



# NICHOLAS BEAZLEY AIRPLANE CO. INC.

Main Office and Warehouses  
**MARSHALL, MO.**

WESTERN BRANCH  
3769 So. Moneta  
Los Angeles, Calif.

AIRPLANE SUPPLIES  
MOTORS, PARTS, MATERIALS

CATALOG

J

PARTS FOR WRIGHT, VELIE, LAM-  
BERT, WARNER, CURTIS OX5-OXX6,  
HISPANO-SUIZA AVIATION Engines

CATALOG J

# AIRPLANES MOTORS - PARTS SUPPLIES

Including Complete Parts Lists of Curtiss OX5,  
Curtiss OXX6, Velie, Lambert and  
Warner-Scarab Engines

Authorized Wright Engine Parts Dealers

NICHOLAS-BEAZLEY AIRPLANE COMPANY, INC.

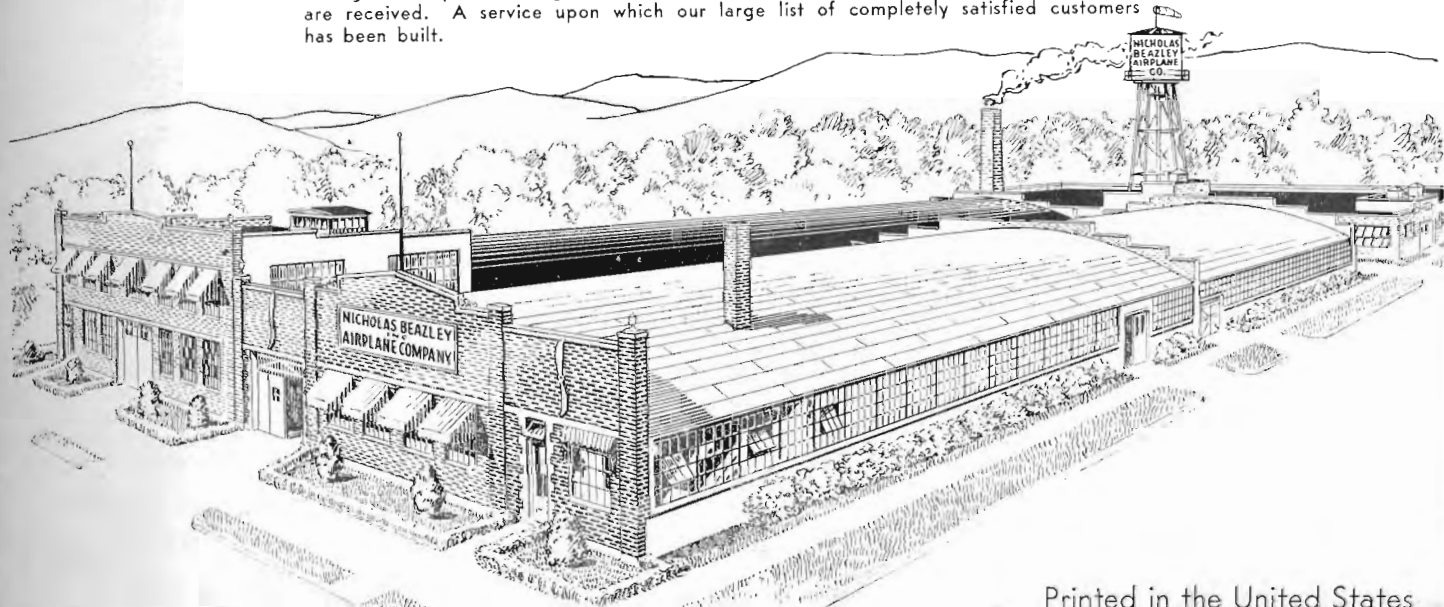
Parts and Supply Division

HOME OFFICE « » MARSHALL, MISSOURI

Western Branch: 3769 South Moneta, Los Angeles, California

Cable Address: NIBCO - Bentley's Code

Illustrated below is our big factory and warehouse covering a full square block and providing the 75,000 square feet of floor space for our immense stocks. Conveniently arranged to expedite filling of orders, enabling us to ship all orders the same day they are received. A service upon which our large list of completely satisfied customers has been built.



Printed in the United States

2195  
590  
1645.  
50.  
40.  
50.  
1785  
890.

# Every Conceivable Aero Part and Supply Ready For Service on Your Order

WITH this new catalog, (which is coming to you in a new and improved form), our latest listing of parts, supplies and accessories appertaining to the aviation industry is brought to you. In changing the size of this, Catalog J, we hope to make our listings more compact so they will be more convenient as an aid to you in making up your orders. The larger pages enable us to more completely list related items on the same page, and open double pages spreads before your eyes a more comprehensive presentation of these various supplies. You will find this new size more convenient to handle, too.

It is through the co-operation of the various manufacturers who have so liberally assisted us in the compilation of these pages that we are able to make this catalog as complete as it is. We extend to them our appreciation. Much time and effort has been expended in

searching the various markets to obtain the best of merchandise and this we offer to you at the lowest price. It is ever uppermost in our minds to first give complete service to our customers through quality merchandise at the lowest possible prices.

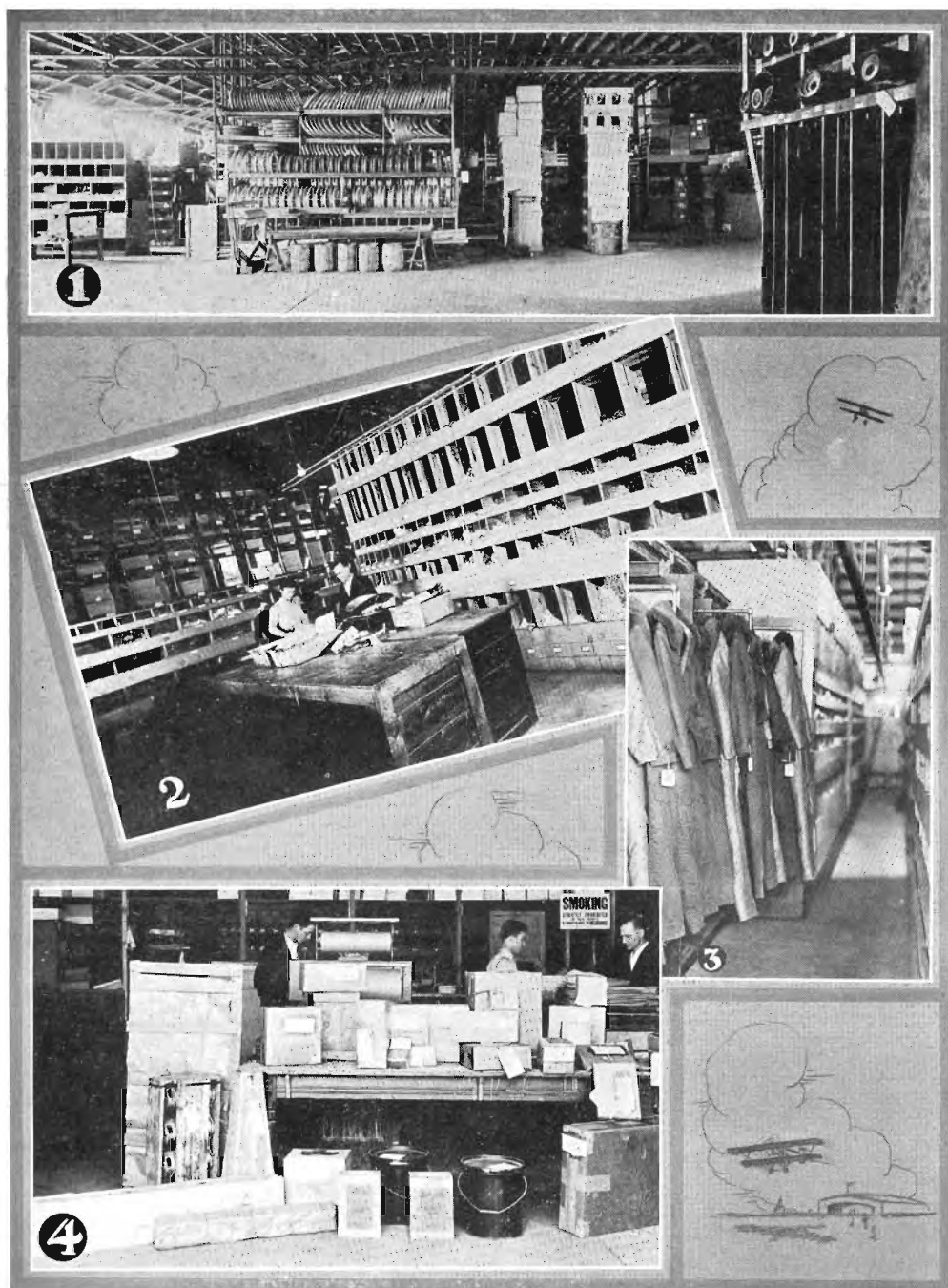
## COMPLETE STOCKS

In our spacious stock room is row after row of shelves, built from the floor to the ceiling, all filled with complete lines and stocks of all of the popular tried and proven items of parts and supplies as used by the aviation industry. This immense concentration of aero accessories, awaiting service on your orders is responsible for our ever popular "Ship-the-Same-Day" service. No delays, no backordering and waiting for the supplies you need NOW. It is a hard and fast rule in our shipping department that every order goes out to the customer the same day that it is received. And our department heads are careful to see that it is strictly adhered to, too.

## COMPLETE CUSTOMER SATISFACTION

The Nicholas-Beazley organization is one built up of experienced aeronautical men. They are all familiar with your problems and are ready and willing to help you in any way that they can. We want all of our customers to be absolutely satisfied and we are willing to meet any reasonable demand in way of adjustments or other problems that might

1. A general view of our parts room showing large stocks of wheels and tires. Note the long rows of bins, chuck full of thousands of items awaiting service on your orders. 2. One corner of our stock room showing part of our immense bolt stock and also shelves filled with popular items of helmets. 3. Cabinet of winter flying clothing and an aisle of stock bins. 4. A view of our shipping room showing orders awaiting express and mail wagons. Competent packers and fillers see that your order is started to you in first class shape and on time.



# Complete Stocks and Our Ship-Same-Day Policy Bring All of Your Orders to You Promptly

arise. All of our merchandise is guaranteed to be exactly as represented or money will be refunded. The Nicholas-Beazley Company is well known from coast to coast as the largest of aero parts suppliers and, too, has built up a large representation in foreign fields. A separately operated export department is maintained to serve this field.

## OUR NEW FACTORY AND WAREHOUSE

Within the past two years we have constructed a modern airplane factory and warehouses which now have a total of over 75,000 square feet of floor space. Our immense stocks of supplies are shelved here ready for shipment on your orders. Three miles south of the city on paved highway No. 65 is maintained a 4-way landing field, equipped with facilities for night landings, government beacon, government teletype weather service, complete repair and hangar service. This is for convenience of those customers who want to fly in for their supplies or to visit us.

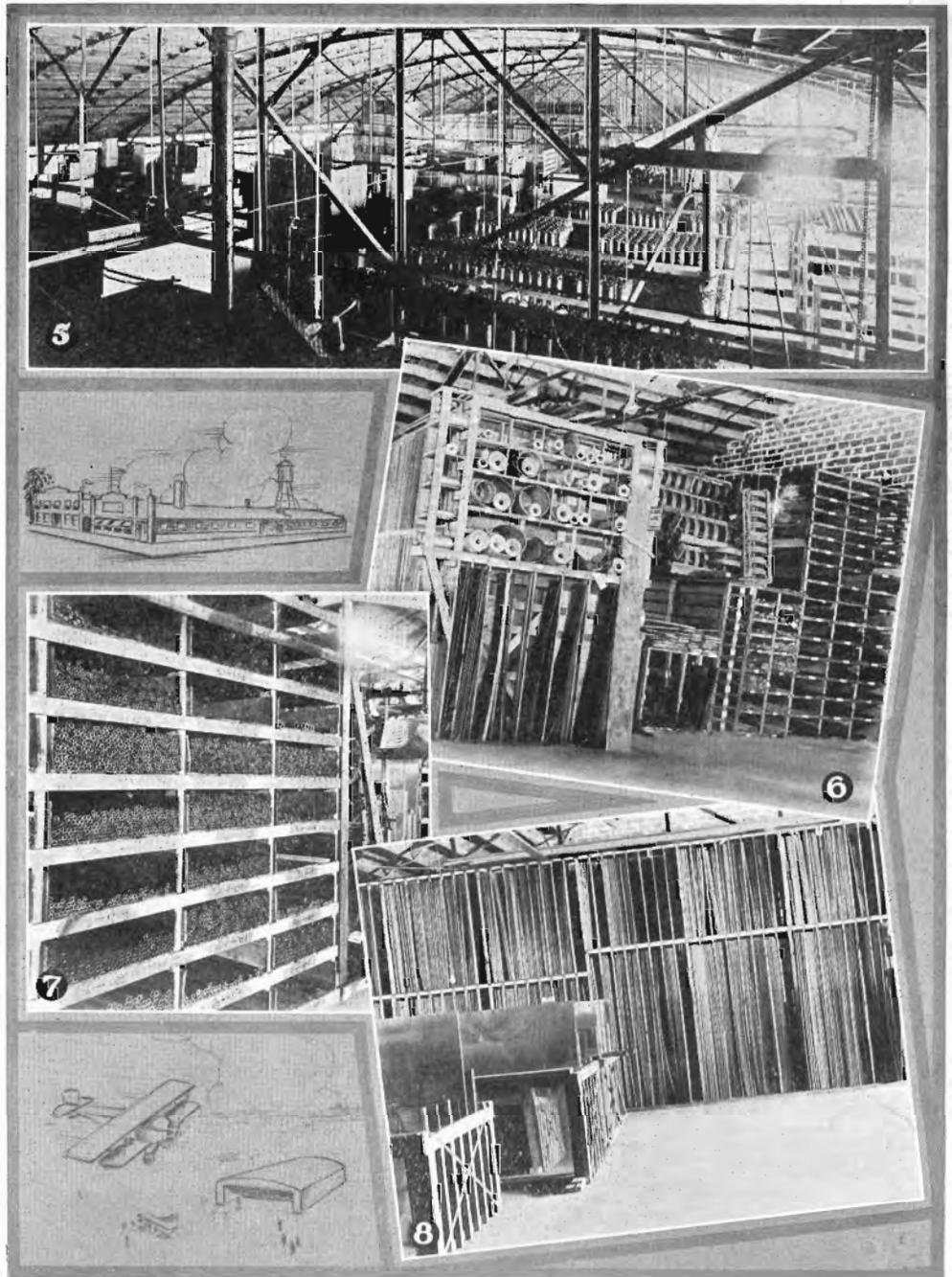
## LET US CARRY YOUR INVENTORY

This catalog has been compiled with the idea in mind that you use it as a listing of your own inventory. With our immense stock only 24 hours from your door it is not necessary that you carry in your places of business a great amount of stock. Do away with your own card index file of items you carry in stock—eliminate your system of making material requisitions from your stock. With our large and complete stocks you merely have to use this catalog as a guide, make out the order for the parts that you need right now, send it in to us and by the next train out we will forward your order, complete. Almost as quick as you can obtain it from your stock room and then you do not have to have a lot of good working capital tied up in inventory. Let us carry it for you. Order it out as you

need it. That is the one big service Nicholas-Beazley has for you and we hope that you will avail yourself of the opportunities it presents.

## NEW ITEMS ADDED AS PRODUCED

While every effort has been made to make this 1931 catalog complete in every way, each week brings out new products in this fast growing industry. Being ever on the alert for these, they will be added to our stock as fast as they have been investigated and proven. If you do not find any item for which you are looking, just write us about it. We are here to give you complete service and it is yours for the mere asking.



5. A general birdseye view of our stock room. While not very distinct it gives you an idea of the bigness of it and proves that when we say BIG we really have this bigness to back up this statement. 6. Tubing, tern plate, coiled and sheet aluminum and sheet steel bins, stocking all popular sizes for immediate shipment. 7. Another steel tubing bin. 8. Ply-wood and sheet aluminum. These last two items again substantiate our claims that we carry large stocks of all popular selling items. These are all actual photographs, unretouched.

## TERMS - PRICES - HOW TO ORDER

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**PRICES:** This is of vital interest to all who are engaged in this new and active industry. You will find our established list prices are based on the lowest cost of materials purchased by us in large quantities. While our prices are usually best we do not place cost before quality, buying for distribution U. S. Army Air Corps specification materials.

The fluctuating market on our purchases makes it necessary that our prices be quoted subject to change without notice. Any price decline will be billed at decreased figure and any price increase on items will be billed at the higher price, the items being subject to your return if price is not satisfactory. Bonafide dealers or manufacturers are entitled to a discount on most of the catalog prices.

A small handling charge will be made on orders shipped as instructed but accepted for credit.

**TERMS:** Our terms are cash. Firms, who have an established credit, will be extended the courtesy of a "Convenience Account" payable between 1st and 10th of the following month. Such accounts are not opened until proper investigation through commercial agencies and trade reference has been made.

**SERVICE:** It is our desire to stay at the head of this fast growing industry and we are stocking all the New Production material for which there is any reasonable demand.

All of your inquiries will receive prompt attention. Let us give you the best of service, quality and co-operation at all times.

**HOW TO ORDER:** In ordering parts and supplies please observe the following rules and we will be able to ship you exactly what you want and avoid errors and delays.

1. Give full name of part, catalog number, catalog page, listed price, and any other description desirable.
2. Specify if you desire shipment by parcel post, express or freight.
3. If by parcel post, be sure to include in your remittance enough to cover parcel post charges. Any over-payment will be immediately refunded.
4. If by express or freight, and there is no express or freight office in your town, give nearest shipping point.
5. Enclose remittance covering at least 25 per cent of the amount of your purchase. Balance can come C. O. D.
6. Please use Western Union when telegraphing as there is no local Postal Telegraph office located in Marshall, Mo.

**DAMAGED SHIPMENTS:** We cannot be held responsible for any loss or damage sustained in transit, however, we will gladly lend our prompt assistance to help our customer secure adjustment. We receive from the transportation company a "good order" receipt and, therefore, if any damage has been sustained in transit the transportation company must be held responsible. Do not return damaged merchandise or shipments without having first communicated with us and having received instructions to return it.

On Parcel Post shipments do not accept broken packages unless proper notation is made upon the carrier's receipt. Be sure and fill out the Post Office Department Parcel Post Insured Damage Claim Form.

On Express packages do not accept these without proper notation on carrier's receipt and after having advised the Express Company and their proper Damage Claim Form filed; send us duplicate of this form.

On Freight shipments do not accept broken or damaged packages unless the proper notation is made upon the carrier's receipt. Have the Freight Agent make proper notation on Bill of Lading and advise us immediately.

**SHORTAGES:** All shipments are checked and rechecked before leaving our stock room to prevent errors in shortage. A Packing Slip of each shipment is enclosed with the shipment and any claims for shortages must be made within five days, after receipt of shipment, directly to us at Marshall.

**RETURNED GOODS:** No merchandise should be returned for credit or exchange without first taking the matter up with us. We stand ready at all times to rectify any mistake that was made by us and without the least cost to our customer. Under no circumstances should merchandise be returned without authorization of shipping instructions by us.

### TELEGRAPH CODE

For your convenience in ordering by telegraph when the use of numbers is necessary we have prepared the following code: The key word is NIBCOPARTS.

N — I — B — C — O — P — A — R — T — S  
 1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9 — 0

Example: Part Number 41375 would be: CNBAO

Also the following shipping code will save you money when ordering by telegraph.

|   |  |  |
|---|--|--|
| LEMAB—Ship to us parcel post.                     | LEMFG—Ship to.....parcel post.                     | LEDAB—Advise date of shipment<br>our order number (or date). |
| LEMPQ—Ship to us parcel post<br>special delivery. | LEMQR—Ship to.....parcel post<br>special delivery. | LEDBC—Wire reply (acknowledgment<br>and shipping date).      |
| LEMBC—Ship to us express.                         | LEMGH—Ship to.....express.                         | LEDCC—Please quote us your prices.                           |
| LEMCD—Ship to us by freight.                      | LEMHI—Ship to.....by freight.                      | LEDDC—Please quote us your<br>prices and delivery.           |
| LEMDE—Ship to us air mail.                        | LEMII—Ship to.....air mail.                        |  |
| LEMEF—Ship to us air express.                     | LEMJK—Ship to.....air express.                     |  |

If your wire acknowledgment is required on an order be sure to add the code word LEDBC to your order.

All telegraph replies are sent at customer's expense.

**NOTE:** Please confirm all telegraphic orders by letter giving both the coded order and the translation.

**IMPORTANT:** When ordering parts for airplanes or engines be sure to mention the make, the model and the serial numbers or any other designation to assure the shipment of the right part.

### REFERENCES

National Credit Office  
 Cleveland, Ohio.

Wood & Huston Bank  
 Marshall, Mo.

R. G. Dun  
 Bradstreet's.  
 Any National Office

WARM, COMFORTABLE WINTER FLYING APPAREL



Army-Navy No. 1



Army Navy No. 2



N-B Commercial No. 2



N-B Special No. 5

WINTER FLYING SUITS

**ARMY-NAVY No. 1.** A heavy fur-lined winter flying suit, lined with solid, long black Manchurian fur; outside shell heavy jungle cloth of best grade; bellows knee pockets with snap fasteners, full zippered, neck to crotch, and both arms and legs; snap fastened openings on sides to reach inside clothing; wide belt with buckle and high, snug-fitting collar of soft fur; knees are quilted; all sizes, per suit, formerly sold at \$140.....**\$75.00**

**ARMY-NAVY No. 2.** This suit is highest grade winter flying suit on the market. Lined with finest quality heavy sheep wool; outside shell is heavy durable, imported Jungle cloth of best grade; expertly tailored, linings all double-stitched and legs quilted; full, double zippered front, neck to crotch; arms and legs; wide adjustable belt; deep roomy pockets on knees and right breast; collar is full, snug-fitting and made of soft beaver fur; snap fastened openings at sides; this suit will turn back the severest of cold weather; all sizes, per suit, formerly sold at \$120.00.....**\$90.00**

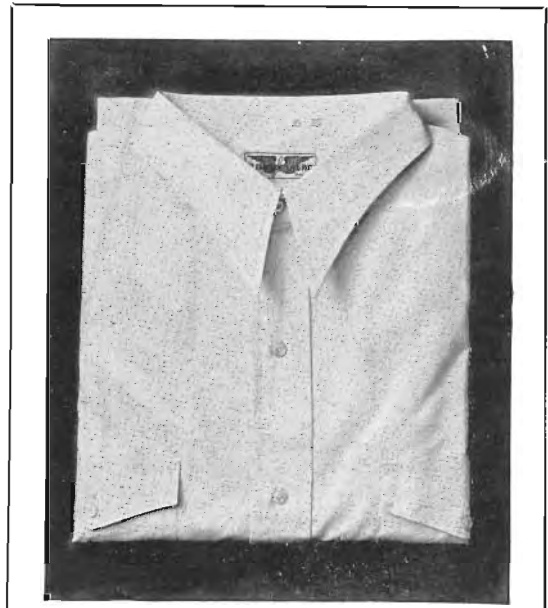
**N-B COMMERCIAL No. 2.** This is an exceptionally well made heavy winter flying suit; lined with good grade heavy sheep's wool, with outside shell of heavy outer cloth; a material with hard surface and well-wearing qualities; full zippered front on left side, neck to crotch; zipper fastenings on arms and legs; wide belt; map pocket on right breast; snap openings on sides to reach inside clothing; high, close-fitting collar of soft fur; all sizes, formerly sold for \$60.00, each **\$48.00**

**N-B SPECIAL No. 5.** A warm, comfortable suit lined with long, black Manchurian fur; outside shell, heavy ribbed Bedford cord cloth, grey; full zippered on left side, neck to crotch; arms and legs, snap openings at side to reach inside clothing; wide belt, high, close-fitting collar of soft fur. Equals most suits which regularly list at \$75.00, all sizes, each.....**\$48.00**

**N-B COMMERCIAL No. 4.** Heavy, felt-lined suit with outside shell of light olive, heavy hard-wearing cloth. Full zippered in center in front, neck to crotch; adjustable straps and buckles on both arms and legs; large button pockets on knees, and large map pocket on left breast; snap openings in sides to reach inside clothing; wide belt, high snug fitting collar of soft fur. Really a remarkable buy for lighter weight suits; all sizes, regular \$27.50 value, each.....**\$20.00**



N-B Commercial No. 4



FLIGHTEX SHIRTS

*Seven Times the Laundry Life*

**FLIGHTEX SHIRTS.** Made from the standard Flightex Fabric, bleached to a snowy lustrous white and carefully tailored into well-fitting, smart-looking shirts. Exhaustive tests show that Flightex Shirts have seven times the laundry life of comparable high quality shirts—one Flightex shirt will outwear seven ordinary shirts. Each Flightex Shirt comes wrapped in a transparent cellophane envelope insuring spotless shirt untouched by hand from manufacturer to wearer. Their unusual value will at once be apparent on inspection. Sizes 14 to 17½, sleeve lengths 33 to 35. Flightex Shirts.....each **\$2.95**

LIGHT WEIGHT CLOTH AND SUEDE FLYING SUITS



GROUND MECHANICS SUITS

This particular suit is made with wrist and ankle straps and a reinforced belt that lies flat; it is designed full and roomy and is especially comfortable; plenty of convenient pockets and has a handsome aviation emblem on left breast. An excellent suit for ground mechanics or field attendants and is also used by many pilots as a flying suit. Can be had in either white or khaki herringbone cloth.

Ground Mechanics Suits—  
Regular \$5.90 value...ea. **\$3.60**



LIGHT WEIGHT SUMMER FLYING SUITS

Lees No. 244 Flying Suits. Button front, made of mercerized White Herringbone twills; adjustable belt model, convertible open lapel collar; two pockets; adjustable tabs at wrists and ankles, extra roomy seat and large legs.

No. 244 Suits.....each **\$5.00**  
No. 2044, full zippered.....each **6.00**

Lees Summer Flying Suits. Made of highest quality herringbone cloth in either white or khaki. Strictly U. S. Navy Air Corps specification. This particular garment is made expressly for us and embodies all the features for aviation use such as large map pockets, bellows back, adjustable belt; full zippered front, legs and wrists. Each suit has aviation emblem on left breast.

No. 2094, white .....each **\$9.00**  
No. 2092, khaki .....each **9.00**



Lee Whizit Flying Suits. Fitted with Talon fastener neck to crotch; adjustable belt model, large pockets; adjustable tabs at wrist and ankles; made in two colors of fade-proof Herringbone Twills; a remarkable suit for warmer weather flying; large, roomy and comfortable.

No. 2086, grey.....each **\$7.50**  
No. 2087, tan .....each **7.50**



LEATHER LIKE SUEDE FLYING SUITS

This particular suit is made exclusively for us and the short time which we have sold it has proven it to be exceptionally well favored among its wearers. Made of a specially woven, brown, leather-like suede cloth which has a downy woolly finish on both sides; it is excellent for spring, fall, warm winter or cool summer days; made roomy and comfortable; full zippered front, elastic arms and legs; wide belt.

Leather-Like Suede Suits.  
Each .....**\$12.50**

NOTE: ALL THE ABOVE SUITS IN SIZES 36 TO 50. ON SIZES 46 TO 50 ADD 10% FOR LARGER SIZE.

**SUMMER FLYING SUIT BARGAINS.** We have put into this lot a number of our discontinued lines, odd and ends and slightly soiled suits of other lines; there are suits in this lot that average from \$4.50 to \$9.00 in values; but in order to clean them out and as long as they last our price will be, each..... **\$3.00**

**LETTERING.** Special insignias will be embroidered on backs of suits at a charge of 50c to 75c per garment, net; depending upon the amount of wording and the character of design you might want. A deposit is required on all orders for lettering and special embroidery work.



AVIATOR'S BREECHES

AVIATOR'S BREECHES. Nothing is quite as serviceable or dressy for flying wear as a pair of breeches with high boots. All of our breeches are English cut and are of highest grade obtainable.

No. 2516. Imitation Bedford cord; full seat; leg reinforced chamois leather; button bottom on legs; nicely tailored.....pair **\$5.75**

No. 2502. Genuine Bedford Cord; chamois leather seat and knee reinforcement; button bottom on legs; extra high quality; full English cut.....pair **\$13.75**

No. 605 MET. Imported Cavalry Twill; the highest grade riding breeches made; 1/4 chamois leather knee reinforcement; a super-quality dress material that will almost wear forever.....pair **\$17.50**

WAR SURPLUS RECLAIMED NAVY FLYING SUITS

WAR SURPLUS RECLAIMED NAVY FLYING SUITS. Reclaimed Navy Regulations Medium weight flying suits; double breasted and double buttoned, buttoned down left side; button adjustable wrists and ankles, large side pockets and large map pockets on breast; made of medium weight olive drab moleskin cloth; we have these only in small sizes (36) but they will make you a mighty nice suit and they are very reasonably priced at.....each **\$3.50**

**WINDTITE**

**SCULLY AirMail HELMETS**

SCULLY HELMETS. To actually produce a helmet that really is wind-tite is to triumph over one of the most stubborn elements in flying. In the famous SCULLY HELMET this has been notably achieved after many tests by men in the air service. These tests proved that the SCULLY HELMET fits properly, it is comfortable, it is wind-tite and remarkably durable. The No. 94 is only one quoted below with the Wind-tite feature, but it may be had on any leather number at \$1.00 additional. We are exclusive for SCULLY HELMETS, from Denver, Colo., to East Coast, inclusive. Carry complete stocks and will make prompt shipment on all of your orders. We have some good dealer territory still open. Write for entire proposition.



SCULLY NO. 94 HELMET. This helmet has the wind-tite feature; made of imported cordovan cape with beaverized lambs wool lining; for winter flying. Scully No. 94 Helmet.....each **\$7.00**



SCULLY MASK NO. 1498. Leather face-mask, covers entire face and chin, with removable mouth-piece; permits free breathing; made of the finest imported leather.

Scully Face Mask No. 1498.....each **\$4.00**

SCULLY MASK NO. 1496. Leather face mask designed for Meyrowitz No. 6 U. S. Air Service model goggles; non-fogging and detachable; leather webbing with elastic fits around the goggle; recommended by all air mail pilots.

Scully Face Mask No. 1496.....each **\$3.50**

We are exclusive distributors for Scully Air Mail Helmets from Denver, Colo., to East Coast inclusive. Some good dealer territory still open. Write for further particulars.

NOTE: Scully Helmets are made in three standard sizes. Small for sizes 6 3/4 to 7. Medium for sizes 7 1/4 to 7 3/4. Large for sizes 7 3/8 to 7 1/2. Also Extra Small for sizes under 6 3/4 and Extra Large for sizes over 7 1/2.



SCULLY NO. 90 HELMET. This helmet is made of imported cordovan cape; light for summer wear. Scully No. 90 Helmet.....each **\$4.00**

SCULLY NO. 91 HELMET. Made of imported cordovan cape; grey suede leather lined; of medium weight. Scully No. 91 Helmet.....each **\$5.50**



SCULLY NO. 97 HELMET. Made of imported cordovan cape and lined with glove silk; all seams are leather taped. Scully No. 97 Helmet.....each **\$5.00**

**OTHER SCULLY HELMETS NOT ILLUSTRATED**

SCULLY NO. 86 HELMET. Made of white duvetyn cloth with black edge binding; leather chin and buckle strap; an excellent helmet for summer use. Scully No. 86 Helmet.....each **\$1.00**

SCULLY NO. 93 HELMET. This helmet is same as No. 86 except that it is made of tan duvetyn cloth. Scully No. 93 Helmet.....each **\$1.00**

SCULLY NO. 92 HELMET. Made of imported cordovan cape; lined with grey suede leather and it also has an inner lining of wool; an excellent helmet for winter use. Scully No. 92 Helmet.....each **\$6.00**

SCULLY NO. 2990 HELMET. Made of imported sand grey leather cape, unlined; an ideal summer helmet. Scully No. 2990 Helmet.....each **\$4.50**

SCULLY NO. 2991 HELMET. Made of imported sand grey leather cape; lined with grey suede leather. Scully No. 2991 Helmet.....each **\$6.00**

SCULLY NO. 3990 HELMET. Made of fine grade chamois, unlined; light weight and an excellent helmet for summer wear. Scully No. 3990 Helmet.....each **\$4.50**

SCULLY NO. 3991 HELMET. Made of fine grade chamois, lined with chamois; light weight for cool weather. Scully No. 3991 Helmet.....each **\$6.00**

**HELMETS**



NB ARMY-NAVY No. 1. A splendid helmet for winter wear, it has every good feature a pilot would want in a helmet; fur-lined with soft fur, cordovan chocolate leather; perfect fitting around chin and cheeks; double-stitched seams; goggle fasteners on back, rolled leather edges; quality is tailored in the fine helmet.....each **\$5.00**



NB ARMY-NAVY No. 2. This is an excellent wool-lined helmet; chocolate brown leather lined with soft warm lamb's wool of select quality; double stitched seams, edges bound with rolled leather to retain shape and fit; buckle and tongue chin strap; goggle fasteners on back; heavy winter weight, yet not thick and cumbersome.....each **\$4.50**

**NB SPECIAL HELMETS**



NO. 1090 NB SPECIAL HELMET. This helmet is an exceptionally good helmet made for us by a well known manufacturer; the helmet is made of brown imported kangaroo leather, perfect fitting, fine appearing and has great wearing qualities; unlined, light weight; fine for warm weather flying. No. 1090 Helmet.....each **\$3.25**

NO. 1091 NB SPECIAL HELMET. Same as above, except it is lined with good grade chamois; an excellent helmet for cooler weather flying. No. 1091 Helmet.....each **\$4.50**



HELMETS



**NB ARMY-NAVY No. 3.** An unusually comfortable helmet lined with best quality soft finish chamois. Comes in chocolate cordovan brown or tan or acorn cape leather outside; form fitting around chin and cheeks; powder puff ear pads; regular pattern chin and goggle straps; a remarkable helmet at the price we now quote; be sure to state color desired.....each **\$4.00**



**NB ARMY-NAVY No. 4.** The helmet is made of the very best grade imported cordovan cape and is unlined. The leather is soft and pliable with unfinished nap leather on the inside; rolled edges; buckle and tongue chin strap; retains shape and has neat appearance; ideal for summer wear.....each **\$3.50**

**NB COMMERCIAL No. 1.** A soft comfortable brown suede unlined helmet of the very best quality; newly patterned and tailored; snug-fitting; ribbon lined on inside seams; reinforced chin strap with buckle fastener; a neat appearing and durable helmet for summer wear.....each **\$2.50**



**NB COMMERCIAL No. 2.** An attractive well-tailored helmet of unlined cordovan leather with soft finished inside; has every latest good feature of tailoring; rolled leather bound edges, buckle and tongue chin strap; goggle straps on back; a most comfortable, well-fitting inexpensive helmet.....each **\$2.00**

HELMETS

**NB COMMERCIAL No. 3.** This is one of the best helmet values we have ever offered; they are made of good quality chocolate cape leather and lined with a soft wool-blanket lining; very warm, yet light; for winter wear; fine for students or for passenger use.....each **\$1.50**

**NB COMMERCIAL No. 4.** An inexpensive, fine appearing helmet of light grey or light tan gaberdine cloth with a satin silk lining; light weight for summer wear; made from the same patterns and has the same feature of the more expensive styles; reinforced chin strap.....each **\$2.00**



**NB COMMERCIAL No. 5.** Best quality cloth helmet for summer wear; can be had in four colors: snow white, grey, cream or tan. Light weight, unlined, with inside seams bound with ribbon; form fitting and attractive; adjustable snap fastener on chin strap; specify color when ordering.....ea. **\$1.50**

**NB COMMERCIAL No. 6.** Good quality cloth helmets of white or tan bleached gaberdine cloth; snug-fitting at cheeks and neck; adjustable strap fasteners; edges substantially bound with ribbon; an excellent helmet for summer wear.....each **\$1.00**

SCULLY COMMUNICATING SET



**SCULLY COMMUNICATING SET.** No. 99 communicating set is No. 91 Helmet fitted with patent amplifiers ingeniously fixed under soft comfortable ear pads permitting ordinary conversation to be heard clearly without distortion above the roar of the motors. The tubing made of rubber and fabric being light and flexible makes communication convenient and comfortable, especially for instruction purposes. Pays for itself in efficiency it adds to pilot-instruction. When not in use the tubes are quickly detachable. Comes complete with specially fitted helmet, mouth piece and connecting tubes.

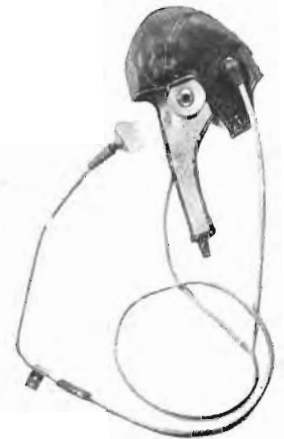
No. 99 Scully Communicating Set.....each **\$13.50**

LARYNGAPHONE TELEPHONE SET FOR AIRCRAFT



**THE LARYNGAPHONE TELEPHONE SET.** A noise-proof telephone set for aircraft. For reception and transmission of telephony in aircraft, nothing approaches this instrument in efficiency. It excludes all sounds except that of the human voice from the earpieces. Can be used with radio apparatus and for intercommunication between pilot and passengers. Simplicity, lightness and strength combine to assure reliability in use. This set consists of a patented throat microphone, held in contact with neck by soft flexible strap, and 2 bi-polar receivers connected in series, mounted on adjustable headbands. Cable and 4-point plug for connecting to battery. Four volts normally required for operating 2, 3 or 4 sets. Dry cells can be used. Used exclusively by the British Air Ministry for training students.  
Laryngaphone, per set of 1.....each **\$39.90**

COMMUNICATING SETS

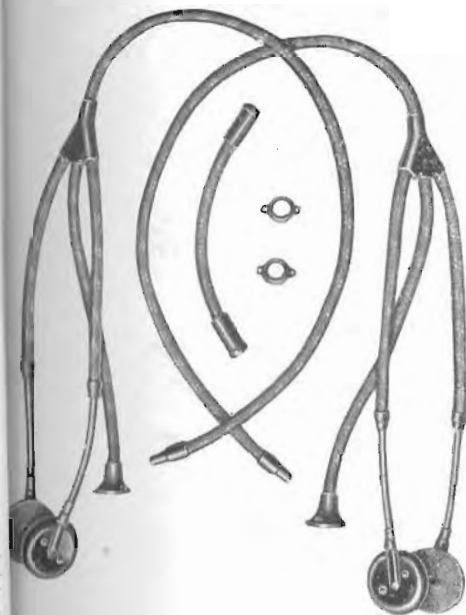


**SPEAKING TUBE AND HELMET SETS.** A very satisfactory communicating set for use in open cockpit planes; excellent for student instruction and also inter-communication between pilot and passenger; light in weight, easily installed; set includes good grade helmet, lined; soft rubber ear pads and detachable earphones; adjustable aluminum speaking tubes with sanitary enameled mouthpiece; attached to cowl or side of ship; flexible tubing connections. Be sure state size of helmet wanted.

One-Way Set, complete.....each **\$ 9.00**  
Two-Way Set, complete.....each **18.00**  
With breast plate additional \$2.50

**PARTS—**  
Helmet, with necessary washers.....each \$5.50  
Breast plate and mouthpiece.....complete 3.50  
Sponge rubber washer.....each .10  
Moulded rubber coupling.....each .10  
Flexible tubing.....per foot .15  
Moulded rubber ear pieces.....each .50

COMMUNICATING SETS



**VOICEPHONE SPEAKING TUBE SETS.** The perfect speaker for Airplanes. A practical, inexpensive, double-proof device; developed after extensive tests made by actual experience; consists of two soft rubber ear-pieces, padded with powder puff type cushion; wide adjustable elastic headband is used to hold in place, helmet then pulled on over earpieces; when used without helmet headbands are sufficient to hold in place over ears; one tube used for communication hence operators may hear their own voice as well as other party; mouthpiece is of soft rubber and cemented directly to main voice tubes; voice tubes are a high grade linen braided rubber composition; couplings and fittings scientifically designed to obtain best speaking results. Excellent equipment for Flying Schools, Cross Country Pleasure Trips, or Passenger Flights.

**voicephone Model E.** Two-way outfit complete with soft rubber earpiece, headband, mouthpiece supports; voice tube measured from junction connector to the end of coupling 27 inches; three feet extension tubing with all fittings for installing in airplane.....each **\$15.00**

**voicephone Model F.** Standard oneway outfit, using small mouthpiece, 7 1/2 feet tube; earpieces and headband standard; no mouthpiece provided at receiving end, complete.....each **\$7.00**

**voicephone Model G.** Special one-way outfit with hard or soft rubber acoustic mouthpiece, standard earpieces and headband; tubing 7 1/2 feet long, complete.....each **\$9.00**

GLOVES AND MITTENS



**AIR SERVICE SPECIFICATION GLOVE MITTENS.** An exceptionally warm fingered glove with a fur-lined mitten pouch to fit over fingers and thumb; full sized zippered gauntlet and adjustable wrist strap; pouch hinged on back to allow removal for free use of fingers.

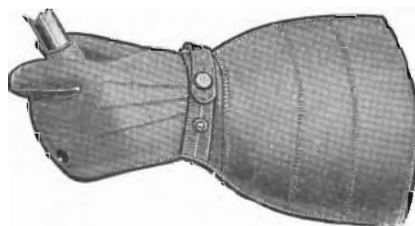
|               |      |                |
|---------------|------|----------------|
| With Pouch    | pair | <b>\$14.50</b> |
| Without Pouch | pair | <b>9.75</b>    |

SCULLY GLOVES



**SCULLY AIR MAIL AVIATOR'S GLOVE.** This glove is made from the finest imported cape leather, very soft and durable; lined with heavy long fibre white wool lining; long wrists for warmth; Talon zipper fastener; made in half sizes from 7 1/2 to 11. Scully Air Mail Glove.....pair **\$6.00**

GLOVES AND MITTENS



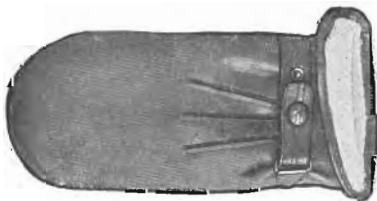
**No. NB1.** One fingered mitten with flexicuff, black horsehide leather lined with soft warm lamb lining, made with new style large and roomy flexible leather gauntlet; adjustable wrist strap on back of wrist; a very comfortable glove for airmen.....pair **\$5.00**



**No. NB2.** The number has full mitten with long flexicuff gauntlet, made of genuine black horsehide leather and lined with soft lamb wool lining; warm and comfortable; adjustable strap on back of wrist.....pair **\$4.50**



**No. NB4.** One finger mitten with leather gauntlet; lined with good grade wool fleece cloth lining; long gauntlet; adjustable wrist strap on back of wrist; a good warm, comfortable mitten and priced economical at.....pair **\$3.75**



**No. NB3.** Short, full mitten made of genuine black horsehide leather and lined with good grade lamb's wool lining; adjustable wrist strap on back of wrist; extra long pattern to fit well up around wrist.....pair **\$3.75**

MOCASSINS



**U. S. NAVY MODEL FLYING BOOTS.** Guaranteed official, latest 1930 design flying boot as used by Naval Air Forces; made of welt construction, 12 inches in height, sheep wool lined, seven inches high in front, six in back; fine bellows tongue, laced in front with rawhide and zipper-fastened in back; with welted sewed-on shoe sole. Navy Model Flying Boot.....pair **\$14.50**



**MOCASSIN NB-No. 15.** Genuine tough elk hide, chocolate color; lined with heavy sheep's wool; fastened four buckles; thin sewed-on soles; really a wonderful mocassin for complete comfort. NB-No. 15.....pair **\$13.00**



**MOCASSIN NB-No. 12.** Genuine leather, russet color; has best grade sheep skin lining; zippers fastening from top to toe insuring easy to put on over shoes; this is really a wonderful mocassin for warmth and wearing qualities. NB-No. 12 .....pair **\$10.00**



**RESISTAL GOGGLES**

The Standard Line Since 1915



**RESISTAL AMERICAN MAJOR.** This type is a favorite with the U. S. Army. It is well built with non-corrosive nickel silver chrome plated. Adjustable bridge, ventilated metal frame and new sponge rubber face masks. Each comes in aluminum case.

Major No. 71. Clear or tinted bent glass.  
Each ..... **\$10.00**

Major No. 72. Immunity bent glass, each..... **11.00**

Major No. 73 Clear or tinted Meniscus lenses.  
Each ..... **14.00**

Major No. 74. Immunity Meniscus lenses.  
Each ..... **15.00**

Major No. 75. Clear or tinted ground cylindrical lenses, each ..... **16.00**

Major No. 76. Immunity ground cylindrical lenses, each ..... **17.00**



**RESISTAL PILOT.** This is a new goggle with a drop eye type lens. It has a very substantial bridge and individual sponge rubber masks. Metal frame, nickel plated. Lenses are good bent type. Each comes in aluminum case.

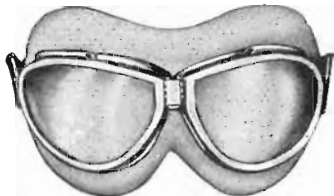
Resistal Pilot Goggles. Bent cylinder lens.  
Each ..... **\$6.00**



**RESISTAL SEYMOUR.** This new goggle will be very popular because of its outstanding feature of 30% more vision. Has genuine Resistal non-shatterable lenses and each comes packed in Aluminum case.

Seymour D. E. M. Sponge rubber mask..each **\$9.00**

Seymour D. E. V. Sponge rubber rings..each **8.00**



**RESISTAL COMMANDER GOGGLES.** Manufactured to Navy specifications. Wide sponge rubber masks assures comfort to wearer. Metal frames and lenses hardened to withstand Navy drop test. Wide lenses give unrestricted vision. Ventilated by positive action of air currents. Each comes packed in aluminum case.

Commander I. Clear lenses guaranteed within Navy standard, each..... **\$25.00**

Commander Im. Immunity lenses within Navy standard, each..... **27.50**

Commander II. Clear lenses beyond Navy limits, ground glass, each ..... **20.00**

**RESISTAL GOGGLES**



**RESISTAL COLONEL GOGGLES.** This is a new goggle made similar to Army specifications. Large lenses afford unlimited vision; replaceable sponge rubber pads, individual for each eye; no sewing. Adjustable bridge, rigidly connected. Wide elastic head band. Scientifically ventilated to prevent fogging. Metal parts are chromium plated on nickel silver, non-corrosive. Each comes in aluminum case.

Colonel No. 17. Bent, clear glass.....each **\$12.00**

Colonel No. 18. Bent, immunity glass.....each **13.50**



**RESISTAL N. M. R. GOGGLES.** This wide vision goggle is extremely popular because of its sponge rubber, comfortable fitting face mask. Resistal non-shatterable lenses, well made metal frames; ventilated. Wide elastic head band. Each comes in aluminum case.

Resistal N. M. R. Clear or dimmer lenses.  
Each ..... **\$7.00**

Resistal N. M. R. Immunity Resistal lenses.  
Each ..... **8.00**



**RESISTAL R. A. V. GOGGLES.** Resistal lenses, sponge rubber binding; close fitting ventilated frames. Large lenses assure wide vision and wide elastic head band, ease to wearer.

Resistal R. A. V. Clear or dimmer lenses.  
Each ..... **\$6.00**



**RESISTAL N. A. K. GOGGLES.** Non-shatterable lenses, light in weight, wide vision; fabric frame, bound with single heavy Chenille.

Resistal N. A. K. Clear or dimmer lenses.  
Each ..... **\$5.00**

**RESISTAL D. G. GOGGLES.** Similar to N. A. K. except that they are bound with triple heavy Chenille.

Resistal D. G. Clear or dimmer lenses, each **\$6.00**



**RESISTAL W. Y. D. GOGGLES.** This popular goggle is now made in several styles. It has Resistal lenses with moderate side vision. They are excellent for student or passenger flying.

Resistal W. Y. D. Clear or dimmer lenses. Chenille bound,.....each **\$3.50**

Resistal W. Y. D. M. Ventilated style with sponge rubber mask pads.....each **\$4.00**

**RESISTAL GOGGLE MASK**



**RESISTAL D. G. MASK.** This is really a wonderful mask goggle combination for cold weather flying. It covers the face around the eyes and is furlined it is comfortable and close fitting. At altitude or cold weather flying it affords eye face protection.

Resistal D. G. Mask.....each **\$12.00**



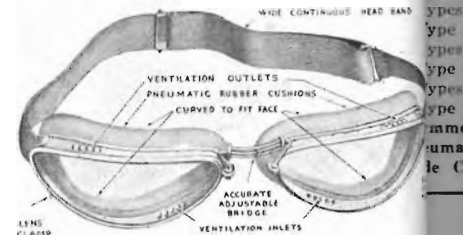
**RESISTAL W. Y. D. MASK.** This goggle combination is very satisfactory for most weather flying. The chamois lined leather fits close to the face giving warmth and comfort and the resistal lenses safety.

Resistal W. Y. D. Mask.....each **\$6.00**

**RESISTAL REPLACEMENT PARTS**

| Goggle             | Lenses Pair | Sponge Rubber Binding | Chenille |
|--------------------|-------------|-----------------------|----------|
| Commander Meniscus | \$15.00     | \$3.00                |          |
| Major Meniscus     | 10.00       | 1.00                  |          |
| Major Bent         | 1.20        | 1.00                  |          |
| Seymour Resistal   | 3.00        | 3.00                  |          |
| N. A. K. Resistal  | 2.00        |                       |          |
| N. M. R. Resistal  | 2.00        | 3.00                  |          |
| R. A. V. Resistal  | 2.00        | 1.25                  |          |
| D. G. Resistal     | 2.00        |                       |          |
| Pilot Bent         | 1.20        | 1.00                  |          |
| W. Y. D. Resistal  | 1.70        | 1.00                  |          |
| Colonel            | 7.00        | 1.00                  |          |

Elastic for any of the above goggles **30c** per pair



**New DICTATOR Goggle**

**THE NEW DICTATOR GOGGLE.** Moderate price, yet meeting all of the requirements of an aviation goggle, light in weight and sturdily built. Has wide adjustable head band and nose piece wearable pilot to seal his goggles comfortably to contour of his face: wide unobstructed vision, wear; all metal parts removed from contact face by highest grade cushion rubber. Packed in metal case.

**Dictator Goggle—**

With clear lenses.....pair **\$5.00**

With tinted lenses.....pair **6.00**

**Lens Only—**

Clear .....pair **2.00**

Tinted .....pair **2.40**

**Head Bands** .....each **1.00**

LUXOR NO. 8 GOGGLES



LUXOR GOGGLE NO. 8. In this goggle Meyrowitz has made a distinct contribution to the safety of piloting aircraft. It is constructed to give a wider range of true vision, a higher degree of fit and comfort and eliminates pressure, slippage, fluttering, headaches, distortion, fogging or sweating and air leakage.

The major features are: Wide flaring feather-edge cushions, duralumin frames, micro-adjustable bridge, non-fogging ventilating circuit, and optically ground lenses.

- Luxor No. 8-A. With white optically ground and polished (Army Type) cylindrical lenses. Each ..... \$18.00
- Luxor No. 8-B. With white optically ground and polished (Navy Type) meniscus spherical lenses. Each ..... \$18.00
- Luxor No. 8-C. With tinted amber No. 1 or No. 2 shade or euphos (green) 1 or 2 shade optically ground and polished meniscus lenses. Each ..... \$19.50
- Luxor No. 8-D. With optically ground and polished soft-lite meniscus lenses ..... each \$22.00
- Luxor No. 8-E. With optically ground and polished non-shatterable meniscus lenses ..... each \$32.00

LUXOR NO. 8 PARTS

- For Black Oxidized Finish on any of the above goggles add ..... \$1.50
  - No. 8-A Lens ..... pair \$10.00
  - No. 8-B Lens ..... pair 10.00
  - No. 8-C Lens ..... pair 11.50
  - No. 8-D Lens ..... pair 15.00
  - No. 8-E Lens ..... pair 20.00
  - Cushions. Wide flaring feather-edge cushions. Pair ..... \$3.00
  - Head Band. Continuous head band ..... each 1.00
- (Popular items carried in stock; others supplied promptly.)

ACCESSORIES FOR LUXOR GOGGLES

- Lenses Only—
- Type 1 ..... pair \$ 4.00
- Types 2, 3 or 4 ..... pair 5.00
- Type 5 ..... pair 8.00
- Types 6 or 7 ..... pair 9.50
- Type 8 ..... pair 9.00
- Types 9 or 10 ..... pair 10.00
- Type 11 ..... pair 20.00
- Asymmetrical Sponge Rubber Cushions, pair \$2.50
- Pneumatic Cushions ..... pair 2.00
- Wide Continuous Headband ..... each 1.00

SNUGFIT GOGGLES



SNUGFIT GOGGLES. The only aviator goggle made with a protective air fin to fill the void between the nose and the cheek. Chromium plated frame, wide vision interchangeable, heavy hard glass lenses. Perfect ventilation, sturdy construction, easy nose adjustment. Wide elastic head band. Special molded snugfit sponge rubber cushions.

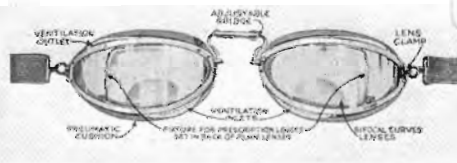
- No. 442 Snugfit. Standard lenses ..... each \$5.00

LENSES AVAILABLE FOR MEYROWITZ LUXOR GOGGLES

Each model of Meyrowitz Luxor Goggles can be equipped with any one of the ten types of lenses listed below. Kindly specify, when ordering, which type of lens is desired. Otherwise Type 1 lenses will be supplied.

- Type 1 Lenses. First quality white cylindrical bent.
- Type 2 Lenses. First quality amber cylindrical bent.
- Type 3 Lenses. First quality euphos (green) cylindrical bent.
- Type 4 Lenses. First quality smoke tint cylindrical bent.
- Type 5 Lenses. White hand ground and polished meniscus.
- Type 6 Lenses. Amber hand ground and polished meniscus.
- Type 7 Lenses. Euphos (green) hand ground and polished meniscus.
- Type 8 Lenses. White cylindrical ground and polished in accordance with U. S. Army specification No. 3024.
- Type 9 Lenses. With cylindrical ground and polished decentered lenses in accordance with U. S. Army specification No. 3024-B.
- Type 10 Lenses. With hand ground and polished decentered meniscus, in accordance with U. S. Navy specification No. 285-D.
- Type 11 Lenses. White optically ground and polished Non-Shatterable lenses.

LUXOR NO. 6 REGULAR

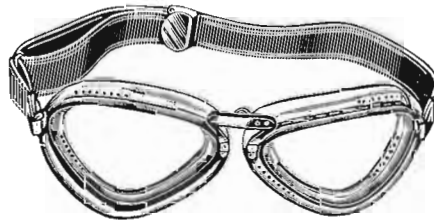


LUXOR NO. 6 REGULAR MODEL. A lower priced model yet embodying most of the features of the more expensive models. Pneumatic cushions, adjustable bridge.

- Luxor No. 6 Regular Model—
- With Type 1 lens ..... pair \$ 9.75
- With Types 2, 3 or 4 lens ..... pair 10.50
- With Type 5 lens ..... pair 14.00
- With Types 6 or 7 lens ..... pair 15.50
- With Type 8 lens ..... pair 16.00
- With Type 9 or 10 lens ..... pair 18.00

(Full description of type lenses found elsewhere on this page.)  
(Popular items carried in stock; others supplied promptly.)

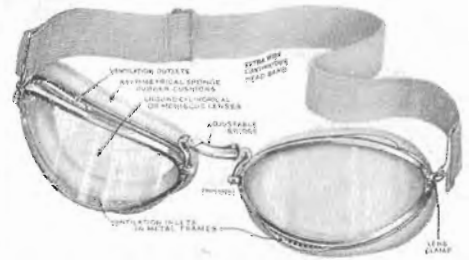
IMPORTED PROTECTOR GOGGLE



IMPORTED PROTECTOR GOGGLE. Scientific ventilation through perfect fitting rubber cushions eliminates all fogging regardless of altitude. Perfectly shaped to contour of face. Clear white wide-vision lens free from all defects insure maximum range of vision. Adjustable bridge and wide one-piece headband.

- Protector Goggles. Clear lens ..... pair \$7.50
- Lenses Only ..... pair 2.00
- Rubber Cushions ..... pair 2.00
- Headbands ..... pair 1.00

LUXOR NO. 6 U. S. AIR SERVICE MODEL

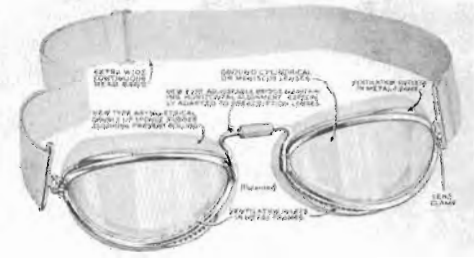


LUXOR U. S. AIR SERVICE MODEL NO. 6. A popular model of Luxor Goggle. A symmetrical sponge rubber cushions, extra wide head band, ventilation inlets and outlet in frames, adjustable bridge.

- Luxor No. 6 U. S. Air Service Model—
- With Type 1 lens ..... pair \$10.75
- With Types 2, 3 or 4 lens ..... pair 12.75
- With Type 5 lens ..... pair 15.00
- With Types 6 or 7 lens ..... pair 16.50
- With Type 8 lens ..... pair 17.00
- With Types 9 or 10 lens ..... pair 19.00
- With Type 11 lens ..... pair 28.00

(Full description of type lenses found elsewhere on this page.)  
(Popular items carried in stock; others supplied promptly.)

LUXOR NO. 7 U. S. AIR SERVICE MODEL

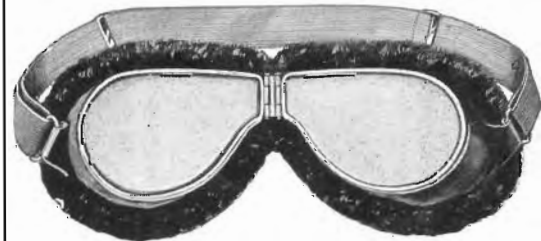


LUXOR NO. 7 U. S. AIR SERVICE MODEL. Highest quality design throughout. Latest type asymmetrical double lip sponge rubber cushions. New adjustable bridge, maintaining horizontal alignment at all times. Extra wide continuous headband.

- Luxor No. 7 U. S. Air Service Model—
- With Type 1 lens ..... pair \$13.75
- With Types 2, 3 or 4 lens ..... pair 15.75
- With Type 5 lens ..... pair 18.00
- With Types 6 or 7 lens ..... pair 19.50
- With Type 8 lens ..... pair 20.00
- With Type 9 or 10 lens ..... pair 22.00
- With Type 11 lens ..... pair 30.00

(Full description of type lenses found elsewhere on this page.)  
(Popular items carried in stock; others supplied promptly.)

TRIPLEX AVIATION GOGGLES



TRIPLEX AVIATION GOGGLES. Non-shatterable lenses, fabric cups bound with soft chenille; substantial construction, close fitting, yet comfortable.

- No. 8125. Clear lenses ..... pair \$3.50
- No. 8125. Amber lenses ..... pair 3.75
- No. 8129. Dimmer lenses ..... pair 3.50

Lenses Only—  
White.pr. \$1.25; Amber.pr. \$1.50; Dimmer.pr. \$1.75

**AMERICAN TRANSPORT GOGGLES**



**AMERICAN TRANSPORT GOGGLES.** In this new goggles the American Optical Company has brought new safety to aviation through decentered lenses—an exclusive feature. They provide accurate vision; no displaced images; no goggle headaches. An ingenious ventilating design keeps the goggles free from fogging and transparent even at high altitude. Transport goggles have been tested, approved and adopted the U. S. Air Corps. Adjustable bridge, all metal parts plated; all adjustments and replacements made without the aid of tools; scientifically constructed to give years of service with greater safety.

- Transport Goggles—**  
 Clear Lenses.....pair **\$20.00**  
 Calobar Lenses.....pair **24.00**  
**Lenses Only—**  
 Clear .....pair **8.00**  
 Calobar .....pair **12.00**  
**Head Bands** .....each **.50**  
**Rubber Cushions** .....pair **2.00**

**NOTE.** Transport Goggles can also be fitted with prescription lenses. The lenses are quickly and easily fitted by changing the rubber cushions and binder, and replacing them with a special binder including Rx lens retaining ring. These are furnished only on special order and it is necessary we have your prescription or sample of lens to be matched.

**AMERICAN AIRWAY GOGGLES**



**AMERICAN AIRWAY GOGGLES.** This is truly a fine goggle made to meet the demand for a good low and medium priced goggle for pilots, student flyers, passengers, motor cyclists and others who need to protect their eyes from strong winds. Specially designed against air leaks. Lenses and headbands are replaceable. Soft rubber cushions, together with adjustable bridge, permit perfect fitting. Available in four models, determined by type of lens desired.

- Model A-1.** Calobar lens, ground, polished, decentered .....pair **\$16.00**  
**Model A-2.** Clear lens, ground, polished, decentered .....pair **12.00**  
**Model B.** Clear lens, ground, polished, bent .....pair **10.00**  
**Model C.** Clear lens, unsurfaced bent.....pair **8.50**

**WILLSON GOGGLES**



**WILLSON OBSERVER GOGGLE.** A goggle that has the same mask and ventilators as the Willson Pilot; flat lenses of single piece hardened plate or laminated non-shatterable glass are optional; the Observer affords a large range of vision although smaller than the Pilot.

- Willson Observer.** Clear lenses.....pair **\$10.00**  
**Willson Observer.** Weld-tinted lenses.....pair **13.00**



**WILLSON PILOT GOGGLE.** Built to U. S. Navy specifications. Equipped with sponge rubber vacuum mask that automatically seals itself to the face, air tight; strong metal frame; precision ground lenses; no eye strain; venturi tube ventilation, no lens fogging; faultless vision with all-day comfort.

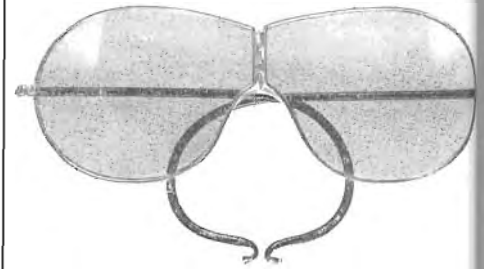
- Willson Pilot.** Clear lenses.....pair **\$20.00**  
**Willson Pilot.** Weld-tinted lenses.....pair **23.00**

**ODD LOT OF GOGGLES**

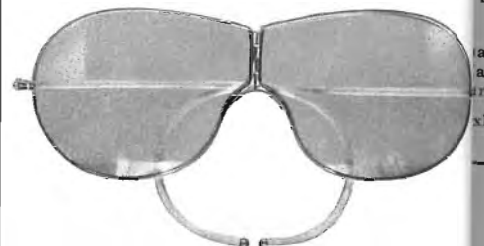
We have made up a collection of odd lots of goggles, discontinued lines, soiled, etc. In this lot are goggles ranging in regular prices from \$4.00 to \$11.00. To sell them out quickly we offer them to the first ones who send in orders at— **\$2.50**  
 Per pair .....

**SUN GOGGLES**

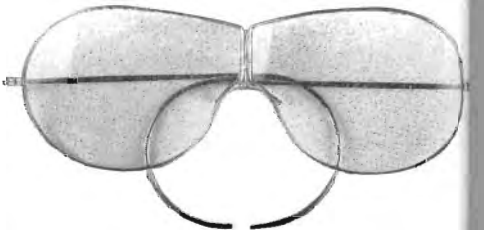
**SUN GOGGLES.** For general outdoor wear, or wear in the closed cockpit, these glare-reducing goggles are a comfort to the eyes. They are made by American Optical Company. The frames are sturdy constructed and their studied design assures maximum comfort.



- SPORTGLAS—**This is a low-priced goggle in yellow low gold-filled temples are covered with brown moisture-proof lenses in smoke, amber, or fieuzal. Sportglas Goggles are supplied with a brown Damaskene case. Be sure to specify lens.....pair **\$3.50**  
**Easy-Lite,** blue lens.....pair **4.50**



**AUTOGLAS—**Frame is yellow gold-filled; temples covered with yellow moisture-proof tubing. Autoglas is supplied with ground and polished Meniscus lens of smoke, amber and fieuzal. Leatherlike cover velvet lined, case supplied with each pair of Autoglas Goggles.....pair **\$5.00**



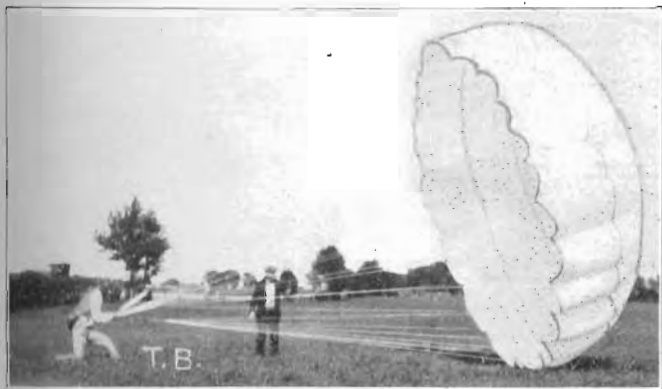
**SOLARGLAS—**A high quality glare-reducing goggle. Frame is yellow gold-filled with oval side, comfort cable temples. The ground and polished Meniscus lenses are furnished in Calobar or Cruxite glass. Cruxite is a flesh-tinted glass which absorbs all invisible ultra-violet rays and just enough of the visible rays to give comfortable vision. Calobar, finest and most comfortable glass made for outdoor wear, is green tinted—yet it does not alter color values—you see green as green and red as red. It allows a high percentage of visible light pass but absorbs all injurious invisible rays. Solarglas Goggles are supplied with velvet lined leatherlike case.....pair **\$10.00**

**LET US CARRY YOUR INVENTORY**

**Orders Shipped Promptly Same Day Received.**

**Complete Stock from which to Make Selections.**

THOMPSON BROS. PARACHUTES



THOMPSON BROTHERS PARACHUTES. Positive-opening manually operated parachutes of standard patterns in seat or back pack styles. Packs are compact, secure and are very easily and quickly opened in conventional rip-cord manner. Strong comfortable webbing harness that evenly distributes opening shock.

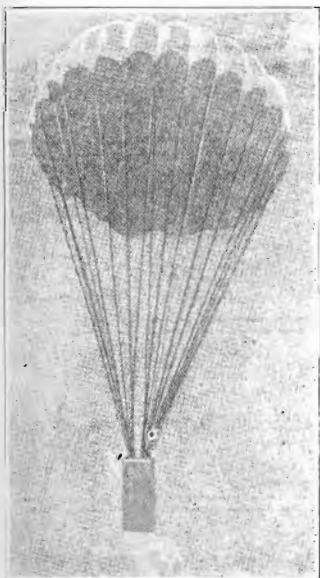
Thompson Parachutes—

|                       |      |          |
|-----------------------|------|----------|
| Silk, seat pack ..... | each | \$275.00 |
| Silk, back pack ..... | each | 265.00   |

THOMPSON BROS. EXHIBITION PARACHUTES. Made of same fine materials but packed in special pack especially adapted for exhibition work. Have unusually low rate of descent—large and strong enough to prevent injurious landing shocks. Come complete with harness and container.

|                            |      |          |
|----------------------------|------|----------|
| Exhibition Parachute ..... | each | \$100.00 |
|----------------------------|------|----------|

SPECIAL LANDING PARACHUTES

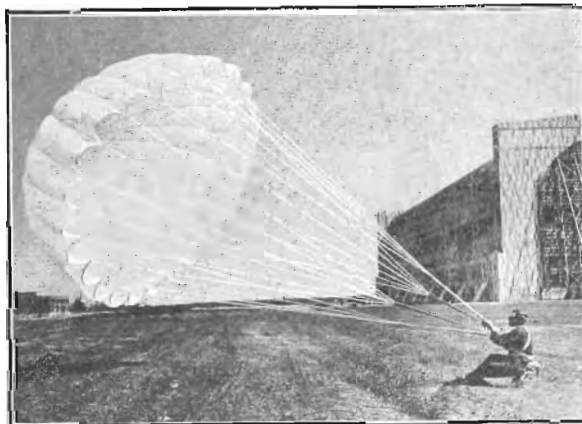


SPECIAL LANDING PARACHUTES. These small chutes are used for many purposes such as dropping food, medical supplies, landing flares, important mail, parcels, rush orders, etc. Also invaluable in making quick non-stop deliveries. (Sizes and prices as follows:

| Size*  | Maximum wt. to be carried in pounds | Price in lots up to 10 chutes | Lots of 50 | Lots of 100 |
|--------|-------------------------------------|-------------------------------|------------|-------------|
| No. 1  | 1/2                                 | \$ 0.75                       | \$ 0.65    | \$ 6.60     |
| No. 2  | 1                                   | 1.00                          | .80        | .70         |
| No. 3  | 2                                   | 2.00                          | 1.75       | 1.50        |
| No. 4  | 4                                   | 3.00                          | 2.50       | 2.25        |
| No. 5  | 6                                   | 3.75                          | 3.00       | 2.75        |
| No. 6  | 10                                  | 6.00                          | 5.00       | 4.75        |
| No. 7  | 16                                  | 9.00                          | 7.00       | 6.50        |
| No. 8  | 30                                  | 13.00                         | 11.00      | 10.00       |
| No. 9  | 48                                  | 18.60                         | 15.00      | 13.00       |
| No. 10 | 70                                  | 25.00                         | 20.00      | 17.00       |

\*Note: Sizes 1, 2, 3, 4 and 5 are complete with pouches at no extra charge. Sizes 6 to 10 inclusive are equipped with snaps. Sizes 1 to 5 inclusive if ordered in less than lots of 10 add 25% to list price. Your name on each chute 10c extra.

IRVIN AIR CHUTES



IRVIN AIR CHUTES are now made in several types, materials and sizes. They have already established their dependability by past performances. Perfected to fill the urgent need for a reliable and practical life-saver for use from all types of disabled aircraft. All Irvin Chutes have Department of Commerce approval.

STANDARD IRVIN AIR CHUTE—Lap, Back, or Seat Pack.

|                                     | 24 foot  | 28 foot  |
|-------------------------------------|----------|----------|
| Standard Canton Silk.....           | \$350.00 | \$375.00 |
| Caterpillar Model, Pongee Silk..... | 290.00   | 325.00   |

FORM FITTING BACK TYPE

|                                     |          |          |
|-------------------------------------|----------|----------|
| Standard Canton Silk.....           | \$365.00 | \$390.00 |
| Caterpillar Model, Pongee Silk..... | 305.00   | 340.00   |

QUICK CONNECTOR PACK

|                                     |          |          |
|-------------------------------------|----------|----------|
| Standard Canton Silk.....           | \$370.00 | \$395.00 |
| Caterpillar Model, Pongee Silk..... | 310.00   | 345.00   |

THE SWITLIK SAFETY CHUTE

Smaller—Lighter—  
More Compact—  
Comfortable

Three Positive Opening Actions Direct from the Rip. No Vital Parts Exposed. Nothing To Go Out of Order.

The Most Modern Fool-Proof Pack in the World Today.

A manually controlled pack with no elastic bands, no flaps, no small wire pilot. Not an if in the whole pack; it is positive. Kept securely together by one continuous wire around pack tray; directly connected with the rip cord, it is simplicity itself. Just pull the cord, two strong flat springs shoot out the pack covering, which acts as a pilot; your chute opens, not maybe, but positive. Opens in 50 feet and has 20 percent slower landing descent than any other standard chute.

Made only in silk and can be had in either 24 or 26 foot in both seat and back packs. The 24-foot weighs 17 pounds and the 26-foot weighs 18 pounds.

SWITLIK SAFETY CHUTES—

|                                 |          |
|---------------------------------|----------|
| 24-foot silk seat type.....each | \$350.00 |
| 26-foot silk seat type.....each | 375.00   |
| 24-foot silk back type.....each | 350.00   |
| 26-foot silk back type.....each | 375.00   |



Seat Pack

**AERIAL FIREWORKS**



**SMOKE TRAILS**

(Burning Five Minutes).....Each, **\$3.00**  
 Huge smoke trails for day use are large cylinders which emit dense columns of smoke, marking the course of the ship and giving a spectacular effect to day flights. They are fitted with electric squibs, that are fired by means of two dry batteries.

**TRIPLE SMOKE TRAILS**

(Burning 15 Minutes).....Each, **\$9.00**

**THUNDER AND LIGHTNING**

**SHELLS**.....Each, **\$8.00**  
 For daylight or night use, 5-inch diameter, 12 inches long, having a paper handle securely strapped to them so that they can be safely handled. They display a series of lightning flashes, and thundrous reports are emitted.

**FUSILADING SHELLS**

.....Each, **\$6.00**  
 For daylight or night use. They are 4 inches in diameter and 12 inches long. They make twelve distinct reports, equal to a rapid firing gun, also one large cannon report at the finish.

**AMERICAN FLAG DAY SHELLS**

.....Each, **\$4.50**  
 These are fired the same as a railroad fusee. After removing the tinfoil from rubber cap, rub red wooden end of rubber cap briskly over tapered black end of shell fuse. After lighting, the time fuse burns six seconds. Upon exploding these shells release a parachute, from which a flag 3 ft. by 5 ft. is suspended. (Each in a separate box.)

**ILLUMINATED FLAG SHELLS**

.....Each, **\$18.00**  
 For night use, 6-inch diameter.

**FRICITION FLASH SHELL**

.....Each, **\$4.00**  
 Good for daylight or night use. They explode with a flash and loud report, and produce a cloud of white smoke. They are fired the same as flash shells. (Each in a separate box.)

**STANDARD NIGHT PLANE**

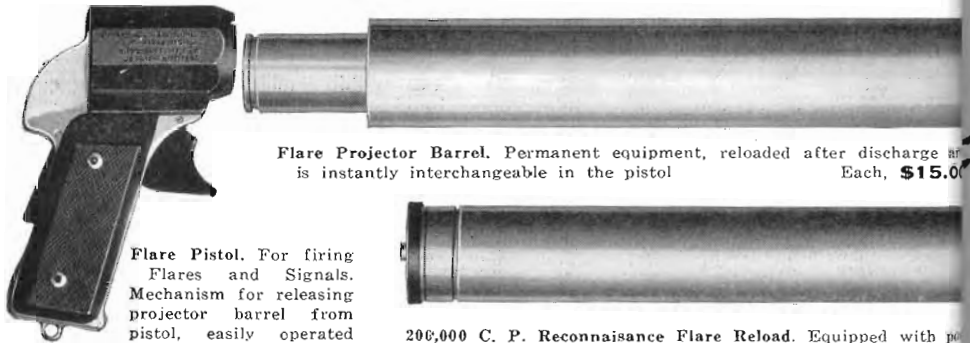
**DISPLAY**.....Per Set, **\$36.00**  
 Duration of fourteen minutes, consisting of:  
 First—Starting light open white, changes to red, to green, to red, duration eight minutes. Fifteen seconds dark.  
 Second—Silver trails, four in number, leave a feathery trail of silver fire a long distance in the wake of the plane. During this period the aviator can perform with thrilling effects. Duration four minutes. Fifteen seconds dark.  
 Third—Flares of 25,000 candle power glare from the tips of each wing and light up the scene for a mile around.  
 Accompanying this set is a diagram, also instructions showing how to attach to ship.

**SPECIAL NIGHT FLYING**

**DISPLAY**.....Per Set, **\$50.00**  
 Duration sixteen minutes.  
 First—Starting light opens white, changes to red, to green, to red. Duration eight minutes. Fifteen seconds dark.  
 Second—A row of twelve changing lights appears across the ship. These gradually change to twelve silver trails.  
 Third—Four flares of 25,000 candle power each light up the scene for a mile around.

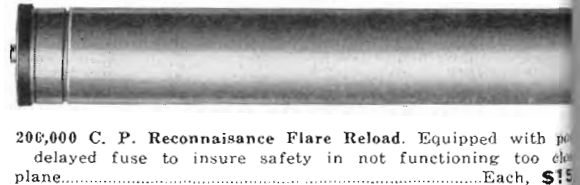
**AERIAL FLARES AND SIGNALS**

**INTERNATIONAL SIGNAL AND FLARES.** This type flare and signal is far superior to any method of aerial illumination. They are safer because pistol cannot be prematurely fired and because fuse does not function until plane is cleared by two or three hundred feet. Efficient because of operation, expert design to insure perfection functioning. Flexible because of number and variety of flares and signals compactly carried and rapidly fired. Economical because of low cost of equipment and ammunition, particularly reloads.



**Flare Projector Barrel.** Permanent equipment, reloaded after discharge and is instantly interchangeable in the pistol.....Each, **\$15.00**

**Flare Pistol.** For firing Flares and Signals. Mechanism for releasing projector barrel from pistol, easily operated with thumb catch of left side.....Each, **\$35.00**



**200,000 C. P. Reconnaissance Flare Reload.** Equipped with delayed fuse to insure safety in not functioning too close.....Each, **\$15.00**



**Signal Projector Barrel.** Permanent equipment to be reloaded after discharge and instantly interchangeable in the pistol.....Each, **\$5.00**



**Parachute Signal Light Reload.** Refills for projector barrel; strongly built, easily inserted.....Each, **\$2.00**

**VERY PISTOL SIGNALS AND PYROTECHNICS**



**VERY PISTOL OR ROCKET GUN.** 1-inch; bronze, straight or bell mouth.....each **\$15.00**

**VERY PISTOL OR ROCKET GUN.** 1½-inch; steel short barrel.....each **\$20.10**

**VERY PISTOL CARTRIDGES.** 1-inch; white, red or green; for night use; a bright star rises 200 or 300 feet high and burns out before reaching ground. Each..... **\$0.25**; doz.....**\$2.75**; 25.....**\$5.00**

**VERY PISTOL CARTRIDGES.** 1½-inch; yellow, red or green; for night use; similar to 1-inch except larger star.....per 25 **\$9.40**

**VERY PISTOL CARTRIDGES.** 1½-inch; red to white or green to red; for night use.....per 25 **\$10.00**

**VERY PISTOL PARACHUTE CARTRIDGES.** White to red, white to green, or red smoke, for night use; cardboard cylinder is projected 300 or 400 feet in the air, bursts, and releasing a brilliant light or smoke star suspended from a parachute; floats in air for some time and burns out before reaching the ground.....per 25 **\$20.30**

**HOLT WING TIP FLARES.** Electric ignition, large and small sizes; for night use; these flares are suspended from edge of lower wing and fired electrically with 6-volt dry cell battery; they burn with a very bright pink light and are used for landing at night; the large one burns three minutes and the small one two minutes.

Small size.....each **\$0.45**; large size.....each **\$0.75**  
**ALUMAG CANDLES.** For night use; about 1½ inches by 1 inch; used as a hand torch; about 50,000 candle power.....each **\$0.55**

**SMOKE CANDLES.** Large 3 minutes, small 2 minutes; day use; give a dense cloud of smoke; can be used on landing fields to show direction of wind. Large.....each **\$0.65**; small.....each **\$0.50**

**FLARES**



**PIONEER FLARES.** Wiley parachute flares, Type 111.....each **\$75.00**  
**PIONEER FLARE BRACKETS.** For Wiley parachute flares.....each **\$15.00**

**Our West Coast Customers**

for your convenience we maintain at

3769 So. Moneta  
 Los Angeles, Calif.

A complete stock of all items listed in this catalog

for prompt service

SEND YOUR ORDERS THERE  
 Phone Humbolt 1294

FIRE EXTINGUISHERS



**FLASH FIRE EXTINGUISHER.** Easy to operate; merely strike button on end against some hard object then press button on side to discharge liquid. Can be refilled with charge cartridges and liquid for reuse. Small, compact, extinguisher; reliable and economical.

- Flash Extinguishers—**  
 1 pint size.....each, **\$5.00**  
 1 quart size.....each, **\$8.25**
- Flash Liquid—**  
 1 pint size.....each, **\$.85**  
 1 quart size.....each, **\$1.50**
- Flash Cartridges.....each, \$.20**

FIRE EXTINGUISHERS

**PYRENE FIRE EXTINGUISHERS.** Double acting pump throws a steady, continuous stream, no matter what position extinguisher is held. Instantaneous effect on the flame, smothers the fire like a blanket; non-conductive liquid, excellent for electrical fires. Two sizes most popular; in brass or nickel. Use only Pyrene liquid in Pyrene Extinguishers. Complete with brackets.



|          | Brass   | Nickel Plated |
|----------|---------|---------------|
| Pt. size | \$ 9.00 | \$10.00       |
| Qt. size | 12.00   | 13.00         |

**Brackets—**  
 Pt. size.....\$0.75  
 Qt. size.....1.60

PYRENE RECHARGES



Recharge Pint Recharge Quart

**PYRENE RECHARGE LIQUID.** Use only Pyrene liquid in Pyrene Extinguishers. Other liquids damage the mechanism.

- Pt. size cans.....each, **\$.90**  
 Qt. size cans.....each, **\$1.80**

B. & B. FIRST AID KITS



**BAUER & BLACK FIRST AID KIT.** This small compact kit is constructed to carry out Department of Commerce requirements and contains items for minor injuries. Complete in metal box and with canvas pouch.

No. 50-A Airplane Kit.....each, **\$0.90**

- Kit Contents—**  
 3 Envelopes Fold Gauze, Plain.  
 6 Small Handy Tape Dressings.  
 3 Mercurochrome Swabs.  
 1 Gauze Bandage—2 in. by 6 yds.  
 1 Zinc Oxide Adhesive Plaster—1 in. by 1 yd.  
 1 Small Tube First Aid for Burns.

INDUSTRIAL FIRST AID CABINETS



**No. 8 INDUSTRIAL FIRST AID CABINET.** This cabinet has been carefully assembled to take care of major and minor injuries that might occur in offices, hangars, and industrial concerns. Completely packed in metal cabinet size 14 3/8"x18", with handles and clasps.....each, **\$15.00**

**Empty Cabinet.....each, \$4.50**

**Cabinet Refill, without scissors, tweezers, medicine dropper and first aid handbook.....each, \$12.00**

- Kit Contents—**  
 3 Cartons B. & B. Plain Gauze, 1 yd.  
 4 Cartons H. P. Cotton, 1/2 oz.  
 1 Carton H. P. Cotton, 1/4 lb.  
 1 Spool Zinc Oxide, 1 in. by 5 yds.  
 4 Gauze Bandages, 1 in. by 10 yds.  
 6 Gauze Bandages, 2 in. by 10 yds.  
 2 Gauze Bandages, 2 1/2 in. by 10 yds.  
 2 Muslin Bandages, 2 in. by 5 yds.  
 1 Muslin Bandage, 3 in. by 5 yds.  
 1 Triangular Bandage, 36 in.  
 1 Triangular Bandage, 40 in.  
 3 Cartons Old-Style Iodine swabs, 6 each.  
 1 Bottle Aromatic Spirits of Ammonia, 2 oz.  
 2 Tubes Petroleum with 3% Sodium Bicarbonate, 3 oz. Each.  
 1 Bottle Castor Oil, 2 oz. 1 Scissors, A.  
 6 Finger Cots, Assorted. 1 Tweezers, A.  
 6 Safety Pins, No. 1.  
 6 Safety Pins, No. 2.  
 1 Tape Tourniquet.  
 1 Dozen Wound Applications.  
 1 Dozen Tongue Depressors.  
 1 Graduated Medicine Glass, 4 oz.  
 1 Medicine Dropper. 1 Bcx Handy Tape.  
 2 Cartons Handy Fold, Plain, 6 Each.  
 1 Cake 1% Surgeons' Soap.  
 1 Burn Dressing Packet.  
 1 Wire Splint Uniflex Unit A21).  
 2 Large Wooden Splints. 1 First Aid Handbook  
 2 Small Wooden Splints. 3 Paper Drinking Cups.

B. & B. FIRST AID KITS

FIRST AID KITS FOR 6-PLACES AND UP



**No. 42-A First Aid Kit.** This is a kit assembled for use in planes of 6 places or less; packed compactly in metal box, complete with canvas pouch.....each, **\$3.00**

No. 42-A Contents—

- 1 Tape Tourniquet.  
 2 Handy Fold Gauze, Plain.  
 1 Medium-Size Bandage Compress.  
 1 1 in. by 2 1/2 yd. Z. O.  
 1 dozen Aspirin Tablets.  
 2 Small First Aid for Burns.  
 1 2 in. by 10 yd. Gauze Bandage.  
 1 1 in. by 10 yd. Gauze Bandage.  
 1 Bottle Aromatic Ammonia, 1/2 oz.  
 2 Cartons, 3 Mercurochrome Swabs Each.  
 1 1/2 oz. H. P. Cotton.  
 3 Small Handy Tapes, Individual Envelopes.  
 1 Triangular Bandage, 36-inch.  
 4 Paper Drinking Cups in Individual Glassine Envelopes.  
 1 Scissors B.

No. 42-A6 AUTHENTIC AIRPLANE FIRST AID

**KIT.** For ships and planes with more than 6 places and large transports and hangars; packed in metal cabinet, size 8 3/8"x10 3/8"x1 1/2".....each, **\$5.50**

Kit Contents—

- 6 Medium-Size Bandage Compresses in 1 Carton.  
 4 Large-Size Bandage Compresses in 1 Carton.  
 1 Gauze Bandage, 2 1/2 by 6 yds.  
 2 Gauze Bandages, 2 in. by 6 yds.  
 4 Cartons, 3 Mercurochrome Swabs Each.  
 1 Z. O., 1 in. by 2 1/2 yds.  
 1 Triangular Bandage, 36 in.  
 1 Bottle Aromatic Ammonia, 2 oz.  
 1 Large-Size First Aid for Burns.  
 1 H. P. Cotton, 1/2 oz.  
 6 Handy Tapes, Small, in Individual Envelopes.  
 1 Tape Tourniquet.  
 1 Scissors B, in Heavy Gray Paper Sheath.  
 1 dozen Aspirin Tablets.

COWLING CLIPS



**COWLING CLIPS.** Made from .0625" spring steel wire. Cadmium plated. Strong, safe and much easier to use than cotter pins or safety wire on cowlings. Illustration is actual size of clip.

Cowling Clips .....per 100 **\$0.75**

COWLING SAFETY PINS



**COWLING SAFETY PINS.** Made of spring wire, of proper design and material to withstand the vibration and exposure to which this part is subjected; cadmium plated.

Safety Pins.....per 100 **\$2.00**

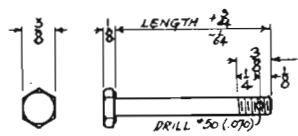


## AN SPECIFICATION NICKEL-STEEL BOLTS

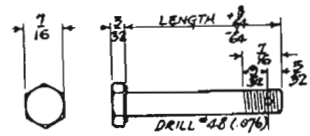
We carry at all times a complete stock of aircraft bolts to serve you on your orders. These are all strictly U. S. Army-Navy specifications and guaranteed to pass these tests. Two hundred and sixty-two sizes for a total of over one million bolts will give you some idea of our immense stock. These are stocked in diameter sizes  $\frac{1}{16}$  to  $\frac{1}{2}$  inch and length sizes from  $\frac{1}{2}$  to 7 inches.

Our bolts are all cadmium plated, checked thoroughly for proper standards and come to you strictly guaranteed to meet all specifications or we will replace them. Material 2330 nickel steel, heat treated to 125,000 lbs. per square inch and drilled for cotter pin. With this guarantee our attractive prices and our most complete stock, there is no need to buy your bolts elsewhere.

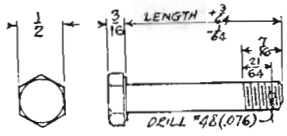
| Dash Nos. | Length Under Head   | PRICES PER 100 |                           |                            |                           |                            |                           |
|-----------|---------------------|----------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
|           |                     | AN 3<br>10-32  | AN 4<br>$\frac{1}{4}$ -28 | AN 5<br>$\frac{5}{16}$ -24 | AN 6<br>$\frac{3}{8}$ -24 | AN 7<br>$\frac{7}{16}$ -20 | AN-8<br>$\frac{1}{2}$ -20 |
| 4         | $\frac{1}{2}$ "     | \$ 2.75        | \$ 3.75                   | \$ 3.40                    | \$ 4.02                   | \$ 5.16                    | .....                     |
| 5         | $\frac{5}{8}$ "     | 2.55           | 2.63                      | 3.46                       | 4.02                      | 5.24                       | .....                     |
| 6         | $\frac{3}{4}$ "     | 3.00           | 3.81                      | 3.14                       | 4.04                      | 5.30                       | 5.46                      |
| 7         | $\frac{7}{8}$ "     | 3.06           | 3.88                      | 4.44                       | 4.06                      | 5.40                       | 10.08                     |
| 10        | 1"                  | 3.13           | 3.94                      | 4.56                       | 5.63                      | 5.54                       | 6.88                      |
| 11        | 1 $\frac{1}{8}$ "   | 3.25           | 4.00                      | 4.63                       | 5.70                      | 5.78                       | 10.56                     |
| 12        | 1 $\frac{1}{4}$ "   | 3.38           | 4.13                      | 3.82                       | 4.28                      | 6.03                       | 9.02                      |
| 13        | 1 $\frac{3}{8}$ "   | 3.50           | 4.25                      | 4.75                       | 5.88                      | 6.37                       | 7.80                      |
| 14        | 1 $\frac{1}{2}$ "   | 3.56           | 4.38                      | 4.88                       | 4.70                      | 6.12                       | 8.30                      |
| 15        | 1 $\frac{3}{4}$ "   | 3.63           | 4.50                      | 5.00                       | 4.92                      | 7.20                       | 11.52                     |
| 16        | 1 $\frac{7}{8}$ "   | 3.69           | 4.56                      | 5.60                       | 4.44                      | 7.00                       | 11.88                     |
| 17        | 1 $\frac{15}{16}$ " | 3.75           | 4.63                      | 5.25                       | 6.63                      | 9.00                       | 8.32                      |
| 20        | 2"                  | 3.88           | 4.69                      | 5.50                       | 5.28                      | 7.95                       | 12.60                     |
| 21        | 2 $\frac{1}{8}$ "   | 3.93           | 4.81                      | 5.75                       | 7.13                      | 10.80                      | 12.96                     |
| 22        | 2 $\frac{1}{4}$ "   | 4.00           | 4.00                      | 4.44                       | 6.00                      | 11.16                      | 13.32                     |
| 23        | 2 $\frac{3}{8}$ "   | 4.06           | 5.00                      | 6.50                       | 5.92                      | 7.81                       | 13.68                     |
| 24        | 2 $\frac{1}{2}$ "   | 3.40           | 4.45                      | 6.75                       | 6.30                      | 7.96                       | 12.04                     |
| 25        | 2 $\frac{5}{8}$ "   | 4.19           | 4.58                      | 6.88                       | 8.13                      | 8.10                       | 14.40                     |
| 26        | 2 $\frac{3}{4}$ "   | 3.46           | 5.38                      | 7.13                       | 6.60                      | 10.33                      | 14.88                     |
| 27        | 2 $\frac{7}{8}$ "   | 3.55           | 4.25                      | 5.56                       | 8.38                      | 9.56                       | 15.36                     |
| 30        | 3"                  | 4.44           | 4.44                      | 5.58                       | 6.90                      | 13.32                      | 15.84                     |
| 31        | 3 $\frac{1}{8}$ "   | 3.70           | 4.38                      | 5.80                       | 8.88                      | 10.90                      | 16.32                     |
| 32        | 3 $\frac{1}{4}$ "   | 3.65           | 4.65                      | 5.80                       | 7.20                      | 11.40                      | 16.92                     |
| 33        | 3 $\frac{3}{8}$ "   | 3.70           | 4.70                      | 5.40                       | 9.13                      | 14.64                      | 14.66                     |
| 34        | 3 $\frac{1}{2}$ "   | 3.75           | 4.82                      | 6.05                       | 7.50                      | 11.92                      | 18.12                     |
| 35        | 3 $\frac{3}{4}$ "   | 4.75           | 4.90                      | 6.15                       | 7.60                      | 12.00                      | 13.50                     |
| 36        | 3 $\frac{7}{8}$ "   | 3.85           | 5.00                      | 6.28                       | 7.80                      | 12.46                      | 19.32                     |
| 37        | 4"                  | 3.90           | 5.10                      | 6.36                       | 8.00                      | 16.80                      | 19.92                     |
| 40        | 4 $\frac{1}{8}$ "   | 3.95           | 5.16                      | 6.55                       | 8.10                      | 12.97                      | 20.52                     |
| 41        | 4 $\frac{1}{4}$ "   | 4.00           | 4.80                      | 9.00                       | 8.60                      | 18.05                      | 21.12                     |
| 42        | 4 $\frac{3}{8}$ "   | 4.10           | .....                     | .....                      | .....                     | 10.05                      | 21.72                     |
| 43        | 4 $\frac{1}{2}$ "   | 4.10           | 5.36                      | 7.45                       | 8.60                      | 14.30                      | 22.32                     |
| 44        | 4 $\frac{3}{4}$ "   | .....          | .....                     | .....                      | .....                     | 10.40                      | 22.92                     |
| 45        | 4 $\frac{1}{2}$ "   | 4.15           | 6.06                      | 11.85                      | 9.00                      | 14.80                      | 23.52                     |
| 46        | 4 $\frac{3}{4}$ "   | .....          | .....                     | .....                      | .....                     | 16.72                      | 13.54                     |
| 47        | 4 $\frac{7}{8}$ "   | 5.40           | 4.50                      | 8.00                       | 9.30                      | 16.71                      | 24.96                     |
| 50        | 5"                  | .....          | .....                     | .....                      | .....                     | 11.20                      | 15.00                     |
| 51        | 5 $\frac{1}{8}$ "   | 5.50           | 4.70                      | 6.63                       | 9.50                      | 22.80                      | 26.40                     |
| 52        | 5 $\frac{1}{4}$ "   | 5.45           | 4.80                      | 8.58                       | 9.85                      | 11.50                      | 14.27                     |
| 54        | 5 $\frac{1}{2}$ "   | 5.40           | 4.80                      | 8.28                       | 15.00                     | 18.60                      | 28.08                     |
| 56        | 5 $\frac{3}{4}$ "   | 5.53           | 5.00                      | 7.08                       | 10.40                     | 18.90                      | 29.76                     |
| 60        | 6"                  | 5.67           | 5.13                      | 9.16                       | 10.80                     | 19.30                      | 31.68                     |
| 62        | 6 $\frac{1}{4}$ "   | 5.80           | 11.24                     | 16.25                      | 11.20                     | 27.60                      | 33.60                     |
| 64        | 6 $\frac{1}{2}$ "   | 7.35           | 7.70                      | 12.00                      | 12.65                     | 23.78                      | 30.80                     |
| 64        | 6 $\frac{3}{4}$ "   | 7.65           | 8.00                      | 12.40                      | 13.05                     | 25.06                      | 32.45                     |
| 70        | 7"                  | 8.10           | 9.60                      | 13.05                      | 15.25                     | 27.54                      | 35.60                     |



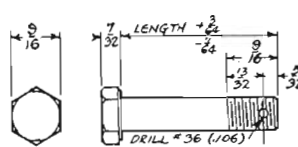
**AN 3 = 10-32**



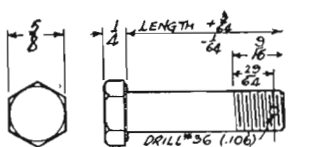
**AN 4 = 1/4-28**



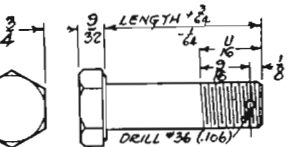
**AN 5 = 5/16-24**



**AN 6 = 3/8-24**



**AN 7 = 7/16-20**



**AN 8 = 1/2-20**

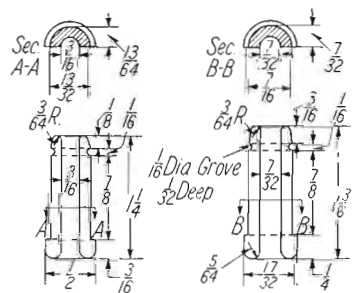
## FORMICA FAIRLEADS

**FORMICA FAIRLEADS.** Designed to guide control wires. Prevents wear on cable which otherwise would drag on frame cross-braces, etc. Fairleads consist of two halves permitting the replacement of worn or broken Fairleads without disconnecting control cable. Made in two sizes as per drawings.

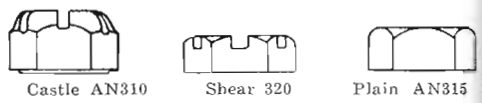
Each

1 $\frac{1}{4}$ " Fairleads ..... **\$0.25**

1 $\frac{3}{8}$ " Fairleads ..... **.25**



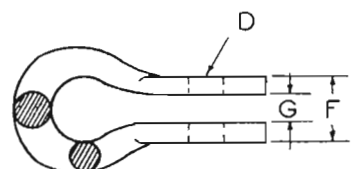
## AIRCRAFT NUTS



Made strictly to Army-Navy Air Corps specifications. Cadmium plated.

| Dash No. | Size               | Price Per 100 |             |             |
|----------|--------------------|---------------|-------------|-------------|
|          |                    | Castle AN310  | Shear AN320 | Plain AN315 |
| 3        | 10-32              | \$1.62        | \$1.62      | \$1.27      |
| 4        | $\frac{1}{4}$ -28  | 1.80          | 1.80        | 1.52        |
| 5        | $\frac{5}{16}$ -24 | 2.10          | 2.10        | 1.87        |
| 6        | $\frac{3}{8}$ -24  | 2.40          | 2.40        | 1.90        |
| 7        | $\frac{7}{16}$ -20 | 2.82          | 2.82        | 2.62        |
| 8        | $\frac{1}{2}$ -20  | 3.90          | 3.90        | 3.37        |

## SHACKLES—CLEVISES

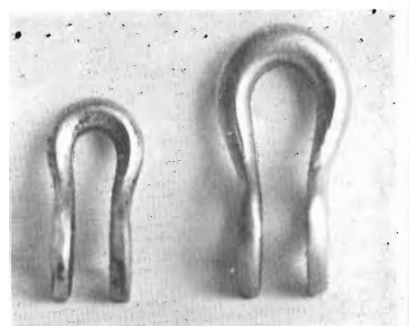


SHACKLES OR CLEVISES. Made strictly to Army-Navy specifications. Drop forged steel.

| Dash No. | AN 115 | Cable Strength   | Dimensions      |       |                  | Price  |
|----------|--------|------------------|-----------------|-------|------------------|--------|
|          |        |                  | Clevis Pin Size | D     | G                |        |
| 8        | 800    | $\frac{3}{16}$ " | .188"           | .109" | $\frac{1}{4}$ "  | \$0.15 |
| 16       | 1600   | $\frac{1}{8}$ "  | .188"           | .150" | $\frac{5}{16}$ " | .25    |
| 21       | 2100   | $\frac{3}{16}$ " | .188"           | .150" | $\frac{5}{16}$ " | .30    |
| 32       | 3200   | $\frac{1}{4}$ "  | .250"           | .203" | $\frac{3}{8}$ "  | .40    |
| 46       | 4600   | $\frac{5}{16}$ " | .313"           | .203" | $\frac{3}{8}$ "  | .50    |
| 61       | 6100   | $\frac{3}{8}$ "  | .375"           | .203" | $\frac{1}{2}$ "  | .60    |
| 80       | 8000   | $\frac{7}{16}$ " | .375"           | .266" | $\frac{1}{2}$ "  | .75    |
| 125      | 12500  | $\frac{1}{2}$ "  | .438"           | .360" | 23/32"           | 1.00   |
| 175      | 17500  | $\frac{5}{8}$ "  | .500"           | .406" | 1"               | 1.50   |

**SPECIAL: PRESSED STEEL SHACKLE.** We have a special pressed steel shackle which tests 2,300 pounds strength;  $\frac{3}{16}$ -inch clevis pin; we have lots of them and they do the work satisfactorily ..... each **\$0.15**

## WAR SURPLUS SHACKLES



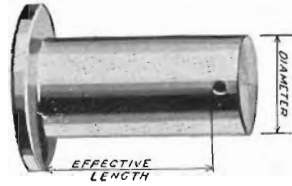
**RECLAIMED WAR SHACKLES.** We have a quantity of both large and small sizes of war surplus shackles or clevises. These have the same material specifications as the present clevises but there has been a slight change in dimensions. Both sizes have  $\frac{1}{4}$ -inch clevis pin holes and  $\frac{3}{16}$ -inch throat; plus and of same maximum strength as AN shackles.

War Reclaimed Shackles ..... each

Lots of ..... 100

CLEVIS PINS

CLEVIS PINS. Cadmium plated. Flat head, made in strict accordance with Army-Navy Air Corps specification. Material is 10,045 steel, heat treated to 125,000 lb. tensile strength per square inch; cadmium plated. The length as given in table below is measurement from under the head of the pin to nearest edge of pin hole.



| Dash Number | Length | Prices Per 100 and apply on quantities less than 100. |                  |                 |                  |                 |                  |                 |
|-------------|--------|---|------------------|-----------------|------------------|-----------------|------------------|-----------------|
|             |        | 1/8" Dia. AN392                                       | 3/16" Dia. AN393 | 1/4" Dia. AN394 | 5/16" Dia. AN395 | 3/8" Dia. AN396 | 7/16" Dia. AN397 | 1/2" Dia. AN398 |
| 7           | 7/32"  | \$3.00  | \$3.60           |                 |                  |                 |                  |                 |
| 9           | 9/32"  | 3.00  | 3.00             |                 |                  |                 |                  |                 |
| 11          | 11/32" | 3.00  | 3.00             | 3.75            | 4.75             |                 |                  |                 |
| 13          | 13/32" | 3.25  | 3.25             | 3.90            | 4.85             | 5.50            |                  |                 |
| 15          | 15/32" | 3.30  | 3.30             | 4.00            | 5.00             | 5.75            |                  |                 |
| 17          | 17/32" | 3.40  | 3.40             | 4.00            | 5.18             | 6.00            |                  |                 |
| 19          | 19/32" | 3.60  | 3.60             | 4.60            | 5.35             | 6.30            |                  |                 |
| 21          | 21/32" | 3.70  | 3.70             | 4.80            | 5.50             | 6.50            |                  |                 |
| 23          | 23/32" | 4.00  | 4.00             | 5.00            | 5.70             | 6.70            |                  |                 |
| 25          | 25/32" | 4.50  | 4.50             | 5.00            | 5.85             | 6.90            | 8.00             |                 |
| 27          | 27/32" | 4.80  | 4.80             | 5.00            | 6.10             | 7.10            |                  | 9.00            |
| 29          | 29/32" |   | 5.25             | 5.35            | 6.30             | 7.20            |                  |                 |
| 31          | 31/32" |   | 5.50             | 5.85            | 7.00             | 7.30            |                  |                 |

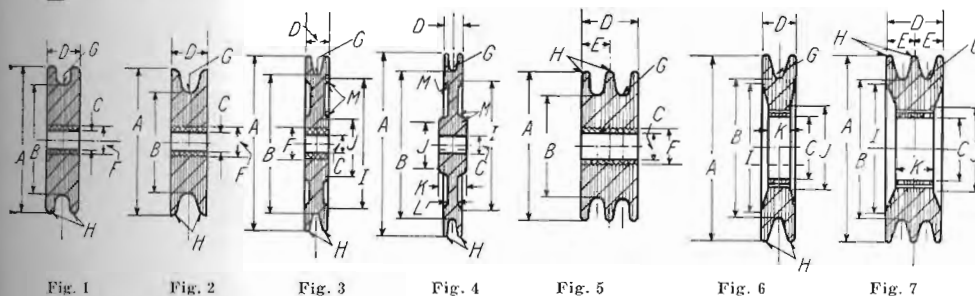
5/32x Clevis Pins for 324 or 325 Turnbuckles, per 100 .....\$3.60

COMMERCIAL CLEVIS PINS

COMMERCIAL CLEVIS PINS. Made of same material as AN specification pins. Commercial length designation is different in that they are measured from under head to center of cotter pin hole instead of edge of hole. These pins are cadmium plated and within good commercial limits.

| Length to center pin hole | Dia.—Priced per 100—Any quantity |        |        |        |
|---------------------------|----------------------------------|--------|--------|--------|
|                           | 3/8"                             | 1/2"   | 5/8"   | 3/4"   |
| 3/4"                      |                                  | \$1.80 |        |        |
| 7/8"                      | \$1.50                           | 1.85   |        |        |
| 1"                        |                                  | 1.90   |        |        |
| 1 1/8"                    | 1.63                             | 1.95   | \$2.45 |        |
| 1 1/4"                    |                                  | 2.00   | 2.50   |        |
| 1 1/2"                    |                                  | 2.05   | 2.60   | \$3.00 |
| 1 3/4"                    | 1.80                             | 2.25   | 2.70   |        |
| 2"                        | 1.85                             | 2.40   |        |        |
| 2 1/4"                    | 2.00                             | 2.50   |        |        |
| 2 1/2"                    | 2.25                             | 2.55   | 2.95   |        |
| 2 3/4"                    | 2.40                             |        |        |        |
| 3"                        | 2.63                             |        |        |        |
| 1"                        | 2.75                             |        |        |        |
| 1 1/8"                    |                                  | 3.20   |        |        |
| 1 1/4"                    |                                  | 3.40   |        |        |

FORMICA BALL AND BRONZE BEARING PULLEYS



FORMICA PULLEYS. There has been a widespread demand for a ball bearing pulley that would reduce friction to the minimum. Manufacturers have perfected such a pulley that will function properly at a great range of temperatures. Bronze bearing pulleys are also listed both in AN and other sizes and types. Both types are the familiar Bakelite pulley made with canvas base. The bearings are anchored in place with solid Bakelite.

PRICE LIST BRONZE BEARING PULLEYS

| Style No. | List Price | Fig. No. | A     | B     | C           | D         | F   | G    | H    | Size of Cable |
|-----------|------------|----------|-------|-------|-------------|-----------|-----|------|------|---------------|
| A-138     | \$0.30     | 1        | 1 1/4 | 3/8   | .251-.255   | .250-.270 | 3/8 | 3/64 | 3/8  | 1/8           |
| A-177     | .31        | 1        | 1 1/2 | 1 1/8 | .251-.255   | .255-.275 | 3/8 | 3/64 | 3/8  | 1/8           |
| A-154     | .33        | 1        | 1 1/2 | 1 1/8 | .251-.255   | .255-.275 | 3/8 | 3/64 | 3/8  | 1/8           |
| A-124     | .38        | 1        | 2 1/2 | 2     | .251-.255   | .255-.275 | 3/8 | 3/64 | 3/8  | 1/8           |
| A-176     | .30        | 1        | 1     | 3/8   | .251-.255   | .392-.412 | 3/8 | 3/64 | 3/8  | 1/8           |
| A-170     | .38        | 1        | 1 3/8 | 1 1/8 | .316-.380   | .365-.385 | 3/8 | 3/64 | 3/8  | 1/8           |
| A-164     | .33        | 1        | 1 1/2 | 3/8   | .376-.380   | .422-.442 | 1/2 | 3/64 | 3/64 | 1/8           |
| A-167     | .33        | 1        | 1 1/2 | 1     | .375-.379   | .302-.322 | 1/2 | 3/64 | 1/64 | 1/8           |
| A-163     | .33        | 1        | 1 1/2 | 1     | .376-.380   | .422-.442 | 1/2 | 3/64 | 3/64 | 1/8           |
| A-148     | .36        | 1        | 2     | 1 3/8 | .251-.255   | .422-.442 | 3/8 | 3/64 | 3/64 | 1/8           |
| A-151     | .35        | 1        | 2     | 1 1/2 | .376-.380   | .302-.322 | 1/2 | 3/64 | 1/64 | 1/8           |
| A-130     | .36        | 1        | 2     | 1 3/8 | .376-.380   | .422-.442 | 1/2 | 3/64 | 3/64 | 1/8           |
| A-136     | .37        | 1        | 2 1/2 | 1 3/8 | .251-.255   | .422-.442 | 3/8 | 3/64 | 3/64 | 1/8           |
| A-139     | .40        | 1        | 2 1/2 | 1 3/8 | .376-.380   | .422-.442 | 1/2 | 3/64 | 3/64 | 1/8           |
| A-120     | .43        | 1        | 3     | 2 3/8 | .376-.380   | .422-.442 | 1/2 | 3/64 | 3/64 | 1/8           |
| A-114     | .51        | 1        | 3 1/2 | 2 3/8 | .376-.380   | .422-.442 | 1/2 | 3/64 | 3/64 | 1/8           |
| A-133     | .37        | 2        | 2 1/2 | 1 3/8 | .376-.380   | .428-.448 | 1/2 | 3/64 | 3/64 | 1/8           |
| A-127     | .37        | 2        | 2 1/2 | 1 3/8 | .376-.379   | .428-.448 | 1/2 | 3/64 | 3/64 | 1/8           |
| A-142     | .37        | 3        | 2 3/8 | 1 3/8 | .3145-.3155 | .302-.322 | 3/8 | 3/64 | 3/64 | 1/8           |
| A-107     | .49        | 3        | 3 3/8 | 3 3/8 | .378-.379   | .396-.416 | 1/2 | 3/64 | 3/64 | 1/8           |
| A-101     | .70        | 3        | 5 1/2 | 4 3/8 | .625-.627   | .422-.442 | 3/4 | 3/64 | 3/64 | 1/8           |

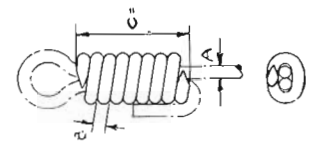
AN Specifications: AN210-1 is No. A-138; AN210-2 is No. A-124; AN210-3 is No. A-130, and AN210-4 is No. A-114.

PRICE LIST BALL BEARING PULLEYS

| Style No. | List Price | A     | B     | C           | D         | F           | G    | H    | I    | Size of Cable |
|-----------|------------|-------|-------|-------------|-----------|-------------|------|------|------|---------------|
| BB-123    | \$1.80     | 2     | 1 1/2 | .1875-.1905 | .250-.280 | .7856-.7860 | 3/64 | 3/8  | 1/8  | 1/8           |
| BB-121    | 1.85       | 2 1/2 | 2     | .1875-.1905 | .250-.280 | .7856-.7860 | 3/64 | 3/8  | 1/8  | 1/8           |
| BB-130    | 1.90       | 2     | 1 3/8 | .250-.253   | .422-.452 | .9017-.9021 | 3/64 | 3/64 | 3/64 | 1/8           |
| BB-128    | 1.95       | 2 1/2 | 1 3/8 | .250-.253   | .422-.452 | .9017-.9021 | 3/64 | 3/64 | 3/64 | 1/8           |
| BB-120    | 2.05       | 3     | 2 3/8 | .250-.253   | .422-.452 | .9017-.9021 | 3/64 | 3/64 | 3/64 | 1/8           |
| BB-114    | 2.05       | 3 1/2 | 2 3/8 | .250-.253   | .422-.452 | .9017-.9021 | 3/64 | 3/64 | 3/64 | 1/8           |
| BB-108    | 2.15       | 4     | 3 3/8 | .250-.253   | .422-.452 | .9017-.9021 | 3/64 | 3/64 | 3/64 | 1/8           |
| BB-105    | 2.30       | 5     | 4 3/8 | .250-.253   | .422-.452 | .9017-.9021 | 3/64 | 3/64 | 3/64 | 1/8           |

AN Specifications: AN210-2 is No. BB-124; AN210-3 is No. BB-130 and AN210-4 is No. BB-114.

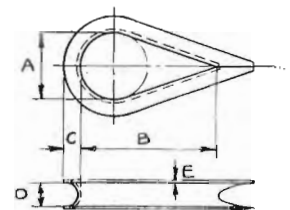
STANDARD STEEL FERRULES



STANDARD STEEL FERRULES. These ferrules are carefully and accurately made to gauge of tinned high-carbon steel wire.

| Roebbling's Gauge | Decimal of Wire | Price Each |
|-------------------|-----------------|------------|
| 10                | .135 in.        | \$0.02 1/2 |
| 11                | .120 in.        | .01 1/2    |
| 12                | .105 in.        | .02        |
| 13                | .091 in.        | .02        |
| 14                | .080 in.        | .02        |
| 15                | .072 in.        | .02        |
| 16                | .062 in.        | .02        |
| 17                | .053 in.        | .02        |
| 18                | .047 in.        | .02        |

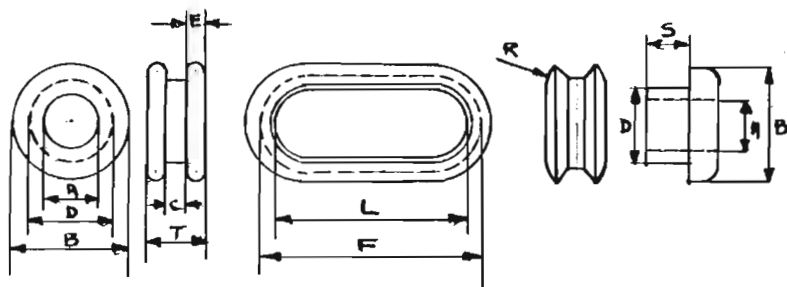
WIRE CABLE THIMBLES AN-100



| AN-100 dash | Dia. of Cable | Priced per 100 |         |         |         |            |
|-------------|---------------|----------------|---------|---------|---------|------------|
|             |               | 1-99           | 100-199 | 200-499 | 500-999 | 1,000 over |
| 3           | 3/8           | \$1.25         | \$1.20  | \$1.15  | \$1.10  | \$1.05     |
| 4           | 1/2           | 1.35           | 1.30    | 1.25    | 1.20    | 1.15       |
| 5           | 5/8           | 1.45           | 1.40    | 1.35    | 1.30    | 1.25       |
| 6           | 3/4           | 1.55           | 1.50    | 1.45    | 1.40    | 1.35       |
| 7           | 7/8           | 1.55           | 1.50    | 1.45    | 1.40    | 1.35       |
| 8           | 1             | 1.65           | 1.60    | 1.55    | 1.50    | 1.45       |
| 9           | 1 1/8         | 1.75           | 1.70    | 1.65    | 1.60    | 1.55       |
| 10          | 1 1/4         | 1.85           | 1.80    | 1.75    | 1.70    | 1.65       |
| 12          | 1 3/4         | 4.70           | 4.65    | 4.60    | 4.55    | 4.50       |

Be sure to include enough postage with your order. Any overage will be promptly returned to you.

RUBBER GROMMETS



| A.N. No. | Mfg. No. | A     | B     | C            | D           | T     | E          | F             | L          | R      | S | Price Each |
|----------|----------|-------|-------|--------------|-------------|-------|------------|---------------|------------|--------|---|------------|
|          |          | I. D. | O. D. | Width Groove | Dia. Groove | Thick | Rim Thick. | Long Dia. Gr. | Long I. D. | Radius |   |            |
| 930-1    | M-20323  | 3/8   | 1 1/4 | 1/8          | 1/2         | 3/8   | 7/16       |               |            |        |   | \$0.05     |
| -2       | M-19336  | 3/8   | 1 1/4 | 1/8          | 1/2         | 3/8   | 7/16       |               |            |        |   | .05        |
| -3       | M-14394  | 3/8   | 1 1/4 | 1/8          | 1/2         | 3/8   | 7/16       |               |            |        |   | .05        |
| -4       | 1405     | 1/2   | 1     | 3/8          | 3/4         | 3/8   | 3/4        |               |            |        |   | .05        |
| -5       | M-7713   | 1/2   | 1     | 3/8          | 3/4         | 3/8   | 3/4        |               |            |        |   | .05        |
| -10      | 5280     | 1/2   | 1 1/4 | 1/8          | 1 1/2       | 3/8   | 7/8        | 2 1/4         | 1 1/2      | 3/16   |   | .10        |
| -20      | X-5209   | 5/8   | 1 1/4 | 1/8          | 1 1/2       | 3/8   | 7/8        |               |            | 3/16   |   | .12        |
| -21      | M-15736  | 5/8   | 1 1/4 | 1/8          | 1 1/2       | 3/8   | 7/8        |               |            | 3/16   |   | .08        |
| -22      |          | 1     | 1 1/2 | 1/8          | 1 3/4       | 3/8   | 1 1/8      |               |            | 3/16   |   | .11        |
| 931-16   |          | 1 3/8 | 1 3/8 | 1/8          | 1 3/8       | 3/8   | 7/8        |               |            | 3/16   |   | .08        |
|          | M-21149  | 3/8   | 1 1/4 | 1/8          | 1 1/2       | 3/8   | 7/8        | 1/8           |            |        |   | .05        |
|          | M-10651  | 3/8   | 1 1/4 | 1/8          | 1 1/2       | 3/8   | 7/8        |               |            |        |   | .03        |
|          | X-8509   | 3/8   | 1 1/4 | 1/8          | 1 1/2       | 3/8   | 7/8        |               |            |        |   | .10        |
|          | M-14395  | 3/8   | 1 1/4 | 1/8          | 1 1/2       | 3/8   | 7/8        |               |            |        |   | .06        |
|          | 21012    | 3/8   | 1 1/4 | 1/8          | 1 1/2       | 3/8   | 7/8        |               |            |        |   | .05        |
|          | 21142    | 3/8   | 1 1/4 | 1/8          | 1 1/2       | 3/8   | 7/8        |               |            |        |   | .05        |
|          | 780      | 3/8   | 1 1/4 | 1/8          | 1 1/2       | 3/8   | 7/8        |               |            |        |   | .03        |
|          | G-516    | 3/8   | 1 1/4 | 1/8          | 1 1/2       | 3/8   | 7/8        |               |            |        |   | .06        |
|          | 21020    | 3/8   | 1 1/4 | 1/8          | 1 1/2       | 3/8   | 7/8        |               |            |        |   | .06        |
|          | 3028     | 3/8   | 1 1/4 | 1/8          | 1 1/2       | 3/8   | 7/8        |               |            |        |   | .16        |

BRASS ESCUTHEON PINS



Priced per Pound—1 Lb. to the Box

| Length Inches | Wire Gauge No. B. W. G. |     |        |     |        |      |        |      |        |        |        |
|---------------|-------------------------|-----|--------|-----|--------|------|--------|------|--------|--------|--------|
|               | 10                      | 11  | 12     | 13  | 14     | 15   | 16     | 17   | 18     | 19     | 20     |
| 1/4"          |                         |     |        |     | \$1.25 |      | \$1.45 |      | \$1.90 | \$2.15 | \$2.35 |
| 3/8"          | \$0.80                  |     | \$0.98 |     | 1.05   | 1.15 | 1.20   |      | 1.50   | 1.75   | 2.10   |
| 1/2"          |                         | .87 |        |     | 1.00   | 1.07 | 1.10   |      | 1.20   | 1.60   | 1.95   |
| 5/8"          |                         | .84 |        | .93 | .96    |      | 1.03   | 1.17 | 1.27   | 1.45   | 1.80   |
| 3/4"          |                         |     |        |     | .92    | .95  | .99    | 1.10 | 1.20   | 1.35   | 1.65   |
| 7/8"          |                         |     |        |     | .84    | .85  | .92    | .96  | 1.04   | 1.15   | 1.30   |
| 1"            |                         |     |        |     |        | .85  | .94    | 1.00 | 1.10   | 1.25   |        |
| 1 1/4"        |                         |     |        | .80 |        |      | .90    |      |        |        |        |
| 1 1/2"        |                         |     |        |     |        |      |        |      |        |        |        |
| 1 3/4"        |                         | .72 |        |     |        |      |        |      |        |        |        |

SPRING COTTER PINS



STEEL SPRING COTTER PINS. Measured in length from under the eye. All orders are filled according to the diameters specified, although they are made a trifle smaller in diameter in order to allow easy insertion into the hole.

Steel Cotter Pins come packed 1000 to a box and we do not break boxes. Priced per 1000.

| Diam.  | 3/8    | 1/2    | 5/8    | 3/4    |
|--------|--------|--------|--------|--------|
| Length |        |        |        |        |
| 1/2    | \$0.21 | \$0.21 | \$0.24 | \$0.33 |
| 3/4    | .27    | .27    | .33    | .45    |
| 1      | .33    | .33    | .39    | .54    |
| 1 1/4  |        | .39    | .48    | .66    |
| 1 1/2  |        | .45    | .54    | .75    |
| 1 3/4  |        | .57    | .63    | .87    |
| 2      |        | .63    | .69    | .96    |
| 2 1/2  |        |        | .93    | 1.20   |
| 3      |        |        |        | 1.50   |

BRASS COTTER PINS. Packed 1000 to box. Boxes not broken. Prices per 1000.

| Diam.  | 3/8    | 1/2    | 5/8    | 3/4    |
|--------|--------|--------|--------|--------|
| Length |        |        |        |        |
| 1/2    | \$1.68 | \$1.68 | \$1.92 | \$2.64 |
| 3/4    | 2.16   | 2.16   | 2.64   | 3.60   |
| 1      | 2.64   | 2.64   | 3.12   | 4.32   |
| 1 1/4  |        | 3.12   | 3.84   | 5.28   |
| 1 1/2  |        | 3.60   | 4.32   | 6.00   |
| 1 3/4  |        | 4.56   | 5.04   | 6.96   |
| 2      |        | 5.04   | 5.52   | 7.68   |
| 2 1/2  |        |        | 8.44   | 9.60   |
| 3      |        |        |        | 12.00  |

CABLE BUSHINGS

CABLE BUSHINGS. Made strictly to Army-Navy Air Corps specifications. Steel, AN-110.

| AN-110 | Cable Size | Price Per 100 |
|--------|------------|---------------|
| -4     | 7/64-1/8   | \$6.60        |
| -5     | 3/32       | 6.40          |
| -6     | 1/16       | 6.65          |
| -7     | 3/32       | 6.90          |
| -8     | 1/4        | 7.20          |
| -10    | 5/16       | 7.45          |
| -12    | 3/8        | 7.80          |

STEEL WOOD SCREWS



Flat Head  
The length includes the head



Round Head  
Measure from bottom of slot to point



Oval Head  
Measure from edge of countersink

Use This List for STEEL Screws with Flat, Round or Oval Heads.

PRICED PER GROSS

| No.    | 0      | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     | 11     | 12  |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| Length |        |        |        |        |        |        |        |        |        |        |        |        |     |
| 1/4"   | \$0.24 | \$0.24 | \$0.24 | \$0.24 | \$0.24 |        |        |        |        |        |        |        |     |
| 3/8"   | .26    | .26    | .26    | .26    | .26    | \$0.26 | \$0.28 | \$0.30 | \$0.32 |        |        |        |     |
| 1/2"   |        | .28    | .28    | .28    | .28    | .30    | .32    | .34    | \$0.36 | \$0.38 |        |        |     |
| 5/8"   |        |        | .30    | .30    | .30    | .32    | .34    | .36    | .38    | .40    | \$0.42 | \$0.46 |     |
| 3/4"   |        |        | .32    | .32    | .32    | .34    | .36    | .38    | .40    | .42    | .46    | .50    |     |
| 7/8"   |        |        |        | .34    | .34    | .34    | .36    | .38    | .40    | .44    | .46    | .50    | .55 |
| 1"     |        |        |        | .36    | .36    | .36    | .38    | .40    | .44    | .46    | .50    | .55    | .60 |
| 1 1/4" |        |        |        |        | .38    | .40    | .42    | .44    | .46    | .50    | .55    | .60    | .65 |
| 1 1/2" |        |        |        |        | .40    | .44    | .46    | .48    | .50    | .55    | .60    | .65    | .70 |
| 1 3/4" |        |        |        |        |        | .50    | .55    | .60    | .65    | .70    | .75    | .80    |     |
| 2"     |        |        |        |        |        |        | .55    | .60    | .65    | .70    | .75    | .80    | .85 |

CADMIUM PLATING—15c per gross in lots less than 5 pounds. 5 pounds or more of any one size 15c per pound. Minimum charge of 25c.

BRASS WOOD SCREWS

Use This List for Solid Brass Screws with Flat, Round or Oval Heads.

PRICED PER GROSS

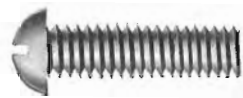
| No.    | 0      | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     | 11   | 12   |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|------|
| Length |        |        |        |        |        |        |        |        |        |        |        |      |      |
| 1/4"   | \$0.26 | \$0.28 | \$0.30 | \$0.32 | \$0.34 |        |        |        |        |        |        |      |      |
| 3/8"   | .28    | .30    | .32    | .34    | .36    | \$0.40 | \$0.45 |        |        |        |        |      |      |
| 1/2"   |        | .34    | .36    | .38    | .40    | .45    | .50    | \$0.55 | \$0.65 |        |        |      |      |
| 5/8"   |        |        | .38    | .40    | .45    | .50    | .55    | .60    | .70    | \$0.80 | \$0.90 |      |      |
| 3/4"   |        |        | .42    | .45    | .50    | .55    | .60    | .70    | .80    | .90    | 1.00   | 1.00 | 1.10 |
| 7/8"   |        |        |        | .55    | .60    | .70    | .80    | .90    | 1.00   | 1.10   | 1.20   | 1.20 | 1.40 |
| 1"     |        |        |        |        | .60    | .70    | .80    | .90    | 1.00   | 1.10   | 1.20   | 1.30 | 1.55 |
| 1 1/4" |        |        |        |        |        | .90    | 1.00   | 1.10   | 1.20   | 1.25   | 1.40   | 1.55 | 1.80 |
| 1 1/2" |        |        |        |        |        |        | 1.60   | 1.20   | 1.30   | 1.40   | 1.65   | 1.80 | 2.10 |
| 1 3/4" |        |        |        |        |        |        |        | 1.45   | 1.65   | 1.85   | 2.05   | 2.40 |      |
| 2"     |        |        |        |        |        |        |        |        | 1.65   | 1.85   | 2.05   | 2.30 | 2.70 |

CADMIUM PLATING—15c per gross in lots less than 5 pounds. 5 pounds or more of any one size 15c per pound. Minimum charge of 25c.

MACHINE SCREWS



Flat Head



Round Head



Filister Head

NOTE: Sizes priced in black-face carried in stock.

IRON MACHINE SCREWS

| Threads per inch | List Per Gross |        |        |        |        |        |        |        |        |        |
|------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                  | 56             | 48     | 40     | 32     | 32     | 24     | 24     | 20     | 18     | 16     |
| Diam.            | 2              | 3      | 4      | 6      | 8      | 10     | 12     | 1/4    | 5/16   | 3/8    |
| Length, In.      |                |        |        |        |        |        |        |        |        |        |
| 1/4              | \$0.24         | \$0.25 | \$0.26 | \$0.28 | .....  | .....  | .....  | .....  | .....  | .....  |
| 1/8              | .25            | .26    | .27    | .29    | \$0.35 | \$0.45 | .....  | .....  | .....  | .....  |
| 3/32             | .26            | .27    | .28    | .30    | .36    | .46    | \$0.64 | .....  | .....  | .....  |
| 1/16             | .27            | .28    | .29    | .31    | .37    | .48    | .66    | \$0.80 | .....  | .....  |
| 5/64             | .28            | .29    | .30    | .32    | .39    | .50    | .68    | .84    | \$1.55 | .....  |
| 3/64             | .29            | .30    | .31    | .34    | .41    | .52    | .70    | .88    | 1.60   | .....  |
| 1/32             | .30            | .31    | .32    | .36    | .43    | .54    | .74    | .92    | 1.65   | \$2.20 |
| 3/64             | .32            | .33    | .34    | .40    | .47    | .58    | .82    | 1.00   | 1.75   | 2.40   |
| 1/16             | .33            | .34    | .36    | .43    | .47    | .62    | .86    | 1.05   | 1.80   | 2.50   |
| 5/64             | .34            | .36    | .38    | .46    | .53    | .66    | .92    | 1.10   | 1.90   | 2.65   |
| 1                | .....          | .....  | .42    | .50    | .57    | .70    | .98    | 1.20   | 2.00   | 2.85   |
| 1 1/8            | .....          | .....  | .46    | .54    | .63    | .76    | 1.04   | 1.30   | 2.10   | 3.05   |
| 1 1/4            | .....          | .....  | .52    | .58    | .69    | .82    | 1.10   | 1.40   | 2.25   | 3.25   |
| 1 1/2            | .....          | .....  | .60    | .68    | .82    | .95    | 1.24   | 1.60   | 2.45   | 3.55   |
| 1 3/4            | .....          | .....  | .....  | .82    | .95    | 1.12   | 1.40   | 1.80   | 2.75   | 3.95   |
| 2                | .....          | .....  | .....  | .96    | 1.08   | 1.30   | 1.60   | 2.00   | 3.05   | 4.40   |
| 2 1/4            | .....          | .....  | .....  | .....  | 1.25   | 1.50   | 1.80   | 2.25   | 3.35   | 4.85   |
| 2 1/2            | .....          | .....  | .....  | .....  | 1.45   | 1.70   | 2.05   | 2.50   | 3.65   | 5.40   |
| 2 3/4            | .....          | .....  | .....  | .....  | 1.65   | 1.95   | 2.30   | 2.75   | 4.00   | 6.00   |
| 3                | .....          | .....  | .....  | .....  | 1.85   | 2.15   | 2.60   | 3.10   | 4.40   | 6.60   |

BRASS MACHINE SCREWS

| Threads per inch | List Per Gross |        |        |        |        |        |        |        |        |        |
|------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                  | 56             | 48     | 40     | 32     | 32     | 24     | 24     | 20     | 18     | 16     |
| Diam.            | 2              | 3      | 4      | 6      | 8      | 10     | 12     | 1/4    | 5/16   | 3/8    |
| Length, In.      |                |        |        |        |        |        |        |        |        |        |
| 1/4              | \$0.38         | \$0.34 | \$0.40 | \$0.52 | .....  | .....  | .....  | .....  | .....  | .....  |
| 1/8              | .30            | .36    | .42    | .54    | \$0.70 | \$0.95 | .....  | .....  | .....  | .....  |
| 3/32             | .32            | .38    | .44    | .58    | .76    | 1.05   | \$1.60 | .....  | .....  | .....  |
| 1/16             | .34            | .40    | .46    | .62    | .82    | 1.15   | 1.70   | \$2.30 | .....  | .....  |
| 5/64             | .36            | .42    | .48    | .66    | .88    | 1.25   | 1.80   | 2.40   | \$4.60 | .....  |
| 3/64             | .38            | .44    | .50    | .70    | .94    | 1.35   | 1.90   | 2.50   | 4.80   | .....  |
| 1/32             | .40            | .46    | .54    | .76    | 1.02   | 1.45   | 2.00   | 2.65   | 5.00   | \$7.10 |
| 3/64             | .44            | .52    | .62    | .92    | 1.20   | 1.75   | 2.20   | 2.95   | 5.40   | 7.70   |
| 1/16             | .50            | .58    | .68    | 1.00   | 1.30   | 1.90   | 2.40   | 3.15   | 5.80   | 8.20   |
| 5/64             | .56            | .66    | .74    | 1.10   | 1.45   | 2.05   | 2.60   | 3.45   | 6.30   | 8.90   |
| 1                | .....          | .....  | .82    | 1.20   | 1.60   | 2.20   | 2.80   | 3.75   | 6.80   | 9.60   |
| 1 1/8            | .....          | .....  | .90    | 1.30   | 1.75   | 2.35   | 3.00   | 4.05   | 7.30   | 10.30  |
| 1 1/4            | .....          | .....  | 1.00   | 1.45   | 1.90   | 2.55   | 3.25   | 4.35   | 7.80   | 11.00  |
| 1 1/2            | .....          | .....  | 1.25   | 1.65   | 2.15   | 2.90   | 3.75   | 4.95   | 8.50   | 12.10  |
| 1 3/4            | .....          | .....  | .....  | 1.95   | 2.45   | 3.35   | 4.25   | 5.55   | 9.30   | 13.40  |
| 2                | .....          | .....  | .....  | 2.25   | 2.75   | 3.80   | 4.75   | 6.15   | 10.40  | 14.70  |
| 2 1/4            | .....          | .....  | .....  | .....  | 3.10   | 4.25   | 5.25   | 6.75   | 11.50  | 16.20  |
| 2 1/2            | .....          | .....  | .....  | .....  | 3.45   | 4.75   | 5.75   | 7.35   | 12.60  | 17.80  |
| 2 3/4            | .....          | .....  | .....  | .....  | 3.80   | 5.25   | 6.25   | 8.00   | 13.70  | 19.50  |
| 3                | .....          | .....  | .....  | .....  | 4.15   | 5.75   | 6.75   | 8.65   | 14.90  | 21.60  |

CADMIUM PLATING: If it is desired machine screws or machine screw nuts will be cadmium plated at extra charge of 15c per gross in quantities less than 5 pounds. 5 pounds or more of a size 15c per pound. Minimum charge of 25c.

Non-listed lengths and diameters take the list prices of the next longer or larger listed sizes. When ordering, be sure to specify style of head wanted, diameter, length and number of threads to the inch.

MACHINE SCREW NUTS

| Size  | Coarse Thread |                | Fine Thread |               |                |
|-------|---------------|----------------|-------------|---------------|----------------|
|       | Iron, Per Gr. | Brass, Per Gr. | Size        | Iron, Per Gr. | Brass, Per Gr. |
| 4-40  | \$0.36        | \$1.08         | 4-48        | \$0.36        | \$1.08         |
| 6-32  | .36           | 1.08           | 6-40        | .36           | 1.08           |
| 8-32  | .40           | 1.30           | 8-36        | .40           | 1.30           |
| 10-24 | .43           | 1.73           | 10-32       | .43           | 1.73           |

BRIGHT WIRE NAILS

| Length | Priced per pound in 1, 5 and 10-lb. packages |        |        |        |        |        |
|--------|--|--------|--------|--------|--------|--------|
|        | 14   | 15     | 16     | 17     | 18     | 19     |
| 1/4"   |  |        |        |        |        |        |
| 3/8"   |  |        |        |        |        |        |
| 1/2"   | \$0.55                                       | \$0.55 | \$0.55 | \$0.60 | \$0.80 | \$1.00 |
| 5/8"   | .43  | .45    | .50    | .52    | .58    | .65    |
| 3/4"   | .38  | .42    | .43    | .46    | .52    | .60    |
| 7/8"   | .35  | .36    | .39    | .43    | .45    | .56    |
| 1"     | .32  | .33    | .36    | .40    | .43    | .53    |

NOTE—Above prices are per pound for 1-lb. packages. Add 6c per pound for 1/2-lb. paper boxes; add 12c per pound for 1/4-lb. paper boxes.

CEMENT COATED NAILS

| Length | Priced per pound in 1, 5 and 10-lb. packages |        |        |        |        |        |
|--------|--|--------|--------|--------|--------|--------|
|        | 14   | 15     | 16     | 17     | 18     | 19     |
| 1/4"   |  |        |        |        |        |        |
| 3/8"   |  |        |        |        |        |        |
| 1/2"   | \$0.59                                       | \$0.59 | \$0.59 | \$0.63 | \$0.84 | \$1.04 |
| 5/8"   | .47  | .49    | .54    | .56    | .62    | .79    |
| 3/4"   | .42  | .46    | .47    | .50    | .56    | .64    |
| 7/8"   | .39  | .40    | .43    | .47    | .49    | .60    |
| 1"     | .36  | .37    | .40    | .44    | .47    | .57    |

NOTE—Above prices are per pound for 1-lb. packages. Add 6c per pound for 1/2-lb. paper boxes; add 12c per pound for 1/4-lb. paper boxes.

STOVE BOLTS

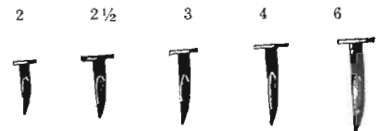


Round Head

STOVE BOLTS. Round or Flat Head, with square nuts. Length overall on flat head, length from under head to extreme point on round head. Priced per 100 bolts and nuts complete.

| Length Inches | Diameter |        |      |
|---------------|----------|--------|------|
|               | 3/8"     | 1/2"   | 5/8" |
| 3/8"          | \$0.85   | \$0.85 |      |
| 1/2"          | .85      | .85    | 1.20 |
| 5/8"          | .85      | .85    | 1.20 |
| 3/4"          | .85      | .85    | 1.20 |
| 7/8"          | .90      | .90    | 1.25 |
| 1"            | .90      | .90    | 1.30 |
| 1 1/8"        | .95      | .95    | 1.35 |
| 1 1/4"        | 1.00     | 1.00   | 1.40 |
| 1 3/8"        | 1.05     | 1.05   | 1.45 |
| 1 1/2"        | 1.10     | 1.10   | 1.50 |
| 1 3/4"        | 1.20     | 1.20   | 1.60 |
| 2"            | 1.30     | 1.30   | 1.70 |

CUT TACKS



American Iron

Blued—one-eighth pound package

| Size oz. | Length, inch | Per Pkg. |
|----------|--------------|----------|
| 2        | 1/4          | \$0.10   |
| 2 1/2    | 1/8          | .09      |
| 3        | 3/8          | .08      |
| 4        | 7/16         | .07      |

One-quarter pound package

| Size | Length, inch | Per Pkg. |
|------|--------------|----------|
| 6    | 1/2          | \$0.12   |
| 8    | 1/8          | .11      |
| 10   | 5/8          | .10      |
| 12   | 1 1/8        | .09      |

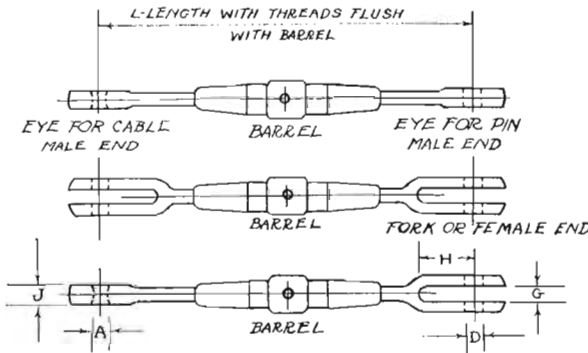
INSULATED STAPLES



| Size No. | Length, in. | 1000   |
|----------|-------------|--------|
| 1        | 1/2         | \$1.50 |
| 5        | 5/8         | 1.70   |
| 6        | 3/4         | 1.70   |

Packed 100 in a box, 1000 in a carton

COMMERCIAL TURNBUCKLES



COMMERCIAL TURNBUCKLES. New production, commercial specifications; manufactured to old army government specifications; material specifications are same as new AN, the only difference is in the design. We carry large and complete stocks for immediate shipment of orders.

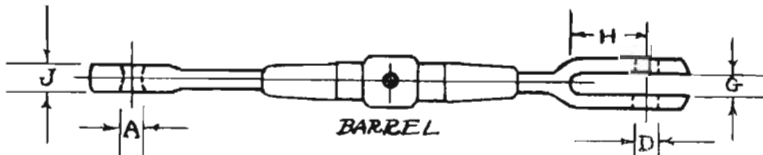
| No.    | Barrel Lgth. | ADJ.  | Min. Sgth. | Wt. in lbs. | A    | D    | G    | H    | J    | L     | Price  |
|--------|--------------|-------|------------|-------------|------|------|------|------|------|-------|--------|
| 323SM  | 2            | 1.    | 900        | .094        | .120 | .156 |      |      | .156 | 3 3/8 | \$0.35 |
| 324SM  | 1 1/2        | 3/8   | 900        | .120        | .156 |      |      |      | .188 | 2 1/2 | .35    |
| 324SF  | 1 1/2        | 3/8   | 900        | .120        | .156 | .078 | .375 |      | .188 | 2 3/8 | .35    |
| 325SF  | 2            | .875  | 1350       | .052        | .188 | .156 | .110 | .344 | .156 | 3 3/4 | .35    |
| 325SM  | 2            | .875  | 1350       | .047        | .188 |      |      |      | .156 | 3 3/8 | .35    |
| 326SF  | 2            | .875  | 2150       | .079        | .219 | .188 | .110 | .469 | .188 | 3 1/2 | .35    |
| 326LF  | 4            | 2.875 | 2150       | .129        | .219 | .188 | .110 | .500 | .188 | 8 1/2 | .50    |
| 326SM  | 2            | .875  | 2150       | .065        | .219 |      |      |      | .188 | 3 3/8 | .35    |
| 326LM  | 4            | 2.875 | 2150       | .122        | .219 |      |      |      | .188 | 7 1/2 | .50    |
| 327LF  | 4            | 2.625 | 2850       | .183        | .281 | .250 | .110 | .625 | .219 | 7 3/4 | .50    |
| 327SF  | 2 1/2        | .75   | 2850       | .119        | .281 | .250 | .110 | .625 | .219 | 4 3/4 | .20    |
| 327SM  | 2 1/2        | .75   | 2850       | .107        | .281 |      |      |      | .219 | 3 3/8 | .40    |
| 327LFW | 4            | 2.625 | 2850       | .184        | .281 | .250 | .203 | .625 | .219 | 7 3/8 | .50    |
| 327LM  | 4            | 2.625 | 2850       | .167        | .281 |      |      |      | .219 | 7 3/8 | .50    |
| 327SFW | 2 3/8        | .75   | 2850       | .116        | .281 | .250 | .203 | .625 | .218 | 4 7/8 | .30    |
| 328LF  | 4            | 2.625 | 3500       | .237        | .344 | .250 | .203 | .625 | .250 | 7 7/8 | .25    |
| 328LM  | 4            | 2.625 | 3500       | .232        | .344 | .250 |      |      | .250 | 7 1/2 | .50    |
| 328SF  | 2 1/2        | .875  | 3500       | .156        | .344 | .250 | .203 | .625 | .250 | 4 3/8 | .25    |
| 328SM  | 2 3/8        | .875  | 3500       | .153        | .344 |      |      |      | .250 | 4 3/4 | .40    |
| 329LF  | 4            | 2.50  | 5000       | .293        | .313 | .281 | .203 | .625 | .281 | 7 1/2 | .25    |
| 329LFW | 4            | 2.50  | 5000       | .294        | .313 | .281 | .266 | .625 | .281 | 7 1/2 | .50    |
| 329LM  | 4            | 2.50  | 5000       | .275        | .313 |      |      |      | .281 | 7 3/8 | .50    |
| 330LF  | 4            | 2.25  | 8400       | .415        | .359 | .313 | .266 | .688 | .328 | 7 3/4 | .60    |
| 330LM  | 4            | 2.25  | 8400       | .411        | .359 | .313 |      |      | .328 | 7 3/4 | .60    |

GLIDER TURNBUCKLE. Medium size; eye, barrel, fork or eye, barrel, eye.....15c

Material: Shank 3 1/2% nickel steel, heat treated; barrel, tobin bronze. Mean tensile strength equals 128,610 lbs. per sq. in.

SF—Short Assembly: fork, barrel, cable eye; LF—Long Assembly, fork, barrel, cable eye; SM—Short Assembly: cable eye, barrel, cable eye; LM—Long Assembly: cable eye, barrel, cable eye; SFW—Short Assembly: fork (wide), barrel, cable eye; LFW—Long Assembly: fork (wide), barrel, cable eye.

AN TURNBUCKLES



AN SPECIFICATION TURNBUCKLES. Made strictly to Army-Navy Air Corps specifications; three types carried in stock, short assembly and long assembly in (130) cable eye, barrel, clevis end, (140) cable eye, barrel, cable eye and (135) cable eye, barrel, pin eye.

SHORT ASSEMBLY—AN-130S

| Strength Lbs. | Nos. Dash | Take-up Inches | L Inches | A Inches | D Inches | J Inches | G Inches | H Inches | Price Each |
|---------------|-----------|----------------|----------|----------|----------|----------|----------|----------|------------|
| 800           | 8S        | 1.260          | 4 1/2    | .188     | .188     | .125     | .109     | .375     | \$0.66     |
| 1600          | 16S       | 1.04           | 4 1/2    | .219     | .188     | .188     | .150     | .469     | .67        |
| 2100          | 21S       | .875           | 4 1/2    | .219     | .188     | .188     | .150     | .562     | .63        |
| 3200          | 32S       | .620           | 4 1/2    | .281     | .250     | .219     | .203     | .625     | .79        |
| 4600          | 46S       | .375           | 4 1/2    | .313     | .313     | .281     | .203     | .656     | .94        |

LONG ASSEMBLY—AN-130L

| Strength Lbs. | Nos. Dash | Take-up Inches | L Inches | A Inches | D Inches | J Inches | G Inches | H Inches | Price Each |
|---------------|-----------|----------------|----------|----------|----------|----------|----------|----------|------------|
| 1600          | 16L       | 2.625          | 8        | .219     | .188     | .188     | .150     | .469     | \$0.86     |
| 2100          | 21L       | 2.500          | 8        | .219     | .188     | .188     | .150     | .562     | .80        |
| 3200          | 32L       | 2.250          | 8        | .281     | .250     | .219     | .203     | .625     | .96        |
| 4600          | 46L       | 2.125          | 8        | .313     | .313     | .281     | .203     | .656     | 1.06       |
| 6100          | 61L       | 1.625          | 8        | .344     | .375     | .281     | .203     | .843     | 1.17       |
| 8000          | 80L       | 1.625          | 8        | .375     | .375     | .328     | .266     | .875     | 1.24       |
| 12500         | 125L      | 1.775          | 9        | .469     | .438     | .375     | .344     | 1.000    | 2.02       |
| 17500         | 175L      | 2.000          | 9 1/2    | .563     | .500     | .469     | .406     | 1.188    | 2.60       |

AN-140 Cable Eye—Barrel Cable Eye same prices as above.  
AN-135 Cable Eye—Barrel Pin Eye same prices as above.

PLAIN LOCK WASHERS



Cadmium Plated

For S. A. E. Standard Bolts

| Bolt Size | Steel Size | Approx. Wt. per 1000 | Price per 1000 |
|-----------|------------|----------------------|----------------|
| 10 R. H.  | 5/64x3/64  | 3 1/2 lbs.           | \$3.00         |
| 1/4       | 3/32x3/64  | 1 1/4 lbs.           | 2.80           |
| 3/8       | 1/8x3/64   | 2 1/4 lbs.           | 4.80           |
| 1/2       | 1/8x1/16   | 3 1/4 lbs.           | 5.00           |
| 5/8       | 5/32x1/16  | 5 lbs.               | 7.00           |
| 3/4       | 11/64x1/16 | 6 1/2 lbs.           | 8.00           |

For Round Head Machine Screws

| Bolt Size | Steel Size | Approx. Wt. per 1000 | Price per 1000 |
|-----------|------------|----------------------|----------------|
| 2         | 1/32x.022  | 1 1/2 ozs.           | \$4.00         |
| 4         | 3/64x1/32  | 3 ozs.               | 3.70           |
| 6         | 1/16x1/32  | 5 ozs.               | 3.30           |
| 8         | 5/64x1/32  | 8 ozs.               | 3.00           |
| 10        | 5/64x3/64  | 12 ozs.              | 3.00           |
| 12        | 3/32x3/64  | 18 ozs.              | 3.50           |

For Fillister Head Machine Screws

| Bolt Size | Steel Size | Approx. Wt. per 1000 | Price per 1000 |
|-----------|------------|----------------------|----------------|
| 2         | .022x.022  | 1 1/2 ozs.           | \$4.00         |
| 4         | 1/32x.022  | 1 3/4 ozs.           | 3.70           |
| 6         | 1/32x1/32  | 2 1/4 ozs.           | 3.50           |
| 8         | 3/64x1/32  | 4 ozs.               | 3.00           |
| 10        | 3/64x3/64  | 8 ozs.               | 2.50           |
| 12        | 1/16x3/64  | 12 ozs.              | 3.50           |

A. N. SPECIFICATION STEEL WASHERS

| No.       | Bolt Size | Inside Dia. | Outside Dia. | Thick. | Price per 1000 |
|-----------|-----------|-------------|--------------|--------|----------------|
| AN960-10  | 10        | 13/64       | 1 1/8        | 3/64   | \$1.00         |
| AN960-416 | 1/4       | 17/64       | 1 1/4        | 1/16   | 1.00           |
| AN960-516 | 5/16      | 21/64       | 1 3/8        | 1/16   | 1.00           |
| AN960-616 | 3/8       | 25/64       | 1 1/2        | 1/16   | 1.00           |
| AN960-716 | 7/16      | 29/64       | 1 5/8        | 1/16   | 1.00           |
| AN960-816 | 1/2       | 33/64       | 1 7/8        | 1/16   | 1.00           |

AN-945 PLAIN STEEL WASHERS



| Dash No. | Bolt Size | Inside Dia. | Outside Dia. | Thick-ness | Price per 1000 |
|----------|-----------|-------------|--------------|------------|----------------|
| 3        | 3/16      | 5/8         | 7/8          | .049       | \$0.40         |
| 4        | 1/4       | 3/4         | 7/8          | .065       | .40            |
| 5        | 5/16      | 7/8         | 1            | .065       | .40            |
| 6        | 3/8       | 1           | 1 1/8        | .078       | .40            |
| 7        | 1/2       | 1 1/8       | 1 1/4        | .078       | .40            |
| 8        | 5/8       | 1 3/8       | 1 3/4        | .094       | .40            |

AN-970 FLAT WASHERS

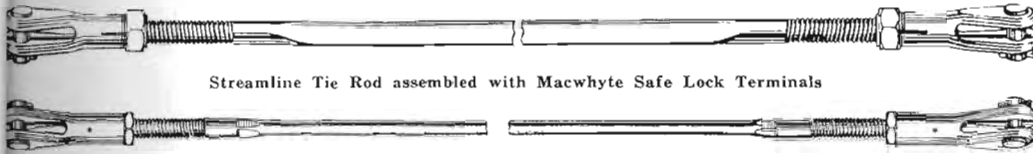
Cadmium Plated

| Dash No. | Bolt Size | Inside Dia. | Outside Dia. | Thick-ness | Price per 1000 |
|----------|-----------|-------------|--------------|------------|----------------|
| 3        | 10        | 10          | 7/8          | 1/16       | \$0.70         |
| 4        | 1/4       | 17/64       | 1 1/8        | 1/16       | 0.70           |
| 5        | 5/16      | 21/64       | 1 3/8        | 1/16       | 0.70           |
| 6        | 3/8       | 25/64       | 1 1/2        | 1/16       | 0.70           |
| 7        | 7/16      | 29/64       | 1 5/8        | 1/16       | 0.70           |
| 8        | 1/2       | 33/64       | 1 7/8        | 1/16       | 0.70           |

BRASS WASHERS FOR MACHINE SCREWS

| No. | Bolt Size | Inside Dia. | Outside Dia. | Price per 1000 |
|-----|-----------|-------------|--------------|----------------|
| 4   | 4         | 7/64        | 3/8          | \$0.40         |
| 6   | 6         | 9/64        | 1/2          | 0.40           |
| 8   | 8         | 11/64       | 3/4          | 0.40           |
| 10  | 10        | 13/64       | 7/8          | 0.40           |

STREAMLINE AND INTERNAL TIE RODS



Streamline Tie Rod assembled with Macwhyte Safe Lock Terminals

Round Tie Rod assembled with Standard Rigid Terminals

NOTE: Tie rods are not carried in stock but can be supplied for prompt shipment. We must have pin center to pin center size and kind of terminals. A deposit of 25% is required on all orders for tie rods and fittings.

STREAMLINE TIE RODS

| Wire   | Number Threads to Inch | Length of Rod    | Price Rods only less Terminals | Each Additional 12 Inches | Tensile Strength |
|--------|------------------------|------------------|--------------------------------|---------------------------|------------------|
| No. 6  | 40                     | Basis length 36" | \$ 2.08                        | \$ .078                   | 1,000 lbs.       |
| No. 10 | 32                     | Basis length 36" | 2.34                           | .104                      | 2,100 lbs.       |
| 1/4"   | 28                     | Basis length 48" | 2.86                           | .13                       | 3,400 lbs.       |
| 3/8"   | 24                     | Basis length 48" | 3.12                           | .182                      | 6,100 lbs.       |
| 1/2"   | 24                     | Basis length 60" | 3.64                           | .39                       | 8,000 lbs.       |
| 5/8"   | 20                     | Basis length 60" | 4.81                           | .52                       | 11,500 lbs.      |
| 3/4"   | 20                     | Basis length 72" | 6.11                           | .65                       | 15,000 lbs.      |
| 7/8"   | 18                     | Basis length 84" | 9.30                           | .78                       | 20,200 lbs.      |
| 1"     | 18                     | Basis length 84" | 11.18                          | .91                       | 24,700 lbs.      |

INTERNAL TIE RODS Round or Square

| Wire   | Number Threads to Inch | Length of Rod    | Price Rods only less Terminals | Each Additional 12 Inches | Tensile Strength |
|--------|------------------------|------------------|--------------------------------|---------------------------|------------------|
| No. 6  | 40                     | Basis length 18" | \$ 1.20                        | \$ .072                   | 1,000 lbs.       |
| No. 10 | 32                     | Basis length 18" | 1.32                           | .096                      | 2,100 lbs.       |
| 1/4"   | 28                     | Basis length 18" | 1.62                           | .12                       | 3,400 lbs.       |
| 3/8"   | 24                     | Basis length 18" | 2.16                           | .168                      | 6,100 lbs.       |
| 1/2"   | 24                     | Basis length 18" | 2.28                           | .192                      | 8,000 lbs.       |
| 5/8"   | 20                     | Basis length 18" | 2.52                           | .216                      | 11,500 lbs.      |
| 3/4"   | 20                     | Basis length 18" | 2.76                           | .24                       | 15,500 lbs.      |



Rigid Terminal, Standard Type



Rigid Terminal, Macwhyte Safe Lock Type

RIGID TERMINALS FOR TIE RODS

| STANDARD TYPE   |            | SAFELOCK TYPE   |            |
|-----------------|------------|-----------------|------------|
| Size of Tie Rod | Price Each | Size of Tie Rod | Price Each |
| 6-46            | \$0.34     | 6-40            | \$0.45     |
| 10-32           | .40        | 10-32           | .50        |
| 1/4-28          | .45        | 1/4-28          | .60        |
| 3/8-24          | .55        | 3/8-24          | .70        |
| 1/2-24          | .70        | 1/2-24          | .90        |
| 5/8-20          | .80        | 5/8-20          | 1.00       |
| 3/4-20          | 2.70       | 3/4-20          | 3.40       |

HARTSHORN UNIVERSAL STRAP FITTINGS

| Size of Tie Rod | Price Each |
|-----------------|------------|
| 6-40            | \$0.80     |
| 10-32           | 1.00       |
| 1/4-28          | 1.20       |
| 3/8-24          | 1.40       |
| 1/2-24          | 1.60       |
| 5/8-20          | 2.00       |
| 3/4-20          | 2.40       |

RIVETS

ALUMINUM 2S-

| Size      | Approx. No. Per Lb. | Round Head |                       | Flat Head |                       | Brazier Head |                       |
|-----------|---------------------|------------|-----------------------|-----------|-----------------------|--------------|-----------------------|
|           |                     | Per 1000   | 1 Lb. or More Per Lb. | Per 1000  | 1 Lb. or More Per Lb. | Per 1000     | 1 Lb. or More Per Lb. |
| 3/8 x 3/4 | 13,900              | \$0.75     | \$4.98                | \$0.75    | \$4.98                | \$0.75       | \$4.98                |
| 3/8 x 1/2 | 4,640               | 1.20       | 2.78                  | .....     | .....                 | .....        | .....                 |
| 3/8 x 3/8 | 3,540               | 1.35       | 2.40                  | 1.35      | 2.40                  | 1.35         | 2.40                  |
| 3/8 x 1/4 | 3,060               | .....      | .....                 | 1.15      | 1.77                  | .....        | .....                 |
| 3/8 x 1/2 | 2,350               | 1.25       | 1.46                  | 1.25      | 1.46                  | 1.25         | 1.46                  |
| 1/2 x 1/4 | 1,740               | 1.52       | 1.33                  | 1.52      | 1.33                  | .....        | .....                 |
| 1/2 x 3/8 | 1,340               | 1.85       | 1.24                  | 1.85      | 1.24                  | 1.85         | 1.24                  |
| 1/2 x 1/2 | 1,115               | 2.07       | 1.16                  | .....     | .....                 | 2.07         | 1.16                  |
| 3/4 x 3/8 | 885                 | .....      | .....                 | .....     | .....                 | 2.53         | 1.12                  |

DURAL 17S-

|           |        |       |       |       |       |       |       |
|-----------|--------|-------|-------|-------|-------|-------|-------|
| 3/8 x 3/4 | 13,900 | ..... | ..... | .80   | 5.34  | .80   | 5.34  |
| 3/8 x 1/2 | 3,540  | ..... | ..... | 1.39  | 2.47  | 1.39  | 2.47  |
| 3/8 x 3/8 | 3,060  | 1.20  | 1.85  | 1.20  | 1.85  | 1.20  | 1.85  |
| 3/8 x 1/4 | 2,350  | ..... | ..... | 1.33  | 1.33  | 1.30  | 1.53  |
| 1/2 x 1/4 | 1,740  | 1.60  | 1.40  | ..... | ..... | 1.60  | 1.40  |
| 1/2 x 3/8 | 1,628  | ..... | ..... | ..... | ..... | 1.71  | 1.40  |
| 1/2 x 1/2 | 1,220  | ..... | ..... | 1.92  | 1.17  | ..... | ..... |
| 3/4 x 1/2 | 1,115  | 2.20  | 1.23  | 2.20  | 1.23  | ..... | ..... |
| 3/4 x 3/8 | 945    | ..... | ..... | 2.51  | 1.23  | ..... | ..... |
| 3/4 x 1/4 | 885    | 2.85  | 1.25  | ..... | ..... | ..... | ..... |

Prices Subject to Change Without Notice

COPPER SAFETY WIRE



Stocked in 1, 5 and 10 pound spools, also in bulk; spools not broken.

| B. & S. Gauge | Diam. | Price per Pound |        |        |
|---------------|-------|-----------------|--------|--------|
|               |       | 1 Lb.           | 5 Lb.  | 10 Lb. |
| 16            | .051  | \$0.50          | \$0.45 | \$0.40 |
| 18            | .040  | .50             | .45    | .40    |
| 20            | .032  | .50             | .45    | .40    |
| 22            | .025  | .50             | .45    | .40    |

BRASS SAFETY WIRE

Stocked in 1, 5 and 10 pound spools, also in bulk; spools not broken.

| B. & S. Gauge | Diam. | Price per Pound |        |        |
|---------------|-------|-----------------|--------|--------|
|               |       | 1 Lb.           | 5 Lb.  | 10 Lb. |
| 16            | .051  | \$0.45          | \$0.40 | \$0.40 |
| 18            | .040  | .45             | .40    | .40    |
| 20            | .032  | .48             | .45    | .45    |
| 22            | .025  | .50             | .48    | .48    |

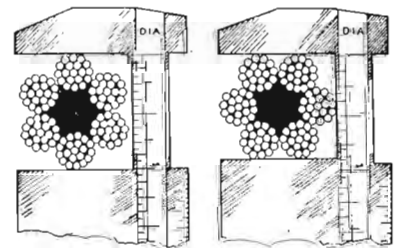
STANDARD TINNED AIRCRAFT WIRE

STANDARD TINNED AIRCRAFT WIRE. The demands exacted from this type wire are most severe. It must be of high tensile strength, uniform and tough, but sufficiently pliable to bend into an eye, terminal or ferrule without danger or fracture. The wire listed below has all of these qualities.

| Roeb- lings Gauge | Dia- meter ins. | Minimum Breaking Strength Pounds | Approx. No feet in one lb. | Price per lb. in 1-lb. rolls | Price per lb. in 5-'b. rolls |
|-------------------|-----------------|----------------------------------|----------------------------|------------------------------|------------------------------|
| 10                | .135            | 3290                             | 20.7                       | \$0.65                       | \$0.80                       |
| 11                | .120            | 2670                             | 26.3                       | .70                          | .65                          |
| 12                | .105            | 2090                             | 34.3                       | .75                          | .70                          |
| 13                | .091            | 1600                             | 44.8                       | .80                          | .75                          |
| 14                | .080            | 1260                             | 59.1                       | .85                          | .80                          |
| 15                | .072            | 1040                             | 72.9                       | .90                          | .85                          |
| 16                | .062            | 775                              | 95.2                       | .90                          | .85                          |
| 17                | .054            | 600                              | 129.8                      | .95                          | .90                          |
| 18                | .047            | 460                              | 171.5                      | .95                          | .90                          |

Note: Aircraft cable or wire shipped as per your instruction is not returnable for credit. Be sure to state decimal diameters in inches.

HOW TO MEASURE CABLE



The right way to measure the diameter of cable. The wrong way to measure the diameter of cable.

The right way to measure the diameter of a cable: The correct diameter is that of a circle which, when enclosed, just touches the outside of all the strands. See illustration.

Phone Marshall 1400 for Telephone Order.

Note: Aircraft cable or wire shipped as per your instruction is not returnable for credit. Be sure to state decimal diameters in inches.

**19-WIRE GALVANIZED AIRCRAFT CORD**



19-WIRE GALVANIZED AIRCRAFT. Made of 19 fine galvanized wires (except 3/8" size, which has 7 strand) of great strength stranded together. This wire is not very flexible and is used principally for stays.

| Diameter Inches | Breaking Strength Pounds | Approx. Wt. per 100 feet | Price per foot |
|-----------------|--------------------------|--------------------------|----------------|
| 3/16 7st        | 185                      | .30 lb.                  | \$0.02         |
| 1/8             | 500                      | .78 lb.                  | .02 1/4        |
| 5/16            | 1,100                    | 1.75 lb.                 | .02 3/4        |
| 3/8             | 2,100                    | 3.50 lb.                 | .03            |
| 7/16            | 3,200                    | 5.50 lb.                 | .03 1/2        |
| 1/2             | 4,600                    | 7.70 lb.                 | .04 1/2        |
| 5/8             | 6,100                    | 10.00 lb.                | .06            |
| 3/4             | 8,000                    | 13.50 lb.                | .06            |

**WIRE CENTER AIRCRAFT CORD**



7x7 GALVANIZED AIRCRAFT CORD. With wire center is six strands around 1 strand of seven galvanized wires each. This cord, having a wire center, is flexible.

| Diameter Inches | Breaking Strength Pounds | Approx. Wt. Per 100 Feet | Price Per Foot |
|-----------------|--------------------------|--------------------------|----------------|
| 1/8             | 485                      | .81                      | \$0.03         |
| 3/16            | 920                      | 1.45                     | .03 1/2        |
| 1/4             | 1,350                    | 2.45                     | .04            |
| 5/16            | 2,600                    | 4.67                     | .05            |
| 3/8             | 3,200                    | 5.80                     | .05 1/2        |
| 7/16            | 4,600                    | 8.30                     | .07 1/2        |
| 1/2             | 5,800                    | 10.50                    | .08            |

**7x19 TINNED AIRCRAFT CORD**



7x19 TINNED AIRCRAFT CORD. Made of seven strands of nineteen tinned wires each. This wire is made from the highest grade of steel and given a heavy plating of tin. It is extra flexible and used principally for control cords.

| Diameter Inches | Breaking Strength Pounds | Approx. Wt. Per 100 Feet | Price Per Foot |
|-----------------|--------------------------|--------------------------|----------------|
| 3/16            | 2,000                    | 2.88                     | \$0.07 1/2     |
| 1/8             | 2,800                    | 4.44                     | .08            |
| 5/16            | 4,200                    | 6.47                     | .09 3/4        |
| 3/8             | 5,600                    | 9.50                     | .11            |
| 1/2             | 7,000                    | 12.00                    | .13            |

**ANNEALED STEEL WIRE**

Tinned aircraft wire for wrapping. Air Corps Specification 25531-C.

| B. & S. Gauge | Diam. | Price per Pound |        |        |
|---------------|-------|-----------------|--------|--------|
|               |       | 1 Lb.           | 5 Lb.  | 10 Lb. |
| 16            | .051  | \$0.40          | \$0.30 | \$0.20 |
| 18            | .040  | .40             | .30    | .20    |
| 20            | .032  | .45             | .40    | .40    |
| 22            | .025  | .48             | .42    | .40    |
| 24            | .020  | .45             | .40    | .35    |

**AIRCRAFT RADIATOR HOSE**



Latest AN Air Service Specification, highest quality hose obtainable, constructed of three plies of high grade fabric. A high grade friction is used between the plies to insure against ply separations. The inner lining of rubber is a special compound of live rubber with certain chemicals added to resist the action of oil and anti-freeze solution. It is practically impossible to pull the inner lining loose from the fabric.

| Dia. Inches | Ply | Price Per Ft. |
|-------------|-----|---------------|
| 1/4"        | 2   | \$0.12        |
| 3/8"        | 2   | .14           |
| 1/2"        | 2   | .15           |
| 5/8"        | 2   | .17           |
| 3/4"        | 2   | .19           |
| 7/8"        | 2   | .22           |
| 1"          | 3   | .26           |
| 1 1/8"      | 3   | .27           |
| 1 1/4"      | 3   | .28           |
| 1 3/8"      | 3   | .30           |
| 1 1/2"      | 3   | .31           |
| 1 5/8"      | 3   | .33           |
| 1 3/4"      | 3   | .34           |
| 1 7/8"      | 3   | .34           |
| 2"          | 3   | .35           |

**On Telegraph Orders use WESTERN UNION**

There is no other telegraph office in Marshall.

**AIRCRAFT FUEL HOSE**

Gas and Oil, Rubber Lined; latest A.N. Specification H-55671.

| Dia. Inches | Ply | Price Per Foot |
|-------------|-----|----------------|
| 1/4"        | 2   | \$1.00         |
| 3/8"        | 2   | .....          |
| 1/2"        | 2   | .....          |
| 5/8"        | 2   | .....          |
| 3/4"        | 2   | .....          |
| 7/8"        | 2   | .....          |
| 1"          | 2   | .....          |
| 1 1/8"      | 3   | .....          |
| 1 1/4"      | 3   | .....          |
| 1 3/8"      | 3   | .....          |
| 1 1/2"      | 3   | .....          |
| 1 5/8"      | 3   | .....          |
| 1 3/4"      | 3   | .....          |
| 1 7/8"      | 3   | .....          |
| 2"          | 3   | .....          |
| 2 1/8"      | 3   | .....          |
| 2 1/4"      | 3   | .....          |
| 2 3/8"      | 3   | .....          |
| 2 1/2"      | 3   | .....          |
| 3"          | 3   | .....          |

**PEERLESS AIRPLANE FUEL HOSE**

PEERLESS AIRPLANE HOSE. Latest AN Air Corps Specifications. This is the gas hose that is recommended and used by practically all commercial operators. To our knowledge there has never been a gas flow failure using this hose. It is the highest grade hose obtainable.

Peerless Hose—  
 3/8 inch diameter .....per foot \$0.35  
 1/2 inch diameter .....per foot \$0.50



Type 6-TS-13-1

**Exide AIRCRAFT BATTERIES**

A wide variety of types cover every phase of aircraft service. Sturdy in construction, light in weight and conservatively rated as to capacity. Recommended for cranking, lighting, radio and ignition. Exides have the non-spill feature, and are constructed to meet even the heaviest demands of heavy discharges at high rates.



Type 6-TX-19-1

Types 6.TX.19.1, 6-TS-7-1 and 6-TS-13-1 carried in stock charged ready for immediate shipment. Other types will have to be charged and it takes 5 to 6 days to make delivery.

| TYPE       | Voltage | Piece No. | Dimensions in Inches |       |        | Net Weight in Lbs. | Capacities at Rates Indicated |               |               |              |                 | Price Each Except Denver and West | Price Each Denver and West | Application See Below |
|------------|---------|-----------|----------------------|-------|--------|--------------------|-------------------------------|---------------|---------------|--------------|-----------------|-----------------------------------|----------------------------|-----------------------|
|            |         |           | L                    | W     | H      |                    | 5 Hr. Amp.                    | 20 Min. Amps. | 10 Min. Amps. | 5 Min. Amps. | 75 Amp. 10 Vts. |                                   |                            |                       |
| 6-TX-9-1   | 12      | 15880     | 7 1/4                | 7 1/4 | 10 1/2 | 38                 | 29                            | 50            | 84            | 133          | 10.0            | \$36.40                           | \$38.20                    | 1                     |
| 6-TX-13-1  | 12      | 15881     | 9 1/4                | 7 3/4 | 10 1/2 | 53                 | 43                            | 75            | 126           | 200          | 19.0            | 47.60                             | 49.95                      | 1                     |
| 6-TX-19-1  | 12      | 15882     | 13 1/4               | 7 1/4 | 10 1/2 | 70                 | 65                            | 112           | 189           | 300          | 33.0            | 56.65                             | 59.50                      | 1                     |
| 3-TX-19-1  | 6       | 18557     | 7 1/4                | 7 1/4 | 11 1/2 | 35                 | 65                            | 112           | 189           | 300          |                 | 28.65                             | 30.10                      | 2                     |
| 1-TX-19    | 2       | 18559     | 3                    | 7 1/4 | 10 3/4 | 14                 | 65                            | 112           | 189           | 300          |                 | 17.10                             | 17.90                      | 3                     |
| 6-TS-7-1   | 12      | 18250     | 7 1/4                | 7 1/4 | 10 1/2 | 26                 | 19                            | 30            | 48            | 75           | 3.5             | 32.40                             | 34.00                      | 2                     |
| 6-TS-13-1  | 12      | 18251     | 10 1/4               | 7 1/4 | 10 1/2 | 36                 | 38                            | 60            | 96            | 150          | 14.0            | 40.50                             | 42.50                      | 1                     |
| 6-TSN-25-3 | 12      | 18252     | 15 1/4               | 7 1/4 | 11 1/2 | 67                 | 75                            | 120           | 189           | 300          | 36.5            | 60.00                             | 63.00                      | 1                     |
| 3-TS-13-1  | 6       | 17729     | 5 1/4                | 5 1/4 | 10 1/2 | 18                 | 38                            | 60            | 96            | 150          |                 | 19.90                             | 20.90                      | 2                     |
| 4-AC-7-1   | 8       | 10594     | 5 1/4                | 3 3/8 | 6 1/2  | 11                 | 10                            | 15            | 24            | 36           |                 | 20.40                             | 21.40                      | 4                     |
| 6-AC-7-1   | 12      | 16814     | 8 1/4                | 3 3/8 | 6 1/2  | 17                 | 10                            | 15            | 24            | 36           |                 | 29.60                             | 30.40                      | 5                     |
| 1-AC-11    | 2       | 18558     | 4 1/4                | 2 3/8 | 8 3/4  | 5                  | 17                            | 25            | 39            | 60           |                 | 7.40                              | 7.75                       | 3                     |
| 3-AC-7-1   | 6       | 18621     | 4 1/4                | 2 3/8 | 6 1/2  | 9                  | 10                            | 15            | 24            | 36           |                 | 15.40                             | 16.50                      | 5                     |

No. S-1-A—Hydrometer Syringe, for testing batteries, each .....\$1.00

**APPLICATION**

1. Cranking, Lighting, Radio and Ignition. Recommended for use with High Wattage Landing Lamp.
2. Cranking, Limited Lighting, Radio and Ignition.
3. Radio or Other Low Voltage Requirements.
4. Ignition.
5. Limited Lighting and Ignition.



**AIRCRAFT LIGHTING AND IGNITION CABLE**

Packard cable has been used on aircraft for over 10 years. This cable is constructed according to U. S. Air Corps specifications. All items except High Tension are furnished with or without wire braid for radio shielding.

**PACKARD HIGH TENSION CABLE.** This cable is corona proof. Used in wiring from magneto or distributor to spark plugs. Sixteen gauge tinned copper core insulated with high grade rubber compound, braided with glazed cotton braid and treated with multiple coats of extra flexible lacquer.



- No. 544—7mm, black or tan.....100 feet, \$ 8.75
- No. 644—7mm, shielded .....100 feet, 23.00



- No. 844—Special Oil Proof Shielded H. T. Cable .....100 feet, \$25.00
- Other numbers carried not up to A. C. specifications are:
- No. 344—14 gauge .....100 feet, \$ 8.50
- No. 44—7mm .....100 feet, 6.25

**PACKARD LIGHTING CABLE.** Lighting cable is constructed of a flexible tinned copper core insulated with two layers of tape and a glazed cotton braid treated with multiple coats of lacquer. Shielded cable has an added wire braid made up of strands of 36 gauge tinned copper. Nos. 6 and 8 gauge used for landing lights, No. 16 gauge used for navigation and miscellaneous lighting, No. 18 gauge for instrument lights.

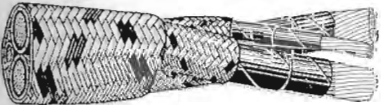


- No. 561— 6 ga., unshielded .....100 feet, \$14.50
- No. 560— 8 ga., unshielded .....100 feet, 9.50
- No. 556—10 ga., unshielded .....100 feet, 7.00
- No. 554—12 ga., unshielded .....100 feet, 5.25
- No. 552—14 ga., unshielded .....100 feet, 4.25
- No. 550—16 ga., unshielded .....100 feet, 3.25
- No. 548—18 ga., unshielded .....100 feet, 2.80



- No. 661— 6 ga., shielded .....100 feet, \$18.50
- No. 660— 8 ga., shielded .....100 feet, 13.50
- No. 656—10 ga., shielded .....100 feet, 10.50
- No. 654—12 ga., shielded .....100 feet, 8.00
- No. 652—14 ga., shielded .....100 feet, 7.00
- No. 650—16 ga., shielded .....100 feet, 6.25
- No. 648—18 ga., shielded .....100 feet, 5.75

**PACKARD COMBINATION LANDING LIGHT CABLE.** Consists of two No. 6 gauge and one No. 16 gauge cables. Used for landing and navigation lights.



- No. 503—Two 6 ga., and one 16 ga., unshielded .....feet, \$0.38
- No. 603—Two 6 ga., and one 16 ga., shielded .....feet, .43 3/4

**PACKARD DUPLEX LIGHTING CABLE.** Two single conductors twisted together with a braid overall treated with lacquer.



- No. 510—16 ga., unshielded .....100 feet, \$ 8.50
- No. 512—18 ga., unshielded .....100 feet, 7.75

**PACKARD CABLE**



- No. 610—16 ga., shielded.....100 feet, \$13.00
- No. 612—18 ga., shielded.....100 feet, 12.00



**PACKARD CABLE ASSORTMENT 5C**

Five spools mounted on a wall type merchandiser board serves as a convenient dispenser as well as a display board. This well chosen assortment is ideal for service hangars and operators' repair stations.

The assortment contains 100 feet each of the following:  
 No. 544—Black.  
 No. 561—6 gauge.  
 No. 510—16 gauge.  
 No. 550—16 gauge.  
 No. 554—12 gauge.  
 Per Assortment, each.....\$40.25

**HOSE CLAMPS**



**WRAPLOCK ALL-PURPOSE CLAMPS:** A specially prepared rust-proofed strip steel and galvanized steel buckle that together make a locking band that neither strain nor vibration can loosen; binds and securely holds any shaped piece, round, square, hexagon, oval or irregular; it's a time saver, easily and quickly to use; each can contains a generous quantity of metal buckles, cotter pins, steel keys and one special ratchet tool; 1/2" wide.

- Shop Service Can (100 feet).....each \$4.00
- Consumer Can (30 feet).....each 2.00



**PUMP HOSE BANDS.** Designed to clamp hose or tubing tightly around pump connection. Made of solid brass and tightened with screw driver. Packed 100 in box and priced per 100.

| Size   | Weight Per 100 | Price Per 100 |
|--------|----------------|---------------|
| 3/4"   | 8 oz.          | \$2.50        |
| 7/8"   | 9 oz.          | 2.50          |
| 1"     | 10 oz.         | 2.50          |
| 1 1/8" | 11 oz.         | 2.50          |
| 1 1/4" | 12 oz.         | 2.50          |
| 1 1/2" | 13 oz.         | 2.50          |
| 1 3/4" | 14 oz.         | 2.50          |
| 2"     | 15 oz.         | 3.00          |
| 2 1/4" | 1 lb.          | 3.00          |
| 2 3/4" | 1 lb.          | 3.00          |

**HOSE CLAMPS**



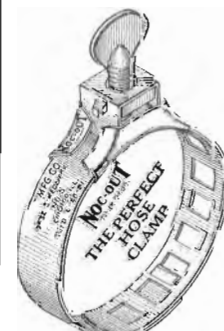
**IDEAL HOSE CLAMPS.** These clamps for years have proved their worth under all conditions of service wherever hose has to be held evenly and where leaks would be fatal. The illustration shows the clamp assembled. The sizes given below are for outside dimension of hose to be fitted and inside dimensions of hose to be fitted. Packed 100 to box.

| Size   | Size Hose Inside Dia. | Price Per 100 |
|--------|-----------------------|---------------|
| 5/8"   | 3/8"                  | \$4.00        |
| 3/4"   | 1/2"                  | 4.00          |
| 7/8"   | 1/2"                  | 4.10          |
| 1"     | 1/2"                  | 4.30          |
| 1 1/8" | 3/4"                  | 4.50          |
| 1 1/4" | 3/4"                  | 4.70          |
| 1 3/8" | 1"                    | 4.90          |
| 1 1/2" | 1"                    | 5.00          |
| 1 5/8" | 1 1/4"                | 5.20          |
| 1 3/4" | 1 1/4"                | 5.40          |
| 1 7/8" | 1 1/2"                | 5.60          |
| 2"     | 1 1/2"                | 5.80          |
| 2 1/8" | 1 3/4"                | 6.00          |
| 2 1/4" | 1 3/4"                | 6.20          |
| 2 3/8" | 2"                    | 6.40          |



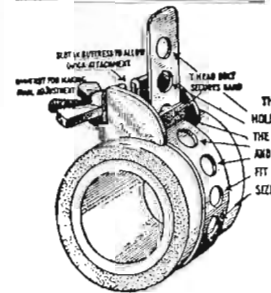
**FITZALL HOSE CLAMPS.** In Fitzall 2 sizes of clamps replace the 25 or more sizes ordinarily needed to fit sizes of hose. Made in one piece from cold-rolled electro galvanized steel that will not kink. Furnished with cadmium plated rust-proof bolt and nut. Smooth edges cannot cut hose. Packed 50 in carton. Fitzall Junior fits hose sizes 3/8" to 1 1/4" outside diameter and Fitzall Senior fits hose sizes 1" to 3".

- Fitzall Juniors .....each \$0.04
- Fitzall Seniors .....each .05



**STANDARD HOSE CLAMPS.** With thumb screw, is rust proof and trouble-proof; makes a tight connection all of the time.

| AN.NO   | Fits   | Hose O.D. | Price Each |
|---------|--------|-----------|------------|
| 745-2A  | 1/2"   | to 1 1/8" | \$0.10     |
| 745-3A  | 1 1/8" | to 1 1/2" | .10        |
| 745-5A  | 1 1/2" | to 2 1/4" | .10        |
| .....1A | 3/4"   | to 1 1/4" | .10        |



**TYPE B STANDARD HOSE CLAMP.** Has wing nut for tightening.  
 AN745-1B  
 Fits Hose O.D.  
 1/2" to 1 1/4"  
 Price each \$0.10



**SAFETY BELTS**

Safety Belts are required by Department of Commerce Regulations for both pilot and passengers. We have contracts with the largest manufacturers of Safety Belts in America, and have taken over distribution and sales rights for safety belts.

We are carrying in stock what we believe is by far the largest and best selected stock of Safety Belts in the country. We have two grades of safety belts to offer, one which we term the Commercial Belt, and the other which is built strictly in accordance with AN specifications.

We are carrying also as regular stock two grades of quick releasing center clasps, one known as the commercial grade which is formed of 3/8 inch metal and which is not heat treated but is cadmium plated. The other clasp is made in accordance with AN Specifications and is made from 1/4 inch metal, heat treated according to specifications and cadmium plated.

Our Commercial Belts, the short belt for pilot, is 41 inches long and the long belt to accommodate two passengers is 57 1/2 inches long. On Government specification belts, Government BP Army Air Corps 074035 the short pilot's belt is 49 3/8 inches over all and the long belt is 59 3/8 inches over all.



**5-INCH SAFETY BELTS.** Made of very strong closely woven cotton web, olive drab in color and five inches in width; leather strap and buckle adjustments; quick release buckle positive action; reinforced by sewing; comfortable.

AN Long, 59 3/8" .....each **\$4.75** Commercial Long, 57 1/2" .....each **\$3.00**  
 AN Short, 49 3/8" .....each **4.25** Commercial Short, 41" .....each **2.75**



**3-INCH SAFETY BELTS, COMMERCIAL.** Made of closely woven grey or olive drab cotton web; sliding buckle adjustment; quick release buckle.

Commercial Long, 57 1/2" .....each **\$2.90** Commercial Short, 41" .....each **\$2.50**



**3-INCH SAFETY BELTS, AN.** Olive drab heavy closely woven cotton webbing; new AN web safety buckle, adjustable sliding buckle, tuck ends finished with metal.

AN Long, 59 3/8" .....each **\$3.20** AN Short, 49 3/8" .....each **\$2.90**

**2-INCH CABIN BELTS.** This is an all web cabin ship safety belt using a snap lock buckle of special design; belt is made with two-tone applique in colors; two lengths, 40 and 50 inches.

40-in. Cabin Belt .....each **\$2.70**  
 50-in. Cabin Belt .....each **3.20**  
**GLIDER SAFETY BELTS** .....each **1.75**

**SAFETY BELT BUCKLES OR CLASPS**



A. N. Specification



A. N. Specification Web Tongue



Commercial Grade

5-inch new A. N. specification, web tongue, cadmium plated, each ..... **\$1.75**  
 5-inch A. N. specification, without web tongue, each ..... **1.25**  
 5-inch commercial, 3/8 or 1/2-inch metal, each ..... **1.00**  
 3-inch new A. N. specification, web tongue, each ..... **1.50**  
 3-inch commercial, each ..... **1.00**  
 2 1/2-inch, made according to A. N. specification but without web tongue, each ..... **1.00**

**AIRCRAFT ENGINE RADIATORS**



N. B. OVERHEAD TYPE

Each  
 N. B. Overhead Type, OX5 or OXX6,  
 New production .....\$20.00  
**J. N. CANUCK OR STANDARD J-I NOSE TYPE**  
 Rome-Turney, new .....\$15.00  
 Rome-Turney, used ..... 10.00  
 Harrison Core, new ..... 10.00  
 Harrison Core, used ..... 8.00  
**Hisso Nose Type, War Surplus, completely tested and repaired before shipping..... 25.00**  
**Hisso Nose Type, War Surplus, repairable..... 10.00**  
 New Production Cartridge Core Radiators, any size or shape. Send us specifications and blue prints and we will quote low prices.

**SHOCK ABSORBER CORD**



**SHOCK CORD.** Manufactured strictly in accordance with AN specifications. Our stock is kept absolutely fresh and guaranteed to be not over 30 days old. Standing orders brings fresh stock every week. Built of fine strands of best quality rubber and protected by 20 gauge thread.

| Size | Per foot lots less than 50 ft. | Per foot 50 feet or more |
|------|--------------------------------|--------------------------|
| 3/8" | <b>\$ .10</b>                  | <b>\$ .08</b>            |
| 1/2" | <b>.14</b>                     | <b>.12</b>               |
| 5/8" | <b>.24</b>                     | <b>.22</b>               |

**RUSCO SHOCK CORD RING**



**RUSCO SHOCK CORD RINGS.** Constructed covering an endless chain of numerous strands the best grade of rubber thread with a two-braided cotton cover. Shock rings are considered superior to any other shocking device, for they are strong enough to withstand the most severe landing shock, yet flexible enough for taxiing.

| Stock No. | Size Cross Section | I. D.  | Each Price |
|-----------|--------------------|--------|------------|
| 9530-A    | 1 1/2"             | 5 3/8" | \$2.80     |
| 8040-A    | 1 1/2"             | 4"     | 1.75       |
| 1037-A    | 1 1/2"             | 3 7/8" | 2.40       |
| 1150-C    | 1 1/2"             | 5"     | 2.74       |
| 1030-CC   | 1 1/2"             | 3"     | 1.85       |
| 9530-C    | 1 1/2"             | 5 3/8" | 2.10       |
| 9740-C    | 1 1/2"             | 7 1/2" | 2.35       |
| 1050-A    | 1 1/2"             | 5"     | 2.17       |
| 8044-A    | 1 1/2"             | 4 1/2" | 1.75       |
| 1080-A    | 1 1/2"             | 8"     | 2.80       |
| 1094-A    | 1 1/2"             | 9 1/2" | 3.20       |
| 8634-CC   | 1 1/2"             | 3 1/2" | 1.45       |

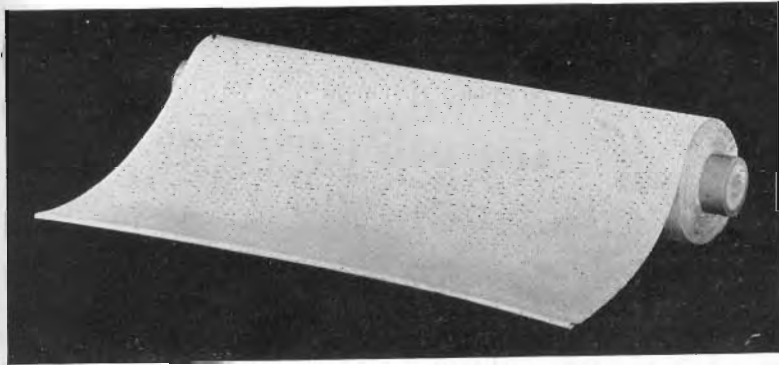
**RUBBER CONTROL GRIPS**



**RUBBER CONTROL GRIPS.** These grips are especially made for a convenient and comfortable hand grip on airplane control sticks. They form not only an insulation, but in cold weather they give protection to the hands.

| No. | Inside Diameter | Price Each    |
|-----|-----------------|---------------|
| 78  | 7/8"            | <b>\$0.35</b> |
| 1   | 1"              | <b>.35</b>    |
| 118 | 1 1/8"          | <b>.30</b>    |

# FLIGHTEX FABRIC



**FLIGHTEX FABRIC.** This is one of the most popular fabrics for airplane coverings. It is used as standard by most of the leading manufacturers, it meets the strict Army-Navy specifications and is guaranteed to be absolutely first-class in every respect by the manufacturers. Flightex Fabric is strong, will withstand severe wear while in use and is light in weight. It is very tightly woven, will absorb only the proper amount of dope and will hold its tautness over a long period of time. Flightex more than meets Air Service specifications in strength, weight and other details. Better material cannot be purchased at any price.

Standard Style "A" Flightex Fabric—

|                             |        |                                     |        |
|-----------------------------|--------|-------------------------------------|--------|
| 36-inch width..... per yard | \$ .50 | Lots 50 yards or more..... per yard | \$ .45 |
| 60-inch width..... per yard | .95    | Lots 50 yards or more..... per yard | .90    |
| 69-inch width..... per yard | 1.50   | Lots 50 yards or more..... per yard | 1.45   |

**FLIGHTEX GLIDER CLOTH.** This is a special light weight cloth as made expressly for use on gliders; it is strong yet light in weight for this particular use: weight 2.15 oz., 36 ins. wide...per yard \$ .25

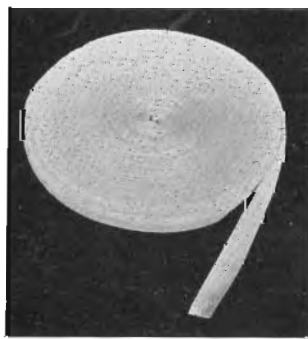
## FLIGHTEX TAPES



Pinked Edge Tape

**PINKED EDGE FLIGHTEX TAPE—**

|                              |         |
|------------------------------|---------|
| 1½ inches wide..... per yard | \$ .03¼ |
| 2 inches wide..... per yard  | .04     |
| 2¼ inches wide..... per yard | .05     |
| 3 inches wide..... per yard  | .06     |
| 3¾ inches wide..... per yard | .08½    |



Reinforcing Tape

**FLIGHTEX REINFORCING TAPE—**

|                             |        |
|-----------------------------|--------|
| ¼ inch..... per gross yards | \$2.20 |
| ⅜ inch..... per gross yards | 2.40   |
| ½ inch..... per gross yards | 2.88   |
| ¾ inch..... per gross yards | 3.60   |
| 1 inch..... per gross yards | 5.60   |

## AIRPLANE FABRICS

# AEROTEX

**AEROTEX AIRPLANE FABRIC.** Our own product and has been developed especially for the commercial aircraft trade. Our entire reputation and facilities are behind Aerotex Fabric. Aerotex is unusually strong and close woven, it will withstand wear and tear to unusual degree and will absorb only the correct amount of dope. It is mercerized and has a beautiful finish both before and after doping. We have thoroughly tested Aerotex on our own ships and found it the equal of any fabric on the market. Manufacturers using large quantities of fabric can materially reduce production costs by adopting Aerotex. We will be glad to forward samples on request, 36 inches in width.

Aerotex Fabric..... per yard **\$0.36**

## AEROTEX TAPE

**AEROTEX TAPE.** Made from same fabric as Aerotex Airplane Cloth; 2¼" wide, scalloped 8 pinks to the inch; put up 100 yards to the roll.

Aerotex Tape..... per yard **\$0.03½**

## COMMERCIAL AERO COTTON

**COMMERCIAL AERO COTTON.** This is a very strong fabric and will stand up under normal conditions and stress. It is especially fitted for commercial planes and is being used by many operators and private owners. It is more economical than the higher priced fabrics and is offered to you with our highest recommendations if you desire a cloth of this grade. Commercial "A" Aero cloth comes in 36-inch width and Commercial "F" in 72-inch width.

Commercial "A" 36-inch wide..... per yard **\$0.32**  
Commercial "F" 72-inch wide..... per yard **.50**

## COMMERCIAL WING TAPES

**COMMERCIAL WING TAPES.** Made from same materials as Commercial Cloth; can be had either plain or scalloped; scalloped is pinked, 8 pinks to the inch; put up in 100-yard rolls.

| Width | Plain—Per Yd. | Scalloped—Per Yd. |
|-------|---------------|-------------------|
| 1½" A | \$6.01¾       | \$0.01¾           |
| 2" A  | .02           | .02               |
| 2¼" A | .02½          | .02½              |
| 2½" A | .03           | .03               |
| 3" A  | .04           | .04               |

**COMMERCIAL GRADE F WING TAPE.** 2¼ inch wide, scalloped..... per yard **\$0.01¾**

## MERCERIZED TWILL TAPE

**MERCERIZED TWILL TAPE.** We have a limited quantity of this special tape but will fill orders as long as this stock lasts. Comes in 100-yard rolls; scalloped 8 pinks to inch.

| Width   | Price per yd. | Per 100-yd. rolls |
|---------|---------------|-------------------|
| 2½ inch | \$0.03        | \$2.50            |
| 3 inch  | .03½          | 3.00              |

## REINFORCING TAPES

|                      |         |
|----------------------|---------|
| ¾ inch..... per yard | \$0.01¾ |
| ½ inch..... per yard | .02     |
| ¾ inch..... per yard | .02½    |

## RIB CORD AND THREADS

**5-cord, left twist, silk finish grey, 1 lb.**  
tubes..... per lb. \$1.50

**¼ left twist, silk finish, fine thread—**  
4,800-yard tubes, grey..... each 3.50  
4,800-yard tubes, black..... each 3.75  
500-yard spools, grey..... each .50

**¾ left twist, silk finish, 6,000-yard tubes..... each 3.25**  
**¾ left twist, hand sewing linen, 1-lb.**  
tubes..... each 4.00

**AN-SPECIFICATION CORD.** Specification No. 16071; cotton cord, special lacing, braided; 1-lb. spools, white..... per lb. **\$2.00**

## SEWING NEEDLES



**Curved Needles—**

|                  |        |
|------------------|--------|
| 3-inch..... each | \$0.08 |
| 4-inch..... each | .08    |
| 5-inch..... each | .08    |

**Straight Needles—**

|                   |        |
|-------------------|--------|
| 10-inch..... each | \$0.10 |
| 12-inch..... each | .10    |
| 14-inch..... each | .15    |
| 16-inch..... each | .15    |

**Package Needles.** No. 2 Sharp's Needles, gold burnished, approximately 1¾ inches long, 25 needles in package..... pkg. \$0.25

**Include sufficient postage with your order. Any overage will be refunded at once.**

**GOVERNMENT STANDARD DOPE AND THINNER**

**Army Corps Spec. No. 3-139**



**NB GOVERNMENT STANDARD DOPE—**

|  |            |               |
|--|------------|---------------|
| 1 gallon cans .....                        | per gallon | <b>\$1.95</b> |
| 5 gallon cans .....                        | per gallon | <b>1.70</b>   |
| 20 gallon cans, put up in 5-gal. cans..... | per gallon | <b>1.60</b>   |
| 30 gallon lots, in steel drums.....        | per gallon | <b>1.30</b>   |
| 50 gallon lots, in steel drums.....        | per gallon | <b>1.30</b>   |

**GOVERNMENT SPECIFICATION THINNER. Highest quality government specification thinner for Nitrate Dope.**

|                            |            |               |
|----------------------------|------------|---------------|
| 1 gallon cans .....        | per gallon | <b>\$1.60</b> |
| 5 gallon cans .....        | per gallon | <b>1.50</b>   |
| 30 or 50 gallon drums..... | per gallon | <b>1.20</b>   |

The above prices include cans and crating. Add \$8.00 for steel drum, which is refunded to you upon return of drum to our St. Louis, Mo., warehouse, freight prepaid.

Remember: Dope can not be shipped parcel post, so please specify freight or express. Express shipments must be in 5-gallon containers.

**NITRATE DOPE AND THINNER**



**CLEAR NITRATE DOPE.** Good quality dope; durable, permanent tautening, penetrating and filling; brushes easy, has smooth finish. One gallon will cover about 90 square feet of surface per coat on an average of 5 coats of dope. Prices include containers and crating. In drum lot an additional charge of \$8.00 per drum will be made, but the amount will be refunded upon return of drum to our ST. LOUIS WAREHOUSE, transportation PREPAID.

Dope cannot be shipped Parcel Post. Express, 1 and 5-gal. cans only freight, 1, 5-gal. cans or steel drums. Please specify which.

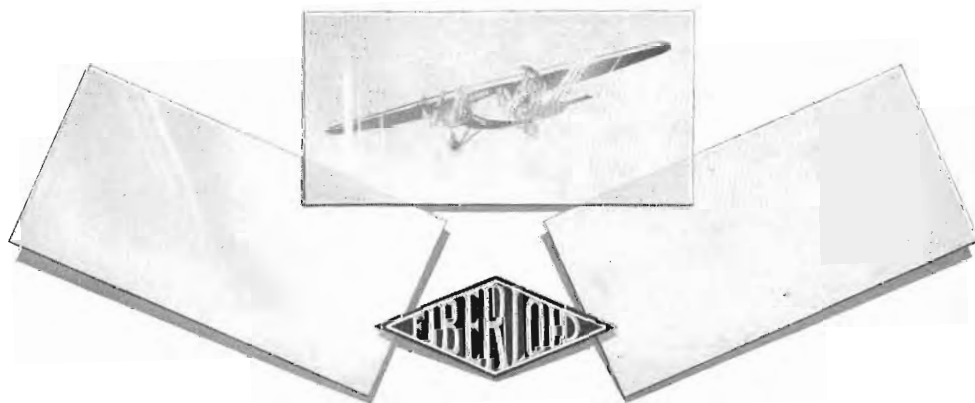
**Clear Nitrate Dope—**

|                                   |          |               |
|-----------------------------------|----------|---------------|
| 1-gal. cans .....                 | per gal. | <b>\$1.50</b> |
| 5-gal. cans .....                 | per gal. | <b>1.45</b>   |
| 20-gal. lots (4 5-gal. cans)..... | per gal. | <b>1.40</b>   |
| 30-gal. steel drum .....          | per gal. | <b>1.15</b>   |
| 50-gal. steel drum .....          | per gal. | <b>1.05</b>   |

**Dope Thinner—**

|                                   |          |               |
|-----------------------------------|----------|---------------|
| 1-gal. cans .....                 | per gal. | <b>\$1.40</b> |
| 5-gal. cans .....                 | per gal. | <b>1.35</b>   |
| 20-gal. lots (4 5-gal. cans)..... | per gal. | <b>1.25</b>   |
| 30-gal. steel drums .....         | per gal. | <b>1.00</b>   |
| 50-gal. steel drums .....         | per gal. | <b>.95</b>    |

**TRANSPARENT WINDSHIELD SHEETING**



**FIBERLOID CRYSTAL CLEAR AIRPLANE SHEETING.** This sheeting was especially developed for airplane work. It is being used by the larger manufacturers in this industry. It is tough but not brittle. Clear and more transparent than usual sheetings. Can easily be cut to size or shape, sews easily, has exceptional stability against weather exposure. Sheet size approximately 21x50 inches in gauges listed below. Sold only in full or 1/2 sheets. We cut only 21x25 inches. We do not cut other sizes. To cut 1/2 sheets a nominal charge of 25c is made.

| Gauge | Approx. Wt. Full Sheet | Price Full Sheet | Approx. Wt. 1/2 Sheet | Price 1/2 Sheet |
|-------|------------------------|------------------|-----------------------|-----------------|
| .040  | 2.27 lbs.              | \$ 4.31          | 1.14 lbs.             | \$2.17          |
| .050  | 2.84 lbs.              | 5.39             | 1.42 lbs.             | 2.70            |
| .060  | 3.22 lbs.              | 6.12             | 1.61 lbs.             | 3.06            |
| .070  | 3.76 lbs.              | 7.14             | 1.88 lbs.             | 3.57            |
| .075  | 4.02 lbs.              | 7.63             | 2.01 lbs.             | 3.82            |
| .080  | 4.29 lbs.              | 8.15             | 2.15 lbs.             | 4.08            |
| .090  | 4.83 lbs.              | 9.17             | 2.42 lbs.             | 4.59            |
| .100  | 5.35 lbs.              | 10.16            | 2.68 lbs.             | 5.08            |
| .110  | 5.89 lbs.              | 11.19            | 2.95 lbs.             | 5.60            |
| .125  | 6.70 lbs.              | 12.73            | 3.35 lbs.             | 6.36            |
| .150  | 8.51 lbs.              | 16.16            | 4.26 lbs.             | 8.08            |

Plus 25c for cutting

FIBERLOID, price per pound.....**\$1.90**

**ALUMINUM POWDER**

For pigmenting dopes, varnishes, paints, etc. Aluminum pigmented dope after it is mixed and allowed to stand for awhile the aluminum settles and when stirred again for use does not mix satisfactorily for use. For this reason it is best to buy clear nitrate dope and aluminum powder and mix as used. The proportions are 1 pound of aluminum powder to 5 gallons of dope.

**Aluminum Powder—**

|                  |         |               |
|------------------|---------|---------------|
| 1-lb. can .....  | per lb. | <b>\$0.95</b> |
| 2-lb. cans ..... | per lb. | <b>.90</b>    |
| 5-lb. cans ..... | per lb. | <b>.85</b>    |
| 10-lb cans ..... | per lb. | <b>.80</b>    |

**VALENTINE'S VALSPAR AERO VARNISH**

|                   |          |               |
|-------------------|----------|---------------|
| 1-gal. cans ..... | per gal. | <b>\$5.50</b> |
| 5-gal. cans ..... | per gal. | <b>5.00</b>   |

**SPAR VARNISH**

|                          |          |               |
|--------------------------|----------|---------------|
| 1-gal. cans .....        | per gal. | <b>\$2.50</b> |
| 5-gal. cans .....        | per gal. | <b>2.25</b>   |
| 30-gal. steel drum ..... | per gal. | <b>1.75</b>   |

**DOPE**

cannot be shipped Parcel Post. 1 and 5-gal. express, 1, 5-gal, and drums freight. Please specify with order.

BERRY BROTHERS PROGRESSIVE AIRCRAFT FINISHES



In co-operation with the Army, the Navy and many progressive airplane manufacturers Berry Brothers' laboratories and practical service men have developed scientifically prepared finishes for all integral parts of aircraft.

Berry Brothers' Aviation Department is equipped with experienced men whose sole duty is that of serving their customers and solving new finishing problems as they may arise. As improved methods of finishing are developed and new and better materials are discovered they are thus equipped to advise our clients.

This age is one of rapid transitions and startling scientific achievements. Believing that the Aircraft Industry is destined to become a mighty factor in the lives of men, Berry Brothers have long been preparing to serve it faithfully and well. This is their pledge and contribution to the advance of Aviation.

**NITRATE WING DOPE.** A first quality government standard wing dope which produces on fabric a taut, well filled, highly flexible coating in a minimum number of coats. Non toxic.

Nitrate Wing Dope—

|          |            |               |
|----------|------------|---------------|
| 1 gallon | per gallon | <b>\$2.10</b> |
| 5 gallon | per gallon | <b>2.00</b>   |
| Drums    | per gallon | <b>1.75</b>   |

**NITRATE DOPE THINNER.** A high grade thinner for wing dope, and can also be used for washing brushes, sprayers, etc.

Nitrate Dope Thinner—

|          |            |               |
|----------|------------|---------------|
| 1 gallon | per gallon | <b>\$1.60</b> |
| 5 gallon | per gallon | <b>1.50</b>   |
| Drums    | per gallon | <b>1.25</b>   |

**BERRYLOID REDUCER.** A special grade of lacquer thinner for mixing with Aircraft Berryloid to reduce the lacquer to spraying consistency. May also be used as a thinner for Nitrate Wing Dope, and can be sprayed over a film of Clear Dope to remove blushing.

Berryloid Reducer—

|                 |            |               |
|-----------------|------------|---------------|
| 1/4 gallon cans | each       | <b>\$ .70</b> |
| 1 gallon cans   | per gallon | <b>2.25</b>   |
| 5 gallon cans   | per gallon | <b>2.15</b>   |
| Drums           | per gallon | <b>2.00</b>   |

**ANTI-BLUSH REDUCER.** Should be mixed with Berryloid Reducer when spraying lacquer under very humid conditions. Use a proportion of one quart of Anti-Blush to one gallon of Berryloid Reducer. A small quantity of Anti-Blush reducer, mixed in Nitrate Wing Dope, will also tend to reduce blushing in humid weather.

Anti-Blush Reducer—

|                 |            |               |
|-----------------|------------|---------------|
| 1/4 gallon cans | each       | <b>\$1.40</b> |
| 1 gallon cans   | per gallon | <b>4.80</b>   |



**AIRCRAFT BERRYLOID.** The well-known aircraft lacquer manufactured by Berry Bros. for use on airplanes. When mixed with Berryloid Reducer to the proper spraying consistency, it makes an ideal finish over suitable primers on all metal surfaces. Before using Aircraft Berryloid on fabric it should be given a proper addition of Plasticizer.

Aircraft Berryloid—

|   |            |               |
|---|------------|---------------|
| Reds, Maroons, Whites and Special Colors— |            |               |
| 1/4 gallon can                            | each       | <b>\$2.25</b> |
| 1 gallon can                              | per gallon | <b>8.25</b>   |
| 5 gallon can                              | per gallon | <b>8.25</b>   |
| Other Standard Colors—                    |            |               |
| 1/4 gallon can                            | each       | <b>\$1.65</b> |
| 1 gallon can                              | per gallon | <b>5.85</b>   |
| 5 gallon can                              | per gallon | <b>5.75</b>   |

**AIRCRAFT BERRYLOID NO. 351.** An ideal vehicle for aluminum or bronze powder. Not more than 1/2 pound of aluminum or 1 pound of gold bronze powder per gallon is recommended.

Aircraft Berryloid No. 351—

|                |            |               |
|----------------|------------|---------------|
| 1/4 gallon can | each       | <b>\$1.15</b> |
| 1 gallon can   | per gallon | <b>3.90</b>   |
| 5 gallon can   | per gallon | <b>3.80</b>   |
| Drums          | per gallon | <b>3.55</b>   |

**AIRCRAFT BERRYLOID ALUMINUM NO. 351.** An aluminum lacquer already prepared with aluminum pigment for spraying on either metal or fabric. The extremely fine grade of aluminum bronze powder used in this material produces a wonderful aluminum finish.

Aircraft Berryloid Aluminum No. 351—

|                 |            |               |
|-----------------|------------|---------------|
| 1/4 gallon cans | each       | <b>\$1.30</b> |
| 1 gallon cans   | per gallon | <b>4.60</b>   |
| 5 gallon cans   | per gallon | <b>4.50</b>   |



**BERRYLOID PIGMENTED DOPES.** Available in several standard colors identical with the same colors in Aircraft Berryloid (lacquer). This is a special grade of pigmented dope manufactured on a secret formula that indeed gives a wonderful finish. This pigmented dope can be brushed or sprayed with the small addition of Berryloid Reducer.

Berryloid Pigmented Dopes—

|                          |            |               |
|--------------------------|------------|---------------|
| Standard Colors—         |            |               |
| 1/4 gallon cans          | each       | <b>\$ .95</b> |
| 1 gallon cans            | per gallon | <b>2.85</b>   |
| 5 gallon cans            | per gallon | <b>2.75</b>   |
| Reds and Special Colors— |            |               |
| 1/4 gallon cans          | each       | <b>\$1.10</b> |
| 1 gallon cans            | per gallon | <b>3.60</b>   |
| 5 gallon cans            | per gallon | <b>3.50</b>   |

**BERRYLOID RED OXIDE PRIMER.** Oil base. Available in Red Oxide, Gray or White. This primer can be brushed or sprayed as it comes in the can, but for best results we recommend the mixture of equal parts of Berryloid Primer, Lionoil Clear and naphtha.

Berryloid Red Oxide Primer—

|                 |            |               |
|-----------------|------------|---------------|
| 1/4 gallon cans | each       | <b>\$ .95</b> |
| 1 gallon cans   | per gallon | <b>3.20</b>   |

**BERRYLOID PLASTICIZER.** Should be mixed, according to directions, with Aircraft Berryloid, when this lacquer is to be used over Nitrate Wing Dope on fabric.

Berryloid Plasticizer—

|                 |            |               |
|-----------------|------------|---------------|
| 1/4 gallon cans | each       | <b>\$1.00</b> |
| 1/2 gallon cans | each       | <b>1.95</b>   |
| 1 gallon cans   | per gallon | <b>3.75</b>   |
| 5 gallon cans   | per gallon | <b>7.15</b>   |

**BERRYLOID SANDING SURFACER.** (Pyroxilin). When the metal surfaces are extremely rough it may be desirable to use a coat of Sanding Surfacers over the primer. This will detract from the elasticity of the finish, however.

Berryloid Sanding Surfacers—

|                 |            |               |
|-----------------|------------|---------------|
| 1/4 gallon cans | each       | <b>\$1.05</b> |
| 1 gallon cans   | per gallon | <b>3.50</b>   |

**REXIT PAINT AND VARNISH REMOVER.** A very active remover and highly recommended where all the paint or lacquer is to be taken off a surface.

Rexit Paint and Varnish Remover—

|                 |            |               |
|-----------------|------------|---------------|
| 1/4 gallon cans | each       | <b>\$ .55</b> |
| 1 gallon cans   | per gallon | <b>1.50</b>   |

**ALUMINUM BRONZE POWDER.** This aluminum bronze powder comes in two grades: Extra Fine Grade and Fine Grade. Highly recommended for use in Nitrate Wing Dope and in Clear Lacquer. One pound of this powder to six gallons of Clear Nitrate Dope makes an excellent aluminum pigmented dope.

Extra Fine Grade Aluminum Powder—

|                             |           |               |
|-----------------------------|-----------|---------------|
| 1 pound                     | per pound | <b>\$1.95</b> |
| 2 pounds                    | per pound | <b>1.85</b>   |
| 10 pounds                   | per pound | <b>1.80</b>   |
| Fine Grade Aluminum Powder— |           |               |
| 1 pound                     | per pound | <b>\$1.50</b> |
| 2 pounds                    | per pound | <b>1.40</b>   |
| 10 pounds                   | per pound | <b>1.35</b>   |

**BERRYLOID RUBBING COMPOUND.** Comes in paste form and is used on a soft rag in bringing up the lustre of Aircraft Berryloid on metal surfaces.

Berryloid Rubbing Compound—

|         |           |               |
|---------|-----------|---------------|
| 1 pound | per pound | <b>\$ .35</b> |
|---------|-----------|---------------|

**SPECIAL GOLD BRONZE POWDER.** A new extra fine grade of gold bronze powder for mixing with Nitrate Wing Dope or Clear Lacquer.

Special Gold Bronze Powder—

|         |           |               |
|---------|-----------|---------------|
| 1 pound | per pound | <b>\$1.75</b> |
|---------|-----------|---------------|

**DOPE PROOF PAINT. White.**

|                 |            |               |
|-----------------|------------|---------------|
| 1/4 gallon cans | each       | <b>\$1.05</b> |
| 1 gallon cans   | per gallon | <b>3.45</b>   |

**ACID PROOF BLACK.**

|                 |            |               |
|-----------------|------------|---------------|
| 1/4 gallon cans | each       | <b>\$ .85</b> |
| 1 gallon cans   | per gallon | <b>2.50</b>   |

**LIONOIL CLEAR AND PRUSSIAN BLUE.** Lionoil Clear is too well known in the aircraft industry to need a description here, as this product is used on practically all commercial airplanes for a primer, as a protection against rust on metal tubing and all metal surfaces and as a sealer and preservative for wood. Lionoil comes in Clear and Prussian Blue. Can be sprayed, brushed or dipped.

Lionoil Clear—

|                        |            |               |
|------------------------|------------|---------------|
| 1/4 gallon cans        | each       | <b>\$ .95</b> |
| 1 gallon cans          | per gallon | <b>3.10</b>   |
| 5 gallon cans          | per gallon | <b>3.05</b>   |
| Drums                  | per gallon | <b>2.90</b>   |
| Lionoil Prussian Blue— |            |               |
| 1/4 gallon cans        | each       | <b>\$ .95</b> |
| 1 gallon cans          | per gallon | <b>3.20</b>   |
| 5 gallon cans          | per gallon | <b>3.15</b>   |
| Drums                  | per gallon | <b>3.00</b>   |

**AIRCRAFT ENAMELS.** Available in several popular shades and can be brushed on, giving excellent results where an oil base exterior enamel is desired. These enamels require 24 hours for drying. Meets Government Standard Specifications.

Aircraft Enamels—

|  |            |               |
|--|------------|---------------|
| Black, Yellow, White, Olive Drab, Insignia Blue, Gray— |            |               |
| 1/4 gallon cans  | each       | <b>\$1.50</b> |
| 1 gallon cans  | per gallon | <b>5.25</b>   |
| 5 gallon cans  | per gallon | <b>5.15</b>   |
| Insignia Red—  |            |               |
| 1/4 gallon cans  | each       | <b>\$1.95</b> |
| 1 gallon cans  | per gallon | <b>7.00</b>   |
| 5 gallon cans  | per gallon | <b>6.90</b>   |

Aluminum—

|                 |            |               |
|-----------------|------------|---------------|
| 1/4 gallon cans | each       | <b>\$1.70</b> |
| 1 gallon cans   | per gallon | <b>6.00</b>   |
| 5 gallon cans   | per gallon | <b>5.90</b>   |

**AIRCRAFT SPAR VARNISH.** Government Specification. Heavy in body and has a good lustre. Dries well over night.

Aircraft Spar Varnish—

|                 |            |               |
|-----------------|------------|---------------|
| 1/4 gallon cans | each       | <b>\$ .90</b> |
| 1 gallon cans   | per gallon | <b>3.00</b>   |
| 5 gallon cans   | per gallon | <b>2.90</b>   |

**EXHAUST STACK BRONZE LIQUID.** A vehicle for aluminum bronze powder; by using 1 1/2 pounds of aluminum bronze powder per gallon. This material should be brushed on to clean exhaust stacks, and the heat of the motor will bake on the aluminum finish.

Exhaust Stack Bronzing Liquid—

|                 |            |               |
|-----------------|------------|---------------|
| 1/4 gallon cans | each       | <b>\$1.15</b> |
| 1 gallon cans   | per gallon | <b>3.85</b>   |

**EXHAUST STACK BLACK.**

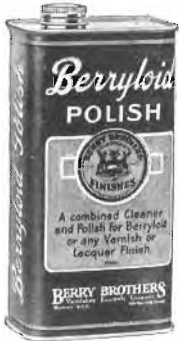
|                 |            |               |
|-----------------|------------|---------------|
| 1/4 gallon cans | each       | <b>\$1.10</b> |
| 1 gallon cans   | per gallon | <b>3.55</b>   |

**BERRY BROS. PRODUCTS**

**INSTRUMENT DULL BLACK LACQUER.** Oil base. Highly recommended for cockpits of all planes used for night flying. This dull black dries quickly and gives absolutely no reflection of light to blind pilot's eyes. Sprays on.

**Instrument Dull Black Lacquer—**

- 1/4 gallon cans.....each **\$ .90**
- 1 gallon cans.....per gallon **6.75**



**BERRYLOID POLISH.** A combined cleaner and polish for any varnish or lacquer finish. Contains no acid or other harmful ingredient and can be used on any varnish, lacquer or baked enamel and removes spots from glass and chromium plate; removes dirt and grease and restores original beauty and lustre to any finish.

- Berryloid Polish—**
- Each
  - Pint cans .....**\$1.00**
  - Quart cans ..... **1.50**
  - Gallons cans ..... **4.20**

**BERRY'S HANDY ANDY TOUCH-UP BLACK.** Here is an enamel of the finest quality; it dries quickly to a smooth glossy black finish; each package has a tight fitting cover with brush attached; brush is large and of good quality; every plane owner and hangar attendant should have one of these Handy Andys to touch up cowlings and other metal surfaces.

Berry's Handy Andy.....per bottle **\$1.00**

**CASEIN GLUE**

**An Easily Prepared, Waterproof Glue.** CASEIN GLUE. In powdered form it has been accepted as standard for aircraft use because of its many features. It is waterproof; it is exceptionally strong; it is easily prepared and very readily applied. Once prepared and applied, it will not absorb moisture nor yield to the most strenuous strains.

The preparation of Casein Glue is simple. You merely add water to the powder until a thick creamy consistency is obtained; then let it stand for 10 minutes and it is ready to use. Once prepared it easily lends itself to the most difficult applications.

Casein Glue is an invaluable shop item; it is inexpensive, yet the finest for aircraft use.

Casein Glue .....per lb. **\$0.40**

**MANIFOLD PAINT**

**ULTRA FUZON.** The extreme heat resisting aluminum Paint. An aluminum powder when mixed with a special liquid, in quantity as needed, and applied to manifolds, exhaust stacks, etc., after heating the liquid evaporates and the chemical reaction causes the aluminum to penetrate below the surface of the metal thereby resulting in a bright aluminum finish which will withstand extreme heats. After exhaustive tests this combination has proved exceptionally satisfactory. Comes in 1, 5 and 10-gallon lots with enough powder of equivalent proportions. To be mixed as used.

- Ultra Fuzon in double containers---**
- 1 gallon.....per gallon **\$3.90**
  - 5 gallon.....per gallon. **3.60**
  - 10 gallon.....per gallon **3.55**

**MASKING AND ADHESIVE TAPES**

Increases production, lowers costs and improves finished job. Applied instantly and removed instantly; gives paint tight edge and leaves clean surface. Flexible tape permits painting designs with curves and angles on flat surfaces; no matter how you curve it, it sticks perfectly without curl.

- Per Roll
- No. 204. Adhesive tape, 1-inch, 50-ft.....**\$ .50**
  - No. 208. Adhesive tape, 4-inch, 100-ft..... **1.35**
  - No. 302. Flexible Adhes. tape, 3/8-in., 50-ft..... **1.10**
  - No. 303. Flexible Adhes. tape, 1 1/2-in., 50-ft..... **1.40**
  - No. 602. Masking Paper, double edge, 6-in., 100-ft..... **1.40**
  - No. 605. Masking Paper, 12-inch, 100-ft..... **1.25**
  - No. 607 Masking Paper, double edge, 12-in., 100-ft. .... **1.50**

**DOPING ACCESSORIES**

**STANDARD DOPE BRUSHES**

This brush is made especially for doping wings and fuselage sections. Same as furnished government departments and many manufacturers.

Made of pure black bristles, extending 4 5/8" out of the metal ferrule. The bristles are 4 1/2" wide and 1 3/4" thick. Brush is made of extra heavy construction. Over all dimension is 12 inches; handle natural finish.

Dope Brush.....each **\$5.00**

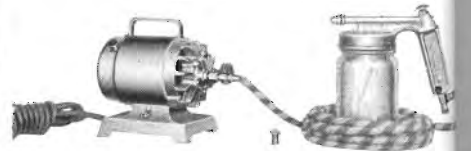


**ARROWHEAD LIQUID CEMENT**

**ARROWHEAD LIQUID CEMENT.** A general purpose liquid Cement that is permanently heat and water-proof. Because of its heat and water-proof qualities, it makes stronger and more durable joints than glue. Gives several times the strength of glue on end-to-end wood joints. For general mending and repairs in the shop or factory, Arrowhead Cement is an unusually wide range of usefulness.

- Price
- 1-oz. bottle ..... **\$ 0.25**
  - 2-oz. bottle ..... **.50**
  - 1/2-pt. can ..... **1.00**
  - 1-pt. can ..... **1.75**
  - 1-qt. can ..... **3.00**
  - 1-gal. can ..... **10.00**

**DEVILBISS ELECTRIC SPRAY OUTFIT**



**DEVILBISS ELECTRIC SPRAYING OUTFIT.** This new power spray outfit will be found very useful in a great many respects; repair jobs or complete new paint jobs; outfit is complete with gun, hose, motor and connection cord; adjustable fan or round; light in weight, compact in size; size jar, 15 feet hose, 10-foot extension cord.

Devilbiss Electric Spray .....each, **\$39.00**

**DEVILBISS SPRAYING OUTFIT**



Here is a complete outfit for spraying the new color lacquers on your ship, plane or automobile lacquer cannot be brushed on, expensive equipment usually required at the factory for production work. Your automobile or your plane received its beautiful factory finish with a spray gun. The method has not only saved millions of dollars, but resulted in finishes not possible by any other method. There are no unsightly brush marks, milled loose hairs with the spray gun method of application.

Type TZ-601—Outfit. Complete .....**\$9.00**

**FINISHES RECOMMENDED FOR VARIOUS SURFACES**

| Parts to be Finished                                | Spray Method   | Brush Method  | Parts to be Finished | Spray Method   | Brush Method  |
|---|--|---|----------------------|--|---|
| Steel Tubing, Inside                                | Lionoil, Clear   | Lionoil, Clear  | Finish for Fabric    | 5 or 6 coats Berryloid Clear Nitrate Dope.   | 4 coats Berryloid Clear Nitrate Dope.   |
| Steel Tubing, Outside                               | Sand Blast<br>1 coat Berryloid Primer, (oil base)<br>1 coat lacquer  | 1 coat Berryloid Primer, (oil base.)<br>1 coat Brushing Lacquer                                       |                      | 2 coats Berryloid Pigmented Dope Reduced for spraying.<br>Light sanding between coats recommended. | 2 coats Berryloid Pigmented Dope or<br>2 coats Berryloid Clear Nitrate Dope.    |
| All-Metal Aircraft, intertor                        | Lionoil Prussian Blue  | Lionoil Prussian Blue   |                      | 1 coat 1/2 pigmented Dope, 1/2 Berryloid Clear Nitrate Dope, 1/2 Berryloid Red.                    | 4 coats Berryloid Semi-Pigmented Dope.  |
| Wooden ribs, spars, etc.                            | 2 coats Lionoil Clear or 1 coat Lionoil, 1 coat Berryspar  | 2 coats Lionoil clear or 1 coat Lionoil, 1 coat Berryspar   | Instrument Boards    | 1 coat Crystallizing Japan (Must be baked in gas oven.)  | 1 coat Berryloid (oil base) Primer.<br>1 coat Instrument Dope Black (oil base). |
| Exterior Finish for All-Metal Planes, Cowling, etc. | 1 coat 1/2 Berryloid Red Oxide Primer (Oil Base), 1/2 naphtha, 1/2 Lionoil. Reduce to spraying consistency. Baked on if impossible 2 coats Aircraft Berryloid or Berryloid Pigmented Dope. | 1 coat Berryloid Primer (Oil Base)<br>2 coats Aircraft Enamel or Brushing Lacquers or Lionoil Colors. | Plywood Clear Finish | 1 coat Lionoil, Clear.<br>2 or 3 coats Berryspar (Sand between coats.)                             | 1 coat Lionoil, Clear.<br>2 or 3 coats Berryspar. (Sand between coats.)         |
| To brighten Finish                                  | Use Berryloid Polish   | Use Berryloid Polish.   | Plywood Color Finish | 1 coat Lionoil Clear<br>2 coats Lionoil Color Enamel<br>1 coat Berryspar.                          | 1 coat Lionoil Clear.<br>2 coats Lionoil Color Enamel<br>1 coat Berry Spar.     |

**MATERIALS FOR HANGAR AND REPAIR SHOPS**

**ALUMINUM WELDING FLUX**



**ALUMINUM WELDING FLUX.** In aluminum welding, a special catalytic flux is required in order to remove the oxide film from the surface of the aluminum. Smith's sheet aluminum flux is an extremely pure flux for this use. Acts as a cleanser, removes impurities and causes the metal to flow freely. Easy to use and does not corrode the metal. Packed in special sealed bottles which contain 1/4 lb. flux.

Aluminum Welding Flux .....per bottle **\$1.75**

**KESTER ACID-CORE SOLDER**



**KESTER ACID-CORE SOLDER.** A handy shop solder, well known and used everywhere. It has been a favorite because of its easy working qualities and its exceptional durability and toughness after being applied.

With the acid core, the usual difficult preparations in the application of chemicals before the soldering work can be started is entirely eliminated. It is just as economical to use in the long run.

Kester Acid-Core Solder—  
 1-lb. spools .....per lb. **\$0.75**  
 5-lb. spools .....per lb. **\$0.70**

**FRICTION TAPE**



**FRICTION TAPE.** As an insulator, friction tape cannot be beat; as a binder, it adheres tenaciously and securely to the smoothest of surfaces and does not curl, tear, or flake; thoroughly impregnated with pure rubber friction, as well as being heavily coated.

Friction Tape—  
 4-oz. rolls .....per roll **\$0.15**  
 8-oz. rolls .....per roll **.30**

**AIRCRAFT PLYWOOD**



**AEROLITE**

**AEROLITE AIRCRAFT PLYWOOD.** The result of extensive experiments and tests carried on by the engineers in order to perfect a waterproof panel for use in aircraft, motor boats, ship and other constructions where waterproof plywood of the highest quality is essential.

The result of these experiments is a plywood greatly exceeding the U. S. Government Aircraft Specifications. The strength, durability, flexibility and water resistance of Aerolite plywood have been repeatedly demonstrated in actual use by the leading airplane and hydroplane manufacturers in this country.

A plywood panel glued with Casein glue and treated by a patented process during the course of manufacture for the purpose of so changing the character of the adhesive used that it becomes insoluble in water. It is made in strict accordance with the U. S. Navy Aircraft plywood specifications. All veneers are selected from clear straight grain stock of uniform thickness.

| BIRCH     |          |             |             |  | MAHOGANY  |          |             |             |  |
|-----------|----------|-------------|-------------|--|-----------|----------|-------------|-------------|--|
| Thickness | No. Plys | Wt. Sq. Ft. | Per Sq. Ft. |  | Thickness | No. Plys | Wt. Sq. Ft. | Per Sq. Ft. |  |
| 3/4"      | 3        | 36x48 only  | \$0.32      |  | 1/2"      | 3        | .22 lbs.    | \$0.32      |  |
| 3/8"      | 3        | .27 lbs.    | .32         |  | 3/8"      | 3        | .29 lbs.    | .32         |  |
| 3/16"     | 3        | .36 lbs.    | .32         |  | 1/4"      | 3        | .37 lbs.    | .32         |  |
| 1/8"      | 3        | .44 lbs.    | .32         |  | 3/16"     | 3        | .46 lbs.    | .35         |  |
| 1/16"     | 3        | .52 lbs.    | .35         |  | 1/8"      | 3        | .54 lbs.    | .36         |  |
| 1/32"     | 3        | .61 lbs.    | .36         |  | 1/16"     | 3        | .77 lbs.    | .38         |  |
| 1/64"     | 5        | .84 lbs.    | .38         |  | 1/32"     | 5        | 1.00 lbs.   | .40         |  |
| 1/128"    | 5        | 1.11 lbs.   | .40         |  |           |          |             |             |  |

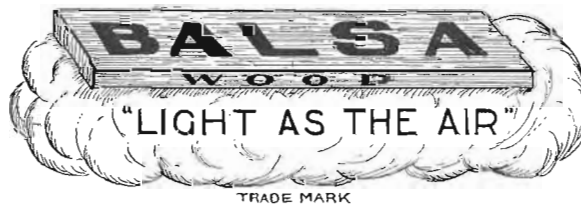
Following sizes carried in stock for immediate delivery.

Note: Sold only in stock size sheets and not cut to special sizes.

|       |       |       |
|-------|-------|-------|
| 24x48 | 36x48 | 48x48 |
| 24x60 | 36x60 | 48x60 |
| 24x72 | 36x72 | 48x72 |
| 24x84 | 36x84 | 48x84 |

We make a nominal crating charge of 5c per sq. ft. for largest size of sheet of your order.

**LATA**



**BALSAL WOOD**

**BALSAL WOOD.** Light weight wood for fairings and model construction. Furnished by us in the plank in thicknesses from approximately two to three inches—widths averaging approximately five to nine inches and lengths approximately five to ten feet. Random pieces we have in stock nearest size you order will be shipped on your order.

Balsa Wood.....per board ft. **\$0.45**

**STEEL WELDING FILLER ROD**



**STEEL WELDING FILLER ROD.** For welding steel tubing, iron, sheet metal, etc., in aircraft. An alloy metal of high character is necessary for use in aircraft work and must be of much higher quality than the ordinary rods used in rough work. This welding material is intended to give maximum strength in very light welds in order to keep down the weight.

Steel Welding Filler Rod—  
 1/8-inch .....per lb. **\$0.15**  
 3/16-inch .....per lb. **.15**  
 Chrome Moly Welding Rod—  
 1/8-inch .....per lb. **.50**  
 3/16-inch .....per lb. **.60**

**ALUMINUM AND BRONZE WELDING ROD**

Aluminum Filler Welding Rod—  
 1/8-inch .....per lb. **\$0.75**  
 Bronze Welding Rod—  
 1/8-inch .....per lb. **.60**

**GRINDING COMPOUND**

**ARICO GRINDING COMPOUND** Cuts quickly. Cuts and polishes in one operation. Easy to clean. Use water or gasoline. Non-rusting. Non-drying. Water mixed. Used by the majority of airplane repair depots, manufacturers, etc. Recognized as one of the most efficient and practical valve grinding compounds obtainable.

Price Each  
 1-oz. tube .....\$0.15  
 4-oz. can ..... .50  
 1-lb. can ..... 1.50

COLD DRAWN SEAMLESS STEEL TUBING



(SHELBY)

COLD DRAWN SEAMLESS STEEL TUBING. Commercial aircraft tubing, 10-20 carbon. Sizes that are shown priced in bold face are carried in stock at Marshall, Missouri, for immediate shipment. Other sizes shipped promptly from our St. Louis warehouse.

Prices are for RANDOM lengths. When tubing is cut to specified lengths a cutting charge of 10% will be added. Boxing or crating will be charged at regular boxing schedule when same is necessary.

| Thickness      | OUTSIDE DIAMETER IN INCHES—PRICED PER FOOT |                      |       |      |       |      |       |      |       |      |      |      |     |         |        |        |        |        |        |        |      |        |        |        |        |        |      |        |      |      |  |  |
|----------------|--|----------------------|-------|------|-------|------|-------|------|-------|------|------|------|-----|---------|--------|--------|--------|--------|--------|--------|------|--------|--------|--------|--------|--------|------|--------|------|------|--|--|
|                | Decimal                                    | B.W.S. and Fractions | 3/16" | 1/4" | 5/16" | 3/8" | 7/16" | 1/2" | 9/16" | 5/8" | 3/4" | 7/8" | 1"  | 1 1/16" | 1 1/4" | 1 1/2" | 1 3/4" | 1 7/8" | 1 5/8" | 1 1/2" | 2"   | 2 1/4" | 2 1/2" | 2 3/4" | 2 1/2" | 2 3/4" | 3"   | 3 1/2" |      |      |  |  |
| .022"          | 24   |                      | .21   | .21  | .20   | .20  | .21   | .21  | .22   | .22  | .23  | .24  | .25 | .27     | .29    |        |        |        |        |        |      |        |        |        |        |        |      |        |      |      |  |  |
| .025"          | 23   |                      | .20   | .20  | .19   | .19  | .19   | .19  | .20   | .20  | .21  | .23  | .24 | .25     | .27    |        |        |        |        |        |      |        |        |        |        |        |      |        |      |      |  |  |
| .028"          | 22   |                      | .19   | .19  | .18   | .17  | .17   | .17  | .18   | .18  | .19  | .20  | .21 | .22     | .25    | .31    | .35    | .37    | .39    | .43    | .46  |        |        |        |        |        |      |        |      |      |  |  |
| .032"          | 21   |                      | .18   | .17  | .17   | .16  | .16   | .16  | .17   | .17  | .18  | .19  | .20 | .21     | .23    | .29    | .33    | .34    | .37    | .40    | .43  |        |        |        |        |        |      |        |      |      |  |  |
| .035"          | 20   |                      | .17   | .15  | .15   | .15  | .15   | .15  | .16   | .16  | .17  | .18  | .19 | .21     | .23    | .29    | .32    | .33    | .35    | .39    | .42  | .45    | .48    | .50    | .54    | .57    | .61  | .65    | .70  |      |  |  |
| .049"          | 18   |                      | .16   | .17  | .17   | .17  | .17   | .17  | .17   | .18  | .19  | .20  | .21 | .23     | .25    | .27    | .28    | .29    | .34    | .36    | .38  | .42    | .43    | .46    | .48    | .53    | .56  | .60    | .68  |      |  |  |
| .065"          | 16   |                      |       | .19  | .19   | .19  | .19   | .19  | .20   | .20  | .21  | .22  | .23 | .25     | .27    | .29    | .30    | .31    | .33    | .35    | .37  | .39    | .41    | .43    | .45    | .49    | .53  | .58    | .63  |      |  |  |
| .083"          | 14   |                      |       | .20  | .20   | .20  | .20   | .20  | .20   | .22  | .23  | .24  | .25 | .27     | .29    | .31    | .32    | .33    | .35    | .38    | .40  | .42    | .44    | .46    | .48    | .50    | .52  | .54    |      |      |  |  |
| .095"          | 13   |                      |       |      |       |      |       | .21  | .23   | .23  | .25  | .26  | .27 | .29     | .31    | .33    | .34    | .35    | .37    | .40    | .42  | .44    | .46    | .48    | .50    | .52    | .54  | .55    | .56  |      |  |  |
| .109"          | 12   |                      |       |      |       | .22  | .22   | .22  | .24   | .24  | .26  | .27  | .28 | .30     | .32    | .34    | .36    | .37    | .39    | .42    | .44  | .46    | .48    | .50    | .52    | .54    | .56  | .58    | .60  |      |  |  |
| .120" or .125" | 11   |                      |       |      |       |      |       | .23  | .25   | .25  | .27  | .28  | .29 | .31     | .33    | .35    | .37    | .39    | .41    | .44    | .46  | .48    | .50    | .52    | .54    | .56    | .58  | .60    | .62  | .64  |  |  |
| .134"          | 10   |                      |       |      |       |      |       | .24  | .26   | .26  | .28  | .29  | .30 | .32     | .34    | .36    | .38    | .40    | .43    | .46    | .48  | .50    | .52    | .54    | .56    | .58    | .60  | .62    | .64  | .66  |  |  |
| .156"          | 9  |                      |       |      |       |      |       |      |       | .30  | .32  | .34  | .36 | .38     | .40    | .42    | .44    | .46    | .49    | .52    | .55  | .57    | .59    | .62    | .65    | .67    | .70  | .73    | .77  |      |  |  |
| .165" or .170" | 8  |                      |       |      |       |      |       |      |       | .32  | .34  | .36  | .38 | .40     | .42    | .44    | .46    | .48    | .51    | .54    | .57  | .60    | .62    | .65    | .68    | .71    | .74  | .78    | .83  |      |  |  |
| .188"          | 7  |                      |       |      |       |      |       |      |       | .34  | .36  | .38  | .40 | .42     | .44    | .46    | .48    | .51    | .54    | .57    | .60  | .63    | .66    | .69    | .72    | .75    | .79  | .83    |      |      |  |  |
| .219"          | 5 1/2                                      |                      |       |      |       |      |       |      |       |      |      | .41  | .44 | .47     | .49    | .52    | .54    | .56    | .60    | .63    | .67  | .71    | .75    | .79    | .83    | .87    | .91  | .95    | .99  | 1.03 |  |  |
| .250"          | 5  |                      |       |      |       |      |       |      |       |      |      | .50  | .53 | .56     | .59    | .62    | .65    | .69    | .73    | .77    | .82  | .87    | .92    | .97    | 1.02   | 1.07   | 1.12 | 1.17   | 1.22 |      |  |  |
| .281"          | 4 3/4                                      |                      |       |      |       |      |       |      |       |      |      |      | .60 | .66     | .69    | .72    | .77    | .82    | .87    | .93    | .99  | 1.06   | 1.11   | 1.17   | 1.23   | 1.29   | 1.35 | 1.41   |      |      |  |  |
| .313"          | 4 1/2                                      |                      |       |      |       |      |       |      |       |      |      |      | .70 | .78     | .81    | .86    | .91    | .97    | 1.05   | 1.12   | 1.19 | 1.26   | 1.33   | 1.40   | 1.47   | 1.54   | 1.61 | 1.69   | 1.78 |      |  |  |
| .375"          | 4  |                      |       |      |       |      |       |      |       |      |      |      | .84 | .90     | .96    | 1.00   | 1.04   | 1.09   | 1.17   | 1.25   | 1.33 | 1.42   | 1.51   | 1.60   | 1.69   | 1.78   | 1.88 | 1.99   | 2.10 |      |  |  |
| .438"          | 3 1/2                                      |                      |       |      |       |      |       |      |       |      |      |      |     | .95     | 1.03   | 1.11   | 1.16   | 1.21   | 1.26   | 1.36   | 1.46 | 1.56   | 1.66   | 1.76   | 1.86   | 1.96   | 2.06 | 2.16   | 2.27 |      |  |  |
| .500"          | 3  |                      |       |      |       |      |       |      |       |      |      |      |     | 1.20    | 1.26   | 1.32   | 1.38   | 1.43   | 1.55   | 1.67   | 1.79 | 1.91   | 2.03   | 2.15   | 2.27   | 2.39   | 2.51 | 2.63   | 2.75 |      |  |  |
| .562"          | 2 3/4                                      |                      |       |      |       |      |       |      |       |      |      |      |     |         | 1.48   | 1.55   | 1.61   | 1.75   | 1.89   | 2.03   | 2.17 | 2.31   | 2.45   | 2.59   | 2.73   | 2.87   | 3.01 | 3.15   | 3.29 |      |  |  |
| .625"          | 2 1/2                                      |                      |       |      |       |      |       |      |       |      |      |      |     |         |        |        |        |        | 1.80   | 1.95   | 2.10 | 2.25   | 2.40   | 2.55   | 2.70   | 2.85   | 3.00 | 3.15   | 3.29 |      |  |  |
| .750"          | 2  |                      |       |      |       |      |       |      |       |      |      |      |     |         |        |        |        |        |        | 2.10   | 2.25 | 2.40   | 2.55   | 2.70   | 2.85   | 3.00   | 3.15 | 3.29   | 3.44 |      |  |  |
| .875"          | 1 3/4                                      |                      |       |      |       |      |       |      |       |      |      |      |     |         |        |        |        |        |        |        |      |        |        |        |        |        |      |        |      |      |  |  |
| 1.000"         | 1  |                      |       |      |       |      |       |      |       |      |      |      |     |         |        |        |        |        |        |        |      |        |        |        |        |        |      |        |      |      |  |  |

20-30 CARBON and CHROME MOLYBDENUM ROUND STEEL TUBING

Prices given in table below are for either 20-30 carbon tubing (government specification No. 57-180-1) or Chrome Molybdenum Steel tubing (government specification No. 57-181-2.)

Prices are for RANDOM LENGTHS; cut to specified lengths additional cutting charge of 10% will be added. Box or crating will be charged at regular boxing schedule when same is necessary.

NOTE: Sizes priced in black face carried in stock at Marshall, Mo., other sizes shipped from St. Louis warehouse promptly.

| Thickness | Outside Diameter in Inches—Priced Per Lineal Foot |                |       |      |       |      |       |      |       |      |      |      |      |         |        |        |        |        |        |        |      |        |        |        |        |        |      |        |      |      |      |
|-----------|---|----------------|-------|------|-------|------|-------|------|-------|------|------|------|------|---------|--------|--------|--------|--------|--------|--------|------|--------|--------|--------|--------|--------|------|--------|------|------|------|
|           | Decimal   | B. W. S. Gauge | 3/16" | 1/4" | 5/16" | 3/8" | 7/16" | 1/2" | 9/16" | 5/8" | 3/4" | 7/8" | 1"   | 1 1/16" | 1 1/4" | 1 1/2" | 1 3/4" | 1 7/8" | 1 5/8" | 1 1/2" | 2"   | 2 1/4" | 2 1/2" | 2 3/4" | 2 1/2" | 2 3/4" | 3"   | 3 1/2" |      |      |      |
| .028      | 22  |                | .27   | .27  | .27   | .27  | .27   | .27  | .29   | .29  | .31  | .33  | .36  | .39     | .42    | .45    | .53    | .57    | .64    | .69    | .75  |        |        |        |        |        |      |        |      |      |      |
| .035      | 20  |                | .27   | .27  | .27   | .27  | .27   | .27  | .29   | .29  | .31  | .33  | .36  | .39     | .42    | .45    | .53    | .57    | .64    | .69    | .75  |        |        |        |        |        |      |        |      |      |      |
| .049      | 18  |                |       |      |       |      |       | .30  | .30   | .33  | .33  | .40  | .43  | .46     | .48    | .53    | .57    | .60    | .64    | .73    | .78  | .82    | .86    | .91    | .96    | 1.02   | 1.10 | 1.20   | 1.32 | 1.46 | 1.50 |
| .065      | 16  |                |       |      |       |      |       | .34  | .42   | .42  | .48  | .52  | .59  | .61     | .64    | .69    | .75    | .81    | .87    | .92    | .96  | 1.04   | 1.08   | 1.13   | 1.20   | 1.26   | 1.31 | 1.38   | 1.46 | 1.54 |      |
| .083      | 14  |                |       |      |       |      |       | .40  | .45   | .45  | .54  | .61  | .69  | .74     | .79    | .84    | .90    | .96    | 1.02   | 1.11   | 1.18 | 1.24   | 1.30   | 1.36   | 1.42   | 1.48   | 1.55 | 1.63   | 1.71 | 1.79 |      |
| .095      | 13  |                |       |      |       |      |       | .42  | .50   | .50  | .57  | .66  | .75  | .83     | .90    | .94    | .98    | 1.04   | 1.12   | 1.20   | 1.24 | 1.32   | 1.38   | 1.46   | 1.52   | 1.60   | 1.66 | 1.73   | 1.81 | 1.88 |      |
| .109      | 12  |                |       |      |       |      |       | .45  | .54   | .54  | .64  | .71  | .81  | .90     | .95    | 1.00   | 1.06   | 1.12   | 1.24   | 1.32   | 1.38 | 1.46   | 1.52   | 1.60   | 1.66   | 1.73   | 1.81 | 1.88   | 1.96 | 2.04 |      |
| .120      | 11  |                |       |      |       |      |       | .47  | .58   | .58  | .67  | .77  | .86  | .96     | 1.02   | 1.08   | 1.15   | 1.24   | 1.33   | 1.42   | 1.48 | 1.56   | 1.65   | 1.75   | 1.84   | 1.94   | 2.04 | 2.14   | 2.24 | 2.34 |      |
| .134      | 10  |                |       |      |       |      |       | .48  | .61   | .61  | .70  | .82  | .90  | 1.02    | 1.10   | 1.18   | 1.25   | 1.34   | 1.44   | 1.52   | 1.63 | 1.72   | 1.82   | 1.92   | 2.02   | 2.12   | 2.22 | 2.32   | 2.42 | 2.52 |      |
| .156      | 9   | 5/32           |       |      |       |      |       |      |       |      | .78  | .92  | 1.05 | 1.14    | 1.22   | 1.32   | 1.42   | 1.52   | 1.62   | 1.73   | 1.85 | 1.98   | 2.10   | 2.22   | 2.34   | 2.46   | 2.58 | 2.70   | 2.82 | 2.94 |      |
| .188      | 8   | 3/16           |       |      |       |      |       |      |       |      | .85  | 1.01 | 1.14 | 1.30    | 1.42   | 1.52   | 1.64   | 1.76   | 1.88   | 2.04   | 2.18 | 2.34   | 2.48   | 2.64   | 2.80   | 2.96   | 3.12 | 3.28   | 3.44 | 3.60 |      |
| .219      | 7   | 7/32           |       |      |       |      |       |      |       |      | 1.11 | 1.25 | 1.46 | 1.64    | 1.80   | 1.96   | 2.12   | 2.28   | 2.44   | 2.64   | 2.78 | 2.92   | 3.12   | 3.26   | 3.46   | 3.60   | 3.78 | 3.96   | 4.14 | 4.32 |      |
| .250      | 6   | 1/4            |       |      |       |      |       |      |       |      |      |      | 1.36 | 1.52    | 1.68   | 1.80   | 1.94   | 2.16   | 2.34   | 2.54   | 2.76 | 2.96   | 3.16   | 3.36   | 3.60   | 3.84   | 4.08 | 4.32   | 4.56 | 4.80 |      |
| .281      | 5   | 9/32           |       |      |       |      |       |      |       |      |      |      |      | 1.80    | 1.90   | 2.16   | 2.38   | 2.60   | 2.80   | 3.04   | 3.26 | 3.48   | 3.72   | 3.96   | 4.20   | 4.44   | 4.68 | 4.92   | 5.16 | 5.40 |      |
| .313      | 4   | 5/16           |       |      |       |      |       |      |       |      |      |      |      |         | 1.88   | 2.12   | 2.40   | 2.65   | 2.92   | 3.10   | 3.30 | 3.60   | 3.78   | 4.02   | 4.30   | 4.56   | 4.80 | 5.04   | 5.28 | 5.52 |      |
| .375      | 3   | 3/8            |       |      |       |      |       |      |       |      |      |      |      |         |        | 2.10   | 2.40   | 2.66   | 2.96   | 3.28   | 3.50 | 3.84   | 4.12   | 4.40   | 4.80   | 5.10   | 5.40 | 5.70   | 6.00 | 6.30 |      |

U. S. ARMY SPECIFICATION NO. 57-180-1; 20-30 CARBON: Physical properties: Yield point, minimum 36,000 lbs. per sq. in.; tensile strength, 55,000 lbs. per sq. in. Elongation, in 2 inches; minimum, 22%. Chemical Properties: Carbon, .20-.30; manganese, .50-.80; phosphorus, maximum, .045; sulphur, maximum, .05.

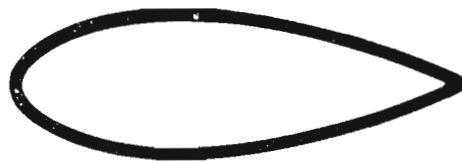
U. S. ARMY SPECIFICATION NO. 57-180-2; CHROME MOLYBDENUM: Physical properties: Yield Point minimum, 60,000 lbs. per sq. inch; tensile strength, minimum, 95,000 lbs. per sq. inch; elongation, in 2 inches, minimum 12%. Chemical Properties: Carbon, .25-.35; manganese, .40-.60; phosphorus, maximum, .04; sulphur, maximum, .045; chromium, .80-1.10; molybdenum, .15-.25.

**KAWNEER STREAMLINE STEEL TUBING**

ELECTRIC WELDED STREAMLINE TUBING.

The four numbers listed below are the more popular sizes as used in this tubing. We can supply other dimensions from factory on special order. This is same kind of tubing we are supplying many aircraft manufacturers. Large stocks carried for immediate shipments. Be sure to specify major and minor axis of tubing.

Minor Axis



Major Axis

| No.  | Size             | Gauge | Per Foot |
|------|------------------|-------|----------|
| 1667 | 1/2 x 1 1/2"     | .031  | \$ .20   |
| 1694 | 63/64 x 2 61/64" | .050  | .40      |
| 1695 | 25/32 x 2 11/32" | .050  | .35      |
| 1727 | 1.325 x 3.445    | .050  | .40      |

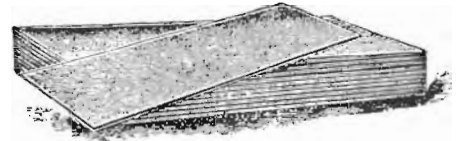
**AN STREAMLINE TUBING**

AN STREAMLINE STEEL TUBING. Chrome Molybdenum or 20-30 carbon. Strictly meets Army-Navy specifications. All sizes not carried in stock, but shipped promptly from our St. Louis warehouse. The round tube size as given in table below is size before tubing is streamlined. The major and minor axis sizes are actual dimension of tubing after streamlined. Random lengths only will be furnished.

| Size in Round Tubing | Gauge | Minor Axis Size | Major Axis Size | Price Per Foot |
|----------------------|-------|-----------------|-----------------|----------------|
| 1                    | 20    | .571"           | 1.349"          | \$0.72         |
| 1 1/8                | 20    | .639"           | 1.534"          | .78            |
| 1 1/4                | 18    | .707"           | 1.697"          | 1.06           |
| 1 1/2                | 20    | .797"           | 1.697"          | .84            |
| 1 3/4                | 18    | .781"           | 1.874"          | 1.14           |
| 2                    | 20    | .781"           | 1.874"          | .94            |
| 2 1/8                | 17    | .854"           | 2.047"          | 1.34           |
| 2 1/4                | 18    | .854"           | 2.047"          | 1.20           |
| 2 3/8                | 16    | .994"           | 2.386"          | 1.74           |
| 2 1/2                | 17    | .994"           | 2.386"          | 1.70           |
| 2 3/4                | 18    | .994"           | 2.386"          | 1.75           |
| 3                    | 16    | 1.136"          | 2.726"          | 1.92           |
| 3 1/8                | 17    | 1.136"          | 2.726"          | 1.90           |
| 3 1/4                | 14    | 1.420"          | 3.406"          | 2.52           |
| 3 3/8                | 16    | 1.420"          | 3.406"          | 2.16           |
| 3 1/2                | 14    | 1.562"          | 3.748"          | 3.00           |
| 3 3/4                | 16    | 1.562"          | 3.748"          | 2.70           |
| 4                    | 13    | 1.174"          | 4.046"          | 3.50           |
| 4 1/8                | 14    | 1.714"          | 4.046"          | 3.75           |



**SHEET ALUMINUM (FLAT)**



SHEET ALUMINUM. Flat, half hard 2S 1/2. Standard air corps specification 57-151. We carry a very large stock of most of the sizes listed below for immediate shipment. Other sizes not in stock can be supplied promptly from warehouse. Crating charge of 5c per square foot on aluminum based on largest sheet of any one shipment.

| Thickness B & S Gauge | Dec. | Size Sheet | Approx. Weight Per Sheet Lbs. | Price Per Lb. |
|-----------------------|------|------------|-------------------------------|---------------|
| 8                     | .128 | 12x72      | 10.87                         | \$0.45        |
|                       |      | 18x72      | 16.30                         | .45           |
|                       |      | 24x72      | 21.74                         | .45           |
| 10                    | .102 | 12x72      | 8.64                          | .46           |
|                       |      | 18x72      | 12.97                         | .46           |
|                       |      | 24x72      | 17.28                         | .46           |
| 11                    | .091 | 12x72      | 7.68                          | .47           |
|                       |      | 18x72      | 11.52                         | .47           |
|                       |      | 24x72      | 15.36                         | .47           |
| 12                    | .081 | 12x72      | 6.84                          | .47           |
|                       |      | 18x72      | 10.26                         | .47           |
|                       |      | 24x72      | 13.68                         | .47           |
| 14                    | .064 | 12x72      | 5.42                          | .47           |
|                       |      | 18x72      | 8.13                          | .47           |
|                       |      | 24x72      | 10.84                         | .47           |
|                       |      | 36x96      | 21.68                         | .47           |
|                       |      | 36x120     | 27.10                         | .47           |
|                       |      | 36x144     | 32.52                         | .47           |
| 16                    | .051 | 12x72      | 4.29                          | .47           |
|                       |      | 18x72      | 6.44                          | .47           |
|                       |      | 24x72      | 8.59                          | .47           |
|                       |      | 36x96      | 17.19                         | .47           |
|                       |      | 36x144     | 25.77                         | .47           |
|                       |      | 42x120     | 25.05                         | .47           |
| 18                    | .040 | 12x72      | 3.41                          | .49           |
|                       |      | 18x72      | 5.12                          | .49           |
|                       |      | 24x72      | 6.82                          | .49           |
| 20                    | .032 | 12x72      | 2.70                          | .49           |
|                       |      | 18x72      | 4.05                          | .49           |
|                       |      | 24x72      | 5.40                          | .49           |
| 22                    | .025 | 12x72      | 2.14                          | .55           |
|                       |      | 18x72      | 3.21                          | .55           |
|                       |      | 24x72      | 4.28                          | .55           |
| 24                    | .020 | 12x72      | 1.70                          | .55           |
|                       |      | 18x72      | 2.55                          | .55           |
|                       |      | 24x72      | 3.39                          | .55           |
| 26                    | .016 | 12x72      | 1.35                          | .70           |
|                       |      | 18x72      | 2.03                          | .70           |
|                       |      | 24x72      | 2.70                          | .70           |
| 28                    | .013 | 12x72      | 1.60                          | .80           |
|                       |      | 18x72      | 2.14                          | .80           |
|                       |      | 24x72      | 2.70                          | .80           |
| 30                    | .010 | 12x72      | 1.69                          | .80           |
|                       |      | 18x72      | 1.36                          | 1.00          |
|                       |      | 24x72      | 1.07                          | 1.26          |

**ALUMINUM TUBING**



| Outside Dia. | Decimal Wall Thickness—Priced per foot |         |        |         |         |        |
|--------------|--|---------|--------|---------|---------|--------|
|              | .022                                   | .028    | .032   | .035    | .049    | .065   |
| 3/8"         | \$0.05                                 |         | \$0.05 | \$0.05  | \$0.06  | \$0.07 |
| 1/2"         |  | .05     | .05    |         | .07 1/2 | .09    |
| 5/8"         | .05 1/2                                | .06     | .06    |         |         |        |
| 3/4"         |  | .07     | .07    | .09     | .09     |        |
| 7/8"         |  | .08     |        | .09     |         |        |
| 1"           | .09                                    |         |        | .09     |         | .14    |
| 1 1/8"       |  | .11     |        |         | .14     | .20    |
| 1 1/4"       |  |         | .13    | .16     | .20     |        |
| 1 1/2"       |  |         | .15    |         | .30     |        |
| 1 3/4"       | .23                                    |         | .17    | .22     | .26     | .34    |
| 2"           |  | .20 1/2 |        | .23 1/2 |         |        |
| 2 1/4"       |  |         |        |         | .30     |        |
| 2 1/2"       |  |         |        |         | .30     |        |
| 2 3/4"       |  |         |        | .26 1/2 | .32     | .40    |
| 3"           |  |         |        | .28     |         |        |
| 3 1/2"       | .30                                    |         |        |         | .38     | .46    |

\*All above sizes are 2SH hard except .032 which is 2SO soft. Stock lengths 10-foot. For cutting to specified lengths a charge of 10 per cent will be made. Minimum cutting charge 10c.

**PITOT TUBING**

PITOT ALUMINUM TUBING. For airspeed indicator, drift indicator installations; 1/4" outside diameter by .018 gauge thickness.....per foot \$0.12

**COILED SHEET ALUMINUM HALF HARD**

| B & S Gauge | Dec. | Width Inches | Approx. Weight Per Lineal Foot, Lbs. | Price Per Lb. |
|-------------|------|--------------|--------------------------------------|---------------|
| 14          | .064 | 12           | .903                                 | \$0.46        |
|             |      | 18           | 1.356                                | .46           |
| 16          | .051 | 12           | .716                                 | .46           |
|             |      | 18           | 1.074                                | .46           |
|             |      | 24           | 1.611                                | .46           |
| 18          | .040 | 12           | .568                                 | .48           |
|             |      | 18           | .853                                 | .48           |
|             |      | 20           | .947                                 | .49           |
|             |      | 24           | 1.136                                | .49           |
| 20          | .032 | 12           | .450                                 | .48           |
|             |      | 18           | .675                                 | .48           |
|             |      | 20           | .750                                 | .49           |
| 22          | .025 | 12           | .357                                 | .48 1/2       |
|             |      | 18           | .535                                 | .48 1/2       |
|             |      | 20           | .595                                 | .50           |
| 24          | .020 | 12           | .284                                 | .49           |
|             |      | 18           | .425                                 | .51           |
|             |      | 20           | .472                                 | .51           |
| 26          | .016 | 12           | .225                                 | .52 1/2       |
|             |      | 18           | .338                                 | .54           |
|             |      | 20           | .378                                 | .54           |
| 28          | .013 | 12           | .178                                 | .52 1/2       |
|             |      | 18           | .267                                 | .54           |
| 30          | .010 | 12           | .141                                 | .56           |
|             |      | 18           | .213                                 | .61           |
|             |      | 20           | .238                                 | .67 1/2       |

**ALUMINUM MATTING**

ALUMINUM MATTING. Studly and durable, an excellent non-slip covering for wing walks, cockpit floors, etc. Lighter and better than rubber or other makeshifts often used for these purposes. Put up in continuous rolls.

Aluminum Matting—

|                                     |        |
|-------------------------------------|--------|
| 10 inches wide.....per running foot | \$ .30 |
| 12 inches wide.....per running foot | .35    |
| 16 inches wide.....per running foot | .50    |

**ALL ORDERS ARE SHIPPED SAME DAY RECEIVED**

**On this service we have built a large list of satisfied customers.**

**Prices Subject to Change Without Notice**



**HIGH CARBON SHEET STEEL**

HIGH CARBON SHEET STEEL. SAE 10-25. Cold rolled, air corps specification 10, 201C or 57-136-3. Standard sheets vary from 12 to 12 1/4 inches wide and run approximately 84 inches long. An extra charge is made of 25c per cut when sheets are cut. Sheet cut across short dimension only. Weights as shown are approximate. Order full sheets where possible to avoid extra charge for cutting.

| B. W. G. | Decimal | Approximate Weight Sq. Ft. | Price per Pound |
|----------|---------|----------------------------|-----------------|
| 24       | .022    | .897                       | \$0.21          |
| 22       | .028    | 1.142                      | .20             |
| 20       | .035    | 1.428                      | .19             |
| 18       | .049    | 2.000                      | .18             |
| 16       | .065    | 2.651                      | .18             |
| 14       | .083    | 3.386                      | .18             |
| .....    | .....   | 3.83                       | .17 1/2         |
| .....    | .....   | 5.10                       | .17 1/2         |
| .....    | .....   | 6.38                       | .17 1/2         |
| .....    | .....   | 7.65                       | .17             |
| .....    | .....   | 10.20                      | .17             |

**CHROME-MOLYBDENUM SHEET STEEL**

CHROME MOLYBDENUM SHEET STEEL. Cold rolled, air corps specification 10,076. Standard sheets vary from 12 to 12 1/4 inches in width and run approximately 72 inches long. An extra charge of 25c is made for cutting. Sheets will be cut across short dimension only.

| B. W. G. | Decimal | Estimated Weight Sq. Ft. | Price Per Pound |
|----------|---------|--------------------------|-----------------|
| 21       | .032    | 1.285                    | \$0.23          |
| 18       | .049    | 2.000                    | .23             |
| 16       | .0625   | 2.651                    | .22             |
| 13       | .095    | 3.73                     | .22             |
| 11       | .120    | 4.46                     | .22             |
| .....    | .....   | 5.10                     | .22             |
| .....    | .....   | 6.38                     | .22             |
| .....    | .....   | 7.65                     | .22             |
| .....    | .....   | 10.20                    | .22             |

**DURAL SHEETING**

We have the following special sizes in Dural sheeting in thickness as listed. These are all in stock for immediate shipment.

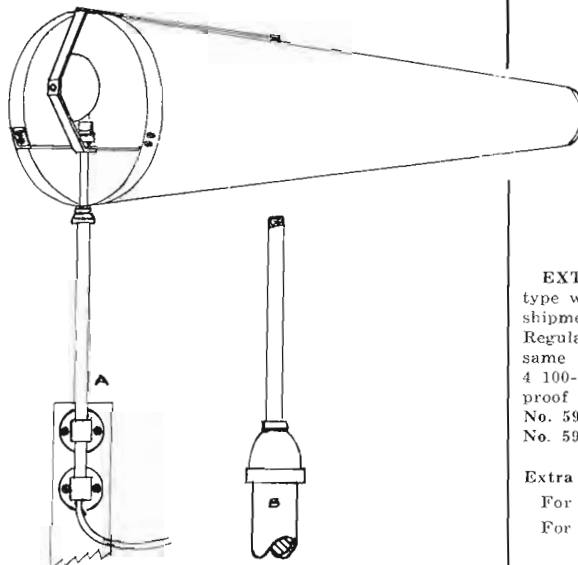
| Gauge | Sizes Inches   | Temper | Price per Sht. |
|-------|----------------|--------|----------------|
| .0126 | 13x76 1/2      | 25 ST  | \$2.18         |
| .020  | 13x77          | 25 ST  | 2.32           |
| .0159 | 13x50 1/2      | 25 ST  | 1.49           |
| .020  | 13x73          | 25 ST  | 3.06           |
| .051  | 3 1/2 x 76 1/2 | 25 ST  | .29            |
| .051  | 14x76 1/2      | 25 ST  | 3.10           |
| .0283 | 3x105          | 25 ST  | .95            |
| .0283 | 3x72           | 25 ST  | .84            |
| .040  | 10x37          | 25 ST  | 1.58           |
| .0742 | 32x76 1/2      | 25 ST  | 7.12           |
| .0254 | 32x60 1/2      | 25 ST  | 5.90           |
| .0453 | 32x86 1/2      | 25 ST  | 16.50          |
| .0359 | 32x23 1/2      | 25 ST  | 3.10           |
| .020  | 13x36          | 25 ST  | 1.45           |
| .032  | 12x76          | 25 SO  | 2.80           |
| .0285 | 12x24 1/2      | 25 SO  | 1.10           |
| .0179 | 12x30          | 25 SO  | .80            |
| .0201 | 12x24 1/2      | 25 SO  | .65            |
| .051  | 12x72          | 2 SO   | 4.36           |
| .0179 | 17x34          | 3 SO   | 1.25           |
| .032  | 8 1/2 x 100    | 3 SO   | 2.55           |
| .032  | 1 1/2 x 34 1/2 | 3 S4   | .15            |
| .032  | 1 1/2 x 30     | 3 S4   | .12            |
| .032  | 1 1/2 x 37     | 3 S4   | .16            |
| .032  | 1 1/2 x 105    | 3 S4   | .45            |
| .032  | 1 1/2 x 72     | 3 S4   | .33            |
| .032  | 1 1/2 x 105    | 3 S4   | .54            |

**DURAL TUBING**

We have the following sizes of tubing in stock for immediate shipment. Random lengths will be shipped nearest length you order.

| Size and Gauge | Temper | Price per foot |
|----------------|--------|----------------|
| 3/8"x.035      | 51 ST  | \$0.11         |
| 3/8"x.035      | 51 ST  | .18            |
| 1/2"x.035      | 51 ST  | .12            |
| 1/2"x.035      | 51 ST  | .15            |
| 3/4"x.035      | 51 ST  | .21            |
| 1"x.049        | 51 ST  | .26            |
| 1 1/2"x.060    | 51 ST  | .30            |

**WIND CONES**



**ELECTRIC WIND CONES.** Either white or orange colored sock; wired for internal lighting; made of closely woven, strong fabric, sewed and built to withstand severe strains; 7 ft. long with 19-inch opening tapering to 6-inch; complete with all metal working parts and hardware for installation.

With White Sock .....each **\$12.00**  
With Orange Sock .....each **15.00**

**EXTRA SOCKS—**  
White .....each **\$4.50**  
Orange .....each **7.00**

**NB COMMERCIAL WIND CONES.** This cone is strongly built of good grade commercial fabric; 7 feet long with opening of 19 inches tapering to 6 inches; complete with all metal working parts for mounting.

With White Sock .....each **\$6.00**  
With Orange Sock .....each **7.50**

**EXTRA SOCKS—**  
White .....each **\$3.00**  
Orange .....each **4.50**

**ROUND EDGE FLAT WIRE**

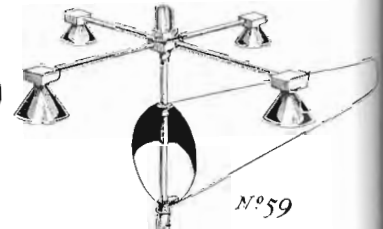
**ROUND EDGE FLAT WIRE.** 1/2 cord cold rolled, commonly known as strip steel; used for making up fittings, wire pulls, angles, etc.

| Width   | Thickness |      | Approx. Wt. per foot | Price per foot |
|---------|-----------|------|----------------------|----------------|
|         | Deci-mal  | Gau. |                      |                |
| 1/4-in. | .035      | 20   | .06                  | \$0.02         |
| 1/4-in. | .065      | 16   | .11                  | .03            |
| 1/4-in. | .095      | 13   | .13                  | .04            |
| 1/4-in. | .125      | 10   | .21                  | .06            |
| 1/4-in. | .065      | 16   | .12                  | .03            |
| 1/4-in. | .035      | 20   | .075                 | .02            |
| 1/4-in. | .065      | 16   | .14                  | .04            |
| 1/4-in. | .095      | 13   | .20                  | .06            |
| 1/4-in. | .125      | 10   | .26                  | .07            |
| 1/4-in. | .035      | 20   | .09                  | .03            |
| 1/4-in. | .049      | 18   | .13                  | .04            |
| 1/4-in. | .065      | 16   | .165                 | .05            |
| 1/4-in. | .095      | 13   | .23                  | .07            |
| 1/4-in. | .125      | 10   | .32                  | .09            |
| 1-in.   | .035      | 20   | .12                  | .03 1/2        |
| 1-in.   | .065      | 16   | .22                  | .06            |
| 1-in.   | .095      | 13   | .313                 | .09            |
| 1-in.   | .125      | 10   | .43                  | .11            |

**For Telephone Orders  
MARSHALL 1400**

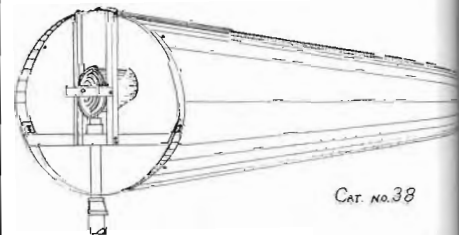
**For Telegram Orders  
USE WESTERN UNION**

**WIND CONES**



**EXTERNALLY LIGHTED WIND CONES.** This type we do not carry in stock but will make upon special order. Meet Dept. of Commerce Airport Regulations. Same colors as Internally lighted cones of same sizes. Complete with all metal working parts, 4 100-watt bulbs, 1 center obstruction light, weather proof units, galvanized fittings and pipe.  
No. 59a, A or B rating .....each **\$45.00**  
No. 59c, C rating .....each **35.00**

**Extra Socks, White or Orange—**  
For 59a .....each **\$15.00**  
For 59c .....each **8.00**



**INTERNALLY LIGHTED WIND CONE.** This cone is made to meet Department of Commerce regulations for Airport Ratings as contained in Bulletin No. 126. Removable sock, double-stitched; can be held either white or orange. Guaranteed surface is wash-proof; genuine Indian head cloth. No. 38a, A or B rating is 12 feet by 36 inches by 12 inches. No. 38c, C rating, is 9 feet by 24 inches by 12 inches. Come complete with all metal working parts and include one 200 watt lamp, tarnish-proof brass mirror and non-fouling arm.

No. 38a, A or B rating .....each **\$30.00**  
No. 38c, C rating .....each **25.00**

**Extra Socks, White or Orange—**  
For 38a .....each **\$15.00**  
For 38c .....each **8.00**

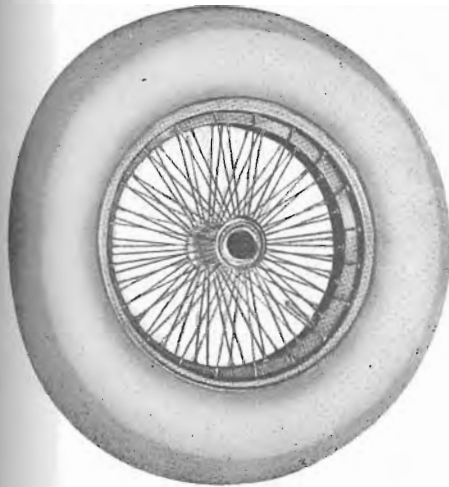
**SPECIAL JUNIOR SIZE.** 100-watt lamp form, otherwise same as above; 7 feet by 24 inches by 6 inches; No. 38d, white or orange.  
Each ..... **\$17.00**

**Extra Socks, White or Orange—**  
For 38d .....each **\$5.00**



**COPPER TUBING**

| Outside Diameter | Gauge | No. ft. to lb. | Price per foot |
|------------------|-------|----------------|----------------|
| 1/2"             | .20   | 26 1/2         | \$0.06         |
| 1/2"             | .20   | 16             | .08            |
| 1/2"             | .20   | 12             | .10            |
| 1/2"             | .20   | 9              | .12            |
| 1/2"             | .20   | 7 1/2          | .14            |
| 1/2"             | .20   | 5 1/2          | .16            |
| 1/2"             | .20   | 4              | .18            |



**AIRCRAFT WIRE WHEELS**

Kelsey-Hayes Wire Aircraft Wheels have proven their leadership through satisfactory service. They are the first landing wheels produced in quantities for the industry. Today a majority of all wheels used for aircraft are Kelsey-Hayes products. New designs and refined construction has kept pace with the exacting aeronautical requirements. A wide range of sizes from 14x3 tail wheels to 36x8 side wheels are listed below, together with tire sizes, hub dimensions, bushings and complete wheel numbers.

We stock the more popular sizes and others can be secured for prompt shipment.

**10x3 TAIL WHEELS**



**THE "MIDGET" 10x3 PNEUMATIC WHEEL.** Complete with Timken bearings. Quality, strength, light weight, simple, easily assembled, durable and streamlined. Made of heat treated alloy by permanent mold process. Rated at 375 lbs. static working load. Alemite-Zerk fitting on axle.

Tail Wheel, 10"x3", with Timken bearings and bolts, each ..... **\$8.80**  
 Standard Axle for 10"x3" wheel with nut and Alemite-Zerk fittings, each..... **1.52**  
 Goodyear 4-ply all-weather tread tire..... **8.65**  
 Goodyear tube, 10"x3", each..... **2.50**

**AIRPLANE WHEEL SPECIFICATIONS AND PRICES BUSHINGS AND PRICES**

| Size of Wheel | Size of Tire | Length of Hub | Diameter of Hub | Bushing No. | Bushing Price | Wheel Part No. | List Price |
|---------------|--------------|---------------|-----------------|-------------|---------------|----------------|------------|
| 14x3          | 14x3 16x4    | 4"            | .627"           | 11856       | \$ 1.25       | 11854          | \$ 20.00   |
| 18x3          | 18x3 20x4    | 5"            | .750"           | 11686       | 5.00          | 11685          | 27.50      |
| 18x3          | 18x3 20x4    | 5"            | 1.000"          | 11070       | 1.25          | 11197          | 25.00      |
| 18x3          | 18x3 20x4    | 5"            | 1.250"          | 11865       | 1.50          | 11864          | 25.00      |
| 24x3          | 24x3 26x4    | 5"            | 1.500"          | 11526       | 1.25          | 11523          | 27.50      |
| 24x3          | 24x3 26x4    | 5"            | 1.500"          | 12225-6     | 1.50          | 12222          | 35.00      |
| 24x3          | 24x3 26x4    | 5"            | 1.500"          | 11246       | 2.00          | 12612          | 35.00      |
| 24x3          | 24x3 26x4    | 5"            | 1.500"          | 11246       | 2.00          | 13151          | 35.00      |
| 24x3          | 24x3 26x4    | 6"            | 1.500"          | 11526       | 1.25          | 55006          | 27.50      |
| 24x3          | 24x3 26x4    | 5"            | 1.500"          | 11526       | 1.25          | 55007          | 27.50      |
| 24x4          | 24x4 26x5    | 5"            | 1.392"          | 11246       | 1.50          | 12466          | 25.00      |
| 24x4          | 24x4 26x5    | 5"            | 1.500"          | 11645-6     | 2.00          | 12603          | 35.00      |
| 24x4          | 24x4 26x5    | 6"            | 1.500"          | 11526       | 1.25          | 13304          | 25.00      |
| 24x4          | 24x4 26x5    | 6"            | 1.500"          | 11526       | 1.25          | 55000          | 25.00      |
| 24x4          | 24x4 26x5    | 5"            | 1.375"          | 55014       | 1.50          | 55013          | 30.00      |
| 24x4          | 24x4 26x5    | 5"            | 1.500"          | 11526       | 1.25          | 55015          | 25.00      |
| 24x4          | 24x4 26x5    | 5"            | 1.508"          | 11526       | 1.25          | 55019          | 25.00      |
| 26x4 Cl.      | 26x4         | 6"            | 1.500"          | 11246       | 2.00          | 11258          | 20.00      |
| 26x4 Cl.      | 26x4         | 6"            | 1.500"          | 11246       | 2.00          | 11679          | 20.00      |
| 26x4 Cl.      | 26x4         | 6"            | 1.500"          | 11246       | 2.00          | 13303          | 22.00      |
| 26x4 Cl.      | 26x4         | 6"            | 1.500"          | 86305       | .50           | 86002          | 11.00      |
| 28x4          | 28x4 30x5    | 6"            | 1.500"          | 11246       | 2.00          | 11243          | 30.00      |
| 28x4          | 28x4 30x5    | 7 1/4"        | 2.197"          | 86356       | 3.00          | 11327          | 36.00      |
| 28x4          | 28x4 30x5    | 6"            | 1.750"          | 11539-40    | 2.50          | 11560          | 45.00      |
| 28x4          | 28x4 30x5    | 6"            | 1.500"          | 11646-45    | 2.00          | 11674          | 35.00      |
| 28x4          | 28x4 30x5    | 6"            | 1.750"          |             |               | 11817          | 80.00      |
| 28x4          | 28x4 30x5    | 6"            | 1.690"          | 11058       | 3.00          | 11054          | 40.00      |
| 28x4          | 28x4 30x5    | 6"            | 1.500"          | 11246       | 2.00          | 13153          | 35.00      |
| 30x5          | 30x5 32x6    | 6"            | 1.500"          | 11714       | 3.00          | 11711          | 40.00      |
| 30x5          | 30x5 32x6    | 7"            | 1.750"          | 11053       | 3.00          | 11050          | 40.00      |
| 30x5          | 30x5 32x6    | 6"            | 1.750"          | 86356       | 2.50          | 11678          | 40.00      |
| 30x5          | 30x5 32x6    | 7 1/4"        | 2.197"          | 11053       | 3.00          | 11575          | 40.00      |
| 30x5          | 30x5 32x6    | 7 1/4"        | 2.197"          | 86309       | 3.00          | 11048          | 36.00      |
| 30x5          | 30x5 32x6    | 7 1/4"        | 2.197"          | 86356       | 3.00          | 11693          | 37.50      |
| 30x5          | 30x5 32x6    | 6"            | 1.750"          | 11053       | 3.00          | 13152          | 40.00      |
| 30x5 Obs.     | 30x5         | 6.580"        | 2.020"          | 86307-8     | 3.00          | 11670          | 60.00      |
| 32x6          | 32x6 36x8    | 7 1/4"        | 2.197"          | 86356       | 3.00          | 86007          | 67.50      |
| 32x6          | 32x6 36x8    | 7 1/4"        | 2.197"          | 86356       | 3.00          | 86367          | 45.00      |
| 36x8          | 36x8 40x10   | 7 1/4"        | 2.502"          | 11606       | 12.50         | 11603          | 125.00     |
| 36x8          | 36x8 40x10   | 7 1/4"        | 2.178"          |             |               | 86364          | 67.50      |
| 36x8          | 36x8 40x10   | 7 1/4"        | 2.197"          |             |               | 86365          | 67.50      |
| 36x8          | 36x8 40x10   | 7 1/4"        | 2.697"          |             |               | 86366          | 67.50      |
| 36x8          | 36x8 40x10   | 7 1/4"        | 2.627"          | 55017       | 7.50          | 55018          | 125.00     |

**"DWARF" PNEUMATIC WHEEL**

**"DWARF" PNEUMATIC WHEEL.** The sturdy wheel for larger ships; designed for either 14x3 or 16x4 tires; simple construction, the two halves of wheel are bolted together, easily mounted inside the casing; materials are of heat-treated alloy; rated working load 800 pounds; axle diameter 3/4 inch; width inside fork 4 1/4 inches.

Wheel only, weight 5.32 lbs.....each **\$18.00**  
 Axle with Alemite Connection.....each **1.52**

**FORMICA TAIL WHEELS**



**FORMICA MOLDED TAIL WHEELS.** Made from a laminated fabric base material that is particularly well suited to withstand the severe service to which tail wheels are subjected. They are lighter and stronger, weight and size considered, than any other type of tail wheel. Fitted with a self-lubricating bearing. Weight approximately 3 pounds.

Formica Tail Wheel, each..... **\$5.30**

**SPOKES AND NIPPLES**

|                         |                        |
|-------------------------|------------------------|
| 14x3.....               | Spokes 10c; Nipples 5c |
| 18x3.....               | Spokes 10c; Nipples 5c |
| 24x3.....               | Spokes 10c; Nipples 5c |
| 24x4.....               | Spokes 10c; Nipples 5c |
| 26x4 Cl.....            | Spokes 10c; Nipples 5c |
| 28x4.....               | Spokes 10c; Nipples 5c |
| 30x5.....               | Spokes 10c; Nipples 5c |
| 32x6.....               | Spokes 10c; Nipples 5c |
| 36x8.....               | Spokes 10c; Nipples 5c |
| 750mm.x125mm. D. H..... | Spokes 10c; Nipples 5c |

**D. H. WHEEL ADAPTERS**

750mm.x125mm. D. H. Wheel Adapters to convert 26x4, 1 1/2-inch axle to take D. H. Wheels  
 per set..... **\$2.75**

**We Can Supply**

**WRIGHT and WARNER**

**Engine Parts---See Page 60**

**MISCELLANEOUS WHEELS AND PARTS**

|   |               |
|---|---------------|
| 750mm.x125mm. D. H. Wheels, each.....           | <b>\$7.50</b> |
| 750mm.x125mm. D. H. Wheel Axle Caps, each.....  | <b>.75</b>    |
| 750mm.x125mm. D. H. Hub Bushings, each.....     | <b>\$1.50</b> |
| 750mm.x125mm. D. H. Wheel Axle Washers, ea..... | <b>.25</b>    |
| 26x4 Wheel Axle Washers, each.....              | <b>.10</b>    |
| 26x4 Wheel Axle Cap.....                        | <b>.25</b>    |

GOODYEAR AIRWHEELS



GOODYEAR AIRWHEELS are the result of nearly two years' pioneering, experimenting and painstaking development. They have been subjected to nearly every conceivable test on airplanes throughout the country. They are constructed to take better care of the tire problems of the airplane, are large air-volume tires with no rims, discs or spokes to collapse in the event of severe or abrupt contact with the ground.

With GOODYEAR AIRWHEELS it is difficult in many cases to tell just when ground contact takes place, as the action is soft, easy and cushion-like. Wear and tear on planes is reduced to a minimum. Airport managers are enthusiastic in their approval for the reason that maintenance costs to landing fields are greatly reduced. Fields are not subjected to the rough treatment that comes from high pressure tires.

Ground looping lessened because Airwheels materially lessen the possibility of a plane starting a ground loop. However, should one occur the possibility of a wheel collapse is eliminated. Take-offs and landings are made with absolute safety under conditions which would make it dangerous or impossible to operate ordinary tires. The Goodyear Airwheel is practically a shock absorber in itself; punctures cause no worry; land easily in rough or muddy fields.

Operates on extremely low air pressure; do not build up drag of ship; in many instances lighter in weight than high pressure equipment; approved by the government; guaranteed performance by the manufacturer. With use of replacement sleeves, can be installed on planes which now have high pressure tires. Below is complete list both with and without brake assembly.

| Size           | Tire     | Tube    | Hub      | Non-Br. Assembly | Brake   | Br. Assembly |
|----------------|----------|---------|----------|------------------|---------|--------------|
| 12x 5-3        | \$ 27.45 | \$ 5.75 | \$ 13.90 | \$ 47.10         |         |              |
| 16x 7-3        | 31.25    | 5.95    | 17.75    | 54.95            |         |              |
| 20x 9-4        | 34.70    | 6.65    | 23.45    | 64.80            | \$42.50 | \$107.30     |
| 22x10-4        | 38.20    | 7.30    | 29.50    | 75.00            | 42.50   | 117.50       |
| 25x11-4        | 45.55    | 8.90    | 29.50    | 83.95            | 42.50   | 126.45       |
| 26x11-6        | 58.60    | 10.20   | 44.55    | 113.35           | 52.50   | 165.85       |
| 30x13-6        | 78.80    | 13.10   | 59.80    | 151.70           | 52.50   | 204.20       |
| 35x15-6        | 105.15   | 16.05   | 59.80    | 181.00           | 52.50   | 233.50       |
| 37x16-8        | 143.00   | 17.50   | 109.45   | 269.95           | 67.50   | 337.45       |
| 46x20-10       |          |         |          | 377.75           | 87.50   | 465.25       |
| 16x 7-3 Glider | 21.30    | 5.95    | 15.50    | 42.75            |         |              |

GOODYEAR AIRWHEEL SLEEVES

Following is price list of sleeves for change-over installation of present high pressure equipment to the Goodyear Airwheel equipment.

SLEEVES for installing 20x9-4, 22x10-4 or 25x11-4 Airwheels on—

|             |      |        |
|-------------|------|--------|
| 1 3/8" axle | each | \$5.80 |
| 1 1/2" axle | each | 5.80   |
| 1 5/8" axle | each | 5.80   |
| 1 3/4" axle | each | 5.80   |

SLEEVES for installing 26x11-6 Airwheel on—

|             |      |        |
|-------------|------|--------|
| 1 1/2" axle | each | \$6.65 |
| 1 3/8" axle | each | 6.65   |
| 1 3/4" axle | each | 6.65   |

(Not carried in stock, supplied on prompt shipment)

TAIL AND GLIDER WHEELS

|                             |      |         |
|-----------------------------|------|---------|
| 6x2.5 sponge or hard rubber | each | \$13.00 |
| 10x3 Tail Wheel             | each | 10.00   |
| 14x3 Tail Wheel             | each | 14.00   |
| 500-3 Tail Wheel            | each | 10.00   |
| 500-4 Tail Wheel            | each | 10.00   |
| 700-4 Tail Wheel, heavy     | each | 25.00   |
| 700-4 Glider, light         | each | 10.00   |

GOODYEAR AIRWHEELS FOR GLIDERS



The Goodyear Company has carried the development of their Airwheels installation on gliders. The one size, 16x7 with 3-inch hub has proved extremely satisfactory in Glider service as it considerably simplifies an installation. There are no moving parts in the landing gear itself and the extremely low air pressure provides a cushion and stroke on deflection of the tire under load which provides a pleasant and safe landing. The tires are sturdy and there is no possibility of wheel breakage. The tire weighs 4 1/4 lbs.; tube, 1 1/2 lbs.; and hub 2 lbs.; total 7 3/4 lbs. The diameter of the axle is 1 1/4 inches. Inflated with 4 pounds air pressure the tire will carry load per tire of 295 lbs. For each additional pound air pressure up to 10 pounds each tire will carry approximately an additional 10 pounds load.

| Size          | Tire    | Tube   | Hub     | Assembly |
|---------------|---------|--------|---------|----------|
| 16x7-3 Glider | \$21.30 | \$5.95 | \$15.50 | \$42.50  |

GOODYEAR AIRWHEEL VALVES

| Airwheel Size | Valve No. | Price Each |
|---------------|-----------|------------|
| 12x 5-3       | 6555      | \$1.10     |
| 16x 7-3       | 6556      | 1.10       |
| 20x 9-4       | 6556      | 1.10       |
| 22x10-4       | 6556      | 1.10       |
| 25x11-4       | 6556      | 1.10       |
| 26x11-6       | 6557      | 1.10       |
| 30x13-6       | 6557      | 1.10       |
| 35x15-6       | 6557      | 1.10       |
| 37x16-8       | 6557      | 1.10       |
| 46x20-10      | 6557      | 1.10       |

(Not carried in stock, supplied on prompt shipment.)

WHEELS FOR NEW LOW PRESSURE TIRES  
CAST ALUMINUM



|                         |          |          |
|-------------------------|----------|----------|
| 650-10 wheel and brake  | per pair | \$115.00 |
| 650-10 wheel less brake | per pair | 65.00    |
| 850-10 wheel and brake  | per pair | 130.00   |
| 850-10 wheel less brake | per pair | 77.50    |
| 950-12 wheel and brake  | per pair | 182.00   |
| 950-12 wheel less brake | per pair | 105.00   |

# Firestone

Gum Dipped

## TIRES AND TUBES FOR AIRCRAFT

Firestone engineers have developed the famous Firestone Gum-Dipped process for aircraft use. Many sizes in both plain and non-skid treads are available. Careful study has been given to produce tires that will meet all aeronautical requirements. Specially designed, they will withstand heavy impact loads on rough landings. Treads high in tensile strength and resistance to abrasion has been developed to withstand sudden rotation action upon plane landing.



| Size                 | Type | Plies | Cases   |          | Tubes   |
|----------------------|------|-------|---------|----------|---------|
|                      |      |       | Plain   | Non-Skid |         |
| 10x3                 | SS   | 4     |         | \$ 8.50  | \$ 2.50 |
| 14x3                 | DC   | 4     |         | 8.16     | 2.30    |
| 18x3                 | DC   | 4     | \$ 7.86 |          | 1.95    |
| 24x3                 | DC   | 4     | 8.82    |          | 2.00    |
| 24x3                 | CL   | 4     | 9.30    |          | 2.10    |
| 16x4                 | DC   | 4     |         | 9.30     | 1.85    |
| 20x4                 | DC   | 4     |         | 10.00    | 2.00    |
| 24x4                 | DC   | 4     | 10.30   | 10.30    | 2.20    |
| 26x4                 | CL   | 4     | 10.60   | 10.60    | 2.25    |
| 26x4                 | DC   | 4     | 11.75   | 11.75    | 2.25    |
| 28x4                 | DC   | 4     | 13.10   |          | 2.40    |
| 26x5                 | DC   | 4     | 13.75   |          | 2.65    |
| 30x5                 | DC   | 4     | 15.45   | 15.45    | 2.80    |
| 32x6                 | DC   | 4     | 20.85   | 20.80    | 4.35    |
| 32x6 H. D.           | DC   | 6     | 26.45   |          | 4.35    |
| 36x8                 | DC   | 6     | 37.50   | 37.50    | 7.00    |
| 36x8 H. D.           | DC   | 8     | 45.30   |          | 7.00    |
| 40x10                | DC   | 8     | 63.06   | 63.06    | 10.60   |
| 44x10                | DC   | 8     | 78.30   | 78.30    | 12.35   |
| 44x10 H. D.          | DC   | 10    |         | 90.65    | 12.35   |
| 44x10 H. D. Ext. Ply | DC   | 12    | 103.00  |          | 12.35   |
| 750x125MM            | CL   | 4     | 15.90   |          | 3.70    |

## FIRESTONE LOW PRESSURE TIRES



| Size             | Type | Cases   | Tubes  |
|------------------|------|---------|--------|
| 5.00-4 Tail Tire | SS   | \$12.70 | \$4.55 |
| 7.00-4 Tail Tire | SS   | 19.80   | 6.05   |
| 6.50-10          | SS   | 19.05   | 6.00   |
| 7.50-10          | SS   | 19.95   | 6.66   |
| 8.50-10          | SS   | 22.85   | 7.50   |
| 7.00-4 Glider    | SS   | 17.70   | 6.05   |

## TERMINALS AND PROTECTORS



RAJAH SAFETY NIPPLES. Made of flexible rubber that will stretch over the terminal and insulator of any spark plug, making a water-tight job. Rajah Safety Nipples.....each \$0.12



RAJAH THRUST CLIP TERMINALS. Fits over thumb screw of spark plugs; all plugs will take this clip terminal. Rajah Thrust Clip Terminals.....each \$0.10



RAJAH LOCK CLIP TERMINAL. Thrust clip on top of which is riveted a steel spring; snaps off or on instantly; positive lock, will not loosen or pull off. Rajah Lock Clip Terminal.....each \$0.15



CONNECTICUT SAFETY AIRPLANE TERMINAL. Used as standard equipment by many airplane manufacturers; incorporates the famous Connecticut safety spring clip as illustrated; insulating sleeve made of bakelite dielec insuring positive insulation; made with groove at end of sleeve for attaching flexible shielding for eliminating radio interference. Connecticut Terminals.....each \$0.40

## MISCELLANEOUS TIRES—TUBES

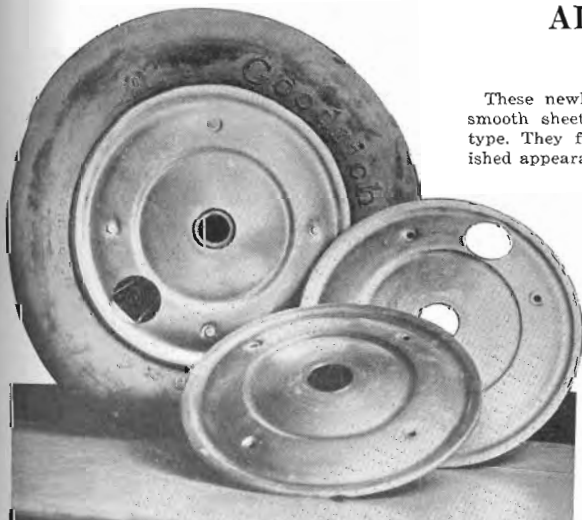
|   |         |
|---|---------|
| 30x5 NB Tubes, each.....                            | \$ 1.80 |
| 30x5 Goodrich Silvertown Cord Tires, each.....      | 11.75   |
| 750mm.x125mm. D. H. Tubes, each.....                | 1.50    |
| 750mm.x125mm. D. H. Tubes, Goodrich, each.....      | 2.00    |
| 36x8 SS. Tires, each, new.....                      | 4.75    |
| 32x6 SS. Tires, each, new.....                      | 12.50   |
| 21x4 NB Tubes, this tube fits 20x3 tires, each..... | 1.50    |

## ALUMINUM WHEEL STREAMLINES

These newly designed streamline discs are made from smooth sheet aluminum and are of the strong arched type. They fit snugly and tight and make a neat finished appearance to your wheels.

Made solid or one disc can be had with cut out valve stem hole; recesses punched in discs to fit bolts properly. Prices are each disc and do not include bolts, nuts and washers for attaching.

| Size                              | Per Disc. |
|-----------------------------------|-----------|
| 18x3                              | \$1.40    |
| 20x4                              | 1.40      |
| 24x3                              | 1.40      |
| 26x4                              | 1.40      |
| 28x4                              | 1.60      |
| 30x5 offset                       | 1.70      |
| 30x5 drop center rims.....        | 1.70      |
| 32x6                              | 2.30      |
| 750mmx125mm DH Clincher type..... | 1.60      |



For Quicker Service Telephone or Telegraph Us.  
MARSHALL 1400--PHONE OR WESTERN UNION

**AIR SPEED INDICATORS**



**PIONEER AIR SPEED INDICATOR, TYPE 354.** Shows the speed corresponding to the pressure produced by a Pitot-static tube, which requires no calibration and may be interchanged with other air speed indicators. Made in two sizes: Type 354, 2 1/4 inch dial, weighs 0.6 pounds; and Cabin size Type 359, with 6-inch dial.

|  |                |
|--|----------------|
| Type 354, 0-60 MPH.....each                | <b>\$60.00</b> |
| 0-120, 0-140, 0-160, or 0-200 MPH.....each | <b>40.00</b>   |
| 0-250 or 0-350 MPH.....each                | <b>60.00</b>   |
| Type 359, Giant, 0-160 MPH.....each        | <b>75.00</b>   |



**CONSOLIDATED TYPE A AIR SPEED INDICATOR.** Pitot Static type. Conforms with Army and Navy Air Services specification. Case is a special aluminum die casting. Metal diaphragm. Actuating mechanism of non-corrosive materials. Standard range 0-160 m. p. h. Complete with Pitot Static tube. Weight 10 ozs.....each **\$35.00**



**CONSOLIDATED TYPE N AIR SPEED INDICATOR.** New design, developed especially for U. S. Navy. Movements Army and Navy Air Services standard. Non-corrosive Bakelite case. Complete with Pitot Static tube. Dial 2 1/4" in diameter. Standard range 0-160 m. p. h. Weight 8 ozs.....each **\$35.00**



**ELGIN TYPE SA AIR SPEED INDICATOR.** Presented to fill the need for a reliable, responsive and vibration proof instrument to measure air speed accurately. Designed to operate upon the differential pressure generated by any Pitot-Static tube. Diaphragm is special design to afford very sensitive response to change of air speed. Zero point at the bottom of the dial, figures large and easily read. Case is of reinforced phenolic composition and equipped with tube fittings and conforms to Army-Navy standard dimensions. Registers naught to 160 miles per hour.

Elgin Type SA Air Speed Indicator.....each **\$45.00**

**AIR SPEED INDICATORS**



**STRUT TYPE AIR SPEED INDICATOR.** Attaches to the outer front wing strut, half way between the wings. No other attachments, tubing, or connections are necessary. The device acts on the pressure plate principle, and the scale is large enough to be read by all occupants of the plane. The instrument is also within your range of vision as you land. Made from phosphor bronze and aluminum, non-corrosive and durable. Process printed scale. Finely finished. Weight complete 9 ozs.....each **\$10.00**

**AIR DISTANCE RECORDERS**



**PIONEER TYPE 351 AIR DISTANCE RECORDERS.** Supplied in cases which interchanges with other instruments of regular series; radium illuminated; air distance is the yard stick by which the performance of aircraft is measured. Made for pneumatic operation, complete with transmitter.

Each .....each **\$150.00**

**AIR PRESSURE GAUGES**

**NB AIR PRESSURE GAUGES.** Hall-Scott gauges, registering 0 to 10 pounds pressure; two-inch dials with flush mounting flange 2 3/4"; light weight case, japanned black; 1/8" pipe thread male fittings; .....each **\$1.00**

**USE WESTERN**

**UNION for TELEGRAPH ORDERS**

**AIRPLANE CLOCKS**



**NB SPECIAL AIRPLANE CLOCK.** Waltham make, thin model, 8-day, luminous dial, 2 3/4-inch dial; airplane dial; really a good value at our special price of each.....**\$8.50**

**MODEL XA WALTHAM AIRPLANE CLOCK**—Specially constructed to keep accurate time under severe conditions of vibration and exposure, and changes of temperature to which planes are subject. U. S. Army Air Corps specification. Each of the clocks passes a full direct government test required for this instrument. The price each is.....**\$50.00**

**MODEL XX**—Same as the Model XA but is not subject to such rigid tests, at, each.....**\$24.00**

**AIRPLANE CLOCKS**



**PIONEER CLOCK.** The novel feature of this clock is an extra pair of red hands which are set at starting time to record time of flight. Luminous dial, standard mounting flange; built sturdily; winding and setting knob in front; built to Pioneer specifications. Mounts flush on instrument board.

No. 543—8-day, 7-jewel, each.....**\$40.00**

No. 544—8-day, 15-jewel, each.....**50.00**



**ELGIN TYPE WA CLOCK.** A husky seven jewel, eight day movement, designed to give reliable service under all conditions. Dial is air core type with only the major hours showing. Case is phenolic composition, one piece splash proof and dust proof. Modern in design built for accuracy and dependability.

Elgin Type WA Clock.....each **\$16.50**

ALTIMETERS



N. B. SPECIAL ALTIMETER. Registering 0 to 25,000 ft. an unusually accurate instrument, 3 1/2" dial, in original boxes, micrometer lock screw adjustment, aluminum case.....each **\$5.00**  
 TAYLOR ALTIMETERS. With 5-inch dial.....each **\$3.50**



ELGIN TYPE AA ALTIMETER. Designed to meet the demand for a durable, accurate, sensitive and lagless instrument. Main dial is fixed in case and does not rotate. Sub dial incorporates a barometric pressure scale and is rotated with a pointer for the alternative purposes of setting it. Registers naught to 15,000 feet.  
 Elgin Type AA Altimeter.....each **\$35.00**



PIONEER ALTIMETERS. Used to indicate height above sea level or above the starting point, depending on the setting of the dial; built in two sizes and width ranges: Type 355, dial 2 3/4 inch and Type 360 Cabin size dial, 6 inch.  
 Type 355—  
 0-3,000 ft. ....each **\$ 65.00**  
 0-3-5,000 ft. ....each **70.00**  
 0-5-10,000 ft. ....each **68.00**  
 0-10,000 ft. ....each **40.00**  
 0-10-15,000 ft. ....each **45.00**  
 0-10-20,000 ft. ....each **48.00**  
 0-20,000 ft. ....each **40.00**  
 0-20-30,000 ft. ....each **70.00**  
 0-20-35,000 ft. ....each **75.00**  
 0-30-50,000 ft. ....each **95.00**  
 Type 360, Cabin size—  
 0-15,000 ft. ....each **125.00**

ALTIMETERS



ZENITH ALTIMETERS. Registering 0 to 20,000 feet, 3 1/2" dial, micrometer screw adjustment, sturdily built with aluminum casing, japanned black. One of the most dependable altimeters made. Preferred by most commercial flyers; very accurate.....each **\$7.50**



CONSOLIDATED ALTIMETER, TYPE A. Designed along lines suggested in official reports of U. S. Bureau of Standards and National Advisory Committee for Aeronautics. Equipped with barometer setting scale. Scale 3 1/2" in diameter, uniformly graduated from 0-20,000 ft. Provided with knurled knob for adjustment of "0" position. Weight 11 ozs.....each **\$40.00**



CONSOLIDATED ALTIMETER, TYPE N. This precisely balanced altimeter is constructed to meet rigid Army and Navy specifications. Non-corrosive case lengthens life of instrument. The 2 3/4" dial is exceptionally easy to read because of widely spaced graduation marks and clear-cut figures. Equipped with barometer setting scale. Scale 2 3/4" in diameter, uniformly graduated from 0-20,000 ft. Provided with knurled knob for adjustment of "0" position. Weight 13 ozs. ....each **\$40.00**

CLIMB INDICATORS



PIONEER CLIMB INDICATOR, TYPE 374. Shows continuously the rate at which an airplane is ascending or descending; this information enables the pilot to climb at the highest rate or descend as slowly as possible without stalling. There are two types: 374 and 374C, having 2 3/4" dials.  
 Type 374, -2-0-2 and -5-0-5.....each **\$100.00**  
 Type 374C, combined with Sensitive Altimeter .....each **125.00**  
 Type 3744, -1-0-1 .....each **125.00**

AIRCRAFT PANELS



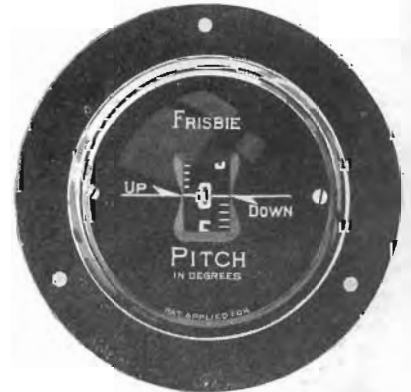
CONSOLIDATED PANEL "B". The new Consolidated Type B Panel is especially built for increased visibility and ease of reading. Now the Tachometer, Altimeter, Oil Pressure Gauge and Distance Type Thermometer are all equipped with circular dials on which the hands, figures and graduation marks are uniformly distinct. The indirect lighting is restful for the eyes and evenly illuminates all the instruments. The panel includes ten feet of capillary tubing for temperature gauge and two electric lights with flexible cord connections. Nickeled bezel and gold-silver mat. Size panel 10 3/8" x 5 3/4".  
 Type B Panel.....each **\$50.00**

TURN INDICATORS



PIONEER TURN INDICATOR, TYPE 385. Used for controlling the flight of aircraft under conditions of poor visibility or when for any reason it is desirable to eliminate yawing or turning; bank indicator is built in, enabling pilot to maintain a laterally level altitude while flying straight and to bank at the proper angle when turning. 2 3/4" dial, with Venturi tube.....each **\$100.00**

PITCH INDICATORS



FRISBIE PITCH INDICATORS, MECHANICAL TYPE. Thoroughly protected against corrosion and balanced to insure proper reading. Arrangement of dial enables pilot to determine exact angle of ascent or descent. Adjustable zero. Diameter case 2 1/8", flange 3 1/2", depth 3".  
 Non-luminous .....each **\$ 8.00**  
 Luminous .....each **10.00**  
 FRISBIE PITCH INDICATORS, LIQUID TYPE. This indicator is fitted with a chrome satin finish vertical scale. Figures and markings calibrated in degrees, deeply etched in black. Glass tube radium treated deeply inserted protecting from damage. Size 1 1/4" wide, 5 1/2" high by 4 3/8" deep.  
 Non-luminous .....each **\$6.00**  
 Luminous .....each **7.00**

COMPASSES

**PIONEER COMPASSES.** The compass is the most necessary of all aircraft instruments. Pioneer Type No. 356B is built especially for panel mounting, having the same standardized size face as all pioneer instruments. With the other compasses you have a choice of three mounting brackets which can be used on horizontal, over-head or vertical surface. All compasses are equipped with Titterington Micrometer compensators. All compasses have luminous cards.



Type 356B Compass, magnetic.....each \$ 50.00



Type 383 Compass, magnetic, 2 1/2" card.....each 40.00 (Specify style of bracket)



Type 518 Compass, magnetic, 3 1/2" card.....each 50.00

Type 569 Compass, straightaway.....each 100.00 (Specify style of bracket)

Type 301D Earth Inductor Compass.....each 750.00



**CONSOLIDATED COMPASSES.** Consolidated Star Pathfinders compasses are of magnetic type. The built in compensating unit eliminates the use of troublesome loose magnets. Spherical magnifying cover lens permits use of small dial with great visibility.

Type "R" Compass.—Mounting projects compass outward from instrument board; weighs two lbs. two oz.....each \$55.00

COMPASSES



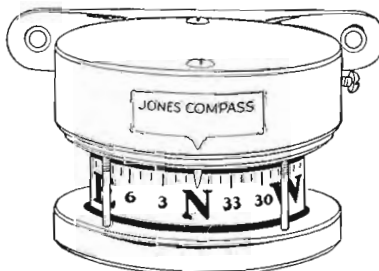
Type "F" Compass.—Mounts flush on instrument board; the cover plate can be removed without detaching the compass itself from the board; the compensating unit is easily accessible and all adjustments can be made from the front. Weighs two lbs. two oz.....each \$55.00



Type "P" Compass.—Newly designed horizontal bezel of this compass saves space in mounting; the artistically white beaded black background accentuates the dial figures and graduation marks so that exceptional attractiveness is combined with instrument's efficiency and increased visibility; built in compensating unit and spherical magnifying cover lens; cover plate removed without detaching compass; compensating unit easily accessible; weighs two lbs. four ozs.....each, net, \$55.00



G E MAGNETIC AIRCRAFT COMPASS. Dash mounting type guaranteed accurate and in first class condition; completely factory reconditioned and are as good as new; black duco finish; we have a limited supply of these left on which we are putting a special price of.....each \$18.00



JONES LIGHTWEIGHT COMPASS. Here is a dependable light weight compass of economical cost on which we have enjoyed very nice business in the past; it is easily installed, has screw compensator adjustment, is sensitive; enclosed in highly polished aluminum case, attractive, and has a conventional direct reading celluloid card suspended in oil; used on aircraft, automobiles, and motor boats; obtainable either unlighted or wired for lighting. Unlighted Jones Compass.....each \$6.50 Electric Lighted Jones Compass.....each 7.50

COMPASSES



**ELGIN AVIGO COMPASS.** Designed to meet the demand for a compact, light-weight, reliable instrument. Many features may be attributed to the general acceptance of this compass. Bowl is spherical perfect. Design is carried to completion with a magnifying window, inside surface concave on a radius identical with the inside surface of the bowl. Card is of phenolic composition and pivoted at exact center of bowl; pivot is of highest grade steel properly hardened and polished. Cup jewel is genuine sapphire. Damping liquid is a special oil highly refined, colorless, odorless and acid free. Shock absorber high grade springs with felt cushions interposed between bowl and mount. Correction card holder attached to compass. Materials are of highest grade throughout. Phenolic composition used throughout for all major parts. Elgin Avigo Compass.....each \$50.00

COMPASSES



**GENERAL ELECTRIC CARD COMPASS.** The new general electric card compass is an accurate instrument for use on small ships because of its light weight and moderate cost. It has a spherical bowl and expansion chambers are of aluminum; glass lens front; can be supplied for base, ceiling, wall or panel mounting; adjustable compensation; weighs one lb. 14 ozs. Without electric illumination.....each \$38.00 With electric illumination.....each 40.00

COMPASS PROTRACTORS

**COMPASS PROTRACTORS.** Pioneer made; 4 1/2 inches square made of transparent celluloid and has compass graduations of 360 degrees indicated in plain black figures; black cord fastened to center of protractor to plot course between points and determine proper reading for compass. A very handy item for cross country work. Each comes in carrying envelope with complete instructions on how to use Pioneer Compass Protractor.....each \$ .50

FAHRENHEIT GAUGES



FAHRENHEIT GAUGES. Registering heat temperatures for 32 to 212 degrees. These are very accurate instruments and are used by all the leading commercial aircraft manufacturers. Complete with capillary tube; lengths from 8 to 12 ft., complete with bushing .....each \$3.50  
Bushing for Fahrenheit Gauges.....each .15

OIL PRESSURE GAUGES



N. B. OIL PRESSURE GAUGES. 2 1/4 inch size to outside rim. The demand for a superior gauge for use on panels and instrument boards brought forth this design which has been widely used by airplane manufacturers. It has an independent, non-corrosive movement of rugged construction. The case is of pressed steel, the front flange of which is finished in black enamel. The gauge is mounted on the dash by means of three screws or bolts. It gives a large and sensitive reading, and affords great visibility of dial reading.

50 lbs. ....each \$ .75  
60 lbs. ....each 1.00  
120, 200 lbs. ....each 1.00



CONSOLIDATED OIL PRESSURE GAUGE, TYPE "D". Exceptionally rugged construction. Black case, moisture and dust proof. Non-corrosive movement, guaranteed for accuracy, workmanship and material. Pipe connection in center at rear. Standard range 0-20 lbs. or 0-60 lbs. Weight 6 ozs.....each \$2.00

CONSOLIDATED OIL PRESSURE GAUGE, TYPE "N". Newly designed gauge using small 1 1/2 inch dial with easily read graduation marks and distinct hand. Meets Army and Navy specifications. Black case, moisture and dust proof. Non-corrosive movement, exceptionally rugged construction. Pipe connect on in center at rear. Standard range 0-120 lbs. Weight, 7 ozs.....each \$3.00

OIL PRESSURE GAUGE



ELGIN OIL PRESSURE GAUGE TYPE PA. Built exceptionally sturdy to withstand shock and vibration. Conforms to Army-Navy specifications and may be had in ranges to meet the requirement of various engines. Bakelite case.  
Elgin Oil Pressure Gauge Type PA.....each \$2.50



PIONEER OIL PRESSURE GAUGE, TYPE 505. Measure pressure in oil system. A most important instrument, because loss of oil pressure means engine failure. Ranges 10, 30, 60, 120, 200 lbs. sq. in. with fittings, luminous.....each \$4.50

HEAT INDICATOR



ELGIN AVIGO THERMOMETERS. Vapor tension type and meet service requirements of Army and Navy. This type of thermometer is preferred by many because of its well known freedom from errors due to temperature change. A longer tubing and at the instrument end and those due to fluctuations of barometric pressure. Furnished in standard lengths, 10 feet; to order up to 20 feet. Bakelite case. Type HA Fahrenheit, Type HB Centigrade.  
Elgin Avigo Thermometers.....each \$12.50

TEMPERATURE GAUGES



CONSOLIDATED TEMPERATURE GAUGE, TYPE G. Distance reading type, provided with capillary tubing and expansion bulb with standard thread connections. Non-corrosive movement, fully guaranteed. Standard range, 32-212 degrees F. Standard length of capillary is 10 ft. Special lengths supplied on request. Weight with 10 ft. of tubing 15 ozs. ....each \$7.00  
With 15-foot tube.....each 7.75  
(On order for 12-foot tubes 15-foot will be sent.)

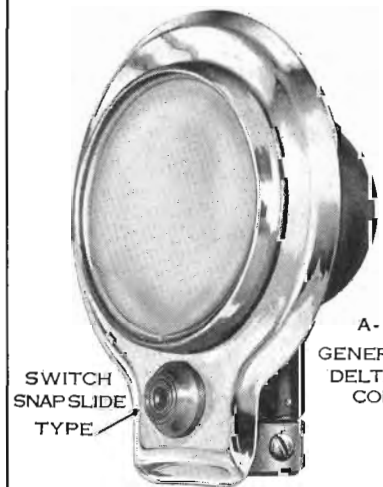
CONSOLIDATED TEMPERATURE GAUGE, TYPE N. Newly designed gauge using small 1 1/2" dial with easily read graduation marks and distinct hand. Meets Army and Navy specifications. Distance reading type, provided with capillary tubing and expansion bulb with standard thread connections. Non-corrosive movement. Standard range 32-212 degrees F. Standard length of capillary tubing is 10 ft. Special lengths supplied on request. Weight 16 ozs. ....each \$10.00



PIONEER THERMOMETER, TYPE 506. Used to indicate the temperature of water or oil at some point in circulating system; bulb is usually placed in top of radiator or in the oil tank; vapor tension type.

With 12-foot tube.....each \$14.50  
With 20-foot tube.....each 18.00

TONNEAU OR DOME LIGHTS



A-642

GENERAL USE LAMP  
DELTA ELECTRIC  
COMPANY

TONNEAU-DOME LIGHTS. For cabin planes. A Delta high-quality product, manufactured expertly with high class finish and mechanical construction; uses 6-volt bulb; can be readily installed in ship and makes neat finished job; same light is being used by motor car manufacturers; polished nickel finish, frosted glass, built-in off and on switch; complete with 6-volt bulb.  
No. 642 Tonneau Light.....each \$2.00



TACHOMETERS



**JOHNS-MANSVILLE TACHOMETERS.** This is a newly manufactured instrument that is giving complete satisfaction to flyers in all parts of the country. It is of the centrifugal type, light in weight yet remarkably durable; not affected by temperature changes and has no magnets which lose their attraction in use. This instrument requires a 1 to 2 increase adapter to give a correct reading when used with the OXX6, the OX5 or Hispano-Suiza Engines.

Johns-Mansville Tachometers.....each **\$12.00**



**VAN SICKLEN TACHOMETERS.** New war surplus instruments, made to army specifications; accurate, dependable and a big value at the low price we are offering them 3 1/2" dial, 1 to 2 ratio.

Van Sicklen Tachometers.....each **\$12.00**



**CONSOLIDATED TACHOMETER, TYPE N.** Only Tachometer equipped with helical gear drive, which insures smoother, quieter operation. Decreased needle vibration makes reading quicker and more accurate. Non-corrosive case protects mechanism. Meets all Army and Navy specifications. Only centrifugal instrument embodying a perfectly uniform scale over entire dial. Scale of greater length and openness than on any other similar instrument, insuring instantaneous and accurate reading of smallest speed variations. Head and flexible shaft connections S. A. E. standard. No adapters required for operation. Many different speed ranges available. Weight 12 ozs. ....each **\$30.00**

TACHOMETERS



**CONSOLIDATED JONES TACHOMETER, TYPE B.** Centrifugal instrument embodying a perfectly uniform scale over entire dial. Scale of greater length and openness than on any other similar instrument, insuring without slightest confusion and instantaneous and accurate reading of the smallest speed variation. Head and flexible shaft connections S. A. E. standard. No adapters required for operation. Many different speed ranges available. Weight 15 ozs. ....each **\$20.00**



**PIONEER TACHOMETER, TYPE 347.** Of the centrifugal type; indicates smoothly and accurately the speed of the airplane engine. Attached by standard flexible drive shaft. Ranges: 500-2000; 500-2500; 500-3000 .....each **\$36.00**  
Tachometer Shaft, per foot.....each **1.00**  
Add for end fittings.....each **3.00**



**ELGIN TYPE TG TACHOMETER.** This tachometer is practically same as the type C except that the mounting dimensions conform to AN Standard and the case is equipped with Army (SAE type drive connection.)  
Elgin Type C Tachometer.....each **\$45.00**

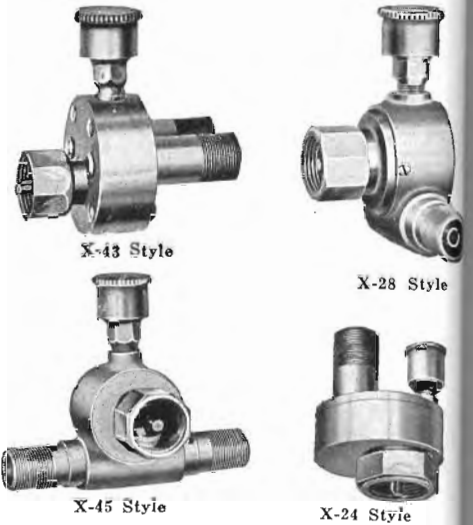
**ELGIN TYPE C TACHOMETER.** This is of the chronometric type and registers in terms of revolutions per minute the totalization of the crank shaft during each alternate second. Famous Elgin watch escapement with specially designed shock-proof fly and fully jewelled balance automatically meters the cycles of operation of the tachometer. All fast moving parts when not jewelled run in ball bearings. Inherently accurate. Case is of reinforced phenolic composition, non-corrodible.  
Elgin Type C Tachometer.....each **\$45.00**

TACHOMETER ADAPTERS



**J.-M. TACHOMETER ADAPTERS.** 1 to 2 increase for Curtiss OX5, OXX6 or Hispano Suiza engines. Each .....**\$3.50**  
**J.-M. TACHOMETER ADAPTERS.** 1 to 2 increase; J.-M. one end Warner the other.....each **\$3.50**

TACHOMETER FITTINGS



| Adapter Style | Cable Fittings | Engine Fittings | Ratio    | Price   |
|---------------|----------------|-----------------|----------|---------|
| X-24F         | X-24 USACS     | USACS           | 2-1 inc. | \$12.00 |
| X-24K         | X-24 USACS     | USACS           | 1-2 dec. | 9.00    |
| X-28E(rt)     | X-28 Reliance  | USACS           | 1-3      | 9.00    |
| X-28F(lf)     | X-28 Reliance  | USACS           | 1-3      | 9.00    |
| X-28-J        | X-28 USACS     | USACS           | 1-3      | 9.00    |
| X-31-2        | X-28 SAE       | SAE             | 1-2      | 14.00   |
| X-31D         | X-28 USACS     | USACS           | 1-2      | 10.00   |
| X-31E         | X-28 Reliance  | USACS           | 1-2      | 10.00   |
| X-31F         | X-28 Reliance  | USACS           | 2-1      | 10.00   |
| X-31L         | X-28 USACS     | USACS           | 2-1      | 10.00   |
| X-31M         | X-28 Reliance  | USACS           | 1-1 1/2  | 9.00    |
| X-31O         | X-28 USACS     | SAE             | 2-1      | 10.00   |
| X-32C         | X-28 USACS     | USACS           | 1-1      | 9.00    |
| X-32E         | X-28 Reliance  | USACS           | 1-1      | 9.00    |
| X-32F         | X-28 USACS     | SAE             | 1-1      | 10.00   |
| X-43E         | X-43 USACS     | USACS           | 1-1      | 14.00   |
| X-43F         | X-43 USACS     | USACS           | 1-2      | 14.00   |
| X-45C         | X-45 Reliance  | USACS           | 1-3      | 13.00   |
| X-46B         | X-45 USACS     | USACS           | 1-1      | 13.00   |
| X-46-D        | X-45 SAE       | SAE             | 1-1      | 13.00   |
| X-50          | X-45 Reliance  | USACS           | 1-1 1/2  | 20.00   |

**Reliance Shafting**—Reliance ball bearing whip-cord casing, \$5.00 first four feet, \$1.00 per foot thereafter up to 35 feet.

**Flexible Shafting**—Brass casing, polished nickel for test stands, etc. Same price.

**Specifications:** Reliance threading 1/8"-24; S. A. E. and U. S. A. C. S., 7/8"-18; Shafting, male tip S. A. E., 3/8" diameter, U. S. A. C. S., 3/4" diameter

TACHOMETER SHAFTS AND HOUSINGS



| Length     | Shaft  | Shaft and Housing |
|------------|--------|-------------------|
| 3 feet     | \$1.08 | \$1.90            |
| 4 feet     | 1.20   | 1.90              |
| 5 feet     | 1.32   | 2.17              |
| 6 feet     | 1.44   | 2.35              |
| 7 feet     | 1.56   | 2.70              |
| 7 1/2 feet | 1.62   | 3.05              |
| 8 feet     | 1.68   | 3.05              |
| 9 feet     | 1.80   | 3.40              |
| 10 feet    | 1.92   | 3.71              |
| 11 feet    | 2.04   | 4.05              |
| 12 feet    | 2.16   | 4.40              |
| 13 feet    | 2.28   | 4.75              |
| 14 feet    | 2.40   | 5.05              |
| 15 feet    | 2.52   | 5.40              |
| 16 feet    | 2.64   | 5.75              |

DASH, THROTTLE AND ENGINE CONTROLS

NO. L-300 CONTROL. Triple lever type; a dependable and economically designed triple lever control for three separate mechanisms; all three throws adjustable; arranged to be hooked up with solid rods, rugged construction; easily attached; minimum in weight and built to give service.

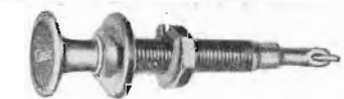
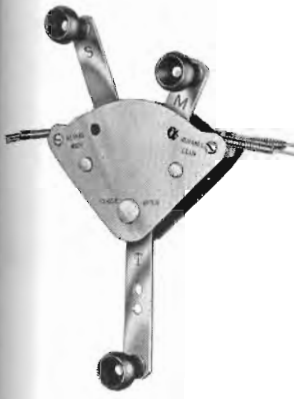
No. L-300 Control.....each \$5.00

NO. L-100 CONTROL. Single lever control; rugged in construction and designed for an economical throttle or spark control; 5-inch fulcrum to handle with 3-inch throw; can be used with solid wires or rods.

No. L-100 Control.....each \$1.75

NO. L-101 CONTROL. Single lever control; similar to No. L-100 except that the attachment to the control is made below the fulcrum to reverse the direction of travel; lever measures 7 7/8 inches overall.

No. L-101 Control.....each \$1.85



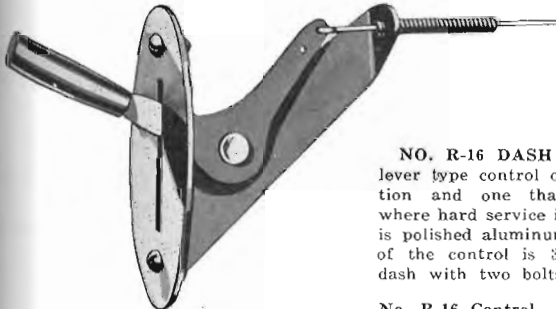
NO. 80510 DASH CONTROL. This control has 7/8-inch diameter nickel plated knob with black enamel etched insert. Harmonizes with black dials and nickel bezels of other instruments. To harmonize with other instruments the etching can be reversed. Complete with 8 foot housing and wire center.

No. 80510 Control.....each \$1.25



NO. 80526 DASH CONTROL. Similar to No. 80510 except that it has 7/8-inch flat knob providing maximum finger room; a very efficient design of exceptional strength and handsome appearance. Can be furnished with etched disc insert in desired.

No. 80526 Control.....each \$1.25



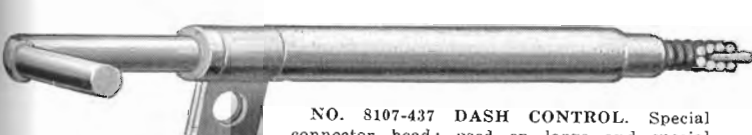
NO. R-16 DASH CONTROL. This is a lever type control of very heavy construction and one that is used extensively where hard service is given; the dash plate is polished aluminum and the total weight of the control is 3 1/2 ounces. Fastens to dash with two bolts.

No. R-16 Control.....each \$1.00



CONSOLIDATED ENGINE CONTROL, TYPE B-3. Made to Air Corps specifications; baked black enamel body; parkerized steel levers; bakelite knobs marked for throttle, spark and carburetor mixture; weight 1 3/4 pounds; luminous.

Consolidated Engine Control.....each \$15.50



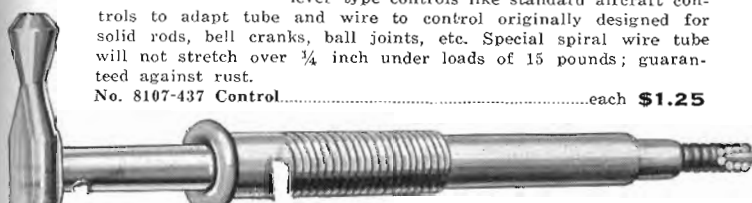
NO. S107-437 DASH CONTROL. Special connector head; used on large and special lever type controls like standard aircraft controls to adapt tube and wire to control originally designed for solid rods, bell cranks, ball joints, etc. Special spiral wire tube will not stretch over 1/4 inch under loads of 15 pounds; guaranteed against rust.

No. S107-437 Control.....each \$1.25



NO. R0-9 DASH CONTROL. Positive locking type, brass body, steel stem, highly polished aluminum dash and T-handle, 2 1/2 inch travel; can be made longer travel if desired; locks in any position with 1/4 turn of handle. Complete with 9 feet of tubing.

No. R0-9 Control.....each \$1.75



NO. S112-21-T DASH CONTROL. T-Handle control, has 2 1/4-inch throws, large 5/8-inch diameter plunger rod, 7/8 mounting threads; devices needing this large handle instead of 7/8 or 1-inch round knob usually need 1/4-inch conduit. Will be supplied with any amount of friction from free working to 10 or 12 pounds. T handle 2 inches long.

No. S112-21-T Control.....each \$1.50



NO. R-8 DASH CONTROL. Friction type, brass body and stem; highly polished aluminum hexagon dash plate with T-handle; 2 1/2 inch travel, but can be made longer if desired; rigid construction; designed especially for airplane use. Complete with 9 feet of flexible steel casing, together with 1/4 inch adjustable stop collar.

No. R-8 Control.....each \$1.00

BALL BANK INDICATOR



ELGIN BALL BANK INDICATOR. Designed to meet the demand for a medium sized, well-damped instrument. The ball and tube are larger than common practice, giving increased readability. Liquid is special Avigo Liquid, has a nearly constant temperature viscosity relation throughout the range of temperatures that have ever been encountered in flying. Case of phenolic composition and scale marked to represent up to 12 degrees is repressed in this durable material.

Elgin Ball Bank Indicators.....each \$6.50



CONSOLIDATED INCLINOMETER. This liquid damped inclinometer is of the steel ball type and is graduated ten degrees on either side of vertical; weight six ounces.

Non-luminous .....each \$ 8.00

Luminous .....each 11.00

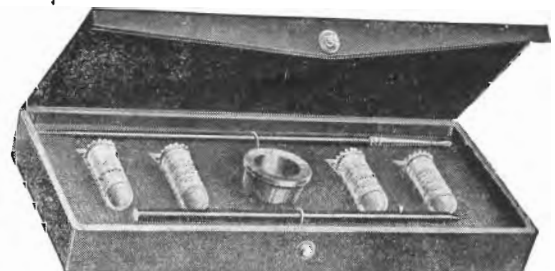
ICE WARNING INDICATORS



ELGIN ICE WARNING INDICATOR TYPE HC. This indicator gives the pilot constant information of atmospheric conditions through which he is flying. Humidity and temperature control ice formation. High humidity is readily detected as fog, mist or rain. Case is bakelite. Complete with 20 ft. of tubing; Centigrade or Fahrenheit scale optional.

Elgin Ice Warning Indicator Type HC, ea. \$30.00

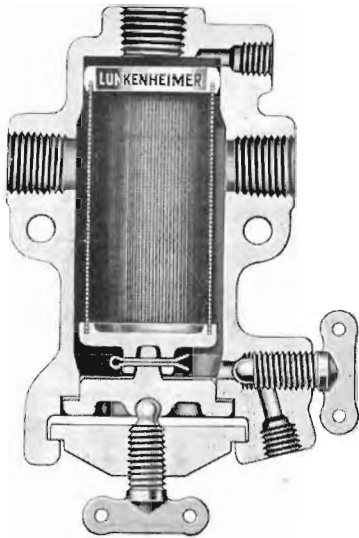
ILLUMINATE YOUR DIALS



UNDARK RADIUM ILLUMINATING SET. Treat your own instrument dials so you can see them in the dark. This set contains the following equipment: 1 bottle containing 1/2 gram of UNDARK Radium Luminous material of 20 microlambert luminosity, which is standard Army-Navy requirement for aeronautical instruments; 1 bottle of practice material; 1 bottle of adhesive, 1 bottle thinner, a mixing cup, a glass mixing rod and a No. 00 brush. The practice material in this set is for experimental work only and should never be mixed with the UNDARK. Complete instructions with each package. Contained in neat case with snap-button fastener.

Undark Illuminating Set.....each \$3.75

FUEL STRAINERS



**LUNKENHEIMER FUEL STRAINER.** Simplicity of design and ease of cleaning are principal features of this gas strainer. Consists of only two units, body and strainer assembly. Two inlets, one outlet and drain connection. Very light in weight, virtually all parts made of aluminum. Strainer gauze is fine mesh Monel. They are procurable with 1/4" and 3/8" gasoline inlet and outlet pipe connections.

Lunkenheimer Fuel Strainer.....each **\$9.00**



**STROMBERG GASOLINE FILTER.** Extremely simple to install. Its efficient service in the automobile industry immediately marks its successful adaptation to aero engine fuel lines. Has two openings for inlet and can be installed directly from tank in fuel line. Gasoline passes through needle valve into the sediment bowl where dirt and water is deposited. From here the fuel passes through a fine wire mesh screen to outlet into carburetor. Bowl easily cleaned by removing thumb nut and wing nut.

Stromberg Gasoline Strainer .....each **\$3.00**



**ZENITH GAS STRAINER.** This strainer has been designed especially for Aero Engines and will properly filter, strain and feed gasoline to engines using as high as 35 gallons per hour. It is equipped with visible glass bowl so it can be cleaned in two seconds. It has also been used for several months by several prominent Air-Mail contractors with complete satisfaction. You cannot afford to be without one.

Zenith Gas Strainer .....each **\$5.00**  
Glass Bowl .....each **.70**

FUEL STRAINERS

**PIONEER FUEL STRAINER, TYPE 570B.** A cleaner for gasoline, of unusual large capacity, filtering screen of Monel wire cloth; fitted with drain for drawing off water and sediment, easily removed for cleaning. Available with either 1/4-inch or 3/8-inch pipe thread connections.

Pioneer Fuel Strainer .....each **\$15.00**



**FUEL STRAINER, TYPE C-1.** Meets Army Air Corps specifications. Die cast aluminum alloy body for lightness. Aluminum body and brass fittings eliminates corrosion of unit, thus insuring longer life and unobstructed fuel flow. Weight 14 ozs.

Type C-1 AN 4000-1. 3/8".....each **\$6.00**  
Type C-2 AN 4000-2. 1/2".....each **8.50**

FUEL INDICATING INSTRUMENTS



**PIONEER FUEL FLOW METER, TYPE 370.** Gives a continuous indication of the rate at which the airplane engine is consuming fuel; reads directly in gallons per hour. Has small separate Venturi which can be placed wherever convenient in fuel line. Four ranges, 2-12, 3-21, 5-40 and 10-60 gallons per hour; connections on two lower ranges for 1/4 inch pipe (3/8 inch tube), and higher ranges 3/8 inch pipe (1/2 inch tube), standard pipe fittings.....each **\$75.00**



**PIONEER FUEL LEVEL GAUGE, TYPE 391.** Continuously and accurately indicates the amount of fuel in the tank to which it is connected; hydrastatic type.....each **\$50.00**



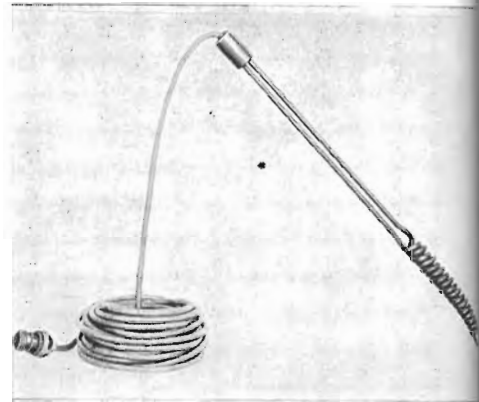
**CONSOLIDATED FLOWMETER, TYPE N.** This safeguard against fuel waste acts as a check-up on engine efficiency and deserves a place on every instrument board. The flowmeter accurately records the engine's gas consumption per hour. Non-corrosive case prevents weather interference with the flowmeter's operation. Weight 16 ozs.....each **\$90.00**  
**PIONEER FUEL SIGHT GAUGE, TYPE 343**.....each **\$12.00**

FUEL PRESSURE GAUGE



**ELGIN AVIGO FUEL PRESSURE GAUGE TYPE PB.** Built in strict accordance with present Army Navy specifications. The construction is very sturdy to withstand shock and vibration. These gauges come in but one range naught to 10 pounds per sq. inch Bakelite case.  
Elgin Avigo Fuel Pressure Gauge Type PB.  
Each .....**\$2.50**

OIL IMMERSION HEATER



**GENERAL ELECTRIC OIL IMMERSION HEATER, TYPE Y-2839.** This is a single heat oil immersion heater as developed by General Electric. Sheath-wire heating element is coiled nickel-chromium resistors imbedded in highly compressed magnesium oxide, encased in metal sheaths. Length overall 24 1/2 inches with approximate effective heating length of 10 inches; comes complete with 35 feet of flexible lacquered extension cable and attaching plug; rated 750 watts single heat, 110 volts. Can be bent, with aid of blow torch, to fit any oil tank.  
G. E. Oil Immersion Heater.....each **\$15.00**

BUFFUM OIL HEATER

**THE BUFFUM AEROMOTIVE HEATING SYSTEMS** eliminate forever your cold starting problems, save valuable time, reduce fuel bills in a single week sufficient to pay for initial cost, insure your motor against injury due to improper lubrication by cold oil, eliminate condensation of moisture on cylinder walls, and crankcase dilution.

These heaters are complete in every respect though exceedingly simple in construction, installation and operation. They consist of an immersion type heater which is placed in the bottom of the oil tank, through a small hole and then permanently soldered into place, this is connected with a flush plug which is placed in the cowling of the ship.

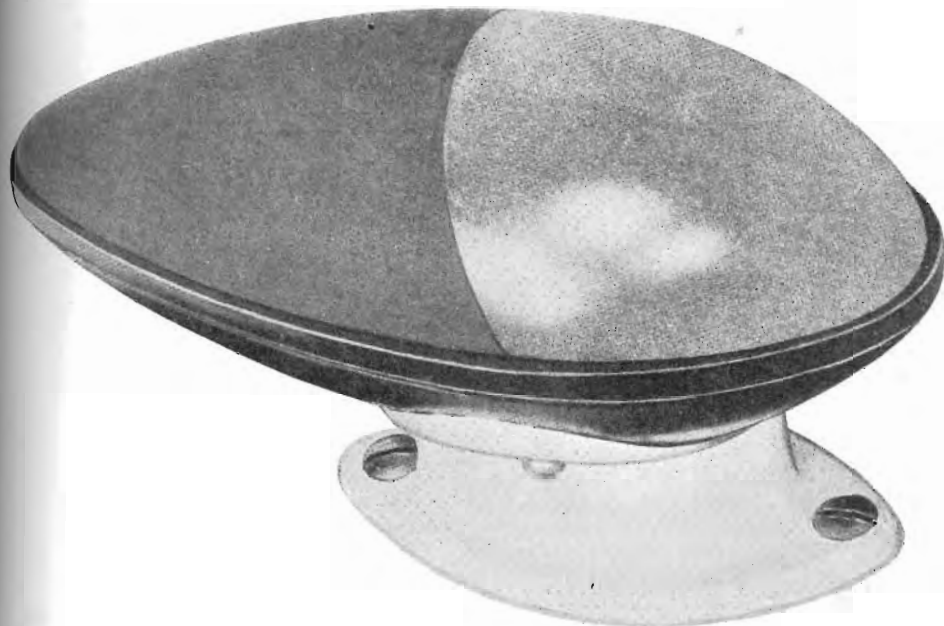
When the plane is placed in the hanger the heating unit is plugged in and the oil remains hot and ready to properly lubricate and warm the motor at a moments notice. Drop cord provided.

Heating units are unconditionally guaranteed against burn out for one year from date of purchase and will be replaced without charge.

Made for any make ship or motor. Specify make when ordering.

Buffum Oil Heater.....each **\$10.00**

NAVIGATION LIGHTS



N. B. NAVIGATION LIGHTS. A complete set of navigation lights equipped with bases and bulbs at a new low honest price. Made to conform with Dept. of Commerce regulations for night flying. Best quality pyralin shells moulded to exact size and fitted so light rays are diffused in proper directions and to necessary extent as required by regulations.

Each light is substantially built of tough pyralin shells, firmly screwed and fitted into a special cast aluminum alloy base; shells are easily removed and replaced when bulbs need attention; shells are of new spherical design on outer edge to prevent usual hangar breakage.

Side lights red on left, green on right, are designed for mounting on vertical surfaces; rear light, clear designed for mounting on horizontal surface. Complete with standard type bulbs; 12-volt double contact, although special bulbs may be used as desired.

N. B. Navigation Lights.....per set of three lights **\$7.50**  
Shells, each, \$2.00; Bases, each, \$1.50

PYLE NATIONAL AVIGATION LIGHTS

Designed to give maximum distance and angular visibility; aerodynamic principles, mounting, materials and reliability have been given first consideration. Lights made in two types, one for tail mounting and one for wing mounting.



TYPE NAVT-4—Clear, each, complete less bulbs .....**\$4.50**



TYPE NAVR-4—Green, each, complete less bulbs .....**\$4.50**



TYPE NAVL-4—Red, each, complete less bulbs .....**\$4.50**

SHELLS ONLY for any of above lights.....**\$1.00**

NAVIGATION LIGHTS



CONSOLIDATED NAVIGATION LIGHTS. Conforms to U. S. Dept. of Commerce Regulations for night flying; bases are die castings; streamlined shape body of special transparent material; two contact plugs incorporated in base; socket provides for mounting on wing; furnished in sets of 3 with 12-volt Mazda lamps for starboard, port and aft mounting; weight, per set of three, 15 ounces.

Consolidated Navigation Lights.....per set **\$15.00**



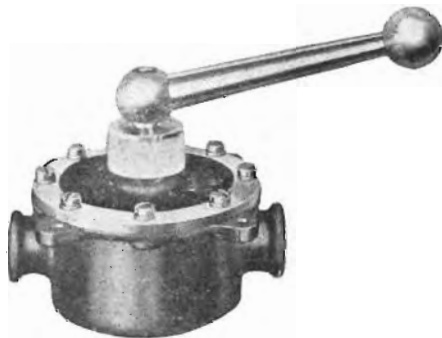
PIONEER NAVIGATION LIGHTS. Die cast base with shell of streamlined transparent material; comes in sets of three in accordance with Dept. of Commerce regulations for starboard, port and aft mounting; 12-volt bulbs, 18 candle-power double contact.

Pioneer Navigation Lights.....per set **\$15.00**

LAMPS

- PIONEER LAMPS FOR INSTRUMENT BOARDS.  
Type 127 .....each **\$2.00**  
Type 519, flush type for indirect lighting .....each **5.00**
- PIONEER LAMPS FOR COMPASSES,  
Type 356-920.....each **5.00**

HAND FUEL PUMPS



HAND OPERATED FUEL PUMPS. These pumps are standard with both the Army and Navy. Made in strict accordance to their drawings and specifications. The design is rugged yet lightly constructed, with semi-steel housings, bronze rotors, valves and blocks. The Type D-2 is provided with 1/2-inch pipe openings for suction and discharge lines and weighs 3 1/8 pounds. At 60 strokes per minute the capacity in gallons per hour is 78; at 120 strokes it is 155 gallons and at 180 strokes it is 252 gallons.

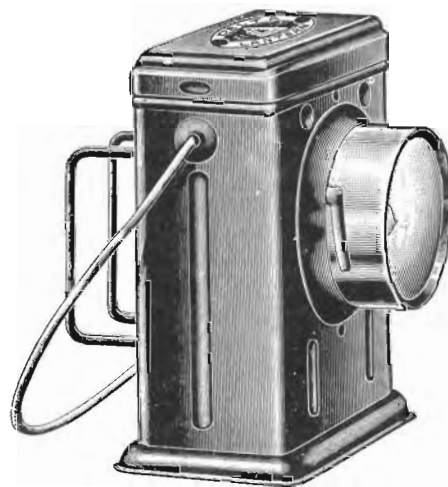
Hand Fuel Pumps, Type D-2.....each **\$40.00**

GEAR TYPE FUEL PUMPS

GEAR TYPE FUEL PUMPS. These pumps are made in two sizes and adopted by the Army and Navy Air Corps. All gears are heat treated while other parts are made of best materials. Capacity of both types at various speeds against a lift head of 3 1/2 feet and a discharge pressure of 51 pounds is—  
Type C-3 Pump: 33 gallons per hour at 500 rpm., 92 at 1,000, 150 at 1,500 and 208 at 2,000.  
Type C-5 Pump: 18 gallons per hour at 500 rpm., 60 at 1,000, 102 at 1,500 and 146 at 2,000.

Gear Type Fuel Pumps—  
Type C-3, AN4005-2.....each **\$25.00**  
Type C-5, AN4005-1.....each **20.00**

DELTA ELECTRIC LANTERNS



DELTA ELECTRIC LANTERNS. A real big-light lantern; it burns by the hour and throws a great volume of strong light two hundred feet or more; operates on two No. 6 dry cell batteries. Equipped with bail and handles for convenience. Made of strong pressed steel with body ribbed for extra strength and ornamentation. Finished in a bright red hard durable enamel; deep parabolic reflector is silver plated and makes the bulb which consumes but a small amount of current; throw a world of light.

No. 10 Delta Electric Lantern—Complete with No. 460 Delta Mazda bulbs (less batteries), each .....**\$2.75**  
Batteries—No. 6 dry cell, each.....**.45**

**TOGGLE SWITCHES**

**PYLE-NATIONAL LUMINOUS TOPPED TOGGLE SWITCHES.** These special long handle toggle switches have an extra quick make and break mechanism enclosed in a pressed steel case; heavily insulated.



10 AMP., 15 VOLT CAPACITY  
Type LNL-101—Single gang, each.....\$2.00

Type LNL-102—Two gang, each.....\$3.50



Type LNS-102—Two gang, each.....\$3.50  
Type LNS-103—Three gang, each.....5.00



35 AMP., 15 VOLT CAPACITY  
Type LNS-352—Two gang, each.....\$12.00



NO. 75-16-Y TOGGLE SWITCH. Single hole mounting finished in nickel; short shank. Each.....\$0.50



NO. 75-16-YCB TOGGLE SWITCH. Same as above but with clamp to clamp on.....each \$0.75



NO. 75-3-Y TOGGLE SWITCH. Easy and positive action toggle; finished in nickel; one gang.....each \$0.40

NO. 75-3-Y TOGGLE SWITCH. Same as above except two gang.....each \$0.80

NO. 195-1-Y TOGGLE SWITCH. Three position toggle, may be used to select between two sets of lights; nickel plated.....each \$0.85

**DELTA "BUDDY" FLASHLIGHTS**



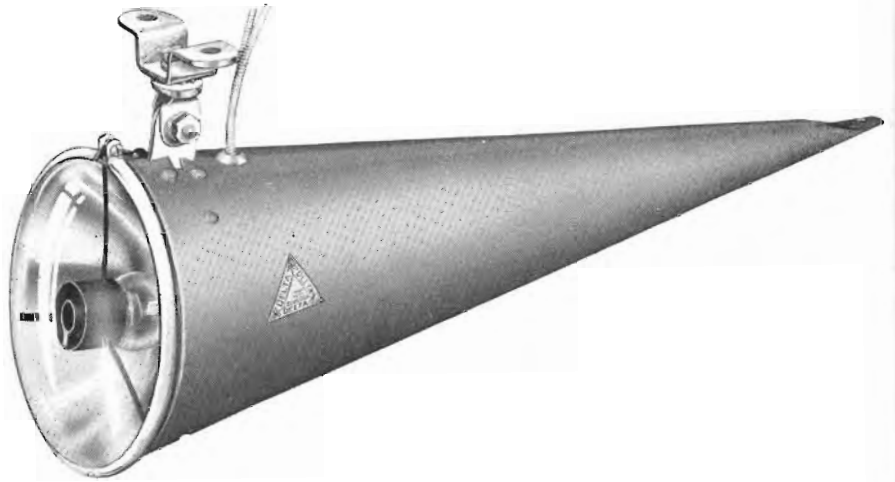
No. 2 Cell for Flashlight



THE DELTA BUDDY ELECTRIC LANTERN 3 3/4" HIGH 3 3/8" WIDE 2 3/8" DEEP OPERATES ON TWO STANDARD FLASHLIGHT CELLS ANY MAKE

**BUDDY FLASHLIGHTS.** A handy, small compact lantern flashlight.  
Buddy Flashlights, price complete, less batteries.....\$1.50  
Batteries—No. 2 cell, each......10

**LANDING LIGHTS**



**DELTA LANDING LIGHTS.** Delta Landing Lights are made exclusively for us and are ideal for use on training planes because of their sturdy construction and unusually low cost; they conform to accepted material and structural specifications; they are streamlined over 18 inches in length with a plated brass frame and chromium plated standard fittings; regular reflector design, 6-inch lens; total weight but 12 ounces; finished in red enamel.

Economically operated on 6-volt dry cell batteries and throws a bright, intense wide beam over 2,000 feet. Our exceptionally low price places night flying equipment within reach of every one; you should have your plane equipped with landing lights; completely equipped with bulbs and fittings all ready to install.

Delta Landing Lights.....per set \$18.50

Lenses, each 50c; Bulbs, each, 90c; U-shaped hanger assembly, each, \$2.00; attaching bracket, each, 15c; defuser, each, 75c; reflector, each, \$2.50; lens retainer, each, 50c.

**LANDING LIGHTS**

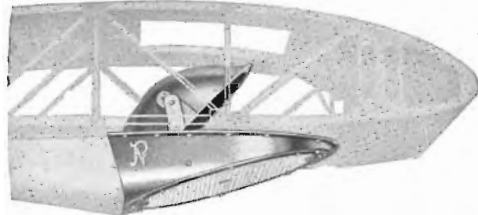
**PYLE-NATIONAL LANDING LIGHTS.** These landing lights have been designed on proven aerodynamic, optical and mechanical principles to insure minimum weight and head resistance. Can be furnished in two sizes in either silver or chromium plated copper reflectors. Clean streamline.



Type LAN-600 Landing Light—6 inch, reflector arranged for 10-12 volt prefocused lamp base, complete with streamline body, each.....\$40.00



Type LAN-900 Landing Light—9 inch, reflector arranged to take a 10-12 volt, 35 amp. lamp, with prefocused base, complete with streamline body, each.....\$70.00



Type LANR—With 12-inch built-in prismatic lens, designed to be built directly into the wing. 12-volt, 20 amp. Catalog No. 1250S, each.....\$60.00

**LANDING LIGHTS**



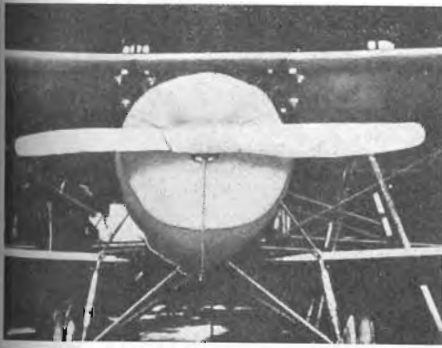
**CONSOLIDATED LANDING LIGHTS.** Conform to present specifications for night flying and are capable of most intense illumination; candle power ranges as high as 250,000; streamlined metal body provided with brackets for mounting to the wing; lens easily removed and all internal parts readily accessible; furnished in sets of two, each light having a lamp rated at 12 volts, 35 amperes; weight, each of two, 20 pounds.

Consolidated Landing Lights.....per set \$175.00

**PIONEER LANDING LIGHTS.** Illuminates the ground so that an airplane can be landed safely at night; two are carried on each airplane; mounted on the wings or under the fuselage; each light uses a 12-volt 35-ampere bulb and has a beam candle power of about 260,000; weight per pair about 20 pounds; priced without bulbs.

PIONEER LANDING LIGHTS.....per set \$110.00  
WITHOUT STREAMLINES.....per set 72.00  
BULBS FOR LANDING LIGHTS.....each 6.50  
Ammeter, Type 503. 30-0-30.....each \$12.50  
50-0-50.....each 13.50  
Voltmeter, Type 504. 0-20.....each 12.50

ENGINE AND PROPELLER COVERS



ENGINE COVERS. Your engines are costly and you should give them the best care possible. Covers for them when they are not in use will keep the dust and dirt out of them and protect them from the weather. They must fit well and be easily put on and taken off. The ones we list below are made of heavy duck, waterproofed with wax solution that keeps them flexible in cold weather. Hookless fasteners.

Engine Covers—

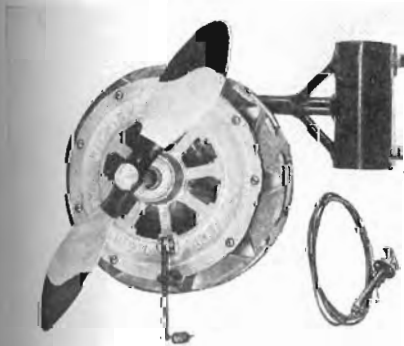
|                        |      |         |
|------------------------|------|---------|
| Curtiss Challenger     | each | \$10.00 |
| Wright J-5             | each | 10.00   |
| Wright J-6             | each | 12.50   |
| Vellie                 | each | 9.75    |
| LeBlond                | each | 9.75    |
| Pratt and Whitney Wasp | each | 16.50   |
| Kinner                 | each | 12.75   |
| Comet                  | each | 13.00   |
| Lycoming               | each | 13.00   |
| Warner Scarab          | each | 11.00   |

PROPELLER COVERS. When you have covers for your propellers they remain in better condition. Keeps the dampness from your wooden propellers and rust and corrosion from metal ones. These covers are made of heavy duck, weather-proofed. The sizes listed below are measurements from tip to tip of propeller.

Propeller Covers—

|                |      |        |
|----------------|------|--------|
| Length 6 feet  | each | \$5.00 |
| Length 7 feet  | each | 5.50   |
| Length 8 feet  | each | 6.50   |
| Length 9 feet  | each | 7.50   |
| Length 10 feet | each | 8.50   |

AIRPLANE SIRENS



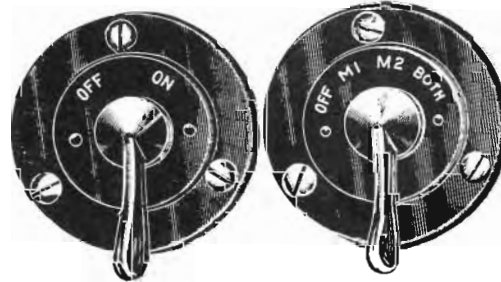
SIRENS FOR AIRPLANES. This new two-tone siren is neat, compact, attractive and the most economical signaling instrument on the market; found to be valuable in spectacular flights, aerial advertising because its tone can be heard for many miles. Made of cast aluminum, weighs only 4½ pounds and is easily installed on plane by means of bracket which straps to the landing gear, or any other strut in the propeller blast. Controlled by pilot from cockpit by means of brake. Price quoted includes siren complete with propeller, brake, cockpit control for operating brake and mounting bracket.

|                |      |         |
|----------------|------|---------|
| Two-Tone Siren | each | \$40.00 |
| Propeller only | each | 3.50    |

IGNITION SWITCHES

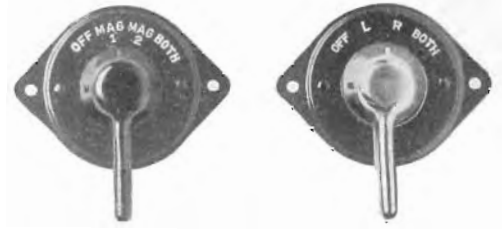


SCINTILLA MAGNETO SWITCHES. Lug mounting, Types EC, ED, EF, or EJ.....each \$10.00



Klum Single Klum Double  
 KLUM IGNITION SWITCH. Single.....each \$1.50  
 Double .....each 3.00  
 BOSCH IGNITION SWITCH. Double.....each \$2.00

IGNITION SWITCHES



BASCO IGNITION SWITCHES. These switches are guaranteed to be of first-class material and workmanship and if properly installed, will give entire satisfaction. It has been thoroughly inspected and tested before leaving factory. If the switch should fail to operate satisfactorily within 90 days from date of sale, it should be returned to the nearest Basco Service Station or to the factory, charges prepaid, and if found defective, it will be repaired or replaced without charge.

|   |      |        |
|---|------|--------|
| Single Magneto  | each | \$1.25 |
| Double Magneto  | each | 1.50   |
| Off-1-2-Mag, (controls either one of two magnetos but not both) | each | .50    |

MISCELLANEOUS INSTRUMENTS

|   |      |          |
|---|------|----------|
| PIONEER OCTANT, TYPE 206-B.<br>Special Aircraft Type..... | each | \$400.00 |
| PIONEER SPEED AND DRIFT METER,<br>Type 54.....            | each | \$90.00  |
| PIONEER SPEED TIMER, Type 93.....                         | each | \$18.00  |



VELLUMOID GASKETS for Air Craft Motors



Vellumoid is the standard aircraft gasket material. From the inception of the industry it has been used as original gasket equipment on the leading aircraft engines and has played its part in all the memorable air achievements. Back of this continuous record in service throughout the aeronautical industry are more than 17 years of manufacturing experience devoted solely to this product. Vellumoid will stand the gaff in the hardest kind of service. In your regular maintenance work use Vellumoid as the manufacturers do when they build the engine. It is available in ready cut gaskets for the popular engines and in rolls of standard thicknesses from which any gasket needed can be cut out easily and quickly.

VELLUMOID IN SHEETS

| Thickness           | Approx. Wt. Per Sq. Yard | Price Per Square Yard |
|---------------------|--------------------------|-----------------------|
| No. 3—1/64" (.015") | 12 oz.                   | \$0.80                |
| No. 5—1/32" (.032") | 24 oz.                   | 1.60                  |
| No. 6—1/16" (.062") | 2.6 lbs.                 | 3.00                  |

VELLUMOID GASKET SETS

(Complete Sets unless otherwise noted)

| Engine   | No. of Gaskets | Per Set |
|--|----------------|---------|
| Curtiss OX5                                      | 79             | \$3.75  |
| Curtiss OXX6                                     | 80             | 4.00    |
| Curtiss Challenger<br>(Curtiss Assembly D-10595) | 132            | 9.00    |
| Hispano Suiza A.E.I.<br>(Vellumoid items only)   | 34             | 2.25    |
| Kinner "K5"                                      | 23             | 2.50    |
| Lambert "Vellie" M5                              | 33             | 3.00    |
| LeBlond "60"                                     | 19             | 1.50    |
| LeBlond "90"                                     | 23             | 1.75    |
| Liberty<br>(Vellumoid items only)                | 58             | 3.00    |
| "Rover" "L-267"                                  | 33             | 2.25    |
| Pratt & Whitney "Wasp Jr."                       | 135            | 7.50    |
| Pratt & Whitney "Wasp"                           | 137            | 7.50    |
| Pratt & Whitney "Hornet"                         | 134            | 7.50    |
| Warner "Scarab"                                  | 119            | 7.00    |
| Wright "J5"                                      | 73             | 3.00    |
| Wright "J4B"                                     | 64             | 2.50    |
| Wright J6-5 Cyl.                                 | 84             | 3.00    |
| Wright J6-7 Cyl.                                 | 100            | 3.50    |

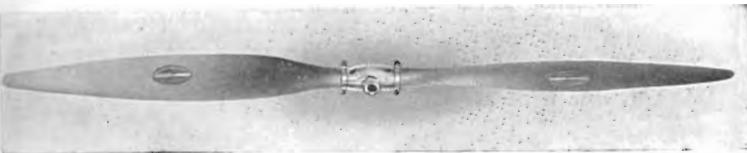


The Vellumoid Company has compiled ready sets of gaskets for the popular aircraft engines. This is for your convenience. Some sets contain all gaskets—Vellumoid, copper, asbestos, cork, hard fibre and rubber. Just what is needed for a complete overhaul job.

|                  |     |      |
|------------------|-----|------|
| Wright J6-9 Cyl. | 123 | 4.50 |
| Wright "Cyclone" | 114 | 4.25 |
| "DH" Gipsy       | 41  | 2.50 |
| Wright "Gipsy"   | 29  | 1.75 |

**HAMILTON STANDARD LIGHT WEIGHT PROPELLERS**

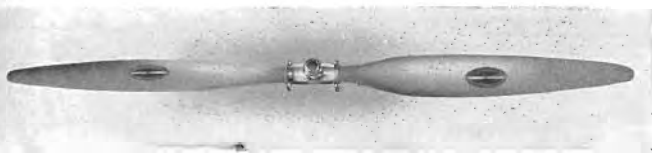
The Hamilton Standard Propeller Corporation has perfected a series of light-weight, adjustable propellers for low horse power sport plane use. These new designs retain the durability, dependability and performance of larger metal propellers at a marked saving in weight. This feature, combined with the well-known low maintenance cost of the sport propellers proves to be very attractive to light plane owners.



**SPORT SENIORS.** For engines from 90 to 115 horse power. Light alloy, adjustable blades. Range in diameters from 7' 0" to 8' 4". Weight complete with hub and puller nuts, 35 to 37 pounds.

| Engine          | Complete | Hub ea.  | Blades ea. |
|-----------------|----------|----------|------------|
| Kinner K-5      | \$225.00 | \$ 65.00 | \$80.00    |
| LeBlond 90      | 225.00   | 65.00    | 80.00      |
| OX-5            | 225.00   | 65.00    | 80.00      |
| OXX-6           | 225.00   | 65.00    | 80.00      |
| Dayton Bear     | 225.00   | 65.00    | 80.00      |
| Warner Scarab   | 225.00   | 65.00    | 80.00      |
| Brownback Tiger | 225.00   | 65.00    | 80.00      |
| Siemens SH 12   | 225.00   | 65.00    | 80.00      |
| Genet 80-88     | 250.00   | 125.00   | 60.00      |

All types not carried in stock but will be shipped promptly.



**SPORT JUNIORS.** For engines 60 to 90 horsepower. Light alloy, adjustable blades. Range in diameters from 5' 8" to 7' 0". Weight complete with hub and puller nuts 25 to 27 pounds.

| Engine        | Complete | Hub ea. | Blades ea. |
|---------------|----------|---------|------------|
| Velie M-5     | \$175.00 | \$55.00 | \$60.00    |
| Lambert R-266 | 175.00   | 55.00   | 60.00      |
| LeBlond 60    | 175.00   | 55.00   | 60.00      |
| Cirrus        | 175.00   | 55.00   | 60.00      |
| Warner Junior | 175.00   | 55.00   | 60.00      |
| Wright Gypsy  | 175.00   | 55.00   | 60.00      |

All types not carried in stock but will be shipped promptly.

**HAMILTON STANDARD PROPELLERS**

The Hamilton Standard light alloy propellers have demonstrated a marked superiority in efficiency over those made of other materials. They incorporate the soundest engineering ability in both design and manufacture. Blades are made of specially forged and hardened aluminum metal alloy and the hubs are made of highest grade chrome steel. The pitch is adjustable to gain fuel economy, quick take-off or high top speed. Metal propellers will out-live many sets of propellers made from other materials. This factor in itself will cover the cost of the Hamilton Standard Steel. The weather can be disregarded and if any damage occurs to the blades they can be readily repaired. Below is listed some of the more popular engine installations, but propellers can be furnished for any.

| Engine         | Complete | Hub ea.  | Blades ea. |
|----------------|----------|----------|------------|
| Axelson        | \$380.00 | \$120.00 | \$130.00   |
| Comet          | 380.00   | 120.00   | 130.00     |
| Continental    | 380.00   | 120.00   | 130.00     |
| Challenger     | 390.00   | 130.00   | 135.00     |
| Hess Warrior   | 280.00   | 90.00    | 95.00      |
| Hornet         | 590.00   | 210.00   | 190.00     |
| Hisso          | 380.00   | 130.00   | 135.00     |
| Kinner R-715   | 390.00   | 130.00   | 135.00     |
| Lycoming       | 390.00   | 130.00   | 135.00     |
| Wasp           | 480.00   | 140.00   | 170.00     |
| Wright J-4-J-5 | 380.00   | 130.00   | 135.00     |
| Wright J-6-5   | 400.00   | 135.00   | 140.00     |
| Wright J-6-7   | 410.00   | 135.00   | 140.00     |
| Wright J-6-9   | 480.00   | 140.00   | 170.00     |
| Cyclone R-1750 | 590.00   | 210.00   | 190.00     |

All types not carried in stock but will be shipped promptly.

**The New AMERICAN PROPELLER**

Splendid Low-Priced Propellers for Curtiss OX5 and Curtiss OXX6 and Hispano Suiza Motors



The NEW PITCH AMERICAN Propellers are made of specially selected lumber, scientifically treated with air currents, heat and vapor which reduce the moisture content of the wood to a negligible degree. They are designed to give top-notch service both on the ground and in the air. All laminations are carefully weighed, balanced and matched for absolute elimination of vibration. This new style pitch provides that extra power for quick take-off and climb. American propellers stand ready to give you maximum and enduring service and lasting quality at a price far below other wooden propellers of equal specifications and performance.

Keep an extra propeller on hand at all times for emergency cases. You never know when accidents will happen and much time and money is saved if you have an extra propeller ready to put the ship back in the air. The low cost of the American makes possible this spare without the outlay of a great sum of money.

The NEW PITCH AMERICAN Propeller is available for most of the popular makes of airplanes. For OX5 and OXX6 motors with and without spinners. Spinners are built in to fit individual ships and we must have the name of your ship with your orders for American with spinners.

Guaranteed against any defect in material and workmanship and should any flaw develop in normal flying conditions the propeller will be repaired or replaced without charge.

Approved by Department of Commerce

- OX5-OXX6 without spinner \$44.00**
- OX5-OXX6 with spinner \$48.00**
- HISPANO-SUIZA 150-180 hp. \$50.00**

Be sure and give name of ship with your order

**NEW WAR SURPLUS PROPELLERS and slightly used new production propellers.**

Below we list various War Surplus Propellers which we still have in stock. These are checked for balance and track before shipment.

**WAR SURPLUS**

- Curtiss OX5-OXX6—
- Copper-Tipped Toothpicks .....each **\$25.00**
- Copper-Tipped Clubs .....each **5.00**
- Lawrence 2-cyl., 28-h. p. cloth tips.....each **10.00**
- LeRhone 80-h. p., cloth tipped.....each **10.00**
- Specimen Props for ornamental or experimental work.....each **2.00**

**POPULAR MAKES OF**

**SLIGHTLY USED NEW PRODUCTION**

- Hispano-Suiza, 150 or 180 h. p.....each **\$40.00**
- Velie M-5, 55 or 65 h. p.....each **25.00**
- LeBlonde, 65 h. p. ....each **25.00**
- Kinner 100-h. p. ....each **35.00**
- Warner 110-h. p. ....each **35.00**
- Curtiss OX5, 90 h. p.....each **35.00**
- Genet, 80 h. p.....each **25.00**

**SUPREME AIRPLANE PROPELLERS**

**SUPREME WOOD PROPELLERS.** Every Supreme is made with the thought, exactness and precision expected of a custom made product. Only the highest grade materials are used and the workmanship is the best. Supreme propellers are built to stand the gaff of hard, day-in-and-day-out service; a service that is efficient and required of propellers. Supremes are made to fit all the popular motors and planes. Below are listed these together with list prices. Supplied with or without spinners. On orders for propellers with spinners be sure to specify name and type of plane on which it is to be used.

| Engine Make         | Without Spinner | With Spinner |
|---------------------|-----------------|--------------|
| Anzani 35 .....     | \$ 50.00        | \$ 60.00     |
| Szekely SR3 .....   |                 |              |
| Anzani .....        | 60.00           | 70.00        |
| Cirrus III .....    |                 |              |
| Genet .....         | 70.00           | 80.00        |
| Gypsy Wright .....  |                 |              |
| LeBlond 60-66 ..... | 70.00           | 80.00        |
| Rover .....         |                 |              |
| Velie M-5 .....     | 70.00           | 80.00        |
| Anzani .....        |                 |              |
| Axelson 115 .....   | 70.00           | 80.00        |
| Dayton Baer .....   |                 |              |
| Hess Warrior .....  | 70.00           | 80.00        |
| Kinner .....        |                 |              |
| LeBlond 90 .....    | 70.00           | 80.00        |
| OX-5 .....          |                 |              |
| OX-6 .....          | 100.00          | 115.00       |
| Seimena 7-9 .....   |                 |              |
| Warner Scarab ..... | 100.00          | 115.00       |
| Axelson 150 .....   |                 |              |
| C6 or K6 .....      | 100.00          | 115.00       |
| Challenger .....    |                 |              |
| Hisso 150-180 ..... | 100.00          | 115.00       |
| Wright J-6 .....    |                 |              |
| Wright WW .....     | 100.00          | 115.00       |
| Wright WW .....     |                 |              |

Glider Propellers, 10 to 30 horsepower...\$25.00 to \$35.00  
(Metal tips, \$5.00 additional.)

**GARDNER GUARANTEED PROPELLERS**

**GARDNER WOODEN PROPELLERS.** All Gardner propellers are designed from data obtained from latest researches. The double-cambered section type is used, giving much better efficiency than the old flat type airfoil. The blade shape is varied to suit requirements of individual design.

Gardner propellers are manufactured by men of years experience in making fine airscrews; material is only the best. Finished either in natural or enamel with special process resulting in durable, waterproof coating. Will withstand damp salt air of sea coast.

Fine performance and all around value of these propellers make them standard equipment on many planes. As Gardner propellers are built to meet their requirements exactly it is important in ordering to name the ship as well as the engine and also the type of flying you generally do.

|                          | With Spinner | Without Spinner |
|--------------------------|--------------|-----------------|
| Aeronca .....            | \$40.00      | \$36.00         |
| Continental A40 .....    |              |                 |
| Szekely SR3 Flight ..... |              |                 |
| Cirrus .....             | \$48.00      | \$45.00         |
| D. H. Gypsy .....        |              |                 |
| Wright Gypsy .....       | \$48.00      | \$45.00         |
| LeBlond 60, 90 .....     |              |                 |
| Velie M-5 .....          | \$48.00      | \$45.00         |
| Rover .....              |              |                 |
| Lambert R266 .....       | \$48.00      | \$45.00         |
| Curtiss OX-5-6 .....     |              |                 |
| Kinner .....             | \$56.00      | \$50.00         |
| Warner .....             |              |                 |
| Walter 120 .....         | \$56.00      | \$50.00         |
| Dayton Bear .....        |              |                 |
| Axelson .....            | \$56.00      | \$50.00         |
| Hispano A, E & L .....   |              |                 |
| Wright J-5 or J-6 .....  | \$87.00      | \$80.00         |

THE GARDNER GUARANTEE MEANS PERFECT SATISFACTION

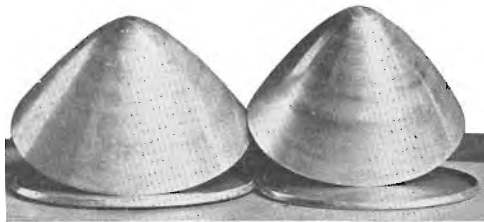
**SMALL PROPELLERS FOR SEA SLEDS, ETC.**

**SMALL PROPELLERS.** We can supply small size propellers for use on small boats or ice sleds. There has been quite a demand for this type of propeller and we are able to supply you with them at follows specifications: 6-foot diameter by 3½-foot pitch; thickness of hub 3¼ inches by 6¼ inches diameter; 1-inch center hole.

Small Propellers .....each \$20.00

(Not carried in stock but will be shipped promptly.)

**ALUMINUM SPINNERS**

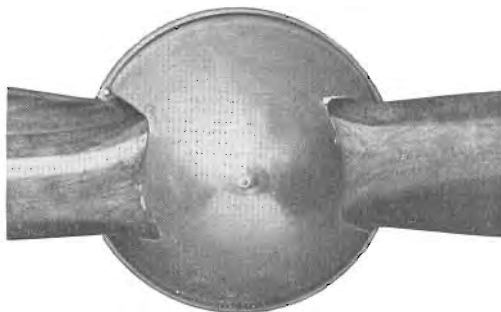


We now carry in stock three sizes of specially made aluminum spinner caps and plates that can be fitted to propellers without spinners and make a neat appearing job on your ship. The base plate fits on back of propeller and the cap fits snugly into it after it has been cut to fit the propeller. Can be used either on wood or metal propellers.

- Type A, Small. Diameter base of cone 11 inches; height of cone 6½ inches. Complete, each...\$7.50
- Type B, Medium. Diameter base of cone 14 inches; height of cone 8¼ inches. Complete each...\$8.75
- Type C, Large. Diameter base of cone 15½ inches; height of cone 7½ inches. Complete each \$10.00

We will cut the caps to fit your propeller if it is here at Marshall or if you will send it to us all transportation charges paid by you.

SPECIAL SIZES made to your order, complete cap and attaching plate.....each \$15.00



Above is shown how aluminum spinners are cut to fit your propellers.

**KINNER AND WARNER Propeller Specials**

Approved by Dept. of Commerce

We can supply strictly high grade propellers for the 7-cylinder Warner Scarab 110 hp or the 5-cylinder 100 hp Kinner K-5 at big savings to you. Finished in natural, newly copper-tinned, 7' 6" diameter, strictly guaranteed as to workmanship, material and performance. Sold on strict money back guarantee if not fully satisfied.

**\$29.50**

Kinner and Warner Propeller Specials Without Spinners .....

**ALUMINUM SPINNER CAPS**



Spun from sheet aluminum and obtainable in a range of base diameters for wooden propellers; nose caps for propellers with built-in spinners.

| Dia. Base | Each   | Dia. Base | Each   |
|-----------|--------|-----------|--------|
| 8 -inch   | \$1.50 | 10 -inch  | \$1.75 |
| 9 -inch   | \$1.50 | 10½ -inch | \$1.75 |
| 9½ -inch  | \$1.50 | 11 -inch  | \$2.00 |



## PARAGON PROPELLERS

For All Aircraft

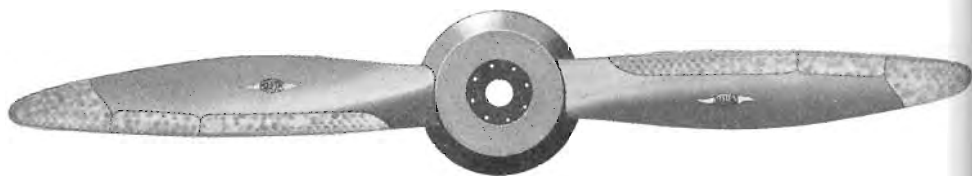
**Paragon Propellers are Guaranteed by the Manufacturer to be made of the Finest Materials, Embody Expert Workmanship and have Lasting Durability and Maximum Efficiency.**

PARAGON PROPELLERS. The manufacturer's years of years experience in making good propellers is back of Paragon Propellers. Data collected from countless tests and experiments and immense engineering facilities combine to give the purchasers of these propellers the assurance of absolute dependability and maximum performance.

Only the best of materials are used in its construction; expert workmanship; a rigid and detailed inspection of every one before it is shipped; guaranteed by manufacturer as to defects in materials or workmanship, efficiency and performance.

Thousands of these propellers are giving absolutely satisfactory service in the industry.

We can make immediate shipment from our stock on most of the types. Others secured on prompt shipment to you. Be sure to state name of your ship if ordering a propeller with spinner.



| Plane             | Engine          | H. P.   | Diameter Propeller | Less Spinner Price | With Spinner Price |
|-------------------|-----------------|---------|--------------------|--------------------|--------------------|
| Alexander         | OX-5            | 90      | 8' 8"              | \$ 70.00           | \$ 80.00           |
| Alexander         | Hisso "E"       | 180     | 8' 6"              | 109.00             | 119.00             |
| Alexander         | Kinner K-5      | 100     | 7' 6"              | 70.00              | 80.00              |
| American Eagle    | Kinner K-5      | 100     | 7' 6"              | 70.00              | 80.00              |
| Arrow             | LeBlond         | 60      | 7' 0"              | 60.00              | 70.00              |
| Arrow             | Kinner          | 100     | 7' 6"              | 70.00              | 80.00              |
| American Savoia   | Kinner K-5      | 100     | 7' 6"              | 70.00              | 80.00              |
| Bird Biplane      | OX-5            | 90      | 8' 8"              | 70.00              | 80.00              |
| Bird Biplane      | Kinner K-5      | 100     | 7' 6"              | 70.00              | 80.00              |
| Bourdon Kittyhawk | Kinner K-5      | 100     | 7' 6"              | 70.00              | 80.00              |
| Command-Aire      | OX-5            | 90      | 8' 8"              | 70.00              | 80.00              |
| Command-Aire      | Warner          | 110     | 7' 6"              | 70.00              | 80.00              |
| Curtiss           | OX-5            | 90      | 8' 8"              | 70.00              | 80.00              |
| Command-Aire      | Hisso           | 150     | 8' 6"              | 109.00             | 119.00             |
| Davis             | LeBlond         | 60      | 7' 0"              | 60.00              | 72.00              |
| Davis             | Kinner          | 100     | 7' 6"              | 70.00              | 82.00              |
| Gipsy Moth        | Gipsy B. B.     | 100     | 6' 4"              | 60.00              | 70.00              |
| Fairchild         | Kinner          | 90      | 7' 6"              | 70.00              | 80.00              |
| Fairchild         | OX              | 90      | 8' 8"              | 70.00              | 80.00              |
| Fleet             | Warner          | 110     | 7' 6"              | 70.00              | 80.00              |
| Fleet             | Kinner          | 100     | 7' 6"              | 70.00              | 80.00              |
| Great Lakes       | Cirrus American | 95      | 6' 6"              | 60.00              | 66.00              |
| Mono              | Velie           | 55      | 6' 8"              | 60.00              | 70.00              |
| Mono              | Warner          | 110     | 7' 6"              | 70.00              | 80.00              |
| Mono              | Kinner K-5      | 100     | 7' 6"              | 70.00              | 80.00              |
| Mono              | J-5             | 200     | 8' 8"              | 109.00             | 119.00             |
| New Standard      | J-5             | 220     | 9' 0"              | 109.00             | 119.00             |
| New Standard      | J-5             | 220     | 8' 8"              | 109.00             | 119.00             |
| New Standard      | J-5             | 220     | 8' 8"              | 109.00             | 119.00             |
| New Standard      | Kinner          | 100     | 7' 6"              | 70.00              | 80.00              |
| Nicholas-Beazley  | LeBlond         | 60      | 7' 0"              | 60.00              | 70.00              |
| Nicholas-Beazley  | Kinner          | 100     | 7' 6"              | 70.00              | 80.00              |
| Nicholas-Beazley  | Warner Junior   | 90      | 7' 6"              | 70.00              | 80.00              |
| Swallow           | OX-5            | 90      | 8' 8"              | 70.00              | 80.00              |
| Swallow           | OX-5            | 90      | 8' 8"              | 70.00              | 80.00              |
| Swallow           | J-5             | 225     | 9' 0"              | 109.00             | 119.00             |
| Travel Air        | J-5             | 200     | 8' 8"              | 109.00             | 119.00             |
| Travel Air        | OX-5            | 90      | 8' 8"              | 70.00              | 82.00              |
| Travel Air        | Warner          | 110     | 7' 6"              | 70.00              | 80.00              |
| Waco              | OX-5            | 90      | 8' 8"              | 70.00              | 80.00              |
| Waco              | Hisso           | 150-180 | 8' 6"              | 109.00             | 119.00             |
| Waco              | J-5             | 220     | 8' 8"              | 109.00             | 119.00             |

**20% discount from prices quoted on Paragon Propellers will be given to any pilot or ship owner or operator.**



## MARSHALL WOODEN PROPELLERS

Approved by Dept. of Commerce

MARSHALL WOODEN PROPELLERS. The Marshall Propeller is a fine new propeller built to the highest standard of quality. Into each propeller is built more efficiency and more durability than you would expect in a wooden propeller. They are made with precise hand methods by expert craftsmen.

The wood used in Marshall Propellers is subjected to very rigid inspections, only the best is allowed to enter into manufacture. Laminations are made by hand and the forms are made by powerful presses. The rough contour of the propeller is then made by a profiling machine, but the finishing, the more important operation, is done by hand: extreme care being taken to keep the propeller in perfect balance.

The tips are important protective shields and they are longer and wider on Marshall Propellers than on any other type.

Only the standard-proved efficient designs are used by the designers of Marshall Propellers—designs that give maximum efficiency and allow the motor to develop its maximum power.

The Marshall Propeller is fully guaranteed to give you satisfaction. It is one of the finest propellers made and it will give you splendid performance and longer service.

All propellers are in natural finish, although special colors can be furnished when desired. They come without built-in wood spinners, however our regular aluminum spinners and spinner back plates can be supplied for them to fit any make ship. See page 47.



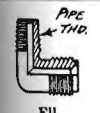
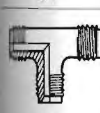

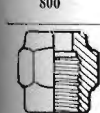
We are prepared to supply any special propeller of any design at very low prices and can make shipment within three days after receipt of order on any special propeller. 25% deposit required on all orders for special made propellers.

### MARSHALL PROPELLERS—

|                                  | Without Spinner |
|----------------------------------|-----------------|
| Cleone 2 cyl. 20 hp.....         | \$25.00         |
| Aeronca 2 cyl. 30 hp.....        |                 |
| Continental A-40 .....           |                 |
| Szekely SR-3 .....               | \$35.00         |
| Flight .....                     |                 |
| Anzani 35 hp.....                |                 |
| All makes up to 35 hp.....       |                 |
| Cirrus Mark III.....             |                 |
| British DH Gypsy, 85-100 hp..... |                 |
| Wright Gypsy, 85-100 hp.....     |                 |
| LeBlond 65 hp. 90 hp.....        | \$45.00         |
| Velie M-5, 65 hp.....            |                 |
| Lambert R-266, 90 hp.....        |                 |
| Rover, 60 hp.....                |                 |
| Warner Junior, 90 hp.....        |                 |
| Genet, 80 hp.....                |                 |
| Curtiss OX-5, 90 hp.....         |                 |
| Curtiss OXX-6, 100 hp.....       |                 |
| Kinner K-5, 100 hp.....          |                 |
| Warner Scarab, 110 hp.....       | \$50.00         |
| Dayton Bear, 110-120 hp.....     |                 |
| Avelson, 115 hp.....             |                 |
| Continental, 165 hp.....         |                 |
| Hisso 150-180 hp.....            |                 |
| Models A, E or I.....            |                 |
| Curtiss Challenger, 170 hp.....  |                 |
| Comet, 150 hp.....               | \$80.00         |
| Lycoming, 210 hp.....            |                 |
| Wright J-5, 225 hp.....          |                 |
| Wright J-6 5-cyl., 165 hp.....   |                 |
| Wright J-6 7-cyl., 225 hp.....   |                 |

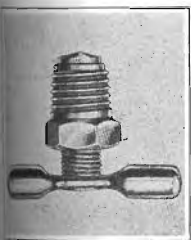
**AIR CORPS STANDARD UNION FITTINGS**

Union connections are specified for both ends of fuel and oil lines where hose fittings are not required. The cone may be silver or soft soldered (silver soldering preferred) to the end of the tube and when the nut is screwed in place a perfect tight joint is effected. The ball seat corrects all irregularities of alignment and insures a tight joint.

| Description  | AN No. | Tube Size | Pipe Thread | Price, Each |
|--|--------|-----------|-------------|-------------|
| <br>Nipple<br>780   | 780-4  | 44        | 1/4"        | \$0.15      |
|  | 780-6  | 3/8"      | 1/4"        | .20         |
|  | 780-8  | 1/2"      | 3/8"        | .27         |
|  | 780-10 | 5/8"      | 1/2"        | .50         |
|  | 780-12 | 3/4"      | 3/4"        | .80         |
| <br>Coupling<br>785 | 785-4  | 1/4"      | 1/8"        | \$0.13      |
|  | 785-6  | 3/8"      | 1/4"        | .21         |
|  | 785-8  | 1/2"      | 3/8"        | .30         |
|  | 785-10 | 5/8"      | 1/2"        | .65         |
|  | 785-12 | 3/4"      | 3/4"        | .80         |
| <br>Ell<br>790      | 790-4  | 1/4"      | 1/8"        | \$0.40      |
|  | 790-6  | 3/8"      | 1/4"        | .50         |
|  | 790-8  | 1/2"      | 3/8"        | .60         |
|  | 790-10 | 5/8"      | 1/2"        | .80         |
|  | 790-12 | 3/4"      | 3/4"        | .90         |
| <br>Tee<br>795      | 795-4  | 1/4"      | 1/8"        | \$0.60      |
|  | 795-6  | 3/8"      | 1/4"        | .75         |
|  | 795-8  | 1/2"      | 3/8"        | 1.00        |
|  | 795-10 | 5/8"      | 1/2"        | 1.50        |
|  | 795-12 | 3/4"      | 3/4"        | 2.00        |
| <br>Cone<br>800    | 800-4  | 1/4"      | 1/8"        | \$0.15      |
|  | 800-6  | 3/8"      | 1/4"        | .17         |
|  | 800-8  | 1/2"      | 3/8"        | .20         |
|  | 800-10 | 5/8"      | 1/2"        | .36         |
|  | 800-12 | 3/4"      | 3/4"        | .48         |
| <br>Nut<br>805    | 805-4  | 1/4"      | 1/8"        | \$0.10      |
|  | 805-6  | 3/8"      | 1/4"        | .15         |
|  | 805-8  | 1/2"      | 3/8"        | .20         |
|  | 805-10 | 5/8"      | 1/2"        | .28         |
|  | 805-12 | 3/4"      | 3/4"        | .40         |












NOTE—One end of Union Nipple, part 780-, and one end of Union Ell, part 790-, have pipe threads as tabulated. All other ends are union ends, requiring on each end a cone and a nut.

**DRAIN COCK AN 771**



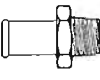
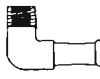
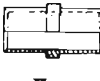
**Drain Cock**  
AN No. 771-1—  
1/8" Pipe Threads,  
each.....35c  
AN No. 771-2—  
1/4" Pipe Threads,  
each.....35c

**STANDARD PIPE FITTINGS**

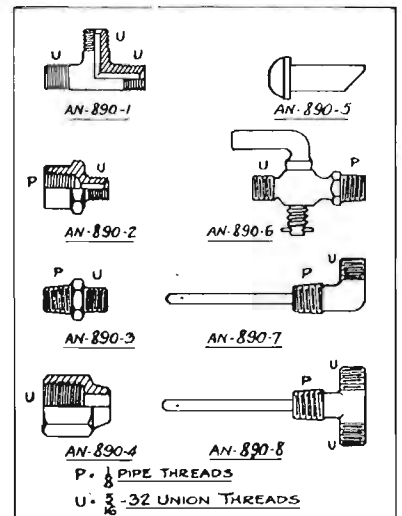
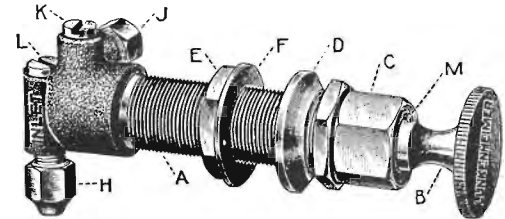
| Description   | AN No.  | Pipe Thread | Price, Each |      |          |        |
|---|---|-------------|-------------|------|----------|--------|
| <br>Street Ell<br>895<br>1-6                         | 895-1   | 1/8"        | \$0.25      |      |          |        |
|   | 895-2   | 1/4"        | .27         |      |          |        |
|   | 895-3   | 3/8"        | .32         |      |          |        |
|   | 895-4   | 1/2"        | .50         |      |          |        |
|   | 895-5   | 3/4"        | .70         |      |          |        |
|   | 895-6   | 1"          | .95         |      |          |        |
| <br>Plain Ell<br>895<br>10-15                        | 895-10  | 1/8"        | \$0.12      |      |          |        |
|   | 895-11  | 1/4"        | .15         |      |          |        |
|   | 895-12  | 3/8"        | .20         |      |          |        |
|   | 895-13  | 1/2"        | .28         |      |          |        |
|   | 895-14  | 3/4"        | .37         |      |          |        |
| 895-15  | 1"  | .56         |             |      |          |        |
| <br>45° Ell<br>895<br>20-25                          | 895-20  | 1/8"        | \$0.16      |      |          |        |
|   | 895-21  | 1/4"        | .20         |      |          |        |
|   | 895-22  | 3/8"        | .25         |      |          |        |
|   | 895-23  | 1/2"        | .35         |      |          |        |
|   | 895-24  | 3/4"        | .50         |      |          |        |
|   | 895-25  | 1"          | .75         |      |          |        |
| <br>Plain Tee<br>895<br>30-35                        | 895-30  | 1/8"        | \$0.15      |      |          |        |
|   | 895-31  | 1/4"        | .20         |      |          |        |
|   | 895-32  | 3/8"        | .30         |      |          |        |
|   | 895-33  | 1/2"        | .40         |      |          |        |
|   | 895-34  | 3/4"        | .50         |      |          |        |
|   | 895-35  | 1"          | .75         |      |          |        |
| <br>Plain Cross<br>895<br>40-45                      | 895-40  | 1/8"        | \$0.25      |      |          |        |
|   | 895-41  | 1/4"        | .30         |      |          |        |
|   | 895-42  | 3/8"        | .40         |      |          |        |
|   | 895-43  | 1/2"        | .50         |      |          |        |
|   | 895-44  | 3/4"        | .80         |      |          |        |
|   | 895-45  | 1"          | 1.20        |      |          |        |
| <br>Coupling<br>895<br>50-55                       | 895-50  | 1/8"        | \$0.10      |      |          |        |
|   | 895-51  | 1/4"        | .14         |      |          |        |
|   | 895-52  | 3/8"        | .16         |      |          |        |
|   | 895-53  | 1/2"        | .25         |      |          |        |
|   | 895-54  | 3/4"        | .37         |      |          |        |
|   | 895-55  | 1"          | .50         |      |          |        |
| <br>Nipple<br>895<br>60-65                         | 895-60  | 1/8"        | \$0.11      |      |          |        |
|   | 895-61  | 1/4"        | .16         |      |          |        |
|   | 895-62  | 3/8"        | .25         |      |          |        |
|   | 895-63  | 1/2"        | .35         |      |          |        |
|   | 895-64  | 3/4"        | .45         |      |          |        |
|   | 895-65  | 1"          | .60         |      |          |        |
| <br>Plug<br>895<br>70B-75B                         | 895-70B   | 1/8"        | \$0.09      |      |          |        |
|   | 895-71B   | 1/4"        | .10         |      |          |        |
|   | 895-72B   | 3/8"        | .12         |      |          |        |
|   | 895-73B   | 1/2"        | .15         |      |          |        |
|   | 895-74B   | 3/4"        | .20         |      |          |        |
|   | 895-75B   | 1"          | .28         |      |          |        |
| <br>Cast<br>Brass<br>Riveting<br>Flange<br>865-1-6 | 865-1   | 1/8"        | \$0.55      |      |          |        |
|   | 865-2   | 1/4"        | .65         |      |          |        |
|   | 865-3   | 3/8"        | .70         |      |          |        |
|   | 865-4   | 1/2"        | .80         |      |          |        |
|   | 865-6   | 3/4"        | 1.00        |      |          |        |
|   | <br>Reducing Bushing<br>Inside Tap Listed<br>895-80-87 | Two Size    |             | P    | One Size |        |
| Description   |   | AN No.      | Each        | T    | AN No.   | Each   |
|    |   | 895-80      | \$0.10      | 1/8" | 895-81   | \$0.20 |
|   |   | 895-82      | .12         | 1/4" | 895-83   | .25    |
|   |   | 895-84      | .14         | 3/8" | 895-85   | .30    |
|   |   | 895-86      | .21         | 1/2" | 895-87   | .38    |
|   | 895-80-87   |             |             |      |          |        |

**AIR CORPS STANDARD HOSE FITTINGS**

Hose connections are used wherever a flexible joint is required on fuel and oil lines. Designers have used such connections with success where a fuel line extends from one unit of the airplane to another—and are always standard and advisable on both ends of lines attached to the engine. A hose liner must always be used inside such connections to prevent material from the hose itself working into the line. Hose fittings reduce the injurious effects of vibration. Don't forget the hose liner—it is required by regulation.

| Description  | AN No. | Tube Size  | Pipe Thread | Price, Each |
|--|--------|------------|-------------|-------------|
| <br>Hose Nipples<br>835 | 835-4  | 1/4 x .032 | 1/8"        | \$0.20      |
|  | 835-6  | 3/8 x .032 | 1/4"        | .25         |
|  | 835-8  | 1/2 x .032 | 3/8"        | .30         |
|  | 835-10 | 5/8 x .032 | 1/2"        | .50         |
|  | 835-12 | 3/4 x .049 | 3/4"        | .80         |
| <br>Hose Ells<br>850    | 850-4  | 1/4 x .032 | 1/8"        | \$0.50      |
|  | 850-6  | 3/8 x .032 | 3/8"        | .55         |
|  | 850-8  | 1/2 x .032 | 1/2"        | .60         |
|  | 850-10 | 5/8 x .032 | 5/8"        | .80         |
|  | 850-12 | 3/4 x .049 | 3/4"        | .95         |
| <br>Hose Liners<br>875  | 875-4  | 1/4 x .032 | 1/8"        | \$0.06      |
|  | 875-6  | 3/8 x .032 | 3/4"        | .08         |
|  | 875-8  | 1/2 x .032 | 3/8"        | .10         |
|  | 875-10 | 5/8 x .032 | 1/2"        | .18         |
|  | 875-12 | 3/4 x .049 | 3/4"        | .21         |

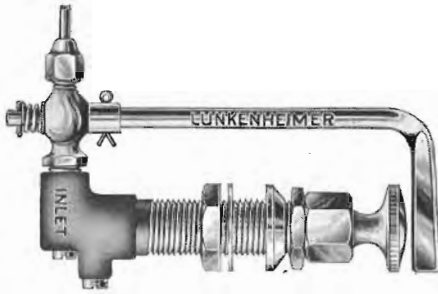
**AIR CORPS PRIMERS AND FITTINGS**



| A. S. No. | Part Name             | Price Each |
|-----------|-----------------------|------------|
| 890-9     | Primer Pump           | \$5.00     |
| 890-8     | Primer Jet Tee        | 1.00       |
| 890-7     | Primer Jet Ell        | .90        |
| 890-6     | Primer Shut-off Cock  | 1.50       |
| 890-5     | Primer Union Cone     | .07        |
| 890-4     | Primer Union Nut      | .09        |
| 890-3     | Primer Nipple, Male   | .40        |
| 890-2     | Primer Nipple, Female | .80        |
| 890-1     | Primer Union Tee      | .35        |

**Our "Ship-the-Same-Day" Service Brings Your Orders to You Immediately.**

PRIMERS



No. 890-11—Primer Pump and Shut-off Cock assembly, single engine, each.....\$8.80



No. 1478—Single Engine Primer Pump and Shut-off Cock assembly; 1/8-in. tube, each.....\$14.00

No. 1479—Two-Engine Primer Pump and Shut-off Cock assembly for left and right hand engine; 1/8-in. tube, each.....\$21.00

No. 1480—Two-Engine Primer Pump and Shut-off Cock assembly for front and rear engines; 1/8-in. tube, each.....\$21.00

No. 1481—Three-Engine Primer Pump and Shut-off Cock assembly; 1/8-in. tube, each.....\$24.00

Dial and Grommet.....1.00  
Grommet......25

STANDARD SHUT-OFF COCKS



Shut-Off Cock Male and Female

| AN No. | Pipe Th. | Each   |
|--------|----------|--------|
| 765-1  | 1/8"     | \$1.15 |
| 765-2  | 1/4"     | 1.30   |
| 765-3  | 3/8"     | 3.20   |



Shut-Off Cock Female

| AN No. | Pipe Tap | Each   |
|--------|----------|--------|
| 765-10 | 1/8"     | \$1.15 |
| 765-11 | 1/4"     | 1.30   |
| 765-12 | 3/8"     | 3.20   |



Three-Way Cock Female

| AN No. | Pipe Tap | Each   |
|--------|----------|--------|
| 765-19 | 1/8"     | \$4.00 |
| 765-20 | 1/4"     | 6.50   |
| 765-21 | 3/8"     | 7.60   |



Drain Cock Male

| AN No. | Pipe Th. | Each   |
|--------|----------|--------|
| 770-1  | 1/8"     | \$1.25 |
| 770-2  | 1/4"     | 1.30   |
| 770-3  | 3/8"     | 1.50   |
| 770-4  | 1/2"     | 2.10   |

IMPERIAL HI-DUTY TUBE COUPLINGS

Illustrated below is the latest development in Imperial Fittings. This is a new scientifically developed Coupling for aeronautical use wherever the service is severe and subject to extreme vibration. Positive resistance to vibration, ease of assembly, easily connected and disconnected and reconnections always tight. While only sizes 1/4", 5/16", 3/8" and 1/2" are listed, any sizes can be had from 1/8" to 1" on special orders.

| Size  | 81-HD | Price  |
|-------|-------|--------|
| 1/4"  |       | \$0.09 |
| 5/16" |       | .10    |
| 3/8"  |       | .14    |
| 1/2"  |       | .25    |

| Size  | 82-HD | Price  |
|-------|-------|--------|
| 1/4"  |       | \$0.45 |
| 5/16" |       | .50    |
| 3/8"  |       | .60    |
| 1/2"  |       | 1.30   |

| Size  | 86-HD      | Price  |
|-------|------------|--------|
| 1/4"  | 1/8" P. T. | \$0.30 |
| 5/16" | 1/8" P. T. | .32    |
| 3/8"  | 1/4" P. T. | .40    |
| 1/2"  | 3/8" P. T. | .90    |

| Size  | 88-HD      | Price  |
|-------|------------|--------|
| 1/4"  | 1/8" P. T. | \$0.28 |
| 5/16" | 1/4" P. T. | .30    |
| 3/8"  | 3/8" P. T. | .38    |
| 1/2"  | 1/2" P. T. | .60    |

| Size  | 85-HD | Price  |
|-------|-------|--------|
| 1/4"  |       | \$0.53 |
| 5/16" |       | .55    |
| 3/8"  |       | .65    |
| 1/2"  |       | 1.26   |

| Size  | 90-HD      | Price  |
|-------|------------|--------|
| 1/4"  | 1/8" P. T. | \$0.40 |
| 5/16" | 1/8" P. T. | .42    |
| 3/8"  | 1/4" P. T. | .55    |
| 1/2"  | 3/8" P. T. | 1.28   |

| Size  | 84-HD | Price  |
|-------|-------|--------|
| 1/4"  |       | \$0.70 |
| 5/16" |       | .75    |
| 3/8"  |       | 1.00   |
| 1/2"  |       | 1.85   |

| Size  | 92-HD      | Price  |
|-------|------------|--------|
| 1/4"  | 1/8" P. T. | \$0.60 |
| 5/16" | 1/4" P. T. | .72    |
| 3/8"  | 3/8" P. T. | .85    |
| 1/2"  | 1/2" P. T. | 1.55   |

| Size  | 52-HD | Price  |
|-------|-------|--------|
| 1/4"  |       | \$1.20 |
| 5/16" |       | 1.38   |
| 3/8"  |       | 2.50   |

| Size  | 91-HD      | Price  |
|-------|------------|--------|
| 1/4"  | 1/8" P. T. | \$0.60 |
| 5/16" | 1/4" P. T. | .66    |
| 3/8"  | 3/8" P. T. | .85    |
| 1/2"  | 1/2" P. T. | 1.55   |

| Size  | 94-HD      | Price  |
|-------|------------|--------|
| 1/4"  | 1/8" P. T. | \$0.31 |
| 5/16" | 1/4" P. T. | .37    |
| 3/8"  | 3/8" P. T. | .41    |
| 1/2"  | 1/2" P. T. | .51    |

| Size  | 89-HD      | Price  |
|-------|------------|--------|
| 1/4"  | 1/8" P. T. | \$0.32 |
| 5/16" | 1/4" P. T. | .38    |
| 3/8"  | 3/8" P. T. | .51    |
| 1/2"  | 1/2" P. T. | 1.00   |

IMPERIAL FLARING TOOL



IMPERIAL FLARING TOOL. Flares copper tubing without cracking or splitting. Sizes 1/8" to 1/2" inch outside diameter. All one assembly, no loose pieces to become lost.

93-F—Imperial Flaring Tool, each.....\$3.00

IMPERIAL TUBE CUTTER



IMPERIAL TUBE CUTTER. A fine companion to the Imperial Flaring Tool is this most efficient tool for cutting copper, brass, clock tin and lead tubing. Takes all sizes from 1/8" to 3/8" inch; makes right angle cut quickly and cleanly. Made of extra strength material and rugged in construction.

94-F—Tube Cutter, each.....\$2.00

96-F—Extra Cutting Wheels, each......50

97-F—Extra Reamer Blades, each......50

IMPERIAL TUBE BENDER



IMPERIAL TUBE BENDER. A much needed tool which makes it a simple matter to bend tubing by hand to any desired shape without collapsing the tube. It is an especially prepared spring wire outfit furnished in six sizes. Springs are cadmium plated to prevent rusting. Overall length 7 1/2 inches.

101-F—Tube Bender Set (6), per set.....\$2.75

102-F—1/4" Inch Bender, each......50

102-F—3/8" Inch Bender, each......40

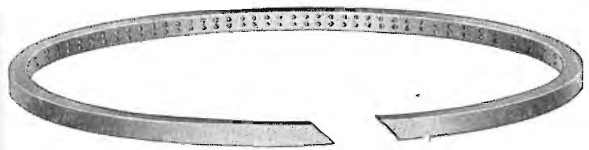
102-F—1/2" Inch Bender, each......40

102-F—5/8" Inch Bender, each......50

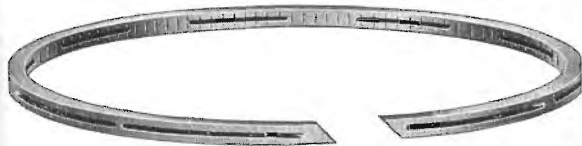
102-F—3/4" Inch Bender, each......50

102-F—7/8" Inch Bender, each......50

# American Hammered Piston Rings



Compression Type Ring



Ventilated Oil Type Ring

AMERICAN HAMMERED PISTON RINGS. Made in a wide range of sizes and adaptable to all popular motors. They are individually cast and tested, made of one piece, easily installed, leakless, accurately machined, tension hammered. American Hammered Rings are made in three types: Compression, Beveled Oil and Oil Regulating. All are made strictly according to specifications as furnished by various engine manufacturers.

| American Hammered Piston Rings— | Comp.  | Bev. Oil | Ven. Oil |
|---------------------------------|--------|----------|----------|
| 1½ to 4 in. incl.....           | \$ .25 | \$ .30   | \$ .50   |
| 4½ to 4½ in. incl.....          | .30    | .40      | .60      |
| 4½ to 5 in. incl.....           | .40    | .50      | .80      |
| 5½ to 5½ in. incl.....          | .50    | .65      | 1.00     |
| 5½ to 6 in. incl.....           | .65    | .85      | 1.20     |
| 6½ to 6½ in. incl.....          | .85    | 1.00     | 1.40     |

(For Piston Ring Specifications see table elsewhere on this page.)

## U. S. HAMMERED PISTON RINGS

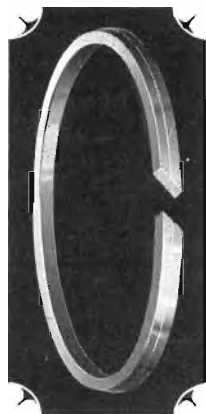
These rings are made of superlative metal, especially designed and treated to meet the exacting requirements of aircraft engines. They have a true circle, flat surface, and uniform wall thickness, and will hold compression under abnormal heat. They will bring out the best performance from any engine.



COMPRESSION TYPE

Guaranteed to hold compression under all conditions. Perfectly machined, and will seat in about one minute's running of the engine. There is no better piston ring on the market. Available in all diameters and widths.

| Prices         |        |
|----------------|--------|
| 3" to 5".....  | \$ .40 |
| 5½" to 6"..... | .50    |
| 6½" to 7"..... | .54    |



BEVELED OIL CONTROL TYPE

May be used with equal success in grooves with or without oil return holes. Precisely machined, and capable of satisfactorily controlling most of the ordinary oil conditions. Available in all diameters and widths.

| Prices         |        |
|----------------|--------|
| 3" to 5".....  | \$ .50 |
| 5½" to 6"..... | .60    |
| 6½" to 7"..... | .70    |



TRIPLE FEATURE OIL CONTROL TYPE

Recommended in all cases of abnormal oil consumption. Guaranteed to satisfactorily control the oil under all conditions. 7/64" or 1/8" oil return holes should be drilled in the oil ring groove, ¾" to 1" apart. Available in all diameters, and in 1/8" and wider.

| Prices         |        |
|----------------|--------|
| 3" to 5".....  | \$ .80 |
| 5½" to 6"..... | .90    |
| 6½" to 7"..... | 1.00   |

## PERFECT CIRCLE PISTON RINGS



Plain Compression Ring



Single Oil-Regulating Ring



The New "85" Ring

PERFECT CIRCLE PISTON RINGS. Perfect Circle now makes four major types of piston rings suitable for airplane use. These are: Single-Duty Oil-Regulating Ring, Beveled Compression Ring, Plain Compression Ring and their new "85" Oil-Regulating Ring.

Each type has its own particular characteristics in the more efficient operation of aviation engines. Single-Duty Oil Regulating eliminates oil pumping and gives thorough cylinder lubrication. Beveled Compression permits effective oil control. The Plain Compression Ring doing its effectual duty in controlling piston blow-by, eliminating the burning of oil on the cylinder walls. The new "85" is an oil-regulating ring with compensating channel; manufacturer guarantees it to eliminate oil-pumping. Wide continuous compensating channel collects and distributes oil entirely around ring thus utilizing the capacity of all the oil-draining slots.

| Perfect Circle Piston Rings— | Plain Comp. | Bevel. Comp. | Sin. Oil. Regulat. | New "85" |
|------------------------------|-------------|--------------|--------------------|----------|
| Under 4½-inch.....           | \$0.30      | \$0.60       | \$0.60             | \$0.85   |
| 4½-inch.....                 | .35         | .70          | .70                | 1.05     |
| 4¾-inch.....                 | .40         | .80          | .80                | 1.25     |
| 5-inch.....                  | .45         | .90          | .90                | 1.50     |
| 5¼-inch.....                 | .50         | 1.00         | 1.00               | 1.75     |
| 5½-inch.....                 | .55         | 1.10         | 1.10               | 2.00     |
| 5¾-inch.....                 | .60         | 1.20         | 1.20               | 2.25     |
| 6-inch.....                  | .65         | 1.30         | 1.30               | 2.50     |

(For Piston Ring Specifications see table elsewhere on this page.)

## PISTON RING SPECIFICATIONS

| Engine                      | Compression Rings Size | Rings No. | Oil Rings Size | Rings No. |
|-----------------------------|------------------------|-----------|----------------|-----------|
| Aeronca.....                | 4¼ x 3/8               | 6         | 4¼ x 3/8       | 2         |
| Axelson.....                | 4½                     |           | 4½             |           |
| Cirrus American.....        | 4¾                     |           | 4¾             |           |
| Comet.....                  | 4½ x 1/8               | 28        | 4½ x 1/8       | 7         |
| Continental, A-70.....      | 4¾ x 1/8               | 21        | 4¾ x 1/8       | 7         |
| Curtiss OX-5.....           | 4 x 9/64               | 24        | 4 x 9/64       | 8         |
| Curtiss OX-5.....           | 4 x 9/64               | 8         | 4 x 9/64       | 8         |
| Curtiss OXX-6.....          | 4¼ x 3/8               | 8         | 4¼ x 3/8       | 8         |
| Curtiss Challenger.....     | 5½                     |           | 5½             |           |
| Hispano-Suiza (A.E.I.)..... | 4.724 x .098           | 32        | 4.724 x .098   | 8         |
|                             | 120mm x 2½mm           | 32        | 120mm x 2½mm   | 8         |
| Kinner K-5.....             | 4¼ x 1/8               | 15        | 4¼ x 1/8       | 5         |
| Kinner B-5.....             | 4¾ x 1/8               | 15        | 4¾ x 1/8       | 5         |
| Kinner C-5.....             | 5¾ x 1/8               | 15        | 5¾ x 1/8       | 5         |
| Lambert R-266.....          | 4¼ x 1/8               | 15        | 4¼ x 1/8       | 5         |
| LeBlond 60-70-90.....       | 4¼ x 1/8               | 10        | 4¼ x 1/8       | 6         |
| LeBlond 85-110.....         | 4¾ x 1/8               | 14        | 4¾ x 1/8       | 7         |
| Lycoming R-680.....         | 4¾ x 1/8               | 18        | 4¾ x 1/8       | 9         |
|                             |                        |           | oil scr.       | 9         |
| Menasco Pirate.....         | 4½                     |           | 4½             |           |
| Pratt Whitney Wasp.....     | 5¾ x 1/8               | 27        | 5¾ x 1/8       | 9         |
| Pratt Whitney Wasp Jr.....  | 5¾ x 1/8               | 27        | 5¾ x 1/8       | 9         |
| Pratt Whitney Hornet-A..... | 6¼ x 1/8               | 27        | 6¼ x 1/8       | 9         |
| Pratt Whitney Hornet-B..... | 6¼ x 1/8               | 27        | 6¼ x 1/8       | 9         |
| Szekely SR-3.....           | 4¼ x 1/8               | 9         | 4¼ x 1/8       | 3         |
| Szekely SR-5.....           | 4¼ x 1/8               | 15        | 4¼ x 1/8       | 5         |
| Velie M-5.....              | 4¼ x 1/8               | 10        | 4¼ x 1/8       | 5         |
| Warner, Scarb.....          | 4¼ x 1/8               | 14        | 4¼ x 1/8       | 7         |
| Warner, Jr.....             | 4¼ x 1/8               | 10        | 4¼ x 1/8       | 5         |
| Wright Five J-6.....        | 5 x 1/8                | 10        | 5 x 1/8        | 10        |
| Wright Seven J-6.....       | 5 x 1/8                | 14        | 5 x 1/8        | 14        |
| Wright Nine J-6.....        | 5 x 1/8                | 27        | 5 x 1/8        | 9         |
| Wright Nine J-5.....        | 4½ x 1/8               | 27        | 4½ x 1/8       | 9         |
| Wright Cyclone R-1750.....  | 6 x 1/8                | 18        | 6 x 1/8        | 36        |
| Wright Gypsy 4-318.....     | 4½ x 1/8               | 8         | 4½ x 1/8       | 4         |

**B. G. SPARK PLUGS**



B. G. Hornet

B. G. Hornet 4B

**B. G. HORNETS.** Various types for all air-cooled and water-cooled aviation motors; standard metric threaded part. Type numbers designate amount of mica on core which is exposed to cylinder temperature, the more mica exposed the hotter the plug will run.

Type No. 2 for high compression 8 to 1 water-cooled motors; Type No. 3 for high compression 6.5 to 1 water-cooled or 6 to 1 air-cooled; Type No. 4 for usual ratios in majority of aviation engines.

**B. G. Hornets.....each \$2.75**

**B. G. HORNET 4-B.** Same as Hornets except that it embodies a non-scaling spindle which will not burn nor scale under any temperature and has a four-sparking point baffle shell electrode; have remarkably long electrode life and good resistance to fouling.

**Hornet 4-B .....each \$3.00**



B. G. IXA Gap

B. G. IXA Regular

**IXA REGULAR.** Used with great success on low compression motors and engines of similar characteristics.

**IXA EXTRA GAP.** Used on same engine as IXA regular, preferred by some users because of greater resistance to fouling; Extra Gap built into terminal.

**IXB REGULAR.** Designed for high temperature and suitable for heavy duty, high-compression engines and motors of similar characteristics.

**IXB EXTRA GAP.** Like IXB Regular except have Extra Gap built into the terminal; as great resistance to fouling and can be used with excellent results where there is excessive oil.

**IXA AND IXB PLUGS.....each \$2.50**

**B. G. MIDGET SPARK PLUGS.** The Midget Plug has the same core as the Hornet Plug except that the core is fitted into the shell; these plugs are for special applications, as where space in the cylinder head is so limited that it is not desirable to tap regular metric spark plug thread; has same classifications as Hornets.

**B. G. MIDGET PLUGS.....each \$2.75**

**THE NEW B. G. RADIO SHIELDED PLUG**



**B. G. RADIO SHIELDED SPARK PLUG.** This new B. G. Radio Shielded spark plug in conjunction with shielded magnetos and harness eliminates all ignition interference; it keeps out dirt, water and oil and gives positive contact. Like other B. G. Plugs the new radio shielded plug is insulated with mica, the superior insulating material. It has standard shell and core hexes and can be easily serviced with standard B. G. wrenches and tools and assembled to harness without solder. The Hornet size B. G. radio shielded plug has an overall length of 3" from cylinder gasket seat and weighs only 3 1/16 ounces complete with terminal.

This new plug is made in types for super-charges and super-compressed engines and with range of operation to meet the idling conditions of winter as well as those of full throttle.

**WRITE FOR COMPLETE INFORMATION AND PRICES.**

**B. G. SPARK PLUG TOOLS**

**B. G. 101.** Offset Chrome Molybdenum wrench with double 1-inch hex openings for all IX model plugs.....each **\$1.50**

**B. G. 201.** Offset Chrome Molybdenum wrench with double 1 1/2-inch hex openings for all Hornet and Midget plugs.....each **\$1.25**

**B. G. 202.** 1 1/2-inch hexagon socket wrench for all Hornet and Midget plugs, with handle.....each **\$ .60**

**B. G. 203.** 1 1/2-inch hexagon vise socket wrench for all Hornet and Midget plugs.....each **\$ .50**

**B. G. 102.** Double end vise socket for all models B. G. plugs.....each **\$ .50**

**B. G. 72.** Special thickness gauge for setting gaps.....each **\$5.00**

**B. G. 3.** Special gap setting tool for 2, 3B and 4B Hornet plug.....each **\$4.40**

**CHAMPION PLUGS**

**CHAMPION SPARK PLUGS** are universally recognized as one of the best plugs for aviation use. The special sillimanity insulator is the finest known and the use of this material is proof against electrical breakdown. With Champion electrode wire a long gap life is insured and with Champion's two piece gaskets the plug will remain gas-tight.



Aero A



No. 7 Metric

**AERO A.** Recommended for all radial air-cooled engines and all others except Curtiss OX-5, OXX-4, Hispano Suiza, Velie and Kinner. Has ability to stand tremendous heat practically no tendency to foul.

**No. 7 METRIC.** Recommended for Curtiss OX-5 & OXX-6 motors and inside bank of Hispano Suiza.



No. 8 Special

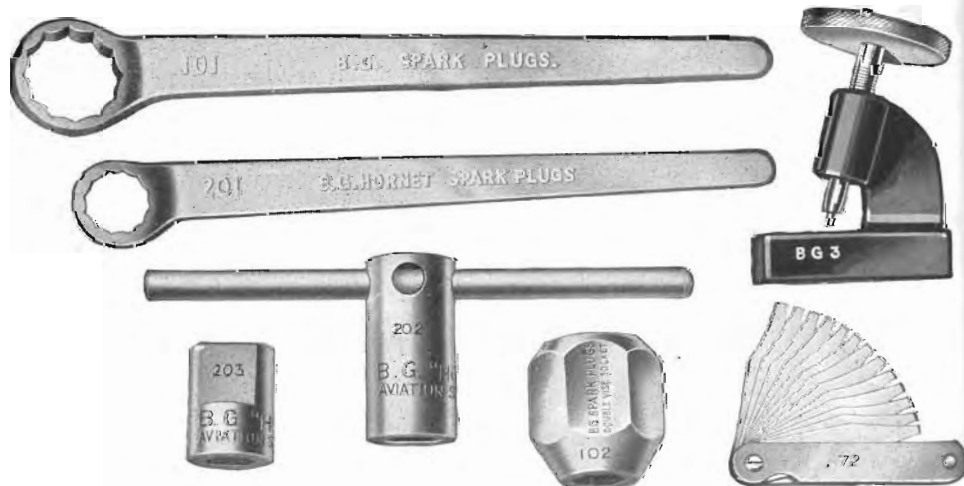


No. 13

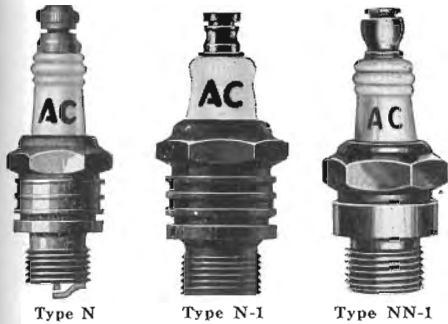
**No. 8 SPECIAL.** For the outside bank of Hispano Suiza.

**No. 13 METRIC.** For Velie and Kinner.

**Aero A** .....each **\$1.25**  
**Nos. 7 & 13 Metric and No. 8 Special**.....each **.75**



A. C. SPARK PLUGS



A. C. has developed three successful types of Metric Spark Plugs which are especially designed and built for aircraft motors.

**TYPE N.** Known as Metric aircraft is recommended for air-cooled engines operating at cruising speed or where continuous fouling is experienced with Type NN-1 or pre-ignition with Type N-1.

**TYPE N-1.** Known as Metric semi-aircraft is recommended for water-cooled engines or in air-cooled engines where fouling is experienced with Type N.

**TYPE NN-1.** Known as Short Metric aircraft is recommended for air-cooled engines operating at full throttle over long distances or where pre-ignition is experienced with Type N.

Types N and NN-1.....each **\$1.25**  
Type N-1.....each **.75**

A. C. MIKO PLUGS



This is a new plug A. C. has recently designed for aircraft engines. This new Miko plug is Mica insulated and is available in a heat range to meet heat characteristics of different engines and operating conditions. Into these Miko plugs have been built these important superiorities: Laboratory tested Mica of highest insulating quality; sealed by electrical process absolutely gas tight; new electrode requiring 50% less voltage; electrically welded and fused eliminating danger of loose terminals.

Miko plugs.....each **\$2.75**

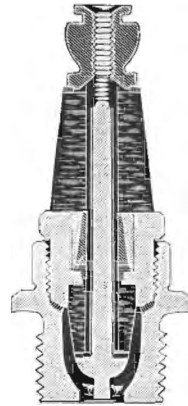
MIKO TOOLS—GASKETS

A. C. Miko Gapping Tool .....each **\$1.00**  
A. C. Miko Take-A-Part Wrenches.....per sets **1.50**  
A. C. Miko Spark Plug Cylinder Wrench.....each **2.00**  
A. C. Miko Insulator Gaskets.....per 1,000 **4.25**  
A. C. Miko Cylinder Gaskets.....per 1,000 **4.25**

MOSLER PLUGS



Mosler M-1



Mosler MK

**M-1 SPARK PLUG.** This plug is the pioneer of mica insulated spark plugs of the aviation industry. It has been used by the various departments of the United States Government and by the various leading commercial aircraft companies for the last eighteen years. This plug is particularly noted for its ability to stay clean under the most severe oil conditions. It is admirably suited for all the pre-war and World War time aircraft engines.

**COPPER COOLED SPARK PLUGS.** These plugs have been developed to meet the more stringent requirements of modern aircraft engines. In virtue of the copper cooling principle incorporated in their design, they possess unusually large range of operation between the preignition tendency of high compression and hot running engines and the fouling tendency of low compression and oily engines. They are made in two styles; a standard and a midjet size, K and MK, respectively. All these plugs have multiple electrodes with inherent merits of (a) higher resistance against fouling, (b) easier starting and (c) longer life between overhauls.

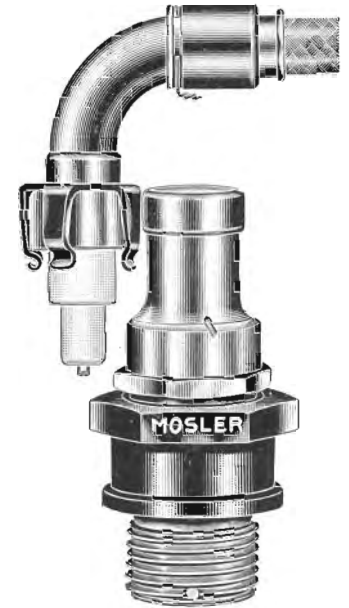
All Mosler Aviation Spark Plugs are divided into three classes, A, B and C.

**CLASS B (K-2 and MK-2).** These plugs are known as Mosler universal plugs, universal in the sense that they fulfill the requirements of almost all the commercial aircraft engines under normal operating conditions.

**CLASS A (K-1 and MK-1).** These plugs possess a greater resistance against preignition and are suitable for engines with compression ratios above 6:1 air-cooled and above 7:1 water-cooled engines.

**CLASS C (K-3, MK-3, KM-1 AND M-1).** These plugs possess a pronounced resistance against fouling tendency of low compression (below 5:1) and oily

MOSLER PLUGS



Mosler Radio Shielded

engines. (KM-1 is a K-3 plug with a baffle plate similar to that of M-1).

**RADIO SHIELDED SPARK PLUG.** This plug is made of two parts and held together with a spring lock. This spring possesses sufficient tension to hold the two parts firmly together. The spark lock has provisions for safety wiring if desired. The upper part after the initial installation becomes a part of the ignition harness and only the lower part, the spark plug proper, is to be changed when worn out. The upper part is free to rotate about the spark plug proper to take any position thereby eliminating any mechanical strain that may come on the cable by sharp bends.

PRICE LIST MOSLER SPARK PLUGS

|                           |           |               |
|---------------------------|-----------|---------------|
| CLASS A—K-1               | .....each | <b>\$2.25</b> |
| MK-1                      | .....each | <b>2.50</b>   |
| CLASS B—K-2               | .....each | <b>\$2.25</b> |
| MK-2                      | .....each | <b>2.50</b>   |
| CLASS C—K-3               | .....each | <b>\$2.25</b> |
| MK-3                      | .....each | <b>2.50</b>   |
| KM-1                      | .....each | <b>2.75</b>   |
| M-1                       | .....each | <b>1.75</b>   |
| RADIO SHIELDED—Upper unit | .....each | <b>\$2.25</b> |
| Lower unit                | .....each | <b>2.75</b>   |

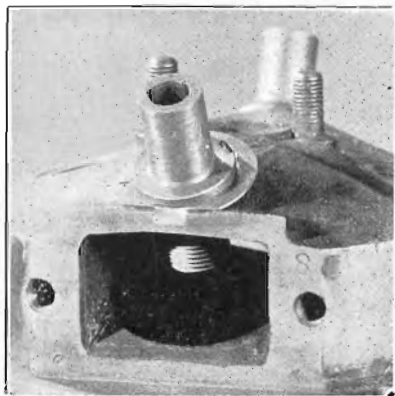
SPARK PLUG RECOMMENDATIONS

|                                  | A. C. Plugs |         | Champion Plugs | Mosler Plugs Class |
|----------------------------------|-------------|---------|----------------|--------------------|
|                                  | Porcelain   | Miko    |                |                    |
| Aeronca, RAD                     | N           | M-5     | Aero A         | C                  |
| Allison                          | N           | M-5     | Aero A         | B                  |
| Anzani                           | N           | M-6     | Aero A         | C                  |
| Axelson                          | N           | M-5     | Aero A         | B                  |
| Beetle                           | N           | M-5     | Aero A         | B                  |
| Bliss, all                       | N           | M-6     | Aero A         | B                  |
| Brownback, all                   | N           | M-5     | Aero A         | C                  |
| Cameron                          | N           | M-6     | Aero A         | B                  |
| Caminez                          | N           | M-5     | Aero A         | B                  |
| Century, all                     | N           | M-6     | Aero A         | B                  |
| Chevolair, D-6                   | N           | M-6     | R-7 or AA      | B                  |
| Chevrolet, D-333                 | N           | M-6     | Aero A         | B                  |
| Cirrus Mark III                  | NN-1        | M-8     | Aero A         | S                  |
| Cirrus, American—Plane           | NN-1        | M-2     | Aero A         | B                  |
| Cirrus, American—Ensign          | N           | M-5     | Aero A         | B                  |
| Comet, 7-D                       | N           | M-5     | Aero A         | C                  |
| Continental, A-70                | N           | M-6     | Aero A         | B                  |
| Curtiss OX5, OXX6                | N           | M-6     | No. 9          | C                  |
| Curtiss, C-6A, D12, V-1550       | N           | M-5     | Aero A         | B                  |
| Curtiss, Geared Conqueror        | NN-1        | M-4     | Aero A         | B                  |
| Curtiss, Chief, Chall., Crusader | N           | M-6     | Aero A         | B                  |
| Dayton, Bear                     | N           | M-5     | Aero A         | B                  |
| Hess, Warrior                    | N           | M-5     | Aero A         | B                  |
| Hispano-Suiza, A & T             | N           | M-7     | No. 7 and 8    | C                  |
| Hispano-Suiza, E                 | N           | M-6     | No. 7 and 8    | C                  |
| Kinner, K-5-B                    | N           | M-5     | No. 13         | B                  |
| Kinner, 715                      | N           | M-5f 4r | Aero A         | B                  |

|                         | A. C. Plugs |         | Champion Plugs | Mosler Plugs Class |
|-------------------------|-------------|---------|----------------|--------------------|
|                         | Porcelain   | Miko    |                |                    |
| Lambert, R-266          | N           | M-7f 6r | No. 13         | B                  |
| LeBlond, 60-66          | N-1         | M-8     | No. 13         | B                  |
| LeBlond, 90-99          | N           | M-5     | No. 13         | B                  |
| Liberty, War Production | N           | M-8     | 7 or AI-64     | C                  |
| Lycoming, R-645         | N           | M-4     | Aero A         | B                  |
| Menasco                 | N           | M-6     | Aero A         | B                  |
| Murray                  | N           | M-6     | Aero A         | B                  |
| Packard, all            | N           | M-5     | Aero A         | A                  |
| Pratt & Whitney, Wasp   | N           | M-7f 6r | Aero A         | B                  |
| Pratt & Whitney, Hornet | N           | M-6f 5r | Aero A         | B                  |
| Quick all               | N           | M-6     | Aero A         | B                  |
| Rhone, Super            | N           | M-5     | Aero A         | C                  |
| Rover, R-267            | N           | M-2     | Aero A         | C                  |
| Salmson, B-2            | N           | M-5     | No. 13         | C                  |
| Scorpion                | N           | M-6     | No. 13         | C                  |
| Siemens & Halske, all   | N           | M-7     | No. 7          | C                  |
| Szekely                 | N           | M-7     | Aero A         | C                  |
| Titan                   | N           | M-5     | Aero A         | C                  |
| Velie, M-5              | NN-1        | M-4     | 13 or 7        | B                  |
| Walter, all             | N           | M-5     | Aero A         | C                  |
| Warner, Scarab          | N           | M-7     | Aero A         | B                  |
| Warner, Scarab Jr.      | N           | M-7     | 13 or AA       | B                  |
| Wright J6, all          | N           | M-5     | Aero A         | B                  |
| Wright J5, 9            | N           | M-7     | Aero A         | B                  |
| Wright, Cyclone R1750   | N           | M-5     | Aero A         | B                  |
| Wright, Gypsy           | N           | M-6     | Aero A         | B                  |

**VALVE GUIDES AND SEATS INSTALLED**

Cylinder Ready  
For Installation

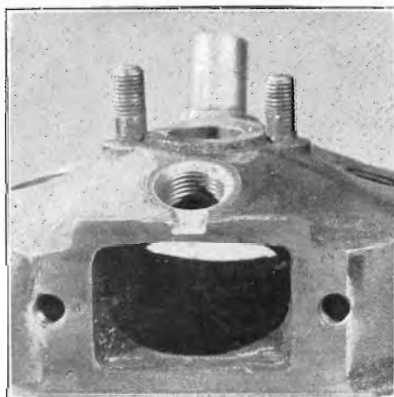


Shoulder  
Rest for  
Spring  
Valve

Valve  
Guide  
Installed

Cylinder Bored, Tapped and  
Faced. Can Replace New  
Guides Without Removing  
Cylinders.

Cylinder  
Counter  
Bored



We are equipped to give you prompt service on Valve Guide and Seat installations. Removable Valve Seats installed into cylinder heads. If work is done on cylinders where seats and guides have been previously installed the work will be done at customer's risk. Where seats are so badly worn as to require a deeper cut than usual for new seat, care will be taken not to injure water jacket, but this class of work is done entirely at customer's risk.

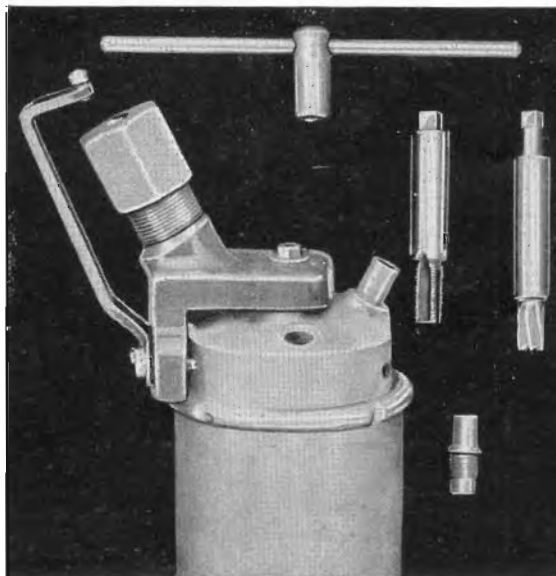
- VALVE GUIDES INSTALLED, valve seats refaced .....per guide **\$1.50**
- REMOVABLE SEATS INSTALLED, and refaced .....per seat **\$2.00**
- NEW OX5 GUIDES, cast iron, press-in or screw-in type .....each **\$0.50**
- NEW SEATS, screw-in or press-in type, Each ..... **\$0.60**

**OTHER OX5 SUPPLIES**

- Miller Pistons—3-ring, medium, high compression, finished rough, standard, .005, .010 or .015 oversize, each.....\$4.00  
(Special order only, one week's delivery.)
- Miller Bronze Exhaust Yokes, each..... 1.00
- Miller Intake Yokes, each ..... 1.25
- Judson Valves (See page 64).
- Judson Perchrome Valves, for exhaust, each .....\$2.50 and \$3.00

**Telegraph and Telephone Orders Receive Special Attention. Use Western Union or Phone Marshall 1400.**

**MILLER PRODUCTS**



**THE MILLER VALVE GUIDE REMOVING AND REPLACING JIG**

It is not necessary to discard OX5 cylinders just because the valve guides and seats are worn, as these cylinders can be put back into service by the Miller Valve Guide Replacement Jig and accompanying accessories. Our jig is designed to be used without any special tools and by anyone who requires such a jig. It bolts to the top of the cylinder and holds the reamer in absolute alignment to remove the old guide and make a hole for the new guide. Through this same jig a tap is operated to thread the hole in alignment.

- Miller Valve Guide Replacement Jig, each.....\$35.00
- Castings, each ..... 16.25
- End Mills, each ..... 8.00
- Valve Guide Taps, each..... 7.00
- Tee Handles, each ..... 1.50
- Nuts, each ..... 1.50
- Hook Bolts, each ..... .50
- Springs, each ..... .25
- Valve Guides, grey iron, each..... .50

**THE MILLER OVERHEAD**

includes the Miller Intake Valve Control and Miller Roller Rocker Arm. Through the alemite connections on this set lubrication is supplied under pressure to all bearing surfaces. The alemite connections are screwed into one side of the intake "H" and lubricant feeds into the hollow large pin and through synchronized holes up the sides of the "H" to the intake pull rod yoke and small pins. A synchronized hole in the center of the large pin is covered by a hole in the exhaust rocker arm through which lubrication is conducted via a feed line to the exhaust push rod yoke and pin. The exhaust yoke is of bronze. The large rocker arm pin runs on bronze bushings in the "H's" and the water manifold is also bronze. All four rocker arm pins are secured and saftied in the sides of the "H's" and push and pull rod yokes at ends of pins, making it impossible for a pin to lose out. These plugs also retain the lubrication and exclude all dust and grit. One of the greatest features of the Miller Overhead is that every time the lubricant from the alemite goes in, the enormous pressure provided forces out all the old oil from between the wearing surfaces, replacing it with clean, unused lubricant. Another important feature of this overhead is the wider flange at the bottom of the water manifold, which greatly aids in preventing rocking of the manifold, breaking of studs and loosening of the gaskets. The system requires lubrication every six or eight hours. The overhead as listed at \$73.00 includes everything above the cylinders, but does not include the push and pull rods nor the intake hold down strap or spring. Push and pull rods are furnished at an extra charge of \$7.00.

- Miller Overhead Assembly, Alemite connection complete with push and pull rods, less spring and hold-down strap.....\$80.00
- Without push and pull rods..... 73.06

**MILLER VALVE SEAT REPLACEMENT SET**

Used in conjunction with the Valve Guide Jig. In using this set the jig is mounted on the cylinder and in replacing the guide. The valve guide hole is reamed and tapped, while the jig is still in place the two bladed cutter is inserted up into the cylinder and through the jig and shaft and then the collar and pin fastened in nut. The spring washer is placed over the shaft and then the collar and pin fastened in place. Unscrewing the nut, places a steady tension against the collar while the cutter is turned with the tee handle. The gauge shown on the valve guide jig acts as a stop when the seat has been cut away to the proper depth. Removing the cutter, the 2 1/2 inch tap is inserted in its place with lead end of the tap first. After the threads are cut the tap is then reversed and reinserted with the bottoming side first in order that the threads may be run clear to the shoulder in the seat. Next operation, the new valve seat, which is machined and threaded to fit, is placed on the valve seat driver and inserted in alignment again through the jig and screwed into the cylinder with litharge and glycerine. The valve guide jig is removed from the cylinder, then before the valve guide is screwed in, the lugs are knocked off the seat by a slight tap from a punch inserted through the valve guide hole, after which the guide is screwed in also with litharge and glycerine. The seat is now ready to be reamed to size.

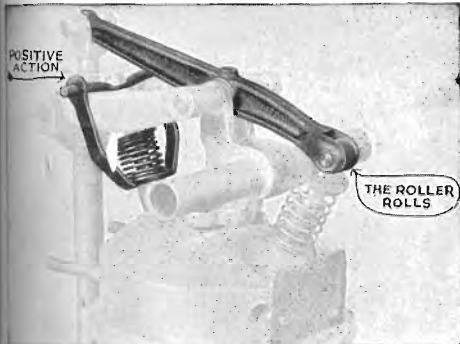
- Miller Valve Seat Replacement Set, with 24 seats, per set.....\$69.50
- Taps, each ..... 28.00
- Reamers, each ..... 6.00
- Seat Drivers, each ..... 4.50
- Arbors, each ..... 2.50
- Bushings, each ..... 3.50
- Collars, each ..... 1.60
- Collar Pins, each ..... .25
- Spring Washers, each ..... .10
- Replacement Seats, each ..... .60

**THE NEW MILLER INTAKE VALVE CONTROL**

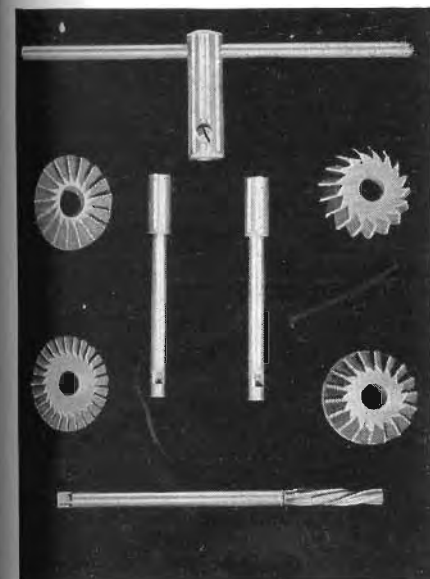
All wearing surfaces are heat treated and hardened. The new style drop forged chrome nickel steel heat treated cross bar insures against breakage and makes this little set the most dependable device that can be made. This control system converts the OX5 valve action into a positive action and increases R. P. M. twenty to fifty revolutions, depending on the condition of motor otherwise, cuts gas consumption fully 15 per cent, completely eliminates all friction in the valve operating system and relieves vibration in the motor. The system weighs one pound and takes approximately three hours to install.

- Complete set of 8.....\$16.00
- Intake Saddles, for replacement, each..... 1.00
- Intake Cross Bars, for replacement, each..... .20
- Wrenches, for installing Cross Bars, each..... .25
- Intake Control Springs, each..... .10

MILLER PRODUCTS



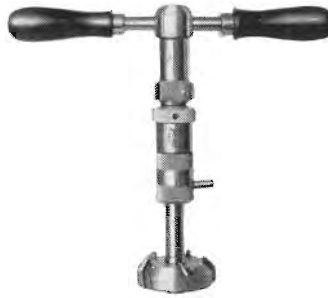
**MILLER ROLLER ROCKER ARMS**  
 were designed to overcome the greatest fault in the OX motor (the premature wearing of the exhaust valve guides and seats). It has long been known that this excessive wear was caused by the tremendous side pressure on the valve stem exerted by the tappet type rocker arm. When opening the valve the tappet is forced to slide nearly 1/8 inch across the valve stem end. The amount of friction consumed in this fault is hard to estimate, but it is considerable. The rocking motion permitted by a loose valve guide allows the valve head to return to the seat in a sliding side motion which results, of course, in rapid wear and consequent sinking of the valve seat. A motor with loose guides and sunken seats cannot turn up. The Miller Roller Rocker Arm is made of drop forged chrome nickel steel, nickel plated, and is equipped at the valve end with a pack hardened and ground steel roller. This roller rolls freely across the valve stem end instead of sticking as is the case with a tappet, result is that the guides remain tight and the valve head leaves and returns to the seat straight and positively. When equipped with Miller Roller Rocker Arms a motor retains the original revolutions much longer and actually runs better because of the perfect valve action. The valve guides and seats last more than twice as long.  
 Miller Roller Rocker Arms, per set of 8.....\$15.00  
 Rocker Arms, less roller and pin, for replacement, each ..... 1.25  
 Rollers, for replacement, each..... .50  
 Pins, for replacement, each ..... .15



**MILLER VALVE SEAT REAMER SET**  
 This set includes all necessary reamers for finishing up replacement seats or for dressing valve seats before grinding valves. The set includes one tee handle, one 3/4 and 2 3/4 pilots, etc., as illustrated in accompanying cut. There is also a 2 3/4 valve stem reamer for use where oversize stem valves are used.  
 Miller Reamer Sets, per set.....\$20.00  
 Seat Reamers, each ..... 3.50  
 Valve Guide Reamer, 2 3/4", each..... 2.60  
 Reamer Handles, each ..... 1.50  
 Pilots, each ..... 1.50

HELLYER

H. S. P. PRECISION VALVE SEATING TOOLS



New designs and materials used in producing the present type, highly efficient aeronautical engines have made exceptional demands for equipment to recondition the valve seats and guides. The location of the seats and the alloy-bronze materials used in their make-up necessitates specially designed equipment to recondition them. This equipment must be fast, efficient and foolproof. The valve seat cutter must stand up under the hardest usage and be able to cut the hard and crystallized surface of the seats to a glass-smooth finish. The H. S. P. Star Line meets these demands, is technically correct and materially proven.  
 The tool when assembled as shown constitutes a unit. As a rigid tool it works with the same positiveness and precision as an accurate lathe or milling machine. The adjustable jack assembly holds the cutter firmly against the valve seat while cutting. It is impossible to leave chattermarks on the seat when this tool is used. The new seats of aeroplane engines require the utmost of precision for holding compression.  
 All H. S. P. Star equipment treated to prevent tarnish and rust.



**H. S. P. STAR JACK ASSEMBLY.**  
 No. H-1. For pilots over 1/2 inch.....each \$10.00  
 No. H-2. For pilots 1/4 inch.....each \$10.00



**H. S. P. STAR UNIVERSAL HANDLE.**  
 All Jacks have an expansion range of 3/4 inches. They are equipped with ball thrust bearing to insure perfect alignment. In ordering refer to motor specification list to insure correct size.  
 No. J-1. Length, 2 inches.....each \$10.00  
 No. J-2. Length, 3 inches.....each 10.00  
 No. J-3. Length, 3 1/2 inches.....each 10.00



**H. S. P. STAR PILOTS.**  
 Furnished in all sizes from 1/8 to 1/2 inches. In ordering refer to motor specification list or give the make of your engine.  
 No. AP-1 to AP-15 Pilot.....each \$3.00

HELLYER H. S. P. PRECISION VALVE SEATING TOOLS



**H. S. P. PILOT SLEEVES.**  
 To be used on engines requiring a pilot over 1/8 inches in diameter. To be used with 1/2-inch pilot. Precision ground inside and out. Hardened steel.  
 No. AP-16. OD .624; ID .499.....each \$3.00  
 No. AP-17. OD .627; ID .499.....each 3.00  
 No. AP-18. OD .685; ID .499.....each 3.00



**H. S. P. STAR CUTTER.**  
 Furnished in 20, 30, 45 and 70 degree angles for all makes of aeronautical engines.

| Dia.      | Catalog Number |      |      |      | Price Each |
|-----------|----------------|------|------|------|------------|
|           | 20°            | 30°  | 45°  | 70°  |            |
| 1 3/4-in. | S206           |      | S406 | S706 | \$10.00    |
| 1 7/8-in. | S207           |      | S407 | S707 | 10.00      |
| 2-in.     | S208           | S308 | S408 | S708 | 10.00      |
| 2 1/8-in. | S210           |      | S410 | S710 | 10.00      |
| 2 1/4-in. | S212           |      | S412 | S712 | 10.00      |
| 2 3/8-in. | S213           |      | S413 | S713 | 10.00      |
| 2 1/2-in. | S214           | S314 | S414 | S713 | 10.00      |
| 2 5/8-in. | S215           |      | S415 | S715 | 12.00      |
| 2 7/8-in. | S217           |      | S417 | S717 | 12.00      |
| 2 3/4-in. | S216           | S316 | S416 | S716 | 12.00      |
| 3-in.     | S218           |      | S418 | S718 | 12.00      |
| 3 1/8-in. | S219           |      | S419 | S719 | 12.00      |
| 3 1/4-in. | S220           |      | S420 | S720 | 12.00      |
| 3 1/2-in. | S221           |      | S421 | S721 | 12.00      |

SPECIFICATIONS FOR H.S.P. VALVE RESEATING TOOLS

| Engine             | Pilots   | Seat |      |      | Cut | Han- | Jack |
|--------------------|----------|------|------|------|-----|------|------|
|                    |          | Ctrs | 20   | 70   |     |      |      |
| Axelson            | Int AP12 | S412 | S212 | S708 | H-1 | J-1  |      |
|                    | Exh AP12 | S412 | S212 | S708 | H-1 | J-1  |      |
| Curtiss OX 5       | Int AP 5 | S412 | S212 | S710 | H-1 | J-1  |      |
|                    | Exh AP 6 | S412 | S212 | S710 | H-1 | J-1  |      |
| Curtiss Challenger | Int AP 8 | S414 | S214 | S712 | H-1 | J-1  |      |
|                    | Exh AP16 | S414 | S214 | S712 | H-1 | J-1  |      |
| Curtiss Conqueror  | Int AP 3 | S407 | S207 | S706 | H-2 | J-1  |      |
|                    | Exh AP 3 | S407 | S207 | S706 | H-2 | J-1  |      |
| Hisso              | Int AP16 | S412 | S212 | S708 | H-1 | J-1  |      |
|                    | Exh AP17 | S412 | S212 | C708 | H-1 | J-1  |      |
| Kinner K-5         | Int AP11 | S310 | S212 | S707 | H-1 | J-1  |      |
|                    | Exh AP11 | S310 | S212 | S707 | H-1 | J-1  |      |
| Kinner P-5         | Int AP 9 | S415 | S216 | S713 | H-1 | J-2  |      |
|                    | Exh AP15 | S415 | S216 | S713 | H-1 | J-2  |      |
| Le Blond           | Int AP 2 | S407 | S207 | S706 | H-2 | J-1  |      |
|                    | Exh AP 2 | S407 | S207 | S706 | H-2 | J-1  |      |
| Liberty            | Int AP 9 | S316 | S217 | S714 | H-1 | J-1  |      |
|                    | Exh AP 9 | S316 | S217 | S714 | H-1 | J-1  |      |
| P & W Wasp         | Int AP 9 | S417 | S217 | S714 | H-1 | J-2  |      |
|                    | Exh AP15 | S417 | S217 | S714 | H-1 | J-2  |      |
| P & W Hornet       | Int AP 9 | S417 | S217 | S714 | H-1 | J-2  |      |
|                    | Exh AP16 | S417 | S217 | S714 | H-1 | J-2  |      |
| Siemens Halske     | Int AP 4 | S407 | S207 | S706 | H-2 | J-1  |      |
|                    | Exh AP 4 | S407 | S207 | S706 | H-2 | J-1  |      |
| Velie              | Int AP 1 | S407 | S207 | S706 | H-2 | J-1  |      |
|                    | Exh AP 1 | S407 | S207 | S706 | H-2 | J-1  |      |
| Warner Scarab      | Int AP 3 | S410 | S210 | S707 | H-2 | J-1  |      |
|                    | Exh AP11 | S410 | S210 | S707 | H-1 | J-1  |      |
| Wright J-5         | Int AP 8 | S412 | S212 | S710 | H-1 | J-1  |      |
|                    | Exh AP14 | S413 | S213 | S710 | H-1 | J-1  |      |
| Wright J-6         | Int AP10 | S414 | S214 | S712 | H-1 | J-3  |      |
|                    | Exh AP16 | S414 | S214 | S712 | H-1 | J-3  |      |
| Wright R-1750      | Int AP10 | S418 | S218 | S716 | H-1 | J-2  |      |
|                    | Exh AP18 | S417 | S217 | S715 | H-1 | J-2  |      |

Special Cutters made on order. All Star Equipment, specially treated to prevent tarnish and rust.



**HELLYER AIRCRAFT  
ENGINE TOOL SETS**

No. 100—  
SPECIAL SET FOR CURTISS OX 5.....**\$20.00**

- Packed in neat green enameled metal box
- 1 Turning handle complete
- 3/8, 25/64 Pilots
- 2 1/4 15 Valve Seat Cutter
- 2 1/4 45 Valve Seat Cutter
- 2 1/4 45 Roughing Cutter
- 2 1/4 75 Valve Seat Cutter
- 25/64 Guide Reamer

This is a practical utility set for the private operator and contains the regular solid type cutters and special turning handle.

No. 101—CURTISS OX 5,  
CONTAINING STAR EQUIPMENT.....**\$50.00**

- H-1 Turning Handle
  - J-1 Jack Assembly
  - AP5 Pilot
  - AP6 Pilot
  - S212 Star Cutter
  - S412 Star Cutter
  - S710 Star Cutter
- Packed in neat metal box

No. 200—WRIGHT J-5,  
CONTAINING STAR EQUIPMENT.....**\$68.40**

- H-1 Turning Handle
  - J-3 Jack Assembly
  - AP 8 Pilot
  - AP14 Pilot
  - S212 Star Cutter
  - S213 Star Cutter
  - S412 Star Cutter
  - S413 Star Cutter
  - S710 Star Cutter
- Packed in neat metal box

No. 201—WRIGHT J-6.....**\$50.00**

- H-1 Turning Handle
  - J-3 Jack Assembly
  - AP10 Pilot
  - AP16 Pilot
  - S214 Star Cutter
  - S414 Star Cutter
  - S712 Star Cutter
- Packed in neat metal box

No. 202—WRIGT R-1750.....**\$88.20**

- H-1 Turning Handle
  - J-2 Jack Assembly
  - AP10 Pilot
  - AP18 Pilot
  - S217 Star Cutter
  - S218 Star Cutter
  - S417 Star Cutter
  - S418 Star Cutter
  - S716 Star Cutter
  - S715 Star Cutter
- Packed in neat metal box

No. 300—CURTISS CHALLENGER AND  
CONQUEROR.....**\$89.10**

- H-1 Turning Handle
  - H-2 Turning Handle
  - J-1 Jack Assembly
  - AP 3 Pilot
  - AP 8 Pilot
  - AP16 Pilot
  - S207 Star Cutter
  - S214 Star Cutter
  - S407 Star Cutter
  - S414 Star Cutter
  - S706 Star Cutter
  - S712 Star Cutter
- Packed in neat metal box

No. 400—P & W WASP AND HORNET.....**\$56.70**

- H-1 Turning Handle
  - J-2 Jack Assembly
  - AP 9 Pilot
  - AP15 Pilot
  - AP16 Pilot
  - S217 Star Cutter
  - S417 Star Cutter
  - S714 Star Cutter
- Packed in neat metal box

**HELLYER AIRCRAFT  
ENGINE TOOL SETS**

No. 601—KINNER P-5 190 H. P.....**\$54.00**

- H-1 Turning Handle
  - J-2 Jack Assembly
  - AP 9 Pilot
  - AP15 Pilot
  - S216 Star Cutter
  - S415 Star Cutter
  - S713 Star Cutter
- Packed in neat metal box

No. 700—HISSO 150 H. P.....**\$50.00**

- H-1 Turning Handle
  - J-1 Jack Assembly
  - AP16 Pilot
  - AP17 Pilot
  - S212 Star Cutter
  - S412 Star Cutter
  - S708 Star Cutter
- Packed in neat metal box

No. 800—LE BLOND 90 H. P.....**\$47.70**

- H-2 Turning Handle
  - J-1 Jack Assembly
  - AP 2 Pilot
  - S207 Star Cutter
  - S407 Star Cutter
  - S706 Star Cutter
- Packed in neat metal box

No. 900—LIBERTY.....**\$51.30**

- H-1 Turning Handle
  - J-1 Jack Assembly
  - AP 9 Pilot
  - S217 Star Cutter
  - S316 Star Cutter
  - S714 Star Cutter
- Packed in neat metal box

No. 1000—VELIE 90 H. P.....**\$47.70**

- H-2 Turning Handle
  - J-1 Jack Assembly
  - AP 1 Pilot
  - S207 Star Cutter
  - S407 Star Cutter
  - S706 Star Cutter
- Packed in neat metal box

No. 500—AXELSON.....**\$47.70**

- H-1 Turning Handle
  - J-1 Jack Assembly
  - AP12 Pilot
  - S212 Star Cutter
  - S412 Star Cutter
  - S708 Star Cutter
- Packed in neat metal box

No. 600—KINNER K-5 100 H. P.....**\$47.70**

- H-1 Turning Handle
  - J-1 Jack Assembly
  - AP11 Pilot
  - S212 Star Cutter
  - S310 Star Cutter
  - S707 Star Cutter
- Packed in neat metal box

**WAR SURPLUS  
AIRPLANE PARTS**

While our stock of War Surplus Airplane parts is rather limited we still have a few left. On whatever items you might be interested in you will just write us what you need we will let you know at once what we can supply and the prices.

**SCINTILLA MAGNETOS**



SCINTILLA MAGNETOS. Selected as standard of aircraft engines of several makes because of their dependability, simplicity and accessibility. Three very important factors for consideration. The proper functioning of your motor depends on the magnetos. The simple design of Scintilla eliminates failures and accessibility makes repair easy.

Dependability of Scintilla Magnetos on which pilots rely comes from their simple design—the stationary coil, armature and contact breaker. Superior performance has been proven on every outstanding flight achievement.

A majority of American aircraft engines are equipped with Scintilla Magnetos.

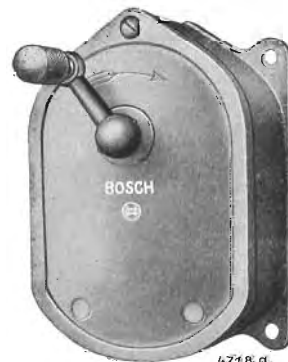
|                               |       |                 |
|-------------------------------|-------|-----------------|
| Type V-AG12-D 12-cyl.....     | Each, | <b>\$210.00</b> |
| Type V-AG9-9 9-cyl.....       | Each, | <b>186.00</b>   |
| Type MN-7-D 7-cyl.....        | Each, | <b>114.00</b>   |
| Type GN-6-D 6-cyl.....        | Each, | <b>120.00</b>   |
| Type PN-5-D 5-cyl.....        | Each, | <b>76.00</b>    |
| Type PN-4-D 4-cyl.....        | Each, | <b>72.00</b>    |
| Curtiss OX5 Engines.....      | Each, | <b>180.00</b>   |
| Curtiss OXX6 Engines.....     | Each, | <b>135.00</b>   |
| Hispano Engines.....          | Each, | <b>180.00</b>   |
| Model EA Ignition Switch..... | Each, | <b>10.00</b>    |

(All types not carried in stock but will be supplied promptly.)

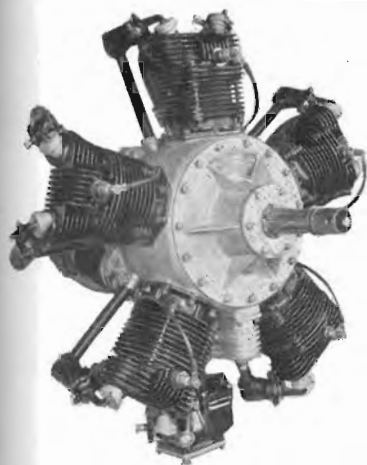
**OTHER MAGNETOS**

|  |      |                |
|--|------|----------------|
| DIXIE 800. For Hispano-Suiza engines left rotation, new..... | each | <b>\$25.00</b> |
| BERLING. For Curtiss OX5 engine, new production.....         | each | <b>\$50.00</b> |
| BERLING. Factory rebuilt, and overhauled.                    |      |                |
| Each.....  |      | <b>\$40.00</b> |
| LE RHONE. 80 H.P. new.....                                   | each | <b>\$20.00</b> |
| REBUILT DIXIE 83-85.....                                     | each | <b>\$20.00</b> |

**BOOSTER MAGNETOS**



|  |                |
|--|----------------|
| BOSCH BOOSTER. Hand crank operated; weight 7 1/2 pounds, each..... | <b>\$24.00</b> |
| DIXIE BOOSTER. Hand crank operated.                                |                |
| Each.....  | <b>\$25.00</b> |
| HEINZ BOOSTER. Hand crank operated.                                |                |
| Each.....  | <b>\$17.50</b> |



VELIE M-5 AND LAMBERT R-266 PARTS LIST

These two models of Lamber radial air-cooled airplane motors are becoming more popular as their continued use proves their real dependability and efficiency. The Velie M-5 is rated at 65 horse power and the Lambert R-266 is rated at 90 horse power.

While it is quite impractical for us to carry at all times a complete stock of all parts for these two motors we plan to carry for immediate shipment a stock of the more popular items and on the others we will make prompt shipment direct from the factory.

There are several parts on these two engines which are identical and are interchangeable. We are below showing a complete listing of the Velie M-5 parts and the items which are interchangeable are starred (\*). Immediately following the M-5 listing is the Lambert R-266 and in this listing we have included only the additional parts for this engine. The rest of the R-266 parts are the starred (\*) items in the M-5 listing.

All parts are guaranteed genuine as guaranteed to us by the manufacturers.

CRANKCASE

| Number  | No. Required | Price Each |
|---|--------------|------------|
| M-101A—Crankcase assembly with studs, valve lifter guides and bearing sleeve..... | 1            | \$150.00   |
| *M-105—Crankshaft rear bearing sleeve.....  | 1            | 5.70       |
| *X-1269B—Crankshaft rear bearing sleeve screw.....                                | 3            | Doz. .10   |
| M-109—Valve lifter guide.....   | 10           | 1.25       |
| M-511—Valve lifter guide lock screw.....  | 10           | .10        |
| M-1003—Cylinder base stud.....  | 40           | .25        |
| M-1003—Crankcase cover stud.....  | 15           | .25        |
| M-1004—Gearcase stud.....   | 10           | .25        |
| M-1004—Intake tube stud.....  | 10           | .25        |
| M-1004—Carburetor adapter stud.....   | 4            | .25        |
| M-1004—Oil sump stud.....   | 4            | .25        |

FRONT CRANKCASE COVER

|  |    |          |
|--|----|----------|
| M-102A—Crankcase cover assembly with studs and bearing sleeves.....              | 1  | 35.00    |
| *M-105—Crankshaft front bearing sleeve.....                                      | 1  | 5.70     |
| *X-1269B—Crankshaft front bearing sleeve screw.....                              | 3  | Doz. .10 |
| *M-104—Crankshaft thrust bearing sleeve.....                                     | 1  | 5.40     |
| M-1016—Crankshaft thrust cover stud.....   | 6  | .20      |
| *M-146—Crankshaft thrust bearing sleeve gasket.....                              | 1  | .05      |
| M-123—Crankcase cover gasket.....  | 1  | .10      |
| *M-1012—5-16-24 S. A. E. plain nut.....  | 15 | .05      |
| *M-1019— $\frac{1}{8}$ x $\frac{1}{8}$ x $\frac{1}{8}$ plain washer.....         | 15 | Doz. .10 |
| *X-4553— $\frac{1}{8}$ x $\frac{1}{8}$ x $\frac{1}{8}$ S. A. E. lock washer..... | 15 | Doz. .10 |
| *M-605—Crankshaft thrust bearing (S. R. B. 210).....                             | 1  | 7.00     |
| *M-103—Crankshaft thrust bearing cover.....                                      | 1  | 3.50     |
| *M-146—Crankshaft thrust bearing cover gasket.....                               | 1  | .05      |
| *M-1012—24 S. A. E. plain nut.....   | 6  | .05      |
| *M-1019— $\frac{1}{8}$ x $\frac{1}{8}$ x $\frac{1}{8}$ plain washer.....         | 6  | Doz. .10 |
| *X-4553— $\frac{1}{8}$ x $\frac{1}{8}$ x $\frac{1}{8}$ S. A. E. lock washer..... | 6  | Doz. .10 |

GEAR CASE

|  |    |          |
|--|----|----------|
| M-111A—Gearcase, studs and bushings asm.....                                     | 1  | 60.00    |
| M-124—Gearcase gasket.....   | 1  | .10      |
| *M-112—Camshaft and cam drive shaft bushing.....                                 | 4  | .70      |
| *M-138—Magneto drive shaft bushing.....  | 4  | .46      |
| *M-3127— $\frac{1}{8}$ pipe plug, headless.....                                  | 1  | .05      |
| *X-1101A— $\frac{1}{4}$ " flared tube union.....                                 | 1  | .05      |
| *M-833— $\frac{3}{8}$ x45 Deg. flared tube ell.....                              | 1  | .35      |
| M-1008—Starter flange plate stud (long).....                                     | 3  | .25      |
| M-1004—Gear case cover stud.....   | 4  | .25      |
| M-1027—Oil pump stud.....  | 2  | .25      |
| *M-1011— $\frac{1}{4}$ -28 S. A. E. plain nuts.....                              | 10 | .05      |
| *M-1018— $\frac{1}{4}$ x $\frac{1}{2}$ x $\frac{1}{8}$ plain washer.....         | 10 | Doz. .10 |
| *X-4552— $\frac{1}{4}$ x $\frac{1}{2}$ x $\frac{1}{8}$ S. A. E. lock washer..... | 10 | Doz. .10 |
| M-501A—Cam assembly w/bushing.....   | 1  | 15.00    |
| M-502—Cam bushing.....   | 1  | .65      |
| M-503—Camshaft.....  | 1  | 7.25     |
| *M-509—Cam thrust washer.....  | 1  | .40      |
| *M-505—Cam drive shaft gear (20 teeth).....                                      | 1  | 3.30     |
| *X-2303—Cam drive shaft drive gear key.....                                      | 1  | .05      |
| *M-506—Cam drive shaft drive gear nut.....                                       | 1  | 1.25     |
| *M-507—Cam drive shaft drive gear nut taper pin.....                             | 1  | .35      |
| M-504—Cam drive shaft (15 tooth gear integral).....                              | 1  | 6.75     |
| M-513—Cam drive shaft thrust washer.....   | 1  | .45      |
| M-508—Cam drive shaft gear (40 teeth).....                                       | 1  | 5.25     |
| M-510—Cam timing flange.....   | 1  | 4.30     |
| M-514—Cam timing flange washer.....  | 1  | .35      |
| M-516—Cam timing flange nut.....   | 1  | .45      |
| M-512—Cam timing flange screw.....   | 4  | .20      |
| *M-137—Magneto drive shaft (16 tooth gear integral).....                         | 2  | 7.35     |
| *M-141—Magneto drive shaft washer.....   | 2  | .30      |
| *M-143—Magneto drive shaft nut.....  | 2  | .25      |
| *M-131—Magneto drive shaft oil slinger.....                                      | 2  | .05      |
| *X-2110— $\frac{3}{8}$ x 1 cotter pin.....                                       | 3  | Doz. .10 |
| X-2305—No. 5 Woodruff key.....   | 2  | .05      |

CARBURETOR ADAPTER

|  |   |          |
|--|---|----------|
| M-154—Carburetor adapter.....  | 1 | 5.10     |
| M-129—Carburetor adapter gasket.....   | 1 | .05      |
| M-1034—Carburetor stud.....  | 2 | .25      |
| *M-1011— $\frac{1}{4}$ -28 S. A. E. plain nut.....                               | 4 | .05      |
| *X-4552— $\frac{1}{4}$ x $\frac{1}{2}$ x $\frac{1}{8}$ S. A. E. lock washer..... | 4 | Doz. .10 |
| *M-1018— $\frac{1}{4}$ x $\frac{1}{2}$ x $\frac{1}{8}$ plain washer.....         | 4 | Doz. .10 |

GEAR CASE COVER

| Number   | No. Required | Price Each |
|--|--------------|------------|
| M-114A—Gear case cover assembly.....   | 1            | 31.50      |
| M-125—Gear case cover gasket.....  | 1            | .05        |
| M-1016—Starter flange plate stud (short).....                                    | 3            | .20        |
| M-1031—Breather tube adapter stud.....   | 2            | .25        |
| *M-142—Magneto drive shaft oil retainer.....                                     | 2            | .05        |
| *M-358—Magneto drive shaft felt washer retainer.....                             | 2            | .10        |
| *M-357—Magneto drive shaft felt washer.....                                      | 2            | .10        |
| *X-1179C—No. 10-24x $\frac{3}{8}$ " rd. hd. machine screws.....                  | 8            | Doz. .10   |
| *X-4567— $\frac{1}{8}$ x $\frac{3}{8}$ / 64x3/64 S. A. E. lock washer.....       | 8            | Doz. .10   |
| *M-1048— $\frac{1}{4}$ x $\frac{3}{4}$ dowel pin.....                            | 2            | .05        |
| *M-115—Starter flange plate.....   | 1            | 1.25       |
| *M-127—Starter flange plate gasket.....  | 1            | .05        |
| *M-1012— $\frac{1}{8}$ -24 S. A. E. plain nut.....                               | 6            | .05        |
| *M-1019— $\frac{1}{8}$ x $\frac{1}{8}$ x $\frac{1}{8}$ plain washer.....         | 12           | Doz. .10   |
| *X-4553— $\frac{1}{8}$ x $\frac{1}{8}$ x $\frac{1}{8}$ S. A. E. lock washer..... | 6            | Doz. .10   |
| M-151—Breather tube adapter.....   | 1            | 2.20       |
| *M-1011— $\frac{1}{4}$ x28 S. A. E. plain nut.....                               | 2            | .05        |
| *M-1018— $\frac{1}{4}$ x $\frac{1}{2}$ x $\frac{1}{8}$ plain washer.....         | 2            | Doz. .10   |
| *X-4552— $\frac{1}{4}$ x 3/32 x $\frac{1}{8}$ S. A. E. lock washer.....          | 2            | Doz. .10   |

OIL PUMP

(Engine No. 1 to 268 Inclusive)

|  |   |          |
|--|---|----------|
| M-800—Oil pump assembly.....   | 1 | 45.00    |
| *M-821—Oil pump gasket.....  | 1 | .05      |
| M-801—Oil return pump body.....  | 1 | 7.50     |
| M-802—Oil pump driver gear shift.....  | 1 | 3.90     |
| *M-803—Oil pump gears.....   | 2 | 1.30     |
| M-804—By pass valve.....   | 1 | .35      |
| *M-805—By pass valve spring.....   | 1 | .05      |
| *M-806—By pass adjusting screw.....  | 1 | .40      |
| *M-808—Oil pump plate gasket.....  | 2 | .05      |
| M-809—Oil pump screw.....  | 2 | .25      |
| *M-810—Oil pump plate.....   | 1 | 1.50     |
| *M-811—Oil pressure pump body.....   | 1 | 7.50     |
| *M-812—Oil pressure pump gear driver.....  | 1 | 1.50     |
| *M-814—Oil pump drive gear.....  | 1 | 2.50     |
| M-817—Oil pump driven gear shift.....  | 1 | .85      |
| *M-818—Oil connections.....  | 2 | .55      |
| *M-819—Oil connection stud.....  | 2 | .75      |
| *M-820—Oil connection gasket.....  | 4 | .10      |
| M-822—Oil pump driven gear shaft nut.....  | 1 | .10      |
| *M-823—By pass valve adjusting screw jam nut.....                                | 1 | .25      |
| *M-824—By pass valve adjusting screw washer.....                                 | 1 | .05      |
| *X-2303—No. 3 Woodruff key.....  | 2 | .05      |
| *X-2539— $\frac{1}{2}$ " ball.....   | 1 | .05      |
| *M-117—Tachometer drive sleeve.....  | 1 | .85      |
| *M-122—Tachometer drive sleeve packing.....                                      | 2 | .05      |
| *M-1019— $\frac{1}{8}$ x $\frac{1}{8}$ x $\frac{1}{8}$ S. A. E. lock washer..... | 1 | .30      |
| *M-1012— $\frac{1}{8}$ x24 S. A. E. plain nut.....                               | 2 | .05      |
| *M-1019— $\frac{1}{8}$ x $\frac{1}{8}$ x $\frac{1}{8}$ S. A. E. lock washer..... | 2 | Doz. .10 |
| *X-4553— $\frac{1}{8}$ x $\frac{1}{8}$ x $\frac{1}{8}$ S. A. E. lock washer..... | 2 | Doz. .10 |
| *M-833— $\frac{3}{8}$ "x45 deg. flared tube ell.....                             | 1 | .35      |
| *X-4103D— $\frac{3}{8}$ "x90 deg. flared tube ell.....                           | 1 | .20      |

AUTHORIZED FACTORY DEALERS

Genuine Wright Parts

Although it is impossible for us to list the complete parts and price list of the various Wright Aeronautical Motors, you may send in your orders for these parts from us with every assurance that you will receive genuine Wright factory parts at the standard prices as published by the factory.

We do not stock every item but will ship your order promptly.

VELIE M-5 PARTS

OIL PUMP

(Engines No. 269 and up)

| Number   | No. Required | Price Each |
|--|--------------|------------|
| M-830—Oil pump assembly.....   | 1            | \$50.00    |
| *M-821—Oil pump gasket.....  | 1            | .05        |
| M-829—Gearcase oil pump body.....  | 1            | 7.50       |
| M-826—Oil pump driver gear shaft.....  | 1            | 3.90       |
| M-827—Oil pump driven gear shaft.....  | 1            | .85        |
| M-807—Oil pump driven gear—small.....  | 1            | 1.00       |
| *M-808—Oil pump plate gasket.....  | 3            | .05        |
| M-831—Crank case oil pump body.....  | 1            | 4.00       |
| *M-812—Oil pump gear driver.....   | 2            | 1.50       |
| *M-803—Oil pump gear-driven.....   | 2            | 1.30       |
| *X-2303—No. 3 Woodruff key.....  | 3            | .05        |
| *M-810—Oil pump plate.....   | 1            | 1.50       |
| *M-811—Oil pressure pump body.....   | 1            | 7.50       |
| *M-828—Oil pump screw.....   | 3            | .25        |
| M-822—Oil pump driven gear shaft nut.....  | 1            | .10        |
| M-1020— $\frac{3}{8}$ x $\frac{5}{8}$ x $\frac{1}{16}$ plain washer.....         | 1            | Doz. .10   |
| X-4554— $\frac{3}{8}$ x $\frac{1}{2}$ x $\frac{3}{32}$ S. A. E. lock washer..... | 1            | Doz. .10   |
| *M-818—Oil connection.....   | 2            | .55        |
| *M-820—Oil connection gasket.....  | 4            | .10        |
| *M-819—Oil connection stud-outlet.....   | 1            | .75        |
| *M-832—Oil connection stud-inlet.....  | 1            | .75        |
| *M-1035— $\frac{1}{4}$ std. brass pipe plug.....                                 | 1            | .15        |
| *X-2539— $\frac{1}{2}$ " steel ball.....   | 1            | .05        |
| *M-804—Bypass valve.....   | 1            | .35        |
| *M-805—Bypass valve spring.....  | 1            | .05        |
| *M-806—Bypass adjusting screw.....   | 1            | .40        |
| *M-823—Bypass adjusting screw nut.....   | 1            | .25        |
| *M-824—Bypass adjusting screw washer.....  | 1            | .05        |
| *M-117—Tachometer drive sleeve.....  | 1            | .85        |
| *M-122—Tachometer drive sleeve packing.....                                      | 2            | .05        |
| *M-119—Tachometer drive sleeve nut.....  | 1            | .30        |
| *M-1012— $\frac{1}{2}$ "-24 S. A. E. plain nut.....                              | 2            | .10        |
| *M-1019— $\frac{1}{8}$ x $\frac{3}{8}$ x $\frac{1}{16}$ " plain washer.....      | 2            | .05        |
| *X-4553— $\frac{1}{8}$ x $\frac{1}{8}$ x $\frac{1}{16}$ " lock washer.....       | 2            | Doz. .10   |
| *M-814—Oil pump drive gear.....  | 1            | 2.50       |
| M-860—Oil line assembly (pump to gearcase).....                                  | 1            | .90        |
| M-865—Oil line assembly (sump to pump).....                                      | 1            | 1.00       |

OIL SUMP

|   |   |          |
|---|---|----------|
| M-130—Oil sump.....   | 1 | 4.70     |
| M-128—Oil sump gasket.....  | 1 | .05      |
| *M-187—Oil sump drain plug.....   | 1 | .10      |
| *X-4103D— $\frac{3}{8}$ flared tube-ell.....                                      | 1 | .20      |
| *M-1011— $\frac{1}{4}$ -28 S. A. E. plain nuts.....                               | 4 | .05      |
| *X-4552— $\frac{1}{4}$ x $\frac{3}{8}$ x $\frac{1}{16}$ S. A. E. lock washer..... | 4 | Doz. .10 |
| *M-1018— $\frac{1}{4}$ x $\frac{1}{2}$ x $\frac{1}{16}$ plain washer.....         | 4 | Doz. .10 |

CRANKSHAFT

|   |   |          |
|---|---|----------|
| M-630-2—Crankshaft assembly w/counterweights and bearing retainer nuts..... | 1 | 155.00   |
| *M-620—Crankshaft bolt.....   | 1 | .75      |
| *M-1013— $\frac{3}{8}$ -24 S. A. E. castle nut (special).....               | 1 | .10      |
| *X-2109— $\frac{3}{32}$ x $\frac{3}{4}$ cotter pin.....                     | 1 | Doz. .10 |
| *M-622—Crank throw center.....  | 1 | 1.75     |
| *X-2125— $\frac{1}{8}$ x $\frac{1}{4}$ cotter pin.....                      | 1 | Doz. .10 |
| *M-605—Crankshaft ball bearing (B. R. B. 210).....                          | 2 | 7.00     |
| *M-609—Crankshaft rear bearing nut.....                                     | 1 | 1.65     |
| *M-607—Crankshaft rear bearing nut lock spring.....                         | 1 | .05      |
| *M-608—Crankshaft front bearing nut.....                                    | 1 | 2.60     |
| *M-621—Crankshaft bearing spacer.....                                       | 1 | 1.60     |
| *M-136—Front bearing oil sling.....   | 1 | .05      |
| *M-611—Propeller hub key.....   | 1 | .25      |
| *X-1179B—No. 10-32 x $\frac{3}{8}$ flat head machine screw.....             | 2 | Doz. .10 |

PROPELLER HUB

|   |   |          |
|---|---|----------|
| *M-612—Propeller hub.....                               | 1 | 15.00    |
| *M-613—Propeller hub flange.....                        | 1 | 5.00     |
| *M-614—Propeller hub bolt.....                          | 6 | .35      |
| *M-615—Propeller hub bolt nut.....                      | 6 | .25      |
| *X-2110— $\frac{3}{32}$ x $\frac{1}{2}$ cotter pin..... | 6 | Doz. .10 |
| *M-616—Propeller hub puller nut.....                    | 1 | 3.00     |
| *M-617—Propeller hub locking nut.....                   | 1 | 2.35     |
| *X-2130— $\frac{1}{8}$ x $2\frac{1}{2}$ cotter pin..... | 1 | Doz. .10 |

CYLINDER

|   |    |          |
|---|----|----------|
| M-300—Cylinder assembly w/valve guides.....   | 5  | 75.00    |
| M-300A—Cylinder assembly complete w/valves.....   | 5  | 85.00    |
| M-334—Cylinder gasket.....  | 5  | .05      |
| M-1005—Intake and exhaust flange stud.....  | 30 | .55      |
| M-302—Valve guide.....  | 10 | .80      |
| M-1012— $\frac{1}{8}$ -24 S. A. E. plain nuts.....  | 40 | .05      |
| X-4553— $\frac{1}{8}$ x $\frac{1}{8}$ x $\frac{1}{16}$ S. A. E. lock washer.....  | 40 | Doz. .10 |
| M-300—Service cylinder assemblies, having new barrels and valve guides will be exchanged for old assembly, where the heads are not damaged for \$20.00 net. |    |          |

Never disturb cylinder head bolt nuts. Heads are shrunk on cylinders and bolted with proper tension when made, and are not removable.

|  |    |      |
|--|----|------|
| M-303—Valve.....                             | 10 | 2.70 |
| M-302—Valve guide.....                       | 10 | .80  |
| M-308—Valve safety clip.....                 | 10 | .05  |
| M-304—Valve spring.....                      | 10 | 1.15 |
| M-305—Valve spring retainer.....             | 10 | 1.05 |
| M-306—Valve spring retainer lock.....        | 20 | .25  |
| M-328A—Valve lifter and roller assembly..... | 10 | 1.75 |
| M-329—Valve lifter oiler.....                | 10 | .35  |
| M-335—Valve lifter roller pin.....           | 10 | .05  |

VELIE M-5 PARTS

CONNECTING RODS

| Number   | No. Required | Price Each |
|--|--------------|------------|
| *M-735—Connecting rod assembly consisting of master rod, link rods, wrist pins and bushings..... | 1            | 100.00     |
| *M-730—Master connecting rod w/piston pin bushing.....   | 1            | 65.00      |
| *M-725—Link rod assembly with bushings.....  | 4            | 6.50       |
| M-706—Wrist pin and piston pin bushing.....  | 9            | .20        |
| *M-715—Wrist pin assembly.....   | 4            | 1.20       |
| *M-714—Wrist pin lock screw.....   | 4            | .10        |

PISTONS

|  |    |      |
|--|----|------|
| M-709A—Piston assembly w/pin and rings fitted..... | 5  | 8.50 |
| M-709—Piston.....                                  | 5  | 6.25 |
| M-710—Piston ring compression.....                 | 10 | .30  |
| M-711—Piston ring-oil control.....                 | 5  | .40  |
| M-712A—Piston pin assembly.....                    | 5  | 1.00 |
| M-713—Piston pin end plug.....                     | 10 | .20  |

PUSH ROD AND ROCKER ARM MECHANISM

(Open Type)

|   |    |          |
|---|----|----------|
| M-330—Push rod assembly.....  | 10 | 1.80     |
| M-325—Push rod adjusting screw.....   | 10 | .25      |
| M-1011—Push rod adjusting screw nut.....  | 10 | .45      |
| M-313A—Rocker arm assembly (intake).....  | 5  | 2.30     |
| M-312A—Rocker arm assembly (exhaust).....                                       | 5  | 3.30     |
| M-314—Rocker arm bushing.....   | 20 | .25      |
| M-315—Rocker arm button.....  | 10 | .35      |
| M-316—Rocker arm push rod seat.....   | 10 | .45      |
| M-310—Rocker arm shaft.....   | 10 | .75      |
| M-311—Rocker arm shaft nut.....   | 10 | .15      |
| M-1117— $\frac{1}{2}$ Alemite "Zerke" elbow.....                                | 10 | .10      |
| M-380—Rocker arm shaft bracket and intake tube assembly.....                    | 5  | 2.50     |
| M-400—Rocker arm shaft bracket and exhaust tube assembly.....                   | 5  | 2.00     |
| M-1012— $\frac{1}{8}$ -24 S. A. E. plain nuts.....                              | 30 | .05      |
| M-1019— $\frac{1}{8}$ x $\frac{1}{8}$ x $\frac{1}{16}$ plain washers.....       | 30 | Doz. .10 |
| X-4553— $\frac{1}{8}$ x $\frac{1}{8}$ x $\frac{1}{16}$ lock washer S. A. E..... | 30 | Doz. .10 |

PUSH ROD AND ROCKER ARM MECHANISM

(Enclosed Type)

|   |    |          |
|---|----|----------|
| M-345A—Push rod assembly.....   | 10 | .50      |
| *M-1036—Push rod adjusting screw nut.....   | 10 | .40      |
| M-346—Push rod tube.....  | 10 | .20      |
| M-347—Push rod tube end.....  | 10 | .30      |
| M-359—Push rod tube end and clamp.....  | 10 | .05      |
| M-343A—Rocker arm assembly.....   | 10 | 1.45     |
| M-351—Rocker arm bushing.....   | 10 | .30      |
| M-354—Rocker arm washer.....  | 10 | .05      |
| M-344—Rocker arm shaft.....   | 10 | .40      |
| M-341A—Rocker bracket-right (with intake tube).....                               | 5  | 2.25     |
| M-342A—Rocker bracket-left (with exhaust tube).....                               | 5  | 1.75     |
| M-348—Rocker shaft bracket-right.....   | 5  | 1.30     |
| M-349—Rocker shaft bracket-left.....  | 5  | 1.30     |
| M-1021—Rocker shaft bracket stud.....   | 20 | .20      |
| M-355—Rocker cover.....   | 10 | .25      |
| M-356—Rocker cover spring.....  | 10 | .10      |
| M-1017— $\frac{1}{4}$ -28 S. A. E. castle nut.....                                | 10 | .05      |
| *M-1012— $\frac{1}{8}$ -24 S. A. E. plain nut.....                                | 30 | .05      |
| *M-1019— $\frac{1}{8}$ x $\frac{1}{8}$ x $\frac{1}{16}$ plain washer.....         | 30 | Doz. .10 |
| *X-4553— $\frac{1}{8}$ x $\frac{1}{8}$ x $\frac{1}{16}$ S. A. E. lock washer..... | 30 | Doz. .10 |
| M-332—Intake and exhaust flange gasket.....                                       | 10 | .10      |

INTAKE TUBES

|  |    |          |
|--|----|----------|
| M-370—Intake tube and flange (short).....                                    | 5  | .90      |
| M-321—Intake tube hose.....  | 5  | .16      |
| M-322—Intake tube hose clamp.....  | 10 | .60      |
| M-333—Intake tube and flange gasket.....                                     | 5  | .05      |
| *M-1011— $\frac{1}{4}$ -28 S. A. E. plain nut.....                           | 10 | .05      |
| *X-4552— $\frac{1}{4}$ x $\frac{3}{8}$ x $\frac{1}{16}$ S. A. E. washer..... | 10 | Doz. .10 |
| M-390—Exhaust ring assembly.....   | 1  | 25.00    |

MAGNETOS

|   |    |          |
|---|----|----------|
| *M-1101—Magneto-Scintilla No. PN-5D.....  | 2  | 120.00   |
| *M-1010—Magneto cap screws.....   | 8  | .15      |
| M-1020— $\frac{3}{8}$ x $\frac{3}{8}$ x $\frac{1}{16}$ plain washers.....         | 8  | Doz. .10 |
| *M-133A—Magneto coupling flange, inner with studs.....                            | 2  | 3.00     |
| *M-121—Magneto drive shaft nut, rear.....   | 2  | .20      |
| *X-2109— $\frac{3}{32}$ x $\frac{3}{4}$ cotter pin.....                           | 2  | Doz. .10 |
| *M-135—Magneto coupling center (Thermoid).....                                    | 2  | .30      |
| *M-134—Magneto coupling flange, outer.....  | 2  | .25      |
| *M-132—Magneto coupling flange, outer-center.....                                 | 2  | 1.75     |
| *M-1001—Magneto coupling outer flange stud.....                                   | 6  | .35      |
| *M-140—Magneto coupling washer.....   | 6  | .20      |
| *M-1012— $\frac{1}{8}$ -24 S. A. E. plain nut.....                                | 6  | .05      |
| *X-4553— $\frac{1}{8}$ x $\frac{1}{8}$ x $\frac{1}{16}$ S. A. E. lock washer..... | 6  | Doz. .10 |
| *M-1104—Spark plug (Champion No. 7).....  | 10 | .70      |
| *M-1180—Set of ignition cables with terminals.....                                | 1  | 5.00     |
| *M-1106—Ignition cable terminals.....   | 10 | .20      |

CARBURETOR

|   |   |          |
|---|---|----------|
| M-1113—Carburetor—Stromberg N. A. R. 3.....                                       | 1 | 100.00   |
| *M-147—Carburetor gasket.....   | 1 | .10      |
| *M-1026— $\frac{3}{8}$ -24 S. A. E. plain nut.....                                | 2 | .05      |
| *X-4554— $\frac{3}{8}$ x $\frac{1}{8}$ x $\frac{3}{32}$ S. A. E. lock washer..... | 2 | Doz. .10 |

GASKETS

|   |   |       |
|---|---|-------|
| M-1135—Set of gaskets, complete.....                          | 1 | 2.50  |
| M-1120—Tool kit assembly.....                                 | 1 | 11.60 |
| *M-1102—Magneto wrench.....                                   | 1 | .10   |
| *M-1116—Alemite "Zerke" grease gun.....                       | 1 | 1.50  |
| *M-1118—Tool kit bag.....                                     | 1 | .40   |
| *M-1125—Cylinder base nut wrench.....                         | 1 | 3.00  |
| *M-1126—Spark plug wrench.....                                | 1 | 1.75  |
| *M-1127— $\frac{1}{4}$ " flexible socket wrench.....          | 1 | 1.75  |
| *M-1128—Socket shaft and handle.....                          | 1 | 1.50  |
| *M-1129— $\frac{1}{4}$ "- $\frac{1}{8}$ " box end wrench..... | 1 | 1.55  |

# Lambert R-266 Parts

Following is a complete list of Lambert R-266 parts in addition to items starred (\*) in Velie M-5 listing on preceding pages. As explained before the starred items are interchangeable with either engine.

| CRANKCASE |  |              |            |
|-----------|--|--------------|------------|
| Number    |  | No. Required | Price Each |
| M-190     | Crankcase assembly with bearing sleeves and studs—<br>less cylinder studs..... | 1            | \$200.00   |
| M-174     | Crankcase assembly bolt.....   | 8            | .55        |
| M-1055    | Crankcase assembly stud.....   | 2            | .40        |
| M-1043    | Intake pipe stud.....  | 10           | .20        |
| M-1052    | Thrust cover stud.....   | 6            | .25        |
| M-1050    | Gearcase stud.....   | 8            | .25        |
| M-1058    | Air heater brace rod stud.....   | 2            | .30        |
| M-1054    | Oil sump stud.....   | 6            | .25        |
| M-1056    | Front breather stud.....   | 2            | .25        |
| M-1049    | $\frac{1}{8}$ -24 S. A. E. castle nut.....                                     | 10           | .10        |
| M-458     | Cylinder stud.....   | 20           | 1.75       |
| M-184     | Breather front.....  | 1            | .90        |
| M-183     | Breather gasket front.....   | 1            | .05        |
| M-178     | Oil sump.....  | 1            | 10.00      |
| M-182     | Oil sump gasket.....   | 1            | .05        |
| M-1053    | Carburetor stud.....   | 2            | .25        |

| GEAR CASE |  |              |            |
|-----------|--|--------------|------------|
| Number    |  | No. Required | Price Each |
| M-170     | Gearcase, studs and bushings assembly.....       | 1            | 65.00      |
| M-118     | Gearcase gasket.....                             | 1            | .20        |
| M-113     | Camshaft thrust bushing.....                     | 1            | .60        |
| M-1051    | Starter motor stud, long.....                    | 3            | .30        |
| M-1057    | Gearcase cover stud.....                         | 4            | .25        |
| M-1044    | Oil pump stud.....                               | 2            | .40        |
| M-516     | Cam assembly w/bushing.....                      | 1            | 13.50      |
| M-519     | Cam bushing.....                                 | 1            | .60        |
| M-518     | Camshaft.....                                    | 1            | 7.45       |
| M-522     | Camshaft thrust washer.....                      | 1            | .65        |
| M-517     | Starting clutch.....                             | 1            | 1.55       |
| M-542     | Cam drive shaft (15 tooth gear integral).....    | 1            | 6.60       |
| M-538     | Cam drive shaft gear (40 teeth).....             | 1            | 7.35       |
| M-539     | Cam drive shaft gear timing flange.....          | 1            | 5.00       |
| M-541     | Cam drive shaft gear timing screw.....           | 3            | .20        |
| M-1061    | Cam drive shaft gear timing flange key.....      | 1            | .05        |
| M-1040    | $\frac{3}{8}$ x1x3/32 plain washer.....          | 1            | Doz. .10   |
| M-1013    | $\frac{3}{8}$ -24 S. A. E. castle nut.....       | 1            | .10        |
| X-2109    | $\frac{3}{8}$ x32x $\frac{3}{4}$ cotter pin..... | 1            | Doz. .10   |

| GEARCASE COVER |                              |              |            |
|----------------|------------------------------|--------------|------------|
| Number         |                              | No. Required | Price Each |
| M-185          | Gearcase cover assembly..... | 1            | 31.50      |
| M-1052         | Starter stud.....            | 3            | .25        |
| M-1039         | Breather stud, rear.....     | 2            | .20        |
| M-106          | Breather rear.....           | 1            | 3.50       |
| M-107          | Breather gasket rear.....    | 1            | .05        |

| OIL PUMP |  |              |            |
|----------|--|--------------|------------|
| Number   |  | No. Required | Price Each |
| M-840    | Oil pump assembly.....                           | 1            | 50.00      |
| M-836    | Gearcase oil pump body.....                      | 1            | 7.50       |
| M-831    | Crankcase oil pump body.....                     | 1            | 4.00       |
| M-837    | Oil pump drive gear shaft.....                   | 1            | 5.80       |
| M-838    | Oil pump driven gear shaft.....                  | 1            | 1.45       |
| M-1013   | $\frac{3}{8}$ -24 S. A. E. castle nut.....       | 1            | .10        |
| X-2109   | $\frac{3}{8}$ x32x $\frac{3}{4}$ cotter pin..... | 1            | Doz. .10   |
| X-3116   | $\frac{1}{8}$ " std. pipe plug, brass.....       | 1            | .05        |
| M-845    | Oil line assy. (pump to gearcase).....           | 1            | .90        |
| M-850    | Oil line assy. (sump to pump).....               | 1            | 1.00       |

| CYLINDERS AND CYLINDER HEADS |   |              |            |
|------------------------------|---|--------------|------------|
| Number                       |   | No. Required | Price Each |
| M-482                        | Cylinder.....   | 5            | 8.00       |
| M-454                        | Cylinder gasket.....  | 5            | .10        |
| M-424                        | Cylinder head gasket.....   | 5            | .20        |
| M-445                        | Cylinder head assembly, complete with valves,<br>valve springs and retainers..... | 5            | 85.00      |
| M-425                        | Cylinder head assembly with studs and bushings.....                               | 5            | 70.00      |
| M-478                        | Valve guide intake.....   | 5            | .30        |
| M-467                        | Valve guide exhaust.....  | 5            | .30        |
| M-477                        | Valve spring seat.....  | 10           | .15        |
| M-1045                       | Valve rocker shaft bracket stud, long.....  | 10           | .40        |
| M-1046                       | Valve rocker bracket stud, short.....   | 20           | .25        |
| M-1043                       | Intake and exhaust flange stud.....   | 20           | .20        |
| M-452                        | Cylinder nut.....   | 20           | .10        |
| M-453                        | Cylinder nut washer.....  | 20           | .01        |

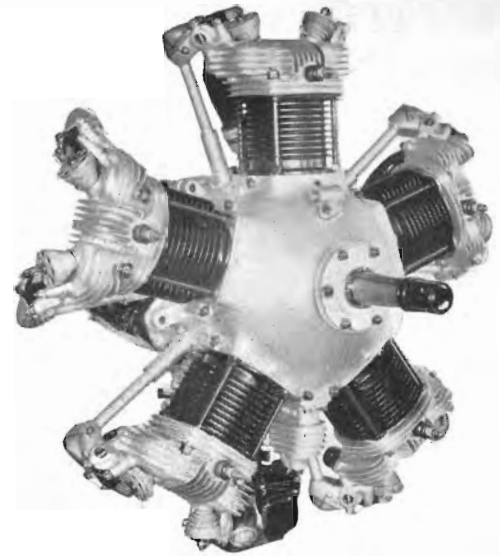
| CRANKSHAFT |  |              |            |
|------------|--|--------------|------------|
| Number     |  | No. Required | Price Each |
| M-630-6    | Crankshaft assembly with counter-weights and<br>bearing retainer nuts..... | 1            | 155.00     |

AUTHORIZED FACTORY DEALERS

## Genuine Wright Parts

Although it is impossible for us to list the complete parts and price list of the various Wright Aeronautical Motors, you may send in your orders for these parts from us with every assurance that you will receive genuine Wright factory parts at the standard prices as published by the factory.

We do not stock every item but will ship your order promptly.



| PISTONS |   |              |            |
|---------|---|--------------|------------|
| Number  |   | No. Required | Price Each |
| M-745   | Piston assembly with pin and rings..... | 5            | 8.50       |
| M-726   | Piston.....                             | 5            | 4.75       |
| M-740   | Piston pin assembly.....                | 5            | 1.00       |
| M-716   | Piston pin end plug.....                | 10           | .20        |
| M-722   | Piston ring, plain.....                 | 10           | .35        |
| M-727   | Piston ring oil.....                    | 10           | .55        |

| VALVE MECHANISM |   |              |            |
|-----------------|---|--------------|------------|
| Number          |   | No. Required | Price Each |
| M-432           | Valve.....  | 10           | 2.70       |
| M-449           | Valve safety clip.....                                  | 10           | .05        |
| M-431           | Valve spring.....                                       | 10           | .60        |
| M-476           | Valve spring retainer.....                              | 10           | 1.50       |
| M-443           | Valve spring retainer lock.....                         | 20           | .25        |
| M-440           | Valve rocker arm assembly with bushing and roller.....  | 10           | 2.75       |
| M-438           | Valve rocker arm bushing.....                           | 10           | .20        |
| M-468           | Valve rocker shaft bracket.....                         | 10           | 2.35       |
| M-470           | Valve rocker shaft assembly.....                        | 10           | 1.20       |
| M-1117          | $\frac{1}{2}$ " Alemite "Zerke" elbow.....              | 10           | .10        |
| M-473           | Valve rocker shaft screw.....                           | 10           | .20        |
| M-459           | Valve rocker cover.....                                 | 10           | .25        |
| M-448           | Valve rocker cover spring.....                          | 10           | .05        |
| M-1049          | $\frac{1}{8}$ -24 S. A. E. castle nuts, parkerized..... | 30           | .10        |
| M-2102          | $\frac{1}{8}$ x $\frac{3}{4}$ cotter pin.....           | 20           | Doz. .10   |
| M-445           | Push rod assembly.....                                  | 10           | 1.90       |
| M-460           | Push rod tube assembly.....                             | 10           | 2.50       |
| M-461           | Push rod tube base.....                                 | 10           | 1.50       |
| M-462           | Push rod tube.....                                      | 10           | .20        |
| M-463           | Push rod tube end.....                                  | 10           | .30        |
| M-464           | Push rod tube spring.....                               | 10           | .05        |
| M-385           | Valve lifter assembly.....                              | 10           | 2.50       |
| M-329           | Valve lifter roller.....                                | 10           | .80        |
| M-388           | Valve lifter roller pin.....                            | 10           | .10        |

| INTAKE TUBES |                                   |              |            |
|--------------|-----------------------------------|--------------|------------|
| Number       |                                   | No. Required | Price Each |
| M-401        | Intake tube, long, assembly.....  | 5            | 1.50       |
| M-403        | Intake tube, short, assembly..... | 5            | 1.35       |
| M-374        | Intake tube gasket.....           | 10           | .05        |
| M-377        | Intake tube hose.....             | 5            | .10        |
| M-378        | Intake tube hose clamp.....       | 10           | .15        |
| M-373        | Exhaust flange.....               | 5            | .20        |
| M-379        | Exhaust flange gasket.....        | 5            | .05        |

| CARBURETOR |  |              |            |
|------------|--|--------------|------------|
| Number     |  | No. Required | Price Each |
| M-1153     | Carburetor, Stromberg NA R-3.....  | 1            | 1.00       |
| M-1047     | Carburetor air heater stud.....  | 4            | .40        |
| M-1155     | Service kit, consisting of<br>5-cylinder barrels<br>5-pistons with rings fitted<br>5 valve guides, intake<br>5 valve guides, exhaust<br>10 rocker arm bushings<br>5 cylinder head gaskets<br>10 spark plugs..... | 1            | 75.00      |
| M-1170     | Exhaust ring assembly.....   | 1            | 25.00      |

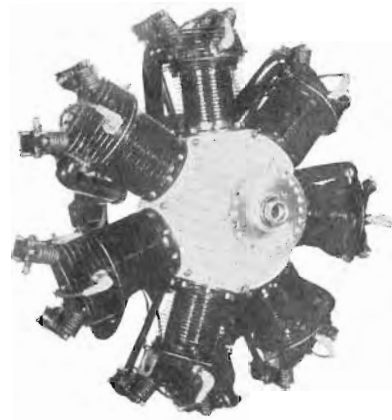
| TOOLS  |  |              |            |
|--------|--|--------------|------------|
| Number |  | No. Required | Price Each |
| M-1116 | Alemite "Zerke" grease gun.....                      | 1            | 1.50       |
| M-1118 | Tool kit bag.....                                    | 1            | .40        |
| M-1126 | Spark plug wrench.....                               | 1            | 1.75       |
| M-1127 | $\frac{1}{4}$ " flexible socket wrench.....          | 1            | 1.75       |
| M-1128 | Socket shaft and handle.....                         | 1            | 1.50       |
| M-1129 | $\frac{1}{4}$ "x $\frac{1}{2}$ " box end wrench..... | 1            | 1.55       |
| M-1159 | Timing pointer.....                                  | 1            | .25        |
| M-1179 | Cylinder nut socket.....                             | 1            | .50        |

| ENGINE MOUNTING RING |   |              |            |
|----------------------|---|--------------|------------|
| Number               |   | No. Required | Price Each |
| M-1185               | Engine mounting ring.....                                     | 1            | 20.00      |
| M-1186               | Engine mount bushing (rubber).....                            | 8            | .20        |
| M-131                | Engine mount bushing washer.....                              | 8            | .05        |
| M-1062               | Engine mount bolt ( $\frac{1}{2}$ x4 S. A. E. Aircraft).....  | 4            | .40        |
| M-1063               | Engine mount bolt nut ( $\frac{1}{2}$ S. A. E. Aircraft)..... | 4            | .10        |
| X-2010               | $\frac{1}{2}$ plain washer.....                               | 4            | .05        |
| X-2102               | $\frac{1}{8}$ "x $\frac{3}{4}$ " cotter pin.....              | 4            | Doz. .10   |

**PARTS FOR HISPANO-SUIZA MOTORS**

Our stock of parts for Hispano-Suiza motors is being depleted very rapidly and below we are listing only the numbers which we now have in stock and can supply. This listing was made up at time copy was released to printers and all items are quoted subject to prior sale. We will fill as nearly as possible your order at the time it is received from you.

| Part No.           | Description  | Price   |
|--------------------|--|---------|
| A-12049-C          | R. H. Cylinder assemblies; reconditioned; refaced valves and seats; cylinder walls and water jacket in excellent condition.                                    | \$25.00 |
| A-12049-C          | L. H. Cylinder Assemblies, same as above   | 25.00   |
|                    | Brand new cylinder assemblies, right hand; includes new original valves and springs, washers, new cam shaft, vertical drive shaft assembly and cylinder cover. | 70.00   |
|                    | Brand new cylinder assembly only, left hand.   | 35.00   |
| A-11303-A          | Nut, 10mm x 1, joint.  | .10     |
| AT-1019-A          | Crankshaft bearing stud nut  | .10     |
| A-9648-A           | Oil pump gear bushing  | 1.25    |
| 11689              | Con rod bolt inner   | .15     |
| A-9617-A           | Valve spring washer lever  | .10     |
| 11893              | Oil pressure relief cap.   | .60     |
| 11527              | Oil pressure relief body, model E.   | .90     |
| 11530              | Oil pressure relief spring, model E.   | .10     |
| 11722              | Oil pressure relief valve assembly, model E.   | 1.80    |
| 10687              | Oil pump hose connection nipple, model E.  | .30     |
| 11990              | Piston guide plug  | .15     |
| AT-951-A           | Cylinder conn screw  | .10     |
| A-10536-D          | Crankshaft, model A  | 17.50   |
|                    | Valves, used intake and exhaust  | .50     |
| A-11030-A          | Piston pin A   | .25     |
| 11989              | Piston pins, plug type   | .25     |
| A-9650             | Vertical shaft easing nut  | .25     |
| 6408               | Hess Bright CS Ball Bearing NB No. 6408  | 1.50    |
| 15018              | Magneto pinion shaft, Model E & I.   | 3.75    |
| 11637              | Crankshaft centering lock nut, E & I.  | .15     |
| 11657              | Magneto pinion, E & I.   | 3.50    |
| 11902              | Magneto pinion ball bearing nut, E & I.  | .60     |
| 10661              | Vertical shaft gear cover, E & I.  | 1.50    |
| A-9649-B           | Vertical shaft casing, A, E & I.   | .60     |
| A-12017-C          | Vertical shaft and collar assembly, A, E & I.  | 1.90    |
| A-9646-B           | Vertical shaft bearing upper, A, E & I.  | .90     |
| A-9644-A           | Vertical shaft collar, A, E & I.   | .15     |
| A-11307-D          | Water outlet pipe, R. H.   | .50     |
| A-12043-C          | Water pump assembly—   |         |
|                    | 1 single inlet—1 double inlet.   | 10.00   |
|                    | Model A Hisso Zenith carburetor  | 10.00   |
| 11469              | Tachometer drive shaft bushing   | 2.00    |
| 14105              | Prop hub outer nut, E & I.   | 1.00    |
| A-9615-B           | Valve tappet (mushroom)  | .25     |
| A-9916-B           | Valve tappet washer (serrated)   | .10     |
| A-11318-A          | Oil level plug   | .15     |
| A-9622-B           | Camshaft bearing—rear  | .75     |
| A-9619-B           | Camshaft bearing—front   | .75     |
| A-11008-B          | Crankshaft front bearing upper, E & I.   | 1.50    |
| A-11009-B          | Crankshaft front bearing lower, E & I.   | 1.50    |
| A-12029-C          | Tachometer shaft and bushing assembly, A, E & I.   | 2.50    |
| A-9909-A           | Valve spring, inner or outer.  | .10     |
| 11816              | Magneto support oil pump gear.   | 1.75    |
| 11817              | Magneto support oil pump idler gear.   | 2.00    |
| A-9608-A           | Crankcase rear plug  | .15     |
| A-10434-A          | Water nozzle   | .15     |
| A-9647-B           | Vertical shaft bearing lower   | 1.25    |
| 10659              | Vertical shaft gear collar, E & I.   | .15     |
| A-9941-B           | Vertical shaft gear lower  | 1.25    |
| AT-968-A           | Exhaust flange gaskets   | .10     |
| A-10431-A          | Inlet pipe flange  | .50     |
| A-10432-A          | Inlet pipe pack nut  | .50     |
| A-10474-B          | Camshaft gear  | .90     |
| A-9623-A           | Camshaft nut   | .25     |
| A-9642-B           | Magneto gear, Model A  | 1.00    |
| 11905              | Magneto drive gear, 24 teeth   | 1.25    |
|                    | Water nozzles  | .15     |
| A-9620-B           | Camshaft bearing center  | .60     |
| A-11137-A          | Water hole plate   | .50     |
|                    | Cylinder covers  | 1.00    |
| A-9668-C           | Camshaft, used   | 1.00    |
| 10341              | Piston, Model A  | 1.50    |
| 11670              | Piston, Model I, ring type, used.  | 1.00    |
| 11988              | Piston, Model E, plug type   | 1.50    |
|                    | Piston, Model E, ring type   | 1.50    |
|                    | Piston, Model E, ring type complete with pins.   | 2.00    |
|                    | Piston, Model E, plug type, used   | 1.00    |
|                    | Piston, Model E, ring type, used   | 1.00    |
|                    | Piston, Model A, high compression, used.   | 1.00    |
| 11915              | Prop hub bolt, Model E & I.  | .30     |
| 797                | Prop hub bolt nut, Model E & I.  | .25     |
| AB-796-A           | Prop hub bolts, Model A.   | .30     |
| A-10536-D          | Crankshaft   | 10.00   |
|                    | Zenith carburetor main jets, assorted sizes.   | .10     |
| <b>HISSE TOOLS</b> |  |         |
| WA-16              | Valve clearance gauge, double end.   | \$00.25 |
| WA-19              | Valve tappet socket wrench   | .75     |
| WA-20              | Valve tappet adjusting wrench  | .50     |
| WA-21              | Water pump bracket nut wrench, A, E & I.   | .50     |
| WA-23              | Adjustable hook spanner (small)  | .60     |
| WA-24              | Adjustable hook spanner (large)  | .60     |
| WA-25              | Spark plug wrench and handle.  | .50     |
| WA-29              | Socket wrench, crankshaft bearing stud nut.  | .50     |
| WA-30              | Double end wrench, 1/2" and 3/8" hex.  | .30     |
| WA-31              | Water pump bracket nut wrench (all models).  | .65     |
| WA-51              | Crankshaft thrust bearing nut wrench   | 1.25    |
| WA-71              | Piston pin set screw wrench  | .75     |
| WA-73              | Cam cover screw wrench   | .35     |
| WA-101             | 6" Westcott wrench   | .40     |
| WA-102             | 12" screw driver   | .55     |
| WA-103             | Side cutting pliers  | .75     |
| WA-104             | 1 Lb. Ball Pein hammer.  | .45     |
| WA-105             | 10" Westcott wrench  | .65     |
| WA-110             | Propeller hub nut wrench—inner (Except A).   | 1.25    |
| WA-111             | Propeller hub nut wrench—outer (Except A).   | 1.50    |

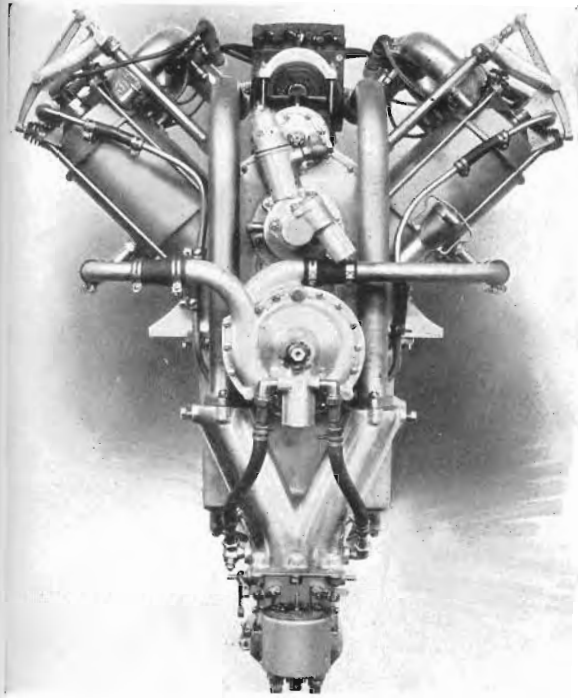


**WARNER SCARAB PARTS**

We are authorized parts dealers for Warner Scarab Engines and are in position to supply genuine spare parts for both the Warner Scarab 110-hp, 7-cylinder and the new Warner Scarab Junior, 5-cylinder 90-hp Engines. Space will not permit a complete listing of these parts. Complete stock of all of these parts is not carried on hand, but shipments will be forwarded promptly on parts which are not carried in stock. The standard price list of the manufacturer will be followed and all of the parts are guaranteed to be genuine Warner manufacture.

**NEW, USED AND OVERHAULED MOTORS**

|  |   |
|--|---|
| OX-5, brand new in original crates, we have 8 left.  |   |
| Single lots.....each   | \$350.00; two at a time.....each \$285.00 |
| If all 8 taken at once.....each  | \$250.00                                  |
| Overhauled OX-5, completely rebuilt, block tested, in excellent condition.....each                   | \$185.00                                  |
| Overhauled OXX-6 100-hp., completely rebuilt, block tested.....each                                  | \$190.00                                  |
| Rebuilt OXX-3 100-hp. block tested, in perfect condition.....each                                    | \$150.00                                  |
| Hispano-Suiza, 150-hp. Model A, completely rebuilt, block tested.....each                            | \$240.00                                  |
| Hispano-Suiza, 180-hp. Model E, completely rebuilt, block tested, excellent condition.....each       | \$280.00                                  |
| Hispano-Suiza, 150-hp. Model I, excellent condition, rebuilt, block tested.....each                  | \$280.00                                  |
| Mercedes 180-hp. new 6-cylinder, watercooled.....each  | \$120.00                                  |
| Liberty 200-hp. 6-cylinder, perfect condition.....each   | \$165.00                                  |
| Velie M-5, 65-hp. 5-cylinder, brand new.....each   | \$680.00                                  |
| LeBlond 65-hp. new engines.....each  | \$490.00                                  |
| Velie M-5, 65-hp. 5-cyl., completely rebuilt.....each  | \$450.00                                  |
| LeBlond 65-hp. 5-cyl., completely rebuilt.....each   | \$350.00                                  |
| Genets 80-hp., new engines, 5-cylinder.....each  | \$875.00                                  |
| Genets 80-hp., practically new, used 3 hours.....each  | \$625.00                                  |
| Anzani 80-hp. 6-cyl., new, latest production.....each  | \$435.00                                  |
| Lambert 90-hp., used, 90 hours.....each  | \$350.00                                  |
| Szekely 32-hp. 3-cyl., radial aircooled, new in original crates, approved type cert. No. 53.....each | \$550.00                                  |
| Szekely 40-hp. aircooled, overhead valves.....each   | \$580.00                                  |
| Salmson 40-hp. 9-cylinder aircooled.....each   | \$675.00                                  |
| Continental A-40, 4-cyl. 35-40 hp. new.....each  | \$475.00                                  |
| Cleone 2-cyl. 20-hp. new.....each  | \$190.00                                  |



## CURTISS OX-5

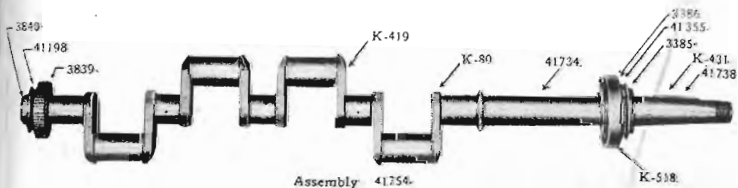
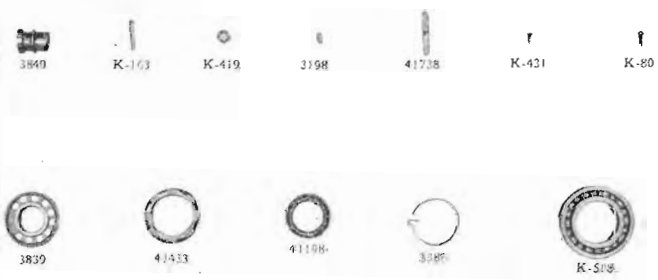
### 90 Horse-Power

## PARTS LIST

The Curtiss OX5 engine is the motor that made commercial aviation possible in the United States and it has done more to foster and aid commercial flying than all other aeronautical motors combined. The Curtiss OX5 engine is considered by flyers everywhere to be one of the most dependable, economical and practical engines available, and is used in dozens of popular commercial airplanes built in the United States today.

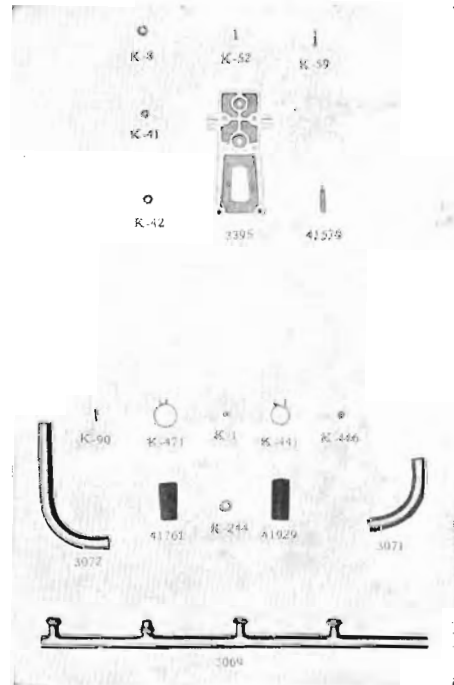
We have by far the most complete stock of parts for the Curtiss OX-5 of any supply house in the country. We have always given complete and prompt service on all orders and will continue to carry this complete stock as long as this motor proves to be so popular.

Several drastic price reductions have been made in our listing this year. It is now possible to make a complete overhaul of your engines at comparatively small cost.



### CRANK SHAFT

| Part No. | Part Name                     | Quantity | Price  |
|----------|-------------------------------|----------|--------|
| K-80     | Plug (Small)                  | 8        | \$0.03 |
| K-163    | Pin, Taper                    | 1        | .05    |
| K-419    | Plug (Large)                  | 17       | .10    |
| K-431    | Screw, Retaining              | 1        | .03    |
| K-518    | Thrust Bearing                | 1        | 6.50   |
| 2198     | Key, Gear                     | 1        | .05    |
| 3385     | Nut, Thrust Bearing           | 1        | .50    |
| 3386     | Lock Wire                     | 1        | .10    |
| 3839     | Gear, Crank Shaft             | 1        | 1.50   |
| 3840     | Shaft, Water Pump Stub        | 1        | 1.00   |
| 41198    | Slinger, Oil                  | 1        | .10    |
| 41355    | Oil Slinger                   | 1        | .25    |
| 41433    | Nut and Oil Slinger Assembly  | 1        | 1.50   |
| 41734    | Crank Shaft                   | 1        | 15.00  |
| 41734    | Slightly Used Crank Shaft     | 1        | 10.00  |
| 41738    | Key, Propeller Hub            | 1        | .12    |
| 41754    | Crank Shaft Assembly Complete | 1        | 32.50  |

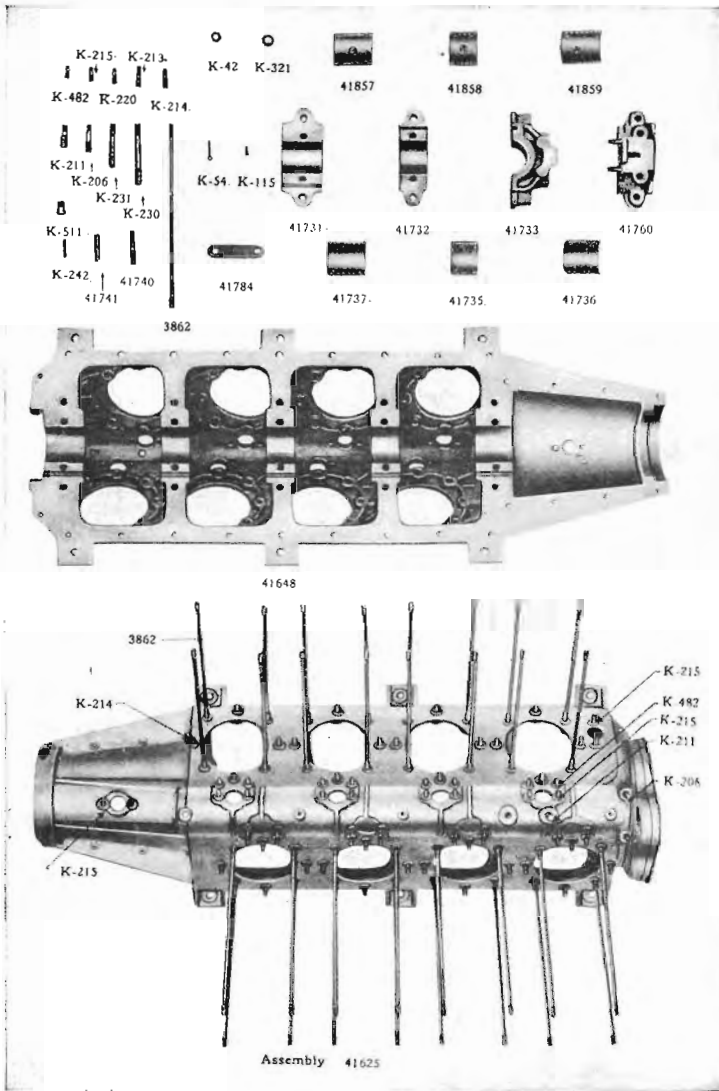


### MAGNETO BRACKET

| Part No. | Part Name              | Quantity | Price  |
|----------|------------------------|----------|--------|
| K-8      | Lock Washer, per dozen | 1        | \$0.05 |
| K-41     | Nut, Attaching Stud    | 2        | .02    |
| K-42     | Nut, Attaching Stud    | 2        | .03    |
| K-52     | Cotter                 | Per Doz. | .01    |
| K-59     | Cotter                 | Per Doz. | .01    |
| 3395     | Magneto Bracket        | 1        | 1.90   |
| 41579    | Bolt Mag. Bracket      | 1        | .15    |

### WATER INLET PIPES

| Part No. | Part Name                     | Quantity | Price     |
|----------|-------------------------------|----------|-----------|
| K-1      | Lock Washer                   | Per Doz. | \$0.0 1/2 |
| K-90     | Screw, Clamp                  | 8        | .01       |
| K-244    | Gasket, Water Inlet           | 8        | .03       |
| K-441    | Clamp, Elbow to Manifold Hose | 6        | .01       |
| K-446    | Nut, Clamp                    | 8        | .02       |
| K-471    | Clamp, Pump to Elbow Hose     | 2        | .05       |
| 3069     | Water Inlet Manifold          | 2        | 3.50      |
| 3071     | Elbow, Inlet (L. H.)          | 1        | .30       |
| 3072     | Elbow, Inlet (R. H.)          | 1        | .30       |
| 41761    | Hose, Conn. Pump to Elbow     | 2        | .10       |
| 41929    | Hose, Conn. Elbow to Manifold | 2        | .30       |

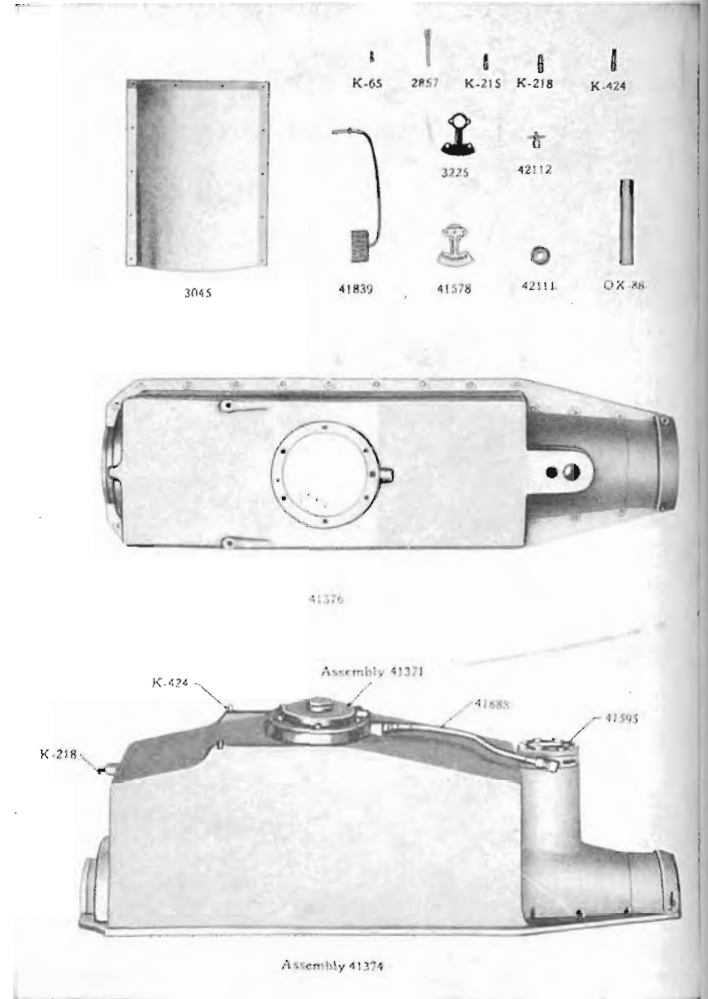


**CRANK CASE  
(UPPER HALF)**

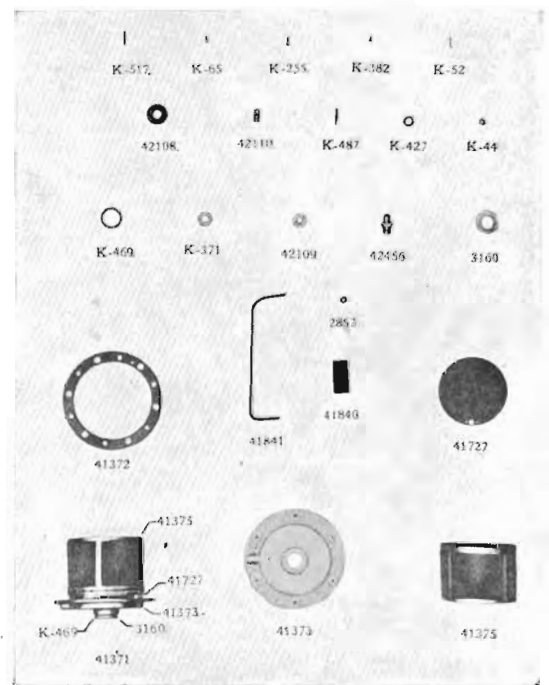
| Part No. | Part Name                             | Quantity | Price  |
|----------|---------------------------------------|----------|--------|
| K-42     | Nut, Main Bearing Stud.....           | 20       | \$0.03 |
| K-54     | Cotter, Stud Nut, per dozen.....      | 20       | .03    |
| K-115    | Screw, Retaining.....                 | 40       | .02    |
| K-206    | Stud, Magneto Bracket.....            | 2        | .10    |
| K-211    | Stud, Magneto Bracket.....            | 1        | .05    |
| K-213    | Stud, Oil Drive Bracket.....          | 2        | .03    |
| K-214    | Stud, Cyl. (Short).....               | 32       | .05    |
| K-215    | Stud, Cam Follower Guide (Long).....  | 16       | .04    |
| K-220    | Stud, Crank Case Joint.....           | 6        | .02    |
| K-242    | Pin, Dowel.....                       | 5        | .05    |
| K-230    | Stud, Main Bearing (Long).....        | 10       | .08    |
| K-231    | Stud, Main Bearing (Short).....       | 10       | .05    |
| K-321    | Washer, Bearing Cap.....              | 12       | .02    |
| K-482    | Stud, Cam Follower Guide (Short)..... | 16       | .02    |
| K-511    | Bushing, Oil Outlet.....              | 1        | .10    |
| 3862     | Stud, Cyl. (Long).....                | 32       | .18    |
| 41625    | Crank Case Assembly (Upper Half)..... | 1        | 125.00 |
| 41648    | Crank Case.....                       | 1        | 110.00 |
| 41731    | Cap, Front Main Bearing.....          | 1        | 2.00   |
| 41732    | Cap, Center Main Bearing.....         | 1        | 1.50   |
| 41733    | Cap, Rear Main Bearing.....           | 1        | 1.50   |
| 41735    | Bearing, Center Main (Lower).....     | 3        | .50    |
| 41736    | Bearing, Rear Main (Lower).....       | 1        | .30    |
| 41737    | Bearing, Front Main (Lower).....      | 1        | .30    |
| 41740    | Key, Front and Rear Main Bearing..... | 2        | .15    |
| 41741    | Key, Center Main Bearing.....         | 3        | .08    |
| 41760    | Cap, Rear Main Bearing Assembly.....  | 4        | 2.50   |
| 41784    | Plate, Bearing Cap.....               | 1        | .08    |
| 41857    | Bearing, Front Main (Upper).....      | 1        | .30    |
| 41858    | Bearing, Center Main (Upper).....     | 3        | .30    |
| 41859    | Bearing, Rear Main (Upper).....       | 1        | .30    |

**CRANK CASE  
(LOWER HALF)**

| Part No. | Part Name                      | Quantity | Price  |
|----------|--------------------------------|----------|--------|
| K-44     | Nut Tappet.....                | 3        | \$0.01 |
| K-52     | Cotter, per dozen.....         | 8        | .01    |
| K-65     | Screw.....                     | 4        | .01    |
| K-215    | Stud, Attaching.....           | 6        | .04    |
| K-218    | Stud, Carb. Brace (Short)..... | 1        | .04    |

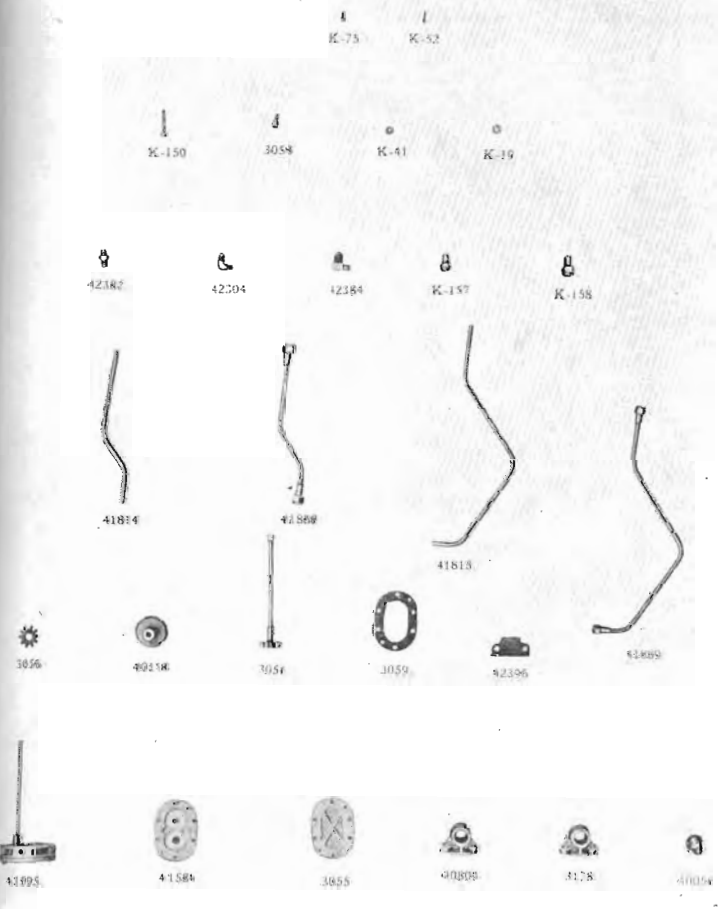


|       |                                  |   |      |
|-------|----------------------------------|---|------|
| K-255 | Screw.....                       | 1 | .03  |
| 2853  | Collar, Retaining.....           | 8 | .01  |
| 2857  | Indicator Hand.....              | 1 | .25  |
| 3045  | Baffle Plate.....                | 2 | .50  |
| 3160  | Plug, Oil Drain.....             | 1 | .20  |
| 3225  | Gasket, Sector.....              | 1 | .01  |
| 41371 | Oil Drain Strainer Assembly..... | 1 | 3.40 |
| 41372 | Gasket.....                      | 1 | .03  |
| 41373 | Flange, Oil Drain Strainer.....  | 1 | .90  |



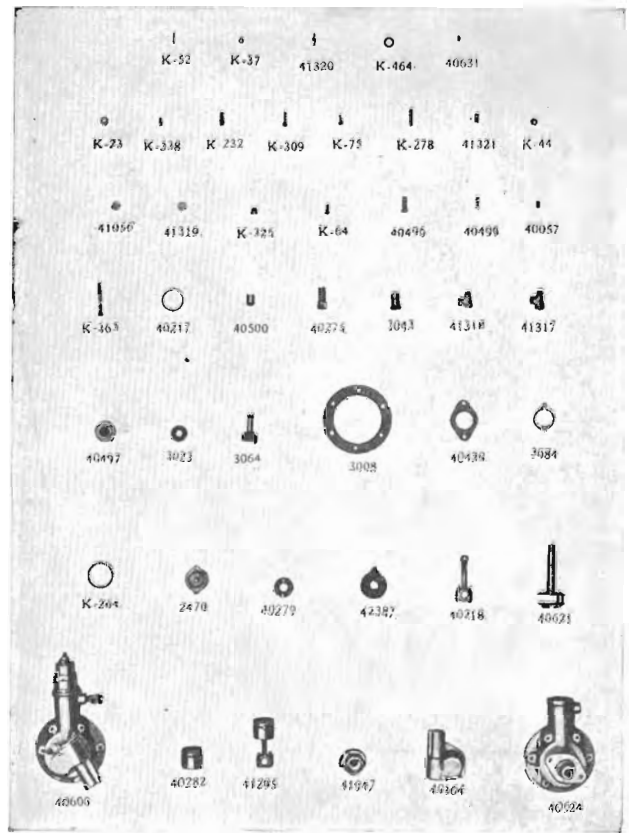
CRANKCASE (LOWER HALF) Continued

|       |                                  |    |       |
|-------|----------------------------------|----|-------|
| 41374 | Crank Case Assembly (Lower Half) | 1  | 35.00 |
| 41375 | Oil Drain Screen Assembly        | 1  | 1.50  |
| 41376 | Case, Lower Half                 | 1  | 20.00 |
| 41578 | Sector                           | 1  | .40   |
| 41727 | Pan, Oil Drain                   | 1  | .15   |
| 41839 | Oil Float Assembly               | 1  | .90   |
| 41840 | Float                            | 1  | .40   |
| 41841 | Float Lever                      | 1  | .50   |
| 42108 | Gasket                           | 1  | .01   |
| 42109 | Plug, Crank Case                 | 1  | .05   |
| 42110 | Plug, Thumb                      | 1  | .05   |
| 42111 | Plate, Oil Level                 | 1  | .10   |
| 42112 | Thumb Plug Assembly              | 1  | .15   |
| 42456 | Nut, Oil Conn.                   | 1  | .10   |
| K-382 | Screw, Attaching                 | 6  | .02   |
| K-424 | Stud, Carb. Brace (Long)         | 2  | .08   |
| K-427 | Washer, Oil Conn. Nut            | 1  | .03   |
| K-487 | Pin, Plug                        | 1  | .05   |
| K-517 | Pin                              | 1  | .03   |
| K-469 | Gasket, Plug                     | 1  | .02   |
| K-371 | Nut                              | 1  | .03   |
| K-382 | Screw, Attaching                 | 24 | .02   |
| OX-88 | Casing, Oil Pump Drive Shaft     | 1  | .20   |



OILING SYSTEM

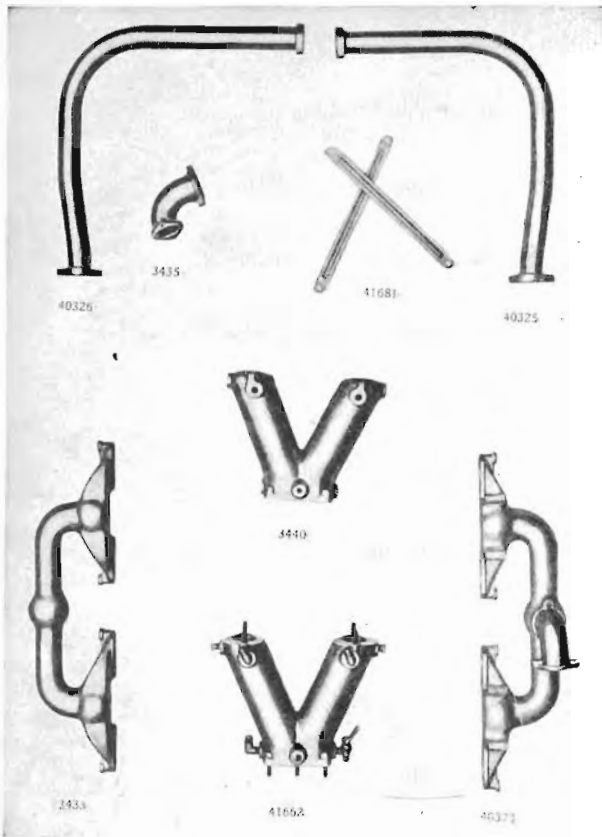
| Part No. | Part Name                            | Quantity   | Price   |
|----------|--------------------------------------|------------|---------|
| K-19     | Lock Washer                          | 2          | \$ 0.01 |
| K-41     | Lock, Attaching Stud                 | 2          | .02     |
| K-52     | Cotter                               | Per Doz. 2 | .01     |
| K-75     | Screw Oil Pump Cover                 | 2          | .02     |
| K-150    | Screws, Oil Pump Attaching           | 6          | .06     |
| K-157    | Union Nut                            | 2          | .09     |
| K-158    | Union Nut                            | 2          | .10     |
| 3054     | Master Gear                          | 1          | 1.75    |
| 3055     | Cover                                | 1          | .60     |
| 3056     | Idler Gear                           | 1          | .50     |
| 3058     | Stud Idler Gear                      | 1          | .12     |
| 3059     | Gasket                               | 1          | .02     |
| 3178     | Bracket, Oil Drive Shaft             | 1          | 1.50    |
| 40056    | Bushing                              | 1          | .25     |
| 40118    | Pinion Oil Pump Drive                | 1          | 1.00    |
| 40804    | Oil Drive Shaft Bearing Assembly     | 1          | 2.50    |
| 41584    | Gear Case                            | 1          | 1.50    |
| 41595    | Oil Pump Assembly                    | 1          | 8.00    |
| 41813    | Outlet Pipe                          | 1          | .40     |
| 41814    | Inlet Pipe                           | 1          | .25     |
| 41888    | Oil Pump Inlet Pipe Assembly         | 1          | .60     |
| 41889    | Oil Pump Outlet Pipe Assembly        | 1          | .60     |
| 42304    | Elbow, Outlet Conn.                  | 1          | .15     |
| 42382    | Nut, Oil Conn. Rear Camshaft Bearing | 1          | .15     |
| 42384    | Elbow, Inlet Conn.                   | 1          | .12     |
| 42396    | Shim, Oil Drive Shaft Bracket        | 1          | .03     |



AIR PRESSURE PUMP AND TACHOMETER DRIVE

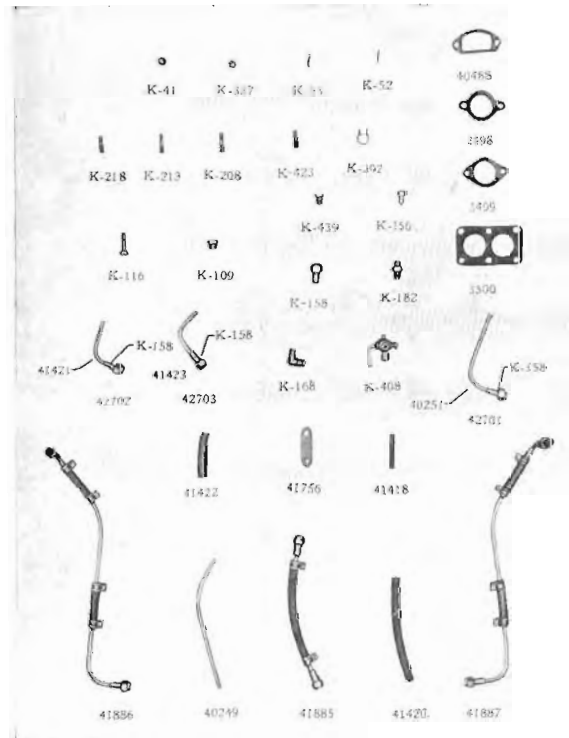
| Part No. | Part Name                                       | Quantity | Price     |
|----------|---|----------|-----------|
| K-1      | Lock Washer                                     | 6        | \$ 0.01/2 |
| 2470     | Cover, Tachometer Gear Housing                  | 1        | .15       |
| 3008     | Gasket, Pump                                    | 1        | .01       |
| 3023     | Gear, Tachometer Drive                          | 1        | .50       |
| 3043     | Bushing   | 1        | .15       |
| 3064     | Gear, Tachometer Driven                         | 1        | .60       |
| 3084     | Gasket, Cover                                   | 1        | .01       |
| 40057    | Screw, Shaft Retaining                          | 1        | .02       |
| 40217    | Ring, Piston                                    | 2        | .15       |
| 40218    | Connecting Rod                                  | 1        | .75       |
| 40275    | Screw, Retaining                                | 1        | .02       |
| 40279    | Coupling, Center Member                         | 1        | 1.00      |
| 40282    | Piston, Air Pump                                | 1        | .50       |
| 40364    | Tachometer Gear Housing                         | 1        | 1.50      |
| 40439    | Gasket, Tachometer Gear Housing                 | 1        | .02       |
| 40496    | Screw   | 1        | .50       |
| 40497    | Guide, Valve                                    | 1        | .60       |
| 40499    | Spring, Relief                                  | 1        | .05       |
| 40500    | Valve, Relief                                   | 1        | .50       |
| 40600    | Air Pressure Pump Assembly                      | 1        | 3.50      |
| 40621    | Shaft, Air Pump Crank                           | 1        | 1.00      |
| 40624    | Case, Air Pump Crank                            | 1        | 1.50      |
| 40631    | Key, Gear                                       | 1        | .10       |
| 41047    | Chamber, Compression                            | 1        | .75       |
| 41056    | Washer, Tachometer Gear                         | 1        | .03       |
| 41295    | Air Pressure Pump Piston Assembly               | 1        | 1.50      |
| 41317    | Check Valve Assembly                            | 1        | .75       |
| 41318    | Check Valve Body                                | 1        | .50       |
| 41319    | Screw, Valve                                    | 1        | .10       |
| 41320    | Valve, Check                                    | 1        | .15       |
| 41321    | Spring, Valve                                   | 1        | .05       |
| 41991    | Tachometer Drive Gear Housing Assembly          | 1        | 3.50      |
| 42387    | Coupling, Pump                                  | 1        | .60       |
| 42709    | U. S. Tachometer Drive Assembly, Straight J. M. | 1        | 7.50      |
| 42709    | U. S. Tachometer Drive Assembly, Angle J. M.    | 1        | 9.00      |
| 2470A    | Screw Type Tachometer Gear Housing Cover        | 1        | .50       |
| K-23     | Nut   | 1        | 0.01      |
| K-37     | Nut   | 2        | .02       |
| K-44     | Nut Attaching                                   | 2        | .01       |
| K-52     | Cotter, per dozen                               | 2        | .01       |
| K-64     | Screw, Cover Retaining                          | 2        | .02       |
| K-75     | Screw Attaching                                 | 6        | .02       |
| K-232    | Stud, Tachometer Attaching                      | 2        | .05       |
| K-264    | Gasket  | 1        | .01       |
| K-278    | Pin, Piston                                     | 1        | .10       |
| K-309    | Screw   | 2        | .03       |
| K-325    | Plug, Pump Case                                 | 1        | .06       |
| K-338    | Screw, Gear Retaining                           | 1        | .03       |
| K-365    | Screw, Attaching                                | 2        | .02       |
| K-464    | Gasket  | 1        | .01       |
| O-60     | Gear Retaining Screw                            | 1        | .03       |





INTAKE MANIFOLD EQUIPMENT

| Part No. | Part Name                                | Quantity | Price   |
|----------|--|----------|---------|
| K-5      | Lock Washer (in place of K-52) per dozen | 16       | \$ 0.01 |
| K-23     | Nut, Manifold Stud (in place of K-41)    | 4        | .01     |
| K-109    | Reducer, Pipe                            | 4        | .12     |
| K-116    | Bolt, Attaching                          | 4        | .05     |
| K-158    | Nut, Union                               | 4        | .20     |
| K-168    | Elbow                                    | 1        | .09     |
| 3433     | Intake Manifold                          | 2        | 5.00    |
| 3435     | Elbow, Intake Manifold                   | 2        | 1.00    |
| 3440     | Intake "Y" Pipe                          | 1        | 9.25    |
| 3498     | Gaske                                    | 2        | .02     |
| 3499     | Gaske, Intake Pipe                       | 4        | .02     |
| 40249    | Intermediate Pipe (R. & L.)              | 2        | .15     |
| 40325    | Intake Pipe Assembly (L. H.)             | 1        | 1.50    |



INTAKE MANIFOLD EQUIPMENT—Continued

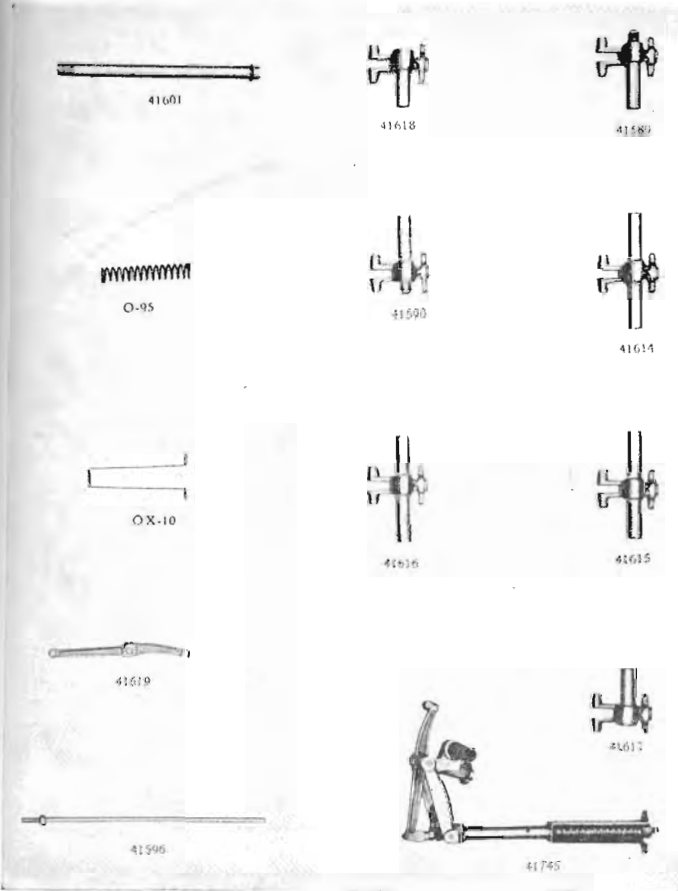
| Part No. | Part Name                             | Quantity | Price |
|----------|---------------------------------------|----------|-------|
| 40326    | Intake Pipe Assembly (R. H.)          | 1        | 1.50  |
| 40373    | Intake Manifold Assembly              | 2        | 6.00  |
| 40488    | Gasket, Intake Port                   | 8        | .02   |
| 41418    | Water Outlet Pipe                     | 4        | .06   |
| 41420    | Hose Connection                       | 2        | .10   |
| 41422    | Hose Connection (R. & L.)             | 4        | .05   |
| 41681    | Carburetor X Brace                    | 1        | .40   |
| 41662    | Intake "Y" Assembly                   | 1        | 11.00 |
| 41756    | Brace, Carburetor, Short Link         | 1        | .05   |
| 41885    | Water Outlet Assembly                 | 2        | .60   |
| 41886    | "Y" Pipe Water Inlet Assembly (R. H.) | 1        | 1.20  |
| 41887    | "Y" Pipe Water Inlet Assembly (L. H.) | 1        | 1.20  |
| 42701    | Lower Pipe Assembly                   | 1        | .40   |
| 42702    | Upper Pipe Assembly                   | 1        | .35   |
| 42703    | Upper Pipe Assembly                   | 1        | .34   |
| K-182    | Union                                 | 2        | .15   |
| K-208    | Stud, Shoulder                        | 4        | .05   |
| K-218    | Stud, Shoulder                        | 1        | .04   |
| K-337    | Washer, per dozen                     | 16       | .03   |
| K-392    | Hose Clamps (R. & L.)                 | 8        | .04   |
| K-408    | Pet Cock                              | 1        | .50   |
| K-423    | Stud, Shoulder                        | 1        | .10   |
| K-439    | Plug, Pipe                            | 2        | .05   |
| K-541    | Stud, Shoulder                        | 2        | .05   |

CYLINDERS AND ATTACHING PARTS

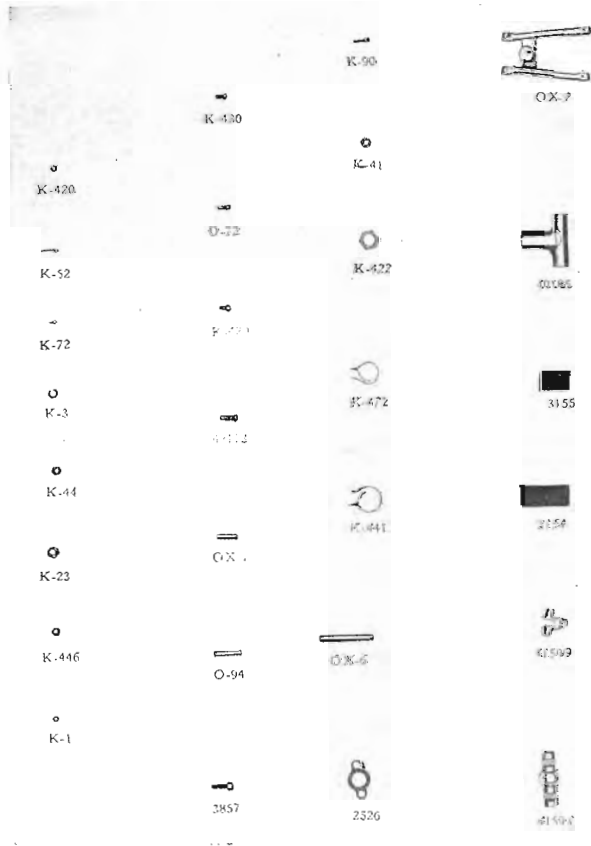


| Part No.  | Part Name  | Quantity    | Price  |
|---|--|-------------|--------|
| K-23  | Nut, Cylinder Stud (Flat)                            | 32          | \$0.01 |
| K-41  | Nut, Cylinder Stud (Cst'l.)                          | 64          | .02    |
| K-52  | Cotter (use Lock Washer K-5)                         | Per Doz. 64 | .01    |
| K-459   | Cotter   | Per Doz. 16 | .03    |
| O-14  | Yoke, Tie Down                                       | 8           | .40    |
| O-85  | Valve, Exhaust                                       | 8           | .60    |
| O-86  | Spring, Exhaust Valve                                | 8           | .06    |
| O-87  | Spring, Intake Valve                                 | 8           | .06    |
| O-88  | Washer, Valve Stem                                   | 16          | .05    |
| O-89  | Washer, Lock   | 16          | .05    |
| O-217   | Valve, Intake, Standard Size Stems                   | 8           | .60    |
| O-217-OS1   | Valve, Intake, Over Size Stem or Head, regular grade | 8           | 1.50   |
| O-217-OS2   | Valve, Intake, Over Size Stem or Head, regular grade | 8           | 1.85   |
| O-217-OS1   | Valve, Intake, Over Size Stem or Head, Super quality | 8           | 2.50   |
| O-217-OS2   | Valve, Intake, Over Size Stem or Head, Super quality | 8           | 3.00   |
| OS1 Valves stock as follows:  |  |             |        |
| 1/4 OS Head, Standard Stem; Standard Head, 1/64 OS Stem; 1/2 OS Head, 1/64 OS Stem. |  |             |        |
| OS2 Valves stocked as follows:  |  |             |        |
| 1/2 OS Head, Standard Stem; Standard Head, 1/32 OS Stem; 1/2 OS Head, 1/32 OS Stem. |  |             |        |
| 1932  | Gasket, Flange                                       | 8           | .03    |
|   | New Valve Seats, installed, per seat                 | 1           | 2.00   |
|   | New Valve Guides, installed, per guide               | 1           | 1.50   |
| 3814  | Stud, Intake Manifold (Short)                        | 8           | .05    |
| 3815  | Stud, Intake Manifold (Long)                         | 8           | .05    |
| 3858  | Stud, Rocker Arm Support                             | 16          | .05    |
| 40333   | Cylinder Assembly                                    | 8           | 32.00  |
| 40210   | Washer, Lock   | 32          | .04    |
| 40019   | Cylinder and Jacket                                  | 8           | 30.00  |
|   | Rebuilt OX5 Cylinders, Replaced Guides and Seats     |             | 9.00   |
|   | Used OX5 Cylinders, Serviceable Condition            |             | 5.00   |

VALVE ACTION

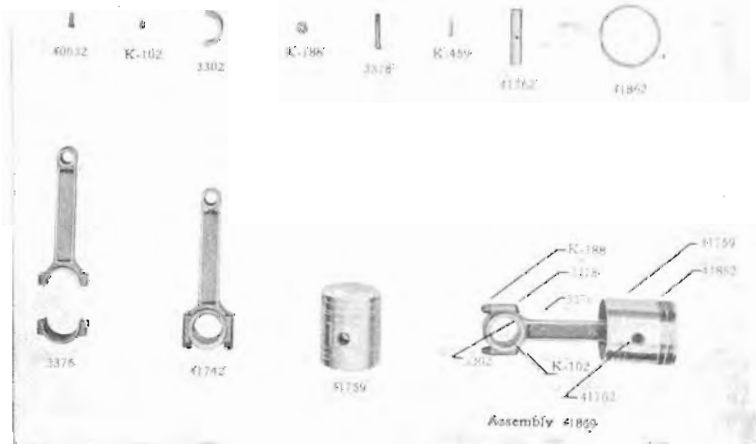


| Part No. | Part Name       | Quantity | Price   |
|----------|-----------------|----------|---------|
| K-1      | Lock Washer     | 16       | \$ 0.0½ |
| K-3      | Lock Washer     | 8        | .0½     |
| 2526     | Gasket, Support | 8        | .02     |



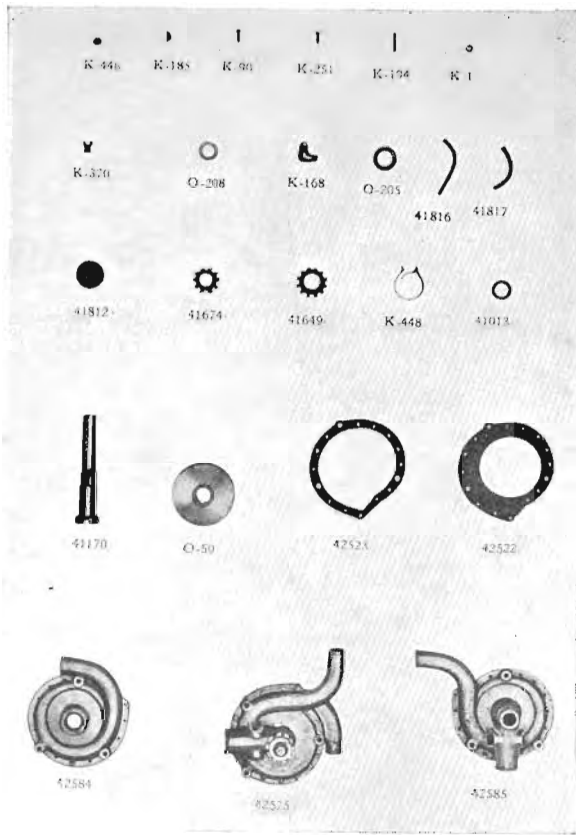
VALUE ACTION—Continued

|          |   |    |      |
|----------|---|----|------|
| 3154     | Hose, Water Outlet                      | 4  | .10  |
| 3155     | Hose, Water Outlet                      | 4  | .05  |
| 3857     | Tappet, Intake                          | 8  | .10  |
| 40185    | Tee, Water Outlet                       | 2  | .60  |
| 41589    | Water Outlet Cylinder No. 1             | 1  | 1.95 |
| 41590    | Water Outlet Cylinder No. 2             | 1  | 1.95 |
| 41593    | Yoke, Intake Push Rod                   | 8  | .80  |
| 41596    | Exhaust Push Rod                        | 8  | .50  |
| 41599    | Yoke, Exhaust Push Rod                  | 8  | .50  |
| 41601    | Intake Push Rod                         | 8  | .80  |
| 41614    | Water Outlet Cylinder No. 3 and No. 4   | 2  | 1.95 |
| 41615    | Water Outlet Cylinder No. 5             | 1  | 1.95 |
| 41616    | Water Outlet Cylinder No. 6             | 1  | 1.95 |
| 41617    | Water Outlet Cylinder No. 7             | 1  | 1.95 |
| 41618    | Water Outlet Cylinder No. 8             | 1  | 1.95 |
| 41619    | Exhaust Rocker Arm                      | 8  | 1.00 |
| 41745    | Valve Action Cylinder No. 1             | 1  | 7.50 |
| 41746    | Valve Action Cylinder No. 2             | 1  | 7.50 |
| 41747    | Valve Action Cylinder No. 3 and No. 4   | 2  | 7.50 |
| 41749    | Valve Action Cylinder No. 5             | 1  | 7.50 |
| 41750    | Valve Action Cylinder No. 6             | 1  | 7.50 |
| 41751    | Valve Action Cylinder No. 7             | 1  | 7.50 |
| 41752    | Valve Action Cylinder No. 8             | 1  | 7.50 |
| 42173    | Tappet, Exhaust                         | 8  | .08  |
| K-23     | Nut, Adjusting                          | 8  | .07  |
| K-41     | Nut, Attaching                          | 16 | .02  |
| K-44     | Nut Tappet                              | 8  | .02  |
| K-52     | Cotter (Lock Washer K-5 used), per doz. | 16 | .01  |
| K-52     | Cotter, per dozen                       | 6  | .01  |
| K-72     | Screw, Lock                             | 24 | .01  |
| K-420    | Lock Washer, per doz.                   | 8  | .05  |
| K-422    | Nut, Adjusting                          | 8  | .05  |
| K-429    | Plug, Bearing (Large)                   | 8  | .02  |
| K-430    | Plug, Bearing (Small)                   | 24 | .02  |
| K-441    | Clamp, Hose                             | 4  | .01  |
| K-472    | Clamp, Hose                             | 12 | .01  |
| O-72     | Set Screw                               | 8  | .03  |
| O-94     | Pin, Bearing (medium)                   | 8  | .15  |
| O-94-OS1 | Pin Bearing (Medium) 1/64 OS            | 8  | .25  |
| O-94-OS2 | Pin Bearing (Medium) 1/32 OS            | 8  | .25  |
| O-95     | Spring, Push Rod                        | 8  | .14  |
| OX-2     | Intake, Rocker Arm                      | 8  | .75  |
| OX-6     | Pin, Bearing (Large)                    | 8  | .20  |
| OX6-OS1  | Pin Bearing (Large) 1/64 OS             | 8  | .35  |
| OX6-OS2  | Pin Bearing (Large) 1/32 OS             | 8  | .35  |
| OX-7     | Pin, Bearing (Small)                    | 16 | .15  |
| OX7-OS1  | Pin Bearing (Small) 1/64 OS             | 8  | .25  |
| OX7-OS2  | Pin Bearing (Small) 1/32 OS             | 8  | .25  |
| OX-10    | Push Rod Support                        | 8  | .30  |
| 41592    | Bushing Pin Bearing (Small), Bronze     | 32 | .08  |
| 41594    | Bushing Pin Bearing (Large), Bronze     | 16 | .10  |



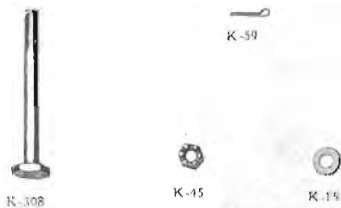
CONNECTING ROD AND PISTON

| Part No.  | Part Name  | Quantity | Price      |
|-----------|--|----------|------------|
| K-102     | Rivet, Conn. Rod Bearing, Per Dozen  | 4        | 64 \$ 0.05 |
| K-459     | Cotter   | 16       | Dozen .03  |
| K-188     | Nut, Conn. Rod Bolt  | 16       | .05        |
| 3302      | Bearing, Conn. Rod, Half   | 16       | .60        |
| 3376      | Connecting Rod and Cap   | 8        | .50        |
| 3378      | Bolt, Conn. Rod  | 16       | .05        |
| 40632     | Pin, Lock  | 8        | .10        |
| 41742     | Connecting Rod Assembly  | 8        | 2.50       |
| 41759     | Piston, Standard or Unfinished   | 8        | 3.00       |
| 41759-OS  | Piston, .0025, .005, .010, .015 Over Size                                    | 8        | 3.50       |
| 41759-HC  | High Compression Piston  | 8        | 4.00       |
| 41762     | Pin, Piston, Standard Size   | 8        | .30        |
| 41762-OS1 | Piston Pin, .003 Over Size   | 8        | .60        |
| 41762-OS2 | Piston Pin, .005 Over Size   | 8        | .60        |
| 41762-OS3 | Piston Pin, .010 Over Size   | 8        | .60        |
| 41862     | Ring, Piston, Burd.  | 16       | .06        |
| 41862-AH  | Ring, Piston, Amer. Hammered, Std. Size, New Prod.                           | 16       | .25        |
| 41862-AHO | Ring, Piston, Amer. Hammered, Over Size, in groove, New Prod.                | 16       | .25        |
| 41862-O   | Ring, Piston, Oversize in groove, Burd.                                      | 16       | .06        |
| 41869     | Piston and Connecting Rod Assembly   | 8        | 6.00       |
|           | Perfect Circle Compression Rings, 9/64 wide, use 2 to the groove on OX, each |          | .30        |
|           | Perfect Circle Oil Regulating Ring, slotted, each                            |          | .60        |



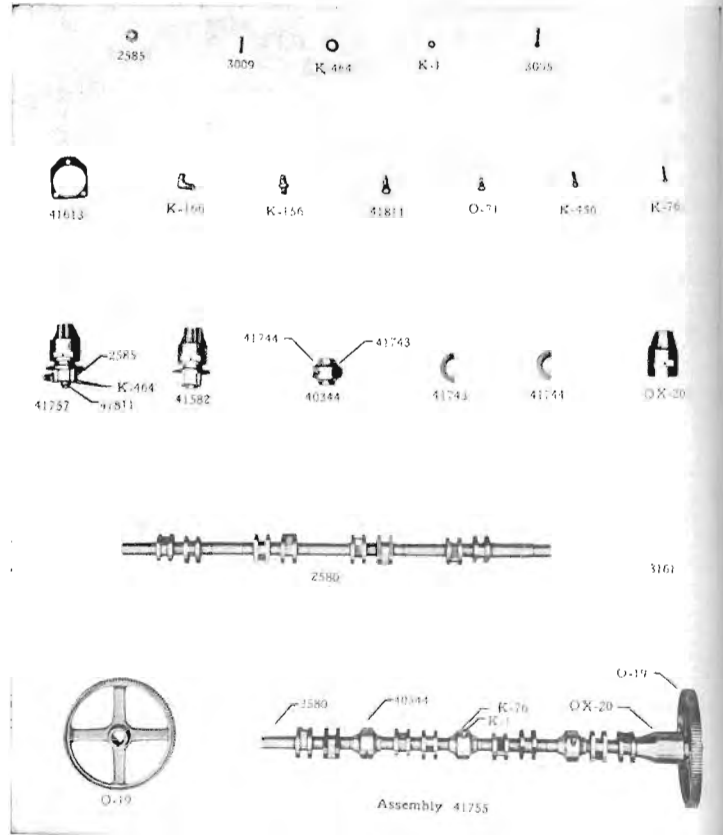
**WATER PUMP**

| Part No. | Part Name                          | Quantity | Price      |
|----------|------------------------------------|----------|------------|
| K-1      | Lock Washer                        | 1        | \$ 0.0 1/2 |
| K-90     | Screw, Clamp                       | 1        | .01        |
| K-168    | Elbow, Body Outlet                 | 2        | .09        |
| K-185    | Key, Impeller                      | 1        | .06        |
| 41013    | Collar, Shaft                      | 1        | .10        |
| 41040    | Bushing, Water Pump (Long Outlet)  | 1        | .25        |
| 41170    | Drive Shaft                        | 1        | 3.80       |
| 41649    | Nut, Packing (Large)               | 1        | .75        |
| 41674    | Nut, Packing (Small)               | 1        | .50        |
| 41812    | Cover, Water Pump Shaft End        | 1        | .25        |
| 41816    | Packing                            | 3        | .03        |
| 41817    | Packing                            | 3        | .03        |
| 42522    | Spacer, Body                       | 1        | .25        |
| 42523    | Gasket, Body                       | 2        | .05        |
| 42575    | Water Pump Assembly                | 1        | 16.00      |
| 42584    | Body Outlet (Short)                | 1        | 3.00       |
| 42585    | Body Outlet (Long)                 | 1        | 6.00       |
| K-194    | Pin, Collar                        | 1        | .05        |
| K-251    | Screw, Cover                       | 12       | .01        |
| K-370    | Plug, Shaft End                    | 1        | .10        |
| K-446    | Nut, Clamp                         | 1        | .02        |
| K-448    | Clamp End                          | 1        | .05        |
| O-50     | Impeller                           | 1        | 2.00       |
| O-205    | Washer, Shaft                      | 1        | .05        |
| O-208    | Nut, Impeller                      | 1        | .25        |
| O-209    | Bushing, Water Pump (Short Outlet) | 1        | .25        |



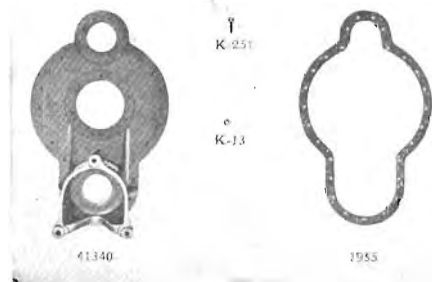
**ENGINE INSTALLATION BOLTS**

| Part No. | Part Name         | Quantity | Price  |
|----------|-------------------|----------|--------|
| K-15     | Washer            | 6        | \$0.01 |
| K-45     | Nut               | 6        | .03    |
| K-59     | Cotter, per dozen | 6        | .01    |
| K-308    | Bolt, Engine Bed  | 6        | .15    |



**CAM SHAFT AND BEARINGS**

| Part No. | Part Name   | Quantity | Price      |
|----------|---|----------|------------|
| K-1      | Lock Washer   | 6        | \$ 0.0 1/2 |
| K-3      | Lock Washer   | 3        | .0 1/2     |
| K-76     | Screw Clamping  | 6        | .03        |
| K-156    | Union Nut   | 1        | .08        |
| K-166    | Elbow, Oil Con. to Dash                                   | 1        | .12        |
| K-456    | Screw, Attaching  | 3        | .03        |
| K-464    | Gasket, Plug  | 1        | .01        |
| O-19     | Gear, Cam Shaft   | 1        | 5.00       |
| O-71     | Screw, Center Bearing Retaining                           | 3        | .03        |
| OX-20    | Bearing, Front  | 1        | 2.00       |
| 2580     | Cam Shaft   | 1        | 15.00      |
| 2585     | Plug Nut End of Rear Cam Shaft Bearing                    | 1        | .25        |
| 2585-A   | Plug Nut, Cam Shaft Gear Retaining, used without air pump | 1        | .25        |
| 3005     | Valve, Oil Pressure                                       | 1        | .25        |
| 3009     | Valve Spring  | 1        | .05        |
| 3161     | Key, Gear   | 1        | .05        |
| 40344    | Center Bearing Assembly                                   | 3        | 2.00       |
| 41582    | Bearing, Rear   | 1        | 3.50       |
| 41613    | Gasket, Rear Bearing                                      | 1        | .03        |
| 41743    | Center Bearing (Upper Half)                               | 3        | 1.00       |
| 41744    | Center Bearing (Lower Half)                               | 3        | 1.00       |
| 41755    | Cam Shaft Assembly  | 1        | 27.50      |
| 41757    | Rear Bearing Assembly                                     | 1        | 4.75       |
| 41811    | Screw, Pressure Reg.                                      | 1        | .25        |

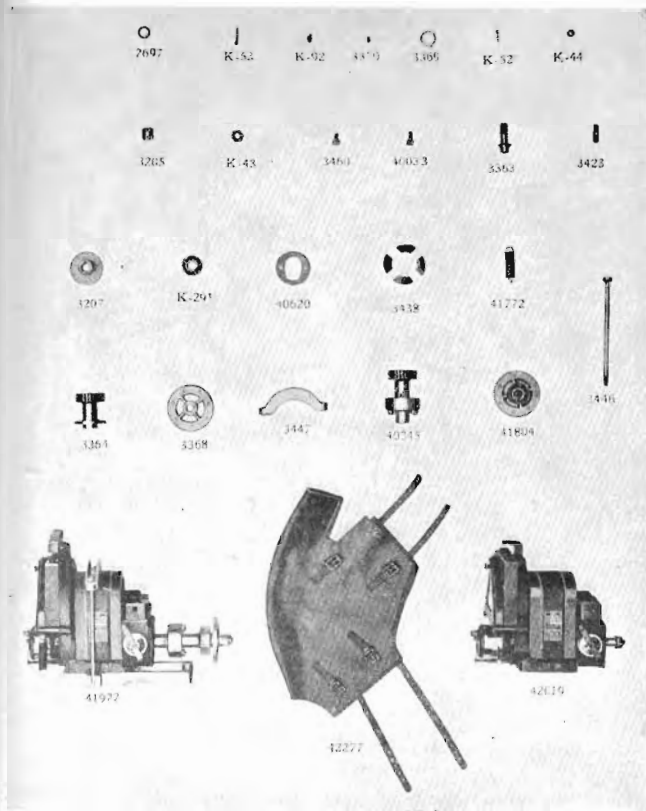


**GEAR CASE COVER**

| Part No. | Part Name              | Quantity | Price  |
|----------|------------------------|----------|--------|
| K-13     | Lock Washer, per dozen | 23       | \$0.05 |
| K-251    | Screw, Attaching       | 23       | .01    |
| 1935     | Gasket, Case Cover     | 1        | .10    |
| 41340    | Gear Case Cover        | 1        | 12.00  |

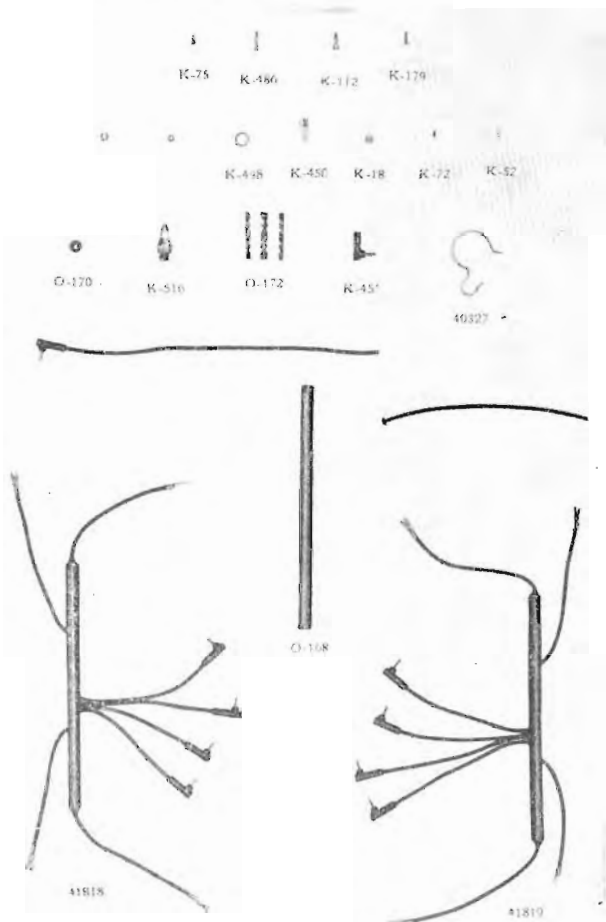
IGNITION EQUIPMENT—Continued

|         |  |   |           |
|---------|--|---|-----------|
| 3363    | Stud, Bearing  | 1 | .30       |
| 3364    | Pinion, Magneto Drive  | 1 | 1.00      |
| 3368    | Cap, Gear Case Cover   | 1 | .50       |
| 3369    | Lock Wire  | 1 | .02       |
| 3370    | Lock Screw   | 1 | .05       |
| 3423    | Stud, Base   | 4 | .10       |
| 3438    | Shock Absorber   | 4 | .06       |
| 3446    | Bolt, Cable Strap  | 2 | .20       |
| 3447    | Strap, Magneto   | 1 | .75       |
| 3460    | Pin, Coupling  | 2 | .15       |
| 40033   | Pin, Coupling  | 2 | .15       |
| 40345   | Magneto Drive Assembly   | 1 | 3.00      |
| 40327   | Clip, Cable Tube Support   | 4 | .15       |
| 40620   | Cover, Coupling  | 1 | .50       |
| 41772   | Magneto Control Spring   | 1 | .08       |
| 41804   | Magneto Drive Cover Assembly                                     | 1 | 2.00      |
| 41818   | Cable Tube Assembly (Right Hand)<br>New Production Packard Cable | 1 | 4.90      |
| 41819   | Cable Tube Assembly (Left Hand)<br>New Production Packard Cable  | 1 | 4.90      |
| IXA     | Spark Plug (B. G.) latest production                             | 8 | \$ 2.50   |
| K-AE9   | Spark Plug (Champion) latest production                          | 8 | 75c, 1.50 |
| K-1     | Lock Washer  | 7 | .07 1/2   |
| K-3     | Lock Washer  | 4 | .07 1/2   |
| K-18    | Washer   | 4 | .01       |
| K-43    | Nut, Bearing Stud  | 1 | .01       |
| K-44    | Nut, Pin   | 2 | .01       |
| K-52    | Cotter, per dozen  | 2 | .01       |
| K-53    | Cotter, per dozen  | 1 | .01       |
| K-72    | Screw, Plug Retaining  | 4 | .01       |
| K-75    | Screw, Cover Attaching   | 3 | .02       |
| K-92    | Key, Shaft   | 1 | .10       |
| K-112   | Bolt, Clip   | 4 | .02       |
| K-179   | Screw, Cover Attaching   | 4 | .03       |
| K-291   | Bearing, S. K. F. No. 1202                                       | 1 | 1.90      |
| K-450   | Terminal, Spark Plug   | 8 | .06       |
| K-451   | Magneto Terminal   | 1 | .50       |
| K-486   | Screw, Clamping  | 2 | .02       |
| K-516   | Spark Plug (A. C.)   | 8 | .20       |
| K-516B  | Spark Plug (Bethlehem)   | 8 | .15       |
| K-516BP | Spark Plug (Bethlehem Ponsot)                                    | 8 | .10       |
| K-535   | Spark Plug (Champion) No. 9, New Prod.                           | 8 | .75       |
| K-575   | Nut, Clip Bolt   | 4 | .01       |
| M-1     | Spark Plug (Mosler)  | 8 | 2.00      |
| O-168   | Cable Tube   | 2 | .30       |
| O-170   | Plug, Tube End   | 4 | .05       |
| O-172   | Cable Holder   | 1 | .20       |
| 42019   | Magneto Berling Single Spark D-81                                | 1 | 50.00     |
| 42277   | Magneto Hood   | 1 | .75       |



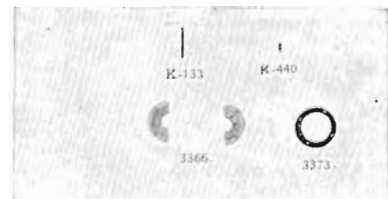
IGNITION EQUIPMENT

| Part No. | Part Name                    | Quantity | Price   |
|----------|------------------------------|----------|---------|
| 2897     | Plug, Pinion                 | 1        | \$ 0.03 |
| 3004     | Gasket, Magneto Pinion Cover | 1        | .02     |
| 3205     | Nut, Drive Shaft             | 1        | .08     |
| 3207     | Coupling, Magneto Drive      | 1        | 1.25    |



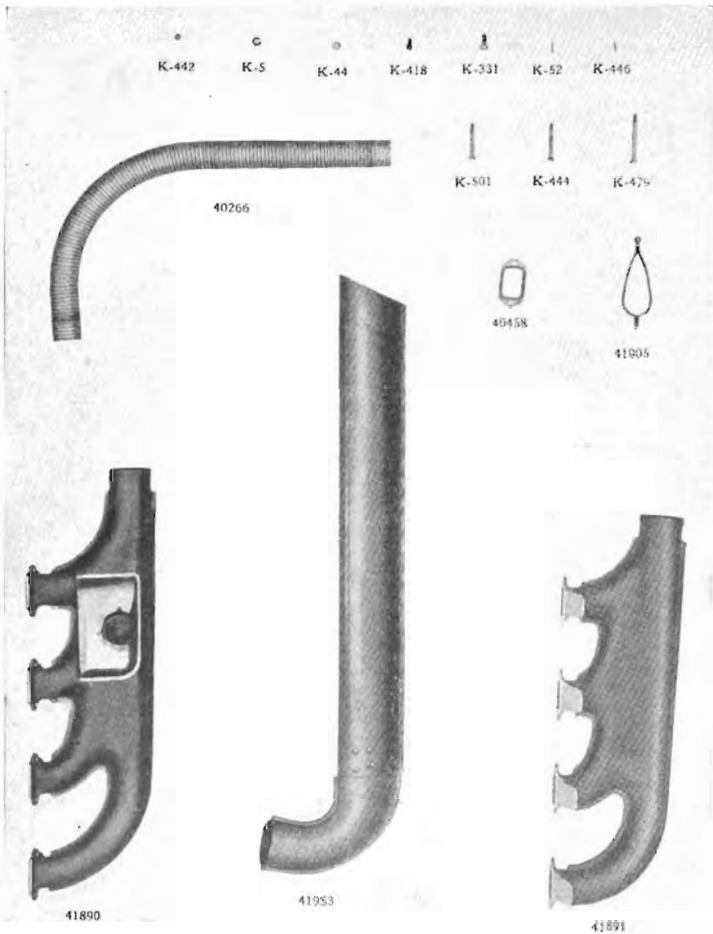
OIL FILLER PIPE

| Part No. | Part Name                 | Quantity | Price  |
|----------|---------------------------|----------|--------|
| K-52     | Cotter, per dozen         | 4        | \$0.01 |
| K-53     | Cotter, per dozen         | 2        | .01    |
| K-248    | Nut, Attaching            | 4        | .01    |
| 3213     | Lock Wire, Screen         | 2        | .05    |
| 3222     | Screen, Breather Pipe     | 2        | .05    |
| 41168    | Gasket, Flange            | 2        | .02    |
| 41652    | Strainer, Oil Filler Pipe | 1        | .05    |
| 41656    | Clamp, Cap                | 2        | .12    |
| 41658    | Pin, Cap Hinge            | 2        | .03    |
| 41678    | Oil Filler Pipe Assembly  | 2        | 1.25   |
| 41679    | Oil Filler Pipe           | 2        | 1.00   |
| 41683    | Oil Filler Cap            | 2        | .30    |
| 41684    | Oil Filler Cap Assembly   | 2        | .50    |



OIL RETAINING COVER

| Part No. | Part Name                      | Quantity | Price   |
|----------|--------------------------------|----------|---------|
| K-133    | Felt Packing                   | 2        | \$ 0.02 |
| K-440    | Screw, Attaching               | 4        | .06     |
| 3366     | Oil Retaining Cover, Each Half | 2        | .60     |
| 3373     | Gasket                         | 1        | .01     |



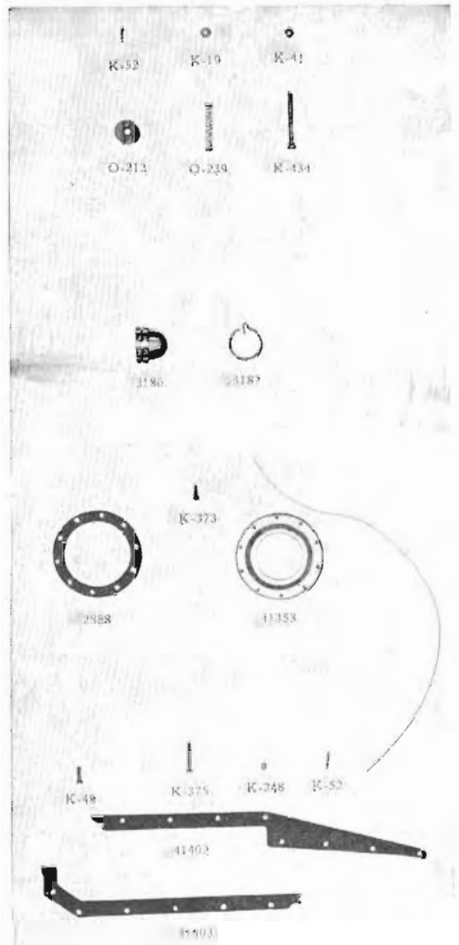
**EXHAUST EQUIPMENT**

| Part No. | Part Name  | Quantity | Price   |
|----------|--|----------|---------|
| K-5      | Lock Washer, per dozen                           | 16       | \$ 0.01 |
| K-44     | Nut, Clamping Screw                              | 2        | .01     |
| K-44     | Nut, Attaching Bolt                              | 2        | .01     |
| K-52     | Cotter, per dozen                                | 2        | .01     |
| K-331    | Screw, Attaching                                 | 16       | .03     |
| K-418    | Screw, Clamping                                  | 2        | .02     |
| K-442    | Nut, Attaching Bolt (not used with pin)          | 2        | .03     |
| K-444    | Bolt, Attaching (use Pin K-563)                  | 2        | .05     |
| K-446    | Cotter (use Cotter K-51 with pin), per dozen     | 2        | .03     |
| K-479    | Bolt, Attaching                                  | 2        | .07     |
| K-501    | Bolt, Attaching (use Pin K-563)                  | 2        | .05     |
| 40266    | Flex. Hot Air Tube                               | 2        | .90     |
| 40458    | Gasket, Exhaust Flange                           | 8        | .05     |
| 41890    | Exhaust Manifold (R. H.)                         | 1        | 7.50    |
| 41891    | Exhaust Manifold (L. H.)                         | 1        | 7.50    |
| 41953    | Exhaust Pipe                                     | 2        | 2.00    |
| 41905    | Elbow only                                       | 1        | 1.50    |
| 41905    | Brace, Exhaust Pipe                              | 2        | .10     |
| 41905    | Exhaust Stacks (Short), Individual Exhaust Pipes | 8        | 1.00    |



**PROPELLER HUB**

| Part No. | Part Name               | Quantity | Price   |
|----------|-------------------------|----------|---------|
| K-8      | Lock Washer, per dozen  | 8        | \$ 0.05 |
| K-54     | Cotter, per dozen       | 8        | .03     |
| K-191    | Nut, Bolt               | 8        | .05     |
| 3181     | Flange, Hub             | 1        | 1.75    |
| 3182     | Lock Nut, Propeller Hub | 1        | 1.25    |
| 3185     | Lock Wire               | 1        | .10     |
| 3188     | Bolt, Propeller Hub     | 8        | .15     |
| 41729    | Propeller Hub           | 1        | 8.00    |
| 41753    | Propeller Hub Assembly  | 1        | 12.50   |



**WATER PUMP ATTACHING**

| Part No. | Part Name                   | Quantity | Price  |
|----------|-----------------------------|----------|--------|
| K-19     | Washer                      | 3        | \$0.01 |
| K-41     | Nut                         | 3        | .01    |
| K-52     | Cotter, per dozen           | 3        | .01    |
| K-434    | Bolts, Water Pump Attaching | 3        | .01    |
| O-213    | Coupling, Center Member     | 1        | .01    |
| O-239    | Spring, Water Pump Shaft    | 1        | .01    |

**CRANK SHAFT NUT**

| Part No. | Part Name                 | Quantity | Price   |
|----------|---------------------------|----------|---------|
| 3186     | Crank Shaft Nut           | 1        | \$ 1.50 |
| 3187     | Crank Shaft Nut Lock Wire | 1        | .10     |

**THRUST BEARING COVER**

| Part No. | Part Name            | Quantity | Price   |
|----------|----------------------|----------|---------|
| 2888     | Gasket, Cover        | 1        | \$ 0.40 |
| 41353    | Thrust Bearing Cover | 1        | .50     |
| K-373    | Screw, Attaching     | 10       | .40     |

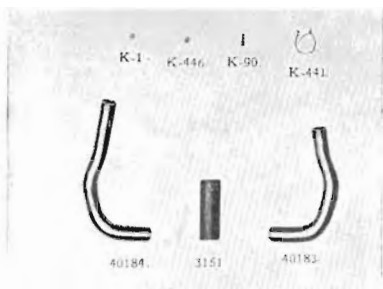
**CASE JOINT ATTACHING**

| Part No. | Part Name          | Quantity | Price   |
|----------|--------------------|----------|---------|
| 41402    | Gasket, Rear Half  | 2        | \$ 0.40 |
| 41403    | Gasket, Front Half | 2        | .40     |
| K-48     | Bolt, Case Joint   | 20       | .40     |
| K-52     | Cotter, per dozen  | 28       | .40     |
| K-248    | Nut, Joint Bolt    | 28       | .40     |
| K-373    | Bolt, Case Joint   | 2        | .40     |

**CAM FOLLOWER GUIDE**



| Part No. | Part Name                     | Quantity | Price  |
|----------|-------------------------------|----------|--------|
| K-3      | Lock Washer                   | 8        | \$0.01 |
| K-44     | Nut, Attaching                | 32       | .01    |
| K-52     | Cotter (Lock Washer K-3 used) | 32       | Dozen  |
| OX-12    | Follower, Intake Cam          | 8        | 2.25   |
| 1931     | Gasket                        | 8        | .40    |
| 3175     | Guide                         | 8        | 1.00   |
| 41297    | Follower, Exhaust Cam         | 8        | 1.00   |
| 41298    | Screw, Guide                  | 8        | .40    |
| 41300    | Cam Follower Guide Assembly   | 8        | 4.00   |

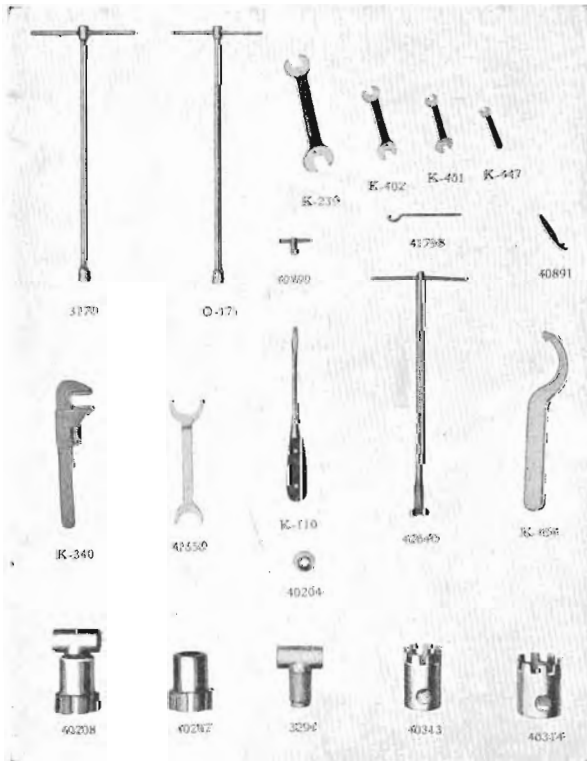


**WATER OUTLET PIPES**

| Part No. | Part Name       | Quantity | Price   |
|----------|-----------------|----------|---------|
| K-441    | Clamp           | 4        | \$ 0.01 |
| 3151     | Hose Connection | 2        | .05     |
| 40183    | Pipe (R. H.)    | 1        | .20     |
| 40184    | Pipe (L. H.)    | 1        | .20     |

**CARBURETOR**

| Part No. | Part Name           | Quantity | Price   |
|----------|---------------------|----------|---------|
| 3500     | Gasket              | 1        | \$00.05 |
| 42534    | Carburetor Complete | 1        | 30.00   |



**TOOLS**

| Part No.              | Part Name                                | Quantity | Price  |
|-----------------------|--|----------|--------|
| K-110                 | 1 1/2" Screw Driver                      | 1        | \$0.75 |
| K-239                 | 1/2"x3/8" Double End Wrench              | 1        | .50    |
| K-340                 | 9" Adjustable Wrench                     | 1        | .75    |
| K-401                 | 1 1/2"x3/8" Double End Wrench            | 1        | .30    |
| K-402                 | 1 1/2"x3/8" Double End Wrench            | 1        | .35    |
| K-447                 | 1 1/2" Open End Wrench                   | 1        | .25    |
| K-454                 | Thrust Bearing Lock Nut Wrench           | 1        | .25    |
| K-455                 | Double End Spark Plug Wrench             | 1        | .35    |
| N. B. 3               | Piston Pin Clamp Screw Socket Wrench     | 1        | .80    |
| O-171A                | 3/4" Socket Wrench, Swedish Tool Steel   | 1        | 1.00   |
| O-171B                | Regular Stock                            | 1        | .40    |
| 3170A                 | 3/4" Socket Wrench, Swedish Tool Steel   | 1        | 1.00   |
| 3170B                 | Regular Stock                            | 1        | .40    |
| 3291                  | Screw, Propeller Hub Puller              | 1        | 1.50   |
| 40204                 | Seat, Swivel                             | 1        | .50    |
| 40207                 | Body, Propeller Hub Puller               | 1        | 2.00   |
| 40208                 | Propeller Hub Puller Assembly            | 1        | 4.00   |
| 40313                 | Socket Wrench Crank Shaft Nut            | 1        | 1.40   |
| 40314                 | Socket Wrench Propeller Hub Nut          | 1        | 1.00   |
| 40890                 | Carburetor Jet Socket Wrench             | 1        | .20    |
| 40891                 | Magneto Wrench                           | 1        | .15    |
| 41650                 | Water Pump Packing Nut Wrench            | 1        | .35    |
| 41798                 | Intake Push Rod Wrench                   | 1        | .15    |
| 42646                 | 3/4" Crowfoot Wrench, Swedish Tool Steel | 1        | .75    |
| Complete Set of Tools |  | 1        | 10.00  |

**GASKETS**

| Part No. | Part Name                             | Quantity | Price   |
|----------|---------------------------------------|----------|---------|
| 1931     | Cam Follower Guide Gasket             | 8        | \$ 0.01 |
| 1932     | Cylinder Flange Gasket                | 8        | .03     |
| 1935     | Gear Case Cover Gasket                | 1        | .10     |
| 2526     | Cylinder Water Outlet Flange Gasket   | 8        | .02     |
| 2888     | Thrust Bearing Cover Gasket           | 1        | .03     |
| 3008     | Gasket, Pump                          | 1        | .01     |
| 3004     | Magneto Pinion Cover Jacket           | 1        | .02     |
| 3059     | Oil Pump Gasket                       | 1        | .02     |
| 3084     | Tachometer Drive Cover Gasket         | 1        | .01     |
| 3225     | Oil Sector Gasket                     | 1        | .01     |
| 3373     | Magneto Drive Cover Gasket            | 1        | .01     |
| 3498     | Intake Manifold Elbow Gasket          | 2        | .02     |
| 3499     | Intake Pipe to Elbow Gasket           | 4        | .02     |
| 3500     | Carburetor Gasket                     | 1        | .05     |
| 40488    | Intake Manifold Gasket                | 8        | .02     |
| 40439    | Tachometer Gear Housing Flange Gasket | 1        | .02     |
| 40458    | Exhaust Flange Gasket                 | 8        | .05     |
| 41168    | Oil Filler Pipe Flange Gasket         | 2        | .02     |
| 41372    | Oil Strainer Flange Gasket            | 2        | .03     |
| 41402    | Crank Case Rear Half Gasket           | 2        | .05     |
| 41403    | Crank Case Front Half Gasket          | 2        | .05     |
| 41613    | Rear Cam Shaft Bearing Gasket         | 1        | .03     |
| 42108    | Oil Level Plate Gasket                | 1        | .01     |
| 42523    | Water Pump Body Gasket                | 2        | .05     |
| K-244    | Water Inlet Manifold Gasket           | 8        | .03     |
| K-264    | Air Pump Chamber Gasket               | 1        | .02     |
| K-464    | Pressure Screw and Plug Gasket        | 3        | .01     |
| K-469    | Oil Drain Plug Gasket                 | 1        | .02     |

**SPECIAL OFFER**—One complete set of 51 Vellumoid and 30 Copper Gaskets for \$2.75. Do not miss this. A real overhaul demands real gaskets.

One complete set of 81 regular paper and copper gaskets for \$1.50.

**HOSE**

| Part No. | Part Name                     | Quantity | Price   |
|----------|-------------------------------|----------|---------|
| 3151     | Water Outlet "T" to Elbow     | 2        | \$ 0.05 |
| 3154     | Water Outlet Hose             | 4        | .10     |
| 3155     | Water Inlet Hose              | 4        | .05     |
| 41420    | Intake "Y" to Water Pump      | 2        | .10     |
| 41422    | Cylinder Outlet to Intake "Y" | 4        | .05     |
| 41761    | Pump to Elbow Inlet Hose      | 2        | .10     |
| 41929    | Elbow to Manifold Inlet Hose  | 2        | .10     |

**SPECIAL OFFER**—One complete set of 20 Hose Connections for \$1.25. Do not miss this. A real overhaul demands good hose.

**HOSE CLAMPS**

1 Complete set of 41 Hose Clamps for OX-5 Engine and OXX-5 Engine \$0.75. A good overhaul demands good new Hose Clamps.

**CURTIS OXX6 Engine Parts**

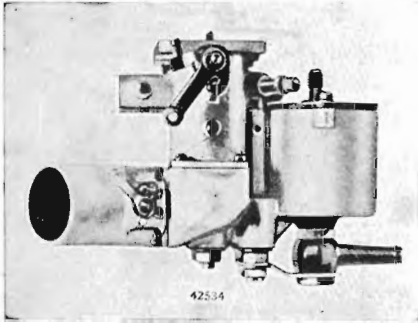
All Curtiss OX5 parts are identical and exactly interchangeable with the OXX6 parts with the exception of the following as listed below:

| Part No. | Part Name  | Quantity | Price            |
|----------|--|----------|------------------|
| O-81     | Bases, Oil Sight   | 1        | \$ 0.75          |
| O-82     | Glasses, Oil Sight   | 1        | .40              |
| O-83     | Guards, Oil Sight  | 1        | .75              |
| 528      | Crank Case, Lower  | 1        | Write for Prices |
| 3120     | Assembly Oil Sight   | 1        | 3.00             |
| 3469     | Pin, Piston  | 8        | .40              |
| 3469-OS1 | Pin, Piston, .003 Over Size                                    | 8        | .40              |
| 3469-OS2 | Pin, Piston, .005 Over Size                                    | 8        | .40              |
| 3469-OS3 | Pin, Piston, .010 Over Size                                    | 8        | .40              |
| 40007    | Piston   | 8        | 3.00             |
| 40007-OS | Piston, Semi-Finished in Rough                                 | 8        | 3.25             |
| 41503    | Gasket, Cylinder Flange  | 8        | .10              |
| 42127    | Cylinder, New  | 8        | 25.00            |
| 42127-T  | Cylinders, Test Run Only                                       | 8        | 9.00             |
| 42455    | Rings, Piston, Burd or McQuay-Norris                           | 16       | .15              |
| 42455-OS | Rings, Piston, O. S. Groove or Diameter, Burd or McQuay-Norris | 16       | .15              |
| 42482    | Cable Tube Assembly (L. H.)                                    | 1        | 5.00             |
| 42483    | Cable Tube Assembly (R. H.)                                    | 1        | 5.00             |
| 412100   | Crank Case, Upper  | 1        | Write for Prices |

New OX5 Lower Cases will fit on the Curtiss OXX6 motor. Can be supplied by us at \$20.00 and will give same service as OXX6 lower cases and fit exactly on upper OXX6 case.

| Part No. | Part Name  | Quantity | Price   |
|----------|--|----------|---------|
| OXX1     | Yoke, Cylinder Tie Down                            | 8        | \$ 0.25 |
| OXX2     | Cam Shaft  | 1        | 15.00   |
| OXX3     | Cam Shaft Bearing No. 5                            | 1        | 2.00    |
| OXX4     | Cam Shaft Bearing No. 6, Rear                      | 1        | 2.00    |
| OXX5     | Timing Gear Case Cover, Front                      | 1        | 5.00    |
| OXX6     | Timing Gear Case Cover, Front Gasket               | 1        | .15     |
| OXX7     | Timing Gear Case Cover, Rear                       | 1        | 2.50    |
| OXX8     | Timing Gear Case Cover, Rear Gasket                | 1        | .10     |
| OXX9     | Magneto Drive Gear, Rear                           | 1        | 4.00    |
| OXX10    | Magneto Driven Gear, Front, Large                  | 1        | 4.00    |
| OXX11    | Magneto Driven Gear, Rear, Small                   | 1        | 3.00    |
| OXX12    | Magneto Rear Drive Gear Retaining Nut, left thread | 1        | .75     |
| OXX13    | Tachometer Drive Assembly, Straight                | 1        | 7.50    |
| OXX14    | Carburetor X Brace                                 | 1        | .75     |
| OXX15    | Magneto Driven Gear Hub                            | 1        | 1.00    |

**ZENITH CARBURETORS**

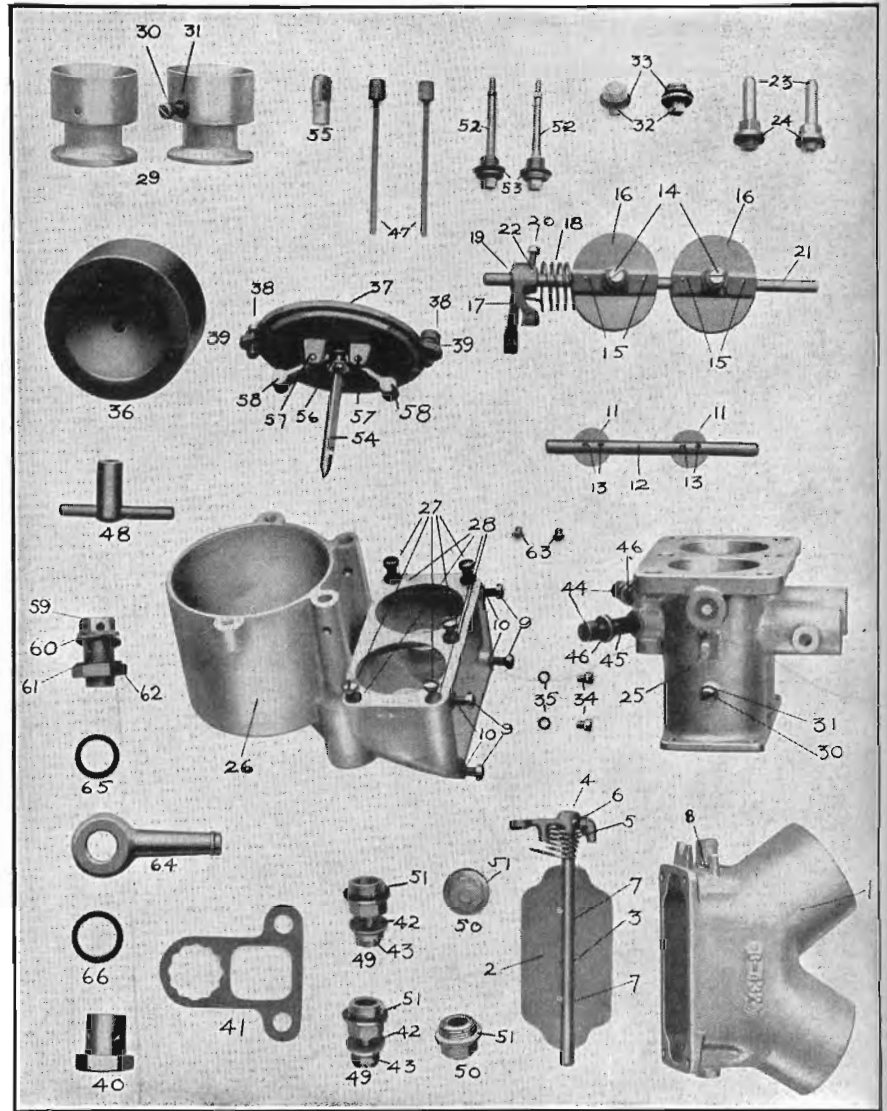


**ZENITH CARBURETOR, MODEL O6DS DUPLEX.** Used on both the Curtiss OX5 90 HP and the Curtiss OXX6 100 HP engines. The only difference being different size choke tubes which can be easily removed and interchanged. Does not include flexible tubing or exhaust pipe stove.

Zenith Carburetors .....each **\$30.00**

**ZENITH CARBURETOR PARTS**

| Part No. | Part Name                             | Price   |
|----------|---------------------------------------|---------|
| 1        | Air Sleeve Body                       | \$ 2.00 |
| 2        | Air Sleeve Shutter                    | .60     |
| 3        | Air Sleeve Shaft                      | .50     |
| 4        | Air Sleeve Lever                      | .25     |
| 5        | Air Sleeve Lever Spring               | .10     |
| 6        | Air Sleeve Lever Taper Pin            | .05     |
| 7        | Air Sleeve Shutter Cotter Pin         | .05     |
| 8        | Air Sleeve Lever Spring Cotter Pin    | .05     |
| 9        | Air Sleeve Assembly Screw             | .05     |
| 10       | Air Sleeve Assembly Screw Lock Washer | .05     |
| 11       | Altitude Air Valve                    | .35     |
| 12       | Altitude Air Valve Shaft              | .50     |
| 13       | Altitude Air Valve Cotter Pin         | .05     |
| 14       | Butterfly Set Screw                   | .05     |
| 15       | Butterfly Throttle Valve Taper Pin    | .05     |
| 16       | Butterfly Throttle Valve              | 1.25    |
| 17       | Butterfly Throttle Lever              | 1.15    |
| 18       | Butterfly Throttle Lever Spring       | .10     |
| 19       | Butterfly Throttle Lever Clamp Screw  | .05     |
| 20       | Butterfly Throttle Stop Screw         | .05     |
| 21       | Butterfly Throttle Lever Shaft        | .20     |
| 22       | Butterfly Throttle Lever Taper Pin    | .05     |
| 23       | Cap Jet                               | .65     |
| 24       | Cap Jet Washer                        | .05     |
| 25       | Carburetor Barrel                     | 15.00   |
| 26       | Carburetor Bowl                       | 20.00   |
| 27       | Carburetor Barrel Assembly Screw      | .05     |
| 28       | Car. Bbl. Ass. Scr. Lock Washer       | .05     |
| 29       | Choke Tube                            | 1.75    |
| 30       | Choke Tube Screw                      | .05     |
| 31       | Choke Tube Screw Lock Washer          | 0.05    |
| 32       | Compensating Jet                      | .45     |
| 33       | Compensating Jet Washer               | .05     |
| 34       | Channel Hole Screw                    | .05     |
| 35       | Channel Hose Screw Washer             | .05     |
| 36       | Float                                 | 1.20    |
| 37       | Float Cover                           | 1.70    |
| 38       | Float Cover Screw                     | .05     |
| 39       | Float Cover Screw Lock Washer         | .05     |
| 40       | Filter Plug                           | .85     |
| 41       | Filter Plug Lock                      | .50     |
| 42       | Filter Plug Lock Washer               | .10     |
| 43       | Filter Plug Lock Castle Nut           | .15     |
| 44       | Idling Screw                          | .20     |
| 45       | Idling Seat                           | .30     |
| 46       | Idling Lock Nut                       | .10     |
| 47       | Idling Tube                           | .50     |
| 48       | Jet Wrench                            | .30     |



|    |                                   |         |
|----|-----------------------------------|---------|
| 49 | Lower Plug (Compensator)          | \$ 0.50 |
| 50 | Lower Plug (Main Jet)             | .50     |
| 51 | Lower Plug Washer                 | .05     |
| 52 | Main Jet, 100, 105, 110, 115, 120 | .85     |
| 53 | Main Jet Washer                   | .05     |
| 54 | Needle Valve                      | 1.00    |
| 55 | Needle Valve Cap                  | .20     |
| 56 | Needle Valve Collar               | .20     |
| 57 | Needle Valve Lever Axle           | .10     |
| 58 | Needle Valve Lever Weights        | .25     |
| 59 | Needle Valve Seat                 | 1.00    |
| 60 | Needle Valve Seat Washer          | .05     |
| 61 | Needle Valve Seat Lock Nut Washer | .05     |
| 62 | Needle Valve Seat Lock Nut        | .40     |
| 63 | Priming Hole Screw                | .05     |
| 64 | Union Body                        | 1.30    |
| 65 | Union Body Washer—Upper           | .05     |
| 66 | Union Body Washer—Lower           | .05     |

**Our Customers on the West Coast Will Get Quicker Service from Our**

**WESTERN BRANCH: 3769 So. MONETA ST.**

**LOS ANGELES, CALIF.**

**Phone Humboldt 1294**



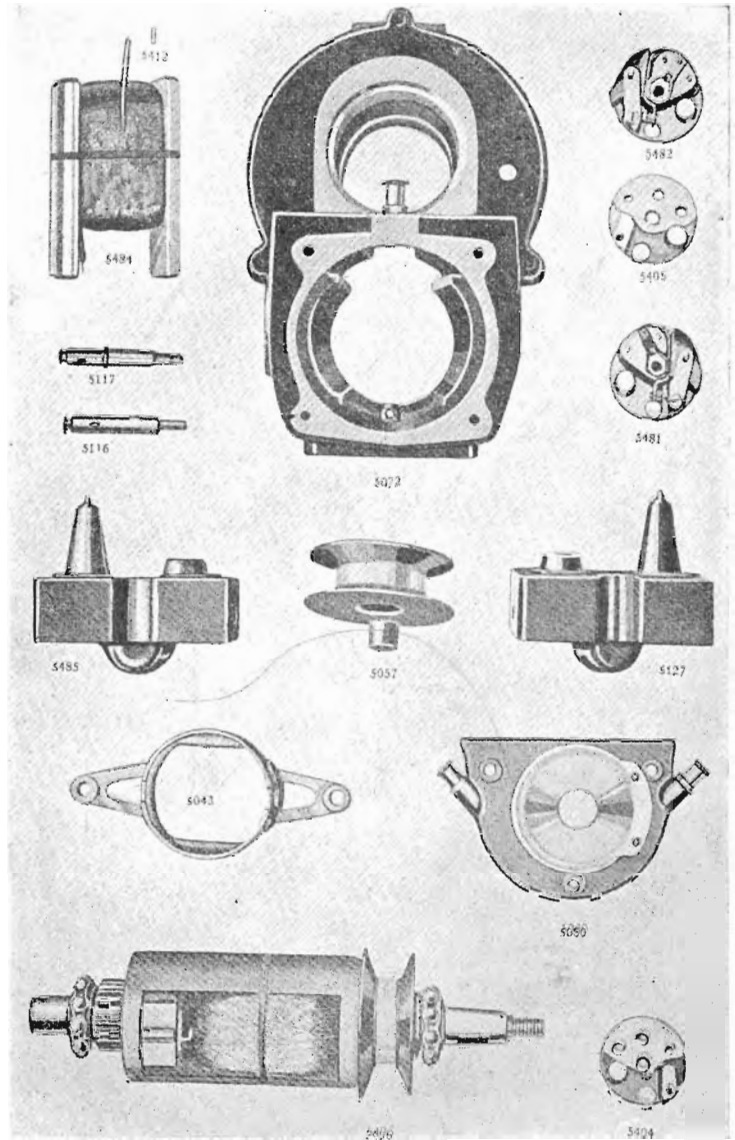
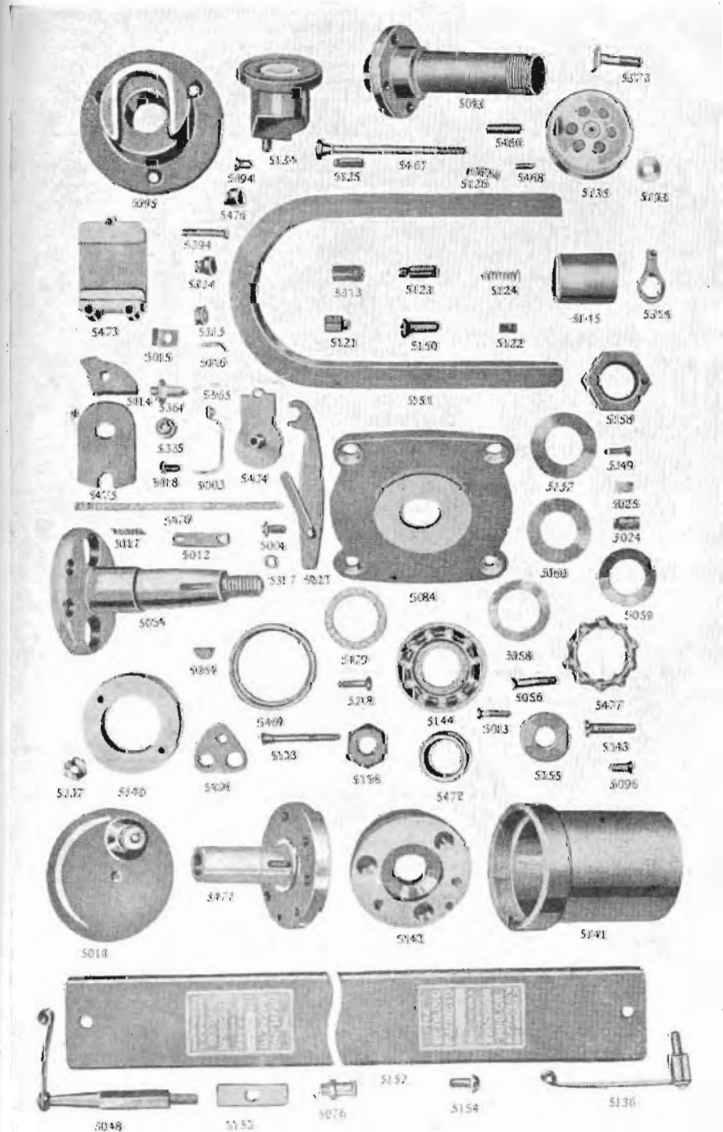
### BERLING D-81 MAGNETO

BERLING D-81 MAGNETO. For Curtis OX5, 90 HP Engine, Norma bearings, mica condensers, platinum and irridium contact points, best quality silk insulation material, new .....each **\$50.00**

BERLING REBUILTS. Completely rebuilt at factory, practically as serviceable as a new one. Each .....**\$40.00**

### BERLING MAGNETO PARTS

| Part No. | Description                                | Price   |
|----------|--|---------|
| 5103     | Interrupter Platinum Contact Spring        | \$ 3.80 |
| 5004     | Interrupter Platinum Contact Screw         | 3.55    |
| 5010     | Interrupter Housing Cover Moulded Assembly | .80     |
| 5012     | Interrupter Lever Clamp Spring             | .03     |
| 5013     | Interrupter Contact Lock Screw             | .03     |
| 5014     | Interrupter Lever                          | .20     |
| 5015     | Interrupter Spring Washer                  | .03     |
| 5016     | Interrupter Cushion Spring                 | .03     |
| 5017     | Interrupter Lever Recoil Spring            | .03     |
| 5018     | Interrupter Spring Mounting Screw          | .03     |
| 5024     | Ground Brush                               | .10     |
| 5025     | Ground Brush Spring                        | .03     |
| 5027     | Interrupter Contact Adjusting Wrench       | .15     |
| 5043     | Cam Housing                                | 2.00    |
| 5048     | Cam Housing Clamp                          | .20     |
| 5054     | Armature Head Driving End                  | 2.50    |



|      |  |         |
|------|--|---------|
| 5056 | Armature Head Screw                                  | .03     |
| 5657 | Collector Spool                                      | 3.50    |
| 5058 | Collector Spool Washer                               | .03     |
| 5059 | Collector Spool Spring Washer                        | \$ 0.03 |
| 5060 | Collector Spool Retaining Washer                     | .03     |
| 5063 | Pinion for D-81                                      | 1.00    |
| 5064 | Pinion Key   | .06     |
| 5072 | Frame Assembly—Clockwise and anti-Clockwise          | 22.00   |
| 5076 | Oil Cup  | .15     |
| 5080 | Interrupter End Bearing Assembly for D-81            | 6.00    |
| 5084 | Driving End Bearing Assembly                         | 4.00    |
| 5092 | Distributor Gear for D-81                            | 4.50    |
| 5093 | Distributor Gear Shaft                               | 3.00    |
| 5094 | Distributor Gear Mounting Screw                      | .03     |
| 5095 | Distributor Finger Locating Bushing                  | 1.00    |
| 5096 | Distributor Finger Locating Bushing Screw            | .03     |
| 5099 | Inside Distributor Block for D-81, carbon brush type | 15.00   |
| 5100 | Distributor Block Cover, brush type                  | 2.00    |
| 5105 | Terminal Plug Clamp Bracket                          | .25     |
| 5107 | Cable Terminal Plug Assembly                         | .65     |
| 5116 | Distributor Block Stud Lower                         | .15     |
| 5117 | Distributor Block Stud, Upper                        | .30     |
| 5118 | Distributor Block Clamp Spring Assembly              | .75     |
| 5120 | Distributor Finger Assembly, brush type              | 5.00    |
| 5121 | Distributor Finger Brush                             | .15     |
| 5122 | Distributor Finger Brush Spring                      | .03     |
| 5123 | Distributor Finger Contact Brush                     | .15     |
| 5124 | Distributor Finger Contact Brush Spring              | .03     |
| 5125 | Collector Brush                                      | .10     |
| 5126 | Collector Brush Spring                               | .03     |
| 5127 | Yoke Assembly  | 6.50    |
| 5133 | Yoke Mounting Screw                                  | .06     |
| 5134 | Brushholder Assembly                                 | 3.00    |
| 5135 | Brushholder Cover                                    | .50     |
| 5136 | Brushholder Clamp                                    | .05     |
| 5137 | Ground Terminal Nut                                  | .03     |
| 5140 | Adjustable Bearing Bushing Nut                       | 1.40    |
| 5141 | Adjustable Bearing Bushing                           | 5.50    |
| 5142 | Adjustable Bearing Clamp Ring                        | 1.30    |
| 5143 | Adjustable Bearing Clamp Ring Screw                  | .04     |
| 5144 | Ball Bearing   | 1.75    |
| 5145 | Adjustable Bearing Spacing Ring                      | .30     |
| 5148 | Terminal Plug Clamp Bracket Screw                    | .03     |
| 5149 | Gear Shaft Nut Lock Screw                            | .03     |



BERLING MAGNETO PARTS

|      |  |         |
|------|--|---------|
| 5150 | Bearing Screw                                      | .03     |
| 5151 | Magnet   | 4.50    |
| 5152 | Magnet Strap                                       | .30     |
| 5153 | Magnet Strap Washer                                | .03     |
| 5154 | Magnet Strap Screw                                 | .03     |
| 5155 | Shaft Washer                                       | .05     |
| 5156 | Shaft Nut  | \$ 0.20 |
| 5157 | Gear Shaft Washer                                  | .04     |
| 5158 | Gear Shaft Nut                                     | .30     |
| 5165 | Terminal Plug Clamp Assembly                       | 1.00    |
| 5193 | Ground Terminal Washer                             | .03     |
| 5313 | Hexagon Screw Insulation Bushing                   | .04     |
| 5314 | Interrupter Block Mtg. Screw Bushing (Long)        | .06     |
| 5315 | Interrupter Block Mtg. Screw Bushing (Short)       | .06     |
| 5316 | Interrupter Hexagon Screw Lock Clamp               | .05     |
| 5317 | Interrupter Block Mtg. Screw Washer                | .03     |
| 5318 | Interrupter Block Mounting Screw                   | .03     |
| 5335 | Terminal Plate Insulation Bushing                  | .05     |
| 5364 | Interrupter Lever Stud                             | .15     |
| 5365 | Interrupter Lever Stud Pin                         | .03     |
| 5373 | Ground Terminal Stud                               | .08     |
| 5394 | Condenser Mounting Screw                           | .03     |
| 5404 | Interrupter Base, Clockwise, for Curtiss OX5 Motor | .50     |
| 5405 | Interrupter Base, Anti                             | .30     |
| 5406 | Interrupter Block Insulation                       | .03     |
| 5407 | Interrupter Block Clockwise                        | .35     |
| 5412 | Timing Stop Pin                                    | .03     |
| 5425 | Interrupter Block, Anti                            | .35     |
| 5465 | Distributor Block Terminal Index                   | .03     |
| 5466 | Dowel Pin for End Bearing End Adjust. Clamp        | .03     |
| 5467 | Interrupter Hexagon Mounting Screw                 | .15     |
| 5468 | Brushholder Locating Pin                           | .03     |
| 5469 | Outside Ball Race                                  | 1.35    |
| 5470 | Dust Guard   | .03     |
| 5471 | Armature Head Interrupter, End                     | 2.50    |
| 5472 | Inside Ball Race                                   | 1.25    |
| 5473 | Condenser  | 7.00    |
| 5474 | Terminal Plate                                     | .20     |
| 5475 | Terminal Plate Insulation                          | .03     |
| 5476 | Condenser Mtg. Screw Insulation Bushing            | .08     |
| 5477 | Ball Cage  | .70     |
| 5479 | Adjustable Bearing Clamp Ring Dust Washer          | .03     |
| 5481 | Interrupter Clockwise, for Curtiss OX5             | 9.60    |

|      |                                    |               |       |
|------|------------------------------------|---------------|-------|
| 5481 | Interrupter Clockwise, Test Run    | Special Price | 5.00  |
| 5482 | Interrupter Anti                   |               | 9.60  |
|      | Bosch Breaker Assembly             |               | 10.50 |
| 5484 | Wound Armature Core                |               | 10.00 |
| 5485 | Yoke Assembly                      |               | 6.50  |
| 5496 | Armature Assembly D-81             |               | 27.00 |
| 5522 | Inside Dis. Block D-81             |               | 15.00 |
| 5523 | Dist. Finger Assembly, Spark type  |               | 5.00  |
| 5526 | Dist. Block Cover D-81, spark type |               | 2.00  |

NOTE—Our stock of parts on Simms and Dixie Magnetos has depleted considerably, but while they last we can furnish the following listed parts. Price is subject to change without notice. Practically all parts for Dixie 800 and 825 are interchangeable.

TYPE L8 SIMMS AERONAUTICAL MAGNETO

| Part No. | Part Name  | Price Each |
|----------|--|------------|
| 2701     | Distributor Shaft Bushing  | \$ 1.25    |
| 2790     | Washer for Oil Retaining Cup   | .03        |
| 2757     | Rotating Distributor Piece   | 2.00       |
| 2794     | Distributor Gear and Spindle   | 3.00       |
| 2718     | Oil Reservoir  | 1.00       |
| 1689     | Brass Clip for Oil Reservoir   | .10        |
| 2707     | Distributor Board Only   | 2.50       |
| 2134     | Distributor Cover Only   | 1.25       |
| 2704     | Distributor Board Spring Clip  | .40        |
| 2716     | Tie Rod  | .35        |
| 2141     | Brush and Spring Assembly  | .15        |
| 2758     | Armature Complete with Slip-Ring, Inner Ball Races and Armature Gear | 6.00       |
| 799-A    | Contact Breaker Complete, Clockwise Rotation                         | 2.50       |
| 2873     | Cam Rings with Cams  | 1.25       |
| 2729     | Aluminum Distance Ring   | .75        |

DIXIE MAGNETO—800 AND 825

New Dixie 800 Magneto, left rotation—each \$25.00

| Part No. | Part Name   | Price Each |
|----------|---|------------|
| A-19022  | Distributor Block Terminal Screws                     | \$ 4.15    |
| A-19028  | Distributor Gear, Model 825                           | 24.21      |
| A-19062  | Breaker Bar Complete with Platinum and Spring (L. H.) | 13.21      |
| A-19080  | Ground Stud   | .41        |
| A-19088  | Winding Clamps  | .34        |
| A-19130  | Contact Screw with Platinum                           | 9.37       |
| A-19201  | Breaker Cover   | 5.10       |
| A-19092  | Cradle, Model 800, superseded by 19206                | 44.00      |
| A-19134  | Back Plate, 800                                       | 10.41      |
| A-19235  | Cover Clamps  | 1.21       |
| A-19008  | Breaker Base Plate, 800                               | 2.36       |
| A-19169  | Breaker Fastening Stud Nuts                           | .41        |
| A-19170  | Breaker Fastening Stud                                | .37        |
| A-19228  | Cam (R. H.) Model 825                                 | 5.14       |
| A-19294  | Distributor Pinion, Model 825                         | 7.37       |
| A-19317  | Tie Rod (Bottom)                                      | 3.30       |
| A-19358  | Cover Clamps, Model 825                               | 1.70       |
| A-19081  | Tie Rods (Top) Model 800, superseded by 19407         | 2.21       |
| A-19354  | Tie Rods (Top) Model 825, superseded by 19407         | 2.20       |
| A-19231  | Magnet Cover, Model 800, superseded by 19409          | 2.60       |
| A-19336  | Back Plate (R. H.) Model 800, superseded by 19431     | 13.55      |

DIXIE 83 AND 85 MAGNETO

Rebuilt Dixie 83-85—each \$20.00

| Part No. | Part Name                                 | Price Each |
|----------|---|------------|
| 14361    | Magnets, per pair                         | \$1.00     |
| 3396     | Side Plate Screws with Lock Washers, each | .10        |
| 8113     | Side Plate Rod                            | .15        |
| 8800     | Side Plate (R. H.) Models 83, 85          | .30        |

HIGH TENSION WINDING

|      |                                   |      |
|------|-----------------------------------|------|
| 3107 | Screw and Washer for Primary Lead | .10  |
| 9013 | Condenser                         | 3.65 |
| 8981 | Safety Gap Holder                 | 1.15 |

ROTATING POLE AND ROCKING FIELD

|       |  |       |
|-------|--|-------|
| 8868  | Rotating Pole and Rocking Field, Complete, Models 84, 85, 86 | 32.25 |
| 8467  | Rotating Pole Structure                                      | 9.15  |
| 8222  | Field Pole Structure, Models 84, 85, 88                      | 6.60  |
| 16774 | Bearing Holder Screw (Long), each                            | .10   |
| 8053  | Bearing Holder with Bearing Drive End, Models 84, 85, 88     | 8.50  |
| 14249 | Bearing Holder with Bearing Breaker End                      | 10.25 |
| 14249 | Bearing Holder with Bearing Drive End, Models 83, 86         | 10.25 |
| 9603  | Primary Lead, Models 84, 85, 88                              | .60   |

BREAKER BOX

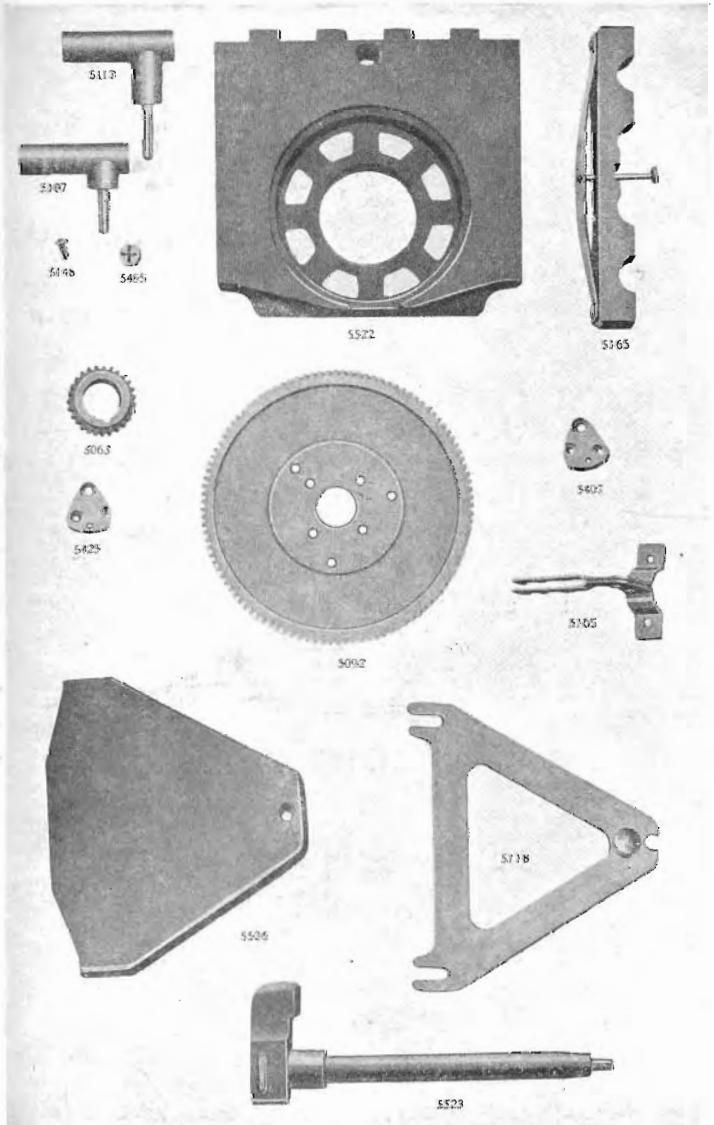
|       |  |      |
|-------|--|------|
| 9588  | Bracket Lock Screw                         | .10  |
| 8097  | Finger Spring                              | .10  |
| 8445  | Breaker Bar Springs                        | .15  |
| 14255 | Breaker Base (Double Lever), Models 83, 86 | 3.65 |
| 9393  | Contact Screw with Large Platinum          | 5.90 |
| 9696  | Breaker Bar Complete with Large Platinum   | 7.15 |
| 14256 | Breaker Cover, Models 83, 86               | .60  |
| 9683  | Breaker Base Fastening Screws, each        | .10  |

DISTRIBUTOR

|       |                                       |       |
|-------|---------------------------------------|-------|
| 227   | Plate Screws with Lock Washer, each   | .10   |
| 9888  | Distributor Rotor Complete            | 11.75 |
| 14295 | Distributor Block Complete, Aero Type | 16.15 |
| 9433  | Distributor Brush and Springs         | .22   |
| 8559  | Distributor Pinion                    | 2.45  |

FRAME AND BACK PLATE

|      |   |       |
|------|---|-------|
| 8069 | Oil Hole Cover with Spring and Pin (Back R. H.) | .15   |
| 8101 | Oil Hole Cover with Spring and Pin (Front)      | .15   |
| 389  | Back Plate Fastening Screws, each               | .10   |
| 9967 | Back Plate (R. H.)                              | 2.61  |
| 9895 | Frame Only, Models 85, 83                       | 28.45 |



SMITH'S AIRPLANE WELDING OUTFITS



SMITH'S AIRPLANE WELDING OUTFIT "A"

This is the ideal unit for the man who wants to weld airplane fuselages, sheet aluminum, or light metal parts. The outfit is complete and easy to use.

The torch comes complete with four welding tip assemblies. Each tip assembly is furnished with guard cap and tip cleaner. The guard cap protects seat and threads when assembly is not in use. The tip cleaner enables operator to keep tip and assembly clean and free from foreign matter.

The regulators furnished with this outfit are the famous Smith's Ball Bearing Regulators. The instruction book tells how to operate and care for the torch and regulators.

The complete outfit includes: One No. 2 Torch handle with welding tips Nos. 21, 23, 25 and 27,

with guard caps and tip cleaners; canvas case and wrench; one Ball Bearing Oxygen Regulator with 2-inch diameter gauges and one Ball Bearing Acetylene Regulator with 2 inch diameter gauges; inlet to fit Airco acetylene cylinders, and adapter to fit Prest-O-Lite acetylene cylinders; two 12½ ft. lengths ¾ inch inside diameter hose with connections; one regulator wrench, pair spectacles with case, instruction book and torch lighter with one flint. Shipping weight 22 lbs.

Smith's Airplane Welding Outfit "A".....\$65.45

SMITH'S AIRPLANE WELDING OUTFIT "B"

Smith's Airplane Welding Outfit "B" is identical to Smith's Airplane Welding Outfit "A," except that the BB-P, single gauge regulators are furnished rather than the double gauge regulators. Shipping weight 19 lbs. Price.....\$53.75

SMITH'S NO. 2 AIRPLANE WELDING TORCH



Smith's No. 2 Airplane Torch is the ideal torch for welding airplane fuselages, sheet aluminum and light metal parts. It is light and well balanced. Each welding tip assembly varies in length and weight directly with size. Each has its separate mixing chamber that is automatically changed with the tip. This insures a soft neutral flame that does not blow the metal being welded.

Welding tips can be had in sizes Nos. 20 to 28 inclusive. Unless otherwise specified, torch is furnished with handle; welding tips Nos. 21, 23, 25 and 27, with tip cleaners and guard caps, canvas case, wrench and hose connections to fit ¾-inch inside diameter hose. Shipping weight, 1 lb. 4 oz.

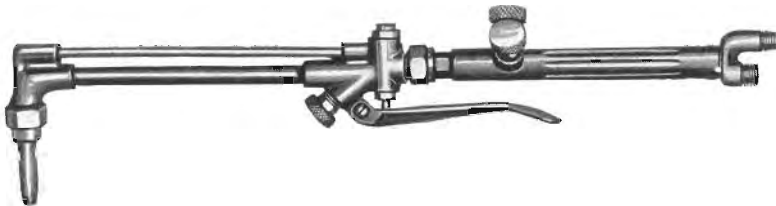
Price, as listed above.....\$16.75

No. 2 airplane torch handle with wrench and connections ..... 7.50

Welding tips with cleaner and cap, each..... 2.25

Tip cleaner, each ..... 2.50

SMITH'S NO. 200 CUTTING ASSEMBLY



The No. 200 cutting tip assembly fits into the No. 2 airplane torch handle and forms a light, well-balanced torch for cutting steel up to 1 inch in thickness.

Cutting tips Nos. 201 and 202 may be had for use with this cutting tip assembly. Cutting tip No. 201 is for use in cutting steel up to ½ inch in thickness. Cutting tip No. 202 has a capacity of 1 inch.

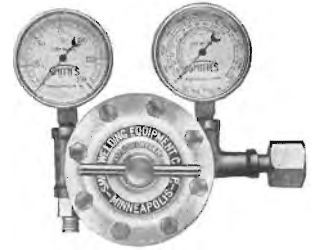
Unless otherwise specified, the No. 200 cutting tip assembly is furnished with tip No. 202. Shipping weight 1 lb. 2 oz.

No. 200—Cutting Tip Assembly with one tip, wrench, handle and hose connections.....\$22.50

No. 200—Cutting Tip Assembly with one tip and wrench ..... 15.00

Tips for No. 200 cutting Tip Assembly, each.... 2.50

BALL BEARING REGULATORS



OXYGEN REGULATORS

This regulator is furnished with 150 lb. working pressure gauge and 3,000 lb. tank pressure gauge; inlet to fit standard oxygen cylinder and outlet with new standard oxygen hose connection to fit ¾ inch inside diameter hose.

Regulator with 2½ inch gauges.....\$25.10

Regulator with 2 inch gauges..... 22.70

Regulator without gauges ..... 15.00

ACETYLENE LINE REGULATORS

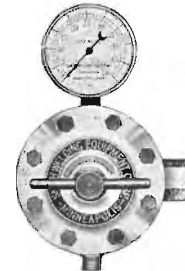
Acetylene regulator is equipped with 50 lb. working pressure gauge and 500 lb. tank pressure gauge; furnished with inlet connection to fit Airco acetylene cylinder and adapter to fit Prest-O-Lite welding; outlet with new standard fuel gas hose connection to fit ¾ inch inside diameter hose.

Regulator with 2½ inch gauges.....\$22.20

Regulator with 2 inch gauges..... 20.20

Regulator without gauges ..... 15.00

LINE REGULATORS



OXYGEN LINE REGULATORS

Furnished with 2 inch diameter, 50 lb. gauge; inlet with ½ inch male pipe thread connection, and hose connection to fit ¾ inch inside diameter hose.

Oxygen Line Regulator.....\$15.60

ACETYLENE LINE REGULATORS

Furnished with 2 inch diameter, 15 lb. gauge; inlet to fit standard ¾ inch pipe thread; hose connection to fit ¾ inch inside diameter hose.

Acetylene Line Regulator.....\$15.60

SHEET ALUMINUM FLUX

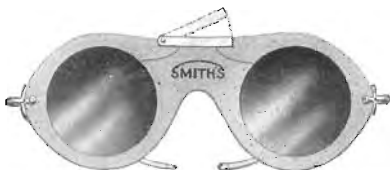


Smith's Sheet Aluminum Welding Flux is an extremely pure flux for use in welding sheet aluminum. Acts as a cleanser, removes impurities, and causes the metal to flow freely. Easy to use and does not corrode the metal. Packed in special sealed bottles which contain ¼ lb. flux.

Per bottle .....\$1.75

WELDING ROD—See Page 29.

FIBRE SPECTACLES



Smith's Fibre Spectacles are comfortable, serviceable, and non-heat conducting. Lenses, when broken or spotted, can be readily replaced at low cost.

Fibre Spectacles, per pair.....\$1.50

Replacement Lenses, each..... .50

WELDER'S SPECTACLES



These Spectacles are strong, rigid, and have a white metal, rust-proof frame with a solid nose piece. Case is all metal with rounded corners and spring hinged cover. Shipping weight 3 oz.

Welder's Spectacles, per pair.....\$1.00

WELDER'S GOGGLES



Smith's Goggles have non-metallic vulcanized cups with indirect ventilation and do not conduct heat. The colored lenses are protected by outer lenses of clear glass and may be easily removed or replaced. Nose strap is adjustable. Head strap is of elastic and is also adjustable. Shipping weight 3 oz.

Goggles, per pair .....\$2.00

Colored Lens for above, each..... .50

Clear Lens for above, each..... .10

SMITH'S HOSE



Smith's single braid  $\frac{3}{8}$  inch inside diameter hose is light, flexible and will withstand hard usage. It is recommended for use with Smith's No. 2 welding torch. Oxygen hose is green, acetylene hose is red.

|                                    |          |
|------------------------------------|----------|
| Smith's Hose—                      | Per Foot |
| Less than 50 ft. lengths.....      | \$0.16   |
| In 50 to 99 ft. lengths.....       | .15      |
| In lengths of 100 ft. or more..... | .14      |

HOSE CONNECTIONS

|  |        |
|--|--------|
| No. R13—Joins $\frac{3}{8}$ inch inside diameter oxygen hose to No. 2 torch.....                       | \$0.25 |
| No. R14—Joins $\frac{3}{8}$ inch inside diameter acetylene hose to No. 2 torch.....                    | .25    |
| No. R13D—Joins $\frac{3}{8}$ inch inside diameter oxygen hose to outlet on oxygen regulator.....       | .25    |
| No. R14D—Joins $\frac{3}{8}$ inch inside diameter acetylene hose to outlet on acetylene regulator..... | .25    |

STARRETT TOOLS



**THICKNESS GAUGES NO. 172A.** This gauge is particularly popular with machinists and tool makers in gauging narrow slots, as well as with the motor mechanic in adjusting the air gap for the valves on motors.

Size A has nine leaves, viz.: .0015, .002, .003, .004, .006, .008, .010, .012 and .015.

Sizes B and C have eight leaves the same as A with the omission of .0015.

The leaves are tempered and have the thickness marked upon them.

Size A is made with either straight leaves as shown above, or with tapering leaves as shown in No. 172M. Sent with tapering leaves unless otherwise ordered.

Sizes B and C are made with tapering leaves only, as shown in No. 172 M.

Sizes D and E have eight (straight) leaves, viz.: .002, .003, .004, .005, .006, .008, .010 and 0.15.

As with all our thickness gauges, when any leaf becomes impaired it can easily be replaced. Leaves  $3\frac{1}{8}$  inches long by  $\frac{1}{2}$  inches wide.

No. 172A Thickness Gauge, each.....\$1.50



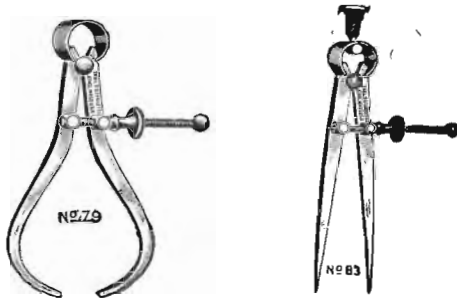
**STEEL MEASURING TAPE NO. 530.** An extremely moderate priced tape without sacrificing durability. Markings are bright, which, against a dark background, make them easily perceptible.

The case consists of two metal sections, covered with Athol black artificial leather, which is drawn and held in position by a concavoconvex ring. The opening in the case has a metal re-enforcement with roller, thereby preventing damage to either the case or the tape. All metal parts have bright nickel finish.

Has  $\frac{3}{8}$  inch wide, quick reading tape, push button and folding handle. Graduated in feet, inches and eighths of an inch.

No. 530 Tape, 50 foot length.....each \$2.90

STARRETT TOOLS



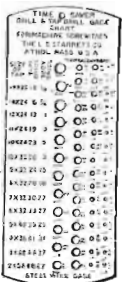
**YANKEE OUTSIDE AND INSIDE CALIPERS NO. 79 AND NO. 73.** The Yankee Calipers and Dividers are similar to the Fay Pattern, but not quite as heavy as the Fay, and cost less. They are much liked, and on account of price are preferred by many to the higher cost tools.

All sizes are supplied with either solid or quick adjusting nut.

No. 73 represents our Yankee Inside Transfer Caliper with either spring or solid nut. The bow is stiff, making the caliper reliable. After calipering inside of chambered cavity by springing in the legs they may be withdrawn, and as they spring back will show exact size calipered.

Nos. 79 or 73 Calipers, 4-inch—

|                      |             |
|----------------------|-------------|
| With solid nut.....  | each \$0.90 |
| With spring nut..... | each 1.10   |



**TAP AND DRILL GAGE NO. 185.** This gauge is approximately  $\frac{5}{64}$  inch thick,  $2\frac{1}{8}$  inches wide and  $6\frac{3}{4}$  inches long. It is hardened, ground and rubbed to a bright finish and is thoroughly tested after hardening.

By the use of this gauge one is enabled to select at once the right sized drill to suit machine screw taps most commonly used, leaving just stock enough for the tap to cut as near a full thread as is practicable for one tap without breaking it, thus saving much time

and uncertainty of result attending the former crude ways of making a selection.

Explaining the chart, the first row of figures, for an example, read thus, 14x20x10 $\frac{1}{4}$ . The number 14 (in the first row of figures) means the number or size of tap: 20 the pitch or size of thread; 10 the size of drill to use which will leave the right stock for proper thread; and  $\frac{1}{4}$ , size of drill to use to let this tap or screw through outside of the thread.

The figures—1, etc., up to 60—designate the number of drill (size agreeing with the holes). Other figures, 228, 221, etc., designate the size of hole in thousandths of an inch.

No. 185 Tap and Drill Gage.....each \$2.40



**READY REFERENCE TABLE WITH RULE NO. 588.** Has decimals, fractions and 6-inch rule with 32ds divisions on one side, and tap and drill data and 6-inch rule with 64ths divisions on the other, as illustrated. Handy for toolmakers and machinists. Markings distinct and easy to read.

Note the 32ds divisions marked every 4, 8, 12, etc., lines; the 64ths divisions marked every 8, 16, 24, etc., lines—our quick reading feature on both sides.

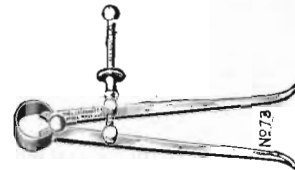
Note also the way the rule is incorporated—no turning end for end—32ds or 64ths always in the natural position.

Size, about 2/100 inch thick, 1 $\frac{1}{4}$  inch wide, and 6 $\frac{3}{4}$  inches long.

No. 588 Reference Table.....each \$0.90



STARRETT TOOLS



**YANKEE SPRING DIVIDERS NO. 83,** 4-inch, with solid nut or spring nut.

|                          |             |
|--------------------------|-------------|
| No. 83. Yankee Dividers— |             |
| With solid nut.....      | each \$0.90 |
| With spring nut.....     | each 1.10   |



**FLEXIBLE RULE NO. 603.** This rule has No. 4 graduation with the 64ths and 32nds figured, like No. 600, and is graduated in 32nds of an inch on both ends of one side, as shown by the cut. Made in 2 inch to 12 inch lengths, inclusive, approximate thickness,  $\frac{3}{32}$ -inch or No. 18 gauge.

|                             |               |               |                |               |               |      |
|-----------------------------|---------------|---------------|----------------|---------------|---------------|------|
| Lengths, inches.....        | 2             | 3             | 4              | 6             | 9             | 12   |
| Approx. widths, inches..... | $\frac{1}{2}$ | $\frac{3}{8}$ | $\frac{5}{16}$ | $\frac{3}{4}$ | $\frac{7}{8}$ | 1    |
| Prices, each.....           | .45           | .60           | .75            | .90           | 1.35          | 1.65 |



**V BLOCKS AND CLAMP NO. 268.** These drill blocks and clamps are of cast iron material, sufficiently strong to stand any work to which they may be subjected. The blocks are 1 $\frac{1}{2}$  inches square and 2 inches long, and are furnished in pairs.

The clamp will hold a round piece up to 1 $\frac{1}{4}$  inches diameter firmly in the groove of the blocks, for prick punching, drilling or laying out a series of holes before and while being drilled.

|                                  |             |
|----------------------------------|-------------|
| No. 268-C, Set complete.....     | each \$1.50 |
| No. 268-A, Two drill blocks..... | 1.25        |
| No. 268-B, Clamp.....            | .40         |

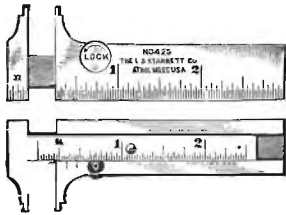


**ADJUSTABLE JAW CUT-NIPPERS NO. 1.** The majority of wire cutters or nippers once dull or broken are useless; these nippers are detachable, can be removed, reground and adjusted when worn; each jaw can be ground away to the extent of  $\frac{1}{4}$  inch, remaining as good as new for practical use; and when used up, if ever, new jaws can be procured. The head and handles are of drop forged steel, finely finished. All the parts are case hardened, except the jaws. These are made from a high grade of steel, nicely tempered. Those warranted to cut music wire have their cutting edges ground to a short, steep bevel, while those for common use have their cutting edges ground more acute, work easier, and are preferable for cutting softer wire or for general use. We particularly recommend this wire cutter, to piano men, linemen telephone men, and airplane workers, or in wire mills where constant cutting of wire is demanded. We also make jaws especially shaped for cutting wire in bicycle rims.

The 5 $\frac{1}{2}$  inch size is made with jaws held in place by one screw.

No. 1 Cut-Nippers, 5 $\frac{1}{2}$ ".....each \$3.50

STARRETT TOOLS



POCKET SLIDE CALIPERS NO. 425. Graduated in 32ds on the stock and 64ths on the slide. The improved clamping device, with left hand thread (see cut), is a valuable feature as it may be locked by the thumb of the same hand in which the tool is held. The two lines on the stock as shown in lower cut enable the user to get either inside or outside measurements.

| Size | Depth of Jaws | Nibs When Closed | Price  |
|------|---------------|------------------|--------|
| 3"   | 1 1/4"        | .125             | \$4.00 |
| 5"   | 1 3/4"        | .250             | 5.00   |



FLEXIBLE STEEL RULE NO. 324. Graduated both sides, quick reading; a departure from the conventional flexible steel rule as both sides are graduated, as shown by the above cuts. Graduated 64ths on one side and 32nds on the other with the addition of our quick reading figures.

As illustrated, it is graduated on opposite sides and opposite edges and from one end.

Furnished with metal bound pocket case at no additional charge.

No. 324 Steel Rule.....each \$0.90



MICROMETER NO. 576. This caliper is for measuring tubing, ranges from 0 to 1/2"; without lock nut and has the face of the anvil rounded, which adapts it for accurately measuring the thickness of tubing, etc. The anvil touches at only one point on the inside, while the end of spindle being flat, touches at only one point on the outside, thus measuring accurately the thickness of tubing. It will enter a 1/8 inch hole freely. For measuring by thousandths up to one-half inch with decimal equivalents stamped on the frame, with ratchet stop.

No. 576 Micrometer.....each \$8.50  
With Leather Case.....each 9.70  
Without ratchet stop 50c less.



MICROMETER CALIPER NO. 436. Black enameled frame; packed one in wooden box; sent without ratchet stop unless otherwise ordered; this Micrometer Caliper also furnished to read in 1/2 thousandths when so ordered; decimal equivalents on thimble.

Sizes and Prices

| Size, Inches | Size, m/m | Range, Inches | Range, m/m | Without Ratchet Stop | With Ratchet Stop | Standards Extra | Leather Case Extra |
|--------------|-----------|---------------|------------|----------------------|-------------------|-----------------|--------------------|
| 1            | 25        | 0 to 1        | 0 to 25    | \$6.25               | \$6.75            |                 | \$1.25             |
| 2            | 50        | 1 to 2        | 25 to 50   | 7.00                 | 7.50              | \$1.00          | 2.50               |
| 3            | 75        | 2 to 3        | 50 to 75   | 7.75                 | 8.25              | 1.25            | 3.00               |
| 4            | 100       | 3 to 4        | 75 to 100  | 8.50                 | 9.00              | 1.50            | 3.50               |
| 5            | 125       | 4 to 5        | 100 to 125 | 9.25                 | 9.75              | 1.75            | 4.00               |
| 6            | 150       | 5 to 6        | 125 to 150 | 10.00                | 10.50             | 2.00            | 4.75               |

VACUUM GRIP PLIERS



"The Aviator"  
Adjustable Slide Joint Thin Nose Pattern with Wire Cutter.  
No. 65—5" .....\$1.50  
No. 66—6" .....1.75  
No. 67—7" .....2.00



No. 137—Adjustable Joint, Heavy Duty Side-Cutting with fashioned handles; 7".....\$2.00



Adjustable Joint, Heavy Duty Side-Cutting Pattern.  
No. 35—5" .....\$1.60  
No. 36—6" .....1.75  
No. 37—7" .....2.00



Diagonal Cutters, Mechanics' Pattern.  
No. 85—5" .....\$1.65  
No. 86—6" .....2.00  
No. 87—7" .....2.50

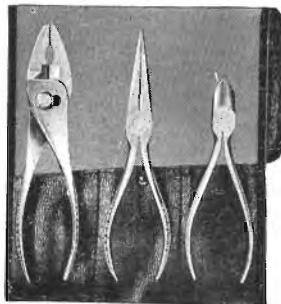


Adjustable Slide Joint, Thin Nose Pattern.  
No. 25—5" .....\$1.20  
No. 26—6" .....1.35  
No. 27—7" .....1.75



No. 336—Special Heavy Duty Diagonal Cutters; 6".....\$1.65

VACUUM GRIP AVIATOR'S KIT

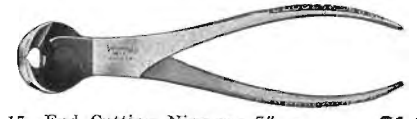


Three pliers especially selected for aircraft use: greater gripping power, greater cutting power. Put up in neat compact kit of durable leatherette lined with purple velvet. Your name etched free on the handle of each pair. Nose pattern wire cutter, 7-inch long, long reach needle nose, wire cutter 6 1/2 inches long; 6-inch diagonal cutters.  
Aviator's Kit, complete.....\$5.75

VACUUM GRIP PLIERS



No. 597—Special Valve Pin Pliers; 7 3/4".....\$2.50



No. 17—End Cutting Nippers; 7".....\$1.90



No. 107—Angle Nose Grippers; adjustable slide joint opens to 3/4"; a handy tool to add to your kit; length 7" .....each \$2.00

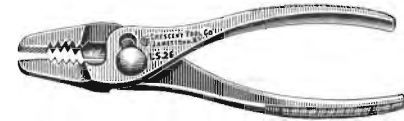
CRESCENT TOOLS



SINGLE END CRESCENT WRENCH—Popular wrench where dependable adjustable wrench is needed.  
A16—6 inch, 3/4 inch capacity, each.....\$0.75



MOTOR KIT COMBINATION PLIERS—High grade, hand finished tool; special steel accurately machined; hardened by special process; nickel plated, hand buffed.  
G26—6 inch, 1 inch capacity, each.....\$0.50



SIDE CUTTING SLIP JOINT PLIERS—This is the regular Crescent Thin Nose Plier with a side cutter added. None of the good points of the thin nose plier have been lost and the addition of the cutter makes it a most valuable tool. The cutter has keen edges and will cut easily. Finish nickel plated, hand buffed.  
LS26—6 inch, 1 inch capacity, each.....\$0.75



DIAGONAL CUTTING PLIERS—Light, yet strong and have a very keen edge; tested blades; full polished.  
942—5 inch, each.....\$1.35



LIGHT END CUTTING NIPPERS—Light serviceable tool for cutting objects close to the surface of other objects; gun metal finish with polished head.  
265—4 1/2 inch, each.....\$1.00



LONG NOSE, SIDE CUTTING PLIERS—An excellent plier, long nose will reach into tight places and the cutter will cut practically any wire used in radio work; full polished.  
654—6 inch, 3-inch nose, each.....\$1.30

**CRESCENT TOOLS**



**SIDE CUTTING SLIP JOINT PLIERS**—This plier has a side cutter and pipe grip. A "V" in the nose helps to hold wires firmly. Barrel stave shaped handles give comfortable grip. Finish nickel plated. 950—5½ inch, each.....**\$1.25**



**THIN STRAIGHT NOSE PLIERS**—Especially adapted to work of a fine nature; its thin nose will reach and grip objects where ordinary plier will not; teeth are sharp and strong; nickel plated, hand buffed. L26—6 inch, 1 inch capacity, each.....**\$0.50**



**LONG NOSE PLIERS**—A plier for radio work, wire bending, loop forming or fine work in repair shops, machine shops, etc.; has strong wire cutter of shear cutting type; full polished. M16—6 inch, each.....**\$0.75**



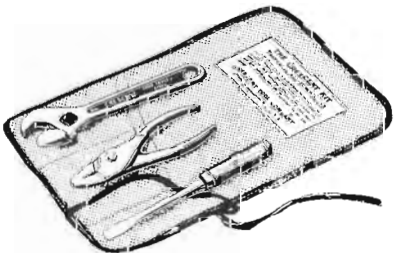
**LONG THIN NOSE PLIERS**—Slip joint style, with extra long nose; three different shaped grips cut into nose; barrel stave shaped handles give comfortable grip; nickel plated. 1027—7 inch, nose 2½ inches, each.....**\$1.25**



**SLIP JOINT PLIERS**—High grade plier for general work; "V" cut in jaws enables user to grip wires, nails and irregular objects; barrel stave handles gives comfortable grip; nickel plated. 925—6 inch, each.....**\$1.00**



**HEAVY DIAGONAL CUTTING PLIERS**—One of the most powerful cutting pliers made; handles designed to give firm grip; edges tested before tool is boxed; blued with polished head. 542—7 inch, each.....**\$1.50**

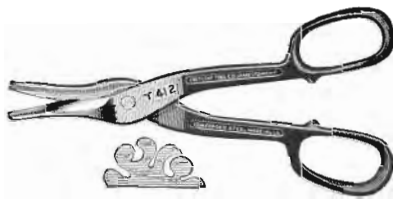


**CRESCENT TOOL KIT**—Made of heavy brown duck with tie tapes; it has three pockets which contain one 8-inch wrench, one 6-inch thin nose plier and one 4-inch all-steel screw driver. TK31—Tool Kit, each.....**\$2.25**



**SCREW DRIVERS**—Forged alloy tool steel, riveted through ferrule, rod and handle; finish black wood handles, polished ferrule and blade. 214 4 inch; 8½ inches over all, each.....**\$0.25**  
214 5 inch; 9½ inches over all, each.....**.30**  
214—6 inch; 11½ inches over all, each.....**.35**

**CRESCENT TOOLS**



**CIRCULAR CUTTING SNIPS**—Designed specially for cutting out intricate patterns and curves; cut smoothly and leave metal unbent; polished blades, enameled handles. T47—7 inch, 1¾ inch cut, each.....**\$1.00**  
T412—12 inch, 3 inch cut, each.....**1.50**



**TINNERS' SNIPS**—Forged up special steel and blades are ground on special machines which give them a keen, strong edge that retain sharpness; powerful leverage makes them cut evenly and smoothly; polished blades, enameled handles, baked on. S410—10 inch, 2¼ inch cut, each.....**\$1.00**



**BALL PEIN HAMMERS**

| Cat. No. | Hammer Size | Weight Without Handle | Price Each |
|----------|-------------|-----------------------|------------|
| 1018     | 3/0         | 8 oz.                 | \$1.00     |
| 1019     | 2/0         | 12 oz.                | 1.00       |
| 1020     | 0           | 1 lb.                 | 1.05       |
| 1021     | 2           | 1½ lbs.               | 1.15       |

**CLE-FORGE HIGH SPEED DRILLS**



**STRAIGHT SHANK DRILLS.** Short set; carbon steel No. 108; high speed steel No. 917.

| Diameter Inches | Price Per Dozen      |                    | Length Overall Inches |
|-----------------|----------------------|--------------------|-----------------------|
|                 | Carbon Steel No. 108 | High Speed No. 917 |                       |
| 3/32            | \$ 1.50              | .....              | 1 1/4                 |
| 1/8             | 1.55                 | .....              | 1 3/4                 |
| 5/32            | 1.60                 | \$ 5.70            | 2 1/2                 |
| 3/16            | 1.65                 | 5.70               | 2 3/8                 |
| 1/4             | 1.70                 | 5.70               | 2 3/4                 |
| 5/16            | 1.75                 | 5.90               | 2 7/8                 |
| 3/8             | 1.80                 | 5.90               | 3                     |
| 7/16            | 1.85                 | 6.10               | 3 1/8                 |
| 1/2             | 1.90                 | 6.10               | 3 1/4                 |
| 9/16            | 2.00                 | 6.30               | 3 3/8                 |
| 5/8             | 2.25                 | 6.30               | 3 1/2                 |
| 11/16           | 2.50                 | 7.00               | 3 3/4                 |
| 3/4             | 2.75                 | 7.00               | 3 3/4                 |
| 13/16           | 3.00                 | 7.35               | 3 7/8                 |
| 7/8             | 3.25                 | 7.35               | 4                     |
| 15/16           | 3.50                 | 9.10               | 4 1/8                 |
| 1               | 3.80                 | 9.10               | 4 1/4                 |
| 1 1/16          | 4.00                 | 10.50              | 4 3/8                 |
| 1 1/8           | 4.35                 | 10.50              | 4 1/2                 |
| 1 1/4           | 4.70                 | 12.00              | 4 3/4                 |
| 1 1/2           | 5.05                 | 12.00              | 4 3/4                 |
| 1 3/4           | 5.50                 | 13.50              | 4 7/8                 |
| 2               | 6.00                 | 13.50              | 5                     |
| 2 1/8           | 6.50                 | 15.00              | 5 1/8                 |
| 2 1/4           | 7.00                 | 15.00              | 5 1/4                 |
| 2 3/8           | 7.75                 | 17.00              | 5 3/4                 |
| 2 1/2           | 8.50                 | 17.00              | 5 1/2                 |
| 2 5/8           | 9.25                 | 18.75              | 5 3/4                 |
| 3               | 10.00                | 18.75              | 5 3/4                 |
| 3 1/8           | 11.00                | 20.00              | 5 7/8                 |
| 3 1/4           | 12.00                | 20.00              | 6                     |

**CHROME-MOLYBDENUM STEEL WRENCH SET**



Vlček's new "Parabolic" type Chrome-Molybdenum steel electro alloy wrenches are not only more advanced in design and principle, but they inaugurate an entirely new idea in wrench design. For the first time a wrench has been produced that has the durability of the round head type open-end wrench and the convenience of the newest parabolic design. The thickness of the heads, the depth of the openings, and the size of the bar are scientifically and practically correct in their relations of one to the other making the strongest wrench on the market.

| Wrench No. | Openings Milled | For USS Nut Size Bolt | For Hex. Head Cap Screws Dia. Screw | For SAE Nut Size Bolt |
|------------|-----------------|-----------------------|-------------------------------------|-----------------------|
| 1723       | 3/8 & 7/8       | .....                 | 3/8 & 7/8                           | 3/8 & 7/8             |
| 1725-B     | 1/2 & 1 1/8     | .....                 | 1/2 & 3/4                           | 1/2 & 3/4             |
| 1027       | 5/8 & 1 1/4     | 5/8 & 3/4             | .....                               | 5/8 & 3/4             |
| 1729       | 3/4 & 1 1/2     | .....                 | 3/4 & 1/2                           | 3/4 & 1/2             |
| 1031       | 7/8 & 1 3/4     | .....                 | 7/8                                 | 7/8                   |
| 1033-C     | 1 & 1 1/2       | .....                 | 1                                   | 1                     |

Chrome-Molybdenum, the finest and toughest alloy steel is electrically heat treated by the special Vlček process to insure uniform hardness in every wrench. No. 2152—Nickel-finished, per set.....**\$2.66**

**VLČEK TAPPET WRENCH SETS**



**TAPPET WRENCH SET.** Electrically heat treated to insure uniform hardness, these wrenches are exceptionally strong and yet of thin design for tappet adjustment service; dependable, very tough and accurate as to milled openings.

No. 2096-Set—Ebony all over, consists of two each following wrenches: ½" and ¾" openings, 8½" long, 1/8" head thickness and 5/16" and 11" openings, 8½" long, 3/16" head thickness, four wrenches per set, per set.....**\$1.30**

**VLČEK CHROME MOLYBDENUM STEEL WRENCHES**



**VLČEK WRENCHES.** This New Parabolic Wrench makes it possible, because of new narrow jaw, to work in the closest corners, yet all the strength of round head type wrench has been retained in the new design. The wrenches listed below will fit regular aircraft bolts and nuts.

| No.   | Milled Openings | Hex. Head Cap | Price Each |
|-------|-----------------|---------------|------------|
|       |                 | Screw Size    |            |
| 1723  | 3/8 "x 7/8"     | .....         | \$0.35     |
| 1725B | 1/2 "x 1 1/8"   | .....         | .50        |
| 1729  | 3/4 "x 1 1/2"   | .....         | .60        |

**BEARING SCRAPER SETS**



No. 563—Machinists' Hollow Ground Bearing Scraper Set, polished blades, ebony shank; set of three, 10½", 11½" and 13½" overall; come packed three in a box; a proven set for use around hangar, airport, overhaul and repair shops, per set.....**\$1.41**

AVIATION TOOL KITS

AVIATION TOOL KIT. This is a specially assembled kit of tools that have been selected because of their particular use in aeronautical repair and servicing work. The kit contains 21 tools, and a canvas carrying bag is furnished with each kit. All tools are made of good grade materials. Following is list of the tools together with list price you would have to pay if bought separately:

|       |                                     |        |
|-------|-------------------------------------|--------|
| 1     | Pistol grip hacksaw frame and blade | \$1.50 |
| 1     | 8" Crescent adjustable wrench       | 1.10   |
| 1     | 1/2" Crowfoot wrench                | 1.00   |
| 1     | 1/2" Socket wrench                  | 1.00   |
| 1     | 1/4" Socket wrench                  | 1.00   |
| 1 Pr. | 6" Adjustable jaw pliers            | .50    |
| 1     | 3/8" x 1/4" Double end wrench       | .35    |
| 1     | 1/2" x 3/8" Double end wrench       | .50    |
| 1     | 5" Diagonal cutters                 | 1.35   |
| 1     | Platinum point file                 | .15    |
| 1     | 6 blade Thickness gauge             | .75    |
| 1     | Magneto wrench                      | .15    |
| 1     | Small Splitdorf double end wrench   | .20    |
| 1     | 10" Screw driver                    | .75    |
| 1     | 9" Adjustable wrench                | .75    |
| 1     | 5/8" Cold chisel                    | .45    |
| 1     | 4" Screw driver                     | .35    |
| 1     | 4" Center punch                     | .30    |
| 1     | 9" Backing out punch                | .35    |
| 1     | 8" Flat mill file                   | .40    |
| 1     | 8" Rat tail file                    | .40    |
| 1     | 8 oz. Ball pein hammer              | 1.00   |

Total Individual Tools \$14.30

Aviation Tool Kit, regular price on this kit is 10.00; we now price it at each \$5.00

STANDARD CLAMPS

(Trade Mark Registered)



STANDARD CLAMPS. An exceedingly well made tool. Furnished with riveted button tip unless ball and socket tip is specified. Steel screw, deep acme thread, long bearing, long life, no broken screws. Shaped grip for hand, heavy ribbed frame.

| Stock No. | Opening | Depth  | List. Doz. |
|-----------|---------|--------|------------|
| 537       | 3"      | 1 1/2" | \$ 8.00    |
| 538       | 4"      | 2 1/8" | 11.00      |
| 540       | 6"      | 2 3/4" | 18.00      |

"JUNIOR" CLAMPS

Malleable Frame, Steel Screws, Button Tip



Well made and nicely finished small Clamps, having Malleable Iron Frames and Steel Screws. They are used for many purposes. Especially useful on jig and pattern work: light gluing; jewelers and instrument work. Frames enameled red.

| Stock No. | Opening | Depth  | List. Doz. |
|-----------|---------|--------|------------|
| 558       | 1"      | 1 1/2" | \$4.00     |
| 571       | 1 1/2"  | 1 3/4" | 5.00       |

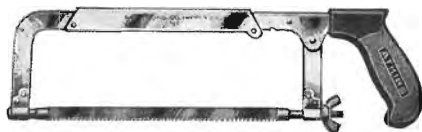
Malleable Frame, Steel Screws, Oscillating Tip

Very strong. Useful for a wide range of work. Frames are enameled red and screws are bright finish, except Nos. 573 and 574, which have tum-bled finish.



| Stock No. | Opening | Depth  | List. Doz. |
|-----------|---------|--------|------------|
| 549       | 2"      | 1 1/2" | \$6.50     |
| 572       | 2 1/2"  | 2 1/2" | 8.50       |

HAND HACK SAWS



ATKINS' HACK SAW No. 11. This frame is made of extra high grade steel, 3/4 inch wide and 3/2 inch thick. Light, strong and stiff. Adjustable from 8 inches to 12 inches, nickel plated and highly polished. The handle is made of hard fibre with open grip and will fit the hand comfortably. It is so constructed that it enables the operator to do fast, accurate cutting. Packed one in a box with 8 inch blade. Price \$1.50



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HAND HACK SAW BLADES

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Silver Steel Blades for cutting angles, channels, pipe, conduit, drill rod, metal trim and tubing thicker than 18 gauge.

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No. 2412—12" length, 1 1/8" width, .025 thickness, 24 teeth, per dozen \$4.08

Silver Steel Blades for cutting above material 18 gauge or thinner.

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Marlin Spike, extra each .60

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- Wichita-Kansas City.
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- Chicago-Milwaukee.
- Milwaukee-St. Paul Minneapolis.
- Cincinnati-Chicago.
- Louisville-Cincinnati-Cleveland.
- Cleveland-Buffalo.
- Buffalo-Albany.
- New York-Albany.
- Birmingham-Atlanta.
- Atlanta-Greensboro.
- Greensboro-Richmond.
- Richmond-Washington.
- Pueblo-Cheyenne.
- Los Angeles-Las Vegas.
- Las Vegas-Milford.
- Milford-Salt Lake City.
- Salt Lake City-Boise.
- Boise-Pasco.

ARMY AIR CORPS MAPS.

- Uniontown-Dayton.
- Washington-Uniontown.
- Washington-New York.
- Washington-Norfolk.
- Dayton-Rantoul.
- New York-Boston.
- Beaumont-New Orleans.
- New Orleans-Montgomery.
- Chicago-Iowa City.
- Iowa City-Omaha.
- Omaha-North Platte.
- North Platte-Cheyenne.
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- Rock Springs-Salt Lake City.
- Montgomery-Augusta.
- Augusta-Fayetteville.
- Not issued.
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- New York-Bellefonte.
- Bellefonte-Cleveland.
- Cleveland-Chicago.
- Chicago-Rantoul-St. Louis.
- St. Louis-Kansas City.
- Kansas City-Muskogee.
- Muskogee-Dallas.
- Dallas-San Antonio.
- San Antonio-Beaumont.
- San Antonio-Dryden.
- Dryden-El Paso.
- El Paso-Tucson.
- Tucson-Phoenix.
- Phoenix-San Diego.
- Salt Lake City-Elko.
- Elko-Reno.
- Reno-San Francisco.
- Dayton-Louisville.
- Louisville-St. Louis.
- San Diego-Tucson.
- San Diego-Los Angeles.
- Los Angeles-San Francisco.
- San Francisco-Medford.
- Medford-Vancouver.
- Vancouver-Seattle.
- Detroit-Rantoul.
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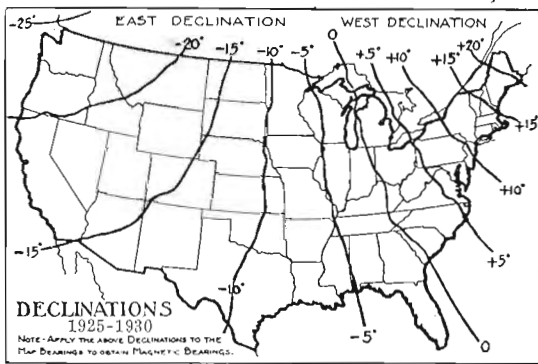
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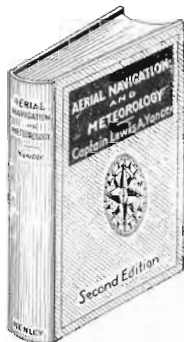


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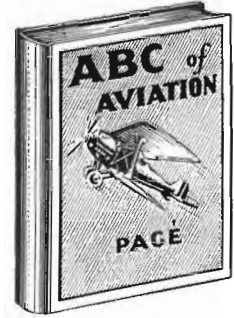


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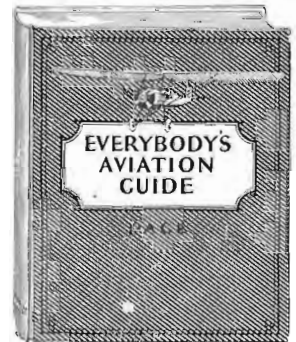
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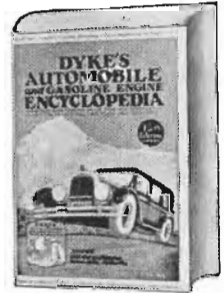
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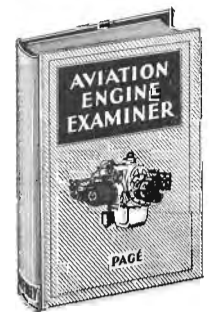
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EXCERPTS FROM DEPARTMENT OF COMMERCE REGULATIONS

LICENSING OF AIRCRAFT

Section 1. Licensing Law.

"Air commerce" means transportation in whole or in part by aircraft of persons or property for hire, navigation of aircraft in furtherance of a business, or navigation of aircraft from one place to another for operation in the conduct of a business." (Sec. 1, air-commerce act of 1926.)

"Interstate or foreign air commerce" means air commerce between any State, Territory or possession, or the District of Columbia, and any place outside thereof; or between points within the same State, Territory or possession, or the District of Columbia, but through the air space over any place outside thereof; or wholly within the air space over any Territory or possession or the District of Columbia." (Sec. 1.)

"The Secretary of Commerce shall by regulation provide for the granting of registration to aircraft eligible for registration if the owner requests such registration" (Sec. 3 (a).)

"It shall be unlawful to navigate any aircraft in interstate or foreign air commerce unless such aircraft is registered as an aircraft of the United States." (Sec. 11 (a) (2).)

"To navigate any aircraft registered as an aircraft of the United States without an aircraft certificate or in violation of the terms of any such certificate." (Sec. 11 (a) (3).)

"Any person who (1) violates any provision (a) of this section shall be subject to a civil penalty of \$500.00" (Sec. 11 (b).)

Aircraft means "any contrivance now known or hereafter invented, used, or designed for navigation of or flight in the air, except a parachute or other contrivance designed for such navigation but used primarily as safety equipment." (Sec. 9 (c).)

Aircraft of the United States means "any aircraft registered" under the air commerce act. (Sec. 9 (f).)

Section 2. Application of the Law.

Aircraft must be licensed before engaging in—

(A) Carrying persons or property for hire, or the United States mails—

(1) Between two or more states, or to or from foreign countries, as from Chicago to Cleveland, Ohio, or from New York to Portland, Me., to Montreal, Canada.

(2) Between two points in one State if a part of the flight is over another State, as from Buffalo to New York via Susquehanna, Pa.; or from Buffalo thence over any part of Pennsylvania, and thence back to Buffalo.

(3) Between two points in one State if it is a part of a through carriage between points in different states, or countries, as from Los Angeles to San Francisco, Calif., as a part of the carriage between Los Angeles and Seattle, Wash., or from San Antonio, Tex., to Laredo, Tex., as a part of the carriage between San Antonio and Monterey, Mexico.

(4) Within the air space over the District of Columbia or any territory or possession of the United States.

(5) Flying between points in different states of the United States, the District of Columbia, or territories or possessions of the United States, or to or from any foreign country, for the operation in the conduct or furtherance of a business, as where the aircraft is used in a business in one state, territory, or possession of the United States, or the District of Columbia, and is flown to another state, territory, or possession for use in the business in that state, territory, or possession. Applied to concrete facts, it includes the aircraft which is used in State A for exhibition purposes or for the carriage there of persons or property for hire and is flown to State B for exhibition purposes or for the carriage there of persons or property for hire. It also includes interstate flights with advertising matter painted or displayed on the plane. It also includes carrying executives or employees of a company on interstate flights in behalf of the company's business.

(B) Aircraft used solely for pleasure or non-commercial purposes need not be licensed, although engaged in flying between states, but, at the option of the owner, may be licensed, in which event it must observe all the requirements of licensed aircraft. Whether licensed or not, all aircraft must display the assigned identification mark.

Section 12. Application for Aircraft License.

Before an aircraft license will be issued the owner must file, under oath, with the Secretary of Commerce an application for the license upon blanks provided by the Secretary of Commerce. Copies thereof will be forwarded upon request.

(B) An airplane constructed under an approved type certificate and owned by an eligible owner of aircraft of the United States will be licensed as follows: found to be equipped as required by these regulations, it will be licensed.

(2) If the application is accompanied by both the manufacturer's affidavit and a valid flight certificate, it will be licensed if found to be equipped as required by these regulations.

(3) If the application is not accompanied by the

(1) If the application is accompanied by the manufacturer's affidavit, the airplane will be inspected for similarity to the specimen and will be given the flight test prescribed in Airworthiness Requirements (Aeronautics Bulletin No. 7-A). If such inspections and tests are passed and the airplane is manufacturer's affidavit and the flight certificate, it will be licensed under the provision of section 14 hereof.

Section 14. Licensing of Airplanes Not Constructed Under Approved Type Certificates.

(A) For an airplane constructed after October 1, 1927, and not manufactured under approved type certificate, the application for the license must be accompanied by the information specified in the requirements for approved type certificate.

(B) Tests.—(1) For an airplane constructed after October 1, 1927, in conformity to the airworthiness requirements of these regulations and which passes the flight tests specified in Airworthiness Requirements (Aeronautics Bulletin No. 7-A), an aircraft license will be issued by the Secretary of Commerce.

(2) For airplanes constructed prior to October 1, 1927, and found by the Secretary of Commerce to be of proper design, assembly, and workmanship, and of suitable materials and equipped in accordance with these regulations, aircraft licenses will be issued after such airplanes have passed the flight tests specified in Airworthiness Requirements (Aeronautics Bulletin No. 7-A).

Section 15. Licensing of Special Classes of Airplanes.

Racing and experimental airplanes and airplanes of unusual design will be granted special aircraft license, and other aircraft may be specially licensed for other purposes and shall be operated only in accordance with the conditions specified in such licenses.

Section 16. Places for Airworthiness Tests.

The Secretary of Commerce will fix the time and place for all inspections and tests for airworthiness.

Section 17. Licenses—Contents.

Aircraft licenses will be issued for a period of not exceeding one year and will be granted subject to compliance with these regulations.

Section 18. Sale of Licensed Aircraft.

On the date of sale or transfer of title of licensed aircraft, the recorded owner shall report in writing to the Aeronautics Branch, Department of Commerce, Washington, D. C., giving the date and place of sale or transfer and the name and residence of the purchaser. The recorded owner shall execute the transfer portion of the record, transfer, and reassignment form and deliver same to the purchaser. The purchaser shall execute the application for reassignment portion of the record, transfer, and reassignment form and deliver the same to the Aeronautics Branch, Department of Commerce. If the purchaser meets the citizenship requirement for holding airplane license under section 6, air commerce regulations, the airplane may be operated under the Department of Commerce number already assigned, in accordance with the terms of the license issued former owner, for a period of 60 days from date of mailing to the Aeronautics Branch or delivery in person to its authorized representative of the reassignment form.

Experimentally licensed aircraft are exempted from provision above permitting operation for 60 days after record, transfer, and reassignment form is mailed. Specific authority must be secured from the Department of Commerce before operation of an experimentally licensed plane by a purchaser.

Between the date of sale and the posting in the mails, or delivery in person to an authorized representative of the Aeronautics Branch, Department of Commerce, of the record, transfer, and reassignment form properly executed, the aircraft is considered unlicensed and unidentified, and the operation thereof constitutes a violation of these regulations.

No transfer of title will be made on the records of the Department of Commerce until the forms required by these regulations, properly executed, are received by this department.

DEFINITION OF OWNERSHIP

Recorded owner is the individual, partnership, company, or corporation that has presented to the Aeronautics Branch, Department of Commerce, evidence of ownership acceptable for the purpose of licensing.

Section 19. Relicensing of Aircraft.

Upon the expiration of the term of an existing aircraft license the aircraft will be relicensed for additional periods of not exceeding one year upon the application of the recorded owner for relicensing and the finding of the Secretary of Commerce that the aircraft is airworthy and is owned by an eligible owner. It is the responsibility of the recorded owner to make contact with an inspector of this department prior to the expiration of the aircraft license for the purpose of reinspection of the aircraft.

Section 20. Display and Surrender of License.

The aircraft license must be carried in the aircraft whenever it is in service and must be conspicuously posted where it may be readily seen by passengers or inspectors. Whenever the craft is unairworthy, and when the license is suspended or revoked, or when it is no longer in force, the license shall be surrendered to the Secretary of Commerce. The license must be presented for inspection upon demand of any passenger or of any authorized official or employee of the Department of Commerce or state or municipal officials charged with enforcing local regulations or laws involving Federal compliance.

Section 25. Ground for Revocation or Suspension.

Aircraft licenses and/or approved type certificates will be suspended or revoked for—

(A) Violating the air-commerce act or any of these regulations.

(B) Failing to make proper and reasonable reports.

(C) Making false statement in application or information accompanying the application for the license or in any report required under these regulations.

(D) Equipping the airplane with a type of engine not specified in the license or approved by the Secretary of Commerce.

(E) Remodeling the engine and using it to propel licensed aircraft without the aircraft having been first rated as airworthy by the Secretary of Commerce.

(F) Remodeling the airplane structure and flying the airplane without having it first rated as airworthy by the Secretary of Commerce.

(G) Operating the airplane in excess of the authorized useful load specified in the license.

(H) Operating with passengers in excess of the number authorized in the aircraft license. Infants under 2 years of age are excepted, provided the maximum allowable useful load is not exceeded.

(I) Using or displaying for fraudulent purpose and/or misrepresenting any product for which an approved type certificate has been issued.

(J) Using or displaying license in any manner contrary to the public safety or interest.

(K) The aircraft license is automatically revoked upon the aircraft being removed from the continental limits of the United States for the purpose of engaging in air navigation wholly within a foreign country without the prior approval of the Secretary of Commerce.

(L) Equipping aircraft with type of propeller which will permit the rated revolutions per minute of engine to be exceeded by more than the allowable excess specified by the engine manufacturer which in no case shall be more than 5 per cent in level flight.

INSPECTOR OF AIRCRAFT

Section 26. Continuous Duty as to Flying Condition.

After an aircraft is licensed, and between the times that it is inspected for airworthiness by an inspector, the owner is charged with the continuous duty of maintaining the aircraft in a good and proper state of repair and flying condition. For violation of this duty or of the inspections required in the next succeeding section the aircraft license will be suspended or revoked.

Section 27. Daily and Periodic Inspections.

(A) It is the responsibility of the recorded owner that licensed aircraft shall be given a line inspection by a licensed airman at least once within each 24 hours preceding flight, and the result thereof shall be entered in the log under the signature of the person making such inspection. The line inspection must be made to ascertain the working condition and state of repair of the—

(1) Open control wires, all control wires and pulleys open to inspection through apertures, and all hinges on control surfaces.

(2) Landing gear, wheels, fittings, and shock absorbers.

(3) Fuselage parts open to visual inspection.

(4) Main plane external bracing, including fittings and struts, external wires, cables, turnbuckles, and fabric or covering.

**EXCERPTS FROM DEPARTMENT OF COMMERCE REGULATIONS**

- (5) Control surface fabric or covering.
- (6) Engine-exhaust manifolds and exhaust-pipe extensions. The engine shall be given a warming-up test, during which the proper functioning of the engine instruments shall be ascertained.
- (7) Carburetors and fuel-feed lines open to visual inspection to insure proper functioning.
- (8) Cooling system and connections.
- (9) Cowling, to insure that the cowlings are properly secured and safetied.
- (10) Propellers, as to condition.
- (B) After each 100 hours of flight the aircraft must be given a "periodic inspection" by a licensed mechanic, and the result thereof must be entered in the log by the person making such inspection. This inspection must be made to ascertain the working condition and state of repair of the—
  - (1) Engine installation.
  - (2) Control systems throughout.
  - (3) Propeller alignment.
  - (4) Fuselage, including fittings, tail skid, and tail-skid shock absorbers.
  - (5) All items specified in (A) above.

**OPERATION OF AIRCRAFT**

**Section 29. Accident Reports.**

Where serious injury to person or property is suffered or death results in operating licensed aircraft the recorded owner and/or pilot of such aircraft shall immediately report, by telegraph or telephone, to the Secretary of Commerce the license number or identification number of the aircraft and the time and place of the accident. All accidents in the operation of licensed aircraft which result in injury to the aircraft shall be reported by the recorded owner and/or pilot without delay on the form provided for that purpose.

**Section 30. Flying Damaged Aircraft.**

(A) A licensed aircraft which is slightly damaged but not damaged to such extent as to come within the meaning of section 31B must not be flown with passengers for hire until it has been fully repaired and such repairs approved by a licensed mechanic. The repair and approval must be noted in the airplane log, together with the signature of the mechanic involved.

(B) A licensed aircraft which is seriously damaged must not be flown with passengers for hire until it has been fully repaired in accordance with Department of Commerce Regulations and the repairs approved by a Department of Commerce inspector.

**Section 32. Solo Flights With Passenger Planes.**

In addition to the requirements of Airworthiness Requirements (Aeronautics Bulletin No. 7-A), licensed airplanes with newly installed engines—old, new, or reconditioned—and airplanes upon which major repairs have been made to the plane structure must be first test flown by a licensed pilot before carrying passengers for hire.

**Section 33. Carrying Passengers at Night.**

Licensed aircraft, when engaged in carrying passengers for hire any time between one-half hour after sunset and one-half hour before sunrise, must be equipped with electric landing lights in addition to the navigation lights required in section 76.

**Section 35. Logs and Navigation Reports.**

The owner of every licensed aircraft shall keep a navigation and engine log book and shall on the 1st day of January and July of each year transmit to the Secretary of Commerce a navigation summary report, in duplicate, showing the number of hours and the approximate number of miles the aircraft has been flown during the six months immediately preceding rendering the report, the duration of the use of each engine, the engine installation and repairs, and the plane structure and rigging changes and repairs.

The log books shall be carried in the aircraft at all times when such aircraft is away from its home airport.

(See Log Books Page 78)

**LICENSING OF PILOTS**

**Section 46. Classification of Pilots.**

Licensed pilots are classed as commercial or private pilots. Commercial pilots are licensed as transport, limited commercial, industrial, or glider pilots. Private pilots are designated as private pilots (without other qualifications) or as student pilots. A person may hold a plurality of licenses, such as pilot's and mechanic's license. A transport pilot will not be issued other classes of pilot's licenses.

**Section 47. Privileges and Restriction of Licensed Pilots.**

Except as otherwise provided in these regulations, the privilege conferred and restrictions imposed upon licensed pilots are as follows:

(A) Transport pilots may pilot any type of licensed aircraft, but shall not carry persons for hire in

licensed aircraft other than in those types and within the classes specified in their license.

Transport pilots shall demonstrate their ability to navigate licensed aircraft of one or more of the classes as set forth by Department of Commerce Regulations. Such demonstration shall be to the satisfaction of the examiner for the Department of Commerce.

(B) Limited commercial pilots shall have all of the privileges conferred and be subject to all of the restrictions imposed upon transport pilots, except they shall not, for hire, instruct students in the operation of aircraft in flight and they shall not pilot aircraft carrying persons for hire outside of the areas mentioned in their licenses, except they may be permitted to function as copilot on dual-controlled aircraft when accompanied by a transport pilot who is in command of and responsible for the operation of such aircraft, but shall not credit such time as solo-flying experience.

(C) Industrial pilots may pilot any type of licensed aircraft not carrying persons for hire, but shall not pilot unlicensed aircraft carrying either persons or property for hire, and shall not, for hire, instruct students in the operation of aircraft in flight.

(D) Glider pilots may pilot any type of motorless aircraft, but shall not transport persons nor property, nor instruct students except in licensed motorless aircraft.

(E) Private pilots not designated as students may pilot licensed aircraft, but shall not carry persons or property for hire in licensed or unlicensed aircraft. Private pilots designated as students are licensed only for the purpose of piloting licensed aircraft, including gliders, when receiving flying instructions, and such student pilots shall not pilot licensed or unlicensed aircraft carrying persons or property for hire, and shall not pilot licensed aircraft for any other purpose than receiving flying instructions nor within any other area than that specified in their licenses. Private pilots shall not, for hire, instruct students in the operation of aircraft in flight.

**Section 48. Applications for Pilot's Licenses.**

An application for a pilot's license must be filed, under oath, with the Secretary of Commerce upon blanks furnished for that purpose. An applicant for a pilot's license, including a student's pilot license, must appear for a physical examination before a physician designated by the Secretary of Commerce and pass such examination, unless he is exempt under these regulations.

**Section 49. Character, Age, and Citizenship Qualifications.**

An applicant for a pilot's license must be of good moral character. The minimum age requirements are 14 years for glider pilots, 16 years for private pilots, and 18 years for industrial, limited commercial, and transport pilots. A glider or private pilot may be a citizen of any country. An industrial, limited commercial, or transport pilot must be (1) a citizen of the United States, or (2) a citizen of a foreign country which grants reciprocal commercial-pilot privileges to citizens of the United States on equal terms and conditions with citizens of such foreign countries, or (3) an alien who has filed his declaration of intention to become a citizen of the United States and advises the Secretary of Commerce of the serial number of such declaration, the date thereof, and the court in which filed. He must diligently and successfully prosecute the naturalization proceedings under penalty of the revocation of his pilot's license and from time to time must keep the Secretary of Commerce advised of the status of such proceedings. All applicants for pilot's licenses above the grade of private pilot shall be able to read, write, speak, and understand the English language.

**WIND DIRECTION INDICATORS**

**SECTION 5. "A" Rating.**

(b) One or more wind-direction indicators of an approved type, equivalent in effect to either a wind cone not less than 12 feet long, 36 inches in diameter at the throat, 12 inches in diameter at the tail, constructed of open-weave unbleached yellow muslin, or a 12-foot by 12-foot wind tee, preferably designed to return automatically to the no-wind landing direction, when the wind velocity drops below 3 or 4 miles per hour, and so mounted as to fly freely with the wind. The wind-direction indicator shall be so located as to give a true indication of the direction of the wind on the landing area and as to be readily visible to aircraft approaching the airport from any direction. In case it is not visible to aircraft approaching from any direction, such additional wind-direction indicators shall be installed as may be necessary.

Airports with "C" Rating . . .

(b) One or more wind-direction indicators as required for an "A" rating, except that wind cone shall be not less than 8 feet long, 18 inches in di-

ameter at the throat, and 8 inches in diameter at the tail, or wind tee shall be not less than 8 feet by 8 feet.

(See Wind Cones Page 32)

**Section 50. Flying Experience Requirements.**

An applicant must have at least the following flying experience:

(A) Transport Pilots.—Two hundred hours of solo flying, of which at least 5 hours must have been within the last preceding 60 days prior to the filing of the application.

(B) Limited Commercial Pilots.—The same solo flying required of industrial pilots.

(C) Industrial Pilots.—Fifty hours of solo flying, of which at least 5 hours must have been within the last preceding 60 days prior to the filing of the application.

(D) Glider Pilots.—No minimum flying experience.

(E) Private Pilots.—Private pilots not designated as students, 10 hours solo flying, of which at least 2 hours must have been within the last preceding 60 days prior to the filing of the application. An applicant who is a graduate of an approved civilian school giving instruction in flying may be privileged to credit a portion of his dual and check time toward the solo flying experience above required, subject to the restrictions set forth in Aeronautics Bulletin No. 7-B (School Supplement), provided such applicant applies for license within 10 days from the date of graduation.

**Section 55. Duration and Renewal of Pilots' Licenses.**

(a) Unless sooner suspended or revoked, transport and limited commercial pilots' licenses shall remain in force for six months and industrial, glider, and private licenses one year from rate of issuance. The Secretary of Commerce may, in his discretion, at any time require the holder of such license to undergo a reexamination in any of the theoretical or practical tests prescribed as prerequisites for the original license.

(b) Licenses may be renewed for like periods where the prescribed physical condition of the holder is shown by the same method as when the original license was issued, except that a transport or limited commercial pilot shall prove by a properly certified log book that he has had at least 10 hours of solo flying within the last six months in each of the classes for which he desires renewal. Industrial pilots shall have had at least 25 hours within the last year, glider pilots shall have made at least 10 gliding flights or 1 soaring flight of at least 1 hour's duration, and private pilots at least 10 hours within the last year, substantiated in the same manner as transport and limited commercial pilots.

(C) If an applicant for renewal applies within six months after the expiration of his last license, a renewal license may be issued to him upon proof of his physical qualifications and the passing of the flight tests required for the class of license for which renewal is requested.

(D) Upon 10 days' notice to and approval of the Secretary of Commerce the area for permissible flying of aircraft carrying passengers for hire designated in the license of limited commercial pilots may be changed to other areas.

(E) Upon application and for good cause shown the licenses specified in this chapter may be extended for 60 days.

**Section 56. Personal Possession of Pilots' Licenses.**

The pilot's license shall be kept in his personal possession when he is piloting aircraft and must be presented for inspection upon the demand of any passenger or any authorized official or employee of the Department of Commerce or State or municipal officials charged with enforcing local regulations or laws involving Federal compliance.

**Section 57. Pilots' Certified Log Books.**

A licensed pilot must keep an accurate record of his solo flying time in a log book in which the entries have been certified to and signed by him and attested by one of the following persons:

- (A) An official of an approved type airplane or engine manufacturing company.
- (B) An official of an approved flying school.
- (C) A contract United States air-mail operator.
- (D) A notary public.
- (E) A properly authorized operations officer for any military organization.
- (F) Department of Commerce aeronautical inspectors.

(G) Any officer of an organization engaged in the operation of aircraft when such officer has direct knowledge of the authenticity of the entries.

This log book shall contain the date of flight, the type of aircraft flown, the license or identification number of such aircraft, the type of engine, the duration of the flight, and the points between which such flight was made, and, in addition, when any flight results in serious damage to the aircraft, a notation to this effect shall be entered. This log book must be presented, upon demand, to any authorized representative of the Department of Commerce or State or municipal officer enforcing local regulations or laws involving Federal compliance.

(See Log Books Page 78)

**EXCERPTS FROM DEPARTMENT OF COMMERCE REGULATIONS**

**Section 58. Carrying Passengers in Various Classes of Airplanes.**

A licensed pilot authorized to transport passengers or hire shall not do so in a type of aircraft which he has not previously operated within the last preceding 90 days for at least two hours, except where he makes practice flights in such type for at least one-half hour, including 10 landings, 3 of which must have been to a full stop.

**Section 60. Pilots' Night-Flying Qualifications.**

A transport or limited commercial pilot who has not had at least two hours of night solo flying within the last preceding 90 days shall not pilot aircraft carrying passengers, for hire, between one-half hour after sunset and one-half hour before sunrise, except where he takes off and lands between one-half hour after sunset and one-half hour before sunrise, at least ten times solo. At least three of such landings must be to a full stop.

**Section 61. Meaning of Solo Flying.**

As used in these regulations a person is engaged in solo flying when he is the sole operator of the controls and is in command of aircraft in flight. A co-pilot who is a licensed transport pilot may credit the time during which he is actually the sole manipulator of the controls, although he may not be in command of the aircraft.

**Section 62. Suspension or Revocation of Licenses.**

- Pilots' licenses will be suspended or revoked for—
- (A) Violating any provision of the air commerce act of 1926 or these regulations.
  - (B) Carelessness or inattention to duty.
  - (C) Unsound physical condition or any demonstration of incompetency in the operation or repair of aircraft.
  - (D) Being under the influence or using or having personal possession of intoxicating liquor, cocaine, or other habit-forming drugs while on duty.
  - (E) Refusal to exhibit license upon proper demand.
  - (F) Violating air-traffic rules.
  - (G) Making any false statement in application of license or in any reports required to be submitted by these regulations.
  - (H) Carrying passengers who are obviously under the influence of intoxicating liquor, cocaine, or other habit-forming drugs.
  - (I) Piloting aircraft carrying passengers in excess of the number authorized in the aircraft license. Infants under 2 years of age are excepted, provided the maximum useful load is not exceeded.
  - (J) Doing any act in connection with aircraft which is contrary to the public safety or interest or detrimental to the morale of pilots or mechanics.
  - (K) Using or displaying license for any fraudulent purpose.

**AIR TRAFFIC RULES**

**Section 74. Flying Rules.**

- (A) Right-Side Traffic.—Aircraft flying in established civil air-ways, when it is safe and practicable, shall keep to the right side of such airways.
- (B) Giving-Way Order.—Craft shall give way to each other in the following order:
  - (1) Airplanes.
  - (2) Airships.
  - (3) Balloons, fixed or free.

An airship not under control is classed as a free balloon. Aircraft required to give way shall keep a safe distance, having regard to the circumstances of the case. Three hundred feet will be considered a minimum safe distance.
- (C) Giving-Way Duties.—If the circumstances permit, the craft which is required to give way shall avoid crossing ahead of the other. The other craft may maintain its course and speed, but no engine-driven craft may pursue its course if it would come within 300 feet of another craft, 300 feet being the minimum distance within which aircraft other than military aircraft of the United States engaged in military maneuvers and commercial aircraft engaged in local industrial operations may come within proximity of each other in flight.
- (D) Crossing.—When two-engine-driven aircraft are on crossing courses the aircraft which has the other on its right side shall keep out of the way.

(E) Approaching.—When two engine-driven aircraft are approaching head-on, or approximately so, and there is risk of collision, each shall alter its course to the right, so that each may pass on the left side of the other. This rule does not apply to cases where aircraft will, if each keeps on its respective course, pass more than 300 feet from each other.

(F) Overtaking.—(1) Definition.—An overtaking aircraft is one approaching another directly from behind or within 70 degrees of that position, and no subsequent alteration of the bearing between the two shall make the overtaking aircraft a crossing aircraft within the meaning of these rules or relieve it of the duty of keeping clear of the overtaken craft until it is finally past and clear.

(2) Presumption.—In case of doubt as to whether it is forward or abaft such position, it should assume that it is an overtaking aircraft and keep out of the way.

(3) Altering Course.—The overtaking aircraft shall keep out of the way of the overtaken aircraft by altering its own course to the right and not in the vertical plane.

(G) Height Over Congested and Other Areas.—Exclusive of taking off from or landing on an established landing field, airport, or on property designated for that purpose by the owner, and except as otherwise permitted by section 79, aircraft shall not be flown—

- (1) Over the congested parts of cities, towns, or settlements, except at a height sufficient to permit of a reasonably safe emergency landing, which in no case shall be less than 1,000 feet.
- (2) Elsewhere at height less than 500 feet, except where indispensable to an industrial flying operation.

(H) Height over Assembly of Persons.—No flight under 1,000 feet in height shall be made over any open-air assembly of persons except with the consent of the Secretary of Commerce. Such consent will be granted only for limited operations.

(I) Acrobatic Flying.—(1) Acrobatic flying means intentional maneuvers not necessary to air navigation.

- (2) No person shall acrobatically fly an aircraft—
  - (a) Over a congested area of any city, town, or settlement.
  - (b) Over any open-air assembly of persons or below 2,000 feet in height over any established civil airway, or at any height over any established airport or landing field, or within 1,000 feet horizontally thereof.
- (c) Any acrobatic maneuvers performed over any other place shall be concluded at a height greater than 1,500 feet.

(d) No person shall acrobatically fly any airplane carrying passengers for hire.

(e) When performing acrobatics not prohibited by these regulations each person in the aircraft must be properly equipped with a parachute of a type and design which has been tested and approved by a competent agency of the United States Government.

(f) Dropping Objects or Things.—When an aircraft is in flight the pilot shall not drop or release, or permit any person to drop or release, any object or thing which may endanger life or injure property, except when necessary to the personal safety of the pilot, passengers, or crew. The discharge of human waste from aircraft in flight is also prohibited.

(J) Seaplanes on Water.—Seaplanes on the water shall maneuver according to the laws and regulations of the United States governing the navigation of water craft, except as otherwise provided herein.

(K) Transporting Explosives.—The transporting of any explosives other than that necessary for signaling or fuel for such aircraft while in flight or materials for industrial and agricultural spraying (dusting) is prohibited, except upon special authority obtained from the Secretary of Commerce.

(L) No person shall navigate aircraft while under the influence of, using, or having personal possession of intoxicating liquor, cocaine, or other habit-forming drugs while on duty, nor shall such person carry passengers who are obviously under the influence of intoxicating liquor, cocaine, or other habit-forming drugs.

**Section 75. Take-off and Landing Rules.**

(A) Method.—Take-offs and landings shall be made upwind when practicable. The take-off shall not be commenced until there is no risk of collision with landing aircraft. Aircraft when taking off or landing shall observe the traffic lanes indicated by the field rules or signals. No take-off or landing shall be made from or on a public street or highway without the prior consent of the local governing authority and the approval of the Secretary of Commerce.

(B) Course.—If practicable, when within 1,000 feet horizontally of the leeward side of the landing field the airplane shall maintain a direct course toward the landing zone.

(C) Right over Ground Planes.—A landing plane has the right of way over planes moving on the ground or taking off, but this shall not excuse the pilots of either or both such aircraft from the exercise of due care and diligence.

(D) Giving Way.—When landing and maneuvering in preparation to land, the airplane at the greater height shall be responsible for avoiding the airplane at the lower height and shall, as regards landing, observe the rules governing overtaking aircraft.

(E) Distress Landing.—An aircraft in distress shall be given free way in attempting to land.

(See Lights Pages 43 and 44)

**Section 76. Lights.**

(A) Angular Limits.—The angular limits laid down in these rules will be determined as when the aircraft is in normal flying position.

(B) Airplane Lights.—Between one-half hour after sunset and one-half hour before sunrise airplanes in flight must show the following lights:

(1) On the right side a green light and on the left side a red light, each showing unbroken light between two vertical planes whose dihedral angle is 110 degrees when measured to the left and right, respectively, from dead ahead. These lights shall be visible at least 2 miles.

(2) At the rear and as far aft as possible a white light shining rearward, visible in a dihedral angle of 140 degrees bisected by a vertical plane through the line of flight and visible at least 3 miles.

(E) Lights When Stationary.—(1) Between one-half hour after sunset and one-half hour before sunrise all aircraft which are on the surface of water and not under control, or which are moored or anchored in navigation lanes, shall show a white light visible for at least 2 miles in all directions.

**Section 78. Signals.**

(B) Signal When Compelled to Land.—When an aircraft is forced to land at night at a lighted airport it shall signal its forced landing by making a series of short flashes with its navigation lights if practicable to do so.

(C) Fog Signals.—In fog, mist, or heavy weather an aircraft on the water in navigation lanes, when its engines are not running, shall signal its presence by a sound device emitting a signal for about five seconds in 2-minute intervals.

**Section 79. Deviation From Air-Traffic Rules.**

The air-traffic rules may be deviated from when special circumstances render a departure necessary to avoid immediate danger or when such departure is required because of stress of weather conditions or other unavoidable cause.

**AIRPORT REGISTERS**

Department of Commerce Aeronautics Branch Aeronautics Bulletin No. 17 has following regulations on Airport Registers:

**REGISTERS.** The airport rating regulations require that a register be maintained if a rating on the airport is assigned. This register includes the following information:

1. License number and model of arriving or departing plane.
2. Owner of plane.
3. Pilot of plane and his license number.
4. Time of arrival and departure.
5. Number of crew.
6. Number of passengers.
7. Space for remarks covering any unusual situation.

(See Airport Registers Page 78)

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**PROPELLER BALANCING AND PITCH SETTING EQUIPMENT**

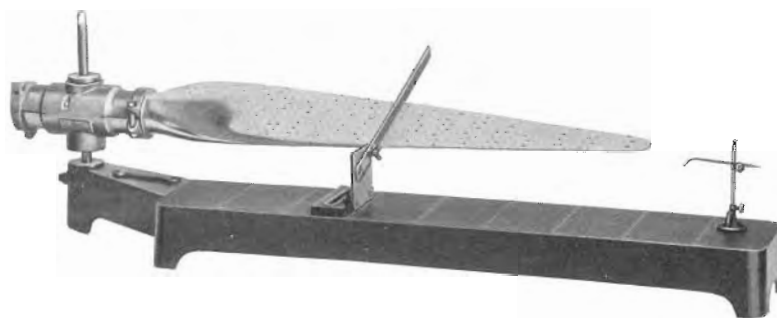
**PROPELLER BALANCING AND PITCH SETTING EQUIPMENT.** This equipment should be a part of every airport repair shop, hangar, air mail and passenger line repair shops and airplane factory machine shop. The roller type balancing stand does not need levelling, it is just as accurate with one side several inches up in the air as when level. The rollers are hardened and do not damage. The outfit is light enough so that it can be moved from place to place in the shop. Hence can be put back out of the way when not needed. Do not have to tie up a lot of space with it. The price is low—compare it with other outfits. Pilots gladly pay five to ten dollars for a check and readjustments which takes not over half an hour.

The main advantage points of this equipment are:

- (1) Simple and inexpensive.
- (2) Accurate results quickly obtained by any mechanic.
- (3) Occupies minimum space, no small parts to get lost.
- (4) Eliminates vibration, saves bearings, prolongs motor life.
- (5) More hours between overhauls.
- (6) Better performance with less fuel consumption.
- (7) An added source of profit for the shop.
- (8) Department of Commerce rules requires propeller alignment and check every 100 hours.
- (9) Tested, approved and adopted by many airplane manufacturers, airways and mail and passenger lines.
- (10) Complete instructions on care and adjustment of propellers with each outfit.



**BALANCING STAND.** All metal, sensitive ball bearing rollers. Requires no leveling.



**PITCH SETTING BENCH.** Ribbed casting, accurately machined, adjustable mandrel holder, station lines.

**CHECK THESE IMPORTANT DETAILS**

1. Are your motors rough?
2. Are your propellers out of balance?
3. Do the blades track.
4. Are you getting maximum performance?
5. Are your blades set to the same pitch?
6. Are you getting cruising efficiency?

**REMEDY ALL OF THE ABOVE FAULTS WITH THIS EQUIPMENT**

**STANDARD AIRPORT OUTFIT.** Contains Base, Protractor, Surface Gauge, Balancing Stand, Mandrel No. 1 (OX, Kinner and similar motors) No. 2 (Hisso A.E. or I., Wright J-50) No. 30 (Wright J-6 series, Wasp A and B). Price, complete, FOB Factory.....**\$300.00**  
Shipping weight slightly under 400 pounds.

The mandrel numbers correspond to the SAE standard hub numbers except the No. 30a.

**UNIT RETAIL PRICES FOR THE COMPONENT PARTS OF THE OUTFIT ARE AS FOLLOWS:**

|                          |          |                                       |         |
|--------------------------|----------|---------------------------------------|---------|
| Pitch setting base ..... | \$ 85.00 | Taper Mandrels No. 1 and No. 2.....   | \$15.00 |
| Protractor .....         | 50.00    | Cone Mandrels Nos. 20, 30 and 40..... | 30.00   |
| Surface Gauge .....      | 5.30     | Cone Mandrel No. 30a, Wasp B.....     | 45.00   |
| Balancing Stand .....    | 100.00   | Cone Mandrels Nos. 50 and 70.....     | 38.00   |



**WILLIAMS MIDGET WRENCH SETS**

**WILLIAMS MIDGET WRENCH SET.** This specially selected wrench set is for all of those troublesome little jobs where a man needs a small tool that's a help—not a hindrance. Midget Super-wrenches are extremely light and thin yet amazingly strong for their size; both openings in each wrench are same but at different angles, 15 to 75 degrees, where one head will not operate the other one will. Excellent for work on magnetoes, timers, generators, wiring connections, carburetors, radios and all other delicate adjustments; forged from genuine chrome molybdenum, heat treated and chrome finished. 7 wrenches from 1/8 to 1/2 inch openings.

No. 1120 Midget Wrench Set.....**\$7.80**

**NEW ITEMS**

It is our policy to supply our customers with all of the latest items of aeronautical parts and supplies and as soon as they are developed and accepted by the industry we will have them for you. We have tried to incorporate as many as possible in this new catalog, even running this page at the last minute. As others appear, write us. We will either have complete information or get it for you.

DECIMAL EQUIVALENTS

|       |         |
|-------|---------|
| 1/4   | .015625 |
| 1/32  | .03125  |
| 3/64  | .046875 |
| 1/16  | .0625   |
| 5/64  | .078125 |
| 3/32  | .09375  |
| 7/64  | .109375 |
| 1/8   | .125    |
| 9/64  | .140625 |
| 5/32  | .15625  |
| 11/64 | .171875 |
| 3/16  | .1875   |
| 13/64 | .203125 |
| 7/32  | .21875  |
| 15/64 | .234375 |
| 1/4   | .25     |
| 17/64 | .265625 |
| 9/32  | .28125  |
| 19/64 | .296875 |
| 5/16  | .3125   |
| 21/64 | .328125 |
| 11/32 | .34375  |
| 23/64 | .359375 |
| 3/8   | .375    |
| 25/64 | .390625 |
| 13/32 | .40625  |
| 27/64 | .421875 |
| 7/16  | .4375   |
| 29/64 | .453125 |
| 15/32 | .46875  |
| 31/64 | .484375 |
| 1/2   | .5      |
| 33/64 | .515625 |
| 17/32 | .53125  |
| 35/64 | .546875 |
| 9/16  | .5625   |
| 37/64 | .578125 |
| 19/32 | .59375  |
| 39/64 | .609375 |
| 5/8   | .625    |
| 41/64 | .640625 |
| 21/32 | .65625  |
| 43/64 | .671875 |
| 11/16 | .6875   |
| 45/64 | .703125 |
| 23/32 | .71875  |
| 47/64 | .734375 |
| 3/4   | .75     |
| 49/64 | .765625 |
| 25/32 | .78125  |
| 51/64 | .796875 |
| 13/16 | .8125   |
| 53/64 | .828125 |
| 27/32 | .84375  |
| 55/64 | .859375 |
| 5/8   | .875    |
| 57/64 | .890625 |
| 29/32 | .90625  |
| 59/64 | .921875 |
| 15/16 | .9375   |
| 61/64 | .953125 |
| 31/32 | .96875  |
| 63/64 | .984375 |
| 1     | 1.      |

TABLE OF STANDARD WIRE GAUGES

This table shows the standard wire gauges and the names of major commodities for which each is used. To determine the gauge used for any commodity, notice the number in parenthesis opposite the commodity named and find the gauge column below bearing the same number in parenthesis.

- Aluminum (2) [Except Tubing (1)]
- Bands (1)
- Brass Tubing (3/8" O.D. and Larger) (1)
- Brass Tubing (Smaller than 3/8" O.D.) (2)
- Brass Sheets (2)
- Brass Strips (2)
- Brass Wire (2)
- Copper Sheets (2)
- Copper Wire (2)
- Flat Wire (1)
- Hoops (1)
- Iron Wire (4)
- Monel Metal Sheets (3)
- Music Wire (5)
- Nickel Sheets (3)
- Nickel Silver Sheets (2)
- Nickel Silver Wire (2)
- Phosphor Bronze Strip (2)
- Spring Steel (1)
- Steel Plates (3)
- Steel Sheets (3)
- Steel Tubing, Seamless and Welded (1)
- Steel Wire (4) [Exceptions: Music Wire (5), Armature Binding Wire (2), Flat Wire (1)]
- Strip Steel (1)

| Ga. No. | (1) Birmingham or Stubs' | (2) American or Brown & Sharp | (3) U. S. Standard | (4) Washburn & Moen | (5) Music Wire (Std) |
|---------|--------------------------|-------------------------------|--------------------|---------------------|----------------------|
| 6/0     |                          | .5800                         | .4687              | .4615               | .604                 |
| 5/0     |                          | .5165                         | .4375              | .4305               | .005                 |
| 4/0     | .454                     | .4600                         | .4062              | .3938               | .006                 |
| 3/0     | .425                     | .4096                         | .3750              | .3625               | .007                 |
| 2/0     | .380                     | .3648                         | .3437              | .3310               | .008                 |
| 1/0     | .340                     | .3249                         | .3125              | .3065               | .009                 |
| 1       | .300                     | .2893                         | .2812              | .2830               | .010                 |
| 2       | .284                     | .2576                         | .2656              | .2625               | .011                 |
| 3       | .259                     | .2294                         | .2500              | .2437               | .012                 |
| 4       | .238                     | .2043                         | .2343              | .2253               | .013                 |
| 5       | .220                     | .1819                         | .2187              | .2070               | .014                 |
| 6       | .203                     | .1620                         | .2031              | .1920               | .016                 |
| 7       | .180                     | .1443                         | .1875              | .1770               | .018                 |
| 8       | .165                     | .1285                         | .1718              | .1620               | .020                 |
| 9       | .148                     | .1144                         | .1562              | .1483               | .022                 |
| 10      | .134                     | .1019                         | .1406              | .1350               | .024                 |
| 11      | .120                     | .0907                         | .1250              | .1205               | .026                 |
| 12      | .109                     | .0808                         | .1093              | .1055               | .029                 |
| 13      | .095                     | .0719                         | .0937              | .0915               | .031                 |
| 14      | .083                     | .0640                         | .0781              | .0800               | .033                 |
| 15      | .072                     | .0570                         | .0703              | .0720               | .035                 |
| 16      | .065                     | .0508                         | .0625              | .0625               | .037                 |
| 17      | .058                     | .0452                         | .0562              | .0540               | .039                 |
| 18      | .049                     | .0403                         | .0500              | .0475               | .041                 |
| 19      | .042                     | .0359                         | .0437              | .0410               | .043                 |
| 20      | .035                     | .0319                         | .0375              | .0348               | .045                 |
| 21      | .032                     | .0284                         | .0343              | .0317               | .047                 |
| 22      | .028                     | .0253                         | .0312              | .0286               | .049                 |
| 23      | .025                     | .0225                         | .0281              | .0258               | .051                 |
| 24      | .022                     | .0201                         | .0250              | .0230               | .055                 |
| 25      | .020                     | .0179                         | .0218              | .0204               | .059                 |
| 26      | .018                     | .0159                         | .0187              | .0181               | .063                 |
| 27      | .016                     | .0142                         | .0171              | .0173               | .067                 |
| 28      | .014                     | .0126                         | .0156              | .0162               | .071                 |
| 29      | .013                     | .0112                         | .0140              | .0150               | .075                 |
| 30      | .012                     | .0100                         | .0125              | .0140               | .080                 |
| 31      | .010                     | .0089                         | .0109              | .0132               | .085                 |
| 32      | .009                     | .0079                         | .0101              | .0128               | .090                 |
| 33      | .008                     | .0071                         | .0093              | .0118               | .095                 |
| 34      | .007                     | .0063                         | .0085              | .0104               | .100                 |
| 35      | .005                     | .0056                         | .0078              | .0095               | .106                 |
| 36      | .004                     | .0050                         | .0070              | .0090               | .112                 |
| 37      |                          | .0044                         | .0066              | .0085               | .118                 |
| 38      |                          | .0039                         | .0062              | .0080               | .124                 |

WESTERN BRANCH

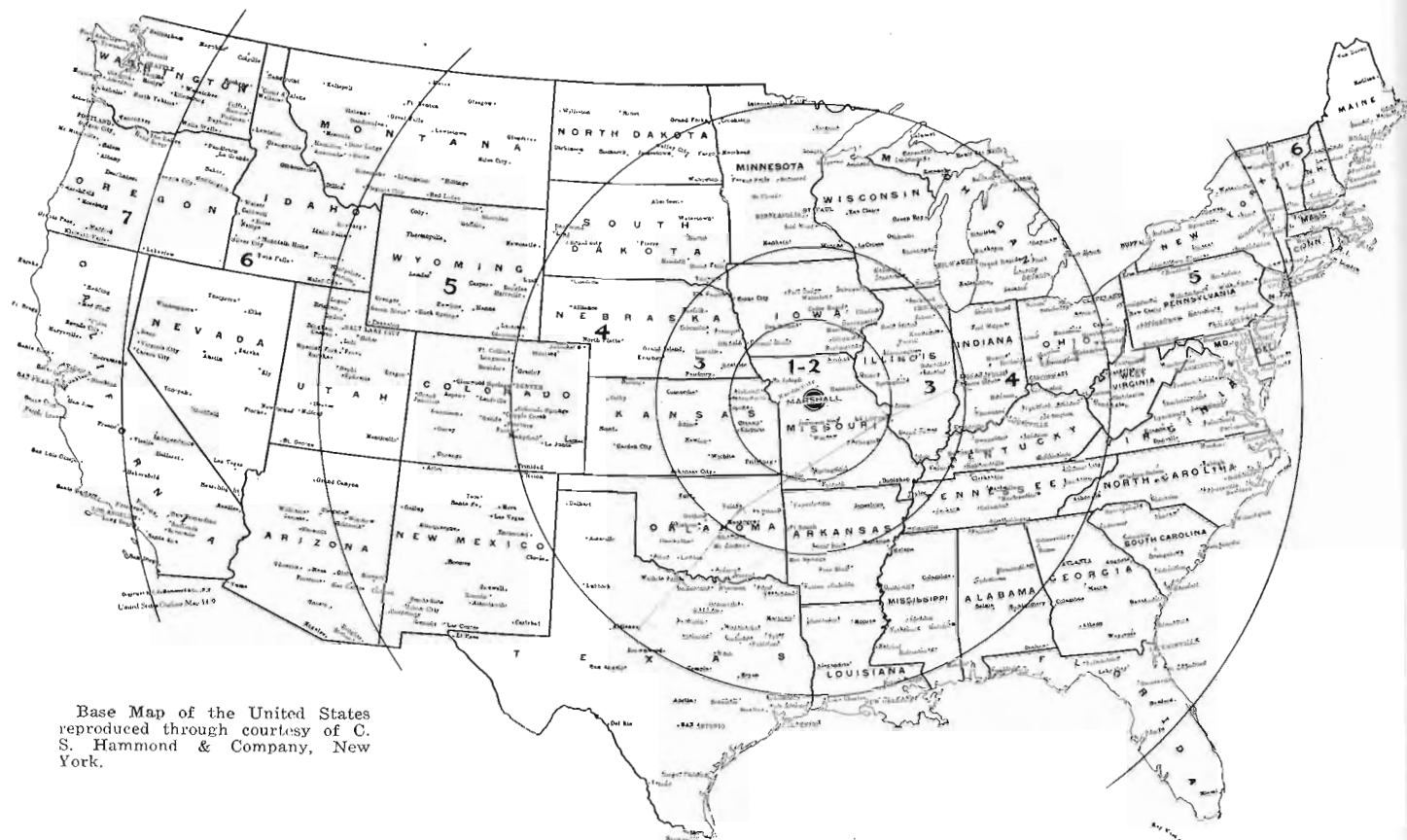
NICHOLAS-BEAZLEY AIRPLANE CO., INC.

3769 So. Moneta Street

Phone Humboldt 1294

Los Angeles, Calif.

**PARCEL POST ZONE MAP**



Base Map of the United States reproduced through courtesy of C. S. Hammond & Company, New York.

**PARCEL POST SHIPMENTS**

Packages which do not exceed 84 inches in combined length and girth and 50 pounds in weight, may be shipped by parcel post anywhere in the United States. Packages which conform to the same measurements and do not exceed 70 pounds weight can be shipped to a point within a radius of 300 miles.

The Postal Department requires that postage be fully prepaid so include with your remittance sufficient amount to cover postage.

Use the Parcel Post rate Schedule below to determine the amount to include for postage, after estimating the weight of shipment, including packing and wrapping ready for shipment. Be sure to allow sufficient to cover postage. Any over-payment will be promptly refunded.

|   | ZONES 1 and 2<br>Not over 150<br>Miles from<br>Marshall, Mo.<br>or our<br>Branches | ZONES 3<br>151 to 300<br>Miles from<br>Marshall, Mo.<br>or our<br>Branches | ZONE 4<br>301 to 600<br>Miles from<br>Marshall, Mo.<br>or our<br>Branches | ZONE 5<br>601 to 1000<br>Miles from<br>Marshall, Mo.<br>or our<br>Branches | ZONE 6<br>1001 to 1400<br>Miles from<br>Marshall, Mo.<br>or our<br>Branches | ZONE 7<br>1400 to 1800<br>Miles from<br>Marshall, Mo.<br>or our<br>Branches |
|---|--|--|---|--|---|---|
| 1-pound<br>or<br>under  | 7¢   | 8¢   | 8¢  | 9¢   | 10¢   | 12¢   |
| For each additional<br>pound or<br>fraction of<br>pound, add. | 1¢   | 2¢   | 4¢  | 6¢   | 8¢  | 10¢   |

**PARCEL POST INSURANCE**

All parcel post shipments are insured for your protection. Add to the allowance for postage the correct amount to cover insurance on your order according to following schedule:

- 5 cents for shipments valued at \$25.00 or less.
- 10 cents for shipments valued at \$25.00 to \$50.00.
- 15 cents for shipments valued at \$50.00 to \$75.00.
- 20 cents for shipments valued at \$75.00 to \$100.00.

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