

ASSEMBLING THE MAXAIR DRIFTER

XP-503 and MU-532

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ASSEMBLING YOUR DRIFTER

A. MAIN FUSELAGE ASSEMBLY

1. Use Details 1A through F as references to identify aircraft components that in all cases where there are separate Details for the XP-503 and the MU-532 drawings will be first and that they will be identified as for the XP-503 or MU-532. In all other cases, a single Detail applies to both aircraft. Take time through the Details and identify those which apply to your aircraft.

2. Preparing the fuselage tube. After painting the parts listed, assembly start with the fuselage tube. We recommend that you follow the order of assembly in this manual. Otherwise, you may find yourself having to backtrack at some point. You will save your back and make the tube easily accessible on all sides if you support it on two foam blocks, saw horses, padded stands, or the like about 3 feet above the floor. The fuselage tube (MT-1D for the XP-503 and MT-1MU for the MU-532) is supported by a vertical stabilizer post at one end and a horizontal rudder pedal mounting post at the other. A foot peg (MT-3D) is at the other end. Simple padded cradles on your stands will keep the tube from turning until you want it to. If you removed the floor pans for painting, then now, using SS-52 rivets to replace the rivets you drilled out when removing them.

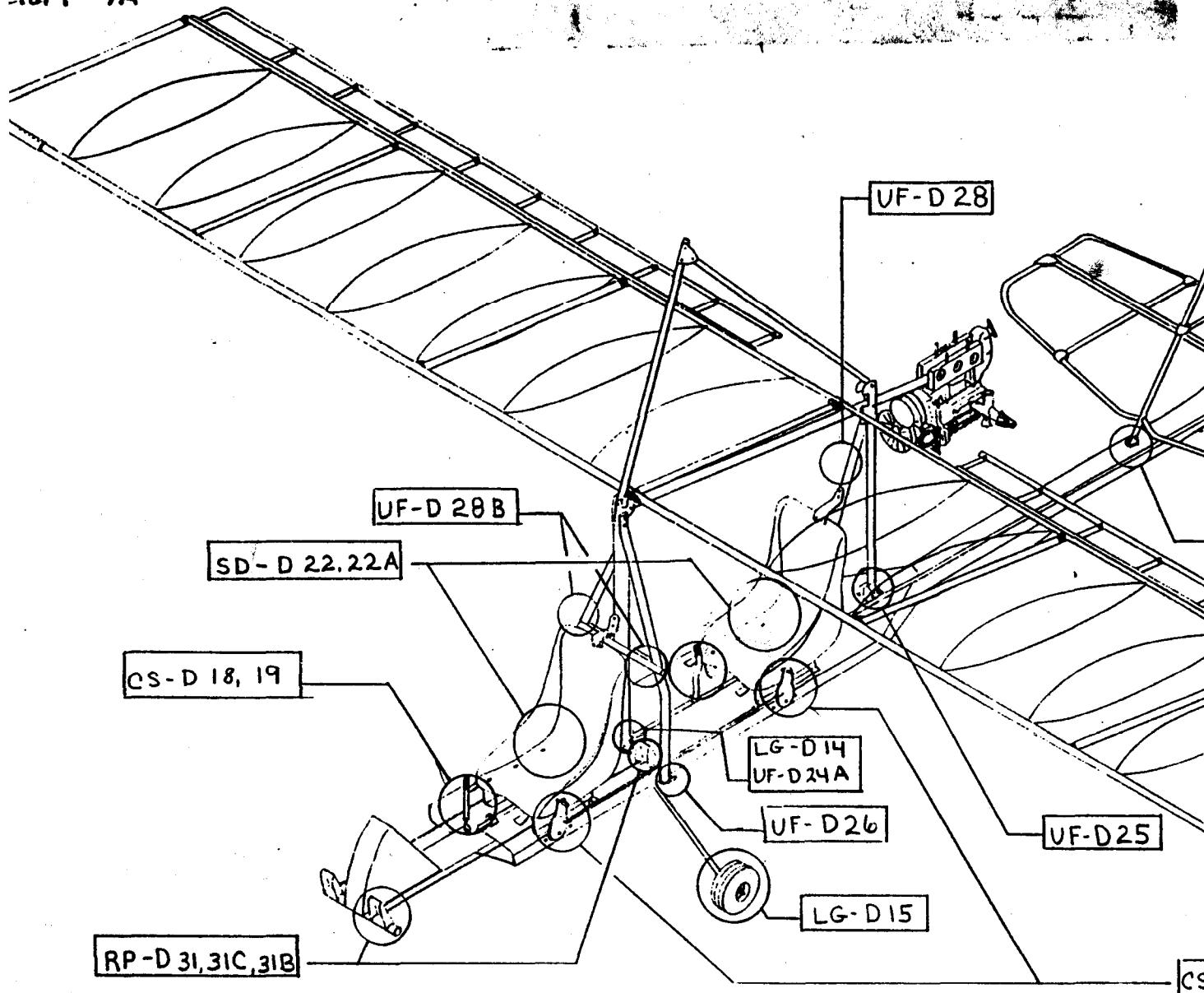
3. Drilling floor pan holes properly. Keep your drill bit perpendicular to the floor pan. Maintain pressure on the floor pan adjacent to the hole being drilled to keep it from being raised and distorted.

4. Clean up after drilling. Lift the floor pans and, with a piece of thin cardboard or plastic, sweep all metal chips from under the floor pans. If you have compressed air available, blowing air under them as they are lifted also helps.

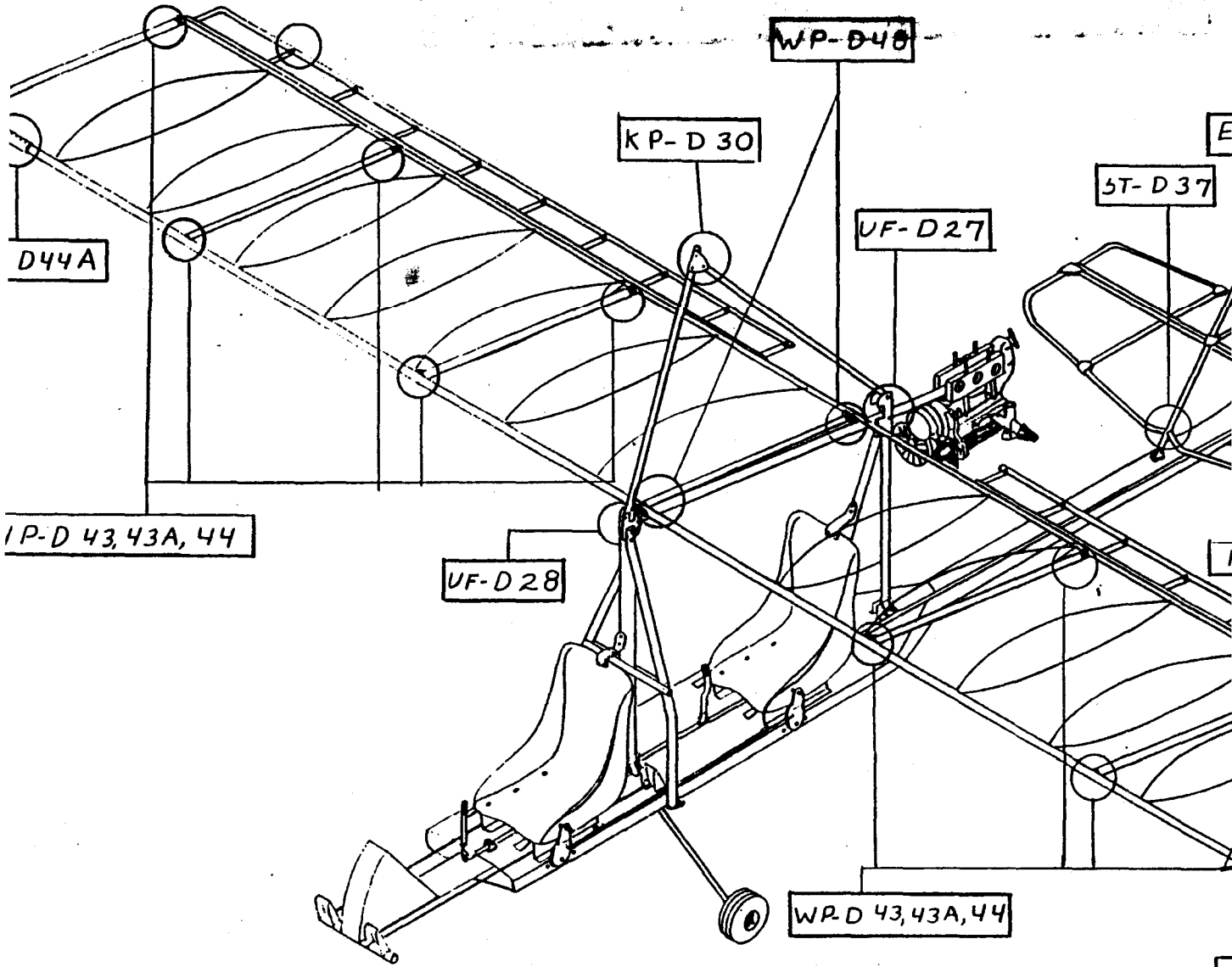
5. Deburring. Remember to deburr holes and edges before riveting or bolting them together.

6. Riveting floor pan. Using SS-52 rivets, rivet the remaining holes in the floor pan. Do not install rivets under the area covered by upper UF tube bracket (L-10) or under the optional floor board (CW-10), if installed. Detail 2.

tail 1A

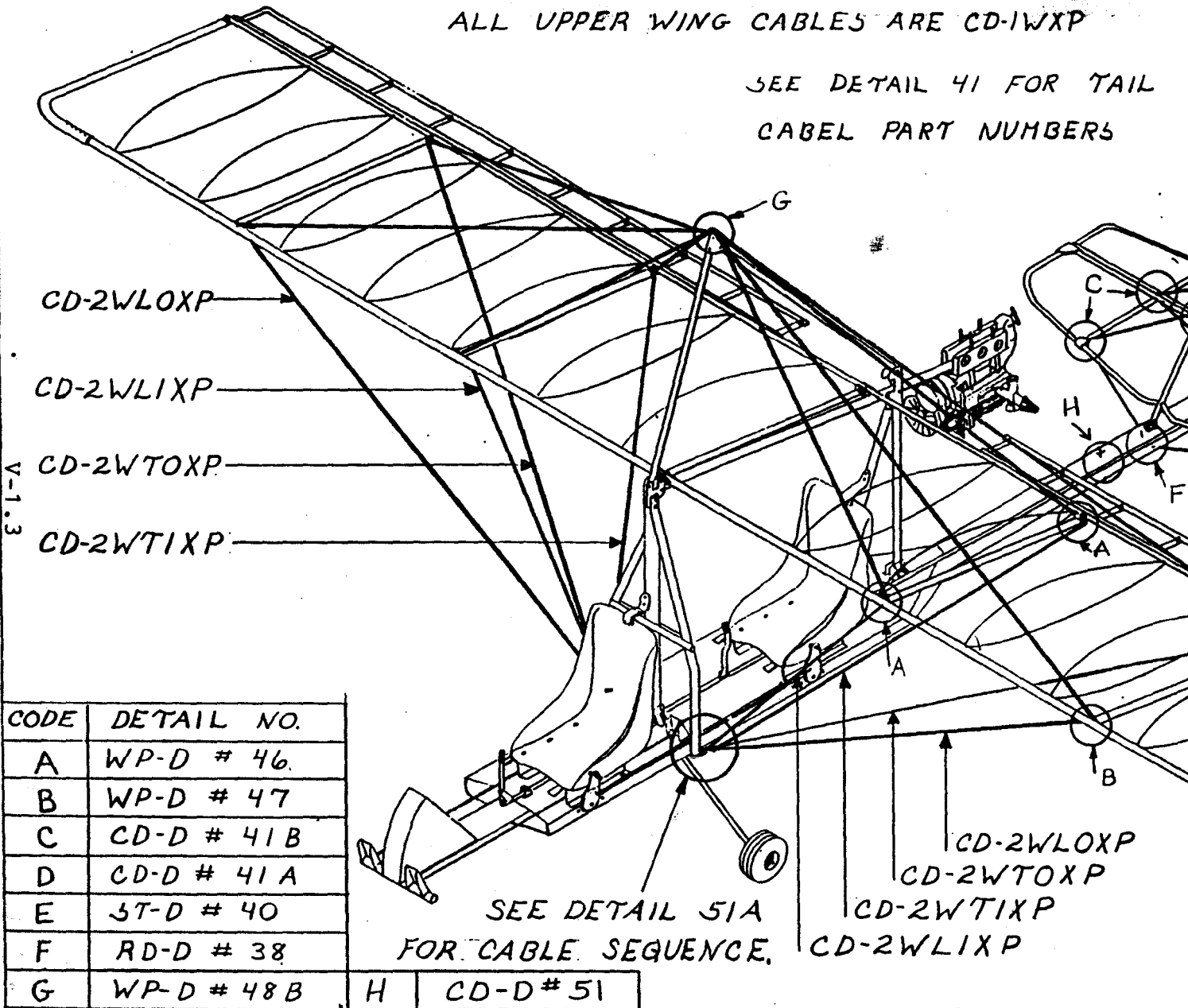


Detail 1B



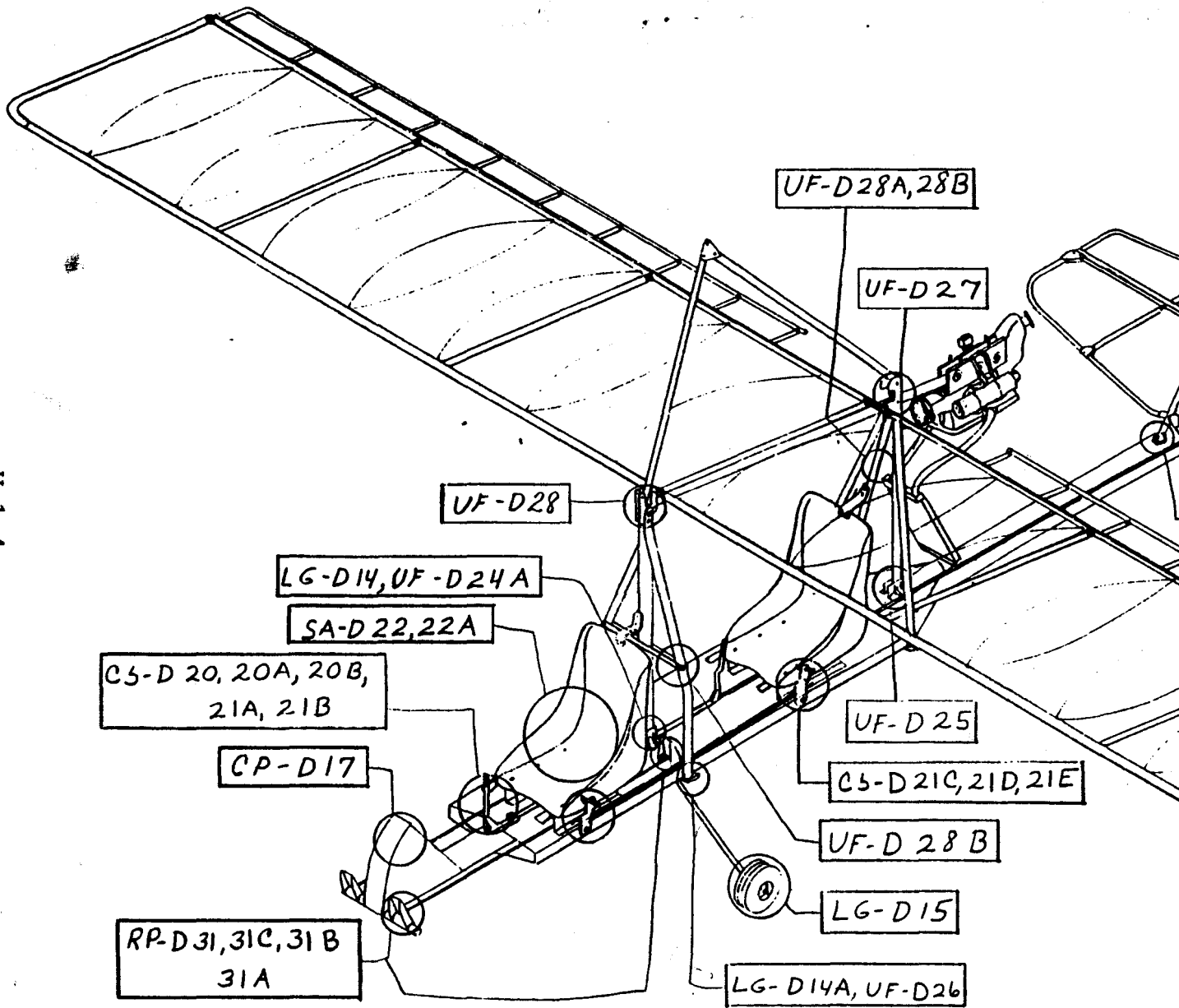
ALL UPPER WING CABLES ARE CD-1WXP

SEE DETAIL 41 FOR TAIL
CABEL PART NUMBERS

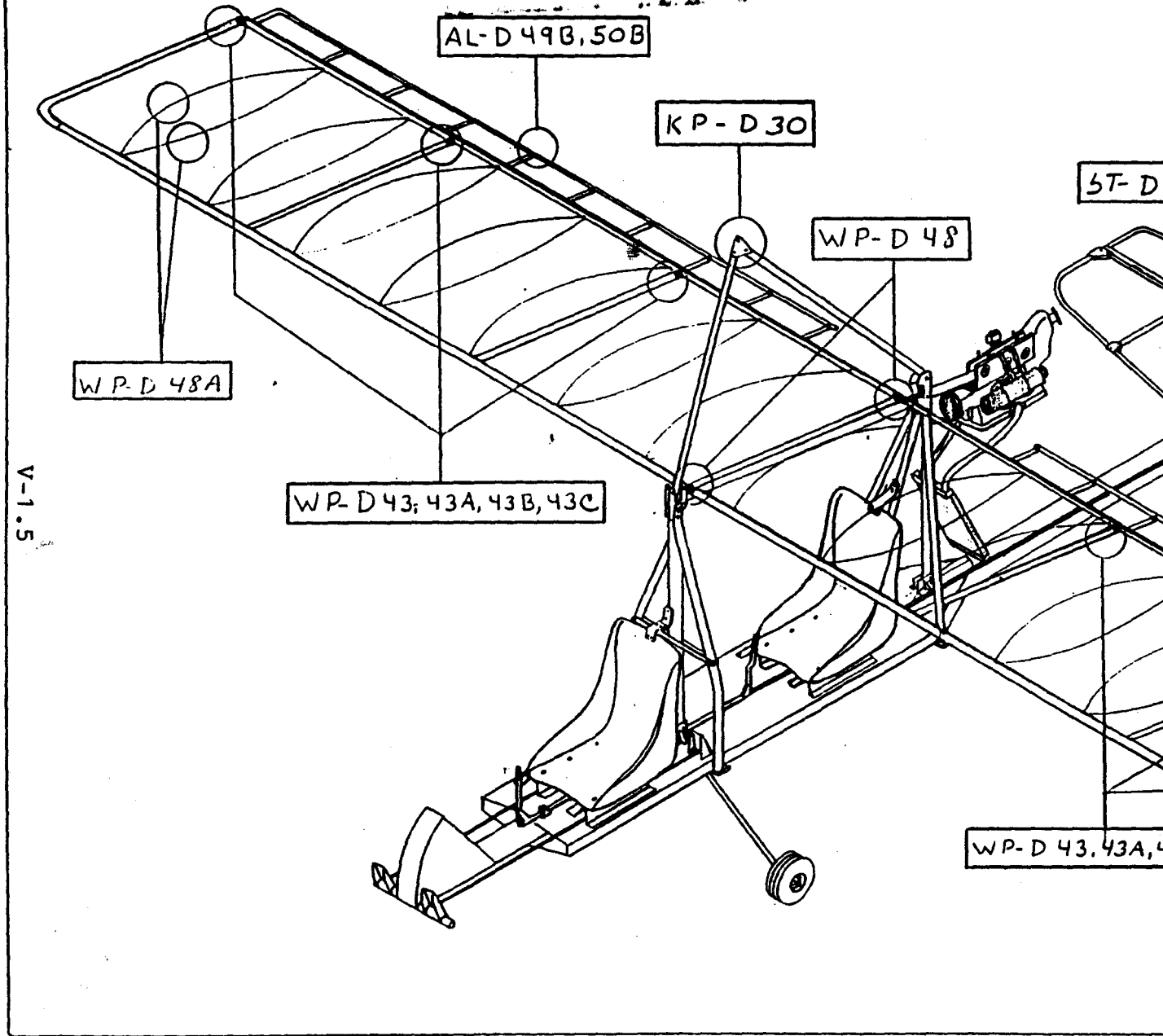


Detail 1D

V-1.4



Detail 1E



V-1.5

AL-D 49B, 50B

KP-D 30

WP-D 48

ST-D

WP-D 48A

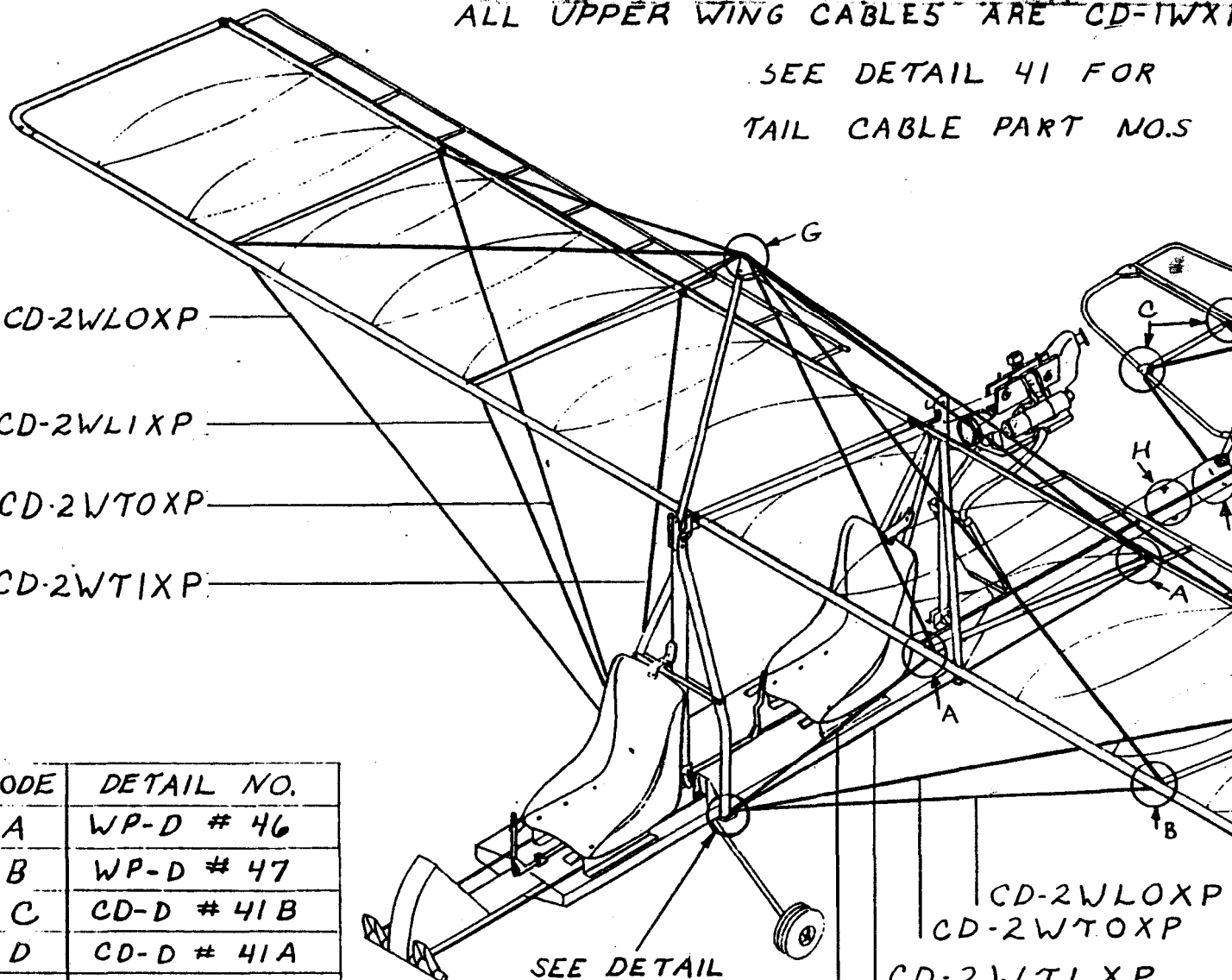
WP-D 43; 43A, 43B, 43C

WP-D 43, 43A, 4

Detail 1F

ALL UPPER WING CABLES ARE CD-TWXI

SEE DETAIL 41 FOR
TAIL CABLE PART NO.S



CD-2WLOXP

CD-2WLI1XP

CD-2WTOXP

CD-2WTIXP

V-1.6

CODE	DETAIL NO.
A	WP-D # 46
B	WP-D # 47
C	CD-D # 41 B
D	CD-D # 41 A
E	ST-D # 38
F	RD-D # 40
G	WP-D # 48 B

H	CD-D # 51
---	-----------

SEE DETAIL
51A FOR SEQUENCE

CD-2WLOXP
CD-2WTOXP
CD-2WTIXP
CD-2WLI1XP

LG-D

DETAIL 2
MODEL: ALL

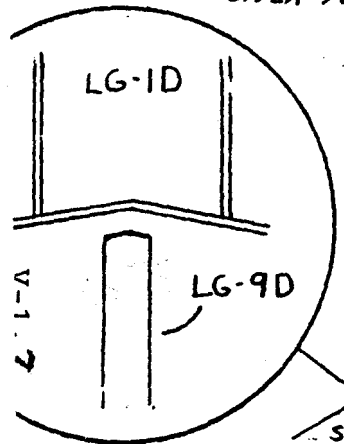
AN 3-4A bolt

(THRU MAIN TUBE)
AN-57A

5

22 SS-62 RIVET
(2 PER SIDE)

LG-1D
UPPER FUSELAGE TOWER BRACKET



MT-2RMU

LG-9D

NOTE ROLT SLEEVE
SHOULD BE FILED ON
TOP - 10° ANGLE TO FIT
LG-1D

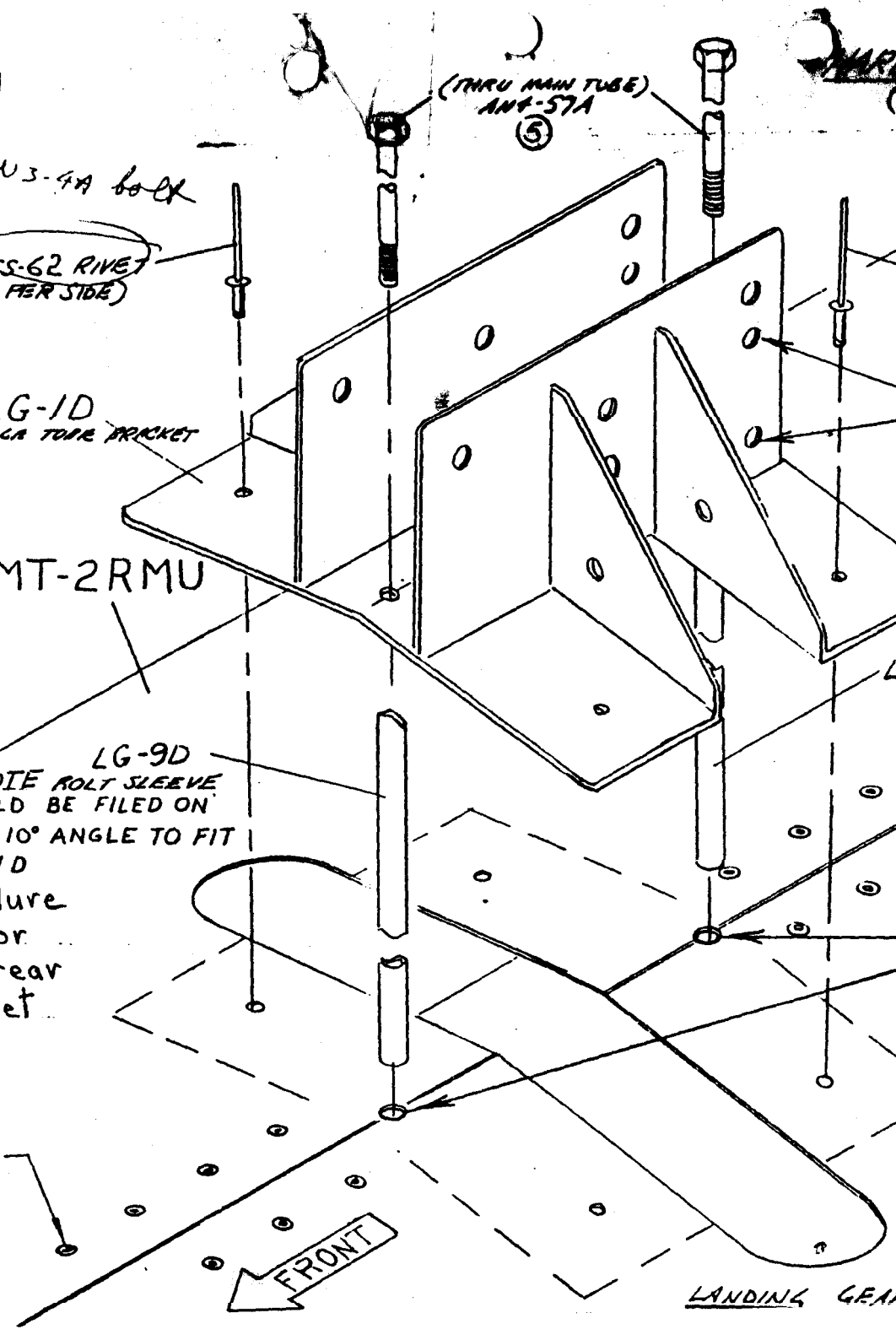
Same Procedure
Applicable For
Front and rear
LG-1D Bracket

20
SS-52 RIVETS
(SECURE PARTS
TO MAIN TUBE)

FA 08/19/86

FRONT

LANDING GEAR



7. Fuselage electrical cable. Remove the electrical wire harness through the fuselage tube to prevent its being damaged while drilling the balance holes in the fuselage tube. To do this, fasten a stout cord to the front end of the harness. Pull the cable out of the fuselage through the rear hole, leaving the cord in the fuselage during the drilling operation. The electrical wire harness can be removed after the drilling has been completed. Remember to install or reinstall rubber grommets on either end where the cord comes out of the tube.

8. Drilling remaining holes in fuselage tube.

a. All pre-located holes in the floor pans along the centerline have been drilled into the fuselage tube except the two immediately behind the rear door slot on the MU-532. Measure and drill all the holes marked on main fuselage details A & B on both the top and bottom of the fuselage. There are 9 1/4 inch holes drilled top and bottom (11 1/4" holes on the MU-532) of the fuselage tube along the centerline.

(1). Then, on the top only, the 1/4" holes which are going to receive the long steel bushings (LG-9D) must be drilled out to 3/8". In the XP-503 there are 4 such holes; on the MU-532, there are 6.

(2). There is one 1/4" hole in the floor pan not predrilled for the rear end of the gas tank tray mounting bracket on the bottom of the fuselage. Measure the distance of the top hole from any point common to both top and bottom. Locate the longitudinal position of the hole using that measurement. Details 3A & B.

b. There are 2 holes on the after part of the fuselage tube which require particular care in measuring. They are the holes for the vertical stabilizer (ST-4D) bolt and the bolt (AN4-60A) to which are attached the wing to main fuselage (CD-1WS).

(1). To locate the top centerline of the fuselage tube, also the bottom, will measure to locate these holes, form a loop of 8" or more in the end of a string. Place the loop over the vertical stabilizer post and run the string over the floor pan. Holding the string tight, tape the string to the centerline of the floor pan. Now measure forward from the front edge of the vertical stabilizer the distances shown in Detail 4 to locate the two holes. Mark and center punch the positions.

(2). Now use the paper ring method of locating the two holes on the opposite side of the fuselage tube. Mark, center punch and then drill both sides of the fuselage tube. Detail 4.

9. Pin striping fuselage. If you are going to use a pin stripe trim on the floor pans and fuselage tube, apply it before mounting any of the parts as throttles and seat belt brackets, on its sides. The tape sticks best to flat surfaces.

10. Filing landing gear bushings. Install LG-9D bushings in the holes (and rear on the MU-532) landing gear mounting brackets (LG-1D) just drill 3/8". File the sides of the tops of the bushings at about 10 degree angle so tops of the bushings are flush with the floor pans. Details 2A & B.

11. Drilling oversize holes. The 1/4 inch holes in the centers of the brackets should be drilled out to .257" which is an "F" size drill bit. Details 2A & B.

12. Fuselage tube brackets and attach points. Mount all brackets and the top and bottom of the fuselage tube for which holes have been drilled.

a. On the top, mount the control stick bracket [CS-58XP], front landing gear brackets [LG-1D], bell crank [CS-53XP], rear diagonal tube at [UF-35D], gas tank tray angle bracket [TW-6D], and vertical stabilizer bracket [LG-4D]). Details 3A & B, 5A, B & C.

b. Before mounting the landing gear support bracket(s) (LG-1D), apply a coat of silicone around the edges and bolt holes on the under side of the brackets. Secure the brackets with 2 AN4-57A bolts through the fuselage. Secure the 4 corner brackets with AN3-4A bolts down through the floor pan. Use a flat washer and a flat washer on the underside of each. Detail 2.

c. On the bottom, mount the landing gear anchor plate (LG-2D) and (LG-2MU). Details 5A & B. On the MU-532, add the rear anchor plate (LG-2MU). See Detail 2. Before mounting both anchor plates, add and secure the anchor plate reinforcement channels (LG-13D) at both ends of each anchor plate using 6 SS-64 rivets in each channel.

d. Before securing the bolt through the vertical stabilizer bracket, add the tangs for 2 lower stabilizer cables (CD-2SD) on the bottom of the fuselage tube.

Notice that all of the bolts going through the main fuselage tube are to be Details 3A & B.

e. When installing the AN4-60A bolt through the fuselage at the tube cable attach point, be sure to use an ST-9D standoff on both the top and bottom of the fuselage. Detail 3A & B.

13. Tail wheel.

a. Pre-assembly. Clamp the control horn (TW-2D) to the tail wheel (TW-3D) and transfer drill a 3/16" hole. Install fork assembly to tail wheel spindle (TW-1XP). Use heavy grease on thrust bearings (TW-10D) and tail wheel bushing (TW-11D). Install bushing and tail wheel. Detail 6.

b. Assembly. While the bottom of the fuselage tube is easily accessible, install the pre-assembled tail wheel assembly. Note the addition of a rubber pad (from a piece of hose) inserted between the tail wheel spring and the bottom of the vertical stabilizer post. When attaching the aluminum U-bracket (TW-6D), cover the rubber pad when marking the holes in the stabilizer post (MT-1D) for transfer. Detail 6.

14. Bolts through landing gear anchor plates. Before installing landing gear tubes, insert bolt (AN4-H12A) with washers through landing gear anchor plates from the underside. Tape into position until used. These bolts cannot be inserted after the landing gear struts are in place. Details 8A & B, and 15G.

15. Reinforcing Braces. Install four reinforcing braces (SA-6D) under floor pan. Debur all edges before riveting in place using pre-drilled floor pan holes. Detail 7.

Detail 3A

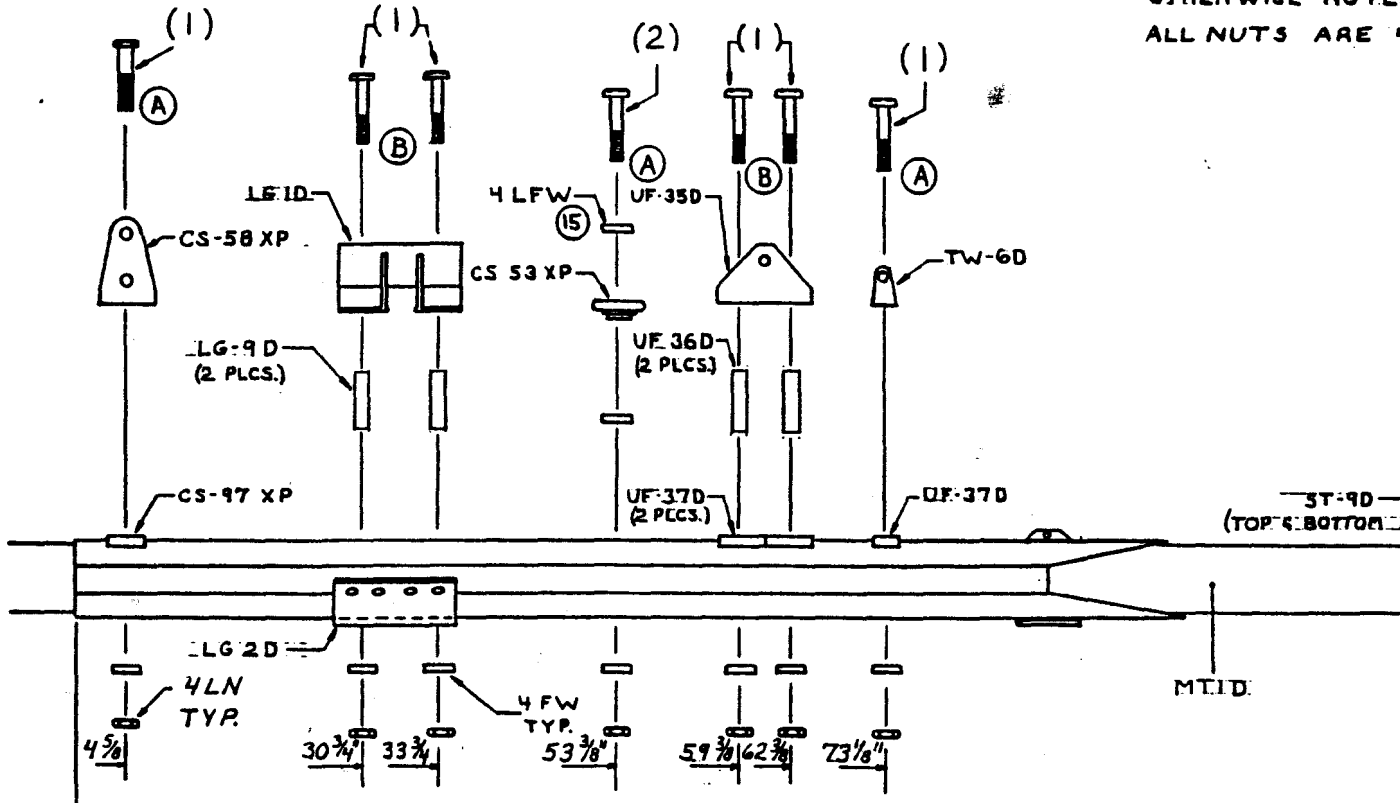
TORQUE VALUES

(A) = 40 in/lb

(B) = 75 in/lb **60 IN LB**

- (1) AN4-57A (S)
- (2) AN4-62A (O)
- (3) AN4-60A (I)
- ALL WASHERS 4 PLCS.
- OTHERWISE NOTED
- ALL NUTS ARE 4 PLCS.

V-4.1



DIMENSIONS TAKEN FROM THIS LINE

NOTE:
AFTER ITEMS ARE PAINTED
ALL ITEMS ON THIS PAGE

1-5-37

Detail 3B

TORQUE VALUES

(A) = 40 in/lb

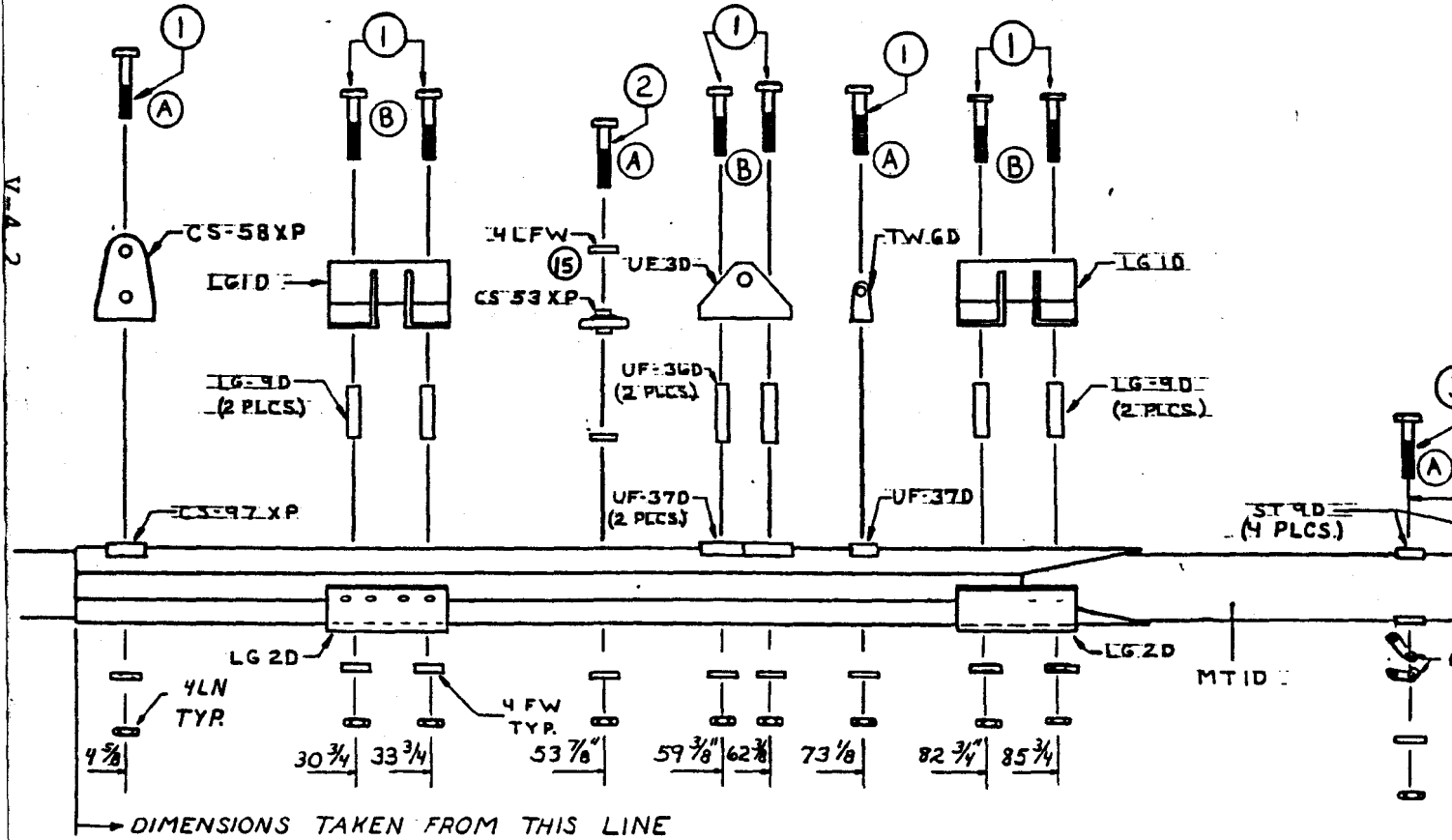
~~(B) = 75 in/lb~~

B = 60

NOTE:

AFTER ITEMS ARE PAINTED, ASSEMBLE ALL ITEMS ON THIS PAGE FIRST.

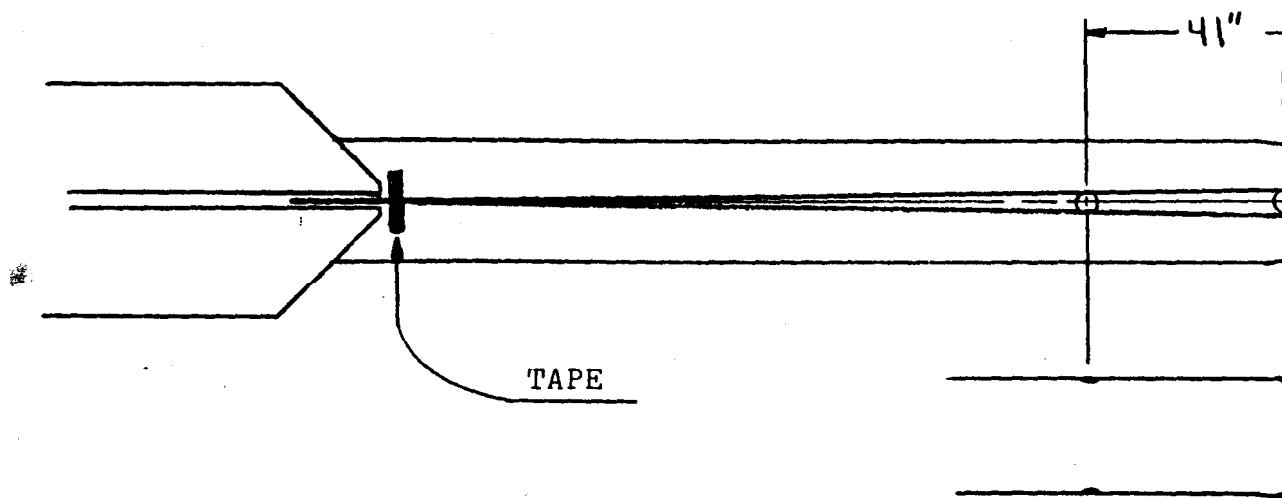
- 1 AN4-57A (5)
- 2 AN4-62A (1)
- 3 AN4-60A (1)
- ALL WASHERS 4FW OTHERWISE NOTED
- ALL NUTS ARE 4LN



4 1-5-87

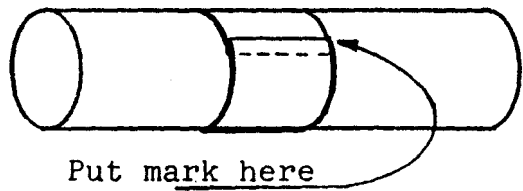
DRILL HOLES SHOWN:

First, to find center line on top of tube, wrap string around tube, draw string tightly and tape as shown. Find center by measuring

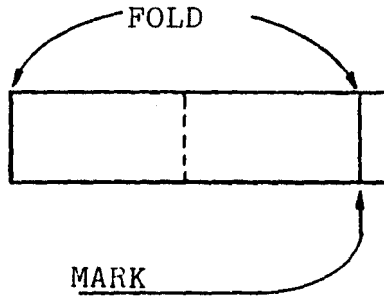


TO FIND CENTER OF BOTTOM OF TUBE:

V-4.3



- 1) Use a long strip of paper (at least 5" wide X 20" long); wrap around tube & mark as shown (where overlap occurs).



- 2) Remove paper and from end to mark
- 3) Wrap paper around top center mark fall on center o

MT-1D

MT-2LX
LEFT FLOOR
PAN
OR MT2L

MT-2RXP
RIGHT FLOOR
PAN
OR MT2RMU

NOTE: DRILL
FUSELAGE 1/4"
TO MATCH LG-2
ANCHOR PLATE

LG-2D
ANCHOR PLATE

9
USE MS3C-17 CLEVIS
PINS WITH LARGE SAFETY
RINGS TO ATTACH LOWER
WING WIRES

LOWER WING
CABLE LOCATIONS

CD-2WLIXP
LEADING EDGE INNER

CD-2WLOXP
LEADING EDGE OUTER

CD-2WTOXP
TRAILING EDGE OUTER

CD-2WTIXP
TRAILING EDGE INNER

LG-13D

27
SSG RIVETS

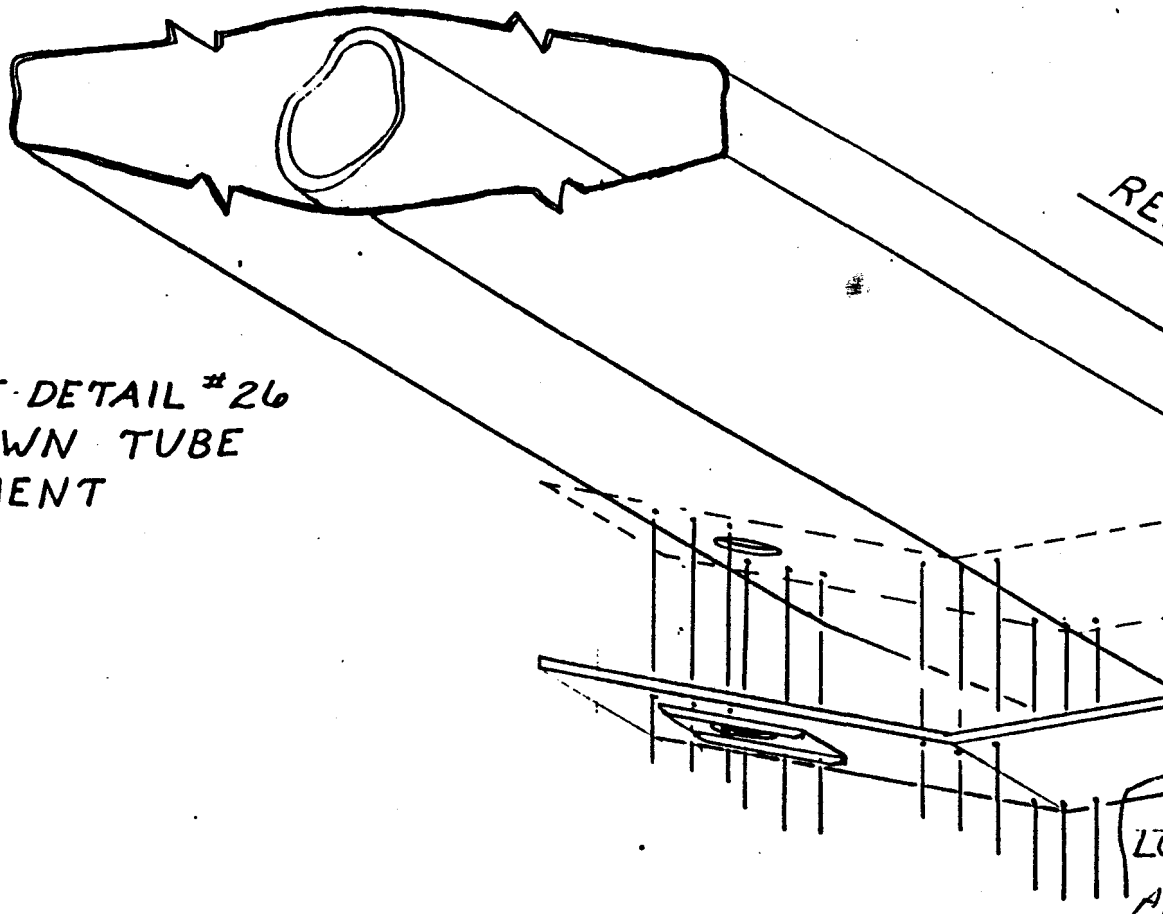
15 4FW

12 4LN
(SEE SECTION LG-D
DETAIL 1FA FOR
BOLT SIZE & LOCATION)

15 4FW

LANDING GEAR DETAIL

V P A



NOTE

SEE UF-DETAIL #26
FOR DOWN TUBE
PLACEMENT

V-4.5

USE SS64
(27)

REAR LANDING GEAR D

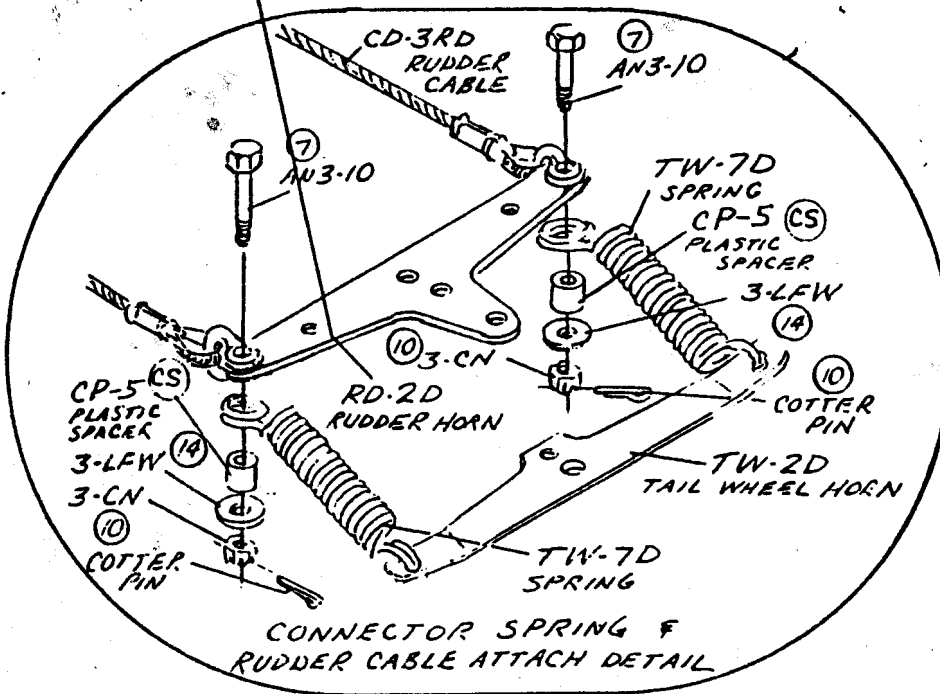
TW-D

HARDWARE GROUP LIST
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

DETAIL 6

MODELS: XP-503/DR-532/MU-532

RUDDER & DR-2D
must be pre-assembled
prior to assembly
(see diagram below)



15 4-FW

12 4-LN

TW-1XP
TAIL WHEEL SPRING

2 AN4-17A

TW-6D
ALUM. U-BRACKET

8 AN3-5A

11 3-LN

16 6-FW

6 AN6-26

6 AN6-15

TAIL WHEEL DETAIL

V-4-A-6

Ji

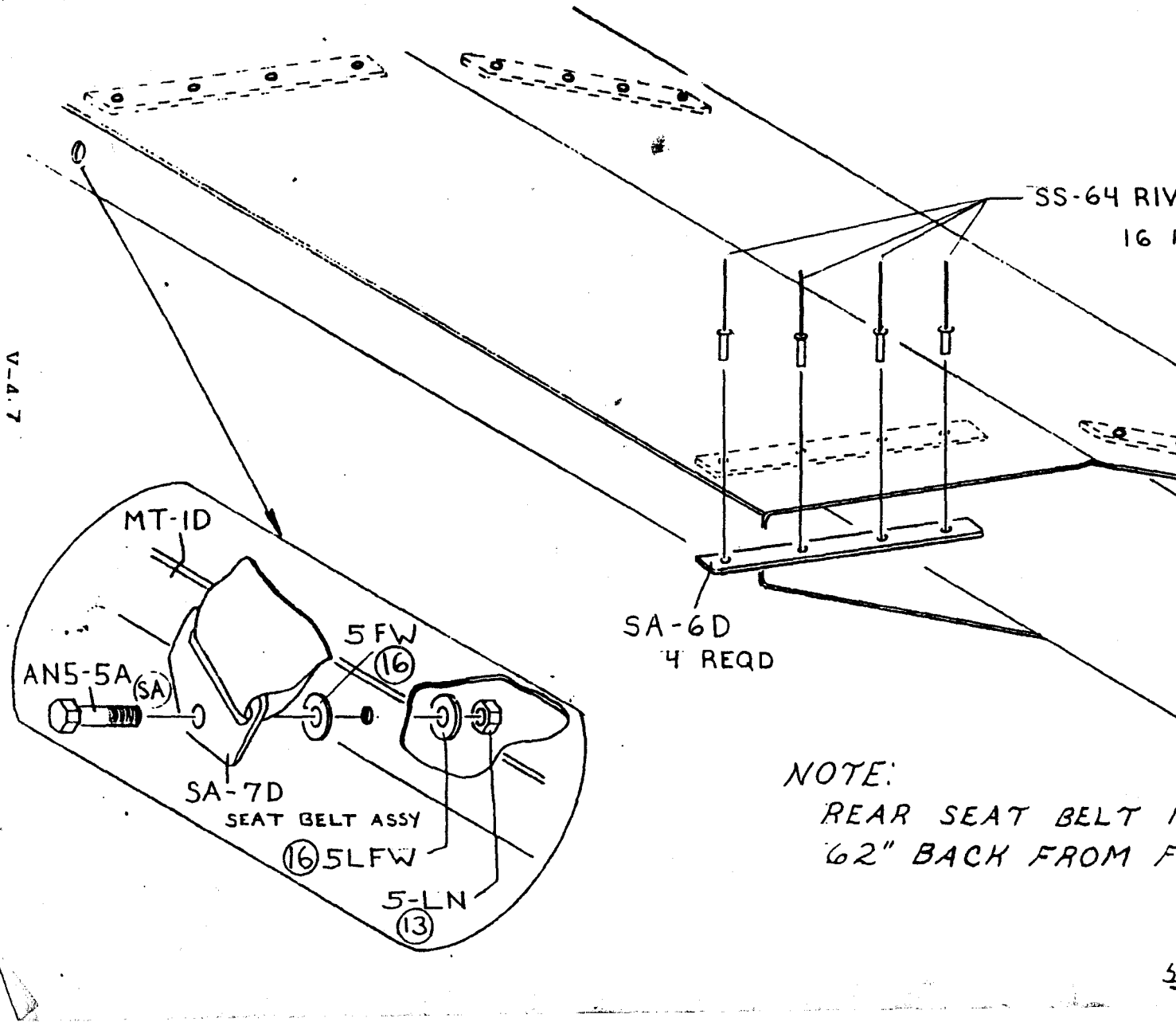
5, 1, 1, 1, 1

DETAIL 7

MODEL: XP503 MU-532

HARDWARE GROUP LIST

(13) (16) (27)



NOTE:
REAR SEAT BELT
62" BACK FROM F...

B. LANDING GEAR

1. Landing gear tubes.

a. Prior to installing the painted landing gear tubes or struts, that you have inserted and taped into position the AN4-H12A bolts with correct washers which will secure the lower end of the front UF-15 down tubes. You cannot insert them after the landing tubes are in place. Details 8A, B & 15G.

b. The holes in the anchor plate (LG-2D) may have to be eased slightly with a half-round file so that the landing gear tubes (LG-4XP or LG-4MU) will slide into them. This is a cut-and-try operation. Be careful not to remove any more metal than necessary. Bolt tubes to landing gear support brackets, bolt heads forward. Use washers (4FW) or Hummer tangs (if provided) for spacing. Details 8A & B.

2. Landing gear spindles. The landing gear spindles (LG-3XP) must be smoothed before inserting them into landing gear tubes. Check the tube ends for any burrs or excess paint which may make it difficult to insert the spindles. Use a cloth or fine sandpaper. Details 8A & B.

3. Wheels.

a. Assemble spindles (LG-3D) and wheel assemblies. They may be assembled before the landing gear tubes now or at any time hereafter. The fact that the fuselage gets heavier as more parts are added argues in favor of mounting them now.

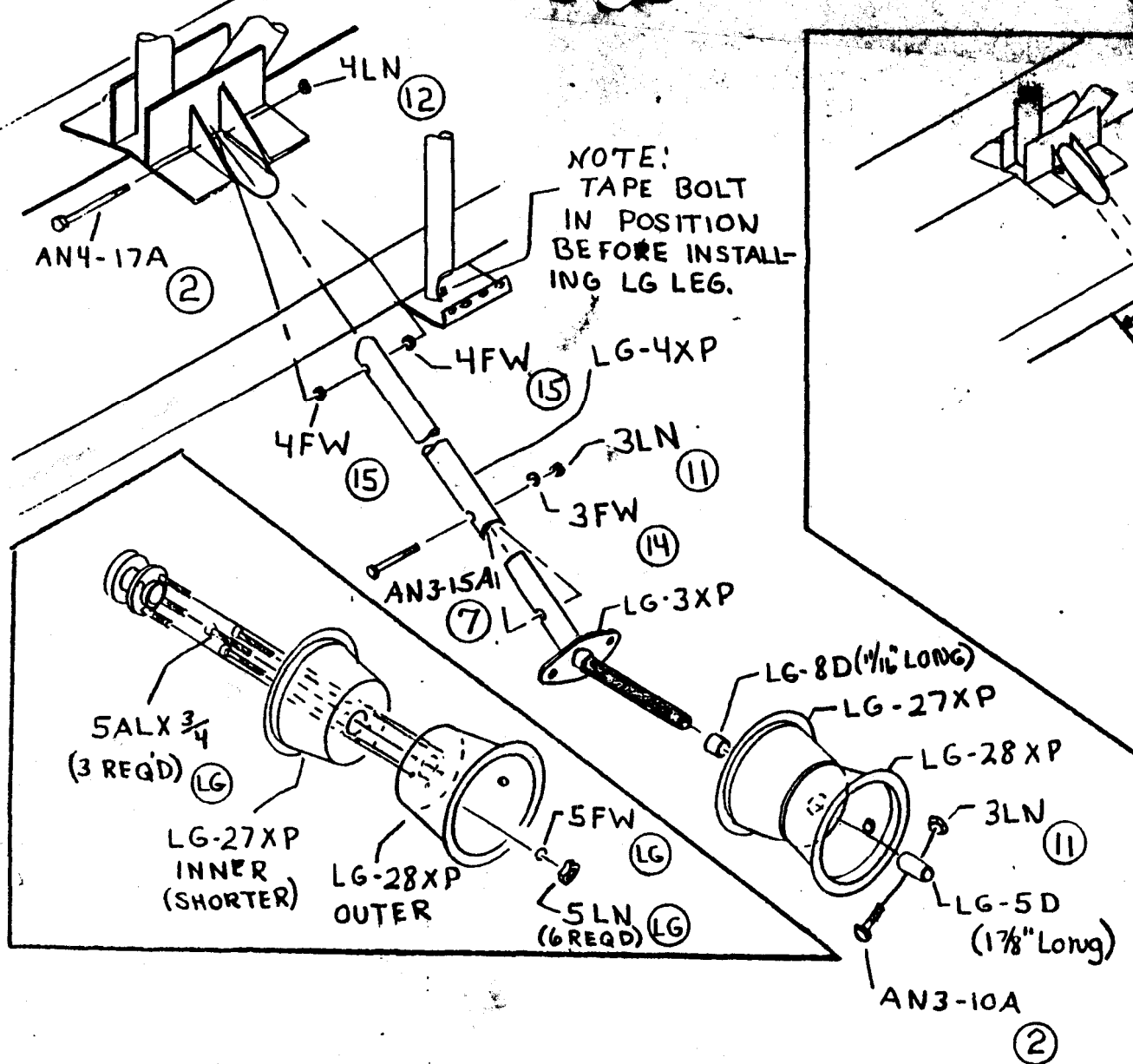
b. Start with an inner tube (LG-25XP), place it into the tire (LG-26XP) and slip the shallow rear half of the wheel (LG-27XP) inside the tube from one side and the deeper front half of the wheel (LG-28XP) - with the valve stem hole in it - from the other side. Make sure the tube's valve stem is inserted through the hole in the wheel.

c. Mount the wheel hub from the rear. Use a 5FW and a 5LN on each of the bolts protruding through the wheel from the rear.

(1). If no brakes are going to be added, place an LG-8D spindle (11/16" long) on the spindle, then the wheel - front side out -, and then an LG-5D bushing (1 7/8" long). Locate and drill through the LG-5D bushing.

(2). The wheel should fit comfortably between the inner and outer tubes.

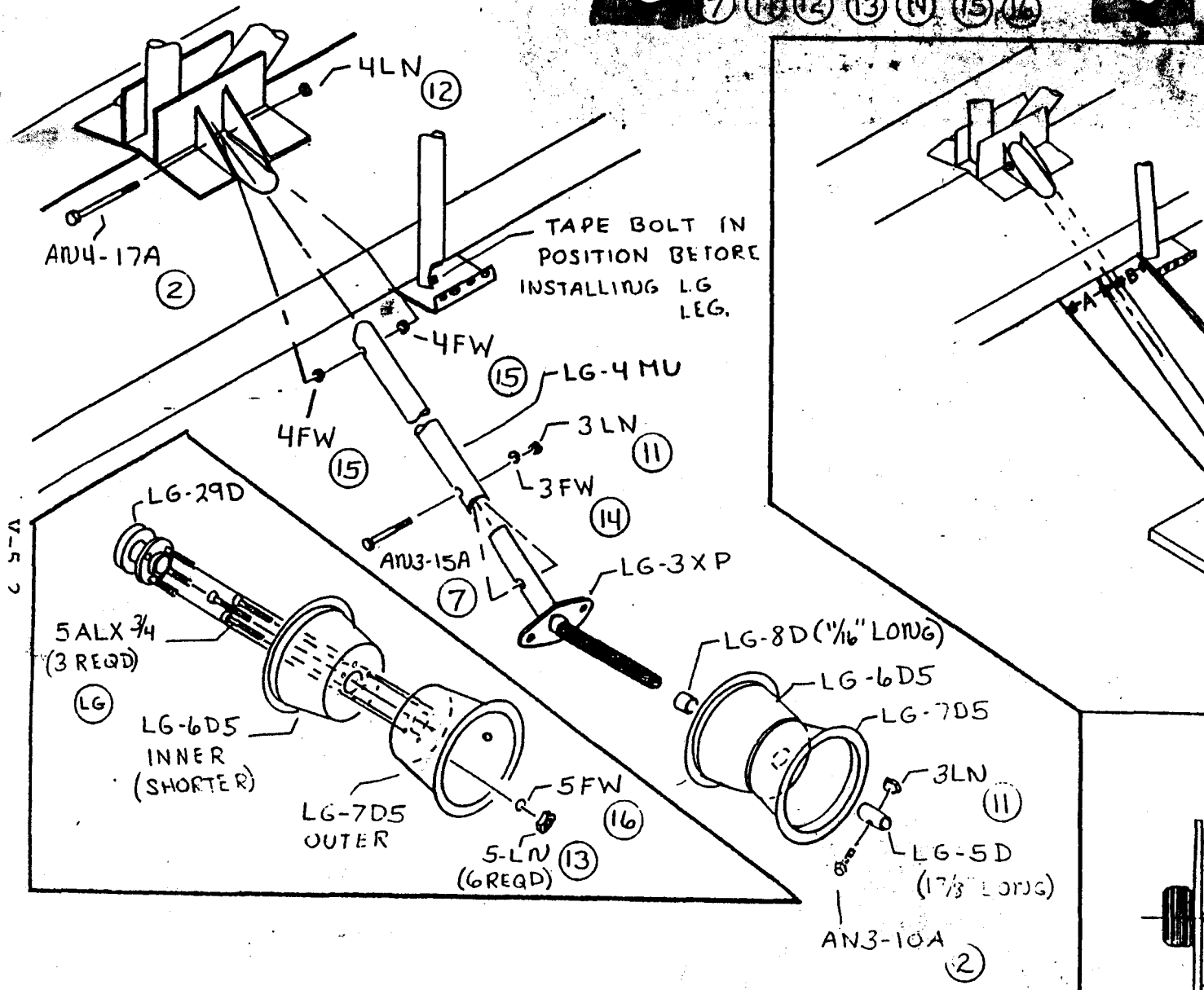
② ⑦ ⑪ ⑬



V-5-1

NOTE:
 MASK SHADED AREA BEFORE PAINTING.

FU



NOTE:
 MASK SHADED AREA BEFORE PAINTING

METAL
 FUSELAGE

bushings, neither so tight as to pre-load the wheel bearings nor so loose as sloppy. (In FINAL assembly, blue Loctite can be used between bearings and spindles to avoid bearing race rotation on spindle. Do not get Loctite on plastic parts.) Mount the wheel with an AN3-10A bolt through the outer bushing and the spindle and

d. Coat well with lithium grease and then slide the spindle of the wheel into the landing gear tube, using a soft hammer or mallet as needed to slide spindle completely home. Do not drill the hole through the spindle to anchor it in the tube until the landing gear toe out has been adjusted.

4. Brakes.

a. If brakes (optional equipment) are being added to the wheel assembly, start before mounting the wheel on the spindle.

b. Mount the brake drum on the rear of the wheel hub, using 1/4x3/8 bolts. Detail 9.

c. The brake shoe plate for the right wheel must be configured opposite to that for the left wheel. Hold the plate with the brake shoe side away from you. On the right brake shoe plate so that the lever is at the bottom of the plate. On the right brake shoe plate, the lever will point to the right and on the left brake shoe, it will point to the left. On the top of the right brake shoe plate, the left and center ears must be cut. On the top of the left brake shoe plate, the center and the right ears must be cut. File the cut edges smooth. Remove the brake shoes and springs from the plates and mount the plates on the spindle ears as shown in Detail 9.

d. Tighten the mounting bolts only to the point that the brake shoes can "float" on the spindles, i.e., they can shift back and forth as the brakes are applied and released. Use white lithium grease on all moving and floating parts.

e. Remount the brake shoes. Now the wheels and brakes can be assembled. Make sure that the short spacer (AN742-D4) goes on the spindle axle first. When the brakes are assembled, there should be about 1/8" clearance between the brake drum and the shoe plate around the edges. If not, chances are you forgot the short spacer. Detail 9.

f. Now the spindles can be inserted in the landing gear tubes, paying attention to mounting the brakes on the proper sides.

5. Wheel alignment

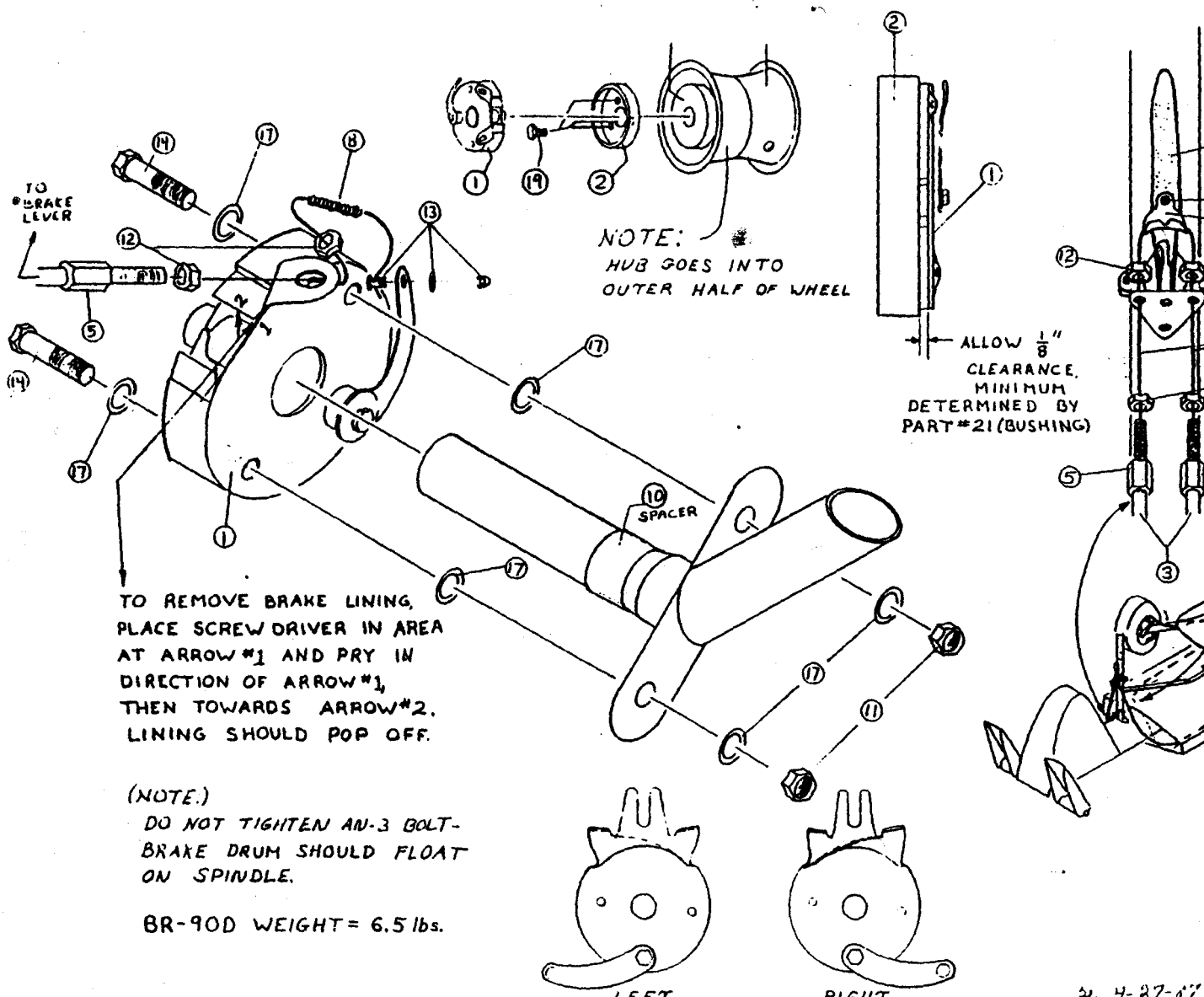
a. Alignment is as important to your plane's wheels as it is to your automobile. Without enough toe-out, your Drifter will not handle well on the ground.

b. With the wheel assemblies mounted on the landing gear tubes and on the ground, level the fuselage.

c. As shown in Details 8A & B, measure from the edge of the floor or ground on a line parallel to the tube and running past the widest point of the tire. Lock the tape measure at that distance. Then note the distance from the center line of the tire to the center line of the tube along that line. Now, make the same measurement on the opposite side of the tire, using the first measurement to set your line.

d. Then, adjust your toe-out to $3/8$ ", i.e., the front centerline of the tire will be $3/8$ " further away from the plane than the rear centerline. To increase toe-out, tap down on the rear spindle ear until you have achieved the adjustment needed. Tapping on the front spindle ear will decrease the toe-out.

e. When the toe-out is set, transfer drill the spindle, drilling on both sides. Insert the AN3-15A bolt from the front.



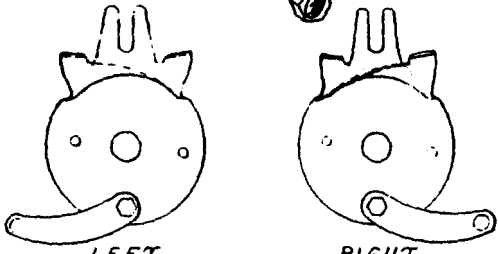
NOTE:
HUB GOES INTO
OUTER HALF OF WHEEL

ALLOW $\frac{1}{8}$ "
CLEARANCE,
MINIMUM
DETERMINED BY
PART #21 (BUSHING)

TO REMOVE BRAKE LINING,
PLACE SCREW DRIVER IN AREA
AT ARROW #1 AND PRY IN
DIRECTION OF ARROW #1,
THEN TOWARDS ARROW #2.
LINING SHOULD POP OFF.

(NOTE.)
DO NOT TIGHTEN AN-3 BOLT-
BRAKE DRUM SHOULD FLOAT
ON SPINDLE.

BR-90D WEIGHT = 6.5 lbs.



LEFT RIGHT
CUT ON DOTTED LINE, REVERSE LEVER
FOR CORRECT SIDE.

4-27-67

17-7 1

Packing List BR-90D

Drum Brake System

L MODELS

Part No.	Description	Item	Qty
BR-1	Brake Shoes & Platte	1	2
BR-2	Brake Drums (hegar Mount)	2	2
BR-3	Cable Conduit	3	2
BR-4	Cable	4	1
BR-5	Drum Adaptor & HW (DR277)	0	2
MR-20DR5	Conduit Adjuster 1/4"	5	4
UF-28D	Cable Ties	6	4
BR-10	Hand Lever	7	1
BR-12	Spring	8	2
BR-13	Center Pull Bracket	9	1
AN742-D4	Clip	10	2
3LN	Lock Nut	11	4
4HNF	Hex Nut	12	8
BR-18	Split Bolt	13	2
AN3-5A	Bolt	14	4
27019-812	Screw	15	1
321042-08	Lock Nut	16	1
3LFWS	Washer	17	12
3FW	Washer	18	1
1/4x20x3/4	Bolt (hegar Mount)	19	6
SS-64	Rivet	20	2

NOTES:

- 1) Remove Brake shoes as shown
- 2) Deburr holes as to be a smooth surface
- 3) Using a good water proof grease, apply on surfaces of 3LFWS that touch shoe plate & spindle arm.
- 4) Note that 3/16" dia. bolts are used in the 1/4" dia hole. This will allow brake shoes to float in brake drum giving more control area and better braking.
- 5) Do not over tighten - just snug nuts as to be able to move shoe on spindle with light pressure. File brake lining on contact area if drum is not free .

9-1

)



C. CONTROLS

1. Conduit adjusters. Rivet 2 conduit adjuster brackets (CS-68D) into left floor pan just aft of front throttle. Secure a conduit adjuster (MR-20) each bracket. Detail 10C.

2. Throttles.

a. The hole with which to mount the front throttle on the left floor pan is predrilled. However, a special tool must be made to insert the AN4-6 bolts from inside of the floor pan when installing the front and rear throttle assemblies (and CS-70XP levers and CS-66 knobs).

b. Tape the right size box wrench very securely to the end of a rod, preferably with a slight bend in it, or a wing rib. Put a piece of duct tape on the back of the wrench socket to help hold the bolt head in place while locating the hole. Locating the hole is made easier by marking the distance to the hole on the end of the floor pan on the rod. Having an assistant look into the hole and turn the rod speeds this process considerably.

c. Note that the side of the front throttle lever (CS-25XP) with the hole is placed at the rear and the side of rear throttle lever (CS-70XP) with the hole is placed to the front. Torque up the rear nut (4-CN) enough to move the throttle with pressure but yet smoothly. Place a cotter pin through the front throttle lever temporarily until the carburetors are connected to the throttles. Do not tighten throttle mounting bolts and washers or throttles will not hold position. Detail 10B.

d. Install throttle stops in front of and behind the front throttle levers with CP-5 spacers and AA-66 rivets. Details 10A & D.

3. Throttle link rod. Detail 10D.

a. Position both throttles perpendicular to the fuselage tube.

b. Attach a pair of stainless steel link rod brackets (CS-73XP) to the front throttle extending aft and a pair on the rear throttle extending forward.

c. Place a guide and base (CS-45D and CS-30D, respectively) on the floor pan (CS-72XP). Position the rear side of the guide in front of the left rear rudder anchor bolt (no further back than 23" from the front of the floor pan). This will prevent it from conflicting with the left rear rudder pedal.

d. Adjust the height of the link rod so that, at its highest travel (throttles perpendicular to floor pan), it just touches the guide on top.

e. Clamp or tape the brackets at each end of the link rod, carefully aligning them on either side of the rod. Transfer drill two holes on each link rod through the brackets on both throttles and secure with SS-62 rivets.

f. Secure the guide and base to the floor pan.

g. Adjust tension in bolts through throttle levers and link rod to give a slight drag but smooth movement.

h. This step must precede installing the seat mounting brackets. The rear side of the link rod brackets cannot be drilled and riveted with seat mount in place. Detail 10D.

4. Reversing bell crank. Install bearing (CS-52XP) into reversing bearing (CS-53XP), using 6 SS-44 rivets. Do not drill rivet holes in side areas of bell crank to its edges. Assemble and mount as shown in Detail 14B.

5. Aileron bell crank. While you're working on bell cranks, drill the aileron bell crank (AL-11D) for its bearing (AL-10D). Using SS-44 rivets, attach it to the bell crank. Now lay it aside for later use. Detail 19.

6. Front seat mounting brackets.

a. The front and rear seat brackets (SA-11LXP and SA-11RXP) are identified as are the right and left brackets in each pair. Start the installation by identifying each and etching an identifier on the bottom of each (e.g., RF, LF, RR, LR). After painting, they can be identified.

b. If the plane will be flown mainly by a pilot over 5' 10" tall, locate the front seat mounts and the rear rudder pedals can be located for more pilot comfort. Locate the front seat mounts and the rear pedal mounts until all controls are attached.

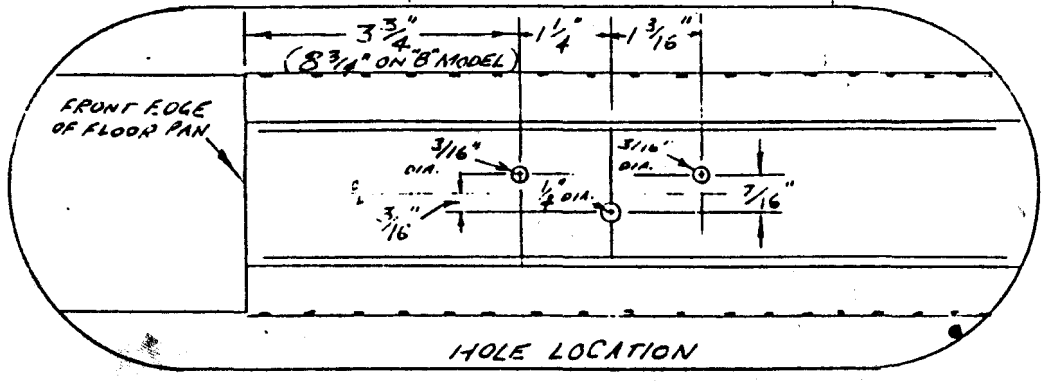
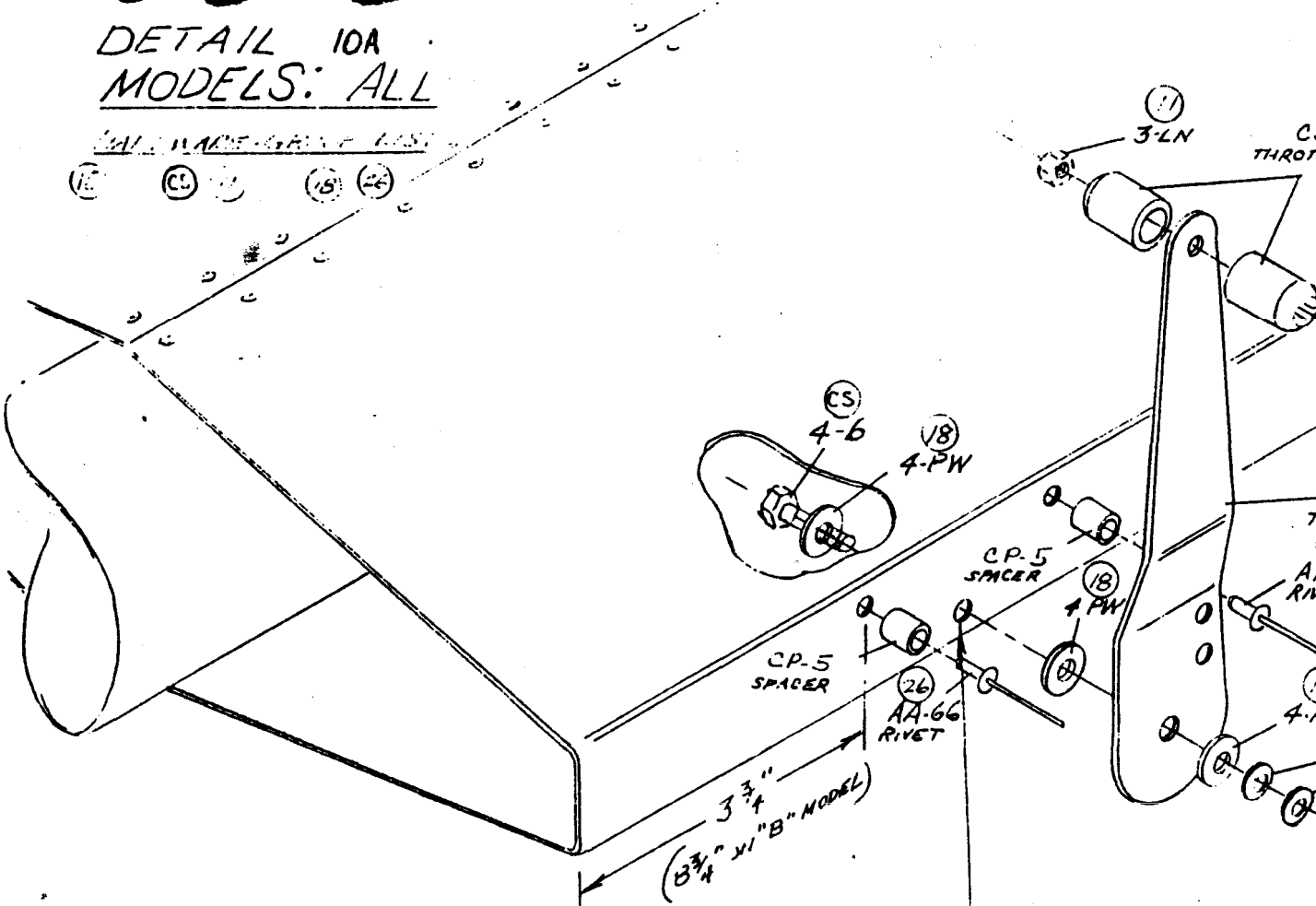
CS-D

DETAIL 10A
MODELS: ALL

WAVELENGTH LIST

(15) (16) (17) (18) (26)

V-0 1



H

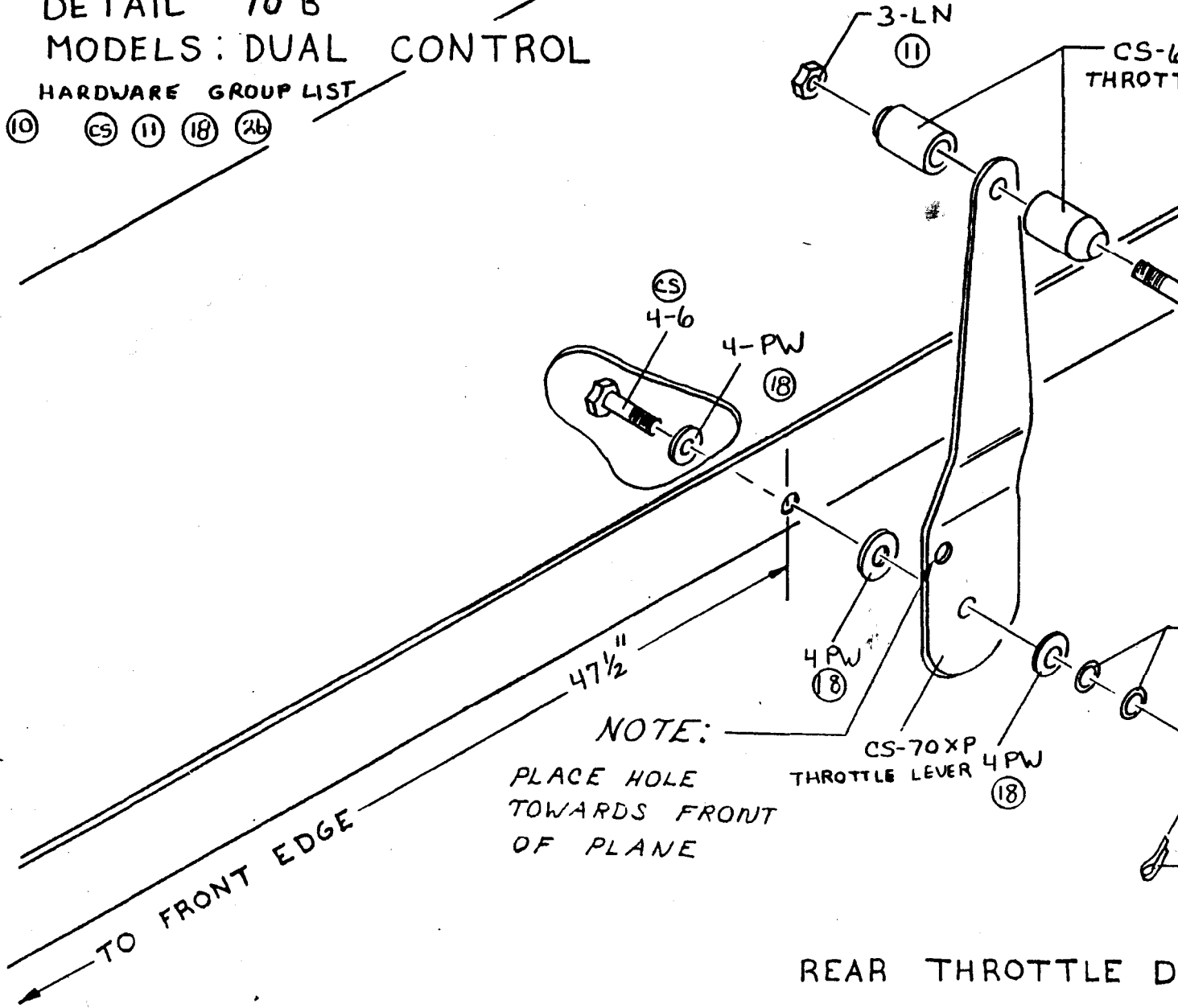
CS-D

DETAIL 10 B
MODELS: DUAL CONTROL

HARDWARE GROUP LIST

- ⑩
- CS
- ⑪
- ⑱
- 26

V-9.2



NOTE:

PLACE HOLE
TOWARDS FRONT
OF PLANE

REAR THROTTLE D

CS-38 D
CHOKE CABLES

CS-68 D CONDUIT A

SS-52 (20)
RIVET

4HNF (11)

4LN (12)

AA-66 26
RIVET

CP-5

AN3-10 (CS)

3PW (17)

CS-73 XP

CS-7

NOTE

DRILL OUT TO 1/4 DIA.
AND DEBUR.

3PW (17)

3CN (10)

CP-15
(3 RE)

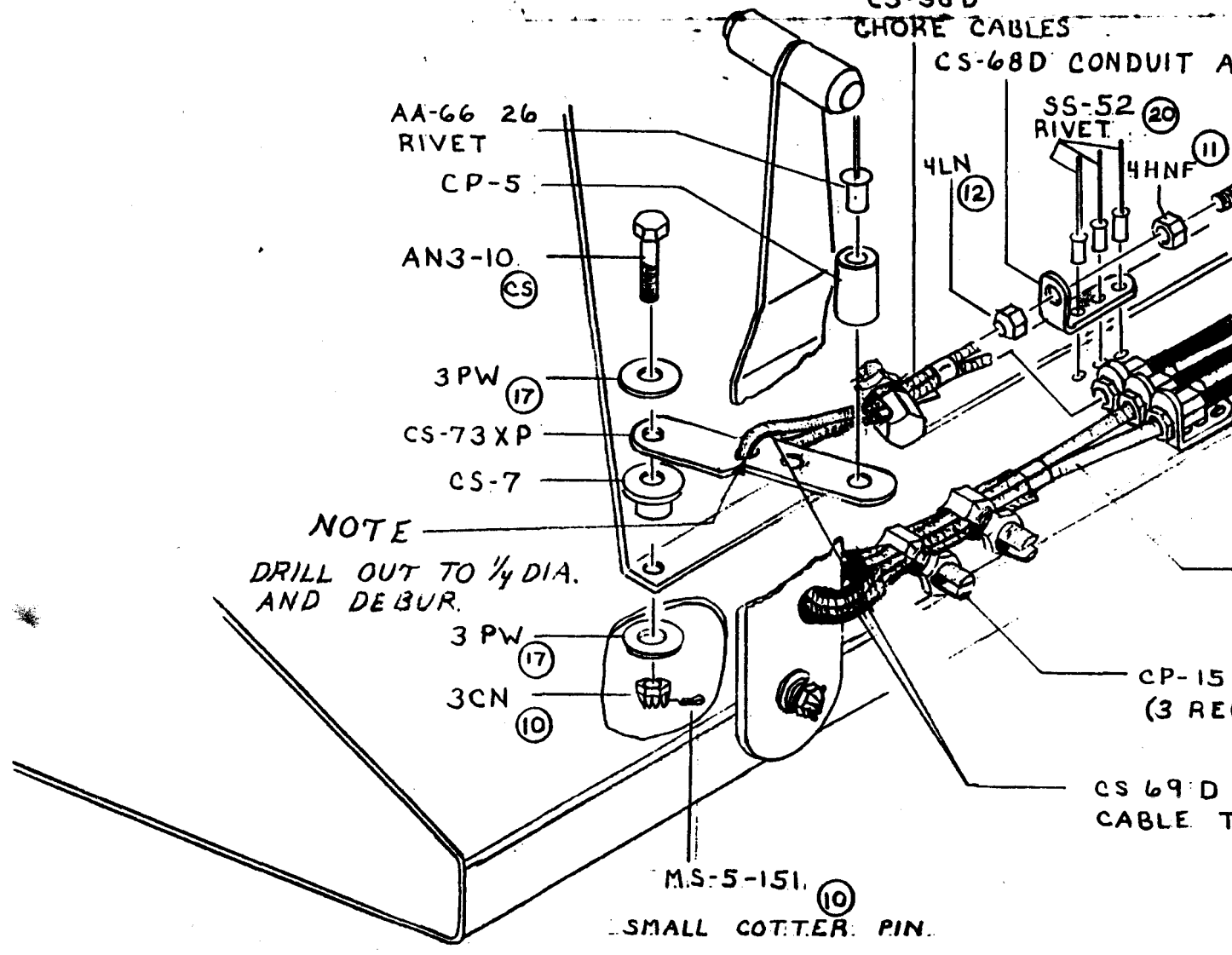
CS 69 D
CABLE T

M.S-5-151 (10)

SMALL COTTER PIN.

V-9.3

MU-
DWN
5

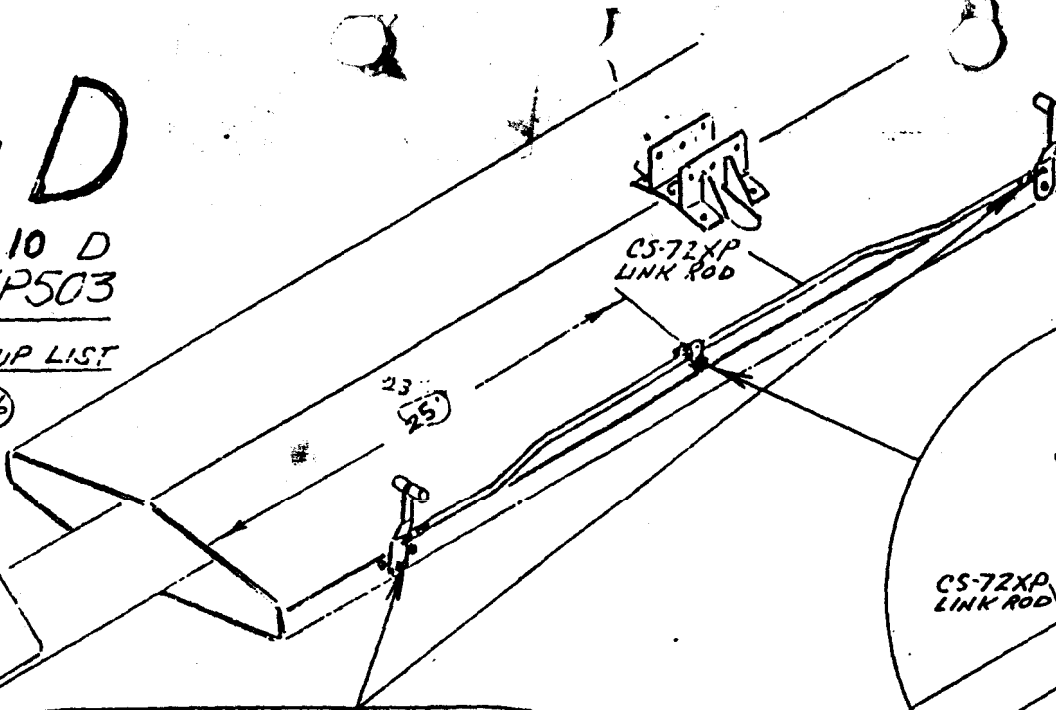
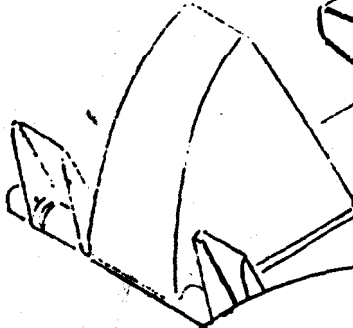


CS-D

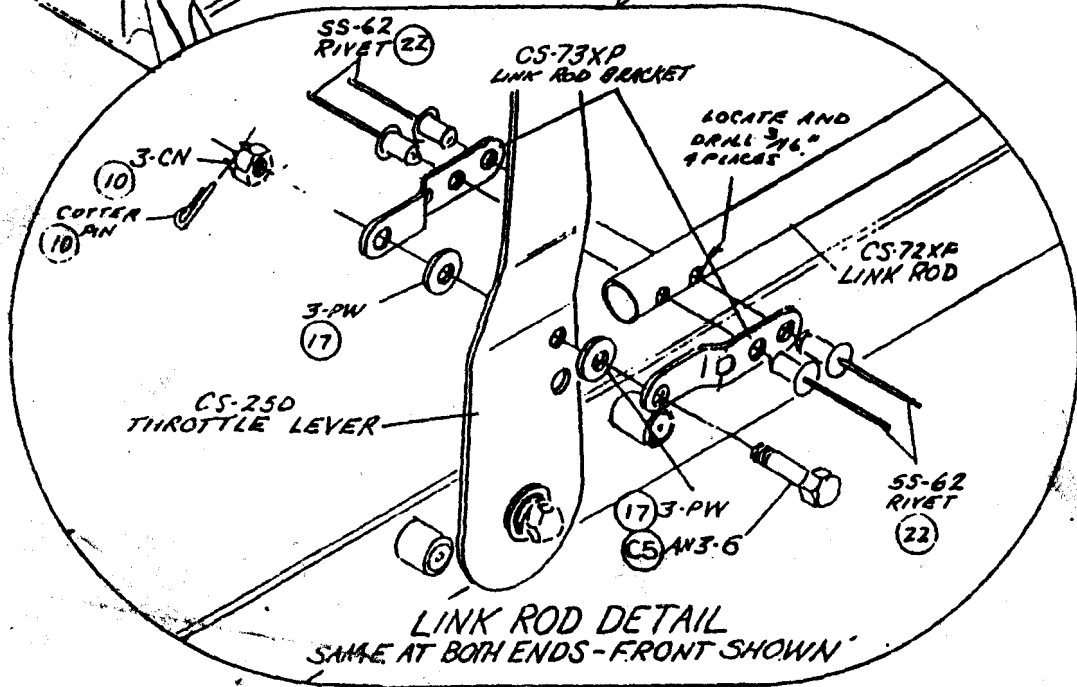
DETAIL 10 D
MODEL: XP503

HARDWARE GROUP LIST

CS (10) (17) (22) (26)



V-0-7



CS-72XP LINK ROD

LOCATE AND DRILL 3/16" 4 PLACES

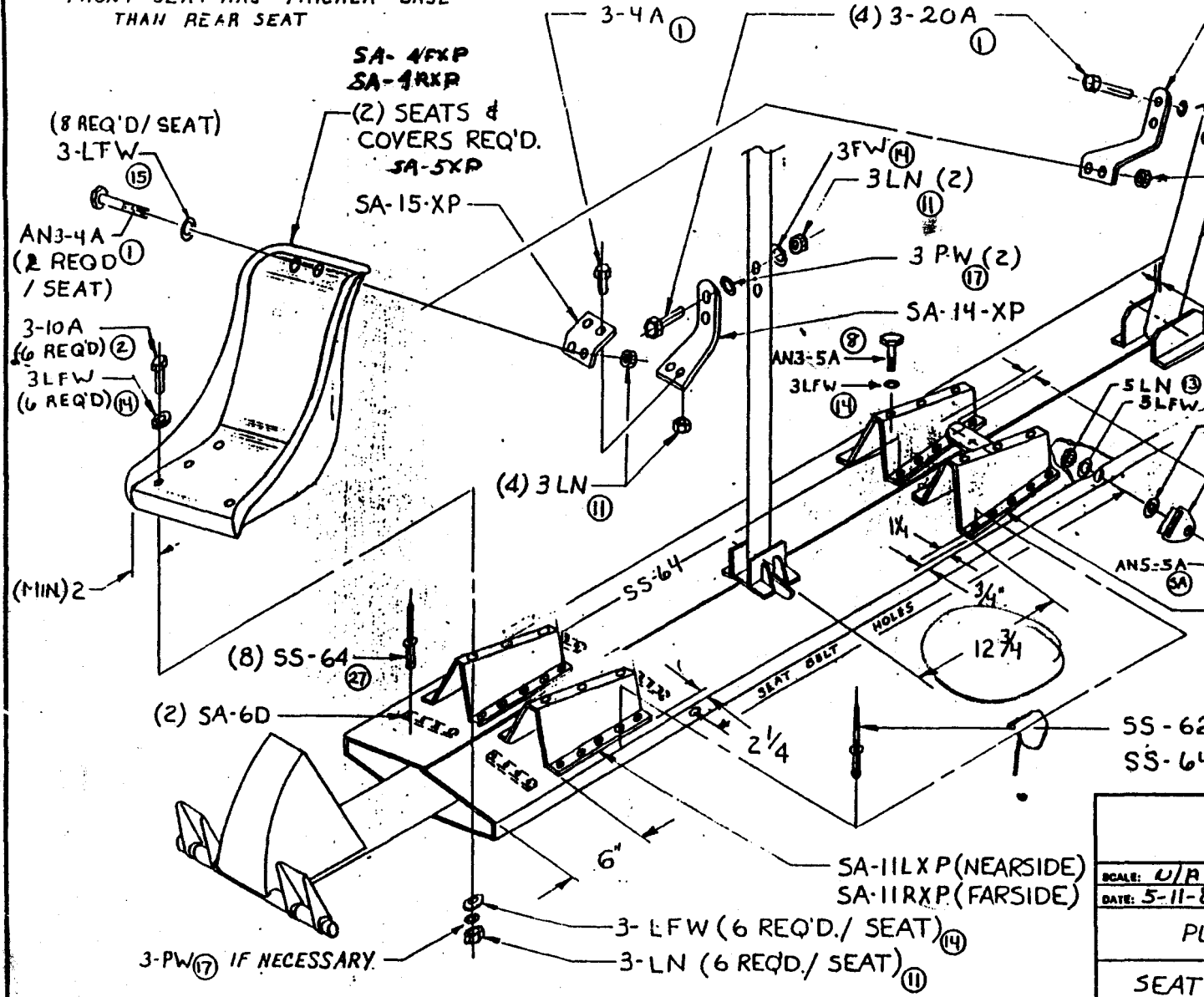
LINK

NOTE:
CLAMP
TO LINK
PRIOR TO

THROTTLE DETAIL - XR 503

NOTE:

FRONT SEAT HAS THICKER BASE
THAN REAR SEAT



SCALE: U/R
DATE: 5-11-6
PU
SEAT

b. Place the right and left front seat mounting brackets (SA-11RXP) flush against the floor pan center line rivets, with their front edges at the correct distance back from the front edge of the floor pan. Detail 11.

c. Transfer drill the four corner holes on each bracket and holes with Cleco pins or rivets temporarily inserted while drilling the remainder of the holes in each bracket. Clean out chips, debur holes and rivet brackets in the exception of the front outboard hole on the left seat bracket. Detail 11.

7. Rear seat mounting bracket. Measure back from the rear side of the strut hole in the floor pan to position the front edges of the rear seat mounting brackets (SA-12XP [left] and SA-13XP [right]). Position the brackets so that the CS-53XP bellcrank by a minimum of 1/4", keeping the tops of the channels up. Detail 11.

8. Choke lever. Choke lever (rod bracket, CS-73XP) is mounted on the outboard hole of the left front seat bracket. Before mounting, drill and ream a hole in the bracket for the choke cable thimble. Tighten the nut sufficiently so there is slight friction but the lever moves smoothly. Detail 10C.

9. Rear rudder pedals.

a. The rear rudder pedal hinge (RP-7XP) holes have been pre-drilled. The center hole for each of the rear rudder pedal hinges should be 25" from the centerline of the floor pan. The outer hinge holes should be 6 1/2" from the centerline of the floor pan and the inner hinge holes should be 3 3/4" from the centerline of the floor pan.

b. Rivet the center hole on the hinge to the pre-drilled hole in the floorpan using an SS-62 rivet.

c. For each hinge, transfer drill the other 2 holes and rivet, making sure that the vertical sides of the hinges face away from the rudder pedals.

d. Insert the left rear pedal bolt (AN4-43) from the center outboard side to avoid conflict with the throttle link rod. Details 12-1, 12-2 & 13.

10. Control stick assembly (CS-D).

a. Control stick pre-assembly. Assemble front and rear control sticks (CS-25D and CS-70XP, respectively) and attach them to the control stick sub-assembly (CS-50XP). Holes drilled in control sticks should be 5/16" in diameter, 1 1/2" deep, and perpendicular to stick front to rear movement. Detail 14A.

b. Push rod pre-assembly. Drill 1/16" holes 3/8" from each end of long and short steel rods (CS-56XP and CS-57XP) used as connecting rods between control sticks and between the rear control stick and the elevator reversing bell crank lever. The purpose of these holes is to permit inspection, ensuring that male rod ends (CS-75D) and CS-75D) are inserted at least 3/8". Detail 14A.

c. Push rod ends. Install male rod ends (CS-75D) in both ends of long rod (CS-56XP) and the short rod (CS-57XP). Details 14A, B and C.

d. Anchor swivels. Assemble anchor swivels (CS-54XP) to control sticks. Install swivel stops using an AN3-15A bolt, 2 CP-5 spacer/stops and a 3LN-5 spacer. Detail 14A.

e. Control stick assembly. Slide the long push rod (CS-56XP) with fittings installed into control stick sub-assembly (CS-50XP). Connect both ends of push rod to the front and rear control sticks. Adjust the push rod ends so that control sticks are parallel. Detail 14A.

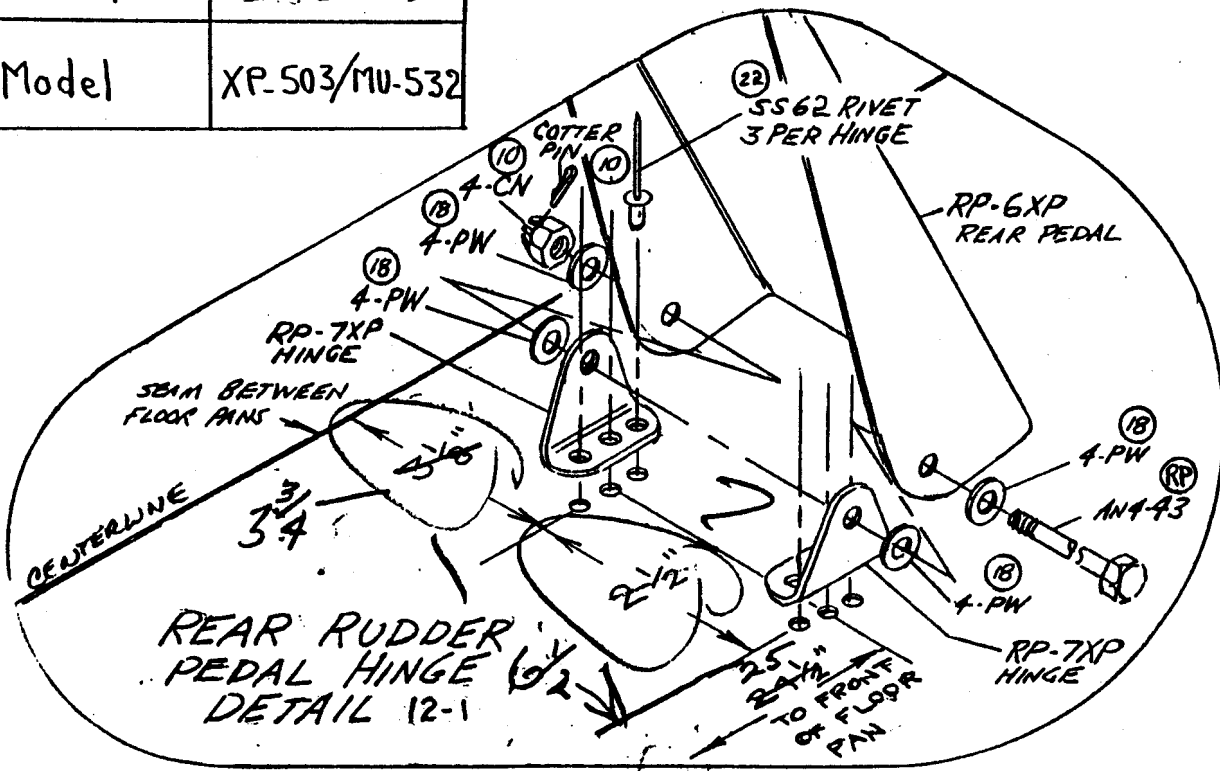
f. Control stick stops. Before installing control stick assembly, install control stick stops in place: 1 AA-66 rivet plus 1 CP-5 plastic spacer for front stop. Detail 14A.

g. Control stick installation - front. Install control stick assembly in front of plastic bearing blocks (CS-51XP), in the control stick bracket (CS-58XP). Apply grease on the bearing surfaces. Secure as indicated in Detail 14A.

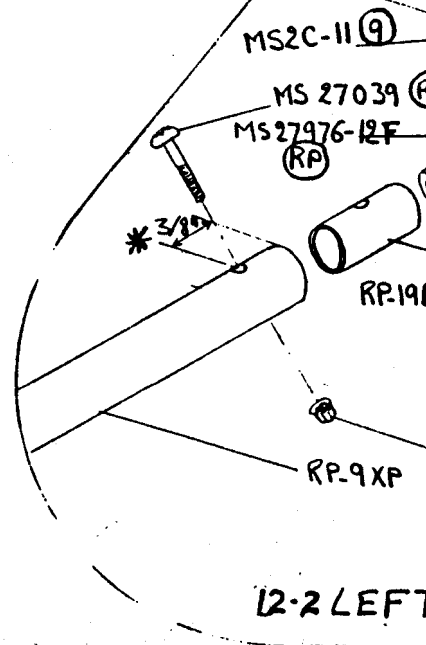
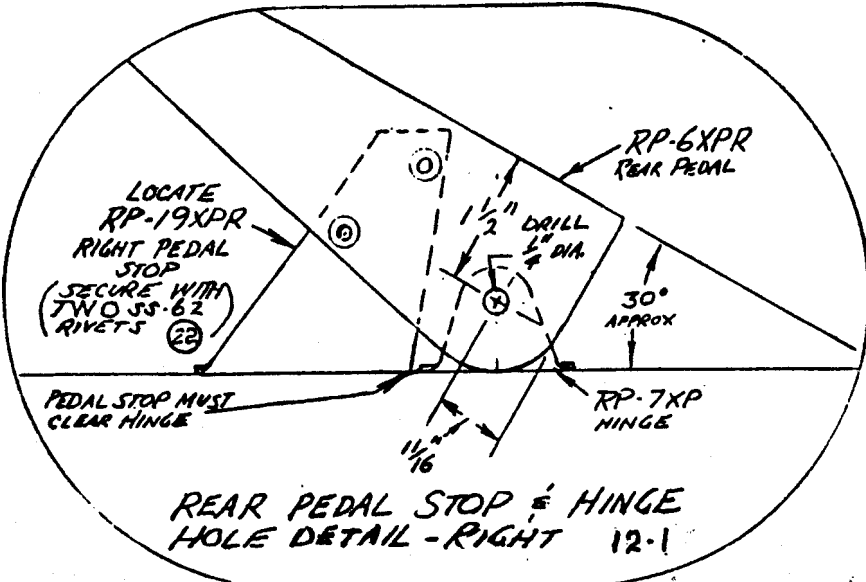
h. Control stick installation - rear. Using another pair of bearing blocks (CS-51XP), mount the rear end of the control stick sub-assembly in the rear landing gear bracket (LG-1D). Make sure that the control sticks move freely in both directions. Details 14B & C.

.RP.] P	
Detail	12-1 - 12-2
Model	XP-503/MU-532

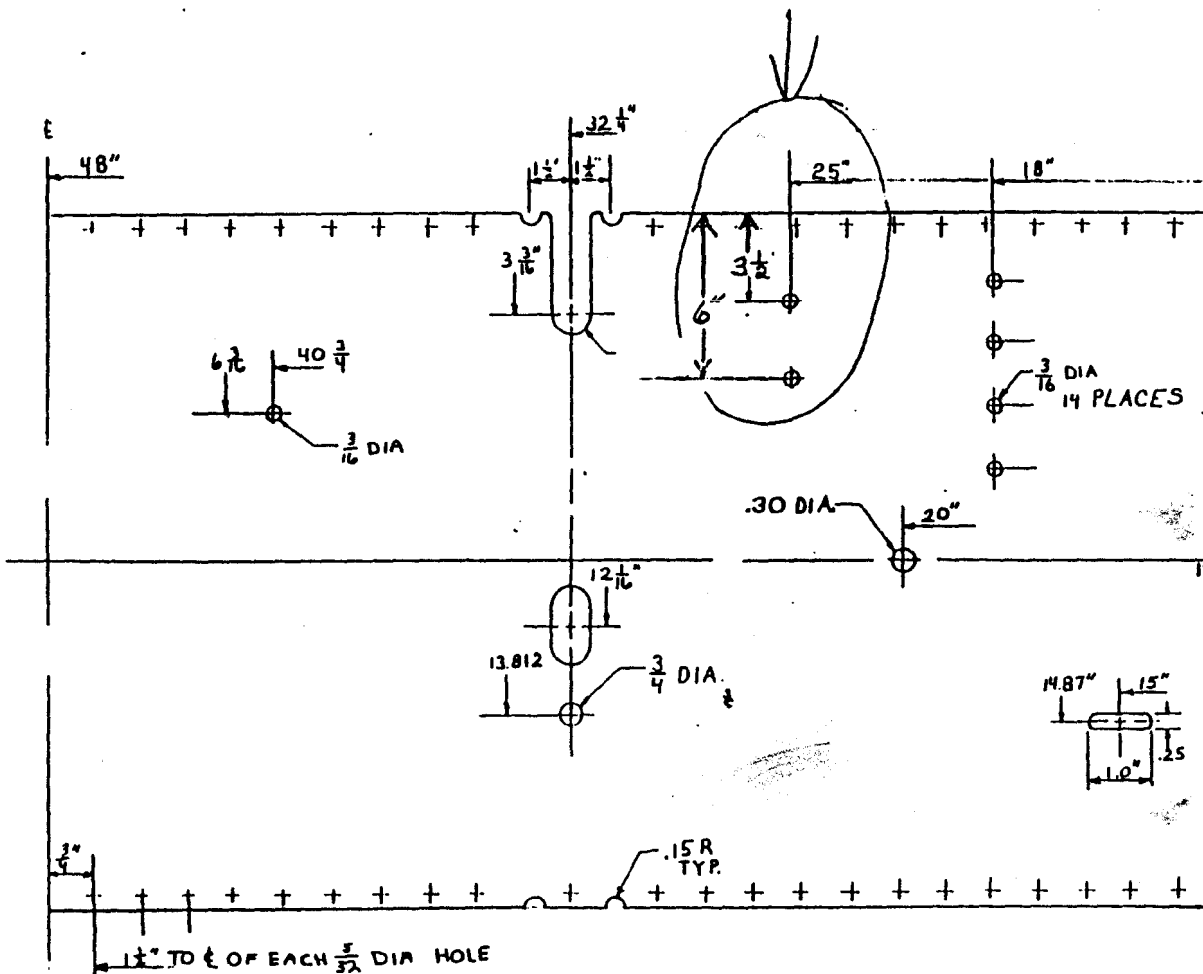
RP 9



V-111 1



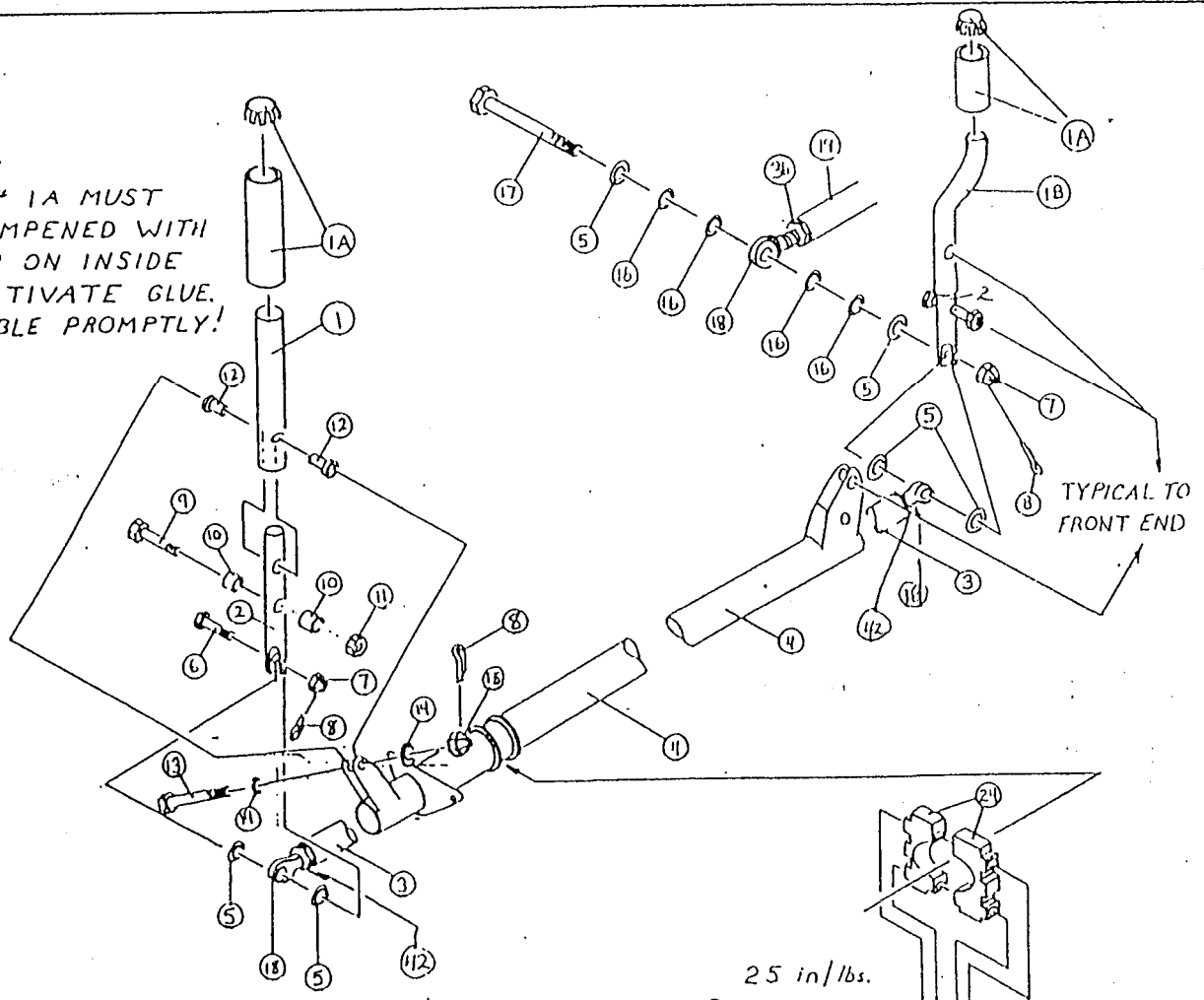
Note: Re-Mark & drill rear pedal hinge holes as shown. Fo



FLOOR PAN
LEFT FRONT
ALL MODELS

17-11-2

NOTE:
ITEM # 1A MUST
BE DAMPENED WITH
WATER ON INSIDE
TO ACTIVATE GLUE.
ASSEMBLE PROMPTLY!

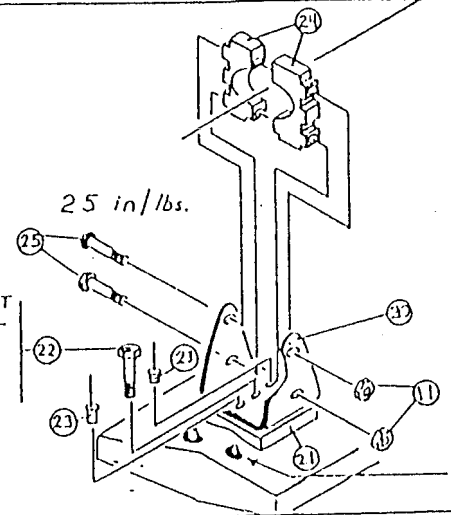


FRONT

NOTE:
SEE DETAIL 13 FOR PLACEMENT
OF ITEM # 20, 21.

SECURE AT
BOTTOM OF
FUSELAGE
WITH
7A & 26

25 in/lbs.



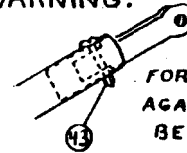
CS STO
SECURE
AA66 RI

V-111.2

Detail 14B

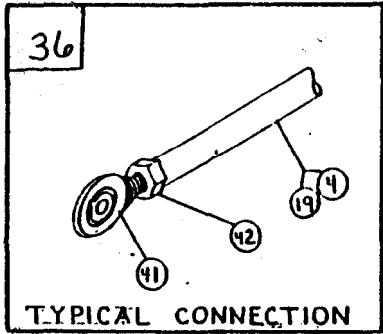
NOTE: MAX. OF 3 THREADS SHOULD SHOW ON ITEM NO. 41 ON TYPICAL CONNECTION.

WARNING:



FORK, # 40 MUST BE AGAINST EDGE OF #32 BEFORE DRILLING

FORK USED ON XP 50

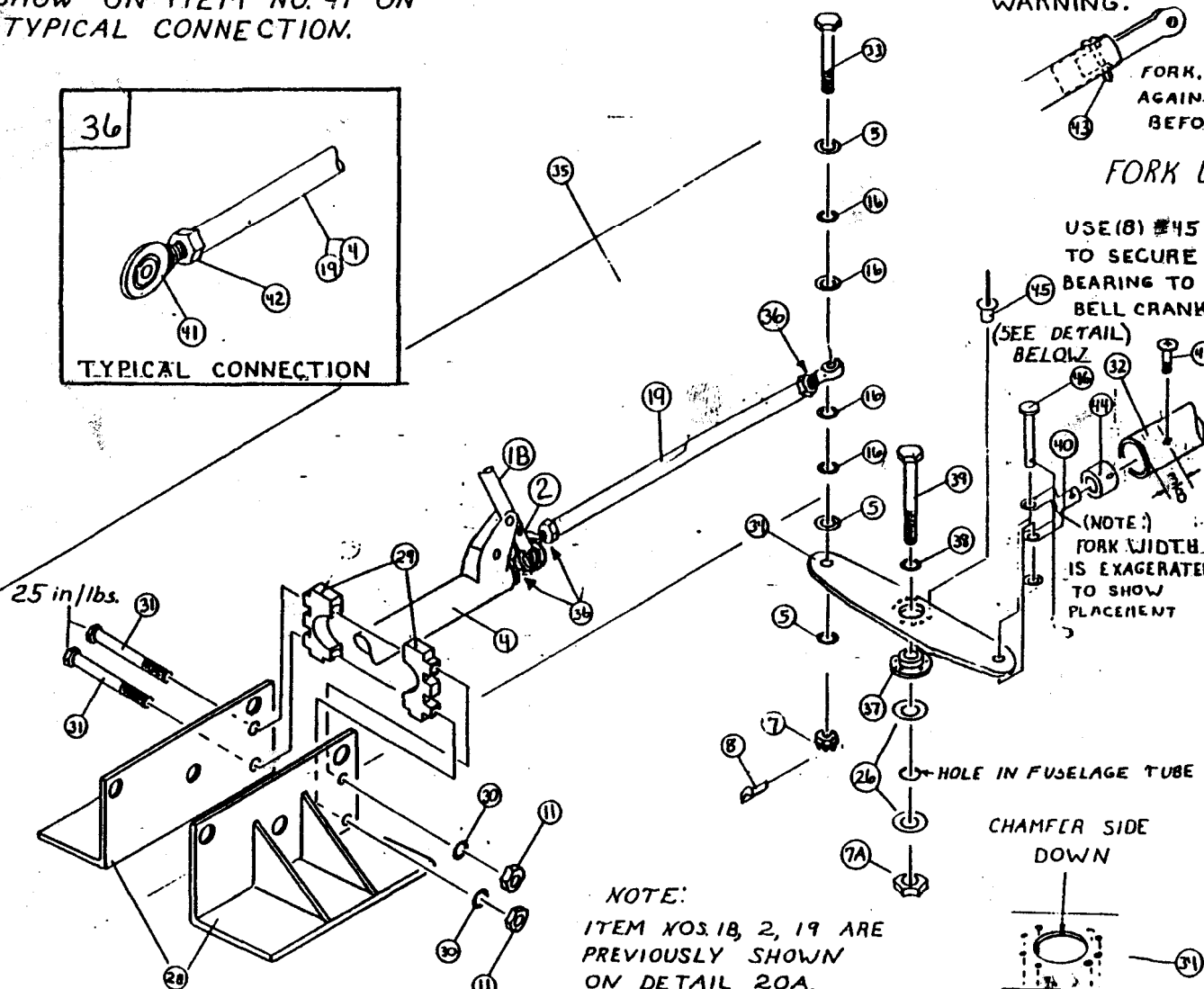


USE (8) #45 TO SECURE BEARING TO BELL CRANK (SEE DETAIL) BELOW

(NOTE) FORK WIDTH IS EXAGGERATED TO SHOW PLACEMENT

BILL OF MATERIALS		
CODE NO.	PART NO.	QTY
28	LG-1D	
29	CS-51XP	(CS)
30	3FW	(1)
31	AN3-21A	(CS)
32	CS-62XP	
33	AN3-11	(CS)
34	CS-63XP	(CS)
35		
36	DIAGRAM	
37	CS52XP	(CS)
38	4 LFW	(CS)
39	AN4-62A	(CS)
40	MS 27976-12F	
41	CS-75D	(CS)
42	3-HNF	(3)
43	2-LN	(2)
44	CS 64XP	(CS)
45	SS-44	(2)
46	MS 2-C16	(CS)
47	MS-27976	(CS)

REVISIONS		
NO.	DATE	BY
1	4-22-87	24
2		
3		
4		



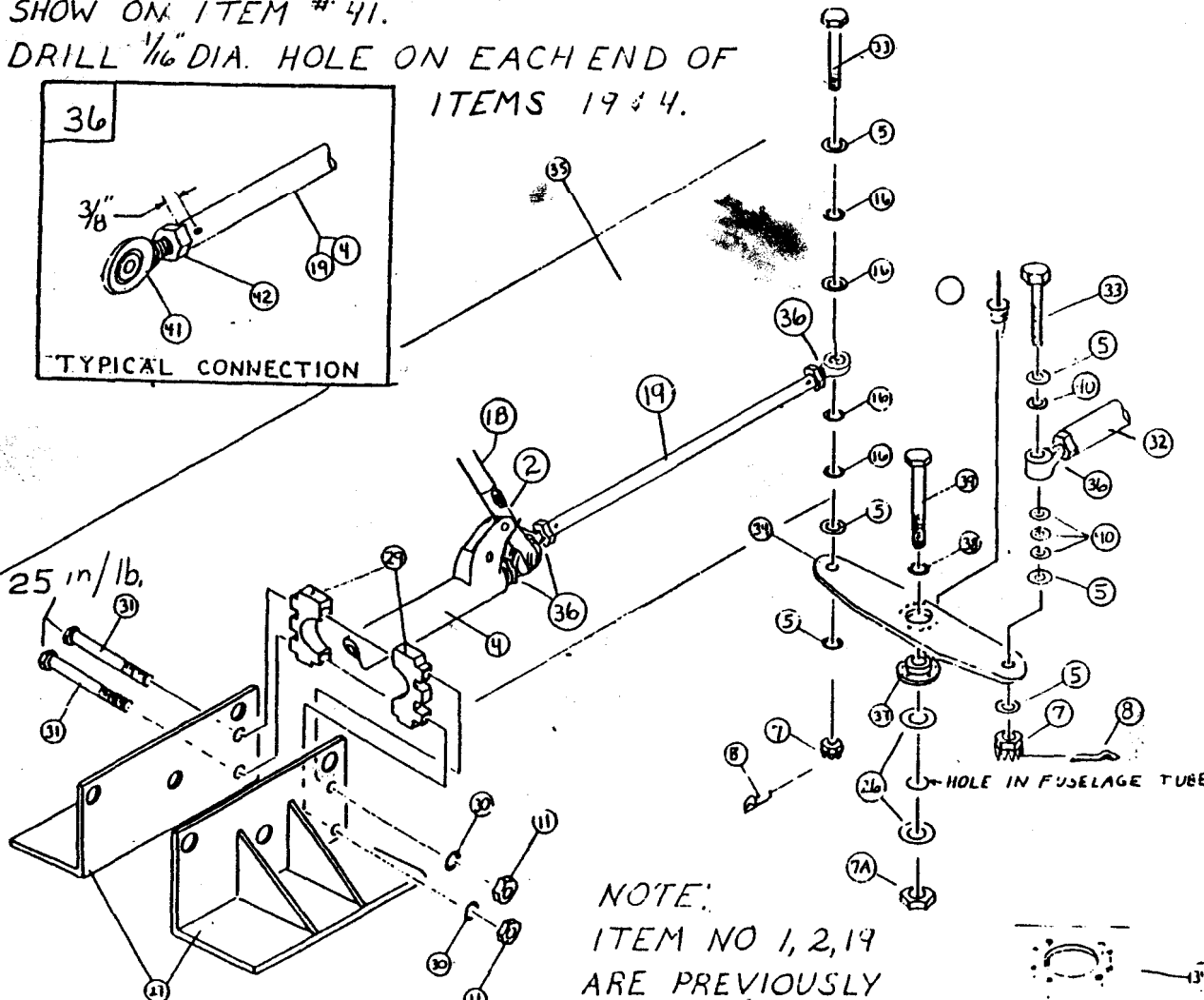
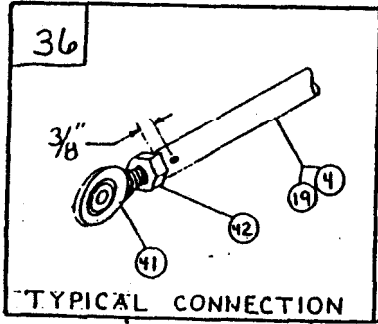
NOTE: ITEM NOS. 18, 2, 19 ARE PREVIOUSLY SHOWN ON DETAIL 20A.

NOTE: DO NOT DRILL OR RIVET 4 DARKENED IN FILE

Detail 14c

NOTE-MAXIMUM OF 3 THREADS SHOULD SHOW ON ITEM # 41.

DRILL $\frac{1}{16}$ " DIA. HOLE ON EACH END OF ITEMS 19 & 4.



BILL OF MATERIALS			
COMP NO	PART NO.	QTY	UNIT
27	LG-1D		
28			
29	CS 51XP		
30	3FW	(14)	
31	ANJ-21A	(3)	
32	CS-62XP		
33	ANJ-11	(3)	
34	CS-53XP		
35			F
36	DIAGRAM		T
37	CS52XP		
38	4 LFW	(5)	
39	AN4-62A	(2)	
40	3FW	(14)	
41	CS-75 D		M
42	3 HNF	(13)	H

NOTE:
DO NOT DRILL OR RIVET 4 DARKENED IN HOLES

REVISIONS			
NO	DATE	BY	CO
1	3-11-87	3/2	D
2	4-30-87	3/2	D

i. Connecting rear push rod. Connect the front end of the short (CS-57XP) to the rear control stick and the rear end temporarily to the left bellcrank (CS-53XP). (Current diagrams show it attached to the right end of crank. Nothing will be attached to the right end.) Details 14B & C.

V-12

D. UPPER FUSELAGE

1. Front and rear seat belt brackets (SA-7D).

a. Lay the harnesses out in place. Starting at the shoulder harness points, move down the harness making sure there are no twists and that all face up. The lap belt buckle should be on the right side. Double check you before starting to attach the harness.

b. Attach the seat belt brackets to the sides of the floor pan. Use a tape a wrench to a rod, a wing rib batten will do. This time, the washer (5LFW and 5LN, respectively) will be on the inside. Position the seat belt about 45 degrees. Details 7 & 11.

2. Pre-assembly, upper fuselage tubes.

a. Debur all tube ends and holes. Round the corners of front and rear mounts (UF-12XP and UF-16D).

b. Insert split steel bushings (UF 8D) with plastic grommets (UF-10D) at both ends of the forward up tube (UF-1XP), the rear up tube (UF-4XP for the MU-532, and the diagonal up tube (UF-3XP). Squeeze the bushing with pliers and insert into the holes drilled to 3/8" diameter. Tap with a soft hammer of brass, copper or wood until flush on both sides - or from each side. Details 15A - F.

c. Insert plastic grommets (UF-10D) in the motor mount tube (XP-503 drive: UF-2XP; XP-503 gear drive: UF-52XP; MU-532: UF-2D5). Detail 15D, E and F.

d. Insert long plastic plugs (UF-15B) into the tops of the down tubes (UF-15XP) and transfer drill both sides.

3. Assembly, upper fuselage tubes.

a. Install front up tube (UF-1XP) in the front landing gear bracket. Make sure that its lower end does not cause the control stick assembly to bind. If there is any interference at all, file the lower end of the up tube to provide clearance.

clearance. Detail 15A.

b. Be sure that the front seat belt and shoulder harness are free before adding down tubes to the front up Tube. Loop the harness over the up shown in Detail 15D, E, H and I.

c. Install a front down tube (UF-15XP) and one side of the front bracket (UF-12XP) on one side of the front up tube and secure loosely, top and bottom. Attach the second down tube and second half of the front wing bracket to the up tube loosely. As you try to swing the bottom end of the down tube into position, downward pressure on the landing gear anchor plate and upward pressure on the fuselage tubes. The combination will enable you to swing the bottom of the down tube into position. Secure as shown in Details 15 F & G.

d. Install the rear up tube (UF-4XP for the 503 and UF-4MU for the 503MU) and the rear landing gear bracket (LG-1D) and secure as in Details 15B & C.

e. Slide the rear anchor loop of the rear seat belt and harness over the rear up tube before adding any other tubes and fittings. Anchor the harness to the rear up tube 3" from the top of the tube using an SS-64 rivet and a 3-PW washer. & E.

f. Attach the diagonal up tube (UF-3XP) at its upper end only, to the rear up tube using rear wing mount brackets (UF-16D). Make sure the shoulder harness can pass on either side of the diagonal up tube.

g. For the MU-532 only, add 2 down tubes (UF-15MU) following the procedures used for the front down tubes. Secure them top and bottom. Detail 15G.

h. For the XP-503 only, attach the motor support cables (CD-2MS) to the outer sides of the rear wing mount brackets on the lower rear bolt (AN4-23A) as shown in Detail 15D. Attach the tangs for the lower end of the motor mount cables to the edges of the floor pans as shown in Detail 30. Prepare, but do not swage the motor mount cables until the wing to main tube cables are swages. Then tighten and secure the motor mount cables using the procedures described in Section V.H.

i. Add motor mount tube UF-52D for the XP-503 and UF-2D5 for the 503MU to the tops of the 2 up tubes in between the 2 pairs of wing mount brackets (front - UF-12XP, rear - UF-16D). Slide the anchor part of the front seat belt and harness over the motor mount tube.

UF-D

DETAIL 15-A

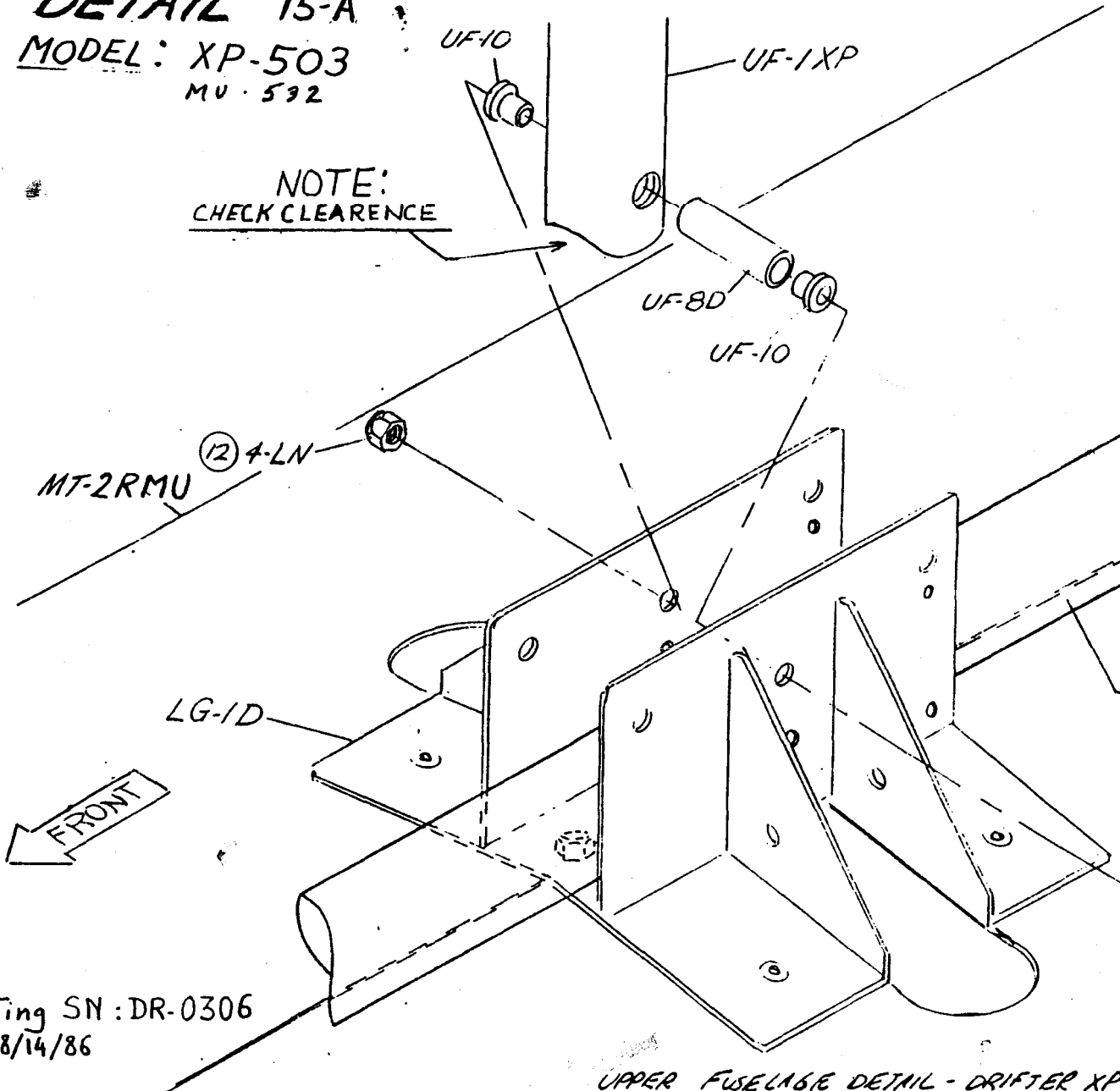
MODEL: XP-503

MU-532

HARDWARE GROUP LIST

(3) (12)

NOTE:
CHECK CLEARANCE



V-14.1

Starting SN: DR-0306
FA 08/14/86

UPPER FUSELAGE DETAIL - DRIFTER XP

UF-D

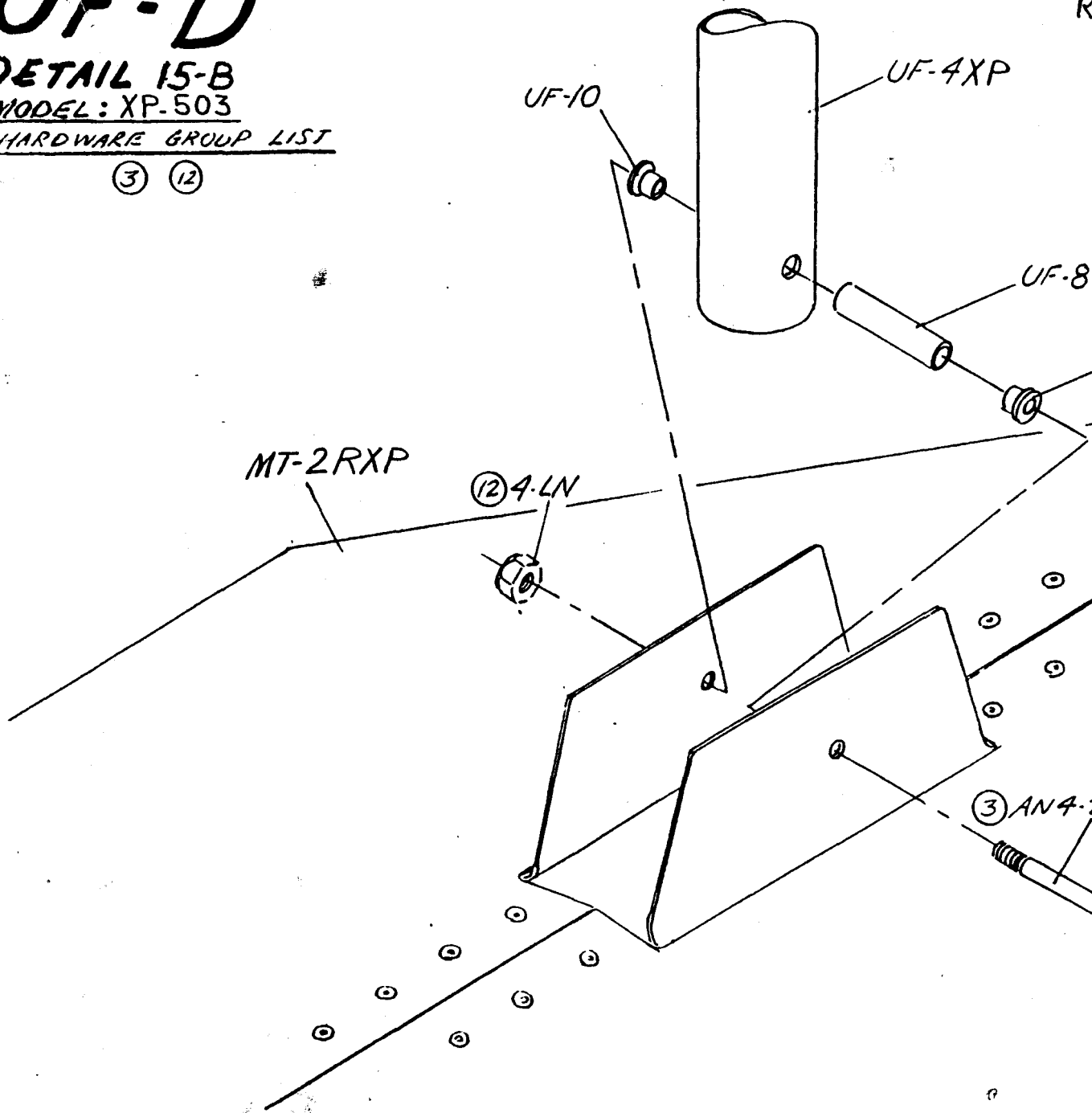
DETAIL 15-B

MODEL: XP-503

HARDWARE GROUP LIST

(3) (12)

V-14.2



FR 08/14/86

UPPER FUSELAGE DETAIL -15B

UF-D

DETAIL 15-C

MODEL: MU-532

HARDWARE GROUP LIST

(3)

(12)

REAR

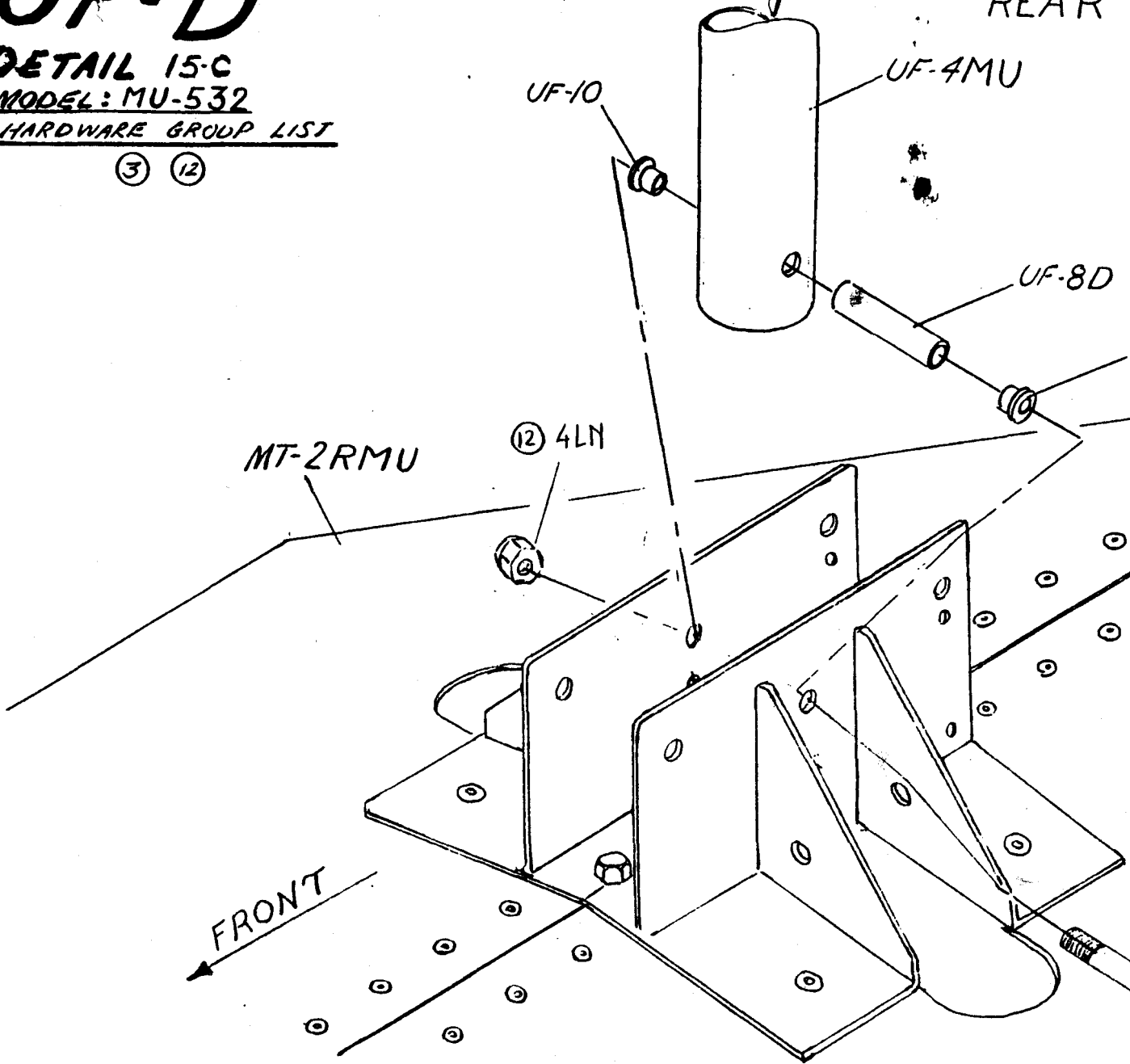
V-14.3

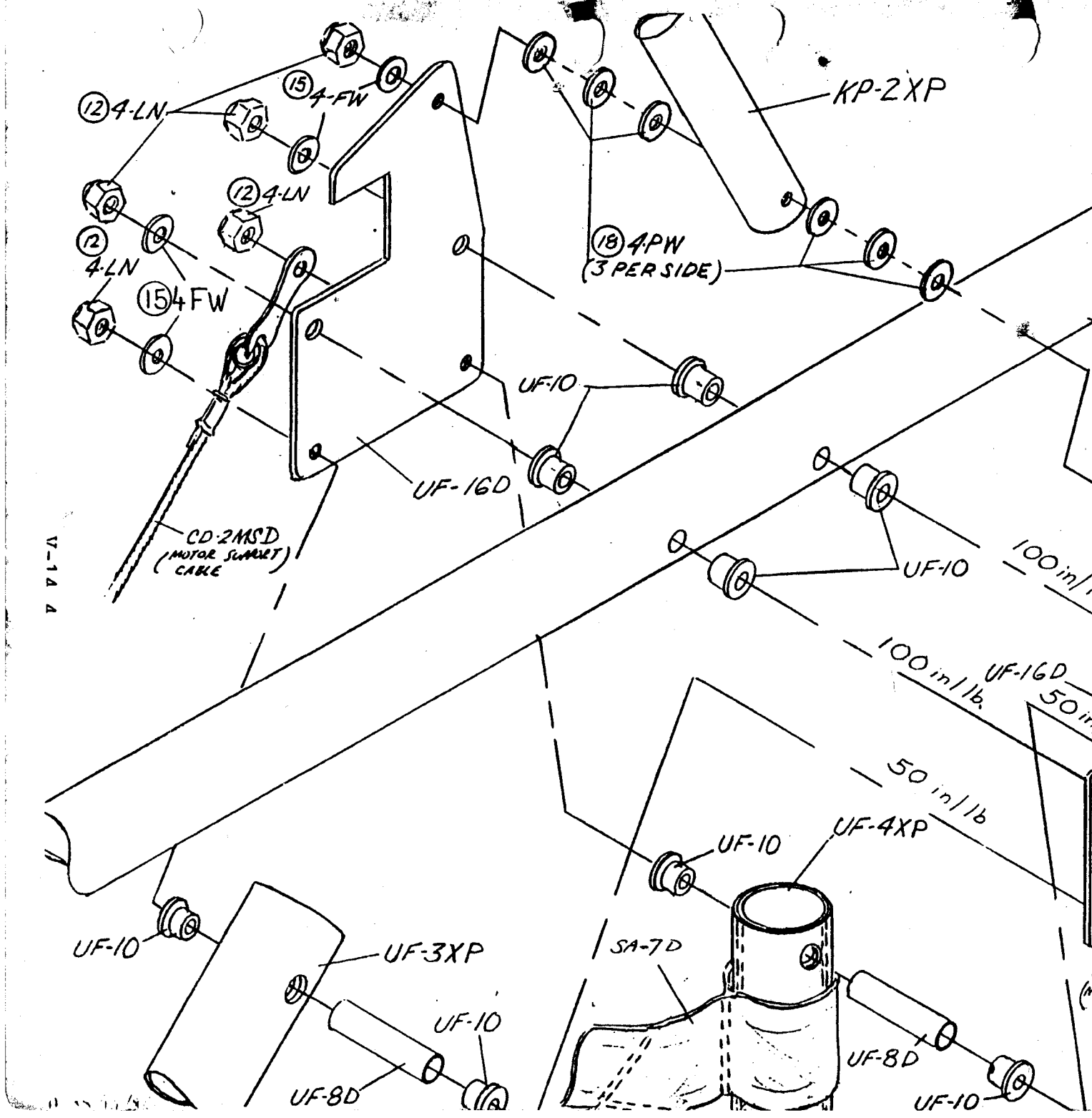
FRONT

Starting SN: DR-0274

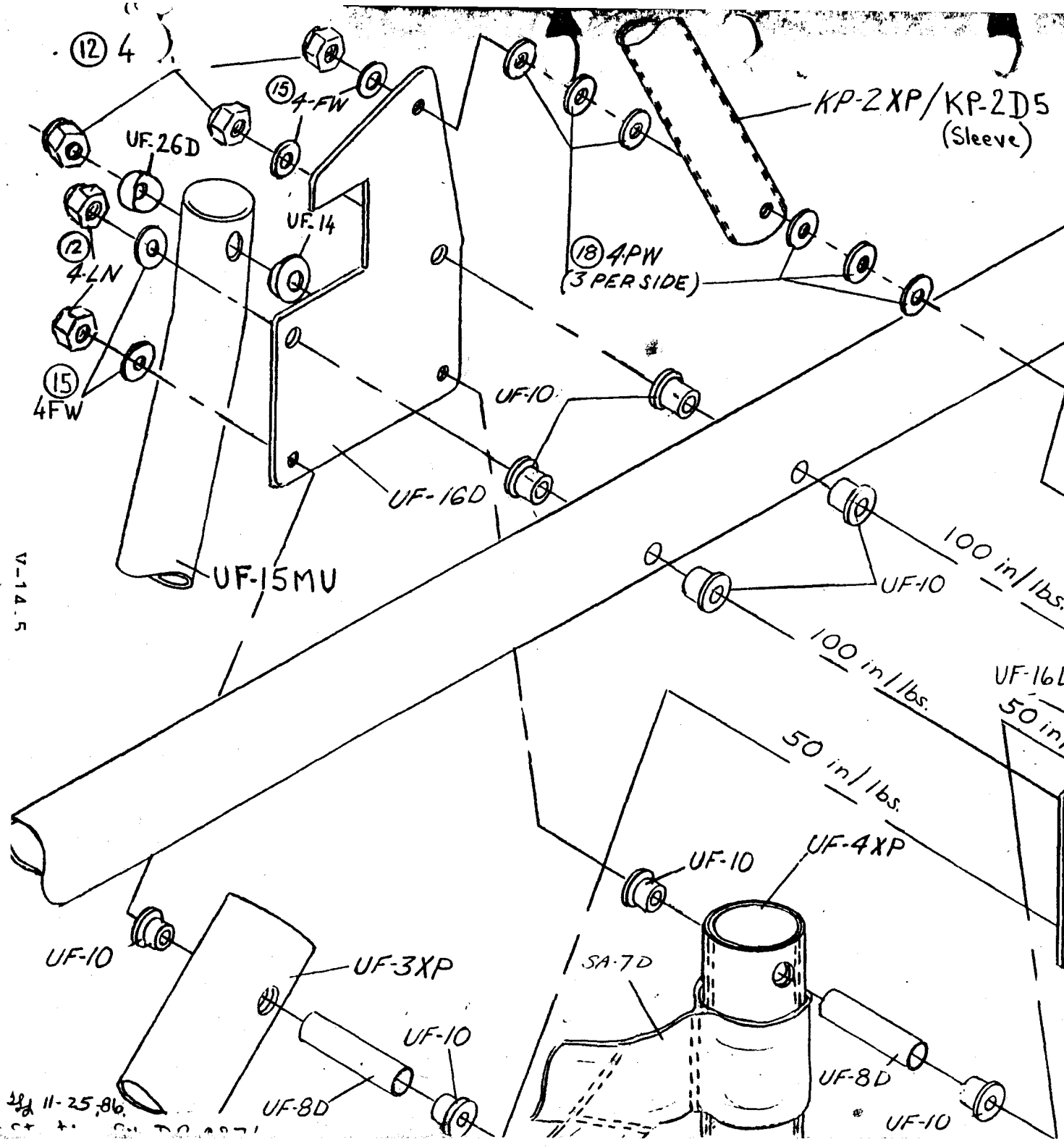
11-25-96

UPPER FUSELAGE DETAIL - 15C





V-11-A



V-14.5

11-25-86

UF-D

DETAIL 15-F
MODELS: XP-503

4-LN- MU-532

⑫

V-11-A

UF-26D

⑫
4-LN
4FW
⑮

UF-14

UF-10

UF-3D

UF-15XP

UF-1XP

UF-10

UF-25D

UF-12XP

UF-10

UF-10

UF-12XP

50 in/lb.

UF-14D

UF-10

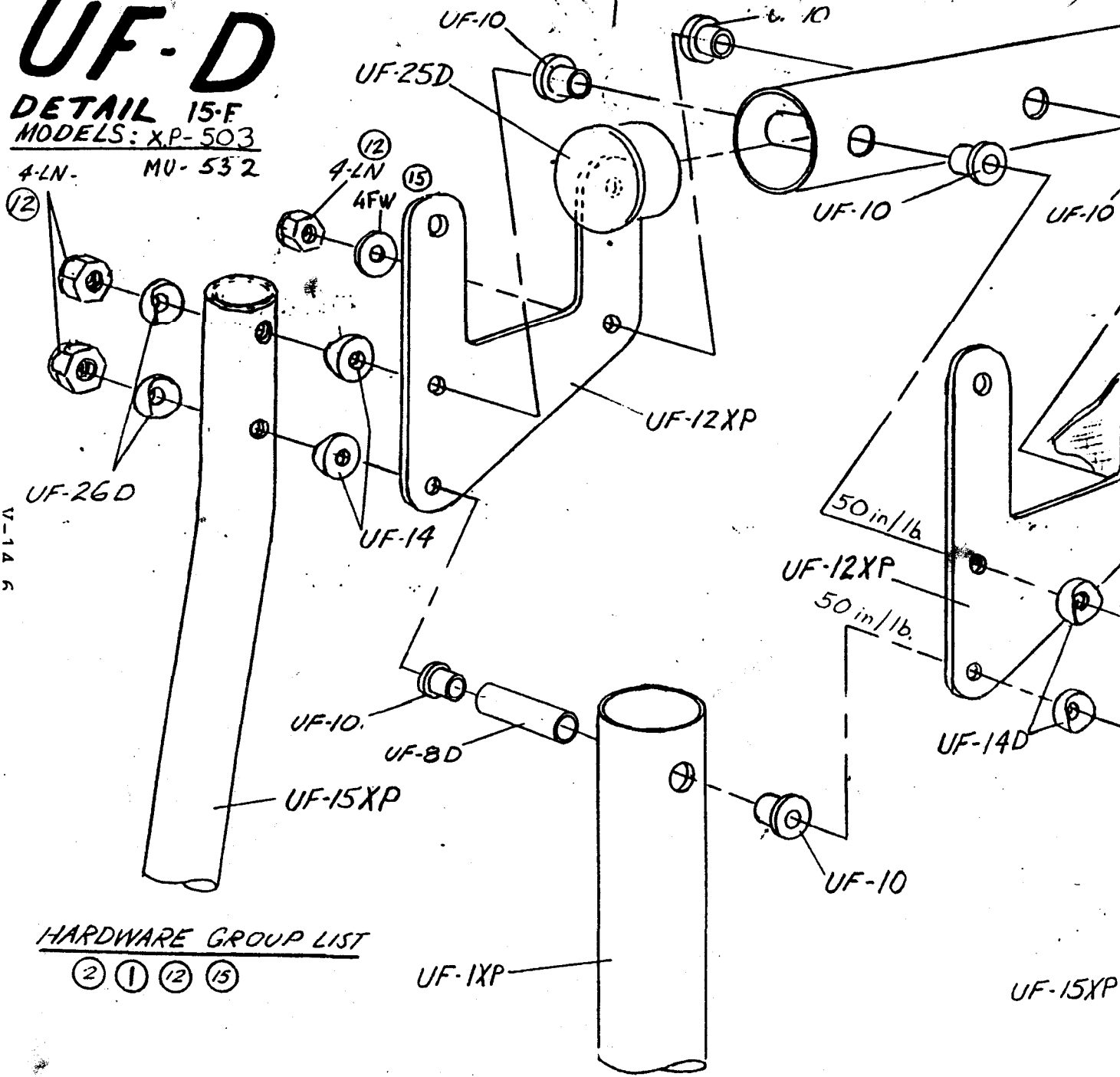
UF-15XP-

HARDWARE GROUP LIST

- ②
- ①
- ⑫
- ⑮

Starting SN: DR-0306

UPPER FACE LAGE DETAIL



UF-D

DETAIL 15-G

MODEL: MU-532 ⚡ XP-503

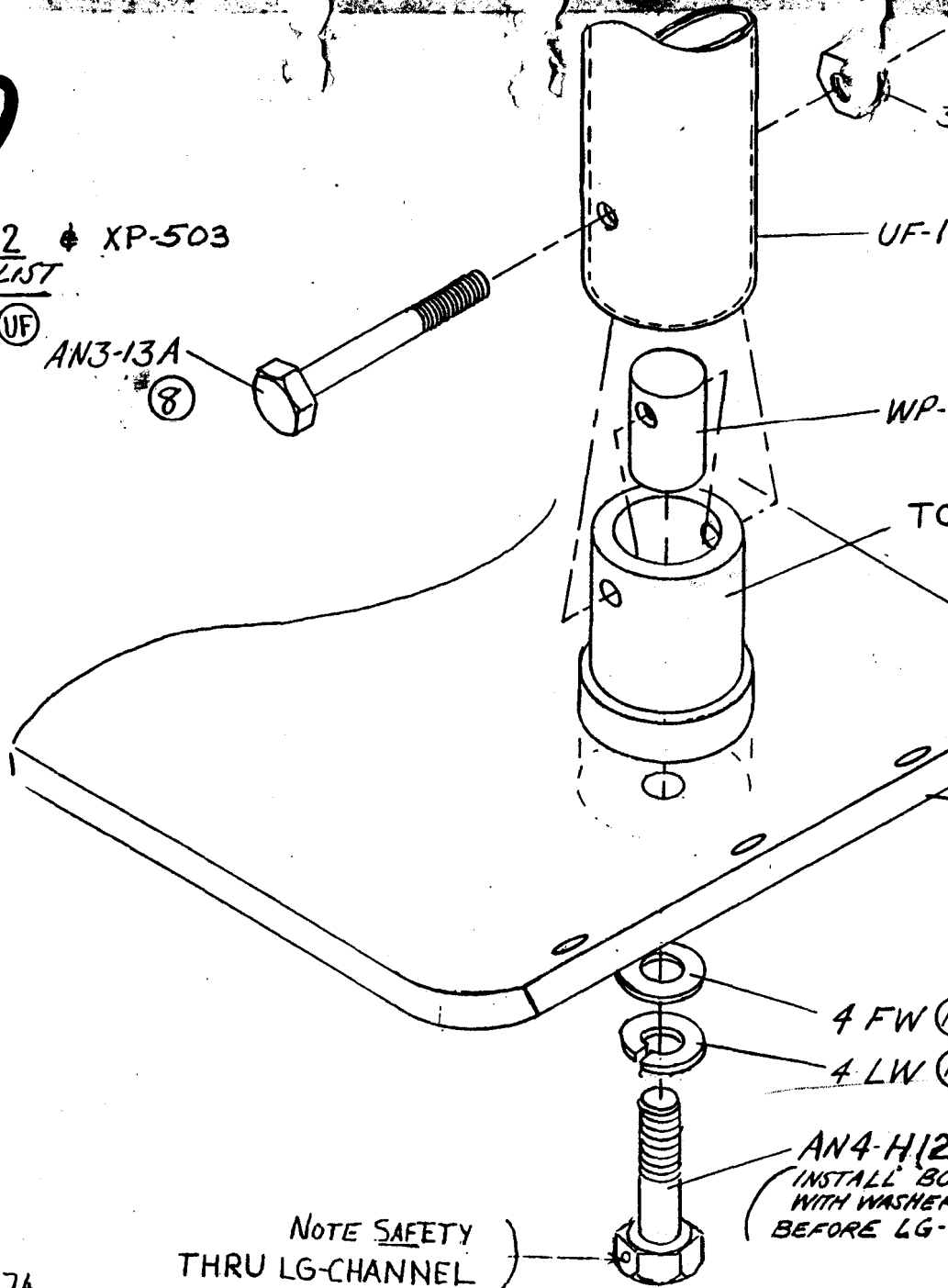
HARDWARE GROUP LIST

⑧ ⑪ ⑮ ④

AN3-13A

⑧

V-14.7



NOTE SAFETY
THRU LG-CHANNEL

AN4-H12
(INSTALL BO
WITH WASHER
BEFORE LG-

Starting SN: DR-0274
FA 08/14/86

5
UPPER FUSELAGE DETAIL

UF-D

DETAIL 15-H

MODELS: XP.503

HARDWARE GROUP LIST

- (5) (12) (15) (17) (27)

V-14.8

NOTE:
MAKE SURE BELT
BUCKEL IS RIGHT
SIDE UP BEFORE
MOUNTING TO UF-52

SA-7D
SHOULDER
HARNASS

UF-1XP
FORWARD
UP-TUBE

UF-52XP

NOTE
PRE-ASSEMBLE
UPPER FUSELAGE,
WITH FORWARD UP-
TUBE (UF-1XP) 90°
LOCATE HOLE FOR
ALUMINUM BRACKET
(UF-35D) ON
MAIN FUSELAGE

UF-3XP
DIAGONAL
UP-TUBE

UF-4XP
REAR
UP-TUBE

SA-7D
SHOULDER
HARNASS

90°

UF-35D
ALUM. BRACK

UF-37D -
LEXAN V SADDL
2 RQD

AT BOTTOM
OF FUSELAGE

1/4" HOLE

(15) 9

4-FW

4-LN

(12)

DIAGONAL
MAIN FUSELAGE

Starting SH: DK-0306
FA 08/15/86

UPPER FUSELAGE DETAIL - DRIFTER XP & MU

UF-D

DETAIL 15-I

MODELS: MU532

HARDWARE GROUP LIST

- (5) (12) (15) (17) (27)

SA-7D
SHOULDER
HARNES

NOTE:
MAKE SURE BELT
BUCKEL IS RIGHT
SIDE UP BEFORE
MOUNTING TO UF-52

V-14 0

UF-1XP
FORWARD
UP-TUBE

UF-52XP

UF-3XP
DIAGONAL
UP-TUBE

UF-4.MU
REAR
UP-TUBE

SA-7D
SHOULDER
HARNES

UF-15M

UF-35D
ALUM. BRACKET

UF-37D
LEXAN V SADDLE
2 RQD

AT BOTTOM
OF FUSELAGE

1/4" HOLES

(15)

4-FW

4-LN

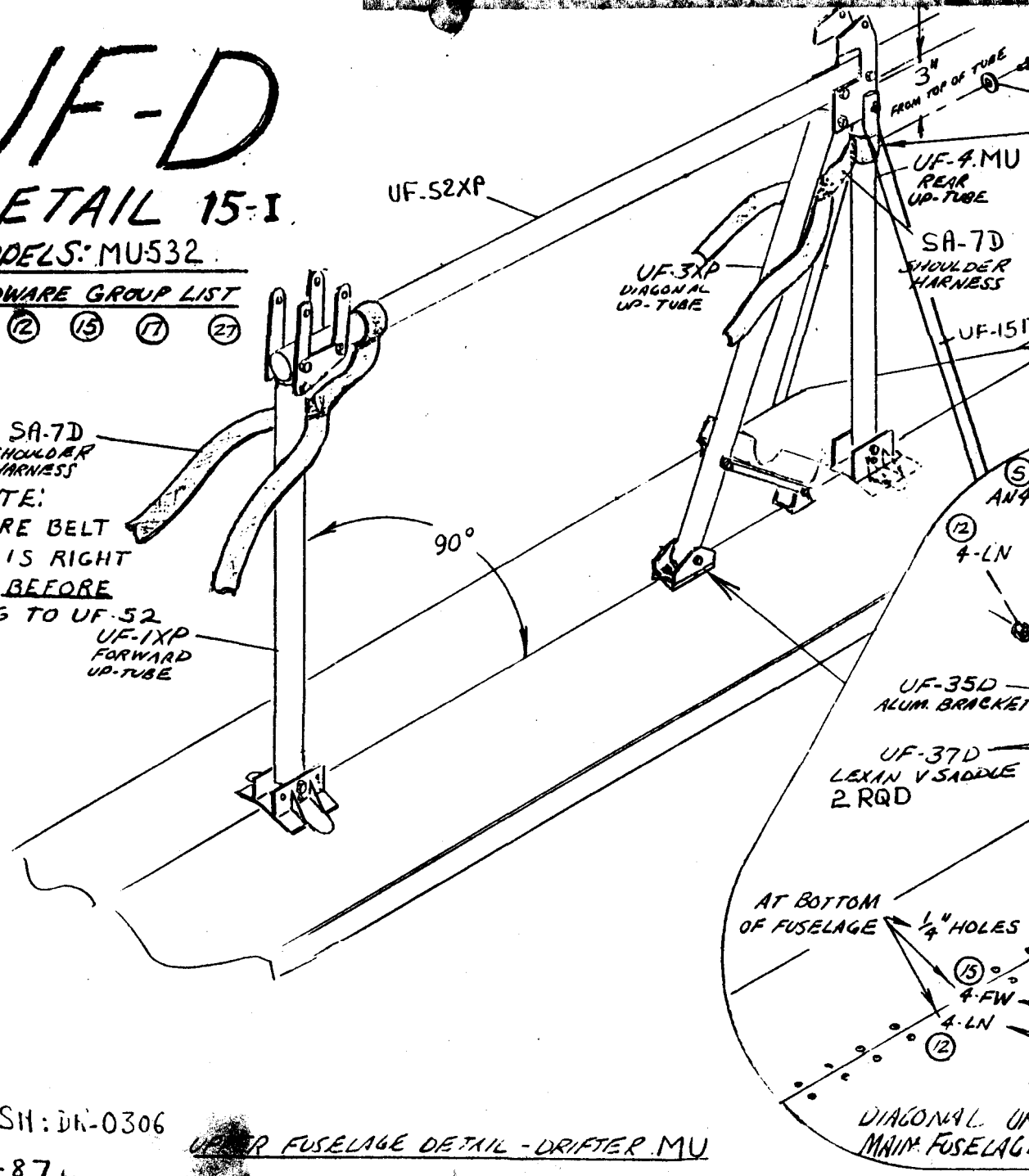
(12)

DIAGONAL UP
MAIN FUSELAGE

Starting SH: DR-0306

3-11-87

UPPER FUSELAGE DETAIL - DRIFTER MU



UF-D

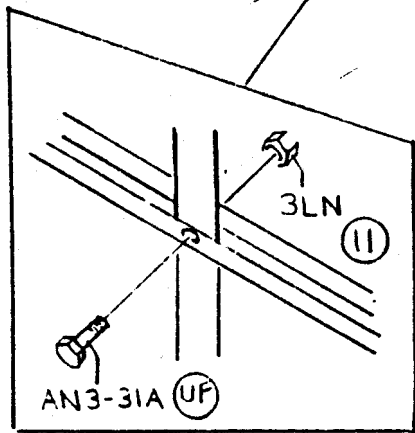
DETAIL 15-J

MODELS: MU532 & XP563

HARDWARE GROUP LIST

- (5) (1) (11) (12) (14) (15)

V-14.10



UF-15XP
DOWN TUBE

UF-1XP
FORWARD
UP TUBE

UF-34XP
CROSS BRACE

UF-15XP
DOWN TUBE

LG-2D
ANCHOR PLATE

ANCHOR TOP
STRAP-SS64
& 4PW 4" DOWN
FROM TOP OF TANK

3LN
(11)

AN3-204

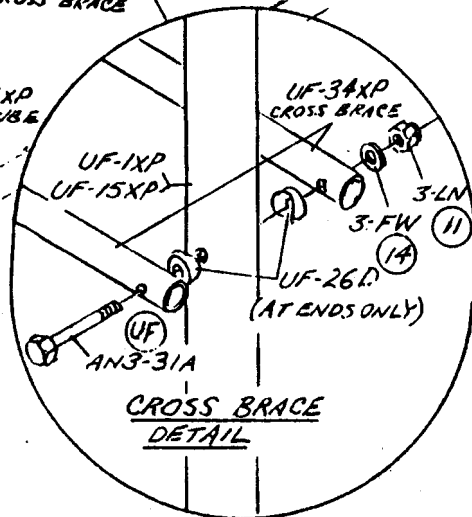
UF-3XP
DIAGONAL
UP-TUBE

UF-18D
TRAY SUPPORTS

UF-17XP
TANK TRAY

LOCATE
SUPPORT
MAIN F
DIAGON
TRAY SU
TO DIAG
TUBE.

UF-15

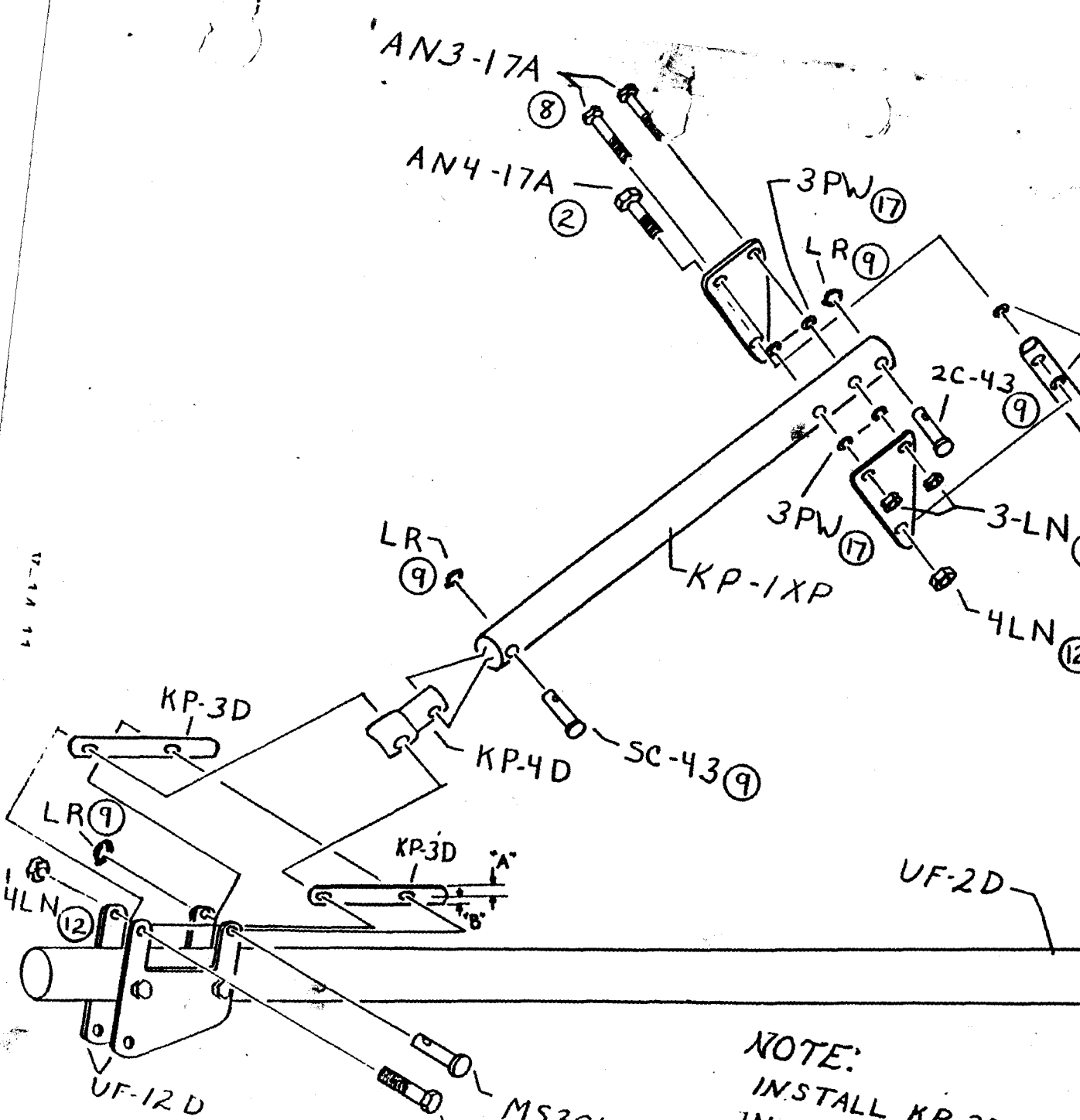


CROSS BRACE
DETAIL

TW 6D
ALUMINUM
DRILL
AT NO
LOCA
UF 37

UPPER FUSELAGE DETAIL - DRIFTER MU

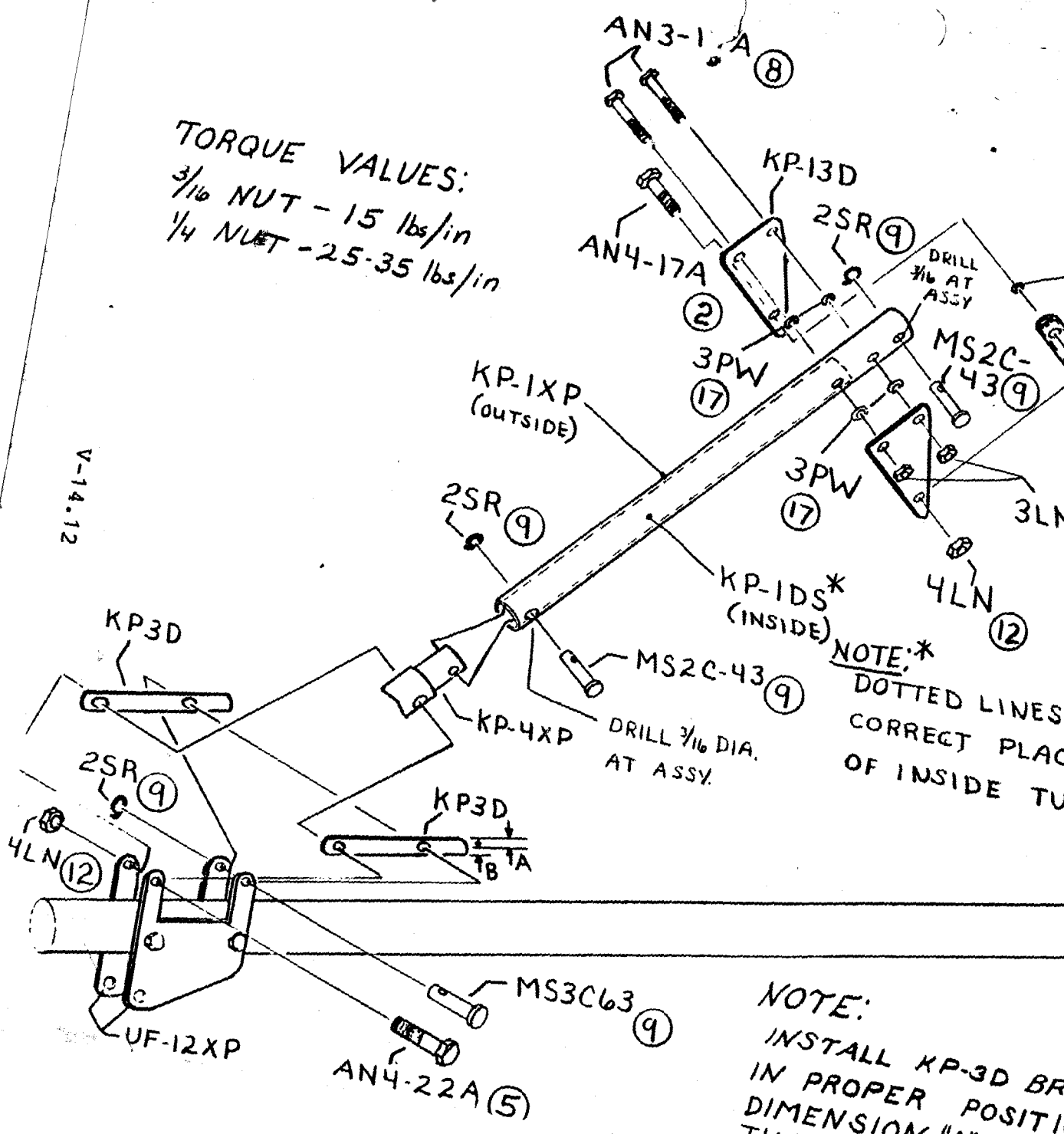
11-25-86



NOTE:
 INSTALL KP-3D BRA
 IN PROPER POSITIO
 DIMENSION "A" BEING
 THAN DIMENSION "B"

TORQUE VALUES:
 3/16 NUT - 15 lbs/in
 1/4 NUT - 25-35 lbs/in

V-14.12



NOTE: *
 DOTTED LINES
 CORRECT PLACE
 OF INSIDE TUB

NOTE:
 INSTALL KP-3D BR
 IN PROPER POSITI
 DIMENSION "A" BEIN
 THAN DIMENSION "B"

the motor mount tube before putting it into the front wing mount brackets. make sure the shoulder harness straps pass on either side of the front up plastic end cap (EC-6) to front end of motor mount tube. Details 15D, E, F

j. Add the cross tubes (UF-34XP) to the front upper fuselage tube up approximately 25" from the landing gear anchor plates on either side and down tube. Using the paper ring method, establish the position for the hole front and back of both down tubes. Center punch and transfer drill and deburr hole. With the first side bolted loosely, the aircraft level from side to side, the level of the cross tubes with the second side mark lined up with the hole, make a new set of marks with the tubes level. Transfer drill, deburr and seal sides, inserting the AN3-31A bolts from the front. Use CS-6 contour spacers, cross braces and the down tubes. Secure with 3-FW washers and 3-LN lock nuts. Tighten the center holes only after the 2 cross tubes are tightly bolted in place.

k. Pre-assemble the front and rear king posts (KP-1XP and KP-2XP respectively) according to Detail 15K & L. Pay particular attention to the sleeves (KP-1D5 and KP-2D5) to be inserted into the king posts. Join the king posts at their top ends with 2 triangular brackets (KP-13D). Connect the top end of the rear king post to the rear wing mount bracket. Join the king post (KP-4XP) to the front ears of the front wing mount brackets and wing hold down (KP-3D). Until the wing has been inserted, the king posts can be folded against each other and laid down to the rear on the motor mount tube. Take care that the bolt on the KP-1 post is not tightened to the degree that it makes the post stiff so that the top rigging plug can be installed easily.

E. FINISHING THE MAIN FUSELAGE.

1. Console panel.

a. Pre-assemble the console panel. Tape the left and right sides of console (CP-1DL and CP-1DR) to the front (curved) panel (CP-2D). When they are aligned, transfer drill 5/32" holes in 2 places on each side through the side panel into the front panel. Detail 16.

b. Assemble the console. Cut flanges on both sides of front panel so that the console will fit around the foot pegs. Place the console panel on the front end of the fuselage tube, aligning it visually with the face plate (CP-6XP) in place. Keep face plate about 1/16th" from the fuselage tube at bottom to prevent instrument vibration. Tape the console panel to the fuselage tube when properly aligned with the upper fuselage, not the foot pegs. Transfer drill and rivet locations to remaining holes to secure console together and to Fuselage Tube. Detail 16.

c. Mount face plate. With the face plate (CP-6XP) still taped in place, and drill 12 1/8" holes for #10 screws. Detail 16. (NOTE: If you are using new nose fairings with the instrument panel built into it, you may want to do something else with the console, such as making it a small locker with a face plate.)

2. Front rudder pedals.

a. Pre-assemble the rudder pedals (RP-1XP and RP-2XP), using 4 AA batteries to secure each rudder pedal bushing (RP-2D) to the pedals. Rotate the bushing on the pedal so that you need drill only one hole in the thin part of the side of the pedal. Add a heel rest (RP-5D) to each pedal. Detail 17.

b. Mount the rudder pedals on the foot peg. First, slide a bushing onto the peg and then the proper pedal, i.e., the right pedal on the right footpeg and left pedal on the left peg. Place another bushing on the outside of the rudder pedal. Do not secure either of the footpeg bushings nor add the rudder pedal spring yet. Detail 17.

c. Assemble rudder pedal connecting rods (RP-9XP) with male rod ends and threaded inserts (TH1-4-5) at front end according to Detail 17. Attach the rods (27976-12F) with a CS-64XP sleeve to the rear end of the rods. Measure and

accurately. Detail 12-2.

d. Connect the front and rear rudder pedals using the connecting rods (SA-9XP). Drill out the lower holes on the inner side of each front rudder pedal. Using the hardware shown in Detail 17, connect the front end of the connecting rods to the front rudder pedals. Adjust the length of the connecting rods so that the front and rear rudder pedals are parallel by turning the rods to lengthen or shorten them to the proper length by tightening the lock nuts on the male rod ends. Permanently connect the forks on the rear end of the connecting rods to the rudder pedals with clevis pins (MS-C11) and safety rings. Detail 12-2.

e. Position the rudder pedal push rods so that there is at least 1/2" clearance between the control stick arms and the push rods. Also, check the clearance of the push rods through the seat brackets throughout their travel. Position the rudder pedals to assure these clearances will determine their final position on the foot pegs. The outer and inner bushings (RP-2D) and the foot peg can now be secured. Accept an AA-52 rivet in the front and rear sides. Detail 17.

f. Rivet 2 CS73-XP rudder cable brackets to the pre-drilled holes on the inner side of the front rudder pedals. Transfer drill the second hole and secure the brackets with an AN3-4A bolt and a 3LN lock nut. Detail 17.

3. Front and rear seats.

a. Front seat. Place a loop of duct tape about 2 feet long by 3/4" wide on each front seat bracket. Place the front seat (SA-4XP) lightly on the tape. The seat is the one with the thicker seat. The pilot who will usually fly the plane will sit in the seat and adjust its position in relation to the rudder pedals. When adjusted to the pilot's satisfaction, check its alignment to the fuselage, seat and fore-and-aft, before drilling 3 holes through the seat bottom and seat back on each side. Secure the seat with 6 AN3-10A bolts with appropriate washers and nuts. Drill 2 1/8" holes in the rear corners of the seat, at its lowest points for tie-down purposes. Detail 11.

b. Front seat bracket. The front seat bracket is in 2 pieces (SA-15XP). The 2 pieces will fit together according to the distance the rear of the seat is from the forward up tube.

(1). Mark and drill the 2 holes in the center top of the seat.

the lower half of the bracket (SA-15XP), using the bracket itself as a template. Secure the bracket with AN3-4A bolts, pointing downward, with 3-LFW washers as retainers on the bolt head side.

(2). Adjust the position of the upper half of the bracket (SA-16XP) so that it fits snugly against the front Up Tube and the lower bracket. Clamp the lower bracket with C-clamps or vise grips. Transfer drill 2 holes in the upper bracket and 2 holes through the up tube. Be sure that the upper bracket is centered on the up tube before drilling both sets of holes.

(3). Connect the 2 bracket halves with 2 AN3-4A bolts and appropriate washers and nuts. Secure the completed bracket to the up tube with AN3-20A bolts and appropriate washers and nuts. Detail 11.

c. The rear seat position is predetermined. Place strips of duct tape on the rear seat brackets. Temporarily bolt the lower end of the diagonal up tube into the bracket (UF-35D). Position the rear seat (SA-4RXP) on the tape with a double layer of corrugated cardboard between the rear of the seat and the diagonal up tube. In addition to the exception of side-to-side alignment and squaring the seat up, that is the position in which to mount the seat. Drill 3 holes through the seat and each seat bracket. Secure with AN3-5A bolts and place the 4 corner bolts in the holes to hold the seat in position. The seat is not secure. Also drill the 1/8" drain holes. Detail 11.

d. The rear seat bracket (SA-16XP) is in 1 piece and requires no drilling. Before drilling holes in the seat back for the bracket, determine where it fits against both the seat back and the diagonal up tube. At that location, mark the bracket. Transfer drill both the 2 holes in the seat back and the 2 holes through the diagonal up tube. Mount the bracket on the tube at this time, but not on the seat back. Detail 11.

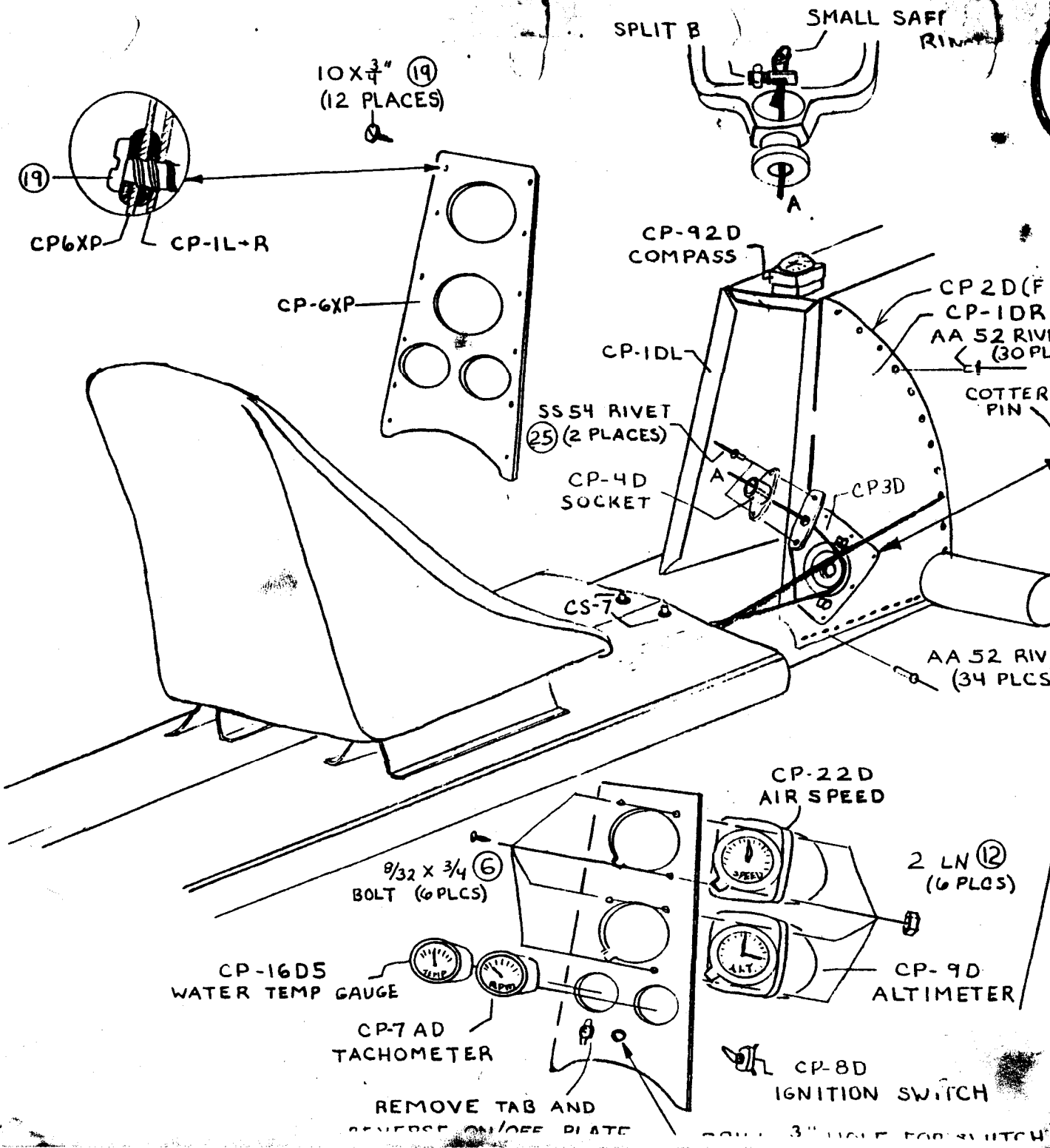
e. Now remove the rear seat in order to continue access to the area for a while longer.

4. Fuel tank tray supports.

a. Attach 2 UF-18D tray supports to the outer sides of TW-6D "U" bracket.

b. Swing the upper end of the tray supports until they are perpendicular to the diagonal up tube. This is the position in which they should be anchored.

V-18.1



REMOVE TAB AND REVERSE ON/OFF PLATE

3" HOLE FOR SWITCH

RP.DXP	
Detail	17
Models	XP.503 MV.532

RDW
 (RP) (9)
 (22)

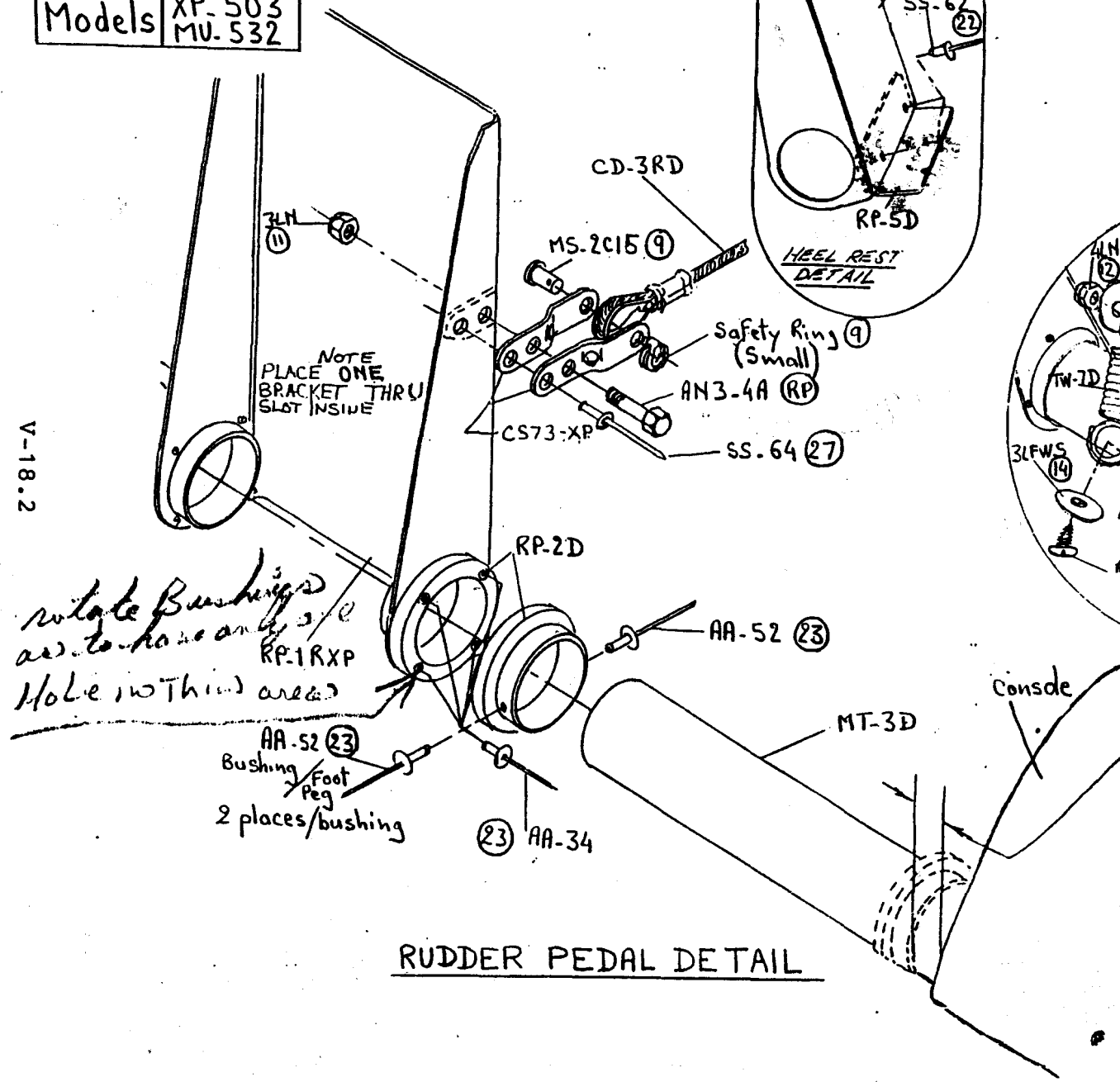
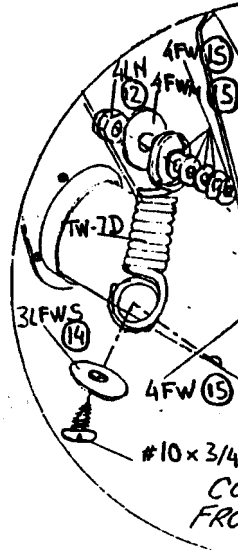
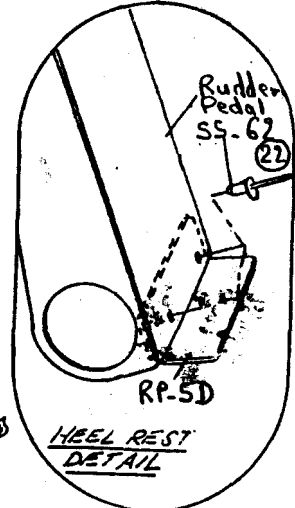
V-18.2

*rotate Bushings
 as to hole and
 Hole within area*

NOTE
 PLACE ONE
 BRACKET THRU
 SLOT INSIDE

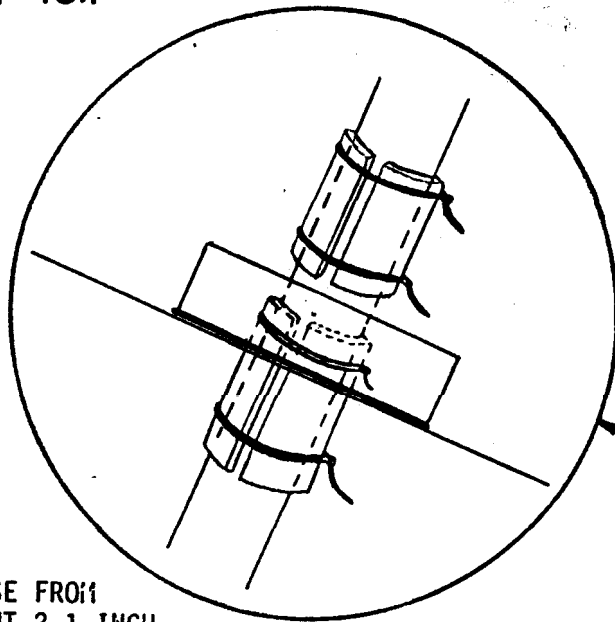
AA-52 (23)
 Bushing / Foot
 Peg
 2 places / bushing

RUDDER PEDAL DETAIL



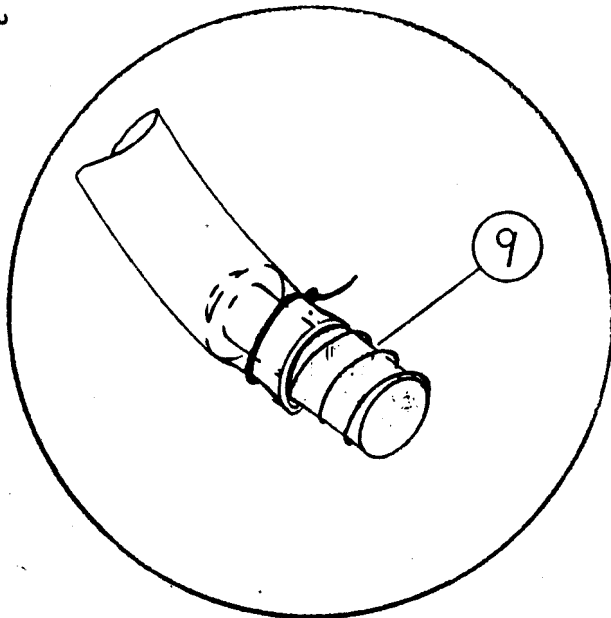
Detail 18A

GAS TANK DE
ALL MOD

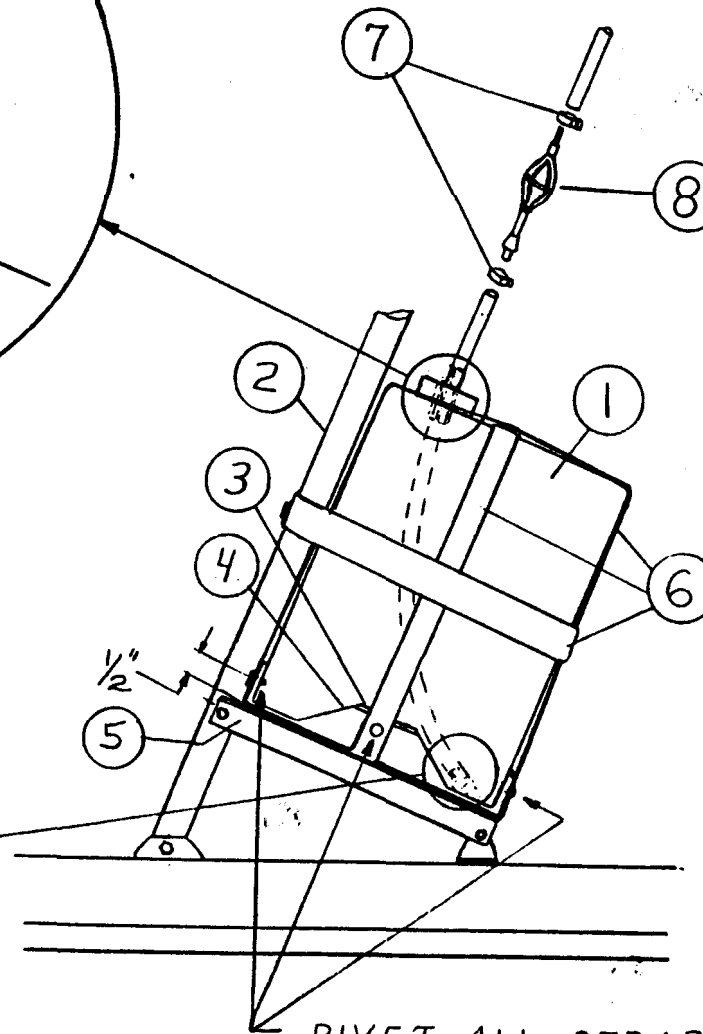


NOTE:
TO KEEP HOSE FROM
SLIDING, CUT 2 1 INCH
LENGTHS OFF END OF HOSE. WRAP AND SECURE
WITH CABLE TIES AS SHOWN.

V-18.3



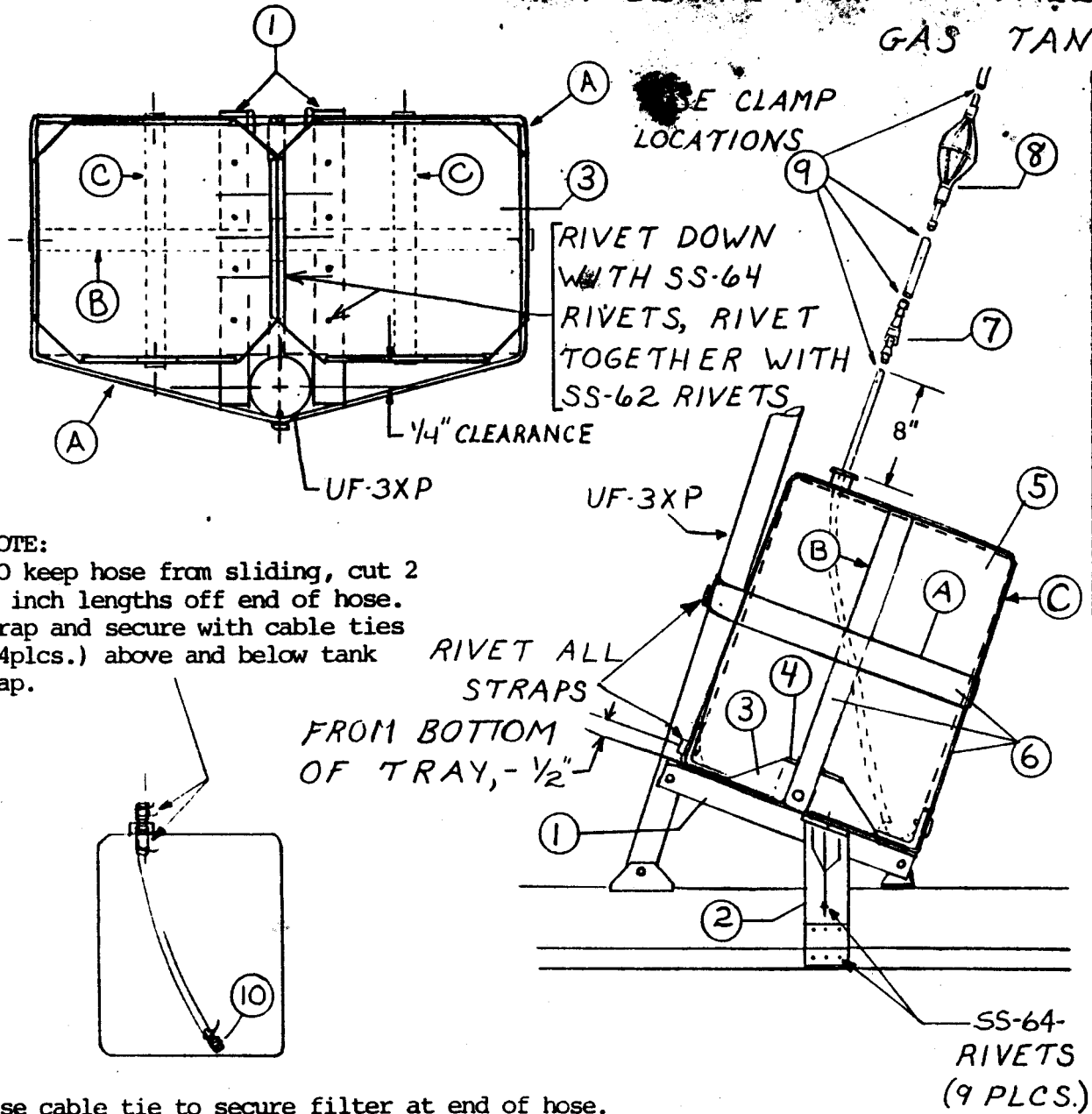
USE CABLE TIE TO SECURE FILTER AT END OF HOSE



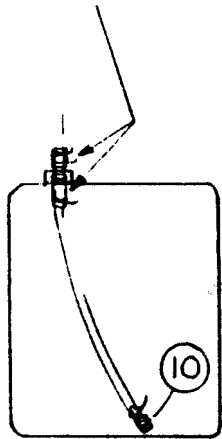
RIVET ALL STRAP
(NOTE DIMENSIO

Detail, L

DETAIL FOR 10 GALLON GAS TANK



NOTE:
 TO keep hose from sliding, cut 2
 1 inch lengths off end of hose.
 Wrap and secure with cable ties
 (4plcs.) above and below tank
 cap.



Use cable tie to secure filter at end of hose.

V-124

AL-D

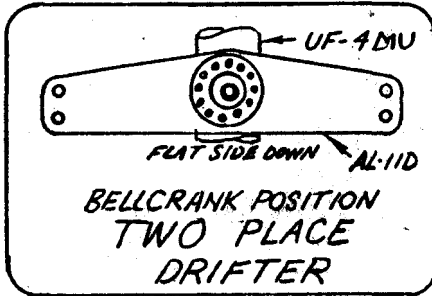
DETAIL 19

MODEL: MU 532 & XP 503

HARDWARE GROUP LIST

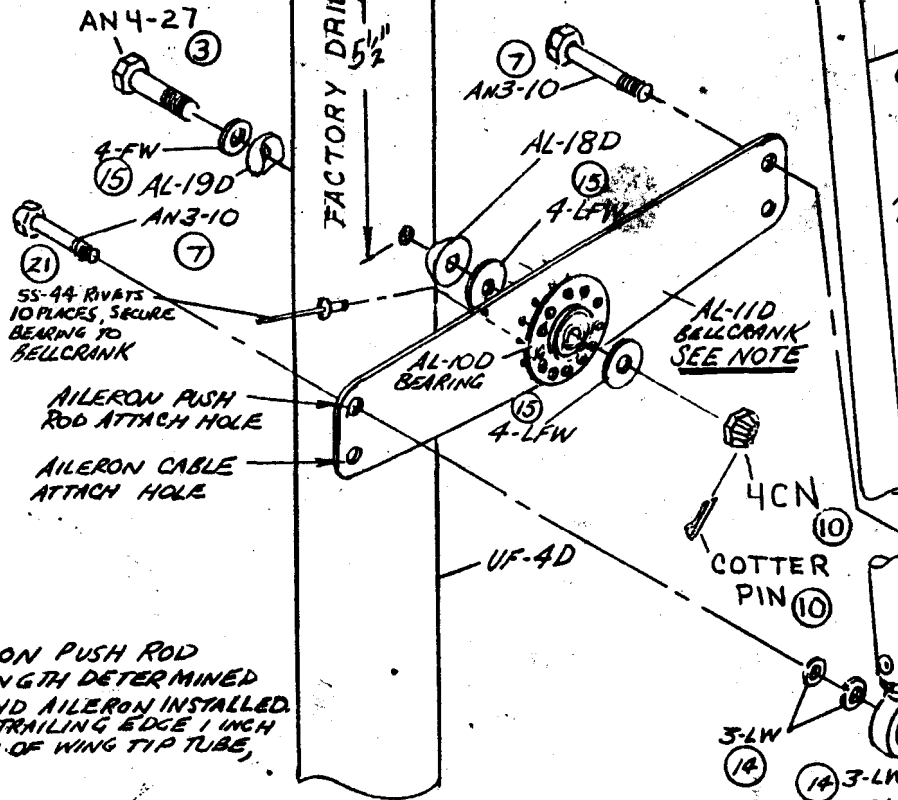
- (3) (7) (10) (13) (14) (15) (19) (21)

NOTE

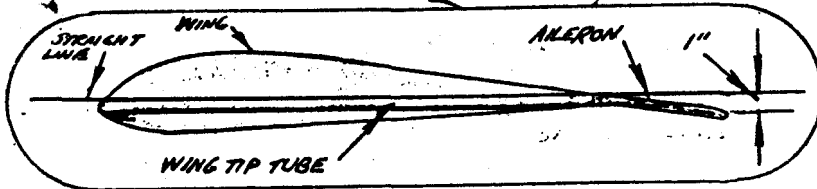


V-18.5

CABLE
V-21



NOTE: AILERON PUSH ROD (AL-9D) LENGTH DETERMINED AFTER WING AND AILERON INSTALLED. SET AILERON TRAILING EDGE 1 INCH LOWER THAN RUN OF WING TIP TUBE, SEE BELOW.



54

AILERON BELLCRANK DETAIL

Making sure the tray supports are level (assuming the fuselage is level side mark, punch and transfer drill a 3/16" hole through the diagonal up tube for bolt which will anchor the tray supports. Do not insert this bolt yet. De

5. Fuselage electrical cable.

a. MU-532.

(1). The fuselage electrical cable (MT-5XP) must be threaded the diagonal up tube and then back through the rear wing mount bracket to t Cut 2 4-6" pieces of fuel line. Split them lengthwise and fit them around t protective sleeves where the cable enters the diagonal up tube and where it tube and passes through the rear wing mount bracket. Secure the sleeves to with cable ties, tape, etc.

(2). Secure the lower end of the diagonal up tube in bracket Secure the upper ends of the tray support brackets. Details 15H, I & J.

b. XP-503. Thread the fuselage electrical cable up through the UF-4XP) and routed to the rear along the left side of the motor mount tube The cable should be protected where it leaves the Up tube as in 5a(1), above

6. Fuel tanks.

a. Fuel tank pan. If there is to be 1 fuel tank mounted, install pan (UF-17XP) on the tray support brackets. Its front side should just touch diagonal up tube; center the pan side to side and square it to the fuselage the pan in place, match drill 6 3/16" holes in it and the tray supports. Riv with SS-64 rivets. Put the tank straps (UF-22D) in place before riveting. When closing straps, you may wish to place the straps so that they are either riv place or held by the pressure of the pan on the brackets. Using duct tape, the heads of any rivets that may come in contact with the fuel tank. Install molding (UF-17MD) on the tank tray to prevent fuel tank chafing. Put the fu 21XP) in the pan with the cap to the front and strap it in place. Detail 15

b. Dual fuel tanks. If there are to be 2 fuel tanks used, install tank pans (UF-17XP). Detail 18B.

1. First, rivet the 2 pans together in 3 places with SS-62 will want to position the trays as far forward and up as possible so, with

CD-D

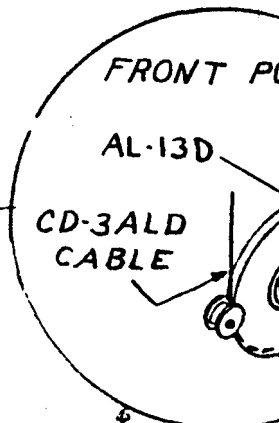
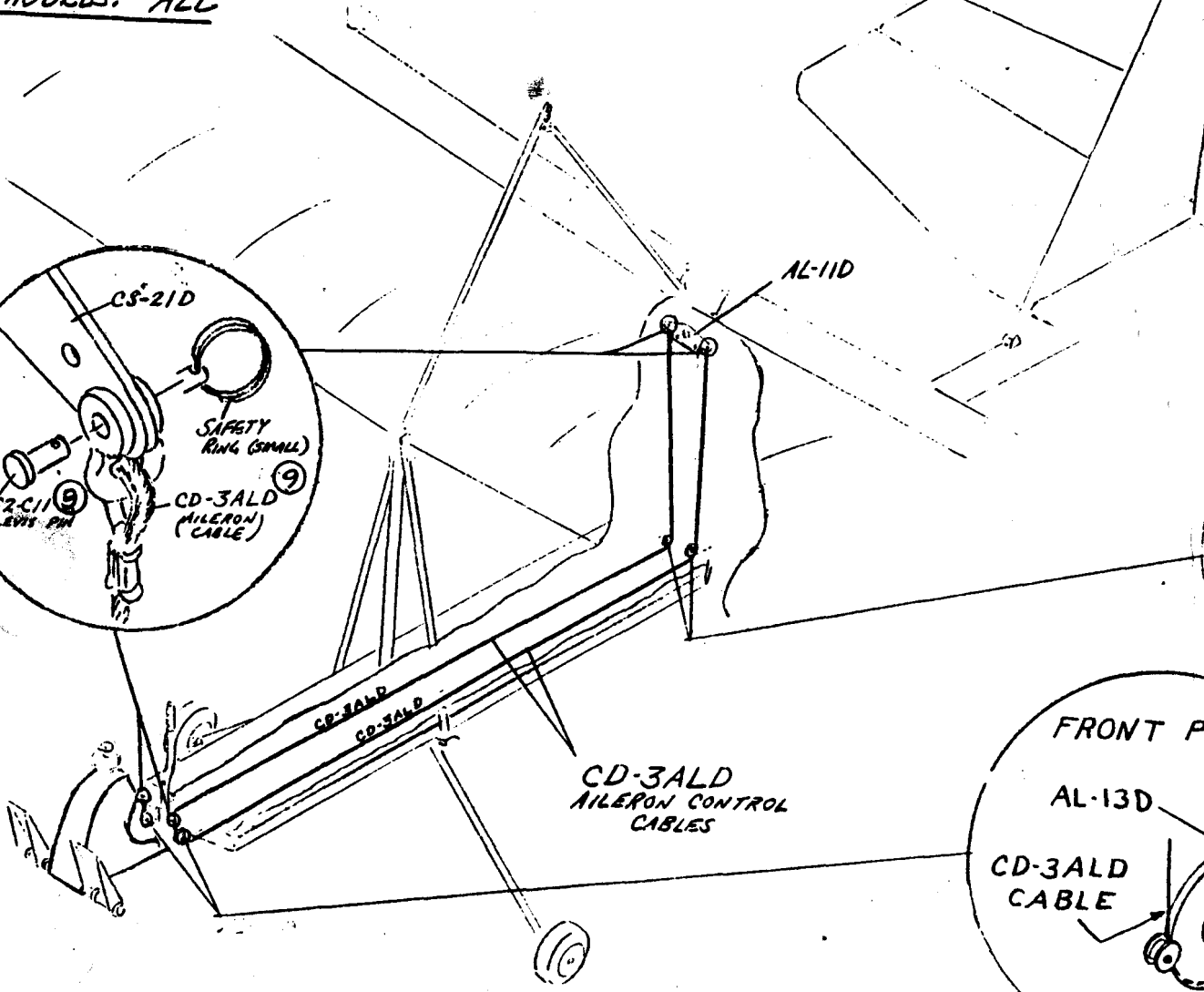
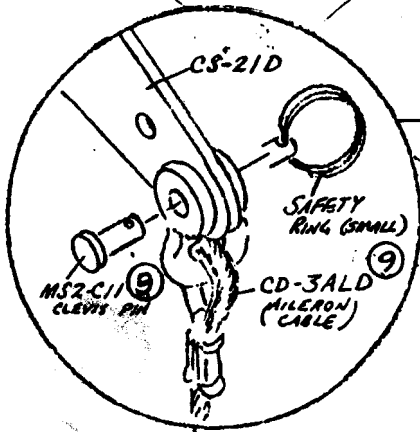
HARDWARE GROUP LIST

(9)


DETAIL 20

MODELS: ALL

V-19.1



AILERON CONTROL CABLE DETAIL



trays, determine their correct position before securing. Center the 2 pans support brackets with their front center corners just touching the diagonal (UF-3XP). When the pans are in place and square to the fuselage, match drilled holes through each pan into the tank support bracket beneath it. Secure with rivets. Place straps under the trays before riveting or rivet strap sections to tank flanges as shown in Detail 18B, using SS-64 rivets and plastic washers.

2. Position an outer tray support bracket (UF-38LXP and UF-38LXP) on the outer edge of each pan so that its bottom edge is flush with the lower side of the floor pan and its top is holding the pan in a level position. Drill 3 rows of 3 6/32" holes, 2 into the floor pan side and one through the tank side into the top flange of the support bracket. Secure with SS-64 rivets. Tape any rivets which come in contact with a fuel tank. Install fuel tank molding (UF-17D) on the floor pan. Detail 18B (Item 2).

c. See Section I on completing the fuel system.

7. Aileron bell crank. On the rear up tube (UF-4XP or UF-4MU), there is a hole drilled fore-and-aft hole 5 1/2" from its top. Use this hole to mount the aileron bell crank (AL-11D) assembled earlier. Insert its mounting bolt (AN4-27) from the top with a 4FW washer on either side of the up tube. Mount the bell crank with the crank side up for 2-seat aircraft. Mount a 4-LFW washer against the outer side of the crank bearing and secure with an AN4CN and cotter pin. Draw the nut up so that there is no play in the bearing but no tighter. Detail 19.

8. Aileron cables.

a. Attach aileron control cables (CD-3ALD) to the control stick with clevis pins (MS2C-11) and small safety rings. Detail 20.

b. Route the aileron cables down through the floor pan, around the front pulleys, back through the floor pans to the rear pulleys. Run the cables around the rear pulleys and up through the floor pans to the aileron cable attach holes (in the aileron bell crank). Be careful in threading the cables not to thread them over the landing gear tubes. When threading later cables, make certain they do not tangle with other cables, fixtures or the landing gear tubes. Detail 19.

c. Attach the aileron control cable shackles to the aileron cable attach holes in the bell crank with clevis pins and small safety rings.

RP.DXP

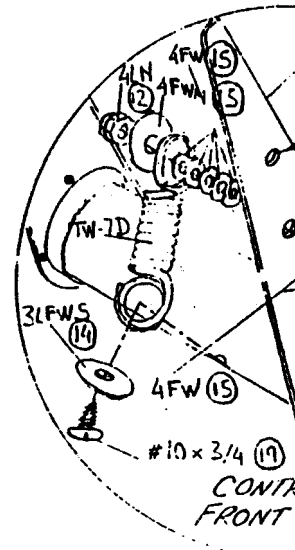
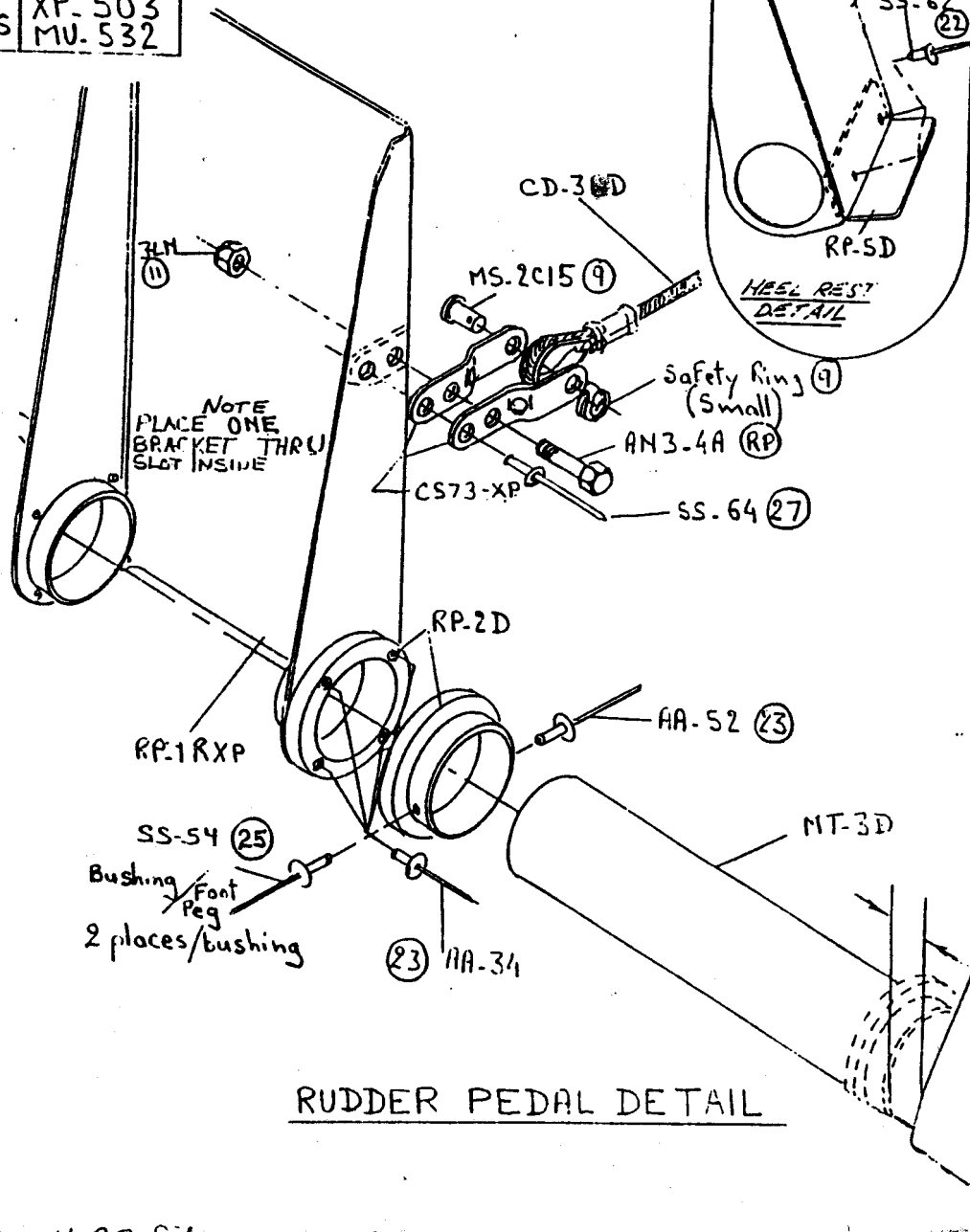
Detail 21

Models XP-503
MV-532

HARDWARE

- (RP) (9) (11)
- (22) (2)

V-20-1



RUDDER PEDAL DETAIL

NOT
DO
UNT
AND
SWA
CLEA
ON C
POINT

CD-D

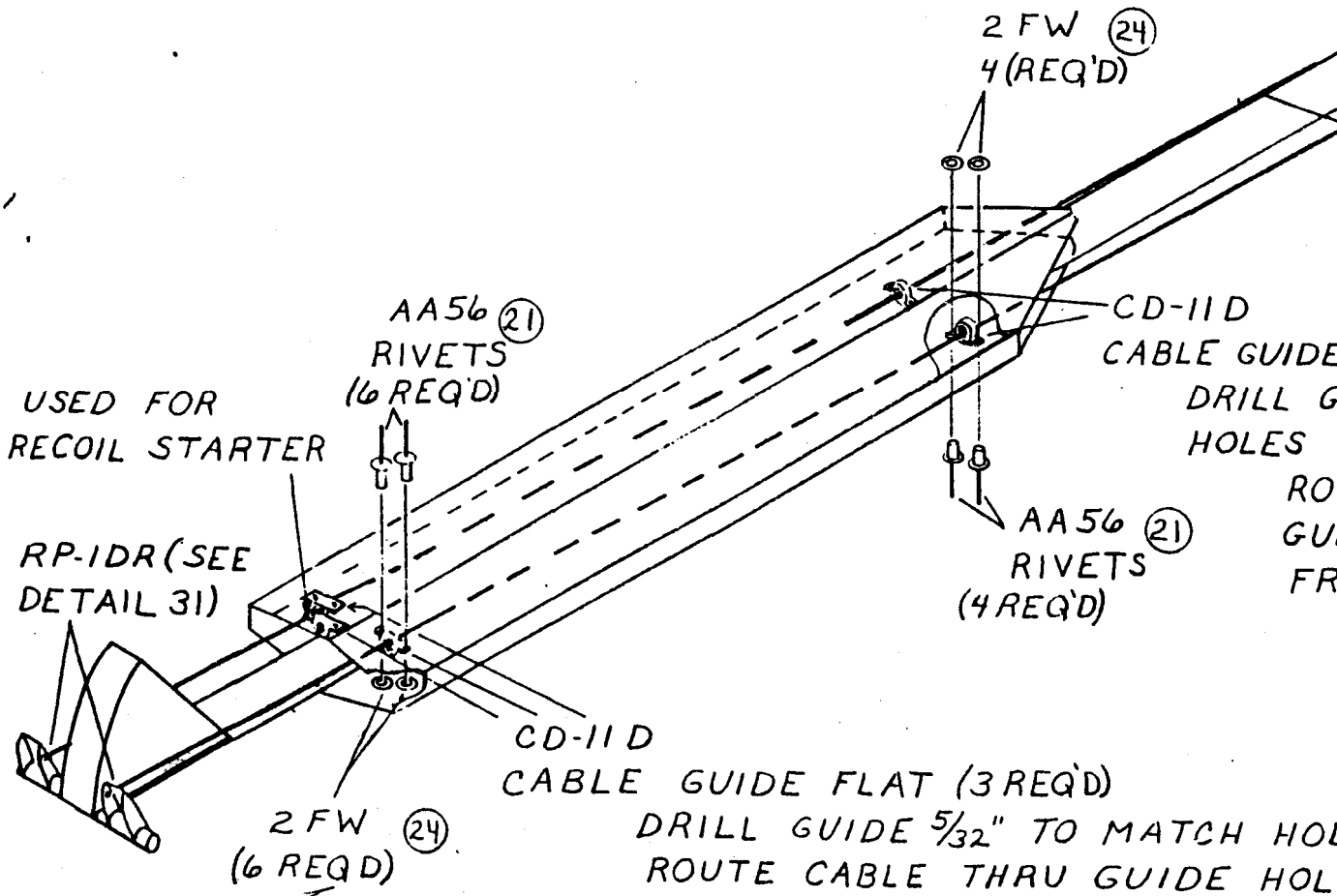
DETAIL 22

MODELS: XP 503
MU 532

HARDWARE GROUP LIST

(21) (24)

V-20.2



d. Swaging cables. Proper swaging of cables is essential for an aircraft. The proper tool and checking gauge must be used for this operation. An inexpensive Nicopress tool or swager can be purchased from Maxair for this purpose. It can also be used for future replacement cables. Additional split bolts for anchoring and tensioning un-swaged cables can be purchased from electrical supply outlets.

e. Tension the aileron cables.

(1). Slide a plastic shrink tube and a Nicopress sleeve onto the aileron cable. Place a cable thimble into the shackle and run the cable around the thimble back onto itself and through the Nicopress sleeve.

(2). While an assistant holds the control stick centered, apply tension on the aileron cables to eliminate any cable sag between pulleys. Keep the tension equal on the 2 cables so that the bell crank remains horizontal. Anchor the cable end using a split bolt (CP-15D) (from the console panel section) until the cable is swaged. When the desired tension on each cable has been attained, you are ready to swage the cable eyes. Make sure the cable fits snugly around the thimble. The Nicopress sleeve is up close to the thimble (so that the cable can not come off the thimble) but not so close to force the cable to bend sharply. The loop formed by the cable around the thimble should be a straight extension of the cable rather than pointing to one side. See Page 11-12, but use only one swage on the cables.

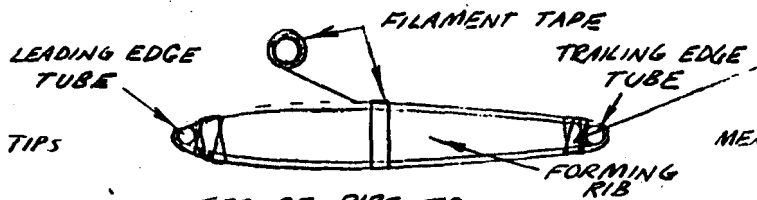
(3). When ready, use the swaging tool to crimp the Nicopress sleeve in 3 places. Use the correct gauge to assure that proper compression has been applied to the sleeve. When done, slide the heat shrink tube over the swage and toward the shackle as far as the flare of the cable. Apply heat, as from a portable hair dryer, until the tube has shrunk snugly over the swage.

9. Aileron push rods.

a. Install male rod ends (AL-25D) (same as CS-75D) with threaded bushings (AL-23D) on both ends of the aileron push rods (AL-9D). Anchor the threaded bushings according to Detail 19.

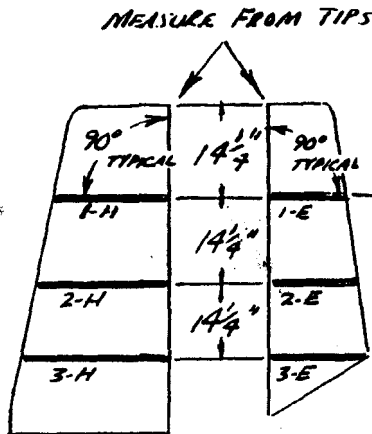
b. Drill 1/16th" holes 3/8" from the ends of the push rods so that the male rod ends be sure that the male rod ends are installed at least 3/8" into the push rods for adjustment.

MAXAIR DRIFTER. STABILIZER FORMING RIB INSTALLATION

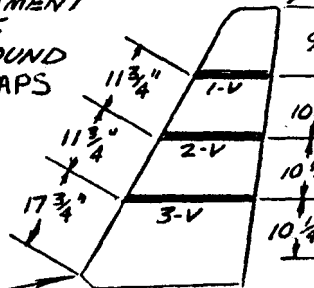


SECURE RIBS TO FRAME WITH FILAMENT TAPE, WRAP TAPE COMPLETELY AROUND RIB EDGES. 2-WRAPS

NOTE: ALL MEASUREMENTS ARE INDICATING CENTERLINES



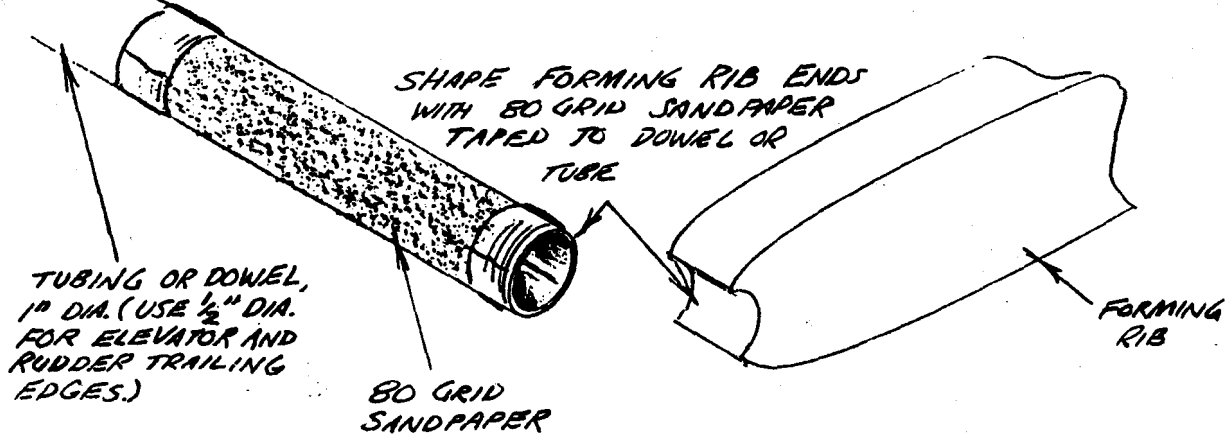
ELEVATOR



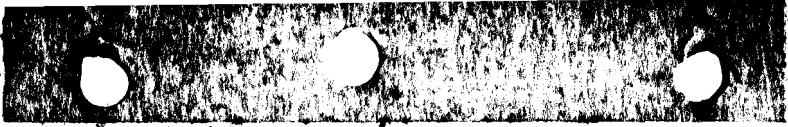
MEASURE FROM END OF LEADING EDGE TUBE.

VERTICAL STABILIZER

HORIZONTAL STABILIZER



V-21.1



c. Attach one end of push rods to the upper holes in the aileron. Adjustment for tension will be made after ailerons are in place. Detail 19.

10. Rudder cables.

a. Attach the prepared end of each rudder cable (CD-3RDD) to a pedal. With the cable eye in between the holes in the brackets (CS-73XP), clevis pin (MS-2C15) from the rudder side and secure with a small safety rivet. Detail 21.

b. Before running the rudder cables through the floor pan, thread a cable guide (CD-11D) onto each cable. Each cable guide has 2 holes in it. Thread the cable through the hole furthest from the guide base. Rivet these guides to the underside of the upper floor pan using the 2 outboard pre-drilled holes. Detail 22.

c. Thread the rudder cables through the floor pan on both sides. After the cables are through, thread a second cable guide onto each cable, again using the outboard holes. These will be riveted to the top of the lower floor pan, again using the outboard pre-drilled holes. But, before riveting the guide in place, check the clearance of each cable through the floor pan. Be sure that its path is straight, and it does not rub on another cable or the landing gear tube. If there is any clearance problem, route the cable before riveting the rear guide in place. Detail 22.

d. Coil each rudder cable behind the floor pan and secure them with a small safety rivet until you have the rudder horn installed.

F. TAIL SURFACES.

1. Tail surface ribs.

a. The foam ribs in the tail surfaces (TA-90D) are optional, but a very popular option because they improve the air flow over those surfaces and therefore, increase their effectiveness. Their installation is included for those who choose to install them.

b. The rib ends may need a little shaping to be positioned according to Detail 23. Be sure they are in the positions shown. To shape the ends, tape the ribs to 80 grit sandpaper around 1" and 1/2" diameter dowels. Use the 1/2" dowel to shape the elevator and rudder trailing edges.

c. Mark the positions of the leading and trailing edges of each rib on the frame of each part using a felt tip or ball point pen. (Do not use graphite or aluminum.) Position the ribs according to these marks, with the ends shaped as necessary for a flush fit.

d. Secure the ribs with filament tape. Keep the tape smooth, wrinkles should show through the fabric. Make 1 complete wrap along each rib and around the trailing edges of the frame and cut the tape. Make a second complete wrap. The tape allows you to adjust for the angles of the leading and trailing edges. Just behind the leading edge, make 2 complete wraps around the rib. Make 2 wraps at the center of the rib and 2 more at the trailing edge. Anchor each rib in this fashion according to Detail 23.

2. Vertical stabilizer (ST-1D).

a. The Vertical stabilizer frame is a combination of aluminum tube and flat sided channel. Before covering the stabilizer frame, and all other tail frames, go over all edges of gussets, the channel and tube ends with a file, to smooth them. Using thin strips of duct tape to cover the edges of the gussets, rivets and tube ends that will be covered by fabric will make a smoother fit and help prevent chafing of the fabric.

b. Before covering the stabilizer, and other tail surfaces, note that pre-drilled holes for hinges, cable tangs, etc. are so that locating the holes in the fabric is on will be easier.

c. Hold the frame vertically, resting on a work bench or such and work the fabric down onto the frame. Work slack material down as far as you can get it more onto the frame and work it down until it is all on the frame. If the sleeve is particularly tight, dusting the frame with talcum powder and shaking into the sleeve sides usually helps.

d. Tightening the fabric. Your goal should be for all fabric surfaces to be drum tight and wrinkle-free.

(1). After the fabric is as far onto the frame as you can get by hand, take strips of filament tape, 2-3' long, and apply 3/4 of their length to the trailing and leading edges of the fabric as well as to the side on which you are working. Use the part of the tape not stuck to the fabric as a handle with which to pull. Make sure the tape is sticking well before applying tension to it. Working across a surface, start with the tape at one end and pull the fabric as tight as possible. Stick the tape to the metal framework. Take the next strip and continue across, gradually eliminating the wrinkles. Repeat this process as many times as are needed to get the side tight and smooth. If the leading and trailing edges are pulled tight and riveted with an AA-54 rivet first, the center will be much easier to pull tight. Keep rivets in from the ends so they will not interfere with the operation of the control horns.

(2). Trim the fabric so that it is about 2" longer than the width of the frame. Fold the upper fabric (the side you are working on) in against itself, creating a double edge. Using the tape, with tension maintained, fold the doubled fabric down onto the bottom of the frame. Run the tape ends up inside the fabric on the bottom edge and secure them to the inside of the frame. Cut any excess tape off.

(3). Turn the frame over and repeat the process. This time the fabric at the bottom is folded down over the first fabric and taped to the inside of the frame.

e. Locate all holes for hinges, bolts and rivets under the fabric. Use a soldering pencil or gun to burn away the fabric at these holes.

f. After tightening the fabric using the process described above, rivet the fabric ends using 5 AA-54 rivets. Detail 24A.

g. Install the horizontal stabilizer mounts (ST-2D) to the leading edge of the fabric.

trailing edges of the vertical stabilizer. Detail 24A & B.

h. Attach stainless steel hinges (ST-16) to the trailing edge of Stabilizer in 2 places. Use SS-54 rivets. Detail 24C.

i. Attach leading and trailing edge cables (CD-1SD) to the leading and trailing edges of the vertical stabilizer. Detail 24D.

j. Insert the vertical stabilizer trailing edge tube into the vent at the rear end of the fuselage tube. Use a screw driver to pry out the lower lip to make it an easier fit. Loosely attach the lower front corner of the stabilizer U-bracket (ST-4D). Cut the fabric at the front anchor bracket if necessary to make it an easier fit. The flat washers (4PW) may need trimming. Detail 24A & E.

k. Level the fuselage. Place a straight rod across the 2 horizontal stabilizer mounts on the side of the vertical stabilizer. Place a level on the rod to raise or lower the rear of the vertical stabilizer to obtain a level position. When a level position is attained, mark that position on a vertical rod or a measurement to the floor. Lower the rear of the Stabilizer 1" below level. This is the final position of the vertical stabilizer. Drill through the stabilizer post and stabilizer trailing edge tube and secure with an AN3-14A bolt. Detail 24A.

3. Horizontal stabilizer (ST-7D).

a. Prepare the horizontal stabilizer frames to be covered as described in the previous sections.

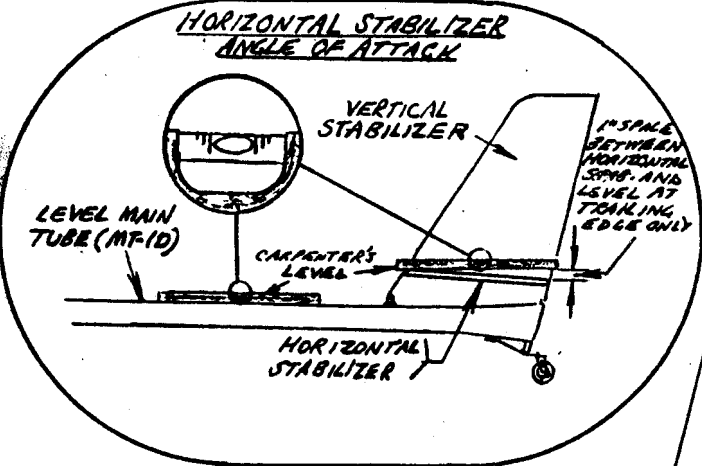
b. Cover frames following procedures used for other tail surfaces. Starting with the right stabilizer, lay out the frames, establishing a right and a left stabilizer, and fabric sleeves so that designs are properly oriented and leading edges are in the correct positions. When sleeves are particularly tight, talcum powder dusted on the frames in the sleeves helps. Tighten the fabric and secure the open ends with filament. With all horizontal surfaces, start with the underside so that, when finished, the top side fabric will fold down across the lower fabric, sealing the end from moisture. Rivet the fabric closed with AA-54 rivets. Locate all predrilled holes and mark them on the fabric out at each.

c. Install 3 stainless steel hinges (ST-16) on the trailing edge of the horizontal stabilizer.

ST-D

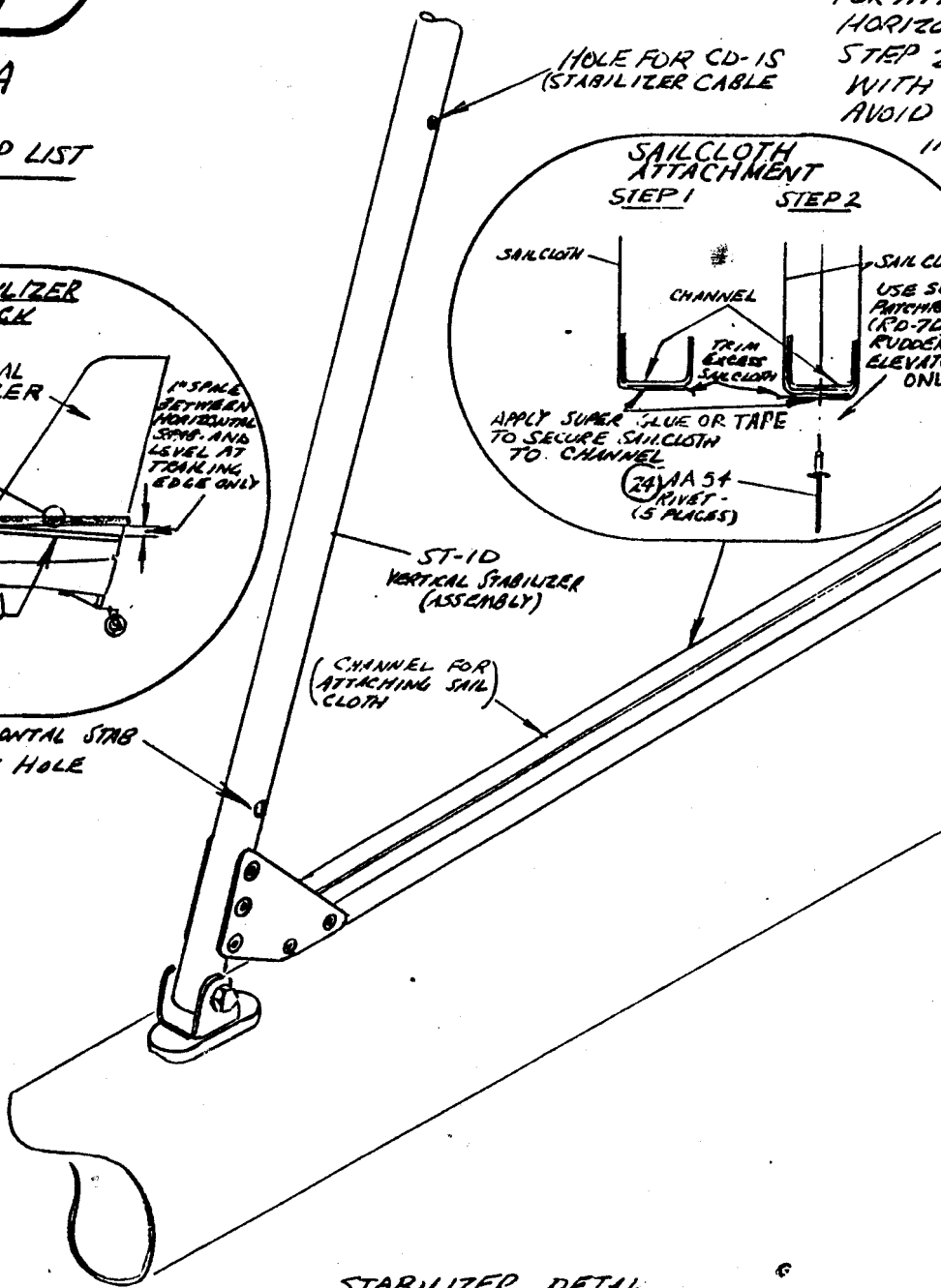
DETAIL 24 A
MODELS: ALL
HARDWARE GROUP LIST

(5) (24) (11)



V-25.1

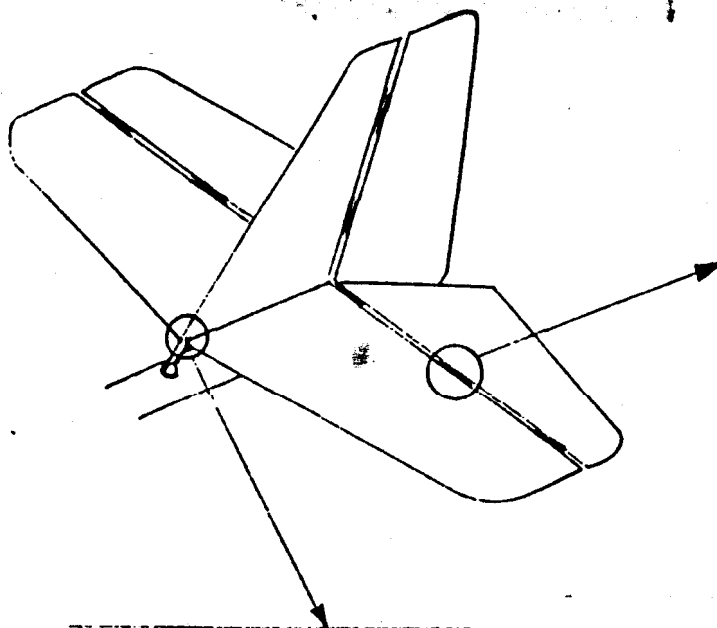
HORIZONTAL STAB MOUNT HOLE



NOTE:
FOR AT
HORIZO
STEP 2
WITH
AVOID

STABILIZER DETAIL

V-25.2

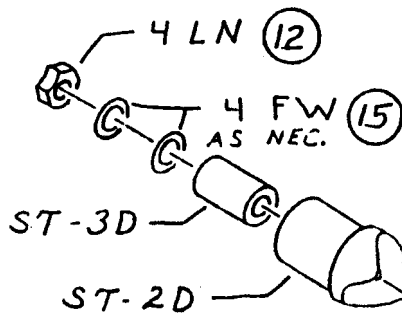


TYPICAL
8 PLACES

SS 54 RIVET
(12 per hinge) (25)

M52 C11 (9)

Hinge Detail 24C



NOTE:
SAME INSTALL
SEQUENCE ON
AND TRAILING
VERTICAL STA

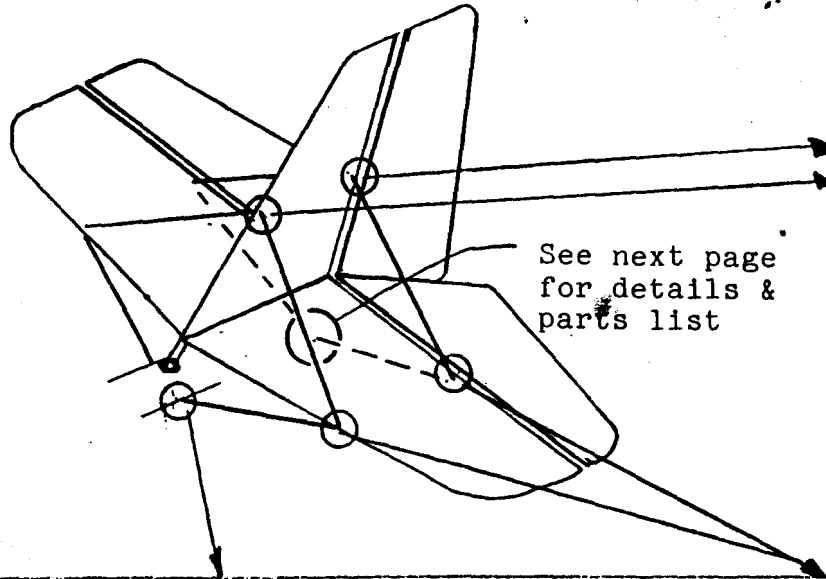
ST-1D

ST-2D

ST-3D

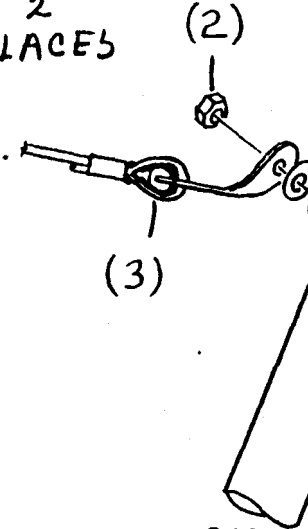
4 FW
AS NEC.

Stabilizer Detail 24B



See next page
for details &
parts list

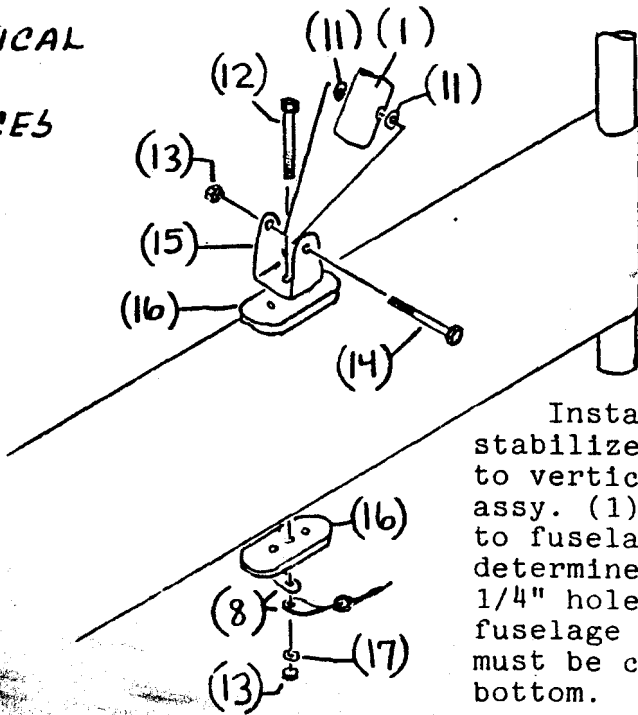
TYPICAL
2
PLACES



Cable detail 24D

V-25.3

TYPICAL
2
PLACES

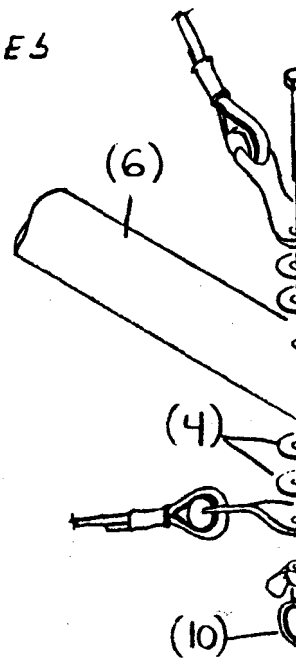


NOTE:

Install vertical stabilizer bracket (15) to vertical stabilizer assy. (1). Install (1) to fuselage at rear to determine location of 1/4" hole for (15) in fuselage tube. Hole must be centered top & bottom.

Stabilizer Detail 24E

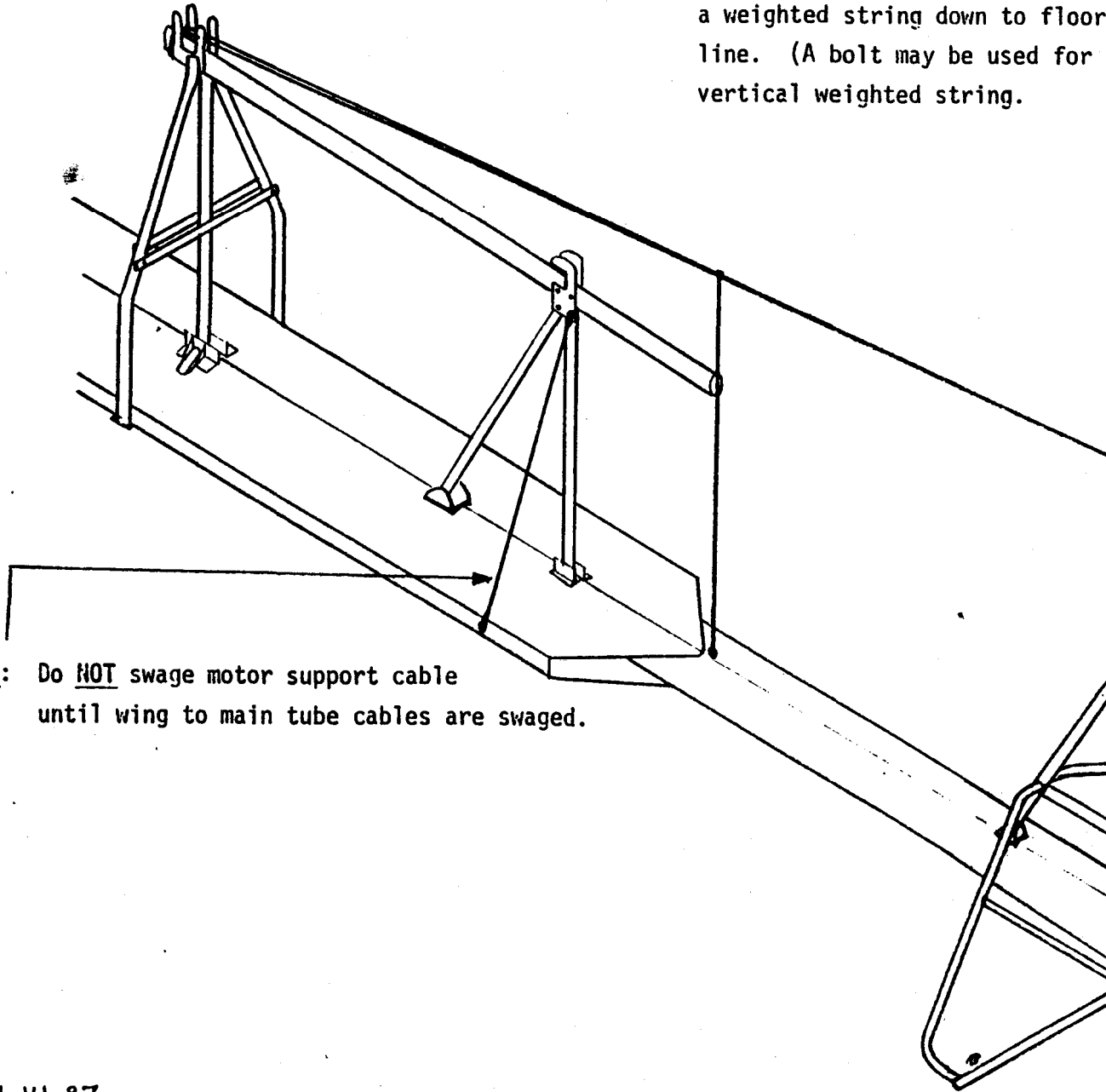
TYPICAL
4
PLACES



Cable detail 24F

De 1 25

To rig tails and check that all
perpendicular, attach a string
top portion of rudder. Locate t
a weighted string down to floor
line. (A bolt may be used for
vertical weighted string.



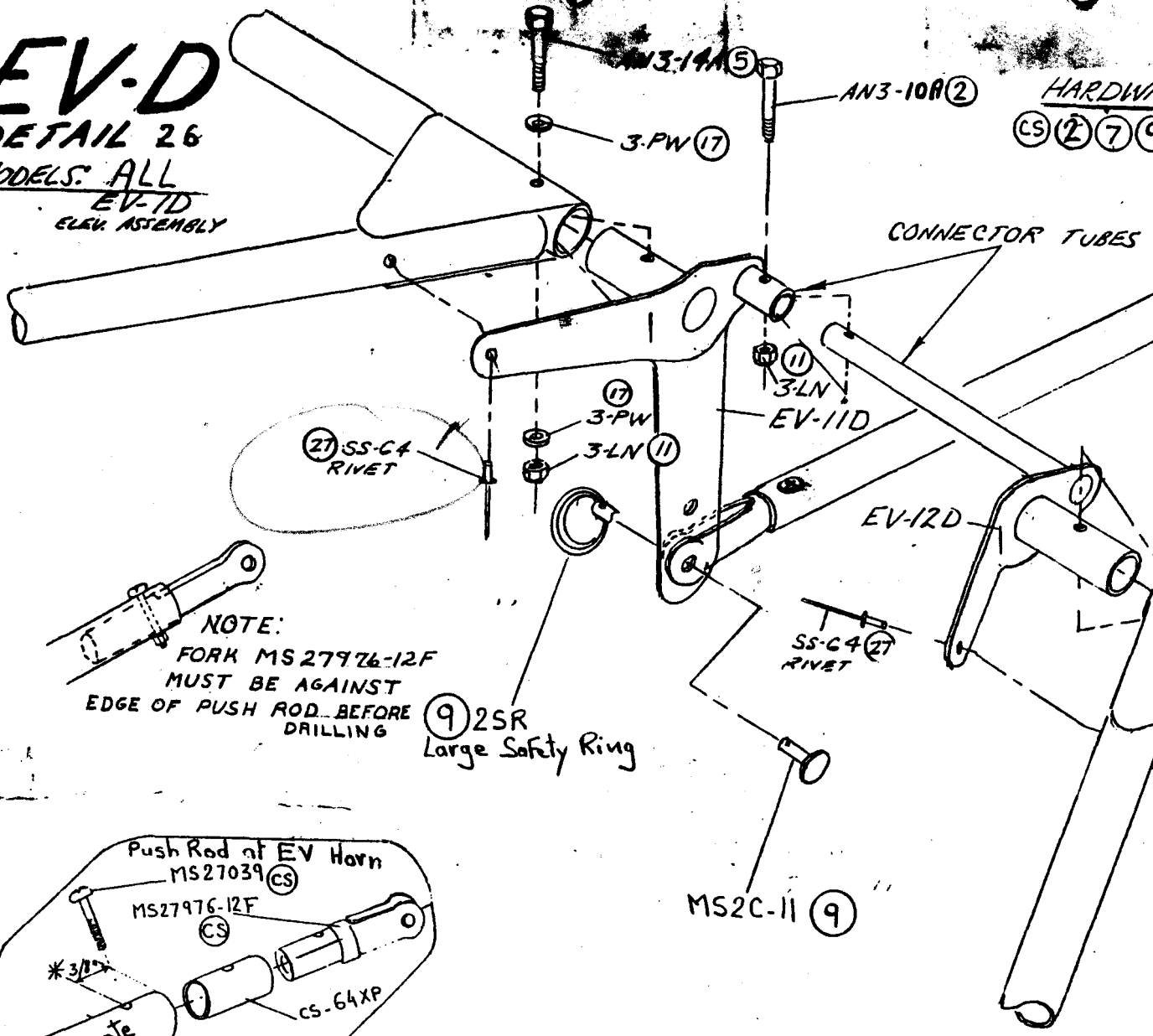
V-25.4

NOTE: Do NOT swage motor support cable
until wing to main tube cables are swaged.

34 11-14-87

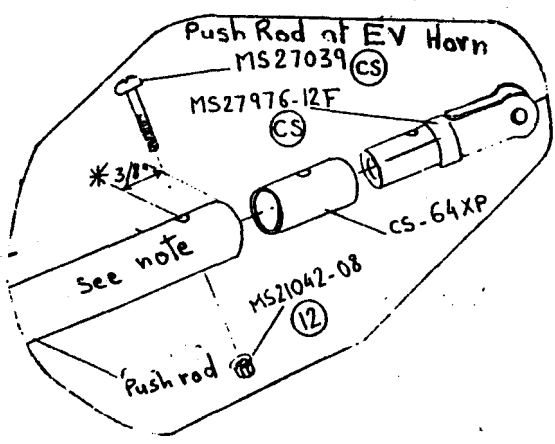
EV-D
DETAIL 26
 MODELS: ALL
 EV-7D
 ELEV. ASSEMBLY

HARDWARE
 (CS) (2) (7) (9)



V-25.5

NOTE:
 FORK MS27976-12F
 MUST BE AGAINST
 EDGE OF PUSH ROD BEFORE
 DRILLING



ELEVATOR CONTROL HORN DETAIL

pressure of 25 pounds must be applied at each cable attach point, as that cable is tensioned. Continue to secure the cables with the split nuts until all 4 cables are tensioned correctly and the stabilizer is aligned within a plus or minus 1/4 inch. One way to check cable tension is to pluck the cable. The tone desired here is a note. Obviously, similarly tensioned cables (of the same length) will sound the same. Swage all 4 cables as described in the aileron cable section. Fine tune the cables by shifting washers (3PW) from one side of the vertical stabilizer to the other. Detail 24D.

4. Elevators

a. Prepare elevator frames for covering, i.e., smooth all edges, round the corners, and remove sharp edges. Slide the elevator fabric onto the frame, taking care that the fabric is correctly aligned on the leading and trailing edges, with the fabric extension on the trailing edge.

b. Tighten and secure the fabric. Use 2 or 3 scuff patches to help hold the fabric on each elevator. The forward part of the inner edge will be covered by the elevator horn (EV-11D and EV-12D) tang so space the scuff patches toward the trailing edge. Secure with AA-54 rivets.

c. Mount 2 halves of 3 stainless steel hinges (ST-16) on the leading edges of the elevators. Tape the 2 halves in position on the leading edge so that they will align with their other halves on the trailing edges of the horizontal stabilizers. Mark the hinges in position with the tape, burn holes and rivet with SS-54 rivets. Detail 24D.

d. Mount the elevator horns in the correct elevators. The elevator horn (EV-12D) with the long connector rod mounts on the right elevator. The elevator horn (EV-11D) with the push rod connecting arm mounts on the left elevator. Detail 24D.

e. Hang the left elevator first using MS-2C11 clevis pins and safes. Use a Phillips head screw driver or a small bolt to align the hinges, if necessary. Make sure all clevis pins rotate freely.

f. Hang the right elevator next. Insert the connector tube on the right elevator horn into its counterpart on the left elevator horn first. Then, align and secure the hinges. Burn out the fabric between the vertical stabilizer and rudder where the connector tube passes through.

g. Lock the elevators and horizontal stabilizers together using wing compression tubes or something similar on each side. The purpose of the elevators into a common plane before drilling the connector tube and lock the elevators together.

(1). Place the elevator horns into the elevators per Detail 26. Rivet the rear arms of each using SS-64 rivets. Then, locate the leading edge transfer drill through the gusset and tube from both sides for an AN3-14A bolt from the top. Tighten.

(2). Drilling the connector tubes requires care to avoid the final connection. Locate and center punch the position for the AN3-10A bolt. Drill a 5/32" hole through the collar and connector tube. Redrill the hole with a 11/64" bit; finish drilling with a 3/16" bit for a snug fit. Insert the bolt and secure with a lock nut (3-LN). Detail 26.

5. Rudder assembly.

a. Pre-assemble the rudder horn assembly (RD-2D). Detail 27.

b. Temporarily insert the rudder horn assembly (RD-2D) into the rudder assembly (RD-1D). Transfer drill a 3/16" hole through the bottom of the rudder for the blind nut (RD-5D). Transfer drill another 3/16" hole side through the gusset, the rudder leading edge post and the rudder horn plug (RD-2D) for an AN3-14A bolt.

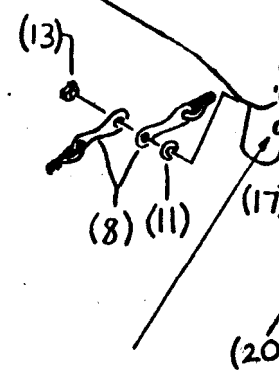
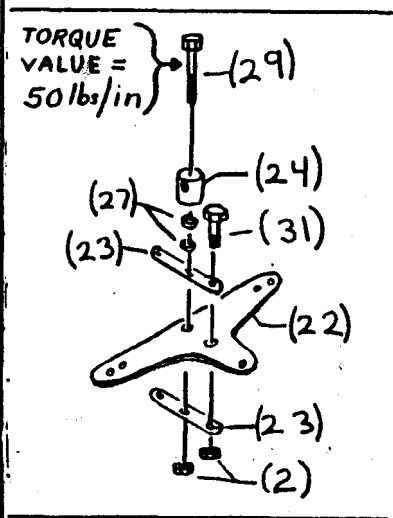
c. Rivet the blind nut in place in between the gussets at the lower corner of the rudder at the hole just drilled. Use AA-32 rivets.

d. Before covering the rudder, prepare the frame as described above. File sharp edges with a file, tape the edges of gussets, corners, and ends so that the fabric will fit well and not be cut or chafed. Detail 27.

e. Covering the rudder. Spread the fabric out on the rudder frame. Make sure that it is oriented correctly, with the fabric extension on its leading edge. Start the fabric over the top of the rudder frame, holding the rudder vertically. Pull the fabric down until it is completely on the frame, making sure that the fabric is on and aligned with the outside tubes.

CODE NO.	PART	BAG NO.	DESCRIPTION
1	ST-1D	ST	VERTICAL STABILIZER
2	3 LN	(11)	LOCK NUT
3	CD-1S		Leading Edge Cable Trailing Edge Cable
4	3 PW	(17)	PLASTIC WASHER
5	AN3-16A	(6)	BOLT
6	ST-7D		HORIZONTAL STABILIZER
7	AN3-16	(2)	BOLT
8	CD-2SD		LEADING CABLE TRAILING CABLE
9	3 WN	(13)	WING NUT
10		(9)	LARGE LOCK RING
11	4 PW	(18)	PLASTIC WASHER
12	AN4-60A	(1)	BOLT
13	4 LN	(12)	LOCK NUT
14	AN4-16A	(4)	BOLT
15	ST-4D	ST	U BRACKET
16	ST-9D	ST	RECTANGULAR PLASTIC SADDLE
17	4 FW	(15)	FLAT WASHER
17	AN43B-17A	(17)	I BOLT
17	MS 2 C II	(9)	CLEVIS PIN
20	AN3-14A	(5)	BOLT
21	RD-1D	RD	RUDDER
22	RD-2D	RD	RUDDER HORN
23	RD-3D	RD	THREE HOLE STAINLESS HINGE
24	RD-4D	RD	ANCI UG ALUMINUM
25	RD-5D	RD	BLIND NUT
26	RD-6D	RD	CONTOUR SPACER PLASTIC
27	3 FW	(14)	FLAT WASHER
28	ISR	(9)	SMALL SAFETY RING
29	AN3-7A	(5)	BOLT
30	AA-32	(22)	RIVET
31	AN2-4A	(1)	BOLT

V-27.1



DRILL I BOLT H
AFTER ALL RIGGI
AND HINGES
ARE INSTALLED

SEE DETAIL
CABLE ATTACH

RUDDER DETAIL 27

f. The fabric is secured with AA-54 rivets and 3 scuff patches (RD- ensure the scuff patches are positioned to leave room for the rudder horn. Cut e filament tape away.

g. Hold the covered rudder in position at the rear of the vertical stabilizer. While it is in that position, locate the holes for the 3 hinges, with their corresponding hinges on the vertical stabilizer. Transfer drill th and rivet with SS-54 rivets. Detail 24C.

h. Install the rudder horn assembly (RD-2D) to the rudder permanent an AN3-16A bolt with a 3FW washer and an RD-6D plastic contour spacer to secur the blind nut. Use an AN3-14A with a 3PW and 3LN nut through the gusset and r horn plug. Detail 27.

i. Hang the rudder on the vertical stabilizer, using the 2 hinges j installed. Work a Phillips head screw driver through the hinges to align them, necessary. Secure with clevis pins (MS-2C11) and small safety rings.

j. Push the rudder in at the bottom so that the hinge on the rudder touches or is close to the stabilizer tube. Mark the location on the vertical stabilizer tube for the eyebolt (AN43B-17A) which will be between the halves o lower rudder hinge. Make sure that the location is centered on the rear of th Use the paper strip technique to locate the position for the hole on the front Check to assure that the hole on the front side will have clearance for cable a lock nut between the hole and the bottom of the fuselage. Detail 27.

k. Center punch and drill each 3/16" hole separately and, once each completed, run the 1/4" drill bit completely through both holes to assure align

l. Install eyebolt (AN43B-17A) from the rear of the post, adding th for the lower trailing edge stabilizer cables (CD-2SD) on the front side. Secu shown in Detail 27.

m. Secure the lower rudder hinge with clevis pin (MS2C11) and a sma ring.

6. Connecting the rudder cables.

a. Attach the rudder cable shackles or clevis pins to the rudder (2D). Attach with AN3-10 bolts inserted from the top. Do not secure these bolts. Detail 6.

b. With the elevators in the neutral position, attach the rudder cables to the shackles. Prepare them as described above for swaging with a sleeve, a heat shrink tube and a thimble. With the rudder pedals held in the neutral position, put enough tension on the rudder cables to remove sag, the tension is equal. When the tension is as you want it, still secured with bolts, sit in the front seat, make sure that you are comfortable and are getting the correct left rudder deflection. If so, swage. Check your swages carefully, before applying pressure, while you are clamping them, and afterwards to assure they are properly sized.

c. Install the tail wheel connector springs (TW-7D) between the tail wheel horn and the rudder horn. Detail 6.

d. Rudder cable tensioning springs (TW-7D) were attached to the front of the front rudder pedals when the rudder pedal connecting rod was attached to the left rudder pedal fully forward and mark the position of the unattached end of the spring. Drill a hole at that point for a #10 x 3/4" screw and secure the spring with the screw and a 3-LFWS (stainless 3/16") washer. Repeat the procedure for the right rudder pedal. Detail 17.

7. Elevator push rod

a. The elevator push rod (CS-33MU) comes as one piece but, in installation you will cut it into two pieces. The first, the shorter, piece runs from the bell crank under the rear seat to a second bell crank on the left side of the fuselage tube aft of the floor pan. In addition to cutting the push rod into two pieces, the shorter piece may have to be adjusted for length, as well. A single plastic guide sleeve is used on the short forward section of the push rod. It is located just behind the cut-out section of the floor pan through which the control wires run. The second and longer piece of the push rod runs from the bell crank on the side of the fuselage tube back to the elevator control rod.

b. Install a bearing (CS-52XP) in the elevator reversing bell crank (____). (See Details 14B & C). Install the assembled bell crank on the side of the fuselage tube 3/4" aft of the rear end of the floor pan, in a true vertical position. Use the paper ring method to locate the positions for the holes on the fuselage tube.

sides of the fuselage tube, making sure the bolt will be horizontal. Punch 1/4" hole on each side. Mount the bell crank with the bearing on the left fuselage, using an AN4-60A bolt, 4FW washers and a 4LN nut.

c. Connect the rear end of the short push rod (CS-57XP) from the control stick to the left arm of the bell crank under the rear seat. Do not yet.

d. Temporarily attach a fork (MS27976-12F) to the elevator horn MS-2C11 clevis pin and large safety ring. Also, attach a male rod end (CS- left arm or end of the bell crank located under the second seat. Use an MS pin and a large safety ring. Details 14C & 26.

e. Cut the long elevator push rod (CS-33MU) 2 5/8" to the rear the off-set in the push rod which goes around the rear UF tube and control After dressing the cut ends, add a fork (MS27976-12F) and sleeve (CS-64XP) end of the front section of the push rod and to the front end of the rear

f. Place the rod guide and flat base (CS-45D and CS-30, respectively) front section of the elevator push rod. Coat the inner face of the rod guide with grease prior to sliding it onto the push rod. Temporarily hold or clamp the elevator push rod in position between the bell crank under the rear seat and an arm of the elevator push rod reversing bell crank on the side of the fuselage. Adjust so that the fore and aft movement of the off-set in the push rod will restrict elevator travel and so that it does not rub on the floor pan or floor in its travel.

g. Position the front edge of the front elevator push rod guide 1/4" to the rear of the cut out in the floor pans for the control cables. The rod guides will not be needed with this configuration. Secure in this position with AA-66 rivets.

h. Run a piece of masking tape from the front up tube to the diaphragm Tube past the rear control stick. Determine the range of stick travel and the point of that travel range. Measure forward from the center point 1 1/2" along the control stick at that point. This will provide the desired degree of up elevator travel. The reversing bell crank should be about perpendicular to the fore and aft of the aircraft.

i. Usually, the push rod is too long at both ends.

(1). With the bell crank anchored in a neutral position and elevators locked in a horizontal plane with the stabilizers, check the length of the push rod against the connections at either end and mark where it should be

(2). Check the Detail drawings carefully concerning final fit of the male rod end and fork in the push rod. Note that the male rod end is horizontal while the rear fork is in a vertical position. Cut and dress the push rod. Use a CS-64XP sleeve with the fork. Make sure that both fit completely into the push rod before drilling completely through 3/8" from the rod. Make sure as you drill that the pieces do not move. Secure with an 0814 screw and a 2LN nut. Do not overtighten.

(3). Attach to the reversing bell crank with an AN3-11 bolt pointing downward, the requisite washers, and a 3-CN nut and cotter pin. Attach the other end of the push rod to the elevator horn with an MS2C-11 clevis pin and a large safety washer. See Details 14C & 26.

j. When you are satisfied with the locations of the 4 push rod guides, drill 4 holes for each guide. For the front guide (guide and base only), use AA-610 rivets. For the second and third guides (guide, base and contour block), use AA-610 rivets. For the fourth guide (guide, base, spacer and contour block), use AA-616 rivets. See Details 28A & B.

8. Rear seat. Using holes previously drilled, mount the rear seat. Bolt the rear seat mounting bracket with 6 AN3-10A bolts and appropriate washers and nuts. Attach the rear seat back with the rear seat bracket to the diagonal up tube using AN3-4A bolts, washers and nuts as identified in Detail 11.

G. PREPARING AND MOUNTING THE ROTAX 503 ENGINE (Details 29a & B)

1. Engine mounting blocks.

a. Note that there is a right and a left engine mounting block (MR-56D5, respectively). Detail 29C.

b. Insert rubber Lord mounts (MM-26D) into the inner side of the holes drilled in the face of each mounting block. A small amount of liquid detergent fluid makes insertion of the blocks easier. Make sure the Lord mounts are seated against the mounting blocks. Detail 29C.

c. When you attach the mounting blocks, pay particular attention to the number of washers required on each side of the engine mount tube to cant the engine slightly. You will have to compress the Lord mounts to start the nuts. Torque lock nuts on the AN5-43A bolts to 130 in/lb. Detail 29C.

2. Preparing the engine for mounting. Your Drifter engine, when you remove it, is set up to be mounted with the mounting studs down. However, you will be mounting the engine from the mounting blocks so some changes must be made.

a. When you remove the engine from its box, turn it upside down on the edge of a bench or table. Be careful not to set the engine on the mounting caps.

b. Remove the short mounting studs from the engine block. Replace them with the longer studs provided (10mm x 90mm). To minimize damage to stud threads, we recommend using vise grips, gripping the studs on the nut end just above the threads. Use Loctite on the studs.

3. Recoil starter. The recoil starter comes with a short rope starter cable installed. In order to be able to start the aircraft from the cockpit, the cable must be replaced with a longer cable (CD-1RD).

a. On the rear of the engine, remove the fan housing in order to access the starter housing. Note that the starter cover has mounted on its fan housing an ignition damping box, an accessory to the coil. Be careful of its connection to the coil. Remove the recoil starter. Detail 29B.

b. Remove parts (2), (3), (4) and (5) from part (1) carefully, on the large pulley. Detail 29B.

c. Before continuing further, have a split bolt and the replacement ready.

d. Holding down on the pulley, pull the handle and rope out, and the pulley to rotate until the rope is fully extended. Hold the pulley at that point and cut the handle off the rope and pop out the end of the rope and the key (8) from slot (7). A screw driver works well for this. CAUTION: During the next 4 steps, hold housing (1) and pulley (6) firmly in position. DO NOT ALLOW IT TO SPIN.

e. Pull the rope out of slot (7) in a left to right direction.

f. Push the new cable into slot (7) in a left to right direction out through opening (10). Pull it all through until only the end is left in slot (7). Detail 29D.

g. Place the end of the cable and the key (8) in the positions shown in Detail 29D. Push the key in the direction of the teeth on the key. Push into place with a screw driver.

h. Slowly allow the cable to wind 3 1/2 turns into the starter housing.

i. Connect the split bolt to the outside end of the housing. Tighten the nut to prevent the entire cable from being pulled onto the starter sheave. A pop rivet will be needed inside the split bolt so that it will grip a single strand of the cable.

j. Replace the parts removed earlier. Refer to paragraph 2, above, for the post and spring when replacing them. Detail 29D.

k. Remount the starter housing on the engine with the cable open to the five o'clock position as you look at the rear of the engine with the engine cover down. Replace the fan housing. Detail 29B.

4. Mounting the engine.

a. Mounting the engine will require assistance, partly because of the weight and the need for extra hands - to guide the studs into the holes in the motor and start the nuts on them.

b. Remove parts (2), (3), (4) and (5) from part (1) carefully, ho on the large pulley. Detail 29B.

c. Before continuing further, have a split bolt and the replaceme ready.

d. Holding down on the pulley, pull the handle and rope out, allo pulley to rotate until the rope is fully extended. Hold the pulley at that p cut the handle off the rope and pop out the end of the rope and the key (8) (7). A screw driver works well for this. CAUTION: During the next 4 steps, housing (1) and pulley (6) firmly in position. DO NOT ALLOW IT TO SPIN. Det

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f. Push the new cable into slot (7) in a left to right direction, out through opening (10). Pull it all through until only the end is left in Detail 29D.

g. Place the end of the cable and the key (8) in the positions sh the direction of the teeth on the key. Push into place with a screw driver.

h. Slowly allow the cable to wind 3 1/2 turns into the starter ho

i. Connect the split bolt to the outside end of the housing. This prevent the entire cable from being pulled onto the starter sheave. A pop ri will be needed inside the split bolt so that it will grip a single strand of

j. Replace the parts removed earlier. Refer to paragraph 2, above post and spring when replacing them. Detail 29D.

k. Remount the starter housing on the engine with the cable openi five o'clock position as you look at the rear of the engine with the engine down.. Replace the fan housing. Detail 29B.

4. Mounting the engine.

a. Mounting the engine will require assistance, partly because of and the need for extra hands - to guide the studs into the holes in the moun and start the nuts on them.

b. Torque the lock nuts (10mm-SLN) on the studs to 225 in/lb.

5. Connecting engine components and parts. (NOTE: For dual carburetor installation on the XP-503, refer to Section H.5. of this manual on the installation of dual carburetors on the MU-532.

a. Fuel Pump.

(1). Install 2 fuel pump brackets (MR-14DR5-aluminum U-brackets) on the left side of the engine just above the carburetor intake manifold using 6mm x 1/2" bolts with 6mm-LW lock washers and Loctite. The fuel pump brackets are used to hold the fuel pump away from the engine block. Detail 29E.

(2). Attach the fuel pump to the brackets with AN4-7A bolts and steel lock nuts. Orient the pump so that the flow arrows point to the rear and with the inlet at the top. Detail 29E.

(3). Connect the fuel pump to the engine as shown in Details 29E and 29F. Use small hose clamps (UF-29D) to secure both ends of the fuel lines. The distance between the engine block and the center of the fuel pump should not be more than 6 inches.

b. Remove the choke lever and mounting bracket from the carburetor; it will be replaced with a different choke control system. Detail 29G.

c. Install the carburetor into its rubber sleeve on the intake manifold. The sleeve ends are different sizes so be sure that you have the proper end on the manifold. Orient the carburetor so that it is perpendicular to the crankshaft when viewed both from the top and the intake side. Tighten the clamps holding the sleeve and the carburetor after locating them so they are accessible for retightening.

d. Connect the fuel line to the carburetor and secure it with a hose clamp. Detail 29G.

e. Throttle and choke cables at carburetor.

(1). Make sure that all conduit ends have end caps installed on the carburetor assembly to ensure that the conduit cannot slide into adjuster bases, causing

throttle adjustments.

(2). Slide the D3 conduit clips onto the throttle conduit and conduit, both with cables installed (CS-39D conduits and CS-38D cables). Detail 29F.

(3). Ready the cables to be attached to the carburetor and the slide tube. The entire length of the cables should be well greased with white grease. Slide the rubber boot and a cable conduit adjuster (MR-20DR5) onto the choke and throttle cables. Detail 29G.

f. Carburetor. (NOTE: For dual carburetors, see Section 5.e.3. of chapter.)

(1). As you remove the carburetor cap, notice carefully which side faces the engine. The adjuster is closer to the engine side of the carburetor. Remove the spring under the cap. Lift out the white plastic plate and the slide barrel. Remove the needle from the slide barrel. Detail 29H.

(2). Make sure the clip is in the lower groove on the needle. Slide the needle back into the slide barrel.

(3). Slip the end of the throttle cable (with the small sleeve at the end) down through the cap and the white plastic plate. Run the cable end down through the slide tube and slide its tip toward the center of the slide tube, locking into the detent. Now fit the white plastic plate back into the slide tube.

(4). Then fit the bottom end of the spring onto the cable by turning the spring. Turn the spring completely onto the cable between the plastic plate and the underside of the top cap. When the spring is completely on the cable, slide the top end of the spring into the recess in the underside of the top cap and return the cap to its proper position on the carburetor.

(5). Add 2 MR-7DR5 bracket arms to the carburetor bolts. Insert the choke conduit adjuster (MR-20DR5) with a 4-HNF nut screwed on through the choke conduit adjuster arms and add the cable adjuster lock nut, 4-LN. Only 2 1/2 threads should be visible on the lock nut. Detail 29G.

(6). Join the choke cable end to the choke knob with a split bolt.

Draw the cable end down against the brass choke knob and fit the split bolt both, locking the cable end to the knob. Tighten the split bolt with two wrenches to prevent the delicate brass knob from bending. Secure with blue Loctite. Tighten the cable adjuster lock nut, using blue Loctite. Make sure that the choke can move freely since the engine will not run with the choke up any amount. Detail 10C.

(7). When setting the carburetor, remember that its idle speed varies with altitude. These instructions will be a starting place.

(8). Look in the intake port on the side of the carburetor. Make sure the cable is not holding the slide tube open, that it is closing fully. Turn the idle adjustment screw on the left side of the carburetor, adjust it to be 5/16" open. This approximates the setting for the desired idle speed of 2000 RPM.

(9). Before leaving the carburetor, make sure that the position of the conduit adjuster leaves room for later cable adjustment in either direction.

g. As the carburetor and choke cables leave the carburetor, they curve upward, forward and down in a sweeping curve toward the floor pan. They may be supported with standoffs to the engine mount tube and the rear up tube enroute.

(1). Run the throttle and choke control cables (CS-38D cable and CS-39D cable conduit) through the left floor pan toward the front of the aircraft. Inside the outer face of the floor pan at its rear end, secure the 2 cables with CS-40D cable clips. From there they run forward to the throttle and the choke.

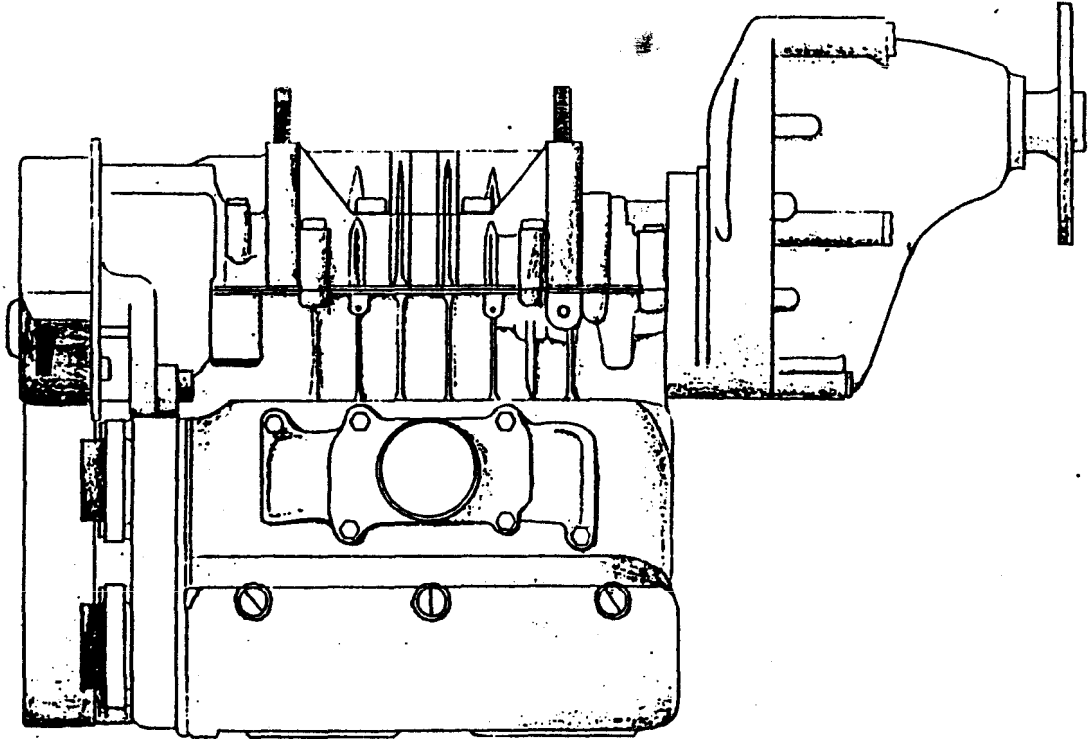
(2). The throttle and choke control cables come up through the upper floor pan just aft and to the left of the forward seat. Fit the throttle control cable with a cable conduit adjuster and insert through the inner conduit adjuster bracket. Secure with lock nuts (4HNF) on either side of the bracket. Repeat the process with the throttle cable, inserting it through the outer conduit adjuster bracket. Detail 10C.

(3). Insert a cable thimble (CS-69D) into the inner hole on the choke lever. Thread the choke cable around the thimble. There are 2 choke settings: OFF and ON. The position for ON is a matter of personal preference. Some prefer the choke ON when set at 45 degrees forward of perpendicular to the fuselage. Others prefer to have the ON position just past centerline. Although cable tension is important, the latter setting ON, both settings rely principally on friction. Since the

Det. 29A

Maxair
Aircraft Corp

XP 503 - Left Side

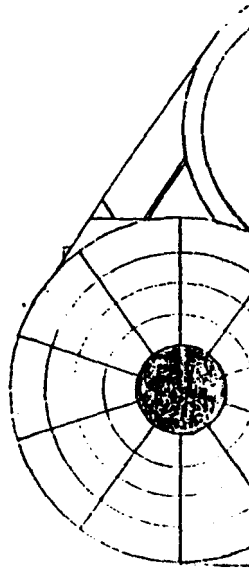
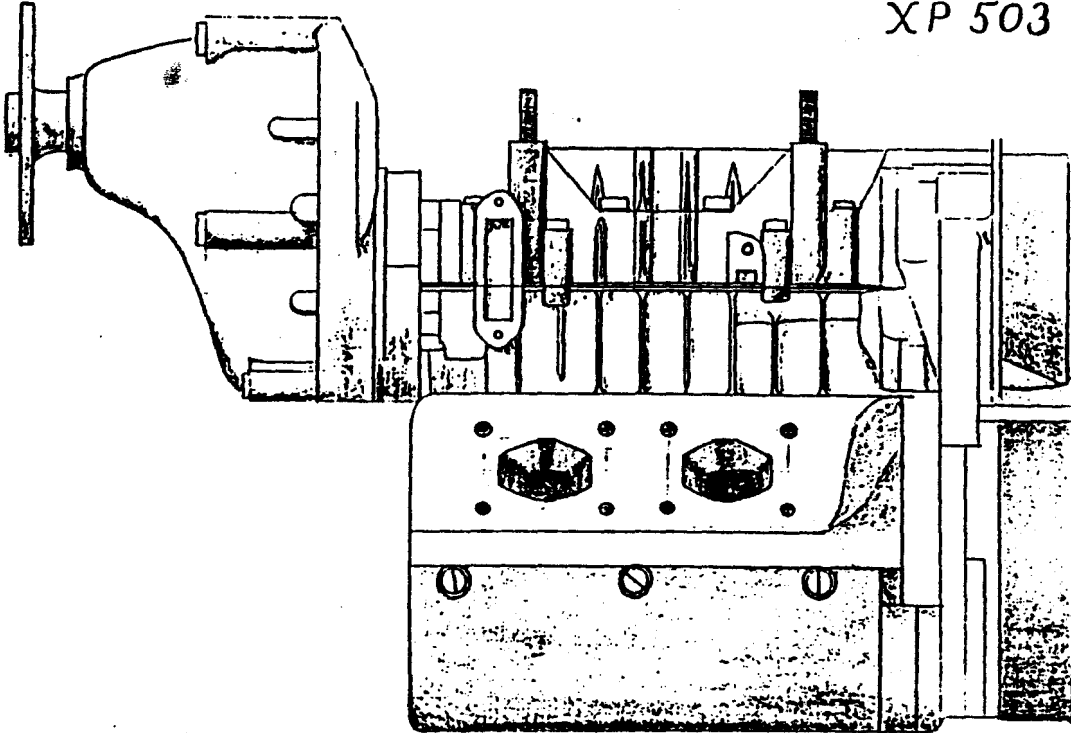


V-339.1

D 129B

Maxair
Aircraft Corp.

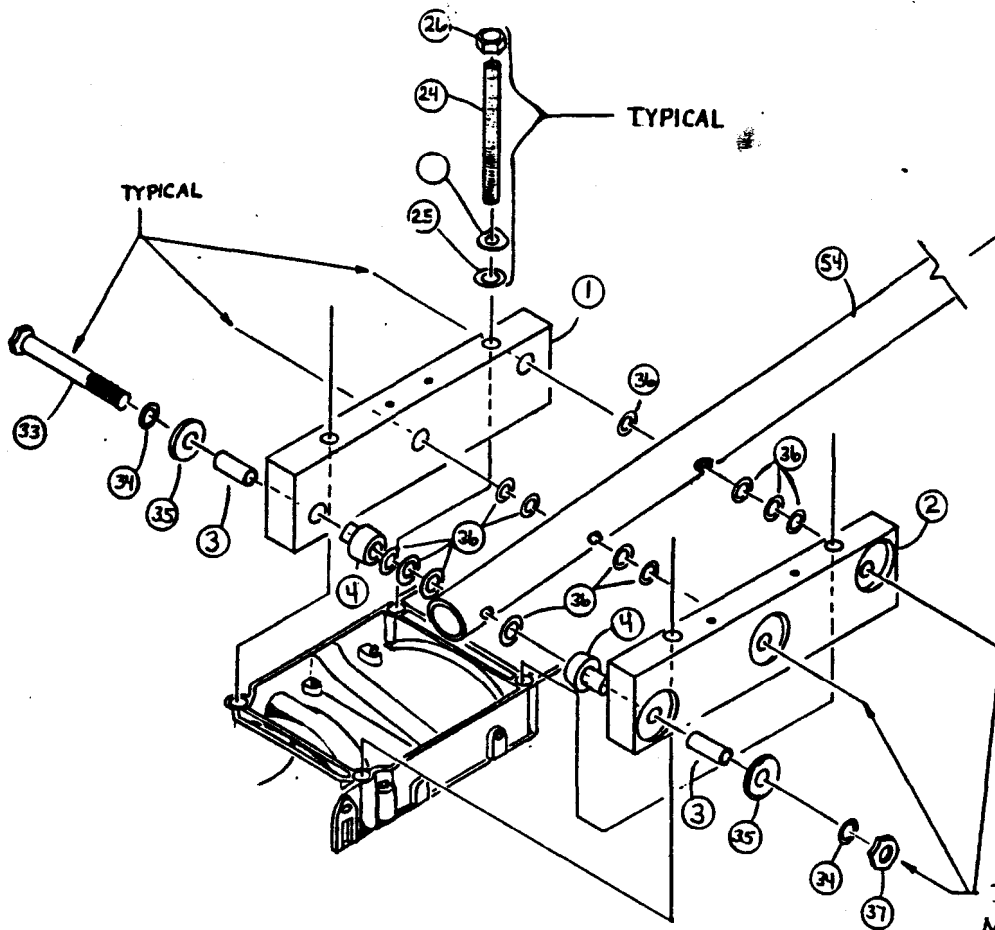
XP 503 - Right Side



V-37.2

Detail 29C

V-39.3

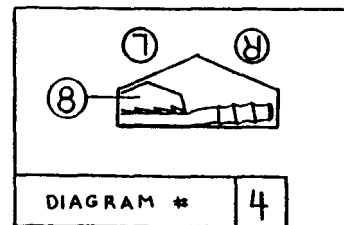
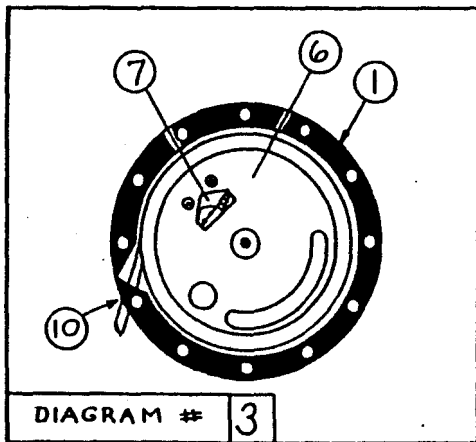
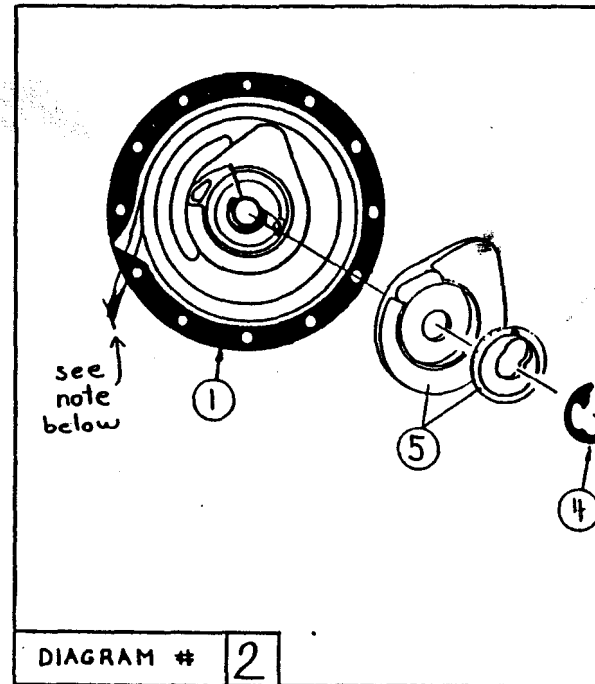
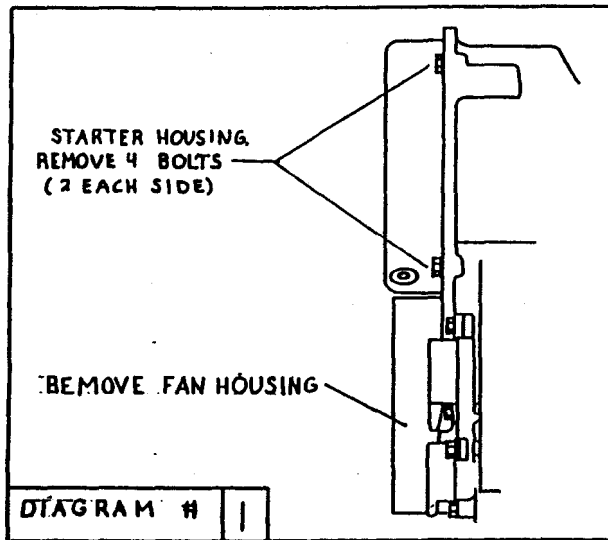


NOTE:
INST.
BLOC
INST.

TYPICAL
NOTE AMOUNT OF
WASHERS SHOWN
INCLUDE THE RUBBER
(ITEM # 3)
ON EACH MOUNT

R
NO
1
2
3
4

Detail 29D

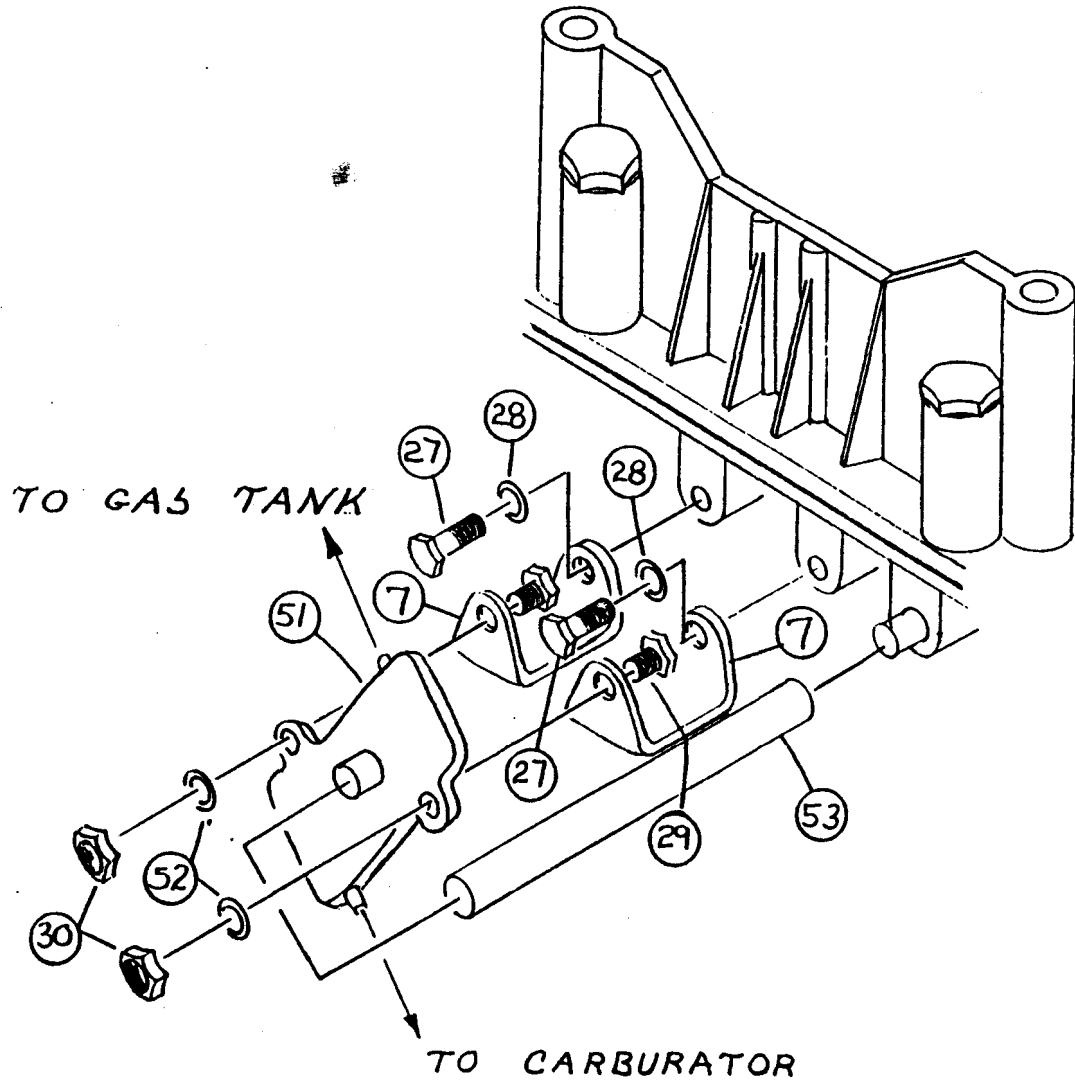


NOTE: POSITION OF SECTION 10 TO SECTION 7 MAY DIFFER - ROTATION MAY BE REQUIRED.

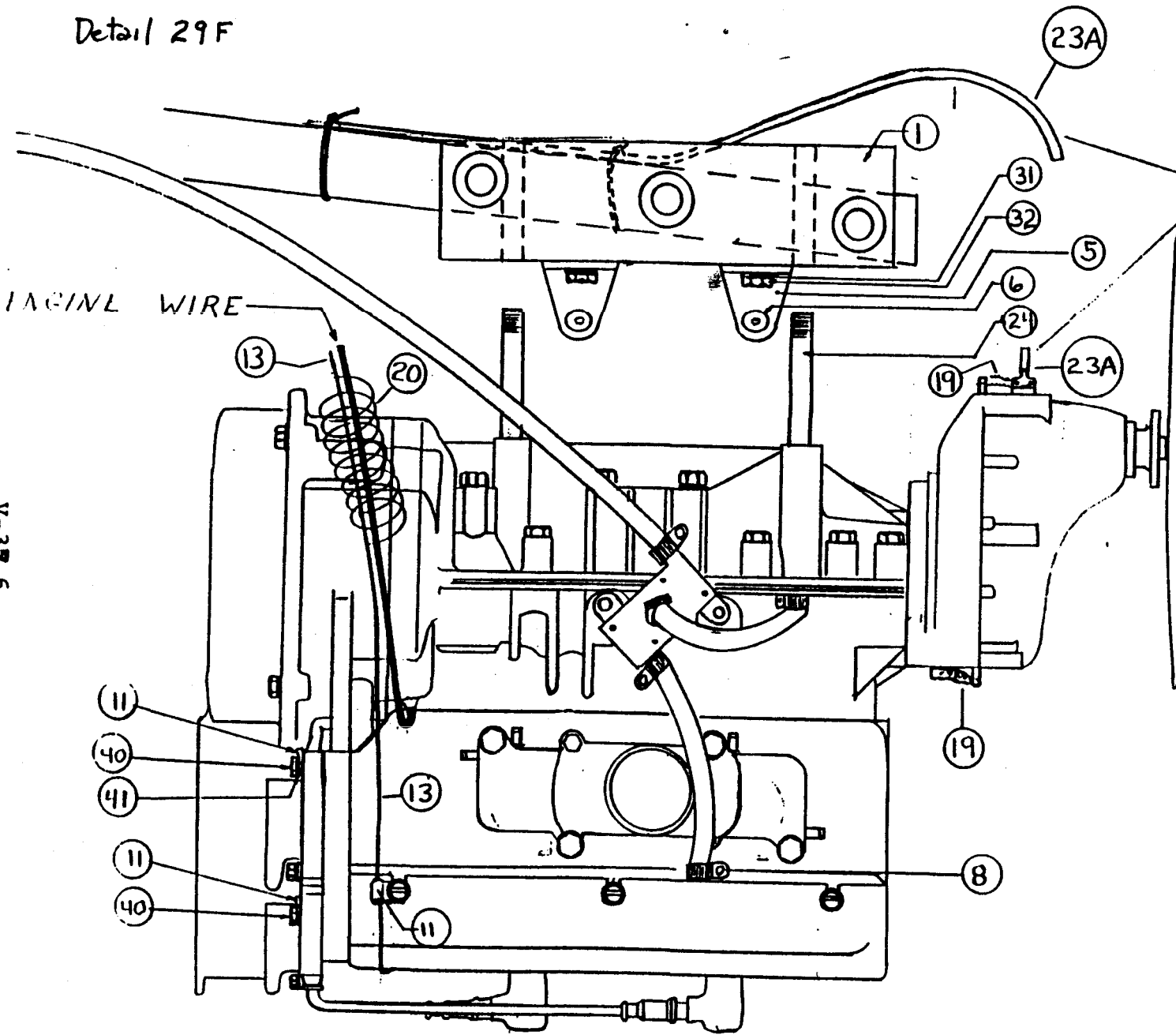
V-37.4

Detail 29 E

V-337.5



Detail 29F



V-39.6

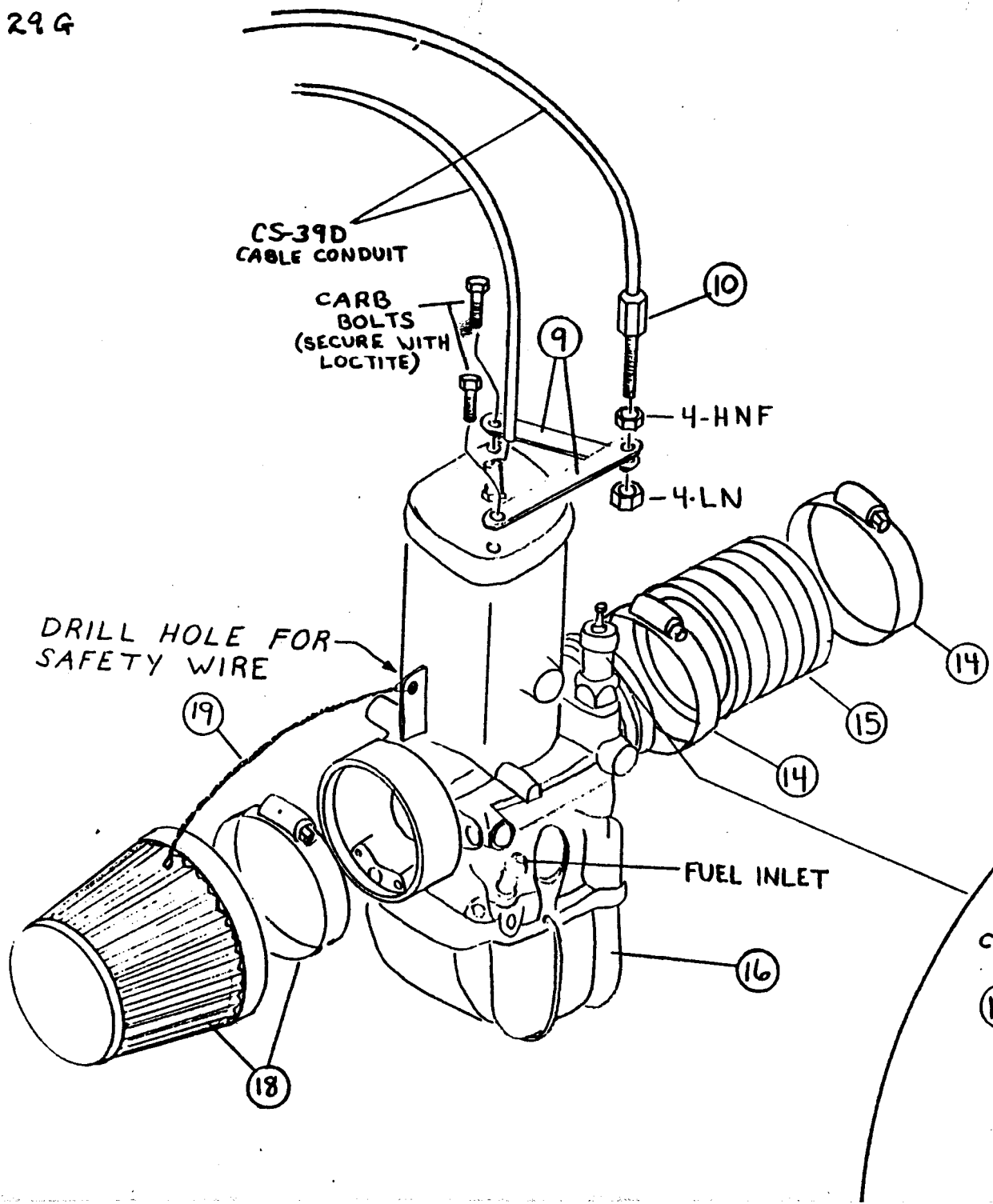
XP503 ENGINE ASSEMBLY

Detail 29F-1

Item#	Qty.	Part No.	Description	Section
1	1	MR-56DR5	LEFT MOTOR MOUNT BLOCK	
2	1	MR-57DR5	RIGHT MOTOR MOUNT BLOCK	
3	6	MM-27D	LORD MOUNT BUSHING	MM-DXP
4	6	MM-26D	RUBBER LORD MOUNT	MM-DXP
5	2	MR-55DR5	S.S. MUFFLER BRACKET	MR-DR5
6	4	MR-31DR5	MUFFLER BRKT. GROMMET	MR-DR5
7	2	MR-14DR5	FUEL PUMP U-BRACKET, ALUM.	MR-DR5
8	7	UF-29D	HOSE CLAMPS	UF-DXP
9	2	MR-07DR5	CONDUIT ADJUSTER BRACKET.	MR-DR5
10	3	MR-20DR5	CONDUIT ADJUSTER	MR-DR5
11	6	MR-21DR5	(CS-40D) CABLE CONDUIT CLIP	MR-DR5
12	1	MR-29DR5	(CP-15D) SPLIT BOLT	MR-DR5
13	1	CP-161D	EGT PROBE	
14	2	251 850	(MR-06DR5) HOSE CLAMPS, LG.	EngPkg
15	1	867 481	(MR-09DR5) CARB MOUNT FLANGE	EngPkg
16	1	995 510	(MR-08DR5) CARBURETOR.	EngPkg
17	3	MR-33DR5	CABLE SAFETY BARREL	MR-DR5
18	1	RC-1200	K&N AIR FILTER	MM-DXP
19	6	MM-31D	SAFETY WIRE	MM-DXP
20	1	MM-29D	SPIRAL WRAP	MM-DXP
21	3	938 795	(MR-04DR5) MUFFLER SPRINGS.	EngPkg
22	1	MR-50DR5	60 M 30 RIGHT HAND PROP	
23	1	827 285	PROP WASHER	EngPkg
23A	1	MR-49DR5	1/4" O.D. GEAR BOX VENT TUBE	MR-DR5
24	4	10MMX90	ENGINE STUD	HW30
25	4	10MM-FW	10MM FLAT WASHER	HW30
26	4	10MM-SLN	10MM LOCK NUT	HW30
27	2	6MMx16	6MM BOLT	HW30
28	2	6MM-LW	6MM LOCK WASHER	HW30
29	2	AN4-7A	1/4" BOLT	HW30
30	2	4SLN	1/4" STEEL LOCKNUT	HW30
31	8	4LW	1/4" LOCK WASHER	HW30
				HW15
32	2	AN4H-4A	1/4" BOLT DRILLED HEAD	HW30
33	3	AN5-43A	5/16" BOLT	HW30
34	12	5FW	5/16" FLAT WASHER	HW16
35	6	5LFWM	5/16 LG. FLAT WASHER 1-3/16 O.D.	HW30
36	12	5LFW1 3/8	5/16 LG. FLAT WASHER S.S.	HW30
37	3	5LN	5/16" LOCK NUT	HW30
38	2	AN4-12A	1/4" BOLT	HW30
39	6	4LFW	1/4" LG. FLAT WASHER	HW15
40	2	5MMx25	5MM BOLT	HW30
41	2	5MM-LW	5MM LOCK WASHER	HW30
42	6	4FW	1/4" FLAT WASHER	HW15
43	6	AN4H-27A	1/4" BOLTS, DRILLED HEAD	MR-DR5
44	2	831 841	Gasket.	ASSY
45	1	879 144	Exhaust Manifold.	EngPkg
46	4	8MM-LW	Lock Washer.	EngPkg
47	4	8MM-A	Cyl. Hex. Bolt.	EngPkg
48	1	MR-03DR5	Side-Mount Muffler.	
49	x	845 270	Star Washer.	ASSY
50	x	841 490	Screw.	ASSY
51	4	10MM-LW	Lock Washer.	EngPkg

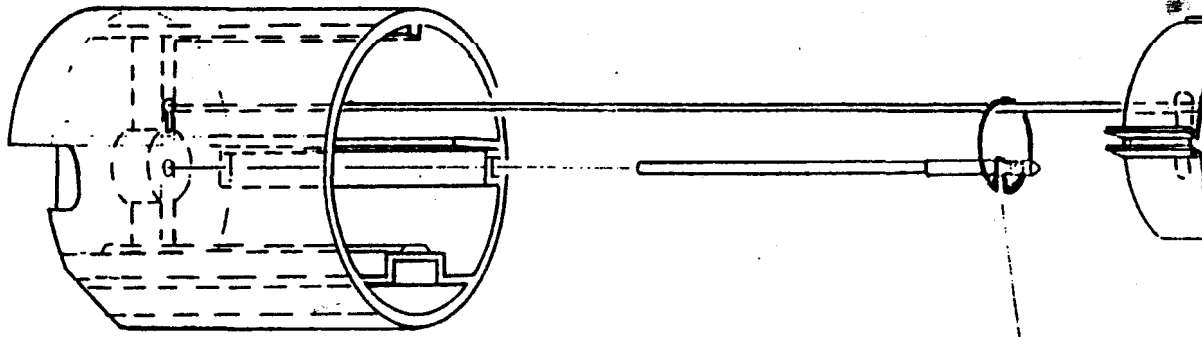
Dev 29F-1

Detail 29 G



V-38-8

Detail 29H



(NOTE)
MAKE SURE PROPER
GROOVE IS IN CLIP

CARBURETOR DETAIL

10-20-66

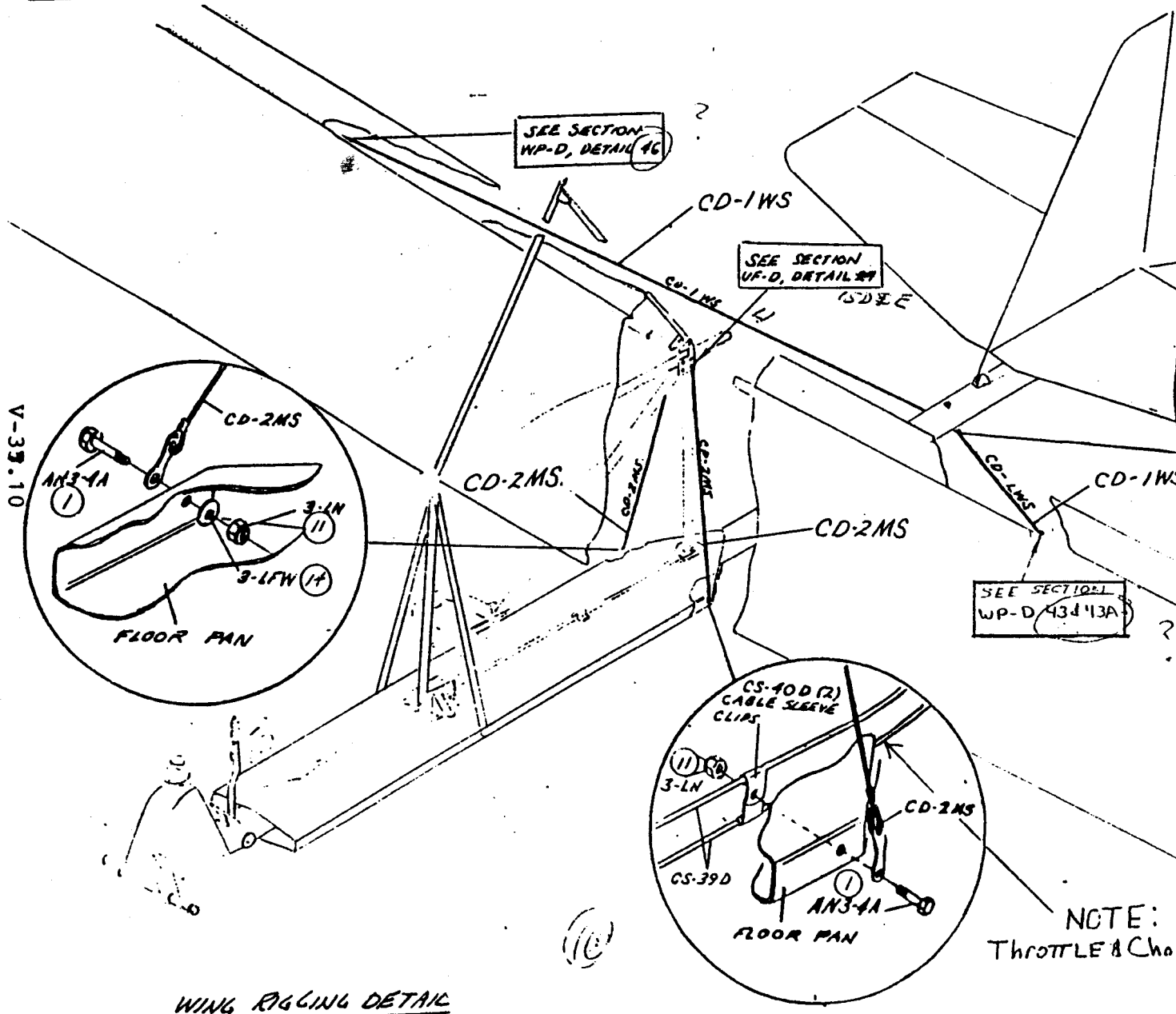
V-37.9

1

CD-D

DETAIL 30

MODELS: ALL



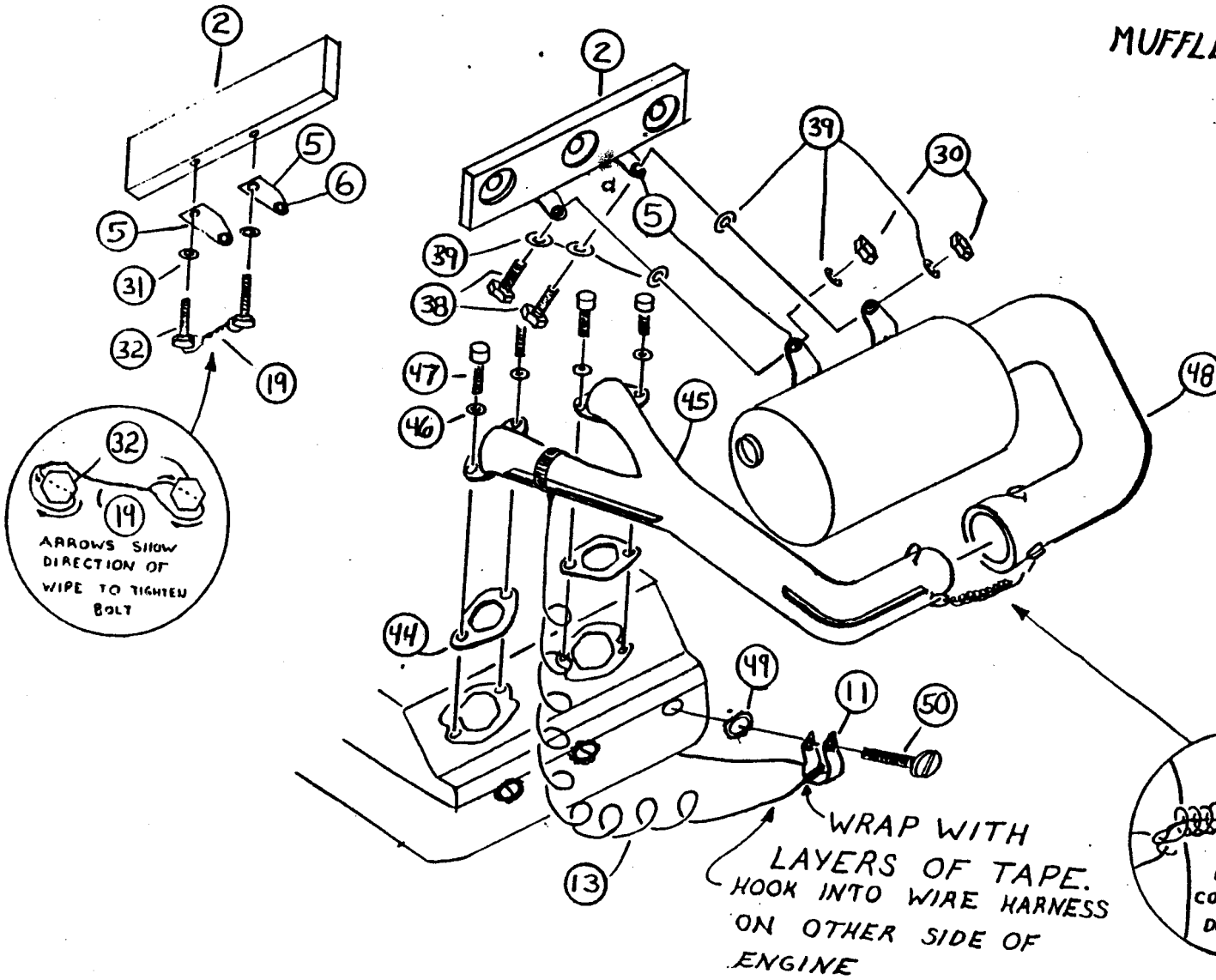
WING RIGGING DETAIL

NOTE:
Throttle & Cho

Detail 31

MUFFLER

V-35.11



2-23-87 51

used only in starting the engine and is OFF at all other times, this setting is critical. After setting the choke to your ON position, secure the choke cable permanently with a split bolt. Use blue Loctite. Detail 10C.

(4). Place a cable thimble (CS-69D) into the lower hole in the throttle lever. Set the throttle full open. Adjust the throttle cable so that the carburetor barrels still have about 1/16" travel before hitting the top. At this point, secure the throttle cable using 2 split bolts. Place the first one close to the carburetor and the second about 1/2" further back. Secure with blue Loctite. Detail 10D.

h. Remove the magnetic steel plug from the top of the gear box and install it in the bottom. Loctite and torque it according to the engine manual. Temporarily install the plastic filler vent cap in the top of the gear box. Check that the cap has a hole drilled through its center. Fill the gear box to the lower level screw with the proper gear oil. Safety wire the drain plug and the filler vent cap. Safety wire the 2 screw plugs on the right side together so that neither will back out. Detail 29F (Item 19).

6. Exhaust System.

a. Install the exhaust manifold or header (879 708) with the muffler pointing forward. Use a header gasket (850 300), 2 M8 x 30 bolts (840 991), 2 lock washers (945 752) and Loctite to secure it to the exhaust port. Detail 30.

b. Attach 2 muffler brackets (MR-55DR5) to the right engine mount using the 2 holes on the underside of the block. Use 2 bolts with drilled lock washers, to secure the brackets. Note the need and method for safety wire the bolts for security. Before tightening them completely, make sure they are a tight fit on the brackets on the muffler. Detail 31.

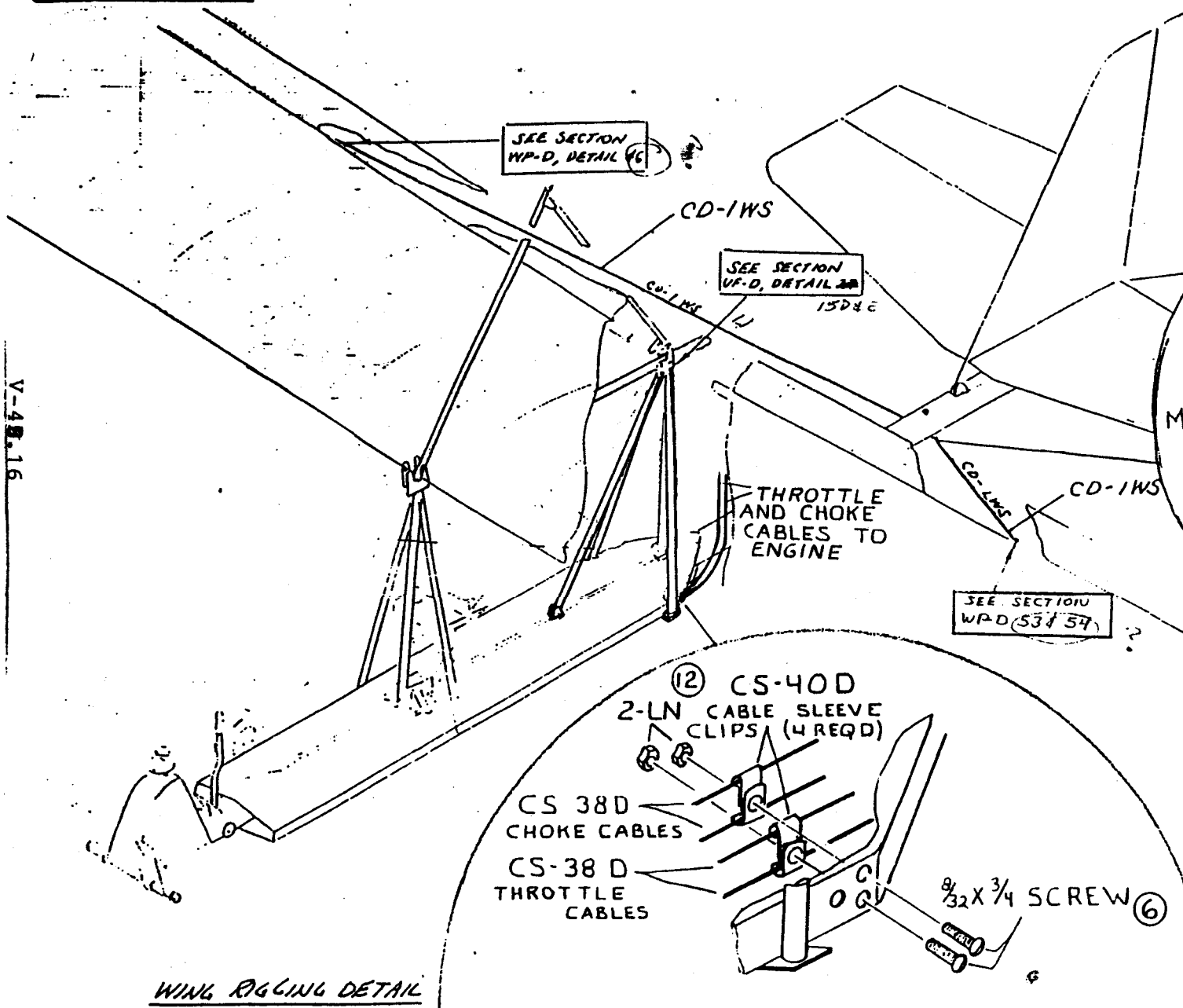
c. Install rubber grommets (MR-31DR5) in the muffler brackets and the muffler brackets on the muffler (MR-03DR5).

d. Insert the end of the muffler into the exhaust manifold flange and secure it to the brackets. Secure the brackets together with AN4-12A bolts and 4-S lock nuts. Use 4-LFW large flat washers between the rubber grommets, between the manifold heads and rubber grommets and between steel lock nuts and rubber grommets.

CD-D

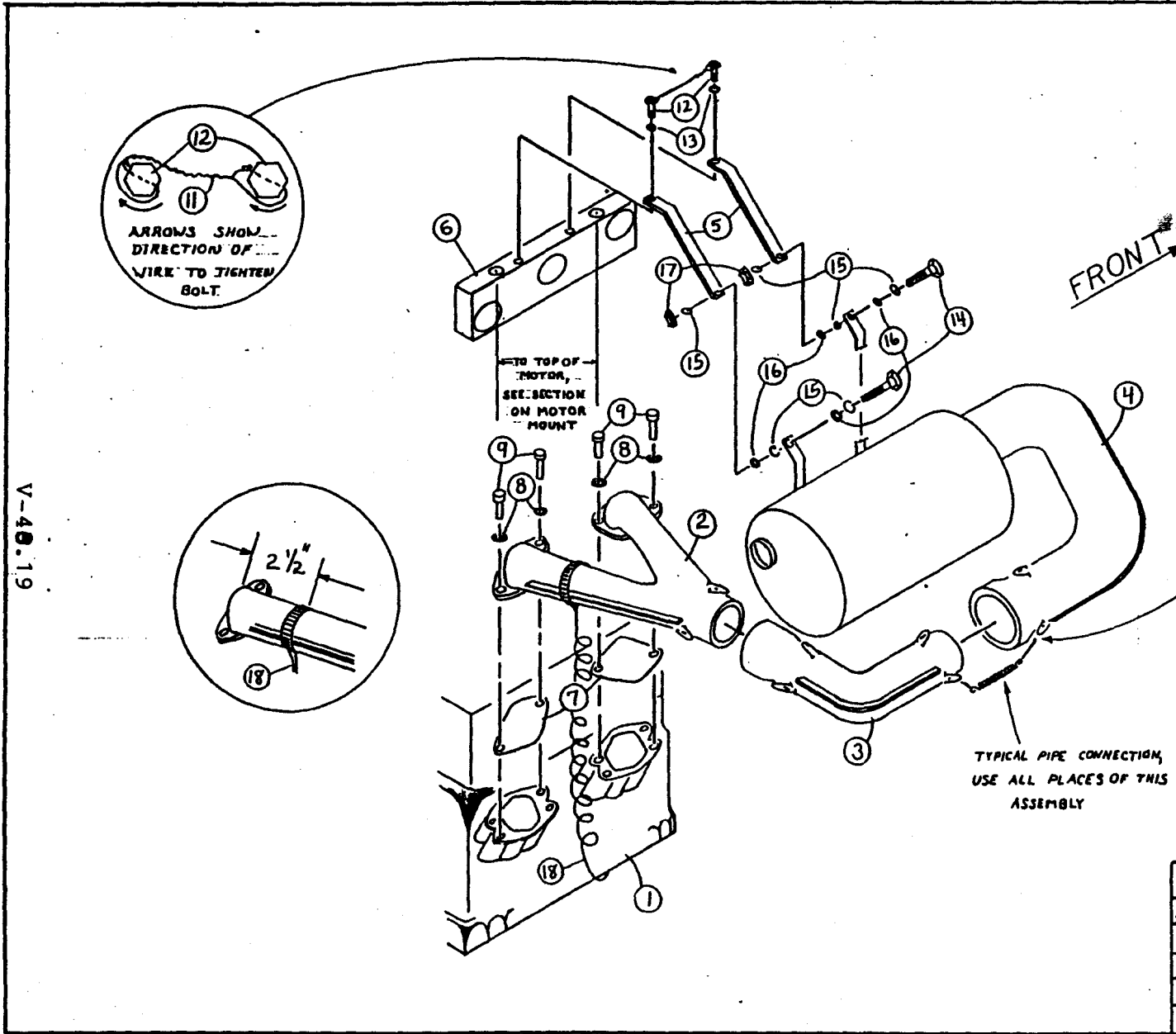
DETAIL 32M

MODEL MV532



WING RIGGING DETAIL

Detail 33



e. Note that there are 3 pairs of ears at the joint of the header and muffler.

(1). Locate the 3 springs (938 790) which will connect these ears. Check that the ears are far enough apart so that the springs, when installed, will be under some tension. If not, carefully bend one or more ears far enough to a more vertical position with pliers to provide tension in a spring. Be careful not to break a weld while bending an ear. Connect the pairs of ears with the springs. Run the spring ends through the ears from the inside out whenever possible.

(2). Run a piece of safety wire from 1 ear through the spring and its companion ear. Loop it through the ear loosely and run it back through the hole in the first ear. It should be loose enough to permit the spring to flex and to expand and contract normally. Secure the safety wire with RTV. This will hold the spring in place should it break. Repeat for all springs. Detail 31.

f. Install an EGT probe (CP-161D) in the exhaust header. Drill a 1/2" diameter size hole in the center bottom of the header 2 1/2" from the engine block. Connect the probe with the accompanying hose clamp. Leave the probe lead coiled for the engine compartment. Detail 31.

Now, go to Section I, page V-51.

H. PREPARING AND MOUNTING THE ROTAX 532 ENGINE

1. Engine mounting blocks.

a. Note that there is a right and a left engine mounting block (MR-56D5, respectively). Detail 32C.

b. Insert rubber Lord mounts (MM-26D) into the inner side of the drilled in the face of each mounting block. A small amount of liquid detergent fluid makes insertion of the blocks easier. Make sure the Lord mounts are seated against the mounting blocks. Detail 32C.

c. When you attach the mounting blocks, pay particular attention to the number of washers required on each side of the motor mount tube to cant the engine slightly. You will have to compress the Lord mounts to start the nuts. Torque lock nuts on the AN5-43A bolts to 130 in/lb. Detail 32C.

2. Preparing the engine for mounting. Your Drifter engine, when you receive it is set up to be mounted with the mounting studs down. However, you will be mounting the engine from the mounting blocks so some changes must be made.

a. When you remove the engine from its box, turn it upside down and place it on the edge of a bench or table. Be careful not to set the engine on the spark caps.

b. Place a container under the oil reservoir, remove the cap and drain the oil from it. Remove both hoses from the oil reservoir. Hold the hose fittings with pliers (carefully, to avoid distorting the fittings). Remove both nuts and washers and remove the reservoir from the engine. With a hack saw, remove the oil reservoir bracket and cut smooth. After mounting the engine, the oil reservoir will be replaced in the bracket.

c. Remove the short mounting studs from the engine block. Replace them with the longer studs provided (10mmx90). Use Loctite on the studs.

d. Temporarily, remove the coil plate assembly. To do so, remove the bottom water outlet using a 10mm socket or wrench. With a 13mm socket, remove the top bolts. DO NOT UNHOOK THE COIL WIRES. Detail 32A & D.

- e. Remove both oil hoses from the engine.
- f. Insert a spring (BR-12) half-way into the end of the oil inlet (lower oil fitting). Its purpose is to prevent a kink in the line as it turns to enter the engine behind the coil plate. Now, expand several coils of the spring sufficiently to prevent it going any further into the oil inlet tube. Insert the other half of the spring, including the expanded portion, into the end of the longer hose. Detail 32D.
- g. With hose clamps in place, fit both oil hoses back on the engine fittings. Mount the longer hose with the spring in it on the lower fitting and the shorter hose on the upper fitting. Tighten the hose clamps, adjusting their positions so that the clamp screws are accessible. Use a drop of blue Loctite on each of the nut areas. Detail 32D.
- h. Make sure both oil hoses will reach at least 2" above the top of the engine block. Route the longer hose from behind the coil plate up between the carburetor mount flanges. Detail 32D.
- i. Cut 3/4" off the end of each hose. Split these sections lengthwise. Using cable ties to secure them on the hoses, place one on the long hose where it touches a nut or bolt head on the back of the coil plate. Place the second cable tie on the upper hose to act as a buffer between the 2 oil lines..
- j. Replace the coil plate assembly using blue Loctite on the bolts. Refer to the engine manual for torque specifications on all bolts and nuts. You may wish to consider reversing the bolts so that the nuts are on the face of the plate. This will make it possible to replace coils without having to remove the entire plate. If you select this option, substitute AN3-15A hex head bolts for the original bolts. Tighten the nuts and bolts according to the engine manual, being careful not to pinch any electrical wires.
- k. Remove the magnetic steel plug from the top of the gear box and install it in the bottom. Loctite and torque it according to the engine manual. Temporarily install the plastic filler vent cap in the top of the gear box. Check that the cap has a hole drilled through its center. Fill the gear box to the lower level screw with the proper gear oil. Safety wire the drain plug and the filler vent cap. Safety wire the 2 screw plugs on the right side together so that neither will back out. Detail 29F (Item 19).

3. Recoil Starter. The recoil starter comes with a short rope start installed. In order to be able to start the aircraft from the cockpit, this must be replaced with a longer cable (CD-1RD).

- a. On the rear of the engine, remove the recoil starter. Detail 29D.
- b. Carefully remove parts (2), (3), (4) and (5) from part (1), on the large pulley. Detail 29D.
- c. Before continuing further, have a split bolt, a rivet mandrel and replacement cable ready.
- d. Holding the pulley down, pull the handle and rope out, allow pulley to rotate until the rope is fully extended. Hold the pulley in that position and cut the handle from the rope. Pop out the end of the rope and the key (8) from the pulley (7). A screw driver works well for this. CAUTION: During the next 4 steps, hold the housing (1) and pulley (6) firmly in position. DO NOT ALLOW IT TO SPIN. Detail 29D.
- e. Pull the rope out of slot (7) in a left to right direction.
- f. Push the new cable into slot (7) in a left to right direction until it comes out through opening (10). Pull it all through until only the end is left in the housing. Detail 29D.
- g. Place the end of the cable and the key (8) in the positions shown in Detail 29D. Push in the direction of the teeth on the key. Push into place with a screw driver.
- h. Slowly allow the cable to wind 3 1/2 turns into the starter housing.
- i. Connect the split bolt to the outside of the housing. This will prevent the entire cable from being pulled onto the starter sheave. A pop rivet mandrel is needed inside the split bolt in order to grip the single strand of cable.
- j. Replace the parts removed earlier. Refer to paragraph 2, above, for the post and spring when replacing. Detail 29D.
- k. Remount the starter housing on the engine with the cable open.

five o'clock position as you look at the rear of the engine with the engine down. Detail 29B.

4. Mounting the engine.

a. Always torque engine bolts and nuts. Use blue Loctite on regular not lock nuts.

b. Mounting the engine will require assistance, partly because of weight and the need for extra hands - to guide the studs into the holes in the mounting and start the nuts on them.

c. Before tightening the nut on the left front stud, place the reservoir bracket (MM-57-2D5) on the stud and then secure it.

d. Torque the lock nuts (10mm-SLN) on the studs to 225 in/lb.

5. Connecting engine components and parts.

a. Place the engine oil reservoir (956 077) and its rubber pad on the reservoir bracket. Secure the reservoir with a cable tie to the side of the

b. Connect the shorter of the 2 oil hoses to the reservoir outlet. The longer oil hose connects the engine oil outlet to the reservoir inlet (which is a standpipe inside the reservoir tank). Secure both hoses with hose clamps. Use hose clamps so that their screws are easily accessible for later adjustment. Use blue Loctite on the screws at their nuts.

c. Prime the engine oil system. The purpose is to fill the engine with oil, thereby forcing all air out of the engine. Fill a turkey baster (a super-suction dropper) with oil. Force into the oil system through the lower inlet in the reservoir. Do not force any air into the system. Repeat a second time or until oil comes out of the other line in the reservoir. Fill the oil reservoir to the correct level.

d. On the engine coolant intake and outlet, there are casting lines that could cause leaks around coolant hoses if not removed. With a fine file, remove the casting lines, but no more. Leave no flat spots.

e. The fuel pump (994 485) requires 2 brackets (1 long - MM-52D5 TOFT)) to mount it on the engine. Detail 32F.

(1). The long bracket mounts on a bolt in the intake manifold. The bolt you take out must be replaced with a longer one (AN4-12A) because of the length of the bracket.

(2). The short bracket mounts to the engine just above the adjuster bracket (MM-58D5). Two rubber grommets (MR-31DR5) are used in the fuel lines at the fuel pump for isolation from vibration. Use 3LF washers drilled to the nut side of the rubber grommets.

(3). Pay attention to the orientation of the fuel pump. Connect the fuel pump end of the lines to both carburetors and both ends of the line from the engine block to the rear of the fuel pump. Use small hose clamps to secure the lines. Detail 32F.

f. Remove the choke lever and mounting bracket from both carburetors. Discard these; they will be replaced with a different choke control system. Detail 32G.

g. On a dual carburetor installation, install the 2 carburetors on the intake manifold. Install rubber sleeves on the intake manifolds. Orient the carburetors so that they are perpendicular to the crankshaft when viewed both from the top and the intake side to ensure an equal fuel mixture distribution to both cylinders. Tighten the clamps on each carburetor after locating them so that they are accessible for retightening.

h. Connect the fuel lines to both carburetors and secure them with hose clamps. Detail 32F.

i. Slide the D3 conduit clips onto the 2 throttle conduits and 2 fuel conduits, all with cables installed (CS-39D conduits and CS-38D cables). Attach the clips to the conduit adjuster bracket (MM-58D5). Detail 32F & G.

j. Attach the conduit adjuster bracket (MM-58D5) to the engine block. After final tightening of the conduit clips, make sure the lengths of the 4 conduits are sufficient to loop upward and over from the clips and down to the carburetors in a smooth arch. Detail 32G & H.

k. Ready the cables to be attached to the carburetor and the choke. The entire length of the cables should be well greased with white grease. Slide the choke boot and a cable conduit adjuster (MR-20DR5) onto each choke and throttle cable.

l. As you remove the carburetor cap, notice carefully which side the spring is on the engine. Remove the spring under the cap. Lift out the white plastic plate and slide tube. Remove the needle from the slide tube. Detail 32I.

m. Make sure the clip is in the center groove on the needle. Put the slide tube back into the slide tube.

(1). Slip the end of the throttle cable (with the small knob on the end) down through the cap and the white plastic plate. Run the cable end down the slide tube and slide its tip toward the center of the slide tube, lock it in the detent. Now fit the white plastic plate back into the slide tube.

(2). Then fit the bottom end of the spring onto the cable between the plastic plate and the spring. Turn the spring completely onto the cable between the plastic plate and the underside of the top cap. When the spring is completely on the cable, slide the slide tube back into the carburetor housing, making certain the needle is properly seated. Fit the top end of the spring into the recess in the underside of the top cap. Return the cap to its proper position on the carburetor.

(3). Add 2 choke bracket arms to the carburetor bolts. Insert the choke cable adjuster and through the choke bracket arms and secure with a cable adjuster lock nut. Repeat for the second carburetor. Detail 32G.

n. Join the choke cable end to the choke knob with a split bolt. Push the cable end down against the brass choke knob and fit the split bolt around both the cable end to the knob. Tighten the split bolt with two wrenches to prevent the delicate brass knob from bending. Secure with blue Loctite. Then secure the cable adjuster lock nut. Make sure that the choke returns to the full down position. Detail 32G.

o. When setting the carburetor, remember that its idle settings will change with altitude. These instructions will be a starting place.

(1). Look in the intake ports on the sides of the carburetor to make sure that the cables are not holding the slide tubes open, that they are closing.

Then, using the idle adjustment screw on the left side of each carburetor, adjust the idle to be about 5/16" open. Make sure that both carburetors are set the same. This setting approximates the setting for the desired idle speed of 2000 RPM.

(2). Later, when the engine is running and adjustments must be made, make sure that equal adjustments are made to each carburetor, 1/8 or 1/4 turn at a time. Before leaving the carburetor, make sure that the position of the cone adjusters leaves room for later cable adjustment in either direction.

p. The radiator (MR-69D5) has plastic mounting ears top and bottom. Make sure the mounting brackets are attached. Ream the holes in these ears using a 1/2" ream in an electric drill. Insert rubber grommets (MR-31DR5) into these holes. Part 32J.

q. Insert rubber grommets (MR-31DR5) into the corresponding mounting holes in the lower and upper radiator brackets (MR-64DR5 and MR-65DR5, respectively).

r. The lower radiator bracket will be located between the third and fourth sets of rivets from the rear of the floor pan. Locate, mark and drill the hole in the bracket. Secure the lower bracket to the floor pan using 4 SS-64 rivets. Drill & K.

s. Attach the radiator to the lower and upper brackets and secure to the aircraft.

(1). Insert an AN4-13A bolt, with a 3LFW-M washer, through the hole in the lower bracket and the radiator ears from the outside. On the inside, insert a 3LFW-M washer and a 4LN lock nut. On the inside of the bracket, the 3LFW-M washer should be ground flat on one side.

(2). Insert an AN4-13A bolt, with a 3LFW-M washer, through the hole in the upper bracket and the radiator ears from the outside. On the inside, insert a 3LFW-M washer and a 4LN lock nut.

(3). Swing the radiator upright and the upper bracket forward to a horizontal position. Move the bracket forward until it contacts the rear up tube. Making sure that the bracket is centered on the up tube, transfer drill its mounting hole, drilling through. Secure the upper bracket using an AN4-24A bolt with a plastic saddle and rubber grommet (MR-31DR5) inserted from the front. On the

of the bracket, add a 3LFW-M washer and an 4LN locknut.

(4). Note that the aileron and recoil starter cables run between radiator and the upper bracket. The face of the radiator should be parallel to the cables. Detail*32K & L.

t. Insert the white plastic plug in the bottom center hole in the radiator. Safety wire it in place.

u. Drill four 7/32" holes in the left end of the upper radiator bracket. Space the holes apart the diameter of the cable splitters. Debur the edges of the holes.

(1). Mount the the 2 cable splitter barrels (one each for the carburetor and choke) one on each side of the radiator bracket. (On the XP-503 dual carburetor installation, mount the cable splitters on the forward, left side of the engine compartment cable ties.) Loop cable ties through one of the holes just drilled, around a barrel and back through the second hole. Tighten them around the second splitter barrel on the front side of radiator bracket.

(2). Each barrel has a slide within it in which the ends of the cables coming from the carburetor or the choke and the throttle or choke cables from the front of the aircraft are locked. The purpose of these barrels is to allow a single cable control both carburetors and another cable control both chokes.

v. The 4 carburetor and choke cables have been clamped to the carburetor adjuster plate and, in one direction, they run downward toward the position where the throttle and choke cable splitters are mounted. Fit the ends of the conduits into the conduit ends and secure the brass tips on the ends of the cables in the proper slides. Crimp the conduit ends sufficiently for them to stay on the conduits enough to impede cable movement. Detail 32A.

w. Run the throttle and choke control cables (CS-38D cables and CS-38D conduit) through the left floor pan toward the cable splitters. Just inside the rear face of the floor pan at its rear end, secure the 2 cables using CS-40D cable clips. From there they curve upward toward the cable splitters. Detail 32M.

x. Fit conduit ends to the rear ends of both cables and secure the cable ends in the proper cable splitter barrel. Tighten the top and bottom of

barrel sleeve, using blue Loctite. Secure both cable splitters in the clamps the upper radiator bracket. Mount them back-to-back.

y. The throttle and choke control cables come up through a slot in the floor pan just aft and to the left of the forward seat. Fit the choke control cable with a cable conduit adjuster and insert through the inner conduit adjuster bracket. Secure with a lock nut, a 4HNF on the inner side of the bracket and a 4LN on the outer side of the adjuster bracket. Repeat the process with the throttle cable, insert through the outer conduit adjuster bracket. Detail 10C.

z. Insert a cable thimble (CS-69D) into the inner hole on the choke control cable. Thread the choke cable around the thimble. There are 2 choke settings: ON and OFF. The ON position for ON is a matter of personal preference. Some prefer to have the choke cable when set at 45 degrees forward of perpendicular to the fuselage. Others prefer to have the ON position just past centerline. Although cable tension may hold the choke in the setting ON, both settings rely principally on friction. Since the choke is used only in starting the engine and is OFF at all other times, this setting is not critical. After setting the choke to your ON position, secure the choke cable to itself permanently with a split bolt. Use blue Loctite. Detail 10C.

aa. Place a cable thimble (CS-69D) into the lower hole in the throttle cable. Set the throttle full open. Adjust the throttle cable so that the carburetor needle valves still have about 1/16" travel before hitting the top. At this point, secure the throttle cable using 2 split bolts. Place the first on close to the cable thimble and the second about 1/2" further back. Secure with blue Loctite. Detail 10C.

NOTE: Those XP-503 builders who have installed dual carburetors should refer to the XP-503 chapter, Section G.5.h., page V-38.

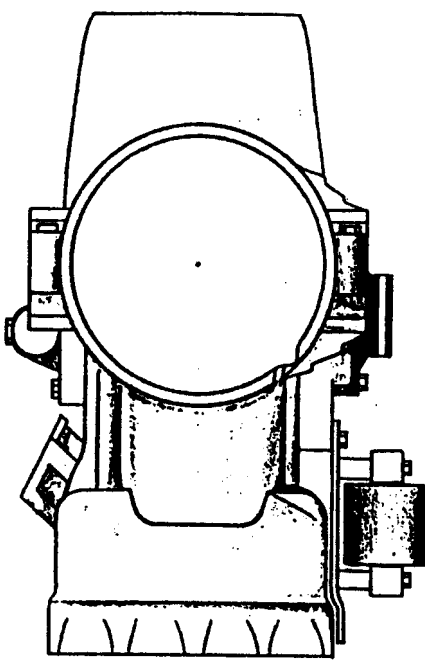
bb. Remove the plug in the center of the bottom of the engine using a 1/2" Allen wrench. Insert the Water temperature sensor (CP-161D5), using teflon pipe sealant to seal it.

cc. Mount the coolant filler tank bracket (MR-66D5) to the rear boom on the left side of the rear wing mount bracket using 4 CP-18D rubber grommets. Attach the coolant filler tank (MR-60DR5) to the filler tank bracket. Detail 32N.

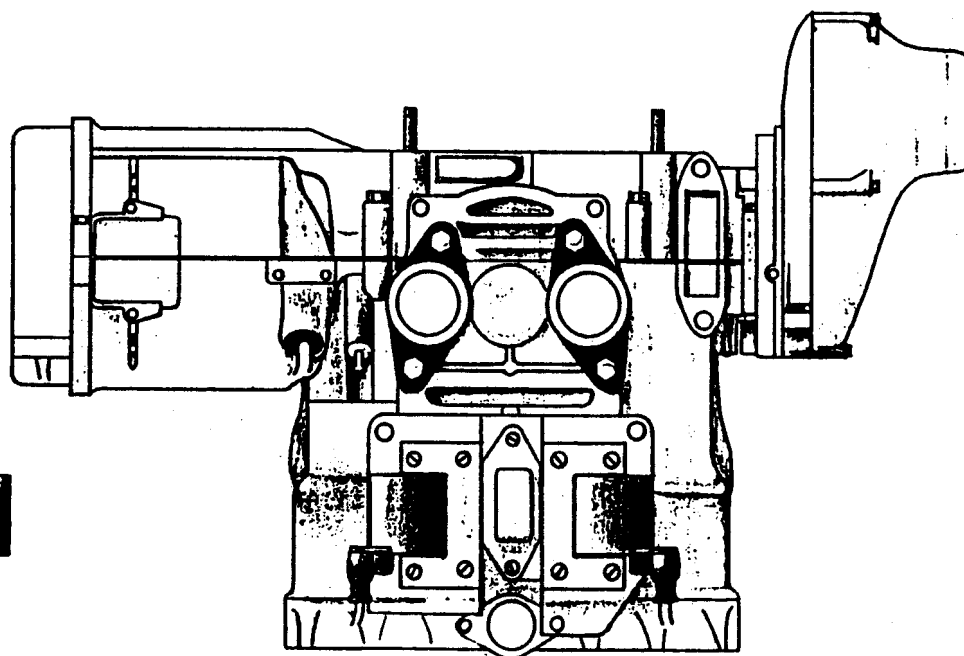
dd. Install the small brass fitting on top of the water pump housing on the exhaust side of the engine. Use teflon tape and tighten carefully.

Detail 32A

V-48.1



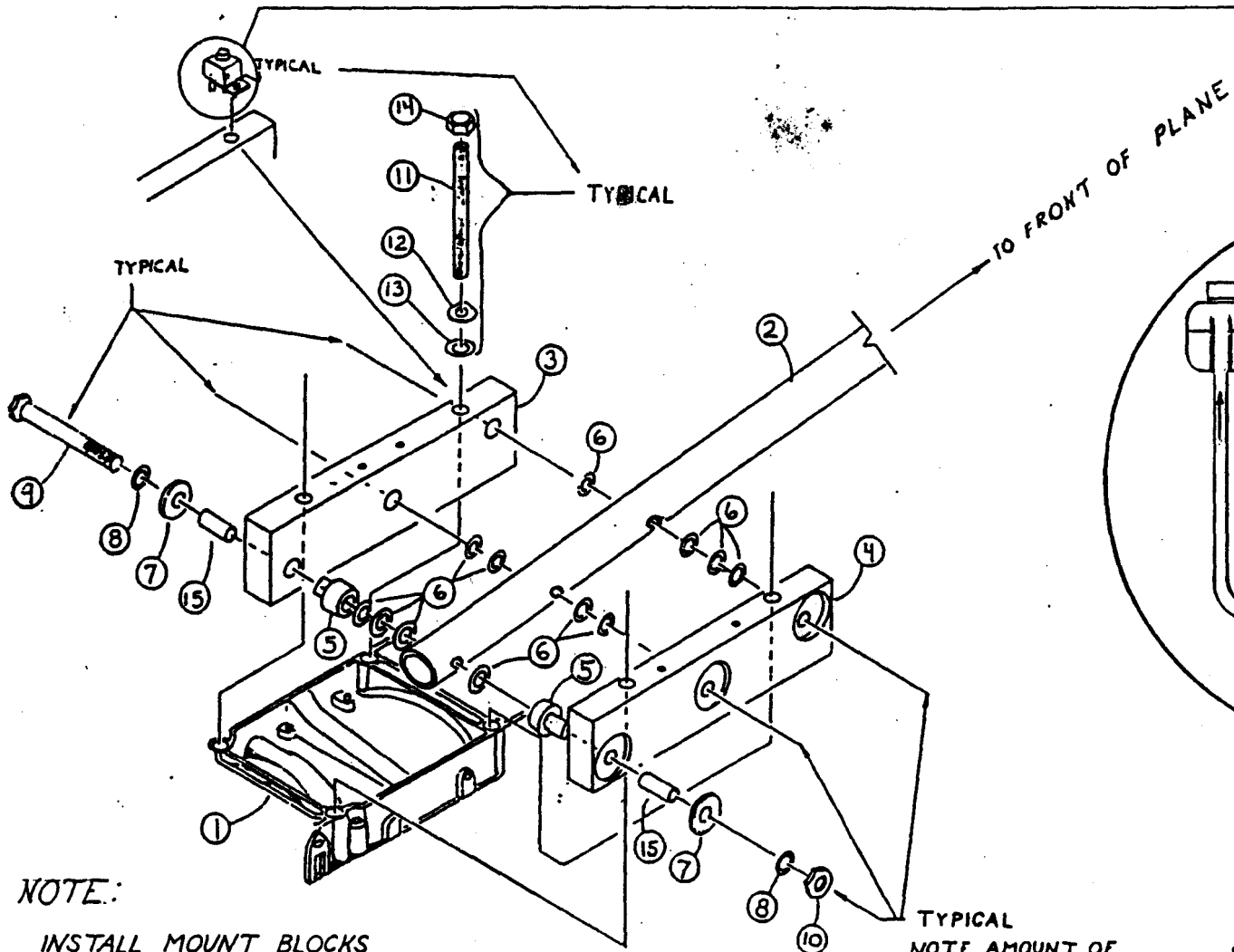
FRONT VIEW.



LEFT SIDE VIEW

F
NO
1
2
3
4

Detail 22C



V-48.3

NOTE:

INSTALL MOUNT BLOCKS
(ITEMS 3 & 4) BEFORE INSTALL-
ING ENGINE (ITEM 1)

TYPICAL
NOTE AMOUNT OF
WASHERS SHOWN
INCLUDE THE RUBBER,
(ITEM #5)
ON EACH MOUNT

12/16/86

MU532

ENGINE MOUNT.

Item #	Part Number	QTY	Description	Sub Group
1	DC532SM GD2.58	1	Rotax 532 Engine	Eng. Pkg
2	UF-2D5	1	Engine Mount Tube	S
3	MR-56D5	1	Engine Mount Block	S
4	MR-57DR5	1	Engine Mount Block	S
5	MM-26D	6	Rubber Lord Mount	MM#1
6	5LFWS	12	Large Flat Washer	12
7	5LFWM	6	1 & 1/8 OD. Washer	MM#2
8	5FW	4	Flat Washer	14
9	AN5-43A	3	Bolt	MM#2
10	5LN	3	Nut	13
11	10MMx90	4	Engine Mount Studs	MM#2
12	10MMxLW	4	Lock Washer	MM#2
13	10MM-FW	12	Flat Washer	MM#2
14	10MM-SLN	4	Lock Nut	MM#2
15	MM-27D	6	Bushing	MM#1

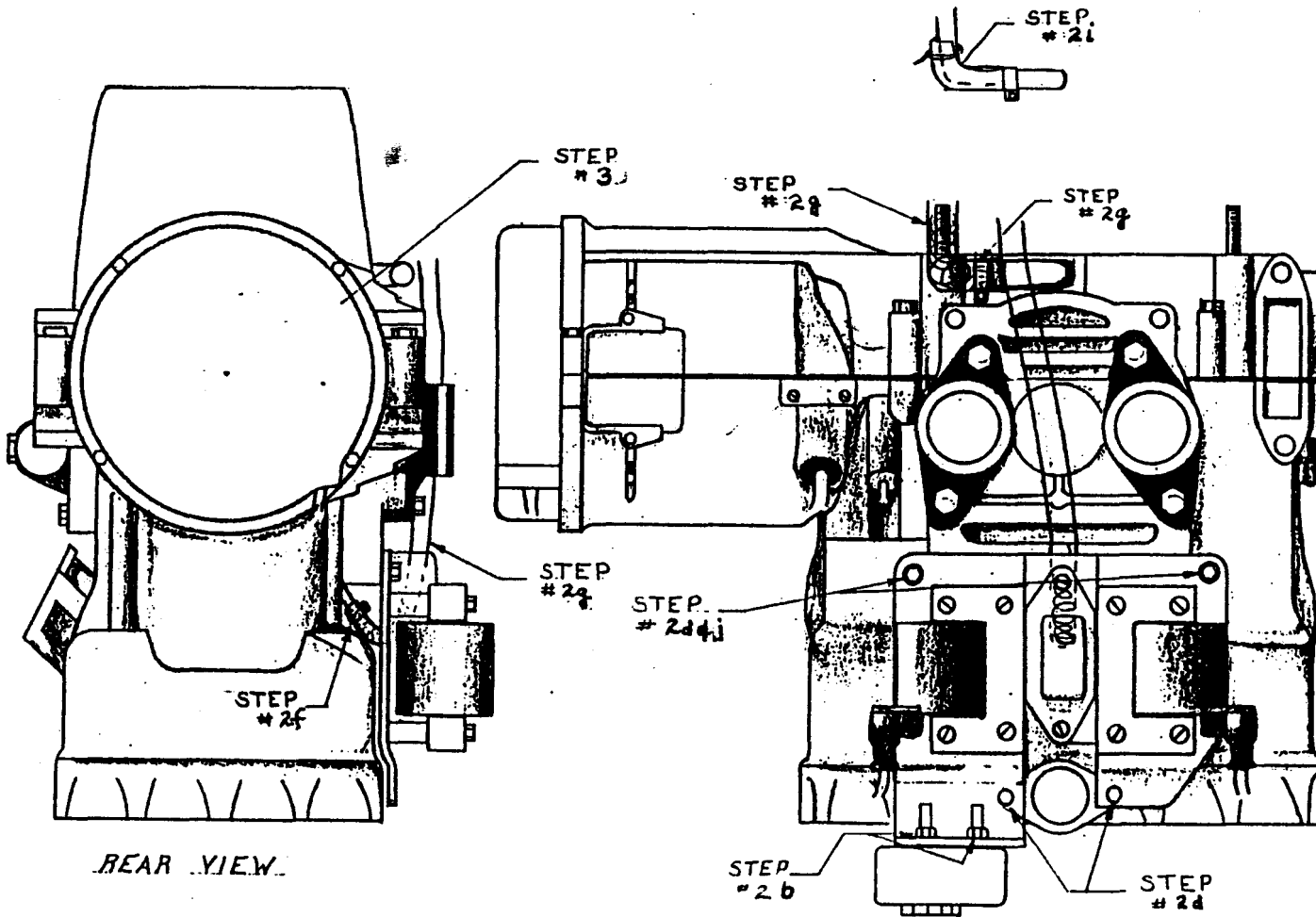
Torque Values: - 10MM-SLN/10MMx90 -> 225 in/lb.
- AN5-43A/5LN -----> 75 in/lb.

MM - I -

Detail 32e-1

Detail 32D

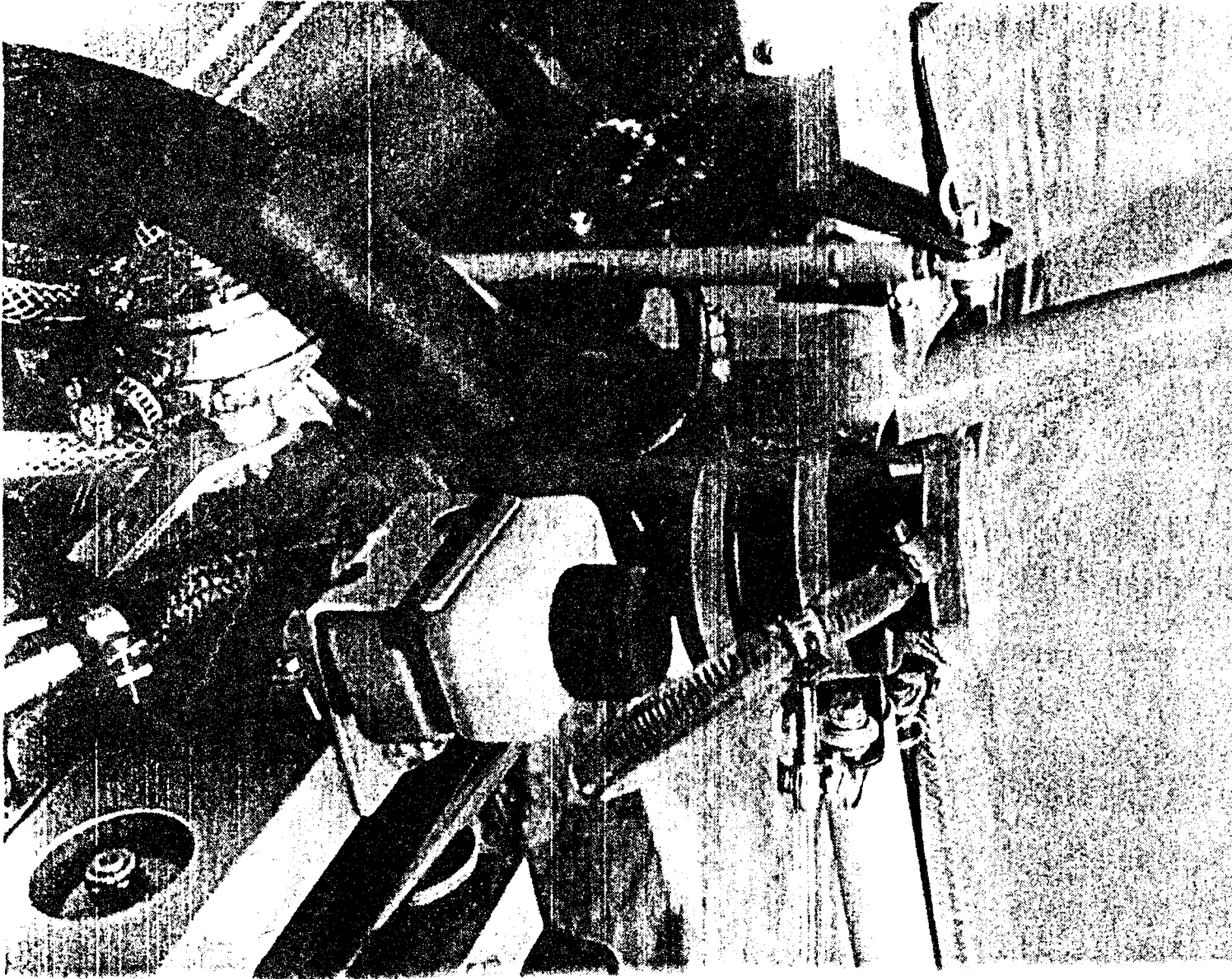
V-40.5



REAR VIEW

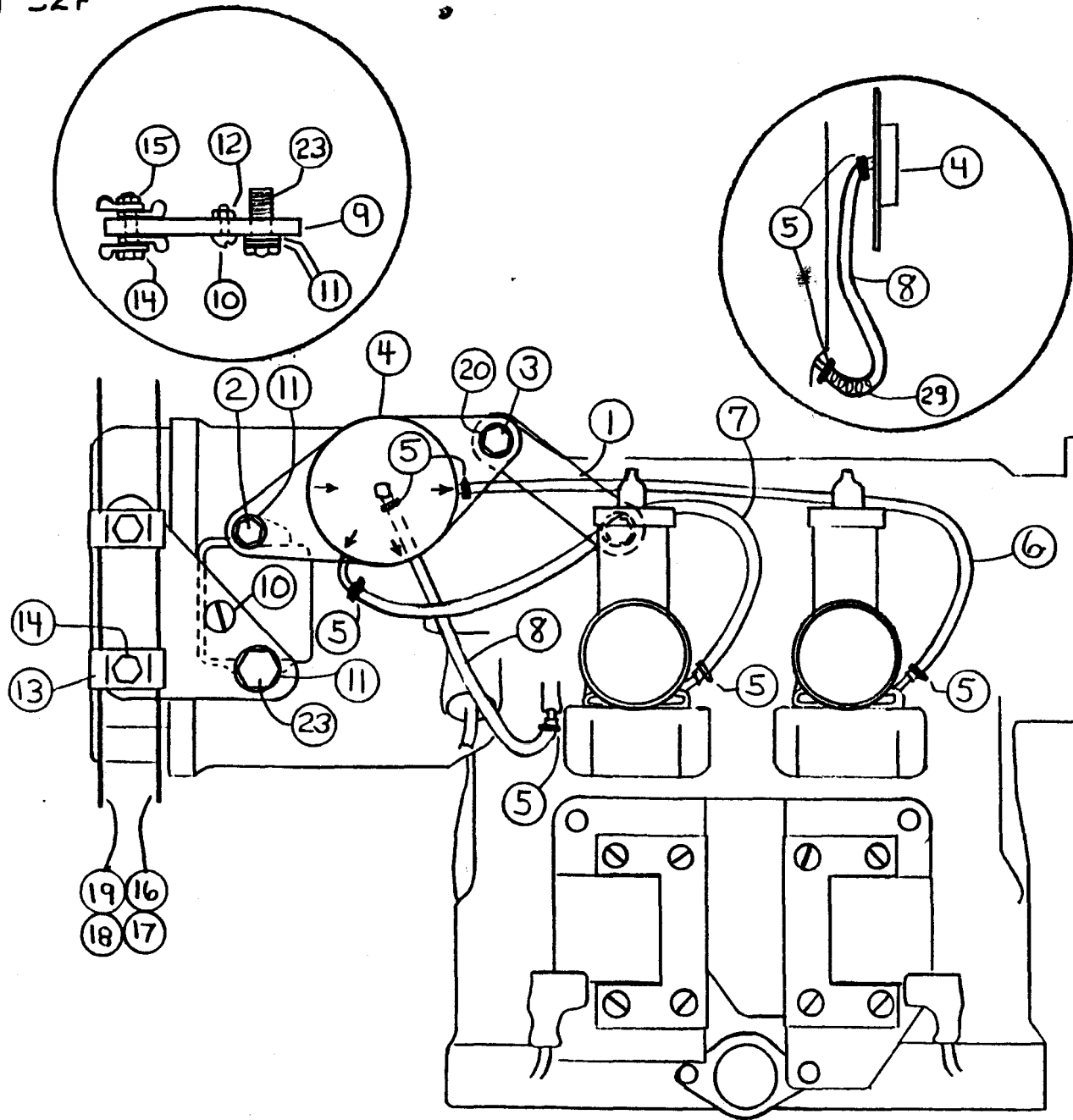
ROTAX 532 ENGINE PREPARATION

Detail S&E



V-48.5

Detail J2F



V-48.7

12/16/86

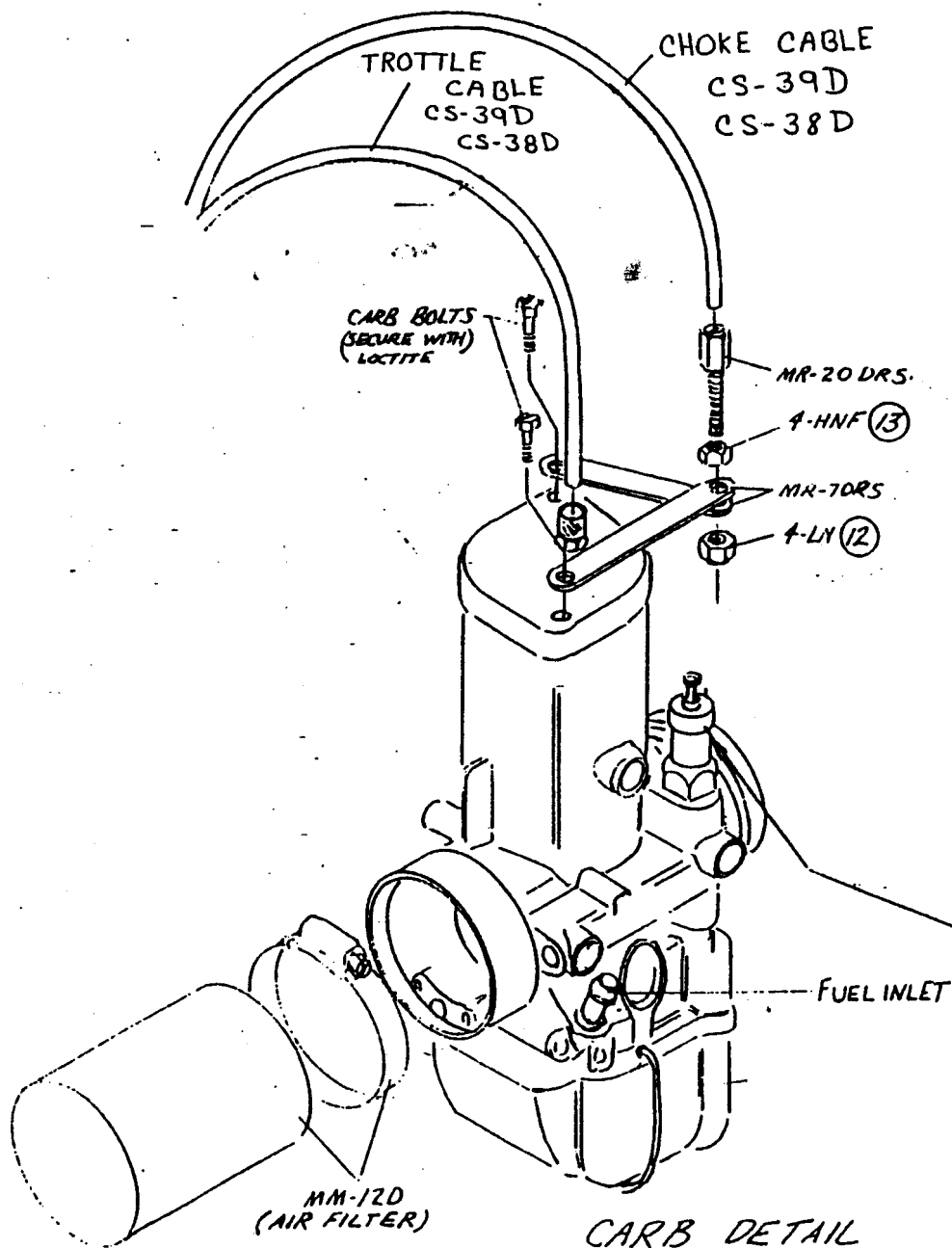
DR532 & MU532

CARBURATOR ASSY.

Item #	Part Number	QTY	Description	Sub Group
1	MM-52D5	1	Fuel Pump Bracket	MM#1
2	8MMx26	2	Bolt	MM#2
3	AN4-7A	1	Bolt	MM#2
4	994 485	1	Fuel Pump	Eng. Pkg
5	UF-29D	6	Hose Clamp	UF+MM#2
6	UF-23D5	x	Fuel Line	S
7	UF-23D5	x	Fuel Line	S
8	UF-23D5	x	Fuel Line	S
9	MM-58D5	1	Bracket	MM#1
10	8/32x1/2	1	Screw	MM#2
11	8MM-LW	4	Lock Washer	MM#2
12	2LN	1	Lock Nut	12
13	CS-40D	4	D3 Conduit Clip	MM#2
14	AN3-4A	2	Bolt	MM#2
15	3LN	2	Lock Nut	11
16	CS-39D/CS-38D	1	Throttle Assy Rear	MM#2
17	CS-39D/CS-38D	1	Choke Assy Rear	MM#2
18	CS-39D/CS-38D	1	Throttle Assy Front	CSD5
19	CS-39D/CS-38D	1	Choke Assy Front	CSD5
20	4LN	1	Lock Nut	12
21	MM-57-2D5	1	Oil Reservoir Bracket	MM#1
22	956 077	1	Oil Reservoir	Eng. Pkg
23	240 276	1	Hex. Screw M8x25	Eng. Pkg
24	MR-30D5	1	Propeller	S
25	826 285	1	Prop. Washer	Eng. Pkg
26	4FW	6	Flat Washer	15
27	4LW	6	Lock Washer	15
28	AN4H-27A	6	Drilled Head Bolt	MM#2
29	BR-12	1	Spring	

Detail 32F-1

Detail 32-G



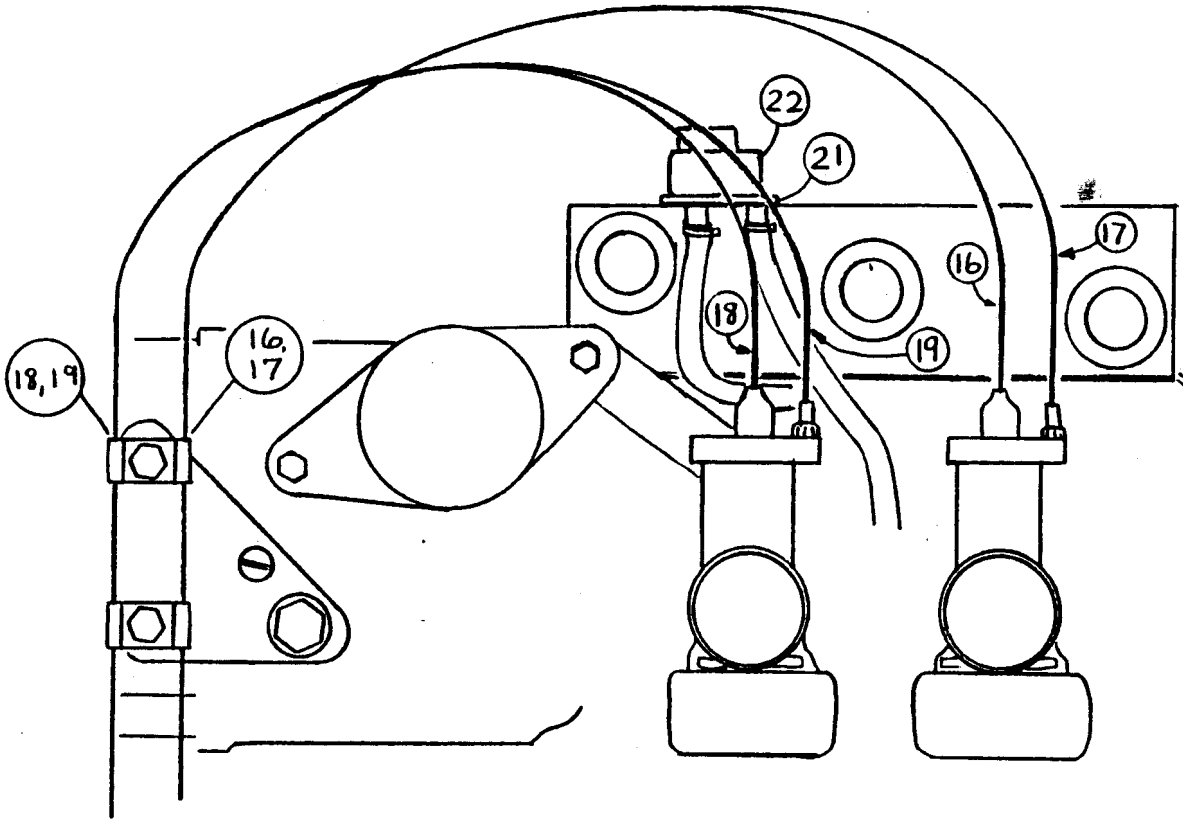
MR
DE
MODEL
PART
(12)

V-48.9

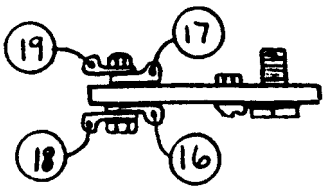
CARB DETAIL
ROTAX / BING

CHO

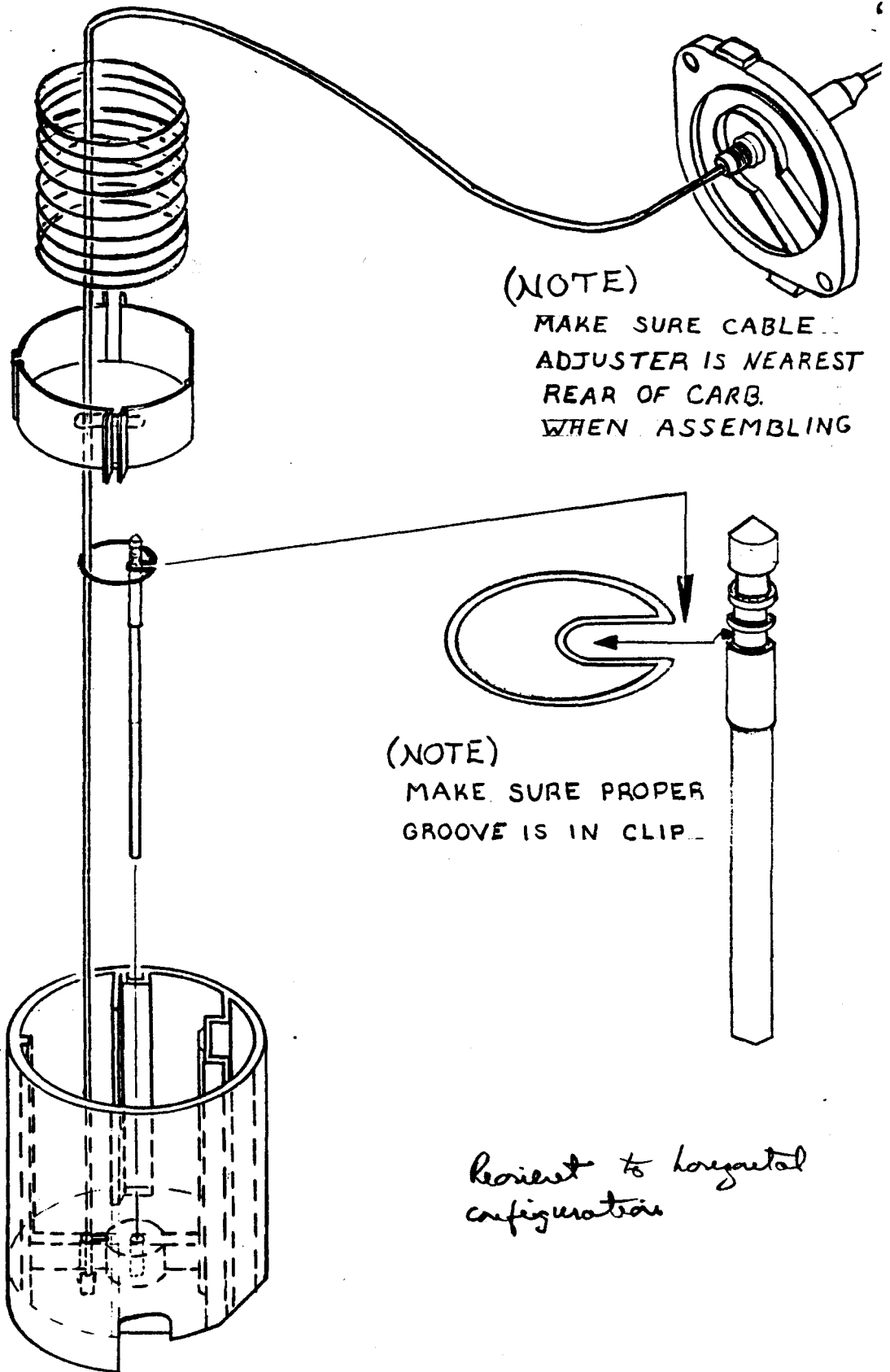
Detail 32 H



V-48.10



MO
IV
DAT



(NOTE)
 MAKE SURE CABLE
 ADJUSTER IS NEAREST
 REAR OF CARB.
 WHEN ASSEMBLING

(NOTE)
 MAKE SURE PROPER
 GROOVE IS IN CLIP

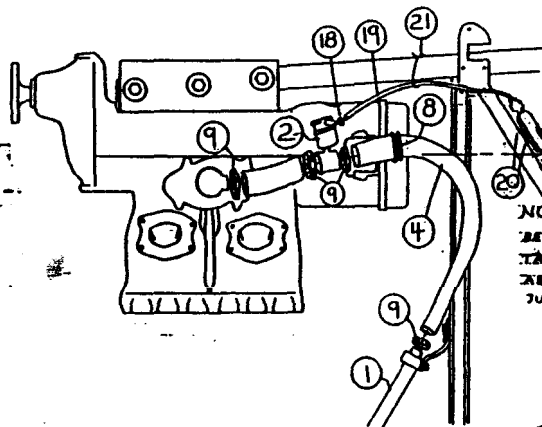
*Revert to horizontal
 configuration*

CARBURETOR DETAIL

10-20-36

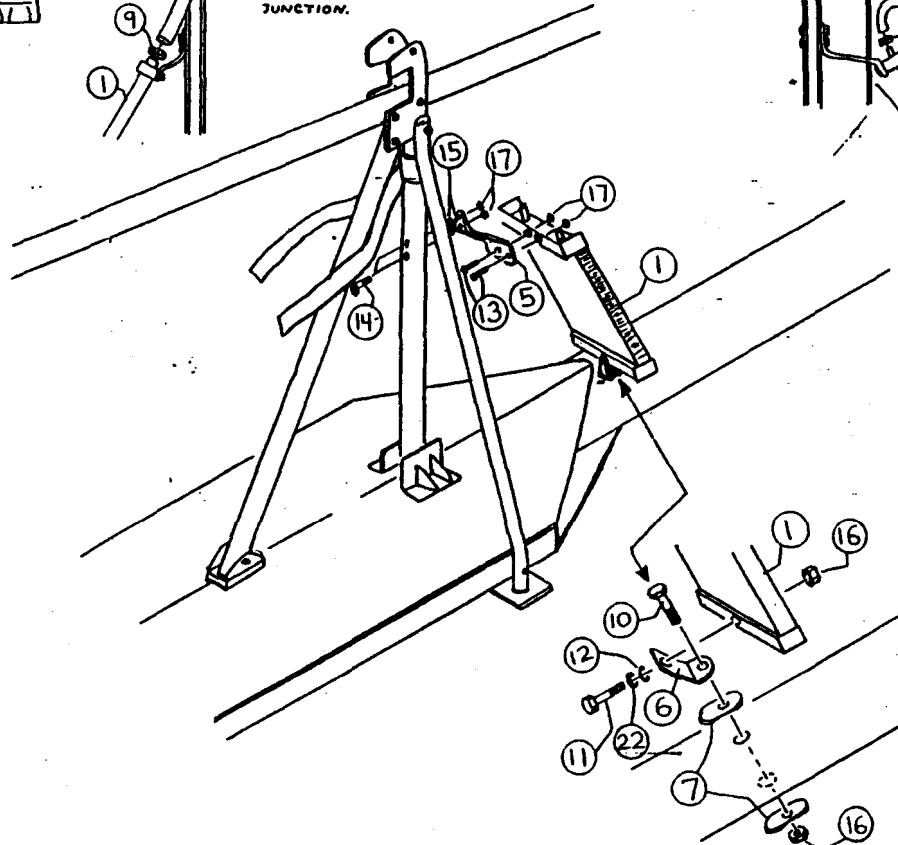
Detail 32 I

Detail 32J



← real connecting →

NOTE:
BE SURE EXPAN-
SION TANK (3) IS MOUNTED
ABOVE CRANK CASE
JUNCTION.



V-49.12

Part No.
1
2
3
4

12/16/86

DR532 & MU532

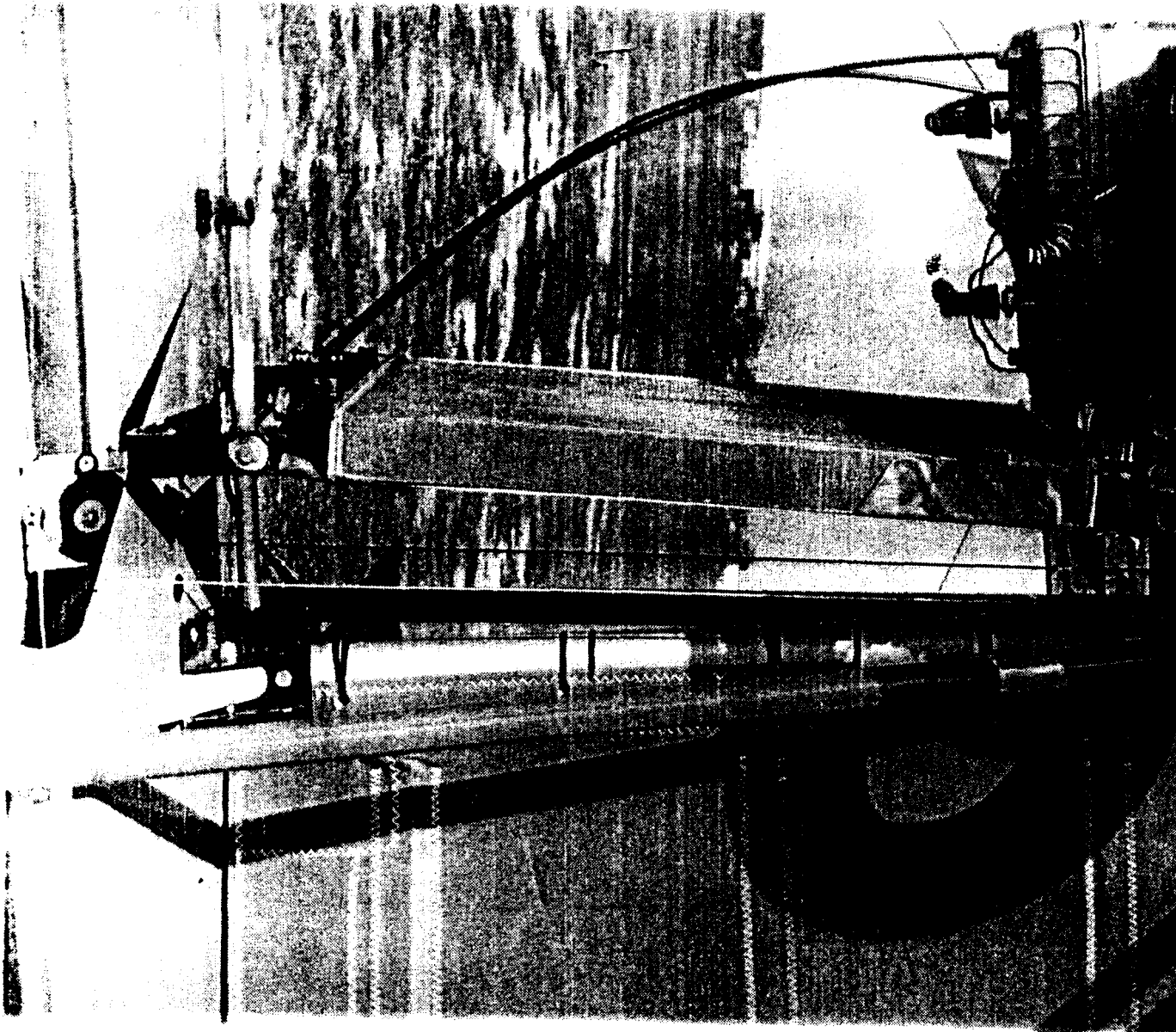
COOLING SYS. MOUNT.

Item #	Part Number	QTY	Description	Sub Group
1	MR-69D5	1	Radiator	S
2	MR-60D5	1	Header Tank	S
3	MR-61D5	1	Expansion Tank	S
4	MR-68D5	1	1" ID. Hose	S
5	MR-63D5	1	Upper Bracket	MM#2
6	MR-62D5	1	Lower Bracket	MM#2
7	MBS-5	2	Saddle	MM#2
8	MR-64D5	1	Mounting Clamp	MM#2
9	MM-56D5	6	1&1/4" Hose Clamp	MM#1
10	AN4-60A	1	Bolt	MM#2
11	AN4-7A	1	Bolt	MM#2
12	MR-31DR5	1	Rubber Grommet	MM#1
13	AN3-4A	2	Bolt	MM#2
14	AN3-20A	2	Bolt	MM#2
15	3PW	2	Plastic Washer	17
16	4LN	2	Lock Nut	12
17	3LN	4	Lock Nut	11
18	UF-29D	1	1/2" Hose Clamp	MM#2
19	MM-53D5	1	1/4" ID. Hose	MM#1
20	SS-64	2	Rivet	27
21	UF-28D	2	Cable Tie	MM#2
22	4LFW	1	Large Flat Washer	15

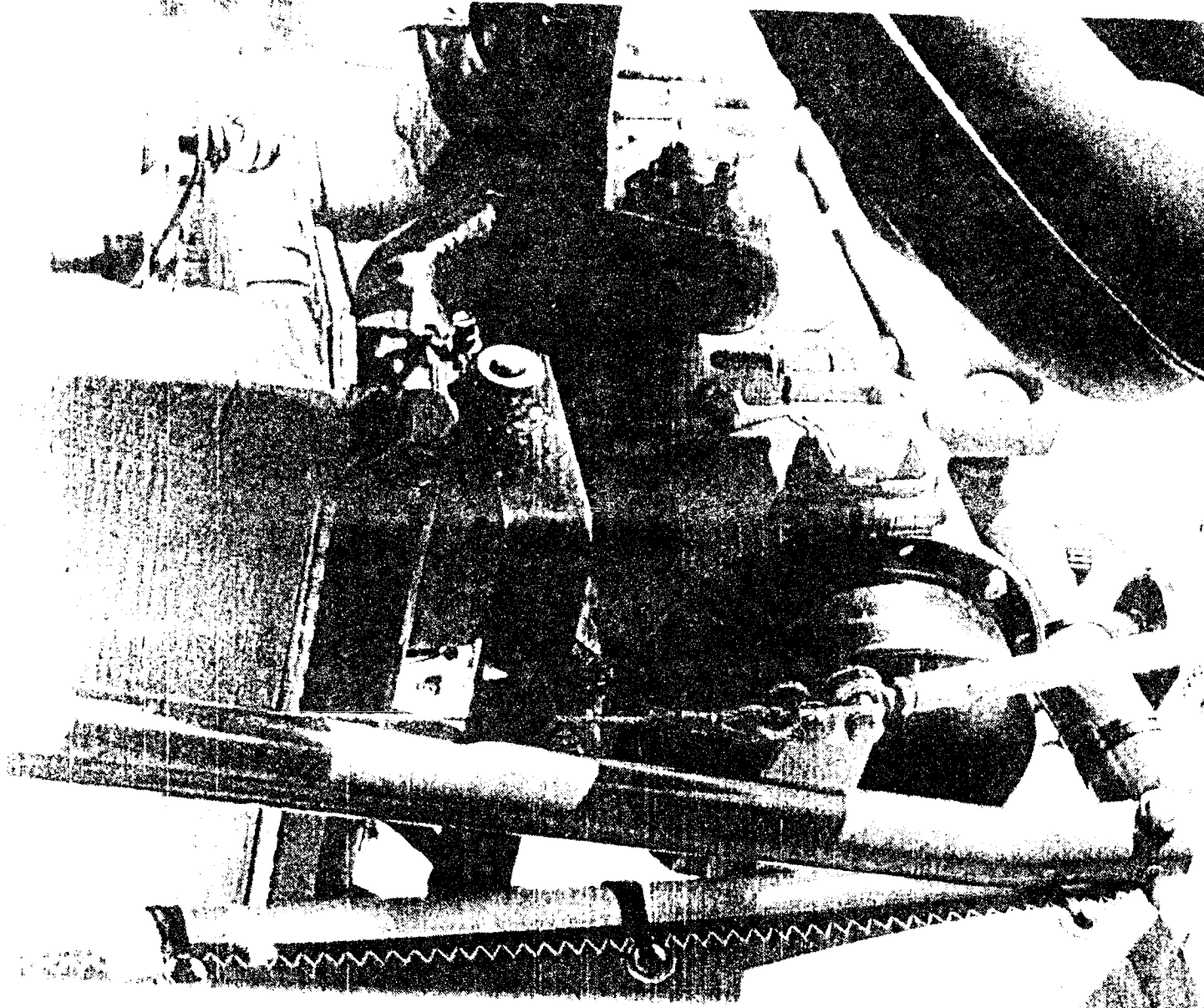
Detail 52J-1

Detail 32 K

V-40.14

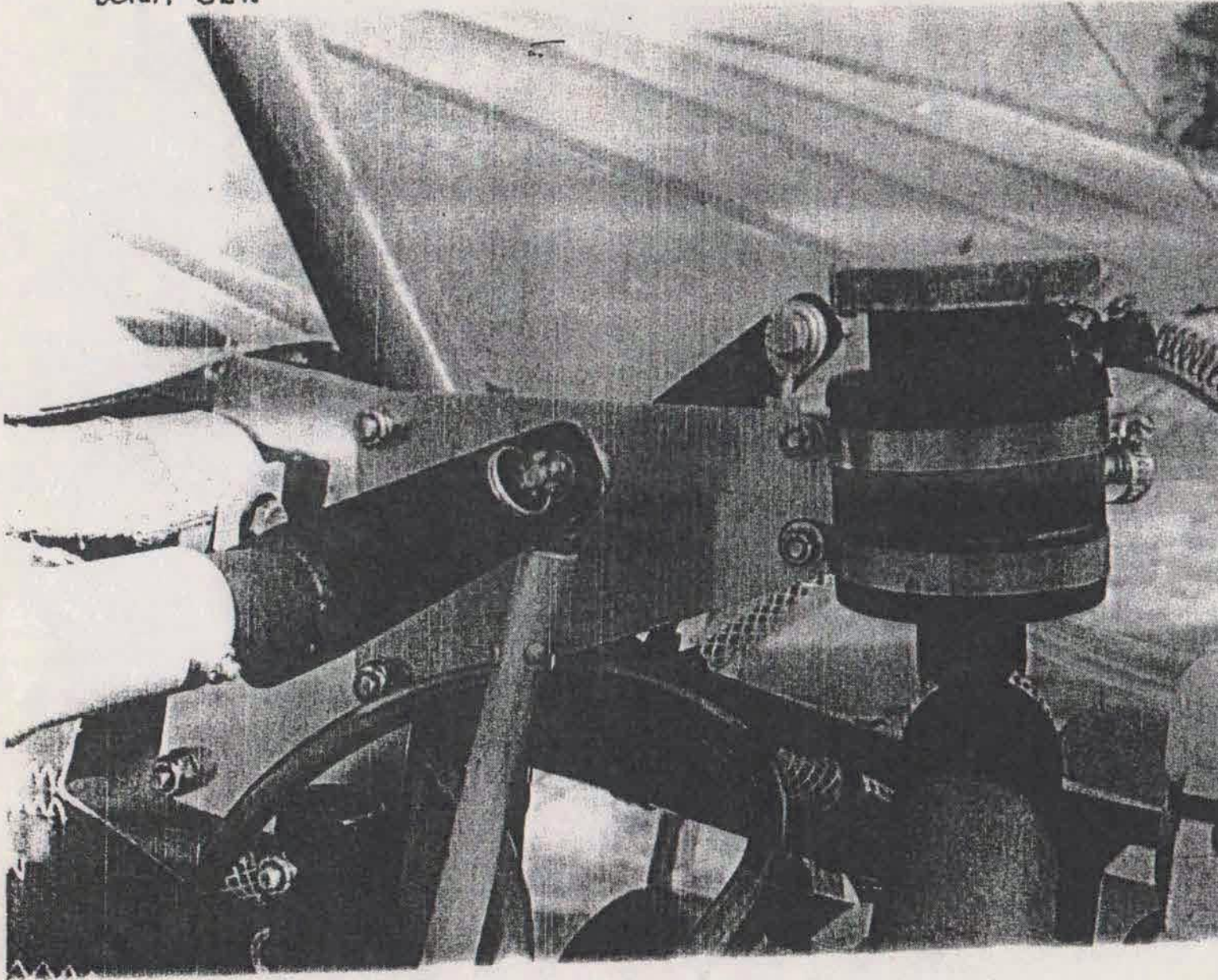


Detail 32L



7-48-55

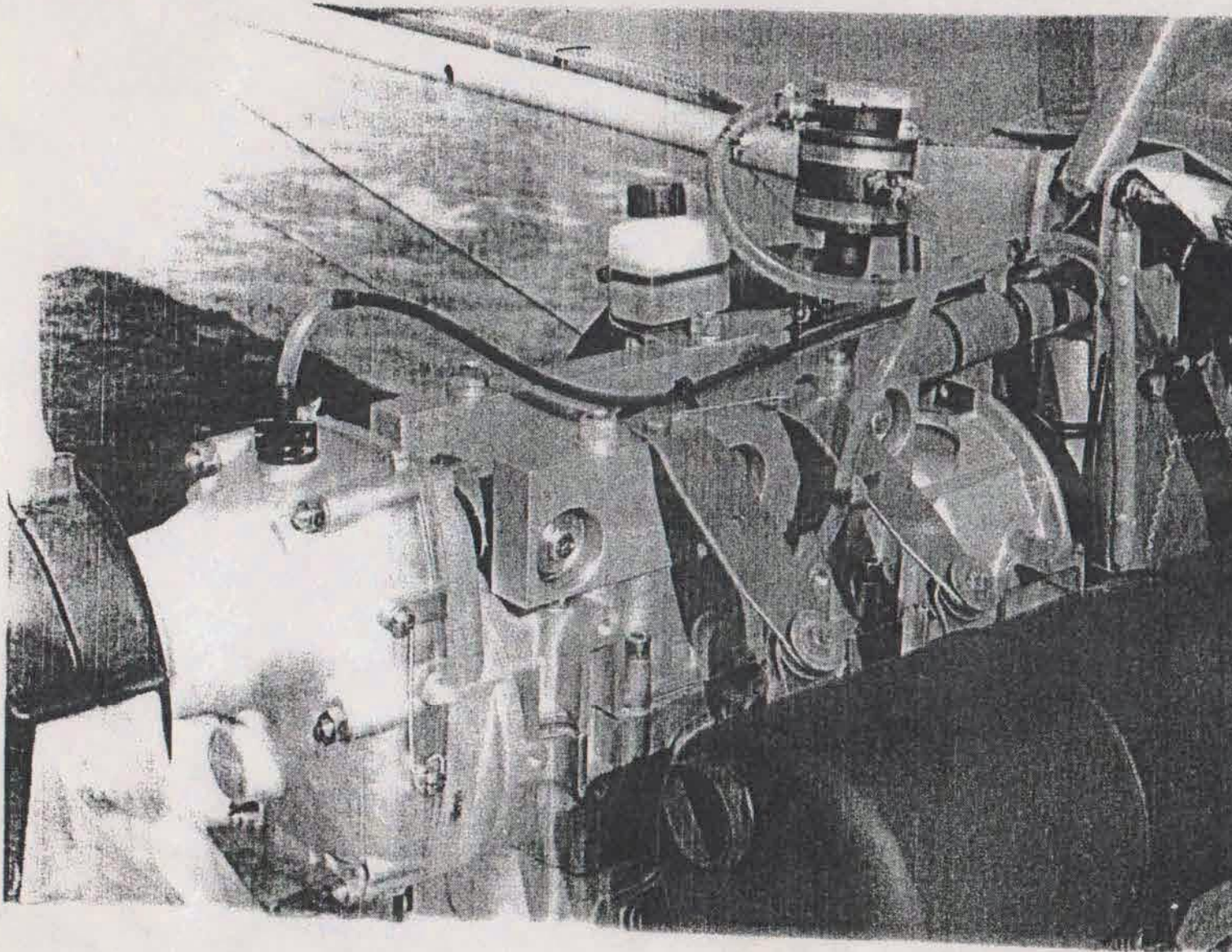
Detail 32N



V-48.17

Det

Detail 320



V-49.18

12/16/86

DR532 & MU532

MUFFLER ASSY.

Item #	Part Number	QTY	Description	Sub Group
1	DC532SM GD2.58	1	Rotax 532 Engine	Eng. Pkg
2	MR-02D5	1	Muffler Header	Eng. Pkg
3	MR-04D5	1	Elbow	Eng. Pkg
4	MR-03D5	1	Muffler	S
5	MM-51D5	2	Muffler Bracket	MM#1
6	MR-57DR5	1	Engine Mount Block	S
7	850 300	2	Gasket	Eng. Pkg
8	945 752	4	Lock Washer A8	Eng. Pkg
9	840 991	4	Cyl. Screw M8x30	Eng. Pkg
10	938 790	6	Spring	Eng. Pkg
11	MM-31D	x	Safety Wire	MM#1
12	AN4H-4A	2	Bolt Drilled Head	MM#2
13	4LW	2	Lock Washer	15
14	AN4-12A	2	Bolt	MM#2
15	4LFW	6	Large Flat Washer	15
16	MR-31DR5	4	5/8 OD. Grommet	MM#1
17	4SLN	2	Lock Nut	MM#2
18	CP-161D	1	EGT Probe	sub box

Detail 33-1

using the 2 center holes on the block. Use 2 bolts with drilled heads, and washers, to secure the brackets. Note the need and method for safety wiring for security. Detail 33.

b. Attach the muffler (MM-03D5) to the brackets. Note that rubber (MR-31DR5) are used to shock mount the muffler. Detail 33.

c. Fit one end of the muffler elbow (MR-04D5) into the muffler and end on to the exhaust header. Note that there are 3 pairs of ears at each joints.

(1). Locate the 6 springs (938 790) which will connect these ears. Check to determine if the ears are far enough apart so that the spring in place, will be under some tension. If not, carefully bend one or more ears toward a more vertical position with pliers to provide tension in a spring. Do not to break

a weld while bending an ear. Connect the pairs of ears with the springs, slide spring ends through the ears from the inside out whenever possible.

(2). Run a piece of safety wire from 1 ear through the spring and companion ear. Loop it through the ear loosely and run it back through the first ear. It should be loose enough to permit the spring to flex and then expand and contract normally. Secure the safety wire. Run a 1/4" bead of RTV length of the spring, going over the ends of the spring loops, and including ears. This will hold a spring in place should it break. Repeat for all springs. Detail 33.

d. Install 1 EGT probe (CP-161D) in each exhaust header. Drill a 1/2" size hole in the center bottom of each header 2 1/2" from the engine block. Install probes with the accompanying hose clamps. Leave the probe leads coiled for the being. Detail 33.

I. COMPLETING THE FUEL SYSTEM

1. Fuel Tank. Each fuel tank is strapped into its tray with 3 straps: one strap over the tank(s), another long strap around the tank(s) and the diagonal and a short strap around each tank from front to rear. See Detail 18B. The fuel line starts in the bottom of the fuel tank (UF-21XP). The fuel enters a filter at the end of the fuel line. The filter is held in the bottom of the tank by a pair of a 1/2" nut on the fuel line and held just above the filter by a pair of cable ties. Detail 18A.

2. Fuel Line. The fuel line runs up through the fuel tank cap. Anchor the fuel line at the correct distance with a cable tie above and below the breather hole in what would be the high side of the cap when it is screwed on the tank. Detail 18A.

3. Two Fuel Tanks. If 2 fuel tanks are to be used, the lines join at a tee (UF-39D) or wye just above the tanks and then a single fuel line runs upward to the primer bulb. Secure the tee with cable ties. Detail 18A.

4. Primer Bulb. The primer bulb (UF-24D) must be oriented so that the long side of its side points toward the engine. The fuel line will not fit over the large side of the bulb. Cut or file them down to a usable size. Use small hose clamps (UF-29D) to secure both ends of the primer bulb. Detail 18A.

5. Securing the fuel line.

a. The fuel line runs from the primer bulb along the diagonal up tube and arches over by the engine mount tube to the input side of the fuel pump. Use a hose clamp (UF-29D) to secure it to the fuel pump.

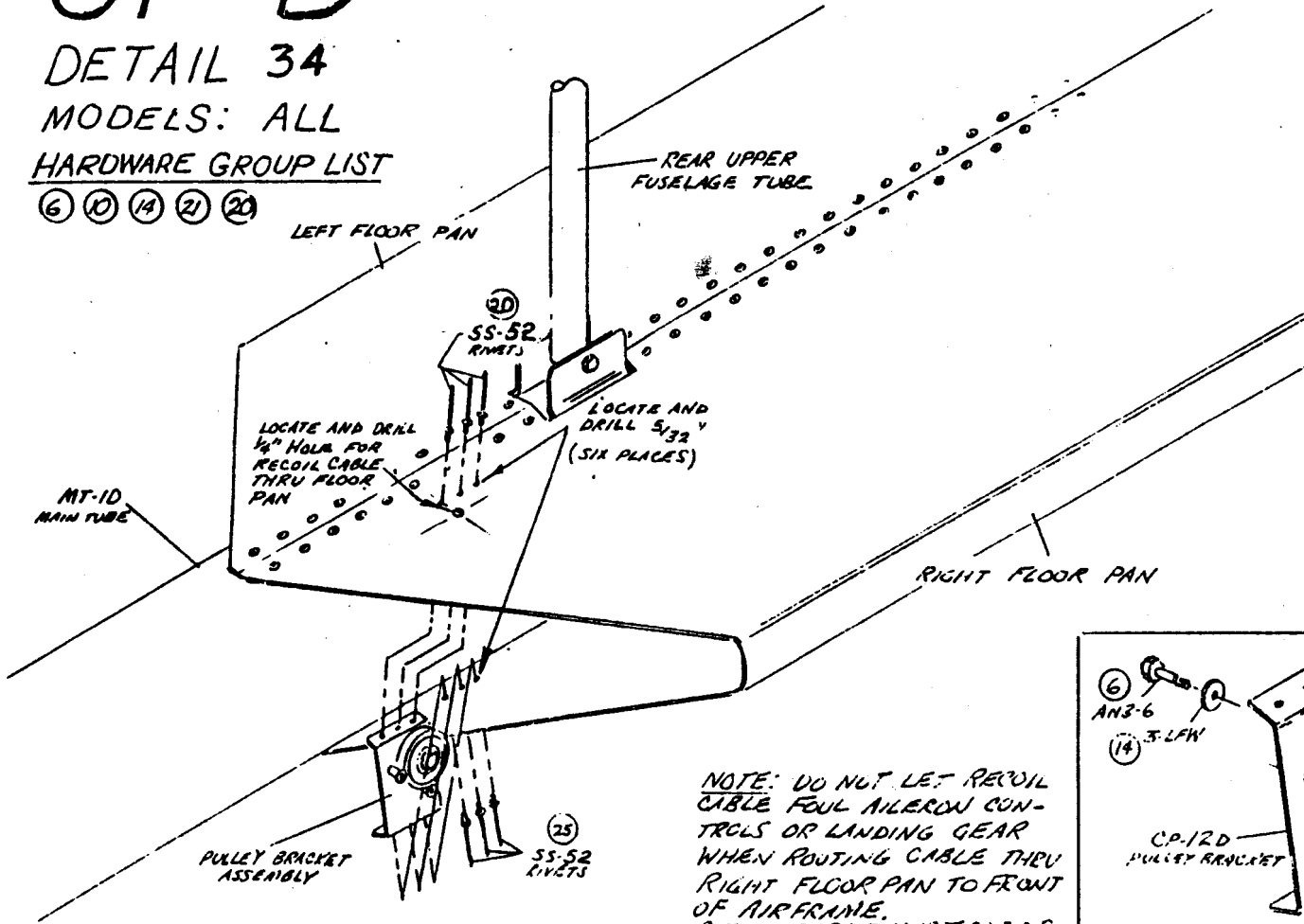
b. Secure the primer bulb to the diagonal up tube with standoffs. Run a cable tie below the bulb. To make a standoff, run a cable tie through a short piece of hose (1/2"-3/4") and then around the diagonal tube and back through the piece of hose. Both ends of the cable tie around the fuel line below the primer bulb and around itself. Tighten until the standoff is anchored. Repeat above the primer bulb. Run standoffs further along the fuel line to hold it to the diagonal tube and the engine mount tube on its way to the fuel pump. Detail 18A.

CP-D

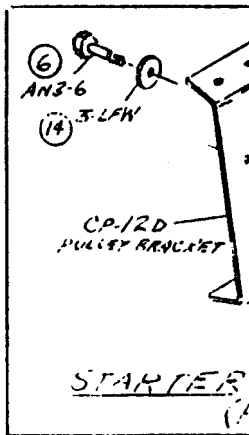
DETAIL 34

MODELS: ALL
HARDWARE GROUP LIST

(6) (10) (14) (21) (20)



NOTE: DO NOT LET RECOIL CABLE FOUL AILERON CONTROLS OR LANDING GEAR WHEN ROUTING CABLE THRU RIGHT FLOOR PAN TO FRONT OF AIRFRAME.
RECOIL CABLE MUST CLEAR REAR AILERON PULLEY BY 3/8" AT REAR PULLEY & 3/8" AT FRONT PULLEY & CABLE WITH CONTROL STICK AT 30° FULL RIGHT POSITION HITTING CS-98 DETAIL 20



STARTER RECOIL DETAIL

H
3-11-87

J. COMPLETING THE RECOIL STARTER

1. Rear starter pulley bracket. Detail 34.

a. The starter pulley bracket requires pre-assembly.

(1). Start with angled flange of the bracket plate (CP-12D). Locate the pulley (CP-17D) 1 1/4" from the right edge and 2 3/16" from the top of the front face of the bracket to allow room for cable guides to be located at the six and nine o'clock positions to the pulley. The top of the pulley must be as high as the top of the bracket.

(2). The pulley is mounted with the bolt (AN3-6) inserted from the rear. Note the locations of the 3-LFW washers. Secure with a 3-CN nut and 3-LFW washers. Two CS-7 cable stops are used as guides to help retain the starter cable on the pulley. Locate them close enough to the pulley that the cable cannot come off but not too close to the pulley. When located to your satisfaction, transfer drill and rivet in place with AA-68 rivets.

b. Locate the rear starter cable bracket against the fuselage top of the rear of the right floor pan. Holes have been pre-drilled in the upper floor pans for it. Note that the top of the bracket is closer to the fuselage than is the bottom.

(1). Before drilling holes in the bracket, thread the starter cable through the guides and around the pulley and forward through the floor pan. A helper hold the end of the cable in the approximate position of the starter cable bracket (CP-3D) on the side of the console with some tension. Check the clearance of the starter cable as it runs down through the floor pan from the engine and forward through the floor pan. Make sure that it clears all other control components and the control stick from side to side while checking.

(2). When satisfied with all clearances, transfer drill 3/16" holes at the top and bottom and rivet the bracket in place with SS-52 rivets.

2. Install starter handle bracket. The starter handle bracket (CP-3D) is located on the right side of the console at the apex of an angle made by the starter cable going forward and the line of pull on the cable toward the pilot's right shoulder. If the cable is not pulled forward and the line of pull on the cable toward the pilot's right shoulder, it elsewhere will cause side wear on the cable and guides.

a. Check Detail 16 concerning the position of the bracket.

(1). Mount the bracket first, before assembling. Tape or hold bracket in position and drill holes for 6 SS-52 rivets. Rivet in place. Agree on Detail 16 concerning pulley and guide locations.

(2). Determine the correct position for the pulley on the bracket to satisfy the geometry described earlier. Mark, center punch and drill the hole for AN3-7 bolt. Mount the pulley as shown. Locate the positions for the 2 CS-7 spacers used for cable guides. Position 1 on each side of the pulley where the cable leaves it. Drill the holes and rivet with SS-68 rivets.

b. Locate the starter handle socket (CP-4) over the center hole of the flange on the starter handle bracket. The socket must be aligned with the intended route of cable travel to avoid having it rub on the sides of the socket. It may be necessary to cut away part of the inner side of the socket for that purpose. Fasten in place with 2 SS-54 rivets.

3. Install starter handle. The starter handle removed from the rope will be installed on the end of the cable. Thread the cable around the starter handle bracket, through the starter handle socket and into the starter handle. Slip the safety ring onto the cable and double the cable back on itself. Fasten with a split bolt and slip the safety ring and split bolt into the cavity in the side of the handle. This completes assembly of the starter.

K. THE INSTRUMENTS.

1. Instrument placement. Installation of a nose cowling (CW-1) on you has a bearing on some of the instruments you will use and their placement. With the nose cowling, your compass and airspeed indicator are mounted on top of the panel or the upper mount bracket which is added with the cowling. With the you will have room for additional instruments. Detail 16. A newer cowling has provisions for instruments in a horizontal array in it, making installation of instruments in the console a matter of choice.

2. Installing Instruments.

a. Earlier, the console face panel (CP-6XP) had been taped to the console and the 12 mounting holes transfer drilled. Install rubber grommets in the holes in the face panel. Detail 16.

b. Consider locating the ignition switch where it can be easily reached when your shoulder harness straps tight, e.g., the inner left cowling rail. Now drill a 3/4" hole at your chosen location for the ignition switch (CP-8D). A position for the switch is shown in Detail 16. If you prefer another location for its installation, be sure that it will not conflict with installation of an instrument. Remove the switch ON/OFF plate and reverse the plate before installing the switch.

c. Having made your decisions concerning instrument placement, mount the instruments according to Detail 16.

d. If you are using the combination compass and airspeed indicator, note that this combination instrument comes mounted on a handle. The handle must be removed and the instrument mounted on a bracket for securing to the console.

(1). Remove the wind dial name plate from the indicator. With a hacksaw, cut the top of the handle off at the crease just below the base of the instrument, following the contour of the crease, leaving the back side step to 3/32" thick.

(2). The indicator base has 5 holes. Drill out to 7/64" 3/32" triangular pattern that match those in the airspeed bracket (CP-11D). Use a 1/8" drill to enlarge holes in the modified base to accept 6x1-1/4" sheet metal.

(supplied in hardware group 19). Do not over tighten when installing. Attach bracket to the upper end of the face panel.

e. If you are using airspeed indicator (CP-22D) which mounts on instrument panel, install the pitot tube assembly (CP-23D) according to Detail 40B. If you intend installing a rear seat instrument pod with an airspeed indicator include a tee (CP-25XP) in the pitot tube line while installing it. Detail 40B.

f. With the instruments installed in the instrument panel or the console panel, it is time to start connecting them. Refer to the following section "Electrical Connections," for guidance on connecting those instruments requiring electrical input. The airspeed indicator will be connected to the pitot tube in Detail 40B. Altimeters and vertical speed indicators use atmospheric pressure in the cockpit so require no external connections. The magnetic compass also uses outside connections.

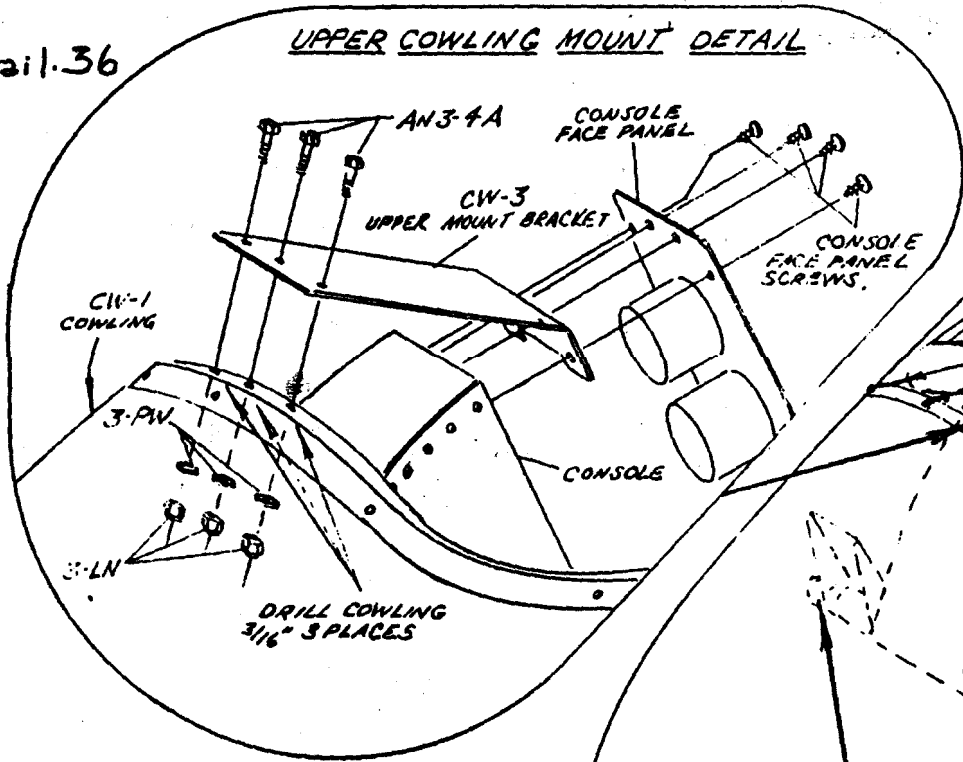
3. Installing instrument panels.

a. The new nose cowling (or fairing) has space on which to mount instruments above the console face panel in a horizontal array. If you plan to install a nose cowling, include this additional space in your planning for instrument placement.

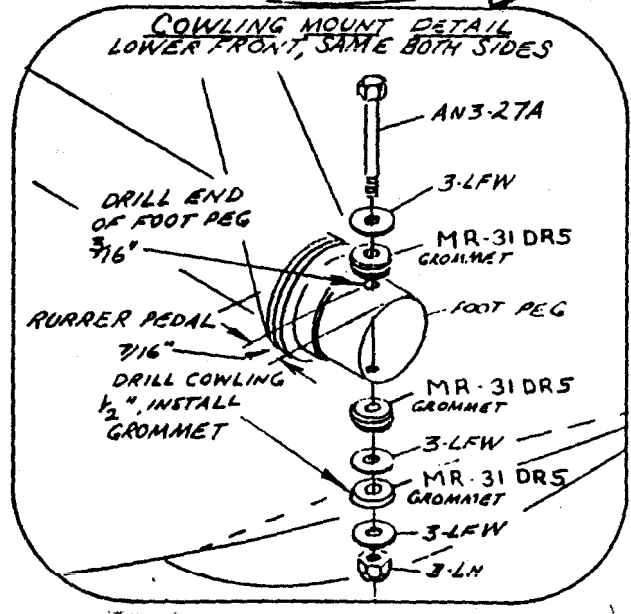
b. Secure the face panel to the console using 10x3/4" sheet metal screws.

WING INSTALLATION - DRIFT

Detail.36



V-55.1



12-18-86

L. CONNECTING THE ELECTRICAL SYSTEM.

1. Electrical cable. The electrical cable running through the fuse engine power source and sensors to the instruments and switches in the front and, optionally, in the rear cockpit. The cable is a bundle of 9 color coded wires: red, white, green, brown, yellow, black, blue, orange and purple. Details 35A & B.

2. Engine electrical connections. The wiring diagram (Details 35A & B) is your principal guide in making these connections. Connections, wherever possible, should be solderless pin or spade connections (furnished in CP-14D baggie, panel sub-bag) to facilitate disconnecting when a component needs servicing. Protect them with plastic sleeves.

<u>Engine Source</u>	<u>Engine End Wires</u>	<u>Cable Wire</u>	<u>Function</u>
EGT Sensor 1	Black	Purple	EGT Temp
EGT Sensor 1&2	White	White	EGT Temp
Egt Sensor 2	Black	Black	EGT Temp
Water Temp Sensor	Black	@	Water Temp (MU-532 only)
Ground	Brown*	Brown	Ground
Magneto Coil C	Yel/Blk* Gen/Lghting 30W	Green	Lighting 110w Yellow*
Magneto Coil B	Green*	Red	Strobe
	Green/Black*	Black	Strobe
Ign Coil	Black (1)*	Blue	Ignition Sw
Ign Coil	Black (2)*	Orange	Ignition Sw

* Engine wires @ Extra wire

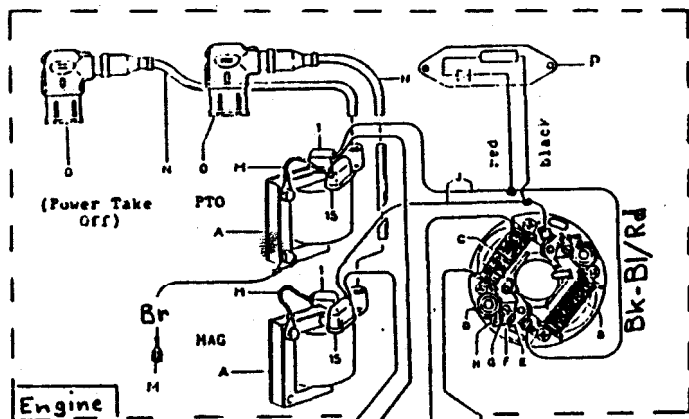
3. Instrument electrical connections. Front cockpit instruments and components requiring electricity or engine input are the tachometer, the EGT gauge, the temperature gauge and the hourmeter. Details 35A & B.

X 503

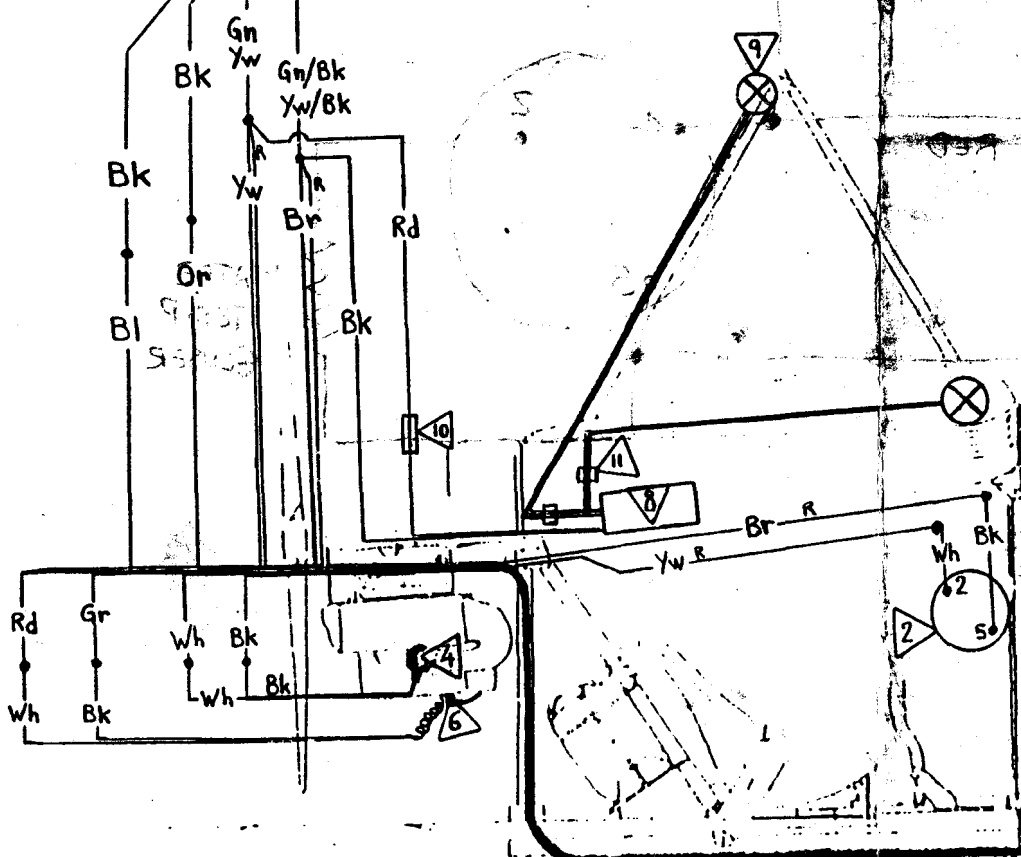
Detail 35A

Wiring Diagram

Starting SN : DR-0301



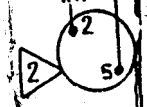
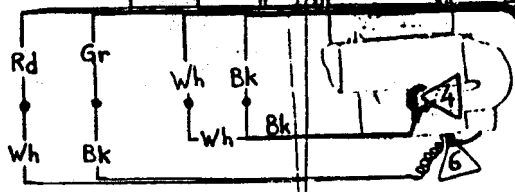
V-5-6.1



Instrument

- 1 Ignition Switch
- 2 Tachometer
- 3 EGT Gauge
- 4 EGT Sensor
- 5 CHT Gauge
- 6 CHT Sensor
- 7 Hourmeter
- 8 Power Pack (Strobe Light)
- 9 Strobe Light
- 10 Fuse
- 11 Connection

- Wh White
- Bk Black
- Bl Blue
- Or Orange



M 532

Detail 35B

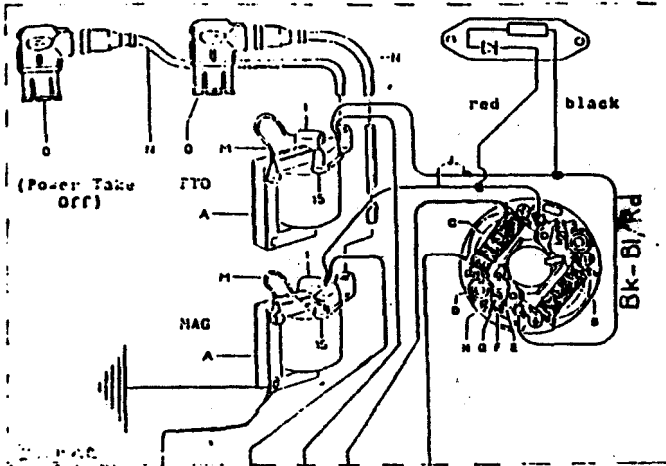
Wiring Diagram

Starting SN : DR-0306

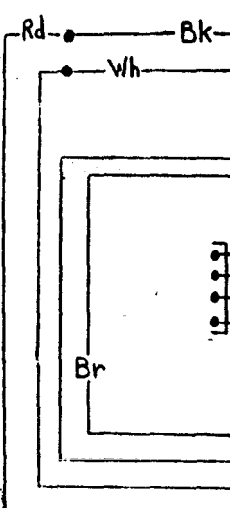
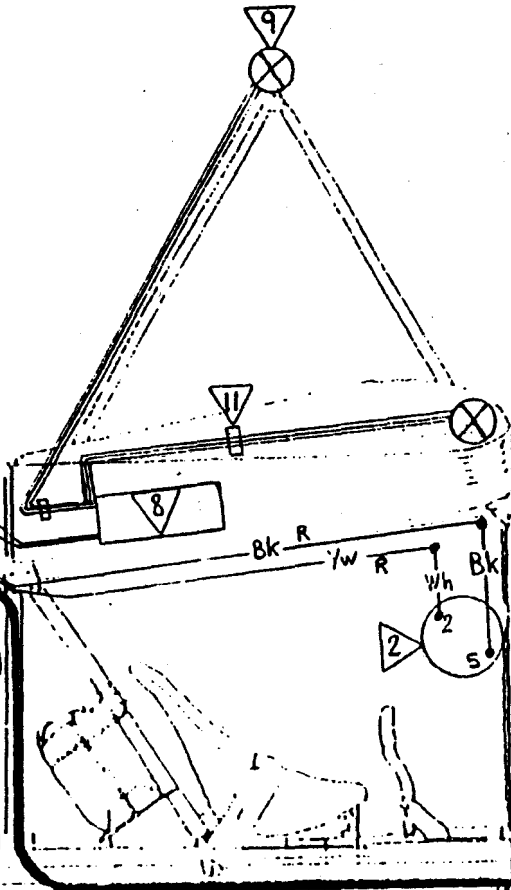
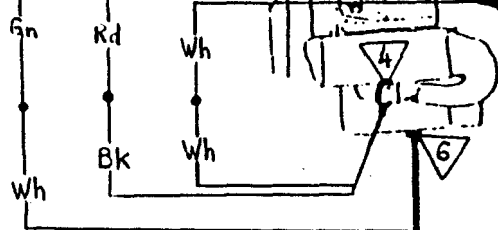
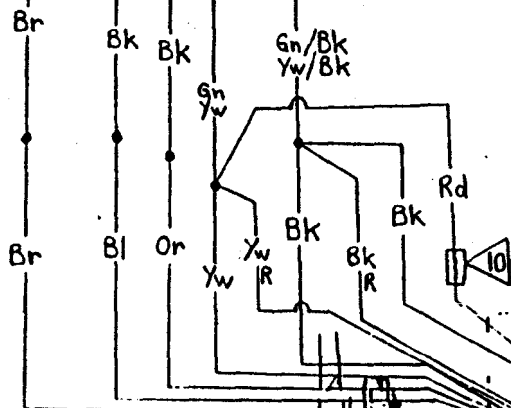
Instrumer Components

- 1 Ignition Switch
- 2 Tachometer
- 3 EGT Gauge
- 4 EGT Sensor
- 5 Water Temp. Gauge
- 6 Water Temp. Sensor
- 7 Hourmeter
- 8 Power Pack (Strobe Light)
- 9 Strobe Light
- 10 Fuse
- 11 Connection
- 12
- 13

Wh	Wh
Bk	Bk
Bk	Bk
Or	Or
Bk/Rd	Bk/Rd
Gn/Bk	Gn/Bk
Yw/Bk	Yw/Bk



V-58.2



Bk

<u>Cable Wire</u>	<u>Console Connection</u>	<u>Instrument</u>
Black	Pin 4	EGT Gauge
White	Pins 1,3	EGT Gauge
Purple	Pin 5	EGT Gauge
Green	Yel 1 wire	Voltage Regulator/Rectifier
Brown	Pin 5	Water Temp Gauge
	Pin (-)	Hour Meter
	Pin 5 (-)	Tachometer
	Black wire	Voltage Regulator/Rectifier
Yellow	Pin 2 (+)	Tachometer
	Yel 2 wire	Voltage Regulator/Rectifier
	Pin (+)	Hour Meter
Blue		Ignition Switch
Orange		Ignition Switch
@	Pin 2	Water Temp Gauge (@ Extra wire)

4. Voltage Regulator/Rectifier.

a. The engine magneto has three coils: a charging coil; a lighting coil; and a generator coil. The former two coils produce from 18 to 50 volts AC. The charging coil produces a max of 30 watts and is intended to charge a battery system. The lighting coil is intended to support lighting and similar requirements and produces a max of 110 watts. The generator coil supports the engine's ignition requirements. To provide a source of direct current, a regulator/rectifier can be added. The combination regulator/rectifier (866 080) is located inside the console, at the fuselage tube away from the instruments. It will get hot while operating. An alternate regulator/rectifier (264 870) is also available. See your Rotax engine manual for details concerning connecting either regulator/rectifier.

b. To complete instrument electrical connections, connect the red wire from the regulator/rectifier to the - pin on the hour meter and to Pin 4 on the water temperature gauge.

c. Connect an 8-10 ohm, 20 watt non-inductive resistor between the two black wires on the regulator/rectifier (866 080). This resistor will get quite hot during operation so arrange its connections so that it stands away from contact wires and with free air around it for cooling purposes. It must not be able to move.

5. Optional electrical equipment. A strobe light, furnished through be added to your electrical system. It consists of a power pack and 1 or 2 lights plus the requisite connecting wire. An hour meter is a convenient help you keep track of engine time. A tachometer may be added for rear seat instrumentation. A cylinder head temperature gauge may also be included. Consult concerning the addition of any other electrical equipment. Details 35A & 1

a. Connect strobe power pack black wire to magneto green wire. Connect power pack red wire (with in-line fuse) to magneto green/black wire. The best place to connect these is at the juncture of the cable and engine wires.

b. Run the strobe light wires from the power pack to the top of the instrument post or, if you are planning wing tip locations, to both wing tips. The post itself will be secured (taped) to the engine mount tube as far aft as possible.

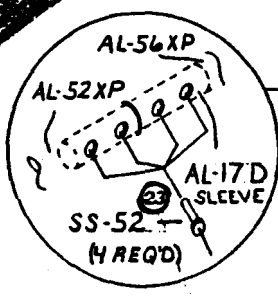
c. Tachometer connections in the rear instrument pod are identical to those of the front tachometer. Pin 2 (+) on the tachometer is connected to the yellow cable wire. Pin 5 (-) on the tachometer is connected to the brown cable wire.

d. The positive side of the hourmeter is connected to the red cable wire. The negative side of the meter is connected to the brown cable wire.

e. The cylinder head temperature (CHT) sending unit on the engine is connected to a common ground with the EGT sending unit. The XP-503 will use a CHT; in the MU-532, its use is optional. If you are not using a regulator/rectifier in your plane, the brown and yellow cable wires may be used for the positive side of the CHT circuit. If those wires are not available, the positive side of the CHT sending unit will require an additional wire to run forward to the front instrument panel to the CHT instrument. Connect the ground side of the instrument to the EGT instrument ground.

6. Completing electrical connections. Keep your knowledge of basic electrical in mind as you make these connections. Keep all connections separate from each other to avoid false readings or short circuits. Remember that all of these connections will be subject to vibration, especially those at the engine. Also, the engine instruments are in the air flow and subject to its pressures. Once all connections at the instrument cable are completed and checked out, i.e. instrument readings are correct, wrap a length of spiral wrap around the bundle of connections at the engine. This

V-58.1



NOTE:
CUT OFF IN LINE
WITH AL-55 & TAPE

AL-5XP
(9 REQ'D)
AS-66
(9 REQ'D)
(FACTORY INST)

FACTORY INST.
(9 PLCS)

NOTE:
DOUBLE
AT POINT
PRESSION

AL-58 R XP

AL-58 RD 3LN

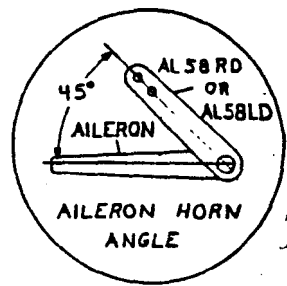
AL-51 XP

HG-2D
(6 REQ'D)

NOTE:
DRILL AND RIVET
3 PLCS AFTER
FABRIC IS TRIMMED
FOLDED & TAPED.
USE AA-52 RIVETS

3FW (THIN) AL
3FW (THICK) M
AN42-15A AL

INSTALL RIVETS
AFTER AILERON
HORN IS ALIGNED



LEFT
RIGHT

them yet leave them accessible.

V-59

M. NOSE COWLING

1. Optional nose cowling. The nose cowling (CW-1) is an option which builders choose because it not only improves the appearance of the finished but improves its aerodynamic efficiency as well. Detail 36.

2. Preparing to install the nose cowling. If you intend to install a there are 2 steps in preparation.

a. Prior to painting the cowling, position the cowling as it would be mounted, locate and drill its mounting holes. This means not painting the cowling after the aircraft is ready to receive it. However, if you chose to have the cowling painted at the same time other parts were painted, you can mount it without a final finish if you handle it carefully.

b. Install the upper mount bracket (CW-3) to the console as described in "Installing instrument panels," above.

3. Installing the nose cowling. Detail 36.

a. Install the lower rear cowling mount brackets (CW-4) to the bottom floor pans.

b. Drill 3/16" holes vertically in the foot peg, 7/16" from each side.

c. Fit the cowling to the fuselage so that the ends of the foot pegs align with the blisters on the bottom of the cowling. Prop the cowling in position. Check for full rudder pedal movement. If not, move the cowling forward until you have full movement. Check to make sure its alignment is satisfactory.

d. Transfer drill 3/16" holes in the cowling blisters through the fuselage. Temporarily bolt in place.

e. With the cowling still centered, mark the location of the holes for the lower rear cowling mount brackets on the bottom rear of the cowling. Remove the cowling.

f. Drill the 4 holes in the cowling to 1/2" and insert rubber grommets (6).

g. Remount the cowling, using hardware as shown. Make sure the cowling is centered before final securing.

h. Locate and drill 3 3/16" holes in the cowling for the upper mounting bracket. Bolt in place.

i. Install the windshield with tape, centering it on the cowling and make sure the ends line up with the ends of the cowling. If they are long, they can be trimmed after installation.

(1). Drill the center 3/16" hole first and secure temporarily with Cleco pin. Work away from the center on either side, fitting, smoothing, and finally securing with Cleco pins until you have worked out to both ends.

(2). When satisfied with its fit to the cowling and ready to install the windshield, trim its ends if necessary. Remove the protective covering and secure in place, using 8/32"x1/2" pan head screws (slotted head bolts) (in CW baggie). Use washers as shims between the windshield and the cowling to minimize dimples. Tighten with 8-32" lock nuts. Do not over tighten screws.

j. Remove all tape, trim and smooth windshield edges. Starting at the top of the windshield, install the cowling molding (CW-5). Use a mallet or soft hammer to gently tap the molding in place, working down one side and then the other until it is all the way on and fitting smoothly.

k. With the cowling in place, install the pitot tube (CP-23D) for the airspeed indicator (CP-22D). The aluminum tube should extend at least as far as the nose of the cowling. Theoretically, it should be further forward but it is not practical because it will get bumped, bent and misaligned. Its alignment should be parallel to the fuselage. The pitot tube enters the cowling through the hole on the underside just aft of the nose and is held in position by 2 conduit cable clips (21DR2). At its inner end, the tube is connected either to the plastic tube for the airspeed indicator through use of a union (CR-25D) or a tee (CP-25XP) if it is to be connected to both front and rear airspeed indicators. Details 40B & C.

N. AILERONS Detail 37

1. Assembling the frame.

a. Secure aileron tip tube (AL-56XP) to aileron trailing edge tube with sleeve connector (AL-17D) and SS-52 rivets. Rivet on the inner side of the sleeve to prevent lumps in the fabric. Be sure that the factory-installed compression bushings (AL-5XP) on the trailing edge tube face toward the leading edge before this connection.

b. Install 9 aileron compression tubes (AL-55XP) into aileron leading edge tube (AL-51XP).

c. Attach aileron compression tubes to trailing edge bushings (AL-5XP) with filament tape in place, using filament tape to hold them in place while pulling the fabric onto the frame. Do not connect the aileron tip tube threaded bushing (AL-6D) to the leading edge tube until the fabric is in place. Bevel the edge of the bushing so it can be slid past the tube while sliding into the fabric sleeve.

d. Cut the trailing edge tube off flush with the inner side of the leading edge compression tube, file the end smooth and tape. Also, tape the outboard end of the leading edge tube. Be careful not to use too much tape and do not cover the leading edge tube.

2. Covering the aileron frame.

a. In preparation for pulling the fabric onto the aileron frame, sprinkle talcum powder on the frame with talcum powder. Also, sprinkle some into the sleeve and shake the fabric to its full length. Insert the frame into the fabric, making sure that the left sleeve is inserted into the left sleeve and vice versa. You have the correct sleeve when the velcro strip is on the top of the leading edge.

b. Working the fabric onto the ailerons is the most difficult of the work on the airplane. An assistant is of great help here. One person pulls the fabric up the frame, the second person works it down the frame. Don't try to pull it down in one step. Be careful to pull straight along the frame to avoid bent tubing. Bent tubing must be replaced. Brace the frame against something and pull at an angle so that you have something to work against. A two piece L-shaped tube taped to the inner ends of the trailing edge tube and the leading edge tube is helpful giving support to the trailing edge tube while you are pulling. Continue

working the fabric onto the frame, removing the pieces of tape securing the tubes to the trailing edge bushings as you get to them.

c. When you have the fabric all the way onto the aileron frameb tight, lay the aileron on a flat surface, bottom side up.

(1). Secure 36" strips of filament tape to the leading and edges. Use these to work the fabric tighter. From here on, pay attention fabric seam. Make sure it is straight and just below the hinge locations a velcro strip is just forward of the top of the leading edge tube.

(2). When you have the leading and trailing edges smooth, p them as tight as you can get it and rivet the fabric to the tube to hold it Repeat with the other edge.

d. Now, press the loose end of the tip tube into place behind th edge tube. Line up the outer hole in the leading edge tube with the thread the bushing using a nail or small diameter Phillips-head screw driver, bein not to damage the threads. When in position, insert and secure the AN42-15A with correct washers as shown.

e. With the aileron still bottom side up, cut the fabric at the the sleeve approximately 1 inch longer than the frame.

(1). Apply 3 strips of filament tape to the face of the fab with the other airfoils, use the tape to apply tension and remove wrinkles, fabric in on itself and tape it to the frame inside the other side of the s and tape, repeating the process as many time as necessary to remove any sla wrinkles.

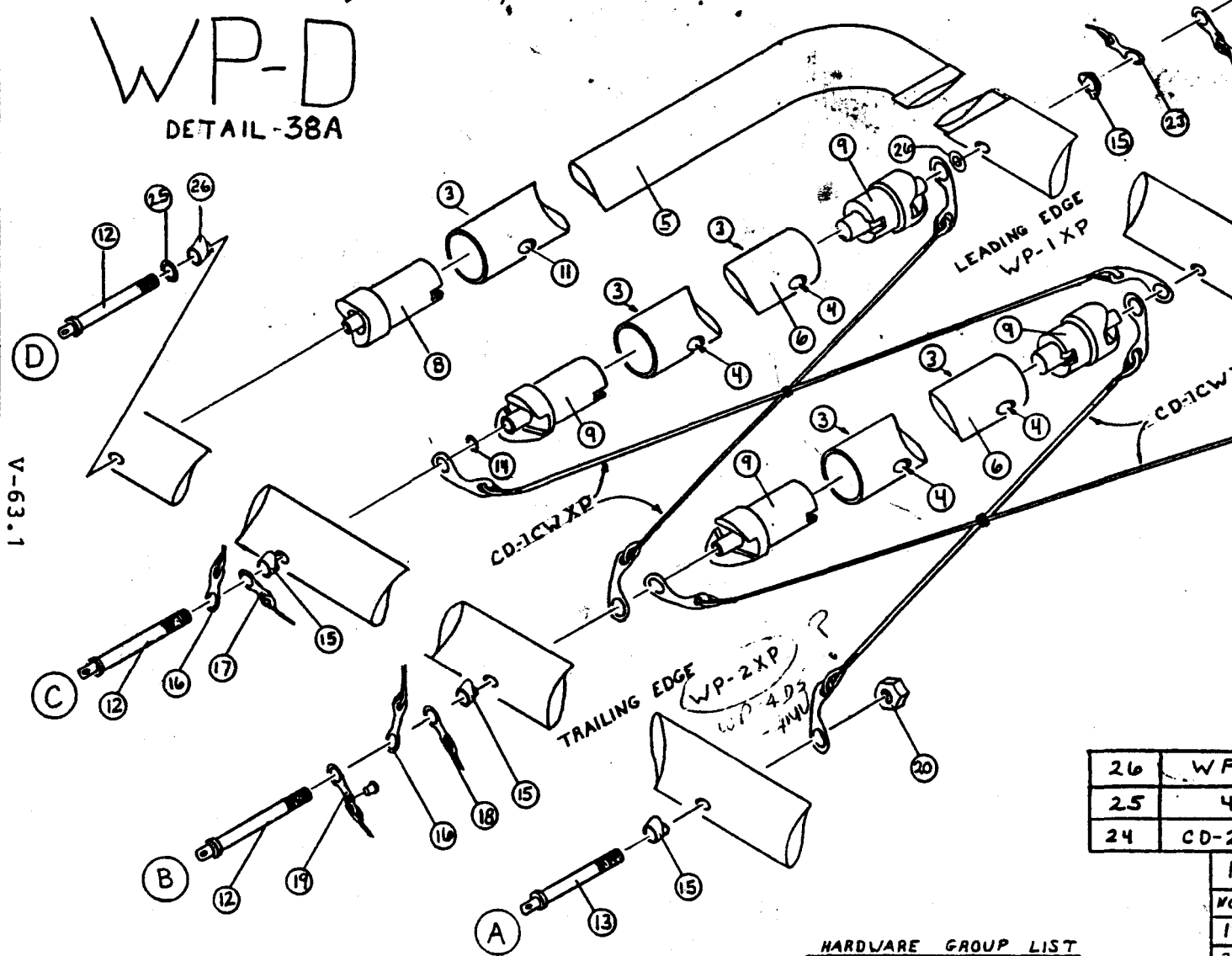
(2). When the bottom side is done, turn the aileron over an the top side. It is important that the top side be done last on all surfac the last fabric secured folds down, preventing moisture from entering. Tape fabric around the end of the frame to the outer surface of the fabric.

(3). Drill 3 holes in the inner side of the inboard compres rivet the fabric in place, using AA-52 rivets. Trim off all exposed tape an extra fabric around the leading edge tube, being careful not to score the t

MODELS XP-503, MU-532, DR-532

WP-D

DETAIL-38A



V-63.1

26	WP
25	4
24	CD-2

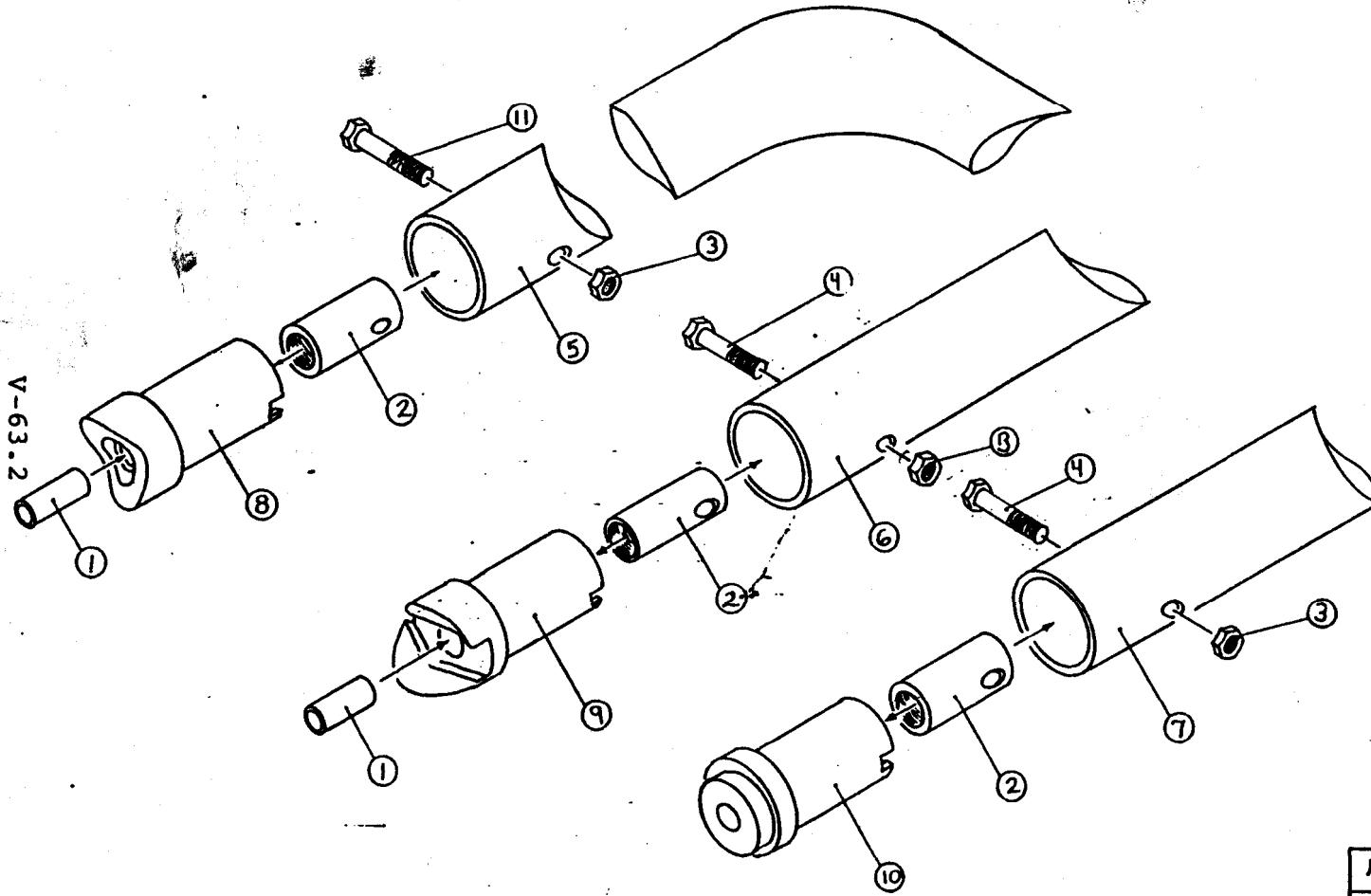
HARDWARE GROUP LIST

- (12) (15) (16) (WP)

1
2
3
4

DETAIL 38B

NOTE: DRILL ITEM *8 $\frac{5}{16}$ BEFORE INSTALLATION



1
2
3
4

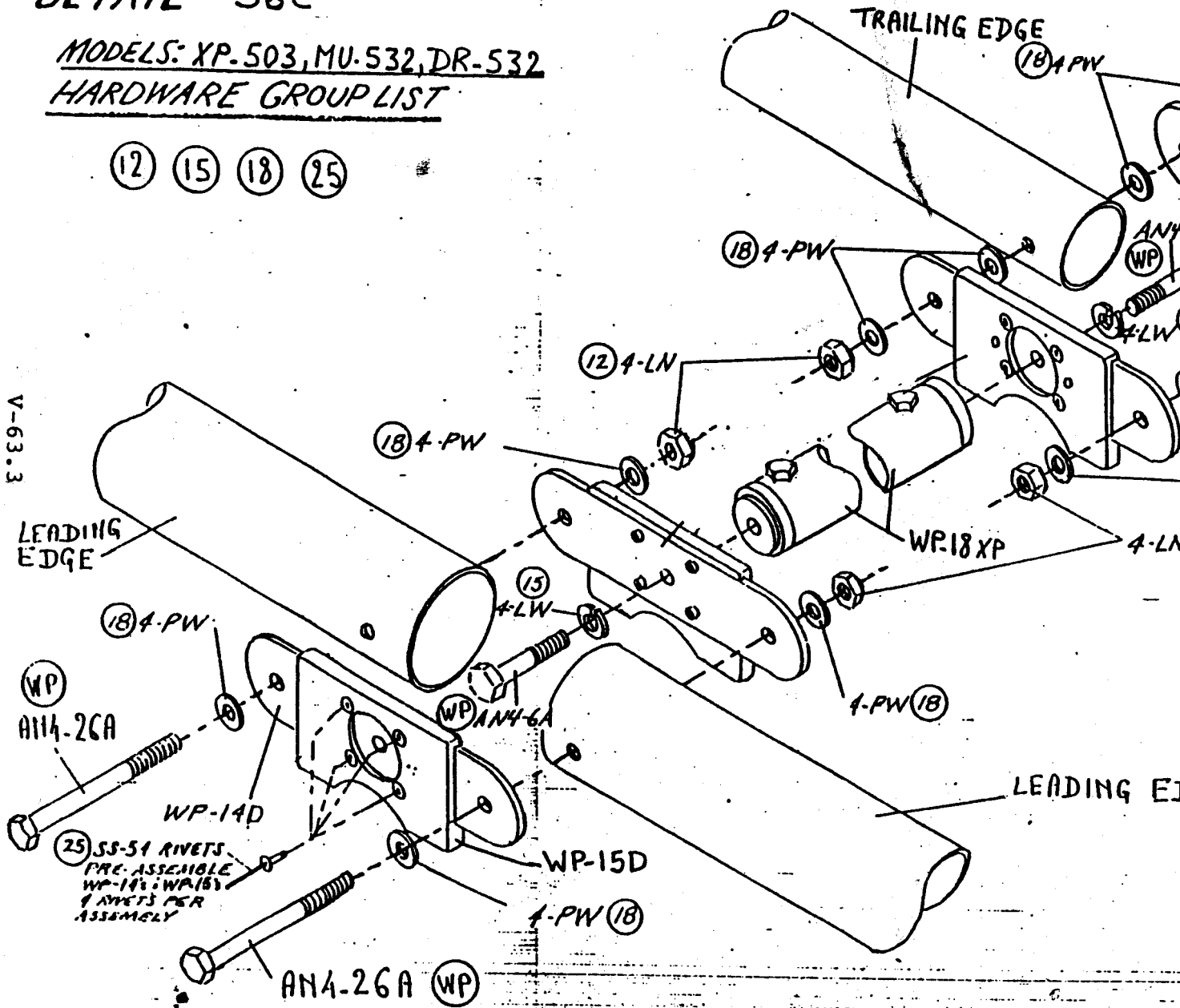
WP-D

DETAIL 38C

MODELS: XP-503, MU-532, DR-532

HARDWARE GROUP LIST

(12) (15) (18) (25)



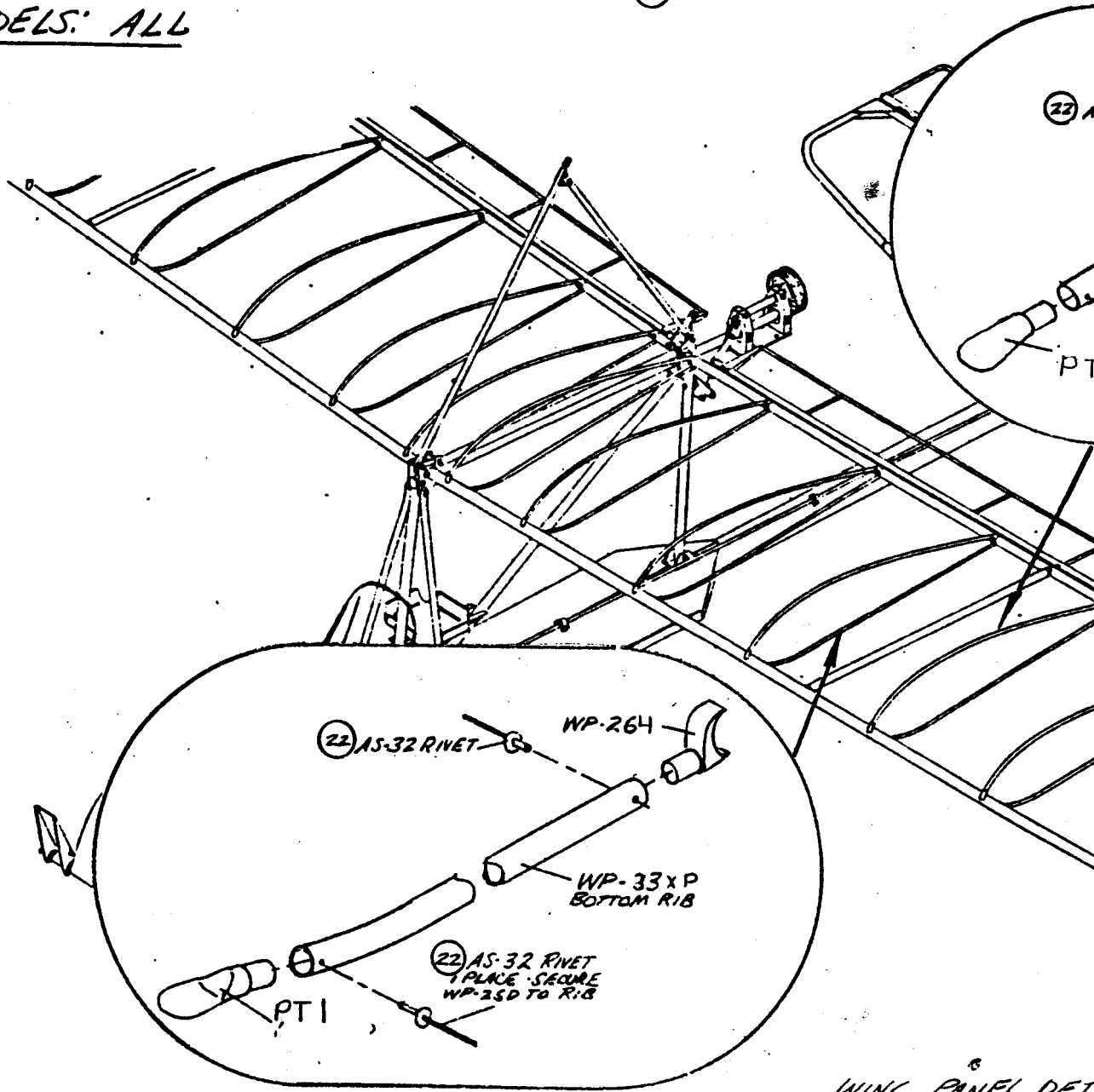
WP-D

DETAIL 38D
MODELS: ALL

HARDWARE GROUP LIST

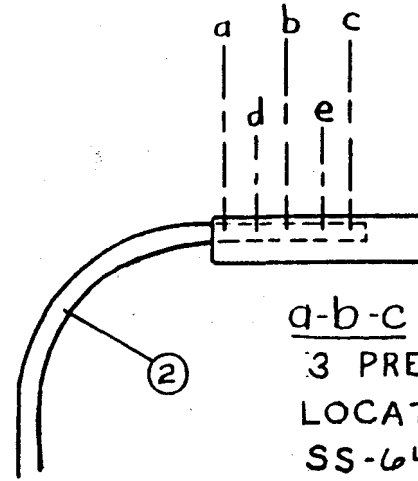
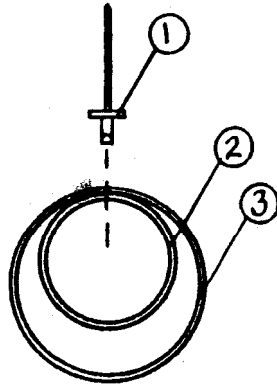
(22)

V-63.4



WING PANEL DET.

Detail 38E



V-63.5

a-b-c
3 PRE
LOCAT
SS-64
d-e
DRILL
a-b A
2 SS

BILL OF MATERIAL		
CODE NO.	PART NO.	DESCRIPTION
1	SS-64 (27)	RIVET
2	WP-13D	

REVISIONS		
NO.	DATE	BY

3. Completing the aileron.

a. Locate all hinge holes in the leading edge of the leading edge tube and burn holes in the fabric.

(1). Locate the correct aileron horn (AL-8LXP [left] and AL-8LXP [right]) and insert into the inner end of the leading edge tube. Its proper position is established by the angle of the horn. Its proper position is established about 45 degrees above the plane of the aileron surface will be established. The pre-drilled hole in its tube is aligned with the center hinge hole (third hole from the end of the leading edge tube).

(2). Rivet the center hole of one-half of an ST-16 hinge to the leading edge tube and the aileron horn using an SS-64 rivet. Transfer drill the remaining holes and insert 2 more rivets into the hinge.

(3). Cross drill the end hole from both sides in the leading edge tube and the aileron horn for the AN42-15A eyebolt. Secure with hardware shown. The eyebolt is aligned with the hinge.

b. Rivet the remaining hinges in place on the leading edge of the aileron using SS-64 rivets.

c. Repeat the entire process described in this section on the second aileron.

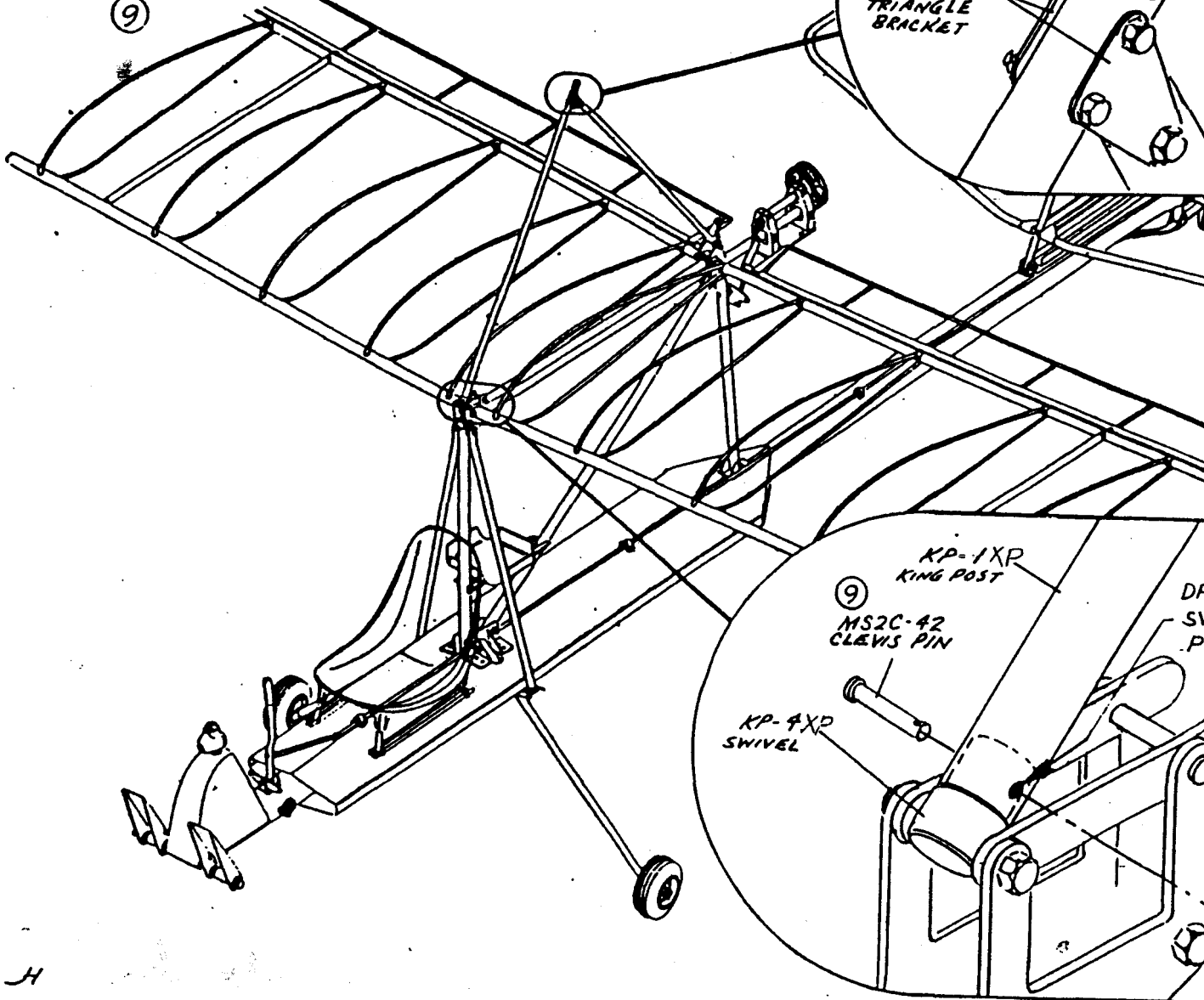
WP:D

DETAIL 39A

MODELS: ALL

HARDWARE GROUP LIST

⑨



V-64.1

H

⑨
MS2C-42
CLEVIS PIN

KP-13D
TRIANGLE
BRACKET

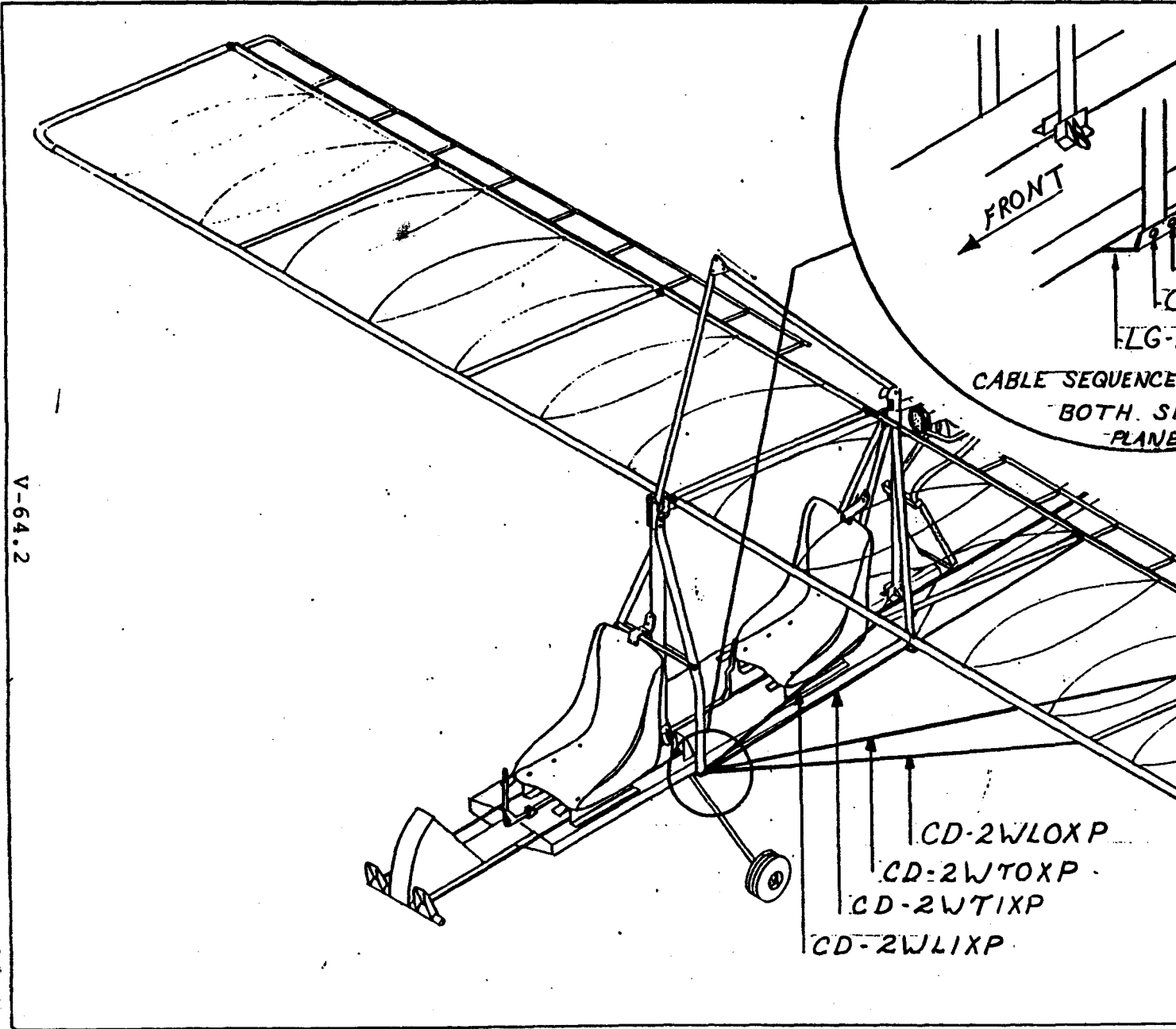
⑨
MS2C-42
CLEVIS PIN

KP-1XP
KING POST

KP-4XP
SWIVEL

DP
SV
P

DETAIL 39B



O. THE WINGS

1. Pre-assembling the wing components. Each wing is a separate frame joined to the other wing frame at the center. Each frame consists of a leading edge tube (WP-1MU) and a trailing edge tube (WP-4XP or WP-4MU). Connecting them is a center tube (WP-13XP), two center compression tubes (WP-9XP) and a wing root compression tube (WP-18XP) which connects the two wings frames. Each wing frame has three sections, the inner two having internal crossed cable bracing. The cables in the center section of each wing are tensioned when assembled. However, in the inner section, only the cable which is secured to the leading edge tube at the inner end is secured during assembly. The other inner section cable is taped to the trailing edge tube in assembly and is secured after the wing is covered. Detail 38A.

a. The compression tubes each have a threaded insert in each end. In the inner end place with an AN-3-12A bolt and a 3-LN lock nut. The wing tip tube has a threaded insert in the end to be connected to the trailing edge tube. Carefully inspect the threaded bushings prior to assembly. Detail 38B.

b. A plastic plug is fitted into the end of each tube with the threaded insert aligned to fit into the plug. Note that the wing root compression tube (WP-18XP), the wing tip tube (WP-13XP) and the center compression tubes (WP-9XP) use different plugs. The wing root compression tube plug is a TC-11; the wing tip tube plug is a TC-2; and the center compression tube plug is a TC-9. The contour in the end of each plug must line up with leading and trailing edge tubes. Detail 38B.

c. Using a pair of pliers to compress them, insert a split bushing into the end of each plastic plug. These bushings will fit into pre-drilled holes on the inner sides of the leading and trailing edge tubes. Detail 38B.

d. Assemble 4 wing connectors (WP-14D) with their shoes or saddles to the center tube using SS-54 rivets. Center tube (WP-9XP) nuts must be up and rotated 30 degrees from vertical so that they will not interfere with the motor mount tube or the KP-1 hold down brackets. Detail 38C.

e. Assemble upper and lower wing ribs and leading and trailing edge contour fittings (PT-1 and WP264, respectively). Note that the contour face of the upper ribs and up for lower ribs.

f. Install wing rib tips (WP-25D) in the leading edge of upper (W

lower (WP-33XP) wing forming ribs as shown in Detail 38D. The flat portion of tips must rest against the leading edge wing spar when finally assembled.

g. Install contour rib tips (WP-26XP) in the trailing end of upper and lower (WP-33XP) forming ribs so that the contoured tip will lock into the edge wing spars in final assembly. Forming ribs will be installed after the frames have been inserted into the wing fabric. Detail 30.

h. If the king post swivel (KP-4XP) and the wing hold-down straps (UF-12XP) have not been attached to the front connector brackets (UF-12XP), do so now. Detail 38A.

2. Assembling the main wing framework.

a. Lay the wing components out on a flat surface as shown in Detail 38A.

(1). Connect the leading and trailing edge tubes and the two cross-wing compression tubes, using the hardware shown in the Detail.

(2). Make sure that the tangs on the ends of the cross-wing compression tubes (10WXP) slip onto the bushings in the ends of the plugs and that they are seated in the slots on the sides of the plug. After they are in place, bend the tangs so that they are in line with the cable.

(3). Remember that the inboard trailing edge cable connection has not been made yet. Tape the end of this cable in its approximate position so that it can be reached after the wing fabric is on the frame.

(4). Insert any smooth-headed bolts to secure the tubes and cross-wings temporarily and but do not add the external cables or any hardware at this time. The bolts must go flush with the leading and trailing edges to allow the fabric to be pulled over them.

b. After the bushing in the wing tip tube has been fitted into the trailing edge tube and temporarily secured, join the wing tip tube to the larger diameter leading edge tube.

(1). Wedge the wing tip tube against the inside of the front of the leading edge tube with the single hole in the wing tip tube aligned with the

of the three pre-drilled holes in the leading edge tube. Use an SS-64 rivet hole.

(2). Transfer drill the 2 remaining holes with a 3/16" bit and use 64 rivets in them. Drill 2 more 3/16" holes, between the three holes already drilled. Use SS-64 rivets in them also. Detail 38E.

c. Attach a wing connector with saddle attached (WP-14D and WP-15D) to the end of the wing root compression tube. Secure them, saddle side in, with an AN4-6A bolt and a 4-LW lock washer. Make sure that they are in exactly the same plane, i.e. when placed on a flat surface, they are both flat against it and the tube will not rock. Secure the connectors so that the nuts on the cross bolts in the ends of the tubes point upward and 30 degrees off vertical. Use Loctite on the AN4-6A bolts. Do not to get blue Loctite on any plastic parts since it will destroy them. Detail 38D.

d. If your space will permit, lay the two wing frames out on a flat surface, wing root to wing root. Lay the wing root compression tube in position on the centerline between the two frames. Be sure that the saddles on each wing connector are down. Locate the remaining two wing connectors and saddles. Connect the two leading edge tubes between a wing connector on the compression tube and a second connector on the trailing edge tube using two AN4-26A bolts, 4-PW washers and 4-LN lock nuts. The second connector should face outward and the bolt heads should be forward. Make sure the second connector is parallel with its mate. Repeat this process for the trailing edge tubes; however, these bolt heads will be to the rear. Detail 38C.

e. If your assembly space will not permit laying the wings out flat, lay them, bottom surface to bottom surface, on their trailing edge tubes so that the wing roots are together. Connect the wing connectors to the leading edge tubes as described above. You will have to visually assure that each pair of connectors is parallel. When the leading edge connectors are secured, turn the pair of wing frames to stand on their leading edge tubes. Connect the second pair of wing connectors. Obviously, this step will require assistance.

3. Preparation for covering the wings. Like all other air foils on the aircraft, there are sharp edges, rough spots, and rivet and bolt heads which should be smoothed or taped over before covering the wing frames.

a. Go over the entire framework of each wing, filing, smoothing and

as may be necessary. One place calling for particular attention is the connection of the wing tip tube and the leading edge tube where a small diameter tube joins a larger diameter tube. Place a strip of tape over the five rivets heads. Wrap a strip of tape around the opening of the leading edge tube. Fold it in against the smaller diameter tube, closing and fairing the opening.

b. Wrap tape around the body of the wing tip tube and over the nut head at its connection with the trailing edge tube. Leave the nut on that tube uncovered for inspection purposes. Put a piece of tape on the end of the trailing edge tube. Use narrow pieces so that you will not cover the tip trailing edge bolts since they must be removed after covering.

c. Both the leading and trailing edge tubes are made up of tubes of different diameters (in addition to the leading edge tube). At the point where the smaller diameter tube projects from the larger, wrap a 1" wide piece of duct tape around the smaller tube. Then, cover it with a 2" piece of tape around both the large and smaller tubes centered on the joint. Smooth it down well. Do this to the joints of the leading and trailing edge tubes.

d. Once the wings are covered, access to the frame work becomes restricted as does visual access to its structure. Therefore, all work on the wing frame (including the inboard trailing edge cable connection) must be completed prior to covering the wings. Make a thorough inspection of both wing frames. Check each part for completeness of assembly. Do not move on to the next step until you are satisfied your preparations are complete.

4. Covering the wings.

a. Start the covering process with the wing frames standing on their leading edges and folded toward the radius or saddle in the wing connectors (bottom side).

b. Spread the wing fabric on a clean surface adjacent to the wing frames. The wing sleeves will be mounted simultaneously so arrange them side-by-side with the gap seals (long Velcro strips on the trailing edges) and the Velcro closure strips on the outer sides. This process can best be handled by no fewer than three people. One person holds the frames off the floor, one pulls the tops of the fabric and the other moves the bottom parts of the fabric along. As with the other airfoils, pull the fabric to the frame and then work it along. Do not try to do both at once. Once the

all on the frames, insertion of the ribs will remove slack in the fabric. After wings are mounted on the aircraft, the Velcro closure panels will tighten the wing fabric further. Adjust the fabric sleeve so that the front seam is centered on the leading edges and the aileron gap seal (long Velcro strip) is approximately between the bolt holes in the trailing edge tubes.

c. When the fabric is fully on and as snug as you can make it, insert the wing tip ribs, lower ribs first. Start with the pocket just under the trailing edge and work inward. It starts in easier with the curve reversed. Once started, turn the rib over and push it all the way into the pocket. Then, push the upper rib in through the same pocket into the sleeve in the upper surface. The seam on the trailing edge will want to move upward when you push the upper rib in. Hold it so that it moves no more than 1/2 inch from the centerline of the trailing edge. Use a soft hammer to tap the rib ends into position.

d. Install only the two inboard upper ribs at the Velcro area, and the two outboard upper ribs at each wing tip, for a total of four upper ribs in position before you mount the wing.

e. If you plan to urethane the wing before mounting it, all of the ribs must be inserted first. Otherwise, wait until the wing is mounted and propped up before inserting the rest of the ribs. In either case, to insert the remainder of the ribs, the wing must be in flying position with the center wing connectors held straight and the Velcro panel fully closed. Then, insert all lower ribs first.

5. Mounting the wings.

a. Mounting the wings can best be done with a minimum of three people. If three props have been pre-positioned to hold the wings in flying position, two people can do it.

(1). Unfold the wings. Orient it so that the leading edge is up. Move the spread wings over the plane.

(2). Insert the trailing edge wing connector into its anchor (see drawing UF-16D).

(3). Then, lower the front connector into place, lower the lower wing straps (KP-3D) over it and insert the clevis pin (MS3C61) and safety ring. Do not

b. Hold the wings tips up, then raise the king post from the rear forward under the cables and place the upper plug, with the upper wing cable it, onto its top. Then, move the front leg of the king post up and put its onto its plug (KP-4XP). Check to make sure there are no kinked or tangled gr before putting weight on them. Detail 39A.

c. Raise the wing tips slightly higher than the flying position a sides of the Velcro center closure panel together tightly, close them, smoo joint down. Gently lower the wings and allow their weight pull on and tighte fabric. Allow the wings to settle for a period and then repeat the process installing the rest of the ribs.

d. Install the remainder of the wing ribs not installed earlier. instructions given earlier. Force contour rib tips (WP-26XP) to nest on the edge tubes by springing the ribs slightly and tapping the tip with a rubber necessary. If the fabric needs to be realigned, back forming ribs partially rib pockets to reduce tension, and adjust the fabric as necessary. Detail 39

6. Attaching Wing Cables.

a. After the wings are mounted on the aircraft, all ribs are in p the fabric is tight, locate all bolt heads in the leading and trailing edges wing and burn holes in the fabric over them with a pencil type soldering iron access to each.

b. The upper (ground) and lower (flying) wing cables can be attac before or after you mount the wings. If you have props to hold the wings on in flying position, you should do it after mounting. Otherwise, attach them ground with the wings and Velcro section spread as when on the aircraft. Be careful to keep the cables untangled and avoid kinking.

(1). The longest upper cable on each side goes to the outboard edge. The next shorter cable attaches to the outboard leading edge. Slit th to pass the upper cables through at the proper angles being careful not to c Velcro on the gap seals.

(2). The inboard pair on each side follow the same pattern.

(3). Attach all cables at the bolt locations in the wing trailing edges, replacing the temporary bolts with the permanent bolts as shown in Detail 38A. Be careful not to jar wing or bolts during the replacement process. Carefully turn bolts out and in and avoid cross-threading in the bushings. When all wing bolts have been started into the threaded bushings on the wings, stop turning the bolts 1/4" from being tight. Pull on the head of the bolts with Vice Grips or pliers to ensure that the bolts are anchored in the bushings. Each bolt must be held by a minimum of ten threads or turns. However, do not overtorque to prevent distorting the wing spars. Use a drop of Loctite on the edge bolts.

(4). The flying cables attach to the same bolts as their respective ground cables. Always mount the flying cables closest to the wing on each side.

(5). The outer leading edge attach point has an optional attachment point that may be added for hanging the dismantled wings in a trailer.

(6). Note that there is a cable tang (T-12-HT4) added outboard of the cables attached at point B on the trailing edge of both wings. Detail 38A.

c. Attach the lower or flying cable clevises to the landing gear brackets with MS3C17 clevis pins and large safety rings. From the front to the rear, the order of attachment is: leading edge inboard, leading edge outboard, trailing edge outboard, trailing edge inboard. In order to have enough slack in the cables, there must be someone to pull down on the wing at the point of attachment for each cable while it is being attached. Pull down on the wing in four places. Detail 38A.

d. Adjust the cable tensioners on the upper cables, sliding the center plug from 4 to 12 inches on either side. The outboard trailing edge cables will not become fully tight until the wing is providing lift.

7. Aligning the wings. The fuselage should always be at 90 degrees to the ground. Different forces on the fuselage and on the wing want to flex them out of alignment. Cables between the wing and the rear fuselage tube eliminate this problem.

a. Attach the wing to main tube cables (CD-1WS) to cable tangs at hinge point B on the trailing edge of the wing using MS2C-11 clevis pins and safety rings. These tangs should be bent as close to their attach points as possible so that they are aligned with the run of the cables. Keep clevis pin heads

ailerons. Detail 32M.

b. Attach tangs for the wing to main tube cables (CD-1WSD) to tube as shown in Details 30 & 32M.

c. Attach the wing to main fuselage tube cables with thimbles, sleeves and shrink tube to the tangs on the fuselage. Do not tighten yet.

d. Measure between the same fixed points outboard on the wings rear fuselage at the vertical stabilizer on both sides of the plane. Tighten on the long side and hold it temporarily with a split bolt. Measure and then the other until you have their lengths matching within 1/8 inch. The bass tone of the cables when plucked should match. Bounce the fuselage tube vigorously. If the cables sag when bouncing, retighten. Then recheck your measurements. If they still match, swage these cables as described earlier. re-tension the longer side and check again. Swage when cables lengths match.

e. After the airplane has been completed and is being flown, keep checks on the tension of the wing to main tube cables. If they should loose the cables may be twisted up to 5 or 6 times to maintain tension and alignment.

8. Attaching the ailerons.

a. Hold a completed aileron with its hinges aligned with the eyebolts on the edge of a wing. Use MS2C-15 clevis pins and small safety rings to connect them. If there are any small misalignments, use a nail or Phillips head screw driver to align the hinge and eyebolt.

b. Adjust the aileron push rods, attached to the aileron bell crank levers so that they are exactly the same length. Although they may have to be later shortened later, this step will enable you to keep the ailerons in exactly the same plane. Detail 19.

c. Attach the push rods to the aileron horns, using the hardware shown in Detail 19. After connecting them, make sure there is free movement through the full range of the ailerons.

d. Now set the proper droop into the ailerons. Stand at the wing tip. Visually, line the aileron chord up with that of the wing tip. With the st

the rear end of the aileron should be 1" lower than the line of the wing tip extended. Adjust one aileron push rod until the droop is correct, noting the turns of the rod end to achieve it. Repeat with the same adjustment on the other aileron. Its droop should be correct; however, if it is not due to some small error in the rigging, very little adjustment will be necessary. Secure both ailerons with castle nuts and cotter pins as shown in Detail 19.

P. THE PROPELLER

1. Which propeller? Selection of a "right" propeller for your aircraft is essential to its best performance. It will depend not only on the model of aircraft you have built, its engine, but also on your intended use of the plane and the recommendations of MAXAIR and ROTAX. Discuss this with your dealer before you purchase your Drifter.

2. Mounting the propeller. Now is the time to mount the propeller on the engine. They are mounted with six bolts which go through the propeller into the hub. On your mounting bolts are 1/4" bolts, they are each torqued to 100 inch-pounds on metal propellers. On propellers with plastic hubs, you may go to 120 inch-pounds. On propellers using 8mm mounting bolts, nuts are used on the rear side of each bolt. Torque the bolts to 8-10 foot-pounds and the nuts to 18-20 foot-pounds. Safety all nuts after torquing. Refer to the diagrams in the "Wingtips" section of your manual for an illustration of how to safety wire the propeller bolts. Although the diagram shows four bolts, the principal applies to six bolts, as well.

3. Function of the propeller. The propeller is a modified screw which is designed to pull or push an aircraft through the air. It is, in one sense, the differential in an automobile. It is the gear ratio in that differential that determines the final efficiency of the drive train. With an incorrect gear ratio, a high rpm engine can be rendered ineffective or a lesser powered engine can be more effective at a cost: higher rpm and loss of fuel efficiency. Similarly, the propeller is the final efficiency of the aircraft drive train of engine, reduction gear, and propeller. Some combinations are more efficient than others, providing more thrust for better fuel economy without demanding too much of the engine. These combinations have been worked out by the engine and aircraft manufacturers. The propeller you use is one of these.

4. Care of a propeller.

a. A propeller is a remarkable device, not only for the thrust it produces but for the rotational and centrifugal stresses that it repeatedly withstands while doing it. While a propeller cannot be considered fragile, it must be regarded as delicate and treated accordingly. A well cared for propeller gives the best performance.

b. Balance. To operate safely and efficiently, the blades of a

must be balanced. The slightest out-of-balance situation will cause vibration. An aircraft does not take much vibration to be unsafe. Anything falling off of or out of an aircraft while in flight may hit the propeller, causing at least a dent or perhaps, far more serious damage which could lead to loss of the entire propeller or possible structural damage. (Thus, the great emphasis on securing all nuts, bolts, and washers as well as loose objects). A small nick or dent in the leading edge or tip of a propeller blade will need filling, but the filling will probably cause an out-of-balance situation that would need correcting before the propeller could be used. Balancers are not expensive and the process of balancing a propeller, while tedious, is not difficult. While some propellers come with protective substances such as epoxy or metal on the tips and leading edges, they do not prevent blade damage entirely.

c. Track. Three, four, and many two bladed, propellers today are made of separate blades joined in a hub. This combination creates the potential for blades which do not track. Tracking refers to blade tips which follow each other in a horizontal plane. If they do not track within 1/4" of one another, they should be adjusted at the hub to do so. This is usually a matter of repositioning washers or shims. As critical as balance, tracking properly reduces stress on the propeller and increases its efficiency.

d. After the initial torquing of the mounting bolts, torque them again every hour each hour of operation for the first three hours. Thereafter, torque them again every three hours of operation but check them before each flight during the preflight. Tighten out on each bolt head with pliers to assure that it is secure.

NOTE ITEMS LISTED BELOW ARE RECOMMENDED ITEMS TO BE MAINTAINED OR REPLACED AT TIMES AND HOURS STATED. (EVERY SINGLE ITEM AND PART ARE EQUALLY IMPORTANT FOR AN AIRWORTHY CRAFT. A THROUGH INSPECTION IS REQUIRED PRIOR TO EVERY FLIGHT.)

	EVERY FLIGHT	FIRST 10	25	HOURS 50	100	200	ONE YEAR	TWO YEARS	HRS 500
AILERON CABLE TENSION	I				T				
AILERON CABLE GUIDES	I								
AILERON CABLE PULLEYS	I			L					R
AILERON CABLE LUBRICATION AT PULLEY AREA				L			L		
AILERON BELCRANK AND BEARING	I			L			L		
AILERON HORNS (CRACKS OR BENDS)	I								
AILERON PUSH RODS AND RIVETS	I		L	LT					
AILERON ROD ENDS (FREE MOVING, NO BENT SHANKS)	I		L	LT			L		
AILERON BOLTS HINGES CLEVIS PINS AND RINGS	I		L	L		R	L		
AIRFRAME BOLTS NUTS									
AIRFRAME BOLT SLEEVES AND BUSHINGS				I		I			R
AIRFRAME(ALL COMPONENTS)	I				C				
BRAKES AND BRAKE CABLES	I		A	L			L		
CABLES (TENSION),	I			A					
CABLES (NICO SLEEVES, COROSION, SLIPPAGE, CRIMP DIAMETER)	I				C				
CABLE THIMBLES (ELONGATION, WEAR AT CONTACT ENDS)	I				I				
CABLE (KINKED, FREYED, DAMAGED)	R								
CABLE GUIDES (CRACKS, RIVETS, ALLIGNMENT)	I								
BOLTS AND NUTS (TOTAL AIRCRAFT)	I	T			T				R
CLEVIS PINS AND RINGS									
ELEVATOR BELCRANK BEARING	I			L	C	C	L		
WING TIP, OUTBOARD BENT TIP TUBE (CHECK RIVETS AND PARTS)	I			C		C			
WING (COMPLETE ASSEMBLY) DISASSEMBLE AND INSPECT	I					C			
WING (FITTINGS ON ALL COMPRESSION TUBES)	I					C	R		R
WING RIBS SHAPE AND PLASTIC TIPS	I					C			
POWER PLANT AND RELATED CONTROLS (NOTE REFER TO ENGINE MANUAL SUPPLIED)									
POST BREAK IN INSPECTION AND BREAK IN									
AIR FILTER	I		C		CR				
FAN BELT (COOLING FAN)	I	I	T			R			
ENGINE MOUNT BOLTS AND NUTS	I	C			C	R			
RUBBER ENGINE MOUNTS AND BUSHINGS	I			C	R		C		
FUEL FILTERS		C				R			
FUEL LINE	I				C			R	R
FUEL PRIMER BULB	I				C	R	C	R	R
FUEL TANK	I				C			R	R
FUEL FITTINGS AND CLAMPS	I	T	C	T					
FUEL PUMP	I	T	C						
FUEL PUMP DIAPHRAM					C	R		R	
GEAR DRIVE ENGINE COMPRESION DECARBORIZING HEADS CRANK BEARINGS ROD BEARINGS									
ENGINE MOUNT STUDS AND NUTS	I			T		R			
TORQUE ALL ENGINE BOLTS BEFORE AND AFTER BREAK IN		T				I			
ENGINE TIMING	I	C		C	C	R			

SEE ENGINE MANUAL

Q

NOTE ITEMS LISTED BELOW ARE RECOMMENDED ITEMS TO BE MAINTAINED OR REPLACED AT TIMES AND HOURS STATED. (EVERY SINGLE ITEM AND PART ARE EQUALLY IMPORTANT FOR AN AIRWORTHY CRAFT. A THROUGH INSPECTION IS REQUIRED PRIOR TO EVERY FLIGHT.)

UNCLASIFIED
1993

	EVERY FLIGHT	FIRST 10	25	HOURS 50	100	200	ONE YEAR	TWO YEARS	HRS 500
✓ ELEVATOR PUSH ROD GUIDES	I		CL		C		L		R
HINGES	I	L		C			CL		
✓ ALL ROD ENDS, FREE MOVING, NO BENT SHANKS.	I		CL	L			L		
FABRIC (ENTIRE AIRCRAFT) 4000 HOURS, OUT SIDE DAYLIGHT	I					C			
FABRIC ,THREADS AND SEAMS	I					C			
GAS LINE, TANK, FILTERS, AND PRIMER BULBS	I						R	R	R
INSTRUMENTS AND GAUGES, WORKING, AND MARKED	I			C	C				
KING POST (INSPECT ALL PARTS, ESPECIALLY AT THRU WIRE AREA	I			C					
LANDING GEAR ATTACH BRACKETS, BOLTS AND PARTS	I			C					
ALL TUBING (NO DENTS, BOWS, CRACKS, OR COROSION)	I			C					
SEATS (CHECK FOR CRACKS, AND ALL ATTACH HARDWARE)	I			T					
HARNESSES	I				C				
SAFETY WIRE, RINGS, COTTER PINS, CASTLE NUTS	I				C			R	R
TAIL SURFACES (ALL PARTS) AND FABRIC	I		TL				TL		
TAIL ANCHOR TUBE (NO CRACKS, ALL PARTS TIGHT)	I			C					
TAIL WHEEL	I		TL				TL		
TAIL SPRING ATTACH POINTS	I		C						
TAIL WHEEL FORK, BOLT, BEARINGS, AND HORN	I	LT	LT						
✓ TIRES AND TUBES KEEP INFLATED	I		C					R	R
✓ WING BOLTS	I		T			R	T		R
✓ WING CONNECTOR PLATE AND PLASTIC SADDLES (WP 14615)	I		C			R			
RECOIL STARTER ASSEMBLY	I			CT					
✓ SPARK PLUGS	I	C	R						
S T O U R A G E S E E M A N U A L									
BELT DRIVE REDUCTION UNITS									
REDUCTION MOUNT BOLTS	I			CT	R				
REDUCTION RUBBER MOUNTS AND BUSHINGS	I		T		R				
REDUCTION PULLEY SHAFT RE LOCTITE IF PULLEY HAS END PLAY.	I				R				
REDUCTION PULLEY BEARINGS (CHECK FOR ANY AXIAL PLAY)	I	C		CR					
REDUCTION V BELTS (CHECK FOR EVEN TENSION AND WEAR)	I		C		R				
PROPELLER ALLIGNMENT		T		C	T				

LEGEND

A - Adjust
 C - check condition & replace if necessary
 I - inspect & replace if necessary
 L - lubricate & inspect
 R - replace
 TL - torque & lubricate
 T - torque
 CT - check & torque

Maxair
 Aircraft Corp.

1-14-89

D. SERVICING SCHEDULE - XP-503 AND MU-532

Section VIII

FLIGHT LIMITATIONS

A. OPERATING LIMITATIONS.

The automobile generally operates effectively and safely from 0 miles per hour to near its maximum velocity with few physical restrictions, with only man-made and environmental limitations. Unlike the automobile, the airplane must operate within an established speed range in order to operate safely. It also has certain speeds which are more efficient in certain flight attitudes and conditions. Each aircraft has its own set of flight operating limitations. It is incumbent on each pilot to know those limitations.

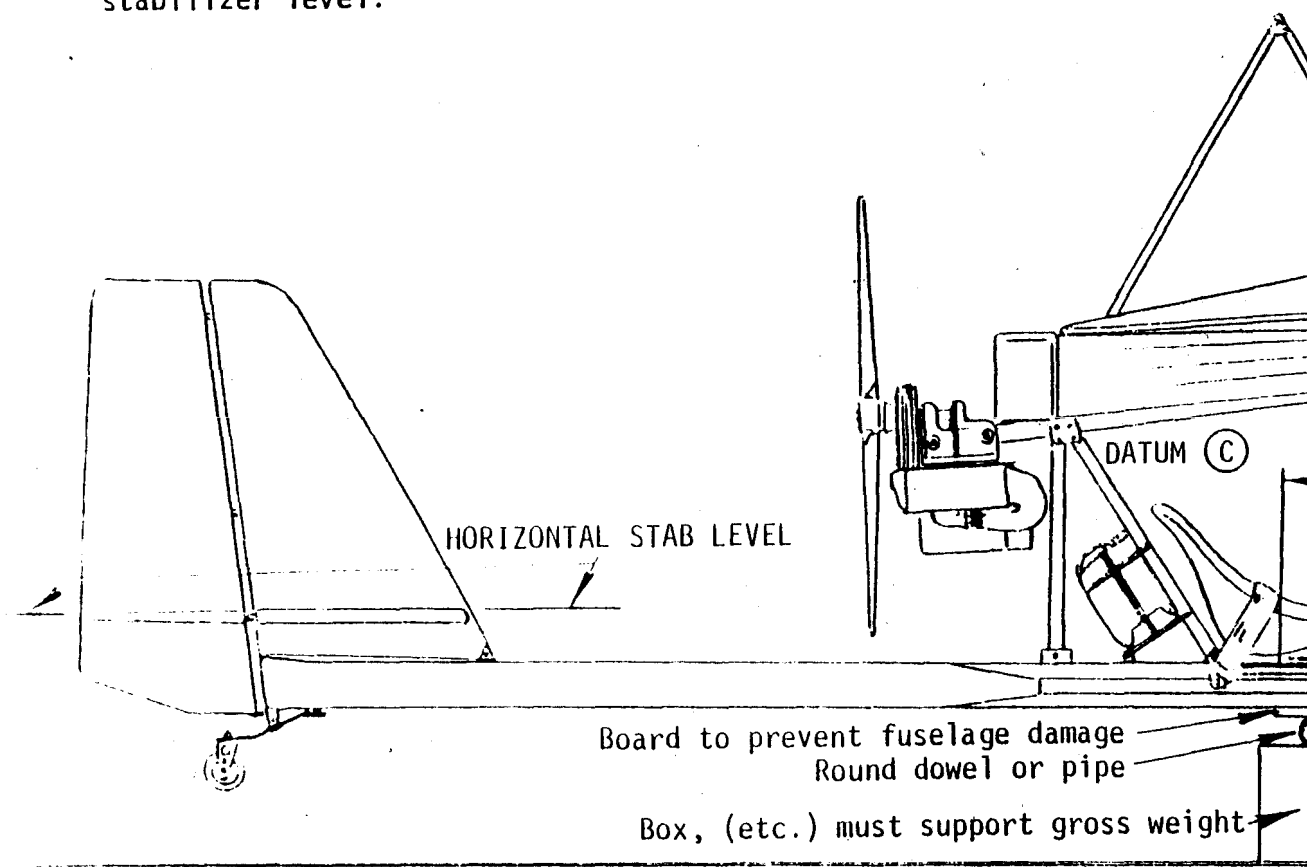
B. OPERATING SPEEDS AND LIMITS - Maxair Drifter

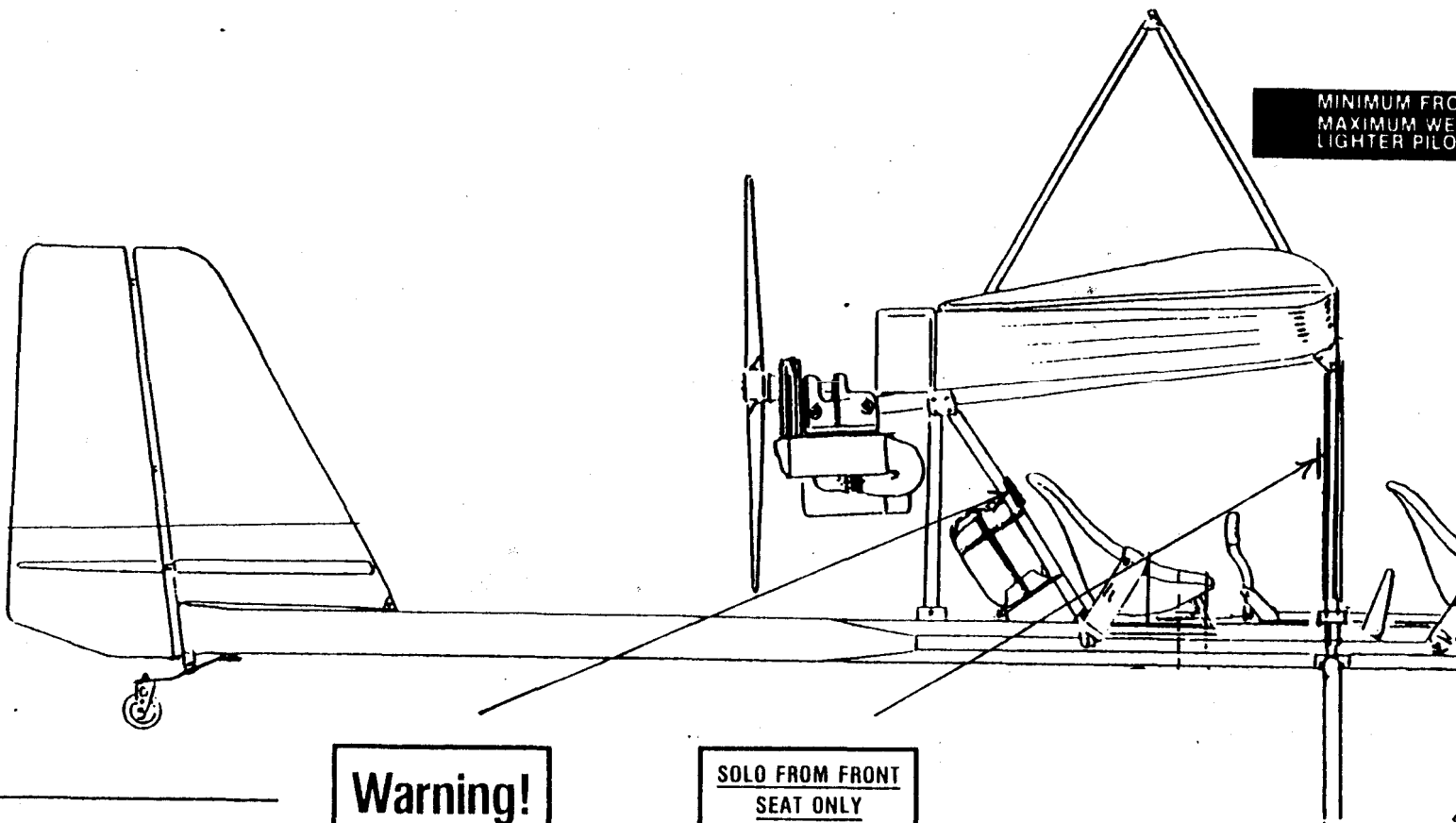
	<u>XP-503</u>	<u>MU-532</u>
Va Designed maneuvering speed	55 mph	55 mph
Vc Cruise speed	55 mph	60 mph
Vc envelope	45-65	50-70
Vh Top speed in level flight w/full power	75 mph	85 mph
Vne ... Never exceed speed	79 mph	85 mph
Vno ... Maximum structural cruising speed	65 mph	75 mph
Vr Rotation speed	40 mph	43 mph
Vs Stalling speed	36 mph	38 mph
Vx..... Best angle of climb (used when clearing an obstacle)	45 mph	47 mph
Vy Best rate of climb	49 mph	54 mph
Minimum powered steady flight speed	40 mph	45 mph
Best glide speed	45 mph	43 mph
Note: When making an engine out approach, increase glide speed once on final approach to normal approach speed (55 mph). Do not descend below 250' A.G.L. without increasing speed to 55 mph.		
Normal approach speed	55 mph	55 mph

WEIGHT AND BALANCE: The Drifter XP must be balanced after final completion of the pilot.

The builder, name: _____, weight _____ lbs., has balanced the aircraft, locating the fulcrum (C.G.) center of gravity on the fuselage so the aircraft will balance with the fuel tank empty and the PILOT IN THE SEAT. With the horizontal stabilizer level, drop plumb bob from leading edge tube (datum point (A)) down to the fuselage and permanently mark datum point (B) for reference. The center of gravity (datum point (C)) MUST BE 16" to 21" from datum point (A) and (B) with the horizontal stabilizer level.

The C.G. with a _____ in _____ with the _____ with the _____





MINIMUM FRONT SEAT PILOT WEIGHT: 150 LBS.

Warning!

THIS ENGINE REQUIRES A FUEL OIL MIX!

Check your Maxair flight information manual for oil specifications and mixing ratios. Use 89 octane auto gasoline.

Maxair 

SOLO FROM FRONT SEAT ONLY

MINIMUM FRONT SEAT PILOT WEIGHT: 150 LBS.

MAXIMUM PILOT WEIGHT:
FRONT SEAT — 235 LBS.
REAR SEAT — 235 LBS.

Maxair 

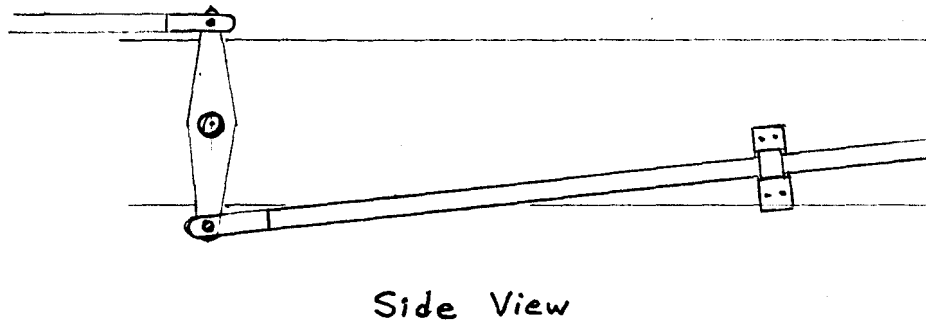
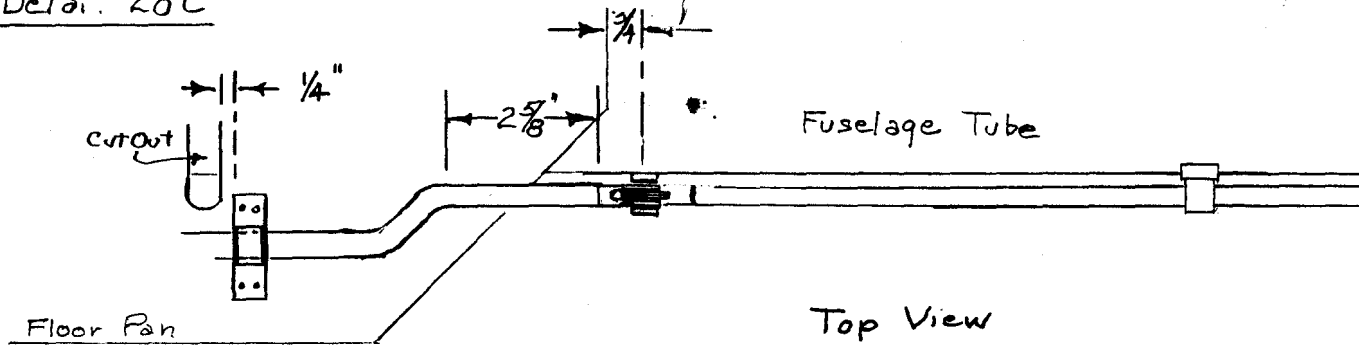
WARNING!

THIS AIRCRAFT IS AMATEUR BUILT. COMPLY WITH THE FEDERAL SAFETY REGULATIONS FOR STANDARD AIRCRAFT.

- *ALL AEROBATIC MANEUVERS ARE PROHIBITED.
- *VNE NEVER EXCEED SPEED 40 MPH.
- *VA MANEUVERING AND ROUGH AIR SPEED 55 MPH.
- *AVOID FLIGHT IN MODERATE OR SEVERE TURBULENCE.

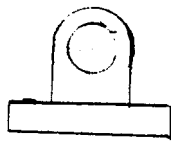
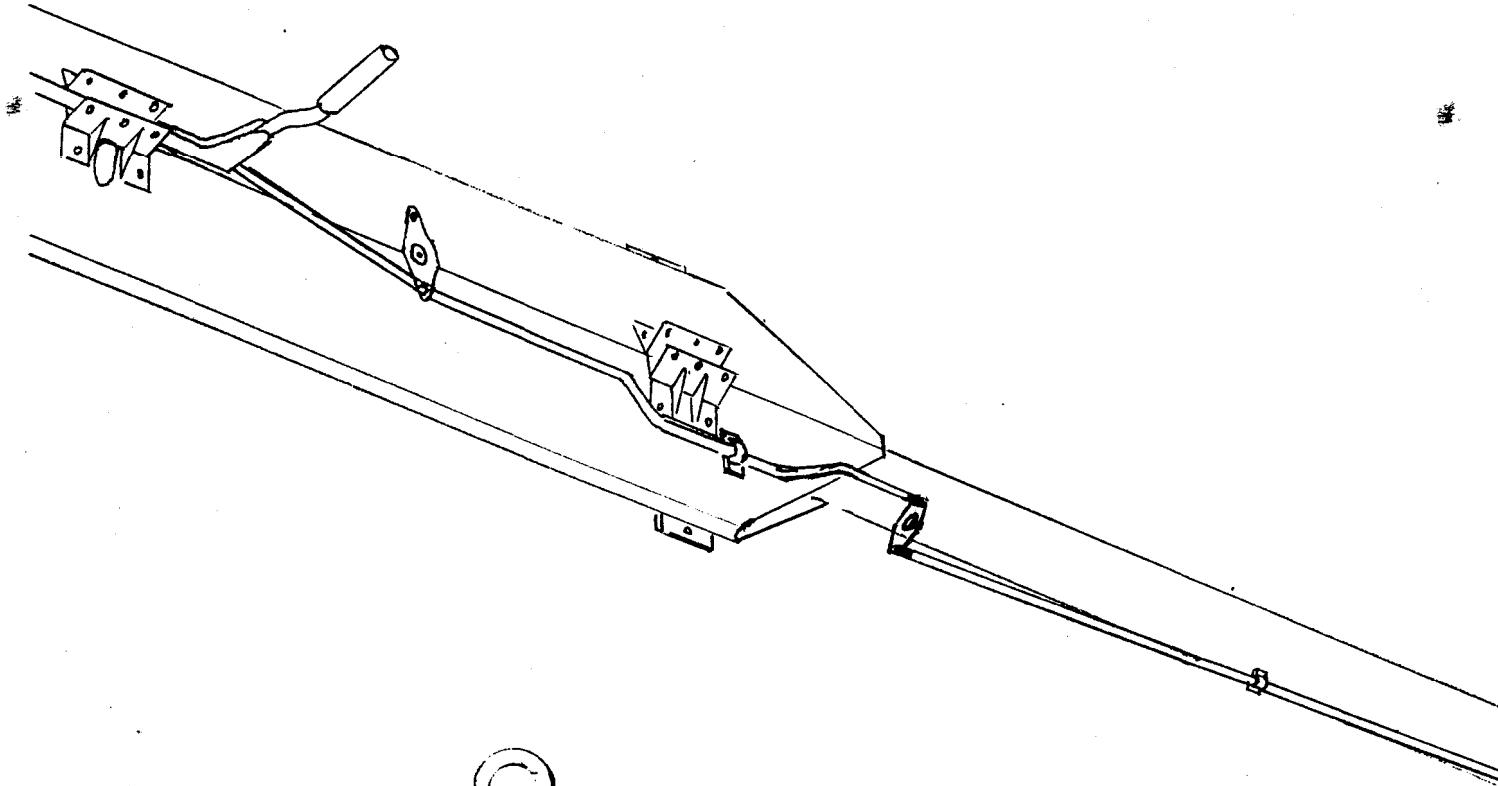
Detail 28C

Drill Bell) bolt hole $\frac{3}{4}$ " - 1) r of

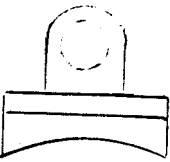


Detail 28B

Model: XP-503
MU-532



AA-66 (27)



AA-610 (27)