

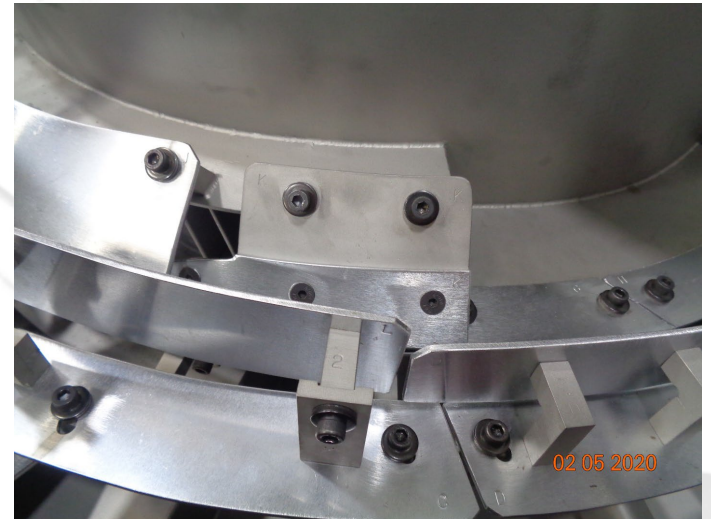
ADJUSTABLE GATE

- **ADJUSTABLE GATE:** A formed plate riding in parallel vertical track that can be raised or lowered to control the flow of parts from a hopper.



ADJUSTABLE TOOLING

- **Adjustable tooling:** Bowl tooling that can be adjusted in height and width or both.



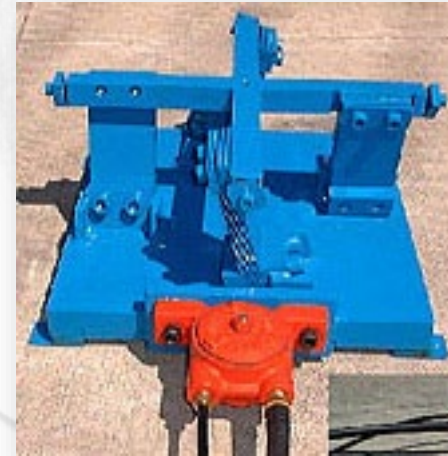
ADJUSTABLE TRACK

- **ADJUSTABLE NARROW DOWN TRACK SECTION:** A short section of track that can be set at various widths. The length depends on the size of the part. This may be either a stainless or tool steel insert that can be adjusted to either orient or limit parts to a single file.



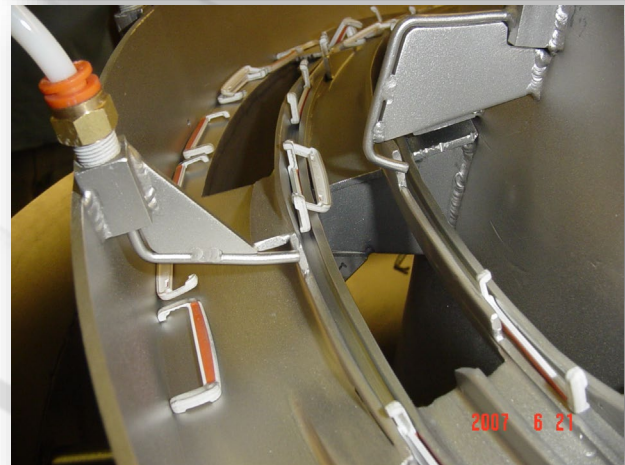
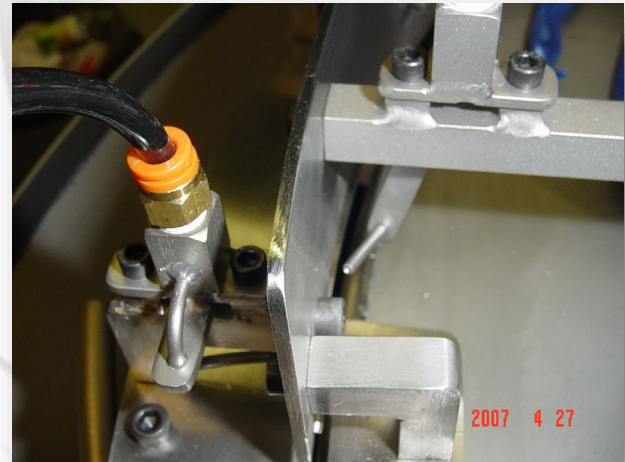
AIR DRIVE

- **AIR DRIVE:** A drive unit that is powered by air using either a reciprocating piston or eccentric rotary device to provide vibration, usually used in explosive environments.
- **AIR TURBINE:** Turbine Vibrators the turbine uses less air than the Ball Vibrator for the purpose of driving a Bowl & Base Unit, Hopper or Inline. Used in explosion proof application.



AIR JETS

- **AIR JET:** (Air Assist) A small diameter tube mounted in place which is sometimes used to assist part movement, it is adjusted in the process of development to assist in orientation or final selection with the minimum amount of air pressure. A section of small diameter tubing that could be welded or screwed in fitting to a small block with an air fitting. An air jet is normally welded or bolted to the bowl to assist parts in moving, separating, selecting or orienting parts. A block with small diameter tubing welded in place which is sometimes used to assist in moving or orienting parts. It is adjusted by trial and error using air pressure.



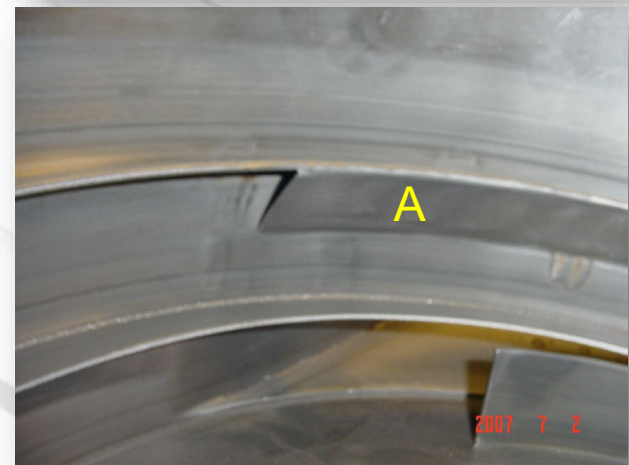
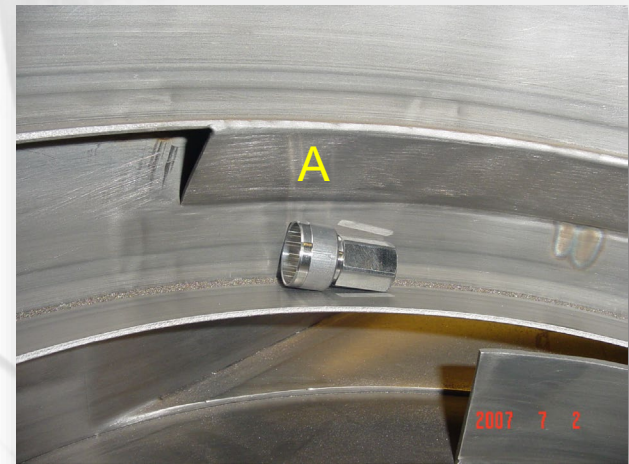
AMPLITUDE CONTROL

- **AMPLITUDE CONTROL:** A controller uses a transducer mounted on a vibratory bowl or track to feed back the stoke amplitude so a constant amplitude can be maintained. Compensates for voltage and load changed and spring drift.
- Transducer motion sensors provide the best control possible by giving the bowl system true closed-loop control. With a motion sensor, your equipment will run at constant speed regardless of power-line fluctuations, parts loading.



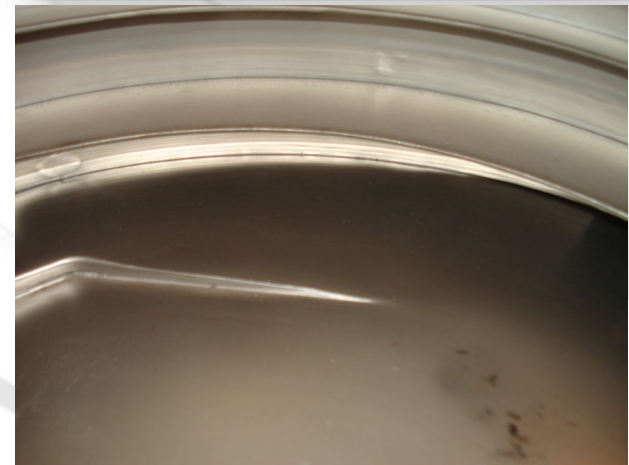
ANGLE SKIRT

- **ANGLE SKIRT:** (A) A conic section calculated to fit at the required angle and attached to the bottom side of the truck and to the bowl wall. It is used for the purpose of preventing parts from stacking and causing jams between the tracks.
- Can be filled with a sound damping material to help reduce the noise level.



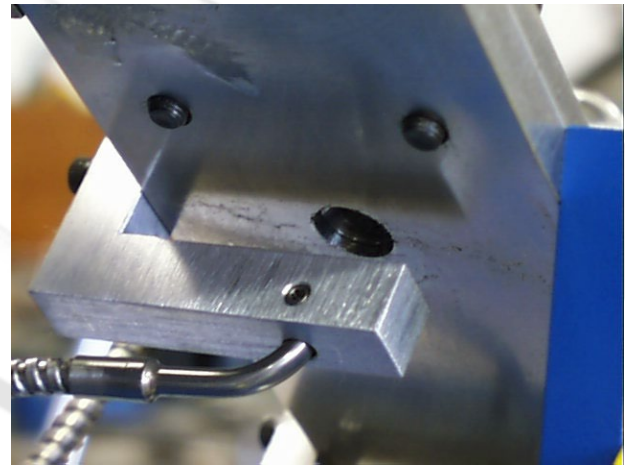
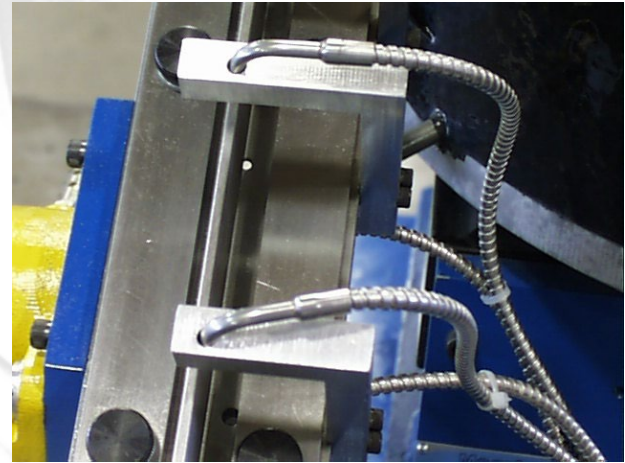
APPROACH

- **APPROACH:** The area inside the feeder bowl where the parts start to climb up the spiral track.
- The common rule is that the approach is 1 and a $\frac{1}{2}$ times the width of the track.



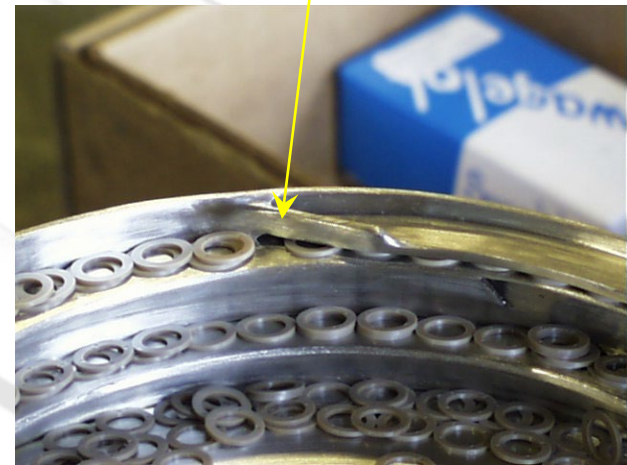
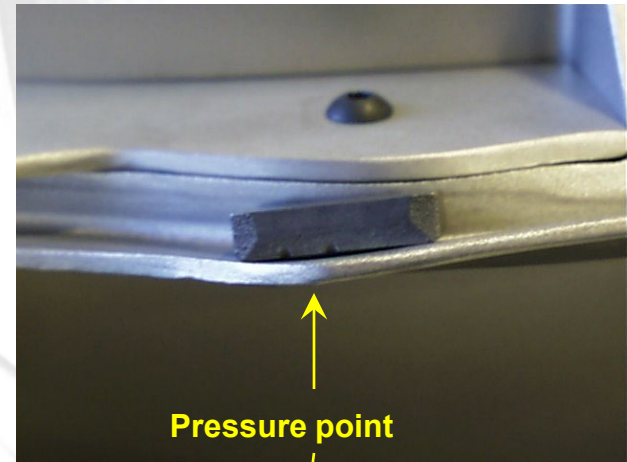
BACK PRESSURE RELIEF DEVICE

- **BACK PRESSURE RELIEF DEVICE:** A sensor that controls back pressure by cycling the bowl feeder on and off or by controlling a solenoid that blows parts off the track off the bowl just prior to the discharge. The sensor is mounted in the gravity or inline track or conveyor close to the bowl discharge to detect a back up of parts.



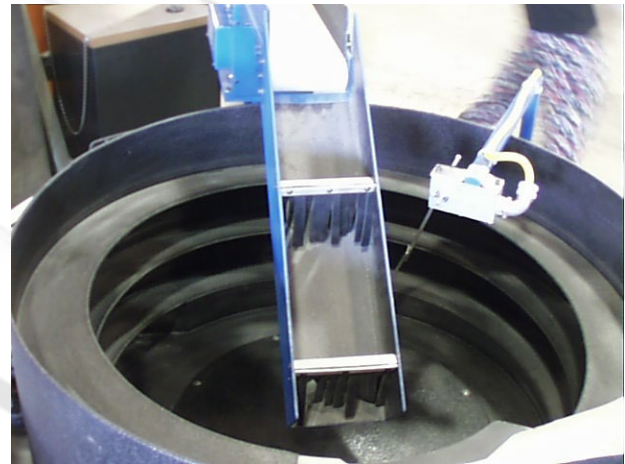
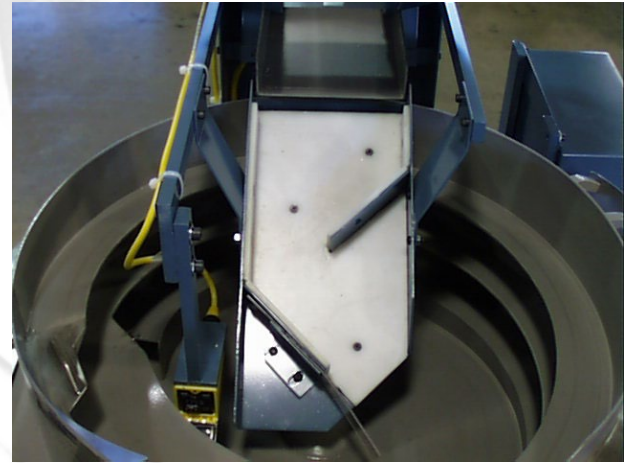
BACK PRESSURE RELIEF POINT

- **BACK PRESSURE RELIEF POINT (BUBBLE):** A section of track just prior to entering the discharge, where the track runs around a curve. Part readily feed through this section unless the discharge becomes filled causing the parts to buckle and fall off the track relieving back pressure. The method used for controlling backpressure, inside the bowl parts drop off the tooling just prior to the discharge confinement (also known as parts bubble), Photocell or Proximity controlled; the bowl is turned on and off, based on a sensed part level in auxiliary track.



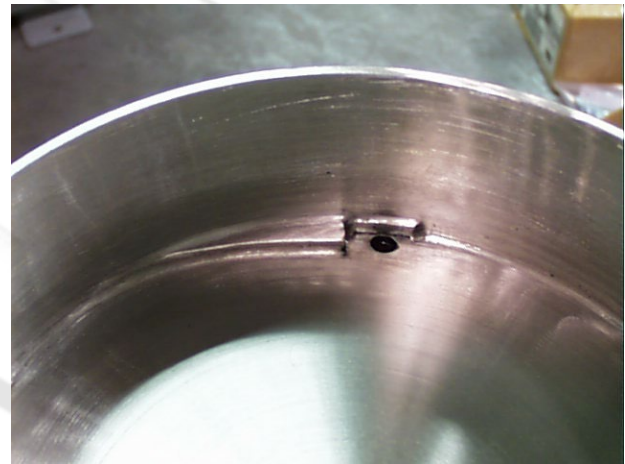
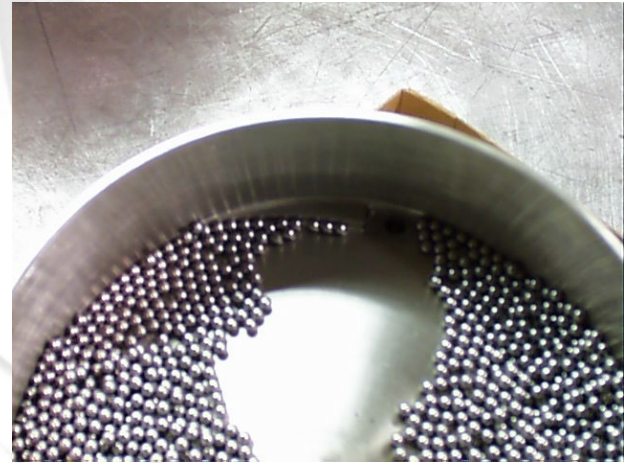
BAFFLE

- **BAFFLE or (CHUTE EXTENSION):** A stainless steel deflector welded or bolted to the end of the hopper or elevator chute to allow for gently handling of the parts into the feeder.
- The chute can be lined to help reduce the noise along with shorting the distant of the drop.



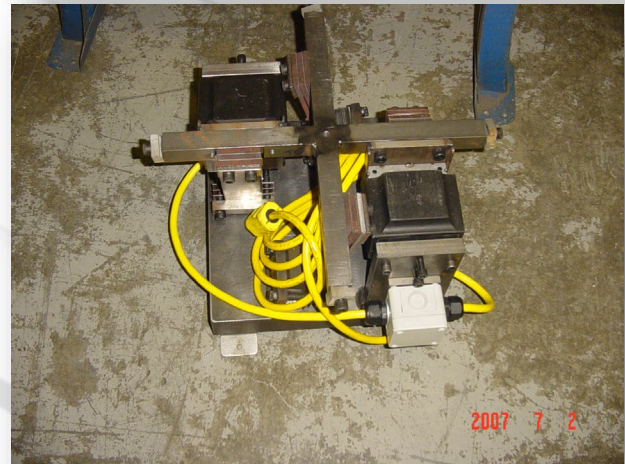
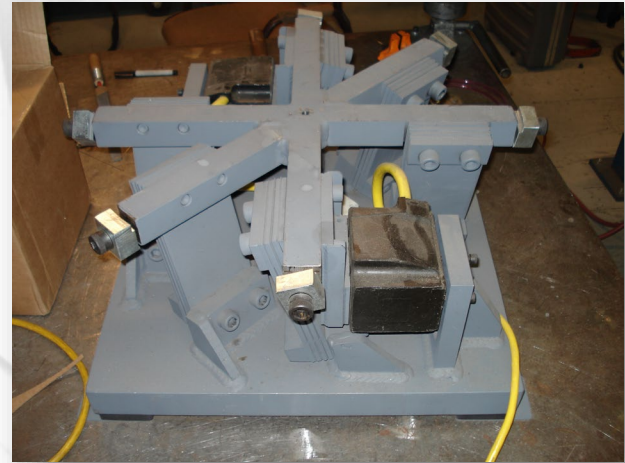
BALL BEARING FEEDER

- **BALL BEARING FEEDER:** A method of feeding ball bearing.
- Consist of a band, domed bottom.



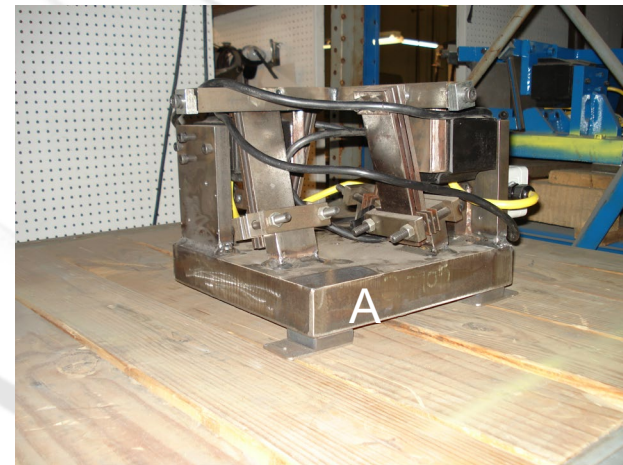
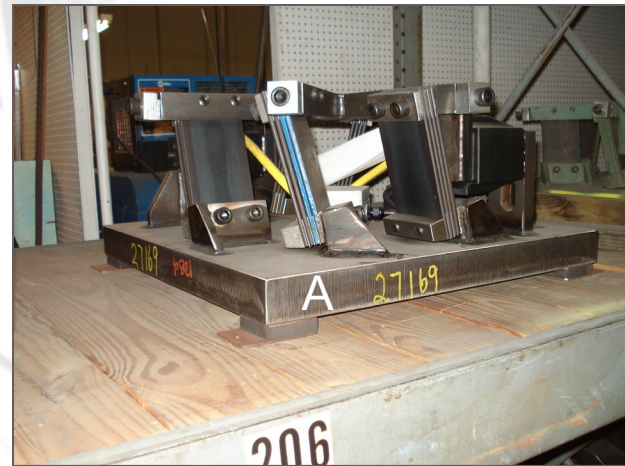
BASE DRIVE UNITS

- **BASE DRIVE UNIT:** Also called a drive unit. A welded, bolted or cast steel base with steel or fiber glass leaf springs, or rubber bands and blocks, and electromagnetic coil or coils, and cross arm, spider, plat, bar or disk for mounting the bowl or inline track. Base drives can air driven when required. The force used to power the LP Drive Unit is accomplished by using one or more electromagnetic coils which act upon pole face plates to generate vibratory motion. The upper and lower members of the drive unit are constrained by leaf springs causing torsion vibration which is transferred to the top member in the form of feed motion. When the drive unit moves the parts at maximum efficiency with minimum current effort, the unit is said to be tuned to a natural frequency of the power source. The mass and diameter of the feeder bowl is the determining factor in tuning the unit as this mass or diameter is increased, more leaf springs must be added. The rubber feet of the base drive play an important part in allowing the lower member of the drive unit to act as a pendulum to power the bowl and must be of the proper durometer.



BASE PLATE

- **BASE PLATE:** (A) A thick steel plate used for mass.
- The mass needs to be greater than the vibratory bowl.
- The base plate can vary in size according to need of what is to be fed in the feeder.



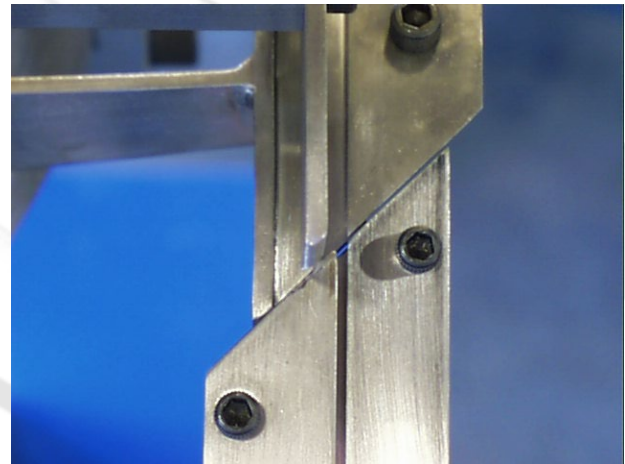
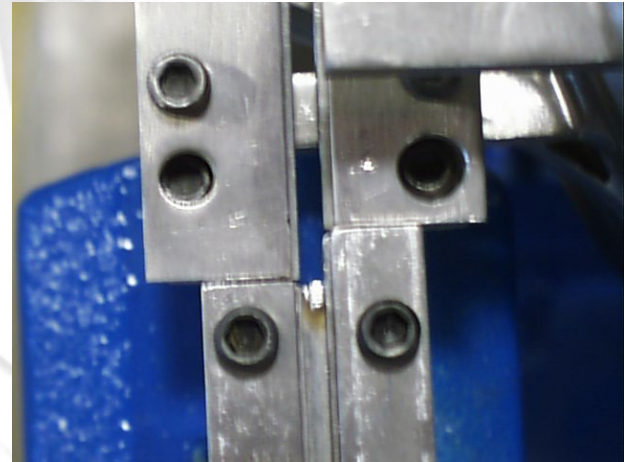
BASIC BOWL

- **BASIC BOWL:** An un-tooled bowl consists of a vertical band and a domed bottom with either an external helical track or an internal helical track. The internal track can also be inverted. Consists of a vertical band of a specific height and diameter, a domed bottom, and an internal helical track of a specific width prior to any tooling. Basic bowls are usually designed and built for a specific part or family of parts.
- The band, bottom and track assembly prior to any tooling for a specific part. Basic bowls are not off-the-shelf standard items. They are individually designed and can be supplied for many profiles of parts.



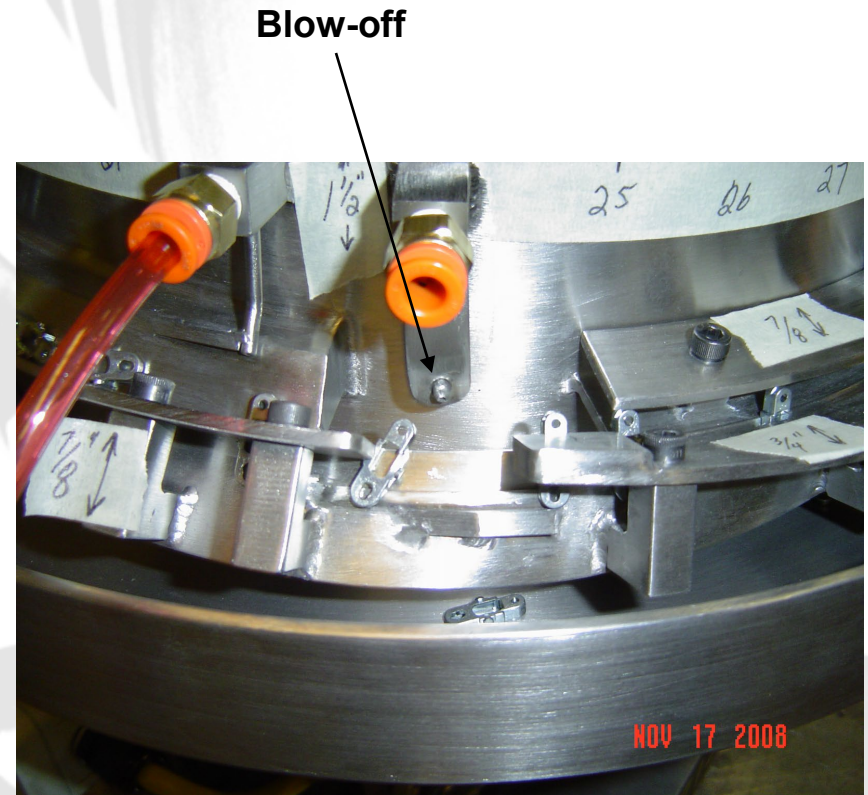
BIAS TRANSFER

- **Bias Transfer:** Allows the part to transfer from the feeder to the inline by having the gap of the transfer offset this allows for smooth transition.



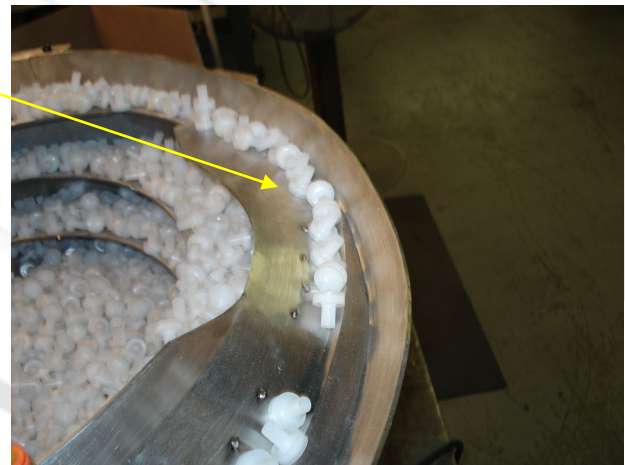
BLOW-OFF

- **BLOW-OFF:** A sensor sends a signal when certain conditions are met, activating an air solenoid that allows the air-jet to remove excess parts.
- Blow-off's are needed when a break point in the bowl cannot be achieved or when the rate is marginal.
- **DUAL LINE BLOW OFF:** Each line of feed would be equipped with a high level photocell sensor to operate the feeder intermittently to control back pressure.



BREAKOUT

- **BREAKOUT:** The area of the feeder where the internal track of the basic bowl stops and the external tooling begins also called a pull out, come out & exit.



BRUSHLON & POLYBRUSH:

- **BRUSHLON & POLYBRUSH:**
A product of vectored bristles that is bonded to the un-tooled tracks and side walls of the bowl. It is available in various thicknesses and Bristol diameter. It helps reduce part damage and noise as well as to increase feed rate in some.



CASCADE FEEDER

- **CASCADE FEEDER:** Manufactured from the materials such as cast aluminum, cast plastic, mild and stainless steel.
- Staircase-like step track to orient parts that cascade down.
- Cascade feeders eliminate blind spots, and jams between the track nominally associated with straight wall bowls.
- Cascade's biggest draw back is the type of parts and rate that can be fed in the bowl mainly symmetrical and regular shaped components such dowel pins, washers, and parts at random .
- Cascade Bowls consist of a waterfall style internal track, no hidden areas, with a domed bottom, no return pan, and internal tooling, counter weight may be required.
- Recommended only for basic parts orientation, end to end at random.



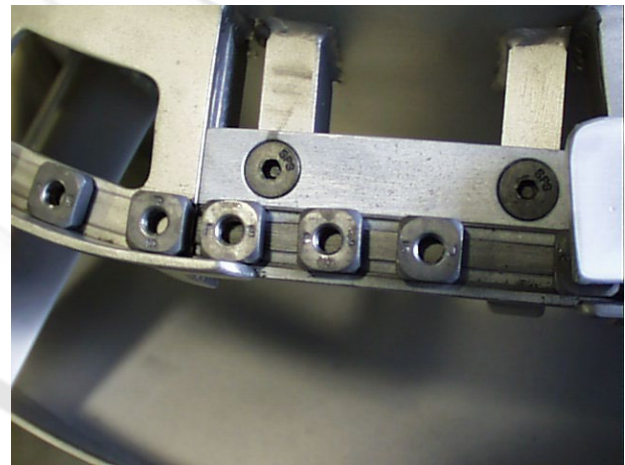
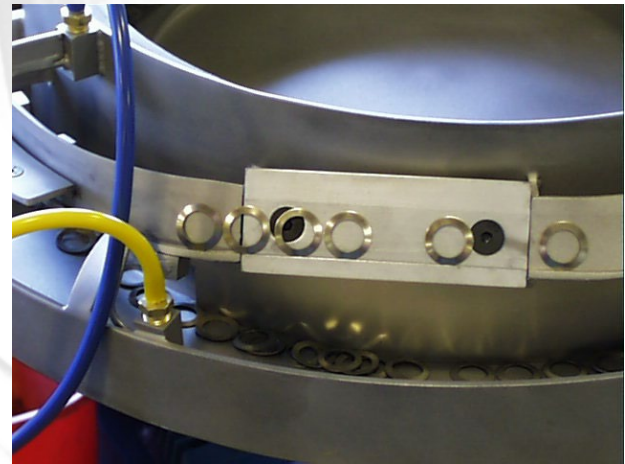
CENTRIFUGAL FEEDER

- **Centrifugal rotary feeders:** use a bowl that spins and forces parts to the outside of the bowl. At the outside edge of the bowl, the parts are channeled into receivers when the parts are in the right orientation. From the receiver, they go onto a track that moves the parts to the next stage of production. Centrifugal feeders are usually faster and less noisy than vibratory feeders.



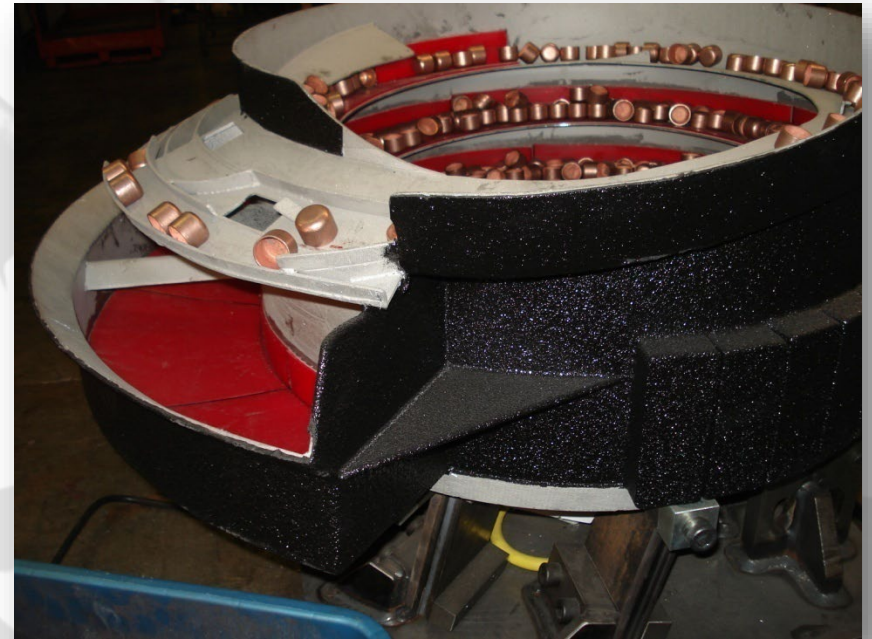
CHORD SECTION

- **CHORD SECTION:** A short straight section of track inserted in the outside of the tooling on the bowl and used to select or orient parts.



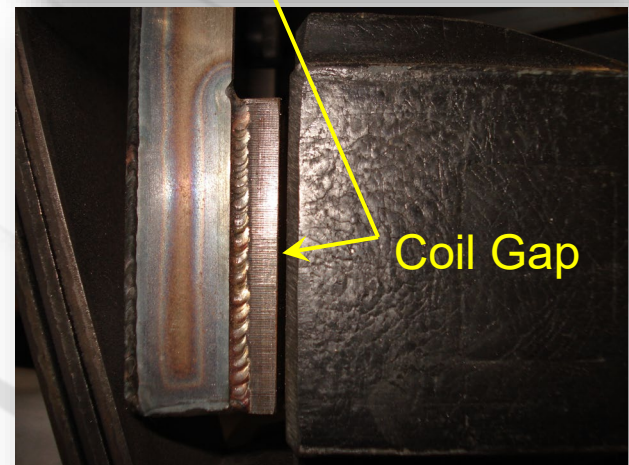
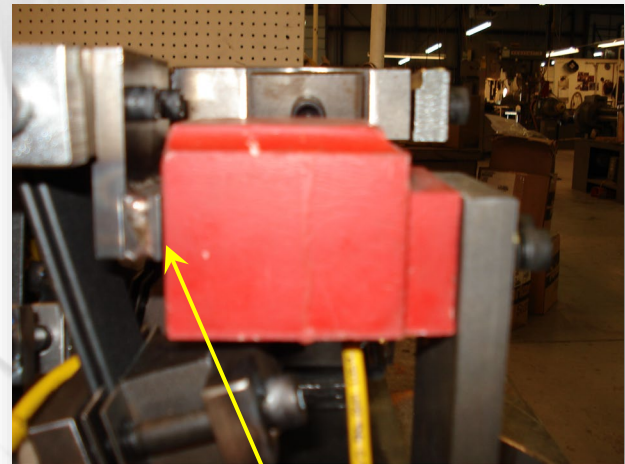
COATING OR LINING

- **COATING OR LINING:** Polyurethane, nylon, Teflon, brushlon, or other materials applied to the bowl surface to reduce wear, reduce noise, or to aid in feeding of the parts.
- The photos shows a combination of spray on lining and glued in lining each serving a purpose of noise and part protection.



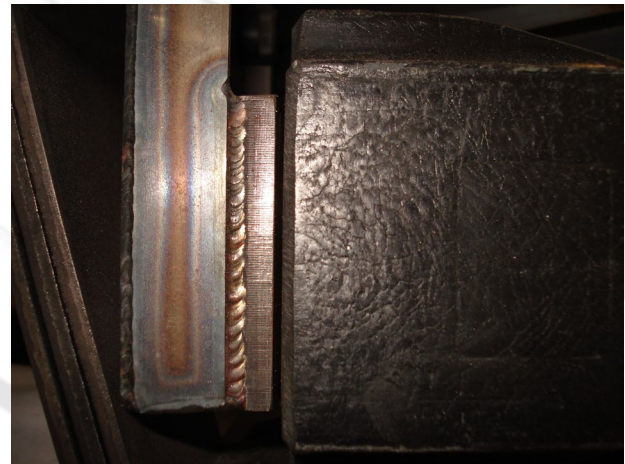
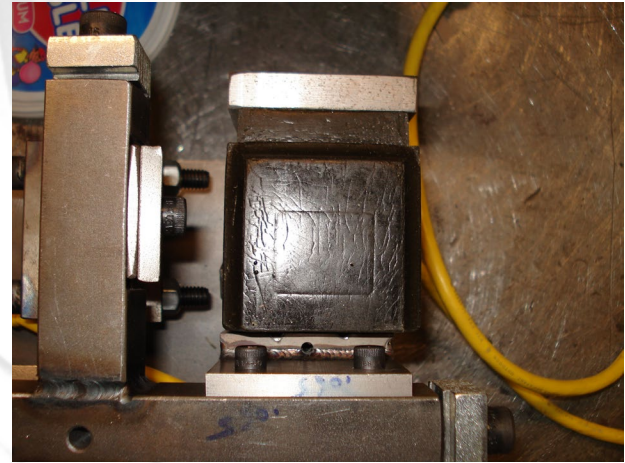
COIL CHATTER

- **COIL CHATTER:** A warning sound which indicates that the coil gap is set too close, causing the pole faces to strike. This condition will result in damage to the drive unit if not corrected. A metallic hammering sound that indicates the coil/armature gap is too close and should be reset.
- Also known as coil banging.



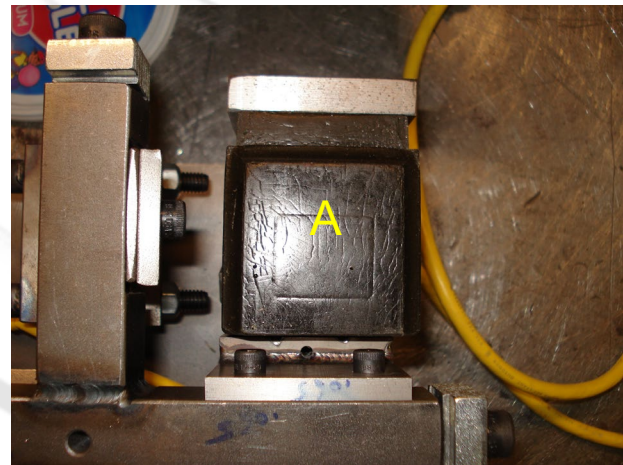
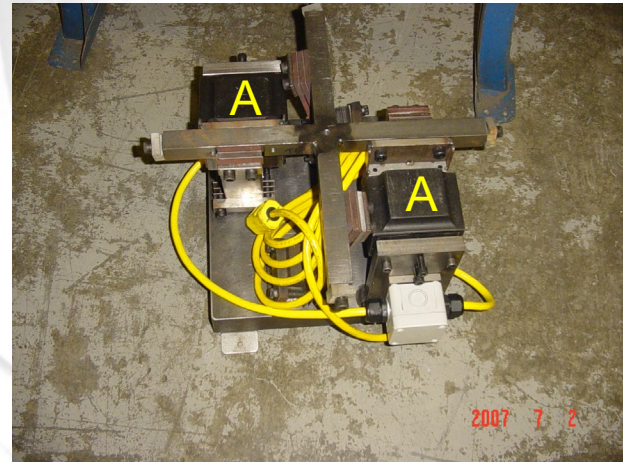
COIL GAP

- **COIL GAP:** The parallel distance between the coil and the pole face measured at rest.
- It is important to have the coil gaps set to the proper setting depending on if it is $\frac{1}{2}$ wave or full wave too much or not enough gap will cause the coils to fail.



COIL

- **COIL:** (A) An electromagnetic coil used to impart energy into a vibratory system.
- 220Volts or 110Volts.
- Full Wave or $\frac{1}{2}$ Wave.



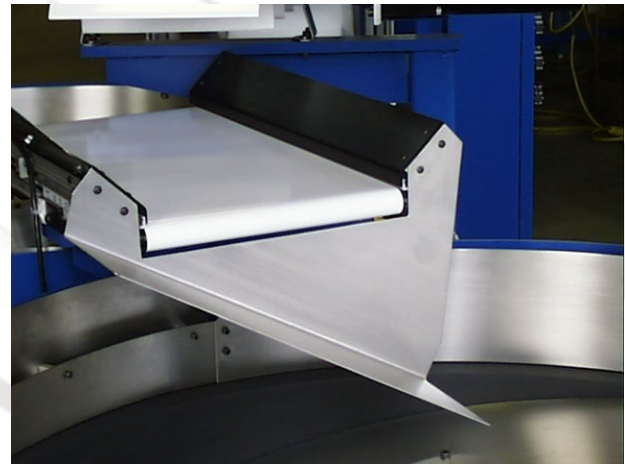
CONVERSION TOOLING

- **CONVERSION TOOLING (CONVERTOR)** : Tooling that turns around or turns over a part to the proper orientation to achieve a higher feed rate or to minimize recirculation of the parts. A properly designed converter repositions or turns around or turns over a part which is not in the proper position. This means a higher feed rate can be achieved. Possibly two or three parts can be converted to the desired position. This also minimizes recirculation of the parts and thus extends the life of the bowl especially on metal or heavy abrasive parts.



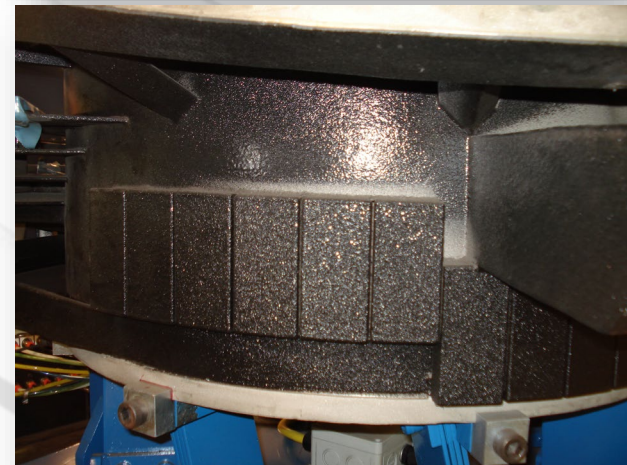
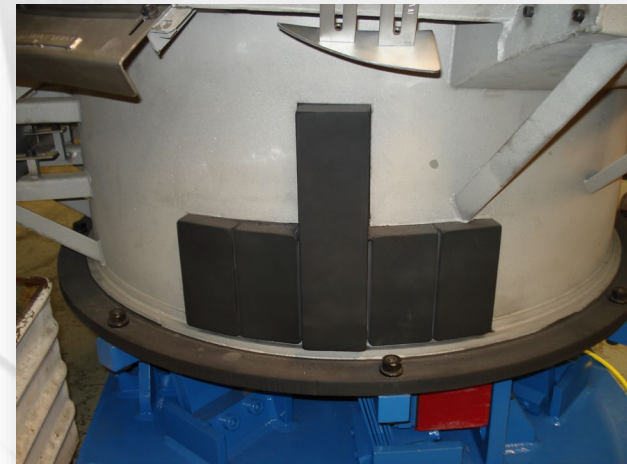
CONVEYOR

- **CONVEYOR:** A powered belt device to move parts, available tooled or un-tooled, fixed or variable speed.



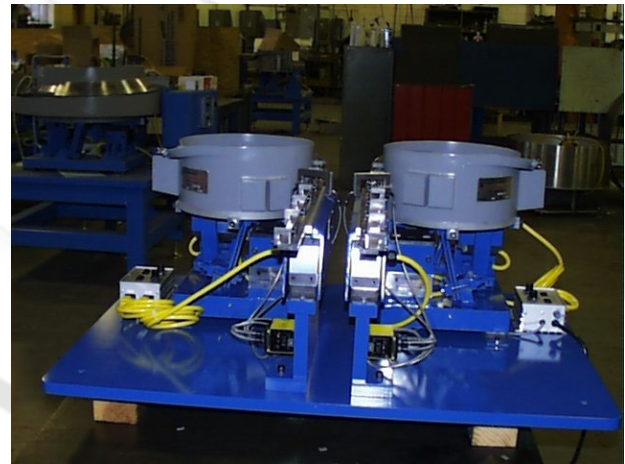
COUNTER-WEIGHT

- **COUNTER-BALANCE WEIGHT:** A piece or pieces of metal attached to the outside wall of the bowl to offset the weight of the external tooling and balance the bowl. The amount of weight and location of the weight is determined by spinning the bowl on a free wheeling shaft and adding weight until the spinning bowl stops in a random pattern indicating that there is no section of the bowl heavier than the rest. A solid steel block of predetermined size and weight that is added to the exterior of the bowl. The location is determined on a counter-balance wheel, in order to offset the weight of the external tooling, etc. (static balance). A piece of metal of predetermined size and weight that is added to the exterior of the bowl. The location is determined on a counter-balance wheel in order to offset the weight of the external tooling, etc.



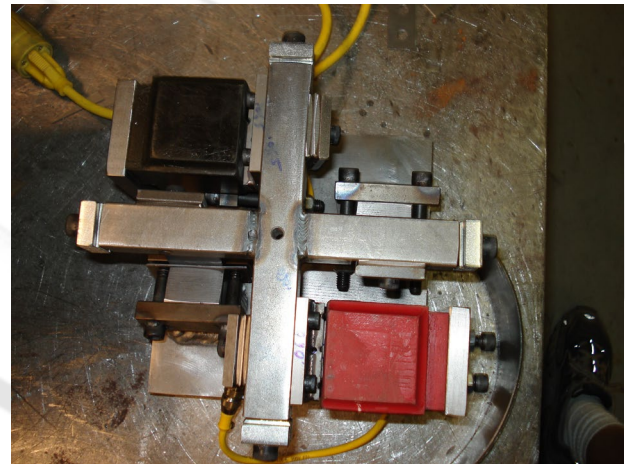
COUNTER ROTATING BOWLS

- **COUNTER ROTATING BOWLS:** When orientation, centerlines, high rate and multiple lines is required and one bowl can not achieve this requirement, then 2 feeders are used to attain this.



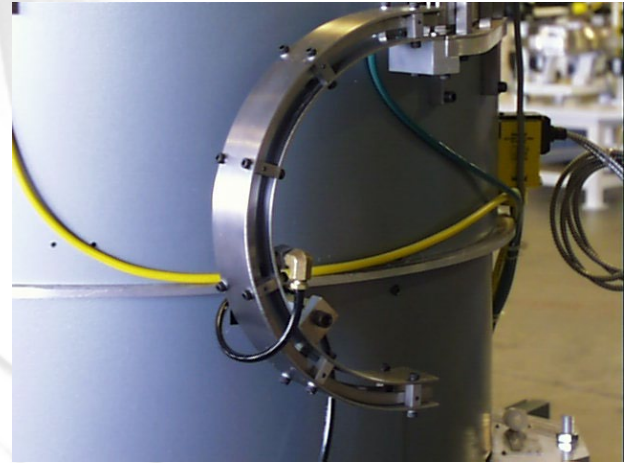
CROSS-ARM

- **CROSS ARMS:** A welded or machined structure consisting of bars that cross in the center that are attached to the drive base via the springs and to the bowl via the toe clamps or tab mounts.
- The 4, 6, or 8 arm spider like support structure that holds the bowl in place.



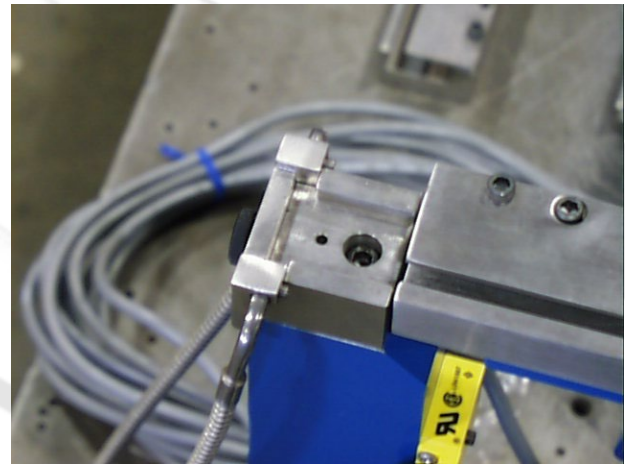
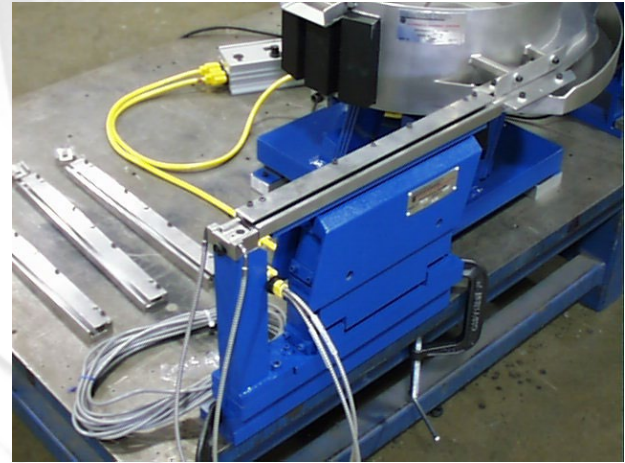
C-TRACK

- **C-TRACK:** If part orientation is difficult to achieve in the feeder, then a C-track can be used to get the desired result.
- Can be used due to layout restraints.



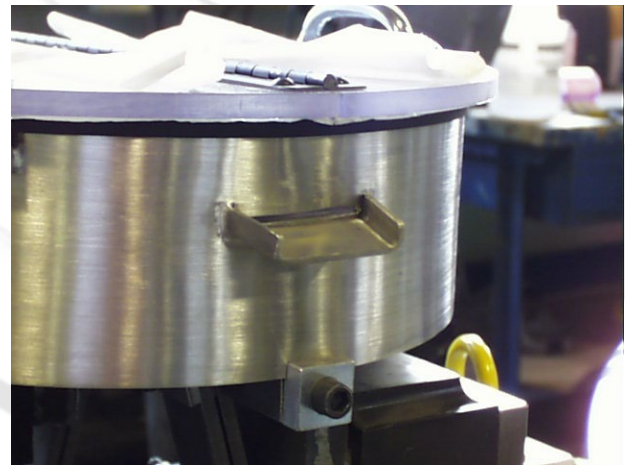
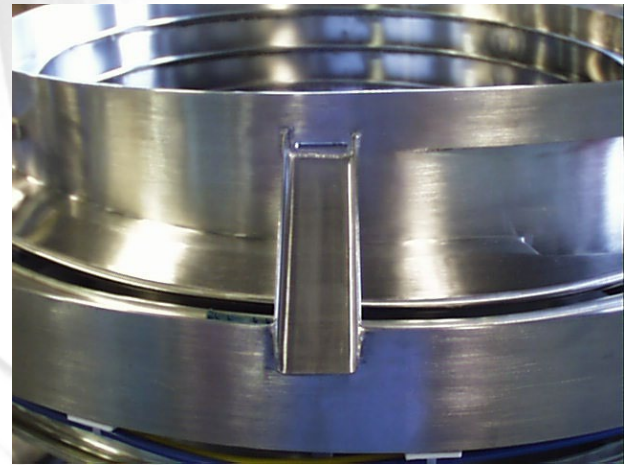
DEAD NEST

- **DEAD NEST:** A station normally at the end of an output for parts to be located to be picked up by a person, robot or a pick and place device.



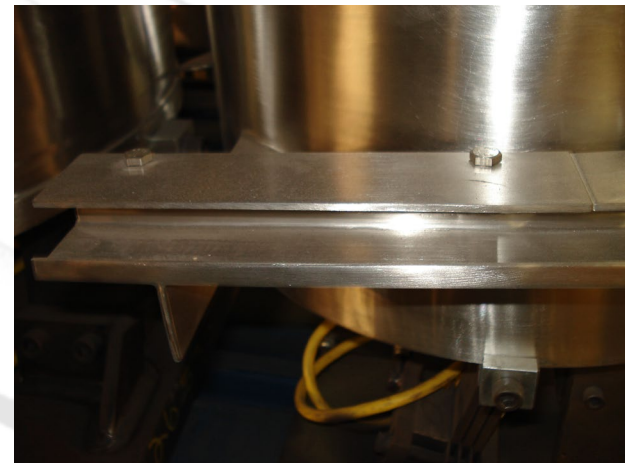
DIRT CHUTE

- **DIRT CHUTE or (SCRAP CHUTE):** Small holes or a slot is made in the track to remove dirt or foreign material from the bowl.
- A dirt chute is used to cam the debris out of the bowl. The openings in the track cannot be larger than the smallest dimension of the part being fed.
- A dirt chute is used to discharge small particles of foreign material from the bowl.



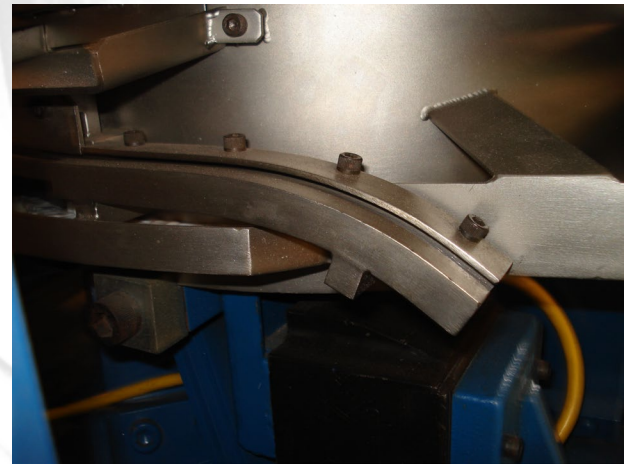
DISCHARGE

- **DISCHARGE CHUTE:** The last tooling section of the bowl that is usually mounted tangent to the center line of the bowl.
- The discharge chute confines the parts in the attitude and orientation achieved in the bowl.
- The area of the bowl tooling where the parts exit the bowl in an oriented attitude.
- (Horizontal or Down Angle) A short section of track that is mounted to the bowl.
- The discharge chute controls parts in the orientation, achieved in the bowl and in most cases, conveys them to either a horizontal vibratory straight line or gravity track.
- This is the last section of the bowl. In most cases, it is a straight exit that confines the parts after they are oriented.
- The section of the bowl that is mounted tangent to the centerline of the bowl.
- The discharge chute controls parts in the attitude and orientation achieved in the bowl.



DOWN ANGLE DISCHARGE

- **DOWN ANGLE DISCHARGE CHUTE:** The discharge is angled down to assist movement of parts into a gravity track section. Used to assist movement of parts feeding into a gravity track section.



DRAG THRU HOPPER

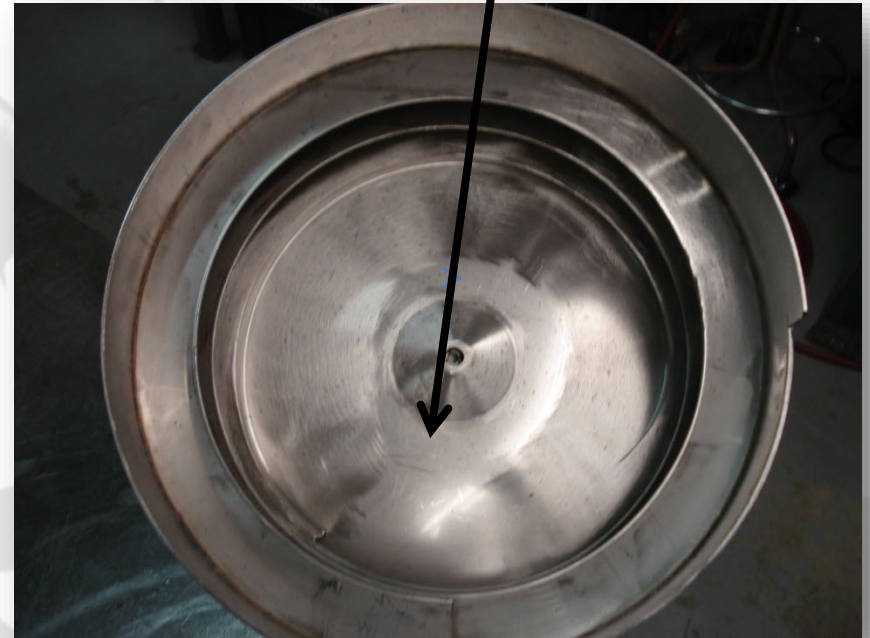
- **DRAG-THRU HOPPER:** A hopper attached directly to an elevator belt conveyor where a belt with cleats drags through the parts to convey them tip the conveyor to a useable position.



DUAL BOTTOM

- **DUAL BOTTOM:** Also known as false bottom is an extra bowl bottom inserted about $\frac{1}{2}$ an inch above the normal bottom the two most common reasons for this are to raise the return pan higher on the basic bowl, and to allow for filling with a sound damping material.
- **FILLED BASIC:** A bowl in which the cavities inside of the dual bottom and angle skirt (if used) are filled with sound deadening material.

Bowl Bottom



ELEVATOR

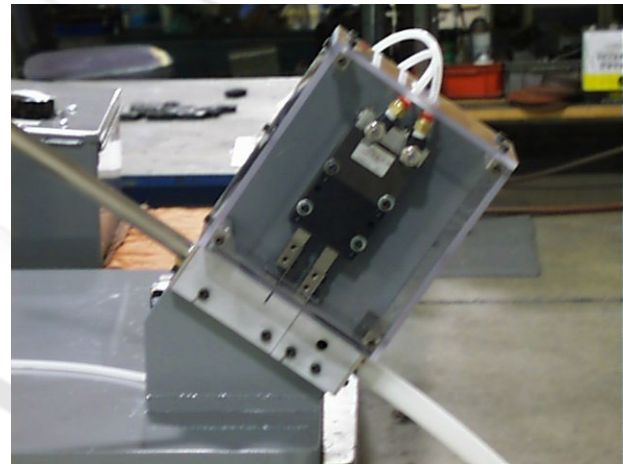
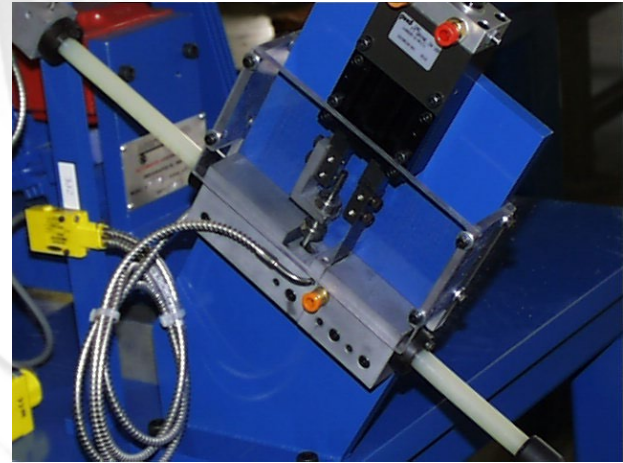
- **ELEVATOR:** A belt conveyor with cleats or a bucket conveyor that is used to convey parts from a hopper to a high bowl.



ESCAPEMENT

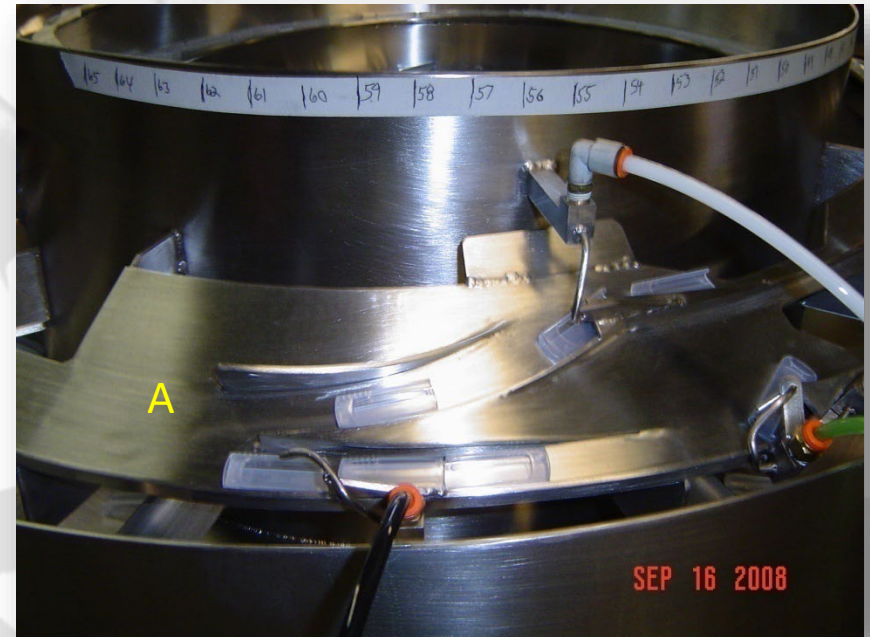
- **ESCAPEMENT:** A mechanical device placed at the end of the feeder discharge, horizontal straight line, or gravity track to isolate the end part. A mechanical device that releases one or more parts on receipt of a signal. A mechanical device usually placed at the end of the feeder discharge. It allows only one part at a time to move into another place such as a dead nest to be picked up by a placing device.

Escapement



EXTERNAL TOOLING

- **EXTERNAL TOOLING:**
Tooling built outside of the vertical band (A) that starts where the parts feed over the bowl wall and ends at the discharge. Because external tooling starts at the top of the band, Gravity can be used to assist in separating parts moving into selectors, cams and other tooling to orient and merge parts. Any construction outside of the vertical band which separates, orients, selects, confines, or relieves pressure buildup on oriented parts.



FAN SECTION

- **FAN SECTION:** Tooling that allows parts to swing and/or hang. A fan section located where headed parts feed over the top of the band allows multiple rows of headed parts to hang. An area with an adjustable gap which allows parts to swing and/or hang.

Fan Blade Section



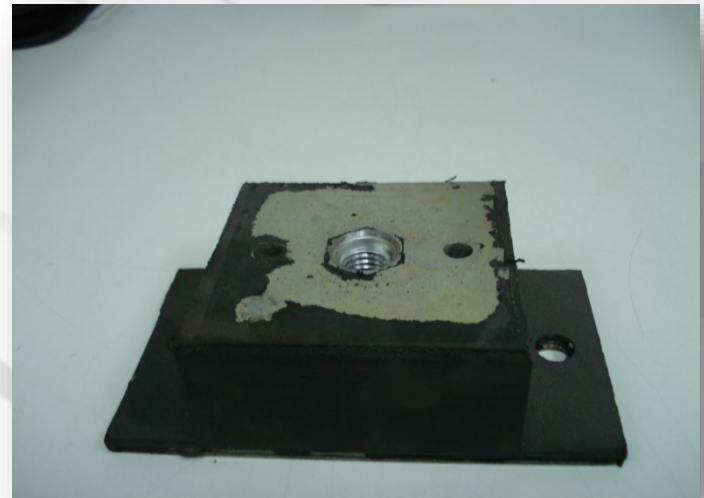
FREQUENCY CONTROL

- **FREQUENCY CONTROL:** This has several advantages; the feeder does not have to be mechanically tuned, high or low frequencies can be used for products to handle at 50Hz and the feeder remains tuned whether it is connected to a 50Hz or 60Hz supply.
- The current output waveform from these controller is virtually a sine wave and so very little noise is generated.
- Constant amplitude control and resonant frequency search can be selected from the standard program, providing an accelerometer is used to provide feedback.
- Dual voltage.
- Compensates for voltage spikes, load changed from heavy to light and tuning change due to spring fatigue.



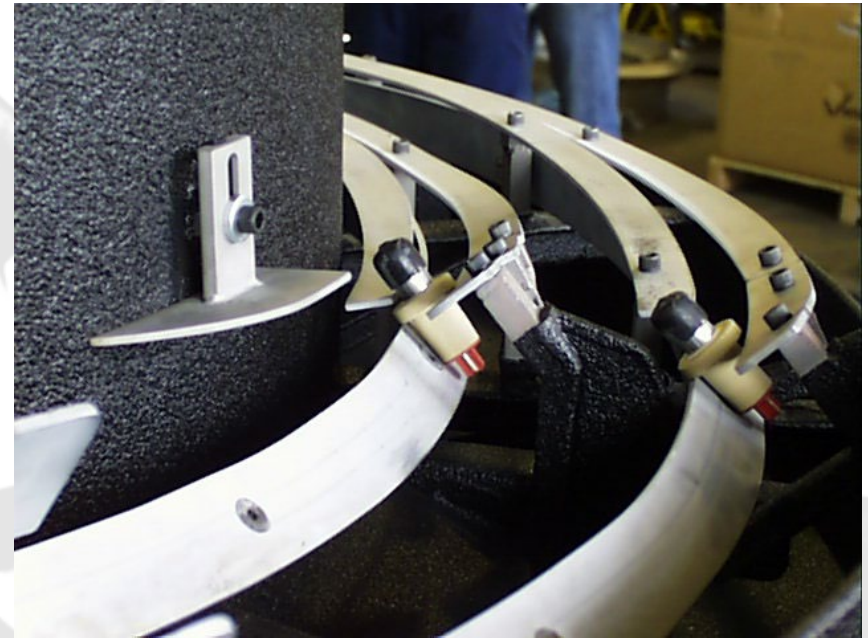
FEET

- **FEET (OR MOUNTING PADS):** Rubber isolation pads that absorb excess vibration that would otherwise be carried into the table or floor.



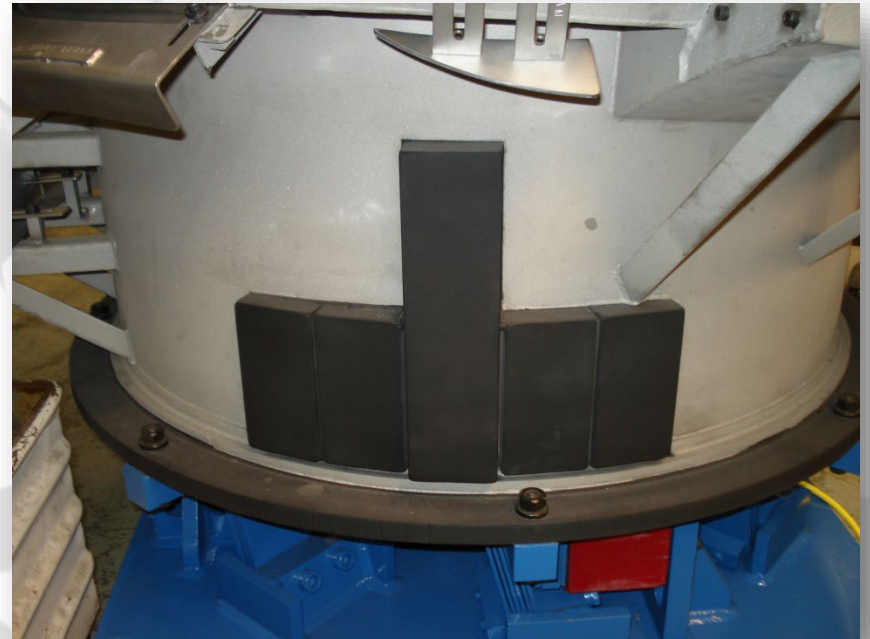
FINAL SELECTOR

- **FINAL SELECTOR:** A tooled section designed specifically to segregate only those parts that are in the correct attitude.
- It is the last opportunity to remove mis-oriented parts.
- A profile that allows only the part that are in the correct position to pass.



FLANGE MOUNT

- **FLANGE MOUNT:** This is a continuation of the band below the bowl bottom to hold fit to the cross arms of the base drive unit. Clamp nuts are used to attach small diameter bowls to the top member. On large diameter bowls, clamp nuts, along with a center bolt, are provided.



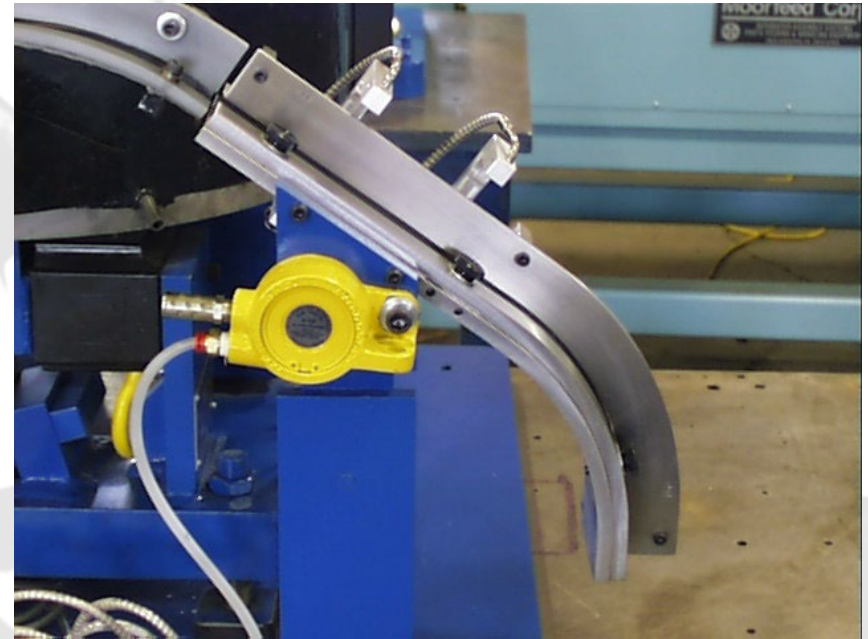
GAGE ROLLERS

- **GAGE ROLLERS:** A method of orienting parts in a hanging position.
- A way of parts conveyance, from the bowl the parts will be fed end to end at random, into the rollers and then part will orient into a hanging position.
- Orients parts with a slight taper small end down.



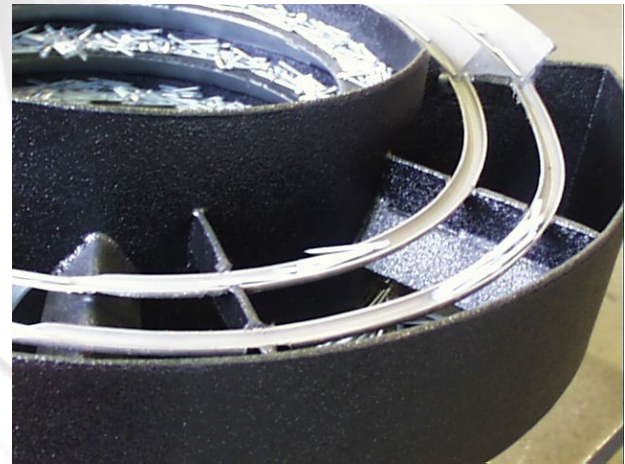
GRAVITY TRACKS

- **GRAVITY TRACKS:** Gravity tracks and vertical magazines are methods of conveying parts. This type track must be set on an angle great enough that gravity will convey the parts from the discharge chute of the feed system. A magazine is a track in which oriented parts are stacked. This device is usually preloaded; the feeder maintains a full stack. A machined or fabricated track inclined at a sufficient angle to allow gravity to move parts.



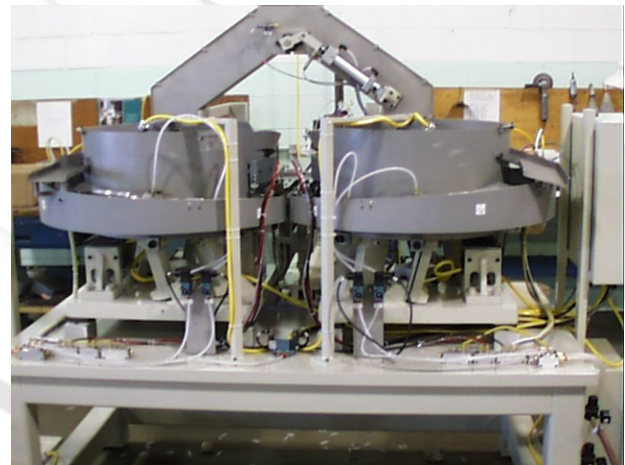
HALF-TUBE

- **HALF TUBE:** The half tube is used to line parts up end to end or round side down. The heavy or wide side of a part can be rolled down. The center of gravity will tend to seek the lowest possible position.
- Performance is best when parts are free running and on a chord.



HOPPER CHUTE DEVERTER

- **HOPPER CHUTE DEVERTER:** This is required when you want to reduce cost and floor space when you have one common storage hopper to feed two bowls feeding the same part.



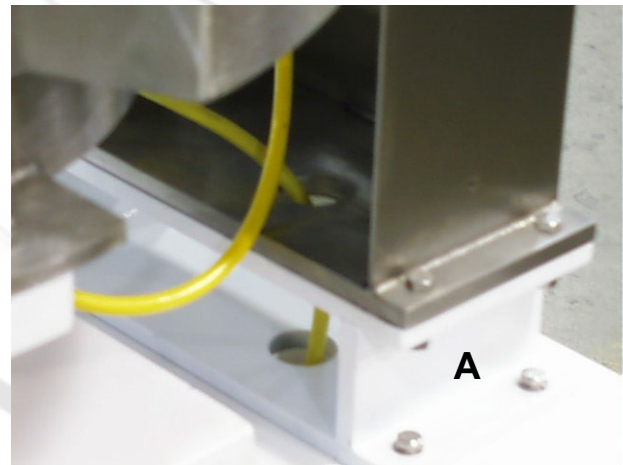
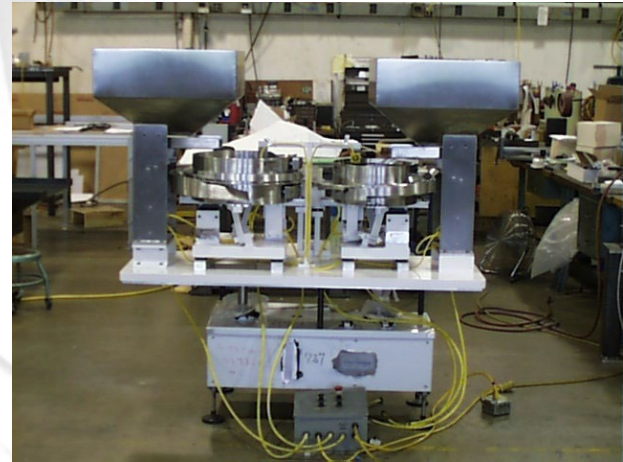
HOPPER

- **HOPPER (STORAGE HOPPER) (Pre-Feeder):** A container used to hold a large quantity of parts in active storage and to trickle those parts into the bowl feeder as required maintaining optimum performance of the parts feeder. A paddle switch or other sensor is mounted to sense the level of parts and is wired to turn on the hopper only when the bowl feeder is running.



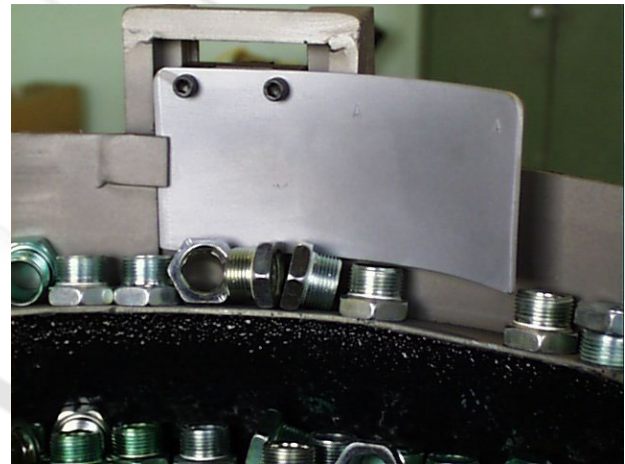
HOPPER RISER

- **HOPPER RISERS: (A)**
- Platform that is used under the hopper to raise the chute up to a specified dimension, in order to clear the top of the bowl feeder, then to feed bulk parts from the storage hopper to the center of the bowl feeder.



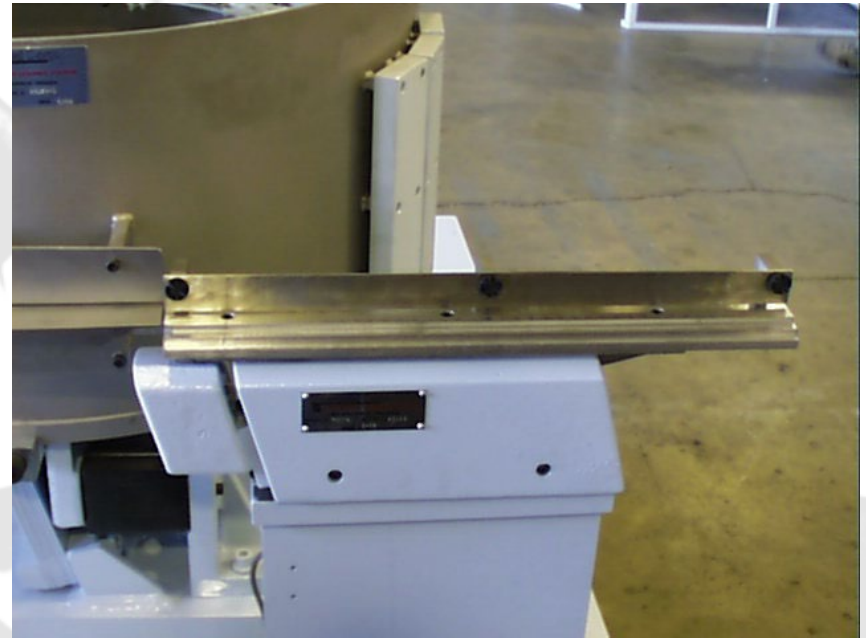
HORIZONTAL CAM

- **HORIZONTAL CAM:**
An irregularly shaped piece of metal usually placed inside the bowl at different points above the parts to control the parts level on the track. A sweep or cam usually placed inside the bowl, at a fixed or adjustable height above the track, opening slightly in the direction of flow to control the parts level on the track.



INLINE FEEDER

- **INLINE FEEDER:** A linear driving device used to convey parts from a feeder bowl, available tooled and un-tooled. A vibratory drive unit designed to produce straight-line motion.



INSIDE TOOLED FEEDER

- **INSIDE TOOLED FEEDER:** Bowl is tooled internally.
- Where the internal tooling can sort and orient the parts in consistent, repeatable positions, according to certain requirements.



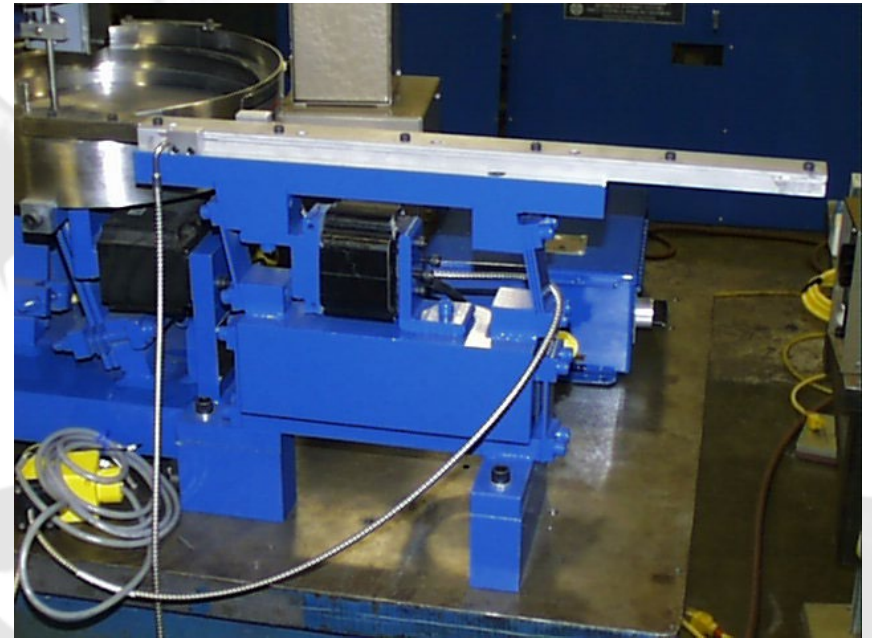
INVERTED BASIC

- **INVERTED BASIC:** An bowl consists of a vertical band and a domed bottom with an internal helical track.
- The internal track is inverted.
- Consists of a internal helical track of a specific width prior to any tooling.
- Inverted basic bowls are usually designed and built for a specific part or family of parts when shingling becomes a problem the inverted track allows you to remove the excess without taking all the parts off.



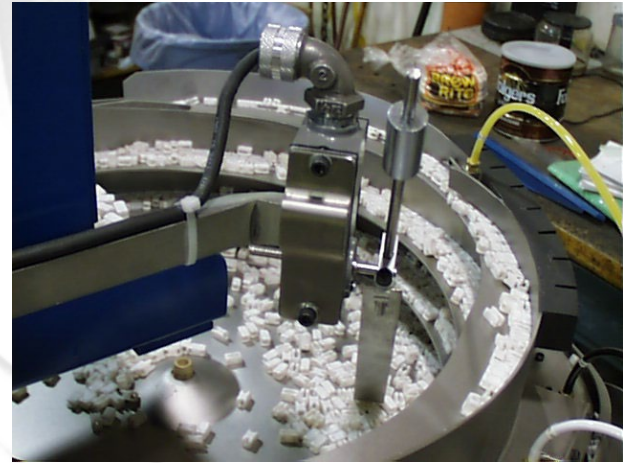
ISOLATION SPRINGS

- **ISOLATION SPRINGS:** The lower spring packs that act to absorb vibratory motion and transmit it to the body of the straight line drive unit.



LIMIT SWITCH

- **LIMIT SWITCH or PADDLE SWITCH:**
- A device used for parts metering.
- A rotary micro switch with a flat on the shaft and a paddle that is positioned in the bowl to rise as the parts flow under it. The radial position of the paddle mounted to the shaft can be adjusted in relation to the flat so that the switch is activated when the paddle drops below the set position.



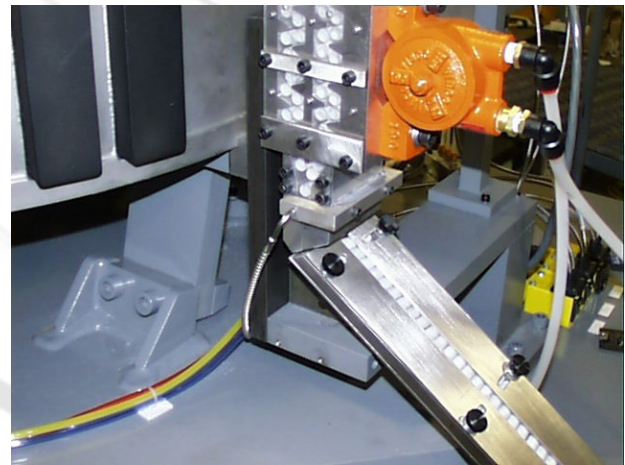
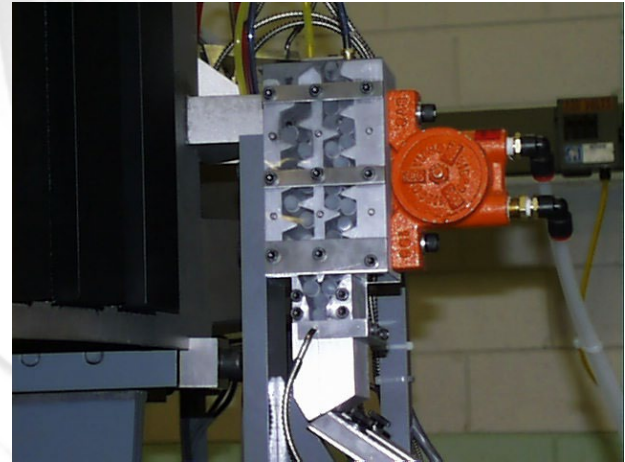
LIVE BELT HOPPER

- **Live Belt Hopper:** Also known as a pre-feeder or storage hopper this uses a conveyor to move parts from storage into the bowl the parts level is control by a limit switch or a non-contact sensor.



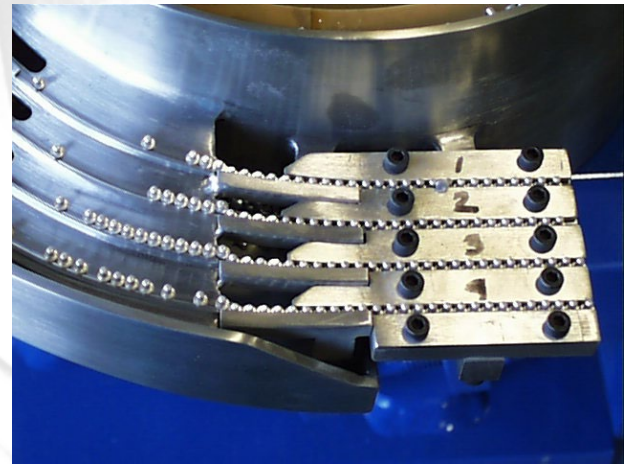
MAGAZINE TRACK

- **Magazine Track:** Tooling that confines the parts oriented in the bowl feeder and conveys the parts to a more convenient position for escaping, shuttling, placing for further processing and assembly.



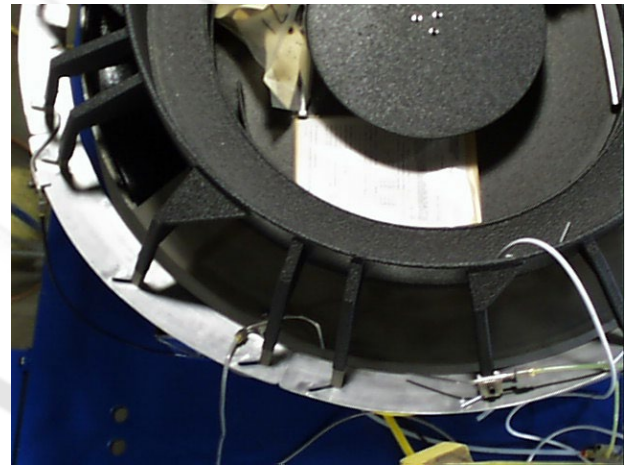
MULTIPLE LINES

- **Multiple Lines:** When the feeder has more than one line of parts discharging from the bowl.
- These lines can be side by side or over and under or even discharge at separate location on the feeder depending on the target that must be held.



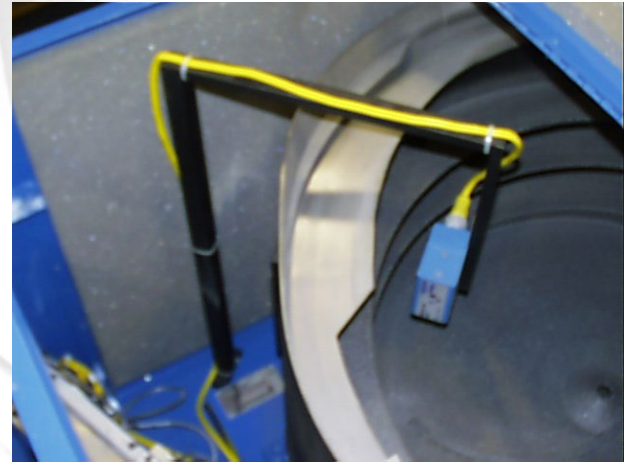
MUSHROOM

- **MUSHROOM:** Used for part protection.
- Reduces the height a part must fall from a pre-feeder.
- Prolongs the life of the bowl bottom.



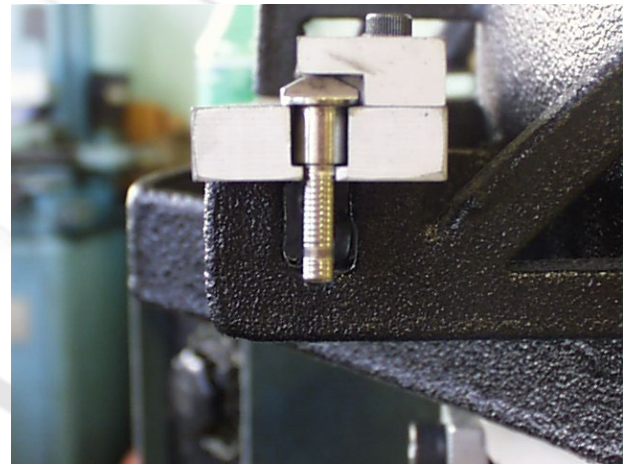
NON-CONTACT SENSOR

- **NON-CONTACT SENSOR:** A sensor used to measure part levels.
- Used with a storage hopper, when part level fall below a set amount of part in bowl sends a signal to activate hopper.



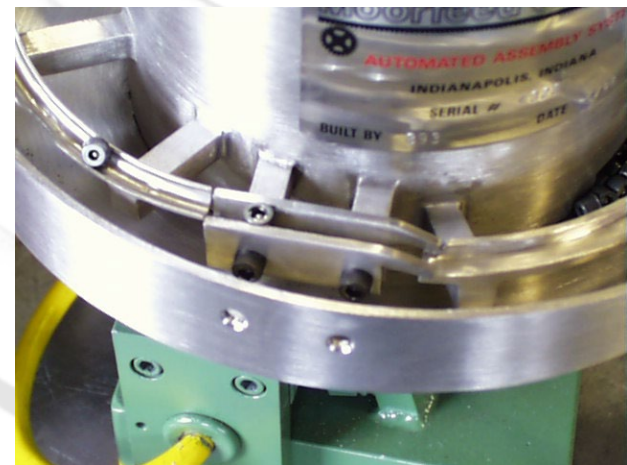
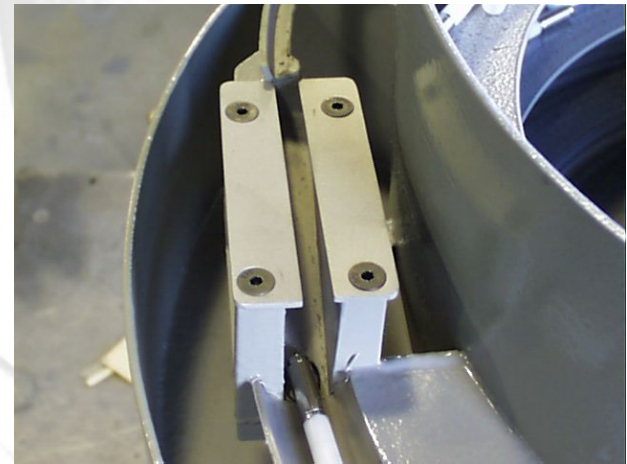
ORIENTATION

- **ORIENTATION:** The correct position of the piece part at the discharge chute as required by the assembly or placing operation.
- The final attitude of the parts as they discharge from a feeding system.
- Parts positioned in a usable attitude.
- Positioning of part in the attitude you desire for your operation.



PARALLEL

- **PARALLEL BLADE SECTION:** An area with a stationary or adjustable gap which orients parts (bolts, screws, etc.) to a hanging attitude.
- Requires that part has a flange in order to select with.



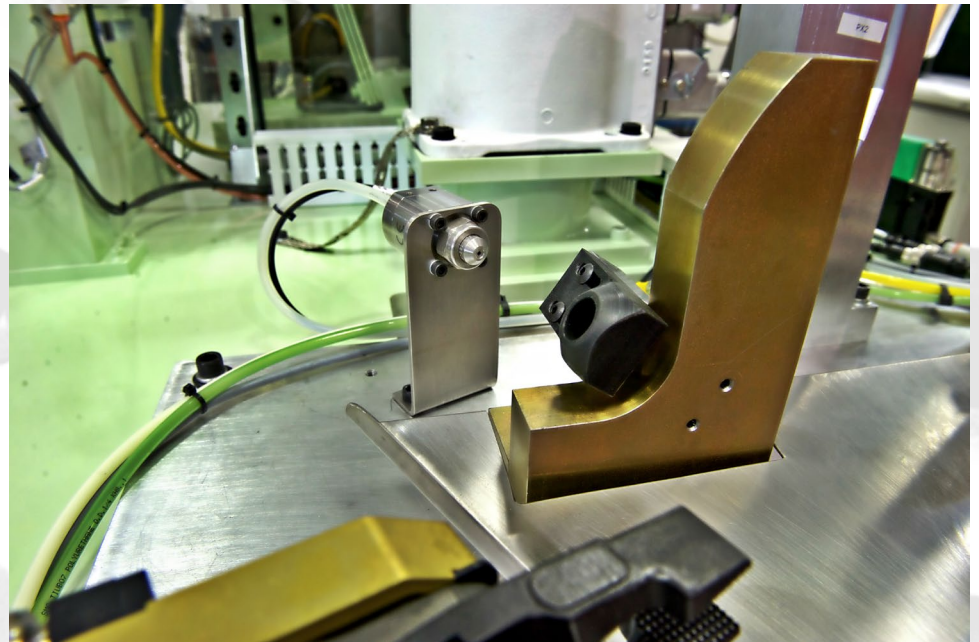
PICK AND PLACE

- PICK AND PLACE (P&P): A mechanical mechanism used to grip a part or parts, convey the part or parts some distance and to position the part or parts for further operations.



PLACING DEVICE

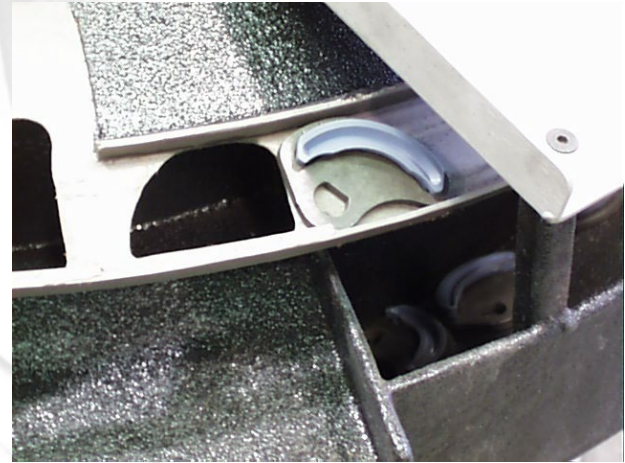
- **PLACING DEVICE (HEAD):** A mechanism used to position a part or parts for further operations. A mechanical means of placing an escaped part into a nest or onto another piece part.



PROFILE SELECTOR

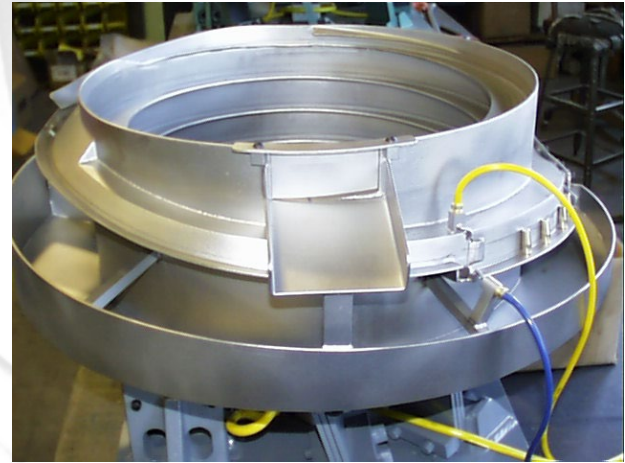
- **PROFILE SELECTORS:**

When the geometry of the part lend itself to be selected by profile, the outline of the part is in the reverse of what is needed, the correct part will past and the mis-oriented part will fall thru the window, if space allow the a converter can be use to trip the part into the acceptable position on it next past.



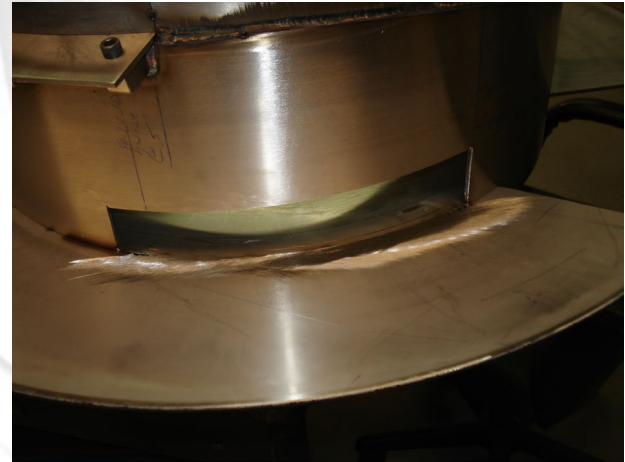
QUICK DUMP CHUTE

- **QUICK DUMP CHUTE:** A section of the bowl or hopper that can be readily opened to remove the parts within. A door or panel in the bowl side wall that allows for faster removal of parts other than through the discharge. A quick-opening “window” that is provided to facilitate changing from one part to another when multiple styles or sizes of parts are being fed from the same bowl.



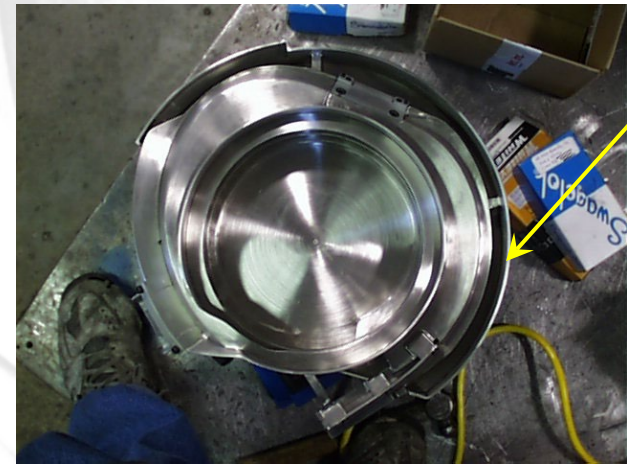
RETURN PAN OPENING

- **RETURN PAN OPENING:** An opening in the lower area of the bowl wall that permits excess parts and parts that are rejected by the tooling to be returned to the center of the bowl.

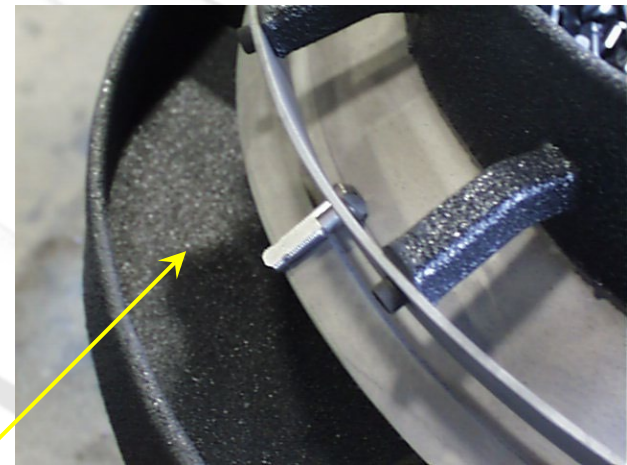


RETURN PAN

- **RETURN PAN:** The structure attached to the outer band for the purpose of recirculation parts, to the inside of the bowl, that have been rejected by the orienting and selection devices. A pan or basin, welded to the outside of the bowl below and extending beyond the external tooling, to catch the excess parts falling from the track or parts rejected by the tooling and convey these parts back into the interior of the bowl through the return pan opening. The area outside of the basic bowl into which the parts are allowed to fall from the tooling, the parts are then directed back inside of the bowl through the return hole. An extra pan-like area welded to the outside of the bowl which catches excess and rejected parts falling from the track. The pan guides these parts back into the interior of the bowl for recirculation.



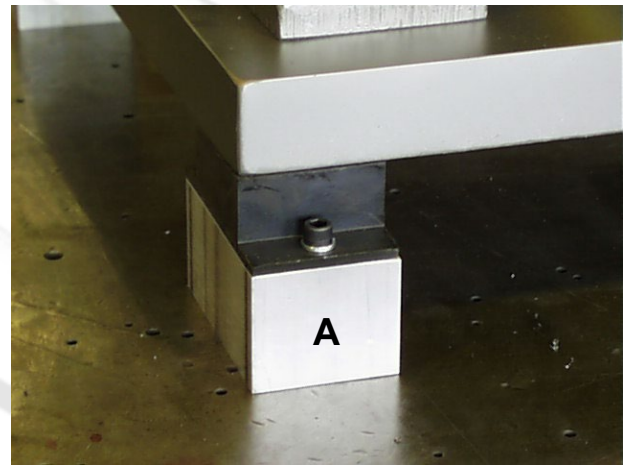
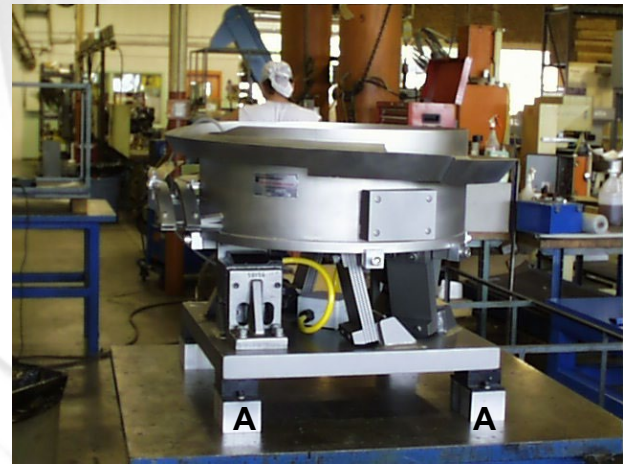
Return Pan



Return Pan

RISERS

- **RISERS:** (A) Machined blocks that are used under the drive unit to raise the discharge up to a specified dimension.



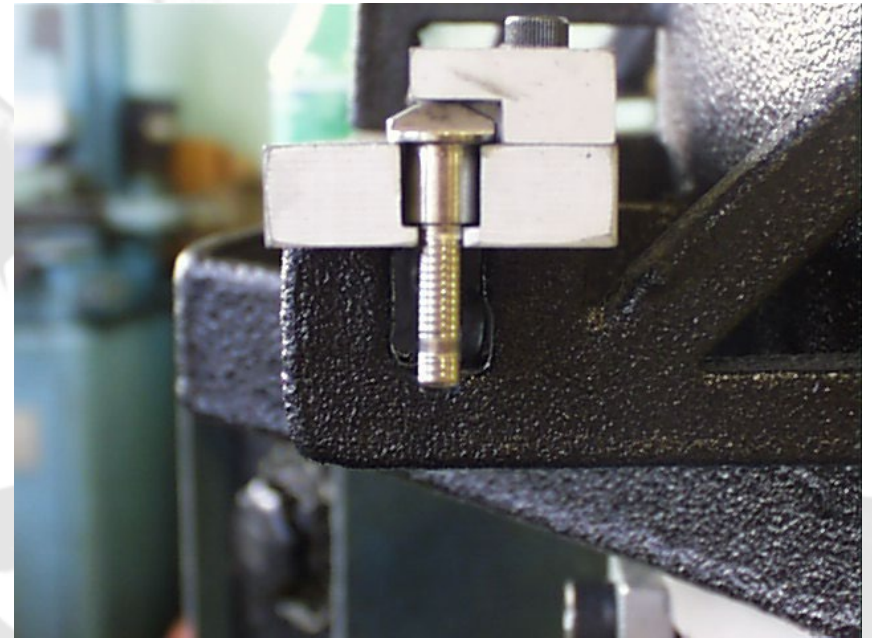
ROTATION

- **ROTATION:** The direction the parts travel inside the bowl. Usually specified as CW (clockwise) or CCW (counterclockwise).
- The direction a bowl and drive will move the parts, either clockwise or counterclockwise.



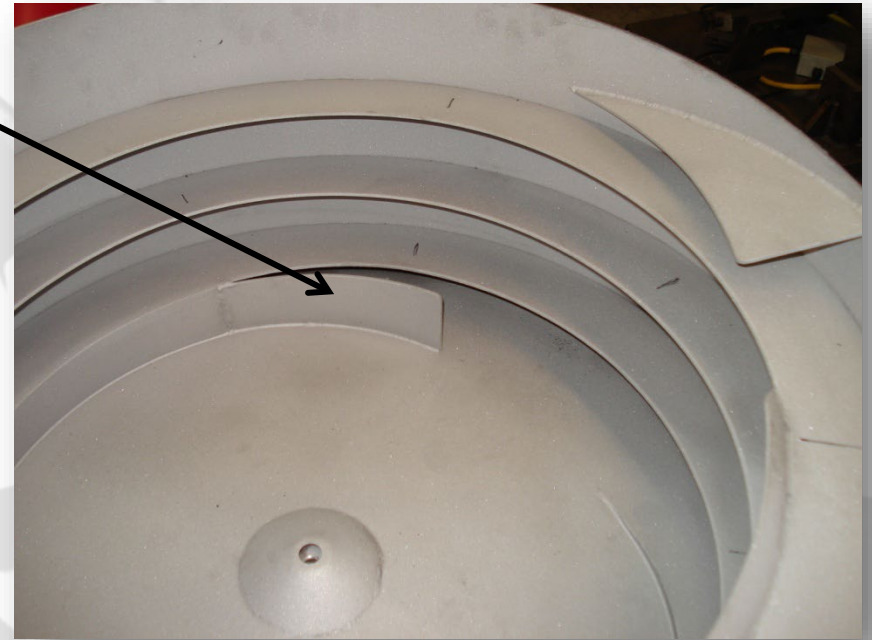
RUNNING SURFACE

- **RUNNING SURFACE:** That portion of the basic bowl, pre selector, final selector or discharge chute with which the part makes contact this is a variable dimension, depending upon the particular piece part.
- That portion of the discharge chute with which the part makes contact.



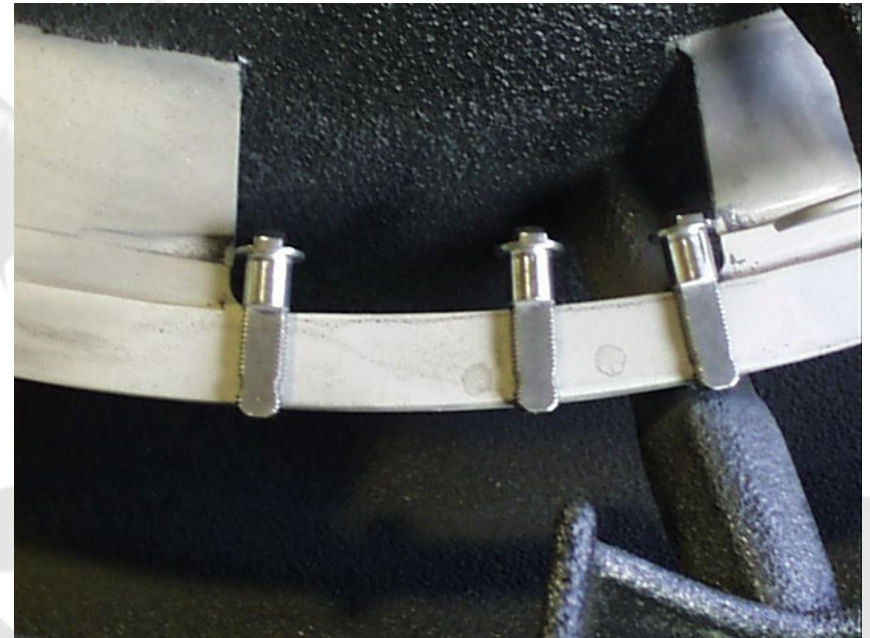
SWEEP

- **SWEEP (DEFLECTOR):** A cam blade welded on the inside of the bowl bottom to divert the flow of parts inside the bowl from the return hole thus allowing parts to flow from the return pan. Through the return hole and back up the track. A short strip of metal placed on the inside of the bowl bottom to guard the return hole and to allow parts to flow evenly back up the track from the return part.



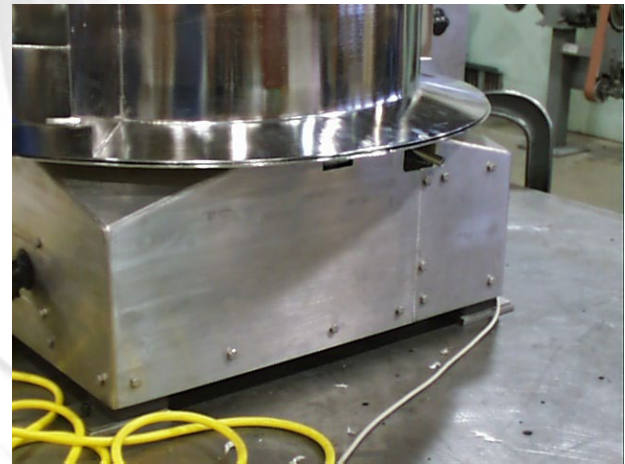
SELECTOR

- **SELECTOR:** Tooling designed to accept parts in the proper orientation or to accept parts in an attitude that can be converted to the proper orientation.
- An area of the system designed and custom fit to profile only the properly positioned part.
- Parts entering a selector which are not in the proper position are diverted out of the feed line.



SHROUD

- **SHROUD:** An enclosure around a drive unit or an inline driver, usually used for cosmetic purposes, or medical application, available in different grades of stainless steel or aluminum or mild metal.



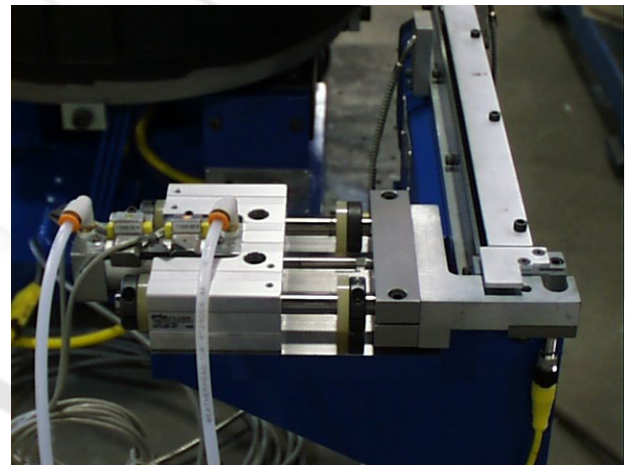
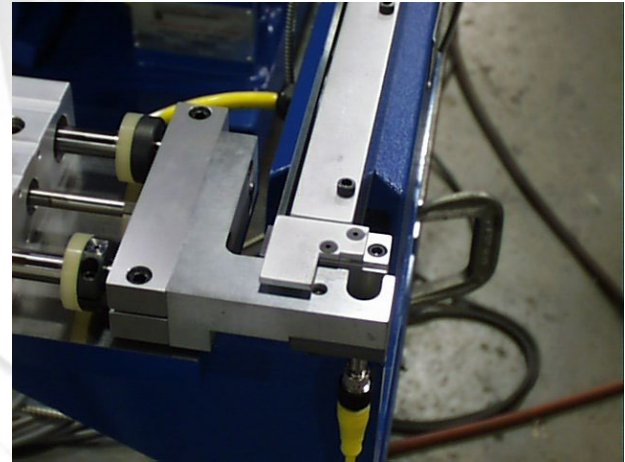
SHUT-OFF

- **SHUT-OFF:** A sensor sends a single when certain conditions are met activating a relay shutting off the bowl.
- When gently handling of the part is required.
- When certain parts configurations does not allow you to use a break point in the feeder.



SHUTTLE

- **SHUTTLE:** A mechanism used to move a part or parts at a right angle to the flow.



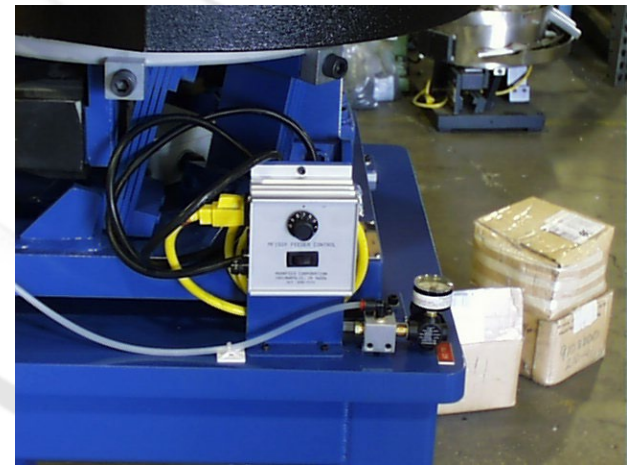
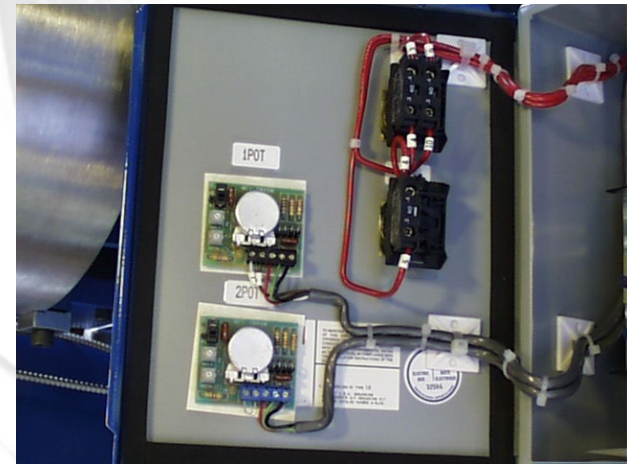
SOLID MOUNT

- **SOLID MOUNT:** A vibrating unit that mounts directly to the table or stand without using rubber isolators.
- Often the vibrating drive will be isolated from the mounting plate by leaf springs and have a large and heavy counterweight attached to the vibrating drive.



SOLID STATE CONTROL

- **SOLID STATE CONTROL (OR PHASE SHIFT CONTROL):** A control using a triac or diode to convert alternating electrical current to pulsating direct current.



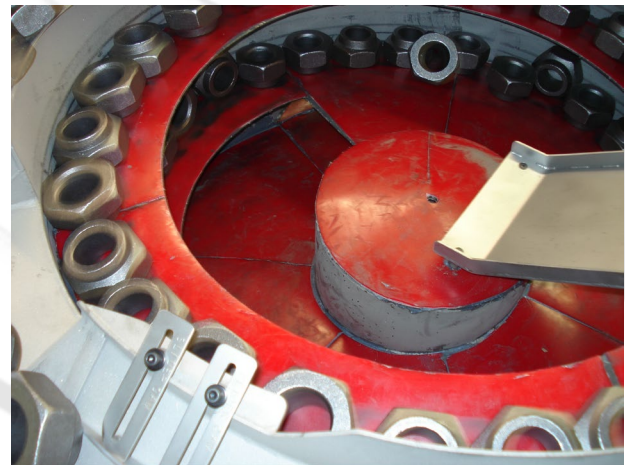
SOUND ENCLOSURE

- **SOUND ENCLOSURE:** A box or other enclosure with doors that are sometime lined with a sound damping material, to reduce the effect of the noise created by the feeding system.



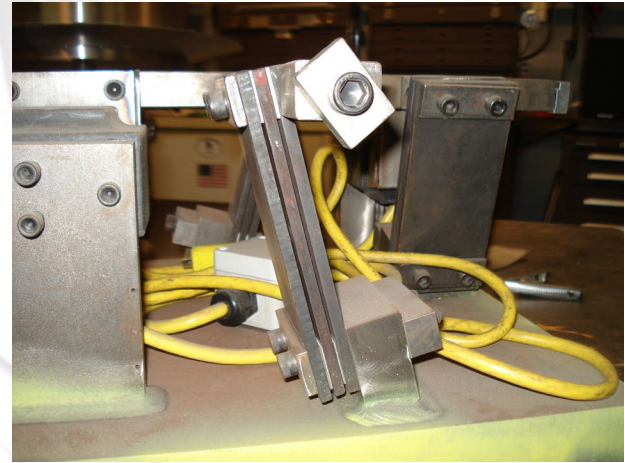
SPLIT BOTTOM BASIC

- **SPLIT BOTTOM BASIC:**
Mainly used on larger bowl feeders due to bulky part size.
- Allows the parts to enter the return pan opening with less restriction due to the split bottom design.



SPRINGS

- **SPRINGS:** The leaf spring that support the driven member of a vibrating unit such as the cross-arms on a drive unit the mounting bar on an inline or the vibrating tray on a pre-feed hopper.



STEP FEEDER

- **STEP FEEDER:** A type of feed system which utilizes moving steps to thin down bulk product to a down stream conveyor, gage roll, or inline track.
- Typically used with simple parts which hang from a flange or need little or no orientation



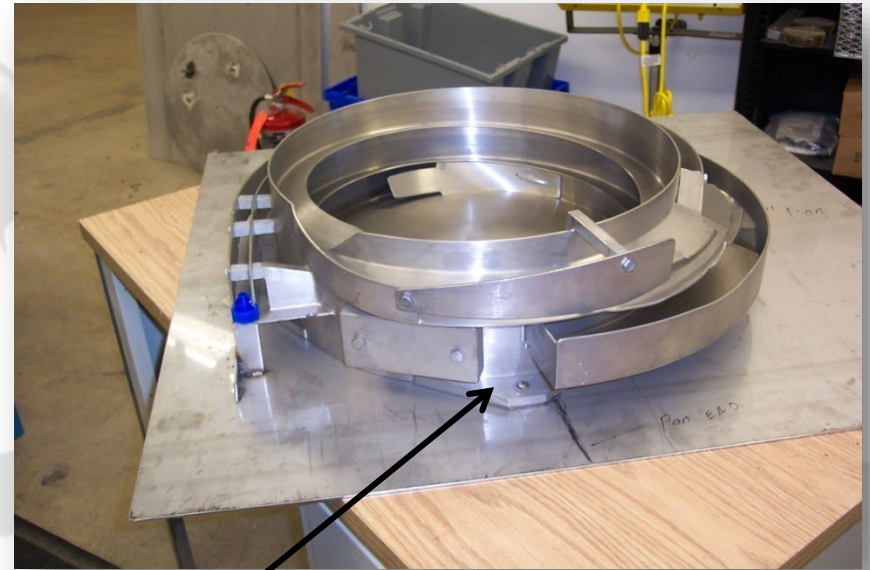
OFFSET LAYOUT

- **Offset or staggered layout:**
Allows for a particular layout to maximize floor space.



TAB MOUNT

- **Tab Mount:** are used when you have bowls that will be using a common drive and to maintain targets when changing from one to the other. Bowls must weight the same so it does not have an effect on tuning.
- Cleaning or interchangeability.
- Repeatability.



Tab

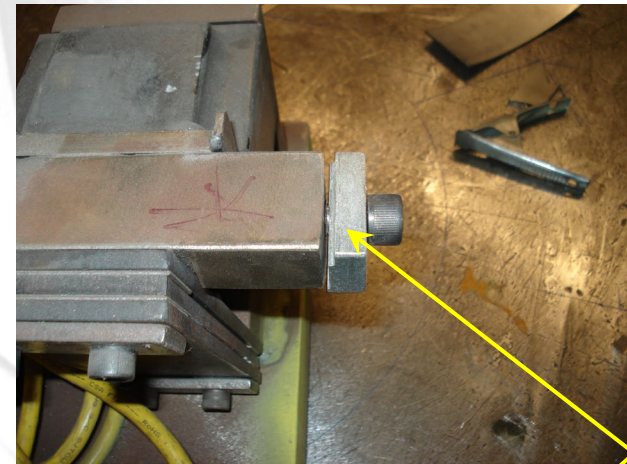
TANDEM BOWL

- **Tandem Bowl:** 2 bowls using a common drive unit, normally to reduce the foot print of the system, used on assembly of the 2 parts fed in separate bowls.

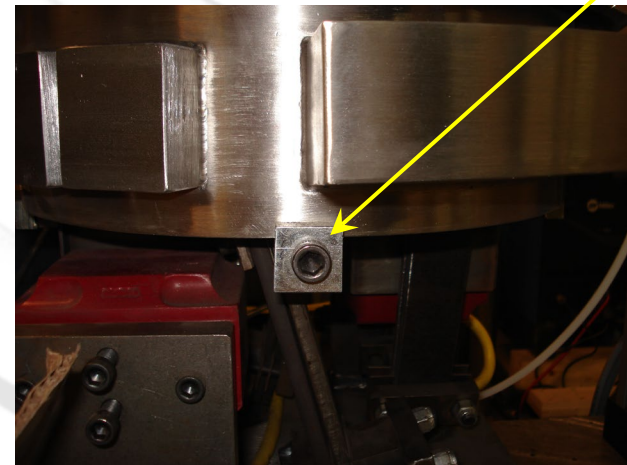


TOE CLAMPS

- **TOE CLAMPS:** Machined blocks at the ends of the cross arms on the base drive unit used to clamp the bowl to the drive and transfer vibration to the bowl.
- The four up to eight machined blocks at the end of the cross arms of the base drive unit must be tightened to assure maximum transfer of vibration to the bowl. Failure to do so will result in failure or malfunction of the feeder system.

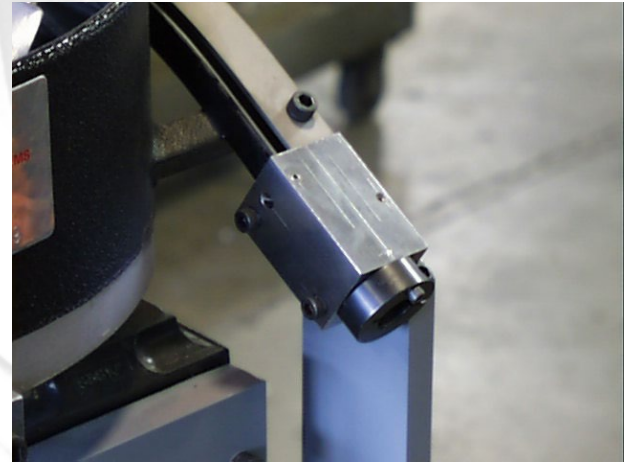


Toe Clamp



TUBE ADAPTOR

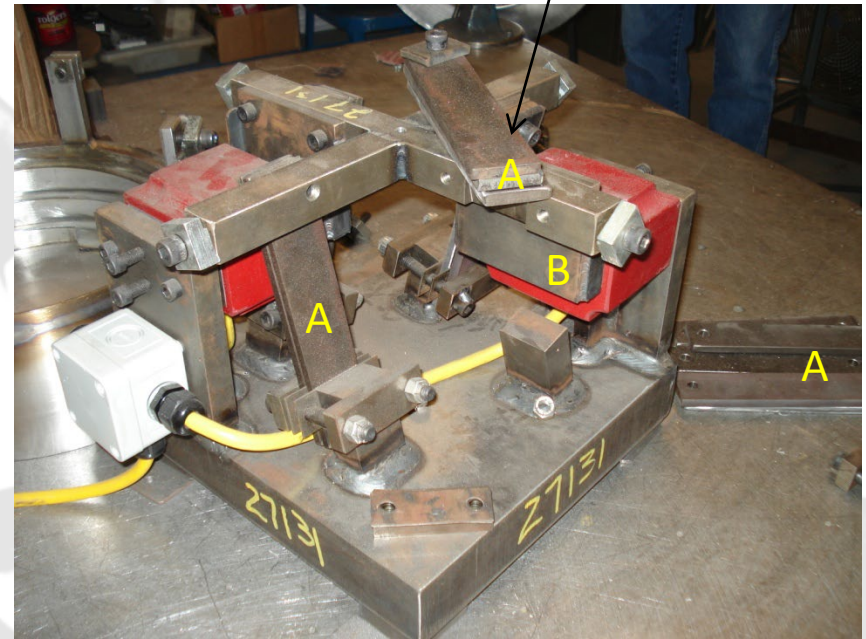
- **Tube Adaptor:** The device that allow the parts to transfer from the vibrator bowl into tubing.
- The tube adaptor can be either mounted to the end of the bowl discharge or on an isolated stand from the table.



TUNING

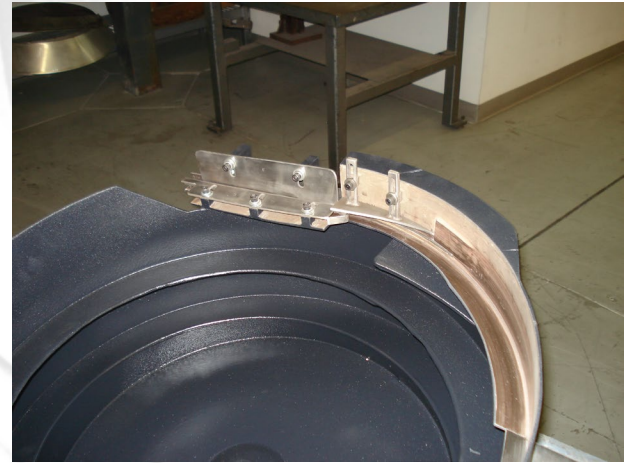
- **TUNING:** Matching the resonance frequency of the two mass system - base and bowl, base and inline, hopper and pan feeder the frequency of the power source. The relationship between the number of springs (A), the thickness of the springs, and the coil gap (B). Proper tuning is an important factor in achieving maximum spring energy level. When a drive unit is improperly tuned (over or under-sprung) the spring tension does not correspond with the natural frequency of the feeder mass. Either condition prevents the mass from returning to its neutral position before the next magnetic pulse takes over thus restricting the full motion each 112 a second. Normal 60 Hz current produces 120 magnetic cycles per second, and transmits 120 mechanical cycles per second to the bowl. Tuning the unit to a natural frequency of either 60 Hz or 120 Hz, for proper balance between coil assembly energy development and spring tension, is of utmost importance to a smooth and efficient feed system. At this balance point it should be noted that parts will feed at maximum efficiency with minimum current draw. The addition or removal of springs may be necessary to obtain the balance needed. The same principles apply for 60 Hz except one half of the magnetic pulse is cut out, leaving only 60 mechanical movements per second (sometimes referred to as 112 wave or rectified current). The air gap between the coil assembly and armature plate is important. If the air gap needs to be reset, adjust it so the pole faces are as close as possible without striking. This will generate maximum power with minimum amperage draws. If the air gap is too small, the coil will clatter; if too large, the energy will not be used efficiently, causing the coil to overheat.

Tuning can be achieved by adding or subtracting springs, as in the photo below the springs bank has been removed for that purpose.



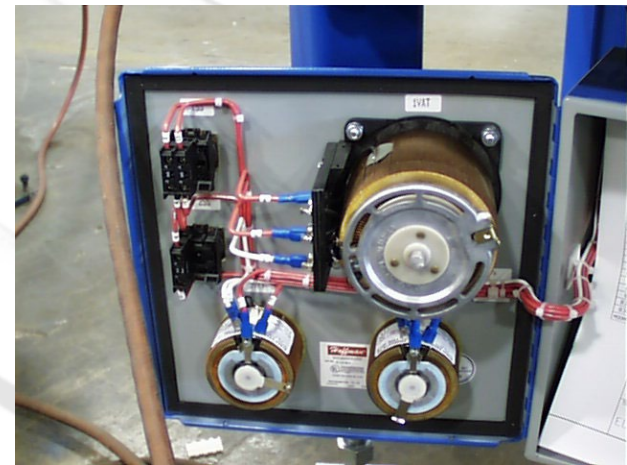
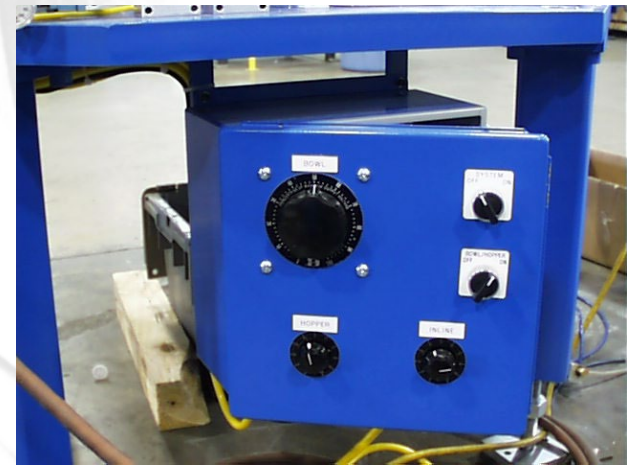
URETHANE COATING

URETHANE COATING: A multi-coat hard surface urethane that is sprayed onto un-tooled areas of a bowl or track helps reduce noise and part abuse.



VARIABLE TRANSFORMER CONTROL

- **VARIABLE TRANSFORMER CONTROL:** A large rheostat type control that varies the voltage applied to the coil.



VIBRATORY PART FEEDER

- **Vibratory Bowl Feeders:** Are self-contained systems consisting of a bowl feeder (A) that orients the parts and a vibrating drive unit (B), upon which the bowl feeder is mounted. The drive unit is equipped with a variable controller (C), vibrates the bowl feeder, forcing the parts to move up a circular, inclined track (D). The track is designed to move parts up and to the outside of the bowl where the external tooling (E) can sort and orient the parts in consistent, repeatable positions, according to certain requirements.



V-TRACK

- **V-TRACK:** A track style in the shape of a “V” which helps to center a part or assists with part orientation.

