

## SECTION IV

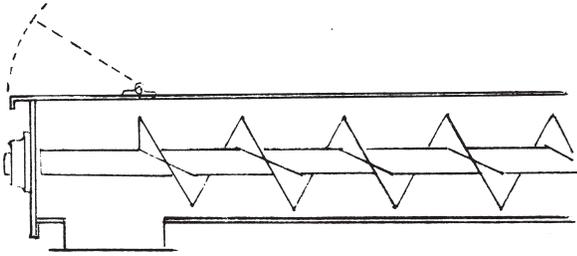
### SPECIAL FEATURES SECTION IV

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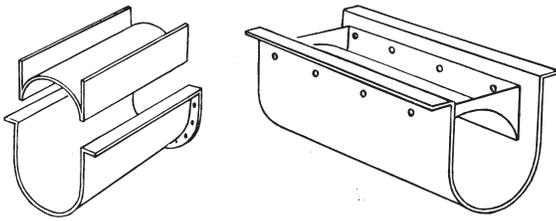
### Special Features

The information presented in this section gives descriptions and functions of the most commonly used special features available in the design of conveyor systems.

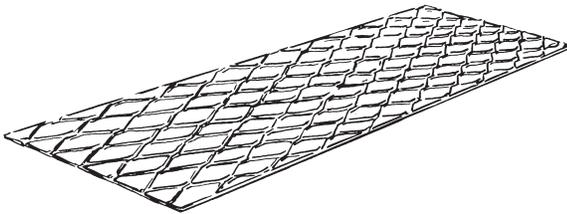
These special features will greatly broaden the range of uses for screw conveyor when added to the many standard features available. Standard features and components are always more desirable and practical in the design of a screw conveyor system; however, one or more of these special features may sometimes be required in special applications for a workable or more efficient system.



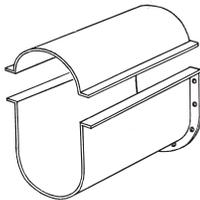
OVERFLOW COVER sections are used as a safety relief to handle overflow over the discharge in cases where the discharge may become plugged. It is a short section of flanged or flat cover hinged across the width to the adjoining cover. The cover is not attached to the trough in order that it can be raised by pressure from within the trough.



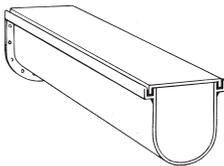
SHROUD COVERS are designed to fit inside a standard conveyor trough of a Screw Feeder or inclined conveyor, and create a tubular trough effect. This cover has an advantage over tubular trough in that ease of access is combined with the convenience of using standard hangers and accessories. An additional flat cover may be required over the shroud to prevent accumulation of dust or water in the recessed portion of the shroud cover.



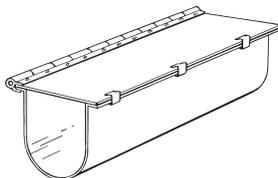
EXPANDED METAL COVERS can be furnished where cover is required for safety but constant visual inspection is required. STANDARD COVERS of any design can be furnished in heavier gauges, when needed to support weight.



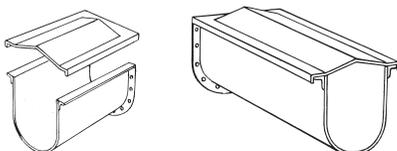
DOMES COVERS are half circle domes rolled to the same inside diameter as the trough bottom and are flanged for bolting to the trough top rails. They are used where venting of fumes or heat from the material being conveyed is required. End sections have a welded end plate and intermediate joints are buttstrap connected. Vent pipes or suction lines can be attached to the cover.



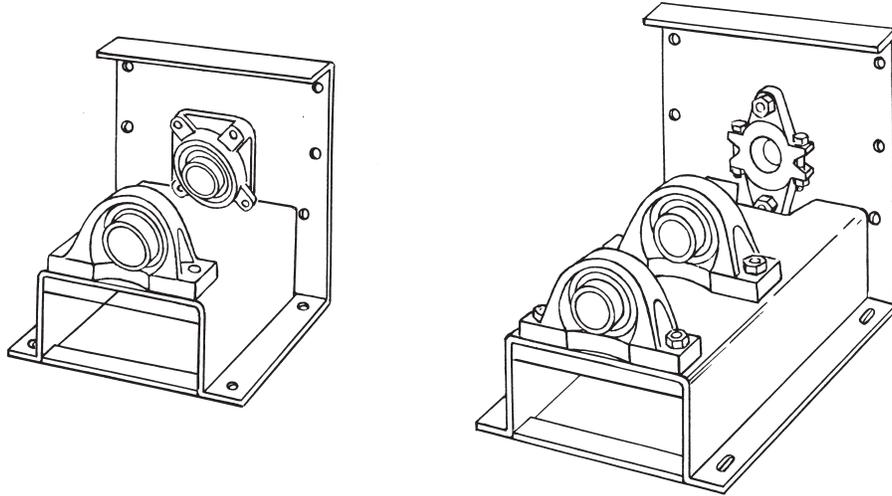
DUST SEAL COVERS are flanged down on all four sides to match channel sections fabricated on the sides, ends, and cross channels of special dust seal troughs. The length of the cover should not exceed one-half the length of the trough section.



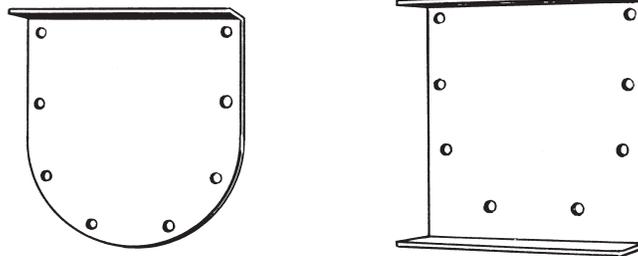
HINGED COVERS may be constructed from conventional flat covers or most special covers. They are equipped with a hinge on one side for attaching to the trough and are bolted or clamped to the trough on the other side. Hinged covers are used in applications where it is not desirable to have a loose cover, such as in high areas above walkways where the cover might fall.



HIP ROOF COVERS are similar to conventional flanged covers except they are peaked slightly to form a ridge along the center of the cover. A welded end plate closes the peaked section at each end of the trough while intermediate joints are usually buttstrap connected. Hip roof covers are usually recommended for outdoor installations to prevent accumulation of moisture. They are also often used in applications where a more rigid cover is required.

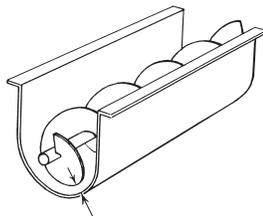


SHELF-TYPE TROUGH ENDS are furnished with outboard bearing pedestals for mounting pillow block bearings. The bearings are mounted away from the trough end plate allowing ample room to protect the bearing when handling abrasive or hot materials. This arrangement allows the use of most any type shaft seal desired. Either one or two bearings can be used.

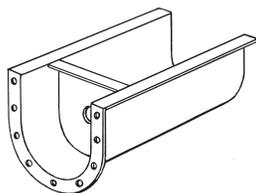


BLIND TROUGH ENDS are used on the tail end (normally the inlet end) of a conveyor, when sealing the end shaft is extremely difficult. A hanger is used inside the trough to support the tail shaft without the shaft projecting through the trough end.

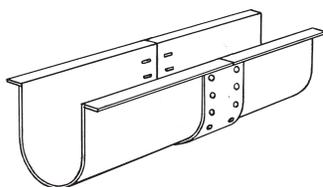
A blind trough end plate can also be furnished with a dead shaft welded to the end plate. For this type the screw is bushed with an antifriction bearing to carry the radial load of the screw. When required, a grease fitting can be furnished through the dead shaft for lubricating the bearing.



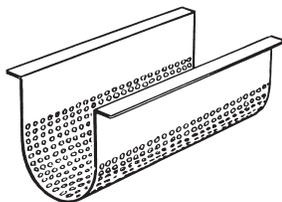
**WIDE CLEARANCE TROUGH** is of conventional construction except with a wider clearance between the outside of the conveyor screw and the inside of the trough. This type trough is used when it is desirable to form a layer of conveyed material in the trough. The material thus moves on itself, protecting the trough from undue wear. By using a wide clearance or oversize trough, a greater capacity than using a standard conveyor screw can be obtained for some materials that travel as a mass. When wide clearance trough is required, it is more economical to use a standard conveyor screw and the next larger size standard trough.



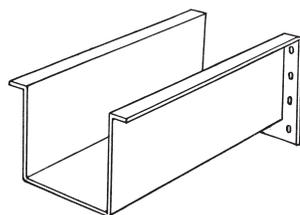
**BULK HEAD** is a plate or baffle shaped to the contour of the inside of the trough and is normally welded or bolted six to twelve inches from the trough end. The bulk head protects the end bearing and drive unit from heat while handling hot materials, when the pocket formed is filled with packing or insulation. The bulk head can be used in the same manner to prevent damage to seals and bearings when handling extremely abrasive materials. An external Bulk Head is also available.



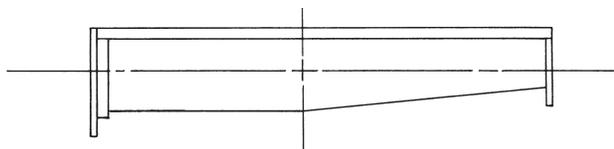
**EXPANSION JOINT** is a connection within a length of trough to allow for expansion caused by hot materials being conveyed. The expansion joint is constructed with bolts fastened in slots to allow for expansion or with a telescoping type slip joint. The number of joints and amount of expansion will depend on the application.



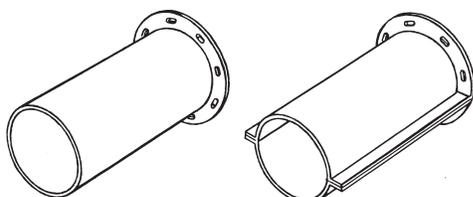
**PERFORATED BOTTOM TROUGH** is equipped with a perforated bottom, and is used as a screening operation or drain section when liquids are present in the conveyed material. The size of the perforations in the trough will vary depending on the material and application.



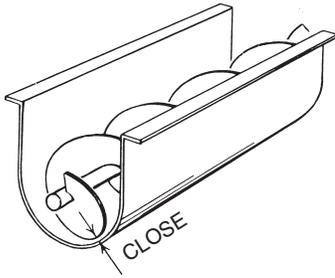
**RECTANGULAR TROUGH** is made with a flat bottom and can be formed from a single sheet or with sides and bottom of separate pieces. This type trough is frequently used in handling abrasive materials capable of forming a layer of material on the bottom of the trough. The material thus moves on itself, protecting the trough from undue wear. Also in handling hot materials, the material will form its own internal insulation with this type trough.



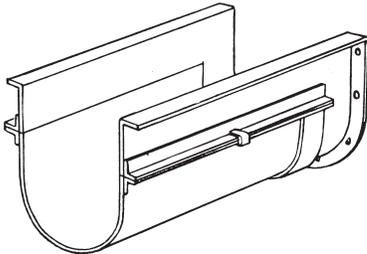
**TAPERED BOTTOM TROUGH** is used to prevent a dead space in the trough at the small end of a tapered conveyor screw. With some materials the tapered trough is necessary to prevent bridging in the trough, or contamination of the material.



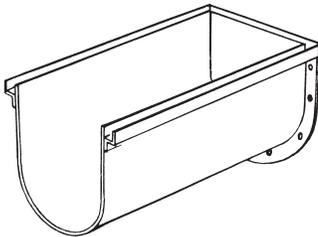
**TUBULAR TROUGH** is furnished in either solid tube construction or split tube construction with flanges for bolting or clamping the two halves together. This trough is a complete tube enclosure and is used for weather-tight applications, for loading to full cross sections, and for inclined or vertical applications where fall back necessitates the housing to operate at a full loading.



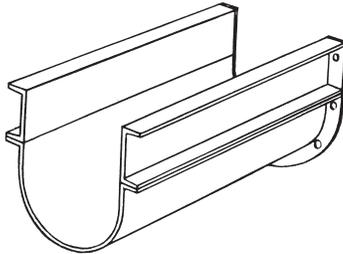
**CLOSE CLEARANCE TROUGH** is of conventional construction except with a closer clearance between the outside of the conveyor screw and the inside of the trough. This type trough leaves less material in the trough and is often used when a greater clean-out of conveyed material is required. This type trough also minimizes fall back of certain materials in an inclined conveyor.



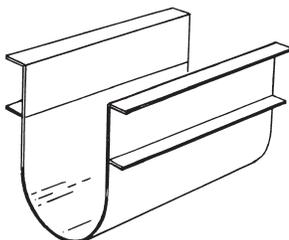
**DROP BOTTOM TROUGH** is equipped with either a bolted or clamped and completely removable drop bottom, or hinged on one side with bolts or clamps on the opposite side. This design offers ease in cleaning of the trough and screw conveyor, and is often used when handling food products where internal inspection and cleaning of the screw conveyor is necessary.



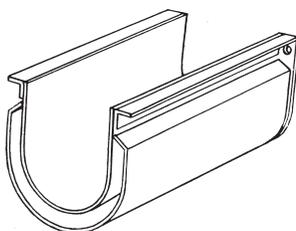
**DUST SEAL TROUGH** (Sometimes referred to as **SAND SEAL TROUGH**) has Z-bar top flanges and formed channel cross members making a continuous channel pocket around the top of the trough into which a special flanged cover is set. The channel is filled with sand or dust of the product being conveyed, thus creating an effective seal against the escape of dust from within the conveyor.



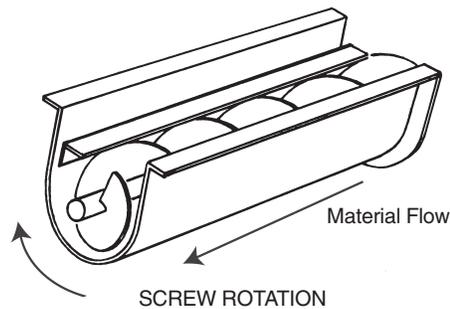
**CHANNEL SIDE TROUGH** is made with separate detachable trough bottoms, bolted or clamped to formed or rolled steel channels. The channels may be of any reasonable length to span widely spaced supports. This type of trough is occasionally used for easy replacement of trough bottoms, and to facilitate repairs when conveyor screw and hangers are not accessible from the top. The channel side trough can also be used without a bottom for filling bins and hoppers.



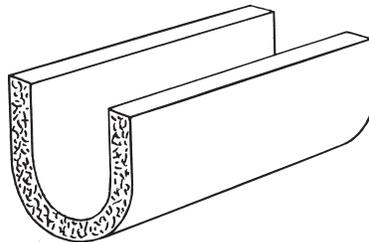
**HIGH SIDE TROUGH** is of conventional construction except that the trough sides extend higher than standard from the center line to the top of the trough. This type trough is frequently used in conveying materials which mat together and travel as a mass on top of the conveyor screw. High side trough will confine this type material in the trough, but still affords the necessary expansion room.



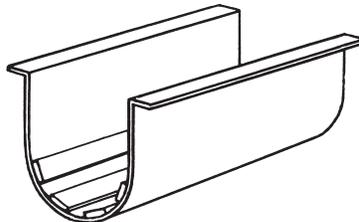
**JACKETED TROUGH** consists of a formed jacket continuously welded to the trough. This type trough is widely used for heating, drying or cooling of materials. Pipe connections are provided for supply and discharge of the heating or cooling media. Special construction must be provided for higher pressures.



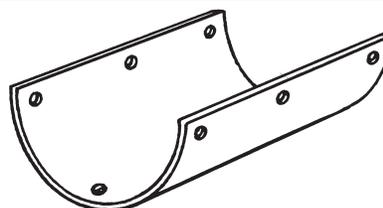
**HOLD DOWN ANGLES** are used to hold the conveyor screw in the trough when the conveyor is operated without intermediate hangers or when chunks of material may tend to ride under the conveyor screw and push it up. The angle is constructed of formed or regular angle iron and is attached to one side of the full length of trough far enough above the conveyor screw to allow approximately one-half inch clearance between the bottom angle and the conveyor screw.



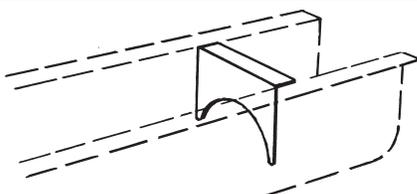
**INSULATED CONVEYOR TROUGH** is used when handling hot or cold materials. There are many types of insulation materials and arrangements that can be used.



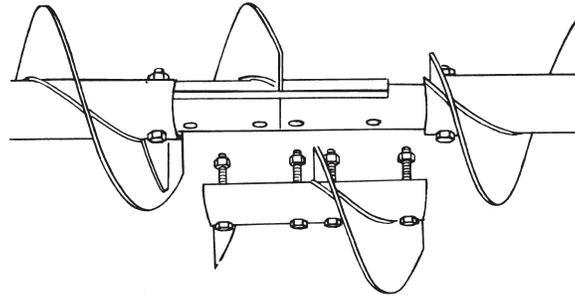
**WEAR BARS** are flat bars one to one and one-half inches in width running part of length or full length of the trough. Two or four bars are normally used and are spaced an equal distance apart along the curved bottom of the trough. The bars are used to support the conveyor screw to prevent wear on the trough when internal hanger bearings are not used. Rider bars are sometimes referred to as Rifling Bars when they are used to assist in conveying materials that tend to stick to the conveyor screw and rotate with it.



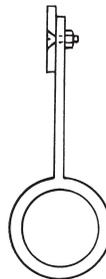
**SADDLE TYPE WEAR PLATES** are plates curved to the contour of the inside of the trough and of slightly less thickness than the clearance between the conveyor screw and trough. The plates are made in lengths of approximately one and one-half times the pitch of the conveyor screw and are normally spaced at intervals equal to the distance between hangers. They are used to support the conveyor screw to prevent damage to the trough when internal hanger bearings are not used.



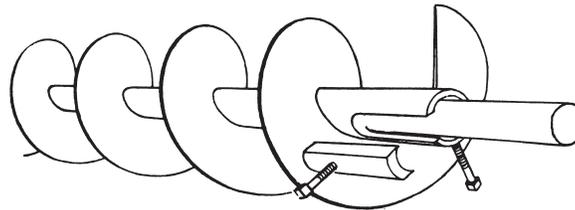
**STRIKE OFF PLATE (Shroud Baffle)** is a single plate bolted vertically to the upper portion of the trough and is cut out to the contour of the screw. This plate is used to regulate the flow of material from an inlet by preventing flooding across the top of the conveyor screw.



SPLIT FLIGHT COUPLINGS permit installation or removal of individual sections of conveyor screw without disturbing adjoining sections. When they are installed on both sides of each hanger, sections of screw can be removed without disturbing the hangers. These must be furnished complete with matching shafts.



WEAR FLIGHTS, or wearing shoes, attached with countersunk bolts to the carrying side of conveyor screw flights are used for handling highly abrasive materials and are easily replaceable.



QUICK DETACHABLE KEY CONVEYOR SCREW is designed for easy removal from the conveyor trough. Each section of screw is provided with a removable key located at one end of the pipe. By removing this key, a conveyor screw section and coupling with a hanger can be quickly removed without disturbing other components.

### Width of Application Chart

Screw Diameter	Standard Width of Application
6	1
9	1½
12	2
14	2
16	2½
18	2½
20	3
24	3



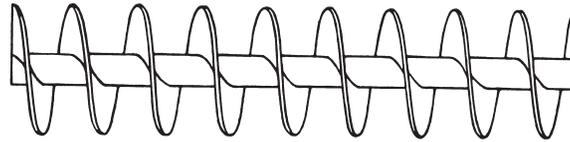
Helicoid



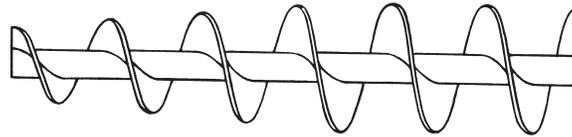
Sectional

NOTE: Weld-on type normally 1/16" thick.

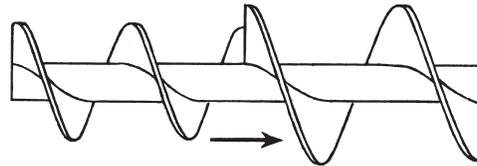
HARD SURFACED FLIGHTS sometimes called abrasive resistant conveyors can be furnished using one of many hardsurfacing processes. The hard surfaced area is normally an outer portion of the face of the flight on the carrying side of the conveyor screw. This process is applied to the conveyor screw to resist wear when handling highly abrasive materials.



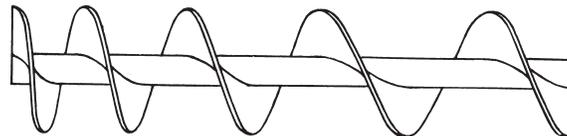
SHORT PITCH CONVEYOR SCREWS are of regular construction except that the pitch of the flights is reduced. They are recommended for use in inclined conveyors of 20 degrees slope and over, and are extensively used as feeder screws, and for controlling cross sectional loading in the balance of a conveyor when short pitch is used at the inlet opening.



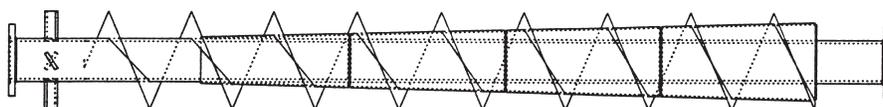
TAPERING FLIGHT CONVEYOR SCREWS are frequently used as feeder screws for handling friable lumpy material from bins or hoppers and also to draw the material uniformly from the entire length of the feed opening.



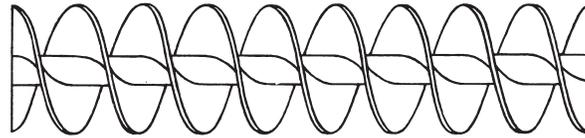
STEPPED DIAMETER CONVEYOR SCREWS consist of flights of different diameters, each with its regular pitch, mounted in tandem on one pipe or shaft. They are frequently used as feeder screws, with the smaller diameter located under bins or hoppers to regulate the flow of material.



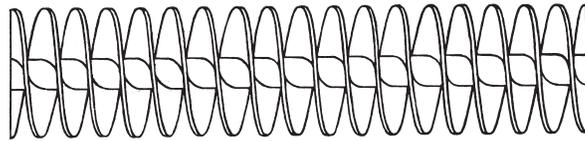
STEPPED PITCH CONVEYOR SCREWS are screws with succeeding single or groups of flights increasing in pitch and are used as feeder screws to draw free-flowing materials uniformly from the entire length of the feed opening.



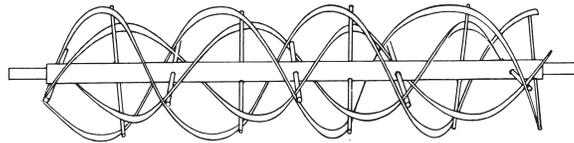
CONE SCREW to withdraw material evenly from a hopper or bin. Constant pitch reduces bridging. Requires less start-up horsepower.



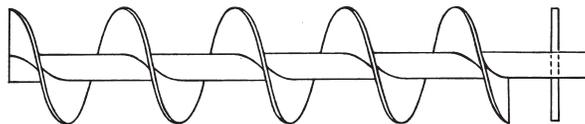
DOUBLE FLIGHT CONVEYOR SCREWS of regular pitch promote a smooth gentle flow and discharge of certain materials. Double flight can be used at hanger points only, for smooth flow past hangers.



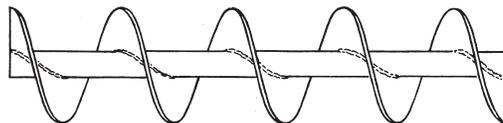
DOUBLE FLIGHT SHORT PITCH CONVEYOR SCREWS assure more accurate regulation of feed and flow in screw feeders and effectively deter flushing action of fluid materials.



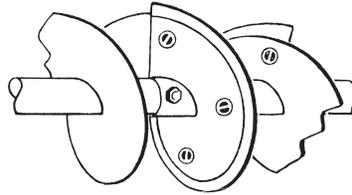
MULTIPLE RIBBON FLIGHT CONVEYOR SCREWS. This type of screw consists of two or more ribbon flights of different diameters and opposite hand, mounted one within the other on the same pipe or shaft by rigid supporting lugs. Material is moved forward by one flight and backward by the other, thereby inducing positive and thorough mixing. (Made per customer specifications.)



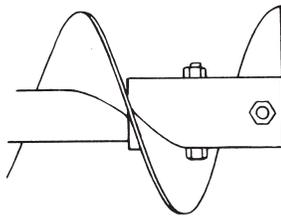
BREAKER PINS. The breaker pin is a rod approximately the same in length as the diameter of the conveyor screw and is inserted through the diameter of the pipe over the discharge to help break up lump materials.



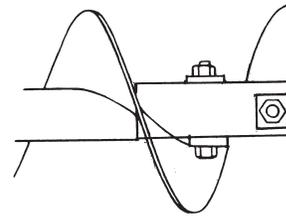
CONTINUOUS WELDING of the conveyor screw flight to the pipe can be furnished with welding one side or both sides. This welding is added to prevent stripping of flight from the pipe under extreme loads. The continuous welding can also be added to fill the slight crack between the flight and pipe for sanitary purposes.



**BEARING SHOES** (Nylon, Teflon, Brass, and other bearing type materials.) Bearing shoes are used in place of internal bearings and are bolted to the conveyor screw. They are made from bearing type material, and when attached to the conveyor screw flight, the bearing shoe projects beyond the outer edge of flighting and rotates with the screw thereby preventing metal to metal contact between the conveyor screw and the trough. The bearing shoes extend around the helix slightly more than one pitch and are spaced along the screw at approximately the same intervals as internal bearings.

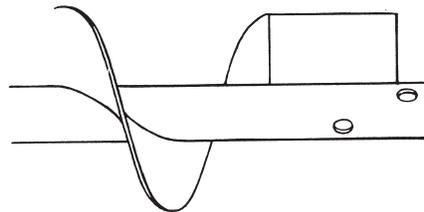


**External Sleeves**

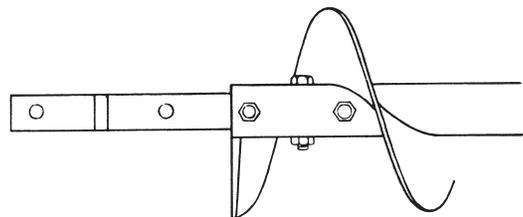


**Bolt Pads**

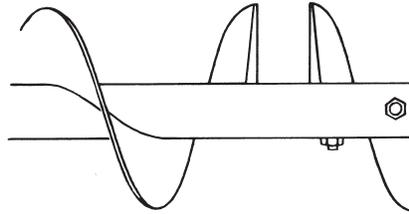
**EXTERNAL SLEEVES OR BOLT PADS** are added to the outside diameter of conveyor screw pipe at the end where the couplings are attached to reinforce the pipe at the bolt area.



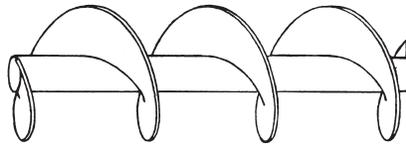
**KICKER BARS** are flat bars projecting from the conveyor screw pipe extending to the outside diameter of the screw over the discharge spout and are used to assist the discharge of materials.



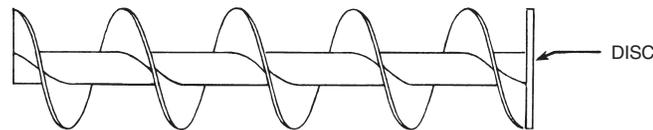
**MULTIPLE HOLE DRILLING** of the conveyor screw pipe and shafts will increase the torque rating of the bolted sections.



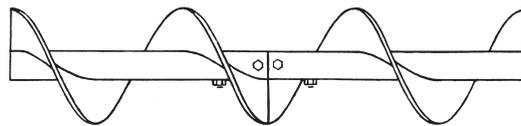
**OPPOSITE HAND FLIGHTS** are short sections (approximately one-half pitch) of flight added to the conveyor screw beyond the discharge point and are the opposite hand of the rest of the screw. This flight opposes the flow of material that tends to carry past the discharge spout and pack at the end plate and forces the material back to the spout for discharge.



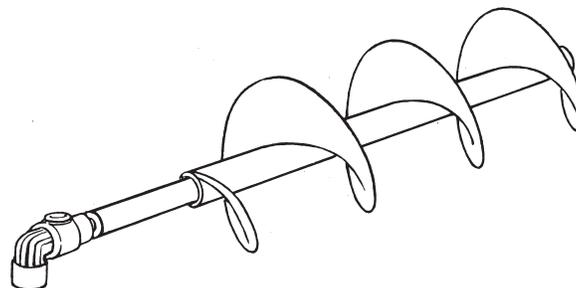
**ODD DIAMETER CONVEYOR SCREW** is of conventional construction except oversized or undersized in diameter. This type conveyor screw is used to provide a close clearance or wide clearance between the screw and trough and enable the use of standard component parts.



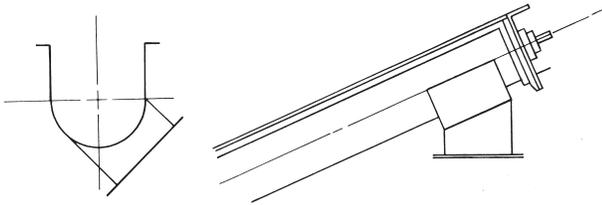
**END DISC ON CONVEYOR SCREW.** This disc is welded flush with the end of the conveyor screw pipe and is the same diameter as the screw. It rotates with the conveyor screw and assists in relieving the thrust of the conveyed material against the end plate shaft seal.



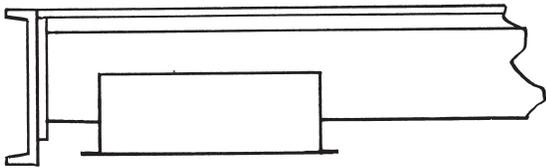
**CLOSE COUPLED CONVEYOR SCREW.** This type screw forms a continuous helix when two or more conveyor screws are close coupled by drilling the shaft of each to align the connecting flight.



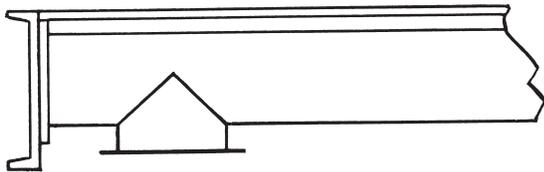
**ROTARY JOINTS FOR COOLING AND HEATING** are attached to one or both end shafts to provide a flow of heating or cooling media through the conveyor screw pipe.



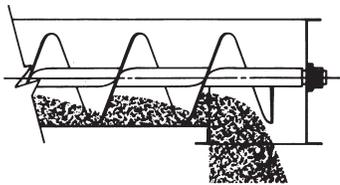
ANGULAR DISCHARGES can be furnished when necessary for certain applications. This type discharge is normally used on inclined conveyors when it is necessary that the discharge be parallel to ground level, or at other times when material must be discharged to one side.



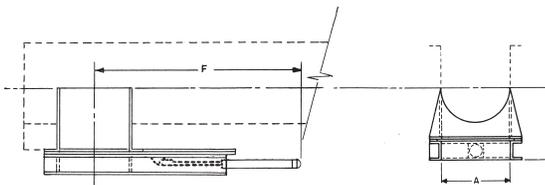
LONGER THAN STANDARD DISCHARGE SPOUTS are approximately one and one-half times the length of the standard discharge spouts. This discharge is used with materials hard to discharge due to the material trying to convey past the discharge opening. This discharge is also used when operating high speed conveyors.



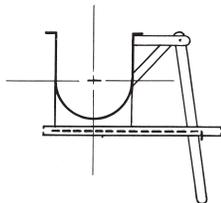
ROUND DISCHARGE SPOUTS are furnished where required for attaching tubular attachments, or when one conveyor discharges into another conveyor at an angle other than a right angle. By using a round discharge and round inlet the connection is easily made.



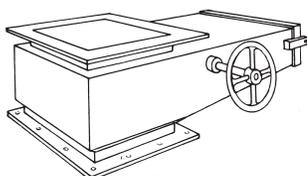
FLUSH END DISCHARGE SPOUTS are furnished with a special trough end plate constructed on trough end side of the spout. This type spout offers a complete discharge without a ledge at the end plate for material build up. It is used primarily in handling food products, where infestation may occur.



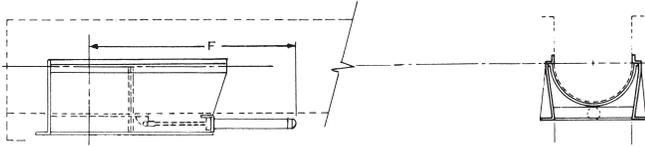
AIR OPERATED FLAT SLIDE GATES are similar in action and purpose to rack and pinion gates. The gate movement is accomplished by an air cylinder. These gates are usually employed when remote control and automatic operation is desired.



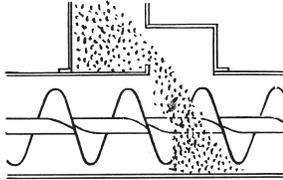
LEVER OPERATED GATES are a modification of standard slide discharges with a lever attached for opening and closing the gates. This attachment provides a leverage for ease of operation and a convenient means for quick opening and closing.



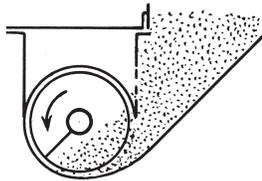
ENCLOSED DUST-TIGHT OR WEATHER-PROOF rack and pinion discharge spouts can be furnished in either flat or curved slide and are similar in construction to conventional rack and pinion slide gates except that the slide, rack, and pinion are fully enclosed in a housing.



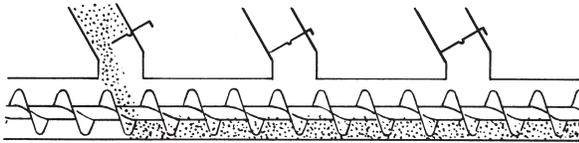
AIR OPERATED CURVED SLIDE GATES are similar to standard rack and pinion gates except they are operated with an air cylinder. The air operated gate is usually used for remote control and automatic operation. These gates can also be furnished in dust-tight or weather-proof construction with the cylinder and gate fully enclosed in the housing.



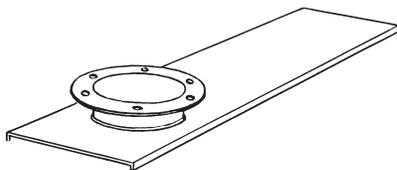
CUSHION CHAMBER INLETS (DEAD BED INLETS) serve the same purpose as the deflector plate inlet, but are constructed with a ledge that forms a cushion for materials fed into the conveyor.



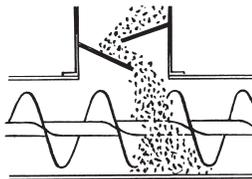
SIDE INLETS are equipped with a gate to furnish a means of regulating or stopping the inlet flow to relieve the conveyor screw from excessive material pressures. When using the side inlet, the screw rotation should be toward the inlet opening to assure a constant flow rate.



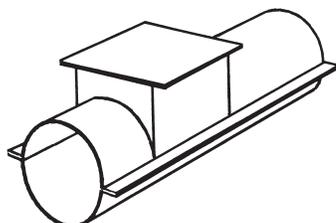
HAND SLIDE INLET GATES are normally used when multiple inlets are required. These inlets must be adjusted or closed manually to assure proper feed to the conveyor.



ROUND INLET SPOUTS are used for tubular attachments or when connecting the discharge of one conveyor to the inlet of another at other than a right angle. This type connection is easily made with round discharges and inlets.



DEFLECTOR PLATE INLETS are used when materials fall vertically into the inlet creating the possibility of impact damage or abrasion to the conveyor screw. The rectangular inlet is equipped with deflector plates, or baffles, that dampen the impact of the material in order to feed the conveyor more gently.



HANGER POCKETS are used with tubular trough, mounted on top of the tubular trough at hanger bearing points. The hanger pocket forms a U-shape section for a short length, allowing the use of standard conveyor hangers and providing easy access to the hanger.