



ENTERPRISES, INC.



SCREW CONVEYOR

- **INSTALLATION** •
- **OPERATION** •
- **MAINTENANCE** •

INSTRUCTIONS

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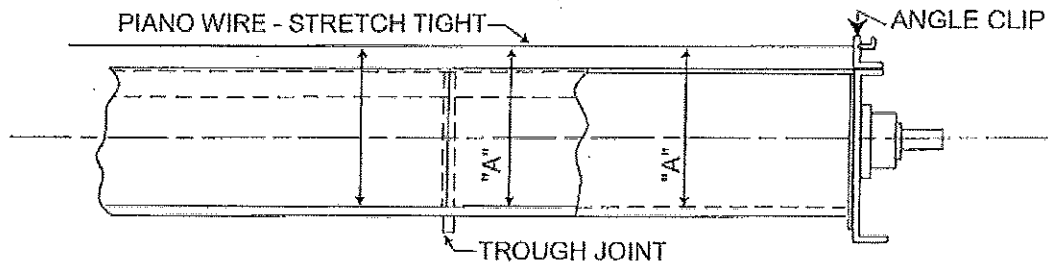
2310 26th Street South
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Phone (218) 236-5050 Fax (218) 233-6378

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INSTALLATION

For Conveyor assemblies purchased as parts or merchandise, assemble as follows: Place conveyor troughs in proper sequence with inlet and discharge properly located. Connect the trough flanges loosely. Do not tighten bolts. Align the trough bottom center lines perfectly using piano wire (or equivalent) then tighten flange bolts. Tighten all anchor bolts.



Assembly of conveyor screws should always begin at the thrust end. If the thrust end is not designated, assembly should begin at the drive end. If a thrust end is designated, assemble trough end and thrust bearing. Insert the end or drive shaft in the end bearing. Do not tighten set screws until conveyor assembly is completed.

1. Place the first screw section in the trough, slipping the end or drive shaft into the pipe end. Secure tightly with coupling bolts. Install so that conveyor end lugs are opposite the carrying side of the flight.
2. Place a coupling shaft into the opposite end of conveyor pipe. Tighten coupling bolts.
3. Slide hanger with bearing over coupling shaft and clamp hanger to trough.
4. Assemble alternately, conveyor screws, couplings and hangers until all screws are installed repeating steps 1, 2 and 3.

A) With Hangers: Assemble screw section so that flighting at each end is approximately 180° from ends of flighting of adjacent sections. Also, adjust conveyor screw and thrust unit so that hangers are equally spaced between adjacent screws. After each hanger is installed, rotate the conveyor by hand to insure that no binding occurs. Remove hanger clamps and bolt hanger to trough with bearing centered between conveyor screws.

B) Without Hangers: (close coupled) Assemble screws so that flighting at adjoining ends of screw sections align to produce a continued helix surface. (note coupling holes have been drilled in assembly to allow for flight alignment).

5. The end shaft should be inserted through the trough end bearing/seal into terminal screw section. Install and tighten coupling bolts. The bearings and seal should be adjusted to be true and concentric on the shaft and bolts tightened. If packing gland type seals are used, they should be tightened only enough to prevent leakage. Check pack type seals to insure packing is loose but sufficiently tight to prevent leakage.

INSTALLATION

5. Install trough covers in proper sequence. Properly locate inlet openings. Handle covers with reasonable care to avoid warping or bending. Attach covers securely to trough. Do not overtighten as cover damage may result.
6. Rotate conveyor by hand to ensure no binding occurs.
7. Install drive at proper location and in accordance with separate instructions or drawing provided. Install all guards
8. Check screw rotation for proper direction of material travel after electrical connections have been made, but before attempting to handle material. Incorrect screw rotation can result in serious damage to the conveyor and to related conveying and drive equipment.
9. Attach all gates, feed chute, discharge chute, etc.. And connect all safety devices and controls.
CAREFULLY TEST TO ENSURE PROPER OPERATION.

OPERATION

Lubricate all bearings and drives per service instructions. Gear reducers are normally shipped without lubricant. Refer to service instructions for lubrication.

Check conveyor to ensure all tools and foreign materials have been removed.

Check conveyor to ensure all coves, guards, safety devices and controls are installed and operating correctly.

In start-up of the conveyor, operate several hours empty as a break in period. Observe for bearing heat up, unusual noises or drive misalignment. Should any of these occur, check the following and take necessary corrective steps (non lubricated hanger bearings may cause some noise).

1. When anti-friction bearings are used, check for proper lubrication. Insufficient or excess lubricant will cause high operating temperatures.
2. Misalignment of trough ends, screws, hangers and trough end can require excessive maintenance and cause poor life expectancy.
3. Check assembly and mounting bolts, tighten if necessary.

After the conveyor has been run per the above instructions, stop the conveyor. **Lock out all power**, and check discharge to ensure it is clear and material flow through the discharge will not be impeded in any way,

Restart the conveyor and gradually begin to feed material. The feed rate should be gradually increased until the design capacity is reached.

Do not overload conveyor. Do not exceed conveyor speed, capacity, material density or rate of flow for which the conveyor and drive were designed.

Cut off feed and allow conveyor to empty. Lock out all power. Check all bolts and all alignments. Re-align as necessary and tighten all bolts.

If conveyor is to be inoperative for a prolonged period of time, operate conveyor until all cleared of material. This is particularly important when the material conveyed tends to harden or become more viscous, or sticky if allowed to stand for a period of time.

It may be necessary to re-center hanger bearings after running material in conveyor.

Check motor amperage frequently.

It is extremely important the following precautions be followed to prevent personal or property damage:

1. Only persons properly trained and familiar with screw conveyors be permitted to operate or maintain the unit.
2. **LOCK OFF ALL POWER** prior to any inspection or maintenance, refer to ANSI standard ANSI Z244.1.244.1
3. Periodically run the conveyor empty for a few minutes to check for excessive vibration, loose fasteners, security of covers and guards, noise, and bearing and drive temperature.
4. **ALWAYS** operate the conveyor with covers, guards and safety labels in place.
5. **NEVER** walk on or cross conveyor covers, guards or grating.
6. **DO NOT** place hands, feet or clothing in conveyor openings.
7. **DO NOT** poke or prod the conveyor or material in the conveyor.

MAINTENANCE

Before any maintenance or inspection is performed, refer to ANSI Standard ANSI Z 244A.4 for minimum safety requirements covering lockout or tagout of energy sources for personal safety.

Practice good housekeeping. Keep the area around the conveyor and drive clean and free of obstacles to provide easy access and to avoid interference with the function of the conveyor and drive.

Establish routine periodic inspections of the entire conveyor to ensure continuous maximum operating performance.

To replace conveyor screw section, proceed as follows:

1. Removal of a section or sections usually must proceed from the end opposite the drive. Make sure drive and electrical power are disconnected before starting to disassemble.
2. Remove the trough end, sections of screws, coupling shafts and hangers until all sections have been removed or until the damaged or worn sections is removed and reached.
3. To re-assemble, follow the above steps in reverse order.

Replacement parts can be identified from a copy of the original packing list, invoice or drawing.

The coupling bolt lock nut may be damaged when removed. It is recommended practice to replace them rather than re-use them when changing conveyor screw sections.

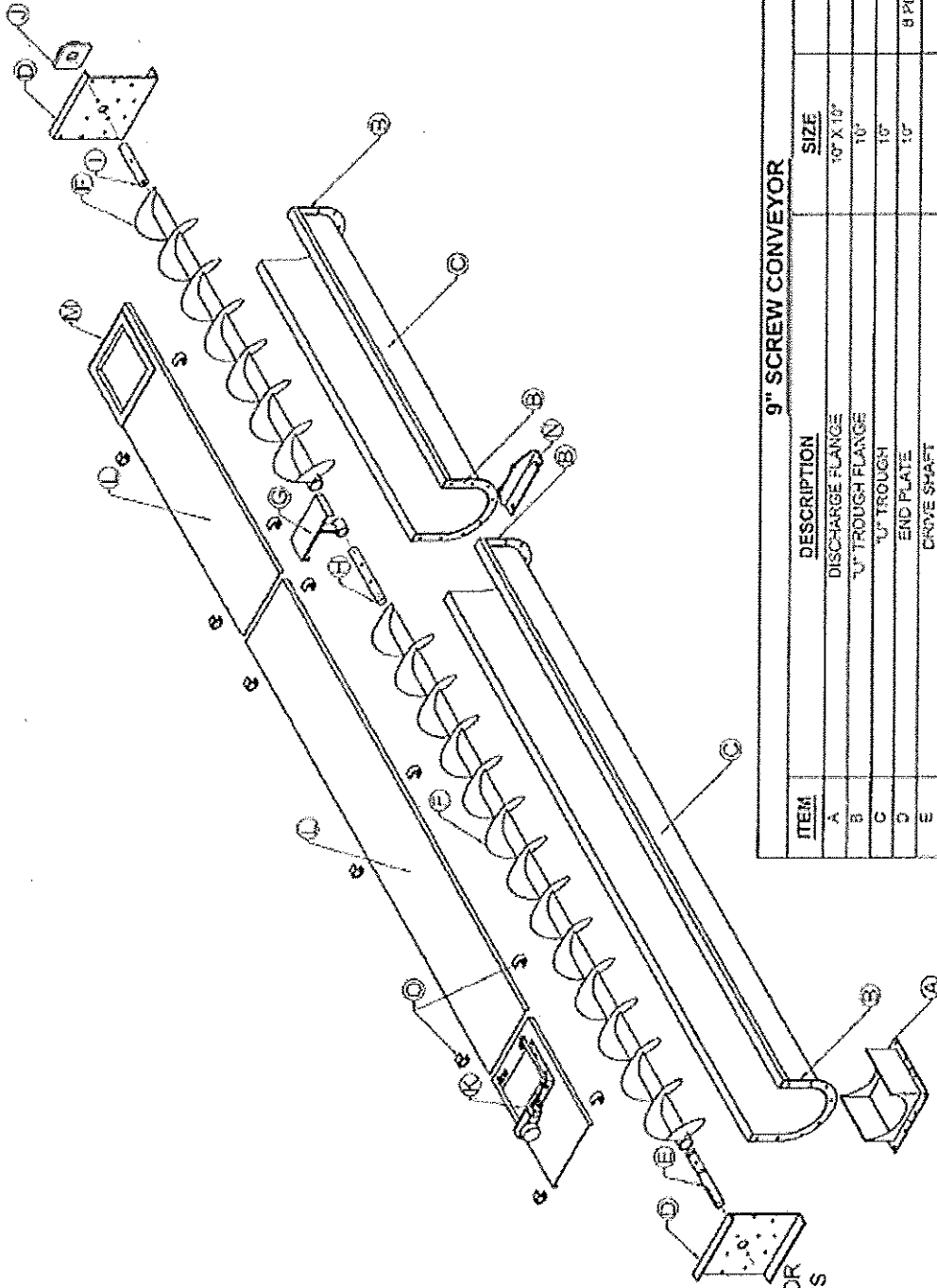
Periodic inspections should be made of the following:

1. Trough—Check for wear and alignment. Tighten all bolts.
2. Shafts—Check for wear. Check for bolt hole elongation and wear.
3. Flights—Check for wear or damage.
4. Bolts and nuts—Check for wear and tightness.
5. Seals—Check for leakage, adjustment and wear.
6. Guards—Check for oil level (if applicable). Check nuts and bolts for tightness.
7. Bearings—Check for lubrication. Refer to specific instructions as various types of bearings require varying frequency of lubrication and varying types of lubrication.

EXTENDED SHUTDOWN/STORAGE

If the conveyors are to have an extended shutdown or storage (beyond one month) the following should be performed:

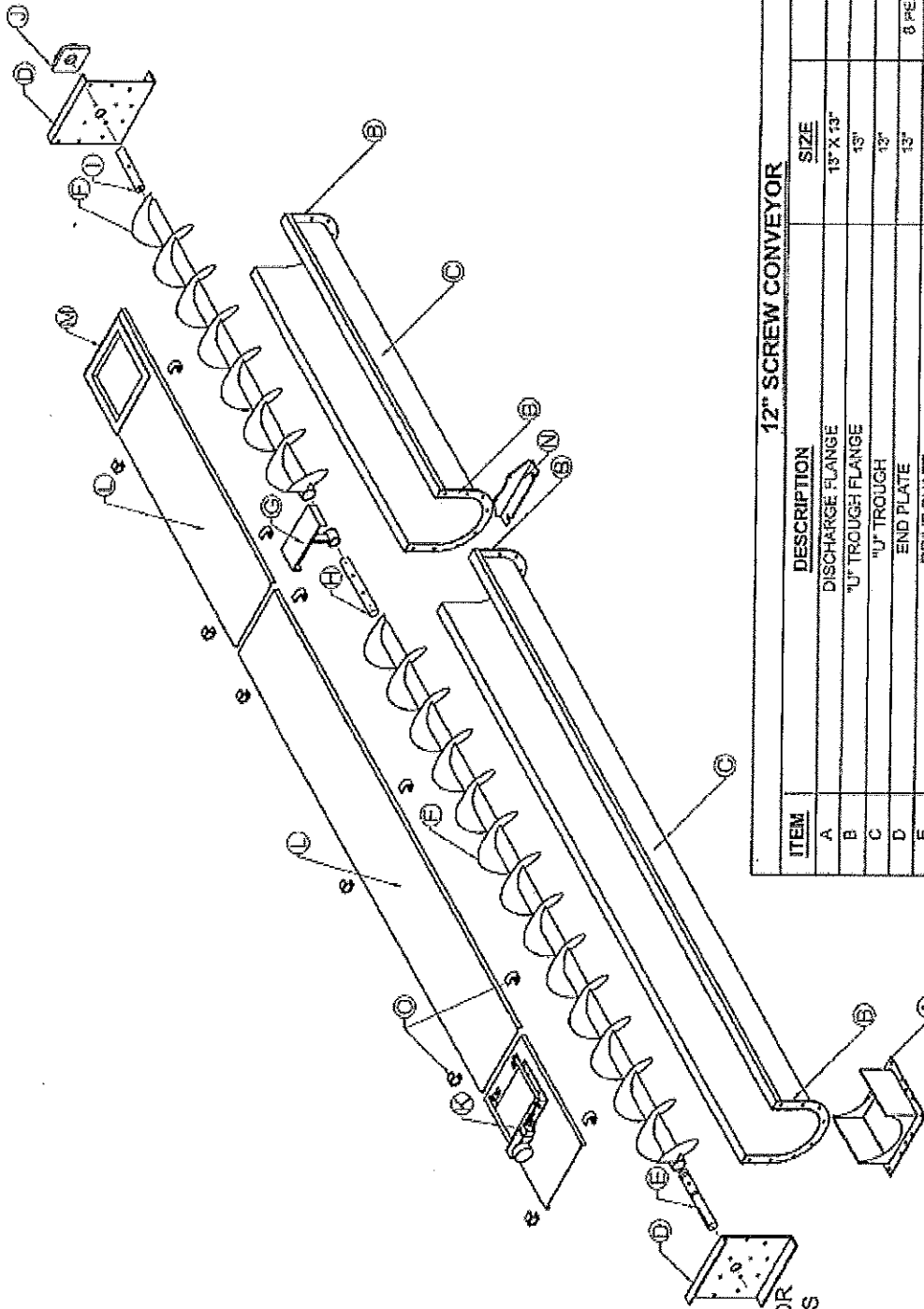
1. Ensure all foreign material is removed from the conveyor and surface coatings are in good order.
2. All bearings and drives are lubricated and protected per manufacturer's instructions.
3. Screws are rotated every two weeks.
4. The conveyor is protected from weather, moisture and extreme temperatures. Do not use plastic or other coverings which promote condensation under the covering.
5. All exposed metal surfaces are coated with rust preventative oil that is applied per instructions.
6. Prior to start-up, inspection and service instructions contained in this manual must be performed.



SEE DODGE FOR INSTRUCTIONS

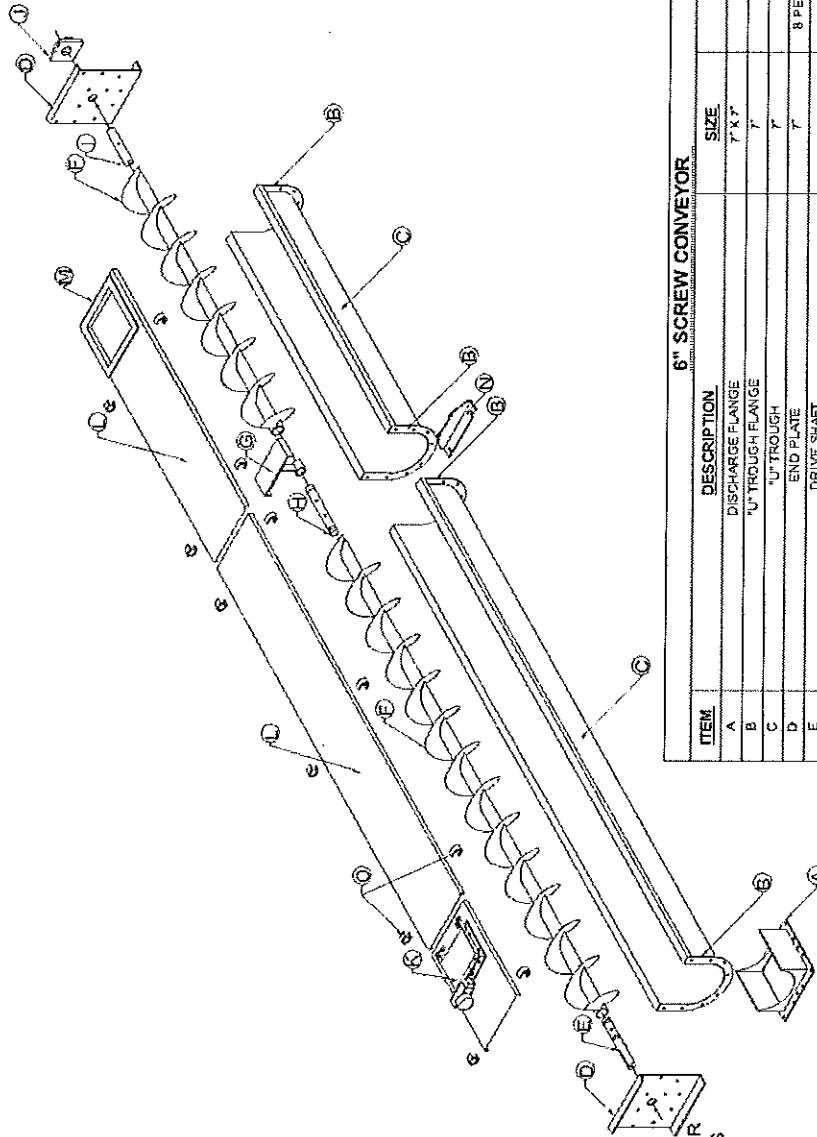
9" SCREW CONVEYOR

ITEM	DESCRIPTION	SIZE	BOLTS
A	DISCHARGE FLANGE	10" X 10"	
B	U-TROUGH FLANGE	10"	
C	U-TROUGH	10"	
D	END PLATE	10"	8 PER PLATE
E	DRIVE SHAFT		2
F	SCHEDULE 40 PIPE (SHOWN WITH FLIGHTS)	2 1/2" O x 9'-10"	
G	MARTIN ROLLER BEARING (FOR MORE THAN ONE TROUGH)	STYLE 225	4 PER SECTION
H	CONNECTOR SHAFT (FOR MORE THAN ONE TROUGH)	1 1/2" O x 1 1/2"	4
I	SCREW END SHAFT	1 1/2" O x 10 1/2"	2
J	BEARING	F49-SC-108	4
K	SCREW CONVEYOR HEAD COVER WITH PLUG SWITCH	24" X 14"	
L	U-TROUGH COVERS	14" X 10-0"	
M	INLET	OPTIONAL	
N	U-TROUGH FOOT PAD (OPTIONAL)	9"	
O	COVER CLIPS	1/2" X 1" 6 max 10-0"	1 PER CLIP



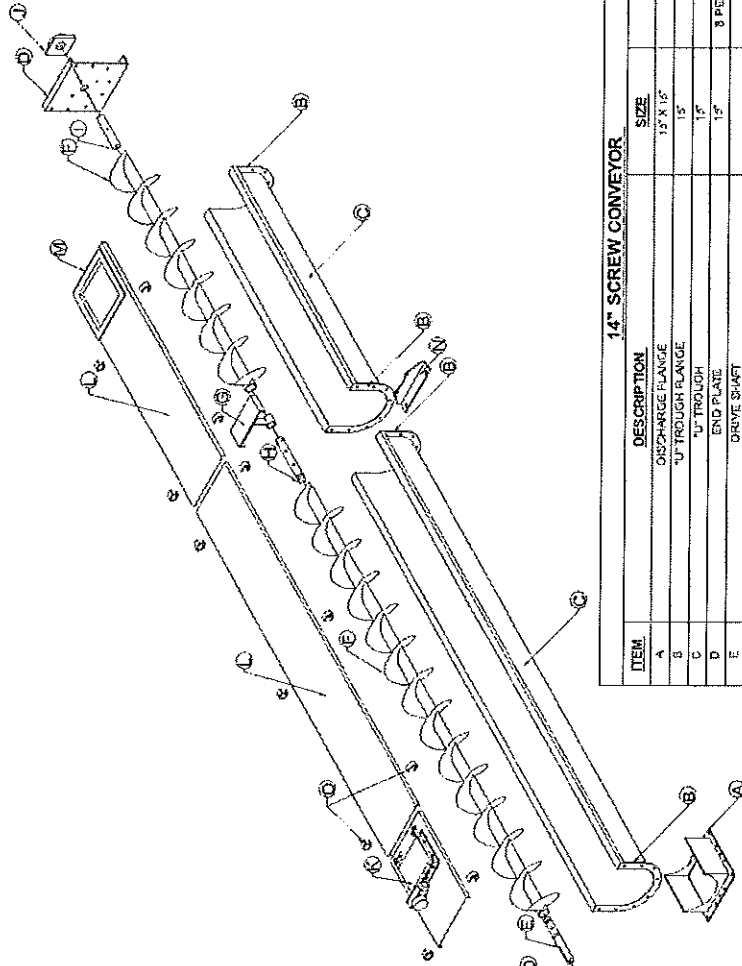
SEE DODGE FOR INSTRUCTIONS

ITEM	DESCRIPTION	SIZE	BOLTS
A	DISCHARGE FLANGE	13" X 13"	
B	"U" TROUGH FLANGE	13"	
C	"U" TROUGH	13"	
D	END PLATE	13"	8 PER PLATE
E	DRIVE SHAFT		2
F	SCHEDULE 40 PIPE (SHOWN WITH FLIGHTING)	2 1/2" O. x 9'-10"	
G	MARTIN HANGER BEARING (FOR MORE THAN ONE TROUGH)	STYLE 226	4 PER SECTION
H	CONNECTOR SHAFT (FOR MORE THAN ONE TROUGH)	2" O. x 11 1/2"	4
I	SCREW END SHAFT	2" O. x 8 1/2"	2
J	BEARING	F411-SCIM-200	4
K	SCREW CONVEYOR HEAD COVER WITH PLUG SWITCH	24" x 14"	
L	"U" TROUGH COVERS	14" x 10'-0"	
M	INLET	OPTIONAL	
N	"U" TROUGH FOOT PAD (OPTIONAL)	12"	
O	COVER CLIPS	1/2" x 1" 8 PER 10'-0"	1 PER CLIP



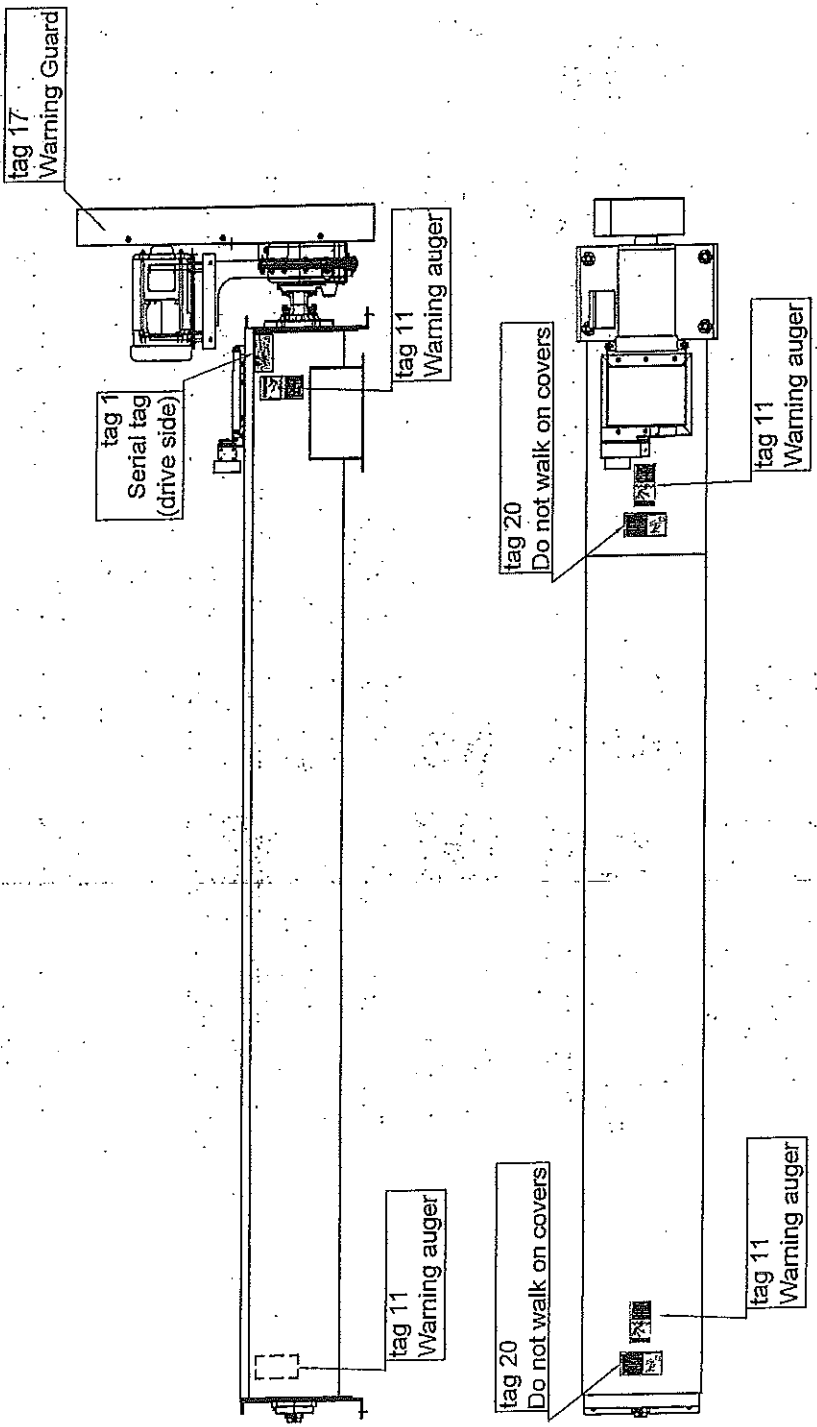
SEE DODGE FOR
INSTRUCTIONS

6" SCREW CONVEYOR			
ITEM	DESCRIPTION	SIZE	BOLTS
A	DISCHARGE FLANGE	7" X 7"	
B	"U" TROUGH FLANGE	7"	
C	"U" TROUGH	7"	
D	END PLATE	7"	8 PER PLATE
E	DRIVE SHAFT		$\frac{3}{8}$ " X $1\frac{1}{2}$ " $\frac{1}{2}$ " X $3\frac{1}{2}$ "
F	SCHEDULE 40 PIPE (SHOWN WITH FLIGHTING)	$2\frac{3}{8}$ " O.D. X 2'-10"	
G	MARTIN HANGER BEARING (FOR MORE THAN ONE TROUGH)	8" TALL X 20"	$\frac{3}{8}$ " X $1\frac{1}{2}$ " W/ FLANGE NUT
H	CONNECTOR SHAFT (FOR MORE THAN ONE TROUGH)	$1\frac{1}{2}$ " O.D. X $11\frac{1}{2}$ "	4
I	SCREW END SHAFT	$1\frac{1}{2}$ " O.D. X $5\frac{1}{2}$ "	2
J	BEARING	FAB-SC-108	$\frac{3}{8}$ " X $3\frac{1}{2}$ "
K	SCREW CONVEYOR HEAD COVER WITH PLUS SWITCH	$24\frac{1}{2}$ " X $10\frac{1}{2}$ "	4
L	"U" TROUGH COVERS	$10\frac{1}{2}$ " X $10\frac{1}{2}$ "	
M	INLET	OPTIONAL	
N	"U" TROUGH FOOT PAD (OPTIONAL)	8"	
O	COVER CLIPS	$\frac{1}{4}$ " X $1\frac{1}{8}$ " X 10'-0"	1 PER CLIP



SEE DODGE FOR INSTRUCTIONS

ITEM	DESCRIPTION	SIZE	QUANTITY
A	DISCHARGE FLANGE	12" X 15"	1
B	"U" TROUGH FLANGE	15"	1
C	"U" TROUGH	15"	1
D	END PLATE	15"	1
E	DRIVE SHAFT	3/4"	1
F	SCHEDULE 40 PIPE (SHOWN WITH LIGHTING)	3"	1
G	MARTIN HANGER BEARING (FOR MORE THAN ONE TROUGH)	ST. LE. 20	4 PER SECTION
H	CONNECTOR SHAFT (FOR MORE THAN ONE TROUGH)	2 1/2" O.D. X 13 1/2"	4
I	SCREW END SHAFT	2 1/2" O.D. X 9 3/4"	2
J	BEARING	F48-SC-207	4
K	SCREW CONVEYOR HEAD COVER WITH PLUG SWITCH	24" X 18"	4
L	"U" TROUGH COVERS	18" X 10 3/4"	4
M	INLET	OPTIONAL	
N	"U" TROUGH FOOT PAD (OPTIONAL)	12"	
O	COVER CLIP	1/2" X 1" X 8" MAX. DIA. Ø	1 PER CLIP



Tag 1
Serial tag
2" x 4"
(1) top side discharge end)



Tag 11
Warning auger
2 1/2" x 4 3/4"
(2) per trough sections
(1) per every cover)



Tag 20
Warning do not walk on covers
5" x 2 1/2"
(1) on every cover)



Tag 17
Warning Guard
5" x 2 1/2"
(1) on every belt guard)

PROJECT: Screw conveyor sticker placements		SHEET: -																																				
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<p>S-M ENTERPRISES HOWELL PRODUCTS 2310 26th Street South Minneapolis, Minnesota 55450 Phone: (218) 235-5050 Fax: (218) 235-5078</p>																																						

LIMITED WARRANTY

S-M Enterprises, Inc., hereinafter referred to as "S-M" warrants each S-M Enterprises product to be free from defects in material and workmanship, when used under normal use and service conditions, for a period of twelve (12) months commencing on the date of delivery of the complete product. The "defect" must be reported to S-M, or to S-M's representative within this 12 month warranty period.

THIS LIMITED WARRANTY IS MADE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF S-M. THE CUSTOMER'S RIGHTS AND REMEDIES ARE GOVERNED EXCLUSIVELY BY THE TERMS AND CONDITIONS OF THIS LIMITED WARRANTY, AND CUSTOMER EXPRESSLY WAIVES FOR HIMSELF AND ANY PURCHASER, ANY CLAIM BASED UPON CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE.

S-M's obligation and sole remedy under this warranty is exclusively limited, at S-M's option, to either repair or replace any part or product found to be defective, within a reasonable time, providing that such part or product is returned to S-M; factory in Moorhead, Minnesota, transportation charges prepaid, or to the selling dealer or distributors place of business from whom the purchase was made. The "defective" product or part may also be returned to the S-M's factory in Moorhead, Minnesota, transportation charges prepaid, for a full refund of the purchase price with respect to any failure of product due to defects in material or workmanship. All corrective work on S-M's product must be approved in writing by S-M prior to such repairs. No allowances will be made for corrective work that has been completed without this express approval. If S-M is unable to repair the equipment, S-M will, at its option: (a) replace the equipment, or (b) refund the purchase price. These remedies are the Buyer's exclusive remedies for breach of warranty. Any action for breach of warranty must be commenced within 15 months following delivery of the goods. S-M makes no warranties with respect to any equipment sold but not manufactured by S-M.

Improper lubrication, improper installation, deterioration by chemical action, and premature wear caused by the presence of abrasive materials do not constitute "defects".

THIS WARRANTY SHALL NOT RENDER S-M LIABLE FOR ANY CONSEQUENTIAL DAMAGES, INCLUDING AND WITHOUT LIMITATION, TO; PERSONAL INJURY, EXPENSES OF REMOVING THE PRODUCTS), LOSS OR DAMAGE RESULTING TO THE EQUIPMENT OR STRUCTURE(S) IN WHICH THE S-M'S PRODUCTS HAVE BEEN INSTALLED, LOSS OF USE OF SUCH EQUIPMENT OR STRUCTURE; LOSS OF COMMODITY, OR LOSS OF PROFITS. IN NO EVENT SHALL S-M BE LIABLE FOR MORE THAN THE PURCHASE PRICE OF THE EQUIPMENT IN THIS CONTRACT.

This warranty shall not apply to any S-M's products that have been altered, or repaired by anyone other than an authorized S-M's service representative, and any product that which has been subject to abuse, misuse, neglect, or accident, nor to any product which shall be found to have been installed or operated in accordance with the S-M's printed operators manual.

This warranty will be declared null and void immediately if the purchaser, a representative of the purchaser, or anyone else shall modify, install, or cause to be installed, replacement parts not sold, distributed, or approved by the S-M.

The equipment covered by this Agreement is capable of handling a wide variety of materials, including those that are flammable and/or explosive. As such, there may be a fire and explosion hazard. Fire and explosion detection and suppression systems vary depending on the materials being processed and handled. Thus, Buyer is solely responsible for and must determine what fire and explosion protection is necessary for its facility, including for the equipment covered by the agreement. Buyer must supply all necessary fire and explosion detection and suppression equipment or systems.

S-M is not an expert in the chemical and biological properties of the infinite number of materials that might be processed in or handled by the equipment covered by the Agreement. Before processing or handling any materials that are or can be flammable, explosive, toxic or otherwise hazardous, Buyer must perform a thorough process hazard analysis and risk assessment of its entire process, including contingency plans for dealing with processing errors and upset conditions.

Much of the equipment that S-M manufacturers can be fitted with a wide variety of options that could be used to reduce specific hazards created by the product which it handles, including, for example, explosion relief panels, electrically grounded components, the ability to maintain an inert atmosphere, and remote sampling and cleaning. Unless specifically set out the Agreement, the equipment quoted does not contain these available safety features. Buyer shall be solely responsible for knowing or determining the hazards of its product and its process and for contacting S-M to learn about the availability of these safety features.

This warranty shall not be extended to gearboxes, motors, electrical controls, filters, or any purchased component that carries its own manufacturers warranty; the warranty on these products will be limited to the published warranties of their respective manufacturers.

All claims under this warranty are to be made, in writing, within 15 days of the date of failure to; S-M Enterprises, Inc., 2310 26th Street South, Moorhead, Minnesota 56560. Failure to do so will result in customers claim being waived.

S-M is not responsible for installation of the product, and is not liable for any loss or damage attributed to improper installation. Customer acknowledges that it is knowledgeable concerning the goods purchased; that customer has reviewed the limited warranty; and that the remedies provided are adequate to customer. S-M is not responsible or liable for any claim of personal injury or death. S-M neither assumes or authorizes any person to assume for S-M any other liabilities in connection with the sale of its -products. This warranty is subject to existing conditions of supply which may directly effect the ability of the manufacturer to obtain materials or manufacturer replacement parts.

Customer agrees to incorporate the terms of this limited warranty into subsequent sale or transfer of these goods to a third party such that the S-M's liability shall be expressed, limited to the terms and conditions of this limited warranty as well as the choice of law and choice of jurisdiction provisions of this agreement, If any party brings an action against S-M for other than those set forth in this limited warranty, customer agrees to defend S-M against for other than those set forth in this limited warranty, customer agrees to defend S-M against such claims at customers expense, including attorney's fees, and to indemnify and hold S-M harmless against any such claims or judgments thereon. In no event shall S-M's liability extend beyond the terms of the warranty provided to S-M's original customer.

Customer agrees that Customer's rights and responsibilities in regard to this transaction shall be governed by the law of the State of Minnesota, and shall be exclusive jurisdiction for bringing any disputes in regard to this transaction, which must be venued in District Court, Clay County, Minnesota.

This writing constitutes the entire representations of warranties, oral or written, express or implied, statutory or otherwise. This limited warranty may be modified only in writing, signed and notarized by S-M, at its home office in Moorhead, Minnesota.

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