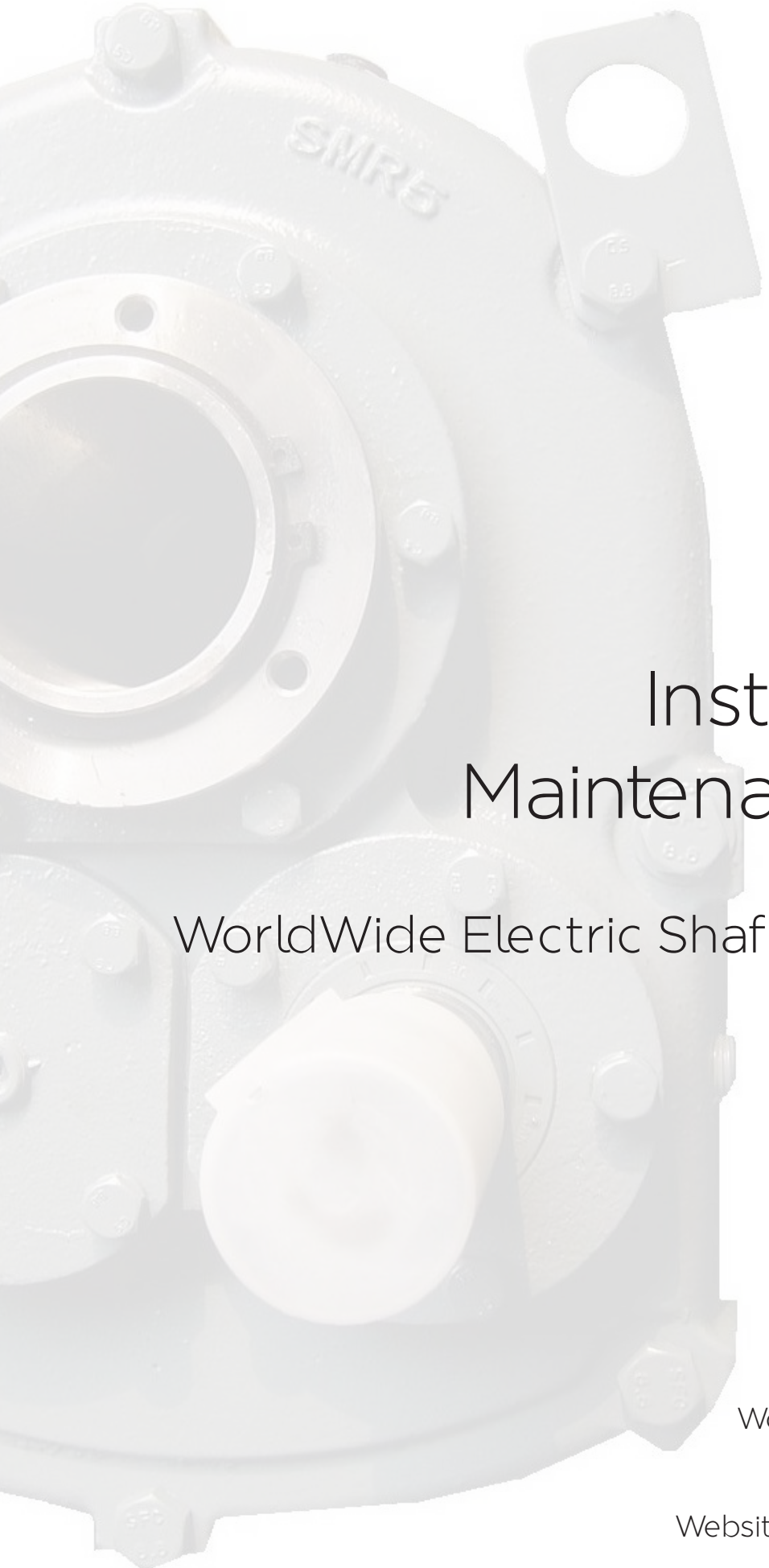

Installation and Maintenance Manual

WorldWide Electric Shaft Mount Reducers

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Installation

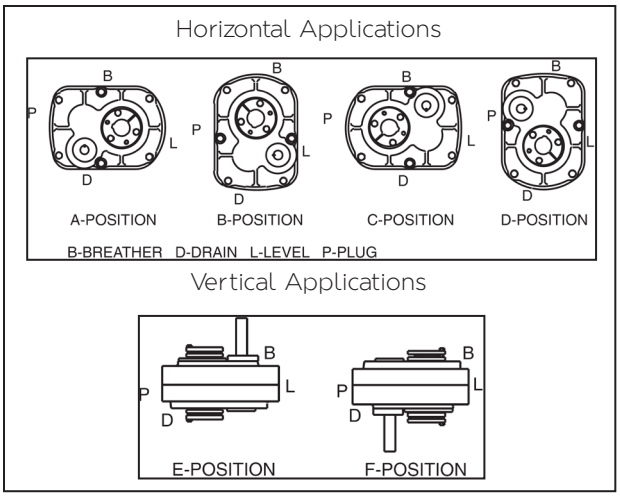
Satisfactory performance depends on proper installation, lubrication and maintenance. Therefore, it is important that the instructions in this manual are followed carefully.

1. Use eyebolts or lifting lugs to lift reducer.

2. Determine the running positions of the reducer (see Figure 1). Note: the reducer is supplied with four plugs around the sides. These plugs must be arranged relative to the running positions as follows: the bottom one is the drain plug. Throw away the tape that covers the filter plug in shipment and install it in the topmost hole. Of the three remaining plugs on the sides of the reducer, the lowest one is the minimum oil level plug.

The running position of the reducer is not limited to the six positions shown in Figure 1. However, if running position is over 20 degrees in position (B) and (D) or in 5 degrees in position (A) or (C) either way from sketches, the oil level plug cannot be used safely to check the oil level, unless during the checking, the torque arm is disconnected and the reducer is swung to within 20 degrees for position (B) and (D) or 5 degrees for position (A) or (C).

Figure 1- Mounting Positions



Note: Below 15 RPM output speed, oil level must be adjusted to reach the highest oil level plug (P).

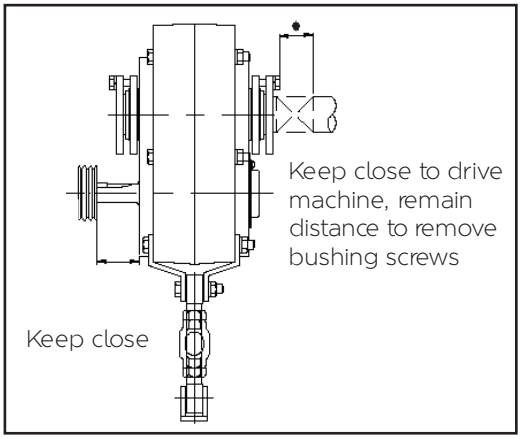
Because of the many possible positions of the reducer, it may be necessary or desirable to make special adaptations using the lubrication filling holes furnished along with other standard pipe fittings, stand pipes and oil level gauges as required.

3. Mount reducer on driven shaft as follows:

> WARNING: To ensure that the drive is not unexpectedly started, turn off and lock out or tag the power source before proceeding. Failure to observe these precautions could result in bodily injury.

A. Install pulley on gearbox input shaft as close to the reducer as possible and mount reducer on driven shaft as close to bearing as practical (remain minimum distance to remove bushing screw) (see Figure 2). Failure to do this will cause excess loads in the input shaft bearings and output bearings and could cause premature failure.

Figure 2.



Installation cont.

B. Install motor and wedge belt drive with the belt pulley at approximately 90 degrees to the center line between driven and input shafts (see Figure 3). This will permit tensioning of the wedge belt drive with the torque arm which should preferably be in tension. If output hub runs counter- clockwise, torque arm should be positioned to the right (see Figure 4).

Figure 3.

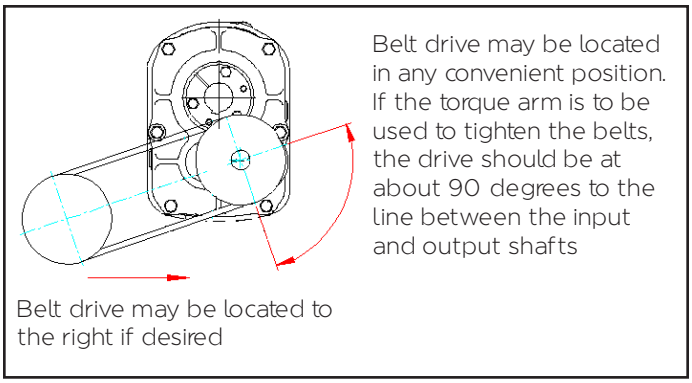
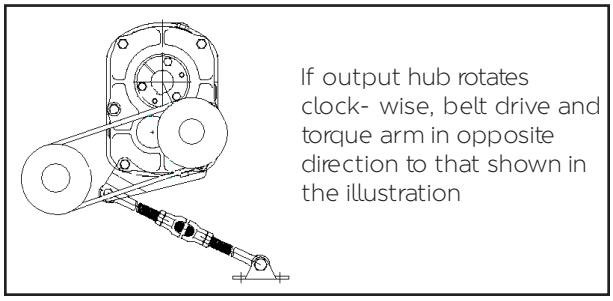
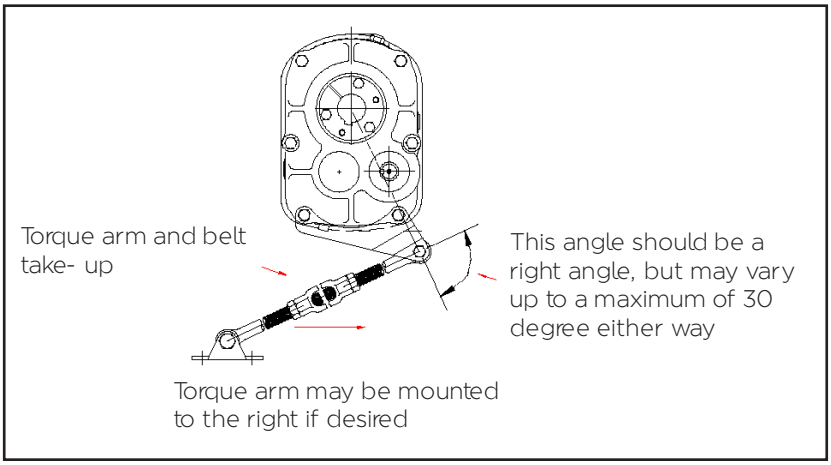


Figure 4.



C. Install torque arm fulcrum on a rigid support so that the torque arm will be at approximately 90 degrees to the center line through the driven shaft and the torque arm case bolt (see Figure 5). Make sure there is sufficient take- up in the turnbuckle for the belt tension adjustment.

Figure 5.



CAUTION: All WorldWide shaft mount reducers are shipped without oil. Every WorldWide shaft mount reducer must be filled with a recommended gear oil. Failure to observe these precautions could result in damage to or destruction of the equipment.

Lubrication Schedule

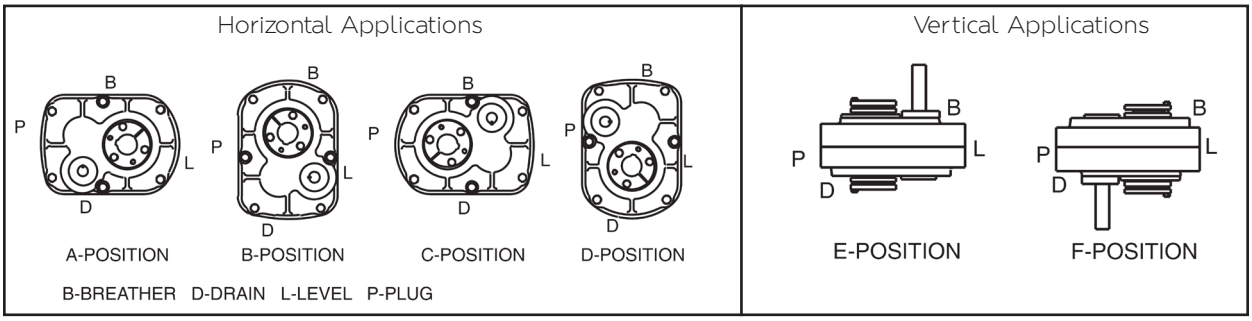
Model Number	15° To 60°F (-9° To 16°C)		50° To 125°F (10° To 50°C)	
Mobil	Mobil SHC 629	Mobil SHC 630	Mobil SHC 630	Mobil SHC 632
AGMA Rating	4	5	5	6
ISO Grade	150	220	220	320
SMR2	N/A	1-400 RPM	N/A	1-400 RPM
SMR3	151-400 RPM	1-150 RPM	151-400 RPM	1-150 RPM
SMR4	126-400 RPM	1-125 RPM	126-400 RPM	1-125 RPM
SMR5	101-400 RPM	1-100 RPM	101-400 RPM	1-100 RPM
SMR6	41-400 RPM	1-40 RPM	41-400 RPM	1-40 RPM
SMR7	41-400 RPM	1-40 RPM	41-400 RPM	1-40 RPM
SMR8	41-400 RPM	1-40 RPM	41-400 RPM	1-40 RPM
SMR9	41-400 RPM	1-40 RPM	41-400 RPM	1-40 RPM

CAUTION: All WorldWide shaft mount reducers are shipped without oil. Every WorldWide shaft mount reducer must be filled with a recommended gear oil. Failure to observe these precautions could result in damage or destruction of the equipment.

CAUTION: Too much oil will cause overheating and too little will result in gear failure. Check oil level regularly. More frequent oil changes are recommended when operating continuously, at high temperatures or under conditions of extreme dirt or dust.

For Best Results

1. Fill with recommended gear oil and operate for two weeks.
2. Drain after two weeks and flush with light oil.
3. Refill with recommended gear oil and continue.
4. Repeat every 2,500 hours to maximize unit life.



Model Number	Approximate Capacity (Quarts & Liters)					
Position	A	B	C	D	E	F
SMR2	0.875 Quarts 0.83 Liters	1 Quarts 0.95 Liters	0.625 Quarts 0.59 Liters	1 Quarts 0.95 Liters	1.625 Quarts 1.54 Liters	1.75 Quarts 1.66 Liters
SMR3	1.5 Quarts 1.42 Liters	1.5 Quarts 1.42 Liters	0.75 Quarts 0.71 Liters	2.25 Quarts 2.13 Liters	2.625 Quarts 2.48 Liters	3 Quarts 2.84 Liters
SMR4	1.875 Quarts 1.77 Liters	2.25 Quarts 2.13 Liters	1.25 Quarts 1.18 Liters	1.75 Quarts 1.66 Liters	3.375 Quarts 3.19 Liters	4.25 Quarts 4.02 Liters
SMR5	3.25 Quarts 3.08 Liters	4 Quarts 3.79 Liters	3.25 Quarts 3.08 Liters	4 Quarts 3.79 Liters	7 Quarts 6.62 Liters	8.625 Quarts 8.04 Liters
SMR6	4.25 Quarts 4 Liters	5 Quarts 4.7 Liters	4.25 Quarts 4 Liters	5 Quarts 4.7 Liters	8.625 Quarts 8.2 Liters	9.125 Quarts 8.6 Liters
SMR7	6.5 Quarts 6.1 Liters	8 Quarts 7.57 Liters	7.25 Quarts 6.86 Liters	9.25 Quarts 8.75 Liters	15.375 Quarts 14.55 Liters	16.375 Quarts 15.5 Liters
SMR8	8.5 Quarts 8 Liters	11 Quarts 10.4 Liters	10.5 Quarts 9.94 Liters	8.5 Quarts 8 Liters	19.125 Quarts 18.10 Liters	19.125 Quarts 18.1 Liters
SMR9	13 Quarts 12.3 Liters	13 Quarts 12.3 Liters	12.5 Quarts 11.83 Liters	14.25 Quarts 13.48 Liters	25.375 Quarts 24 Liters	25.375 Quarts 24 Liters

Replacement of Parts

IMPORTANT: Using tools normally found in a maintenance department, shaft mount reducers can be disassembled and re-assembled by careful attention to the instructions following.

Cleanliness is very important to prevent the introduction of dirt into the bearings and other parts of the reducer. A tank of clean solvent, an arbor press, and equipment for heating bearings and gears (for shrinking these parts on shafts) should be available.

The oil seals are of the rubbing type and considerable care should be used during disassembly and re-assembly to avoid damage to the surface which the seals rub on.

The key- seat in the input shaft, as well as any sharp edges on the output hub should be covered with tape or paper before disassembly or re-assembly. Also, be careful to remove any burrs or nicks on surfaces of the input shaft or out hub before disassembly or re-assembly.

Ordering Parts: When ordering parts for reducer, specify reducer size number, part name, part number, and quantity.

It is strongly recommended that, when a pinion or gear is replaced, the mating pinion or gear is replaced also.

If the large gear on the output hub must be replaced, it is recommended that an output hub assembly of a gear assembly on a hub be ordered to secure undamaged surfaces on the output hub where the output seals rub. However, if it is desired to use the old output hub press the gear and bearing off and examine the rubbing surface under the oil seal carefully for possible scratching or other damage resulting from the pressing operation. To prevent oil leakage at the shaft oil seals, the smooth surface of the output hub must not be damaged.

If any parts must be pressed from a shaft or from the output hub, this should be done before ordering parts to make sure that none of the bearings or other parts are damaged in removal. Do not press against outer race of any bearing.

Because old shaft rubber oil seals may be damaged in disassembly, it is advisable to order replacements for these parts.

Replacement of Parts cont.

Removing Reducer from Shaft

CAUTION: Remove oil external loads from drive before removing or servicing drive or accessories.

WARNING: To ensure that drive is not unexpectedly started, turn off and lock out or tag power source before proceeding. Failure to observe these precautions could result in bodily harm.

1. Remove bushing screws.

2. Place the screws in the threaded holes provided in the bushing flanges. Tighten the screws alternately and evenly until the bushings are free on the shaft. For ease of tightening screws, make sure screw threads and threaded holes in bushing flanges are clean.

DISASSEMBLY

1. Position the reducer on its side and remove all housing bolts. Drive dowel pins from housing. Gently tap the output hub and input shaft with a soft hammer (rawhide, not a lead hammer) to separate the housing halves. Open housing evenly to prevent damage to the parts inside.

2. Lift shaft gear, and bearing assemblies from housing.

3. Remove seals from housing.

Re- Assembly

1. Output Hub Assembly: Heat gear to 160- 180 degrees to shrink onto hub. Heat bearings to 130- 145 degrees to shrink onto hub. Any injury to hub surfaces where the oil seals rub will cause leakage, making it necessary to use a new hub.

2. Counter shaft Assembly: Shaft and pinion are integral. Press gear and bearings on shaft. Press against inner (not outer) race of bearing.

Replacement of Parts cont.

Re- Assembly cont.

3. Input Shaft Assembly: Shaft and pinion are integral. Press bearings on shaft. Press against inner (not outer) race of bearings (for SMR2 press against the ball bearing on shaft).

4. Drive the two dowel pins into place in the right- hand housing half. Apply sealant to carriers for R. H. side (back stop side) of reducer. Install carriers and torque bolts with 30-27 for SMR3 to 6, 50-45 lb.- ft. for SMR7 to 9, for SMR2 do not have this carriers.

5. Place R. H. housing half on block to allow for protruding end of output hub.

6. Install bearing cups in right- hand housing half, making sure they are properly sealed (for SMR2 do not have this step).

7. Mesh output hub gear and small counter shaft gear together and set in place in housing. Make sure bearing rollers (cones) are properly seated in their cups. Set bearing cups for left- handed housing half in place on their rollers (except SMR2).

8. Clean housing flange surfaces on both halves, making sure not to nick or scratch the face. Apply sealant to flange face (make sure that the sealant is placed between bolt holes and inside of the surface). Place L.H. housing into position and tap with a soft hammer (rawhide, not lead hammer) until housing bolts can be used to draw housing halves together. Torque housing bolts per torque values 30- 27 lb.- ft. for SMR2, 50- 45 lb.- ft. for SMR3 to 4, 75- 68 lb.- ft. for SMR5 to 6, 150- 135 lb.- ft. for SMR7 to 9.

9. Place output hub seal carrier into position without shims and install two carrier screws diametrically opposed. Torque each screw to 25 in.- lbs. Rotate the output hub to roll in the bearings and then torque each screw to 50 in.- lbs. Again turn output hub to roll in the bearings. With a shim thickness, take the average of the two feeler gauge readings. Remove carrier and install the required shims plus 0.002. Install carrier with shims and torque bolts per torque values 17- 15 lb.- ft. for SMR3, 30- 27 lb.- ft. for SMR4 to 6, 50- 45 lb.- ft. for SMR7- 9, for SMR2 do not have this step.

Replacement of Parts cont.

Re- Assembly cont.

Rotate hub assembly, tap lightly with rawhide mallet on end of hub, while rotating, to ensure bearings are sealed. Using a dial indicator check end play of hub bearings, end play should be 0.001- 0.003. Repeat this process as necessary to obtain proper end play. Place sealant inside the carrier at the shim I.D. and install carrier on reducer housing. Torque carrier bolts to value 17- 15 lb.- ft. for SMR3, 30- 27 lb.- ft. for SMR4 to 6, 50- 45 lb.- ft. for SMR7 to 9, for SMR2 do not have this step.

10. Adjust the counter shaft bearings using the same method as in step 9 above. The axial end play should be 0.001" to 0.003".

11. Again, using the same procedure as in step 9, adjust the input shaft bearing, except the axial end play should be 0.002" to 0.004". Using gaskets install input shaft cover and counter shaft cover to right- handed housing half. Install input and output seals. Extreme care should be used when installing seals to avoid damage due to contact with sharp edges on the input shaft or output hub. The possibility of damage and consequent oil leakage can be decreased by covering all sharp edges with tape prior to seal installation. Fill cavity between seal lips with grease. Seals should be pressed or tapped with soft hammer evenly into place in the carrier, applying pressure only on the outer edge of the seals. A slight oil leakage the seals may be evident during initial running, but should disappear unless seals have been damaged.

12. Install bushing backup plates and snap rings on Taper Bushing reducers. (Please note SMR6, 8, 9's snap rings have a little notch for the bushing screw, and the notch must have a right angle to output hub's key seat.)

13. Install the backstop into the housing (please take attention to the rotation of the output hub's key seat.)

14. Install the backstop cover onto the box, if the cover was wrought iron, do not forget the backstop gasket, if the cover was cast iron, do not forget to place some sealant to the joint surface (inside the bolt holes).

Replacement of Parts cont.

Table 1- Bearings for SMR gearbox (bearing type and dimensions inner *outer* width). The SMR2 has a ball bearing. The SMR3 to 9 have roller bearings.

	Bearing Position					
Model Number	**Input Shaft Input Side**	**Input Shaft Output Side**	**Intermediate Shaft Input Side**	**Intermediate Shaft Output Side**	**Output Hub Input Side**	**Output Hub Output Side**
SMR2	6206 30*62*16	6305NR 25*62*17	6305 25*62*17	6305 25*62*17	6013 65*100*18	6013 65*100*18
SMR3	LM48548A/LM48510 34.925*65.088*18.034	15102/15245 (25.4*62*19.05)	15102/15245 25.4*62*19.05	15102/15245 25.4*62*19.05	LM814849/LM814810 77.788*117.475*25.4	LM814849/LM814810 77.788*117.475*25.4
SMR4	32208J 40*80*24.75	30306J 30*72*20.75	32206J 30*62*21.25	32206J 30*62*21.25	32017XJ 85*130*29	32017XJ 85*130*29
SMR5	32210J 50*90*24.75	30308J 40*90*25.25	32208J 40*80*24.75	32208J 40*80*24.75	32019XJ 95*145*32	32019XJ 95*145*32
SMR6	32212J 60*110*29.75	30310J 50*110*29.25	32309J 45*100*38.25	33209J 45*85*32	32022XJ 110*170*38	32022XJ 110*170*38
SMR7	33113J 65*110*34	30310J 50*110*29.25	32309J 45*100*38.25	32309J 45*100*38.25	32024XJ 120*180*38	32024XJ 120*180*38
SMR8	32214J 70*125*33.25	30312J 60*130*33.5	33213J 65*120*41	32212J 60*110*29.75	32928 140*190*32	32928 140*190*32
SMR9	32313J 65*140*51	30313J 65*140*36	30314J 70*150*38	30314J 70*150*38	32934 170*230*38	32934 170*230*38

Table 2- Oil Seals for SMR gearbox (all SMR oil seals are TC double lip oil seals).

Model Number	**Input Shaft (1 Required)**			**Output Shaft (2 Required)**		
	Housing Diameter	**Shaft Diameter**	**Width**	**Housing Diameter**	**Shaft Diameter**	**Width**
SMR2	62	30	8	100	65	10
SMR3	57.2	32	10	95.25	73.03	9.53
SMR4	55	38	8	120	80	10
SMR5	75	50	10	120	95	10
SMR6	95	60	10	160	110	12
SMR7	95	60	10	160	120	13
SMR8	100	65	10	170	140	12
SMR9	100	65	10	190	165	13

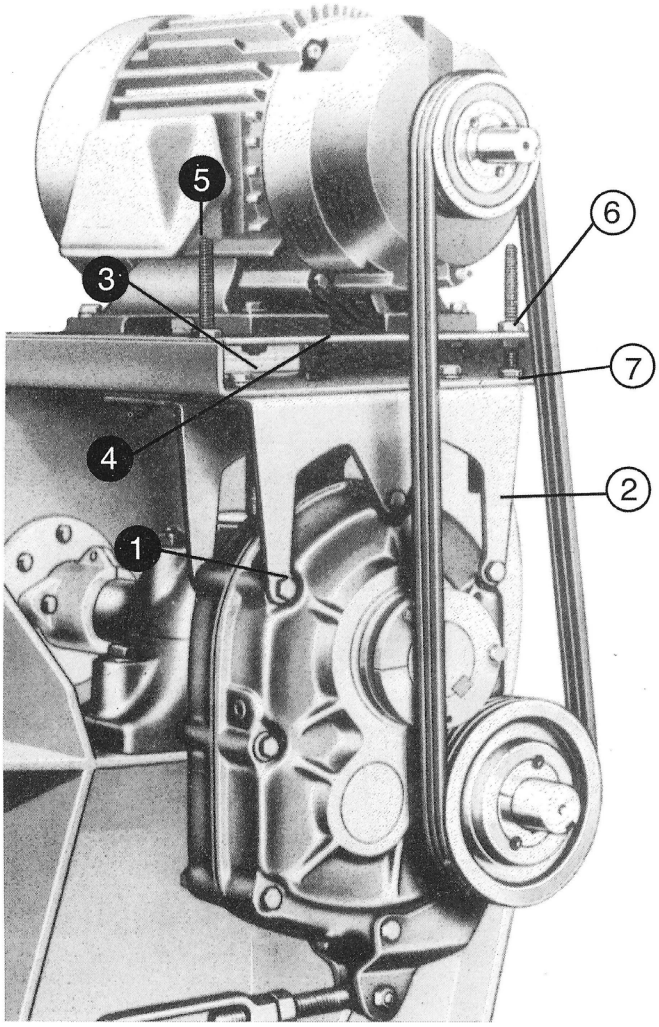
Table 3- Actual Ratio and Maximum input speed (rpm).

Model Number	**Nominal Ratio 15:1**		**Nominal Ratio 25:1**	
	Actual Ratio	**Maximum Input Speed**	**Actual Ratio**	**Maximum Input Speed**
SMR2	14.04	1974	23.37	1994
SMR3	14.87	2083	24.75	2100
SMR4	15.13	2118	24.38	2072
SMR5	15.4	1925	25.56	2044
SMR6	15.34	1916	25.14	2010
SMR7	15.23	1827	24.84	1844
SMR8	15.08	1809	24.62	1847
SMR9	15.12	1814	25.66	1925

All dimensions on this page are in millimeters (mm)

Motor Mount Installation

WARNING: To ensure that the drive is not unexpectedly started, turn off and lock out or tag the power source before proceeding. Failure to observe these precautions could result in bodily harm.



Note: Refer to photo for positions of all parts before installation

1. Remove the two or three bolts required for mounting the motor mount from the reducer housing. Install the front and rear supports (2) using the new reducer bolts (1) supplied with the motor mount. Make sure support flanges face output side of reducer. Tighten bolts securely.

2. Mount bottom plate (3) on supports with bolts supplied. Insert bolts (7) from top through slotted holes. Add flat washer, lock washer, and nut. Hand tighten.

3. Thread two nuts (6) on each threaded stud (5) leaving approximately 1" of stud protruding at one end. Insert threaded stud with 1" of threads through corner holed of bottom plate. Thread a hex nut (6) on the studs and tighten securely.

4. Slide top plate (4) over the threaded stud, making sure the center handling hole is positioned opposite input side of reducer. Thread a hex nut (6) on the studs and tighten securely.

5. Locate the proper position for the motor and bolt it to the top plate. Tighten bolts securely.

6. Install motor sheave and reducer sheave as close to motor and reducer housings as possible. Accurately align the motor and reducer sheave by sliding bottom plate in relation to supports. Tighten bolts (7) securely.

7. Install V- belts and tension belts by alternately adjusting nut (6) on the threaded studs (jackscrews). Make certain that all bolts are securely tightened, the V- belt drive is properly aligned and an appropriate belt guard is installed before operating the drive.

Backstop Installation

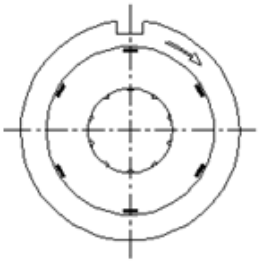
WARNING: If the reducer is filled with oil, drain off oil before proceeding.

Step 1: Remove backstop cover and gasket from the reducer body.

Step 2: Determine the direction of required shaft rotation.

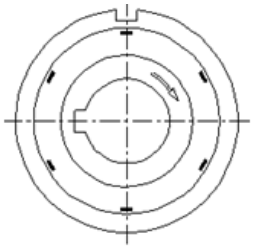
IMPORTANT: The arrow direction in our backstop shows the free direction of the race where is arrow marked. Detail as followed:

For sizes 2, 3, 4, 5 Backstops



When the backstop does not have inner race, the rotation arrow are marked on the outer race, meaning the outer race's free direction.

For sizes 6, 7, 8, 9 Backstops



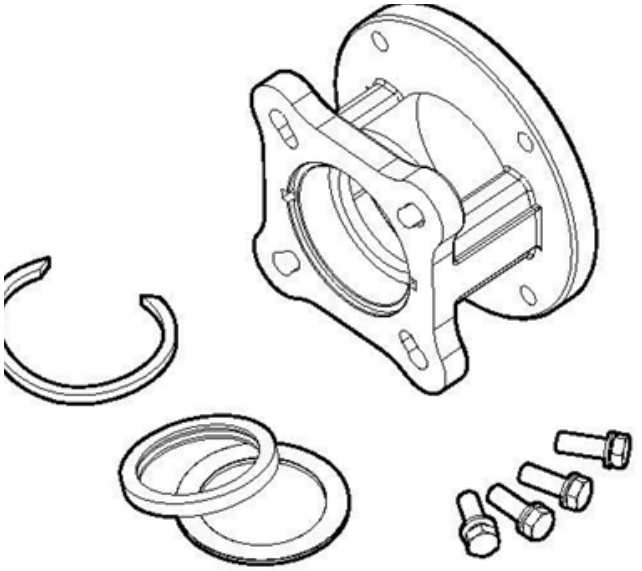
When the back stop has inner race, the rotation arrow is marked on the inner race, it means the inner race's free direction, which is the same as the shaft's free direction.

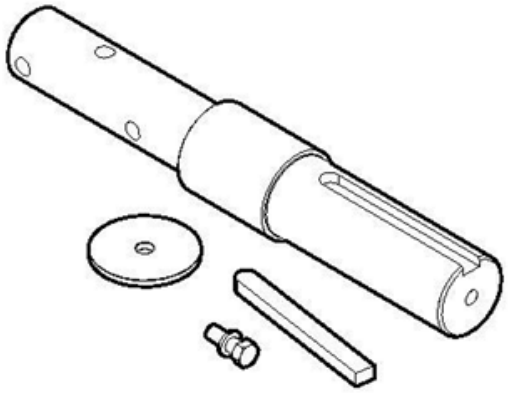
Feed the backstop into the housing, feed the key into the backstop's outer race and housing's key ways. In case of backstops with inner race, feed another key into the backstop's inner race and the shaft's key ways.
If you need the shaft rotate in another way, turn around the backstop so that the side which has arrow faces the reducer.

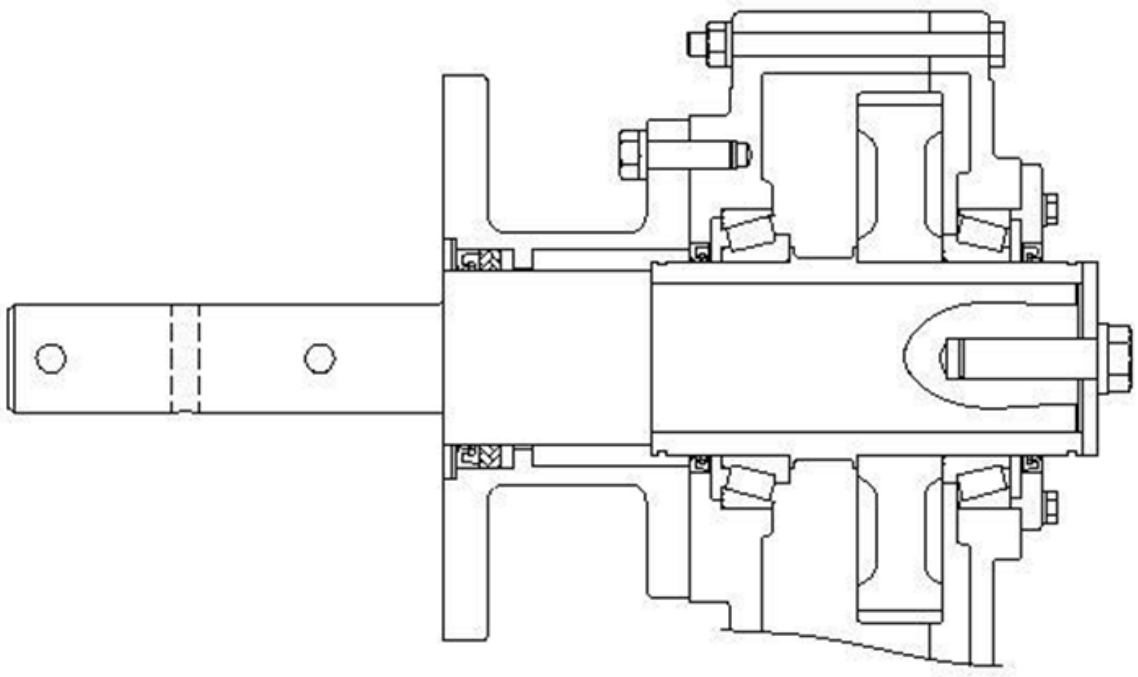
Step 3: Install the backstop cover. (Replace the gasket where fitted, or use some sealant for oil seal.)
Step 4: Refill reducer with correct grade of oil.

CAUTION: When pressing the backstop into the housing DO NOT use a hammer. The backstop may be tapped gently if necessary. To change the backstopping direction, you will have to take out the existing backstop with professional tool.

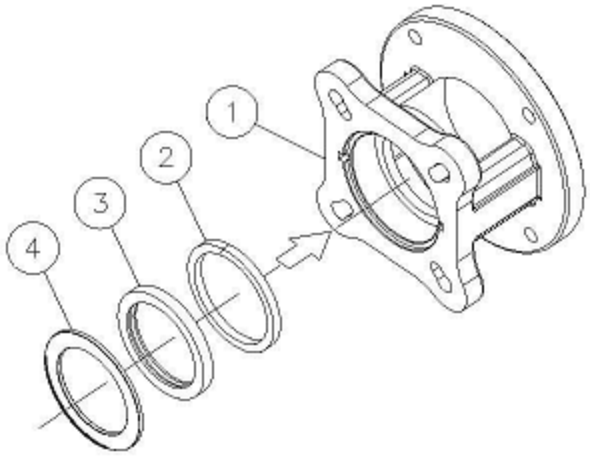
Screw Conveyor Drives







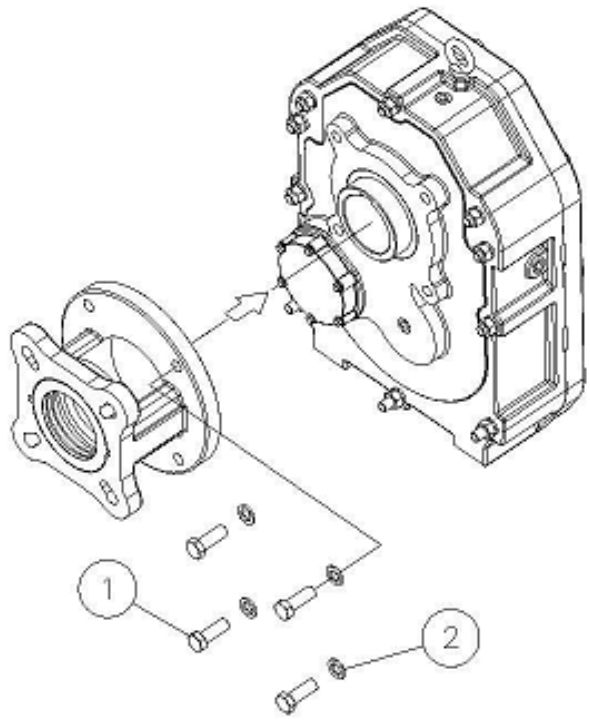
Screw Conveyor Accessories Assembly



Step 1: Adapter Assembly

1. Adapter
2. Gland Seal
3. Oil Seal
4. Seal Retainer

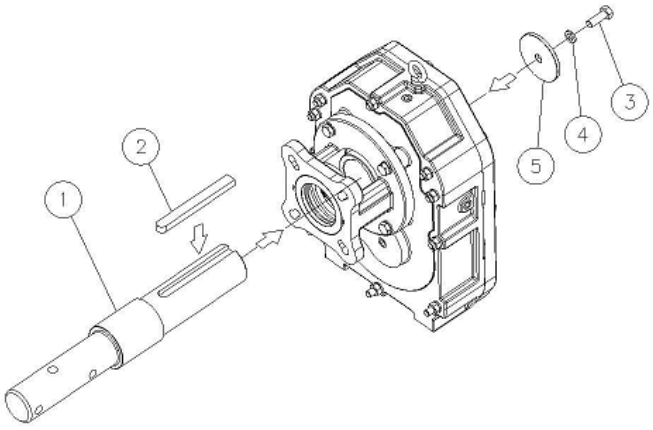
Follow the sequence of gland seal oil seal and seal retainer to complete the adapter assembly.



Step 2: Reducer Assembly

1. Remove Bushing Kit Ring
2. Adapter Bolt
3. Spring Washer

Place adapter bolts through the spring washers, then fasten the adapter kit onto the reducer.



Step 3: Drive Shaft Assembly

1. Drive Shaft
2. Drive Shaft Key
3. Bolt
4. Spring Washer
5. Shaft Retainer

First, strike the key onto the shaft. Second, place the shaft through the reducer. Third, place the spring washer through the bolt and shaft retainer then fasten it onto the drive shaft.

Screw Conveyor Adapters

FIG. 1

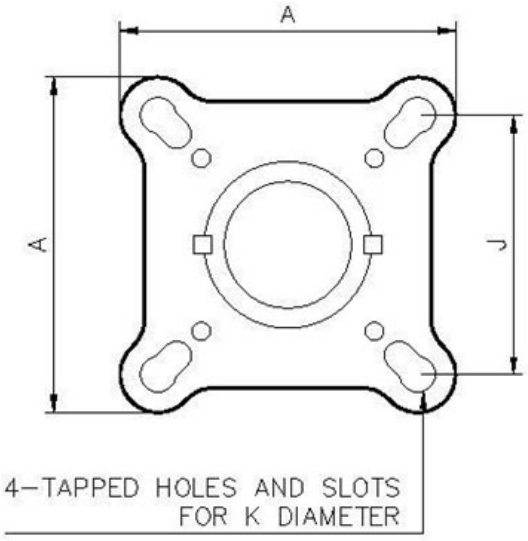
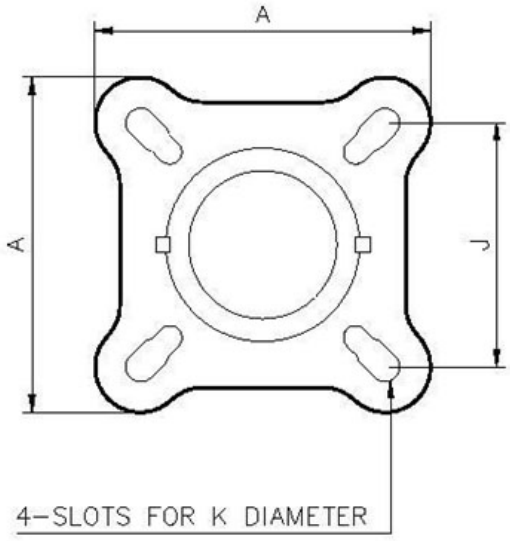
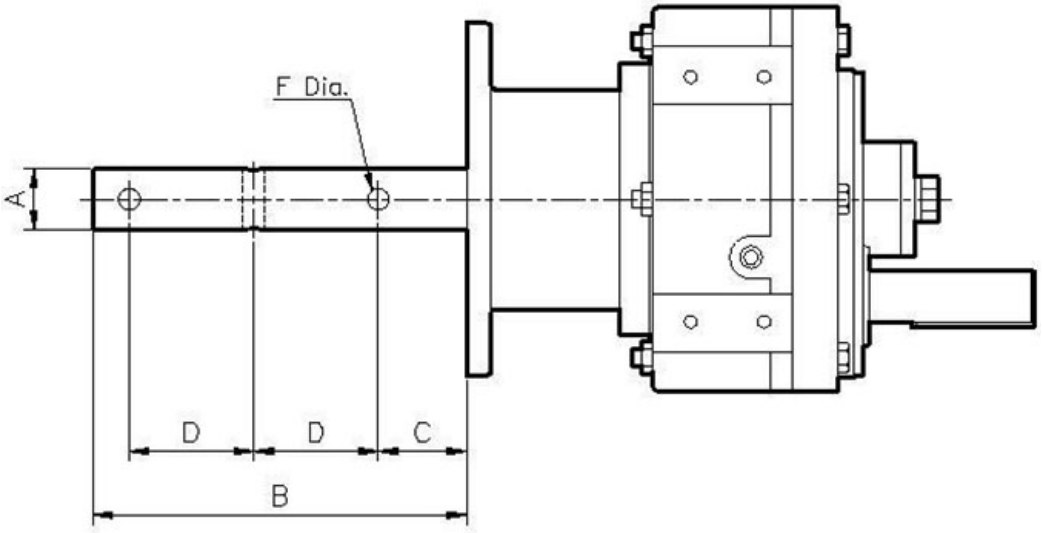


FIG. 2



Reducer Size	Drive Shaft Dia.	J	K	A	FIG.
#2	1-1/2	4	1/2-13UNC	7.75	1
	2	5-1/8	5/8		
	2-7/16	5-5/8	5/8		
	3	6	3/4		
#3	1-1/2	4	1/2-13UNC	8.50	
	2	5-1/8	5/8		
	2-7/16	5-5/8	5/8		
	3	6	3/4		
#4	1-1/2	4	1/2-13UNC	9.26	
	2	5-1/8	5/8		
	2-7/16	5-5/8	5/8		
	3	6	3/4		
	3-7/16	6-3/4	3/4		
#5	2	5-1/8	5/8	9.26	2
	2-7/16	5-5/8	5/8		
	3	6	3/4		
	3-7/16	6-3/4	3/4		
#6	2-7/16	5-5/8	5/8	9.26	
	3	6	3/4		
	3-7/16	6-3/4	3/4		

Screw Conveyor Drive Shafts



Reducer Size	Drive Shaft Dia. A	B	C	D	F
#2	1-1/2	9.00	2.13	3.00	0.52
	2	9.00	2.13	3.00	0.64
	2-7/16	9.69	2.75	3.00	0.64
	3	9.88	2.88	3.00	0.77
#3	1-1/2	9.00	2.13	3.00	0.52
	2	9.00	2.13	3.00	0.64
	2-7/16	9.69	2.75	3.00	0.64
	3	9.88	2.88	3.00	0.77
#4	1-1/2	9.00	2.13	3.00	0.52
	2	9.00	2.13	3.00	0.64
	2-7/16	9.69	2.75	3.00	0.64
	3	9.88	2.88	3.00	0.77
	3-7/16	14.13	3.88	4.00	0.89
#5	2	9.00	2.13	3.00	0.64
	2-7/16	9.69	2.75	3.00	0.64
	3	9.88	2.88	3.00	0.77
	3-7/16	14.13	3.88	4.00	0.89
#6	2-7/16	9.69	2.75	3.00	0.64
	3	9.88	2.88	3.00	0.77
	3-7/16	14.13	3.88	4.00	0.89

Guidelines for Long- Term Storage

Guidelines for Long- Term Storage:

During periods of long storage, or when waiting for delivery or installation of other equipment, special care should be taken to protect a gear reducer to have it ready to be in the best condition when placed into service.

By taking special precautions, problems such as seal leakage and reducer failure due to lack of lubrication, improper lubrication quality, or contamination can be avoided. The following precautions will protect gear reducers during periods of extended storage.

Preparation:

1. Drain the oil from the unit. Add a vapor phase corrosion inhibiting oil in accordance with followed table.

Table 4- Quantities of Vapor Phase Oil

Size	2	3	4	5	6	7	8	9
Liters	.1	.1	.2	.3	.4	.5	.6	.9

2. Seal the unit airtight. Replace the air breather plug with a standard pipe plug and wire the vent to the unit.

3. Cover the shaft extension with a waxy rust preventative compound that will keep oxygen away from the bare metal.

4. The instruction manuals and lubrication tags are paper and must be kept dry. Either remove these documents and store them inside or cover the unit with a durable waterproof cover which can keep moisture away.

5. Protect reducer from dust, moisture, and other contaminants by storing the unit in a dry area.

6. In damp environments, the reducer should be packed inside a moisture- proof container or an envelope of polyethylene containing a desiccant material. If the reducer is to be stored outdoors, cover the entire exterior with a rust preventative.

Guidelines for Long- Term Storage cont.

When Placing the Reducer into Service:

1. Assemble the vent plug into the proper hole.

2. Clean the shaft extensions with petroleum solvents.

3. Fill the unit to the proper oil level using a recommended lubricant. The vapor phase corrosion inhibiting oil will not affect the new lubricant.

4. Follow the installation instructions provided in this manual.

Limited Warranty

Limited Warranty:

WorldWide Electric Corporation (The Company) warranties its products to be free from defect in materials or workmanship to the original purchaser for a period of two (2) years from the date of purchase. For this warranty to be effective, this product must be installed, used and maintained by the original purchaser in the accordance with good industry standards. The warranty does not cover normal wear, tear and erosion from use, misuse, abuse or corrosion.

In the event of failure, it shall be the responsibility of the original purchaser to notify The Company either in writing or by telephone to make arrangements for the correction of the problem. The purchaser shall be responsible for transportation charged connected with the return, exchange or repair of parts. Returns found defective upon inspection by our warranty department or authorized warranty service agent will be replaced free of charge.

The Company shall not be liable for any labor cost connected with the replacement of the equipment, the replacement of the parts or adjustments to the equipment by the purchaser or their contractor without The Company's prior written approval.

The Company, as the exclusive remedy under this warranty, shall at it's option repair or replace defective items or, if agreed upon, refund the purchase price less reasonable allowance for depreciation exchange for product.

THE COMPANY MAKES NO OTHER WARRANTIES AND ALL IMPLIES OR EXPRESSED WARRANTIES AND REPRESENTATIONS, EXCEPT THAT OF TITLE, ARE DISCLAIMED. ALL IMPLIED WARRANTIES INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE OR USE BUT NOT LIMITED TO JUST THOSE THAT ARE DISCLAIMED. LIABILITY FOR DAMAGES AND LOSSES UNDER ANY AND ALL WARRANTIES WHETHER IN CONTACT, TORT OR OTHERWISE ARE EXCLUDED TO THE EXTENT EXCLUSION IS PERMITTED BY LAW.