



# Technical Manual

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## SAFETY PRECAUTIONS



This safety alert symbol is used here and throughout this manual to call your attention to instructions concerning your personal safety. Carefully read and follow these instructions and observe all safety and danger, warning and caution graphics mounted on various areas of the machine.

Be certain anyone servicing this machine is aware of these SAFETY PRECAUTIONS. In the event you question your ability to safely perform any of the enclosed maintenance and operational procedures contact your regional Marion service representative or the factory.

The following defines distinctions between safety instructions. In all these definitions the safety alert signal is used.



**DANGER:** Denotes extreme intrinsic hazard which exists and could result in high probability of death or irreparable injury if proper precautions are ignored.



**WARNING:** Denotes a hazard exists which can result in injury or death if proper precautions are ignored.



**CAUTION:** Denotes a reminder of safety practices or directs attention to unsafe practices which could result in personal injury if proper precautions are ignored.

An example of a safety alert symbol and special safety instructions is shown below.



**DANGER:** Inherent danger exists in the operation of any high voltage electrical equipment. A safe grounding system includes ground conductors in the power cable, a neutral grounding resistor and related relays and switchgear. A ground continuity check system is required by law in many parts of the world.

Operating, maintaining or servicing this machine can be dangerous unless performed properly. Each person must satisfy himself and his employer that he is alert and has the necessary skill and information, proper tools and equipment, and all methods are safe and correct. Factory service representatives and specialists are available to provide additional information or technical assistance.



**VISUAL INSPECTION** of the machine should be performed by the operator at the beginning of each shift. A potential problem may be prevented if discovered early. The following check list should help with the inspection.

**GENERAL CHECK LIST** for all areas of the machine:

- Is power source properly grounded
- Are guards, cover plates and safety devices secured in place
- All wiring harness secured in proper manner
- Are electrical terminals tight
- All loose pieces stored in proper place or removed from machine
- Check ALL hardware for tightness, missing bolts, nuts, pins, etc.
- Proper lube supply to all bearing and lube points
- All lube (grease) spills wiped up
- The machine thoroughly CLEAN

**LOWER FRAME CHECK LIST** – Note the following items:

- Trail cable condition
- Air and lube lines connections
- Oil level in gear cases
- No obstructions in roller path or rotating gear
- Crawler belt(s) adjustment and condition
- Crawlers and lower frame for cracks and/or broken welds

**FRONT END EQUIPMENT** – Check the following items:

- Bucket for worn, broken or missing teeth, loose or missing pins, weld cracks
- Note condition of drag and dump chains
- Boom, mast and gantry for cracks, bent pipes and/or plates
- Condition of fairlead components
- Condition of boom and mast support ropes
- Condition of hoist and drag ropes
- Lubrication lines connections

**MACHINERY HOUSE** – Check the following:

- Automatic Lube systems has adequate lube supply
- Gear cases lube levels
- Air compressor lube level and drive belts
- All gearing for cracks, wear, proper lube
- Air and lube lines connections

**NOTE:** If any problems are found after going thru the above check lists, notify maintenance at ONCE, so correction can be made.

**NOTE:** Unusually dusty or dirty atmosphere, high humidity and extreme temperatures alter the effective life of a lubricant. Therefore, it shall be the responsibility of the owner/operator to determine the most effective lubricant interval according to existing environmental conditions for all components, bearings (plain and anti-friction), gears, gear cases, etc.

**WIRE ROPE PENDANT LUBRICATION** dislodges with the movement of strand against strand. This permits moisture to enter and causes deterioration of the rope. The area where greatest deflection occurs is at or adjacent to the socket connection. Experience shows this the most likely point of boom point support wire rope failure. To avoid this condition and increase useful life expectancy of the wire rope support rope apply wire rope lube to the socket area using the hand spray.

**CHECK LIST** for initial lubrication start up and any inspection following:

Clean up spilled petroleum products immediately.

Remove promptly any petroleum product that gets on your skin.

Don't use gasoline, naphtha, turpentine, or similar solvents to remove oil or grease from your skin.

Don't use dirty wipe cloths.

Avoid breathing oil mist or solvent vapors.

Don't wear oil-soaked garments.

Remove grease accumulation around bearing and gears.

All grease piping connected and filled.

Proper lube supply to all bearing and lube points.

**NOTE:** All anti-friction bearings and bushings have correct initial lube fill per manufacturer's recommendations.

Proper oil level in all gear cases.

Open and semi-enclosed gear teeth coated with lube.

Automatic lubrication system with adequate lube supply.

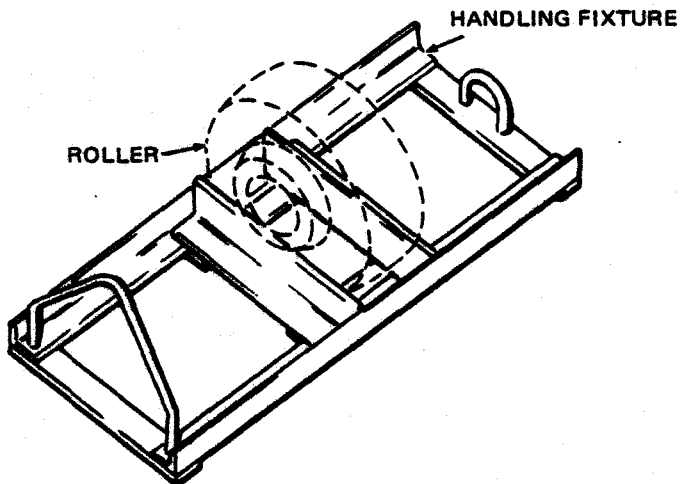
<u>NAME OF PART</u>	<u>TYPE</u>	<u>NO. OF POINTS</u>	<u>LOCATION</u>	<u>LUB. SYM.</u>	<u>METHOD &amp; FREQUENCY</u>
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**LUBRICATION OF UPPER FRAME (cont.)**

Hoist Motor Ext. Shaft	Anti-Friction	2	Bearing Retainer	MPG	Man., 500 hrs.
Hoist Motor Coupling	—	—	Inside Hub	MPG	Check, 30 days 3-6 mos. lube
Hoist Brake	—	11	—	MPG	Man., weekly
Hoist Motor	Anti-Friction	—	Motor End Casting	EMG	Man., see elec- trical manual
Drag Drum Gear	—	4	Drip on Teeth	OGL	Auto, 12 min.
Int. Drag Gear	—	5	Drip on Teeth	OGL	Auto, 12 min.
Drag Drum Support Bearing	Anti-Friction	2	Top of Boss	MPG	Man., 500 hrs.
Int. Drag Shaft	Anti-Friction	2	Bearing Housing	MPG	Man., 500 hrs.
Drag Motor Ext. Shaft	Anti-Friction	2	Bearing Retainer	MPG	Man., 500 hrs.
Drag Motor Coupling	—	—	Inside Hub	MPG	Check, 30 days 3-6 mos. lube
Drag Motor	Anti-Friction	—	Motor End Casting	EMG	Man., see elec- trical manual
Drag Brake	—	—			No lubrication required
Swing Gear Case	—	2	Fill at Breather 101 gal. each	GL	Check daily at dip stick
Swing Motor	—	—	Motor End Casting	EMG	Man., see elec- trical manual

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Remove lube guard and disconnect lube piping to roller. Remove roller shaft retainer bolt from back side of shaft. Support roller on jack and cribbing or use a handling fixture similar to sketch. Each roller weighs about 1,000 pounds (with bushing and thrust washers).



Pull the 220 pound shaft from outside of crawler side frame. Carefully lower roller. As roller clears side frame, clamp thrust washers to prevent loss of dowel pins and springs.

Reverse operation to install new roller. Be sure to fill bushing with grease before replacing lube guard. Reconnect crawler belt and adjust tension.

NOTES:

Remove the bearing retainer from the right end of the shaft. Pull the shaft (1,290 pounds) from the right side of the case. Move the intermediate gear toward the front of the case and block. The main propel shaft and first intermediate shaft must be removed before the intermediate gear can be removed from the case.

**REMOVE THE MAIN PROPEL SHAFT** by first removing the bearing retainer (216 pounds), oil seal and shims from the right end of the shaft and the oil seal from the left hand bearing retainer.

Block or suspend the main propel gear (4,800 pounds). Pull the shaft (2,940 pounds) from right side of the gear case.

**NOTE:** As the shaft is being pulled, the roller bearing and spacer at left of propel gear must be held in place until the shaft is removed.

Lift the main propel gear out of the case. Remove the left hand propel gear spacer and roller bearing.

**REMOVE FIRST INTERMEDIATE PROPEL SHAFT** next. Block up or suspend the first intermediate gear (1,204 pounds).

Remove the left hand retainer (55 pounds) and shims. Remove the bearing retainer from the left end of the quill shaft. Suspend the quill shaft (633 pounds). Remove the right hand bearing carrier (250 pounds). Remove the quill shaft from right side of case. Lift the first intermediate gear from the case.

**NOTE:** When pulling quill shaft the left bearing must be held in place until the shaft is removed.

The second intermediate gear can now be removed from the case.

Clean the gear case thoroughly after all parts are removed. Clean and check all parts for damage or excessive wear. Replace defective parts.

#### **ASSEMBLY OF PROPEL COMPONENTS:**

Lower the second intermediate gear, with the hub counterbore toward the right side, into the gear case. Block gear to the front (not in position) of case.

**FIRST INTERMEDIATE PROPEL SHAFT** – Install the gear spacer on long end of the quill shaft. Heat the right hand bearing and install on quill shaft.

## BRAKE REMOVAL AND INSTALLATION –



**CAUTION:** Read these instructions thoroughly and review until you fully understand the brake removal and installation sequence before proceeding with the work described in this section. Failure to follow these instructions will result in unreasonable exposure to hazardous conditions or personal injury.

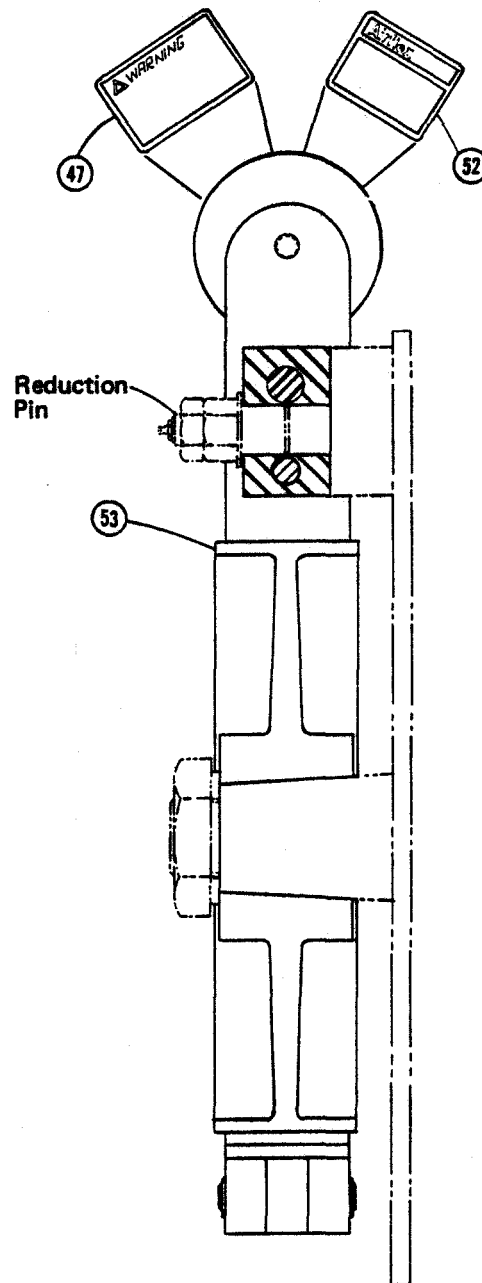
### A. REMOVAL OF BRAKE

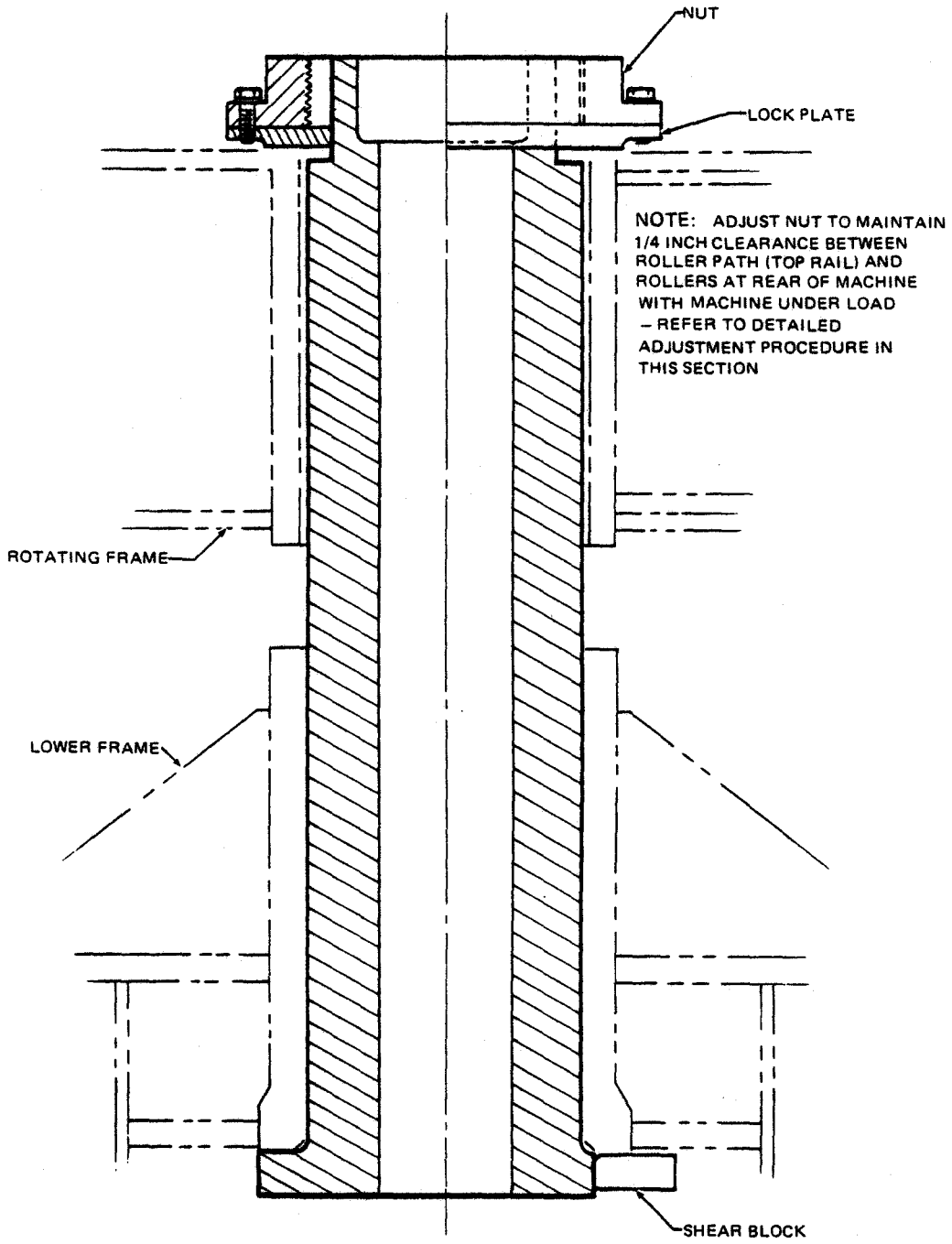
This brake is supported and reacted by a single reaction pin. The brake is held in position on the pin by a washer and two locknuts. For brake removal, proceed as follows:

1. Set and block the machine in a safe position to prevent hazards when the brake is released. Disconnect all electrical power.
2. With air released from cylinder (34), disconnect the flexible air connection into the cylinder.
3. Detach spring shields (39) by removing cap screws (40) and lockwashers (41).
4. Back off two stop nuts (18) from one end of spring rod (15) until the outboard nut is flush with the end of the spring rod (15). The inboard nut must be touching the outboard nut. Then, from the other end of the spring rod (15) remove the outboard stop nut (18) and back off the inboard stop nut until it is flush with the end of the spring rod.



**WARNING:** Failure to follow this procedure can cause the spring/rod assembly to become a projectile capable of causing damage and/or personal injury.





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**REASSEMBLE INTERMEDIATE HOIST SHAFT ASSEMBLY.** First, lightly lube the shaft and slide the pinion on until it seats.

Slide the inner bearing retainer and spacer onto the shaft, against the pinion.

Heat the bearing to 200 degrees F.

Install the bearing on the shaft and secure with the retainer plate and cap screws. Wire lock cap screws.

Install the housing and bearing cover.

Support the intermediate gear and slide it onto the shaft.

Install the inner bearing retainer and spacer on left end of shaft.

Heat the bearing to 200 degrees F.

Install the bearing on the shaft and secure with the retainer plate and cap screws. Wire lock the cap screws.

Install the housing and bearing cover.

Attach a lifting device to the intermediate hoist shaft. Pick up the shaft and position it in the frame. Be sure all gears and pinions mesh properly.

Install the rod bolts at each end of the shaft.

Reinstall drum shaft.

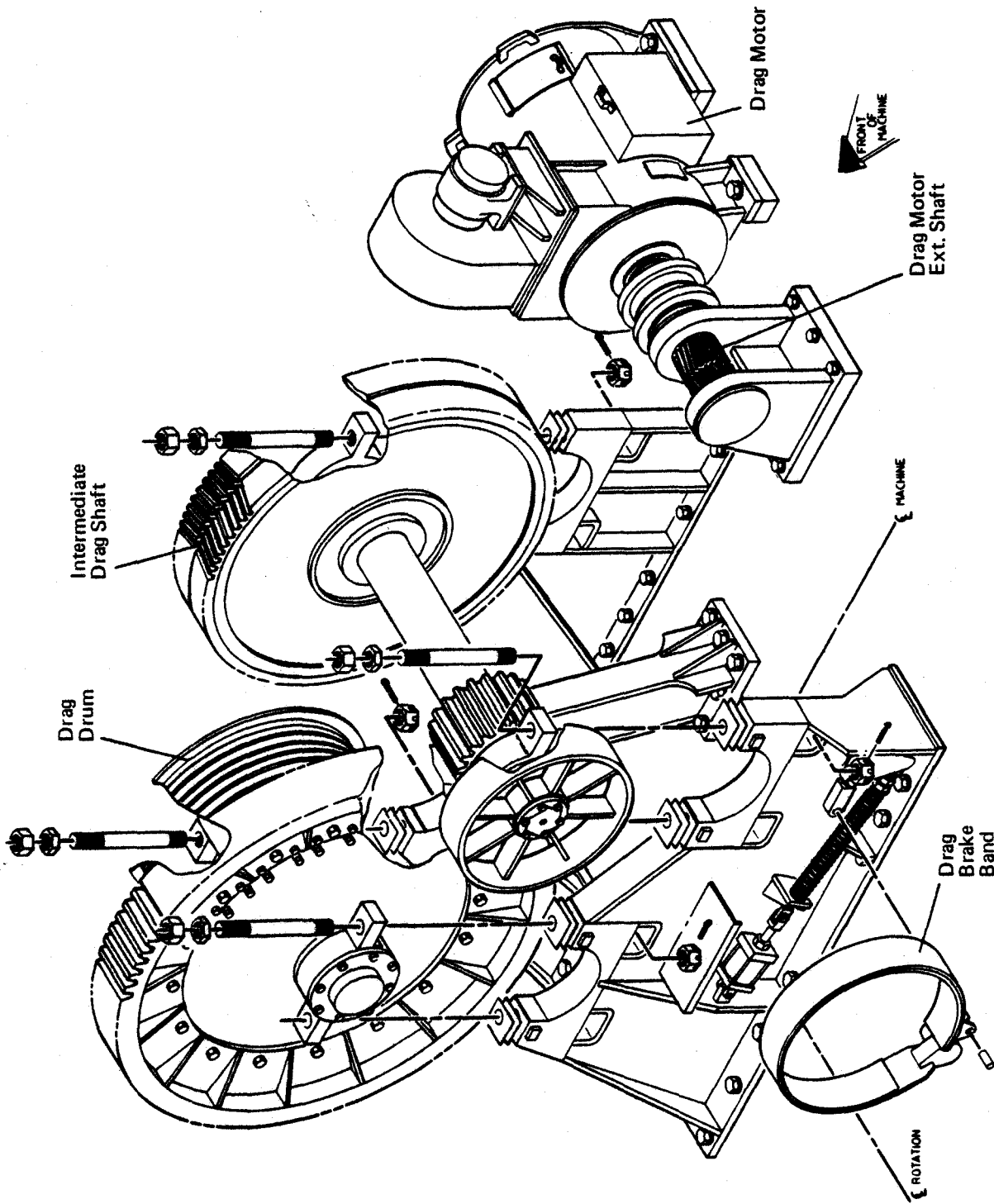
Replace all machinery guards and lube lines.

**HOIST MOTOR EXTENSION SHAFT REMOVAL** – Remove the guard over the coupling and over the extension shaft.



**CAUTION:** Block gearing of intermediate hoist shaft so shafting cannot rotate.

Separate the coupling connecting the shaft to the hoist motor. The coupling has been dynamically balanced so mark all of the parts, including the bolts, so it can be installed in the same order.



**DRAG MACHINERY**

**REASSEMBLE ROTATING GEAR CASE** — Assemble the bearing shield on bottom of the intermediate shaft and then the bearings on each end of the shaft.

Lower shaft into case. Install the bottom gasket and bearing retainer for the intermediate shaft. There must be 1/32 inch clearance between the bearing shield and bottom of the case.

Install the bearings on the main rotating gear and lower the assembly into the case. Be sure the lower bearing is seated and the gear is meshed properly with the intermediate shaft.

Place a new gasket on top of the case and align the center section on the case. Temporarily secure it with the hold down bolts.

Place the top bearing retainer on the intermediate shaft WITHOUT SHIMS. Tighten the cap screws progressively until the bearings drag can be felt when turning shaft. Back off the cap screws until the shaft turns freely. There should be no end play in shaft.

Measure the space between the retainer and the housing at three places, 120 degrees apart. Average the measurements and add shims under the retainer of this dimension.

One of the shims furnished is laminated in increments of .003 of an inch. Separate the laminations with a sharp knife until the proper dimension is obtained. Place shims under retainer and tighten cap screws and lock with wire.

Repeat the above procedure for the upper bearing retainer of the main rotating gear.

Slide the intermediate gear down onto the splines of the intermediate shaft. Install the lock plate, tighten and secure the cap screws with lock wire.

Remove the temporary bolts holding the center section.

Place a new gasket on top of the center section. Lower the gear case cover in place.

Install the taper bolts in the proper holes and the remaining bolts. Torque the bolts to 645 ft.-lbs.

Before installing the gear case on the machinery deck, check the condition of the O-ring that is on the bottom of case, around the outside of the main shaft opening.

Lower the case into position on the deck secure with the hold down bolts. Torque the hold down bolts to 1,820 ft.-lbs.

Carefully raise the main rotating shaft, with the lower bearings in place, thru the opening in the bottom of the rotating frame until the bearings are seated properly.

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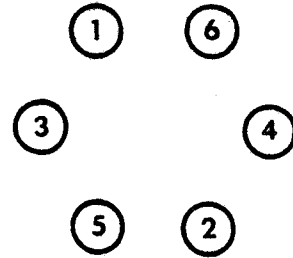
4. Energize actuation valve.

5. Check for air leaks — correct as required.

6. De-energize actuation valve.

7. Repeat steps 4 and 6 several times.

8. Reset any interlocks which may have been bypassed in step 1.



NOTES:



## TROUBLE SHOOTING GUIDE FOR AIR COMPRESSOR

**A. CONDITION: Excessive noise.**

**CAUSE: Loose flywheel or motor pulley.**

**REMEDY: Tighten.**

**CAUSE: Loose valve.**

**REMEDY: Inspect valve for damage and tighten valve, both plug and cover.**

**CAUSE: If noisy only during starting check for loose belts.**

**REMEDY: Tighten until no slippage is apparent, allowing some slack.**

**CAUSE: Vibration of belt guard, piping or loose components.**

**REMEDY: Tighten.**

**CAUSE: Intercooler or aftercooler tubes out of place or not clamped securely.**

**REMEDY: Position properly and clamp tightly.**

**CAUSE: Improper level and grade of oil in crankcase.**

**REMEDY: See Lubrication of Compressor in this section.**

**CAUSE: Carbon or other foreign material on piston head.**

**REMEDY: Clean off piston tops. Inspect and clean valves.**

**CAUSE: Excessive motor or compressor shaft end play.**

**REMEDY: Check pulley or flywheel for lateral movement.**

**REMEDY:** Read Item No. 1. Change oil frequently — avoid cylinder rusting and ring wear.

**O. CONDITION:** Excessive water in the air receiver or tank.

**CAUSE:** Condensation in the air receiver.

**REMEDY:** This is the natural result of compressing air and is not due to faulty equipment. This condition can be corrected by draining the air receiver daily.

**P. CONDITION:** Unloader pilot chatters or does not operate properly.

**CAUSE:** Dirt on screen in lower end of body.

**REMEDY:** Clean and repair as necessary.

**CAUSE:** Valve disc of the damaged valve seat will cause the pilot valve to chatter.

**REMEDY:** Replace pilot or parts. See Service Bulletin 31.101.

**CAUSE:** Pilot is at the bottom of the air receiver.

**REMEDY:** Install pilot valve in the center of the tank to prevent contaminants from clogging the valve.

**Q. CONDITION:** Unloader mechanism in the intake valves chatter or air pressure drops even though no air is being used. See "Automatic Unloader" under "Operation."

**CAUSE:** Broken or bent forks in compressor unloader mechanisms doesn't unload the compressor, although pilot is operating.

**REMEDY:** Repair or replace as necessary.

**CAUSE:** Dirt, chips or damaged valve plunger.

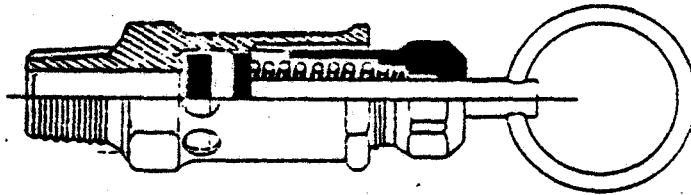
**REMEDY:** Clean and repair as necessary.

The domed end plate is disassembled by completely removing the locking screw and pulling the valve lever out of the end plate. The valve lever is located under the cover plate.

To assemble the CPR reverse the disassembly procedure. Coat the inside of the ball cup assembly and the ball cage with the crankcase oil. Heavy grease will retard the action of the CPR and should not be used.

On several compressors an adapter casting known as a pressure release housing is installed between the (CPR) and the crankcase. It is essential that the oil port for lubricating the (CPR) mechanism be pointing toward the bottom of the crankcase.

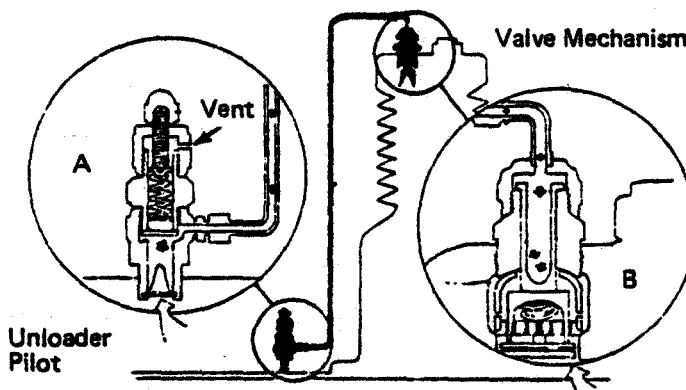
**SAFETY VALVES** — Safety valves on air receivers are set at the factory to a pressure approximately 15 lbs. higher than the rated pressure of the outfit to protect the air receiver against excessive pressure.



The safety valve is set at 50 to 55 lbs. on each innercooler casting. The valves serve to protect and prevent excess pressure from building up inside the innercooler. A heavy accumulation of carbon in the innercooler or possibly a carboned or leaking valve assembly in the compressor head will cause frequent popping of the safety valve. The reason for "popping" is usually not the fault of the safety valve.

**AUTOMATIC UNLOADER** — Compressors with unloaders can run constantly and maintain air pressure within set limits. The compression is removed when maximum desired pressure is achieved and the compression is automatically resumed when the minimum desired pressure is reached.

The automatic unloader is used when frequent starts and stops are impractical as with a gasoline engine or when air receiver capacity is so small, as with portable compressor outfits.



**RUNNING CLEARANCE FOR BRONZE BUSHINGS**  
All Dimensions in Inches

Shaft		Running Clearance	Shaft		Running Clearance
Nom. Diam.	O.D.		Nom. Diam.	O.D.	
1	1.000 .999	.006 .010	5	5.000 4.998	.011 .020
1-1/4	1.250 1.249	.005 .010	5-1/4	5.250 5.248	.011 .020
1-1/2	1.500 1.499	.008 .013	5-1/2	5.500 5.498	.012 .020
1-3/4	1.750 1.749	.008 .013	5-3/4	5.750 5.748	.012 .021
2	2.000 1.999	.007 .012	6	6.000 5.998	.012 .021
2-1/4	2.250 2.248	.006 .013	6-1/4	6.250 6.248	.012 .021
2-1/2	2.500 2.498	.006 .013	6-1/2	6.500 6.498	.012 .021
2-3/4	2.750 2.748	.008 .015	6-3/4	6.750 6.748	.013 .022
3	3.000 2.998	.008 .015	7	7.000 6.998	.013 .022
3-1/4	3.250 3.248	.008 .015	7-1/4	7.250 7.248	.013 .022
3-1/2	3.500 3.498	.008 .015	7-1/2	7.500 7.498	.014 .022
3-3/4	3.750 3.748	.011 .019	7-3/4	7.750 7.748	.016 .024
4	4.000 3.998	.011 .019	8	8.000 7.998	.015 .024
4-1/4	4.250 4.248	.010 .019	8-1/4	8.250 8.248	.015 .024
4-1/2	4.500 4.498	.010 .019	8-1/2	8.500 8.498	.016 .025
4-3/4	4.750 4.748	.014 .022	8-3/4	8.750 8.748	.016 .025

The **RIGHT WAY TO RECOIL**, after wire rope has been used, is in the direction of its lay. A Good Rule Here requires looking down at the rope on the floor, then coil right-lay rope clockwise and coil left-lay rope counter-clockwise. It is not difficult to determine when wire rope is being coiled in the **WRONG** direction; it soon becomes lively and hard to handle.

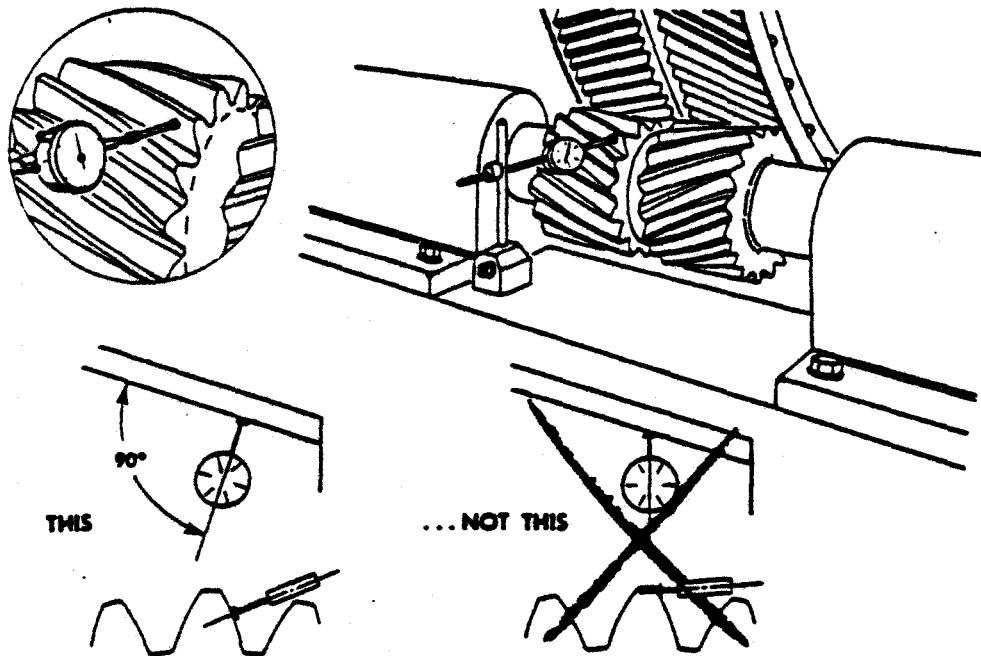
The **WRONG WAY TO UNCOIL WIRE ROPE** is when coil is placed on floor and uncoiled by pulling it straight off. Spirals and kinks occur. Torsions put into rope at every loop pulled off cause rope twists and makes hard to handle. Also wire rope cannot be uncoiled like hemp rope. Pulling one end thru the middle only results in severe kinking.

Once wire rope is improperly uncoiled, it is a waste of time to try to run out the kinks by twisting with one end loose on the floor. Once kinked, the rope is ruined in the area of the kink.

The EXAMPLE (right) shows the contact and backlash measurements of a gear set of 1 diametral pitch. From table 3, the recommended backlash is .030 minimum and .060 maximum.

Position of Gear Relative to Mesh	Contact		Backlash	
	Left CL	Right CR	Left BL	Right BR
Start Position	.000	.002	.048	.047
90° from Start Position	.000	.001	.047	.045
180° from Start Position	.002	.000	.042	.045
270° from Start Position	.003	.000	.037	.040

**ALTERNATE METHOD OF CHECKING TOOTH CONTACT AND BACKLASH:** When impossible to use a feeler gauge due to space limitations, obtain proper contact pattern by the trace method. Satisfactory patterns are shown in sketch below.



After a correct pattern is established, CHECK the backlash with an indicator as shown in sketch. DETERMINE proper backlash from table 3. USE CARE in adjusting pedestals to establish correct backlash. Use indicators at EACH pedestal for EQUAL in - out movement so not to affect a change in contact setting. After proper backlash is obtained, RECHECK contact.

**FINAL CHECK FOR UNIFORM CONTACT PATTERN:** After establishing pinion alignment (with pedestals firmly secured); make a final check for tooth contact to assure accurate gear alignment. Apply a very thin coat of Prussian blue pigment, lamp black, or red lead to five or six teeth, previously cleaned (see top sketch, pg. 19), COVER ENTIRE profiles of the

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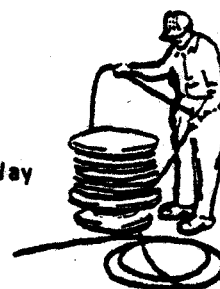
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**KINKS** are places where the rope has been bent to a permanent set. Great stress has been placed on the care to take and avoid these kinks in wire rope. Loops of small diameter where rope is pulled, bending a rope around a sheave where radius is wrong and sharp objects are the general causes. No amount of restraightening will restore the wire where the kink has occurred. Normal service of this kinked wire cannot be expected, it has been permanently damaged thru lack of caution.

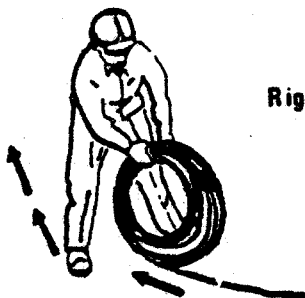
Information for these instructions and cautions obtained from MPSD CI-897.



Wrong Way



Wrong Way

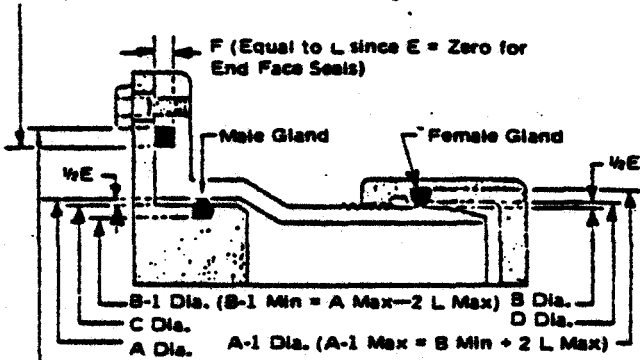


Right Way

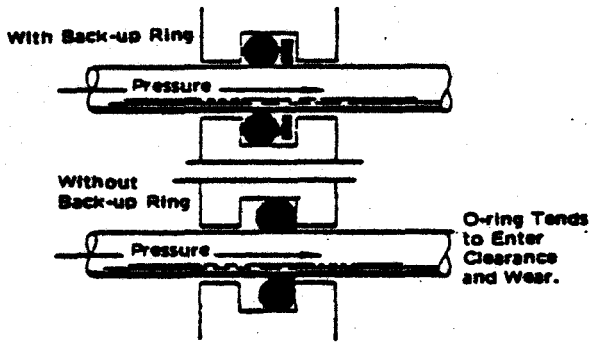
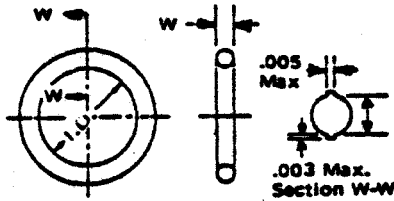


Right Way

$H_1$  Dia. When Direction of Pressure is Inward.  $H_1$  Max. = O-ring Mean I.D. Plus 1% up to 0.060 Max.  $H_1$  Min. = O-ring Mean I.D.



$H_0$  Dia. when Direction of Pressure is Outward.  
 $H_0$  Max. = O-ring Mean O.D.  $H_0$  Min. = O-ring Mean O.D. Minus 1% up to 0.060 Max.



the new with the old. One other detail here: Do not open package until O-ring is needed for installation. This prevents mixing, rolling on floor, dropping in sewer; among other disasters.

**POOR INSTALLATION** may begin with the removal of the old seal.

Some points on removal:

Removal involves parts with close tolerance surface finishes.

In critical surface areas; scratches, abrasions, dents, and other surface mars cause faulty seals. This results in component failure.

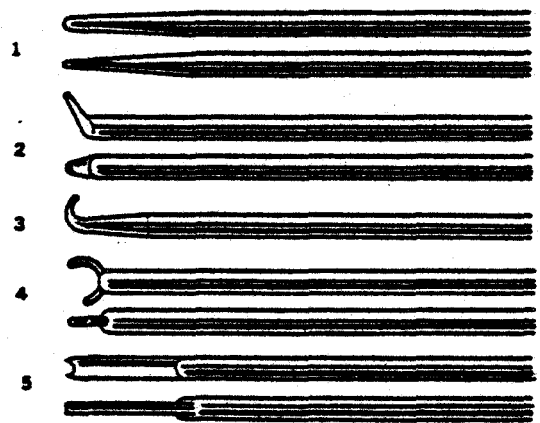
Static seal use is generally simple. Three common types are shown at left.

When pressure exceeds 1500 psi, the backup ring is used. In static face seals, backup rings may not be needed.

**MOST O-RING PROBLEMS** return to three factors:

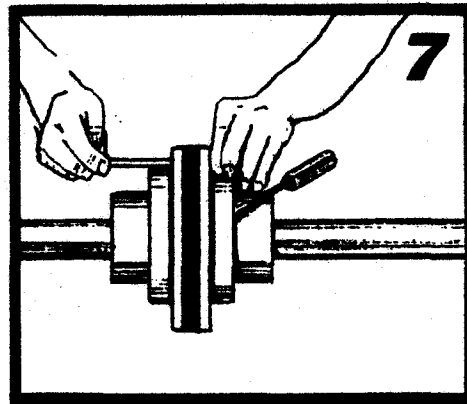
1. **Size:** Using incorrect size causes ineffective or totally destroyed function.
2. **Compatibility:** O-ring material must be compatible with the chemical, thermal and mechanical surroundings.
3. **Installation:** Improper handling during assembly causes a great deal of grief.

Size cannot be picked out by color code. Exact replacements are found **ONLY** by part number. **DO NOT ATTEMPT** matching size by feeling and comparing

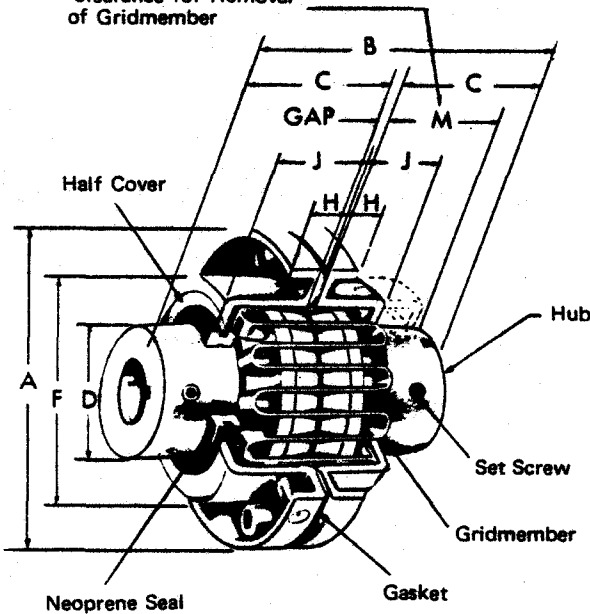


- Position covers so that lube fittings are 180 degrees apart. Align covers to prevent wobble. Tighten cover bolts. Check seals for proper seat. Insert thin, smooth screwdriver under seal for venting when lubing with permanent fittings.

Lube until grease flows thru coupling and out other hole. Then RE-INSTALL BOTH LUBE PLUGS.



Clearance for Removal of Gridmember



**GRIDMEMBER DATA**

DO NOT APPLY LOAD UNLESS COMPLETE GRIDMEMBER IS INSTALLED AND ALL SECTIONS IN THEIR PROPER LAYER

Coupling Size	Gridmember Dimensions Inches	No. Rungs	No. Layers	No. Segments Per Layer	Outside Diameter—Inches		
					Single Layer Gridmember Painted Aluminum	Outer Layer Gridmember Painted Bronze & Stamped "OUT"	Inner Layer Gridmember Painted Aluminum & Stamped "IN"
3	.048 x 3/16 x 1 1/2	20	1	1	2.375		
4	1/16 x 3/16 x 2	24	1	1	2.687		
5	1/16 x 1/4 x 2	28	1	1	3.125		
6	1/16 x 1/4 x 2	32	1	1	3.625		
7	1/16 x 3/8 x 2	36	1	2	4.250		
8	3/32 x 1/2 x 2 3/4	40	1	2	5.000		
9	3/32 x 1/2 x 2 3/4	40	1	2	5.500		
10	1/8 x 3/8 x 3 1/2	40	1	2	6.125		
11	1/8 x 1/2 x 3 1/2	40	1	2	6.750		
12	1/8 x 3/8 x 3 3/4	44	2	2		7.500	6.875
13	1/8 x 3/8 x 3 3/4	52	2	2		8.750	8.125
14	3/32 x 1/2 x 4 1/2	48	2	2		9.500	8.750
15	3/16 x 3/8 x 4 1/2	48	2	2		9.750	9.000
16	3/16 x 3/8 x 4 1/2	56	2	2		11.250	10.500
17	3/16 x 3/8 x 4 1/2	64	2	2		12.750	12.000
18	3/16 x 3/8 x 4 1/2	72	2	3		14.250	13.500
19	3/16 x 1/2 x 6 1/4	72	2	4		15.750	14.750

Coupling Size	Max. Speed rpm	Basic Rating	Max. Bore	Min. Bore	DIMENSIONS — INCHES								GAP			Approx. wt With No Bore lb	Lubricant Required lb	Coupling Size
					A	B†	C	D	F	H	J	M*	Min.	Normal	Max.			
3F	6000	0.4	1 1/16	7/16	3 3/8	3 3/8	1 3/8	1 1/8	2 3/8	5/8	3/8	1 3/8	1/8	1/8	3/16	4	1/8	3F
4F	6000	0.9	1 1/2	7/16	4 1/8	4 3/8	2 1/8	1 13/16	2 3/8	5/8	1 1/8	1/8	1/8	3/16	6	1/8	4F	
5F	6000	1.5	1 1/2	7/16	4 1/2	4 3/8	2 3/8	2 3/8	3 3/8	5/8	1 1/8	2 1/4	1/8	1/8	3/16	8	1/8	5F
6F	6000	2	1 3/16	7/16	5	4 3/8	2 3/8	2 13/32	3 3/8	5/8	1 1/8	2 3/4	1/8	1/8	3/16	10	1/8	6F
7F	6000	4	2 3/16	7/16	5 5/8	4 3/8	2 3/8	2 15/16	4 1/2	5/8	1 1/8	2 1/4	1/8	1/8	3/16	14	1/8	7F
8F	5000	8	2 3/8	1/2	7 1/8	6 3/8	3	3 3/8	5 1/8	5/8	1 1/2	3	1/8	1/8	1/4	28	1/4	8F
9F	4500	12	2 13/16	1 1/8	7 5/8	6 3/8	3 3/4	3 13/16	5 3/4	5/8	1 1/2	3	1/8	1/8	1/4	33	1/4	9F
10F	3750	16	3 3/4	1 1/2	8 3/4	7 13/16	3 3/4	4 1/2	6 3/8	5/8	1 3/8	3 3/4	1/8	1/8	3/8	49	3/8	10F
11F	3600	23	3 3/4	1 1/2	8 3/8	7 11/16	3 3/4	4 15/16	7 1/8	5/8	1 3/8	3 3/4	1/8	1/8	3/8	60	1/2	11F
12F	3600	35	3 3/8	2	9 3/4	7 3/4	3 3/8	5 3/8	7 7/8	3/4	2	3 3/4	1/8	1/8	3/8	75	5/8	12F
13F	2700	48	4 1/4	2	11	7 13/16	3 3/8	6 3/8	9 3/8	3/4	2	3 3/4	1/8	1/8	3/8	97	3/4	13F
14F	2500	70	4 5/8	2 1/2	11 3/8	10	4 3/8	6 3/4	9 3/8	3/4	2 1/2	4 3/4	1/8	1/8	1/2	145	1 1/2	14F
15F	2400	100	5	2 1/2	13 3/4	10 3/4	5	7 3/4	10 3/8	1 1/8	2 1/2	4 3/4	1/8	1/8	1/2	175	1 1/2	15F
16F	2300	140	5 1/2	2 1/2	15 1/4	10 3/4	5	8 3/4	11 3/8	1 1/8	2 1/2	4 3/4	1/8	1/8	1/2	215	2	16F
17F	2200	180	6	3	16 3/4	10 3/2	5 3/8	9 3/8	13 3/8	1 1/8	2 3/2	4 3/4	1/8	1/8	1/2	285	2 3/4	17F
18F	2100	230	7	3	18 3/4	11 1/4	5 1/2	10 13/16	14 3/8	1 1/4	2 3/2	4 3/4	1/8	1/8	1/2	365	3 3/4	18F
190F	2000	330	8	4	21 1/2	15 1/4	7 1/2	12	16 1/4	1 1/4	3 3/4	7 3/4	1/8	1/8	1/2	650	7	190F

† Dimension B Based on NORMAL GAP. \* Clearance M required for installation and removal of gridmember. Dimensions for reference only. Sizes 3F thru 11F are furnished for CLEARANCE FIT with set screws over keyway or at 90°, depending on bore size. Sizes 12F thru 190F are furnished for INTERFERENCE FIT without set screws unless otherwise specified.









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