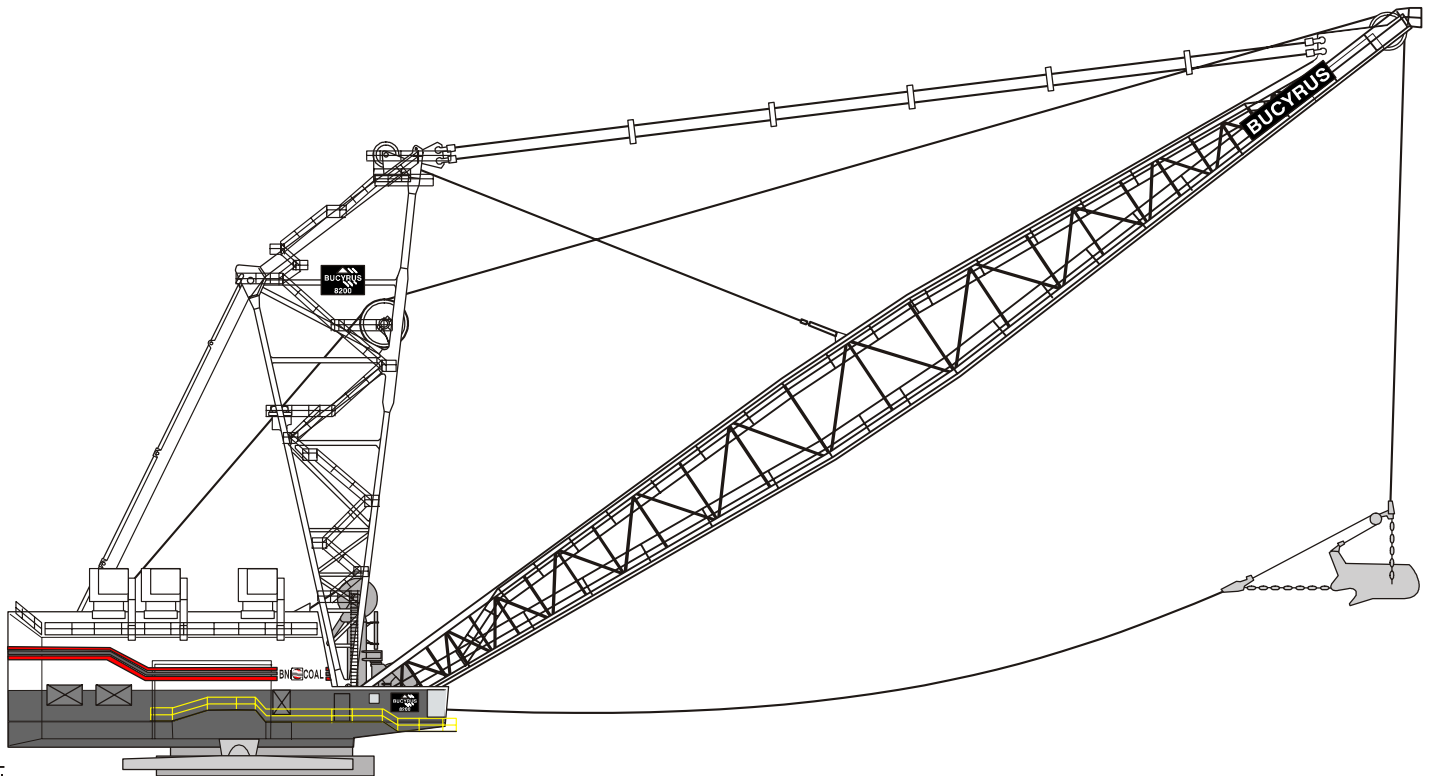




8200 WALKING DRAGLINE MAINTENANCE and OPERATION MANUAL

SN: 141147
Manual No. 10237



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Bucyrus International, Inc.

10237_T.pmd

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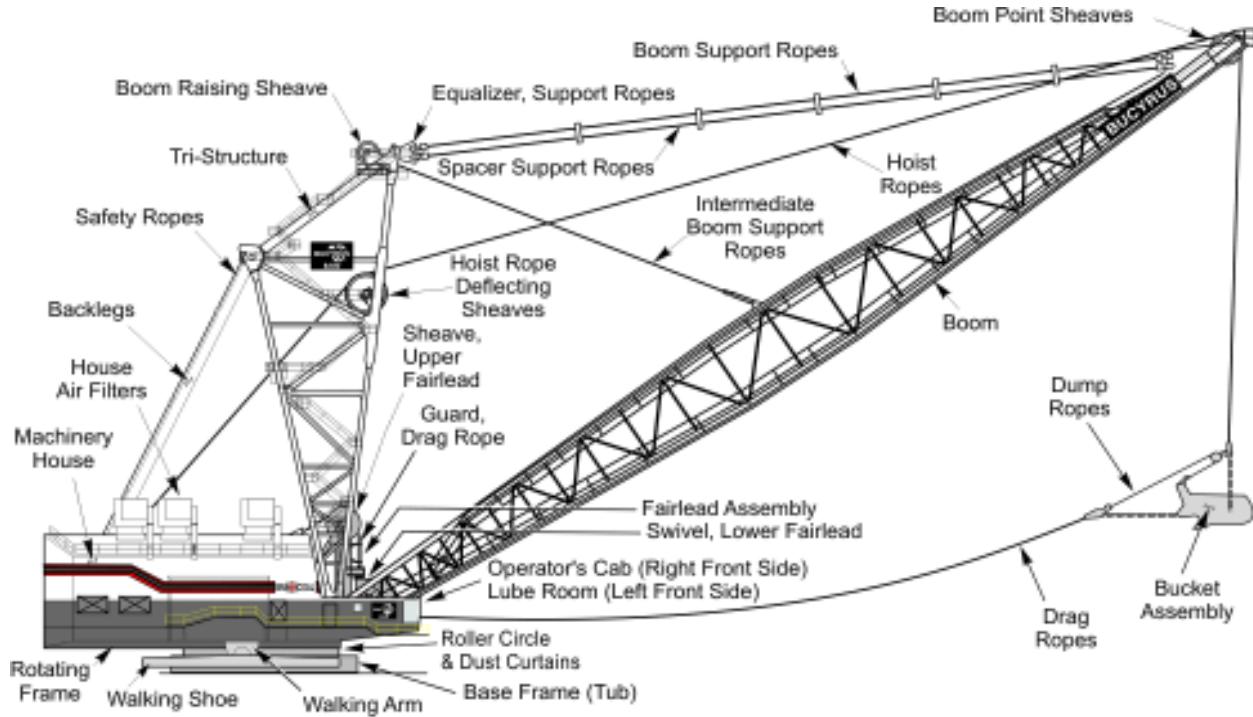
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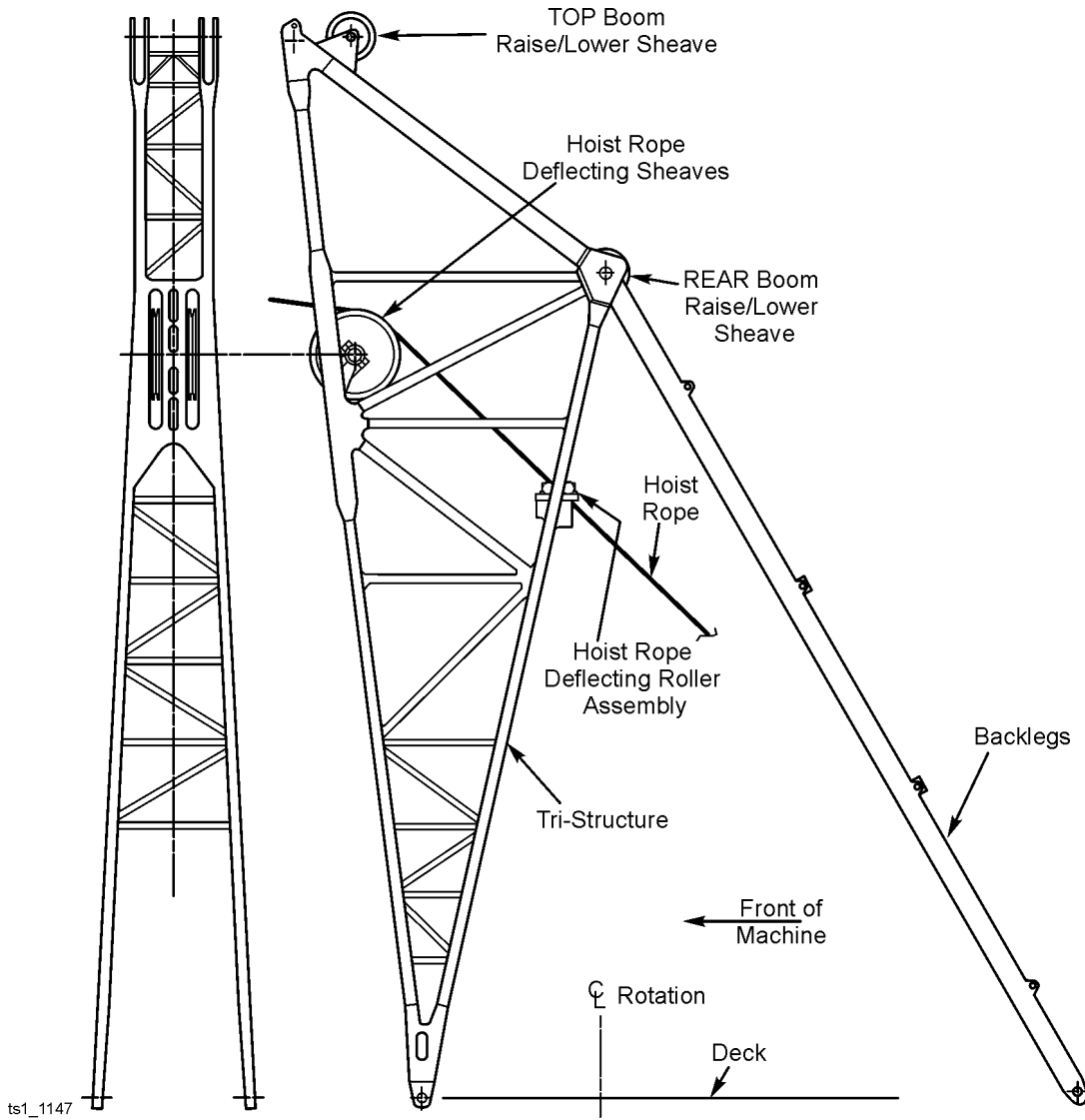
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MACHINE OVERVIEW



141147NM

NOMENCLATURE



TRI-STRUCTURE



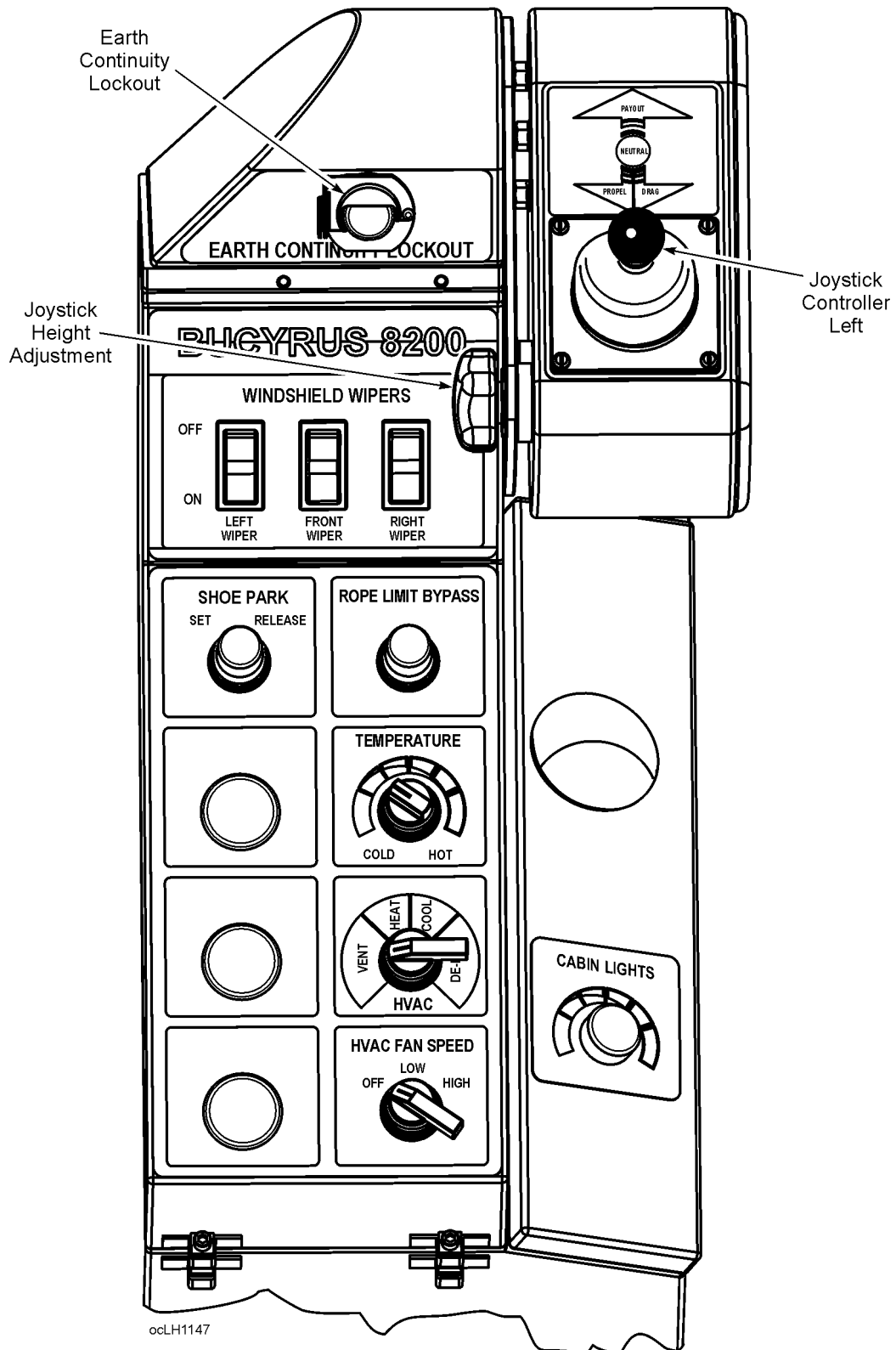
Section **2**
Operation

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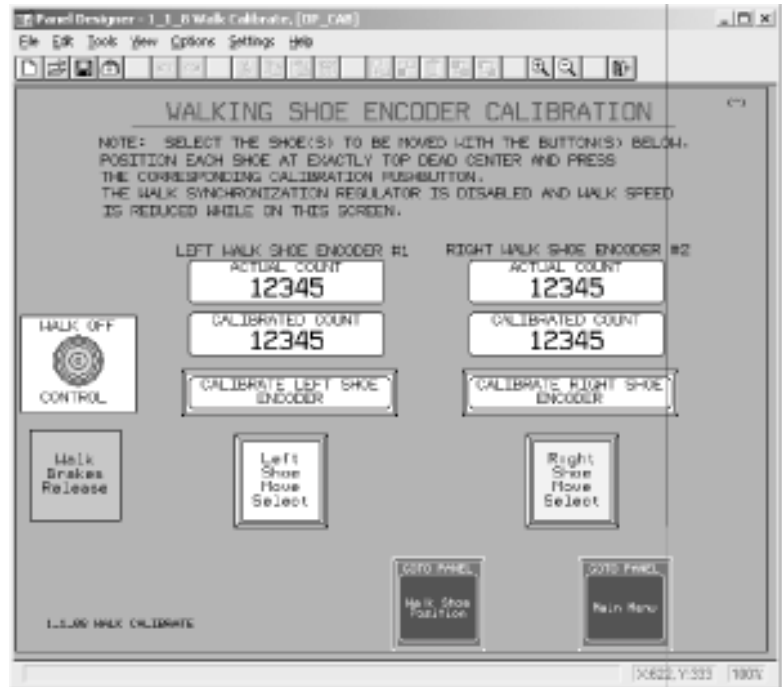
8200 Walking Dragline



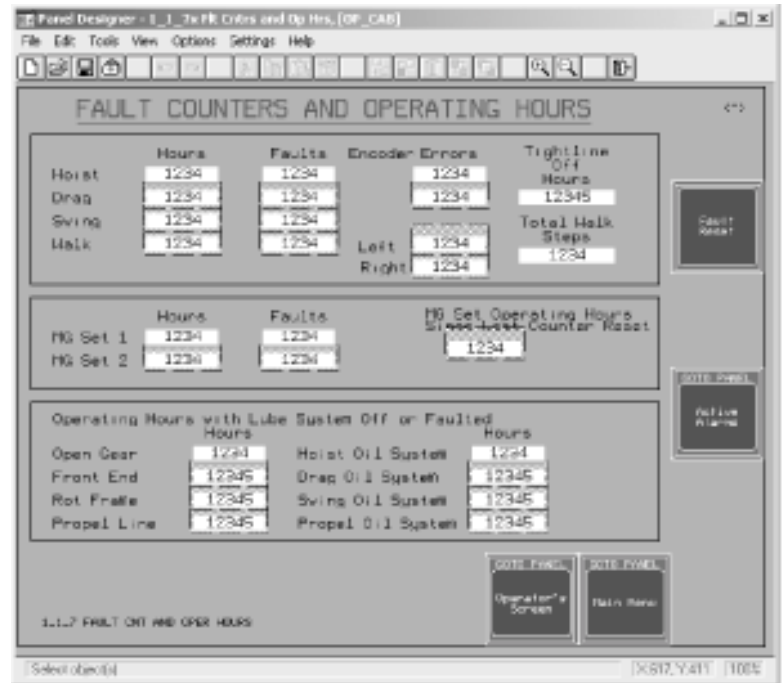
Left-hand Operator's Controls



8200 Walking Dragline



Walking Shoe Encoder Calibration Screen



Fault Counters and Operating Hours Screen



MACHINERY HOUSE REAR DOORS

The rear doors of the machinery house consists of a set of 3 doors on each half of the rear wall. Each set of doors includes 1 top door, and a left and right side door. The doors are opened and closed by hydraulic cylinders, actuated by manual hydraulic valves, one for each door, located at the center of the rear machinery house wall. Refer to the figure on the following page.

Either set of doors or both can be opened, however each set must be opened in sequence and closed in the opposite sequence.



CAUTION: DO NOT ATTEMPT TO OPERATE THE REAR DOORS UNTIL THE GREEN LIGHT IS ILLUMINATED, INDICATING THE DOOR LATCHES HAVE BEEN RELEASED.



CAUTION: DO NOT OPEN OR CLOSE THE REAR DOORS OUT OF THE SEQUENCE SHOWN. FAILURE TO FOLLOW THE SEQUENCE WILL RESULT IN DAMAGE TO THE DOORS.



CAUTION: DO NOT OPERATE THE MACHINE (DIG OR PROPEL) WITH THE REAR DOORS OPEN.



CAUTION: DO NOT LEAVE THE REAR DOORS OPEN DURING INCLEMENT WEATHER. FAILURE TO FOLLOW THIS CAUTION MAY RESULT IN DAMAGE TO THE DOORS OR TO THE EQUIPMENT INSIDE THE MACHINE.



GROUND PREPARATION

Ground preparation is very important. The walking dragline requires a properly prepared ground base for operation. The tub and walking shoes must have full contact with the ground when the machine is digging or propelling. With the machine weight distributed over the entire tub bottom or the partial tub bottom and the two walking shoes area, moderate ground bearing pressure is obtained and the machine components are less stressed.

The ground supporting a walking dragline must be as near level as possible, firm, and dry. Sand, clay, and topsoil can be leveled easily with a dozer or grader. Sharp rocks and boulders cause point loading which will damage the tub and shoes structures and should be removed if possible. Where this is impractical, cover the working area with fill dirt to a sufficient depth that will eliminate the effects of the rocks.

This walking dragline can be propelled up or down a grade or ramp. Ramping the machine, moving it from one level to another, requires exercising great care because this situation subjects the tub and rotating frame to stresses much greater than experienced while digging. For a new machine, ramping should be restricted to no greater than a 5% grade (See Note). Later, this can be increased up to a 10% grade maximum. It is possible to traverse (cross) a 5% grade with this machine; however, *AVOID CROSSING ANY GRADE IF POSSIBLE.*

NOTE: When beginning to propel the machine, the transition from one grade to the next should gradual, no more than 2% over the length of the walking shoes (for this machine is approx. 70 feet). For example, starting from level ground, the machine should travel at least 3 shoe lengths before reaching a 5% grade.

The 8200 dragline design incorporates a calculated balance between boom length, boom angle, allowable bucket load, machine weight, and ballast used. During normal digging cycles, the center of gravity shifts from the front to the rear within a specific area called the "kern". The machine maintains stability and relatively even ground bearing pressure over the entire tub area. If, for any reason, the digging radius or load increases to cause the center of gravity to extend out of the kern to the tub perimeter, an undesirable rocking motion will occur due to the cone shape that will develop in the ground under the tub. This results in an unstable machine and concentrated ground bearing pressure at the center of the tub. This condition is very detrimental to the machine and must be eliminated. Contact Bucyrus for consultation on this problem immediately.



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7. *MANUAL PROPEL* - A yellow pushbutton that changes the 3 auto lube systems from DRAG to PROPEL. Press this button and any of the 3 manual buttons when testing the system's propel operation.
8. *PROPEL MODE* - Amber light which indicates the machine is operating in PROPEL.
9. *ROTATING FRAME-MANUAL* - Pushbutton to manually cycle the Rotating Frame lube system.
10. *ROTATING FRAME-FAULT* - Red light indicates a fault in the Rotating Frame lube system.
11. *OPEN GEAR-MANUAL* - Pushbutton to manually cycle the Open Gear lube system.
12. *OPEN GEAR-FAULT* - Red light indicates a fault in the Open Gear lube system.
13. *LINE A* - An amber light that indicates that Line A is activated for the Rotating Frame system.
14. *LINE B* - An amber light that indicates that Line B is activated for the Lube Reel.
15. *LINE A* - An amber light that indicates that Line A is activated for the Hoist/Drag Open Gear system.
16. *LINE B* - An amber light that indicates that Line B is activated for the Propel Open Gear system.
17. *PROPEL-MANUAL* - Pushbutton to manually cycle the Propel lube system.
18. *PROPEL-FAULT* - Red light indicates a fault in the Propel lube system.
19. *FRONT END-MANUAL* - Pushbutton to manually cycle the Boom lube system.
20. *FRONT END-FAULT* - Red light indicates a fault in the Boom lube system.
21. *LINE 1* - An amber light that indicates that Line 1 is activated for the Propel system.
22. *LINE 2* - An amber light that indicates that Line 2 is activated for the Propel system.
23. *LINE 1* - An amber light that indicates that Line 1 is activated for the Boom system.
24. *LINE 2* - An amber light that indicates that Line 2 is activated for the Boom system.

OPERATION

- A. If LE has been de-energized less than 60 minutes, the timers will restart when LE is energized and continue the lube intervals prior to the shutdown.
- B. If LE has been de-energized more than 60 minutes, the system will cycle immediately when LE is energized. Each of the 3 systems (OGL, Rotating Frame, Lower Frame) cycles in sequence and continue cycling per their programmed intervals.
- C. If LE is de-energized less than 15 minutes when in propel mode, the timer will restart and continue the lube intervals prior to the shutdown, or when LE is re-energized.
- D. If LE is de-energized more than 15 minutes in propel mode, the system will cycle immediately when LE is energized and continue cycling per the programmed intervals.

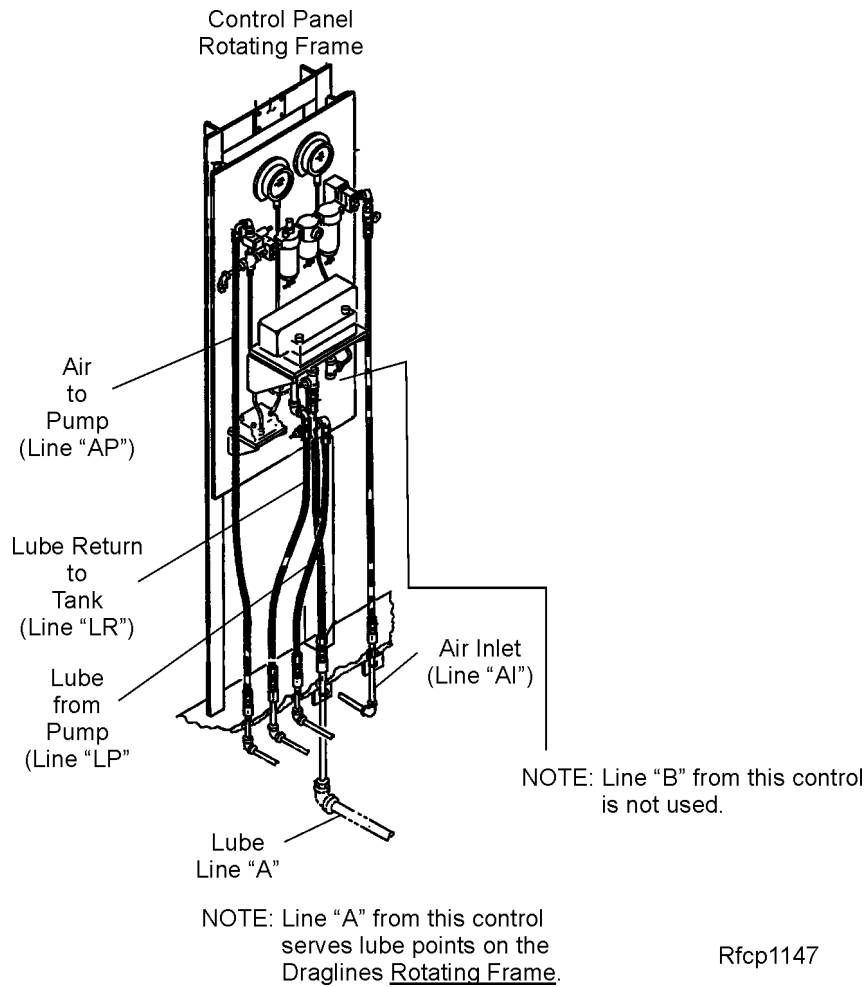
A typical lube cycle operation for any of the circuits occurs in the following manner:



AUTO LUBE ~ MPG

ROTATING FRAME

The Auto lube for the Rotating Frame supplies the center journal, the main rotating shaft bottom bearings, the intermediate hoist and drag shafts, the hoist and drag drum shafts, Tri-Structure and Fairlead. The air pressure regulator is set at 55 PSI (379 kPa). The end-of-line pressure switches are set at 2500 PSI (17238 kPa).

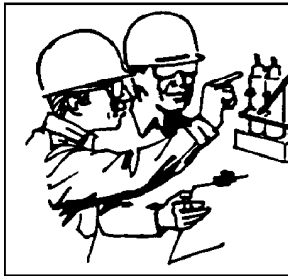


ROTATING FRAME CONTROL PANEL, Line-A



INJECTOR ADVANTAGES

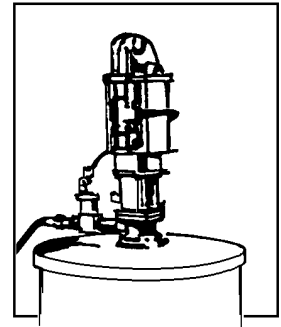
SIMPLICITY



Lincoln Centro-Matic is not only simpler and less expensive to install than other systems-it is also much easier to understand. Your maintenance personnel will appreciate the ease with which they can learn the operation and service of Centro-Matic.

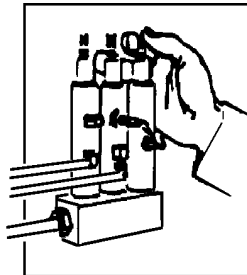
POWERFUL PUMPING UNIT

Lincoln's Power-Master pump widely recognized as a most powerful, trouble-free pump, so much so, that Lincoln Power-Master pumping units often are specified even where other centralized lubrication systems are used.



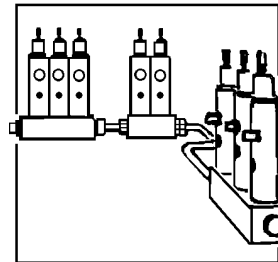
EXTERNAL ADJUSTMENT

A micrometer-type adjustment makes each injector (metering device) adjustable externally, without special tools. The Lincoln Centro-Matic System permits lubricant adjustments to meet actual bearing requirements - not just an approximation, as with all other systems.

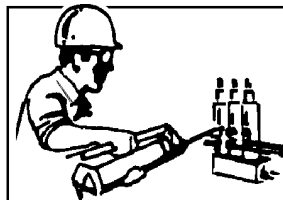


EXTREME PUMPING DISTANCE

Single-line design and powerful pumping unit permit installations at long distances from original refinery containers of bulk tanks to point of application. And if you plan to expand your operation, the Lincoln Centro-Matic System has the design and capacity that lets you do it - normally without adding booster pumps and controls.



BUILT-IN GREASE FITTING

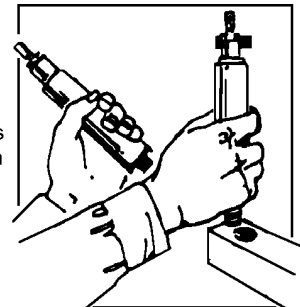


Lincoln Centro-Matic is the only system that has a capped grease fitting on the injector. This permits easy filling of lines when the system is installed. It also allows hand lubrication of the machine in the event of a pump or power failure, damage to the supply line, or

even a malfunction in the air system. **NO OTHER SYSTEM OFFERS THIS!** The built-in grease fitting can also be used as an inspection system. When the cap is removed, the lubricant normally metered to a bearing will come out of the grease fitting head.

EASY INJECTOR REPLACEMENT

Should the Lincoln injector ever need replacing, it can be done quickly and easily without disturbing adjacent injectors or removing the supply line connections - does not require machine shutdown as do all other systems. As a matter of fact, injector replacement usually can be done between lubricating cycles, thus preventing lubricant loss or machine downtime.



injadvan



If the piston is jammed, proceed with disassembly. Dismantle distributor by first removing tie-rods. With individual sections on the bench, remove the hex head plugs from both ends of each section. Now taking one section at a time, remove the piston. If it appears to be stuck, try removing it from the other direction. If it is badly jammed, it may be necessary to use a brass rod to tap it out. Now flush the section and piston in a clean suitable solvent until all the lubricant has been cleaned away. Blow out all ports thoroughly and use a small piece of wire to make sure that all passages are clean and open. Next inspect the cylinder bore carefully for scratches, score marks, or other damage. Inspect the piston in the same manner. If either of these parts is damaged, a new section should be installed. If the distributor section and piston both appear in good condition, reassembly as before making certain that the piston slides smoothly but snugly in the cylinder bore. Repeat the operation on each section. Take care, however, not to replace piston in any section except the one from which it was removed. (Early models of the new M and MX Distributors with Check Valves, employed a nylon ball in the circular check valve, located at top center of each Intermediate Section. Under heat or special pressure conditions, these nylon balls, now replaced by steel, would sometimes become deformed causing blockage. Replace if necessary.)

After all sections have been cleaned, blown out, inspected and found to be in good condition, reassemble the distributor assembly by following your sketch. **IMPORTANT** - use *the torque settings listed below*. Test the operation of the assembly on the bench by pumping lubricant (preferably oil) into the inlet of the distributor with a hand grease gun. If it now functions properly, replace it in the system and again test for proper operation. **REMEMBER – DIRT AND FOREIGN MATERIAL ARE THE WORST ENEMIES OF ANY LUBRICATING SYSTEM.** All servicing should be carried out under the cleanest possible conditions.

*Lube Distributor Torque Data
(Ft.Lbs.)*

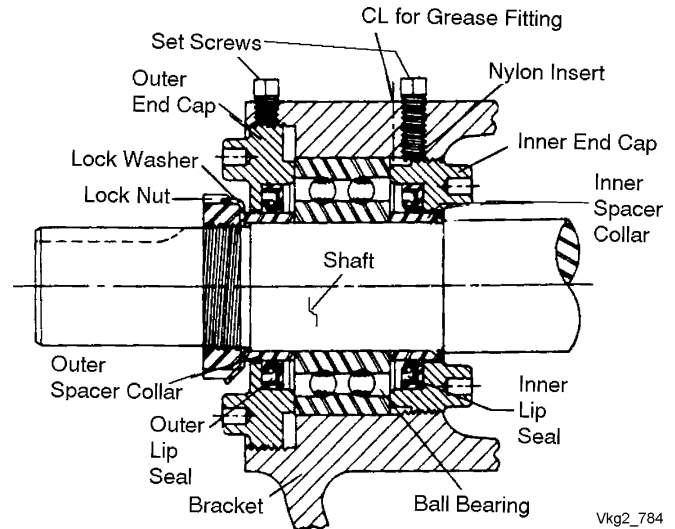
	MJ	M-MV	MX
Tie Rod Nuts	12	20	25
Alternate Outlets	10	10	24
Check Valves	10	15	19
End Plugs	15	15	45

NOTES:

1. Re-stack distributor according to your sketch.
2. Check proper assembly, including gaskets, etc.
3. Draw up assembly to proper torque settings.
4. Test distributor with light oil.



9. Pack the ball bearing with multi-purpose grease, NLGI #2. Place on the shaft and push or gently drive into place in the bracket.
10. Press the lip seal, with the lip facing the end of the shaft, into the outer end cap and insert the end cap in the bracket. Turn the end cap in the bracket until it is tight against the bearing.
11. Put the lockwasher and locknut on the shaft. Insert a length of hardwood or brass through the port opening between the rotor teeth to keep the shaft from turning.



Tighten the locknut and bend one tang of the lockwasher into the slot of the locknut.

12. Adjust the pump end clearance. Refer to "Thrust Bearing Adjustment".
13. Lubricate all grease fittings with multi-purpose grease, NLGI #2.



DANGER: BEFORE STARTING THE PUMP, BE SURE ALL DRIVE EQUIPMENT GUARDS ARE IN PLACE. Failure to properly mount guards may result in SERIOUS INJURY or DEATH.

INSTALLATION OF CARBON GRAPHITE BUSHINGS

When installing carbon graphite bushings, extreme care must be taken to prevent breaking. Carbon graphite is a brittle material and is easily cracked. If cracked, the bushing will quickly disintegrate. Using a lubricant and adding a chamfer on the bushing and the mating part will help in installation. The additional precautions listed below must be followed for proper installation:

- A press must be used for installation.
- Be certain the bushing is started straight.
- Do not stop the pressing operation until the bushing is in the proper position. Starting and stopping will result in a cracked bushing.
- Check the bushing for cracks after installation.

Carbon graphite bushings with extra interference fits are frequently furnished for high temperature operation. These bushings must be installed by a shrink fit:

1. Heat the bracket or idler to 750°F.
2. Install the cooled bushings with a press.
3. If facilities are not available to reach a temperature of 750°F., it is possible to install at 450°F.: however, the lower the temperature, the greater the possibility of cracking the bushing.



Viscosity And Viscosity Index:

For the maximum gear life the heaviest viscosity gear oil should be used, limited by the gearcase ambient temperature and duty cycle. The gear oil used must have a viscosity index equal to or greater than the required minimum of this specification.

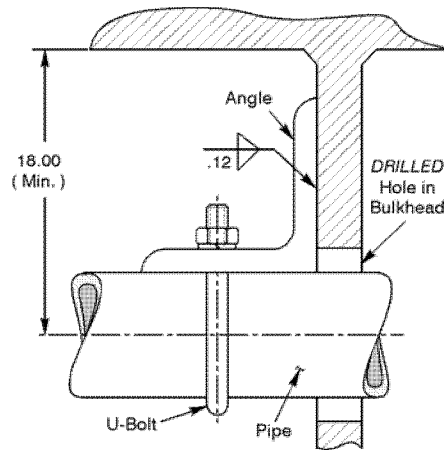
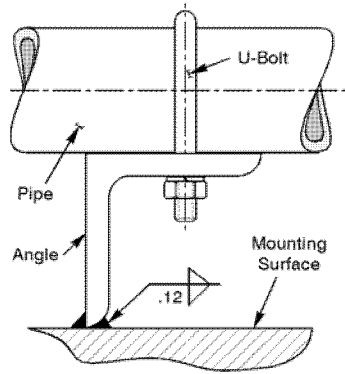
The AGMA (American Gear Manufacturer's Association) grade is SUS (Saybolt Universal Seconds) as specified in this standard for gear oil viscosity. This tends to overcome the confusion of selecting a grade of oil based on SAE numbers (motor oil & gear oil, viscosity at what temperature, etc.).

NOTES:

1. Ambient Temperature: The ambient temperature is defined as the air temperature in the immediate vicinity of the gearcase. Refer to the following in determining the ambient temperature:
 - Use atmospheric temperature for gearcases in an extreme exposed location.
 - Use machinery house temperature for gearcases inside of the house. Some machines are equipped with house heaters.
 - Use oil temperature for gearcases having either strip heaters or immersion heaters.
 - Gearcases exposed to the direct rays of the sun will run hotter and must therefore be given special attention.
2. Requirements For Selecting Gear Lubricant:
 - Lubrication of the gears and anti-friction bearings with the same gearcase oil.
 - Lubrication for the gears only whenever the bearings are sealed and lubricated separately.
 - Duty Cycle:
 - Semi-continuous operations such as: dragline hoist, drag and swing; shovel hoist, swing and crowd; drill rotary drive.
 - Intermittent operation such as propelling.
3. Guidelines For Selecting Temperature Range For Any Gear Oil:
 - Minimum Ambient Temperature:
 - Use oil pour point temperature when gears only are to be lubricated.
 - Use a temperature 10°F above pour point when gears and bearings are to be lubricated.
 - Maximum Ambient Temperature when oil viscosity is 2000 SUS
 - At many locations, a winter and summer grade of Regular Gear Oil will be used.
 - Use ASTM standard viscosity / temperature chart (later in this section) to plot temperature range.

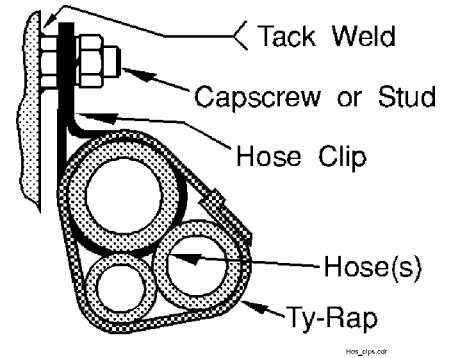
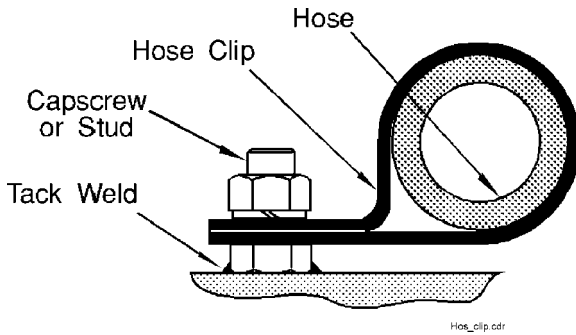


STANDARD LUBRICATION INSTALLATION



TYPICAL PIPE MOUNTING

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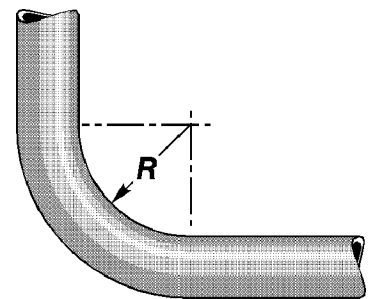


For more than one hose, clip one and secure the others to the 1st with tiewraps.

TYPICAL HOSE MOUNTING

Dia. Inch/(mm)	BUCYRUS Hose No.	Minimum Bend Radius (R)	
		Inch	mm
3/8 (10)	R 5-5	3.38	86
1.2 (13)	R 2-8	7	178
3/4 (19)	R 2-12	9.5	241
1 (25)	R 2-16	11	279

Table3_10.cdr



Hos-bend

MINIMUM HOSE BEND RADIUS



BOOM

NAME OF PART	TYPE	NO. OF-POINTS	LOCATION	LUBE SYMBOL	METHOD &-FREQUENCY
Point Sheaves	Anti-Friction	2	End of shaft	MPG	Automatic
Front Trunnion - Bearing Block	Bushing	2	In hub of - bearing block	MPG	Automatic
Rear Trunnion Bearing Block	Bushing	2	In hub of - bearing block	MPG	Automatic
Rear Trunnion Thrust	Thrust Washer	3	In hub flange - of bearing block	MPG	Automatic
Intermediate Support Ropes Connection	Bushing	2	End of pins	MPG	Automatic
Intermediate Support Ropes Cylinder	Bushing	2	End of Cylinder	MPG	Automatic
Rope Damper	—	8	2 ea. damper	MPG	by hand 6 months
Boom Support Ropes Connection	Bushing	4	End of pins	MPG	Automatic
Boom Foot Pins	Plain	2	End of pins	MPG	By hand - 500 hrs or 30 days
Point Sheaves	—	2	Spray	WRL	Semi-Auto - 8 Hrs.

LT_BM147



LUBRICANT CLEANLINESS

Even the best lubricant is a useless wear preventative if it has become contaminated by careless handling and storage. The lubricant manufacturer packs the lubricant in a tight container to keep it clean. It is the responsibility of the person performing the machine lubrication to be sure that no dirt gets into the lubricant.

Follow these points of good lubrication practice:

- Keep all oil and other lubricants in tightly covered containers.
- Wipe off covers before opening containers.
- Keep funnels, oil cans, grease guns, etc., in a clean place and wipe them off with a clean lint-free cloth before using.
- Wipe off each fitting before attaching the lubricant gun.
- Wipe off oil filler caps or covers and the surrounding area before removing them.

Refer to the topic “Lubricant Benchmarks” in Section 3 of this manual for an explanation of each type of lubricant required for servicing this machine. Make sure the lubricant was not dirty or of improper viscosity. When the machine is operated for more than one shift each day, all crews must cooperate on checking lubrication. This is to ensure that no lubrication point will be missed or over-lubricated. It is usually best to do this at the beginning of each shift. Reproducible service schedules are provided for recording service information.

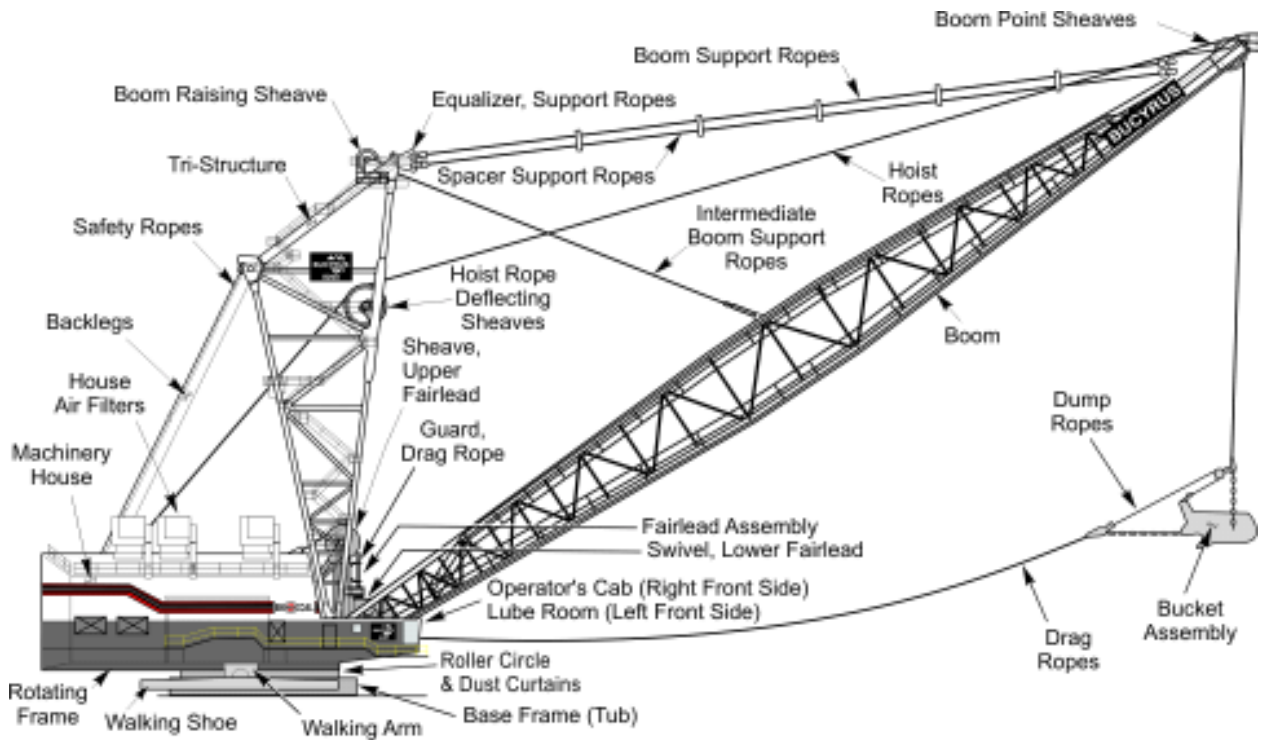
NOTE: Lubrication instructions provided by any vendor for a vendor supplied item have priority over Bucyrus lubrication intervals and procedures.



CAUTION: When not possible to work on the machine with a safety harness, use a “cherry picker” or “man basket” when inspecting or servicing elevated areas. A slip or fall can result in severe personal injury or death.



MAJOR COMPONENT LOCATIONS



141147NM

MACHINE NOMENCLATURE

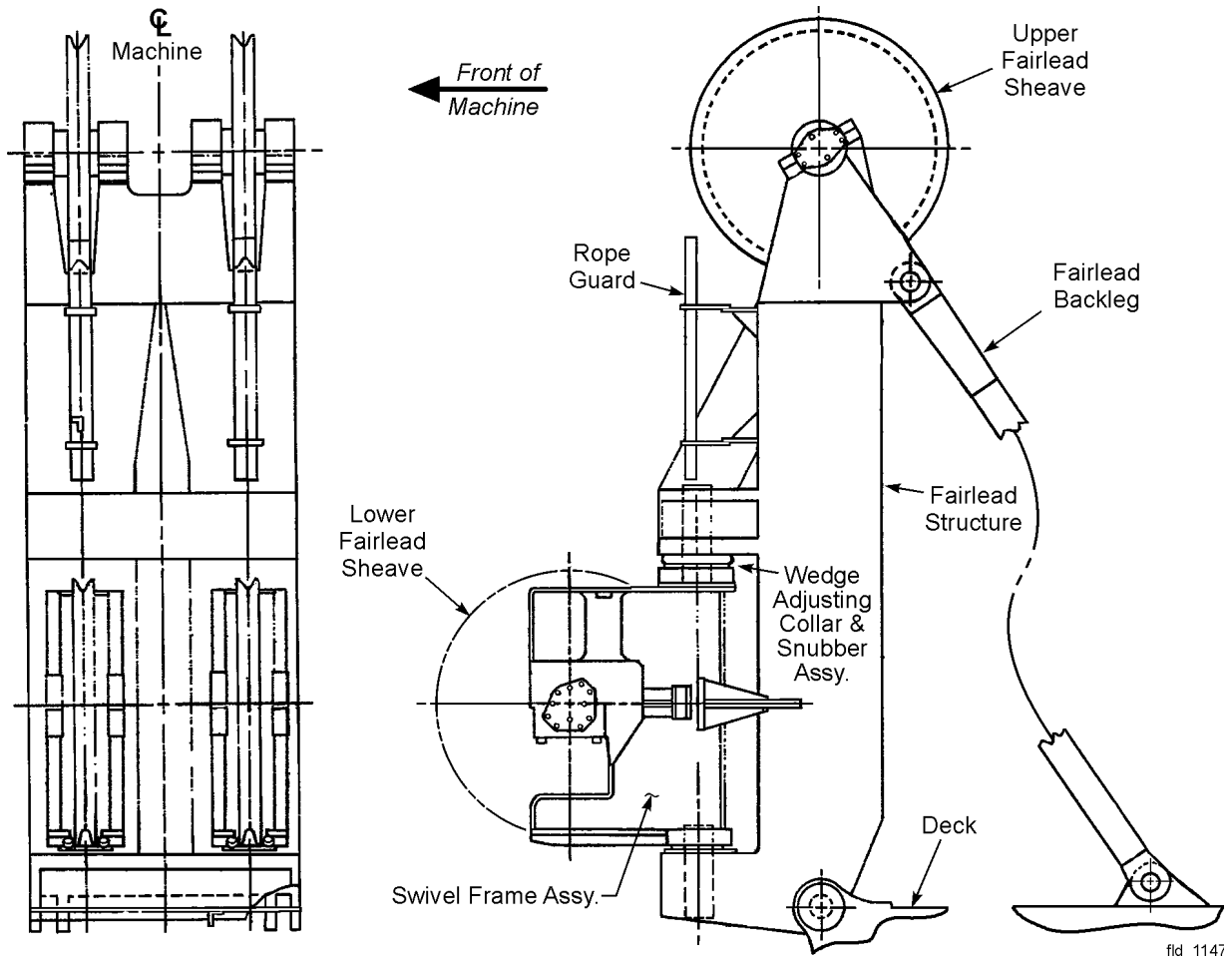
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FAIRLEAD ASSEMBLY

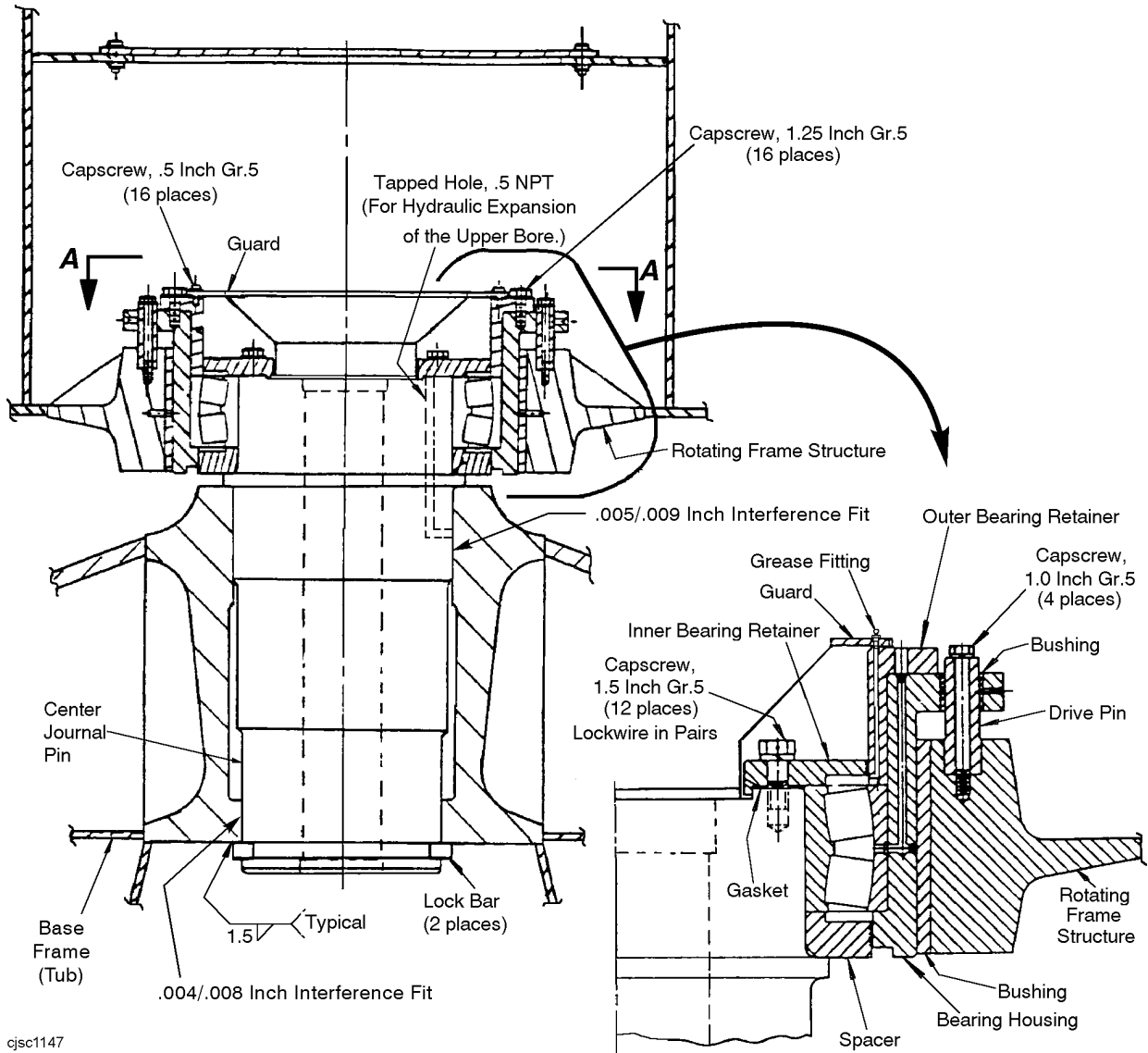


CENTER JOURNAL

The CENTER JOURNAL pin holds the Rotating Frame and the Base Frame (Tub) in concentric alignment at the center of rotation.



DANGER: REMOVE POWER FROM MACHINE PRIOR TO REMOVING HOUSING FROM COLLECTOR RINGS OR GAINING ACCESS TO THE RING AREA.



cjsc1147

CENTER JOURNAL

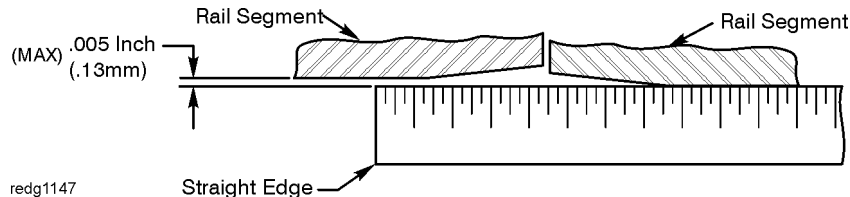
The CENTER JOURNAL PIN is fitted into tub structure with an interference fit as follows:

CENTER JOURNAL INTERFERENCE FIT

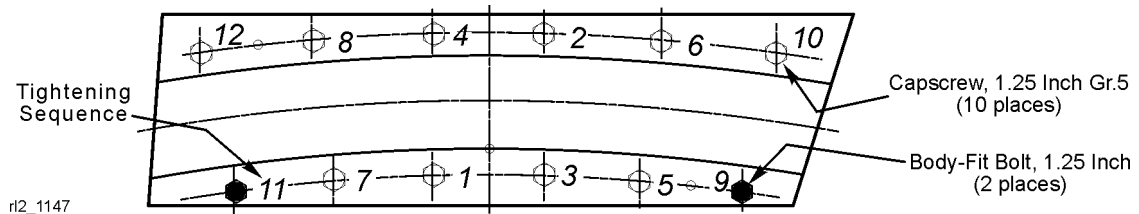
Top: { .005 } over { .009 } Inch ~Bottom: { .004 } over { .008 } Inch



5. Remove the roller rail and carefully clean the mounting surface of the rail and pad on the rotating frame.
6. Lift the new rail (approx. 2300 Lbs.) into place and secure with 2 inner and 2 outer bolts at each end of the segment. DO NOT use the holes for the body-fit bolts.
7. Check the new and the existing rail height. The offset between adjacent rail ends should be .005 inch maximum.



8. Ream the 2 body-fit holes to 1.251/1.253 diameter when the rail(s) is properly aligned.
9. Remove the rail, clean all parts and re-install the rail. Install the body-fit bolts first.



TENSIONING SEQUENCE for the UPPER ROLLER CIRCLE RAILS

10. If additional rails are to be replaced, rotate the machine to place the roller circle opening over the rail to be replaced and repeat steps 4 through 13.
11. Replace the rollers and cage bars. Tighten the tie rods to 265 Ft.Lbs.
12. After 200 hours of operation, retighten the bolts. Check the bolt tension every 90 days.

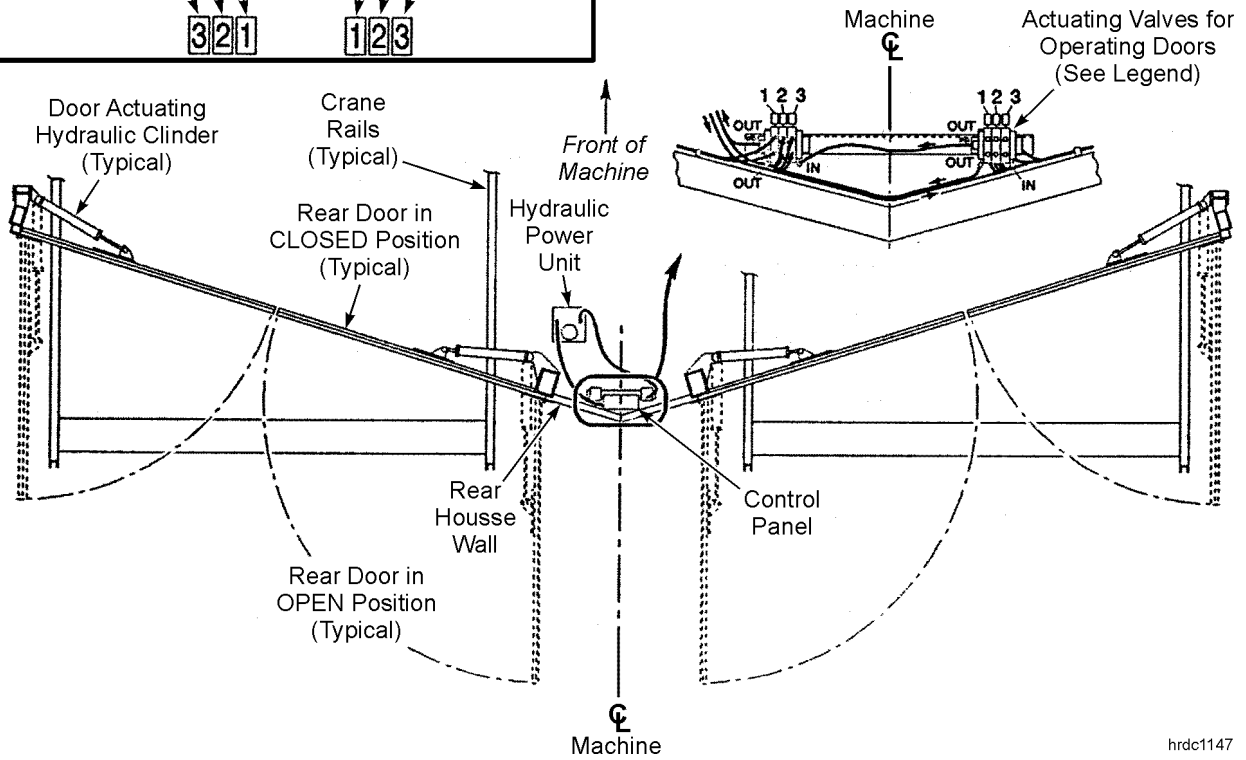
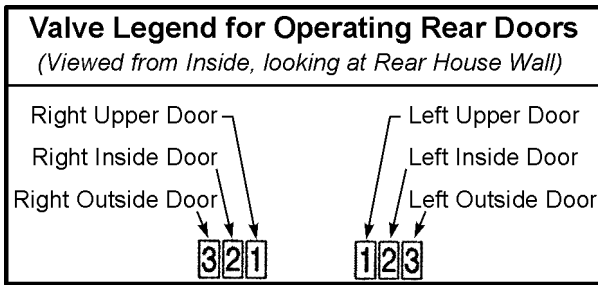
ROLLER CIRCLE

The ROLLER CIRCLE contains 143 tapered steel rollers. The rollers are held in place by retainers, splice bars and a thrust rail.

NOTE: To prevent damage to rails or other rollers, immediately remove a roller from the roller circle if it becomes chipped, broken or damaged in any way.

Remove the roller by rotating the machine until the damaged roller is directly below one of the roller removal holes in the rotating frame. Remove the 2 rods which secure the roller in the cage. Use suitable tongs or a sling to lift the roller from the roller circle.

REAR DOOR OPENING AND CLOSING



REAR DOOR OPERATION

NOTE: Either set of doors or both can be opened, however each set must be opened in sequence and closed in the opposite sequence.

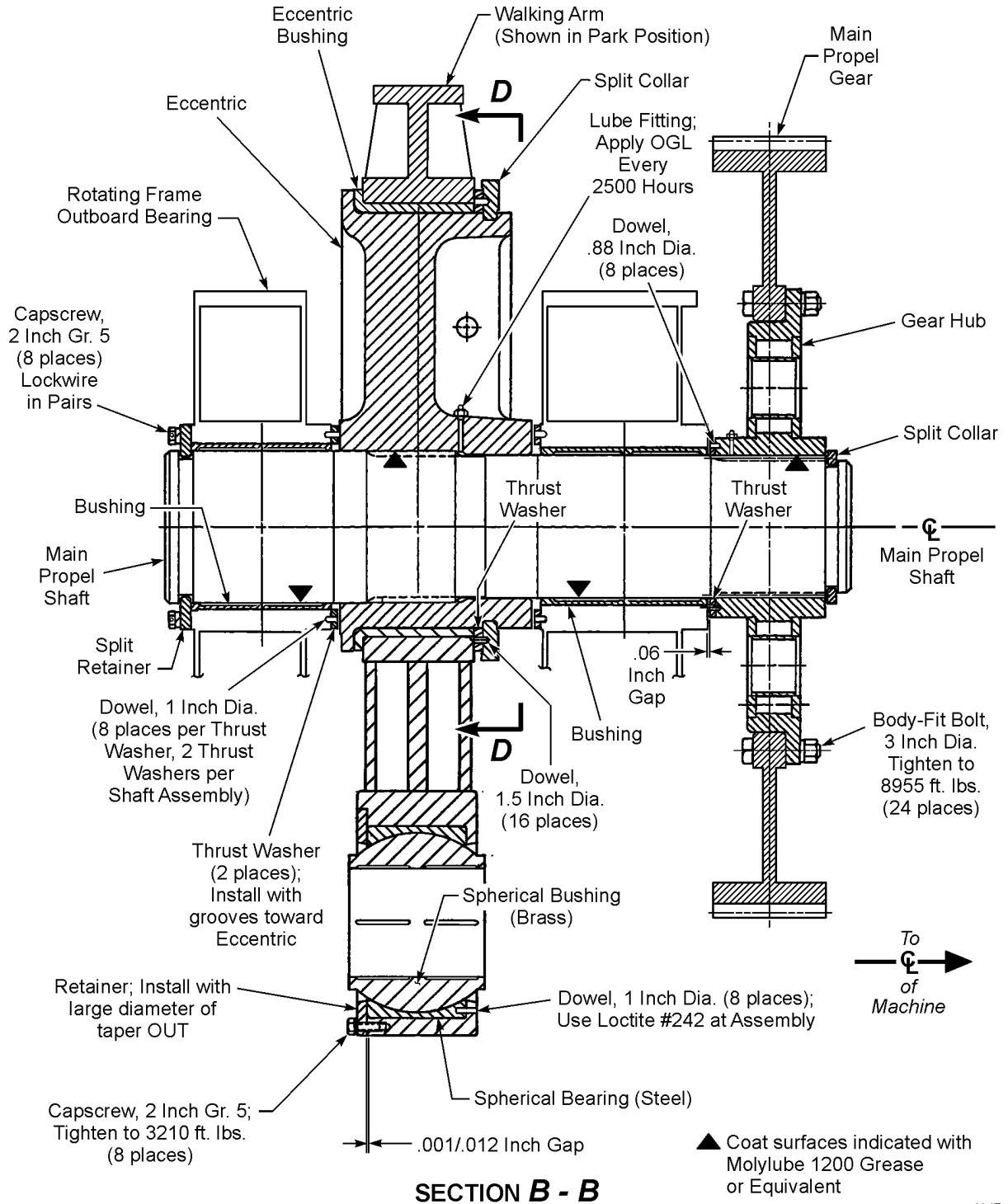


CAUTION: DO NOT ATTEMPT TO OPERATE THE REAR DOORS UNTIL THE GREEN LIGHT IS ILLUMINATED, INDICATING THE DOOR LATCHES HAVE BEEN RELEASED.



MAIN PROPEL SHAFT / WALKING ARM ASSEMBLIES

The MAIN PROPEL SHAFT assembly consists of the main drive gear, the propel shaft and the walking eccentric.

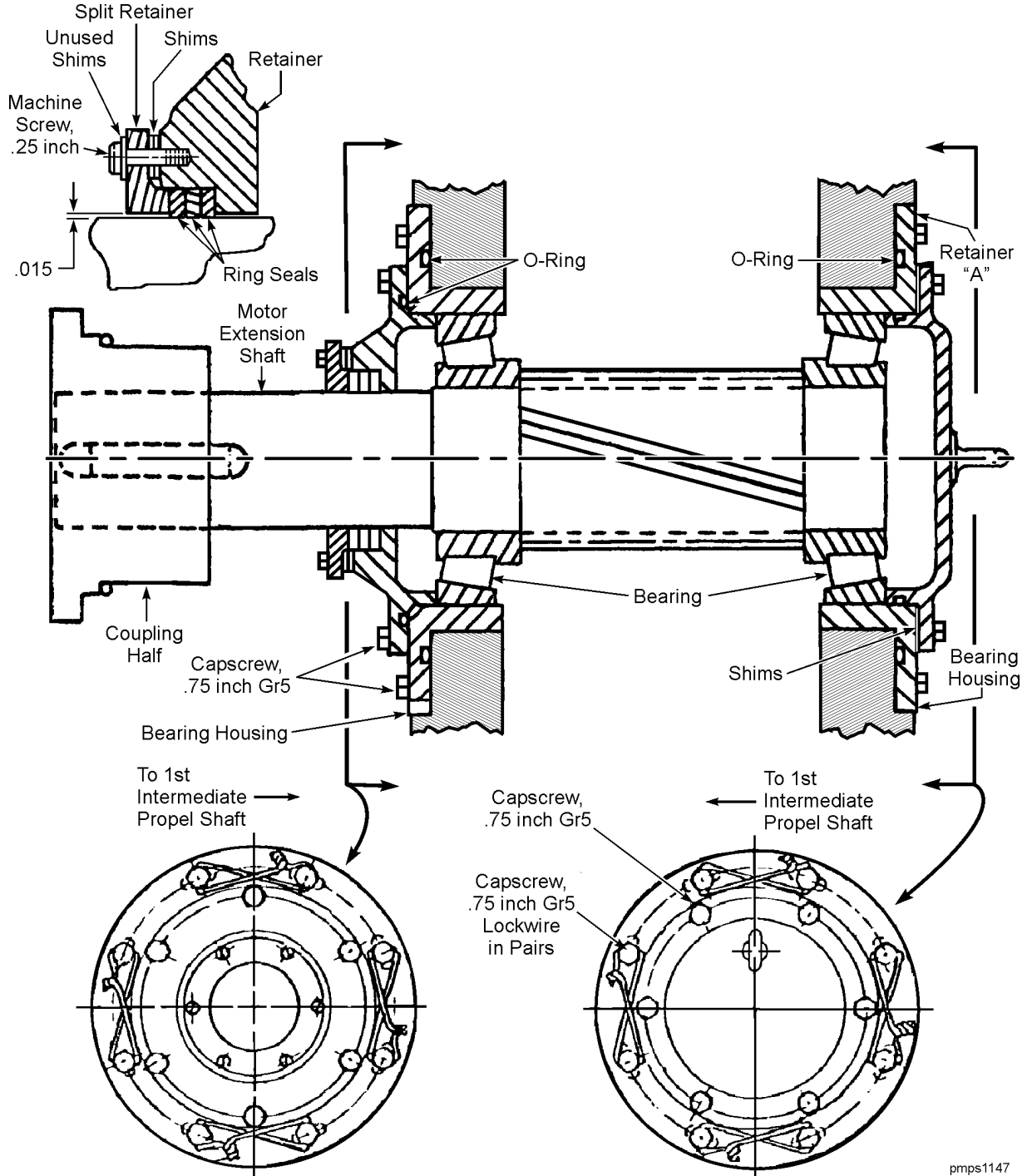


pmsc1147



MOTOR PINION SHAFT

The motor pinion shaft is coupled to the propel motor and drives the 1st intermediate propel shaft assembly. Tapered roller bearings support the shaft.



pmps1147

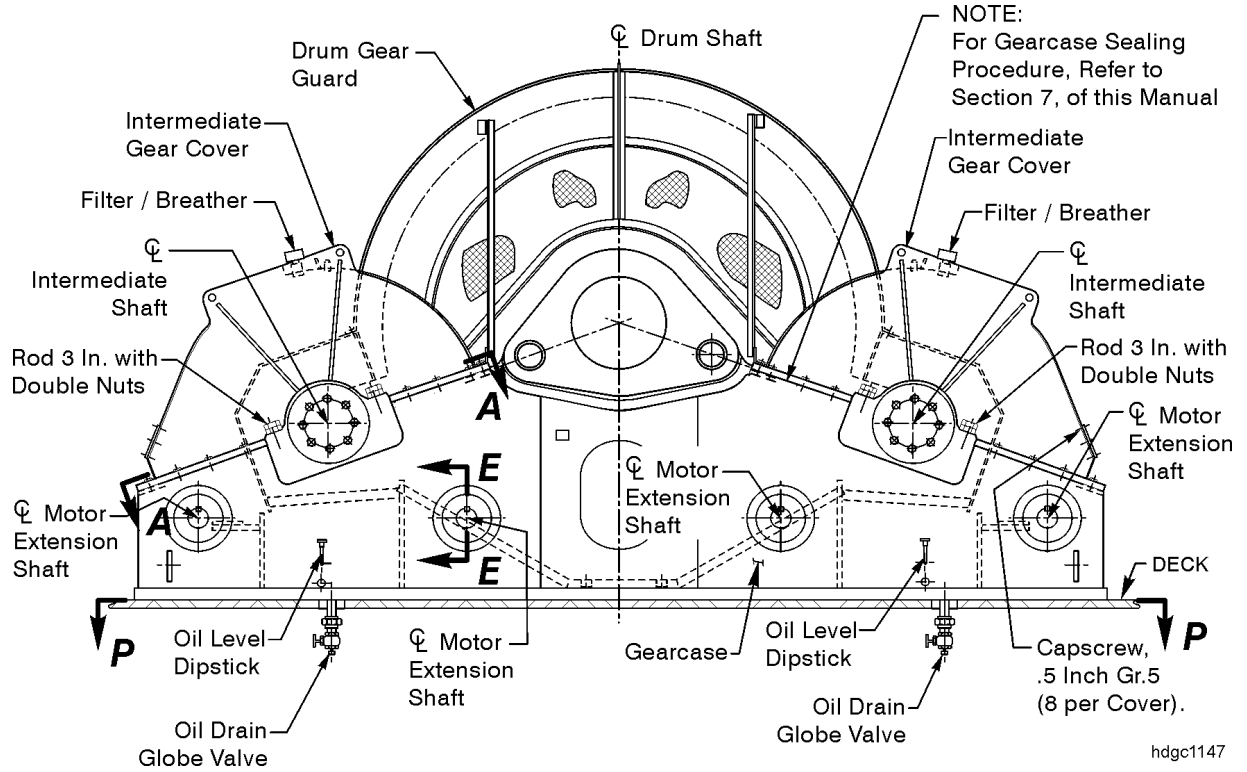
Section A-A

PROPEL MOTOR PINION SHAFT ASSEMBLY

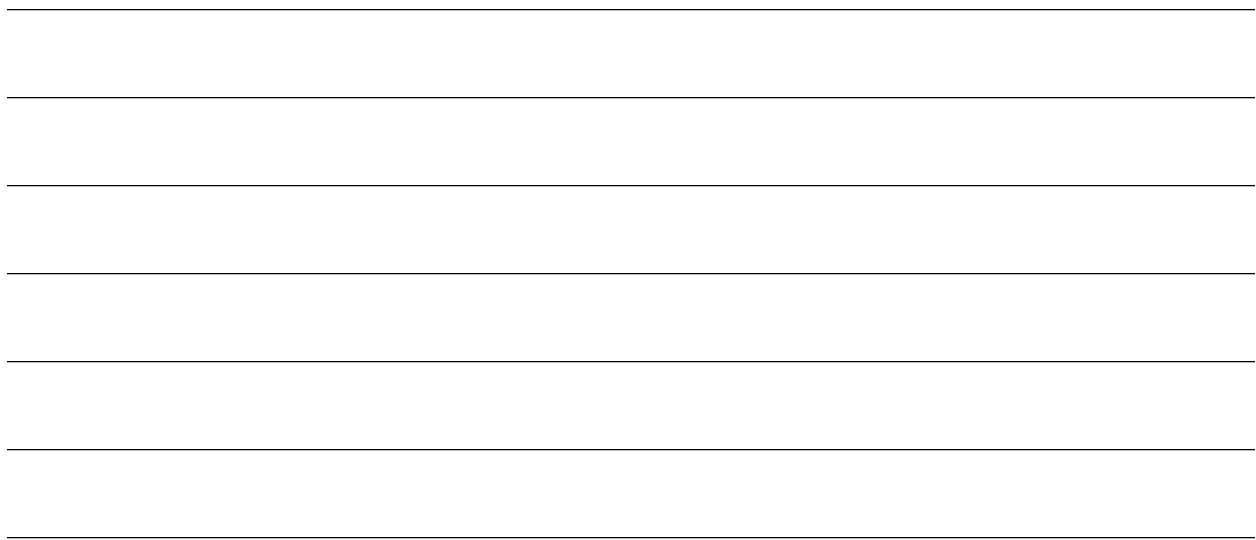


HOIST AND DRAG GEARCASE ASSEMBLIES

The hoist and drag machinery assemblies utilize the same sub-assemblies. Each assembly has four DC motors, one 4-motor gearcase and a drum shaft.

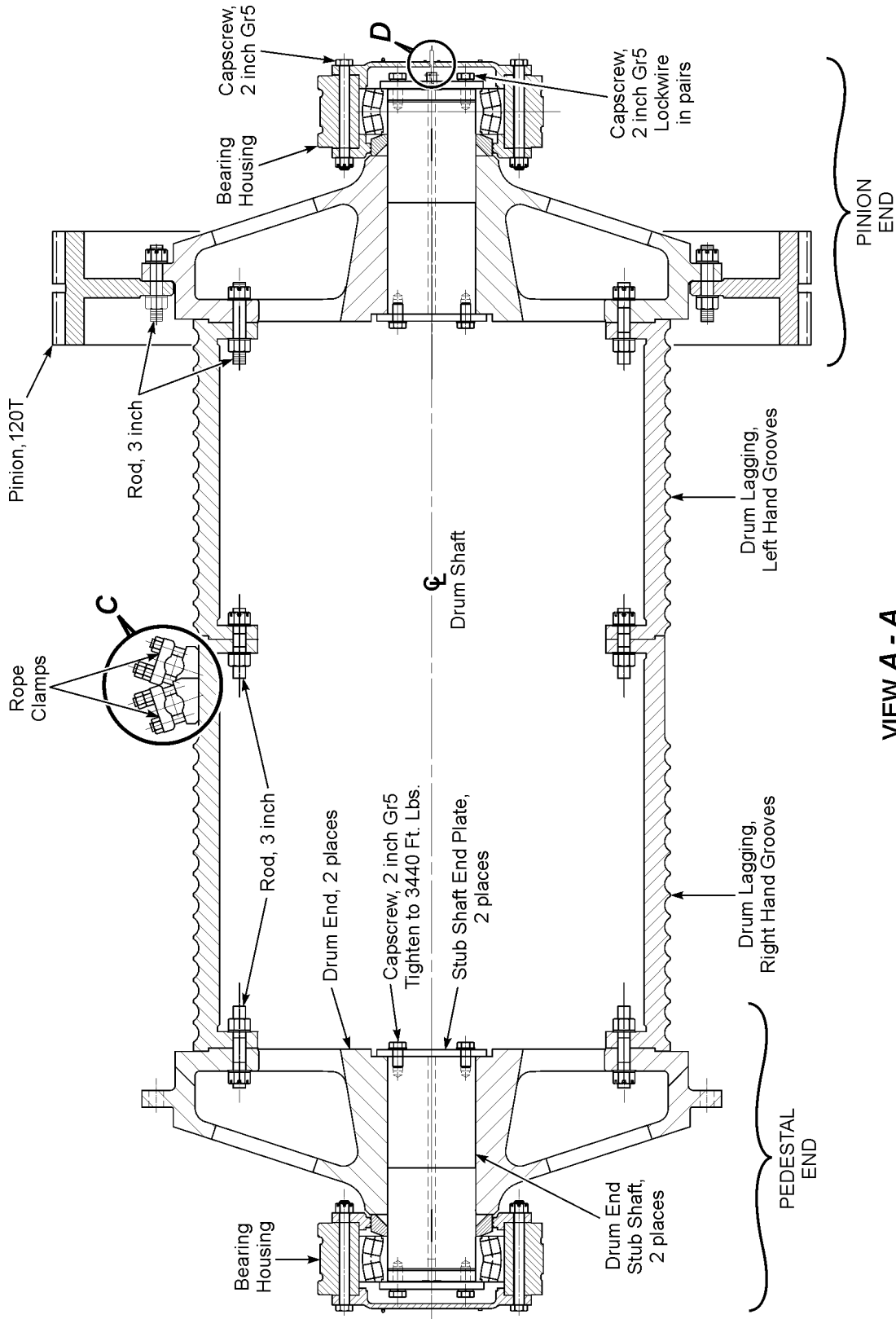


HOIST / DRAG GEARCASE ~4-Motor
(Side View)





8200 Walking Dragline



VIEW A - A
HOIST/DRAG DRUM SHAFT ASSEMBLY

hdrm1147

VIEW A-A
HOIST/DRAG DRUM SHAFT ASSEMBLY



- 11. Set the flange of the gearcase/motor assembly on cribbing. Be sure that the output shaft does not support the weight of the entire assembly and that the flange of the gearcase is resting on the cribbing.
- 12. Remove the motor & brake per the previous procedures.

To install the gearcase/motor, assemble in the reverse order of removal — after the following have been completed:

- a. Check the main rotating shaft splines for damage. Replace the shaft if cracks or excessive wear is found.
- b. Coat the main rotating shaft splines and approximately heap 2.6 Lbs. of MPG on the end of the shaft.
- c. Reposition all swing shaft support guides to their lowered position for machine operation.
- d. Before returning the machine to service, be sure to fill the cooling system and gearcase with the proper fluid and reconnect all air and electrical lines to the swing machinery assembly.

SWING GEARCASE ASSEMBLY

The swing gearcase is a totally enclosed, double-reduction, planetary gearcase. To minimize downtime, it is recommended that the case be replaced as a complete unit if a problem should develop within the case.

When repairing the case, note the following:

- Change planet gears in sets only.
- Although the 2nd reduction carrier and both sun pinions have a preset end-play, it is important that this is checked and verified. Bearing damage can result from zero end-play or end pre-load.



SNUBBER ADJUSTMENT

Each Snubber Assembly should be adjusted so that it retards the sideways movement of the lower fairlead swivel during machine operation. The swivel should not swing excessively and should hit the bumpers only very infrequently. The tighter the snubber is adjusted, the quicker the lining wear. Swivel frame control is also dependent upon the expertise of the operator.



DANGER: SHUT DOWN THE MACHINE TO WORK ON THE SNUBBER ASSEMBLY.

Adjustment is made with the adjusting nut AFTER backing off the lock-nut. For MORE retardation of the swivel frame - tighten the adjusting nut to shorten the spring length. For LESS retardation of the swivel frame - loosen the adjusting nut to lengthen the spring length. Re-seat the lock-nut after adjustment. The spring length, when the lining is new, can be set at 6.5 inches (165 mm) for an initial setting.

SNUBBER REPLACEMENT

1. Set the bucket on the ground and shut down the machine. Have the lower fairlead sheaves positioned in line with the machine centerline straight fore and aft. Secure them in place so they cannot swing.

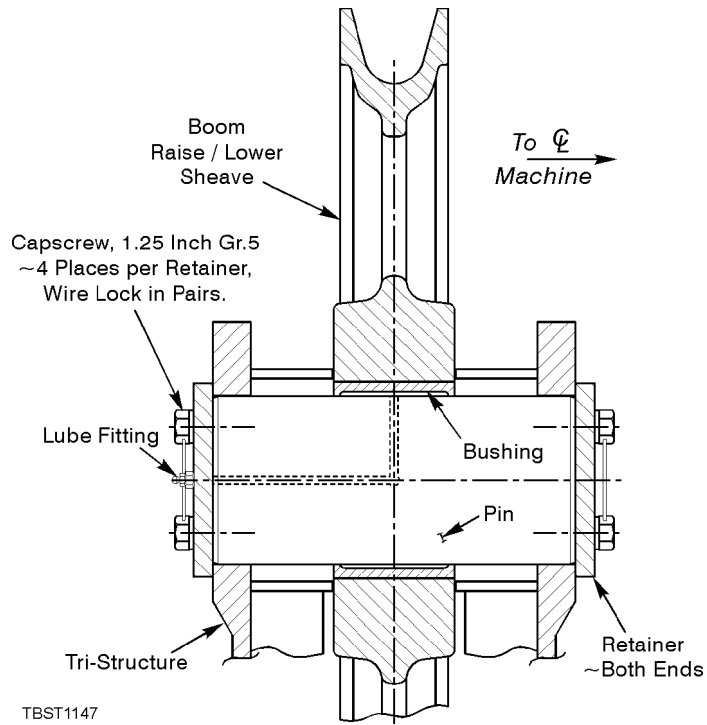


CAUTION: ALWAYS USE A SAFETY HARNESS WHEN WORKING ON THE FAIRLEAD TO AVOID FALLING OFF.

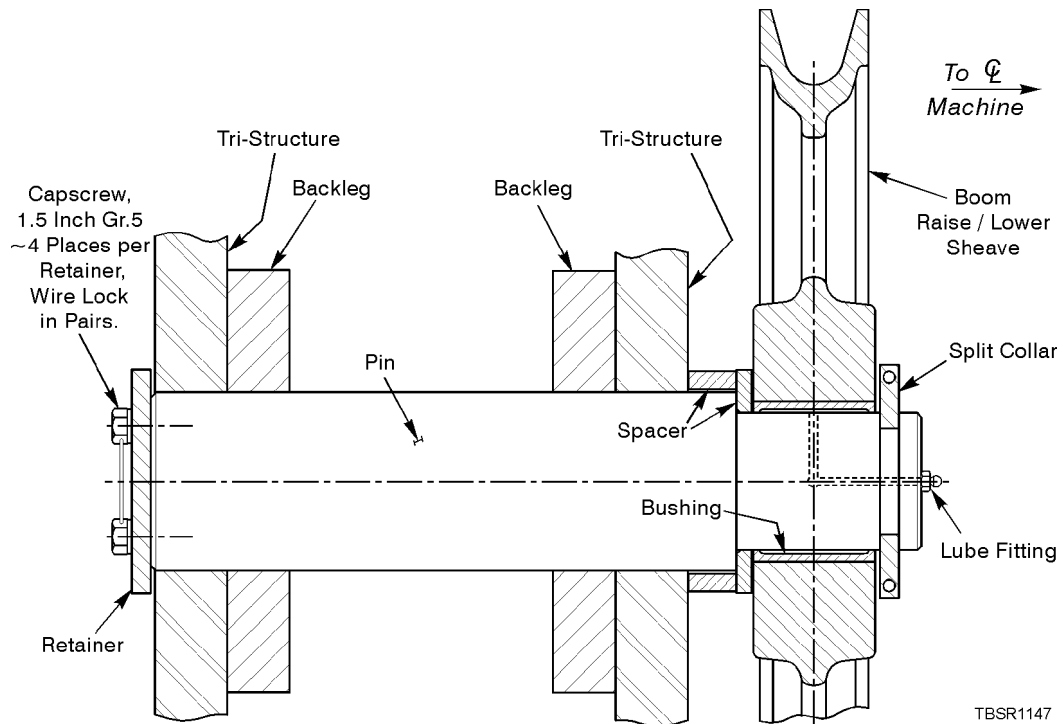
2. Back off the lock-nut and then the adjusting nut on the snubber band halves connecting bolt until the band is loose on the swivel frame.
3. Remove the pin connecting the snubber to the anchor lugs on the fairlead structure.
4. Rotate the snubber about the swivel frame until the hinge pin can be reached through the opening in the gantry frame.
5. Loosen the nylock set screw and remove the hinge pin.
6. Remove the nuts, washer, and spring from the connecting bolt. Take each band half in turn off the swivel frame.
7. Installation is the reverse of removal. Initial spring length adjustment for a band with a new lining is 6.5 inches.



8200 Walking Dragline



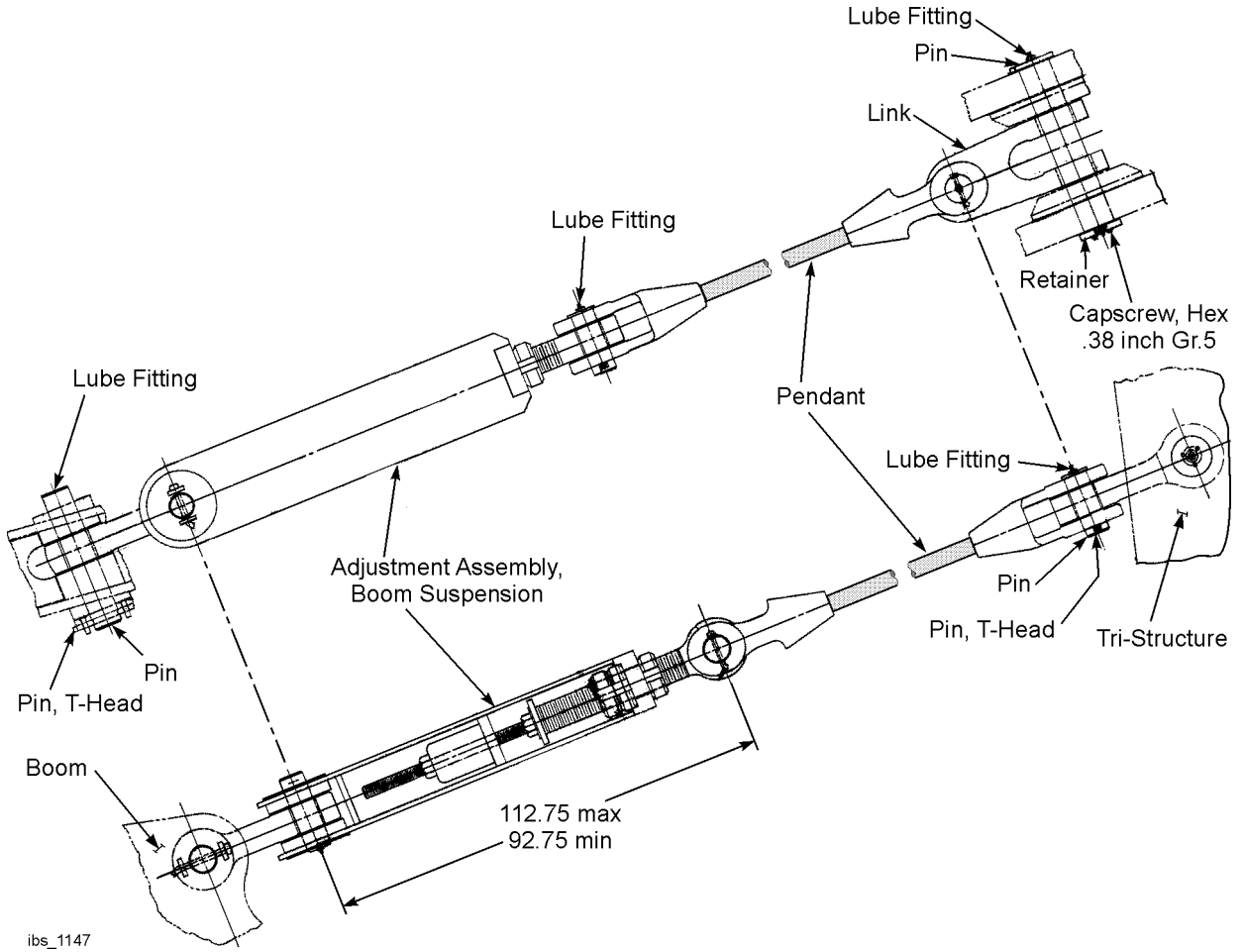
Section A-A



Section B-B



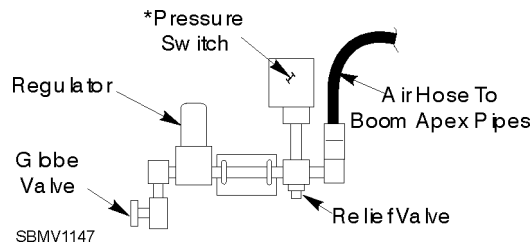
INTERMEDIATE BOOM SUPPORT



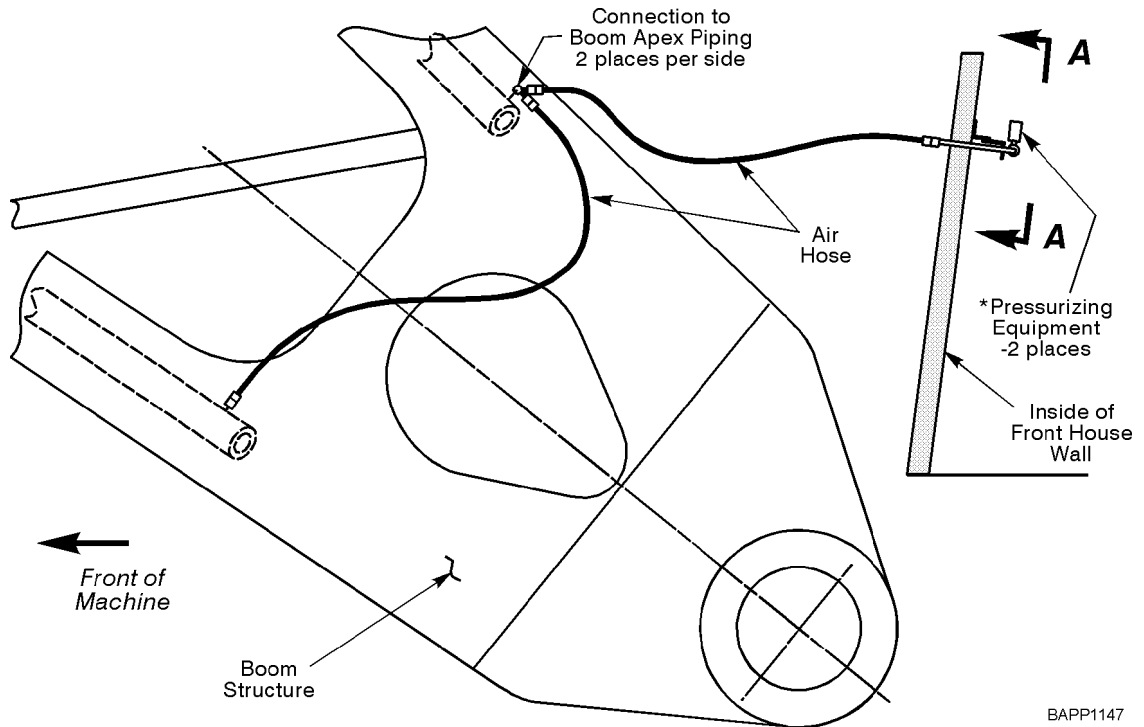
The intermediate support ropes on this machine require a pre-load tension of **102,000** pounds. Use the procedure on the following page.



8200 Walking Dragline



View A-A



BAPP1147

The boom Apex Pipes are pressurized. Loss of pressure in any of the four pipes will set off an alarm in the operator's cab and be indicated on the OIT. Refer to Section 7 - COMPRESSED AIR SYSTEM of this manual for charging procedures.



Section **6**

Brakes and Couplings

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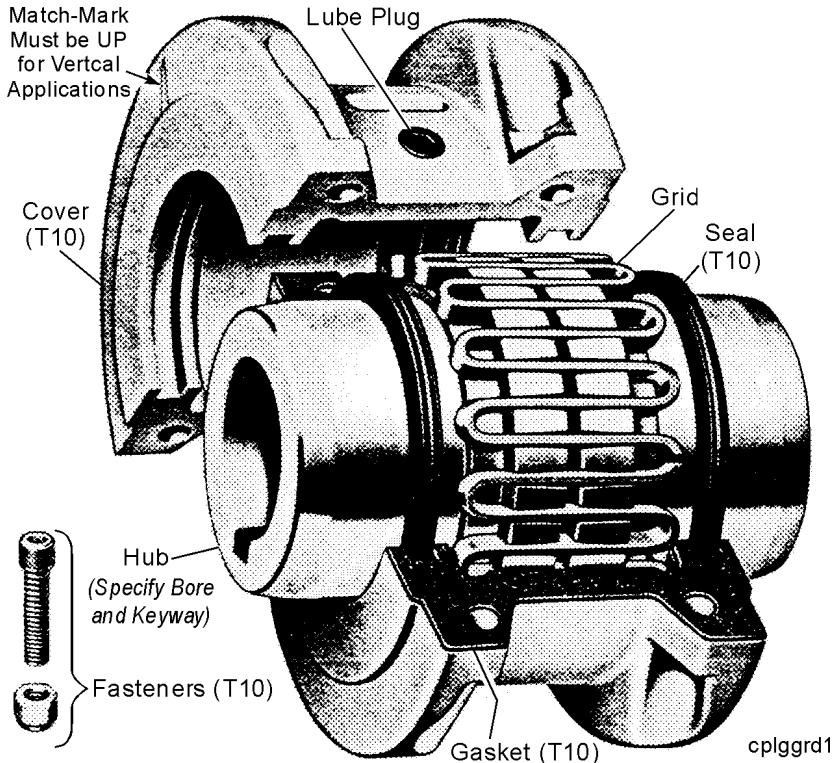
 COUPLING DATA. 14



COUPLINGS

GRID COUPLINGS

These instructions apply to Tapered Grid Couplings. They are designed to operate in either the horizontal or vertical position without modification. However, for vertical applications, the match mark shown above, must be up. The performance and life of the couplings depend largely upon how they are installed and serviced. Carefully follow these instructions for optimum performance and trouble-free service.

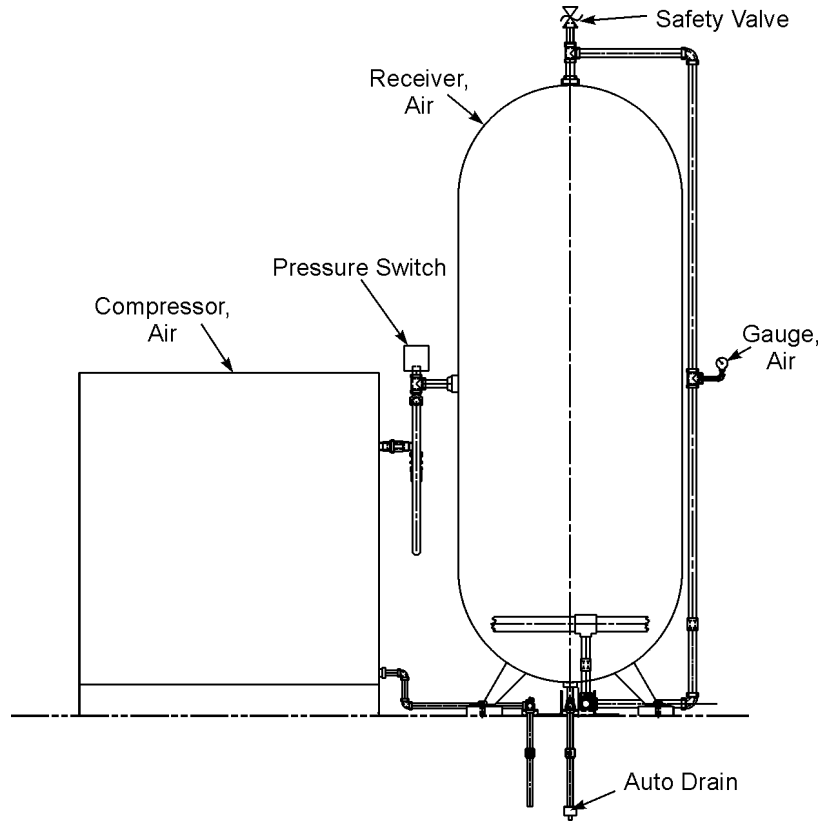


All coupling parts have identifying part numbers. When ordering parts, always **SPECIFY SIZE and TYPE**. Cover halves have 1/8 NPT lube holes. Use a standard grease gun and lube fitting.

NOTE For specific coupling data, refer to the end of this section of the manual.

LUBRICATION

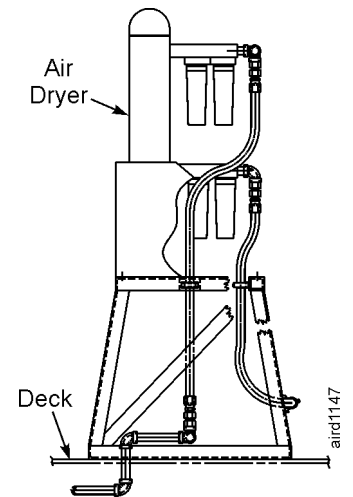
Adequate lubrication is essential for proper operation of the coupling. Refer to Table 9 for the amount of lubricant required. It is recommended that the coupling be checked once a year and lubricant added if required. For extreme or unusual operating conditions, check more frequently. Grid couplings initially lubricated with LTG will not require re-lubrication until the connected equipment is stopped for servicing.



AIR COMPRESSOR INSTALLATION

(Left Shown)

NOTE: Set the pressure switch on each compressor to turn on at 100 PSI and to turn off at 120 PSI.

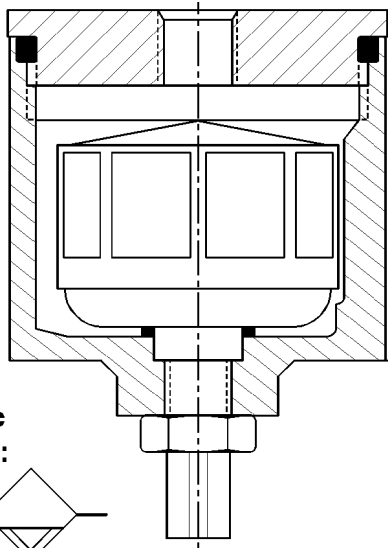


View G-G

Air Dryer



AUTOMATIC DRIP LEG DRAIN



Graphic
Symbol:



ADLDRAIN

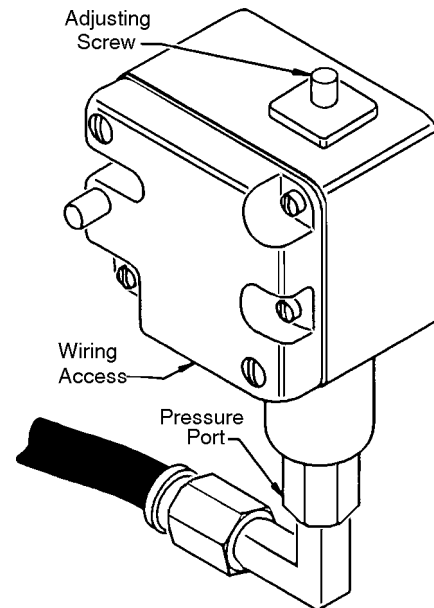
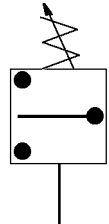
The Automatic Drip Leg Drain is designed to collect moisture from low areas of a pneumatic system and automatically discharge it from its bottom port when the moisture reaches a predetermined level. It is compact in size and easily serviced without tools. This unit is equipped with a manual override and is **NOT ADJUSTABLE**. Three drain units are installed in the air system, below the machinery deck.

AIR PRESSURE SWITCHES

These devices are used in the air receiver supply line and in the swing, hoist, drag and propel brake circuits to monitor system pressure and brake operation. These switches are all double-make double-break units that have snap action switching elements. They automatically reset by a snap-action of the switch. **DO NOT PLUG THE DRAIN PORT ON THESE UNITS.** Each switch is adjustable externally within the ranges listed on it. Refer to the air system schematic for the setting on each pressure switch.

If the air pressure in any of these circuits falls below a preset value on its pressure switch, then an electrical interlock will be activated that will alert the operator of the malfunction and, in some instances, shutdown the machine.

Graphic
Symbol:



SWPRES3D

A pressure switch in the auto lube air supply circuit monitors that system for pressure in excess of a preset amount. If this pressure is exceeded, then the operator is again notified of the situation via the annunciator panel.



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Engineering Data

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MAINTENANCE WELDING

These recommendations for repair welding apply to the major structural members of the machine. The high cyclic loading characteristics of the machine are considered in the design and material selected for the construction of the machine. However, due to unusual operational conditions that may be encountered and to the great number of cyclic loadings that may be applied to the machine, fatigue cracks or other abnormalities may occur. Early detection of these conditions through regular machine inspection helps to avoid problems or emergency breakdowns.

Maintenance welding is applied to the repair of cracked or broken structural components. Reconditioning of broken parts by the application of heating, cutting and welding processes requires attention to a number of details, careful adherence to the repair procedure and observance of federal, state and local safety regulations.



CAUTION: WELDING AND THERMAL-CUTTING OF METALS INVOLVE THE GENERATION OF TEMPERATURES UP TO THOUSANDS OF DEGREES AT WHICH METALS MELT AND VAPORIZE. When proper precautions are taken to protect personnel and property against the heat, evolved gases and fumes, electric shock and radiation, no harm will result either to personnel or property. In gas heating and cutting, the handling and storage of compressed gases present other hazards that also must be protected against to provide a safe working environment.

Safety precautions should conform to the latest edition of ANSI standard Z49.1, Safety in Welding and Cutting, published by the American Welding Society.

Reconditioning of failed members requires attention to a number of details and careful application of the repair procedure. Only in certain cases is it necessary to strengthen members by added reinforcement.



WARNING: REINFORCING STRUCTURAL MEMBERS SHOULD BE MADE ONLY UPON RECOMMENDATION BY BUCYRUS INTERNATIONAL, INC. IMPROPERLY APPLIED REINFORCEMENTS CAN HAVE AN ADVERSE EFFECT ON THE PERFORMANCE AND LIFE OF THE STRUCTURE.

A broken member is best repaired by making a complete penetration weld, preferably by welding from both sides, using the correct welding electrode and observing all precautions such as preheat, back-gouging, etc. The complete penetration groove weld should be ground flush with the base metal on both sides to remove all surface irregularities. An alternate procedure incorporates backup bars to ensure sound, complete penetration welds in the repair area. Be sure to follow all applicable safety measures and federal, state and local regulations.

A complete penetration weld repair conditioned by grinding instead of adding reinforcement is favored to maintain the original pattern of stress flow designed into the structural members. Addition of reinforcement which is not part of the design can reduce fatigue strength because of the change in geometry from the original structure.



DUPLEX WIRES - Chromel-Alumel - Type K - 16 AWG Stranded

LENGTH - Total External Resistance for both Wires including Thermocouple not to exceed 2500 Ohms or 410 Feet.

WIRE RESISTANCE - Nominal Resistance, Ohm per Foot at 20°C (66°F) - Chromel - Ohms - Alumel - .0683 Ohms.

WIRE INSULATION - each Conductor Enamel, Asbestos (Twisted Pair) Overall Asbestos Braid

WIRE CODE -Alumel, Negative Wire (Red); Chromel, Positive Wire (Yellow)

OVERALL COLOR - Yellow

CATALOG No. 16-59-17

POLARITY DISCONNECT

CHROMEL-ALUMEL COMPENSATED CONNECTION

JACK Color Code (Yellow) - Catalog No. 040419

PLUG Color Code (Yellow) - Catalog No. 040434

CABLE CLAMP - Catalog No. 072513

ADAPTER - Catalog No. 076794

THERMOCOUPLE ELEMENT

CHROMEL-ALUMEL - Type K - Swagged One (1) Inch Stripped

CHROMEL POSITIVE WIRE Color Code (None)

ALUMEL NEGATIVE WIRE Color Code (Red)

CATALOG No. 8784-K-1-3-12"-D

1. 588003 Kaopak Flex Heaters
2. 588004 Kaopak Collector Streamer Type
3. Kaopak Blankets 3, 5, or 6 Pocket Size as needed for Size Pipe being Stressed Relieved

Thermocouple Assembly, Complete

Catalog No. 8784-K-1-3-12"-Q

Temperature Heating Pellets

Range: 1050°F 1100°F - 1200°F 1250°F

Mean Accuracy: +/-1%

These Tempil Pellets will begin to melt at the temperature specified.

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