



Technical Manual

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— COMPONENT WEIGHTS —

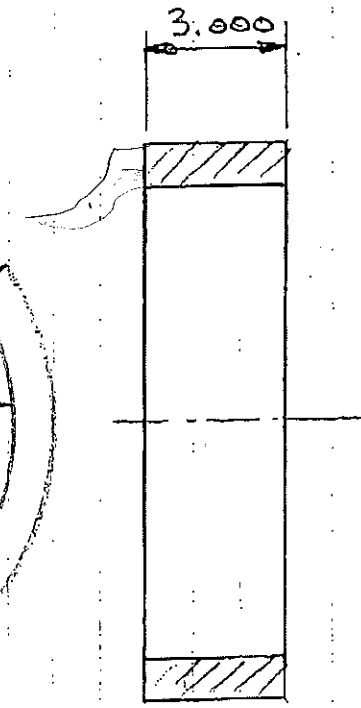
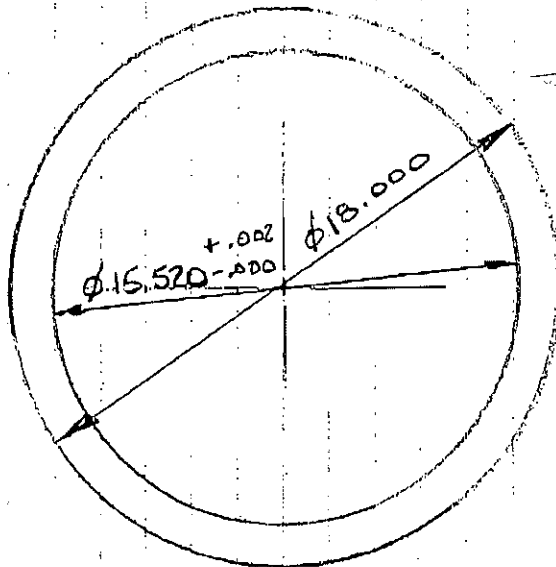
| | Lbs. |
|--|------------------|
| BASE FRAME ASSEMBLY (Tub) | 1,740,800 |
| Center Section | 131,700 |
| Intermediate Inner Section | 76,140 |
| Intermediate Outer Section | 58,170 |
| Rail/Gear Segment Section | 80,500 |
| Outer Section (typical) | 80,500 |
| Outer Electrical | 81,050 |
| ROTATING FRAME ASSEMBLY - Front | 2,563,800 |
| ROTATING FRAME ASSEMBLY - Rear | 834,025 |
| Center Journal Pin | 13,100 |
| Hook Shoe Casting | 11,000 |
| Roller Circle Assembly | 119,870 |
| Rail Segment (typ.) | 3,200 |
| Gear Segment (typ.) | 6,060 |
| Thrust Rail Segment (typ.) | 320 |
| Roller | 775 |
| Main Collector Rings | 2,500 |
| House Roof Panel Assembly | 60,400 |
| Door Assembly, Rear | 3,260 |
| Door Actuator Gearcase | 1,190 |
| Air Filter, Dynavane | 10,120 |
| M.G.Set (4) | 200,000 |
| Air Compressor | 1,310 |
| Deck Winch | 1,190 |
| Vacuum Breaker Cabinet | 8,000 |
| Fields Control Module | 10,000 |
| Transformer, 1500 KVA | 14,000 |
| Transformer, 7500 KVA | 33,000 |
| Breaker Cabinet, 25 KV | 10,000 |
| Motor Control Center | 10,000 |
| Disconnect Switch Cabinet | 3,600 |
| Air Conditioner, Heater | 5,000 |
| Ballast | 1,200,000 |
| ROTATING MACHINERY (16) | 26,220 |
| Rotating Gearcase Assembly | 9,625 |
| Main Rotating Shaft Assembly | 8,900 |
| Rotating Motor | 6,170 |
| Motor Brake | 600 |

2 2
G.E.M.-jk
3/29/00

• SPACER (NEW) MATERIAL ASTM A-36

1- REQUIRED

125/ ALL SURFACES



* NOTE

INSTALL SPACER OVER SHAFT SPLINES BETWEEN MODIFIED GEAR D024556-01 AND MODIFIED SPACER C117157-01

Section **8**

8750 Series Dragline

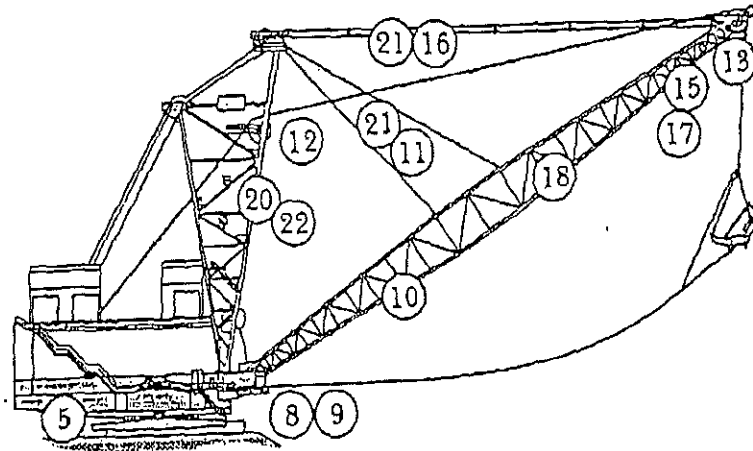
Maintenance Inspection Schedule

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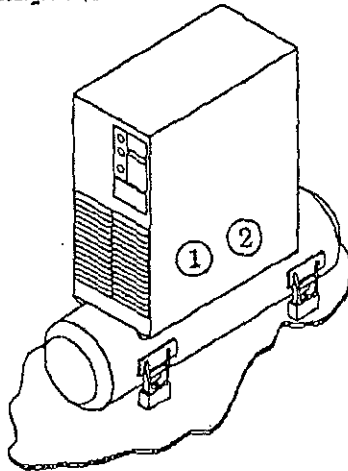
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| Monthly | 8.15 |
| Quarterly | 8.16 |
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Weekly —

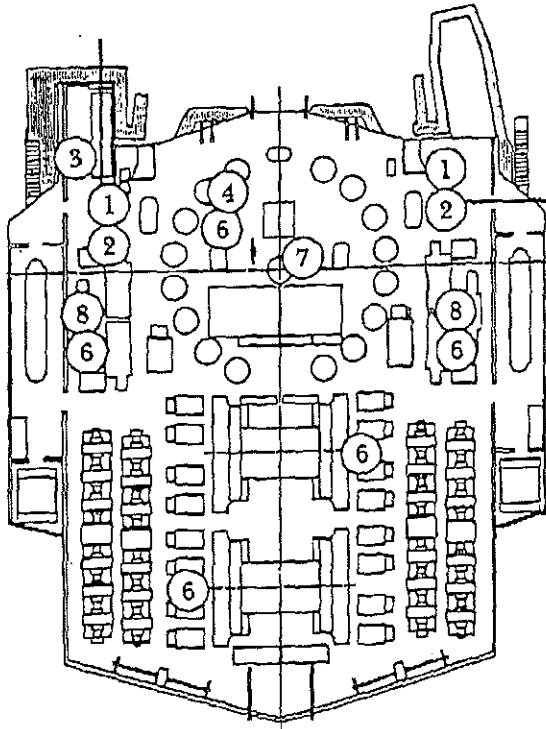
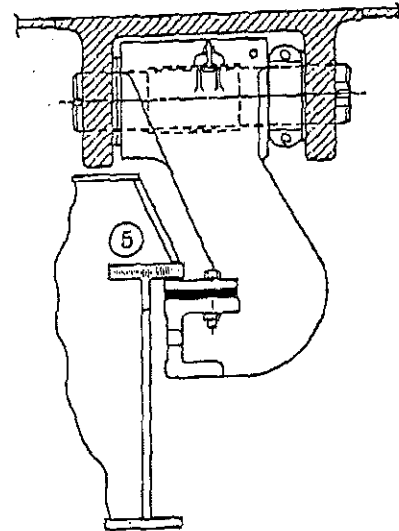
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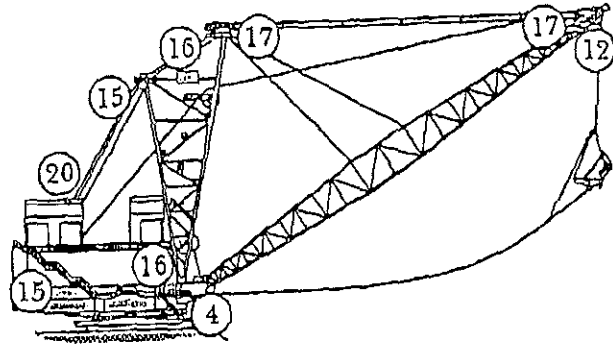


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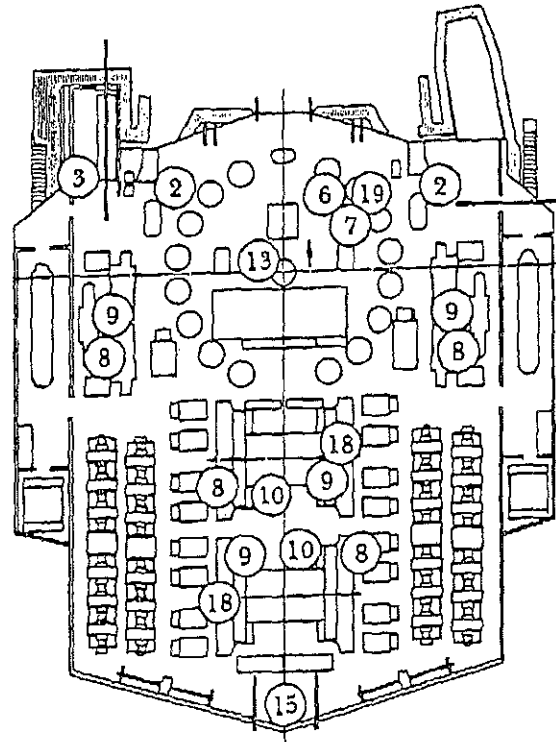


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Annual —

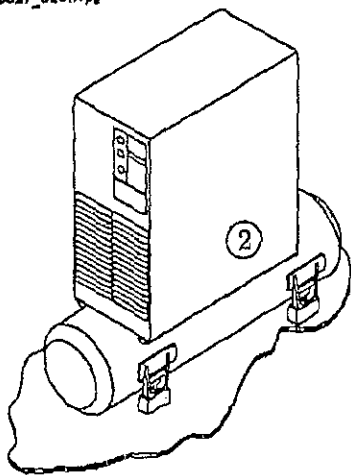


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INTRODUCTION

The information contained in this manual provides guidance to all persons who care about the operation and maintenance of this machine. Needed data for operation, lubrication, adjustments and other tasks supplied in the various sections permits accurate operation and service. All enclosed specifications agree with the Marion Power Shovel Engineering Department. This information allows for quality maintenance when followed exactly.

This Manual is NOT a Parts Book. Do not use it to order parts. You have been supplied with a separate, detailed Parts Book. Please read carefully the instructions in the front of it. All parts are listed by group number with items and part numbers for this SPECIFIC machine. Please order the correct parts in exact quantity. Parts ordered by mistake and returned are subject to a Company rehandling charge. RIGHT and LEFT HAND PARTS on the upper frame correspond to the operator's hands at the controls as he faces the bucket. Please state the correct machine SERIAL NUMBER in any conversation or correspondence. Records of each machine are filed by serial number. Given this number, the specific design and original equipment check is accurate and quick.

ADDED INFORMATION not found in this Manual or the Parts Book may be obtained from Marion Power Shovel Co., Inc., 617 West Center Street, P.O. Box 505, Marion, Ohio 43302.

SERVICE and LABOR CHARGES are **NOT** accepted unless previously authorized by the Company in writing.

STANDARD WARRANTY — Marion Power Shovel Company, Inc. guarantees the equipment manufactured by it to be free of defects in material and workmanship under normal use and service, its obligation under this warranty being limited to making good at its factory any part of parts thereof manufactured by it which shall, within six (6) months after delivery to Buyer, be returned to it, with transportation charges prepaid, and which its examination shall disclose to its satisfaction to have been thus defective, this warranty being expressly in lieu of all warranties, express or implied, and of all other obligations or liabilities on Marion Power Shovel Company's part.

Marion Power Shovel Company, Inc. shall not be held responsible or liable in any event for special or consequential damages, arising from any cause whatsoever, and Buyer agrees to indemnify and save Marion Power Shovel Company, Inc. harmless therefrom.

Marion Power Shovel Company, Inc. makes no guaranty or warranty, express or implied as to adequacy, fitness, quality, or performance of any machinery, equipment, apparatus or accessories not manufactured at its own factory which are subject only to such guaranty as may be made by the respective manufacturers thereof.

The Company reserves the right to improve or change the design of its products and specifications thereof and the Company shall incur no liability thereby or any obligations to install such improvements on products previously sold.



RUNNING CLEARANCE FOR BRONZE BUSHINGS

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



Once insuring a clean bore, quickly locate pinion in the SAME angular position on shaft as before when cold readings were taken. Just as pinion nearly engages with taper fit, but not in actual contact, SNAP pinion into place with a quick, forceful PUSH. This is important. The HOT pinion must be snapped into position rapidly, before it COOLS. Otherwise, the pinion SEIZES on the shaft and stops any further adjustment.

Check this hot or Shrunk-On pinion position using the micrometer depth gauge as before.

The ACTUAL advance is the DIFFERENCE of depth gauge readings in HOT and COLD positions. To control pinion stresses, this advance MUST fall within the limits specified in the table herein. If this advance is NOT within the given limits, PULL and REMOUNT the pinion.

Assemble the lockwasher and nut AFTER proper pinion installation.

DO NOT permit the shoulder on nut to bottom BEFORE the main part of this nut tightens on locking plate. If this happens, REMOVE the nut and grind or turn so the needed clearance is available.

Now, certain the nut secures tightly against locking plate and pinion, turn up the locking plate on at least TWO faces of the nut.

Keep in mind that this pinion fit and key fit are the important points in the job of holding the pinion on the shaft. The locking plate just serves to hold the nut on the shaft. A CORRECT pinion, shaft fit places no LOAD on this nut and locking plate.

PINION REMOVAL from armature requires the use of a suitable pinion puller. This avoids causing damage to motor frame, bearings, armature shaft or pinion.

Please do NOT heat the pinion before pulling.

Please do NOT use wedges between the pinion and bearing cap.

Please do NOT use sledge hammer on the puller. This damages the anti-friction bearings, besides you might miss and hurt yourself.

(NOTE: This information obtained from Engineering Standard 790-1 and CI-772; MPS)



METHOD OF CHECKING SPACING AT SPLITS OF SPLIT RING GEARS (without hubs).

After mounting on flange and tightening alignment and clearance bolts; place a cylindrical pin between gear teeth, several teeth away from the split. Set up a dial indicator and zero to maximum-plus reading as gear (with pin in teeth) rotates past the indicator stem. Remove the pin without disturbing indicator setting and place in the adjacent space toward the split. Rotate gear again (pass the pin under the indicator stem). Record the maximum-plus reading. Repeat this procedure for three spaces on EACH SIDE of the split, as well as, for the space AT each split. An indicator reading AT a split varying by .005" or more in the negative direction from other readings indicates the split is OPEN. This open split is caused by interference between gear bore and a mounting flange surface; bolting pads burred or foreign material between their surfaces; or the gear mounted elliptical, (egg-shaped) with large diameter at splits preventing tightening there. The gear egg-shaped mounting can be determined by making a radial runout check as described in a following paragraph. Take steps to correct this open split condition: Remove the interference between gear bore and flange register by clearing bolting pads of dirt or burrs. REMOUNT gear, if needed, to eliminate the elliptical shape. If this gear operates with open splits, bumping will occur every time a split passes thru mesh point with pinion.

CAUTION IS THE BY-WORD



BOLTING PROCEDURE (Gear to Drum) — Due to dead weight only, it is possible to have all bolts tight (i.e., the nuts will not turn anymore) and still have a gap increasing from 0 at topmost center to a maximum at bottommost center. As drum rotates under hoist rope load, this gap changes position and in turn bolt becomes loose and introduces an additional bending load and possible stress concentration in the bolt.

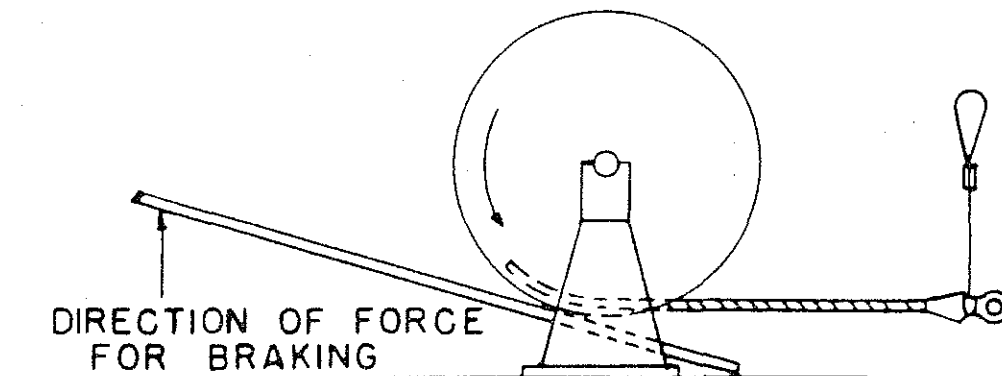
1. Drum shaft must be free to rotate under no load. Hoist ropes must be slack. Hoist brake must be in released position.
2. Drum must be positioned with two finished bolts at extreme top center.
3. Loosen all bolts not being replaced at joint in question.
4. Replace bolts as required, keeping nuts loose. Make sure that slotted nut side of bolt is up tight against flange.
5. Tighten all nuts hand tight, keeping all locknuts loose.
6. Using an air wrench, tighten two topmost center bolts only — do not tighten locknuts until No. 15 below.
7. Rotate drum 180° and tighten two finished bolts now on topmost center.
8. Rotate drum 90° and tighten two finished bolts now on top center.
9. Rotate drum 180° and tighten two finished bolts now on top center. All finished bolts are now tightened.
10. Now rotate drum 45° and tighten two rough bolts on topmost center — tighten bolts in outer bolt circle only.
11. Rotate drum 180° and tighten two topmost rough bolts.
12. Rotate drum 90° and tighten two topmost rough bolts.
13. Rotate drum 180° and tighten two topmost rough bolts.
14. Now proceeding from this point rotate drum, advancing one bolt at a time and retighten each bolt as it reaches topmost center point.
15. Install all locknuts in outer bolt circle and tighten. Drum does not have to be rotated.
16. Now install eight bolts making up inside bolt circle and tighten nuts. Drum does not have to be positioned or rotated.
17. Install locknuts on these eight bolts and tighten.
18. Operate machine under load for thirty minutes and repeat Steps 1,2 and 6 thru 17.



Position socket tagged, FRONT END (remove first) AS CLOSE to bottom of reel as practical and pull this free end away from reel. Pulling hitch or sling is recommended to attach to socket. Where sling must attach on strand; use great care to avoid kink or dogleg in the strand at socket base. DO NOT nick or damage wires here. Keep the longitudinal stripe aligned also.

Usually an area of the reel is BLOCKED OUT, thru necessity, for positioning and securing the socket during shipment. Use normal care when removing sockets from this BLOCKED OUT area.

During unwinding from reel, pull the strand in a straight line and please DO NOT pull over sharp edges or object(s) on ground.



After strand is unwound from reel, remove socket tagged, REAR END.

If more than one strand is packed on the reel, remove lengths in order in which they are tagged, using the procedure as outlined.

Please use Common Precautions here also.



The following data shall serve as a guide for the proper selection and application of electrodes and preheat temperatures for welding all MARION ferrous materials. Standard electrodes specified hereafter supersede listings in drawing bills of material. These specifications in no way countermand specific instructions or procedures for specific weldments or materials developed by the Welding Engineer or indicated with the weld symbol on drawings.

Descriptions and Brinells shown are approximate for welding purposes only; refer to "Marion Symbol Specifications" for latest complete published data.

Welds joining materials of different mechanical properties shall utilize electrodes specified for the lower strength material determined by lower minimum brinell hardness indicated. Preheat temperatures shall be governed by material requiring higher temperature.

When major field repairs are anticipated, contact MARION Service Representative for specific instructions prior to initiation of work.

ELECTRODES: **Alternate** electrodes may be used where high restraint requires greater ductility in the weld metal, or where recommended preheats cannot be maintained. (Latter condition not recommended — use with caution at your own risk.)

Low hydrogen electrodes shall be placed in 250 degree F. (121 degree C.) holding ovens immediately upon the opening of sealed containers.

Electrodes exposed to atmosphere exceeding 4 hours shall be rebaked at 700 degrees F. (371 degrees C.) for one hour minimum then placed in holding ovens at 250 degrees F. (121 degrees C.).

Electrode Reference to Semi-Automatic Materials:

| | |
|--------------|---|
| E70XX, E7018 | — E70T-1 or Equivalent Chemistry |
| E8018-CI | — McKay 85-CI or Equivalent Chemistry |
| E9018M | — E90T (McKay 95) or Equivalent Chemistry |
| E11018M | — McKay 105 or Equivalent Chemistry |

PREHEATS AND POSTHEATS: When practical, preheat the entire part, when not practical heating is required 18" from weld joint in all directions.

Preheat temperatures indicated are minimum; maximum preheat and interpass temperatures should not exceed those listed for over 2" by more than 100 degrees F. (37.7 degrees C.). Avoid excessive local temperatures which could cause distortion, embrittlement, or other detrimental effects.

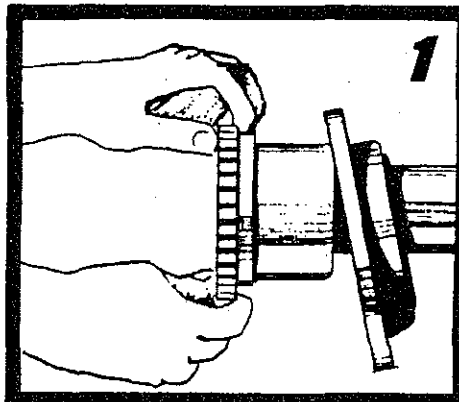
Weldments containing conditions of high restraint may require the use of higher preheats or the use of lower strength electrodes as specified by MARION Welding Engineer.



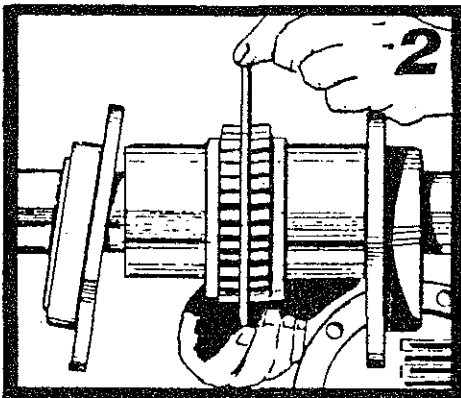
FALK COUPLINGS

F TYPE

1. Mount cover with seal ring and hub on shaft. Press or shrink hubs on respective shafts so hub face is flush with shaft end. Tighten set screws on BOTH hubs on sizes 3 thru 11. (See chart.)

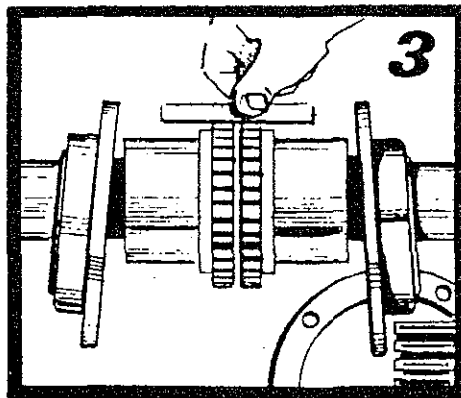


2. Check gap and angular alignment. Set coupling for normal gap. Align shafts by placing spacer block equaling gap between hub faces, and at right angles to it. Check using feelers.



Maintain normal coupling gap where possible. To insure best performance, DO NOT EXCEED minimum and maximum gaps. Consult company if limited axial float is needed. Provide for shaft end play in coupling gap when using sleeve bearing units. Once mounted, position free unit so coupling gap is between minimum and maximum limits with BOTH shafts in extended or retracted position. With gap set and shafts aligned, tighten unit foundation bolts and RECHECK alignment.

3. Check parallel alignment so a straight edge rests squarely on BOTH hubs at right angles. Fasten foundation bolts and RECHECK alignment and gap.



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ALLOW coupling rabbet to disengage. Spread coupling about .005 inch to .015 inch using two jacking screws or with a fiber mallet, rap the flange.

3. Measure gap between coupling faces at four points (90 degrees around coupling rim) with feeler gauge to nearest .001 inch. Maximum variation may not exceed .002 inch between any two readings.
4. Rotate coupling 90, 180, 270, 360 degrees and take similar readings. Maximum variation may not exceed .002 inch.
5. Correct horizontal misalignment by loosening foot bolts, removing dowel pins and bumping frame into position. Correct vertical misalignment by shimming under feet. Check and maintain ALL internal clearances (air gaps, bearing covers, fans, baffle clearances) equally around circumference. Abuse in shipping and handling often causes misalignment, even distort dowel pins to point of needing redoweled.
6. Repeat steps 2, 3, 4, 5 for each coupling while working away from two bearing unit.
7. Recheck couplings of long sets after completing previously mentioned checks, due to possibility that shimming on previous units effects units already checked. After aligning set within specified limits, carefully tighten ALL coupling bolts.

The table on next page indicates typical readings of properly aligned coupling AND an example of each of three possible cases of misalignment.



LUBRICATION SPECIFICATIONS

SPECIFICATION—GREASES

| CODE OR SYMBOL NO. | ASTM or TEST | MPG | RGL | OGL TYPE B | OGL TYPE H |
|---|-----------------|---------|---------|---------------|---------------|
| Penetration Worked 60X Summer, NLGI | D-217 | 2 | semi- | 1 | — |
| Winter, NLGI | | 1 | fluid | 0 | — |
| Penetration Worked 5000X, Max. Change | D-217 | 10% | — | — | — |
| Dropping Point, Min. °F. | D-566 | 350 | — | 325 | — |
| Base Oil Viscosity @ 210°F., Min. | D-446 | 75 SUS | 140 SUS | 200 SUF | 200 SUF |
| Oxidation Stability Max. psi Drop - 100 hrs. | D-942 | 10 | — | — | — |
| Water Resistance Max. Loss @ 100°F. | D-1264 | 20% | — | 10% | 10% |
| Texture | Visual | Buttery | — | Adhesive | Tacky |
| EP Timken, Min. OK | — | 35 lbs. | — | 35 lbs. | 35 lbs. |

SPECIFICATIONS—OILS

| CODE OR SYMBOL NO. | ASTM or TEST | MO | OILS PO |
|------------------------|-----------------|------|-------------|
| Pour Point °F. Max. | - Summer | D-97 | 5 |
| | Winter | | 0 |
| Flash Point °F. Min. | - Summer | D-92 | 450 |
| | Winter | | 420 |
| Viscosity @ 100°F. SUS | D-446 | — | 150 Min. |



| NO. | NAME OF PART | TYPE | NO. OF POINTS | LOCATION | LUB. SYM. | METHOD & FREQUENCY |
|-----|--------------|---------------|---------------|-------------------|-----------|--------------------|
| 50. | Hoist Motor | Anti-Friction | 16 | In Motor End Bell | EMG | Hand-500 Hrs. |

LUBRICATION OF DRAG MACHINERY

| | | | | | | |
|-----|------------------------------------|---------------|----|-----------------------------------|-----|------------------------|
| 51. | Drag Drum Support Bearing | Anti-Friction | 2 | In Bearing Retainer | MPG | Hand-500 Hrs. |
| 52. | Intermediate Drag Shaft (In Case) | Anti-Friction | — | From Gear Case | GL | 66 gal. Each Gear Case |
| 53. | Intermediate Drag Shaft (In-Board) | Anti-Friction | 4 | In Bearing Retainer | MPG | Hand-500 Hrs. |
| 54. | Drag Motor Extension Shaft | Anti-Friction | — | From Gear Case | GL | — |
| 55. | Drag Motor Coupler | — | 6 | Plug in Coupler Flange | MPG | Hand-500 Hrs. |
| 56. | Drag Gear | — | — | Drip On | OGL | Automatic |
| 57. | Drag Motor | Anti-Friction | 12 | In Motor End Bell | EMG | Hand-500 Hrs. |
| 58. | Hoist Rope | — | — | Spray on at Boom Point and Gantry | WRL | Semi-Automatic 8 Hrs. |
| 59. | Drag Rope | — | — | Spray on at Top Fairlead Sheave | WRL | Semi-Automatic 8 Hrs. |

LUBRICATION OF HOIST, DRAG BRAKE

| | | | | | | |
|-----|-----------------------|--------|---|---|---|---|
| 60. | Lever Arm Pivot | Oilite | 2 | — | — | — |
| 61. | Brake Shoe Connection | Oilite | 2 | — | — | — |



SECTION 3

COMPRESSED AIR SYSTEM AND COMPONENTS

The Marion air control is quite simple in operation. Reasonable care and maintenance ensures a long and trouble free life. Compressed air releases the hoist and drag clutches, as well as, the hoist, drag, propel and swing brakes. It is piped to the auto-lube system also.

Air pressure provides a vital link in the safe operation of this machine. The operator **MUST CONSTANTLY** check the pressure gauge reading. If at any time this pressure **DROPS** below 90 p̄si, **SHUT DOWN** and investigate the cause.

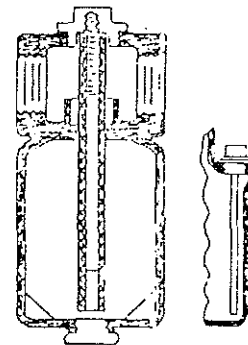
NEVER OPERATE THIS MACHINE WITHOUT FULL TANK PRESSURE.

Two **AIR COMPRESSORS**, located at right front corner of deck, are complete independent units. The right compressor operates propel, swing, hoist and drag brakes. The left compressor supplies air to the automatic lubrication system. Should a compressor fail, close compressor valve atop tank and open globe valve at cross over between the compressors. This valve is normally closed.

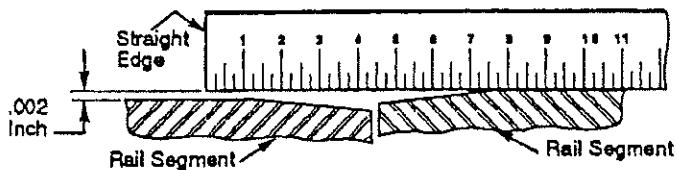
INSPECT the belt drive often. Maintain **PROPER** belt tension which permits no more than 5/8" deflection of a single strand. **ADJUST** by moving the electric motor on the base. **CHECK** crankcase oil level **DAILY** and keep at dipstick **FULL** mark. Every 500 operational hours, **DRAIN** and **FLUSH** the crankcase. Look in Lubrication Charts for the proper **NON-DETERGENT** oil to use. Clean the air cleaner once a week or daily if conditions require.

ANTI-FREEZER, installed in air line, prevents icing and freeze-up of air system in severe weather. Introduced alcohol vapor mixes with water vapor in entering air. A bottom alcohol chamber and a top vapor chamber separate the unit. A central rod fits to a plug in the top. This rod, covered with a wick, carries alcohol up into the vapor chamber where it evaporates into the air stream. This in-line unit is non-adjustable.

MAINTENANCE requires cleaning bowl and wick assembly with non-flammable solvent before freezing weather. Drain plug is in bottom. **TURN OFF** air compressor **BEFORE** checking or refilling. Vent the line pressure thru cut-out. Pressure not vented off escapes thru a small hole drilled in cap and vents out between cap and bowl. Due to this filler cap safety factor and to avoid over-

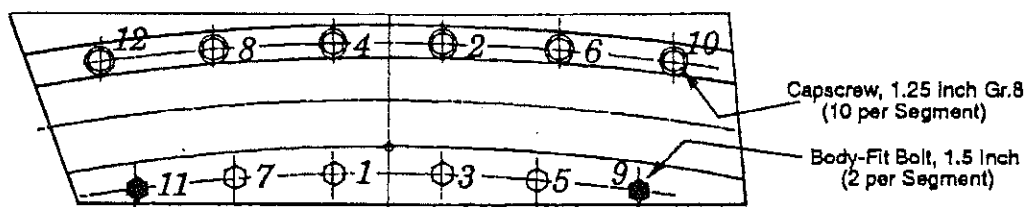


- 9. Check the new and the existing rail height. The offset between adjacent rail ends should be .002 inch maximum.



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- 10. Ream the 2 body-fit holes to 1.501/1.503 diameter when the rail(s) is properly aligned.
- 11. Remove the rail, clean all parts and re-install the rail. Install the body-fit bolts first.



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TENSIONING SEQUENCE for the LOWER ROLLER CIRCLE RAILS

- 12. Install the thrust rail and remaining bolts. Tighten all the bolts to 1120 Ft.Lbs. in the sequence shown.

NOTE: Wedge the thrust rail to the outside of the groove before tightening the bolts.

- 13. 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.
- 14. Replace the rollers and cage bars. Tighten the tie rods to 1950 Ft.Lbs.
- 15. After 200 hours of operation, retighten the bolts. Check the bolt tension every 90 days.

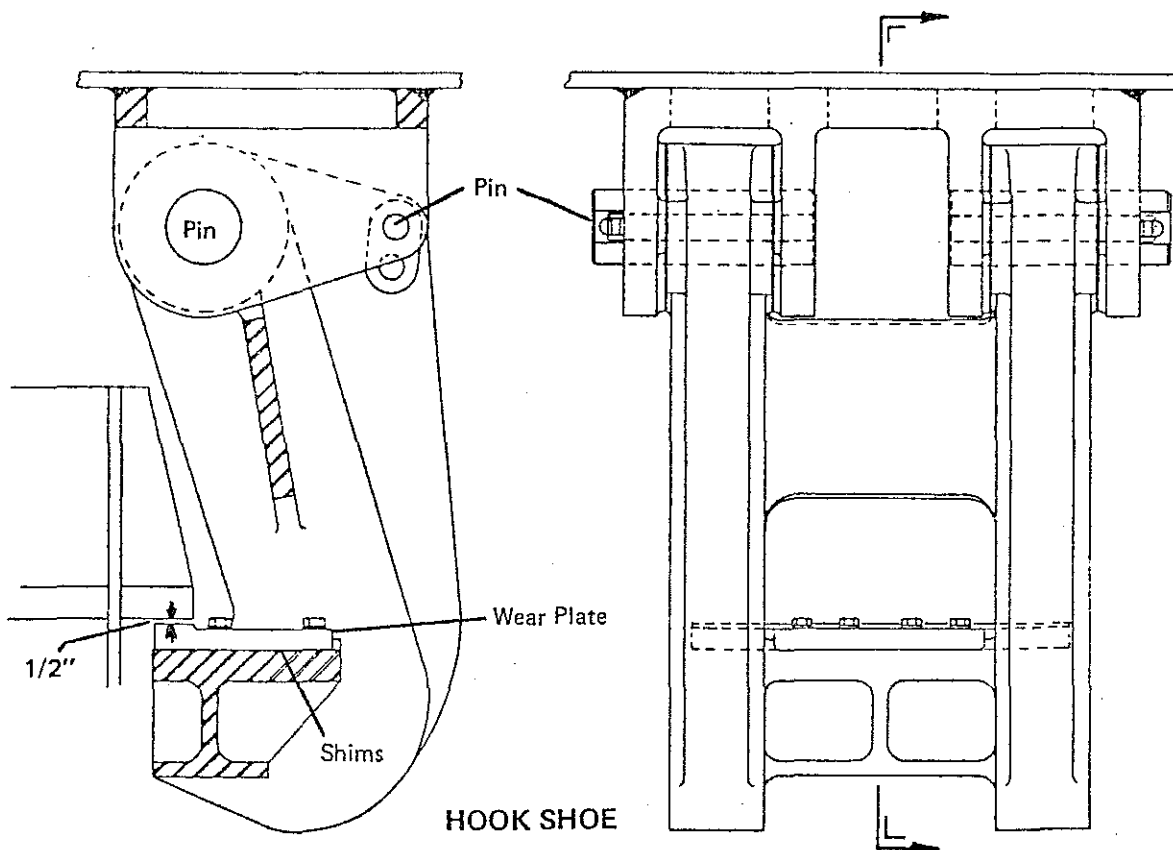


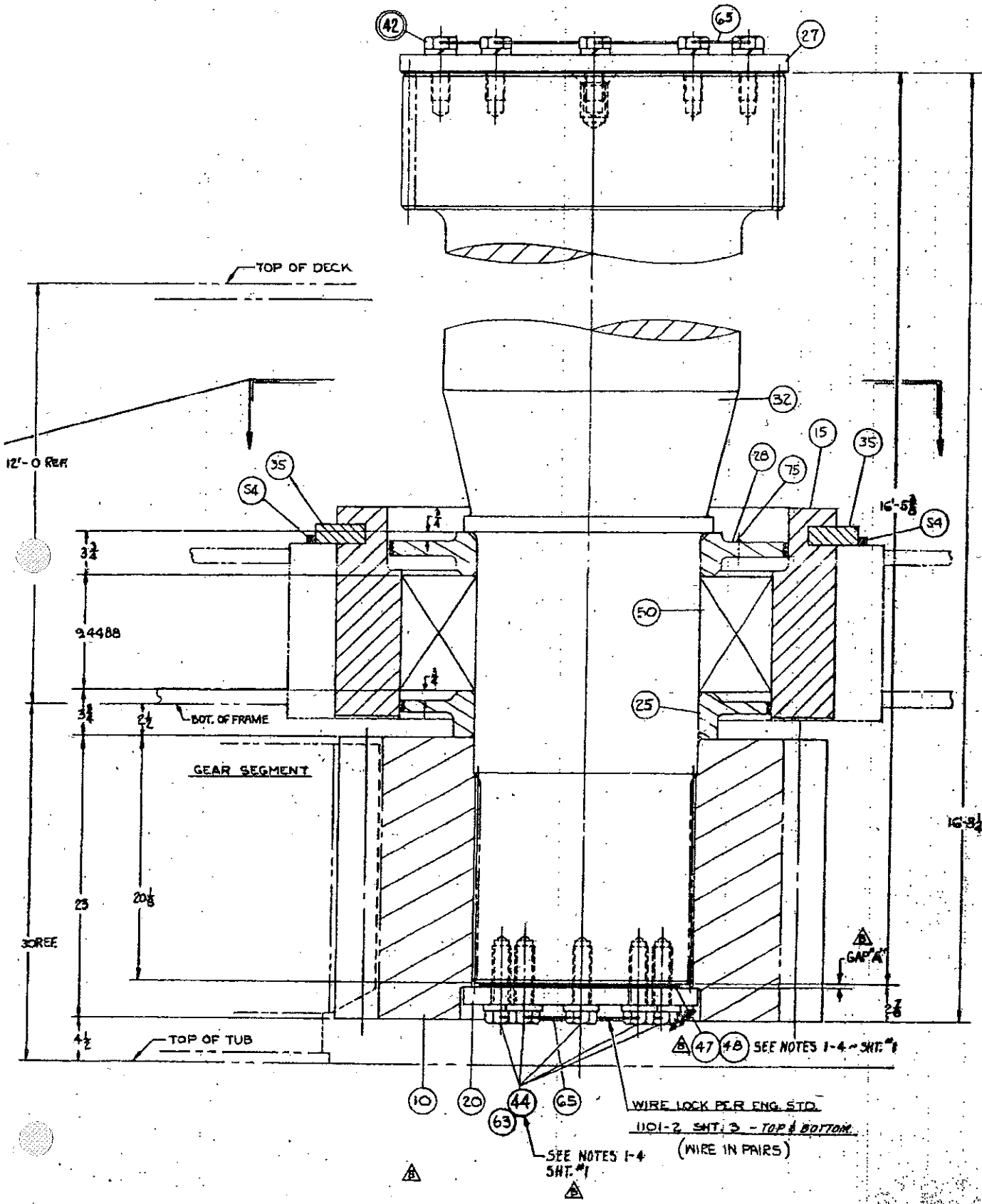
shear bars are welded to tub at side of each rail joint. A matching rail is bolted to bottom of rotating frame and is the same as the tub rail except for the space provided to remove the rollers.

Two **HOOK SHOES** lift the back side of leading edge on the tub during the walking step. Each hook shoe is pinned to a support casting that is welded to the bottom of the rotating frame. Clearance of $1/2$ inch exists between the hook rail on the tub and the wear plate on hook shoe when machine weight rests evenly on all rollers. Adjust clearance by placing or removing shims between the wear plate and hook shoe.

Disengage hook shoe by removing the two rear pins and swing hook toward rear of machine and replace pins in lower holes to hold hook shoe.

The **WALKING SHOE RETURN MECHANISM** brings shoes parallel to rotating frame and against shoe rollers at end of the walking step. Two spring loaded ropes, at each shoe do this. These spring assemble in cases welded to the under side of the rotating frame. The ropes reeves thru a sheave also on bottom of rotating frame and then is attached to an adjustable U-bolt anchor on the walking shoe.



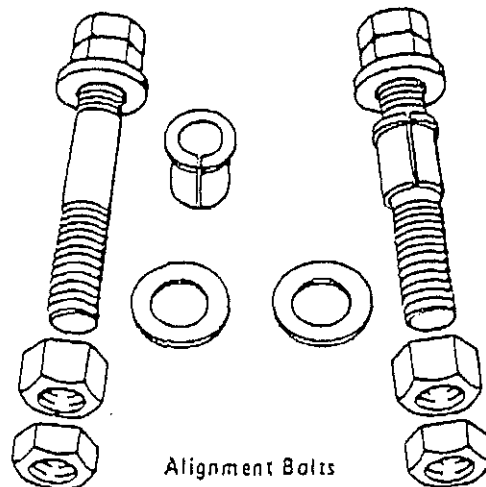


INSERT into an alignment hole (near bore) with flange to top (shown in sketch). Seat flange portion against counterbore.

INSERT TAPERED ALIGNMENT BOLT into sleeve with small end of the taper DOWN.

TAP until SEATED in sleeve. Use a lead hammer. This avoids thread damage.

PLACE a washer over bottom end of alignment bolt and RUN on a standard nut. TIGHTEN with wrench and then sledge so nut rotates 2-1/2 - 3 flats approximately (see sketch).



Alignment Bolts

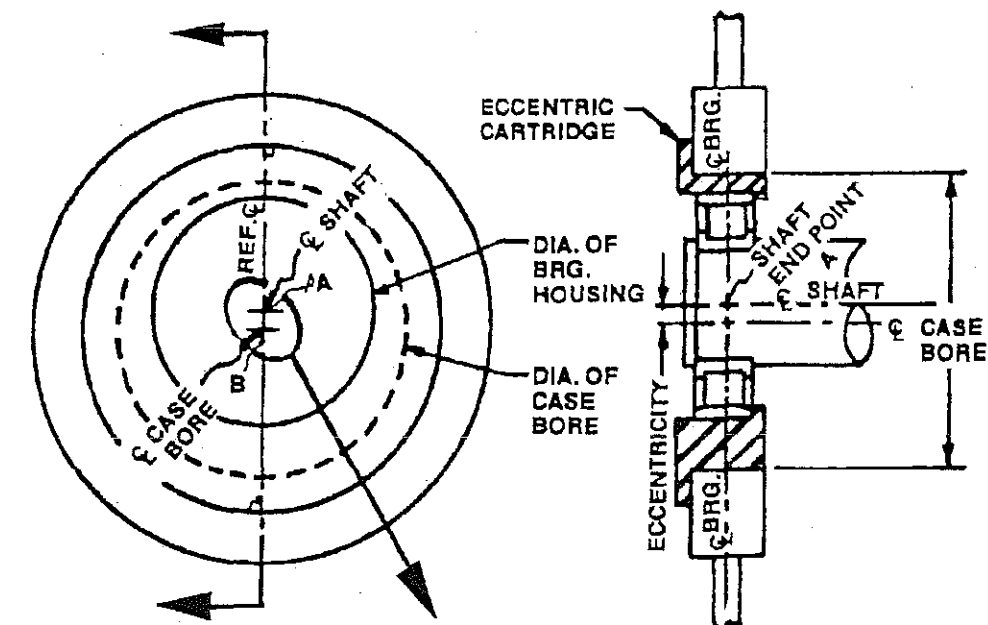
Position top washer, RUN on top standard nut and tighten with wrench and sledge. RE-TIGHTEN lower nut to make sure the bolt has not pulled loose in sleeve. RUN locknut on lower thread and TIGHTEN with a wrench and sledge. RUN second locknut on top thread and TIGHTEN with wrench and sledge.

INSTALL REMAINING ALIGNMENT BOLTS. Follow the SAME procedure for these three. Install BOTH bolts for one split BEFORE proceeding to the other split.

CHECK ALIGNMENT (use a parallel and feeler gauge) on rim faces of gear halves. They should align within .003" approximately.

CLEARANCE BOLT INSTALLATION

POSITION CLEARANCE BOLTS. With bolts inserted, adjust top and bottom standard nuts so equal portions extend ABOVE and BELOW the split. REMOVE bottom nuts, making sure it rotates freely. SLIP bolt out of hole so ENTIRE unthreaded portion is exposed. DO NOT DAMAGE THREADS.



gear7-2a.wpg

Figure 2A

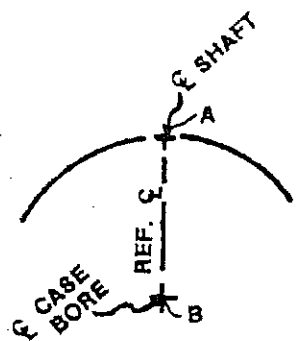


Figure 2B

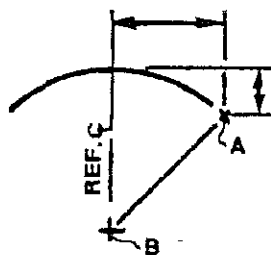


Figure 2C

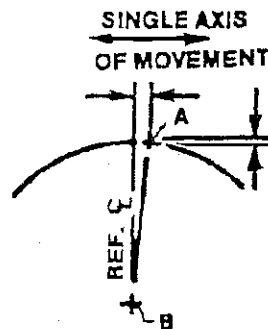


Figure 2D

gear7-2b.wpg

gear7-08.wpp

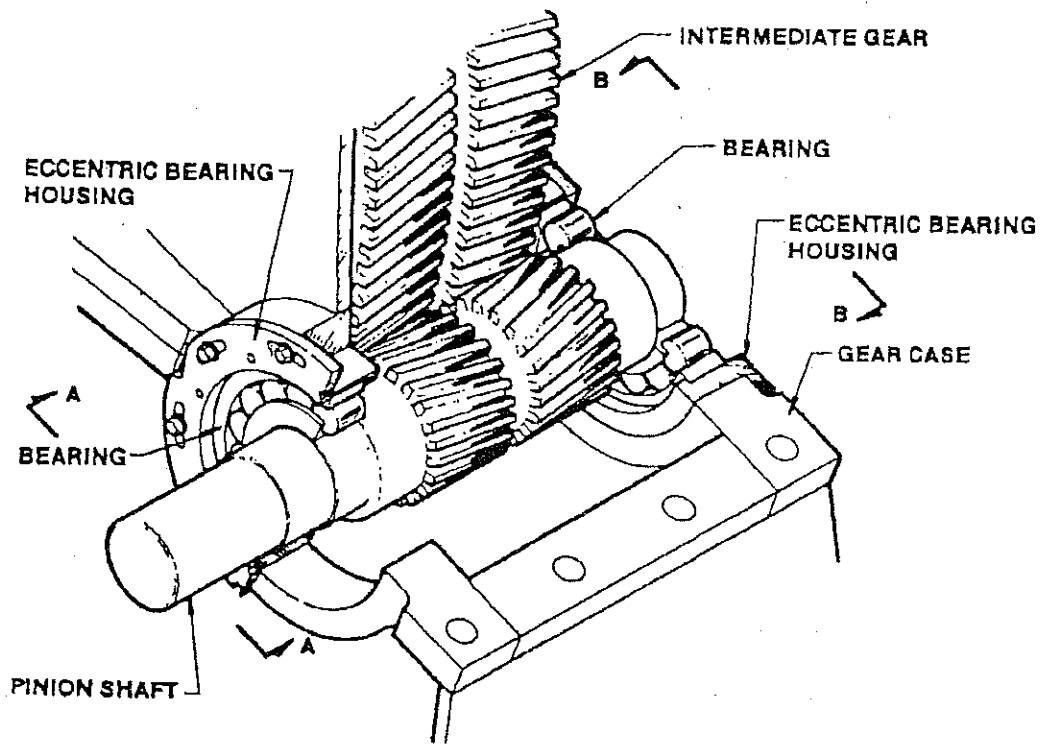


Figure 9

MISALIGNMENT OF PINION SHAFT
OUT OF PARALLELISM

gear7-14.wpd

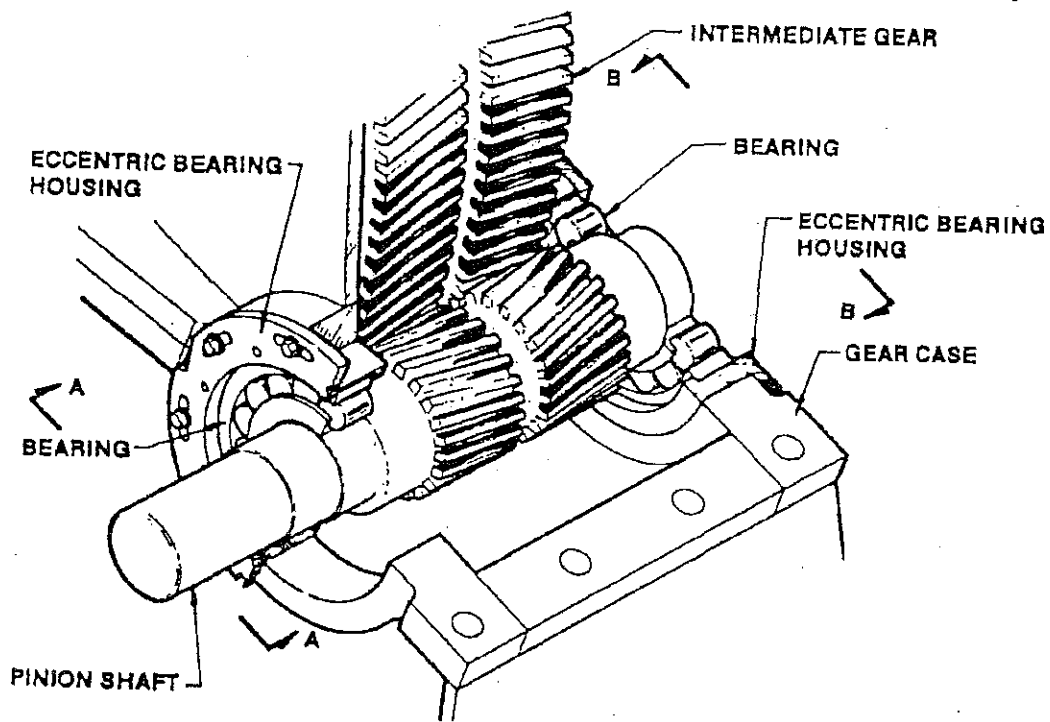


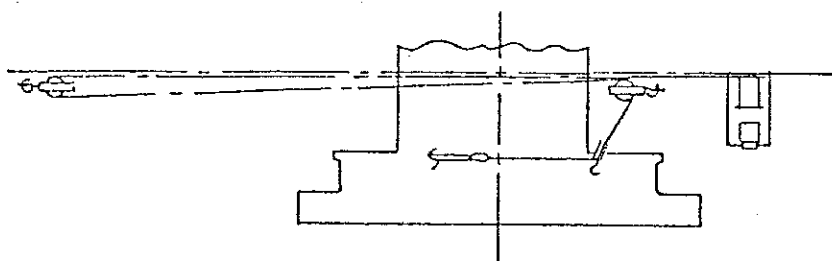
Figure 14

MISALIGNMENT OF PINION SHAFT
OUT OF PARALLELISM and PLANE

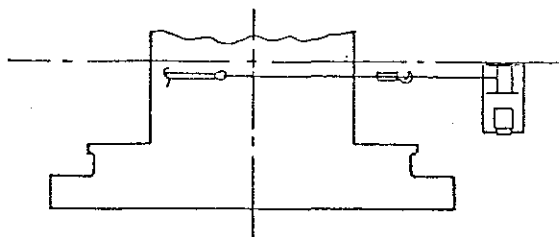


The outside rope from hoist drum reeve over the outside floating sheaves and outside grooves of point sheaves. The outside drag ropes reeve over the outside groove of each fairlead sheave.

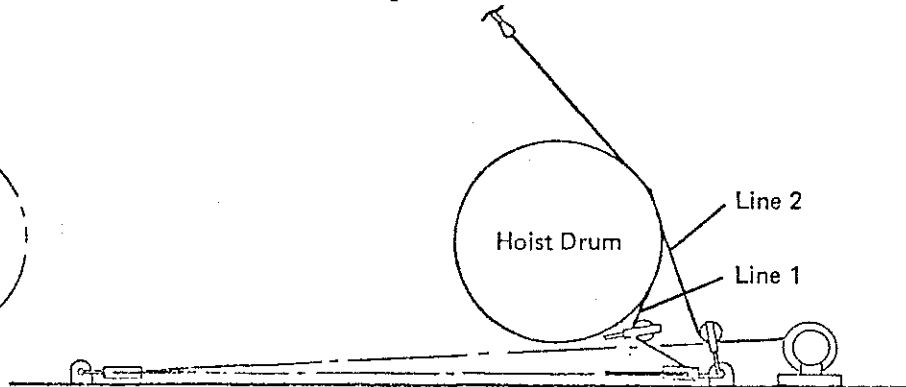
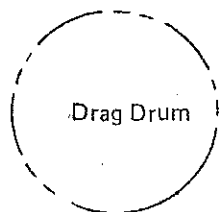
The ROPE WINCH (two) located at rear of hoist drum aid in reeving of ropes. Attach the 7 ton snatch blocks and reeve winch rope as shown in the following two sketches:



TOP VIEW
(Showing Line 1)



TOP VIEW
(Showing Line 2)



HOIST ROPE REEVING

11-29-00

REVISION 1



MANUFACTURER'S NOTE

The drawing tolerances shall be as follows:

1. All dimensions are in inches unless otherwise specified.

2. All dimensions are to be held unless otherwise specified.

3. All dimensions are to be held unless otherwise specified.

4. All dimensions are to be held unless otherwise specified.

5. All dimensions are to be held unless otherwise specified.

6. All dimensions are to be held unless otherwise specified.

7. All dimensions are to be held unless otherwise specified.

8. All dimensions are to be held unless otherwise specified.

9. All dimensions are to be held unless otherwise specified.

10. All dimensions are to be held unless otherwise specified.

REVISIONS AND RELATED TOLERANCES

1. Revision 1: 11/29/00 - Initial release of drawing.

2. Revision 2: 12/08/03 - Updated drawing to reflect changes in material and tolerances.

3. Revision 3: 01/15/04 - Updated drawing to reflect changes in material and tolerances.

4. Revision 4: 02/10/04 - Updated drawing to reflect changes in material and tolerances.

5. Revision 5: 03/10/04 - Updated drawing to reflect changes in material and tolerances.

6. Revision 6: 04/10/04 - Updated drawing to reflect changes in material and tolerances.

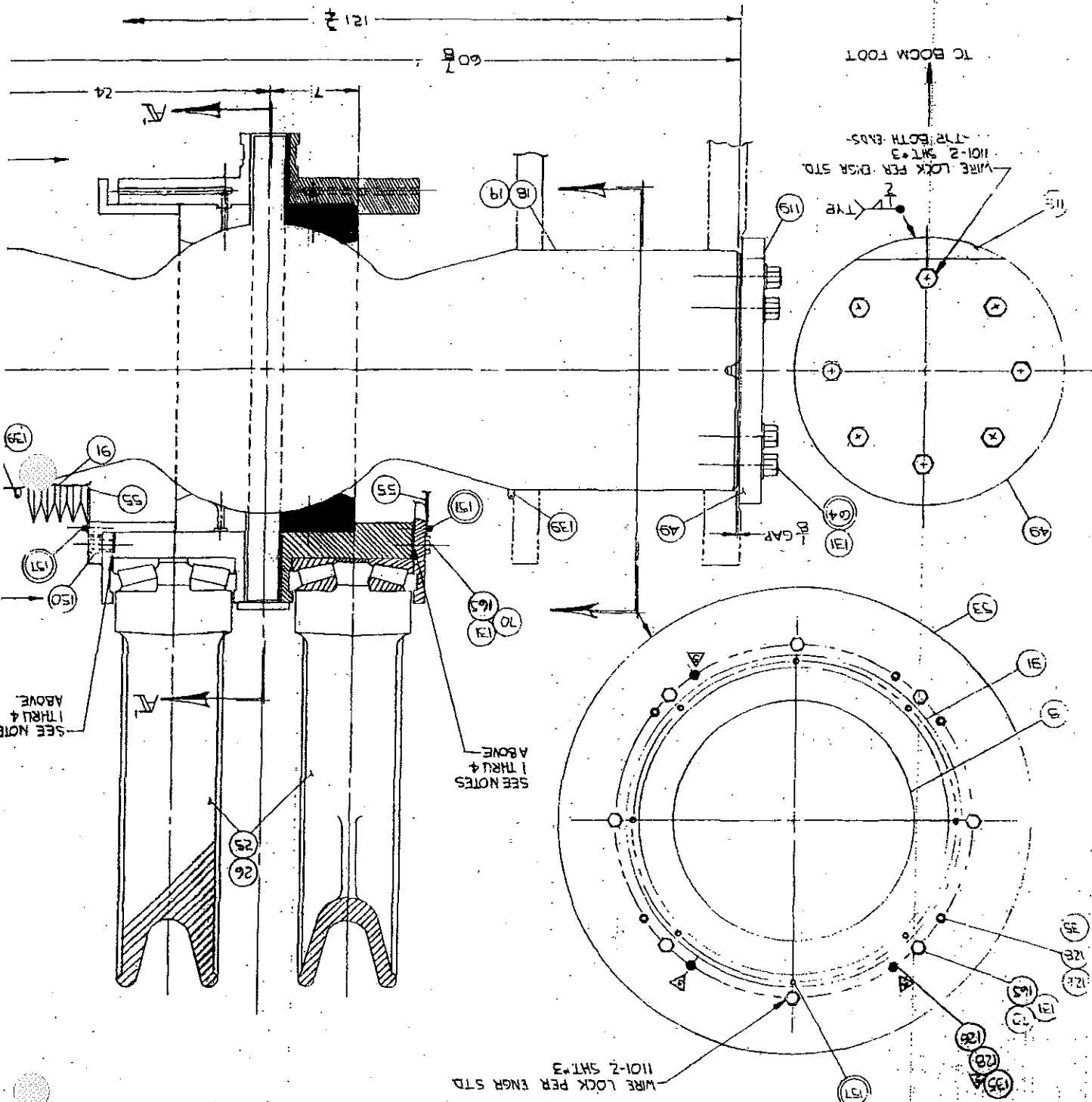
7. Revision 7: 05/10/04 - Updated drawing to reflect changes in material and tolerances.

8. Revision 8: 06/10/04 - Updated drawing to reflect changes in material and tolerances.

9. Revision 9: 07/10/04 - Updated drawing to reflect changes in material and tolerances.

10. Revision 10: 08/10/04 - Updated drawing to reflect changes in material and tolerances.

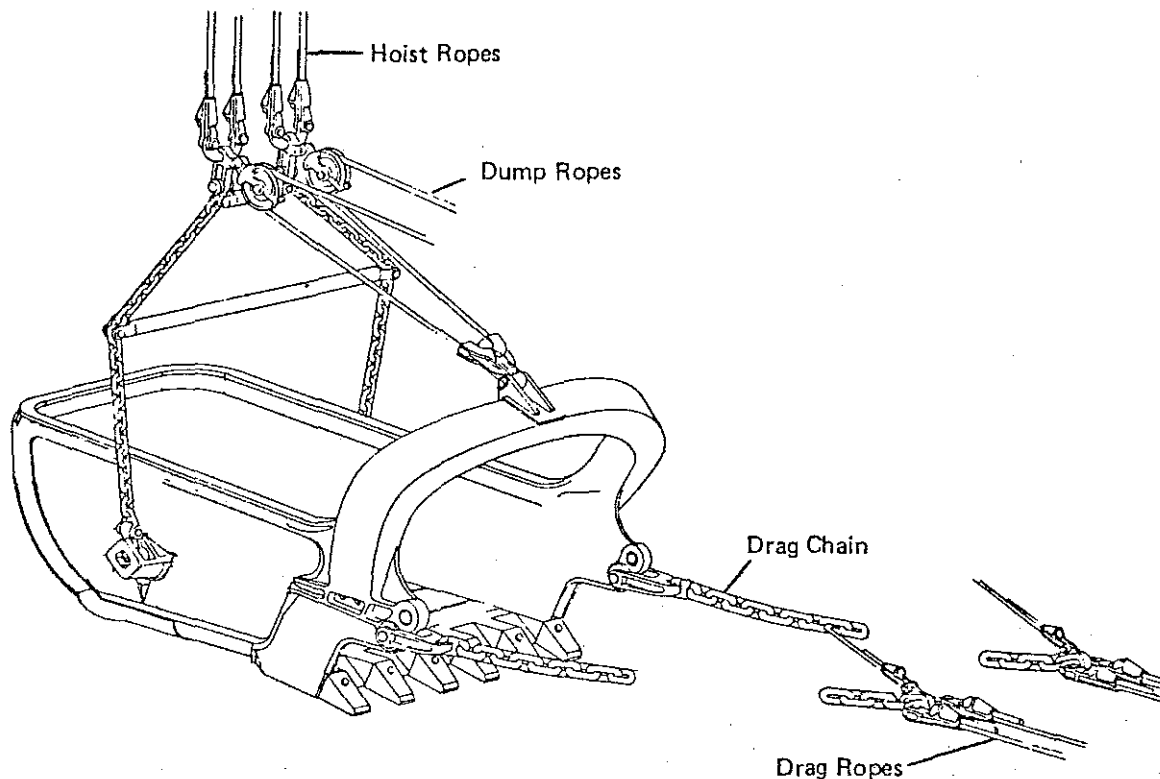
SECTION THRU BOOM POINT (PLAN VIEW)



SEE NOTE THRU 4 ABOVE

SEE NOTES THRU 4 ABOVE

WIRE LOCK PER ENGR STD 1101-2 SMT #3



The hoist chain is attached to each side of the bucket. This point is to rear of and below the center of gravity of a loaded bucket. When the distance from center of gravity is increased, dumping response is faster but load on dump rope is greater and amount of tension required on drag rope to carry load is increased. When hoist chain is attached near center of gravity the dump action is sluggish but drag rope pull is less.

The length of dump rope determines the angle of bucket when carrying the load.

The optimum is achieved largely by trial and error. Once this condition is established, the hoist chain trunnion is welded securely in place and all other positions become fixed no further adjustment is required.

The **WEAR PLATES** on Marion buckets are replaceable. They are located on inside of cheeks and inside of bucket bottom. The plate thickness vary according to location and wear concentration. **FREQUENTLY** check condition of plates. **DO NOT** allow plates to wear thru and expose the parent metal of the bucket. Wear bars for lip shroud, cheek plates and heel plates are also replaceable.

Plates can be checked by drilling a 1/2 to 3/4 inch hole at the greatest wear, and actually measuring remaining metal. If plates are not ready to be replaced plug weld drilled hole.



PERFORMANCE: Replace or repair faulty part, then prove this action correct by checking that system functions properly. Many electricians feel the job complete with machine in operation. A good electrician determines the cause of failure, then takes necessary steps to prevent further failure. Cause may be the improper function of another part or circuit, improper use or overloading of a device, either by supplier or user; perhaps the effect of external conditions of dirt, moisture, temperature or normal life exceeded. A good electrician determines cause of failure and takes preventative steps.

TYPES OF FAILURES: The preceding material, general in nature, allowed development of a procedure of trouble shooting for any problem. The following discusses certain failures in more detail.

Most failures are circuit opening, wire breaks, resistors or coils opening, faulty contacts, etc. An open circuit's best feature is that current cannot flow, so the best check is for current flow.

Current measurements are difficult since opening a circuit and inserting the proper instrument is required. Generally, it's better to use Ohm's law and seek a voltage drop caused by the current using a voltmeter that connects easier.

Voltage measurements indicate an open circuit only if readings are properly understood. Voltage across an open circuit generally is higher than expected. Special conditions such as a sneak circuit provide nearly normal voltage across an open circuit. The following is one example.

Assume a motor field is open. If normal voltage is almost the same as exciter voltage, the reading across the field will be almost identical whether field is open or not. Likewise, if several motor fields connect in parallel, voltage across the group changes little with one open field. While the voltage differs somewhat, this difference well could be attributed to a change in exciter voltage or an inaccurate meter. In these cases, find the trouble by measuring voltage across each field coil. This emphasizes an earlier point, use care in selecting a test point and eliminate confusion readings.

Open circuits can usually be found using an ohmmeter and care in analyzing the measurements. In many cases, sneak circuits present the need to completely disconnect a device from other circuits.

Open circuits generally cause complete or partial loss of output. In some cases, an open circuit can cause increased output. For example, if the current-limit field circuit opened; stall current exists higher than normal. Likewise, if voltage feedback opened; the no-load exists high.



SECTION 6

OPERATION

Sit in the operator's seat facing boom and become familiar with the controls. See sketch.

The two pedals at your feet control machine swing or rotation. Pressing right pedal swings machine right. Pressing left pedal swings machine left.

The hand control, at right, controls the hoist and the thumb latch controls hoist rope tension when hand controller is in neutral. Pulling back (toward you) raises bucket. Pushing lever forward, bucket is lowered or pays out the hoist ropes. When pressing the thumb latch, reduced hoisting power is applied to the hoist drum. This power is enough to remove hoist rope slack and hold spreader bar and rigging off bucket.

The hand control lever, at left, is the drag control. Pulling lever towards you pulls in the bucket. Pushing lever forward pays out the drag ropes. The thumb latch controls the horns. Pushing the propel push button, on panel B changes this lever to control the propel motors.

An inclined control panel atop each controller stand contains push buttons, selector switches and indicator lights; ALL clearly marked.

NOTE: Normal control position is considered to be with machine idle and controls deenergized.

PANEL A, see sketch, contains five lights, three selector switches and three push buttons. Starting forward, left to right, they are:

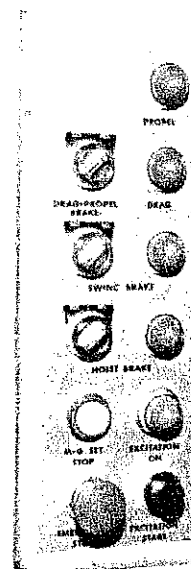
Red Propel brake light—Lit when brake is SET.

Drag-Propel Brake switch—SET or RELEASE either the propel or drag brakes depending on which mode machine is in. Next to it is a red Drag light, when lit the brake is SET.

Swing Brake switch—move switch left to SET, right to RELEASE. The red light next to the switch is on when the brakes are set.

Hoist Brake switch—Move switch left to SET, right to RELEASE. When red light next to switch is on the brakes are set.

M-G Set Stop—Push button when pressed shuts down the M-G sets.



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