



A6474X269
June 2012

Operation Manual

Feeder Breaker 7MFBH-48A (FB110)

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Characters and symbols used

The following characters and symbols are used for safety instructions and important information in the operating manual.

Try to memorize the symbols and their meanings.

DANGER!

Points in the text marked with this symbol draw your attention to immediately impending danger. Possible consequences are: very serious injury or even death.

WARNING!

These points contain information on dangerous situations. Possible consequences are: very serious injury or even death.

CAUTION!

This symbol draws attention to dangerous situations. Possible consequences are: light to moderately serious injuries and machine damage.

NOTICE!

Points in the text marked with this symbol draw attention to harmful situations. Possible consequences are: damage to the machine or damage in the immediate vicinity.



IMPORTANT!

Points in the text marked with this symbol contain useful tips and information intended to facilitate work for you. They do not warn about harmful or dangerous situations.

- Items in lists are marked with bullets.
 - Points in sub-lists are marked with a long dash at the start of the line.
- ☞ Points in text marked in this way describe individual operations. Follow these instructions step by step. They will help you carry out your work faster and more importantly, safer.

Storage and transport

Maintain the prescribed storage periods and observe the instructions for storage.

Do not store materials or parts in the travel way or in your working area.

Inform the persons involved about the intended transport route and the anticipated duration of the transport.

transport safety device

Ensure that the transport safety devices are correctly fitted.

Fix all moving parts with transport locks.

Never stand under unsupported parts or suspended loads.

means of attachment

Connect the lifting equipment only to the points of attachment provided for that purpose. Observe the different load limits of the attachment points. Also observe the instructions on the transport sheet.

Only use means of attachment which are in good condition and have been designed for the loads to be handled.

For round components use transport straps only. Never use chains or steel cables for this purpose.

Do not damage the treated or polished surfaces of shafts, sealing surfaces, etc.

mobile handling equipment

When using mobile handling systems for transport make sure that the center of gravity is as low as possible.

Installation and start-up

inclined face

On inclined faces secure all component parts by chains, e.g. to the support.

environmental acceptability

When working with oils, greases and other chemical substances, observe the safety regulations applicable to the product.

Dispose of cleaning rags, etc. which have been soiled with oil, grease or other chemical substances in an environmentally safe manner.

inspection

Inspect the machine and have any malfunctioning, broken, or missing parts corrected or replaced before use.

maintenance

Verify that all maintenance has been performed.

instruction and safety tags

Verify that all instruction and safety tags are in place and readable. These are as important as any other equipment on the machine.

operator's area

Clean any foreign material from the operator's area.

Overview of safety instructions

NOTICE!

In the event that a sudden jam occurs which could damage the power unit, the breaker is protected by a shear pin.

WARNING!

Before performing maintenance on the machine, the circuit breaker must be in the "OFF" position and the power should be disconnected at the main power source. Electrical shock and accidental machine movement can cause serious injuries or even death to you or the maintenance person.

WARNING!

Do not move any hydraulic control lever unless you are certain that everyone is completely clear of any machine movement. Accidental machine movement can cause serious injuries or even death to you or the maintenance person.



IMPORTANT!

The feeder breaker is equipped with a central lubrication system that allows several lubrication points to be lubricated from one central point.

NOTICE!

All hydraulic filter elements should be changed after one week of the initial start-up of machine or pre-mature wear of hydraulic components could occur.



IMPORTANT!

A short hose is attached to ball valve in dust suppression system to allow water to be directed away from other machine components.

NOTICE!

Incorrect grease or over greasing may cause serious damage to the electric motor.

CAUTION!

During inspection, report any damage, missing parts or other faults to your immediate supervisor.

NOTICE!

The adjustment procedure for conveyor chain take-up must be performed on both right and left hand sides of the conveyor.

NOTICE!

Make certain that the same amounts of shims are used on both sides of the conveyor to prevent chain from stretching unevenly. Incorrect tension or adjustment can cause premature wear of sprockets and chain.

WARNING!

Due to grease cylinders being under high pressure, do not stand in direct line of grease fitting or bleeder valve when releasing pressure. You could be seriously injured from high pressure grease.

4 Installation

Installing the tailpiece

To install the tailpiece on the feeder breaker (Reference Fig. 10: Tailpiece installation):

WARNING!

You could be seriously injured or even killed by falling loads. Observe the safe working load limits of lifting or blocking devices and keep a safe distance from suspended loads.

- ☞ Install spacer blocks (Item 14) into the underside of the tailpiece weldment (Item 6).
 - ☞ Make sure that bolts (Item 37) will pass through the bearing spacers and the tailpiece weldment.
 - ☞ Tack weld bearing spacer blocks (Item 14) to tailpiece weldment (Item 6).
- ☞ Install belt pulley assembly (Item 15) using hex bolts, flat washers, hex nuts, and lock washers (Items 37, 36, 35, and 22).
- ☞ Bolt impact bed assembly (Item 13) to tailpiece weldment (Item 6) using flat washers, lock washers, hex nuts, and bolts (Items 31, 32, 33, and 34).
- ☞ Install slider assembly (Item 18) using flat washers, lock washers, hex nuts, and bolts (Items 27, 28, 29, and 30).
- ☞ Install knuckle piece (Item 4) to tailpiece weldment (Item 6) using tailpiece swivel pin, flat washer, hex nut, keeper pin, and cotter pin (Items 7, 38, 39, 40, 43).
- ☞ Tighten the hex nut (Item 39) onto the tailpiece swivel pin (Item 7) then weld the pin keeper (Item 40) across the flat of the tailpiece swivel pin (Item 7) on three sides.
- ☞ Position the assembled knuckle joint and the tailpiece frames to the main frame. (Reference Figure 10 for placement). Install pins (Item 5).
- ☞ Install the tailpiece hopper weldments (Items 8 and 9) on the main frame using flat washers, lock washers, hex nuts and bolts (Items 23, 24, 25, and 26) and flat washers, lock washers, hex nuts, and bolts (Items 27, 28, 29, and 30).
- ☞ Install tailpiece tilt cylinders (Item 12) into the tailpiece hopper weldments (Items 8 and 9) and the tailpiece weldment (Item 6) using the swivel clevis weldments, pins, and cotter pins (Items 11, 16, and 41).
- ☞ Install the steering cylinders (Item 10) between the tailpiece frame (Item 6) and the knuckle joint weldment using pins and cotter pins (Items 16 and 41).

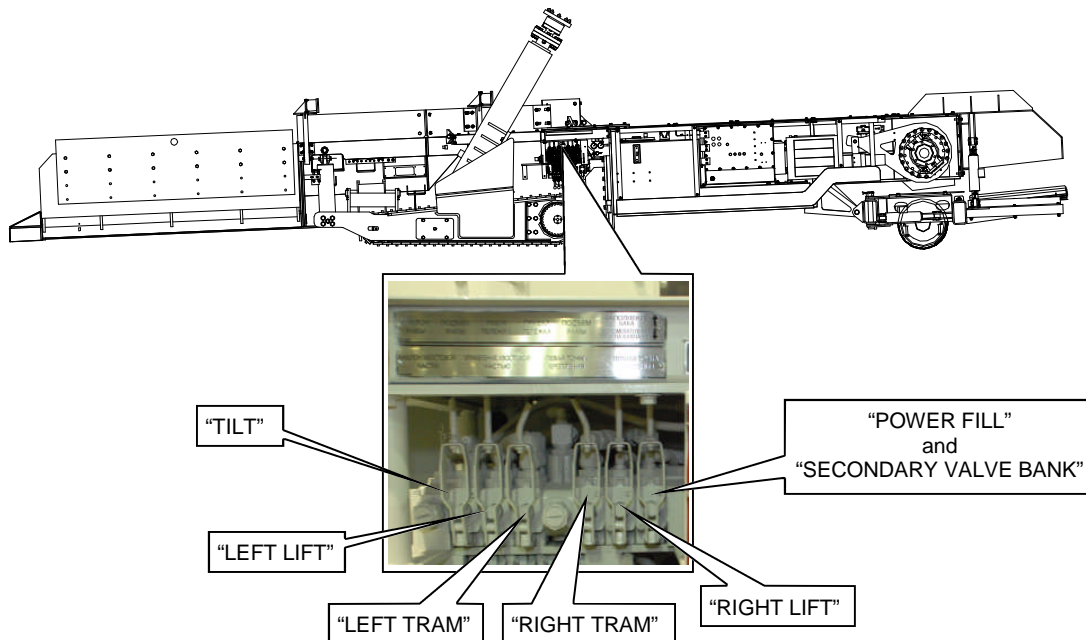
“LEFT FRAME LIFT”

The fifth lever from the operator’s right controls the movement of the left cylinder at the pivot point of the crawler, which adjusts the ground clearance on the left side of the machine. To increase the ground clearance, slowly push the control lever away from the operator and to decrease the ground clearance, slowly pull the control lever towards the operator.

“FRAME TILT”

The sixth lever from the operator’s right controls the movement of the cylinders mounted to the underside of the hopper and end of the crawlers, which adjust the discharge height of the machine. To raise the height, slowly push the control lever away from the operator and to lower the height, slowly pull the control lever towards the operator.

Fig. 13: Primary valve bank



auxiliary system pressure gauges

The auxiliary function pressure gauges (Fig. 14) are high pressure gauge (6,000 psi) located to the right of the tram control levers. These gauges give the operator a constant reading of the auxiliary system pressures.

conveyor speed pressure gauge

The conveyor speed pressure gauge (Fig. 14) is a low pressure gauge (400 psi) located to the right of the conveyor direction control lever. This gauge gives the operator a constant reading of the conveyor speed pressure.

two position conveyor direction control valve

The two position conveyor direction control valve (Fig. 14) controls the feeder breaker and discharge conveyor direction. Push the control lever down to run the conveyor in the direction of the discharge end and pull the control lever up to run the conveyor in the direction of the receiving end.

Shutdown procedure

There are several methods of shutting down the feeder breaker. Some methods will remove the main incoming power and other methods will only stop the motor.

- ☞ Allow the machine to run until the hopper is empty. Continue to run the machine until all material that has been carried back into the return line has been cleaned out.



IMPORTANT!

If material is very wet or sticky, it is recommended that the return line be flushed with water and the conveyor be allowed to run to clean out the return line before shutting the machine down.

To shutdown the feeder breaker proceed as follows:

- ☞ Depress either of the onboard pushbutton stations “STOP” buttons. This will remove the main incoming power.
- ☞ Engage the pull cord switch located across the receiving end. This will remove the main incoming power.
- ☞ Depress either of the remote pushbutton stations “STOP” buttons. This will stop the crusher motor.
- ☞ Turn the “MANUAL/OFF/AUTOMATIC” selector switch located on the cover of the starter enclosure to the “OFF” position. This will stop the crusher motor.
- ☞ Depress the “STOP” button located on the cover of the starter enclosure. This will stop the crusher motor.
- ☞ Move the conveyor directional control handle to the centered “NEUTRAL” position.
- ☞ Turn the conveyor speed control knob counter clockwise (CCW) to the lowest speed.

Mechanical assemblies

The following pages contain a brief description of the major mechanical assemblies that are on the feeder breaker.

WARNING!

This section is intended only to familiarize the user with the major mechanical assemblies of the feeder breaker. All mechanical maintenance should be performed only by a qualified technician with the knowledge of the function of the assemblies involved.

Crawler assembly (s)

The feeder breaker is trammed by two (2) hydraulically driven crawlers (Fig. 24) located on each side of the machine. The complete drive assemblies are housed in crawler frames which enclose, guide, and support the tram components. Each tram drive is independently controlled by the operator for moving the machine forward, backward, and for making turns.

The crawlers on the machine are hydraulic driven through torque hub gear reducers. Attached to the torque hub is a single sprocket that engages the crawler tracks directly. The crawler track loops around the take-up roller assembly located on the opposite end of the crawler assembly. The idler assembly, along with a grease take-up, is used to adjust the tension on the crawler tracks. (See Maintenance section in this chapter for Crawler track adjustment procedure)

Fig. 24: Crawler assembly main components

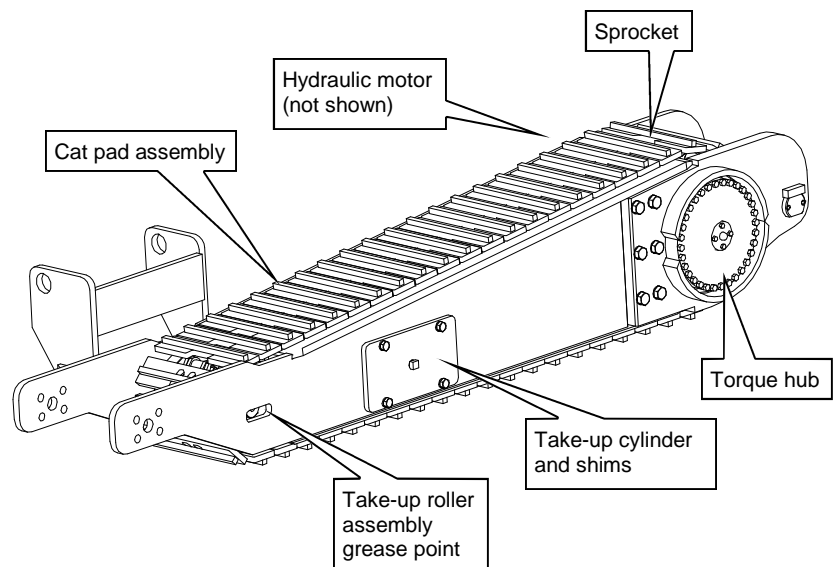
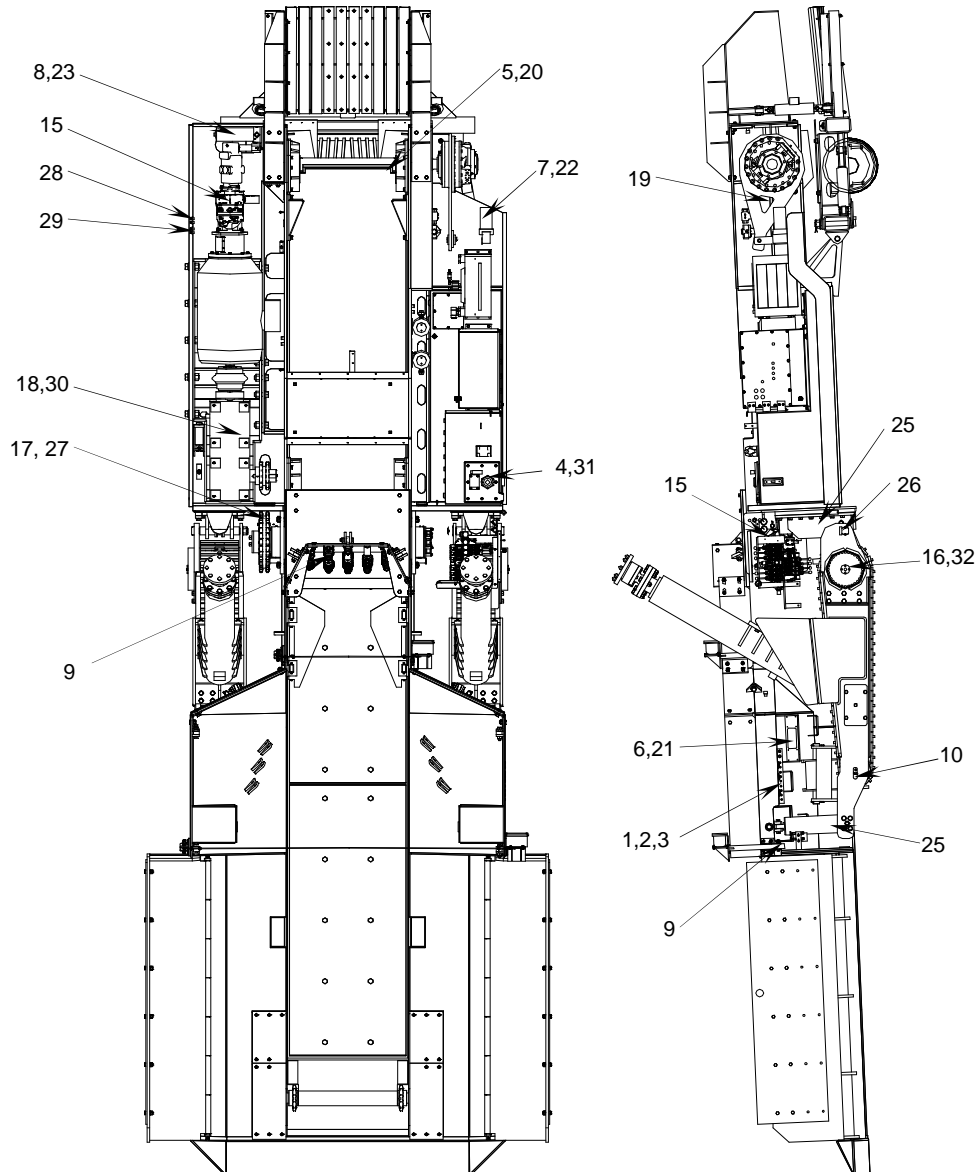


Table 1 Continued: Lubrication and maintenance schedule (feeder breaker)

Item	Description	Places	Lubricant	Specification
Every 2500 hours				
30	** Breaker reducer (Change)	1	Century 220	
Every 6 months				
31	Hydraulic oil tank (change)	1	Century Hydraulic AW 68	Spec. 100-1
32	Tram reducer (change oil)	2	80W-90	

** Change breaker reducer oil after first 500 hours of operation and every 2500 hours afterwards.

Fig. 33: Lubrication chart (feeder breaker)



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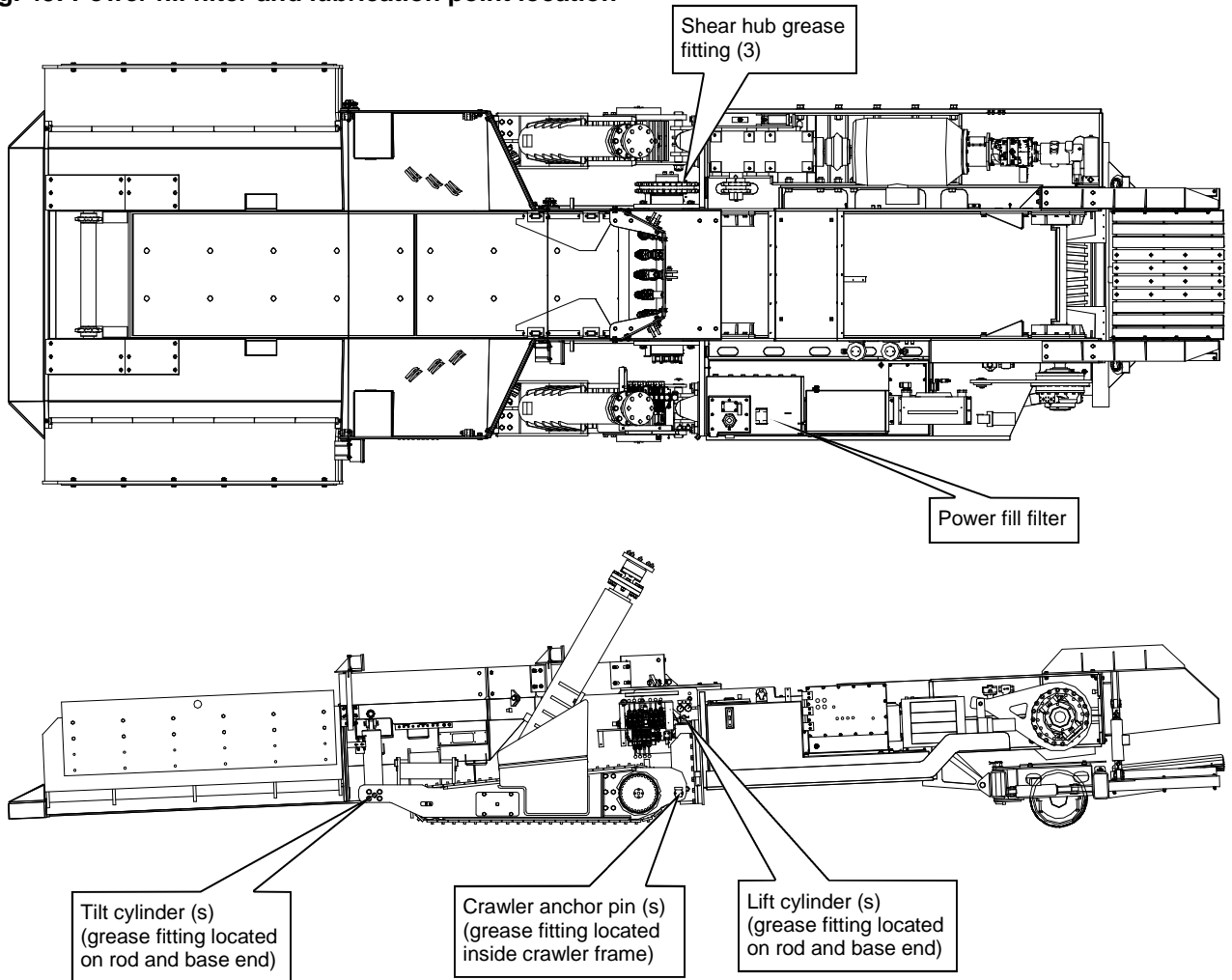
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Monthly

- power fill filter** Change the power fill filter element (Fig. 45). If the element is extremely dirty, a more frequent interval may be required.
- conveyor lift and tilt cylinders** Lubricate grease fittings on the rod and base ends of the conveyor lift and tilt cylinders with Spec. 100-3 (Fig. 45). Pump grease into the fittings until new grease can be observed coming out of the pins.
- crawler anchor pins** Lubricate grease fittings on both left and right side crawler anchor pins with Spec. 100-3 (Fig. 45). Pump grease into the fittings until new grease can be observed coming out of the pins.
- shear hub** Lubricate grease fittings (3) on the breaker shaft shear hub with Spec. 100-3 (Fig. 45). Pump grease into the fittings until new grease is observed coming out of the spare shear pin holes and around the outer diameter of the hub collar.

Fig. 45: Power fill filter and lubrication point location



Recharge of fire suppression system on the feeder breaker

To return your fire suppression system to service after use (Fig. 50).

- ☞ Pull ring on safety valve to relieve actuator system pressure.
- ☞ Disconnect actuation system hose at cartridge receiver/actuator assembly.
- ☞ Open bursting disc union assembly.
- ☞ Remove extinguisher from bracket.
- ☞ Replace ruptured bursting disc with new disc. (Full disc side must face extinguisher).
- ☞ Fill extinguisher to rated capacity with Ansul dry chemical specified on nameplate.
- ☞ Clean fill opening threads and gasket seating surface.
- ☞ Secure fill cap, hand tighten.
- ☞ Remove cartridge guard assembly.
- ☞ Remove empty cartridge.
- ☞ Make certain that receiver/actuator puncture pin is fully retracted.
- ☞ Screw full charged cartridge into receiver/actuator assembly, hand tighten.
- ☞ Replace cartridge guard.
- ☞ Secure extinguisher in bracket.
- ☞ Assemble bursting disc union, wrench tighten.
- ☞ Connect actuation system hose at cartridge receiver/actuator assembly, wrench tighten.
- ☞ Replace cartridge in remote actuator (dashboard type). Pull out button, insert ring pin and remove empty cartridge. Screw fully charged cartridge into actuator, hand tighten. Seal ring pin to actuator button stem with lead and wire seal.
- ☞ Record date of recharge and notify operating personnel that system is back in service.

Hydrostatic pump charge pressure adjustment

WARNING!

Follow all standard safety procedures before beginning this adjustment process. Failure to do so may result in serious injury or death.

- ☞ 1. Start the machine (see Start-up procedure in this chapter).
- ☞ 2. The charge pressure gauge (Fig. 56) should read 350 psi while the machine is at idle, the conveyor direction valve handle is in neutral, and the oil temperature is between 90°F and 110°F. Locate the charge pressure adjustment screw (Fig. 54).

Note: The charge pressure will drop slightly (as low as 290 psi) while the conveyor is running. This is normal and does not require further adjustment after initial setting.

Note: The charge pressure will vary depending on oil temperature (the hotter the oil, the lower the pressure and the cooler the oil, the higher the pressure). This is normal and does not require further adjustment after initial setting.

- ☞ 3. Insert an internal hex key into the pressure adjustment screw and turn the internal hex key **clockwise** to **increase** the charge pressure setting and **counterclockwise** to **decrease** the charge pressure setting.

CAUTION!

Do not turn the adjustment screw in any further once it is felt that the screw has bottomed out as this may damage the needle valve and seat. Likewise, do not turn the adjustment screw out all the way as this may present difficulties in reassembly and may introduce contamination into the hydraulic pump.

- ☞ 4. Monitor the charge pressure gauge until the desired 350 psi pressure setting is obtained for the charge pressure.
- ☞ 5. Lock the pressure adjustment screw in place by turning the hex jam nut clockwise while still holding the pressure adjustment screw with the internal hex key so as not to alter the desired pressure setting. Once the hex jam nut is snugged down, observe the charge pressure gauge to ensure the relief pressure setting was not accidentally changed during the tightening of the hex jam nut. If the charge pressure setting has changed, loosen the hex jam nut and readjust the pressure adjustment screw.
- ☞ 6. Turn off the machine.

How to install the head shaft split sprockets

To install the split sprockets on the head shaft proceed as follows (Fig. 58):



IMPORTANT!

Adhere to all weld specifications shown on Fig. 58. Failure to do so may result in sprocket failure and machine damage.

- ☞ Release tension on the conveyor chain by removing shims from the conveyor chain take-up. (See Conveyor chain adjustment in this chapter).
- ☞ Separate conveyor chain and fold back to clear drive shaft. (See Conveyor chain replacement in this chapter).
- ☞ Remove the two (2) sprocket guards located on the end of the feeder breaker.
- ☞ Remove damaged sprockets and keys from head shaft. Old sprockets may require cutting to remove.
- ☞ Thoroughly clean and degrease the drive shaft.
- ☞ Insert key into shaft keyway.
- ☞ Install both sprocket halves onto shaft and tack weld in place. Ensure sprocket alignment and proper spacing with conveyor chain.
- ☞ Preheat sprocket weld joint to 600°F .
- ☞ Weld sprocket halves together and do not exceed 800°F maximum interpass temperature. Ensure that the weld is smooth in the tooth area to prevent damage to the conveyor chain bushings during chain operation.
- ☞ If possible, cover sprocket with insulating blanket and allow weld to cool to a maximum of 100°F before uncovering. If this is not possible, then post weld heat to 800°F.
- ☞ Connect conveyor chain. (See Conveyor chain replacement in this chapter).
- ☞ Adjust tension on the conveyor chain. (See Conveyor chain adjustment in this chapter).

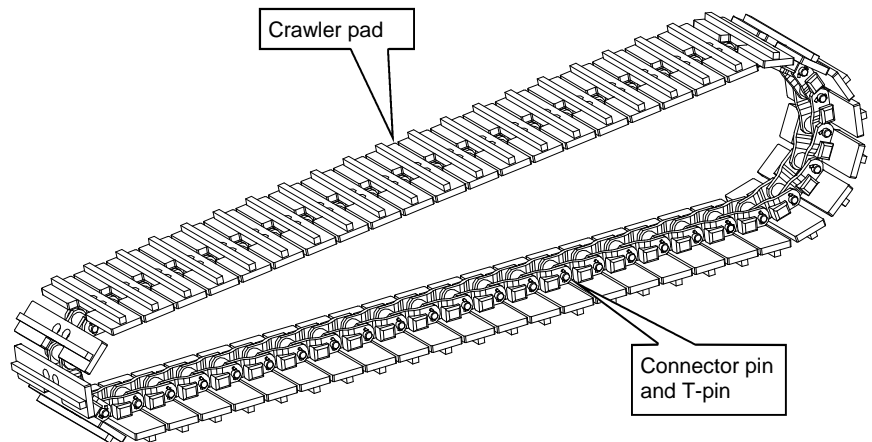
Crawler track

The crawler track (Fig. 64) assembly (left and right) carries the machine via torque received from the tram drive reducer. The crawler track is made up of one basic crawler pad assembly, which repeats sequentially along the entire pad loop. As soon as any component of the crawler track is worn the component or complete crawler track assembly must be replaced.

Each crawler track consists of the following main components:

- crawler pad
- connector pin
- t-pin

Fig. 64: Crawler track main components



Power unit

The power unit (Fig. 68) has been assembled as a unit and can be removed as a unit or as individual components. As soon as any component of the power unit is worn or damaged, the component must be replaced.

The power unit consists of the following main components:

- gear pump
- hydrostatic pump
- pump coupling
- motor (200 hp)
- reducer/motor coupling
- reducer
- sprocket
- connecting tube

Fig. 68: Power unit main components

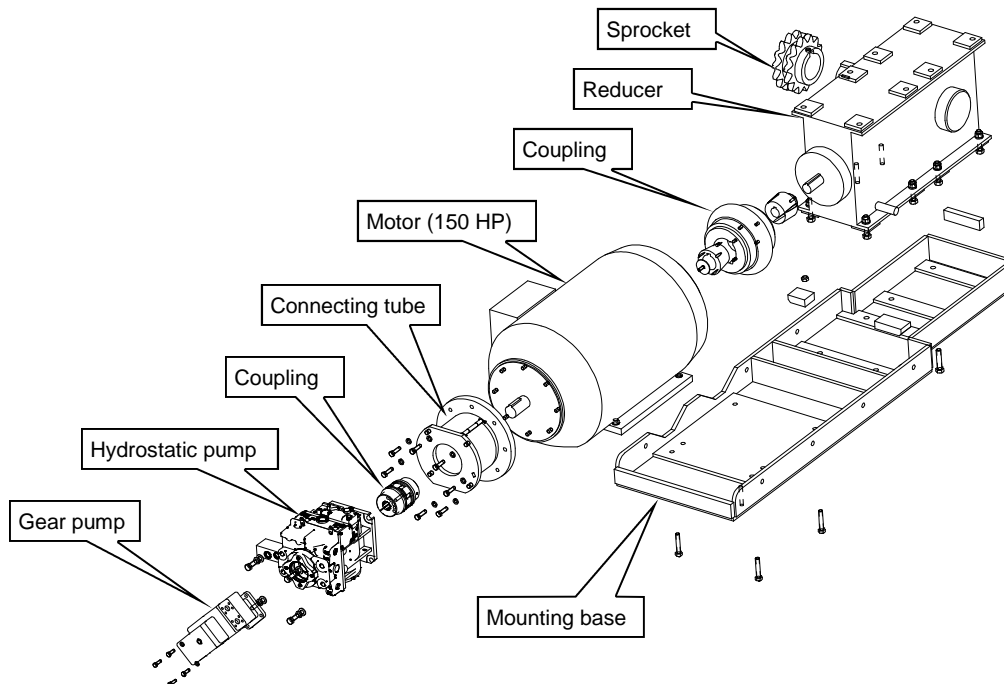
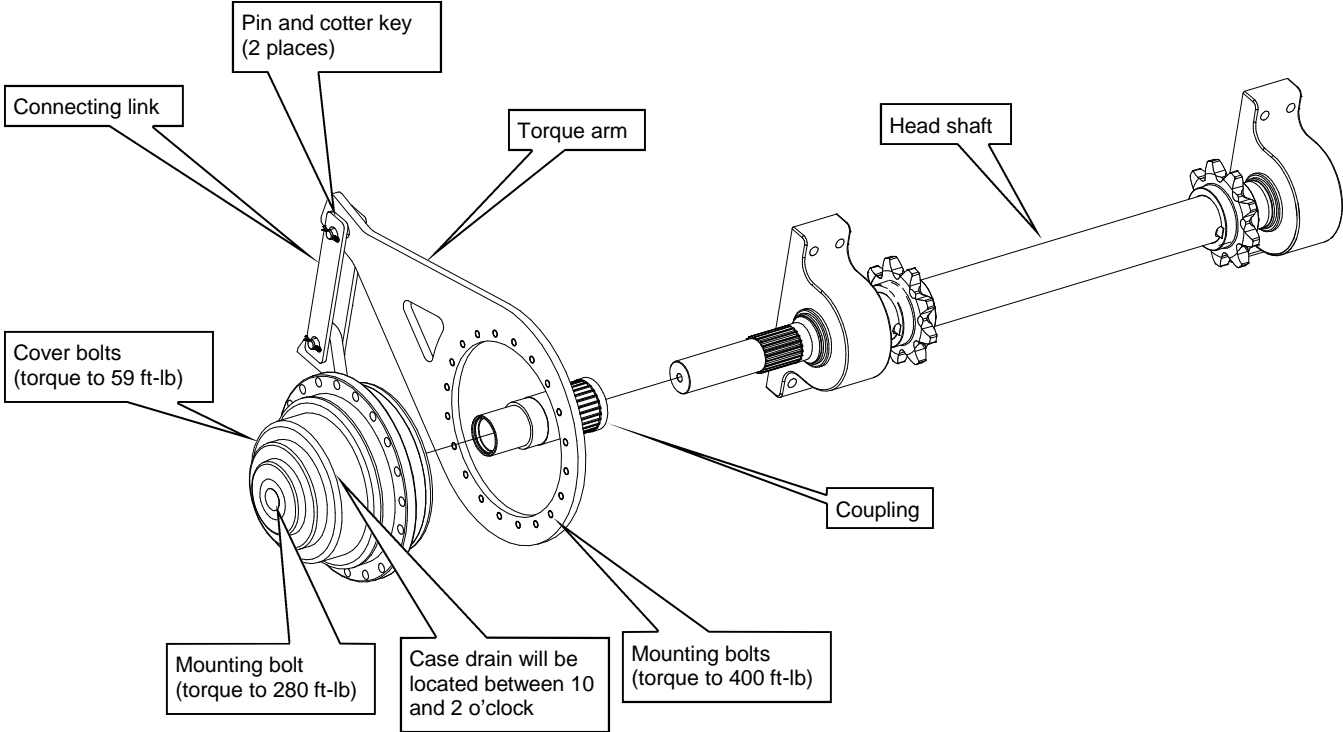
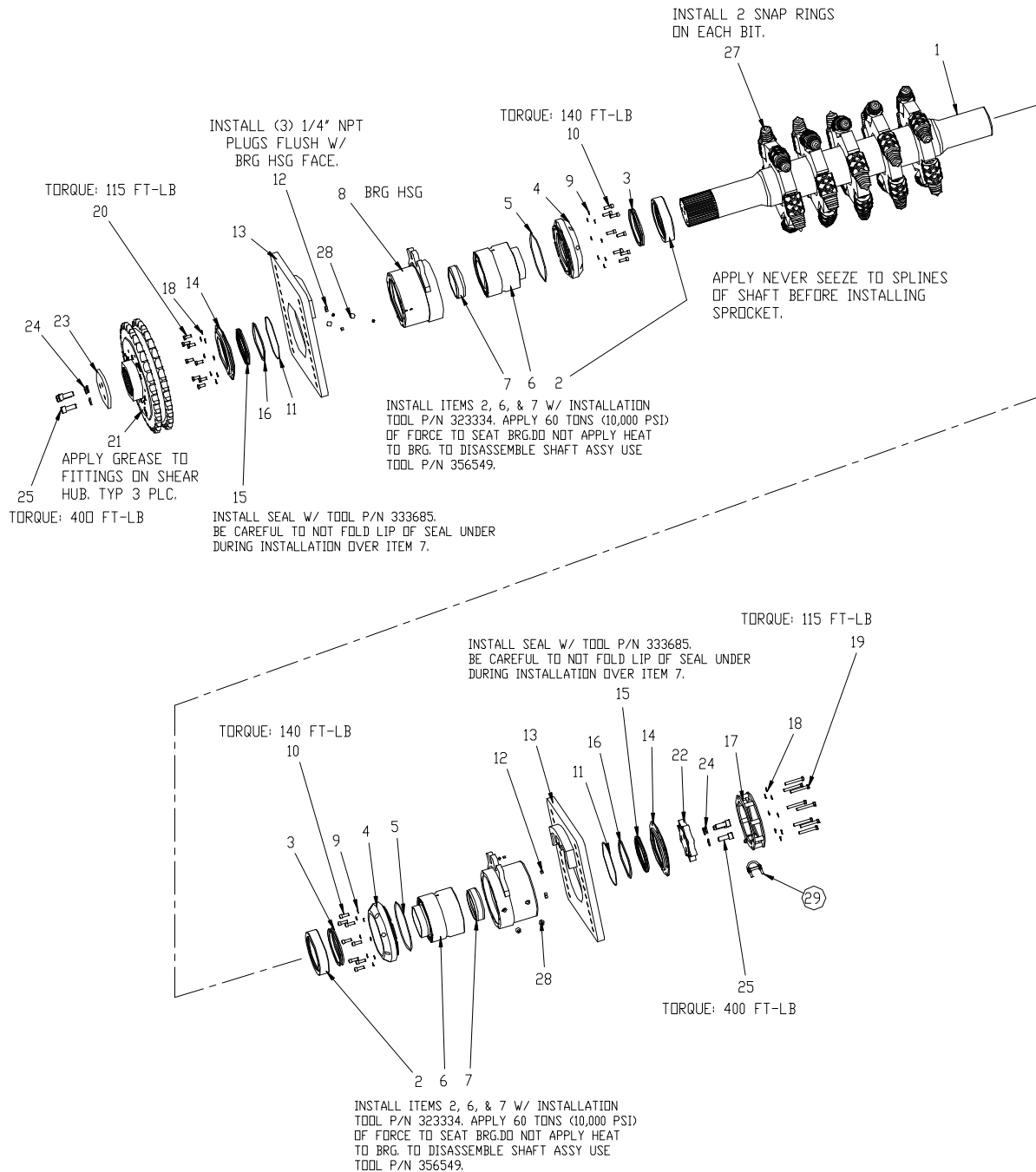


Fig. 72: Conveyor drive motor removal and installation



Replacement of wear parts

Fig. 75: Breaker shaft assembly and disassembly



- | | | |
|--------------------------|------------------------------|-------------------|
| 1. breaker shaft | 12. pipe plug 1/4" | 23. retainer cap |
| 2. bearing backing ring | 13. side plate | 24. lock washer |
| 3. seal | 14. seal housing | 25. bolt |
| 4. bearing retainer ring | 15. seal | 26. wire |
| 5. o-ring | 16. retainer ring | 27. breaker bit |
| 6. bearing | 17. under speed sensor mount | 28. pipe plug #12 |
| 7. sealing ring | 18. lock washer | 29. u-bolt |
| 8. bearing housing | 19. bolt | 30. flat washer |
| 9. lock washer | 20. bolt | 31. lock washer |
| 10. bolt | 21. shear hub sprocket | 32. locknut |
| 11. o-ring | 22. end cap | |

Tightening torques



IMPORTANT!

Due to the application of fasteners being subject to great stresses and heavy or extreme vibration, it is imperative that all bolts be applied with an adequate amount of torque. For this reason this list of recommended torque settings for different types and sizes of fasteners used has been compiled.

The tightening torques stated in the spare parts lists have to be observed, as well, for installation and maintenance.

Set screws

Table 3: Set screws (Socket long-lok)

Nominal diameter	Recommended torque setting
#6	6 in-lbs
#8	9 in-lbs
#10	13 in-lbs
¼"	30 in-lbs
5/16"	5 ft-lbs
3/8"	8 ft-lbs
7/16"	11 ft-lbs
½"	16.7 ft-lbs

Table 4: Set screws (Socket standard steel)

Nominal diameter	Recommended torque setting
#6	9 in-lbs
#8	16 in-lbs
#10	30 in-lbs
¼"	6 ft-lbs
5/16"	12 ft-lbs
3/8"	18 ft-lbs
7/16"	29 ft-lbs
½"	43 ft-lbs
5/8"	100 ft-lbs
¾"	146 ft-lbs
7/8"	199 ft-lbs
1"	262 ft-lbs

Permissible media

Table 23: Invert emulsion hydraulic fluid (Spec. 100-5)

	Supplier	Brand name
1	Unocal 76	FR Fluid
2	Conoco Inc.	FR Hydraulic Fluid
3	Atlantic Richfield Company	Duro FR-HD
4	Brooks Oil Company	Brooks fire Resistant Hydraulic Fluid B
5	Cincinnati – Vulcon Company	Vulcon FR Fluid #1
6	Cities Service Oil company	Citgo Pacemaker Invert FR Fluid
7	Century Oils limited	Aquacent Light
8	Fiske Bros. Refining Company	Lubriplate HO-Retard
9	Getty Oil company (Veedol, Tidewater)	Veedol Auburn FRH
10	Gulf Oil Company	FR Fluid
11	E.F. Houghton	Houghto-Safe 5046 Houghto-Safe 5046W
12	Century Lubricating Oils	Hulsafe 600
13	Imperial Oil and Grease	Astrol 587
14	Mobil Oil Corporation	Pyrogard D
15	National Oil and chemical Co.	Erifon 1, 2, and 3
16	Pennzoil	Maxmul FRP/G
17	Quaker Chemical Company	Quintolubric 958 Series Quintolubric 958 Series
18	Henry E. Sanson and Sons MFGE Company	Hydra-Mul Premium Emulsion Fluid
19	Southwest Grease and Oil Company, Inc.	Invert Emulsion fire resistant Hydraulic Fluid
20	Southwest Petroleum Corp.	Swepeco Fire Resistant Hydraulic oil #718
21	Standard Oil Company of Ohio (Boron Sohio)	Staysol FR
22	Sun Oil company	Sunsafe F
23	Tower Oil Company	Safoil Anti-Wear Hydraulic Fluid
24	Wynn Oil company	Hydra-Safe heavy Medium
25	Lubrication Engineers	6455 Monolec Fire Resistant hydraulic Fluid
26	Hydrotex	HY-Guard

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