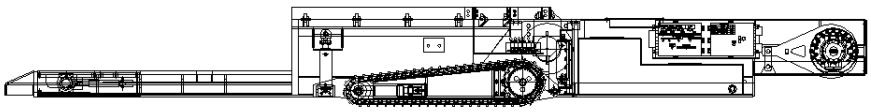
Operation Manual

BUCYRUS - Feeder Breaker
Model - 7MFBH-48A

Doc. No.: A6474X248



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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.

Chapter 6: Technical data

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.

NOTICE!
Use only lubrication fluids and greases approved by Bucyrus America, Inc. These fluids and greases have been tested at Bucyrus America, Inc. and guarantee reliable operation of the mechanical and hydraulic functions of the machine.

IMPORTANT!
The lubrication fluids and greases listed in the same table can be mixed. Other products may only be used if the supplier can guarantee that they are equivalent.
Differently composed fluids and greases must not be mixed as this may change the consistency, i.e. the mixture can become thinner so that the lubrication effect is not sufficient. It may also be dangerous to use lubricating greases and fluids having the same specification base but different origins.
In case of doubt, the manufacturer of the lubrication to be used should be contacted as to the compatibility of the lubrication in question.

IMPORTANT!
Bucyrus America, Inc. expressly point out that the approval of the listed products relates only to the pure technical use in our mechanical and hydraulic systems. The responsibility for the constituents used in the hydraulic concentrates lies solely with the respective manufacturer.

NOTICE!
When performing maintenance on the machine, all used oil and lubricants should be disposed of per your local EPA standards.

Installation

Points to observe prior to installation

Who is allowed to carry out installation?

Installation is only allowed to be carried out by personnel having received adequate training to perform this task.

Work on:

the safety components (pressure relief valves, fire extinguishing equipment etc.)

the electrical equipment (control units, signaling devices, etc.) and

the hydraulic equipment (cylinders, directional control valves, hoses etc.)

should only be carried out by Bucyrus America, Inc. service engineers or by specially trained personnel.

Which tools are required for installation?

tool box

No special tools are required to put the feeder breaker into service.

In addition, various items of auxiliary equipment and machines may be required at the point of installation.

These include i.e.:

- hoists with adequate lifting capacity
- means of attachment with adequate lifting capacity
- unloading dock
- jacks with adequate lifting capacity
- impact wrenches, including accessories

Operation

This chapter contains important information on the operation and maintenance of the machine. It also includes instructions on the replacement of wear parts.
Read this chapter carefully and thoroughly. In particular, observe the safety instructions in chapter 2 “Your safety”.

How to operate the feeder breaker

DANGER!
Incorrect operation endangers yourself and others!
Incorrect operation of the machine is often the cause of very serious accidents!
Operate the unit only when you have been sufficiently trained on the machine and have read and understood this operating manual. Should anything be unclear, please contact your immediate supervisor.

Who is allowed to operate the feeder breaker?

The feeder breaker is only allowed to be operated by persons with adequate knowledge of the complete machine.

This also includes:

- what safety devices are installed on the machine.
- where these safety devices are located.
- how these safety devices are to be operated.

When can conveying be started?

Operation must not be started until the safe condition and proper function of the complete machine has been checked and the daily maintenance operations have been carried out.

Shutdown procedure

(Reference Fig. 16)

☞ 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 and clean out the return line before shutting the machine down.

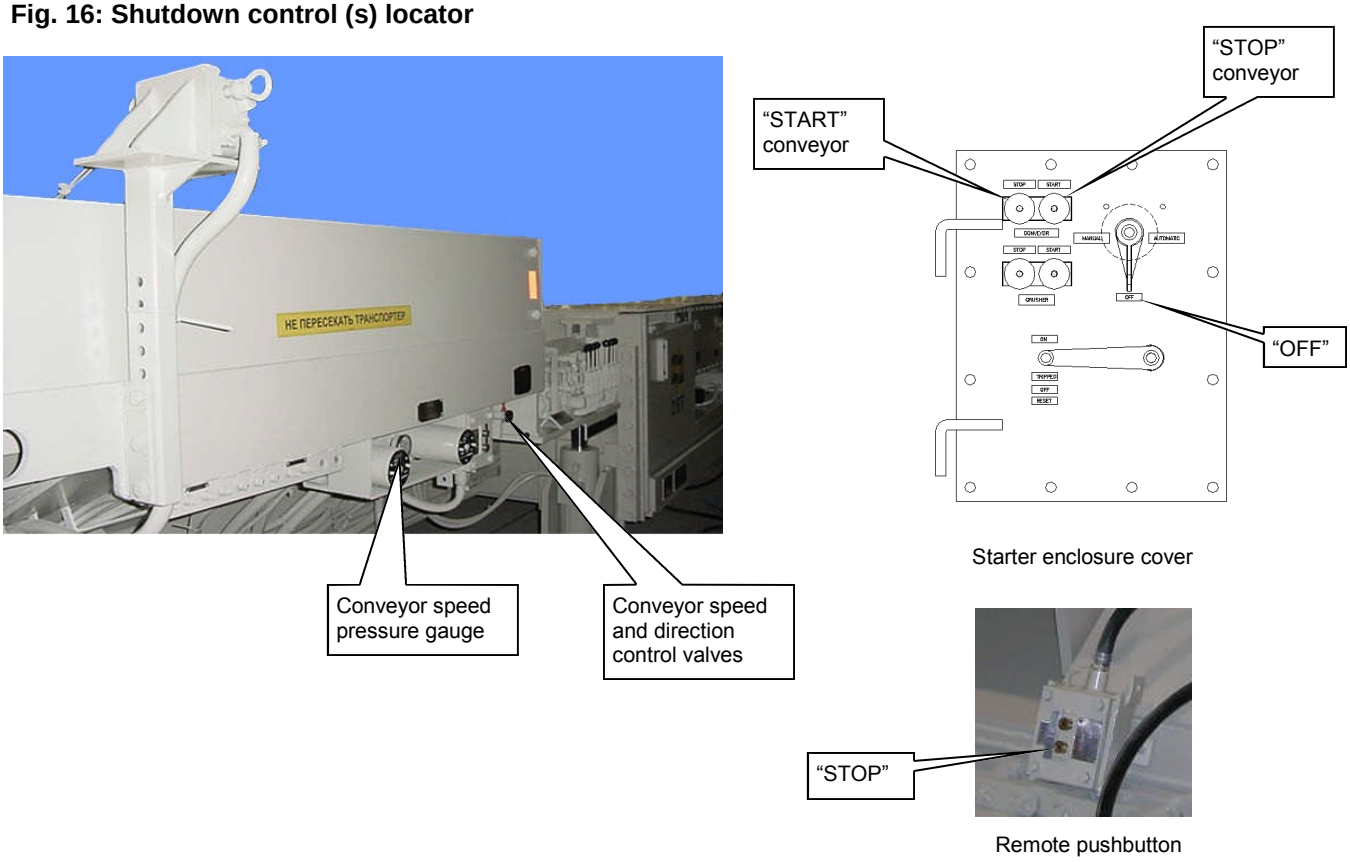
☞ Stop the machine by depressing the “STOP” push-button located on the starter enclosure or either of the two remote pushbuttons.

☞ Turn the “MAN / OFF / AUTO” switch to the “OFF” position.

☞ Move the conveyor directional control handle to the centered “NEUTRAL” position.

☞ Turn the conveyor speed control knob counter clockwise (CCW) to the lowest speed.

Fig. 16: Shutdown control (s) locator



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. 22); one is 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. 22: Crawler assembly main components

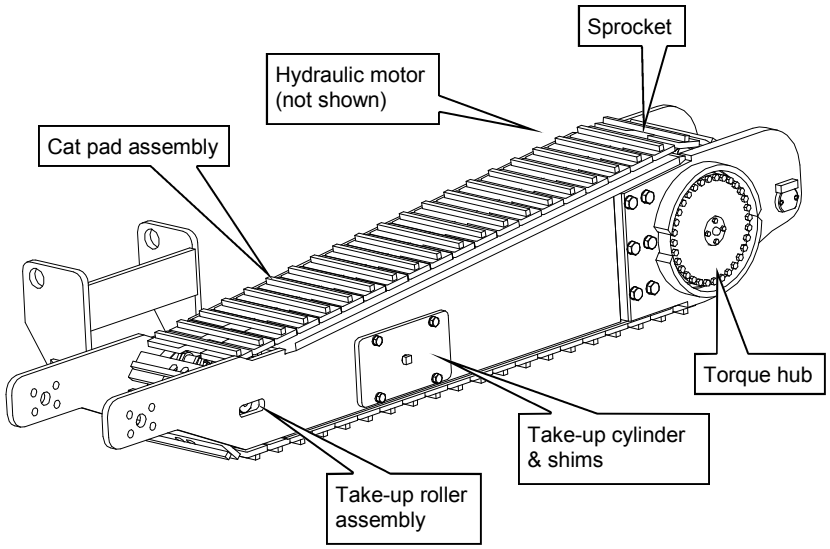
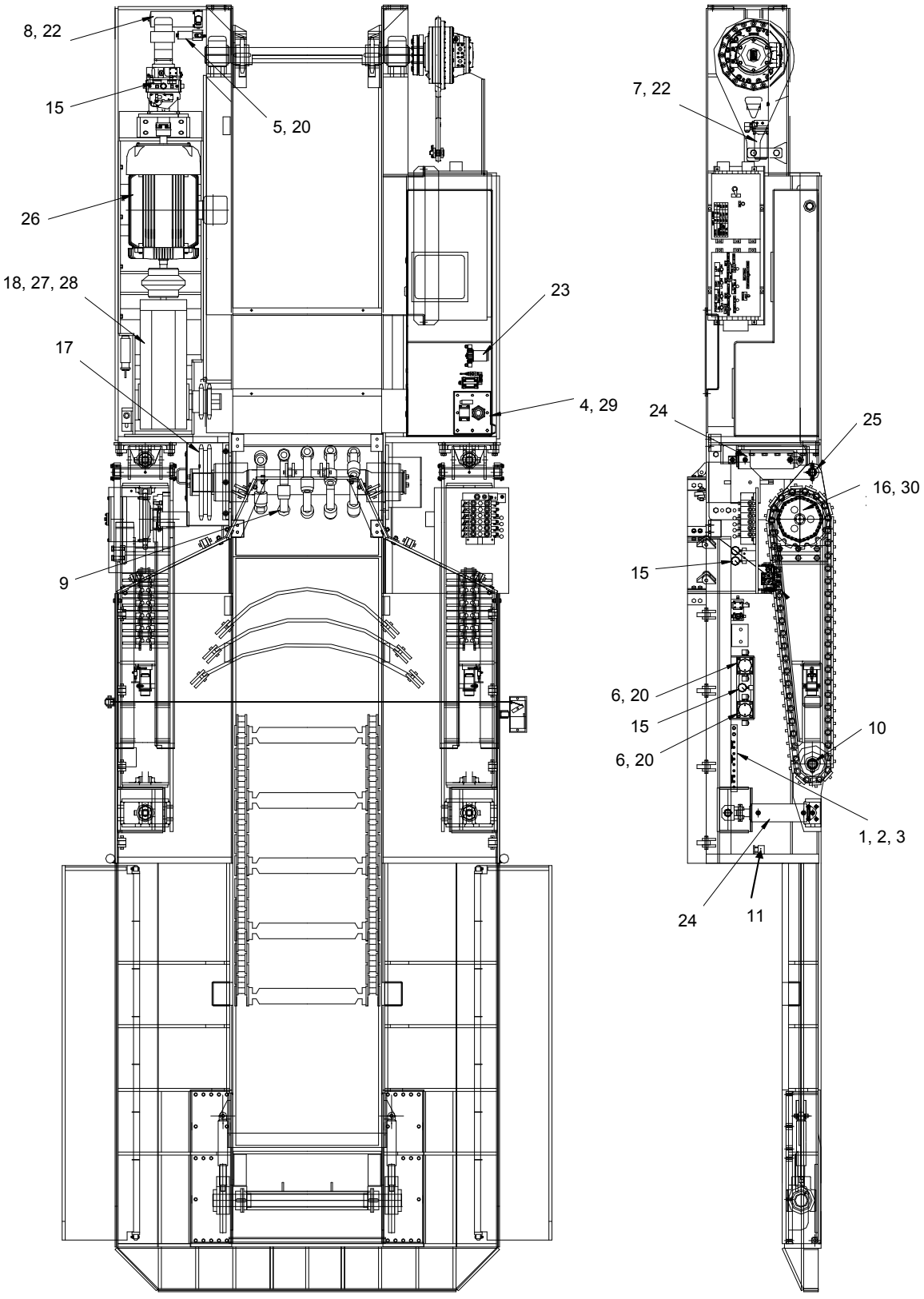


Fig. 31: Lubrication chart



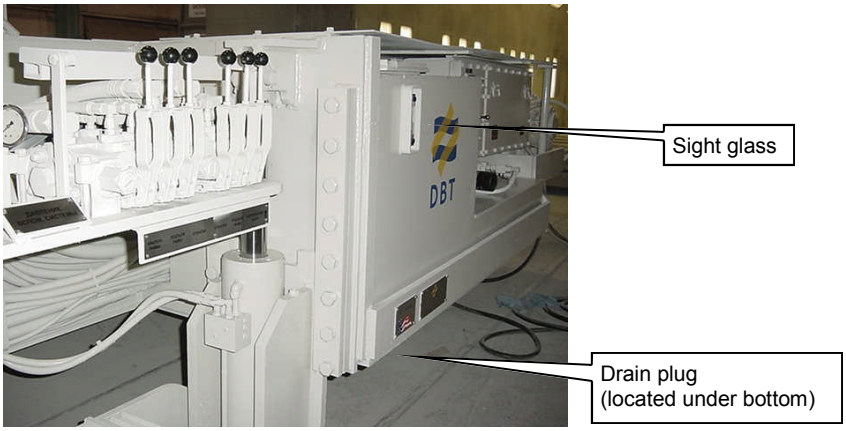
Every 6 months

hydraulic oil tank

Change the hydraulic fluid in the oil tank (Fig. 44).

- ☞ Clean all dirt and debris from and around the fill cap and drain plug.
- ☞ Remove the drain plug and allow the oil tank to completely drain.
- ☞ Clean and reinstall drain plug.
- ☞ Add oil Spec 100-1 as required via the power fill system until fluid is visible in sight glass.
- ☞ Install fill cap.
- ☞ Start the machine and allow the hydraulic pump to run in order to purge air from the system.
- ☞ Shut down the machine and recheck the oil level. Add oil if necessary.

Fig. 44: Hydraulic oil tank



Instructions on the replacement of wear parts on the feeder breaker

It is essential that wear parts are replaced before they reach the lowest wear limit, as otherwise damage can be caused to other parts of the machine. Inspect the wear parts at regular intervals.

Head shaft

The head shaft (Fig. 49) transmits the torque of the hydraulic motor to the conveyor chain assembly. It is part of a complete assembly. As soon as any component is worn, the component or complete head shaft must be replaced. Due to the high abrasion forces the chain sprockets are subject to a very high level of wear.

The head shaft assembly consists of the following main components:

- drive shaft
- sprockets
- bearings
- hydraulic motor

Fig. 49: Head shaft main components

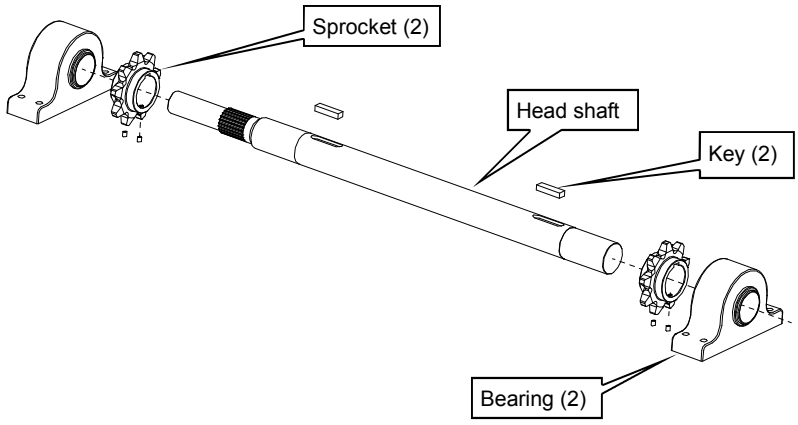
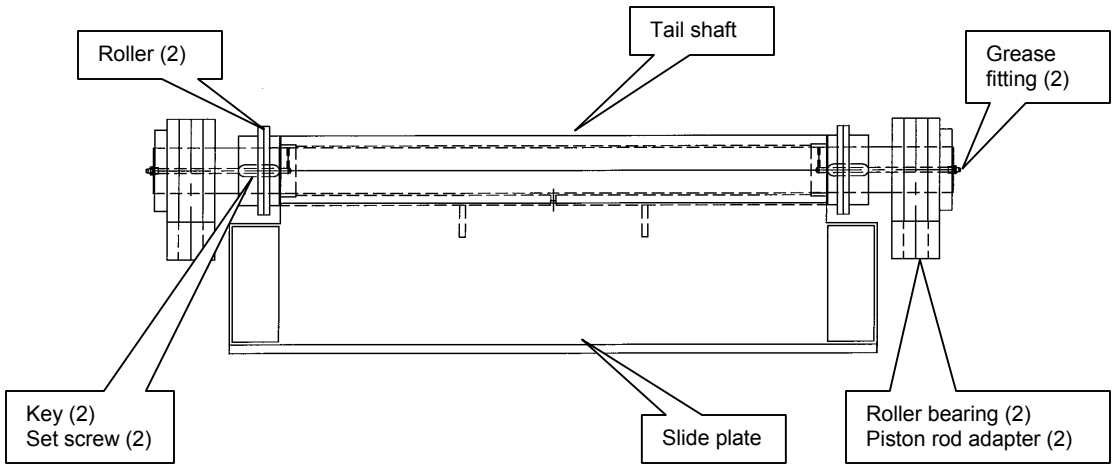


Fig. 54: Tail shaft disassembly and assembly



How to install the crawler take-up assembly

To install the crawler take-up assembly proceed as follows (Fig. 59):

- ☞ Remove old take-up assembly (see previous section, How to remove crawler take-up assembly).

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

- ☞ Inspect all components for wear or damage prior to assembly.
- ☞ Clean all dirt and debris from inside crawler frame.
- ☞ Attach appropriate lifting device to take-up assembly and slide assembly completely into the end of crawler frame.
- ☞ Install and connect crawler and track pad assembly, see How to install the crawler track pad assembly in this chapter.
- ☞ Swing the tilt cylinder and mounting bracket into crawler frame and secure with the eight (8) bolts, washers and nuts.
- ☞ Connect hydraulic hoses to tilt cylinder.
- ☞ Purge hydraulic system of air.
- ☞ Adjust crawler track pad tension, see How to adjust crawler track pad tension in this chapter.

- Install end cap (item 21) onto motor shaft and secure with bolt and lockwasher. Torque bolt to 80 ft-lb.
- With the aid of a lifting device, slowly lift motor onto mounting base (item 1) and align mounting holes and coupling halfs. Secure reducer with the eight (8) bolts, lockwashers and nuts to mounting base. Torque bolts to 280 ft-lb.
- Connect coupling (item 3) with the twelve (12) bolts supplied with coupling.
- Insert key into slot of motor shaft and slide motor coupling half (item 7) onto motor shaft until shaft and coupling face are flush.
- Tighten set screw in motor half of coupling.
- Insert coupling element into motor half of coupling.
- Align the 8 holes of connecting tube (item 8) with motor (item 5)and secure with the eight (8) bolts and lockwashers.
- Slide pump half of coupling (item 7) onto hydrostatic pump shaft (item 25) until a .67” (17 mm) shaft end gap is acquired. Tighten the two (2) coupling half bolts.
- With the aid of a lifting device, slowly lift hydrostatic pump (item 25) and carefully align pump half and motor half of coupling. Secure pump to connecting tube with four (4) bolts and lockwashers. Coupling spacing should be .18” (4.5 mm) after pump mounting bolts are tightened.
- Align mounting holes and shaft of gear pump (item 26) with hydrostatic pump (item 25) and secure with four (4) bolts and lockwashers.
- Install completed power unit onto machine. (See How to install the power unit in this chapter)
- Fill hydrostatic pump thru case drain port with system oil before running pump.

6 Technical data

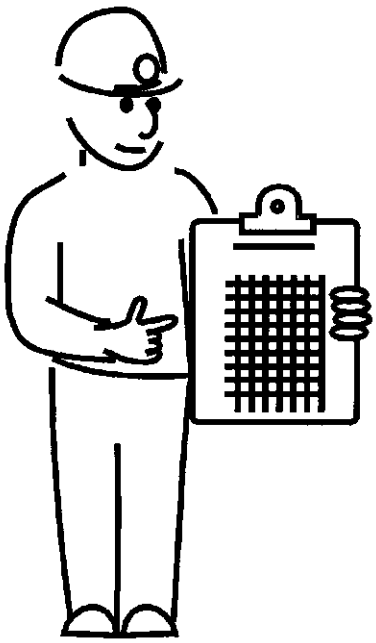


Table 12: Electrically zinc plated (Coarse thread)

Property class	Torque	Recommended torque setting	Nominal diameter					
	Ma	M33	M4	M5	M6	M7	M8	M10
5.6	Nm	0.56	1.28	2.50	4.3	7.1	10.5	21
	Ft-lbs	0.41	0.94	1.84	3.1	5.2	7.7	15
8.8	Nm	1.28	2.90	5.75	9.9	16.5	24	48
	Ft-lbs	0.94	2.14	4.24	7.3	12.1	17.7	35
10.9	Nm	1.80	4.10	8.10	14	23	34	67
	Ft-lbs	1.33	3.02	5.97	10.3	16.9	25	49
12.9	Nm	2.15	4.95	9.70	16.5	27	40	81
	Ft-lbs	1.59	3.65	7.15	12.1	19.9	29	59

Table 13: Electrically zinc plated (Coarse thread, continued)

Property class	Torque	Recommended torque setting	Nominal diameter				
	Ma	M12	M14	M16	M18	M20	M22
5.6	Nm	36	58	88	121	171	230
	Ft-lbs	26	42	54	89	126	169
8.8	Nm	83	132	200	275	390	530
	Ft-lbs	61	97	147	202	287	390
10.9	Nm	117	185	285	390	550	745
	Ft-lbs	86.2	136	210	287	405	549
12.9	Nm	140	220	340	470	660	890
	Ft-lbs	103	162	250	346	486	656

Table 14: Electrically zinc plated (Coarse thread, continued)

Property class	Torque	Recommended torque setting	Nominal diameter				
	Ma	M24	M27	M30			
5.6	Nm	295	435	590	800	1030	1340
	Ft-lbs	217	320	435	590	759	988
8.8	Nm	675	995	1350	1830	2360	3050
	Ft-lbs	497	733	995	1349	1740	2249
10.9	Nm	960	1400	1900	2680	3310	4290
	Ft-lbs	708	1032	1401	1902	2441	3163
12.9	Nm	1140	1680	2280	3090	3980	5150
	Ft-lbs	840	1239	1661	2278	2935	3798