Technical Manual

BI016347

What is the purpose of this operating manual?

cost-effectiveness

This operating manual is intended to help you work efficiently and safely with our product. It contains important information on all the activities related to the machine.

Read this operating manual completely and at ease. Pay special attention to the safety instructions. Try to memorize the appearance and the meaning of the safety and instruction symbols.

service

If any details are not clearly understood, please contact our service department. Our service address is given in the chapter titled “For your information”.

safety

Read the chapter “For your safety” with special attention. The chapter contains important information indicating possible hazards. Observe the information given and follow the procedural instructions.

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Safety instructions

moving parts

Never allow parts of your body to come between parts which could move, such as e.g.:

- conveyor chains
- flights
- pivot points
- boom assemblies
- crawler assemblies
- breaker shaft assemblies

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Storage and transport

plastic deformation

In order to prevent plastic deformation of the seal elements, cylinders must be stored in an upright position. Some cylinders must be removed so that they can be stored upright.

random sample inspection

After a storage period of approximately two years, a random sample inspection must be performed to determine whether the measures taken and the method of storage has prevented damage. On request, the inspection can be carried out by Caterpillar.

natural aging

Even with proper storage, seals and hoses are subject to natural ageing. Do not use these parts if they have been stored for more than two years.

HFA fluids

Instructions on the storage of concentrates for hydraulic fluids can be found, if required, in chapter 6 in this operating manual.

IMPORTANT!
Take care to insure that new supplies are stored separately from existing stock and that removal takes place on the “first in, first out” principle.

Transport

Load units; dimensions and weights

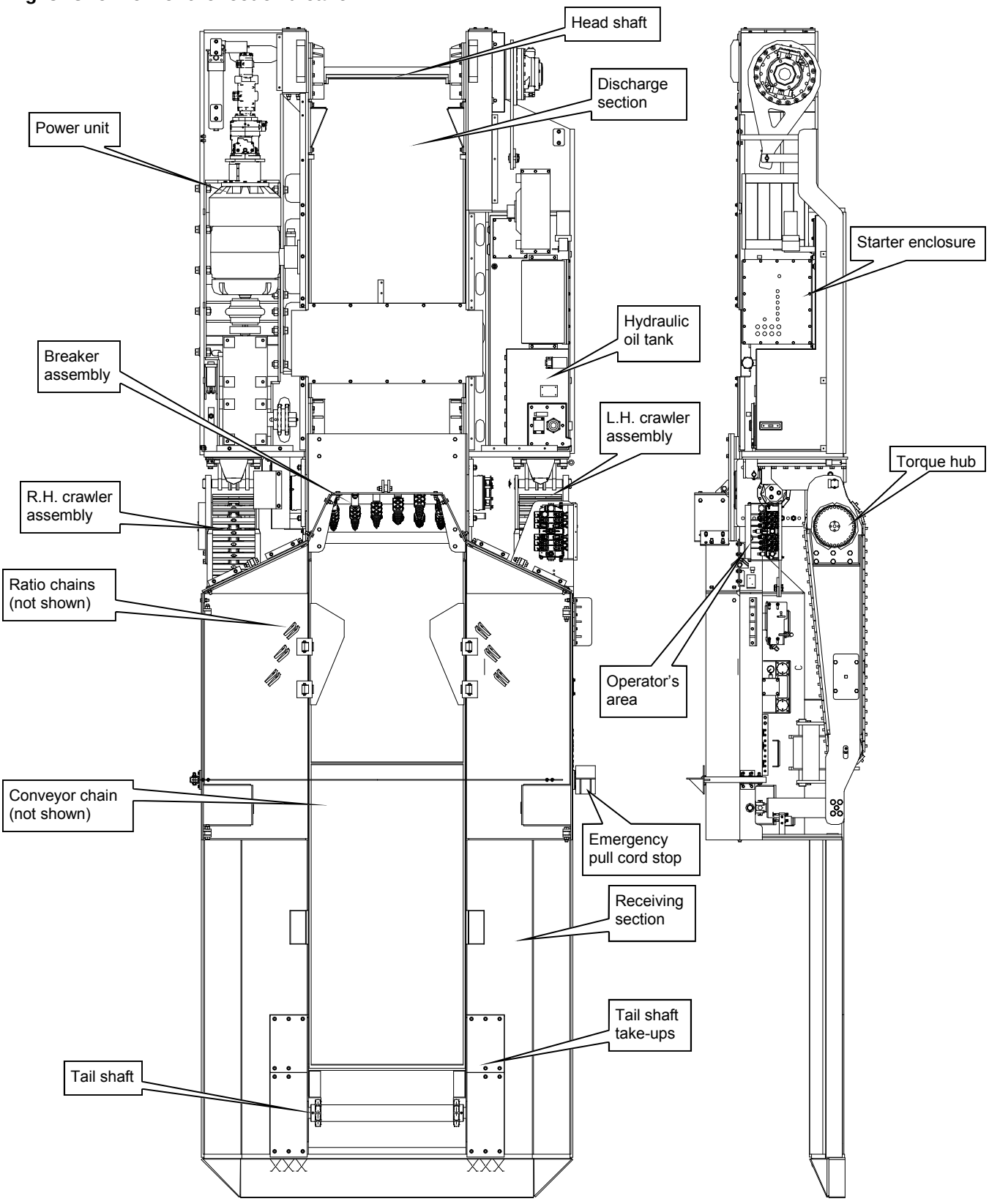
Observe the transport sheets for the machine and spare parts. They contain information on:

- Dimensions
- Weight
- lifting points, etc. (See Fig. 6 for lifting point locations)

Additional information on the dimensions and weights can be found in chapter 6 in this operating manual.

WARNING!
Use only load handling devices complying with the technical and legal regulations for the transport of loads. You could be seriously injured or even killed by falling loads. Use only suitable load handling devices.

Fig. 8: Overview of the feeder breaker



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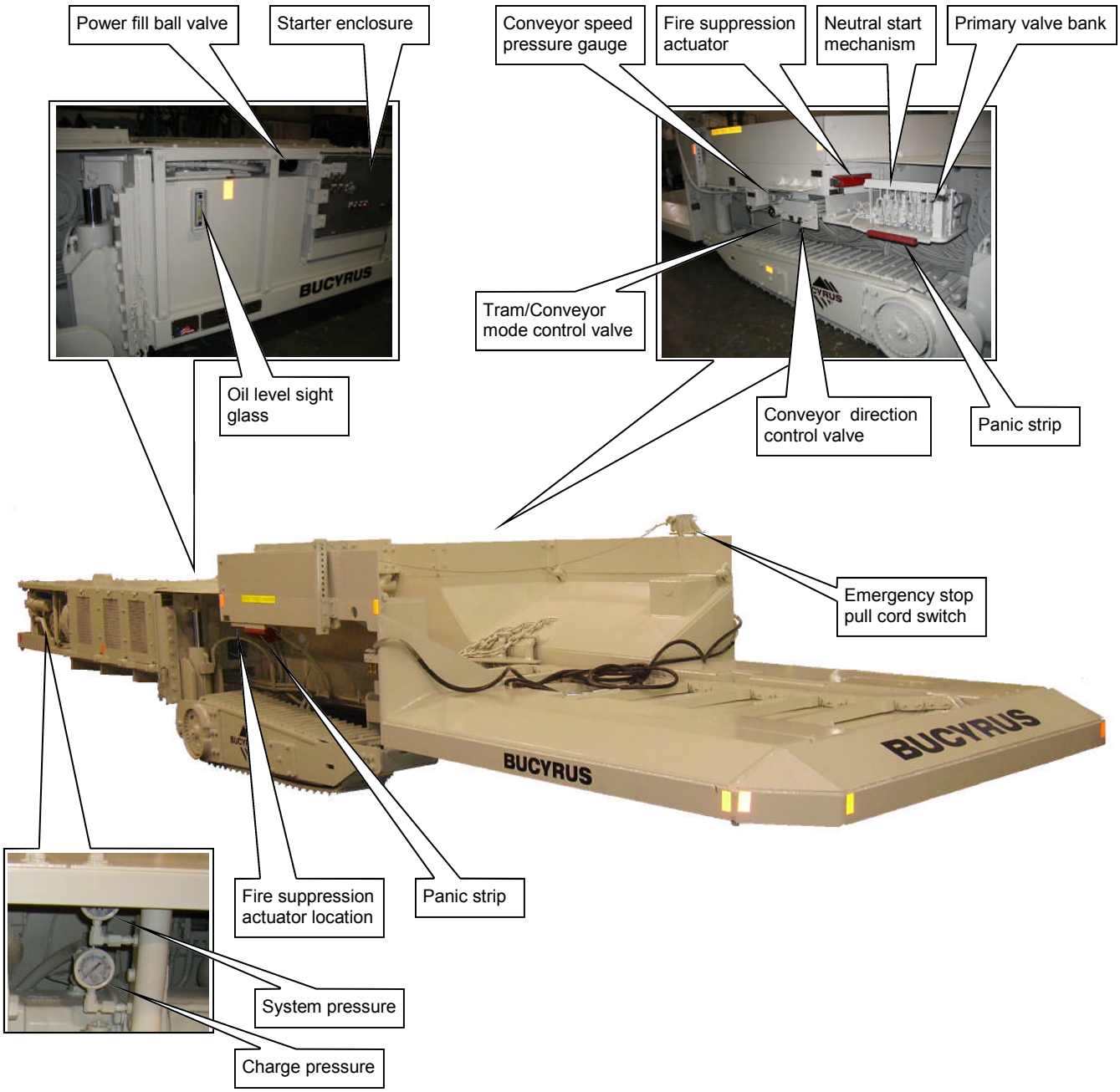
Operation

Fig. 12: Controls and indicators



Panel board

The panel board (Fig. 16) is accessed by opening the cover of the starter enclosure and moving the swing panel out. Located on the panel board are the control transformer, the vacuum contactor, and the overload.

control transformer, "T1" "T1" is the control transformer that reduces the voltage to the control circuit from 950V to 120V.

vacuum contactor, "M1" "M1" is the vacuum contactor fro the motor.

overload, "OL1" "OL1" is the overload relay for the motor. If the motor is overloaded, the relay will shut it down.

Swing panel

The swing panel (Fig. 16) is accessed by opening the cover on the starter enclosure. Located on the swing panel are the indicator lights, relays, timers, circuit breaker resets, and the power supply.

main circuit breaker, "CB1" The main circuit breaker, "CB1", is located to the right of the swing panel. the circuit beaker reset switch on the front of the starter enclosure panel is used to control the circuit breaker when the starter enclosure cover is in place.

When looking directly at "CB1", the circuit breaker is on when the black switch is all the way up. The circuit breaker is off when the switch is down. If the circuit breaker has tripped, the switch is only partially up. to reset the circuit breaker, push the switch down past the off position, then up to the on position.

"IS RELAY" The "IS RELAY" is an intrinsically safe relay for the tape switches. When either tape switch is struck, the relay will shutdown the machine.

safety relay, "SR" "SR" is the safety relay. If either tape switch is struck, the motor will shutdown.

master control relay, "MCR" The master control relay, "MCR", must be energized for the machine to operate.

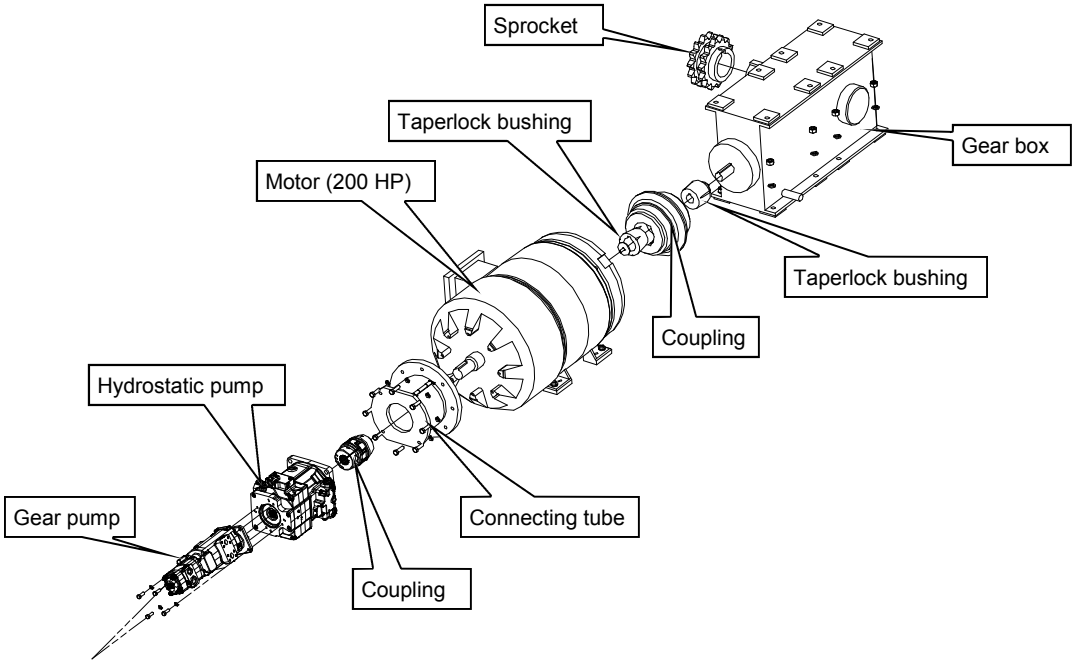
belt slip control relay "BSCR" The belt slip control relay, "BSCR", will stop the feeder breaker conveyor if the belt that the feeder breaker is dumping onto stops.

timer, "TR" The timer "TR" is a time delay on dropout timer and is normally set at three (3) seconds. If there is a low oil, high temperature, or high pressure condition that lasts for more than three seconds, the machine will shutdown.

Power unit

The power unit drives the hydraulic pump (s) and pick breaker reducer (Fig. 24). It consists of a 200 HP electric motor, coupled to a reducer, hydrostatic pump and piggyback gear pump. The power unit has been assembled as a unit and can be removed as a unit or as individual components.

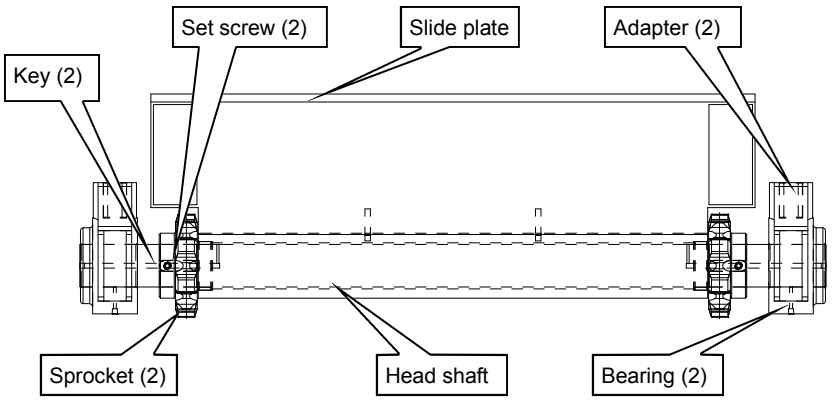
Fig. 24: Power unit main components



Tail shaft

The feeder breaker is equipped with a tail shaft (Fig. 25) located on the receiving end of the conveyor. The tail shaft is an idler shaft that is driven by the tension of the conveyor chain. There is a slide plate arrangement attached to the tail shaft, which fills the gap between the receiving impact plate and the shaft.

Fig. 25: Tail shaft components



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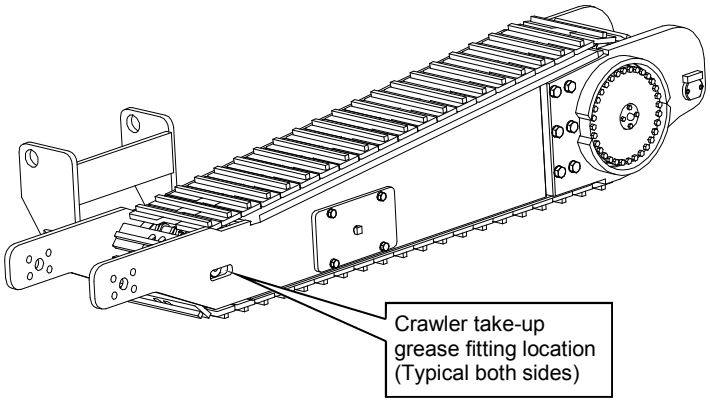
Maintenance

Weekly

crawler track take-up bearings

Lubricate the right and left hand crawler track take-up bearings (Fig. 32) with Spec. 100-3. The fittings (one per side) may be reached through the slot in the end of the crawler frame on the outside of each crawler. Pump grease into the fitting until new grease can be observed coming out of the bearings.

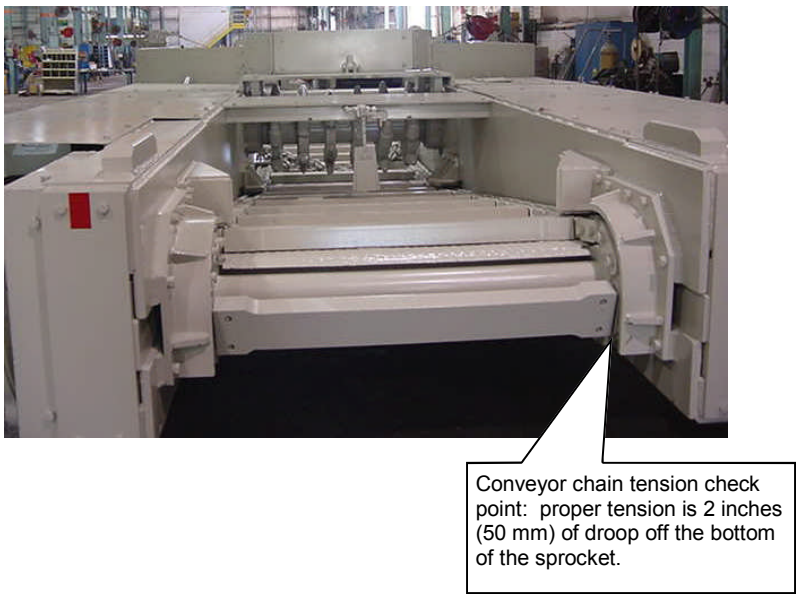
Fig. 32: Crawler track take-up lubrication



conveyor chain tension

With the machine off, check the conveyor chain tension at the head shaft end. (Fig. 33). When the conveyor chain is properly tensioned, there will be approximately 2 inches (50 mm) of droop on the bottom side of the head shaft sprockets. With the machine running, visually inspect tail shaft to ensure shaft is turning and conveyor chain is engaging the tail shaft sprockets properly. If adjustment is necessary, see Conveyor chain adjustment procedure in this chapter.

Fig. 33: Conveyor chain tension



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Inspection of wear parts on the feeder breaker

In order to be able to determine in good time when a repair shift has to be scheduled and to avoid damage to other components, it is essential to inspect all the following wear parts as to their degree of wear.
Inspect:

- the conveyor chain
- the conveyor chain flights
- the conveyor drive sprockets
- the conveyor tail shaft
- the conveyor wear plates
- the crawler pads
- the crawler drive sprockets
- the crawler idler rollers

How to remove the head shaft

To remove the head shaft assembly from the feeder breaker discharge boom proceed as follows (Fig. 49):

- ☞ 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 discharge boom.
- ☞ Remove the hydraulic motor. (See Hydraulic motor removal in this chapter).
- ☞ Disconnect, tag and cap the central lubrication hoses on both head shaft bearings.
- ☞ Remove the left and right covers from the end of the boom frame.
- ☞ Remove the four (4) nuts, bolts, and lock washers from each of the head shaft bearings.
- ☞ Attach an appropriate lifting device to the head shaft and slide out towards the rear of the frame.

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.

How to install the head shaft

To install the head shaft assembly proceed as follows (Fig. 49):

- ☞ Attach an appropriate lifting device to the head shaft and slide in the slots located at the end of the discharge boom.
- ☞ Align the head shaft bearings with the mounting holes in frame and secure each with the four (4) nuts, bolts, and lock washers. Torque bolts to 645 ft-lbs.
- ☞ Install the left and right covers to the end of the boom frame.
- ☞ Connect the central lubrication hoses on both head shaft bearings.
- ☞ Install the hydraulic motor. (See Hydraulic motor installation in this chapter).

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Replacement of wear parts

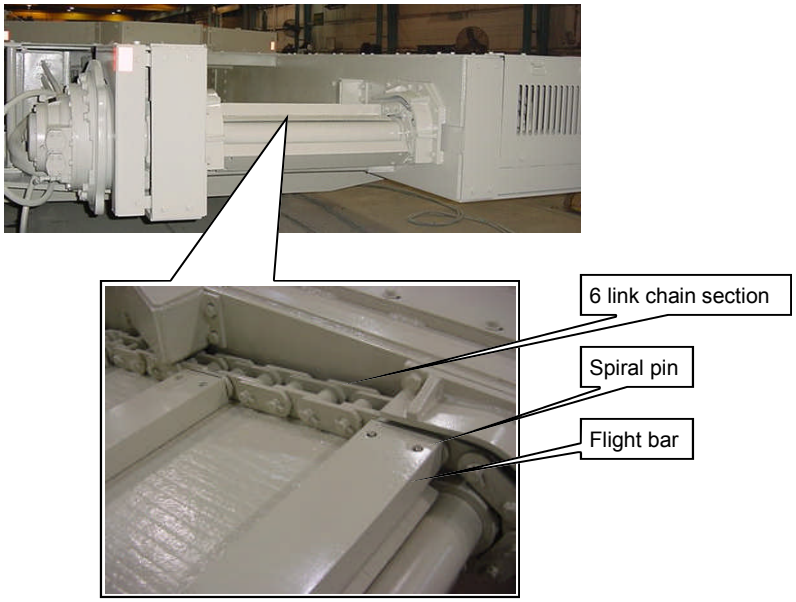
Conveyor chain

The conveyor chain (Fig. 54) is made up of one basic chain assembly which repeats sequentially along the entire chain loop. As soon as any component of the conveyor chain is worn the component or complete conveyor chain assembly must be replaced.

Each conveyor chain section consists of the following main components:

- 6 link chain section
- flight bar
- spiral pin

Fig. 54: Conveyor chain main components



How to remove the crawler drive assembly

To remove the crawler drive assembly proceed as follows (Fig. 59):

- ☞ Raise complete crawler assembly off ground and securely block under the machine. The machine must be securely supported off the ground with the crawler free to turn.

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.

- ☞ Crawler track tension must be released (see Crawler track adjustment in this chapter).
- ☞ Separate the crawler pads (see How to remove the crawler track assembly in this chapter) and fold pads back to clear sprocket.
- ☞ Disconnect, cap and tag all hydraulic hoses to hydraulic motor.
- ☞ Remove slotted nut, roll pin and washer from lift cylinder anchor pin.
- ☞ Slide anchor pin out of crawler frame and swing tilt cylinder free of the crawler frame.
- ☞ Remove the six (6) bolts and lock washers that secure the removable side plate to crawler frame and remove side plate.
- ☞ Remove the twelve (12) bolts and lock washers that secure the torque hub to the crawler frame.
- ☞ Attach an appropriate lifting device to the torque hub and slide complete assembly out of crawler frame.
- ☞ Remove the four (4) bolts and lock washers that secure the hydraulic motor and adapter plate to the torque hub.
- ☞ Attach an appropriate lifting device to the torque hub and slide complete assembly out of crawler frame.
- ☞ Slide adapter plate and motor off of torque hub.
- ☞ Remove adapter plate gasket.
- ☞ Remove the four (4) nuts and lock washers that secure the hydraulic motor to the adapter plate. And remove adapter plate.
- ☞ Remove the twenty (20) bolts and lock washers that secure the sprocket to the torque hub and separate hub and sprocket.
- ☞ Inspect all components for wear or damage.

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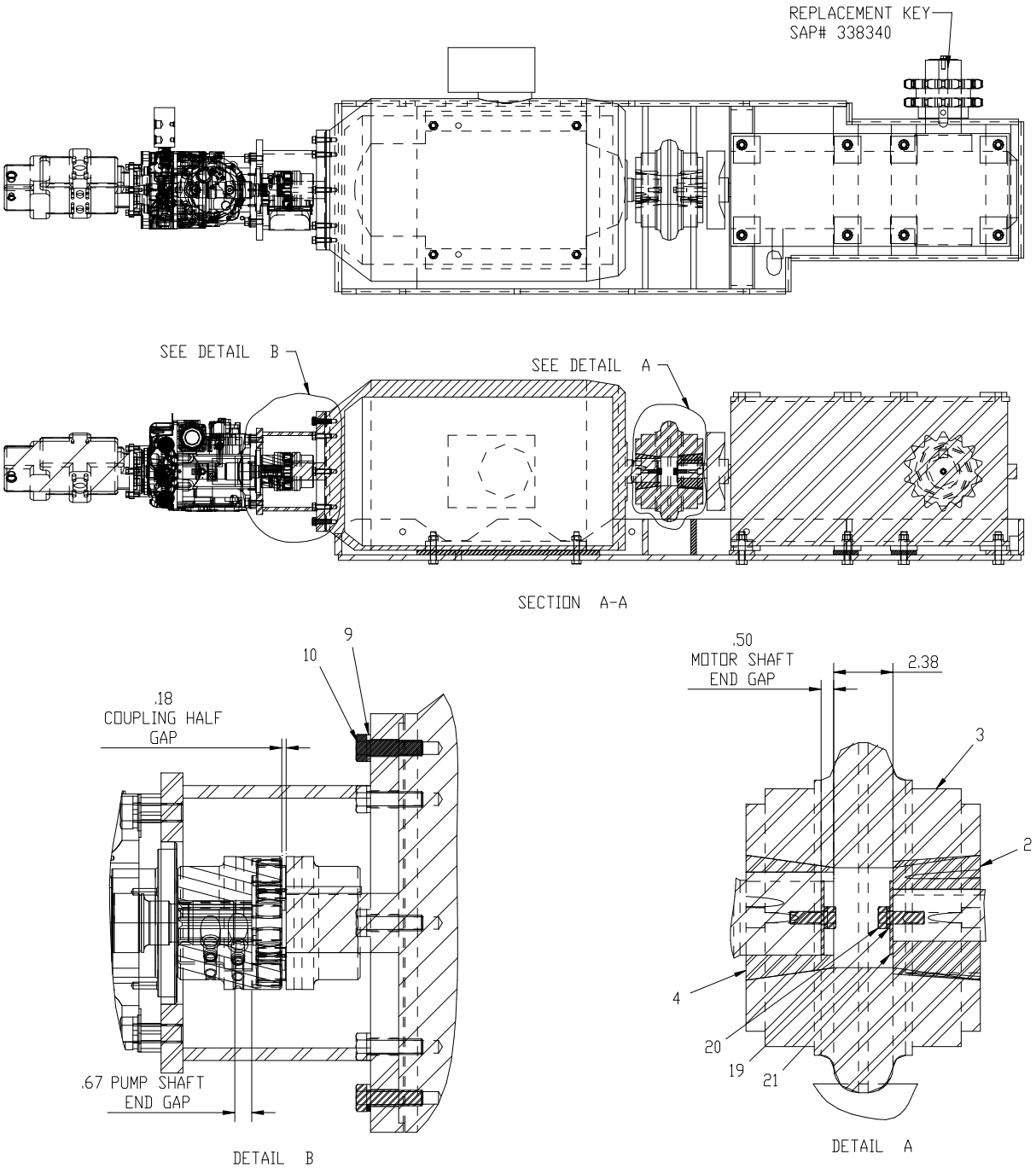
Replacement of wear parts

Fig. 63: Power unit disassembly and assembly (continued)



1. reducer
2. taper lock bushing
3. coupling
4. taper lock bushing
5. motor
6. sprocket
7. coupling
8. connecting tube
9. washer (lock)
10. bolt
11. mounting base
12. bolt
13. washer (lock)
14. nut (lock)
15. bolt
16. washer (lock)
17. nut (lock)
18. end cap
19. washer (lock)
20. bolt
21. end cap
22. retainer bar
23. retainer bar
24. retainer bar
25. hydrostatic pump
26. gear pump
27. washer (lock)
28. bolt
29. washer (flat)
30. bolt
35. key
36. key
37. element
38. hub
39. key
40. key

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Tightening torques