2. Technical Specifications & Service Tools

PT-70 Specifications

Engine
- Model: Perkins 804C-33T
- Displacement: 3.3 liter
- Gross horsepower: 71 hp (53 kW)
- Torque: 173 lb-ft. (234 Nm)
- Idle rpm: 1000 (low idle), 2600 (high idle)
- Average water /thermostat temperature: 190°F, 87.8°C

Transmission
- Model: Cat A22VG45 tandem (Rexroth)

Drive Pumps
- Displacement: 2.7459 in3/rev (45 cc/rev)
- Relief pressure: 5500 psi (380 bar)
- Flow: 30.91 gpm (117 lpm) @ 2600 rpm (per pump)

Charge Pump
- Displacement: 1.373 in3/rev (22.5 cc/rev)
- Relief pressure: 475 +/- 30 psi (32.75 bar)
- Flow: 15.4 gpm (58.3 lpm) @2600 rpm

Drive Motors
- Model: Rexroth MCR 05 C
- Displacement: 37.8 in3/rev (620 cc/rev)

Pilot Controls (Joysticks)
- Model: Rexroth 08-351

Auxiliary Pump
- Make: Rexroth
- Type: Axial Piston, Variable Load Sense
- Displacement: 2.75 in3/rev (45 cc/rev)
- Max Flow: 30 gpm (113.6 lpm) @ 2600 rpm
- Relief pressure: 3000 psi (20,680 kPa)
- Marginal (Standby) Pressure: 218 psi (1,503 kPa)
- Cooling/filtering: Oil is filtered and cooled at all times. In auxiliary mode, the oil is filtered after the attachment to protect the machine if the attachment motor fails or contaminants are introduced from the quick couplers.

Lift Arm Control Valve
- Make: Rexroth
- Type: Load Sense

Oil Cooler
- Operating pressure: 150 psi (1034 kPa)
- Bypass relief pressure: 80 psi (689 kPa)
- Hot oil sending unit: 225°F (107.2°C)
- Avg. oil operating temp. 50-60°F / 28-33°C above ambient.
  (High flow application 80°F / 44°C above ambient.)

Critical Torque Specs
- Transmission Mounting Bolts
  -- 85 ft-lb. w/Blue Loctite
- Drive Sprocket Drive Teeth Bolts
  -- 88 ft-lb. -Dry
- 10” Idler Wheel Retaining Nut
  -- 350 ft-lb. -Dry
- 15” Idler Wheel Retaining Nut
  -- 350 ft-lb. / 475 Nm -Dry
- Drive Sprocket Lug Nut
  -- 129 ft-lb. / 175 Nm -Dry
- Drive Motor Mounting Bolts
  -- 177 ft-lbs. / 240 Nm -Dry

Cycle Times
- Lift-Arm up: 3.5 seconds (+/- .35 seconds)
- Lift-Arm Down: 3.3 seconds (+/- .33 seconds)
- Bucket Curl: 1.7 seconds (+/- .17 seconds)
- Bucket Dump: 1.9 seconds (+/- .19 seconds)

Service Tools
Listed below are common service tools which are identified and utilized in the service procedures described in this manual. Use tools recommended by ASV whenever possible to reduce risk of injury and or machine damage during service.

- TEREX Jack Stands (2) (TEREX P/N: 0402-900)
- Heavy Duty Hydraulic Jack (5-ton rating)
- Test Gauge Kit (TEREX P/N: 0402-935)
- Ratchet Strap
- Long Pry Bar(s)
- TEREX Service Cart (0402-871)

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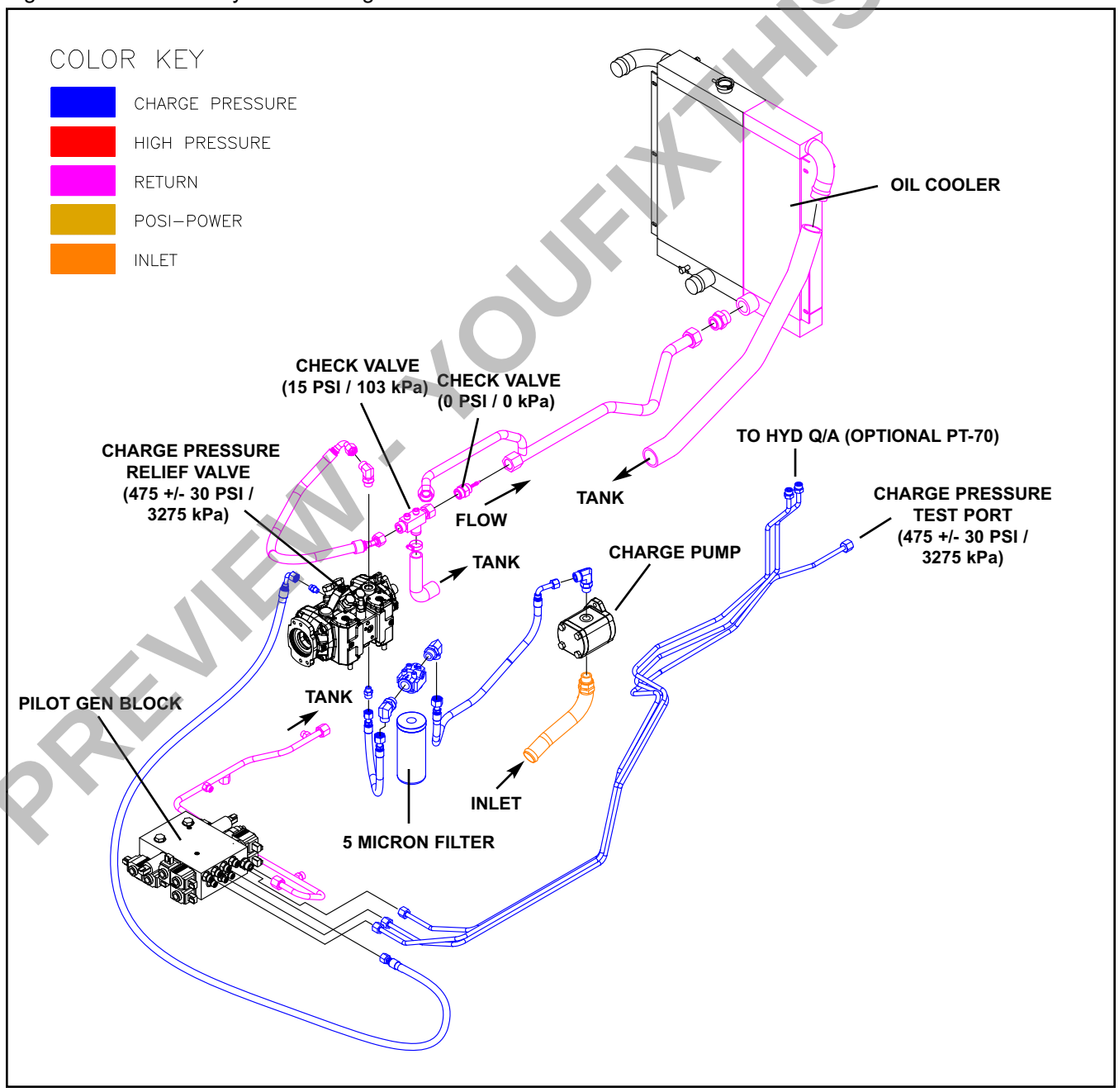
3. Circuit Diagrams

Chapter Overview

This chapter contains diagrams for the following PT-70/80 circuits: hydraulic charge circuit, hydraulic auxiliary circuit, hydraulic drive circuit, loader valve, hydraulic pilot generation (solenoid) block and electrical attachment outlet. It also contains hose routing information for the control configurations for the drive and lift arm pilot controls.

Hydraulic Charge Circuit

Figure 3-1 PT-70/80 Hydraulic Charge Circuit



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4. Maintenance

Chapter Overview

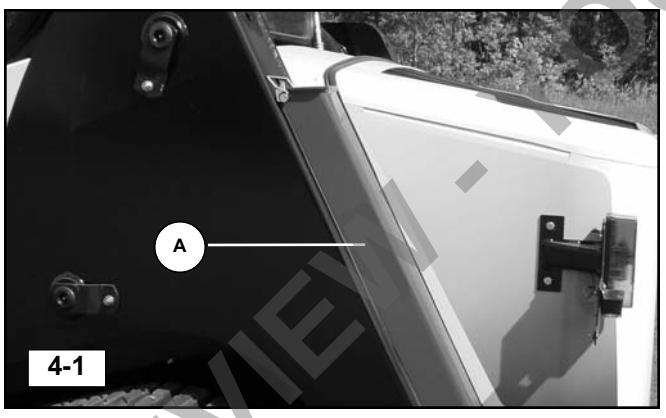
This chapter provides information on general maintenance procedures for the PT-70/80. If there is an issue that requires troubleshooting, refer to Chapter 18, Troubleshooting.

⚠ Personal Safety

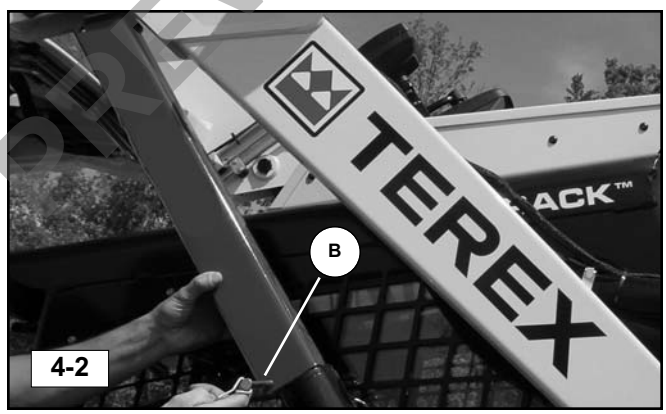
Improper or incomplete maintenance/repair of a Rubber Track Loader can be dangerous and may result in machine damage, injury or death.

Do not attempt to perform any type of repair or maintenance on a Rubber Track Loader until you have read and fully understood the information in this manual. Refer to the Operation and Maintenance manual for instructions regarding proper machine operation techniques before operating any Rubber Track Loader.

Prior to performing any type of service work on a Rubber Track Loader, read and understand Chapter 1 (Product Safety) for personal safety information.



4-1



4-2

Lift Arm Brace

The lift arm brace (A) is intended to keep service personnel safe when it is necessary to work on a machine with the lift arms in the raised position. It is not safe to rely on the hydraulic system to hold the lift arms in the raised position just as it is not safe to crawl under a machine supported only by a jack. The lift arm brace is used to support the weight of the lift arms much like jack stands are used to mechanically support vehicle weight.

To install the lift arm brace:

1. Park the machine on level ground in a safe area for performing service work.
2. Remove any attachments that may be fastened to the quick attach.
3. Have an assistant remove the retaining pins (B) securing the lift arm brace and remove it from the machine.
4. Make sure bystanders are clear of the lift arms, then raise them to the upper limit.
5. Have an assistant Install the brace around the cylinder shaft as shown and reinstall the pins to secure it to the cylinder.
6. Lower the lift arms slowly until they come to rest on the brace.
7. It is now safe to shut the engine off and exit the machine.

> ⚠ **Do not work on or near the machine with the lift arms in the raised position unless the lift arm brace has been correctly installed.**

To remove the lift arm brace:

1. Start the machine and raise the lift arms until they are clear of the brace.
2. Once clear, have an assistant remove the brace from the cylinder and stow it on the machine with the pins.
3. Once the brace has been stowed and the assistant is clear of the lift arms, lower the arms to the ground and shut the engine off to complete the procedure.

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Track Removal/Installation

Tracks may need to be removed periodically to inspect undercarriage components or for replacement if worn or damaged. This section covers the procedure to remove and install a track on PT-70/ 80 machines.

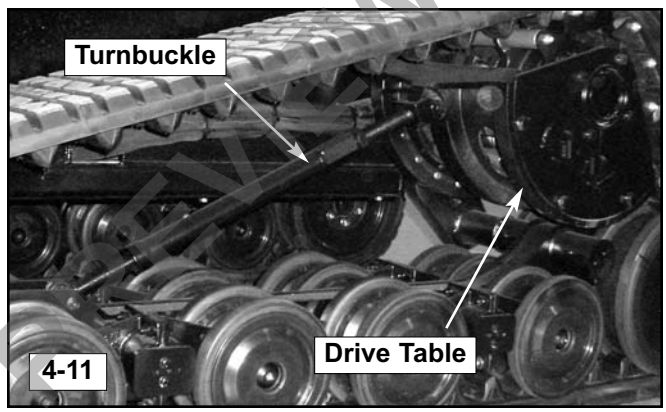
Tools required:
- Socket/impact wrench
- Ratchet strap
- Heavy duty hydraulic jack
- Combination wrench
- Long pry bar(s)
- Terex approved jack stands (2)
- Spray lubricant
- Shop vac or Pressure washer

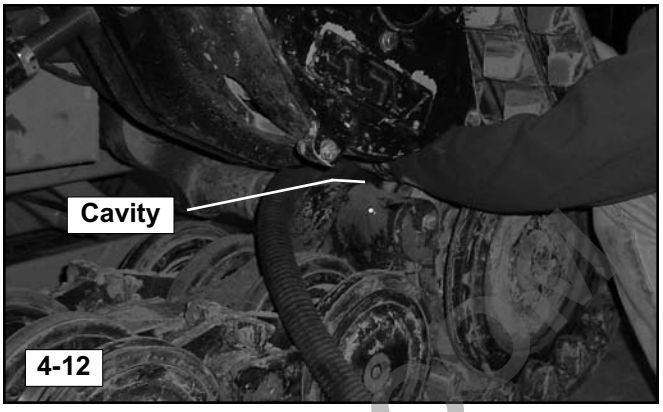
Track Removal

1. Break up and remove any foreign material from the cavity between the suspension rail and the drive table support. (fig. 4-12)

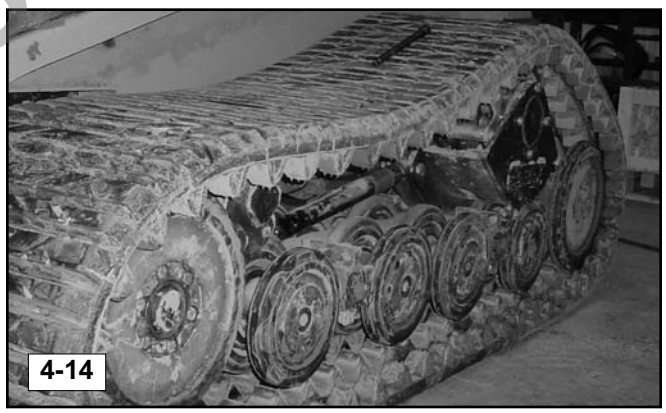
Note: A shop vac or pressure washer will work well to remove material from this cavity.

2. Clean the threads on the turnbuckle thoroughly using a stiff bristle brush.
3. Loosen the lock nut on the turnbuckle and spin it to the end of the threaded shaft to allow clearance when the drive table is lowered.(fig. 4-13)
4. Rotate the turnbuckle and lower the drive table as far as it will go. (fig. 4-14)
5. Remove the bolts securing the outer front wheel to the hub. Then remove the wheel. (fig. 4-11, 4-15, 4-16)











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18. Troubleshooting

Chapter Overview

This chapter contains basic troubleshooting procedures for PT-70/80 Rubber Track Loaders.

Additional troubleshooting aids are provided in Chapter 3 (Circuit Diagrams) and in chapters containing disassembly and assembly procedures for the appropriate component or assembly.

⚠ Personal Safety

Improper or incomplete maintenance/repair of a Rubber Track Loader can be dangerous and may result in machine damage, injury or death.

Do not attempt to perform any type of repair or maintenance on a Rubber Track Loader until you have read and fully understood the information in this manual. Refer to the Operation and Maintenance manual for instructions regarding proper machine operation techniques before operating any Rubber Track Loader.

Prior to performing any type of service work on a Rubber Track Loader, read and understand Chapter 1 (Product Safety) for personal safety information.

Visual Inspection

Prior to troubleshooting, walk around the machine and perform an overall visual inspection. Look for missing, loose, worn or broken parts. Pay particular attention to the following items:

- Track tension
- Fluid levels
- Fan belt tension and condition
- Hoses (no visible sign of wear)
- Fittings (no apparent leaks)
- Battery cables
- Fuse panel (fuses in place and operational)
- Controls (for neutral)

A simple visual inspection and operational check can identify many problems without the need for extensive troubleshooting. However, if these checks indicate a problem that requires further analysis, proceed to Troubleshooting.

General Troubleshooting

The most effective way to prevent a malfunction from occurring is to closely follow the recommended maintenance schedule and instructions throughout the life of the machine. However, if a malfunction does occur, finding the problem and fixing it quickly are important. This section covers a select set of symptoms that may occur and suggests possible causes.

Problem 1:
Machine will not crank over.

Possible causes

1. Continuous high flow switch activated.
2. Continuous low flow switch activated.
3. Power quick-attach switch in unlocked position. (if equipped)
4. Battery cables loose or corroded.
5. Ignition fuse blown.
6. Main starter fuse blown.
7. Starter relay malfunctioning.
8. Weak or dead battery.
9. Faulty continuous hydraulic flow switch.
10. Faulty power quick attach switch.
11. Faulty ignition switch.
12. Faulty starter.
13. Loose, broken or disconnected wiring at key, relay or starter.
14. Main power fuse (60-80 amp) blown.

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PT-80 Specifications

Engine
- Model: Perkins 804D-33T
- Displacement: 3.3 liter
- Gross horsepower:80 hp (60 kW)
- Torque: 186 lb-ft. (253 Nm)
- Idle rpm: 1200 (low idle), 2600 (high idle)
- Average water /thermostat temperature: 190°F, 87.8°C

Transmission
- Model: Cat A22VG tandem (Rexroth)

Drive Pumps
- Displacement: 2.349 in3/rev (38.5cc/rev)
- Relief pressure: 5500 psi (380 bar)
- Flow: 26.4 gpm (100 lpm) @ 2600 rpm (per pump)

Charge Pump
- Displacement: 1.373 in3/rev (22.5 cc/rev)
- Relief pressure: 475 +/- 30 psi (32.75 bar)
- Flow: 15.4 gpm (58.3 lpm) @2600 rpm

Drive Motors
- Model: Rexroth MCR 5 (2-speed)
- Displacement: 50 in3/rev (820 cc/rev)

Pilot Controls (Joysticks)
- Model: Rexroth 08-351

Auxiliary Pump
- Make: Rexroth
- Type: Axial Piston, Variable Load Sense
- Displacement: 2.75 in3/rev (45 cc/rev)
- Max Flow: 30 gpm (113.6 lpm) @ 2600 rpm
- Relief pressure: 3000 psi (20,680 kPa)
- Marginal (Standby) Pressure: 218 psi (1,503 kPa)
- Cooling/filtering: Oil is filtered and cooled at all times. In auxiliary mode, the oil is filtered after the attachment to protect the machine if the attachment motor fails or contaminants are introduced from the quick couplers.

Lift Arm Control Valve
- Make: Rexroth
- Type: Load Sense

Oil Cooler
- Operating pressure: 150 psi (1034 kPa)
- Bypass relief pressure: 80 psi (689 kPa)
- Hot oil sending unit: 225°F (107.2°C)
- Avg. oil operating temp. 50-60°F / 28-33°C above ambient.
  (High flow application 80°F / 44°C above ambient.)

Critical Torque Specs
- Transmission Mounting Bolts
  -- 85 ft-lb. / 115 Nm - w/Blue Loctite
- Drive Sprocket Drive Teeth Bolts
  -- 85 ft-lb. / 115 Nm - Dry
- Bogie Wheel (10” Idler) Retaining Bolt
  -- 180 ft-lb. / 244 Nm - w/Red Loctite
- 15” Idler Wheel Retaining Nut
  -- 350 ft-lb. / 475 Nm -Dry
- Drive Sprocket Lug Nut
  -- 177 ft-lb. / 240 Nm -Dry
- Drive Motor Mounting Bolts
  -- 177 ft-lbs. / 240 Nm -Dry

Cycle Times
- Lift-Arm up: 3.5 seconds (+/- .35 seconds)
- Lift-Arm Down: 3.3 seconds (+/- .33 seconds)
- Bucket Curl: 1.7 seconds (+/- .17 seconds)
- Bucket Dump: 1.9 seconds (+/- .19 seconds)

Service Tools
Listed below are common service tools which are identified and utilized in the service procedures described in this manual. Use tools recommended by TEREX whenever possible to reduce risk of injury and or machine damage during service.

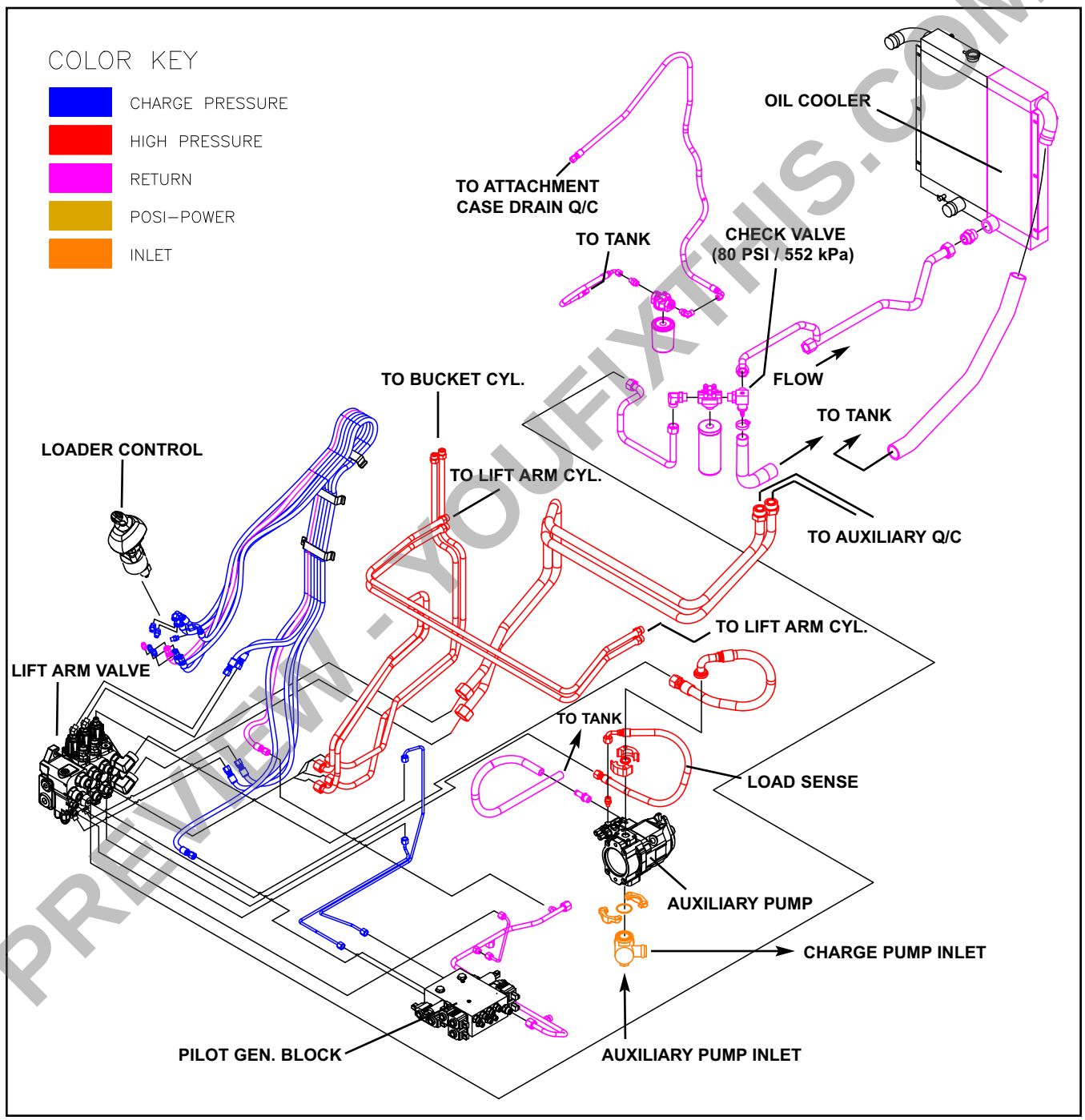
- TEREX Jack Stands (2) (TEREX P/N: 0402-900)
- Heavy Duty Hydraulic Jack (5-ton rating)
- Test Gauge Kit (TEREX P/N: 0402-935)
- Ratchet Strap
- Long Pry Bar(s)
- TEREXService Cart (0402-871)

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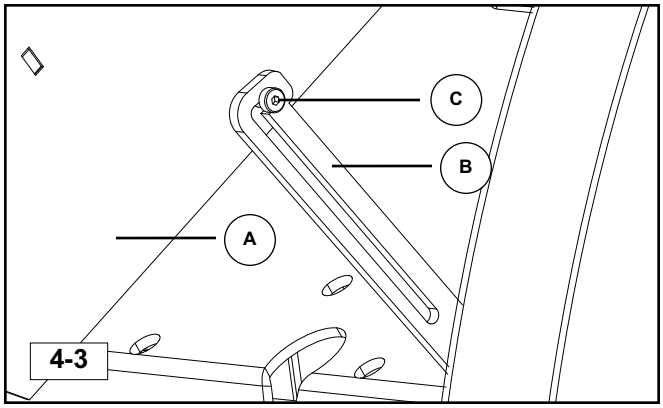
Hydraulic Auxiliary Circuit

Figure 3-2 PT-70/80 Hydraulic Auxiliary Circuit



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Tilt-Up Cab

The ROPS/FOPS approved cab (A) tilts up to allow easier access while performing maintenance. It features a gas spring assist and a brace mechanism to hold it in place while tilted.

To tilt the cab:

1. Remove any attachments that may be fastened to the machine.
2. (Optional) Raise the lift arms and secure them with the lift arm brace. (See page 4-1.)
3. Remove the two bolts that fasten the cab to the chassis. They are located inside the cab, one in each of the front corners.
4. Once the bolts have been removed, tilt the cab slowly upwards. The cab brace (B) should fall onto the shoulder bolt (C) locking the cab in its upright position.

The cab is now secure.

To lower the cab:

1. Raise the cab brace so that the locking channel is clear of the shoulder bolt.
2. Hold the brace upwards and lower the cab until the locking channel is clear of the shoulder bolt then release the brace.
3. The cab is now free to be lowered into operating position.
4. Lower the cab completely and then fasten it to the chassis with the two bolts removed previously.





Jacking Procedure

Occasionally, your machine may need to be suspended off of the ground to perform maintenance. Exercise caution when jacking the machine. Always use a jack that is capable of lifting the machine and support its weight with Terex approved jack stands while suspended. Never work on or under a machine supported only by a jack.

To safely jack your machine:

1. Remove any attachments that may be fastened to the machine and raise the lift arms.
2. Install the lift arm brace as instructed on page 4-1.
3. Once the lift arms are secured, carefully exit the machine.
4. Roll or slide your jack under the front of the machine and center the lifting pad directly under the middle of the front torsion axle.
5. Once in place, jack the machine upward making sure it remains stable until it has reached sufficient height to install an Terex jack stand beneath the machine. (fig. 4-4)
6. Slide the jack stand into place making sure it is centered under the machine (left to right when viewed from the front) and far enough back for the machine to remain stable when the jack is lowered and the front of the machine rests on the stand. (fig. 4-5)
7. Once the stand is in place, slowly lower the machine onto the stand and then remove the jack.

Repeat steps 4-7 at the rear of the machine should both ends of the machine need to be off of the ground for service.

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Track Installation

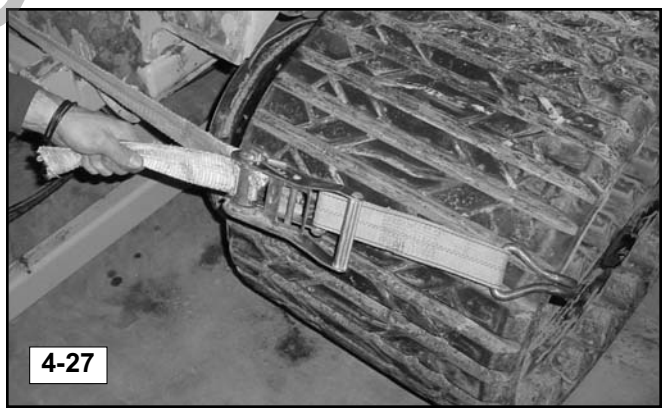
1. Slide the track over the drive sprocket at the rear of the machine. (fig. 4-23, 4-24)
2. Slide the front of the track into position for installa tion. (fig. 4-25)
3. Lubricate the inner front wheel(s) and the inside of the front portion of the track with a spray lubricant. (fig. 4-26)
4. Attach a ratchet strap to the upper front portion of the track and the other end to one of the tow hooks on the front of the machine. (fig. 4-27)
5. Tighten the strap until the track is pulled upward slightly and in position to slide over the inner idler wheel(s) at the front. (fig. 4-27)
6. Pull all of the slack forward and make sure the track drive lugs are properly meshed with the sprocket to provide as much slack as possible for installation.
7. If you have an assistant, have them pull the track forward while you push inward on the track. Work the track over the wheel(s) and into place.
8. If you do not have an assistant, push the track for ward in inward in a quick forceful motion to slide the track into place. The ratchet strap will help to keep the track in place while you work it over the idler(s). (fig. 4-28)

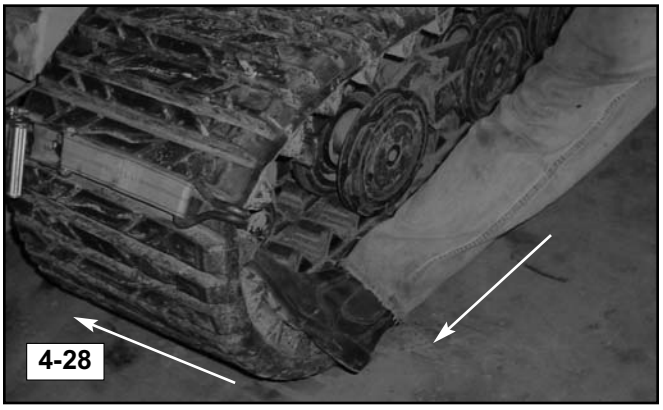

4-23


4-24


4-25


4-26


4-27


4-28

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Problem 2:

Machine cranks, but will not start.

Possible causes

1. Fuel tank empty, fuel filter plugged or fuel line restricted.
2. Battery discharged (engine rotates slowly).
3. Injection pump fuse blown.
4. Power relay (B) fuse blown (40 amp).
5. Faulty power relay (B).
6. Loose, broken or disconnected wiring at injection pump, fuel pump or fuse.
7. Glow plugs not pre-heating (look for black smoke).
   a) Main glow plug fuse blown.
   b) Glow plug relay malfunctioning.
   c) Loose, broken, or disconnected wiring at ignition switch, relay or glow plug ground strip.
   d) Faulty glow plugs.
8. Faulty ignition switch.
9. Loose, broken or disconnected wiring in starting circuit.
10. Loose, broken or disconnected wiring at fuel shutoff solenoid.
11. Air in fuel system or defective fuel injection pump.

Problem 3:

Machine starts, but hydraulics will not operate.

Possible causes

1. Operator not in seat.
2. Seat belt not fastened.
3. Safety relay fuse and or or safety solenoid fuse for seat belt or operator presence safety switches blown.
4. Faulty operator presence safety switch.
   a) Test for continuity through operator presence and seat belt switches. Adjust or replace as necessary.
5. Loose, broken or disconnected ground wires (check ground connections behind the operator seat, from cab to chassis and on the chassis crossmember.)
6. Faulty safety relay.
7. Faulty safety solenoid or safety solenoid spool.
8. Loose, broken or disconnected wiring at fuse, relay, or safety solenoid.
9. Low charge pressure.

Problem 4:

Lift arm/bucket controls are operational, but tracks will not move.

Possible causes

1. Leak in feed line to drive control joystick (pilot control).
2. Loose, broken or disconnected wire to DA control solenoid.
3. Drive control joystick (pilot control) malfunction.
4. Low charge pressure.
5. Parking brake switch in on position.
6. Faulty parking brake switch.

Problem 5:

Tracks are operational, but lift arms will not move.

Possible causes

1. Continuous hydraulic flow switch activated, sending oil over relief. (lift arms work, but move slowly)

If auxiliary flow hydraulics work check for:

   a) Leak in feed line to lift arm control joystick (pilot control).
   b) Lift arm control joystick (pilot control) malfunction.
   c) Lift arm control valve assembly malfunction.

If auxiliary flow hydraulics do not work check for:

   a) Main auxiliary relief malfunction.
   b) Faulty auxiliary pump.

.

Problem 6:

Lift arms are operational, but high/low flow auxiliary circuits are not.

Possible causes

1. Auxiliary hydraulic fuse blown.
2. Faulty ground in at chassis crossmember.
3. Faulty auxiliary hydraulic switch.
4. Faulty auxiliary hydraulic solenoid at pilot generation block.
5. Loose, broken or disconnected wire at fuse, auxiliary hydraulic switch, pin connector P10.
6. Auxiliary hydraulic pilot generation spool stuck in closed position.
7. Faulty or improperly connected quick coupler.
8. Quick coupler block pressure release stuck in down (open) position.

Problem 7:

Multiple switches/electrical accessories are not operational in ON or RUN position.

Possible causes

1. Power A or B fuse blown.
2. Faulty power relay (A or B).
3. Faulty ignition switch.
4. Loose, broken or disconnected wiring at ignition switch, fuse or relay.

Problem 8:

Battery will not charge/maintain charge.

Possible causes:

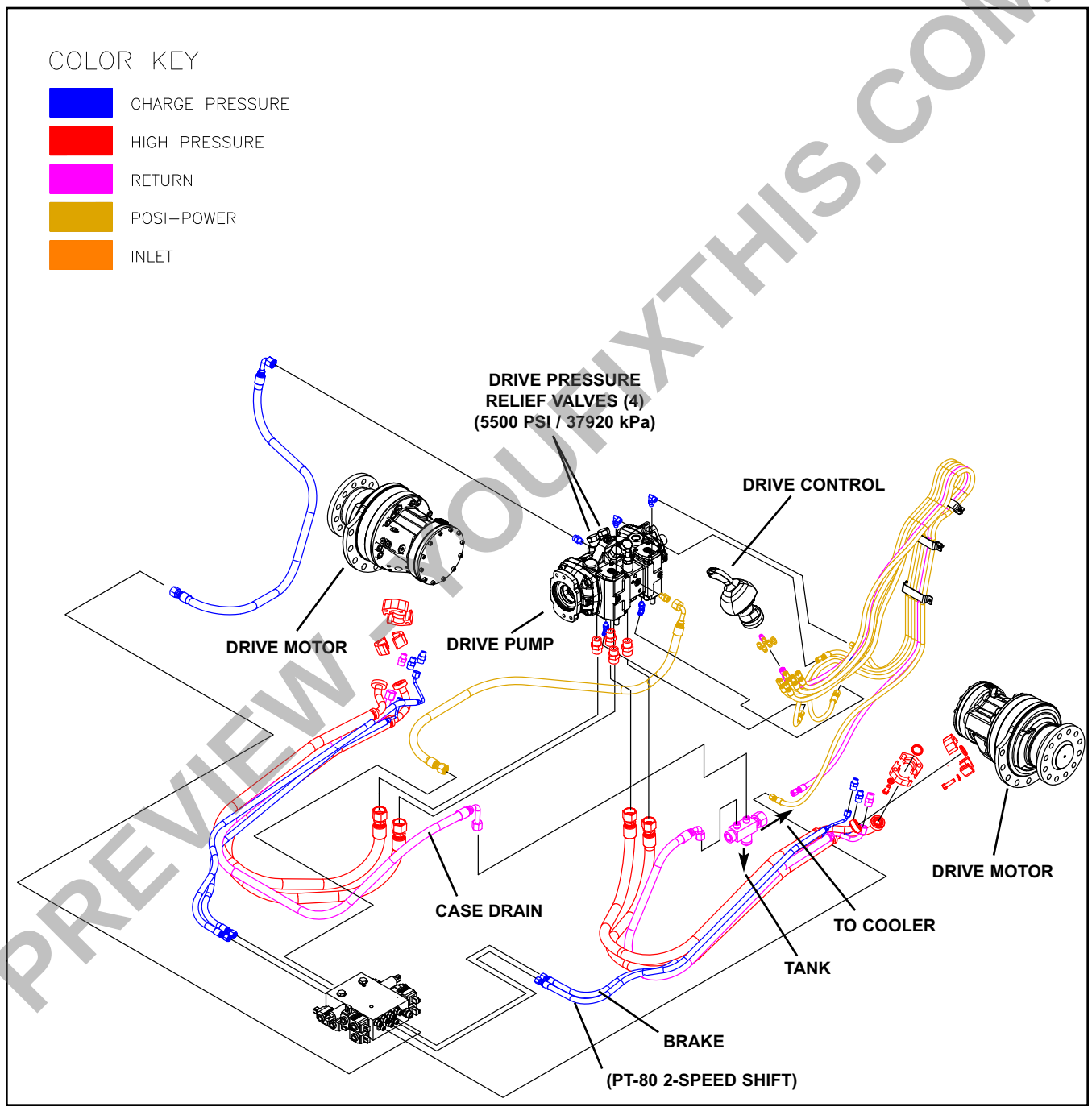
1. Loose alternator belt.
2. Alternator fuse blown.
3. Faulty alternator diode.
4. Loose, broken or disconnected wiring at battery, alternator, diode or fuse.
5. Excessive current draw with key in "off" position.
6. Faulty battery.
7. Faulty alternator.

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Hydraulic Drive Circuit

Figure 3-3 PT-70/80 Hydraulic Drive Circuit

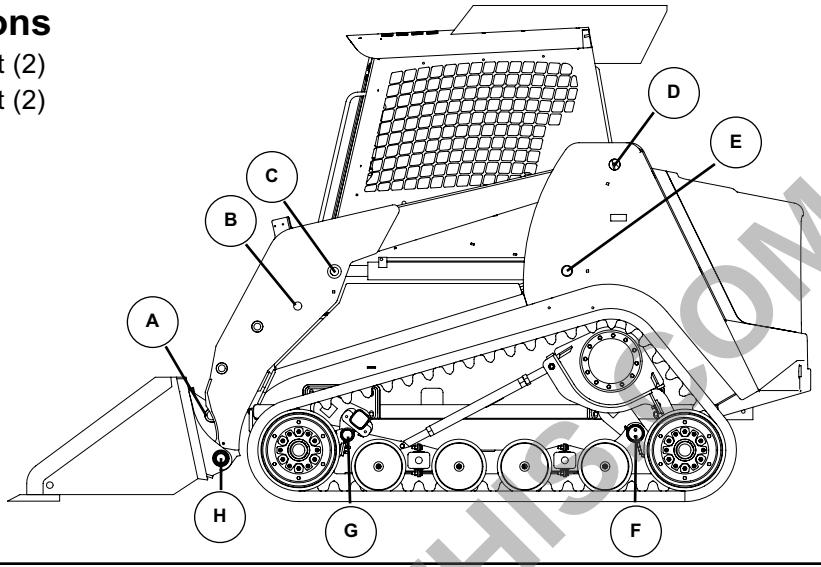


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Grease Fitting Locations

- **A.** Lower Bucket Cylinder Pivot (2)
- **B.** Upper Bucket Cylinder Pivot (2)
- **C.** Front Lift Cylinder Pivot (2)
- **D.** Lift Arm Pivot (2)
- **E.** Rear Lift Cylinder Pivot (2)
- **F.** Rear Axle Pivot (2)
- **G.** Front Axle Pivot (2)
- **H.** Lower Bucket Pivot (2)



4-6

Grease Fittings

The PT-70/80 are equipped with grease fittings at pivot points throughout the machine. The illustration above shows the locations of all fittings on the left side of the machine. An identical fitting exists on the right side of the machine for each one identified in the illustration. Lubricate all fittings **DAILY** or after every 10 hours of operation to maximize component life and ensure proper machine function. (fig. 4-6)

Undercarriages

The undercarriage assemblies in Rubber Track Loaders typically operate in harsh working conditions. They work in mud, gravel, debris and various other abrasive materials during operation. Terex recommends a daily inspection of the undercarriage assemblies and cleaning if necessary.

Materials that are particularly sticky or abrasive like clay, mud, or gravel should be cleaned from the undercarriages more often to minimize component wear. A pressure washer works well for cleaning materials from the undercarriages. At times when a pressure washer is not available, use a bar, shovel or similar device to remove foreign materials.

When cleaning, pay particular attention to the drive tables, sprockets, and the front and rear wheels where debris is likely to accumulate. If working in scrap or debris, inspect more often and remove foreign objects that may wrap around or lodge themselves between components causing premature wear and damage.

Operation in loamy sand or on turf or other finished surfaces may require less frequent cleaning, but daily inspection is still advised.

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