TEREX®

Service Manual

Compact Track Loader

PT-100G

PT-100G Forestry

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1. Product Safety

Chapter Overview

This chapter contains product safety information for the Terex PT-100G Compact Track Loaders. Read and understand all product safety information before attempting to service any Compact Track Loader.



Safety Alert Symbol
This symbol means: **Attention! Be alert! Your safety is involved!**

The safety alert symbol is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

This symbol is used as an attention-getting device throughout this manual as well as on decals and labels fixed to the machinery to assist in potential hazard recognition and prevention.

Property or equipment damage warnings in this publication are identified by the signal word "NOTICE".

NOTICE
“NOTICE” Indicates a hazardous situation which, if not avoided, could result in property or equipment damage.

The word “Note” is used throughout this manual to draw your attention to specific topics or to supplement the information provided in that section.

Improper or incomplete maintenance/repair of a Compact 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 Compact Track Loader until you have read and fully understood both this manual and the machine specific operation and maintenance manual.

Refer to the Operation and Maintenance manual for instructions regarding proper machine operation and maintenance techniques before operating or servicing any Compact Track Loader.

The person(s) in charge of servicing a Compact Track Loader may be unfamiliar with many of the systems on the machine. This makes it especially important to use caution when performing service tasks. Familiarize yourself with the affected system(s) and components before attempting any type of maintenance or service.

It is not possible to anticipate every potential hazard. The safety messages included in this document and displayed on the machine are not all-inclusive. They are intended to make you aware of potential risks and encourage a safe approach to performing service work. If you use a tool, procedure, work method or operating technique that is not specifically recommended by Terex, you must satisfy yourself that it is safe for you and others. You must also ensure that the machine will not be damaged or be made unsafe by the operation, lubrication, maintenance or repair procedures that you choose.

⚠ Basic Precautions

Safety Labels

Safety labels have been included and are displayed in various places throughout the machine to serve as warnings of potentially dangerous conditions. Read and understand all "Safety" labels on any Compact Track Loader before attempting to operate, maintain or repair it. Replace any damaged, illegible or missing labels immediately, prior to service.

Personal Protective Equipment

Personal protection equipment is recommended when performing maintenance or service on a machine. Always wear appropriate protective equipment for working conditions when working on or around the machine. Loose clothing should not be worn and long hair should be restrained. Wear hard hats, protective face/eyewear, safety shoes and any other equipment necessary to ensure your safety and the safety of others around you as you work.

Entering and Exiting

Always use steps and handholds when entering or exiting a Compact Track Loader. Clean any mud or debris from steps or work platforms before using them. Always face the machine when using steps and handholds. When it is not possible to use the designed entry/exit system, utilize ladders, scaffolds, or work platforms to safely gain access to the machine.

Lifting

Use a hoist when lifting components that weigh 50 lb (23 kg) or more, to avoid back injury. Make sure all chains, hooks, slings, etc., are in good condition and are of the correct capacity. Be sure hooks are positioned correctly and equipped with a spring latch. Lifting eyes are not to be side loaded during a lifting operation.

Hot Fluids and Components

Stay clear of hot components and system fluids of the engine, exhaust, radiator/oil cooler and hydraulic lines/tubes. Also, use caution when removing fill caps, breathers and plugs on the machine. Hold a rag over the cap or plug to prevent being sprayed or splashed by liquids under pressure. Be especially careful if the machine has been operated recently, fluids may still be hot. **To ensure your safety, allow the machine to cool before attempting any service procedure that involves hot fluids or components.**

Corrosion Inhibitor

Corrosion inhibitor contains alkali. Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Do not take internally. In case of contact, wash skin immediately with soap and water. For eyes, flush with large amounts of water for at least 15 minutes. Call Physician. Keep out of reach of children.

Batteries

Do not smoke when inspecting the battery electrolyte level. Never disconnect any charging unit circuit or battery circuit cable from the battery when the charging unit is operating. A spark can cause an explosion from the flammable vapor mixture of hydrogen and oxygen that is released from the electrolyte through the battery outlets. Do not let electrolyte solution make contact with skin or eyes. Electrolyte solution is an acid. In case of contact, immediately wash skin with soap and water. For eyes, flush with large amounts of water for at least 15 minutes. Call Physician. Keep out of reach of children.

Pressurized Items

1. Do not use hands or any other body part to check for fluid leaks in the hydraulic system. Always use a solid material like wood or metal to check for this type of leak. Leaking fluid under pressure can penetrate body tissue. Fluid penetration can cause serious injury and even death. If fluid is injected into your skin, get treatment immediately. Seek treatment from a doctor that is familiar with this type of injury.

2. Relieve pressure from the hydraulic system before disconnecting or removing any lines, fittings or related items. Do this by relaxing all hydraulic actuators. If the lift arms are raised, make sure they are securely braced. Be alert for possible pressure release when disconnecting any device from a pressurized system.

3. Lower the lift arms before performing any work on the machine. If this cannot be done, make sure they are securely braced to prevent them from dropping unexpectedly during service.

4. Loose or damaged fuel, oil, hydraulic, lines, tubes and hoses can cause fires. Do not bend or strike high pressure lines or install ones that have been bent or damaged. Check lines, tubes and hoses carefully. See item 1 for precautions on checking for fluid leaks.

5. Pressurized air or water can also cause injury. When pressurized air or water is used for cleaning, wear a protective face shield, protective clothing, and protective shoes. The recommended maximum air pressure for cleaning purposes is 30 psi (205 kPa). When using a pressure washer, keep in mind that nozzle pressures are typically very high. Generally, pressures are well above 2000 psi (13790 kPa). Follow all recommended practices provided by the pressure washer manufacturer.

Repair

Accidental machine starting can cause injury or even death to personnel working on a Compact Track Loader.

As a precaution, disconnect the battery cables from the battery terminals, tape the battery clamps and remove the key from the ignition switch prior to performing any service work on a Compact Track Loader.

Place a "Do Not Operate" tag prominently on the machine to inform personnel that the machine is being serviced.

1. Disconnect the battery and discharge any capacitor before beginning work on a machine. Attach a **Do Not Operate** tag in the cab to alert any operator that service is in progress.
2. If possible, make all repairs with the machine parked on a level, hard surface. Use blocks to prevent the machine from rolling while working on or under the machine.
3. Do not work on or under any machine that is supported only by a hydraulic jack or hoist. Always use some sort of mechanical support to ensure that the machine will not fall. Terex jack stands work well to support the machine while performing maintenance or repair work.
4. Make sure the work area around the machine is safe and make yourself aware of any hazardous conditions that may exist. If the engine needs to be started inside an enclosure, make sure that the engine's exhaust is properly vented.
5. Be sure all protective devices including guards and shields are properly installed and functioning correctly before beginning any service task. If a guard or shield must be removed to perform the repair work, use extra caution.
6. Always use the appropriate tools for the work to be performed. Tools should be in good condition and you should understand how to use them properly before performing any service work.
7. When replacing fasteners, use parts of equivalent grade and size. Do not use a lesser quality fastener if replacements are necessary.
8. Be prepared to stop an engine if it has been recently overhauled or the fuel system has been recently serviced. If the engine has not been assembled correctly, or if the fuel settings are not correct, the engine can possibly overspeed and cause bodily injury, death or property damage. Be prepared to shut off the fuel and air supply to the engine in order to stop the engine.
9. Be careful when removing cover plates. Gradually back off the last two bolts or nuts located on opposite sides of the cover. Then, pry the cover loose to relieve any spring or other pressure before removing the last two nuts or bolts completely.
10. Repairs requiring welding should be performed only by personnel adequately trained and knowledgeable in welding procedures and with the guidance of appropriate reference information. Determine the type of metal being welded and select the correct welding procedure and filler material to provide a weld that is as strong or stronger than the original weld.

NOTICE

Prior to welding, disconnect the following to prevent component damage:

- **Negative battery cable**
- **J1/P1 connectors from the ECM (engine)**
- **Main controller (machine)**
- **Output module (machine)**
- **Display (machine)**

A proper ground is essential to protect the machine from damage when welding. Improper grounding can cause damage to mechanical, hydraulic and electrical components.

As a precaution, connect the welding ground clamp as close as possible to the weld area.

11. Take precautions to avoid damaging wiring during removal and installation operations. Carefully route wires so that they will not contact sharp corners, objects or hot surfaces during operation.
12. When performing service that requires the lift arms to be in the raised position, always utilize the lift arm brace located on the rear of the loader tower.
13. Relieve hydraulic system pressure by relaxing all hydraulic actuators prior to attempting any hydraulic maintenance or repair.
14. Always tighten connections to the correct torque specification. Make sure that all shields, clamps and guards are installed correctly to avoid excessive heat, vibration or unwanted contact between parts during operation. Shields that protect exhaust components from oil spray in event of a line, tube or seal failure must be correctly installed.
15. Do not operate a machine if any rotating part is damaged or contacts other parts during operation. Any high speed rotating component that has been damaged or altered should be checked for balance before reusing. Make sure all protective devices, including guards and shields, are properly installed and functioning correctly before starting the engine or operating the machine.

⚠ Attachments

Only use attachments that are recommended by Terex.

Make sure that all necessary guards and protective equipment are in place and functioning prior to operating any attachment.

Wear protective glasses and protective equipment as required by conditions or as recommended in the attachment's operation manual.

When replacement parts are required for your machine, use only genuine Terex replacement parts or parts that meet or exceed original specifications including, but not limited to physical dimensions, type, strength and material.

Installing lesser components can lead to premature failures, product damage, personal injury or death.

Ensure that all personnel are far enough away from the work area so they will not be struck by flying objects.

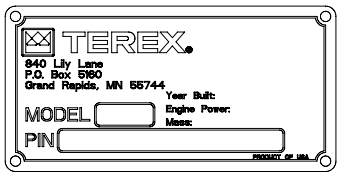
Stay clear of the cutting edges, pinching surfaces or crushing surfaces of the attachment while performing any attachment maintenance, testing or adjustments.

⚠ Machine Labels and Decals

Labels and decals placed on the machine provide safety information and operating instructions. Familiarize yourself with the location and significance of these labels to ensure your safety.

Product Identification Number

The Product Identification Number (PIN) is located on the front of the cab enclosure (figure 1-1). Always provide the PIN when contacting the dealer about parts, service, warranty or accessories. No warranty claims will be processed unless the PIN is provided.



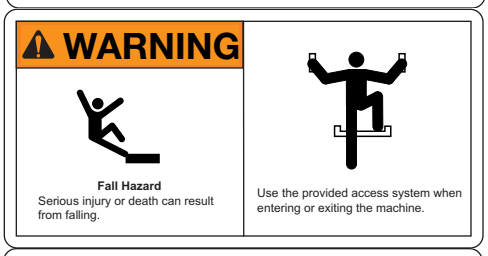
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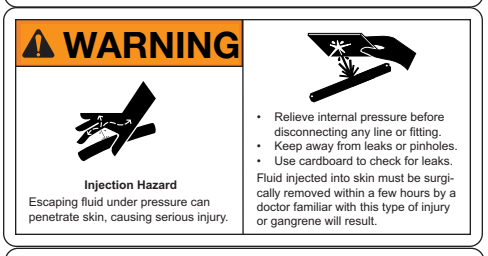
Safety Label Examples

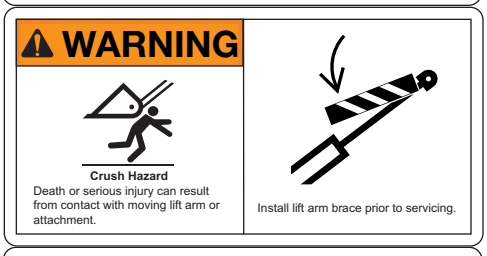
Examples of the labels and decals displayed on the machine are shown on this page.

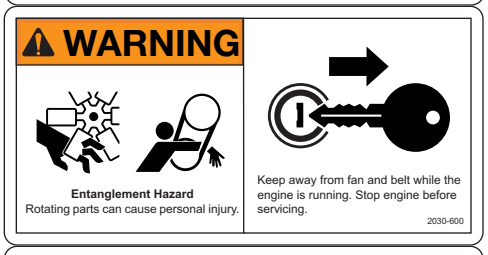


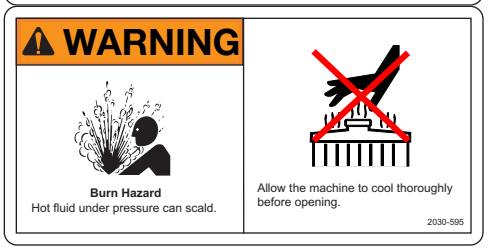












WARNING



Improper operation or maintenance can result in serious injury or death.



Read and understand the operator's manual and all safety signs prior to operating or maintaining the machine.

WARNING



Fall Hazard
Falling can result in serious injury or death.



Do not use the bucket/attachment as a work platform.

NOTICE



Fire Hazard
Flammable debris can collect near hot components and lead to a fire.



Read Operator's Manual
Keep the engine, exhaust and chassis areas free of debris.

WARNING



Crush Hazard
Rollover can crush and result in serious injury or death.



Fasten Seat Belt

WARNING



Fall Hazard
Falling from a machine can result in serious injury or death

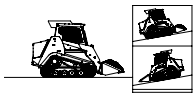


No Riders

WARNING



Rollover/Ejection Hazard
Serious injury or death can result.

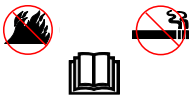


Carry loads low. Load unload and turn on level ground. Travel on inclines with heaviest end of machine uphill.

DANGER



Explosion/Burn Hazard
Will cause death, burns or blindness due to ignition of explosive gasses or contact with corrosive acid.



- **Keep all flames/sparks away!**
- **No Smoking!**
- **Read and understand all manuals prior to operation.**

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2. Technical Specifications & Service Tools

PT-100G Specifications

Engine
- Model: Perkins 1104d-44T
- Displacement: 4.4 liter
- Gross horsepower: 99.9 hp (73.5 kW)
- Torque: 310 lb-ft. (420.3 Nm)
- Idle rpm: 1000 (low idle), 2200 (high idle)
- Average water /thermostat temperature: 190°F, 87.8°C

Transmission
- Model: Cat A10VG63 tandem (Rexroth)

Drive Pumps
- Displacement: 3.844 in3/rev (63 cc/rev)
- Relief pressure: 5500 psi (380 bar)
- Flow: 36.6 gpm (138.6 lpm) @ 2200 rpm (per pump)

Charge Pump
- Displacement @ 1.7:1: 1.49 in3/rev (24.5 cc/rev)
- Relief pressure: 392 +/- 30 psi (27 bar)
- Flow: 14.2 gpm (53.8 lpm) @2200 rpm

Drive Motors
- Model: Bonfiglioli 704 gearbox with KYB MAG 50 VP motor
- Displacement (High): 3.11 in3/rev (50.9 cc/rev)
- Displacement (Low): 1.73 in3/rev (28.4 cc/rev)
- Gear reduction: 18:47:1

Controls (Joysticks)
- Model:

Auxiliary Pump
- Model: A10VO85 (Rexroth)
- Type: Axial Piston, Variable Load Sense
- Displacement: 5.19 in3/rev (85 cc/rev)
- Low Flow: 0-20 gpm (0-75.7 lpm) @ 2200 rpm
- High Flow: 30-43 gpm (114-163 lpm) @ 2200 rpm
- Low Flow Relief Pressure: 3300 psi (22,750 kPa)
- High Flow Relief Pressure: 3800 psi (26,200 kPa)
- LS (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
- Drive Pump Mounting Bolts
  -- 200 ft-lb. w/Blue Loctite
- Drive Sprocket Drive Teeth Nuts
  -- 41 ft-lb. / 55.6 Nm -Dry
- 10” Idler Wheel Retaining Nut
  -- 180 ft-lb. / 244 Nm -w/Red Loctite
- 15” Idler Wheel Retaining Nut
  -- 350 ft-lb. / 475 Nm -Dry
- Drive Sprocket Lug Bolts
  -- 199 ft-lb. / 270 Nm -Dry
- Drive Motor Mounting Bolts
  -- 199 ft-lbs. / 270 Nm -Dry

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.

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

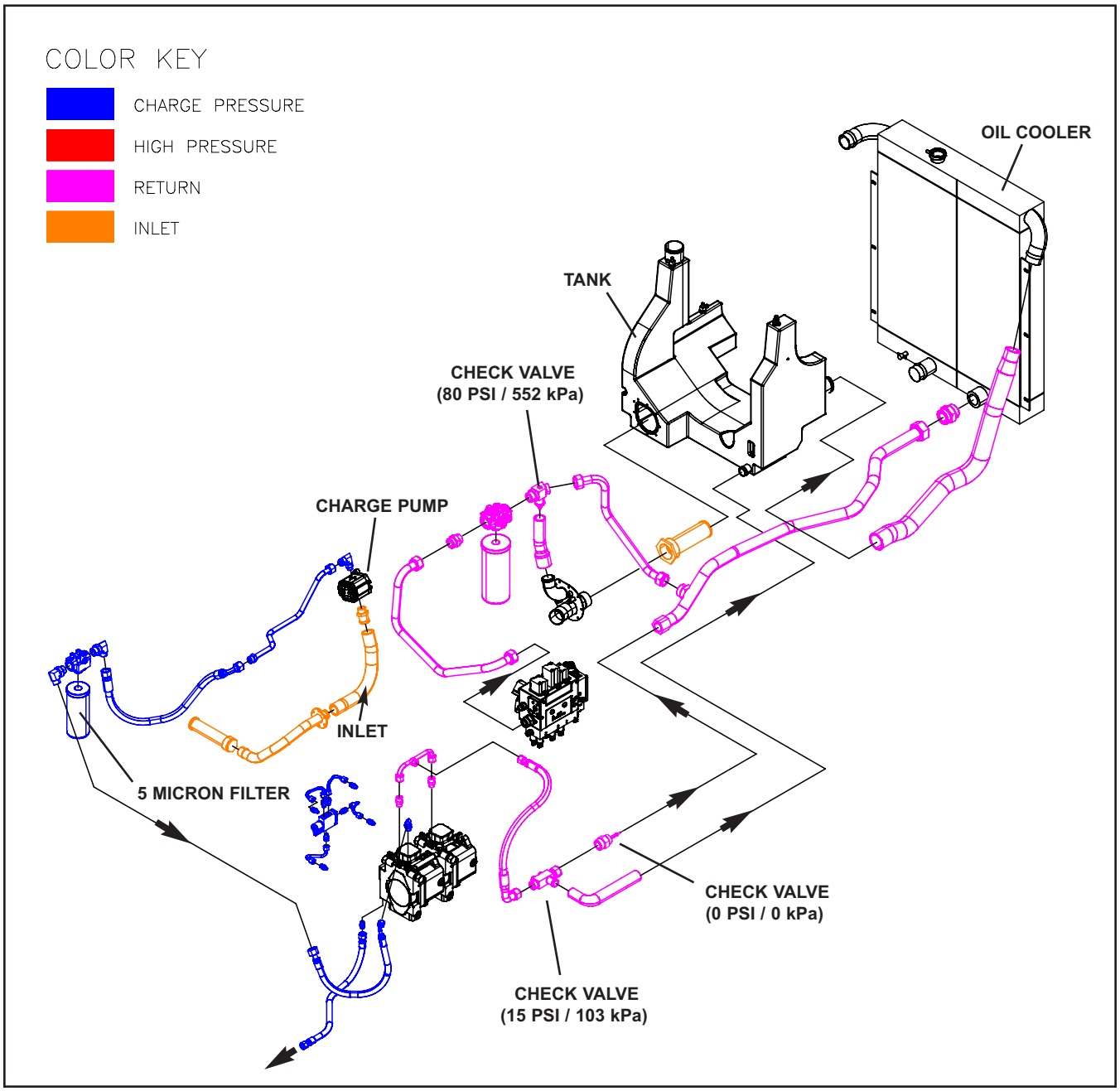
3. Circuit Diagrams

Chapter Overview

This chapter contains diagrams for the following PT-100G circuits: hydraulic charge circuit, hydraulic auxiliary circuit, hydraulic control circuit, hydraulic drive circuit, lift arm control valve, hydraulic solenoid blocks and electrical attachment outlet.

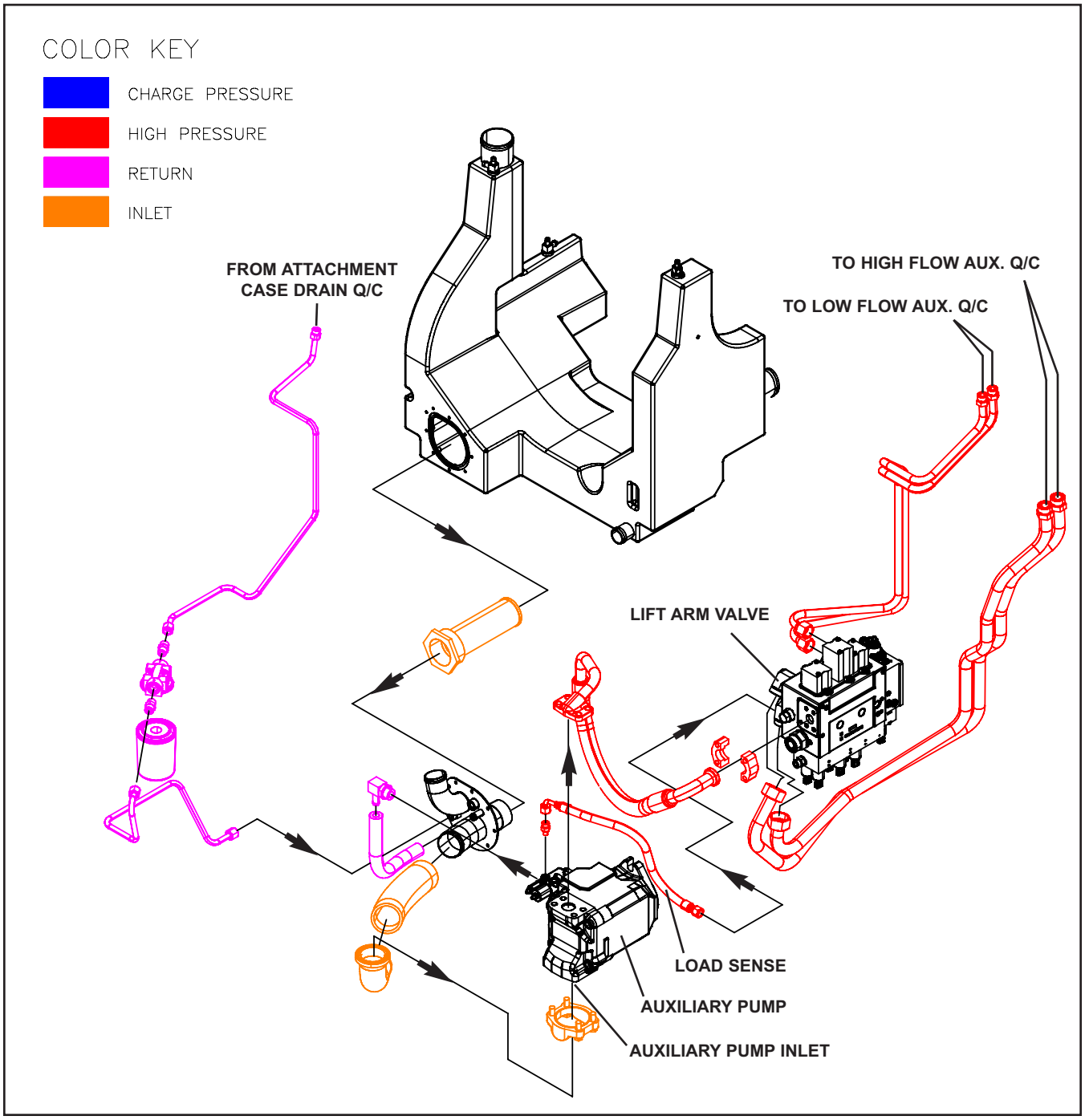
Hydraulic Charge Circuit

Figure 3-1 PT-100G Hydraulic Charge Circuit



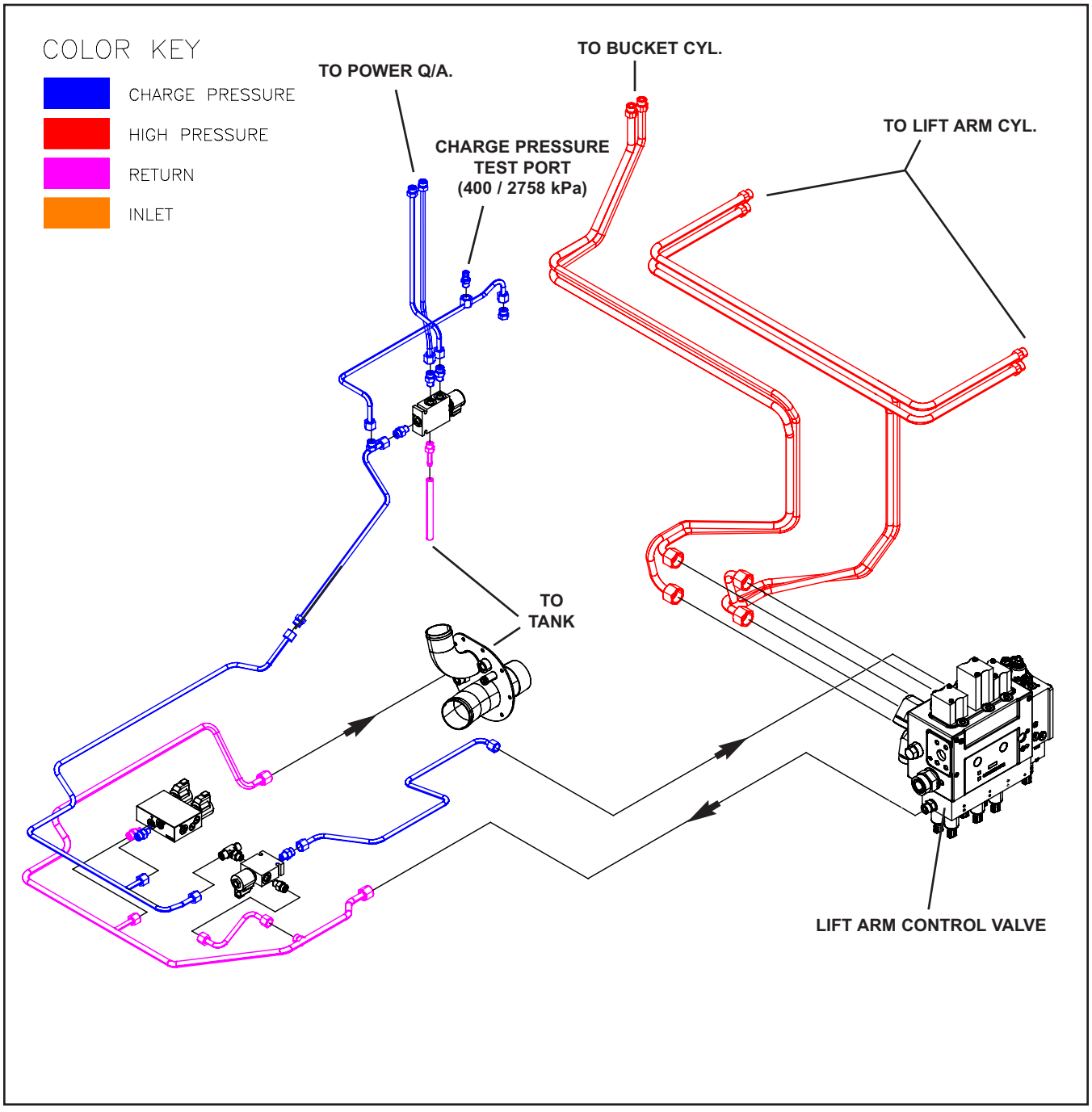
Hydraulic Auxiliary Circuit

Figure 3-2 PT-100G Hydraulic Auxiliary Circuit



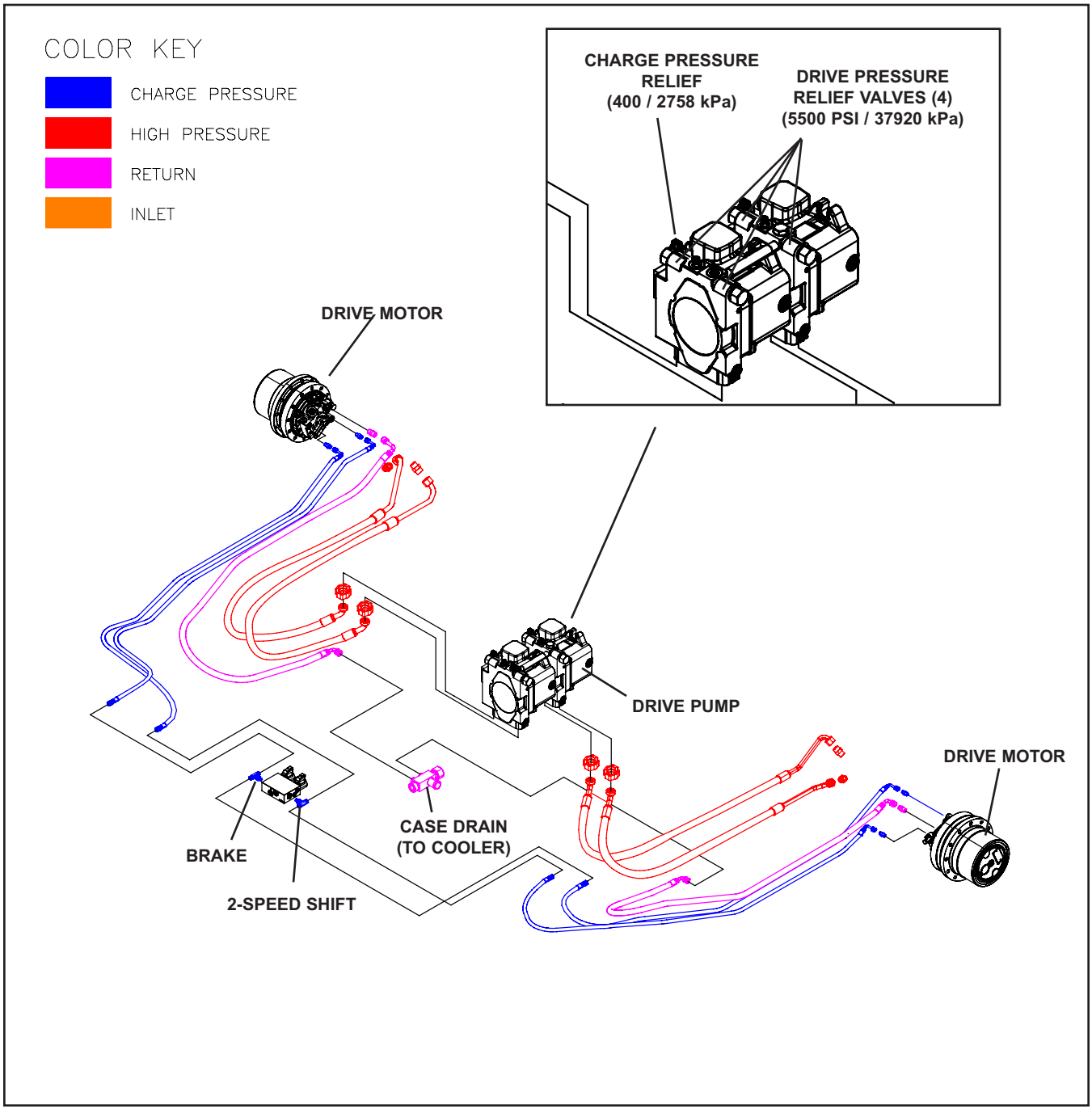
Hydraulic Control Circuit

Figure 3-3 PT-100G Hydraulic Control Circuit



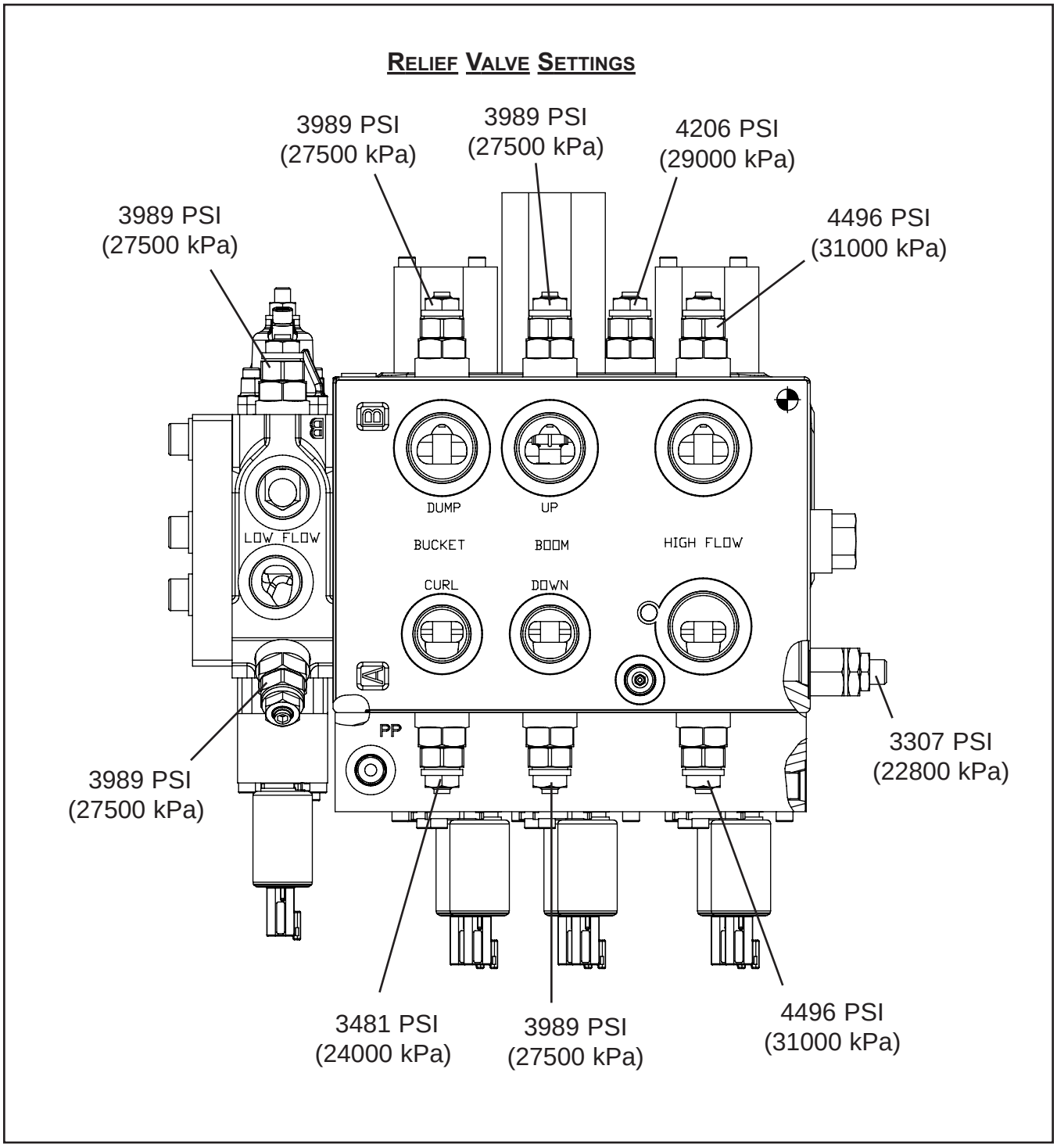
Hydraulic Drive Circuit

Figure 3-4 PT-100G Hydraulic Drive Circuit



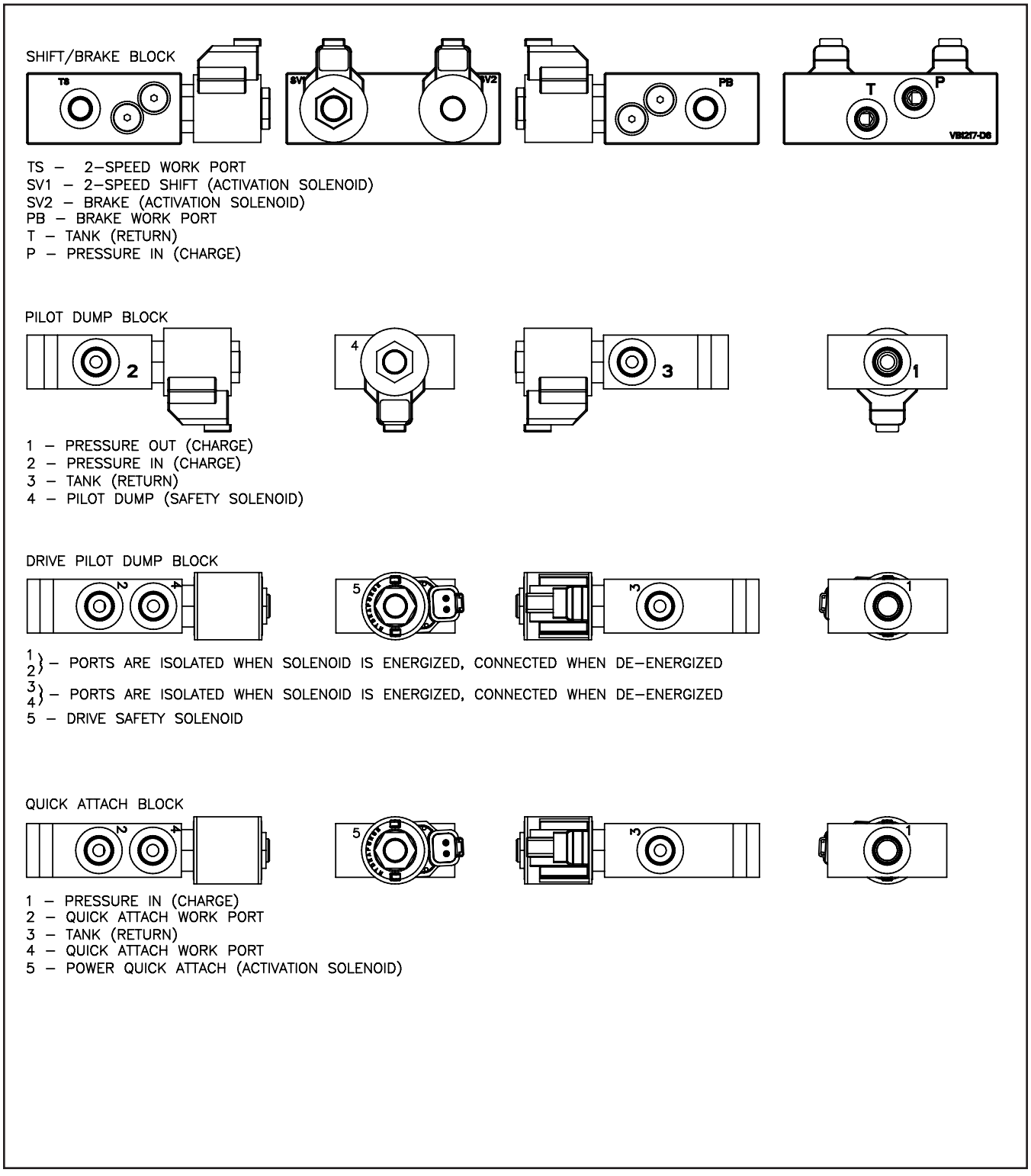
Lift Arm Control Valve

Figure 3-5 PT-100G Lift Arm Control Valve



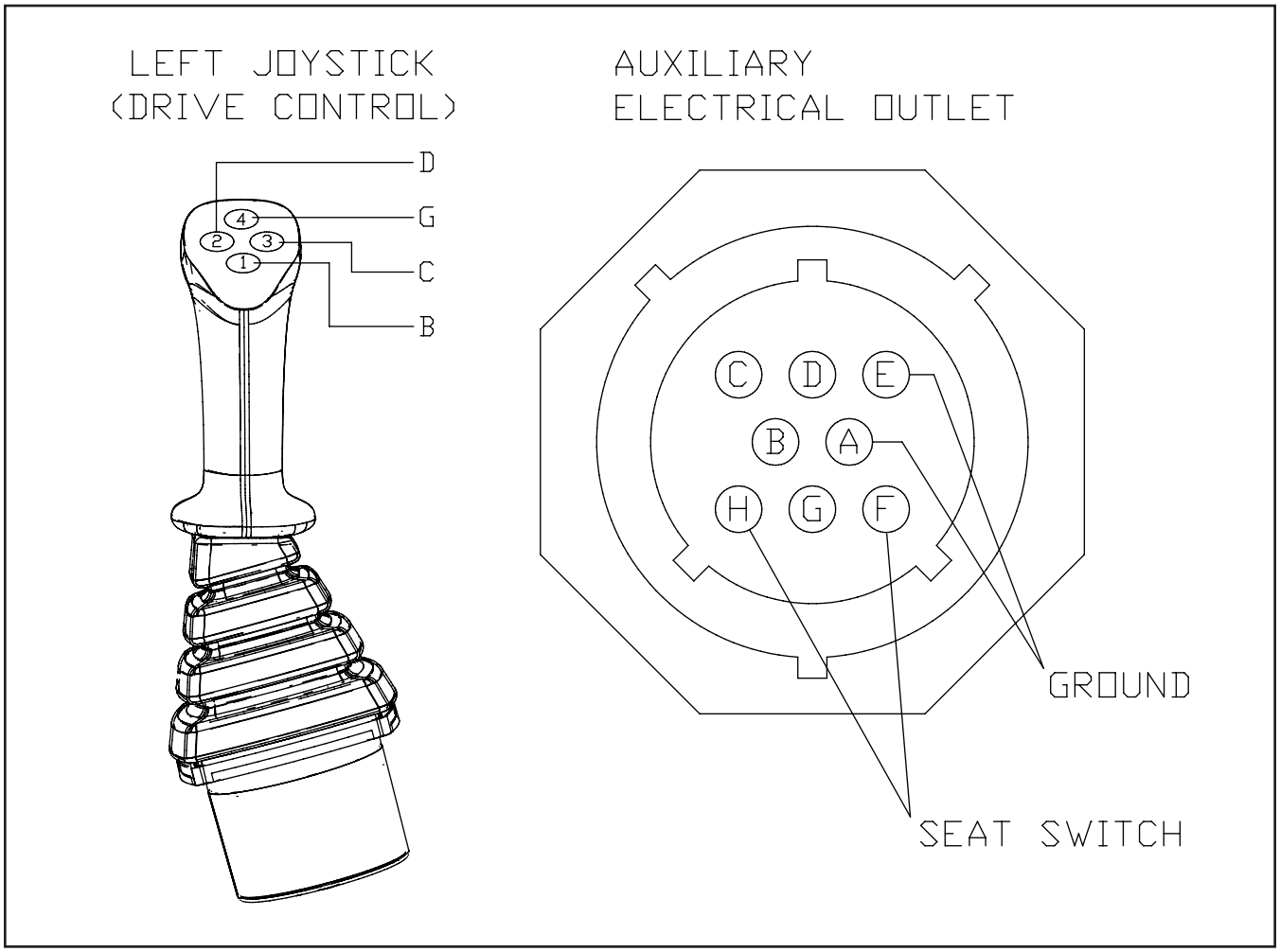
Hydraulic Solenoid Blocks

Figure 3-6 PT-100G Hyd. Solenoid blocks



Electrical Attachment Outlet

Figure 3-7 PT-100G Electrical Attachment Outlet



4. Maintenance

Chapter Overview

This chapter provides information on general maintenance procedures for the PT-100G. If there is an issue that requires troubleshooting, refer to Chapter 18, Troubleshooting.

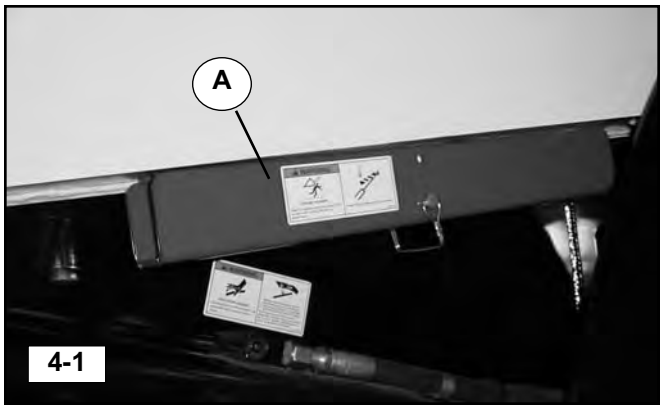
Personal Safety

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

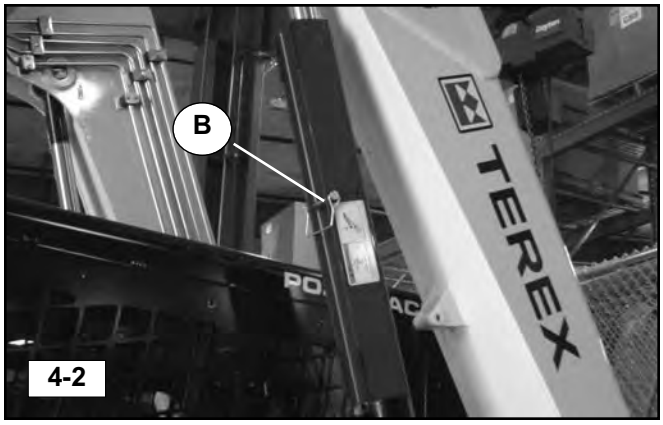
Do not attempt to perform any type of repair or maintenance on a Compact Track Loader until you have read and fully understood the information in this manual.

Refer to the Operation and Maintenance manual for instructions regarding proper machine operation techniques before operating any Compact Track Loader.

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



4-1



4-2

Lift Arm Brace

The lift arm brace (fig. 4-1, item 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.

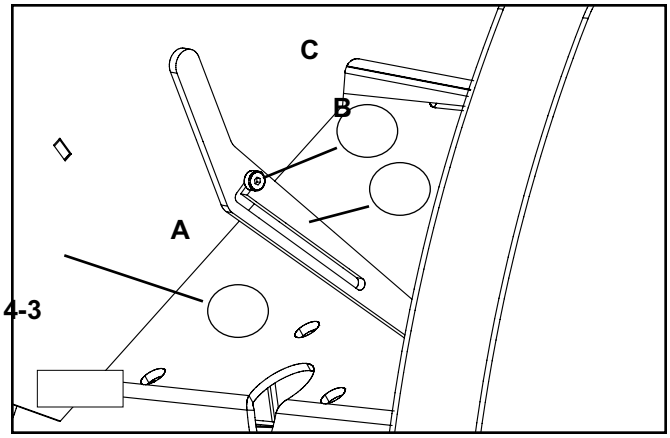
To install the lift arm brace:

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 (fig. 4-2, item 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.

To remove the lift arm brace:

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.

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.



4-3

Tilt-Up Cab

The ROPS/FOPS approved cab (fig. 4-3, item A) tilts up to allow easy access to components while performing maintenance or service. It is equipped with 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 (four for forestry) that fasten the cab to the footwell. They are located along the upper edge of the footwell inside the cab, one in each of the front corners (rear as well on forestry machines).
4. Once the bolts have been removed, tilt the cab slowly upwards. The cab brace (fig. 4-3, item B) should fall onto the shoulder bolt (fig. 4-3, item 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 footwell with the bolts removed previously.
5. Reinstall the pre-cleaner.
6. Lower the lift arms (if raised) per page 4-1.



4-4



4-5

Jack

Occa
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.

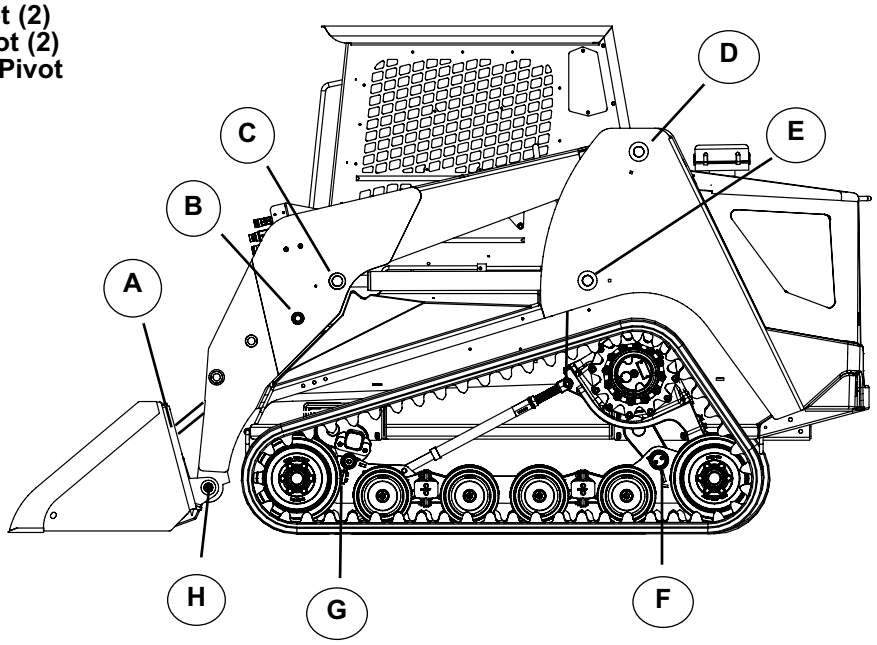
To safely jack your machine:

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 a 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.

Grease Fitting Locations

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



4-6

Grease Fittings

The PT 100G is 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 Compact 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.

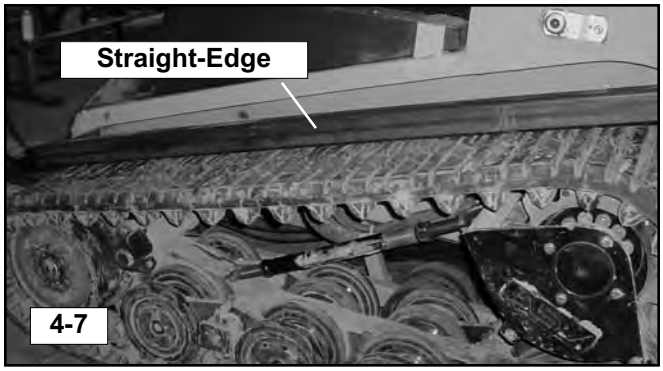
Track Tension (PT-100G)

Proper track tension must be maintained for optimal performance and track/undercarriage life. Running a track that is too loose may cause the track to misfeed possibly causing damage to the track and or undercarriage components. Running a track that is too tight may cause the track to stretch, create premature bearing failure, or other preventable damage to the machine. As a rule, a track should only be tightened to the point where there is no visible sag. Never tighten your tracks beyond this point.

Note: During the first 50 hours of operation the tracks will "break-in" and will most likely require adjustment.

To check track tension: (fig. 4-7, 4-8)

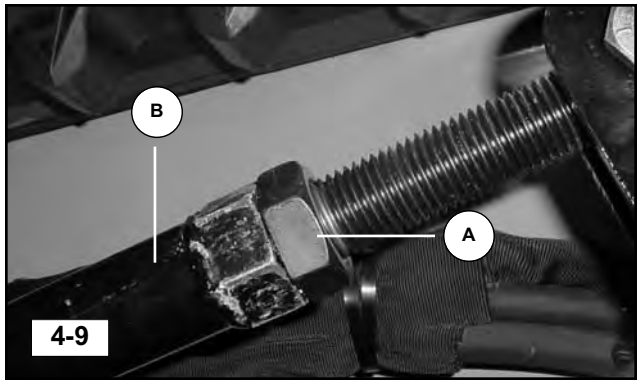
1. Drive the machine forward 5 feet to remove belt slack from the lower and rearward portions of the track.
2. Lay a straight edge along the top of the track bridging the drive sprocket and front idler wheel.
3. Apply 90 lbs. of down force to the the track by either placing weight on top, or by hanging the weight by using rope or wire, midway between the drive sprocket and front idler as seen in figure 4-8.
4. Measure from the bottom of the straight edge to the lug surface (top) of the track. The deflection should measure between 3/4" and 1" (1.9-2.5 cm).





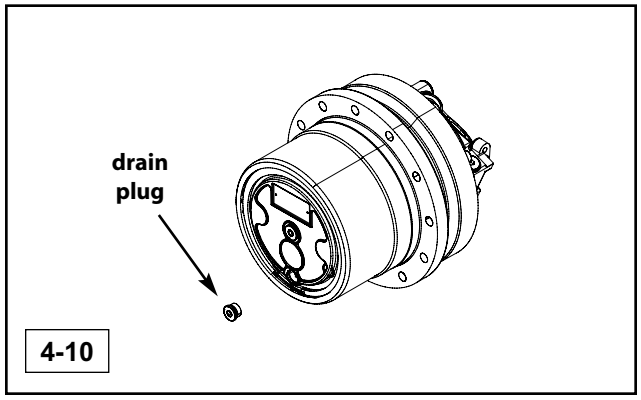
To adjust track tension: (fig. 4-9)

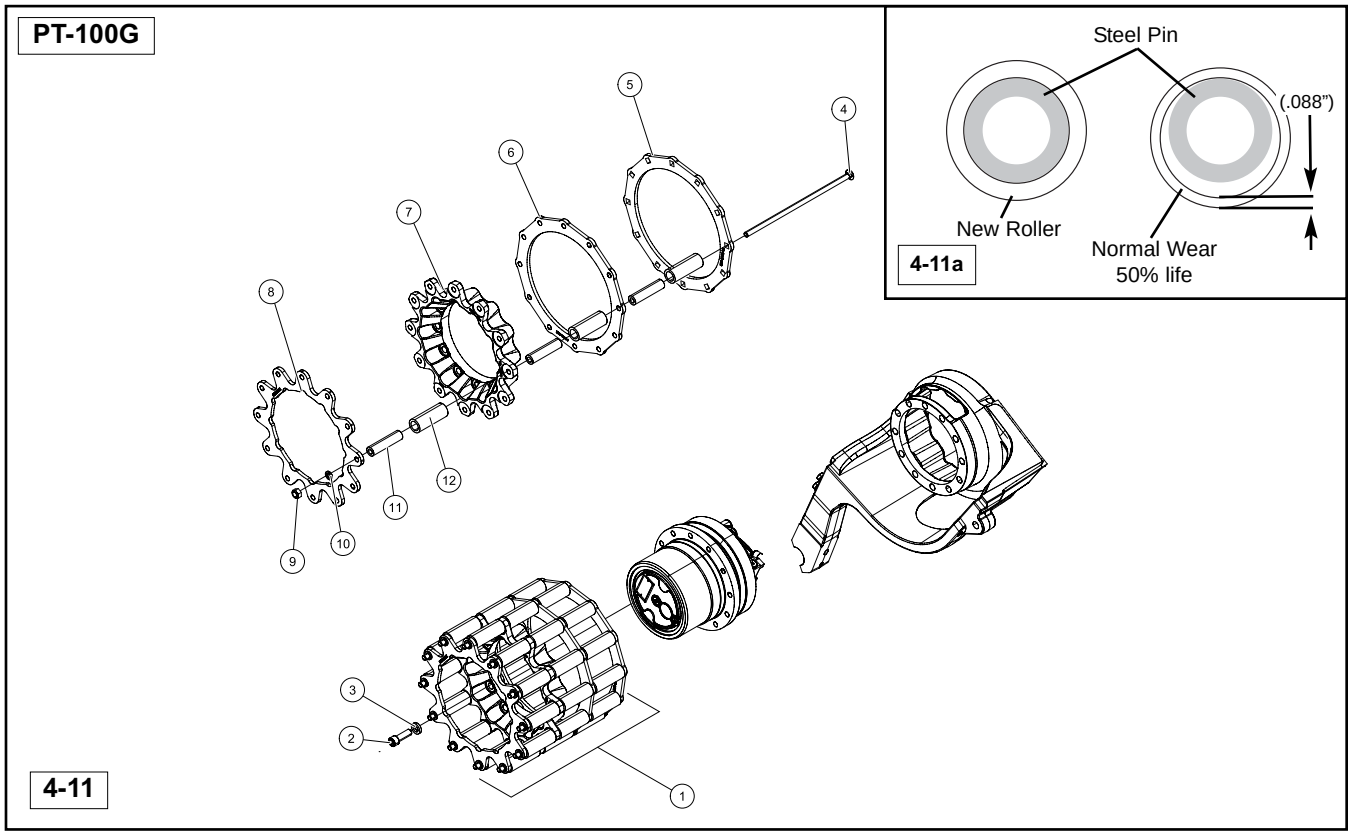
1. Loosen the lock nut (A) on the turnbuckle (B) and adjust by turning the turn buckle itself until proper tension has been achieved.
2. Then tighten the turnbuckle lock nut to complete the procedure.
3. Repeat the adjustment procedure on the other side of the machine if necessary.



Planetary Oil Change (fig. 4-10)

1. Place the machine on jackstands as described in jacking prodedure in this chapter.
2. Orient the perimeter drain plug at the very bottom of the drive motor, then turn the engine off and remove the key to avoid accidental start.
3. Remove the plug and drain the oil into a suitable catch container. (fig. 4-10) Dispose oil according to mandates.
4. Start the machine (make sure all personnel are clear of the machine), then roll the drive motor over so that the drain/fill hole is on the very top of the drive motor. Stop the engine and remove the key to avoid accidental start.
5. Fill the planetary with .95qt (.9l) of 75-140 synthetic gear oil, reinstall plug.
6. Repeat the procedure on the opposite drive motor.





Drive Sprocket Rollers

Terex compact track loaders utilize rollers on the drive sprockets to drive the track. These rollers help minimize friction between the track and the drive sprocket to prolong track life.

The rollers rotate around hardened steel pins and usually wear on their inside surfaces. As they wear, the rollers become thinner, but will continue to function as long as they rotate freely around the pins. Sprocket rollers should be inspected every 50 hours of operation and replaced if cracked or worn to less than 35% of original thickness. (.088" / .22cm)

To replace worn rollers: (fig. 4-11)

1. Begin by performing steps 1-4 in the track removal procedure on page 4-6 to allow the sprocket to be removed.
2. Remove the sprocket mounting bolts (2) to release sprocket from drive motor; then remove the sprocket.

Note: You may need to pry or lift the track upwards with a hoist above the drive sprocket to provide clearance for removal.

3. Remove one bolt (4) holding the steel pins (11) and rollers (12) in place.
4. Install the new rollers over the pins, then slide the bolt back through the sprocket and pins and secure it with the nut (9).
5. Repeat this process as required throughout the sprocket.
6. Reinstall the sprocket by reversing steps 2-3.
7. Repeat steps 1-5 on the other side of the machine if necessary.
8. Perform the track tension adjustment and check procedures on page 4-4.

Note: Replace rollers as a set to simplify inspection and maintain proper sprocket function.

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 100G machines.

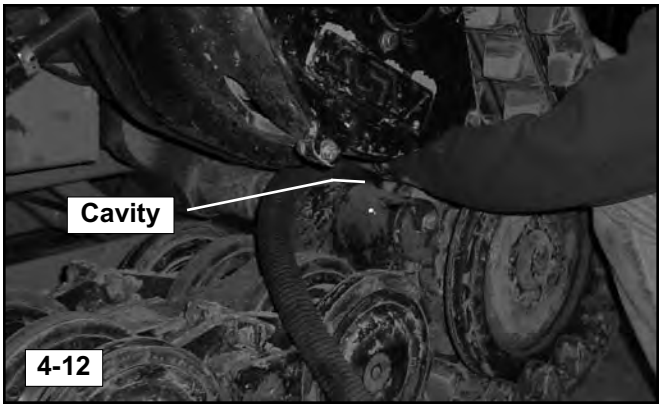
Tools required:
- Socket/impact wrench
- Ratchet strap
- Heavy duty hydraulic jack
- Combination wrench
- Long pry bar(s)
- Terex approved jack stands (2)
- Spray lubricant
- Shop vac or pressure washer

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).

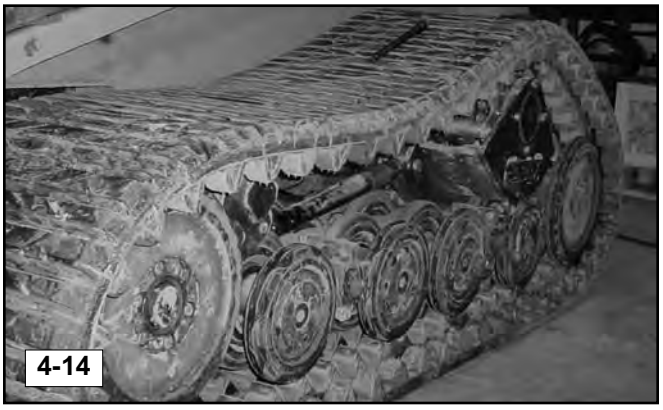
Note: A shop vac or pressure washer will work well to remove material from this cavity.

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. 4-15, 4-16).



4-12


4-13


4-14


4-15


4-16

6. Remove the outer scraper plate from the suspension rail. (fig. 4-17)
7. Remove the bolts securing the inner wheel to the hub, then remove the wheel. (fig. 4-18, 4-19)
8. Use a pry bar to peel the track over the inner wheel(s) toward the outside of the machine. (fig. 4-20)
9. Once the track is off of the front wheel(s), pull the rear of the track clear of the suspension. (fig. 4-21, 4-22)

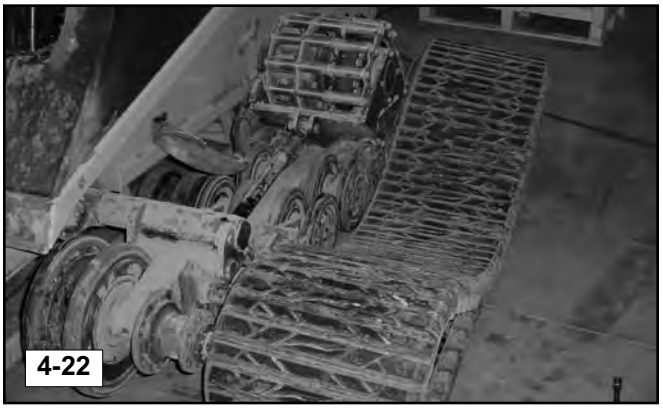

4-17


4-18


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4-20


4-21


4-22

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 installation (fig. 4-25).
3. Lubricate the inner front wheel 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 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 and into place.
8. If you do not have an assistant, push the track forward and 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 (fig. 4-28).

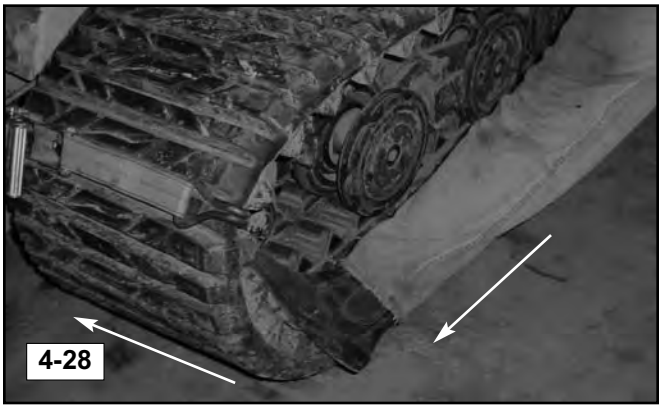

4-23


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4-25


4-26


4-27


4-28

9. Once the track is in position over the idler wheels, install the inner idler wheel onto the hub and secure it in place with the mounting bolts. Torque them to 90 +/- 10 Lb. Ft. (122 Nm) (fig. 4-29, 4-30, 4-31).

Note: You may need to use a bar to keep the wheel from spinning as you torque the mounting bolts (fig. 4-31).

10. Install the scraper onto the suspension rail and tighten the bolts to secure it in place (fig. 4-32).

11. Install the outer idler wheel and secure it in place with the mounting bolts. Torque them to 90 +/- 10 Lb. Ft. (122Nm) (fig. 4-33, 4-34).

12. Perform the track tension adjustment and check procedures on page 4-4 to complete installation.













Air Cleaner

The PT 100G is equipped with two air filter elements to remove contaminants from the air used for combustion. Regular inspection and replacement is necessary to ensure proper performance and to prolong engine life. **Inspect the air cleaner elements daily.**

To remove and inspect your air cleaner elements:

1. Shut the machine down as described in section 5.13 of the operation and maintenance manual, then open the hood to uncover the air cleaner access door on rear of the left loader tower.

2. Open the access cover, then pull the yellow slide lock (fig. 4-35, item A) on the air cleaner housing outward as shown. Next, turn the cover approximately 1/8 turn CCW and pull to remove.

3. Remove the primary element (fig. 4-36, item B). The primary element can be cleaned and reused up to five times, but should be changed at least once a year.

4. Remove the secondary element (fig. 4-37, item C).

Note: The secondary element is not serviceable. It should be replaced after every three cleanings of the primary filter.

Note: The primary element may be cleaned and reused up to five times if properly maintained, but should be replaced at least once a year.

5. Once the inspection has been performed, install the new secondary filter element into the enclosure as found upon disassembly (fig. 4-37).
6. Install the primary element by sliding it into place in the enclosure as found upon disassembly.
7. Install and secure the cover by sliding it into place and positioning the yellow slide into the locked position. Gently wiggle the cover to make sure it is secure.

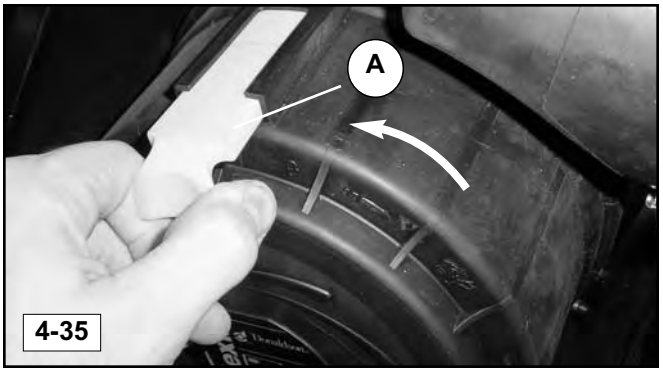
To clean your primary filter element:

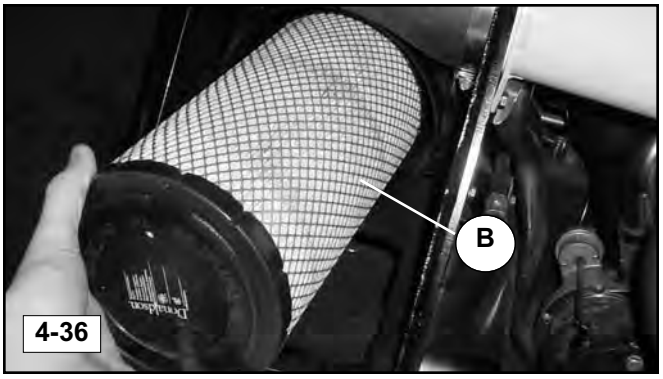
1. Remove loose dirt from the filter element with compressed air or water hose.

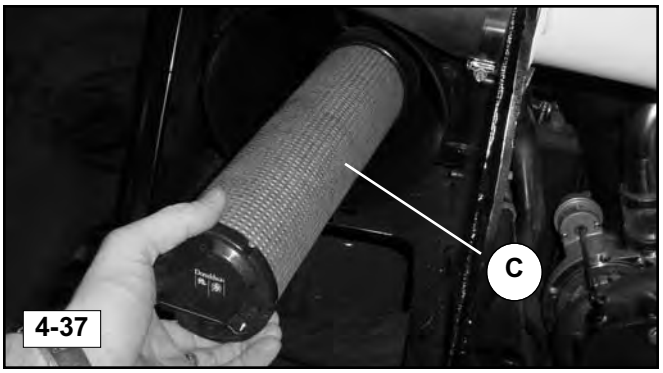
   Compressed air: 100 P.S.I. (689 kPa) max. 1/8" (.3175cm) diameter nozzle at least 2" (5.1 cm) away .

   Water: 40 P.S.I. (276 kPa) max. without nozzle.

2. Soak the filter in a non-sudsing detergent solution for at least 15 minutes moving it gently through the solution to further clean the element. (Never soak for more than 24 hours.)





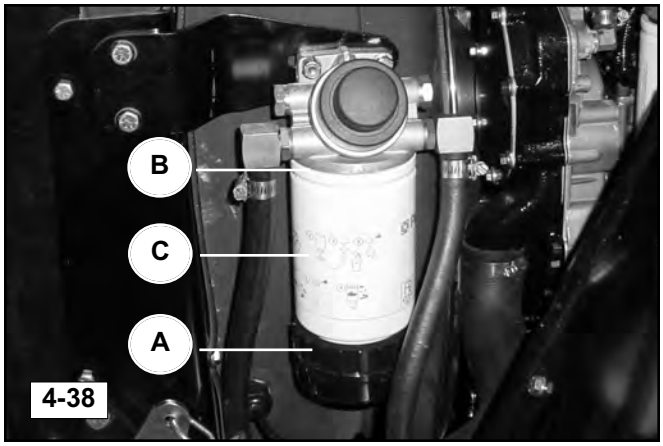


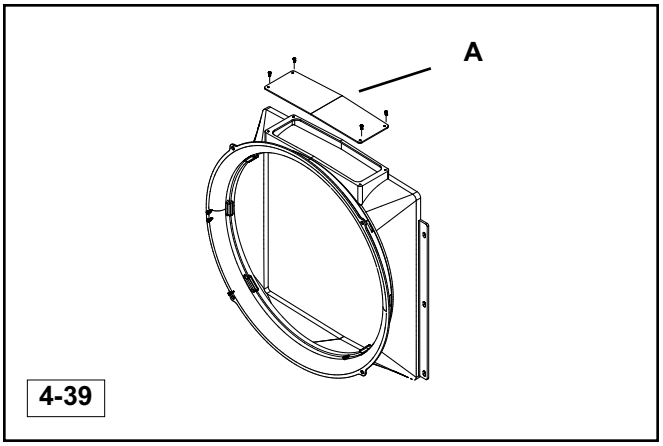
3. Rinse the filter thoroughly with a gentle stream of water to remove all dirt and remaining detergent.
4. Allow the filter to dry completely before re-installing it into the machine.

NOTICE

Do not use any heat source other than warm air at less than 160°F to dry the filter.

Do not clean air filter elements while engine warranty is in effect. During the warranty period, Terex recommends replacing air filter elements instead of cleaning them. Heavy-duty air filter manufacturers will not warrant the air filter once it has been cleaned.





Fuel Filter

The fuel filter removes contaminants from the fuel as it enters the engine for combustion. Over time the filter can become plugged and cause the engine to lose power, run roughly or fail to start. The fuel filter should be changed every 500 hours or more often if needed to prevent these conditions from occurring.

To change the fuel filter: (fig. 4-38)

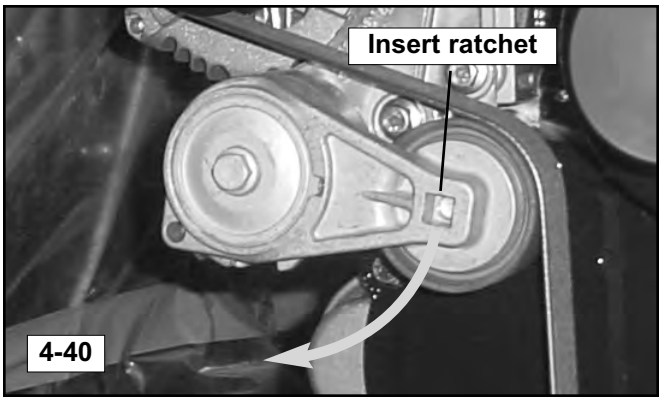
1. Clean the outside of the filter assembly thoroughly to reduce the chances of contaminants being introduced into the fuel system.
2. Twist the water separator catch bowl (A) counter clockwise (when viewed from the bottom) and remove it from the assembly.
3. Twist the upper lock ring (B) counter clockwise (when viewed from the bottom) and remove it from the assembly.
4. Slide the filter (C) downward to remove it. Note the position of the raised tabs on the upper portion of the filter to simplify reassembly.
5. Install the new filter element into the assembly by reversing steps 2-4.

Water Separator

The water separator (item A, fig. 4-38) removes water from the fuel supply as the engine runs. Drain the water separator daily to maintain proper function.

To drain the water separator:

1. Loosen the black screw on the bottom of the separator.
2. Re-tighten the screw after the water has been drained from the catch bowl.



Belt Removal & Installation

To remove the belt:

1. Shut the machine down as described in section 5.13 of the operations manual.
2. Remove the cover plate from the top of the fan shroud (fig. 4-39, item A).
3. Insert a 3/8” drive ratchet into the square hole found on the end of the belt tension arm and rotate it downward away from the belt as shown, to release pressure on the belt and allow for removal (fig. 4-40).
4. With the tension arm held away from the belt (step 3), carefully remove the belt from the pulleys.

To install the belt:

1. Reverse the steps of the removal procedure.

Engine Oil/Filter Change

Regular oil changes are necessary to maintain a strong running engine. Terex recommends a normal oil change interval of 250 hours or every six months. This recommendation has been made to help ensure proper lubrication during operation and to prolong engine life under typical operating conditions.

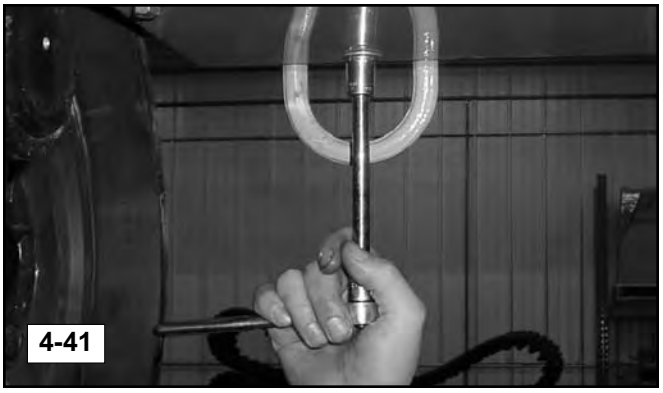
To change the oil and filter:

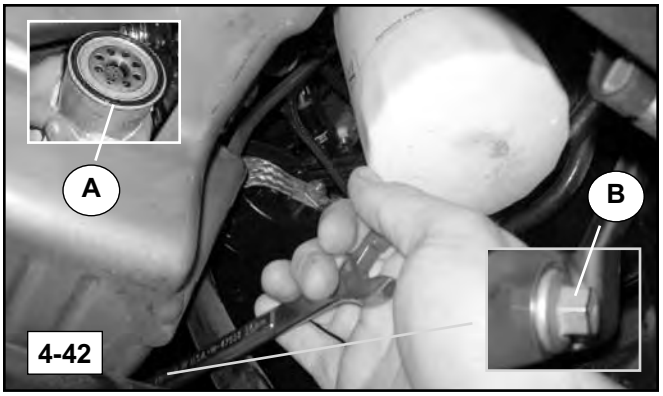
1. Start and run the engine for a few minutes to warm the oil. Then turn the engine off before proceeding.
2. Lower the belly pan beneath the engine to access the oil drain and filter (fig. 4-41).
3. Remove the oil drain plug (fig. 4-42, item B) from the right side of the pan.
4. Drain the oil into a suitable catch container.
5. Remove engine oil filter by hand or with strap if necessary.
6. Once the filter has been removed, check to make sure the rubber gasket has come off of the filter head with the old filter. If it is not on the old filter, check the filter head. If it is still on the filter head, remove it prior to installing the new filter.

NOTICE

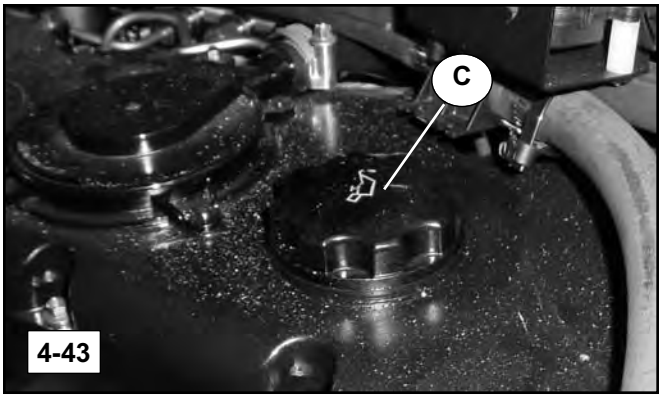
If the old filter gasket (fig. 4-42, item A) is not removed from the filter head and the new filter is installed on top of it, an oil leak will result when the engine is started. If unnoticed, the engine can run itself out of oil causing engine failure.

7. Prepare new filter for installation by rubbing fresh oil on the exposed surface of the filter gasket.
8. Thread the new filter onto the filter head. Tighten the filter by hand as instructed by the label located on the filter or filter box.
9. Re-install the oil drain plug into pan and tighten to 50 +/- 10 ft lbs [67.8Nm].
10. Remove the oil filler cap and fill the engine crankcase with Terex 10W-30 Heavy Duty Engine Oil [capacity: 9 qt./8.5l including filter] (fig. 4-43, item C).
11. Install the oil filler cap.
12. Perform a visual inspection to make sure the drain plug, filter and oil filler cap are in place and tight.


4-41



4-42



4-43

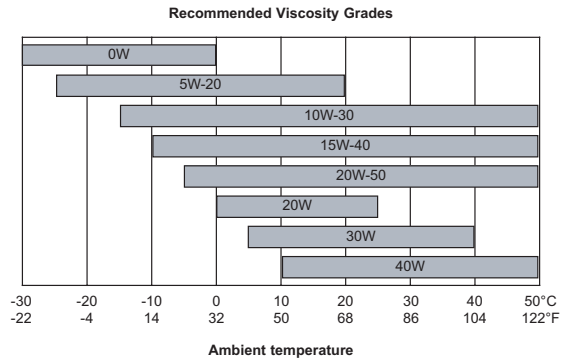
13. Start engine. Engine will not run without sufficient pressure.
14. Once the engine is running, perform a visual inspection to make sure there are no leaks or other visible problems.
15. If everything looks like it should, shut the engine down and exit the machine.
16. Re-install the belly pan.

Engine Oil Specifications

Terex recommends using Terex 10W-30 Heavy Duty Engine Oil for most conditions. In the event of an alternate working environment, the following chart may be used as a guide to oil viscosity grades.

You may also use a quality engine oil substitute meeting the following minimum specification:

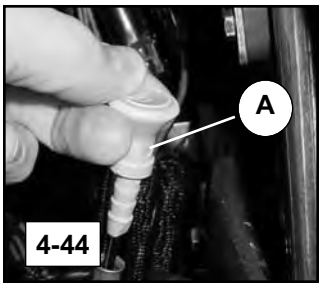
• API CH-4 multigrade engine oil.

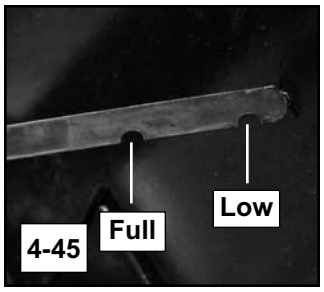


Oil Level Check

To check the oil level:

1. Park the machine on level ground and shut down as described in 5.13 of the operations manual.
2. Open the hood to gain access to the engine compartment.
3. Locate and remove the engine oil dipstick from its tube (fig. 4-44, item A).





4. Wipe the dipstick with a clean shop cloth and re-insert it into the tube until it comes to rest in its seated position.
5. Remove the dipstick once again and inspect the end for oil on the level indicator (fig. 4-45).
6. Oil should be present on the dipstick up to, but not over the upper (full) level indicator notch. If the level is correct, reinstall the dipstick and then close and latch the hood to complete the procedure.
7. If the level is low, add the proper grade and viscosity engine oil and re-check as necessary until the proper level has been achieved. Then reinstall the dipstick and filler cap and close and latch the hood to complete the procedure.

Hydraulic Fluid/Filter Change

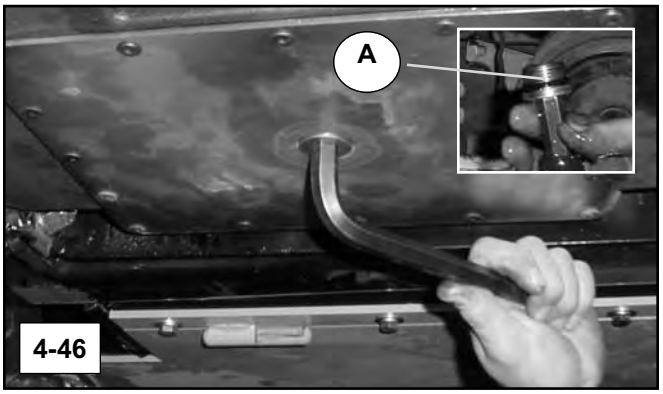
Hydrostatic components require extremely clean oil in order to have a long service life. Use extreme caution when changing the hydraulic oil. Introducing dirt or debris could be detrimental to the hydraulic system. Terex recommends service intervals of 1000 hours for hydraulic fluid and 250 hours for hydraulic fluid filters.

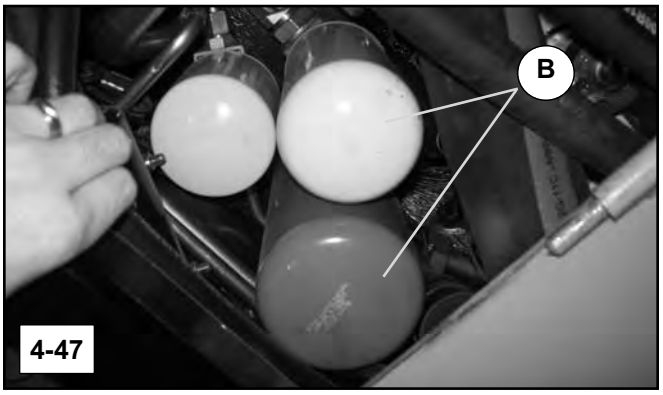
To change the hydraulic fluid:

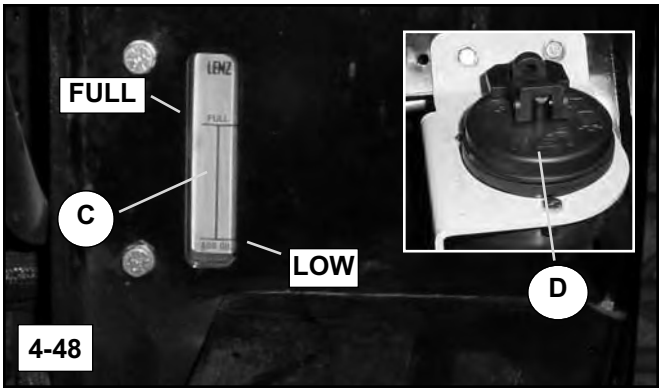
1. Shut the machine down as described in 5.13 of the operations manual.
2. Allow machine to cool, then release any residual pressure in the hydraulic system as described in 4.6 of the operations manual.
3. Lower the middle belly pan to access the tank drain plug as shown.
4. Remove the drain plug using the correct size allen type wrench, or allen socket to, avoid damaging the drain plug (fig. 4-46, item A).
5. Drain the hydraulic fluid into a suitable catch container.
6. Locate the hydraulic filters underneath the cab on the left side of the machine (fig. 4-47, item's B).
7. Thoroughly clean around the filters to prevent dirt or debris from entering the system and remove the filters by hand or with a strap as required.
8. Check to make sure the filter gaskets are still present on the old filters. If not, check the filter heads to make sure they are free from old gasket material prior to installing the new filters.
9. Prepare the new filters by rubbing a small amount of fresh hydraulic oil onto the filter gasket surface and then threading them onto their respective filter heads. Tighten filters by hand as instructed by the label located on the filter or filter box.
10. Install the hydraulic system drain plug and tighten.
11. Remove the hydraulic reservoir filler cap (fig. 4-48, item D). Slowly fill the hydraulic system with Mobil DTE 10 Excel Series, or equivalent, until visible in the sight gauge and the full mark has been reached (fig. 4-48, item C).

Note: When checking or adding to the hydraulic fluid level, do so with the lift arms in the lowered position. If the level is checked with the lift arms in the raised position, an inaccurate reading will result.

Note: When adding hydraulic fluid, add fluid slowly until it is visible in the sight gauge. Once visible, add fluid in one quart increments until the full mark has been reached.







12. Install and secure the hydraulic reservoir filler cap.
13. Start the machine and operate all hydraulic circuits to work any trapped air out of the system.
    - Drive the machine forward and backward.
    - Raise and lower the lift arms(unloaded).
    - Dump and curl bucket/quick attach.
14. Once you have purged the air from the system, check the level on the hydraulic fluid level sight gauge. If the level is low repeat step 11 and 12 to complete the procedure.

Radiator/Oil Cooler Cleaning

The Radiator and Oil Cooler must be kept clean to ensure proper operation. Engine and hydraulic system overheating, damage and even failure can result if the radiator/oil cooler is not kept clean. A pressure washer or compressed air nozzle work well to blow debris clear of the fins in the oil cooler and radiator.

Note: If hydraulic oil or engine coolant temperature gauges indicate abnormally high temperatures during operation, increase cleaning intervals.

Note: In brush cutting applications check and clean the coolers often to avoid overheating.

To clean radiator/oil cooler: (fig. 49 & 50)

1. Make sure the engine is off acourding to descriptio of the operations manual, and is cool.
2. Wear any appropriate safety clothing.
3. Clean the radiator/oil cooler using compressed air, or a pressure washer, and direct spray forward as shown.

Note: Make sure water nozzle is at least 12 in. / 30.5 cm (8 in. / 20.3 cm for air) from the cooler and that the spray is directed straight through the cooler or the cooling fins may be damaged (bent over) which will decrease cooling performance.

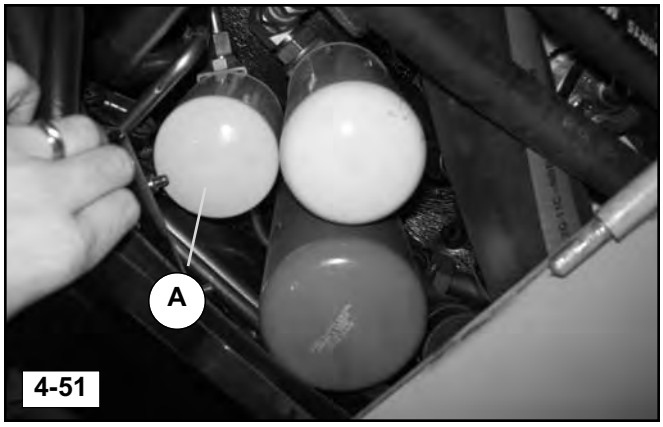

4-49


4-50

Engine Cleaning

Periodic cleaning of the chassis area beneath the cab and engine compartment are also necessary to maintain safe operation. Clean as required.

1. Remove the belly pans on the underside of the machine.
2. Tilt the cab up and raise the hood at the rear of the machine.
3. Pressure wash any debris from the engine com partment and chassis area out through the lower opening.



Case Drain Filter (fig. 4-51)

The PT machines are also equipped with a filter in the auxiliary circuit case drain line (A). It protects the main hydraulic system in the event of catastrophic failure in an attachment. This filter is designed to last the life of the vehicle. The only instance where this filter should be replaced is if an attachment equipped with a case drain has a drive motor failure during use.



Fuse Panel (fig. 4-52)

The electrical systems in the PT machines are equipped with fuses that protect the electrical components from damage. They are found in the fuse panel enclosure which is located behind the panel cover in the right, rear corner of the interior of the cab behind the operator seat.

In the event of an electrical malfunction, the most logical place to start is at the fuse panel. Check the fuse related to the problem you are having and inspect it. If the fuse appears black and burned, it needs to be replaced. Replace fuses with the correct amperage replacement fuse only. Replacing a fuse with one of a lower amperage rating may lead to premature fuse failure. Replacing a fuse with one of a higher amperage rating may burn out the electrical component the fuse was meant to protect. See the troubleshooting section in this manual for an additional resource to aid in tracking suspected electrical problems.

Maintenance Item	Service required	Interval	Notes	Service Capacity
Grease fittings	Lubricate	Daily	Grease often.	
Fluid levels	Check	Daily	Adjust levels as necessary.	
Fan-A/C belt tension	Check	Daily	Adjust tension as necessary.	
Fan-A/C belt condition	Inspect	Daily	Replace as a pair if worn or damaged.	
Water separator	Drain	Daily		
Track condition	Inspect	Daily	Replace if severely damaged.	
Track tension	Inspect	Daily	Adjust tension as necessary.	
Air cleaners	Inspect	Daily	Replace if damaged or heavily soiled.	
Radiator/oil cooler	Inspect	Daily	Clean often (as necessary).	
Undercarriages	Inspect	Daily	Clean often (as necessary).	
Engine compartment	Inspect	Daily	Clean often (as necessary).	
Drive sprocket rollers	Inspect	50 hr.	Replace if damaged or worn. (35% min.)	
Engine oil and filter	Replace	250 hr. or 6 Mo.		9 qt.
Hydraulic filter	Replace	250 hr.		
Hydraulic oil	Replace	1000 hr.	Service refill capacity only. (Dry: 22 gallons)	13 gal.
Water separator-fuel filter	Replace	500 hr.	Replace fuel filter element.	
Radiator coolant	Replace	3000 hr.	Coolant with SCA additive required.	4.3 gal

5. Machine Controls and Instrumentation

Chapter Overview

This chapter contains an overview of the machine controls and instrumentation. For further information regarding machine controls, instrumentation or operation, refer to the operation and maintenance manual for the PT-100G. Included here are illustrations of the following controls and instrumentation components and a description of their functions.

- Machine Controls
- Operator Interface
- Switch Location and Function

Machine Controls (fig. 5-1)

There are three primary machine controls: lift arm control (1), drive control (2) and throttle (3).

Lift Arm Control

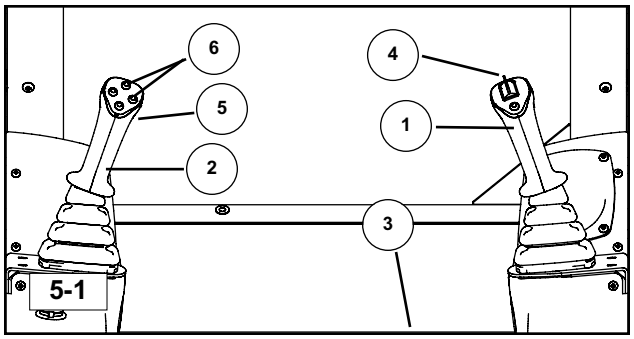
The lift arm control (1) is an electronic joystick that allows the operator to raise or lower the lift arms and dump or curl the quick attach mechanism. Item 4 (found on the lift arm control) is a switch that controls variable low flow auxiliary hydraulic operation.

Drive Control

The drive control (2) is also an electronic joystick. It allows the operator to change the direction and speed of the machine. Item 5 (found on the drive control) is the 2-speed activation switch (trigger). Item(s) 6 (also found on the drive control) are buttons that send electrical signals to attachments connected to the outlet located at the end of the lift arms.

Throttle

The mechnical foot throttle (floor mounted pedal, item 3) controls engine rpm.

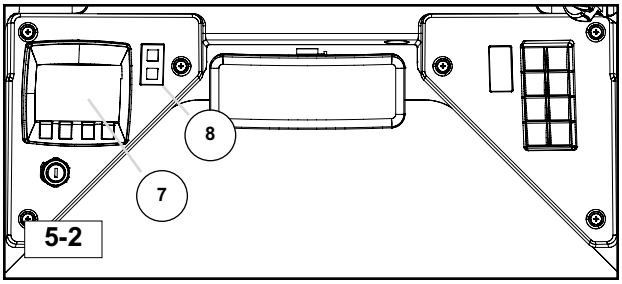


Instrumentation

The Instruments (Figure 5-2) are positioned in the dash panel for good visibility and when seated inside the operator enclosure. Instruments include the following components.

(7) Display
- Oil Pressure Gauge
- Hyd. Oil Temperature Gauge
- Fuel Gauge
- Voltmeter
- Tachometer
- Speedometer
- Air Inlet Temperature
- Coolant Temperature
- Engine Hours
- Trip Hours

(8) Indicator Light Display
- High Range Indicator
- Glow Plug Operation Indicator



NOTICE

Should an alarm message be displayed on the operator interface during normal operation indicating low engine oil pressure, excessive hydraulic oil temperature or excessive engine coolant temperature, shut the machine down immediately (in a safe location). Diagnose the problem and make needed repairs before resuming operation.

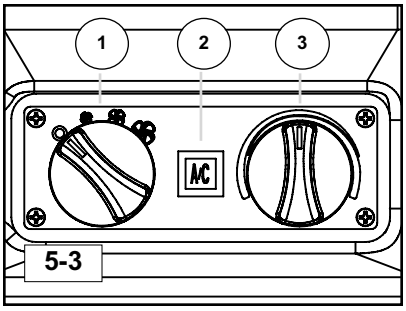
The engine may automatically derate or shut down if necessary, but as a precaution, always shut the machine down if any of these alarm messages appear during operation to prevent damage.

The glow plug operation light illuminates only when engine pre-heat is activated, showing normal operation.

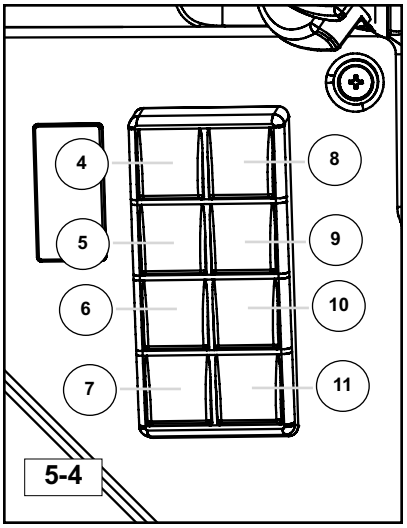
Switches

The various switches (Figure 5-3, 5-4) are positioned to provide good access and visibility. The standard and optional switches are listed below.

1. Fan Speed Switch (optional)
2. A/C Activation Switch (optional
3. Air Temperature Control (optional)
4. Work Light Switch
5. Bucket Positioning Switch (optional)
6. High Flow Aux. Switch (forward)
7. High Flow Aux. Switch (reverse)
8. Power Quick Attach Switch (optional)
9. Parking Brake Switch
10. Low Flow Aux. Switch (forward)
11. Low Flow Aux. Switch (reverse)



5-3



5-4

6. Operator Enclosure

Chapter Overview

This chapter provides information on the assembly and disassembly of the operator enclosure assembly. If there is an issue that requires troubleshooting, refer to Chapter 18, Troubleshooting.

Personal Safety

Improper or incomplete maintenance/repair of a Compact 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 Compact 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 Compact Track Loader.

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

Machine Preparation

Accidental machine starting can cause injury or death to personnel working on a Compact Track Loader.

As a precaution, disconnect the battery cables from the battery terminals, tape the battery clamps and remove the key from the ignition switch prior to performing any service work on a Compact Track Loader.

Place a “Do Not Operate” tag prominently on the machine to inform personnel that the machine is being worked on.

Removal and Installation

Removal and installation procedures are provided for the following operator enclosure components.

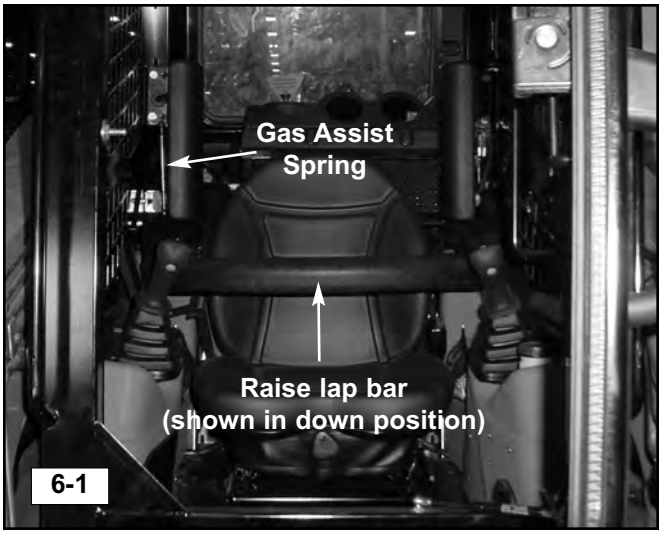
- **Lap Bar Gas Spring**
- **Dash Pod Covers**
- **Side Panels**
- **Pillar Harness Panels**
- **Seat**
- **Headliner**

Note: Procedures are provided for only the operator enclosure components listed above. However, exploded parts diagrams exist in the PT-100G Parts manuals to serve as visual aids in the removal or installation of other operator enclosure components.

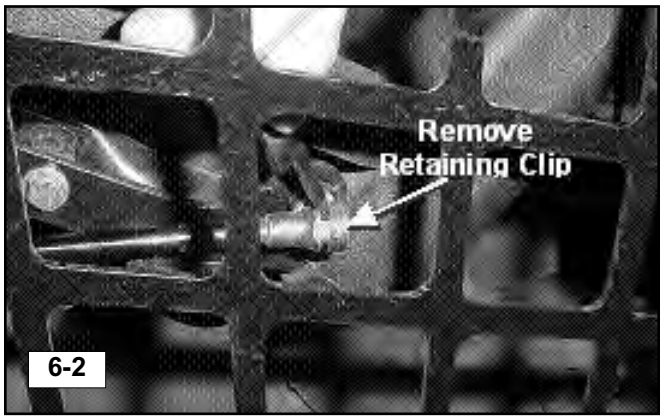
Lap Bar Gas Spring

Removal

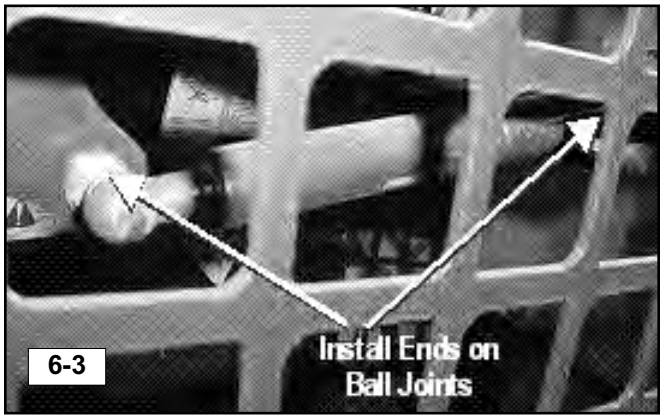
Required Tools
Blade Type Screwdriver



1. Put the lap bar in the raised position to minimize tension on the lap bar gas spring during installation (fig. 6-1).



2. Remove the retaining clip from each of the gas springs using a small screwdriver (6-2).



3. Remove the gas spring by pulling both ends off of from the ball joints (6-3).

Installation

1. To reinstall the lap bar gas assist springs, reverse the removal procedure.

Dash Pod Covers

Removal

Required Tools
Phillips Screwdriver



1. Remove the fasteners securing the dash pod covers to the pod base (fig. 6-4).



2. Pivot the cover away from the pod base to expose the connectors. Disconnect the switches and display from the cab harness, then remove the cover (fig. 6-5).

Note: The connectors on the harness are labeled as are the wires in the cover. Use these labels to properly identify (match up) and reconnect the harness to the instruments during installation.

Note: At this point in the disassembly process, the instruments mounted to the cover may be removed and replaced if needed.

Installation

1. To reinstall either cover, reverse the steps of the removal procedure.

Side Panels

Removal

Required Tools
Phillips Type Screwdriver



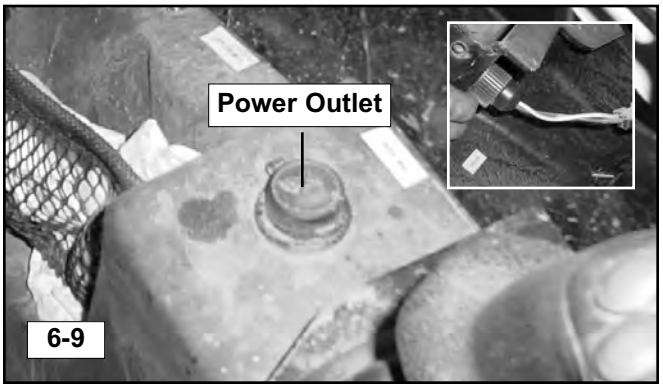
1. Remove the fasteners securing the forward portion of the side panel to the cab enclosure (fig. 6-6).



2. Pull the side panel away from the cab as shown, then remove it from the machine (fig. 6-7).



3. Remove the fasteners securing the rear portion of the side panel to the cab enclosure (fig. 6-8).



4. If removing the left side panel, disconnect the 12v power outlet, then remove the panel from the machine (fig. 6-9).

Installation

1. To install the side panels, reverse the removal procedure.

Pillar Harness Panels

Removal



1. Remove the fasteners securing the pillar panel to the cab enclosure (fig. 6-10).



2. Pivot the panel away from the cab to expose the wire harness. (Disconnect alarm if removing the left pillar harness panel) (fig. 6-11).

Installation

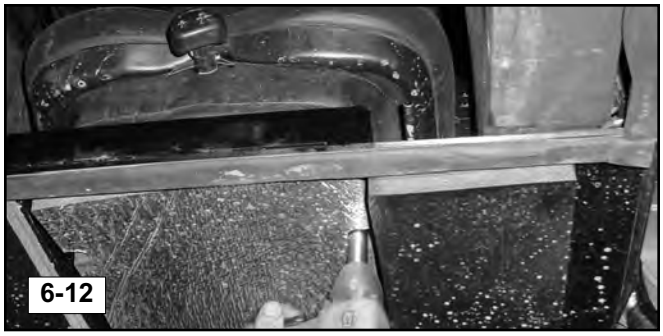
1. To install the pillar panels, reverse the removal procedure.

Seat

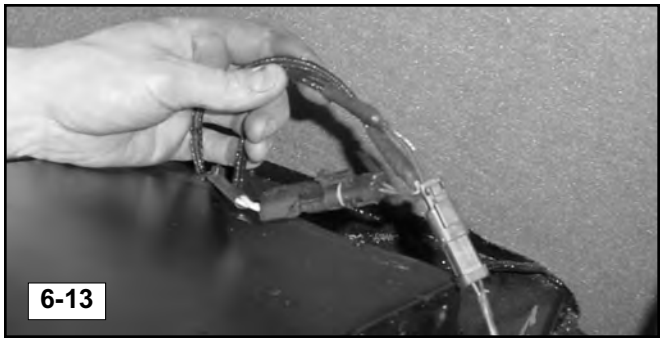
Removal

Required Tools
Combination/Socket Wrench

1. Raise and secure the cab as described on page 4-2 of this manual.



2. Remove the four nuts securing the seat to the cab floor (fig. 6-12).



3. Lift and move the seat forward slightly to expose the seat switch harness located behind the seat (fig. 6-13).



4. Disconnect the harness, then remove the seat from the machine (fig. 6-14).

Installation

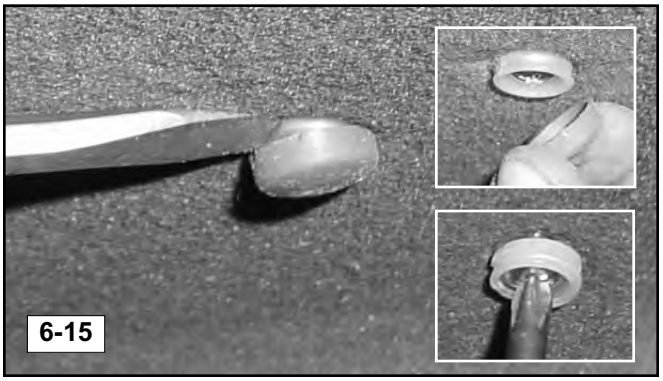
1. To install the seat, reverse the removal procedure.

Headliner

Removal

Required Tools
Phillips/Blade Type Screwdrivers

1. Remove the finishing caps with a blade type screwdriver to gain access to screws as shown (fig. 6-14).



2. Remove all screws with a phillips screwdriver (fig.6-15).



3. Lower the headliner slightly, then disconnect the dome light from the cab harness. Once disconnected, you may remove the headliner from the cab (fig. 6-16).

Installation

1. To install the headliner panel, reverse the removal procedure.

7. Chassis and Fuel Tank

Chapter Overview

This chapter provides information on the assembly and disassembly of the chassis. If there is an issue that requires troubleshooting, refer to Chapter 18, Troubleshooting.

Personal Safety

Improper or incomplete maintenance/repair of a Compact 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 Compact 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 Compact Track Loader.

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

Machine Preparation

Accidental machine starting can cause injury or death to personnel working on a Compact Track Loader.

As a precaution, disconnect the battery cables from the battery terminals, tape the battery clamps and remove the key from the ignition switch prior to performing any service work on a Compact Track Loader.

Place a “Do Not Operate” tag prominently on the machine to inform personnel that the machine is being worked on.

Removal and Installation

Removal and installation procedures are provided for the following chassis components.

- Fuel Sending Unit
- Fuel Tank
- Footwell
- Foot Throttle Assembly
- Hood Assembly

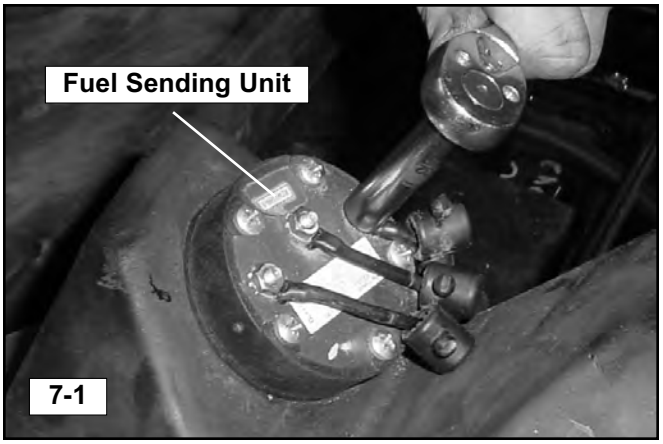
Note: Procedures are provided for only those chassis components listed above. However, exploded parts diagrams exist in the PT-100G Parts manual to serve as visual aids in the assembly and disassembly of other chassis components.

Fuel Sending Unit

Removal

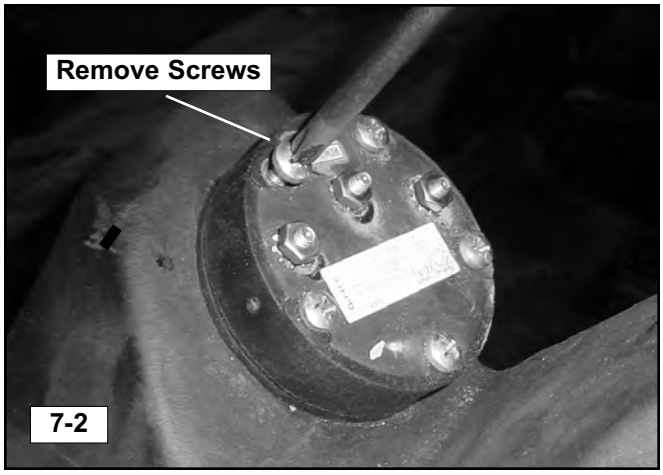
Required Tools
Screwdriver Combination/Socket Wrench

1. Raise and support the lift arms as described on page 4-1 of this manual.



2. Tilt and support the operator enclosure (cab) as described on page 4-2 of this manual.
3. Locate the fuel sending unit on the upper left side of the fuel tank (fig. 7-1).
4. Remove the nuts and associated hardware securing the leads to the sending unit (fig. 7-1).

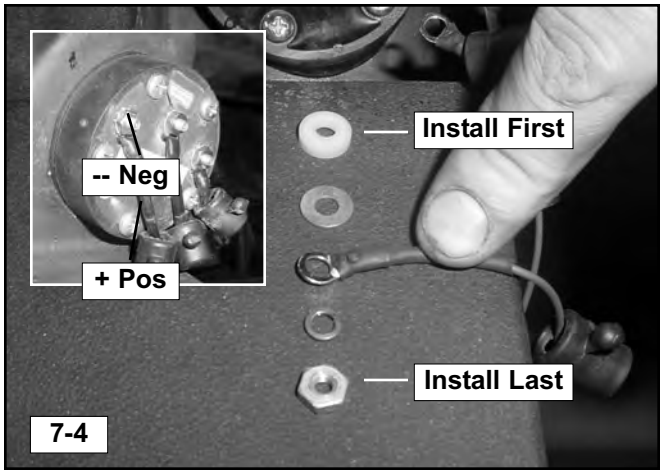
Note: Record the order of assembly and polarity of the leads to ensure proper function when reassembled.



5. Remove the screws that secure the fuel sending unit to the tank (fig. 7-2).



6. Remove the sending unit by pulling it through the opening in the fuel tank (fig. 7-3).



Installation

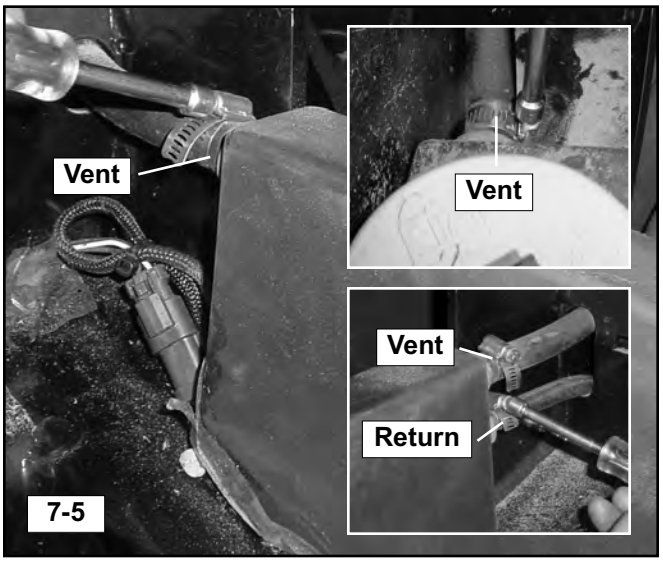
1. To install the fuel sending unit, reverse the removal procedure (See fig. 7-4 for terminal installation).

Fuel Tank

Removal

Required Tools
Screwdriver Combination/Socket Wrench

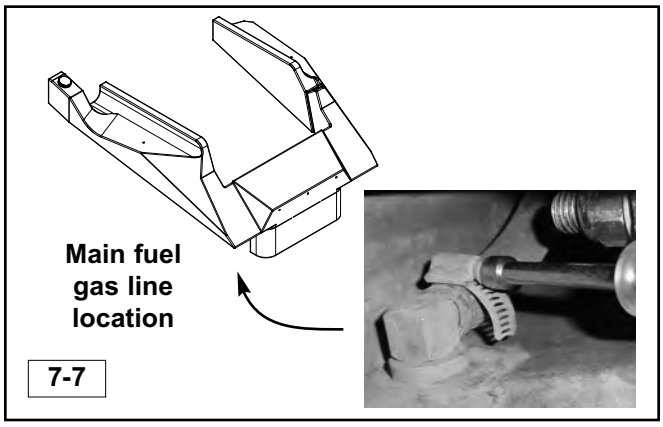
1. Raise and support the lift arms as described on page 4-1 of this manual.
2. Tilt and support the operator enclosure (cab) as described on page 4-2 of this manual.



3. Loosen the hose clamps that secure the return and vent hoses to the left and right, rear of the fuel tank (fig. 7-5).
4. Disconnect and plug the ends of the hoses to prevent fuel leakage.



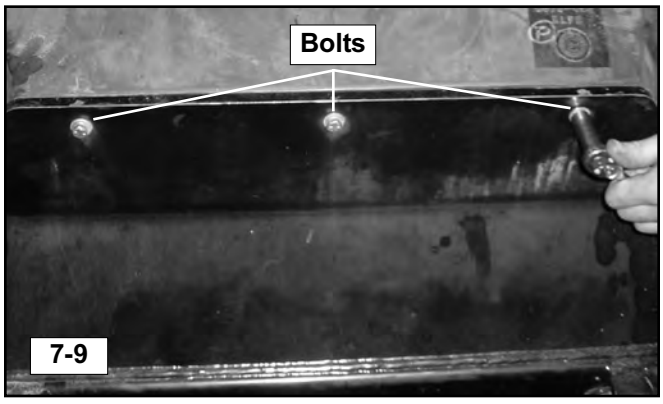
5. Carefully remove the zip tie from the fuel sending unit harness and then unplug from the main wire harness (fig. 7-6).
6. Loosen the hose clamp securing the main fuel line to the tank outlet in the front, right corner of the tank. Disconnect and then plug the line and cap the outlet to prevent fuel leakage (fig. 7-7).



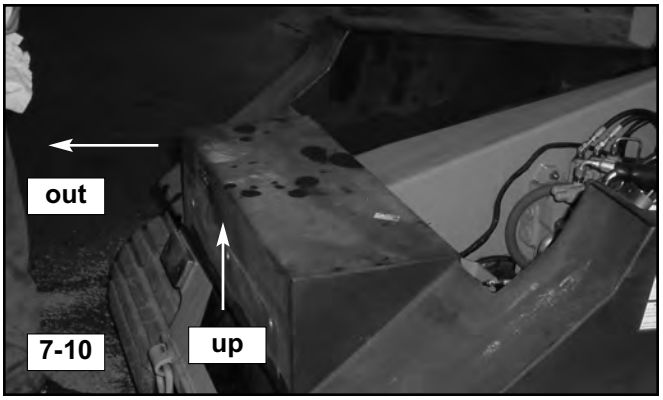


7. Remove the allen head plug from the cleanout plate located on the rear, bottom side of the fuel tank. Allow fuel to drain into a suitable catch container (fig. 7-8).

Note: Collect and contain flammable liquids in suitable containers. Dispose of all liquids in accordance with local regulations and mandates.



8. Remove the bolts securing the fuel tank to the rear mounting plate and fenders (fig. 7-9).



9. Lift and remove the tank from the machine (fig. 7-10).

Installation

1. To install the fuel tank, reverse the removal procedure.

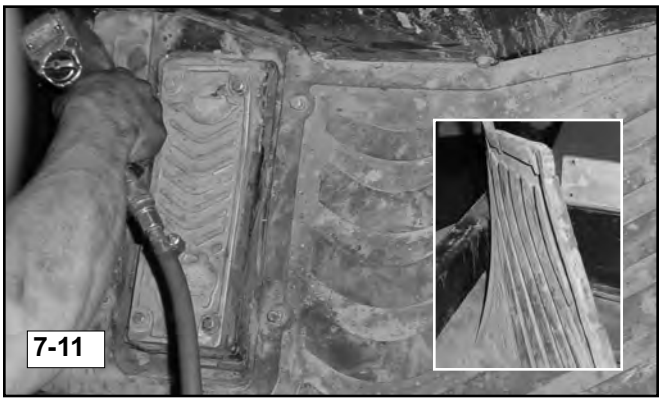
Footwell

Removal

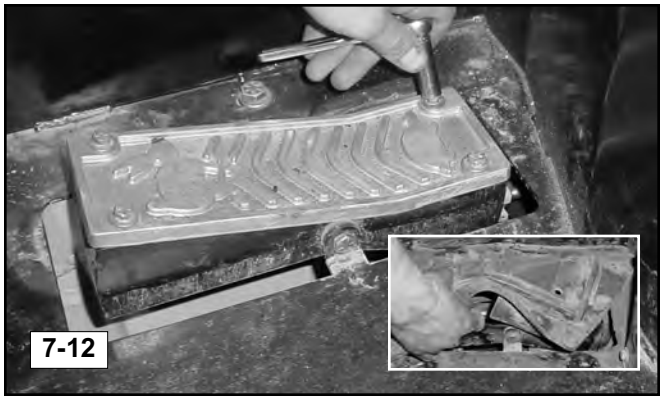
Required Tools
Screwdriver Combination/Socket Wrench

1. Raise and support the lift arms as described on page 4-1 of this manual. (optional)

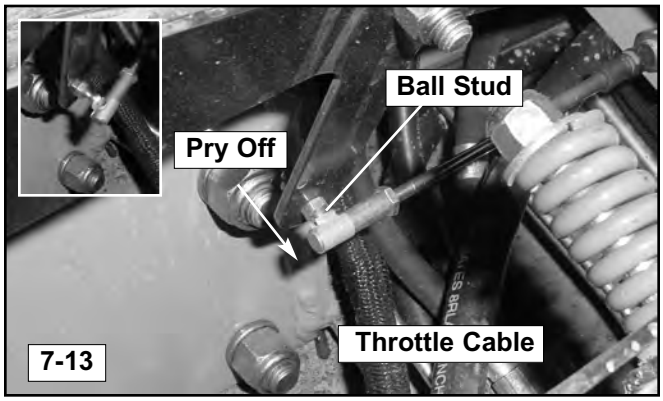
2. Tilt and support the operator enclosure (cab) as described on page 4-2 of this manual.



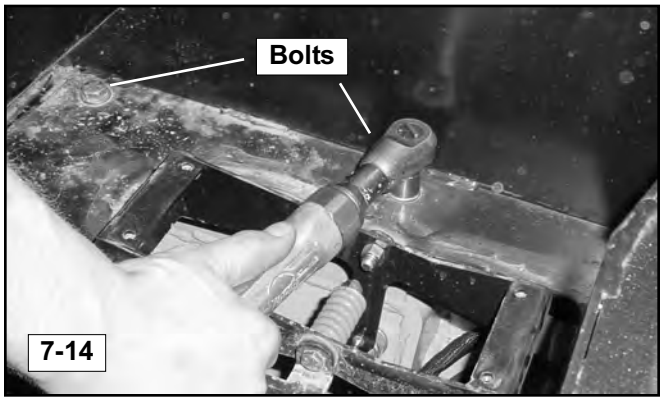
3. Remove the bolts that secure the floor mat to the footwell and remove the mat from the machine (fig. 7-11).



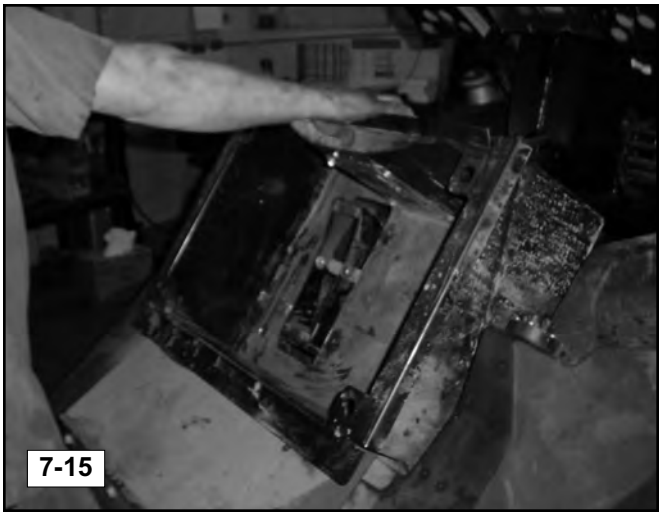
4. Remove the bolts (4) that secure the foot pedal cover to the pedal, then remove the cover and the throttle boot (fig. 7-12).



5. Pry the throttle cable off of the ball stud on the foot pedal. (fig. 7-13)



6. Remove the bolts securing the footwell assembly to the chassis (fig. 7-14).



7. Remove the footwell from the chassis as shown (fig. 7-15)

Installation

1. To install the footwell, reverse the removal procedure.

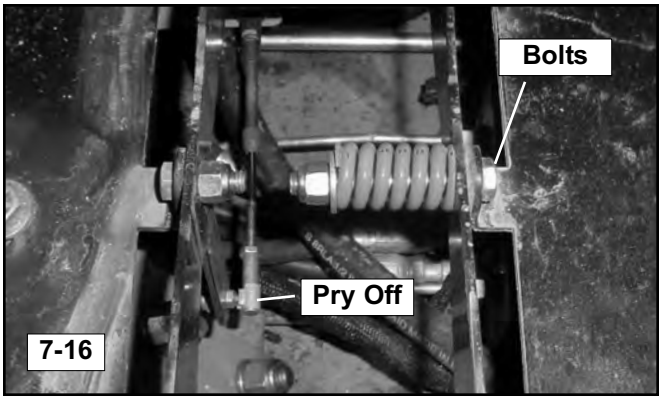
Foot Throttle Assembly

Removal

Required Tools
Screwdriver Combination/Socket Wrench

Note: The foot throttle assembly may be removed with the footwell still installed in the machine.

1. Perform steps 3 and 4 of the footwell removal procedure.



2. Remove the bolts (2) and associated hardware securing the foot throttle assembly to the footwell (fig. 7-16).

Note: Record the order of assembly during removal to ensure proper operation when re-installed.

3. Remove the foot throttle from the machine.

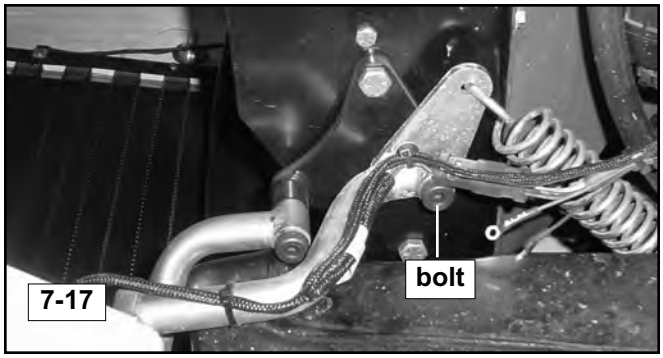
Installation

1. To install the foot throttle assembly, reverse the removal procedure.

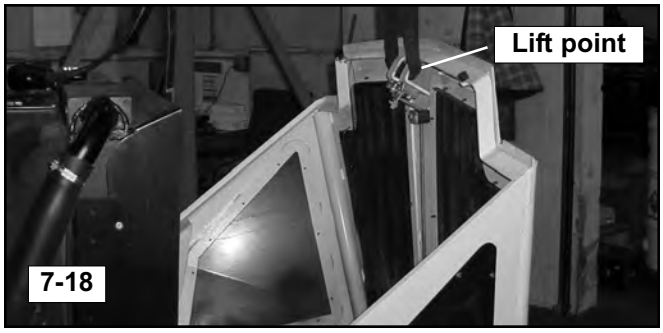
Hood Assembly

Removal

Required Tools
Screwdriver Combination/Socket Wrench



1. Remove bolts from hood spring tension bracket on each side of machine (fig. 7-17).



2. Attach lifting device with hood in open position as shown in 7-18.



3. Remove the allen head bolts from each side of the hood hinges (fig. 7-19).
4. Remove hood from machine using lifting device.

Installation

1. To install the hood assembly, reverse the removal procedure.

8. Radiator and Oil Cooler

Chapter Overview

This chapter provides information on the disassembly and assembly of the radiator/oil cooler and associated components. If there is an issue that requires troubleshooting, refer to chapter 18, Troubleshooting.

Personal Safety

Improper or incomplete maintenance/repair of a Compact 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 Compact 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 Compact Track Loader.

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

Machine Preparation

Accidental machine starting can cause injury or death to personnel working on a Compact Track Loader.

As a precaution, disconnect the battery cables from the battery terminals, tape the battery clamps and remove the key from the ignition switch prior to performing any service work on a Compact Track Loader.

Place a “Do Not Operate” tag prominently on the machine to inform personnel that the machine is being worked on.

Removal and Installation

Removal and installation procedures are provided for the following radiator/oil cooler components.

- Fan Guard
- Fan
- Radiator/Oil Cooler/Fan Shroud

Note: Procedures are provided for only those radiator/oil cooler components listed above. However, exploded parts diagrams exist in the PT-100G Parts manuals to serve as visual aids in the assembly and disassembly of other system components.

Note: Refer to pages 3-1 and 3-2 for pictorial views of the filtering and cooling system components.

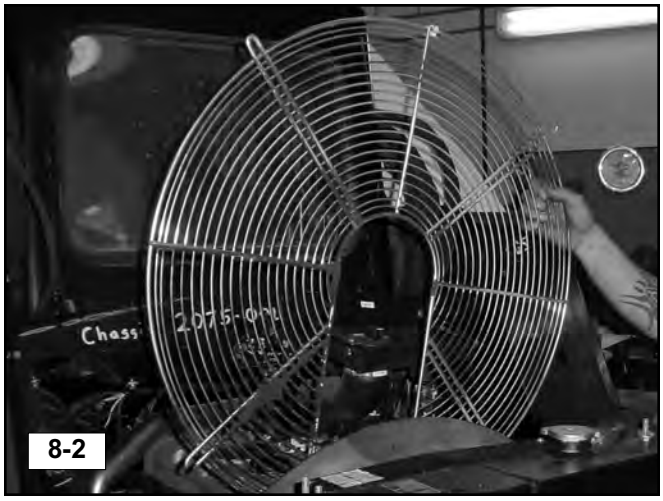
Fan Guard

Removal

Required Tools
Combination Wrench Socket Wrench Socket Wrench Extension (optional)



1. Remove key to avoid accidental start and then remove the bolts (4) that secure the fan guard to fan shroud (fig. 8-1).



2. Remove the fan guard from the machine by sliding it upward (fig. 8-2).

Installation

1. To install the fan guard, reverse the removal procedure.

Fan

Removal

Required Tools
Combination Wrench Socket Wrench



1. Remove key to avoid accidental start, then remove the bolts (2) securing the fuel pump/filter assembly to the radiator support and lay it aside over the bumper to allow clearance to remove the shroud and fan (fig. 8-3).



2. Remove the bolts (6) securing the radiator and shroud to the radiator support (fig. 8-4).

3. Push the shroud forward to allow access to the fan mounting bolts.





4. Remove the nuts (4) securing the fan to the engine, then remove the fan from between the shroud and radiator as shown (fig. 8-5, 8-6).

Installation

1. To install the fan, reverse the removal procedure.

Radiator/Oil Cooler/Fan Shroud

Removal

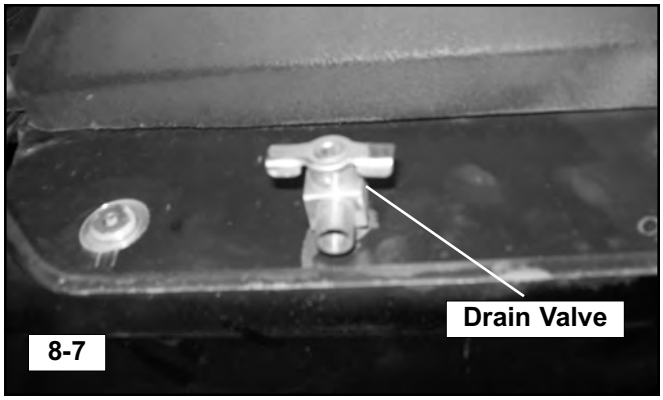
Personal injury can result from exposure to hot fluids and components. Allow the machine to cool thoroughly before attempting any type of service on the cooling or hydraulic systems.

Cooling system conditioner contains alkali. Avoid contact with skin and eyes.

Note: Collect and contain liquids in suitable containers. Dispose of all liquids according to local regulations and mandates.

Required Tools
Socket Wrench
Pliers
Screwdriver
Hydraulic Caps/Plugs (various sizes)

1. Perform the fan guard and fan removal procedures found in this chapter.
2. Remove the bolts (3) securing the left rear access cover to the chassis.



3. Twist the valve control counter clockwise to drain the cooling system (fig. 8-7).



4. Remove the bolts (6) securing the outer shroud to the chassis, then remove the shroud (fig. 8-8).



5. Remove the upper hydraulic cooler hose. Cap or plug the exposed ends of the engine, cooler, and hose upon removal (fig. 8-9).



6. Loosen and disconnect the lower hydraulic line from the cooler. Cap and plug the line and cooler opening upon disassembly (fig. 8-10).


8-11


8-12

7. Loosen the clamps securing the upper and lower coolant hoses to the radiator, then disconnect the hoses from the radiator. Cap or plug exposed ends of the radiator and hose (fig. 8-11, 8-12).


8-13

8. Tilt the radiator rearward and then remove it from the machine (fig. 8-13).


8-14

9. Tilt the fan shroud rearward and remove it from the machine (fig. 8-14).

Installation

1. To install the radiator/oil cooler, reverse the removal procedure.

9. Hydraulic Reservoir

Chapter Overview

This chapter provides removal and installation procedures for the hydraulic reservoir.

Personal Safety

Improper or incomplete maintenance/repair of a Compact 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 Compact 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 Compact Track Loader.

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

Machine Preparation

Accidental machine starting can cause injury or death to personnel working on a Compact Track Loader.

As a precaution, disconnect the battery cables from the battery terminals, tape the battery clamps and remove the key from the ignition switch prior to performing any service work on a Compact Track Loader.

Place a “Do Not Operate” tag prominently on the machine to inform personnel that the machine is being worked on.

Removal and Installation

Removal and installation procedures are provided for the following hydraulic components.

- Hydraulic Reservoir (tank)
- Suction Screen

Note: Procedures are provided for only those hydraulic components listed above. However, exploded parts diagrams exist in the PT-100G Parts manuals to serve as visual aids in the removal and installation of other system components.

Note: Refer to pages 3-1, 3-2 and 3-3 for additional hydraulic circuit and system information.

Hydraulic Reservoir

Removal (in event of contamination)

Required Tools
Screwdriver **Combination/Socket Wrench** **Pry Bar(s)**

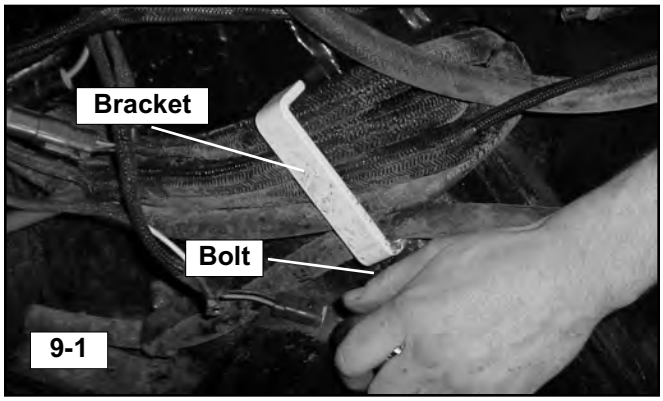
Relax all hydraulic circuits and make sure the oil is cool before disconnecting any component or line from the system. Pressurized and or hot hydraulic fluid can cause personal injury.

Note: Collect and contain liquids in suitable containers. Dispose of all liquids according to local regulations and mandates.

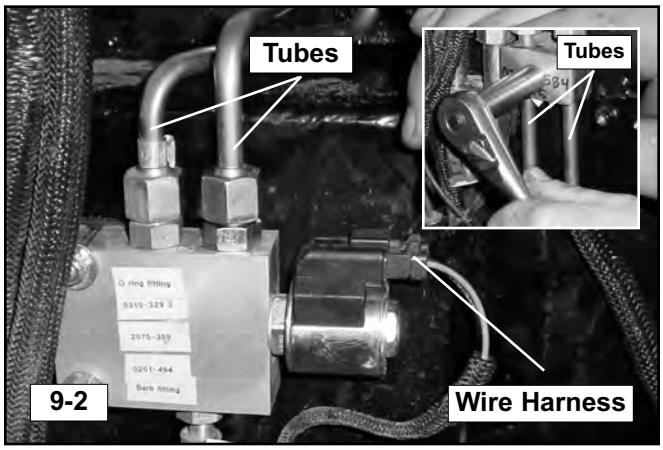
NOTICE

During disassembly, plug and cap all hoses and fittings to prevent system fluid loss or contamination.

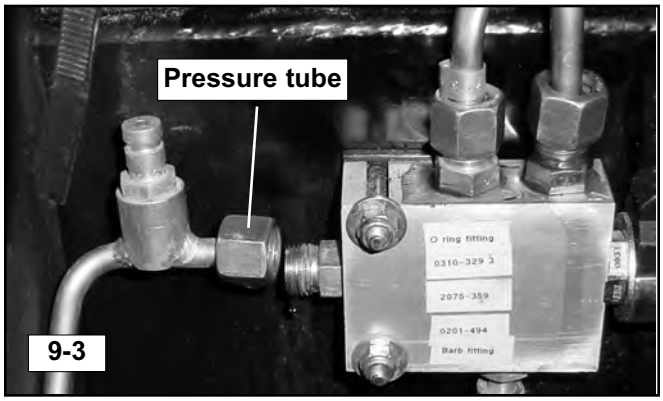
1. With the machine off, cool, and key removed from the ignition, remove the center and rear belly pans from the machine.
2. Drain the hydraulic fluid. Refer to page 4-16 for the hydraulic fluid and filter change procedure.
3. Remove the auxiliary and drive pumps (for inspection, repair, or replacement) accourding to the procedures in section 11of this manual.
4. Remove the engine as described on page 12-5 of this manual.



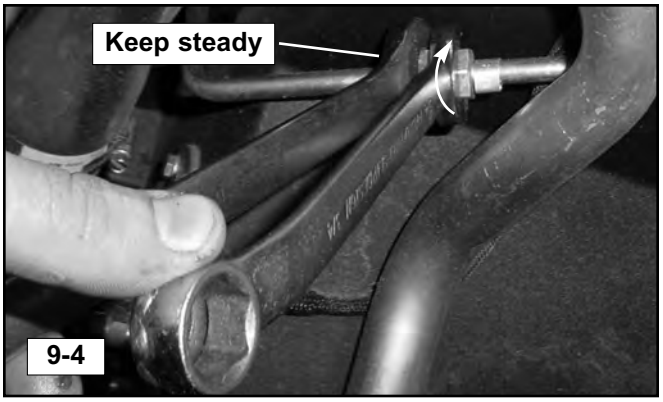
5. Remove bracket that secures the wire harness to the right side of chassis (fig. 9-1). Move the harness up and away from the tank.



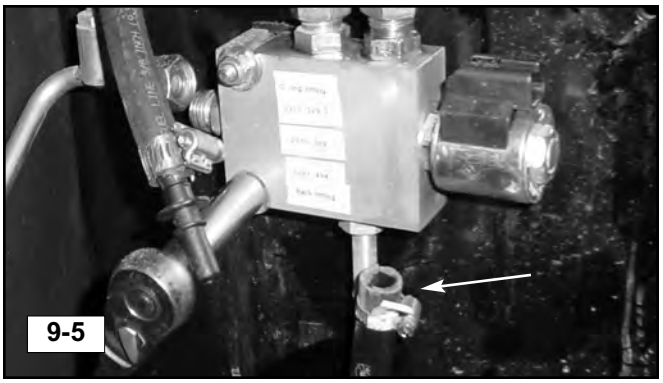
6. Disconnect the two tubes from the top of the QA solenoid block, follow the tubes above the solenoid and remove the tube camps securing the tubes to the chassis. Then disconnect wire harness (fig. 9-2).



7. Disconnect the pressure tube from the front side of the QA solenoid block. Follow the tube forward to the connecting pilot tube (fig. 9-3).



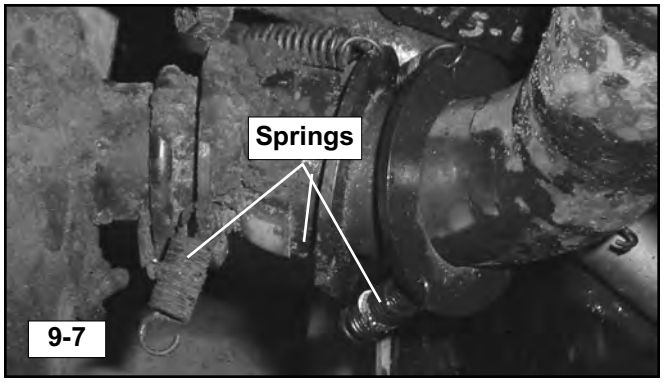
8. Using one wrench, keep the pilot tube steady to ensure it does not twist, with another wrench separate the tubes. Then remove the pressure tube from the machine (fig. 9-4).



9. Loosen the hose clamp on bottom of QA solenoid block to remove the hose. Then remove the two bolts securing the QA solenoid block to the chassis and slide to remove (fig. 9-5).



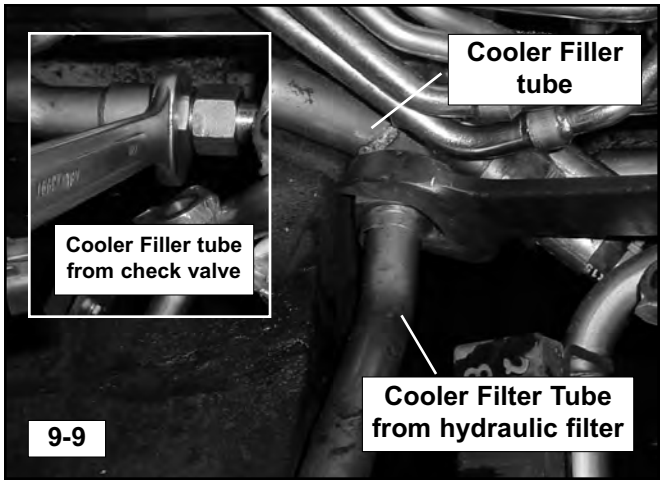
10. Remove both of the tube clamps from the high and low flow loader tubes located on the left side of the chassis, then disconnect the tubes fromthe valve and fromthe hoses to remove (fig 9-6).



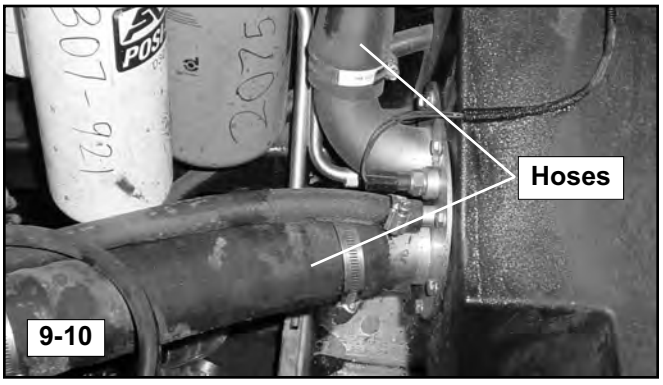
11. Disconnect the exhaust springs (6) on either side of the middle exhaust pipe. Remove the lower and middle exhaust pipes to gain access to the cooler filler tube (fig. 9-7).



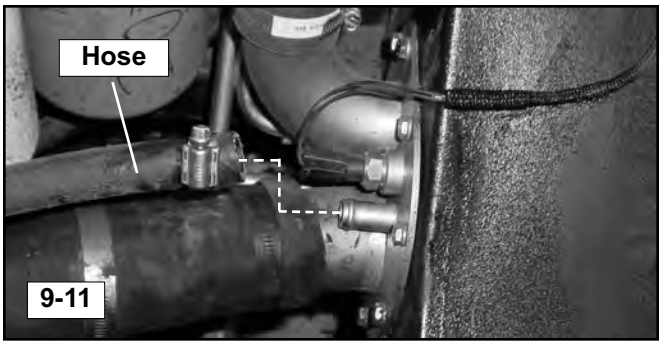
12. Remove the heat guard which protects the charge intake and cooler return hoses in the rear left side of the tank (fig. 9-8).



13. Disconnect the filter tube from the cooler inlet tube and check valve connected to the hydraulic filter. Then remove cooler inlet tube from the check valve adapter (fig. 9-9). Both tubes can then be removed from the machine.



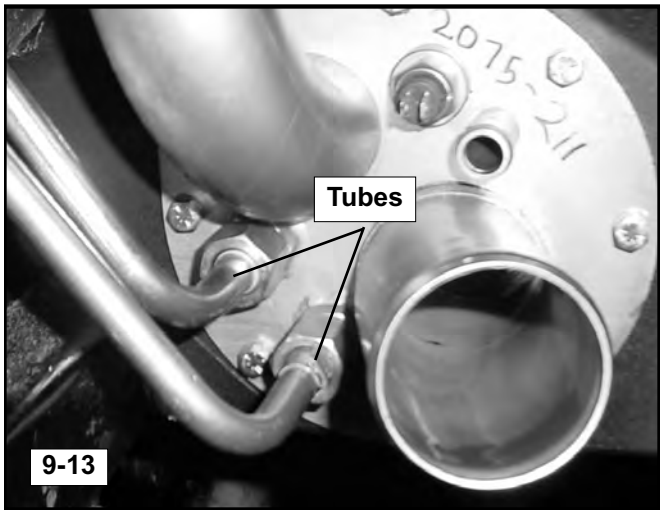
14. Remove both the auxiliary inlet and return hoses from the right front of the hydraulic tank (fig. 9-10).



15. Remove the auxiliary case drain hose from the tank (fig. 9-11).



16. Disconnect the cooler return and intake hoses from the tank (fig. 9-12).



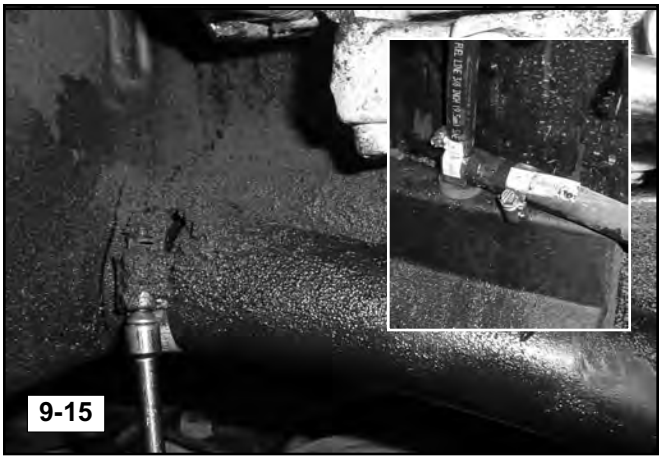
17. Disconnect the pilot and case drain tubes from the hydraulic tank. Disconnect the other ends of tubes; pilot tube from the loader valve and the case drain from the 10 micron hydraulic filter. Remove the tubes from the machine (fig. 9-13).

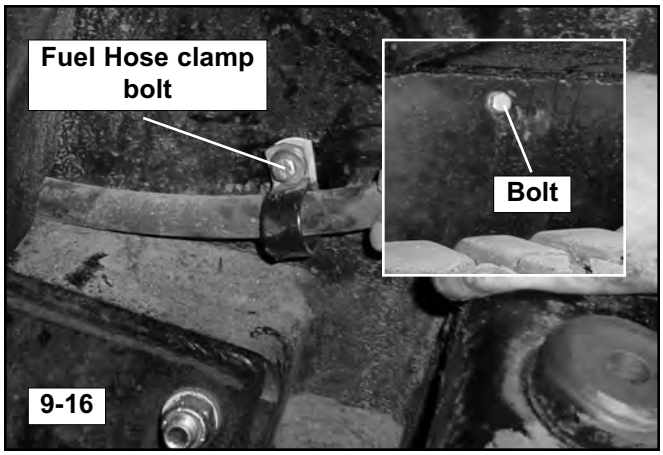
Note: If there is anything else that is routed behind the auxiliary hydraulic tubes that will prevent them from being removed, disconnect or carefully remove these items at this time to allow the tubes to be removed.



18. Remove the hydraulic oil fill tube and other hoses from the top of the tank on each side (fig. 9-14).

19. Disconnect the lower hoses on the back of the tank on each side (fig 9-15).





20. Remove the hose clamp on rear, the right side of the chassis and remove the bolts that secure the hydraulic tank to the chassis (fig 9-16).

21. Make sure that there is nothing that would visibly prevent the reservoir from being removed, or is still attached to other components within the machine, then proceed with step 22.



22. Carefully remove hydraulic tank from chassis by lifting up and sliding it towards the back of the machine (fig 9-17).

Installation

1. To install the hydraulic reservoir, reverse the removal procedure.

Note: The only service issue warranting the removal of the reservoir is hydraulic system contamination. Upon installation, the tank must be clean and free of **any** dirt or debris that may contaminate the hydraulic oil. If you are unable to successfully flush the tank clean of **all** dirt or debris, replace the tank.

Suction Screen (fig. 9-18)

Removal

Required Tools
Small Pry Bar (hose removal if necessary)
Socket Wrench & Extension
Combination Wrenches (to remove lines)

Note: The suction screen may be removed with the reservoir tank still in the machine. If this is necessary, remove the center belly pan and tilt and support the cab to gain access.

1. If the tank is still in the machine, drain the hydraulic fluid as described on page 4-14 of this manual.

2. Remove/disconnect any tubes/hoses connected to the flange weldment that may interfere with removal.

3. Remove the bolts and washers (12) securing the flange to the hydraulic reservoir.

4. Slide the assembly out of the reservoir as shown.

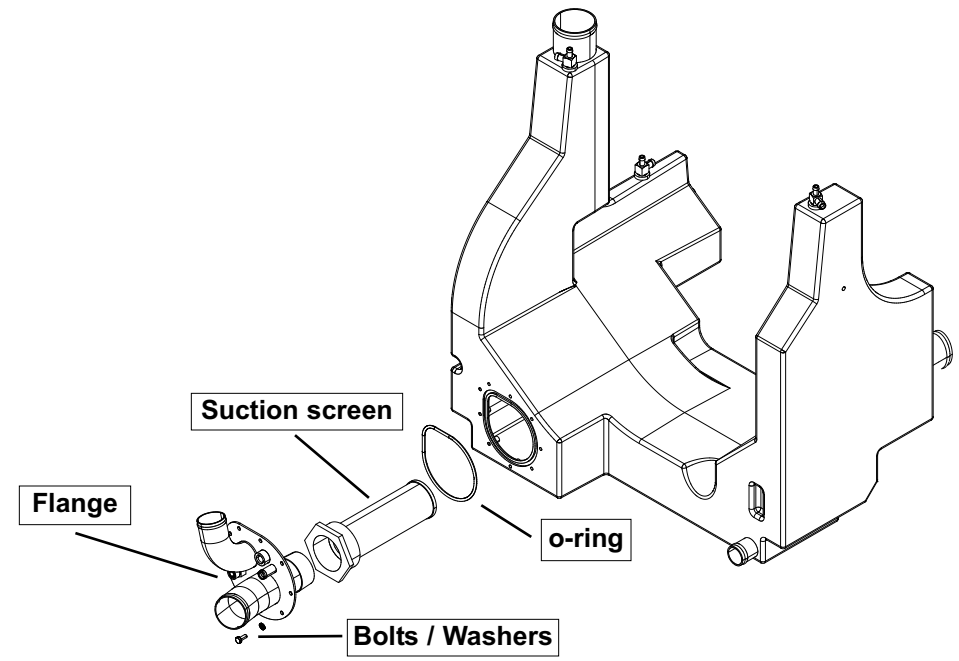
5. The suction screen is now accessible for inspection or replacement.

Note: If removal is necessary, thread the suction screen off of the flange weldment and remove.

Installation

1. To install the suction screen, reverse the removal procedure.

Note: It is important to inspect the screen for pieces of metal or other debris that may have been generated by a worn or defective component. If there is debris present on the screen, the hydraulic system (including the reservoir) must be flushed clean to remove any and all contamination (debris). The screen should be replaced as well as any components found to be defective.



9-18

10. Lift-Arm/Drive Controls

Chapter Overview

This chapter provides removal and installation procedures for the lift-arm and drive control components.

Personal Safety

Improper or incomplete maintenance/repair of a Compact 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 Compact 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 Compact Track Loader.

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

Machine Preparation

Accidental machine starting can cause injury or death to personnel working on a Compact Track Loader.

As a precaution, disconnect the battery cables from the battery terminals, tape the battery clamps and remove the key from the ignition switch prior to performing any service work on a Compact Track Loader.

Place a “Do Not Operate” tag prominently on the machine to inform personnel that the machine is being worked on.

Removal and Installation

Removal and installation procedures are provided for the following lift-arm/drive control components.

- Electric Control Joystick
- Lift Arm Control (loader) Valve

Note: Procedures are provided for only those lift-arm/drive control components listed above. However, exploded parts diagrams exist in the PT-100G Parts manuals to serve as visual aids in the assembly and disassembly of other system components.

Note: Refer to page 3-2 and 3-3 for pictorial views of the hydraulic auxiliary and drive systems and components.

Electric Control Joystick

Removal

Required Tools
Side Cutter **Combination/Open End/Socket Wrenches**

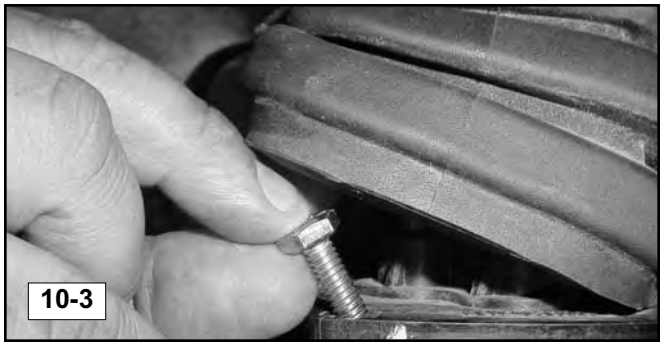
Note: The procedures for removing and installing the right and left joysticks are basically identical. As a result, only the procedures for the right joystick are described in this section.

1. Relax all hydraulic actuators to relieve pressure in the hydraulic system prior to service.
2. Turn the ignition switch to the **OFF** position, remove the key and disconnect the battery to avoid accidental start.
3. Perform the interior front side panel removal procedure that addresses the joystick you plan to remove in page 6-3 of this manual.

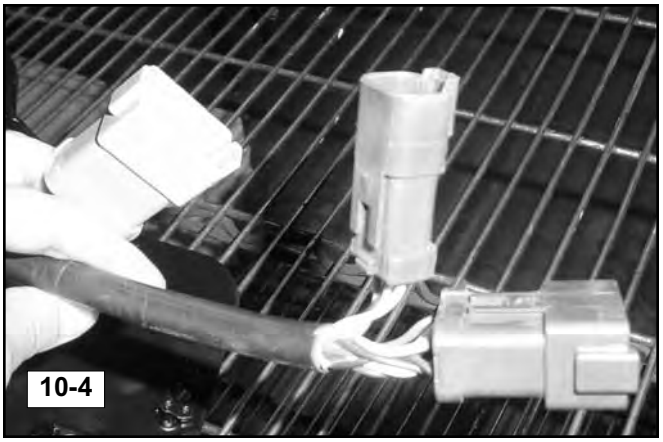




4. Expose and cut the zip tie securing the lower portion of the boot to the joystick body, then lift it upwards (figure 10-2).



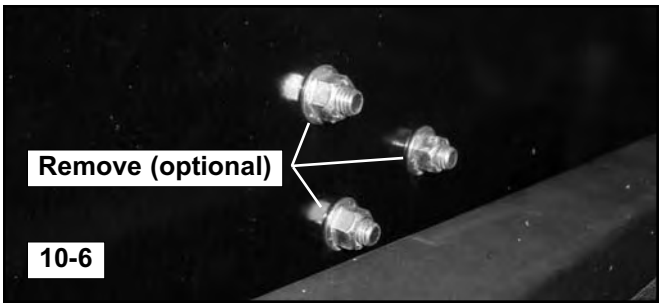
5. Remove the four bolts to disconnect the joystick from the mount (fig. 10-3).



6. Disconnect wire harness from joystick (fig 10-4).



7. Lift the joystick through the opening in the bracket and remove it from the machine (fig. 10-5).



8. Remove the bolts (3) securing the joystick mounting bracket to the cab from the outside (fig. 10-6). (optional)

Installation

1. To install the joystick, reverse the removal procedure.

Lift Arm Control Valve

Removal

Required Tools
Socket Wrench **Combination/Open End Wrench**

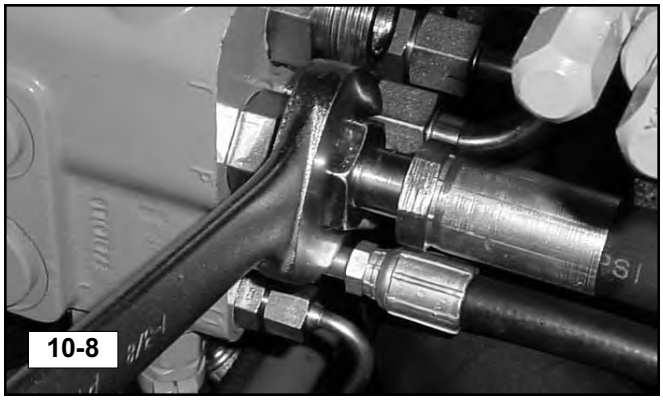
NOTICE

Cap and plug all fittings and tubes to prevent fluid loss and or contamination during service work.

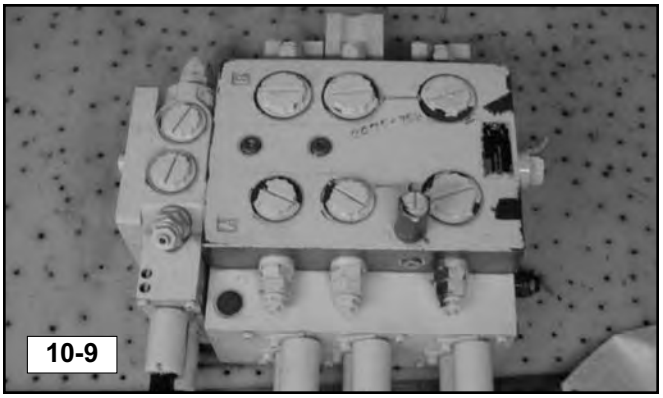
Remove any attachment, lower the lift arms and make sure the hydraulic oil is cool before removing any components or lines. Hot or pressurized oil can cause personal injury.

1. Perform the footwell removal procedure in page 7-3 of this manual.
2. Drain the hydraulic system as described in page 4-14 of this manual.





3. Disconnect tubes and harness from lift arm valve (fig. 10-7, 10-8).
4. Label all tubes, as necessary, to aid in reassembly.



5. Remove the carriage bolts (3) securing the loader valve to the chassis, then remove the valve. (fig. 10-9)

Note: The carriage bolts have a partial square shank that mates with a square hole in the chassis to keep them from rotating during removal.

Installation

1. To install the lift arm control valve, reverse the removal procedure.

11. Hydraulic Pumps/Motors

Chapter Overview

This chapter provides removal and installation procedures for the hydraulic pumps and motors.

Personal Safety

Improper or incomplete maintenance/repair of a Compact 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 Compact 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 Compact Track Loader.

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

Machine Preparation

Accidental machine starting can cause injury or death to personnel working on a Compact Track Loader.

As a precaution, disconnect the battery cables from the battery terminals, tape the battery clamps and remove the key from the ignition switch prior to performing any service work on a Compact Track Loader.

Place a “Do Not Operate” tag prominently on the machine to inform personnel that the machine is being worked on.

NOTICE

The hydraulic system fluid should be changed following any hydraulic component service according to the procedure described on page 4-14.

Removal and Installation

Removal and installation procedures are provided for the following hydraulic components.

- Charge Pump
- Auxiliary Pump
- Tandem (Drive) Pump
- Drive Motor

Note: Procedures are provided for only those hydraulic components listed above. However, exploded parts diagrams exist in the PT-100G Parts manuals to serve as visual aids in the removal and installation of other system components.

Note: Refer to pages 3-1, 3-2 and 3-3 for additional motor, pump and hydraulic system information.

Charge Pump (fig. 11-1)

Removal

Required Tools
Screwdriver **Combination Wrench** **Socket Wrench**

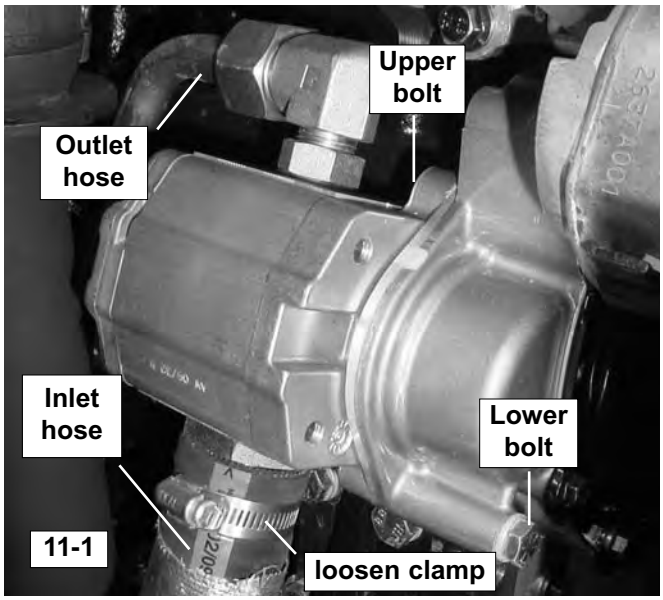
Remove any attachment, relax all actuators and make sure the hydraulic oil is cool before removing any components or lines. Hot or pressurized oil can cause personal injury.

Note: Collect and contain liquids in suitable containers. Dispose of all liquids according to local regulations and mandates.

NOTICE

During disassembly, plug and cap all hoses and fittings to prevent system fluid loss or contamination.

1. Lower the lift arms to the ground and relax the bucket tilt/curl cylinders to relieve pressure within hydraulic system.
2. Turn the ignition switch to the OFF position and remove the key to avoid accidental start.
3. Drain the hydraulic fluid. Refer to page 4-14 for the hydraulic fluid and filter change procedure.



4. Raise the hood at the rear of the machine.
5. Disconnect the outlet hose from the charge pump as shown.
6. Loosen the hose clamp and disconnect the hose from the inlet on the bottom side of the charge pump.
7. Remove the upper and lower bolts securing the charge pump to the engineer.
8. Remove the charge pump from the engine.

Installation

1. To install the charge pump, reverse the removal procedure.

Note: The front bearing on the charge pump uses engine oil for lubrication. It must be kept extremely clean. Make sure to shield it as well as the opening to the engine from dirt or debris while disassembled.

The gasket that seals the pump to the engine housing should be replaced whenever the charge pump is removed and installed to prevent oil leaks and or dirt/debris from entering the engine during operation

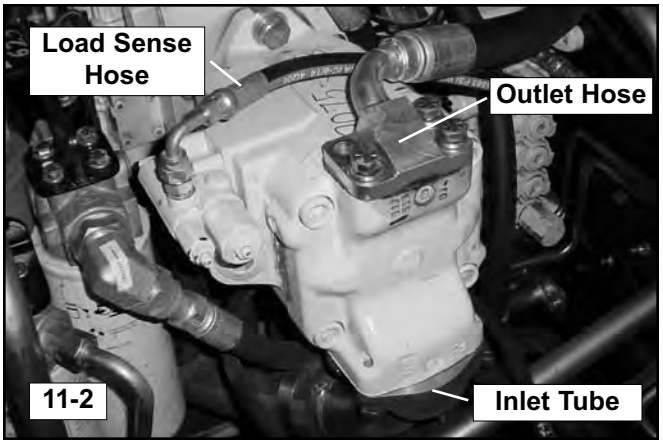
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Auxiliary Pump

Removal

Required Tools
Screwdriver Combination Wrench Socket Wrench

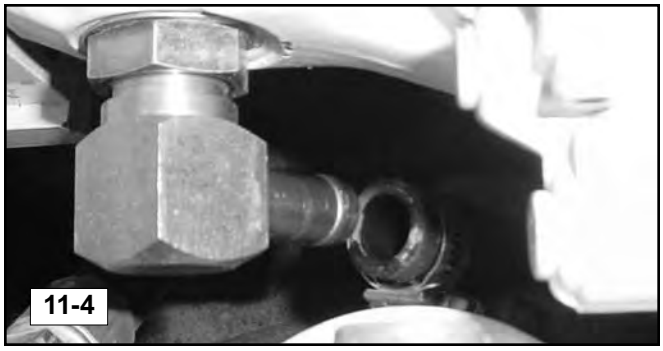
1. Raise and support lift arms as described on page 4-1of this manual.
2. Turn the ignition switch to the **OFF** position and remove the key to avoid accidental start.
3. Drain the hydraulic fluid. Refer to page 4-14 for the hydraulic fluid and filter change procedure.
4. Tilt and support the operator enclosure (cab) as described on page 4-2 of this manual.



5. Remove the four bolts securing the upper outlet hose on the auxiliary pump and slide off to the side of the machine (fig. 11-2)
6. Remove the load sense hose from the right side of the auxiliary pump (fig. 11-2).



7. Remove the four bolts and split flange clamp from the lower inlet tube and lay it aside (fig. 11-3).



8. Disconnect hose clamp from case drain hose and slide the hose off of the fitting (fig. 11-4).



9. Remove the upper and lower bolts that secure the auxiliary pump to the drive pump (11-5).



10. Support the auxiliary pump with a suitable lifting device as shown and remove (fig. 11-6).

Installation

1. To install the auxiliary pump, reverse the removal procedure.

Tandem (Drive) Pump

Removal

Required Tools
Screwdriver Combination/Open End Wrenches

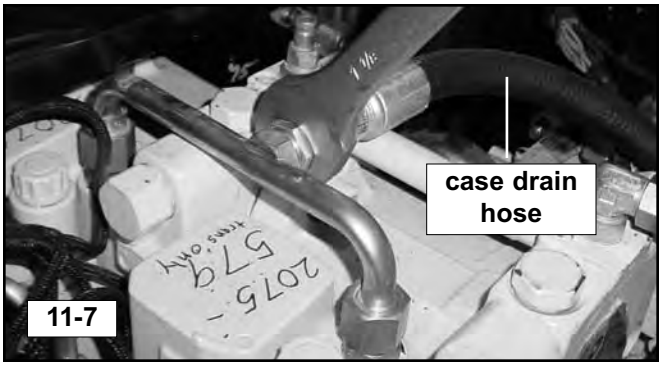
Personal injury can result from exposure to hot fluids and components. Allow the machine to cool thoroughly before attempting any type of service on the cooling or hydraulic systems.

Note: Collect and contain liquids in a suitable container. Dispose of all fluids according to local regulations and mandates.

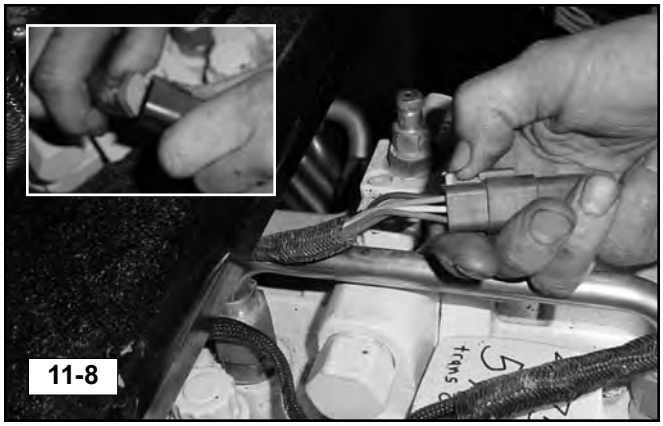
NOTICE

During disassembly, plug and cap hoses and fittings to prevent fluid loss and or contamination.

1. Perform the auxiliary pump removal procedure found in this chapter.



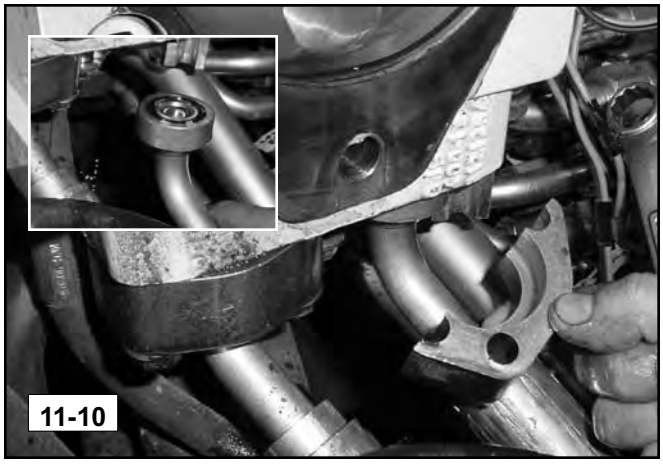
2. Disconnect the case drain hose from the top of the pump and then lay it aside (fig. 11-7).



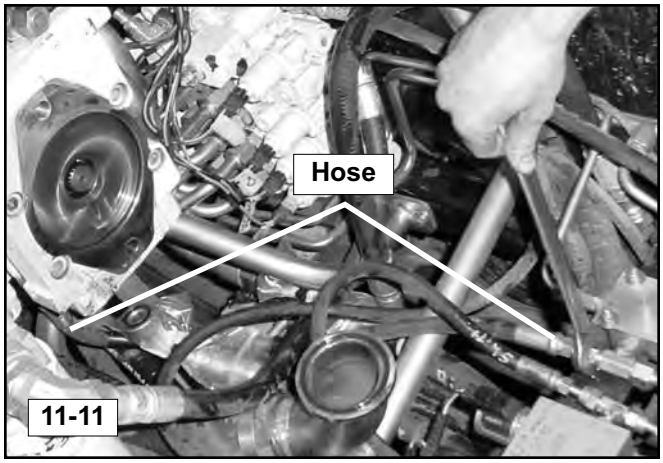
3. Locate the tandem pump harness near the top, rear of the pump and unplug it from the machine harness (fig.11-8).



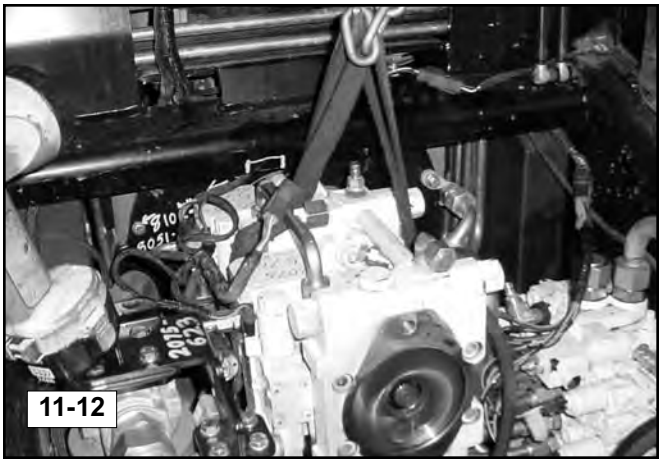
4. Remove the charge pressure hose from the rear adapter on the hydraulic filter to allow access to the two drive hoses (fig. 11-9).



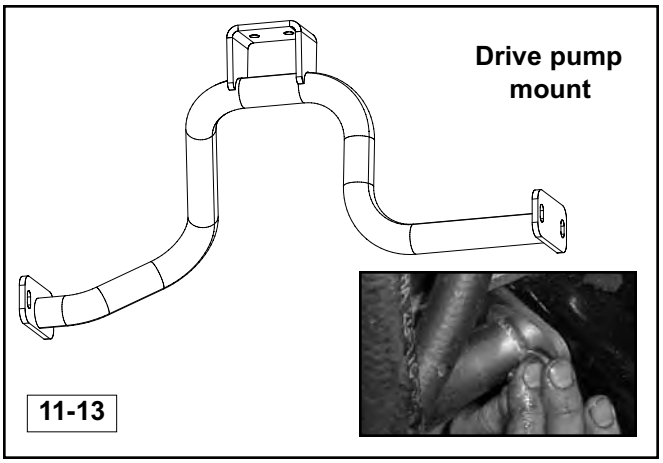
5. Disconnect the lower drive hoses by removing the four bolts from the split flange clamps (fig. 11-10). Label the hoses to ensure correct installation during reassembly.



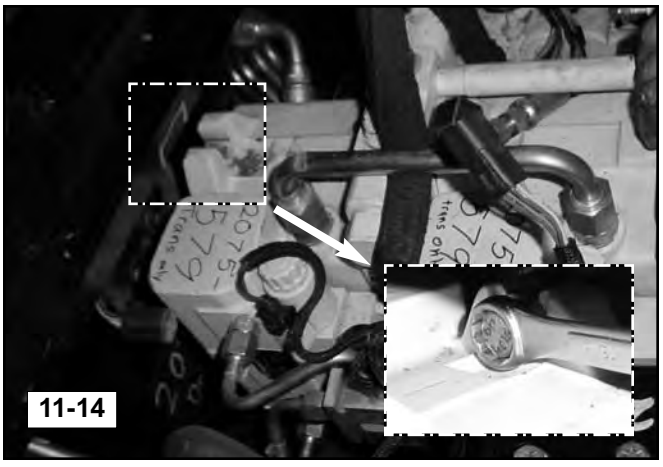
6. Remove the hose from the control block as shown in figure 11-11. This will help when removing the hose once the tandem pump has been removed.



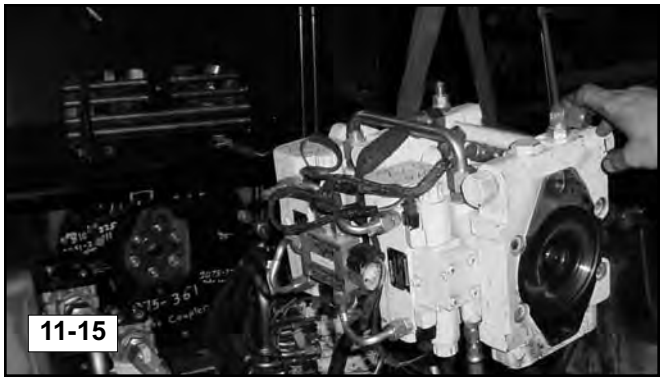
7. Attach a lifting device to elevate and secure the tandem pump as it is disconnected from the engine. Lift up to approximately 1/2" (fig. 11-12).



8. Detach the tandem pump from the bottom of pump mount by working from under the chassis. Remove the bolts (4) that secure the mount to each side of the chassis for ease of pump removal (fig.11-13).



9. Remove the top bolt from the rear of the tandem pump (fig. 11-14).



10. Slide the pump forward and lift out of the machine utilizing the lifting device (11-15).

Installation

1. To install the tandem pump, reverse the removal procedure.

Note: Torque the tandem pump mounting bolts to 200 lb. ft. (271 Nm) and use blue *Loc-tite* or equivalent to secure the bolts in position.

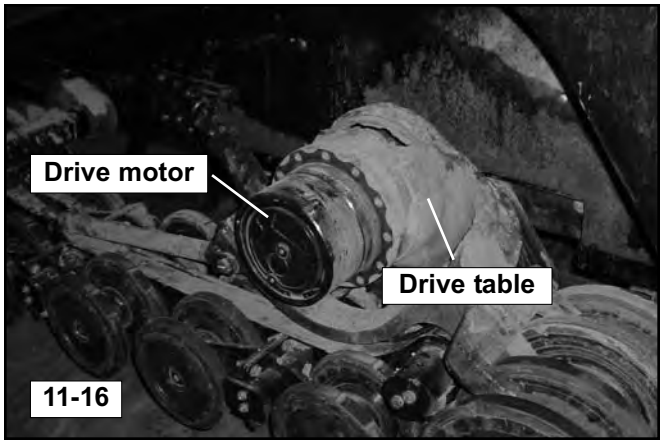
Drive Motor

Removal

Required Tools
Combination/Socket Wrench
Impact Wrench
3-Jaw Puller
Snap Ring Pliers
Hammer/Mallet

1. Remove the track from the undercarriage by performing the track removal procedure from page 4-6 of this manual.

2. Remove the sprocket from the undercarriage by performing the sprocket removal procedure from page 4-5 of this manual.



Note: Label the drive hoses, drive motor and drive table to ensure correct installation and proper orientation during reassembly.



3. Remove the hoses from the drive motor through the cavity of the drive table (fig. 11-17). Remove the two large adapters for ease of access to the remaining components. Be sure to cap and plug the ends of the hoses to prevent contamination.



4. Remove the socket head bolts that secure the drive motor to the drive table as shown in in figure 11-18.



5. Remove the drive motor by sliding it away from the chassis and then out of the drive table (fig. 11-19).

Installation

1. To install the drive motor into the undercarriage, reverse the removal procedure.

12. Engine

Chapter Overview

This chapter provides procedures for the removal and installation of the engine and associated components.

Personal Safety

Improper or incomplete maintenance/repair of a Compact 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 Compact 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 Compact Track Loader.

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

Machine Preparation

Accidental machine starting can cause injury or death to personnel working on a Compact Track Loader.

As a precaution, disconnect the battery cables from the battery terminals, tape the battery clamps and remove the key from the ignition switch prior to performing any service work on a Compact Track Loader.

Place a “Do Not Operate” tag prominently on the machine to inform personnel that the machine is being worked on.

Removal and Installation

Removal and installation procedures are provided for the following engine related components.

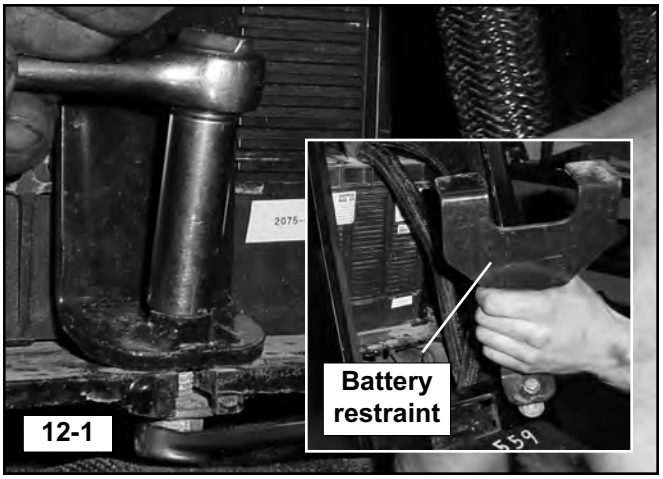
- Battery
- Exhaust
- Air Cleaner
- Engine

Note: Procedures are provided for only those engine associated components listed above. However, exploded parts diagrams exist in the PT-100G parts manuals to serve as visual aids in the assembly and disassembly of other system components.

Battery

Removal

1. Open the hood at the rear of the machine. Locate and open right tower battery access.



2. Remove the bolt that secures the battery restraint to the tower then remove the restraint (fig. 12-1).



3. Disconnect the positive and negative battery cables (fig. 12-2).



4. Remove the battery from the tower compartment (fig. 12-3).

Installation

1. To install the battery, reverse the removal procedure.

Exhaust System

Removal

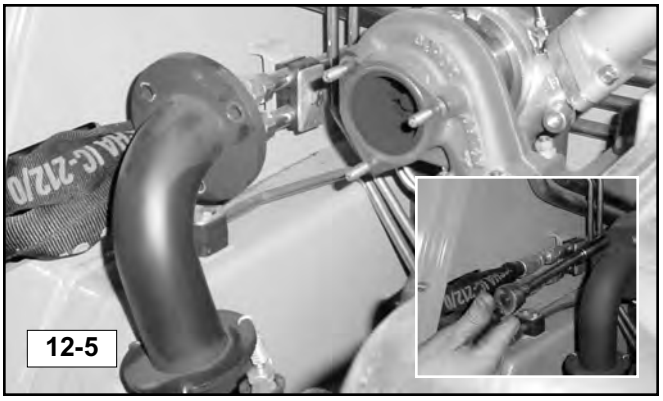
Required Tools
Pry Bar(s)
Combination/Socket Wrench
Rubber mallet
Penetrating Lubricant

The exhaust system is very hot at operating temperature. Make sure the machine is off and cool before attempting to service the exhaust system.

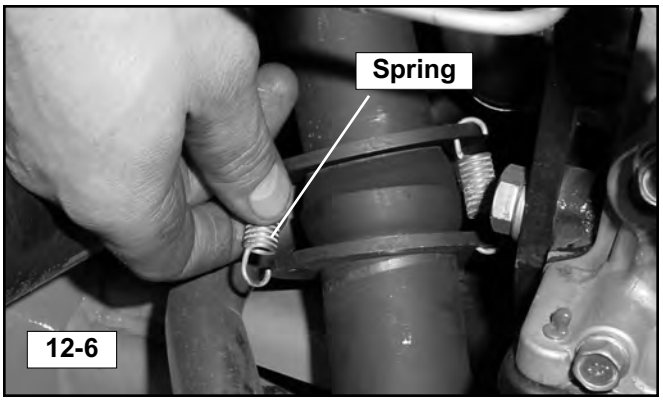
1. Perform the radiator/oil cooler removal procedure on page 8-3 to provide access to the exhaust system components.



2. Remove the bolts securing the rear belly pan and remove it from the machine (fig. 12-4).



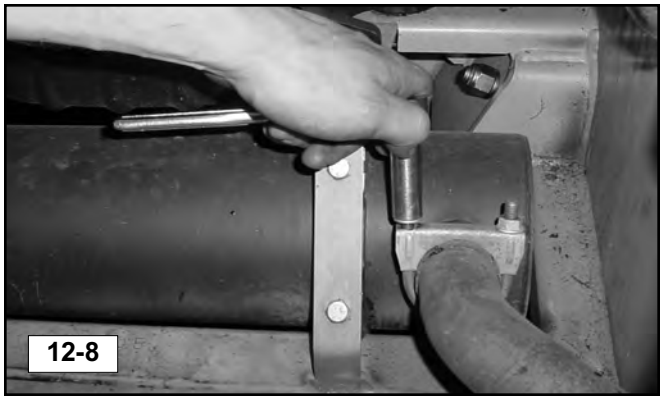
3. Remove the nuts securing the head-pipe to the turbo, then pull it away from the studs (fig. 12-5).



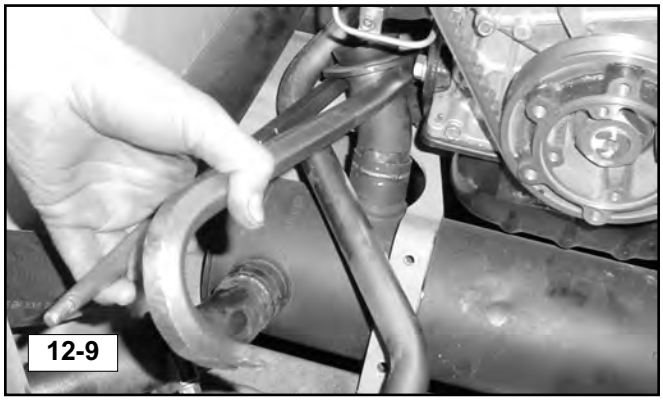
4. Remove the tension springs that secure the middle pipe section to the head (upper) pipe and muffler inlet (lower) pipe (fig. 12-6).



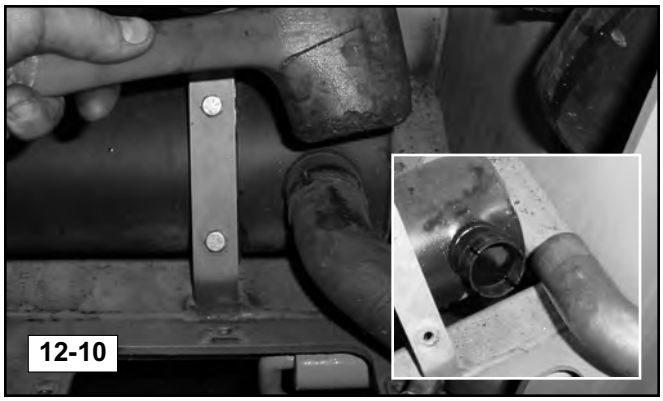
5. Remove the upper and middle pipe sections from the machine (fig. 12-7).
6. Remove the clamps that secure the inlet and outlet pipes to the muffler (fig. 12-8).


12-8

Note: Thoroughly coat all clamped exhaust pipe joints with a penetrating lubricant prior to attempting to remove the pipe sections from the muffler. This will make removal significantly easier.


12-9

7. Remove the inlet pipe from the muffler. It may be necessary to use levers to force the inlet pipe section out of the muffler (fig. 12-9).


12-10

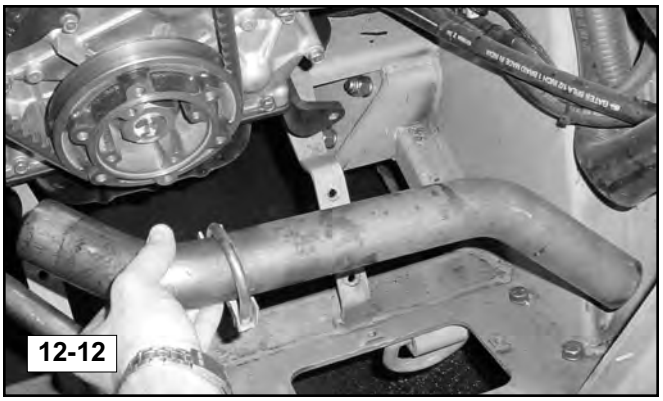
8. Remove the tail pipes from the muffler. If necessary, tap the pipes lightly with a rubber mallet or dead blow hammer to loosen the joints (fig. 12-10).

Note: Use caution not to damage the pipe or connection point during removal.

Note: Use caution when striking the pipes with a mallet. The pipes are easily damaged and may be disfigured by the blows.


12-11

9. Remove the four bolts (and nuts) securing the muffler to the chassis, then remove the muffler (fig, 12-11).


12-12

10. You may now remove the tail pipes by sliding them forward within the chassis, then out. (fig, 12-12).

Installation

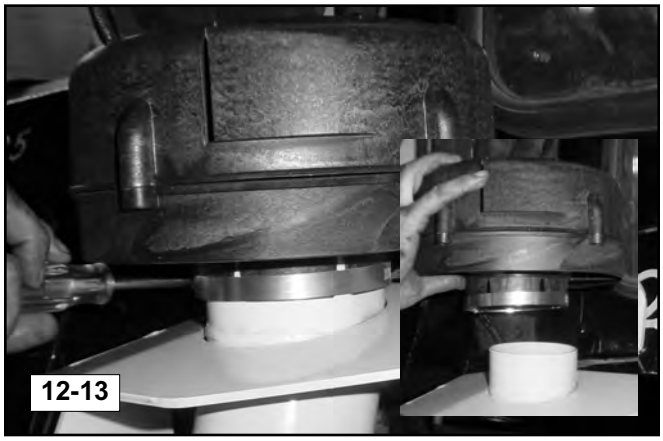
1. To install the exhaust system, reverse the removal procedure.

Air Cleaner

Removal

Required Tools
Combination Wrenches **Socket Wrench & Extension**

1. Open the hood at the rear of the machine.



2. Loosen hose clamp on engine air precleaner filter and remove (fig. 12-13).



2. Remove the bolts that secure the precleaner tube weldment to the chassis, two on top and one to the side (fig. 12-14).



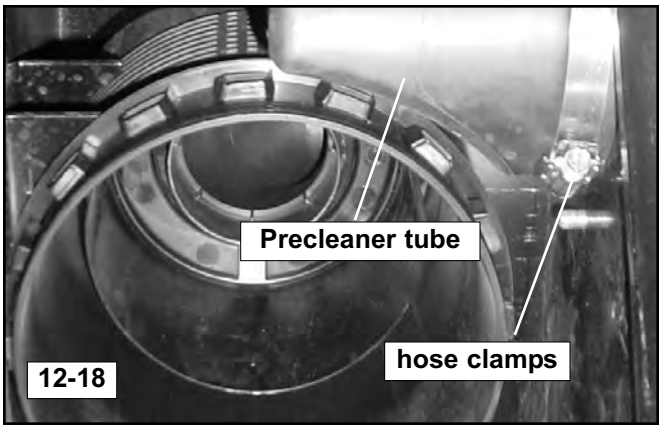
2. Locate and open left tower engine air filter access. Then, pull the yellow slide lock on the air cleaner housing outward as shown. Next, turn the cover approximately 1/8 turn CCW and pull to remove (fig. 12-15).



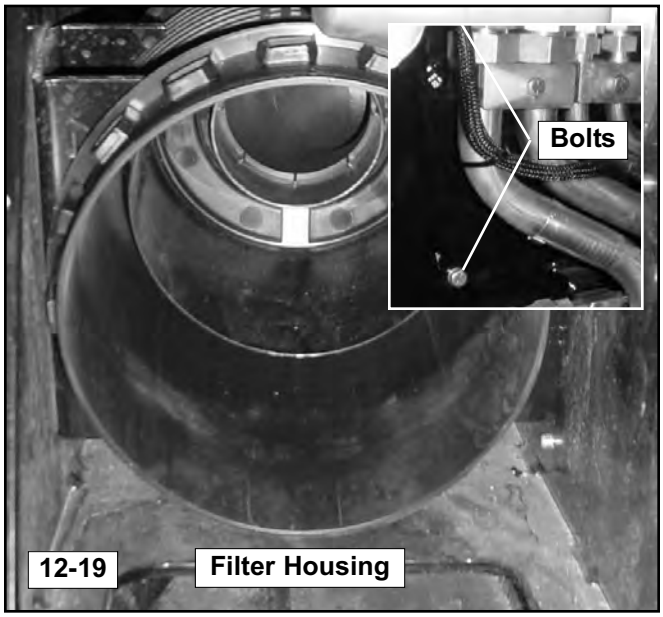
3. Remove the primary element filter (fig. 12-16).



4. Remove the secondary element filter (fig. 12-17).



5. Loosen the two hose clamps that secure the precleaner tube to the side and rear of the compartment and remove (fig. 12-18).



6. Remove the lower bolt located on the engine compartment side of the loader tower that secures the air cleaner housing bracket to the chassis. Follow the bracket upward to locate the second bolt and remove it as well (fig. 12-19).

7. Remove the air cleaner housing from the compartment.

Installation

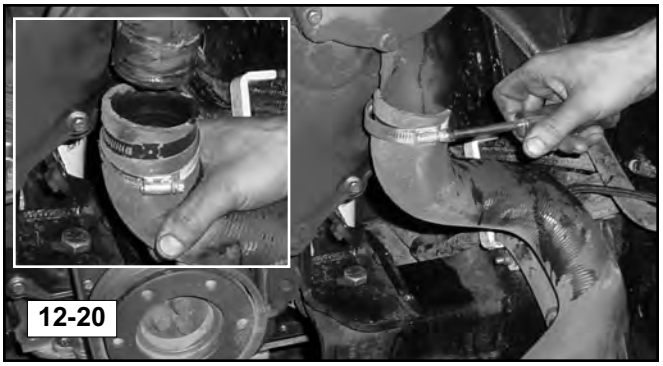
1. To install the air cleaner assembly, reverse the removal procedure.

Engine

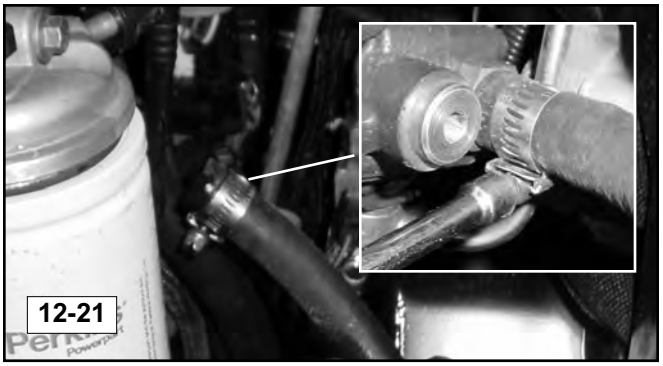
Removal

Required Tools
Combination/Socket Wrenches
Tie Down or Ratchet Strap
Forklift/Engine Hoist
Pry Bar

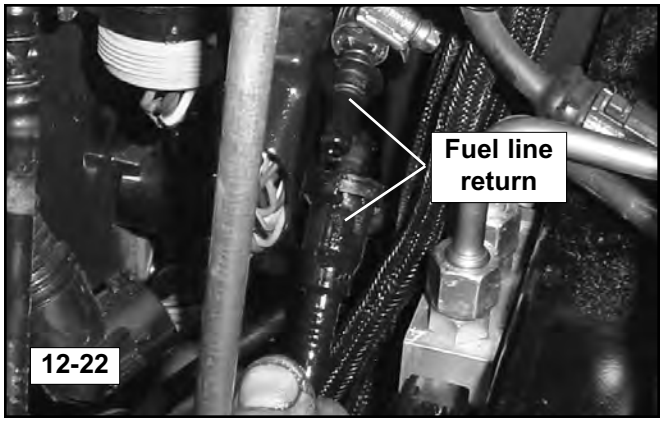
1. Perform the battery, air cleaner, and charge pump, removal procedures in sections 11 and 12 of this manual prior to starting this procedure.
2. Remove the hood assembly as described on page 7-5 of this manual.
3. Raise and support the operator enclosure (cab) as described on page 4-2 of this manual.
4. Perform steps 2-7 of the exhaust removal procedure on page 12-2 of this manual.
5. Remove the center belly pan from the machine.



6. Loosen the hose clamp on the lower radiator hose on the right side of the engine (fig. 12-20).



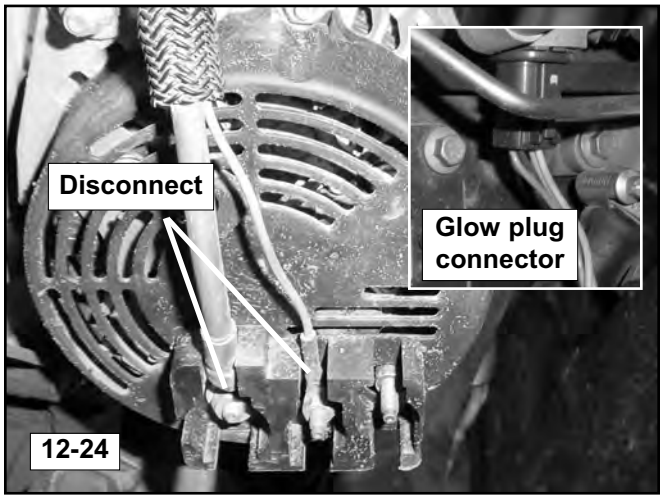
7. Loosen the hose clamp on the fuel line located on the injection pump on the right side of the engine (fig. 12-21).



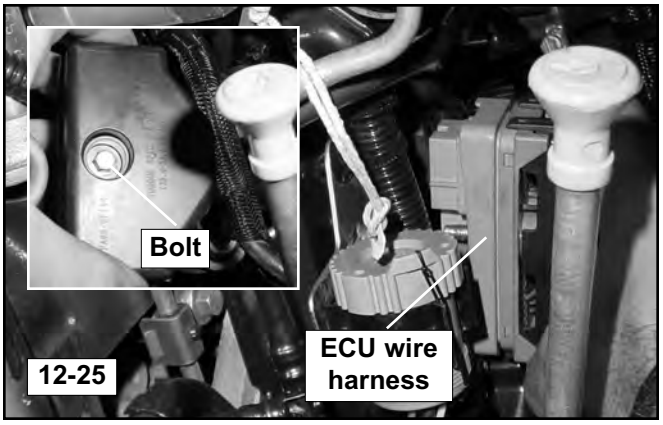
8. Separate the return fuel line connector plug located behind the oil dipstick on the ride side of the engine (fig. 12-22).



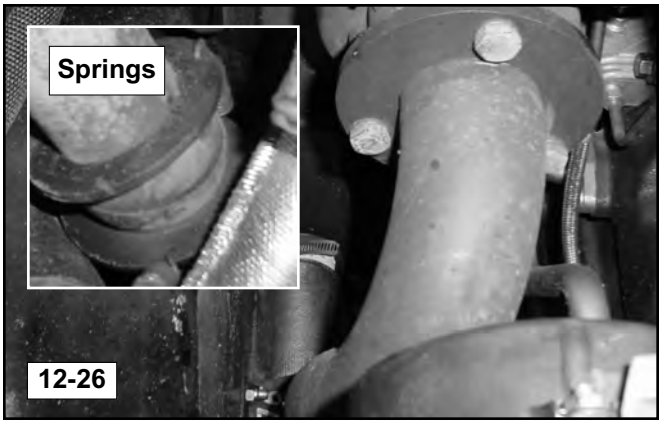
9. Disconnect the battery cable, ground cables, and other wires from the starter on the left side of the engine compartment (fig. 12-23).



10. Disconnect the wire harness from the alternator and the glow plug connector on the left side of the engine compartment (fig. 12-24).



11. Disconnect the ECU wire harness connector from the ECU (computer), located behind the oil dip stick on the right side of the engine compartment and then loosen the center bolt on the connector to allow it to be unplugged (fig. 12-25).



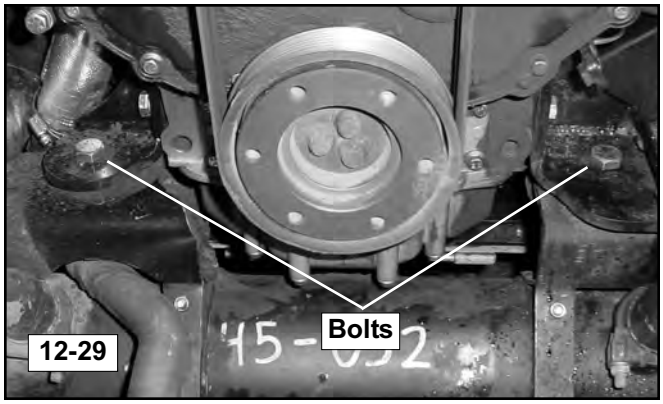
12. Remove the lower three springs from exhaust pipe and then remove the three bolts that secure the pipe to the engine. Remove the pipe (fig. 12-26).



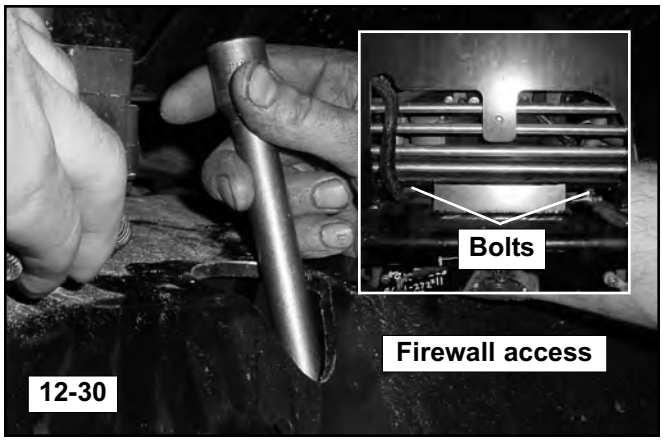
13. Loosen the hose clamp on the air intake located on the left side of the engine and right tower (fig. 12-27).



14. Remove the intake tube from the top of the engine by loosening the hose clamp on the left side and removing the bolts (4) on the right. Once removed, cover the intake connections to the engine to prevent contamination. (fig. 12-28)



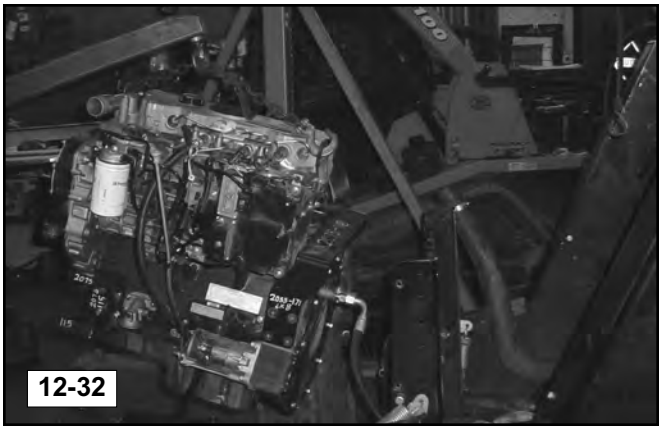
15. Remove the two motor mount bolts near the rear of the engine (fig. 12-29).



16. Access and remove the two front engine mount bolts through the cutouts on the top rear of the firewall. Use an appropriate extension (fig. 12-30).



Note: The rear cab window is directly over the lift point of the engine. It is important to use an engine lifting device that is low in profile and can reach forward between the engine and chassis (as shown in fig. 12-30) or the rear window could be damaged. (fig. 12-31)



17. Attach a device that is capable of safely lifting the engine to the lifting points located on the top of the front and back of the engine. Then slide the engine rearward, and upward to clear the radiator supports. (fig. 12-32)

Installation

1. To install the engine, reverse the removal procedure.

Note: When reinstalling the engine, lightly grease the rubber motor mount surfaces to allow the engine to slide onto them without snagging or disfiguring them.

NOTICE

Once the engine has been installed, make sure to properly reconnect and install all items removed during engine removal to ensure proper operation.

Prior to starting, make sure all fluids are at appropriate levels and that they have not been contaminated with dirt or debris during service. Change fluids or adjust fluid levels as needed to ensure proper operation.

13. Undercarriage

Chapter Overview

This chapter provides removal and installation procedures for the undercarriages.

Note: *For track removal and installation procedures, refer to pages 4-6 through 4-9 of this manual.*

Note: *For drive sprocket removal and roller inspection and replacement, refer to page 4-5 of this manual.*

Personal Safety

Improper or incomplete maintenance/repair of a Compact 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 Compact 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 Compact Track Loader.

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

Machine Preparation

Accidental machine starting can cause injury or death to personnel working on a Compact Track Loader.

As a precaution, disconnect the battery cables from the battery terminals, tape the battery clamps and remove the key from the ignition switch prior to performing any service work on a Compact Track Loader.

Place a “Do Not Operate” tag prominently on the machine to inform personnel that the machine is being worked on.

Removal and Installation

Removal and installation procedures are provided for the following undercarriage components.

- Idler Wheels (Removal and installation)
- Bogie Wheels (Removal and installation)
- Hub Assembly Service Procedures

Note: Procedures are provided for only those components listed above. However, exploded parts diagrams exist in the PT-100G parts manuals to serve as visual aids in the removal and installation of other system components.

15” Idler Wheel

Removal

Note: The 15” idler and 10” bogie wheels may be removed from the PT-100G undercarriages without removing the tracks.

Required Tools
Socket/impact wrench
Heavy duty hydraulic jack
Combination wrench
Terex approved jack stands (2)
Shop vac or Pressure washer

1. Raise and support the machine by following the jacking procedure on page 4-2.

2. Follow the track removal procedure from page 4-6, steps 1-7 for 15” front idler wheel removal.

3. Repeat step 7 of the track removal procedure as necessary to remove the 15” idler wheels throughout the undercarriage.

Installation

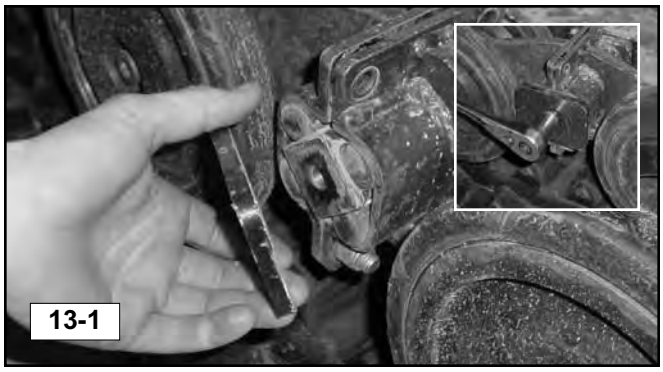
1. To install the 15” idler wheels, reverse the removal procedure. **Torque the wheel mounting bolts upon installation to 105 +/- 10 Lb. Ft / 142 Nm.**

Bogie Wheel

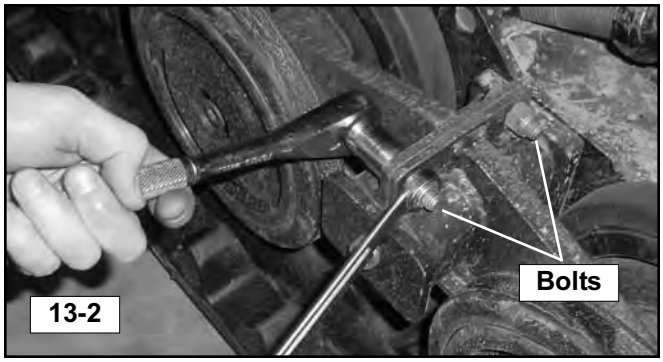
Removal & Service Procedure

Required Tools
Combination/Socket Wrenches (including Allen)
Press & Various Press Tooling
Torque Wrench
Bench Vise

1. Perform steps 1-5 of the 15” idler wheel removal procedure on page 4-6 to loosen the track and provide clearance for bogie wheel removal.

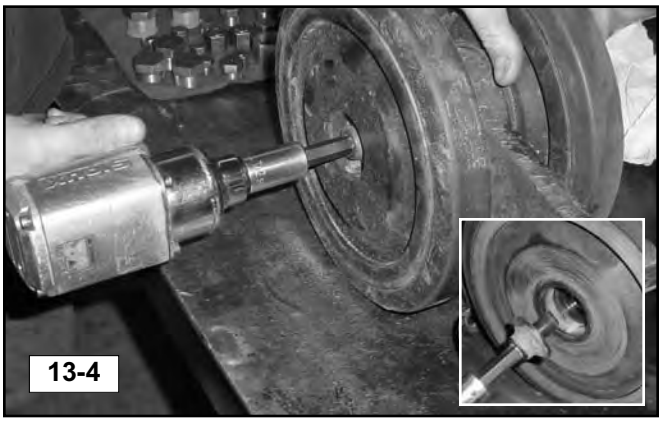


2. Remove the outer plate securing the assemblies to the shaft (Most plates will be a two bolt design. The one bolt version is shown here.) (fig. 13-1).



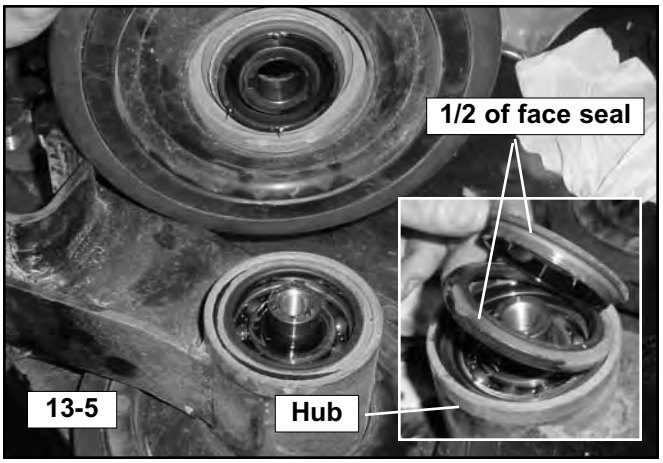


3. Loosen and remove the 4 bolts securing the bogie assemblies together around the mounting shaft (fig. 13-2, 13-3).



4. The inner and or outer bogie wheels may now be removed with an impact wrench and allen socket as shown in (fig. 13-4). If necessary, clamp one wheel in a vise to keep the axle from spinning while you remove the bolts.

Note: The wheel assemblies in the PT machines use metal face seals to keep dirt/debris out of the wheel bearings. During wheel removal/replacement, it is necessary to remove, inspect and clean all components prior to reassembly to ensure proper function.

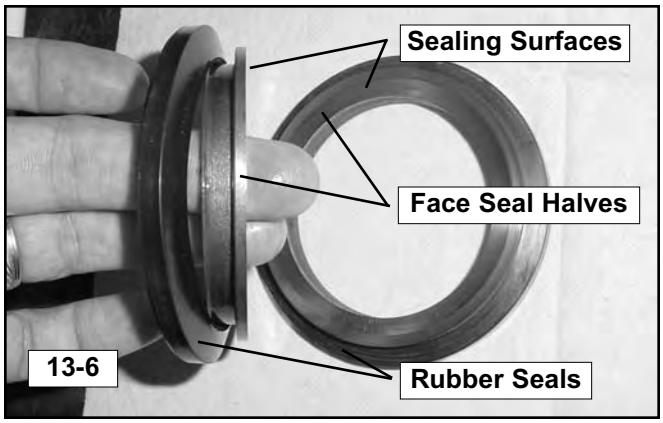


5. Remove both wheels from the hub. (fig. 13-5)

Note: Take care not to drop the metal face seal halves. The sealing surfaces are surface ground and have an extremely fine finish. If scratched or disfigured, the seal will not function as intended.

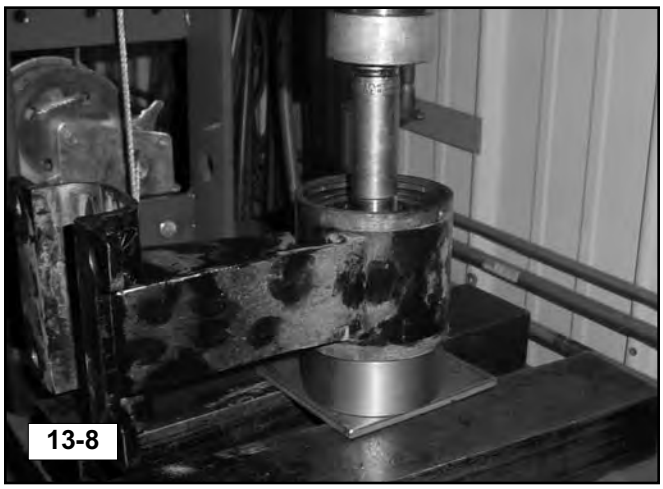
Also, take care not to lose the keys for indexing the wheels onto the shaft.

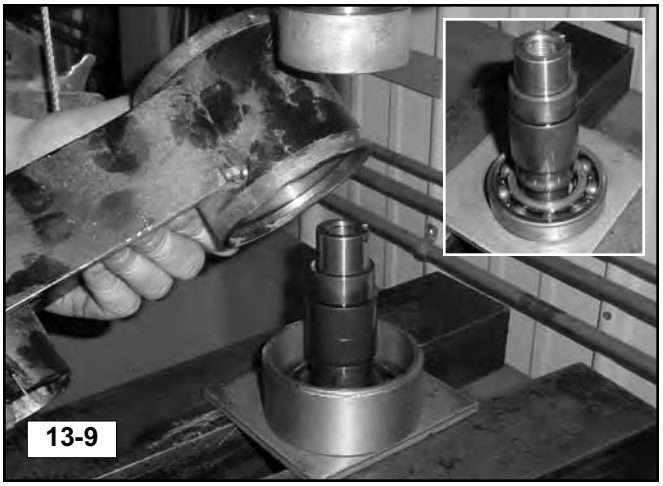
Note: Now is a good time to inspect the components for damage or wear. If the bearings do not roll smoothly when rotated, replace them. If the seals appear worn or damaged, replace them. If the wheels are worn or damaged, replace them. If the components appear to be in good working condition, you may reuse them.





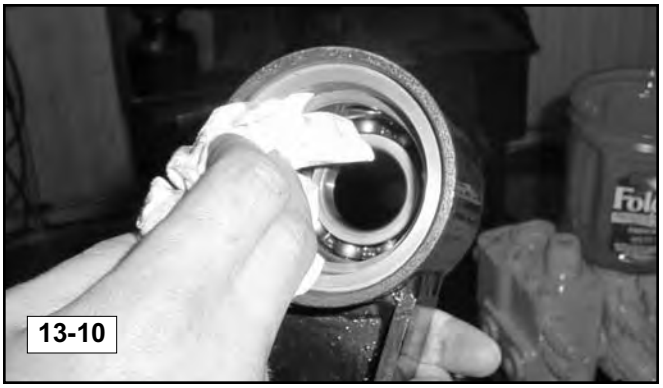
Note: The metal face seals are a 4-piece design with one rubber outer seal and one metal face seal fitted into each wheel and one rubber outer seal and one metal face seal fitted into each hub. As they are assembled, the metal halves mate and ride against each other on a thin layer of oil to seal out dirt and debris. Figure 13-6 shows the various components that make up a face seal. Figure 13-7 shows the seal as a mated assembly.





6. Once the wheels have been removed, use a press to push the axle and far side bearing out of the hub as shown (fig. 13-8, 13-9).

7. If it is necessary to remove the other bearing for replacement, press it out as well. If not, you may leave this bearing in the hub during cleaning.



8. **Clean all parts** (including wheels) **thoroughly** with parts cleaning solution and **dry them** prior to reassembly. Wipe the inner hub surfaces to remove any solvent or oil residue (fig. 13-10).



9. Reinstall the bearing and shaft into the hub as found upon disassembly, then press the bearing back into the hub over the shaft (fig. 13-11).

10. Disassemble and clean the face seals and their rubber outer seals thoroughly, then wipe them dry to ensure a good seal when assembled.



11. Once the seals and hub have been thoroughly cleaned and dried, reinstall the hub portion of the face seal into the hub as shown. Make sure to work the rubber seal down into place within the hub (until it seats) to ensure a good seal (fig. 13-12).



12. Similarly, reinstall the wheel portion of the face seal into the (clean) wheel. Make sure to work the rubber seal down into place within the wheel (until it seats) to ensure a good seal (fig. 13-13).







13. Once the seals are in place, wipe the mating surfaces of the face seals with a clean shop cloth and alcohol in a circular motion ending in a gentle sweep from the inside to the outside of the face until clear of the face. This will ensure a clean mating surface and a good seal (fig. 13-14, 13-15).

14. Apply a **very thin** coating of fresh 10W30 engine oil onto the seal faces **(faces only)** in a circular motion to provide lubrication and help them seal.



15. Align the wheel hub and axle, then slide the wheel back onto the axle/hub assembly as shown in figure 13-16.



16. Install the key into the opening in the axle/hub assembly as shown. (fig. 13-17)



17. Apply red (high strength) thread locking compound to the wheel retaining bolt as shown (fig. 13-18).



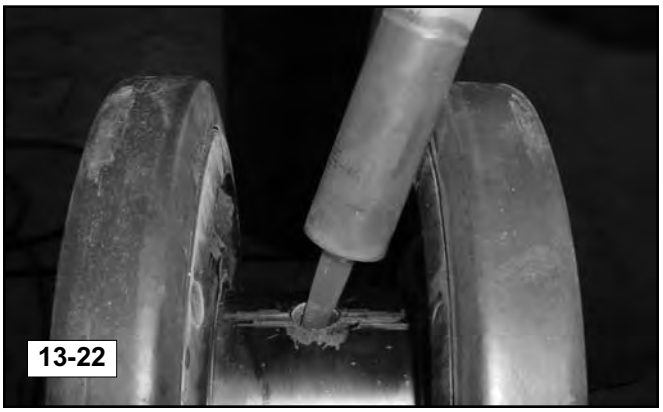
18. Install the bolt and tighten it (fig. 13-19).

19. If you haven't already, repeat steps 10-18 of this procedure on the other side of the hub/wheel assembly to secure the second wheel in place.



20. Once the hub/wheel assembly is together as shown, torque the wheel retaining bolts to 180 ft. lbs. / 244 Nm to secure them in place (fig. 13-20).





21. Remove the allen plug from the center of the hub assembly and fill it with 2 ounces of 10W-30 API CH-4 engine oil. Then reinstall the plug (fig. 13-21, 13-22).

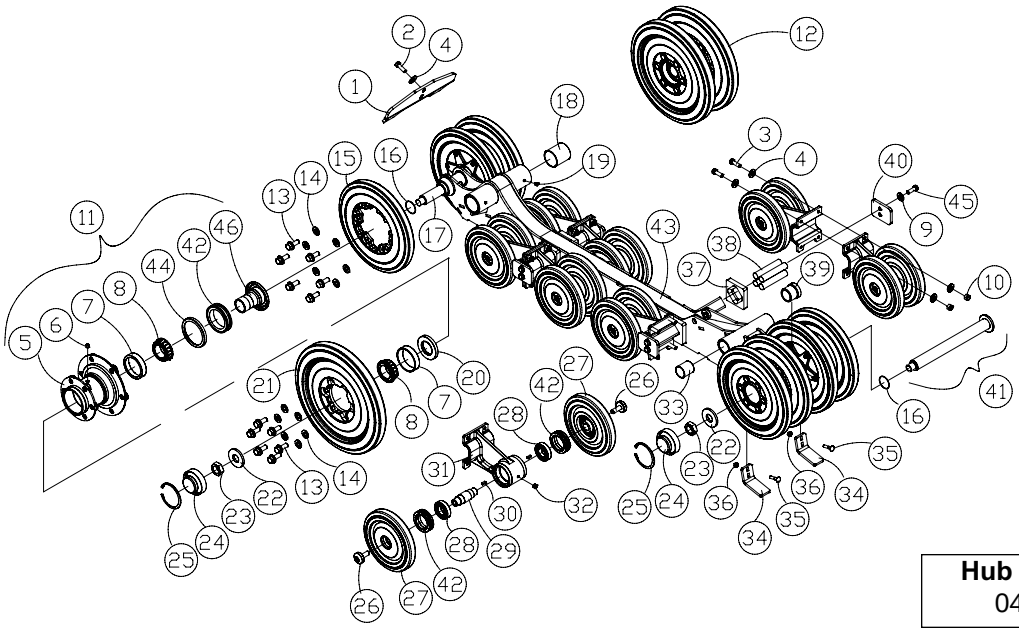
22. Repeat this procedure on the other half of the bogie assembly if necessary prior to installing the two halves back onto the undercarriage.



23. Place the rubber rods back into position on the square shaft, then tape them in place to keep them secure while installing the bogie assemblies around them (fig. 13-23).

24. Reverse steps 1-3 of this procedure to reinstall the bogie assembly back onto the undercarriage and complete the procedure.

25. Repeat this procedure as necessary throughout the undercarriage to restore proper function.



13-24

Hub Tool Kits
0403-339

Idler Hub

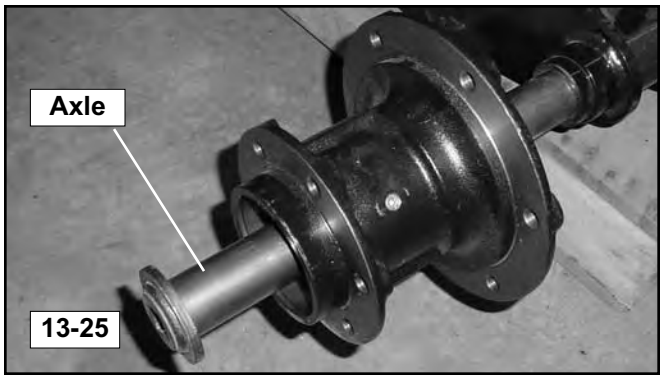
Service Procedure

Required Tools
Socket Wrench & Sockets (including Allen) **Press & Tool Kit** (0403-339) **Snap Ring Pliers**

1. Remove the hub assemblies from the undercarriages as required first by following steps 1-7 of the track removal procedure on page 4-6. Then proceed to the steps below.

2. Remove the snap ring (item 25) securing the cap (item 24) in the hub assembly (fig. 13-24).

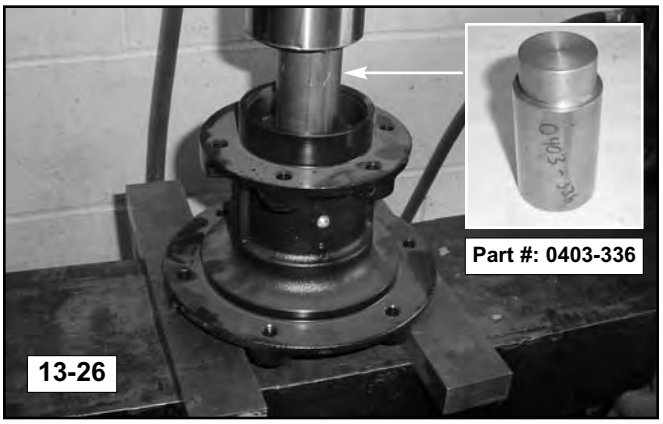
3. Remove the nut (item 23) and the washer (item 22), then remove the hub assembly from the axle shaft (fig. 13-24). (see note below)



13-25

Note: If you are removing the inner front hub assembly, you will have to slide the axle (item 41) out of the main rail weldment to remove it (fig. 13-24, 13-25).

Note: If you are removing the outer or rear hub assemblies you will be able to remove the hub assembly once step three is complete.



13-26

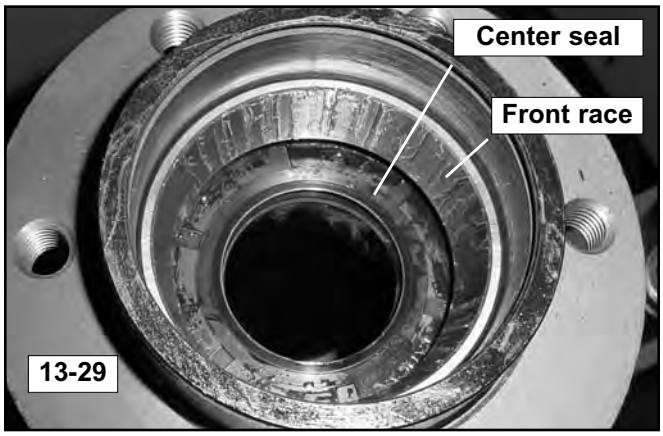


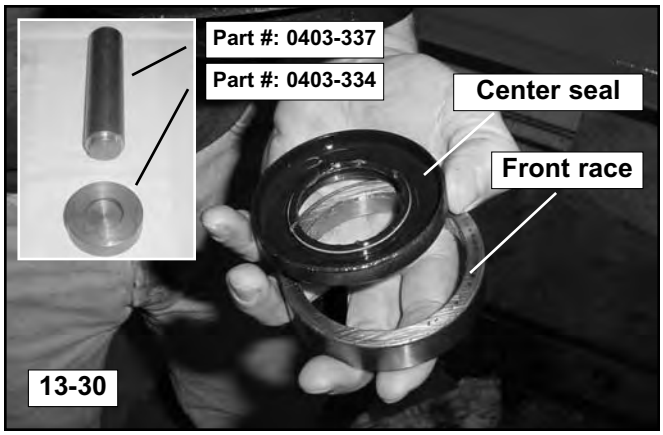
13-27

4. Using a press and tool part # 0403-336, press the bearing sleeve out of the hub assembly (fig. 13-26, 13-27).



5. Remove the bearing out of the front of the hub as shown (fig. 13-28).



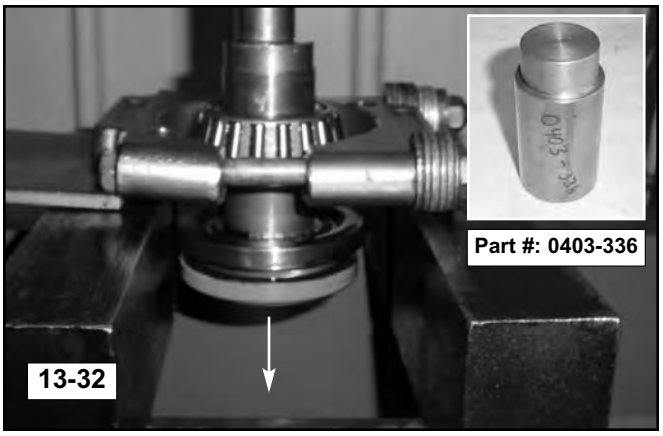


6. Press the center seal and front bearing race out of the assembly from the rear of the hub using tools 0403-337 and 0403-334 (fig. 13-29, 13-30).

Note: The center seal will be destroyed during removal and must be replaced upon reassembly.



7. If bearings are to be replaced, press the rear bearing race out of the assembly from the front of the hub with tools 0403-337 and 0403-333 (fig. 13-31).



8. Press the bearing sleeve out of the rear bearing using tool 0403-336 (fig. 13-32).



9. Remove the face seals and retaining ring from the bearing sleeve for cleaning and or replacement (fig. 13-33).

Note: Take care not to drop the metal face seal halves. The sealing surfaces are surface ground and have an extremely fine finish. If scratched or disfigured, the seal will not function as intended.

Note: Now is a good time to inspect the components for damage or wear. If the bearings do not roll smoothly when rotated, replace them. If the seals appear worn or damaged, replace them. If the wheels are worn or damaged, replace them. If the components appear to be in good working condition, you may reuse them.

10. Thoroughly clean all parts with parts cleaning solution and gently blow them clean with air if necessary, then wipe dry.

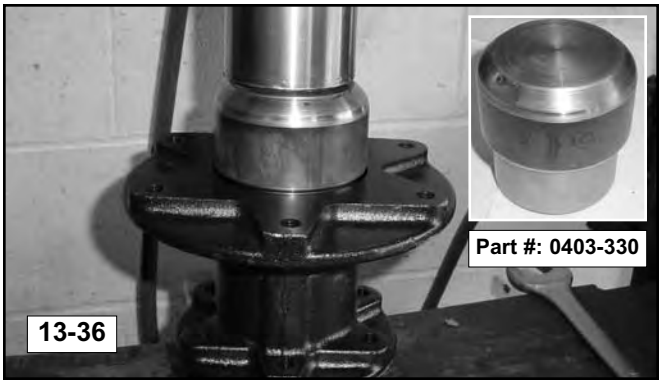
11. Disassemble and clean the face seals and their rubber outer seals thoroughly, then wipe them dry to ensure a good seal when assembled.



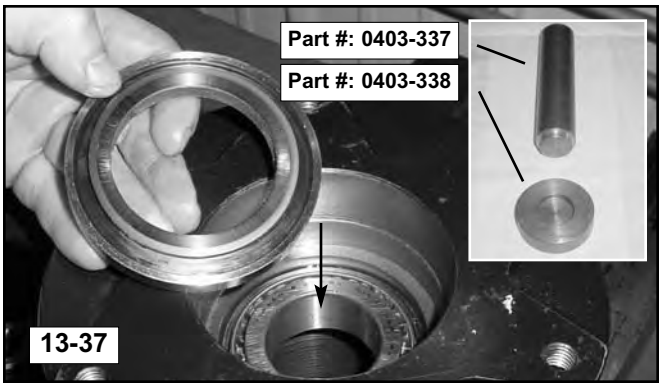
12. Once components are clean and dry, install half of the rear face seal into the bearing sleeve. Make sure to work the rubber seal down into place within the seal recess (until it seats) to ensure a good seal (fig. 13-34).



13. Install the other half of the rear face seal into the retaining ring. Make sure to work the rubber seal down into place within the ring (until it seats) to ensure a good seal (fig. 13-35).



14. If the rear race has been removed, press it into the hub from the rear until properly seated with tool # 0403-330, then install the clean, dry bearing (fig. 13-44).





15. Install the seal/retaining ring assembly into the rear of the hub and press into place until seated using the tools shown above (fig. 13-37, 13-38).

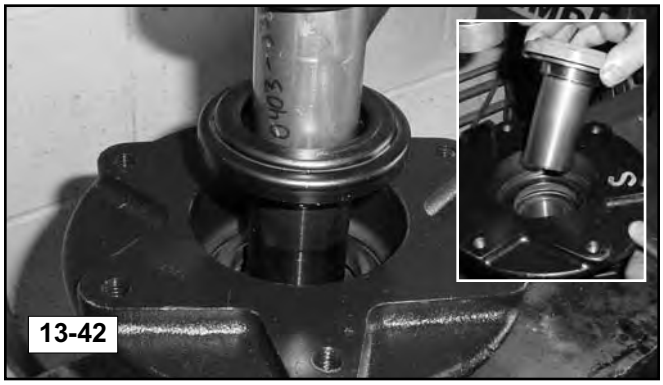




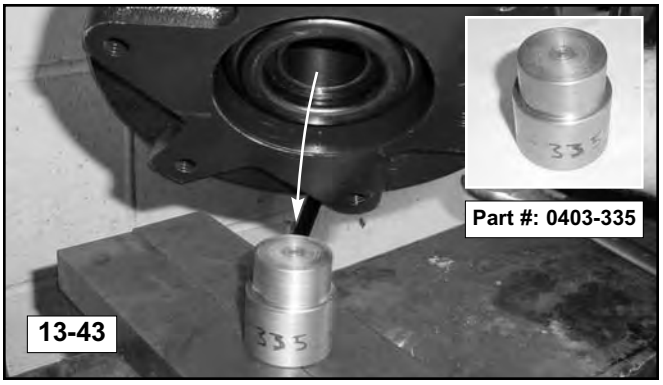
16. Once the seals are in place, wipe the mating surfaces of the face seals with a clean shop cloth and alcohol in a circular motion ending in a gentle sweep from the inside to the outside of the face until clear of the face.This will ensure a clean mating surface and a good seal (fig. 13-39, 13-40).



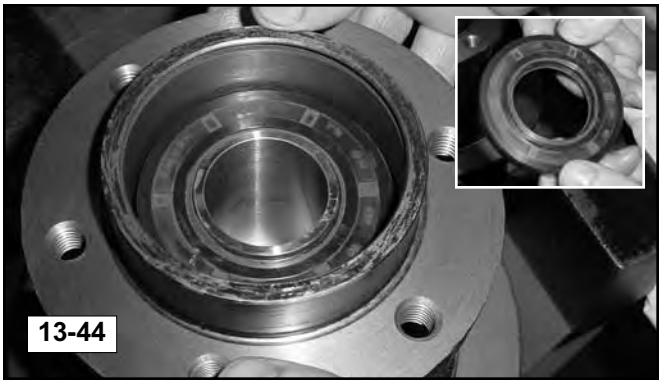
17. Apply a **very thin** coating of fresh 10W30 engine oil onto the now clean seal faces (faces only) in a circular motion (fig. 13-41).



18. Press the bearing sleeve assembly (with face seal clean, installed, and oiled) into the hub with tool 0403-336 until seated (fig. 13-42).



19. Flip the hub over, support the bearing sleeve from the bottom with tool 0403-335 and set it onto the press for center seal installation (fig. 13-43).



20. Install the center seal into the hub. Work the lip around the bearing sleeve with your fingers prior to pressing it into place (fig. 13-44).

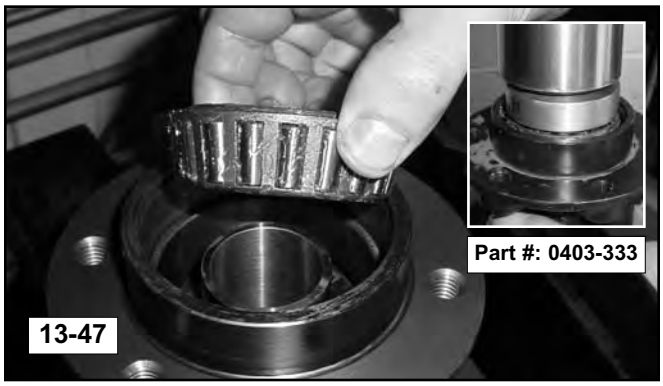


21. Install the race into the hub as shown above the seal. When the race is pressed into place, it will push the seal into position (fig. 13-45).

Note: See step 22 for tool information and race installation instructions.

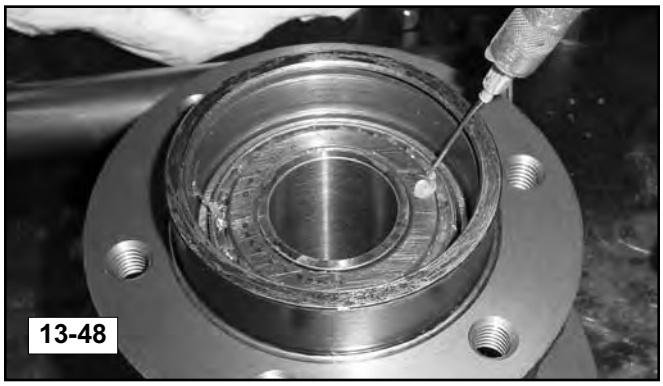


22. Press the outer bearing race into the hub with tool # 0403-330 until it seats (fig. 13-46).

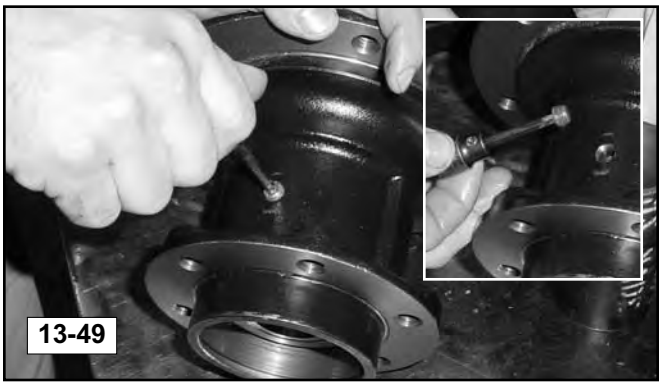


23. Pack the bearing with Terex Multi-Purpose EP Lithium Grease and then install it onto the bearing sleeve using tool 0403-333 (fig. 13-47).

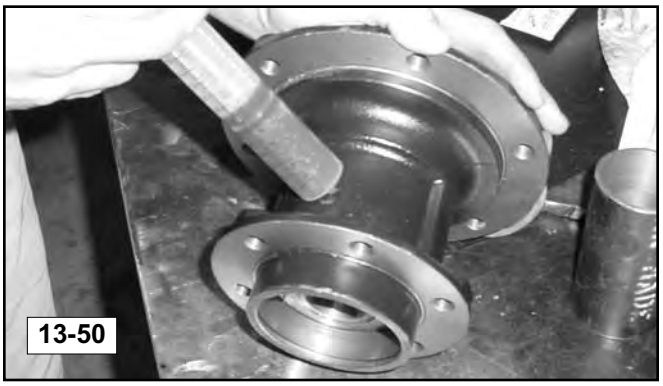
24. Press it into the assembly until it gently seats into the bearing race (fig. 13-47).



25. If necessary, use a needle dispenser to fill any places in the bearing that are not full of grease to ensure adequate lubrication (fig. 13-48).



26. Remove the allen plug in the center portion of the hub (fig. 13-49).



27. Add 2 oz. of 10W-30 (API CH-4) engine oil to the hub as shown, then reinstall the plug and tighten (fig. 13-50).



28. The hub assembly is now ready to be reinstalled. To install it onto the machine, reverse steps 1-3 on page 13-7 of this procedure. Make sure to read the note below step 3 prior to reinstalling (fig. 13-51).

29. Repeat this procedure throughout the undercarriage as necessary to repair worn or damaged components and restore proper function.

Front and Real Axles

Removal

Required Tools
Socket/impact wrench
Heavy duty hydraulic jack
Combination wrench
Terex approved jack stands (2)
Shop vac or Pressure washer

Note: The front and rear axles may be removed from the chassis while leaving the suspension components intact.

1. Suspend machine from the ground as described in jacking procedure on page 4-2 using Terex approved jack stands.



2. Remove the three bolts that secure the suspension mount bracket to the front axle (fig. 13-52).



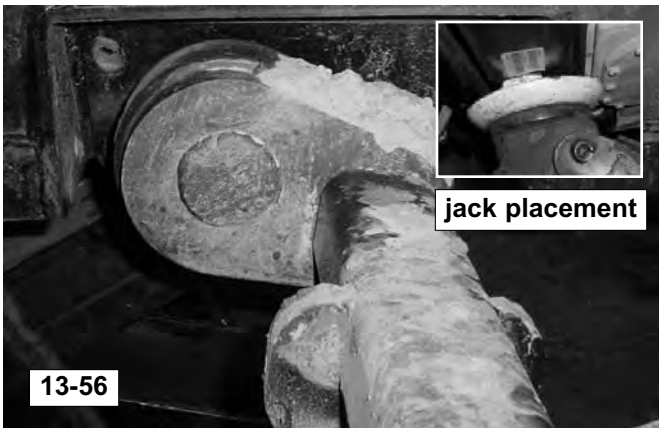
3. Remove the two bolts that secure the suspension retaining plate to the rear axle (fig. 13-53).



4. Remove the four bolts that secure the drive hose guides located on both the right and left sides of the chassis (fig. 13-54).



5. Support each undercarriage with a suitable lifting device, then slide each of the undercarriages outward and off of the axles (fig. 13-55).



6. Support the axle with a suitable lifting device (as shown), then remove the four bolts that secure front and rear axles to each side of the chassis (fig. 13-56).

Note: Always place the jack beneath the center of the axle.



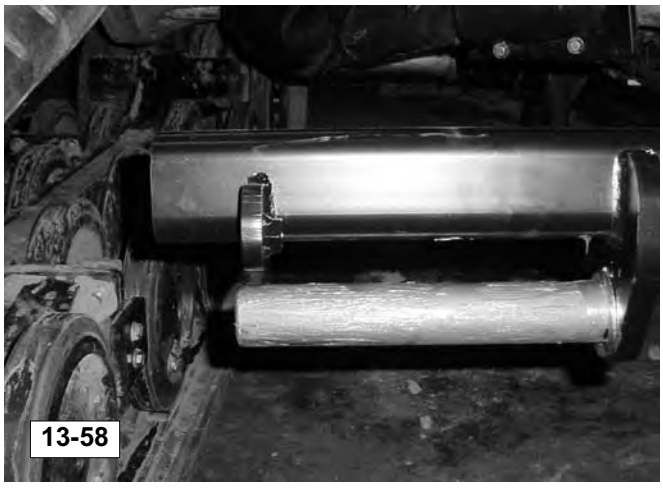
7. Lowerand remove front and rear axles (fig. 13-57).

Note: Supprt the axles at the ends while lowering to keep them steady on the lifting device as they are lowered.

Installation

1. To install rear and front axles, reverse the removal procedure.

Note: Before installing each undercarriage onto the rear and front axles, coat each axle shaft with anti-seize compound (fig. 13-58).



14. Lift-Arm Components

Chapter Overview

This chapter provides removal and installation procedures for the lift-arm components.

Personal Safety

Improper or incomplete maintenance/repair of a Compact 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 Compact 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 Compact Track Loader.

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

Machine Preparation

Accidental machine starting can cause injury or death to personnel working on a Compact Track Loader.

As a precaution, disconnect the battery cables from the battery terminals, tape the battery clamps and remove the key from the ignition switch prior to per-forming any service work on a Compact Track Loader.

Place a “Do Not Operate” tag prominently on the machine to inform personnel that the machine is be-ing worked on.

NOTICE

The hydraulic system fluid should be changed following any hydraulic component service according to the procedure described on page 4-14.

Removal and Installation

Removal and installation procedures are provided for the following lift-arm components.

- Lift Cylinder
- Bucket/Tilt Cylinder
- Quick Coupler Block PRV

Note: Procedures are provided for only those lift-arm components listed above. However, exploded parts diagrams exist in the PT-100G Parts manual to serve as visual aids in the assembly and disassembly of other system components.

Note: Refer to page 3-1 through 3-3 for pictorial views of the hydraulic systems and components.

Lift Cylinder

Removal

Required Tools
Combination/Open End/Socket Wrenches
Hydraulic Caps/Plugs (various sizes)
Terex Approved Jack Stand (or equivalent)
Pin Removal Tool (P/N: 2045-277)

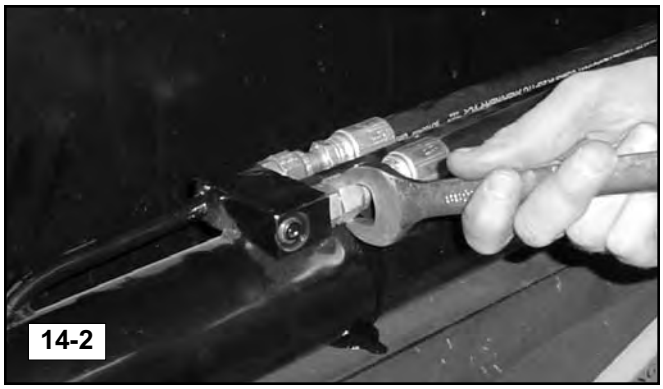
NOTICE

Cap and plug all fittings and hoses to prevent fluid loss and or contamination during service work.

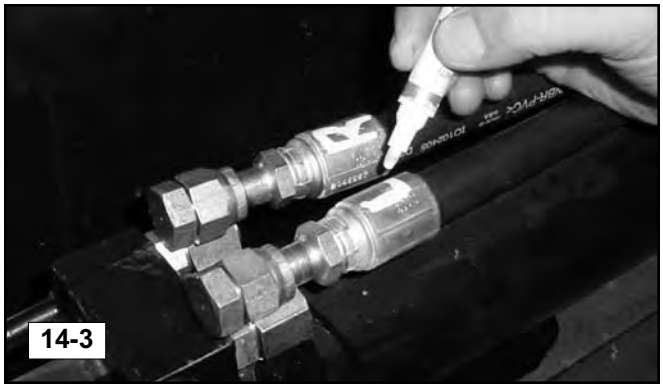
Remove any attachment, lower or safely support the lift arms and make sure the hydraulic oil is cool before removing any components or lines. Hot or pressurized oil can cause personal injury.



1. Rest the lift arms on an Terex approved jack stand to provide clearance for lift cylinder removal. (fig. 14-1)



2. Disconnect the inlet and outlet hoses from the cylinder. (fig. 14-2)



3. Label the hoses according to right and left orientation to simplify reassembly, then cap and plug the hoses and fittings to prevent fluid loss and or system contamination. (fig. 14-3)



4. Remove the bolts securing the front and rear lift arm cylinder pivot pins to the lift arm and lift arm tower. (fig. 14-4)



5. Remove the grease fitting from the pivot pins to allow the installation of the pin removal tool. (fig. 14-5)



6. Thread the removal tool into each pin, then use the slide hammer to extract them. (fig. 14-6)



7. Remove the cylinder from the machine for service or inspection. (fig. 14-7)

Note: At this time the pivot bushings and pivot pins are easily accessible for replacement. Inspect them for visible wear or damage and replace them as necessary .

Installation

1. To install the lift arm cylinder, reverse the removal procedure.

Bucket/Tilt Cylinder

Removal

Required Tools
Socket Wrench
Combination/Open End Wrench
Hammer
Punch (brass)



1. Raise the lift arms and support them with the lift arm brace as described on page 4-1. (fig. 14-8)



2. Place a suitable catch container beneath the cylinder fittings, then disconnect the inlet and outlet hoses from the cylinders. (fig. 14-9)

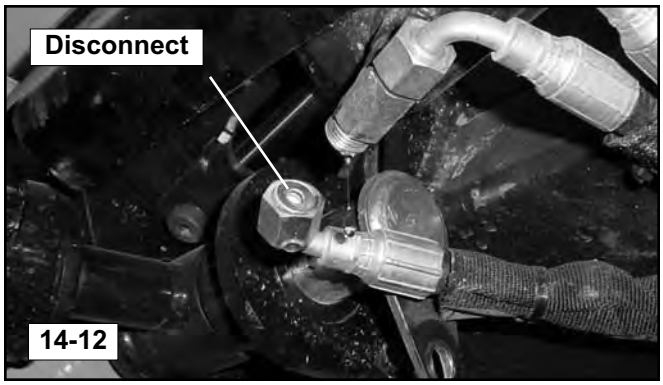
3. Cap and plug the hoses and fittings to prevent fluid loss and or system contamination.



4. Remove the bolt securing the lower pin to the quick attach. (fig. 14-10)



5. Remove the bolt securing the upper pin to the lift arm weldment. (fig. 14-11)



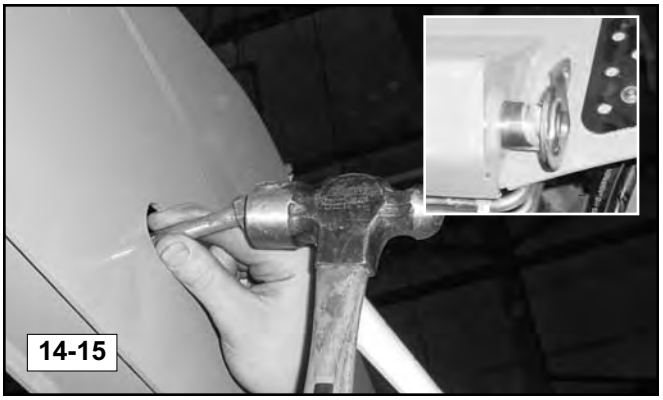
6. Disconnect the outer quick attach cylinder hose (if equipped) to allow the lower pin to be removed. (fig. 14-12)



7. Use a pry bar to slide the lower pin out of the cylinder end allowing it to be removed. (fig. 14-13)



8. Use a pry bar to pry the lower cylinder eyelet out of the upper Q/A mount as shown. (fig. 14-14)

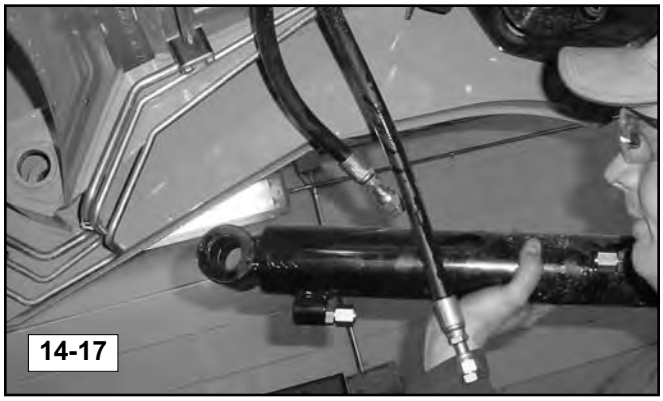


9. Use a hammer and a brass punch to tap the upper pin most of the way out of the lift arm weldment. (fig. 14-15)

Note: Make sure to support the cylinder (have an assistant support it if necessary) while removing the upper pin to prevent it from falling and being damaged or from causing injury to anyone standing underneath.



10. Remove the pin from the cylinder while supporting the cylinder. (fig. 14-16)



11. Remove the cylinder from the machine. (fig. 14-17)

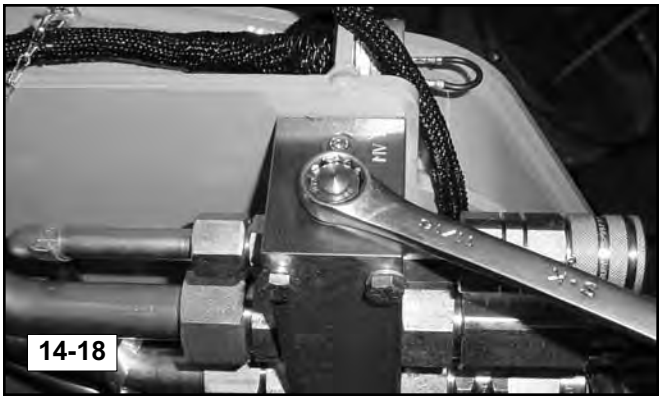
Installation

1. To install a bucket/tilt cylinder, reverse the removal procedure.

Quick Coupler Block PRV

Removal

Required Tools
Combination Wrench



1. With the machine off and cool and with all hydraulic actuators relaxed, loosen the pressure release valve on the top of the auxiliary quick coupler block. (fig. 14-18)



2. Once loose, remove the valve from the block by twisting it counter-clock-wise until free. (fig. 14-19)

Installation

1. To install the Q/C PRV, reverse the removal procedure.

15. Quick Attach

Chapter Overview

This chapter provides removal and installation procedures for the quick attach and associated components.

Personal Safety

Improper or incomplete maintenance/repair of a Compact 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 Compact 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 Compact Track Loader.

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

Machine Preparation

Accidental machine starting can cause injury or death to personnel working on a Compact Track Loader.

As a precaution, disconnect the battery cables from the battery terminals, tape the battery clamps and remove the key from the ignition switch prior to per-forming any service work on a Compact Track Loader.

Place a “Do Not Operate” tag prominently on the machine to inform personnel that the machine is be-ing worked on.

Removal and Installation

Removal and installation procedures are provided for the following quick attach components.

- Quick Attach locking Pin Assemblies
- Quick Attach Pivot Pins

Note: Procedures are provided for only those quick attach components listed above. However, exploded parts diagrams exist in the PT-100G Parts manual to serve as visual aids in the assembly and disassembly of other system components.

Locking Pin Assembly

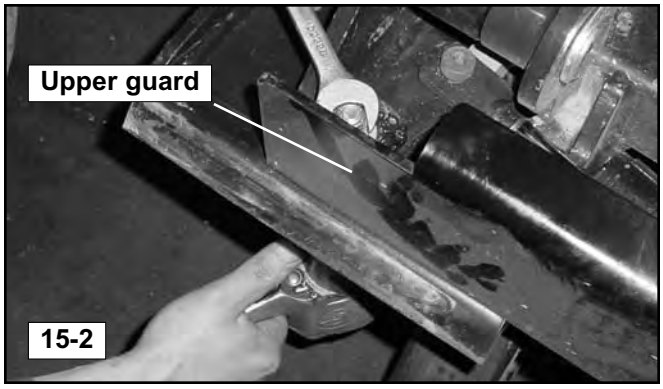
Removal

Required Tools
Combination/Open End/Socket Wrenches Terex Approved Jack Stand (or equivalent)

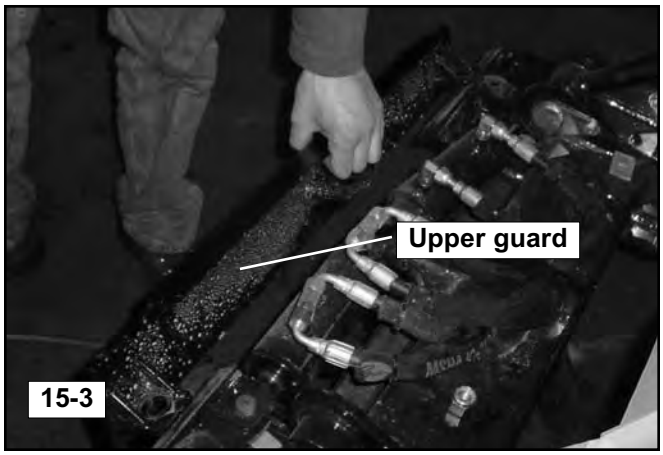
Remove any attachment, lower or safely support the lift arms and make sure the hydraulic oil is cool before removing any components or lines. Hot or pressurized oil can cause personal injury.



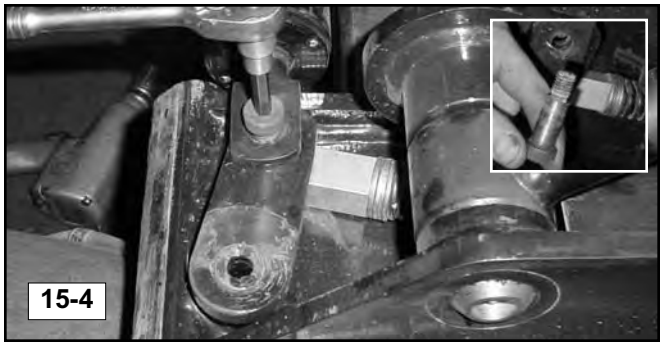
1. Rest the lift arms on an Terex approved jack stand to provide clearance for quick attach disassembly. (fig. 15-1)



2. Remove the bolts (3) securing the upper guard to the quick attach weldment. (fig. 15-2)



3. Remove the upper guard from the quick attach. (fig. 15-3)



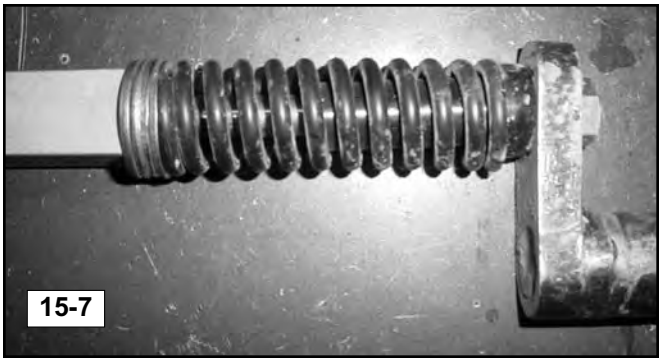
4. Remove the bolt securing the locking pin assembly to the locking cylinder or latch handle. (fig. 15-4)



5. Remove the pivot link from the quick attach. (fig. 15-5)



6. Slide the locking pin assembly out of the quick attach. (fig. 15-6)



Note: At this time the locking pin assembly components are easily accessible for replacement. Inspect them for visible wear or damage and replace them as necessary .

Pay attention to the quantity and position(s) of each component to aid during reassembly. (fig. 15-7)

Installation

1. To install the quick attach locking pin assembly, reverse the removal procedure.

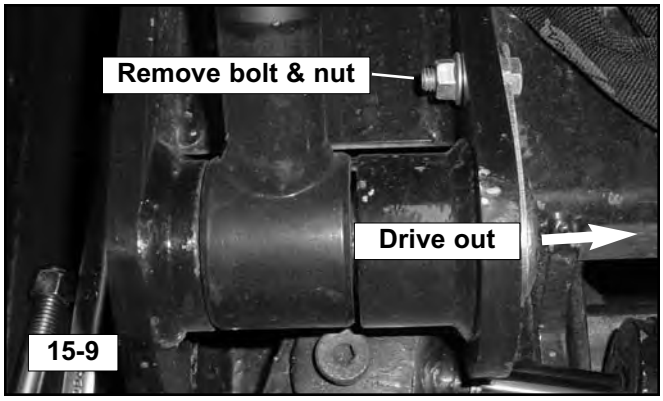
Pivot Pin (quick attach)

Removal

Required Tools
Combination/Open End/Socket Wrenches Terex Approved Jack Stand (or equivalent) Hammer Punch (brass)



1. Rest the lift arms on an Terex approved jack stand to provide clearance for quick attach disassembly. (fig. 15-8)



2. Remove the bolt securing the pivot pin to the quick attach weldment, then drive the pin out with a hammer and brass drift punch. (fig. 15-9)

Note: There are four pivot pins that connect the quick attach to the lift arm and cylinders. All four pins are removed in a similar manner.

Installation

1. To install the quick attach pivot pins, reverse the removal procedure.

2. Repeat this process as necessary to remove and replace worn or damaged quick attach pins.

NOTICE

Disassembly of hydraulic components should only be performed by factory trained personnel experienced in the disassembly and repair of hydraulic components. Components should not be serviced during the warranty period without written instruction from the Terex service department. Component disassembly during this period may void the manufacturer's warranty.

16. Hydraulic Component Service Procedures

Chapter Overview

This chapter provides information on inspection, disassembly and assembly of major hydraulic components.

Personal Safety

Improper or incomplete maintenance/repair of a Compact 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 Compact 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 Compact Track Loader.

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

When servicing any hydraulic component, make sure the machine is off and cool and that all of the hydraulic actuators are relaxed prior to disconnecting or removing any component from the system.

NOTICE

When servicing any hydraulic component, keep in mind that any scratches or damage that can be felt with a fingernail on surfaces that parts move, slide, roll or rotate upon indicate a need for part replacement.

Hydraulic components must be kept extremely clean to ensure proper function and service life. Do not assemble any components that have not been inspected for damage and thoroughly cleaned prior to assembly.

The hydraulic system fluid should be changed following any hydraulic component service according to the procedure described on page 4-16.

Disassembly & Assembly

Disassembly and assembly procedures are provided for the following components:

- Hydraulic Cylinders
- Lift Arm Control Valve
- Drive Pump Reliefs
- Drive Pump Solenoids/Spools
- Auxiliary Pump

Note: Procedures are provided for only those components listed above. However, exploded parts diagrams exist in the PT-100G parts manual to serve as visual aids in the assembly and disassembly of other system components.

Hydraulic Cylinder

Disassembly

Required Tools
Bench Vise
Pipe Wrench
Socket or Impact Wrench
Screwdriver (blade type)
Rubber or Dead Blow Hammer
Small Pry Bar



1. With machine off and cool and with hydraulic actuators relaxed, disconnect and cap hoses from the cylinder(s) to be serviced.

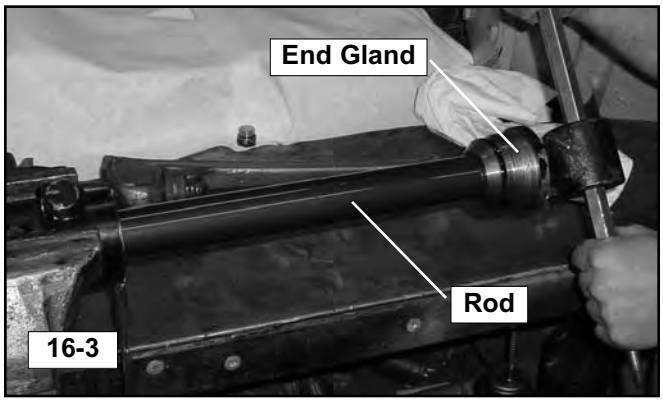
Note: When servicing cylinders, the attached components must be supported in a manner that allows the cylinders to be safely removed and installed. (lift arms & quick attach)

2. Remove the cylinder(s) and secure it in a bench vise to aid in disassembly. (figure 16-1)

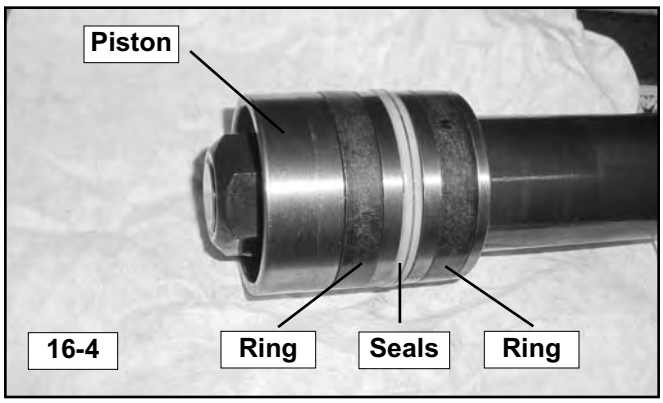
3. Place a suitable catch container beneath the rod end of the cylinder to catch any hydraulic oil that may leak out upon disassembly.



4. Use an open end or pipe wrench to turn and remove the end gland. (fig. 16-2)

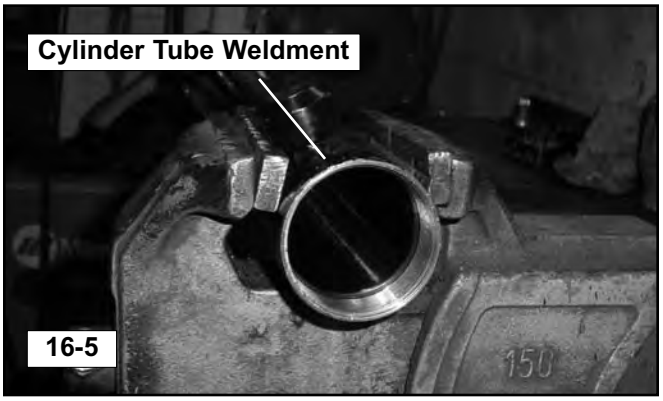


5. Use a pry bar or similar device to pull the rod and piston from the cylinder. (fig. 16-3)

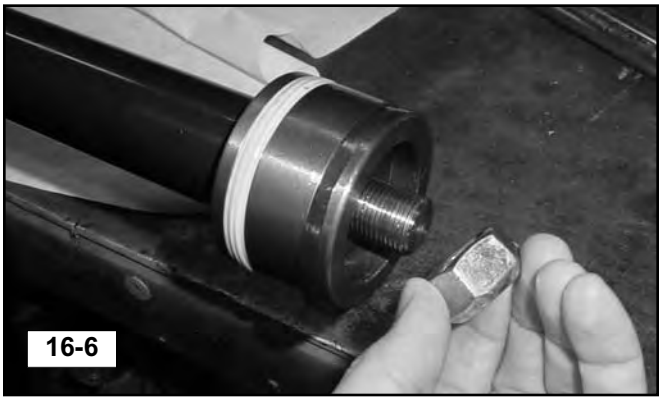


6. Inspect the piston surface, seals and rings for wear or damage. If any component appears to be damaged in any way, replace it. When inspecting the piston surface, look for scratches. If any are present that are deep enough to catch with your fingernail, the piston should be replaced. (fig. 16-4)

Note: Seal imperfections or scratches on the piston, bore or rod or will cause internal/external leakage and impaired function. Defective components must be repaired or replaced.



7. With the piston and rod removed from the cylinder, inspect the cylinder bore for scratches or other damage. If any are present that are deep enough to catch with your fingernail, the cylinder tube weldment should be replaced. (fig. 16-5)



8. Remove the nut from the rod end. (fig. 16-6)



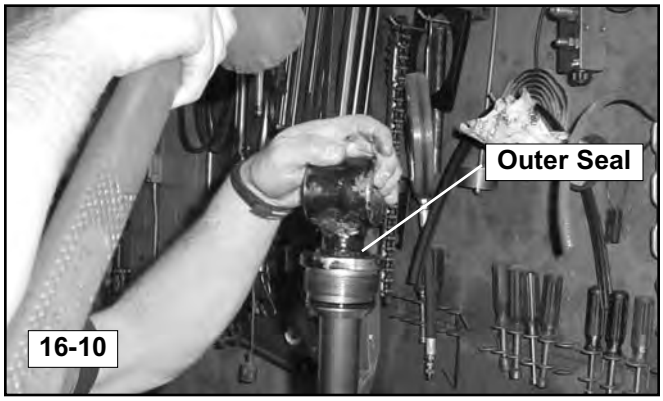
9. Support the piston loosely from the underside (fig. 16-7), thread the nut partially on to protect the threads and tap the rod end with a rubber or dead blow hammer to free the piston from the rod.

10. Once loose, remove the nut and piston from the rod.





11. Remove the seals and piston rings taking care not to scratch the piston. Also, pay close attention to seal and ring orientation and position to aid when installing new parts. (fig. 16-8, 16-9)



12. Gently tap the end gland off of the cylinder rod. (fig. 16-10)



13. Remove the tandem seals from the end gland paying close attention to the order of removal to aid during installation of the new seals. (fig. 16-11)



14. Remove the inner seal from the end gland. Pay attention to the seal orientation upon removal to aid during installation of the new seal. (fig. 16-12)

15. Remove the end gland outer seal from the end gland. (fig. 16-10)

16. Thoroughly clean all parts to prevent contamination of hydraulic oil when reinstalled.

Assembly

1. Install new seals and components in place of the originals paying close attention to orientation and location to ensure proper operation.

2. Lubricate the piston, ring, and seals with fresh hydraulic oil prior to assembly to avoid damage.

3. Reassemble components by reversing the disassembly process.

Note: During reassembly, use an impact wrench to tighten the piston retaining lock nut. Make sure the nut is tight and that there is no independent movement between the piston and rod before reassembling.

Lift Arm Control Valve

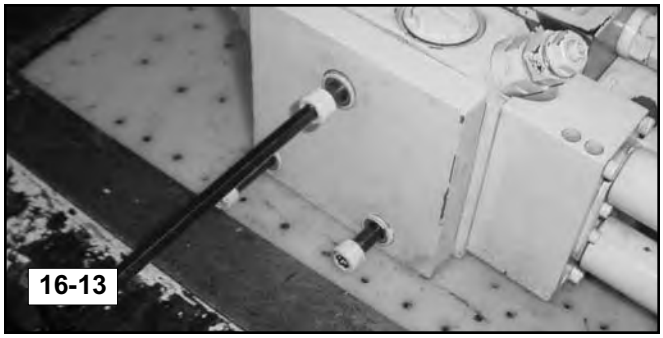
Disassembly

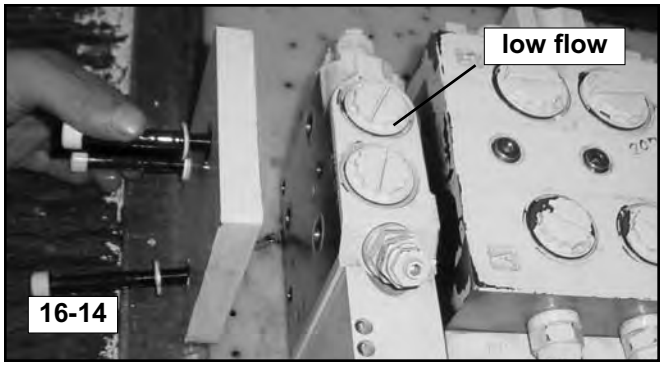
Required Tools
Socket Wrench
Combination Wrench
Screwdriver (blade type)
Allen Wrench

Note: All valve shown can be done with valve in machine.

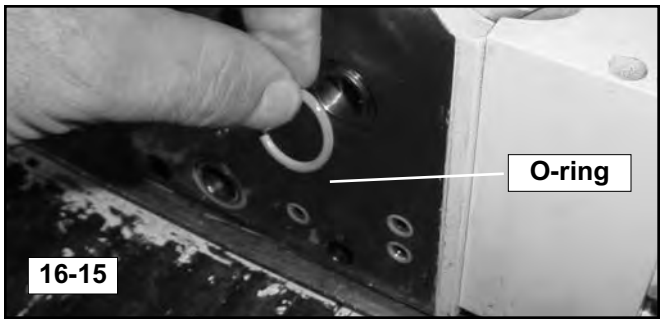
1. With machine off and cool and with hydraulic actuators relaxed, drain hydraulic oil according to the procedure on page 4-14.

2. Remove tubes and fitting from the low flow section of valve. (see Chapter 3)

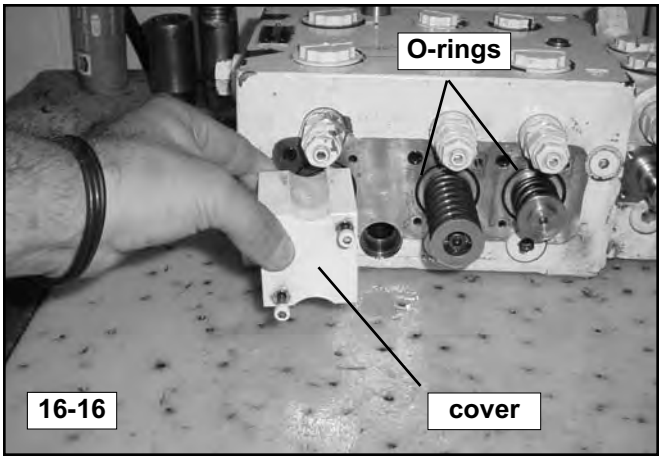


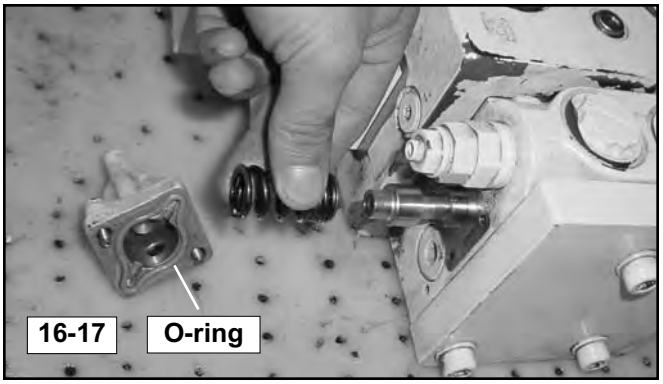


3. Remove the bolts holding the valve stack together. (fig. 16-13, 16-14)

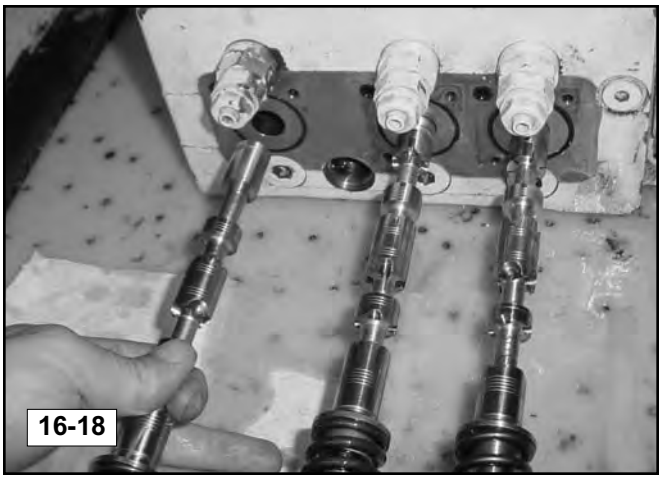


4. Remove valve section and inspect the seals for damage, replace if necessary. (fig. 16-15)





5. Remove the spool covers and inspect the seals for damage, replace if necessary.(fig. 16-16, 16-17)



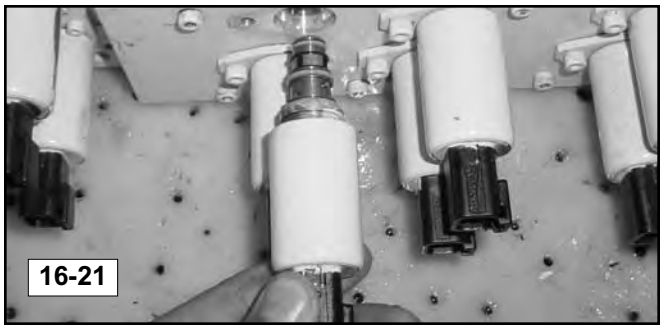
6. Once the spool covers have been removed, the spool may be removed. Inspect the spools for damage, replace if necessary. (fig. 16-16,16-18)

Note: The spools are unique. All spools must be reinstalled as found upon disassembly to function properly.

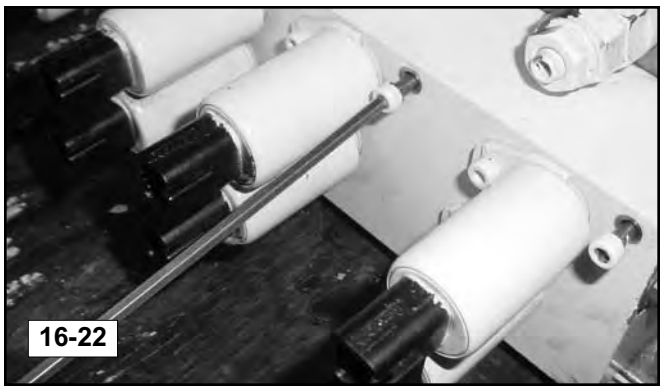




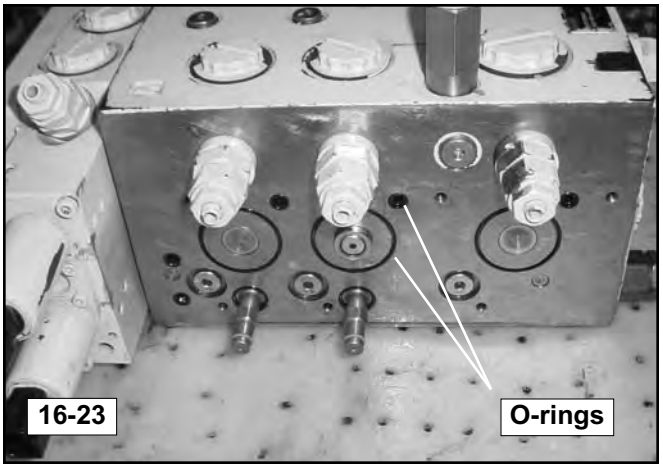
7. To remove solenoids, unplug wiring harness from solenoids, then remove fastener and clamp as shown. (fig. 16-19, 16-20)



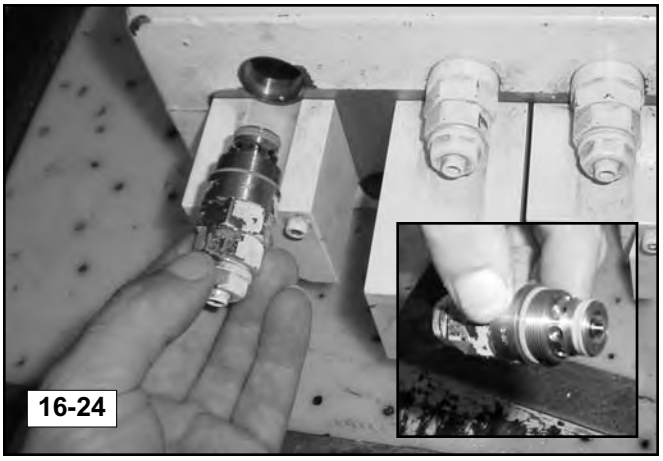
8. Remove solenoid from valve. Inspect solenoid and o-rings for damage, replace if necessary (fig. 16-21)



9. Remove the six fasteners that secure solenoid block to valve . (fig. 16-22)



10. Remove solenoid block from valve, inspect the o-rings for damage, replace if necessary. (fig. 16-23)



11. Remove reliefs from valve, inspect relief and o-rings for damage, replace if necessary. (fig. 16-24)

Assembly

1. Install new seals and components in place of the originals as necessary paying close attention to location and orientation to ensure proper function.

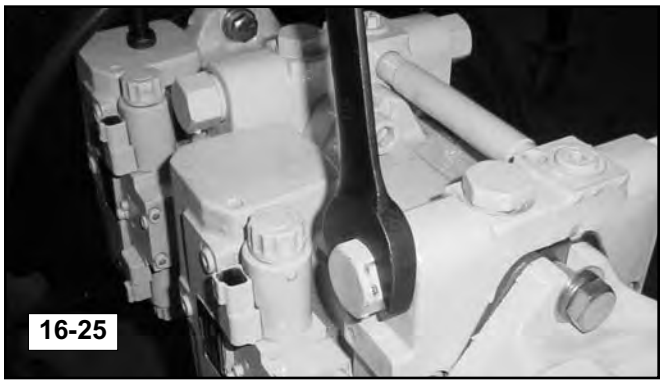
2. Thoroughly clean all components to prevent system contamination.

3. Reassemble components by reversing the disassembly process.

Drive Pump (Drive Relief Valves)
Removal & Adjustment

Required Tools
Allen Wrench/Socket Combination/Socket wrench

1. Make sure the machine isoff and cool and with hydraulic actuators are relaxed.





2. Remove the drive pressure relief valves as shown in (fig.16-25, 16-26)



3. If adjustment is needed (see drive pressure check procedure in section 17), loosen the allen type set screw on the valve (fig. 16-27).



4. Flip the valve over, then tighten the nut to increase the pressure setting (CW) or loosen it to decrease the pressure setting (CCW) (fig. 16-28).

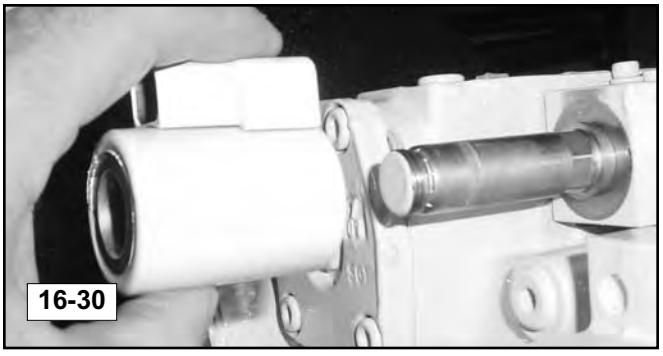
Drive Pump Solenoid/Spool
Disassembly

Required Tools
Combination/Socket wrench

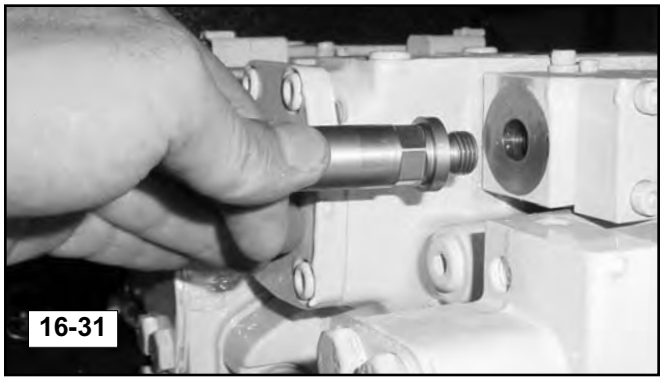
1. Make sure the machine isoff and cool and with hydraulic actuators are relaxed.



2. Remove the nut securing solenoid in place. (fig. 16-29)



3. Remove solenoid from spool. (fig. 16-30)



4. Remove spool from drive pump. Inspect spool and o-ring for damage, replace if necessary. (fig. 16-31)

Assembly

1. To reassemble, reverse the disassembly procedure.

Auxiliary Pump

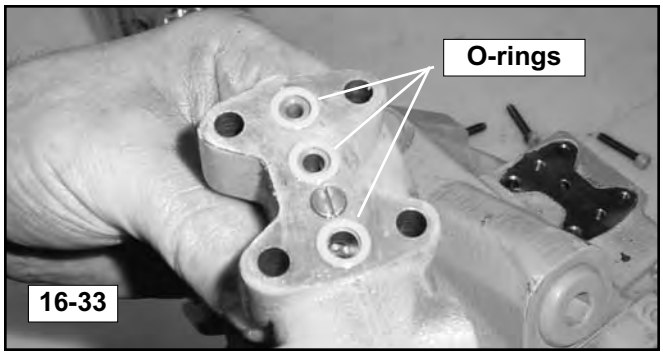
Disassembly

Required Tools
Allen Wrench/Socket Snap Ring Pliers

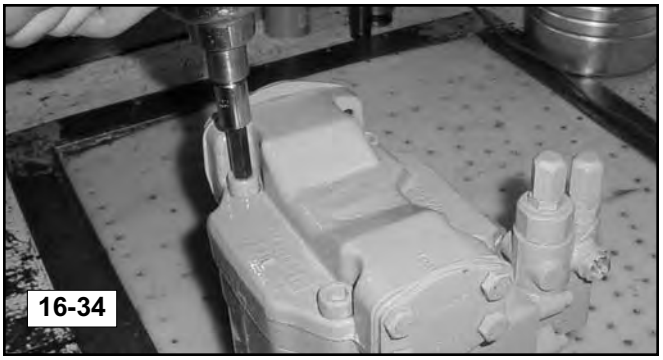
1. With machine off and cool and with hydraulic actuators relaxed, remove the drive pump from the machine by following the procedure in section 11.



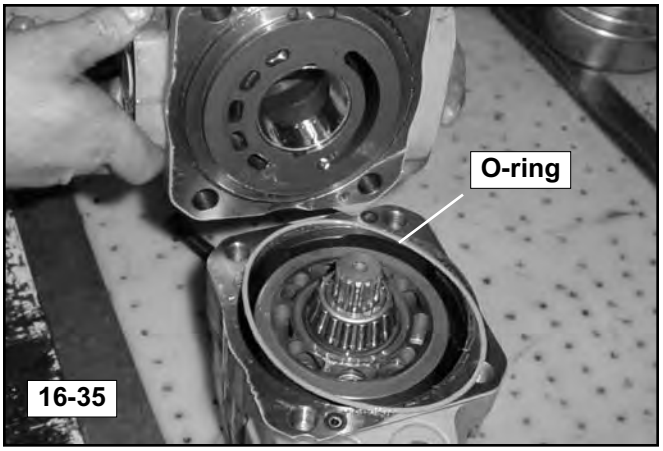
2. Remove the bolts securing the relief valve to the housing. (fig. 16-32)



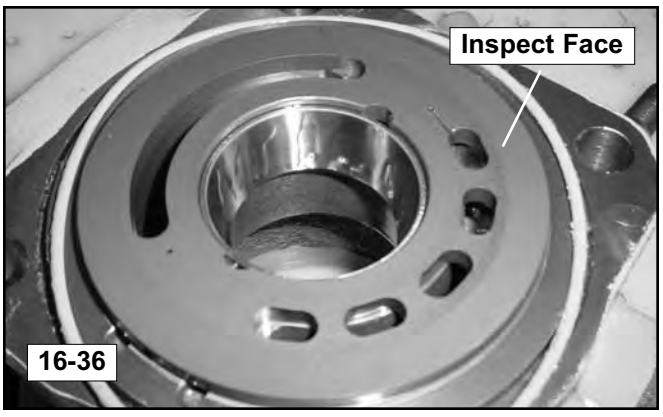
3. Inspect o-rings for proper shape and condition. Replace if necessary. (fig. 16-33)



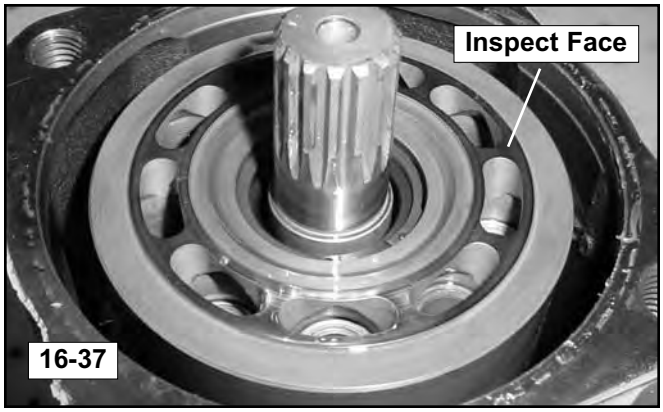
4. Remove the Allen bolts securing the cover onto the pump. (fig. 16-34)



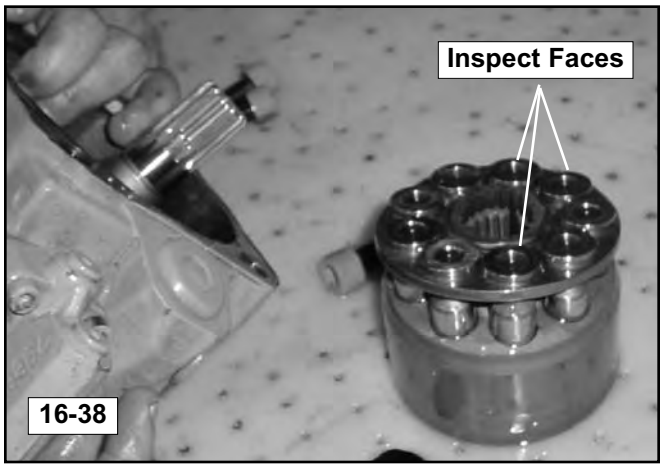
5. Lift the cover off to expose the pump components and the o-ring seal. Inspect the o-ring for damage, replace if necessary. (fig. 16-35)



6. Inspect the valve plate face (both sides) for scratches or any other damage that can be felt with a fingernail. (fig. 16-36)



7. Inspect the barrel face for scratches or any other damage that can be felt with a fingernail. (fig. 16-37)



8. Remove the piston/barrel assembly and inspect the slipper faces for scratches or any other damage that can be felt with a fingernail. (fig. 16-38)

Assembly

1. To reassemble, reverse the disassembly procedure.

17. Hydraulic Pressure Test & Troubleshooting

Chapter Overview

This chapter provides hydraulic pressure and flow check, adjustment and troubleshooting procedures.

Personal Safety

Improper or incomplete maintenance/repair of a Compact 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 Compact 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 Compact Track Loader.

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

NOTICE

Hydraulic oil must be at operating temperature to obtain accurate readings during the pressure and flow test procedures described in this section. Start and warm the engine and hydraulic oil prior to performing the test and troubleshooting procedures in this section.

Contamination Inspection

The hydraulic system can become contaminated when one or more of it's dynamic components fails or begins to wear excessively. This can introduce significant amounts of debris into the hydraulic oil.

In the event of contamination, the defective component(s) must be replaced, the remaining components must be inspected and thoroughly cleaned (if found to be reusable) and the system lines and reservoir must be thoroughly flushed to restore original function.

The hydraulic filters remove contaminants from the oil. Small amounts of debris found within the filters are to be expected, but If there is significant metallic debris found in either filter, certain components of your hydraulic system may be contaminated. To inspect for contamination, label the hydraulic filters by location and remove them. Cut them apart approx. halfway between the top and bottom of the filter and inspect them for debris. If contamination is suspected, contact the Terex service department at 1-800-346-4367.

Hydraulic Pressure Test & Troubleshooting Procedures

Test and troubleshooting procedures are provided for the following Hydraulic system components.

- Charge Pressure Check & Adjustment
- Auxiliary Valve Pressure Check & Adjustment
- Lift Arm Pressure Check & Troubleshooting
- Drive Pressure Check & Troubleshooting

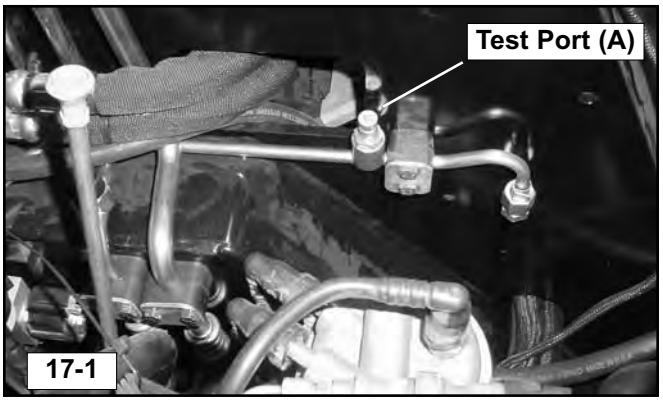
When checking hydraulic system pressures, you are essentially reading the relief valve settings of each circuit tested. If your hydraulic system and components are functioning properly, your readings should match those specified. If they differ, adjustment and or repair may be required to restore proper function.

The procedures in this section are listed in the order they are to be performed. When a pressure issue is suspected, perform these procedures to help diagnose and or repair the problem.

Charge Pressure Check

Charge pressure is used to prime the various circuits with hydraulic oil for operation. Low charge pressure could lead to sluggish operation of any and all functions.

Required Tools
Pressure Gauge 0-1000p.s.i. (0-6895 kPa)



Note: The quick coupler (test port A) located in the engine compartment just inside the right lift arm tower can be used for general pressure checks and troubleshooting.

1. Attach the gauge to test port A. (fig. 17-1) Route the gauge so that you or an assistant can read it during testing.

2. Make sure any bystanders are clear of moving components, then start the engine.

3. Allow the engine to warm up to operating temperature, then with the engine at idle, check the charge pressure. Record your reading. It should read 392 +/- 30 psi (2703 kPa) at this test port. If your reading differs, adjustment is necessary.

4. If necessary, adjust the charge relief pressure.
To adjust:

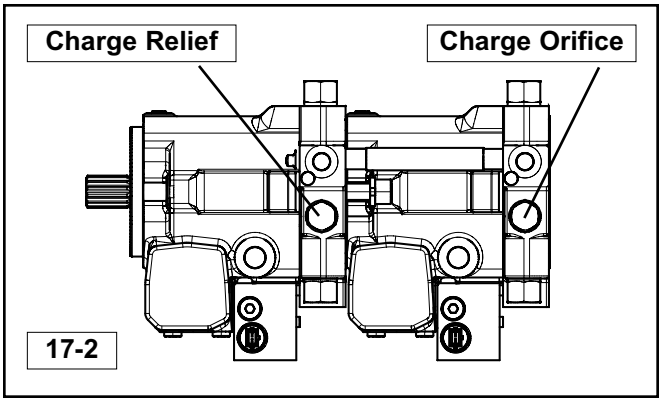
a) Tilt the cab as described on page 4-2 of this manual to access the pump.

b) Locate the charge relief valve on the top of the drive pump. (fig. 17-2)

c) Remove the relief valve from the top of the pump as shown in figure 17-3.

d) Add shims to increase the pressure setting, or remove shims to decrease the setting until within specification. (figure 17-4)

5. Retest once adjustments have been made to make sure pressure is correct. Readjust as necessary until correct.



17-2


17-3


17-4

Auxiliary Pressure Check

Required Tools
Pressure Gauges 0-1000 p.s.i. (0-6895 kPa) & 0-6000 p.s.i. (0-41370 kPa)

Auxiliary pressure is used to drive flow style attachments. Low auxiliary pressure can produce poor performance in attachments while high pressure can cause component damage/failure in the machine or the attachment being utilized.

Note: Make sure charge pressure is set correctly prior to testing this function.

1. Tilt the cab as described on page 4-2 of this manual to access the valve.

2. Locate the test port on the side of the lift arm control valve. (fig. 17-5)

3. Attach the low pressure hydraulic gauge to test port (B) on the side of the valve. Route the gauge so that you or an assistant can read the gauge while performing the test procedures. (figure 17-5, 17-6)

4. Start the machine and with the auxiliary hydraulic switch off (no functions activated) and the engine at idle, you should read 218 psi (1503 kPa) at test port (B).

5. Attach the high pressure gauge to test port B, then activate the low or high flow auxiliary hydraulics with no auxiliary attachment fastened to the quick couplers. This action will send oil over relief and you will read the actual pressures required to activate the relief valve for each circuit. Do this for both the high and low flow circuits in both directions. Record the pressure readings.

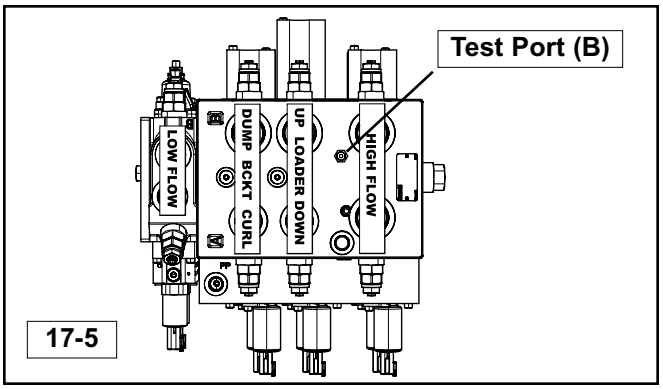
Check your readings against those stated below. If your readings differ, an adjustment and or repair may be required.

Pressures should read: (at test port B)
- 218 +/- 10 PSI (1503 kPa) **(standby)**.
- 3300 +/- 100 PSI (22750 kPa) Low Flow activated.
- 3700 +/- 100 PSI (25510 kPa) High Flow activated.

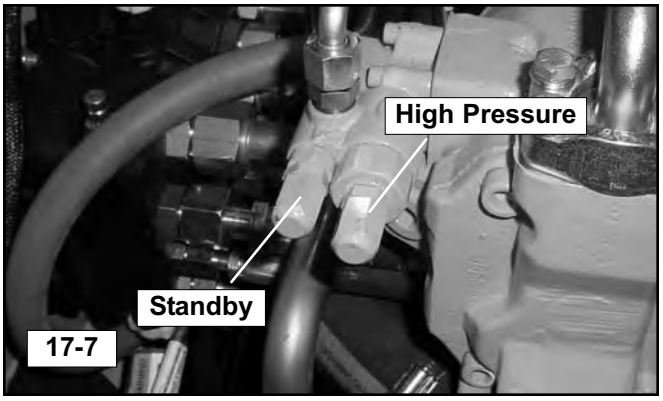
6. If necessary, adjust the relief settings on the auxiliary standby or high pressure valves. (figure 17-7)
To adjust:

a) Remove the cap covering the affected relief valve.

b) Using an allen wrench, turn the adjustment screw clockwise to increase the setting or counter-clock wise to reduce it until within specification.







Lift Arm Pressure Check

Required Tools
Pressure Gauge 0-6000 p.s.i. (0-41370 kPa)

Lift arm pressure is used to lift loads or “break-out”. Low lift arm pressure can produce a weak lift arm function while high lift arm pressure can damage lift arm and hydraulic components.

Note: Make sure auxiliary circuit pressures are set correctly prior to testing this function.

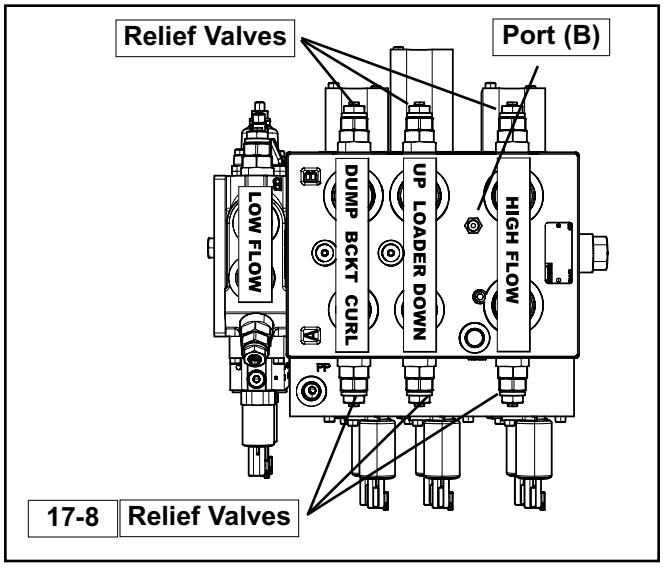
1. Attach a hydraulic gauge to test port B. Route the gauge so that you or an assistant can read the gauge while testing these functions. (figure 17-6)

2. Raise the lift arms all the way up and continue holding the joystick even when the lift arms stop. Record the pressure readings. Then lower the lift arms to the stops and continue holding the joystick. Record the pressure readings. Repeat this process with the bucket dump/curl functions.

3. Check your readings against those stated below. If your readings differ, adjustment or repair may be necessary. (figure 17-8)

Pressures should read: (at test port B)
- 3300 +/- 100 PSI (22750 kPa) the lift arms or bucket are in the up/curl position.
- 3300 +/- 100 PSI (22750 kPa) the lift arms or bucket are in the down/dump position.

4. If any of the readings are low, reverse the function and recheck. If reading is within specification in that direction, replace the opposing relief valve.



17-8

Drive Pressure Check

Required Tools
Pressure Gauge 0-6000 p.s.i. (0-41370 kPa)

NOTICE

This procedure should only be performed if you suspect a drive pump or drive motor is faulty. The procedure is difficult and in performing it, you risk contaminating your hydraulic system if your equipment and working environment is not clean.

Make certain all couplers, fittings and hoses used during this process are clean and free of contaminants that may potentially cause damage to the hydraulic pump and or system components!

Drive pressure is used to turn the drive motors that power your tracks. Low pressure can cause decreased drive motor performance resulting in sluggish maneuvering, decreased speed and or uneven forward or reverse motion.

1. Remove the plug from the port you would like to test and insert a quick coupler similar to the one in port A or B.

Note: There are 4 drive pump test ports, shown in figure 17-10.

2. Attach the hydraulic gauge to the port(s) you are trying to test and route the gauge so you or an assistant can read the gauge during testing.

3. Position the machine so that the lift arms are resting against the chassis stops and the front edge of the bucket is facing, centered on and in contact with an **IMMOVABLE** object.

4. Move the drive control fully forward in an attempt to drive the machine forward. This will force oil over the relief valve and give you a reading for the circuit you are tapped into.

5. Attach a heavy-duty chain capable of restraining the machine securely to the bucket and an **IMMOVABLE** object.

6. Move the drive control fully rearward in an attempt to drive the machine in reverse. This will force oil over the relief valve and give you a reading for the circuit you are tapped into.

7. Check all four ports in this same manner and record your readings.

Check your readings against that stated below. If your readings differ, relief replacement and or component repair may be required.

Pressures should read:

- 5100 PSI (35160kPa) the relief is reached in attempted forward or reverse motion.

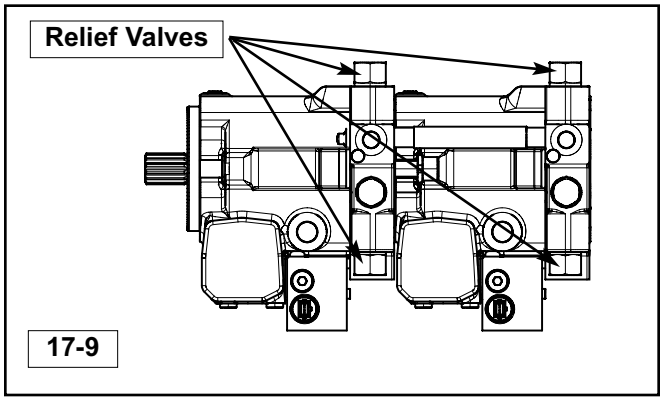
Drive pressure troubleshooting:

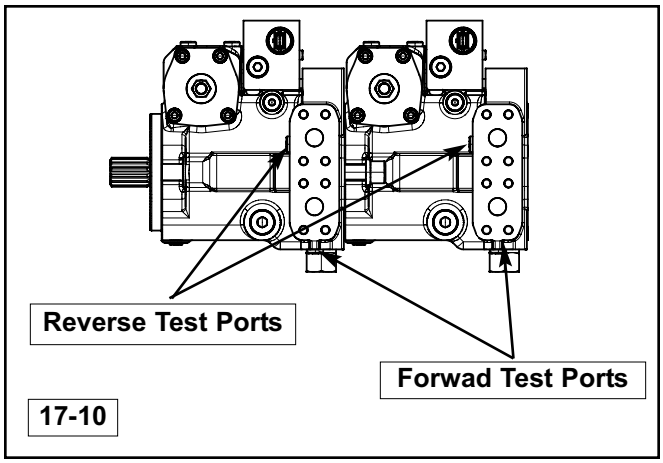
8. If one reading is low, swap the relief valve with a similar one and recheck. If the reading improves, replace the faulty relief valve.

9. If two readings are low, but on different circuits (pumps), perform step 8 for both.

10. If both readings are low on one pump, disconnect the drive hoses from the suspected ports and plug them at the pump. Cap the hoses to prevent contamination and then recheck the pressures at those ports. If the reading improves, the drive motor is at fault. If the reading does not improve, one pump (in the tandem assembly) is at fault.

11. If all 4 readings are low, it is unlikely that all four relief valves are faulty. The tandem pumps are most likely not working properly.





18. Troubleshooting

Chapter Overview

This chapter contains general and control system troubleshooting guides and information for the PT-100G Compact 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 Compact 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 Compact 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 Compact Track Loader.

Prior to performing any type of service work on a Compact 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. Battery cables loose or corroded.
2. Weak or dead battery.
3. Ignition fuse blown.
4. Main starter fuse blown.
5. Starter relay malfunctioning.
6. Faulty starter.
7. Faulty ignition switch.
8. Loose, broken or disconnected wiring at key, relay or starter.
9. Main power fuse (60-80 amp) blown.

If the possible causes found here do not appear to address your problem, refer to the:
- Perkins Engine Service Tool
- Control system troubleshooting guide (pg. 18-4)

Problem 2:
Machine cranks, but will not start.
Possible causes
1. Engine ECU fuse blown.
2. Fuel tank empty, fuel filter plugged or fuel line restricted.
3. Battery discharged (engine rotates slowly).

If the possible causes found here do not appear to address your problem, refer to the:
- Perkins Engine Service Tool
- Control system troubleshooting guide (pg. 18-4)

Problem 3:
Machine starts, but hydraulics will not operate.
Possible causes
1. Operator not in seat.
2. Seat belt not fastened.

If the possible causes found here do not appear to address your problem, refer to the:
- Control system troubleshooting guide (pg. 18-4)
- PT-100G Service Tool (chapter 19)

Problem 4:
Lift arm/bucket controls are operational, but tracks will not move.
Possible causes
1. Parking brake switch in on position.
2. Low charge pressure.

If the possible causes found here do not appear to address your problem, refer to the:
- Control system troubleshooting guide (pg. 18-4)
- PT-100G Service Tool (chapter 19)

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) Lift arm control valve assembly malfunction.

If auxiliary flow hydraulics do not work check for:
a) Main auxiliary relief malfunction (check pressures).

If the possible causes found here do not appear to address your problem, refer to the:
- Control system troubleshooting guide (pg. 18-4)
- PT-100G Service Tool (chapter 19)

Problem 6:
Lift arms are operational, but high/low flow auxiliary circuits are not.
Possible causes
1. Faulty or improperly connected quick coupler.
2. Quick coupler block pressure release stuck in down (open) position.

If the possible causes found here do not appear to address your problem, refer to the:
- Control system troubleshooting guide (pg. 18-4)
- PT-100G Service Tool (chapter 19)

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).

If the possible causes found here do not appear to address your problem, refer to the:
- Control system troubleshooting guide (pg. 18-4)
- PT-100G Service Tool (chapter 19)

Problem 8:
Battery will not charge/maintain charge.
Possible causes:
1. Loose alternator belt.
2. Loose, broken or disconnected wiring at battery, alternator, diode or fuse.
3. Excessive current draw with key in "off" position.
4. Faulty battery.
5. Faulty alternator.

If the possible causes found here do not appear to address your problem, refer to the:
- Control system troubleshooting guide (pg. 18-4)
- PT-100G Service Tool (chapter 19)

Problem 9:

Hydraulic oil temperature elevated; hydraulic system overheating.

Possible causes

1. Debris plugging oil cooler, limiting airflow.
2. Low hydraulic oil level.
3. Loose or missing fan belt.
4. Damaged or missing cooling fan blades.
5. Incompatible attachment.
   a) Attachment must match machine flow capabilities.
   b) Attachment hose inside diameter must be at least ½" (1.3 cm) for low flow and ¾" (1.9 cm) for high flow.
6. Faulty hydraulic oil temperature sending unit.
7. Faulty quick coupler.
8. Cooler bypass relief open.
9. Damaged or missing brush ring (around fan).
10. Aftermarket (non-OEM) shrouding or guarding installed in or around engine compartment (obstructing airflow).
11. Auto-Reversing fan malfunction (see control system troubleshooting to address possible faults).

Note: Cooler bypass should open at 80 PSI / 552 kPa.

Problem 10:

Engine coolant temperature elevated; engine overheating.

Possible causes:

1. Low coolant level.
2. Debris plugging radiator, limiting airflow.
3. Damaged or missing cooling fan blades.
4. Loose or missing fan belt.
5. Thermostat stuck in closed position.
6. Damaged or missing brush ring (around fan).
7. Aftermarket (non-OEM) shrouding or guarding installed in or around engine compartment (obstructing airflow).
8. Auto-Reversing fan malfunction (see control system troubleshooting to address possible faults).

Engine/Machine Troubleshooting

When a problem occurs that effects engine performance or function, it is important to determine whether or not the problem lies with the machine itself, or with the engine. The conditions below illustrate problems with the machine. If correcting the potential issues listed below does not alleviate your problem, refer to the Perkins engine manual specific to your engine for troubleshooting procedures.

Problem:

Hard starting

check for:

1. Water in fuel.
2. Proper grade and quality fuel.

Problem:

Low power

check for:

1. Air filter clogged.
2. Dirty, clogged, or restricted fuel filter.
3. Adequate supply of fuel to engine (fuel lines).
4. Water in fuel.
5. Proper grade and quality fuel.

Problem:

No start

check for:

1. Low fuel.
2. Out of fuel. (ensure proper gauge/sending unit function. Inspect tank for fuel)
3. Blocked or restricted fuel line. (try alternate/remote fuel supply to pump.)
4. Water in fuel.
5. Proper grade and quality fuel.

Control System Troubleshooting
Propel

Propel			
Display reads:	Fault results in:	Possible causes:	Solution
Invalid propel mode selection	Propel disabled	Valid propel mode not selected. Select valid mode (Accomplished through the display in config menu) and cycle power by turning the key off then back on	Select valid mode and cycle power by turning the key off then back on
Loss of communications between Main Controller and Display	Display disabled	Blown fuse, faulty connections or wires between Main Controller and Display.	Restore communications, then cycle power by turning the key off then back on
Loss of communications between Main Controller and Engine	Loss of engine feedback on Display	Blown fuse, faulty connections or wires between Main Controller and Engine.	Restore communications, then cycle power by turning the key off then back on
Loss of communications between Main Controller and Left joystick	ISO-mode: Drive Disabled H-mode: Drive and Boom disabled	Faulty connections or wires between Main Controller and Left Joystick.	Restore communications, then cycle power by turning the key off then back on
Loss of communications between Main Controller and Right Joystick	ISO-mode: Boom and Bucket Disabled H-mode: Drive disabled	Faulty connections or wires between Main Controller and Right Joystick.	Restore communications, then cycle power by turning the key off then back on
Loss of communications between Main Controller and Keypad	Drive disabled (brake applied), Auxiliary Hydraulics disabled	Faulty connections or wires between Main Controller and Keypad.	Restore communications, then cycle power by turning the key off then back on
Battery Voltage above upper limit	Display reads: "N/A" for battery voltage	Alternator/regulator fault.	Repair or replace. Once battery voltage is back within range, the fault will automatically clear.
Battery Voltage below lower limit	Display reads: "N/A" for battery voltage	Battery faulty, Faulty or damaged alternator or connections to and from battery, Blown alternator fuse or alt diode.	Once battery voltage is back within range, the fault will automatically clear.
Sensor Power Fault - Voltage above upper limit	Low flow rocker disabled	There is a problem with the main controller.	Manually check voltages at connector pins. If confirmed high, replace main controller.
Sensor Power Fault - Voltage below lower limit	Low flow rocker disabled	There is a problem with the main controller.	Manually check voltages at connector pins. If confirmed low, replace main controller.
Lap Bar Switch Fault (both inputs off)	Propel disabled	Switch faulty, wiring connection faulty, switch out of adjustment.	Restore connections, adjust or replace switches, then cycle power by turning the key off then back on
Lap Bar Switch Fault (both inputs on)	Propel disabled	Switch faulty, wiring connection faulty, switch out of adjustment.	Restore connections, adjust or replace switches, then cycle power by turning the key off then back on
Invalid Keypad installed	Propel disabled (Brake Applied)	Incorrect keypad part number installed at recent service, keypad fault	Install correct keypad for your machine.
Left Joystick X-Axis outside of specified limits	ISO mode: Propel disabled (ramp to stop)	Joystick Faulty	Replace joystick, then cycle power.
	H mode: Boom disabled	Joystick Faulty	Replace joystick, then cycle power.
Left Joystick Y-Axis outside of specified limits	ISO & H: Propel disabled (ramp to stop)	Joystick Faulty	Replace joystick, then cycle power.
Right Joystick Y-Axis outside of specified	ISO Mode: Boom disabled	Joystick Faulty	Replace joystick, then cycle power.
	H mode: Propel disabled	Joystick Faulty	Replace joystick, then cycle power.
Hydraulic Oil Temperature above upper limit Derate Active	Machine de-rates performance (propel) to 50% of maximum	Low hydraulic oil. Machine or attachment quick coupler fault. Coolers plugged or damaged, improper attachment, damaged or missing fan, fan belt, fan brush ring, or shroud. Faulty cooler bypass relief (s) are also a possibility.	Check hydraulic oil. Inspect quick couplers. Clean coolers and engine compartment, ensure proper fan and belt condition and operation. Cool machine until oil temp is less than 210 deg F. If the above solutions prove inneffective, inspect cooler bypass relief valves. Repair or replace as necessary
Temp Sensor resistance above upper limit	Hydraulic oil temperature display disabled	Faulty Sensor	Replace temp sender, then cycle power
Temp Sensor resistance below lower limit		Faulty Sensor	Replace temp sender, then cycle power
Fuel Sender voltage above upper limit	Display "N/A" for fuel level	Faulty Sensor	Replace sensor, then cycle power
Fuel Sender voltage below lower limit		Faulty Sensor	Replace sensor, then cycle power
Left Forward Threshold not calibrated	Propel automatically limited to default threshold parameters	Threshold needs to be calibrated	Perform threshold calibration procedure
Left Reverse Threshold not calibrated	Propel automatically limited to default threshold parameters If threshold < 4000, limit to 4000, If > 6000, limit to 6000	Threshold needs to be calibrated	Perform threshold calibration procedure

Propel (continued)

Right Forward Threshold not calibrated	Propel automatically limited to default threshold parameters If threshold < 4000, limit to 4000, If > 6000, limit to 6000	Threshold needs to be calibrated	Perform threshold calibration procedure
Right Reverse Threshold not calibrated	Propel automatically limited to default threshold parameters If threshold < 4000, limit to 4000, If > 6000, limit to 6000	Threshold needs to be calibrated	Perform threshold calibration procedure
Left Forward high speed End Current not calibrated	Propel automatically limited to default parameter setting (If parameter is out of range, limits to max current, 15030)	End current needs to be calibrated	Perform end current calibration procedure
Left Forward low speed End Current not calibrated	Propel automatically limited to default parameter setting (If parameter is out of range, limits to max current, 15030)	End current needs to be calibrated	Perform end current calibration procedure
Left Reverse high speed End Current not calibrated	Propel automatically limited to default parameter setting (If parameter is out of range, limits to max current,	End current needs to be calibrated	Perform end current calibration procedure
Left Reverse low speed End Current not calibrated	Propel automatically limited to default parameter setting (If parameter is out of range, limits to max current,	End current needs to be calibrated	Perform end current calibration procedure
Right Forward high speed End Current not calibrated	Propel automatically limited to default parameter setting (If parameter is out of range, limits to max current, 15030)	End current needs to be calibrated	Perform end current calibration procedure
Right Forward low speed End Current not calibrated	Propel automatically limited to default parameter setting (If parameter is out of range, limits to max current, 15030)	End current needs to be calibrated	Perform end current calibration procedure
Right Reverse high speed End Current not calibrated	Propel automatically limited to default parameter setting (If parameter is out of range, limits to max current, 15030)	End current needs to be calibrated	Perform end current calibration procedure
Right Reverse low speed End Current not calibrated	Propel automatically limited to default parameter setting (If parameter is out of range, limits to max current, 15030)	End current needs to be calibrated	Perform end current calibration procedure
Brake Solenoid short circuit	Propel disabled (ramp to stop)	Faulty connections or wires to or from brake solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back on
Brake Solenoid short circuit (to power)	Propel disabled (ramp to stop)	Faulty connections or wires to or from brake solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back on
Brake Solenoid open circuit (to ground)	Propel disabled (ramp to stop)	Faulty connections or wires to or from brake solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back on
Drive Enable Solenoid short circuit (to power)	Propel disabled	Faulty connections or wires to or from drive enable solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back on
Drive Enable Solenoid short circuit (to ground	Propel disabled	Faulty connections or wires to or from drive enable solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back
Drive Enable Solenoid open circuit	Propel disabled	Faulty connections or wires to or from drive enable solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back on
2-Speed Solenoid fault	High range propel disabled	Faulty connections or wires to or from 2-speed solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back on
Left Fwd Solenoid short circuit	Propel disabled (de-energizes drive enable solenoid)	Faulty connections or wires to or from left fwd solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back on
Left Fwd Solenoid short circuit	Propel disabled (de-energizes drive enable solenoid)	Faulty connections or wires to or from left fwd solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back on
Left Fwd Solenoid open circuit	Machine stops immediately and returns to neutral. Forward propel is disabled and reverse propel is limited to parameter setting (Default 50%)	Faulty connections or wires to or from left fwd solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back on
Left Rvs Solenoid short circuit	Propel disabled (de-energizes drive enable solenoid)	Faulty connections or wires to or from left reverse solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back on
Left Rvs Solenoid short circuit	Propel disabled (de-energizes drive enable solenoid)	Faulty connections or wires to or from left reverse solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back on
Left Rvs Solenoid open circuit	Machine stops immediately and returns to neutral. Reverse is disabled and forward propel is limited to parameter setting (Default 50%)	Faulty connections or wires to or from left reverse solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back on
Right Fwd Solenoid short circuit	Propel disabled (de-energizes drive enable solenoid)	Faulty connections or wires to or from right fwd solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back on
Right Fwd Solenoid short circuit	Propel disabled (de-energizes drive enable solenoid)	Faulty connections or wires to or from right fwd solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back on

Propel (continued)

Right Fwd Solenoid open circuit	Machine stops immediately and returns to neutral. Forward propel is disabled and reverse propel is limited to parameter setting (Default 50%)	Faulty connections or wires to or from right fwd solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back on
Right Rvs Solenoid short circuit	Propel disabled (de-energizes drive enable solenoid)	Faulty connections or wires to or from right reverse solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back
Right Rvs Solenoid short circuit	Propel disabled (de-energizes drive enable solenoid)	Faulty connections or wires to or from right reverse solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back on
Right Rvs Solenoid open circuit	Machine stops immediately and returns to neutral. Reverse is disabled and forward propel is limited to parameter setting (Default 50%)	Faulty connections or wires to or from right reverse solenoid, faulty solenoid.	Restore connections, replace faulty compoents, then cycle power by turning the key off then back on

Boom

Boom			
Display reads:	Fault results in:	Possible Causes	Solution
Invalid propel mode selection	Propel disabled	Valid propel mode not selected.	Select valid propel mode, then cycle power by turning the key off then back on
Loader Speed selection above upper limit	Automatically sets speed to 100%	Loader speed set above 100%	Select valid speed
Loader Speed selection below lower limit	Automatically sets speed to 50%	Loader speed set below 50%	Select valid speed
Loss of communications between Main Controller and Lefft Joystick	H mode: Boom disabled	Faulty connections or wires between left joystick and main controller	Restore communications, then cycle power by turning the key off then back on
Loss communications between Main Controller and Right Joystick	ISO mode: Boom disabled	Faulty connections or wires between right joystick and main controller	Restore communications, then cycle power by turning the key off then back on
Loss of communications between Main Controller and Output Module	Boom control disabled	Faulty connections or wires between main controller and output module	Restore communications, then cycle power by turning the key off then back on
Left Joystick X-Axis outside of specified limits	H mode: Boom control disabled	Joystick Faulty	Replace joystick, then cycle power.
Right Joystick Y-Axis outside of specified limits	ISO mode: Boom control disabled	Joystick Faulty	Replace joystick, then cycle power.
Lap Bar Switch Fault	Boom control disabled	Switch faulty, wiring connection faulty, switch out of adjustment.	Restore connections, adjust or replace switches, then cycle power by turning the key off then back on
Lap Bar Switch Fault	Boom control disabled	Switch faulty, wiring connection faulty, switch out of adjustment.	Restore connections, adjust or replace switches, then cycle power by turning the key off then back on
Boom Up Solenoid short circuit	Boom up/down disbled Work enable solenoid de-energized	Solenoid shorted to battery (faulty wires, connections)	Restore proper connections, then cycle power
Boom Up Solenoid short circuit	Boom up/down disbled Work enable solenoid de-energized	Solenoid shorted to ground (faulty wires, connections)	Restore proper connections, then cycle power
Boom Up Solenoid open circuit	Boom up disabled	Solenoid open circuit (faulty wires, connections)	Restore proper connections, then cycle power
Boom Down Solenoid short circuit	Boom up/down disbled Work enable solenoid de-energized	Solenoid shorted to battery (faulty wires, connections)	Restore proper connections, then cycle power
Boom Down Solenoid short circuit	Boom up/down disbled Work enable solenoid de-energized	Solenoid shorted to ground (faulty wires, connections)	Restore proper connections, then cycle power
Boom Down Solenoid open circuit	Boom down disabled	Solenoid open (faulty wires, connections)	Restore proper connections, then cycle power
Work Enable Solenoid fault	Boom control disabled	Solenoid shorted to battery (faulty wires, connections)	Restore proper connections, then cycle power
Work Enable Solenoid fault	Boom control disabled	Solenoid shorted to ground (faulty wires, connections)	Restore proper connections, then cycle power
Work Enable Solenoid fault	Boom control disabled	Solenoid open circuit (faulty wires, connections)	Restore proper connections, then cycle power

Bucket

Bucket			
Display reads:	Fault results in:	Possible causes:	Solution:
Invalid propel mode selection	Bucket control disabled	Valid propel mode not selected	Select valid propel mode
Loader Speed selection above upper limit	Automatically sets speed to 100%	Loader speed set above 100%	Select valid speed
Loader Speed selection below lower limit	Automatically sets speed to 50%	Loader speed set below 50%	Select valid speed
Loss communications between Main Controller and Right Joystick	Bucket control disabled	Faulty connections or wires between main controller and right joystick	Restore connections, then cycle power by tu the key off then back on
Keypad CAN Fault - Loss of Keypad CAN communications	Auto level disabled (if equipped)	Faulty connections or wires between main controller and keypad	Restore connections, then cycle power by tu the key off then back on
Loss communications between Main Controller and Output Module	Bucket control disabled	Faulth connections or wires between main controller and output module	Restore connections, then cycle power by tu the key off then back on
Right Joystick Y-Axis outside of specified limits	Bucket control disabled	Joystick Faulty	Replace joystick, then cycle power.
Invalid Keypad installed	Auto level disabled (if equipped)	CE keypad installed in US machine or vice versa.	Install correct keypad for your machine.
Lap Bar Switch Fault (both inputs off)	Bucket control disabled	Switch faulty, wiring connection faulty, switch out of adjustment.	Restore connections, adjust or replace switch then cycle power by turning the key off then t on
Lap Bar Switch Fault (both inputs on)	Bucket control disabled	Switch faulty, wiring connection faulty, switch out of adjustment.	Restore connections, adjust or replace switch then cycle power by turning the key off then t on
Bucket Curl solenoid short circuit	Bucket curl/dump disabled Work enable solenoid de-energized	Solenoid shorted to battery (faulty wires, connections)	Restore connections, then cycle power by tu the key off then back on
Bucket Curl solenoid short circuit	Bucket curl/dump disabled Work enable solenoid de-energized	Solenoid shorted to ground (faulty wires, connections)	Restore connections, then cycle power by tu the key off then back on
Bucket Curl solenoid open circuit	Bucket curl disabled	Solenoid open circuit (faulty wires, connections)	Restore connections, then cycle power by tu the key off then back on
Bucket Dump solenoid short circuit	Bucket curl/dump disabled Work enable solenoid de-energized	Solenoid shorted to battery (faulty wires, connections)	Restore connections, then cycle power by tu the key off then back on
Bucket Dump solenoid short circuit	Bucket curl/dump disabled Work enable solenoid de-energized	Solenoid shorted to ground (faulty wires, connections)	Restore connections, then cycle power by tu the key off then back on
Bucket Dump solenoid open circuit	Bucket dump disabled	Solenoid open circuit (faulty wires, connections)	Restore connections, then cycle power by tu the key off then back on
Work Enable solenoid fault	Bucket control disabled	Solenoid shorted to battery (faulty wires, connections)	Restore connections, then cycle power by tu the key off then back on
Work Enable solenoid fault	Bucket control disabled	Solenoid shorted to ground (faulty wires, connections)	Restore connections, then cycle power by tu the key off then back on
Work Enable solenoid fault	Bucket control disabled	Solenoid open circuit (faulty wires, connections)	Restore connections, then cycle power by tu the key off then back on

High Flow Auxiliary

High Flow Auxiliary			
Display reads:	Fault results in:	Possible causes	Solution:
GPM selection above upper limit	Automatically sets GPM to 45	GPM selection greater than 45 GPM	Select valid GPM value
GPM selection below lower limit	Automatically sets GPM to 30	GPM selection less than 30 GPM	Select valid GPM value
Hydraulic Oil Temperature above upper limit Derate Active	Machine de-rates performance (high flow) to 50% of maximum	Coolers plugged, improper attachment, damaged or missing fan or fan belt.	Check hydraulic oil. Inspect quick couplers. Clean coolers and engine compartment, ensure proper fan and belt condition and operation. Coo machine until oil temp is less than 210 deg F.
Temp Sensor resistance above upper limit	Hydraulic oil temperature display disabled	Faulty Sensor	Replace temp sender, then cycle power
Temp Sensor resistance below lower limit		Faulty Sensor	Replace temp sender, then cycle power
Invalid Keypad installed	High Flow male/female disabled	CE keypad installed in US machine or vice versa.	Install correct keypad for your machine.
Keypad CAN Fault - Loss of Keypad CAN communications	High Flow disabled	Faulty connections or wires between keypad and main controller	Restore communications, then cycle power by turning the key off then back on
OX CAN Fault - Loss of Output Module CAN Communications	High Flow disabled	Faulty connections or wires between main controller and output module	Restore communications, then cycle power by turning the key off then back on
Engine CAN Fault - Loss of Engine CAN communications	High Flow disabled	Faulty connections or wires between engine and Main controller	Restore communications, then cycle power by turning the key off then back on
High Flow Male not calibrated	High flow male disabled	Parameter setting out of valid range	Perform High flow male calibration procedure
High Flow Male not calibrated	High flow male disabled	Parameter values not in proper low to high sequence	Perform High flow male calibration procedure
High Flow Female not calibrated	High flow female disabled	Parameter setting out of valid range	Perform High flow female calibration procedure
High Flow Female not calibrated	High flow female disabled	Parameter values not in proper low to high sequence	Perform High flow female calibration procedure
Lap Bar Switch Fault (both inputs off)	Load sharing disabled	Switch faulty, wiring connection faulty, switch out of adjustment.	Restore connections, adjust or replace switches, then cycle power by turning the key off then back on
Lap Bar Switch Fault (both inputs on)	Load sharing disabled	Switch faulty, wiring connection faulty, switch out of adjustment.	Restore connections, adjust or replace switches, then cycle power by turning the key off then back on
High Flow Male solenoid short circuit	High flow disabled, work enable solenoid de-energized	Solenoid shorted to battery (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
High Flow Male solenoid short circuit	High flow disabled, work enable solenoid de-energized	Solenoid shorted to ground (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
High Flow Male solenoid open circuit	High flow male disabled	Solenoid open circuit (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
High Flow Female solenoid short circuit	High flow disabled, work enable solenoid de-energized	Solenoid shorted to battery (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
High Flow Female solenoid short circuit	High flow disabled, work enable solenoid de-energized	Solenoid shorted to ground (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
High Flow Female solenoid open circuit	High flow female disabled	Solenoid open circuit (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
Work Enable solenoid fault	High flow disabled	Solenoid shorted to battery (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
Work Enable solenoid fault	High flow disabled	Solenoid shorted to ground (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
Work Enable solenoid fault	High flow disabled	Solenoid open circuit (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on

Low Flow Auxiliary

Low Flow Auxiliary			
Display reads:	Fault results in:	Possible causes:	Solution:
Low Flow Rocker voltage above upper limit	Low flow variable disabled	Faulty joystick	Replace joystick, then cycle power by turning the key off then back on
Low Flow Rocker voltage below lower limit		Faulty joystick	Replace joystick, then cycle power by turning the key off then back on
Invalid Keypad installed	Low flow disabled	CE keypad installed in US machine or vice versa.	Install correct keypad for your machine.
Lap Bar Switch Fault (both inputs off)	Low flow control disabled	Switch faulty, wiring connection faulty, switch out of adjustment.	Restore connections, adjust or replace switches, then cycle power by turning the key off then back on
Lap Bar Switch Fault (both inputs on)	Low flow control disabled	Switch faulty, wiring connection faulty, switch out of adjustment.	Restore connections, adjust or replace switches, then cycle power by turning the key off then back on
Keypad CAN Fault - Loss of Keypad CAN communications	Low flow control disabled	Faulty connections or wires between keypad and main controller	Restore communications, then cycle power by turning the key off then back on
OX CAN Fault - Loss of Output Module CAN Communications	Low flow control disabled	Faulty connections or wires between main controller and output module	Restore communications, then cycle power by turning the key off then back on
Engine CAN Fault - Loss of Engine CAN communications	Load sharing disabled	Faulty connections or wires between engine and Main controller	Restore communications, then cycle power by turning the key off then back on
Low Flow Rocker not calibrated	Low flow variable disabled	Parameter setting out of valid range	Perform low flow rocker calibration proecedure
Low Flow Male not calibrated	Low flow male disabled	Parameter setting out of valid range	Perform low flow male end current calibration procedure
Low Flow Female not calibrated	Low flow female disabled	Parameter setting out of valid range	Perform low flow female end current calibration procedure
Low Flow Male solenoid short circuit	Low flow disabled, work enable solenoid de-energized	Solenoid shorted to battery (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
Low Flow Male solenoid short circuit	Low flow disabled, work enable solenoid de-energized	Solenoid shorted to ground (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
Low Flow Male solenoid open circuit	Low flow male disabled	Solenoid open circuit (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
Low Flow Female solenoid short circuit	Low flow disabled, work enable solenoid de-energized	Solenoid shorted to battery (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
Low Flow Female Solenoid short circuit	Low flow disabled, work enable solenoid de-energized	Solenoid shorted to ground (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
Low Flow Female solenoid open circuit	Low flow female disabled	Solenoid open circuit (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
Work Enable solenoid fault	Low flow disabled	Solenoid shorted to battery (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
Work Enable solenoid fault	Low flow disabled	Solenoid shorted to ground (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
Work Enable solenoid fault	Low flow disabled	Solenoid open circuit (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on

Quick Attach

Quick Attach			
Display reads:	Fault results in:	Possible causes:	Solution:
Invalid Keypad Installed	Quick attach output de-energized	CE keypad installed in US machine or vice versa.	Install correct keypad for your machine, then cycle power
Loss of communications between Main Controller and Keypad	Quick attach output de-energized	Faulty connections or wires between keypad and main controller	Restore communications, then cycle power by turning the key off then back on
Quick Attach Solenoid fault	Quick attach output de-energized	Solenoid shorted to battery/ground or open circuit (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
Work Enable solenoid fault	Quick attach output de-energized	Solenoid shorted to battery (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
Work Enable solenoid fault	Quick attach output de-energized	Solenoid shorted to ground (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on
Work Enable solenoid fault	Quick attach output de-energized	Solenoid open circuit (faulty wires, connections)	Restore connections, then cycle power by turning the key off then back on

Electric Auxiliary

Electric Auxiliary			
Display reads:	Fault results in:	Possible causes:	Solution:
Loss of communications between Main Controller and Left Joystick	Electrical auxiliary disabled	Faulty connections or wires between left joystick and main controller	Restore communications, then cycle power by turning the key off then back on
		* Output fault detection does not work for load connected to outputs	

19. Service Tool

Chapter Overview

This chapter contains information on how to download and use the service tool for the PT-100G Compact Track Loaders.

Personal Safety

Improper or incomplete maintenance/repair of a Compact 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 Compact 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 Compact Track Loader.

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

Service Tool

The service tool is a computer application (.exe file) made available by Sauer-Danfoss. It can be used to:

- Diagnose machine malfunctions
- Calibrate machine parameters
- Update Software Versions

You must have a laptop computer meeting the minimum requirements set forth by Sauer-Danfoss and a service tool programming cable (available from your Terex Dealer) to connect your computer to the onboard system of your machine.

Download the service tool by visiting:
www.sauer-danfoss.com

Steps:

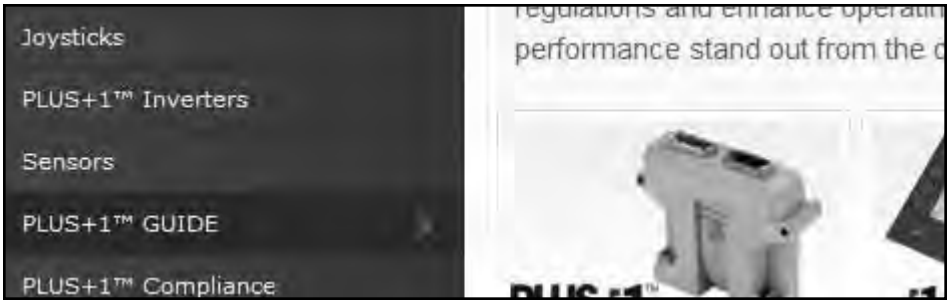
1. **Select:** Products



2. **Select:** Mobile Electronics



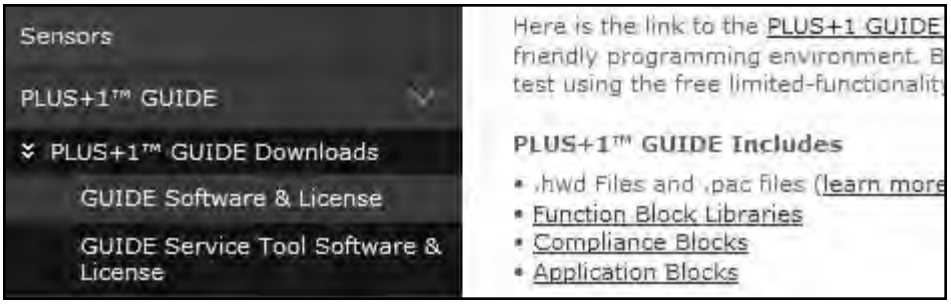
3. **Select:** PLUS+1™ GUIDE



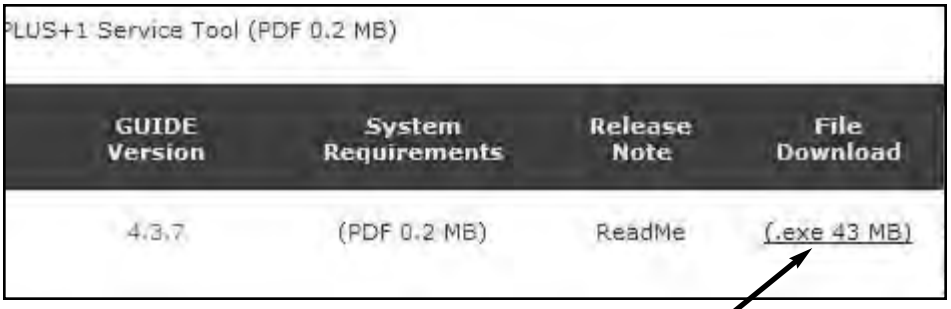
4. **Select:** PLUS+1™ GUIDE Downloads



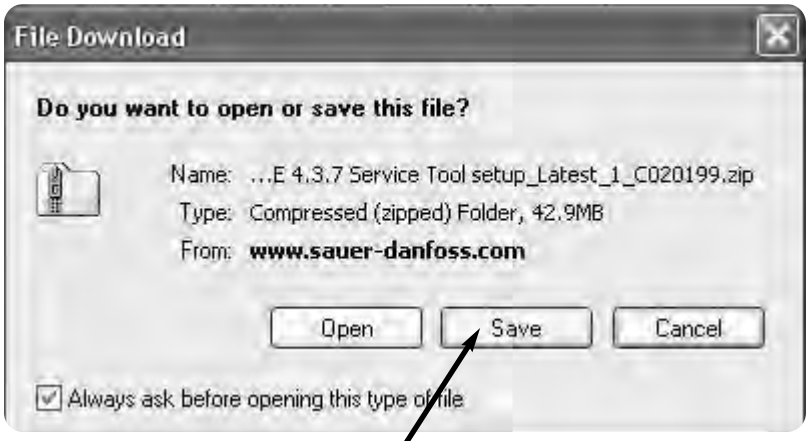
5. **Select:** PLUS+1™ GUIDE Service Tool Software & License



6. **Select:** .exe file



7. **Select:** Save

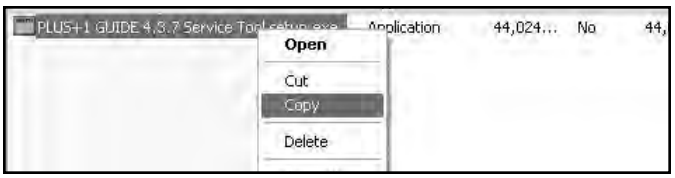


8. At this point, you will need to select a location on your laptop to save the file. Once you have found a suitable location, click save.

9. Navigate to the folder where you saved the file.

10. Double click on the folder which should allow you inside.

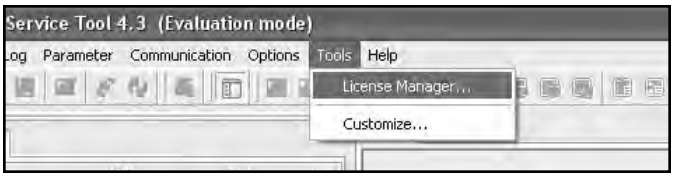
11. Left click on the file inside to highlight it, then with the cursor still over the highlighted file, right click and select copy.



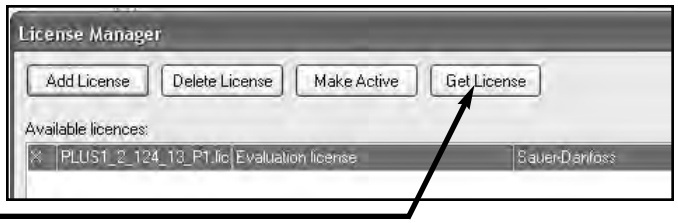
12. Paste the file on your desktop.

13. Double click on the icon to begin the installation, then follow the on screen instructions to install the drivers.

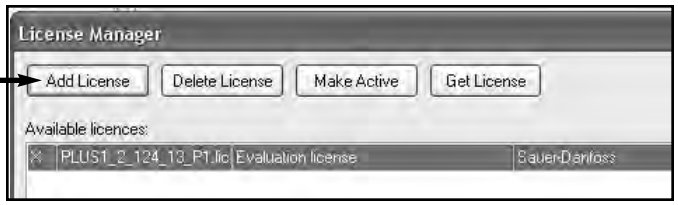
14. Once installed, open the service tool program and in the upper portion of your window, click on “tools”. Then in the drop down menu, select “license manager”.



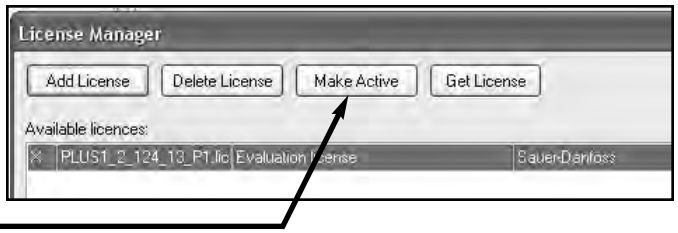
15. Once the license manager window appears, select “get license” from the options at the top of the window. This should automatically load a “license help” pdf document that will walk you through the steps involved in obtaining a license for use.



16. Once you have received your license file, save it in a known location, then click “add license”. Navigate to the folder where you saved your licence and click open. This should add it to the available licenses for selection.



17. Once the new license is visible in the license manager window, highlight it by clicking on it, then select “make active” to allow use of the service tool.



18. If you wish to have password protection, set it up according to the “license help” document mentioned in step 15. If not, decline by clicking “no” in the pop-up and the service tool will be ready for use.

Connecting the Service Tool

In order to calibrate or diagnose your particular machine, you must:

1. Connect your laptop to the port on your machine located within the fuse panel (to the upper right of the operator's seat) with the cable purchased from your Terex dealer for use with the service tool.

2. With your service tool application running on your laptop, open the .P1D file (available under "service tools" from the construction support website: constructionsupport.terex.com). This will bring up the various formats through which the machine data will be displayed.

3. To access the data stream from your machine, you must turn the key to the on position to power up the onboard computers and display. Then click on the "play" button located at the top of each screen you open (on your laptop within the service tool application) prior to analyzing any log data. This will ensure the data being displayed is fresh and representative of what is taking place currently with the machine being diagnosed or calibrated. If viewing machine parameters, click the (upload parameters) button in the top toolbar to read the parameters stored in the onboard computer through the service tool.

Note: To ensure your machine is connected properly to the service tool, look in the lower right corner of the service tool window. You should see a green icon with the word "connect" displayed within it. If you see a red icon with the word "disconnect" or a yellow flashing icon with the word "searching" displayed, click on the "scan connected device" icon located in the upper toolbar.



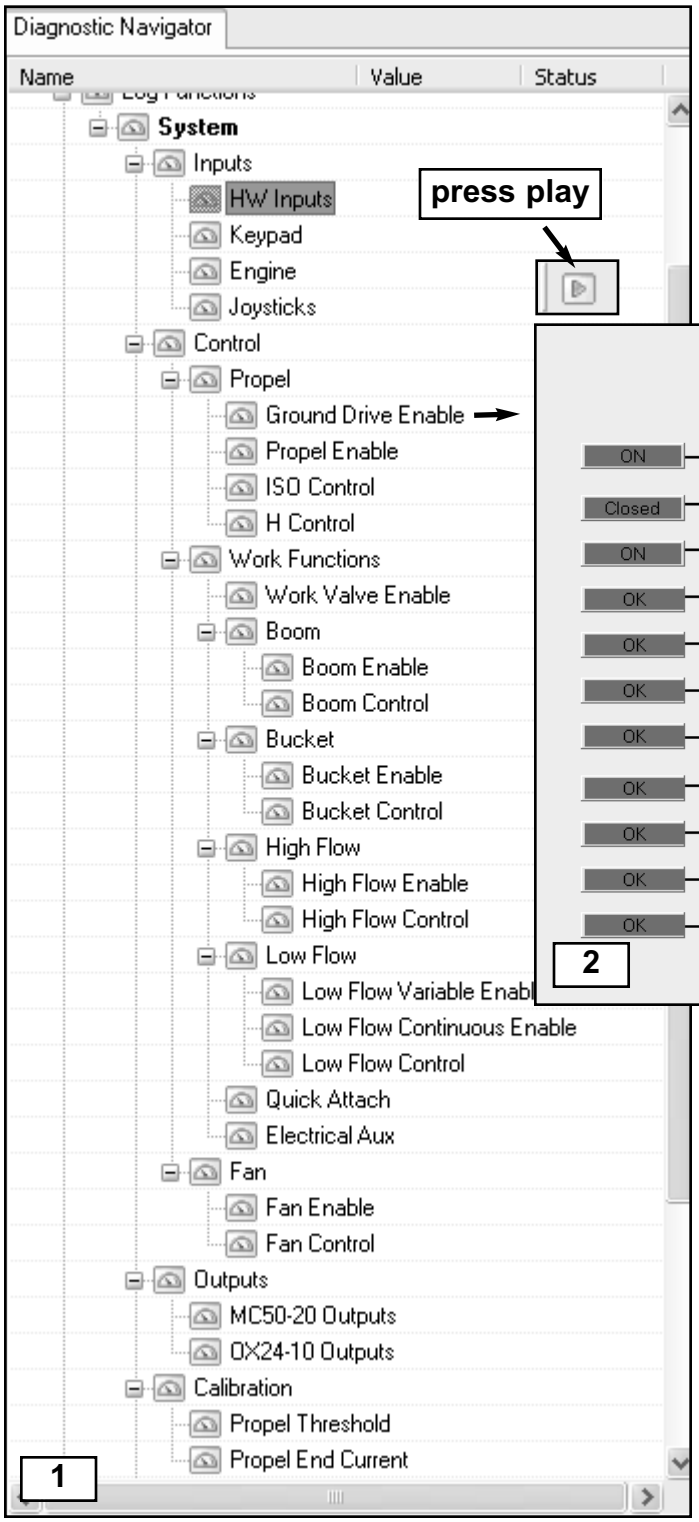
Using the Service Tool

The service tool has three functions:

- Diagnostics
- Calibration
- Software Version Updates

Diagnostics

To use the service tool for diagnostics, first refer to your control system troubleshooting guide in chapter 00. This will help you to use the symptoms present (malfunction characteristics) to identify possible causes. Once you have an idea of where the problem lies, the service tool can help you to take a deeper look at relevant components and systems if additional data is available for that particular component or system. This can help to pinpoint the problem and simplify the process of identifying any defective item(s).

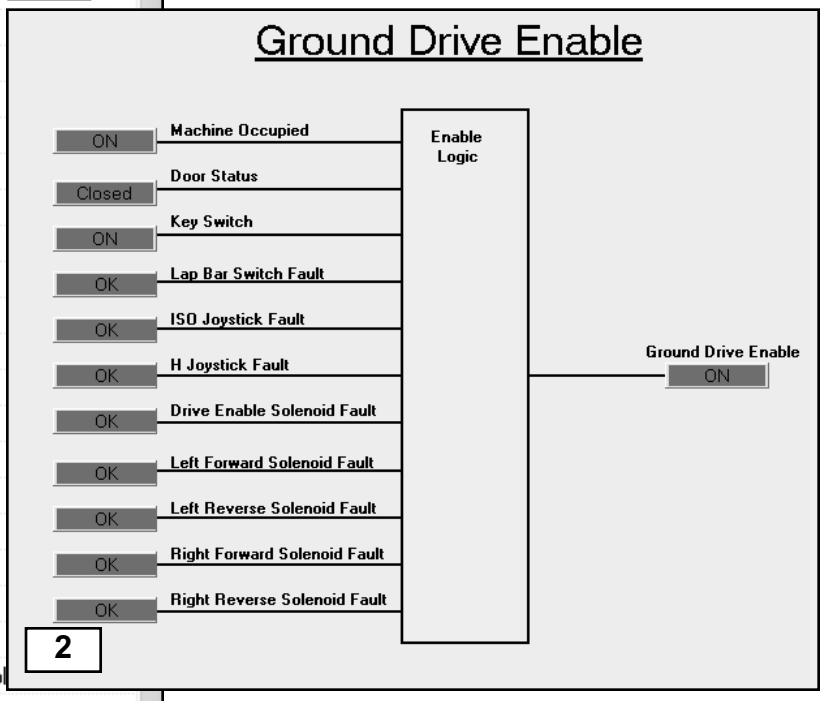


Diagnostic Navigator

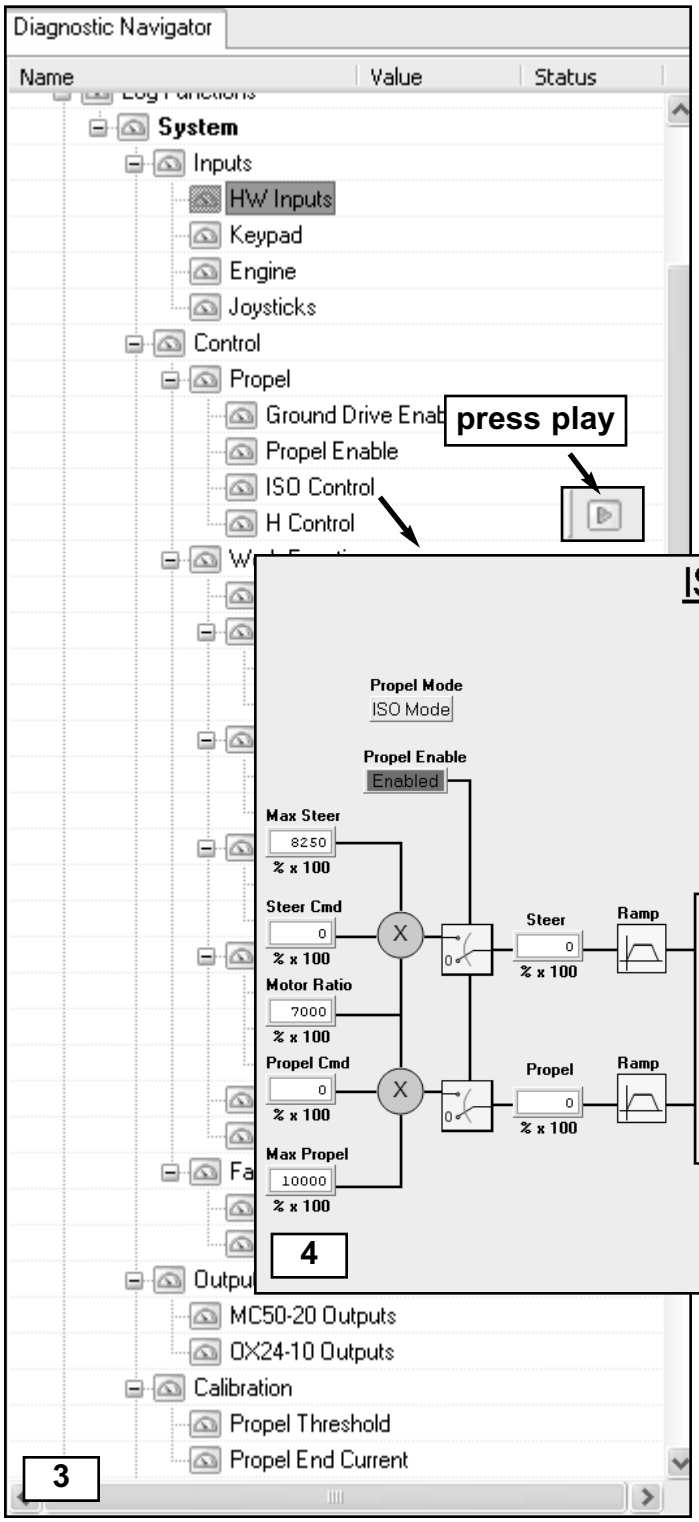
The diagnostic navigator for the service tool is shown in figure 1. You can see the different systems and components that are accessible with this tool.

Enable Screens

The enable screen for Ground Drive is shown here, accessed by clicking on the item in the Diagnostic Navigator.



The “enable” screens display components, systems and sensors that affect the particular function they are associated with (ground drive, propel, work valve, boom, bucket, etc.). If there is a problem with one of the prerequisites (shown on the left side of the enable screen) for normal operation, they would be displayed in red. In most cases, this indicates that there is a malfunction of some sort or a condition that requires attention to restore normal operation.

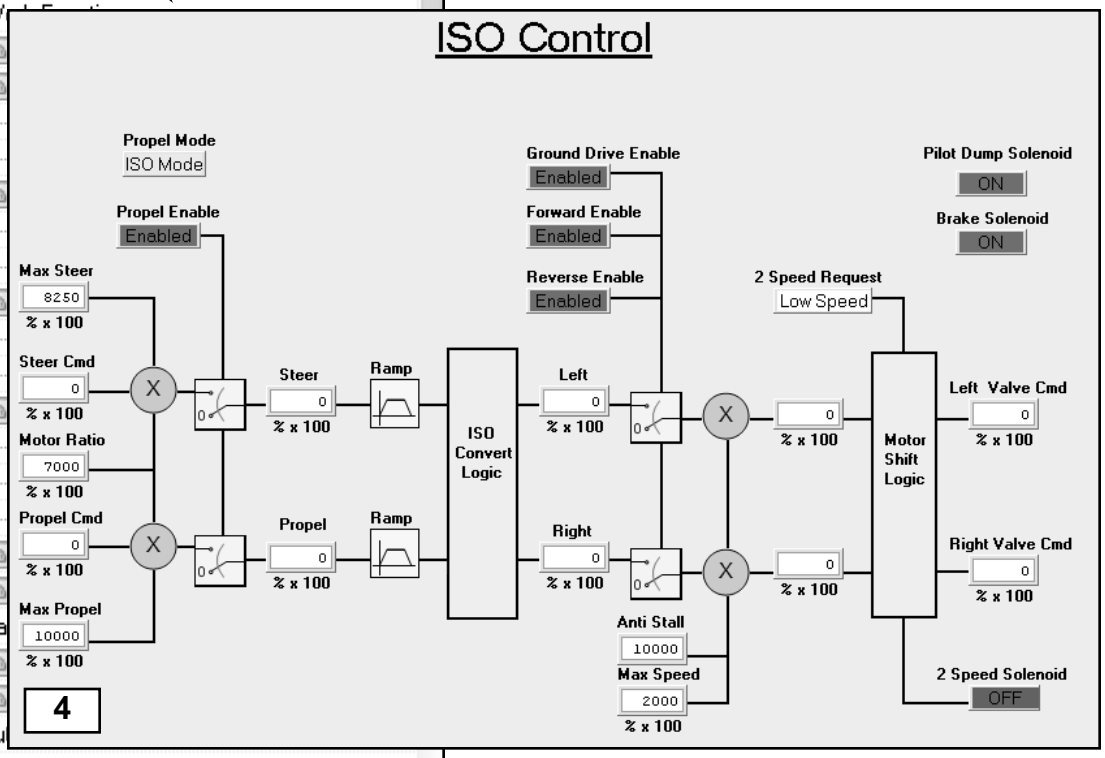


Control Screens

The control screen for ISO is shown here, accessed by clicking on the item in the Diagnostic Navigator.

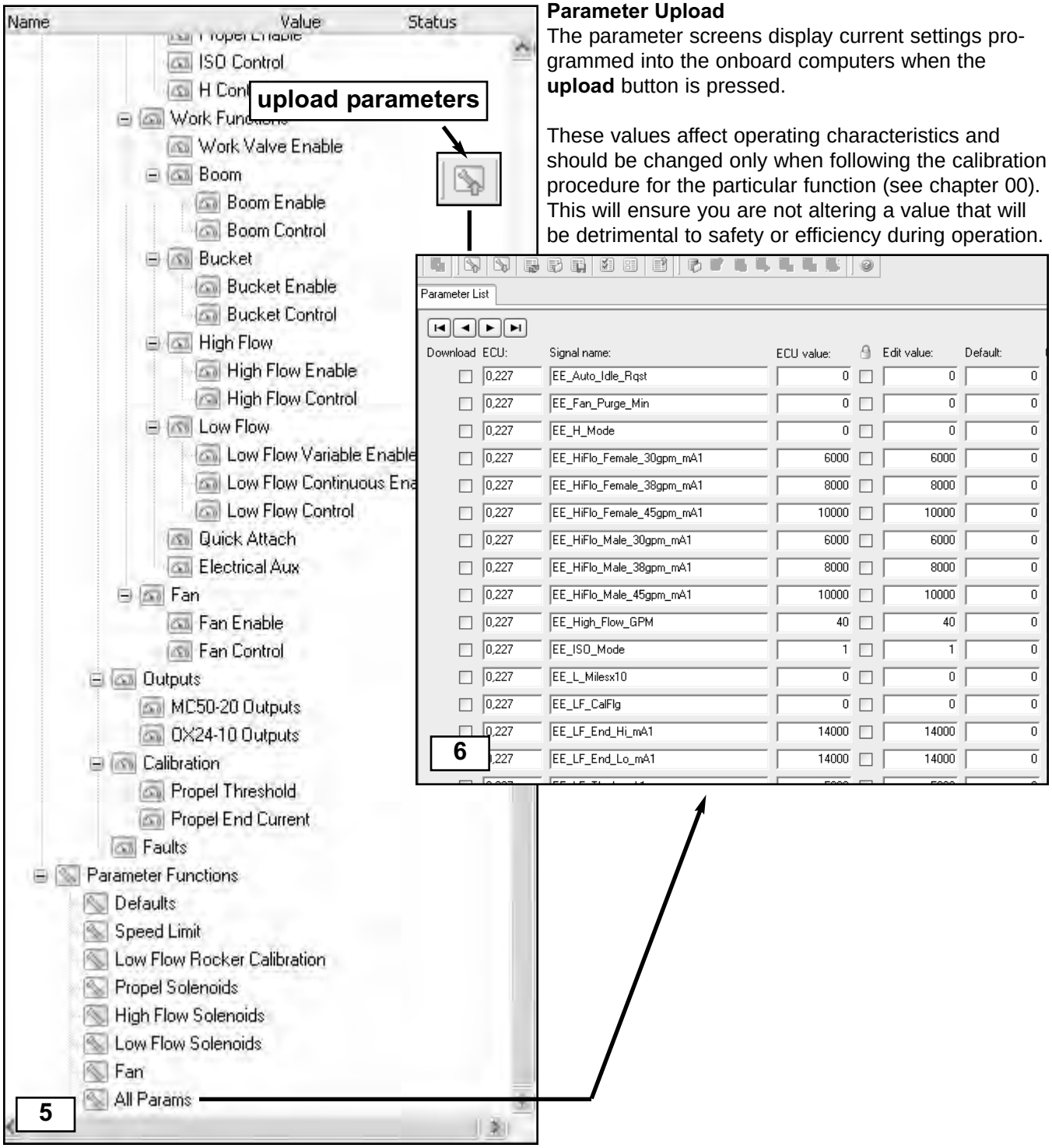
The control screens show the sequence of events that take place when a command is given. The numerical values of the signals sent between components are displayed in the white boxes (fig. 4).

As a command is given (ex: joystick is moved) the information in the display boxes will change to reflect what is taking place in the system. If there is a problem with one of the prerequisites for normal operation, they would be displayed in red. In most cases, this indicates that there is a malfunction of some sort or a condition that requires attention to restore normal operation.



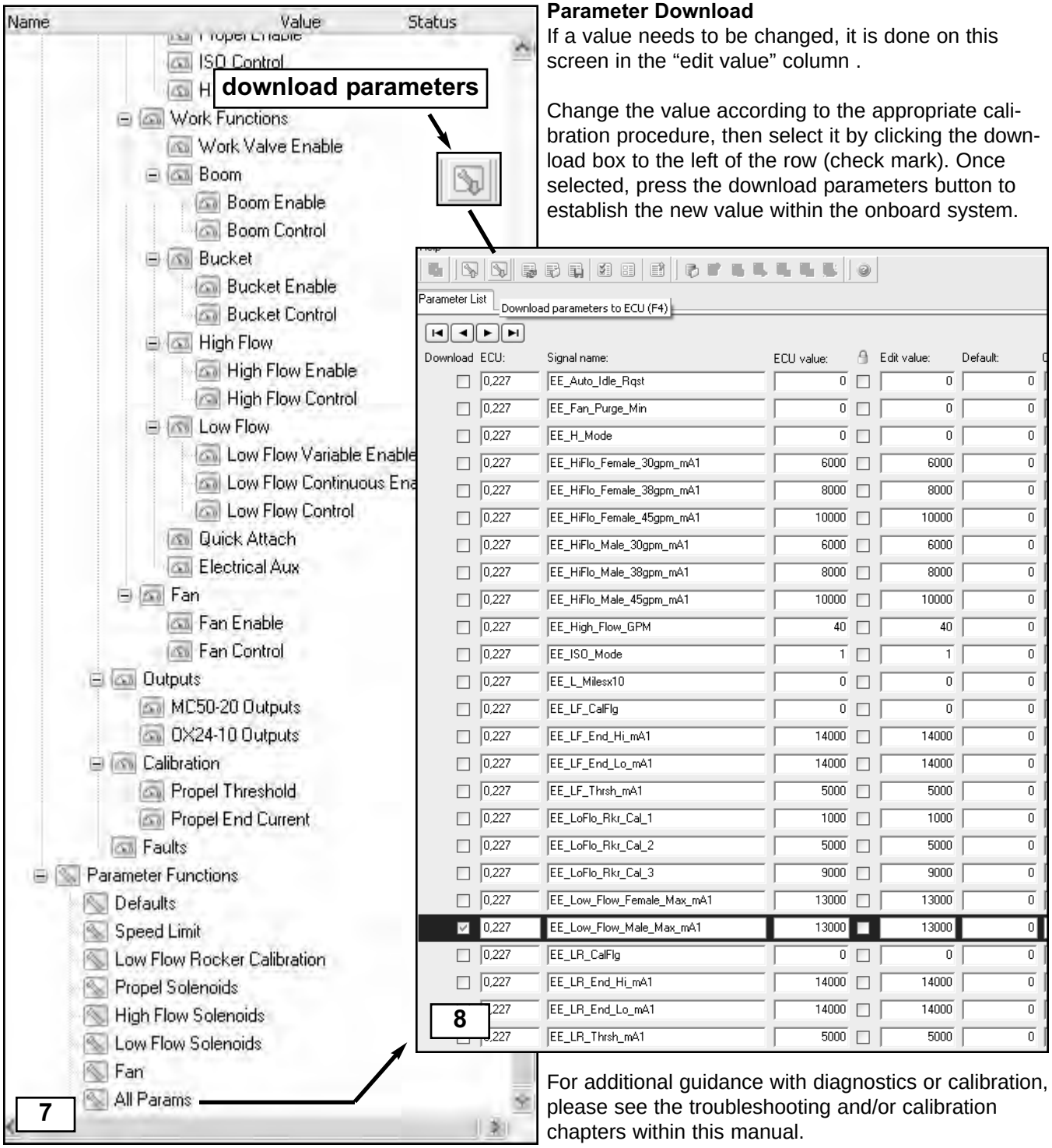
As with the enable screens, you must press the play button as each screen is entered to allow the realtime data from the machine systems to be displayed in the service tool screens.

The 2-speed solenoid activation indicator shown in the lower right corner of figure 4 is a good example of the color red being used in a manner that does not indicate a malfunction. Here it simply indicates that high range (2-speed) is not active.



Parameter Upload
The parameter screens display current settings programmed into the onboard computers when the **upload** button is pressed.

These values affect operating characteristics and should be changed only when following the calibration procedure for the particular function (see chapter 00). This will ensure you are not altering a value that will be detrimental to safety or efficiency during operation.



Parameter Download

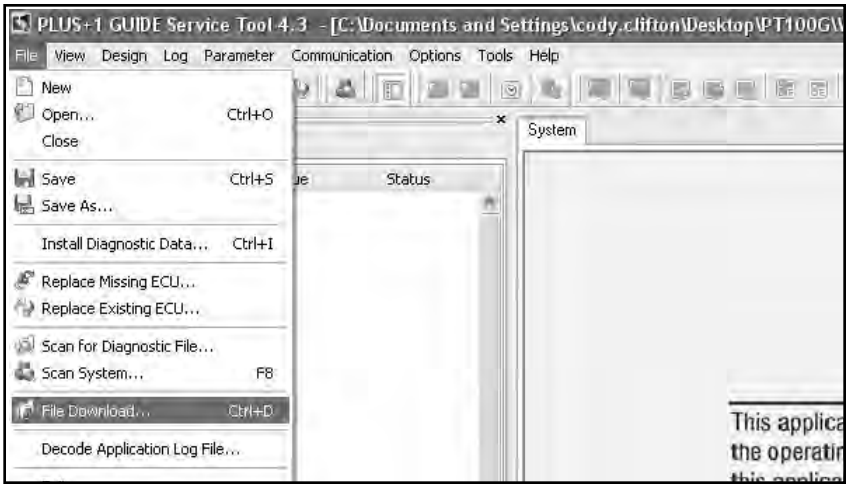
If a value needs to be changed, it is done on this screen in the “edit value” column .

Change the value according to the appropriate calibration procedure, then select it by clicking the download box to the left of the row (check mark). Once selected, press the download parameters button to establish the new value within the onboard system.

For additional guidance with diagnostics or calibration, please see the troubleshooting and/or calibration chapters within this manual.

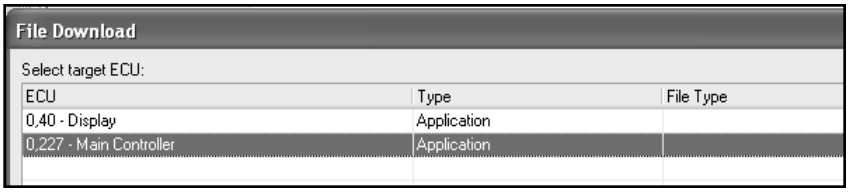
Software version update

If a new software version is available for your machine, it must be downloaded to the onboard computers in order to take effect. To download the update:



1. Visit: constructionsupport.terex.com to download the latest version of the software for your machine.

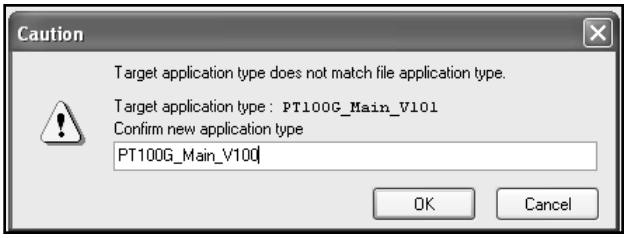
2. With the machine connected to the laptop, ignition key in the “on” position and the service tool up and running, select “file” and then “file download” from the drop down list.



3. When you see the “File Download” pop-up displayed, select the component you wish to update.
   - Display
   - Main Controller



4. You will then be prompted to find the new version file to download. Locate it on your computer and click “open”. The “DownloadFile Tab” will then appear as shown at right. Click “start download” to begin the process.



5. A confirmation window will then appear ensuring you wish to continue and displaying the current software version. Type in the new software version (found in the filename located in step 4) in the format shown at right (do not include periods in the file name).



6. Once you have typed the new version in to confirm the update, click “ok” to begin the download. Once finished, you may confirm the update by looking at the “software version” screen in the display. It will display the current version and should reflect the version you have just installed.

Note: Do not disconnect the laptop from the onboard systems during the download.

20. Lubricant & Fuel Specifications

Chapter Overview

When replacing or replenishing the fluids and lubricants in an Terex Compact Track Loader, use Terex products. This ensures that the new fluids and lubricants match those originally installed when the machine left the Terex factory. Terex products were developed for, tested and approved by Terex to assure optimum life and performance in all Terex Compact Track Loaders, when used as recommended.

Fluids

Engine Oil

- SAE 10W-30 (API CH-4)
  Capacity: 9 quarts (8.52l) including filter

Engine Anti-freeze/Coolant

- Terex Long-Life 50/50 Antifreeze/Coolant
  Capacity: 4.3 gallons (16.3l)
  P/N: 0300-766 1 gallon
  P/N: 0402-841 6 gallons

Hydraulic Oil

- Mobil DTE 10 Excel 46
  Service Capacity: 22 gal.(83.3l) incl. filters
  P/N: 0404-094 2.5 gallons

Grease (general-use)

- Terex Multi-Purpose EP Lithium Grease
  P/N: 0300-769 1 tube
  P/N: 0402-844 10 tubes
  P/N: 0402-834 40 tubes

Planetary Oil

Service Capacity: .95 quarts (.9l)

- 75-140 Synthetic gear oil

If Terex products are not available, use high quality substitutions that meet or exceed factory installed fluid specifications.

Fuel Specifications

Diesel fuel, distilled from crude oil, identified as No. 1-D or No. 2-D in “ASTM D975” and “EN 590” generally meet machine requirements.

21. Service Aids & Supplements

General Torque Specifications

Inch Fasteners

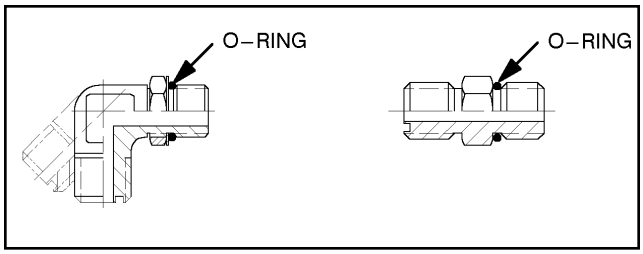
Thread Size	Standard Torque
1/4"	9 +/- 2 lb ft
5/16"	18 +/- 4 lb ft
3/8"	35 +/- 7lb ft
7/16"	50 +/- 11 lb ft
1/2"	75 +/- 15 lb ft
9/16"	120 +/- 22 lb ft
5/8"	160 +/- 30 lb ft
3/4"	275 +/- 37 lb ft
7/8"	460 +/- 60 lb ft
1"	660 +/- 75 lb ft
1-1/8"	960 +/- 110 lb ft
1-1/4"	1320 +/- 150 lb ft
1-3/8"	1780 +/- 220 lb ft
1-1/2"	2280 +/- 260 lb ft

Metric Fasteners

Thread Size	Standard Torque
M6	12 +/- 3 Nm
M8	28 +/- 7 Nm
M10	55 +/- 10 Nm
M12	100 +/- 20 Nm
M14	160 +/- 30 Nm
M16	240 +/- 40 Nm
M20	460 +/- 60 Nm
M24	800 +/- 100 Nm
M30	1600 +/- 200 Nm
M36	2700 +/- 300 Nm

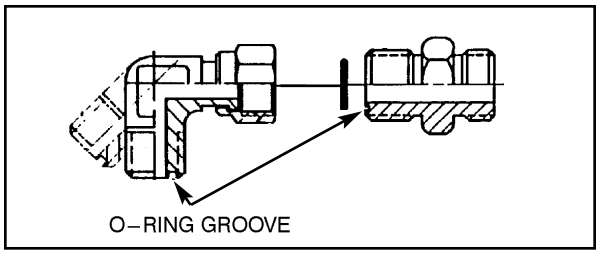
Fitting Torque Specifications

O-Ring Port (in conjunction with ORFS connectors)



REF NOMINAL TUBE OD		THREAD SIZE	DYNAMIC ASSEMBLY TORQUE
mm	INCH		(N·m)
4.76	.188	3/8	12+2
6.35	.250	7/16	22+2
7.94	.312	1/2	30+3
9.52	.375	9/16	48+5
12.70	.500	3/4	82+8
15.88	.625	7/8	140+14
19.05	.750	1–1/16	190+15
22.22	.875	1–3/16	250+20
25.40	1.000	1–5/16	300+30
31.75	1.250	1–5/8	350+35
38.10	1.500	1–7/8	415+40

O-Ring Face Seal (ORFS)



REF NOMINAL TUBE OD		THREAD SIZE	DYNAMIC ASSEMBLY TORQUE (N·m)
mm	INCH		
6.35	.250	9/16	25+3
9.52	.375	11/16	40+4
12.70	.500	13/16	55+5
15.88	.625	1	86+8
19.05	.750	1–3/16	125+15
25.40	1.000	1–7/16	165+15
31.75	1.250	1–11/16	200+20
38.10	1.500	2	245+20

Note: For o-ring port fittings, use 50% of listed torque values if fitting or port material is non-ferrous.

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