OPERATION MANUAL

MAINTENANCE

COMPACT TRACK LOADER

TL100VS

(S/N: 00101 & Above)

Original Instructions

YANMAR

WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov.
0404-841

Please fill in before commissioning the machine:

Model: _____

Vehicle Serial Number: _____

Year of Manufacture: _____

Commissioned on: _____

Dealer:

7.1 General

The operating condition and life expectancy of a machine is largely influenced by care and maintenance. For this reason, it is in every machine owner's interest to perform the specified maintenance work and comply with the service intervals.

This chapter describes periodic maintenance, inspection and lubricating tasks. The maintenance interval charts list all work to be performed on the machine at regular intervals.

Note: Always use genuine original equipment replacement parts when performing maintenance or service to maintain the highest possible level of quality.

The supplemental engine operation and maintenance manual supplied with the machine contains information specific to the proper operation, inspection and maintenance of the engine and its internal components. This manual must be read, understood and followed in order to properly maintain the engine and comply with warranty requirements.

⚠ The operator must have sufficient knowledge to inspect and maintain the machine. The operator should follow the procedures in this manual and take any necessary precautions to ensure his/her safety. Wear appropriate personal protection equipment for all tasks.

7.2 Care and cleaning

Cleaning the machine

- Do not use aggressive detergents to clean the machine. We recommend using commercially available cleaning agents for passenger cars.
- Linings (insulating materials, etc.) should not be exposed directly to water, or high-pressure jets.
- When cleaning with water jets, take care not to direct the jet into exhaust and air filter openings and do not expose sensitive engine parts, such as alternator, wiring, oil pressure switches, etc. directly to the jet.
- Do not clean the machine with hot water in excess of 140° F or steam as it can accelerate the formation of corrosion on zinc plated components.
- Pay particular attention to the radiator / oil cooler, engine compartment, and chassis area when cleaning. Remove any visible debris from these areas prior to cleaning.
- After wet cleaning lubricate the machine as specified in section 7.4 prior to operation.
- Inspect the machine after cleaning for the presence and condition of safety signs. If any are missing or damaged, contact your dealer immediately to obtain a replacement.

7.3 Maintenance Intervals

7.3-1 Daily Maintenance Tasks

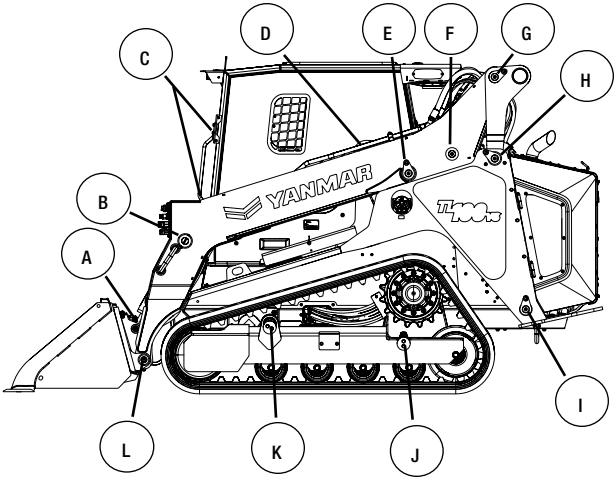
Daily		Page
1	Check hydraulic oil level (figure 7.7-3, p-106)	106
2	Check engine oil level	104
3	Check fuel level (gauge screen on display)	37
4	Check diesel exhaust fluid level (gauge screen on display)	37
5	Check track tension / condition	109
6	Check for proper control operation	40
7	Check safety circuit for proper operation	83
8	Check for proper switch and lighting operation	37
9	Check display for air filter fault message, service as required	112,113
10	General visual check for cracks, damage, completeness	20,83
11	Check for leaks in hoses, tubes, valves, pumps, cylinders, etc.	18,27,83
12	Check display for water in fuel fault message, drain as required	108
13	Lubricate all grease points	103
14	Inspect / clean the coolers and engine compartment (as needed)	114,115
15	Inspect / clean undercarriages (as needed)	109
16	Inspect / clean chassis	115
17	Inspect/replace missing/damaged safety signs	12,13

7.3-2 250-2000 hour Tasks

Every 250 operating hours		Page
1	Replace hydraulic filter(s)	107
2	Check alternator / A/C belt tension / condition	107
Every 500 operating hours		Page
1	Replace engine oil & filter	105
2	Replace fuel filter elements	108
Every 1000 operating hours		Page
1	Replace hydraulic oil	106
Every 2000 operating hours		Page
1	Replace engine coolant (see chapter 3 for specifications)	114
2	Replace DEF filter	117

7.4 Lubrication Points

The illustration below shows the location of grease points found on the left side of the machine. Identical points also exist on the opposite side of the machine with the exception of the door pivots. Lubricate all points daily, prior to operation.



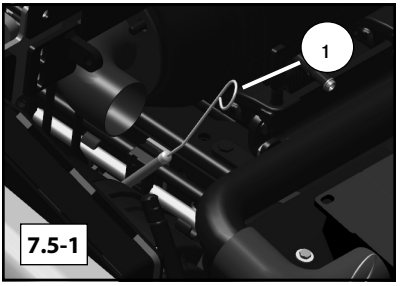
A. Lower Bucket Cylinder Pivot
B. Upper Bucket Cylinder Pivot
C. Door Pivot (2)
D. Front Control Arm Pivot
E. Upper Lift Cylinder Pivot
F. Rear Control Arm Pivot
G. Rear Lift Arm Pivot
H. Rear Lift Arm Linkage Pivot
I. Lower Lift Cylinder Pivot
J. Rear Axle Pivot (2)
K. Front Axle Pivot (2)
L. Lower Bucket Pivot

7.5 Engine Oil Check

1. Shut the machine down according to the procedure in section 5.13.

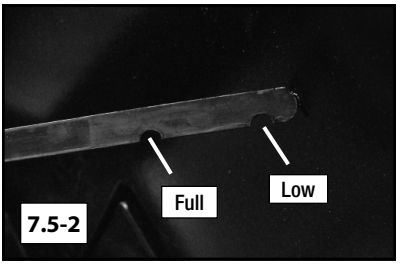
2. Open the hood to gain access to the engine compartment (pg. 125).

3. Locate and remove the engine oil dipstick (1) from its tube (fig. 7.5-1).



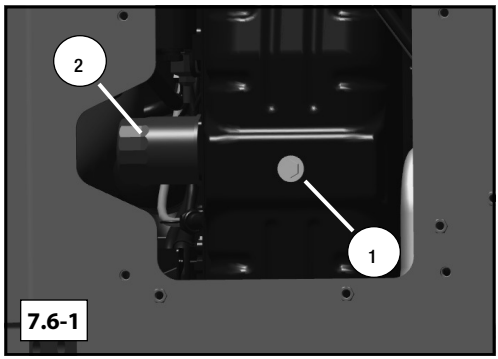
4. Wipe the dipstick with a clean shop cloth and reinsert it into the tube until it comes to rest in its seated position.

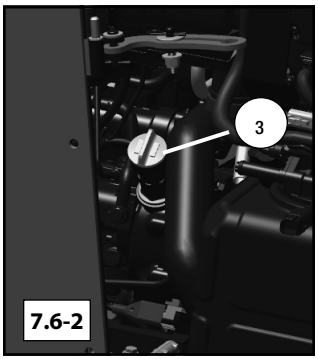
5. Remove the dipstick once again and inspect the end for oil on the level indicator.



6. Oil should be present on the dipstick up to, but not over the upper (full) level indicator. If the level is correct, reinstall the dipstick and then close and latch the hood to complete the procedure (fig. 7.5-2).

7. If the level is low, add the proper grade and viscosity engine oil as described in section 7.6 and re-check as necessary until the proper level has been achieved. Then reinstall the dipstick and filler cap and close the rear door, hood and side panels to complete the procedure.





7.6 Engine Oil Change

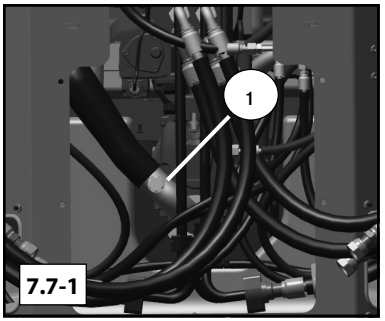
Regular oil changes are necessary to maintain a strong running engine. Change the oil at 500 hour intervals (or every year if annual operating hours do not exceed 500). Allow the machine to cool prior to service. Wear safety glasses, safety gloves and any other items necessary to ensure your safety while performing maintenance or service.

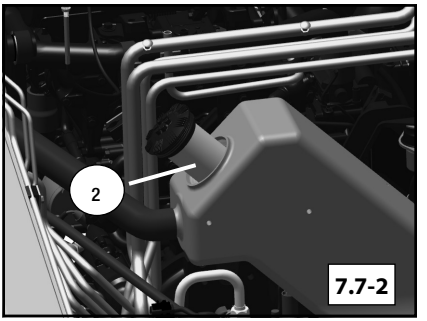
To change engine oil:

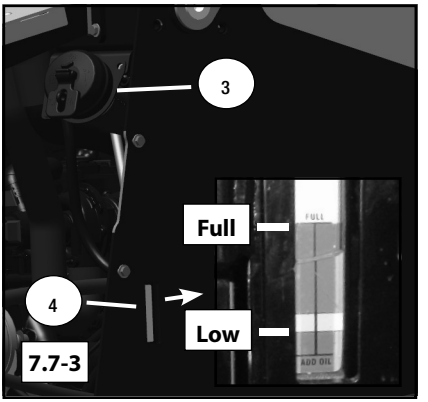
1. Shut the machine down according to the procedure in section 5.13 and allow the machine to cool thoroughly. Open the hood and side panels, then pivot the cooler assembly for access (pg. 125).
2. Lower the access panel beneath the engine to access the oil drain and filter.
3. Remove the oil drain plug (item 1, fig. 7.6-1) from the bottom of the pan.
4. Drain the oil into a suitable catch container.
5. Remove the engine oil filter (item 2, fig. 7.6-1).
6. Apply fresh oil to the new oil filter seal and install the filter (fig. 7.6-1).
7. Tighten filter according to the specifications on the filter label or box.
8. Reinstall the oil drain plug as found upon removal and tighten to secure.
9. Refill the engine to capacity at the location labeled 3 above with oil as specified in chapter 3, Technical Data.
10. Re-secure the access panels as found upon removal, close hood, side panels and rear door. Dispose of the used oil and filter according to mandates.

⚠ Oil and machine components can be HOT! Allow the machine to cool thoroughly prior to performing maintenance or service to avoid the possibility of burns.

7.7 Hydraulic Oil Change







The hydraulic oil should be changed every 1000 service hours. Before beginning the procedure, make sure the machine is in a clean working environment. Take any necessary measures to prevent dirt or debris from entering the hydraulic system.

To change hydraulic oil:

1. Shut the machine down in accordance with the procedure in section 5.13.
2. Allow the machine to cool.
3. Lower the middle belly pan to access the hydraulic oil drain. Remove the hydraulic fluid drain plug (item 1) as shown (fig. 7.7-1). Also, drain the hydraulic oil from the rear oil cooler (open the hood and side panels, then pivot the cooler assembly (pg. 125), remove drain plug (item 1, fig. 7.18-1).
4. Drain the used oil into a suitable catch container.
5. Dispose of the oil according to mandates.
6. Reverse step 3 to reinstall / tighten the drain plugs and secure the cooler assembly, hood, side panels and belly pan.
7. Open the hood and right side panel, then refill the hydraulic system (fill point, item 3) with hydraulic oil as specified in chapter 3 (fig. 7.7-3).

Note: Visually inspect the hydraulic oil sight gauge (item 4) to verify proper oil level (fig. 7.7-3). Oil should be visible in the site gauge, indicating the level is safe. If oil is not present in the gauge, fill until oil is visible.

8. Once full, reinstall the cap and start the engine according to the proper starting procedure and operate all hydraulic circuits to work any trapped air out of the system. Then, check the oil level. If low, add oil as necessary until full. Close hood and side panel.

7.8 Hydraulic Filter Change

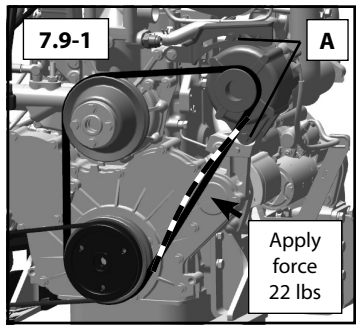
The hydraulic filter should be changed every 250 hours. Hydrostatic components require extremely clean oil in order to have a long service life. Use caution when changing the hydraulic filter. Before beginning the procedure, make sure the machine is clean and parked in a clean working environment. Take any necessary measures to prevent dirt or debris from entering the hydraulic system.

To change the hydraulic filter:

1. Shut the machine down in accordance with the procedure in section 5.13.
2. Tilt the cab as described in section 7.23 for filter access.
3. Allow the machine to cool, then release any residual pressure in the hydraulic system by following the procedure in section 2.18 of this manual.
4. Clean above and around the hydraulic tank filter cap to prevent contaminants from entering the hydraulic system, then thread the cap off of the tank. Slowly guide the cap and filter upward and out of the tank.
5. Twist the cap counter-clockwise to separate it from the filter element, then empty any trapped oil from the top of the element into a suitable catch container. Dispose of the filter and used oil according to mandates.
6. Install new filter element onto the cap and twist clockwise to secure.
7. Install the filter and cap assembly into the tank. Lower it into place as found upon removal, ensuring the bottom of the filter is centered over the lower inlet tube. Carefully thread the cap/filter assembly into place until secure.
8. Inspect the hydraulic oil level. If low, add as needed until full (see sections 3.11 and 7.7 for fluid specifications and oil fill procedure).
9. Reverse step 2 to complete the procedure.

7.9 Accessory Belts

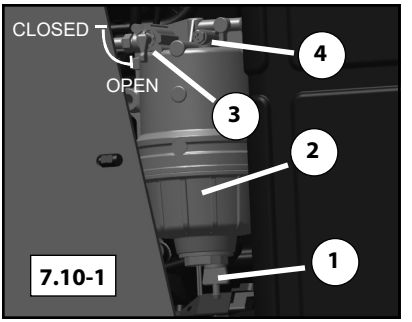
The accessory belts should be visually inspected initially at 50 hours, then at 250 hour intervals thereafter. Replace if damaged. To inspect:



1. Shut the machine down as described in section 5.13, allow to cool.
2. Open the hood and side panels, then pivot the cooler assembly (pg. 125).
3. Visually inspect the belt. If it appears loose, apply moderate thumb pressure to the belt (fig. 7.9-1). If it deflects more than .38 - 0.5 in. (10-14 mm), loosen alternator fasteners (A) and use a lever between the engine block and alternator to increase tension until within limits. Tighten fasteners (A).

Note: For additional clearance, remove the fan guard as described in section 7.26. A/C belt tension is not adjustable. Inspect only for presence and condition.

7.10 Water Separator

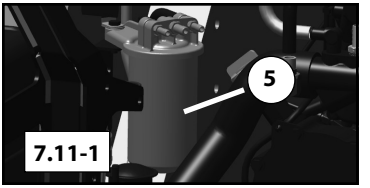


The water separator (item 1) removes water from the fuel supply as the engine runs. (fig. 7.10-1) It is located on the left side of the engine compartment behind the side panel. Drain the water separator every 50 hours or as indicated (operator interface will display water in fuel fault message) to maintain proper function.

To drain the water separator:

1. Shut the machine down according to the procedure in section 5.13.
2. Open the hood and left side panel to access the water separator, attach a section of hose to the separator outlet for draining. Close fuel valve 3.
3. Loosen the twist valve (1) on the bottom of the separator (2) to drain the contents into a suitable catch container. Dispose according to mandates. If no water comes out, loosen the air vent screw (4) 2-3 turns. If still no water comes out, open fuel valve (3) to drain.
4. Once all of the water has been drained, close twist valve (1), close air vent screw (4), then reverse step 2 (ensure fuel valve 3 is open). **IMPORTANT:** prime the fuel system by turning the key to the on position for 10-15 seconds and check for leaks prior to starting to complete the procedure.

7.11 Fuel Filter(s) Change



The fuel filters should be changed every 500 service hours, or as needed. A plugged fuel filter can cause loss of engine power, rough running, or no start. **See also section 7.26.**

To change the filter:

1. Shut the machine down according to the procedure in section 5.13, allow the machine to cool before performing this procedure.
2. Open the hood, side panels and rear door assembly for access (pg. 125).
3. Clean the outside of the filters (items 2, 5) thoroughly (fig. 7.10-1, 7.11-1).
4. Drain the water separator as described in section 7.10. Disconnect the electrical connector. Close fuel valve (3).

Note: Drain fluids into a suitable catch container. Dispose according to mandates.

5. Twist the fuel filter (5) and water separator housing (2) CCW when viewed from the bottom to remove the filter (5) and expose the internal water separator element for removal. Remove and dispose of both filter elements according to mandates.
6. Reverse steps 2, 4 and 5 to reinstall new fuel filter and separator elements. Open fuel valve (3), then prime the fuel system (step 4, section 7-10) and check for leaks prior to starting to complete the procedure.

7.12 General Undercarriage Information

The undercarriage assemblies typically operate in harsh working conditions. They work in mud, gravel, debris and various other abrasive materials during operation. A daily inspection of the undercarriage assemblies and cleaning (if necessary) is recommended.

Materials that are particularly sticky or abrasive like clay, mud, or gravel should be cleaned from the undercarriages 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 carefully remove foreign materials.

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

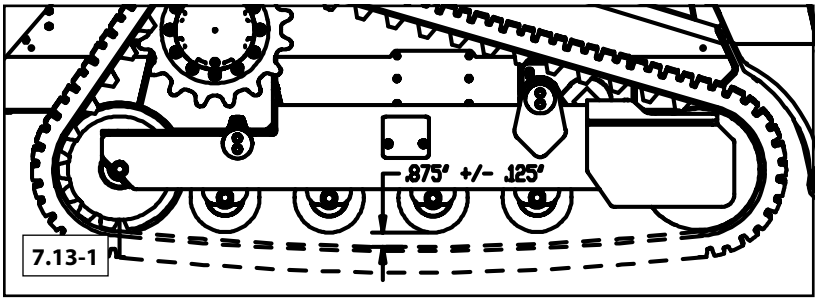
Operation on sand, turf, or other finished surfaces may require less frequent cleaning, but daily inspection is still advised.

7.13 Track Tension Check

Proper track tension is important for achieving both optimum performance and maximum track and undercarriage life. **Always operate with track tension within the specified range.** Operating with tracks that are over tightened will result in accelerated wear to sprockets, bearings, tracks and other undercarriage components. Operating with tracks that are under tensioned however, can result in accelerated track wear or derailment. Check track tension every 50 hours and adjust as needed to maintain proper tension.

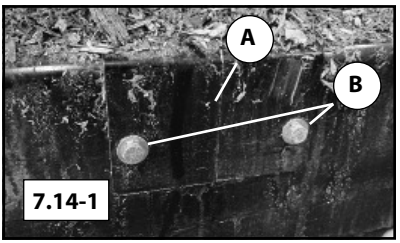
To check for proper track adjustment:

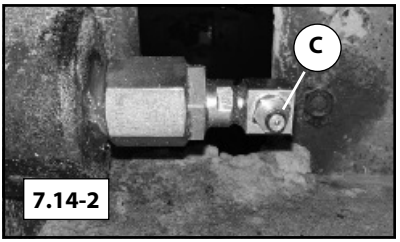
1. Shut the machine down according to the procedure in section 5.13.
2. Jack and support the machine according to the procedure in section 7.24. Once off of the ground, any slack in the tracks should hang down off of the bottom of the undercarriage between the front and rear idler wheels (fig. 7.13-1).
3. Using a ruler or tape, measure the distance between the bottom of the center idler wheels and the top of the lower section of track. The track should deflect .875 in. (2.2 cm) + / - .125” (.32 cm) between the idlers and track.
4. If the track deflection measurement does not fall within limits, adjust track tension until within specification.

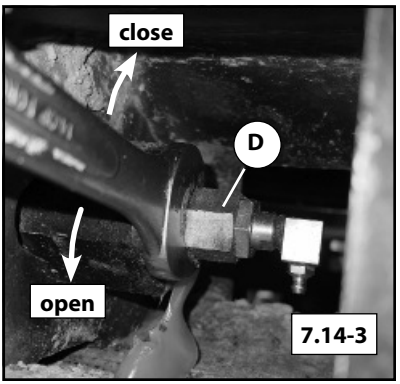


7.14 Track Tension Adjust (see 7.13)

1. Perform steps 1-2 of the track tension check procedure to jack and support the machine.
2. Remove the fasteners (B) and access cover (A) on the outside of the undercarriage you plan to service (figure 7.14-1).
3. To tighten the track, attach the grease gun hose coupler to fitting (C) and pump grease into the tensioner unit until the track tension measurement is within specification (figure 7.14-2).
4. To loosen the track, use the appropriate size open end wrench to open the grease valve as shown. Turn the nut counter clockwise to open the grease valve (no more than 1 full turn). Turn the nut clockwise to close the valve (figure 7.14-3).





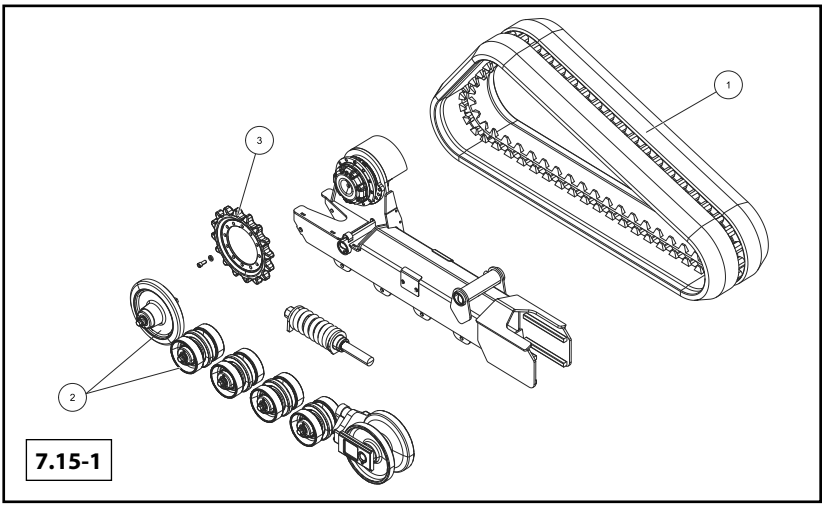


Note: Grease will weep from the tensioner when the valve is opened. Place a shop towel beneath fitting (C) to catch grease when released. Dispose of grease according to mandates.

5. Once track tension is set, reverse steps 1-2 of this procedure to return the machine to operating condition and complete this procedure.

7.15 Track and Drive System

Compact Track Loaders use a steel sprocket and steel embedded rubber tracks. Undercarriages should be cleaned often and inspected daily for leaks, damage and completeness. Tracks, wheel assemblies and sprockets should be inspected.



Tracks

Tracks (1) consist of an external rubber structure with a steel core. The rubber acts as a cushion between the steel core, roller assemblies (2) and external terrain that contact the track. If the rubber begins to separate from the steel core or if the rubber portion of the track is worn to less than 20% of its original thickness it should be replaced. Additionally, if the track is significantly torn, cut, or worn around the drive sprocket contact points affecting operation, it should also be replaced (see also sections 5.4 and 5.12).

Wheel assemblies

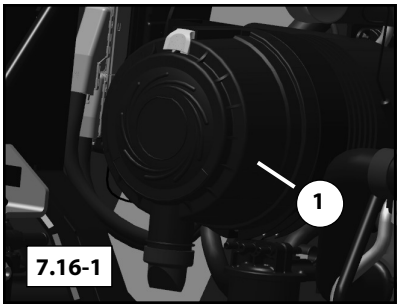
Wheel assemblies (2) are oil filled and should be inspected for leaks or damage. If a wheel assembly is found to be leaking, does not rotate freely or is damaged it should be replaced.

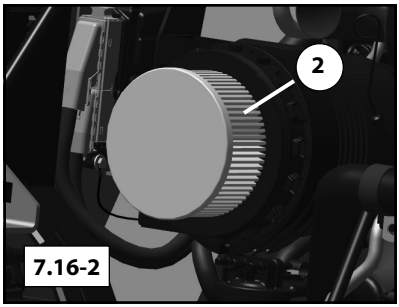
Drive Sprockets

Large steel sprockets (3) are used to drive the tracks. Wear will occur on sprocket teeth as well as in the track drive windows during use. Over time this will affect their ability to engage effectively and increase the likelihood of track ratcheting or derailment. If significantly worn, replace the drive sprockets, especially when replacing tracks to maximize track life.

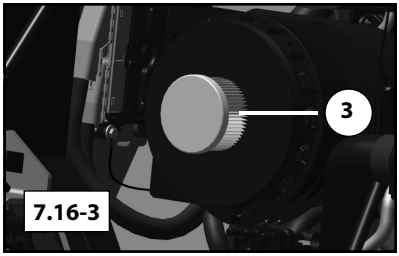
Track / drive sprocket removal and replacement should be performed by your local TL100VS dealer.

7.16 Air Cleaner Inspection / Service





A properly functioning air cleaner is necessary to ensure performance and to prolong engine life. The air cleaner is electronically monitored. If the air filter requires service, a fault message will be displayed on the operator interface (fig. 7.16-4) indicating the need for service.



To service the air cleaner:

1. Shut the machine down as described in section 5.13. Open the hood and side panels, then pivot the cooler assembly for access (pg. 125).
2. Pull the yellow slide latch outward, twist the housing cover (1) CCW, then pull to remove it (1).
3. Immediately vacuum the inside of the canister to remove loose dirt.
4. Once any dirt particles have been removed, slowly remove the primary element (2) taking care not to disturb dirt that may be caked around the filter seal. Again vacuum the canister.
5. Remove the secondary element (3) at this time, again taking care not to disturb dirt that may be caked around the filter seal. Vacuum the canister.
6. Wipe the seal areas with a clean damp cloth to remove any remaining dirt.
7. Reverse steps 1, 2, 4 and 5 to reinstall new elements prior to resuming operation.

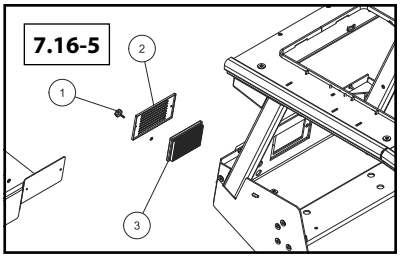
NOTICE

- DO NOT remove filters until you know they need to be replaced.
- DO NOT clean air filter elements. Instead, replace them. Heavy-duty air filter manufacturers will not warrant the air filter once it has been cleaned.

A message like the one shown above will be displayed when the air cleaner requires service.

Cabin Air Filter

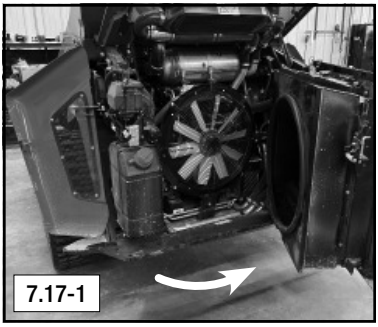
Machines equipped with an all weather cab are equipped with a cabin air filter (3) located on the right rear of the cab. Check the condition of the filter every 250 hours and replace if necessary. If operating in extremely dirty or dusty conditions, check the filter more often.



To service the cabin air filter:

1. Shut the machine down as described in section 5.13.
2. Loosen the thumb screws (1) securing the vented cover (2) to the cab.
3. Remove the cover and inspect the filter (3) for condition.
4. If soiled or damaged, replace the filter.
5. Reverse steps 2 and 3 to reinstall the vented cover over the new filter and secure prior to resuming operation.

7.17 Radiator / Oil Cooler Cleaning


7.17-1


7.17-2

The radiator and oil cooler must be 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 both work well to blow debris clear of the fins in the coolers.

To clean radiator / oil cooler:

1. Shut the machine down as described in section 5.13. Allow the machine to cool thoroughly.
2. Open the hood and side panels, then pivot the cooler assembly away from the engine for access (pg. 125 / fig. 7.17-1).
3. Thoroughly clean all coolers with a pressure washer or compressed air. Wear any appropriate PPE (see section 2.5). Direct spray through the cooler as shown. (fig. 7.17-2).

Note: If hydraulic oil or engine coolant temperature warnings occur during operation, clean coolers more often.

NOTICE

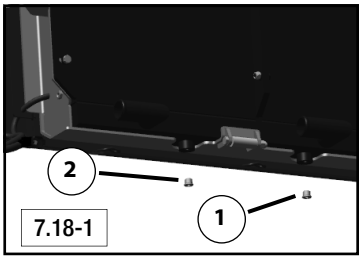
Make sure water nozzle is at least 12 in. (30.5 cm), for air 8 in. (20.3 cm) from the cooler and that the spray is directed straight through the cooler or the cooling fins may be damaged (bent over) which will decrease cooling performance.

⚠ In dusty applications check and clean the coolers and chassis often to avoid overheating and prevent fires.

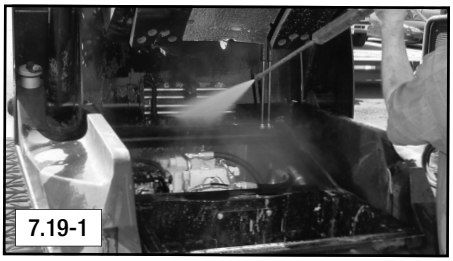
7.18 Engine Coolant Change

1. Shut the machine down as described in section 5.13 and allow it to cool thoroughly, then open the hood, side panels and pivot the cooler assembly (pg. 125).
2. Remove the coolant drain plug (item 2, fig. 7.18-1) and drain the old coolant into a suitable catch container. Dispose according to mandates.
3. Reinstall the drain plug and tighten, then add specified coolant (chapter 3) into the reservoir through the fill neck until full.
4. Warm the engine to operating temperature, then turn the engine off, remove the key and allow the machine to cool.
5. Check the coolant level, and top off (repeat steps 4 and 5 until all air has been purged and the level is full when cold).

⚠ Coolant and machine components can be HOT! Allow the machine to cool thoroughly prior to performing maintenance or service to avoid the possibility of burns.



7.18-1


7.19-1

7.19 Chassis / Engine / A/C Cleaning

Periodic cleaning of the chassis area beneath the cab and engine compartment is also necessary to maintain safe operation. Clean as necessary. (fig. 7.19-1)

To clean the chassis/engine:

1. Shut the machine down as described in section 5.13, allow the machine to cool thoroughly, then lower the access panels on the underside of the machine.
2. Open the hood and side panels, then pivot the cooler assembly at the rear of the machine (pg. 125).
3. Pressure wash any debris from the engine compartment out through the lower openings.
4. Tilt the cab as described in section 7.23.
5. Pressure wash any debris from the chassis area out through the lower openings. Once complete, lower and secure the cab.
6. Re-secure the access panels, then close and secure the hood, side panels and cooler assembly to complete the cleaning procedure.

⚠ If any safety signs are found to be damaged or missing after cleaning, contact your dealer for a replacement immediately. They can be reapplied according to the location illustration in section 2.3 of this manual.

A/C Equipped Machines

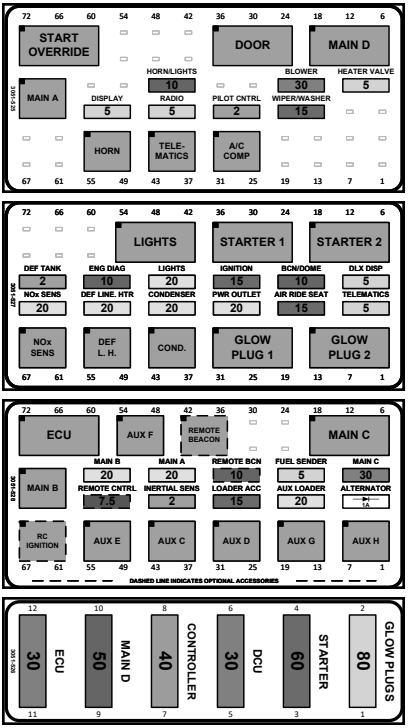
Air Conditioning Condenser: There is an A/C condenser (radiator like component at the top rear of the cab, behind the fan). This must be kept clean so that air can easily pass through.

Cleaning the condenser is very similar to cleaning the other coolers on the machine. Clean from the top down using compressed air. Water and cleaner may also be used and covers may be removed, but only if required. Perform steps 1 and 3 (and obey notice) of section 7.17 to clean the A/C condenser.

7.20 Electrical System

The electrical systems in compact track loader machines are equipped with fuses that help to protect the electrical components from damage. They are found in the fuse panel enclosures located to the right of the operator seat and in the on the right side of the chassis behind the access panel.

In the event of an electrical malfunction, check the fuse panels. Remove the fuse related to the component that is not working properly and inspect it. If it appears damaged in any way, replace it.



7.21 Diesel Exhaust Fluid (DEF)

The emissions system in the TL100VS requires diesel exhaust fluid (DEF) to operate (see chapter 3 for fluid specifications).

The DEF tank is located in the left rear corner of the engine compartment as shown (fig. 7.21-1).

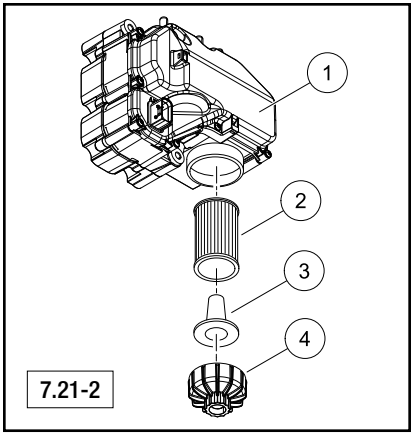
The level should be checked and topped off (if needed) daily, prior to operation. The current level is shown on the display and low level warnings will be displayed if the DEF level gets too low.


7.21-1

Use only DEF that is API (American Petroleum Institute) certified to ensure proper function of the aftertreatment system. **Add ONLY specified diesel exhaust fluid to your DEF tank or the aftertreatment system may be damaged.**

DEF Filter Change

The DEF supply module (1), located behind the left side panel adjacent to the DEF tank (fig. 7.21-2) is equipped with a filter (2) to prevent contaminants from entering the unit. The filter must be replaced every 3 years or 2000 operating hours. Reference the Yanmar engine specific service manual for more details.



7.21-2

To access the filter:

1. Shut the machine down as described in section 5.13, allow the machine to cool thoroughly, then open the left rear side panel to access the DEF system.
2. Wait at least 5 minutes after shutting the machine down to allow the supply module to complete the purge cycle (the module will create an audible pumping noise while this occurs). Once complete, disconnect the battery (see sections 2.18 and 2.19 for safety precautions and additional information).

⚠ Diesel exhaust fluid (DEF) contains urea. Do not get the substance in your eyes. In case of contact, immediately flush eyes with large amounts of water for a minimum of 15 minutes. Do not swallow. In the event the DEF is ingested, contact a physician immediately. Reference the Materials Safety Data Sheet (MSDS) for additional information.

3. Wear appropriate PPE to avoid DEF contact with eyes, then place a suitable catch container beneath filter cap (4) to catch any spills.
4. Remove cap (4), filter (2) and equalizing element (3) from module (1). Discard items 2, 3 according to mandates (DO NOT reuse items 2, 3).
5. Remove any visible DEF deposits from the threads on the cap (4) and supply module (1) with warm water and a clean cloth. At this time, inspect the cap and supply module for damage. Replace any damaged components.
6. Insert a new equalizing element (3) into new filter (2) and insert the assembly into the supply module as found upon removal in step 4.
7. Reinstall cap (4) and tighten to 177 in-lb (20 Nm) to secure.
8. Reverse steps 1 and 2 of this procedure to complete the filter change.

7.22 Storage

It may be necessary to store your TL100VS Compact Track Loader for an extended period of time.

Perform the following tasks to prepare the machine for storage.

7.22.1 Storage Preparation

- Thoroughly clean the machine (inside and out) including the engine compartment and underbody. Open the hood and side panels, pivot the cooler assembly, then remove belly pans and pressure wash to remove all buildup / debris.
- Allow machine to dry thoroughly, then reinstall belly pans, close hood, rear door and side panels. Touch up any paint blemishes to prevent rust.
- Lubricate all chassis, lift arm and undercarriage points as indicated on the chart in this chapter. Wipe away any excess grease.
- Replace any worn or damaged components.
- Add fuel stabilizer to near empty fuel tank, then fill to evenly distribute stabilizer throughout fuel. Run the engine for 5 minutes to circulate stabilized fuel throughout fuel system.
- Park the machine in a dry place that provides protection from the elements.
- Drain and refill the cooling system with 50/50 pre-mixed antifreeze/water.
- Replace engine oil and filter. (chapter 7)
- Replace hydraulic oil and filters. (chapter 7)
- Jack the machine and rest the chassis on suitable mechanical supports to remove weight from the torsion axles and suspend the tracks off of the ground.
- Apply protective lubricant (grease) to all exposed cylinder rods.
- Replace air cleaner elements and a/c filter element (if equipped).
- Return all controls to neutral position.
- Cover the exhaust outlet to shield it from the elements and foreign objects.
- Disconnect and remove the battery from the machine (see note below regarding SMARTASSIST-Remote equipped machines). Adjust the electrolyte level if needed and charge before storing. Store in a warm dry place. **Do not allow battery to freeze.** Charge periodically during storage as necessary.

Note: The SMARTASSIST-Remote system consumes trace amounts of electrical energy to maintain function even when the ignition key is turned off. Although equipped with an internal battery, the system requires machine battery power for long term operation. For security reasons, we recommend leaving the machine battery in place and attaching a maintenance charger to the battery to maintain voltage during storage on SMARTASSIST-Remote equipped machines.

⚠ Battery contents are flammable and corrosive. Contact with skin can cause burns! Do not smoke or allow open flame near the battery to avoid explosion! Wear appropriate PPE.

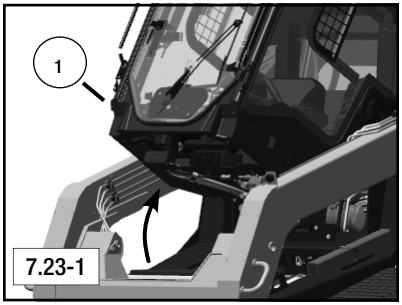
- Label or tag the machine to indicate storage condition.

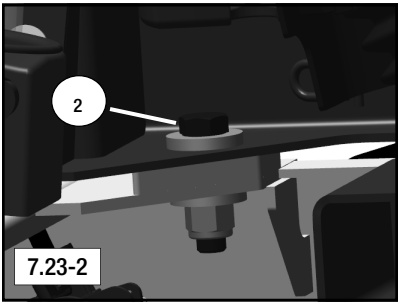
7.22.2 Removal From Storage

Perform the following tasks to remove the TL100VS Compact Track Loader from storage and return to operating condition.

Return to Operating Condition:

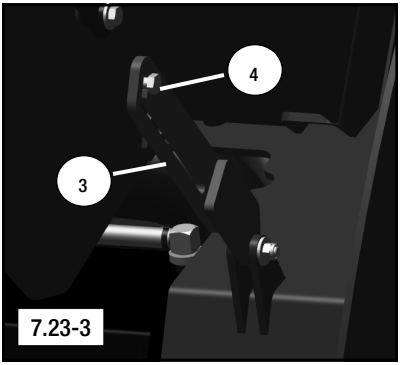
- Remove protective lubricant from cylinder rods.
- Lubricate all chassis, lift arm and undercarriage points.
- Safely remove the mechanical supports and lower machine to the ground.
- Install fully charged battery.
- Remove exhaust outlet cover.
- **If storage time has exceeded 6 months,** remove any remaining diesel exhaust fluid from the DEF tank and replace it with fresh API certified DEF. Dispose of expired DEF according to mandates.
- Perform pre-operation safety checklist in chapter 5 of this manual.
- Perform starting procedure. (chapter 5)
- Let engine run while observing engine monitoring systems (gauge screens / warning lights). Look for anything out of the ordinary. Should the coolant temp. or hydraulic oil temp gauge screens read excessive temperatures (**or** warning lights illuminate) or should the oil pressure gauge read abnormally low, shut the machine down immediately. Diagnose and make needed repairs before resuming operation.





7.23 Cab Tilt Procedure

The ROPS/FOPS approved cab (1) 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 per section 5.14.
3. Remove the two bolts (item 2) 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.
4. Once the bolts have been removed, **ask an assistant to help you** tilt the cab slowly upwards. The cab brace (3) should fall onto the shoulder bolt (4) locking the cab in its upright position.

Note: The force required to lift the cab exceeds 50 lbs (22.7 kg) and requires at least 2 people to safely tilt it (or the use of a suitable lifting apparatus).

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 (with help from the assistant) 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. Lower the lift arms (if raised) per section 5.14.

7.24 Jacking Procedure

Lifting the machine should only be done from beneath the machine with a jack of the proper capacity.

To safely lift 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 in section 5.14.
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 **beneath the center of the front torsion axle**.

NOTICE

Note: When using a jack to lift the machine, place the jack beneath the torsion axles only. Lifting at any other point will cause machine damage.

5. Once in place, jack/lift the machine upward making sure it remains stable until it has reached sufficient height to install suitable mechanical supports beneath the machine.
6. Slide the mechanical supports into place making sure they are positioned beneath the torsion axles only and spaced in such a manner that the machine will be stable when its weight rests solely on the supports.
7. Once the supports are in place, slowly lower the machine onto them 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.

Lift the machine straight up in a slow and careful manner (under the torsion axles only). Lower it this same way making sure all persons in the area are clear of the machine and its expected path.

⚠ When lifting attachments or components, use caution. Attach straps or chains securely and in such a way that they evenly distribute the weight of the item to be lifted, ensuring a balanced load. Stay clear of expected travel path.

7.25 SMARTASSIST-Remote (optional)

SMARTASSIST-Remote is a system that uses communication devices mounted in machines to manage information pertaining to the location and operation of the machine. A contract must be signed for usage of SMARTASSIST-Remote. If interested, please contact your local dealer for further information.

⚠ Under no circumstances must attempts be made to disassemble, repair, remodel, move or otherwise tamper with SMARTASSIST-Remote communication devices. Failure to observe this warning may result in malfunction of the machine or communication device or fire.

Be careful to ensure that cables or cords are not damaged by, for example, becoming trapped or being subjected to excessive tugging. Failure to observe this warning may result in malfunction of the machine or communication device or fire due to short circuits or severed cables or cords.

Persons with pacemakers must be careful to ensure that the implant is never less than 8.7in. (22cm) away from the antenna on the communication device. Failure to observe this warning may result in adverse effects on the operation of pacemakers caused by radio waves emitted by the communication device.

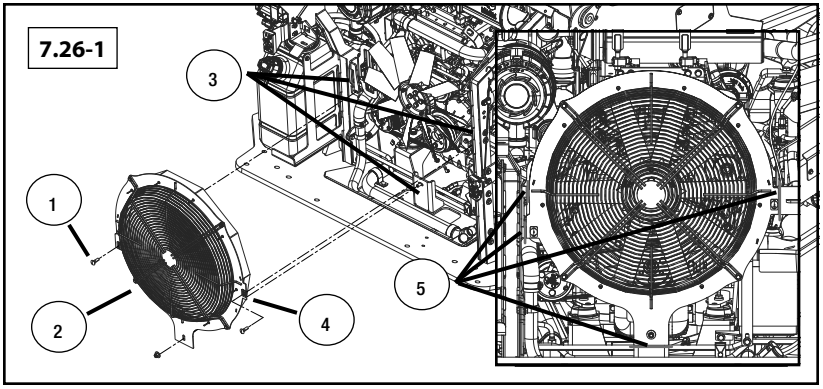
SMARTASSIST-Remote utilizes various communication devices. The following items should be considered when operating with SMARTASSIST-Remote.

- Since SMARTASSIST-Remote uses mobile communications, use of the system may not be possible in places inaccessible by radio waves such as tunnels, underground locations or in buildings or in places with poor radio reception.
- Disassembling or removing the communication device may inhibit operation of the machine. In the event that the device needs to be removed or repaired, please contact your local dealer.
- Although SMARTASSIST-Remote communication devices do not require any special operational procedures or inspections, please contact your local dealer in the event of possible abnormalities.
- Communication devices mounted in machines use radio waves and, therefore, require approval in accordance with national and local laws and ordinances.
- Since measures such as the removal of communication devices before resale or export of machines in which they are mounted may be required, please contact your local dealer in such cases.
- Some SMARTASSIST-Remote communication devices are mounted with a nickel metal hydride battery depending on the specification. Disposal of communication devices mounted with a nickel metal hydride battery requires appropriate treatment. Please contact your local dealer before disposing of such communication devices.

Note: The SMARTASSIST-Remote communication device consumes minute amounts of power even when the machine is turned off. Please refer to section 7-22 for information regarding machine storage.

7.26 Fan Guard

Some maintenance procedures may be aided by the removal of the fan guard for additional clearance / access. If desired, remove and install the fan guard as described below (see also section 2.18).



1. Shut the machine down according to the procedure in section 5.13. Remove key to avoid accidental start. **Exercise extra caution anytime a guard is removed for service.**
2. Allow the machine to cool thoroughly.
3. Open the hood, side panels and rear door to access the fan guard (pg. 125).

To remove the fan guard (fig. 7.26-1):

A. Mark the brackets (3) where the guard mounting tabs (4) contact them with a paint marker along tab edges (5) on both sides and similarly on the lower mounting tab. This will give you clear references to help to align the guard (horizontally and vertically) when reinstalled.

B. Remove fasteners (1) securing guard (2) to the brackets (3), then remove the guard from the machine.

C. After maintenance is complete, reinstall the fan guard (2) by reversing step B, aligning the tabs with marks from step A.

D. Inspect for equal clearance between the fan tips and the surrounding brush around the entire circumference of the fan (fan should be centered). Once the guard is properly positioned, tighten fasteners to secure.

Note: Fan must be centered within the guard or it may contact the guard during operation, causing damage. Ensure fan guard is properly installed, secured and that the fan is centered within the guard (equal fan tip to guard clearance around circumference of the fan) prior to returning the machine to service.

4. Reverse step 3 to complete the procedure.

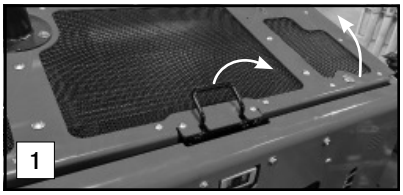
CALIFORNIA PROPOSITION 65

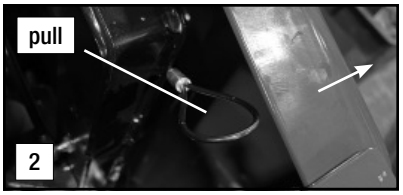
California (U.S.A.) state law stipulates that manufacturers of machines operated within its borders must provide a clear warning to customers regarding exposure to substances commonly associated with the machine that are recognized by the state as harmful. The manufacturer provides the following information.

WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov.
0404-841

Hood Opening Procedure

The machine has an upper hood, two side panels and a rear door assembly that can be opened for access to the engine compartment. They must be opened and closed in sequence **(DO NOT run engine with hood open (see notice below)**.



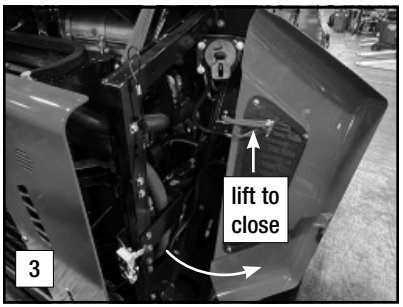


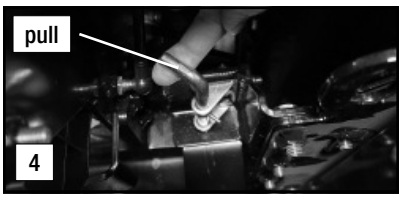
To open:

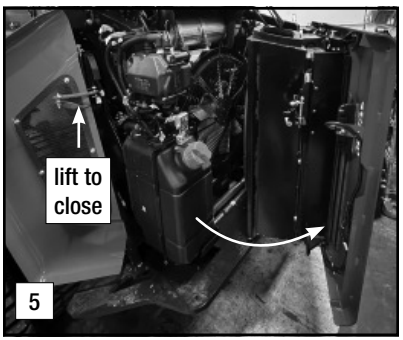
1. Lift the latch on the top rear of the machine, then raise the upper hood. It is supported by gas springs and a locking brace and will remain open once lifted (fig. 1).

2. Locate the latch release cables on each side of the machine, then pull each one and open the corresponding side panel (fig. 2, 3).

3. Once the upper hood and side panels are open, locate the rear door assembly latch on the left side of the door (inside, fig. 4). Pull the L shaped pin upward to disengage the latch, then pivot the door assembly open (fig. 5) to access the engine compartment.





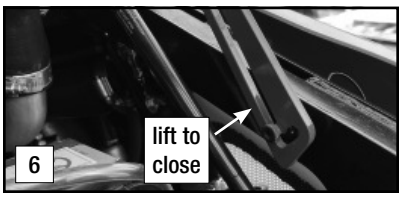


To close:

1. Close the rear door.

2. Lift and hold the locking mechanisms on the inside of the side panels to disengage them, then close the side panels (fig. 3, 5).

3. Lift and hold the locking mechanism on the right side of the hood to disengage it, then close the upper hood (fig. 6).



Exiting exhaust can overheat items near tailpipe outlet. Keep hood closed.

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