

REMOVING AND INSTALLING UPPER COWL

All components in the upper cowl may be serviced separately. The upper cowl is removed to facilitate servicing clutch housing and transmission without removing them from the skidder.

REMOVAL

Disconnect battery cables.

Remove hood, operator side shields, cowl covers, footrest, and transmission top shield.

DISCONNECTING RIGHT SIDE OF COWL

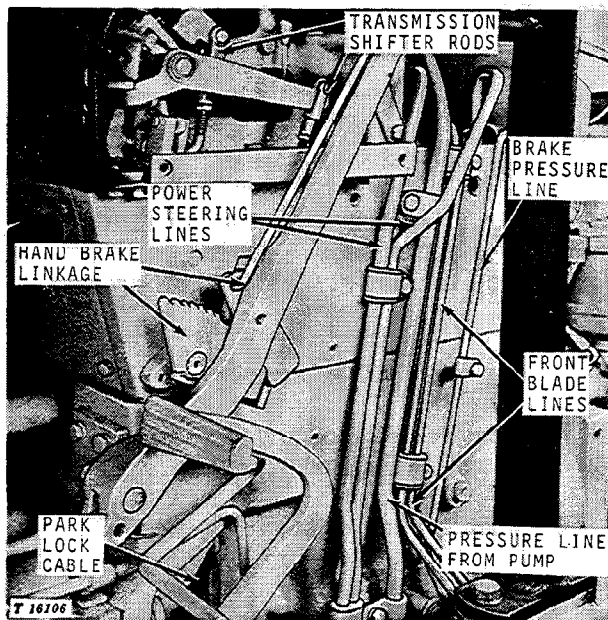


Fig. 5 - Disconnecting Right Side of Cowl

Disconnect foot throttle and hand brake linkage from cowl (Fig. 5).

Disconnect main pump pressure line, steering cylinder lines, brake pressure line, and front blade lines at both ends and remove lines from unit.

Disconnect oil cooler top lines, engine oil pressure tube, temperature sending unit, and diesel cold weather starting aid.

Disconnect two transmission shifter rods, park lock cable, and starter safety switch lead.

DISCONNECTING LEFT SIDE OF COWL

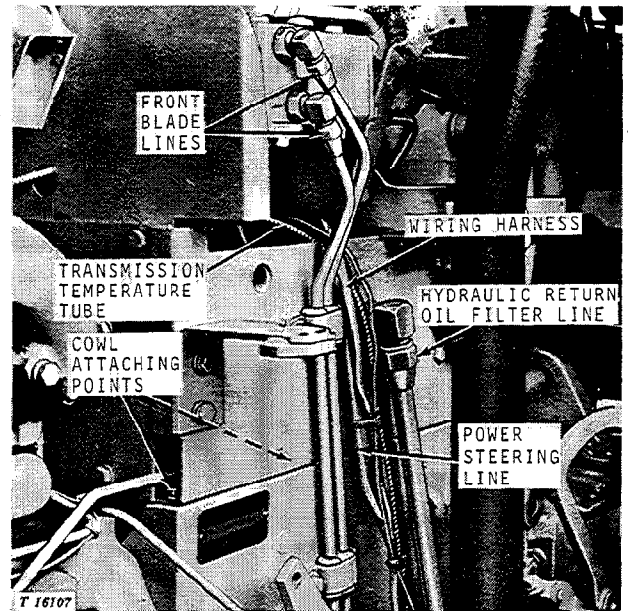


Fig. 6 - Disconnecting Left Side of Cowl

Disconnect transmission temperature tube.

Remove front blade lines, power steering line, and hydraulic filter line (Fig. 6).

Disconnect wiring harnesses from cowl.

Remove cap screws securing upper cowl to clutch housing and remove cowl assembly from unit.

INSTALLING UPPER COWL

Install upper cowl on clutch housing and secure with attaching cap screws.

Install all lines removed from both sides of unit as shown in Figures 5 and 6.

Connect wiring harnesses and linkage on both sides of cowl.

Install all sheet metal and connect battery ground cables.

REMOVING AND INSTALLING TRANSMISSION AND CLUTCH HOUSING

REMOVAL

The transmission and clutch housing may be completely serviced within the skidder by removing the engine and upper cowl. If either assembly is to be completely replaced, remove the upper cowl, clutch housing, and transmission as a unit. See the following:

1. Remove engine with front support, main pump, and radiator as a unit. See "Engine Removal."

2. Disconnect oil lines and linkage as instructed in "Upper Cowl Removal." (Cowl may be removed with transmission and clutch housing.)

3. Remove seat with mounting bracket. For added hoisting clearance, remove canopy from unit.

4. Attach hoist to transmission and clutch housing.

5. Disconnect differential lock valve lines and remove valve(s) from unit. Disconnect oil lines from front junction block.

6. Disconnect transmission front and rear drive shafts. Disconnect winch drive shaft.

7. Remove transfer case rear mounting brackets (Fig. 7) and lift transmission-clutch housing assembly so that brake valve can be removed.

8. Using a hoist, remove transmission and clutch housing as an assembly.

Disassemble and service assemblies on a bench by referring to the specific section and group covering the components.

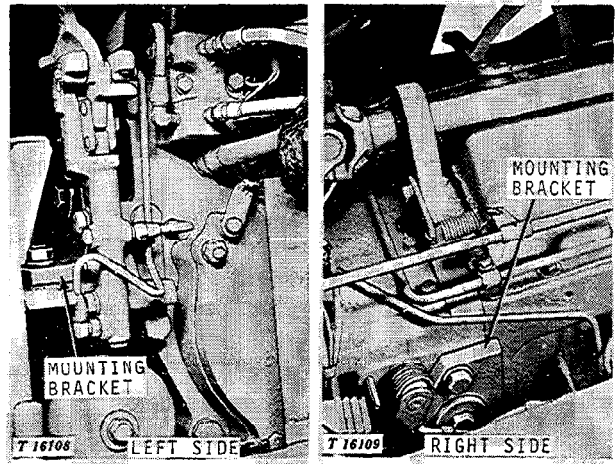


Fig. 7 - Transmission Attaching Points

INSTALLATION

Connect clutch housing to transmission and hoist assemblies into engine frame. Install all hydraulic lines in the order that they were removed.

Install brake valve assembly.

Tighten transfer case to rear mounting bracket cap screws to specified torque (Fig. 7).

Connect transmission drive and winch drive shafts. Connect oil lines to front junction block.

Connect lines and linkage as instructed in "Installing Upper Cowl."

Install engine as instructed in this group.

Install all sheet metal. Install batteries and connect cables.

REMOVING AND INSTALLING AXLE HOUSINGS AND DIFFERENTIALS

REAR DIFFERENTIAL AND AXLE HOUSING REMOVAL

Disconnect battery ground strap; remove bottom plate, and support front and rear of equipment frame.

Drain oil from differential housing.

Attach a chain around each axle housing to support axles and differential assembly. Remove wheels from both axles.

Disconnect differential lock pressure and return lines at differential housing (if equipped with lock). Disconnect brake line.

Disconnect differential drive shaft.

Remove cap screws and clamps securing axle housings to equipment frame. Lower assembly from equipment frame.

Separate axle housings from differential housing as required.

An alternate method of removing rear differential is to disconnect axle housings from equipment frame, lift equipment frame, and roll assembly out from under frame.

REAR DIFFERENTIAL AND AXLE INSTALLATION

Lift differential with axle housings in position under equipment frame.

Install equipment frame clamps around axle housing and insert top clamp cap screws from the rear and bottom clamp cap screws from the front. Tighten to the specified torque.

Connect differential lock lines (if equipped). Connect brake lines.

Install equipment frame bottom plate.

Fill rear differential with recommended oil to the proper level (Section 10, Group 15).

FRONT AXLE HOUSING REMOVAL

Disconnect battery ground strap and support front and rear of engine frame.

Drain oil from front differential.

Remove wheel from the axle housing to be removed.

Pivot or block opposite axle up to provide clearance under frame. Remove cap screws and pull axle housing from differential.

FRONT AXLE HOUSING INSTALLATION

Position axle drive shaft and brake facing plate in differential assembly. With axle housing positioned against final drive shaft, turn axle shaft slowly to align planet pinions with sun pinion.

Draw up two attaching cap screws finger tight and turn axle shaft to be sure that brake disk is splined correctly and axle shaft is free to turn.

Tighten axle housing attaching cap screws to the specified torque. Install wheel and tighten cap screws to specified torque.

Refill differential housing (see Section 10, Group 15).

FRONT DIFFERENTIAL REMOVAL

Disconnect battery ground strap; remove engine frame bottom guards, and support front and rear of engine frame.

Drain oil from differentials.

Attach a chain around each axle housing to support axles and differential assembly. Remove wheels from both axles.

Disconnect differential lock pressure and return lines at differential housing. Disconnect brake line. Disconnect differential drive shaft.

Remove pin from front differential oscillating support bracket. Remove cap screws from rear support bracket and lower assembly from engine frame.

FRONT DIFFERENTIAL INSTALLATION

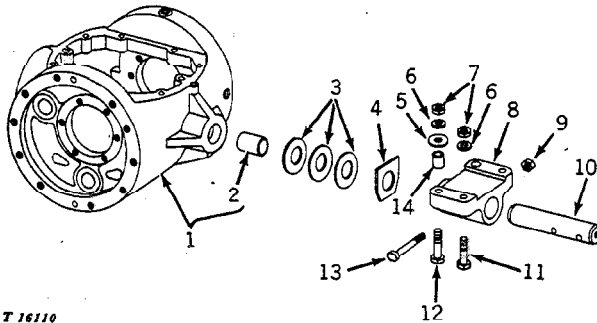
Lift differential with axle housing into position under engine frame.

Place three shims between thrust plates and front support (see Fig. 8). Install pin through front support into differential housing.

Secure rear support brackets to engine frame with dowels, cap screws, plain washers, and hex. nuts.

The large flat washers fit on top of engine frame over the two rear cap screws of each support to cover dowels.

Adjusting End Play on Axle Oscillating Front Pivot



T 16110

- | | |
|-----------------------|----------------------------|
| 1 - Differential Case | 8 - Support |
| 2 - Bushing | 9 - Lock Nut |
| 3 - Washer (3 used) | 10 - Pin |
| 4 - Thrust Plate | 11 - Cap Screw (2 used) |
| 5 - Washer (3 used) | 12 - Cap Screw (2 used) |
| 6 - Washer (4 used) | 13 - Cap Screw |
| 7 - Hex. Nut (4 used) | 14 - Hollow Dowel (2 used) |

Fig. 8 - Axle Oscillating Pivot Assembly (Front)

Pivot and pry front differential assembly rearward as far as possible. With front oscillating support bracket thrust plate mounted next to differential case and its straight edge up, measure the distance between thrust plate and support bracket with a feeler gauge (see Fig. 8). Refer to "Specifications" for correct end play.

To adjust, do the following: (1) Support differential assembly with floor jack and remove cap screw securing front pin to support bracket. (2) Pull pin out halfway and add or deduct washers between thrust plate and support bracket to provide end play on front oscillating support bracket. (3) Push front pin back into differential case and install cap screw with hex. nut and grease fitting.

After checking front axle end play, check rotation of front axle. Check force required to oscillate axle assembly at axle hub end (without tires and rims). If force required to rotate axle is more than specified, readjust oscillating pivot end play.

Final Assembly

Connect differential drive lines and install wheels.

Connect differential lock pressure line and brake lines.

Install engine frame bottom plates.

Fill differential with recommended oil (Section 10, Group 15).




SPECIFICATIONS

ASSEMBLY NOTES

Differential oscillating pivot end play 0.001 to 0.036 in.
 Maximum force required to rotate front axle freely 50 pounds
 Length of winch control cable between pivot pin and clamping groove 20 inches

**TORQUES FOR HARDWARE (FT-LBS)
 (UNLESS OTHERWISE NOTED)**

Upper pivot pin nut 300
 Steering cylinder pin nut 300
 Engine-to-engine front support 170
 Engine-to-clutch housing 170
 Engine front support-to-engine frame . . . 170
 Rear transmission mounting bracket-to-engine frame 300
 Rear transmission mounting bracket-to-transfer case 170
 Axle housing-to-differential housing . . . 130
 Drive shaft universal joint-to-yokes . . . 70
 Oscillating supports-to-engine frame . . . 445
 Oscillating front support pin screw . . . 130
 Equipment frame-to-axle housing clamp screws 200
 Cast drive wheel-to-rim stud nuts 275
 Drive wheel retainer cap screws 170
 (Rap with hammer and retighten; repeat 3 times.)
 Front blade pivot-to-engine frame
 5/8-inch cap screws 170
 3/4-inch cap screws 300
 Canopy-to-engine frame clevis cap screws 300
 All hydraulic pump and cooler hose clamps 25 in-lbs

RECOMMENDED TORQUE IN FT-LBS COARSE AND FINE THREADS			
	 (B STRENGTH)	 (D STRENGTH)	 (F STRENGTH)
Bolt Diameter	Plain Head*	Three Radial Dashes*	Six Radial Dashes*
1/4	Not used	10	14
5/16	Not used	20	30
3/8	Not used	35	50
7/16	35	55	80
1/2	55	85	120
9/16	75	130	175
5/8	105	170	240
3/4	185	300	425
7/8	160**	445	685
1	250**	670	1030
1-1/8	330**	910	1460
1-1/4	480**	1250	2060

*The types of bolts and cap screws are identified by head markings as follows:

Plain Head: regular machine bolts and cap screws.

3-Dash Head: tempered steel high-strength bolts and cap screws.

6-Dash Head: tempered steel extra high-strength bolts and cap screws.

**Machine bolts and cap screws 7/8 inch and larger are sometimes formed hot rather than cold, which accounts for the lower torque.

TOOLS

No.	Name	Use
CONVENIENCE TOOLS		
JD244*	Engine Lift Eyes	To Remove Engine
JDG-1*	Engine Sling	To Remove Engine

* These tools are available from Service Tools Inc., 1901 Indiana Avenue, Chicago, Illinois 60616

Group 25 SEPARATION

SEPARATING ENGINE AND EQUIPMENT FRAMES

Remove batteries.

Disconnect winch control cable from winch valve and cable clamp. Remove seat with mounting bracket.

Support front and rear sections of equipment frame and engine frame as evenly as possible to prevent frames from pivoting.

Upper Pivot

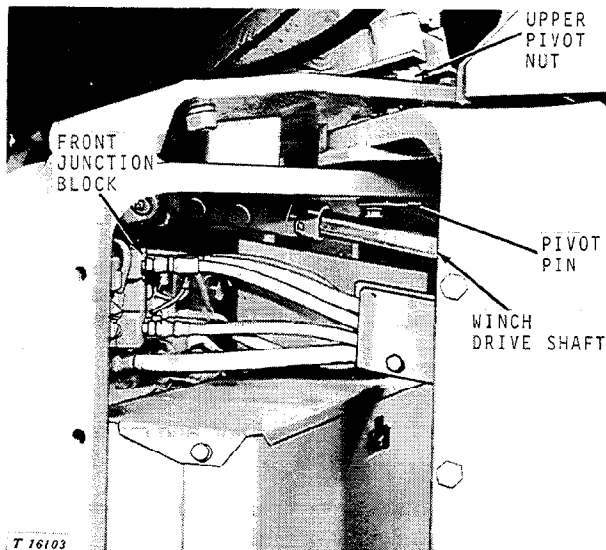


Fig. 1-Upper Pivot

Disconnect fuel tank sending unit lead and rear wiring harness lead connectors.

Disconnect oil lines from front junction block (Fig. 1). Oil lines are designed so that they may be installed in only their correct location.

Disconnect winch drive shaft.

Remove nut and drive upper pivot pin down through pivot.

Lower Pivot

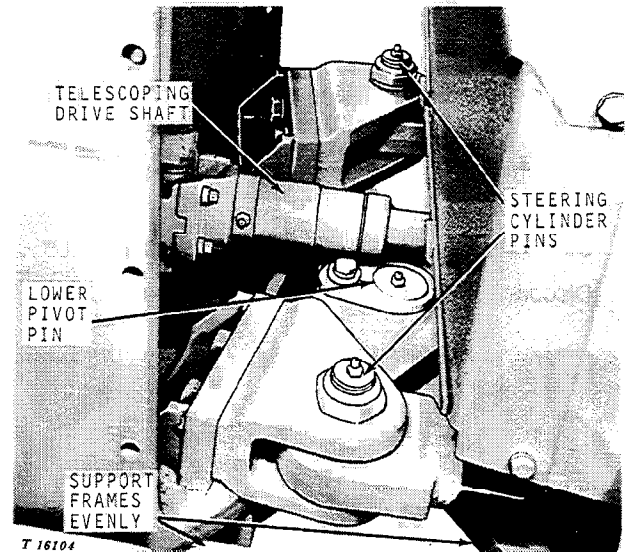


Fig. 2-Lower Pivot

Disconnect steering cylinders from supports on equipment frame.

Disconnect lower telescoping drive shaft.

Remove retaining screw and drive lower pivot pin up through pivot points.

Separate equipment frame from engine frame.

JOINING ENGINE AND EQUIPMENT FRAMES

1. Align upper and lower pivot points, install pins, and tighten to specified torque.
2. Connect drive lines (See Section 50, Group 15).
3. Secure steering cylinders to equipment frame supports and tighten nuts to specified torque.
4. Connect oil lines to front junction block.
5. Connect wiring harness. Install seat.
6. Connect winch control cable and install clamp the specified distance between pivot pin and clamping groove. See "Specifications."
7. Connect batteries.

REMOVING AND INSTALLING ENGINE

REMOVAL

Disconnect battery cables and remove muffler and hood.

Remove grille screen and disconnect oil cooler and upper radiator support from grille housing. Disconnect air cleaner hose.

Disconnect grille housing and remove housing from engine frame. Remove front bottom guard.

Detach wiring and linkage on both sides of the engine necessary for engine removal.

Disconnect main pump inlet and pressure lines.

Disconnect oil cooler lines at top of cooler.

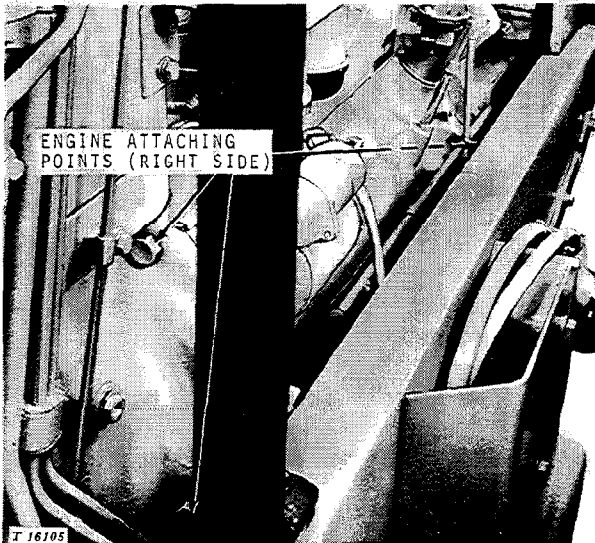


Fig. 3-Engine Attaching Points

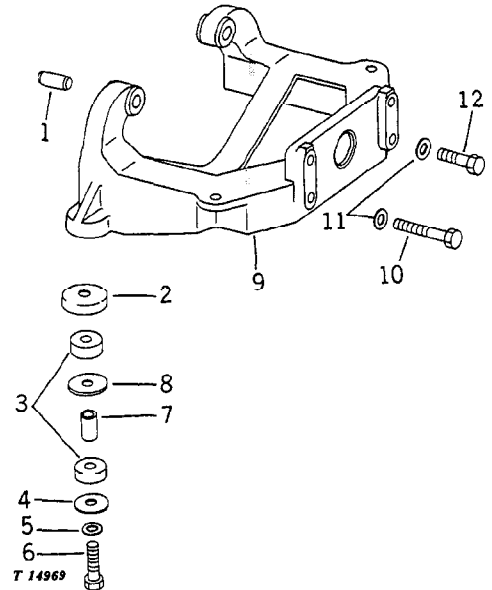
Attach JDG-1 or JDG-23 Engine Lifting Sling or D01043AA Load Positioning Sling to engine using two JD244 Lifting Eyes or JDG-19 Lifting Brackets

IMPORTANT: Place blocking between engine frame and clutch housing at the front differential so that the clutch housing does not settle while engine is being removed.

Remove cap screws securing engine to frame and clutch housing (Fig. 3). Remove engine from unit.

If complete engine repair is necessary, remove main pump, radiator, and front end support from engine.

INSTALLATION



- | | |
|--------------------------|-----------------------|
| 1—Dowel Pin (2 used) | 7—Spacer (2 used) |
| 2—Cup (2 used) | 8—Washer (2 used) |
| 3—Rubber Washer (4 used) | 9—Support |
| 4—Washer (2 used) | 10—Cap Screw (2 used) |
| 5—Lock Washer (2 used) | 11—Washer (4 used) |
| 6—Cap Screw (2 used) | 12—Cap Screw (2 used) |

Fig. 4-Engine Front Support

Attach front end support, radiator, and main pump to engine.

Using hoist install engine in unit. Bar engine over to index clutch shaft with clutch disk.

Secure engine to clutch housing and engine frame with attaching cap screws and tighten cap screws to the specified torque. Be sure rubber pads are on front mounts.

Coat tachometer cable gasket with Lubriplate and install on cable. Index slot in cable to coupler and tighten so that no oil leaks from around cable.

IMPORTANT: Do not tighten too tight or gasket will be damaged and oil leaks will develop.

Install grille housing and secure cooler and radiator to housing. Connect air cleaner.

Install hood, muffler, and grille screen.

Connect battery cables.



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