

848G / 660D GRAPPLE SKIDDER

(Serial No. WC848GX001029 --)
(Serial No. WC660DG001259 --)
(Serial No. WC660DC001259 --)

TECHNICAL MANUAL
848G / 660D GRAPPLE SKIDDER
TMF435521 25FEB03 (ENGLISH)

For complete service information also see:

POWERTECH® 8.1L Diesel Engines CTM86
Alternators and Starting Motors CTM77

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Introduction


Foreword

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.



Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.



 This is the safety-alert symbol. When you see this symbol on the machine or in this manual, be alert to the potential for personal injury.



The Service Manual is intended to provide technical information, component specifications, troubleshooting and removal, disassembly and reassembly procedures for most of the major components of the felling head. Use this manual in conjunction with the applicable Operator Manual and the applicable Carrier Service Manuals.



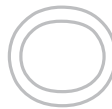
When practical, the Service Manual lists likely causes of malfunctions, offers test procedures to verify causes and then illustrates the steps for the adjustment or repair procedure(s).

Troubleshooting must always be a multi-step process. Use the following steps:

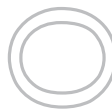
1. Know the operation of the attachment.
2. Ask the operator about symptoms and when they occur.
3. Operate the attachment yourself if practical.
4. List all possible causes.
5. Inspect for obvious causes.
6. Carry out diagnostic procedures like pressure and leakage testing to pinpoint the cause.



Component specifications provide performance and mode of operation information that can be very useful in troubleshooting.



Disassembly and reassembly procedures are given for many major components. When possible, clearance and torques are given. If a manufacturer's service manual is available, it should be given priority.



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0010 How To Use This Book

1. Serial Numbers

This Manual covers the full range of 848G and 660D Skidder serial numbers: See front cover for serial number details.

2. Component Numbers

The manual is divided into Chapters. Chapter 1, for example, details the engine system and includes the engine mounting, cooling system, coupling, exhaust and air intake systems. Each chapter starts with a Table of Contents giving details and page references.

Each Chapter is further divided into smaller sections. Each section is identified with a unique number that relates to the warranty system. For example, all parts used in the engine air intake system are found under section 1700.

3. Page Layout

At the top of each page are two sets of numbers.

The 'page' number (A), at the outside corner, consists of the four digit section number followed by the page number in that section. Each section is numbered sequentially from one. For example, 1800 - 3, would be the third page of Section 1800, Exhaust System.

The 'Issue' number (B) also comprises two sets of numbers separated by a hyphen. The first numbers identify the issue date of that section of the manual. The numbers following the hyphen are the issue number of the section and are used to control updating in the field. For example, 06/2000 - 02, would indicate Revision 2, released June, 2000.

At the bottom of each page is a model identification and the type of manual (C). The model identification may identify a unique product or a range of products (848G / 660D Service Manual for example).

3. Page Layout

Issue
12/2000-01

Page
1100 - 1

1100 Engine

1. Description and Operation

1.1 General

The primary source of power for the skidder is a turbocharged, aftercooled, six cylinder John Deere engine.

Model	John Deere 6081AF
Cylinders	6
Displacement	8.1 Liters (496 cu. in.)
Rated Power (HP)	149 Kw (200 HP) @ 2200 RPM

The engine is mounted in front of the operator cab and provides power directly to the transmission via a flex-plate connector and hydrostatic torque converter system.

Power to the hydraulic pump and the transmission charge pump is mechanically transmitted around the torque converter. The air conditioning compressor is belt driven from the cooling fan hub.

848G Skidder Service Manual

4. Abbreviations

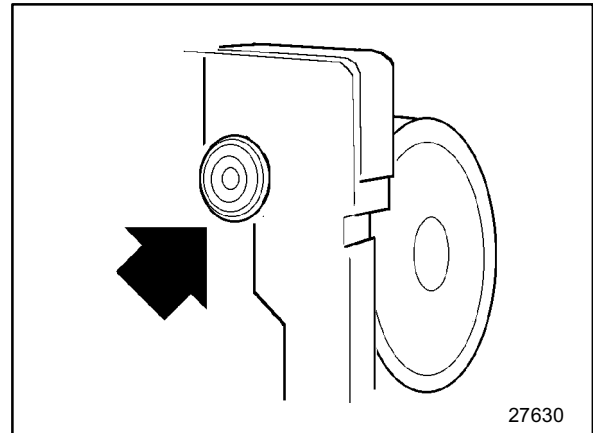
The abbreviations in the following list are common. While we have endeavored to use 'industry standard' abbreviations wherever possible, common practice mandates that historical usage be maintained.

ADJ	adjust; adjuster	F	Fahrenheit
ADPTR	adapter	FD	front drive
ALT	alternator	FH	flat head
ANG	angle	FLT	flat foot
ASSY	assembly	FT	feet
AUX	auxiliary	FTG	fitting
AWG	American Wire Gage	FWD	forward
BATT	battery	GP	group
BLK	black; block	GR	grapple
BLU	blue	GRN	green
BRG	bearing	HARN	harness
BRK	brake	HD	heavy duty
BS	bar saw	HDLNR	headliner
BU	backup	HH	hex head
BUSH	bushing	HP	high pressure
C	Celsius; Centigrade	HSG	housing
CARR	carrier	HYD	hydraulic
CBL	cable	ID	inside diameter
CF	carrier frame	IN	inch; inches
CHK	check	INCL	includes
CM	centimeter	INSTR	instrument
CMPRSR	compressor	INT	internal
CONV	converter	JS	joystick
CRDL	cradle	LF	left front
CS	capscrew	LG	long
CTR	circle saw center	LH	left hand
CUM	Cummins	LK	lock
CYL	cylinder	LP	low pressure
D	diameter	LR	left rear
DEG	degree(s)	LWR	lower
DL	delimber		
EL	elbow		
EMGCY	emergency		
ENG	engine		
EXT	extension		

1. Engine/Transmission Removal and Installation

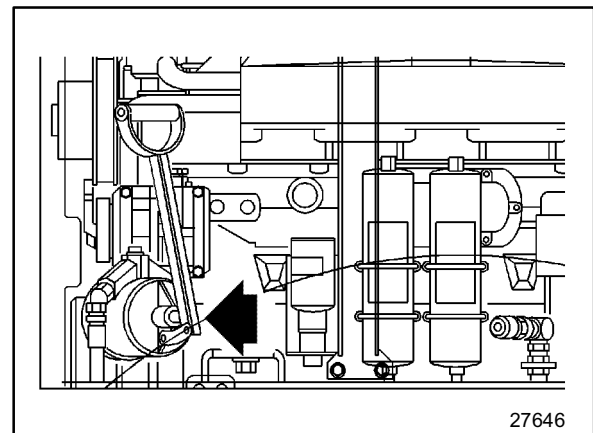
1.2 Access to Engine/Transmission

Disconnect horn wires.



Remove the hydraulic oil transfer pump, for clearance.

See Section 2120, Transfer pump, for more information.

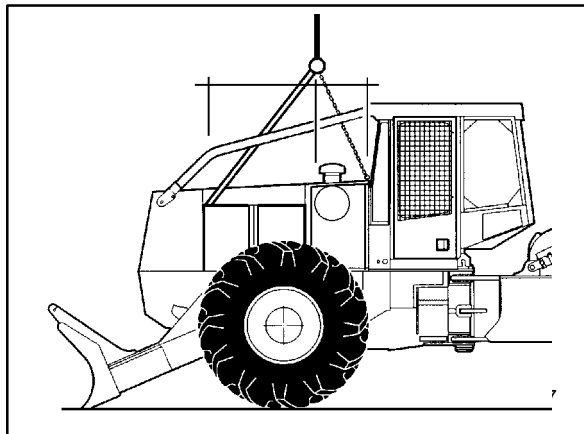


1. Engine/Transmission Removal and Installation

1.2 Access to Engine/Transmission

If lifting the entire assembly as one piece is awkward or impractical:

- Disassemble the exhaust system
- Remove the canopy sweeps
- Remove the top panels
- Remove the shroud
- Remove the hydraulic tank frame



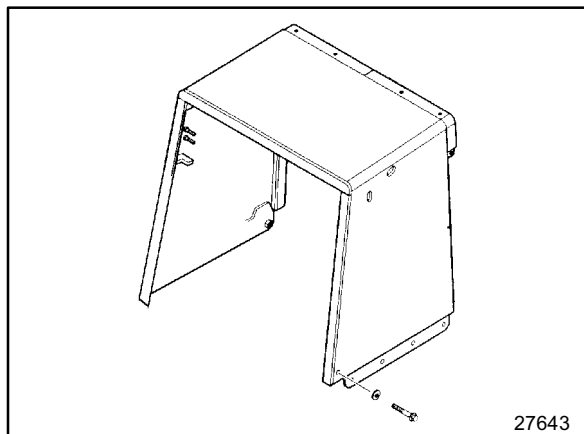
To lift off the assembly as one piece:

Attach a suitable lifting device to the engine compartment frame assembly. The assembly weighs approximately 400 kg (880 lbs).

Sling a lifting strap under the top panel supports just behind the shroud.

Install two eyebolts in the panel mounting holes in the top of the firewall. Attach suitable chains.

Note that the lift cable is over a point approximately at the forward edge of the hydraulic frame.

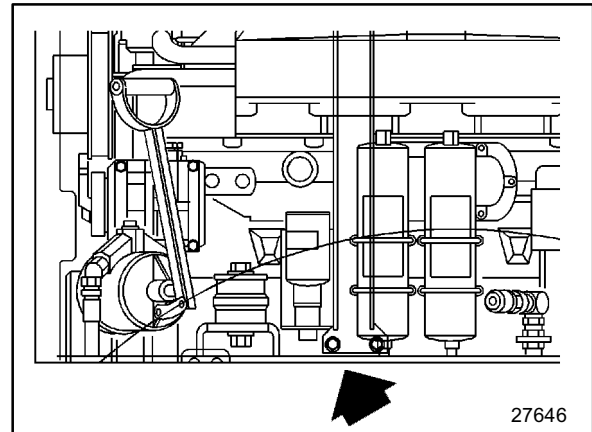


Remove the bolts retaining the shroud.

1. Engine/Transmission Removal and Installation


1.2 Access to Engine/Transmission

Remove the bolts on the panel supports.



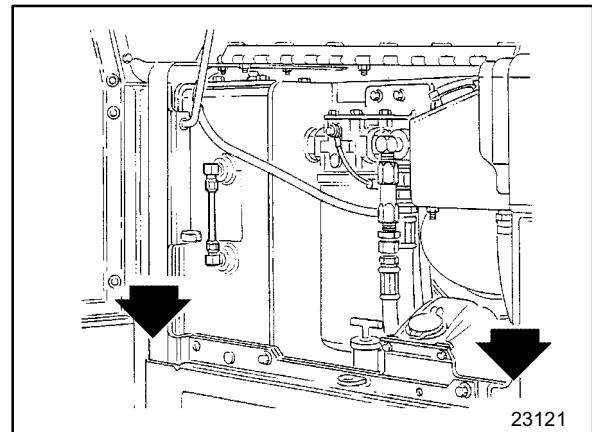
Remove the bolts on the hydraulic tank frame.

Lift the assembly away from the machine.

 **CAUTION**

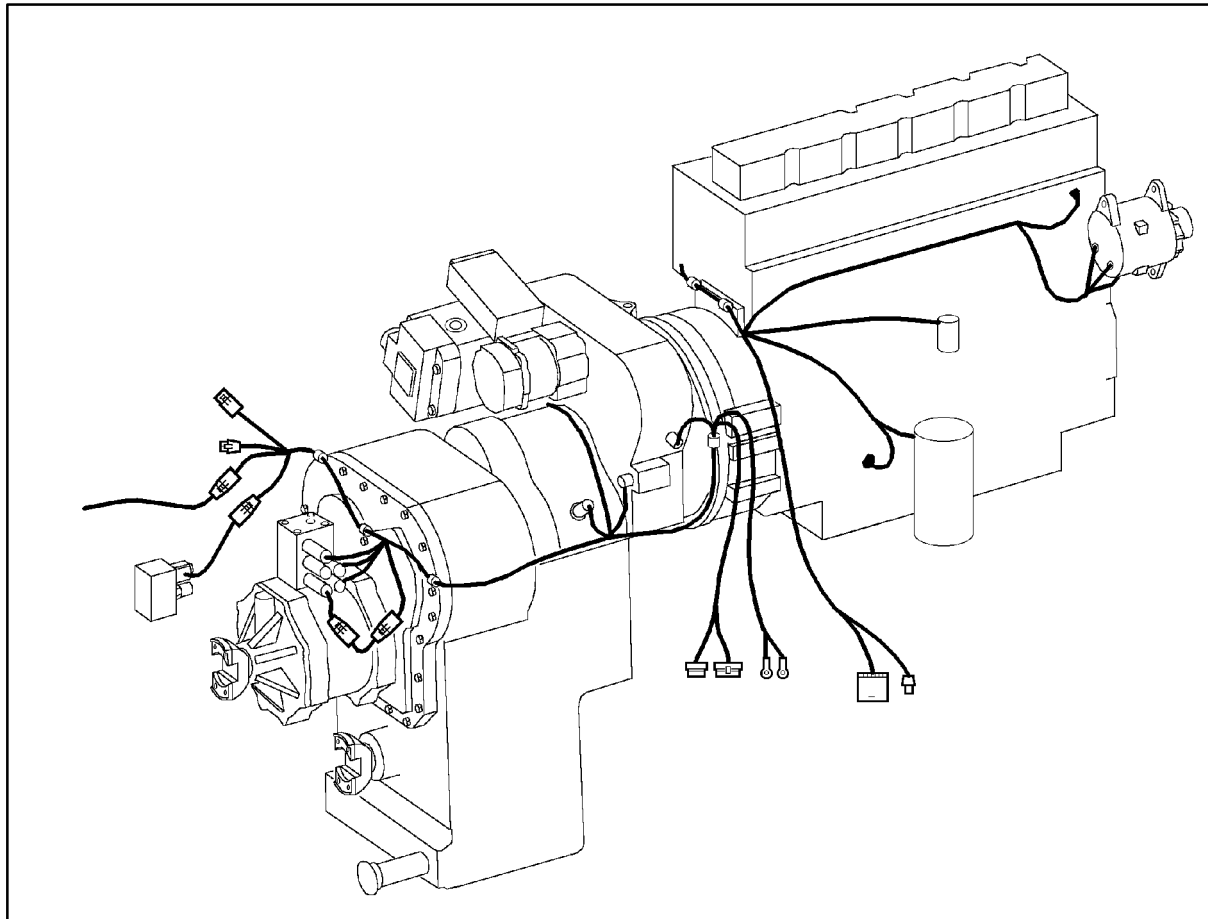
Use proper safety precautions when using lifting equipment.

Failure to do so may result in risk of personal injury.



1. Engine/Transmission Removal and Installation

1.3 Wiring Harnesses



Disconnect the the engine/transmission wiring harness connectors:

J83	Connector, Transmission Harness	J25	Connector, Aux. Steering Pressure Switch
J85	Connector, Transmission Harness	J109	Connector, Boom Lights Harness
J110	Connector, Engine	J107	Connector, Fuel Level Sender
J136	Connector, Starter Motor	J84	Connector, Diff-Lock Solenoid

Disconnect battery cables at starter motor terminals.
Disconnect ground cable connections at right side of engine block.

Important!

Note the location of any ties to the frame that must be cut. They must be replaced as originally installed.

1. Engine/Transmission Removal and Installation

1.4 Fuel Line Hoses

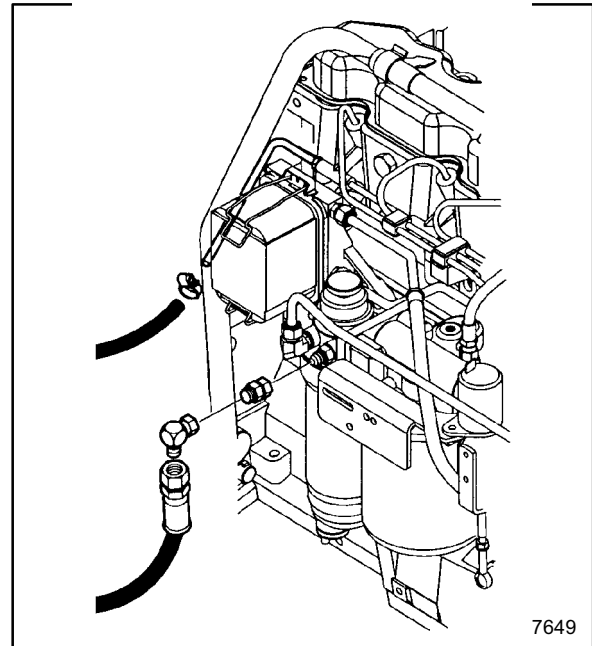
Disconnect the fuel supply line at the primary filter.

Disconnect the fuel return hose.

Note:

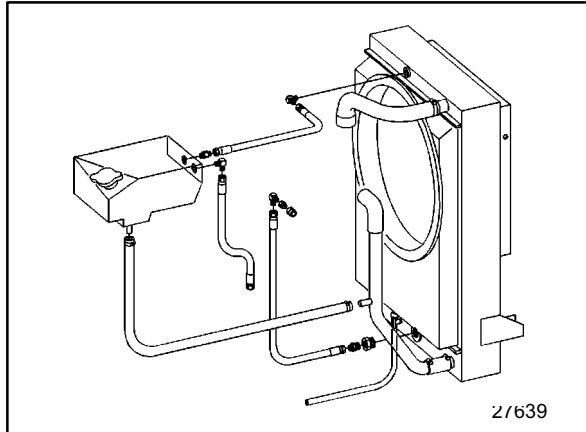
Tag any hoses disconnected to ease re-assembly. Cap the hoses and ports to prevent fluid loss and contamination of the machine's systems.

Note the location of any clamps removed or ties cut. They must be replaced as originally installed.



1. Engine/Transmission Removal and Installation

1.5 Engine Hoses



Drain the engine coolant.

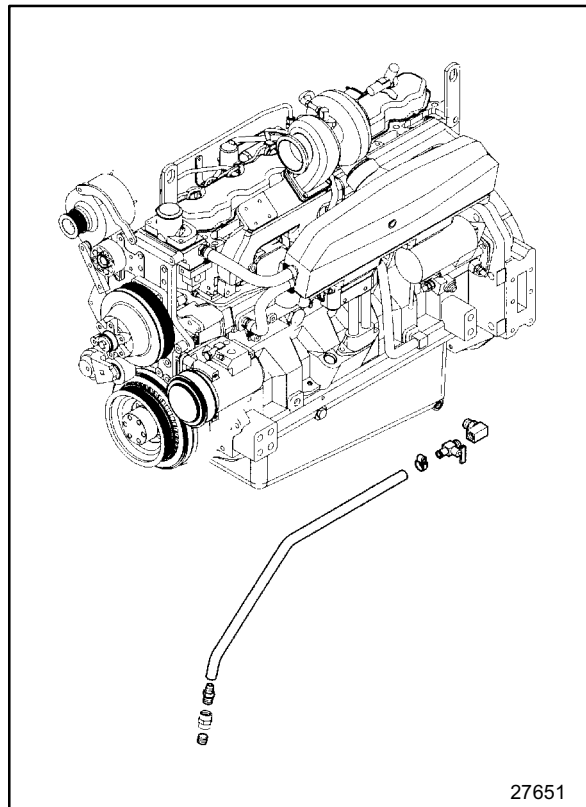
Disconnect the engine cooling system hoses at the engine.

- Upper coolant hose
- Lower coolant Hose
- Hose - radiator to engine

Note:

The surge tank is removed with the hydraulic tank weldment and engine compartment panels.

See Section 1500, Cooling System, for more information.



Disconnect the engine oil drain hose.

1. Engine/Transmission Removal and Installation

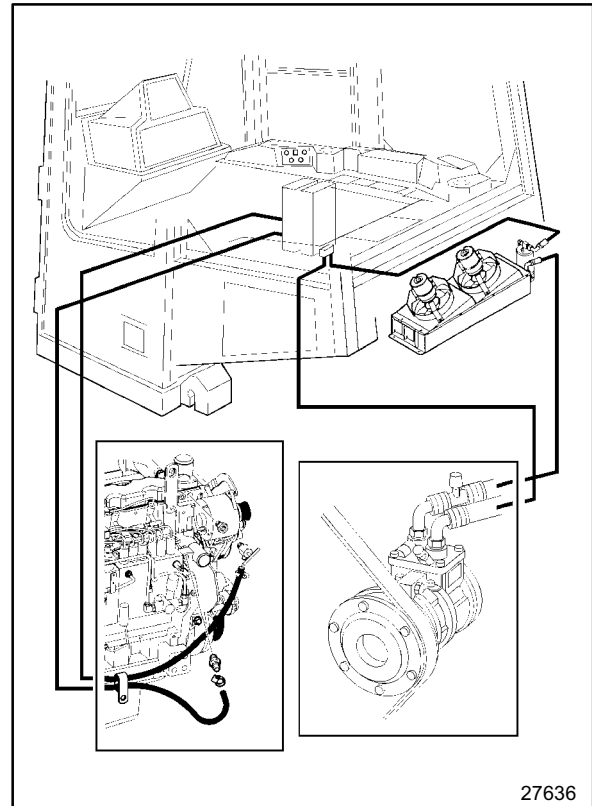
1.5 Engine Hoses

Disconnect the heater hoses at the engine.

Important!

Do not disconnect the hoses from the compressor.

See Section 5500, Heater/Air Conditioner Unit.

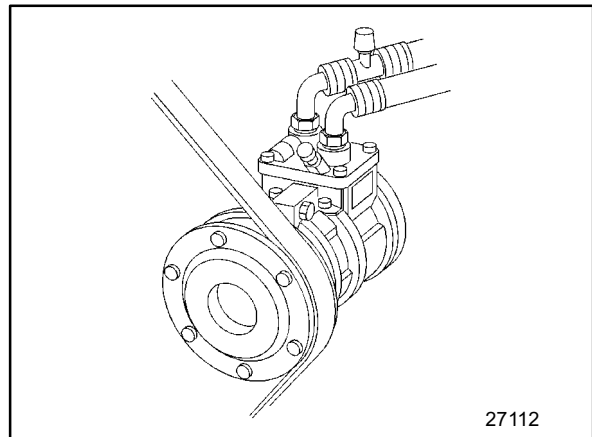


Dismount the A/C compressor from the engine.

Important!

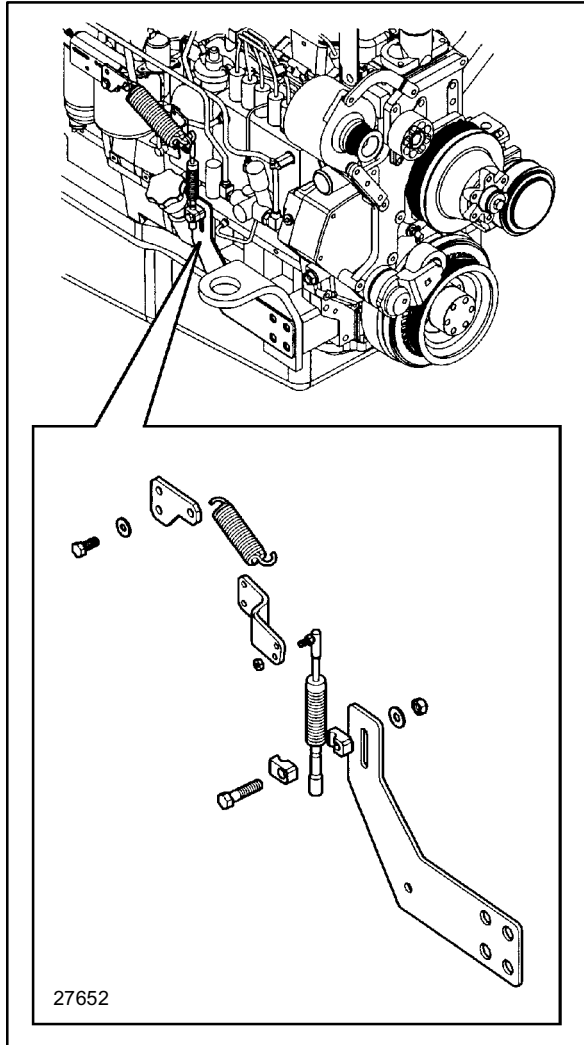
Do not disconnect the hoses from the compressor.

Disconnect the compressor clutch wire at the plug-in connector.



1. Engine/Transmission Removal and Installation

1.6 Engine Mechanical Connections

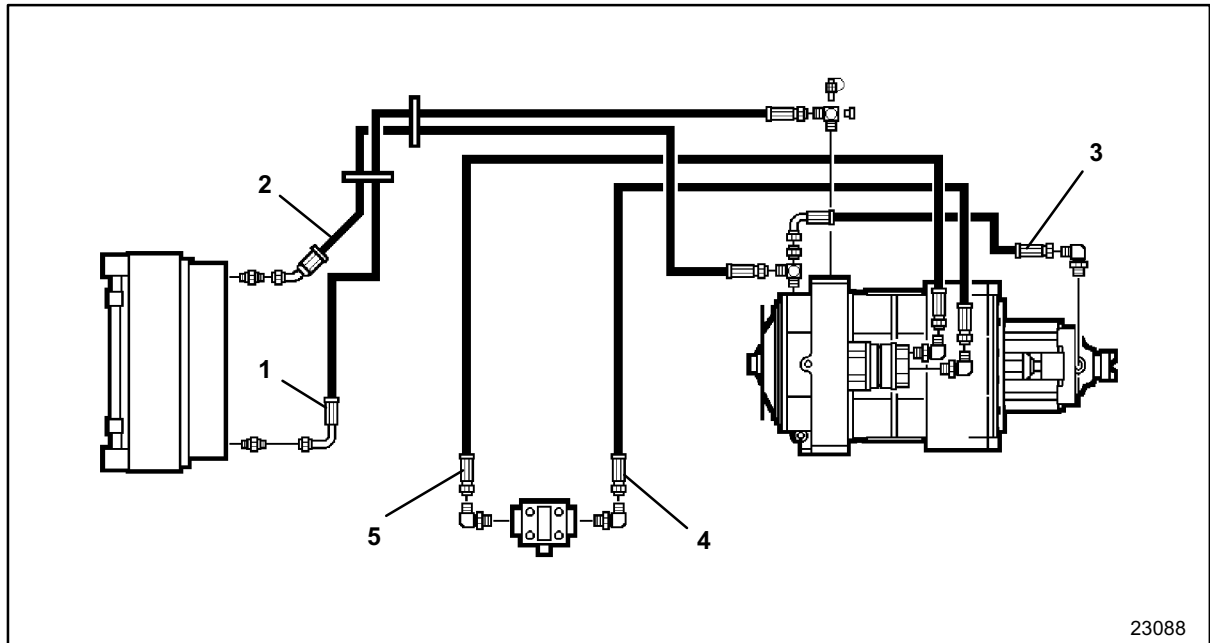


Disconnect the throttle linkage.

The linkage assembly is located on the right hand side of the engine.

1. Engine/Transmission Removal and Installation

1.7 Transmission Hoses

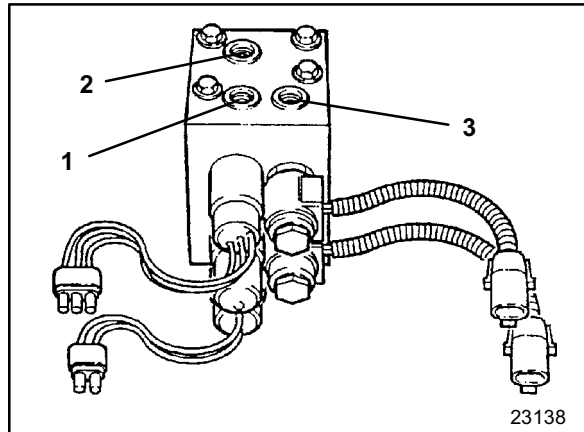


Disconnect transmission charge hoses at the transmission:

1. Hose to cooler
2. Hose from cooler
3. Lubrication hose (may remain connected)
4. Hose from filter
5. Hose to filter

1. Engine/Transmission Removal and Installation

1.7 Transmission Hoses



Disconnect the hoses at the transmission brake manifold.

Note:

The hose from transmission charge pump may be left attached.

1. Hose from Transmission Charge Pump
2. Hose from Cab Tilt/Brake Release Selector
3. Hose to Accumulator on rear frame

1. Engine/Transmission Removal and Installation

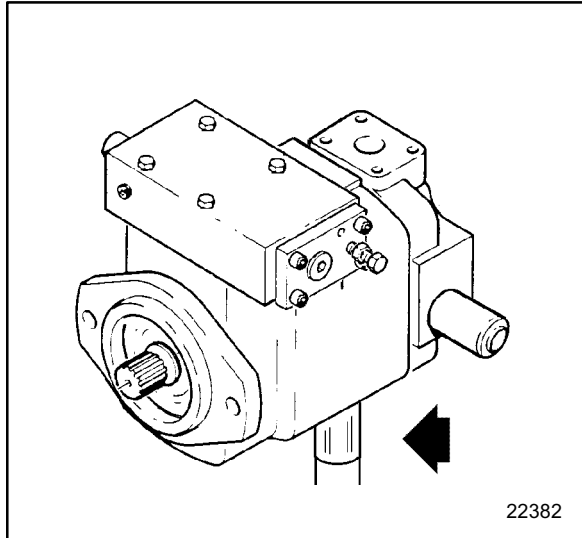
1.7 Transmission Hoses

Disconnect winch hoses at the transmission.



1. Engine/Transmission Removal and Installation

1.7 Transmission Hoses



Disconnect the pump case drain hose to the cooler.

See Section 2110, Work Pump, for more information.

1. Engine/Transmission Removal and Installation

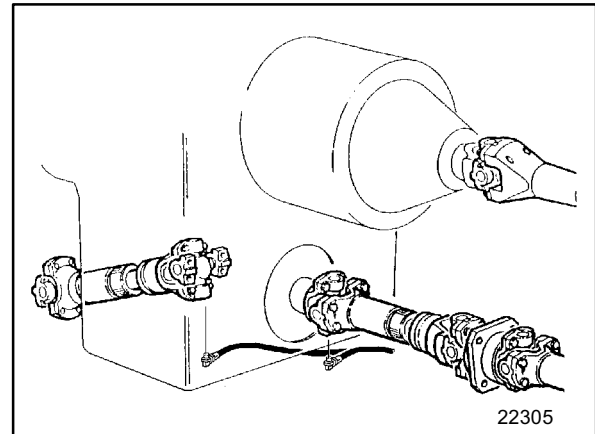
1.8 Transmission Mechanical Connections

Disconnect the driveshafts at the transmission yokes and winch PTO.

See Section 4200, Drivelines, for more information.

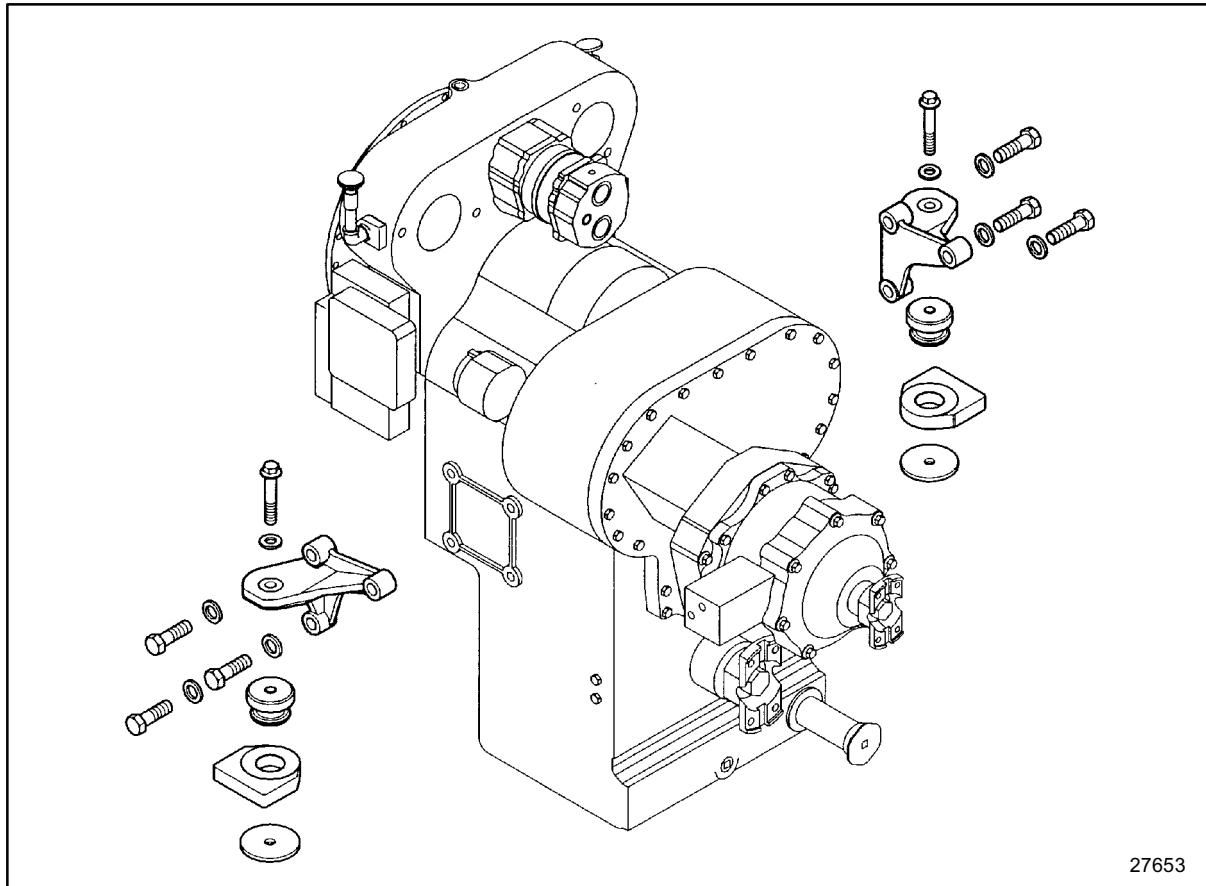
Important!

Disconnect the grease lines at both transmission yokes.



1. Engine/Transmission Removal and Installation

1.9 Engine and Transmission Mounts



When disassembling the transmission mounts, remove bolts through rubber mountings.

To assemble the mounts, install M16 - 2.0 x 100 bolts and washers through rubber mountings.
Torque to bolts to 289 Nm (213 lbs ft)

If brackets are removed from transmission housing, install M20 - 2.5 x 70 bolts and washers.
Apply Loctite 271 to bolts and torque to 471 Nm (420 lbs ft).



Suggest:

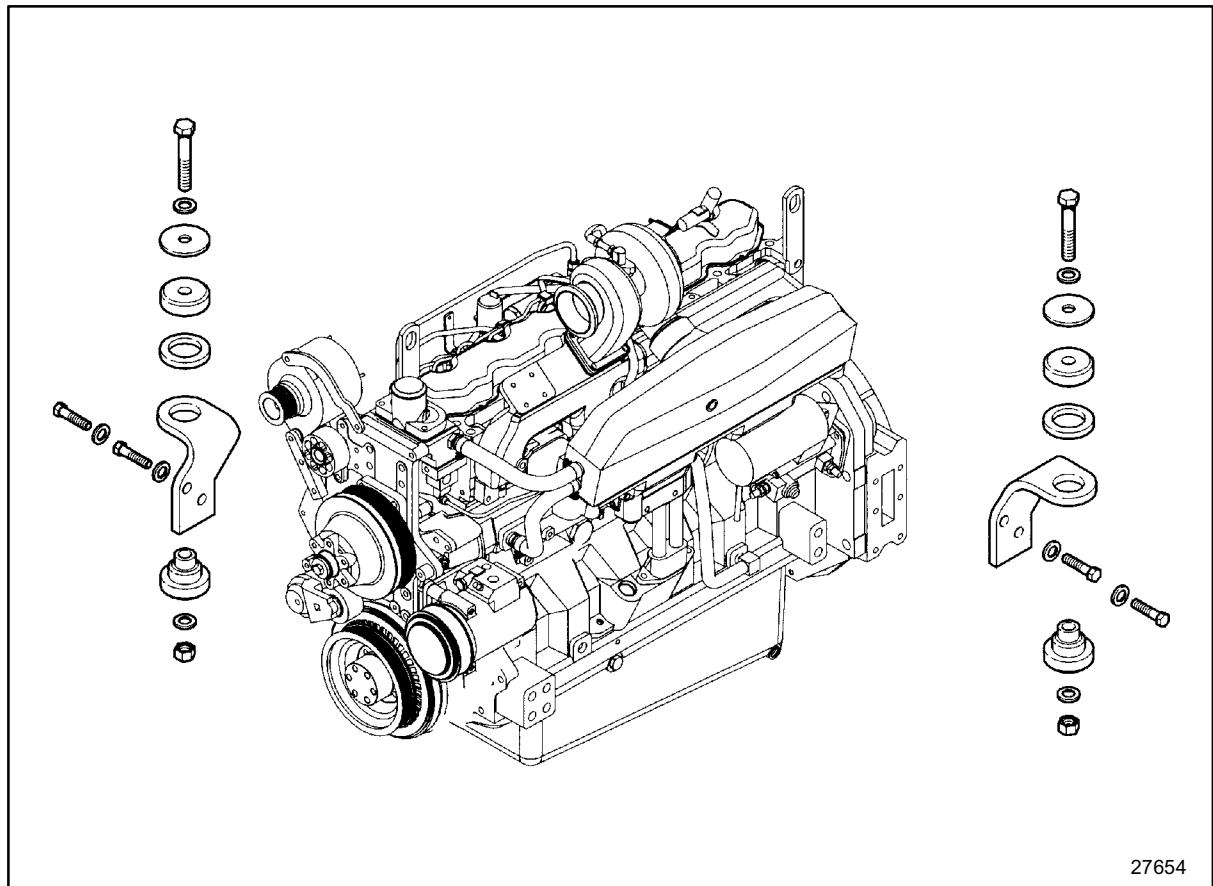
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1. Engine/Transmission Removal and Installation

1.10 Engine and Transmission Mounts



When disassembling the engine mounts, remove bolts through rubber mountings.

To assemble the mounts, install M20 - 2.5 x 130 bolts with washers and nuts through rubber mountings. Torque to bolts to 471 Nm (420 lbs ft).

If brackets are removed from engine, install hex head cap screws 0.563 - 12 x 2.75 and torque to 471 Nm (420 lbs ft).

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