

SRI30
SRI60
Tier 4B (final)
Alpha Series Skid Steer Loader
SRI30 PIN NDM442151 and above
SRI60 PIN NDM477801 and above

SERVICE MANUAL

Part number 47712039

English

April 2014

Replaces part number 47465734



Link Product / Engine

Product	Market Product	Engine
SR130 TIER 4 [NDM442151 -]	North America	N844L-F-36SL
SR160 TIER 4 [NDM477801 -]	North America	N844LT-F-45SL

Contents

INTRODUCTION

Engine.....	10
[10.001] Engine and crankcase	10.1
[10.414] Fan and drive	10.2
[10.501] Exhaust Gas Recirculation (EGR) - Diesel Particulate Filter (DPF) exhaust treatment	10.3
Front axle system	25
[25.450] Chain drive system.....	25.1
Rear axle system.....	27
[27.650] Chain drive system	27.1
Hydrostatic drive.....	29
[29.202] Hydrostatic transmission	29.1
[29.200] Mechanical control	29.2
[29.218] Pump and motor components.....	29.3
Brakes and controls	33
[33.110] Parking brake or parking lock	33.1
Hydraulic systems.....	35
[35.000] Hydraulic systems.....	35.1
[35.104] Fixed displacement pump.....	35.2
[35.128] Auxiliary hydraulic function control	35.3
[35.300] Reservoir, cooler, and filters.....	35.4
[35.350] Safety and main relief valves	35.5
[35.359] Main control valve	35.6
[35.701] Front loader arm hydraulic system	35.7
[35.723] Front loader bucket hydraulic system	35.8
[35.724] Front loader hydraulic system control.....	35.9

<https://www.ebooklibonline.com>

Hello dear friend!

Thank you very much for reading.

Enter the link into your browser.

The full manual is available for immediate download.

<https://www.ebooklibonline.com>

[35.734] Tool quick coupler hydraulic system	35.10
Frames and ballasting	39
[39.140] Ballasts and supports	39.1
Wheels	44
[44.511] Front wheels.....	44.1
[44.520] Rear wheels.....	44.2
Cab climate control	50
[50.100] Heating.....	50.1
[50.200] Air conditioning.....	50.2
Electrical systems	55
[55.000] Electrical system	55.1
[55.010] Fuel injection system.....	55.2
[55.011] Fuel tank system	55.3
[55.012] Engine cooling system	55.4
[55.014] Engine intake and exhaust system.....	55.5
[55.015] Engine control system.....	55.6
[55.019] Hydrostatic drive control system	55.7
[55.031] Parking brake electrical system	55.8
[55.036] Hydraulic system control	55.9
[55.100] Harnesses and connectors.....	55.10
[55.302] Battery.....	55.11
[55.404] External lighting	55.12
[55.512] Cab controls.....	55.13
[55.525] Cab engine controls.....	55.14
[55.640] Electronic modules.....	55.15
[55.DTC] FAULT CODES.....	55.16
Front loader and bucket.....	82
[82.100] Arm.....	82.1

[82.300] Bucket.....	82.2
Platform, cab, bodywork, and decals.....	90
[90.154] Cab doors and hatches	90.1



INTRODUCTION

Contents

INTRODUCTION

Foreword - Important notice regarding equipment servicing (*)	3
Safety rules (*)	4
Safety rules - Personal safety (*)	5
Safety rules - Ecology and the environment (*)	6
Safety rules (*)	7
Torque - Minimum tightening torques for normal assembly (*)	8
Torque - Standard torque data for hydraulics (*)	13
Basic instructions - Shop and assembly (*)	15
Hydraulic contamination – Contamination (*)	17
General specification - Left-hand instrument cluster (*)	18
General specification - Electronic Instrument Cluster (EIC) (*)	20
General specification - Advanced Instrument Cluster (AIC) (*)	25
General specification - Biodiesel fuels (*)	30
Capacities	33
Product identification (*)	34
Product identification (*)	36

(*) See content for specific models

Foreword - Important notice regarding equipment servicing

SR130	NA
SR160	NA

All repair and maintenance work listed in this manual must be carried out only by qualified dealership personnel, strictly complying with the instructions given, and using, whenever possible, the special tools.

Anyone who performs repair and maintenance operations without complying with the procedures provided herein shall be responsible for any subsequent damages.

The manufacturer and all the organizations of its distribution chain, including - without limitation - national, regional, or local dealers, reject any responsibility for damages caused by parts and/or components not approved by the manufacturer, including those used for the servicing or repair of the product manufactured or marketed by the manufacturer. In any case, no warranty is given or attributed on the product manufactured or marketed by the manufacturer in case of damages caused by parts and/or components not approved by the manufacturer.

The information in this manual is up-to-date at the date of the publication. It is the policy of the manufacturer for continuous improvement. Some information could not be updated due to modifications of a technical or commercial type, or changes to the laws and regulations of different countries.

In case of questions, refer to your CASE CONSTRUCTION Sales and Service Networks.

Safety rules

SR130	NA
SR160	NA

Personal safety



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

Throughout this manual you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

 DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury.

 WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.

 CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

Machine safety

NOTICE: Notice indicates a situation that, if not avoided, could result in machine or property damage.

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine or property damage. The word Notice is used to address practices not related to personal safety.

Information

NOTE: Note indicates additional information that clarifies steps, procedures, or other information in this manual.

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

Safety rules - Personal safety

SR130	NA
SR160	NA

Carefully study these precautions, and those included in the external attachment operators manual, and insist that they be followed by those working with and for you.

1. Thoroughly read and understand this manual and the attachment Operator's Manual before operating this or any other equipment.
2. Be sure all people and pets are clear of the machine before starting. Sound the horn, if equipped, three times before starting engine.
3. Only the operator should be on the machine when in operation. Never allow anyone to climb on to the machine while it is in motion. If the machine is equipped with an Instructors Seat, this must only be used for training purposes. Passengers must not be allowed to use the Instructors Seat.
4. Keep all shields in place. Never work around the machine or any of the attachments while wearing loose clothing that might catch on moving parts.
5. Observe the following precautions whenever lubricating the machine or making adjustments.
 - Disengage all clutching levers or switches.
 - Lower the attachment, if equipped, to the ground or raise the attachment completely and engage the cylinder safety locks. Completing these actions will prevent the attachment from lowering unexpectedly.
 - Engage the parking brake.
 - Shut off the engine and remove the key.
 - Wait for all machine movement to stop before leaving the operators platform.
6. Always keep the machine in gear while travelling downhill.
7. The machine should always be equipped with sufficient front or rear axle weight for safe operation.
8. Under some field conditions, more weight may be required at the front or rear axle for adequate stability. This is especially important when operating in hilly conditions or/when using heavy attachments.
9. Always lower the attachment, shut off the engine, set the parking brake, engage the transmission gears, remove the key and wait for all machine movement to stop before leaving the operators platform.
10. If the attachment or machine should become obstructed or plugged; set the parking brake, shut off the engine and remove the key, engage the transmission gears, wait for all machine or attachment motion to come to a stop, before leaving the operators platform to removing the obstruction or plug.
11. Never disconnect or make any adjustments to the hydraulic system unless the machine and/or the attachment is lowered to the ground or the safety lock(s) is in the engaged position.
12. Use of the flashing lights is highly recommended when operating on a public road.
13. When transporting on a road or highway, use accessory lights and devices for adequate warning to the operators of other vehicles. In this regard, check local government regulations. Various safety lights and devices are available from your CASE CONSTRUCTION dealer.
14. Practice safety 365 days a year.
15. Keep all your equipment in safe operating condition.
16. Keep all guards and safety devices in place.
17. Always set the parking brake, shut off the engine and remove the key, engage the transmission gears, wait for all machine or attachment motion to come to a stop, before leaving the operators platform to service the machine and attachment.
18. Remember: A careful operator is the best insurance against an accident.
19. Extreme care should be taken in keeping hands and clothing away from moving parts.



SERVICE MANUAL

Engine

SR130 TIER 4 [NDM442151 -]
SR160 TIER 4 [NDM477801 -]

Contents

Engine - 10

[10.001] Engine and crankcase	10.1
[10.414] Fan and drive	10.2
[10.501] Exhaust Gas Recirculation (EGR) - Diesel Particulate Filter (DPF) exhaust treatment	10.3



Engine - 10

Engine and crankcase - 001

SR130 TIER 4 [NDM442151 -]
SR160 TIER 4 [NDM477801 -]

Contents

Engine - 10

Engine and crankcase - 001

SERVICE

Engine	
Remove	3
Install	11

Engine - Remove

WARNING

Avoid injury! Always do the following before lubricating, maintaining, or servicing the machine.

1. Disengage all drives.
2. Engage parking brake.
3. Lower all attachments to the ground, or raise and engage all safety locks.
4. Shut off engine.
5. Remove key from key switch.
6. Switch off battery key, if installed.
7. Wait for all machine movement to stop.

Failure to comply could result in death or serious injury.

W0047A

WARNING

Fire hazard!

When handling diesel fuel, observe the following precautions:

1. Do not smoke.
2. Never fill the tank when the engine is running.
3. Wipe up spilled fuel immediately.

Failure to comply could result in death or serious injury.

W0099A

WARNING

Escaping fluid!

Hydraulic fluid or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury. To prevent personal injury: Relieve all pressure before disconnecting fluid lines or performing work on the hydraulic system. Before applying pressure, make sure all connections are tight and all components are in good condition. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately.

Failure to comply could result in death or serious injury.

W0178A

WARNING

Heavy objects!

Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders.

Failure to comply could result in death or serious injury.

W0398A

Prior operation:

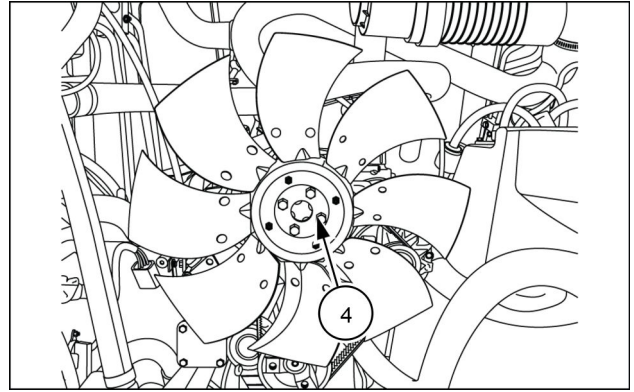
Disconnect the negative battery cable from the battery.

Prior operation:

Remove the engine hood.

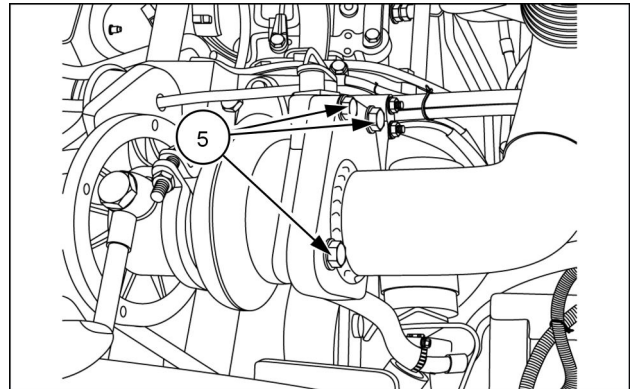
1. Remove the rear access door. See **Engine inspection door - Remove (90.102)** ..
2. Drain the engine oil.
3. Remove the radiator. See **Radiator - Remove (10.400)**.
4. Remove the oil cooler. See **Oil cooler/Heat exchanger - Remove (35.300)**.

5. Remove the four mounting bolts **(4)** and slide the fan off the hub.



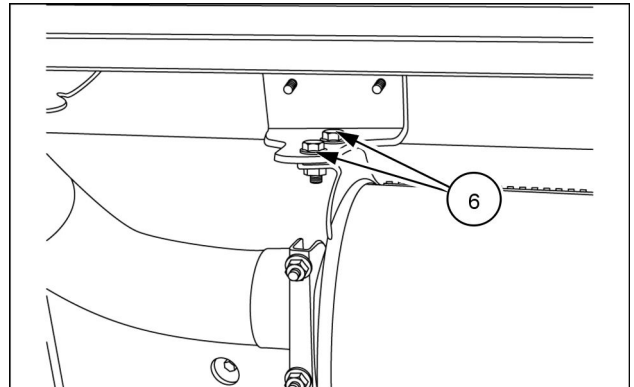
931002027 1

6. Remove the five mounting bolts **(5)** retaining the muffler inlet pipe mounting flange to the turbocharger and remove muffler.



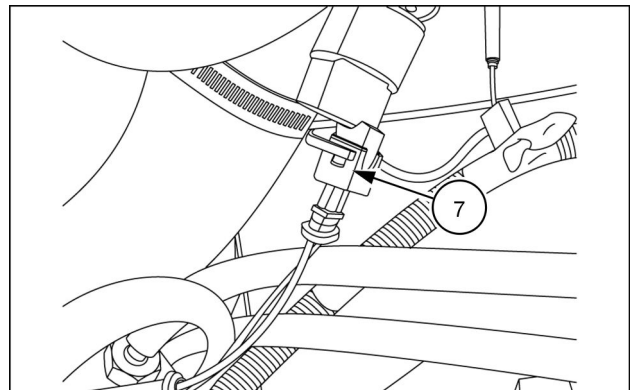
931002028 2

7. Remove the two retaining bolts **(6)** from the muffler support.



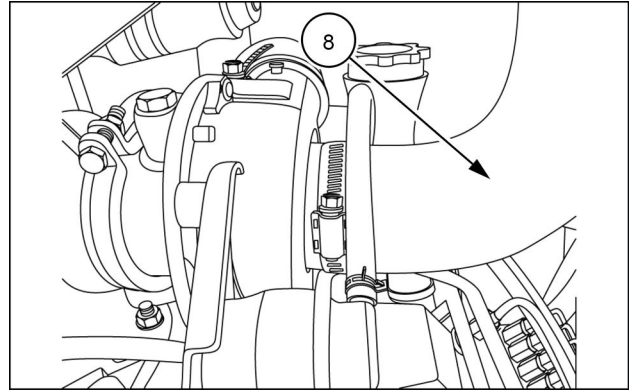
931002029 3

8. Disconnect air restriction sensor **(7)**.



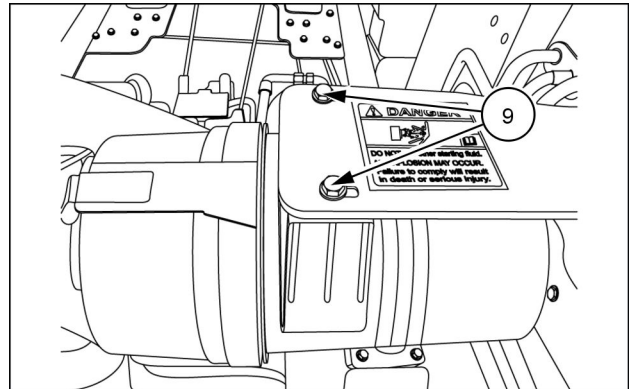
931002030 4

9. Loosen the hose clamps on the intake tube at both ends, remove the intake tube **(8)**, cover turbocharger inlet to avoid entry of debris.



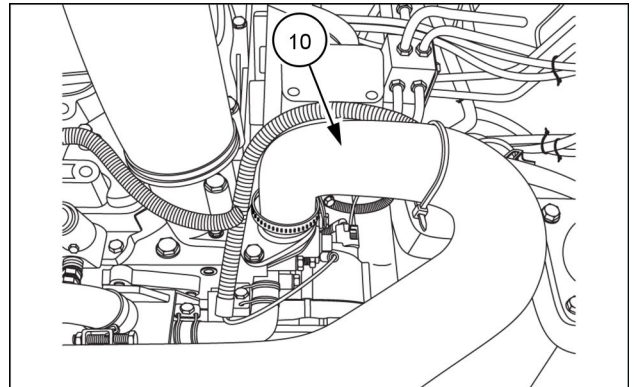
931002031 5

10. Remove air cleaner housing **(9)**.



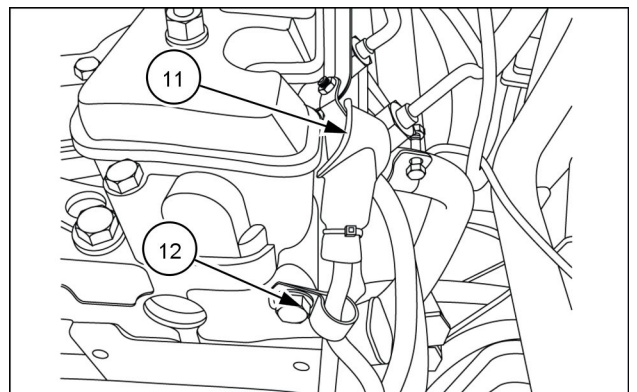
931002032 6

11. Loosen hose clamp and remove upper radiator hose **(10)** from engine.



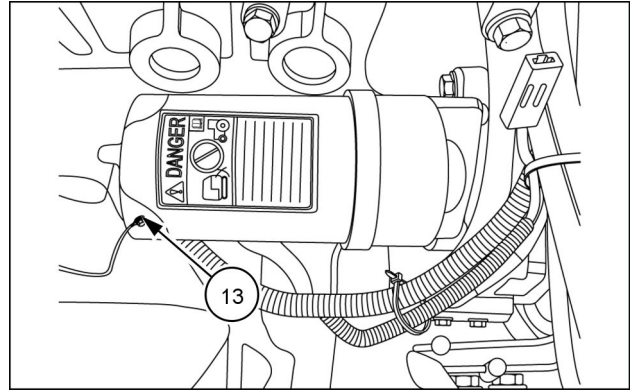
931002033 7

12. Disconnect the glow plug connection **(11)**. Remove wire clamp **(12)**.



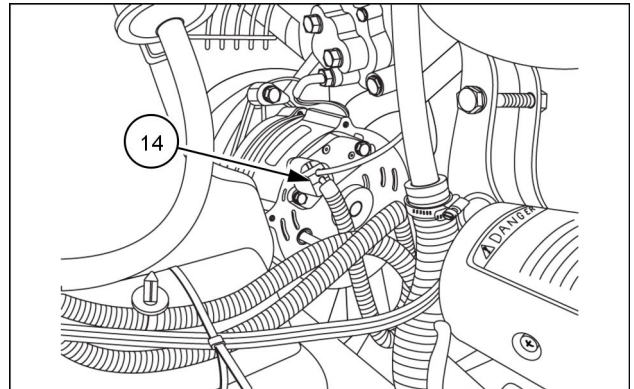
931002034 8

13. Disconnect the starter connections **(13)**.



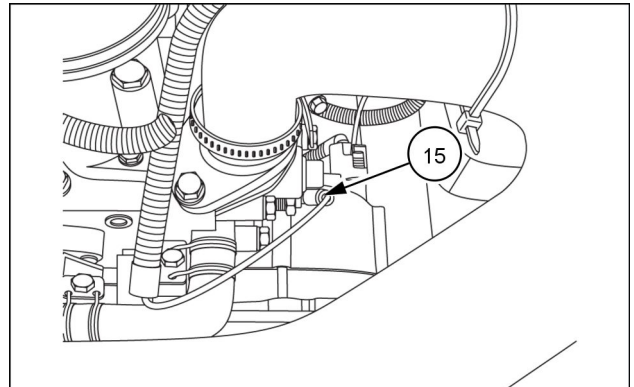
931002035 9

14. Disconnect the alternator connection **(14)**.



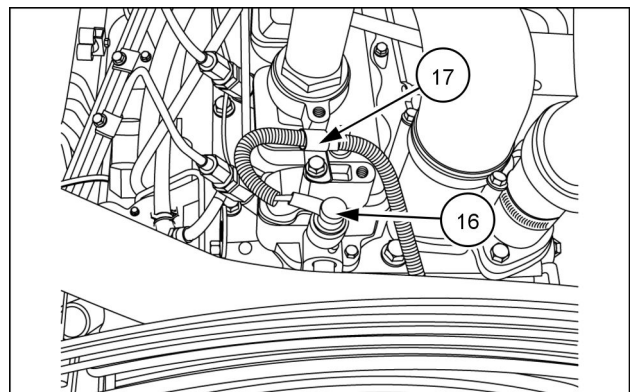
931002036 10

15. Disconnect temperature sender wire **(15)**.



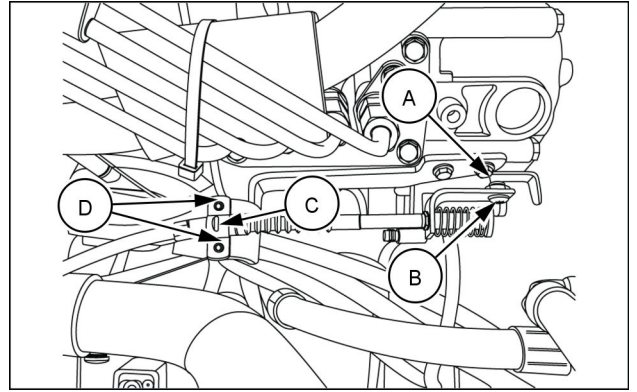
931002037 11

16. Disconnect oil pressure sender wire **(16)** and wire clamp **(17)**.



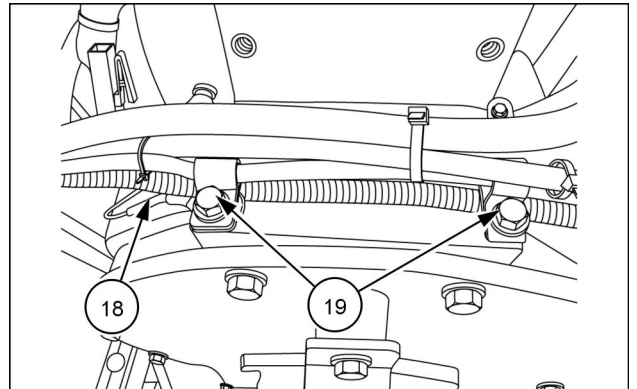
931002038 12

17. Disconnect throttle cable by removing the nut **(A)** and bolt **(B)** from the throttle body. Remove cable support clamp **(C)** by loosening the two hex head bolts **(D)**.



931002039 13

18. Disconnect wire harness **(18)** and clamps **(19)** from the top of the flywheel housing.



931002040 14

19. **⚠ WARNING**

Fire hazard!

When handling diesel fuel, observe the following precautions:

1. Do not smoke.
 2. Never fill the tank when the engine is running.
 3. Wipe up spilled fuel immediately.
- Failure to comply could result in death or serious injury.

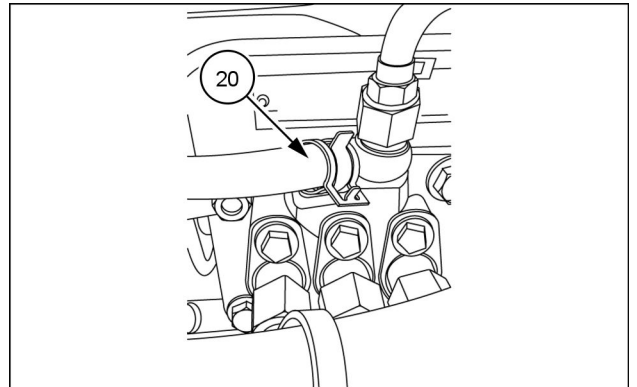
W0099A

⚠ WARNING

Escaping fluid!

Hydraulic fluid or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury. To prevent personal injury: Relieve all pressure before disconnecting fluid lines or performing work on the hydraulic system. Before applying pressure, make sure all connections are tight and all components are in good condition. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately. Failure to comply could result in death or serious injury.

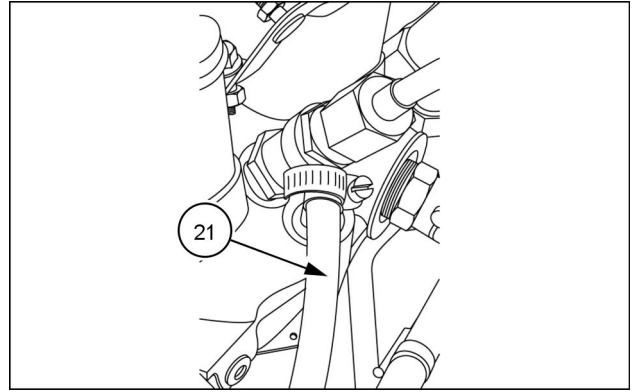
W0178A



931002042 15

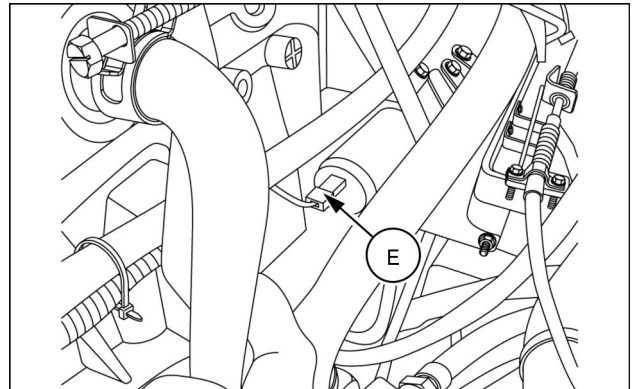
Place a suitable container under lines to prevent spillage and remove the fuel supply line **(20)**.

20. Remove the fuel return line **(21)**.



931002041 16

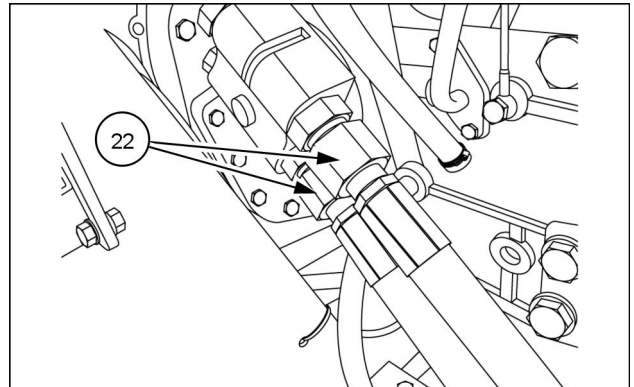
21. Disconnect the spade connector **(E)** from the back side of the fuel shut off solenoid.



931002043 17

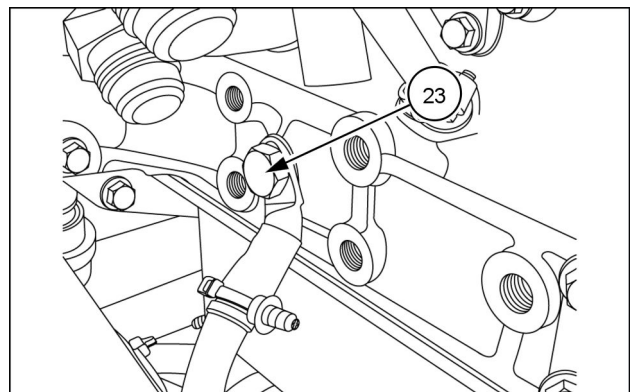
22. Place a suitable container under the remote engine oil filter lines. Label and disconnect oil filter lines **(22)**.

NOTE: Cap the ends to avoid entry of debris.



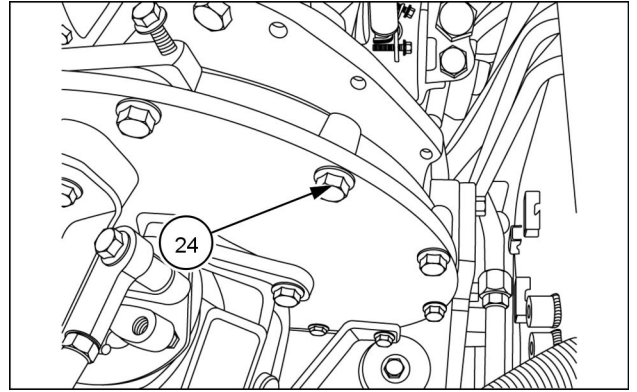
931002044 18

23. Disconnect the ground from the engine **(23)** to the battery quick disconnect.



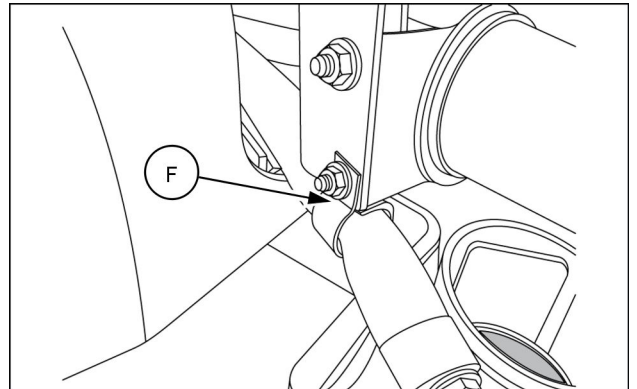
931002045 19

24. Remove the twelve mounting bolts **(24)** securing the hydraulic pump to the engine plate



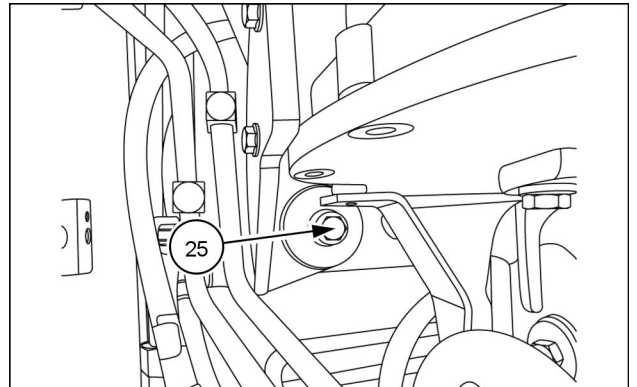
931002046 20

25. Remove engine oil pan drain hose clamp **(F)**.



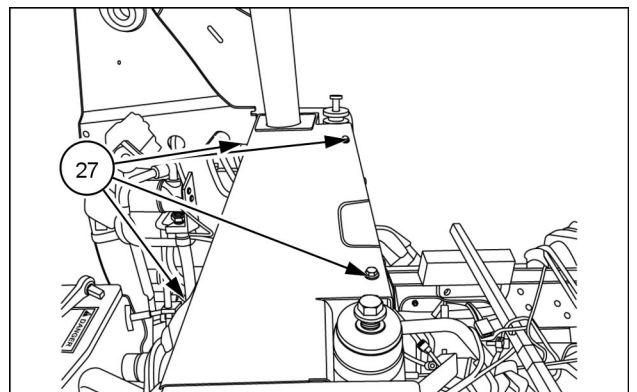
931002050 21

26. Remove the front and rear engine mounts **(25)**, **(26)** (not shown).



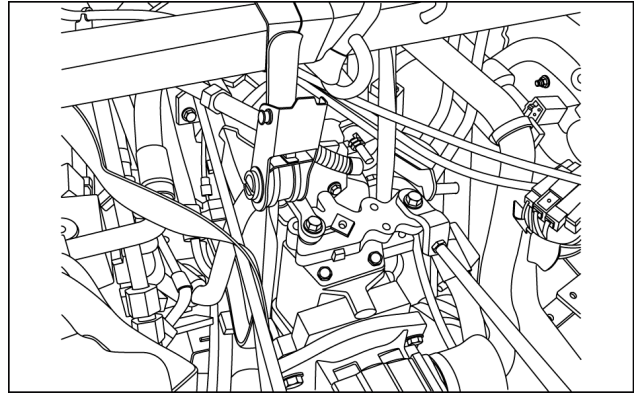
931002047 22

27. Remove the four mounting bolts **(27)** from the fixed hood, remove hood.



931002049 23

28. Place a suitable support beam across the skid steer frame. Tie a suitable strap around the pump and secure to the support beam, as shown.

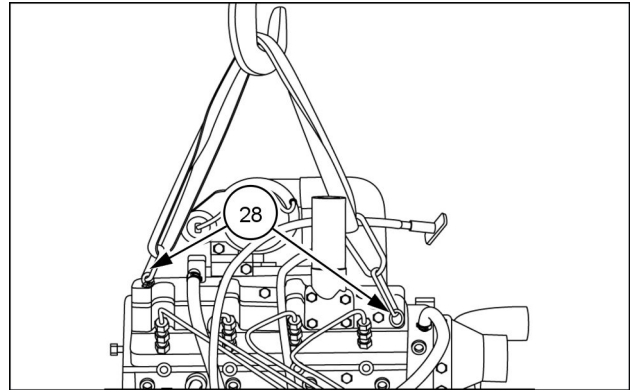


931002051 24

29. **▲ DANGER**
Heavy parts!
Support designated component(s) with adequate lifting equipment.
Failure to comply will result in death or serious injury.

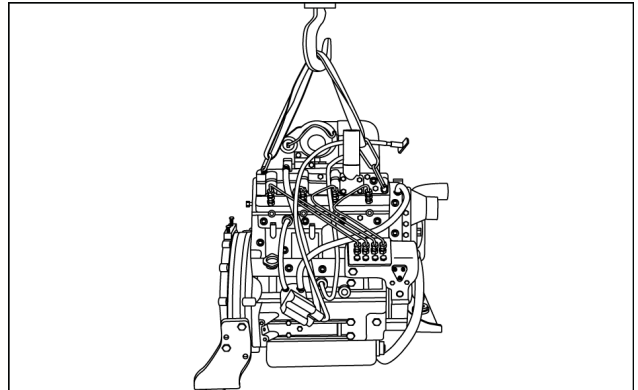
D0018A

Attach proper lifting straps to the eye hooks (28) provided on the engine.



931002052 25

30. Use a suitable hoist to carefully lift the engine slightly rearward to separate from the hydraulic pumps. Once free, lift the engine and remove from the rear of chassis.



931002053 26

Engine - Install

⚠ DANGER

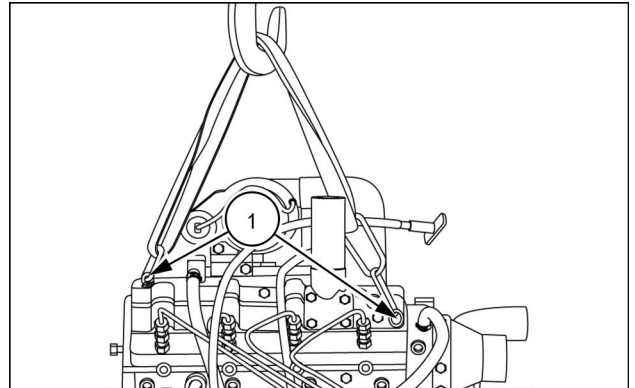
Heavy objects!

Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders.

Failure to comply will result in death or serious injury.

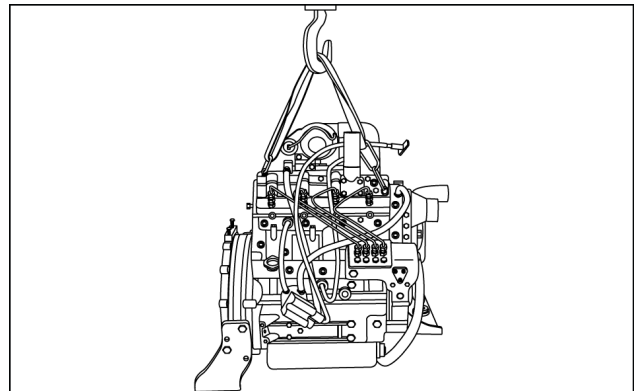
D0076A

1. Attach proper lifting straps to the eye hooks **(1)** provided on the front right and rear left of the engine.



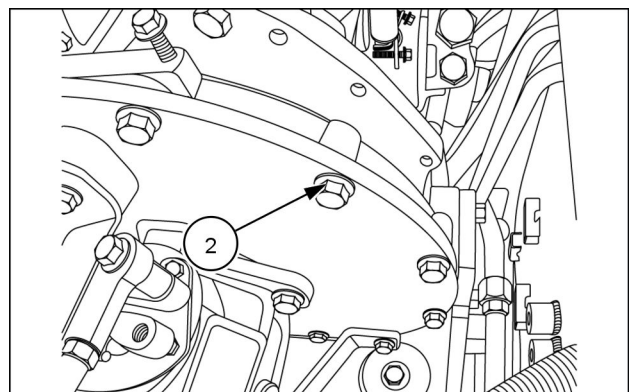
931002052 1

2. Using a suitable hoist carefully lower engine into engine compartment on the skid steer.



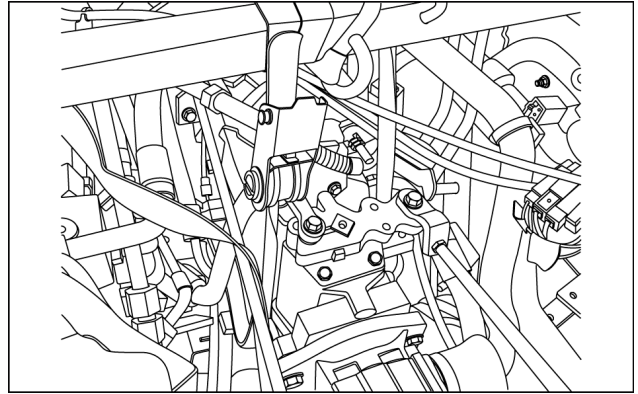
931002053 2

3. Slowly orient the hydraulic pump coupler to the adapter on the engine ensuring the attachment of engine plate to flywheel housing.
4. Apply **LOCTITE® 243** to the threads of the bolts **(2)**. Attach engine to hydraulic pump mounting plate using the twelve mounting bolts **(2)**. Tighten the mounting bolts **(2)** to a torque of **48 - 66 N·m (35 - 49 lb ft)**.



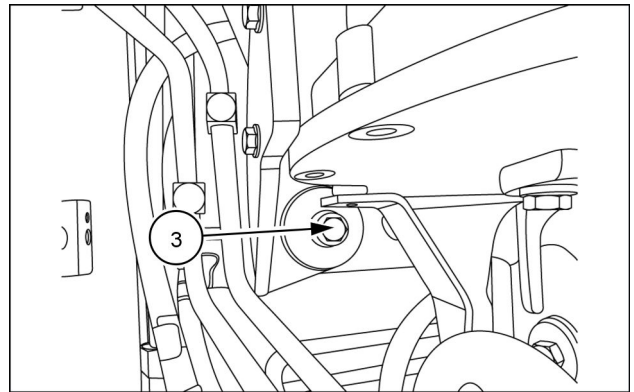
931002046 3

5. Remove support brace and straps from hydraulic pump.



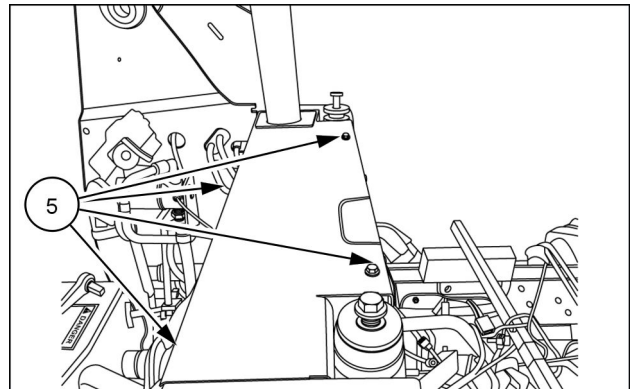
931002051 4

6. Apply **LOCTITE® 243** to the threads of the mounting bolts **(3)**, **(4)** (not shown). Install front engine mounting bolts **(3)** and rear mounting bolts **(4)** (not shown). Tighten the front engine mounting bolts **(3)** to a torque of **183 - 224 N·m (135 - 165 lb ft)**. Tighten the rear engine mounting bolt **(4)** (not shown) to a torque of **121 - 164 N·m (89 - 121 lb ft)**.



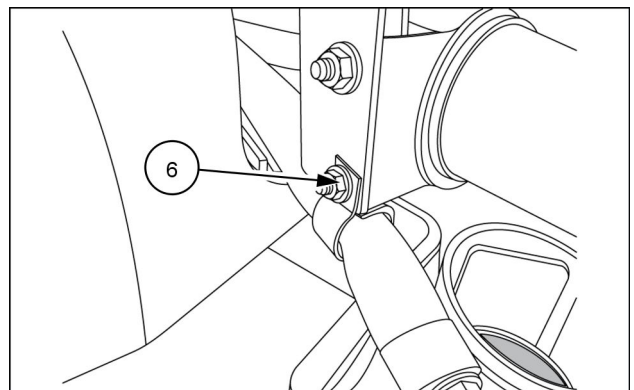
931002047 5

7. Install Fixed hood and secure with hardware **(5)**.



931002049 6

8. Install engine oil pan drain hose into clamp **(6)**.



931002050 7



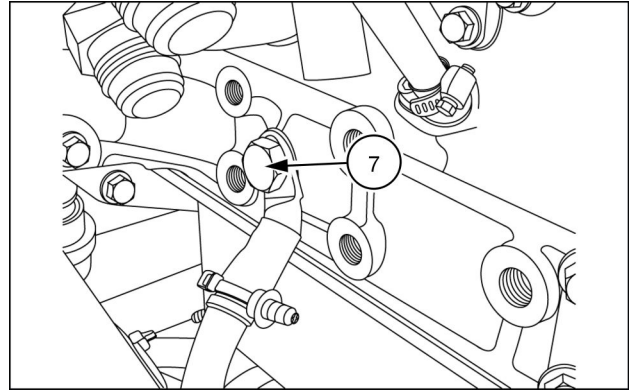
Suggest:

If the above button click is invalid.

**Please download this document
first, and then click the above link
to download the complete manual.**

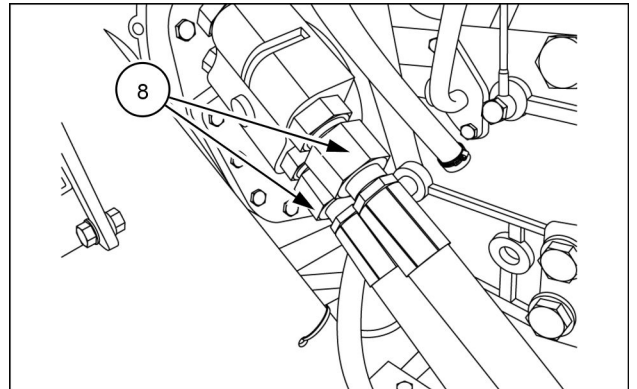
Thank you so much for reading

9. Connect ground from the quick battery disconnect to the engine **(7)**.



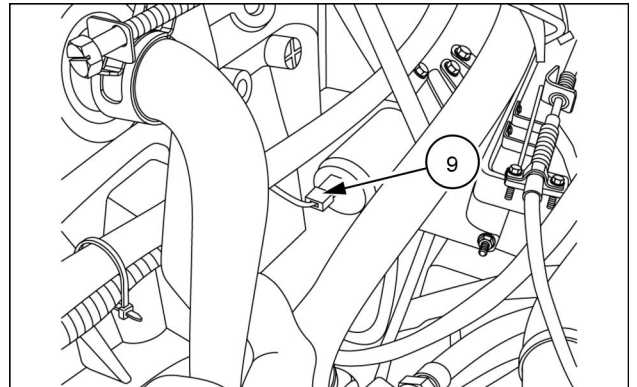
931002045 8

10. Connect remote engine oil filter lines **(8)**.



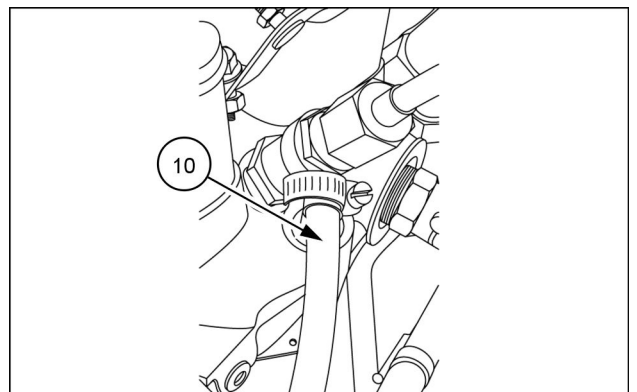
931002044 9

11. Connect the spade connector to the back of the fuel shut off solenoid **(9)**.



931002043 10

12. Connect the fuel return line **(10)**.



931002041 11

<https://www.ebooklibonline.com>

Hello dear friend!

Thank you very much for reading.

Enter the link into your browser.

The full manual is available for immediate download.

<https://www.ebooklibonline.com>