



John Deere 333P & 335P Oil Cooler Cab Mount Kit

Installation Instructions

(Originating with Oil Cooler
Serial Number 50-1183)





Table of Contents

Introduction

Dealer Information	1
Dealer Responsibility	1

Safety Instructions

Safety First	2
Safety Rules	2
Set-up Safety	2
Hoist (Lifting) Safety	3
Hydraulic Safety	3

Options

Universal Oil Cooler Kit (John Deere 333P and 335P) Options	4
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Installation Instructions

Set-up	7
Installing the Cab Mount Kit to the Loader	7
Mounting the Frame and Oil Cooler	8
Raising Oil Cooler into Service Position	9
Lifting Loader Arms	10
Mounting the Bulkhead and Fittings	10
Connecting the Loader Core Hydraulic Hoses	11
Connecting the Cooler Hydraulic Hoses	13
Routing Wiring Harness	14
Electrical Connections	16
Finalizing Installation	17
Securing Hoses and Wiring Harness	17
Checking for Leaks	17
Check Hydraulic Oil Level	17
Reinstalling Panels	17
Re-installing Oil Cooler Panel	17
Re-installing Track Loader Panels and Door	18
Lowering Arms	18
Check and Verify Fan Operation	18

Appendix

Torque Specifications	19
Inches Hardware and Lock Nuts	19
Metric Hardware and Lock Nuts	20



Dealer Information

Some components of the Universal Hydraulic Oil Cooler Cab Mount Kit for the John Deere 333P and 335P Track Loader are shipped disassembled and need to be removed from their shipping positions, assembled, and secured in their operating position before being delivered to the owner.

To ensure safe and proper set-up of the oil cooler cab mount kit, it is mandatory that you thoroughly study this manual and follow its recommendations and information. Proper assembly is essential to prevent injury or damage and to maximize the life of the oil cooler.

For specific operating and maintenance instructions, specifications, and serviceable parts for the Loftness Universal Oil Cooler, refer to the Owner's Manual (N14882) that is shipped with each cooler, or visit www.loftness.com for an electronic file of the manual.

Continuous improvement and advancement of Loftness products may result in changes to this equipment that may not be reflected in this publication. Loftness reserves the right to make product improvements to the oil cooler cab mount kit at any time. Although great care has been taken to ensure the accuracy of this publication, Loftness does not assume any liability for errors or omissions.

Dealer Responsibility

Assemble and set up the oil cooler cab mount kit in a safe manner and in accordance with all applicable local, state, and federal codes, regulations and/or laws, and in compliance with on-product labeling and these instructions.

Make sure that all personnel employed to set up and assemble the oil cooler cab mount kit:

- has read this manual and thoroughly understands safe and correct installation procedures.
- is familiar with the oil cooler and track loader.
- has a full understanding of the tools and/or equipment used to set up the oil cooler cab mount kit, such as hoists, power tools, etc.


Make sure the oil cooler cab mount kit is installed correctly before being placed into service.

Fulfill and assist the owner with all warranty obligations so as not to void the warranties. The warranty policy included in the Owner's Manual for the oil cooler outlines the warranty policy of Loftness.

Safety Instructions

Safety First

Accidents can be prevented by recognizing the causes or hazards before an accident occurs and doing something about them. Regardless of the care used in the design and construction of the oil cooler cab mount kit, there are some areas that cannot be safeguarded without interfering with accessibility and efficient operation.

	<p>Safety Alert Symbol</p> <p>This message alert symbol identifies important safety messages on the product and in this manual. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.</p>
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In this manual and on decals used on the oil cooler the words **DANGER, WARNING, CAUTION, IMPORTANT,** and **NOTE** are used to indicate the following:

DANGER: This word warns of immediate hazards which, if not avoided, will result in severe personal injury or death. The color associated with Danger is RED.



WARNING: This word refers to a potentially hazardous situation which, if not avoided, could result in severe personal injury or death. The color associated with Warning is ORANGE.

CAUTION: This word refers to a potentially hazardous or unsafe situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. The color associated with Caution is YELLOW.

IMPORTANT: Highlights information that must be heeded.

NOTE: A reminder of other related information that needs to be considered.

If Safety Decals on the oil cooler are ISO two panel pictorial, decals are defined as follows:

- The first panel indicates the nature of the hazard.
- The second panel indicates the appropriate avoidance of the hazard.
- Background color is YELLOW.
- Prohibition symbols such as  and  if used, are RED.

Be certain all assemblers are aware of the dangers indicated by safety decals applied to the oil cooler, and be certain they follow all safety decal instructions. Contact Loftness for safety decal replacement.

Loftness cannot anticipate every possible circumstance that may involve a potential hazard. The warnings in this manual are not all inclusive.

Safety Rules

These are general safety considerations. Additional precautions may be necessary to set up the oil cooler cab mount kit in a safe manner. Be certain you are operating your equipment and tools in accordance with all safety codes, OSHA rules and regulations, insurance requirements and local, state, and federal laws while setting up this Loftness unit.

Set-up Safety

- Do not allow anyone to set up and/or assemble the oil cooler cab mount kit until he or she has read the dealer set-up manual and is completely familiar with all safety precautions.
- Become familiar with the safety decals on the oil cooler.
- Do not allow inexperienced persons unfamiliar with the track loader, or the tools/equipment used to set up the oil cooler cab mount kit, to perform any set up procedures.
- Do not allow persons under the influence of alcohol, medications, or other drugs that can impair judgment or cause drowsiness to set up the oil cooler cab mount kit.
- Make sure the set-up area is clear of any distracting objects. Keep work areas clean and free of grease and oil to avoid slipping or falling.

Safety Rules (Cont'd)

Set-up Safety (Cont'd)

- Keep children, bystanders and other workers away from the unit while being set up.
- Wear safety glasses, ear protection, respirators, gloves, hard hats, safety shoes and other protective clothing when required.
- It is the dealer's responsibility to be aware of work area hazards when assembling the oil cooler cab mount kit.
- Do not replace components or parts with other than factory-supplied parts. To do so may decrease the effectiveness of the oil cooler. If you notice any missing or damaged parts contact Loftness immediately.
- Never attempt to make any adjustments to the oil cooler cab mount kit if the engine is running or the key is in the "ON" position in the track loader. Before leaving the operator's position, disengage power to the track loader and remove ignition key.

Hoist (Lifting) Safety

During maneuvering and set-up, it is recommended that a power hoist, or lift, be used to lift the cooler cab mount kit assembly into the operating position.

- Make sure the lifting device (hoist or heavy equipment) is capable of lifting the specified parts and/or assemblies.
- All personnel must be properly trained and experienced lift operators.

Hydraulic Safety

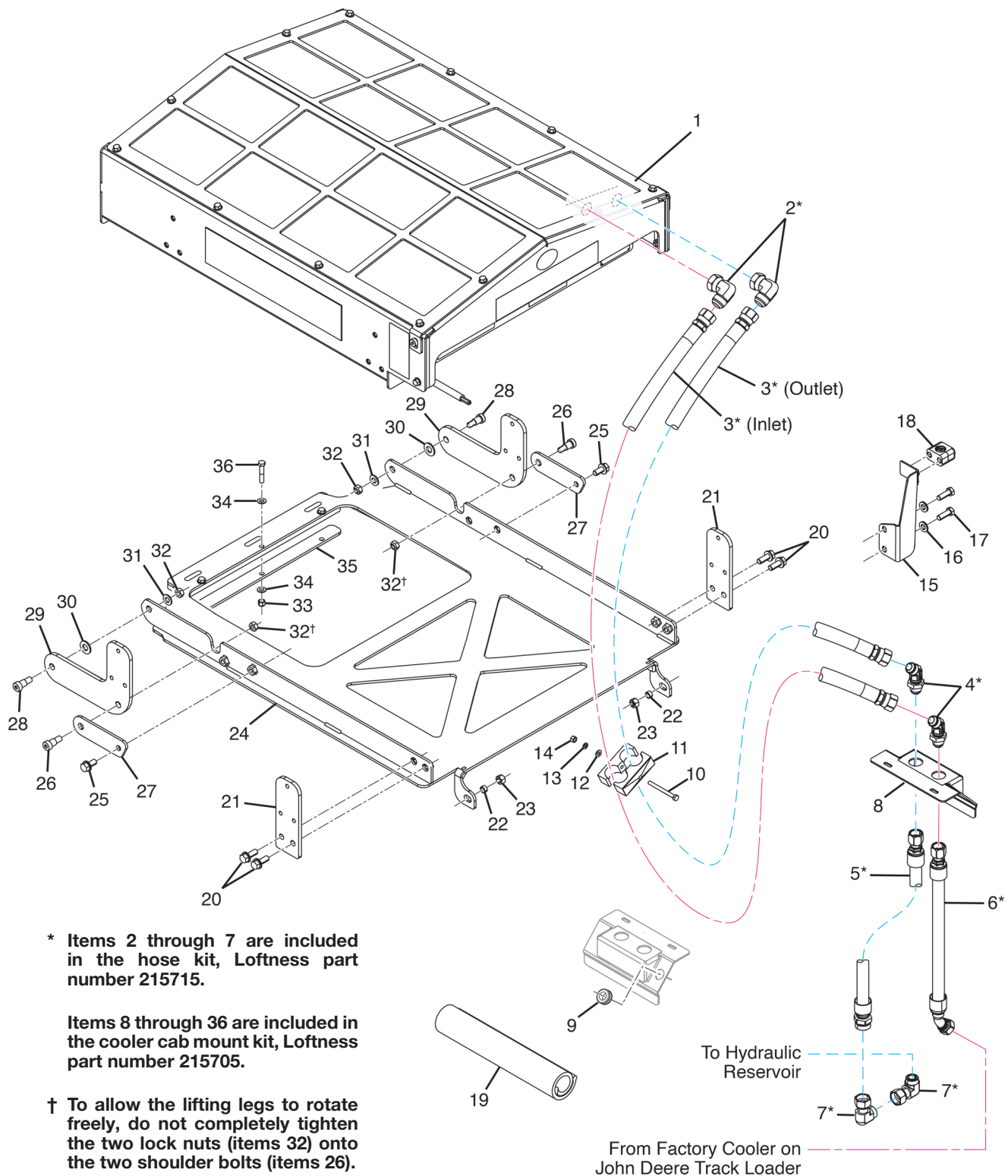
- The hydraulic system is under high pressure. Make sure all lines and fittings are tight and in good condition. These fluids escaping under high pressure can have sufficient force to penetrate skin and cause serious injury.
- Never check for leaks by using any part of your body to feel for escaping fluid.
- Always use a piece of wood to check for leaks.



WARNING: *Contact with high pressure fluids may cause fluid penetration and burn hazards. Fluid that is under pressure can penetrate body tissue. Fluid penetration can cause serious injury and possible death. If fluid is injected into the skin, seek medical attention immediately!*

Options

Universal Oil Cooler Kit (John Deere 333P and 335P) Options



Universal Oil Cooler Kit (John Deere 333P and 335P) Options

#	QTY.	PART #	DESCRIPTION
1	1	212325	OIL COOLER, FINAL ASM 2 FAN
2	2	N19270	ELBOW, 90 DEG - 16MJC - 16FJC
3	2	215716	HOSE, 1 X 63 -16FJIC -16FJIC
4	2	N108294	ADAPTER, BULKHEAD 45-16MJIC
5	1	215718	HOSE, 1 X 41 -16-10643-16-16-1J043-16-16
6	1	215720	HOSE, 1 X 36 -16-10643-16-16-1J743-16-16
7	2	N34060	ELBOW, 90DEG 16MORFS - 16FORFS
8	1	215708	MOUNT, JD P-SER COOLER BULKHEAD
9	1	N19297	GROMMET-RUBBER
10	1	4413	BOLT, 5/16" X 3-1/4" GR 5
11	1	N49250	WELD-MOUNT CLAMP 1.5"
12	1	N28927	WASHER, FLAT 5/16 SAE
13	1	4228	WASHER, 5/16" LOCK
14	1	4237	NUT, 5/16" STANDARD
15	1	215725	MOUNT, HOSE CLAMP
16	2	N37780	WASHER, NORD-LOCK 1/2" SP
17	2	4376	BOLT, M12 X 35 MM
18	1	215722	CLAMP, VIBRATION DAMP 1 ID
19	1	215711	INSTRUCTIONS, JD P-SER COOLER MNT
20	4	N18360	BOLT, 1/2-13 X 1-1/4 SER FLG
21	2	206863	PLATE, JD MOUNT LEG BACK
22	8	4064	WASHER, FLAT 3/8"
23	2	206861	NUT, LOCK M12 X 1.75 CLASS 10
24	1	215706	WELDMENT, JD P-SERIES COOLER MNT
25	2	N26748	BOLT, 1/2" X 1" SER FLG
26	2	202769	BOLT, SHOULDER 5/8IN X 5/8IN
27	2	206864	PLATE, JD COOLER STAND
28	2	206866	BOLT, SHOULDER 5/8IN X 3/4IN
29	2	206862	PLATE, JD MOUNT LEG FRONT
30	2	4997	WASHER, FLAT 5/8" SAE
31	2	4068	WASHER, 1/2" SAE FLAT
32	4	4054	NUT, LOCK 1/2" TOP
33	3	209887	NUT, LOCK 3/8IN-16 NYLOCK
34	6	N31741	WASHER, FLAT 3/8" SAE
35	1	215713	PLATE, STIFFENER
36	3	4226	BOLT, 3/8" X 2" GRADE 5



Installation Instructions

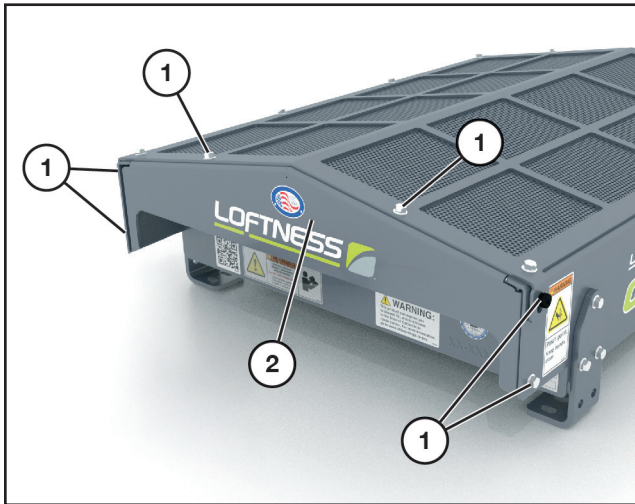
Set-up

To ensure safe and proper set-up of the oil cooler kit, it is mandatory that you thoroughly study this manual and follow its recommendations and information.

Become familiar with all parts and part numbers in the John Deere Oil Cooler Cab Mount Kit and the Cooler Hose Kit before starting.

Refer to the drawing and parts list on pages 4 and 5 to assemble the cab mount kit.

Installing the Cab Mount Kit to the Loader



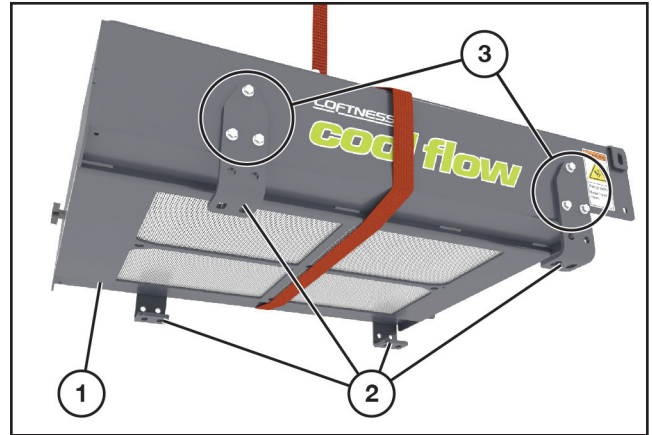
While the oil cooler is still on the ground remove the six bolts (1) securing the back cover (2) to the cooler frame.

Pull the back cover out and set it and the bolts aside.

NOTE: Removing the back cover allows for easier access to the hydraulic fittings and the wiring harness during installation.

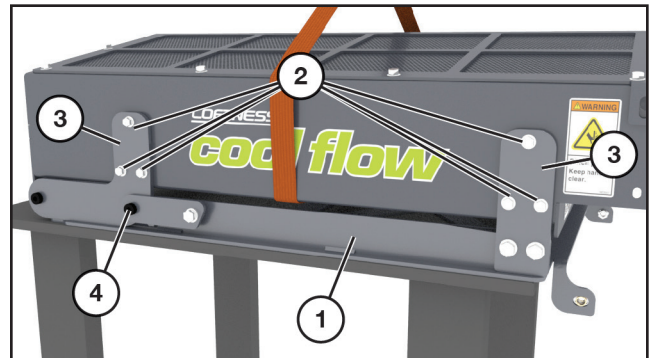


WARNING: The cooler mount frame and the oil cooler are heavy. It is recommended that a power hoist be used to lift and place them into position.



Suspend the universal oil cooler (1) with a hoist and straps.

Remove all four of the factory-installed legs (2) from the oil cooler by unscrewing the mounting bolts (3) (three bolts per leg, twelve total). Keep these bolts, they will be used to remount the oil cooler to the cab mount assembly.



With the cab mount assembly setting on a workbench, slowly set the oil cooler onto the cab mount (1).

Reinstall the mounting bolts (2) through all four cab mount brackets (3). Refer to the drawing on page 4 as an assembly guide. Tighten the mounting bolts.

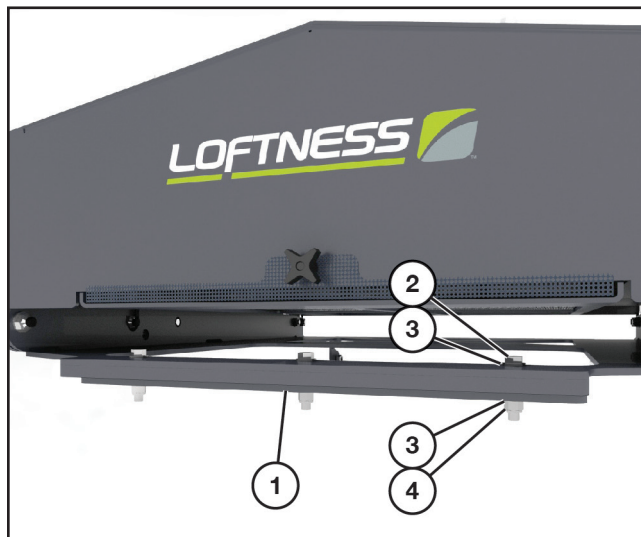
IMPORTANT: DO NOT tighten the shoulder bolts/lock nuts completely at location 4 (both sides). This is a pivot point for the lifting legs when moving the oil cooler into the service position and must be allowed to move freely. Refer also to items 26 and 32 on the exploded illustration on page 4.

(Procedure continued on following page.)

Installation Instructions

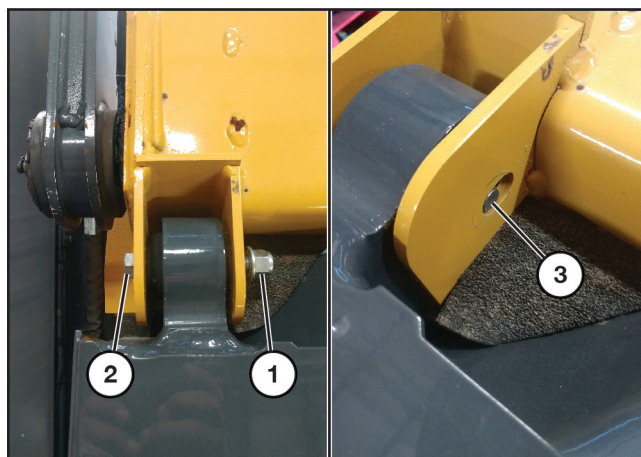
Set-up (Cont'd)

Installing the Cab Mount Kit to the Loader (Cont'd)



Remove the stiffener (1) by taking out the three sets of bolts (2), washers (3), and nuts (4).

Mounting the Frame and Oil Cooler



Remove the lock nut (1) on the John Deere cab pivot bolt (2), then back the bolt out so the threaded end is flush with the frame (3).

IMPORTANT: *DO NOT* remove the pivot bolt(s). If the bolt is removed, damage to the cab wiring, etc. can occur.

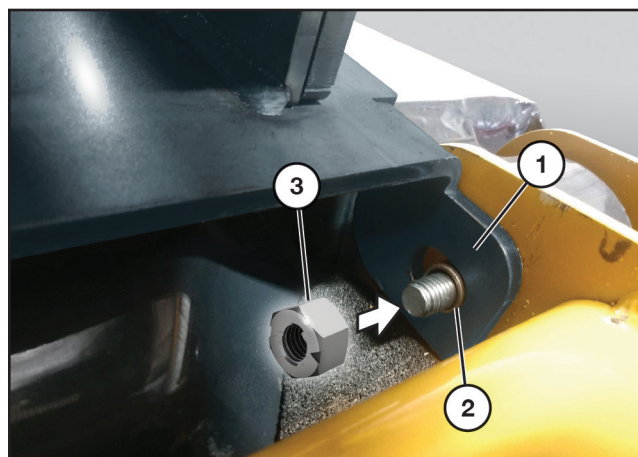
Repeat this procedure on the opposite side of the cab.



Carefully lift the oil cooler cab mount kit onto the cab of the track loader.



WARNING: Crushing hazard. Do not stand under the oil cooler cab mount kit while it is being raised, or while it is the raised position.



When setting the oil cooler cab mount kit down onto the cab, tip the back of the cab kit down to align the holes on the ears (1) of the cab mount to the bolts in the cab pivot.

Push the cab pivot bolt through, then install a bushing (2) on the bolt as shown above.

Install a lock nut (3) included with the kit onto the pivot bolt and tighten.

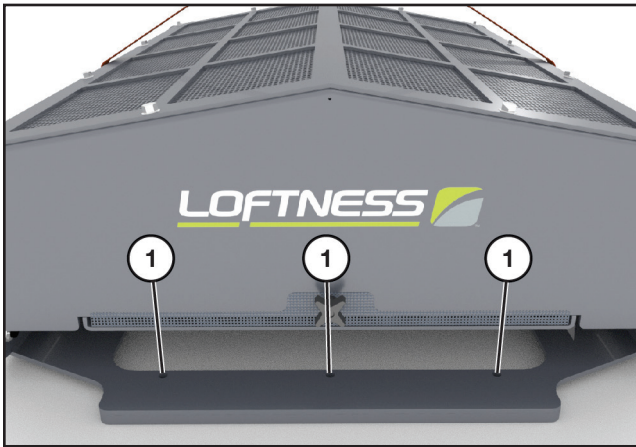
Repeat this procedure on the opposite side of the oil cooler cab mount.

(Procedure continued on following page.)

Installation Instructions

Set-up (Cont'd)

Mounting the Frame and Oil Cooler (Cont'd)



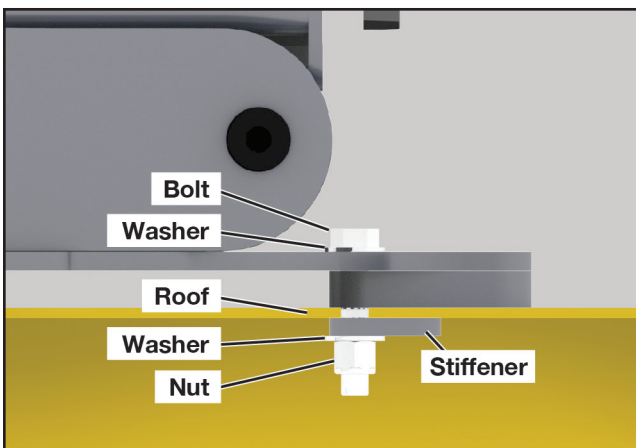
Lower the front of the cab kit down onto the cab and center it with the front of the cab.

Locate and mark the three holes (1) at the front of the mount base, then lift the front of the cab kit off of the roof to allow enough room for drilling.

Drill three 7/16 in. holes at the marked locations through the cab sheet metal. Deburr all holes after drilling.

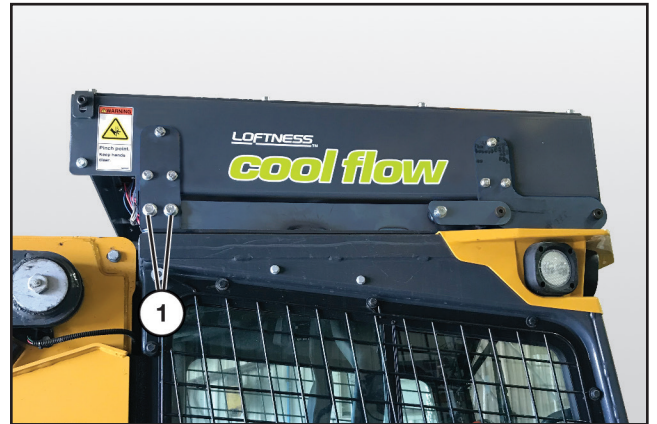
Lower the front of the cab kit back into position, ensuring that the three holes in the mount base align with the drilled holes in the cab.

NOTE: A punch may be needed to assist with alignment.



Secure the cab mount kit onto the cab using the previously removed hardware and stiffener. Refer to the side view illustration above for the correct sequence and placement of the bolts, washers, nuts, and stiffener.

Raising Oil Cooler into Service Position



Remove the two bolts (1) securing the rear legs to the mount. Repeat this process for the corresponding bolts on the rear legs on the opposite side.

Set the bolts aside.



Remove the hex bolt (1) securing the lifting leg in the storage position. Repeat this process for the corresponding bolt on the lifting leg on the opposite side.

Keep the bolts near, they will be used to prop up the oil cooler in the next step.

(Procedure continued on following page.)

Installation Instructions

Set-up (Cont'd)

Raising Oil Cooler into Service Position (Cont'd)



Using a hoist, lift the rear of the oil cooler up and pivot the lifting legs (1) (both sides) until the open holes in the legs align with service position holes in the cab mount. Reinstall the bolts (2) (both sides).

Move the hoist out of the way and make sure all tools, parts, equipment and personnel are cleared from the area.

Lifting Loader Arms

Start the track loader.

Lift the track loader arms all the way up, then turn out the safety lock from inside the cab and lower the arms gently down onto the stop. Refer to the John Deere track loader owner's manual for instructions.

Shut OFF the track loader.

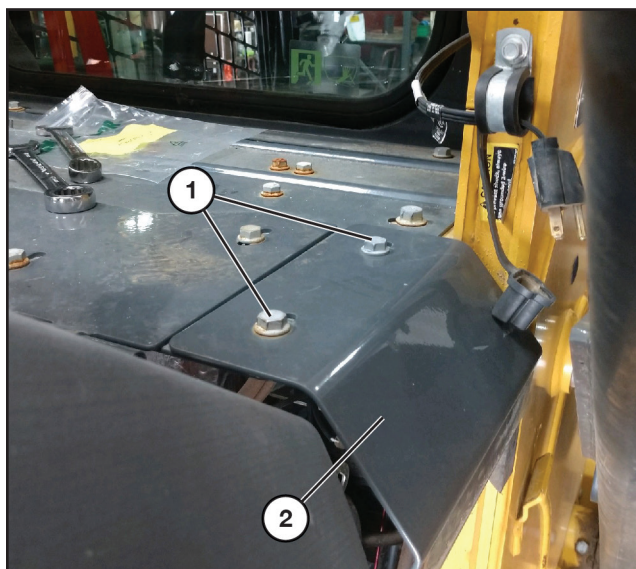


WARNING: Failure to shut down and lock out power could result in serious injury, or death.

Mounting the Bulkhead and Fittings



Lift the rear engine compartment door up and remove the right and left side engine panels. Refer to the John Deere track loader owner's manual for instructions.



Unscrew the two bolts (1) and set aside. These bolts will be used to secure the new bulkhead.

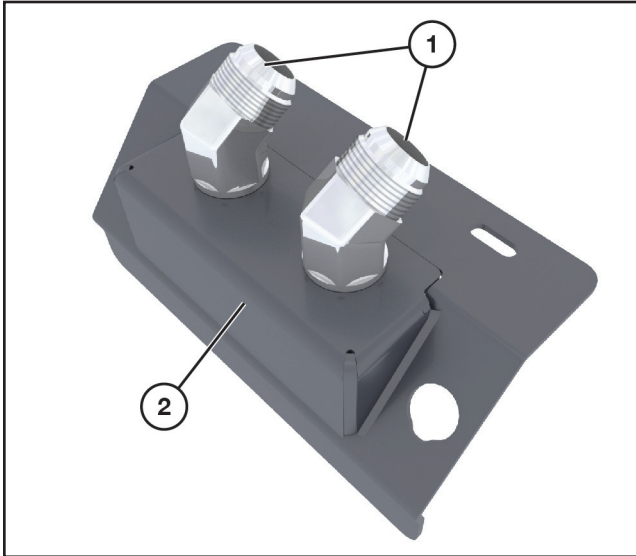
Remove the small body panel (2).

(Procedure continued on following page.)

Installation Instructions

Set-up (Cont'd)

Mounting the Bulkhead and Fittings (Cont'd)

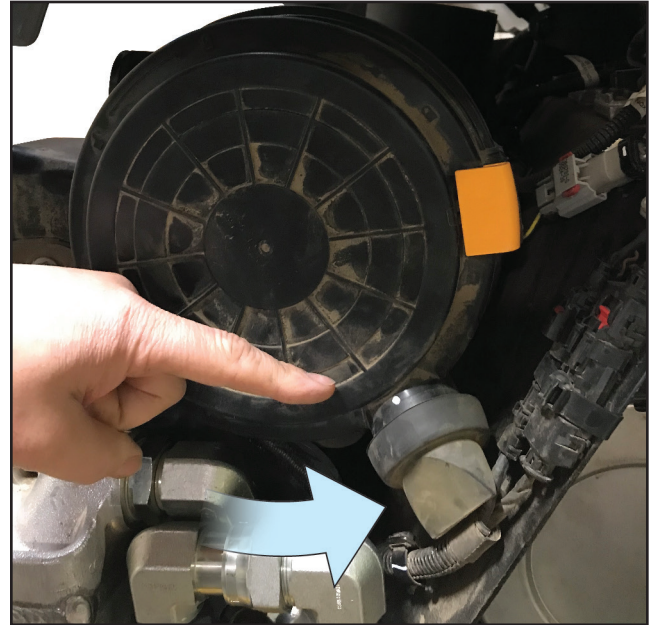


Install the two bulkhead fittings (1) (Loftness part no. N108294 in the cooler hose kit) onto the new bulkhead panel (2) in the direction shown below. Tighten the fittings.

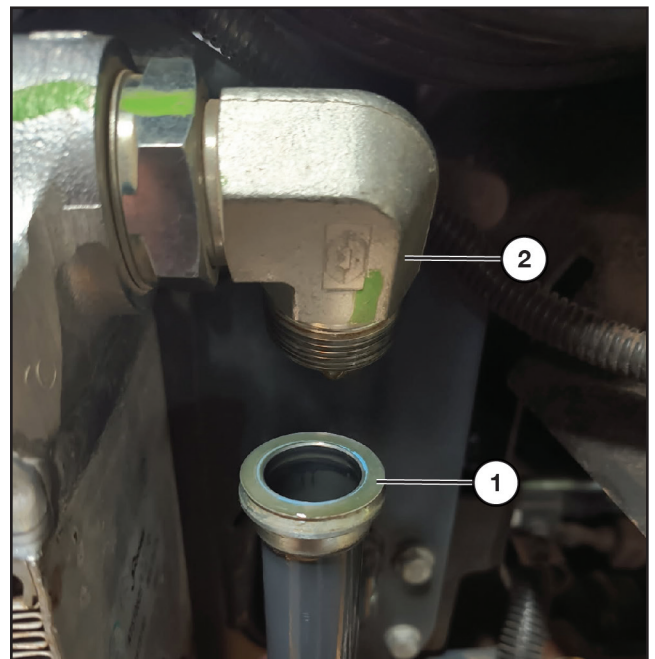


Using the two bolts (1) that were removed from the small panel, secure the bulkhead panel assembly onto the frame in the same location as the former panel.

Connecting the Loader Core Hydraulic Hoses



Turn the air filter cover so the drain is positioned as shown above.



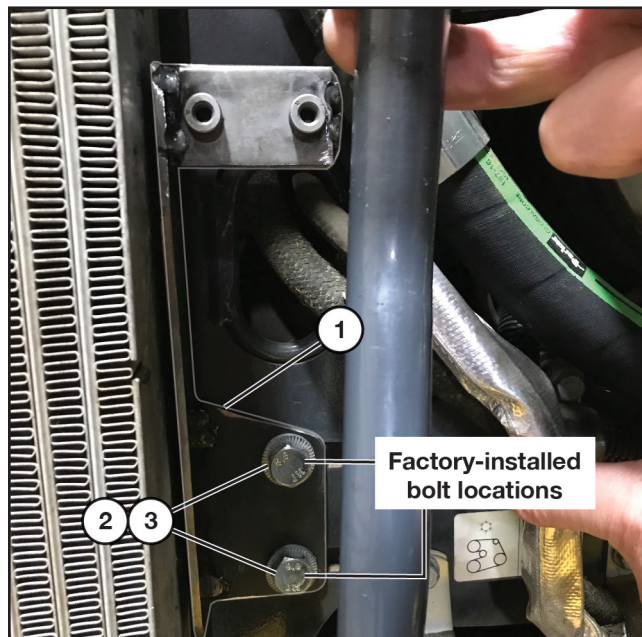
Disconnect the steel line (1) from the fitting (2) on the factory cooler.

(Procedure continued on following page.)

Installation Instructions

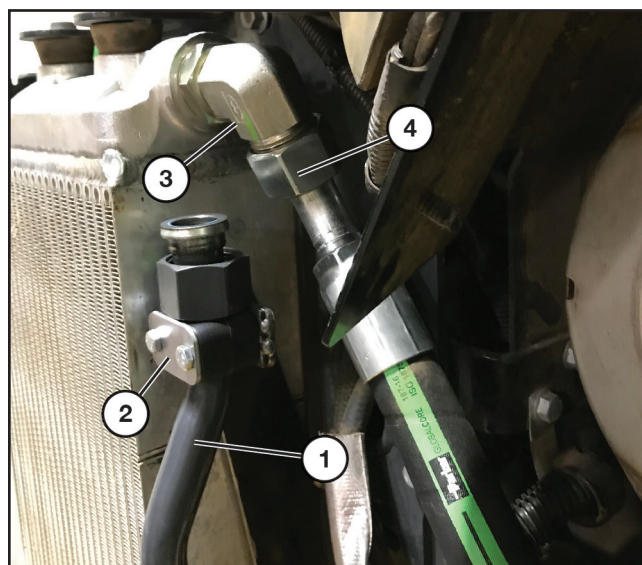
Set-up (Cont'd)

Connecting the Loader Core Hydraulic Hoses (Cont'd)



Remove the two factory-installed bolts from their location shown above.

Place the hose clamp mount (1) from the cab mount kit as shown and secure it with the provided M12 x 35mm bolts (2) and washers (3).



Secure the steel line (1) to the hose clamp mount with the

clamp assembly (2) provided in the kit. Do not tighten the clamp hardware at this time.

Rotate the cooler fitting (3) away from the steel line slightly as shown above.

Connect the elbow end of the 36 in. hose (4) - (Loftness part no. 215720) to the fitting. Tighten.



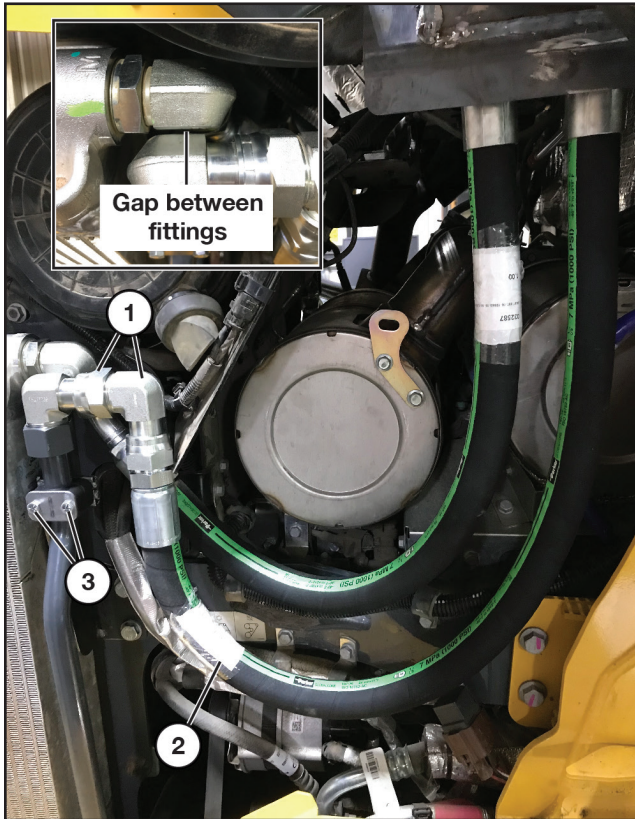
Connect the other end of the hose to the rear bulkhead fitting (5). Tighten.

(Procedure continued on following page.)

Installation Instructions

Set-up (Cont'd)

Connecting the Loader Core Hydraulic Hoses (Cont'd)



Connect the two elbow fittings (1) - (Loftness part no. N34060) onto the steel line. Make sure there is a gap between the cooler fitting and the steel line fitting as shown in the inset image.

Connect the female end of the 41 in. hose (2) - (Loftness part no. 215718) to the front bulkhead fitting and the male end to the fitting on the steel line.

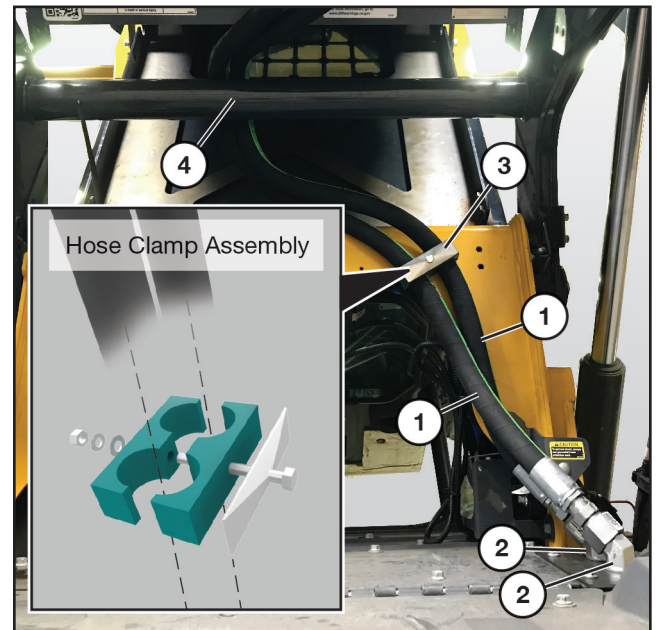
Tighten the bolts (3) on the steel line clamp.

Make sure all hose and fitting connections are tightened.

Connecting the Cooler Hydraulic Hoses

Lift the cab into the service position.

IMPORTANT: Refer to the John Deere track loader owner's manual for instructions on safely lifting and stabilizing the cab.



Connect one end of each 63 in. hydraulic hose (1) (Loftness part no. 215716 in the cooler hose kit) to the bulkhead fittings (2) as shown. Tighten both connections.

Install the double hose clamp (3) with hoses onto the cab. Leave the clamp slightly loose until the hoses are routed and connected to the cooler. Refer to the inset illustration for assembly instructions and hose routing.

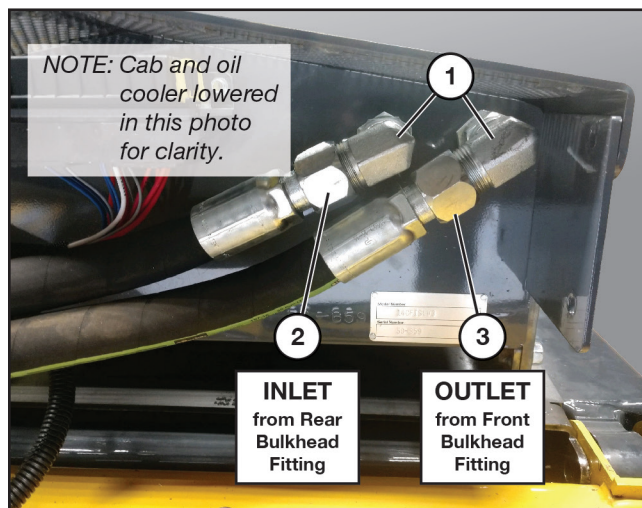
Route the hydraulic hoses behind the track loader arm stabilizer tube (4).

(Procedure continued on following page.)

Installation Instructions

Set-up (Cont'd)

Connecting the Cooler Hydraulic Hoses (Cont'd)



Install the two 90-degree elbow fittings (1) (Loftness part no. N19270 in the cooler hose kit) onto the two straight oil cooler fittings. Secure the fittings at the angles shown above. Tighten both fittings.

Connect the end of the hose (2) coming from the REAR bulkhead fitting to the inside elbow on the cooler (INLET port). Tighten.

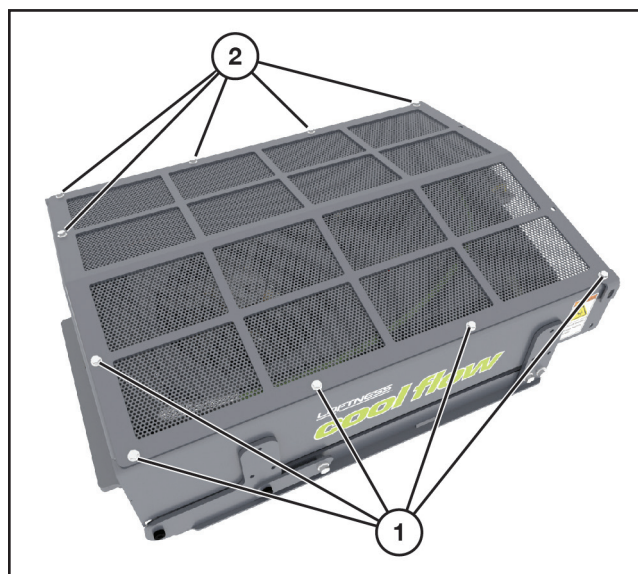
Connect the end of the hose (3) coming from the FRONT bulkhead fitting to the outside elbow on the cooler (OUTLET port). Tighten.

Tighten the hose clamp.



Make sure the hydraulic hoses are routed as shown above and all hose and fitting connections are tightened.

Routing Wiring Harness



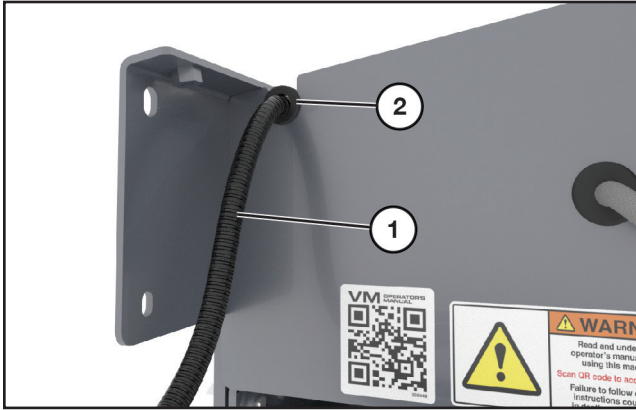
Remove the remaining 10 bolts (1) from the cooler cover.

(Procedure continued on following page.)

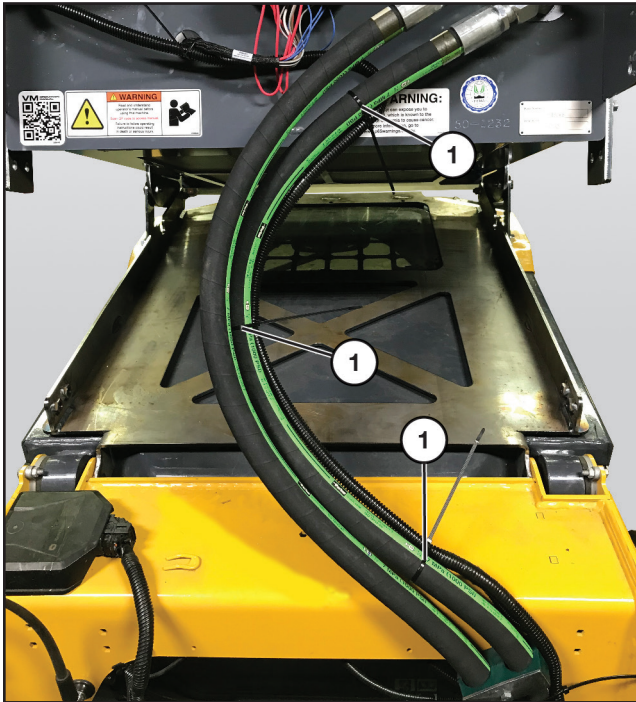
Installation Instructions

Set-up (Cont'd)

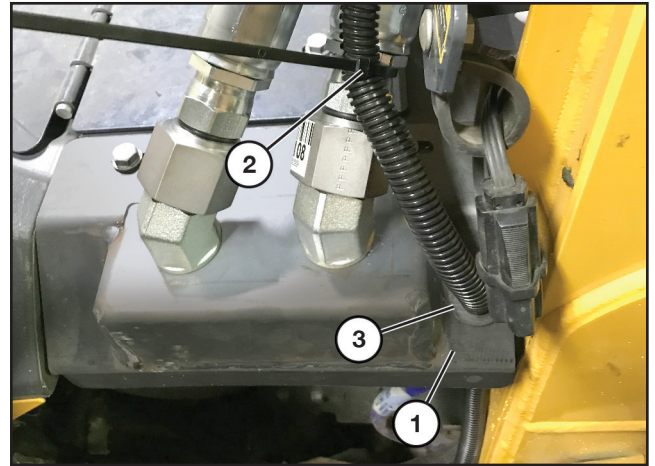
Routing Wiring Harness (Cont'd)



Pull the main wire harness from inside the cooler and secure the harness (1) with the grommet (2) in the rear panel of the cooler.

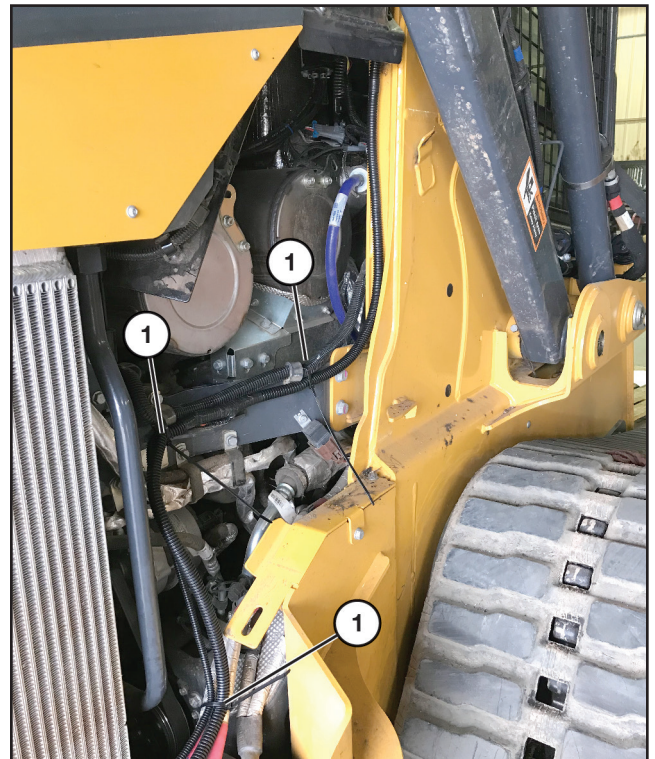


Route and secure the first section of the wiring harness to the outlet hose with zip-ties (1) as shown above. Make sure to provide enough slack in the harness to avoid binding and pinch points when tilting the cab.



Continue routing the harness through bulkhead plate (1). Secure it to the front bulkhead hose using a zip-tie (2).

Cut the grommet (3) - (Loftness part no. N19297) from the outside edge to the center. Then wrap the grommet around the harness and insert into the hole on the bulkhead plate (1).



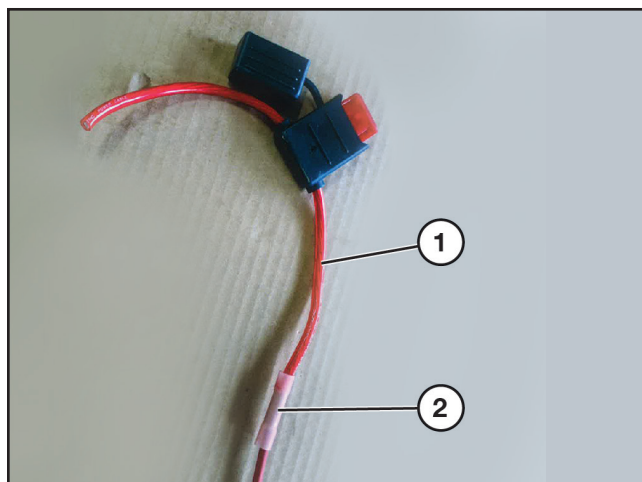
Route the remainder of the harness through the engine bay and back to the battery. Secure with zip-ties in the areas shown above.

Installation Instructions

Set-up (Cont'd)

Electrical Connections

With the right side engine panel removed, locate the battery (1) and make sure it is clear of any debris.



Cut the loop of the inline fuse holder (1) at the half-way mark, keeping an equal length of wire on either side of the fuse holder. Strip both ends of the wire.

Connect one end to the red positive (+) 8 AWG wire of the harness using a butt connector (2).

Attach a ring terminal on the other end for battery connection.



Connect the fuse holder (supplied with the oil cooler) to the red (8 AWG) wire from the cooler harness, and to the battery positive (1).

Connect both white wires (8 AWG and 18 AWG) from the cooler harness to battery ground (2).

Connect the orange wire (18 AWG) from the cooler harness to a keyed power location on the track loader.

NOTE: Refer to your John Deere owner's manual or your dealer for a keyed power location.

Ensure the track loader's battery connections are reconnected properly.

Installation Instructions

Finalizing Installation

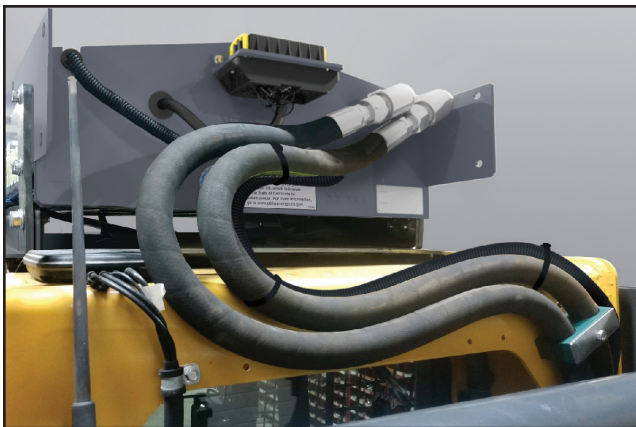
Lower the track loader cab back into the operating position.

IMPORTANT: Refer to the John Deere track loader owner's manual for instructions on lowering and securing the cab.

Lower the oil cooler back down into the operating position.

NOTE: Reverse the procedure for raising the oil cooler. Refer to "Raising Oil Cooler into Service Position" on page 9 for instructions. Ensure all hardware has been re-installed and is secure.

Securing Hoses and Wiring Harness



Make sure the oil cooler hydraulic hoses and wiring harness are secure. The hydraulic hoses and wiring harness coming from the oil cooler should route as shown above.

Avoid any potential pinch points or sharp turns that could cut or wear on the hoses or wires.

Provide slack in the hoses and wires to allow them to move freely when the cab is tilted up and down.

Checking for Leaks

Start the track loader and check all new hydraulic connections for leaks. If any leaks are present, make necessary corrections.

Turn track loader off.

Check Hydraulic Oil Level

The oil cooler cab mount kit is shipped without hydraulic oil present. Also, some hydraulic oil may have been lost during the installation, especially when the track loader's original hoses were disconnected.

After the oil cooler cab mount kit installation, check the hydraulic oil level in the track loader. Add as needed.

NOTE: Refer to your John Deere 333P or 335P Owner's Manual for checking and adding hydraulic oil.

Reinstalling Panels

Shut down the power on the track loader before re-installing the oil cooler and track loader panels.



WARNING: Failure to shut down and lock out power could result in serious injury, or death.

Re-installing Oil Cooler Panel



Reinstall the back access cover (1) onto the oil cooler and tighten the bolts.

Installation Instructions

Finalizing Installation (Cont'd)

Re-installing Track Loader Panels and Door

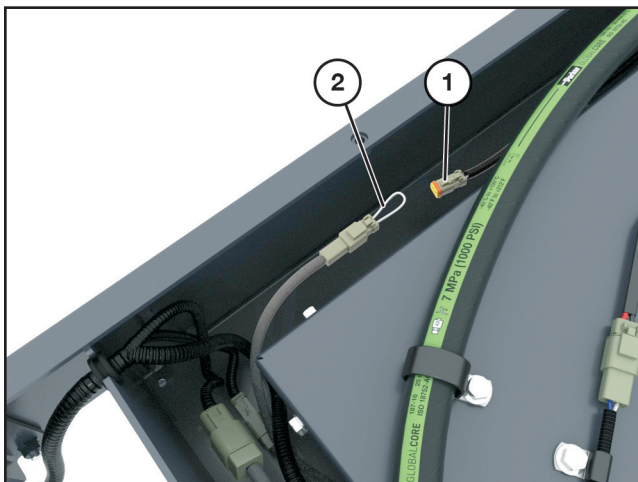
With the track loader turned off, reinstall the side engine panels and then the rear engine compartment door. Refer to the John Deere track loader owner's manual for instructions.

Lowering Arms

After the panels and door are secured, start the track loader and lower the arms. Refer to the John Deere track loader owner's manual for instructions.

Turn the track loader off.

Check and Verify Fan Operation



Remove the temperature sensor plug (1) on the main harness.

With the track loader key set to "ON", use a jumper wire or Deutsch plug jumper (2) (dealer-made) to activate fan #1. Fan #2 will activate 25-30 seconds later.

Preset 120° F temperature setting is non-adjustable.

After checking the fans and ensuring they are running properly, turn the track loader key to "OFF".

Remove the plug jumper and reconnect the temperature sensor plug.

Re-install the top cover.

Torque Specifications

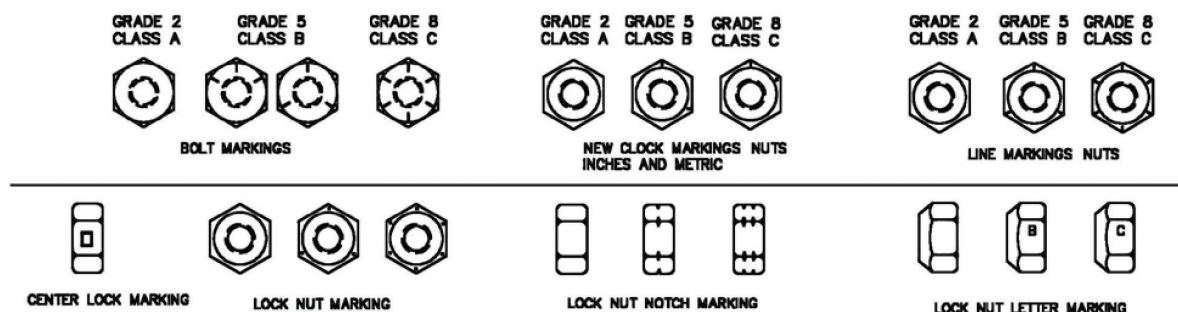
Inches Hardware and Lock Nuts

TORQUE CHARTS

Minimum Hardware Tightening Torques

Normal Assembly Applications
(Standard Hardware and Lock Nuts)

SAE Gr. 2	SAE Grade 5		SAE Grade 8		LOCK NUTS			
Nominal Size	Unplated or Plated Silver	Plated W / ZnCr Gold	Unplated or Plated Silver	Plated W / ZnCr Gold	Unplated or Plated Silver	Plated W / ZnCr Gold	Grade W / Gr. 5 Bolt	Grade W / Gr. 8 Bolt
1/4	55 in.-lb. (6.2 N•m)	72 in.-lb. (8.1 N•m)	86 in.-lb. (9.7 N•m)	112 in.-lb. (12.6 N•m)	121 in.-lb. (13.6 N•m)	157 in.-lb. (17.7 N•m)	61 in.-lb. (6.9 N•m)	86 in.-lb. (9.8 N•m)
5/16	115 in.-lb. (13 N•m)	149 in.-lb. (17 N•m)	178 in.-lb. (20 N•m)	229 in.-lb. (26 N•m)	250 in.-lb. (28 N•m)	324 in.-lb. (37 N•m)	125 in.-lb. (14 N•m)	176 in.-lb. (20 N•m)
3/8	17 ft.-lb. (23 N•m)	22 ft.-lb. (30 N•m)	26 ft.-lb. (35 N•m)	34 ft.-lb. (46 N•m)	37 ft.-lb. (50 N•m)	48 ft.-lb. (65 N•m)	19 ft.-lb. (26 N•m)	26 ft.-lb. (35 N•m)
7/16	27 ft.-lb. (37 N•m)	35 ft.-lb. (47 N•m)	42 ft.-lb. (57 N•m)	54 ft.-lb. (73 N•m)	59 ft.-lb. (80 N•m)	77 ft.-lb. (104 N•m)	30 ft.-lb. (41 N•m)	42 ft.-lb. (57 N•m)
1/2	42 ft.-lb. (57 N•m)	54 ft.-lb. (73 N•m)	64 ft.-lb. (87 N•m)	83 ft.-lb. (113 N•m)	91 ft.-lb. (123 N•m)	117 ft.-lb. (159 N•m)	45 ft.-lb. (61 N•m)	64 ft.-lb. (88 N•m)
9/16	60 ft.-lb. (81 N•m)	77 ft.-lb. (104 N•m)	92 ft.-lb. (125 N•m)	120 ft.-lb. (163 N•m)	130 ft.-lb. (176 N•m)	169 ft.-lb. (229 N•m)	65 ft.-lb. (88 N•m)	92 ft.-lb. (125 N•m)
5/8	83 ft.-lb. (112 N•m)	107 ft.-lb. (145 N•m)	128 ft.-lb. (174 N•m)	165 ft.-lb. (224 N•m)	180 ft.-lb. (244 N•m)	233 ft.-lb. (316 N•m)	90 ft.-lb. (122 N•m)	127 ft.-lb. (172 N•m)
3/4	146 ft.-lb. (198 N•m)	189 ft.-lb. (256 N•m)	226 ft.-lb. (306 N•m)	293 ft.-lb. (397 N•m)	319 ft.-lb. (432 N•m)	413 ft.-lb. (560 N•m)	160 ft.-lb. (217 N•m)	226 ft.-lb. (306 N•m)
7/8	142 ft.-lb. (193 N•m)	183 ft.-lb. (248 N•m)	365 ft.-lb. (495 N•m)	473 ft.-lb. (641 N•m)	515 ft.-lb. (698 N•m)	667 ft.-lb. (904 N•m)	258 ft.-lb. (350 N•m)	364 ft.-lb. (494 N•m)
1	213 ft.-lb. (289 N•m)	275 ft.-lb. (373 N•m)	547 ft.-lb. (742 N•m)	708 ft.-lb. (960 N•m)	773 ft.-lb. (1048 N•m)	1000 ft.-lb. (1356 N•m)	386 ft.-lb. (523 N•m)	545 ft.-lb. (739 N•m)



Appendix

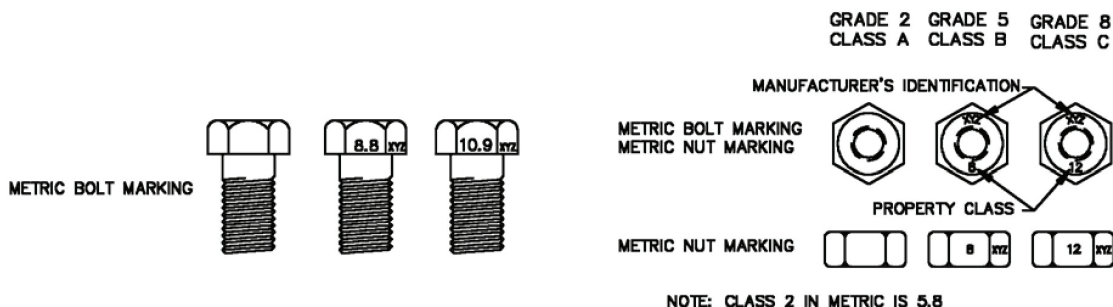
Torque Specifications (Cont'd)

Metric Hardware and Lock Nuts

TORQUE CHARTS Minimum Hardware Tightening Torques

Normal Assembly Applications
(Metric Hardware and Lock Nuts)

Nominal Size	Class 5,8		Class 8,8		Class 10,9		Lock nuts
	Unplated or Plated Silver	Plated W / ZnCr Gold	Unplated or Plated Silver	Plated W / ZnCr Gold	Unplated or Plated Silver	Plated W / ZnCr Gold	Class 8 W / CL. 8,8 Bolt
M4	1.7 N•m (15 in.-lb.)	2.2 N•m (19 in.-lb.)	2.6 N•m (23 in.-lb.)	3.4 N•m (30 in.-lb.)	3.7 N•m (33 in.-lb.)	4.8 N•m (42 in.-lb.)	1.8 N•m (16 in.-lb.)
M6	5.8 N•m (51 in.-lb.)	7.6 N•m (67 in.-lb.)	8.9 N•m (79 in.-lb.)	12 N•m (102 in.-lb.)	13 N•m (115 in.-lb.)	17 N•m (150 in.-lb.)	6.3 N•m (56 in.-lb.)
M8	14 N•m (124 in.-lb.)	18 N•m (159 in.-lb.)	22 N•m (195 in.-lb.)	28 N•m (248 in.-lb.)	31 N•m (274 in.-lb.)	40 N•m (354 in.-lb.)	15 N•m (133 in.-lb.)
M10	28 N•m (21 ft.-lb.)	36 N•m (27 ft.-lb.)	43 N•m (32 ft.-lb.)	56 N•m (41 ft.-lb.)	61 N•m (45 ft.-lb.)	79 N•m (58 ft.-lb.)	30 N•m (22 ft.-lb.)
M12	49 N•m (36 ft.-lb.)	63 N•m (46 ft.-lb.)	75 N•m (55 ft.-lb.)	97 N•m (72 ft.-lb.)	107 N•m (79 ft.-lb.)	138 N•m (102 ft.-lb.)	53 N•m (39 ft.-lb.)
M16	121 N•m (89 ft.-lb.)	158 N•m (117 ft.-lb.)	186 N•m (137 ft.-lb.)	240 N•m (177 ft.-lb.)	266 N•m (196 ft.-lb.)	344 N•m (254 ft.-lb.)	131 N•m (97 ft.-lb.)
M20	237 N•m (175 ft.-lb.)	307 N•m (226 ft.-lb.)	375 N•m (277 ft.-lb.)	485 N•m (358 ft.-lb.)	519 N•m (383 ft.-lb.)	671 N•m (495 ft.-lb.)	265 N•m (195 ft.-lb.)
M24	411 N•m (303 ft.-lb.)	531 N•m (392 ft.-lb.)	648 N•m (478 ft.-lb.)	839 N•m (619 ft.-lb.)	897 N•m (662 ft.-lb.)	1160 N•m (855 ft.-lb.)	458 N•m (338 ft.-lb.)





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