

# SERVICE MANUAL

## U80C Tier 4B (final) Tractor Loader

**Part number 47821918**

1<sup>st</sup> edition English

April 2015

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## **SERVICE MANUAL**

**U80C FOUR-WHEEL DRIVE (4WD) TIER 4B (FINAL)**  
**U80C TWO-WHEEL DRIVE (2WD) TIER 4B (FINAL)**

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EN

## Link Product / Engine

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<b>Product</b>	<b>Market Product</b>	<b>Engine</b>
U80C FOUR-WHEEL DRIVE (4WD) TIER 4B (FINAL)	North America	F5HFL463D*F005
U80C TWO-WHEEL DRIVE (2WD) TIER 4B (FINAL)	North America	F5HFL463D*F005

# Contents

---

## INTRODUCTION

<b>Engine</b> .....	<b>10</b>
[10.001] Engine and crankcase .....	10.1
[10.216] Fuel tanks .....	10.2
[10.501] Exhaust Gas Recirculation (EGR) - Diesel Particulate Filter (DPF) exhaust treatment .....	10.3
[10.400] Engine cooling system .....	10.4
[10.414] Fan and drive .....	10.5
<b>Transmission</b> .....	<b>21</b>
[21.112] Power shuttle transmission.....	21.1
[21.134] Power shuttle transmission external controls .....	21.2
[21.154] Power shuttle transmission internal components .....	21.3
<b>Front axle system</b> .....	<b>25</b>
[25.100] Powered front axle .....	25.1
[25.102] Front bevel gear set and differential .....	25.2
[25.108] Final drive hub, steering knuckles, and shafts .....	25.3
[25.400] Non-powered front axle .....	25.4
<b>Rear axle system</b> .....	<b>27</b>
[27.100] Powered rear axle.....	27.1
[27.106] Rear bevel gear set and differential .....	27.2
[27.120] Planetary and final drives .....	27.3
<b>Power Take-Off (PTO)</b> .....	<b>31</b>
[31.104] Rear electro-hydraulic control.....	31.1
<b>Hydraulic systems</b> .....	<b>35</b>
[35.000] Hydraulic systems.....	35.1
[35.300] Reservoir, cooler, and filters.....	35.2

[35.104] Fixed displacement pump .....	35.3
[35.102] Pump control valves.....	35.4
[35.350] Safety and main relief valves .....	35.5
[35.204] Remote control valves .....	35.6
[35.114] Three-point hitch control valve .....	35.7
[35.116] Three-point hitch cylinder .....	35.8
[35.723] Front loader bucket hydraulic system .....	35.9
[35.734] Tool quick coupler hydraulic system .....	35.10
<b>Wheels .....</b>	<b>44</b>
[44.511] Front wheels.....	44.1
[44.520] Rear wheels.....	44.2
<b>Cab climate control .....</b>	<b>50</b>
[50.200] Air conditioning.....	50.1
<b>Electrical systems .....</b>	<b>55</b>
[55.100] Harnesses and connectors.....	55.1
[55.525] Cab engine controls.....	55.2
[55.991] Telematics .....	55.3
[55.DTC] FAULT CODES.....	55.4
<b>Front loader and bucket.....</b>	<b>82</b>
[82.100] Arm.....	82.1
[82.300] Bucket.....	82.2
<b>Platform, cab, bodywork, and decals .....</b>	<b>90</b>
[90.150] Cab.....	90.1
[90.114] Operator protections .....	90.2
[90.105] Machine shields and guards .....	90.3



# INTRODUCTION

# Contents

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## INTRODUCTION

Safety rules .....	3
Safety rules Ductile iron .....	4
Safety rules .....	5
Safety rules .....	6
Safety rules .....	7
Safety rules - Ecology and the environment .....	8
Basic instructions Important notice regarding equipment servicing .....	9
Basic instructions Battery .....	10
Basic instructions Fuse and relay locations .....	12
Basic instructions of fuse, relay and diode icons .....	16
Basic instructions Diagnostic service tool port .....	20
Basic instructions Welding on the machine .....	21
Engine cooling system - Basic instructions .....	23
Basic instructions Coolant shutoff valve .....	25
Basic instructions Loader lift arm .....	26
Basic instructions Hood .....	28
Torque Minimum tightening torques for normal assembly .....	29
Torque Standard torque data for hydraulics .....	34
Abbreviation Measurements .....	36
Capacities .....	38
Consumables .....	39
Engine lubrication system - General specification .....	42
General specification - Diesel fuel .....	43
General specification - Biodiesel fuels .....	44
Product identification – machine orientation .....	46
Product identification .....	47
Product identification – machine overview .....	50

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## Safety rules

### **⚠ DANGER**

Improper operation or service of this machine can result in an accident.  
Do not operate this machine or perform any lubrication, maintenance, or repair on it until you have read and understood the operation, lubrication, maintenance, and repair information.  
Failure to comply will result in death or serious injury.

D0010A

### **⚠ WARNING**

**Maintenance hazard!**  
Always perform all service procedures punctually at the intervals stated in this manual. This ensures optimum performance levels and maximum safety during machine operation.  
Failure to comply could result in death or serious injury.

W0132A

### **⚠ WARNING**

**Pressurized system!**  
Before attempting any service procedure, it is your responsibility to know the number of accumulators on the machine, and the correct procedure for releasing the pressure of each accumulator.  
Failure to comply could result in death or serious injury.

W0136A

**NOTICE:** *Extreme working and environmental conditions require shortened service intervals.*

Use Case fluids, lubricants, and filters for the best protection and performance of your machine. All fluids, lubricants, and filters must be disposed of in compliance with environmental standards and regulations. Contact your dealer with any questions regarding the service and maintenance of this machine.

Read the safety decals and information decals on the machine. Read the Operator's Manual and safety manual. Understand the operation of the machine before you start any service.

Before you service the machine, put a 'Do Not Operate' tag on the steering wheel or over the key switch. Ensure the tag is at a location where everyone who might operate or service the machine may see clearly. One tag is included with your new machine. Additional tags are available from your dealer.

## Plastic and resin parts

- Avoid using gasoline, paint thinner, etc. when cleaning plastic parts, console, instrument cluster, etc.
- Use only water, mild soap, and a soft cloth when you clean these parts.
- Using gasoline, thinners, etc. can cause discoloration, cracking, or deformation of the part being cleaned.

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## Safety rules Ductile iron



### **⚠ DANGER**

**Improper operation or service of this machine can result in an accident.**

**Any unauthorized modifications made to this machine can have serious consequences. Consult an authorized dealer on changes, additions, or modifications that may be required for this machine. Do not make any unauthorized modifications.**

**Failure to comply will result in death or serious injury.**

D0030A

Before you weld, cut, or drill holes on any part of this machine, make sure the part is not cast ductile iron. See your dealer if you do not know if a part is cast ductile iron. The following are cast ductile iron parts:

- two wheel drive steering link
- dump links
- front axle
- Air Conditioning (A/C) compressor mounting bracket

Unauthorized modifications to cast ductile iron parts can cause injury or death. Welding, cutting, or drilling can cause cast ductile iron to break. Do not weld, cut, or drill to repair or to attach items to cast ductile iron parts on this machine.

## **Safety rules**

Before welding on the machine you must do the following. If you have any questions about welding on the machine contact your dealer.

- Disconnect the batteries.
- Disconnect the alternator terminal wires.
- Disconnect the instrument cluster.
- Disconnect the engine control unit. Disconnect all connectors from the engine harness to the ECU.
- Disconnect the controller for the loader 4 in 1 bucket or auxiliary hydraulics, if equipped (one connector, located under the loader valve at the rear, left underside of the machine).

## **Safety rules**

Unless otherwise instructed, always perform these steps before you service the machine:

1. Park the machine on a flat, level surface.
2. Place the loader bucket on the ground, with the bottom of the loader bucket parallel to the surface.
3. Place the direction control lever and the transmission in neutral.
4. If you need to open the hood to perform service, raise the loader arms and install the support strut.
5. Shut down the engine.
6. Place a 'Do Not Operate' tag on the key switch so that it is visible to other workers or remove the key.

## Safety rules

### 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.

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## Safety rules - Ecology and the environment

Soil, air, and water quality is important for all industries and life in general. When legislation does not yet rule the treatment of some of the substances that advanced technology requires, sound judgment should govern the use and disposal of products of a chemical and petrochemical nature.

Familiarize yourself with the relative legislation applicable to your country, and make sure that you understand this legislation. Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, anti-freeze, cleaning agents, etc., with regard to the effect of these substances on man and nature and how to safely store, use, and dispose of these substances.

### Helpful hints

- Avoid the use of cans or other inappropriate pressurized fuel delivery systems to fill tanks. Such delivery systems may cause considerable spillage.
- In general, avoid skin contact with all fuels, oils, acids, solvents, etc. Most of these products contain substances that may be harmful to your health.
- Modern oils contain additives. Do not burn contaminated fuels and or waste oils in ordinary heating systems.
- Avoid spillage when you drain fluids such as used engine coolant mixtures, engine oil, hydraulic fluid, brake fluid, etc. Do not mix drained brake fluids or fuels with lubricants. Store all drained fluids safely until you can dispose of the fluids in a proper way that complies with all local legislation and available resources.
- Do not allow coolant mixtures to get into the soil. Collect and dispose of coolant mixtures properly.
- The air-conditioning system contains gases that should not be released into the atmosphere. Consult an air-conditioning specialist or use a special extractor to recharge the system properly.
- Repair any leaks or defects in the engine cooling system or hydraulic system immediately.
- Do not increase the pressure in a pressurized circuit as this may lead to a component failure.
- Protect hoses during welding. Penetrating weld splatter may burn a hole or weaken hoses, allowing the loss of oils, coolant, etc.

### Battery recycling

Batteries and electric accumulators contain several substances that can have a harmful effect on the environment if the batteries are not properly recycled after use. Improper disposal of batteries can contaminate the soil, groundwater, and waterways. NEW HOLLAND CONSTRUCTION strongly recommends that you return all used batteries to a NEW HOLLAND CONSTRUCTION dealer, who will dispose of the used batteries or recycle the used batteries properly. In some countries, this is a legal requirement.



### Mandatory battery recycling

**NOTE:** The following requirements are mandatory in Brazil.

Batteries are made of lead plates and a sulfuric acid solution. Because batteries contain heavy metals such as lead, CONAMA Resolution 401/2008 requires you to return all used batteries to the battery dealer when you replace any batteries. Do not dispose of batteries in your household garbage.

Points of sale are obliged to:

- Accept the return of your used batteries
- Store the returned batteries in a suitable location
- Send the returned batteries to the battery manufacturer for recycling

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## **Basic instructions Important notice regarding equipment servicing**

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 NEW HOLLAND CONSTRUCTION Sales and Service Networks.

## Basic instructions Battery

### ⚠ WARNING

#### Explosive gas!

Batteries emit explosive hydrogen gas and other fumes while charging. Ventilate the charging area. Keep the battery away from sparks, open flames, and other ignition sources. Never charge a frozen battery.

Failure to comply could result in death or serious injury.

W0005A

### ⚠ WARNING

#### Hazardous chemicals!

Battery electrolyte contains sulfuric acid. Contact with skin and eyes could result in severe irritation and burns. Always wear splash-proof goggles and protective clothing (gloves and aprons). Wash hands after handling.

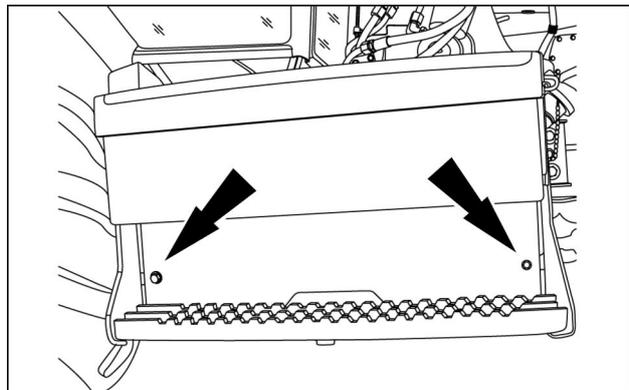
Failure to comply could result in death or serious injury.

W0006A

- Do not run the engine with the alternator wires disconnected.
- Before using an electric welder, disconnect the alternator wires, instrument cluster and batteries. Disconnect the ECU connectors.
- Do not use a steam cleaner or a cleaning solvent to clean the alternator.
- Keep the battery vents clean. Ensure the battery vents are not restricted.

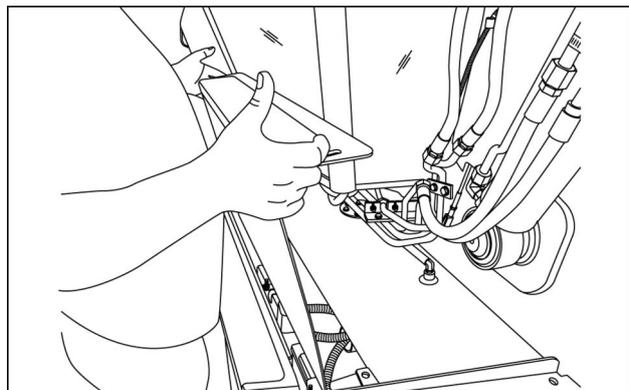
## Disconnect battery

1. Remove the battery cover hardware.



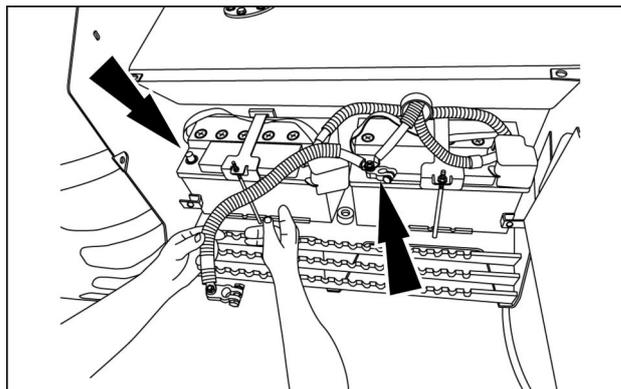
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2. Remove the battery cover.



RCPH11TLB002AAM 2

3. Disconnect the negative battery cable from the negative battery terminal.



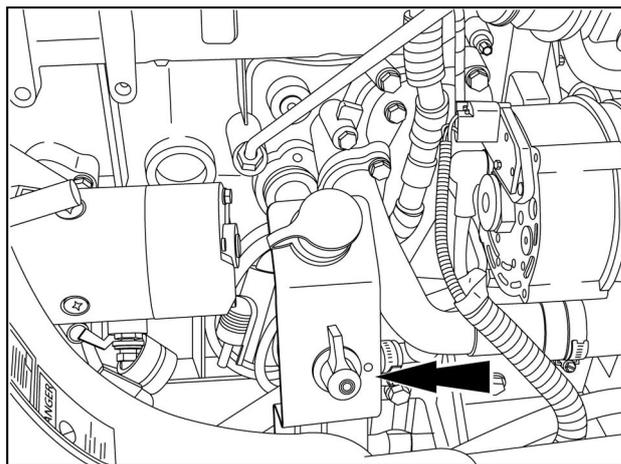
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### Master disconnect switch (if equipped)

Enable or disable electrical power from the machine batteries to the electrical components using the master disconnect switch, located on the right hand side of the engine.

**NOTICE:** Wait at least 60 seconds after ignition key is placed in the OFF position before turning master disconnect switch to OFF. This allows the machine controllers to shutdown properly.

**NOTICE:** Some machine service procedures require an actual terminal disconnect of the batteries. Do not use the master disconnect for those types of procedures, such as welding on the machine.



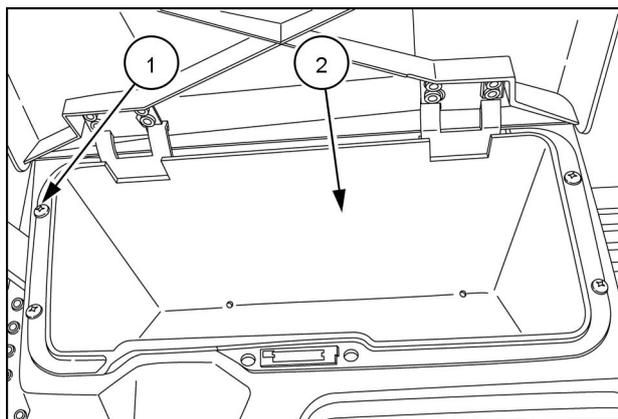
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## Basic instructions Fuse and relay locations

The machine is equipped with four fuse box locations. In the front console, a side console box and two external locations (Glow-plug Control Unit and Telematics System).

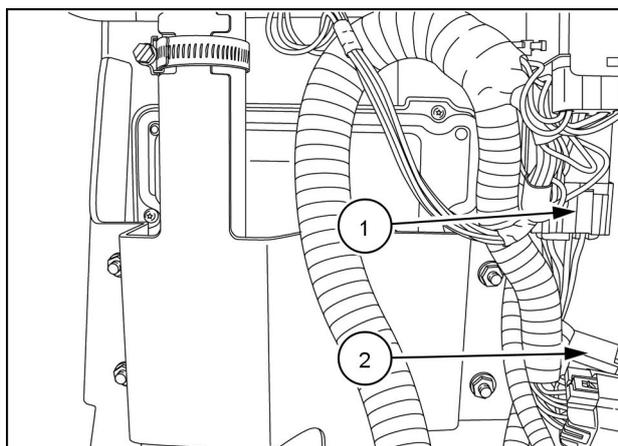
### Front console — Engine Control Unit (ECU) fuse and relay

1. Open the manual storage compartment located in front of the steering wheel.
2. Remove the four screws (1) .
3. Remove the compartment insert (2) to access the fuse and relay.

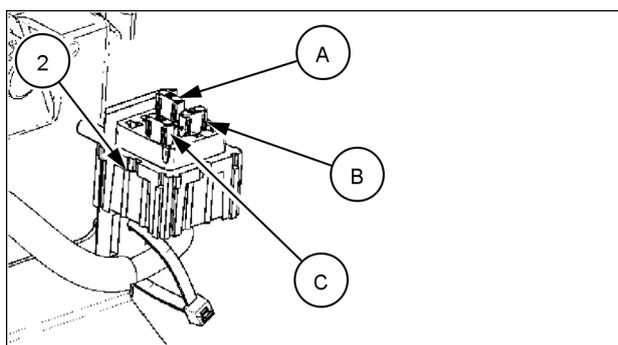


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Fuse or relay reference	Designation
(1)	ECU B+ 70 A sealed relay
(2)	(A) ECU B+ 20 A fuse
	(B) ECU B+ 7.5 A fuse
	(C) LAMBDA SENSOR B+ 7.5 A fuse



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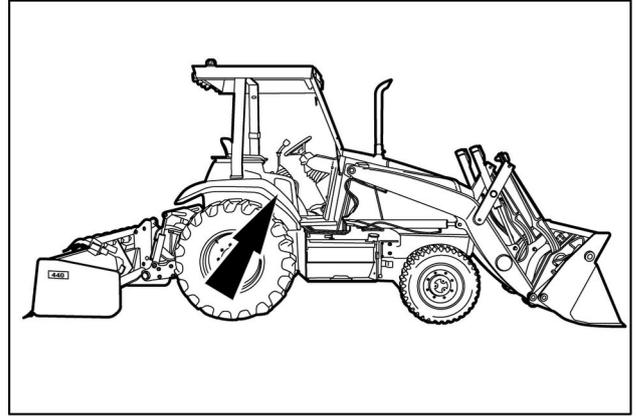


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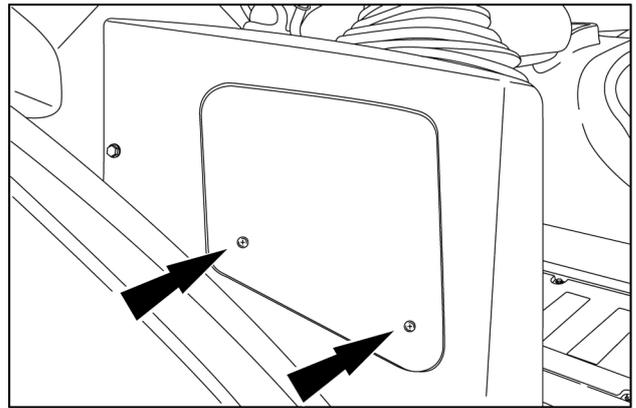
## Side console box

Find the fuse cover panel on the right hand side below the loader control handle.

1. Loosen both retaining screws and remove the panel cover.

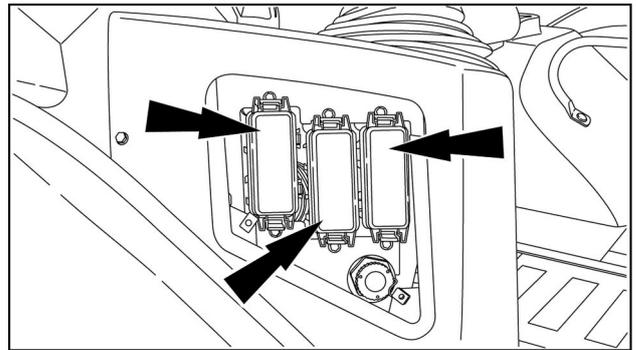


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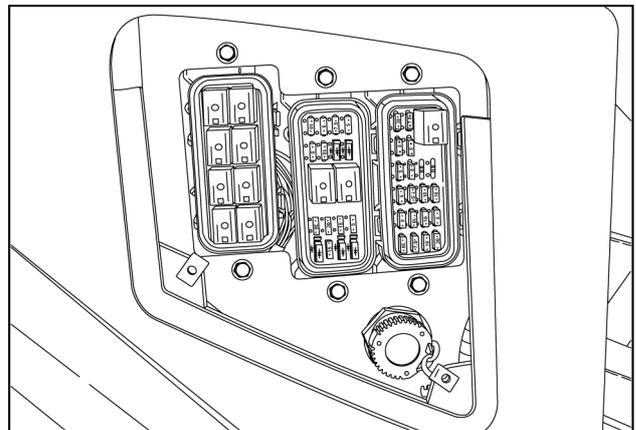


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2. Remove the fuse box covers as needed.



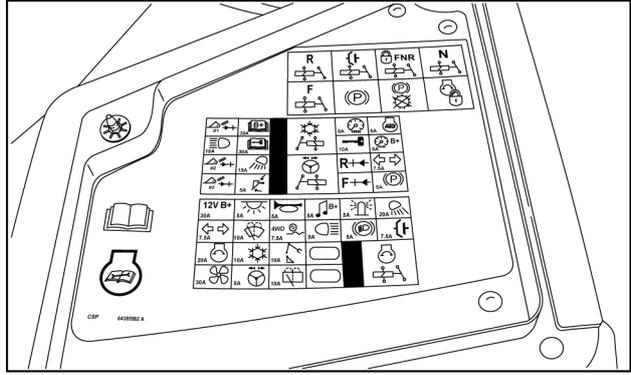
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## INTRODUCTION

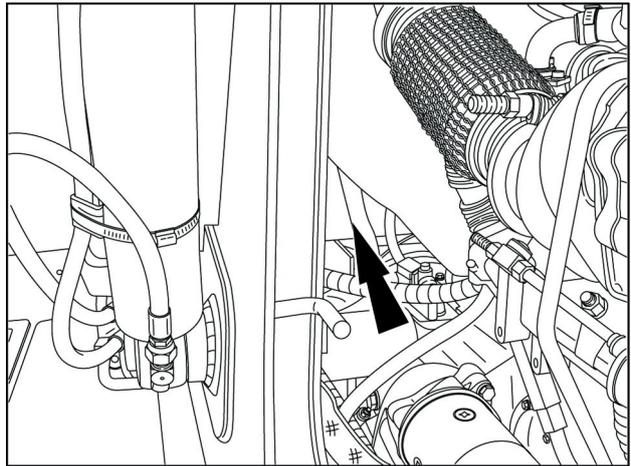
3. Refer to the decal on the interior side of the panel cover for fuse, relay, and/or diode functions.



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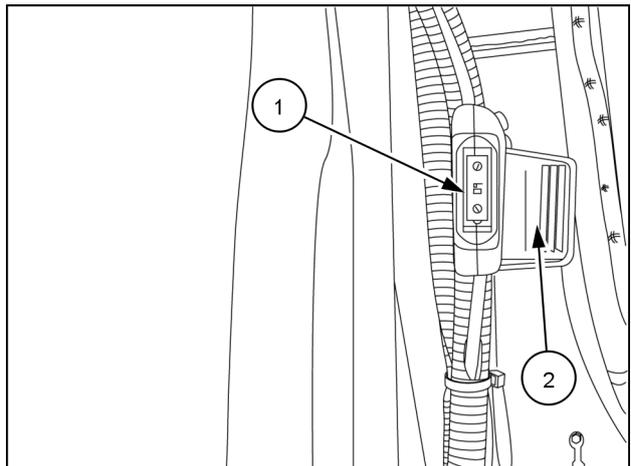
### Glow-plug Control Unit (GCU) fuse

1. Raise the loader arm and engage the safety support.
2. Lift the engine hood.
3. Locate the **60 A** fuse box for the GCU on the right hand side of the engine.



RAPH12UTL0056AA 9

4. Remove the rubber fuse cover (2) to view the fuse (1).

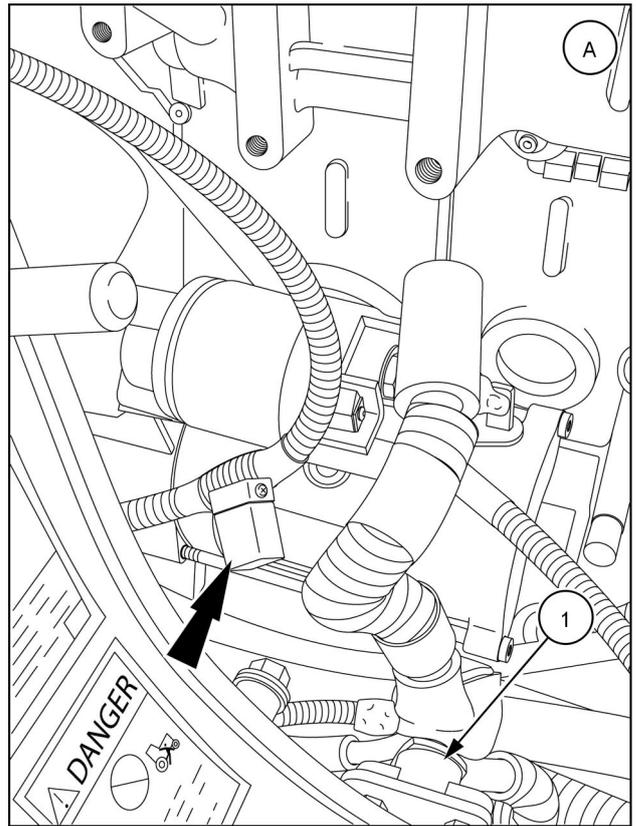


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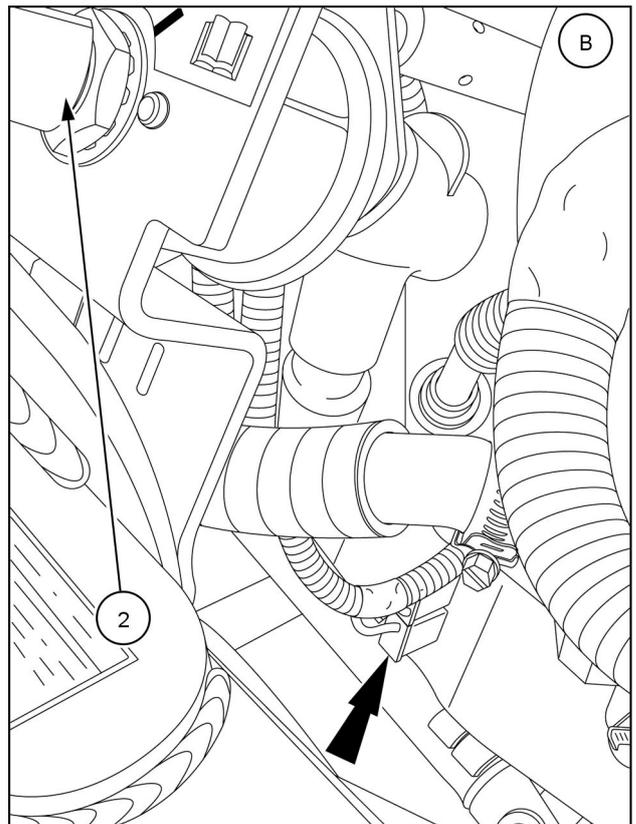
### Telematics system fuse

1. Raise the loader arm and engage the safety support.
2. Lift the engine hood.
3. On the right-hand side of the engine locate the wire harness with the in-line **5 A** fuse. The location of the fuse will depend on the machine configuration:

- A. Machines equipped with the Battery Power Junction Stud **(1)**.
- B. Machines equipped with a Master Disconnect Switch **(2)**.



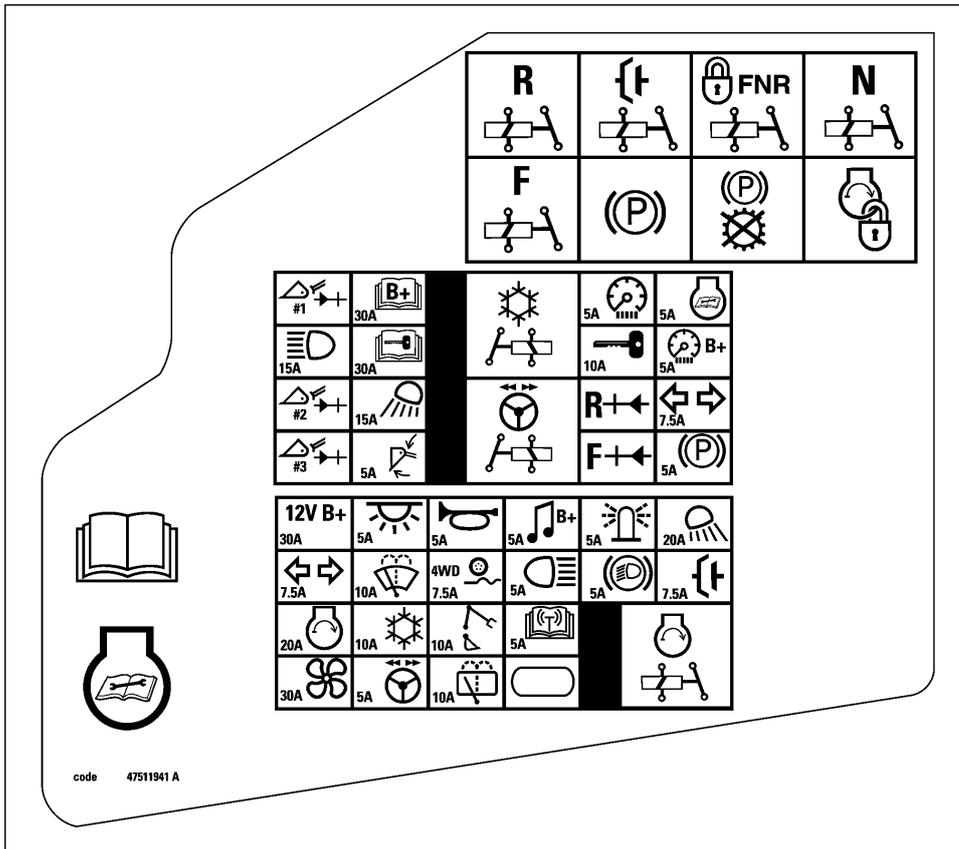
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RAIL13TLB0206BA 12

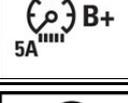
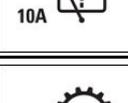
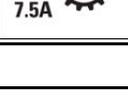
## Basic instructions of fuse, relay and diode icons

### Right-hand side console panel

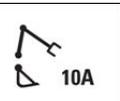
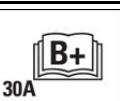


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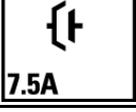
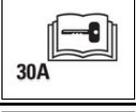
### Fuse icon definitions

Symbol	Function
	Engine Control Unit (ECU) B+
	Instrument cluster key ON
	Instrument cluster B+
	Rear lights
	Rear wipers/washers
	Transmission differential lock

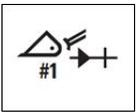
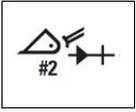
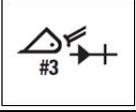
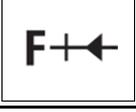
INTRODUCTION

Symbol	Function
	Tail lights
	Cigarette lighter plugs
	4WD, Glide Ride
	Dome light
	Radio B+
	Horn
	Blower motor
	A/C
	Key switch
	2WD, Glide Ride
	Quick coupler, EH Clam, Radio Key ON
	SAHR brake
	Comfort Steer
	Customer B+
	Head lights

INTRODUCTION

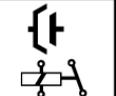
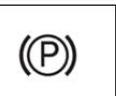
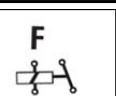
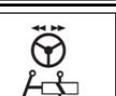
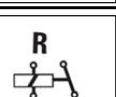
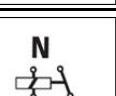
Symbol	Function
	Front work lights
	Turn signal, Hazards
	Front wiper/washer
	High beam
	Beacon
	Transmission de-clutch
	Customer key ON
	Telematics <b>NOTE:</b> The Telematics system has an additional external fuse location. Refer to “Fuses and Relays” starting on page <b>Basic instructions Fuse and relay locations ()</b> .

Diode icon definitions

Symbol	Function
	Quick coupler diode #1
	Quick coupler diode #2
	Quick coupler diode #3
	Reverse Signal Diode
	Forward Signal Diode

INTRODUCTION

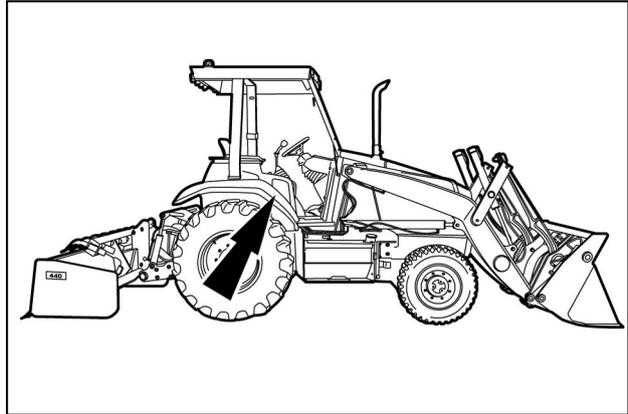
Relay icon definitions

Symbol	Function
	Transmission De-clutch relay
	Transmission lock relay
	Start relay
	Spring Applied Hydraulic Release (SAHR) park brake relay
	SAHR park brake transmission cutout relay
	Forward relay
	A/C relay
	Comfort Steer relay
	Reverse relay
	Neutral relay
	Starter interlock relay

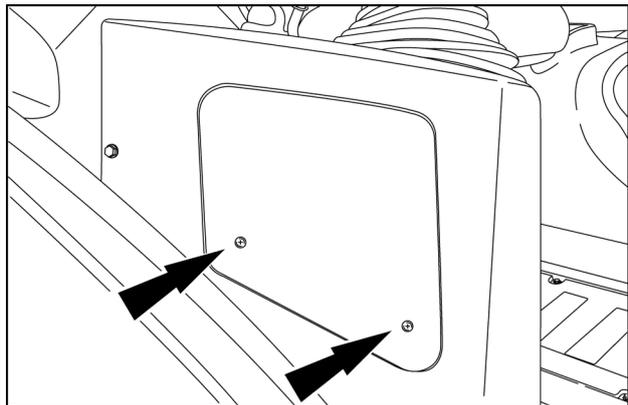
## Basic instructions Diagnostic service tool port

The diagnostic/service tool port is located in the fuse box at the side console. Connect the Electronic Service Tool (EST) or DATAR to this port to update software and/or perform service and diagnostic tests.

1. Turn the thumb screws **(1)** to loosen the panel cover **(2)** for the fuse box. Remove the panel cover.



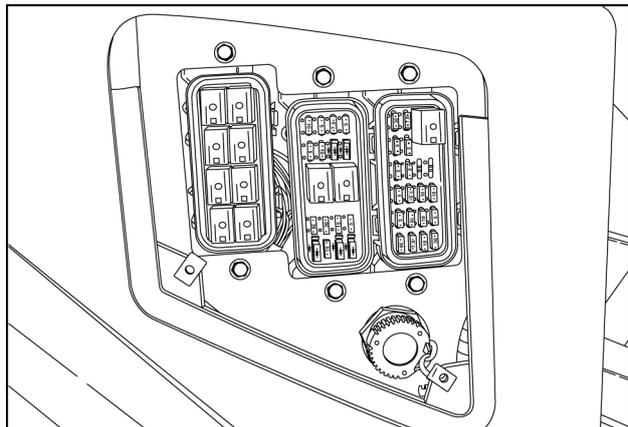
RAPH12UTL0106AA 1



RAPH12UTL0122AA 2

2. Unscrew the cap for the diagnostic/service tool port.

**NOTE:** You do not have to remove the fuse box covers.

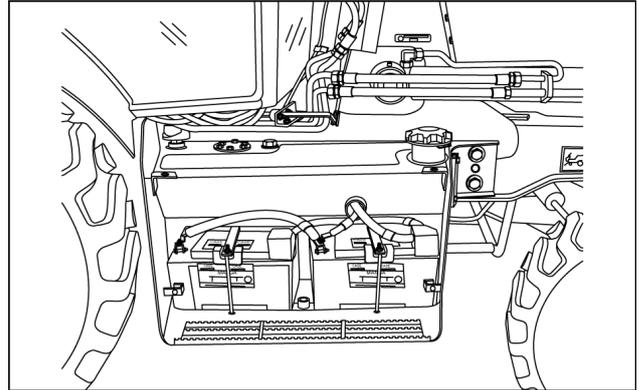


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## Basic instructions Welding on the machine

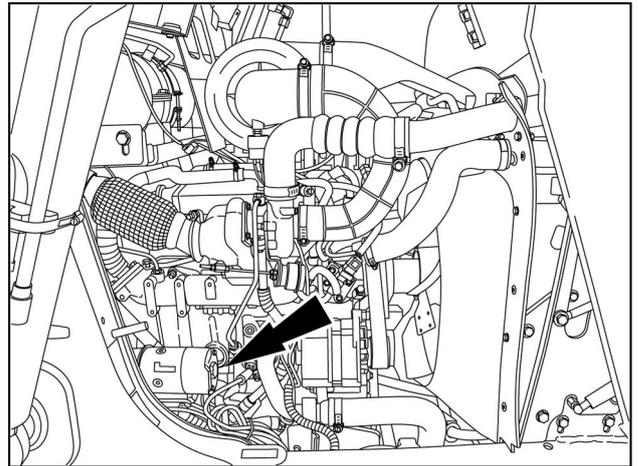
Contact your dealer if you have any questions before welding on this machine. The following procedures must be completed before welding.

Remove the battery cover and disconnect the batteries.



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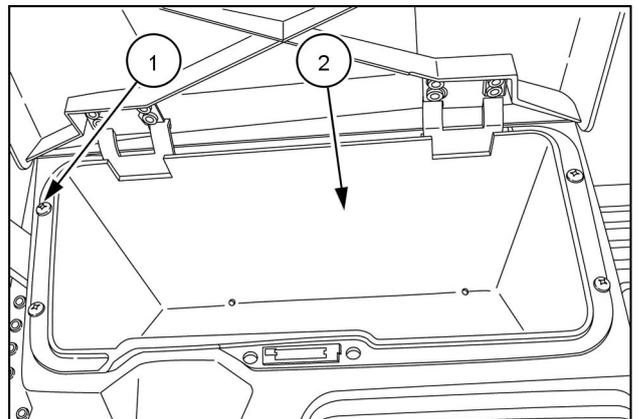
Disconnect the alternator terminal wires.



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Disconnect the engine control unit (ECU)

1. Remove the cover from the steering column shroud.



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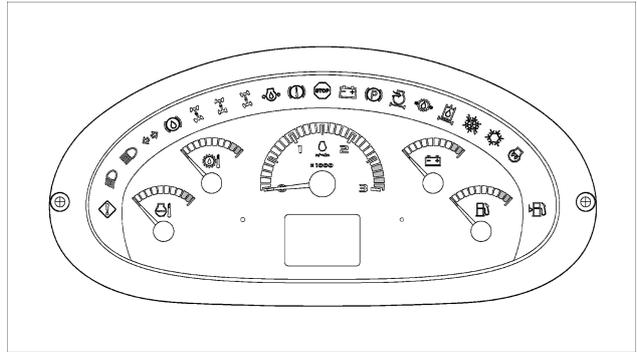
2. Remove the ECU guard plate.

3. Disconnect both ECU connectors.

## INTRODUCTION

Disconnect the instrument cluster.

1. Remove the instrument cluster panel.
2. Disconnect all connectors from the back of the panel.



RAIL12FRK1169FA 4

- Disconnect the controller for the loader 4 in 1 bucket or auxiliary hydraulics, if equipped (one connector, located under the loader valve at the rear, left underside of the machine).

## Engine cooling system - Basic instructions

Depending on the date of manufacture, your cooling system may be equipped with conventional ethylene glycol coolant such as **CNH XHD HEAVY DUTY COOLANT / ANTI-FREEZE** or an Organic Acid Technology (OAT) coolant solution such as **NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT**. You can easily identify **NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT** by its yellow color. You should never mix the coolant types.

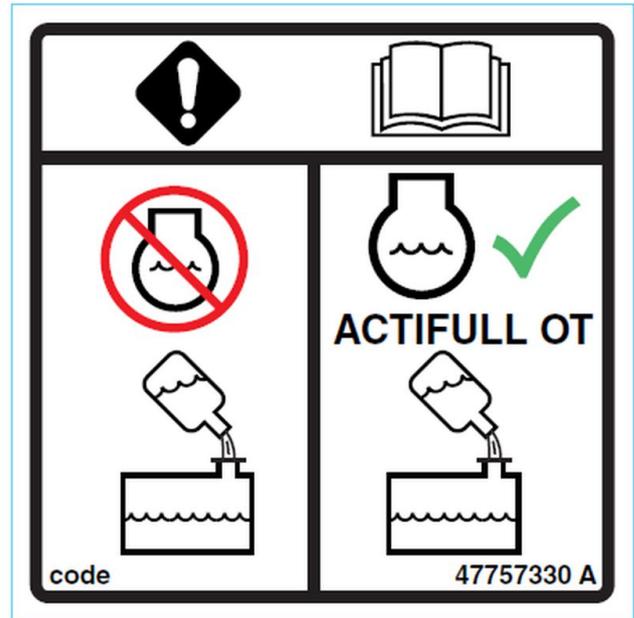
**NOTE:** Organic Acid Technology (OAT) appears yellow in small quantities. OAT coolant can also appear yellow when against translucent backgrounds. However, under certain lighting conditions and backgrounds, such as looking into the coolant overflow tank, OAT coolant may appear green. The green appearance is similar to the color of ethylene glycol coolant. This color appearance is normal, which is not an indication of mixed coolant fill in new units built after the implementation of OAT coolant.

The coolant solution used must meet the following CNH Industrial material specifications for either coolant type:

- **MAT3624** for OAT coolant
- **MAT3620** for conventional coolant

The decal shown is located near the fill point of the cooling system whenever the factory fill is **NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT**. This decal is available in three different sizes. See the table below for the associated part numbers.

CNH Industrial part number	Size
47757330	50 mm x 50 mm
47757331	75 mm x 75 mm
47757332	100 mm x 100 mm



47757330 1

**NOTICE:** NEVER mix OAT coolant with conventional coolant. Under no circumstances should you top off a cooling system with only water. You can use a refractometer to check the concentration level. You should not use Supplemental Coolant Additives (SCA) when using **NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT**. Change the coolant solution at the recommended change interval.

If you need to change a machine from conventional coolant to OAT coolant or vice versa, you should follow the “Changing coolant types” procedure below to attain the full benefit of the coolant.

### Changing coolant types

To change coolant from OAT coolant to conventional coolant (or vice versa):

1. Empty the engine cooling system by draining the coolant into a suitable container.
2. Fill the system with clean water.
3. Start the engine and run the engine for at least **30 min**.

**NOTE:** Make sure that you activate the heating system (if equipped) to circulate fluid through the heater core.

4. Repeat Steps 1 to 3 for a total of two washes.
5. Fill the system with conventional coolant (or OAT coolant).
6. Operate the engine until it is warm. Inspect the machine for leaks.
7. If you are changing to OAT coolant, then attach the decal (CNH Industrial part number 47757330) to indicate the use of OAT coolant in the cooling system.

You may notice the older version of the OAT decal (CNH Industrial part number 47488993) on some applications.

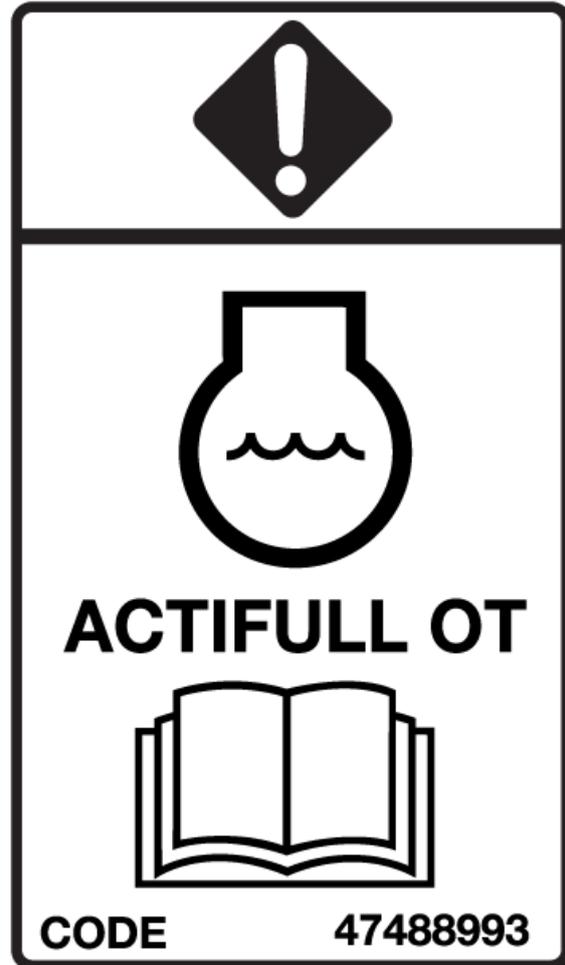
### Definitions

Conventional coolant:

A coolant that relies on inorganic inhibitors such as silicates, nitrites, and phosphates for corrosion and cavitation protection.

Organic Acid Technology (OAT) coolant:

A coolant that relies on inhibitors such as organic acid salts for corrosion and cavitation protection.

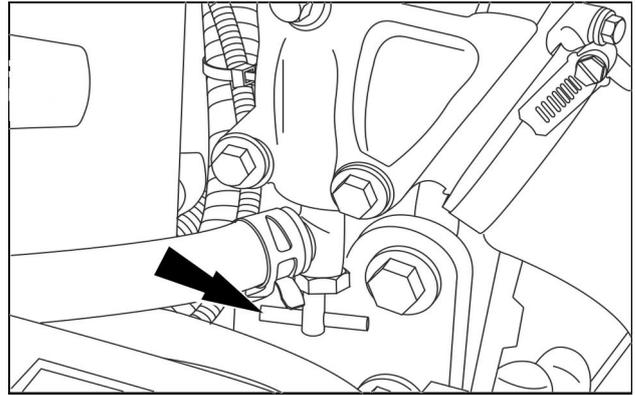


47488993 2

## Basic instructions Coolant shutoff valve

The heater coolant shutoff valve controls the flow of hot coolant to the heater.

- In warm ambient temperatures, turn the shutoff valve clockwise to stop hot coolant flow to the heater.
- In cold ambient temperatures, turn the shutoff valve counter-clockwise to allow hot coolant to flow to the heater.



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