

# SERVICE MANUAL

**T9.390 / T9.450 / T9.505 /  
T9.560 / T9.615 / T9.670**

**Tractor**

*PIN ZCF200001 and above*

*PIN ZDF200001 and above*

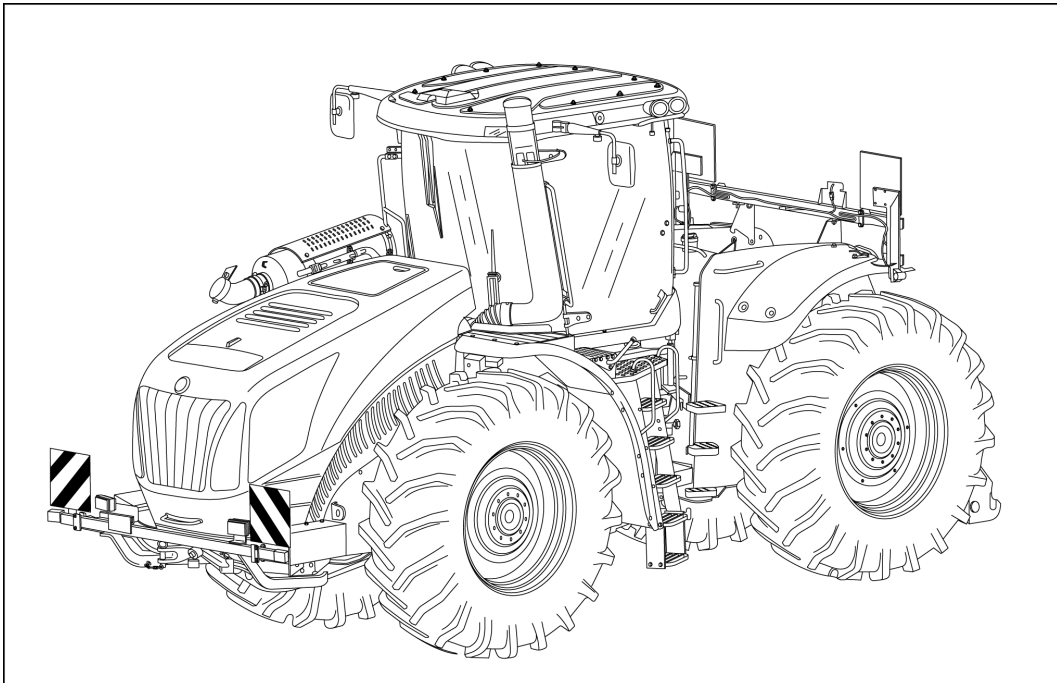
Part number 47488219

English

March 2013



## SERVICE MANUAL



**T9.390 [ZCF200001 - ], T9.390 [ZDF200001 - ], T9.450 [ZCF200001 - ], T9.450 [ZDF200001 - ], T9.505 [ZCF200001 - ], T9.505 [ZDF200001 - ], T9.560 [ZCF200001 - ], T9.560 [ZDF200001 - ], T9.615 [ZCF200001 - ], T9.615 [ZDF200001 - ], T9.670 [ZCF200001 - ], T9.670 [ZDF200001 - ]**

# Contents

---

## INTRODUCTION

Engine.....	10
[10.001] Engine and crankcase .....	10.1
[10.202] Air cleaners and lines .....	10.2
[10.400] Engine cooling system .....	10.3
[10.414] Fan and drive .....	10.4
[10.500] Selective Catalytic Reduction (SCR) exhaust treatment .....	10.5
Transmission.....	21
[21.113] Powershift transmission .....	21.1
[21.135] Powershift transmission external controls.....	21.2
[21.145] Gearbox internal components.....	21.3
[21.155] Powershift transmission internal components.....	21.4
Front axle system .....	25
[25.100] Powered front axle .....	25.1
[25.102] Front bevel gear set and differential .....	25.2
[25.310] Final drives.....	25.3
Rear axle system.....	27
[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
Power Take-Off (PTO).....	31
[31.104] Rear electro-hydraulic control.....	31.1
[31.110] One-speed rear Power Take-Off (PTO) .....	31.2
[31.220] Gearbox .....	31.3
Brakes and controls .....	33
[33.110] Parking brake or parking lock .....	33.1

**<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>**

[33.202] Hydraulic service brakes .....	33.2
<b>Hydraulic systems.....</b>	<b>35</b>
[35.000] Hydraulic systems .....	35.1
[35.102] Pump control valves.....	35.2
[35.105] Charge pump.....	35.3
[35.106] Variable displacement pump .....	35.4
[35.204] Remote control valves .....	35.5
[35.220] Auxiliary hydraulic pump and lines .....	35.6
[35.300] Reservoir, cooler, and filters.....	35.7
[35.304] Combination pump units .....	35.8
[35.600] High flow hydraulics.....	35.9
<b>Hitches, drawbars, and implement couplings.....</b>	<b>37</b>
[37.100] Drawbars and towing hitches .....	37.1
<b>Frames and ballasting .....</b>	<b>39</b>
[39.100] Frame .....	39.1
[39.110] Drawbar and hitch assembly .....	39.2
<b>Steering.....</b>	<b>41</b>
[41.101] Steering control .....	41.1
[41.200] Hydraulic control components.....	41.2
[41.206] Pump .....	41.3
[41.910] Auxiliary steering .....	41.4
<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>
[50.104] Ventilation .....	50.1
[50.200] Air conditioning.....	50.2
[50.300] Cab pressurizing system .....	50.3

<b>Electrical systems</b> .....	<b>55</b>
[55.010] Fuel injection system .....	55.1
[55.014] Engine intake and exhaust system .....	55.2
[55.024] Transmission control system .....	55.3
[55.035] Remote control valve electric control .....	55.4
[55.045] Front axle control system .....	55.5
[55.046] Rear axle control system .....	55.6
[55.048] Rear Power Take-Off (PTO) control system .....	55.7
[55.050] Heating, Ventilation, and Air-Conditioning (HVAC) control system .....	55.8
[55.051] Cab Heating, Ventilation, and Air-Conditioning (HVAC) controls .....	55.9
[55.100] Harnesses and connectors .....	55.10
[55.130] Rear three-point hitch electronic control system .....	55.11
[55.301] Alternator .....	55.12
[55.302] Battery .....	55.13
[55.404] External lighting .....	55.14
[55.522] Cab Power Take-Off (PTO) controls .....	55.15
[55.640] Electronic modules .....	55.16
[55.988] Selective Catalytic Reduction (SCR) electrical system .....	55.17
[55.DTC] FAULT CODES .....	55.18
<b>Platform, cab, bodywork, and decals</b> .....	<b>90</b>
[90.100] Engine hood and panels .....	90.1
[90.102] Engine shields, hood latches, and trims .....	90.2
[90.124] Pneumatically-adjusted operator seat .....	90.3
[90.150] Cab .....	90.4
[90.151] Cab interior .....	90.5



# INTRODUCTION

# Contents

---

## INTRODUCTION

<b>Safety rules</b> .....	<b>3</b>
T9.390 [ZCF200001 - ] WE, T9.390 [ZDF200001 - ] WE, T9.390, T9.450 [ZCF200001 - ] WE, T9.450 [ZDF200001 - ] WE, T9.450, T9.505 [ZCF200001 - ] WE, T9.505 [ZDF200001 - ] WE, T9.505, T9.560 [ZCF200001 - ] WE, T9.560 [ZDF200001 - ] WE, T9.560, T9.615 [ZCF200001 - ] WE, T9.615 [ZDF200001 - ] WE, T9.615, T9.670 [ZCF200001 - ] WE, T9.670 [ZDF200001 - ] WE, T9.670	
<b>Personal safety - Do not operate tag</b> .....	<b>4</b>
T9.390, T9.450, T9.505, T9.560, T9.615, T9.670	
<b>Safety rules</b> .....	<b>5</b>
T9.390 WE, T9.450 WE, T9.505 WE, T9.560 WE, T9.615 WE, T9.670 WE	
<b>Foreword - Ecology and the environment</b> .....	<b>18</b>
T9.390, T9.450, T9.505, T9.560, T9.615, T9.670	
<b>Basic instructions - Important notice regarding equipment servicing</b> .....	<b>19</b>
T9.390, T9.450, T9.505, T9.560, T9.615, T9.670	
<b>Basic instructions - Shop and assembly</b> .....	<b>20</b>
T9.390, T9.450, T9.505, T9.560, T9.615, T9.670	
<b>Basic instructions - Product identification</b> .....	<b>22</b>
T9.390 WE, T9.450 WE, T9.505 WE, T9.560 WE, T9.615 WE, T9.670 WE	
<b>Torque - Minimum tightening torques for normal assembly</b> .....	<b>26</b>
T9.390, T9.450, T9.505, T9.560, T9.615, T9.670	
<b>Torque - Standard torque data for hydraulics</b> .....	<b>29</b>
T9.390, T9.450, T9.505, T9.560, T9.615, T9.670	
<b>Capacities - Product identification numbers ZCF and before</b> .....	<b>31</b>
T9.390 [ZCF200001 - ], T9.450 [ZCF200001 - ], T9.505 [ZCF200001 - ], T9.560 [ZCF200001 - ], T9.615 [ZCF200001 - ], T9.670 [ZCF200001 - ]	
<b>Definition - Important notice regarding equipment servicing</b> .....	<b>32</b>
T9.390, T9.450, T9.505, T9.560, T9.615, T9.670	
<b>Capacities - Product identification numbers ZDF and after</b> .....	<b>33</b>
T9.390 [ZDF200001 - ] WE, T9.450 [ZDF200001 - ] WE, T9.505 [ZDF200001 - ] WE, T9.560 [ZDF200001 - ] WE, T9.615 [ZDF200001 - ] WE, T9.670 [ZDF200001 - ] WE	
<b>Definition - Machine orientation</b> .....	<b>34</b>
T9.390 WE, T9.450 WE, T9.505 WE, T9.560 WE, T9.615 WE, T9.670 WE	

---

## Safety rules

T9.390 [ZCF200001 - ] WE, T9.390 [ZDF200001 - ] WE, T9.390, T9.450 [ZCF200001 - ] WE, T9.450 [ZDF200001 - ] WE, T9.450, T9.505 [ZCF200001 - ] WE, T9.505 [ZDF200001 - ] WE, T9.505, T9.560 [ZCF200001 - ] WE, T9.560 [ZDF200001 - ] WE, T9.560, T9.615 [ZCF200001 - ] WE, T9.615 [ZDF200001 - ] WE, T9.615, T9.670 [ZCF200001 - ] WE, T9.670 [ZDF200001 - ] WE, T9.670


### 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.

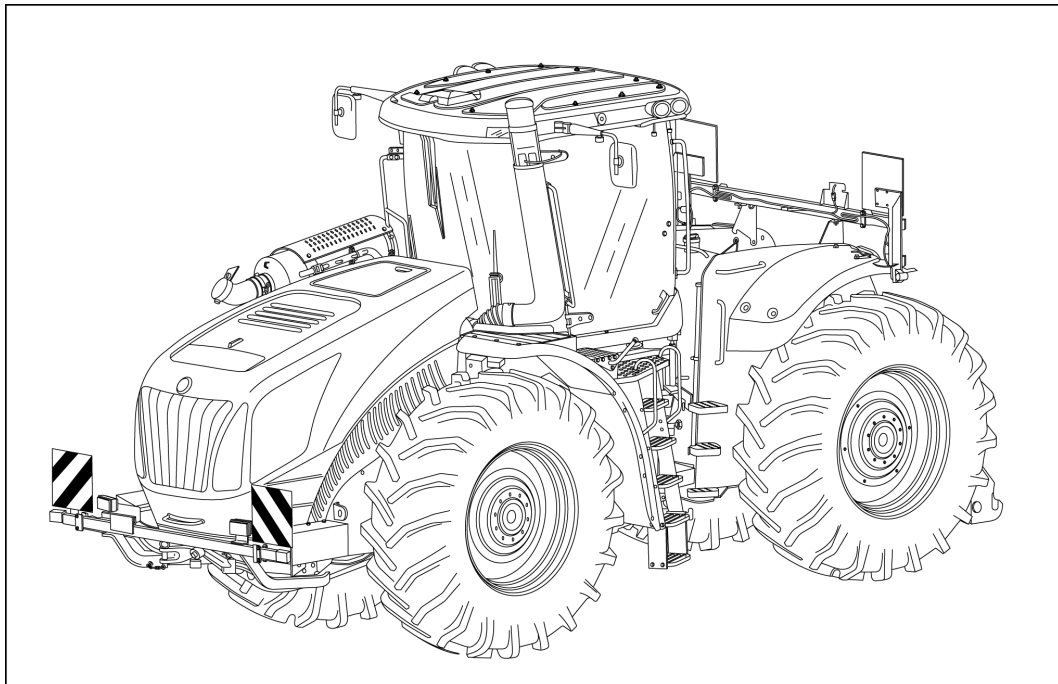
### Information

**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.

# SERVICE MANUAL

## Engine



**T9.390 , T9.450 , T9.505 , T9.560 , T9.615 , T9.670**

# Contents

---

## Engine - 10

[10.001] Engine and crankcase .....	10.1
T9.390 , T9.450 , T9.505 , T9.560 , T9.615 , T9.670	
[10.202] Air cleaners and lines .....	10.2
T9.390 , T9.450 , T9.505 , T9.560 , T9.615 , T9.670	
[10.400] Engine cooling system .....	10.3
T9.390 , T9.450 , T9.505 , T9.560 , T9.615 , T9.670	
[10.414] Fan and drive .....	10.4
T9.390 , T9.450 , T9.505 , T9.560 , T9.615 , T9.670	
[10.500] Selective Catalytic Reduction (SCR) exhaust treatment.....	10.5
T9.390 , T9.450 , T9.505 , T9.560 , T9.615 , T9.670	



## **Engine - 10**

### **Engine and crankcase - 001**

**T9.390 , T9.450 , T9.505 , T9.560 , T9.615 , T9.670**

# Contents

---

## Engine - 10

### Engine and crankcase - 001

#### SERVICE

##### Engine

Remove - 9 Liter tractors T9.390 .....	3
Install - 9 Liter tractors T9.390 .....	8
Remove - 13L single turbo tractors T9.450, T9.505, T9.560 .....	20
Install - 13L single turbo tractors T9.450, T9.505, T9.560 .....	26
Remove 13L Two Stage turbocharger tractors T9.615, T9.670 .....	39
Install 13L Two Stage turbocharger tractors T9.615, T9.670 .....	47

## Engine - Remove - 9 Liter tractors

T9.390

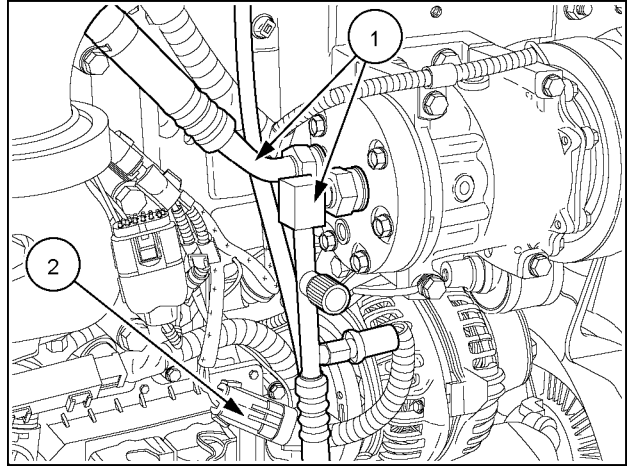
### Air conditioning - Evacuate - Air conditioning system (50.200)

#### Prior operation:

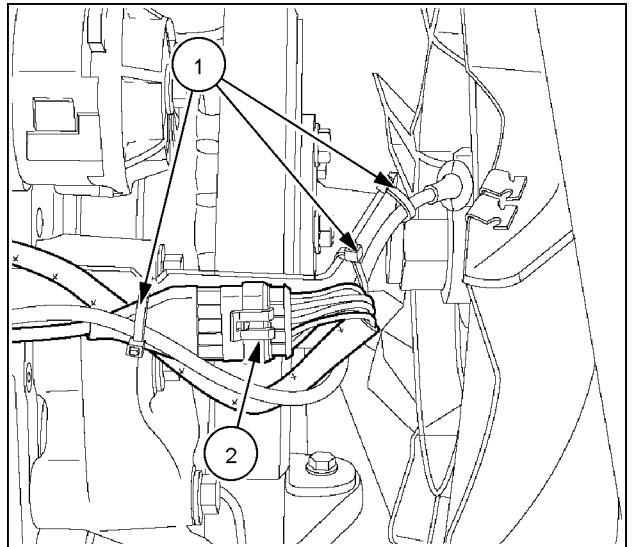
#### Hood - Remove - Hood support frame on row crop unit (90.100)

1. Disconnect air conditioning high and low pressure hoses (1) from compressor. Unplug high pressure sending unit (2).

**NOTE:** Cap and plug disconnected hoses and ports.

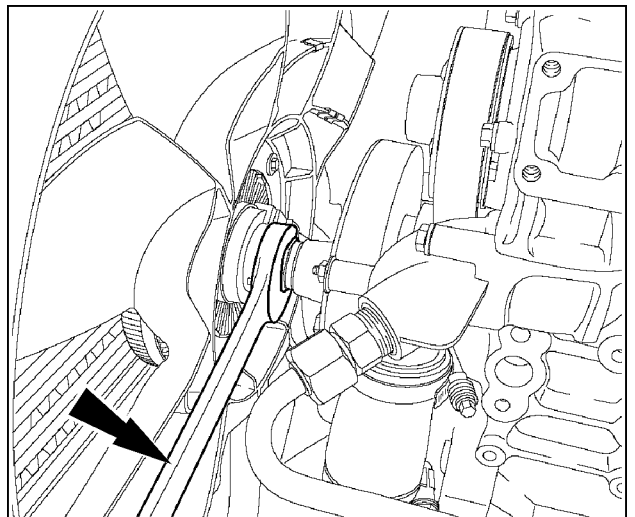


2. Cut ties (1) and unplug harness (2).

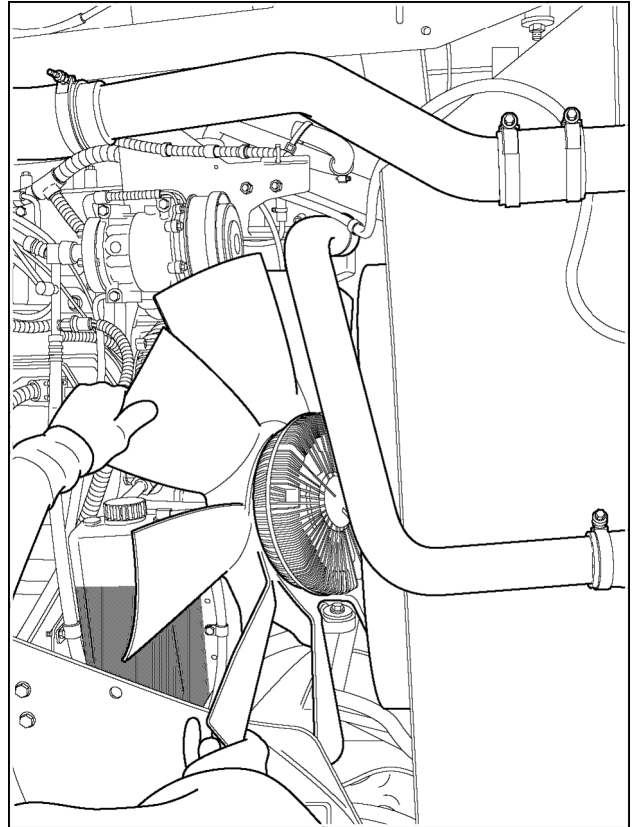


3. Loosen fan from hub.

**NOTE:** Hub has left hand threads.

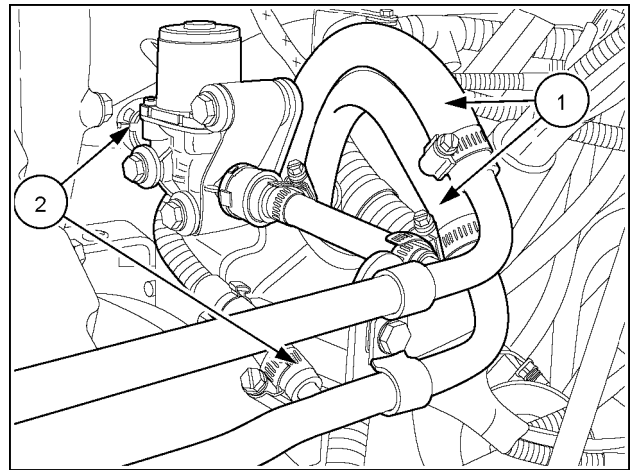


4. With the help of an assistant turn fan off hub. Remove out the right hand side.



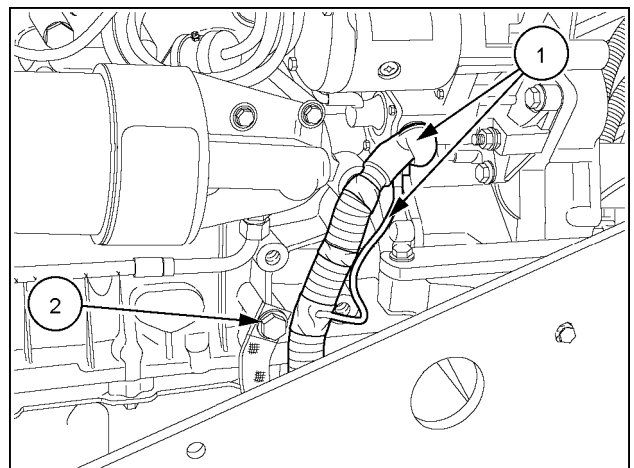
RCPH10FWD011BBC 4

5. Label and disconnect heater hoses (1) and DEF/Ad-Blue® solenoid hoses (2).



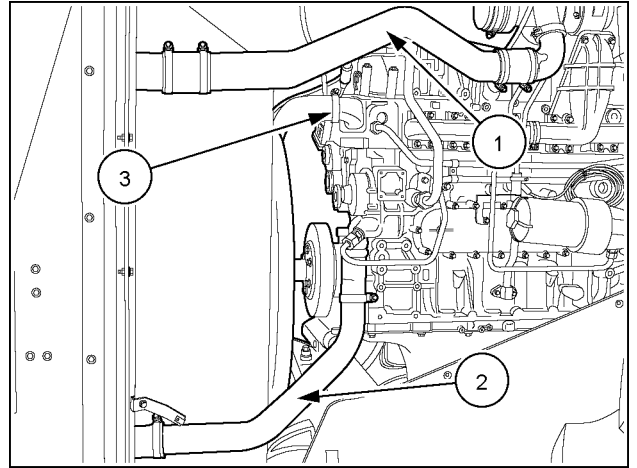
RCPH10FWD012BBC 5

6. Disconnect starter connections (1). Remove ground strap from engine block (2).



RCPH10FWD013BBC 6

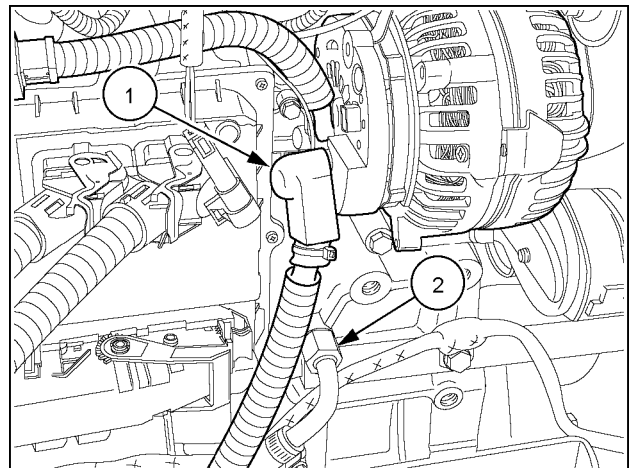
7. Remove left hand air to air tube (1) and lower radiator hose (2). Loosen upper radiator hose clamp (3).



RCPH10FWD014BBC 7

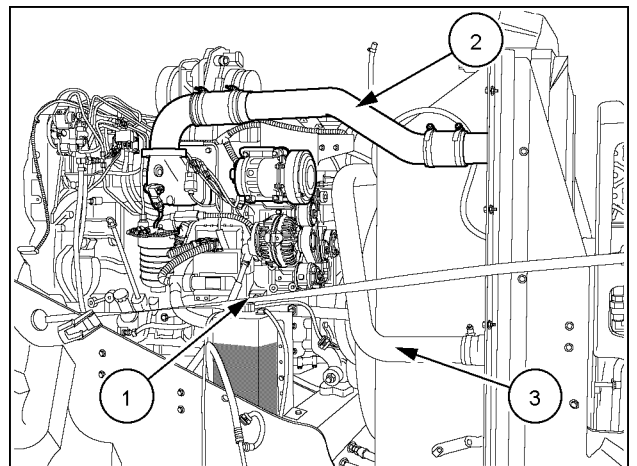
8. Disconnect alternator cable (1). Disconnect fuel line (2).

**NOTE:** Plug and cap disconnected fuel line and fitting.



RCPH10FWD015BBC 8

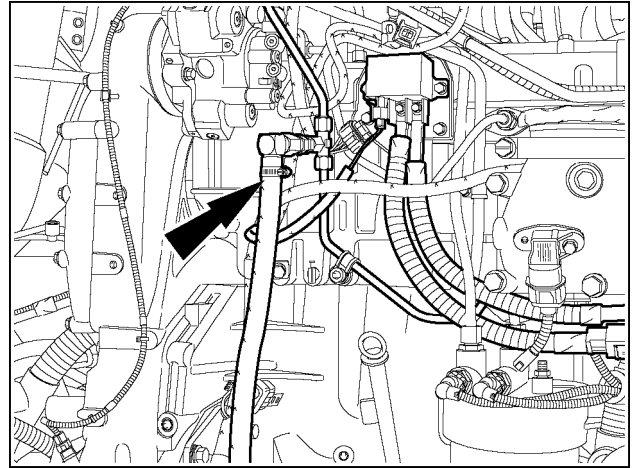
9. Secure cooling package with support strap (1). Remove right hand air to air tube (2) and upper radiator hose (3).



RCPH10FWD016BBC 9

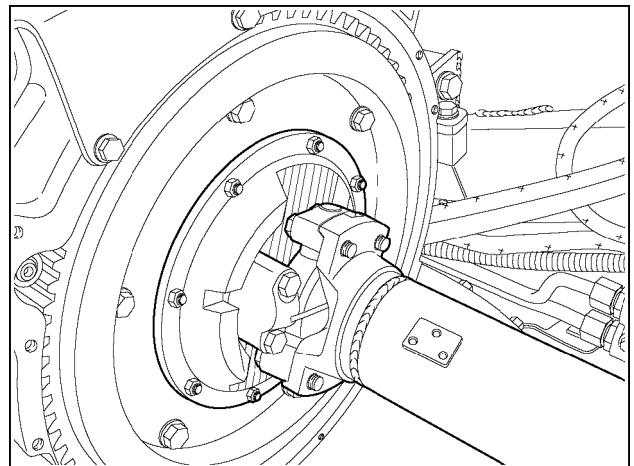
10. Disconnect fuel return line.

**NOTE:** Plug and cap disconnected hoses and fittings.



RCPH10FWD017BBC 10

11. Disconnect drive shaft from engine.



RCPH10FWD018BBC 11

12. Remove bracket on both sides over rear engine mounts.



RCPH10FWD019BBC 12



**Suggest:**

**If the above button click is invalid.**

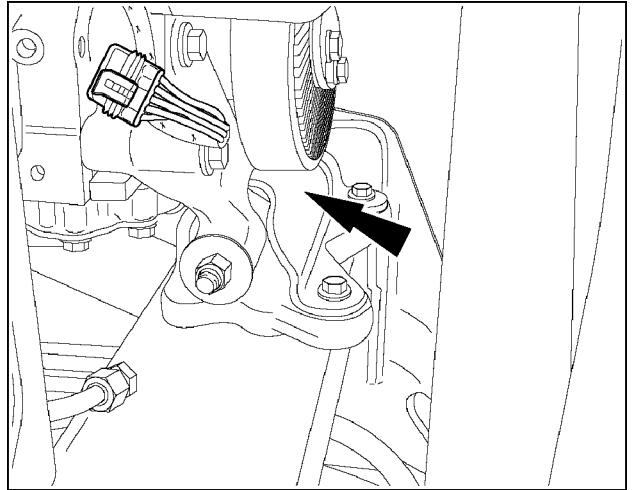
**Please download this document**

**first, and then click the above link**

**to download the complete manual.**

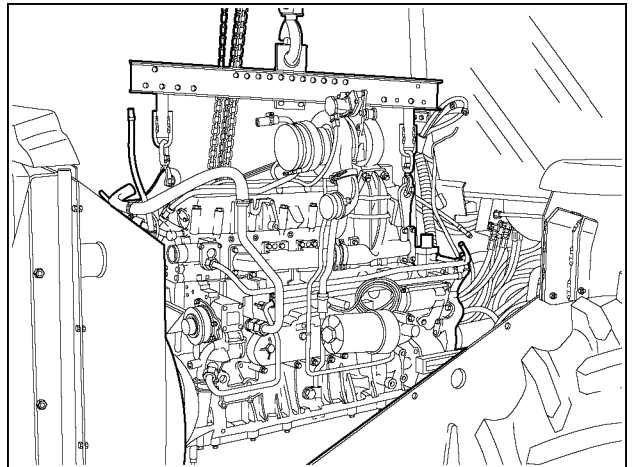
**Thank you so much for reading**

13. Remove front engine mount bracket.



RCPH10FWD021BBC 13

14. Attach 4130 load rotor lifting bale or equivalent. Remove engine from tractor over left hand side rail.



RCPH10FWD022BBC 14

**<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>**