

**QUANTUM® 80N**  
**QUANTUM® 90N**  
**QUANTUM® 100N**  
**QUANTUM® 110N**  
**QUANTUM® 80V**  
**QUANTUM® 90V**  
**QUANTUM® 100V**  
**QUANTUM® 110V**

**Tractor**

*PIN HLRQ010NPHLU08569 and above*

**SERVICE MANUAL**

Part number 51526041

English

November 2018

**CASE IH**  
AGRICULTURE



## SERVICE MANUAL

Quantum® 100N With cab [HLRQ010NPHLU08569 - ], Quantum® 100N Without cab [HLRQ010N\*JLU\*\*\*\*\* - ], Quantum® 100V With cab [HLRQ010V\*JLU\*\*\*\*\* - ], Quantum® 100V Without cab [HLRQ010V\*JLU\*\*\*\*\* - ], Quantum® 110N With cab [HLRQ011N\*JLU\*\*\*\*\* - ], Quantum® 110N Without cab [HLRQ011N\*JLU\*\*\*\*\* - ], Quantum® 110V With cab [HLRQ011VJHLU02630 - ], Quantum® 110V Without cab [HLRQ011V\*JLU\*\*\*\*\* - ], Quantum® 80N With cab [HLRQ080NCHLU08309 - ], Quantum® 80N Without cab [HLRQ080N\*JLU\*\*\*\*\* - ], Quantum® 80V With cab [HLRQ080VVHLU07985 - ], Quantum® 80V Without cab [HLRQ080VKHLU10171 - ], Quantum® 90N With cab [HLRQ090N\*HLU\*\*\*\*\* - ], Quantum® 90N Without cab [HLRQ090N\*HLU\*\*\*\*\* - ], Quantum® 90V With cab [HLRQ090VLHLU09809 - ], Quantum® 90V Without cab [HLRQ090V\*JLU\*\*\*\*\* - ]

## Link Product / Engine

Product	Market Product	Engine
Quantum® 100N With cab [HLRQ010NPHLU08569 - ]	Australia New Zealand	F5DFL413K*C001
Quantum® 100N With cab [HLRQ010NPHLU08569 - ]	Europe	F5DFL413K*C001
Quantum® 100N With cab [HLRQ010NPHLU08569 - ]	Asia Pacific	F5DFL413K*C001
Quantum® 100N With cab [HLRQ010NPHLU08569 - ]	Latin America	F5DFL413K*C001
Quantum® 100N With cab [HLRQ010NPHLU08569 - ]	Middle East Africa	F5DFL413K*C001
Quantum® 100N Without cab [HLRQ010N*JLU***** - ]	Middle East Africa	F5DFL413K*C001
Quantum® 100N Without cab [HLRQ010N*JLU***** - ]	Latin America	F5DFL413K*C001
Quantum® 100N Without cab [HLRQ010N*JLU***** - ]	Europe	F5DFL413K*C001
Quantum® 100N Without cab [HLRQ010N*JLU***** - ]	Asia Pacific	F5DFL413K*C001
Quantum® 100N Without cab [HLRQ010N*JLU***** - ]	Australia New Zealand	F5DFL413K*C001
Quantum® 110N With cab [HLRQ011N*JLU***** - ]	Middle East Africa	F5DFL413J*C002
Quantum® 110N With cab [HLRQ011N*JLU***** - ]	Asia Pacific	F5DFL413J*C002
Quantum® 110N With cab [HLRQ011N*JLU***** - ]	Europe	F5DFL413J*C002
Quantum® 110N With cab [HLRQ011N*JLU***** - ]	Australia New Zealand	F5DFL413J*C002
Quantum® 110N With cab [HLRQ011N*JLU***** - ]	Latin America	F5DFL413J*C002
Quantum® 110N Without cab [HLRQ011N*JLU***** - ]	Middle East Africa	F5DFL413J*C002
Quantum® 110N Without cab [HLRQ011N*JLU***** - ]	Australia New Zealand	F5DFL413J*C002
Quantum® 110N Without cab [HLRQ011N*JLU***** - ]	Latin America	F5DFL413J*C002
Quantum® 110N Without cab [HLRQ011N*JLU***** - ]	Asia Pacific	F5DFL413J*C002
Quantum® 110N Without cab [HLRQ011N*JLU***** - ]	Europe	F5DFL413J*C002
Quantum® 80N With cab [HLRQ080NCHLU08309 - ]	Australia New Zealand	F5DFL413B*H001
Quantum® 80N With cab [HLRQ080NCHLU08309 - ]	Europe	F5DFL413B*H001
Quantum® 80N With cab [HLRQ080NCHLU08309 - ]	Asia Pacific	F5DFL413B*H001
Quantum® 80N With cab [HLRQ080NCHLU08309 - ]	Middle East Africa	F5DFL413B*H001

<b>Product</b>	<b>Market Product</b>	<b>Engine</b>
Quantum® 80N With cab [HLRQ080NCHLU08309 - ]	Latin America	F5DFL413B*H001
Quantum® 80N Without cab [HLRQ080N*JLU***** - ]	Latin America	F5DFL413B*H001
Quantum® 80N Without cab [HLRQ080N*JLU***** - ]	Asia Pacific	F5DFL413B*H001
Quantum® 80N Without cab [HLRQ080N*JLU***** - ]	Middle East Africa	F5DFL413B*H001
Quantum® 80N Without cab [HLRQ080N*JLU***** - ]	Australia New Zealand	F5DFL413B*H001
Quantum® 80N Without cab [HLRQ080N*JLU***** - ]	Europe	F5DFL413B*H001
Quantum® 90N With cab [HLRQ090N*HLU***** - ]	Middle East Africa	F5DFL413L*C001
Quantum® 90N With cab [HLRQ090N*HLU***** - ]	Asia Pacific	F5DFL413L*C001
Quantum® 90N With cab [HLRQ090N*HLU***** - ]	Australia New Zealand	F5DFL413L*C001
Quantum® 90N With cab [HLRQ090N*HLU***** - ]	Latin America	F5DFL413L*C001
Quantum® 90N With cab [HLRQ090N*HLU***** - ]	Europe	F5DFL413L*C001
Quantum® 90N Without cab [HLRQ090N*HLU***** - ]	Middle East Africa	F5DFL413L*C001
Quantum® 90N Without cab [HLRQ090N*HLU***** - ]	Asia Pacific	F5DFL413L*C001
Quantum® 90N Without cab [HLRQ090N*HLU***** - ]	Europe	F5DFL413L*C001
Quantum® 90N Without cab [HLRQ090N*HLU***** - ]	Latin America	F5DFL413L*C001
Quantum® 90N Without cab [HLRQ090N*HLU***** - ]	Australia New Zealand	F5DFL413L*C001
Quantum® 100V With cab [HLRQ010V*JLU***** - ]	Europe	F5DFL413K*C001
Quantum® 100V With cab [HLRQ010V*JLU***** - ]	Australia New Zealand	F5DFL413K*C001
Quantum® 100V With cab [HLRQ010V*JLU***** - ]	Asia Pacific	F5DFL413K*C001
Quantum® 100V With cab [HLRQ010V*JLU***** - ]	Middle East Africa	F5DFL413K*C001
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Quantum® 100V Without cab [HLRQ010V*JLU***** - ]	Asia Pacific	F5DFL413K*C001

<b>Product</b>	<b>Market Product</b>	<b>Engine</b>
Quantum® 110V With cab [HLRQ011VJHLU02630 - ]	Australia New Zealand	F5DFL413J*C002
Quantum® 110V With cab [HLRQ011VJHLU02630 - ]	Middle East Africa	F5DFL413J*C002
Quantum® 110V With cab [HLRQ011VJHLU02630 - ]	Latin America	F5DFL413J*C002
Quantum® 110V With cab [HLRQ011VJHLU02630 - ]	Europe	F5DFL413J*C002
Quantum® 110V With cab [HLRQ011VJHLU02630 - ]	Asia Pacific	F5DFL413J*C002
Quantum® 110V Without cab [HLRQ011V*JLU***** - ]	Middle East Africa	F5DFL413J*C002
Quantum® 110V Without cab [HLRQ011V*JLU***** - ]	Europe	F5DFL413J*C002
Quantum® 110V Without cab [HLRQ011V*JLU***** - ]	Asia Pacific	F5DFL413J*C002
Quantum® 110V Without cab [HLRQ011V*JLU***** - ]	Australia New Zealand	F5DFL413J*C002
Quantum® 110V Without cab [HLRQ011V*JLU***** - ]	Latin America	F5DFL413J*C002
Quantum® 80V With cab [HLRQ080VVHLU07985 - ]	Latin America	F5DFL413B*H001
Quantum® 80V With cab [HLRQ080VVHLU07985 - ]	Asia Pacific	F5DFL413B*H001
Quantum® 80V With cab [HLRQ080VVHLU07985 - ]	Australia New Zealand	F5DFL413B*H001
Quantum® 80V With cab [HLRQ080VVHLU07985 - ]	Europe	F5DFL413B*H001
Quantum® 80V With cab [HLRQ080VVHLU07985 - ]	Middle East Africa	F5DFL413B*H001
Quantum® 80V Without cab [HLRQ080VKHLU10171 - ]	Asia Pacific	F5DFL413B*H001
Quantum® 80V Without cab [HLRQ080VKHLU10171 - ]	Middle East Africa	F5DFL413B*H001
Quantum® 80V Without cab [HLRQ080VKHLU10171 - ]	Europe	F5DFL413B*H001
Quantum® 80V Without cab [HLRQ080VKHLU10171 - ]	Australia New Zealand	F5DFL413B*H001
Quantum® 80V Without cab [HLRQ080VKHLU10171 - ]	Latin America	F5DFL413B*H001
Quantum® 90V With cab [HLRQ090VLHLU09809 - ]	Europe	F5DFL413L*C001
Quantum® 90V With cab [HLRQ090VLHLU09809 - ]	Asia Pacific	F5DFL413L*C001
Quantum® 90V With cab [HLRQ090VLHLU09809 - ]	Middle East Africa	F5DFL413L*C001
Quantum® 90V With cab [HLRQ090VLHLU09809 - ]	Australia New Zealand	F5DFL413L*C001
Quantum® 90V With cab [HLRQ090VLHLU09809 - ]	Latin America	F5DFL413L*C001
Quantum® 90V Without cab [HLRQ090V*JLU***** - ]	Asia Pacific	F5DFL413L*C001

<b>Product</b>	<b>Market Product</b>	<b>Engine</b>
Quantum® 90V Without cab [HLRQ090V*JLU***** - ]	Latin America	F5DFL413L*C001
Quantum® 90V Without cab [HLRQ090V*JLU***** - ]	Europe	F5DFL413L*C001
Quantum® 90V Without cab [HLRQ090V*JLU***** - ]	Middle East Africa	F5DFL413L*C001
Quantum® 90V Without cab [HLRQ090V*JLU***** - ]	Australia New Zealand	F5DFL413L*C001

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# INTRODUCTION

## Safety rules

QUANTUM® V - TIER 4A (INTERIM) and STAGE IIIB	ANZ --- APAC --- LA --- MEA --- WE
Quantum® 100N	ANZ --- APAC --- LA --- MEA --- WE
Quantum® 110N	ANZ --- APAC --- LA --- MEA --- WE
Quantum® 80N	ANZ --- APAC --- LA --- MEA --- WE
Quantum® 90N	ANZ --- APAC --- LA --- MEA --- WE


### 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 SAFETY REGULATIONS

### TO PREVENT ACCIDENTS

Most accidents or injuries that occur in workshops are the result of non-observance of simple and fundamental safety regulations.

For this reason, IN MOST CASES THESE ACCIDENTS CAN BE AVOIDED: by foreseeing possible causes and consequently acting with the necessary caution and care.

Accidents may occur with all types of vehicle, regardless of how well it was designed and built.

A careful and judicious service technician is the best guarantee against accidents.

Precise observance of the most basic safety rule is normally sufficient to avoid many serious accidents.

DANGER: Never carry out any cleaning, lubrication or maintenance operations when the engine is running.

### GENERAL

- Carefully follow specified repair and maintenance procedures.
- Do not wear rings, wristwatches, jewellery, unbuttoned or loose articles of clothing such as: ties, torn clothing, scarves, open jackets or shirts with open zips that may remain entangled in moving parts.  
It is advised to wear approved safety clothing, e.g: non-slip footwear, gloves, safety goggles, helmets, etc.
- Do not carry out repair operations with someone sitting in the driver's seat, unless the person is a trained technician who is assisting with the operation in question.
- Operate the vehicle and use the implements exclusively from the driver's seat.
- Do not carry out operations on the vehicle with the engine running, unless specifically indicated.
- Stop the engine and ensure that all pressure is relieved from hydraulic circuits before removing caps, covers, valves, etc.
- All repair and maintenance operations must be carried out using extreme care and attention.
- Service steps and platforms used in a workshop or in the field should be built in compliance with the safety rules in force.
- Disconnect the batteries and label all controls to indicate that the vehicle is being serviced. Block the machine and all equipment which should be raised.
- Do not check or fill fuel tanks, accumulator batteries, nor use starting liquid when smoking or near naked flames, as these fluids are inflammable.
- Brakes are inoperative if manually released for repair or maintenance purposes.  
In such cases, the machine should be kept constantly under control using blocks or similar devices.
- The fuel nozzle should always be in contact with the filling aperture. Maintain this position until filling operations are completed in order to avoid possible sparks caused by the accumulation of static electricity.
- Only use specified towing points for towing the tractor, connect parts carefully. Make sure that all pins and/or locks are secured in position before applying traction.  
Never remain near the towing bars, cables or chains that are operating under load
- Transport vehicles that cannot be driven using a trailer or a low-loading platform trolley, if available.
- When loading or unloading the vehicle from the trailer (or other means of transport), select a flat area capable of sustaining the trailer or truck wheels, firmly secure the tractor to the truck or trailer and lock the wheels in the position.
- Electric heaters, battery-chargers and similar equipment must only be powered by auxiliary power supplies with efficient ground insulation to avoid electrical shock hazards.
- Always use suitable hoisting or lifting devices when raising or moving heavy parts.
- Take extra care if bystanders are present.
- Never pour gasoline or diesel oil into open, wide and low containers.
- Never use gasoline, diesel oil or other inflammable liquids as cleaning agents. Use non-flammable non-toxic proprietary solvents.
- Wear safety goggles with side guards when cleaning parts with compressed air.
- Limit the air pressure to a maximum of **2.1 bar (30.5 psi)**, according to local regulations.

## INTRODUCTION

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- Do not run the engine in confined spaces without suitable ventilation.
- Do not smoke, use naked flames, or cause sparks in the area when fuel filling or handling highly inflammable liquids.
- Never use naked flames for lighting when working on the machine or checking for leaks.
- All movements must be carried out carefully when working under, on or near the vehicle and wear protective equipment: helmets, goggles and special footwear.
- When carrying out checks with the engine running, request the assistance of an operator in the driver's seat. The operator must maintain visual contact with the service technician at all times.
- If operating outside the workshop, position the vehicle on a flat surface and lock in position. If working on a slope, lock the vehicle in position and move to a flat area as soon as is safely possible.
- Damaged or bent chains or cables are unreliable. Do not use them for lifting or towing. Always use suitable protective gloves when handling chains or cables.
- Chains should always be safely secured. Ensure that fastening device is strong enough to hold the load foreseen. No persons should stop near the fastening point, trailing chains or cables.
- Maintenance and repair operations must be carried out in a CLEAN and DRY area, eliminate any water or oil spillage immediately.
- Do not create piles of oil or grease--soaked rags as they represent a serious fire hazard; store them in a closed metal container.  
Before starting the vehicle or implements, make sure that the driver's seat is locked in position and always check that the area is free of persons or obstacles.
- Empty pockets of all objects that may fall unobserved into the vehicle parts when disassembled.
- In the presence of protruding metal parts, use protective goggles or goggles with side guards, helmets, special footwear and gloves.
- Handle all parts carefully, do not put your hands or fingers between moving parts, wear suitable safety clothing -- safety goggles, gloves and shoes.

## WELDING OPERATIONS

- When welding, use protective safety devices: tinted safety goggles, helmets, special overalls, gloves and footwear. All persons present in the area where welding is taking place must wear tinted goggles.  
**NEVER LOOK AT THE WELDING ARC IF YOUR EYES ARE NOT SUITABLY PROTECTED.**
- Where possible, remove the part or tool that requires arc welding from the tractor.
- Disconnect both battery leads. Isolate the cable ends to avoid contact with each other and the tractor.
- Position the welder ground clamp as near as possible to the area where welding is taking place.
- Remove the electronic control units located on the tractor if welding is to be carried out near these control units.
- Never allow welding cables to lay on, near or across any electrical wiring or electronic component while welding is in progress.
- Metal cables tend to fray with repeated use. Always use suitable protective devices (gloves, goggles, etc.) when handling cables.

## START UP

- Never start the engine in confined spaces that are not equipped with adequate ventilation for exhaust gas extraction.
- Never place the head, body, limbs, feet, hands or fingers near fans or rotating belts.

## ENGINE

- Always loosen the radiator cap slowly before removing it to allow any remaining pressure in the system to be discharged. Coolant should be topped up only when the engine is stopped or idle if hot.
- Never fill up with fuel when the engine is running, especially if hot, in order to prevent the outbreak of fire as a result of fuel spillage
- Never check or adjust fan belt tension when the engine is running.  
Never adjust the fuel injection pump when the vehicle is moving.



## SERVICE MANUAL

### Engine

Quantum® 100N With cab [HLRQ010NPHLU08569 - ], Quantum® 100N Without cab [HLRQ010N\*JLU\*\*\*\*\* - ], Quantum® 100V With cab [HLRQ010V\*JLU\*\*\*\*\* - ], Quantum® 100V Without cab [HLRQ010V\*JLU\*\*\*\*\* - ], Quantum® 110N With cab [HLRQ011N\*JLU\*\*\*\*\* - ], Quantum® 110N Without cab [HLRQ011N\*JLU\*\*\*\*\* - ], Quantum® 110V With cab [HLRQ011VJHLU02630 - ], Quantum® 110V Without cab [HLRQ011V\*JLU\*\*\*\*\* - ], Quantum® 80N With cab [HLRQ080NCHLU08309 - ], Quantum® 80N Without cab [HLRQ080N\*JLU\*\*\*\*\* - ], Quantum® 80V With cab [HLRQ080VVHLU07985 - ], Quantum® 80V Without cab [HLRQ080VKHLU10171 - ], Quantum® 90N With cab [HLRQ090N\*HLU\*\*\*\*\* - ], Quantum® 90N Without cab [HLRQ090N\*HLU\*\*\*\*\* - ], Quantum® 90V With cab [HLRQ090VLHLU09809 - ], Quantum® 90V Without cab [HLRQ090V\*JLU\*\*\*\*\* - ]



## Engine - Remove from transmission

Quantum® 100N With cab [HLRQ010NPHLU08569 - ]	ANZ --- APAC --- LA --- MEA --- WE
Quantum® 100V With cab [HLRQ010V*JLU***** - ]	ANZ --- APAC --- LA --- MEA --- WE
Quantum® 110N With cab [HLRQ011N*JLU***** - ]	ANZ --- APAC --- LA --- MEA --- WE
Quantum® 110V With cab [HLRQ011VJHLU02630 - ]	ANZ --- APAC --- LA --- MEA --- WE
Quantum® 80N With cab [HLRQ080NCHLU08309 - ]	ANZ --- APAC --- LA --- MEA --- WE
Quantum® 80V With cab [HLRQ080VHHLU07985 - ]	ANZ --- APAC --- LA --- MEA --- WE
Quantum® 90N With cab [HLRQ090N*HLU***** - ]	ANZ --- APAC --- LA --- MEA --- WE
Quantum® 90V With cab [HLRQ090VLHLU09809 - ]	ANZ --- APAC --- LA --- MEA --- WE

### ⚠ WARNING

#### Burn hazard!

Be very careful to avoid contact with hot fluids. If fluid is extremely hot, allow it to cool to a moderately warm temperature before proceeding.

Failure to comply could result in death or serious injury.

W0362A

### ⚠ WARNING

#### Hot surface possible!

Wait for all components to cool before performing any operation.

Failure to comply could result in death or serious injury.

W0251A

### ⚠ CAUTION

#### Hot area!

Use care when working near hot components. Wear protective gloves.

Failure to comply could result in minor or moderate injury.

C0034A

### ⚠ WARNING

#### Chemical hazard!

When handling fuel, lubricants, and other service chemicals, follow the manufacturer's instructions. Wear Personal Protective Equipment (PPE) as instructed. Do not smoke or use open flame. Collect fluids in proper containers. Obey all local and environmental regulations when disposing of chemicals.

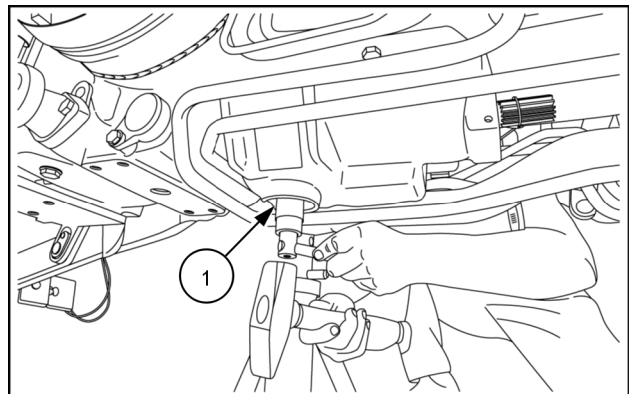
Failure to comply could result in death or serious injury.

W0371A

### Prior operation:

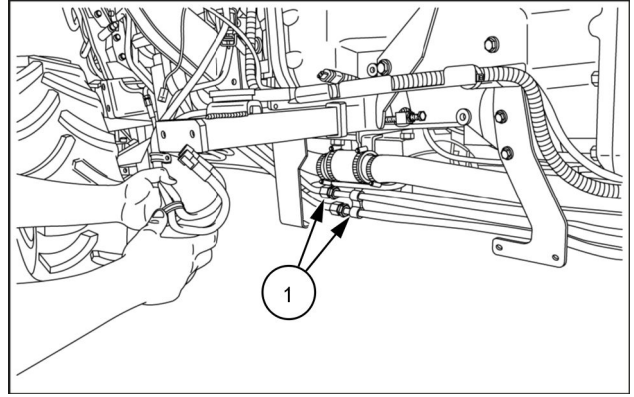
A. Remove the front ballast - See **Front ballast - Remove (39.140)**.

- Carefully clean the area around the central drain plug (1) on the transmission.
- Use a suitable container to collect the transmission oil.
- Loosen the central drain plug (1) on the transmission and drain the transmission oil.
- Replace the central drain plug (1) on the transmission.
- Tighten the central drain plug (1) on the transmission.
- Carefully clean all the parts contaminated by any leaking hydraulic fluid.
- Remove the cab – See **Cab and platform - Remove (90.150)**.
- Remove the transmission drive shaft going from the transmission to the front axle – See **Front drive shaft - Remove (23.314)**.



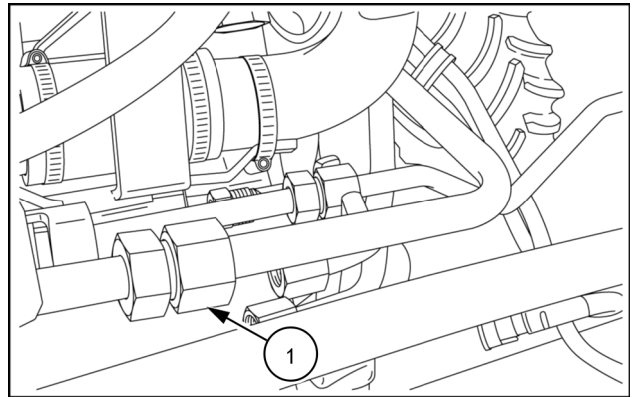
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9. Carefully clean the area around the couplings **(1)** on the intermediate delivery and return pipes on the transmission oil exchanger.
10. Use a suitable container to collect the transmission oil.
11. Loosen the couplings **(1)** on the intermediate delivery and return pipes on the transmission oil exchanger.



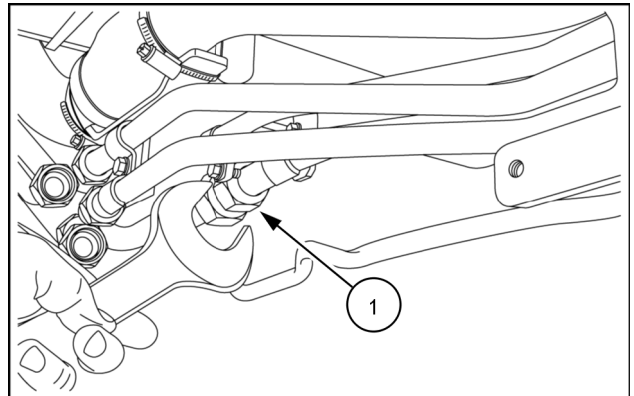
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12. Carefully clean the area around the coupling **(1)** of the intermediate differential oil delivery pipe on the left-hand side of the vehicle.
13. Use a suitable container to collect the transmission oil.
14. Loosen the coupling **(1)** of the intermediate differential oil delivery pipe on the left-hand side of the vehicle.



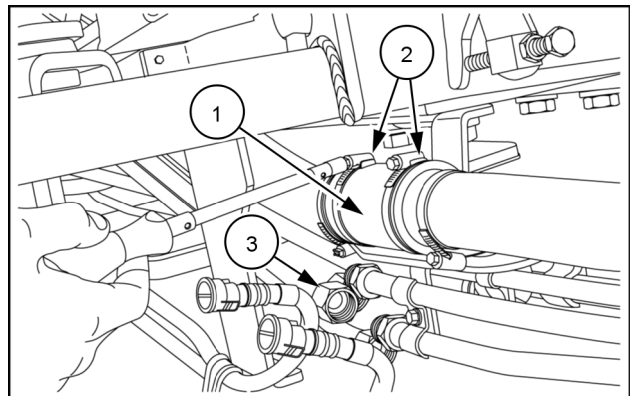
MOIL16TR01455AA 3

15. Carefully clean the area around the coupling **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
16. Use a suitable container to collect the transmission oil.
17. Loosen the coupling **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
18. Carefully clean all the parts contaminated by any leaking hydraulic fluid.



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19. Carefully clean the area around the sleeve **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
20. Use a suitable container to collect the transmission oil.
21. Loosen the two screw collars **(2)** on the sleeve **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
22. Loosen the screw collar **(3)** fixing the sleeve **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
23. Disconnect the sleeve **(1)** of the intermediate delivery pipe connected to the transmission oil filter.
24. Carefully clean all the parts contaminated by any leaking hydraulic fluid.



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