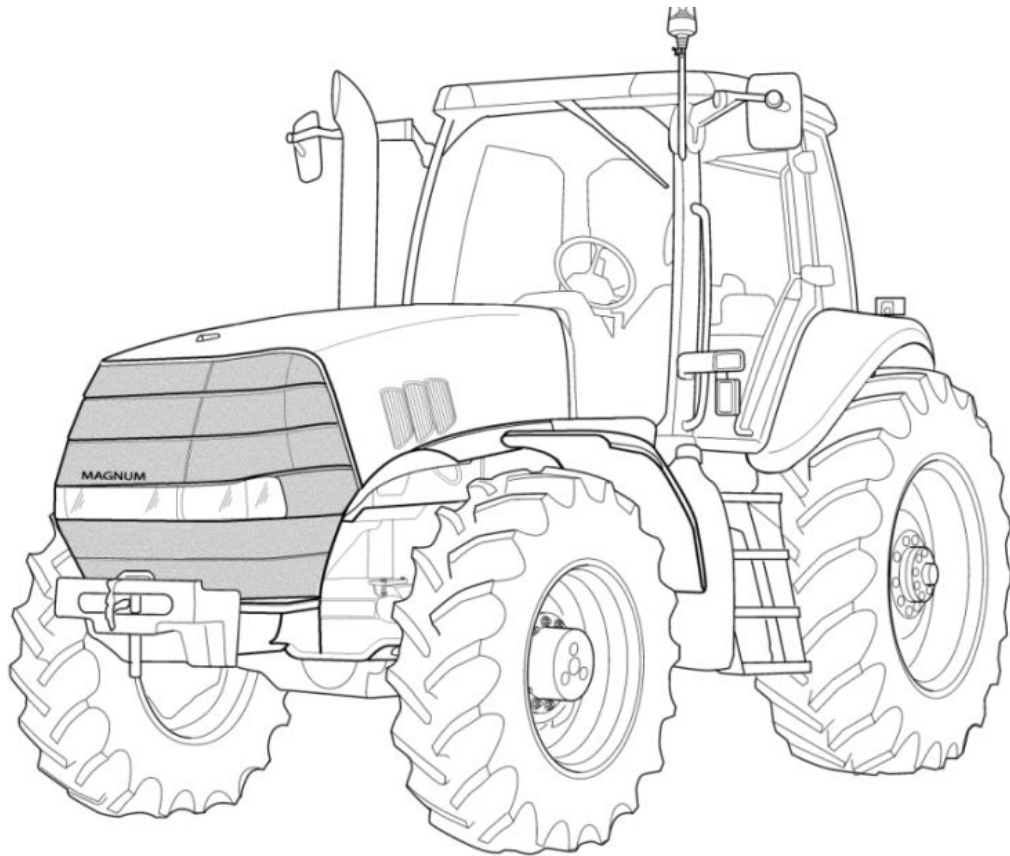




## SERVICE MANUAL



**Magnum 225 [Z8Rx06001 - ]**  
**Magnum 250 [Z8Rx06001 - ]**  
**Magnum 280 [Z8Rx06001 - ]**  
**Magnum 310 [Z8Rx06001 - ]**  
**Magnum 335 [Z8Rx06001 - ]**

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## INTRODUCTION

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## Safety rules

Magnum 225, Magnum 250, Magnum 280, Magnum 310, Magnum 335

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### WARNING



**Improper machine operation can cause injury or death. Always operate all machine controls from the operator's seat.**

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84-60



### WARNING



**Before starting engine, study operator's manual safety messages. Read all safety signs on machine. Clear the area of other persons. Learn and practice safe use of controls before operating. It is your responsibility to understand and follow manufacturer's instructions on machine operation, service, and to observe pertinent laws and regulations. Operators and service manuals can be obtained from your equipment dealer.**

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D46-59C



### WARNING



**If you wear clothing that is too loose or do not use the correct safety equipment for your job, you can be injured. Always wear clothing that will not catch on objects. Extra safety equipment that can be required includes hard hat, safety shoes, ear protection, eye or face protection, heavy gloves and reflector clothing.**

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M492



### WARNING



**When working in the area of the fan belt with the engine running, avoid loose clothing if possible, and use extreme caution.**

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M493



### WARNING



**When doing checks and tests on the equipment hydraulics, follow the procedures as they are written. DO NOT change the procedure.**

---

M494



### WARNING



**Lower all attachments to the ground or use stands to safely support the attachments before you do any maintenance or service.**

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M496



### WARNING



**Fluid under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Always protect the skin and eyes from escaping fluid under pressure. Before disconnecting lines or fittings, be sure to release all pressure by operating the tractor control valves. Before applying pressure to the system, be sure all connections are tight and that hoses and connections are not damaged. If injured by escaping fluid, obtain medical assistance at once. Serious infection or reaction can develop if medical treatment is not administered immediately. Failure to comply could result in death or serious injury.**

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M1184

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 **WARNING** 

Hydraulic fluid escaping under pressure can have enough force to penetrate the skin. Hydraulic fluid may also infect a minor cut or opening in the skin. If injured by escaping fluid, see a doctor at once. Serious infection or reaction can result if medical treatment is not given immediately. Make sure all connections are tight and that hoses and lines are in good condition before applying pressure to the system. Relieve all pressure before disconnecting the lines or performing other work on the hydraulic system. To find a leak under pressure use a small piece of cardboard or wood. Never use hands. Failure to comply could result in death or serious injury.

M252A

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 **WARNING** 

When removing hardened pins such as a pivot pin, or a hardened shaft, use a soft head (brass or bronze) hammer or use a driver made from brass or bronze and a steel head hammer.

M497

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 **WARNING** 

When using a hammer to remove and install pivot pins or separate parts using compressed air or using a grinder, wear eye protection that completely encloses the eyes (approved goggles or other approved eye protectors).

M498

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 **WARNING** 

Use suitable floor (service) jacks or chain hoist to raise wheels or tracks off the floor. Always block machine in placed with suitable safety stands.

M499

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 **WARNING** 

When servicing or repairing the machine. Keep the shop floor and operators compartment and steps free of oil, water, grease, tools, etc. Use an oil absorbing material and or shop cloths as required. Use safe practices at all times.

M500

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 **WARNING** 

Batteries contain acid and explosive gas. Explosions can result from sparks, flames or wrong cable connections. To connect the jumper cables correctly to the battery of this machine see the Operators Manual. Failure to follow these instructions can cause serious injury or death.

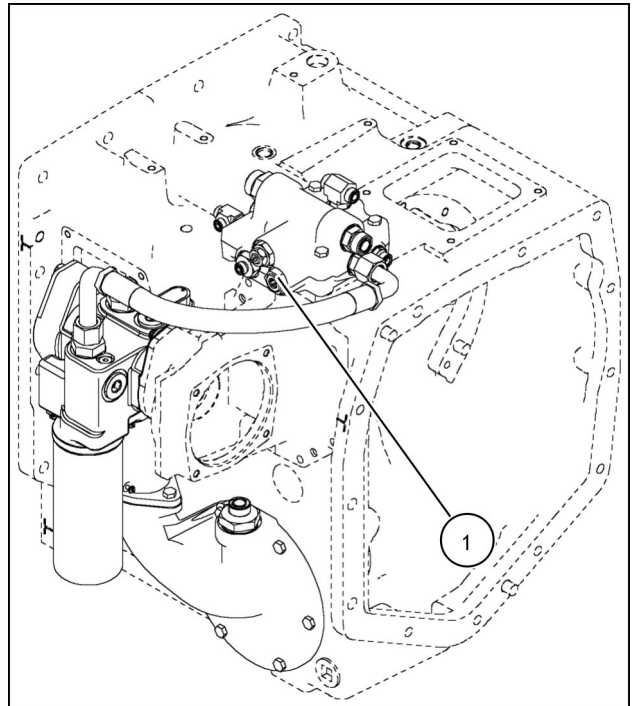
M504

## Tandem gear pump Regulated pressure - Adjust

Magnum 225, Magnum 250, Magnum 280, Magnum 310, Magnum 335

**NOTICE:** Regulated pressure cannot be adjusted on the Magnum 335. The transmission controller monitors and adjusts regulated as required on this model.

1. To perform the regulated pressure check and adjustment with the tractor instrumentation:
  - Start the engine.
  - Cover the front grill with a large piece of paper.
  - Press the INCR or DECR key on the instrumentation until the TRANS OIL TEMP screen is reached.
  - Operate the engine at **1500 RPM** until the transmission temperature displayed on the instrumentation reads at least **49 °C (120 °F)**.
2. The regulated pressure specification is **22.4 - 24.5 bar (325 - 355 psi)** at **1500 RPM** engine speed. Pressure is adjustable at the screw indicated **(1)**.



RCPH07CCH020BAE 1

3. Loosen the lock nut and turn the adjustment screw **(1)** in or out until the correct pressure displays on the tractor instrumentation.
4. Tighten the lock nut to a torque of **41 - 54 Nm (30 - 40 lb ft)**. After tightening the lock nut, check the regulated pressure again.
5. If the correct pressure cannot be obtained, check the following:
  - Transmission oil level.
  - Priority/regulator valve for broken springs or sticking spool. See **Control valve Priority/Regulator valve - Remove (A.10.A)**.
  - Low pump flow performance. See **Tandem gear pump Regulated pressure - Flow test (A.10.A)**.



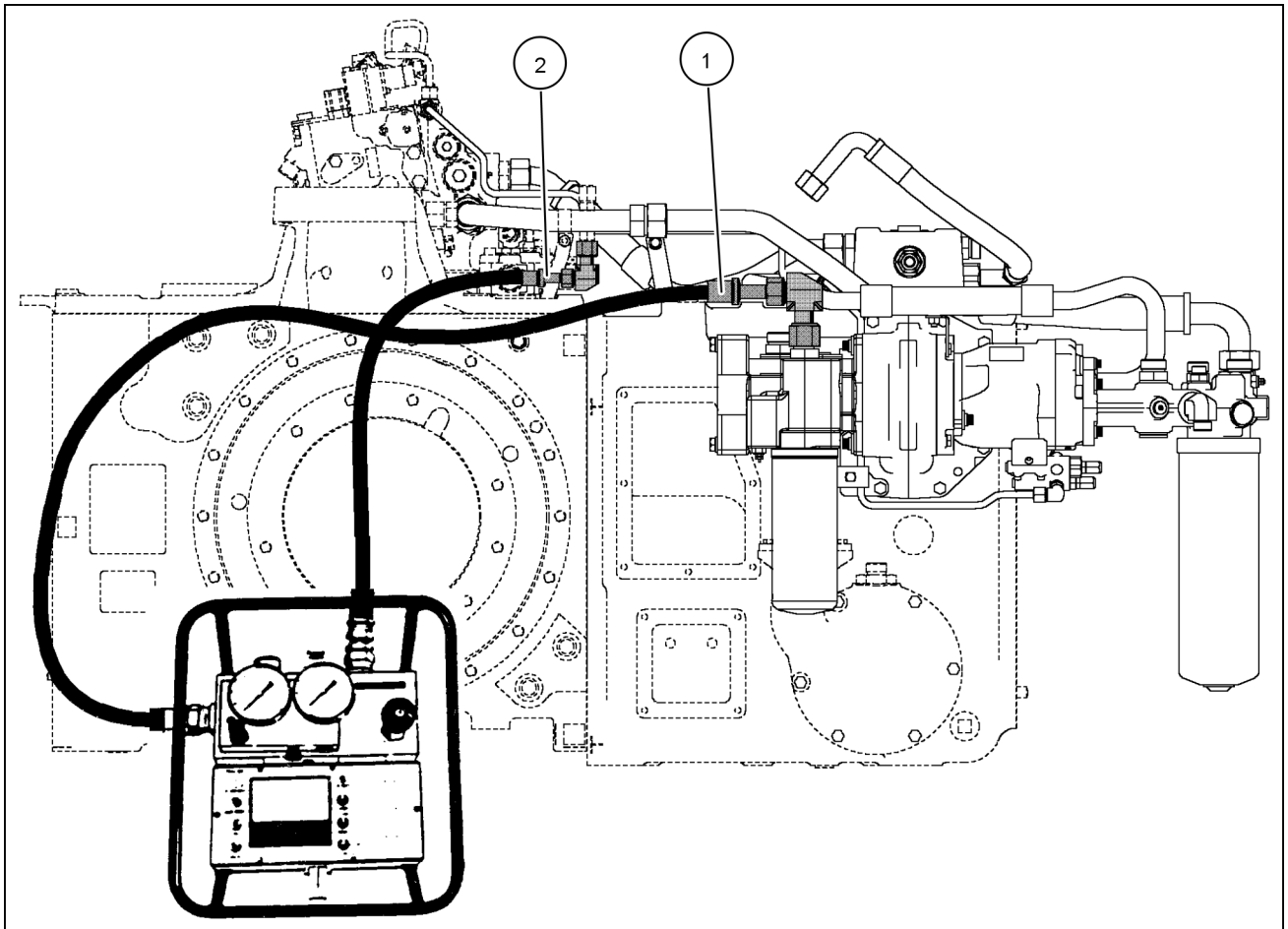
## Tandem gear pump Regulated pressure - Flow test

Magnum 225, Magnum 250, Magnum 280, Magnum 310, Magnum 335

Special Tools: Flowmeter **380001806**, 19.0 mm (0.75 in) hoses and special tool kit **380040106** are required for this test.

**NOTE:** Always perform the regulated system pressure test and adjustment procedure before this test

**NOTE:** The front section of the tandem gear pump supplies oil flow to the priority/regulator valve. The regulator section of the valve maintains the regulated circuit pressure at **22.4 - 24.5 bar (325 - 355 psi)**.



RCPH07CCH004GAE 1

1. Connect the outlet of the front section of the pump to the flowmeter inlet (1).
2. Connect the outlet of the flowmeter to the remote return manifold (2).

**NOTE:** If the tractor is equipped with power beyond, connect the outlet of flowmeter to the return port on the power beyond coupler.

3. Open the flowmeter load valve completely (turned counterclockwise) before starting tractor.

**NOTE:** Hydraulic system oil does not have to be heated for this test, but the system should be near room temperature – 21 °C (70 °F).

4. To perform this test:
  - Place the transmission control in park.
  - Start and run the engine at **2000 RPM**.
  - Adjust the flowmeter load setting to approximately **20.7 bar (300 psi)**.
  - Record the front regulated pump flow reading \_\_\_\_\_.
5. Analyze the results:
  - If the flow reading was greater than **90.8 l/min (24.0 US gpm)** at **2000 RPM** engine speed, the front regulated pump is functioning correctly.
  - If the flow reading was **81.8 - 90.8 l/min (21.6 - 24.0 US gpm)** at **2000 RPM** engine speed, the front regulated pump output is adequate, but pump efficiency is low.
  - If the flow reading was less than **81.8 l/min (21.6 US gpm)** at **2000 RPM** engine speed, replace the front regulated pump.

## Tandem gear pump Charge and lubrication - Pressure test

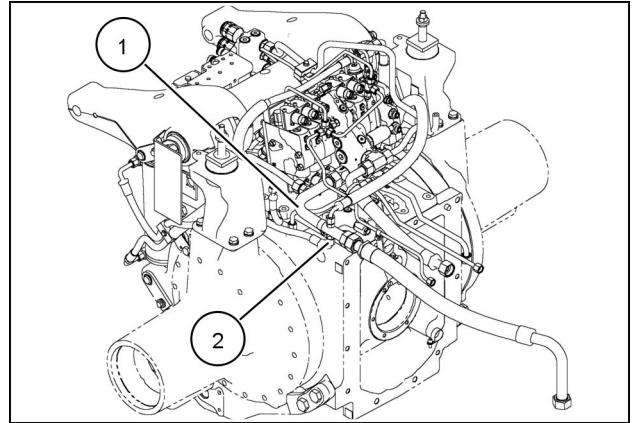
Magnum 225, Magnum 250, Magnum 280, Magnum 310, Magnum 335

Special Tools: A **7.0 bar (100 psi)** pressure gauge with an extension hose long enough to reach into cab and diagnostic fitting part number **322529A1** are required for this test.

**NOTE:** Perform this test when experiencing problems with all the pressure and flow compensating (PFC) pump circuits – all remote sections and the hitch system not operating normally. The symptoms could be low flow, aerated oil, or unusually loud pump operation possibly due to cavitation.

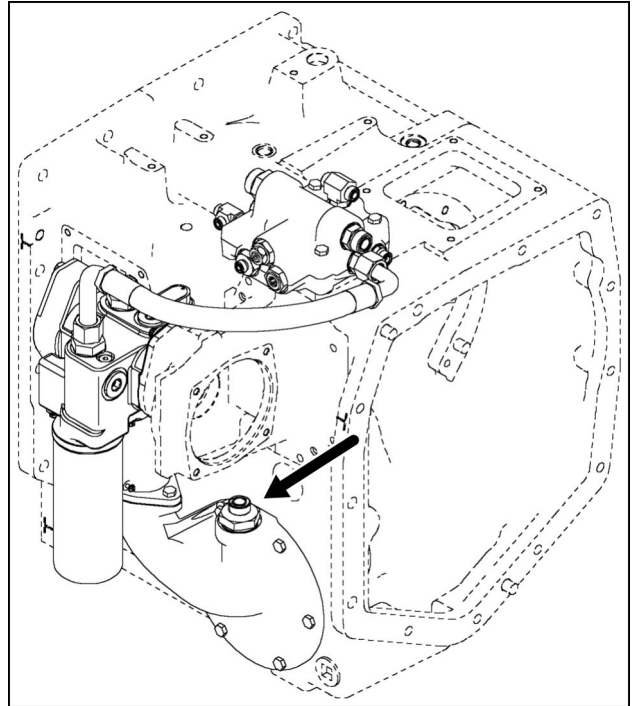
**NOTICE:** Do not attempt to use the hitch during this test.

1. To perform this test:
  - Move the right rear tire out to the end of axle, if required.
  - Locate the return flow manifold tube (1). Remove the lower cap or hose assembly (2), and install diagnostic fitting **322529A1**.
  - If a hitch return hose was disconnected, plug the open fitting to keep contaminants out.
  - Install hose/gauge assembly to the diagnostic port.
2. Place the transmission in Park. Start and run the engine at low idle.
3. Heat the transmission oil to a minimum of **49 °C (120 °F)**. Place a piece of cardboard over the oil cooler to help heat the oil.
4. Increase the engine speed to **2000 RPM**. Record the charge pressure \_\_\_\_\_
5. If the correct charge pressure displays – **3.4 bar (50 psi)** minimum at **2000 RPM** engine speed, the charge system is performing correctly.
6. If the charge pressure is less than **3.4 bar (50 psi)**, check for the following:
  - Low oil level in the transmission.
  - A broken spring or a stuck poppet in the lube relief valve.
  - Plugged inlet suction screen.
  - Air leaks on the suction side of the pump.
  - Low charge pump pressure. See **Tandem gear pump Charge and lubrication - Pressure test (A.10.A)**.
  - Low regulated pump flow. See **Tandem gear pump Regulated pressure - Pressure test (A.10.A)**.



RCPH07CCH009GAE 1

7. If the charge pressure is low, check for broken spring or damaged seat on lube relief valve cartridge. If the relief is okay and the inlet screen is not blocked, the pump must be replaced.



RCPH07CCH020BAE 2

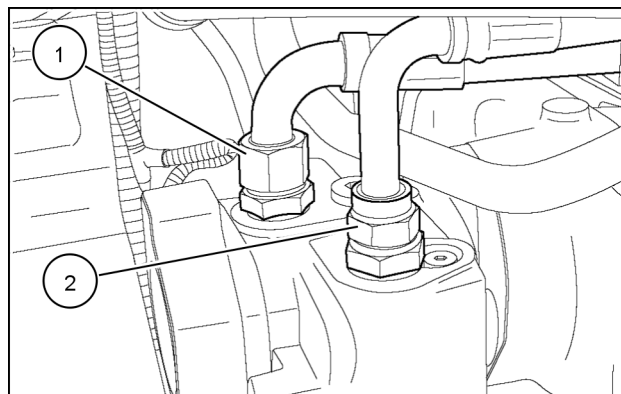
## Tandem gear pump Charge and lubrication - Remove

Magnum 225, Magnum 250, Magnum 280, Magnum 310, Magnum 335

### Prior operation:

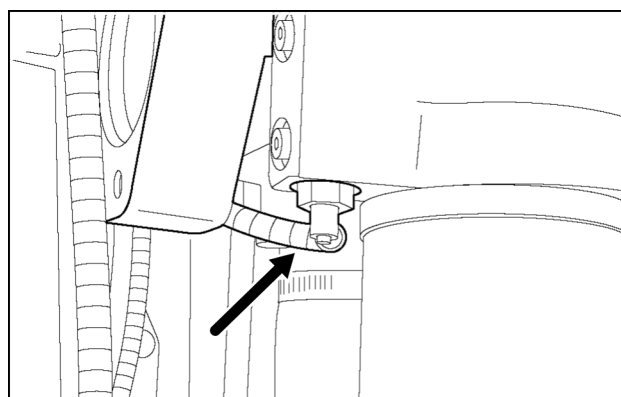
### Pressure/flow compensating (PFC) pump Dual flow - Remove (A.10.A).

1. Disconnect the charge outlet (1) and regulated circuit outlet (2) hose assemblies from tandem gear pump. Cap or plug all open ports and lines.



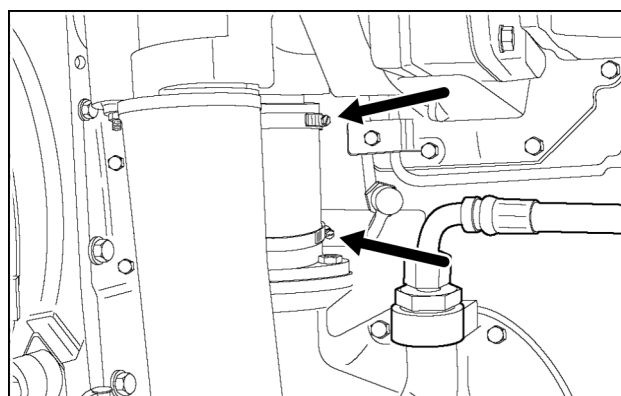
RCPH07CCH415AAB 1

2. Disconnect the pressure switch connector at the filter housing.



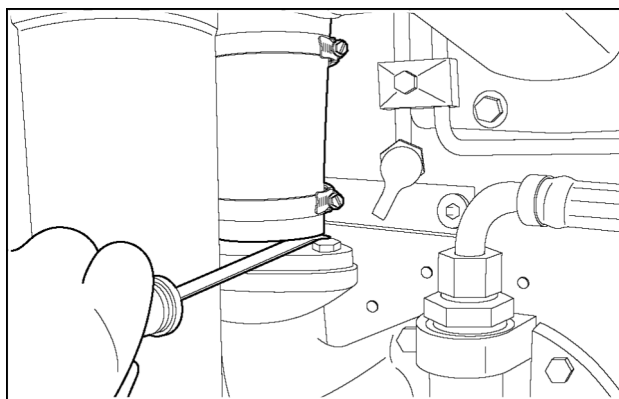
RCPH07CCH416AAB 2

3. Loosen the hose clamp at the top and bottom on the pump inlet hose.



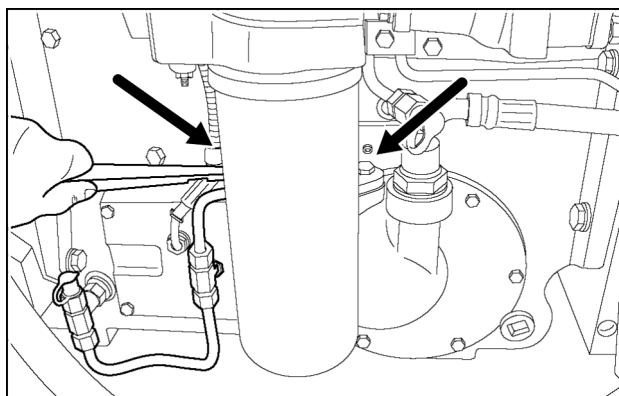
RCPH07CCH417AAB 3

4. Carefully pry up around the base of the inlet hose. Move the hose off the flange.



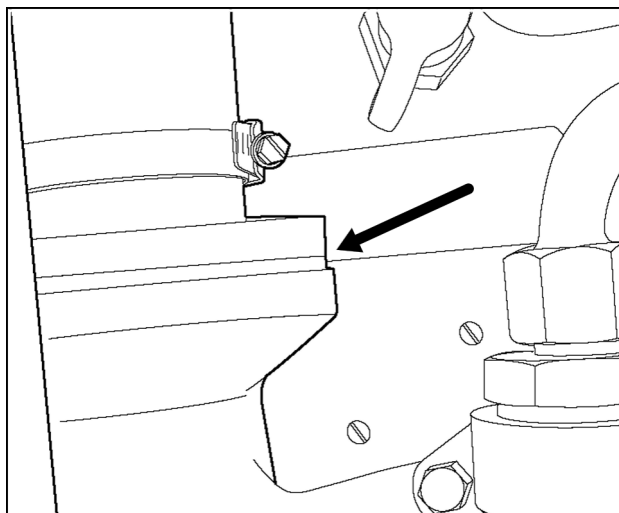
RCPH07CCH418AAB 4

5. Remove the two bolts that secure the pump inlet flange.



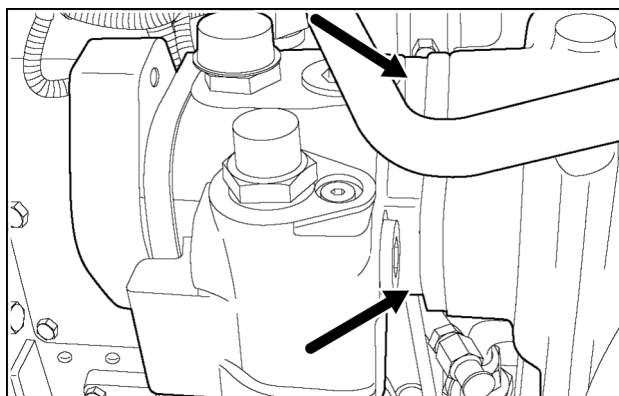
RCPH07CCH419AAB 5

6. Use a thin tipped screw driver to carefully pry the flange up into the hose. This provides clearance for the O-ring seal when the tandem gear pump assembly is removed.



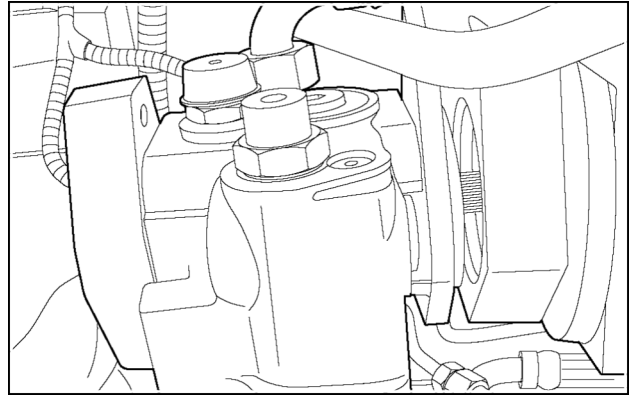
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7. Remove the two pump assembly mounting bolts.



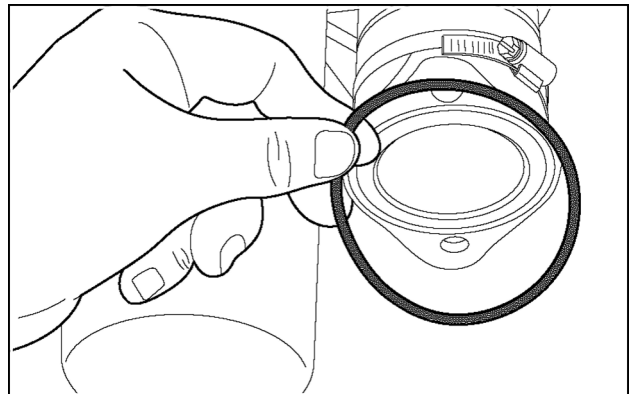
RCPH07CCH420AAB 7

8. Remove the tandem gear pump assembly.



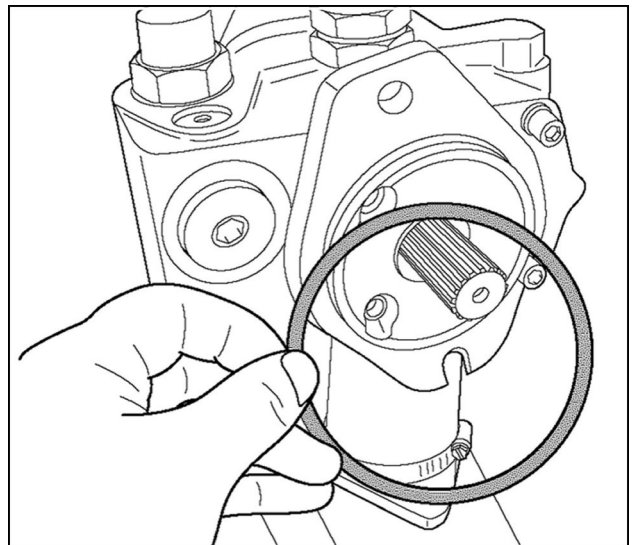
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9. Remove and discard the O-ring seal from the inlet flange.



RCPH07CCH422AAB 9

10. Remove the O-ring from pump drive end flange.



RCPH07CCH215BAB 10

**Next operation:**  
**Tandem gear pump Charge and lubrication - Install (A.10.A)**

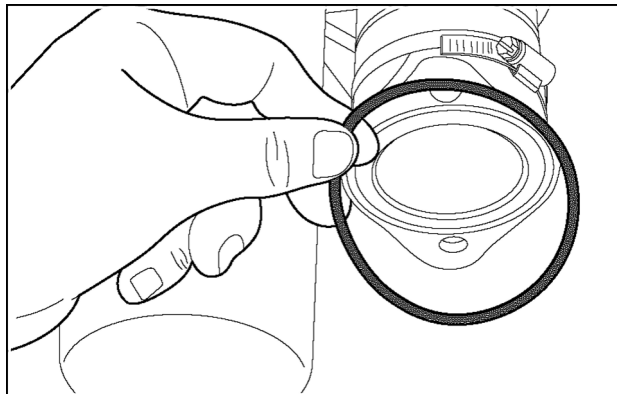
## Tandem gear pump Charge and lubrication - Install

Magnum 225, Magnum 250, Magnum 280, Magnum 310, Magnum 335

### Prior operation:

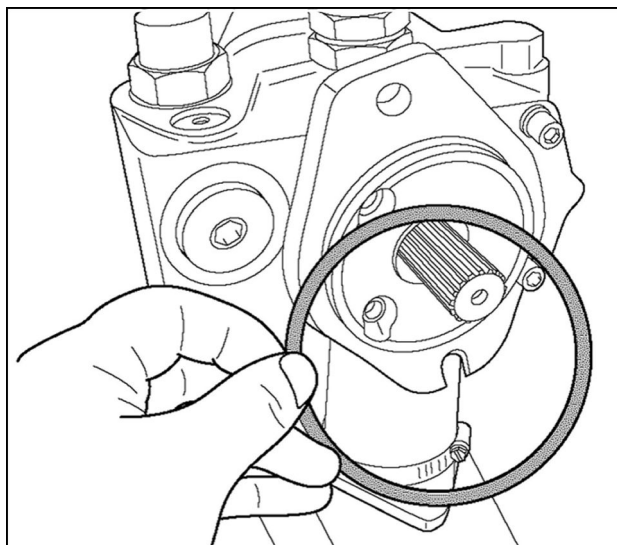
### Tandem gear pump Charge and lubrication - Remove (A.10.A)

1. Install a new O-ring on the inlet flange.



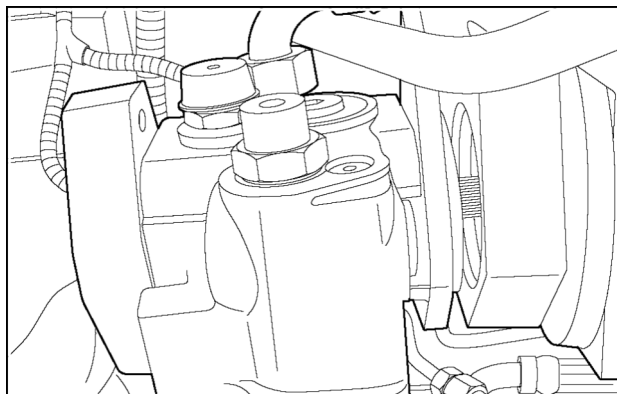
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2. Install a new O-ring on the pump drive flange.



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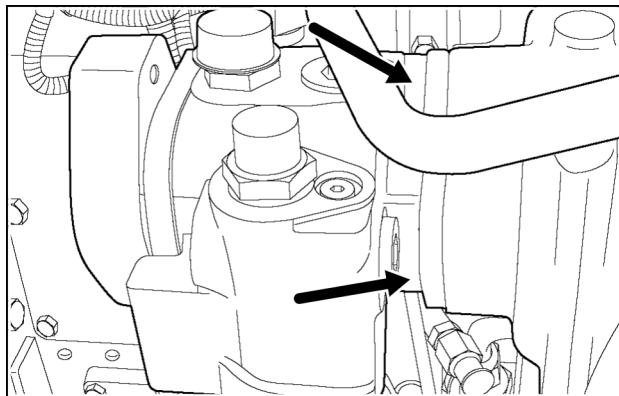
3. Install the tandem gear pump assembly onto the pump drive. Be careful to keep O-ring seals in place.



RCPH07CCH421AAB 3

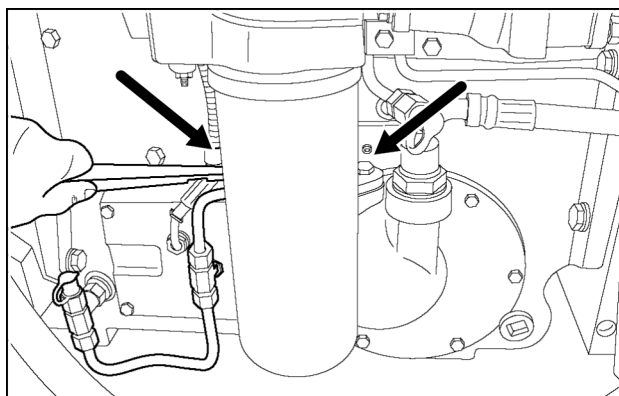


4. Install the two pump mounting bolts. Tighten to a torque of **90 - 107 Nm (60 - 79 lb ft)**.



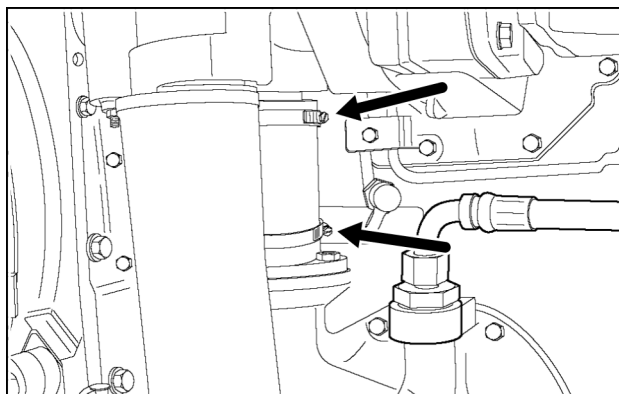
RCPH07CCH420AAB 4

5. Align the inlet flange and install the two mounting bolts. Tighten each bolt to a torque of **73 - 87 Nm (54 - 64 lb ft)**.



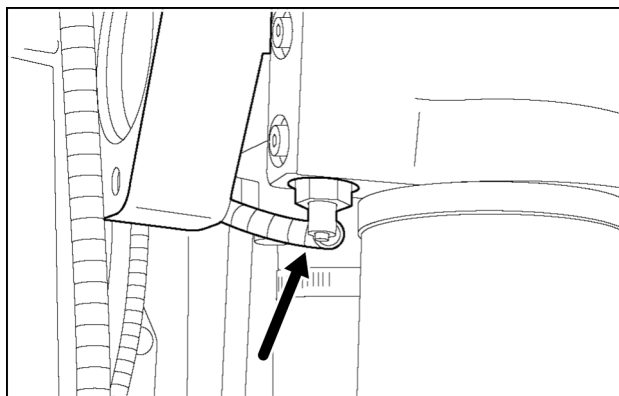
RCPH07CCH419AAB 5

6. Position the pump inlet hose down against flange. Tighten both the top and bottom hose clamp.



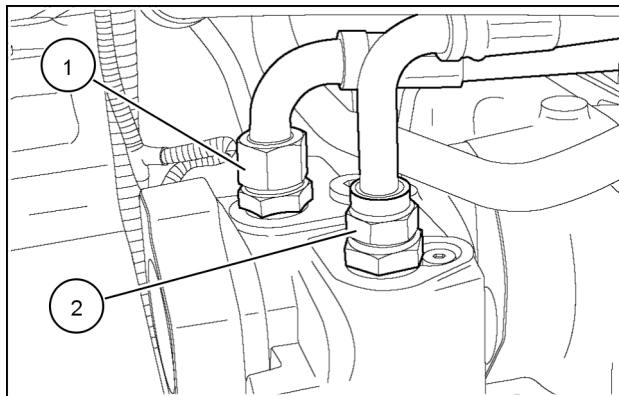
RCPH07CCH417AAB 6

7. Connect the pressure switch connector to the filter housing.



RCPH07CCH416AAB 7

8. Remove the caps and install new O-rings on both pump fittings. Connect the hose assemblies for the charge outlet (1) and the regulated circuit outlet (2) to the pump fittings. Tighten both hose connections.



RCPH07CCH415AAB 8

**Next operation:**

**Pressure/flow compensating (PFC) pump Dual flow - Install (A.10.A)**

## Pump drive - Remove

Magnum 225, Magnum 250, Magnum 280, Magnum 310, Magnum 335

### Prior operation:

Move the right hand rear wheel out on the axle, or remove the wheel. If the wheel is removed, block the front wheels and properly supporting the rear axle.

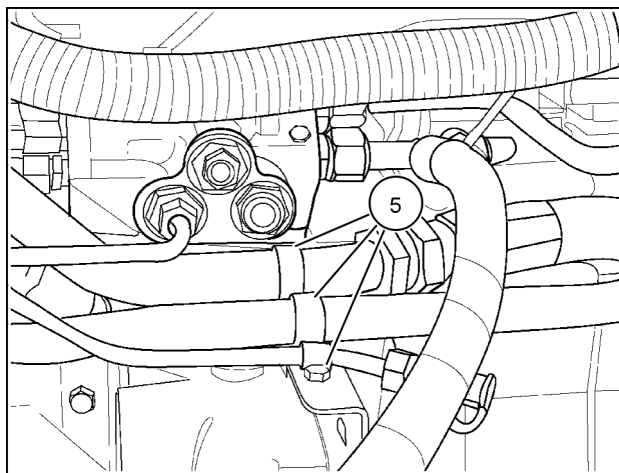
### Prior operation:

Remove the charge pump and filter. See **Tandem gear pump Charge and lubrication - Remove (A.10.A)**.

### Prior operation:

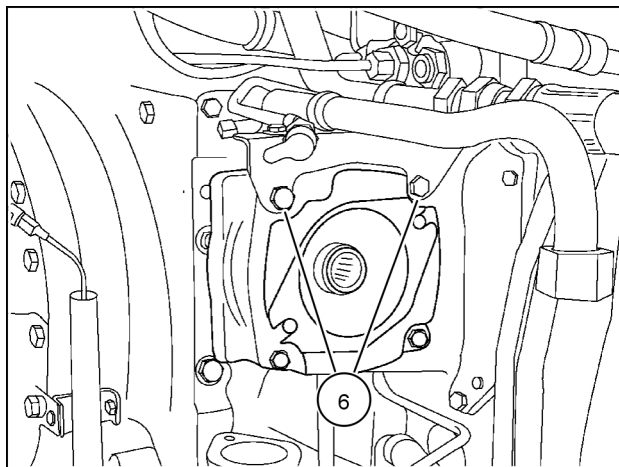
Remove the transmission filter and the pressure and flow compensating pump. See **Pressure/flow compensating (PFC) pump - Remove (A.10.A)** or **Pressure/flow compensating (PFC) pump Dual flow - Remove (A.10.A)**.

1. Use identification tags to mark the hydraulic lines.  
Cap the lines and open fittings.
2. Remove the three hydraulic line clamps (5) on top of the hydraulic line support bracket.



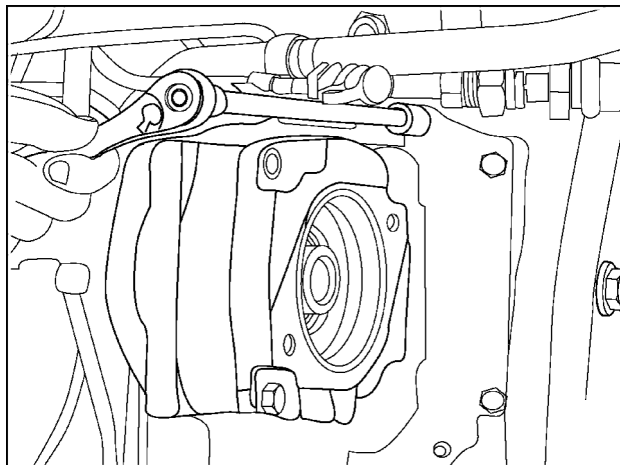
RCPH07CCH630BBC 1

3. Remove the two mounting bolts (6) from the hydraulic line support bracket.



RCPH07CCH652BBC 2

4. Remove the two longer top mounting bolts and the six shorter bolts from the pump drive mounting flange. Remove the pump drive assembly.



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**Next operation:**  
**Pump drive - Disassemble (A.10.A)**

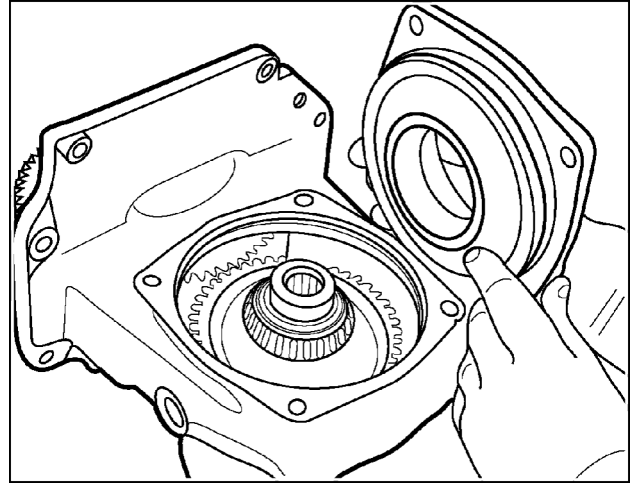
## Pump drive - Disassemble

Magnum 225, Magnum 250, Magnum 280, Magnum 310, Magnum 335

### Prior operation:

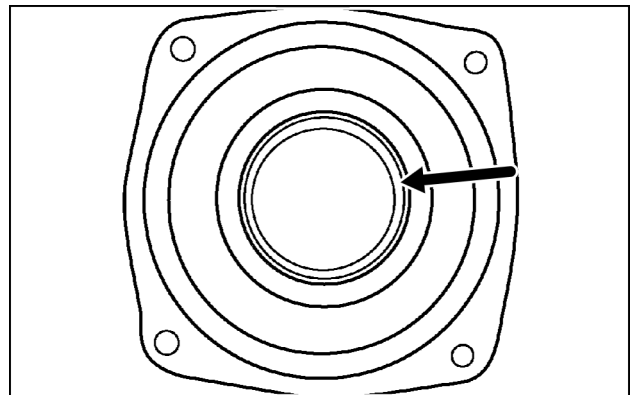
#### Pump drive - Remove (A.10.A)

1. Remove the bearing cage from the pump drive housing.



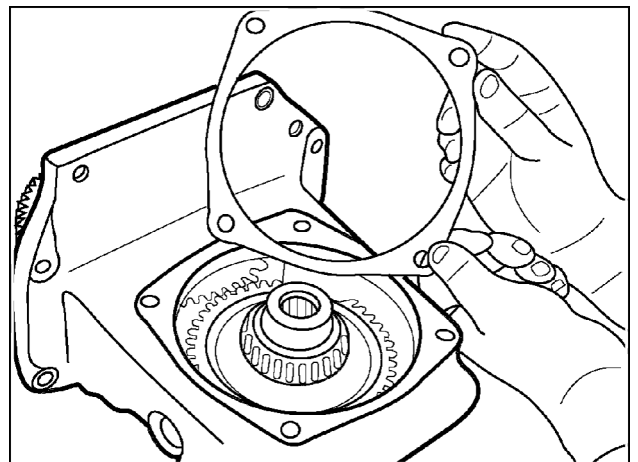
RCPH07CCH648BBC 1

2. Remove the bearing cup from the bearing cage.



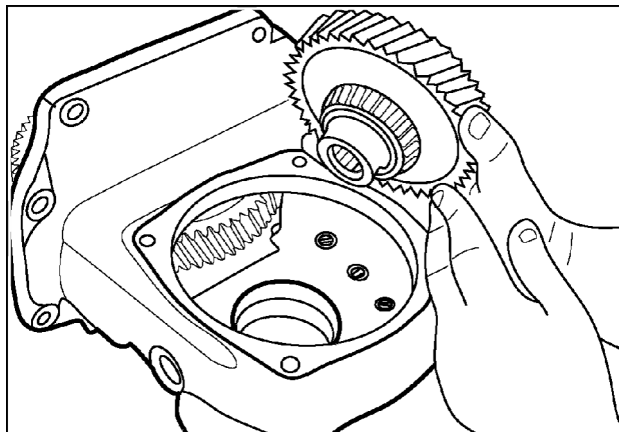
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3. Remove the shims from the pump drive housing.



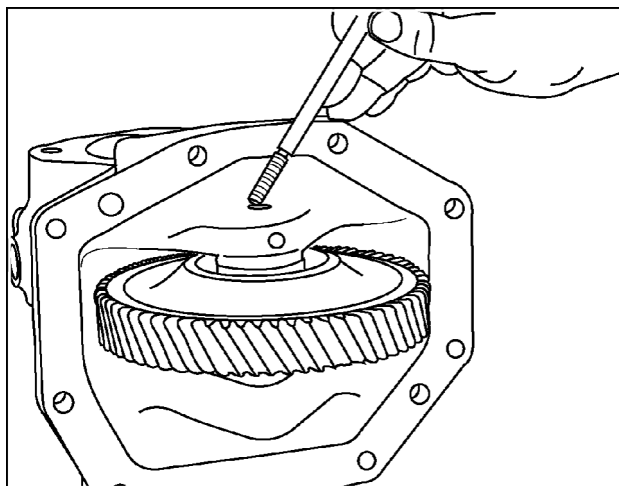
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4. Mark the gear positions and remove the drive gear assembly from the pump drive housing.



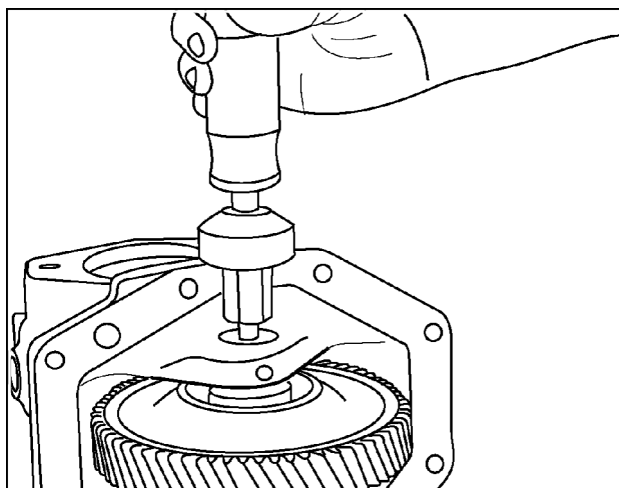
RCPH07CCH634ABC 4

5. Remove the idler gear bolt and washer from the pump drive housing.



RCPH07CCH650BBC 5

6. Install a slide hammer on the idler gear shaft.



RCPH07CCH651BBC 6



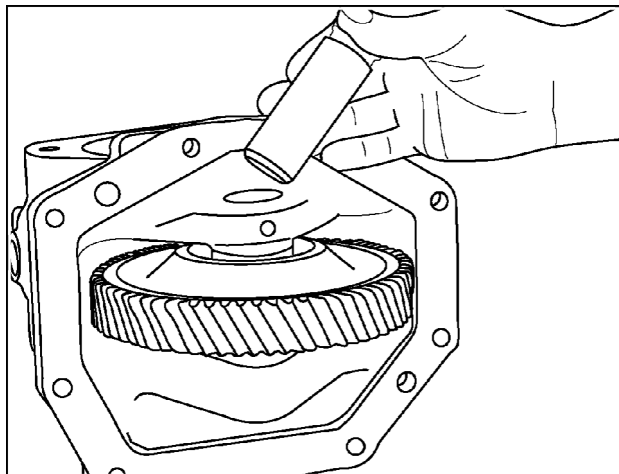
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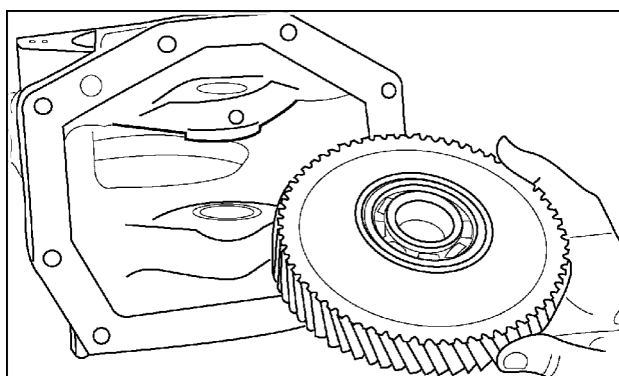
**Thank you so much for reading**

7. Remove the idler gear assembly from the pump drive housing.



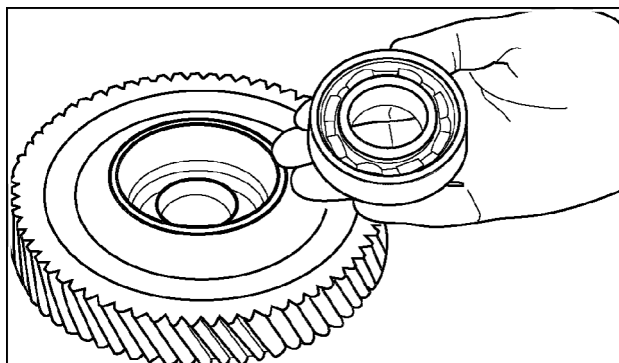
RCPH07CCH649BBC 7

8. Remove the idler gear assembly from the pump drive housing.



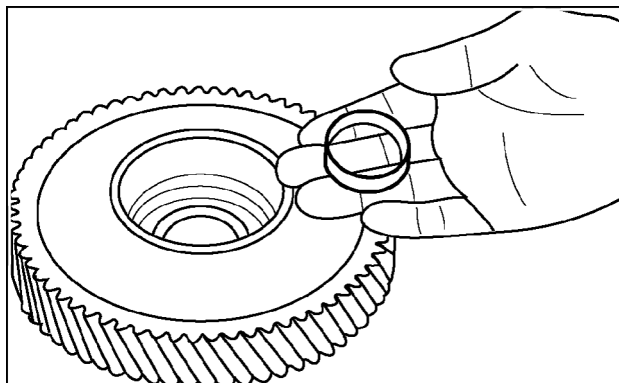
RCPH07CCH645ABC 8

9. Drive one of the bearings from the idler gear. Discard the bearing.



RCPH07CCH644ABC 9

10. Remove the spacer from the idler gear.



RCPH07CCH643ABC 10



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