REMOVAL AND INSTALLATION OF ENGINE AND RADIATOR

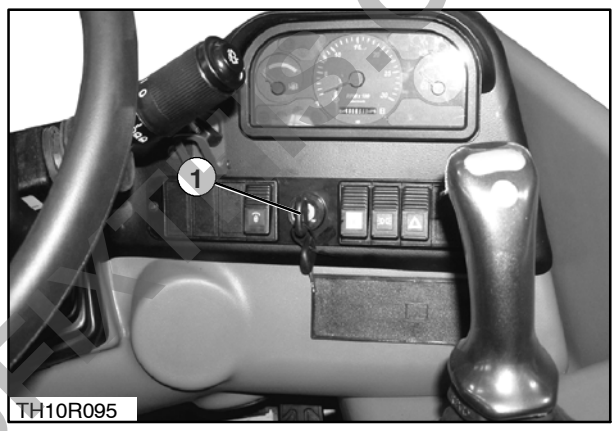
Preliminary operations

- Position the machine on a flat and compact surface.
- Apply the parking brake and chock the wheels with wedges.
- Use only the recommended tools.
- Do not insert hands or extraneous components between parts.
- Disconnect the batteries and remove them.
- Remove the engine hood and cowling.
- Disconnect the propeller shafts.

⚠ CAUTION ⚠

Do not allow unauthorized persons to carry out repair or maintenance work on this machine. Be certain to read the Use and Maintenance Manual with care before starting, operating, servicing, refuelling or repairing this machine.

Turn the **STARTER SWITCH** (1) to the **OFF** position and display the "**DO NOT START**" warning card.



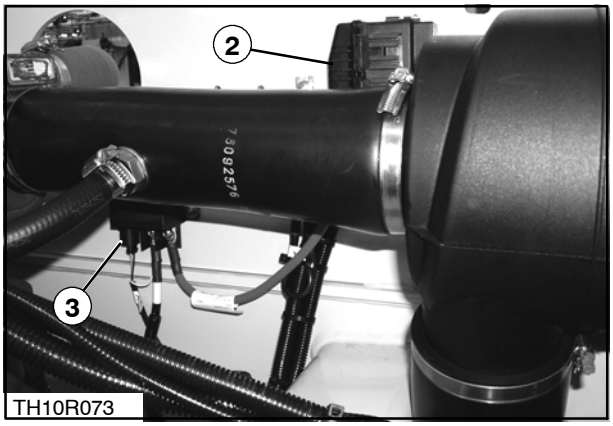
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⚠ IMPORTANT ⚠

From this point onwards, mark all electrical connections and hydraulic pipes to facilitate the process of RESTORING CONNECTIONS DURING REFITMENT.

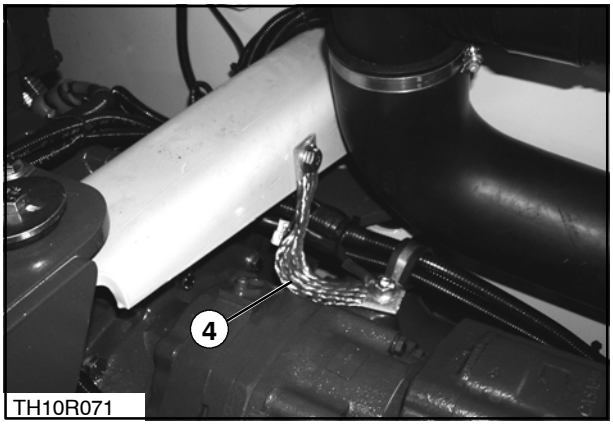
Removal of electrical part

Remove the fuse box (2) and cold starting device (3) from inside the engine compartment.



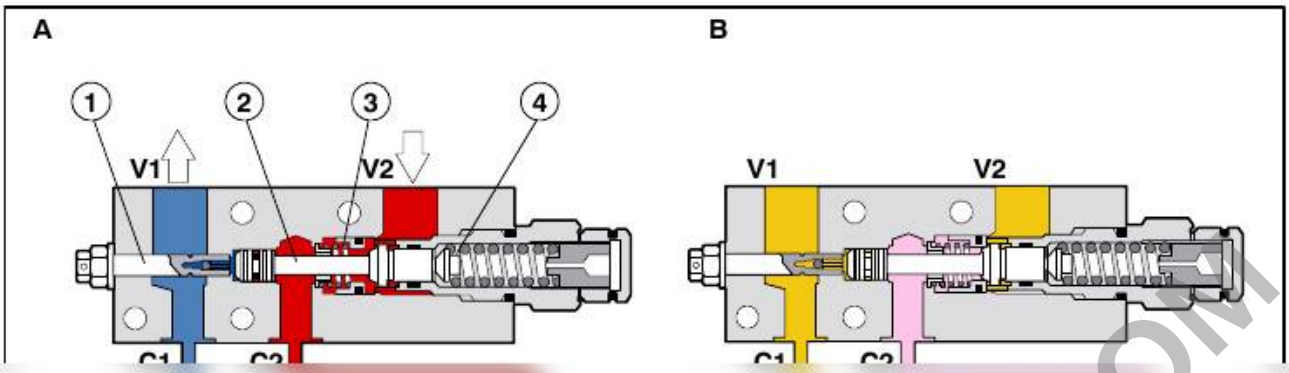
8

Detach the earth strap (4).



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Workshop manual
LM732
TELESCOPIC HANDLER

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SAFETY RULES

PAY ATTENTION TO THIS SYMBOL



This warning symbol accompanies important messages involving your safety. Read the safety instructions carefully, and follow the precautions recommended in order to avoid potential risks and safeguard your health and your safety. You will find this symbol in the text of this Manual with the following key words:



WARNING *- Cautions intended to avoid unsuitable repair operations with potential consequences for the safety of the person performing the repair.*

DANGER *- Warnings specifically indicating potential dangers for the safety of the operator or of other persons directly or indirectly involved.*

AVOID ACCIDENTS

Most accidents and injuries that occur in and around workshops are caused by failure to follow some simple and fundamental rule regarding precautionary procedures and safety. Accordingly, IN THE MAJORITY OF CASES, ACCIDENTS CAN BE AVOIDED: it is sufficient simply to foresee the possible causes, and exercise the necessary caution and prudence.

Whatever the type of equipment, and however well designed and built, it is not possible to eliminate the risk of accident completely.

A careful and prudent mechanic is the best insurance against any accident.

The complete observance of this simple rule will of itself be sufficient in avoiding many serious accidents.

DANGER. Never attempt to clean, lubricate or maintain a machine with the engine running.

SAFETY RULES

GENERAL

◊ Follow the specified maintenance and repair procedures carefully.

◊ Do not wear rings, wristwatches, jewellery, and loose or hanging garments, such as: ties, torn clothing, scarves, unbuttoned or unzipped jackets that could become caught and entangled in moving parts. Wear proper safety clothing and protective gear, for example: non-slip footwear, gloves, safety glasses or goggles, hard hats, etc.

◊ Do not perform any service operation on the machine with persons occupying the driver seat, unless these are authorized operators assisting with the work in hand.

◊ Never attempt to operate the machine or its attachments from any position other than seated in the driving position.

◊ Never perform any operation on the machine with the engine running, unless indicated in the manual.

◊ Shut off the engine and make certain that there is no pressure in the hydraulic circuits before removing caps, covers, valves etc.

◊ All service operations must be performed with the utmost care and attention.

◊ Step-ladders and access platforms used in the workshop or in the field must be constructed and maintained in accordance with accident prevention regulations.

◊ Disconnect the batteries and tag all controls to signal that servicing is in progress. Immobilize the machine and any attachment that must be lifted.

◊ Do not check or refill fuel tanks, or top up batteries, or use starting fluid when smoking or near a naked flame, since the fluids in question are flammable.

◊ Brakes are inactive when released manually for servicing purposes: in this situation, keep the machine under control using wheel chocks or similar devices.

◊ The gun of the filler hose must always remain in contact with the tank filler pipe when refuelling. Maintain this contact throughout the refuelling operation so as to avoid any possibility of sparks being generated with the build-up of static electricity.

◊ When towing, use only the designated hitch points. Exercise care when coupling trailed loads: Make sure pins and/or locks are secure before pulling. Stay clear of drawbars, cables or chains under load.

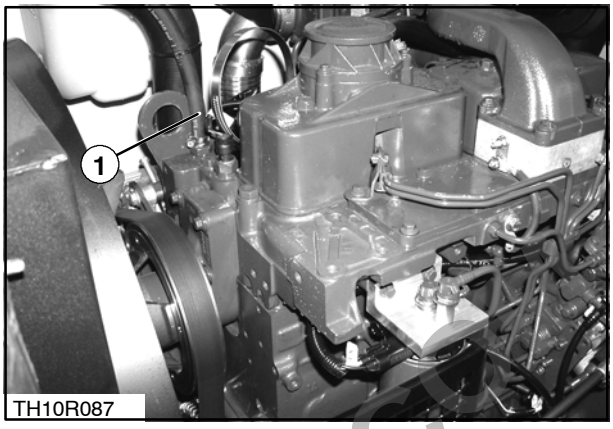
◊ To move a machine when broken down, use a trailer or a low-loader, if available.

◊ When loading/unloading a machine from a transport vehicle, select a level surface affording firm support to the wheels of the truck or trailer. Anchor the machine securely to the bed of the truck or trailer and lock the wheels as specified by the carrier.

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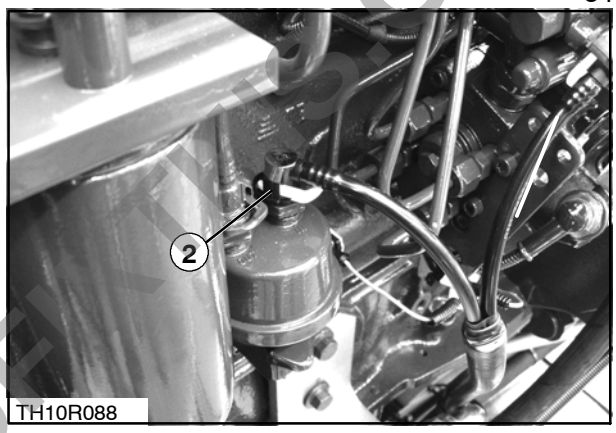
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Disconnect the engine breather hose (1).



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Disconnect the fuel feed pipeline (2).



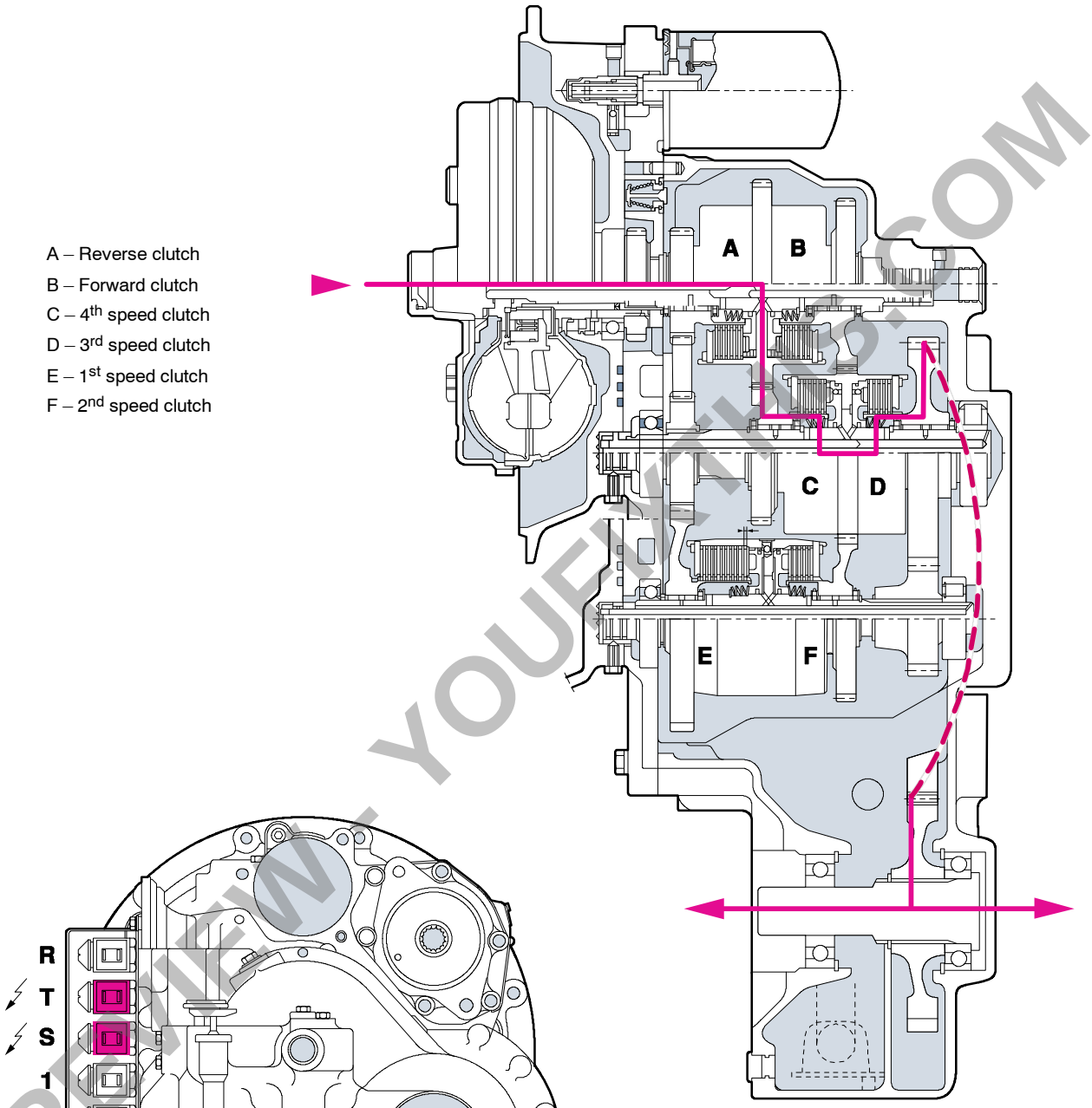
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OPERATION OF TRANSMISSION IN FOURTH GEAR FORWARD*

A – Reverse clutch
B – Forward clutch
C – 4th speed clutch
D – 3rd speed clutch
E – 1st speed clutch
F – 2nd speed clutch



Solenoid valves energized: T and S

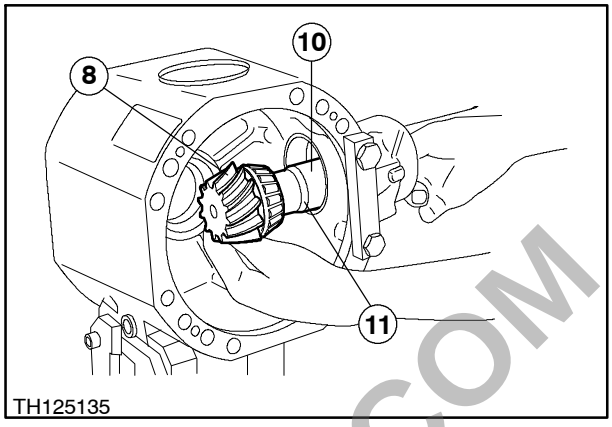
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* Unless specified otherwise for foreign countries.

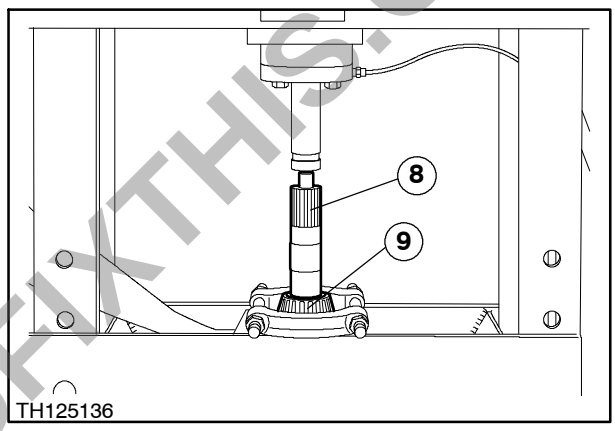
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Remove the pinion (8), shims (11) and spacer (10).



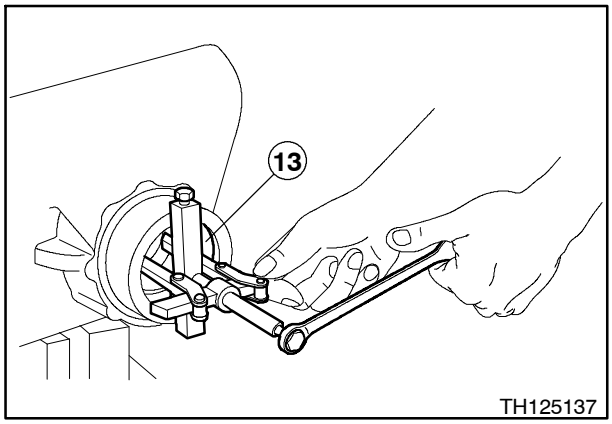
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Using a puller and a press, remove the inner bearing (9) from the pinion (8).



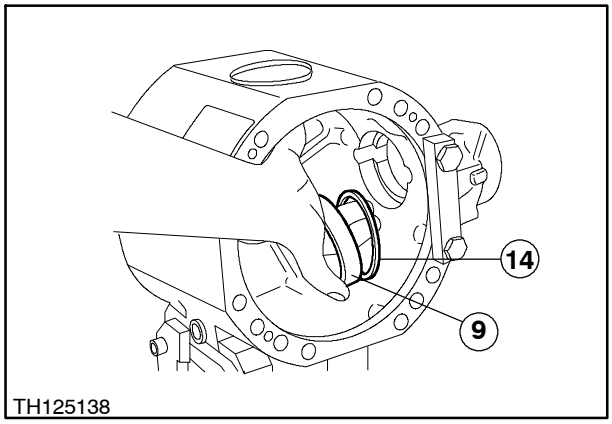
157

Remove the outer bearing (13) thrust block.



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Insert a drift in the appropriate holes and remove the inner bearing (9) thrust block as well as the shim washers (14).



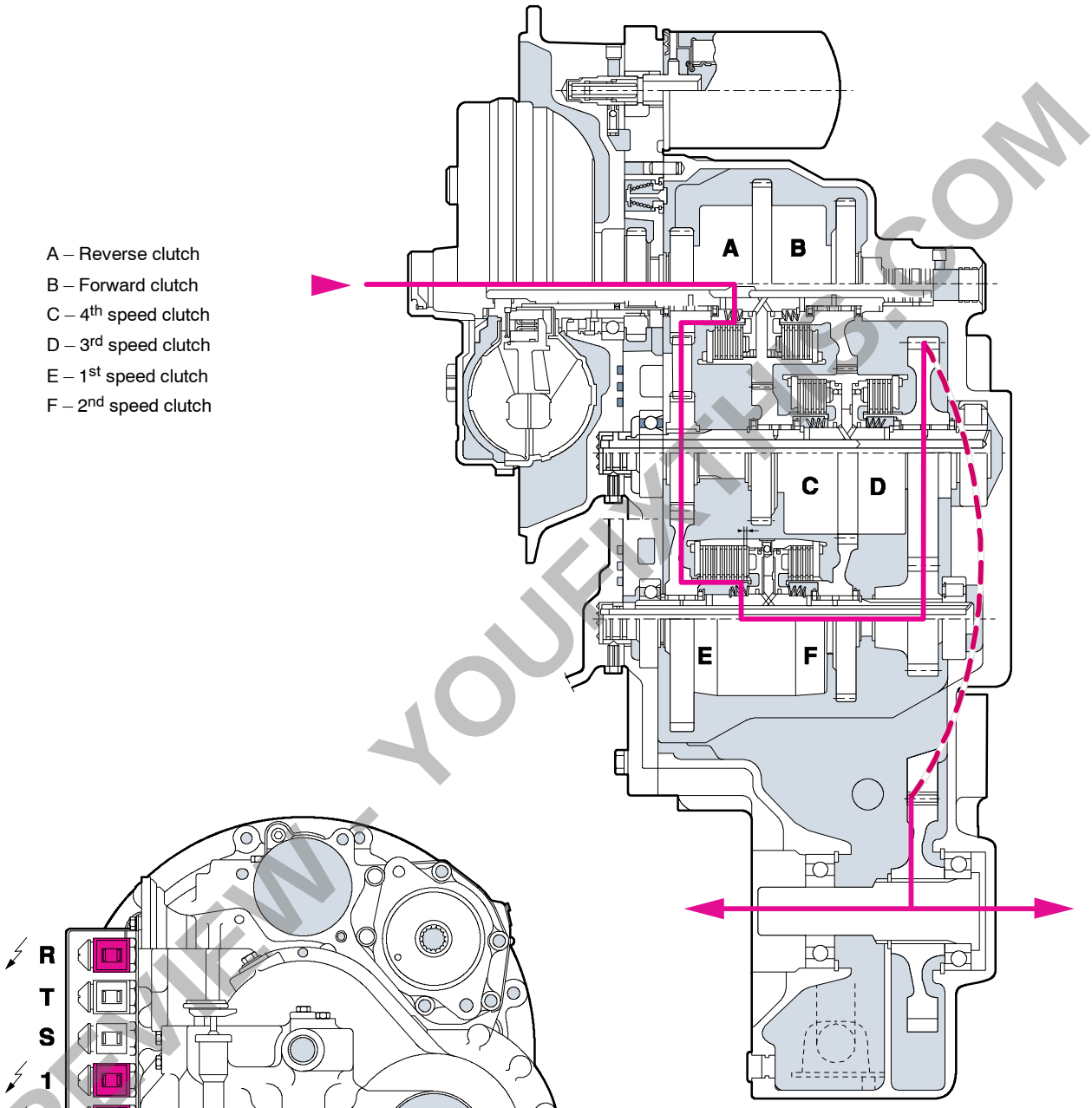
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OPERATION OF TRANSMISSION IN FIRST GEAR REVERSE

A – Reverse clutch
B – Forward clutch
C – 4th speed clutch
D – 3rd speed clutch
E – 1st speed clutch
F – 2nd speed clutch



Solenoid valves energized: R, 1 and 2

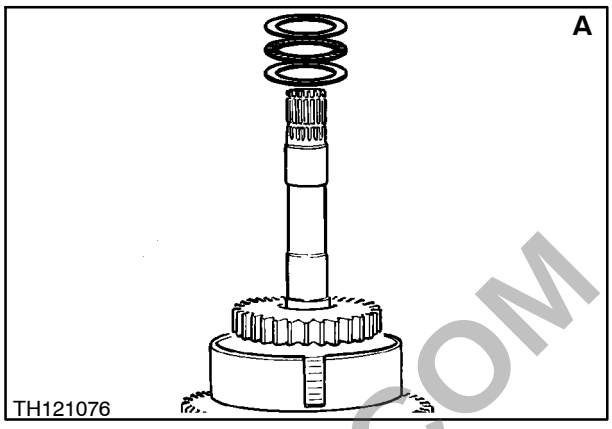
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Disassembly of clutches A and B

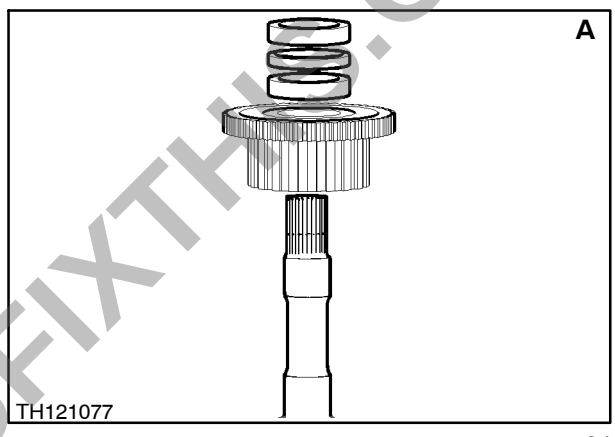
Disassembly of clutch A (Reverse)

Remove the outer thrust washer, thrust bearing and inner thrust washer.



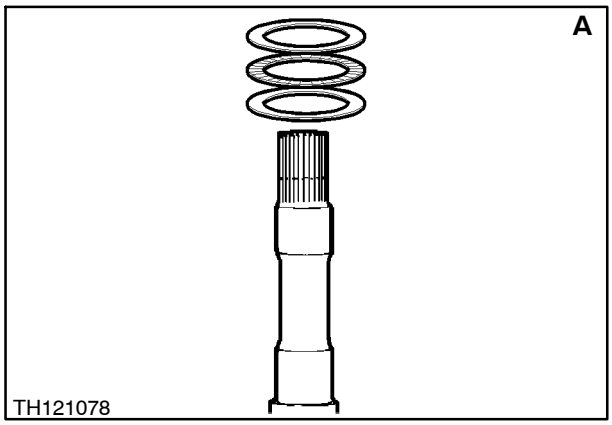
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Remove the clutch hub and gear assembly and push out the 2 bearings and spacer.



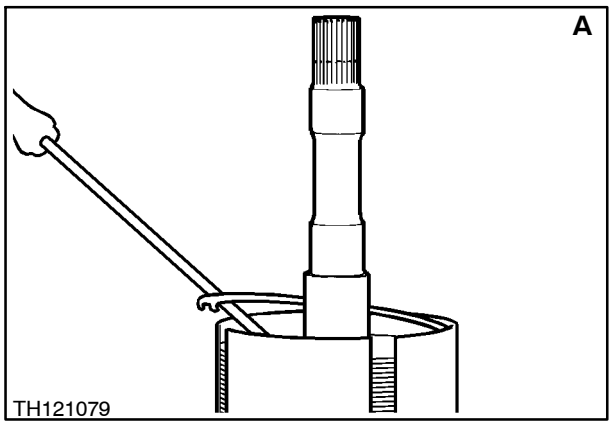
81

Remove the outer thrust washer, thrust bearing and inner thrust washer.



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Remove the snap ring retaining the end plate.

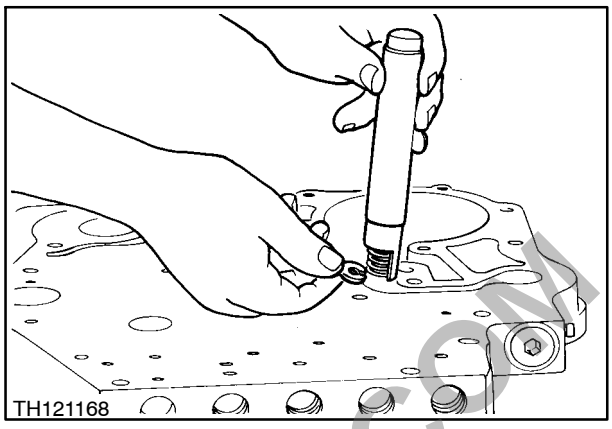


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Compress the safety valve using a suitable hand tool and remove the retaining washer. Remove the spring, and from the other side of the manifold plate, remove the poppet valve.



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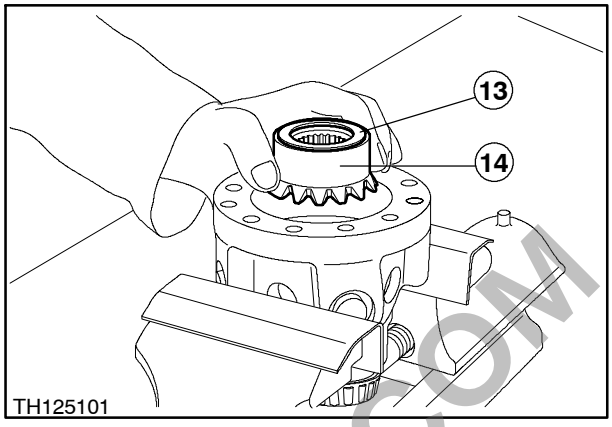
Assembly of manifold plate

To assemble, repeat the disassembly steps in reverse order.

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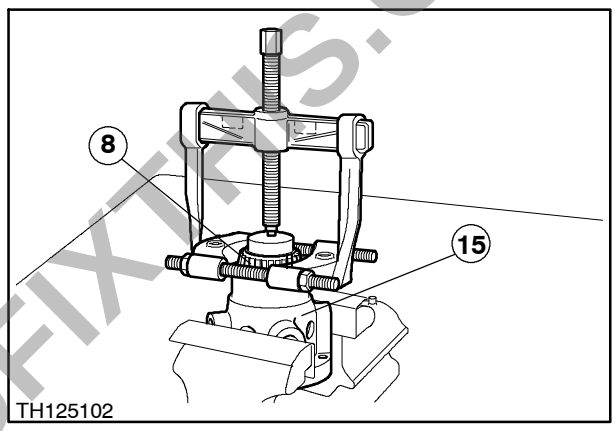
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Remove the shim washer (13) and the planetary gear (14).



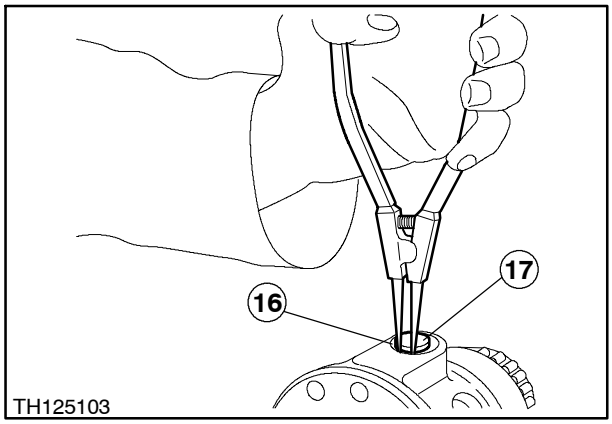
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If the bearing needs replacing, extract the bearing (8) from the differential carrier (15).



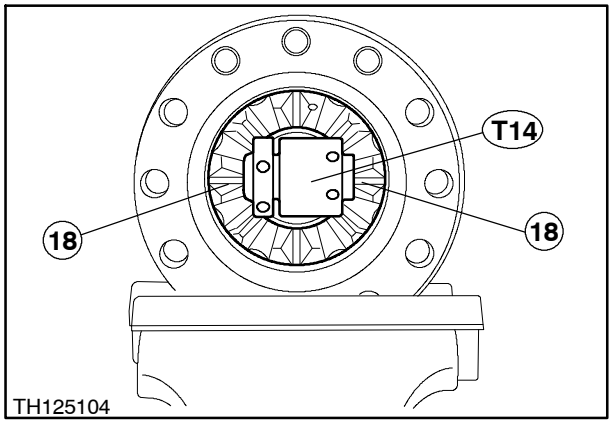
115

Remove the snap rings (16) from the two pins (17) of the planetary gears (18).



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Insert tool (T14) P.N. 380000587 between the planetary gears (18).



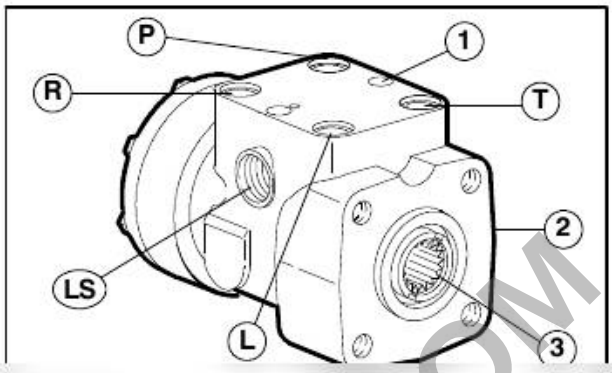
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POWER STEERING (OSPQ)

The main components of the OSPQ are the control valve and the rotor assembly. The control valve is a revolving valve that modifies the alignment of the oil passages as it revolves, thereby activating the steering cylinders. The rotor assembly is under the control valve.

Its normal function is to work as a hydraulic motor to perform metering operations. In an emergency, without fluid power, it is only possible to perform short steering manoeuvres while the vehicle continues



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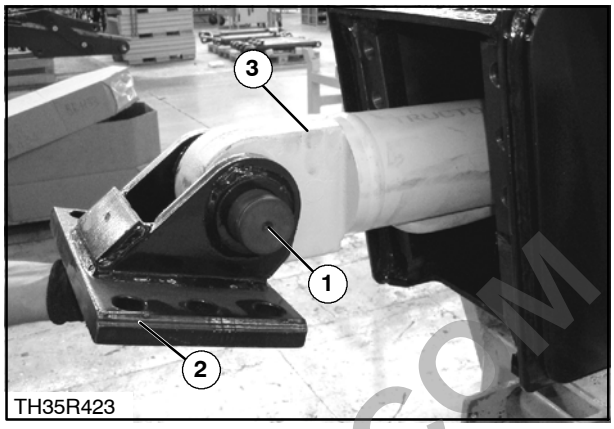
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- Use a striker to extract the locking pin (1) from the support (2) securing the the telescopic cylinder (3).

WARNING

It is dangerous to hit hardened steel parts using tools other than a soft iron or non-ferrous metal hammer. When detaching or reattaching these parts always wear proper safety equipment, including gloves and safety glasses with side shields, in order to reduce the risk of injury.



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- Remove the twin hoses for the auxiliary function and TILT cylinder from their respective channels.

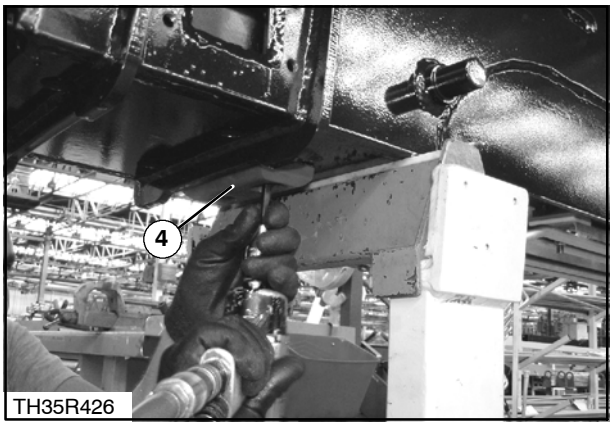


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- Remove the lower stop pad (4) from the 1*st* boom section.

WARNING

Handle all components with great care. Never place hands or fingers between parts. Wear approved protective clothing such as glasses, gloves and safety shoes.



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Calibration mode

WARNING

The SAR Calibration should only be performed by authorized technician after technical instruction.

WARNING

During Calibration the SAR's safety functions can be disabled to allow the calibration. Pay extreme caution in use of the machine to prevent accidents.

The calibration is necessary for the system to compute the LMI conditions (regular, pre-alarm, block).

The complete calibration procedure provides first the recording of 4 points of the overturning moment without load applied and 1 point of the overturning moment with load applied.

To enter the Calibration Mode follow the procedure described afterwards (Enter to Calibration Mode).

If an alarm is recorded during calibration, the system stop and exits the mode.

Operation allowed in calibration:

- With machine calibration not performed
  - To perform machine calibration (SAR Machine Calibration).
- With machine calibration performed:
  - To delete Calibration (Reset Calibration);
  - To correct Machine Calibration (Correction of Machine Calibration).

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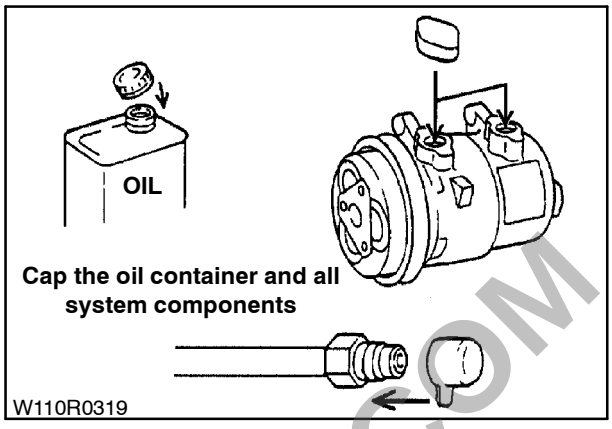
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Compressor oil

Use compressor oil intended specifically for use in conjunction with R134a.
Compressor oil for R134a systems has -a high capacity for absorption of moisture from the air.

WARNING

When servicing the system, always cap the oil container when not in use, and keep single air-conditioning components similarly capped or plugged.
Do not mix compressor oil with other types of oil.

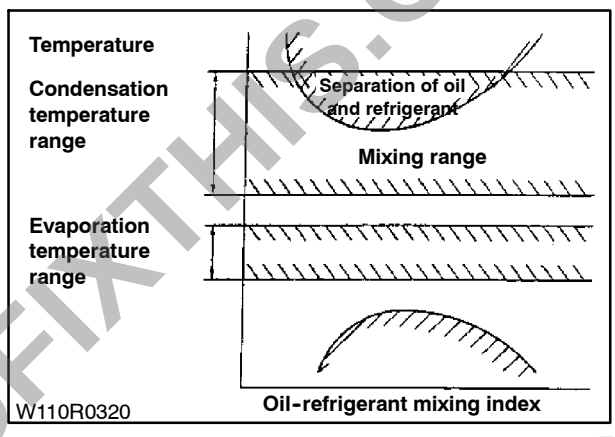


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The oil should be replaced or topped up in the following situations:

- when there are leaks of refrigerant or oil in the system;
- when refrigerant drains suddenly from the system;
- when system components are replaced.

NOTA: *Renew the O-ring in the oil filler cap.*



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Checking the refrigerant charge

As illustrated in the figure alongside, compressor oil for R134a systems is not miscible with the refrigerant (R134a) at certain temperatures. At these temperatures, the refrigerant can appear cloudy when examined with a magnifying glass, leading to the mistaken impression that the charge may be insufficient.

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