

AVOID ACCIDENTS

Most accidents and injuries occurring in industry, on the farm, at home or on the road, are caused by the failure of some individual to follow simple and fundamental safety rules or precautions. For this reason, MOST ACCIDENTS CAN BE PREVENTED by recognizing the real cause and taking the necessary precautions before

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REMOVAL AND INSTALLATION OF THE MOTOR AND THE RADIATOR

Preliminary operations

- Position the machine on a flat and compact surface.
- Engage the parking brake and block the wheels with a wedge.
- Use only the recommended tools.
- Do not insert your hands or unnecessary components between the parts.
- Disconnect the batteries.
- Remove the engine hood and under-hood.
- Disconnect the propeller shafts.

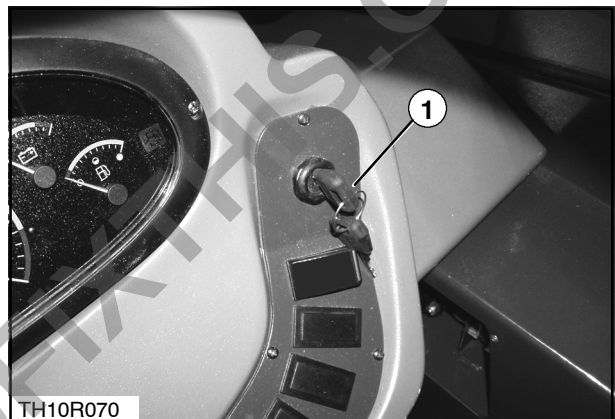


WARNING



Do not allow unauthorized persons to repair or maintain this machine. Read carefully the Operation and Manual prior to starting, maintaining or refueling and repairing the machine.

Turn the **STARTER SWITCH** (1) **OFF** and place the **"DO NOT START"** Tag.



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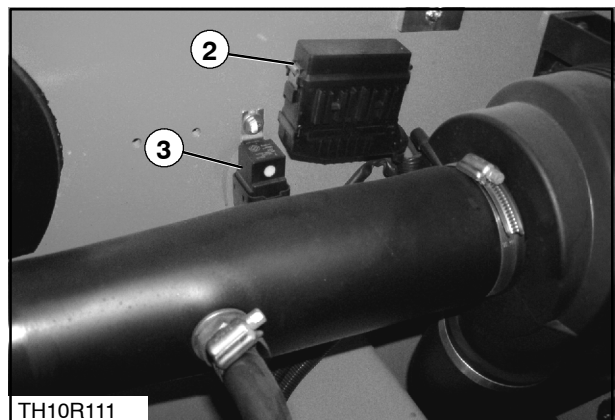
IMPORTANT



From this phase onward, identify with tags all electrical connections and hydraulic pipes to facilitate the CONNECTIONS DURING THE INSTALLATION PHASE.

Removal part electrical

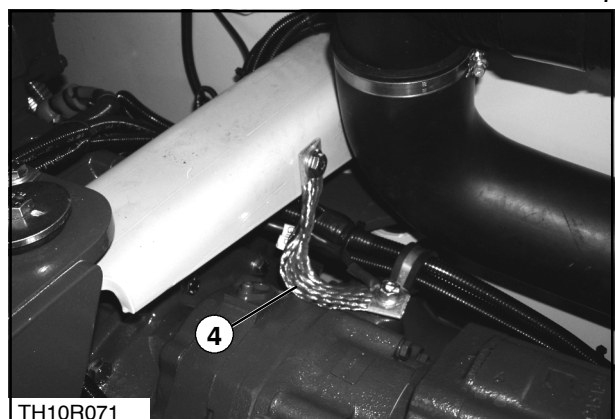
Remove, inside the engine compartment, fuse box (2) and cold starting device (3).



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Disconnect ground braid (4).



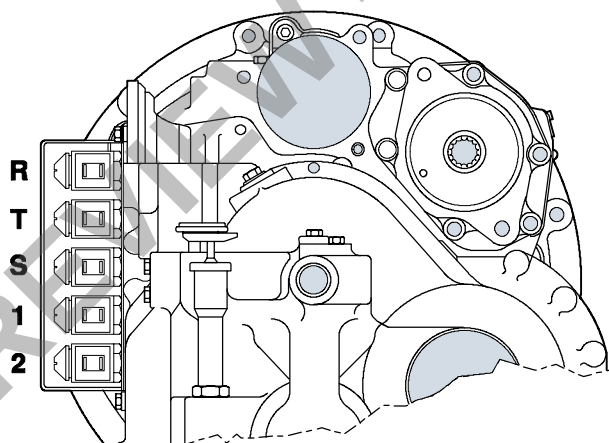
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TRANSMISSION AND HYDRAULIC OIL CIRCUIT DIAGRAMS

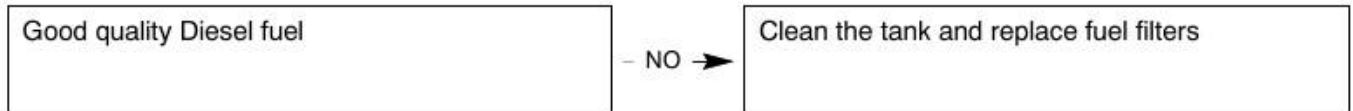
NEUTRAL GEAR ENGAGED

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



Operating solenoids: none

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TIGHTENING TORQUES

PART	TORQUE	
	Nm	(kgm)
Securing screws, cylinder head 45 th phase screws M10x1 75-78	50-55	(5-5.5)

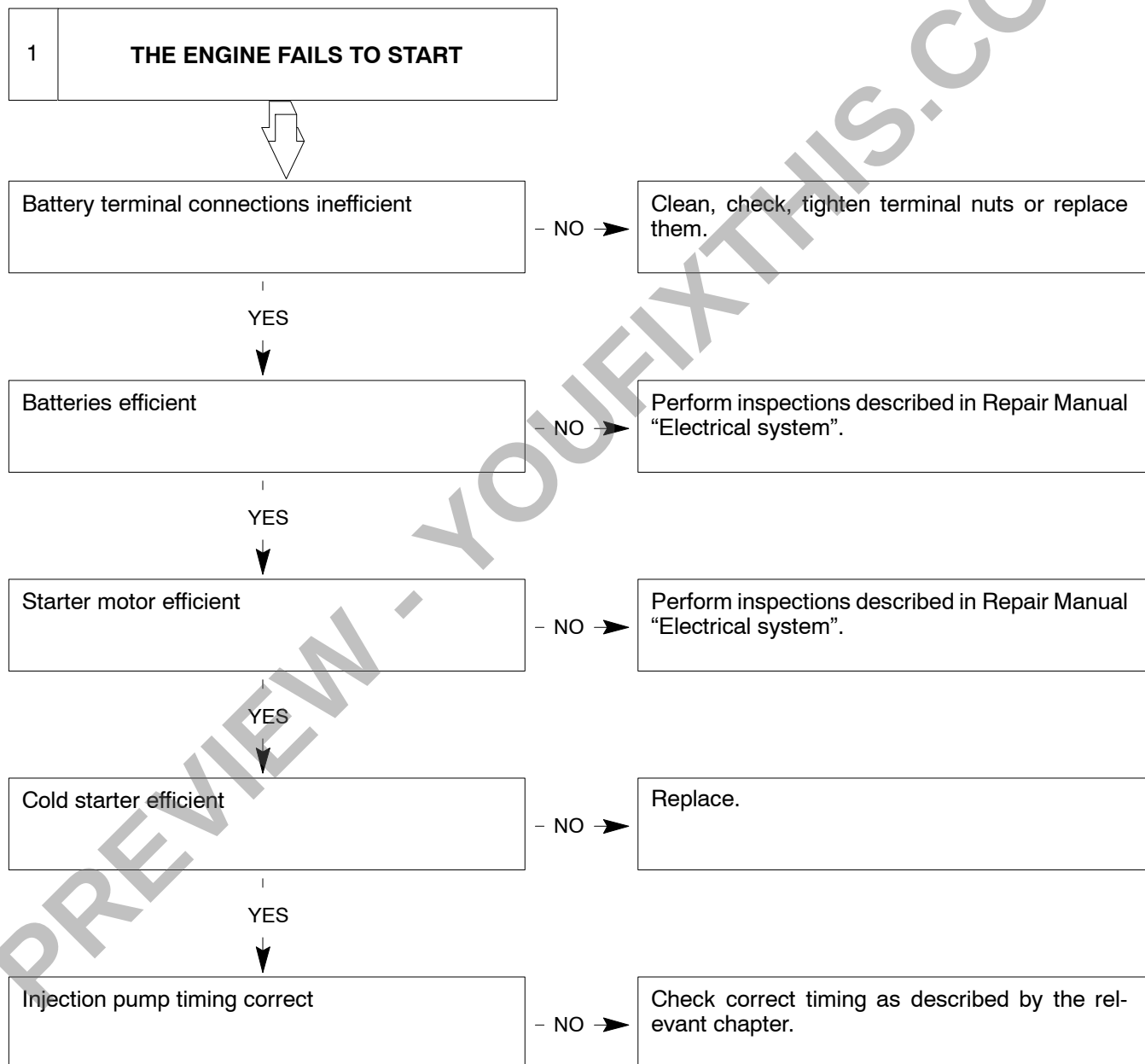
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TROUBLESHOOTING

Main operational engine troubles:

- 1 - The engine fails to start.
- 2 - The engine overheats.
- 3 - The engine lacks power and operates irregularly.
- 4 - The engine smokes black or dark grey.
- 5 - The engines smokes grey (tending to white).

- 6 - The engine smokes light blue.
- 7 - The engine has abnormal knocks.
- 8 - The engine dies.
- 9 - The engine over-speeds.
- 10 - Excessive or insufficient oil pressure.
- 11 - Excessive fuel consumption.
- 12 - The engine fails to stop.



(cont.ed)

Workshop Manual

M427/M428/M459

TELEHANDLERS

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M459

ENGINE	88 kw (120 HP)
Low idle	1000-1050 rpm
Max idle	2275-2325 rpm
Transmission stall	1930-2070 rpm
Implement stall	2140-2240 rpm
Steering stall (Min)	>600 rpm
Total stall	1460-1660 rpm

PRESSURE psi (bar)

Implement (Max)	3336-3553 (230-245)	On main valve - valve release bucket cylinder
Steering (Max)	2393-2538 (165-175)	On pump - full steering
Gears engage (Min)	188-232 (13-16)	On transmission with brakes applied
Pilot neutral	290-348 (20-24)	On supply block valve
Pilot implement control lever	464-522 (32-36)	
Brakes control	725-870 (50-60)	

TIMING CYCLE Sec

Extending (boom)	16-19
Retracting (boom)	13-16
Raising (boom)	14-17
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Dumping (forks)	3-4
Rollback (forks)	3-4
Stabilizers - rise	6-8
Stabilizers - fall	8-11

STEERING

Steering wheel turns (slowly)	3-4	Four steering wheels
Effort lbf-ft (Nm)	184 (250)	Two steering wheels

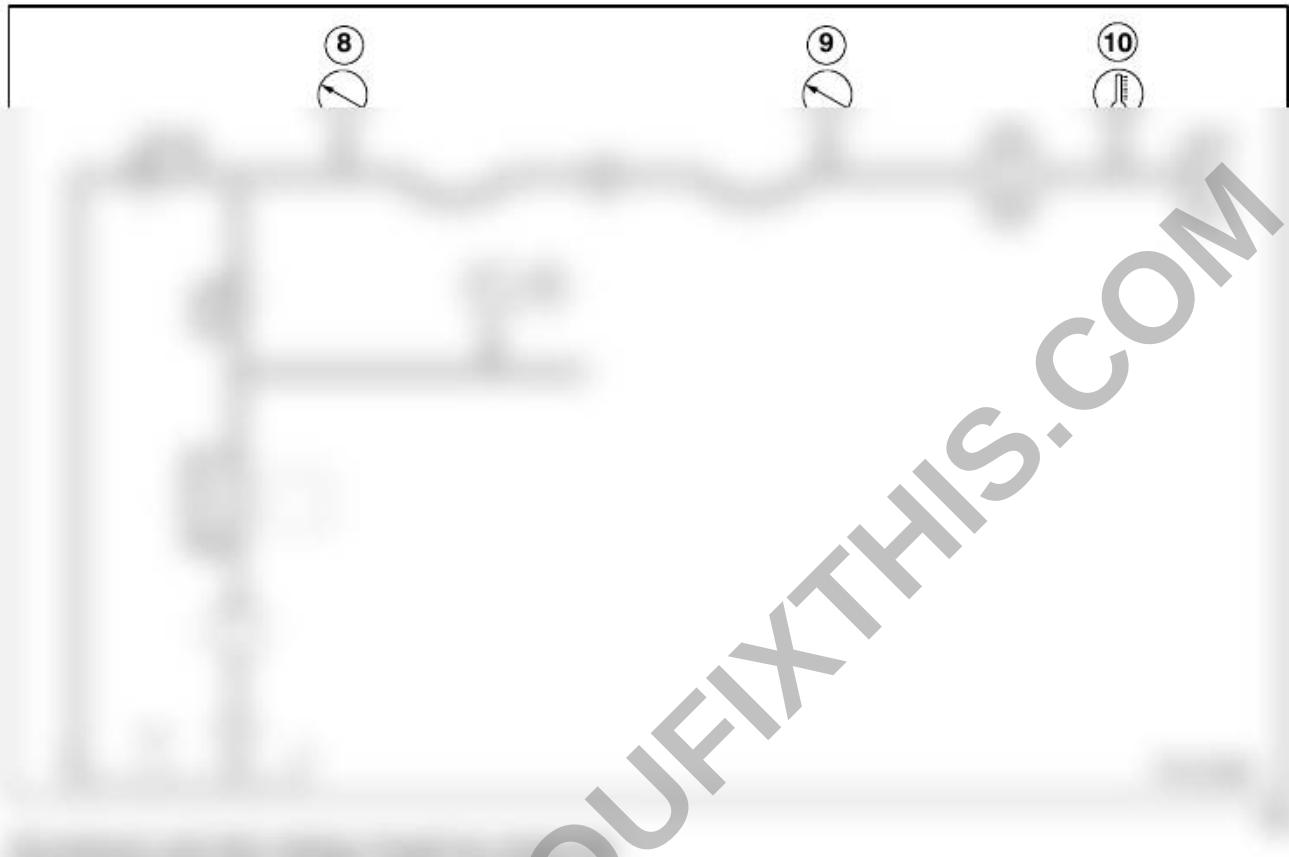
BRAKES

Distance (maximum speed in neutral) inch (m)	< 551 (14)
Parking brake	20%=12 degree

SECTION 21 - POWERSHIFT GEARBOX**CONTENT**

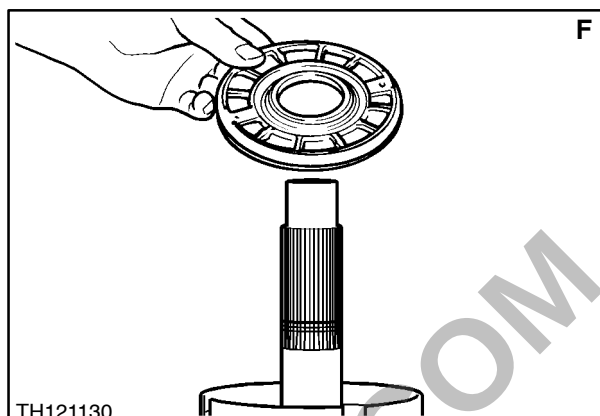
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PRESSURE TESTING TORQUE CONVERTER AND COOLER CIRCUIT



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Remove the clutch piston by turning the clutch pack over and tapping the shaft on a block of wood.



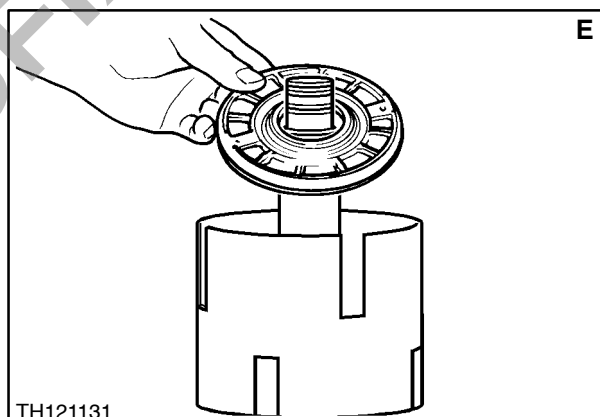
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Clean and inspect all parts for damage. Where damage is evident replace parts and also all gaskets.

NOTE: It is more economical to replace parts when the unit is disassembled than to carry out overhaul due to premature failure.

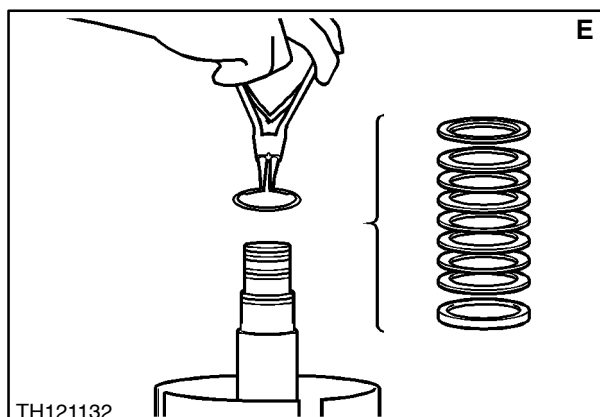
Reassembly of the E Clutch (1st speed)

If new seal rings have been fitted to the piston make sure they have been sized. After sizing wipe the surfaces with a little transmission oil, the fit to the clutch housing.



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Place the clutch piston wear plate onto the piston, then place the first belleville washer on top of the wear plate with the large diameter downwards, then alternate the remaining 6 washers followed by the snap ring retainer. Compress the washers and fit the snap ring.



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WHEEL TOE-IN CHECK

When checking the toe-in, ensure the front wheels are pointing straight ahead.

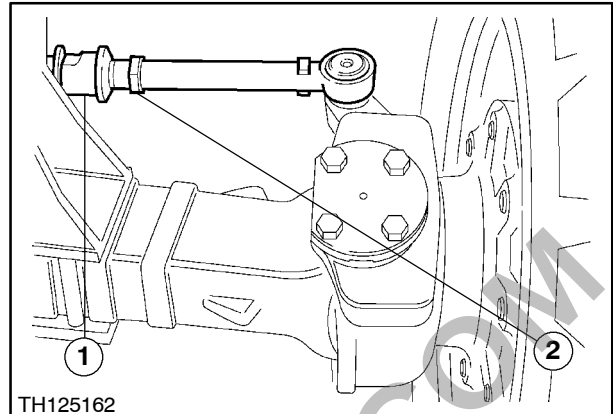
Measure the distance between the two front wheels at the front of the rim (A). Then measure the distance between the front wheels at the rear of the rim (B).

The variance between A and B should be 0 – 0.078 in (0 – 2 mm) = toe-in.

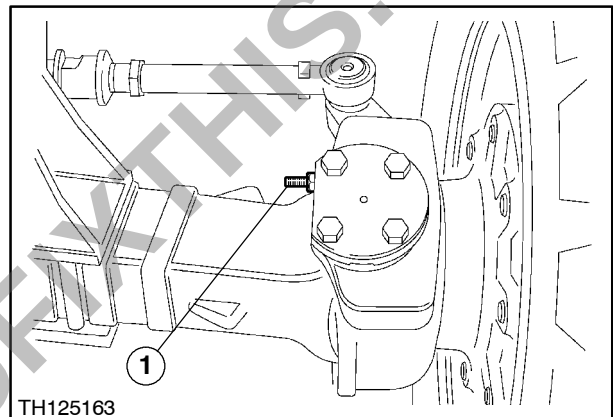
i.e.: $B - A = 0 - 0.078$ in (0 – 2 mm)

To adjust front wheel toe-in, slacken both lock nuts (2) and turn rims equally (1) in the same way. Re-tighten both lock nuts (2).

The steering stops (1) are incorporated in the hubs at each end of the axle. The stops are adjustable to prevent the tires contacting any part of the frame or cab when on full lock and held by the locknut.



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COMPONENT OVERHAUL

Axle in unit

The following components can be overhauled with the axle mounted on the unit.

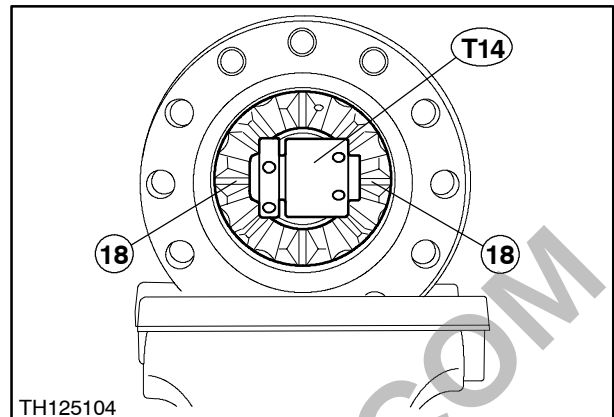
- Planetary reduction hub assembly
- Steering knuckle
- Tie rod pins
- Axle drive shafts, seals and bushings

Axle removed

The following components can be overhauled with the axle removed.

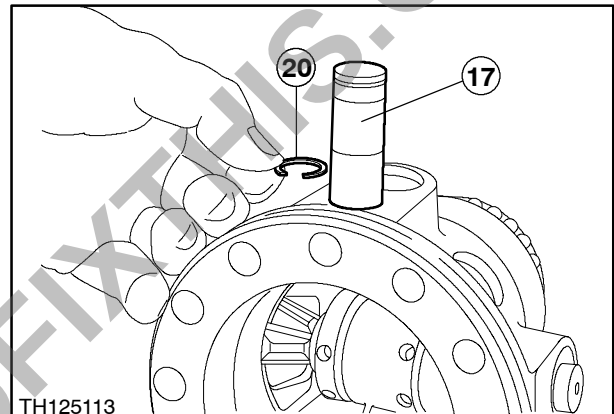
- Brake assemblies
- Differential assembly
- Pinion assembly

Lock tool (T14) behind the planet wheel gears (18).
After locking, remove bar (T16C).



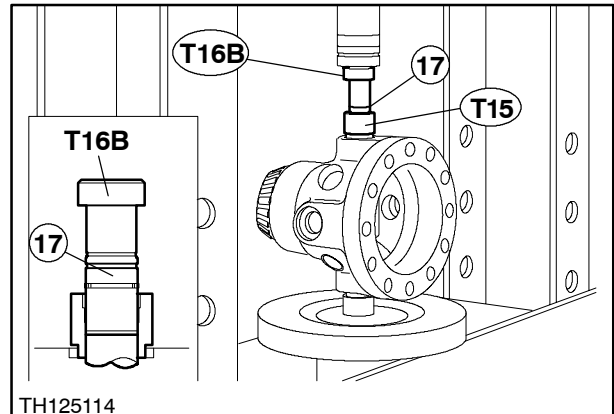
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Fit the snap rings (20) onto the pins (17).



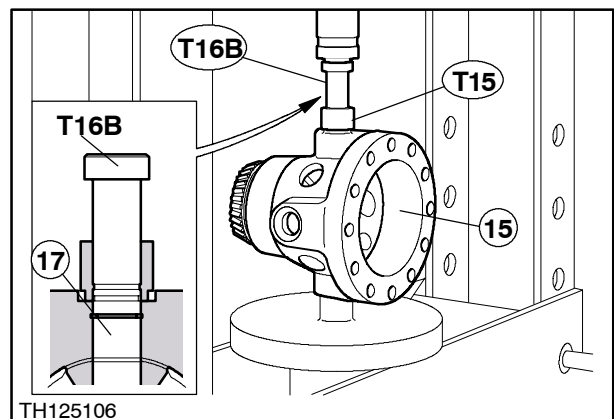
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Place the differential carrier (15) under the press, position bushing (T15) and insert the pinion gear pin (17).
Put pinion shaft (T16B) on top of the pinion gear pin (17).

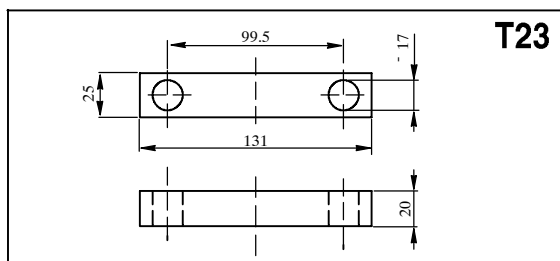
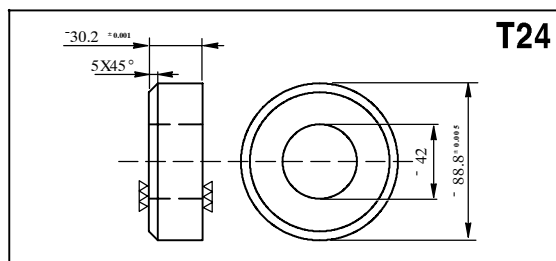
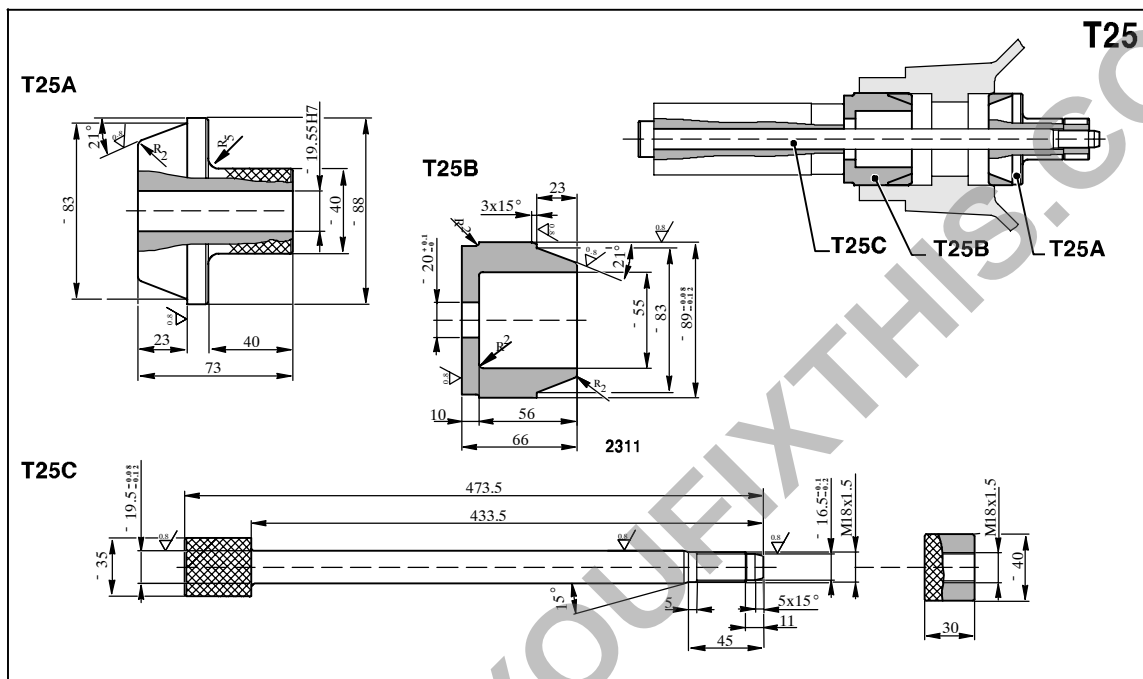
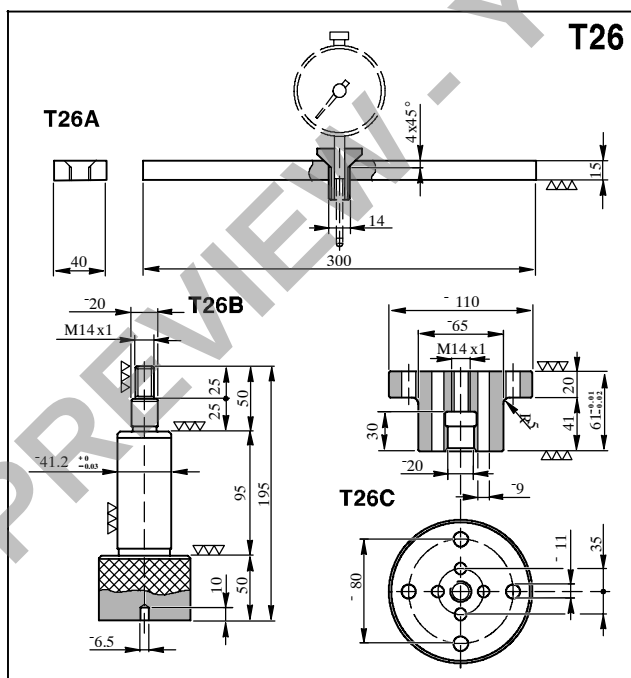
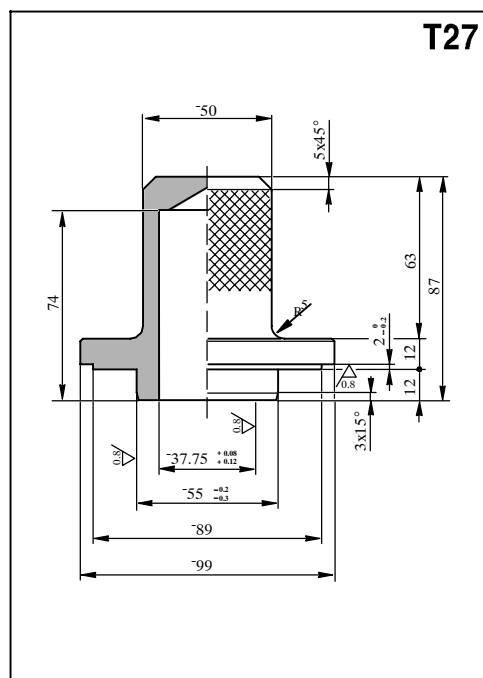


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Press (T16B) pin all the way down.



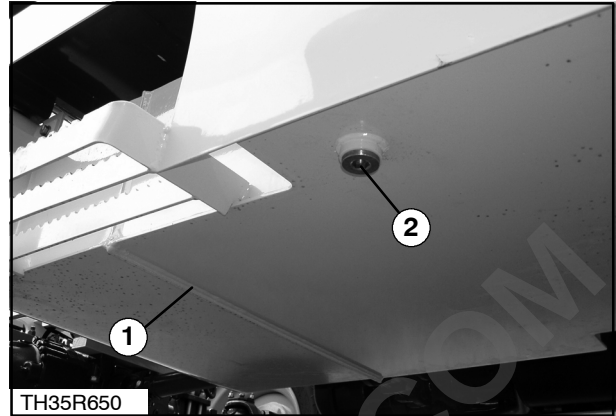
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2. Drain completely the attachment hydraulic oil from tank (1) through plug (2) using a container of appropriate capacity.

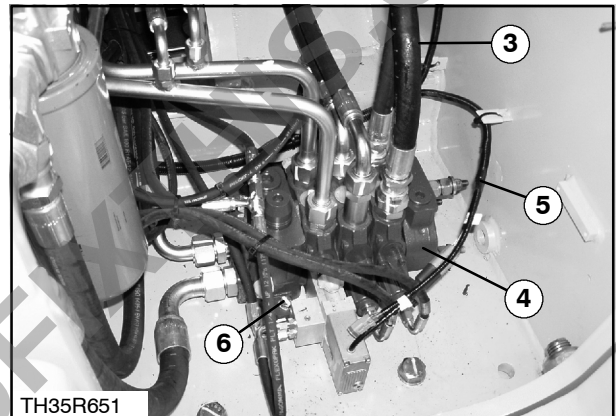
**WARNING**

Fluid under pressure. Cut-off the engine, actuate the control lever a few times, then loosen and re-tighten the hydraulic system tank cap to bleed residual pressure, prior to disconnecting the connections of the hydraulic system.



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3. Remove all hydraulic pipes (3) secured to control valve (4) marking all lines to facilitate the reconnections.
4. Disconnect electric connections (5) of control valve (4) marking all the connections to facilitate the reconnections.
5. Remove screws (6, total q.ty 3) securing the control valve to the machine frame.
6. Lift the control valve using a hoist and lifting cables and remove it from the machine.



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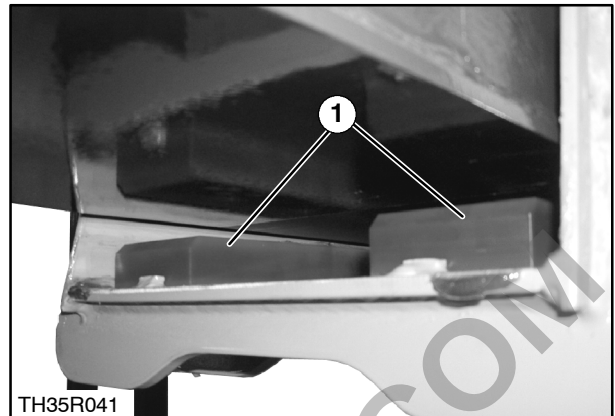
Installation

1. To install the control valve on the machine, reverse the operations described for the removal.
2. Install the hydraulic pipes of the control valve, applying the standard tightening specifications.

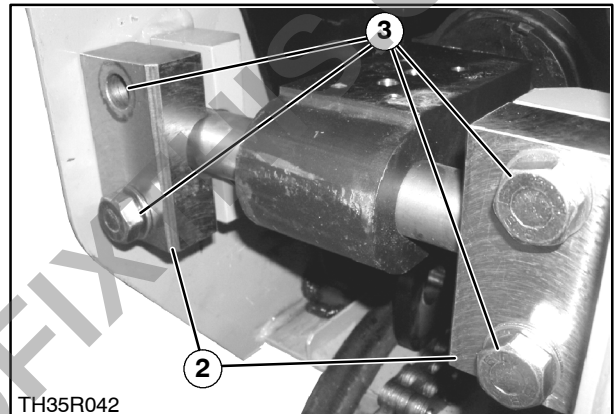
⚠ ATTENTION ⚠

Handle all parts with great care.
Do not place hands or fingers between pieces. Wear authorized protective clothing/devices such as glasses, gloves and safety shoes.

- Use slinging cables to lift and slightly extract forward boom 2 and 3 so that pads (1) located on the lower side of the boom can be reached.
- Remove the pads by removing the six securing screws.
- Remove two brackets (2) securing the cylinder pin by removing the four securing screws (3) complete with washers.



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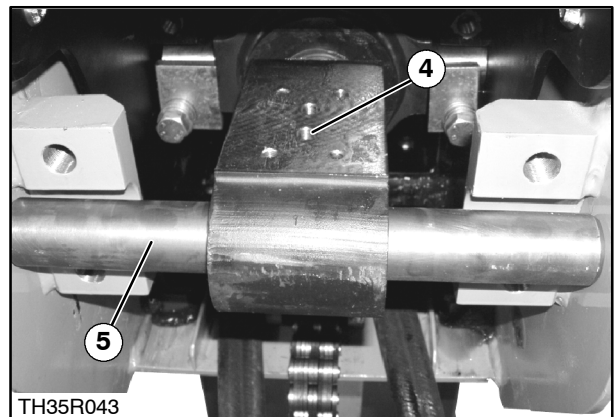


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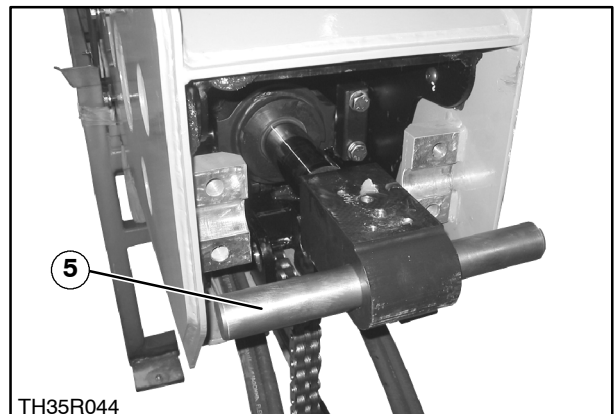
⚠ DANGER ⚠

Fluid under pressure; prior to removing the cap or the cover, turn them slowly to bleed internal pressures. Please refer to the Operation and Maintenance Instruction Manual.

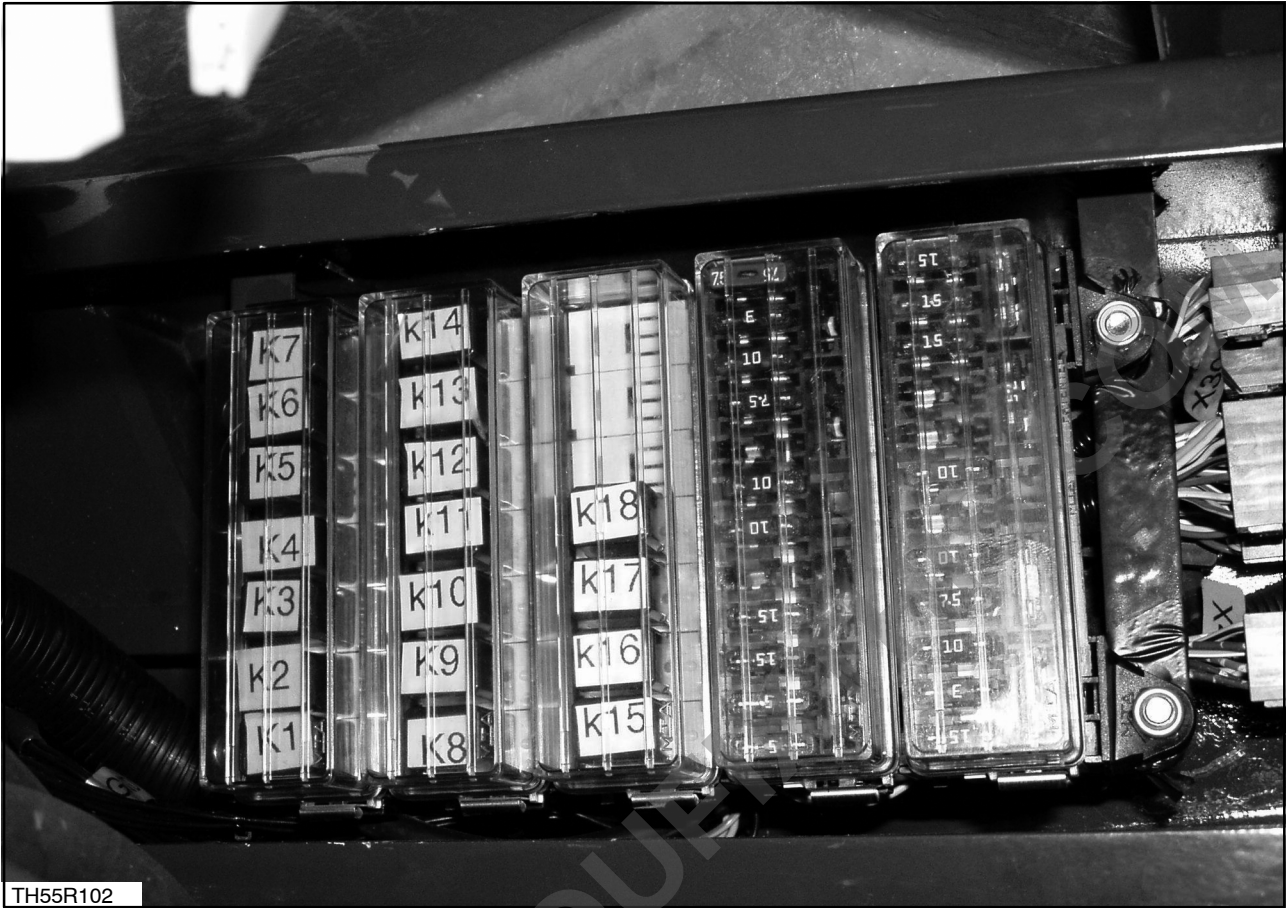
- Inject compressed air inside hole (4) located on the head of the rod to move the cylinder backward to facilitate the removal of pin (5).
- Then, extract pin (5) securing the cylinder rod.



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K1	K8	K15	F1	7.5A	F13	F17	15A	F29	5A
K2	K9	K16	F2	3A		F18	15A		
K3	K10	K17	F3	10A		F19	15A		
K4	K11	K18	F4	7.5A	F14	F20	10A	F30	7.5A
K5	K12	K19	F5	10A		F21	7.5A		
K6	K13	K20	F6	10A		F22			
K7	K14	K21	F7	10A	F15	F23	10A	F31	7.5A
			F8			F24	10A		
			F9	15A		F25	7.5A		
			F10	15A	F16	F26	10A	F32	5A
			F11	5A		F27	3A		
			F12	5A		F28	15A		

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