Service Manual

700 Series

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JCB SERVICE ©
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*** This Service Manual covers the following machines:-**

712 from machine no. 612001
712 from machine no. 612250 (HR build)
716 from machine no. 614001

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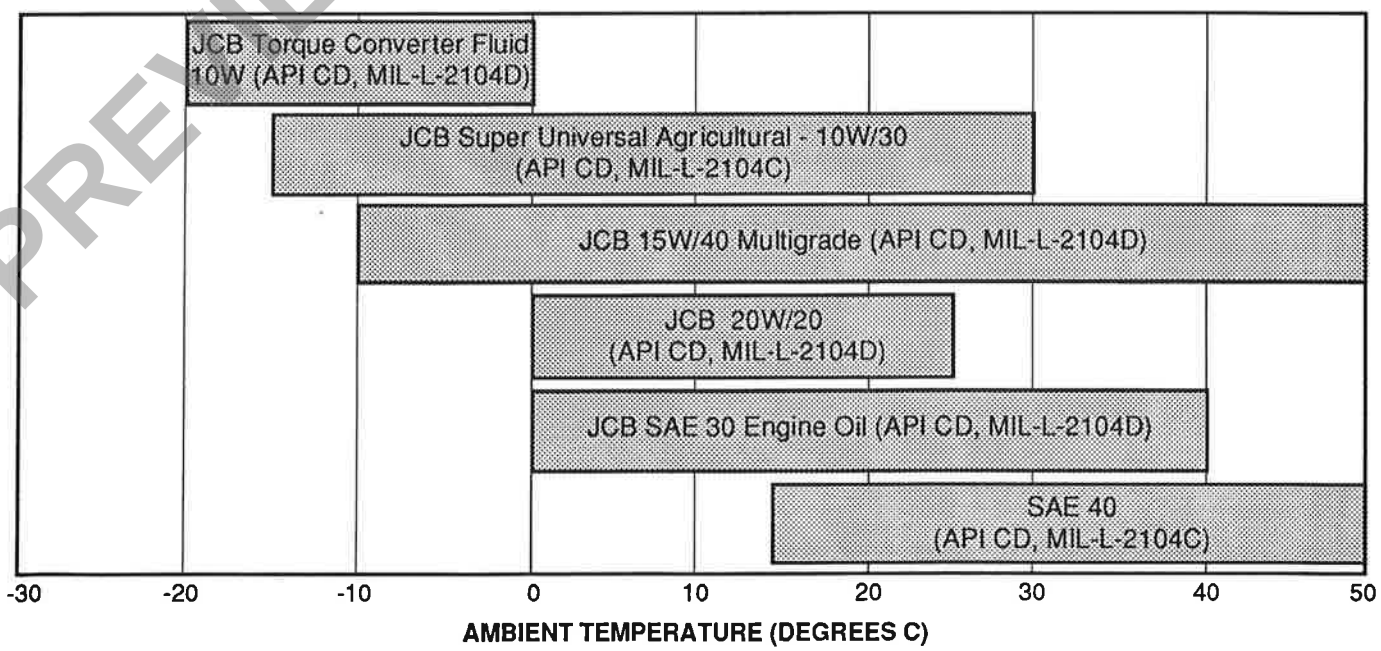
LUBRICANTS AND CAPACITIES

Note: To promote thorough running-in, engines of new machines are filled at the factory with JCB 10W/30 Multigrade Oil. This oil should be drained after the first 100 hours of operation and the engine filled with the recommended grade shown in the engine lubrication chart. JCB 10W/30 should be used also for the first 100 hours operation whenever a new or reconditioned engine is installed in a machine. Alternatively, when a new or reconditioned engine requires protection against corrosion during prolonged storage, Mobilarma 524 may be used during the storage period, and during the first 100 hours. It is essential that both these oils are replaced by the recommended lubricant after the first 100 hours operation.

ITEM	LUBRICANT	CAPACITY	Litres	UK gal	US gal
ENGINE	See Chart below		14.8	3.2	3.8
TRANSMISSION	JCB Torque Converter Fluid (SAE 10W)		18.0	4.0	4.8
* JCB DRIVE AXLES	JCB Special Gear Oil		28.0	6.25	7.5
* ZF DRIVE AXLES					
Differential	JCB LS Gear Oil		13.5	2.90	3.6
Hubs (each)	JCB LS Gear Oil		3.5	0.77	0.9
HYDRAULIC TANK			82.0	18.0	21.7
Below 38 deg. C	JCB Special Hydraulic Fluid	**Note:** The capacity quoted does not include the system.			
Above 38 deg. C	JCB High Performance Hydraulic Fluid	This will vary with the attachments fitted.			
BRAKE SYSTEM	(see Hydraulic Tank)				
GREASE POINTS	JCB Special MPL Grease (see Note)				
COOLING SYSTEM	See Page 5/5-1 for Anti-freeze recommendations		28.0	6.25	7.5
FUEL TANK			227.0	50.0	60.0
ELECTRICAL CONNECTIONS:	As a corrosion and moisture inhibitor all exposed connections should be coated liberally with petroleum jelly.				

Note: JCB Special MPL Grease is a lithium based No.2 consistency grease.

ENGINE LUBRICATION CHART



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TORQUE SETTINGS

Use only where no torque setting is specified in the text. Values are for dry threads and may be within three per cent of the figures stated. For lubricated threads the values should be REDUCED by one third.

UNF Grade 'S' Bolts

Bolt Size in	(mm)	Hexagon (A/F) in	Torque Settings Nm	kgf m	lbf ft
1/4	(6.3)	7/16	14	1.4	10
5/16	(7.9)	1/2	28	2.8	20
3/8	(9.5)	9/16	49	5.0	36
7/16	(11.1)	5/8	78	8.0	58
1/2	(12.7)	3/4	117	12.0	87
9/16	(14.3)	13/16	170	17.3	125
5/8	(15.9)	15/16	238	24.3	175
3/4	(19.0)	1 1/8	407	41.5	300
7/8	(22.2)	1 5/16	650	66.3	480
1	(25.4)	1 1/2	970	99.0	715
1 1/4	(31.7)	1 7/8	1940	198.0	1430
1 1/2	(38.1)	2 1/4	3390	345.0	2500

Metric Grade 8.8 Bolts

Bolt Size	(mm)	Hexagon (A/F) mm	Torque Settings Nm	kgf m	lbf ft
M5	(5)	8	7	0.7	5
M6	(6)	10	12	1.2	9
M8	(8)	13	28	3.0	21
M10	(10)	17	56	5.7	42
M12	(12)	19	98	10	72
M16	(16)	24	244	25	180
M20	(20)	30	476	48	352
M24	(24)	36	822	84	607
M30	(30)	46	1633	166	1205
M36	(36)	55	2854	291	2105

Note: All bolts used on JCB machines are high tensile and must not be replaced by bolts of a lesser tensile specification.

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SERVICE SCHEDULES

EVERY 10 HOURS OR DAILY whichever occurs first

Clean

1 Machine generally
* 2 Air fliter pre-cleaner

Grease

* 1 Steer rams
* 2 Tip-up rams and body pivots

Check and adjust as necessary (Engine stopped)

1 Generally for damage
2 Engine coolant level and condition
3 Fuel system for leaks and contamination
4 Hydraulic fluid level
5 Hydraulic system for leaks
6 Transmission oil level
7 Engine oil level and condition
8 Engine generally for leaks
9 Tyre pressures and condition
10 Tightness of wheel nuts
11 Windscreen washer level
12 Seat belt condition and security
13 ROPS/FOPS structure

Check and adjust as necessary (Engine running)

1 Instrument readings, warning lights and buzzer
2 Operation of all electrical equipment
3 Exhaust for excessive smoke
4 Footbrake operation
5 Transmission operation
6 Steering operation
7 Operation of body tip service
8 Parking brake operation

EVERY 50 HOURS OR WEEKLY whichever occurs first

Do the daily jobs plus:-

Drain

1 Fuel filter
2 Fuel sediment trap

Grease

1 Propshafts - universal and sliding joints
* 2 Steer pivots

***Oil**

1 All linkage points

Check and adjust as necessary (Engine stopped)

1 Front and rear axle oil levels
2 Oil cooler connections
3 Radiator hoses and condition
4 Fan belt tension
* 5 Condition of ram piston rods
* 6 Hoses and pipework for chafing and damage
* 7 Air cleaner hose security
* 8 Wiring for chafing

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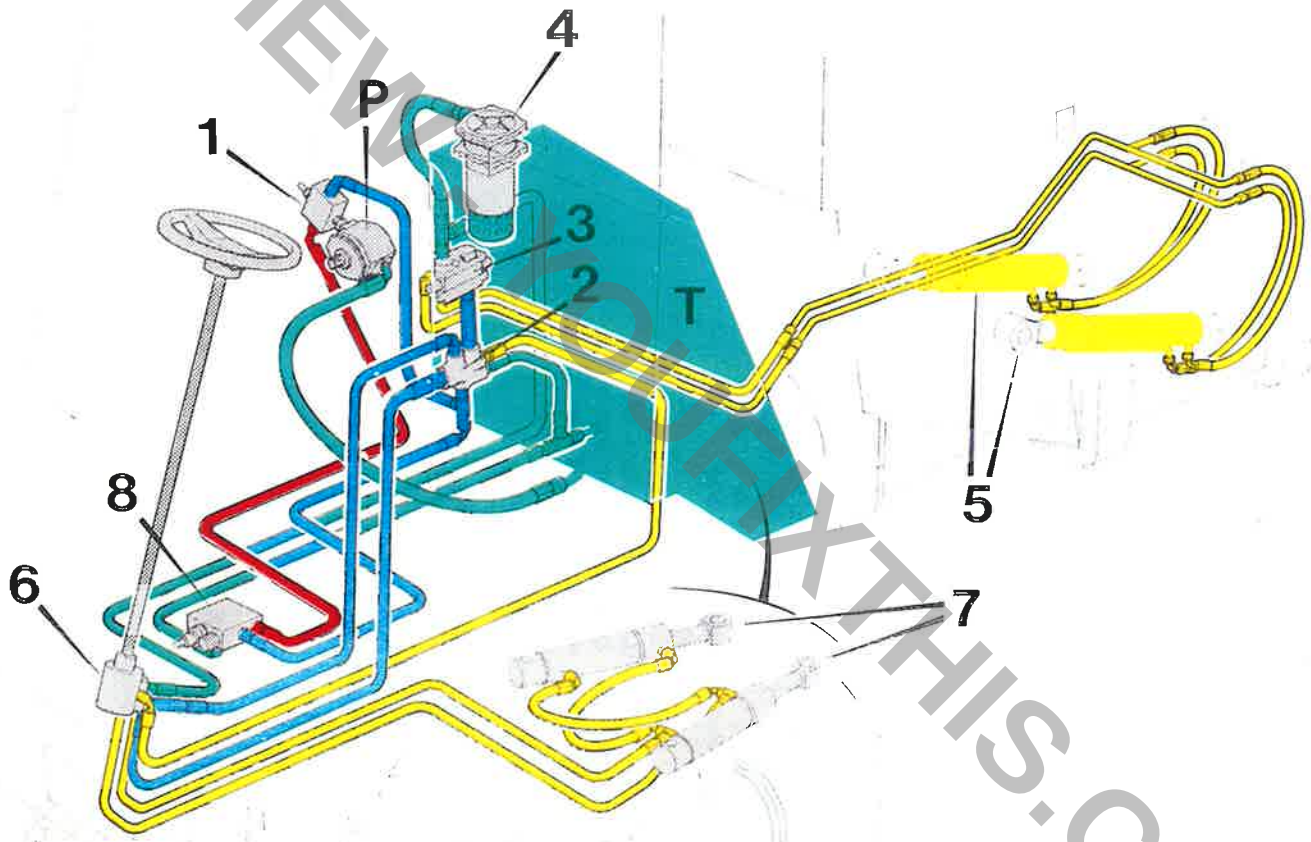
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* MACHINE NEUTRAL CIRCUIT up to machine no. 612249

Oil is drawn from tank **T** by the pump **P** and flows first through the brake flow valve **1** which ensures that a proportion of oil always reaches the brake control valve **8**. The oil then flows on to the steering priority valve **2** which, apart from the brakes, always gives priority demand to the steering circuit.

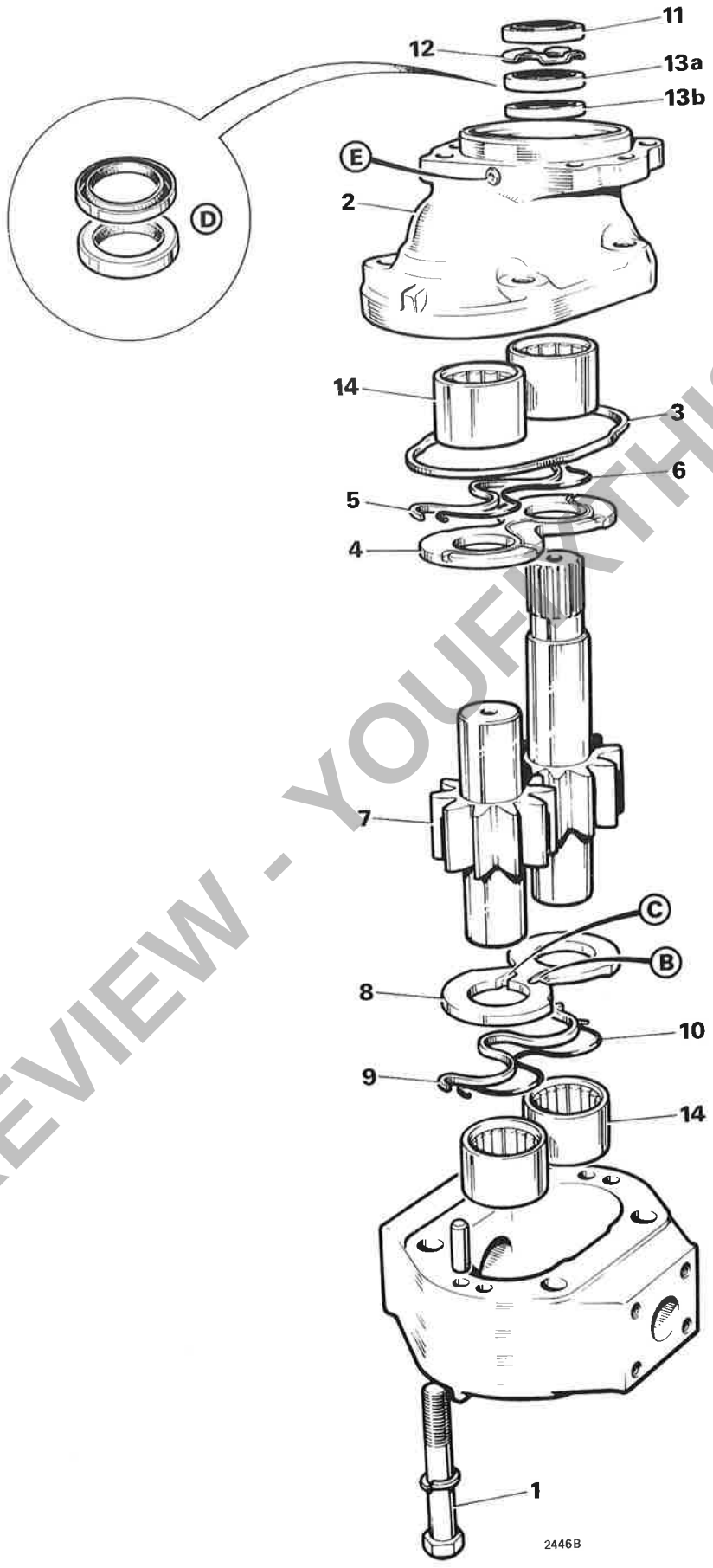
In neutral circuit conditions oil flows through the control valve **3** and is then piped back to tank via the filter **4**. When the body lift service is selected, oil is fed from the control valve **3** to the lift rams **5**.

Also shown on this view is the steering control unit **6**, which is fed from priority valve **2**, and steering rams **7**.



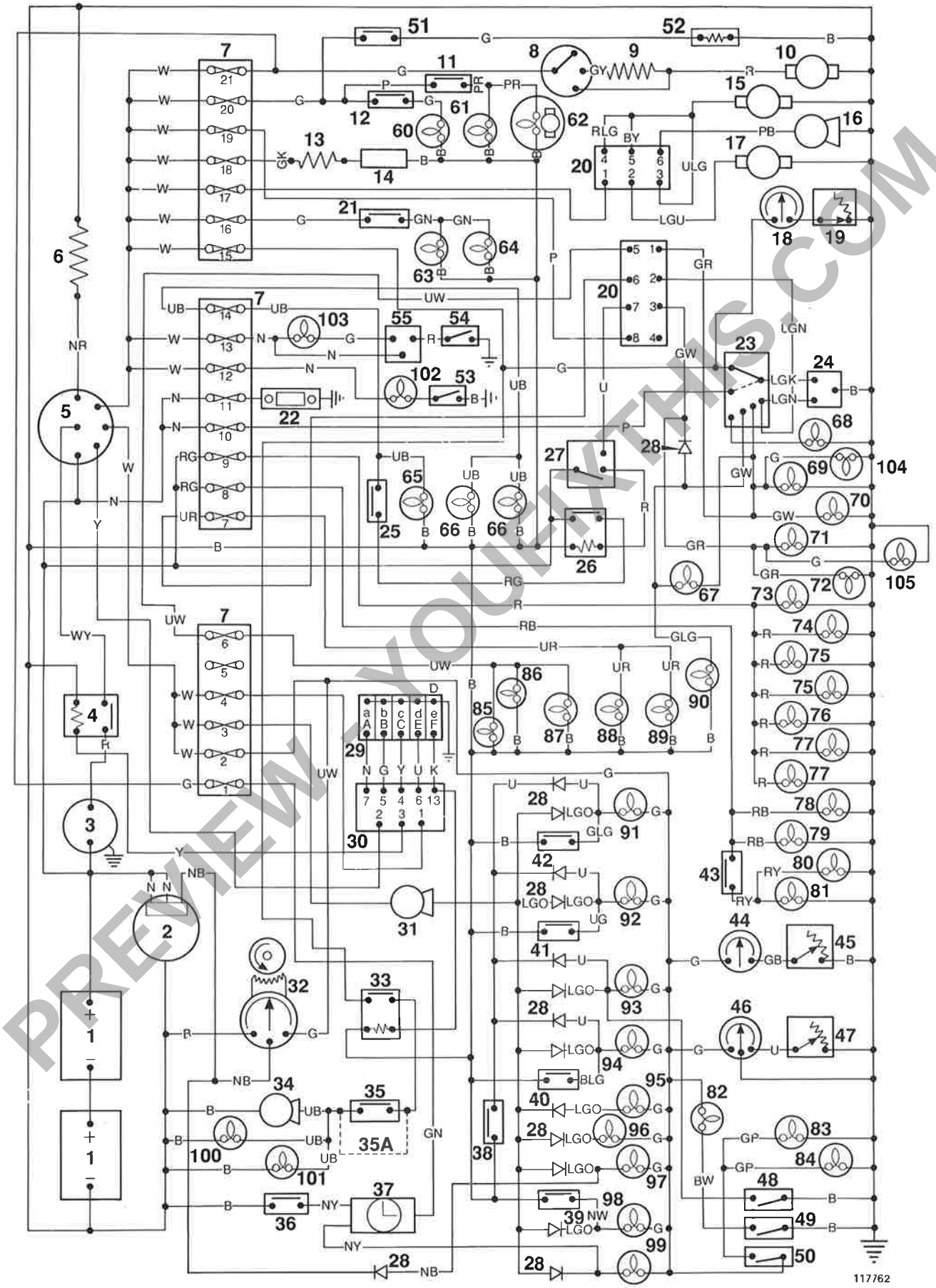
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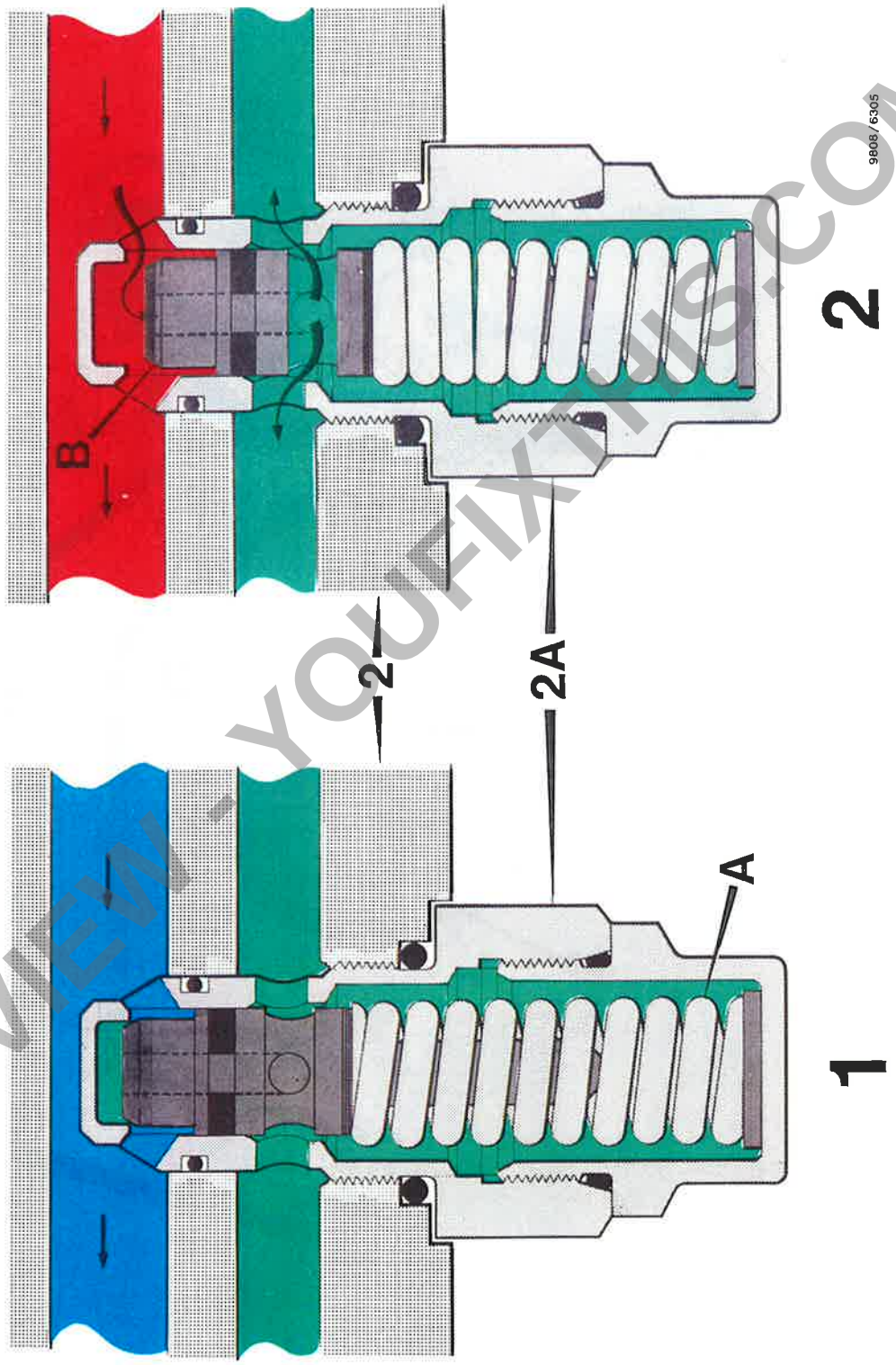
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CAB

Removal

Position the machine on firm level ground and fit the articulation link. Apply the parking brake and stop the engine. Securely chock all wheels.

Raise the front grille **A** and disconnect the battery earth lead.

Unscrew the steering unit mounting nuts **B** and lower the unit onto the front chassis, leaving the hoses attached.

Remove the coolant radiator cap to release any pressure then disconnect the heater hoses **C** and quickly plug to avoid excessive coolant loss.

Unplug the connectors **D** from the electrical harnesses underneath the cab floor, making sure that they can be identified for replacement.

On early machines with cable operated parking brake, disconnect the parking brake cable clevis **E** from the brake valve. Unscrew nuts **F** and slide the cable bracket off the bolts.

On later machines with electrically operated parking brake, disconnect the cables from the parking brake solenoid at the brake valve.

Disconnect the body control rod clevis **G** at the lever end. Raise the rear engine cover and disconnect the body control rod clevis **H** at the valve block then remove the control rod.

* On 712 machines, disconnect the 2/4WD control cable clevis **J** at the transmission, remove the outer cable clamp **K** and withdraw the cable. Tie the cable up under the cab floor to prevent possible damage when the cab is removed.

Remove the nuts and bolts **L** securing the brake valve mounting plate to the cab floor and lower the complete assembly onto the front chassis, leaving the hoses attached.

Loop lifting rope around the cab roof as shown and attach to a hoist. Make sure that the rope cannot slip off the cab. Remove the four cab mounting bolts **M** and lift the cab clear of the machine. On early machines, take care that the parking brake cable and bracket do not get trapped.

Replacement

Replace the cab by reversing the removal sequence.

When refitting the parking brake cable on early machines, check that the clevis pin will fit easily without moving the parking brake spool. If necessary, reposition the outer cable locknuts.

When replacement is complete, start the engine and check all electrical and control functions. Check engine coolant level after the engine is stopped and cooled.

Torque Settings

Item	Nm	kgf m	lbf ft
M	238	24.3	175

⚠ WARNING

The cab on this machine is designed to give the operator protection in the event of the machine rolling over (ROPS) and also against falling objects striking the roof (FOPS). The following points must be strictly observed.

1 **If the machine has been in an accident which has damaged the ROPS/FOPS structure, the machine must not be used until the structure has been renewed. If there is any doubt about the strength of the ROPS/FOPS structure, the structure must be renewed.**

2 **The ROPS/FOPS structure must not be modified in any way as this may result in weakening of the structure.**

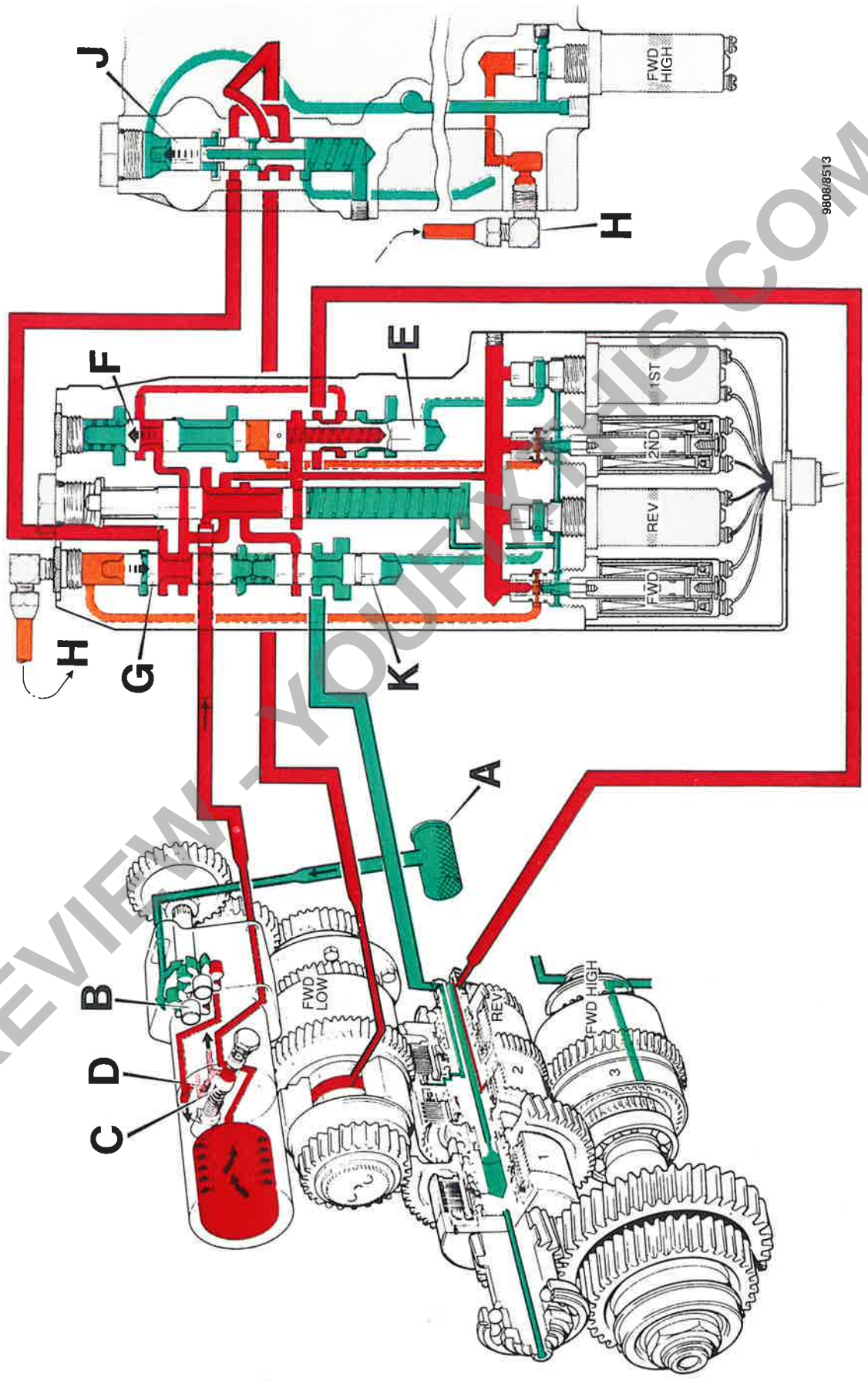
3 **Always use JCB supplied parts to mount the ROPS/FOPS structure on the machine. The use of unapproved components could reduce the protection given by the structure.**

4 **Make sure the ROPS/FOPS structure mounting bolts are not damaged and are tightened to the correct torque. Always renew the bolts when the structure is renewed following an accident.**

BF 1-7

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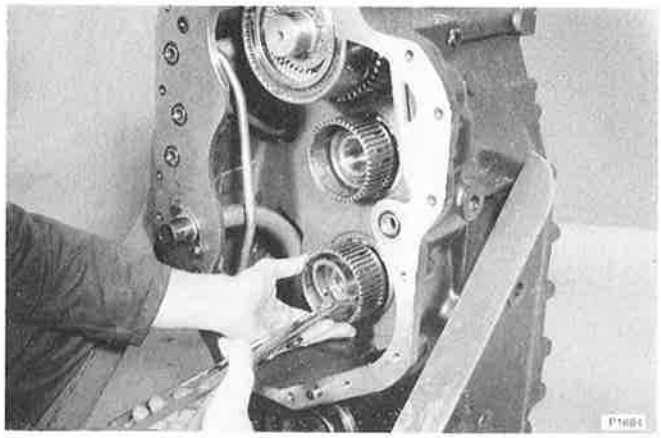
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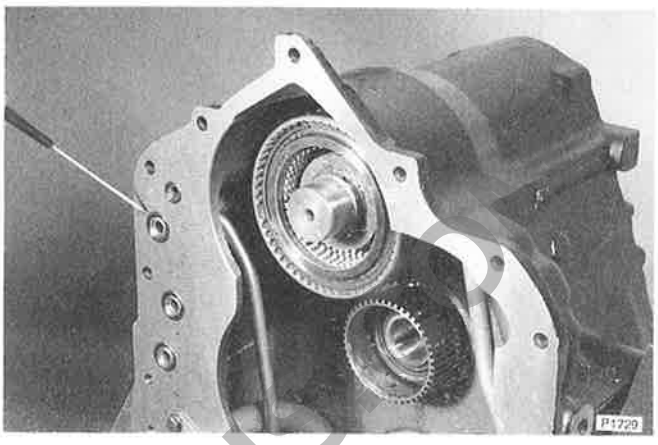
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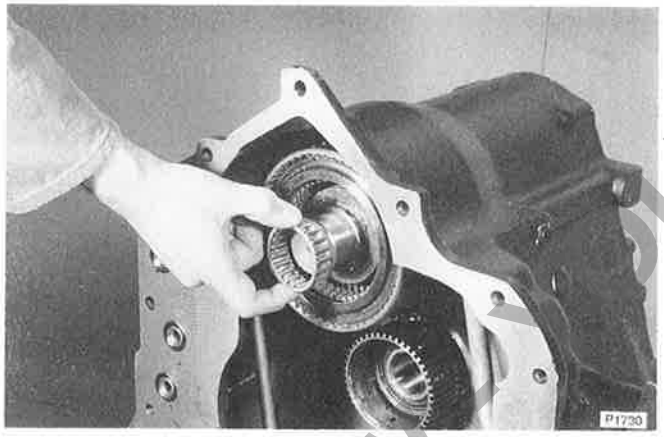
TRANSMISSION - ASSEMBLY (cont'd)



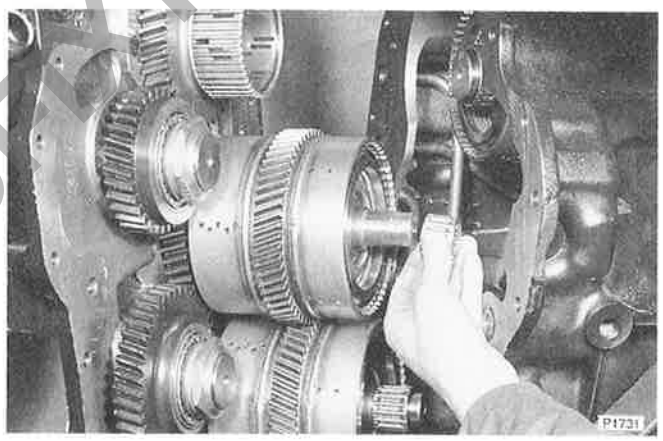
37 Install 3rd gear hub and fit circlip.



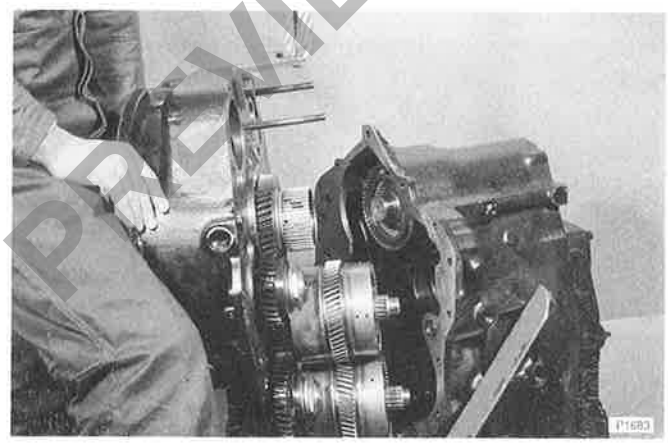
38 Position new 'O' rings and a new gasket in place on front face of transmission casing. A smear of grease will hold them in position.



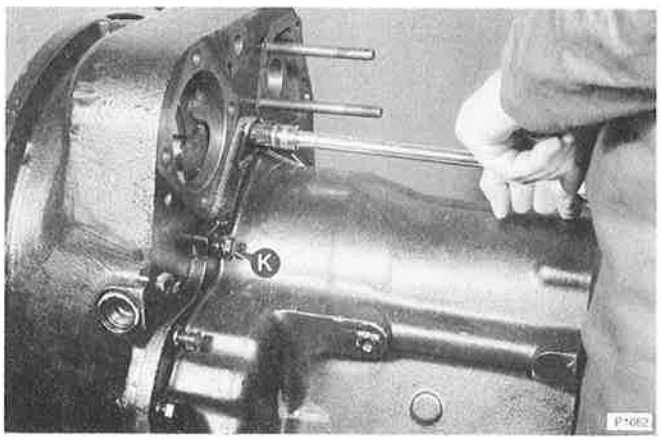
39 Install forward clutch pilot bearing.



40 Install 2nd and 3rd speed clutch shaft pilot bearings onto clutch shafts.



41 Fit converter housing to transmission casing taking care to align the clutch pilots into the clutch disc hubs. Turn the turbine shaft back and forth to align the clutch discs with the hubs. DO NOT FORCE THIS OPERATION. When all clutches are properly aligned the converter housing will be tight against the transmission housing.

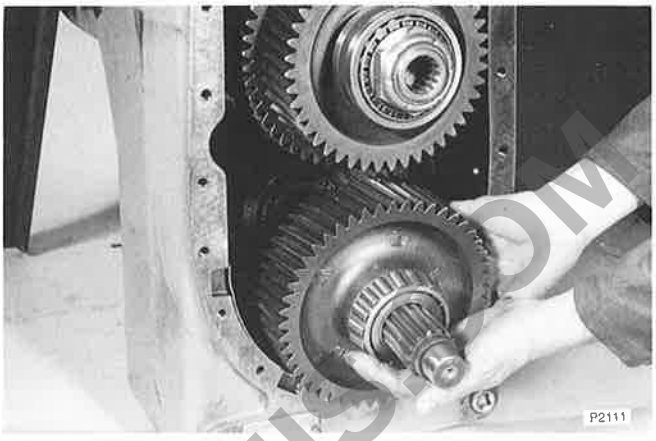


42 Tighten bolts **K** to 50-55 Nm (37-41 lbf ft).

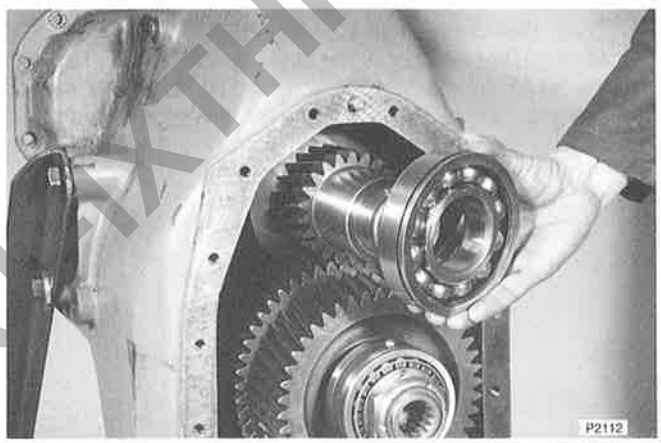
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24000 SERIES TRANSMISSION - ASSEMBLY (cont'd)

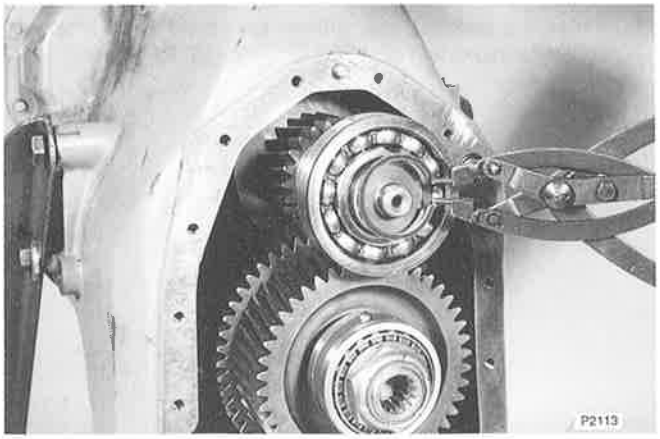
13 Position the output shaft assembly in the front bearing bore, take care not to damage the front oil seal.



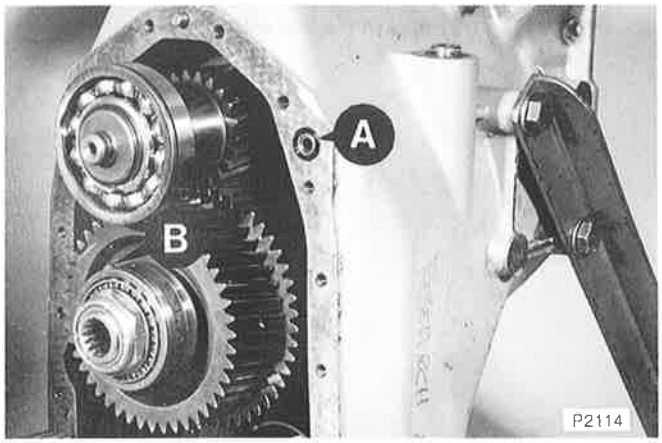
14 Install the 1st clutch rear bearing with the retaining ring groove outwards.



15 Fit the bearing retainer ring.



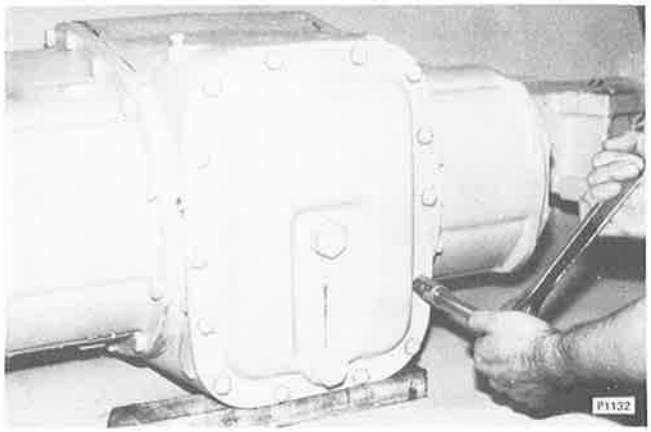
16 Position a new gasket on the rear of the housing. A light coat of grease will hold the gasket in place. Install a new 'O' ring **A** in the housing and lockball **B** in the idler rear bearing.



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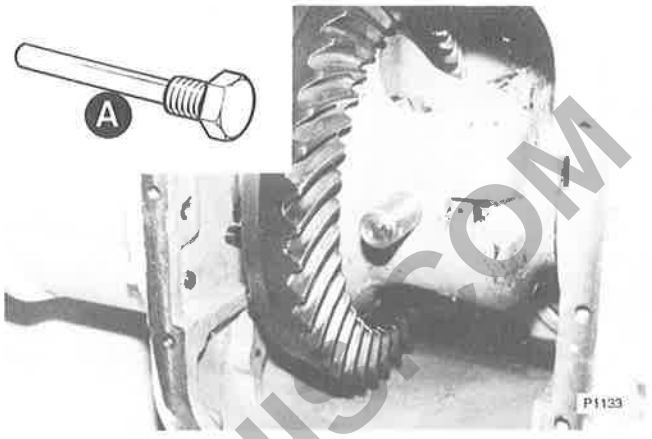
*JCB AXLE - DIFFERENTIAL GEARS - Removal and Replacement

Note: This operation may be carried out without removing the axle from the machine.

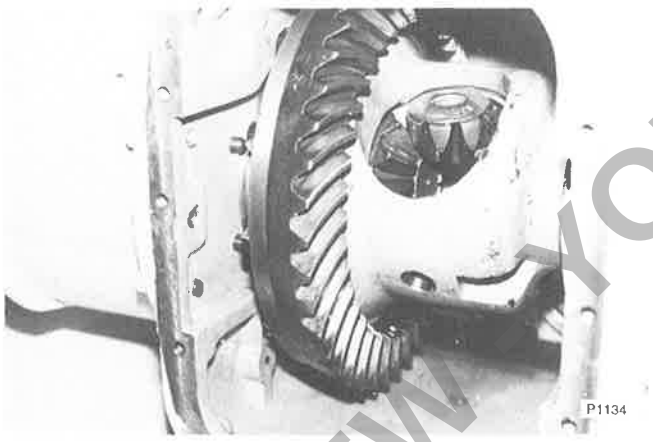


1 Securely chock the machine to prevent movement then raise the machine so that the axle shafts can be turned. Drain oil and remove cover plate.

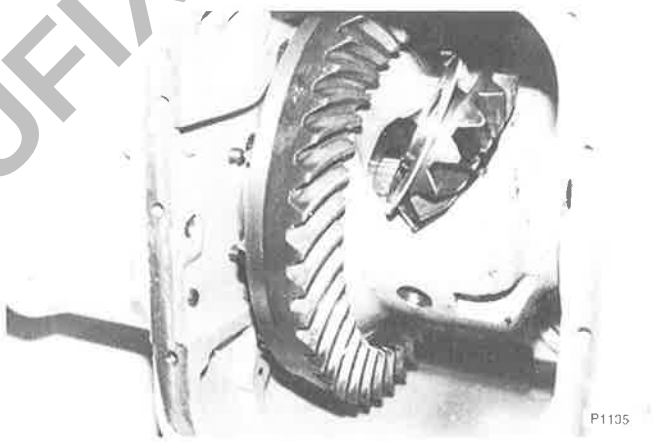
Note: When working on the rear axle, hydraulic pressure must be applied to release the parking brake.



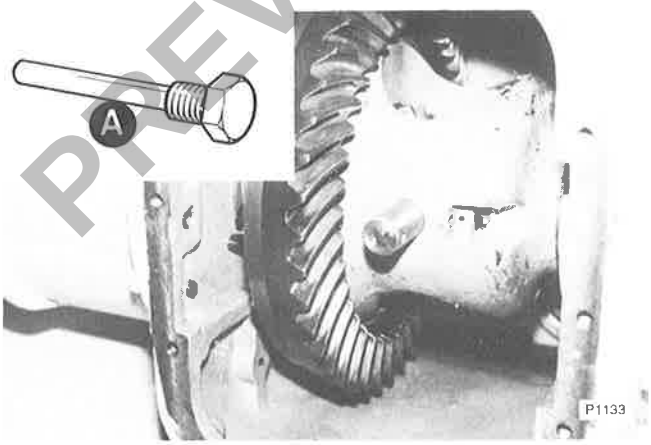
2 Unscrew lock pin **A** and tap trunnion through carrier to release planet gears.



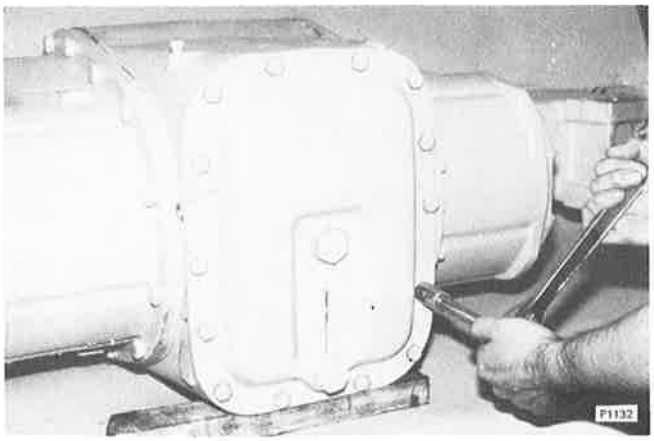
3 Rotate axle shaft on one side so that planet gears and thrust washers can be removed.



4 Lift out side gears and thrust washers.



5 Reassemble in reverse order. Apply JCB Lock and Seal to threads of lock pin **A**.

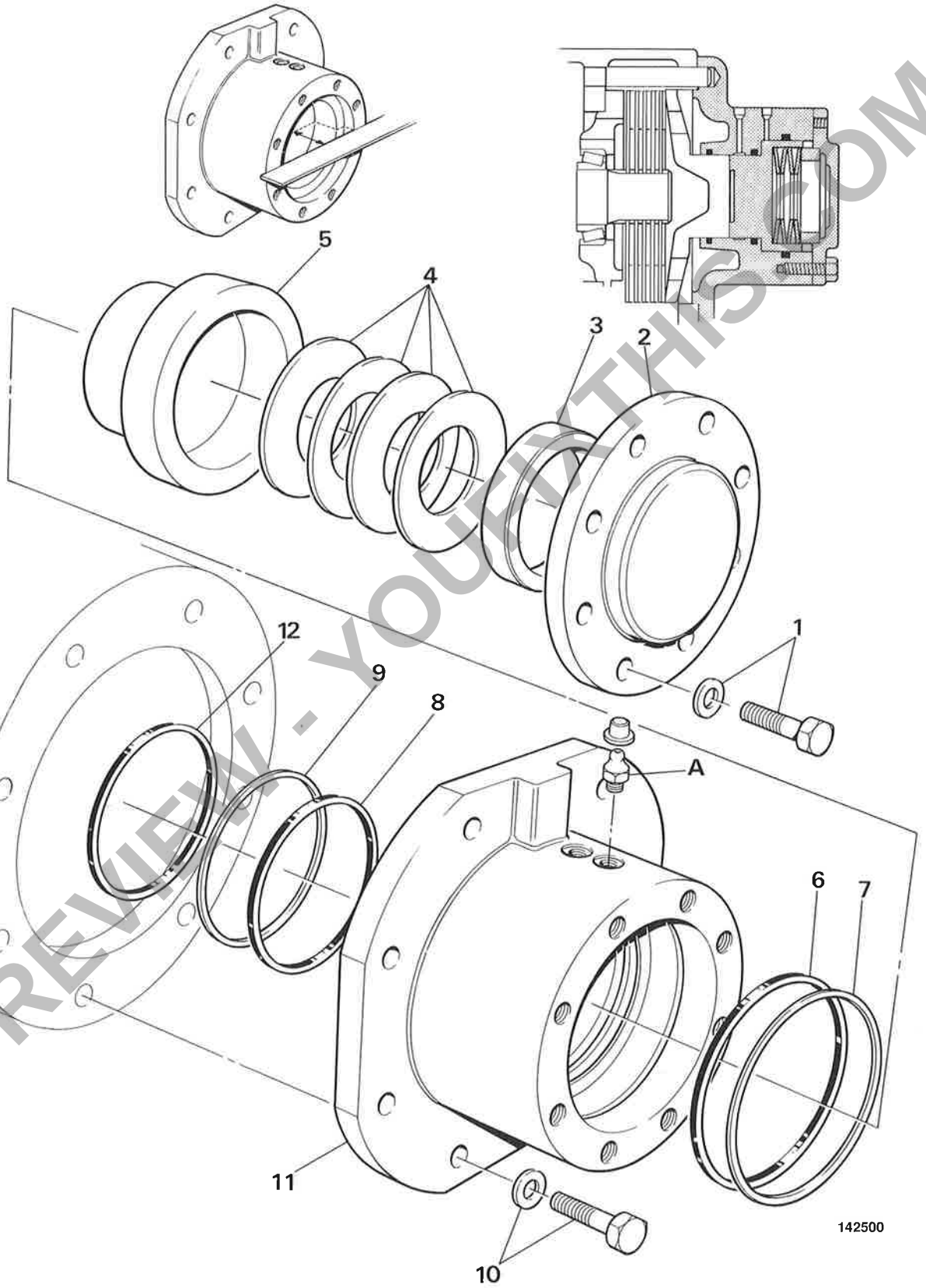


6 Replace cover using a new gasket. Apply JCB Lock and Seal to bolts and tighten to 56 Nm (44 lbf ft).

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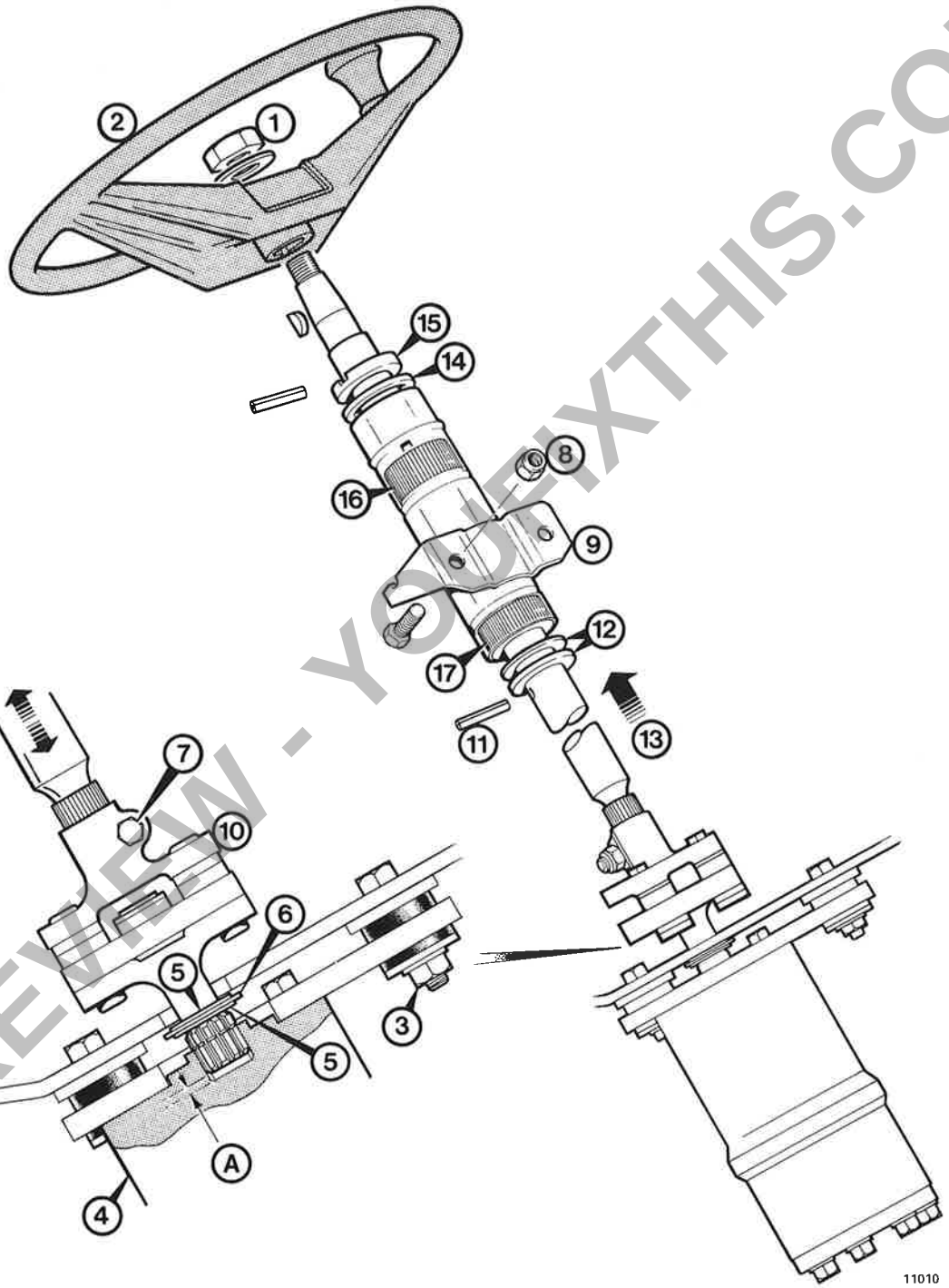
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