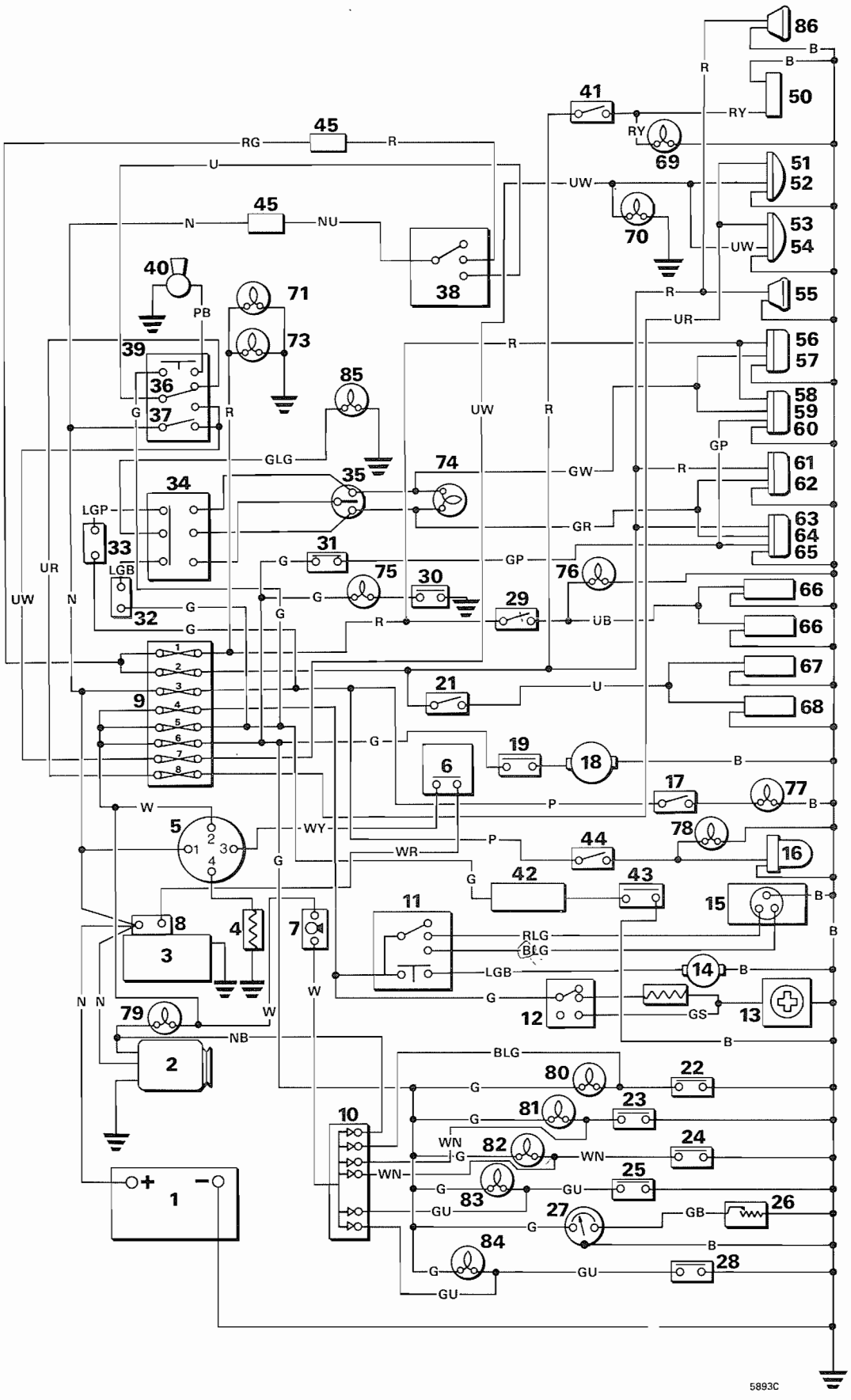
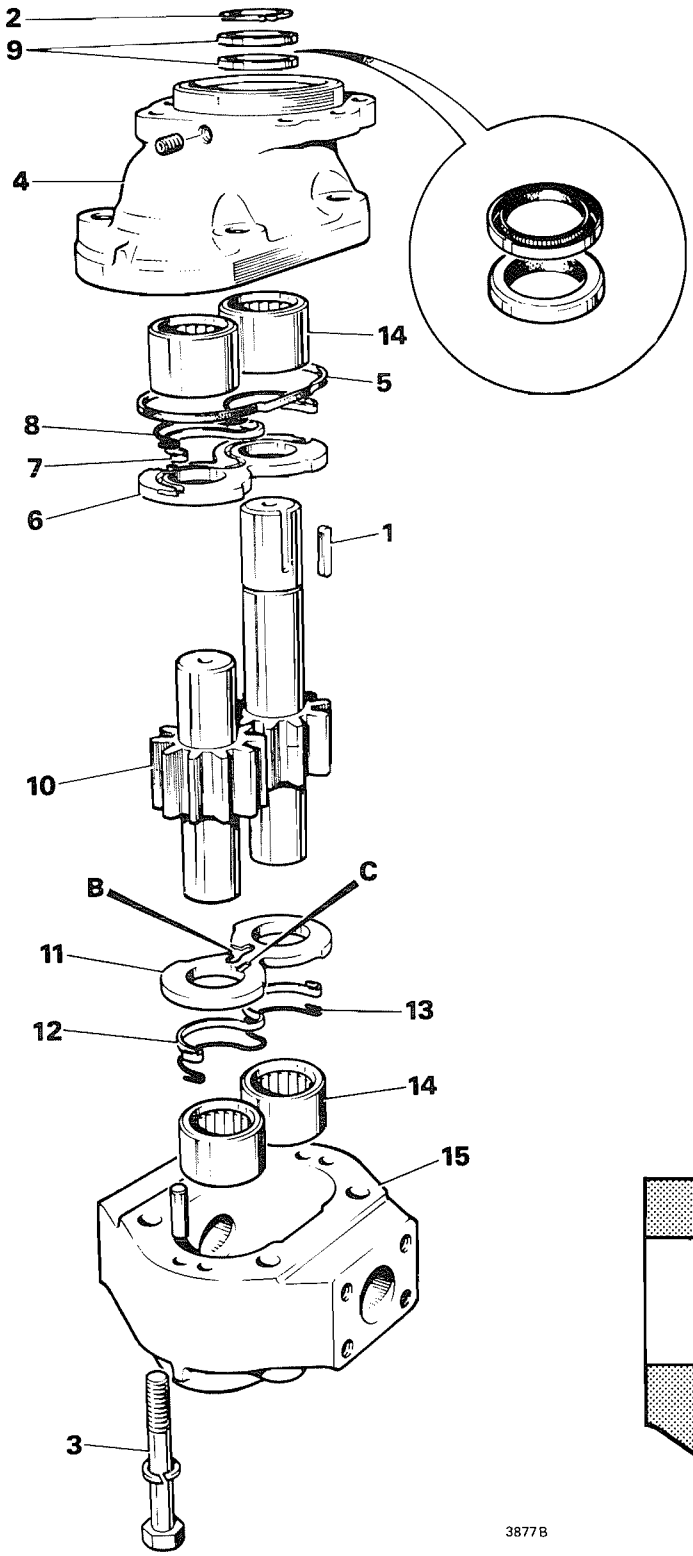
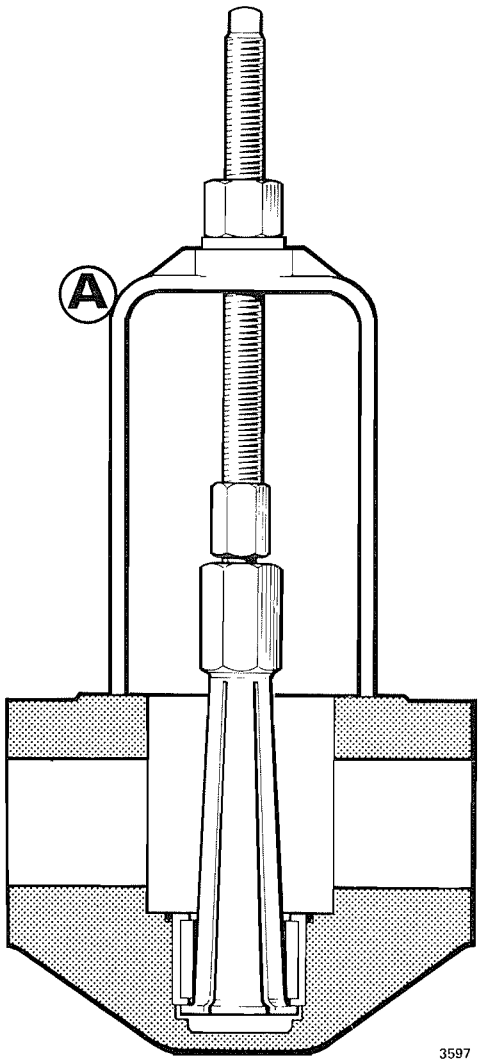

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*HYDRAULIC CIRCUIT with SERVO EXCAVATOR CONTROLS (ISO PATTERN) (upto m/c no. 319999)

P1	Pump, main section
P2	Pump, attachment section (knuckle)
P3	Steering Pump
S	Suction lines
T	Tank
1A	Neutral circuit lines
1B	
1C	
2A	
3	Loader valve block
3A	Pressure test point
3B	Main relief valve
3C	Loader shovel ram spool
3D	Lift arm spool
3E	Clam shovel spool
3F	Shovel ram head side A.R.V.
3G	Shovel ram rod side A.R.V.
3H	Load hold check valves
3J	
3K	
4	Pressure maintenance valve
5	Excavator valve block
5A	Bucket spool
5B	Boom spool
5C	Stabilizer spool
5D	Stabilizer spool
5E	Dipper spool
5F	Slew spool
5G	Bucket ram rod side A.R.V.
5H	Bucket ram head side A.R.V.
5J	Boom ram head side A.R.V.
5K	Boom ram rod side A.R.V.
5L	Dipper ram rod side A.R.V.
5M	Dipper ram head side A.R.V.
5N	Slew A.R.V.
5P	Slew A.R.V.
5R	Anti-cavitation valve
5S	Anti-cavitation valve
5T	Load hold check valves
5U	
5V	
5W	
5X	
5Y	
5Z	Stabilizer solenoid valve
6	Filter
6A	Filter by-pass valve
7	Pressure reducing valve
8	Hand control, dipper & slew
9	Hand control, boom & bucket
21	Knuckle control valve
21A	Pressure test point
21B	M.R.V.
21C	Knuckle spool
21D	Load hold check valve
22	Knuckle ram
23	Check valve
31	Shovel ram R.H.
32	Shovel ram L.H.
33	Lift ram R.H.
34	Lift ram L.H.
35	Clam shovel ram R.H.
36	Clam shovel ram L.H.
41A	Pressure test point
41B	Steering relief valve
41C	Steering control valve feed line
42	Steering control valve
43	Steering shock valve
44	Steering ram
51	Bucket ram
52	Boom ram
53	Stabilizer ram
54	Stabilizer ram
55	Dipper ram
56	Slew ram
57	Slew ram
58	Restrictor
59	Restrictor
61	Check valve
62	Check valve
63	Hose burst check valve



3877B



3597

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

SHU TTLE REVERSER

Fault Finding

Before carrying out the checks listed, the machine should be operated to determine the fault area and to bring the systems to their normal working temperatures.

The shuttle reverser should also be checked to ensure that the correct grade of oil is used and it is at the correct level and that there are no obvious leaks.

A If the reverser is noisy, start at check 1.

B If the valve is noisy, start at check 4.

C If the reverser overheats, start at check 8.

D If the reverser will not pull, start at check 10.

CHECK		ACTION	
1.	In what condition is the reverser noisy?	FORWARD & REVERSE NEUTRAL ONLY	See check 2. See check 3.
2.	Is the shuttle reverser misaligned?	YES: NO:	Replace mountings and correct position. Check universal joints.
3.	Are the pump bushings worn?	YES: NO:	Renew Check converter for wear.
4.	Is there air in the hydraulic system?	YES: NO:	Continue running and the air will be expelled. Check 5
5.	Is there an air leak on the pump suction side?	YES: NO:	Find leak and cure Check 6
6.	Are the oil passages restricted?	YES: NO:	Find restriction and clear Check 7
7.	Is the oil screen restricted?	YES: NO:	Remove and clean Check if valve is sticking.
8.	Are the oil passages restricted?	YES: NO:	Find restriction and clear Check 9
9.	Is the pump pressure low?	YES: NO:	Renew pump Check converter sprag clutch for wear or slip
10.	In which condition is the reverser not pulling?	FORWARD & REVERSE FORWARD OR REVERSE	Check 11 Check 12
11.	Is the converter driving the pump?	YES: NO:	Check pump pressure Renew damaged parts
12.	Are the clutch sealing rings damaged?	YES: NO:	Renew Check clutch plates for damage

PUMP (Hamworthy)

Dismantling and Assembly

When Dismantling

Remove sharp edges and burrs from shaft to avoid seal damage.

Mark cover 4 and housing **15** to ensure correct replacement. Use a soft faced hammer to separate components. Do not use levers or machined surfaces may be damaged.

Mark adjacent teeth of gears with indelible ink before removal. Do not use a centre punch or similar tool.

* Remove bearings **14** only if requiring replacement, using service tool A, part no. 892/00176 together with collets 892/00178 .

* Note: All pumps have a 'gear track' in the suction side of the housing which is cut by the gears during initial testing by the manufacturer. This is not detrimental unless bearing wear or dirt has caused the track to be worn deeper than 0.1mm (0.004in).

When Assembling

Renew gears in pairs if:

a) Journal area of shaft is pitted or worn in excess of 0.025mm (0.001in).

b) Keyway or gears are badly worn or cracked.

Renew bearings if worn or if gears are renewed. Bearings must fit flush with or not more than 0.05mm (0.002in) below face of bearing bore.

* The seal kits supplied may have three single lip shaft seals included, only two of which should be used. Alternatively, the kits may include one double lip seal and one single lip seal. In this application fit the double lip seal only in place of the two single lip seals **9**.

Renew wear plates **6** and **11** if scored or eroded. Trim to size seals 8 and **13** and supports **7** and **12**, using grease to retain them firmly in the wear plates.

Fit wear plates **6** and **11** with relief channel **B** facing the gears on the pressure side of the pump and slot **C** towards the inlet side of the idler gear. Ensure that seals and supports are not trapped between plate and bore, also that wear plate **11** is fully home in the bore and free to move.

Align gears, housings and covers using marks made when dismantling.

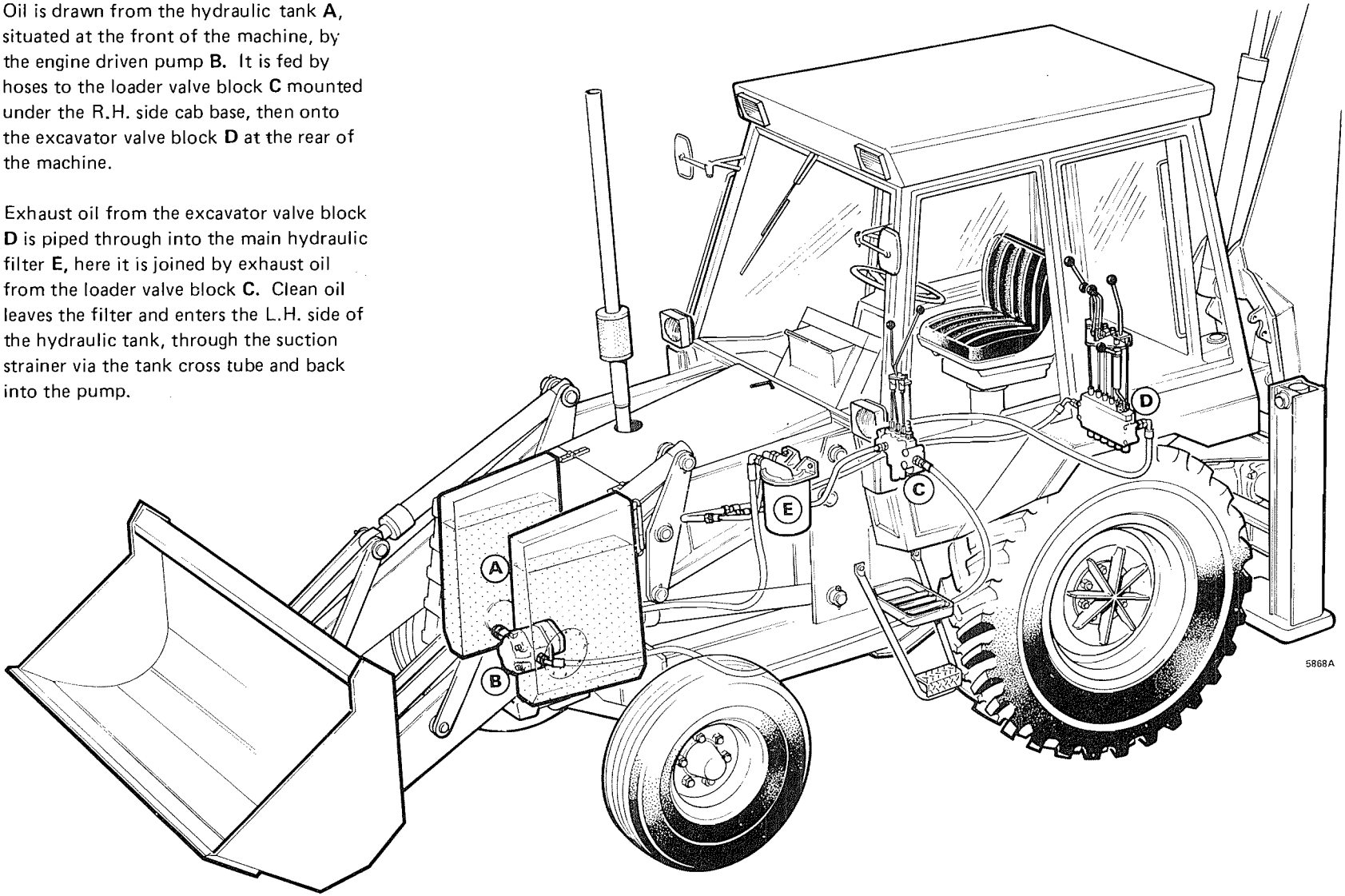
*** Torque Settings**

Item	Nm	kgf m	lbf ft
3	203	21	150

MACHINE NEUTRAL CIRCUIT

Oil is drawn from the hydraulic tank **A**, situated at the front of the machine, by the engine driven pump **B**. It is fed by hoses to the loader valve block **C** mounted under the R.H. side cab base, then onto the excavator valve block **D** at the rear of the machine.

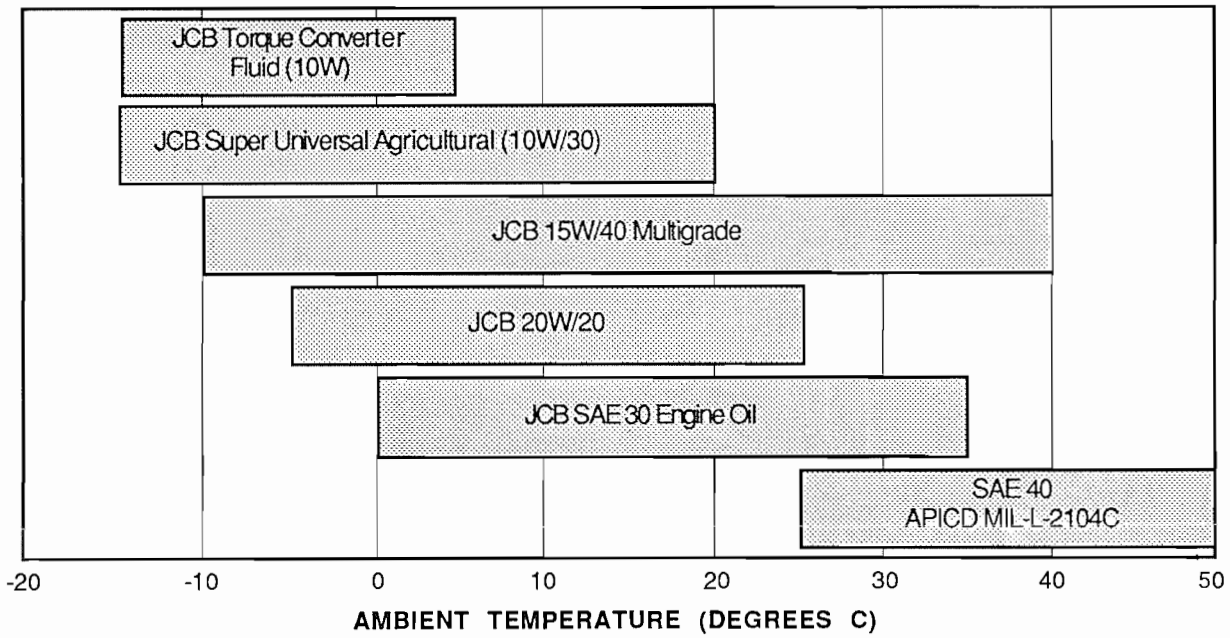
Exhaust oil from the excavator valve block **D** is piped through into the main hydraulic filter **E**, here it is joined by exhaust oil from the loader valve block **C**. Clean oil leaves the filter and enters the L.H. side of the hydraulic tank, through the suction strainer via the tank cross tube and back into the pump.



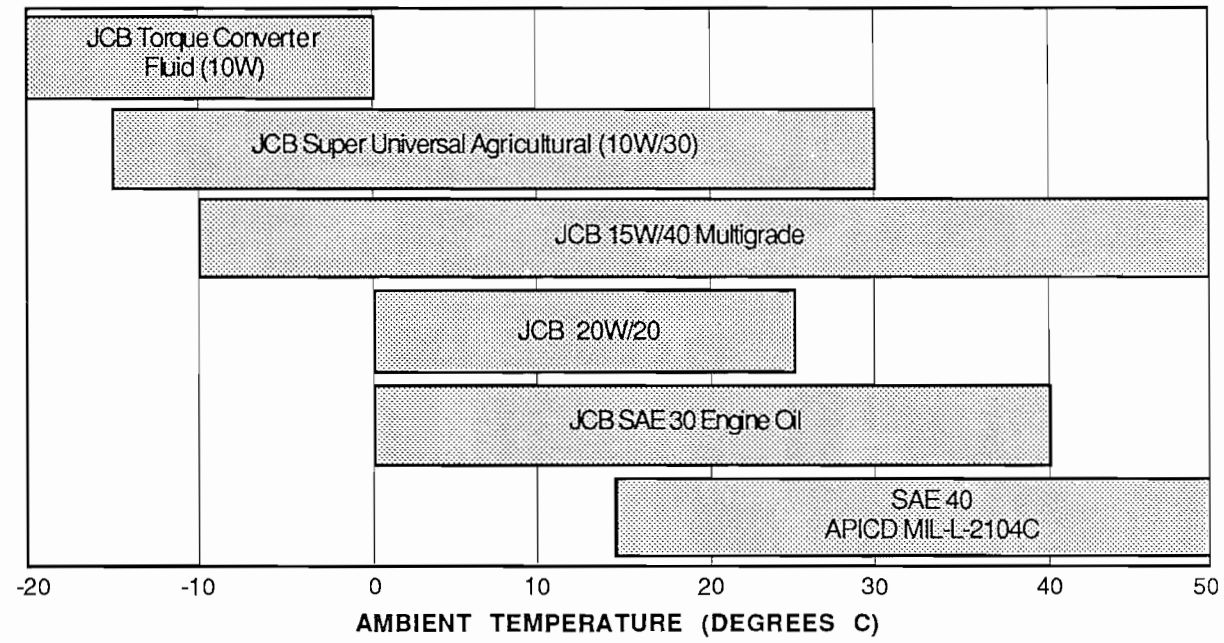
LUBRICANTS AND CAPACITIES

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 operation and the engine filled with the recommended grade as shown in the engine lubrication chart. JCB 10W/30 Multigrade should also be used for the first 100 hours operation whenever a new or reconditioned engine is fitted to the machine. Alternatively, where 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 operation. It is essential that both these oils are replaced by the recommended lubricant after the first 100 hours operation

LEYLAND 4/98 ENGINE



PERKINS 4.236 & T4236 ENGINES



PRESSURE TESTING (SERVO CONTROLS)

Pressure Reducing Valve

1 Lower stabilizers and rest bucket on ground. Stop engine.

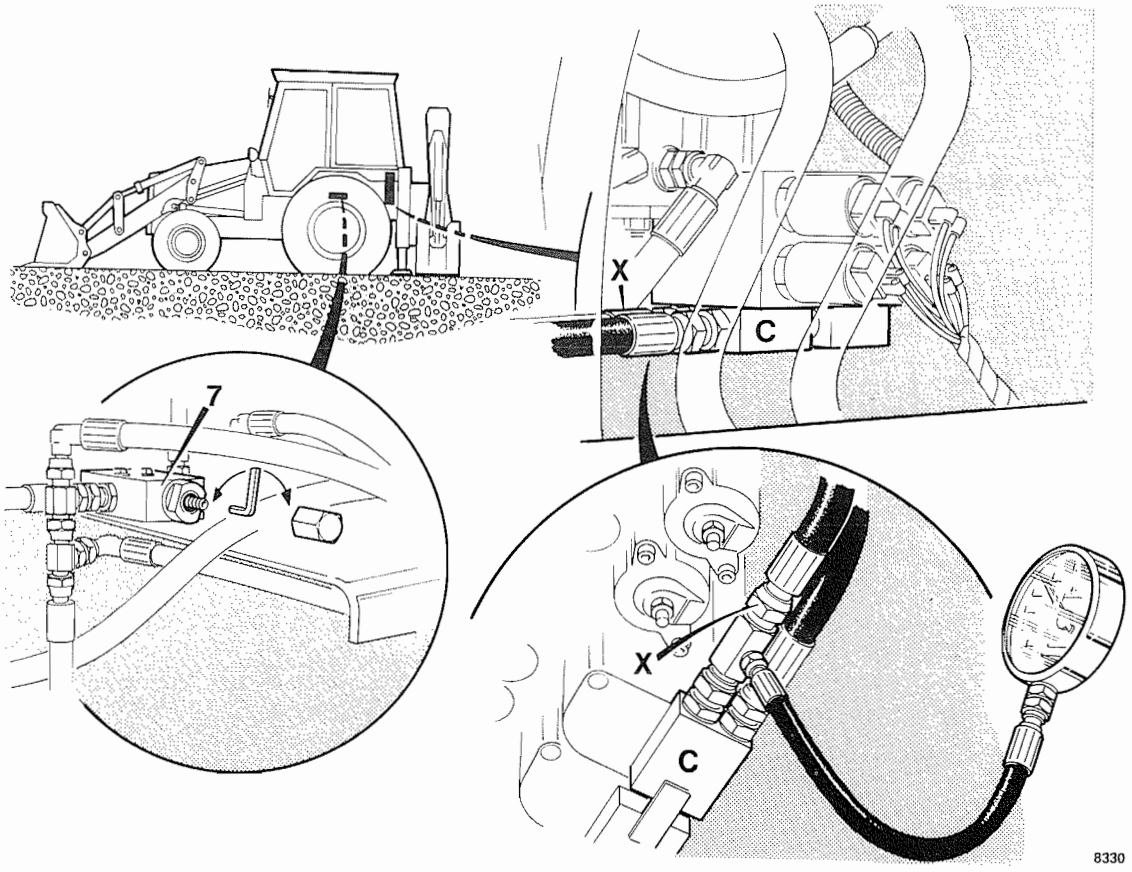
2 Fit tee piece between stabilizer spool manifold block **C** and servo pressure feed hose **X**.
Note: Of the two hoses connected to the manifold block, hose **X** is the hose nearer the front of the machine. Connect 0—40 bar (0—600 lbf/in²) gauge to tee piece as shown.

3 Run engine at 1800 rev/min, operate an excavator service to full travel and hold while checking gauge reading which should be 25 bar (360 lbf/in²).
WARNING: Keep clear of moving boom and dipper.

4 If gauge reading is incorrect, STOP ENGINE before crawling under machine to adjust pressure at reducing valve **7**.

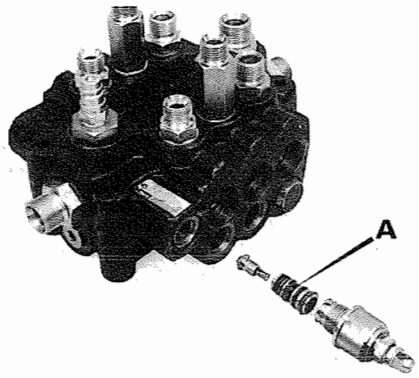
5 Repeat operations **3** and **4** until pressure is correct.

*__WARNING__: On servo machines main system pressure can be vented from operating services only by gradually disconnecting hoses, taking special care to avoid oil which will escape under pressure. (Eye protection recommended).



PARKER HANNIFIN LOADER VALVE A.R.V.'s and LOAD HOLD CHECK VALVES

Dismantling and Assembly



Remove A.R.V. (**X**) items **1** to **15** as a unit. Use a suitable hook engaged in holes **A** to extract sleeve **16**.

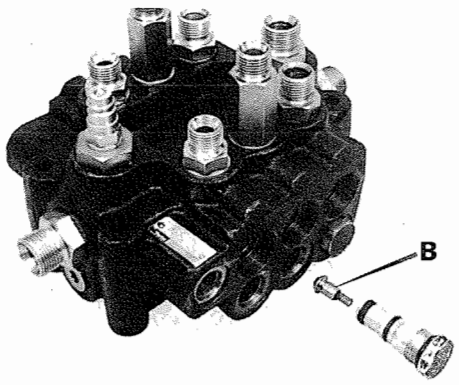
Remove check valve items **22** and **23**, drift out seat **24**.

Remove A.R.V. (**Y**) items **1** to **27** as a unit. This is fitted to shovel ram rod side on later machines. Use a suitable hook to withdraw items **28** and **33**. Drift out seat **34**.

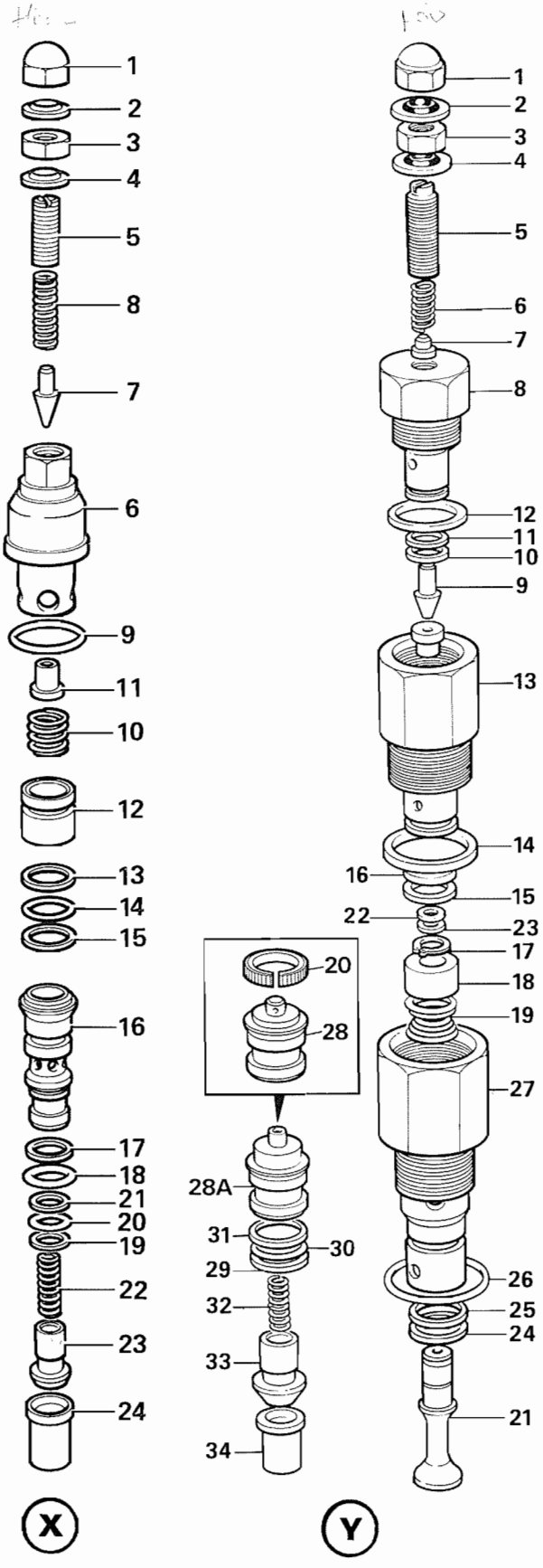
On re-assembly, fit serrated ring **20** flush with end of item **27**. When this is screwed home, ring **20** will take up its correct position.

Note: On later valves, items **20** and **28** are replaced by item **28A** which is drilled and tapped to accept a 3mm. threaded rod for removal.

Check operating pressure after fitting A.R.V's (see page 2/9–3).



Remove check valve **B** as shown.



SERVICE SCHEDULE

Check		Every 10 Hours	Every 50 Hours	Every 100 Hours	Every 250 Hours	Every 500 Hours	Every 1000 Hours	Every 2000 Hours
Hydraulic fluid level	1	●	●	○ ●	●	●	●	
–System for leaks	2	●	●	○ ●	●	●	●	●
–Operation of all services	3	●	●	○ ●	●	●	●	●
Condition of ram piston rods	4			○ ●	●	●	●	●
Pump drive	5			○ ●	●	●	●	●
M.R.V. pressure	6					●	●	●
A.R.V. pressure	7					●	●	●
Steering relief valve pressure	8					●	●	●
Hoses/pipes for chafing or damage	9			○ ●	●	●	●	●
Engine - Cylinder head torque settings - 4/98TT and 4.236 LD and LH builds - T4.236 upto Eng. No. LJ-UO27773M	14			○				
- Oil level and condition	15	●	●	○ ●	●	●	●	●
–Coolant/anti-freeze	16	●	●	○ ●	●	●	●	●
–Leaks	17	●	●	○ ●	●	●	●	●
–Idling Speed	18			○		●	●	●
–Max. governed speed	19			○		●	●	●
–Pulled down speed	20			○		●	●	●
–Exhaust (excessive smoke)	22	●	●	○ ●	●	●	●	●
–Fuel system for leaks/contamination	23			○	●	●	●	●
–Fan belt tension	24		●	○ ●	●	●	●	●
–Compression	25						●	●
–Exhaust system security	26			○		●	●	●
–Valve clearances–4/98	27			○		●	●	●
–4.236				○				●
–Mounting bolts tightness	28			○		●	●	●
–Radiator and hoses condition	29		●	○ ●	●	●	●	●
–Air cleaner hose security	30			○ ●	●	●	●	●
Wiring for chafing	34			○ ●	●	●	●	●
Operation of electrical equipment	35	●	●	○ ●	●	●	●	●
Battery electrolyte level	36							●
Instrument readings	38	●	●	○ ●	●	●	●	●
Windscreen washer bottle water	39	●	●	○ ●	●	●	●	●
*Hydraclamp adjustment	40			○ ●	●	●	●	●

○ First 100 hours or one month whichever occurs sooner

● Routine service

EXCAVATOR LOADER

From Machine Serial No. 290000

PREVIEW - YOUFIXTHIS.COM

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Technical Data		7/1 - 1

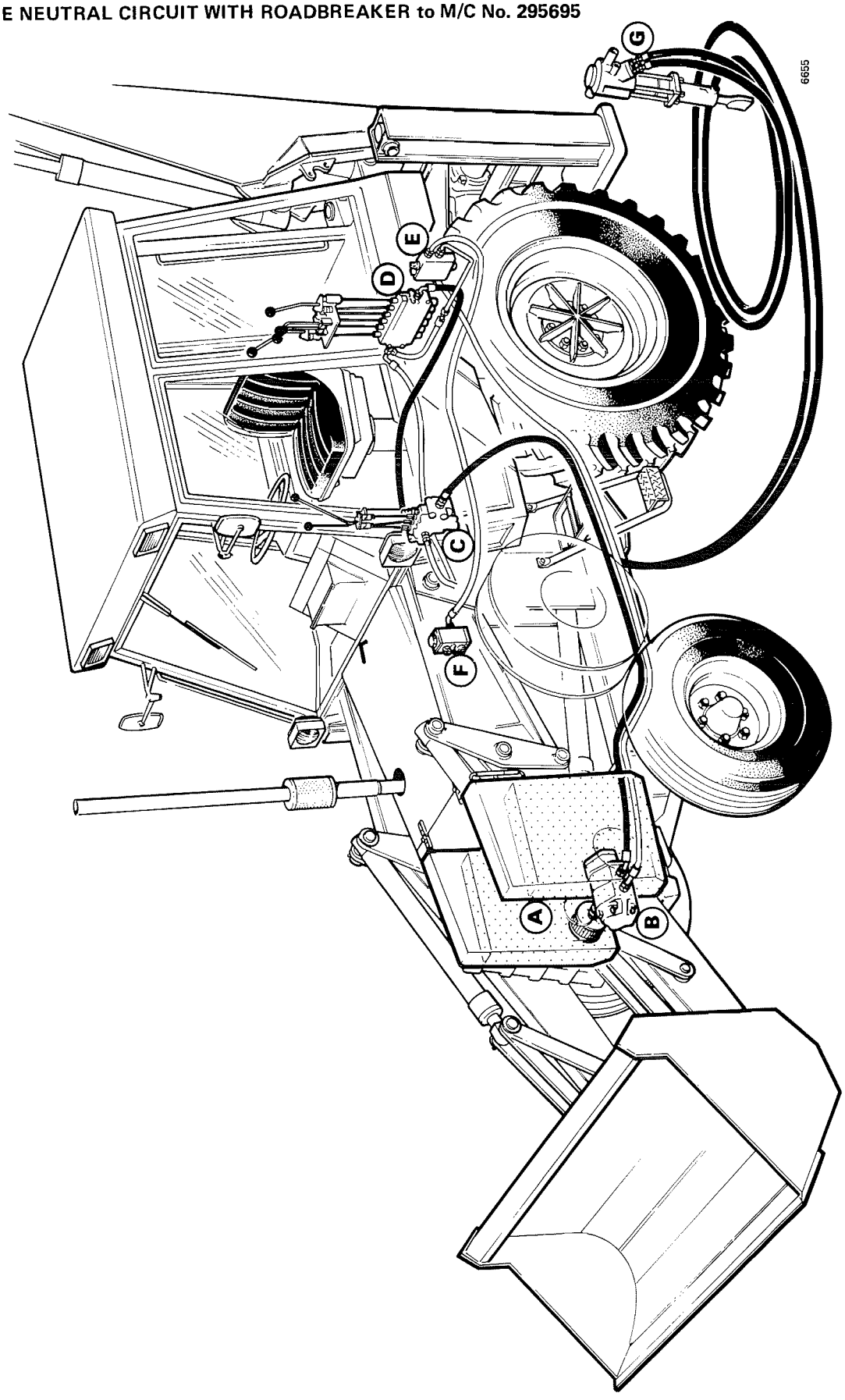
Axle - Front (WD) from m/c no. 297208

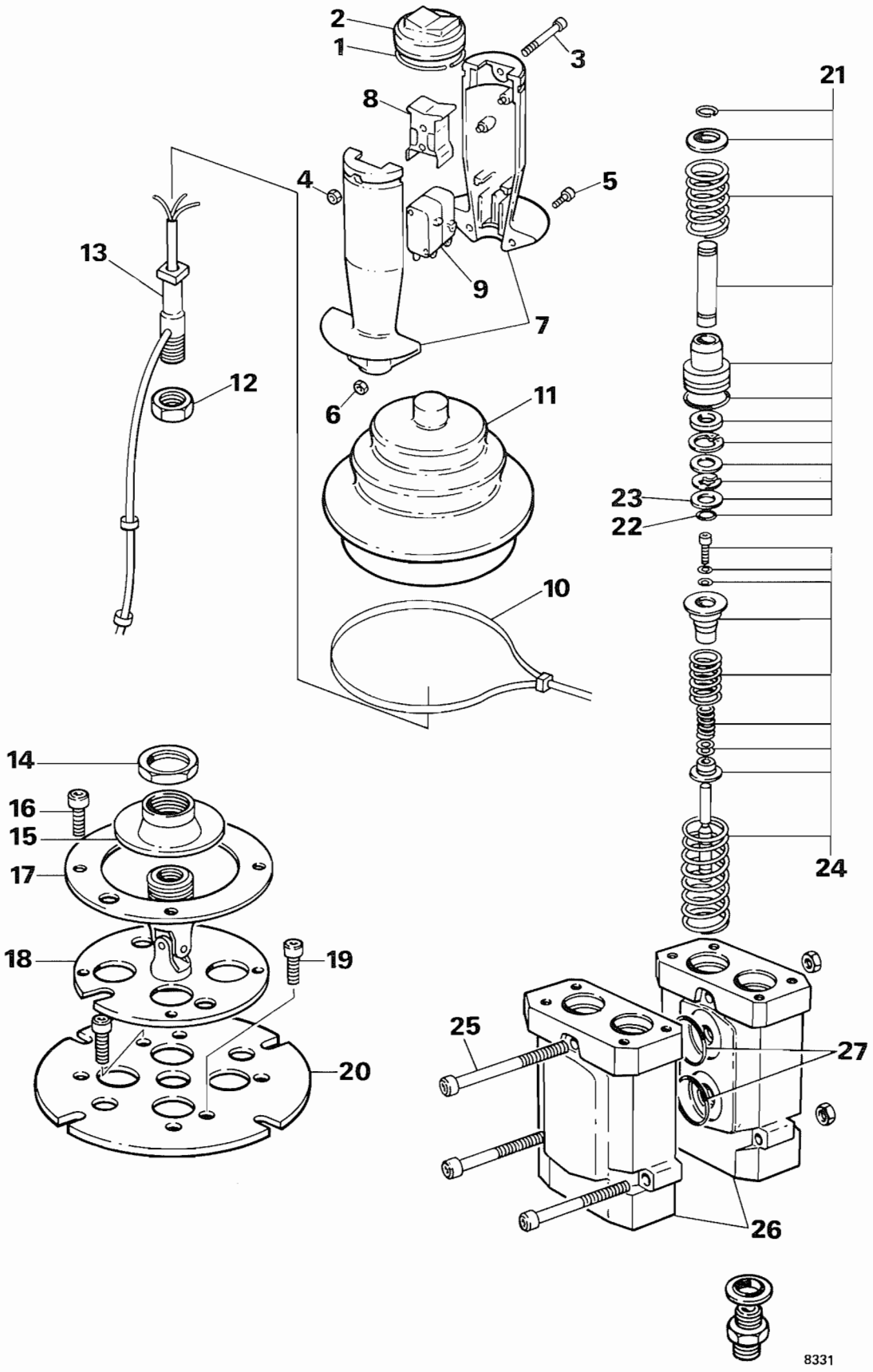
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MACHINE NEUTRAL CIRCUIT WITH ROADBREAKER to M/C No. 295695




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AIR FILTER RAIN CAP & OPTIONAL PRE-CLEANER

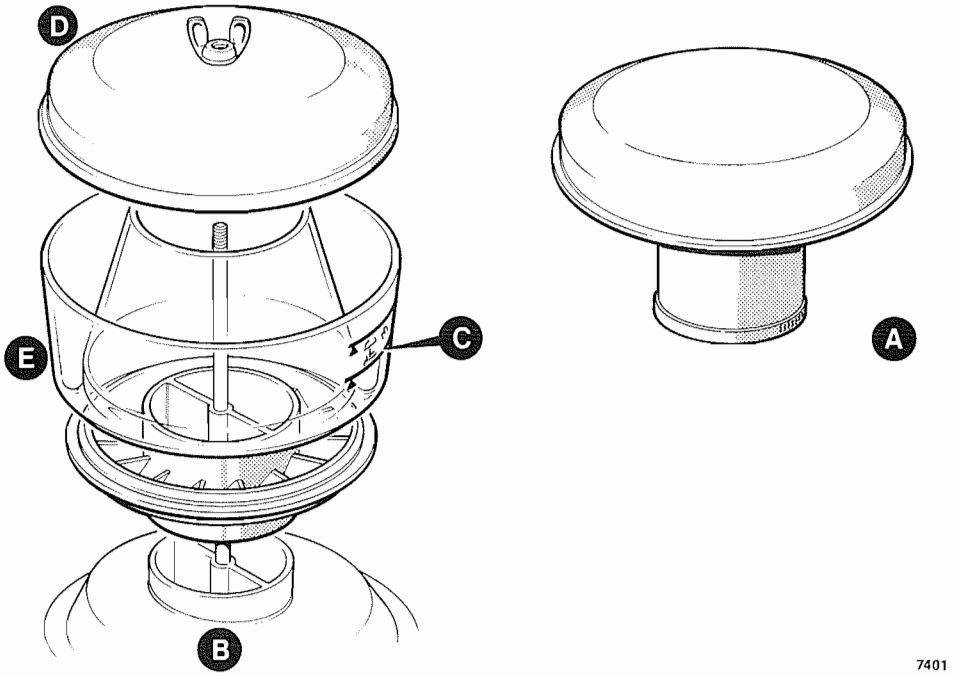
CAUTION: DO NOT run engine with rain cap **A** or optional pre-cleaner **B** removed. Before opening bonnet of machines prior to machine no. 315000, empty dust from pre-cleaner if level is above line **C.**

Empty Optional Pre-cleaner **Every 10 hours**

1. Unscrew wing nut and remove cover **D.**
2. Carefully remove dust bowl **E** and empty out dust, ensuring that none is spilt into the air filter intake. Wipe clean before refitting.
3. Reassemble pre- cleaner.

Note 1: To clean oil and grease from rain cap or pre-cleaner, wash in hot water with a little detergent. Dry before refitting.

* Note 2: Certain suppliers do not provide indicator lines on the collector bowl, in which case empty it if the level reaches one third full.

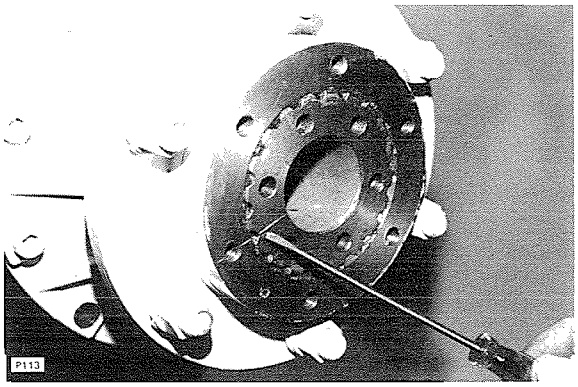


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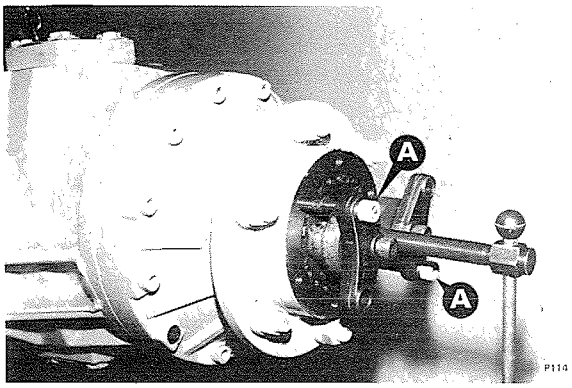
DRIVE AXLE–FRONT (4 WHEEL DRIVE)

Although the axle is shown mounted on a stand, hub and pinion oil seal renewal can be carried out with the axle in situ. If other components are renewed, bearing preload will be altered and this can only be corrected with hub or differential removed from the machine.

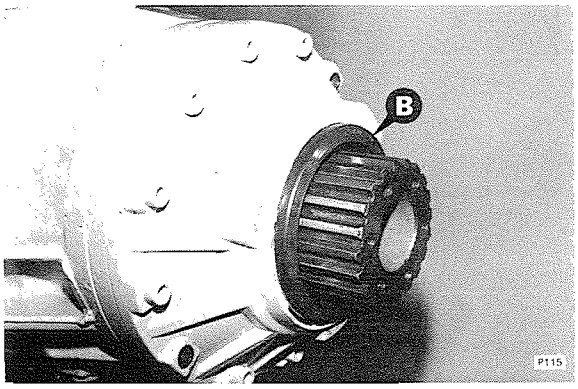
Hub Oil Seal Renewal



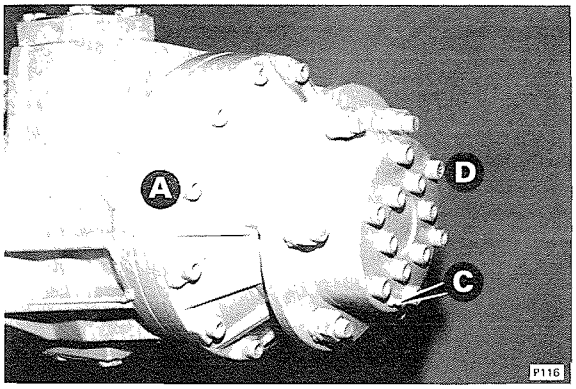
1. Drain oil from hub, remove cover plate and mark wheel drive flange relative to drive splines to ensure correct positions of capscrew holes on re-assembly.



*2. Withdraw drive flange using puller 892/00220 with two capscrews **A** removed from housing.



3. Renew oil seal **B**.



4. Refit drive flange and cover plate, ensuring that grease nipple **C** is aligned with hole in drive flange. Tighten capscrews **A** and **D** to 145 Nm (107 lbf ft).

PREVIEW ONLY

You're viewing 17 of 458 pages

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