SERVICE MANUAL

406
407
408
409

JCB SERVICE ©
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TECHNICAL DATA (407, 409 Machines)

Model

Type	Perkins 1004 - 4LR2, naturally aspirated (AA)
Number of cylinders	4
Bore and Stroke	100 mm (3.937 in) x 127 mm (5 in)
Swept Volume	3990 cm³ (243.5 in³)
Compression Ratio	16.5 : 1
Compression Pressure	20 to 34 bar (290 to 493 lbf/in²) [max. variation between cylinders of 3.5 bar (50 lbf/in²)]
Injection Sequence	1, 3, 4, 2
Valve Clearance (hot or cold)	
- Inlet	0.20 mm (0.008 in)
- Exhaust	0.45 mm (0.018 in)
Max. Speed (No Load)	2160 rev/min
Governed Speed	2000 rev/min
Idling Speed	820 rev/min

Fuel System

Injection Pump Type	CAV DPA
Injection Pump Setting Code (407 IND)	2643C621/HM46L/850/7/2160
Injection Pump Setting Code (All other 407, 409)	2643C619/DM55L/1000/4/2200
Governing	Mechanical
Injection Timing	16° ± 2° BTDC
Injection Setting Pressure	250 atm
Lift Pump Type	AC Diaphragm

Induction System

Air Cleaner Type	2 stage, dry element
Max. Restriction (at which warning light operates).	635 mm (25 in) H_2O

Lubrication System

Oil Pump Type	Eccentric rotor
Oil Pressure (hot) at maximum speed.	2.0 bar (30 lbf/in²) (minimum)

Cooling System

Coolant Pressure	0.48 bar (7 lbf/in²)
Cooling Temperature (normal)	80 to 85 deg C
Temperature Warning Light operates at	98 deg C

For further details see engine manual, Publication No. 9806/0100

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POWERSHIFT FAULT FINDING - INTRODUCTION

The Powershift fault finding procedures concern themselves with general problems normally associated with this type of transmission system, and so the layout is a 'Possible Cause and Remedy' type.

Full flow, pressure and stall testing procedures for the Powershift transmission start on page 6/27-1.

Before commencing with the fault finding procedure make sure that the correct type of transmission fluid has been used (JCB Special Transmission Fluid).

Note: Due to the orientation of the transmission unit in this machine, when the Reverse Clutch is selected, the machine will travel forwards. Similarly, when the Forward Clutch is selected, the machine will travel in reverse.

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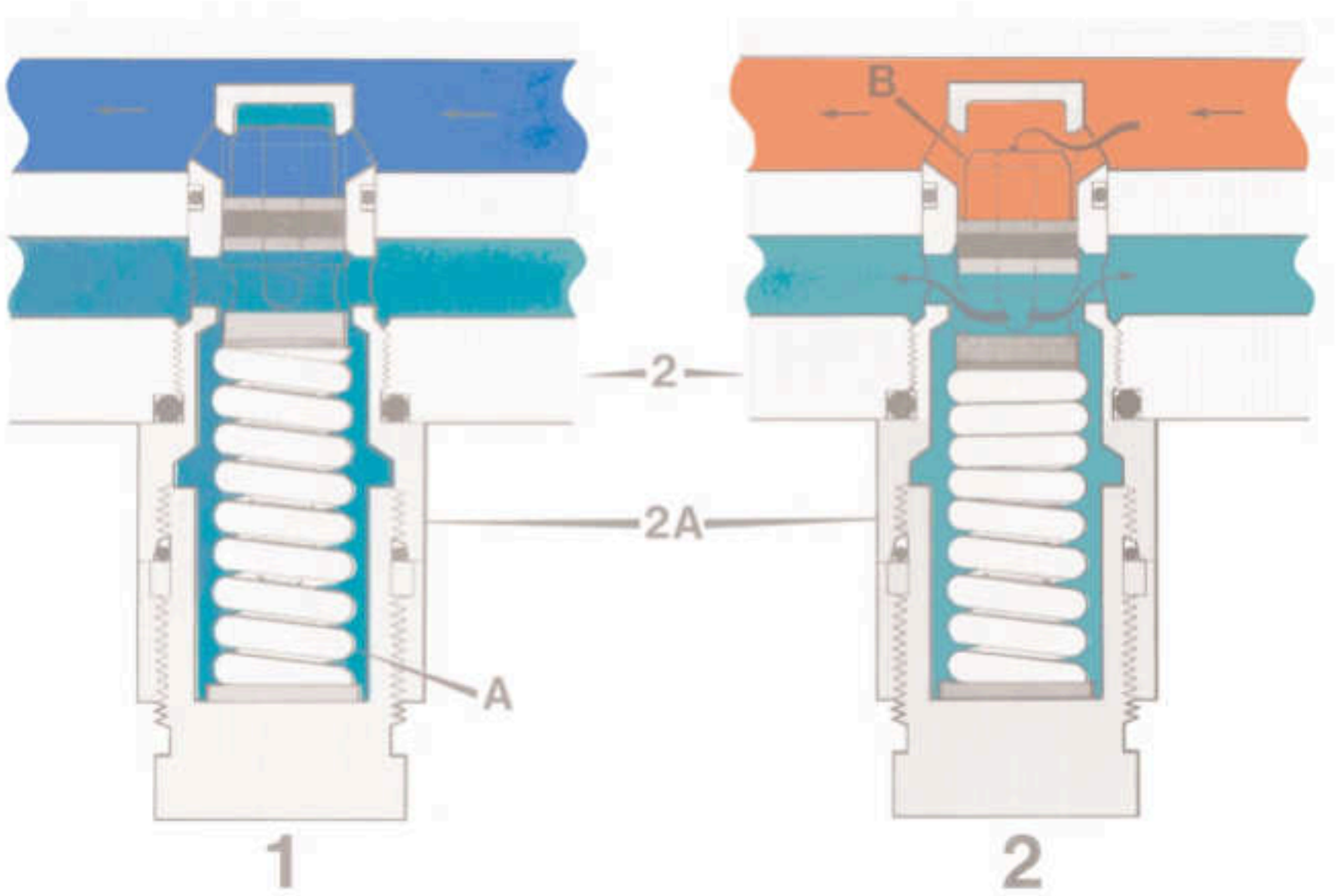
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LOADER VALVE - M.R.V. OPERATION



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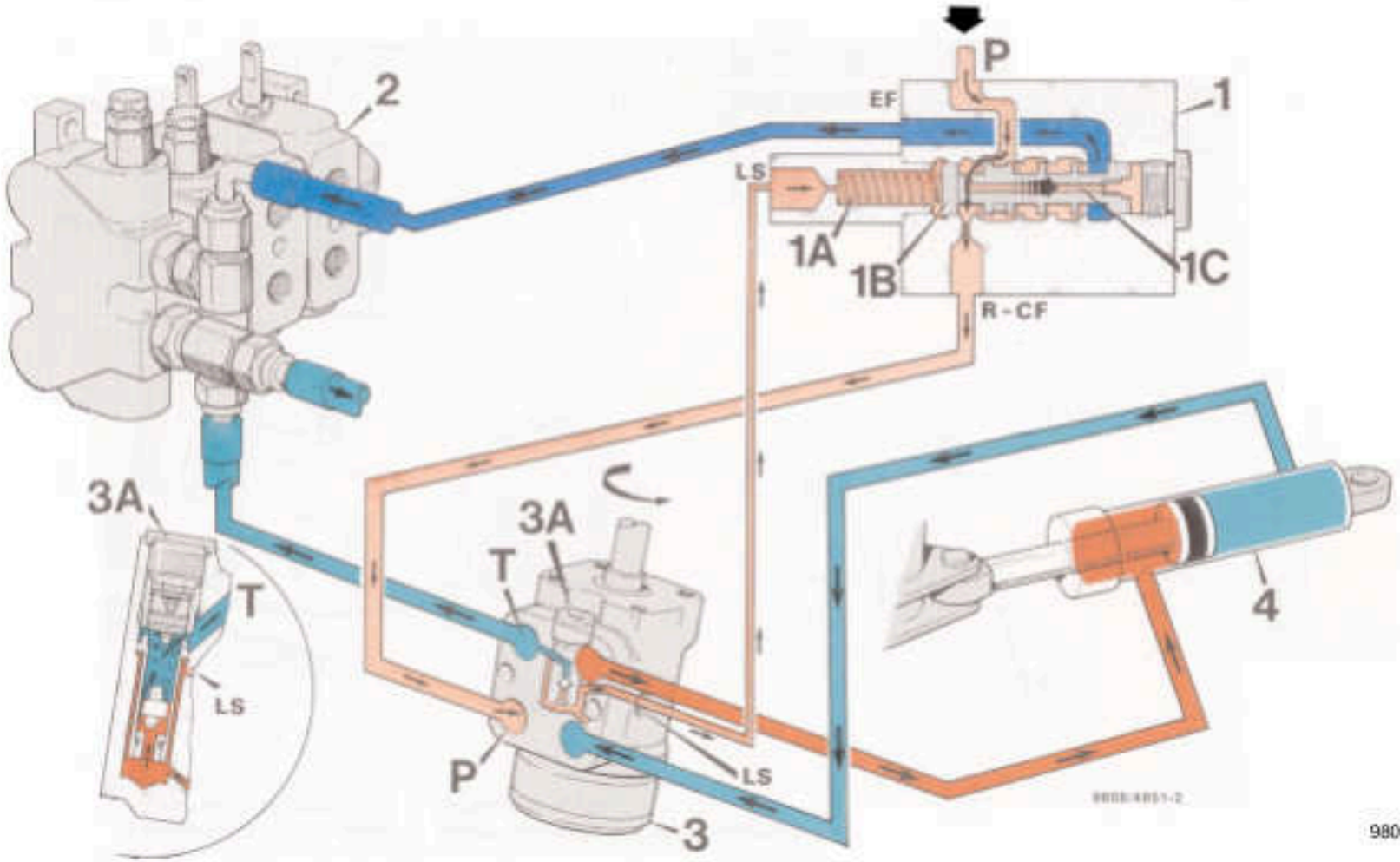
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PRIORITY VALVE OPERATION 2 - TURNING

Pump flow enters the priority valve **1** at port **P**. As the steering unit **3** is operated, pressure demand is signalled on the end of priority valve spool **1B** via the sensing line from the side port **LS** of the steering unit. This pressure causes the spool to move to the right to allow priority flow to the steering unit, which directs the flow to the ram **4** until the required steering lock is reached. When the steering lock is held the pressure signal across the side port **LS** of the steering unit ceases and spool **1B** moves back allowing full pump flow to the loader control valve **2**.

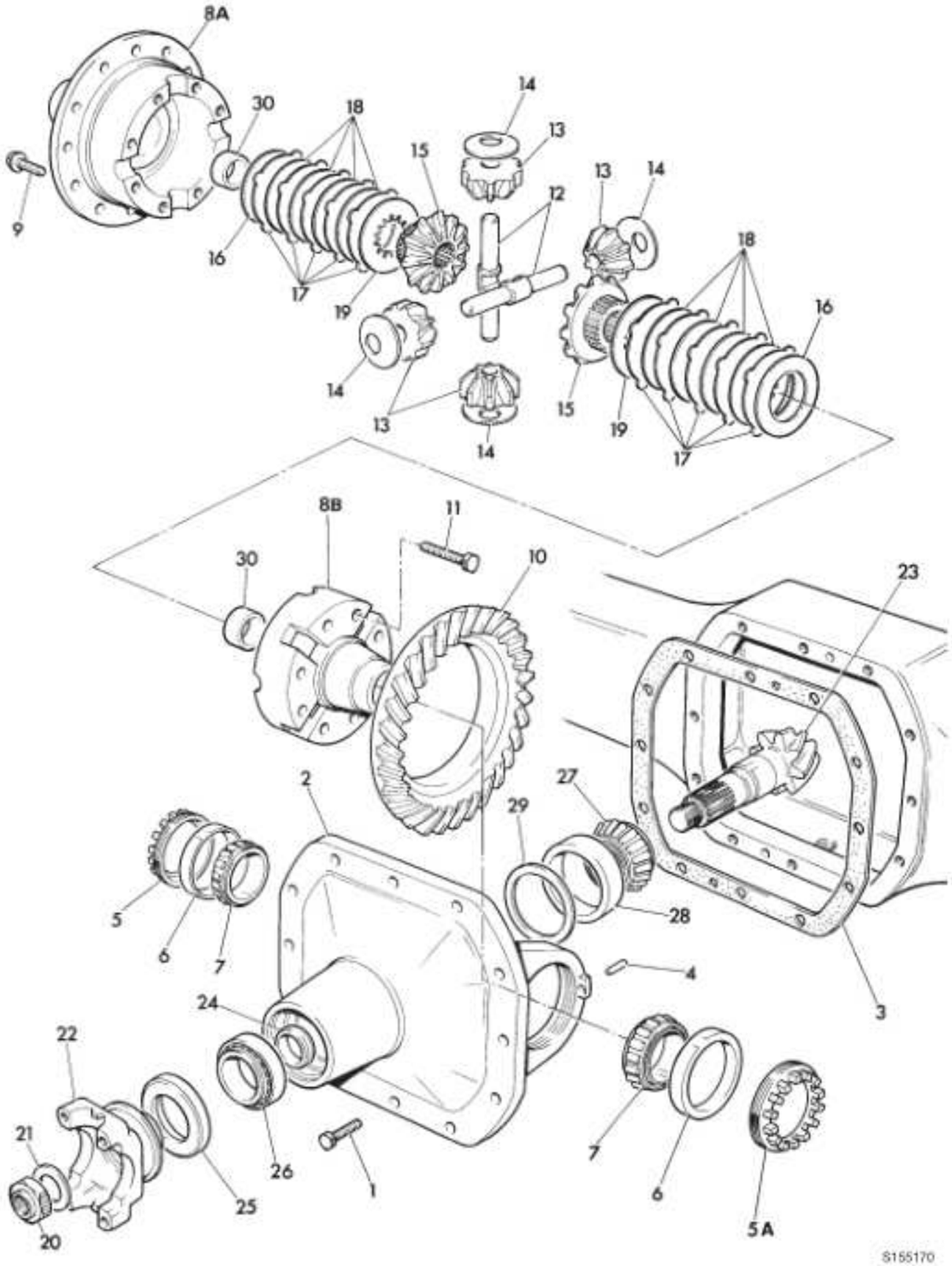
Because the pump flow is always greater than the flow required to operate the steering system, flow to the loader control valve is never completely cut off.

Maximum system pressure is controlled by relief valve **3A**, located in the steering unit **3**.

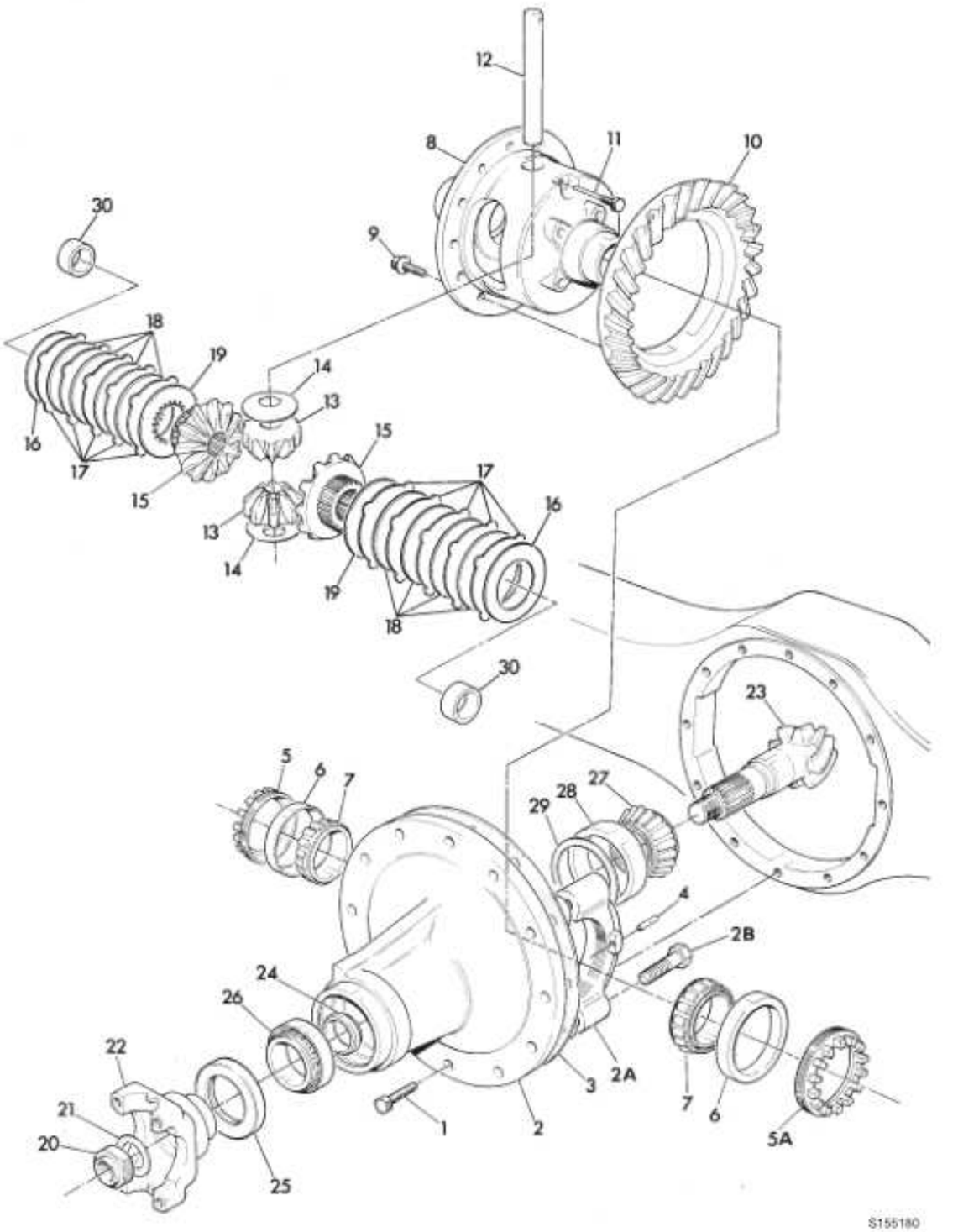


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DRIVE HEAD - 406 Machines with JCB Axles with Limited Slip Differentials



DRIVE HEAD - 408 Machines with JCB Axles with Limited Slip Differentials



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