

Cushion Control Off

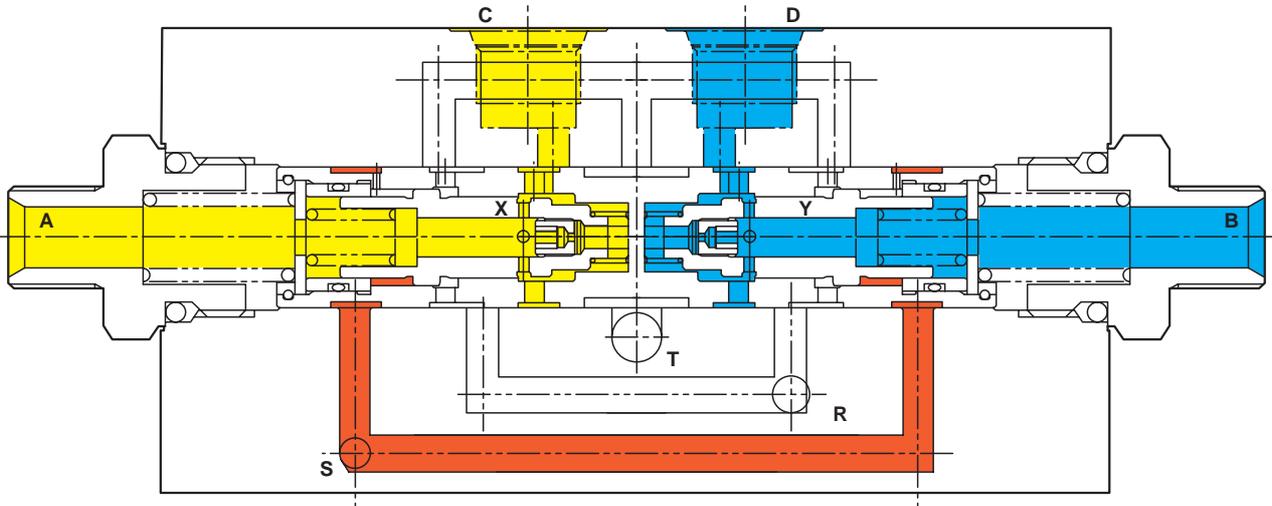


Fig 6. Cushion Control Off

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When the cushion switch is illuminated, the cushion solenoid is energised and pilot pressure is fed to port **S** on the cushion valve. The two inner left and right cushion spools are both pushed into the centre of the outer spool, so that the unrestricted galleries **X** and the cushion valve spools are open to allow the pilot outputs from the hand controller to pass through the valve unrestricted, to the main control valve. When the dipper hand controller is operated, pilot pressure from the lever to port **A**, moves the outer spool to the right and pilot pressure is fed to the dipper spool in the right control valve, via port **C**. At the conclusion of the hand controller operation, the returning pilot oil, goes straight back to the lever, with no restriction. There is no cushioning effect. Hot oil from port **R** returns to tank via the dipper hand controller, as it does in the warming circuit in the neutral position. → [Fig 6. \(□ E-117\)](#)

Removal and Replacement

WARNING

Hydraulic Pressure

Hydraulic fluid at system pressure can injure you. Before connecting or removing any hydraulic hose, residual hydraulic pressure trapped in the service hose line must be vented. Make sure the hose service line has been vented before connecting or removing hoses. Make sure the engine cannot be started while the hoses are open.

INT-3-1-11_2

WARNING

Fluid Under Pressure

Fine jets of fluid at high pressure can penetrate the skin. Keep face and hands well clear of fluid under pressure and wear protective glasses and gloves. Hold a piece of cardboard close to suspected leaks and then inspect the cardboard for signs of fluid. If fluid penetrates your skin, get medical help immediately.

INT-3-1-10_3

Removal

- 1 Make the machine safe, refer to **Service Procedures, Section E**.
- 2 Disconnect all hydraulic hoses from the valve and plug all orifices to prevent ingress of dirt. The hoses should be labelled, if not, label each hose before disconnecting, this will ensure correct position when refitting.
- 3 Remove the four M8 bolts from rear of valve and remove valve from machine.

Replacement

Replacement is a reversal of the removal sequence.

Note: All hydraulic adapters that are installed together with a bonded sealing washer must also have JCB Threadseal applied to the threads of the adapter.

Dismantling and Assembly

Dismantling

⇒ [Fig 7.](#) ([□ E-120](#)).

- 1 Remove adapter **A** and 'O'-ring **B** from valve.
- 2 Extract spring **C**, spool **D** and spring **E**.
- 3 Remove adapter **F** from valve and repeat step 2.

Port	Hose Colour
S	Green
T	Clear

Inspection

Before assembling the solenoid valve make sure that a thorough inspection of all the components is carried out. Remember that although a failed component may be easy to identify, the cause may be less easy to trace. It is also possible that a failed component may have caused damage to other areas of the valve.

- 1 Carefully clean all components using a suitable degreasing agent.
- 2 Carefully inspect all components for signs of excessive wear or damage. If wear or damage is evident, components must be renewed.

Assembly

Assembly is a reversal of the dismantling sequence.
⇒ [Fig 7.](#) ([□ E-120](#)).

- 1 Lubricate spool **D**, springs **C** and **E** with clean hydraulic oil.

Table 1. Hydraulic Connections

Port	Hose Colour
A	Pink
B	Green
C	Pink
D	Green
E	Red
F	Blue
G	Red
H	Blue
R	White/Yellow

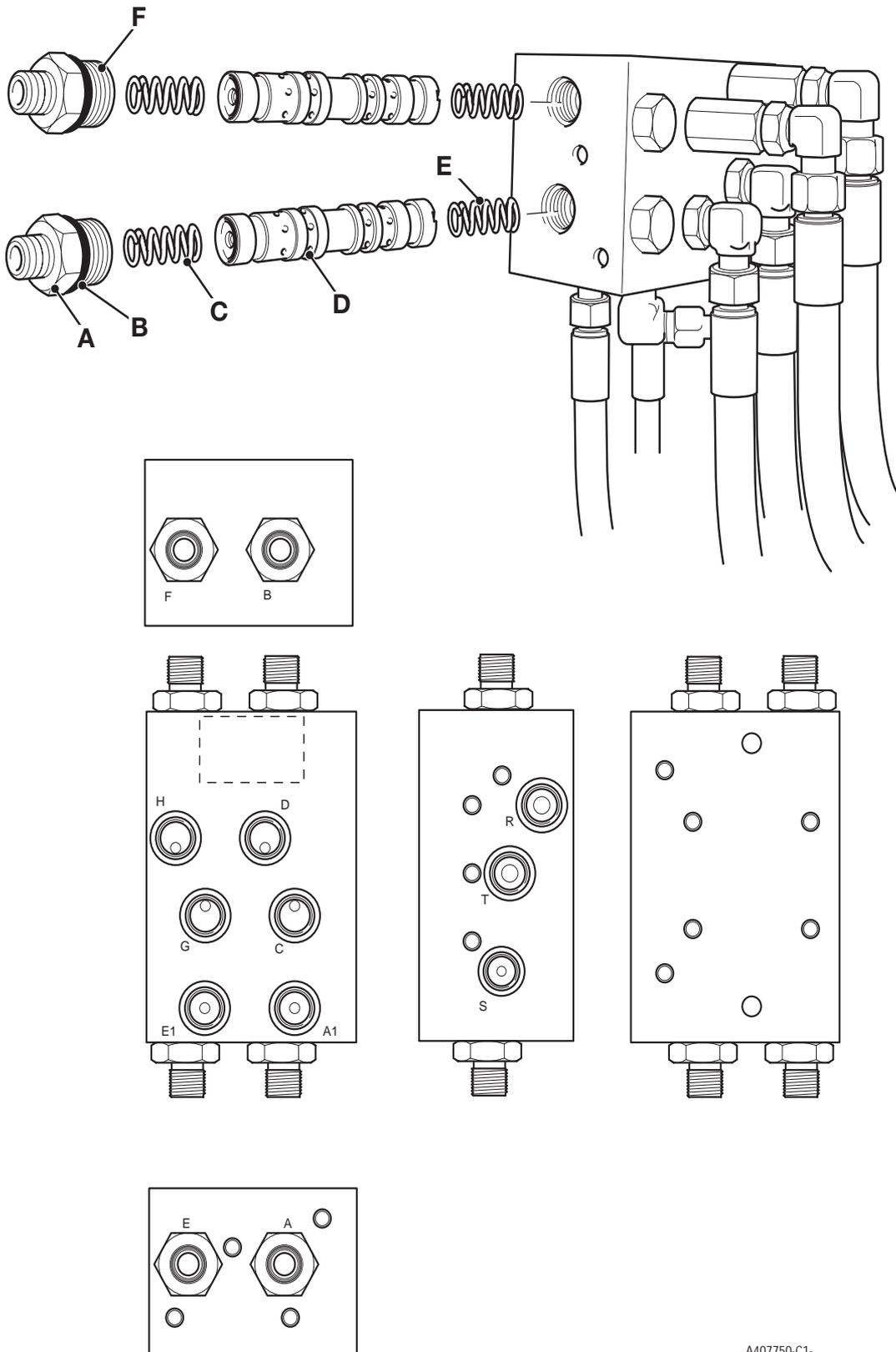


Fig 7.

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Slew Motor

Motor Operating Principles

The following detailed description explains the operating cycle of an individual piston.

High pressure hydraulic fluid **P** from the pump flows via input port **a** and control valve **A** into cylinder **B** when it is aligned with the input side **A(a)** of the control plate. The force **F** against piston **C** generates a force **F2** (shown vectorially) which acts on piston shoe **D**. The piston shoe moves against stationary swash plate **E**, causing cylinder block **F** and hence drive shaft **G** to rotate. This situation exists for 180° of rotation of the cylinder block i.e. until the cylinder aligns with the output side **A(b)** of the control plate. For the next 180° of rotation of the cylinder block the piston

expels low pressure hydraulic fluid **T** via the output side **A(b)** of the control plate, port **b** and back to tank. Driving force **F2** varies according to the flow rate of the high pressure hydraulic fluid input.

There are nine pistons equally spaced around the cylinder block. As each one in turn goes through the cycle described, a continuous even rotation of the output shaft is produced.

By reversing the hydraulic fluid flow direction i.e. high pressure feed into port **b**, the motor rotation is reversed.

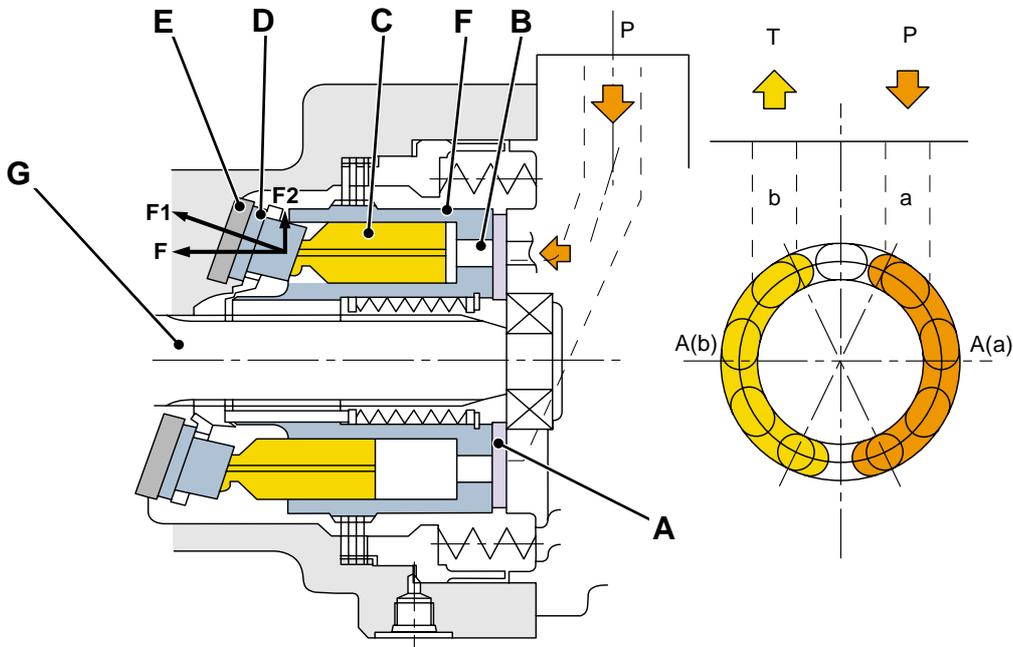


Fig 1.

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Slew Brake Operation

Cylinder block **F** is splined to output shaft **G**. Two friction plates **A** are splined to the outer edge of the cylinder block and are interleaved between three counter plates **B** which are fixed to the slew motor casing **E**.

The brakes are applied when the hydraulic pressure at port **X** is zero. Spring **C** pressure forces piston **D** down to press the friction plates and the counter plates together, thereby

locking cylinder block **F** and casing **E** and preventing rotation.

The brakes are released when hydraulic pressure is applied to port **X**. Oil enters chamber **Y** and pushes brake piston **D** up, against the pressure of spring **C**, to release the previously locked friction plates **A** and counter plates **B**. Cylinder block **F** is now free to rotate within casing **E**.

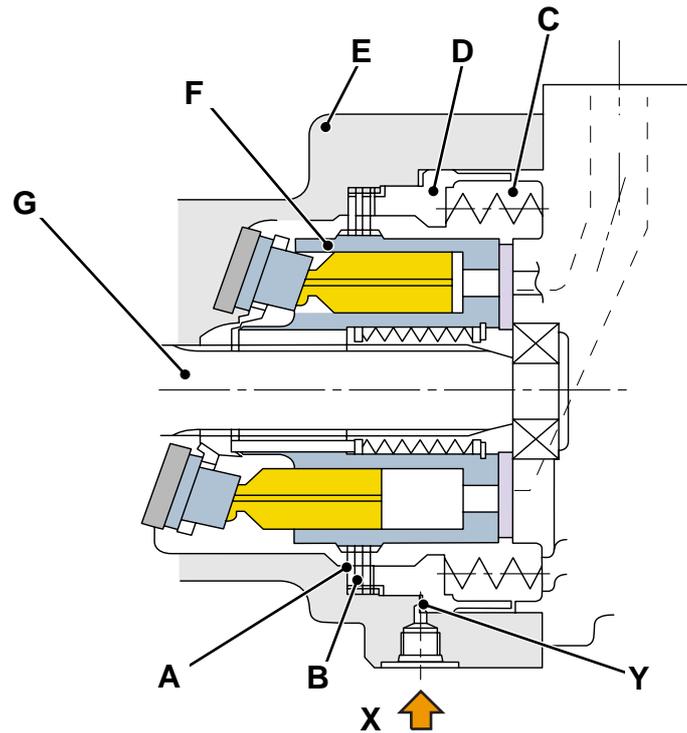


Fig 2.

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