*New engines DO NOT require a running-in period. The engine/machine should be used in a normal work cycle immediately; glazing of the piston cylinder bores, resulting in excessive oil consumption, could occur if the engine is gently run-in. Under no circumstances should the engine be allowed to idle for extended periods; (e.g. warming up without load). 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 appropriate recommended grade as shown in the 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. After the first 100 hours operation, it is essential that the 10W/30 oil is replaced by the lubricant recommended below.

ITEM	CAPACITY Litres (Gal)	FLUID / LUBRICANT	INTERNATIONAL SPECIFICATION
Fuel Tank	17.0 (3.75)	Diesel Oil (See Types of Fuel)	ASTM D975-66T Nos. 1D, 2D
Engine (Oil)			
First 100 hours only	3.5 (0.77)	**JCB 10W/30 Multigrade** above -15°C (above 5°F) **5W/20** -15°C to -25°C (5°F to -13°F)	MIL-L-46152, API CC/SF API CC/SE (recommended)
After first100 hours		**JCB 15W/40 Multigrade** above -10°C (above 14°F) **5W/20** -10°C to -25°C (14°F to -13°F)	SAE15W/40, MIL-L-46152B, AP1 CD/SE MIL-L-2104D API CC/SE or API CD/SE
Engine (Coolant)			
Canopy Cab	4.5 (1.0) 5.0 (1.1)	**JCB Universal Antifreeze/water** (See **Coolant Mixtures**)	ASTM D3306-74
Track Gearbox (each)	0.3 (0.07)	**JCB SAE 30 Engine Oil** (NOT Multigrade)	API CD/SF, MIL-L-46152 MIL-L-2104D
Slew Gearbox (Lubrication)			
801.4 to M721136 801.5 to M730003 801.6 to M728056		**From Hydraulic System**	
801.4 M721137 on 801.5 M730004 on 801.6 M728057 on	0.7 (0.15)	**JCB HD90 Gear Oil** Below 0°C (32°F) **JCB HD140 Gear Oil** 0°C to 40°C (32°F to 104°F)	API-GL-5, MIL-L-2105D API-GL-5, MIL-L-2105D
Track Idler Wheels	0.025 (0.006)	**JCB HD90 Gear Oil**	API-GL-5, MIL-L-2105D
Track Rollers	0.025 (0.006)	**JCB HD90 Gear Oil**	API-GL-5, MIL-L-2105D
Hydraulic System	30 (6.6)	**JCB Special Hydraulic fluid** Below -10°C (14°F) **JCB Hydraulic Fluid 46** -10°C to 40°C (14°F to 104°F) **JCB Hydraulic Fluid 68** Over 40°C (104°F)	
Slew Ring Bearings Gear Teeth		**JCB MPL Grease** **JCB Slew Pinion Grease ##**	Lithium based, No. 2 consistency.
All Other Grease Points		**JCB MPL Grease**	Lithium based, No. 2 consistency.

WARNING

JCB Slew Pinion Grease is harmful. It contains bitumen compounds 2811 with possible risks of irreversible effects. Excessive contact may lead to dermatitis or skin cancer. Always use a barrier cream or wear gloves.
Wash contaminated skin thoroughly with soap and water. In the event of contact with the eye, immediately wash with plenty of water and seek medical advice.

You must grease the machine regularly to keep it working efficiently. Regular greasing will also lengthen the machine's working life.

Greasing should be done with a grease gun. Normally, two strokes of the gun should be enough. Stop greasing when fresh grease appears at the joint.

WARNING

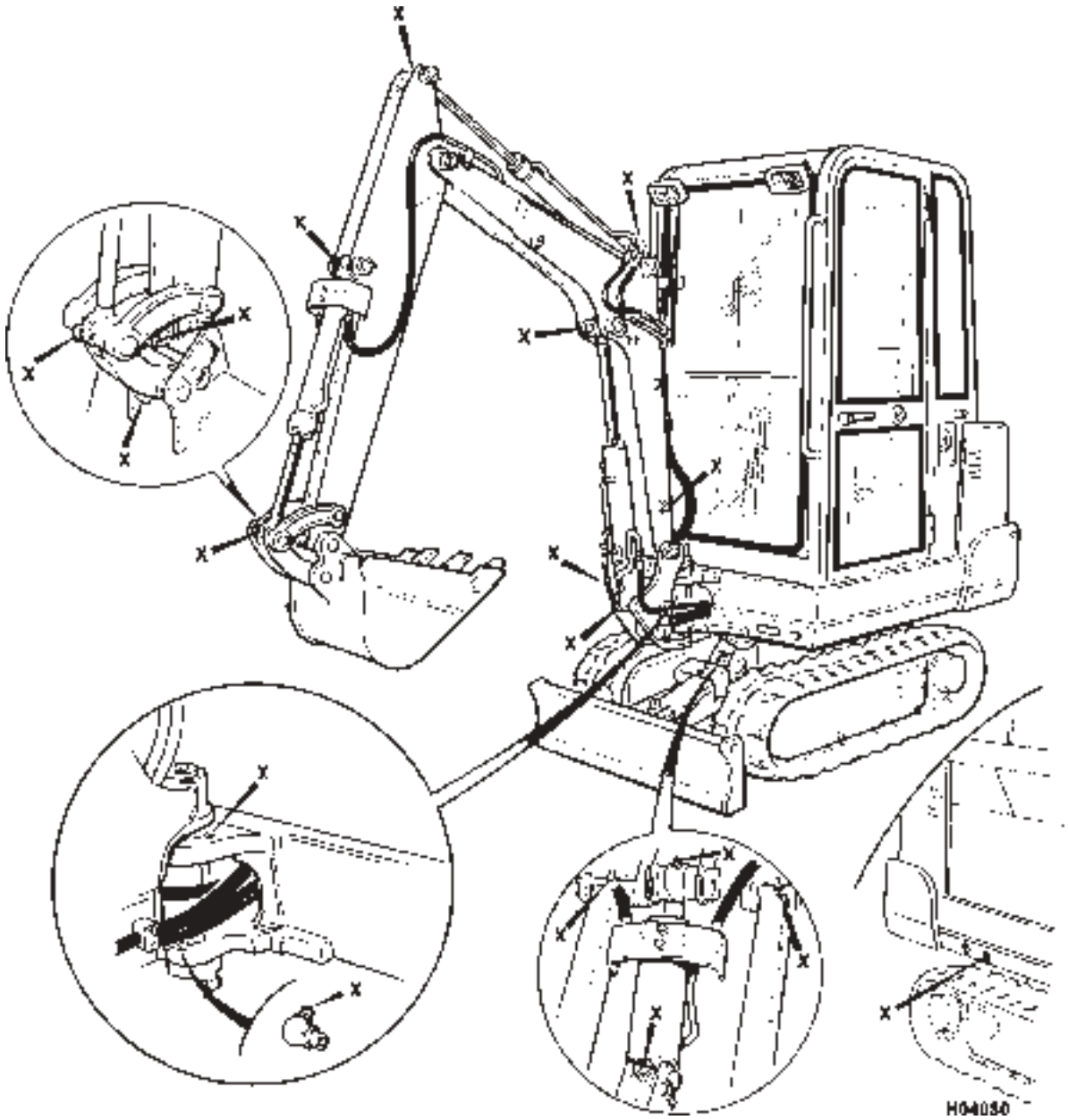
You will be working close into the machine for these jobs. Lower the attachments if possible. Remove the starter key . This will prevent the engine being started.

8-3-1-3

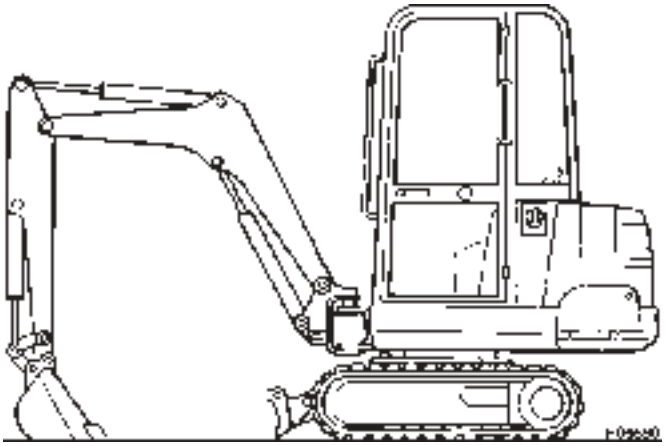
For the types of grease to use at each point see the **Lubricants and Capacities** chart.
Do not mix different types of grease, keep them separate.

Note: *Some optional attachments may need greasing more often. See Section A - ATTACHMENTS .*

Daily



Bucket Dismantling and Assembly



When Dismantling

1 Set up the machine in the posture shown, with the bucket lightly grounded.

2 Shut down the machine and post **WARNING** notices to prevent operation during maintenance.

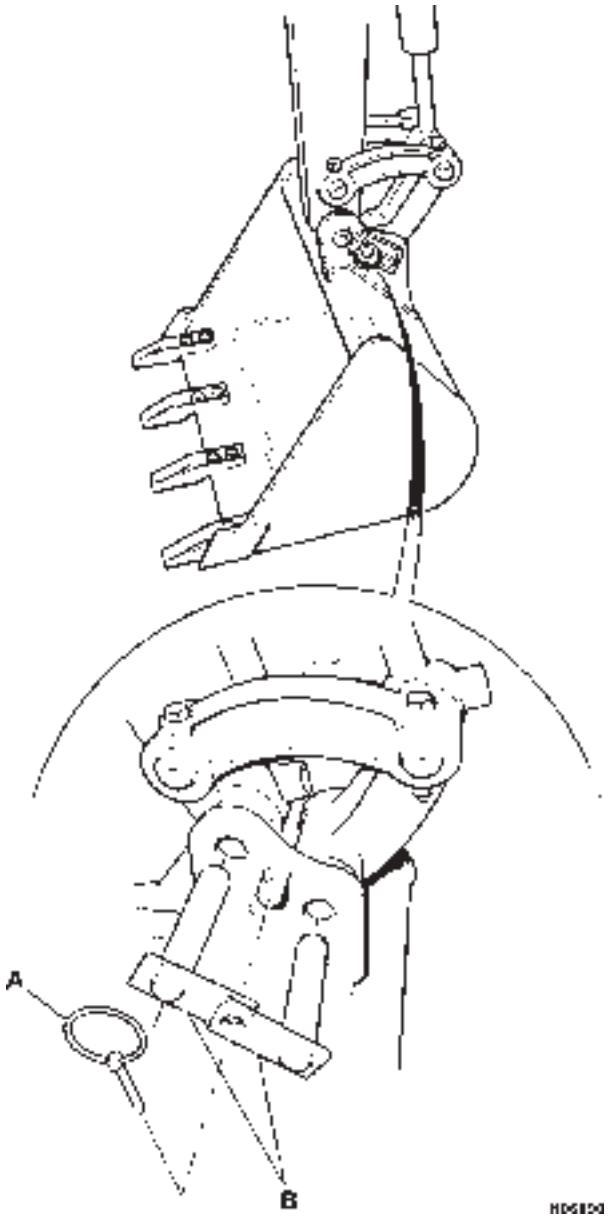
3 Remove the lynch pin **A**. Drive out the bucket pivot pins **B**.

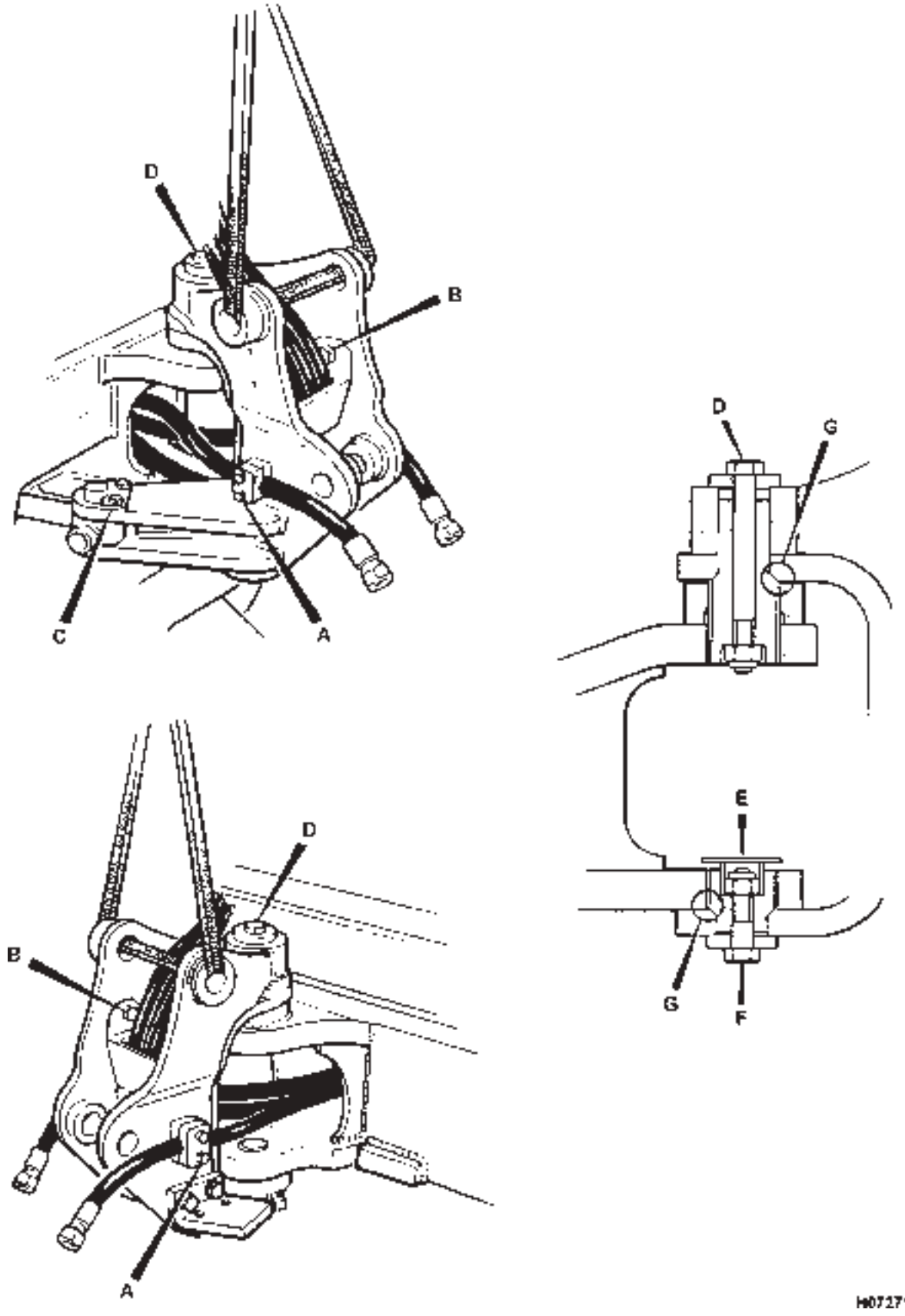
4 Separate the bucket from the machine.

***5** Check the wear on the bucket teeth. Remove and renew as necessary.

Bucket Tooth Wear

Reference value	104 mm (4.1 in.)
Allowable limit	78 mm (3.1 in.)

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ALTERNATOR (cont'd)

Inspection/Testing

Rectifier Assembly

1 Inspect the rectifier assembly for any obvious damage.

2 Using a ohmmeter, touch one ohmmeter lead to the rectifier frame **A** and the other ohmmeter lead to each of the diodes **B** (6 off) terminals in turn.

3 Observe the ohmmeter readings.

4 Change over the ohmmeter leads and repeat step **2**.

5 Observe the ohmmeter readings.

NOTE: *A serviceable diode shown continuity in one direction and high resistance in the other direction.*

6 If each diode gives a high and low resistance, the rectifier is satisfactory.

7 ft one or more diodes shows a high resistance in both directions - replace the rectifier assembly.

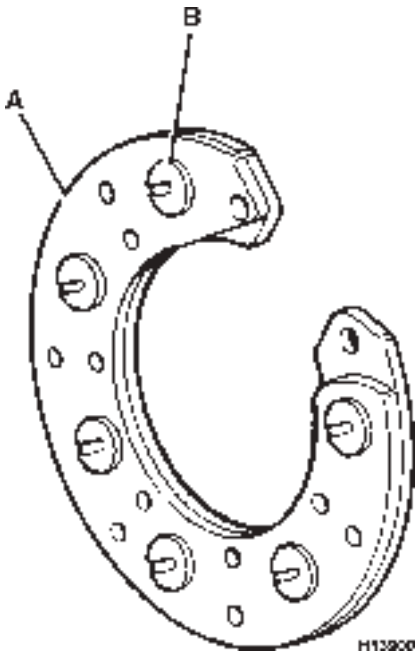
8 If one or more diodes shows a low resistance in both directions - replace the rectifier assembly.

Brush Holder and Brushes

1 Inspect the brush holder assembly for the following:
a Damaged, corroded or stretched brush springs.
b Chipped or broken bushes.
c Dirt or contamination.
d Broken mounting holes, cracks or other damage.

2 Measure the length of the brushes. If less than 0.217in (5.5mm) replace them.

3 If the bushes are to remain in use, clean them with a soft cloth.



ALTERNATOR TO REGULATOR B CIRCUIT CONTINUITY TEST (see fig. 13)

indication Lamp On - Engine Running

1 Disconnect the cable from the battery negative post.

2 Turn the starter switch to the ON position.

3 Disconnect the regulator from the wiring harness.

4 Connect one ohmmeter lead to the wiring harness B terminal.

5 Connect the remaining ohmmeter load to alternator B terminal and observe the ohmmeter reading.

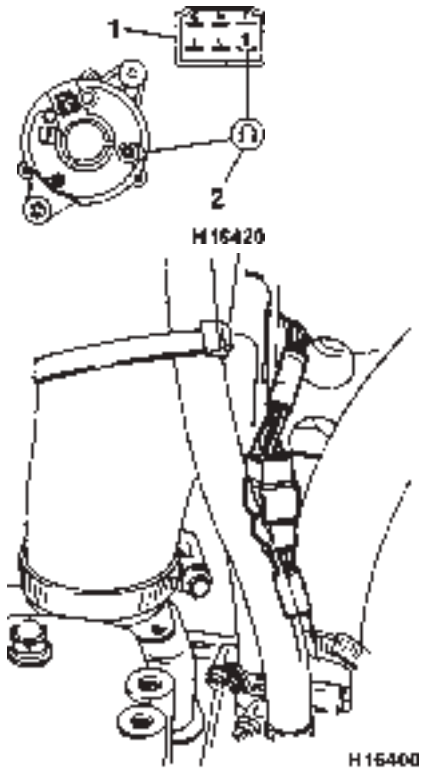


Figure 13
Alternator to Regulator B Circuit ContinuityTest

1 Regulator Wiring Connector 2 Ohmmeter

TEST RESULTS

- High Resistance Reading = Repair open or cause of high resistance in the B circuit
- Low Resistance Reading = Replace regulator

FUSE TO REGULATOR L TERMINAL CIRCUIT CONTINUITY TEST (see fig. 14)

Starter Switch On - Indicator Lamp Off

1 Disconnect the wiring harness at the regulator.

2 Connect a jumper from the wiring harness L terminal to ground.

3 Turn the starter switch to the ON position and observe the indicator lamp.

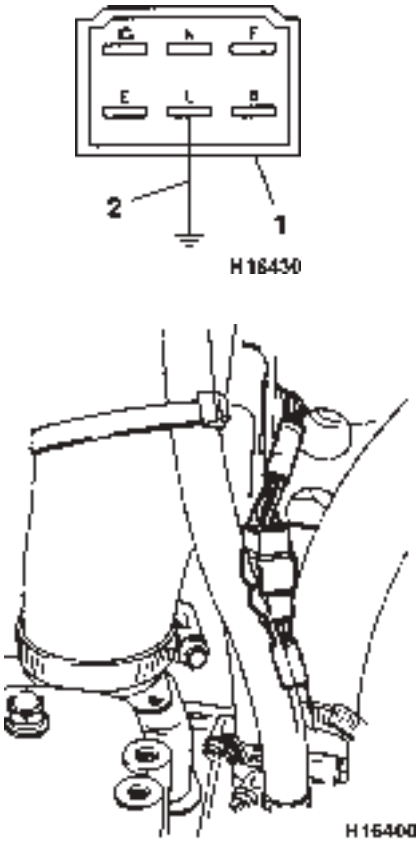


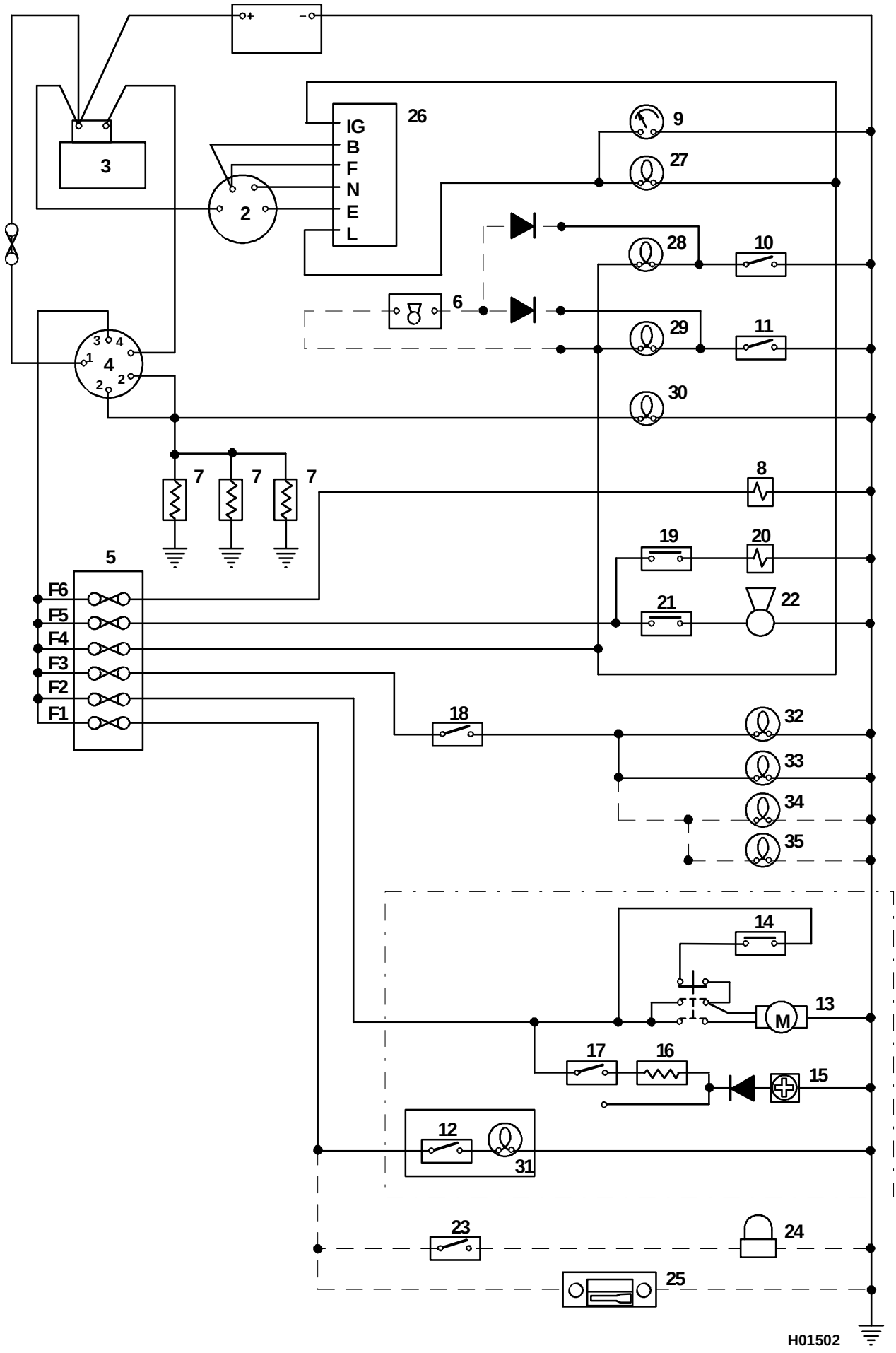
Figure 14
Fuse to Regulator L Terminal Circuit Continuity Test

1 Regulator Wire Connector 2 Jumper Wire

TEST RESULTS

- Indicator lamp is ON = Check L circuit continuity in regulator

  Check fuse, bulb and wiring for an open circuit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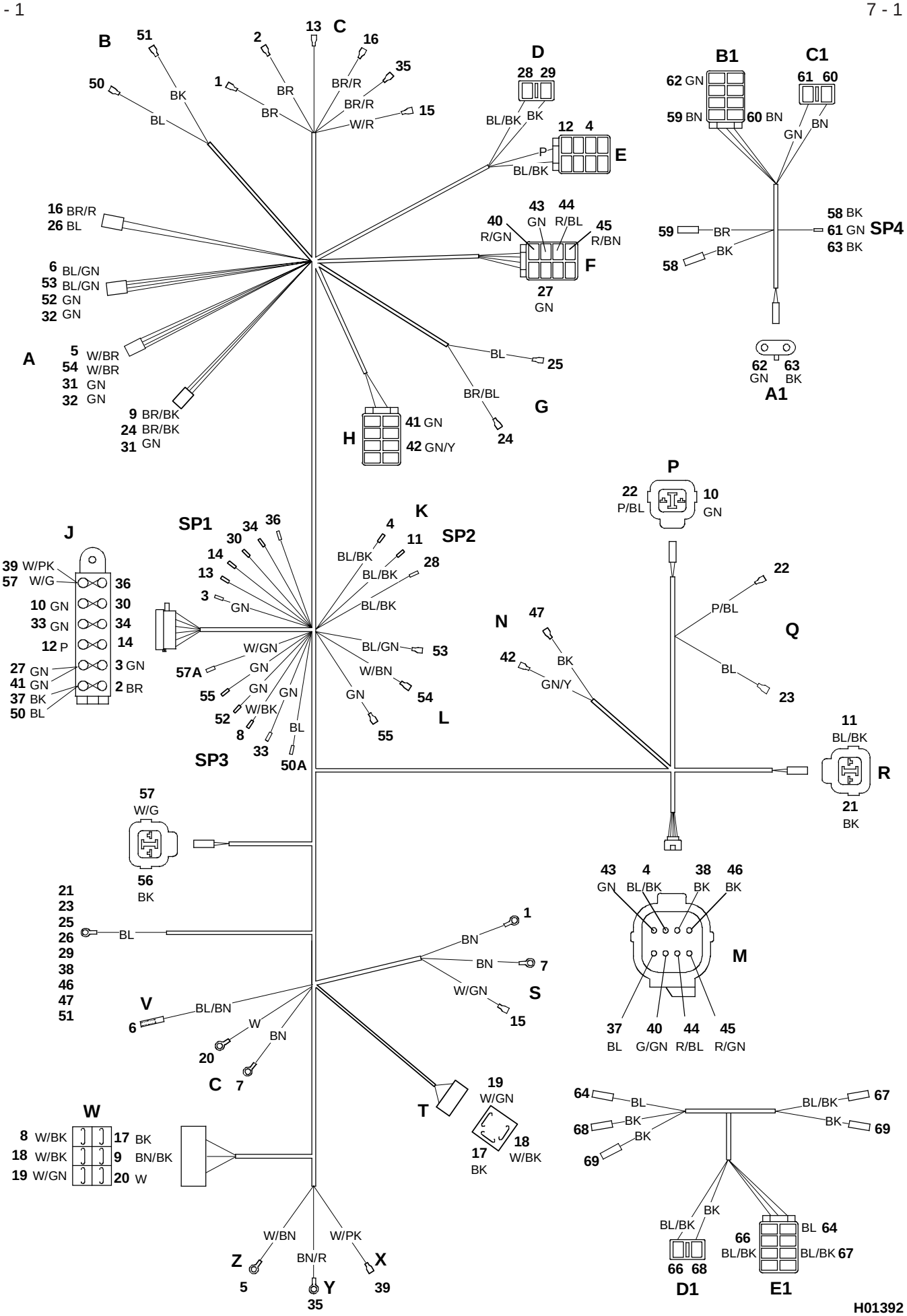
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GN BN
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59 BR
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SP4
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52 GN
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44 R/BL
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Swing Control cable (foot pedal)

1 Fit cable to slew frame with cable saddle **H** and bolts **G**.

2 Connect cable ends to valve block spool and foot pedal link with the clevis pins.

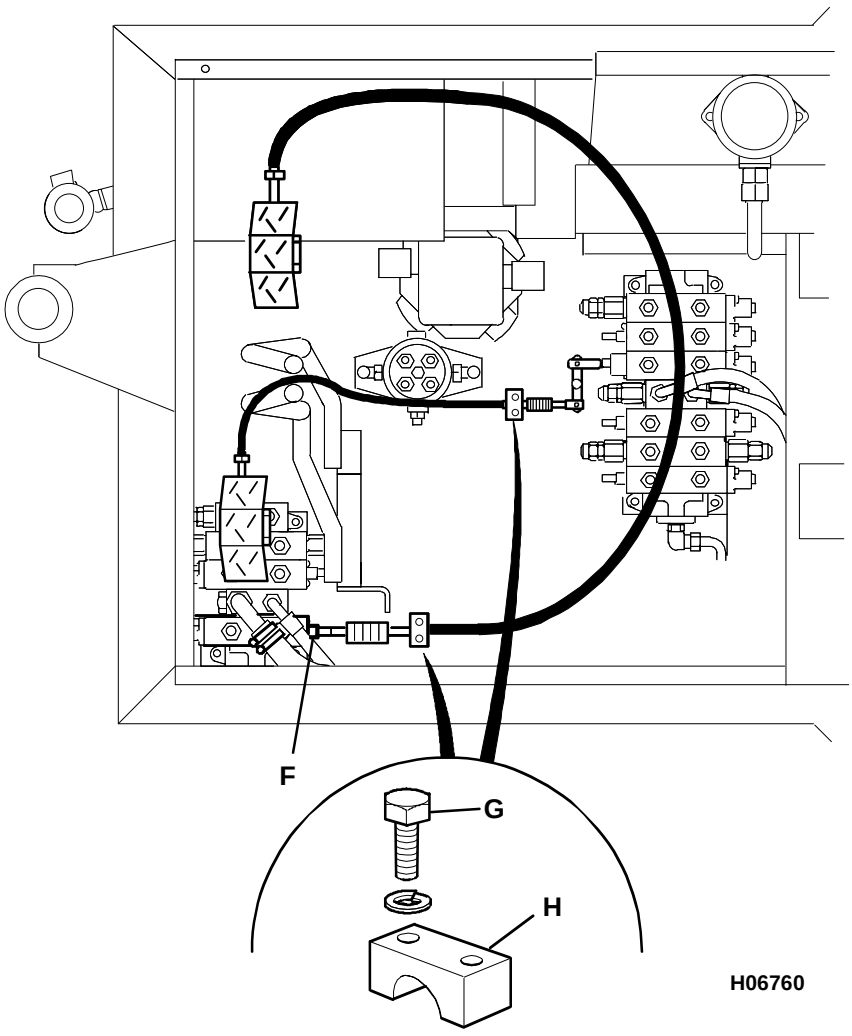
3 Adjust cable length until foot pedal pad is horizontal.

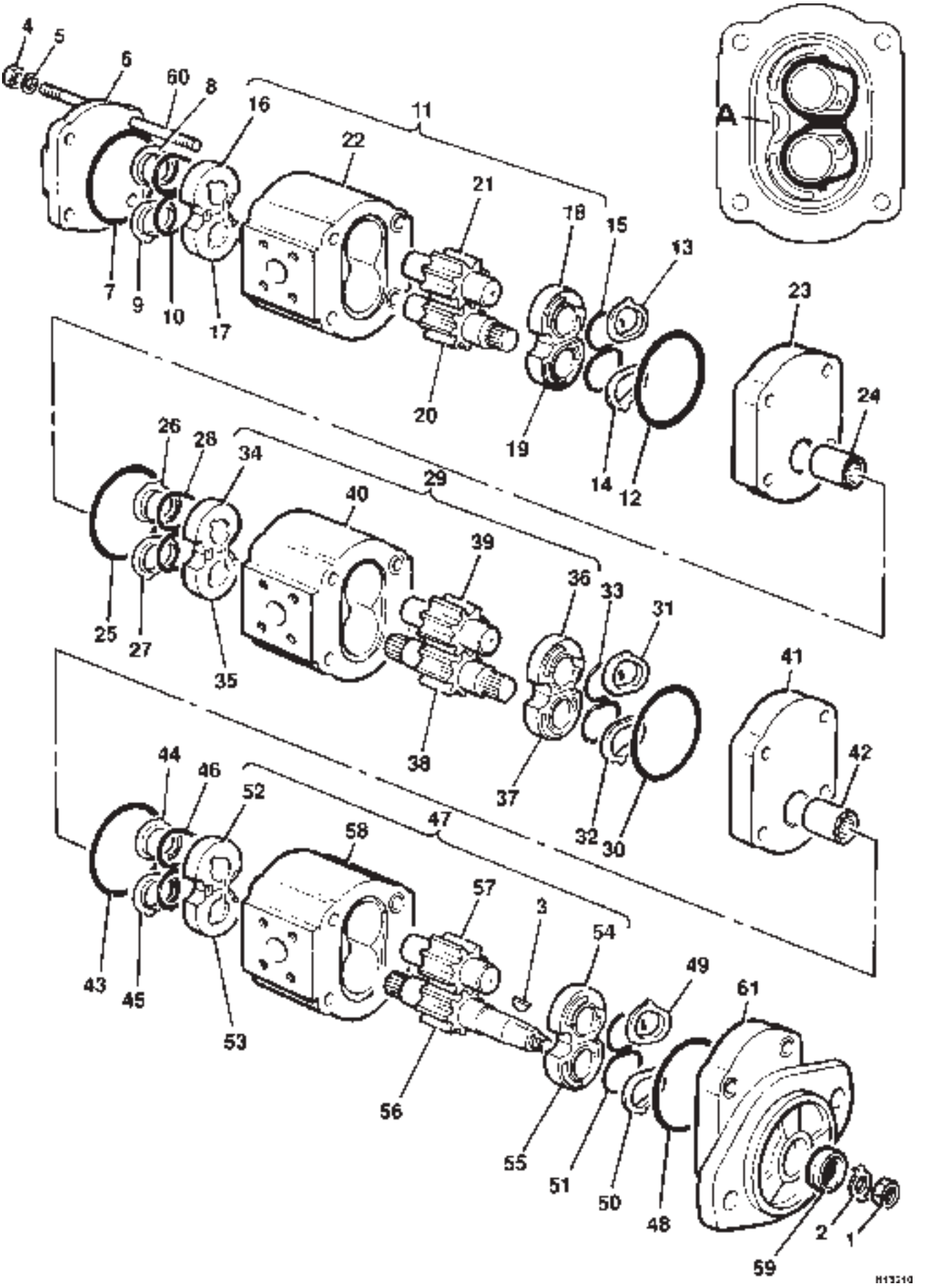
Auxiliary Control Cable (foot pedal)

1 Fit cable to slew frame with cable saddle **H** and bolts **G**.

2 Screw cable end into spool following Excavator Control Cable fitting precautions above, and tighten locknut **F**. Fit the cable end to the foot pedal link with clevis pin.

3 Adjust cable length until foot pedal stem is in the centre of floor plate slot.

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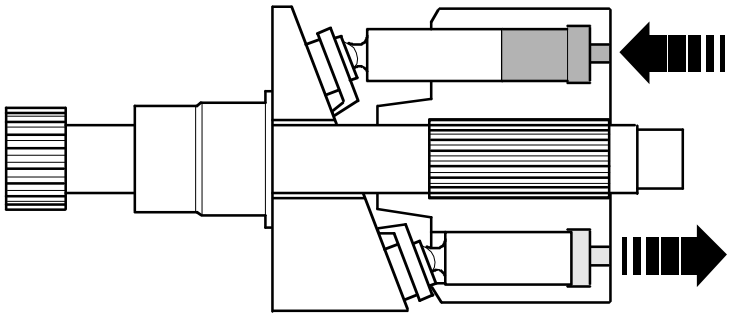
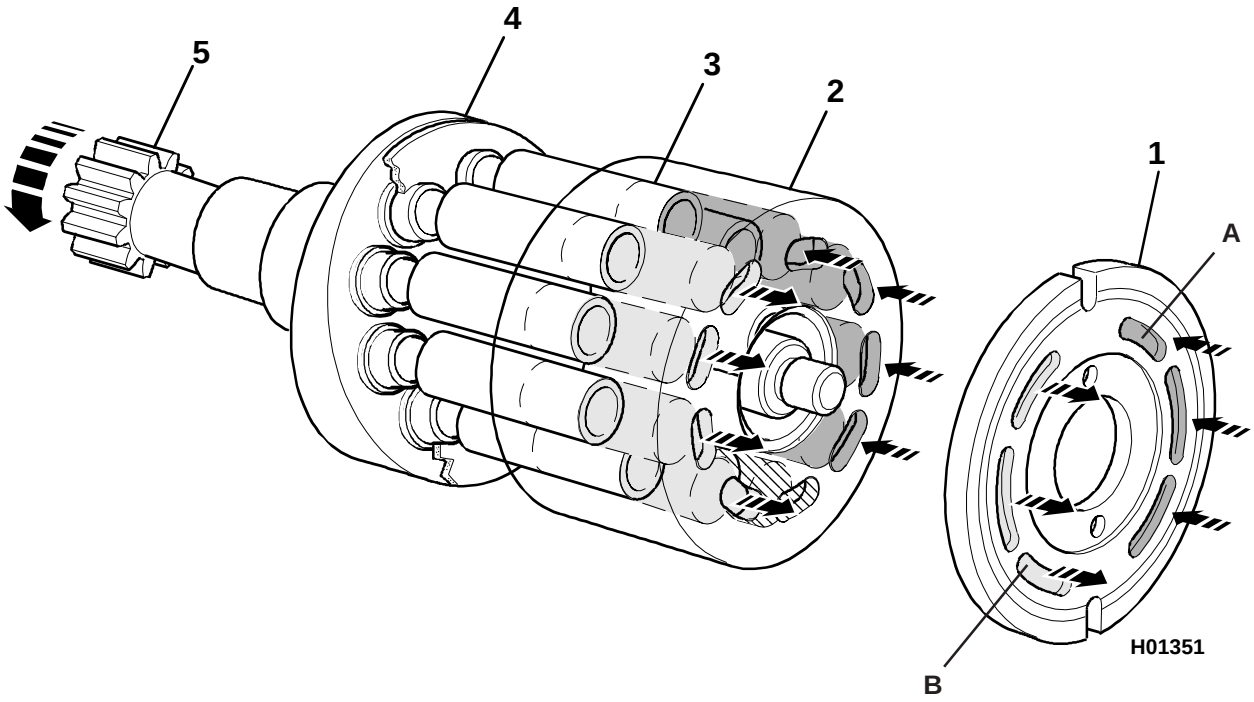
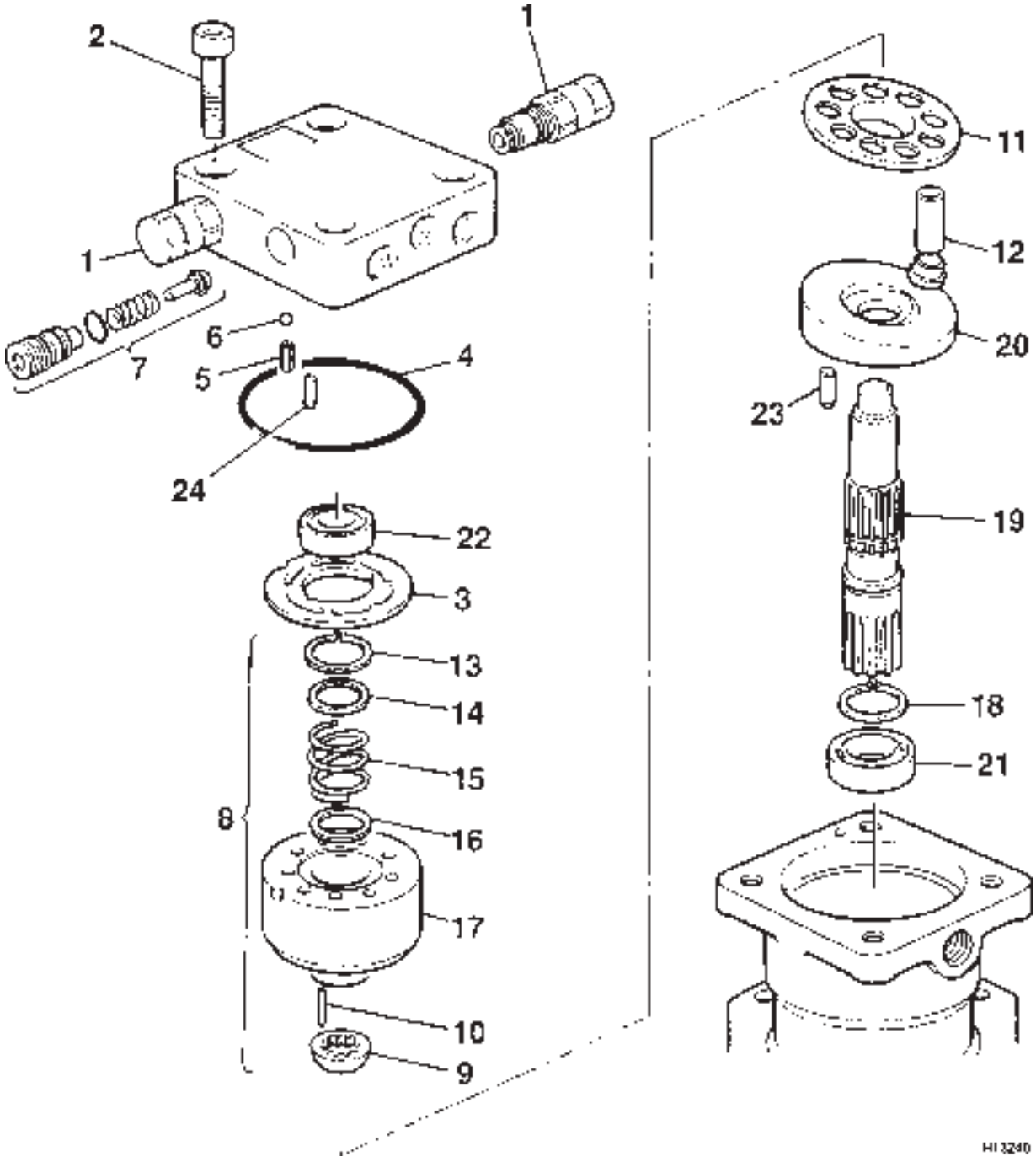
*Operation (cont'd)

Hydraulic oil enters the motor via the counter balance valve (page E6-2). From the counterbalance system the pressurised flow passes through three of the six slots **A** in fixed valve plate **1** and reacts against the crowns of piston **3** located in cylinders of rotating barrel **2**.
The pressurised oil pushes the pistons down and the slipper pads fitted to the base of the pistons, slide on the angle face of fixed swash plate **4**.
As the barrel is driven round, it is splined to and rotates the drive shaft of sun gear **5** which inputs the drive to the track gearbox. The pistons then reach bottom dead centre, their oil port is first masked by valve plate **1** and then aligns with the first of the remaining three slots **B** which connects the oil in the cylinders with the return line to tank.
This allows the barrel to continue to rotate and as the pistons are pushed back up the cylinders, the oil above them is displaced to tank.
When the operator selects reverse drive, then the oil under pressure enters slots **B** in the valve plate, the pistons are pushed down their cylinders and the barrel and drive shaft rotate in the opposite direction.



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Slew Gearbox

801.4 from M722497

Motor Removal and Replacement

The slew motor may be removed without removing the gearbox complete from the machine.

Position the machine on firm level ground, rest the bucket on the ground and stop the engine.

Remove the cab/canopy floor plates to gain access to the slew gearbox.

Vent residual pressure in the hydraulic tank by releasing the filler cap.

To remove the motor, mark, disconnect and plug the two supply hoses and the motor drain hose **1**.

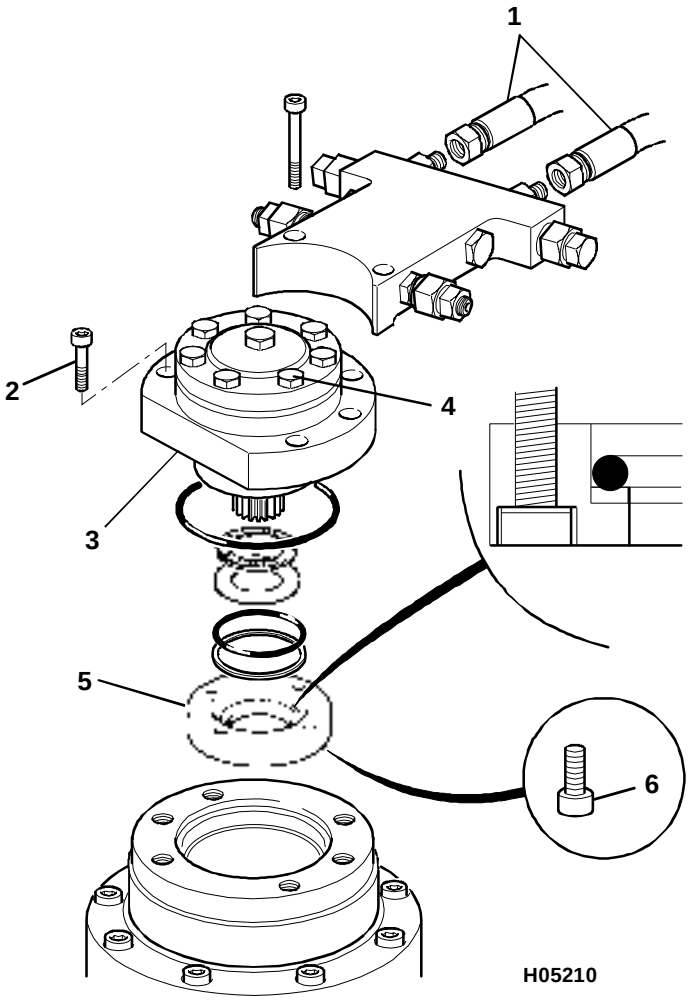
*****Note:** When the supply hoses are disconnected, there is a direct connection via the control valve spool to the hydraulic tank, consequently both hoses must be quickly plugged to prevent the hydraulic tank syphoning.*

Remove the six capscrews**2** holding the hydraulic motor **3** to the slew gearbox casing, including the long screws that hold the crossline relief valve assembly to the motor. Lift the motor clear.

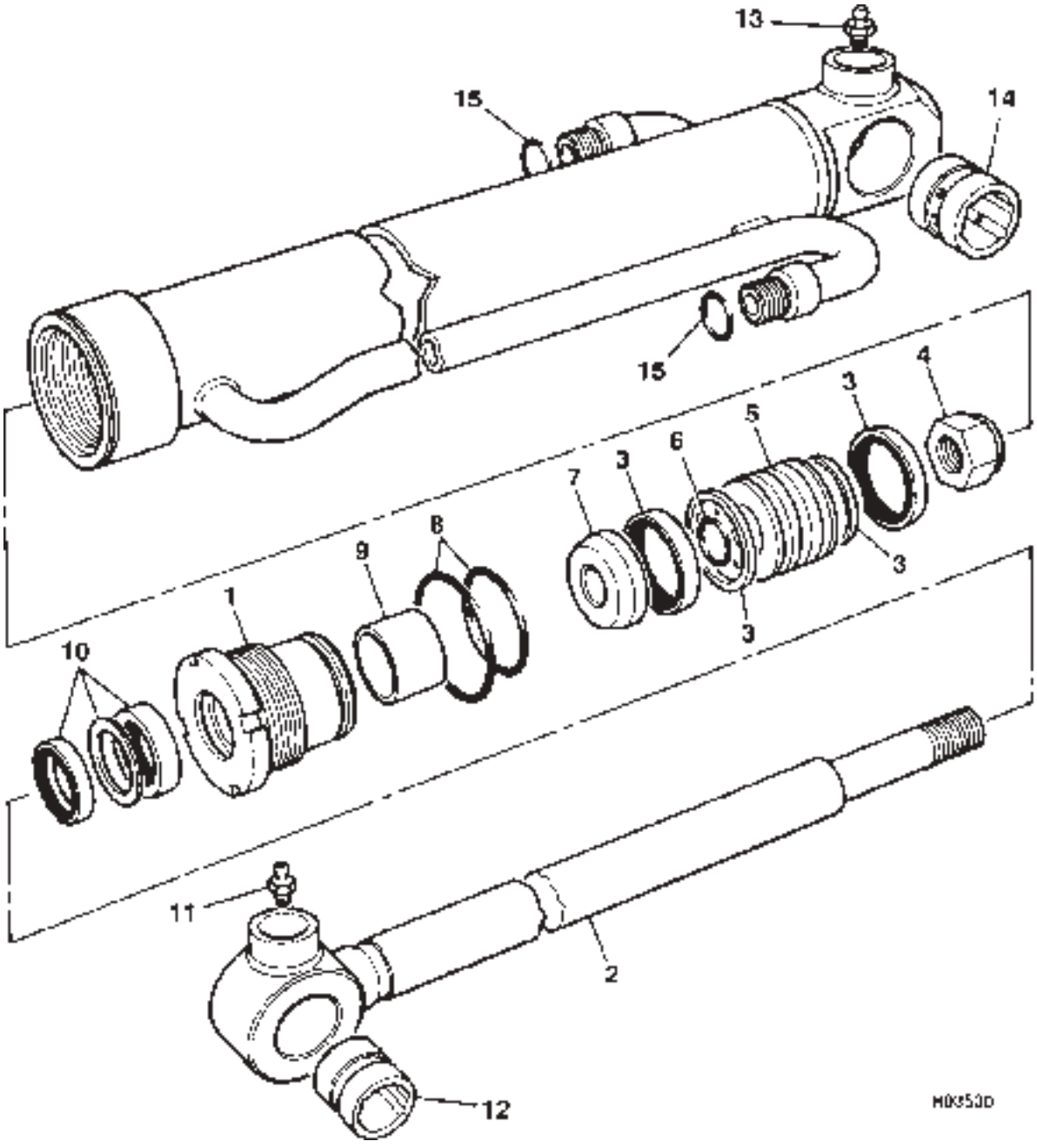
*****Note:** Unless there is evidence of oil leaking past the motor top cover seals there is no need to remove the top bolts**4** as internal motor components other than 'O' rings are not renewable. If there is evidence of oil leaking from between motor sections, the 'O' rings sealing the joints may be renewed. However, the motor sections must be marked, as must the relationship between the rotor and centre shaft, this ensures correct motor timing will be maintained.*

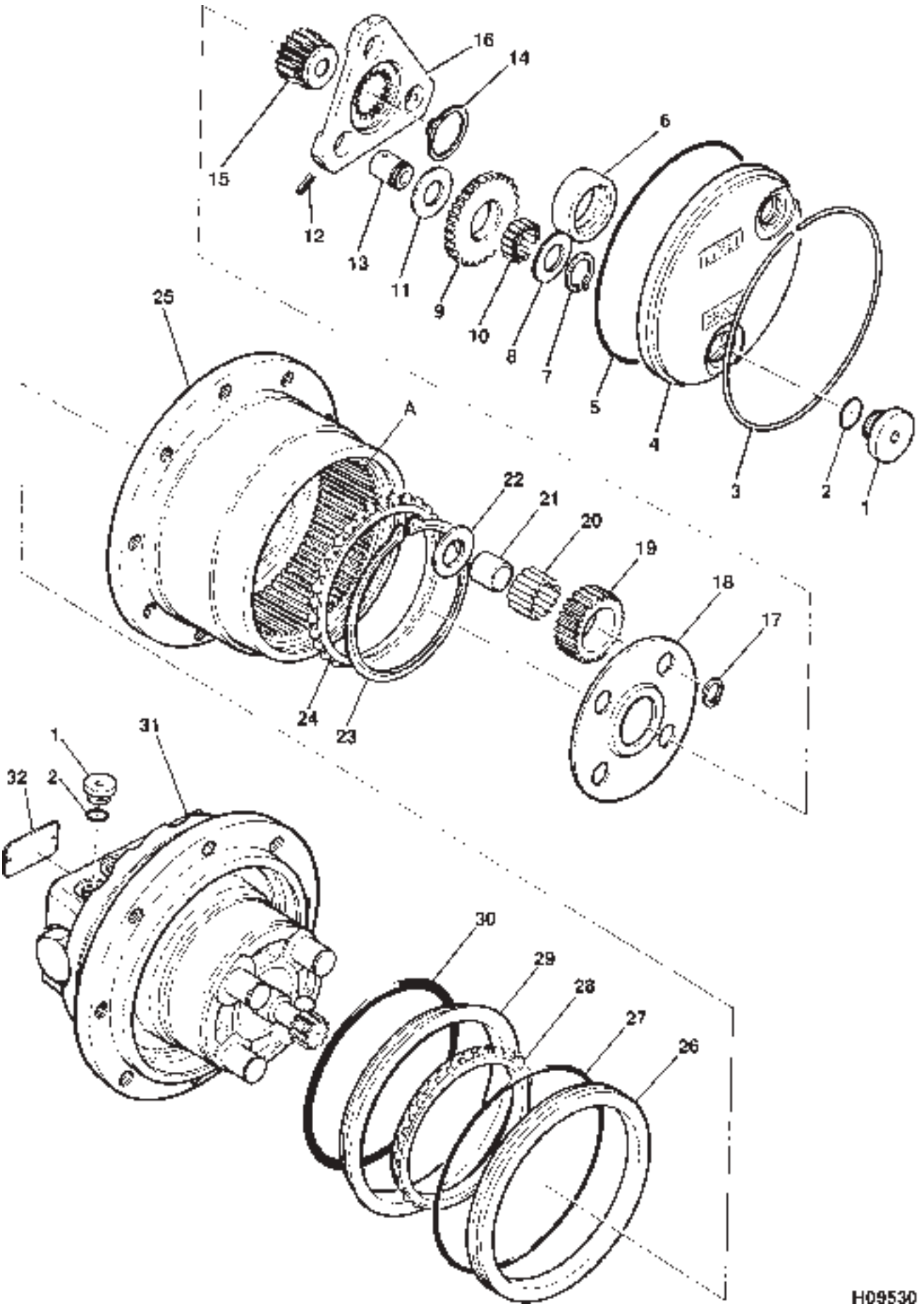
To renew the motor shaft seal housing **5**, remove the four capscrews**6** retaining the housing. Replace the seal housing complete if it contains a lip seal, otherwise just the 'O' ring and back-up ring in the later housings may be renewed.

Refit capscrews **6** using Loctite 270 and torque tighten to 20Nm.



Typical - Dismantling and Assembly

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