Section D

Controls

Service Manual - Backhoe Loader

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Notes:

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Steering Column

Removal and Replacement

On some machines, the steering column can be tilted to improve operator reach and comfort levels. This type of assembly is referred to as a `tilt column'. Non-tilting columns are referred to as a `fixed column'.

⇨ *Fig 1. (D-2)*. The illustration shows a `tilt column' and is intended as a guide to removal and replacement.

Removal

1 Park the machine on firm level ground, engage the park brake and set the transmission to neutral. Lower the loader arms to the ground. Switch OFF the engine, remove the starter key and disconnect the battery.

2 Working in the cab, remove the steering wheel **A** as shown.

Note: *If the steering wheel spinner knob **Z** is loose, or is removed for any reason, make sure that it is retightened to the correct torque. Apply JCB Threadlocker and Sealer to the threads before fitting.*

3 Remove the fixings **B** and take off the steering column pedestal cover.

4 Remove the control column switches **C**.

5 Remove the socket screw **D** securing the gas damper strut **E**. Note that on `fixed column' assemblies a solid bracing link is fitted instead of the gas damper.

6 Remove socket screws **F** and lift up the rubber protective cover behind the brake pedals to gain access to the flexible coupling.

7 Remove the coupling bolt **G** and shoulder bolts **H**. Then carefully withdraw the steering column assembly (with the gas damper strut attached) from the flexible coupling **J**.

Replacement

Replacement is the reverse of the removal sequence, but note the following:

Make sure that the coupling bolt **G** engages with the cut-out in the shaft.

Apply JCB Threadlocker and Sealer to the threads of nuts **T** before fitting.

On completion, check that the steering tilt functions correctly, and that the direction indicators and lights operate correctly. Check that the wires from the brake pedal switch do not rub on the steering column.

Table 1. Torque Settings

Item	Nm	kgf m	lbf ft
D	14	1.4	10.3
H	40	4.1	29.5
V	40	4.1	29.5
Z	13	1.3	9.6

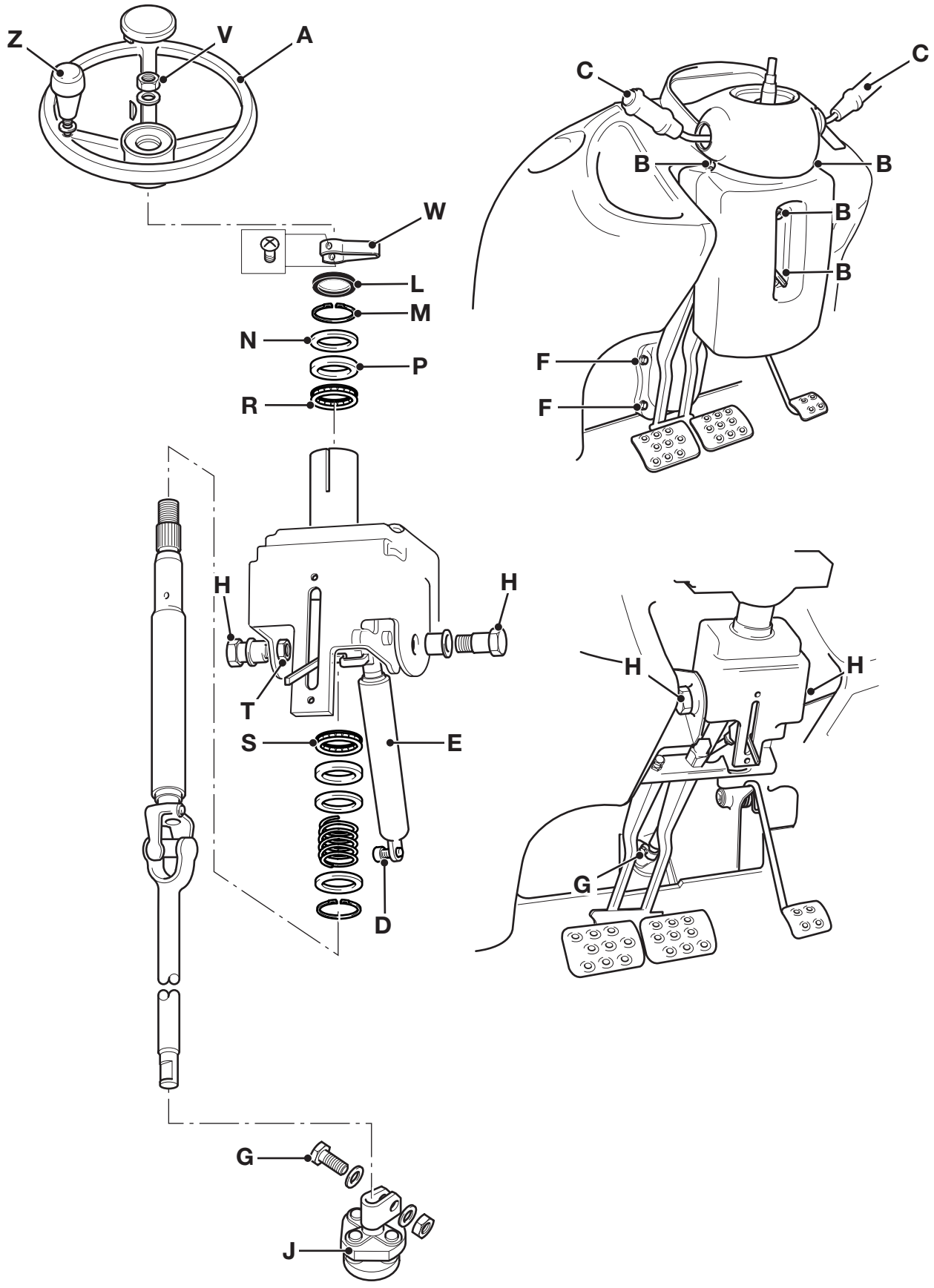

Fig 1. Tilting Column

Dismantle and Assemble

⇨ *Fig 1. (D-2)*. The illustration shows a `tilt column' and is intended as a guide to dismantling and assembly.

Dismantle

1 Remove the self-cancelling indicator cam **W** (if fitted).

2 Using a screwdriver in the slot, carefully prise out the dust seal **L** from the outer column tube.

3 Remove external circlip **M**, washer **N**, tolerance ring **P** and withdraw the steering shaft from the outer column tube and pivot bracket.

Note: *The top and bottom bearings **R** and **S** housed in the outer column tube are non-serviceable parts. They may be removed for cleaning and inspection, but if the bearing(s) have failed a new outer column tube and pivot bracket assembly must be used.*

Note: *The gas damper strut **E** is a non-serviceable part. If the damper is faulty it must be replaced with a new one.*

Assemble

Assembly is the reverse of the dismantling sequence.

Column Switches

Removal and Replacement

Removal

1 Park the machine on firm level ground, engage the park brake and set the transmission to neutral. Raise the loader arms and fit the loader arm safety strut. Stop the engine and remove the starter key.

⚠ WARNING

Raised Equipment

Never walk or work under raised equipment unless it is supported by a mechanical device. Equipment which is supported only by a hydraulic device can drop and injure you if the hydraulic system fails or if the control is operated (even with the engine stopped).

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2 Remove the front grille and disconnect the battery.

3 Working in the cab, remove the front steering console, see ***Section B, Body and Framework***.

4 Uncouple the two electrical connectors **A** from the cab harness.

5 Undo the two screws **B** and remove the switches.

Replacement

Replacement is the reverse of the removal sequence but note the following:

The left-hand switch incorporates a locating pin **C** which engages with a drilled hole in the steering column and prevents rotation of the switch mounting.

On completion, operate the column switches and check they all function correctly.

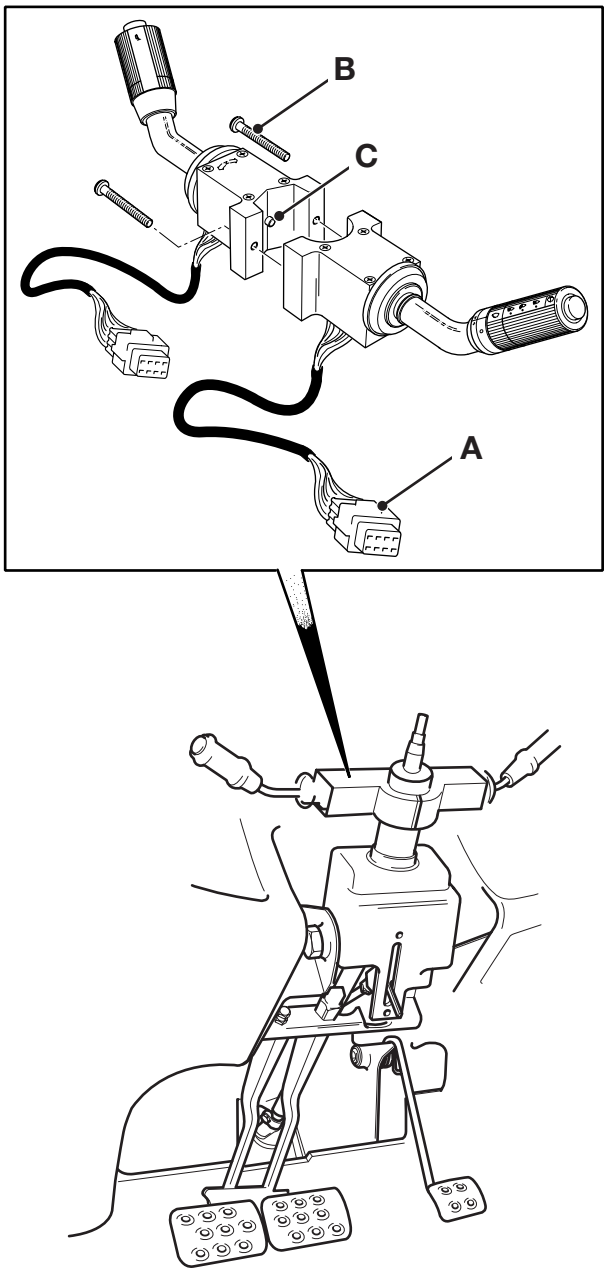

Fig 2.

Control Rods and Linkages

Dismantle and Assemble

Loader Valve Controls

⇨ *Fig 3. (D-6)*. The illustration shows the control rods and linkages for a 3 spool loader control valve, and is intended as a guide to the dismantling and assembly.

Dismantle

1 Park the machine on firm level ground, apply the parking brake. Lower the loader arms and excavator to the ground, switch OFF the engine and remove the starter key. Disconnect the battery.

2 Working in the cab, remove the console panels surrounding the loader levers as shown at **A**.

3 Uncouple the transmission dump switch electrical connector and remove the wires from the connector. Use a screwdriver to release the wires and pins from the connector, alternatively cut the wires and re-solder on assembly.

4 Remove the control lever knobs and gaiters.

5 Disconnect the control rods from the loader valve spools. Remove the bolts securing the complete lever assembly to the chassis and withdraw the control levers and mounting bracket through the floor aperture.

Assemble

Assembly is the reverse of the dismantling sequence.

1 Bolt the mounting bracket **B** to the chassis. Fit the rubber cover **C** over the mounting bracket, make sure it is fitted the correct way round. Do not fix it to the floor at this stage.

2 Assemble the loader lever **D** and auxiliary lever **E** (if fitted) to the mounting plate **F**, together with the universal joint as shown. Align side **X** of the universal joint with the edge **Y** on the mounting plate.

3 Bolt the lever assembly onto the mounting bracket **B**. Fit the control rods **G**, **H** (and **J** if applicable) to the lever assembly. Ensure that the locking flats **Z** are at the top.

***Note:** If necessary, loosen the locknuts and rotate the end fittings to give equal amounts of adjustment (thread) at each end of the control rod.*

4 Thread the control rods through the rubber cover **C** and connect them to the loader valve spools. Adjust the control rods as necessary, ⇨ *Adjustment (D-7)*. After the control rods are adjusted fit the gaiters over the control levers.

5 Thread the transmission dump switch cable through the loader control lever and fit the wires and pins into the electrical connector. Couple the connector to the chassis harness and fit the control lever knobs.

6 Reconnect the battery, check that the controls and transmission dump switch operate correctly. Refit the rubber cover **C** and the console panels around the loader levers.

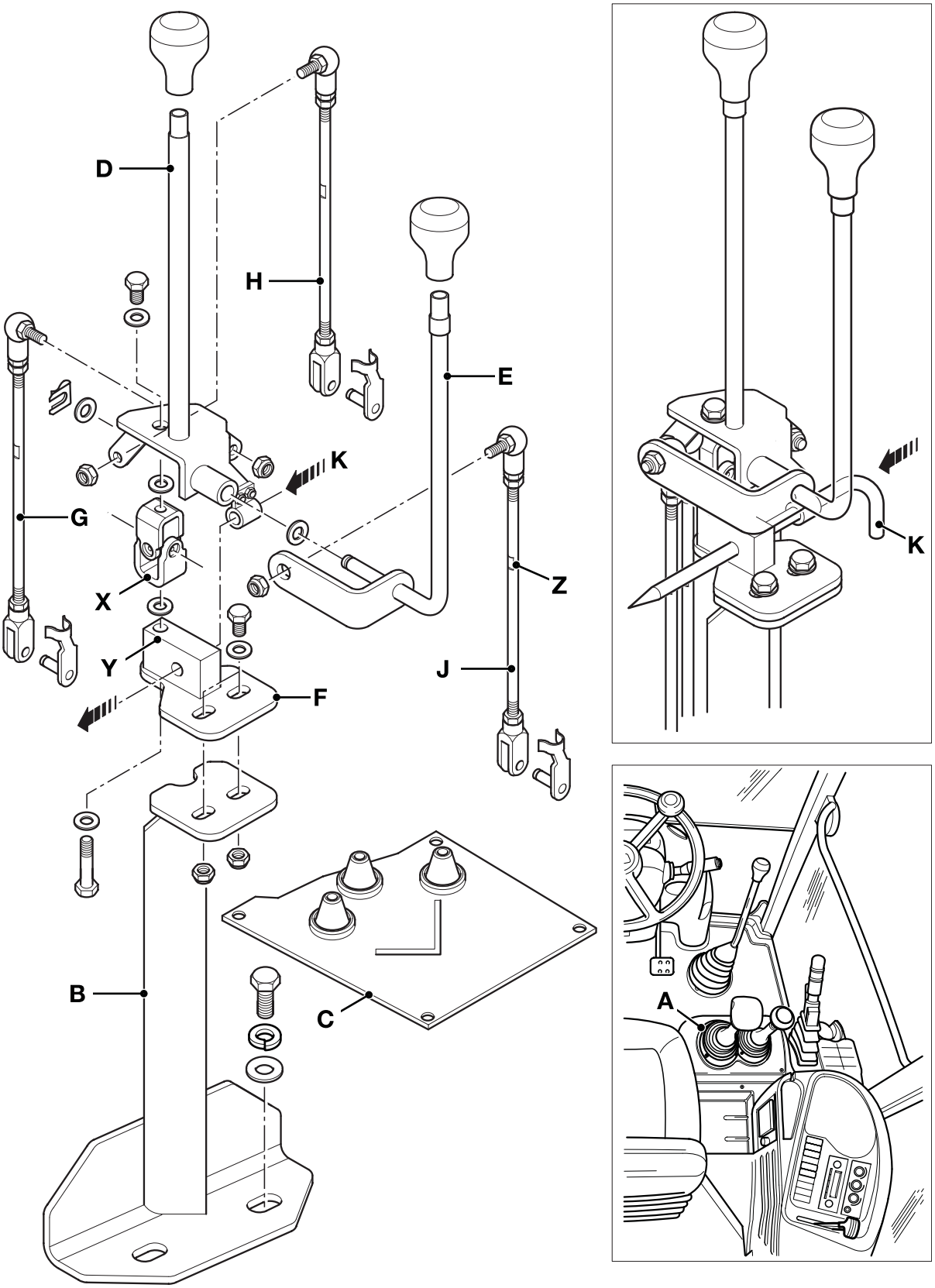

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Fig 3. Loader Valve Controls

Adjustment

⇒ Fig 3. (D-6).

1 Adjust the control rods **G** and **H** so that the loader lever **D** is vertical. If applicable, adjust the auxiliary control rod **J** until the auxiliary lever **E** aligns with loader lever **D**, then tighten the control rod locknuts.

2 After adjustment operate the levers and check that there is sufficient travel to give full movement of the loader valve spools.

3 Loader controls that feature a control lever locking pin (option) as shown should be adjusted as described below:

a Fit the control lever locking pin **K**.

b Adjust the control rods **G** and **H** until the locking pin is a sliding fit, then tighten the control rods locknuts.

Note: *Make sure there is an equal amount of thread at each end of the control rod.*

c If applicable, adjust the auxiliary control rod **J** until the auxiliary lever **E** aligns with loader lever **D**, then tighten the control rod locknuts.

d Remove the lever locking pin **K**.

Excavator Valve Controls

⇨ *Fig 4. (D-9)*. The illustration shows the control rods and linkages for the excavator control valve and is intended as a guide to the dismantling and assembly.

Dismantle

1 Park the machine on firm level ground, apply the parking brake. Lower the loader arms, sideshift the excavator to the R.H. side of the machine and lower to the ground. Switch OFF the engine and remove the starter key. Disconnect the battery.

2 Uncouple the rear horn switch electrical connector and remove the wires from the connector. Use a screwdriver to release the wires and pins from the connector, alternatively cut the wires and re-solder on assembly.

Note: *Some machine variants may have additional switches in the control lever knobs which will also need to be uncoupled as above.*

3 Working in the cab, remove the control lever knobs and gaiters. Lift off the cover **A** surrounding the excavator levers.

4 Disconnect the control rods from the excavator valve spools. Remove the bolts securing the complete lever assembly to the excavator valve mounting plate and withdraw the control levers and mounting bracket through the floor aperture.

Assemble

Assembly is the reverse of the dismantling sequence.

1 Bolt the mounting bracket **B** to the excavator valve mounting plate.

2 Assemble the stabiliser levers **C** to the mounting bracket. Measure the stabiliser lever control rods (2 off) which should be 370 mm (14.57 in) between hole centres, adjust as required. Feed the control rods through the rubber seal **D** and connect to the stabiliser levers.

Note: *If necessary, loosen the lock nuts and rotate the end fittings to give equal amounts of adjustment (thread) at each end of the control rod.*

3 Assemble the excavator levers **E** to the mounting bracket together with the universal joints **F**. Measure the excavator lever control rods (4 off) which should be 395 mm (15.55 in) between hole centres, adjust as required. Feed the control rods through the rubber seal **D** and connect to the excavator levers.

4 Connect the control rods to the excavator valve spools with the clevis pins **G**.

5 Adjust the control rods if necessary, ⇨ *Adjustment (D-8)*. Refit the cover and the gaiters over the control levers.

6 Thread the rear horn switch cable through the control lever and fit the wires and pins into the electrical connector. Couple the connector to the chassis harness and fit the control lever knobs.

7 Connect the battery, check that the controls and rear horn switch operate correctly.

Adjustment

Minor adjustment of the control rods may be necessary to align the levers, or to position the levers closer or further from the operator. After adjustment operate the levers and check that there is sufficient travel to give full movement of the excavator valve spools.

Excavator controls that feature a control lever locking pin (option) should be adjusted as follows:

1 Fit the control lever locking pin.

Note: *If there is no lever locking pin with the machine use a suitable diameter metal bar.*

2 Adjust the control rods until the locking pin is a sliding fit, then tighten the control rods locknuts.

3 Remove the lever locking pin.

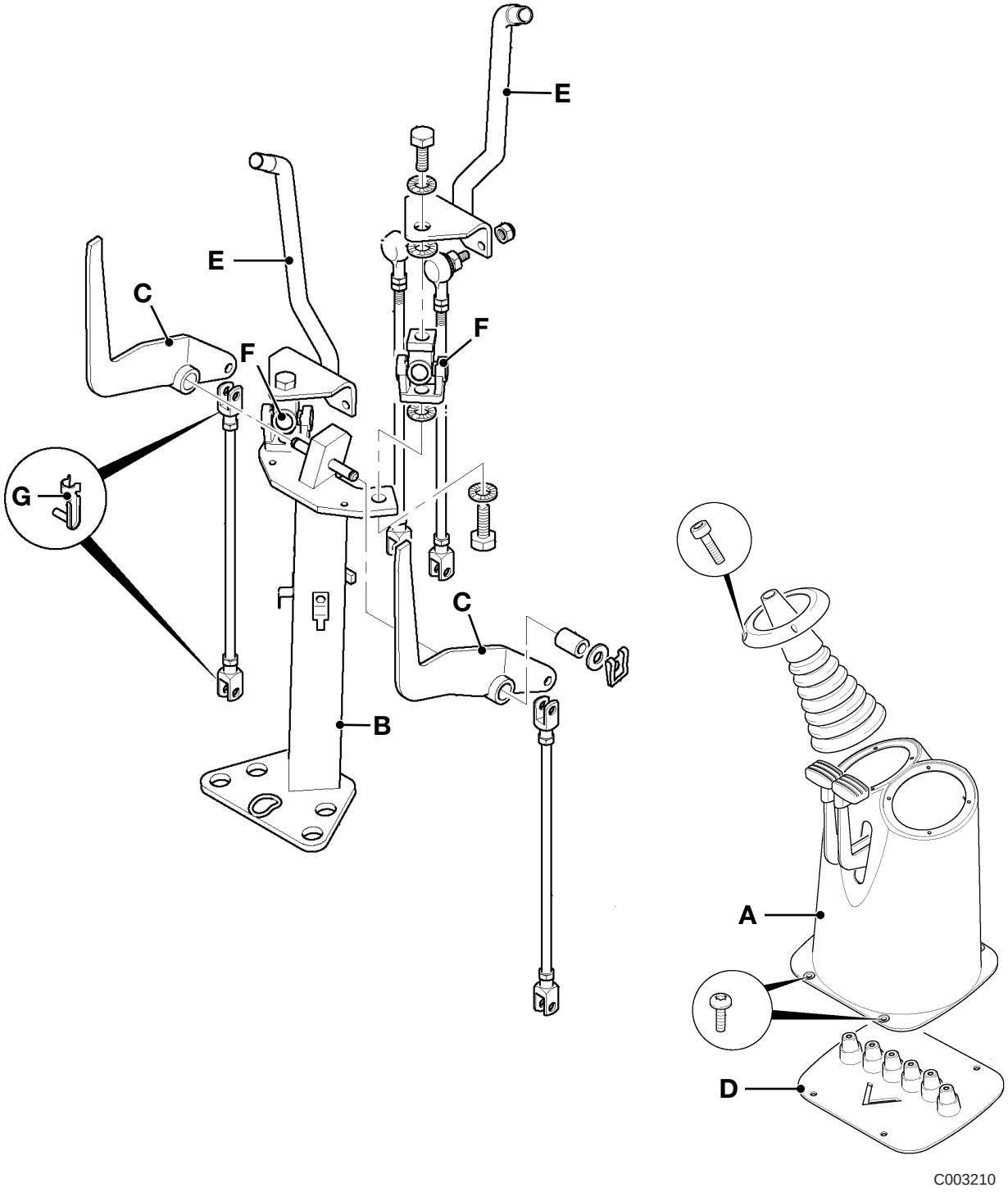

Fig 4. Excavator Valve Controls

Auxiliary Footpedal Control

⇨ *Fig 5. (D-11)*. The illustrations show the control rods and linkages for the auxiliary control valve and are intended as a guide to the dismantling and assembly.

Dismantle

1 Park the machine on firm level ground, apply the parking brake. Lower the loader arms and excavator to the ground, switch OFF the engine and remove the starter key. Disconnect the battery.

2 Working at the rear of the machine at the auxiliary valve, remove the clevis clip **A** and disconnect the lower control rod **B** from the valve spool.

3 Undo the locknut **C** and disconnect the upper control rod from the lever **D**.

4 Remove the locknuts **E** (3 off) securing the footpedal assembly into the cab floor.

Note: *On some machine variants the footpedal assembly may incorporate a proximity switch. If fitted, uncouple the electrical harness from the proximity switch connector **F**.*

5 Working in the cab, withdraw the footpedal assembly with the upper control rod attached from the aperture in the cab floor.

Assemble

Assembly is the reverse of the dismantling sequence.

When assembling check the lever **D** rotates freely on the pivot and is not seized. If the bearing is worn, replace the lever **D**.

Adjust the control rods and proximity switch (if fitted), ⇨ *Adjustment (D-10)*.

After adjustment, operate the footpedal and check that the auxiliary valve functions correctly.

Adjustment

1 Adjust the length of the lower control rod **B** so that the lever **D** is horizontal.

Note: *If necessary, loosen the locknuts and rotate the end fittings to give equal amounts of adjustment (thread) at each end of the control rod.*

2 Screw the rod adjusting nut **G** to set the pedal travel. Depress the heel end of the pedal and check there is sufficient pedal travel to give full movement of the auxiliary valve spool.

3 On some machine variants the footpedal assembly may incorporate a proximity switch **Y**, ⇨ *Fig 6. (D-11)*. If fitted, adjust the switch as follows:

a Note that the knurled pin **W** protrudes 3 mm (0.120 in) as shown at **X**. Adjust the proximity switch **Y** to give a clearance **Z** of 2 mm (0.080 in) from the face of the knurled pin. Torque tighten the proximity switch locknuts to 20 Nm (14.7 lbf ft).

Note: *The proximity switch will NOT operate without the steel knurled pin.*

b Depress the pedal and check that the proximity switch operates (L.E.D. illuminates) when the pedal has travelled between 60 to 70 mm, and check that it remains operated throughout the remaining pedal travel.

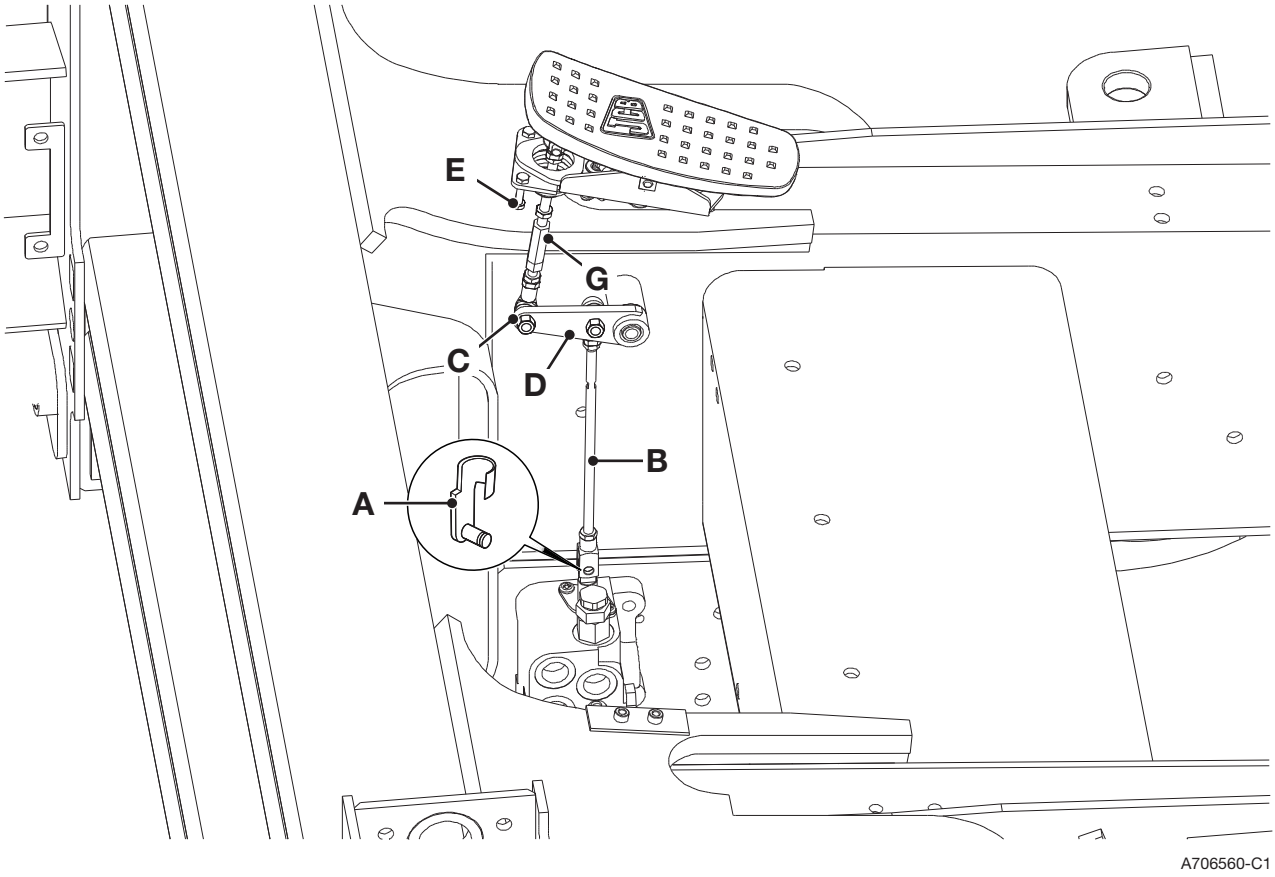

Fig 5. Auxiliary Footpedal Control

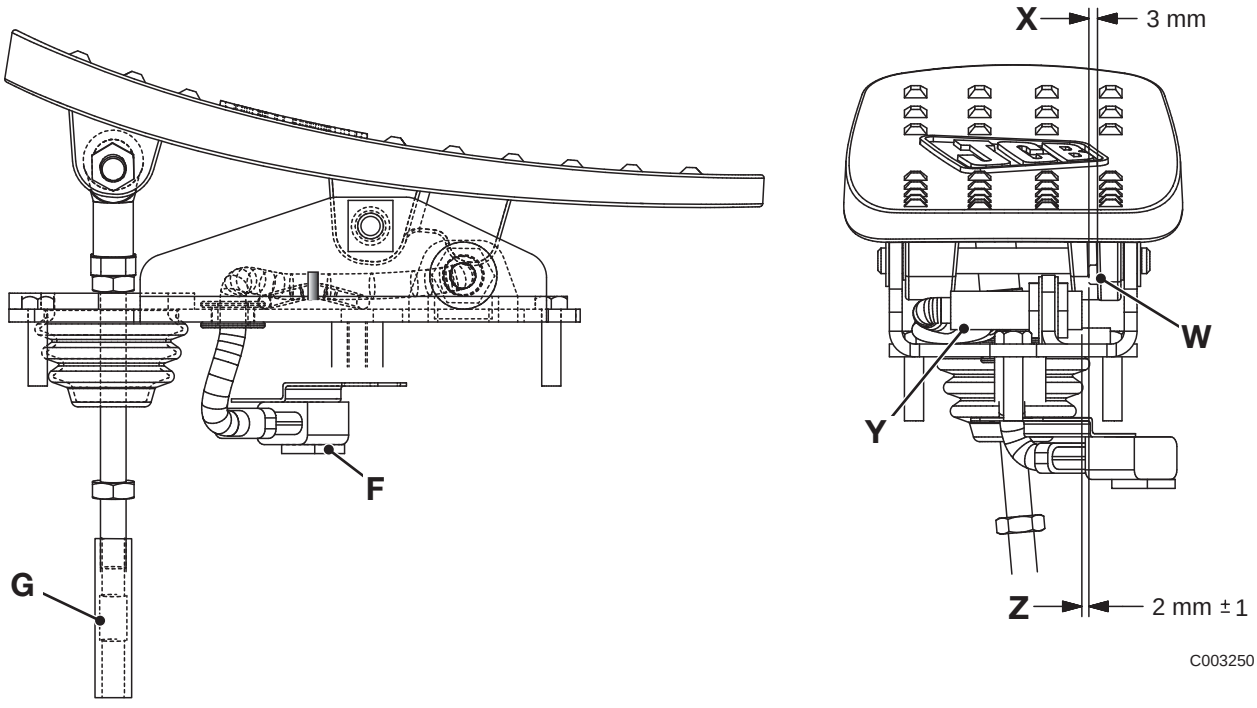

Fig 6. Footpedal Proximity Switch (if fitted)

Control Cables

Removal and Replacement

Cab Heater Control Cables

Fig 7. (D-13). The cab heater controls **A** and associated cables are housed in the R.H. side console. There are two control cables which operate the re-circulation vent and the hot water valve. Both the cables can be accessed by removing the side console instrument panel.

Removal

1 Park the machine on firm level ground, apply the parking brake. Lower the loader arms and excavator to the ground, switch OFF the engine and remove the starter key.

2 Remove the fixing **B** at the top of the instrument panel and carefully lift the panel forward to reveal the connections at the back.

3 Disconnect the temperature control cable **C** by releasing the cable outer sheath from the clips **R** at each end, and unhooking the cable from the water valve lever **S** and from the pin **T** at the control knob.

4 Disconnect the re-circulation vent cable **D** by releasing the cable outer sheath from the clips **X** at each end, and unhooking the cable from the vent **Y** and from the pin **Z** at the control knob.

Replacement

Replacement is the reverse of the removal sequence.

After fitting the cables, operate the heater controls and check that they function correctly.

Adjustment

If the control cable **C** is not correctly assembled it is possible that the heater cannot be turned fully off.

To ensure that the heater can be turned fully OFF, the temperature control cable **C** should be adjusted so that the water valve will close FULLY within the range of movement of the control knob as follows:

1 Set the water valve control lever **S** to the fully closed position.

2 Turn the heater control knob **E** a small amount clockwise from the closed position, i.e. a fraction before the cold position on the decal as shown.

3 Tighten the cable clips **R** to clamp the cable outer sheath.

4 Check the heater control range of movement and that the water valve can be fully closed by turning the knob.

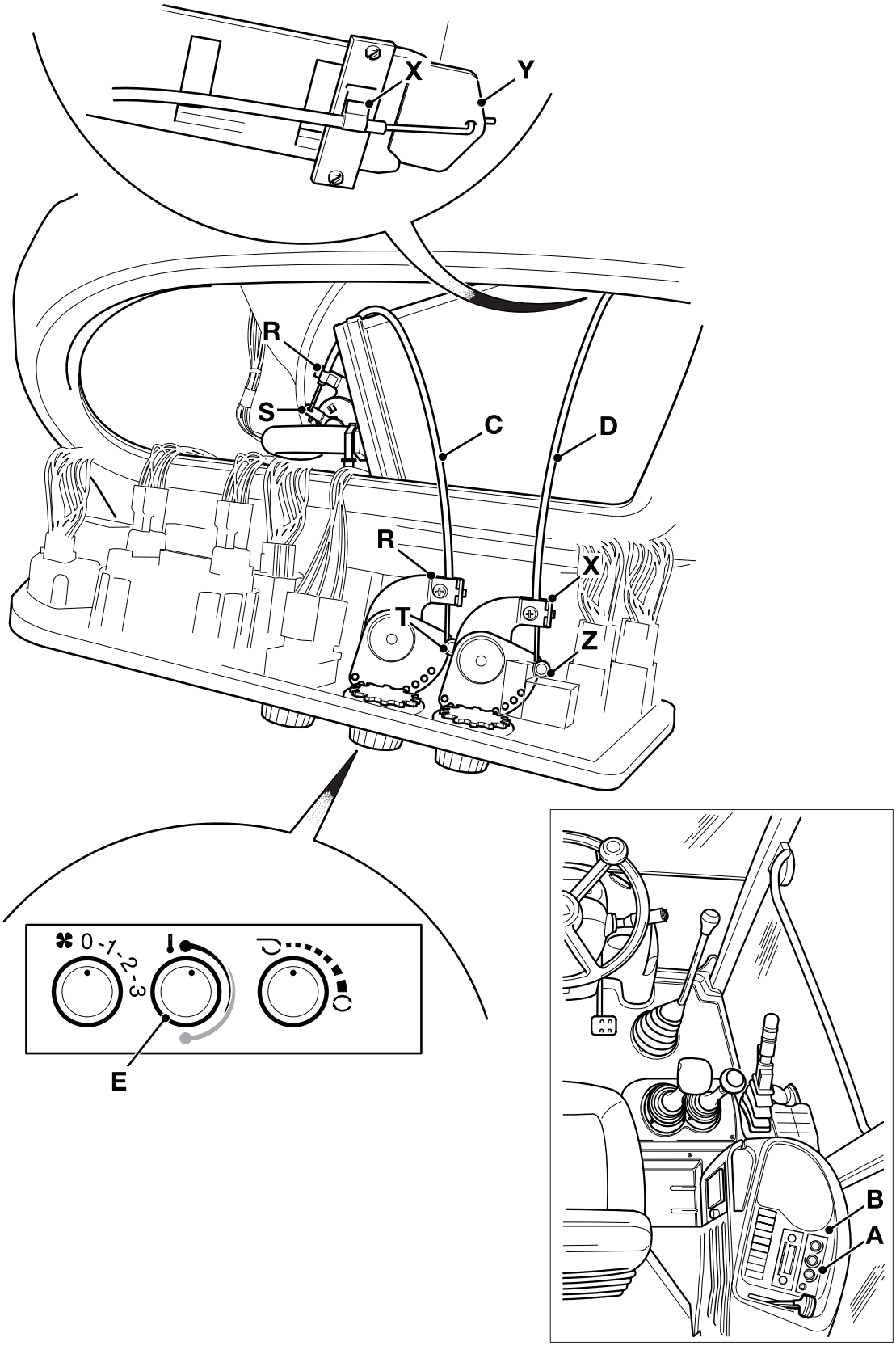

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Fig 7. Cab Heater Control Cables

Boom Lock Cable

⇒ Fig 8. (D-15). The boom lock control **A** and associated cable is housed in the R.H. side console. Note the routing of the existing cable and route the new cable in the same way.

Removal

1 Park the machine on firm level ground, apply the parking brake. Lower the loader arms and excavator to the ground, switch OFF the engine and remove the starter key.

2 Working at the boom, remove the cable ball stud **B** from the boom lock casting.

3 Loosen the locknut and disconnect the bulkhead fitting **C** from the bracket. Feed the end of the cable back underneath the cab to the rear wheel arch on the R.H. side of the machine. Remove the spring clip **D** from the outer sleeve.

4 Working in the cab, unscrew the knob and lock nut from the boom lock control **A**. Remove the fixings from the side console panel and carefully lift up the rear corner of the side console panel over the boom lock control outer sleeve.

5 With the rear corner of the side console panel lifted up, carefully pull the boom lock cable up into the cab through the aperture in the cab floor.

Replacement

Replacement is the reverse of the removal sequence.

1 After fitting the cable, with the control knob pressed down adjust the bulkhead fitting **C** to take up any slack in the cable. The cable should be tight but must not lift the boom lock from its fully down position.

2 Operate the boom and check that the boom lock will engage and disengage correctly using the control knob in the cab. Check the boom stop setting, *⇒ Boom Stop Setting (D-14)*.

Boom Stop Setting

The boom stop block should be set as follows:

1 Lightly secure the boom stop block **E** in its lowest position.

2 Raise the boom lock **F** using the control knob in the cab.

3 Fully raise the boom (i.e. the boom ram fully retracted) and engage the boom lock using the control knob in the cab.

4 With the engine switched OFF, operate the excavator control levers several times to vent any residual pressure from the boom ram.

5 Adjust the boom stop block **E** until there is 3 mm ($^{1}/_{8}$ in.) gap between the stop and the boom profile as shown at **G**.

6 Tighten clamping bolt **H**. Tighten grubscrew **J** and locknut **K**.

7 Switch ON the engine. Fully raise the boom (i.e. the boom ram fully retracted) and raise the boom lock using the control knob in the cab.

8 If the boom lock does not release readjust the stop block as follows:

a Loosen the locknut **K** and slacken the grubscrew **J** a further half turn.

b Loosen clamping bolt **H** and reposition the stop block. Retighten bolt **H** and lock the grubscrew.

9 Operate the boom and check that the boom lock will engage and disengage correctly using the control knob in the cab.

Table 2. Torque Settings

Item	Nm	kgf m	lbf ft
H	476	48	352

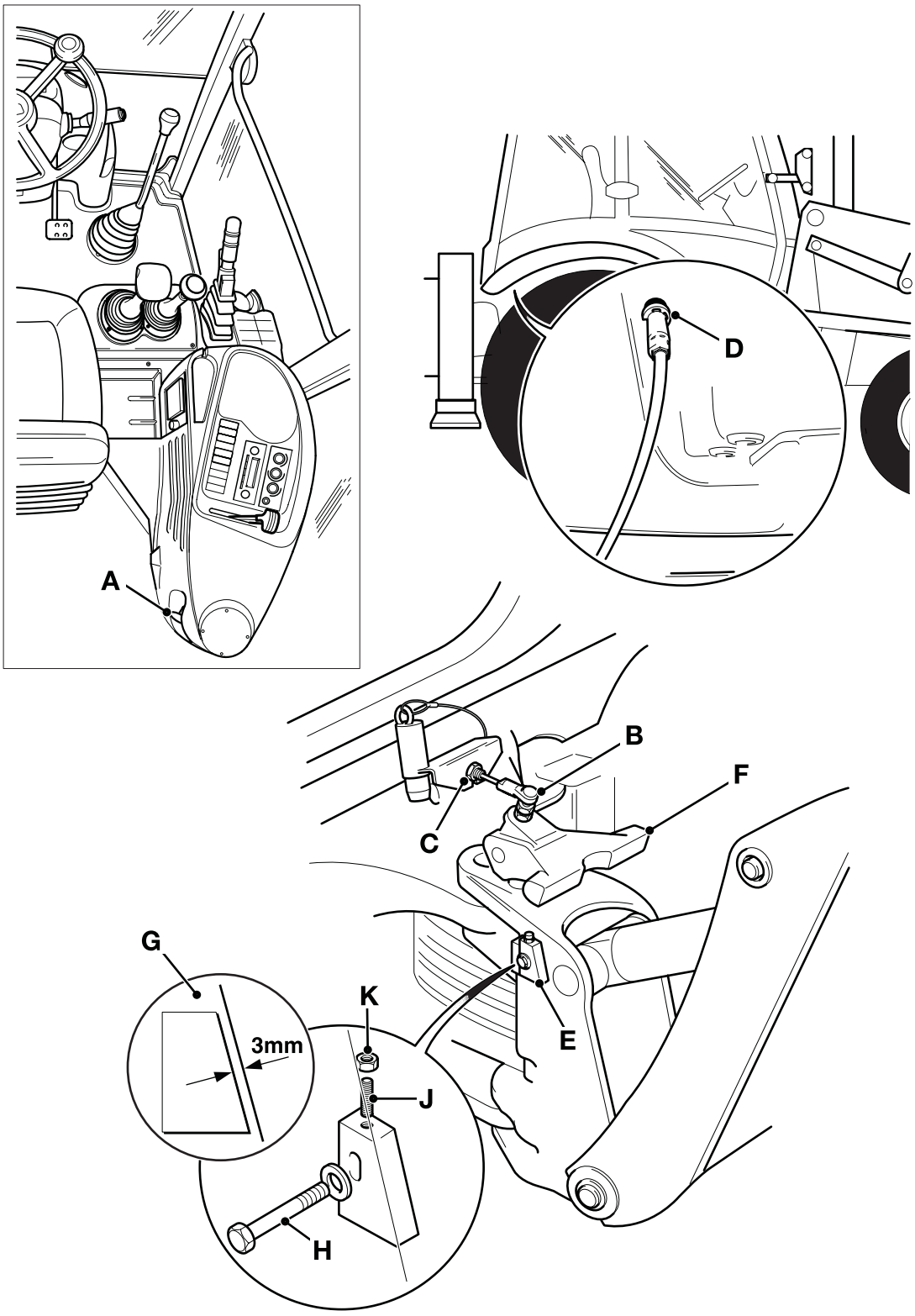

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Fig 8. Boom Lock Cable

Engine Throttle Cable

⇨ Fig 9. (D-17). The engine throttle cable is routed from the L.H. side of the engine compartment to connect with the footpedal **A** at the engine compartment bulkhead, and to the hand throttle lever **B** housed in the R.H. side console.

Removal

1 Park the machine on firm level ground, apply the parking brake. Lower the loader arms and excavator to the ground, switch OFF the engine and remove the starter key.

2 Raise the bonnet.

3 At the L.H. side of the engine compartment, disconnect the throttle cable by loosening the lock nut **C** and unhooking the cable from the fuel injector pump lever **D** as shown. Feed the end of the cable back across the engine compartment to the bulkhead on the R.H. side.

4 Working at the R.H. side of the engine compartment at the bulkhead, remove the screws **E** and ease back the rubber bulkhead cover to reveal the end of the footpedal lever as shown. Remove the nut **F** and disconnect the cable pivot block from the footpedal. Loosen the lock nut **G** and release the cable from the bracket. Feed the cable back underneath the cab to the rear wheel arch on the R.H. side of the machine.

5 Working in the cab, remove the fixing **H** at the top of the instrument panel and carefully lift the panel forward to reveal the hand throttle lever and mounting bracket assembly **J** inside the side console.

6 Remove the hand throttle lever knob. Remove the screws **K**, taking hold of the hand throttle lever assembly withdraw the handle through the slot in the panel.

7 From inside the side console, carefully pull the cable up into the cab through the aperture in the cab floor.

Replacement

Replacement is the reverse of the removal sequence.

After fitting the cable, operate the hand and foot throttle controls and check that they function correctly.

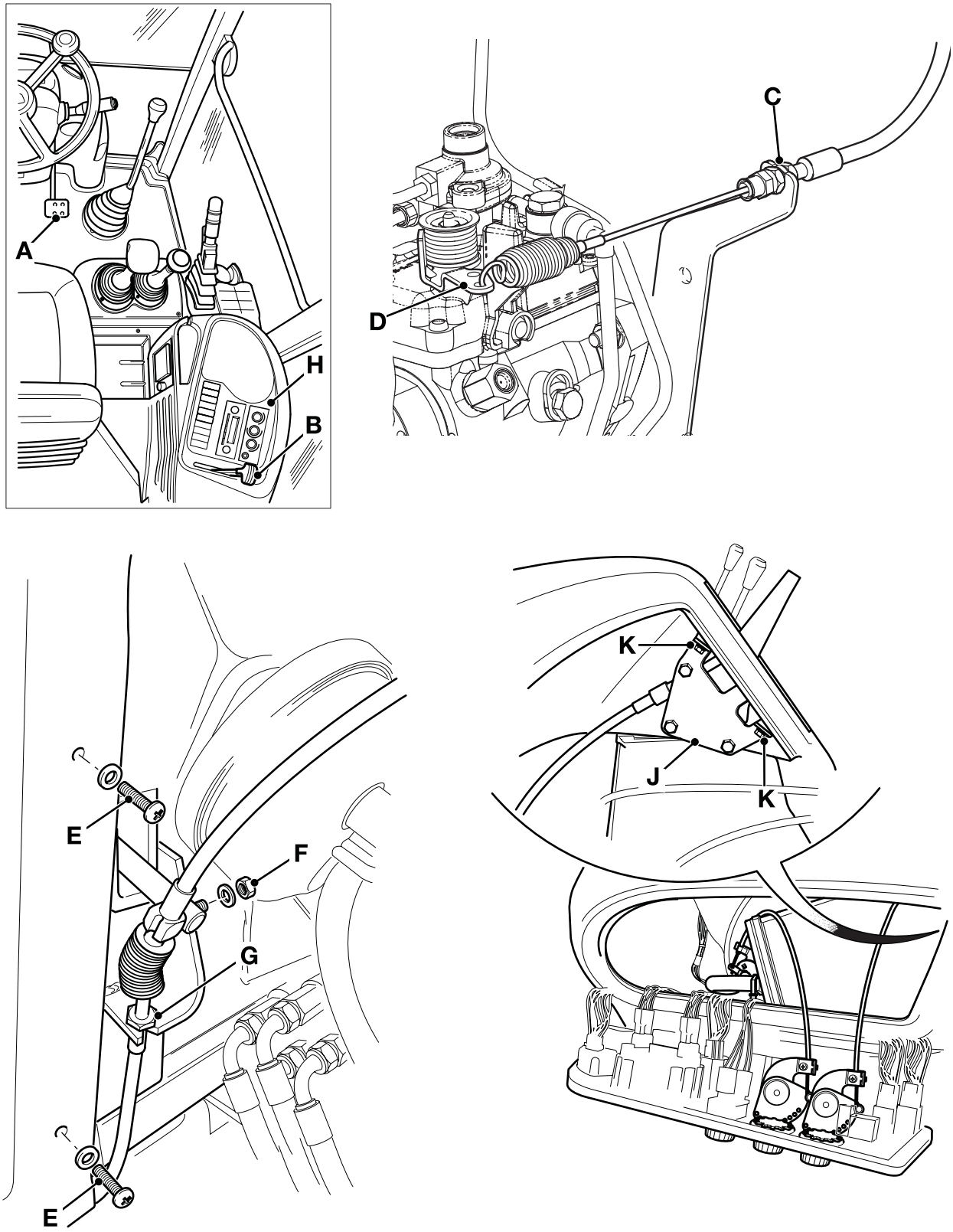

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Fig 9. Engine Throttle Cable

Park Brake Cable (Synchro Shuttle Machines)

⚠ WARNING

Before working on the park brake, park on level ground and put blocks on each side of all four wheels. Stop the engine and disconnect the battery so that the engine cannot be started. If you do not take these precautions the machine could run over you.

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Removal

1 Release the parking brake lever **11A** (lever horizontal).

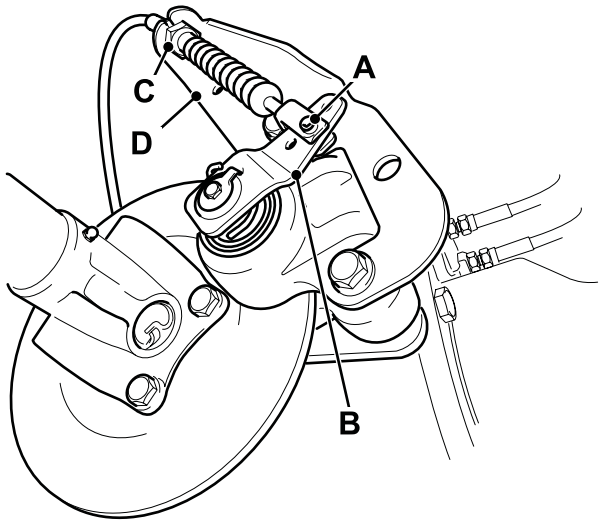

Fig 10.

2 Working at the park brake caliper, disconnect clevis **10A**, note which of the three holes on the actuating lever **10B** is used.

3 Remove clip or loosen locknut **10C** as applicable. Disconnect the cable from the bracket **10D**. Note the cable routing to the underside of the cab.

4 Working at the park brake lever, undo the gaiter fixings at positions **11B** and pull up the gaiter (not shown).

5 Uncouple the park brake switch electrical connector **11C**.

6 Undo the 2 lever fixing bolts **11D** and withdraw the lever assembly together with the cable **11E**.

7 Measure and record dimension **11X**.

8 Undo the 2 buffer bracket fixing bolts **11F**.

9 Withdraw the cable sideways from the lever, disengaging the cable nipple from the clevis **11H**. Remove the buffer assembly **11J** from the cable.

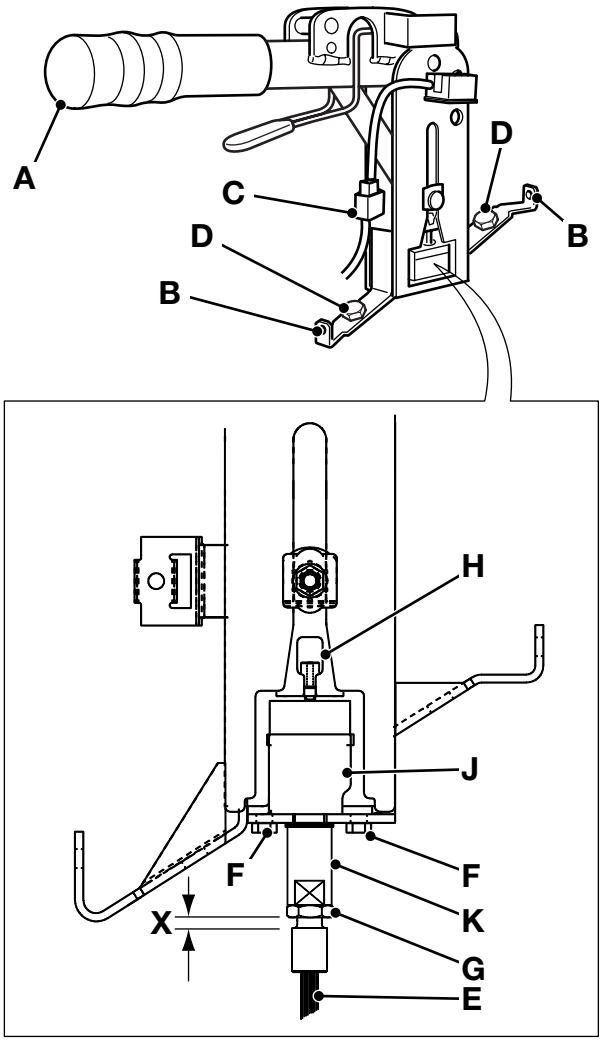

Fig 11.

Replacement

Replacement is the reverse of the removal sequence. When replacing note the following:

1 Be sure to route the cable correctly.

2 Ensure that the locknut **11G** is screwed fully down. Adjust sleeve **11K** to allow cable location to the lever assembly.

3 Apply JCB Threadlocker to the buffer bracket fixing bolts **11F**.

4 Ensure that the buffer bracket assembly **11J** is located correctly. Torque tighten the bolts **11F**.

5 Adjust the sleeve **11K** and locknut **11G** until dimension **11X** is achieved (recorded during removal). Tighten the locknut.

6 Ensure that the cable clevis **10A** is connected at the correct hole in the caliper actuating lever **10B**.

7 Ensure that the actuating lever **10B** is not being pulled by the cable when the parking brake lever is in the OFF (horizontal) position. If necessary adjust sleeve **11K** until the actuating lever is allowed to return fully to its OFF position.

8 Adjust the cable. See ***Section G, Service Procedures***.

Table 3. Torque Settings

Item	Nm	kgf m	lbf ft
11F	3	0.3	2.2

Park Brake Cable (Powershift Machines)

⚠ WARNING

Before working on the park brake, park on level ground and put blocks on each side of all four wheels. Stop the engine and disconnect the battery so that the engine cannot be started. If you do not take these precautions the machine could run over you.

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Removal

1 Release the parking brake lever **13A** (lever horizontal).

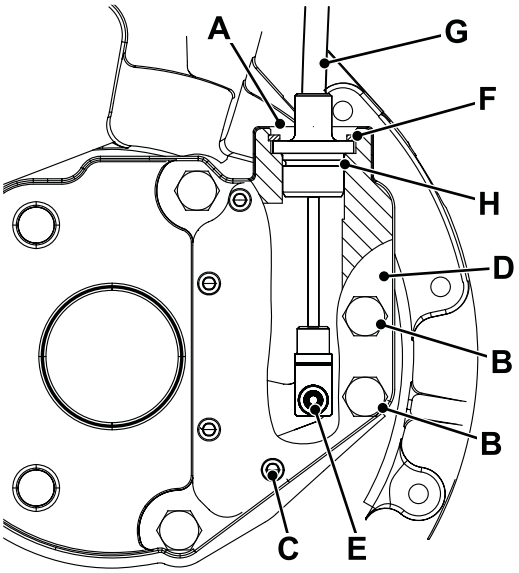

Fig 12.

2 Clean off all dirt from the gearbox brake housing. Make sure there is no dirt or debris trapped in the housing at the cable entry **12A**.

3 Undo 2 bolts **12B** and 5 screws **12C**. Remove the cover plate **12D**.

4 Undo clevis screw **12E**. Remove circlip **12F**. Withdraw the cable assembly **12G** from the housing.

5 Working at the park brake lever, undo the gaiter fixings at positions **13B** and pull up the gaiter (not shown).

6 Uncouple the park brake switch electrical connector **13C**.

7 Undo the 2 lever fixing bolts **13D** and withdraw the lever assembly together with the cable **13E**.

8 Measure and record dimension **13X**.

9 Undo the 2 buffer bracket fixing bolts **13F**.

10 Withdraw the cable sideways from the lever, disengaging the cable nipple from the clevis **13H**. Remove the buffer assembly **13J** from the cable.

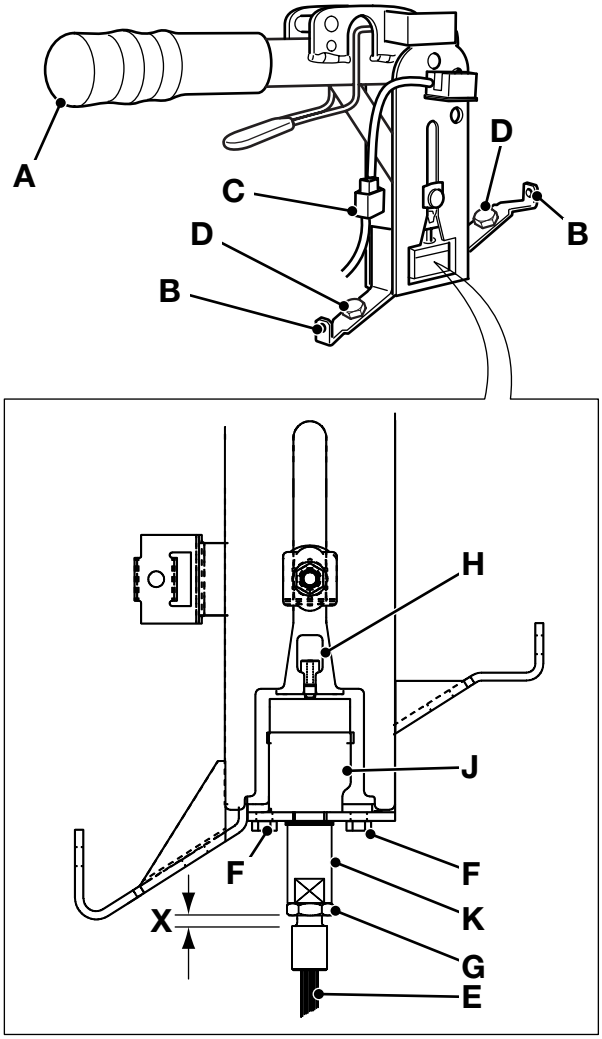

Fig 13.

Replacement

Replacement is the reverse of the removal sequence. When replacing note the following:

1 Be sure to route the cable correctly.

2 Ensure that the locknut **13G** is screwed fully down. Adjust sleeve **13K** to allow cable location to the lever assembly.

3 Apply JCB Threadlocker to the buffer bracket fixing bolts **13F**.

4 Ensure that the buffer bracket assembly **13J** is located correctly. Torque tighten the bolts **13F**.

5 Adjust the sleeve **13K** and locknut **13G** until dimension **13X** is achieved (recorded during removal). Tighten the locknut.

6 Make sure that `O' ring **12H** is undamaged and correctly fitted.

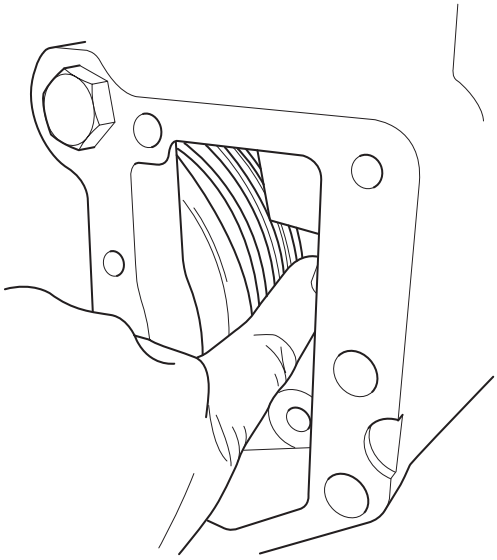

Fig 14.

7 After connecting both ends of the cable set the parking brake lever to the OFF (horizontal) position. Feel the edge of the brake pack plates. When the brake is released free play between the plates should be easily detectable ⇒ ***Fig 14. (D-21)***. If necessary adjust sleeve **13K** until the plates are free.

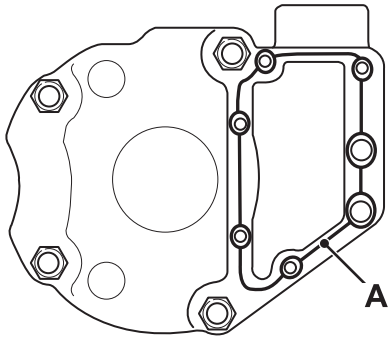

Fig 15.

8 Clean off all traces of old sealant from the cover plate and brake housing. Make sure that no sealant enters the gearbox. Apply a bead of JCB Multigasket **15A** to the brake housing. Fit the cover plate. Torque tighten the bolts.

Important: *DO NOT operate the machine until the cable adjustment procedure has been carried out.*

9 Adjust the cable. See ***Section G, Service Procedures***.

Table 4. Torque Settings

Item	Nm	kgf m	lbf ft
12B	56	5.7	41
12C	16	1.6	12
12E	9	0.9	6.6
13F	3	0.3	2.2

Anti-Spill Mechanism 3C-14 (214e) & 3C Machines

Fitting and Adjustment

The anti-spill mechanism is designed to automatically roll the shovel forwards to prevent a heaped shovel from depositing its contents onto the engine cover or cab as the loader arms are raised.

When the loader arms are raised, a reaction rod **16A** causes a cam plate **16B** to rotate anti-clockwise. The rotation of the cam plate pulls the operating cable **16C** which selects the loader valve block shovel spool **16D** to tip the shovel forwards.

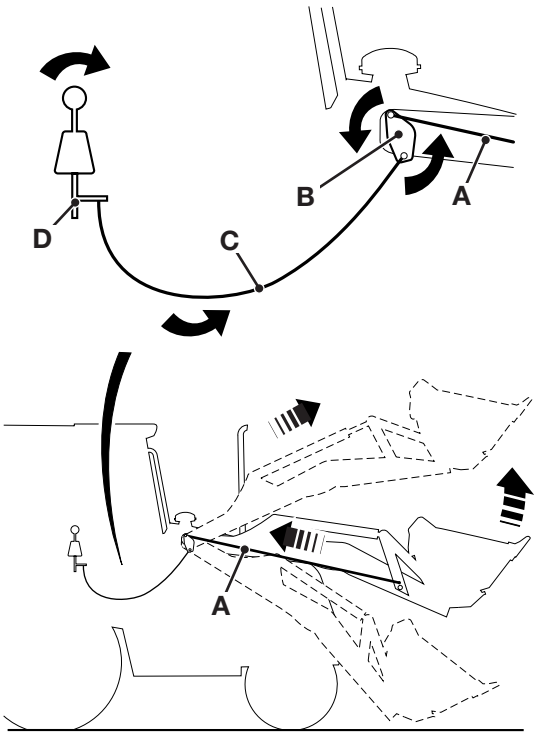

Fig 16.

If the operating cable or reaction rod is replaced, or if the anti-spill mechanism is not operating correctly, carry out the initial set-up and adjustment checks.

Important: *The machine must be parked on firm level ground in order for the required measurements to be accurately made.*

Fitting

1 Fit the cam plate **17A** and washers to the top loader pivot with the mounting hole for the reaction rod and the alignment `notch' uppermost and secure with the circlip **17E**.

2 Connect the reaction rod **17D** between the loader arm shovel reaction link and the cam plate.

Initial Set-Up

1 With the loader shovel flat on the ground, adjust the reaction rod until the `notch' **17C** in the cam plate **17A** is centrally aligned with the pointer **17B** on the loader tower.

2 Carefully tighten the locknuts on the reaction rod. Check that the relationship between the notch and the pointer has not changed.

3 Connect the operating cable **17H** loosely to the bracket on the loader tower. Do not secure the cable adjusting nuts **17J** and **17K** at this stage.

4 Connect the operating cable yoke end **17G** to the cam plate and secure the clevis pin **17F** with a suitably sized split pin

Adjustment

1 Start the engine. Raise the loader arms just sufficiently to allow the shovel to be fully rolled back. Roll the shovel fully back and lower to the ground.

2 Slowly raise the arms until the lower shovel pivot pin is 300 mm below the loader arm pivot pin. Block the loader arms in this position so that the position is held steady whilst the final adjustments are made. ⇨ *Fig 18. (D-24)*.

3 With the loader arms blocked in this position, adjust the cable using the adjusting nuts **17J** and **17K** until the shovel spool just starts to spill. Lock the cable adjusting nuts.

4 Slowly raise the arms. From this point, the shovel will automatically start to roll forwards as the loader arms rise.

Note: *If the shovel fails to roll forward, recheck the initial settings and re-adjust as necessary.*

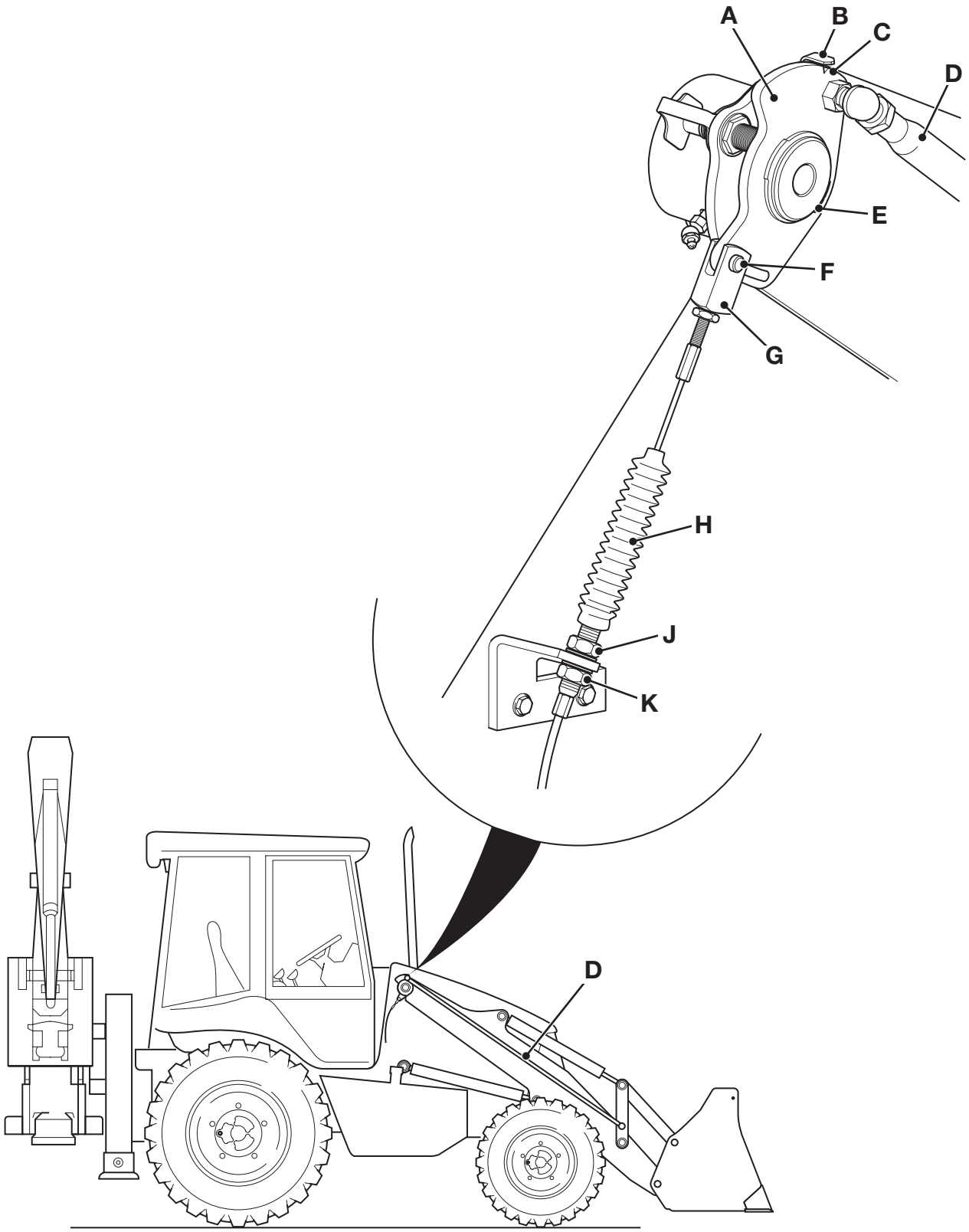

Fig 17.

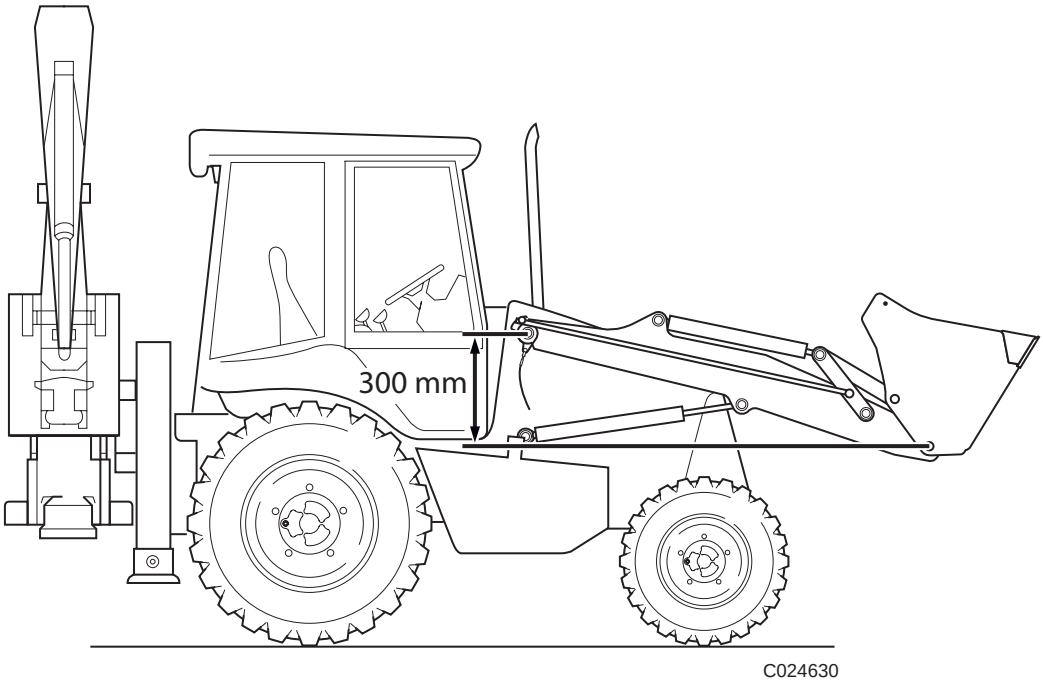

Fig 18. Shovel Setting Position

Shovel Reset

Operation and Adjustment

Operation

This enables you to roll the shovel from the rolled forward position into the digging position quickly and easily.

When you select `Shovel Reset' a proximity switch on one of the loader arms cuts off the hydraulic pressure to the shovel rams immediately the shovel reaches the correct angle for digging.

To select `Shovel Reset':

1 Press the `Shovel Reset Enable' switch **Z** to the ON position, the switch will illuminate.

2 Pull the loader lever to the left as far as it will go. You will feel a slight pressure on the lever as it passes through the `Roll Back' position.

3 Release the lever, it will stay in the detent position until the shovel reaches the reset position when the lever will automatically return to the central hold position.

4 When shovel reset is no longer required press the enable switch to the OFF position.

Adjustment

1 Lower the loader arms and position the shovel in the required `Shovel Reset' position.

2 Switch OFF the engine but leave the ignition ON.

3 Press the `Shovel Reset Enable' switch to ON.

4 ⇨ *Fig 21. (D-26)*. Adjust the rod with nuts **A** so that the LED on the proximity switch illuminates and extinguishes at this position.

5 Adjust the proximity switch with nuts **B** to give a clearance **X** of 2 mm (0.08 in).

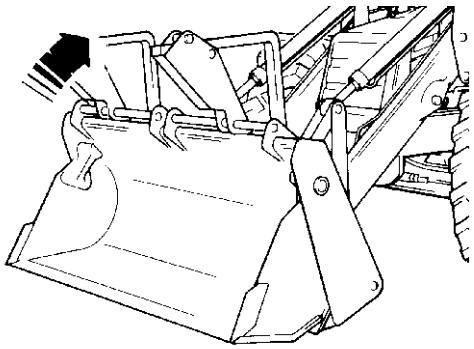

Fig 19.

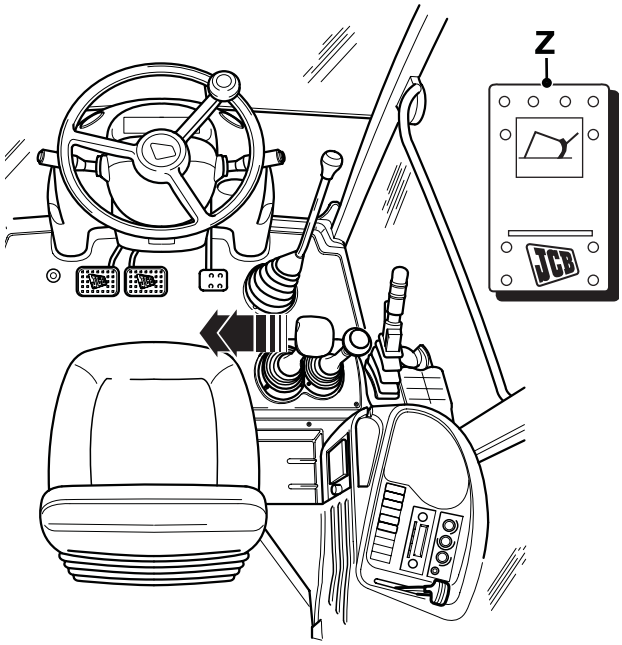

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Fig 20.

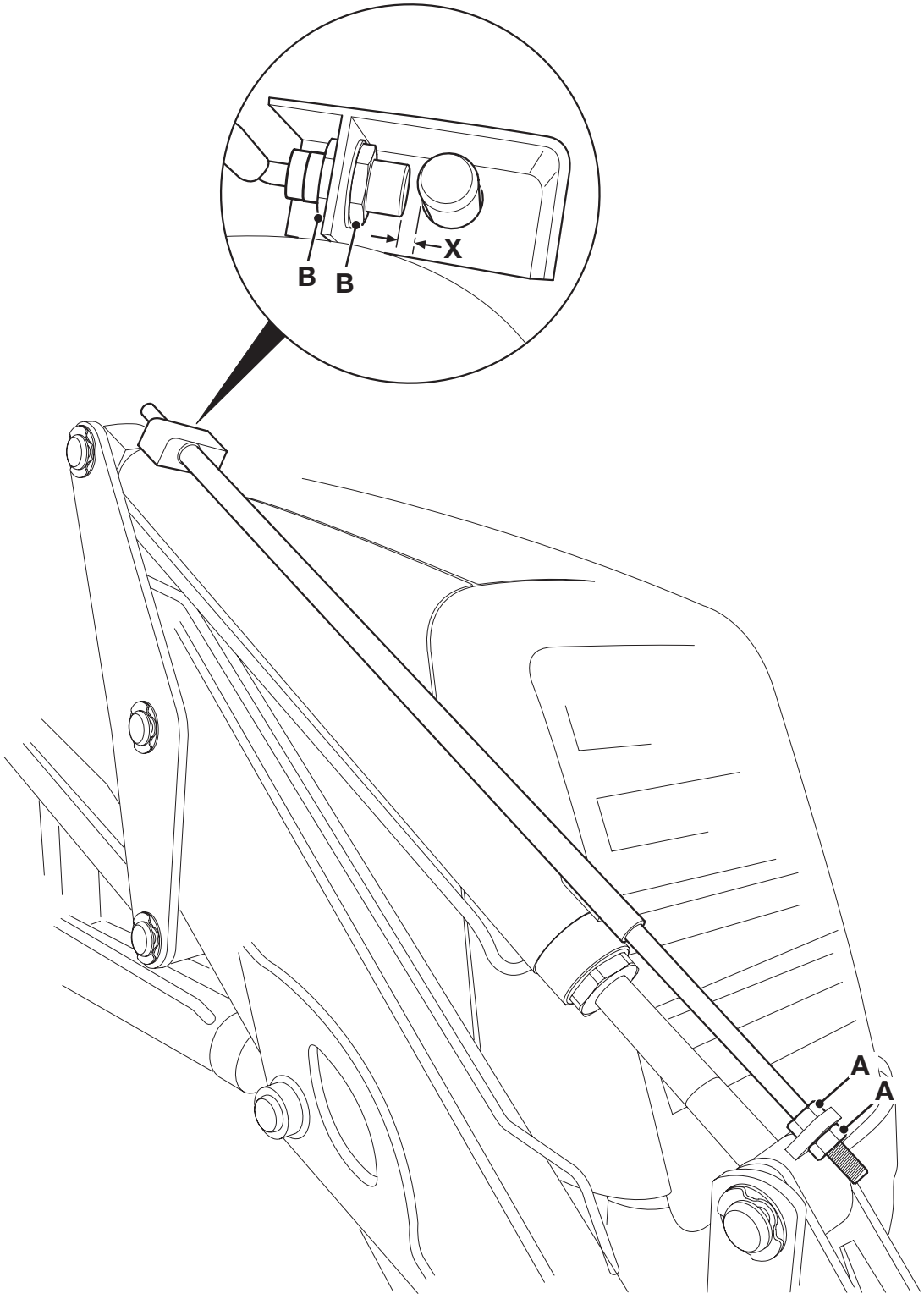

Fig 21. Proximity Switch Setting

Shovel Reset 3C-14 (214e) & 3C Machines

Operation and Adjustment

Operation

This enables you to roll the shovel from the rolled forward position into the digging position quickly and easily.

When you select `Shovel Reset' a proximity switch on one of the loader arms cuts off the hydraulic pressure to the shovel rams immediately the shovel reaches the correct angle for digging.

To select `Shovel Reset':

1 Pull the loader lever to the left as far as it will go. You will feel a slight pressure on the lever as it passes through the `Roll Back' position.

2 Release the lever, it will stay in the detent position until the shovel reaches the reset position when the lever will automatically return to the central hold position.

Adjustment

1 Park the machine on firm level ground, lower the bucket to the ground and switch off the engine.

2 Ensure the cam plate on the right hand loader tower is correctly set, see ***Anti-Spill Mechanism 3C-14 (214e) & 3C Machines***.

3 Adjust the proximity switch **24A** with the nuts **24B** to give a clearance **24C** of 5 - 8 mm (0.2 - 0.3 in).

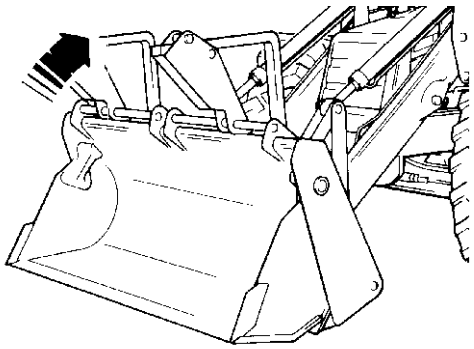

Fig 22.

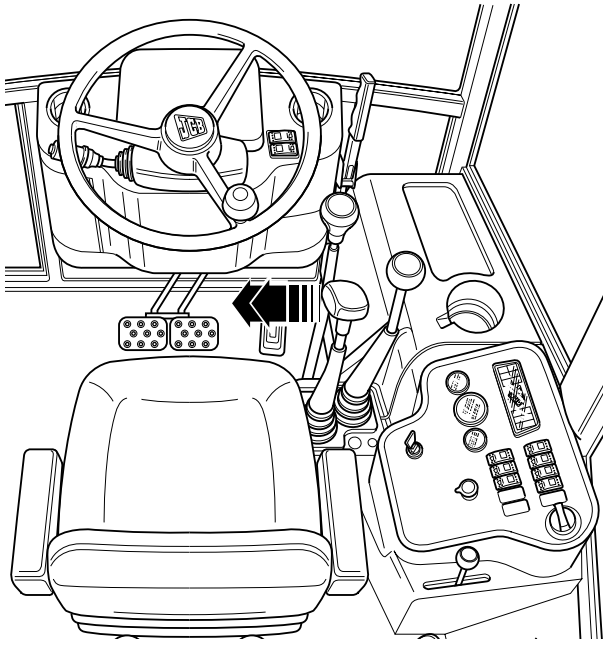

Fig 23.

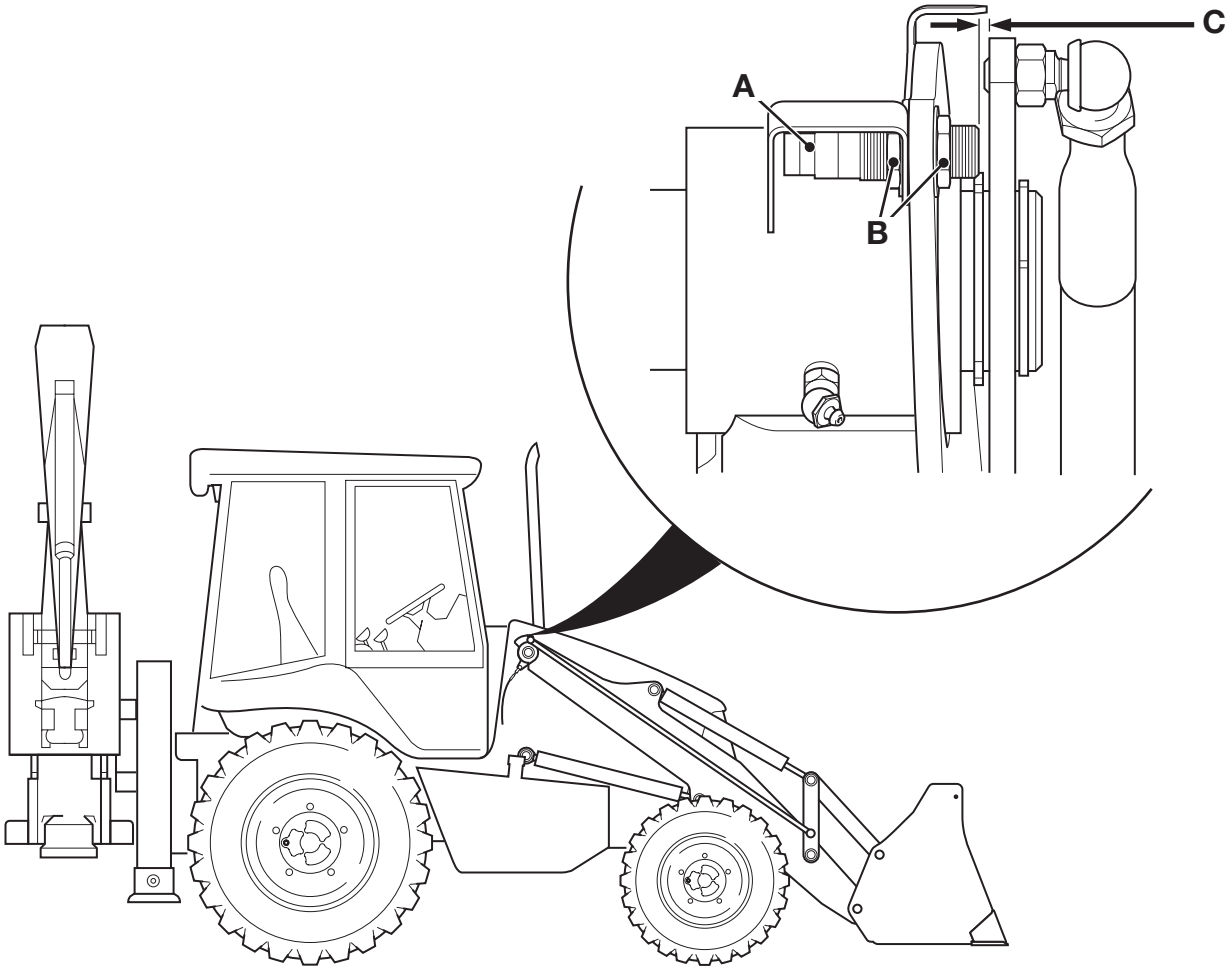

Fig 24.