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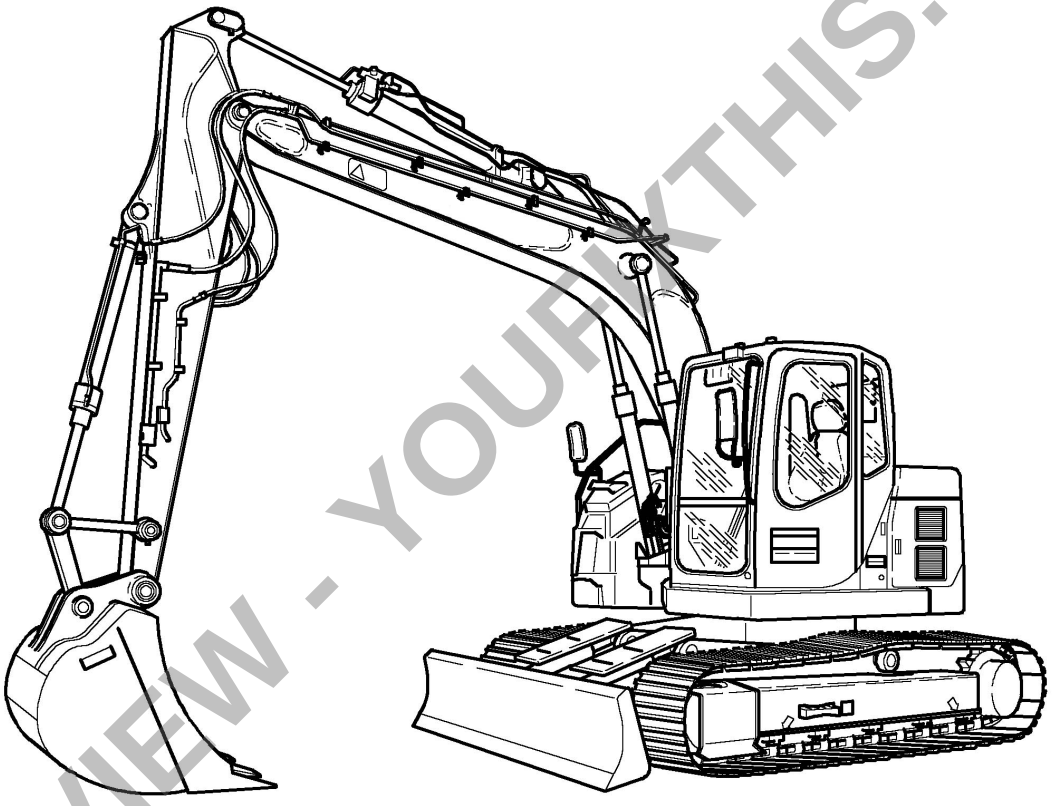
REPAIR MANUAL



CX75SR
CX80

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Contents

INTRODUCTION	
DISTRIBUTION SYSTEMS	A
POWER PRODUCTION	B
TRAVELLING	D
BODY AND STRUCTURE	E
FRAME POSITIONING	F
WORKING ARM	H
TOOLS AND COUPLERS	J

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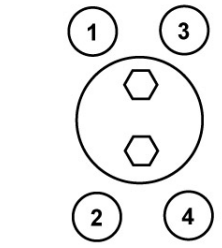
Torque (- A.90.A.10)

CX75SR

Order of tightening nuts and cap screws.

Tighten alternately so that torque setting remains even.
Cap screws which are fitted with Loctite (look for traces of a white residue on the thread after removal), must be cleaned with a thin oil or a suitable solvent, then dried.
Add two or three drops of Loctite to the cap screw thread, then fit the screw.



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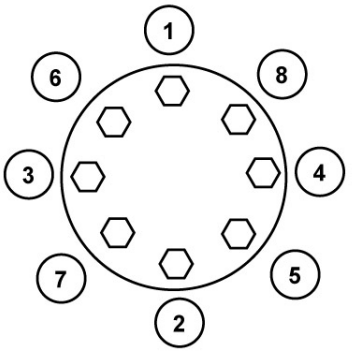

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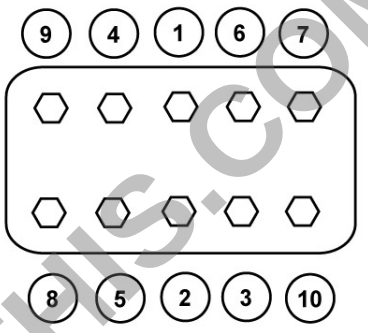

The numbers in the diagrams represent the order of tightening.

Tightening torque

Where there are no special instructions, tighten cap nuts screws to the torques given in the table below.

Standard torque setting table.

Designation of cap screws (dimensions)		M6	M8	M10	M12	M14	M16	M18	M20
Cap screw	Wrench in **mm**	**10**	**13**	**17**	**19**	**22**	**24**	**27**	**30**
	Torque setting in **Nm**	**6,9**	**19,6**	**39,2**	**58,8**	**98,1**	**157,2**	**196**	**274**
Socket head screw	Wrench in **mm**	**5**	**6**	**8**	**10**	**12**	**14**	**14**	**17**
	Torque setting in **Nm**	**8,8**	**21,6**	**42,1**	**78,4**	**117,6**	**176,4**	**245**	**343**

SPECIAL TORQUE SETTINGS

No.	Component	Screw diameter	Wrench in mm	Tightening torque
(1)*	Travel moto-reduction gear	M16	24	**267 - 312 Nm**
(2)*	Sprocket	M14	22	**173 - 202 Nm**
(3)*	Idler wheel	M10	17	**63 - 73 Nm**
(4)*	Upper roller	M16	24	**267 - 312 Nm**
(5)*	Lower roller	M20	30	**521 - 608 Nm**
(6)	Track pad	M14	22	**220 - 270 Nm**
(7)	Counterweight	M24	36	**850 - 992 Nm**
(8)	Turntable bearing (chassis and upperstructure)	M16	24	**252 - 283 Nm**
(9)*	Swing moto-reduction gear	M16	24	**267 - 312 Nm**
(10)*	Engine	M16	24	**265 - 313 Nm**
(11)*	Engine mounts	M10	17	**64 - 74 Nm**
(12)	Radiator	M12	19	**36 - 44 Nm**
(13)*	Hydraulic pump	M10	17	**64 - 74 Nm**
(14)*	Hydraulic pump support	M12	Hex	**109 - 126 Nm**
(15)*	Hydraulic reservoir	M12	19	**69 - 78 Nm**
(16)*	Fuel tank	M10	17	**36 - 44 Nm**

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PRIMARY HYDRAULIC POWER SYSTEM - General specification (A.10.A - D.40.A.10)

CX75SR

Capacities

Total hydraulic circuit	**95 L**
Hydraulic fluid reservoir	**50 L**
Coolant only	**3.5 L**

Main hydraulic pump

Variable flow twin pump, with axial pistons.

Maximum flow	**2 x 71.4 L/min**
Displacement	**2 x 34 cm³**

Hydraulic control pump

Fixed flow pump

Maximum flow	**22,5 L/min**
Displacement	**10.7 cm³**

Secondary hydraulic pump

Fixed flow pump

Maximum flow	**25.4 L/min**
Displacement	**12.1 cm³**

Calibration pressure

Pilot circuit main relief valve (± 1 bar)	**42 bar**
Main relief valve (standard) (± 3 bar)	**294 bar**
Main relief valve (option) (± 3 bar)	**226 bar**
Secondary relief valve (boom, dipper and bucket) (± 5 bar)	**319 bar**
Secondary relief valve (swing) (± 4 bar)	**226 bar**
Secondary relief valve (travel) (± 5 bar)	**294 bar**
Secondary relief valve (dozer blade) (± 5 bar)	**255 bar**
Secondary relief valve (backhoe offset) (± 5 bar)	**333 bar**
Secondary relief valve (boom and dipper) (± 5 bar)	**314 bar**

Boom cylinder

Barrel diameter	**110 mm**
Rod diameter	**70 mm**
Stroke	**911 mm**

Dipper cylinder

Barrel diameter	**95 mm**
Rod diameter	**60 mm**
Stroke	**797 mm**

Bucket cylinder

Barrel diameter	**85 mm**
Rod diameter	**110 mm**
Stroke	**665 mm**

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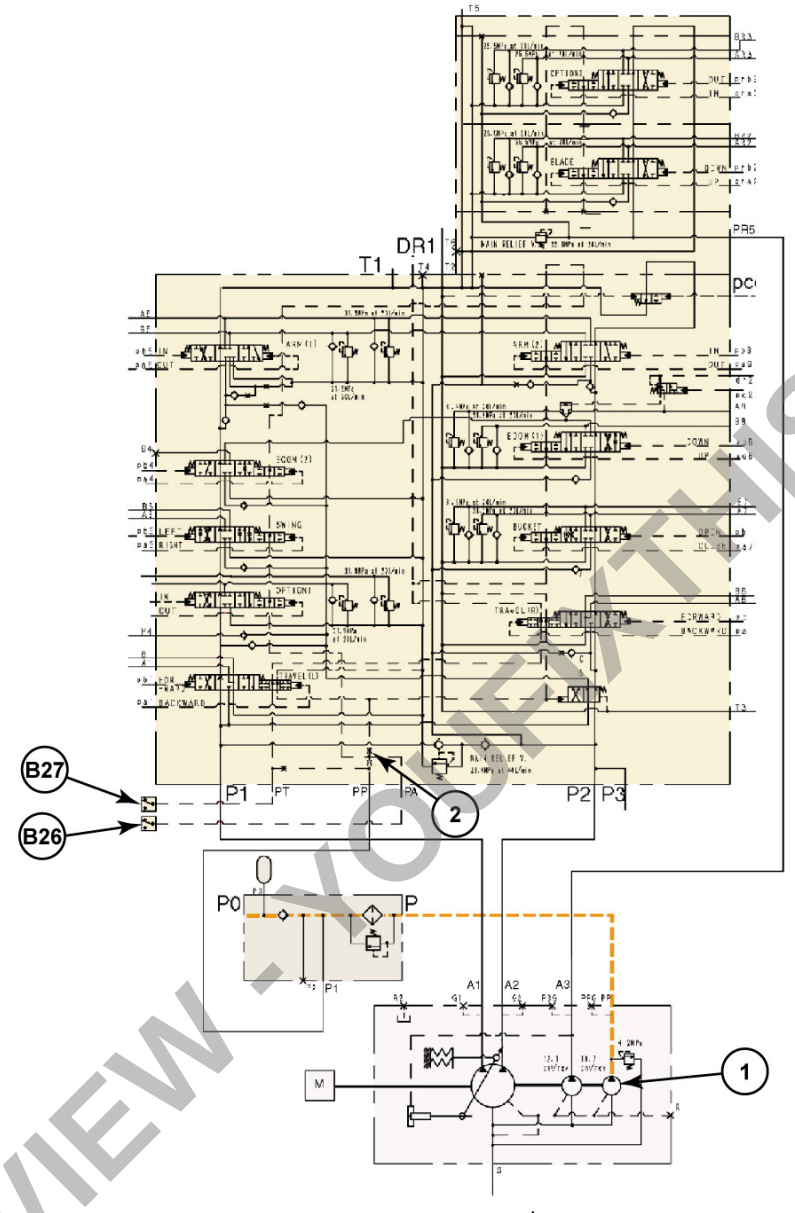
PRIMARY HYDRAULIC POWER SYSTEM - Dynamic description (A.10.A - C.30.A.10)

CX75SR, CX80



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Controls in neutral position

In neutral with the engine running, some of the flow from the low pressure pump **(1)** is fed to **(PP)** and is divided by a calibrated restrictor bridge. One fraction passes through the two travel spools, and the other passes through all the other spools before rejoining the general return circuit. When the spools are moved, these circuits will be locked, which will close the upper pilot **(B26)** and travel pilot **(B27)** pressure switches.

(1) Low pressure pump

(2) Calibrated restrictor bridge

(B26) Upper pilot pressure switch

(B27) Travel pilot pressure switch

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Contents

DISTRIBUTION SYSTEMS - A

ELECTRICAL POWER SYSTEM - 30.A

TECHNICAL DATA

ELECTRICAL POWER SYSTEM - General specification (A.30.A - D.40.A.10) 4
CX75SR, CX80

ELECTRICAL POWER SYSTEM - Special tools (A.30.A - D.20.A.40) 4
CX75SR WE, CX80 WE

ELECTRICAL POWER SYSTEM - Special tools (A.30.A - D.20.A.40) 10
CX75SR NA, CX80 NA

Battery

Battery - General specification (A.30.A.83 - D.40.A.10) 16
CX75SR, CX80

FUNCTIONAL DATA

ELECTRICAL POWER SYSTEM - Static description (A.30.A - C.30.A.20) 17
CX75SR, CX80

ELECTRICAL POWER SYSTEM - Overview (A.30.A - C.10.A.10) 18
CX75SR

ELECTRICAL POWER SYSTEM - Overview (A.30.A - C.10.A.10) 22
CX80

Fuse and relay box

Fuse and relay box - Overview (A.30.A.80 - C.10.A.10) 26
CX75SR, CX80

Fuse and relay box - Detailed view (A.30.A.80 - C.10.A.50) 28
CX75SR

Fuse and relay box - Detailed view (A.30.A.80 - C.10.A.50) 29
CX80

Alternator

Alternator - Electronic schema (A.30.A.82 - C.20.A.50) 30
CX75SR, CX80

Circuit breaker

Circuit breaker - Electronic schema (A.30.A.85 - C.20.A.50) 31
CX75SR, CX80

SERVICE

Battery

Battery - Visual inspection (A.30.A.83 - F.40.A.10) 32
CX75SR, CX80

Battery - Disconnect (A.30.A.83 - F.10.A.11) 33
CX75SR, CX80

Battery - Remove (A.30.A.83 - F.10.A.10) 34
CX75SR, CX80

Battery - Check (A.30.A.83 - F.40.A.11) 35
CX75SR, CX80

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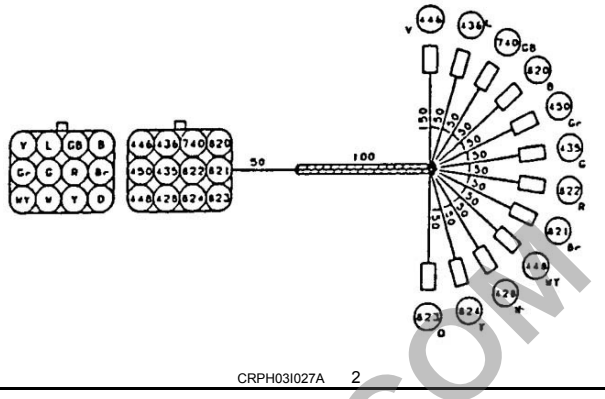
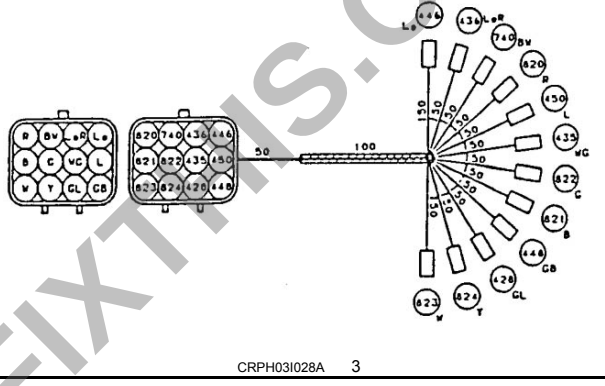
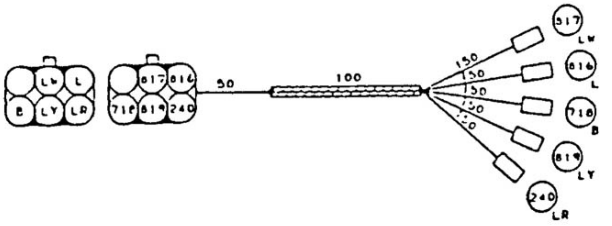
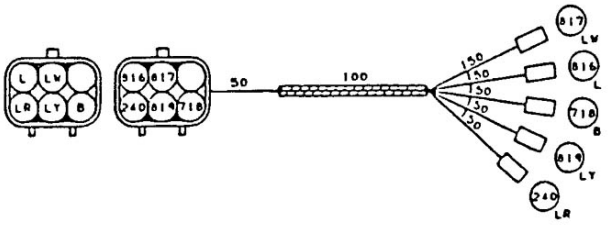
CONTENTS OF TEST ELECTRICAL CONNECTOR KIT **CAS-30039**	
Test electrical connector.- not used	 CRPH03I027A 2
Test electrical connector.- not used	 CRPH03I028A 3
Test electrical connector for emergency stop motor, motor side.	 CRPH03I029A 4
Test electrical connector for emergency stop motor, emergency stop motor harness side.	 CRPH03I030A 5

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Battery - Charging (A.30.A.83 - F.60.A.30) 36
CX75SR, CX80

Battery - Overhaul (A.30.A.83 - F.10.A.40) 37
CX75SR, CX80

Battery - Install (A.30.A.83 - F.10.A.15) 38
CX75SR, CX80

Battery - Connect (A.30.A.83 - F.10.A.16) 39
CX75SR, CX80

Alternator

Alternator - Tension adjust (A.30.A.82 - F.45.A.40) 40
CX75SR, CX80

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PRIMARY HYDRAULIC POWER SYSTEM - Troubleshooting (A.10.A - G.40.A.10)

CX75SR, CX80

NOTE: *This table summarises the main symptoms relating to the hydraulic circuit in general.*

Problem	Possible Cause	Correction
The hydraulic system is not operating or is operating incorrectly.	Oil level in reservoir too low	Refill the tank
	Insufficient pilot pressure	Refer to **HYDRAULIC COMMAND SYSTEM - Troubleshooting (A.14.A - G.40.A.10)**
	Pump faulty	Check the pressures Test the pump
	Main relief valve faulty	Refer to **Relief valve - Troubleshooting (A.10.A.16 - G.40.A.10)**
	Cylinder faulty	Check for leaks, traces of flaking or scratches on the cylinder rods.
	Pump charge pressure too high	Check the pressure
	Valves or control valve cracked	Replace cracked components
	Spool stroke incomplete	Refer to **Stack valve - Troubleshooting (A.10.A.18 - G.40.A.10)**
	Filter clogged in the circuit	Clean and replace filters
	Blockage in the system	Locate and remove the cause of the blockage

Stack valve - Troubleshooting (A.10.A.18 - G.40.A.10)

CX75SR, CX80

NOTE: *This table summarises the main symptoms relating to the control valve block in general.*

Problem	Possible Cause	Correction
The spool does not move	Abnormal rise in oil temperature (flow is encountering resistance in the lines)	Eliminate the cause of the flow resistance
	Contaminated hydraulic oil	Clean the circuit and replace the hydraulic oil
	Lines with over-tightened port unions	Loosen and retighten the unions to the required torque
	Control valve body deformed during installation	Loosen the fixing screws and inspect
	Excessive pressure	Check the inlet (pump side) and supply pressures
	Spool not straight	Replace the control valve assembly
	Return spring damaged	Replace the spring
	Spring or cap deformed	Loosen the cap fixing screws and retighten them to the required torque
	Uneven temperature distribution in the control valve	Warm up the oil by operating all the controls
	Control valve obstructed by oil pollution	Clean out the control valve and the hydraulic circuit
	Insufficient pilot pressure	Check the pilot circuit main relief valve
Does not hold the load	Oil leak in the spool	Check the spool
	Leak in the main relief valve	Remove the valve and clean the seats of the valve and the control valve
	Leak in the load holding valve	Remove the valve and clean the seats, replacing them if necessary
	Leak in the cylinder	Check that the cylinder rings are not leaking

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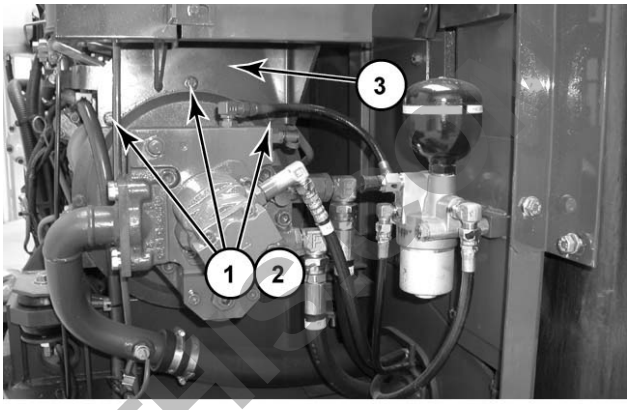
Hydraulic pump - Remove (A.10.A.20 - F.10.A.10)

CX75SR, CX80

Prior operation: PRIMARY HYDRAULIC POWER SYSTEM - Drain fluid (A.10.A - F.35.A.20)
Prior operation: Rear ballasting - Remove (F.20.B.61 - F.10.A.10)
Prior operation: Silencer - Remove (B.40.A.36 - F.10.A.10)

1. Remove the fixing screws **(1)** and washers **(2)** from the silencer bracket **(3)**, then remove the silencer bracket **(3)**.



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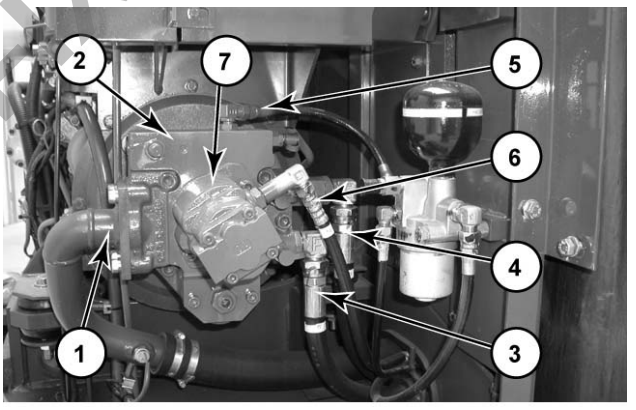
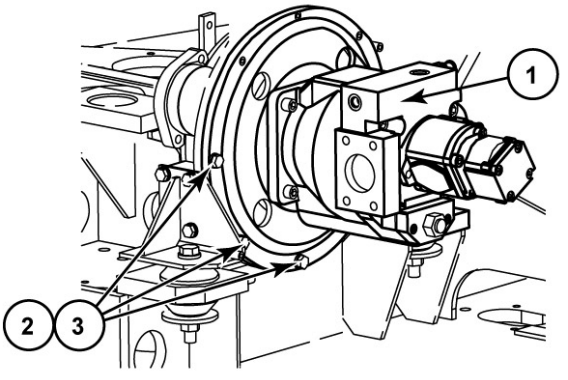
2. Mark all the hoses connected to the main pump and the control pump.
3. Remove and plug the inlet pipe **(1)** on the main pump **(2)**.
   Disconnect and plug the hoses **(3)** and **(4)** on the main pump **(2)**.
   Disconnect and plug the pilot hose **(5)** from the main pump **(2)**.
   Disconnect and plug the hose **(6)** from the control pump **(7)**.



CRIL03J005A02 2

4. Install a suitable lifting device with sling to support the flange and pump assembly **(1)**.
   Do not allow any slack in the sling so that the lifting device supports the flange and pump assembly **(1)** immediately it is removed.



CRIL03J006A01 3

5. Remove the screws **(2)** and washers **(3)** which secure the flange and pump assembly **(1)** to the engine.
6. Gently pull the flange and pump assembly **(1)** horizontally away from the flexible coupling secured to the engine flywheel. Set the flange and pump assembly **(1)** down on a clean workbench.

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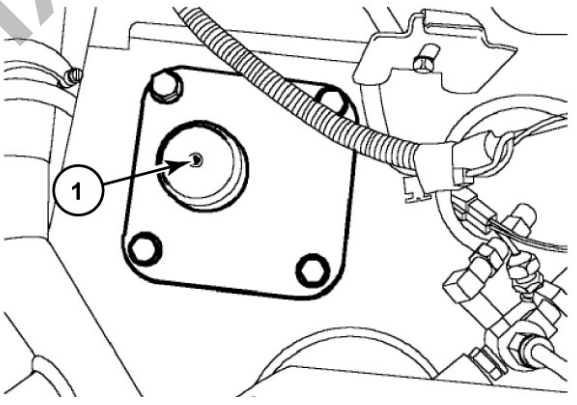
PRIMARY HYDRAULIC POWER SYSTEM - Depressurising (A.10.A - F.35.A.51)

CX75SR, CX80

IMPORTANT: *This operation must be carried out before any work is done on the hydraulic circuit.*

1. Park the machine on hard, flat ground.
2. Open the bucket until the cylinder rod is completely retracted.
3. Extend the dipper until the cylinder rod is completely retracted.
   Lower the boom so that the end of the dipper is resting on the ground.
   Lower the tool to the ground.
   Lower the dozer blade to the ground
4. Reduce the engine speed to idle for **30 secondes**, then shut down the engine.
5. Turn the starter switch key to "ON" without starting the engine.
6. Lower the pilot control cancellation lever.
7. Operate each control more than 10 times in both directions to release all pressure in the circuits.
8. Press the button **(1)** located on the hydraulic reservoir breather to release all pressure in the reservoir.



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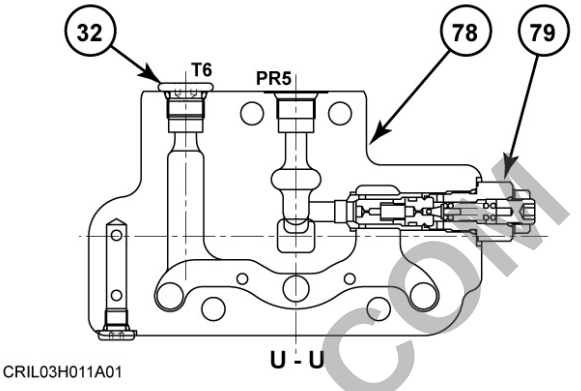
Stack valve Inlet section - Assemble (A.12.A.18.10 - F.10.A.20)

CX75SR, CX80

1. Install and tighten to a torque of **61 - 82 Nm** plug **(32)** fitted with a new seal.



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2. Install and tighten to a torque of **59 - 69 Nm** the main relief valve **(79)** on the inlet plate **(78)**.

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Battery - Connect (A.30.A.83 - F.10.A.16)

CX75SR, CX80

1. Clean the battery connections and cables.
2. Clean and grease the negative and positive terminals on the battery.
3. Reconnect the battery cable (**+12 volts**) to the POSITIVE terminal, indicated by **(+)** on the battery.
4. Reconnect the battery cable (**0 volts** to the NEGATIVE terminal, indicated by **(-)** on the battery.
5. Install the terminal connection covers to the battery cable connections, taking care to match the correct polarity colours.
6. Fold back the protective mat.

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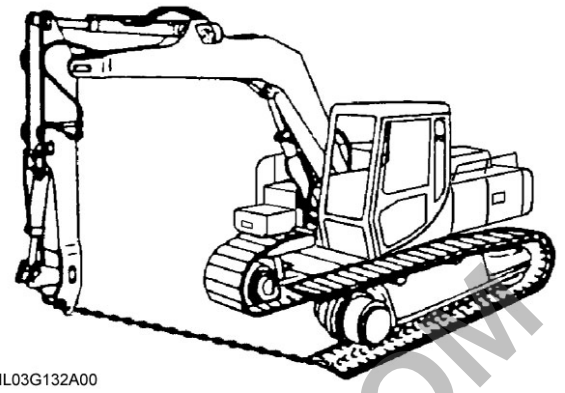
14. Attach a sling to the lower end of the track.
Start the engine.
Reverse the machine, moving the dipper out at the same time.
When the track is free of the sprocket, stop the machine from reversing further.
Continue moving the dipper out until the track is pulled away from the machine.
Stop the engine, move the track to be replaced away from the machine.



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CRIL03G132A00 12

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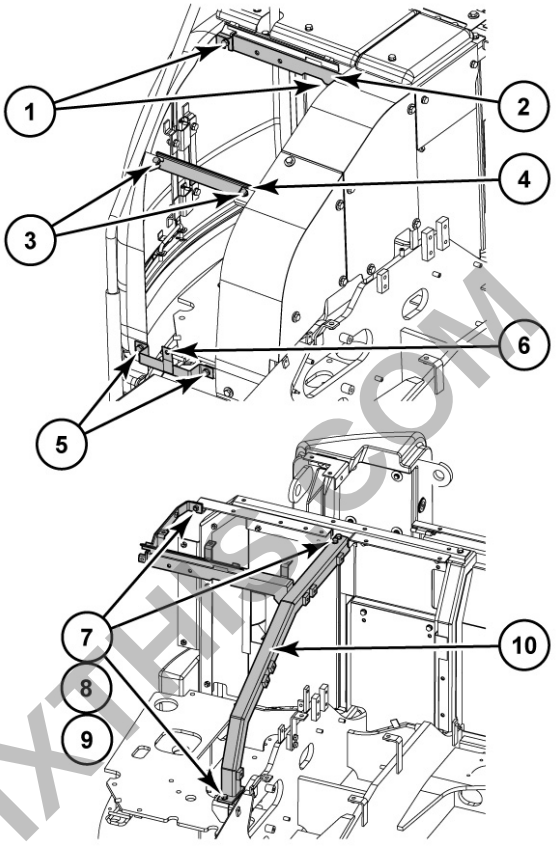
7. VALVE BANK COVER SUPPORT
   Remove fixing screws **(1)** and bracket **(2)**.
   Remove fixing screw **(3)** and bracket **(4)**.
   Remove screws **(5)** and bracket **(6)**.
   Remove fixing screws **(7)**, **(8)**, **(9)** and brackets **(10)**.



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FRAME POSITIONING - F

TRAVELLING Travel - 10.F

CX75SR
CX80

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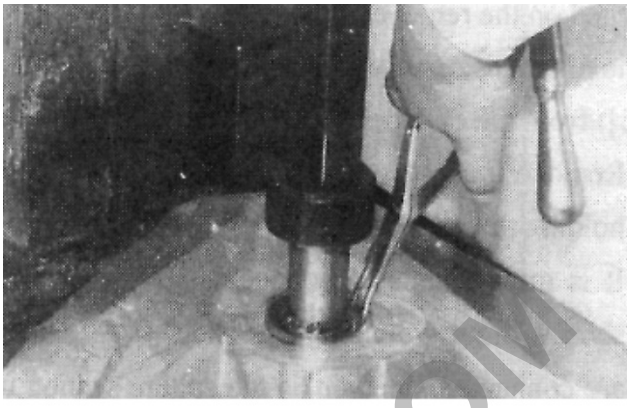
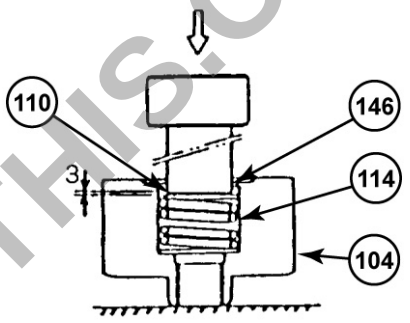
23. Place the cylinder barrel **(104)** under a press.
Insert the **Hydraulic motor - Special tools (F.10.F.28 - D.20.A.40)** guide between the press and the washer **(110)**.
Activate the press.
Remove the snap ring **(146)**.





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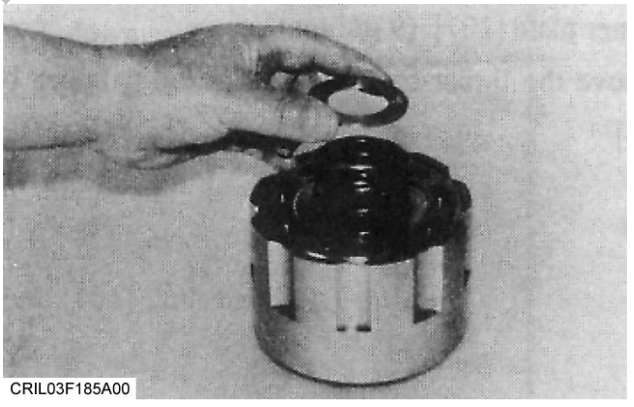
CRIL03F183B01 15

24. Remove the washers **(110)** and spring **(114)**.



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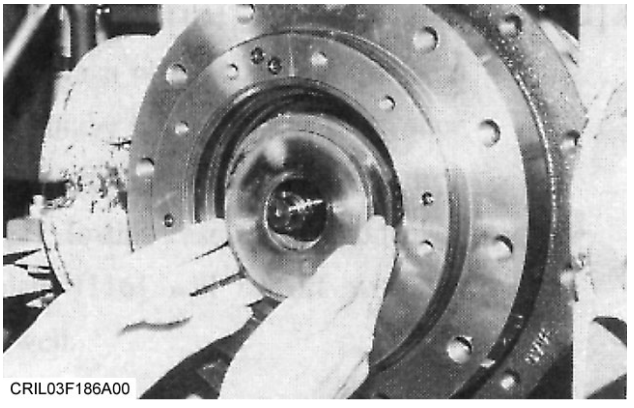
CRIL03F185A00 16

25. Remove the swash plate **(103)**, paying attention to the pivots **(176)**.



CRIL03F186A00

CRIL03F186A00 17

26. Remove the pivots **(176)** and centring studs **(177)**.

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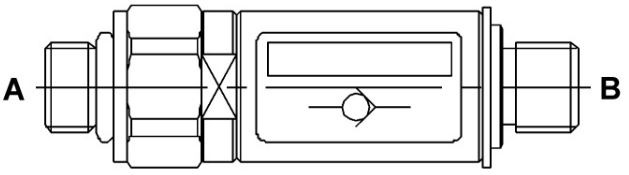
Command valve Cushion valve - External view (F.40.C.12.20 - C.10.A.40)

CX75SR, CX80



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Swing pilot damper

(A) Towards control valve
(B) Towards control lever

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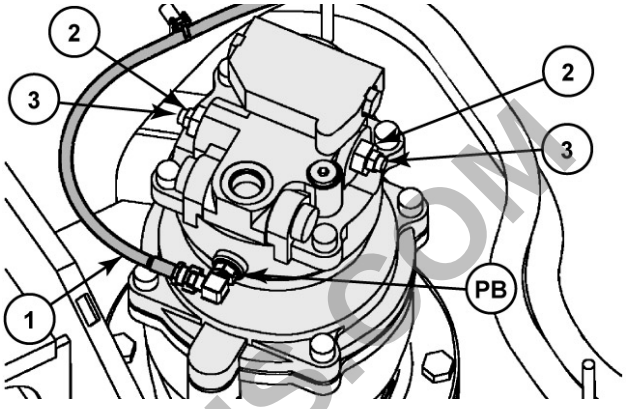
Relief valve - Pressure setting (F.40.C.16 - F.45.A.70)

CX75SR, CX80

Prior operation: Relief valve - Pressure test (F.40.C.16 - F.40.A.30)

1. With a wrench, hold adjusting screw **(3)** on the main relief valve concerned in position and loosen lock nut **(2)**.



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2. Operate and hold in position the swing control that is to be calibrated.
3. Turn adjusting screw **(3)** on the main relief valve concerned until the correct pressure is obtained.
4. With a wrench, hold adjusting screw **(3)** in position and tighten lock nut **(2)**.
5. Check the pressure again and repeat the operations if the required value is not obtained.

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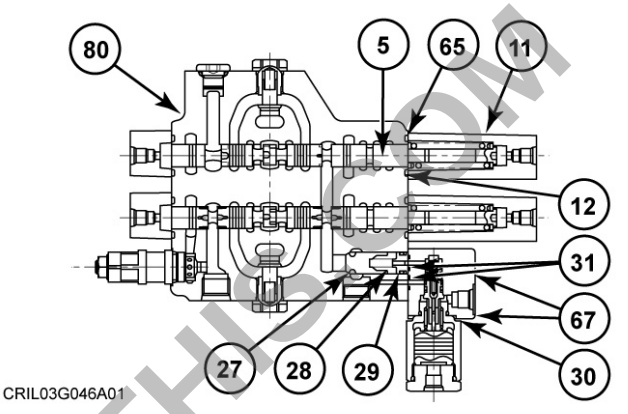
Control valve - Disassemble (H.20.B.14 - F.10.A.25)

CX75SR, CX80

1. Unscrew and remove screws **(65)** from element **(80)**.
   Remove the caps **(11)** and **(13)**.
   Remove the seals **(12)**.
   Remove the spool **(5)**.

2. Disassemble the other spool in the same way.

NOTE: *Mark each spool to ensure that it is returned to the correct housing during re-assembly.*



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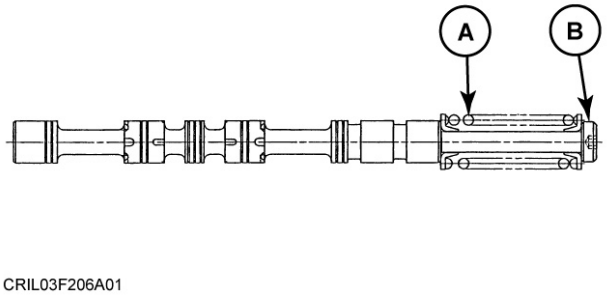
3. Remove each spool as a complete sub-assembly from the body of the control valve, taking care not to damage them.

NOTE: *To avoid abrasion of the spool surface during dismantling of the slide valve assembly, use a soft-jawed vice and clamp the spool as closely as possible to the head in order to avoid any deformation. If the threaded part of the screw is coated with thread lock fluid, heat the screw head with an industrial dryer until it can be removed easily (usually the temperature must be **200 - 250 °C**). If this operation causes distortion of the spring (impaired performance), replace the spring.*

4. Remove the spool screws **(B)** on the spring side **(A)** of the spools.
   Remove the springs **(A)**.



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5. Disassemble the parts of the load holding valve, refer to **Load holding valve - Disassemble (H.20.B.19 - F.10.A.25)**.

6. Unscrew and remove the screws **(67)**.
   Remove the load holding valve assembly **(30)**, then remove the control valve seal **(31)**.

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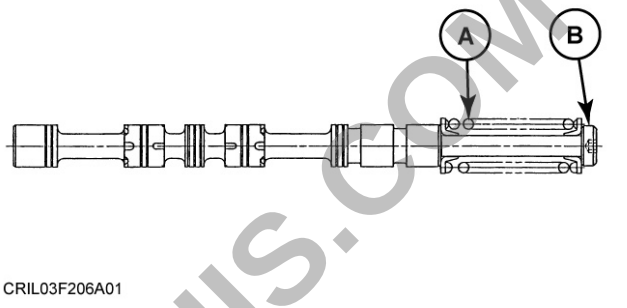
Control valve - Assemble (H.20.D.14 - F.10.A.20)

CX75SR, CX80

Prior operation: Clean and check parts before assembly, refer to **Stack valve - Visual inspection (A.10.A.18 - F.40.A.10)**

1. Apply thread lock fluid to the threaded parts of the spool **(83)**.
   Clamp the spool in a soft-jawed vice.
   Fit the spring **(A)** to the screw **(B)** and tighten the screw to the required torque on the spool.



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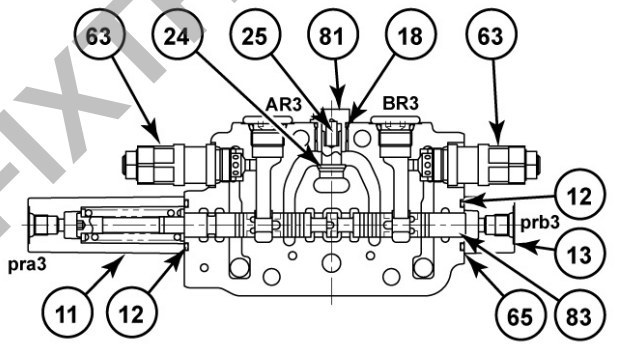
2. Install valve **(24)** and spring **(25)**.



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3. Fit plug **(81)** fitted with seal **(18)** and tighten to the required torque.
4. Install the spool **(83)**.
   Install seals **(12)** on the section.
5. Install caps **(11)** and **(13)** on the section.
   Engage screws **(65)** and tighten to the required torque.
6. Install relief valves **(63)**, and tighten to the required torque.

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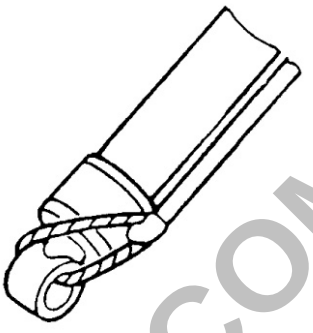
Cylinder - Install (H.25.B.26 - F.10.A.15)

CX75SR MONOBLOC BOOM, CX80

1. Attach a sling to retain the cylinder rod in the cylinder barrel.



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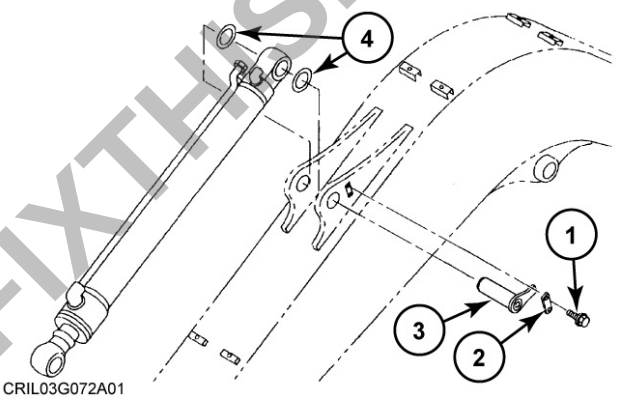
2. Using a suitable lifting device, lift th cylinder.
   Align the cylinder foot with the boom mounting brackets.
   Fit the shims **(4)** and pins **(3)**.
   Check the clearance between the cylinder foot and the mounting bracket, refer to **Arm - Service limits (H.25.B.50 - D.20.A.20)**.
   If necessary remove the pin and add or remove shims as required to obtain the correct play, replace the pin.
   Fit the plate **(2)** and screws **(1)**.



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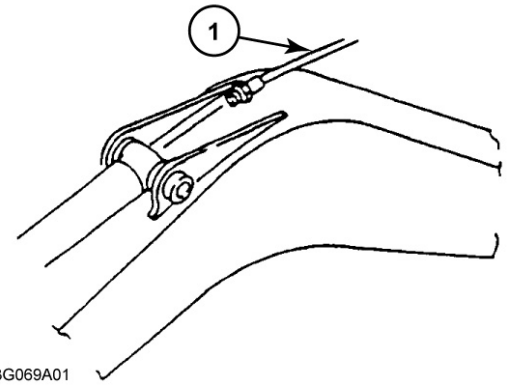
3. Connect the lubrication hose **(1)** to the cylinder.



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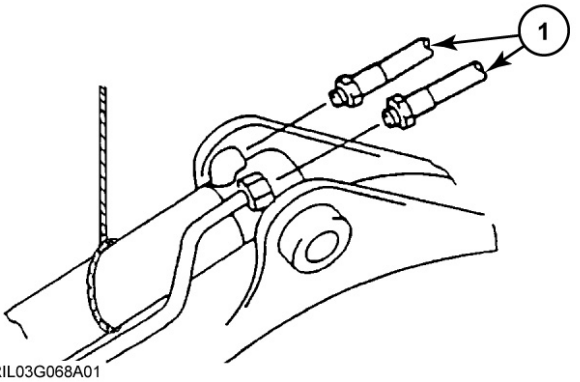
4. Start the vacuum pump.
   Remove the plugs.
   Connect the supply hoses **(1)**.



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