

Hydraulic hammers CB Serie

Service Manual

603.67.221.03



March 2009.

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SECTIONS HYDRAULIC HAMMERS	REFERENCE N°
MODELS CB18S - CB27S - CB37S	SMCB18S-1EN
MODEL CB90S	SMCB90S-0EN
MODELS CB32 - CB45 - CB65- CB85 - CB120 - CB150	7-22013EN
MODELS CB200S - CB260S - CB320S - CB400S - CB550S - CB700S	7-23863EN



HYDRAULIC HAMMERS

CB18S - CB27S - CB37S



Lep SMCB18S-1EN

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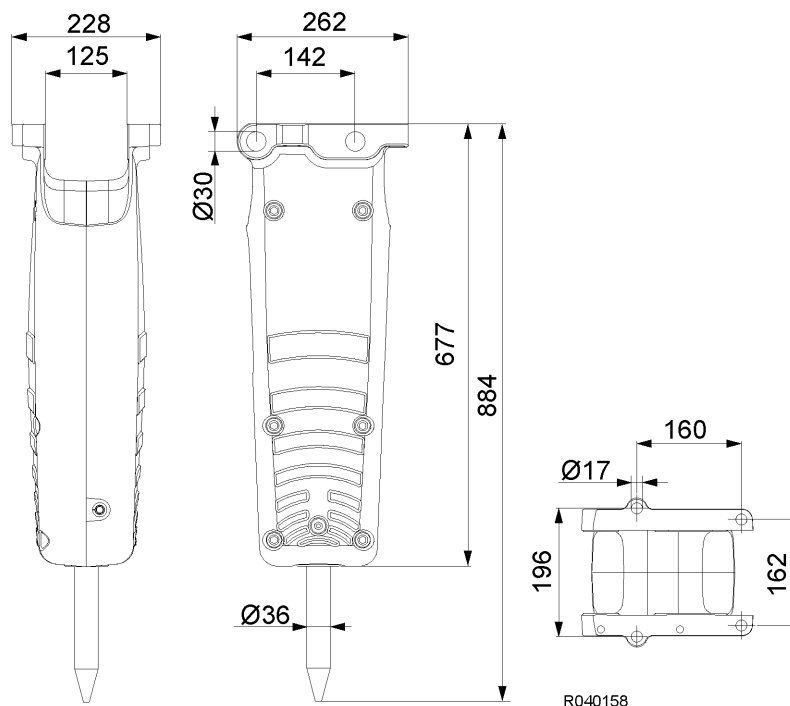
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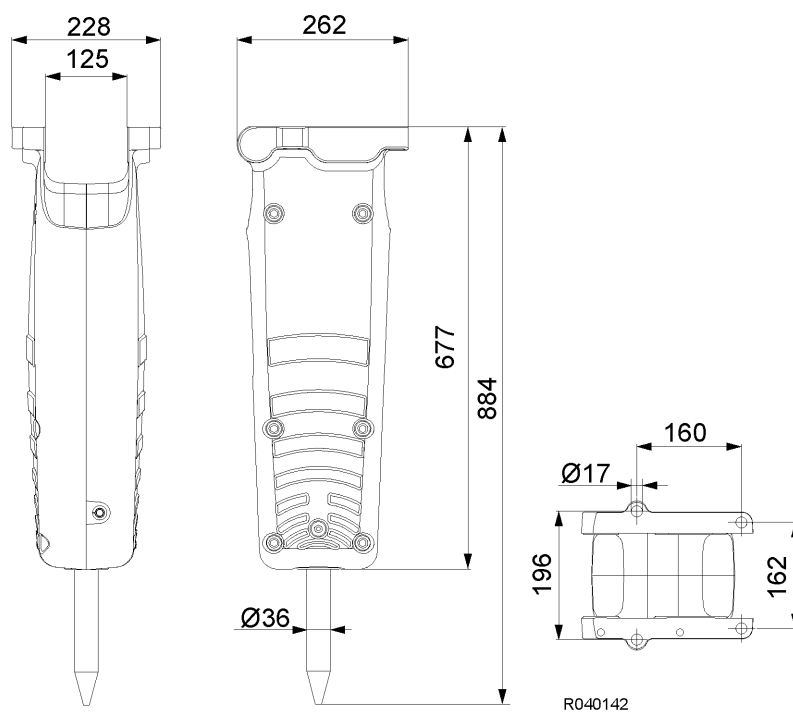
SPECIFICATIONS

OVERALL DIMENSIONS

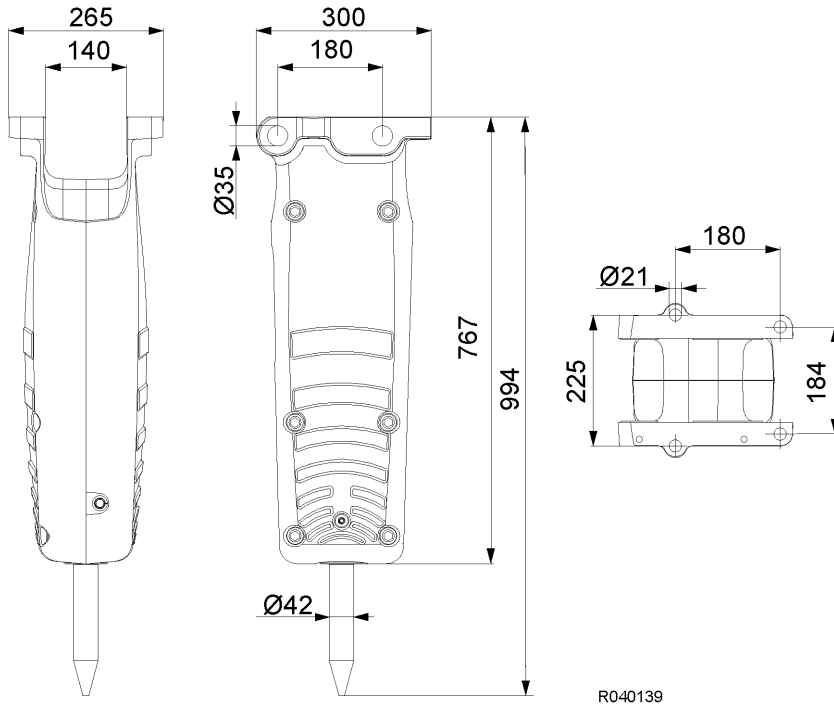
Model CB18 "SI" type



Model CB18 "S" type

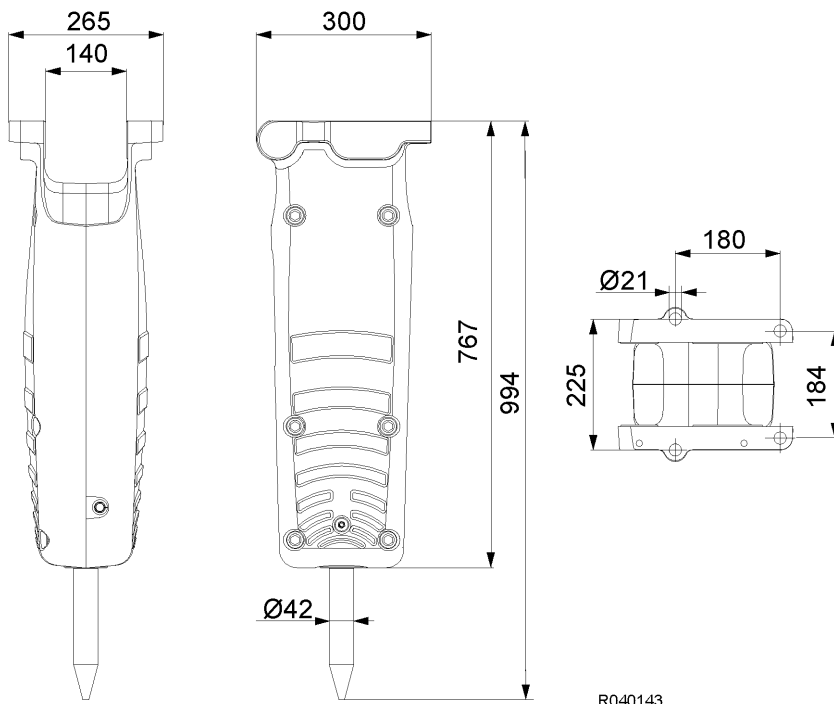


Model CB27 "SI" type



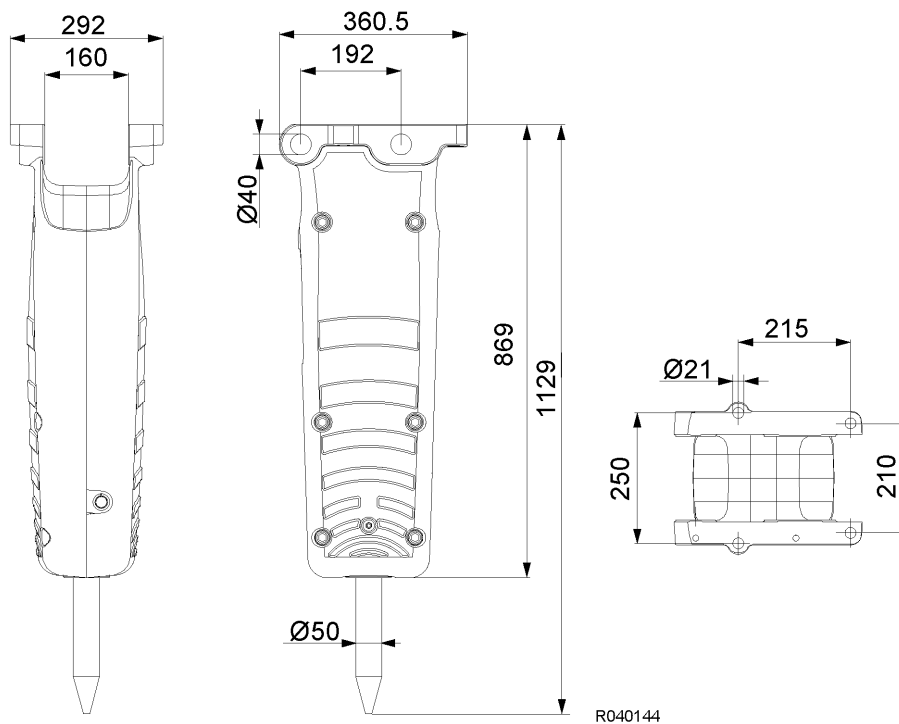
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Model CB27 "S" type

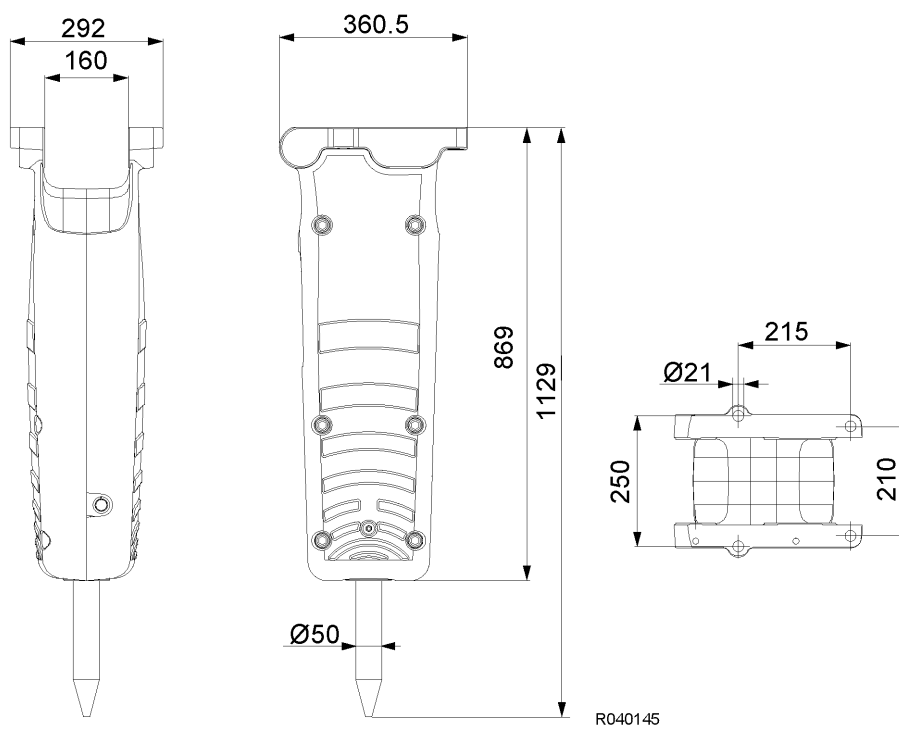


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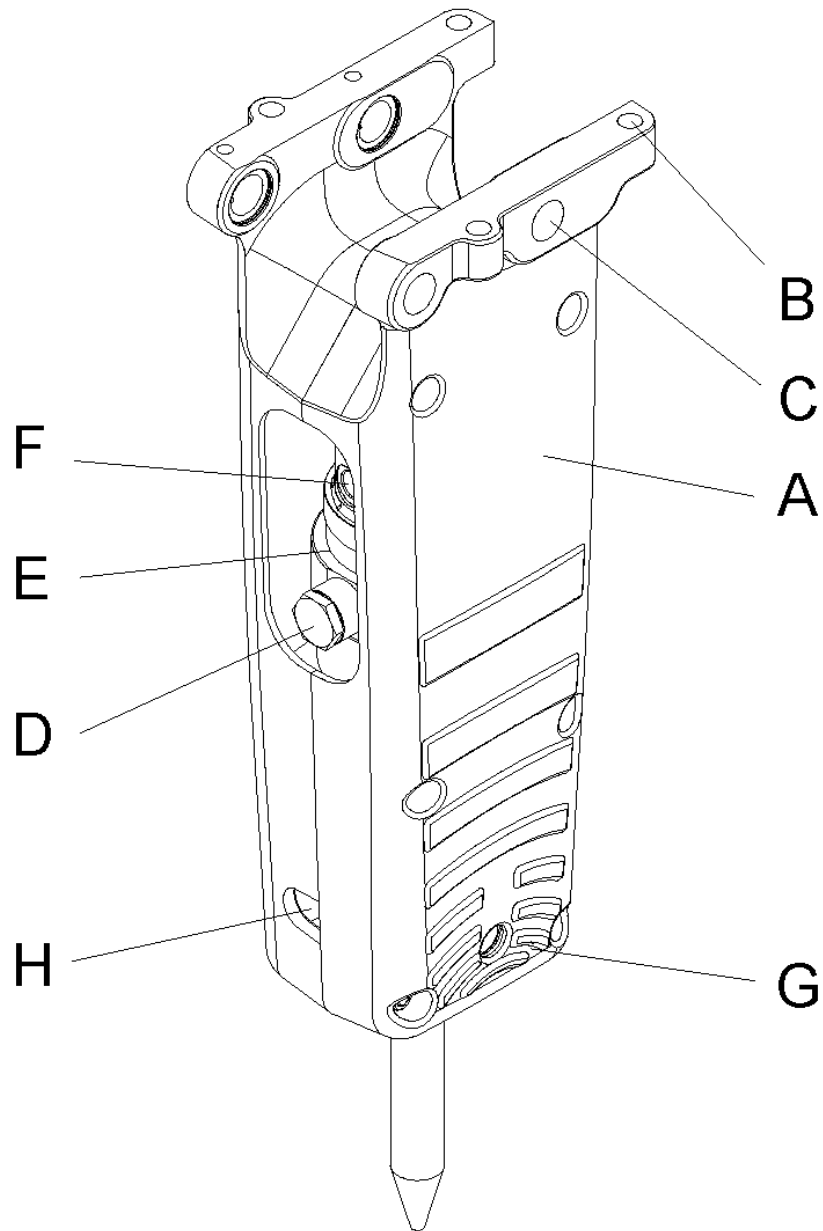
Model CB37 "SI" type



Model CB37 "S" type



MAIN PARTS



R010273

ITEM	Description
A	Side plates (Housing)
B	Mounting flange
C	Mounting pin holes
D	Accumulator
E	Hammer mechanism
F	Hose connections
G	Grease nipples
H	Tool retaining hardware

TECHNICAL SPECIFICATIONS

ITEM	Specifications CB18S	Specifications CB27S	Specifications CB37S
Working weight (1.)	80kg	120kg	160kg
Impact rate (2.)	1300-2500 (bpm)	1600-2600 (bpm)	1000-2000 (bpm)
Operating pressure (3.)	100 - 120 bar	120 - 140 bar	120 - 140 bar
Pressure relief, min (4.)	150 - 170 bar	170 - 190 bar	170 - 190 bar
Pressure relief, max	220 bar	220 bar	220 bar
Oil flow range	15 - 33 (L/mn)	20 - 48(L/mn)	30 - 63 (L/mn)
Back pressure, max	20 bar	20 bar	20 bar
Tool diameter	36mm	42mm	50mm
Pressure line connection (IN)	BSPP-internal 1/2"	BSPP-internal 1/2"	BSPP-internal 3/4"
Return line connection (OUT)	BSPP-internal 1/2"	BSPP-internal 1/2"	BSPP-internal 3/4"
Pressure line size (minimum internal diameter)	12 mm	12 mm	15 mm
Return line size (minimum inner diameter)	12 mm	12 mm	15 mm
Optimum oil temperature range	+40(°C) to +60(°C)	+40(°C) to +60(°C)	+40(°C) to +60(°C)
Allowed oil temperature range	-20(°C) to + 80(°C)	-20(°C) to + 80(°C)	-20(°C) to + 80(°C)
Optimum oil viscosity at operating temperature	30-60 cSt	30-60 cSt	30-60 cSt
Allowed oil viscosity range	20-1000 (cSt)	20-1000 (cSt)	20-1000 (cSt)
Carrier weight (5.)	0.8 t - 1.8 t	1.3 t - 2.7 t	2.0 t - 4.0 t
Noise level, guaranteed sound power level (6.)	119 dB	123 dB	124 dB
Charging pressure (Nitrogen N ²) Accumulator	25 bar	25 bar	25 bar

1. Includes average mounting bracket and standard tool.
2. Actual impact frequency depends on oil flow, oil viscosity, temperature, and material to be broken.
3. Actual pressure depends on oil flow, oil viscosity, temperature, and material to be broken and back pressure.
4. Minimum setting = actual operating pressure +50 bar (730 psi).
5. Check carrier's lifting capacity from carrier manufacturer.
6. Guaranteed sound power level CE 2000/14/EC LWA.

TORQUE SETTING

Sections	Torque setting		
	CB18S	CB27S	CB27S
Housing plate mounting screws (B)	170 Nm	175 Nm	175 Nm
Cover screws (A) valve body and distributor	160 Nm	240Nm	460 Nm
Nozzel (B) valve body and distributor	20 Nm	30 Nm	30 Nm
Pressure measuring plug (C) valve body and distributor	30 Nm	30 Nm	30 Nm
Shield plug (A) Charging accumulator	150 Nm	150 Nm	150 Nm
Accumulator filling plug (B)	20 Nm	20 Nm	20 Nm

MAINTENANCE

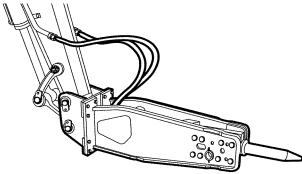
REMOVAL HAMMER

Warning : The hammer must be secured from rolling over when disconnecting from the carrier. Only use skilled operator to position carrier for removal!

Warning : Hydraulic pressure inside hammer must always be released before opening hose connections!

Warning : Hot hydraulic fluid can cause severe injuries!

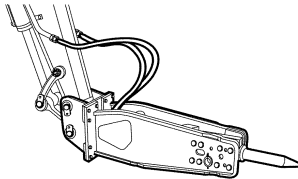
STEP 1



STEP 2

Stop the carrier engine. Operate boom and hammer controls to release pressure trapped inside hoses. Wait ten minutes for oil pressure to drop.

STEP 3



Place a receptacle of a suitable capacity under the piping.

Close hammer inlet and outlet lines. If quick couplers are used, disconnection automatically closes hammer lines.

If hammer line includes ball valves, please make sure that they are closed.

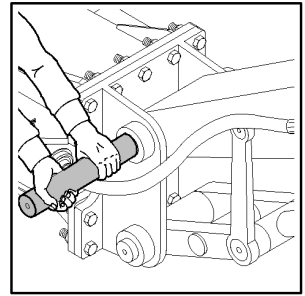
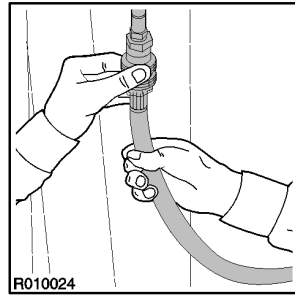
STEP 4

Disconnect hoses.

Protect environment from oil spills.

Plug the hoses and the hammer inlet and outlet ports.

STEP 5



R010024

Remove bucket pins and other parts.

STEP 6

The carrier can be moved aside.

INSTALLATION HAMMER

STEP 1

Install hammer in the same manner as mounting a bucket. Install bucket pins.

STEP 2

Connect hoses.

Hammer inlet port is marked on the valve body with "IN" and outlet port with "OUT"

An installation inspection must be carried out after the product has been mounted on the carrier.

In the installation inspection certain specifications (operating pressure, oil flow, etc.) are checked so that they are within given limits.

See "Hammer specification" on page 7.

STEP 3

Open hammer inlet and outlet lines.

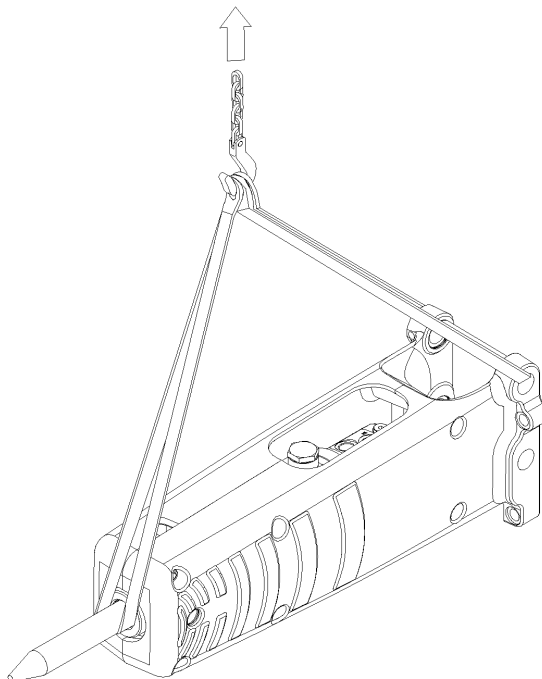
HANDLING HAMMER

Use a hoist when lifting components which weigh 23kg or more, to avoid back injury. Make sure all chains, hooks, slings etc., are in good condition and are in the correct capacity. Be sure hooks are positioned correctly. Lifting eyes are not to be side loaded during a lifting operation. Do not use the hammer's tools for lifting.

Lifting devices must safely carry the working weight of the product. See "Technical specifications" on page 7. Place chains or slings, as shown by the illustration, to lift the product.

SAFETY INSTRUCTIONS FOR LIFTING

Below are some common safety instructions concerning lifting operations. In addition to this, the local, national standards for machines and lifting-tackles must always be strictly observed. Please note that the list below is not all inclusive, you must always ensure the procedure you choose is safe for you and others.



RD10272

STEP 1

Do not lift load over people. No one shall be under the hoisted load.

STEP 2

Do not lift people and never ride the hoisted load.

STEP 3

Keep people clear from lift area.

STEP 4

Avoid side pull of the load. Make sure you take up the slack slowly. Start and stop carefully.

STEP 5

Lift load a few centimeters and verify it before proceeding. Make sure the load is well balanced. Check for any loose items.

STEP 6

Never leave the suspended load unattended. Maintain load control at all times.

STEP 7

Never lift the load over the rated capacity.

STEP 8

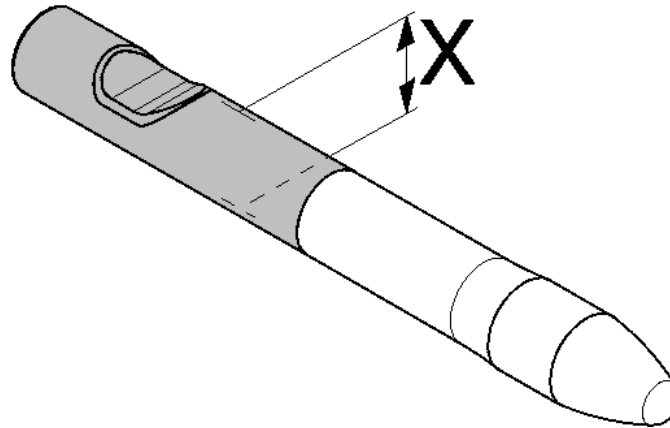
Inspect all lifting equipment before use. Do not use twisted or damaged lifting equipment. Protect lifting equipment from sharp corners.

STEP 9

Obey all local safety instructions.

REMOVAL AND INSTALLATION OF TOOL

WEAR LIMITS AND LUBRICANTS FOR TOOL REMOVAL



C030003

Model	Item	Wear Limit (X)	Lubricant
CB18S	Tool diameter (Worn out)	34mm	
CB27S	Tool diameter (Worn out)	40mm	
CB37S	Tool diameter (Worn out)	48mm	
	Tool and tool retaining pins		Tool Grease

REMOVAL OF TOOL

Warning : *The hydraulic pressure inside the hammer must always be released before removing the tool. After operating the hammer, wait 10 minutes for oil pressure to drop inside hammer.*

Warning : *Hot tool can cause severe injuries.*

STEP 1

Set the hammer on level ground.

STEP 2

Make sure the carrier's transmission is in neutral and the parking brake is engaged.

STEP 3

Stop the carrier engine.

STEP 4

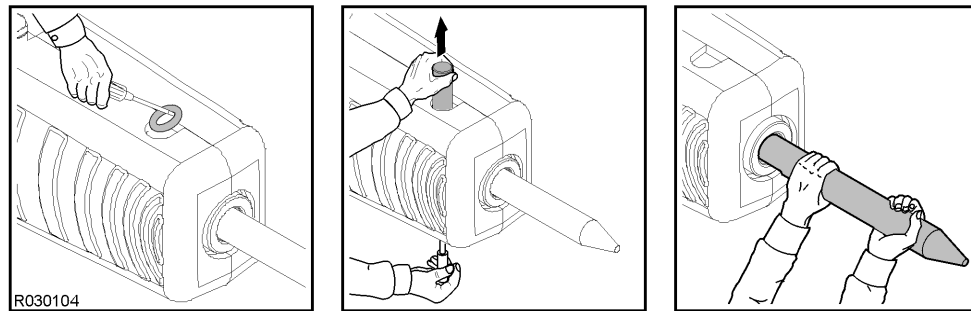
Remove plug and O-ring.

STEP 5

Remove tool retaining pin.

STEP 6

Remove tool. Use lifting device if necessary. See "Tool specifications" on page 7



NOTA : *If hammer is still on carrier, it may be easier to stick the tool in the ground and lift the hammer off the tool. Make sure that the tool can not fall.*

INSTALLATION OF TOOL**STEP 1**

Clean all parts carefully.

STEP 2

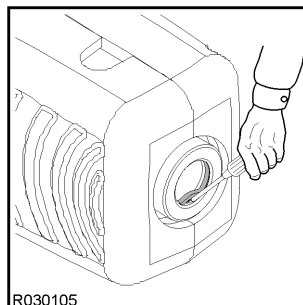
Measure the tool diameter (X) from the area marked on the illustration.
Replace tool if necessary.

STEP 3

Check tool bushing for wear. See "Removal and installation of tool Bushing" on page 10.

STEP 4

Check tool seal. Replace if necessary.

**STEP 5**

Clean and coat tool and retaining pin with grease.

STEP 6

Install tool and align the groove of the tool with the pin bore.

STEP 7

Install tool retaining pin.

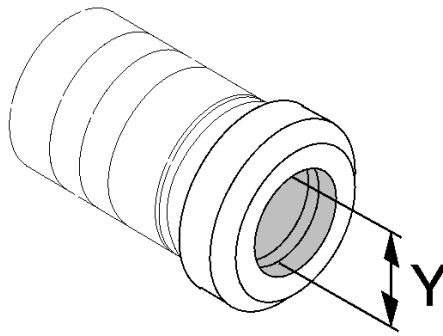
STEP 8

Install retaining pin.

REMOVAL AND INSTALLATION OF TOOL BUSHING

WEAR LIMITS AND LUBRICANTS FOR TOOL BUSHING

Model	Item	Wear Limit (Y)	Lubricant
CB18S	Tool bushing inner diameter (Worn out)	38 mm	
CB27S	Tool bushing inner diameter (Worn out)	44 mm	
CB37S	Tool bushing inner diameter (Worn out)	52 mm	
	Contact surfaces of front head		Thread grease

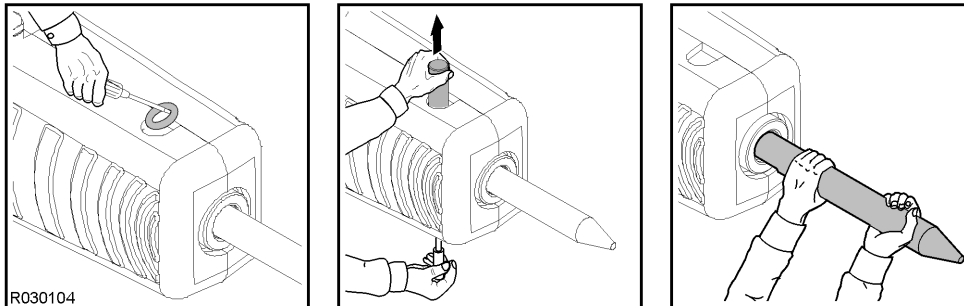


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REMOVAL OF LOWER TOOL BUSHING

STEP 1

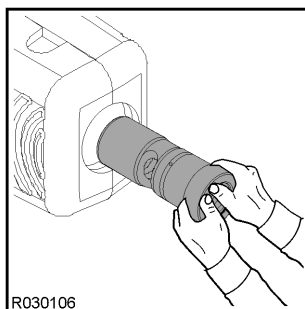
Remove tool



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STEP 2

Remove lower tool bushing.

**STEP 3**

Remove seal from lower tool bushing.

INSTALLATION OF LOWER TOOL BUSHING**STEP 1**

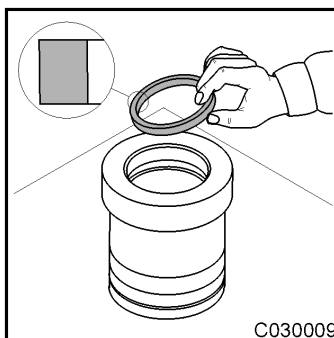
Clean all parts carefully.

STEP 2

Measure the bushing inner diameter (marked Y).
Replace bushing if necessary.

STEP 3

Install seal.

**STEP 4**

Lubricate the contact surfaces of the front head.

STEP 5

Install the lower tool bushing. Align the holes in the tool bushing with the holes in the front head.

STEP 6

Install the tool.

TROUBLESHOOTING

Defect	Cause	Solution
THE HAMMER DOES NOT START.	Pressure or return lines closed.	Check the operation of quick couplings in hammer line. Open hammer line ball valves if closed.
	Pressure and return hoses installed backwards.	Swap the pressure and return hoses.
	Piston is in its lower hydraulic brake.	Keep the hammer control valve open and force the tool against an object. The tool head will push the piston out of its brake area.
	Grease between piston and tool contact area.	Remove the tool and wipe excessive grease off.
	Hammer control valve does not open.	When operating the hammer control valve, check that the pressure line pulsates (this indicates the hammer control valve is opening). If the valve does not operate, check the operating means: mechanical connections, pilot pressure or electrical control.
	Relief valve in hydraulic circuit opens at a low pressure. Hammer operating pressure is not reached.	Check the installation. Check the relief valve operation. Adjust the relief valve in hydraulic circuit. Measure the high pressure in the hammer inlet line. (See "Measuring hammer operating pressure" on pages 37 and "Measuring hammer circuit" on page 35).
	Excessive back pressure in return line.	Check the installation. See "Measuring hammer circuit" on page 35. Check the size of the return line.
	Leakage from pressure to return in excavator hydraulic circuit.	Check the installation. Check the pump and the other hydraulic components.
	Failure in hammer valve operation.	The hammer must be serviced in an authorized CNH service shop.
Piston failure.	The hammer must be serviced in an authorized CNH service shop.	
THE HAMMER OPERATES IRREGULARLY BUT THE BLOW HAS FULL POWER	Not enough feed force from excavator.	Refer to the correct working methods.
	Relief valve in hydraulic circuit opens at a low pressure Hammer operating pressure is not reached.	Check the installation. Check the relief valve operation. Adjust the relief valve in hydraulic circuit. Measure the high pressure in the hammer inlet line. (See on pages 40 and 42)
	Failure in hammer valve operation	The hammer must be serviced in an authorized CNH service shop. (See "Body part" on page 29).

Defect	Cause	Solution
THE HAMMER OPERATES IRREGULARLY AND BLOW HAS NO POWER.	The working method is not correct.	Refer to the correct working methods.
	Relief valve in hydraulic circuit opens at a low pressure. Hammer operating pressure is not reached.	Check the installation. Check the relief valve operation. Adjust the relief valve in hydraulic circuit. Measure the high pressure in the hammer inlet line. (See "Measuring hammer operating pressure" on pages 40 and 42).
	Pressure adjusting valve setting is incorrect.	The hammer must be serviced in an authorized CNH service shop.
	Pressure loss in pressure accumulator.	The hammer must be serviced in an authorized CNH service shop. (See "Pressure accumulator" on page 21). (See "Charging accumulator" on page 27).
	Failure in hammer valve operation.	The hammer must be serviced in an authorized CNH service shop. (See "Body parts" on page 29).
IMPACT RATE SLOWS DOWN.	Oil has overheated (over +80 °C / +176° F).	Check the following: a) for a fault in the oil cooling system, or an internal leak in the hammer b) the hydraulic circuit of the carrier (See "Measuring hammer circuit" on page 40). c) the relief valve operation in the carrier. d) the line size. Assemble an extra oil cooler.
	Hydraulic oil viscosity too low.	Check hydraulic oil.
	Excessive back pressure in return line.	Check the installation. (See "Measuring hammer circuit" on page 40). Check the size of the return line.
	Relief valve in hydraulic circuit opens at a low pressure. Hammer operating pressure is not reached.	Check the installation. Check the relief valve operation. Adjust the relief valve in hydraulic circuit. Measure the high pressure in the hammer inlet line. Contact your local dealer for more information. (See "Measuring hammer circuit" on page 40, and "Measuring hammer operating pressure" on page 42).
	Leakage from pressure to return in excavator hydraulic circuit.	Check the installation. Check the pump and the other hydraulic components
	Pressure loss in pressure accumulator.	The hammer must be serviced in an authorized CNH service shop. (See "Pressure accumulator" on page 21). (See "Charging accumulator" on page 26).
	Failure in breaker valve operation.	The hammer must be serviced in an authorized CNH service shop. (See "Body part" on page 29).
THE HAMMER DOES NOT STOP OR HAS RUN ON.	Failure in hammer control valve operation.	

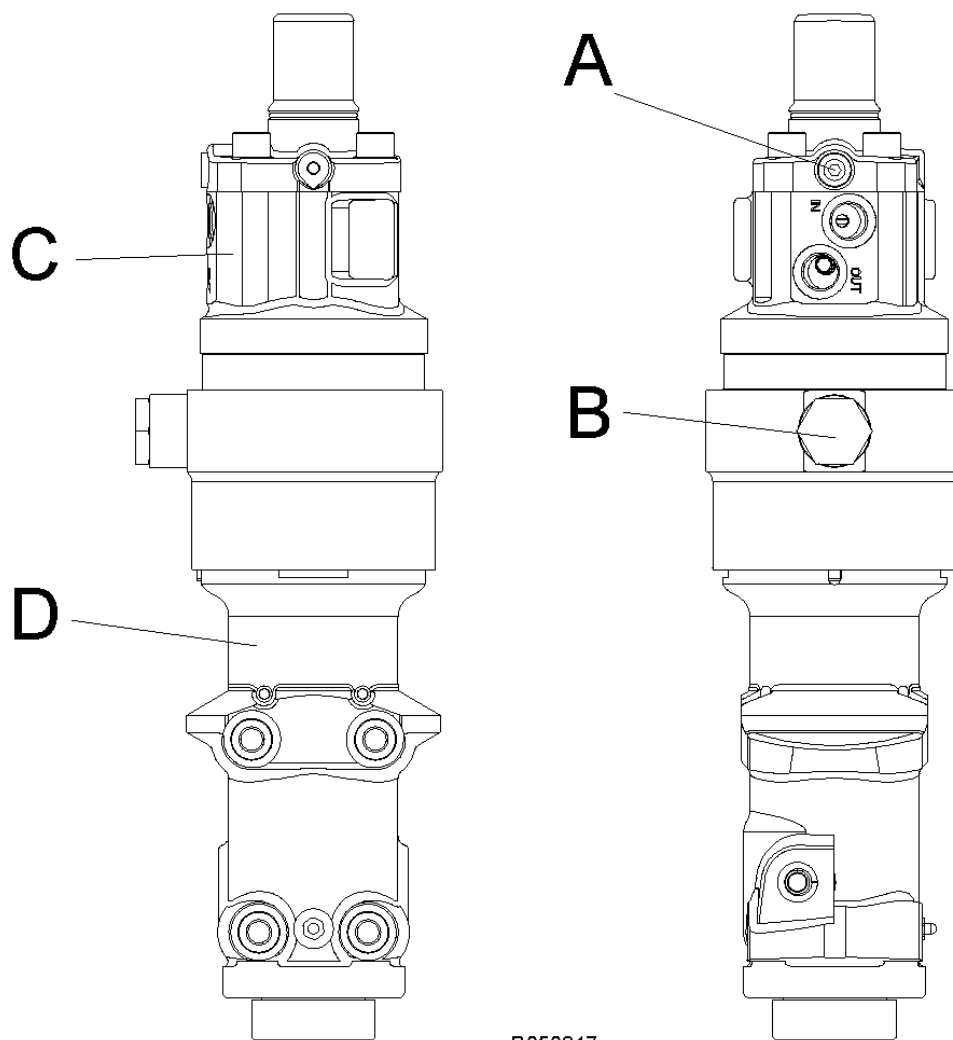
Defect	Cause	Solution
OIL OVERHEATS.	Application not correct for hammer.	Refer to recommended use and to correct working methods
	Cooling capacity of the factory oil cooler is too small.	Assemble an extra oil cooler.
	Relief valve in hydraulic circuit opens at a low pressure. Hammer operating pressure is not reached.	Check the installation. Check the relief valve operation. Adjust the relief valve in hydraulic circuit. Measure the high pressure in the hammer inlet line. Contact your local dealer for more information. (See "Measuring hammer circuit" on page 40, and "Measuring hammer operating pressure" on page 42).
	Hydraulic oil viscosity too low	Check hydraulic oil.
	Leakage from pressure to return in excavator hydraulic circuit.	Check the installation. Check pump and the other hydraulic components.
	Internal oil leak in the hammer.	The hammer must be serviced in an authorized CNH service shop. (See "Body parts" on page 29).
	Excessive back pressure in return line.	Check the installation. (See "Measuring hammer circuit" on page 40). Check the size of the return line.
RECURRENT TOOL FAILURE.	Application not correct for hammer.	Refer to recommended use and to correct working methods
	Rough operating practices	Refer to recommended use and to correct working methods
	Tool does not get enough lubricant.	Refer to recommended use and to correct working methods
	Tool long tool.	Use shortest tool possible. Refer to recommended use and to correct working methods
	Rapid wear of tool.	Refer to recommended use and to correct working methods. There is a wider selection of tools available for different applications. Consult with your local dealer for more information.
FURTHER ASSISTANCE.	Further assistance.	<p>If further assistance is required, please prepare to answer the following questions before calling your dealer.</p> <ul style="list-style-type: none"> -Model and serial number -Working hours and service history -Carrier model. -Installation: Oil flow, operating pressure and return line pressure if known. -Application. -Has the product operated normally before.

WORKSHOP

DISASSEMBLY AND ASSEMBLY

MAIN COMPONENTS

LOCATION OF MAIN COMPONENTS (HAMMER MECHANISM)



R050847

ITEM	Description
A	Pressure measuring plug
B	Pressure accumulator
C	Valve body
D	Cylinder and front head

RELEASING HYDRAULIC PRESSURE FROM HAMMER

RELEASING PRESSURE

Warning : *The hydraulic pressure inside the hammer must always be released before making any adjustments or repairs when the hammer is connected to the carrier. There may also be pressurized oil trapped inside the hammer even if the hammer is disconnected from the carrier. Release the hydraulic pressure according to the following instructions before opening any plugs or valve covers.*

STEP 1

Stop the carrier engine.

STEP 2

Operate boom and hammer controls to release any pressure trapped inside hoses.

STEP 3

Wait 10 minutes for oil pressure to drop inside hammer.

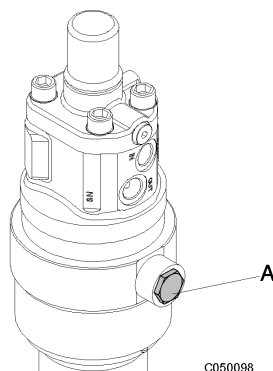
STEP 4

Close hammer inlet and outlet lines. If quick couplers are used, disconnection automatically closes hammer lines. If hammer line includes ball valves, please make sure that they are closed.

Warning : *This procedure does not release the pressure from the pressure accumulators! Read the instructions dealing with the accumulator before disassembling the hammer. See "Releasing pressure from accumulator" on page 18.*

RELEASING PRESSURE FROM ACCUMULATOR

LOCATION OF ACCUMULATOR REFILLING PLUG



ITEM	Description
A	Shield plug.

RELEASING PRESSURE FROM ACCUMULATOR

Warning : *Do not disassemble hammer before releasing pressure from accumulators.*

STEP 1

Remove shield plug from accumulator, and open filling plug carefully. Wait until all nitrogen gas escaped.

