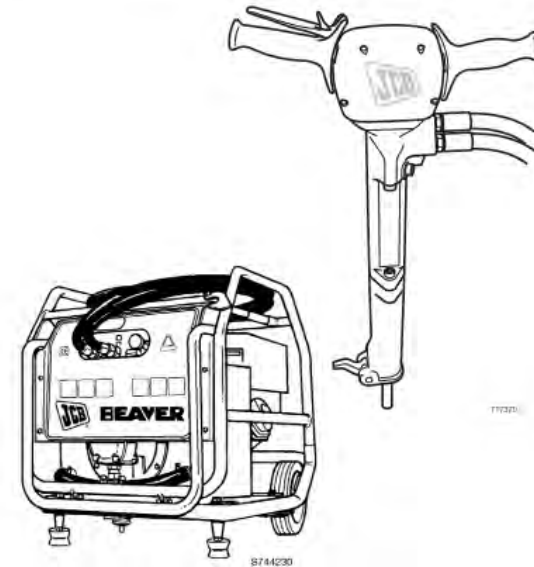


SERVICE MANUAL



**JCB HAND HELD
HYDRAULIC
EQUIPMENT**

SERVICE MANUAL : JCB HAND HELD HYDRAULIC EQUIPMENT

9803/1250 ISSUE 2

JCB Attachments, Riverside, Rugeley, Staffordshire WS15 2WA, England
Tel: 01889 572700



9803/1250
ISSUE 2
MAY 04
PRINTED IN ENGLAND

CONTENTS

INTRODUCTION	Section A
MAINTENANCE (HM 22, 25, 29)	Section B
MAINTENANCE (OTHERS)	Section C
SPECIFICATION	Section D
HYDRAULIC POWERPACKS	Section E

▲ WARNING

Study this service manual before attempting to maintain the breaker. You must understand and follow the instructions in this service manual. If you are unsure of anything ask your JCB dealer or employer. Do not guess, or you or others could be killed or seriously injured.

ABOUT THIS MANUAL

To ensure that the JCB series of hydraulic breakers can be operated efficiently **and safely**, they must be serviced and maintained regularly. This manual is designed to give you a good understanding of the breaker and provide detailed maintenance information.

It is assumed that personnel carrying out maintenance have at least a sound knowledge of workshop practice, safety procedures and general techniques associated with the repair of hydraulic equipment. Details of such are, therefore, generally omitted from the manual, the intention being to convey only the more specialised information concerning particular aspects of the breaker or component in question.

For example, renewal of oil seals, gaskets etc. and any component showing obvious signs of wear or damage is expected as a matter of course and information on these matters, therefore, only included where a specialised procedure or range of wear tolerances is required. Similarly, it is expected that components be thoroughly cleaned and lubricated, where appropriate, also that any opened hose connections will be blanked to prevent entry of dirt and excessive loss of hydraulic fluid.

For specific details regarding choice of breaker, operation and choosing steels etc., reference should be made to the Operator's Handbook which was supplied with the breaker.

USING THIS MANUAL

Read this manual from front to back before attempting to maintain the breaker for the first time. Particular attention must be given to all the safety aspects which are provided. General safety warnings are given in this chapter and specific safety warnings are given throughout the book. Read all the safety warnings regularly so you do not forget them.

UNITS OF MEASUREMENT

The S.I. system is used throughout. For example, liquid capacities are given in litres. The Imperial units are given in parentheses () e.g. 28 litres (6 U.K. gal).

EHTMA CATEGORIZATION

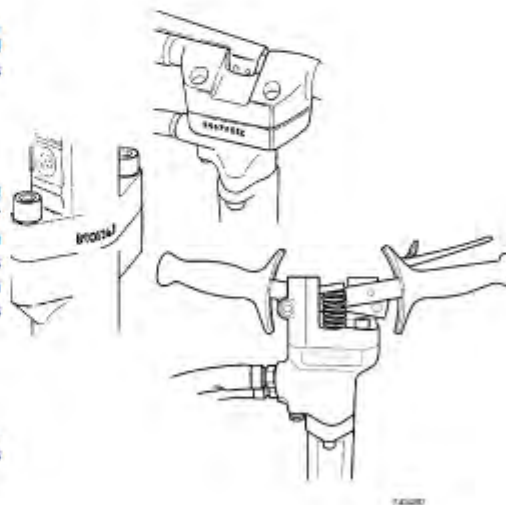


BREAKER MODEL AND SERIAL NUMBER

The following breakers are covered by this manual:

- 1 Standard handle breakers
- 2 Vibro-damped handle breakers
- 3 'D' handle picks
- 4 'T' handle picks
- 5 HM 22
- 6 HM 25
- 7 HM 29
- 8 HM 26 (Non EU)

The serial number of your breaker is stamped on the breaker as shown. It is important to quote the serial number when making repairs or ordering parts. Identification of the serial number is the only means of ensuring that you receive the correct part for your particular breaker.



The JCB series of hydraulic breakers are categorized by the EHTMA as Category 'C' or 'D' breakers and can be safely used on any hydraulic powerpack displaying the green EHTMA 'C' or 'D' decals as shown below.

TORQUE SETTINGS

Only use the following torque settings when no setting is specified in the manual.

CAUTION: All bolts used on JCB equipment are high tensile and must not under any circumstances be replaced with bolts of a lesser tensile specification.

TABLE OF IMPORTANT TIGHTENING TORQUES

Tightening Points	Tightening Torques		Capscrew	
	Nm	kgf m	lbf ft	Size
Top cover to head capscrews (Standard, 20 kg & 23 kg)	135	13.8	100	M12
Top cover to head capscrews (Standard, 26 kg)	215	21.9	158	M14
Handle bracket to head capscrews (Vibro, 22 kg & 25 kg)	135	13.8	100	M12
Handle bracket to head capscrews (HM22 & HM25)	135	13.8	100	M12
Handle bracket to head capscrews (Vibro, 28 kg)	215	21.9	158	M14
Handle bracket to head capscrews (HM29)	215	21.9	158	M14
Handle to top cover capscrews (Standard, 20kg, 23kg & 26 kg)	67	6.8	50	
Top cover to Handle bracket capscrews (Vibro, 22kg, 25kg & 28 kg)	16	1.6	11.9	
Top cover to Handle bracket capscrews (HM22, HM25, HM29)	16	1.6	11.9	
Barrel to nose capscrews (Standard 20, 23 kg & Vibro 22, 25kg)	135	13.8	100	M12
Barrel to nose capscrews (HM22 & HM25)	135	13.8	100	M12
Barrel to nose capscrews (Standard 26 kg & Vibro 28 kg)	215	21.9	158	M14
Barrel to nose capscrews (HM29)	215	21.9	158	M14
Head assy to barrel/nose assy (Standard 20 kg & Vibro 22 kg)	135	13.8	100	M12
Head assy to barrel/nose assy (HM22)	135	13.8	100	M12
Head assy to barrel/nose assy (Standard 26 kg & Vibro 28 kg)	215	21.9	158	M14
Head assy to barrel/nose assy (HM29)	215	21.9	158	M14
Accumulator top to head capscrews ('D' & 'T')	80	8.1	59	M10
Barrel to head capscrews ('D' & 'T')	135	13.8	100	M12

Note: Check breaker specification to match breaker weight with the model number of your breaker. (see **Section D**)

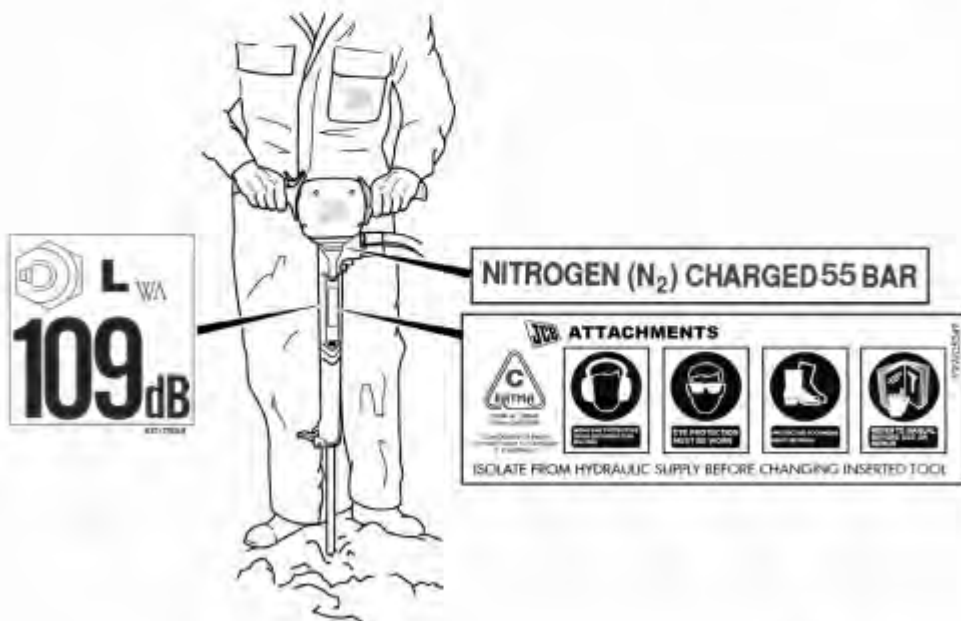
SAFETY DECALS

Decals on the breaker warn you of particular hazards. Read, and make sure you understand the safety message before you work with the breaker.

Keep all decals clean and readable. Replace lost or damaged decals. The decals and their attachment points on the breaker are as shown. Each decal has a part number printed on it. Use this number to order a new decal from your JCB Distributor, specifying the language required.

In addition to the decals shown in the illustration below, possibly three (3) other decals may be fitted. These are year/model number, tool size and model type. They have been omitted from the illustration for clarity.

The model shown is an HM 25 but all other models are similar.



743460

B

MAINTENANCE
CONTENTS

B

Lubricants - Health and Safety	B1
Hygiene	
Storage	
Handling	
First aid - Oil	
Fires	
Waste disposal	
Service Schedules	B2
Daily	
Monthly	
Breaker dismantling - HM22, 25, 29	B3
Breaker inspection - HM22, 25, 29	B6
Breaker assembly - HM22, 25, 29	B8
Charging the accumulator	B11
Equipment required	
Charging pressure	
Charging procedure	
Fault Finding	B12
Specifications - HM22, 25, 29	B12
Exploded View - HM26 (Non EU)	B13
Servicing - HM26 (Non EU)	B14
Exploded View - HM22, 25, 29	B15

**NOTE: SEE SECTION C FOR MAINTENANCE OF BREAKERS
OTHER THAN HM22, 25 OR 29.**

B1

MAINTENANCE

B1

LUBRICANTS - HEALTH AND SAFETY

It is most important that you read and understand this information and the publications referred to. Make sure that all of your colleagues who are concerned with lubricants read it too.

Hygiene

JCB lubricants are not a health risk when used properly for their intended purpose.

However, excessive or prolonged skin contact can remove the natural fats from your skin, causing dryness and irritation.

Low viscosity oils are more likely to do this, so take special care when handling used oils which may be diluted with fuel contamination.

Whenever you are handling oil products you should maintain good standards of care and personal and plant hygiene. For details of these precautions we advise you to read the relevant publications issued by your Local Health Authority, plus the following.

Storage

Always keep lubricants out of reach of children. Never store lubricants in open or unlabelled containers.

Handling**New Oil**

There are no special precautions needed for the handling or use of new oil, beside the normal care and hygiene practices.

Used Oil

Used oils contain harmful contaminants. Here are precautions to protect your health when handling used oil.

- 1 Avoid prolonged, excessive or repeated skin contact with used oil.
- 2 Apply a barrier cream to the skin before handling used oil.
- 3 Note the following removing oil from the skin:
 - a Wash your hands thoroughly with soap and water.
 - b Using a nail brush will help.
 - c Use special hand cleansers to help clean dirty hands.
 - d Never use petrol, diesel fuel or paraffin for washing.

- e Avoid skin contact with oil soaked clothing.
- f Do not keep oily rags in pockets.
- g Wash dirty clothing before reuse.
- h Throw away oil soaked shoes.

First Aid-Oil**Swallowing**

If oil is swallowed do not induce vomiting. Get medical advice.

Eyes

In the case of eye contact, flush with water for 15 minutes. If irritation persists get medical attention.

Skin

In the case of excessive skin contact, wash with soap and water.

Spillage

Absorb on sand or a locally approved brand of absorbent granules. Scrape up and remove to a chemical disposal area.

Fires

Extinguish with carbon dioxide, dry chemical or foam. Firefighters should use self-contained breathing apparatus.

Waste Disposal

All waste products should be disposed of in accordance with the relevant regulations.

The collection and disposal of used oil should be in accordance with any local regulations. Never pour used oil into sewers, drains or on the ground.

B2

MAINTENANCE

B2

SERVICE SCHEDULES**⚠ WARNING**

Maintenance work must only be done by competent personnel.

A-3-1-1

⚠ CAUTION

Only use lubricants and hydraulic fluids recommended by JCB Attachments.

To make sure your breaker keeps working to maximum efficiency, it is essential that it is properly and regularly maintained in accordance with the service schedules included in this manual.

Badly maintained equipment can be a danger to the operator and the people working around him. Make sure that the regular maintenance and lubrication jobs listed in the service schedules are done to keep the equipment in a safe and efficient working condition.

Any defects found during the regular routine maintenance checks must be rectified before the equipment is used.

Daily**Clean**

- 1 The breaker, its steels and its hoses.

Check (Breaker disconnected)

- 2 All hydraulic connections.
- 3 For damage to the breaker, its steels and its hoses.

Monthly**Check (Breaker disconnected)**

- 1 Torque tightness of all fasteners.
- 2 The hexagon bush in the nose casting for wear or damage.
- 3 The cutting steel shanks for excessive wear.

Lubricate

- 1 Vibro-damped handle types only. Spray the trigger and all contacting parts with suitable lubricant.

Every 600 Operating Hours or Yearly (which ever occurs first.)

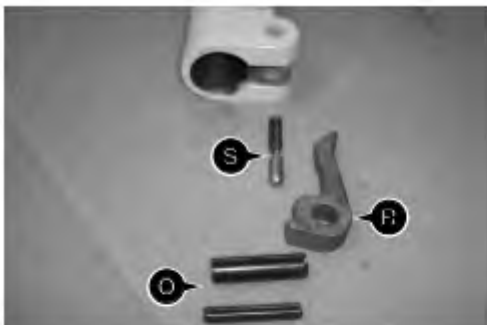
- 1 Overhaul the breaker.

B3

MAINTENANCE

B3

BREAKER DISMANTLING - HM 22, 25, 29



1 Using a press, remove roll pins **Q** from the nose. This releases latch **R**, latch plunger **S** and the plunger spring.



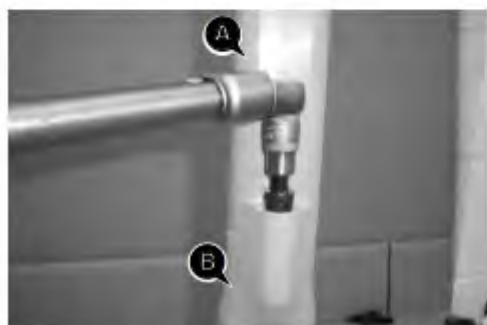
4 Prepare for oil spillage and remove the two upper barrel fixing capscrews. Remove the barrel **A**.



2 Unless signs of damage or wear are evident it is not necessary to remove the tool bush. Removal will be dealt with in the following 'Breaker Inspection'.



5 Push the piston **C** and piston feeder **D** out of the barrel. Remove 3 'O' rings from the barrel.



3 Before commencing dismantling, clean externally. Remove the hoses. Remove the two lower barrel fixing capscrews. Separate the barrel **A** from the nose **B**.



6 Unscrew and remove check valve **E** ensuring that the breaker is positioned as shown above so as to avoid losing the check valve ball **F**.

B4

MAINTENANCE

B4

BREAKER DISMANTLING - HM 22, 25, 29 (cont'd)



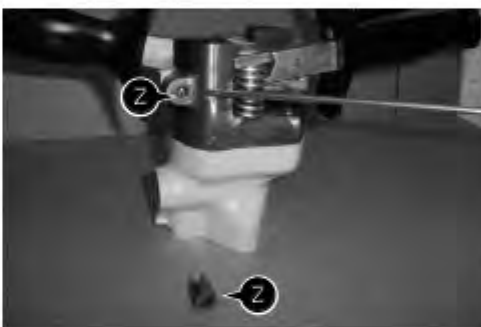
- 7 Remove the seals from the lower section of the barrel casting. A slide hammer will be necessary to remove the seal housing.



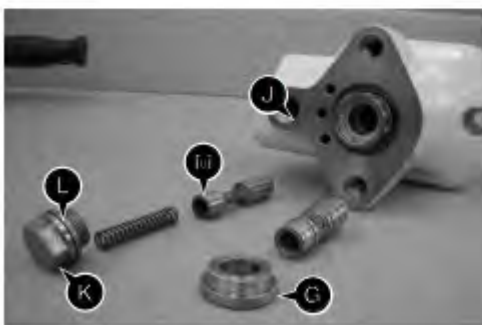
- 10 Remove screws (4 off each cover) from covers N (2 off), this will expose the handle mechanism.



- 8 Remove the housing cap G and the spool H from the head J.



- 11 Unscrew the handle pivot pin Z nearest the trigger pin. Withdraw handles assemblies from the handles control bracket.



- 9 Remove the plug K, seal washer L, spring and trigger spool M from the head J. Examine seals on the head J and housing cap G.



- 12 Remove vibration dampening springs.

B5

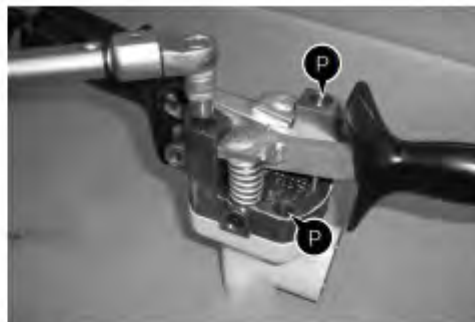
MAINTENANCE

B5

BREAKER DISMANTLING - HM 22, 25, 29 (cont'd)



13 Remove the cover screw **T** to expose the charging screw.



16 Remove the four top cover retaining screws **P** and remove the cover.

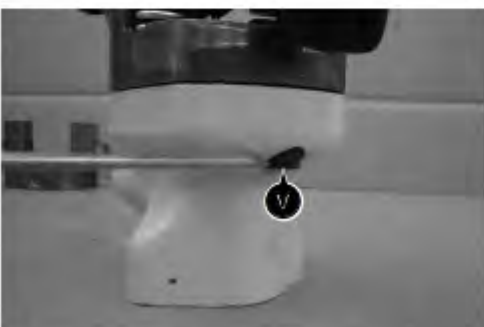
Note: There are two long and two shorter retaining screws



14 Loosen the charging screw **U** slowly approximately 3 or 4 turns, listening for all the gas to escape. Refit the cover screw **T**.



17 Remove the trigger pin **W** and the 'O' ring seal **Y** from the head.



15 When you are sure that all the gas in the accumulator has been evacuated, remove the safety screw **V** from the head.



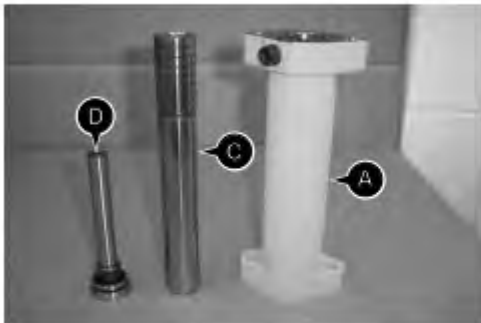
18 Remove the diaphragm **X** from the head.

B6

MAINTENANCE

B6

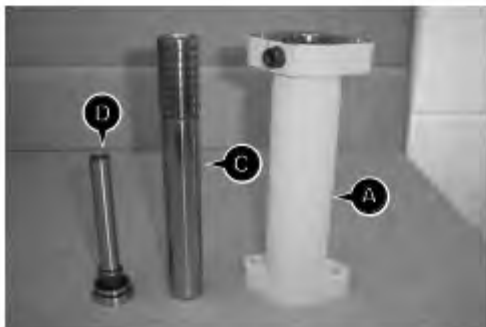
BREAKER INSPECTION - HM 22, 25, 29



1 Examine the piston **C**, piston feeder **D** and barrel **A** for signs of damage. Small scratches can be carefully removed with fine emery cloth.



4 Examine the seals for signs of wear. Pay particular attention to their lips. Obtain new seals if necessary or if the piston is changed.



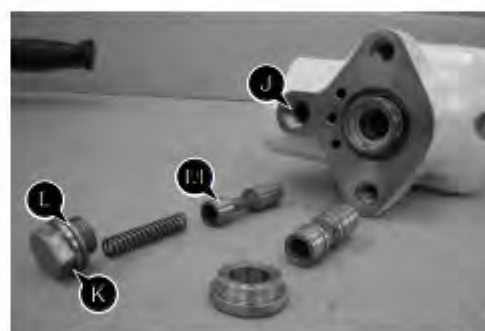
2 Deep grooves or signs of pick-up (especially on the lower sealing portion of the piston) will require replacement of the component. Examine seal on feeder **D**, replace if necessary.



5 Examine the housing cap **G** and spool **H** for signs of damage. Obtain new components if necessary.



3 Examine the check valve ball **F** and ball seats for signs of damage or excessive wear. Obtain new components if necessary.



6 Examine the plug **K**, seal washer **L**, spring and trigger spool **M** for signs of damage or wear. Obtain new components if necessary.

B7

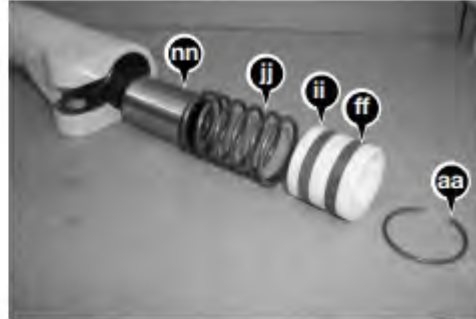
MAINTENANCE

B7

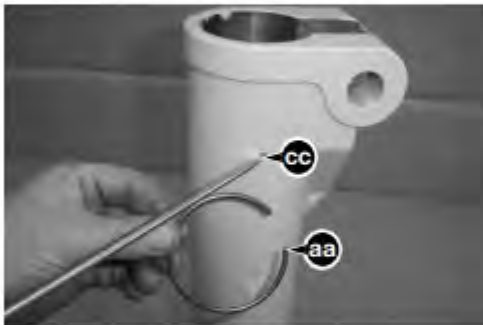
BREAKER INSPECTION - HM 22, 25, 29 (cont'd)



7 Examine the roll pins **Q**, latch **R**, latch plunger **S** and plunger spring for signs of damage or wear. Obtain new components if necessary.



10 Check the spring ring **aa**, guide rings **ff** (2 off), carrier **ii**, spring **jj** and tool bush **nn** for damage and wear. Replace as necessary. See **Note**: below

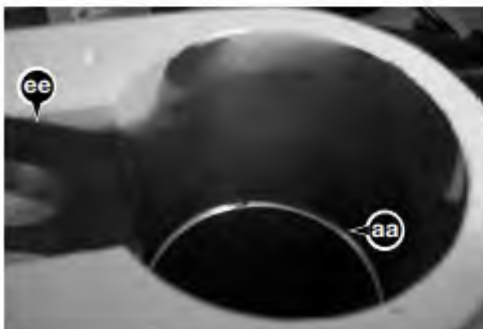


8 Should it be necessary to remove the components of the tool bushing, firstly push in the spring ring **aa** with a sharp instrument via the hole shown at **cc**.



11 Examine the diaphragm **X** for signs of damage. Pay particular attention for signs of cracking around the diaphragm insert. Replace as necessary.

Note: A hydraulic press will be required to remove to remove the steel tool bush **nn**. See item 10.



9 Grip the spring ring **aa** with a suitable pair of pincers **ee** and remove. The sliding bush and other components can now be removed from the nose (see item 10).

BREAKER ASSEMBLY - HM 22, 25, 29

CAUTION

Before commencing assembly, all components must be scrupulously cleaned.
A-3-1-4

Note: During assembly, apply Multi Gasket Loctite 518 (JCB Part No. 4102/1212) to all joint faces. Use new seals and 'O' rings throughout.



3 Fit the trigger pin **O** into the handle bracket. Fit the handle bracket to the head. Treat the threads of the safety screw **V** with Loctite 270 and fit to the head.



1 Place diaphragm **X** into the head, ensuring that the diaphragm insert is uppermost (as shown above). Fit new 'O' ring seal **Y**.



4 Fit the handle assembly springs. Coat the contacting surface of the handle furthest from the trigger pin (see **item 5**) and fit to the handle bracket.



2 Fit the trigger spool **M**, spring, seal washer **L** and plug **K** into the head **J**. Fit seal on head unit **J**.



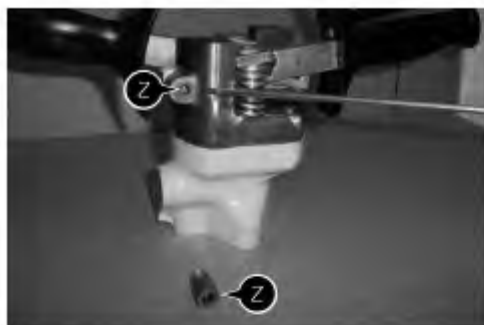
5 The illustration above shows the trigger handle after coating with a suitable lubricant before fitting.

B9

MAINTENANCE

B9

BREAKER ASSEMBLY - HM 22, 25, 29 (cont'd)



- 6 Treat the thread of the pivot pin **Z** with Loctite 270 and fit the pin where indicated.



- 9 Assemble the seals into the lower section of the barrel casting **A**. Ensure seal **ss** has the open face uppermost, seal **zz** is fitted in the same direction.



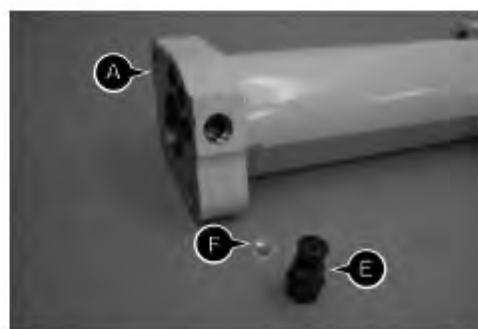
- 7 Check that all parts of the trigger and other parts in contact are well coated with lubricant. (see item 5)



- 10 Treat the threads **E** of the check valve with Loctite 542. Ensure that the ball **F** is clean and undamaged. Obtain a new seal. Assemble the check valve.



- 8 Fit the housing spool **H** and the housing seal **G** into the head **J**. Fit a new 'O' ring to the housing seal **G**.



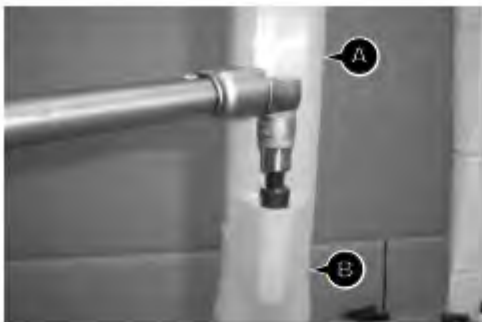
- 11 Fit the check valve into the barrel **A**. Always ensure that ball **F** has been fitted.

B10

MAINTENANCE

B10

BREAKER ASSEMBLY - HM 22, 25, 29 (cont'd)



- 12 Bolt the barrel **A** to the nose **B**. Torque tighten the capscrews progressively using a Gedore narrow head torque wrench (part no. 7200-01). See Torque Figures on Page **A2**



- 15 Replace covers **N** (2 off).



- 13 Fit 3 new seals into barrel **A**. Insert the piston **C** and piston feeder **D** into the barrel **A**.



- 14 Fasten the barrel **A**/nose **B** assembly onto the head assembly using the capscrews and a Gedore torque wrench (part no. 7200-01). See Torque Figures on Page **A2**.

CHARGING THE ACCUMULATOR - HM 22, 25, 29

⚠ WARNING

Use only nitrogen gas to charge the accumulators. The use of any other gas can cause the accumulators to explode. Remember that although nitrogen is not poisonous, you can be killed by suffocation if it displaces air in your workplace. Do not allow excessive quantities of nitrogen to be discharged into the atmosphere.

This procedure must not be carried out with the breaker (or pick) connected to a source of hydraulic supply.

During charging, the breaker must be securely mounted in the upright position. This prevents the breaker falling over whilst charging, thereby preventing uncontrolled escape of gas.

EQUIPMENT REQUIRED.

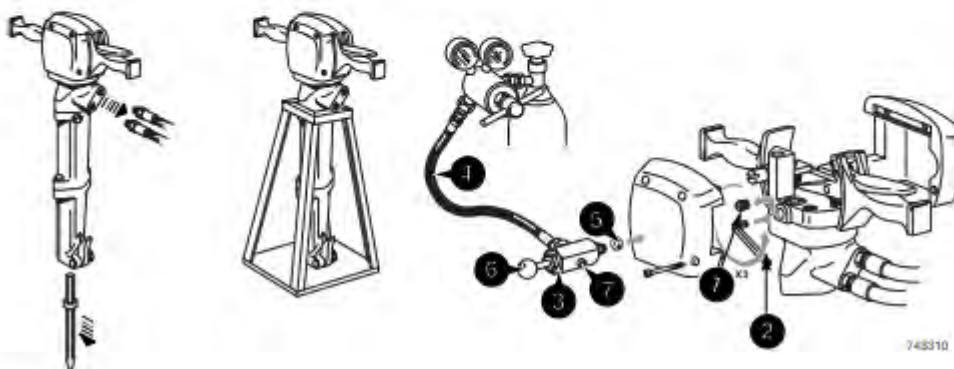
- a **Nitrogen bottle**
Minimum residual pressure 70 bar (1000lb/in²)
- b **Regulator (with contents and outlet gauge)**
Outlet pressure should be controllable up to 55 bar (800 lb/in²)
- c **Charging adaptor (JCB part no. 929/05800)**
together with 3/8 in. BSP Dowty washer.
- d **Connecting hose**
Suitable hose of minimum operating pressure 207 bar (3000 lb/in²), together with female coupling (JCB part no.929/06303).

CHARGING PRESSURE

The charging pressure should not exceed 50 bar (800 lb/in²). Refer to Specification section for specific accumulator pressures.

CHARGING PROCEDURE

- 1 Remove the slotted cover screw 1 from the breaker.
- 2 Using a 4 mm. Allen key 2, slowly loosen the charging screw approximately 3 turns. Do not remove the screw.
- 3 Fit the 3/8 in. Dowty washer 5 to the charging adaptor 3 and screw into the breaker. Do not overtighten, hand tight is adequate.
- 4 Ensure that the nitrogen bottle outlet pressure is at zero and then connect the charging hose 4 to the charging adaptor 3.
- 5 Gradually increase the nitrogen bottle outlet pressure until the required level is reached (see **Specification** section).
- 6 Push in knob 6 on the charging adaptor 3 to engage the charging screw and tighten. Do not overtighten.
- 7 Shut the regulator valve on the nitrogen bottle and using the venting screw 7, release the trapped gas in the hose.
- 8 Disconnect the charging hose 4 and unscrew the charging adaptor 3 from the body of the breaker.
- 9 Finally, tighten the charging screw using a 4mm. Allen key 2 and refit the cover screw 1 after applying Loctite 270 to the threads.



B12

MAINTENANCE

B12

OPERATOR FAULT FINDING

*The remedy in certain cases should be carried out by your JCB dealer

Symptom	Possible Fault	Remedy
Breaker fails to operate.	No flow from supply.	*Check output with flow and pressure tester.
	Hoses incorrectly fitted.	Check that pressure feed is connected to top port on the breaker.
	Insufficient movement of trigger spool.	*The trigger spool should move approx. 5mm (0.2in.). Check lever mechanism.
	Main spool jammed or damaged.	*Remove and check. Clean all associated parts.
Breaker lacks breaking power.	Striker piston seized.	*Remove and check for 'pick-up' on piston feeder or barrel. Replace any damaged parts.
	Insufficient available pressure.	*Check Main Relief Valve - minimum setting 76 bar (1100 lbf/in ²) for the 22 kg Breaker and 110 bar (1595 lbf/in ²) for the 25 and 29 kg Breaker.
	Low accumulator gas pressure (Normally associated with violent shaking of hoses).	*Re-charge the accumulator
Breaker runs slow	Hexagon bush in nose casting loose.	Apply JCB Retainer(High Strength) and press back.
	Insufficient flow.	*Check that the flow rate is between 18 - 22 l/min. (3.96 - 4.84 gal/min). Note: For HM29 (30 litre.) flow rate 28 - 32l/min (6.16 - 7.04 gal/min).
	Cold oil.	Warm up the oil supply. Optimum temperature 20 - 70C (68 - 158F).
Breaker runs hot.	High return line back pressure.	*Check return line back-pressure. Pressure should not exceed 12 bar (174 lbf/in ²).
	Incorrect oil.	Use only JCB Hydraulic Oil HP32 (part no. 4002/1000).
Breaker runs hot.	Inadequate cooling of hydraulic oil.	Check oil supply has adequate cooling. Temperature should not exceed 80C (176F).

Specifications

Model	Length	Weight	Steel Size mm (in)	Noise Level	Vibration	EHTMA Category	Flow Rate	Pressure Range	Min. Relief Valve Settings	Acc. Gas Pressure
929/92400	760 mm	25 kg	32 x 160 (1 1/4 x 6 1/4)	109 Lwa	4.0 m/s ²	C	18-22 L/Min	90-110 bar	110 bar	43 bar
929/92500	720 mm	22 kg	22 x 82.5 (7/8 x 3 1/4)	106 Lwa	3.4 m/s ²	C	18-22 L/Min	69-86 bar	76 bar	38 bar
929/92600	680 mm	22 kg	25 x 108 (1 x 4 1/4)	106 Lwa	3.4 m/s ²	C	18-22 L/Min	69-86 bar	76 bar	38 bar
929/92700	730 mm	29 kg	32 x 160 (1 1/4 x 6 1/4)	108 Lwa	5.0 m/s ²	C	18-22 L/Min	90-110 bar	110 bar	50 bar
929/92900	730 mm	29 kg	32 x 160 (1 1/4 x 6 1/4)	110 Lwa	5.9 m/s ²	D	28-32 L/Min	90-110 bar	110 bar	50 bar

Noise Level Standard:

Noise Level EC Directive 84/537/EEC (Lwa)

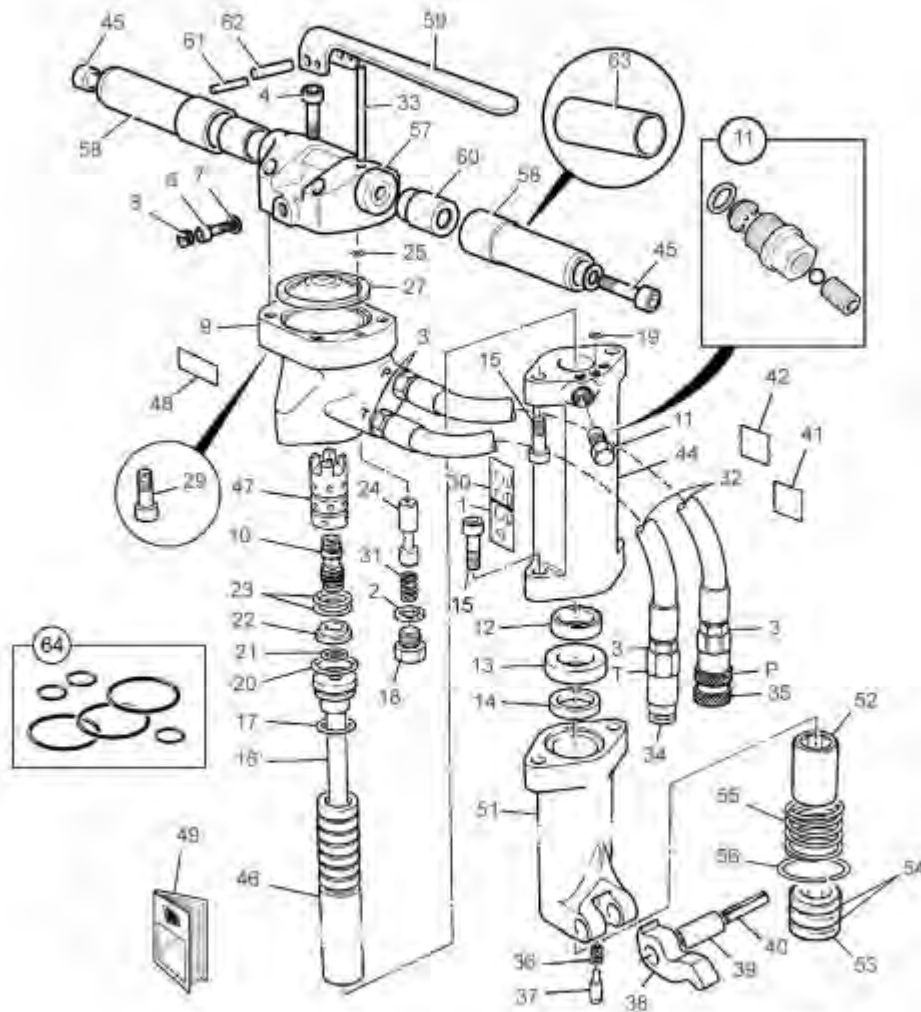
Vibration Standard:

Vibration Weighted RMS Acceleration ISO 8662 Part 5 (m/s²)

B13

MAINTENANCE
BREAKER HM26 (NON EU)

B13



716540

B14

MAINTENANCE

B14

BREAKER HM26 (NON EU)

HM26 (NON EU) - Servicing

It should be noted that, when servicing this breaker (shown on page **B12**), detail for the handle only reference should be made to **Section C - Standard handle breakers**(from 9803/1250 Issue 1).

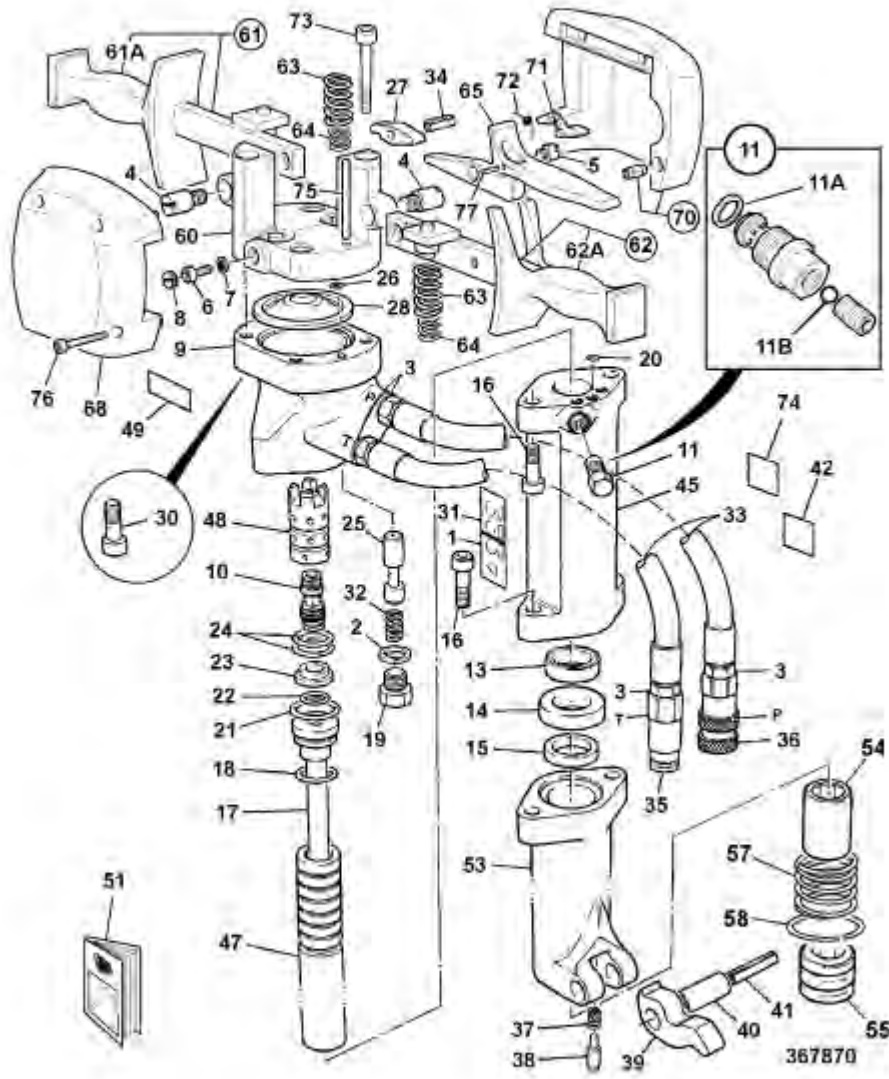
The remainder of the breaker , **head, barrel and nose sections**, are covered in **Section B - respective sections**.

B15

MAINTENANCE

B15

BREAKER - HM22, 25, 29



C

MAINTENANCE

C

CONTENTS

Breaker dismantling - Standard and Vibro-damped	C1
Breaker inspection - Standard and Vibro-damped	C5
Breaker assembly - Standard and Vibro-damped	C7
Breaker dismantling - 'D' and 'T' picks	C8
Breaker inspection - 'D' and 'T' picks	C14
Breaker - 'D' and 'T' picks	C16
Charging the accumulator	C19
Equipment required	
Charging pressure	
Charging procedure	
Fault Finding	C20

C1

MAINTENANCE

C1

BREAKER DISMANTLING - STANDARD AND VIBRO-DAMPED

⚠ WARNING

Accumulator

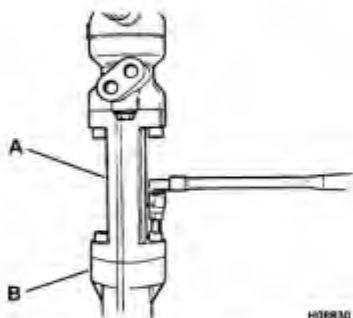
The breaker incorporates a pressure accumulator. This accumulator is pressurised even when there is no hydraulic pressure to the breaker. Attempting to dismantle the accumulator without first releasing the pressure can cause injury or death. This procedure must be carried out by a qualified person.

⚠ WARNING

The breaker must be disconnected from its source of hydraulic power before any maintenance is carried out.

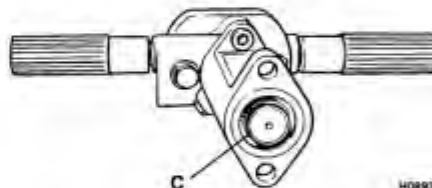
Note: Unless otherwise indicated, the following instructions apply to both the standard handle and vibro-handle type breakers.

- 1 Before commencing dismantling, thoroughly clean all external parts.



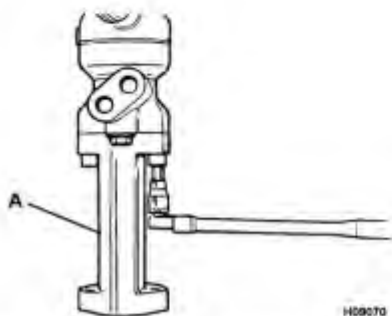
H09930

- 2 Remove the hoses. Remove the two lower barrel fixing capscrews. Separate the barrel A from the nose B.



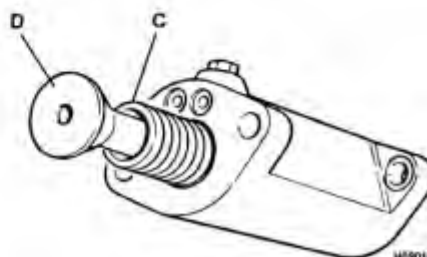
H09930

- 3 The lower portion of the piston C and the seal housing and seal will be exposed.



H09070

- 4 Prepare for oil spillage and then remove the two upper barrel fixing capscrews. remove the barrel A.



H09014

- 5 Push the piston C and piston feeder D out of the barrel.

C2

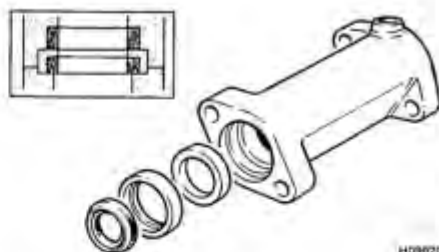
MAINTENANCE

C2

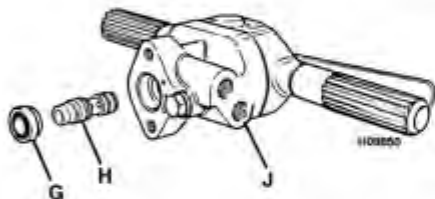
BREAKER DISMANTLING - STANDARD AND VIBRO-DAMPED (cont'd)



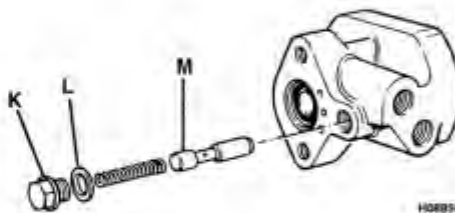
- 6 Unscrew and remove check valve **E** ensuring that the breaker is positioned as shown above so as to avoid losing the check valve ball **F**.



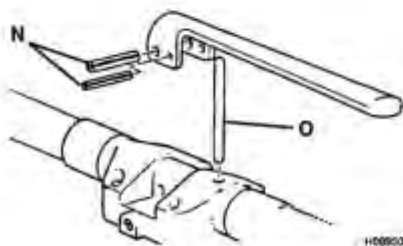
- 7 Remove the seals from the lower section of the barrel casting. A slide hammer will be necessary to remove the seal housing.



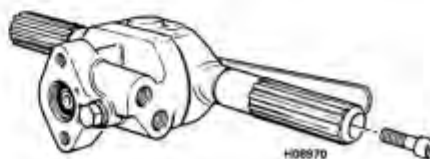
- 8 Remove the housing cap **G** and the spool **H** from the head **J**.



- 9 Remove the plug **K**, seal washer **L**, spring and trigger spool **M** from the head.

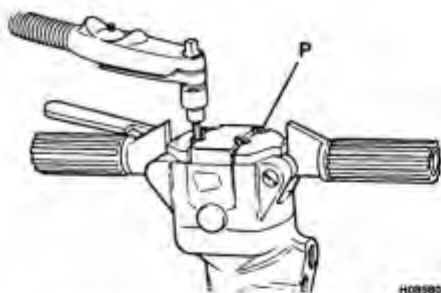


- 10 For standard handle breakers only, Using a press, remove roll pins **N** from the top cover and remove the trigger. Withdraw the trigger pin **O**.

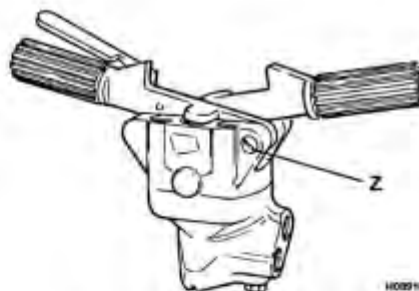


- 11 For standard handle breakers only, remove the capscrew from inside each handle and remove the handles from the top cover.

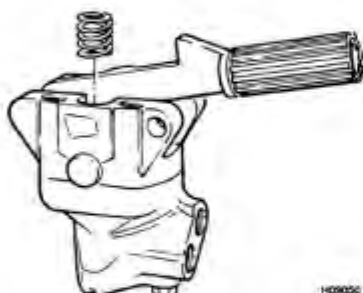
BREAKER DISMANTLING - STANDARD AND VIBRO-DAMPED (cont'd)



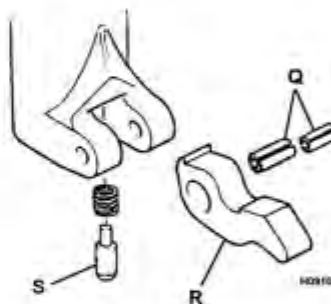
12 For vibro-damped handle breakers only, remove the four top cover retaining screws **P** and remove the cover.



13 For vibro-damped handle breakers only, unscrew the handle pivot pin **Z** nearest the trigger pin. Withdraw the handle assembly from the control handles bracket.



14 For vibro-damped handle breakers only, withdraw the remaining handle assembly complete with handle pivot. Remove the springs.



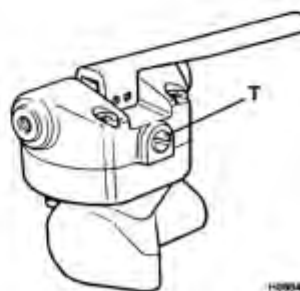
15 For vibro-damped handle breakers only, using a press, remove roll pins **Q** from the nose. This releases latch **R**, latch plunger **S** and the plunger spring.

⚠ WARNING

Accumulator

The breaker incorporates a pressure accumulator. This accumulator is pressurised even when there is no hydraulic pressure to the breaker. Attempting to dismantle the accumulator without first releasing the pressure can cause injury or death. Gas pressure must be released before carrying out further dismantling.

Note: Once gas has been released, a special charging tool (part no. 929/05800) is required to re-charge the accumulator. Re-charging the accumulator must only be undertaken by a suitably qualified person.



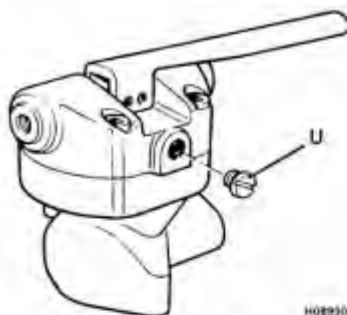
16 Remove the cover screw **T** to expose the charging screw.

C4

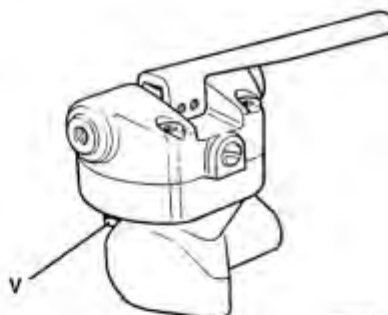
MAINTENANCE

C4

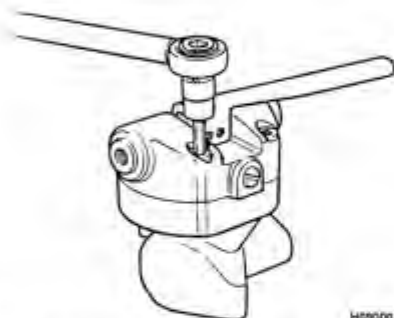
BREAKER DISMANTLING - STANDARD AND VIBRO-DAMPED (cont'd)



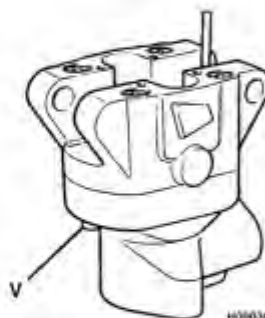
17 Loosen the charging screw **U** slowly approximately 3 or 4 turns, listening for all the gas to escape. Refit the cover screw **T**.



18 For standard handle breakers only, when you are sure that all the gas in the accumulator has been evacuated, remove the safety screw **V** from the head.



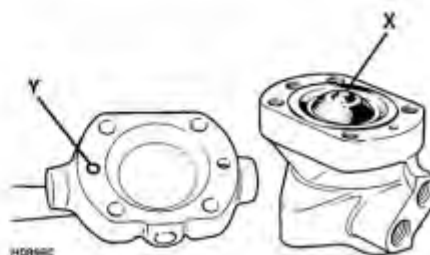
19 For standard handle breakers only, remove the four capscrews and remove the cover from the head.



20 For vibro-damped handle breakers only, when you are sure that all the gas in the accumulator has been evacuated, remove the safety screw **V** from the head.



21 For vibro-damped handle breakers only, withdraw the trigger pin **O**. Remove the four capscrews and remove the handle bracket from the head.



22 Remove the diaphragm **X** and 'O' ring seal **Y** from the head.

C5

MAINTENANCE

C5

BREAKER INSPECTION - STANDARD AND VIBRO-DAMPED



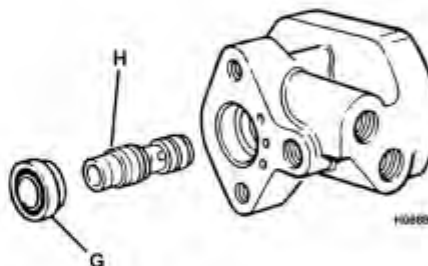
- 1 Examine the piston **C**, piston feeder **D** and barrel **A** for signs of damage. Small scratches can be carefully removed with fine emery cloth. Deep grooves or signs of pick-up (especially on the lower sealing portion of the piston) will require the replacement of the component.



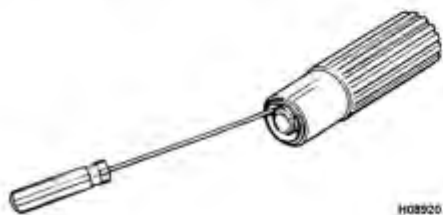
- 2 Examine the check valve ball **F** and ball seats for signs of damage or excessive wear. Obtain new components if necessary.



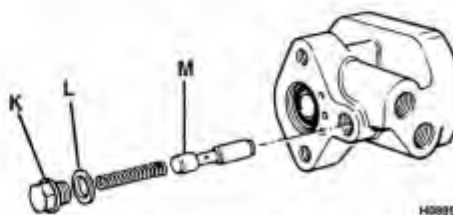
- 3 Examine the seals for signs of wear. Pay particular attention to their lips. Obtain new seals if necessary.



- 4 Examine the housing cap **G** and spool **H** for signs of damage. Obtain new components if necessary.



- 5 **For standard handle breakers only**, examine the rubber bushes inside the handles for signs of damage. Fit new bushes if necessary. These bushes are a press fit inside the handles and can be removed by slitting their cores from the inside and driving out.



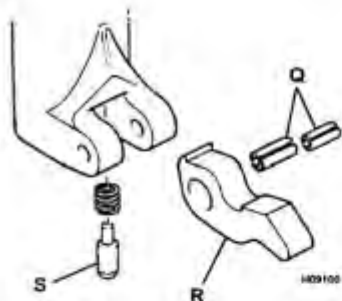
- 6 Examine the plug **K**, seal washer **L**, spring and trigger spool **M** for signs of damage or wear. Obtain new components if necessary.

C6

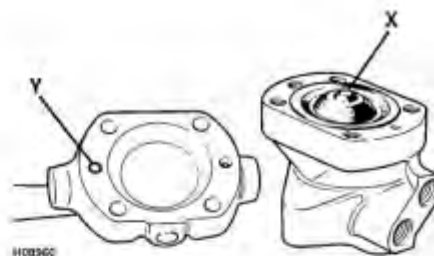
MAINTENANCE

C6

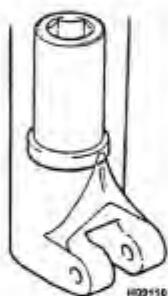
BREAKER INSPECTION - STANDARD AND VIBRO-DAMPED (cont'd)



7 Examine the roll pins **Q**, latch **R**, latch plunger **S** and plunger spring for signs of damage or wear. Obtain new components if necessary.



8 Examine the diaphragm **X** for signs of damage. Pay particular attention for signs of cracking around the diaphragm insert. Obtain a new diaphragm if necessary.



9 Examine the bush inside the nose for signs of damage or wear. If it is necessary to remove the bush it can be pressed out from the top of the housing using a suitable hydraulic press of approximately 20 tonnes.

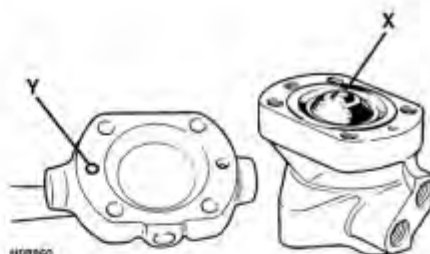
BREAKER ASSEMBLY - STANDARD AND VIBRO-DAMPED

CAUTION

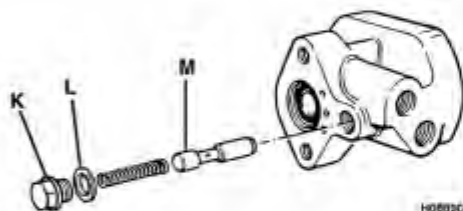
Before commencing assembly, all components must be scrupulously cleaned.

A-3-1-4

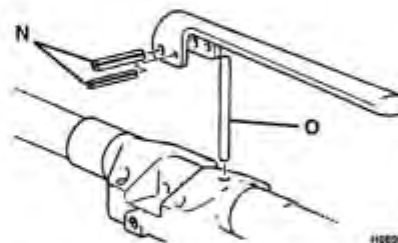
Note: During assembly, apply Multi Gasket Loctite 574 (JCB Part No. 4102/1201) to all joint faces.



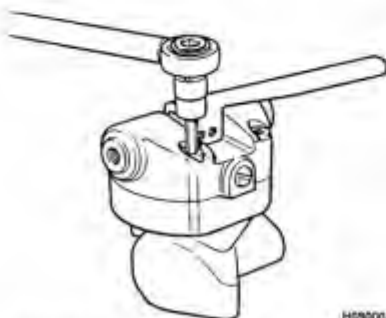
- 1 Place diaphragm **X** into the head, ensuring that the diaphragm insert is uppermost (as shown above). Fit new 'O' ring seal **Y**.



- 2 Fit the trigger spool **M**, spring, seal washer **L** and plug **K** into the head.



- 3 For standard handle breakers only, insert the trigger pin **O**. Assemble the trigger onto the top cover and fit roll pins **N** using a press.



- 4 For standard handle breakers only, assemble the top cover onto the head and fit the four capscrews. Torque tighten the capscrews progressively (see **Introduction section**), ensuring that the trigger pin remains free to move.



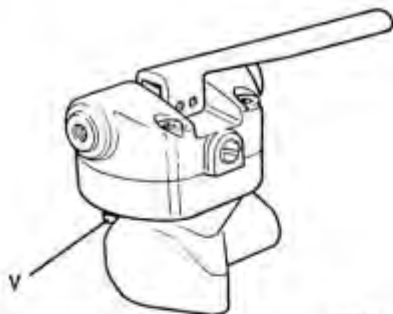
- 5 For vibro-damper handle breakers only, fit the trigger pin **O**. Assemble the handle bracket onto the head and fit the four capscrews. Torque tighten the capscrews progressively (see **Introduction section**), ensuring that the trigger pin remains free to move.

C8

MAINTENANCE

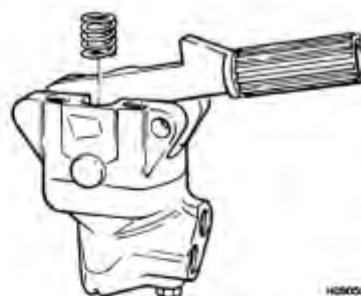
C8

BREAKER ASSEMBLY - STANDARD AND VIBRO-DAMPED (cont'd)



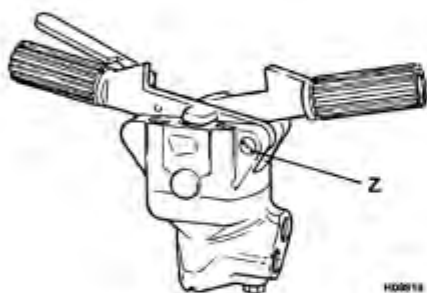
H08941

- 6 Treat thread of safety screw **V** with Loctite 242 and fit the safety screw into the head.



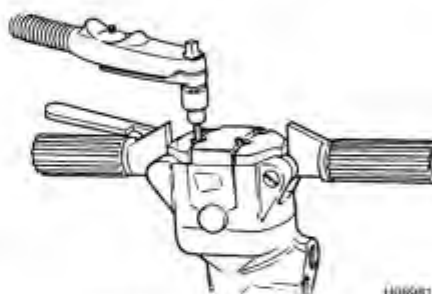
H08900

- 7 For **vibro-damped handle breakers only**, fit the handle assembly springs. Fit the handle assembly furthest from the trigger pin complete with pivot pin into the handle bracket (see **Step 14 of Dismantling**).



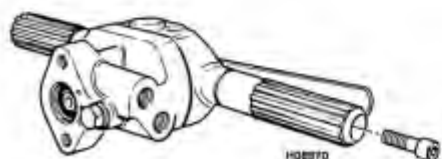
H08918

- 8 For **vibro-damped handle breakers only**, fit the remaining handle assembly. Treat the thread of pivot pin **Z** with Loctite 242 and fit the pin. Spray the handles, trigger and all contacting parts with a suitable lubricant.



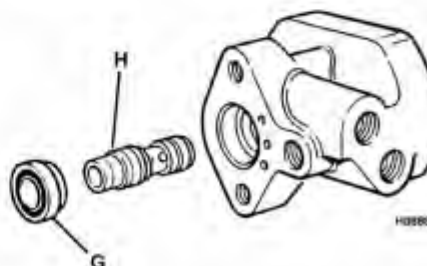
H08981

- 9 For **vibro-damped handle breakers only**, assemble the top cover onto the handle bracket. Treat the threads of the top cover capscrews with Loctite 242 and torque tighten (see **Introduction section**).



H08970

- 10 For **standard handle breaker only**, fit the handles to the top cover with capscrews. Torque tighten the capscrews (see **Introduction section**).



H08895

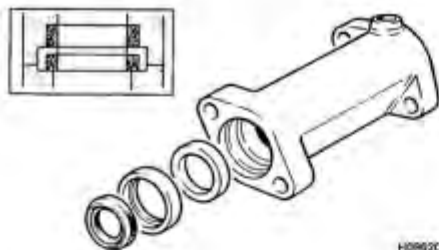
- 11 Fit the housing spool **H** and housing seal **G** into the head. Fit a new 'O' ring to the housing seal.

C9

MAINTENANCE

C9

BREAKER ASSEMBLY - STANDARD AND VIBRO-DAMPED (cont'd)



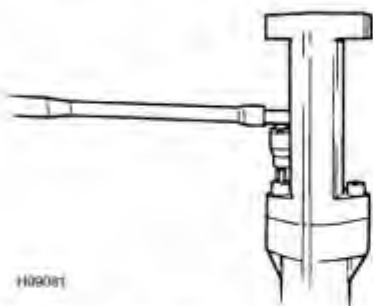
H0902C

- 12 Assemble the seals into the lower section of the barrel casting. Ensure that the open faces of the seals are fitted as shown on inset.



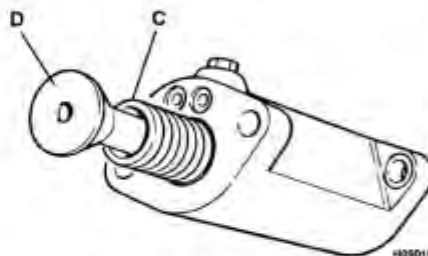
H0890D

- 13 Treat the thread of check valve **E** with Loctite 542. Fit the check valve and its ball **F** into the barrel by offering the check valve to the barrel from underneath to avoid losing the ball.



H0908T

- 14 Bolt the barrel to the nose with capscrews. Torque tighten the capscrews progressively (see **Introduction section**) using a Gedore narrow head torque wrench (part no. 7200-01). **Do not** use a standard torque wrench fitted with a universal joint as this distorts the torque setting.



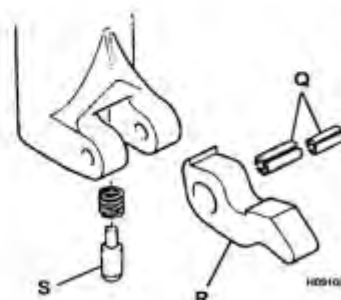
H0901H

- 15 Insert the piston **C** and piston feeder **D** into the barrel.



H0907I

- 16 Assemble the head assembly onto the barrel/nose assembly and fit the capscrews. Torque tighten the capscrews progressively (see **Introduction section**) using a Gedore narrow head torque wrench (part no. 7200-01- see **Step 14 above**). Fit the hoses, ensuring that the hose with the female coupling is fitted to the top port of the head assembly.



H0910J

- 17 Assemble the plunger spring, plunger **S**, and latch **R** into position in the nose. Using a press, insert roll pins **Q** to secure the mechanism.

C10

MAINTENANCE

C10

BREAKER DISMANTLING - 'D' and 'T' PICKS

⚠ WARNING

Accumulator

The breaker incorporates a pressure accumulator. This accumulator is pressurised even when there is no hydraulic pressure to the breaker. Attempting to dismantle the accumulator without first releasing the pressure can cause injury or death. This procedure must be carried out by a qualified person.

⚠ CAUTION

Before commencing assembly, all components must be scrupulously cleaned.

A-3-1-4

Note: Unless otherwise indicated, the following instructions apply to both the 'D' type and 'T' type breakers.

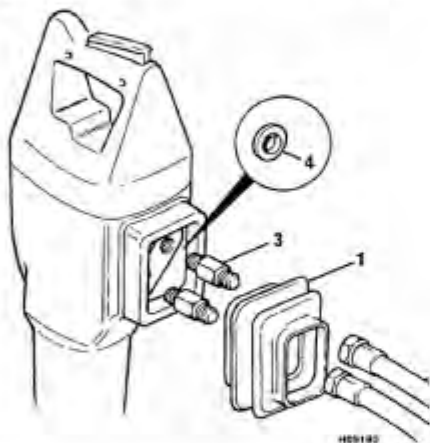
⚠ WARNING

The pick must be disconnected from its source of hydraulic power and the oil drainer before any maintenance is carried out.

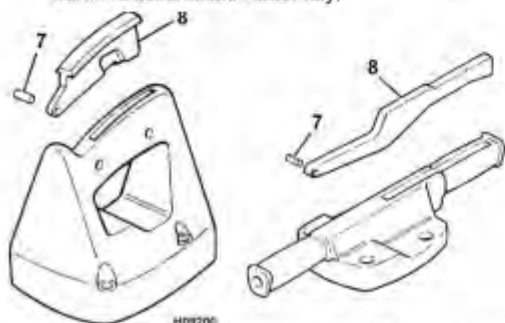
⚠ WARNING

Under no circumstances should an attempt be made to remove the handle when the pick is connected to a source of hydraulic power.

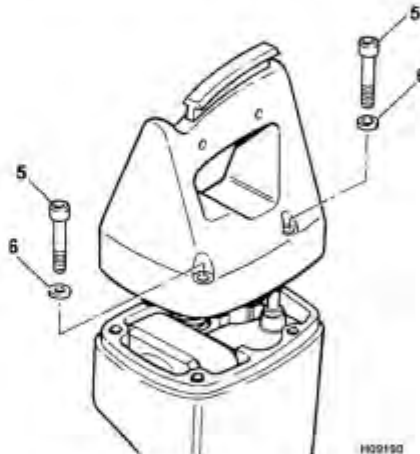
- 1 Disconnect hoses and collect any residual oil into a suitable container.



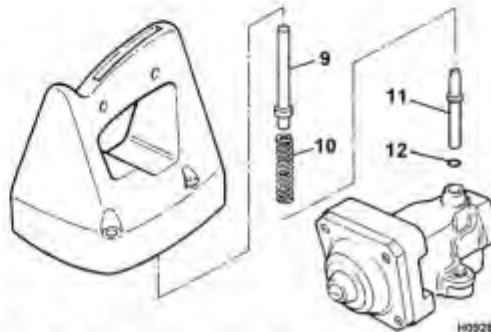
- 2 Cut the cable tie securing the hose gaiter 1 and remove the gaiter. Remove the hoses 2 from the adaptors 3. Remove the adaptors and seals 4 from the accumulator assembly.



- 4 If necessary, drift out the pivot pin 7 and remove the trigger 8 from the handle.

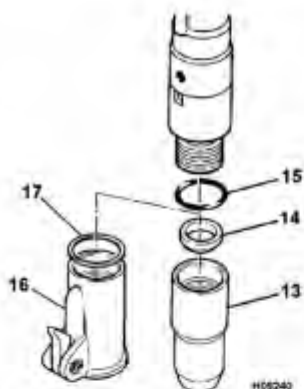


- 3 Remove the four capscrews 5 together with washers 6 and remove the handle assembly.



- 5 Remove the push pin 9 ('D' Type only). Remove the spring 10, trigger pin 11 and 'O' ring 12 from the accumulator assembly. Discard the 'O' ring.

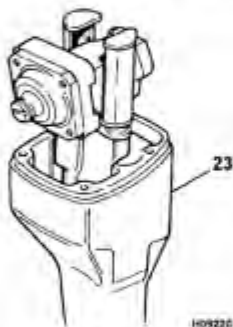
BREAKER DISMANTLING - 'D' and 'T' PICKS (cont'd)



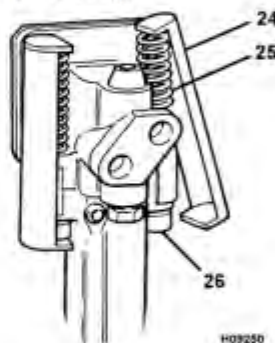
- 6 'D' Type only.** Remove the retainer 13 with the bump stop 14. Remove and discard 'O' ring 15. **'T' Type only.** Remove nose latch 16 with the shim assembly 17. Remove and discard 'O' ring 15.



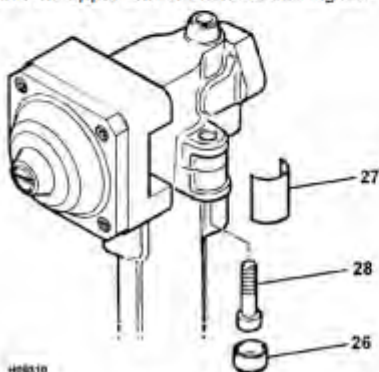
- 7 'T' Type only.** If necessary, remove roll pins 18 and 19 using a press. Remove the latch 20, plunger 21 and spring 22.



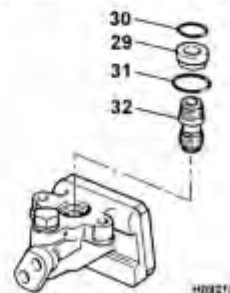
- 8** Remove the accumulator/barrel/nose assembly from the upper end of the nose casting 23.



- 9** Apply light pressure to the top of slide rail 24 to compress spring 25 then swing the bottom of the slide rail clear of bump stop 26. Remove the slide rail and the spring. Repeat for the other side.



- 10** Remove slide bearing 27 and bump stop 26 from both sides then remove capscrews 28 to separate the accumulator assembly from the barrel/nose assembly.



- 11** Turn the accumulator assembly over. Withdraw housing cap 29 then remove and discard 'O' ring 30. Remove 'O' ring 31 from the recess in the accumulator assembly and discard the 'O' ring. Withdraw spool 32 from the spool housing.

C12

MAINTENANCE

C12

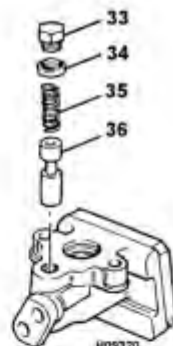
BREAKER DISMANTLING - 'D' and 'T' PICKS (cont'd)

⚠ WARNING

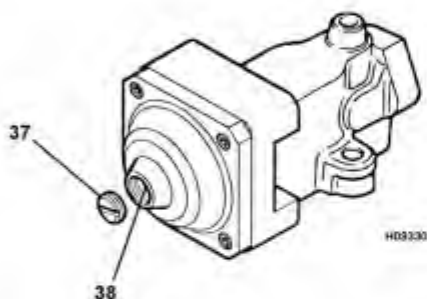
Accumulator

The breaker incorporates a pressure accumulator. This accumulator is pressurised even when there is no hydraulic pressure to the breaker. Attempting to dismantle the accumulator without first releasing the pressure can cause injury or death. Gas pressure must be released before carrying out further dismantling.

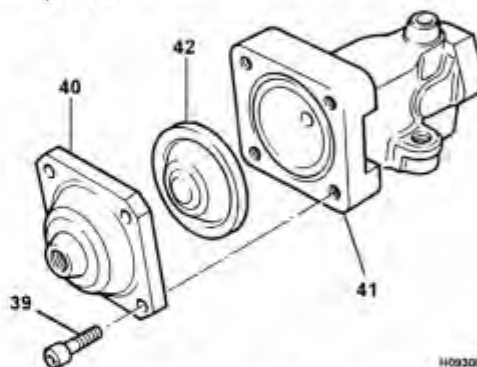
Note: Once gas has been released, a special charging tool (part no. 929/05800) is required to re-charge the accumulator. Re-charging the accumulator must only be undertaken by a suitable qualified person.



12 Remove plug 33, seal 34, spring 35 and trigger spool 36.



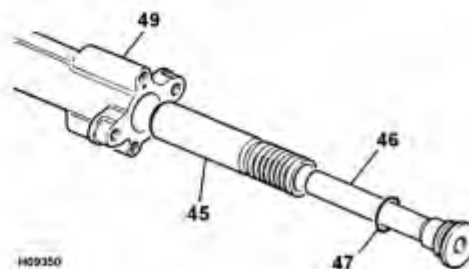
13 Releasing Gas Pressure from the accumulator. Remove the cover screw 37 to gain access to the charging screw 38. Insert a 4 mm allen key and slowly loosen the charging screw approximately 3 or 4 turns listening for all the gas to escape. Tighten the charging screw approximately 3 or 4 turns. Refit the cover screw.



14 Dismantling the Accumulator Assembly (see WARNING). Remove the four capscrews 39 and separate the accumulator top 40 from the accumulator head 41. Remove the diaphragm 42 from the head.



15 Hold the barrel/nose assembly above the workbench with the check valve housing pointing downwards. Remove the check valve 43 with the check valve ball 44.



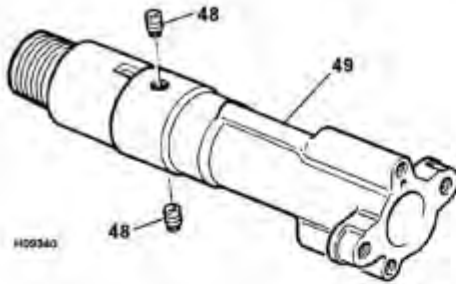
16 Using a suitable drift, push out the piston 45 and piston feeder 46 from the barrel 49. Separate the piston from the feeder. Remove and discard 'O' ring 47.

C13

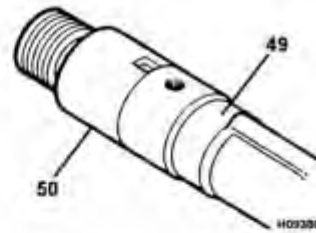
MAINTENANCE

C13

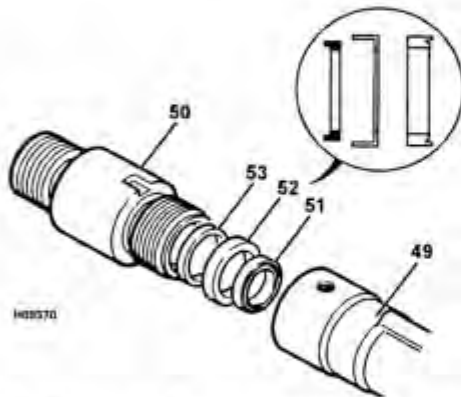
BREAKER DISMANTLING - 'D' and 'T' PICKS (cont'd)



17 Remove the two grub screws **48** from the lower end of the barrel **49** (one each side).



18 Clamp the barrel/nose assembly in a vice and unscrew the barrel **50** from the barrel **49**, using a 'C' spanner.



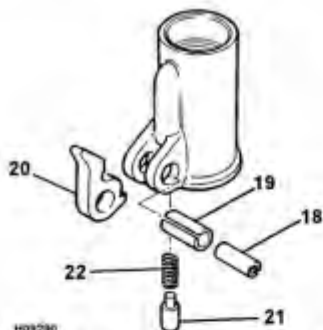
19 Remove seal **51** and seal housing **52** from the lower end of the barrel **49**. Using a slide hammer, remove seal **53** from seal housing **52**. Discard the seals.

C14

MAINTENANCE

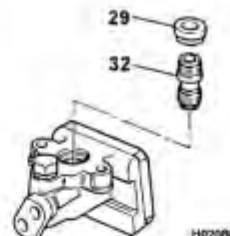
C14

BREAKER INSPECTION - 'D' and 'T' PICKS



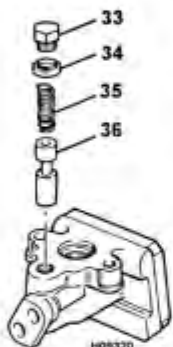
H09290

1 'T' Type only. Examine the roll pins 18 and 19, latch 20, plunger 21 and plunger spring 22 for signs of damage or wear. Obtain new components if necessary.



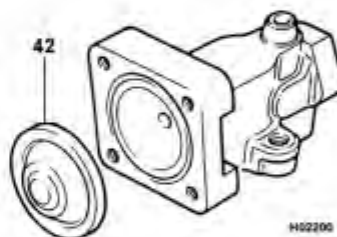
H02080

2 Examine the housing cap 29 and spool 32 for signs of damage. Obtain new components if necessary.



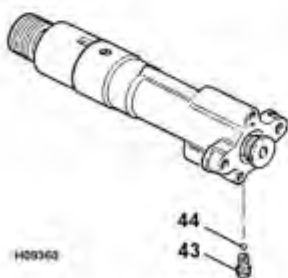
H09320

3 Examine the plug 33, seal 34 and trigger spool 36 for signs of damage or wear. Obtain new components if necessary.



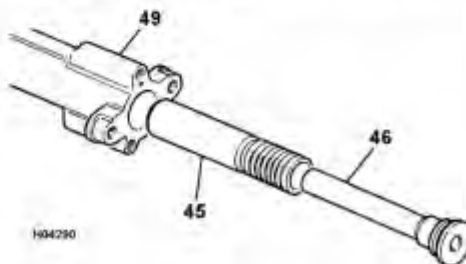
H02200

4 Examine the diaphragm 42 for signs of damage. Pay particular attention for signs of cracking around the diaphragm insert. Obtain a new diaphragm if necessary.



H09360

5 Examine the check valve ball 44 and ball seat in check valve 43 for signs of damage or excessive wear. Obtain new components if necessary.



H04290

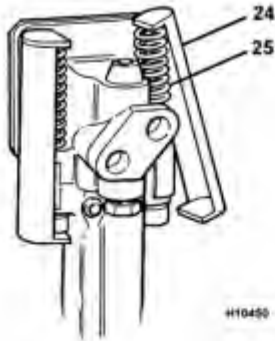
6 Examine the piston 45, piston feeder 46 and barrel 49. Small scratches can be carefully removed with fine emery cloth. Deep grooves or signs of pick-up (especially on the lower sealing portion of the piston) will require the replacement of the component.

C15

MAINTENANCE

C15

BREAKER INSPECTION - 'D' and 'T' PICKS (cont'd)



- 7 Examine slide rails 24 and springs 25 for signs of excessive wear, damage or deformation. Replace if necessary.



- 8 Examine slide bearings 26 and bump stops 27 for signs of damage or excessive wear. Replace if necessary.

BREAKER ASSEMBLY - 'D' and 'T' PICKS

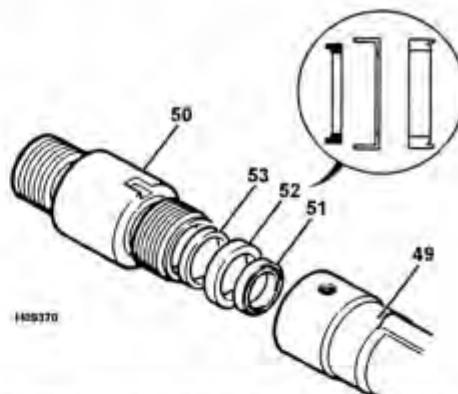
CAUTION

Before commencing assembly, all components must be scrupulously cleaned.

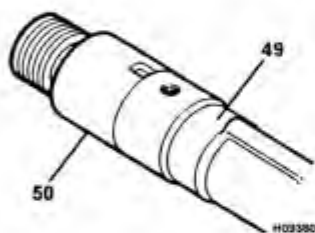
A-3-1-4

Note: Unless otherwise indicated, the following instructions apply to both the 'D' type and 'T' type breakers.

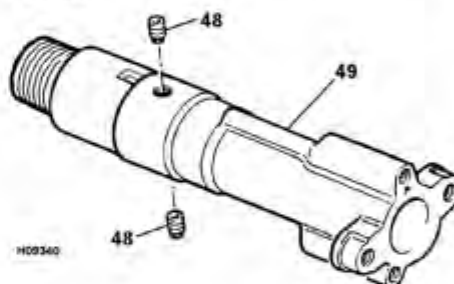
Note: During assembly, apply Multi Gasket Loctite 574 (JCB Part No. 4102/1201) to all joint faces. Lightly lubricate all hydraulic components with hydraulic fluid prior to assembly.



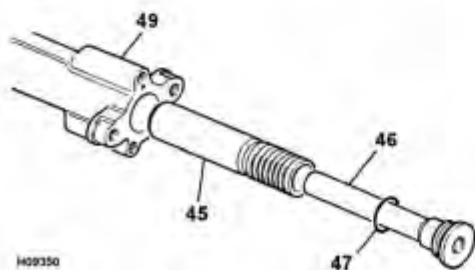
- 1 Insert new seal 51 into the lower end of barrel 49. Assemble new seal 53 to seal carrier 52 and insert into barrel 49. Ensure the seals are fitted as shown.



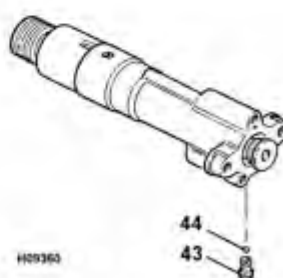
- 2 Clamp the barrel 49 in a vice. Apply Loctite 242 to nose 50 and screw into the barrel using a 'C' spanner.



- 3 Apply Loctite 242 to grub screws 48 and fit into the lower end of barrel 49 (one each side).



- 4 Insert piston 45 into the upper end of barrel 49. Fit new 'O' ring 47 to piston feeder 46 and slide the piston feeder into the piston.



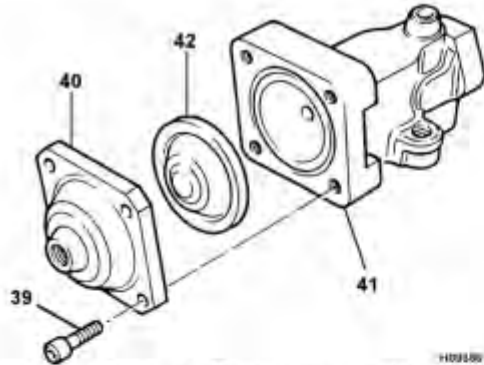
- 5 Treat the thread of check valve 43 with Loctite 542. Hold the barrel/nose assembly above the workbench with the check valve housing pointing downwards and fit the check valve with the check valve ball 44.

C17

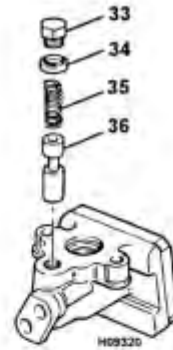
MAINTENANCE

C17

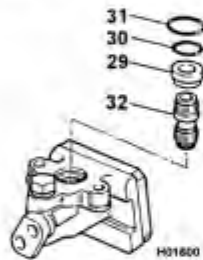
BREAKER ASSEMBLY - 'D' and 'T' PICKS (cont'd)



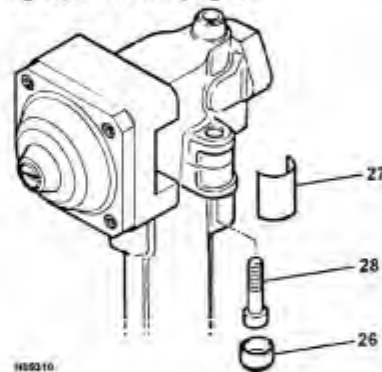
- 6 Fit the diaphragm 42 into the accumulator head 41, ensuring the diaphragm insert is uppermost. Assemble the accumulator top 40 onto the head and fit the four cap screws 39. Torque tighten the cap screws to 80 Nm (8.1 kgf m, 59 lft ft).



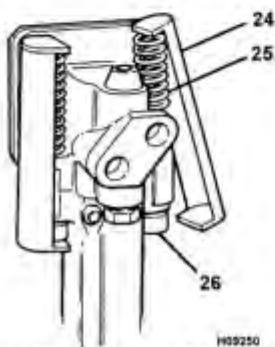
- 7 Turn the accumulator assembly over. Insert trigger spool 36 into accumulator assembly. Fit spring 35, seal 34 and plug 33.



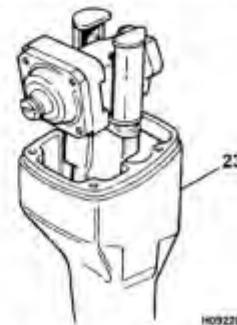
- 8 Slide spool 32 into spool housing. Fit new 'O' ring 30 to housing cap 29 and insert into accumulator assembly, followed by new 'O' ring 31.



- 9 Assemble the accumulator assembly onto the barrel/nose assembly and fit the cap screws 28. Torque tighten the cap screws to 135 Nm (14 kgf m, 100 lbf ft). Fit bump stops 26 to the heads of the cap screws and assemble slide bearings 27 (both sides). Charge the accumulator, refer to page C19.



- 10 Fit spring 25 and slide rail 24 as shown. Apply light pressure to the top of the slide rail to compress the spring then swing the bottom of the slide rail over the bump stop 26. Repeat for the other side.



- 11 Fit the accumulator/barrel/nose assembly into the upper end of the casting 23.

C18

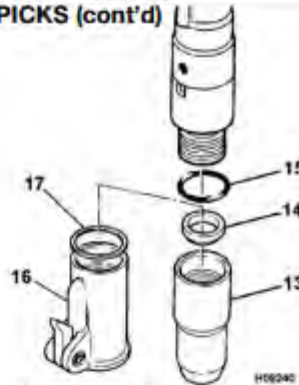
MAINTENANCE

C18

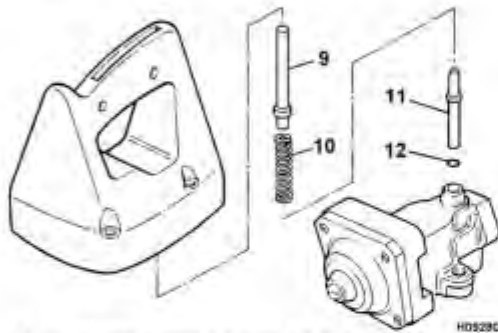
BREAKER ASSEMBLY - 'D' and 'T' PICKS (cont'd)



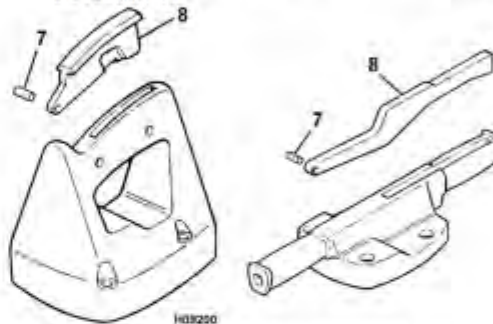
12 'T' Type only. If dismantled, fit the spring 22, plunger 21 and latch 20 into the nose latch. Using a press, insert roll pins 18 and 19 to secure the mechanism.



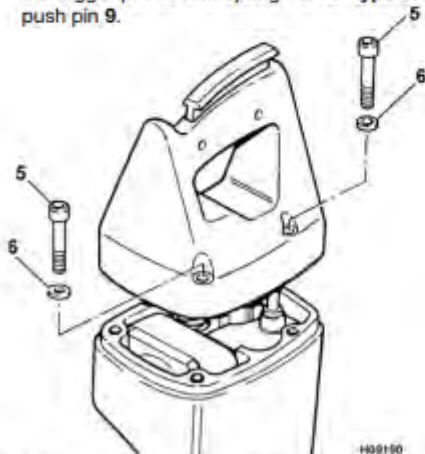
13 Fit new 'O' ring seal 15 onto the nose 52, taking care not to damage it on the exposed thread. **'T' type only.** Fit the shim assembly 17 and the nose latch 16. **'D' Type only.** Fit the bump stop 14 and the retainer 13.



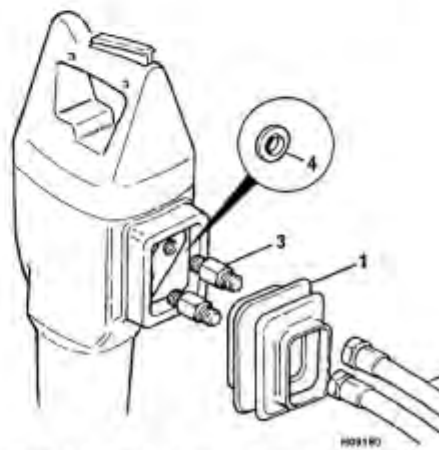
14 Lubricate a new 'O' ring 12 and feed it into the hole in the top of the accumulator assembly; once inside, the 'O' ring will expand to fill the groove. Fit the trigger pin 11 and spring 10. **'D' type only.** Fit push pin 9.



15 If dismantled, fit trigger 8 to the handle and drive in pivot pin 7 to secure.



16 Assemble the handle assembly onto the outer casing and fit washers 6 and cap screws 5. Note that two of the cap screws are longer than the others.



17 Assemble seals 4 and adaptors 3 to the accumulator assembly. Fit hoses 2, ensuring that the hose with the female coupling is fitted to the top port of the accumulator head. Fit the hose gaiter 1 and secure with a cable tie.

CHARGING THE ACCUMULATOR

⚠ WARNING

Use only nitrogen gas to charge the accumulators. The use of any other gas can cause the accumulators to explode. Remember that although Nitrogen is not poisonous, you can be killed by suffocation if it displaces air in your workplace. Do not allow excessive quantities of nitrogen to be discharged into the atmosphere.

This procedure must not be carried out with the breaker (or pick) connected to a source of hydraulic supply.

During charging, the breaker must be securely mounted in the upright position. This prevents the breaker falling over whilst charging, thereby preventing uncontrolled escape of gas.

EQUIPMENT REQUIRED

- a **Nitrogen bottle**
Minimum residual pressure 70 bar (100 lbf/in²).
- b **Regulator (with contents and outlet gauge)**
Outlet pressure would be controllable up to 55 bar (800 lbf/in²)
- c **Charging adaptor (JCB part No. 929/05800)**
together with 3/8 in. BSP Dowty washer.
- d **Connecting hose**
Suitable hose of minimum operating pressure 207 bar (3000 lbf/in²), together with female coupling (JCB part No. 929/06303)

CHARGING PRESSURE

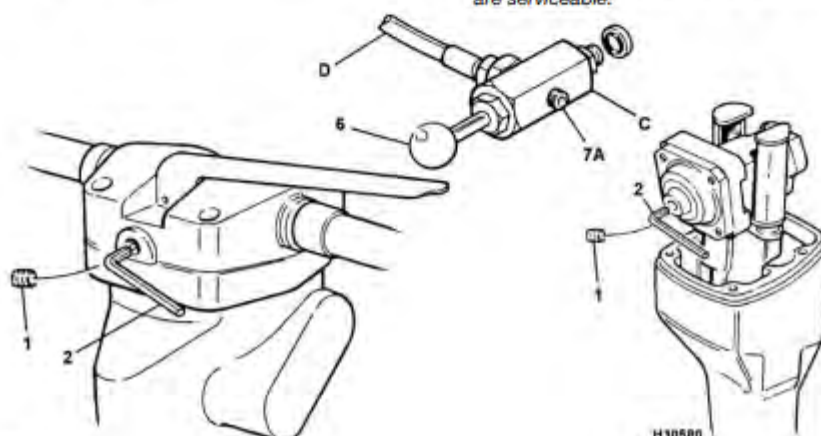
The charging pressure should not exceed 50 bar (725 lbf/in²). Refer to **Specification** section for specific accumulator pressures.

CHARGING PROCEDURE

Note: For 'D' and 'T' picks, access must first be gained to the accumulator assembly by carrying out Steps 1 to 8 (excluding step 7) of **Breaker Dismantling**.

- 1 Remove the slotted cover screw **1** from the breaker.
- 2 Using a 4 mm Allen key **2**, slowly loosen the charging screw approximately 3 turns. **Do not** remove the screw.
- 3 Fit the 3/8 in. Dowty washer to the charging adaptor **C** and screw into the breaker. Do not overtighten, hand tight is adequate.
- 4 Ensure that the nitrogen bottle outlet pressure is at zero and then connect the charging hose **D** to the charging adaptor **C**.
- 5 Gradually increase the nitrogen bottle outlet pressure until the required level is reached (see **Specification** section).
- 6 Push in knob **6** on the charging adaptor **C** to engage the charging screw and tighten. **Do not** overtighten.
- 7 Shut the regulator valve on the nitrogen bottle and using the venting screw **7A**, release the trapped gas in the hose.
- 8 Disconnect the charging hose **D** and unscrew the charging adaptor **C** from the body of the breaker.
- 9 Finally, tighten the charging screw using a 4 mm Allen key **2** and refit the cover screw **1** after applying Loctite 242 to the threads.

Note: For 'D' and 'T' picks, refit the accumulator assembly by carrying out Steps 11 to 17 of **Breaker Assembly**. Seals need not be replaced providing they are serviceable.



C20

MAINTENANCE

C20

FAULT FINDING

*The remedy in certain should be carried out by your JCB Dealer.

Symptom	Possible Fault	Remedy
Breaker fails to operate.	No flow from supply.	*Check output with flow and pressure tester.
	Hoses incorrectly fitted.	Check that pressure feed is connected to top port on the breaker.
	Insufficient movement of trigger spool.	*The trigger spool should move approx. 5 mm (0.2 in). Check lever mechanism.
	Main spool jammed or damaged.	*Remove and check. Clean all associated parts.
	Striker piston seized.	*Remove and check for 'pick-up' on piston feeder or barrel. Replace any damaged parts.
Breaker lacks breaking power.	Insufficient available pressure.	*Check Main Relief Valve - for settings refer to Specification section.
	Low accumulator gas pressure (Normally associated with violent shaking of hoses).	*Re-charge the accumulator as detailed in this section.
	Hexagon bush in nose casting loose.	Apply JCB Retainer (High Strength) and press back.
Breaker runs slow.	Insufficient flow.	*Check the flow rate - for settings refer to Specification section.
	Cold oil	Warm up the oil supply. Optimum temperature 20 - 70°C (68 - 158 °F).
	High return line back pressure.	*Check return line back-pressure. Pressure should not exceed 12 bar (174 lb/in ²).
	Incorrect oil.	Use only JCB Special Hydraulic Oil (part no. 4002/0224).
Breaker runs hot.	Inadequate cooling of hydraulic oil.	Check oil supply has adequate cooling. Temperature should not exceed 80 °C (176 °F).

D **SPECIFICATION** D

CONTENTS

JCB hydraulic breakers	
Standard Breakers	D1
Vibro-damped breakers	D1/D2
'D' and 'T' breakers	D2
Noise and vibration data	D3

D1

SPECIFICATION

D1

JCB HYDRAULIC BREAKERS

STANDARD BREAKERS

Breaker weight		
Model Nos. 929/05400 & 05600	20 kg	44 lb
Model Nos. 929/07200 & 08200	26 kg	57 lb
Breaker length		
Model Nos. 929/05400 & 05600	910 mm	36 in.
Model Nos. 929/07200 & 08200	1050 mm	41 in.
Accumulator gas pressure (Nitrogen)		
Model Nos. 929/05400 & 05600	38 bar	551 lb/in ²
Model Nos. 929/07200 & 08200	50 bar	725 lb/in ²
Hydraulic supply flow rate		
Model Nos. 929/05400, 05600	18 - 22 l/min	3.96 - 4.84 gal/min
Model No. 929/07200	18 - 22 l/min	3.96 - 4.84 gal/min
Model No. 929/08200	28 - 32 l/min	6.20 - 7.00 gal/min
Hydraulic supply pressure range		
Model Nos. 929/05400 & 05600	69 - 86 bar	1000 - 1247 lb/in ²
Model Nos. 929/07200 & 08200	90 - 110 bar	1300 - 1600 lb/in ²
Hydraulic supply relief valve setting		
Model Nos. 929/05400 & 05600	76 bar min	
Model Nos. 929/07200 & 08200	1100 lb/in ² min	
All models	138 bar max.	2000 lb/in ² max.
Hydraulic return line pressure	12 bar max.	174 lb/in ² max.
Breaker blow frequency	1500 blows/min	-
Breaker shank size		
Model No. 929/05400	22 mm	7/8 in.
Model No. 929/05600	25 mm	1 in.
Model No. 929/07200 & 08200	32 mm	1 1/4 in.
Hydraulic supply oil type	JCB Special Hydraulic Oil (part no. 4002/0224)	
EHTMA Category	'C' or 'D'	

VIBRO-DAMPED BREAKERS

Breaker weight		
Model Nos. 929/05300 & 05500	22 kg	44 lb
Model Nos. 929/07400 & 08300	28 kg	62 lb
Breaker length		
Model Nos. 929/05300 & 05500	930 mm	36 in.
Model Nos. 929/07400 & 08300	1090 mm	43 in.
Accumulator gas pressure (Nitrogen)	50 bar	725 lb/in ²
Hydraulic supply flow rate		
Model Nos. 929/05300 & 05500	18 - 22 l/min	3.96 - 4.84 gal/min
Model No. 929/07400	18 - 22 l/min	3.96 - 4.84 gal/min
Model No. 929/08300	28 - 32 l/min	6.20 - 7.00 gal/min

D2

SPECIFICATION

D2

JCB HYDRAULIC BREAKERS (cont'd)

VIBRO-DAMPED BREAKERS (cont'd)

Hydraulic supply pressure range		
Model Nos. 929/05300 & 05500	69 - 86 bar	1000 - 1247 lb/in ²
Model Nos. 929/07400 & 08300	90 - 110 bar	1300 - 1600 lb/in ²
Hydraulic supply relief valve setting		
Model Nos. 929/05300 & 05500	76 bar min.	1100 lb/in ²
Model Nos. 929/07400 & 08300	117 bar min.	1700 lb/in ² min.
All models	138 bar max.	2000 lb/in ² max.
Hydraulic return line pressure	12 bar max.	174 lb/in ² max.
Breaker blow frequency	1500 blows/min	-
Breaker shank size	32 mm	1.25 in.
Hydraulic supply oil type	JCB Special Hydraulic Oil (part no. 4002/0224)	
EHTMA Category	'C' or 'D'	

'D' and 'T' BREAKERS

Breaker weight (Dry with hoses)		
'D' Handle	12 kg	26.4 lb
'T' Handle	14 kg	28.6 lb
Breaker length		
'D' Handle	645 mm	25.4 in.
'T' Handle	TBA mm	TBA in.
Accumulator gas pressure (Nitrogen)	33 bar	480 lb/in ²
Hydraulic supply flow rate	15 - 20 litre/min	3.3 - 4.5 gal/min
Hydraulic supply pressure range	50 - 65 bar	725 - 945 lb/in ²
Hydraulic supply relief valve setting	TBA bar min.	TBA lb/in ² min.
	TBA bar max.	TBA lb/in ² max.
Hydraulic return line pressure	TBA bar max.	TBA lb/in ² max.
Breaker blow frequency	1500 blows/min	-
Breaker shank size	2.22 mm	0.875 in.
Hydraulic shank size	JCB Special Hydraulic Oil (part no. 4002/0224)	
ETHMA Category	'C'	

D3

SPECIFICATION

D3

NOISE AND VIBRATION DATA

Model No.	Handle Type	Noise Level EC Directive 84/457/EEC (LWA)	Vibration Weighted RMS Acceleration ISO 8662 Part 5 (m/s ²)
929/05300	Vibro-Damped	111	5.5
929/05400	Standard	111	18.9
929/05500	Vibro-Damped	111	5.5
929/05600	Standard	111	18.9
929/07400	Vibro-Damped	107	5.4
929/07200	Standard	107	16.6
929/08300	Vibro-Damped	108	6.0
929/08200	Standard	108	17.1
929/12900	'D' Type	103	5.7
929/20400	'T' Type	103	5.7

E1

INTRODUCTION

E1

HYDRAULIC POWERPACKS


The range of hydraulic powerpacks are categorised by EHTMA as Category 'C' or 'D' hydraulic powerpacks and can be safely used with any hydraulic tool displaying the EHTMA 'C' or 'D' decals as shown below.



TO AVOID RISK OF INJURY
CONNECT ONLY TO CATEGORY
'C' POWERPACKS



TO AVOID RISK OF INJURY
CONNECT ONLY TO CATEGORY
'D' POWERPACKS

 **WARNING**

You must understand and follow the instructions in this manual and any accompanying manuals. If you are unsure about anything ask your dealer or employer. Do not guess, or you or others could be killed or seriously injured.

GENERAL DESCRIPTION

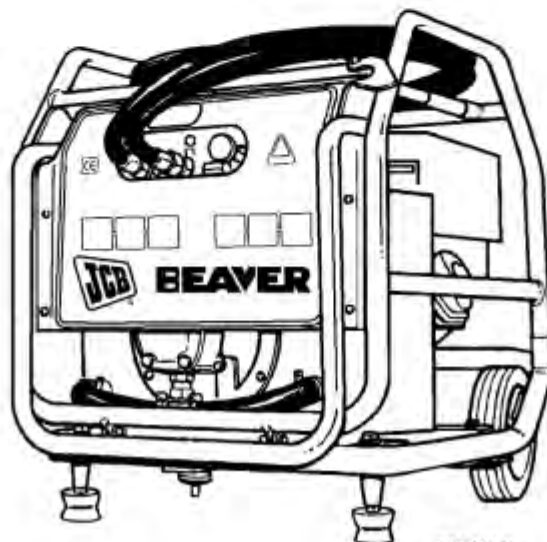
The JCB Hydraulic powerpacks have been specially developed to provide a lightweight source of portable hydraulic power for the JCB handheld hydraulic breakers and tools.

Despite their simple construction, the powerpacks incorporate many special features such as automatic, energy saving, engine speed control, a variable hydraulic flow and a unique hydraulic circuit design (patent applied for) which eliminates totally any possibility of pulsation damage to the oil cooler.

All the major components are enclosed in a fully welded tubular frame which also provides easy hand holds to maximise portability. A balanced lifting point is also provided.

This manual covers the **BEAVER III**, to operate the powerpack efficiently and safely you must know the powerpack and have the skill to use it. It is assumed that personnel carrying out maintenance have at least a sound knowledge of workshop practice, safety procedures and general techniques associated with the repair of hydraulic equipment.

Note: It is important to quote the serial number when making repairs or ordering parts.



S744230

HYDRAULIC POWERPACKS

MAINTENANCE

Safety Decals

Keep all decals clean and readable. Replace lost or damaged decals.

Before Operating the Machine.

- 1 Check for cleanliness.
- 2 Check for Damage.
- 3 Check for Leaks.
- 4 Make sure the fuel filler cap is tightly closed.
- 5 Check Hydraulic Oil Level.
- 6 Ensure the machine is positioned safely.
- 7 Ensure that all hydraulic couplings are fully serviceable. *Refer to Hydraulic Couplings.*
- 8 Ensure that any hydraulic tools you are planning to use are compatible with the machine you are using.
- 9 Check Engine Oil Level.
- 10 Check the Fuel.

⚠ WARNING

Never refuel with the engine running.

Operating in Low Temperatures

- 1 Use the Correct Viscosity Engine Oil.
Refer to Engine Manufacturer's Handbook.
- 2 Keep the Battery at Full Charge.
- 3 Fill the Fuel Tank at the End of each Working Day.
- 4 Protect the Machine When not in Use.

Note: If the machine is to be used continually at temperatures below 0°C (32°F) consult your Dealer.

Connecting Hoses

- a Stop the engine.
- b Move the Output Control to the Off position.
- c Attach Return Line.
- d Attach Feed Line.

Note: The connector is locked when the collar is turned away from the ball.

- e Start the engine and run the machine to fill up the hydraulic circuit.
- f Check the hydraulic oil level.

Checking the Hydraulic Oil Level

- 1 Prepare the Machine - Position the machine on level ground. Switch off the engine and allow it to cool down.
- 2 Check the Hydraulic Oil Level using the sight level gauge.
- 3 If necessary top up the Hydraulic Oil using the filler port.

Service Schedules

Apart from the daily jobs, the schedules are based on machine running hours. Keep a regular check of hours in use. Do not use a machine which is due for a regular service. Rectify any defects found during regular maintenance before clearing the machine for use.

⚠ WARNING

Maintenance must only be done by suitably qualified and competent persons. Before doing any maintenance, make sure the machine is safe and correctly sited on level ground.

Daily

- 1 **Clean the machine generally. Clean the machine using water and/or steam. Do not allow mud to build up on the engine. Make sure that the air inlets on the hydraulic cooler are not clogged.**

Check

- 2 Generally for damage.
- 3 Hydraulic oil level.
- 4 Engine oil level.
- 5 Hydraulic couplings.
- 6 Hydraulic hoses.

Note: Check the tightness of nuts, bolts, screws and hose fittings after the first days operation and thereafter in accordance with the Service Schedules.

Note: The engine oil should be replaced after the first three days and thereafter in accordance with the Maintenance Schedules.

Every 3 Months

Do the Daily jobs plus:

Clean

- 1 Air cleaner elements.
Refer to Engine Manufacturer's Handbook
- 2 Engine oil filter.

Change

- 3 Engine oil.
- 4 Hydraulic oil filter.
- 5 Hydraulic oil.

Every 6 Months

Do the Daily and 3-monthly jobs plus:

Check

- 6 Tightness of nuts, bolts, screws and hose fittings.
- 7 Flow and pressure output.

Change

- 8 Main hydraulic filter.
- 9 Hydraulic oil.
- 10 Engine oil.
Refer to Engine Manufacturer's Handbook

Clean

- 11 Fuel strainer.
- 12 Spark plug - Petrol model only - check plug gap -

Refer to Engine Manufacturer's Handbook

HYDRAULIC POWERPACKS

Changing the Hydraulic Oil

- 1 Prepare the Machine - Position the machine on level ground. Switch off the engine and allow it to cool down.
- 2 Place a container of suitable size below the hydraulic tank.
- 3 Remove the tank drain plug and filler cap to allow the oil to drain out.
- 4 Clean and refit the drain plug.
- 5 Pour hydraulic oil into the tank through the filler until it reaches the required level in the sight glass.
- 6 Refit the filler cap.

Note: Use only the recommended hydraulic oil.

Changing the Main Hydraulic Filter

⚠ WARNING

Hot oil and engine components can burn you. Make sure the engine is cool before doing this job.

- 1 Prepare the Machine - Position the machine on level ground. Switch off the engine and allow it to cool down.
- 2 Place a container of suitable size below the filter to catch any spill oil.
- 3 Remove the bolts securing the lid to the hydraulic filter housing and remove the lid.
- 4 Lift out and dispose of the filter.
- 5 Push the new element firmly into place in the filter housing.
- 6 Refit the lid on the filter housing, ensuring that the spring clip locates between the spigots. Secure with the bolts.
- 7 Check the hydraulic oil level. Refer to **Checking the Hydraulic Oil Level**.

⚠ WARNING

There may be limited oil spillage when the filter is removed. Clean any spillage immediately and dispose of materials in accordance with current regulations.

Cleaning the Cooler

The oil cooler fins may be cleaned using low pressure compressed air. Do not attempt to clean using a wire brush as this could damage the fins.

Checking the Electrolyte Level

⚠ WARNING

Battery electrolyte contains sulphuric acid. It can burn you if it touches your skin or eyes. Wear safety glasses and handle the battery carefully to prevent spillage.

- 1 Prepare the Machine - Position the machine on level ground. Switch off the engine and allow it to cool down.
- 2 Unscrew and remove the battery covers.
- 3 Look at the level in each cell. The electrolyte should be 6mm(1/4in) above the plates.
- 4 Top up if necessary with distilled or de-ionised water.
- 5 Refit the battery covers.

Gaining Access to Machine Components

To facilitate easier maintenance, the tubular frame is fitted with hinge bolts. The frame may be moved to afford ready access to the machine components in the following manner:

- 1 Remove and retain the securing clips.
- 2 Lift the tubular frame out of the way of the machine components by hinging it on the bolts.

Note: It is important that after maintenance, the tubular frame is restored to its operating position and that the clips are securely fitted.

Note: When the machine is to be lifted using the balanced lifting point, it is important to ensure that the clips are in place and securely fitted.

Cleaning

It is expected that components will be thoroughly cleaned and lubricated, where appropriate, also that any opened hose connections will be blanked to prevent entry of dirt and excessive loss of hydraulic oil.

Serial Numbers

Serial numbers are stamped on a spacer plate located between the engine and the hydraulic tank.

E4

SPECIFICATIONS

E4

HYDRAULIC POWERPACKS**Engines**

The **BEAVER III** may be fitted with a **Honda GX240** petrol engine. These engines are fitted with an Oil Alert system which is designed to prevent engine damage caused by an insufficient amount of oil in the crank case. The oil alert system will shut down the engine before the oil in the crankcase can fall below a safe limit.

If the Oil Alert system has shut down the engine then Oil Alert indicator will flash when you attempt to restart the engine.

If the **Lombardini 15LD315** is fitted it will either be a **Recoil Start Model** or an **Electric Start Model**.

Recoil Start Model: Pull the starter grip lightly until resistance is felt, then pull briskly. Do not allow the starter grip to snap back against the engine. Return it gently to prevent damage.

Electric Start Model: Do not use the electric starter for more than 5 seconds at a time. If the engine fails to start, release the key and wait 10 seconds before operating the starter again.

After starting, allow the engine to idle for a few minutes, then slacken the engine speed control.

Temperature Idling Time

The following times are recommended for allowing the engine to idle when the temperatures are as indicated.

below -20 °C (-4 °F)	5 minutes
-20 °C to -10 °C (-4 °F to 14 °F)	2 minutes
-10 °C to 5 °C (14 °F to 41 °F)	1 minute
above 5 °C (above 41 °F)	20 seconds