

Contents	Page No.
Technical Data	
- Hammermaster 65	1 - 1
General	2 - 1
JCB Mini-Excavator	2 - 1
Hammermaster Identification	2 - 1
Sideplates - HM65	
- Removal	3 - 1
- Installing	3 - 1
Tools	
- Removal	4 - 1
- Installing	4 - 1
Main Body - HM65	
- Dismantling	5 - 1
- Inspection	5 - 1
- Assembly	5 - 1
Accumulators	
- Dismantling	8 - 1
- Assembly	8 - 1
- Charging	8 - 2
Fault Finding	9 - 1
Torque Settings	
- HM65	10 - 1
Maintenance Materials	11 - 1
Service Tools	11 - 1
Service Schedules	12 - 1
Greasing	12 - 2
Parts List	
- HM65	13 - 1

Technical Data - Hammermaster 65

Working weight (including tool and sideplates)	75 kg (165 lb)
Impact energy	110 Joules
Impact rate	1300 - 1600 blows/min
Working pressure	90 - 160 bar (1305 - 2321 lbf/in ²)
Pressure relief Minimum/maximum	170/220 bar (2466 lbf/in ² /3190 lbf/in ²)
Oil supply	15 - 30 l/min (3.3 - 6.6 gal/min)
Oil Viscosity	15-1000 cSt
Maximum return line back pressure	20 bar (290 lbf/in ²)
Output power (min)	3.5 kW
Port adapters - Hammermaster/connecting hoses	
Pressure line	1/2 in BSP (Female)
Return line	3/4 in BSP (Male)
Oil temperature range	- 20 °C to + 80 °C (- 4 °F to + 176 °F)
Carrier Weight	0.6 - 1.6 tonne (1,323 - 3,527 lb)
Tools	
Length -moil point (standard)	430 mm (17 in)
Length - chisel	430 mm (17 in)
Bushings	
Diameter (new)	40 mm
Diameter (maximum allowable)	42 mm
Accumulator charging pressure	50 bar (725 lbf/in ²)
JCB Nitrogen Kit Part Number	See Accumulators - Charging
Sound Power	124 Lwa (db)

General

The following servicing instructions are intended to be carried out with the Hammermaster removed from the carrier and the tool removed.

A method of ensuring the safety of servicing personnel is:

A specially constructed stand capable of supporting the weight. Refer to **Technical Data** for the weight of the assembly.

When carrying out servicing, absolute cleanliness and careful handling of the precision hydraulic components are essential to avoid damage and ensure long life.

Use only purpose made cleaning fluids for hydraulic parts. **Never** use water, paint thinners or carbon tetrachloride. Keep cleaned and dried parts covered with lint free cloth to prevent re-contamination.

Coat all cleaned hydraulic components, seals and 'O' rings with clean hydraulic oil before assembly.

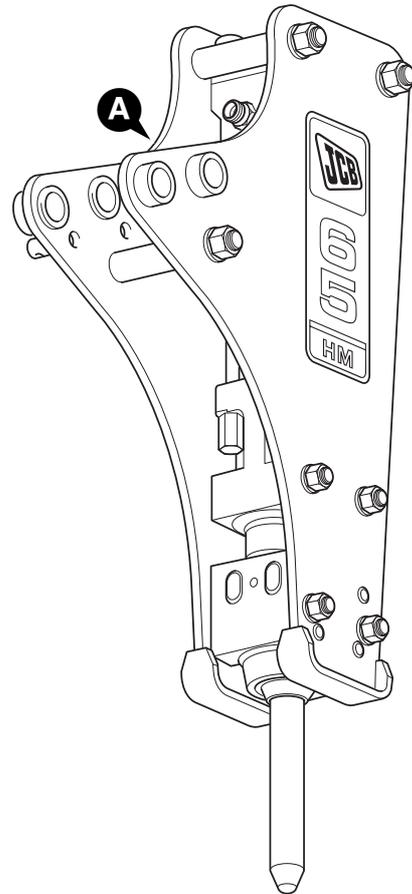
JCB Excavators

The Hammermaster HM 65 is suitable for use on the JCB Micro Range and 801CX Excavators fitted with a suitable breaker circuit.

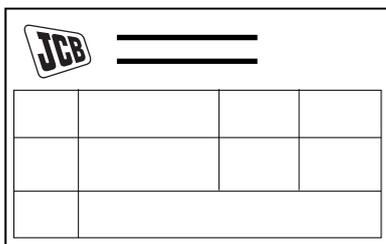
For Removing and Installing the Hammermaster refer to the Carrier Machine Owners Manual.

Hammermaster Identification

The equipment serial number is stamped on plate **A** located on the sideplates. Usually the left hand sideplate.



A



C043540

Sideplates - HM65

Removal

- 1 Lay the Hammermaster horizontally on a suitable work bench.

Note: Refer to **Technical Data** for the weight of the assembly.

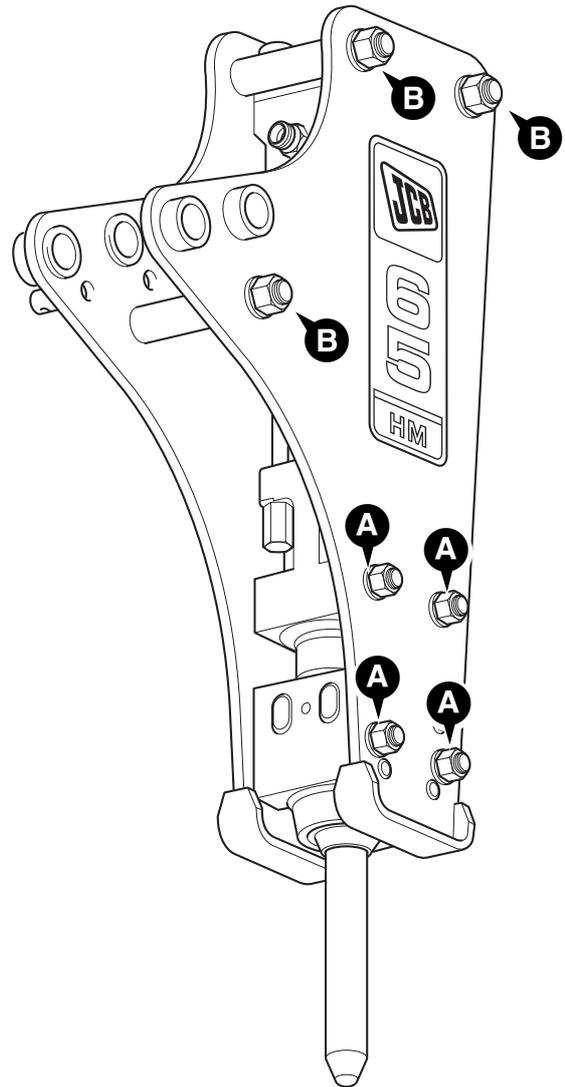
- 2 Remove the three sideplate securing bolts **B** (3 off) and their washers. Remove and retain the spacers from between the sideplates.
- 3 Remove securing bolts **A** (4 off) and their washers, one side at a time.
- 4 Remove the sideplates.

Installing

Installing is the reversal of the Removal procedure.

- 1 Locate the spacer tubes between the sideplates and insert bolts **B** and their washers.
- 2 Finger tighten only, bolts **B** (3 off).
- 3 Fit mounting bolts **A** (4 off) complete with Nord-lock washers.
- 4 Torque tighten as follows:-

Item	Qty	Nm	lbf ft
Bolts B	3 off	478	353
Bolts A	4 off	244	180



C050750

Tools

1 Take the Load Off the Tool

Position the breaker horizontally.

2 Vent the Hydraulic Pressure

After stopping the engine, with the starter switch set to 'ON', operate the excavator and Hammermaster controls a few times to vent pressure in the system. Remove the starter key. Engage the parking brake, if appropriate.

WARNING

After the Hammermaster has been stopped there may be pressure trapped inside it. This pressure could cause the Hammermaster to 'fire' unexpectedly and injure you. Before working on the Hammermaster, take the following precautions:

- Do not stand in front of the tool.
- Relieve external system pressure by operating the relevant controls.
- Wait at least 10 minutes, to allow internal pressure to decay, before working on the Hammermaster.

B-2-1-15

3 Removing/Installing the Tool

- Tap out roll pin **A** and discard.
- Remove the retaining pins **B**.
- Remove the tool.
- Clean the tool shank and retaining pins **B**. Lubricate tool and pins with **JCB 'Special' Hammer Grease**. (JCB Part No. 4003/1119)

Note: If you are proposing to install a used tool, first check it for wear (see **Wear Limits** below).

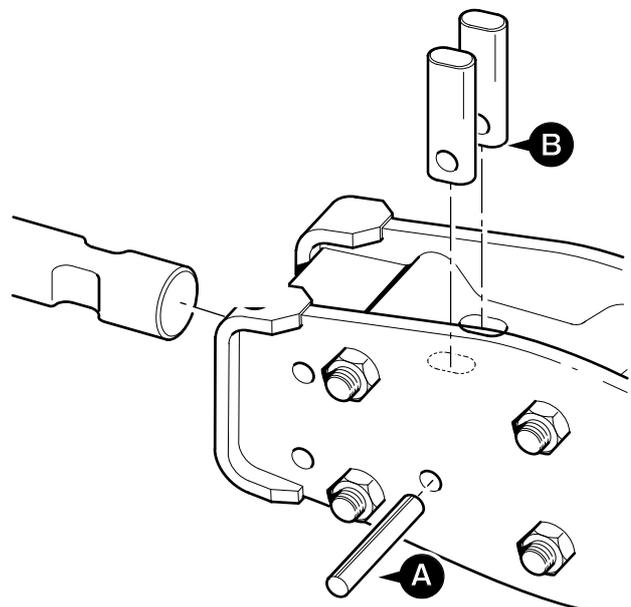
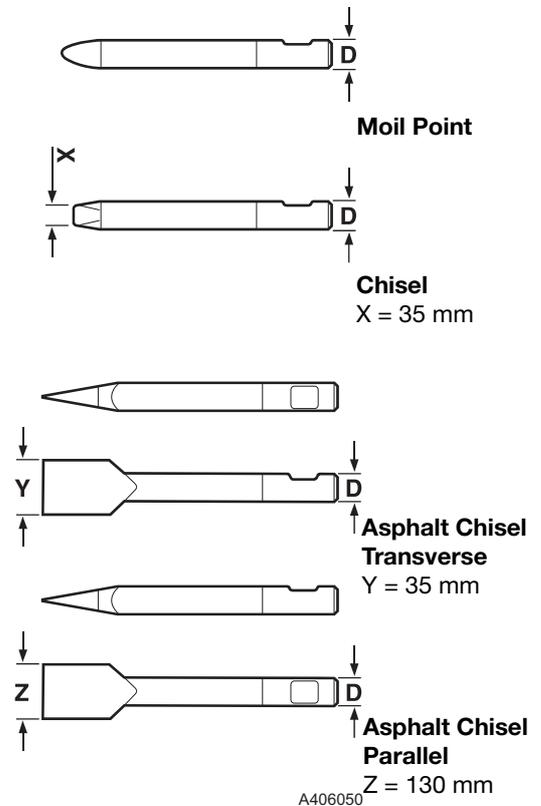
- Install the tool, aligning the grooves with the bore in the housing.
- Replace tool retaining pins **B**.
- Install new roll pin **A**.

Wear Limits

HM65 Tool New Dia. 40 mm. Min. Dia. 38.5 mm.

Choosing Tools

Diameter D = 40 mm (HM65)

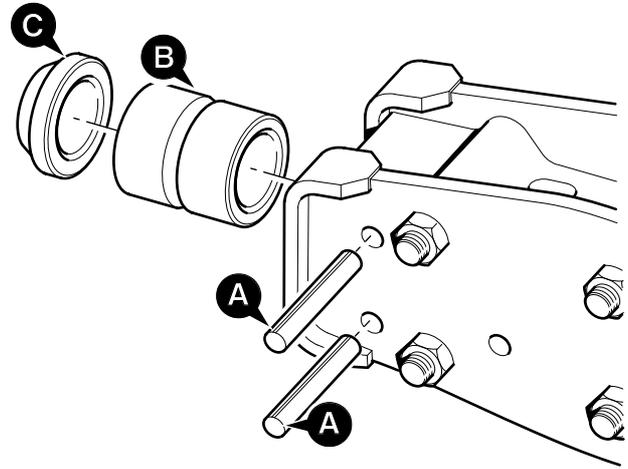


Lower Bushing - Removal

- 1 Remove the Hammermaster from the carrier machine.
- 2 Remove the tool as described in Tools - Removing and Installing.
- 3 Remove roll pins **A**.
- 4 Remove seal and tool bush.

Lower Bushing - Replacement

- 1 Apply MoS2 spray to the contact surfaces of the bushing and the nose.
- 2 Install the bushing and insert roll pins **A**.
- 3 Fit a new seal **C**. Ensure that the seal is pressed in square to the housing.
- 4 Fill the holes in the sideplates for roll pins **A** with silicone sealant.
- 5 Install the tool as described in Tools - Installing and Removing.



A1131

Main Body - HM65

Dismantling

WARNING

After the Hammermaster has been stopped there may be pressure trapped inside it. This pressure could cause the Hammermaster to 'fire' unexpectedly and injure you. Before working on the Hammermaster, take the following precautions.

- a Do not stand in front of the tool
- b Relieve external system pressure by operating the relevant controls.
- c Wait at least 10 minutes, to allow internal pressure to decay, before working on the Hammermaster.

B-2-1-15

- 1 Remove the sideplates (see **Sideplates - HM65, Removal**).
- 2 Unscrew tie rod nuts **B** and lift off rear body **C**.
- 3 Remove Main Body **E**.

Access is now available to Front Body, piston and cylinder bushes.

Note: The accumulators are charged with nitrogen at high pressure. No attempt should be made to dismantle them without first releasing the pressure (see **Accumulators, Dismantling and Assembly**).

If Necessary

- 4 Unscrew and remove tie rods **H** from rear body **C**.

Note: The tie rod threads are coated with JCB High Strength Thread Locker. The body **C** should be preheated around the thread holes to 100 - 120 °C (212 - 248 °F) to assist removal of the tie rods.

Inspection

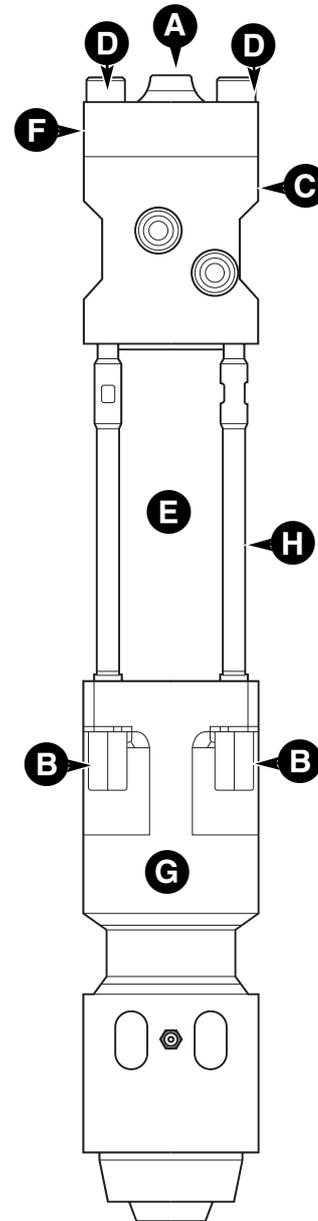
Clean the tie rods and use crack detecting equipment to inspect them. If cracks are found, or if other damage is evident, replace the affected tie rod and its nut. (see WWW.ROCOL.COM for crack detector)

Assembly

Assembly is the reverse of the dismantling procedure.

Note: The threads on the upper ends of the tie rods and in the front body must be thoroughly cleaned before the application of JCB High Strength Thread Locker prior to assembly. Torque tighten the Tie Rod Nuts to 200 Nm (147.5 lbf.ft)

Refer to **Maintenance Materials** for the application of seals, lubricants and joints.



C066510

Accumulators

Dismantling

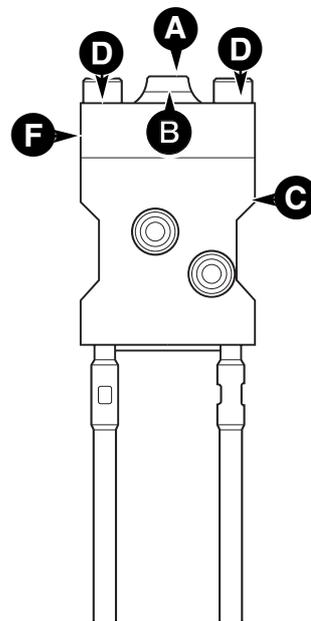
⚠ WARNING

Accumulators

The breaker incorporates one or more pressure accumulators. These are pressurised even when there is no hydraulic pressure to the Hammermaster. Attempting to dismantle an accumulator without first releasing the pressure can cause injury or death. Before dismantling an accumulator, release the pressure as instructed in this publication.

B-1-3-3/1

- 1 The accumulator cannot be dismantled with the breaker side plates fitted See **Breaker - Dismantling**.
- 2 Discharge the accumulator as follows:
 - a Remove cover screw **A** to gain access to charging screw **B**.
 - b Undo charging screw **B** 3 to 4 turns. Listen for all gas to escape.
 - c Tighten charging screw **B** and replace cap **A**.
- 3 Undo cover retaining screws **D** (4 off) diagonally, remove the cover and discard the diaphragm.



Assembly

- 1 Using suitable solvents, clean the components and allow to dry. Ensure components are **TOTALLY** clean.
- 2 Coat the sealing faces of accumulator body **C** with Loctite flange sealant **5205**.
- 3 Spray both sides of new diaphragm with silicone (see **Maintenance Materials**).
- 4 Place diaphragm into accumulator body **C** with the bead edge downwards, fitting into the groove of the body.
- 5 Refit the bolts to the cover and torque tighten to 280 Nm (207 lb/ft)
- 6 Fit a new seal to the charging screw **B** and insert the screw **B** into accumulator cover **F**.

Accumulators (cont'd)

Charging

WARNING

Use only nitrogen gas to charge 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 the air in your workplace. Do not allow excessive quantities of nitrogen to be discharged into the atmosphere.

B-3-1-6

Note: Your attention is drawn to the new publication "Gas Charging Kits" 9814/0579. Page 3 deals with Hammermaster 65 and refers to Layout 6. Layout 6 is the specific kit for the HM65.

Equipment Required

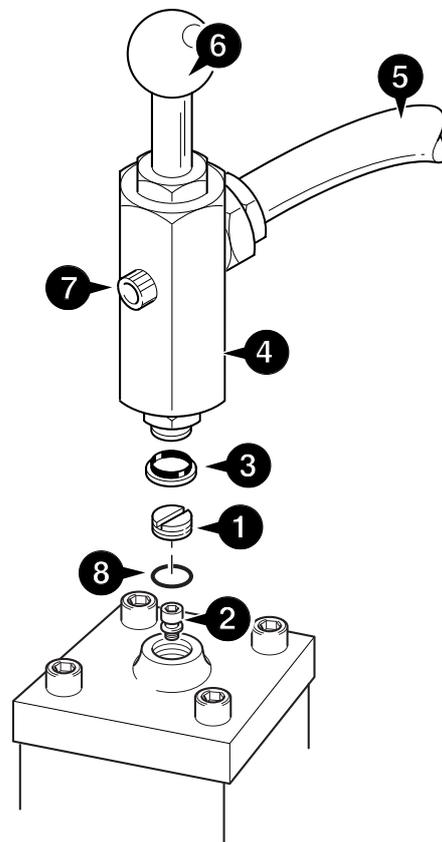
- a **Nitrogen bottle**
Minimum residual pressure 90 bar (1305 lbf/in²).
- b **Regulator (with contents and outlet gauge)**
Outlet pressure should be controllable up to 70 bar (1015 lbf/in²).
- c **Charging adapter (JCB part No. 929/05800)**
together with 3/8 in. BSP Dowty washer.
- d **Connecting hose**
Suitable hose of minimum operating pressure 207 bar (3000 lbf/in²), together with female coupling (JCB part No. 929/06306).

Charging Pressure

The charging pressure must not exceed 50 bar (725 lbf/in²). Refer to **Technical Data** for specific accumulator pressures.

Charging Procedure

- 1 Remove slotted cover screw 1 from the accumulator.
- 2 Slowly loosen the charging screw 2 approximately 3 turns. DO NOT remove the screw.
- 3 Fit the 3/8 in Dowty washer 3 to charging adapter 4 and screw into the accumulator. DO NOT overtighten, hand tight is adequate.
- 4 Ensure that the nitrogen bottle outlet pressure is at zero and then connect charging hose 5 to charging adapter 4.
- 5 Gradually increase the nitrogen bottle outlet pressure until the required level is reached (see **Charging Pressure**).
- 6 Push in knob 6 on charging adapter 4 to engage the charging screw and tighten. DO NOT overtighten.
- 7 Shut the regulator valve on the nitrogen bottle and using venting screw 7, release the trapped gas in the hose.
- 8 Disconnect charging hose 5 and unscrew charging adaptor 4 from the accumulator.
- 9 Finally, tighten the charging screw and refit cover screw 1 after applying **JCB Threadlocker and Sealer** to the threads.



C068370

Fault Finding

Symptom	Possible Fault	Remedy
1 The breaker does not operate.	a Insufficient hydraulic oil	Replenish.
	b Incomplete hose connection.	Connect completely.
	c Reverse connection of feed and return hoses.	Connect correctly. The lower hose is for high pressure.
	d Lower relief-set pressure of power source.	Adjust to the correct pressure.
	e Breaker spool does not function correctly.	Dismantle and examine.
	f Breaker is damaged.	Replace spool
	g Oil does not flow.	Check the oil circuit.
2 Impact power is weak.	a Insufficient oil flow.	Adjust flow rate.
	b Lower relief-set pressure.	Adjust to the correct pressure.
	c Reduced accumulator gas pressure.	Refill to attain the correct gas pressure.
	d Breaker spool does not function correctly.	Dismantle and examine.
	e Accumulator diaphragm is damaged.	Replace diaphragm.
	f Chisel insertion is not smooth.	Remove burrs from the chisel or chisel pin.
3 Excessive pulsation in high pressure hose.	a Excessive gas pressure of high pressure accumulator.	Adjust to the correct pressure.
	b Accumulator diaphragm is damaged.	Replace diaphragm.
†4 Large oil leakage from chisel.	a Wear of piston rod seal.	Replace seals.
	b Rod seal is damaged by piston scratches/scores.	Replace seal and examine piston scratches/scores.

† Note: If the oil leakage is slight, these parts can be used without renewal.

Fault Finding (cont'd)

Symptom	Possible Fault	Remedy
†5 Oil leakage from joint of valve body, cylinder, etc.	a 'O' ring on seal side damaged.	Replace 'O' ring.
	b Stay bolts or screws are loose.	Tighten bolts using thread locker to the correct torque valve.
	c Stay bolts or screws are damaged.	Replace bolts or screws.
†6 Oil leakage from hose.	a Hose is damaged.	Replace hose.
	b Hose joint is loose.	Tighten hose joint.

† **Note:** If the oil leakage is slight, these parts can be used without renewal.

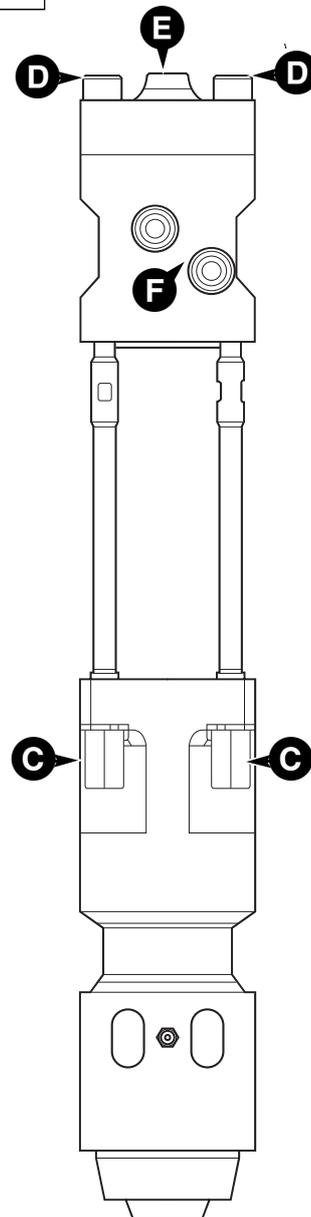
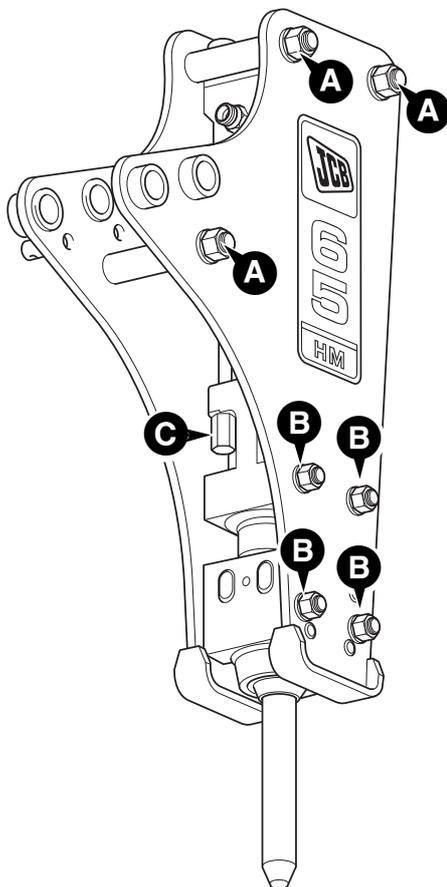
Item	Description	Qty.	Torque Settings	
			Nm	lbf ft
D	Accumulator head screw	4	280	207
E	Charging screw	1	27	19.9
F	Hose connections	2	65	45
A	Bolts	3	478	353
B	Bolts	4	244	180
	Plugs etc.	-	33	24
C	Tie Rod Nuts	4	200	147.5

Sideplates

Checking Bolt Tightness

(Daily)

It is important that the three bolts **A**) and the four bolts **B** are checked for torque tightness.



C050750

Maintenance Materials

Item	Function	Product Description	JCB Part No.
A	Lubricate surfaces	JCB Special MPL Moly Grease	4003/1302
B	Anti-friction coating	JCB Chain Lubricant (Molybdenum Disulphide Spray)	4004/0237
C	Accumulator diaphragms	Silicone Spray	Proprietary item
D	'O' Ring lubrication	Petroleum Jelly	Proprietary item
E	Thread locking	JCB High Strength Thread Locker	4102/0502

Service Tools

Item	JCB Part No.	Reference
Nitrogen charging tool	929/05800	Refer to Accumulators, Dismantling and Charging

Service Schedules

WARNING

Maintenance must only be done by competent personnel.

A-3-1-1

Every 2 - 4 Hours

(Depending on operating conditions)

Grease

- 1 The tool bushings via the grease nipples.

Note: Only grease when the tool is pushed into the breaker. This ensures that grease does not fill the cavity between the piston and tool.

Daily

Do the 2 - 4 hour jobs plus:

Clean

- 1 The Hammermaster, its tools and its hoses.

Grease

- 2 The Hammermaster pivots. (See the Carrier Handbook for actual frequency and method).

Check (engine stopped)

- 3 For damage to the Hammermaster, its tools and its hoses. Tighten loose fasteners and connections.

Observe (Hammermaster operating)

- 4 Operating pressure, hydraulic oil temperature, blow efficiency and evenness of operation.

Weekly

Do the 2 - 4 hour and Daily jobs plus:

Check (engine stopped)

- 1 Remove the tool and check for burrs around the cut-out. File or grind off any burrs.
- 2 Check that the tool and bushing have received adequate greasing. If necessary grease more frequently.
- 3 The lower tool bushing for excessive wear.
- 4 The tool shank for excessive wear.
- 5 The hydraulic hoses - renew if necessary.

Every 500 Hours or Yearly

(whichever occurs first)

This annual service is best carried out by your JCB Distributor.

- 1 Service the Hammermaster.
- 2 With the Hammermaster installed on the carrier, measure the circuit oil flows and back pressure.
- 3 Renew hydraulic filters of carrier.
- 4 Check hoses do not foul the boom/dipper throughout their ranges of movement.
- 5 Check operating pressure, hydraulic oil temperature, blow efficiency and evenness of operation.
- 6 Check accumulator and re-charge if necessary.

Note: Service intervals should be reduced in certain applications, such as hammer tunneling, scaling, smelter cleaning. If in doubt, consult your JCB Distributor.

Greasing

The Tool Bushings

(Every 2 - 4 Hours†)

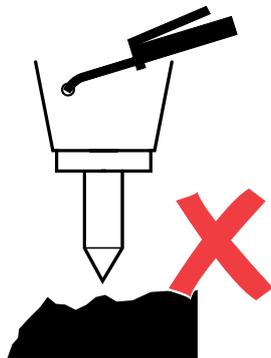
Position the Hammermaster vertically, with its weight on the tool. Make sure the carrier parking brake is engaged, the drive is in neutral and the engine stopped. Remove the starter key.

Inject **JCB 'Special' Hammer Grease (JCB Part No. 4003/1119)** or equivalent (see below) into the grease point **A** using the grease gun supplied (10 to -15 shots should normally be enough).

Note: Make sure that the tool is kept fully up in its housing during greasing, to prevent grease filling the cavity between the piston and the tool (see below).

† The actual frequency of this job will depend on operating conditions and the material being worked. If inspection reveals that the greasing has been insufficient, grease more often.

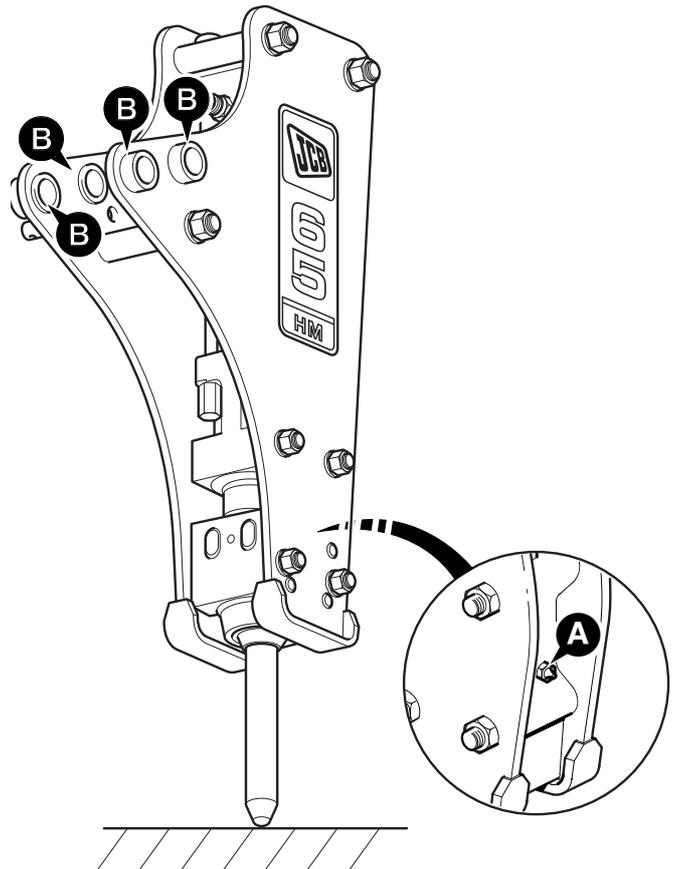
JCB EVERY 2 - 4 h



Hammermaster Pivots

(Daily)

Use a grease gun to inject **JCB 'Special' MPL Grease** into the pivot grease points **B**.



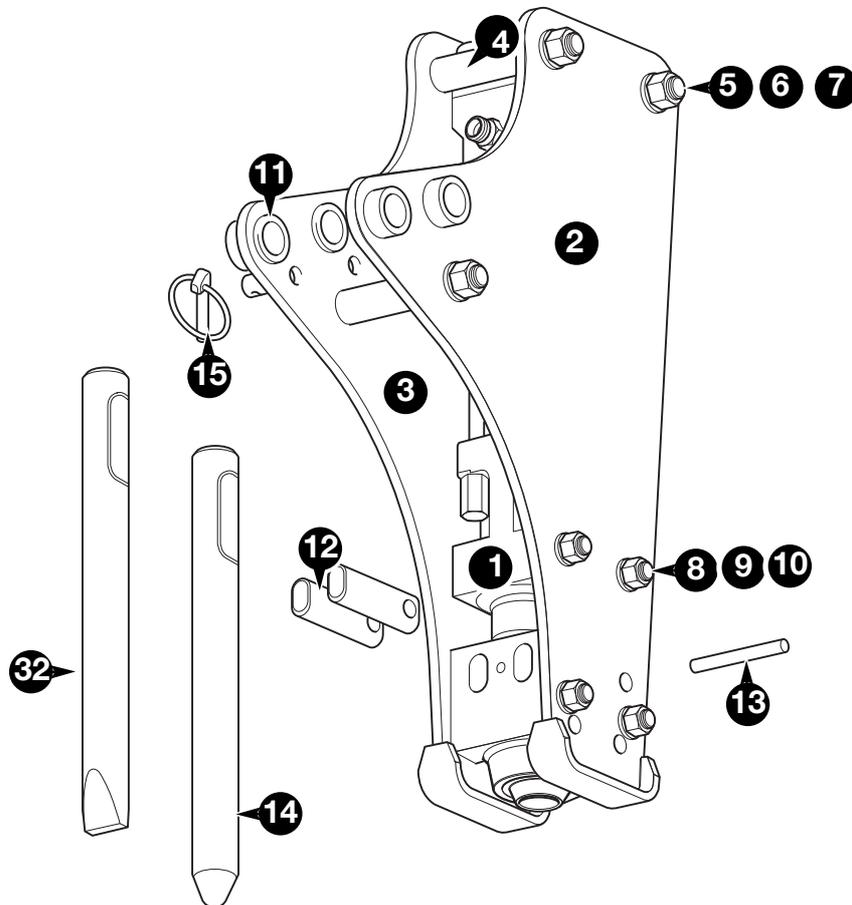
C050670

Alternative Equivalent Grease Types

Esso EOL 232
Wynns GS80
Shell Kuggfet
Shell Extrema MDS
Klüber Crafloscon C-SG O Ultra

Parts List

ITEM	QTY	PART NAME
1	1	HM65 Powercell
2	1	RH Sideplate
3	1	LH Sideplate
4	3	Spacer
5	3	Bolt M20 x 160
6	3	Hex Nut M20
7	6	Lock Washer
8	4	Bolt M16 x 150
9	4	Nut M16
10	8	Self Locking Washer
11	4	Bush Flanged
12	2	Bar Retaining
13	1	Tension Pin
14	1	Moil HM65
15	2	Linch Pin
16	1	Grease - Hammer PO64
17	1	Label Noise Warning
18	1	Label - Warning
19	1	Decal - Grease
20	2	Decal HM65
21	1	Decal - HM Safety
22	1	Data Plate
23	1	Operator Manual (9801/0081_5)
24	1	Grease Gun
32	1	Chisel HM65 (Option)



Sample manual. Download All pages at:

<https://www.aresairmanual.com/downloads/jcb-hammermaster-rockbreakers-service-repair-manual/>