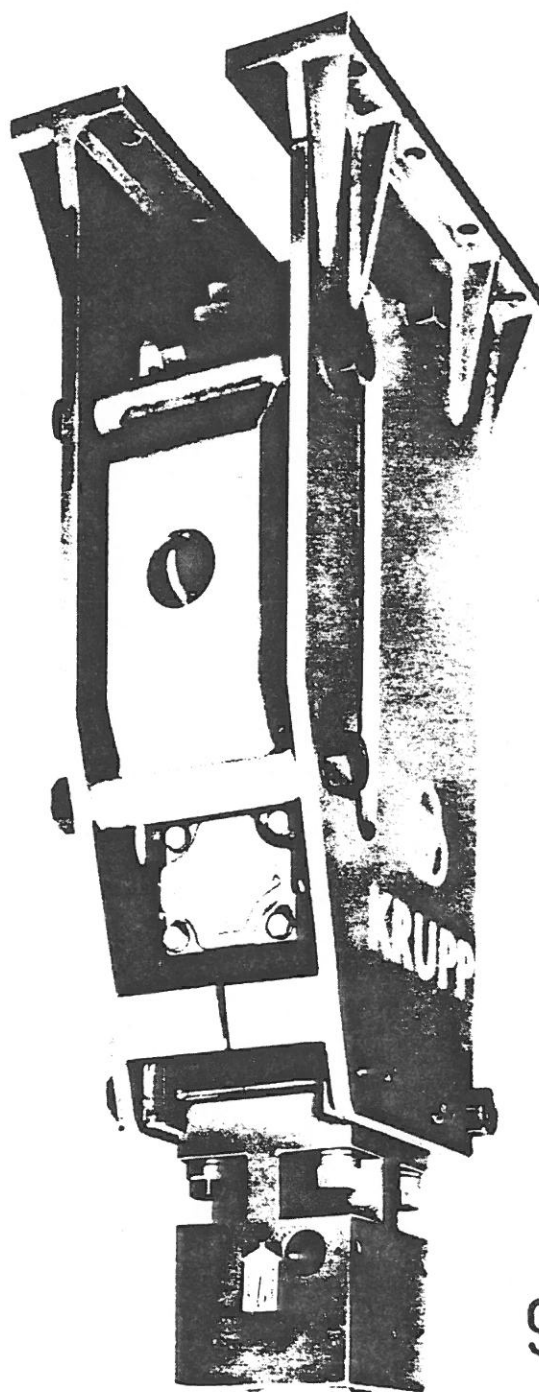


List of spare parts
and operating instructions

Krupp Hydraulic Hammer HM 600 C

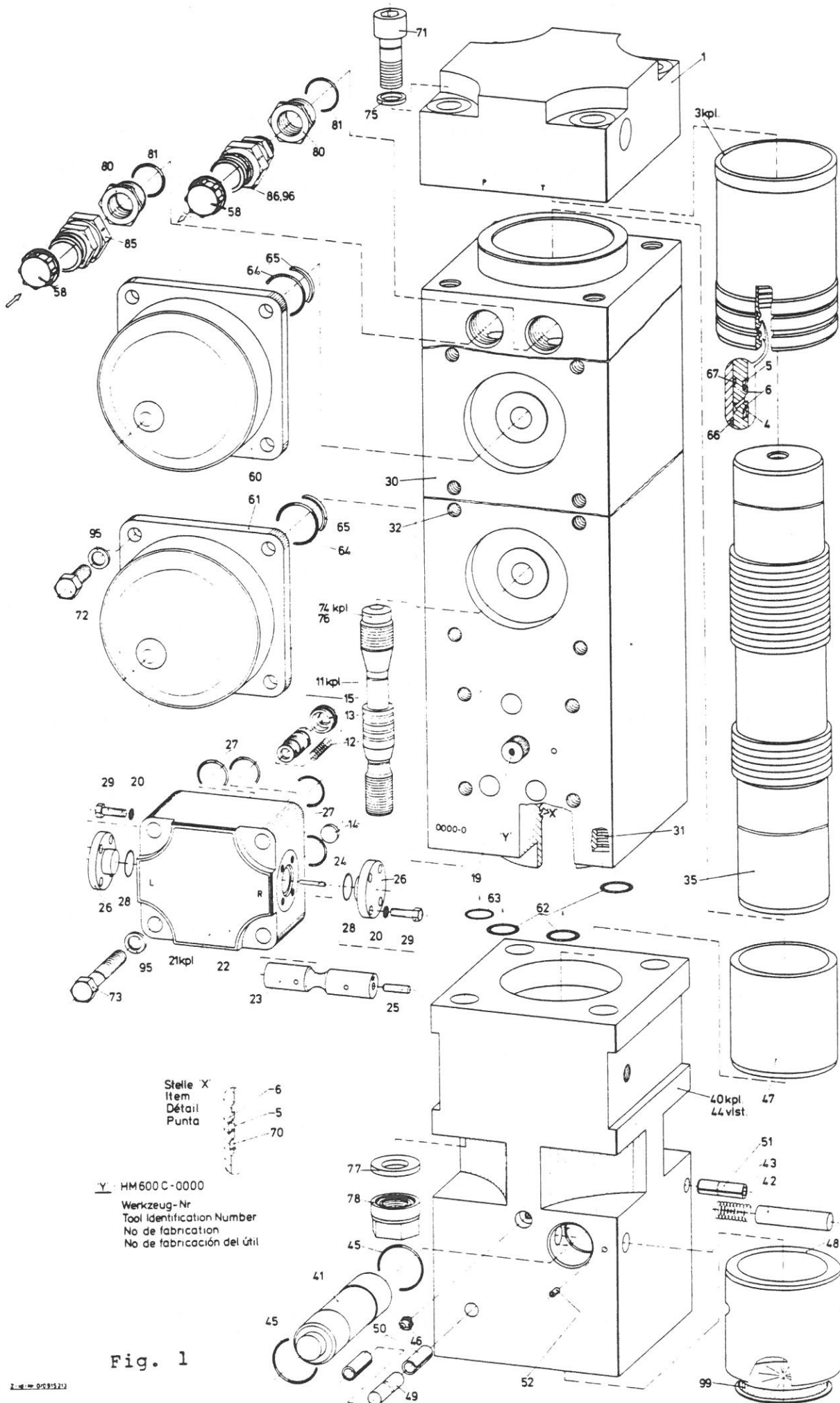


960 - 7002

Technical data

Krupp Hydraulic Hammer HM 600 C

Service weight	kg	900
Number of blows	min. ⁻¹	380 - 520
Oil flow	l/min.	65 - 90
Operating pressure	bar	150



1. LIST OF SPARE PARTS

Part- Ident-No. Qty. Description
No.

	0479186	x	hydraulic-hammer HM 600 C with bracket, compl.
	0480505	1	bracket, compl. (spare parts on page 6)
	0476550	x	hydraulic hammer HM 600 C
1	0328028	1	cylinder cover
3	0328024	1	seal bushing, compl. with parts 4, 5 = 1x, 6 = 2x
4	0328048	1	sealing ring
5	0328043	2	slide ring packing
6	0328047	3	O-ring
11	0328212	1	regulator, compl. with parts 12 - 15
12	0328020	1	regulator spring
13	0330509	1	threaded ring
14	0328006	1	pressure plate
15	0328005	1	slide valve
19	0921413	1	lock pin
20	0432695	8	spring ring
21	0328035	1	control valve compl. with parts. 20 - 29, without regulator item 11
22	0328004	1	control housing
23	0328008	1	control piston
24	0328009	1	control pin I
25	0328011	1	control pin II
26	0328010	2	control housing cover
27	0314368	4	O-ring
28	0314381	2	O-ring
29	0103296	8	hexagon bolt
30	0480591	1	cylinder, compl. with parts 31 and 32
31	0478306	4	threaded insert
32	0186601	12	threaded insert
35	0328221	1	percussion piston
40	0328268	1	lower hammer part compl. with parts 41 - 52
41	0328275	1	pin
42	0328276	1	lock pin
43	0480233	1	pressure spring
44	0328269	1	lower hammer part with parts 47 - 50
45	0314373	2	O-ring
46	0118136	1	tapered grease nipple
47	0328271	1	wear bushing
48	0328272	1	wear bushing
49	0921127	1	pin
50	0100536	2	clamping sleeve
51	0206736	1	clamping sleeve
52	0100483	1	clamping sleeve
58	1353487	2	screw cap
60	0328044	1	pressure accumulator
61	0328045	1	pressure accumulator
62	0479139	3	gasket
63	0479140	1	gasket
64	0314364	2	O-ring
65	0328046	2	back-up ring
66	0314377	1	O-ring
67	0314376	1	O-ring

Part- Ident-No. Qty. Description
No.

70	0328040	1	stripper ring
71	0103785	4	cylindrical screw
72	0105145	8	hexagon bolt
73	0103149	4	hexagon bolt
74	0920744	4	stud bolt, compl. with parts 76 - 78
75	0480191	4	washer
76	0921415	4	stud bolt
77	0921373	4	washer
78	0916385	4	nut
80	0328190	2	threaded bushing
81	0314382	2	O-ring
85	0332406	1	check valve
86	0332494	1	check valve with part 96
95	0480187	12	washer
96	0068212	1	special spring
99	0995337	1	dust cap
-	0479133	1	set of seals, compl.

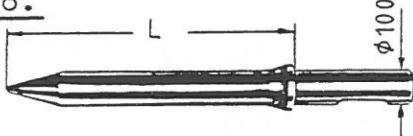
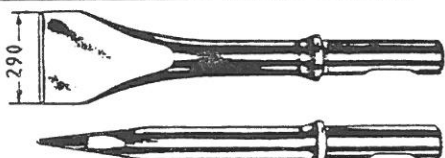
Please indicate the tool no. in orders for spare parts.

2. ACCESSORIES

2.1 Inserted Tools

Tools of a high-quality special steel hardened to the core are used. The uniformly high strength on the entire cross section enables the tools to be re-machined. The tapered point tool can be simply re-machined on a lathe equipped with hard metal tools. Flat chisels and spades can be re-sharpened on a stationary grinding machine.

I N S E R T E D T O O L S

Description	Design	Length L	Part ident. no.	
Moil point		660 mm	0476591	
Moil point		900 mm	0480215	
Moil point with pyramidal point		660 mm	0480497	
Flat chisel	a	660 mm	0480211	
Flat chisel	a	900 mm	0480321	
Flat chisel	b	660 mm	0480213	
Flat chisel	b	900 mm	0480151	
Spade	a	660 mm	0479216	
Spade	b	660 mm	0479217	

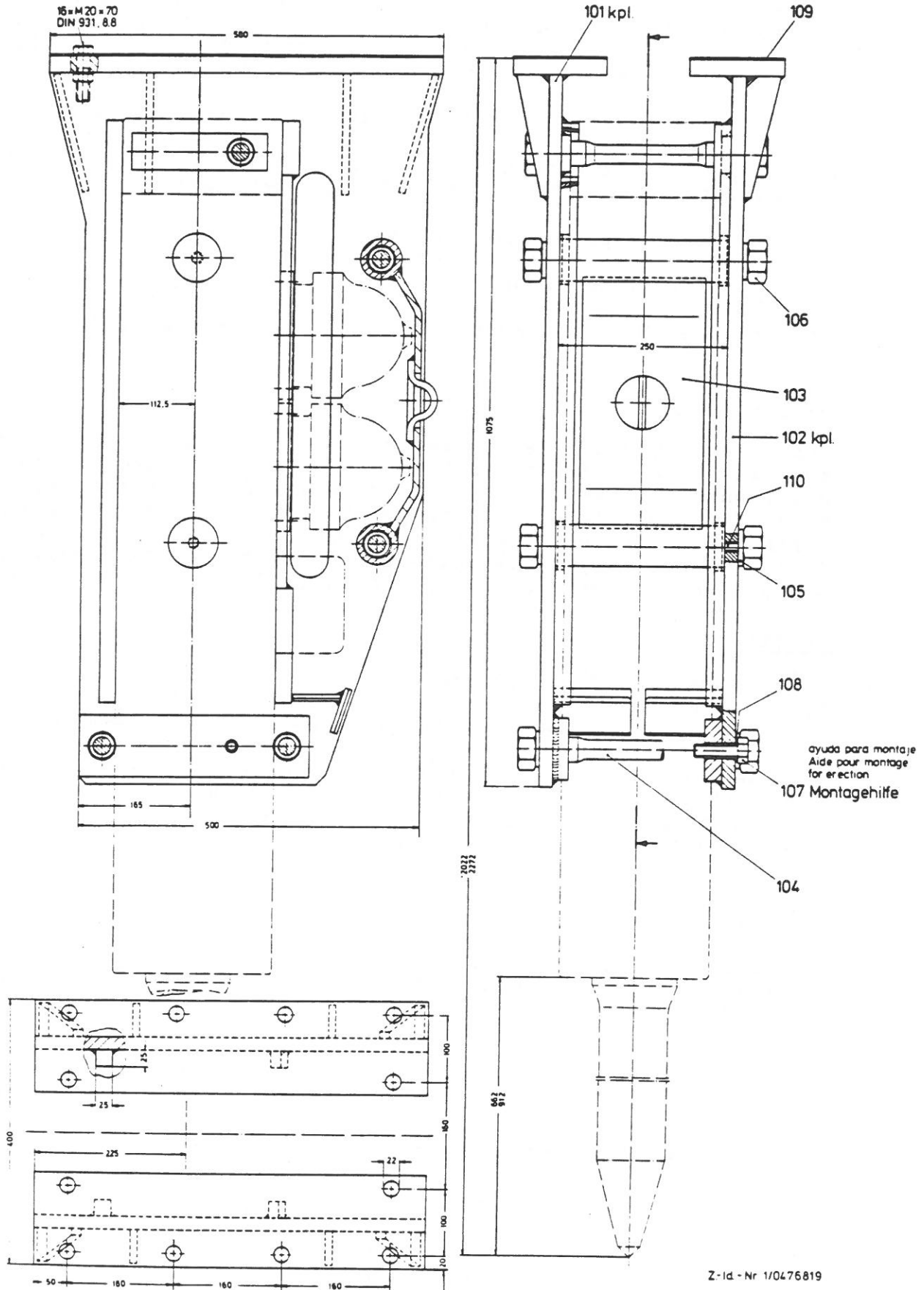
a: Bit crosswise to the jib direction
b: Bit in parallel with jib direction

Table 1

2.2 Bracket (see Fig. 2)

Part No.	Part ident-No.	Qty.	Description
	0480505	1	bracket, compl.
101	0994117	1	cheek, left-hand
102	0995314	1	cheek, right-hand
103	0479491	1	guard plate
104	0921369	5	threaded pin
105	0480547	10	washer
106	0921371	10	hexagon nut
107	0105157	2	hexagon bolt
108	0204395	2	spring ring
109	0480587	2	plate
110	0480691	4	clamping buffers

Hammer bracket



Z-Id - Nr 1/0476819

Fig. 2

2.3 Attachment Component

The HM 600 is mechanically mounted to the carrier unit by means of the attachment component. On the one hand it is firmly bolted to the bracket and on the other hand coupled to boom of the excavator by means of the pins belonging to the excavator shovel.

For every excavator a special attachment component is required.

For supplying the correct attachment component it is necessary to indicate in the order the following details:

1. Type of carrier unit
2. Model No. or year of construction
3. Type of boom

More than a 100 attachment components can be supplied.

2.4 Conversion kit

The hammer is connected to the hydraulic circulation system of the excavator by means of the conversion kit. There are two different kits available which are adapted to the battery voltage of the carrier unit. The conversion kit incorporates all parts for the attachment of the hammer.

Table 2 shows only those spare parts which, during operation, are subject to outside wear (look Fig. 3).

Table 2

Part No.	Part idten No.	Qty.	Description
----------	----------------	------	-------------

	0995654	1	conversion kit, cpl. 24 V
203	0995552	1	KRUPP flow divider 24 V
204	0332294	2	HP hose, NW 20, 2.3 m lg.
205	1333740	2	ball valve
206	0992579	1	magnet 24 V

12 V kits request.

After fitting the conversion kit, release and close the pressure line leading to the hammer. Set the pressure limiting valve at the KRUPP flow divider to $p_{max} = 180 \text{ bar}$ and lead it.

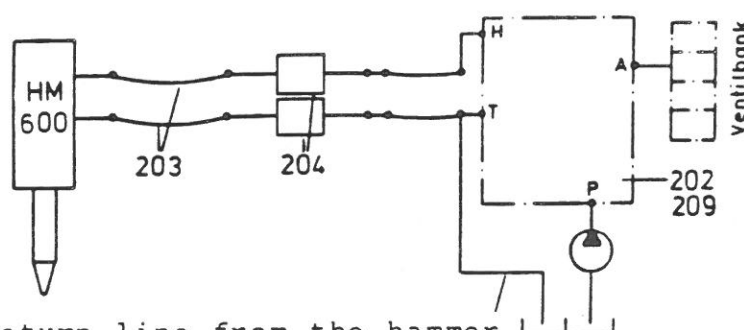
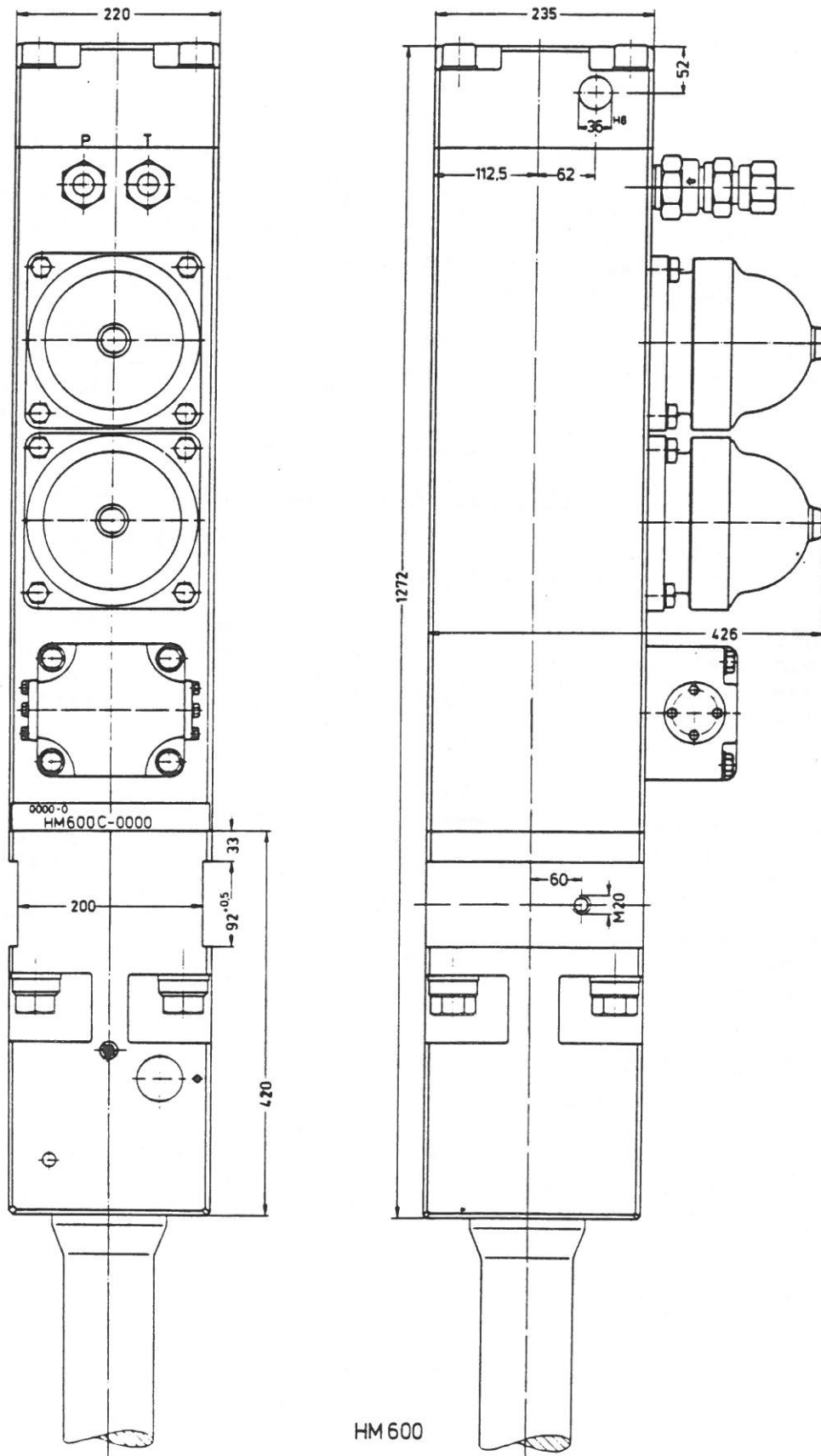


Fig. 3

Attention: return line from the hammer going directly to the tank.

Main Dimensions



Z-Id - Nr 1/0328850

Fig. 4

3. SPECIAL PARTS AND SPECIALITIES OF THE HM 600

3.1 Special Parts

3.11 Economic Design

To enable the hammer HM 600 to be attached to excavators with a smaller pump capacity an alternative regulator is provided which reduces the number of blows and, consequently, the oil flow rate. The complete standard regulator, part No. 11 (Identification No. 0328212), is then to be replaced by the complete alternative regulator (Identification No. 0328210).

Complete regulator	Identification No.	Oil flow rate
Standard regulator	0328212	90 litres/min.
Alternative regulator	0328210	65 litres/min.

3.12 Hammer with and without Automatic Shut-off Device

The standard design of the HM 600 is supplied with an automatic shut-off device responding during idle blows.

There may be applications where the hammer must keep running when the percussion piston does not reach the shank. In such case the standard percussion piston, part No. 35 of the list of spare parts, is replaced by the special percussion piston, Identification No. 0328003.

Design	Piston-Id.-No.	
with automatic shut-off	0328221	Tool HM 600 C compl. 0476550
without automatic shut-off	0328003	Tool HM 600 D compl. 0333588

3.2 Specialities

3.21 Pressure Regulation

All KRUPP hydraulic hammers including HM 600 are provided with a pressure regulating unit which in the case of a reduced pump delivery maintains the pressure and reduces the number of blows only.

3.22 Idling Behaviour of the Hammer

In the standard design the hammer is safe during idle operation, i. e. the piston (design without automatic shut-off device) is hydraulically braked in a damping buffer during idling. In the case of a design with automatic shut-off device the hammer is switched-off during idling.

3.23 Check Valves

For safety purpose check valves are provided in the pressure and return lines direct at the hammer.

- a) The check valve (part No. 85) on the high-pressure side prevents the accumulator from suddenly unloading the high-pressure pipe.
- b) The pre-stresses check valve (part No. 86) prevents the pressure in the low-pressure system of the hammer from dropping below 5 bar. The above check valves, parts Nos. 85 and 86, are directly screwed into the hammer together with part No. 80.

Marking

Feed line at P = red (direction of arrow to the hammer)
Return line at T = blue (direction of arrow away from the hammer)

4. OPERATING INSTRUCTIONS

4.1 Hydraulic-Oil

All hydraulic oil brands used in the excavators are suitable for the operation of the HM 600.

4.11 Non-inflammable pressure fluids

Important

In case non-inflammable pressure fluids are required (for example HS - F - or HS - D) please ask hammer manufacturer for special seals. Also observe special limits of the operating temperature contrary to item 4.12.

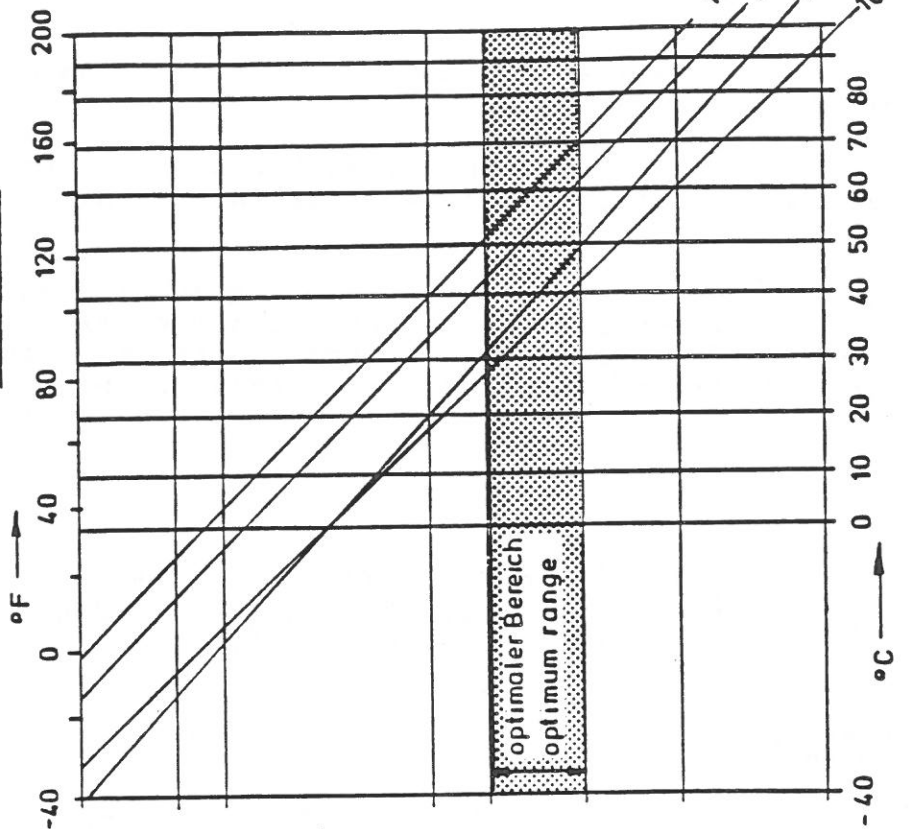
4.12 Oil Temperature

When breaking and destroying materials by percussion tools idling and light-load operations cannot be avoided. During idling the complete hydraulic energy absorbed by the hammer is converted to heat, thus increasing the oil temperature. Therefore a sufficient cooling of the oil is required. The temperature of the oil in the tank must not exceed 80°C.

4.2 Oil Filter

As in all hydraulic systems, the oil for operating the HM 600 must be sufficiently filtered. It is sufficient to provide for a return flow filter with magnetic separator and a mesh of 50 μ .

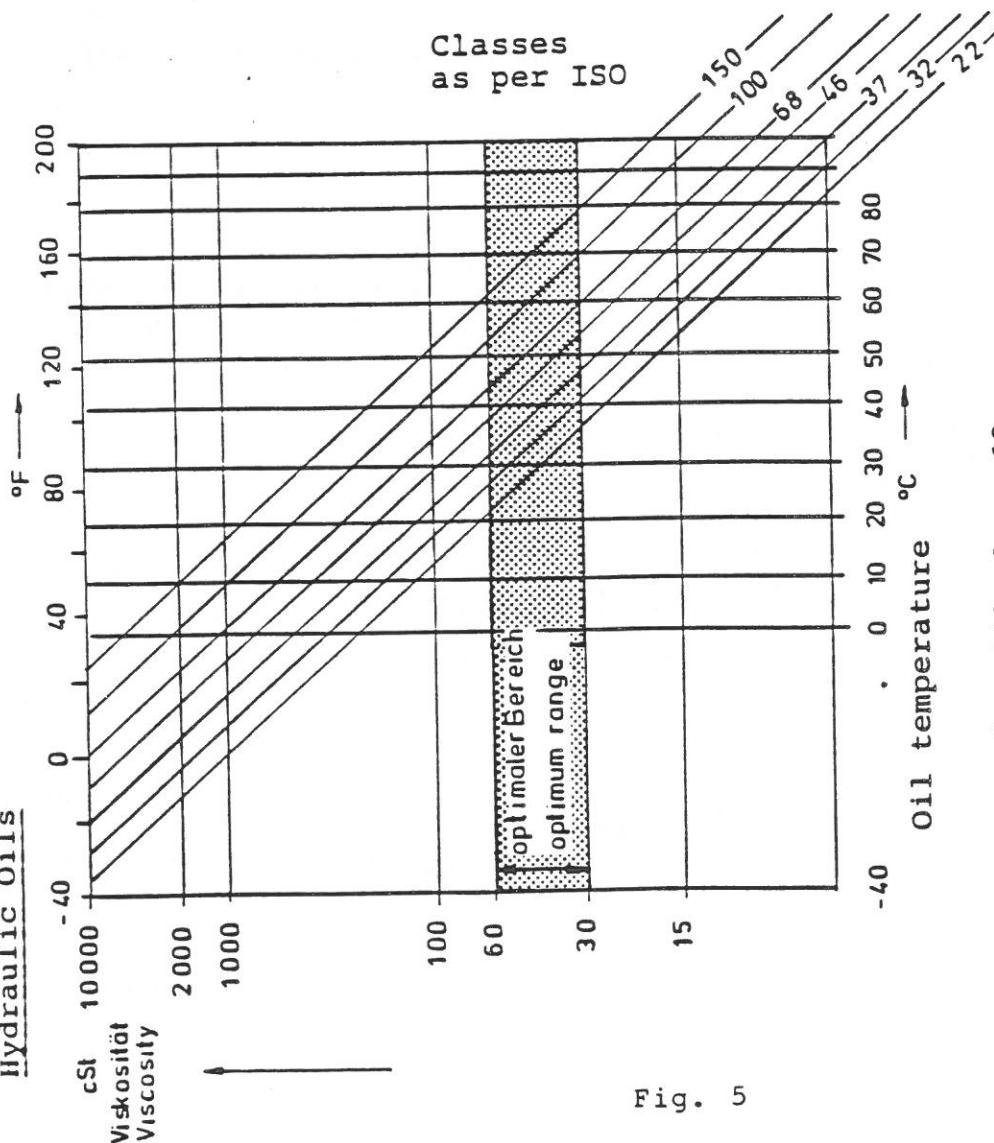
Motor Oils



Example: Oil class 15W-40

Optimum oil temp. range = 50...70°C

Hydraulic Oils



Example: Oil class 68

Optimum oil temp. range = 40...60°C

OPERATING INSTRUCTIONS

Hydraulic Oil

For hydraulic hammer operation, the above diagrams should be observed for hydraulic and motor oils for the carrier units:

Max. initial viscosity = 2000 cSt. Optimum viscosity range = 30...60 cSt.

Max. oil temperature (for short period) = 80°C

Fig. 5

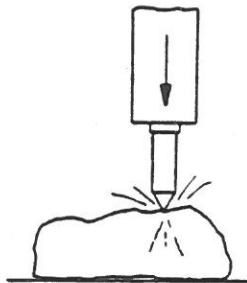
4.3 Operating the HM 600 C

Basic rule:

The HM 600 C with working steel is not to be used as a crowbar.

Using the hammer as a crowbar could cause serious damage to the hammer, the hammer bracket and the working steels. It is therefore of utmost importance that the following general operating instructions be observed:

(a) Contact pressure



Hammer must be in contact with the material to be demolished before operation is started.

Never operate with the working steel suspended in the air.

(b) Contact pressure direction

Position 1: Wrong!

Contact pressure is not exerted axially through the hammer.

Position 2: Correct!

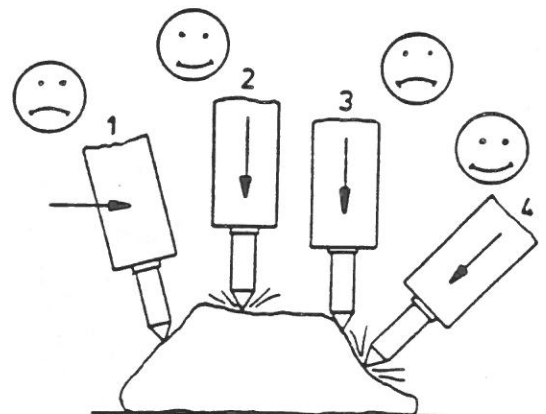
Contact pressure is exerted axially through the hammer. The bit of the working steel is positioned at right angles to the material surface.

Position 3: Wrong!

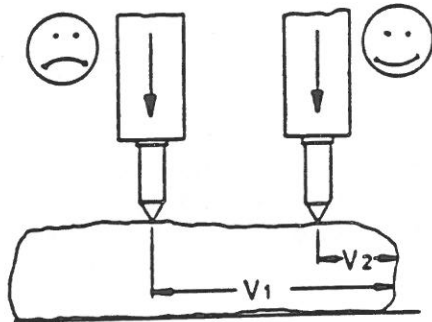
The bit of the working steel will slip.

Position 4: Correct!

Contact pressure is exerted axially through the hammer. The bit of the working steel is positioned at right angles to the material surface.



(c) Advance



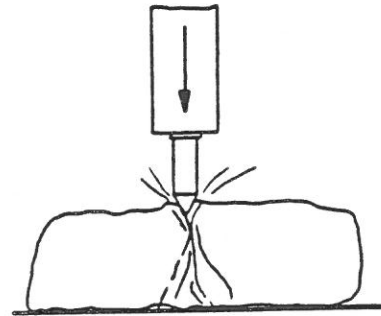
Advance V1: Wrong! Too far away from the edge.

Advance V2: Correct! Far more efficient than V1.

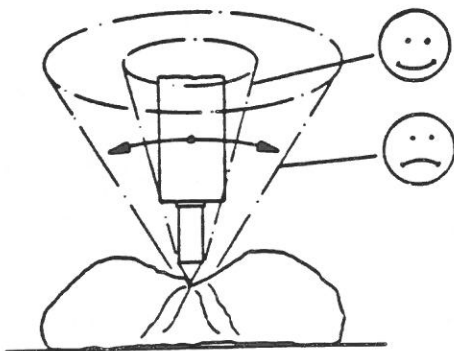
The advance depends on the type of rock.

(d) Early shut-off

As soon as the material shows continuous cracks and starts to break up, shut off the hammer immediately so as to avoid any possible damage which may be caused by idle blows. If no visible results have been achieved after continued operation, re-set the bit of the working steel at another point on the material and start again.



(e) Hammer panning



Dust collecting under the bit of the chisel acts as a buffer and has a negative effect on crushing or breaking. Slight small-angle panning causes such rock dust to be projected out to the sides. However, too large an angle subjects the moil point and the hammer to bending stresses which can cause damage.

4.4 Work under Water

On principle the KRUPP HM 600 hydraulic hammer is suitable for underwater operation, however, for this purpose the following requirements must be met:

- Chromium-plated percussion piston

To avoid damages by corrosion a percussion piston must be installed which is hard-chromium-plated on its lower diameter. The underwater design of the HM 600 is provided with a chromium piston as standard.

Part No.	Ident-No.	Qty.	Description
----------	-----------	------	-------------

	0995009	x	hydraulic hammer HM 600 F with hammer bracket
	0480505	1	hammer bracket, compl. (for parts list see page 6)
	0479061		hydraulic hammer HM 600 F
35	0479059	1	percussion piston
-	1843385	1	connector kit

- Aeration of the percussion chamber

The aeration of the percussion chamber is intended to prevent water from penetrating into the inside of the hammer. For this purpose the tapered grease nipple (part 46) provided as a standard is to be removed and an air hose is to be connected through which an air quantity of approx. 1 m³/min. is supplied from a compressor.

The water pressure acting on the hammer should be exceeded by the air pressure by about 1 to 2 bar.

It is by all means required to turn on the air flushing before submerging the hammer.

Furthermore it is recommended to let the flushing air act for some minutes to dry the percussion chamber after completion of work.

Without this blast air system damages are caused during underwater work resulting in a failure of the hammer. No warranty claims can be raised for such damages.

5. MAINTENANCE OF THE MECHANICAL EQUIPMENT

5.1 Screw Connection and Spanners

All screw connections of breakers are subjected to particular stresses. Therefore all bolts and nuts of new tools should be checked every day and later every week.

The following spanners are required:

Spanner sizes and torques

Part Ident-No.	Parts and Spanner Sizes	Torque Nm
0119581	Engineers wrench SW 30/32 for part 101 and attachment component	
0209253	Key, hexagon sockets screws SW 19 for part 71	700
0313189	Box wrench SW 30 for attachment component	
0314519	Engineers wrench SW 46 for parts 85 and 86	
0430613	Engineers wrench SW 41/46 for hose connection	
0430622	Box wrench SW 13/15 for part 29	25
0430642	Box wrench S" 24/27 for parts 72 and 73	200
0430991	Tee wrench SW 8/9 for part 46	
0439439	Slugging wrench, box SW 55 for part 103	2.500
0478217	Box wrench SW 55 for part 103	2.500
0478558	Engineers wrench SW 41 for hose connection	
1146182	Tee wrench SW 24 for parts 72 and 73	200
1147270	Slugging wrench, box SW 46 for part 78	1.600

5.2 Inserted Tools

Only use inserted tools of list of accessories 2.1. Before mounting and regularly every 3 operating hours the shank has to be lubricated with high-pressure grease through the grease fitting (part-No. 46 - Fig. 1) in tool holder.
For lubricating purpose use a high-performance slide bearing grease for high temperatures with molybdenum sulphide additions (e.g. Retinax AM of Messrs. Shell).

Inserted tools have to be changed when the nominal dia. the shank of 100 mm has worn down to 98 mm dia.

5.3 Wear bushings

The wear bushings (parts 47 and 48) have to be changed when their nominal inside diameter has worn from 100 mm to 104 mm.

6. MAINTENANCE OF THE HYDRAULIC SYSTEM

6.1 Filter

The filter of a new hammer should be checked and, if required, cleaned in accordance with the following time schedule:

	after	8 hours of operation
	then after	50 hours of operation
and then at intervals of		100 hours of operation

7. FINDING FAULTS

7.1 Reduced Blow Power

- 7.11 Check pressure by means of hydraulic instruments. Check pump and relief valve.
- 7.12 Check back pressure in the return line. The pressure should not exceed 8 bars. Check filter and hose connections.
- 7.13 Chisel jams in the tool holder. This occurs when the force of the boom does not act in the direction of the hammer axis. Correct this direction.

- 7.14 High-pressure accumulator (part 60, red) is damaged and hose vibrates. This is caused by a too low operating pressure resulting in destruction of the accumulator bladder. The accumulator becomes inoperative.

Replace the accumulator.

Low-pressure accumulator (part 61, blue) is damaged and the return hose vibrates. This is caused by a too low return flow pressure. Measure the return flow pressure and adjust it, if required by fitting a throttle, to 5 to 8 bar. When the accumulators are replaced, check O-ring (part 64) and back up ring (part 65). It is recommended to replace O-ring and back up ring each time an accumulator is replaced.

7.2 Hammer does not start

- 7.21 Pressure and return lines are reversed.
- 7.22 Damaged screw coupling blocks the feed line.
- 7.23 Parts of the controls are blocked by dirt. Replace the controls and clean the contaminated unit in the workshop.
- 7.24 Percussion piston (part 35) jams due to dirt. Clean the hammer in the workshop.

7.3 Oil leakage

- 7.31 After new packings have been fitted, larger quantities of oil may leak in the beginning, however, after some hours of operation the packings will be tight.
- 7.32 Oil leakage at the screw couplings and check valves (parts 80, 85, 86), tighten them by means of spanner SW 41/46, identification No. 0430613.

7.33 Oil leaks at accumulators (part 60 and 61).

When oil is leaking on the side of the threading, the accumulator is damaged and has to be replaced.
When oil leaks below the flange surface, tighten fastening bolts part 72 and fit new gaskets and back-up rings (parts 64 and 65), if required.

7.34 Oil leaks at themoil point.

The packing (parts 5 and 6) is damaged and must be replaced.

7.35 Oil leaks between cylinder (part 30) and lower part (part 40).

Nut (part 78) must be tightened or see 7.34.

If required, replace gaskets 62 and 63.

7.36 Oil leaks between complete valve block (part 21) and cylinder (part 30).

O-rings (part 27) are damaged and all four O-rings are to be replaced.

8. PUTTING THE HAMMER OUT OF OPERATION

8.1 For a short period:

- Lay HM 600 on the ground
- Cut-off power to hammer hydraulics on the carrier unit
- Observe safety regulations when putting carrier out of operation.

8.2 For a longer period:

If the hydraulic hammer is to be put out of operation for longer than 14 days, the following maintenance work must be carried out:

- Bleed gas completely from piston accumulator
- Remove working steel
- Open screw connections P and T
- Using auxiliary tool, press percussion piston into highest stroke position
- Re-close screw connections P and T
- Give wear bushes a thick coating of grease
- Seal lower wear bush with dust cap (part 99)
- Store HM 600 with adapter in vertical position
- Place HM 600 without adapter upside down in vertical position on the hammer bracket.

8.3 Maintenance

Maintenance work on the hydraulic hammer HM 600 is carried out by the carrier unit operator. All valid regulations concerning both hydraulic hammer and carrier unit must be observed.

9. GUARANTEE

Wear parts such as: wear bushes part no. 47 + 48
holding pin part no. 41
working steels
are not covered by the guarantee.

10. HEALTH AND SAFETY STANDARDS REGULATIONS

During operation, the hydraulic hammer's critical noise level of 90 dB(A) may be reached or exceeded. If this is the case, the machine operator and any other workers in the noise area must wear personal noise protection gear in accordance with UVV regulations (accident prevention regulations) on "noise" (VGB 121).

I m p o r t a n t !

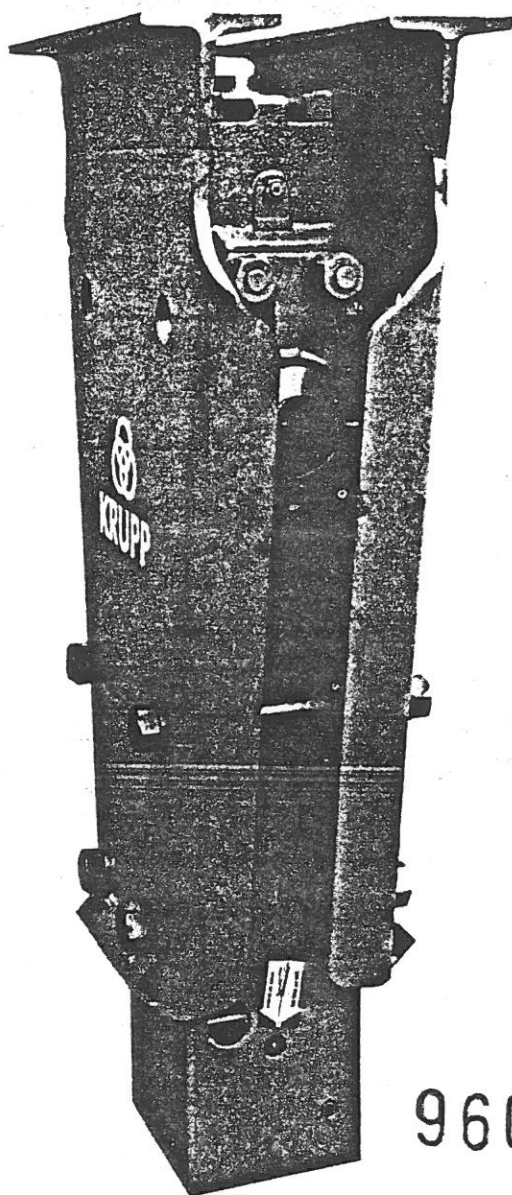
During hammer operation, the front screen and splinter protection apparatus on the cab must be closed!
All workers must be kept away from the immediate area of the hammer when in operation due to the danger of flying rock splinters.

ATTACHMENT INSTRUCTION +

Spare part list for Flow Divider (electrical)
for

KRUPP Hydraulic Hammers HM 200, 300, 550, 600

for installation on excavators in 25 mm pipe diameter



960-7002



KRUPP INDUSTRIETECHNIK

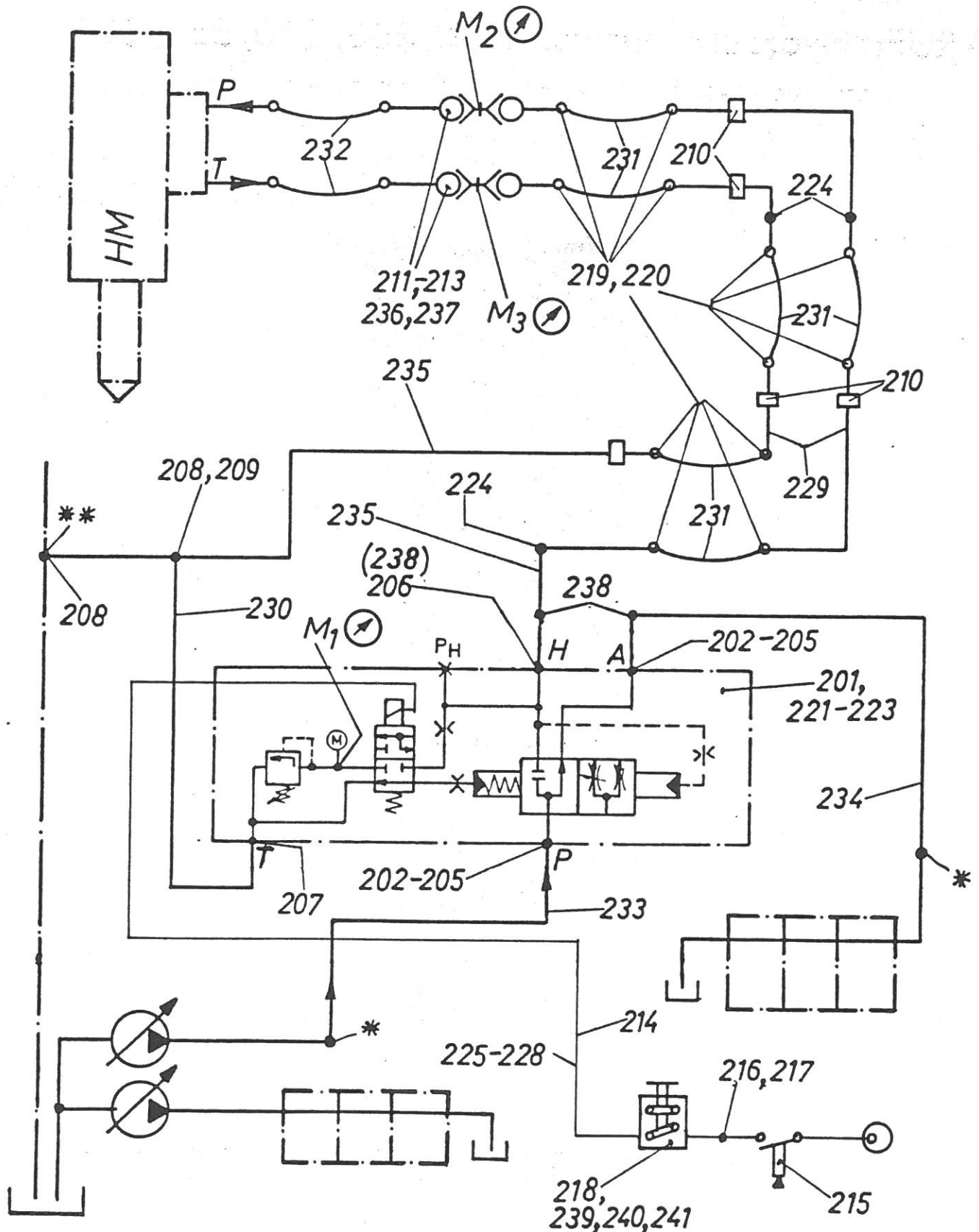
Krupp Industrietechnik GmbH
Werk Essen · Postfach 1021 44 · Helenenstr. 149 · 4300 Essen 1
Telefon (0201) 31901 · Telex 08579331
W. Germany

Service Dpt. Tel. (0201) 3190-619

573
512
612

Positionsplan zum KRUPP Umbausatz:90995654

Position plan for KRUPP installation kit:90995654



*, ** siehe unter 1.3 Übergangsverschr.

*, ** see under 1.3 adaptor

$M_{1/2/3}$ Meßstelle, measuring point

Bild 1
Fig. 1

SPARE PART LIST FOR INSTALLATION KIT 24 V cpl.

ERSATZTEILLISTE UMBAUSATZ 24 V kpl.

Item Pos.	Stock-No. Waren-Nr.	PID-No. TID-Nr.	Qty. Stück	Description Benennung
	90995654	0995654	x	Umbausatz kpl., installation kit cpl.
201	90995552	0995552	1	Druckwaage elektr. 24 V, flow divider
202	90995663	0995663	2	Flanschstutzen XGFS 63/25-S, flange adaptor
203	90995664	0995664	4	SAE-Flanschhälfte, flange half
204	820055	0026393	8	Zylinderschraube M10x35, hex. bolt
205	834956	0314549	2	O-Ring 25x3,53, O-ring
206	847327	0478190	1	Verschraubung GE 25-S, fitting
207	846356	0313875	1	Verschraubung EVW 8-SR, fitting
208	848902	0314475	2	Verschraubung EES 25, fitting
209	848595	0314841	1	Verschraubung KOR 25/8-S, fitting
210	90980128	0980128	20	Rohrklemme RK 3000/25, clamb
211	90995186	0995186	4	Verschraubung GFS 64/25-S, fitting
212	91333740	1333740	2	Kugelhahn SAE 1" DN 25/10, ballcock valve
213			2	Messkupplung, measuring point
214	90920081	0920081	10	Leitung FLKK 1,5 qmm., electr. wire
215	90920093	0920093	1	Zugschalter, switch
216	90920094	0920094	1	Sich. Patrone, electr. fuse
217	90333359	0333359	4	Kabelschuh, cable connector
218	90330446	0330446	1	Fußtaster, foot switch
219	832572	0431240	16	Überwurfmutter, cap-nut
220	835111	0204808	16	Schneidring S 25, grip ring
221	90994675	0994675	1	Haltewinkel, holding angle
222	821240	0103305	3	Sechskantschraube M10x20, hex. bolt
223	813767	0204387	3	Federring, washer
224	848624	0204579	4	Verschraubung G 25-S, fitting
225	90333388	0333388	4	Kabelöse 3,5, cable connector
226	90333389	0333389	4	Kabelöse 4,5, cable connector
227	90995344	0995344	1	Kabelschuh, cable connector
228	90920766	0920766	1	Kabelschuh, cable connector
229	14608041	0330443	6	Rohr 25 x 2,5 x 3000, pipe
230	90916680	0916680	1	Schlauch kpl. ST1 NW 5x2500, hose
231	14603013	0332293	6	Schlauch kpl. 2ST 20E1 E1x1500 W, hose
232	14603014	0332294	2	Schlauch kpl. 2ST 20BO B0x2300 W, hose
233	90995666	0995666	1	Schlauch kpl. 4SP 20DKO, SAE 3/4" 90°x1500, hose
234	90995667	0995667	1	Schlauch kpl. 4SP 20DKO, SAE 3/4" 90°x2300, hose
235	90995669	0995669	2	Schlauch 2ST 20 E1, B0x2300, hose
237	836203	0478859	2	Verschlußbutzen 25-S, protection öluga
238	848338	0314476	2	Versch. evW 25-S, fitting

1. Installation of the electrical flow divider.

1.1 Explanation of the hydraulic connections

P = Pump
A = Consuming unit (control block)
H = Hammer
T = Tank
M_{1/2/3} = Measuring point

1.2 Positioning of the flow divider

On principle, the flow divider is used for single-circuit excavator systems as well as for double-circuit systems, that means double pumps. In this connection one of the two main pumps is used as hammer feeding pump, comparatively only that pump supplying the valve section in which the swing + track is accommodated.

The valve is to be installed as follows:

- a.: The main pump shall be used as hammer feeding pump.
- b.: The corresponding pump pipe is to be interrupted at a suitable point between pump and control block.
- c.: A connection shall be made by means of a tube, item 233, between the pump and connection "P" of the pressure scale.

By means of a tube, item 234, the connection "A" shall be connected with the control block (consuming unit).
- d.: The hammer connection "H" is done with tube, item 235.
Continued installation will be according to item plan, page 2 (fig. 1).
- e.: The tank connection "T" is done with tube line, item 230. Near the tank connection the hammer return pipe, item 235, is to be connected.

C A U T I O N :

In case of carrier units requiring the use of oil coolers the total return shall be carried through via the oil cooler (part No. 90 992 439).

1.3 Transition screwing

On all those points marked with *, ** the corresponding transition screwings according to special parts list shall be used per carrier unit.

1.4 Piping of connections "P" and "A"

In case the connection pump - connection "P" flow divider as well as connection "A" flow divider - consuming unit (control block) shall be piped, the pipe, item 229, instead of tubes, item 233 and 234, shall be used.

2. Pressure adjustment on the electrical flow divider

2.1 Setting values

Pressure (bar)	Hammer Type HM	200	600	550	300
P _{max.} (dyn.)		150	150	170	150
P _{max.} (stat.)		180	180	200	180

All pressures are to be understood as max. values!
Pressure adjustment only at operating temperature!

2.2 Measuring point

The measuring point M₁ is on the valve body and is equipped with plug connection, as well as measuring points M₂ + M₃ at couplings.

2.3 Statical pressure adjustment

After the installation works have been completed according to item plan, fig. 1, the adjustment of the operating pressure shall be carried through. The statical pressure adjustment is done with uncoupled connection hoses, item 232, on the hammer. The HP gauge shall directly be installed on the measuring point M₁ of the divider. Upon operating the valve, there is max. statical pressure from "P" to "A". (Because valve is now functioning from "P" to "A" like a simple relief valve) Relief valve which needs to be adjusted is located in activation pilot valve (see fig. 5).

2.4 Dynamic pressure adjustment (only possible with HM 550+300)

The HP gauge shall be connected to the measuring point M₂. The hammer is coupled. Spindle of flow regulator at HM has to be turned out cpl.. While hammer is running dyn. pressure is to be adjusted at flow regulator spindle. With HM 200/600 only pressure control can be carried out!

2.5 Return pressure

The counterpressure in the return pipe may not exceed the value of 6 - 8 bar in operating condition. To be measured at measuring point M₃.

2.6 Trouble shooting

2.6.1 Reduced number of percussion:

- Pressure checking as described under 2.3.
- Checking of counterpressure in the return pipe, as described under 2.4.

2.6.2 Hammer does not start:

- Screw couplings, item 212, blocked.
- Screw couplings not completely coupled.
- Operating pressure too low - correction as under 2.3.
- Electrical connections defective - please check.

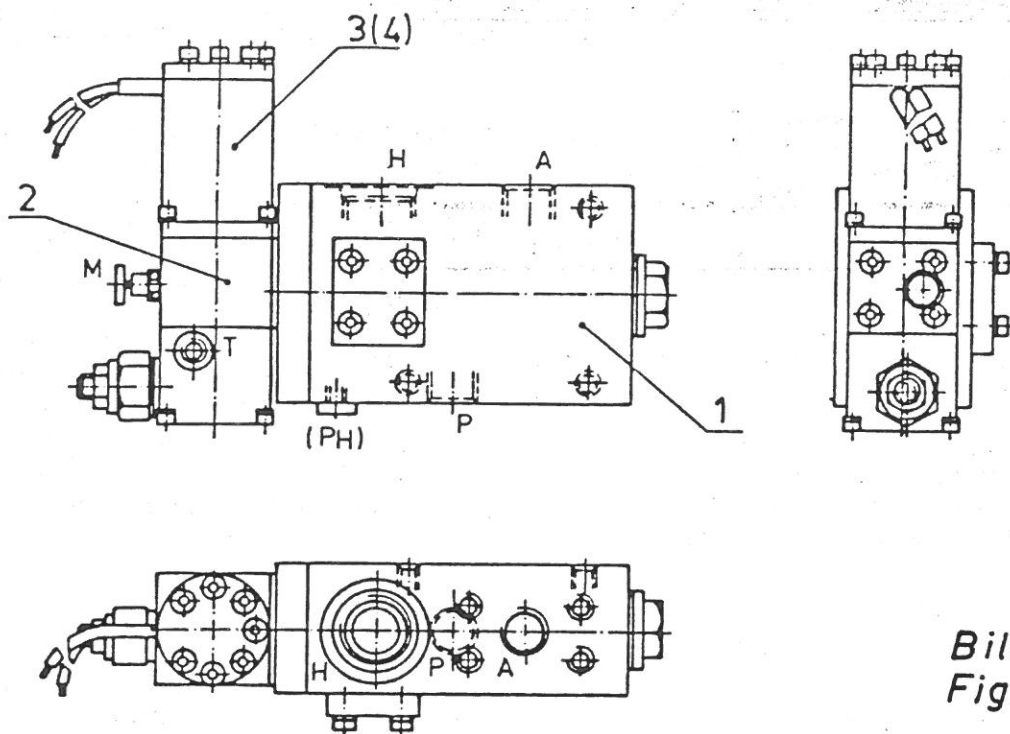
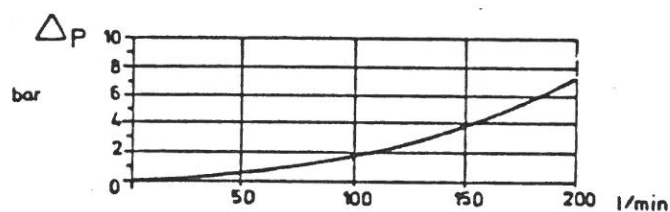


Bild 2
Fig. 2



Flow characteristic
Durchflurkennlinie

P → A

Viskosität: + 50 °C = 4,6 E°
Viscosity

Bild 3
Fig. 3

P_{max} = 280 bar

Q_{max} = 200 l/min

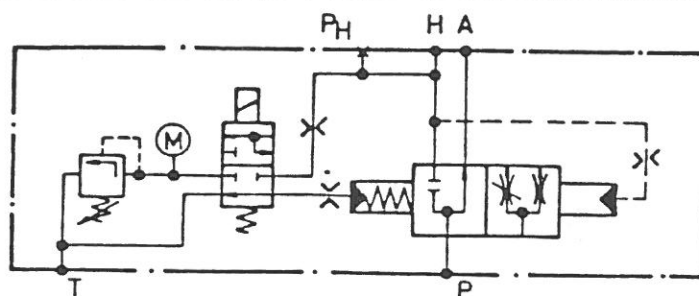


Bild 4
Fig. 4

Anschlüsse Connections		Pos. Item	Stück Qty.	Benennung Description	W - Nr. Stock-No.
M	Meßstelle, measuring point	1	1	Umschaltventil, selector valve	9 0 9 9 5 6 7 2
P	Pumpe, pump	2	1	Pilotventil kompl. mit Magnet pilot valve	12 Volt 9 0 9 9 5 6 7 1 24 Volt 9 0 9 9 5 6 7 0
A	Verbraucher, consumer	3	1	Magnet 12V, magnet	9 0 9 9 2 4 9 3
H	Hammer, hammer	4	1	Magnet 24V, magnet	9 0 9 9 2 5 7 9
T	Tank, tank	5	1	Dichtungssatz kpl. set of packings cpl.	9 0 9 9 5 6 7 3

Hydraulikhammer · Druckwaage · Elekt. ohne Frequenzumschaltung 24 V

Hydraulic Hammer · Flow Divider Comb. Elect. without Freq. Change Valve 24 V

W.-Nr.
part no. 90995 552

Rohr Außen- ϕ pipe diameter	Connection Anschluß			
	(A)	(P)	(H)	(T)
ϕ (in mm)	25	25	25	8

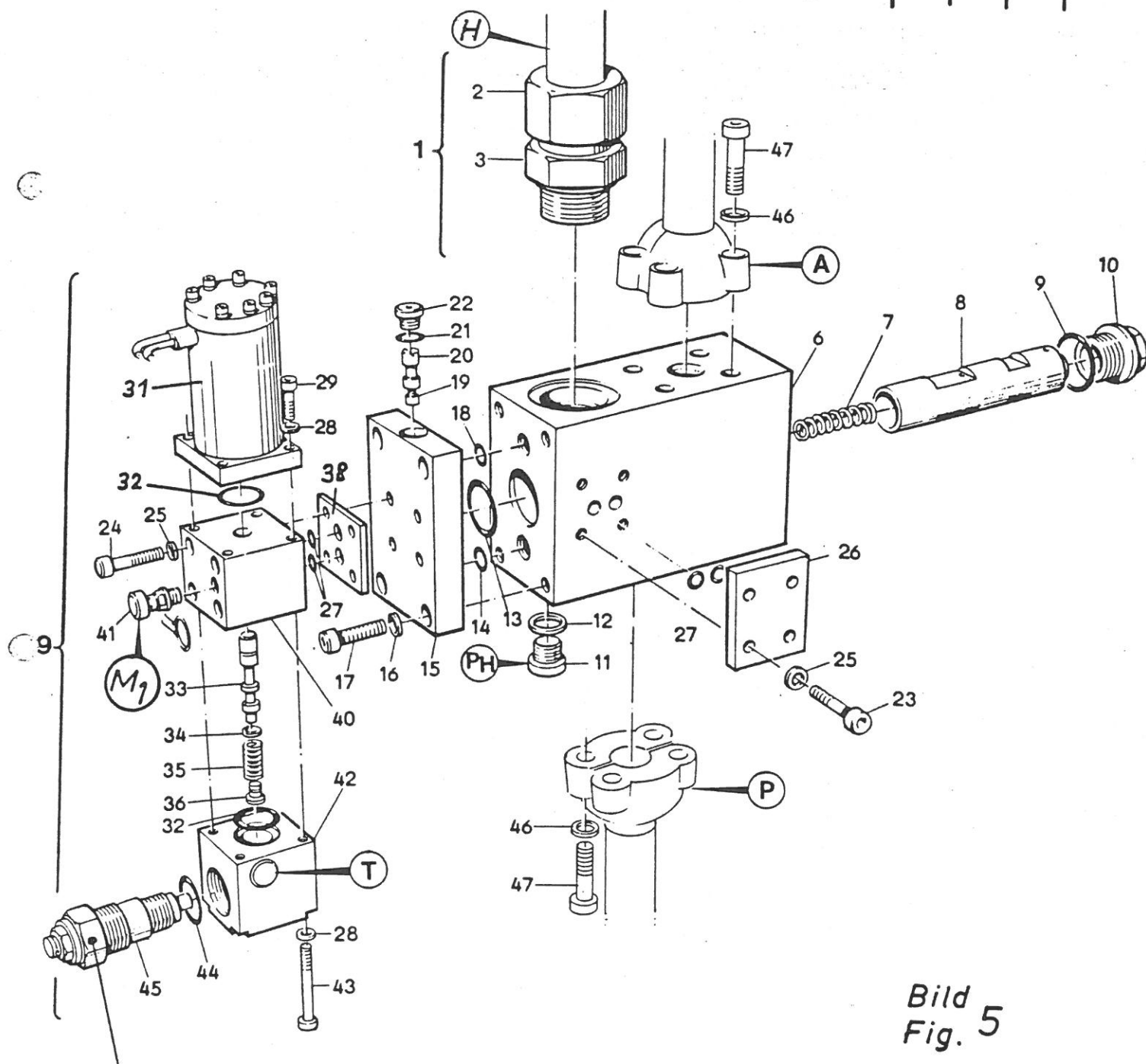


Bild
Fig. 5

DB-Ventil

pressure relief valve

(Nach erfolgter Druckeinstellung kann das DB-Ventil plombiert werden.)

(After pressure adjustment pressure relief valve has to be plumbed.)

HYDRAULIKHAMMER - Druckwaage, elektr. ohne Frequenzumschaltung 24 V
 HYDRAULIC HAMMER - Flow Divider Comb., elect.without freq.Change valve

Pos	Bestell Nr. Part No	Benennung	Description	Menge Quant	Waren Nr. Stock No.
1		Einschraubverschraub, kpl	Insert union cpl.	1	847327
2		Überwurfmutter	Union nut	1	
3		Anschlußschraube	Union connection	1	
4					
5					
6		Gehäuse	Housing	1	90995672
7		Druckfeder	Spring	1	
8		Steuerkolben	Piston valve	1	
9		Dichtring	Seal ring	1	
10		Verschlußschraube	Union plug	1	
11	R1/4"ERMETO	Verschlußschraube	Union plug	1	
12		Ring	Ring	1	
13	9x2.5 70 Sh	O-Ring	O-ring	1	
14	30x2.5 70 Sh	O-Ring	O-ring	1	
15		Zwischenplatte	Distance plate	1	
16		Schnorrnsicherung	Spring washer	4	
17	M8x20DIN912	Zylinderschraube	Soc. hd. screw	4	
18	5x2.5 70 Sh	O-Ring	O-ring	1	
19	Ø 2.5	Düse	Jet	1	
20		Filterstößel	Filter piston	1	
21		Dichtring	Seal ring	1	
22	M8x1 DIN908	Verschlußschraube	Union plug	1	
23	M6x25DIN912	Zylinderschraube	Soc. hd. screw	4	
24	M6x18DIN912	Zylinderschraube	Soc. hd. screw	4	
25	Ø 6	Schnorrnsicherung	Spring washer	8	
26		Deckel	Cover plate	1	
27	Ø 5x2.5	O-Ring	O-ring	5	
28	Ø 5	Schnorrnsicherung	Spring washer	8	
29	M5x20DIN912	Zylinderschraube	Soc. hd. screw	4	
31	Hub3.3	Magnet 24 V	Magnet 24 V	1	90992579
32	Ø15x2.5	O-Ring	O-ring	2	
33		Steuerkolben	Piston valve	1	
34		Scheibe	Washer	1	
35	D 173.B	Druckfeder	Spring	1	
36		Federteller	Spring plate	1	

HYDRAULIKHAMMER - Druckwaage, elektr. ohne Frequenzumschaltung 24 V
 HYDRAULIC HAMMER - Flow Divider Comb., elect. without freq. change valve

Pos	Bestell Nr. Part No	Benennung	Description	Menge Quant	Waren Nr. Stock No.
36	R 1/8"	Zwischenplatte	Distance plate	1	90995670
37					
38					
39		Wegeventil S3/2+D kpl.	S3/2+D way valve cpl.	1	
41		Minimeßanschluß	Micro-measuring unit	1	
40	M5x50 DIN912	Gehäuse	Housing	1	90992437
42		Gehäuse	Housing	1	
44		Dichtring	Seal ring	1	
43		Zyl.-Schraube	Soc. hd. screw	1	
45		DB-Ventil Einsatz kpl.	Pressure control insert	1	
46	M 14	Fächerscheibe	Washer	8	91333155
47		Zylinderschraube	Soc. hd. screw	8	