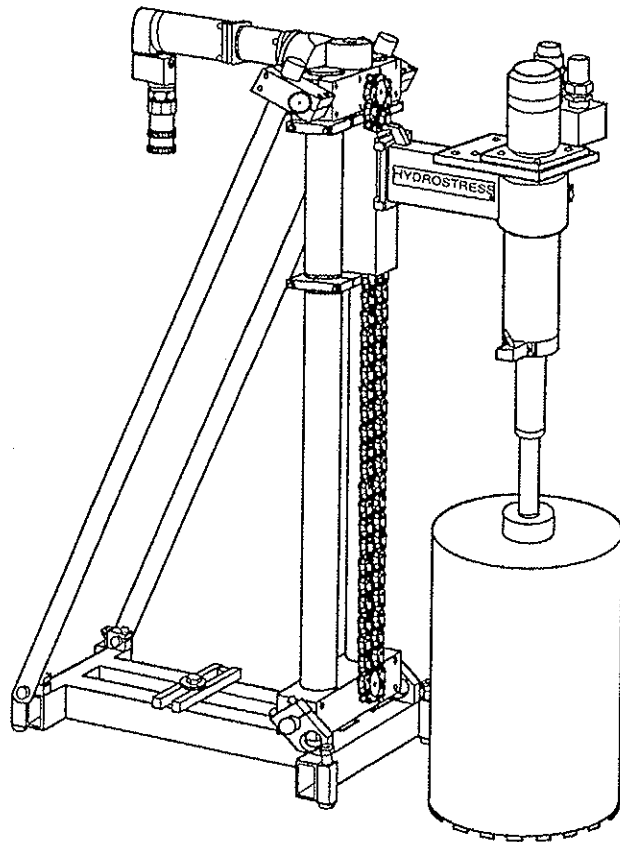


OPERATING INSTRUCTIONS AND SPARE PARTS LIST



CORE DRILL SYSTEM BC-2

PREFACE

Dear customers,

Congratulations on having decided to buy a HYDROSTRESS system - you acquired a highly sophisticated and reliable state-of-the-art unit.

Due to our special efforts in the field of quality assurance, the core drill system BC-2 is a further Swiss, top-of-the-range product:

- high drilling performance
- reliable operation
- high mobility
- easy handling

This manual contains any information required for operation, maintenance, and ordering of spare parts. The exclusive use of genuine HYDROSTRESS spare parts ensures quality and interchangeability.

In the case of neglected or inappropriate maintenance, we refuse to accept any warranty commitment as specified in our terms of delivery.

Any repair work is to be carried out by trained specialists exclusively.

Should you need to know more details concerning your HYDROSTRESS system in order to keep it in perfect condition, please contact our after-sales service for further information.

We would be pleased to hear that working with your HYDROSTRESS system was without any difficulties and troublefree.

HYDROSTRESS® AG

The Management

These instructions are only valid for the core drill systems BC-2, mutation code 001. Technical modifications reserved that do not affect handling and function.

1st Edition, December 1991

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1991

In this manual we use the following remarks:

CAUTION

This headline indicates that any inappropriate compliance or non-compliance of instructions or procedures may cause injuries or fatal accidents.

IMPORTANT

This headline indicates that any inappropriate compliance or noncompliance of instructions or procedures may damage the unit.

NOTICE

The headline indicates an important feature.

Please observe any instructions and safety regulations attached to the unit.

Abbreviations:

ETL	-	Spare parts list
NA	-	Not shown in the illustration
Fig.	-	Figure
Tab.	-	Table
HS	-	HYDROSTRESS

In the following description the core drill system BC-2 will only be referred to as the „drill system“.

GENERAL SAFETY REGULATIONS

Please read these safety regulations very **CAREFULLY**:



Maximum water pressure is 10 bar. If the local water supply provides water at a higher pressure, be sure to insert a pressure reducing valve.



Always check the unit prior to operation according to our instructions and make sure that it is in perfect condition.



Never connect or disconnect hoses when the unit is running or when being under pressure.



Before carrying out any maintenance and repair works make sure that there is no pressure in the hydraulic system.



Connect only equipment authorized by HYDROSTRESS to the core drill system. HYDROSTRESS refuses any liability if other than genuine equipment was used.



Only genuine HYDROSTRESS spare parts will ensure the perfect operation of the unit. HYDROSTRESS declines any liability for damages resulting from the use of other than genuine components.



Observe all general and specific regulations for prevention of accidents of the relevant professional and insurance associations.



The core drill system is designed exclusively for drilling reinforced and ordinary concrete, natural stone and asphalt. Do not drill materials other than specified! In case of inappropriate use HYDROSTRESS will not be responsible or fulfill any warranty commitment.



For operation in electric mode the safety regulations of the manufacturers of the gear motors are to be observed.



To block the support: Tighten all 8 screws (Pos. 9) indicated on page 3-0 !

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TECHNICAL DATA

Weights:

Drill rig	28 kg (short), 32 kg (long)
Drill arm 350 mm with spindle	10 kg
Reduction arm 550 mm	24 kg
Reduction arm 700 mm	28 kg
Reduction arm 1000 mm	31 kg
Vacuum plate	15 kg
Vacuum power pack	30 kg

Drill rig BC-2 short/long	can be put to any drilling angle
Two-speed feed gear	- 1:2 for manual and hydraulic operation
Feed gear	- 1:9 only for manual operation
Hydraulic advance feed extension set for hydraulic motor (optional)	- 1:3 for manual and hydraulic operation (optional)

Electric motors On demand HYDROSTRESS

Drill arm with drill spindle	- 350 mm (standard)
	- 550 mm
	- 700 mm
Reduction arm GR 550	- 550 mm, 1:7
Reduction arm GR 700	- 700 mm, 1:7
Reduction arm GR 700-2	- 700 mm, 1:11
Reduction arm GR 1000	- 1000 mm, 1:14

Hydraulic motors from 8 ccm up to 160 ccm

Tools HYDROSTRESS drill heads, effective length 570 mm
standard connection 1 1/4"

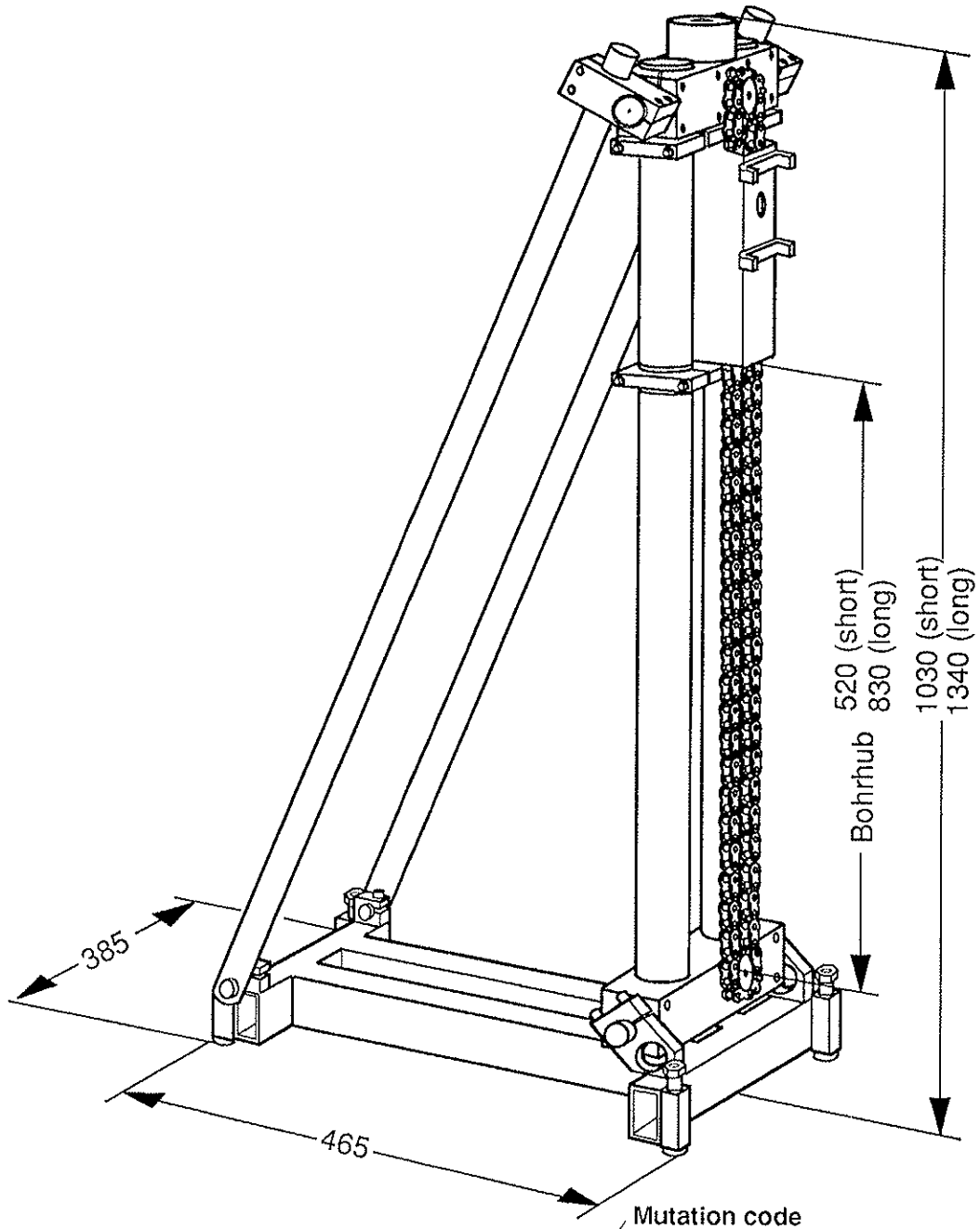
Anchorage - dowel bolts
- vacuum plate

Water supply central

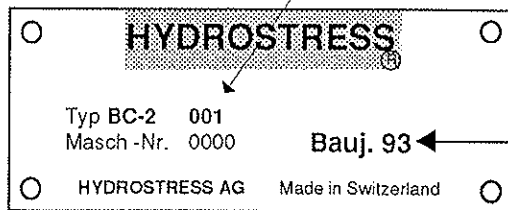
Power of advance feed 5 kN max.

TECHNICAL DATA

(Dimensions in mm)



Drill rig BC-2
Total weight 28 kg (long version: 32 kg)



Year of production

Type plate BC-2

Abb. 0-1 Dimensions and Type Plate

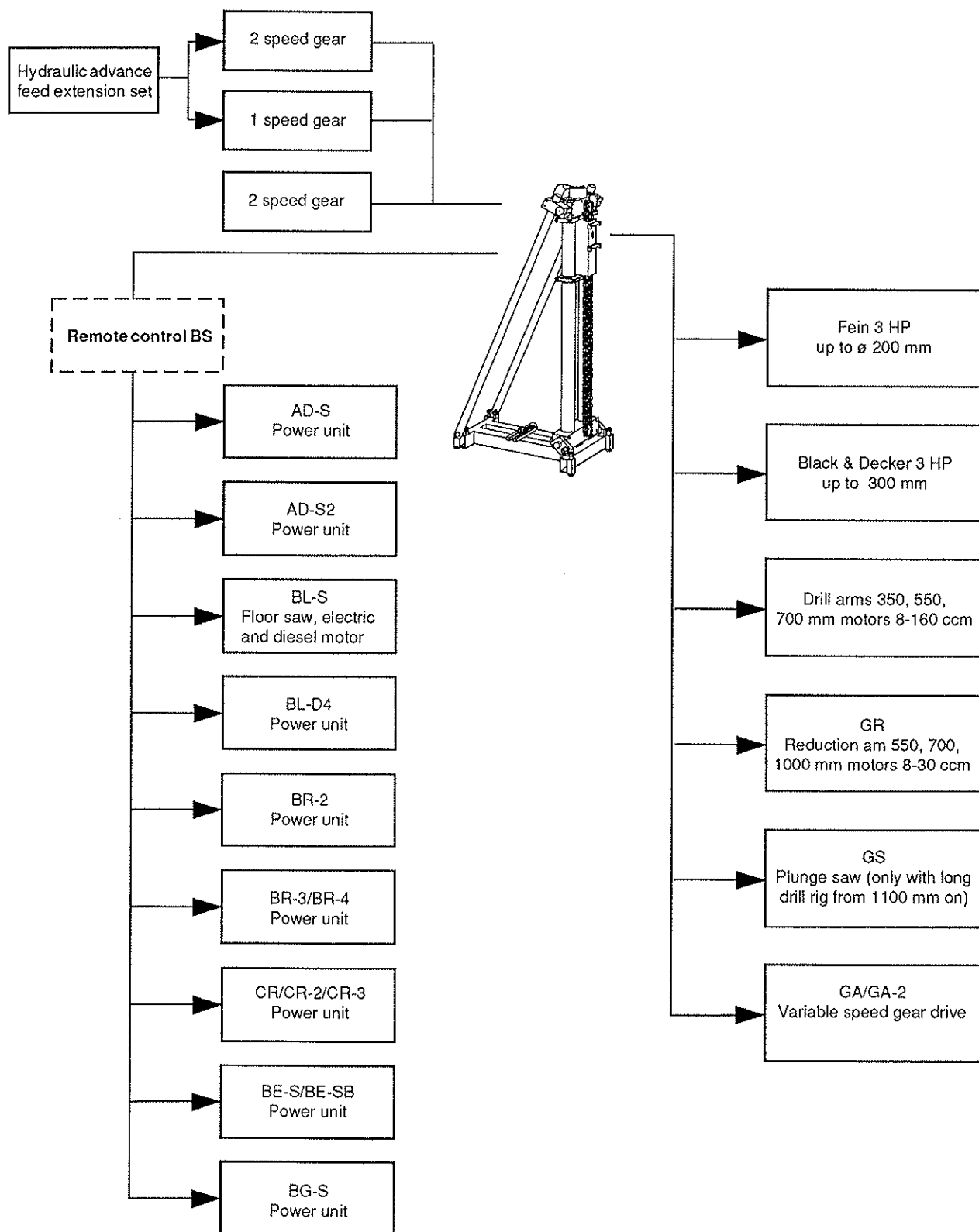


Abb. 1-1 Connectable Units

1 RANGE OF APPLICATION**1.1 Connectable Units**

The core drill system BC-2 can be operated with the following HYDROSTRESS units:

- Power unit RD
- Power units AD-S / AD-S2
- Floor saw BL-S (electric drive)
- Power units BR-2 / BR-3
- Power unit CR
- Power units BE-S / BG-S
- and via remote control BS

Observe the following when connecting units and equipment:

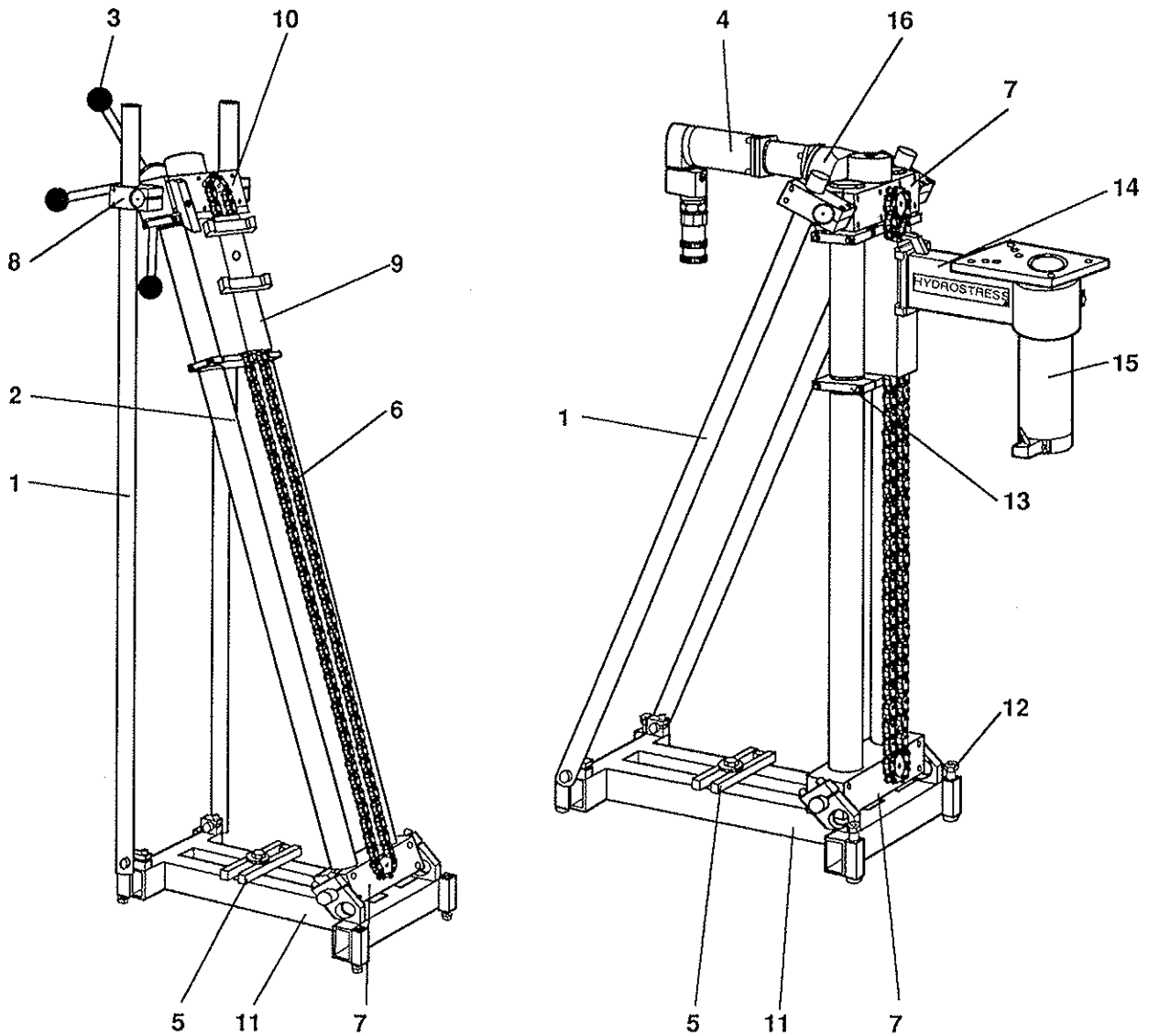
The output of the various units differs according to type. In order to obtain optimum drilling performance, the appropriate gear motor is to be selected according to the unit employed and the type of application (see section 4).

POWER UNIT/EQUIPMENT	TO BE OBSERVED
Power units BE-S / BG-S	Advance feed circuit cannot be connected.
Power units BR-2, BR-3	Two performance levels available
Electric drives	Weka: Drilling diameter 200 mm max.; connecting plate will be required Fein: Drilling diameter 200 mm max. Black & Decker: Drilling diameter 300 mm max. Operation only with manual advance feed (hand wheel).
Plunge saws GS 1000 and GS 2000	Operation only with long-type drill rig
Remote control BS	1. Only connectable in connection with AD-S, AD-S2, BL-S, BR-2, BR-3. 2. Additional hose length 16 m (in addition to the hose package of 8 m of the power unit).

1.2 Possible Applications

All kinds of reinforced or ordinary concrete, natural stone and asphalt can be processed by means of the core drill system BC-2.

Any drill works (also inclined bores) can be carried out in walls, ceilings, and floors.



- 1 Supporting poles
- 2 Guide columns
- 3 Hand wheel
- 4 Advance feed motor
- 5 Connection plate
- 6 Advance feed chain
- 7 Guide support
- 8 Clamp of support bar

- 9 Support
- 10 Chain wheel
- 11 Chassis
- 12 Micro adjustable rests
- 13 Guide bush
- 14 Drill arm 350 mm
- 15 Drill spindle
- 16 2-speed feed gear

Abb. 2-1 Design of the core Drill System

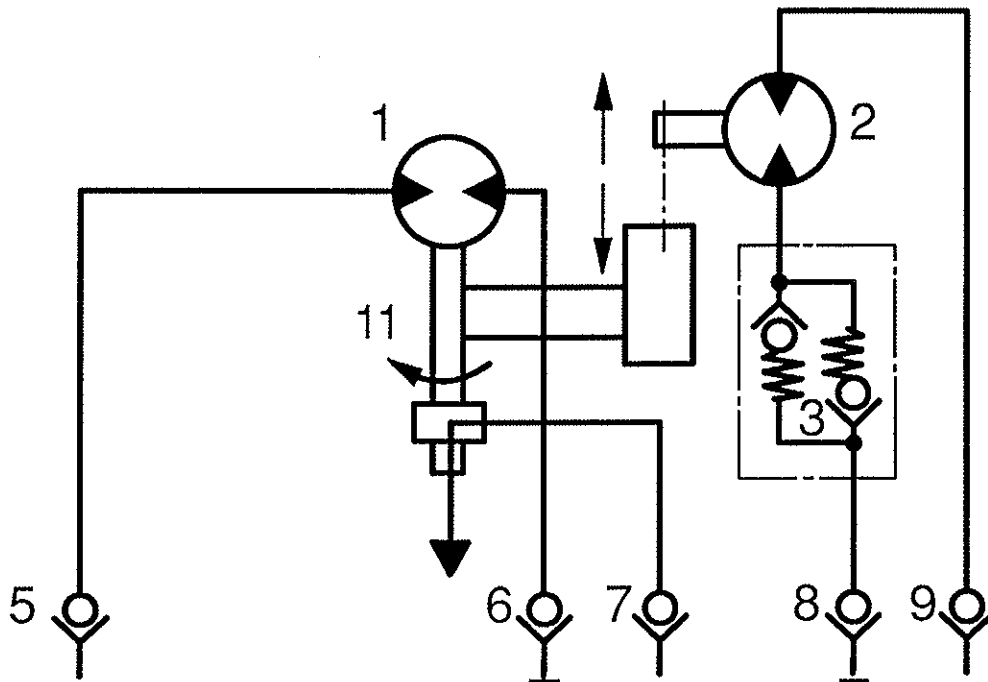
HYDROSTRESS

2 DESIGN AND FUNCTION

2.1 Design

The core drill system BC-2 consists of the following items:

Drill rig	It consists of the chassis (11, Fig. 2-1) and a two-column guiding device (2) with sloping supporting poles (1) at the rear side. The drill rig can be adjusted to biased positions, covering a large range. The micro adjustable rests (12) are mounted to the chassis.
Support	It is arranged on slide bearings at the guide columns (2) and is connected with a chain drive. The various drill arms and equipment are fixed to the support.
Drill arms	Three different normal drill arms and three chain-driven reduction arms are available. Thus drilling holes of a diameter of up to 1000 mm can be carried out. With the normal drill arm the drill spindle is held by means of a clamping device.
Advance feed	In standard design, the advance feed drive is realized via a 2-speed feed gear. <ul style="list-style-type: none">- Stage 1: 1:2 manual or hydraulic drive- Stage 2: 1:9 only manual operation Optionally available: feed gear with a reduction ration of 1:3 for hydraulic or manual operation. The support can be secured against dropping by means of the support brake.
Electric drive	Three different electric drives can be mounted to the support (9): <ul style="list-style-type: none">- FEIN, 2-speed electric drive- Black & Decker, 4-speed electric drive- Weka 3-speed electric drive
Hydraulic drive	The various hydraulic gear motors are flange-mounted to the drill spindle.



- 1 Gear motor
- 2 Advance feed motor
- 3 Stopping valve
- 4 not assigned
- 5 Nipple, return P1
- 6 Coupling, advance P1
- 7 Nipple, water
- 8 Coupling, advance P2
- 9 Nipple, advance P2
- 10 not assigned
- 11 Drill spindle

Design with hydraulic advance feed motor

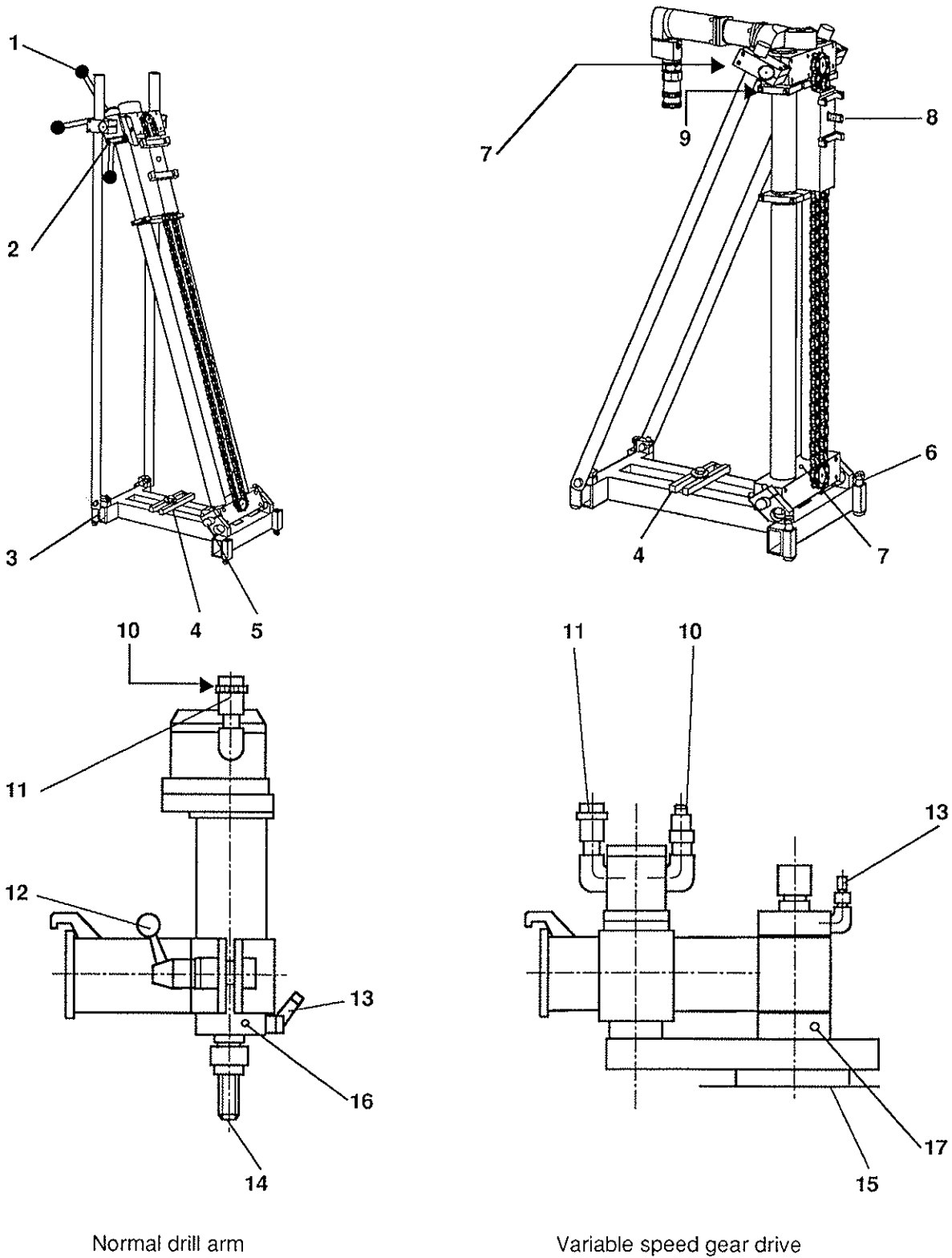
Abb. 2-2 Function

2.2 Function

The drilling drive can be realized in hydraulic or electric mode.

The core drill system BC-2 featuring the advance feed motor is equipped with one main and one feed circuit.

- Main circuit** The main circuit pump of the connected unit pumps the hydraulic oil via the coupling (6, Fig. 2-2) to the gear motor (1) from where it will return to the power unit via the nipple (5). The gear motor drives the drill head via the drill spindle (11) or via a reduction arm. The number of revolutions is defined by the selection of the gear motor and the type of drill arm.
- Feed circuit** The feed circuit of the connected unit pumps the hydraulic oil via the nipple (9) to the advance feed motor (2) from where it will return to the power unit via the stopping valve (3) and the coupling (8).
The advance feed motor (2) drives the chain wheel via a gear. The feed speed is controlled via the pressure in the feed circuit (pressure control valves at the connected power unit). Maximum pressure must not exceed 120 bar. Maximum power of advance feed is 5 kN.
The stopping valve (3) prevents the drill head from dropping caused by its own weight.
- Water circuit** Via the nipple (7) the water flows from the connected unit to the drill spindle (11) and emerges in the center of the drill head. The required flow rate is adjusted at the power unit.
- Electric drive** When the electric drive is flange-mounted, the drill head is directly driven. In this case hydraulic advance feed is not recommended (operation with hand wheel).



(Legend overleaf)

Abb. 3-1 Operating Elements (page 1 of 2)

BC-2 OPERATING ELEMENTS AND CONNECTIONS

3 OPERATING ELEMENTS AND CONNECTIONS

Pos. No.	Designation	Symbol	Function/Indication
1	Hand wheel	-	Adjustment of the feed motion of the drill head
2	Locking screw	-	Locking of support bars
3	Locking screw	-	Locking of support bars
4	Holding clamp	-	Fixing of chassis
5	Locking screw	-	Locking of guide support
6	Micro adjustment rest	-	Adjustment of drill rig
7	Lubricating nipple	-	Lubrication of feed gear
8	Support screw	-	Fixing of drill arms and electric drives
9	Support brake	-	Locking the 2-speed gear
10	Nipple	P1	Pressure connection of main circuit
11	Coupling	P1	Return connection of main circuit
12	Clamping lever	-	Clamp-locking of drill spindle
13	Nipple	-	Connection of the water hose of the unit
14	Connecting screw thread	-	Connection of drill heads and drill head extensions (the correct connecting screw thread is to be chosen according to the type of drill head used).
15	Large hole flange	-	Connection of drill heads of a diameter larger than 400 mm
16	Lubricating nipple	-	Lubrication of the drill spindle
17	Lubricating nipple	-	Lubrication at the variable speed gear drive

Fig. 3-1 Operating Elements (page 2 of 2)

4 PREPARATORY OPERATIONS

4.1 General

Always proceed as follows:

1. Settle fundamental conditions.
2. Secure the construction site.
3. Determine both position and sequence of the drillings.
4. Select first the drill heads and then the gear motor.
5. Carry out visual inspections and maintenance works.

Prior to putting the drill system into operation, the following steps are absolutely always to be observed:

Position of supply lines:

Inform yourself about the position of supply lines in walls and ceilings.

Water:

Where does the cooling water drain off that is needed for the drill process by the core drilling system? Take appropriate precautions, if necessary.

Secure the construction site:

Secure the operating area of the core drill system. No access to unauthorized persons! When drilling into walls, think also of the other side of the wall, with floors think of the rooms beneath! Secure these areas as well.

Secure the cutouts:

Secure the drill parts and cores cut out of walls and especially of ceilings by appropriate means, e.g. by a crane, supports etc. Consider the weight of concrete! (1 m³ weighs approximately 2.6 t).

Position of the drilling holes:

Inform yourself about the concrete in which the drilling holes are to be placed. Where is the reinforcement? Is the concrete heavily or lightly reinforced?

4.2 Fixing the Drill Rig

Fix the drill rig according to the instructions of Fig. 4-1:

1. Provide the appropriate drilling hole and insert the dowel.
2. Fix the chassis slightly by means of the connection plate and the dowel bolt (M12; with a drill hole diameter larger than 400 mm: M16).
3. Adjust the drill rig by means of the micro adjustment rests in a way that all of the four adjustment screws touch the concrete.
4. Tighten the dowel bolt. Tightening torque: for M 12 80 Nm, for M16 120 Nm

IMPORTANT

- With dimension A (fig. 4-1), smaller than 10 cm, and with large bore diameter, or during works at walls, a second plug has to be fixed to the very front of the fixing.
- If the fixing of the drill holder is insufficient:
 - * strong vibration takes place
 - * the bit grinds strongly at the drill walls (loss of performance)
 - * the angle of the boring deviates from the desired size
 - * it can tear out the plug fittings.

CAUTION

Observe the manufacturer's instructions about the inserted fastening system (min. lifting power 8 kN), in particular with thin-walled elements.

5. Check the desired angular position of the drill head (e.g. by means of a water level), if necessary, readjust the drill rig.

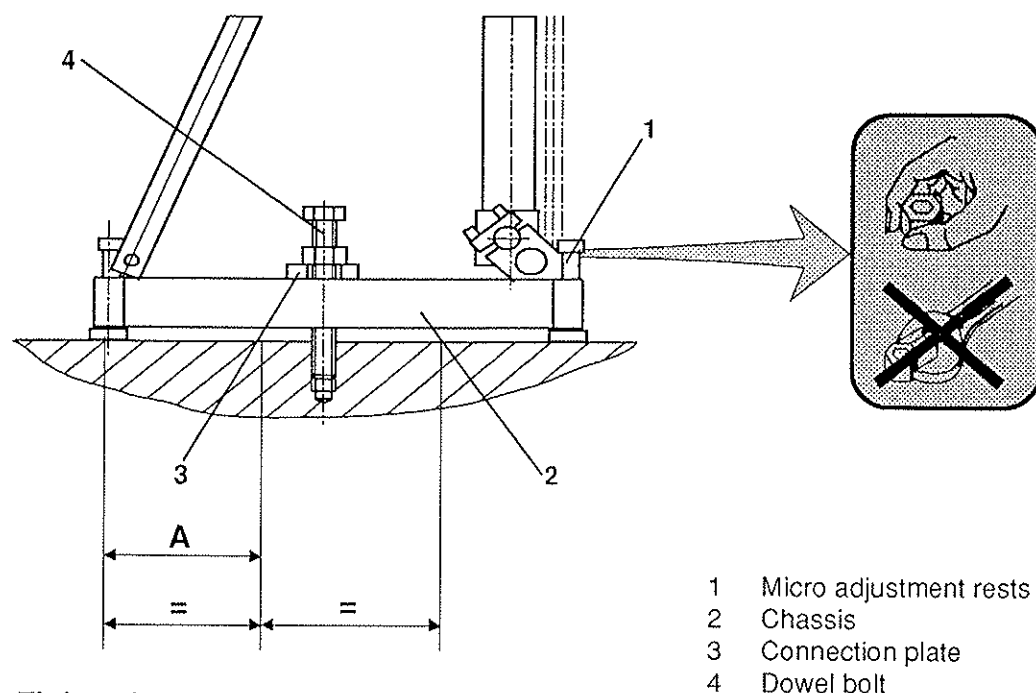


Fig. 4-1 Fixing the Drill Rig

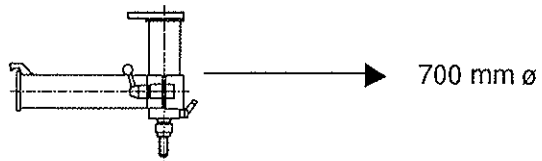
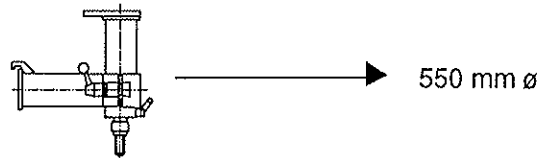
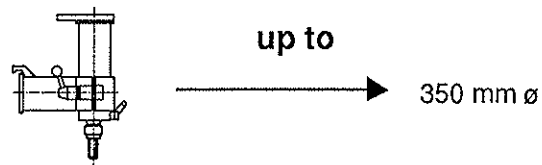
4.3 Selecting the drill arm

NOTICE

The application of normal drill arms is recommended up to a drill hole diameter of 400 mm; with drill hole diameters larger than 400 mm reduction arms should be employed.

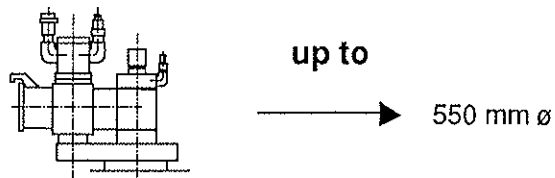
Example

Normal drill arm



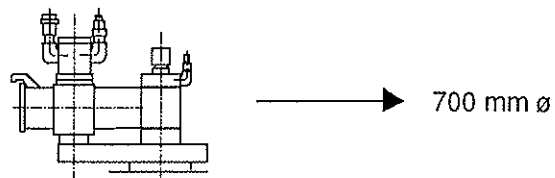
Reduction arm GR

GR 550 (1:7)



GR 700 (1:7)

GR 700-2 (1:11)



GR 1000 (1:14)

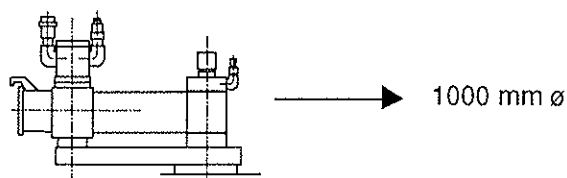


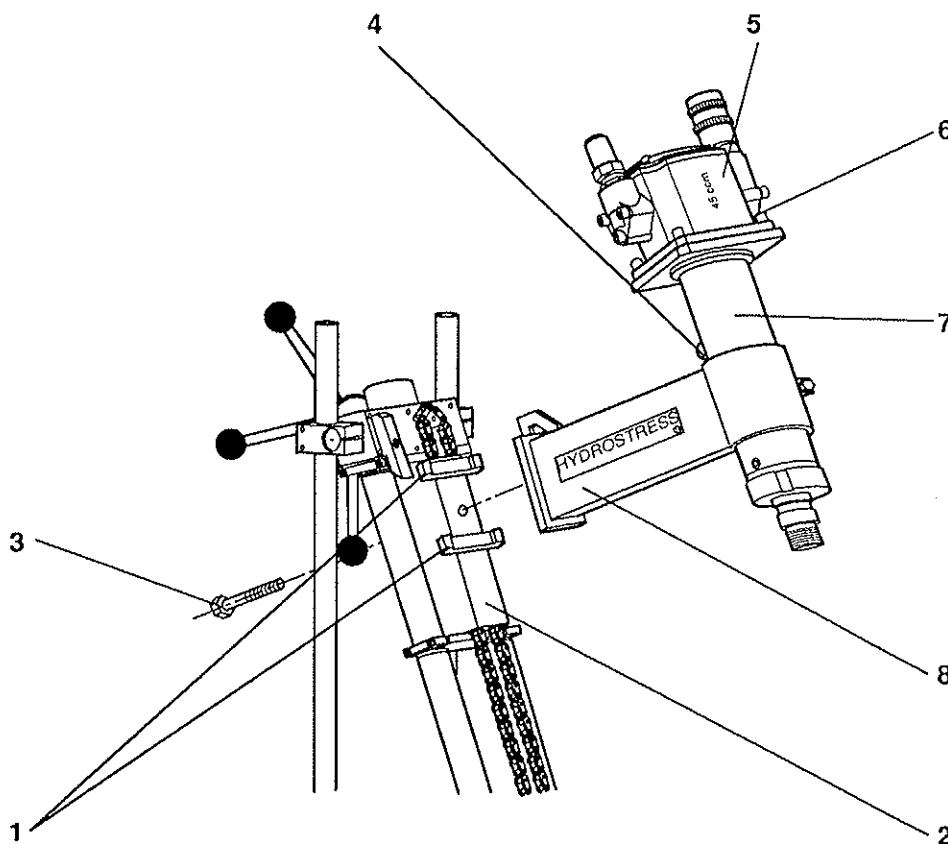
Abb. 4-2 Selecting the Drill arm

4.4 Connecting the Drill Arm

NOTICE

- Reduction arms will be connected in the same way as are normal drill arms (see Fig. 4-3).
- When using electric gear motors, first apply the required connection plate (see Fig. 11-43) and then connect the electric gear motor to it.

1. Insert the drill arm (8, Fig. 4-3) into the guiding device (1) at the support (2).
2. Tighten the support screw (3) firmly.
3. Insert the drill spindle (7) into the drill arm (8) and lock it by means of the clamping lever (4).
4. Screw the gear motor (5) with all Allen head screws (6) to the drill spindle (7). Tighten the screws firmly.



- | | | | |
|---|------------------------------|---|------------------|
| 1 | Guiding device for drill arm | 5 | Gear motor |
| 2 | Support | 6 | Allen head screw |
| 3 | Support screw | 7 | Drill spindle |
| 4 | Clamping lever | 8 | Drill arm |

Fig. 4-3 Connecting the Drill Arm

4.5 Selecting the Gear Motor

The selection of the appropriate gear motor ensures an optimum cutting performance of the core drill system. The selection of the gear motor depends on the drill hole diameter.

The optimum drilling performance is obtained

in normally reinforced concrete - at a cutting rate of 3 to 6 m/s.
in flint - at a cutting rate of 3 m/s.

The optimum peripheral velocity of the drill head is

- approx. 3 to 4 m/s with hard quality concrete and strong reinforcement,
- approx. 5 m/s with normal quality concrete and strong reinforcement, and
- approx. 6 m/s with green concrete and light or no reinforcement.

Select the gear motor as follows:

1. Determine the drill hole diameter to be obtained.
2. Select the appropriate drill arm.
3. Determine the gear motor according to the following speed table and in dependence on the power unit employed.

When using a normal drill arm:	Speed table	BY/BC direct
When using a reduction arm GR:	Speed table	GR 550/700
		GR 700-2
		GR 1000

Example:

Drill hole diameter 450 mm, drill arm GR 550, power unit BR-3; the selection of the gear motor according to the speed table GR 550/700 shows:

- Gear motor of 22 ccm, stage 1
- Cutting rate of approx. 4 m/s

For soft concrete or concrete without reinforcements a higher cutting rate (approx. 6 m/s) can be obtained by switching to stage 2 (BR-3).

NOTICE

When changing the drill head, always employ the optimum gear motor indicated in the tables as well. Doing so results in the following advantages:

1. Optimum cutting performance
2. Minimum drill head wear
3. The drill system is not subject to excessive stress.
4. The drill head is kept in exact position at optimum speed.

BY/BC/BC-2		DRILLING															
		TABLE OF REVOLUTIONS FOR DIRECT FEED BY/BC/BC-2 For a cutting speed of 3-6 m/s															
HYDRAULIC-MOTOR		POWER PACK															
						BR-2 BR-3 1. Stage		RA BR-4 BE-S		BR-2 BR-3 2. Stage		AD-S AD-S2				RA/RC	
		BE BG		BF BD				BE-SB BG-S		BL- S diesel		BL-S electr. BL-D3 BL-D4				RD Stage I *	
				CD				CR/CR-2 CR-3 Stage I		CR/CR-2 CR-3 Stage II		CR-3 Stage III		CR/CR-2 Stage III		CR-3 Stage IV	
		Ømm	rpm	Ømm	rpm	Ømm	rpm	Ømm	rpm	Ømm	rpm	Ømm	rpm	Ømm	rpm	Ømm	rpm
Gear motor		30	2000	20	2500	18	3200	-	-	-	-	-	-	-	-	-	-
8 ccm		↓ 60		↓ 40		↓ 36		-		-		-		-		-	
12 ccm		45	1300	35	1600	25	2100	20	2800	17	3300	-	-	-	-	-	-
		↓ 90		↓ 70		↓ 50		↓ 40		↓ 34		-		-		-	
18 ccm		70	800	55	1000	45	1300	35	1700	25	2100	25	2300	-	-	-	-
		↓ 140		↓ 110		↓ 90		↓ 70		↓ 50		↓ 50		↓ 50		↓ 50	
22 ccm		80	700	60	900	50	1100	40	1500	30	1800	30	2000	-	-	-	-
		↓ 160		↓ 120		↓ 100		↓ 80		↓ 60		↓ 60		↓ 60		↓ 60	
26 ccm		95	600	60	700	55	1000	50	1200	40	1500	35	1700	-	-	-	-
		↓ 190		↓ 160		↓ 110		↓ 100		↓ 80		↓ 80		↓ 80		↓ 80	
30 ccm		110	500	95	600	70	800	55	1000	45	1300	40	1500	20	2500	30	2000
		↓ 220		↓ 190		↓ 140		↓ 110		↓ 90		↓ 90		↓ 90		↓ 90	
Gerotor																	
45 ccm		190	300	140	400	110	500	80	700	75	850	60	950	30	1700	45	1320
		↓ 380		↓ 280		↓ 220		↓ 160		↓ 150		↓ 150		↓ 120		↓ 60	
60 ccm		220	250	190	300	140	400	100	550	90	650	75	750	45	1250	55	1000
		↓ 440		↓ 380		↓ 280		↓ 200		↓ 180		↓ 150		↓ 150		↓ 150	
75 ccm		280	200	220	250	190	300	140	400	110	500	95	600	55	1000	70	800
		↓ 560		↓ 440		↓ 380		↓ 280		↓ 220		↓ 220		↓ 220		↓ 220	
100 ccm		350	160	280	200	220	250	190	300	140	400	120	450	75	750	95	600
		-		↓ 560		↓ 440		↓ 380		↓ 280		↓ 280		↓ 280		↓ 280	
145 ccm		-	-	-	-	300	180	250	220	210	270	190	300	110	500	140	400
		-	-	-	↓ 600	↓ 500		↓ 420		↓ 360		↓ 360		↓ 360		↓ 360	
160 ccm		-	-	-	-	-	-	280	200	220	250	200	280	120	480	150	380
		-	-	-	-	-	↓ 560	↓ 440		↓ 440		↓ 440		↓ 440		↓ 400	

Tab. 4-1 Speed Table for Direct Drive

GR 550/700

DRILLING

TABLE OF REVOLUTIONS FOR BC/BC-2 WITH REDUCTION ARM GR 550/700

For a cutting speed of 3-6 m/s

JAN. 1993

HYDRAULIC-MOTOR	POWER PACK									
	BR-2, 1. Stage BR-3, 1. Stage		RA BR-4		BR-2, 2. Stage BR-3, 2. Stage		AD-S AD-S2		RA/RC	
			BE-S/BE-SB * BG-S*		BL-S diesel		BL-S electr. BL-D3			
			CR/CR-2, Stage I CR-3, Stage I		CR/CR-2, Stage II CR-3, Stage II		BL-D4 CR-3, Stage III		CR-3 Stage IV	
	ø mm from - to	rpm	ø mm from - to	rpm	ø mm from - to	rpm	ø mm from - to	rpm	ø mm from - to	rpm
8 ccm	120 ↓ 240	460	100 ↓ 200	600	---	720	---	800	---	1070
11 ccm	170 ↓ 340	330	130 ↓ 260	430	110 ↓ 220	520	100 ↓ 200	580	---	780
16 ccm	250 ↓ 500	230	190 ↓ 380	300	160 ↓ 320	360	140 ↓ 280	400	100 ↓ 200	540
18 ccm	300 ↓ 600	190	210 ↓ 420	270	180 ↓ 360	320	160 ↓ 320	350	120 ↓ 240	475
22 ccm	350 ↓ 700	160	260 ↓ 520	220	220 ↓ 440	260	200 ↓ 400	290	140 ↓ 280	390
30 ccm	500 ↓ 700	120	350 ↓ 700	160	300 ↓ 600	190	270 ↓ 540	210	200 ↓ 400	280

***ATTENTION**

Working with BE-S, BE-SB and BG-S is only possible when a hose isolating valve or a drill motor unit is used.

Tab. 4-2 Speed Table for Reduction Arm GR 550/700

GR 700-2

DRILLING

TABLE OF REVOLUTIONS FOR BC/BC-2 WITH REDUCTION ARM GR 700-2

For a cutting speed of 3-6 m/s

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HYDRAULIC-MOTOR	POWER PACK									
	BR-2, 1. Stage BR-3, 1. Stage		RA BR-4		BR-2, 2. Stage BR-3, 2. Stage		AD-S AD-S2		RA/RC	
			BE-S/BE-SB * BG-S *		BL-S diesel		BL-S electr. BL-D3			
			CR/CR-2, Stage I CR-3, Stage I		CR/CR-2, Stage II CR-3, Stage II		BL-D4 CR-3, Stage III		CR-3 Stage IV	
	ø mm from - to	rpm	ø mm from - to	rpm	ø mm from - to	rpm	ø mm from - to	rpm	ø mm from - to	rpm
8 ccm	200 ↓ 400	290	150 ↓ 300	380	120 ↓ 240	450	140 ↓ 220	500	---	680
11 ccm	270 ↓ 540	210	200 ↓ 400	270	170 ↓ 340	330	150 ↓ 300	360	110 ↓ 220	500
16 ccm	400 ↓ 700	140	300 ↓ 600	190	260 ↓ 520	220	220 ↓ 440	250	160 ↓ 320	350
18 ccm	500 ↓ 700	120	330 ↓ 660	170	280 ↓ 560	200	260 ↓ 520	220	190 ↓ 380	300
22 ccm	550 ↓ ---	100	400 ↓ 700	140	350 ↓ 700	160	300 ↓ 600	180	220 ↓ 440	250
30 ccm	700 ↓ ---	75	550 ↓ ---	100	500 ↓ ---	120	400 ↓ ---	130	320 ↓ 640	180

***ATTENTION**
Working with BE-S, BE-SB and BG-S is only possible when a hose isolating valve or a drill motor unit is used.

Tab. 4-3 Speed Table for Reduction Arm GR 700-2

GR 1000										
DRILLING										
TABLE OF REVOLUTIONS FOR BC/BC-2 WITH REDUCTION ARM GR 1000										
For a cutting speed of 3-6 m/s										
POWER PACK										
HYDRAULIC-MOTOR	BR-2, 1. Stage BR-3, 1. Stage		RA BR-4		BR-2, 2. Stage BR-3, 2. Stage		AD-S AD-S2		RA/RC	
			BE-S/BE-SB* BG-S*		BL-S diesel		BL-S electr. BL-D3			
			CR/CR-2, Stage I CR-3, Stage I		CR/CR-2, Stage II CR-3, Stage II		BL-D4 CR-3, Stage III		CR-3 Stage IV	
	ø mm	rpm	ø mm	rpm	ø mm	rpm	ø mm	rpm	ø mm	rpm
from - to		from - to		from - to		from - to		from - to		
8 ccm	250 ↓ 500	230	190 ↓ 380	300	160 ↓ 320	360	140 ↓ 280	400	100 ↓ 200	540
11 ccm	350 ↓ 700	160	280 ↓ 560	200	220 ↓ 440	260	190 ↓ 380	300	140 ↓ 280	390
16 ccm	500 ↓ 1000	110	350 ↓ 700	150	300 ↓ 600	180	280 ↓ 560	200	200 ↓ 400	270
18 ccm	550 ↓ 1000	100	400 ↓ 800	130	350 ↓ 700	160	300 ↓ 600	180	230 ↓ 460	240
22 ccm	700 ↓ 1000	80	500 ↓ 1000	110	400 ↓ 800	130	350 ↓ 700	150	280 ↓ 560	200
30 ccm	1000 ↓ ...	60	700 ↓ 1000	80	550 ↓ 1000	100	500 ↓ 1000	110	350 ↓ 700	150

JAN. 1993

***ATTENTION**
Working with BE-S, BE-SB and BG-S is only possible when a hose isolating valve or a drill motor unit is used.

Tab. 4-4 Speed Table for Reduction Arm GR 1000

HYDROSTRESS

4.6 Operation with Vacuum Plate

In order to quickly install and shifting the drill rig, it can be fixed to the floor or to the wall by means of the vacuum plate (see Fig. 4-4). However, the fixing surface must not be too rough or uneven.

CAUTION

When drilling in walls, the drill rig must additionally be secured against falling down (e.g. with a rope).

Fixing the drill rig with the vacuum plate:

IMPORTANT

The Storz couplings must be coupled perfectly. Should the pressure hose loosen, the drill rig may detach.

1. Connect the vacuum plate and the vacuum power pack with the pressure hose.
2. Position the drill rig at the desired place.
3. Switch on the vacuum pump and let it pump for approx. 2 minutes.
4. Carry out any required positioning corrections by shifting the vacuum plate:
 - Loosen the vacuum plate by opening the ventilation outlet.
 - Shift the vacuum plate.
 - Close the ventilation outlet with the rubber plug and let the vacuum power pack pump for approx. 2 minutes.

IMPORTANT

When using the vacuum plate for drilling works do not employ maximum advance feed pressure.

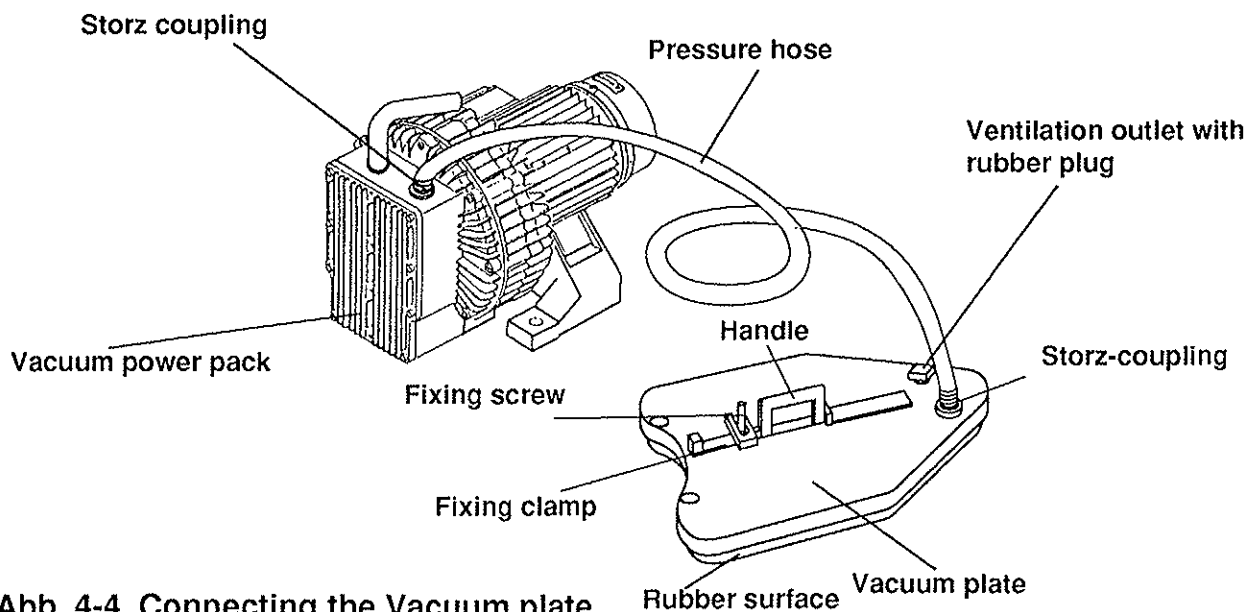


Abb. 4-4 Connecting the Vacuum plate

4.7 Changing the Gear Motor

CAUTION

- Never connect or disconnect hoses when the unit is running or under pressure.
- Never force connections.

1. Switch the unit off and reduce pressure to zero.
2. Disconnect the hoses of the gear motor.

IMPORTANT

- Keep the hose couplings always clean.
- Do not drop the hose couplings to the ground.

- Turn the locking ring into its unsecured position.
- Hold the hose end in straight position in order to avoid jamming.
- Push the coupling sleeve back and remove the hose.

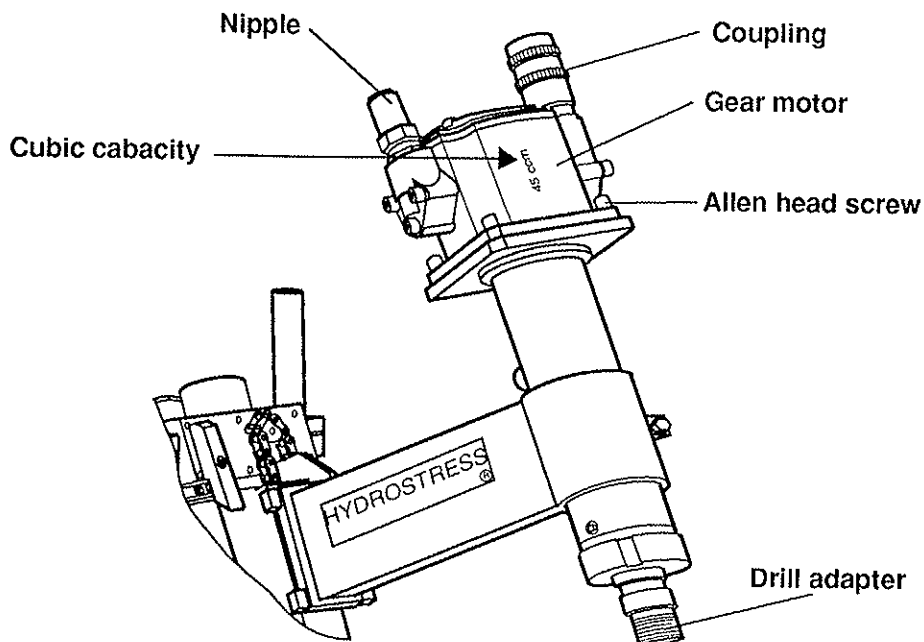


Fig. 4-5 Changing the Gear Motor

NOTICE

If possible, leave the hoses connected to the unit. Should heating lead to a pressure build-up within the hoses, the pressure can easily be relieved via the unit.

3. Remove the Allen head screws (Fig. 4-5) and the gear motor.
4. Install the other gear motor.
5. Fix and tighten the Allen head screws.
6. Reconnect the hoses. Connect couplings with elbow pieces to the core drill system, straight couplings to the unit:
 - Push the hose coupling on or into its counterpart until it is audibly locked into place.
 - Turn the locking ring of the coupling into its secured position.

IMPORTANT

- **Make absolutely sure that the hydraulic hoses are properly connected.**
- **Always secure them after the coupling procedure.**
- **Inadequate coupling of the hydraulic hoses inevitably leads to damages to the gear motor as soon as it will be put into operation.**

4.8 Mounting the Drill Head

1. Select the appropriate drill adapter (Fig. 4-5) and install it.
2. If necessary, employ drill extension.
3. Select the appropriate drill head and install it.
4. Check any screw connection for firm seat; if necessary, tighten again.

5 CONNECTION TO POWER UNITS

5.1 General:

- * Connecting hoses:
 - Connect couplings with elbow pieces to the core drill system
 - Connect straight couplings to the power unit
- * Always keep the couplings clean.
- * Observe the service instructions and maintenance intervals indicated in section 7.
- * When the hoses cannot be coupled or only with difficulty, the hose or the power unit are under pressure (e.g. due to heating).

Reduce the pressure as follows:

At the unit: Actuate the main circuit valve or the spool valve several times.
 At the hose: With hoses provided with TEMA couplings, pressure will be discharged automatically during the coupling procedure. Install the pressure relief valve on hoses with NS couplings and screw it in, until the pressure is reduced.

CAUTION

- Never connect or disconnect hoses when the unit is running or under pressure.
- Never force connections.

5.2 Connection of Hoses

The following hose connections are to be established:

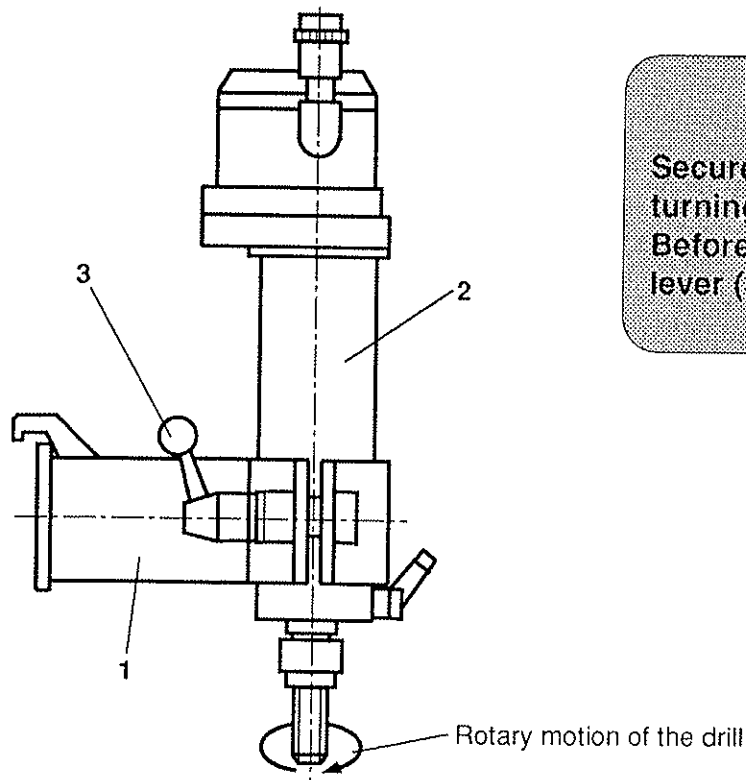
CORE DRILL SYSTEM BC-2	POWER UNIT	HOSES
* Gear motor	- Main circuit P1	Pressure hose Return hose
* Feed motor	- Feed circuit P2 or P3	2 hoses
* Water connection	- Water connection at the power unit, outlet	Water hose

1. Push the hose coupling on or into its counterpart until it is audibly locked into place.
2. Turn the locking ring of the coupling into its secured position.

IMPORTANT

- Set the pressure control valves of the feed circuit at the power unit to zero (turn them completely out).
- Before starting to work, check the moving sense of the feed motor.

6 DRILLING

**CAUTION**

Secure drill spindle (2, fig. 6-0) against turning within the arm (1).
Before drilling, make sure that jamming lever (3) is tightened.

Fig. 6-0

CAUTION

- Never drill when there is no chain guard or when only parts of the chain guard of the reduction arm are mounted.
- Never stay near rotating parts.
- Make sure to regularly carrying out the following checks and inspections.

PRIOR TO DRILLING:

- * Check the chain tension (see 7.2).
- * Check the rotation motion of the drill spindle (clockwise, see fig. 6-0)
- * Check the moving sense of the and feed motion.
- * Check whether the guiding column is clean and whether the support glides in perfectly smooth motion over the guide column.
- * Check whether all dowel bolts at the chassis are firmly tightened and whether the vacuum plate is correctly and firmly seated.
- * When working for longer periods with the same drill head, regularly check the firm seat of the flange-mounting.
- * Adjust the water supply at the unit and check whether the water emerges properly at the pivot of the drill head.

OPERATION

IMPOTRANT

Never start drilling with the drill extension

1. Turn the pressure control valves at the unit completely out.
2. Set the main circuit valve to zero.
3. Start the power unit.
4. Set the support into its starting position.
5. Open the main circuit valve and cautiously start drilling with low feed pressure, until the depth of the drilling hole is approx. 1 cm.
6. Set the advance feed pressure to optimum value: With hydraulic advance to approx 50-60 bar.

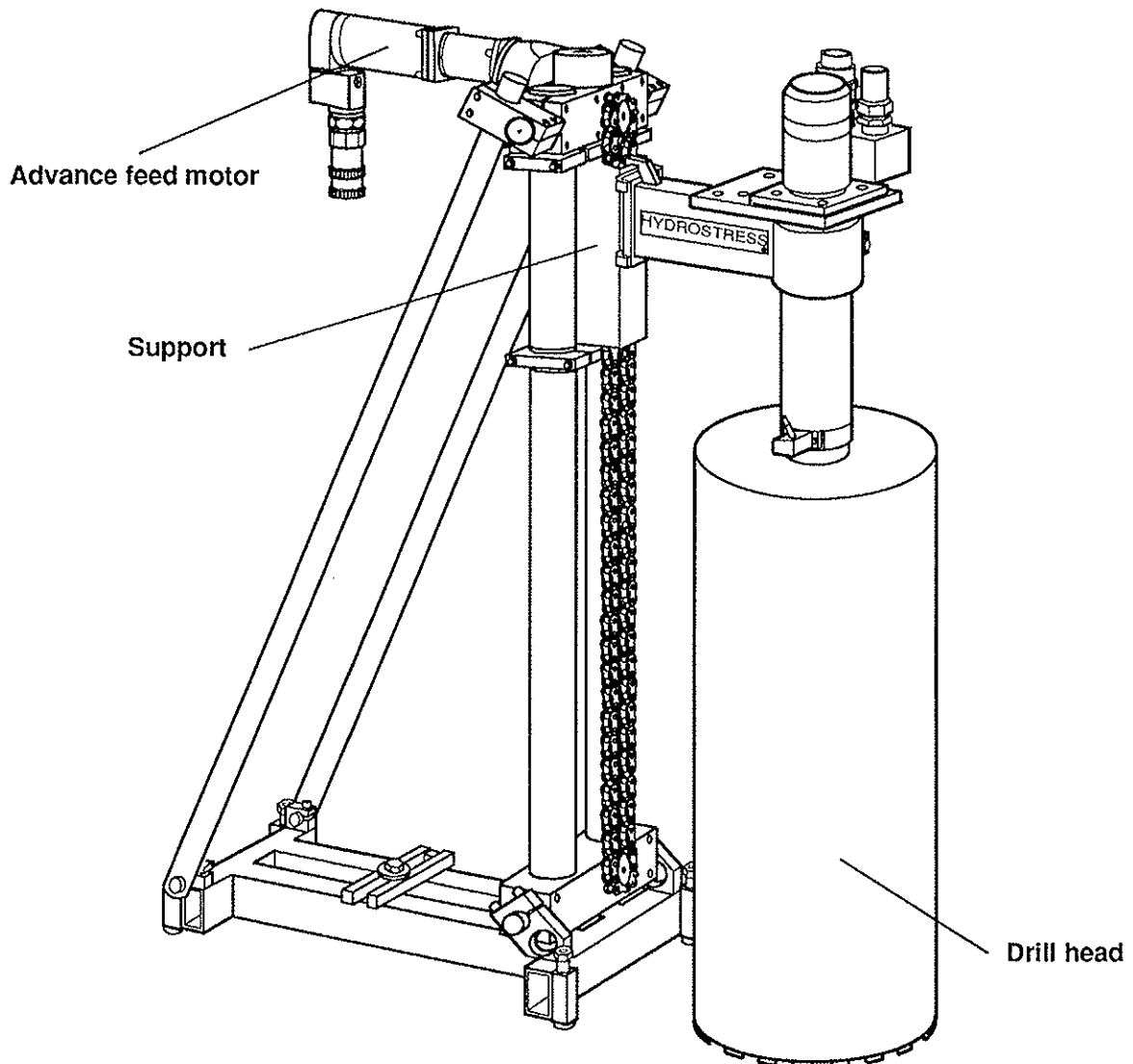


Fig. 6-1 Operation of the Core Drill System

IMPORTANT

- When you work at highest possible pressure in sections which consist of concrete only, reduce the advance feed pressure immediately when the drill head is encountering reinforcements; the maximum admissible pressure must not be exceeded.
- Never switch off the core drill system during the drilling process. Always withdraw the drill head still rotating from the drilling hole.

WHEN THE DRILL HEAD IS BLOCKED:

1. Immediately switch off the main circuit.

IMPORTANT

- Do not attempt to free the drill head from the drilling hole by applying a strong advance feed pressure.
- Do not force.

2. If possible, withdraw the drill head by carrying out a feed motion.
3. Should it not be possible to free the drill head by doing so, disconnect the support and remove only the drill head from the drilling hole.

END OF OPERATION

1. Withdraw the drill head still rotating from the drilling hole.
2. Shut the power unit down and discharge the pressure from the hydraulic circuits.
3. Clean the core drill system, e.g. by hosing it down.
4. Remove the drill head.
5. Disconnect the hoses.

IMPORTANT

- Keep the hose couplings always clean.
- Do not drop the hose couplings to the ground.
- In order to avoid damage to the hose couplings, never slide the hoses on the ground.

- Turn the locking ring into its unsecured position.
- Hold the hose end in straight position in order to avoid jamming.
- Push the coupling sleeve back and remove the hose.

NOTICE

Connect both ends of the hose package. Thus the hose couplings are kept clean and will not be damaged during transport.

7 SERVICING AND MAINTENANCE

7.1 Maintenance Works

Maximum performance and optimum reliability of the equipment are obtained as long as you carry out the necessary maintenance works indicated in the following tables - or have them carried out - at regular intervals.

These maintenance works are specified as being obligatory by the manufacturer. HYDROSTRESS will reject any liability for damages resulting from nonobservance of the maintenance intervals and of maintenance works.

CAUTION

Before carrying out any maintenance works make sure to disconnect the core drill system from the power unit.

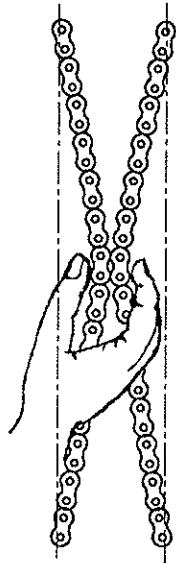
Maintenance interval	Activity	Remarks
Daily	1. Visual inspection for: - leakage - dirt accumulation - damage of the guide columns	Remove strong dirt accumulations, if necessary clean with steam jet. Lubricate the guide columns
	Prior to any start of work check the firm seat of - the supporting poles - the guide columns - the guide supports	If necessary, tighten
	2. Check the smooth running of the support	If necessary, tighten the nuts of the guide bushes again or loosen them. Grease the guide columns
	3. Check the chain tension	See Fig. 7.1
	4. Lubricate the chain prior to starting to work	Chain spray available from HYDROSTRESS
		IMPORTANT Do not use other than the prescribed chain spray

Tab. 7-1 Regular Maintenance Works (page 1 of 2)

Maintenance interval	Activity	Remarks
<p>Weekly</p>	<ol style="list-style-type: none"> 1. Check the couplings for: <ul style="list-style-type: none"> - leakage - damage 2. Clean the drill rig 3. Clean the guide columns and lubricate them 4. Grease the core drill system 5. Lubricate the chain 6. Lubricate the lubricating nipples (6 pieces) 	<p>Replace leaking or damaged couplings.</p> <p>Grease all lubricating nipples indicated in Fig. 3-1</p> <div style="border: 1px solid black; background-color: #cccccc; padding: 5px; text-align: center;"> <p>IMPORTANT</p> <ul style="list-style-type: none"> ■ Do not use other than the prescribed chain spray. ■ Do not press in the grease by force. ■ Use normal waterresistant grease. </div> <p>Use the grease gun</p>
<p>Annually</p>	<p>Major service</p>	<p>Will be carried out only by HYDROSTRESS or an authorized HYDROSTRESS representation</p>

Tab. 7-1 Regular Maintenance Works (page 2 of 2)

7.2 Check of Chain Tension, Readjustment



- * cannot be squeezed together: too taut
- * can be squeezed together: correct
- * can be squeezed together without any resistance: too slack, readjust!

Fig. 7-1 Checking of Chain Tension

Squeeze the middle of the chain together with thumb and forefinger:

- * The chain is too taut when it cannot be squeezed together.
- * The chain tension is correct when it can be squeezed together by manual force.
- * The chain is too slack when it can be squeezed together without showing any resistance.

Readjust the chain tension as follows (Fig. 7-2):

1. Unscrew the four Allen head screws (2, 3) of the upper guide support.
2. Loosen the clamping screws (1, 4) of the supporting poles.
3. Shift the guide support upward by applying slight strokes with a plastic hammer until the chain is correctly tensioned.
4. Fix the guide support by means of the four Allen head screws (2, 3).
5. Tighten the clamping screws (1, 4) of the supporting poles.

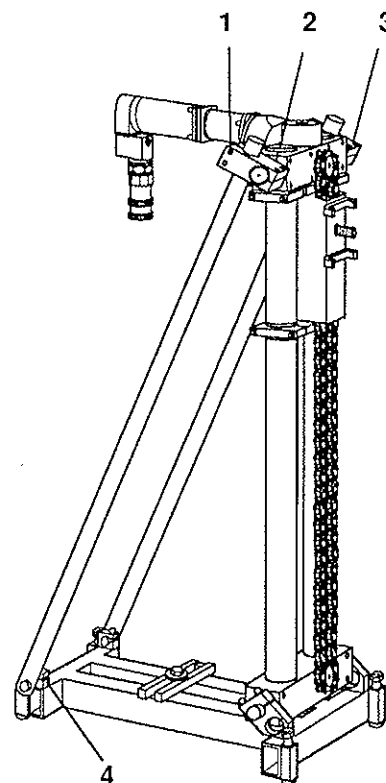


Fig. 7-2 Tensioning of Chain

8 TROUBLESHOOTING

Proceed systematically when looking for the cause of defects. For this purpose also use the hydraulic scheme (see section 10).

If you cannot find the defect or eliminate the faulty condition, please contact our after-sales service.

Before calling us, please observe the following:

- The better you describe the defect, the better we can help you.
- Have the operating instructions (hydraulic scheme) at hand.
- Note machine type and machine number of your unit.

Trouble	Cause	Remedy
The Drill head does not move, main circuit valve is switched on	- Drill head got jammed - Return circuit is not coupled	- Free the drill head - Connect the return circuit, check the hydraulic motor
Oil leakage in the area of the hydraulic motor	Shaft seal is defective	Replace the shaft seal
Oil leakage at the couplings	Coupling is defective	Replace the coupling. The o-rings at the return connections (couplings) can be replaced
The drill head vibrates, especially when beginning to drill	1. Selected speed is too high 2. Drill head is not fixed correctly	Select the appropriate gear motor Tighten the drill head firmly by means of a fork wrench
No water at the drill head	1. Water shut-off valve at the unit closed 2. Coupling not carried out correctly 3. Water pressure is too low 4. Main water shut-off valve is closed	Open the water regulating valve Connect the coupling appropriately The water pressure should not fall below 1 bar Always make sure that the water supply is not interrupted
Full performance of the core drill system is not reached	1. Pump/pressure control valve at the unit are defective 2. Gear motor is defective 3. Selection of inappropriate gear motor	Contact the aftersales service. Replace the motor Select correct gear motor according to section 4

Tab. 8-1 Troubleshooting

9 ACCESSORIES

The accessories supplied together with the core drill system comprise a tool kit with the following items:

(Contents are listed in detail in Fig. 11-13)

- Available upon request (optionally):
- Electric gear motors
 - Fein
 - Weka
 - Black & Decker
 - HYDROSTRESS quick-connection for drill heads
 - Trolley
 - Gear 1:3
 - CA for drill holes up to 2200 mm