

**Operating Instructions**  
(Translation of original)

---

**BRINKMANN pressure boosting pumps**

**FH11...FH17**



**Brinkmann Pumpen**  
**K. H. Brinkmann GmbH & Co. KG**  
Friedrichstraße 2 D-58791 Werdohl  
Tel.: +49-2392 / 5006-0  
Fax.: +49-2392 / 5006-180

Subject to change without prior notice.

[www.brinkmannpumps.de](http://www.brinkmannpumps.de)  
[sales@brinkmannpumps.de](mailto:sales@brinkmannpumps.de)

Order - No.: BE4114 ENGLISH

# Brinkmann pressure boosting pumps series FH11 ... FH17

## Contents

1	Indication to the manual .....	2	9	Trouble shooter's guide.....	12
2	Description of product .....	2-8	10	Spare part .....	13-15
3	Safety instructions .....	9	11	Repair .....	15
4	Transport and storage .....	9	12	Disposal .....	15
5	Installation and Connection .....	10	13	EC declaration of conformity .....	16
6	Start up / Shut down .....	11			
7	Operation.....	11			
8	Servicing and Maintenance .....	11			

## 1 Indication to the manual

This operating manual gives basic instructions which are to be observed during installation, operation and maintenance of the pump. It is therefore imperative that this manual be read by the responsible personnel and operator prior to assembly and commissioning. It is always to be kept available at the installation site.

### 1.1 Identification of safety instructions in the operating manual

Safety instructions given in this manual non-compliance with which would affect **safety** are identified by the following symbol



Safety sign according with ISO 3864 – B.3.1

or where **electrical safety** is involved, with:



Safety sign according with ISO 3864 – B.3.6

Where non-compliance with the safety instructions may cause a risk to the machine and it's function the word

**ATTENTION**

is inserted.

## 2 Description of product

### 2.1 General description of the pump

Pumps of this type are multi-stage rotary pumps. Series FH use closed impellers in order to minimizing power consumption and to optimize hydraulic pump efficiencies.

The pump shaft and the motor shaft are connected by a coupling. The pump shaft is sealed by a rotating mechanical seal.

These Pumps are not self-priming.

Pump and motor form a compact and space-saving unit.

The pumps can be mounted next to the coolant tank or the lined-up pump.

### 2.2 Intended use

In combination with pre-pumps or central coolant supply pumps of series FH work as pressure booster up to 26 bar increase within the limiting application in accordance with table 1.

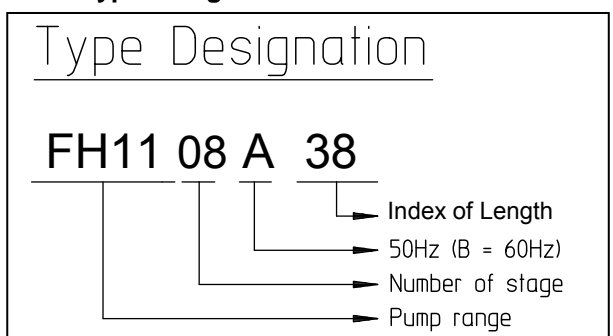
#### Limit of Application (Table 1)

Type	FH11...FH17	
Mediums	Industry water, cooling emulsions, cooling- and cutting-oils	
Kinetic viscosity of the medium	...25 mm <sup>2</sup> /s	
Temperature of medium	0 ... 80 °C	
max. inlet pressure	26 bar	
max. operation pressure	54 bar	
Particle-size in the medium	1 mm	
min. delivery volume	1% of Q max.	
Dry running	The pumps are not suitable for dry running.	
Switching-on frequency per hour	Motors less 3 kW	max. 200
	from 3 kW to 4.0 kW	max. 40
	from 5.0 kW to 10.3 kW	max. 20
	Motors 11 kW and higher	max. 15
Ambient temperature	40 °C	
Set-up altitude	1000 m	

**ATTENTION**

The pumps are to be operated within their design limits. Applications outside of these limits are not approved. The manufacturer is not responsible for any damages resulting from use of the pumps in such applications.

### 2.3 Type Designation



## Technical data

### 50 Hz

Type	Max. del. pressure bar / spec. weight 1	Max. del. volume l/min	Height <sup>1</sup> H mm	Length <sup>1</sup> l mm	Weight kg	Power kW	Noise level <sup>2</sup> dBA
FH1102A18	2.1	250	643	212	39	1.3	63
FH1103A18	3.8	250	643	212	40	1.5	63
FH1104A28	4.8	250	765	308	44	1.7	63
FH1105A28	5.9	255	798	308	48	1.9	63
FH1106A28	7.0	260	798	308	50	2.6	63
FH1107A31	8.0	265	869	340	60	3.0	71
FH1108A38	9.2	280	933	404	63	3.3	71
FH1109A38	10.7	280	933	404	64	4.0	71
FH1110A47	11.9		1028	500	66		
FH1111A47	13.0	285	1058	500	72	5.0	71
FH1112A47	14.0				73		
FH1113A50	15.2	290	1090	532	74	5.5	71
FH1114A57	16.3		1154	596	75		
FH1115A57	17.8	295	1232	596	107	7.5	74
FH1116A66	19.0		1328	682	109		
FH1117A66	20.0				110		
FH1118A66	21.2				113		
FH1119A76	22.4	295	1424	788	117	9.0	74
FH1120A76	23.8				118		
FH1121A76	25.0	300			119		

1) Dimensions in accordance with page 10

2) Noise emissions measured in accordance with  
DIN 45635 at a distance of 1 m

The motor is surface-cooled and compliant with  
DIN IEC 34 and EN 60034 (protection degree IP 55).

## 50 Hz

Type	Max. del. pressure bar / spec. weight 1	Max. del. volume l/min	Height <sup>1</sup> H mm	Length <sup>1</sup> l mm	Weight kg	Power kW	Noise level <sup>2)</sup> dBA
FH1402A18	2.8	420	669	212	42	1.7	63
FH1403A28	4.1	425	798	308	49	2.6	63
FH1404A28	5.9	445	837	308	61	3.3	71
FH1405A38	7.2	455	933	404	63	4.0	71
FH1406A38	8.4	465	963	404	69	5.0	71
FH1407A47	10.0	475	1058	500	72	5.5	71
FH1408A47	11.8	475	1136	500	103	7.5	74
FH1409A57	12.1		1232	596	105		
FH1410A57	14.3	485	1232	596	112	9.0	74
FH1411A66	16.0		1328	692	128		
FH1412A66	17.6	485	1336	692	137	11.0	74
FH1413A76	19.0		1432	788	140		
FH1414A76	20.1	500	1432	788	144	13.0	74
FH1415A90	21.9		1576	932	147		
FH1416A90	23.2				148		
FH1417A90	24.8	500	1881	932	167	15.0	78

1) Dimensions in accordance with page 10

2) Noise emissions measured in accordance with  
DIN 45635 at a distance of 1 m

The motor is surface-cooled and compliant with  
DIN IEC 34 and EN 60034 (protection degree IP 55).

## 50 Hz

Type	Max. del. pressure bar / spec. weight 1	Max. del. volume l/min	Height <sup>1</sup> H mm	Length <sup>1</sup> l mm	Weight kg	Power kW	Noise level <sup>2)</sup> dBA
FH1702A18	3.1	500	702	212	48	2.2	63
FH1703A28	4.3	500	837	308	61	3.3	71
FH1704A28	6.0	500	867	308	67	5.0	71
FH1705A38	7.7	505	963	404	70	5.5	71
FH1706A38	9.1	505	1040	404	93	7.5	74
FH1707A47	10.4		1136	500	103		
FH1708A47	12.0	510	1136	500	122	9.0	74
FH1709A57	13.7	520	1240	596	130	11.0	74
FH1710A57	15.0				132		
FH1711A66	16.4	535	1336	692	136	13.0	74
FH1712A66	18.0				138		
FH1713A76	19.7	535	1737	788	156	15.0	78
FH1714A76	21.2	535	1787	788	174	18.5	78
FH1715A90	22.4	555	1930	932	176		
FH1716A90	24.0				178		
FH1717A90	25.2				183		

1) Dimensions in accordance with page 10

2) Noise emissions measured in accordance with  
DIN 45635 at a distance of 1 m

The motor is surface-cooled and compliant with  
DIN IEC 34 and EN 60034 (protection degree IP 55).

## 60 Hz

Type	Max. del. pressure bar / spec. weight 1	Max. del. volume l/min	Height <sup>1</sup> H mm	Length <sup>1</sup> l mm	Weight kg	Power kW	Noise level <sup>2)</sup> dBA
FH1102B18	3.4	275	643	212	39	1.49	66
FH1103B18	5.2	285	702	212	46	2.18	66
FH1104B28	6.8	290	798	308	47	2.94	66
FH1105B28	8.2	300	837	308	60	3.8	74
FH1106B28	10.1	310	837	308	62	4.55	74
FH1107B31	11.9	320	899	340	67	5.75	74
FH1108B38	13.8	325	963	404	69		
FH1109B38	15.6	330	963	404	71	6.3	74
FH1110B47	17.2	330	1136	500	102	8.6	77
FH1111B47	19.0	335			103		
FH1112B47	20.4	340			104		
FH1113B50	22.1	340	1168	532	112	10.3	77
FH1114B57	23.8	350	1232	596	113		
FH1115B57	25.0	350			114		

1) Dimensions in accordance with page 10

2) Noise emissions measured in accordance with  
DIN 45635 at a distance of 1 m

The motor is surface-cooled and compliant with  
DIN IEC 34 and EN 60034 (protection degree IP 55).

## 60 Hz

Type	Max. del. pressure bar / spec. weight 1	Max. del. volume l/min	Height <sup>1</sup> H mm	Length <sup>1</sup> l mm	Weight kg	Power kW	Noise level <sup>2)</sup> dBA
FH1402B18	4.0	460	702	212	48	2.94	66
FH1403B28	6.0	475	837	308	62	4.55	74
FH1404B28	8.1	490	867	308	68	6.3	74
FH1405B38	10.2	500	1040	404	98	8.6	77
FH1406B38	12.2	510			99		
FH1407B47	14.4	520	1136	500	109	10.3	77
FH1408B47	16.4	530	1144	500	127	12.6	79
FH1409B57	18.6	545	1240	596	131	15.0	79
FH1410B57	20.8	550			133		
FH1411B66	22.8	560	1641	692	161	17.3	81
FH1412B66	25.0	570			164		

1) Dimensions in accordance with page 10

2) Noise emissions measured in accordance with  
DIN 45635 at a distance of 1 m

The motor is surface-cooled and compliant with  
DIN IEC 34 and EN 60034 (protection degree IP 55).

## 60 Hz

Type	Max. del. pressure bar / spec. weight 1	Max. del. volume l/min	Height <sup>1</sup> H mm	Length <sup>1</sup> l mm	Weight kg	Power kW	Noise level <sup>2)</sup> dBA
FH1702B18	4.1	550	741	212	60	3.8	74
FH1703B28	6.4	555	867	308	66	5.75	74
FH1704B28	8.4	570	943	308	91	8.6	77
FH1705B38	10.8	580	1040	404	115	10.3	77
FH1706B38	13.1	600	1048	404	118	12.6	79
FH1707B47	15.2	605	1144	500	126	15.0	79
FH1708B47	17.4	610			128		
FH1709B57	19.7	620	1545	596	154	17.3	81
FH1710B57	21.8	630	1594	596	173	21.3	81
FH1711B66	24.0	640	1690	692	175		

1) Dimensions in accordance with page 10

2) Noise emissions measured in accordance with  
DIN 45635 at a distance of 1 m

The motor is surface-cooled and compliant with  
DIN IEC 34 and EN 60034 (protection degree IP 55).



### 3 Safety instructions

When operating the pump, the safety instructions contained in this manual, the relevant national accident prevention regulations and any other service and safety instructions issued by the plant operator are to be observed.

#### 3.1 Hazards in the event of non-compliance with the safety instructions

Non-compliance with the safety instructions may produce a risk to the personnel as well as to the environment and the machine and results in a loss of any right to claim damages.

For example, non-compliance may involve the following hazards:

- Failure of important functions of the machines/plant
- Failure of specified procedures of maintenance and repair
- Exposure of people to electrical, mechanical and chemical hazards
- Endangering the environment due to hazardous substances being released

#### 3.2 Unauthorized modes of operation



- Pump may not be used in potentially explosive environments!
- Pump and discharge piping are not designed to hold any weight and may not be used as a step ladder.

#### 3.3 Remaining Risk



##### **Risk of Injury!**

Risk of squeezing or crushing body parts when installing or removing the pump exists. Proper and secured lifting tools must be used.

##### **Risk of burns!**

The pump must have cooled down sufficiently prior to commencing any repair, maintenance or installation.

#### 3.4 Qualification and training of operating personnel

The personnel responsible for operation, maintenance, inspection and assembly must be adequately qualified. Scope of responsibility and supervision of the personnel must be exactly defined by the plant operator. If the staff does not have the necessary knowledge, they must be trained and instructed, which may be performed by the machine manufacturer or supplier on behalf of the plant operator. Moreover, the plant operator is to make sure that the contents of the operating manual are fully understood by the personnel.

#### 3.5 Safety instructions relevant for operation

- If hot or cold machine components involve hazards, they must be guarded against accidental contact.
- Guards for moving parts (e.g. coupling) must not be removed from the machine while in operation.
- Any leakage of hazardous (e.g. explosive, toxic, hot) fluids (e.g. from the shaft seal) must be drained away so as to prevent any risk to persons or the environment. Statutory regulations are to be complied with.
- Hazards resulting from electricity are to be prevented (see for example, the VDE Specifications and the bye-laws of the local power supply utilities).
- The pumps are only secured safely if properly attached to the floor and to the lined-up pump or tank.
- The female threads on the motor MUST NOT be used to lift the entire pump and motor assembly.

#### 3.6 Safety instructions relevant for maintenance, inspection and assembly work

Any work on the machine shall only be performed when it is at a standstill, it being imperative that the procedure for shutting down the machine described in this manual be followed.

Pumps and pump units which convey hazardous media must be decontaminated.

On completion of work all safety and protective facilities must be re-installed and made operative again.

Prior to restarting the machine, the instructions listed under "Start up" are to be observed.

#### 3.7 Signs on the pump

It is imperative that signs affixed to the machine, e.g.:

- arrow indicating the direction of rotation
- symbols indicating fluid connections be observed and kept legible.

#### 3.8 Unauthorized alterations and production of spare parts

Any modification may be made to the machine only after consultation with the manufacturer. Using spare parts and accessories authorized by the manufacturer is in the interest of safety. Use of other parts may exempt the manufacturer from any liability.

### 4 Transport and storage

Protect the pump against damage when transporting.

The pumps may only be transported in a horizontal position and hooks or straps must be attached on the motor and pump end.

Do not use the pump shaft for connecting any transportation aids such as hooks or straps.

Pumps must be drained prior to their storage.

Store pump in dry and protected areas and protect it against penetration of foreign bodies.

Always store pump above the freezing point!

## 5 Installation and Connection

### 5.1 Mechanical installation

During any assembly or disassembly process the pumps must be secured against tipping through ropes for example at all times.

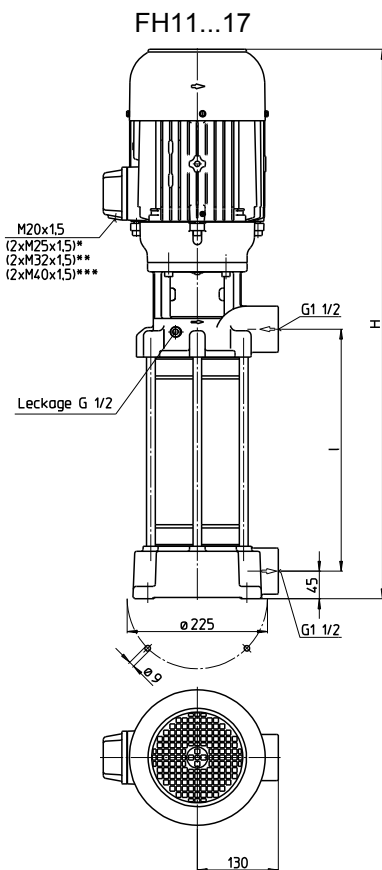
Pumps must be mounted securely. Piping, tank and pumps must be mounted without any tension.

The liquid entrance is situated at the pump body. The pressure connection is at the connection cover in the end of the pump unit (They are marked with arrows).

Possible leakage will be caught by a leakage chamber and returned to the tank by means of a leakage line from the leakage bore on the upper side of the flange.

To obtain the full flow rate it is recommended to choose for the pipework the nominal bore diameter of the pumps cross section for connection. Therefore pipe bends should be used, not pipe angles!

The pipework must be qualified for occurring hydraulic pressure.



\*) Dim. for 7.5 to 10.3 kW; \*\*) Dim. for 11 to 13.0 kW and 15 kW 60 Hz

\*\*\*) Dimensions for 15.0 kW 50 Hz to 21.3 kW

### ATTENTION

Pay attention of the max. tightening torque for piping connection

Type	Pipe connection	Cast iron
FH11...17	G 1 1/2	150 Nm

When installed the space around the pump must be large enough to provide sufficient cooling of the motor.

The suction port cannot support the weight of the supply pipe.

## 5.2 Electric wiring



All service work must be carried out by qualified service personnel. Pump must be disconnected from the power source and all rotating parts must stand still. Reassure that pump is disconnected from power source and cannot be switched on. Verify that there is no voltage at the terminal board!

According to the European Standard EN809 a motor overload must be installed and properly set to the full load amps stated on the pump name plate.

It is the responsibility of the machine operator to decide whether or not an additional emergency switch must be installed.

### 5.2.1 Circuit

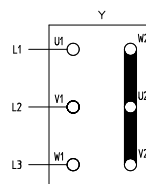


Tension voltage and frequency must correspond with the shown specification on the nameplate.

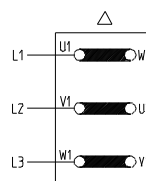
The pump must be wired so that a solid long term electrical connection is ensured. Establish a solid ground connection.

The electrical wiring must be performed according to the wiring diagram shown inside the terminal box cover. (Please see above sample wiring diagrams)

Wiring diagram e.g.



**Star connection**  
up to 5.5 kW  
3 x 400 V, 50 Hz  
resp. 380-415 V, 50 Hz



**Delta connection**  
up to 5.5 kW  
3 x 230 V, 50 Hz  
resp. 220-240 V, 50 Hz  
From 7.5 kW and higher  
3 x 400 V, 50 Hz  
resp. 380-415 V, 50 Hz

There may be no foreign objects such as dirt, particles or humidity inside the terminal board.

Mount terminal board cover to motor tight against dust and humidity and close up all unused wiring ports.

### ATTENTION

When Variable Frequency Drives are used interfering signals might occur.

Non-sinus shaped supply voltage from a variable frequency drive might result in elevated motor temperatures.

## 6 Start up / Shut down

### 6.1 Start up

#### ATTENTION

Switch off at the mains.

After connection the electrical wires, close the terminal box. Briefly start the motor (max. 30 sec.) and check the rotation according to the arrow on the top of the motor.

If the direction is incorrect change over two of the power leads.

### 6.2 Shut down

All service work must be carried out by qualified service personnel. Pump must be disconnected from the power source and all rotating parts must stand still. Reassure that pump is disconnected from power source and cannot be switched on. Verify that there is no voltage at the terminal board! Open terminal box and disconnect the power leads. Empty out the pump.

## 7 Operation

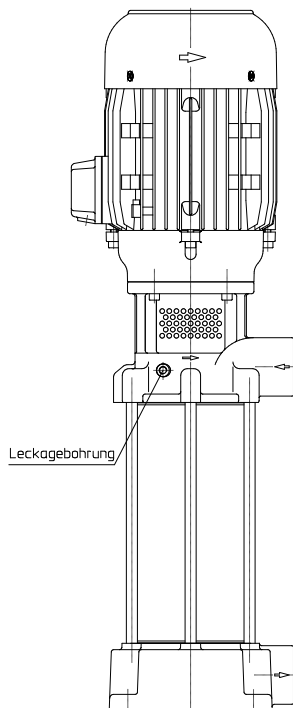
### Liquid level

The valve on the suction side of the pump must be opened 1 or 2 seconds before starting up the pump to avoid the damage resulting from low pressure.

Do not switch on pressure boosting pump FH before positive inlet pressure by a primary pump or by a static head pressure (from a central filtration system) is established. Max. inlet pressure 26 bar.

CAUTION: avoid hydraulic shocks!

Care has to be taken that the pump station will not run empty.



If the pump should lock up and cease, shut pump down (see 6.2) and disconnect from power supply. Pump must be uninstalled and removed from the system prior to its repair.



**Attention! Potential Risk of Burning!**

Surface temperatures above 50°C do occur during regular operation, i.e. on the surfaces of the motor and bearing housing.

It must be insured that the pump has cooled down sufficiently prior to performing any repair or maintenance work.

## 8 Servicing and Maintenance

#### ATTENTION

The surface of the motor must be kept free of dirt.

The motor shaft is spinning in permanently greased ball bearings (with special grease and increased bearing play) and does not require any special maintenance.

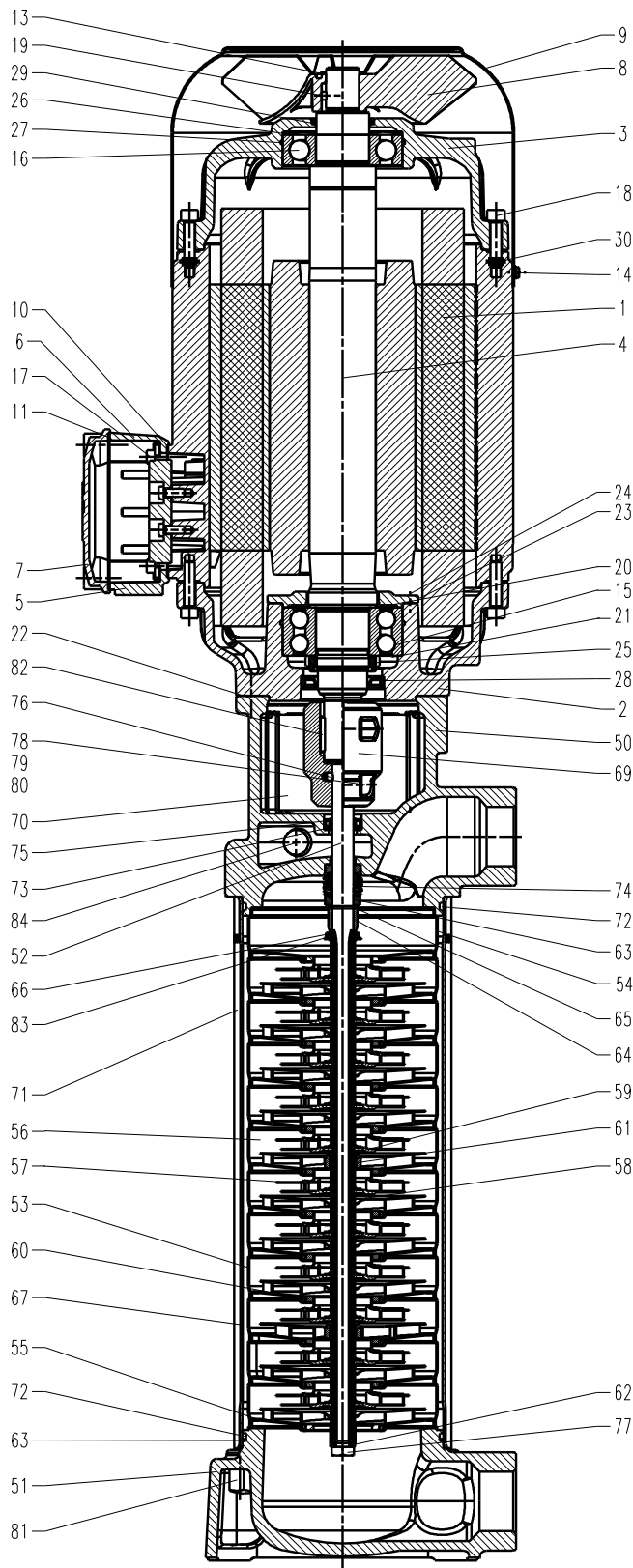
## 9 Trouble shooter's guide

Fault	Cause	Remedy
Motor does not start, no motor noise	At least two of the power supply leads have failed	Check fuses, terminals and supply leads .
	Overload has tripped	Inspect overload
Motor does not start, humming noise	One of the supply leads has failed	See above
	Impeller faulty Motor bearing faulty	Replace impeller Replace bearing
Overload trips	Pump locked up mechanically	Inspect pump hydraulics
	High on/of cycling frequency	Check application
Power consumption is too high	Wrong direction of rotation of impeller	See above
	Lime or other deposits mechanical friction	Clean pump mechanism repair pump
Motor overheats	High on/off cycling frequency Wrong power supply (voltage or cycles)	See above Power supply must correspond with name plate rating
	Insufficient cooling	Check air flow at motor fan
Pump does not pump	Pre-pump does not work	Check the pre-pump
	Pump mechanism faulty Pipe blocked	replace pump mechanism Clean pipe
Insufficient flow and pressure	Wrong direction of rotation of impeller	Change over two power supply leads
	Pump mechanism silted up Worn pump mechanism	Clean pump mechanism Replace pump mechanism
Incorrect flow or pressure	Wrong power supply (voltage or cycles)	Power supply must correspond with name plate rating
Running noise/Vibration	Foreign objects in pump end	Remove foreign objects
	Impeller damaged	Replace impeller
	Bearing/Bushing broken	Replace bearing/bushing

## 10 Spare part

### 10.1 Spare part list for pressure boosting pumps series FH11 FH1402A18...FH1413A76 FH1402B18...FH1408B47

FH1702A18...FH1710A57  
FH1702B18...FH1706B38



#### Item Description

1	Stator with terminal board	
2	Motor flange	
3	End shield	
4	Motor shaft with rotor	
5	Terminal box up to 5.5 kW	
6	Terminal box frame from 7.5 kW and over	
7	Terminal box cover from 7.5 kW and over	
8	Fan	
9	Fan cover	
10	Gasket	
11	Gasket from 7.5 kW and over	
13	Retaining ring	
13	Retaining ring 1.3...2.6 kW	DIN 471
14	Thread rolling screw	DIN 7500
15	Ball bearing	DIN 625
15	Ball bearing 1.3...2.6, 7.5 kW	DIN 628
16	Ball bearing	DIN 625
17	Slotted cheese head screw	DIN 84
18	Hexagon socket head cap screw	DIN 912
19	Parallel pin	DIN 7
20	Retaining ring up to 5.5 kW	DIN 472
21	Retaining ring up to 5.5 kW	DIN 471
22	Socket head cap screw	DIN 912
23	Bearing cover 7.5 kW and over	
24	Socket head cap screw 7.5 kW	DIN 931
25	Shaft nut 7.5 kW and over	
26	Compensation disk	
27	O-ring	
28	Shaft seal	
29	Rotary shaft seal	
30	Nut up 11 kW	DIN 934
50	Pump body	
51	Connection cover	
52	Pump shaft	
53	Diffusor with sliding ring	
54	Entering stage with sliding ring	
55	Outflow stage	
56	Bearing stage with sliding ring	
57	Impeller	
58	Spacer-long 2 x per stage	
59	Spacer-short 1 x per bearing stage	
60	Sliding ring	
61	Shaft sleeve	
62	Supporting ring	
63	Spiral backup ring	
64	Mech. Seal stop ring cover	
65	Mech. seal stop half-ring	
66	Mech. seal washer	
67	Pump casing	
69	Clamp coupling	
70	Coupling shield with M5 screw	
71	Stud bolt	
72	O-ring	
73	Rotary shaft seal	
74	Mechanical seal	
75	Retaining ring	
76	Parallel pin	DIN 7
77	Hexagon head cap screw	DIN 933
78	Hexagon socket head cap screw	DIN 912
79	Serrated lock washer	
80	Hexagon nut	DIN 934
81	Hexagon cap nuts	DIN 917
82	Woodruff key	DIN 6888
83	Distance plate instead of impeller / 60 HZ	
84	Hexagon socket pipe plug	DIN 906

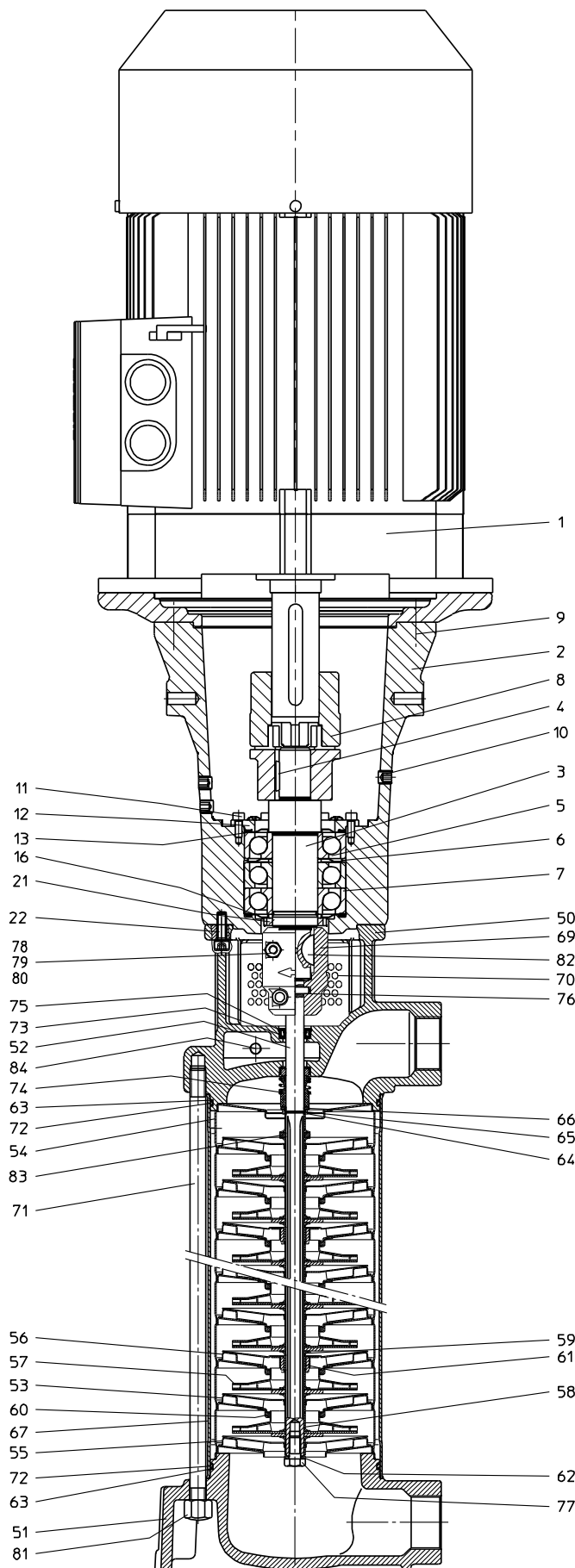
## 10.2 Spare part list for the pressure boosting pumps series

FH1414A76...FH1417A90

FH1409B57...FH1412B66

FH1711A66...FH1717A90

FH1707B47...FH1711B66



### Item Description

1	Motor	
2	Bearing housing	
3	Bearing shaft	
4	Woodruff key	DIN 6888
5	Ball bearing	DIN 628
6	Distance plate	
7	Ball bearing	DIN 628
8	Coupling	
9	Socket head cap screw	DIN 912
10	Threaded pin	DIN 705
11	Bearing cover	
12	Socket head cap screw	DIN 912
13	Nilos-ring	
16	Nilos-ring	
21	Shaft nut	
22	Socket head cap screw	DIN 912
50	Pump body	
51	Connection cover	
52	Pump shaft	
53	Diffusor with sliding ring	
54	Entering stage with sliding ring	
55	Outflow stage	
56	Bearing stage with sliding ring	
57	Impeller	
58	Spacer-long 2 x per stage	
59	Spacer-short 1 x per bearing stage	
60	Sliding ring	
61	Shaft sleeve	
62	Supporting ring	
63	Spiral backup ring	
64	Mech. seal stop ring cover	
65	Mech. seal stop half-ring	
66	Mech. seal washer	
67	Pump casing	
69	Clamp coupling	
70	Coupling shield with M5 screw	
71	Stud bolt	
72	O-ring	
73	Rotary shaft seal	
74	Mechanical seal	
75	Retaining ring	
76	Parallel pin	DIN 7
77	Hexagon head cap screw	DIN 933
78	Hexagon socket head cap screw	DIN 912
79	Serrated lock washer	
80	Hexagon nut	DIN 934
81	Hexagon cap nuts	DIN 917
82	Woodruff key	DIN 6888
83	Distance plate	
	instead of impeller / 60 Hz	
84	Hexagon socket pipe plug	DIN 906

### 10.3 Indications to the spare part order

Spare parts are available from the supplier. Standard commercially available parts are to be purchased in accordance with the model type. The ordering of spare parts should contain the following details:

#### 1. Pumptype

e.g. FH1407A47

#### 2. Pump No.

e.g. 11194114

The date of the construction year is a component of the pumps type number.

#### 3. Voltage. Frequency and Power

Take item 1, 2 and 3 from the nameplate

#### 4. Spare part with item No.

e.g. Impeller item No. 57

## 11 Repair

### 11.1 Exchange the rotary mechanical seal: FH11...FH17

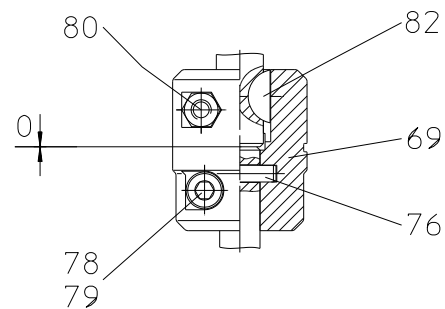
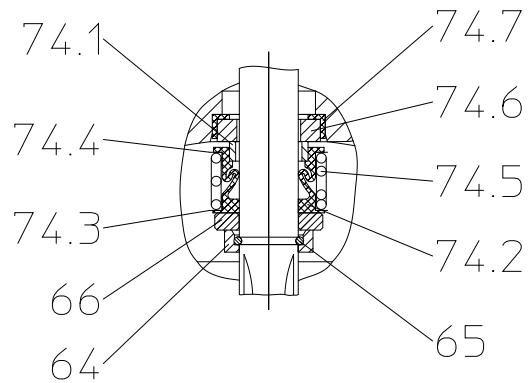
- 1) Disconnect the pump from the power supply.
- 2) Loosen the M5 screws and pull out coupling shield (70). Remove clamp coupling (69.1. 69.2) and parallel pin (76).
- 3) Loosen and pull off the hexagon cap nuts (81), the stud bolt (71), connection cover (51) and the pump casing (67) from the pump unit. Remove pump unit with pump shaft (52) from the pump body (50).
- 4) Take off rotating axial face seal unit (74.1-74.5) and mech. seal washer (66) from the shaft (52) and clean the shaft. Pay attention to the drilled hole for the parallel pin (76) that it is without any bur. Check the sliding surface for the rotary shaft seal (73) for any damage.
- 5) Remove complete seal (74.6. 74.7) from the pump body (50) and clean the seat.
- 6) Mounting of the new axial face seal :  
Ensure that the sliding surfaces of the ring and the rotating axial face seal unit are free from grease and dirt.  
Moisten the angle-sleeve (74.7) of the counter ring lightly with rinse water / (water with washing-up liquid) and push the unit into the seat of the pump body (50).  
Slide the mech. seal washer (66) first and then the axial face seal (74.1-74.5) onto the pump shaft (52).
- 7) Lubricate lightly the lip of the rotary shaft seal (73) and push it into the pump body (50). Then insert the pump shaft (52) with the pump unit through the rotary shaft seal (73).
- 8) Fit together the coupling clamp (69) with the parallel pin (76) around the shafts, tighten the hexagon socket head cap screws (78) with the serrated lock washer (79) lightly.  
Be sure that the key of the motor shaft (4) coincides with the key groove of the coupling clamp (69.1). Press the pump shaft (52) toward the motor and tighten the screws.  
The distance between the two shaft ends **must be zero**.

- 9) Lubricate the O-ring seal (72)  
Put on the spiral-backup ring (63), the O-ring seal (72), the connection cover (51) and the pump casing (67) and screw evenly the stud bolt (71) and the hexagon cap nuts (81).  
During the assembly from (63) and (72) take care of the order. See the pump drawing.
- 10) Fit the coupling shield (70) into the pump body (50) and tighten the M5 screws.
- 11) Reconnect pump to the power supply.

### Check direction of rotation!

#### Tightening torques for screwed connections

Thread - Ø	M4	M5	M6	M8	M10
Strength classes	4.8	4.8	8.8	8.8	8.8 / 10.0
Tightening torque (Nm)	1 Nm	3 Nm	4.5 Nm 20 Nm Clamp coupling	15 Nm 30 Nm Clamp coupling	30 Nm



## 12 Disposal

When disposing of the pump or the packaging materials the local and national regulation for proper disposal must be complied with. Prior to its disposal, the pump must be completely drained and decontaminated if necessary.

# 13 EC declaration of conformity

DEUTSCH / ENGLISH / FRANÇAIS / ESPAÑOL



## EG-Konformitätserklärung

### EC declaration of conformity / Déclaration de conformité CE / Declaración de conformidad CE

Hersteller / Manufacturer / Constructeur / Fabricante

**Brinkmann Pumpen, K. H. Brinkmann GmbH & Co. KG**  
Friedrichstraße 2, D-58791 Werdohl

Produktbezeichnung / Product name / Désignation du produit / Designación del producto

**Druckerhöhungspumpen / Pressure Boosting Pumps / Pompes de surpression / Bombas de aumento la presión**

**Typ / Type / Tipo FH11 ... FH17**

Das bezeichnete Produkt stimmt mit den folgenden Richtlinien des Rates zur Angleichung der Rechtsvorschriften der EG-Mitgliedsstaaten überein:

The named product conforms to the following Council Directives on approximation of laws of the EEC Member States:  
Le produit sus-mentionné est conforme aux Directives du Conseil concernant le rapprochement des législations des Etats membres CEE:

El producto designado cumple con las Directivas del Consejo relativas a la aproximación de las legislaciones de los Estados Miembros de la CEE:

<b>2006/42/EG</b>	Richtlinie für Maschinen
<b>2006/42/EC</b>	Council Directive for machinery
<b>2006/42/CE</b>	Directive du Conseil pour les machines
<b>2006/42/CE</b>	Directivas del Consejo para máquinas
<b>2014/30/EU</b>	Richtlinie für elektromagnetische Verträglichkeit
<b>2014/30/EU</b>	Council Directive for Electromagnetic compatibility
<b>2014/30/UE</b>	Directive du Conseil pour Compatibilité électromagnétique
<b>2014/30/UE</b>	Directivas del Consejo para Compatibilidad electromagnética

<b>2011/65/EU und 2015/863/EU</b>	RoHS Richtlinien
<b>2011/65/EU and 2015/863/EU</b>	RoHS Directives
<b>2011/65/UE et 2015/863/UE</b>	Directives RoHS
<b>2011/65/UE y 2015/863/UE</b>	RoHS Directivas

Folgende Ausnahmen gem. Anhang III RoHS (2011/65/EU) werden in Anspruch genommen: 6a, 6b  
The following exceptions in accordance with appendix III RoHS (2011/65/ EU) are claimed: 6a, 6b  
Les exceptions suivantes selon l'annexe III RoHS (2011 / 65 / UE) sont revendiquées : 6a, 6b  
Las siguientes excepciones conforme al apéndice III RoHS (2011/65 / UE) son requeridas: 6a, 6b

Hinsichtlich der elektrischen Gefahren wurden gemäß Anhang I Nr. 1.5.1 der Maschinenrichtlinie 2006/42/EG die Schutzziele der Niederspannungsrichtlinie 2014/35/EU eingehalten.

With respect to potential electrical hazards as stated in appendix I No. 1.5.1 of the machine guide lines 2006/42/EC all safety protection goals are met according to the low voltage guide lines 2014/35/EU.

Conformément à l'annexe I N° 1.5.1 de la Directive "Machines" (2006/42/CE) les objectifs de sécurité relatifs au matériel électrique de la Directive "Basse Tension" 2014/35/UE ont été respectés.

Con respecto al potencial peligro eléctrico como se indica en el apéndice I No. 1.5.1 del manual de la máquina 2006/42/CE, todos los medios de protección de seguridad se encuentran según la guía de bajo voltaje 2014/35/UE.

Die Übereinstimmung mit den Vorschriften dieser Richtlinien wird nachgewiesen durch die vollständige Einhaltung folgender Normen:

Conformity with the requirements of this Directives is testified by complete adherence to the following standards:

La conformité aux prescriptions de ces Directives est démontrée par la conformité intégrale avec les normes suivantes:

La conformidad con las prescripciones de estas directivas queda justificada por haber cumplido totalmente las siguientes normas:

Harmonisierte Europ. Normen / Harmonised Europ. Standards / Normes europ. harmonisées / Normas europ. Armonizadas

**EN 809 :1998+A1 :2009+AC :2010 EN ISO 12100 :2010 EN 60204-1 :2018 EN 61000-3-2 :2014 EN 61000-3-3 :2013**  
**EN 61000-6-2 :2005/AC :2005 EN 61000-6-3 :2007/A1 :2011/AC :2012 EN IEC 63000 :2018**

Nationale Normen / National Standards / Normes nationales / Normas nacionales : **EN 60034-1 :2010/AC :2010**

**Die Hinweise in der Betriebsanleitung für den Einbau und die Inbetriebnahme der Pumpe sind zu beachten.**

**The instructions contained in the operating manual for installation and start up the pump have to be followed.**

**Les indications d'installation / montage et de mise en service de la pompe prévues dans l'instruction d'emploi doivent être suivies.**

**Tenga en cuenta las instrucciones en el manual para la instalación y puesta en marcha de la bomba.**

**Brinkmann Pumpen, K. H. Brinkmann GmbH & Co. KG**

Werdohl, 22.11.2019

Reimund Gidde  
Geschäftsführer  
Managing Director

Dr. H. Abou Dayé

K. H. Brinkmann GmbH & Co. KG  
Friedrichstraße 2, D-58791 Werdohl

Dokumentationsbevollmächtigter / Representative of  
documentation/ Mandataire de documentation /  
Mandatario de documentación