Fire NBF, NKF

Grundfos electric-powered firefighting pump sets
Supplement for NB, NK installation and operating instructions

Installation and operating instructions

GRUNDFOS

Fire NBF, NKF

English (GB)

Installation and operating instructions 4

Original installation and operating instructions

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1. General information

This Fire NBF and NKF installation and operating instruction is a supplement to the following installation and operating instructions.

Product	Document type	QR code and link
NB, NBG	Installation and operating instructions	http://net.grundfos.com/qr/i/96483177
NK, NKG	Installation and operating instructions	http://net.grundfos.com/qr/i/96646512

Product	Document type	Publication number
NBF	Safety instruction	99333663
NKF	Safety instruction	99333665

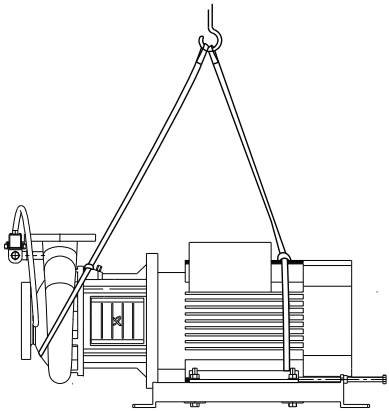
2. Mechanical installation

2.1 Foundation of an NBF pump set with slide rail

See section 8.3 Foundation of an NB, NBG pump without base frame in the NB, NBG installation and operating instructions.

2.2 Lifting of an NBF pump set with slide rail

Lift the NBF pump set by means of nylon straps and shackles as shown on figure below.



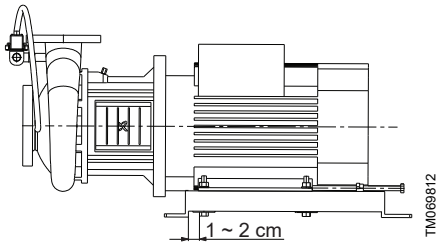
TM069813

Correct lifting of an NBF pump set with slide rail

2.3 Positioning of an NBF pump set with slide rail

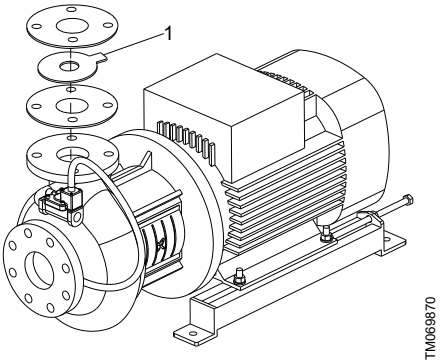
2.3.1 Position of the slide rail

The slide rail pair under operation must be positioned so it is placed furthest away from the pump part (on the figure, most to the right) except 1-2 cm to ensure motor and pump part to be fully closed.



Correct position of the slide rail when it is operating

2.3.2 Position of the orifice plate



Correct position of the orifice plate

Pos.	Description
1	Orifice plate

There are two models of orifice plates:

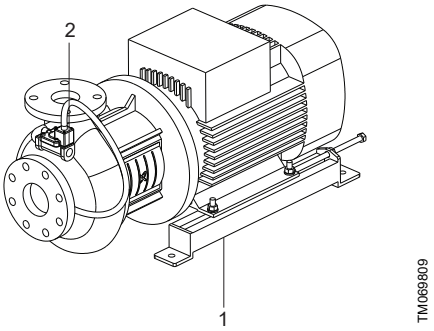
- For one of the models, the orifice plate is countersunk into the pump outlet flange and is mounted with three M4 countersunk screws onto the pump outlet flange. The screw torque is 1 ± 0.2 Nm.
- For the other model, the orifice plate is delivered separately. This type is disk shaped and with an "ear" showing the K factor and nominal outlet flange size. This model is placed between the pump outlet flange and the main pipe flange during the installation. This orifice plate must have a gasket on both sides provided by the installer. The outer diameter ensures that the orifice plate is kept in position via the bolts in the flange. See figure above.

3. Product description

NBF and NKF Fire Pumps with an LPCB approved Fire pump set demand a cooling loop. This secures always having a minimum flow when the pump is running, for example against a closed valve, and shall avoid overheating of the pump. The cooling loop valve opens automatically when it detects a pressure difference between pump inlet and outlet.

An NBF pump set has the motor mounted onto a pair of slide rails. The slide rail functions as control or guide when the motor is moved backwards, for example during service.

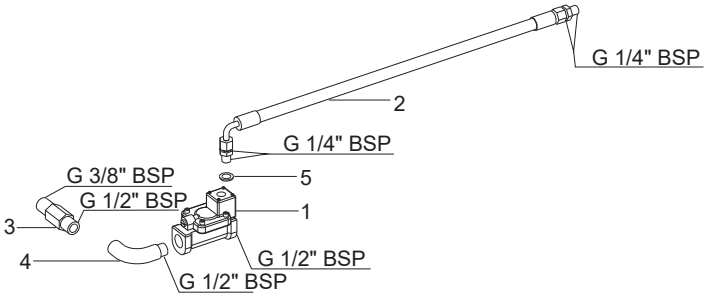
An NBF pump set includes a cooling loop and a slide rail, whereas an NKF pump set only includes a cooling loop.



NBF pump set with cooling loop and slide rail

Pos.	Description
1	Slide rail
2	Cooling loop

3.1 Cooling loop



Assembly of cooling loop

Pos.	Designation		Tightening & torque	Thread sealing
	Type G 3/8"	**Type G 1/2"**		
1	Valve EV220X DN15 G12 NC Hydraulic	Valve EV220X DN15 G12 NC Hydraulic	See table below (Brass)	
2	Cooling line hole 90 elbow 590 mm	Cooling line hole 90 elbow 650 mm	See table below	Use Loctite 577 [1] [2]
3	Bar, hexagon G 3/8 " - G 1/2", male fitting	Bar, hexagon G 1/2 " - G 1/2", male fitting	See table below	Use Loctite 577 [1]
4	Elbow 1/2" Female-Male	Elbow 1/2" Female-Male	See table below	Use Loctite 577 [1]
5	Fitting, self-centring G 1/4" BSP 821	Fitting, self-centring G 1/4" BSP 821		

1 The Loctite may NOT enter the internal parts of the valve or the hose. Therefore, only apply directly onto the male threads in an appropriate amount and position.

2 No Loctite on the thread at position 5.

Tightening & torque

Thread type & size	Tightening [Nm]	Max. torque [Nm]	
		Steel	**Brass (70 %)**
G 1/4" BSP	2-3 T.F.F.T [3]	50	35
G 3/8" BSP	2-3 T.F.F.T [3]	63	
G 1/2" BSP	2-3 T.F.F.T [3]	160	112

3 T.F.F.T=Turns-From-Finger-Tight

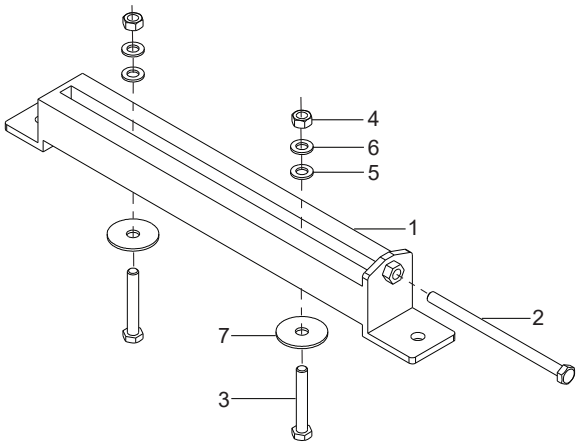
Example on how to interpret table of tightening and torque.

The connection of the G 1/2" male thread elbow fitting to the Danfoss relief valve's female G 1/2" thread (brass):

Use your fingers to tighten the elbow fitting as much as possible. Then make 2 to 3 360° turns of the fitting with the torque wrench. The connection should be leakage-free.

Note: The 2 to 3 360° turns of the fitting must not exceed a torque value of 112 Nm as this will put too much strain on the material.

3.2 Slide rail



Assembly of slide rail

Pos.	Designation		Tightening & torque
	Type D160 & D180	**Type 200 & D225**	
1	Slide rail for motor, D160 & D180	Slide rail for motor, D200 & D225	
2	Hexagon bolt, M12 x 220	Hexagon bolt, M16 x 300	
3	Hexagon bolt, M12 x 90	Hexagon bolt, M16 x 120	See table below
4	Hexagon nut, M12	Hexagon nut, M16	See table below
5	Washer, plain M12	Washer, plain M16	
6	Washer, spring M12	Washer, spring M16	
7	Washer, M12 ∅55 mm x 3 mm	Washer, M16 ∅60 mm x 4 mm	

Tightening & torque

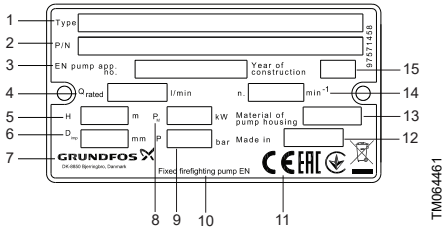
Thread type & size	Torque [Nm]
M12 [1]	70 ± 10
M16 [1]	180 ± 20

1 Class 8.8; Util. rate 0.9; Coef. of fric. 0.14

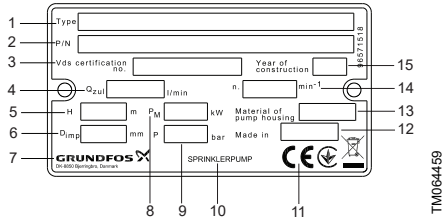
4. Identification

4.1 Nameplate

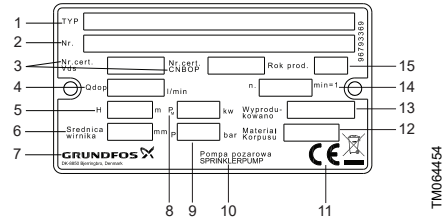
The nameplate shows all important data of the pump set. The nameplate is attached to the bearing bracket.



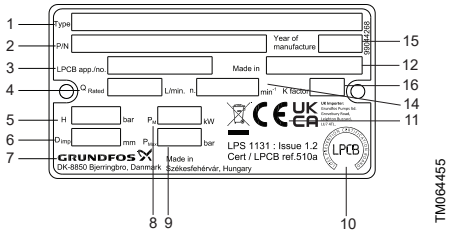
Nameplate of an NBF or NKF pump set with EN approval



Nameplate of an NKF pump set with VdS approval



Nameplate of an NBF or NKF pump set with CNBOP approval



Nameplate of an NBF or NKF pump set with LPCB approval

Pos.	Description
1	Type designation
2	Product number
3	Approval number
4	Rated flow rate [l/min]
5	Head [m]
6	Impeller diameter [mm]
7	Manufacturer
8	Rated engine power [kW]
9	Maximum operating pressure [bar]
10	Approval or standard
11	Approval mark
12	Country of origin
13	Pump housing material
14	Rated speed [rpm]
15	Year of construction
16	K-factor for orifice plate

4.2 Type key

4.2.1 NBF pump set

Example: NBF 80-250/270 A-F-B-S-BAQE-G 50Hz

Code	Explanation	Designation
NBF	Pump type Pump for firefighting	
80		Nominal diameter of discharge flange [mm]
-250		Pump housing size (Nominal impeller size) [mm]
/270		Actual impeller diameter [mm]
A	A: Basic version C: Without motor D: Pump housing with feet F: With base frame X: With motor slide rails	Code for pump version
F	F: DIN flange (EN 1092-2)	Code for pipework connection
B	B: EN-GJL-250 pump housing and bronze CuSn10 impeller, bronze wear ring S: EN-GJS-400-15 pump housing and bronze CuSn10 impeller, bronze wear ring	Code for materials
S	S: Single seal	Shaft seal arrangement
BAQE	**Grundfos type designation** B: Rubber bellow seal **Material, rotating seal face** A: Carbon, metal-impregnated **Material, stationary seat** Q: Silicon carbide **Material, secondary seal** E: EPDM	Code for mechanical shaft seal
G	D: CNBOP E: LPS 1131 G: prEN 12259-12 S: Custom	Approval/standard
50 Hz		Rated speed [rpm] (only used for pump without motor)

4.2.2 NKF pump set

Example: NKF 80-250/270 AH-F-B-S-BAQE-G 2960

Code	Explanation	Designation
NKF	Pump type Pump for firefighting	
80		Nominal diameter of discharge flange [mm]
-250		Pump housing size (Nominal impeller size) [mm]
/270		Actual impeller diameter [mm]
AH	AH: Bare shaft pump A1: Basic version with standard coupling A2: Basic version with spacer coupling	Code for pump version
F	F: DIN flange (EN 1092-2)	Code for pipework connection
B	B: EN-GJL-250 pump housing and bronze CuSn10 impeller, bronze wear ring S: EN-GJS-400-15 pump housing and bronze CuSn10 impeller, bronze wear ring	Code for materials
S	B: Stuffing box S: Single seal	Shaft seal arrangement
BAQE	**Grundfos type designation** B: Rubber bellow seal **Material, rotating seal face** A: Carbon, metal-impregnated **Material, stationary seat** Q: Silicon carbide **Material, secondary seal** E: EPDM	Code for shaft seal
	Grundfos type designation S: Packing type stuffing box **Cooling method** N: Uncooled stuffing box **Barrier liquid** E: With internal barrier liquid O: Without barrier liquid **Materials** A: PTFE-impregnated packing rings and EPDM O-rings in the pump housing	Code for stuffing box
G	D: CNBOP E: LPS 1131 F: VdS 2100-07 G: prEN 12259-12 S: Custom	Approval/standard
2960		Rated speed [rpm] (only used for bare shaft pumps)

Subject to alterations.

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