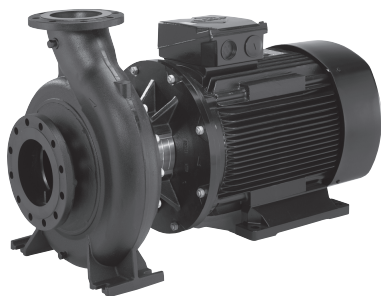


NB, NBG, TP, TPD

ATEX-approved pumps

Installation and operating instructions



QR96528411

Other languages

<http://net.grundfos.com/qri/96528411>

NB, NBG, TP, TPD

English (GB)

Installation and operating instructions 4

English (GB) Installation and operating instructions

Original installation and operating instructions

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1. General information



Read this document before you install the product. Installation and operation must comply with local regulations and accepted codes of good practice.

These supplementary installation and operating instructions apply to ATEX-approved Grundfos NB, NBG, TP, TPD pumps and NB, NBG bare-shaft pumps. The pumps comply with ATEX Directive 2014/34/EU.

1.1 Symbols used in this document



DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious personal injury.



WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious personal injury.



CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate personal injury.

The text accompanying the three hazard symbols DANGER, WARNING and CAUTION is structured in the following way:

SIGNAL WORD



Description of the hazard

Consequence of ignoring the warning

- Action to avoid the hazard.



A blue or grey circle with a white graphical symbol indicates that an action must be taken.



A red or grey circle with a diagonal bar, possibly with a black graphical symbol, indicates that an action must not be taken or must be stopped.



If these instructions are not observed, it may result in malfunction or damage to the equipment.



Tips and advice that make the work easier.

1.2 Related installation and operating instructions

In addition to these instructions, observe all installation and operating instructions supplied with the pump.

- NB, NBG product number: 96483177.
- TP, TPD product number: 96404999.
- TP product number: 96511031.

2. Product introduction

2.1 NB, NBG bare-shaft pumps

ATEX-approved NB, NBG bare-shaft pumps are supplied with an ATEX marking similar to that of the ATEX-approved NB, NBG pump. See section Identification.

Installation and operating instructions mentioned in section [Related installation and operating instructions](#) also apply to ATEX-approved NB, NBG bare-shaft pumps.

Related information

[1.2 Related installation and operating instructions](#)

2.2 Intended use

The pumps are suitable for use in areas or zones classified according to Directive 2014/34/EU. In case of doubt, consult the above-mentioned directives, or contact Grundfos.

The pumps must only be operated within the specification given in the "key application data sheet".

2.3 Pumped liquids

The pumps are suitable for thin, clean liquids, not containing solid particles or fibres.

2.4 Explosion protection documentation

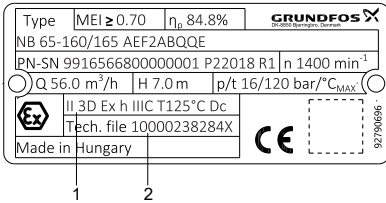
The combination of NB, NBG, TP, TPD pumps and all monitoring equipment must be described in the explosion protection document according to the Directive 2014/34/EU. The responsibility rests with the installer or owner.

2.5 Identification

2.5.1 Nameplate

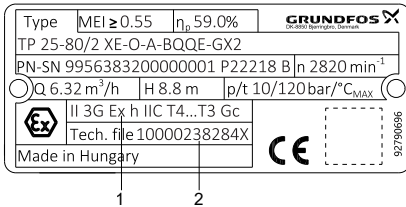
The nameplate on the pump head gives the following details:

- data for the standard pump
- data for the ATEX marking, pos. 1 and 2.



TM08422B

Nameplate of ATEX-approved NBG pump



TM08422T

Nameplate of ATEX-approved TP pump

Data for the ATEX marking only refer to the pump part including the coupling. The motor has a separate nameplate.

ATEX-related positions on the pump nameplate:

Pos.	Description	
	ATEX marking	
II	Equipment group	
2, 3	Equipment category	
G	Environment:	
D	Gas or vapours Combustible dust	
Ex	Explosion protection	
h	Type of protection	
1	II C IIC	Environment group: Gas or vapours Combustible dust
T4...T3	Maximum surface temperature according to 80079-36. Temperature range or specific temperature.	
T125 °C		
Gb	EPL	
Db	(Equipment Protection Level)	
	Technical file number	
10000238284	Number of technical file stored at DEKRA.	
2	"X" indicates that the equipment is subject to special conditions for safe use. The conditions are mentioned in this document.	
X		

2.6 ATEX approvals

2.6.1 Scope of ATEX categories for NB, NBG, TP, TPD pumps

Directive	ATEX-approved NB, NBG, TP, TPD pumps									
2014/34/EU	Equipment group	I			II					
	Equipment category	M			1		2		3	
	Environment	1	2	G	D	G	D	G	D	
	EPL (Equipment Protection Level)	Ma	Mb	Ga	Da	Gb	Db	Gc	Dc	
1999/92/EC	Zone			0	20	1	21	2	22	
Pumps		None			NB, NBG, TP, TPD					
Motors		None			II 2G Ex eb IIC T3 Gb II 2G Ex db IIC T4 Gb II 2G Ex db eb IIC T4 Gb		II 2D Ex tb IIIC T125 °C Db	II 3G Ex ec IIC T3 Gc	II 3D Ex tc IIIC T125 °C Dc	

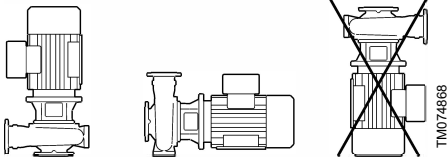
The link between groups, categories and zones is explained in the 2014/34/EU Directive. Please note that this is a minimum directive. Some EU countries might therefore have stricter local rules. The user or installer is always responsible for checking that the group and category of the pump correspond to the zone classification of the installation site.

3. Installation requirements

3.1 Location

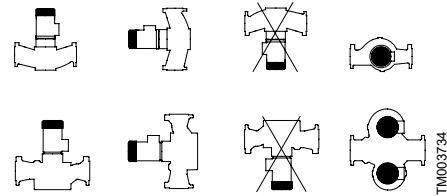
3.1.1 Horizontal or vertical installation

NB, NBG

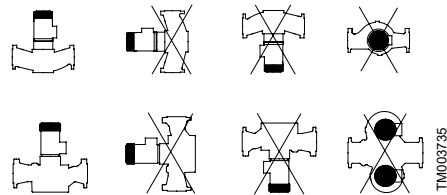


Installation of NB, NBG pumps

TP, TPD



Installation of a TP and a TPD pump with a motor size smaller than 11 kW



Installation of a TP and a TPD pump with a motor size of 11 kW and above

3.1.2 Pit installation

WARNING
Accumulation of explosive gases from shaft seal leakage
 Death or serious personal injury



- Provide adequate ventilation around the pump if the pump is installed in a pit. A minimum air exchange of 1.5 times per hour is required.

3.2 Bypass with pressure relief valve

CAUTION
Overheating

Minor or moderate personal injury



- The pump must not run against a closed outlet valve or a closed shut-off element as this may cause overheating. Install a bypass with a pressure relief valve.
- Observe the minimum flow rate. See section *Related installation and operating instructions*.

Related information

[1.2 Related installation and operating instructions](#)

4. Electrical connection

4.1 Earthing the pump housing



DANGER
Electric shock

Death or serious personal injury

- The pump housing must be earthed.



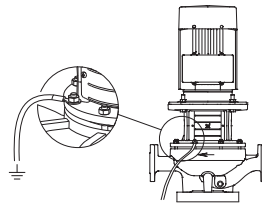
DANGER
Ignition of explosive environment

Death or serious personal injury

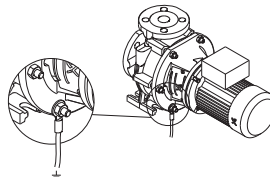
- The pump housing must be earthed.



Remove coating from the earthing point to ensure proper grounding connection.



TM054161_2112



TM054162

Earthing point of the pump housing

Torque: 80 ± 16 Nm.

5. Starting up the product

WARNING Dry running



Death or serious personal injury

- Make sure that the pump is filled with pumped liquid during operation.

5.1 Before starting an ATEX-approved pump



Strictly observe the following check list.

1. Compare the order with the supplied pump and motor. Check that the EPL of the pump and motor (Equipment Protection Level) corresponds to what is ordered. If the EPL of the motor and pump differs from each other or the temperature class of the motor differs from that of the pump, the following applies:
 - The EPL which defines the lower protection level applies. Example: The EPL of the motor is Gc and the pump's is Gb. Gc applies.
 - The temperature class which defines the higher temperature applies. Example 1: Motor temperature class is T4 (135 °C), and pump temperature class is T3 (200 °C). T3 (200 °C) applies. Example 2: Motor temperature class is T3 (200 °C), and pump temperature class is T4...T3. T3 (200 °C) applies.
2. Check that the pumped liquid and its operating temperatures are in accordance with what is stated on the "key application data sheet".
3. Check that the shaft seal and rubber parts of the pump are as ordered. See the nameplate.

NB32-125.1/142.1AEFAESBQOE

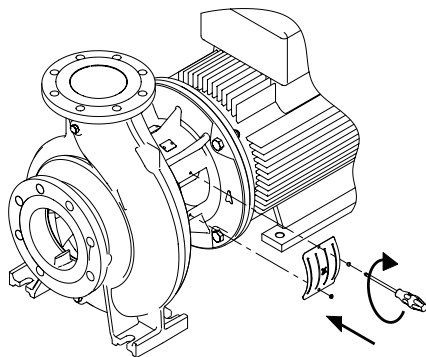
Example of code for rubber parts on the NB, NBG nameplate

TP 150-360/4 A-F-B-BQOE

Example of code for rubber parts on the TP nameplate

The key to the nameplate is shown in the installation and operating instructions for the standard pump.

4. Check that the maximum speed on the pump nameplate corresponds to the speed of the motor and that the pump will not be used for operation with a frequency over 60 Hz.
5. Check that the pump has been filled with liquid and is vented.



TM033919

Location of vent screws

6. Check that the shaft can rotate freely. There must be no mechanical contact between impeller and pump housing.
7. Check the direction of rotation. The correct direction of rotation is shown by an arrow on the pump housing.
8. Before start and during operation, make sure that the pump does not leak or have any malfunctions.
9. The pump must be re-vented in these cases:
 - The pump has been stopped for a period of time.
 - Air or gas has accumulated in the pump.

TM074826

TM067168

5.2 Non-flammable liquids

EPL Gb/Db (category 2G/D)

If the operator cannot ensure that the pump is filled with pumped liquid during operation, appropriate monitoring, for instance dry-running protection, is required to stop the pump in case of malfunction.

EPL Gc/Dc (category 3G/D)

No additional monitoring is required.

5.3 Flammable liquids

EPL Gb/Db, Gc/Dc

If the operator cannot ensure that the pump is filled with pumped liquid during operation, appropriate monitoring, for instance dry-running protection, is required to stop the pump in case of malfunction. Ventilation around the pump is also required. The leakage rate of a normally working shaft seal is less than 36 ml for each 24 hours of operation. A minimum air exchange of 1.5 times per hour is required.

CAUTION

Flammable material

Minor or moderate personal injury



- The responsibility for checking the functions of the dry-running protection, such as flow rate, sealing pressure and temperature of the barrier or flushing liquid rests with the installer or owner.



Increased leakage can be the indication of shaft seal failure. For some types of liquids the leakage will not be visible due to evaporation.

5.4 Checking the direction of rotation



Never check the direction of rotation by starting the pump, not even for a short period, unless the pump has been filled with liquid. This is to prevent temperature rises resulting from contact between rotating and stationary components, and to protect the shaft seal against dry running.

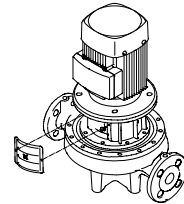
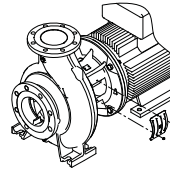
6. Servicing the product

Service on the pump end can be made on site. The pump end does not need to be shipped to an approved ATEX workshop.



Strictly observe the following check list. It may be overruled by stricter local maintenance schedules.

1. Check on a daily basis that the shaft seal functions correctly.
2. Any standby pump installed must be switched on once a week to keep it operational.
3. It is the responsibility of the customer to do the following:
 - Decide whether to use the non-sparking tools or to shut down the system for service.
 - Lay down a cleaning scheme for pump surfaces in installations with combustible dust.
4. When cleaning a pump in a combustible dust environment, remember to take the shaft guard off and clean the shaft cavity.



TM081260

Take the shaft guard off

5. Inspect O-rings for cracks, elasticity, and permanent change of shape when doing periodic maintenance or servicing the pump. Renew O-rings if necessary.
6. Torques for all fasteners can be found in the service instructions for NB, NBG and TP, TPD products.

7. Technical data

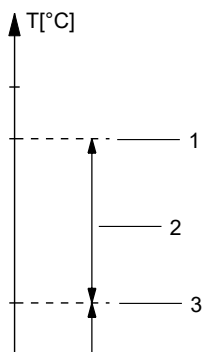
7.1 Operating conditions

7.1.1 Liquid temperature

The maximum liquid temperature depends on the temperature class specified by customer and the shaft seal.

Temperature class	Maximum surface temperature [°C]
T1	450
T2	300
T3	200
T4	135
T5	100
T6	85

The illustration below shows the maximum surface temperature of the pump as a result of maximum liquid temperature and temperature rise in the shaft seal.



TM081289

Calculation of maximum surface temperature

Pos.	Description
1	Maximum surface temperature of the pump
2	Temperature rise in the shaft seal (determined by Grundfos)
3	Maximum liquid temperature

The maximum surface temperature of the pump must be at least 5 °C lower than the maximum surface temperature of the temperature class specified by the customer.

The maximum liquid temperature and the temperature class specified by the customer are stated on the "key application data sheet" supplied with the pump. See the example at the end of this document.

A copy is filed by Grundfos and can be traced by means of the product number and serial number on the pump nameplate.

Model B 96689648 P2 07 02 0001

TM067167

Model, product number, production site, year, week, and serial number



Do not exceed the maximum liquid temperature or pump another type of liquid than those specified on the "key application data sheet" supplied with the pump. Damage resulting from disregarding this warning will not be covered by the Grundfos warranty.



If the "key application data sheet" is missing, contact Grundfos for information about the maximum liquid temperature.

If the pump is to be operated at a higher liquid temperature, or with another liquid than the one stated on the data sheet, contact Grundfos.

7.1.2 Ambient temperature

The ambient temperature range in operation is -20 to +60 °C for the pump-end.

8. Disposing of the product

This product or parts of it must be disposed of in an environmentally sound way.

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.



The crossed-out wheellie bin symbol on a product means that it must be disposed of separately from household waste. When a product marked with this symbol reaches its end of life, take it to a collection point designated by the local waste disposal authorities.

The separate collection and recycling of such products will help protect the environment and human health.

See also end-of-life information at www.grundfos.com/product-recycling.

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