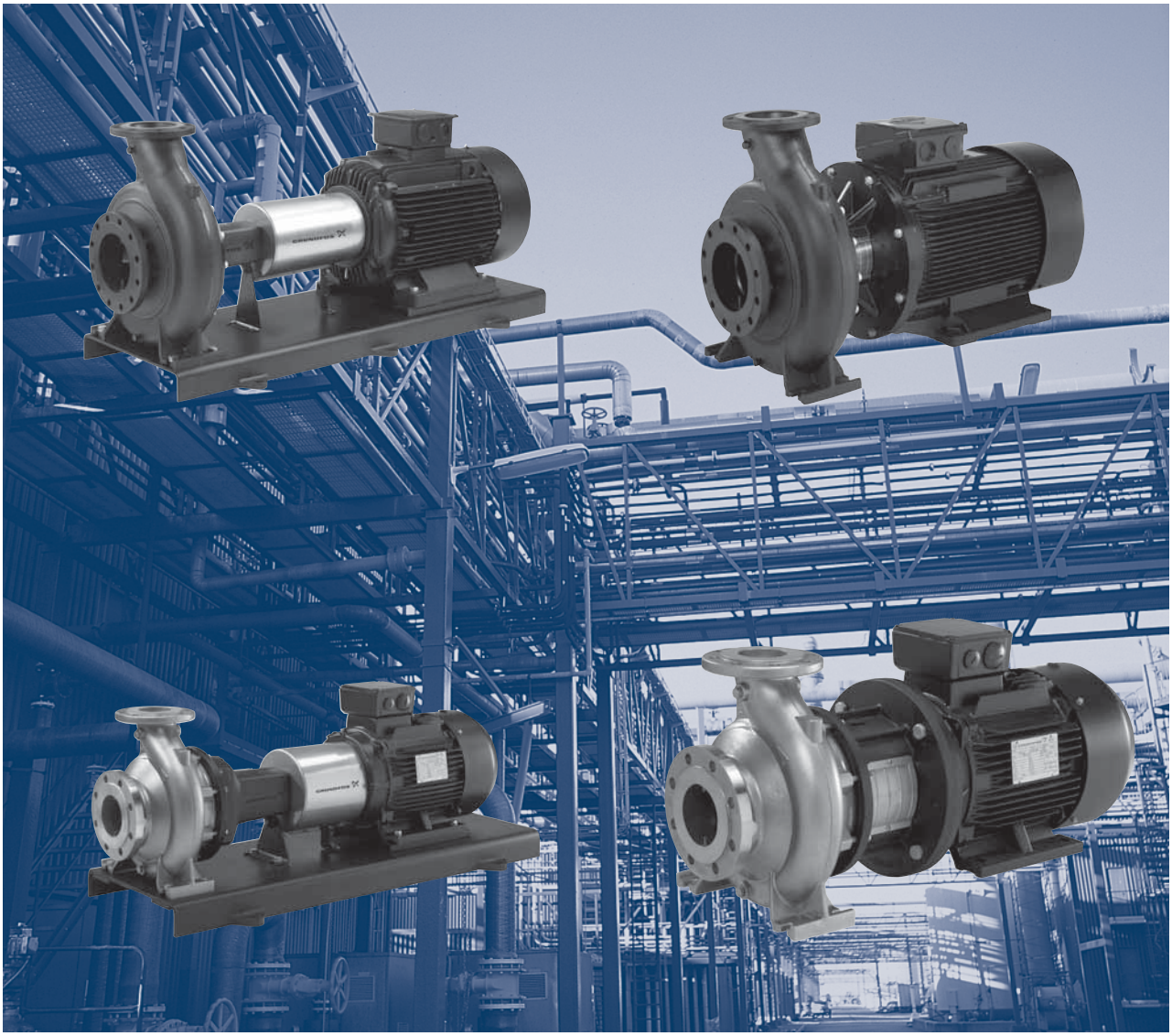
NBG, NKG

Single-stage end-suction pumps according to ISO 2858
50 Hz



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Applications

Introduction

NBG and NKG are multi-purpose pumps suitable for a variety of different applications demanding reliable and cost-efficient supply.

NBG and NKG pumps are used in five main fields of application:

- water supply
- industrial pressure boosting
- industrial liquid transfer
- HVAC
- irrigation.

Water supply

Besides general water supply in municipal and industrial waterworks, the NBG and NKG pumps are used for these specific applications:

- filtration and transfer at waterworks
- pressure boosting in mains
- pressure boosting in high-rise buildings, hotels, etc.
- pressure boosting in industrial buildings
- various swimming bath applications.

Industrial pressure boosting

Pressure boosting in:

- industrial washing and cleaning systems
- industrial washdown systems
- vehicle washing tunnels
- fire protection systems.

Industrial liquid transfer

Liquid transfer in:

- cooling and air-conditioning systems (refrigerants)
- boiler-feed and condensate systems
- aquafarming
- industrial heating systems
- district heating plants.

HVAC

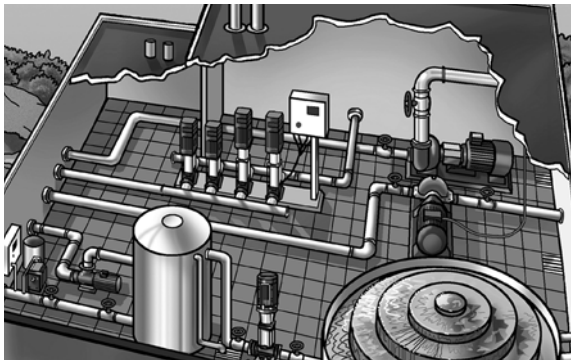
Liquid transfer in:

- heating systems
- ventilation systems
- HVAC
- air-conditioning systems

Irrigation

Irrigation covers these applications:

- field irrigation (flooding)
- sprinkler irrigation
- drip-feed irrigation.



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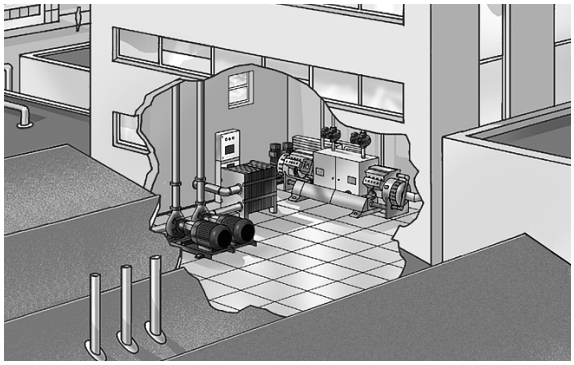

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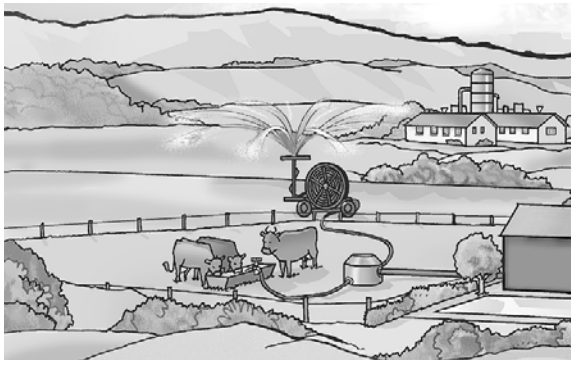

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Features and benefits

NBG and NKG pumps present these features and benefits:

- The pumps are non-self-priming, single-stage, centrifugal volute pumps with axial suction port, radial discharge port and horizontal shaft.
- Suction and discharge flanges are PN 16 according to EN 1092-2.
- Dimensions and rated performance are according to ISO 2858 (16 bar).
- The NBG pump is close-coupled with a totally enclosed fan-cooled standard motor with main dimensions to IEC and DIN standards
- The NKG pump is long-coupled with a totally enclosed fan-cooled standard motor with main dimensions to IEC and DIN standards and mounting designation B3 (IM 1001).
- The mechanical shaft seal has dimensions according to EN 12756.
- NBG and NKG pumps offer flow rates from 2 to 1200 m^3/h and heads from 2 to 160 m. Motor sizes fall in the 0.25 to 355 kW range.
- Pumps with power requirement of 1.1 to 22 kW are available with motors with built-in frequency converter. These pumps are called NBGE and NKGE.
- Pumps outside ISO 2858 are called "oversize"; dimensions may differ from the dimensions of similar pumps from other suppliers.
- All pumps are dynamically balanced according to ISO 1940 class 6.3.
  Impellers are hydraulically balanced.
- The NKG pump and motor are mounted on a common, steel base frame in accordance with EN 23661.
- The NBG and NKG product ranges are available in two product series, "standard range" and "premium range". Premium-range products are available with EFF 1 motors; standard-range products with EFF 2 motors.
- The pumps are of the back pull-out design enabling removal of the motor, coupling, bearing bracket and impeller without disturbing the pump housing or pipework. Even the largest pumps can thus be serviced by a single person with a crane. See fig. 1 and fig. 2.

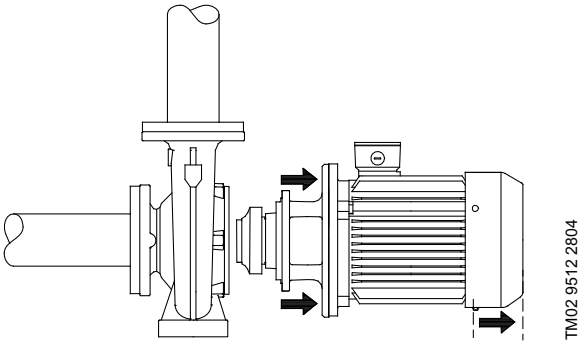


Fig. 1 NBG back pull-out design

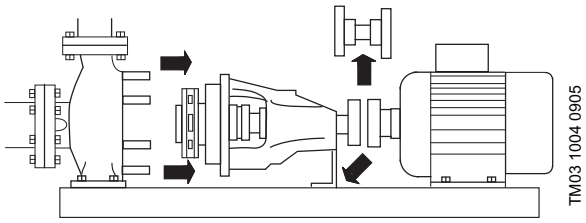


Fig. 2 NKG back pull-out design

High-efficiency motors

Premium range 2- and 4-pole NBG and NKG pumps with motor sizes from 1.1 to 90 kW are fitted with high-efficiency motors (EFF 1). EFF 1 is the highest efficiency class defined by CEMEP (European Committee of Manufacturers of Electrical Machines and Power Electronics).

Features and benefits

Pumps with electronic speed control

NBG and NKG pumps equipped with a motor with built-in frequency converter and the necessary application software to achieve an all-in-one solution enable electronic speed control. These pumps are called NBGE and NKGE.

Electronic speed control enables continuously variable control of motor speed which again enables adaptation of the performance to a given requirement.

The pump materials of NBGE and NKGE pumps are the same as those of the NBG and NKG pump range.

If a sensor is installed, NBGE and NKGE pumps allow for any of these configurations and control methods:

- constant pressure
- temperature control
- constant flow.

Why select an NBGE, NKGE pump?

Select an NBGE, NKGE pump if

- controlled operation is required
- constant pressure is required
- communication with the pump is required.

This furthermore gives these obvious advantages:

- energy savings
- increased comfort.

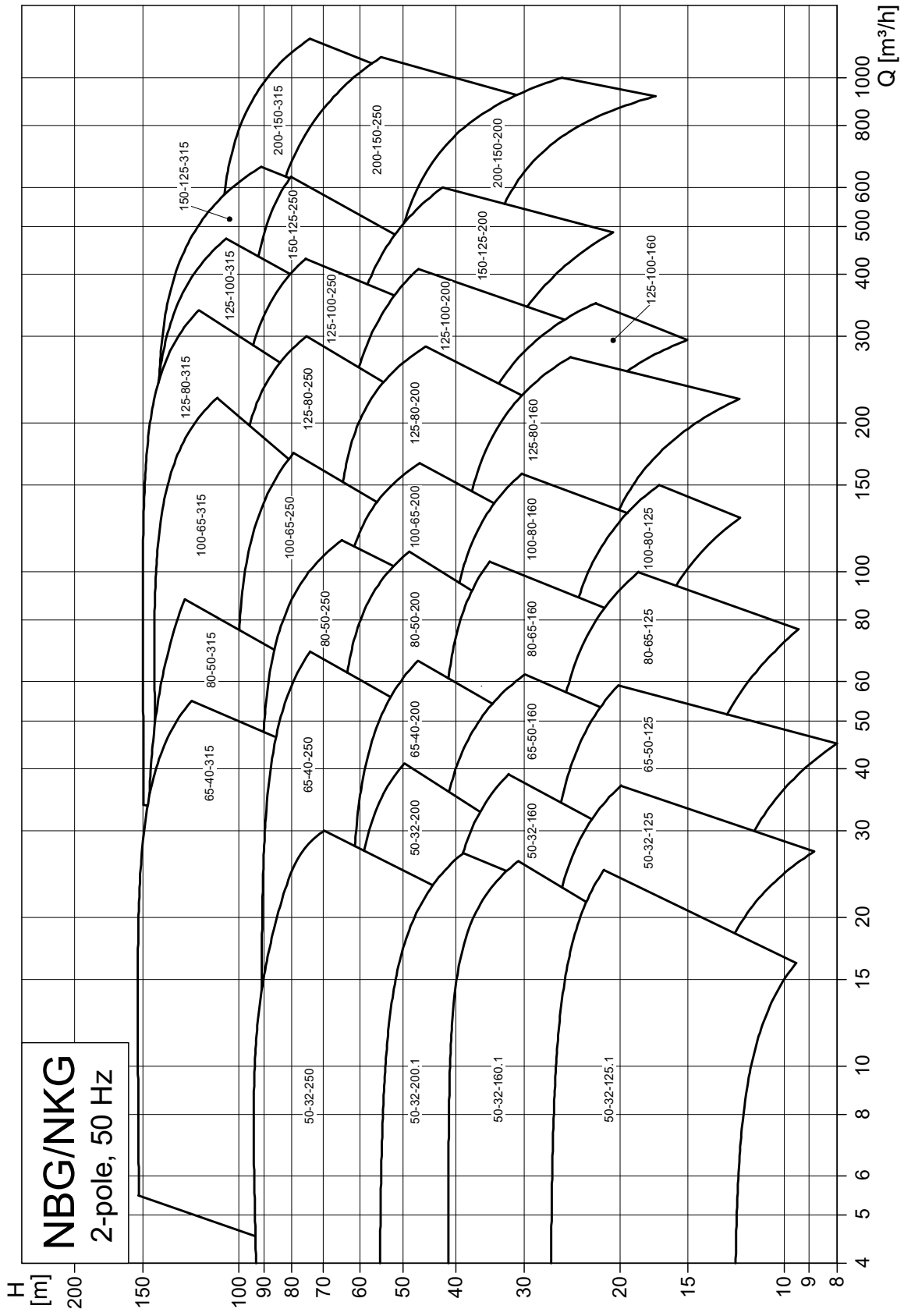
For further information on electronic speed control, see section "Speed-controlled NBG and NKG pumps" on page 33.

ATEX-approved NBG and NKG pumps

On request, Grundfos offers NBG and NKG pumps with ATEX-approval in accordance with Directive 94/9/EC (group II, category 3G and 3D). If an ATEX-approved dry-running protection is installed, the pump can be upgraded to category 2G.

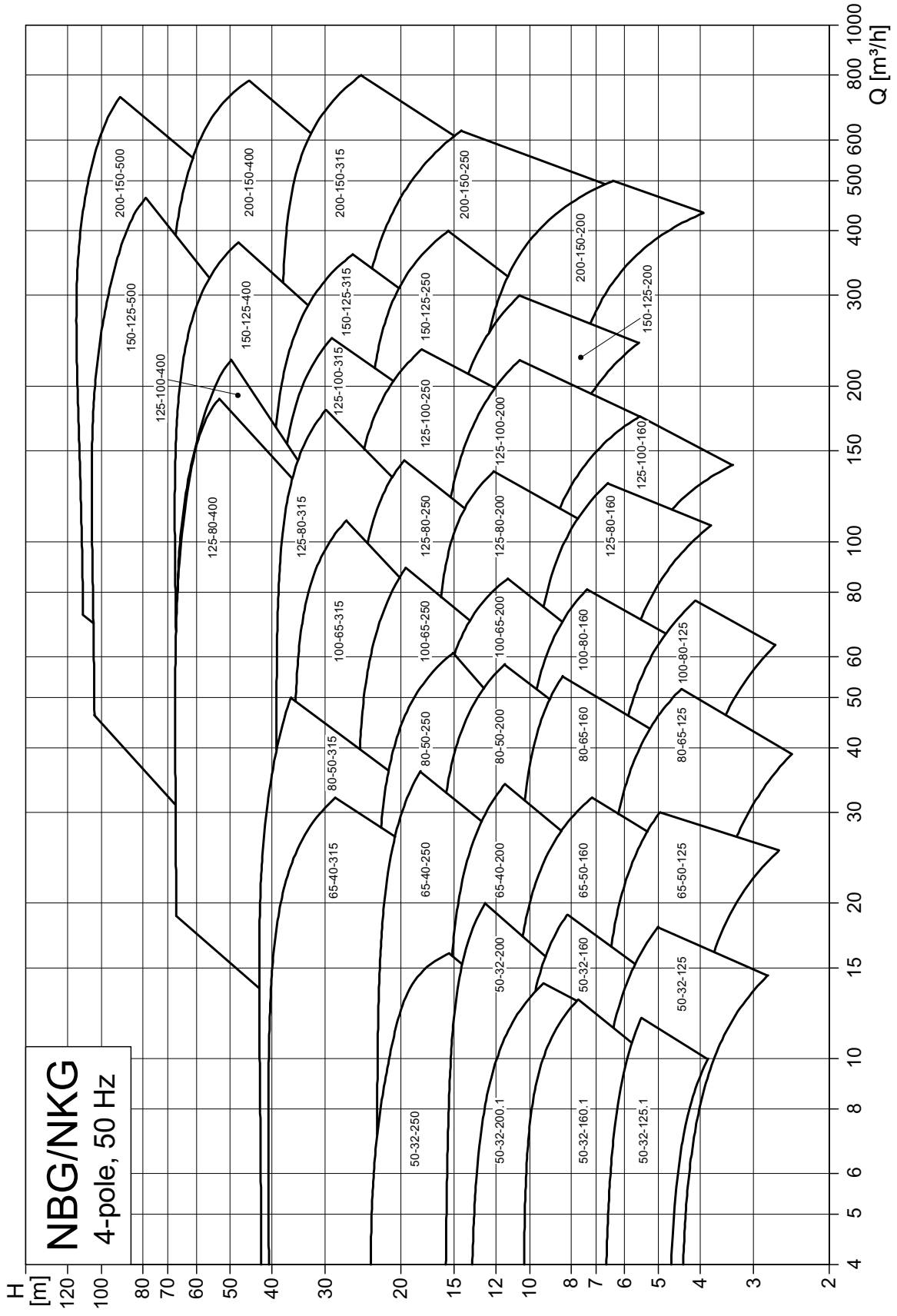
Performance range

NBG, NKG 2-pole



Performance range

NBG, NKG 4-pole



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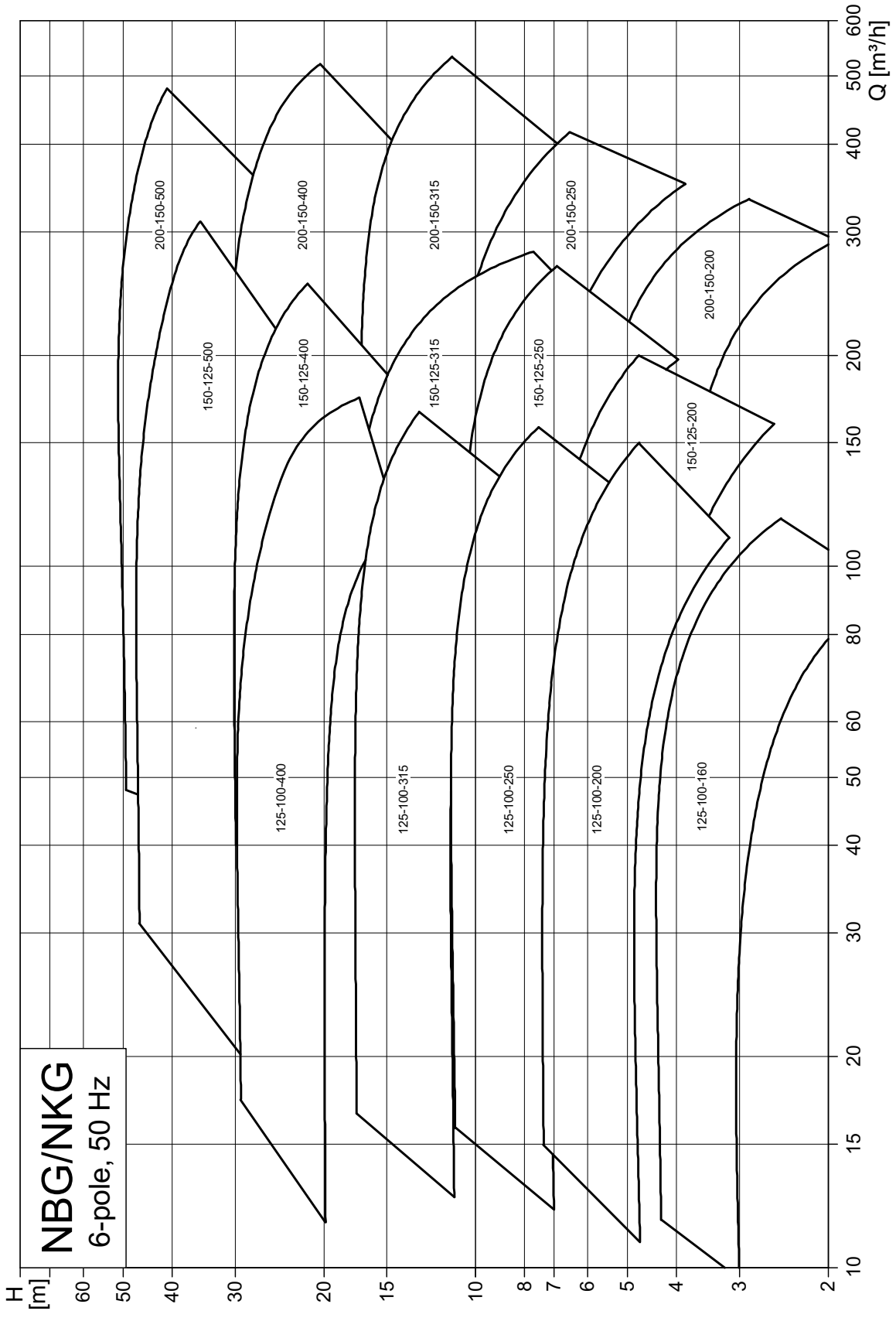
Performance range

NBG, NKG 6-pole



Sectional drawing NBG

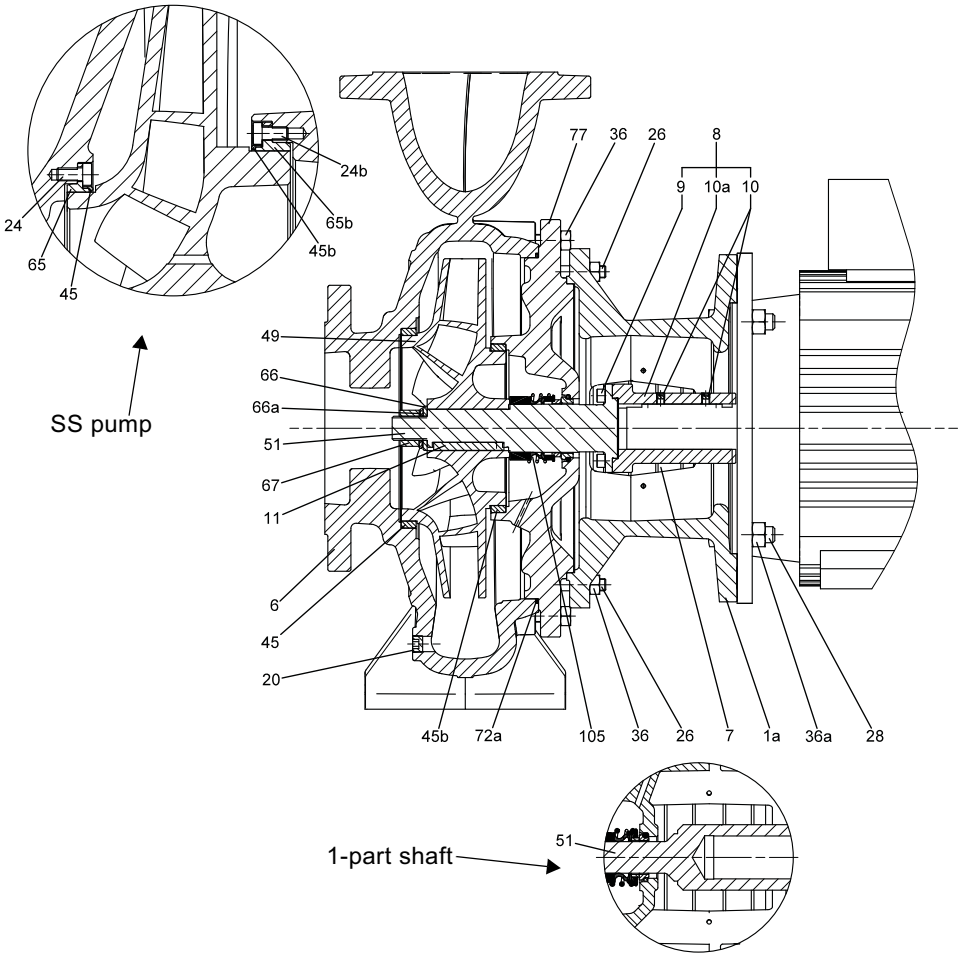


Fig. 3 Sectional drawing NBG

Pos.	Component	A-version Cast-iron impeller	B-version Bronze impeller	S-version Stainless steel impeller
6	Pump housing	EN-GJL-250	EN-GJL-250	EN-GJL-250
11a	Key	1.4301/AISI 304	1.4301/AISI 304	1.4401/AISI 316
20	Plug (drain, priming)	1.1152		
49	Impeller	EN-GJL-250	CuSn10	1.4408
51	Shaft	1.4021/AISI 420	1.4021/AISI 420	1.4404/AISI 316
53	Ball bearing	SKF - FAG - NSK	SKF - FAG - NSK	SKF - FAG - NSK
54	Ball bearing	SKF - FAG - NSK	SKF - FAG - NSK	SKF - FAG - NSK
66	Washer	1.4305/AISI 303	1.4305/AISI 303	1.4404/AISI 316
66a	Spring washer	1.4310/AISI 302	1.4310/AISI 302	1.4404/AISI 316
67	Nut	1.4301/AISI 304	1.4301/AISI 304	1.4404/AISI 316
72a	O-ring	EPDM or FKM	EPDM or FKM	EPDM or FKM
77	Cover	EN-GJL-250	EN-GJL-250	EN-GJL-250
86	Bearing bracket	EN-GJL-250	EN-GJL-250	EN-GJL-250
105	Mechanical shaft seal	Burgmann	Burgmann	Burgmann
159f	Retaining ring			
	Wear ring	CuSn10	CuSn10	PTFE

Sectional drawing NKG

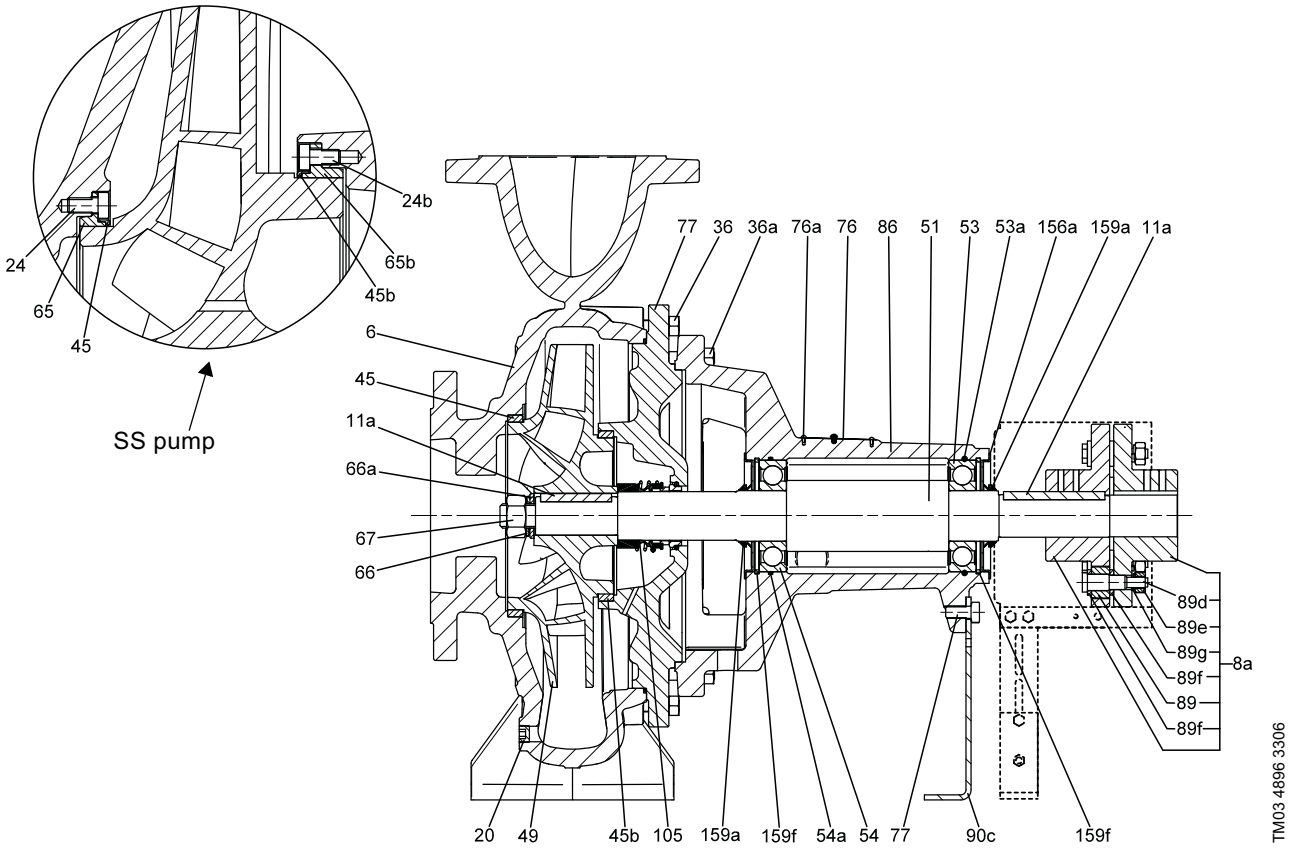


Fig. 4 Sectional drawing NKG

Components and material specification

Cast-iron pump

Pos.	Component	A-version Cast-iron impeller	B-version Bronze impeller	S-version Stainless steel impeller
6	Pump housing	EN-GJL-250	EN-GJL-250	EN-GJL-250
11a	Key	1.4301/AISI 304	1.4301/AISI 304	1.4401/AISI 316
20	Plug (drain, priming)	1.1152		
49	Impeller	EN-GJL-250	CuSn10	1.4408
51	Shaft	1.4021/AISI 420	1.4021/AISI 420	1.4404/AISI 316
53	Ball bearing	SKF - FAG - NSK	SKF - FAG - NSK	SKF - FAG - NSK
54	Ball bearing	SKF - FAG - NSK	SKF - FAG - NSK	SKF - FAG - NSK
66	Washer	1.4305/AISI 303	1.4305/AISI 303	1.4404/AISI 316
66a	Spring washer	1.4310/AISI 302	1.4310/AISI 302	1.4404/AISI 316
67	Nut	1.4301/AISI 304	1.4301/AISI 304	1.4404/AISI 316
72a	O-ring	EPDM or FKM	EPDM or FKM	EPDM or FKM
77	Cover	EN-GJL-250	EN-GJL-250	EN-GJL-250
86	Bearing bracket	EN-GJL-250	EN-GJL-250	EN-GJL-250
105	Mechanical shaft seal	Burgmann	Burgmann	Burgmann
159f	Retaining ring			
	Wear ring	CuSn10	CuSn10	Graflon

Stainless steel pump

Pos.	Component	N-version	R-version
1a	Motor stool	EN-JL1040/AISI A48-40B	EN-JL1040/AISI A48-40B
6	Pump housing	1.4408/AISI CF8M	1.4517/AISI CD4MCuN
7	Coupling guard	1.4301/AISI 304	1.4301/AISI 304
9	Set screw		
11	Parallel key	1.4401/AISI 316	1.4539/AISI 904L
17	Air vent	1.4401/AISI 316	1.4539/AISI 904L
20	Pipe plug	1.4401/AISI 316	1.4539/AISI 904L
26	Staybolt	1.4401/AISI 316	1.4401/AISI 316
26a	Staybolt	1.4401/AISI 316	1.4401/AISI 316
36	Nut	1.4401/AISI 316	1.4401/AISI 316
36a	Nut	1.4401/AISI 316	1.4401/AISI 316
36b	Nut	1.4401/AISI 316	1.4401/AISI 316
45	wear ring	HY 22	HY 22
	Retainer f. wear ring	1.4517/AISI CD4MCuN	1.4517/AISI CD4MCuN
	Hexagon socket head cap screw	1.4539/AISI 904L	1.4539/AISI 904L
45b	Wear ring, upper	HY 22	HY 22
	Retainer f. wear ring, upper	1.4517/AISI CD4MCuN	1.4517/AISI CD4MCuN
	Hexagon socket head cap screw	1.4539/AISI 904L	1.4539/AISI 904L
49	Impeller	1.4408/AISI CF8M	1.4517/AISI CD4MCuN
51	Shaft for pump	1.4408/AISI CF8M	1.4462
	Bushing for motor	1.0301/1.0619	1.0301/1.0619
	Hexagon socket head cap screw		
66	Washer	1.4401/AISI 316	
66a	Spring washer	1.4401/AISI 316	
67	Nut	1.4401/AISI 316	
72a	o-ring	EPDM rubber	EPDM rubber
77	Cover	1.4408/AISI CF8M	1.4517/AISI CD4MCuN
105	Shaft seal	1.4301/AISI 304	1.4301/AISI 304
115	Seal sparcer		

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