



**NBG/NKG PUMPS**  
Mix and match to create the ideal pump for the job at hand

# Motors



Grundfos Blueflux® technology represents the best from Grundfos within energy efficient motors and variable frequency drives.

Products with Grundfos Blueflux® label either meet or exceed international legislation regarding motor efficiency.

The motors are available in a variety of configurations to meet the demands of the pumping environment and/or the pumped liquid itself.

What follows is an overview of some of the most common motor variants offered by Grundfos. However, the overview covers only a fragment of the total motor range. Please do not hesitate to contact Grundfos if your requirements are not covered by the overview.

- Special supply voltages
- Extreme operating conditions
- Special motor protection
- Specific approval
- Special motor design



Solution	Description	Photo
<b>ATEX approved</b>	A full range of special explosion-proof and dust ignition-proof motors is available with ATEX approved pumps.	
<b>MGE motors</b>	<p>The Grundfos MGE motor with integrated frequency converter can operate at different speeds in order to optimise pump performance to the application:</p> <p>Low speed, to obtain e.g.</p> <ul style="list-style-type: none"> <li>- gentle handling of the liquid</li> <li>- pumping at low NPSH level</li> <li>- reduced noise emission</li> </ul> <p>Oversynchronous speed, to obtain e.g.</p> <ul style="list-style-type: none"> <li>- more flow and head on a given pump size</li> <li>- compact physical size</li> </ul> <p>The advanced control can measure and adapt to special applications, e.g.:</p> <ul style="list-style-type: none"> <li>- Extended protection of process</li> <li>- Extended protection of pump and drive</li> <li>- Pump performance curve adjusted to match individual applications</li> </ul> <p>Standard MGE motors have built-in motor protection, pump monitoring, and on-board regulator and sensor supply for control of primary process. If special control is required, the MGE can be equipped with extended I/O cards and BUS connection. Customised software and add-on hardware can be tailored to match special demands.</p> <p>The MGE motor can be controlled by a variety of interfaces, i.e.</p> <ul style="list-style-type: none"> <li>- buttons on the pump</li> <li>- advanced R100 infra-red remote control</li> <li>- standard analogue signals</li> <li>- BUS communication</li> </ul>	
<b>Heating units</b>	Anti-condensation heating can be supplied by a built-in heating unit.	
<b>Multi-plug</b>	Our motors are available with a multi-plug (Harting® plug) according to HAN 10 ES for fast mains connections.	
<b>Thermal protection</b>	Motors with a built-in bimetallic thermal protector (PTO) or a temperature depending resistance (PTC) are available.	

Solution	Description	Photo
<b>cURus approval</b>	<p>Grundfos motors are available with the cURus approval covering USA and Canada.</p> <p>Dual frequency: 50 Hz: 3 x 208-230/460 V 60 Hz: 3 x 400 V</p>	
<b>Certificates</b>	<p>The Grundfos laboratory is authorised to issue various certificates for motors:</p> <ul style="list-style-type: none"> <li>- noise</li> <li>- vibration</li> <li>- performance</li> <li>- efficiency</li> </ul>	
<b>VIK approved motors</b>	VIK approved motors are available according to German industrial electrical standard.	
<b>Over or undersize motors</b>	For use where the viscosity or density is different from that of water, installations where the altitude exceeds 1000m or where the ambient temperature is very high.	
<b>Special voltage</b>	A wide range of supply voltages within three-phase as well as dual voltage can be supplied.	
<b>Enclosure class</b>	Enclosure class IP 55 is standard on Grundfos motors. Enclosure class IP 65, IP 54 and IP 44 are available as options.	

3-MOT MG 90SA2-24FF-165-C2	IP 1.60	kw 0.6507906
60 Hz	U 220-277/380-480V	
Eff. %	Im 3.70-5.00/3.00-2.90	A
80.5-82	Imin 6.30-5.35/3.65-3.10	A
n 3440-2500	min cosφ 0.89-0.78	
CL F IP 55	0346	
DE 6305.2Z C4	NDE 6205.2Z C3	

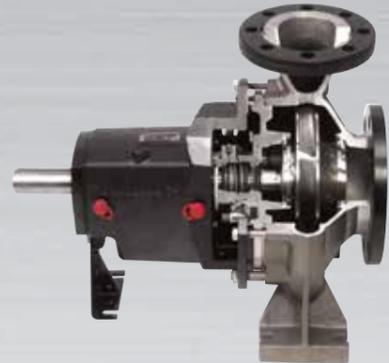


# Shaft seals

Extreme liquids call for extreme measures. Most NBG/NKG pumps are used for watery liquids at temperatures below 120°C and pressures lower than 16 bar. When liquids go beyond these limits, special shaft seal solutions are required to guarantee reliable operation.

What follows is an overview of some of the most common shaft seal variants for the NBG/NKG range offered by Grundfos. However, the overview covers only a fragment of the total shaft seal range. Please do not hesitate to contact Grundfos if your requirements are not covered by the overview.

- Aggressive or corrosive liquids
- Abrasive liquids
- Poisonous and/or explosive liquids
- High-viscosity and/or sticky liquids
- Extraordinary high pressure
- Extraordinary high or low temperature



Solution	Description
<b>Double shaft seal Back-to-back</b>	<p>For applications involving dangerous, flammable, or very abrasive liquids, a double shaft seal fitted back-to-back in a pressure chamber is available. The pressure in the chamber must be higher than the pump pressure to prevent leakage.</p> <p>The barrier fluid pressure can be supplied by either a Grundfos dosing pump arrangement (up to 16 bar) or an intensifier for pressure requirements up to 25 bar.</p> 
<b>Double shaft seal Tandem</b>	<p>For applications involving a high risk of crystallisation (e.g. sugar solutions) or hardening (e.g. oil or paint) as well as pumps handling vacuum, special double shaft seals are available.</p> <p>Grundfos offers a quenching fluid system for flushing of shaft seals.</p> 
<b>Double shaft seal Tandem or Back-to-back</b>	<p>For applications mentioned above a cartridge seal operating either as a tandem seal or as a back-to-back seal is also available.</p> 

Solution	Description
<b>Shaft seal variants</b>	<p>Grundfos offers a wide range of balanced and unbalanced shaft seals, non-cartridge and cartridge seals. These include several seal face combinations that can handle almost any industrial liquid.</p>  
<b>Rubber materials</b>	<p>Different combinations of O-rings in shaft seals and in the pump are possible in order to adapt to the specific application. Special rubber types such as FXM (Flouraz®), FFKM (Kalrez®), and HNBR are available where the liquid may damage standard O-ring materials such as EPDM, FKM and Viton®.</p> 
<b>Gland packing (Stuffing box)</b>	<p>The stuffing box is an alternative for remote applications where the mechanical shaft seal will quickly wear out. Three types are available: without cooling (SNE), with internal cooling (SNO) and with external cooling (SNF).</p> 



# Pump modules

All the made-to-stock NBG/NKG pump modules can handle the most demanding of liquids and pressures – and be adjustable to virtually any requirement. Of course, the modules can be combined in multiple ways making it possible for us to provide you with a pump solution that matches your specific needs. NBG/NKG pumps come in many flow sizes and various grades of corrosion-resistant stainless steel.

What follows is an overview of some of the most common NBG/NKG pump variants offered by Grundfos. However, the overview covers only a fragment of the total pump range. Please do not hesitate to contact Grundfos if your requirements are not covered by the overview.

- High inlet pressure
- High-pressure pump systems required (up to 25 bar)
- Pumping of gas or particle-entrained liquids
- Pumping of high-viscosity or sticky liquids
- Vertical pump mounting
- Reduced silicon content in pump
- Special materials required



Solution	Description	Photo
<b>Housing material</b>	NBG/NKG pump housings are available in three material variants – cast iron and two different stainless steel grades, covering everything from clean water to chemical applications.	
<b>Impeller material</b>	With the choice of cast iron, bronze or stainless steel impellers, the pump can be fully adapted to any pumped liquid.  Optimised hydraulics of impeller and pump housing provide outstanding efficiencies.	
<b>Wear ring material</b>	The complete pump range is supplied with replaceable wear rings. The wear ring material is matched to the impeller to achieve best possible sealing and wear properties.	
<b>Shaft material</b>	To provide a very long life and good serviceability of the pump, the wetted part of the shaft is always in stainless steel. Three grades are available: 1.4034, 1.4401, 1.4462.	
<b>Rubber materials</b>	Different combinations of O-rings in the pump are possible in order to adapt to the specific application. Special rubber types such as FXM (Flouraz®), FFKM (Kalrez®), HNBR and FEPS are available where the liquid may damage standard O-ring materials such as EPDM, FKM and Viton®.	
<b>Couplings</b>	For NKG pumps two couplings are available: the standard coupling and the spacer coupling.  The spacer coupling provides supreme serviceability.	

Solution	Description	Photo
<b>High inlet pressure</b>	For applications with extremely high inlet pressure, a heavy-duty bearing construction is necessary to counterhold the shaft. By using heavy duty bearing bracket execution, lifetimes for bearings up to 100.000 hours is available on NK/NKG, also for harsh applications.	
<b>Flange connections</b>	Flange connections are according to EN 1092-2 and AS (PN16).  Most stainless steel pumps are available with loose flanges rated for 16, 25 or 40 bar.	
<b>Bearing monitoring</b>	Unexpected downtime for repairs usually causes major production losses. This can be avoided by having bearing monitoring devices installed in the bearing bracket. These give continuous information about the bearing condition so that repairs can be scheduled for an appropriate time.  SPM (shock pulse measurement) fittings are fitted as standard in the heavy-duty bearing bracket. Fitting of Pt100 sensors is an option.	
<b>Vertical mounting</b>	Certain situations require the pumps to be mounted vertically.  The NBG pumps can be designed to fit installations with limited width, vehicles, ships, etc.	
<b>Bare shaft pump</b>	For applications in remote areas or mobile applications where electric power is not available, bare pumps powered by e.g. diesel engine or steam turbine can be supplied.	
<b>Silicon reduced pump</b>	For applications where paint wetting impairment substances must not be present, a silicon reduced pump can be used. The silicon reduced pump is assembled using silicone-free components, lubrication, shaft seal, and O-rings.  The product will be performance tested in the normal production test equipment.	



# Other options

In addition to the range of variants relating to the motor, shaft seal, or pump module of the NBG/NKG products presented on the foregoing pages, Grundfos offers a variety of other customised solutions to suit almost any conceivable need or requirement that you may have. For instance a variety of certificates and approvals are available, as are pumps in special colours.

The following overview presents only a fraction of the many possibilities that we offer. Please do not hesitate to contact Grundfos if your requirements are not covered by the overview.

### What you need. Guaranteed

It is more than likely that we will be able to create exactly the right pump for you by combining the elements and options already available within the NBG/NKG range. But if you have special requirements or a specific design in mind, let us know. We will do our best to provide full satisfaction.

### Great tools are just a mouse-click away!

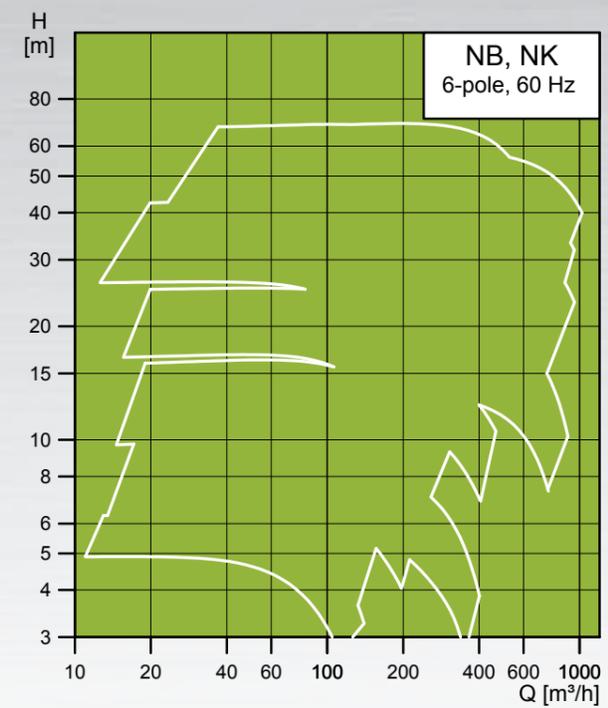
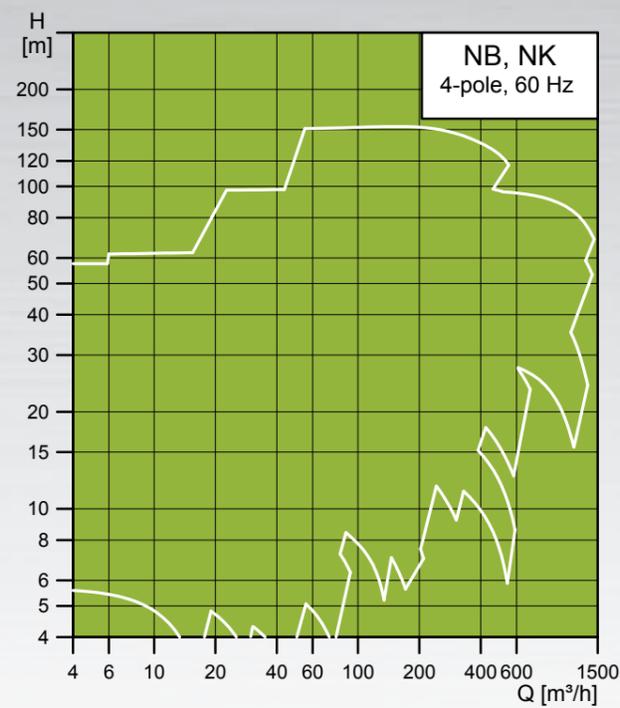
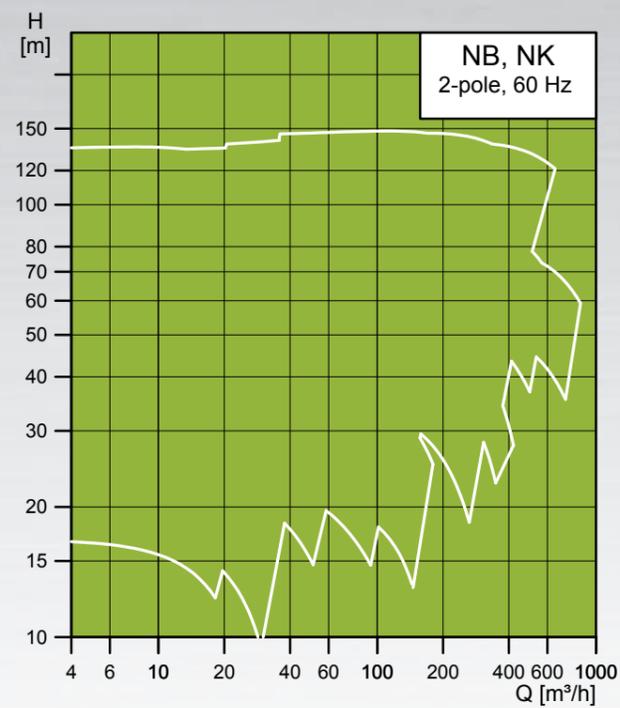
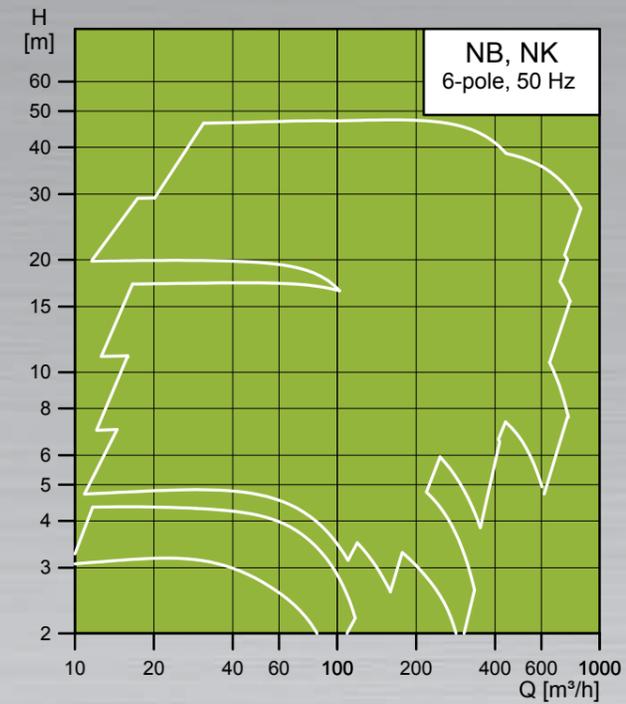
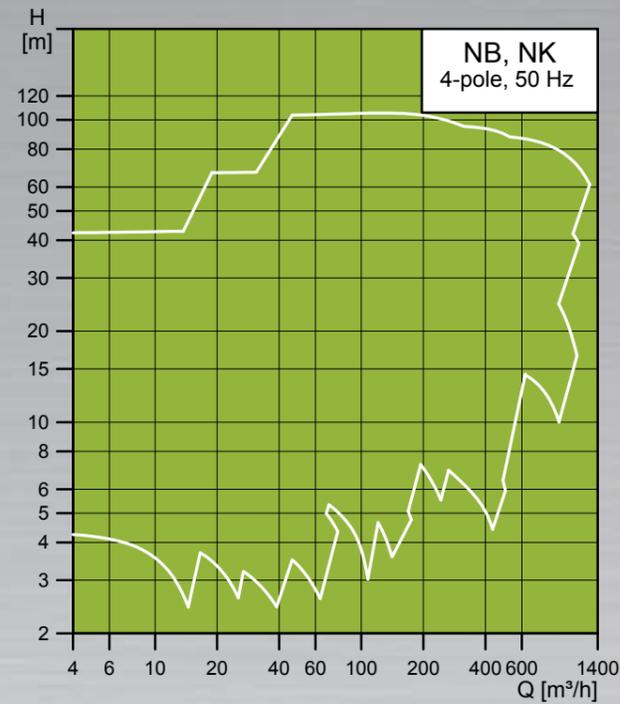
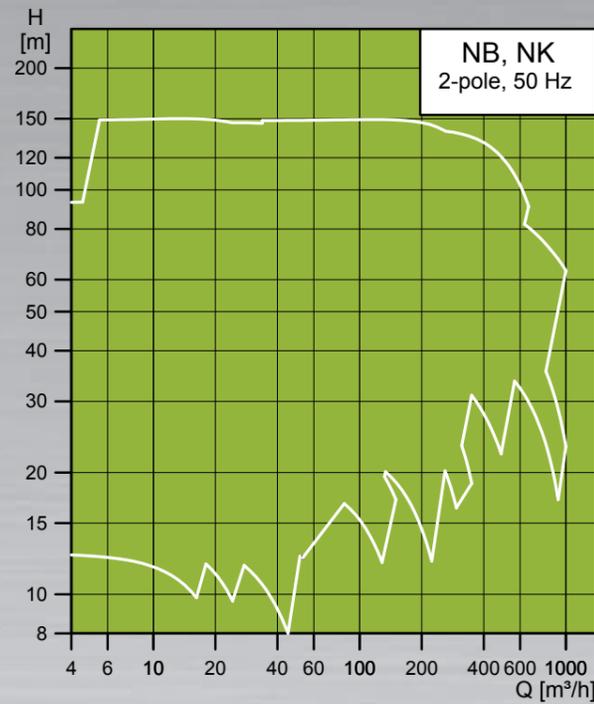
Grundfos offers the market's most comprehensive, 24-hour, online access to everything you need to maintain or service your system: from CAD drawings to installation videos and operating instructions. Go to [www.grundfos.com](http://www.grundfos.com), choose the WebCAPS symbol, and you are there: detailed technical information, drawings, wiring diagrams, dimensioning – everything!



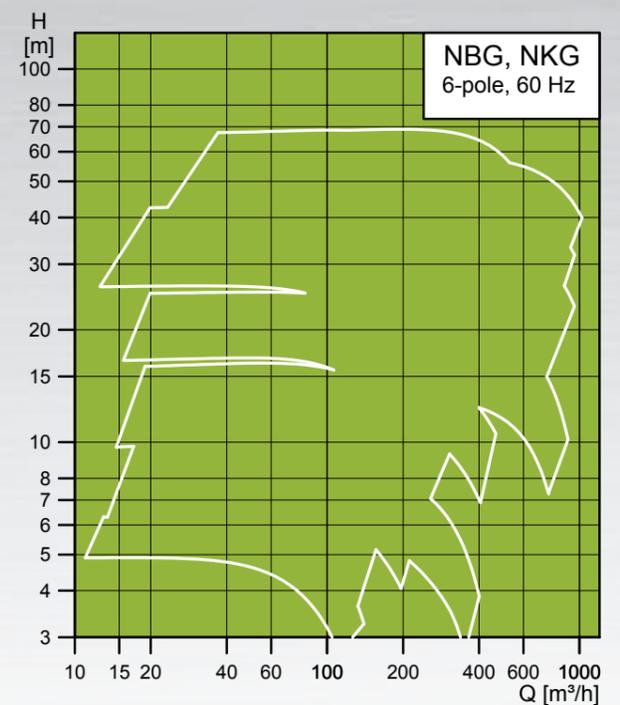
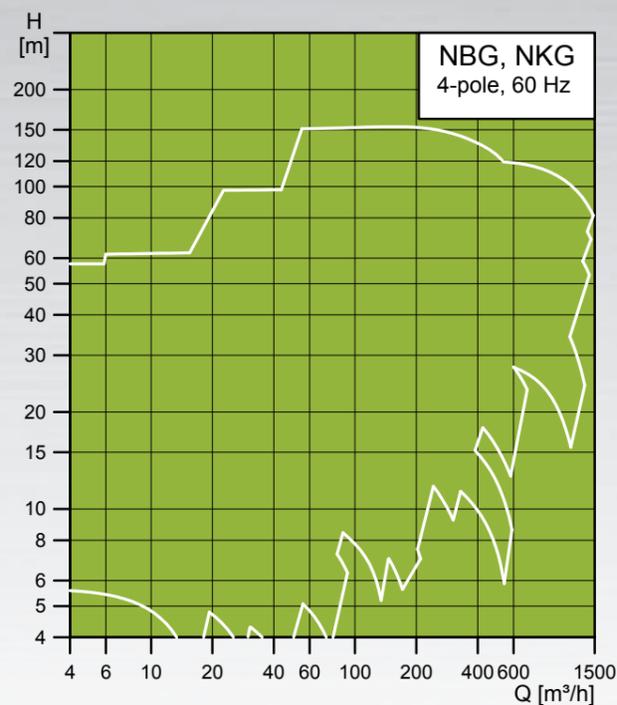
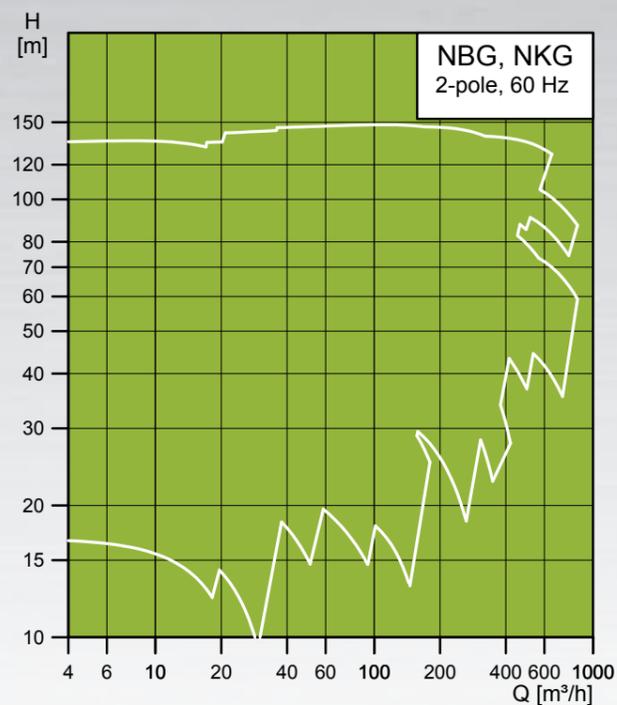
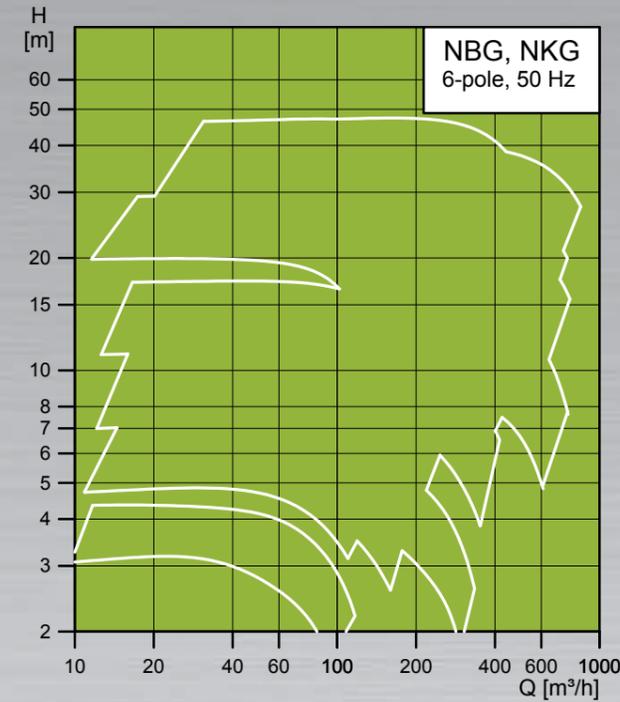
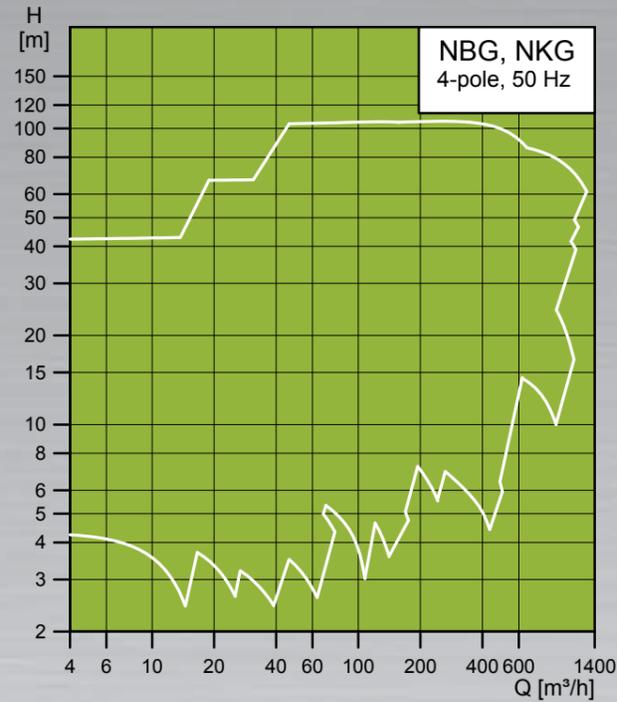
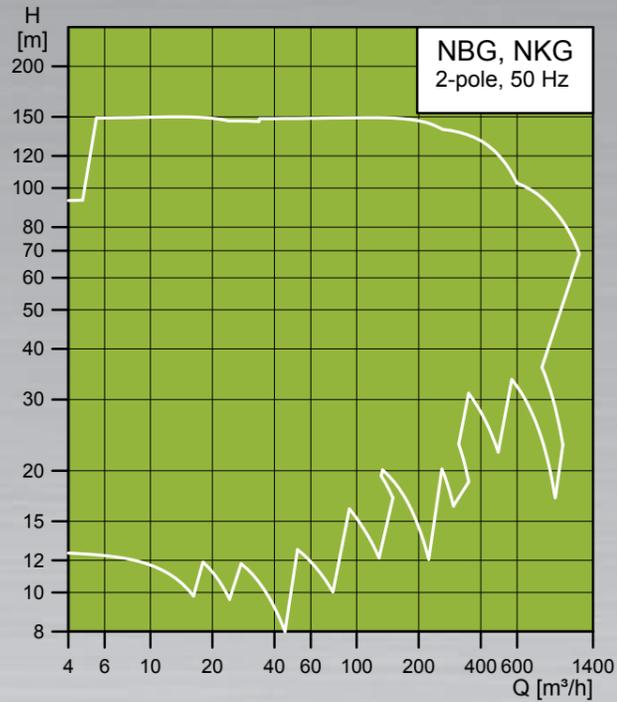
Solution	Description	Photo
<b>Diesel drive</b>	Alternative drive with diesel or other motor brands.	
<b>NBG pumps with or without feet</b>	All NBG pumps are available with housing feet. A smaller range of NBG pumps are available without feet for suspension to the pump flanges only.	
<b>Duty point specific pump</b>	A duty point specific is available for both bloc and norm pumps.	
<b>Special colours</b>	Pumps are available in a multitude of colours to match any requirement.	
<b>Certificates and approvals</b>	A wide range of pump and material certificates are available, e.g. inspection certificates Lloyds (LRS), Veritas (DNV), American (ABS), standard test report, ATEX certificate and much more.	
<b>Pumps for bottle washing machines</b>	Grundfos has a wide range of NBG pumps adapted specifically to bottle washing machines. This accounts for new projects as well as replacement pumps.  The pump range for bottle washing machines includes pumps for suspension to the pump flanges only.	



# Performance range NB/NK pumps according to EN 733



# Performance range NBG/NKG pumps according to ISO 2858



# Technical data



Pump size	NB										NK										Cast iron pump					Stainless steel pump				
	Cast iron pump	Stainless steel pump		Single mech. seal	Double mech. seal	Cartridge seal - single/double	Pump housing without feet 3)	Pump with support blocks	Base frame	Cast iron pump	Stainless steel pump		Single mech. seal	Double mech. seal	Cartridge seal - single/double	Stuffing box	Heavy duty bearing bracket	Bearing monitoring	Flange rating	Flange standard			Flange rating	Flange standard						
		EN-GJL-250	1.4408								1.4517	EN-GJL-250								1.4408	1.4517	PN 10		PN 16	DIN (code F)	ANSI (code G)	JIS (code J)	PN 10	PN 16	DIN (code F)
32-125.1	x	x	x	x	-	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-			
32-160.1	x	x	x	x	-	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-			
32-200.1	x	x	x	x	-	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-			
32-125	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
32-160	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
32-200	x	x	x	x	-	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-			
32-250*	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
40-125	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
40-160	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
40-200	x	x	x	x	-	-	x	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
40-250	x	x	x	x	-	-	x	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
40-315*	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
50-125	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
50-160	x	x	x	x	-	-	x	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
50-200	x	x	x	x	-	-	x	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
50-250	x	x	x	x	-	-	x	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
50-315*	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
65-125	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
65-160	x	x	x	x	-	-	x	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
65-200	x	x	x	x	-	-	x	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
65-250	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
65-315	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
80-160	x	x	x	x	-	-	x	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
80-200	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
80-250	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
80-315	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
80-400*	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
100-160*	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	L	L	x	-	-				
100-200	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	L	L	x	-	-				
100-250	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	L	L	x	-	-				
100-315	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	L	L	x	-	-				
100-400	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	L	L	x	-	-				
125-200	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	L	L	x	-	-				
125-250	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	L	L	x	-	-				
125-315	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	L	L	x	-	-				
125-400	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	L	L	x	-	-				
125-500	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	L	L	x	-	-				
150-200	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	L	L	x	-	-				
150-250	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	L	L	x	-	-				
150-315.1	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	L	L	x	-	-				
150-315	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	L	L	x	-	-				
150-400	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	L	L	x	-	-				
150-500	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	L	L	x	-	-				
200-400	x	-	-	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	-	-	-	-	-				
200-450	x	-	-	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	-	-	-	-	-				
250-350	x	-	-	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	-	-	-	-	-				
250-400	x	-	-	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	-	-	-	-	-				
250-450	x	-	-	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	-	-	-	-	-				
250-500	x	-	-	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	-	-	-	-	-				

\* = oversize  
 2) The loose flange is cast iron GGG50-EN-GJS-500-7  
 3) All pump housing sizes can be supplied with feet.

"F=fixed flange  
 L=loose flange 2)"

Pump size	NBG										NKG										Cast iron pump					Stainless steel pump				
	Cast iron pump	Stainless steel pump		Single mech. seal	Double mech. seal	Cartridge seal - single/double	Pump without feet	Pump with support blocks	Base frame	Cast iron pump	Stainless steel pump		Single mech. seal	Double mech. seal	Cartridge seal - single/double	Stuffing box	Heavy duty bearing bracket	Bearing monitoring	Flange rating	Flange standard			Flange rating	Flange standard						
		EN-GJL-250	1.4408								1.4517	EN-GJL-250								1.4408	1.4517	PN 16		PN 25	DIN (code F)	ANSI (code G)	JIS (code J)	PN 16	PN 25	DIN (code F)
50-32-125.1	x	x	x	x	-	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-			
50-32-160.1	x	x	x	x	-	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-			
50-32-200.1	x	x	x	x	-	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-			
50-32-125	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
50-32-160	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
50-32-200	x	x	x	x	-	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-			
50-32-250	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	F	F	x	-	-	F	F	x	-	-				
65-50-125	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	L	L	x	-	-	L	L	x	-	-				
65-50-160	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	L	L	x	-	-	L	L	x	-	-				
65-40-200	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	L	L	x	-	-	L	L	x	-	-				
65-40-250	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	L	L	x	-	-	L	L	x	-	-				
65-40-315	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	L	L	x	-	-	L	L	x	-	-				
80-65-125	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	L	L	x	-	-	L	L	x	-	-				
80-65-160	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	L	L	x	-	-	L	L	x	-	-				
80-50-200	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	L	L	x	-	-	L	L	x	-	-				
80-50-250	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	L	L	x	-	-	L	L	x	-	-				
80-50-315	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	L	L	x	-	-	L	L	x	-	-				
100-80-125	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	L	L	x	-	-	L	L	x	-	-				
100-80-160	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	L	L	x	-	-	L	L	x	-	-				
100-65-200	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	L	L	x	-	-	L	L	x	-	-				
100-65-250	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	L	L	x	-	-	L	L	x	-	-				
100-65-315	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	L	L	x	-	-	L	L	x	-	-				
125-80-160	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	L	L	x	-	-	L	L	x	-	-				
125-80-200	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	L	L	x	-	-	L	L	x	-	-				
125-80-250	x	x	x	x	-	-	-	x	x	x	x	-	-	x	-	-	L	L	x	-	-	L	L	x	-	-				
125-																														