Series NB

Centrifugal type process pumps

- Reliability
- Good Efficiencies
- Modular Construction
- Good Wear Resistance
- Simplified Maintenance
Series NB - quality pumps for arduous duties

Reliability
Rugged designs, careful manufacturing and strict quality control ensure long operating lifetimes.
B-10 bearing life exceeds 50,000 hours at capacity giving highest bearing loading within recommended operating range for each pump size.
Long seal lifetimes can be expected due to the low shaft deflections: max 0.05 mm.

Good Efficiencies
Skillful designs and production accuracies have led to high efficiencies, exceeding 83% for the larger pumps. On continuous duties a few years service may easily recover the full capital cost of the pump by energy savings alone, even for the medium-sized units.
Efficiencies are guaranteed by performance testing every pump before delivery to ISO 9906 Grade 2.

Modular Construction
NB-pumps are incorporated into the ABS Modular System™. Pumps with the same bearing assembly size have many parts in common. This reduces spares stocking costs and simplifies the administration of spares purchasing.

Good Wear Resistance
NB-pumps are available in many material combinations, ranging from cast iron to titanium for example.
Smooth interior contours free from cavities, combined with generous corrosion allowances, make them particularly resistant to erosion and corrosion.

Simplified Maintenance
Maintenance has been facilitated by good design. Shaft seals and bearings, for example, can easily be replaced by exchanging the seal cartridge and bearing assembly modules.
The pumps are normally fitted with spacer-couplings, permitting back-pull out of the rotor assembly from the pump casing without moving the motor.

Reliability
Modular Construction
Good Efficiencies
Good Wear Resistance
Simplified Maintenance
Range of Applications
NB-pumps are available with closed (shrouded) or semi-open impellers. They are therefore suitable for clean and solids-bearing liquids, except where risk of clogging exists due to large solids or high concentrations of fibrous material.

Typical applications
Chemical process industries - corrosive chemicals, light slurries, etc.
Pulp Mills - Liquors, chemicals, etc.
Paper Mills - Thin stock, backwater, water, chemicals.

Standards
ISO 2858
A dimensional standard only, for horizontal centrifugal pumps with 16 bar pressure rating.

ISO 5199
This is a design specification for pumps in process industry applications. Several quality features are specified, e.g. maximum shaft deflection, vibration level, bearing life and corrosion resistance. The end user therefore has a warranty for the pump’s reliability.

Pumps for severe operations and with a larger ISO-standard of measurement than 2858 can be supplied in various material.

Installation in the chemical industry, Akzo Nobel, Bohus in Sweden. The pump is mounted on a concrete foundation.

Regarding smaller motors, it is an advantage if the motor is flanged directly against the bearing assembly.
**Series NB**

**Design Features**

**Casing**
Smooth internal contours and the elimination of cavities at the periphery of the casing cover have virtually eliminated the risks of localised wear occurring. Generous wall thicknesses give high resistance to corrosion and erosion.

The casing cover gasket is “confined”, eliminating the possibility of it blowing out due to the internal pressure.

The suction is protected by a casing wear ring, or wear disc in pumps fitted with semi-open impellers.

**Impeller**
Impellers are either closed or semi-open type.

Pumps built on Bearing Assembly Size 1 have impellers which are threaded onto the pump shaft, and a shaft sleeve sealed off with an O-ring. For pumps on the larger bearing assemblies, the impellers are normally secured to the shaft by screw(s) and a key, but threaded impellers are also available as a standard alternative for Bearing Assembly Sizes 2 and 3.

**Lantern**
This is a separate component linking the bearing assembly to the casing. It is a rigid design with large openings to prevent the accumulation of dirt or liquid. The casing cover is attached to the lantern with screws to facilitate the dismantling and assembly of the rotor unit.

**Bearing Assembly**
The bearing assemblies are the base of the ABS Modular System™.

All bearing assemblies have angular contact ball bearings at the coupling end as thrust bearings, and deep groove ball or roller bearings as radial bearings. This combination gives the best lifetime expectancy.

The axial position of the rotor can be adjusted by displacing the thrust bearing housing in the bearing bracket. The clearance between a semi-open impeller and its wear disc can therefore be easily adjusted to maintain the rated efficiency.

**Shaft and Shaft Sleeve**
The standard shaft material used is stainless steel grade 2321 or 2324. All shafts are fitted with a replaceable shaft sleeve.

**Shaft Seal**
The shaft seal can be of many types: single or double mechanical seal, gland packing or dynamic seal. Mechanical seals and gland packings are contained in a seal cartridge, which is part of the modular system. Like the bearing assemblies, there are therefore only five sizes of seal cartridges.

NB-pumps can be fitted with virtually any mechanical seal or packed gland arrangement. For single mechanical seals ABS PSI™, Pump Seal Integration, are used. We guarantee perfect conditions for the seal.

**Materials**
Based on many years of field operational experience and tests from our own corrosion laboratory, we have selected a range of standard material combinations to suit a wide variety of applications (see table below).

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### Materials

#### Code | Standard mat.comb. | 01 | 08 | 24 | 25 | 27 | 32 | 51
--- | --- | --- | --- | --- | --- | --- | --- | ---
Pump casing | Cast iron 0120 Stainless steel 2343 | Cast iron 0120 Nodular steel 0717 Stainless steel 2324 Stainless steel 2390 Stainless steel 2564 Nickel alloy 6371 Titanium 4890
Impeller | Stainless steel 2343 Stainless steel 2343 | Cast iron 0120 Stainless steel 2343 Stainless steel 2324 Stainless steel 2562 Stainless steel 2562 Stainless steel 6371 Titanium 4890
Shaft sleeve | Stainless steel 2324 Stainless steel 2324 | Stainless steel 2324 Stainless steel 2324 Stainless steel 2562 Stainless steel 2562 Stainless steel 6371 Titanium 4890
Shaft | Stainless steel 2324 Stainless steel 2324 | Stainless steel 2324 Stainless steel 2324 Stainless steel 2562 Stainless steel 2562 Stainless steel 6371 Titanium 4890

1) For semi-open impellers use material code 05 and 09
2) The shafts of Bearing Assembly Sizes 1-3 are protected from the pumped liquid. For Bearing Assembly Sizes 4 and 5: 2324.
3) Semi-open impellers material 2324.

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<table>
<thead>
<tr>
<th>ABS material</th>
<th>Equivalent grades</th>
<th>Germany</th>
<th>UK</th>
<th>USA</th>
<th>Chemical Composition</th>
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<td>Ft20D</td>
<td>G200</td>
<td>Gr. 220</td>
<td>A48/30B Cast iron</td>
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<tr>
<td>0717</td>
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<td>Gr. 420/12</td>
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</table>
Impeller Fixing - Bearing Assemblies D and F
Impeller fixing by screw and key is standard on all bearing assembly sizes except the smallest one. The larger sizes 4 and 5 have two and three screws respectively.

Impeller Fixing - Bearing Assemblies E
For Bearing Assembly size 1 and for all pumps of Titanium, the impellers are threaded onto the shaft. This is also an optional alternative for bearing assembly sizes 2 and 3.

Replaceable wear ring or wear disc
Smooth contours and no cavities where erosion could start
Max. deflection 0.05 mm at seal position
Confined gasket

Shaft Seal in Cartridge allows for full flexibility, with ABS PSI cartridge as first choice. Our Pump Seal Integration leads to perfect conditions for the seal.

Large rubber thrower - perfect sealing in stationary or rotating conditions
Shims for adjustment of impeller/wear disc clearance

Semi-open impellers
Semi-open impeller and replaceable wear disc (X) are available for some of the NB pumps, see also page 7.
Series NB

**Technical Data**

- **Capacity**: 2-1000 m³/h
- **Head**: 30-160 m
- **Temperature**: Max. 190°C (max. 280°C for hot oils)
- **Pressure ratings**: PN10/PN16 (for higher pressure ratings, refer to separate brochure)
- **Specification**: ISO 5199 "Technical Specification for centrifugal pumps, Class II"
- **Dimensions**: ISO 2858
- **Flanges**: ISO 7005 PN10 or PN16 (BS 4504) or ANSI
- **Lubrication**: Grease. Optional alternative - oil.

**Type Designations**

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<tr>
<td>Outlet dia (mm)</td>
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<tr>
<td>Impeller dia (cm)</td>
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**Bearing Assembly Sizes**

![Diagram showing bearing assembly sizes at 3000 rpm and 1500 rpm]
### Series NB

**Pumps with Bearing Assembly Sizes 1-3**

<table>
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<tr>
<th>Pump Type</th>
<th>ISO-designation</th>
<th>Bearing Assy.</th>
<th>DN1</th>
<th>DN2</th>
<th>h1</th>
<th>h2</th>
<th>g</th>
<th>f</th>
<th>B2* max.</th>
<th>L1* max.</th>
<th>z* max.</th>
<th>Weight** kg</th>
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<td>-</td>
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<td>32</td>
<td>25</td>
<td>160</td>
<td>200</td>
<td>65</td>
<td>390</td>
<td>475</td>
<td>1120</td>
<td>150</td>
<td>56</td>
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<td>NB 50/32-16</td>
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<td>50</td>
<td>32</td>
<td>132</td>
<td>180</td>
<td>80</td>
<td>385</td>
<td>320</td>
<td>1250</td>
<td>120</td>
<td>53</td>
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<tr>
<td>NB 50/32-20</td>
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<td>50</td>
<td>32</td>
<td>160</td>
<td>180</td>
<td>80</td>
<td>385</td>
<td>320</td>
<td>1250</td>
<td>150</td>
<td>53</td>
</tr>
<tr>
<td>NB 65/40-16</td>
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<td>1</td>
<td>65</td>
<td>50</td>
<td>132</td>
<td>160</td>
<td>80</td>
<td>385</td>
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<td>1250</td>
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<td>52</td>
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<td>160</td>
<td>180</td>
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<td>385</td>
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<td>57</td>
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<td>200</td>
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<td>385</td>
<td>400</td>
<td>1325</td>
<td>150</td>
<td>60</td>
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</table>

**Baseframe for concreting in**

<table>
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<tr>
<th>Pump Type</th>
<th>Bearing Assy.</th>
<th>DN1</th>
<th>DN2</th>
<th>h1</th>
<th>h2</th>
<th>g</th>
<th>f</th>
<th>q</th>
<th>B1*</th>
<th>L1*</th>
<th>z</th>
<th>Weight** kg</th>
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<tbody>
<tr>
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<td>2300</td>
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<td>NB 300/250-60</td>
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<td>250</td>
<td>450</td>
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<td>200</td>
<td>965</td>
<td>476</td>
<td>760</td>
<td>3000</td>
<td>250</td>
<td>750</td>
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x) Semi-open impeller available.
*) Varies with motor size and baseplate material
**) Pump only
Quality at every stage

Our continuing commitment to advanced research and development and the newest machining technology combined with a salesforce well-trained in products and applications give complete satisfaction. With this reliable background we can offer products where performance, availability and low running and servicing costs will give you the most economical solution on the market.

Cost-Effective Pumping.

ABS reserves the right to alter specifications due to technical developments.

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www.abs-pumps.com

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