

## NK150-200/224A2F1AE-SBAQE

Grundfos pump 98318508



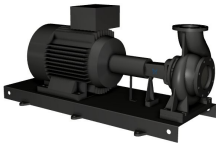
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<https://www.lenntech.com/grundfos/NKBASIS/98318508/NK-150-200-224-A2-F-A-E-BAQE.html>

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| Position | Qty. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | 1    | <p><b>NK 150-200/224 A2-F-A-E-BAQE</b></p>  <p>Product No.: On request</p> <p>Non-self-priming, single-stage, centrifugal volute pump designed according to ISO 5199 with dimensions and rated performance according to EN 733. Flanges are PN 10 with dimensions according to EN 1092-2. The pump has an axial suction port, a radial discharge port and horizontal shaft. It is of the back pull-out design enabling removal of the coupling, bearing bracket and impeller without disturbing the motor, pump housing or pipework.</p> <p>The unbalanced rubber bellows seal is according to DIN EN 12756.</p> <p>The pump is fitted with a foot-mounted, fan-cooled asynchronous motor. Pump and motor are mounted on a common base frame.</p> <p><b>Further product details</b></p> <p>The product's minimum efficiency index (MEI) is greater or equal to 0.70. This is by the Commission Regulation (EU) considered as an indicative benchmark for best-performing water pump available on the market as from 1 January 2013.</p> <p>Pump and motor are mounted on a common steel base frame in accordance with ISO 3661. The back pull-out design together with a spacer coupling makes it possible to make service on the pump without dismantling the pump housing and motor from the base frame. This saves realignment of pump and motor after service.</p> <ol style="list-style-type: none"> <li>1) Remove coupling.</li> <li>2) Remove the bolts in the bearing bracket support foot.</li> <li>3) Remove the bearing bracket from the pump housing.</li> </ol>  <p>Cast-iron parts have an epoxy-based coating made in a cathodic electro-deposition (CED) process. CED is a high-quality dip-painting process where an electrical field around the products ensures deposition of paint particles as a thin, well-controlled layer on the surface. An integral part of the process is a pretreatment. The entire process consists of these elements:</p> <ol style="list-style-type: none"> <li>1) Alkaline-based cleaning.</li> <li>2) Zinc phosphating.</li> <li>3) Cathodic electro-deposition.</li> <li>4) Curing to a dry film thickness 18-22 my m.</li> </ol> <p>The colour code for the finished product is NCS 9000/RAL 9005.</p> <p><b>Pump</b></p> <p>The pump housing has both a priming and a drain hole closed by plugs.</p> <p>The impeller is a closed impeller with double-curved blades with smooth surfaces. The impeller is statically balanced according to ISO 1940-1 class G6.3 and hydraulically balanced to compensate for axial thrust.</p> <p>Wear rings used in pump housing and for impeller are made of bronze/brass or cast iron.</p> <p>The pump is fitted with an unbalanced rubber bellows seal with torque transmission across the spring and around the bellows. Due to the bellows, the seal does not wear the shaft, and the axial movement is not prevented by deposits on the shaft.</p> <p>Primary seal:</p> <ul style="list-style-type: none"> <li>• Rotating seal ring material: carbon graphite, metal-impregnated</li> <li>• Stationary seat material: silicon carbide (SiC)</li> </ul> |

This material pairing has a very good corrosion resistance and is especially suitable for water up to 120 °C. However, seal life will be reduced at temperatures above 90 °C. The material pairing is not recommended for liquids containing particles as this will result in heavy wear on the SiC face.

Secondary seal material: EPDM (ethylene-propylene rubber)

EPDM has excellent resistance to hot water. EPDM is not suitable for mineral oils.

The shaft is made of stainless steel and has a diameter of 32 mm where the coupling is mounted.

The pump uses a spacer coupling between the pump and motor shaft.



## Motor

The motor is a totally enclosed, fan-cooled motor with principal dimensions to IEC and DIN standards and mounting designation B3 (IM 1001). Electrical tolerances comply with IEC 60034.

The motor efficiency is classified as IE3 in accordance with IEC 60034-30-1.

The motor has thermistors (PTC sensors) in the windings in accordance with DIN 44081/DIN 44082. The protection reacts to both slow- and quick-rising temperatures, e.g. constant overload and stalled conditions.

Thermal switches must be connected to an external control circuit in a way which ensures that the automatic reset cannot cause accidents. The motors must be connected to a motor-protective circuit breaker according to local regulations.

A variable speed drive makes adjustment of pump performance to any duty point possible. If the motor is to be connected to a variable speed drive, the pump must be ordered with an electrically insulated motor bearing.

## Technical data

### Liquid:

Pumped liquid: Water  
Liquid temperature range: 0 .. 120 °C  
Liquid temperature during operation: 20 °C  
Density: 998.2 kg/m<sup>3</sup>

### Technical:

Rated flow: 830 m<sup>3</sup>/h  
Rated head: 39.6 m  
Actual impeller diameter: 224 mm  
Impeller nom: 200 mm  
Primary shaft seal: BAQE  
Secondary shaft seal: NONE  
Curve tolerance: ISO9906:2012 3B

### Materials:

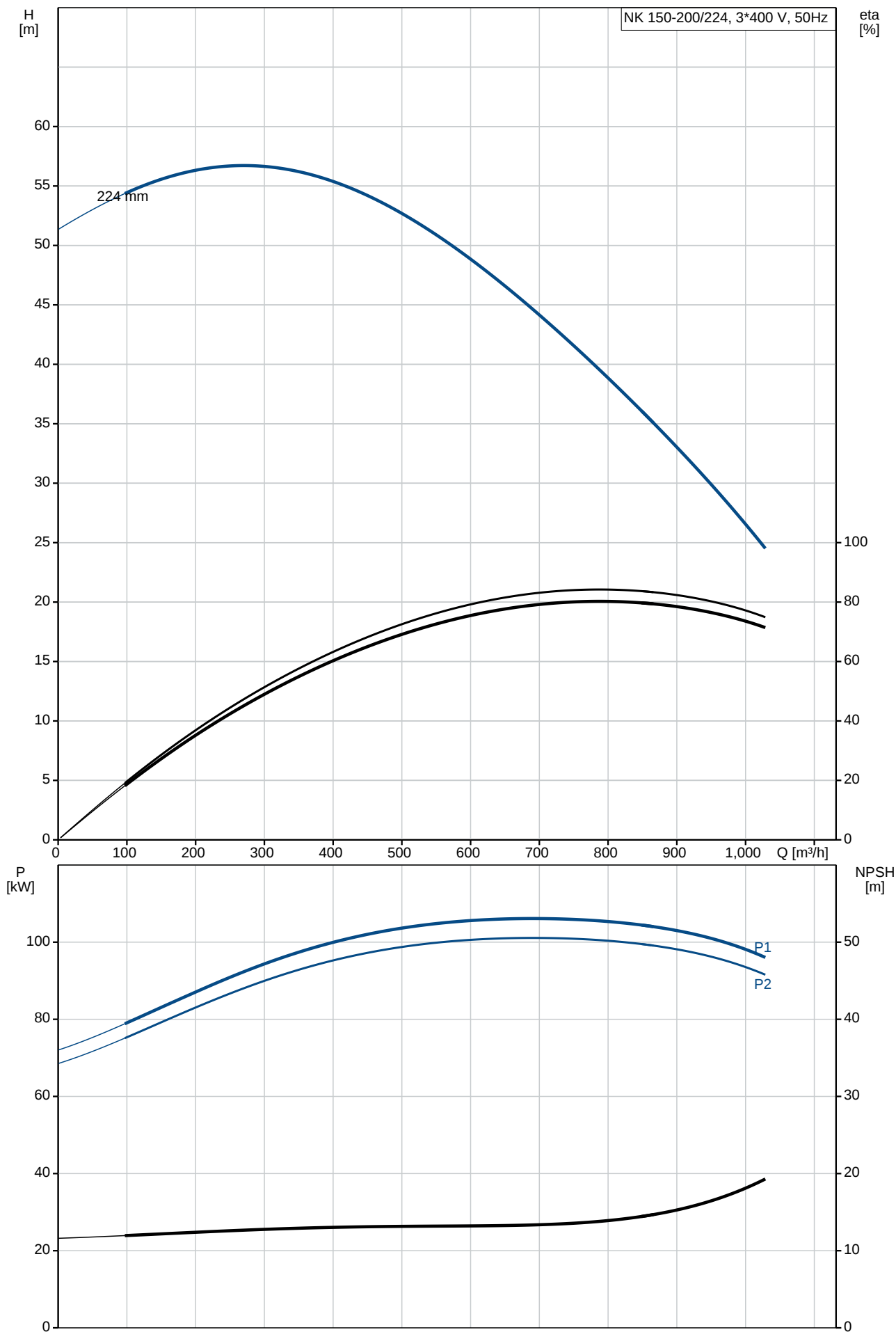
Pump housing: Cast iron  
EN-GJL-250  
ASTM A48-40 B  
Impeller: Cast iron  
EN-GJL-200  
ASTM A48-30 B  
Rubber: EPDM  
Wear ring mat.: High alloy brass(CuZn34Mn3Al2)

### Installation:

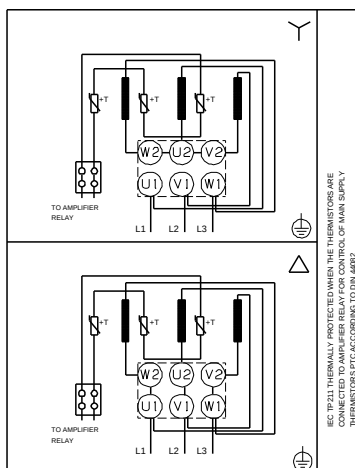
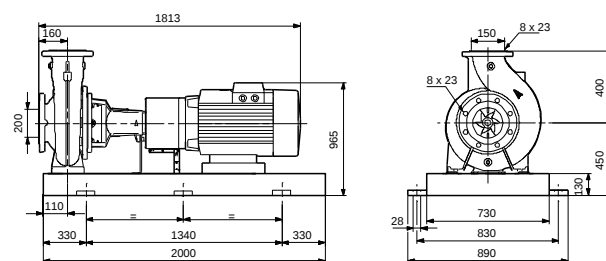
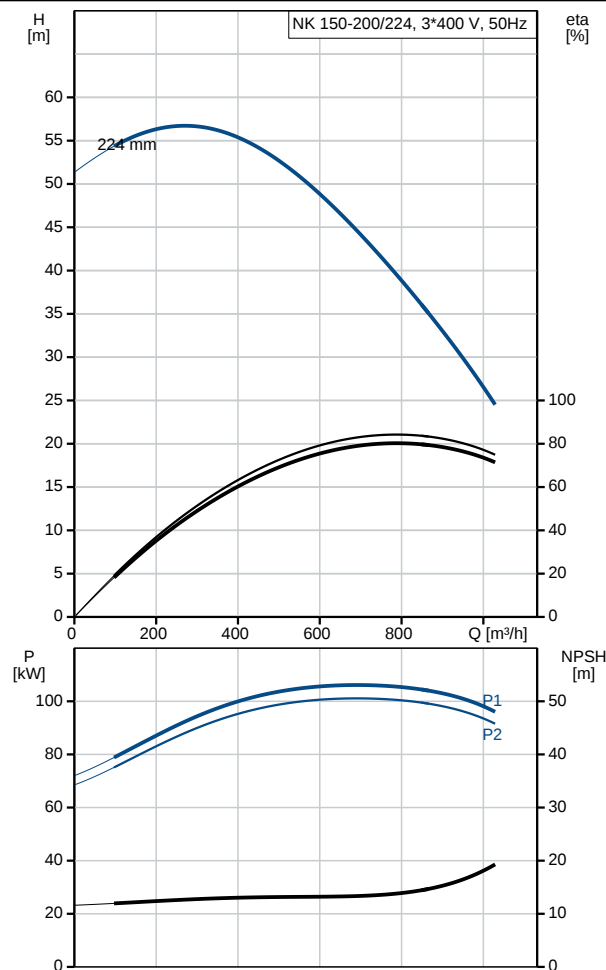
Maximum ambient temperature: 55 °C  
Maximum operating pressure: 10 bar  
Flange standard: EN 1092-2  
Pump inlet: DN 200  
Pump outlet: DN 150

| Position | Qty. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |      | Pressure rating: PN 10<br>Coupling type: Spacer<br>Base frame: EN / ISO<br><br><b>Electrical data:</b><br>Motor type: SIEMENS<br>IE Efficiency class: IE3<br>Rated power - P2: 110 kW<br>Mains frequency: 50 Hz<br>Rated voltage: 3 x 380-420D/660-725Y V<br>Rated current: 192-176/110-102 A<br>Starting current: 710-710 %<br>Cos phi - power factor: 0.91<br>Rated speed: 2980 rpm<br>Efficiency: IE3 95,2%<br>Motor efficiency at full load: 95.2-95.2 %<br>Motor efficiency at 3/4 load: 95.4-95.4 %<br>Motor efficiency at 1/2 load: 94.9-94.9 %<br>Number of poles: 2<br>Enclosure class (IEC 34-5): 55 Dust/Jetting<br>Insulation class (IEC 85): F<br>Lubricant type: Grease<br><br><b>Others:</b><br>Minimum efficiency index, MEI ≥: 0.70<br>ErP status: EuP Standalone/Prod.<br>Net weight: 1360 kg<br>Gross weight: 1460 kg<br>Shipping volume: 2.96 m <sup>3</sup> |

# On request NK 150-200/224 A2-F-A-E-BAQE 50 Hz

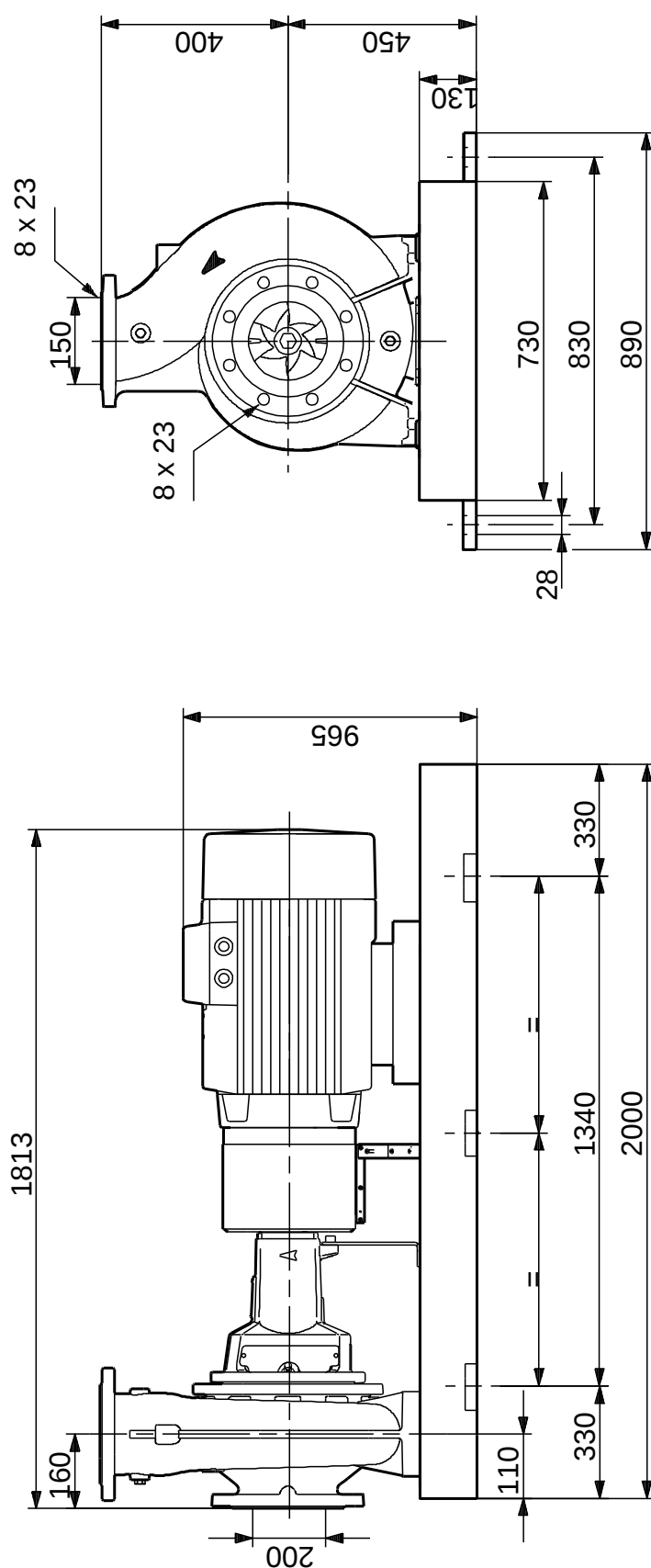


| Description                          | Value                            |
|--------------------------------------|----------------------------------|
| <b>General information:</b>          |                                  |
| Product name:                        | NK 150-200/224                   |
| Product No:                          | A2-F-A-E-BAQE                    |
| EAN number:                          | On request                       |
| <b>Technical:</b>                    |                                  |
| Rated flow:                          | 830 m³/h                         |
| Rated head:                          | 39.6 m                           |
| Actual impeller diameter:            | 224 mm                           |
| Impeller nom:                        | 200 mm                           |
| Primary shaft seal:                  | BAQE                             |
| Secondary shaft seal:                | NONE                             |
| Shaft diameter:                      | 32 mm                            |
| Curve tolerance:                     | ISO9906:2012 3B                  |
| Pump version:                        | A2                               |
| <b>Materials:</b>                    |                                  |
| Pump housing:                        | Cast iron                        |
|                                      | EN-GJL-250                       |
|                                      | ASTM A48-40 B                    |
| Impeller:                            | Cast iron                        |
|                                      | EN-GJL-200                       |
|                                      | ASTM A48-30 B                    |
| Material code:                       | A                                |
| Rubber:                              | EPDM                             |
| Code for rubber:                     | E                                |
| Wear ring mat.:                      | High alloy<br>brass(CuZn34Mn3Al2 |
| <b>Installation:</b>                 |                                  |
| Maximum ambient temperature:         | 55 °C                            |
| Maximum operating pressure:          | 10 bar                           |
| Flange standard:                     | EN 1092-2                        |
| Pump inlet:                          | DN 200                           |
| Pump outlet:                         | DN 150                           |
| Pressure rating:                     | PN 10                            |
| Coupling type:                       | Spacer                           |
| Wear ring(s):                        | neckring(s)                      |
| Base frame:                          | EN / ISO                         |
| Connect code:                        | F                                |
| <b>Liquid:</b>                       |                                  |
| Pumped liquid:                       | Water                            |
| Liquid temperature range:            | 0 .. 120 °C                      |
| Liquid temperature during operation: | 20 °C                            |
| Density:                             | 998.2 kg/m³                      |
| <b>Electrical data:</b>              |                                  |
| Motor type:                          | SIEMENS                          |
| IE Efficiency class:                 | IE3                              |
| Rated power - P2:                    | 110 kW                           |
| Mains frequency:                     | 50 Hz                            |
| Rated voltage:                       | 3 x 380-420D/660-725Y V          |
| Rated current:                       | 192-176/110-102 A                |
| Starting current:                    | 710-710 %                        |
| Cos phi - power factor:              | 0.91                             |
| Rated speed:                         | 2980 rpm                         |
| Efficiency:                          | IE3 95,2%                        |
| Motor efficiency at full load:       | 95.2-95.2 %                      |
| Motor efficiency at 3/4 load:        | 95.4-95.4 %                      |
| Motor efficiency at 1/2 load:        | 94.9-94.9 %                      |
| Number of poles:                     | 2                                |
| Enclosure class (IEC 34-5):          | 55 Dust/Jetting                  |
| Insulation class (IEC 85):           | F                                |
| Motor protec:                        | PTC                              |
| Motor No:                            | 98943382                         |
| Lubricant type:                      | Grease                           |
| <b>Others:</b>                       |                                  |



| Description                      | Value                |
|----------------------------------|----------------------|
| Minimum efficiency index, MEI ≥: | 0.70                 |
| ErP status:                      | EuP Standalone/Prod. |
| Net weight:                      | 1360 kg              |
| Gross weight:                    | 1460 kg              |
| Shipping volume:                 | 2.96 m <sup>3</sup>  |

# On request NK 150-200/224 A2-F-A-E-BAQE 50 Hz



Note! All units are in [mm] unless others are stated.  
Disclaimer: This simplified dimensional drawing does not show all details.

# Exploded view



Sectional drawing (TM058200 for TPE2,TPE3)



TM058200

# Exploded view ( TM057026 for MGE model H/I )



**Parts list NK 150-200/224, Product No. On request**  
**Valid from 1.3.2010 (1009)**

| Pos   | Description                   | Annotation | Données de classification | Référence | Quantité | Unité |
|-------|-------------------------------|------------|---------------------------|-----------|----------|-------|
| +     | Motor                         |            |                           |           | 1        | pcs   |
| -     | Nut                           |            |                           |           | 1        | pcs   |
| 66    | Washer                        |            | Designation: DIN 125 A2   |           | 1        |       |
|       |                               |            | Internal diameter: 19     |           |          |       |
|       |                               |            | Outer diameter: 34        |           |          |       |
|       |                               |            | Thickness: 3              |           |          |       |
| 66a   | Spring lock washer            |            |                           |           | 1        |       |
| 67    | Nut                           |            | Thread: M18               |           | 1        |       |
|       | Sticker                       |            |                           |           | 1        | pcs   |
| -     | Pump housing cpl.             |            |                           |           | 1        | pcs   |
| 6     | Pump housing                  |            |                           |           | 1        |       |
| 36    | Nut                           |            | Thread: M10               |           | 8        |       |
| - 7   | Coupling guard cpl.           |            |                           |           | 1        | pcs   |
| - 7   | Coupling guard cpl.           |            |                           |           | 1        |       |
| 7     | Guard                         |            |                           |           | 1        |       |
| 7c    | Spacer f/coupling guard       |            |                           |           | 1        |       |
| 7e    | Hex socket head cap screw     |            |                           |           | 3        |       |
| 94    | Lock nut                      |            | Thread: M6                |           | 2        |       |
| 7b    | Retainer for coupling guard   |            |                           |           | 1        |       |
| 7k    | Hex socket head cap screw     |            | Length (mm): 10           |           | 4        |       |
|       |                               |            | Thread: M6                |           |          |       |
| - 7.d | Foot for coupling guard       |            |                           |           | 1        | pcs   |
| 7d    | Foot for coupling guard       |            |                           |           | 1        |       |
| 7h    | Hex socket head cap screw     |            |                           |           | 2        |       |
| 7l    | Support f/coupling guard foot |            |                           |           | 1        |       |
| 66    | Washer                        |            |                           |           | 2        |       |
| - 8   | Coupling cpl.                 |            |                           |           | 1        | pcs   |
| 89    | Rubber blocks for coupling    |            |                           |           | 7        |       |
| 89.a  | Socket set screw              |            | Length (mm): 10           |           | 1        |       |
|       |                               |            | Thread: M8                |           |          |       |
| 89.c  | Socket set screw              |            |                           |           | 1        |       |
| 89.d  | Hex socket head cap screw     |            |                           |           | 7        |       |
| 89.p  | Coupling female               |            |                           |           | 1        |       |
| 89o   | Coupling part spacer side     |            |                           |           | 1        |       |
| 89r   | Spacer sleeve                 |            |                           |           | 1        |       |
| 89s   | Spacer ring                   |            |                           |           | 1        |       |
| 49    | Impeller                      |            |                           |           | 1        | pcs   |
| 72.a  | O-ring                        |            | Diameter: 221,84          |           | 1        | pcs   |
|       |                               |            | Material type: EPDM       |           |          |       |
|       |                               |            | Thickness: 3,53           |           |          |       |
| - 77  | Cover                         |            |                           |           | 1        | pcs   |
| 77    | Cover                         |            |                           |           | 1        |       |
| - 86  | Bearing bracket               |            |                           |           | 1        | pcs   |
| 28a   | Hex head screw                |            | Length (mm): 25           |           | 1        |       |
|       |                               |            | Thread: M12               |           |          |       |
| 53.b  | Spacer ring                   |            |                           |           | 1        |       |
| 54    | Ball bearing                  |            |                           |           | 2        |       |
| 54a   | O-ring                        |            | Diameter: 89,5            |           | 2        |       |
|       |                               |            | Material type: EPDM       |           |          |       |
|       |                               |            | Thickness: 3              |           |          |       |
| 77a   | Pan head screw                |            |                           |           | 4        |       |
| 86    | Bearing bracket               |            |                           |           | 1        |       |
| 153a  | Retaining ring                |            |                           |           | 2        |       |
| 156a  | Bearing cover                 |            |                           |           | 2        |       |
| 159a  | V-ring                        |            |                           |           | 2        |       |
| - 90  | Base plate                    |            |                           |           | 1        | pcs   |
|       | Washer                        |            |                           |           | 4        |       |
|       | Base plate                    |            |                           |           | 1        |       |
|       | Support block                 |            |                           |           | 1        |       |

| Pos  | Description    | Annotation | Données de classification | Référence | Quantité | Unité |
|------|----------------|------------|---------------------------|-----------|----------|-------|
|      | Support block  |            |                           |           | 2        |       |
|      | Support block  |            |                           |           | 2        |       |
|      | Hex head bolt  |            | Length (mm): 65           |           | 2        |       |
|      |                |            | Thread: M12               |           |          |       |
|      | Hex head bolt  |            |                           |           | 4        |       |
|      | Hex head bolt  |            |                           |           | 4        |       |
| 7h   | Hex head screw |            | Length (mm): 16           |           | 2        |       |
|      |                |            | Thread: M8                |           |          |       |
| 66   | Washer         |            |                           |           | 2        |       |
| 66   | Washer         |            |                           |           | 4        |       |
| 66   | Washer         |            |                           |           | 2        |       |
| 105  | Shaft seal     |            | Material type: BAQE       |           | 1        | pcs   |
| 105b | Spacer         |            |                           |           | 1        | pcs   |

*Disclaimer: The information about the Grundfos pump in this document may be outdated.*

*Data may be subject to alterations without further notice.*

*Please contact us to verify the data above is still accurate/up-to-date.*

*All information is copyright Grundfos.*



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