

## NBE65-160/149 A-F2-A-BQQE

Grundfos pump 99104683



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<https://www.lenntech.com/grundfos/NBE00/99104683/NBE-65-160-149-A-F2-A-E-BQQE.html>

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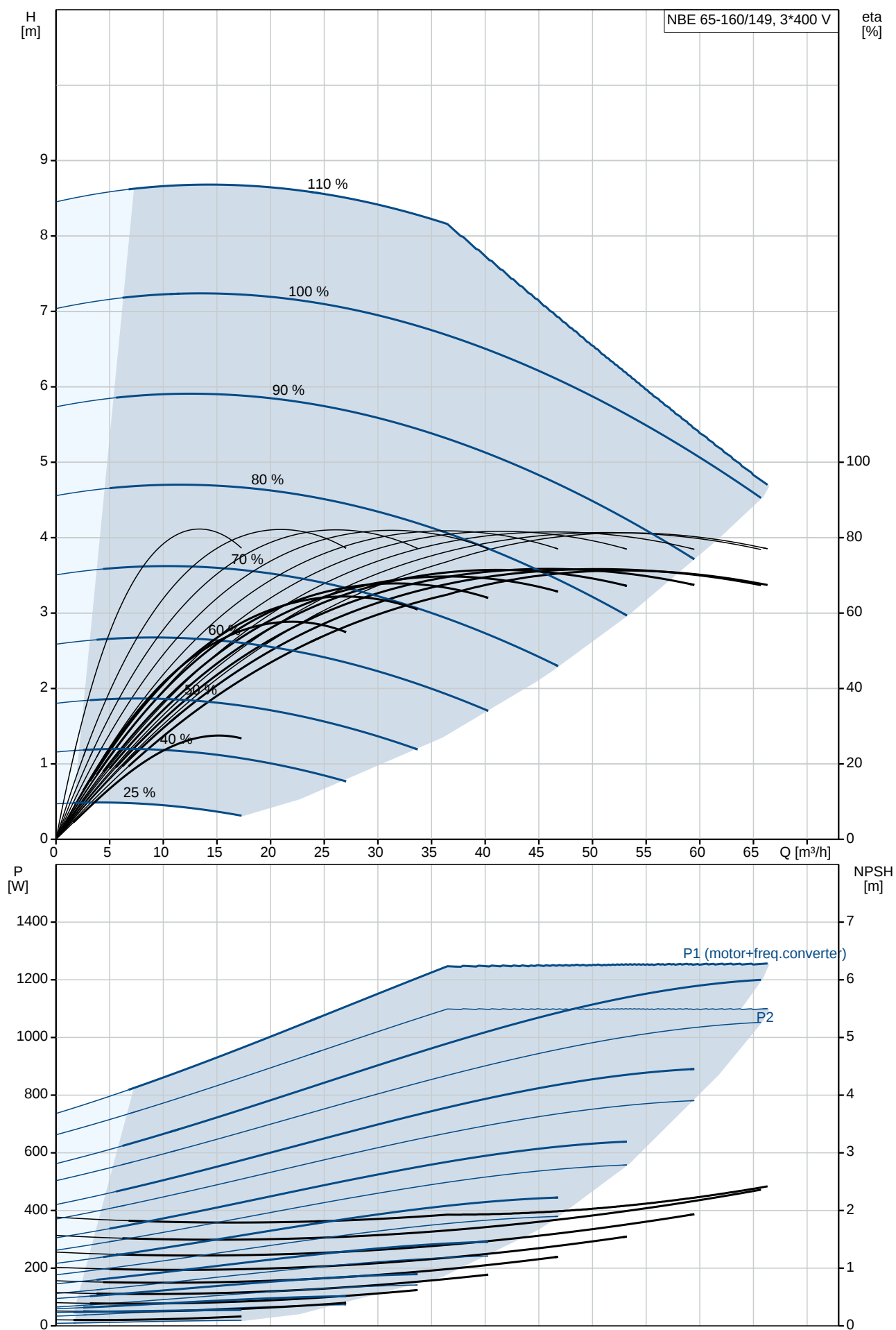
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| Position | Qty. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | 1    | <p><b>NBE 65-160/149 A-F2-A-E-BQQE</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 (10 bar). Flanges are PN 16 with dimensions according to EN 1092-2. The pump has an axial suction port, radial discharge port, horizontal shaft and a back pull-out design enabling removal of the motor, motor stool, cover and impeller without disturbing the pump housing or pipework.</p> <p>The unbalanced rubber bellows seal is according to DIN EN 12756.</p> <p>The pump is close-coupled to a fan-cooled, permanent-magnet synchronous motor.</p> <p>The motor includes a frequency converter and PI controller in the motor terminal box. This enables continuously variable control of the motor speed, which again enables adaptation of the performance to a given requirement.</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>An external sensor can be connected if controlled pump operation is required for flow, differential pressure or temperature control.</p> <p>An operating panel on the motor terminal box enables setting of required setpoint as well as setting of pump to "Min." or "Max." operation or to "Stop". The Grundfos Eye indicator on the operating panel provides visual indication of pump status:</p> <ul style="list-style-type: none"> <li>• "Power on": Motor is running (rotating green indicator lights) or not running (permanently green indicator lights)</li> <li>• "Warning": Motor is still running (rotating yellow indicator lights) or has stopped (permanently yellow indicator lights)</li> <li>• "Alarm": Motor has stopped (flashing red indicator lights).</li> </ul> <p>Communication with the pump is possible by means of Grundfos GO Remote (accessory). The remote control enables further settings as well as reading out of a number of parameters such as "Actual value", "Speed", "Power input" and total "Power consumption".</p> <p>The back pull-out design means that the pump can be serviced by a single person without disturbing the pump housing or pipe work.</p>  <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> |

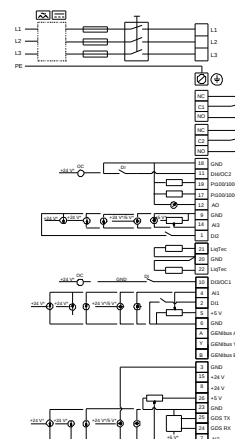
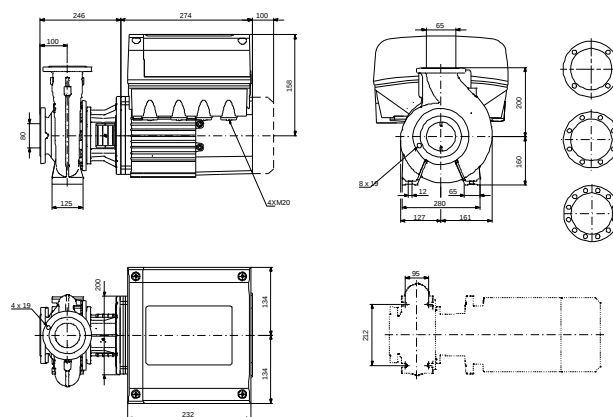
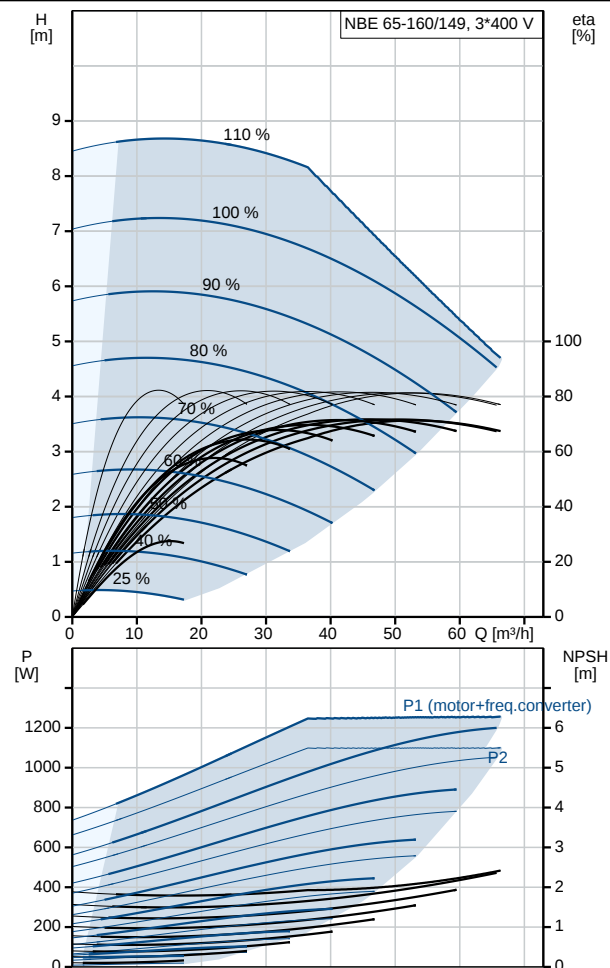
| Position | Qty. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |      | <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>Motor stool and pump cover are made of cast iron (EN-GJL-250). Coupling guards are fitted to the motor stool. The pump cover is provided with a manual air vent screw for venting of the pump housing and the shaft seal chamber.</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: silicon carbide (SiC)</li> <li>Stationary seat material: silicon carbide (SiC)</li> </ul> <p>This material pairing is used where higher corrosion resistance is required. The high hardness of this material pairing offers good resistance against abrasive particles.</p> <p>Secondary seal material: EPDM (ethylene-propylene rubber)</p> <p>EPDM has excellent resistance to hot water. EPDM is not suitable for mineral oils.</p> <p><b>Motor</b></p> <p>The motor is a totally enclosed, fan-cooled motor with principal dimensions to IEC and DIN standards. Electrical tolerances comply with IEC 60034.</p> <p>The motor efficiency is classified as IE5 in accordance with IEC 60034-30-2.</p> <p>The motor requires no external motor protection. The motor control unit incorporates protection against slow- and quick-rising temperatures, e.g. constant overload and stalled conditions.</p> <p>The terminal box holds terminals for these connections:</p> <ul style="list-style-type: none"> <li>one dedicated digital input</li> <li>two analog inputs, 0(4)-20 mA, 0-5 V, 0-10 V, 0.5 - 3.5 V</li> <li>5 V voltage supply to potentiometer and sensor</li> <li>one configurable digital input or open-collector output</li> <li>Grundfos Digital Sensor input and output</li> <li>24 V voltage supply for sensors</li> <li>two signal-relay outputs (potential-free contacts)</li> <li>GENIbus connection</li> <li>interface for Grundfos CIM fieldbus module.</li> </ul> <p><b>Technical data</b></p> <p><b>Liquid:</b></p> <p>Pumped liquid: Water</p> <p>Liquid temperature range: -25 .. 120 °C</p> <p>Liquid temperature during operation: 20 °C</p> <p>Density: 998.2 kg/m<sup>3</sup></p> <p><b>Technical:</b></p> <p>Rated flow: 52 m<sup>3</sup>/h</p> <p>Rated head: 5.7 m</p> <p>Actual impeller diameter: 149 mm</p> <p>Impeller nom: 160 mm</p> <p>Primary shaft seal: BQQE</p> <p>Secondary shaft seal: NONE</p> <p>Curve tolerance: ISO9906:2012 3B</p> <p><b>Materials:</b></p> <p>Pump housing: Cast iron<br/>EN-GJL-250<br/>ASTM A48-40 B</p> <p>Impeller: Cast iron<br/>EN-GJL-200<br/>ASTM A48-30 B</p> |

| Position | Qty. | Description                                                                                                                                                                                                                                                                                                                                                                                            |
|----------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |      | Shaft: Stainless steel<br>1.4301<br>304<br>Rubber: EPDM<br>Wear ring mat.: High alloy brass(CuZn34Mn3Al2)                                                                                                                                                                                                                                                                                              |
|          |      | <b>Installation:</b><br>Maximum ambient temperature: 50 °C<br>Maximum operating pressure: 16 bar<br>Flange standard: EN 1092-2<br>Pump inlet: DN 80<br>Pump outlet: DN 65<br>Pressure rating: PN 16                                                                                                                                                                                                    |
|          |      | <b>Electrical data:</b><br>Motor type: 90SD<br>IE Efficiency class: IE5<br>Rated power - P2: 1.1 kW<br>Mains frequency: 50 Hz<br>Rated voltage: 3 x 380-500 V<br>Rated current: 2.30-2.10 A<br>Cos phi - power factor: 0.90-0.74<br>Rated speed: 180-2000 rpm<br>Efficiency: 87.2%<br>Number of poles: 4<br>Enclosure class (IEC 34-5): IP55<br>Insulation class (IEC 85): F<br>Lubricant type: Grease |
|          |      | <b>Others:</b><br>Minimum efficiency index, MEI ≥: 0.70<br>ErP status: EuP Standalone/Prod.<br>Net weight: 49 kg<br>Gross weight: 66 kg<br>Shipping volume: 0.315 m³                                                                                                                                                                                                                                   |

# On request NBE 65-160/149 A-F2-A-E-BQQE 50 Hz

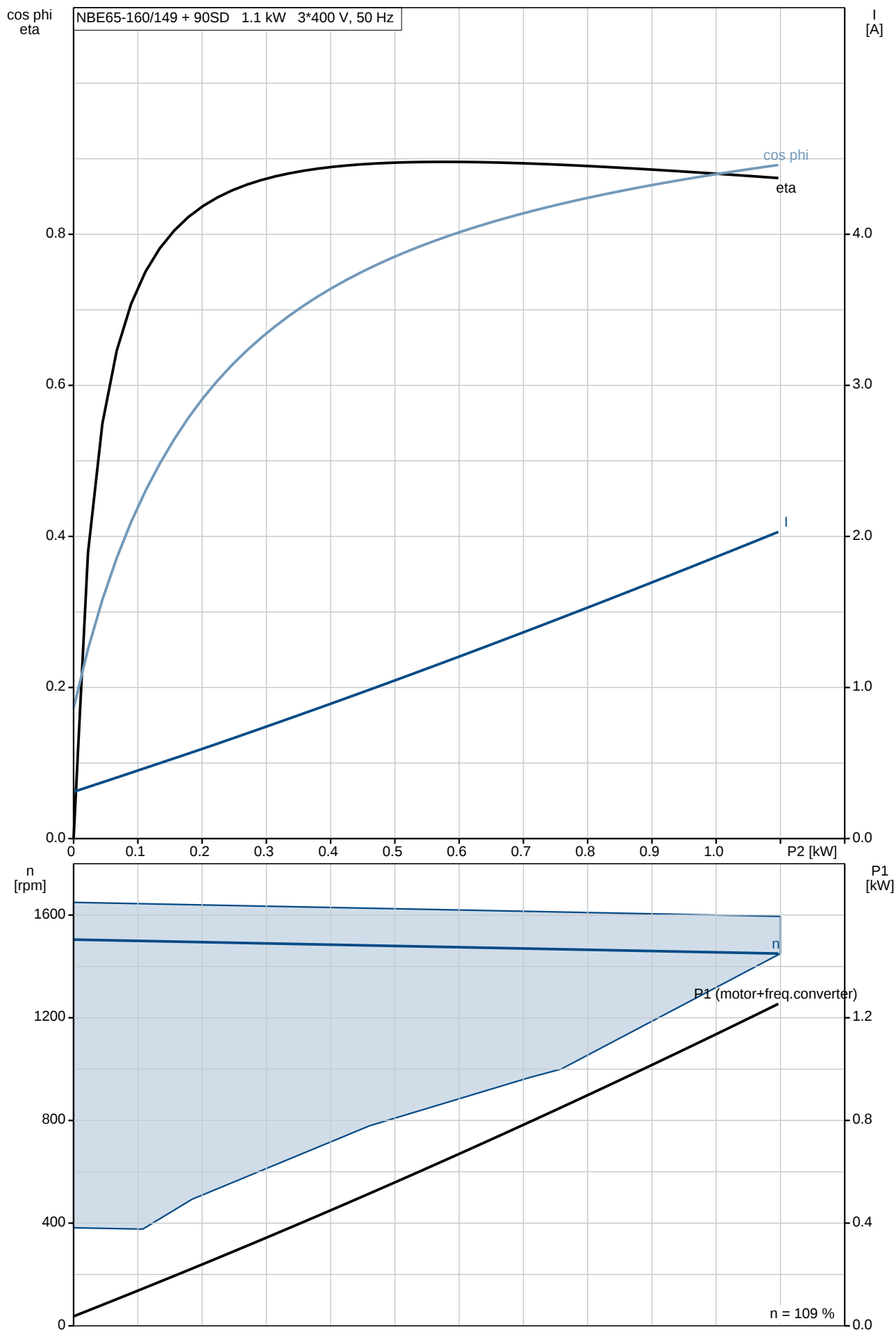


| Description                          | Value                            |
|--------------------------------------|----------------------------------|
| <b>General information:</b>          |                                  |
| Product name:                        | NBE 65-160/149<br>A-F2-A-E-BQQE  |
| Product No:                          | On request                       |
| EAN number:                          | On request                       |
| <b>Technical:</b>                    |                                  |
| Rated flow:                          | 52 m³/h                          |
| Rated head:                          | 5.7 m                            |
| Actual impeller diameter:            | 149 mm                           |
| Impeller nom:                        | 160 mm                           |
| Primary shaft seal:                  | BQQE                             |
| Secondary shaft seal:                | NONE                             |
| Shaft diameter:                      | 24 mm                            |
| Curve tolerance:                     | ISO9906:2012 3B                  |
| Pump version:                        | A                                |
| <b>Materials:</b>                    |                                  |
| Pump housing:                        | Cast iron                        |
|                                      | EN-GJL-250                       |
|                                      | ASTM A48-40 B                    |
| Impeller:                            | Cast iron                        |
|                                      | EN-GJL-200                       |
|                                      | ASTM A48-30 B                    |
| Shaft:                               | Stainless steel                  |
|                                      | 1.4301                           |
|                                      | 304                              |
| Material code:                       | A                                |
| Rubber:                              | EPDM                             |
| Code for rubber:                     | E                                |
| Wear ring mat.:                      | High alloy<br>brass(CuZn34Mn3Al2 |
| <b>Installation:</b>                 |                                  |
| Maximum ambient temperature:         | 50 °C                            |
| Maximum operating pressure:          | 16 bar                           |
| Flange standard:                     | EN 1092-2                        |
| Pump inlet:                          | DN 80                            |
| Pump outlet:                         | DN 65                            |
| Pressure rating:                     | PN 16                            |
| Wear ring(s):                        | neckring(s)                      |
| Connect code:                        | F2                               |
| <b>Liquid:</b>                       |                                  |
| Pumped liquid:                       | Water                            |
| Liquid temperature range:            | -25 .. 120 °C                    |
| Liquid temperature during operation: | 20 °C                            |
| Density:                             | 998.2 kg/m³                      |
| <b>Electrical data:</b>              |                                  |
| Motor type:                          | 90SD                             |
| IE Efficiency class:                 | IE5                              |
| Rated power - P2:                    | 1.1 kW                           |
| Mains frequency:                     | 50 Hz                            |
| Rated voltage:                       | 3 x 380-500 V                    |
| Rated current:                       | 2.30-2.10 A                      |
| Cos phi - power factor:              | 0.90-0.74                        |
| Rated speed:                         | 180-2000 rpm                     |
| Efficiency:                          | 87.2%                            |
| Number of poles:                     | 4                                |
| Enclosure class (IEC 34-5):          | IP55                             |
| Insulation class (IEC 85):           | F                                |
| Motor protec:                        | YES                              |
| Motor No:                            | 99116407                         |
| Mount. design. acc. IEC 34-7:        | IM V1/B5                         |
| Lubricant type:                      | Grease                           |
| <b>Controls:</b>                     |                                  |
| Control panel:                       | HMI300 - Graphical               |
| Function Module:                     | FM300 - Advanced                 |

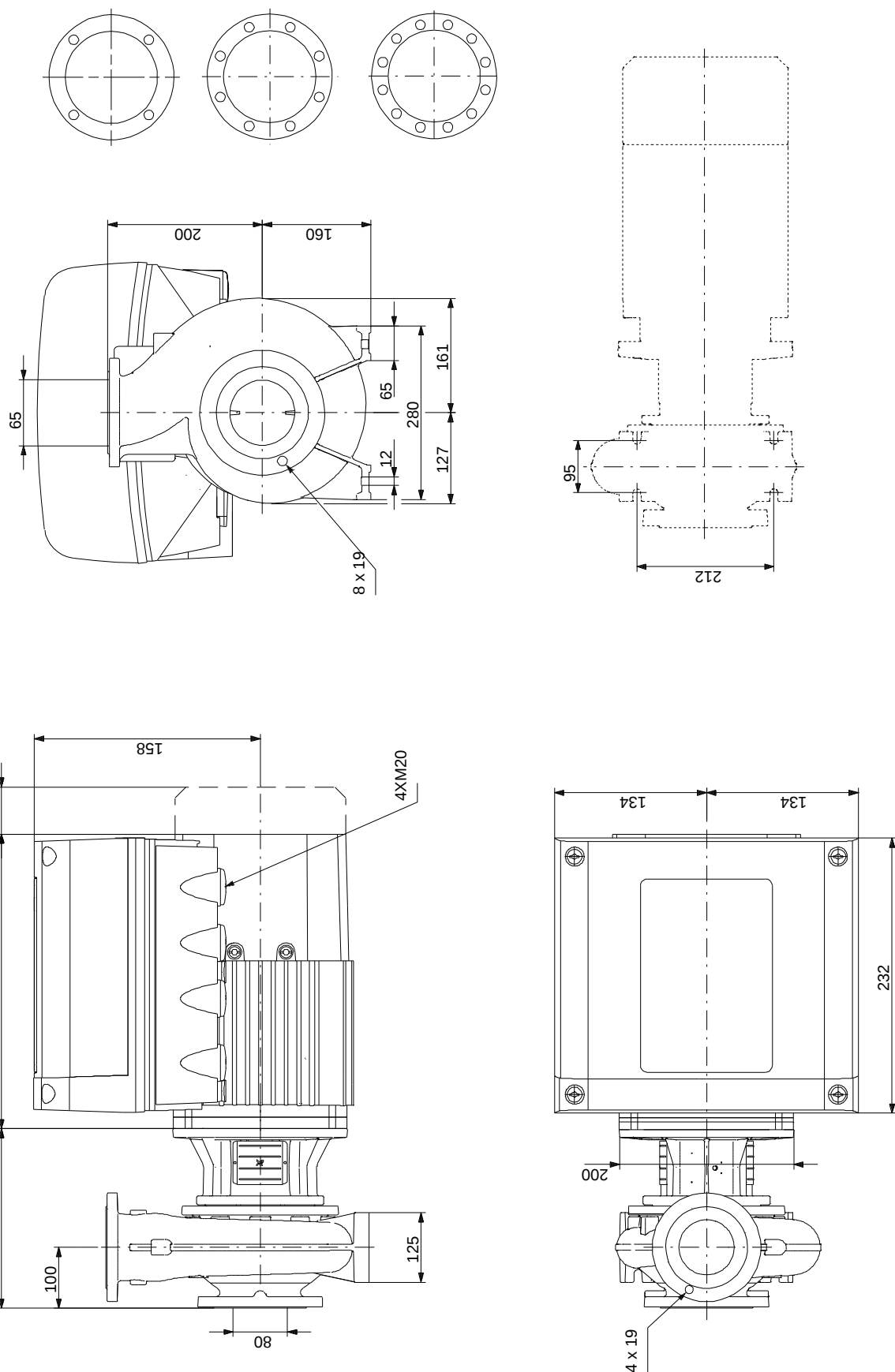


| Description                      | Value                |
|----------------------------------|----------------------|
| <b>Others:</b>                   |                      |
| Minimum efficiency index, MEI ≥: | 0.70                 |
| ErP status:                      | EuP Standalone/Prod. |
| Net weight:                      | 49 kg                |
| Gross weight:                    | 66 kg                |
| Shipping volume:                 | 0.315 m³             |
| Config. file no:                 | 98478703             |

# On request NBE 65-160/149 A-F2-A-E-BQQE 50 Hz



# On request NBE 65-160/149 A-F2-A-E-BQQE 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 NBE 65-160/149, Product No. On request**  
**Valid from 25.12.2012 (1252)**

| Pos  | Description                   | Annotation | Données de classification   | Référence | Quantité | Unité |
|------|-------------------------------|------------|-----------------------------|-----------|----------|-------|
| -    | Motor                         |            |                             |           | 1        | pcs   |
|      | Terminal                      |            |                             |           | 3        |       |
|      | Pan head thread forming screw |            |                             |           | 4        |       |
| 150  | Stator housing                |            |                             |           | 1        |       |
| 150  | Stator                        |            |                             |           | 1        |       |
| 151  | Fan cover                     |            |                             |           | 1        |       |
| 152  | Pan head thread forming screw |            |                             |           | 6        |       |
| 152  | Pan head thread forming screw |            |                             |           | 1        |       |
| 152  | Pan head thread forming screw |            |                             |           | 1        |       |
| 152  | Pan head thread forming screw |            |                             |           | 4        |       |
| 153  | Ball bearing                  |            |                             |           | 1        |       |
| 154  | Ball bearing                  |            | Designation: 6204.2Z.C3.SYN |           | 1        |       |
| 156  | Fan                           |            |                             |           | 1        |       |
| 156b | Flange                        |            |                             |           | 1        |       |
| 156d | Gasket                        |            | Internal diameter: 114,80   |           | 1        |       |
|      |                               |            | Outer diameter: 121,20      |           |          |       |
|      |                               |            | Thickness: 0,25             |           |          |       |
| 157  | O-ring                        |            | Diameter: 47                |           | 1        |       |
|      |                               |            | Material type: NBR          |           |          |       |
|      |                               |            | Thickness: 3                |           |          |       |
| 158  | Waved washer                  |            |                             |           | 1        |       |
| 159a | Seal ring                     |            |                             |           | 1        |       |
| 159c | Seal ring                     |            |                             |           | 1        |       |
| 166  | Torx Screw                    |            |                             |           | 2        |       |
| 172  | Shaft w/rotor                 |            |                             |           | 1        |       |
| 172a | Parallel key                  |            | Dimension: 8X7X40           |           | 1        |       |
| 173a | Base                          |            |                             |           | 1        |       |
| 185  | Cross recess Pan head screw   |            |                             |           | 4        |       |
| 186  | Drain plug                    |            |                             |           | 1        |       |
| 187  | Retaining ring                |            |                             |           | 1        |       |
| 188  | Retaining ring                |            |                             |           | 1        |       |
| 203  | Terminal plug                 |            |                             |           | 1        |       |
| 251a | Control box                   |            |                             |           | 1        |       |
| 251b | Control box                   |            |                             |           | 1        |       |
| 251d | Pan head thread forming screw |            |                             |           | 4        |       |
| 266  | Connector plug 3-pole         |            |                             |           | 1        |       |
| 266  | Connector plug 3-pole         |            |                             |           | 1        |       |
| 266  | Connector plug 8-pole         |            |                             |           | 1        |       |
| 266  | Connector plug 8-pole         |            |                             |           | 1        |       |
| 266  | Connector plug 10-pole        |            |                             |           | 1        |       |
| 268  | Pan head screw                |            |                             |           | 1        |       |
| 273  | Funct. Module cpl.            |            |                             |           | 1        |       |
| 275a | Pin                           |            |                             |           | 1        |       |
| 277  | Isolation cover               |            |                             |           | 1        |       |
| 277a | Cross recess Pan head screw   |            |                             |           | 1        |       |
| 277a | Cross recess Pan head screw   |            |                             |           | 4        |       |
| 277a | Cross recess Pan head screw   |            |                             |           | 1        |       |
| 286  | Spacer                        |            |                             |           | 1        |       |
| 286  | Spacer                        |            |                             |           | 1        |       |
| 287  | Cover                         |            |                             |           | 1        |       |
| 288  | Wire clamp                    |            |                             |           | 3        |       |
| 288b | Washer                        |            |                             |           | 6        |       |
| 289  | Wire clamp                    |            |                             |           | 1        |       |
| 290  | Control panel, cpl.           |            |                             |           | 1        |       |
| 300  | Plug cpl.                     |            |                             |           | 4        |       |
| 301  | Jumper                        |            |                             |           | 1        |       |
| -    | Nut                           |            |                             |           | 1        | pcs   |
| 66   | Washer                        |            |                             |           | 1        |       |
| 66a  | Spring lock washer            |            |                             |           | 1        |       |

| Pos | Description               | Annotation | Données de classification | Référence | Quantité | Unité |
|-----|---------------------------|------------|---------------------------|-----------|----------|-------|
| 67  | Nut                       |            | Thread: M14               |           | 1        |       |
| -   | Motor stool cpl.          |            |                           |           | 1        | pcs   |
| 1a  | Motor stool               |            |                           |           | 1        |       |
| 7   | Coupling guard            |            |                           |           | 2        |       |
| 9   | Hex socket head cap screw |            | Length (mm): 30           |           | 4        |       |
|     |                           |            | Thread: M10               |           |          |       |
| 77a | Pan head screw            |            |                           |           | 4        |       |
| -   | Pump housing cpl.         |            |                           |           | 1        | pcs   |
| 6   | Pump housing              |            |                           |           | 1        |       |
| 36  | Nut                       |            | Thread: M10               |           | 8        |       |
| -   | Stub shaft                |            |                           |           | 1        | pcs   |
| 9   | Socket set screw          |            | Length (mm): 6            |           | 2        |       |
|     |                           |            | Thread: M8                |           |          |       |
| 11  | Parallel key              |            | Dimension: 6X6X35         |           | 1        |       |
| 51  | Pump shaft                |            |                           |           | 1        |       |
| 49  | Impeller                  |            |                           |           | 1        | pcs   |
| 72a | O-ring                    |            | Diameter: 177,39          |           | 1        | pcs   |
|     |                           |            | Material type: EPDM       |           |          |       |
|     |                           |            | Thickness: 3,53           |           |          |       |
| 105 | Shaft seal                |            |                           |           | 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.*

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