

Close Coupled Centrifugal Pumps

NMM SERIES (50 Hz.)



TECHNICAL MANUAL



Revision No: 02

June/2018

NMM Series

Close Coupled Centrifugal Pump

General Information



Mas Grup

Fields of Application

- Water supply and booster stations.
- Irrigation, overhead irrigation and draining.
- Filling and emptying of tanks and containers.
- Circulating of hot and cold water in central heating and air-conditioning installations.
- Pumping of condensate.
- Water circulating for swimming pools.
- Sanitary and cleaning installations.
- For industrial applications and public services.
- Fresh water supply on ships.

Pumped Liquids

Thin, clean, non-aggressive and non-explosive liquids free from large solid particles or fibres.

For special applications, please consult to MAS DAF MAKINA SAN. A.Ş.

Design

- NMM series pumps are volute casing, single stage, end suction, close-coupled centrifugal pumps with closed impeller and mechanical seal.
- Main dimensions and the nominal flow rates of the pumps comply with the DIN 24 255 and EN 733 standards.
- Pump flanges sizes according to ISO 7005-2, DIN 2533 and PN 16.
- Single entry, closed impeller is hydraulically thrust compensated and dynamically balanced.
- A drain plug is fitted in the bottom of pump housing.
- Pump and motor are separate components. Motor shaft is passed into the pump shaft for coupling. After a certain motor power, a coupling system is used between the motor shaft and pump shaft.
- Maintenance is very much easier, the impeller shaft and other rotating parts being removable with no need to disconnect the suction and delivery pipes, due to back pull-out design.
- Maximum interchangeability of components, identical parts can be used along various pumps of the NMM series, which greatly simplifies and reduces stock of spare parts in addition to reduced delivery times.
- Single-stage centrifugal pump coupled by means of a support, to a standard asynchronous motor, closed type, with external ventilation.
- NMM series are fitted with mechanical shaft seal and pump shaft is supported by motor bearings.

Shaft Seal

Single mechanical seal, flushed by pumped liquid, uncooled, unbalanced, heavy duty and rubber bellows mechanical seals are used for sealing.

On the series production, BURGMANN MG1 type mech. seals are used for operation pressures up to 10 bar and for clean, non-aggressive liquids. Different types are available for harder operation conditions. Please refer to MAS DAF MAKINA SAN. A.Ş.

Technical Data

- Suction Flange : DN 50... DN 150
- Discharge Flange : DN 32...DN 125
- Operating Pressure : 10 Bar
- Casing Test Pressure : 13 Bar
- Operating Temperature : -25 – 120°C
- Impeller Diameter \varnothing : 123...428 mm \varnothing
- Speed Range : 1450 – 2900 RPM
- Capacity Range : 5 – 400 m³ / h
- Head Range : 4 - 110 m

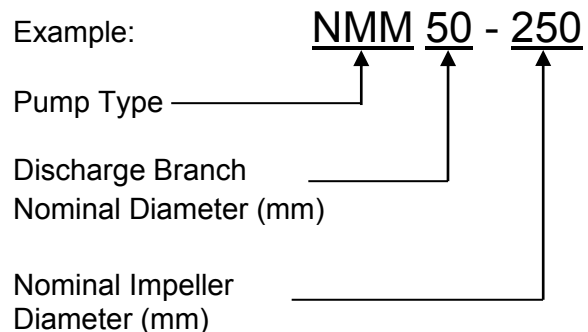
Flanges

- Discharge Flanges : DIN 2533 – PN 16
- Suction Flanges : DIN 2533 – PN 16

Driver

B5 flanged, IP 55 and according to IEC electric motors are used for NMM series pumps. 50 Hz and 60 Hz can be used.

Identification Code



NMM Series
Close Coupled Centrifugal Pump
ATEX Description



Mas Grup

ATEX Codification

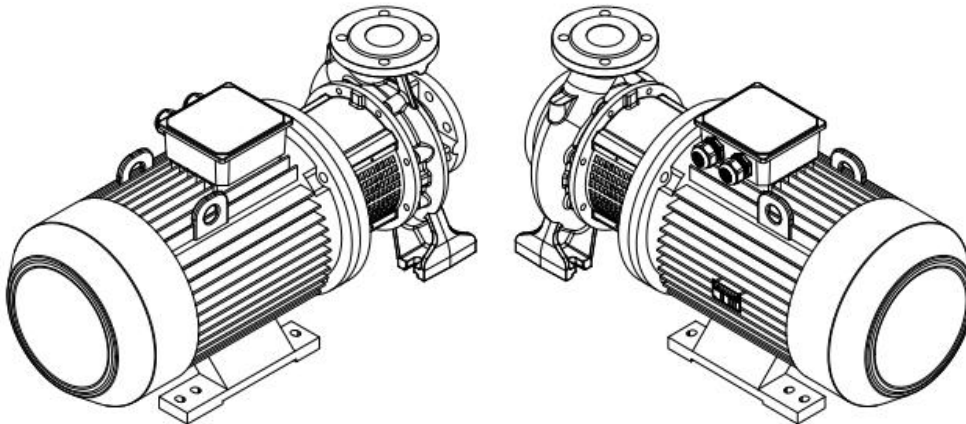
ATEX -95

Ex /D c Tx (85 °C – 200 °C)

| Equipment Groups (Annex I of Directive 94/9/EC) | | | | | | | |
|--|--|--|--------------------------|--|--------------------------|---|--------------------------|
| Group I (mines, mine gas and dust) | | Group II (other explosive atmospheres gas/dust) | | | | | |
| Category M 1 | Category M 2 | Category 1 | | Category 2 | | Category 3 | |
| | | G (gas) (Zone 0) | D (dust) (Zone 20) | G (gas) (Zone 1) | D (dust) (Zone 21) | G (gas) (Zone 2) | D (dust) (Zone 22) |
| For equipment providing a very high level of protection when endangered by an explosive atmosphere | For equipment providing a high level of protection when likely to be endangered by an explosive atmosphere | For equipment providing a very high level of protection when used in areas where an explosive atmosphere is very likely to occur | | For equipment providing a high level of protection when used in areas where an explosive atmosphere is likely to occur | | For equipment providing a normal level of protection when used in areas where an explosive atmosphere is less likely to occur | |

| TEMPERATURE CLASS | | |
|---|--------------------------------------|--|
| Temperature class required by the area classification | Ignition temperature of gas or vapor | Allowable temperature classes of equipment |
| T1 | > 450 °C | T1 - T6 |
| T2 | > 300 °C | T2 - T6 |
| T3 | > 200 °C | T3 - T6 |
| T4 | > 135 °C | T4 - T6 |
| T5 | > 100 °C | T5 - T6 |
| T6 | > 85 °C | T6 |

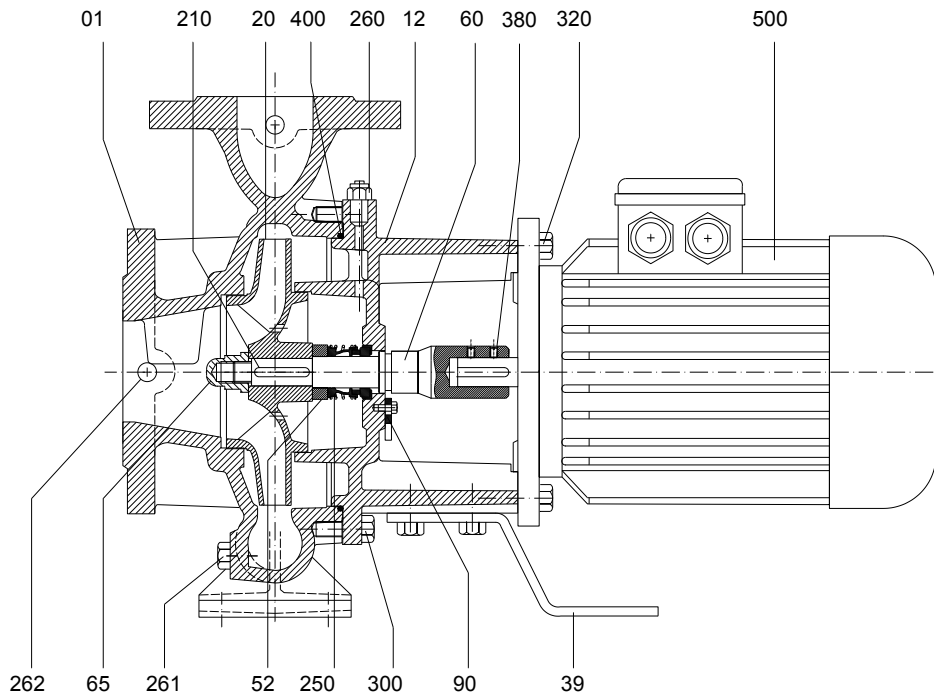
| Code | Description |
|------|---|
| II | The Usage in other non-mining explosive atmospheres |
| 2 | 2. Category: High level of protection |
| G | For potentially explosive environments due to gases or vapors |
| T | Temperature class |
| X | ATEX Marking of the motor manufacturer |



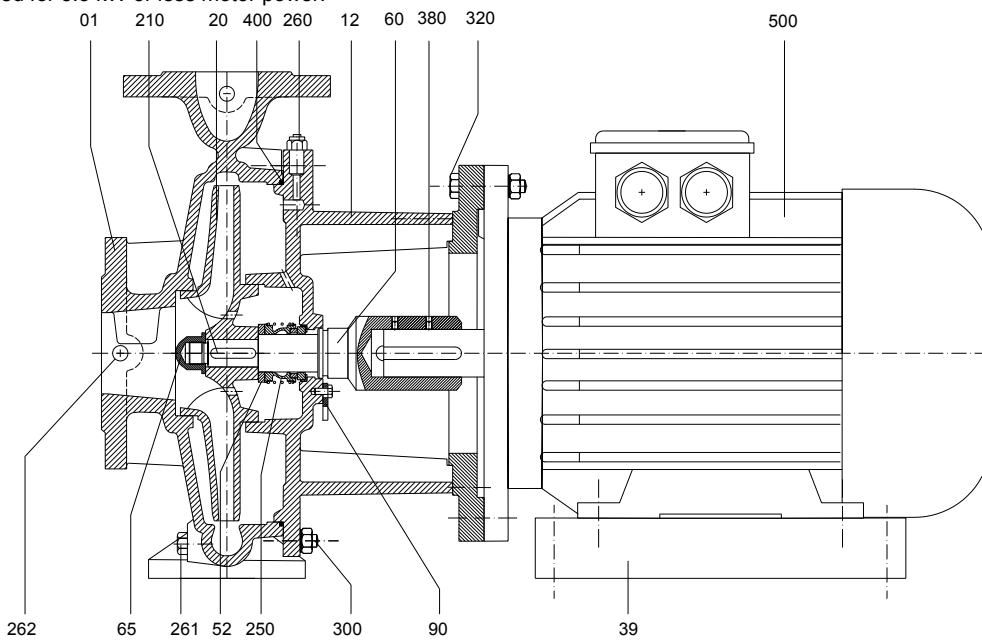
NMM Series
Close Coupled Centrifugal Pump
Cross-Sectional View and Part List (Without Coupling)



Mas Grup



Note: This system is used for 5.5 kW or less motor power.



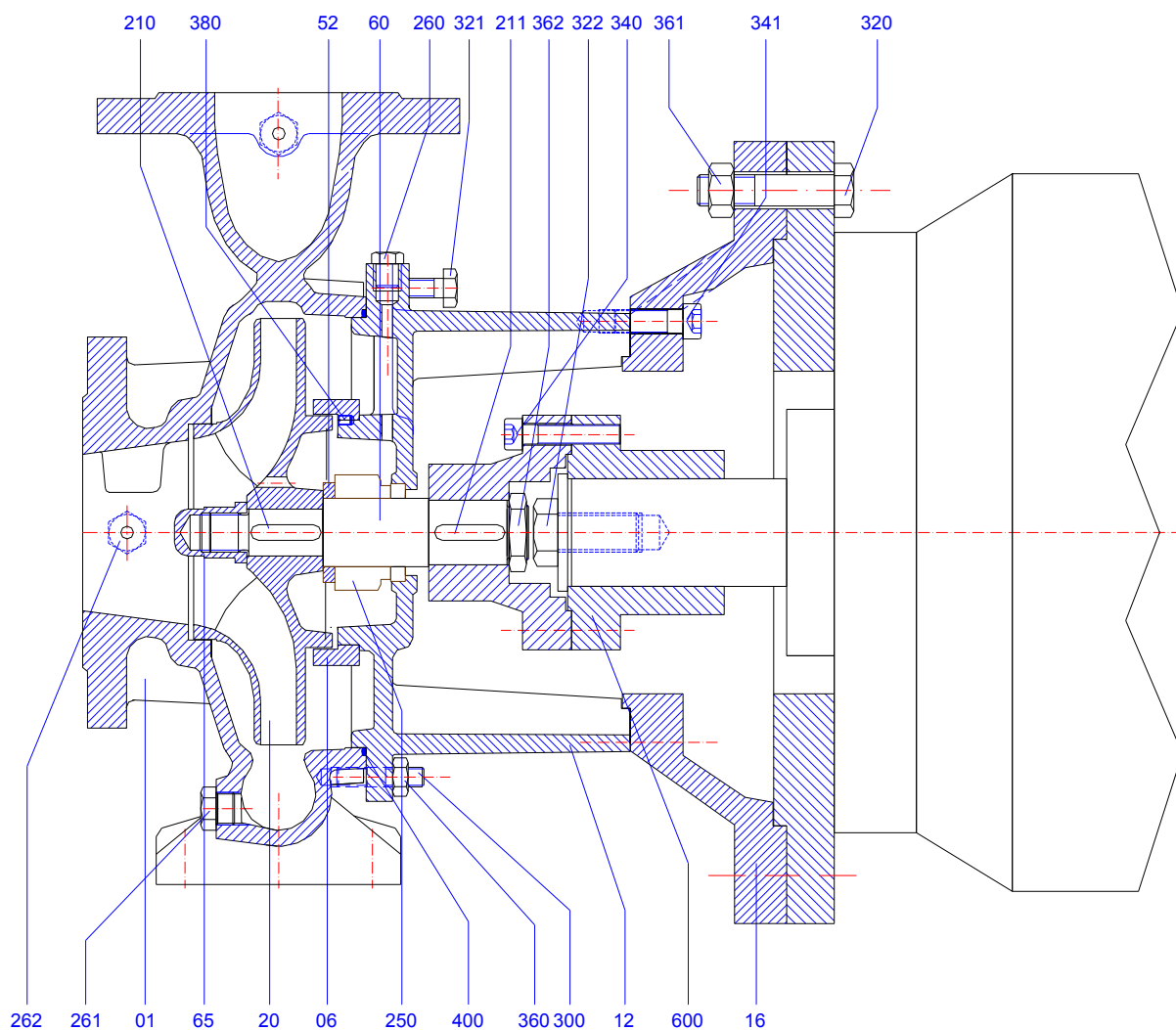
Note: This system is used for motor power above 5.5 kW.

| PART NO | PART NAME | PART NO | PART NAME |
|---------|------------------------|---------|-----------------|
| 01 | Pump Casing | 250 | Mechanical Seal |
| 12 | Adapter | 260 | Plug |
| 20 | Impeller | 261 | Drain Plug |
| 39 | Supporting Foot | 262 | Plug (Casing) |
| 52 | Mechanical Seal Sleeve | 300 | Stud, Casing |
| 60 | Pump Shaft | 320 | Hexagonal Bolt |
| 65 | Impeller Nut | 380 | Setscrew |
| 90 | Shaft Fixing Device | 400 | O-Ring |
| 210 | Impeller Key | 500 | Motor |

NMM Series
Close Coupled Centrifugal Pump
Cross-Sectional View and Part List (With Coupling)



Mas Grup



| PART NO | PART NAME | PART NO | PART NAME |
|---------|-----------------|---------|-------------------|
| 01 | Pump Casing | 262 | Plug, Pump Casing |
| 06 | Wearing Ring | 300 | Stud, Pump Casing |
| 12 | Adapter | 320 | Hexagonal Bolt |
| 16 | Motor Flange | 321 | Hexagonal Bolt |
| 20 | Impeller | 322 | Hexagonal Bolt |
| 52 | Mech. Seal Ring | 340 | Imbus Bolt |
| 60 | Pump Shaft | 341 | Imbus Bolt |
| 65 | Impeller Nut | 360 | Nut |
| 210 | Impeller Key | 361 | Nut |
| 211 | Coupling Key | 362 | Nut |
| 250 | Mechanical Seal | 380 | Setscrew |
| 260 | Plug | 400 | O-Ring |
| 261 | Drain Plug | 600 | Coupling |

Note: This coupling system is applied with a motor power 30 KW and over.

NMM Series

Close Coupled Centrifugal Pump

Technical Data



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Material Options

| Components | Material. No | | | | | | |
|-----------------|--------------|--------|--------|-----------|--------|--------|--------|
| | | 0.6025 | 0.7040 | 2.1050.01 | 1.4021 | 1.4301 | 1.4401 |
| Pump Casing | | ● | ○ | ○ | | ○ | ○ |
| Impeller | | ● | ○ | ○ | | ○ | ○ |
| Wearing Ring | | ○ | ● | ○ | | ○ | ○ |
| Shaft | | | | | ● | ○ | ○ |
| Adapter | | ● | ○ | ○ | | ○ | ○ |
| Adapter (Motor) | | ● | ○ | | | | |

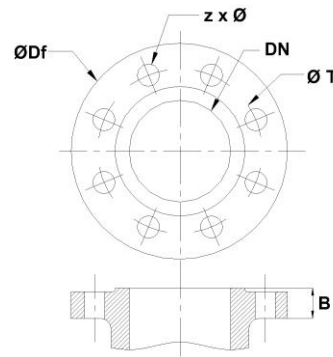
● - Standard Manufacturing
○ - Optional

Material Equivalent

| Description | DIN 17007 | EN-DIN | ASTM |
|--------------------------------|-----------|--------------------|-------------------|
| Cast Iron | 0.6025 | GJL-250 (GG25) | A 48 Class 40-B |
| Nodular Cast Iron | 0.7040 | GJS-400-15 (GGG40) | A 536 Gr.60-40-18 |
| Cast Bronze | 2.1050.01 | G-Cu Sn 10 | B 584 C 90700 |
| Chrome Steel | 1.4021 | X20 Cr 13 | A 276 Type 420 |
| Chrome Nickel Steel | 1.4301 | X5 Cr Ni 18.9 | A 276 Type 304 |
| Chrome Nickel Molybdenum Steel | 1.4401 | X5 Cr Ni Mo 18.10 | A 276 Type 316 |

Flange Dimensions

| Suction and Discharge Flange Dimensions | | | | | | | | |
|---|----|-----|-----|-----|-----|----|---|-----------------|
| DNs DNd | PN | ØD | Øk | Ød4 | Ød2 | b | f | Number of holes |
| 32 | 16 | 140 | 100 | 78 | 18 | 18 | 2 | 4 |
| 40 | | 150 | 110 | 88 | 18 | 18 | 3 | 4 |
| 50 | | 165 | 125 | 102 | 18 | 20 | 3 | 4 |
| 65 | | 185 | 145 | 122 | 18 | 20 | 3 | 4 |
| 80 | | 200 | 160 | 138 | 18 | 22 | 3 | 8 |
| 100 | | 220 | 180 | 158 | 18 | 24 | 3 | 8 |
| 125 | | 250 | 210 | 188 | 18 | 26 | 3 | 8 |
| 150 | | 285 | 240 | 212 | 22 | 26 | 3 | 8 |



| No | Pump Type | Flange | | | |
|----|-----------|------------------|-------|--------------------|-------|
| | | DNs (mm) Suction | | DNs (mm) Discharge | |
| 1 | 32-160 | 50 | PN 16 | PN 16 | PN 16 |
| 2 | 32-200 | | | | |
| 3 | 32-250 | | | | |
| 4 | 40-160 | 65 | | | |
| 5 | 40-200 | | | | |
| 6 | 40-250 | | | | |
| 7 | 50-160 | 65 | | | |
| 8 | 50-200 | | | | |
| 9 | 50-250 | | | | |
| 10 | 50-315 | 80 | | | |
| 11 | 65-160 | | | | |
| 12 | 65-200 | | | | |
| 13 | 65-250 | | | | |
| 14 | 65-315 | | | | |
| 15 | 65-400 | 100 | | | |

| No | Pump Type | Flange | | | |
|----|-----------|------------------|-------|--------------------|-------|
| | | DNs (mm) Suction | | DNs (mm) Discharge | |
| 16 | 80-160 | 100 | PN 16 | PN 16 | PN 16 |
| 17 | 80-200 | | | | |
| 18 | 80-250 | | | | |
| 19 | 80-315 | | | | |
| 20 | 80-400 | | | | |
| 21 | 100-160 | 125 | | | |
| 22 | 100-200 | | | | |
| 23 | 100-250 | | | | |
| 24 | 100-315 | | | | |
| 25 | 100-400 | | | | |
| 26 | 125-200 | 150 | | | |
| 27 | 125-250 | | | | |
| 28 | 125-315 | | | | |
| 29 | 125-400 | | | | |

NMM Series

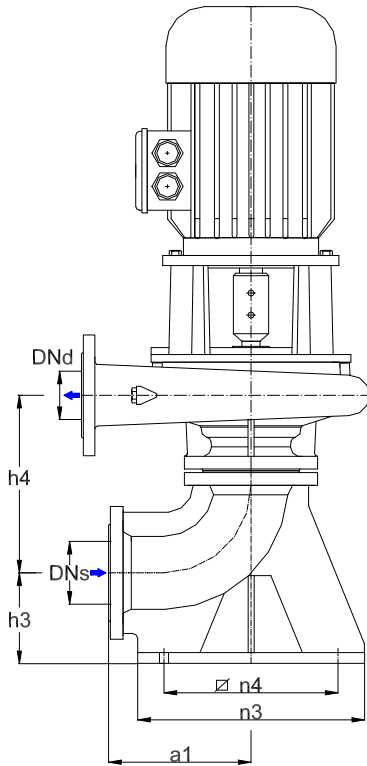
Close Coupled Centrifugal Pump

Technical Data



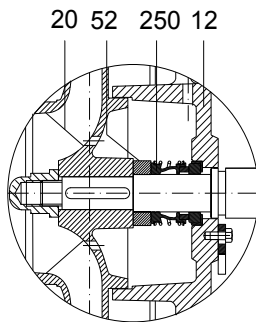
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Elbow Flange Dimensions for Vertical NMM Pumps



| Pump Type | DNs | DNd | a1 | n3 | n4 | h3 | h4 |
|-------------|-----|-----|-----|-----|-----|-----|-----|
| NMM 32-160 | 50 | 32 | 140 | 200 | 150 | 90 | 170 |
| NMM 32-200 | | | 140 | 200 | 150 | 90 | 170 |
| NMM 32-250 | | | 140 | 200 | 150 | 90 | 190 |
| NMM 40-160 | 65 | 40 | 160 | 235 | 180 | 105 | 185 |
| NMM 40-200 | | | 160 | 235 | 180 | 105 | 205 |
| NMM 40-250 | | | 160 | 235 | 180 | 105 | 205 |
| NMM 50-160 | 65 | 50 | 160 | 235 | 180 | 105 | 205 |
| NMM 50-200 | | | 160 | 235 | 180 | 105 | 205 |
| NMM 50-250 | | | 160 | 235 | 180 | 105 | 185 |
| NMM 50-315 | 80 | | 190 | 290 | 215 | 115 | 230 |
| NMM 65-160 | 80 | 65 | 190 | 290 | 215 | 115 | 230 |
| NMM 65-200 | | | 190 | 290 | 215 | 115 | 230 |
| NMM 65-250 | | | 190 | 290 | 215 | 115 | 230 |
| NMM 65-315 | | | 190 | 290 | 215 | 115 | 255 |
| NMM 65-400 | 100 | | 225 | 360 | 375 | 145 | 285 |
| NMM 80-160 | 100 | 80 | 225 | 360 | 275 | 145 | 285 |
| NMM 80-200 | | | 225 | 360 | 275 | 145 | 285 |
| NMM 80-250 | | | 225 | 360 | 275 | 145 | 285 |
| NMM 80-315 | | | 225 | 360 | 275 | 145 | 285 |
| NMM 80-400 | | | 225 | 360 | 275 | 145 | 285 |
| NMM 100-160 | 125 | 100 | | | | | |
| NMM 100-200 | | | 280 | 450 | 350 | 180 | 325 |
| NMM 100-250 | | | 280 | 450 | 350 | 180 | 340 |
| NMM 100-315 | | | 280 | 450 | 350 | 180 | 340 |
| NMM 100-400 | | | 280 | 450 | 350 | 180 | 340 |
| NMM 125-200 | 150 | 125 | 315 | 500 | 400 | 200 | 380 |
| NMM 125-250 | | | 315 | 500 | 400 | 200 | 380 |
| NMM 125-315 | | | 315 | 500 | 400 | 200 | 380 |
| NMM 125-400 | | | 315 | 500 | 400 | 200 | 380 |

Mechanical Seal Application



| Part No | PartName |
|---------|-------------------|
| 12 | Adapter |
| 20 | Impeller |
| 52 | Mech. Seal Sleeve |
| 250 | Mechanical Seal |

Burgmann MG1-G60 – Up to 12 Bar
(Independent of direction of rotation)

NMM Series

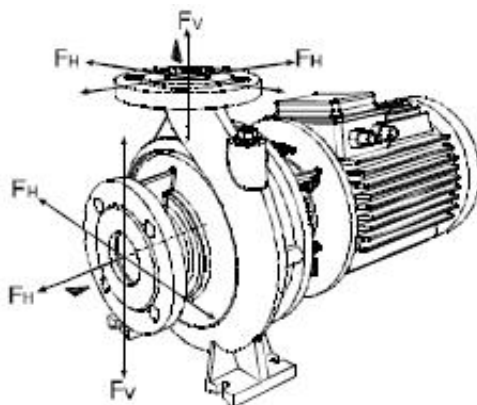
Close Coupled Centrifugal Pump

Technical Data



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Permissible Forces and Moments at the Pump Flanges



The following condition must be satisfied;

$$\left[\frac{\sum(F_V)}{F_{V\max}} \right]^2 + \left[\frac{\sum(F_H)}{F_{H\max}} \right]^2 + \left[\frac{\sum(M_t)}{M_{t\max}} \right]^2 \leq 1$$

$\sum(F_V)$, $\sum(F_H)$ and $\sum(M_t)$ are the sums of the absolute amounts of the corresponding loads applied to the supports.

Neither the direction of the loads nor their distributions across the supports are taken into account in these sums.

| No | Pump Type | Flanges | | Forces | | Moments |
|----|-----------|---------------------|-----------------------|--------------------|--------------------|---------------------|
| | | DNs (mm) Suction | DNd (mm) Discharge | F _v (N) | F _H (N) | M _t (Nm) |
| 1 | 32-160 | 50 | 32 | 2255 | 1485 | 385 |
| 2 | 32-200 | | | | | |
| 3 | 32-250 | | | | | |
| 4 | 40-160 | 65 | 40 | 2420 | 1620 | 440 |
| 5 | 40-200 | | | | | |
| 6 | 40-250 | | | | | |
| 7 | 50-160 | 65 | 50 | 2490 | 1700 | 530 |
| 8 | 50-200 | | | | | |
| 9 | 50-200 | | | | | |
| 10 | 50-315 | | | | | |
| 11 | 65-160 | 80 | 65 | 2550 | 1900 | 650 |
| 12 | 65-200 | | | | | |
| 13 | 65-250 | | | | | |
| 14 | 65-315 | | | | | |
| 15 | 65-400 | | | | | |
| 16 | 80-160 | 100 | 80 | 3170 | 2400 | 1060 |
| 17 | 80-200 | | | | | |
| 18 | 80-250 | | | | | |
| 19 | 80-315 | | | | | |
| 20 | 80-400 | | | | | |
| 21 | 100-160 | 125 | 100 | 4400 | 3480 | 1740 |
| 22 | 100-200 | | | | | |
| 23 | 100-250 | | | | | |
| 24 | 100-315 | | | | | |
| 25 | 100-400 | | | | | |
| 26 | 125-200 | 150 | 125 | 5580 | 4620 | 2565 |
| 27 | 125-250 | | | | | |
| 28 | 125-315 | | | | | |
| 29 | 125-400 | | | | | |

NMM Series

Close Coupled Centrifugal Pump

General Information About Minimum Efficiency Index Implementing



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Product Information as per Regulation No. 547/2012 (for Water Pumps with a Maximum Shaft Power of 150 kW) Implementing "Ecodesign" Directive 2009/125/EC

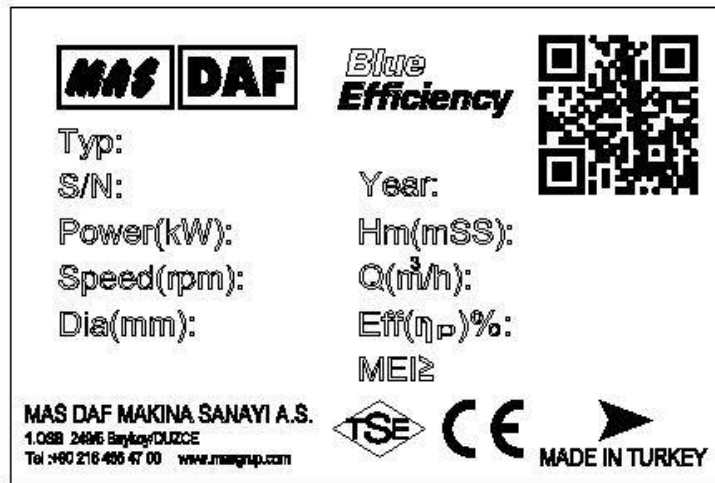
Minimum Efficiency Index for MAS NMM Pump Series is shown on the pump label.

MEI values of MAS NMM Pump Series are shown on the pump characteristic curves.

Minimum Efficiency Index for MAS NMM Pump Series; Minimum 0.4. (MEI \geq 0,4)

Efficiency values of the pump characteristic curves, which are cut diameter, are expressed in %.

NMM Series water pumps, the pump efficiency can be achieved more than fix speed in case of variable speed control.



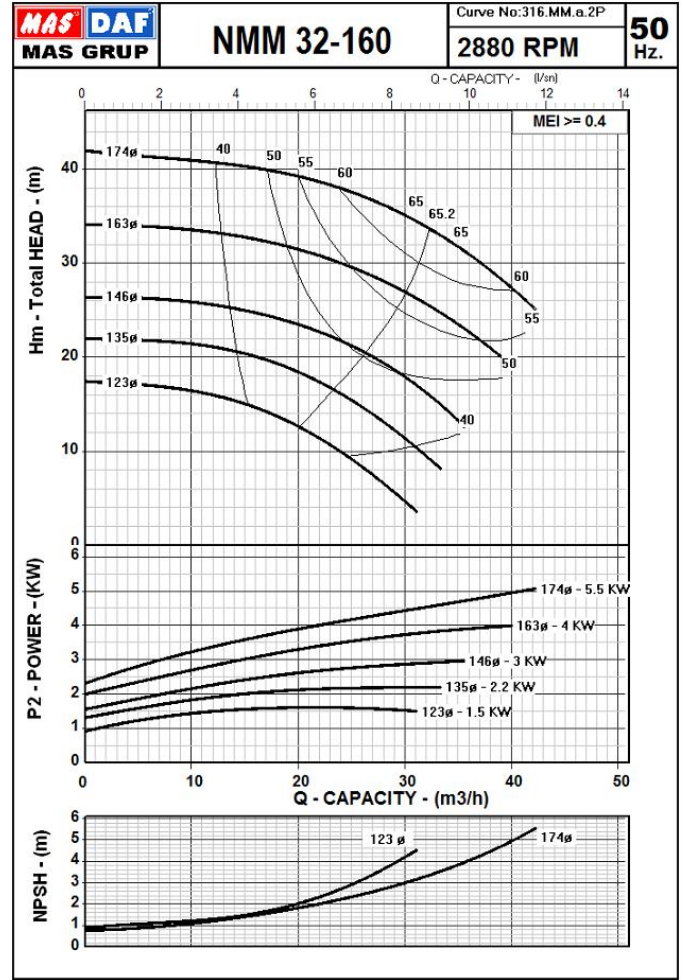
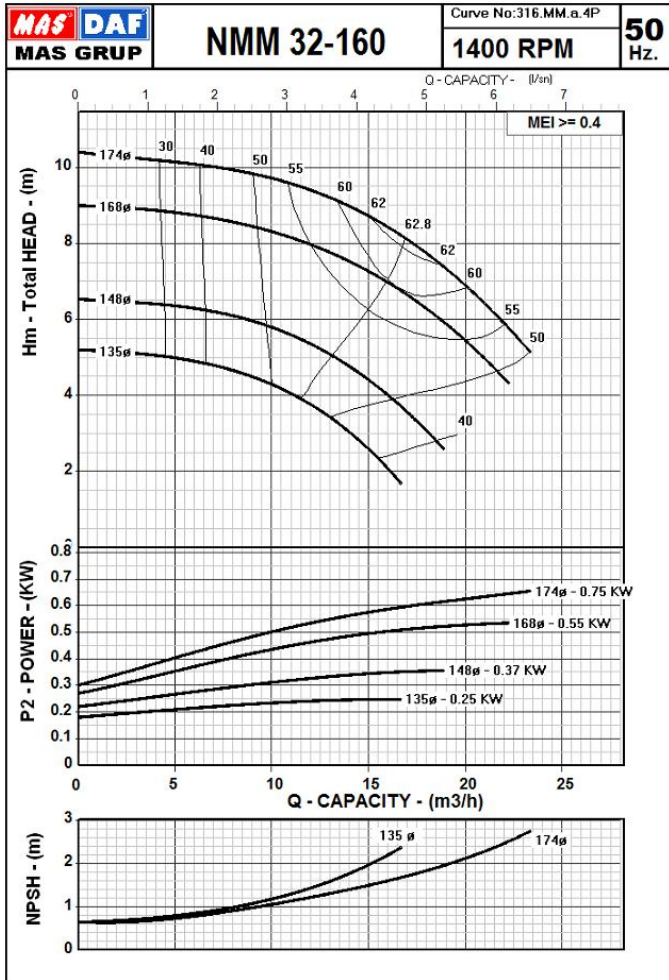
Pump Label

NMM Series
Close Coupled Centrifugal Pump
Performance Curves

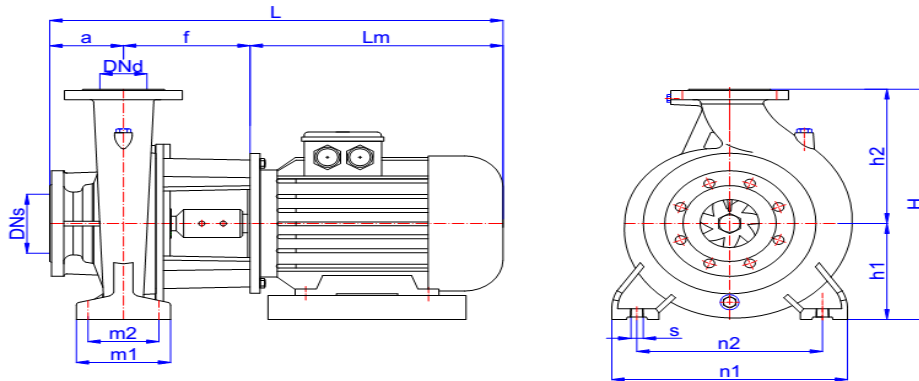
NMM 32-160



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The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| | MOTOR | | | FLANGES | | GENERAL | PUMP | | | | | | | | | Mechanical Seal | | |
|--------|---------|------|-------|---------|-----|---------|------|-----|-----|-----|-----|-----|-----|----|----|---------------------------|-------|-----|
| | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter | | |
| | | | mm | | | | | | | | | | | | | | mm | mm |
| 32-160 | 4 poles | 0.25 | 71 | 222.5 | 32 | 50 | 80 | 159 | 132 | 160 | 240 | 190 | 100 | 70 | 12 | 20 | | |
| | | 0.37 | 71 | 222.5 | | | | | | | | | | | | | 461.5 | 159 |
| | | 0.55 | 80 | 243.5 | | | | | | | | | | | | | 482.5 | 159 |
| | | 0.75 | 80 | 243.5 | | | | | | | | | | | | | 482.5 | 159 |
| | 2 poles | 1.5 | 90L | 266.5 | 32 | 50 | 80 | 160 | 132 | 160 | 240 | 190 | 100 | 70 | 12 | 20 | | |
| | | 2.2 | 90L | 266.5 | | | | | | | | | | | | | 506.5 | 160 |
| | | 3 | 100L | 292 | | | | | | | | | | | | | 552 | 180 |
| | | 4 | 112M | 335.5 | | | | | | | | | | | | 595.5 | 180 | |
| | 5.5 | 132S | 360.5 | | | | 200 | | | | | | | | 30 | | | |

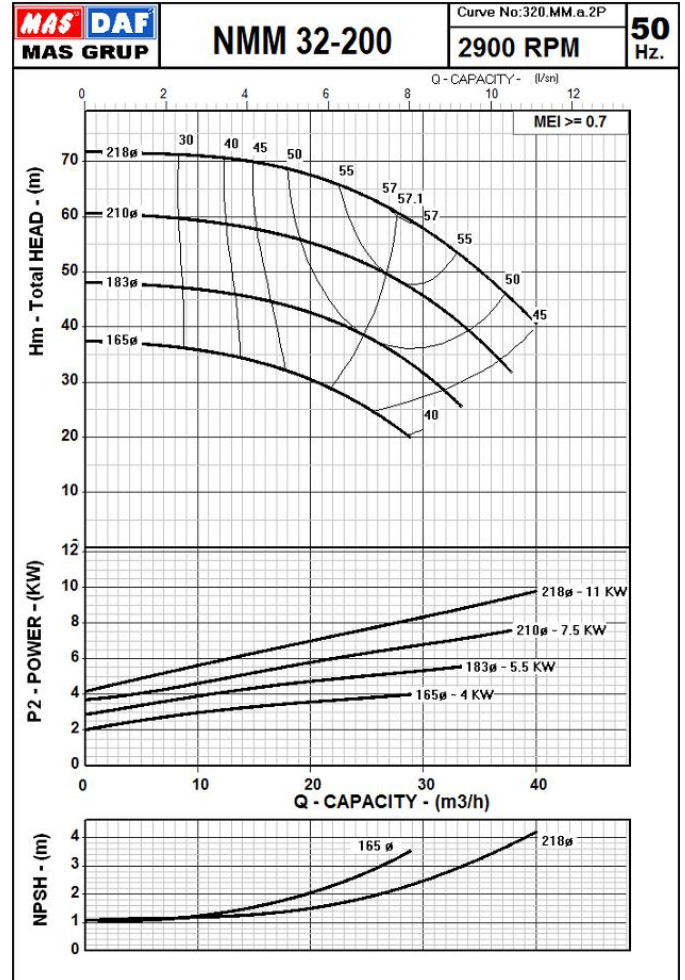
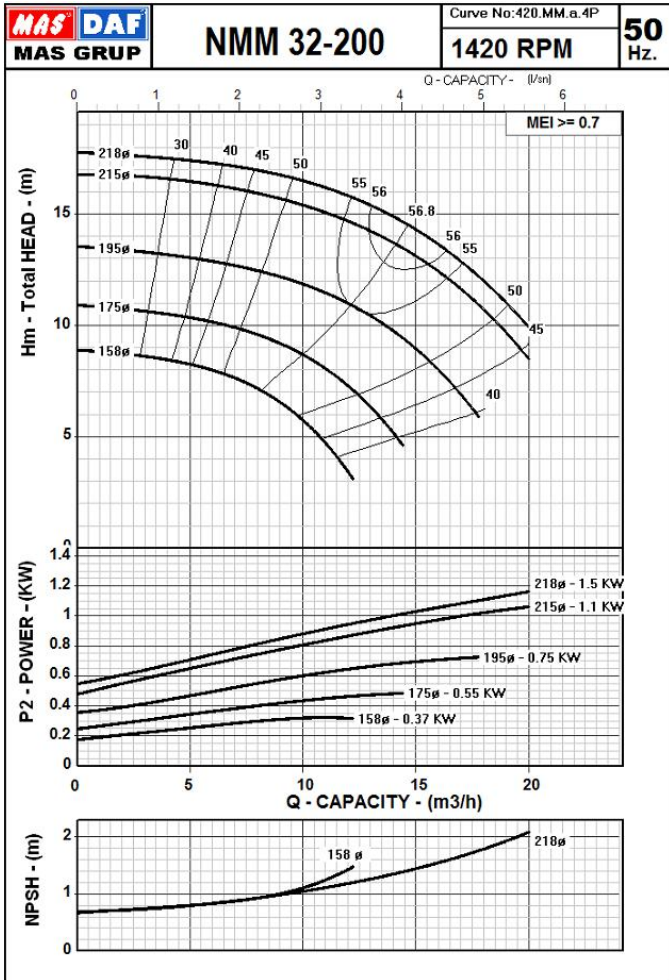
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

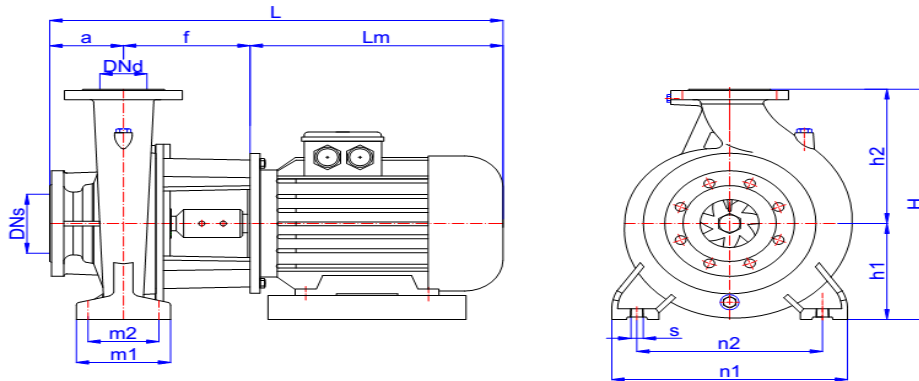
NMM 32-200



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| | MOTOR | | FLANGES | | GENERAL | PUMP | | | | | | | | | | Mechanical Seal | |
|--------|---------|------|---------|-------|---------|------|-------|----|-----|-----|-----|-----|-----|-----|----|---------------------------|----|
| | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter | |
| | | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | | mm |
| 32-200 | 4 poles | 0.37 | 71 | 222.5 | 32 | 50 | 462.5 | 80 | 160 | 160 | 180 | 240 | 190 | 100 | 70 | 12 | 20 |
| | | 0.55 | 80 | 243.5 | | | 483.5 | | 160 | | | | | | | | |
| | | 0.75 | 80 | 243.5 | | | 483.5 | | 160 | | | | | | | | |
| | | 1.1 | 90L | 266.5 | | | 506.5 | | 160 | | | | | | | | |
| | | 1.5 | 90L | 266.5 | | | 506.5 | | 160 | | | | | | | | |
| 32-200 | 2 poles | 4 | 112M | 335.5 | 32 | 50 | 595.5 | 80 | 180 | 160 | 180 | 240 | 190 | 100 | 70 | 12 | 20 |
| | | 5.5 | 132S | 360.5 | | | 645.5 | | 205 | | | | | | | | 30 |
| | | 7.5 | 132M | 395.5 | | | 680.5 | | 205 | | | | | | | | |
| | | 11 | 160M | 666 | | | 976 | | 230 | | | | | | | | |

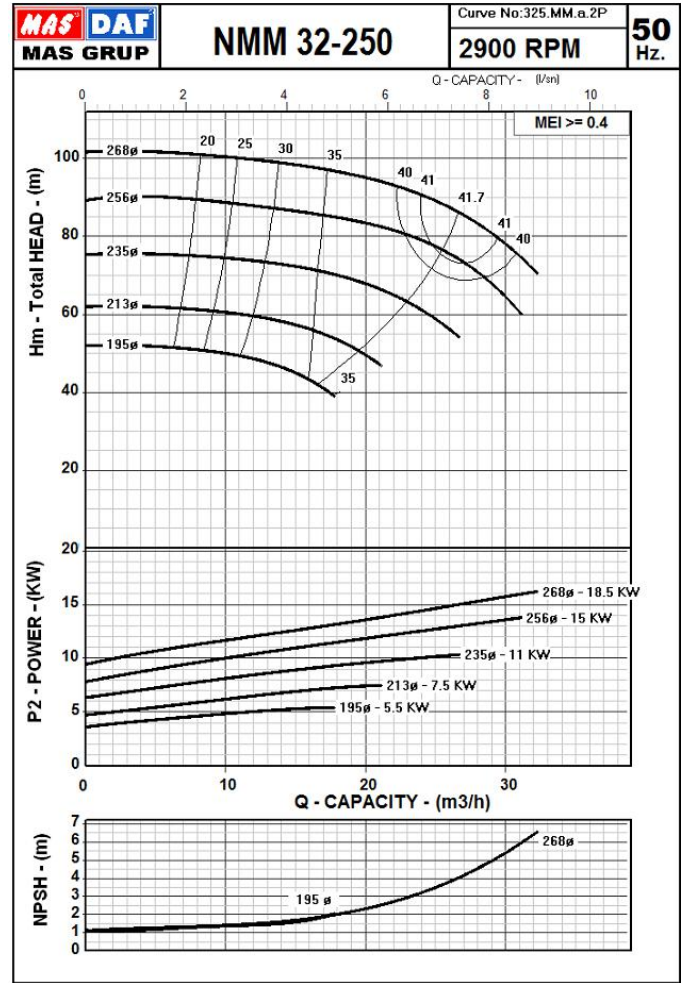
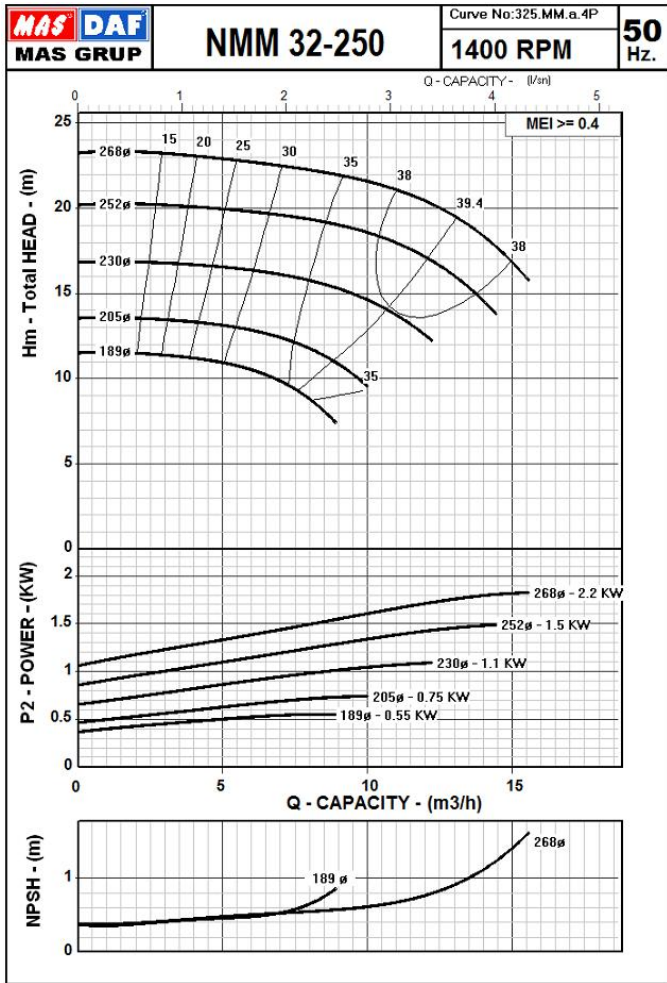
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

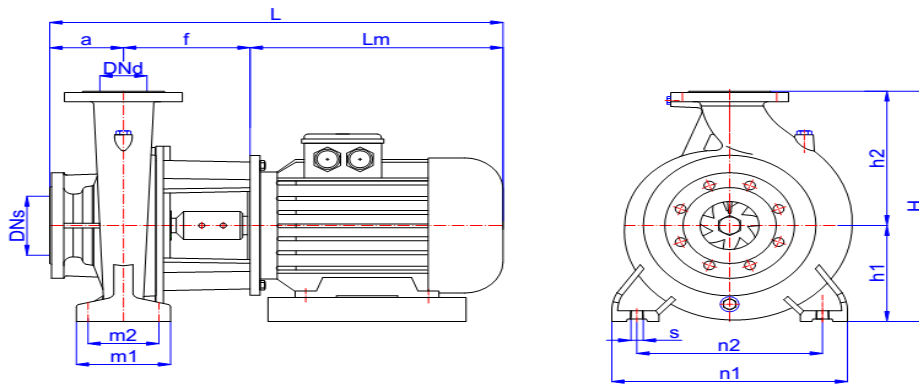


NMM 32-250

Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| | MOTOR | | FLANGES | | GENERAL | PUMP | | | | | | | Mechanical Seal | | | | | | |
|--------|---------|------|---------|-------|---------|------|-------|-----|-----|-----|-----|-----|-----------------|-----|----|---------------------------|----|-------|-----|
| | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter | | | |
| 32-250 | 4 poles | 0.55 | 80 | 243.5 | 32 | 50 | 513.5 | 100 | 170 | 180 | 225 | 320 | 250 | 125 | 95 | 12 | 20 | | |
| | | 0.75 | 80 | 243.5 | | | | | | | | | | | | | | 513.5 | 170 |
| | | 1.1 | 90L | 266.5 | | | | | | | | | | | | | | 536.5 | 170 |
| | | 1.5 | 90L | 266.5 | | | | | | | | | | | | | | 536.5 | 170 |
| | | 2.2 | 100L | 292 | | | | | | | | | | | | | | 582 | 190 |
| | 2 poles | 5.5 | 132S | 360.5 | 32 | 50 | 675.5 | 100 | 215 | 180 | 225 | 320 | 250 | 125 | 95 | 12 | 30 | | |
| | | 7.5 | 132M | 395.5 | | | | | | | | | | | | | | 710.5 | 215 |
| | | 11 | 160M | 666 | | | | | | | | | | | | | | 1006 | 240 |
| | | 15 | 160L | 666 | | | | | | | | | | | | | | 1006 | 240 |
| | | 18.5 | 160L | 666 | | | | | | | | | | | | | | 1006 | 240 |

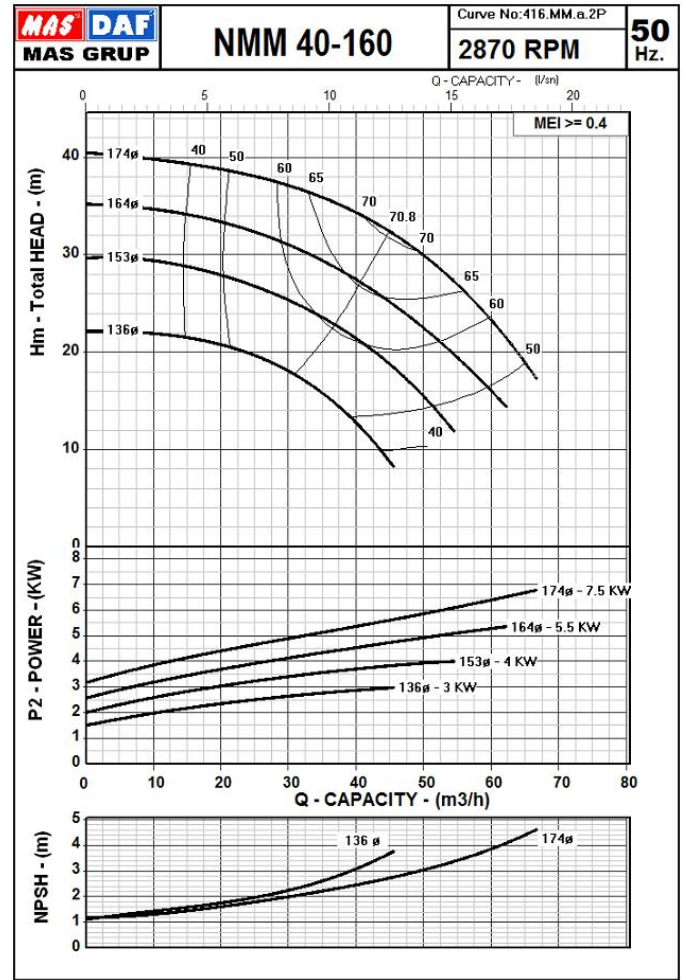
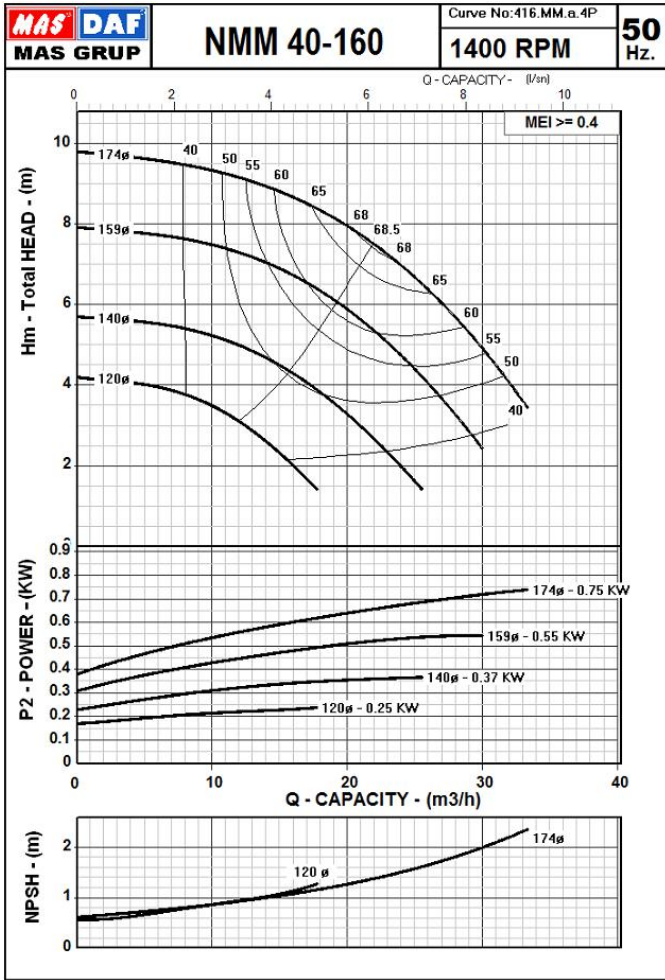
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

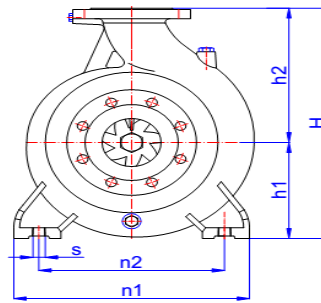
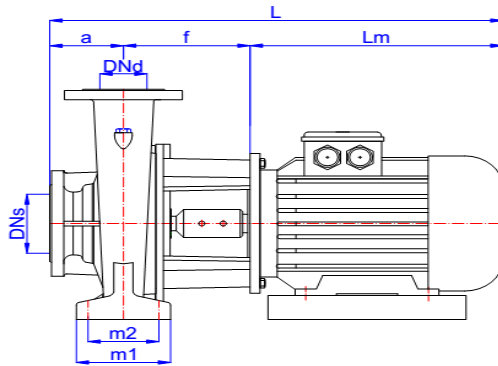
NMM 40-160



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity $1 \text{ mm}^2/\text{s}$ and density 1 g/cm^3 . Tolerances are acc. to ISO 9906 Annex A.



| | MOTOR | | FLANGES | | GENERAL | PUMP | | | | | | | | | | Mechanical Seal | | | |
|--------|---------|------|---------|-------|---------|------|-------|----|-----|-----|-----|-----|-----|-----|----|---------------------------|----|-----|-----|
| | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter | | | |
| | | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | | mm | | |
| 40-160 | 4 poles | 0.25 | 71 | 222.5 | 40 | 65 | 462.5 | 80 | 160 | 132 | 160 | 240 | 190 | 100 | 70 | 12 | 20 | | |
| | | 0.37 | 71 | 222.5 | | | 462.5 | | | | | | | | | | | 160 | |
| | | 0.55 | 80 | 243.5 | | | 483.5 | | | | | | | | | | | 160 | |
| | | 0.75 | 80 | 243.5 | | | 483.5 | | | | | | | | | | | 160 | |
| | 2 poles | 3 | 100L | 292 | 40 | 65 | 552 | 80 | 180 | 132 | 160 | 240 | 190 | 100 | 70 | 12 | | 20 | |
| | | 4 | 112M | 335.5 | | | 595.5 | | | | | | | | | | | | 180 |
| | | 5.5 | 132S | 360.5 | | | 640.5 | | | | | | | | | | | 200 | 30 |
| | | 7.5 | 132M | 395.5 | | | 675.5 | | | | | | | | | | | 200 | |

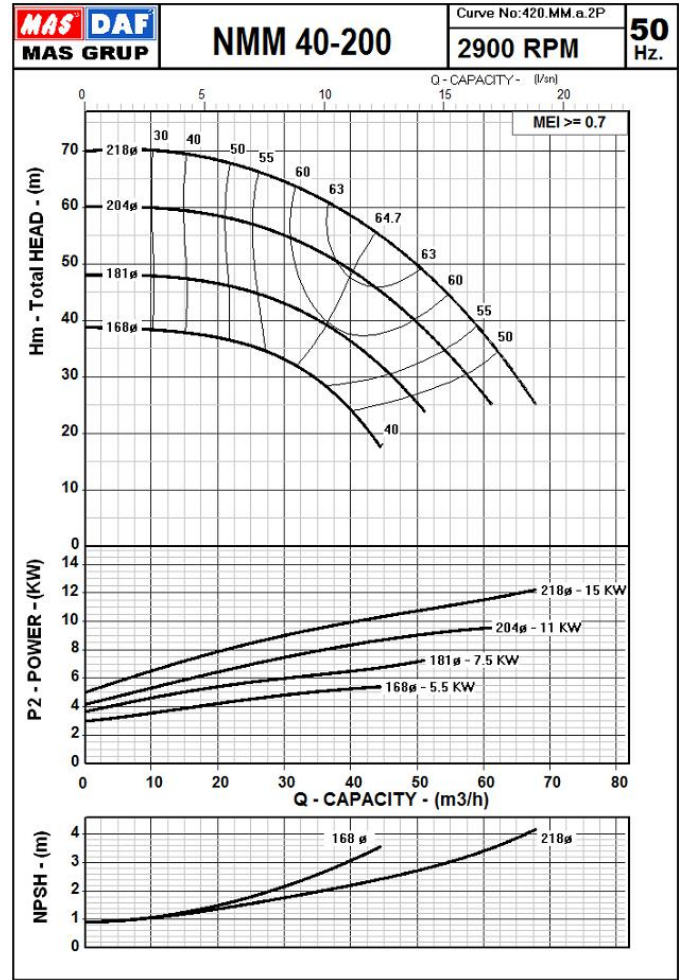
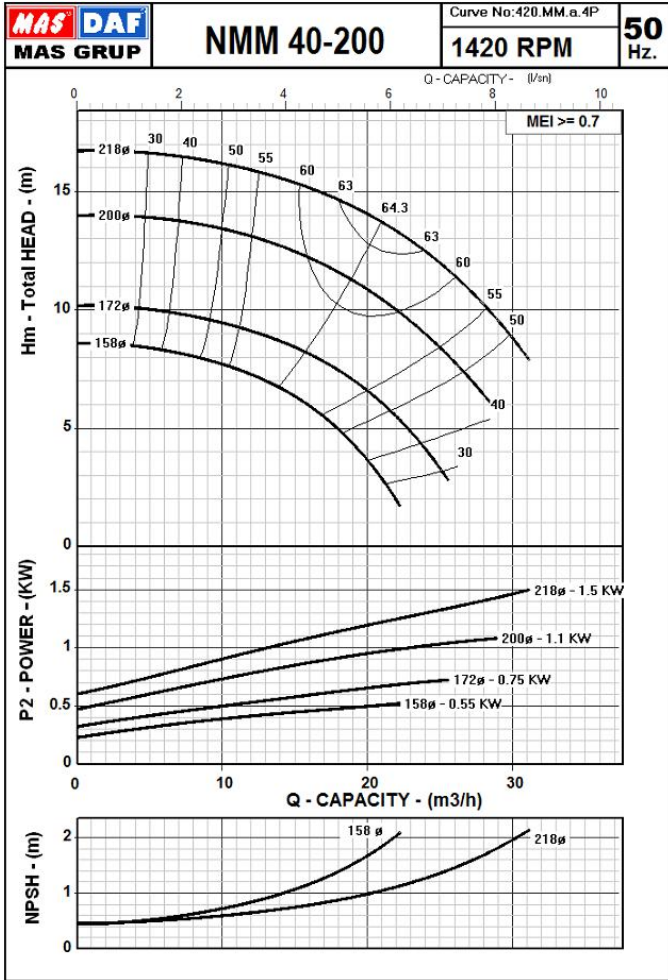
MAS DAF MAKİNA SAN. A.Ş. reserves the right to change specifications without prior notice.

NMM Series
Close Coupled Centrifugal Pump
Performance Curves

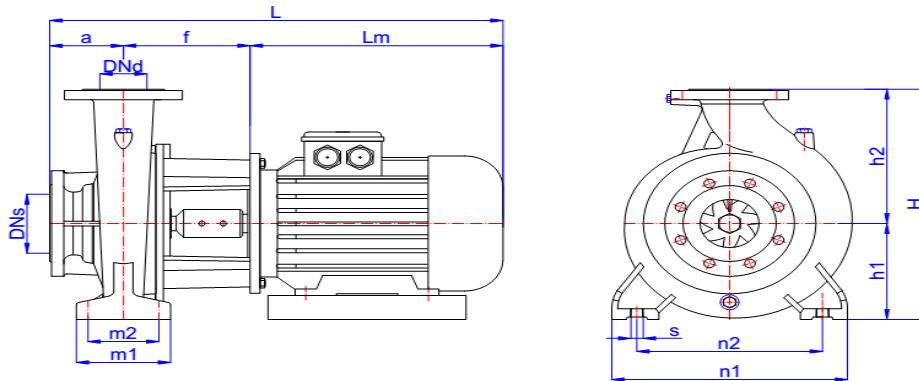
NMM 40-200



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| | MOTOR | | FLANGES | | GENERAL | PUMP | | | | | | | Mechanical Seal | | | | |
|--------|---------|------|---------|-------|---------|------|-------|-----|-----|-----|-----|-----|-----------------|-----|----|---------------------------|----|
| | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter | |
| 40-200 | 4 poles | 0.55 | 80 | 243.5 | 40 | 65 | 503.5 | 100 | 160 | 160 | 180 | 265 | 212 | 100 | 70 | 12 | 20 |
| | | 0.75 | 80 | 243.5 | | | 503.5 | | 160 | | | | | | | | |
| | | 1.1 | 90L | 266.5 | | | 526.5 | | 160 | | | | | | | | |
| | | 1.5 | 90L | 266.5 | | | 526.5 | | 160 | | | | | | | | |
| | 2 poles | 5.5 | 132S | 360.5 | 40 | 65 | 665.5 | 100 | 205 | 160 | 180 | 265 | 212 | 100 | 70 | 12 | 30 |
| | | 7.5 | 132M | 395.5 | | | 700.5 | | 205 | | | | | | | | |
| | | 11 | 160M | 666 | | | 996 | | 230 | | | | | | | | |
| | | 15 | 160L | 666 | | | 996 | | 230 | | | | | | | | |

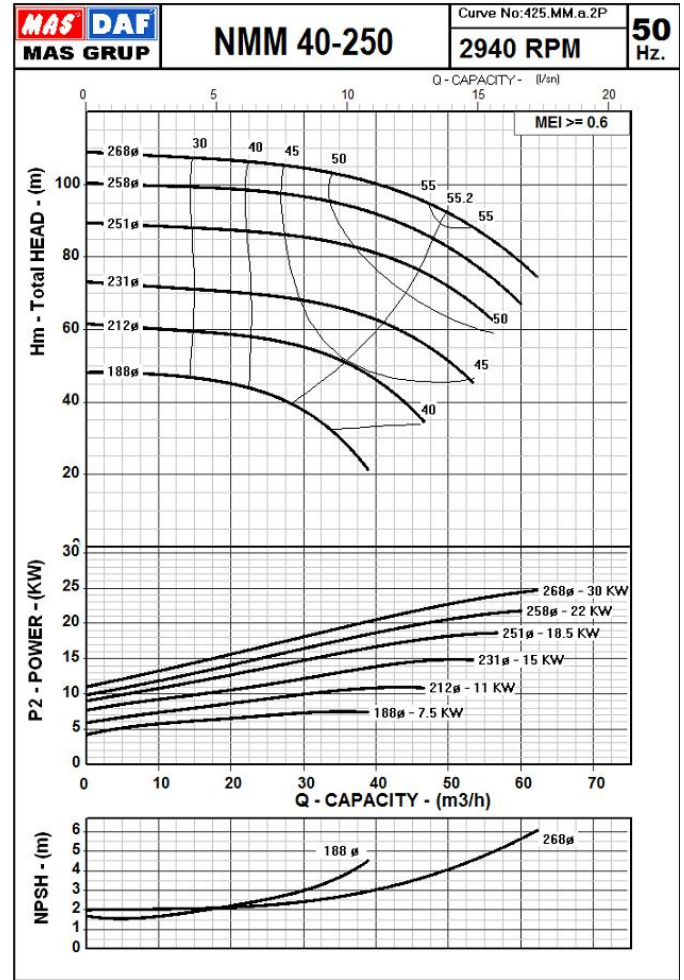
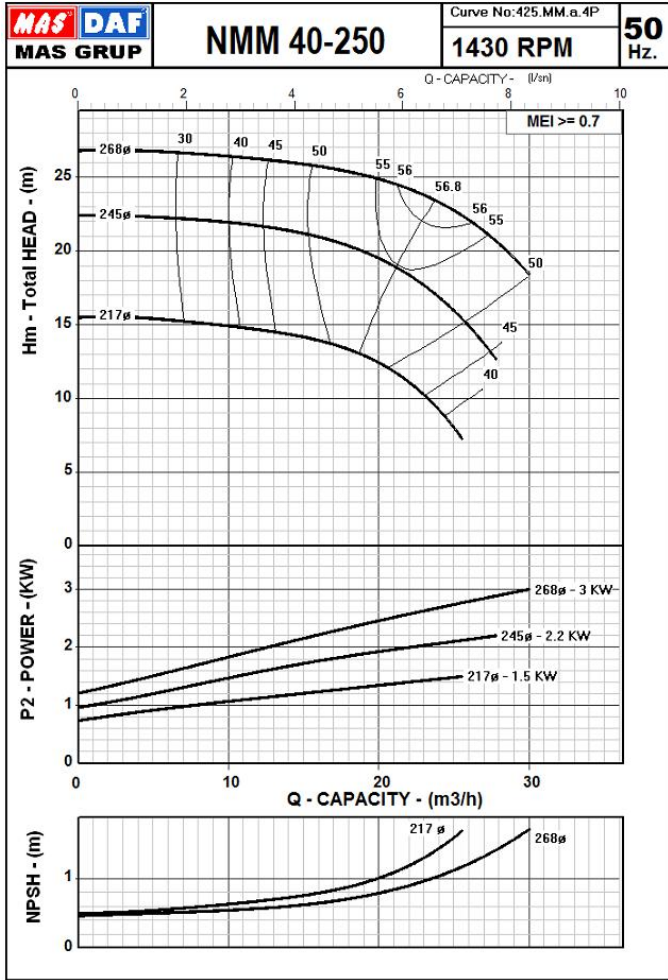
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

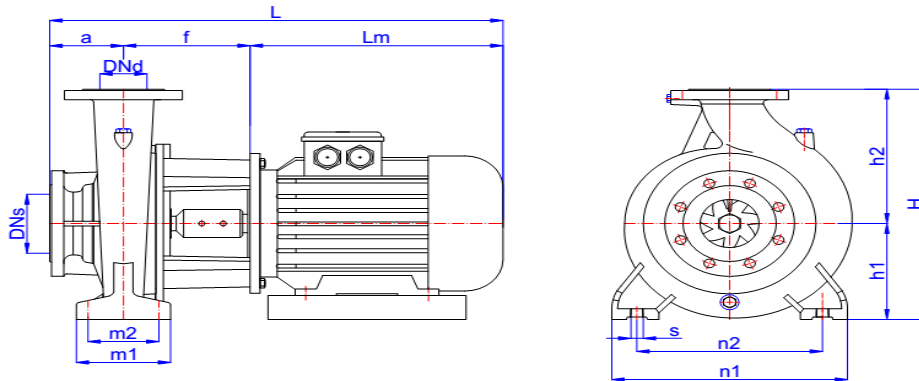


NMM 40-250

Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| | MOTOR | | | FLANGES | | GENERAL | PUMP | | | | | | | | | Mechanical Seal | |
|--------|---------|------|------|---------|-----|---------|-------|-----|-----|-----|-----|-----|-----|-----|----|---------------------------|----|
| | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter | |
| | | | mm | | | | | | | | | | | | | | mm |
| 40-250 | 4 poles | 1.5 | 90L | 266.5 | 40 | 65 | 526.5 | 100 | 180 | 180 | 225 | 320 | 250 | 125 | 95 | 12 | 20 |
| | | 2.2 | 100L | 292 | | | 572 | | | | | | | | | | |
| | | 3 | 100L | 292 | | | 572 | | | | | | | | | | |
| | 2 poles | 7.5 | 132M | 395.5 | 40 | 65 | 725.5 | 100 | 230 | 180 | 225 | 320 | 250 | 125 | 95 | 12 | 30 |
| | | 11 | 160M | 666 | | | 996 | | | | | | | | | | |
| | | 15 | 160L | 666 | | | 996 | | | | | | | | | | |
| | | 18.5 | 160L | 666 | | | 996 | | | | | | | | | | |
| | | 22 | 180M | 519 | | | 849 | | | | | | | | | | |
| | | 30 | 200L | 555 | | | 885 | | | | | | | | | | |
| | | 230 | | | | | | | | | | | | | | | |

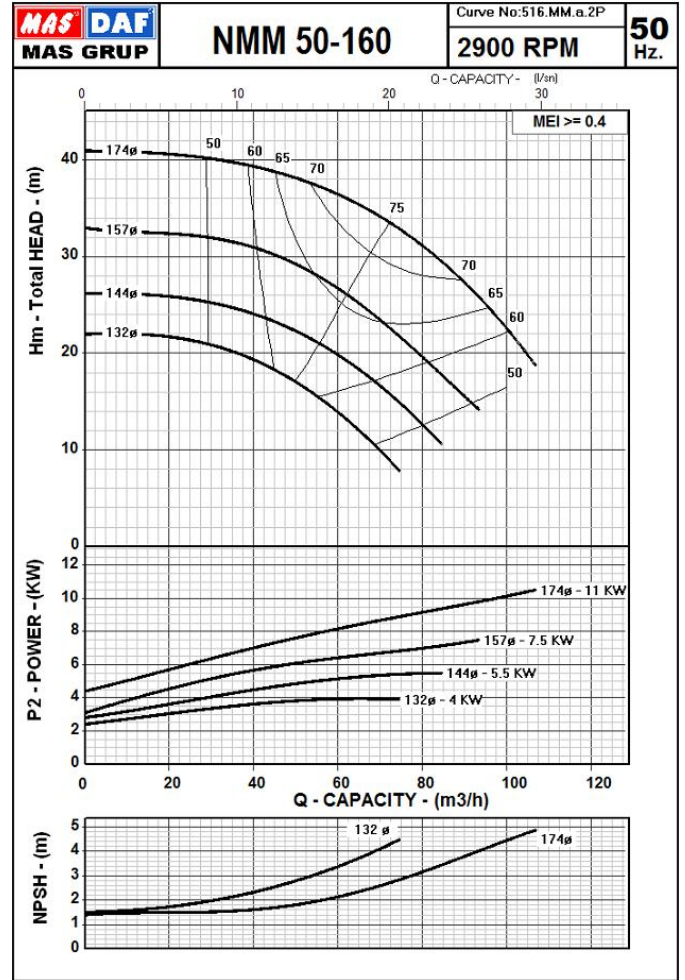
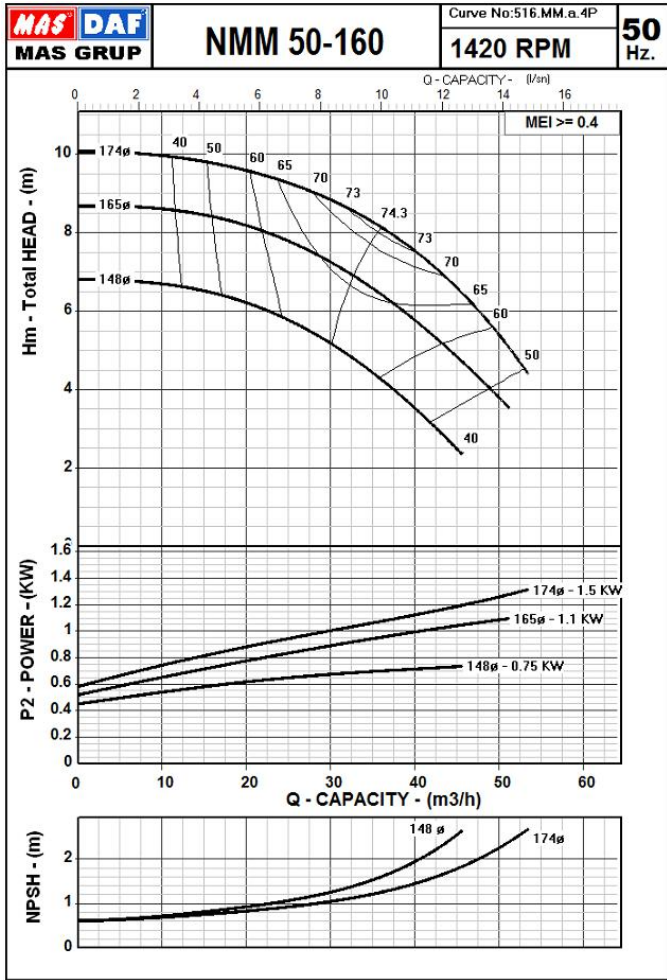
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

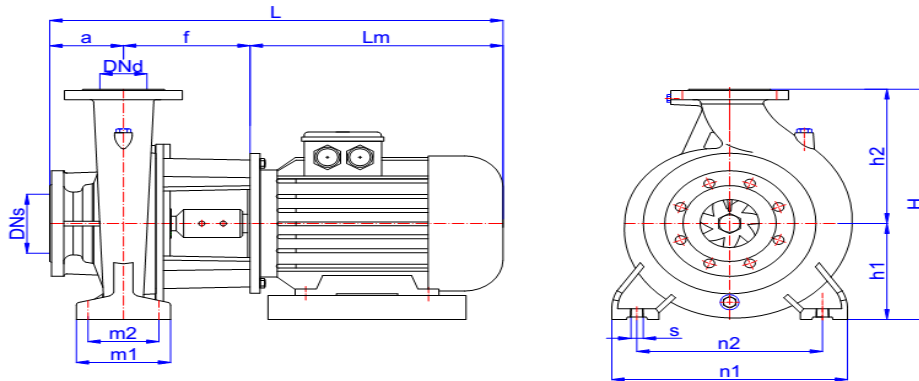
NMM 50-160



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| | MOTOR | | FLANGES | | GENERAL | PUMP | | | | | | Mechanical Seal | | | | | | |
|--------|---------|------|---------|-------|---------|------|-------|-----|-----|-----|-----|-----------------|-----|-----|----|---------------------------|-----|-------|
| | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter | | |
| 50-160 | 4 poles | 0.75 | 80 | 243.5 | 50 | 65 | 503.5 | 100 | 160 | 160 | 180 | 265 | 212 | 100 | 70 | 12 | 20 | |
| | | 1.1 | 90L | 266.5 | | | | | | | | | | | | | | 526.5 |
| | | 1.5 | 90L | 266.5 | | | | | | | | | | | | | | 526.5 |
| | 2 poles | 4 | 112M | 335.5 | 50 | 65 | 615.5 | 100 | 180 | 160 | 180 | 265 | 212 | 100 | 70 | 12 | 20 | |
| | | 5.5 | 132S | 360.5 | | | 660.5 | | | | | | | | | | 200 | |
| | | 7.5 | 132M | 395.5 | | | 695.5 | | | | | | | | | | 200 | |
| 11 | | 160M | 666 | 966 | | | 200 | | | | | | | | | | 30 | |

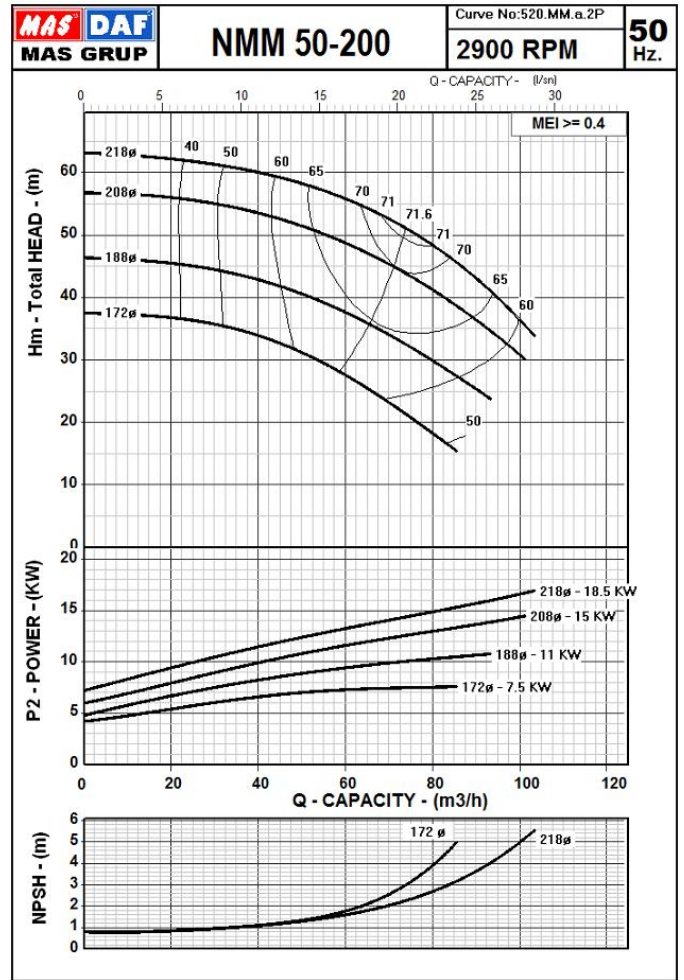
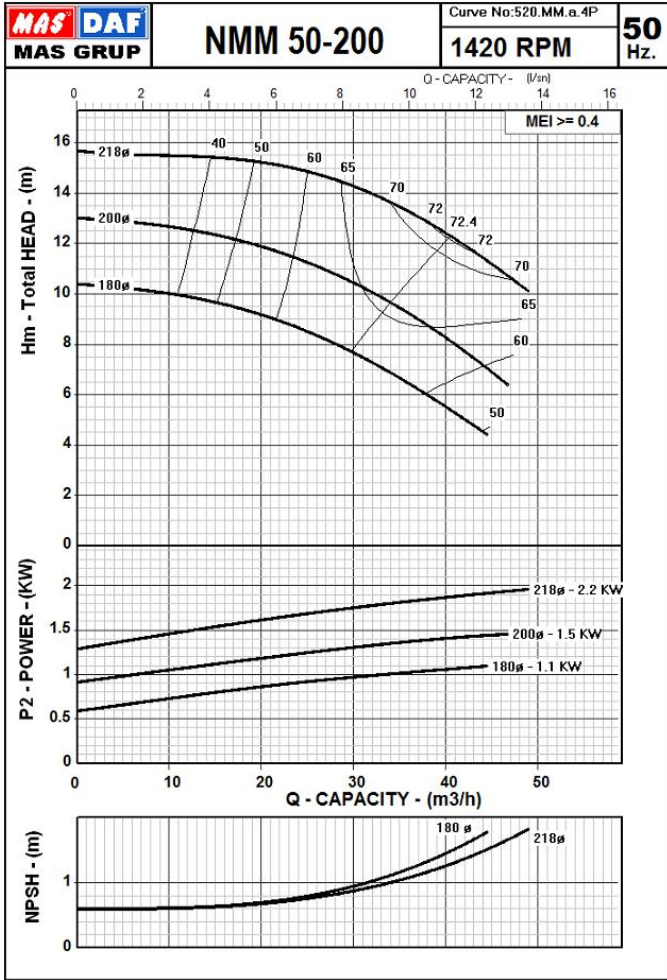
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

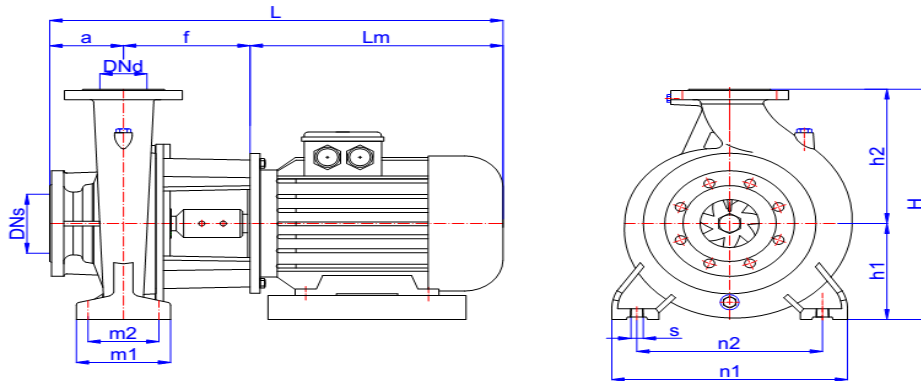
NMM 50-200



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| | | MOTOR | | FLANGES | | GENERAL | PUMP | | | | | | | | | Mechanical Seal | | |
|--------|---------|-------|------|---------|-----|---------|-------|-----|-----|-----|-----|-----|-----|-----|----|-----------------|---------------------------|----|
| | | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter | |
| 50-200 | 4 poles | 1.1 | 90L | 266.5 | 50 | 65 | 526.5 | 100 | 160 | 160 | 200 | 265 | 212 | 100 | 70 | 12 | 20 | |
| | | 1.5 | 90L | 266.5 | | | 526.5 | | 160 | | | | | | | | | |
| | | 2.2 | 100L | 292 | | | 572 | | 180 | | | | | | | | | |
| | 2 poles | 7.5 | 132M | 395.5 | 50 | 65 | 700.5 | 100 | 205 | 160 | 200 | 265 | 212 | 100 | 70 | 12 | | 30 |
| | | 11 | 160M | 666 | | | 996 | | 230 | | | | | | | | | |
| | | 15 | 160L | 666 | | | 996 | | 230 | | | | | | | | | |
| | | 18.5 | 160L | 666 | | | 996 | | 230 | | | | | | | | | |

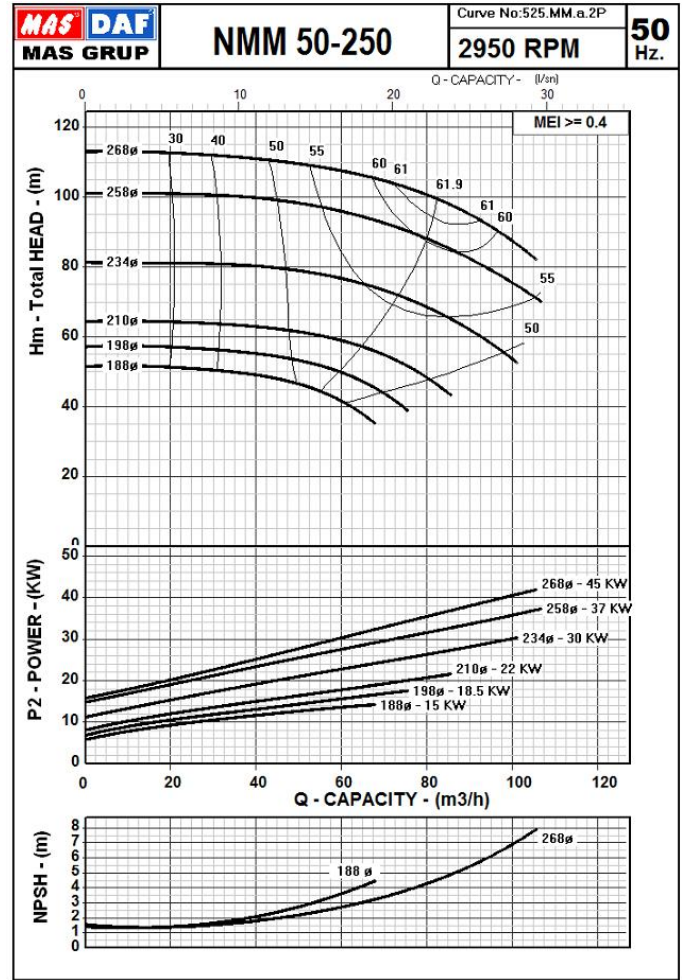
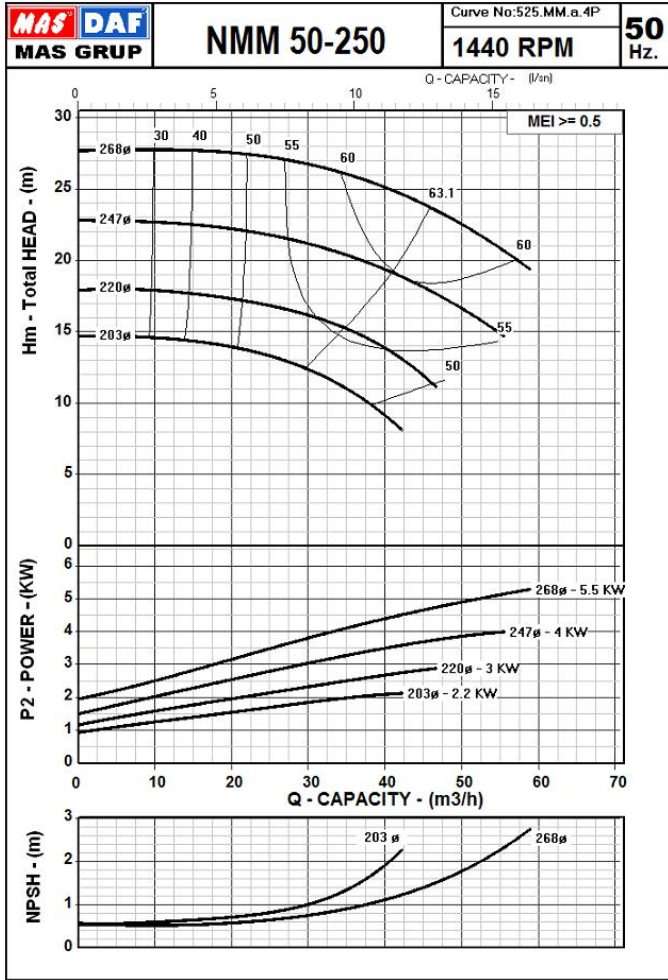
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

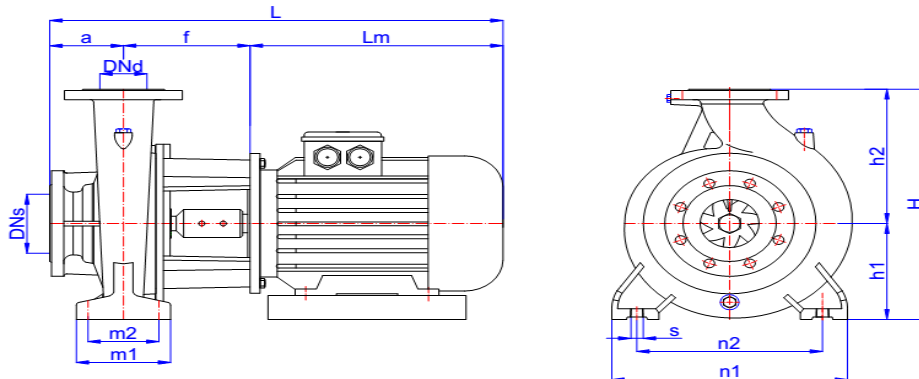
NMM 50-250



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| | MOTOR | | FLANGES | | GENERAL | PUMP | | | | | | Mechanical Seal | | | | | |
|--------|---------|------|---------|-------|---------|------|-------|-----|-----|-----|-----|-----------------|-----|-----|----|---------------------------|----|
| | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter | |
| 50-250 | 4 poles | 2.2 | 100L | 292 | 50 | 65 | 572 | 100 | 180 | 180 | 225 | 320 | 250 | 125 | 95 | 12 | 20 |
| | | 3 | 100L | 292 | | | 572 | | 180 | | | | | | | | 30 |
| | | 4 | 112M | 335.5 | | | 615.5 | | 180 | | | | | | | | 30 |
| | | 5.5 | 132M | 395.5 | | | 700.5 | | 205 | | | | | | | | 30 |
| | 2 poles | 15 | 160L | 666 | 50 | 65 | 996 | 100 | 230 | 180 | 225 | 320 | 250 | 125 | 95 | 12 | 30 |
| | | 18.5 | 160L | 666 | | | 996 | | 230 | | | | | | | | 30 |
| | | 22 | 180M | 519 | | | 849 | | 230 | | | | | | | | 30 |
| | | 30 | 200L | 555 | | | 885 | | 230 | | | | | | | | 30 |
| | | 37 | 200L | 555 | | | 885 | | 230 | | | | | | | | 30 |
| | | 45 | 225M | 625 | | | 955 | | 230 | | | | | | | | 30 |

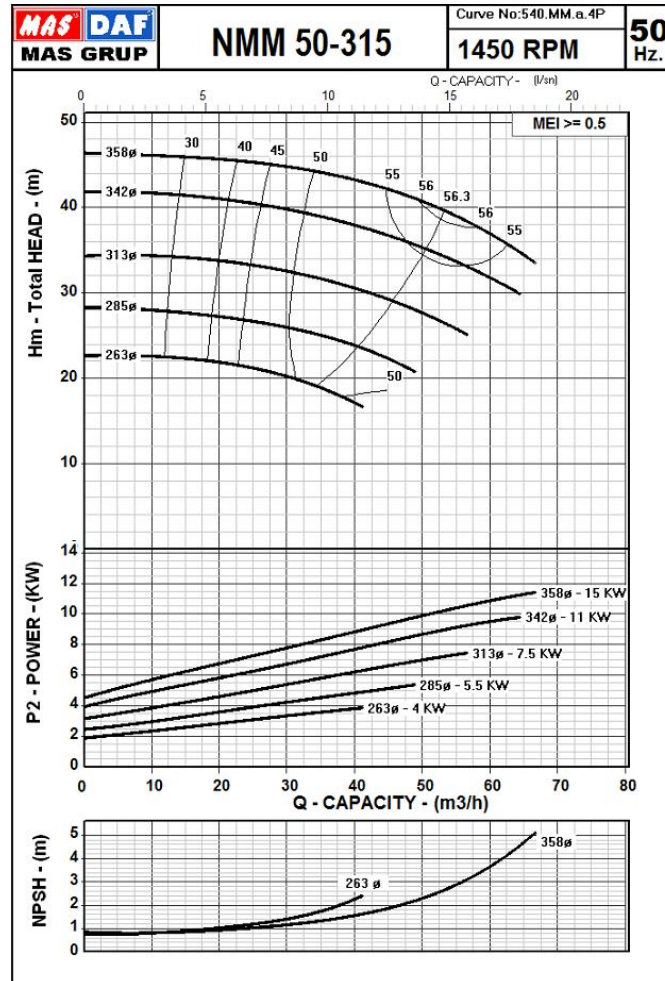
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

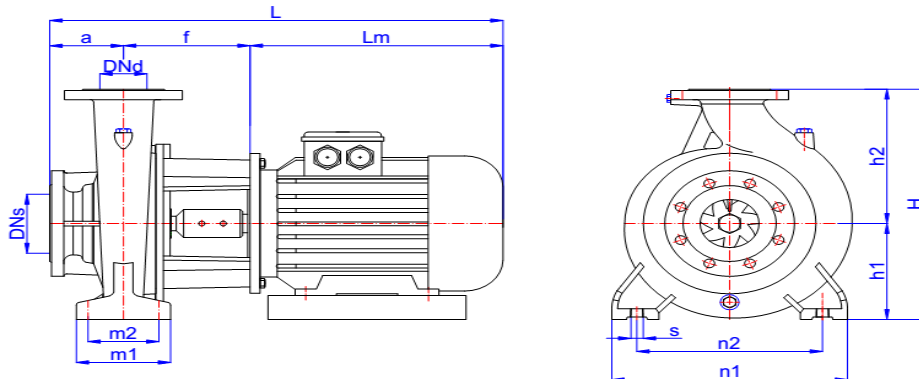
NMM 50-315



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| 50-315 | 4 poles | MOTOR | | FLANGES | | GENERAL | | PUMP | | | | | | | Mechanical Seal | | |
|--------|---------|-------|------|---------|-----|---------|-------|------|-----|-----|-----|-----|-----|-----|-----------------|----|---------------------------|
| | | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter |
| | | | | mm | | | | | | | | | | | | | |
| | | 4 | 112M | 335.5 | 50 | 80 | 625.5 | 100 | 190 | 225 | 280 | 360 | 280 | 160 | 120 | 12 | 30 |
| | | 5.5 | 132M | 395.5 | | | 710.5 | | 215 | | | | | | | | |
| | | 7.5 | 132M | 395.5 | | | 710.5 | | 215 | | | | | | | | |
| | | 11 | 160M | 666 | | | 1006 | | 240 | | | | | | | | |
| | | 15 | 160L | 666 | | | 1006 | | 240 | | | | | | | | |

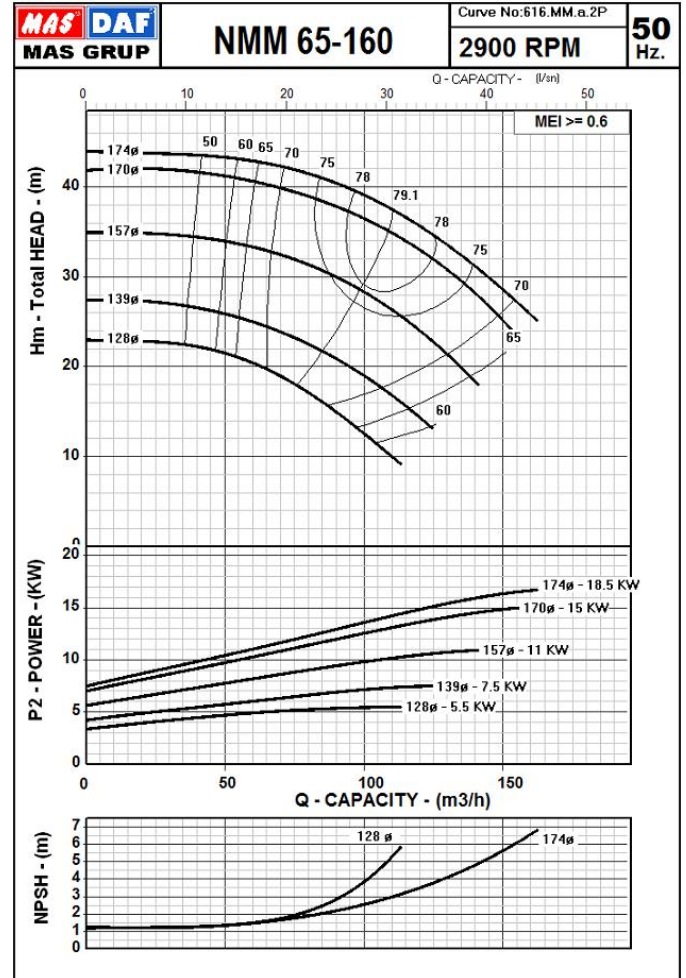
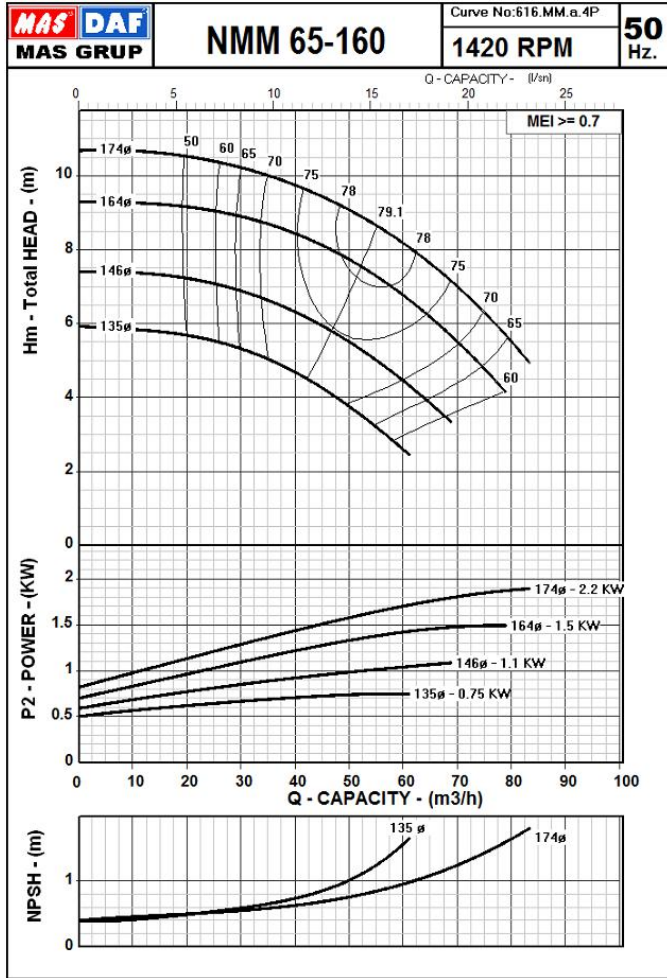
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

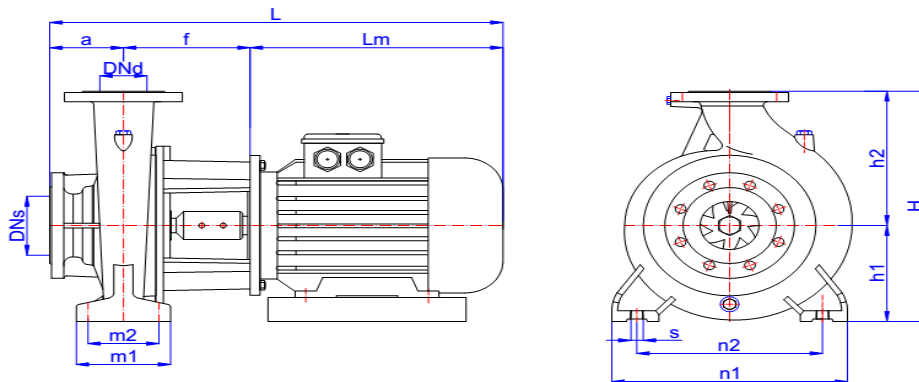
NMM 65-160



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| | MOTOR | | FLANGES | | GENERAL | PUMP | | | | | | | | | | Mechanical Seal | | |
|--------|---------|------|---------|-------|---------|------|-------|-----|-----|-----|-----|-----|-----|-----|----|---------------------------|----|-----|
| | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter | | |
| | | | | | | | | | | | | | | | | | mm | mm |
| 65-160 | 4 poles | 0.75 | 80 | 243.5 | 65 | 80 | 503.5 | 100 | 160 | 160 | 200 | 280 | 212 | 125 | 95 | 12 | 20 | |
| | | 1.1 | 90L | 266.5 | | | 526.5 | | | | | | | | | | | 160 |
| | | 1.5 | 90L | 266.5 | | | 526.5 | | | | | | | | | | | 160 |
| | | 2.2 | 100L | 292 | | | 572 | | | | | | | | | | | 180 |
| | 2 poles | 5.5 | 132M | 395.5 | 65 | 80 | 695.5 | 100 | 200 | 160 | 200 | 280 | 212 | 125 | 95 | 12 | 30 | |
| | | 7.5 | 132M | 395.5 | | | 695.5 | | | | | | | | | | | 200 |
| | | 11 | 160M | 666 | | | 996 | | | | | | | | | | | 230 |
| | | 15 | 160L | 666 | | | 996 | | | | | | | | | | | 230 |
| | | 18.5 | 160L | 666 | | | 996 | | | | | | | | | | | 230 |

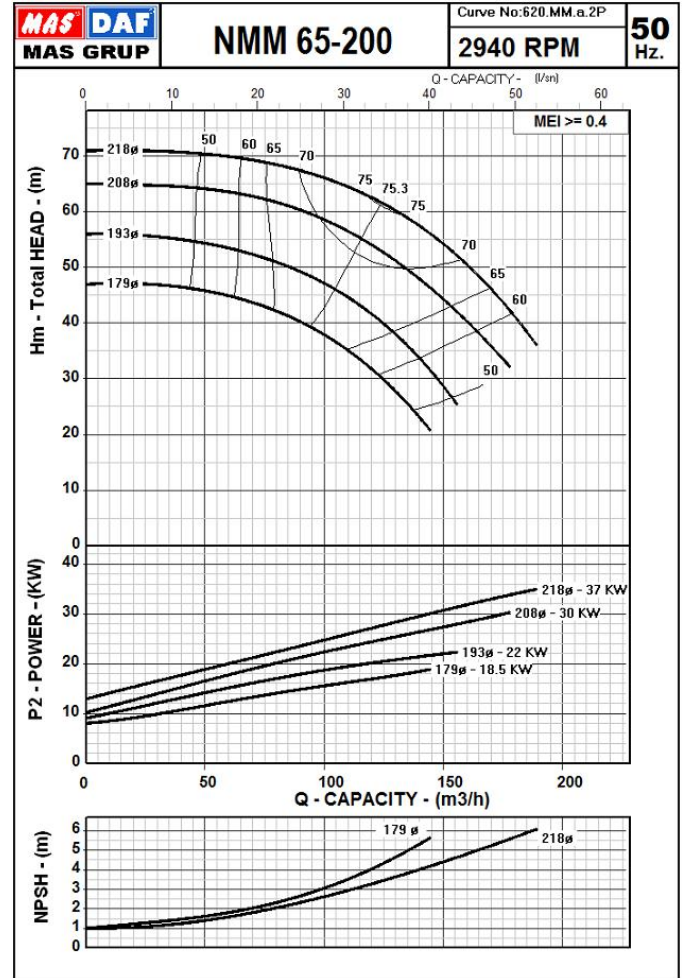
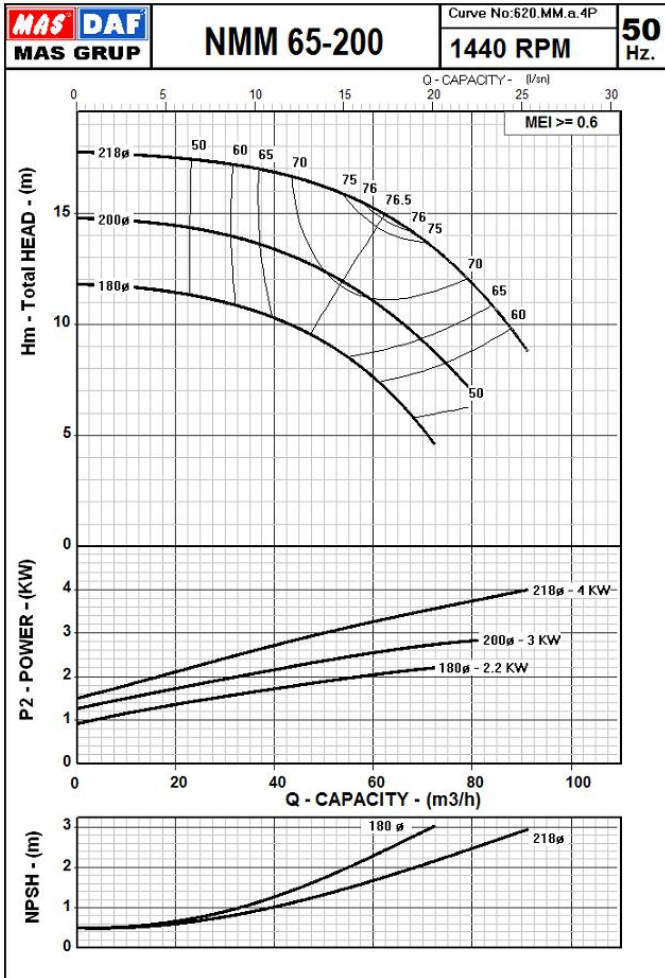
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

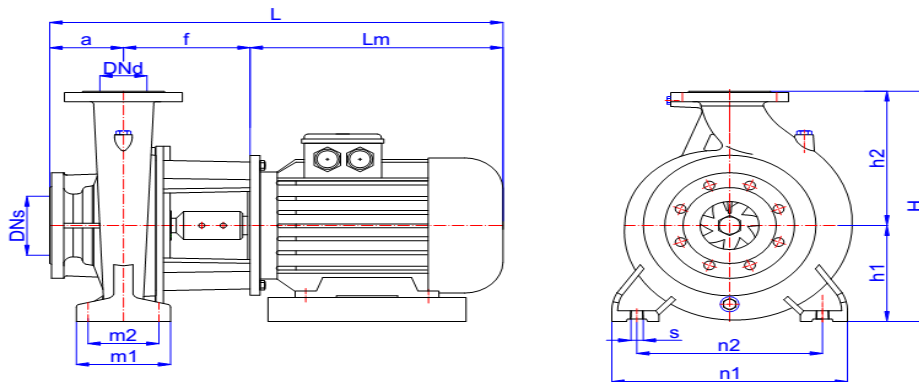
NMM 65-200



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| | | MOTOR | | FLANGES | | GENERAL | PUMP | | | | | | | | | Mechanical Seal | |
|--------|---------|-------|------|---------|-----|---------|-------|-----|-----|-----|-----|-----|-----|-----|----|-----------------|---------------------------|
| | | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter |
| 65-200 | 4 poles | 2.2 | 100L | 292 | 65 | 80 | 572 | 100 | 180 | 180 | 225 | 320 | 250 | 125 | 95 | 12 | 20 |
| | | 3 | 100L | 292 | | | 572 | | 180 | | | | | | | | |
| | | 4 | 112M | 335.5 | | | 615.5 | | 180 | | | | | | | | |
| | 2 poles | 18.5 | 160L | 666 | 65 | 80 | 996 | 100 | 230 | 180 | 225 | 320 | 250 | 125 | 95 | 12 | 30 |
| | | 22 | 180M | 519 | | | 849 | | 230 | | | | | | | | |
| | | 30 | 200L | 555 | | | 915 | | 260 | | | | | | | | |
| | | 37 | 200L | 555 | | | 915 | | 260 | | | | | | | | |

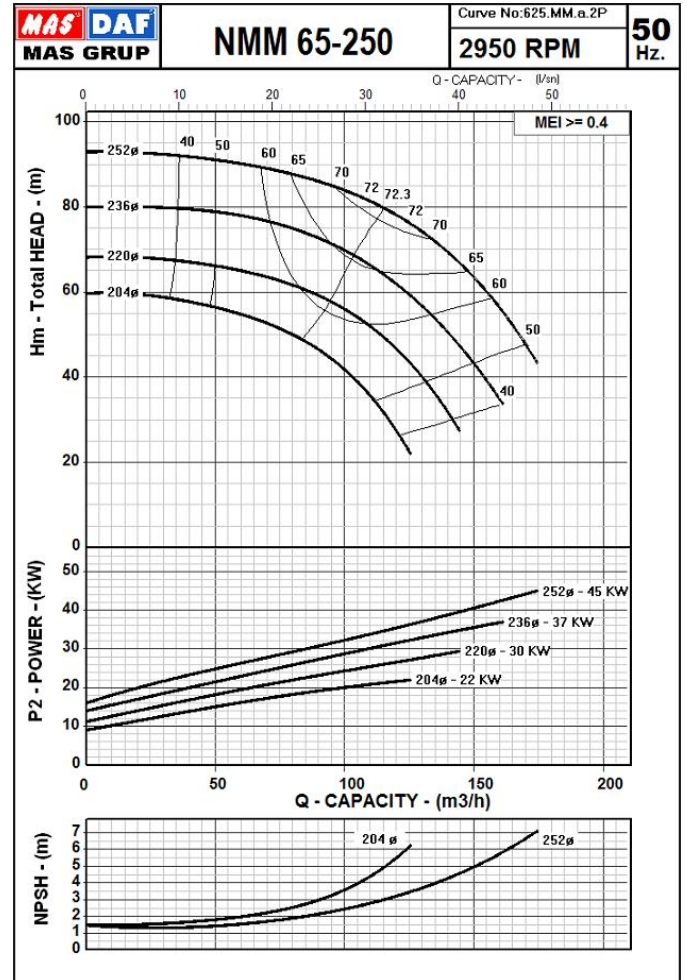
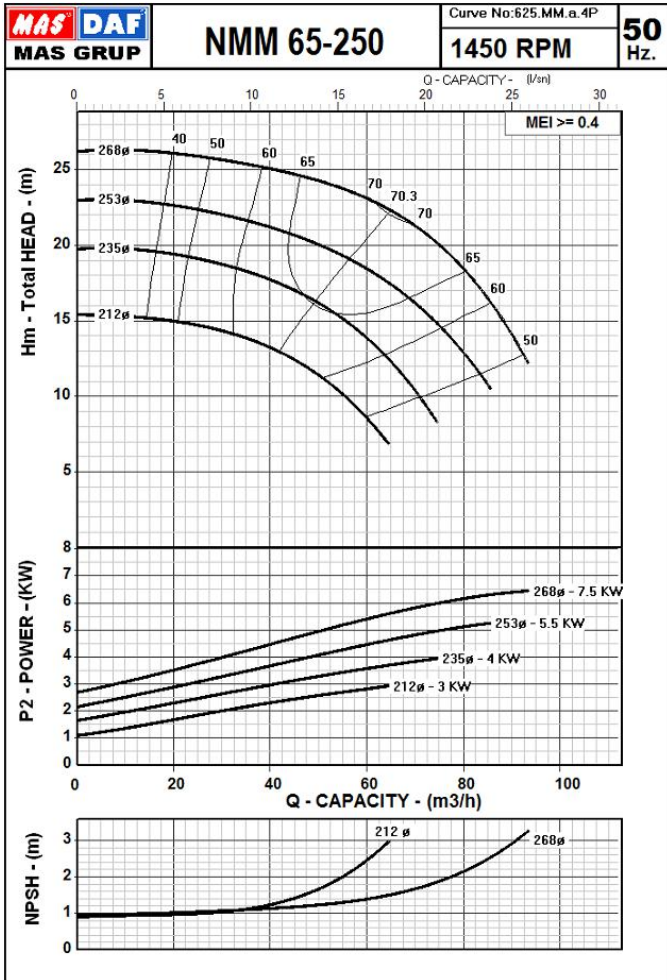
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

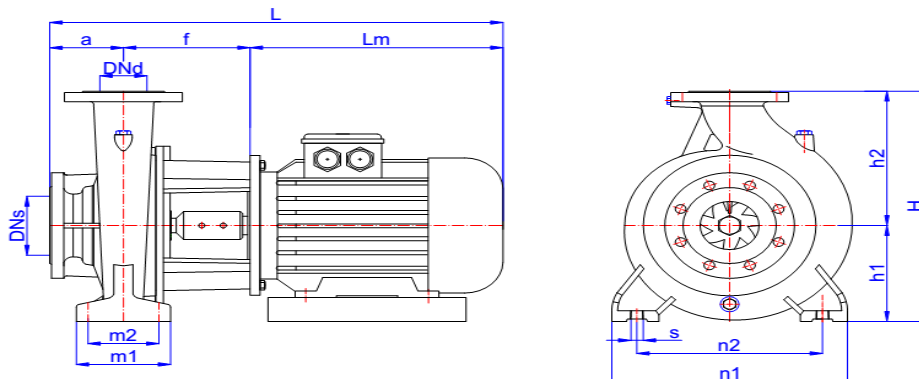


NMM 65-250

Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| | MOTOR | | FLANGES | | GENERAL | PUMP | | | | | | | | | | Mechanical Seal | |
|--------|---------|-----|---------|-------|---------|------|-------|-----|-----|-----|-----|-----|-----|-----|-----|---------------------------|----|
| | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter | |
| | | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | | mm |
| 65-250 | 4 poles | 3 | 100L | 292 | 65 | 80 | 582 | 100 | 190 | 200 | 250 | 360 | 280 | 160 | 120 | 16 | 20 |
| | | 4 | 112M | 335.5 | | | 625.5 | | 190 | | | | | | | | 30 |
| | | 5.5 | 132M | 395.5 | | | 710.5 | | 215 | | | | | | | | 30 |
| | | 7.5 | 132M | 395.5 | | | 710.5 | | 215 | | | | | | | | 30 |
| | 2 poles | 22 | 180M | 519 | 65 | 80 | 859 | 100 | 240 | 200 | 250 | 360 | 280 | 160 | 120 | 16 | 30 |
| | | 30 | 200L | 555 | | | 925 | | 270 | | | | | | | | 35 |
| | | 37 | 200L | 555 | | | 925 | | 270 | | | | | | | | 35 |
| | | 45 | 225M | 625 | | | 995 | | 270 | | | | | | | | 35 |

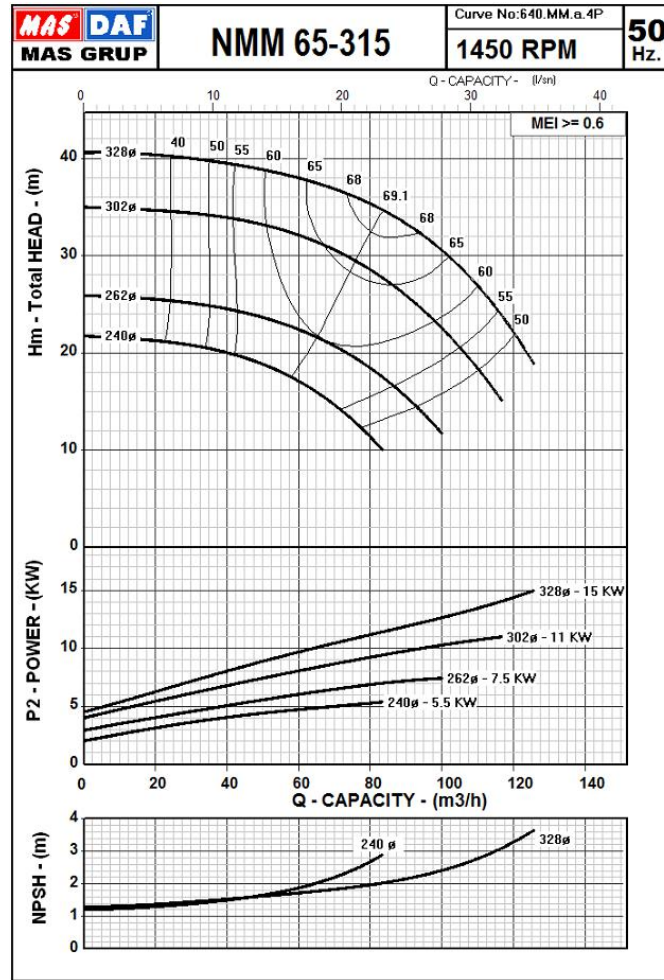
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

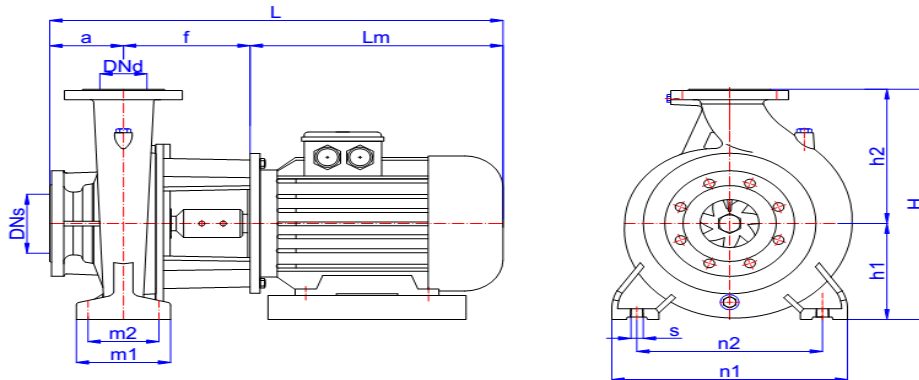
NMM 65-315



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| 65-315 | 4 poles | MOTOR | | FLANGES | | GENERAL | | PUMP | | | | | | | Mechanical Seal | | |
|--------|---------|-------|------|---------|-----|---------|-------|------|-----|-----|-----|-----|-----|-----|-----------------|----|---------------------------|
| | | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter |
| | | | | mm | | | | | | | | | | | | | |
| | | 5.5 | 132M | 395.5 | 65 | 80 | 735.5 | 125 | 215 | 224 | 280 | 400 | 315 | 160 | 120 | 16 | 30 |
| | | 7.5 | 132M | 395.5 | | | 735.5 | | 215 | | | | | | | | |
| | | 11 | 160M | 666 | | | 1031 | | 240 | | | | | | | | |
| | | 15 | 160L | 666 | | | 1031 | | 240 | | | | | | | | |

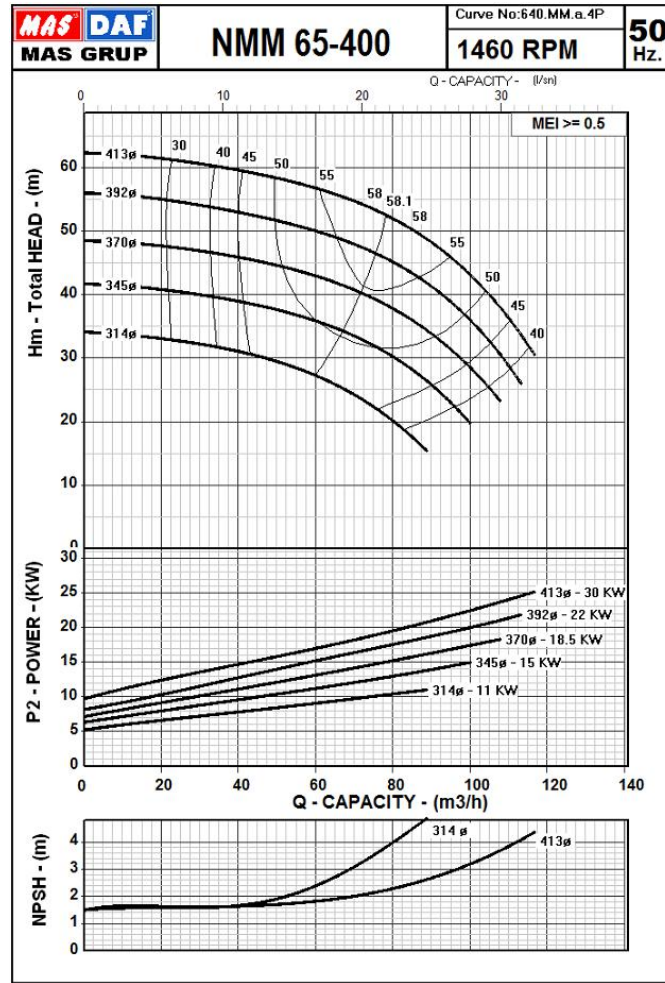
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

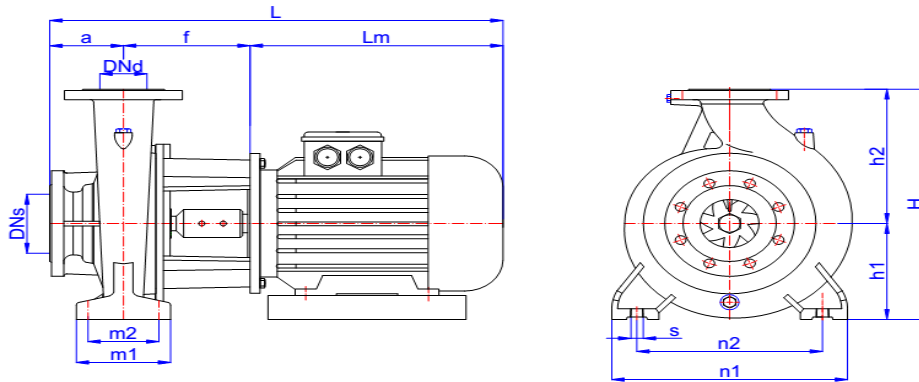
NMM 65-400



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| | MOTOR | | FLANGES | | | GENERAL | | PUMP | | | | | | | Mechanical Seal | | |
|--------|---------|------|---------|-----|-----|---------|------|------|-----|-----|-----|-----|-----|-----|-----------------|---------------------------|----|
| | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter | |
| | | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | | mm |
| 65-400 | 4 poles | 11 | 160M | 666 | 65 | 100 | 1031 | 125 | 240 | 250 | 355 | 400 | 315 | 160 | 120 | 16 | 30 |
| | | 15 | 160L | 666 | | | 1031 | | 240 | | | | | | | | |
| | | 18.5 | 180M | 519 | | | 884 | | 240 | | | | | | | | |
| | | 22 | 180L | 519 | | | 884 | | 240 | | | | | | | | |
| | | 30 | 200L | 555 | | | 950 | | 270 | | | | | | | | 35 |

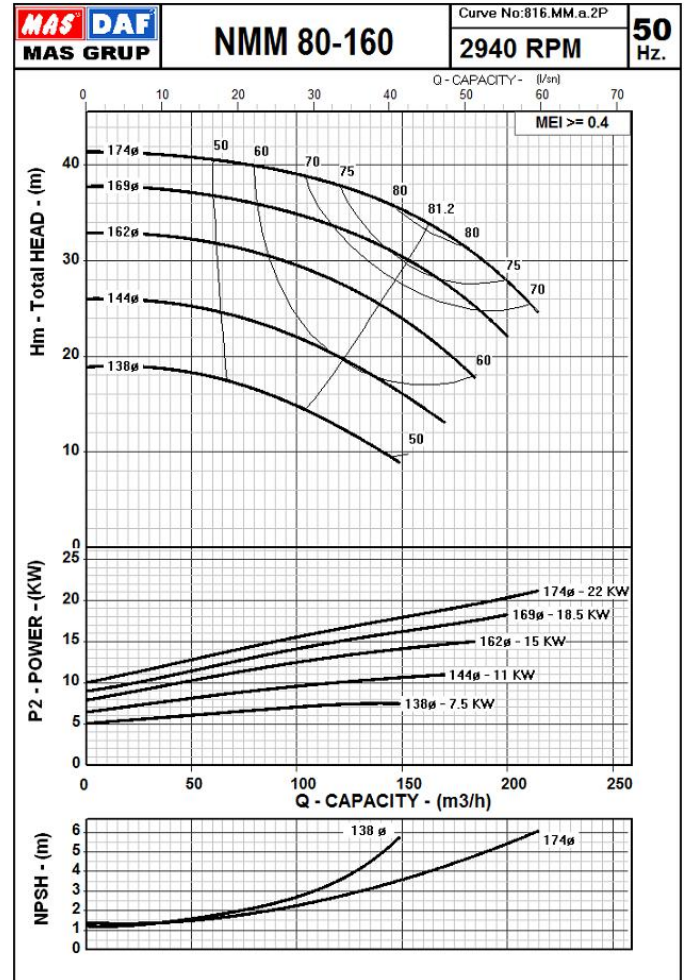
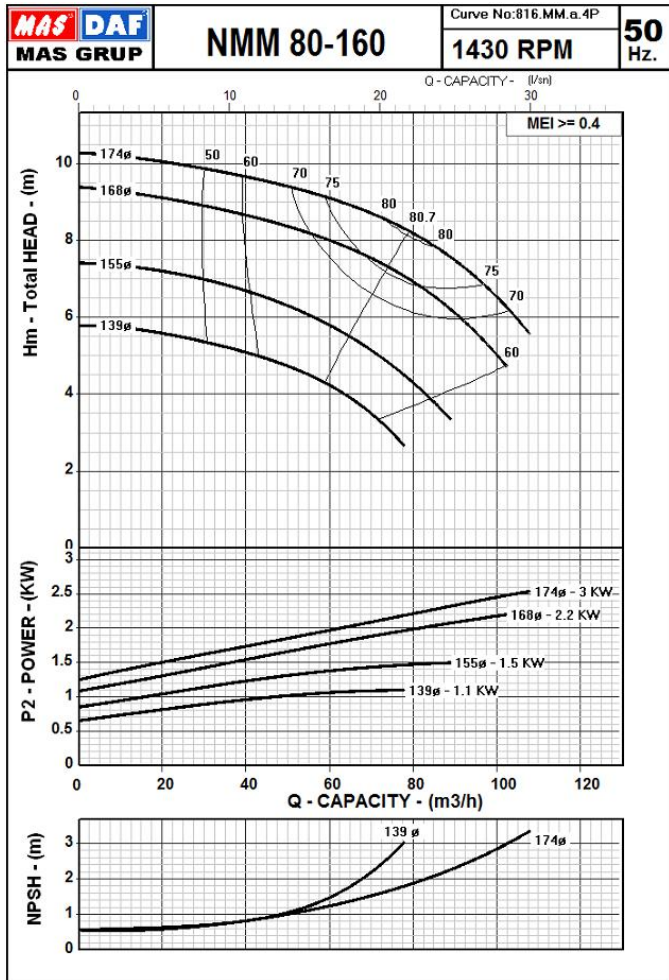
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

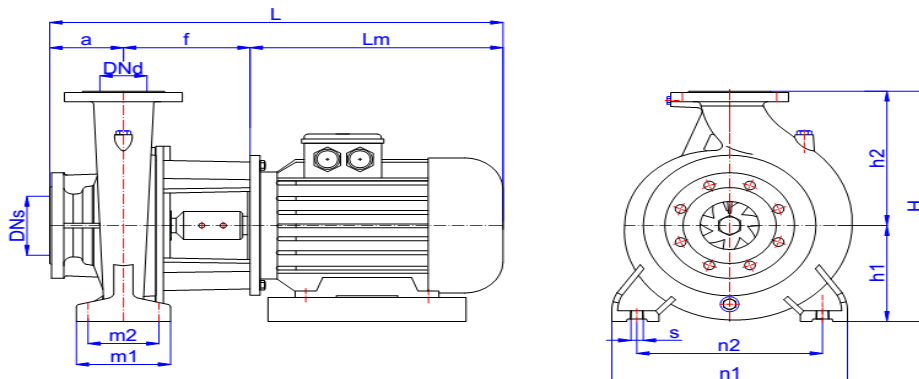


NMM 80-160

Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| | MOTOR | | FLANGES | | GENERAL | PUMP | | | | | | | | | | Mechanical Seal | | |
|--------|---------|------|---------|-------|---------|------|-------|-----|-----|-----|-----|-----|-----|-----|----|---------------------------|----|-----|
| | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter | | |
| | | | mm | | | | | | | | | | | | | | mm | mm |
| 80-160 | 4 poles | 1.1 | 90L | 266.5 | 80 | 100 | 551.5 | 125 | 160 | 180 | 225 | 320 | 250 | 125 | 95 | 12 | 20 | |
| | | 1.5 | 90L | 266.5 | | | 551.5 | | | | | | | | | | | |
| | | 2.2 | 100L | 292 | | | 597 | | | | | | | | | | | |
| | | 3 | 100L | 292 | | | 597 | | | | | | | | | | | |
| | 2 poles | 7.5 | 132M | 395.5 | 80 | 100 | 720.5 | 125 | 200 | 180 | 225 | 320 | 250 | 125 | 95 | 12 | 30 | |
| | | 11 | 160M | 666 | | | 1021 | | | | | | | | | | | 230 |
| | | 15 | 160L | 666 | | | 1021 | | | | | | | | | | | 230 |
| | | 18.5 | 160L | 666 | | | 1021 | | | | | | | | | | | 230 |
| | | 22 | 180M | 519 | | | 874 | | | | | | | | | | | 230 |

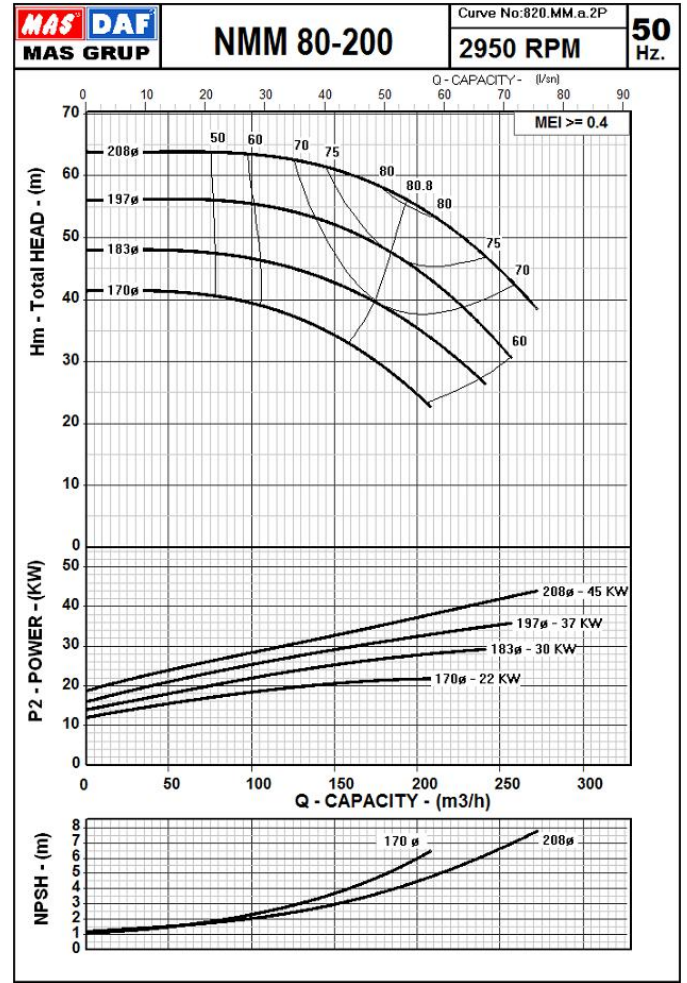
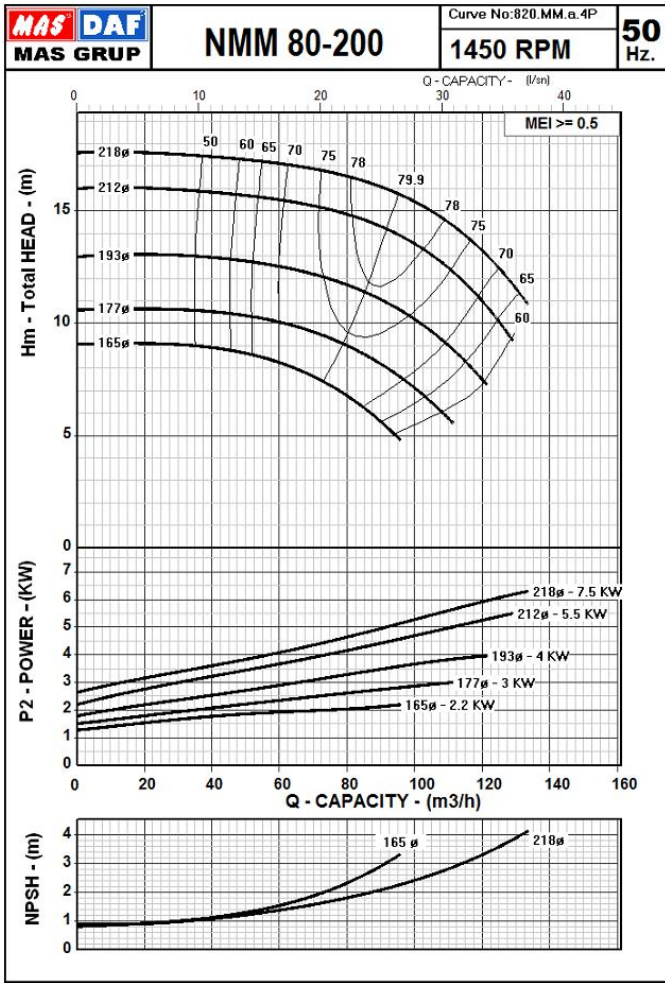
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

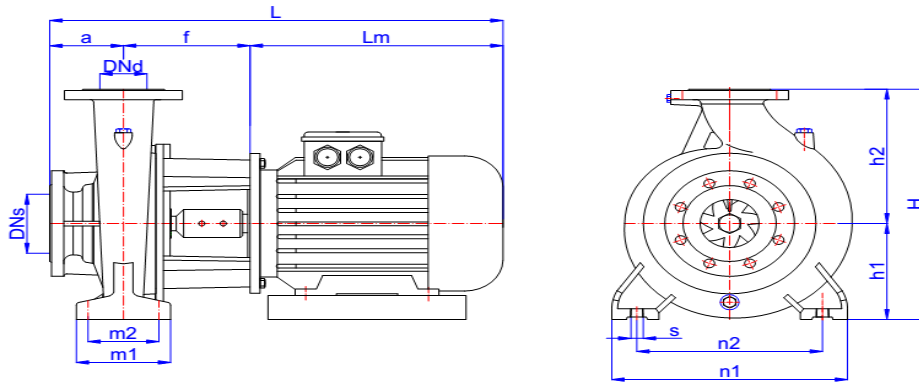


NMM 80-200

Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| | MOTOR | | FLANGES | | GENERAL | | PUMP | | | | | | | | Mechanical Seal | | | |
|--------|---------|------|---------|-------|---------|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------------------|-----|-----|
| | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter | | |
| | | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | | | |
| 80-200 | 4 poles | 2.2 | 100L | 292 | 80 | 100 | 607 | 125 | 190 | 180 | 250 | 345 | 280 | 125 | 95 | 12 | 30 | |
| | | 3 | 100L | 292 | | | 607 | | | | | | | | | | | 190 |
| | | 4 | 112M | 335.5 | | | 650.5 | | | | | | | | | | | 190 |
| | | 5.5 | 132M | 395.5 | | | 735.5 | | | | | | | | | | | 215 |
| | 7.5 | 132M | 395.5 | 735.5 | 215 | | | | | | | | | | | | | |
| | 2 poles | 22 | 180M | 519 | 80 | 100 | 884 | 125 | 240 | 180 | 250 | 345 | 280 | 125 | 95 | 12 | 30 | |
| | | 30 | 200L | 555 | | | 950 | | | | | | | | | | 270 | 35 |
| | | 37 | 200L | 555 | | | 950 | | | | | | | | | | 270 | |
| 45 | | 225M | 625 | 1020 | | | 270 | | | | | | | | | | | |

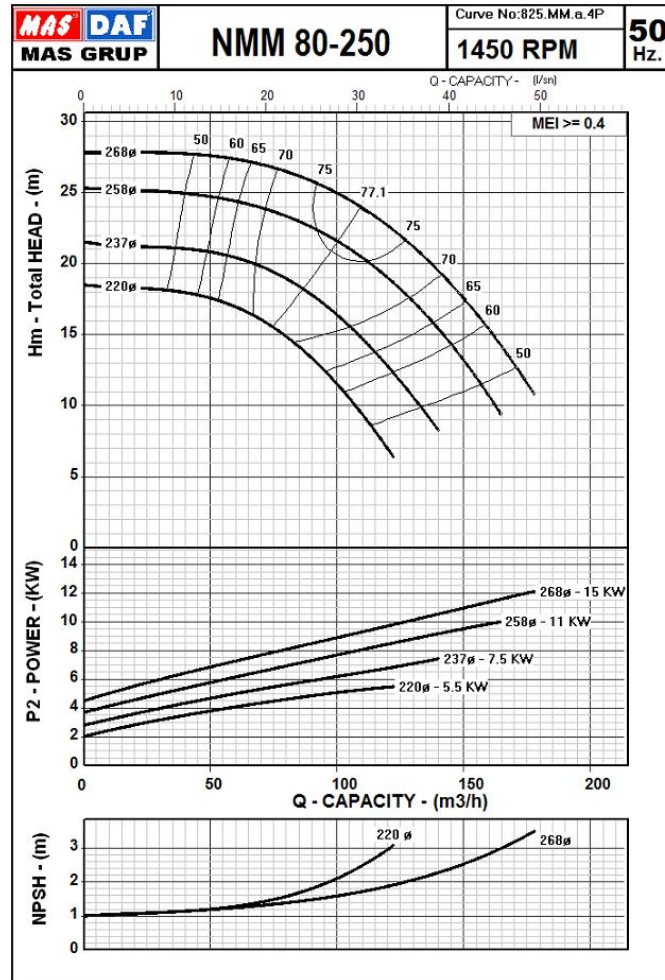
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

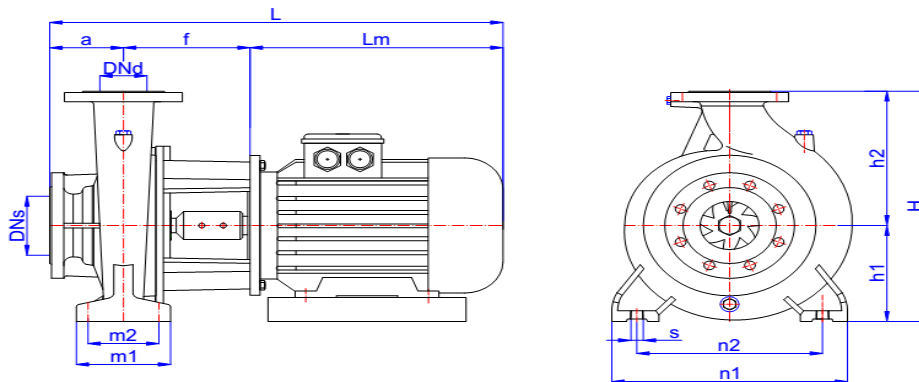
NMM 80-250



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| 80-250 | 4 poles | MOTOR | | FLANGES | | GENERAL | | PUMP | | | | | | | Mechanical Seal | | |
|--------|---------|-------|------|---------|-----|---------|-------|------|-----|-----|-----|-----|-----|-----|-----------------|----|---------------------------|
| | | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter |
| | | | | mm | | | | | | | | | | | | | |
| | | 5.5 | 132M | 395.5 | 80 | 100 | 735.5 | 125 | 215 | 200 | 280 | 400 | 315 | 160 | 120 | 16 | 30 |
| | | 7.5 | 132M | 395.5 | | | 735.5 | | 215 | | | | | | | | |
| | | 11 | 160M | 666 | | | 1031 | | 240 | | | | | | | | |
| | | 15 | 160L | 666 | | | 1031 | | 240 | | | | | | | | |

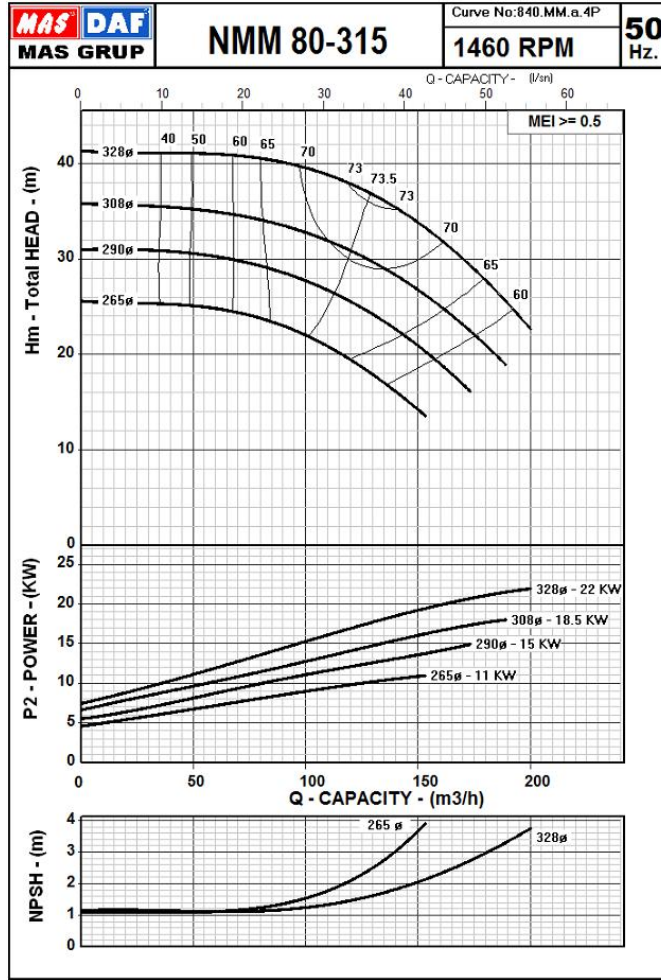
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

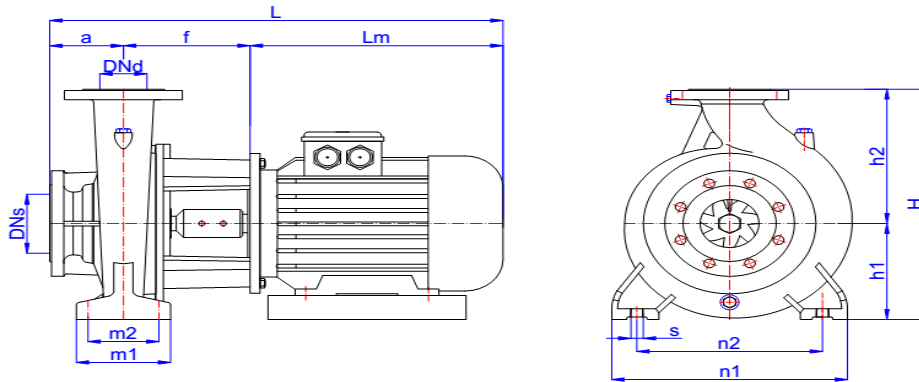
NMM 80-315



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| 80-315 | 4 poles | MOTOR | | FLANGES | | GENERAL | | PUMP | | | | | | | Mechanical Seal | | |
|--------|---------|-------|------|---------|-----|---------|------|------|-----|-----|-----|-----|-----|-----|-----------------|----|---------------------------|
| | | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter |
| | | | | mm | | | | | | | | | | | | | |
| | | 11 | 160M | 666 | 80 | 100 | 1031 | 125 | 240 | 250 | 315 | 400 | 315 | 160 | 120 | 16 | 30 |
| | | 15 | 160L | 666 | | | 1031 | | 240 | | | | | | | | |
| | | 18.5 | 180M | 519 | | | 884 | | 240 | | | | | | | | |
| | | 22 | 180L | 519 | | | 884 | | 240 | | | | | | | | |

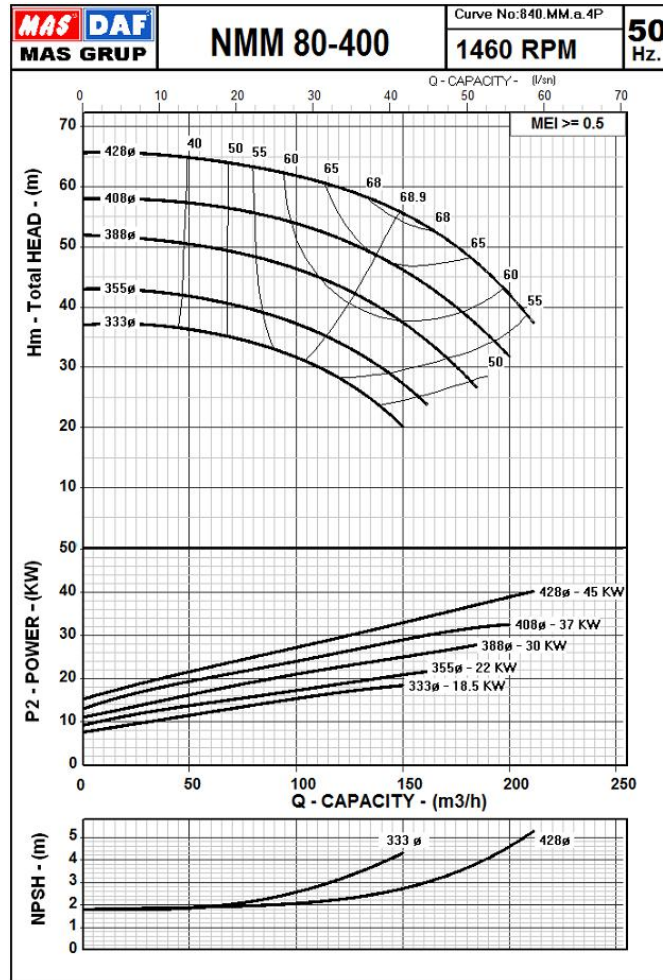
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

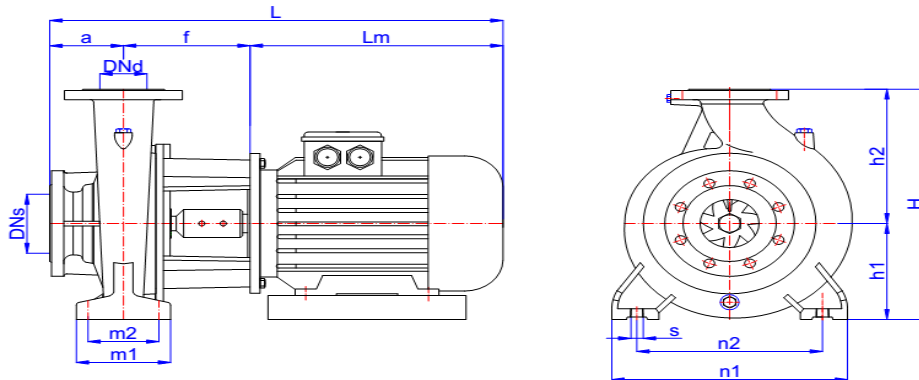
NMM 80-400



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| 80-400 | 4 poles | MOTOR | | FLANGES | | GENERAL | | PUMP | | | | | | | Mechanical Seal | | |
|--------|---------|-------|-----|---------|------|---------|-----|------|-----|-----|-----|-----|-----|-----|-----------------|----|---------------------------|
| | | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter |
| | | | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | |
| 18.5 | 180M | 519 | 80 | 100 | 894 | 125 | 250 | 280 | 280 | 355 | 500 | 400 | 200 | 150 | 20 | 45 | |
| 22 | 180L | 519 | | | 894 | | 250 | | | | | | | | | | |
| 30 | 200L | 555 | | | 960 | | 280 | | | | | | | | | | |
| 37 | 225M | 625 | | | 1030 | | 280 | | | | | | | | | | |
| 45 | 225M | 625 | | | 1030 | | 280 | | | | | | | | | | |

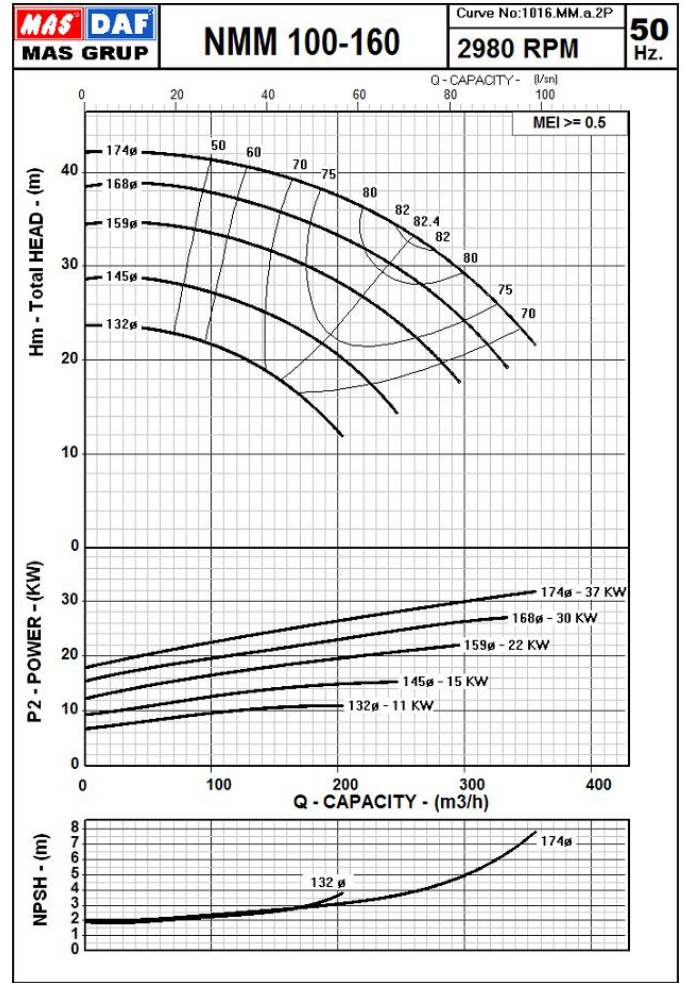
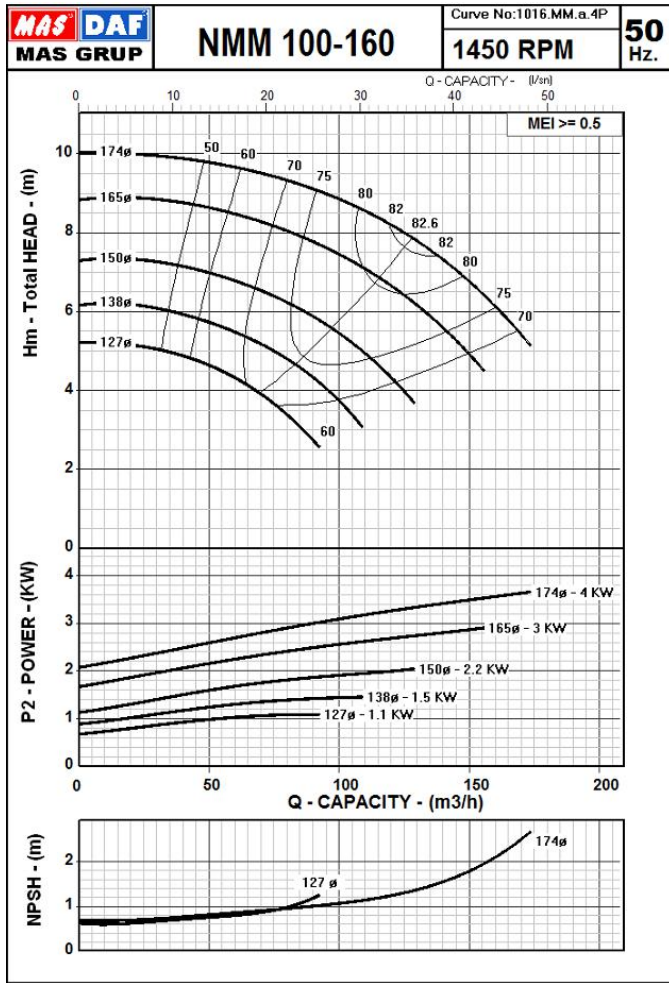
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

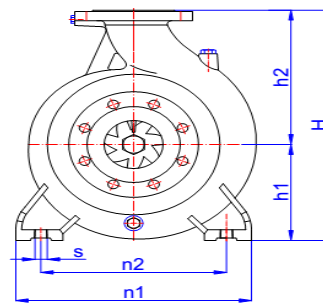
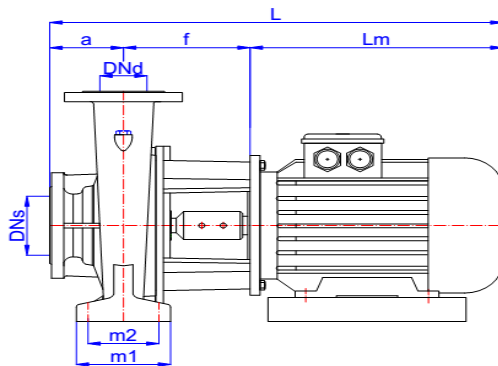


NMM 100-160

Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| | MOTOR | | FLANGES | | GENERAL | PUMP | | | | | | | Mechanical Seal | | | | | |
|---------|---------|-----|---------|-------|---------|------|-------|-----|-----|-----|-----|-----|-----------------|-----|-----|---------------------------|-----|-----|
| | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter | | |
| 100-160 | 4 poles | 1.1 | 90L | 266.5 | 100 | 125 | 551.5 | 125 | 160 | 200 | 280 | 360 | 280 | 160 | 120 | 16 | 20 | |
| | | 1.5 | 90L | 266.5 | | | | | | | | | | | | | | |
| | | 2.2 | 100L | 292 | | | | | | | | | | | | | | |
| | | 3 | 100L | 292 | | | | | | | | | | | | | | |
| | | 4 | 112M | 335.5 | | | | | | | | | | | | | | |
| | 2 poles | 11 | 160M | 666 | 100 | 125 | 1021 | 125 | 230 | 200 | 280 | 360 | 280 | 160 | 120 | 16 | 30 | |
| | | 15 | 160L | 666 | | | | | | | | | | | | | | |
| | | 22 | 180M | 519 | | | | | | | | | | | | | | |
| | | 30 | 200L | 555 | | | | | | | | | | | | | 940 | 260 |
| | | 37 | 200L | 555 | | | | | | | | | | | | | | |

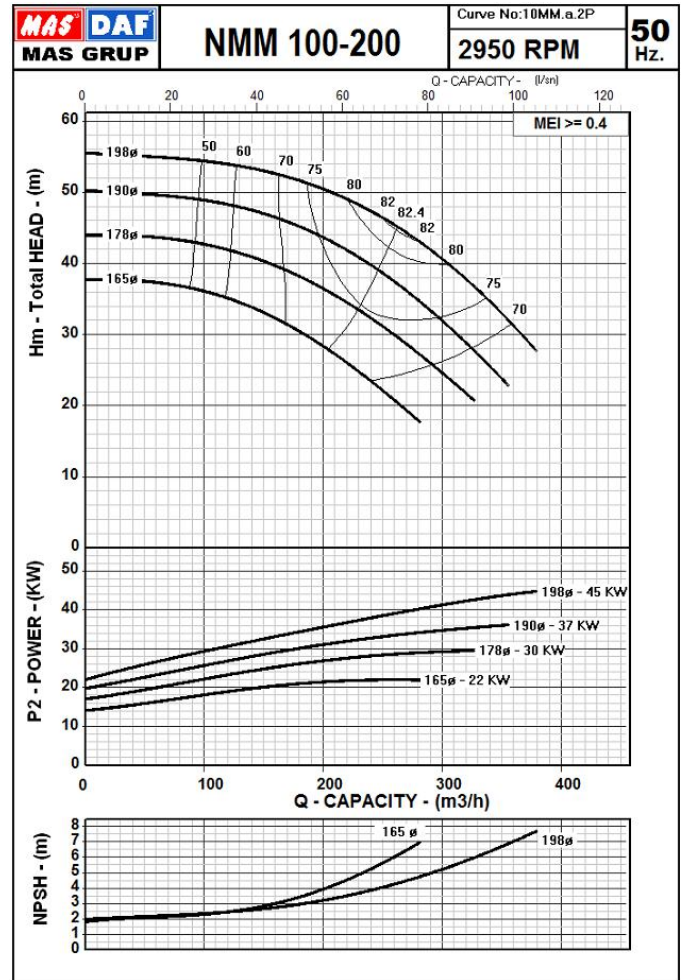
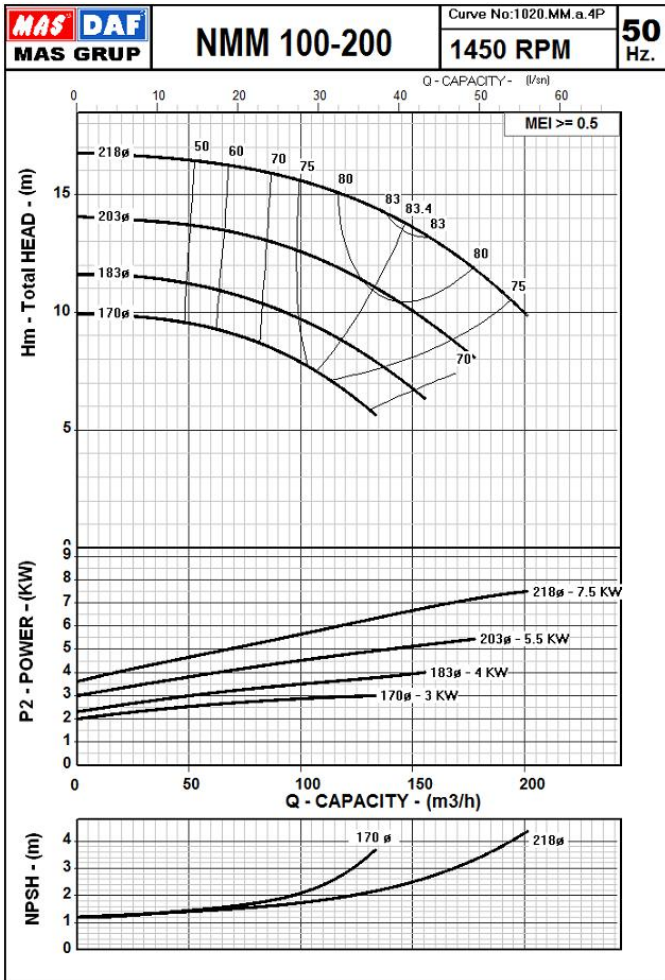
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

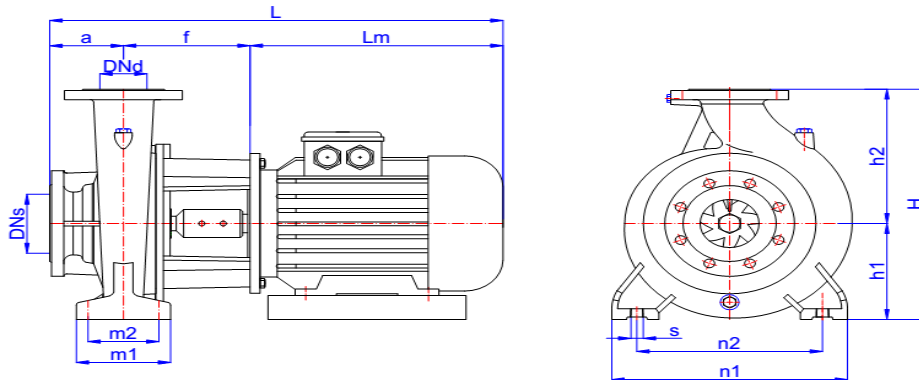


NMM 100-200

Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| | MOTOR | | FLANGES | | GENERAL | | PUMP | | | | | | | Mechanical Seal | | | |
|---------|---------|-----|---------|-------|---------|-----|-------|-----|-----|-----|-----|-----|-----|-----------------|-----|---------------------------|----|
| | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter | |
| | | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | | |
| 100-200 | 4 poles | 3 | 100L | 292 | 100 | 125 | 607 | 125 | 190 | 200 | 280 | 360 | 280 | 160 | 120 | 16 | 30 |
| | | 4 | 112M | 335.5 | | | 650.5 | | 190 | | | | | | | | |
| | | 5.5 | 132M | 395.5 | | | 760.5 | | 240 | | | | | | | | |
| | | 7.5 | 132M | 395.5 | | | 760.5 | | 240 | | | | | | | | |
| | 2 poles | 22 | 180M | 519 | 100 | 125 | 884 | 125 | 240 | 200 | 280 | 360 | 280 | 160 | 120 | 16 | 35 |
| | | 30 | 200L | 555 | | | 950 | | 270 | | | | | | | | |
| | | 37 | 200L | 555 | | | 950 | | 270 | | | | | | | | |
| | | 45 | 225M | 625 | | | 1020 | | 270 | | | | | | | | |

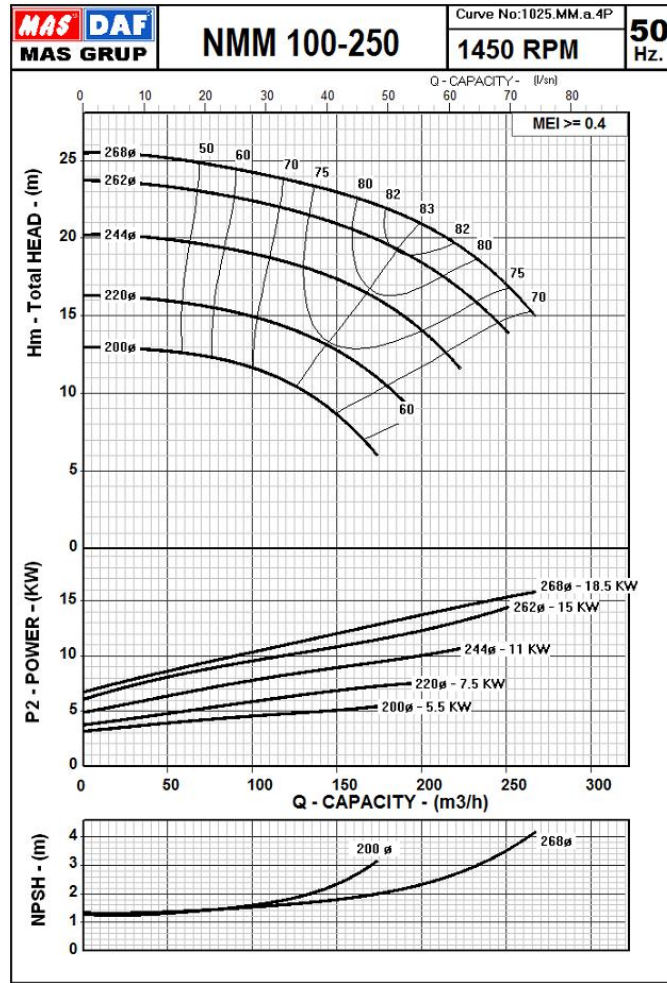
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

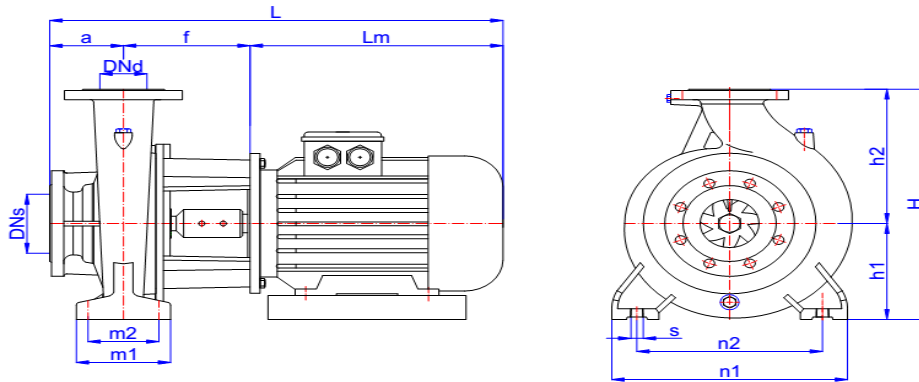
NMM 100-250



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| 100-250 | 4 poles | MOTOR | | FLANGES | | GENERAL | | PUMP | | | | | | | Mechanical Seal | | |
|---------|---------|-------|-----|---------|-------|---------|-----|------|-----|-----|-----|-----|-----|----|-----------------|----|---------------------------|
| | | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter |
| | | | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | |
| 5.5 | 132M | 395.5 | 100 | 125 | 735.5 | 125 | 215 | 225 | 280 | 400 | 315 | 160 | 120 | 16 | 30 | | |
| 7.5 | 132M | 395.5 | | | 735.5 | | 215 | | | | | | | | | | |
| 11 | 160M | 666 | | | 1031 | | 240 | | | | | | | | | | |
| 15 | 160L | 666 | | | 1031 | | 240 | | | | | | | | | | |
| 18.5 | 180M | 519 | | | 884 | | 240 | | | | | | | | | | |

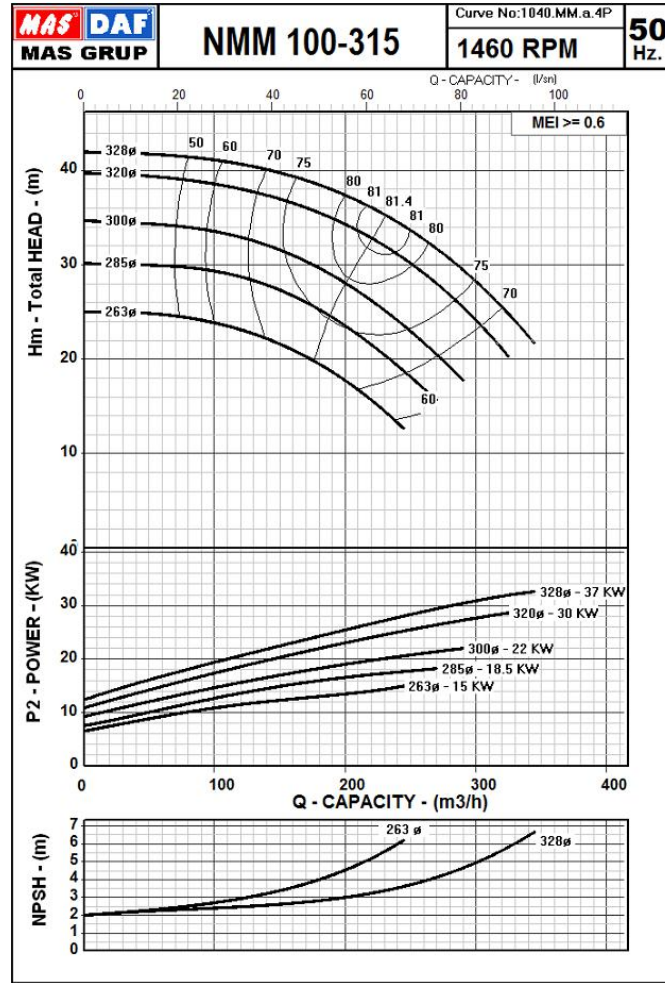
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

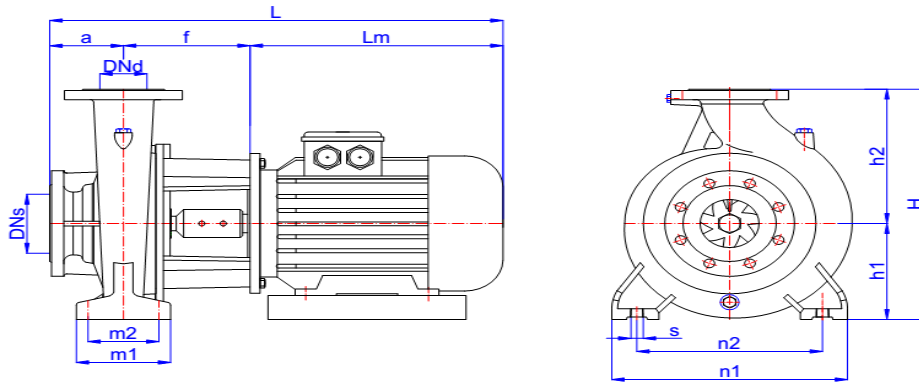
NMM 100-315



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| | MOTOR | | FLANGES | | GENERAL | PUMP | | | | | | | | | | Mechanical Seal | |
|---------|---------|------|---------|-----|---------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|---------------------------|----|
| | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter | |
| | | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | | mm |
| 100-315 | 4 poles | 15 | 160L | 666 | 100 | 125 | 1046 | 140 | 240 | 250 | 315 | 400 | 315 | 160 | 120 | 16 | 30 |
| | | 18.5 | 180M | 519 | | | 899 | | 240 | | | | | | | | |
| | | 22 | 180L | 519 | | | 899 | | 240 | | | | | | | | |
| | | 30 | 200L | 555 | | | 965 | | 270 | | | | | | | | |
| | | 37 | 225M | 625 | | | 1035 | | 270 | | | | | | | | 35 |

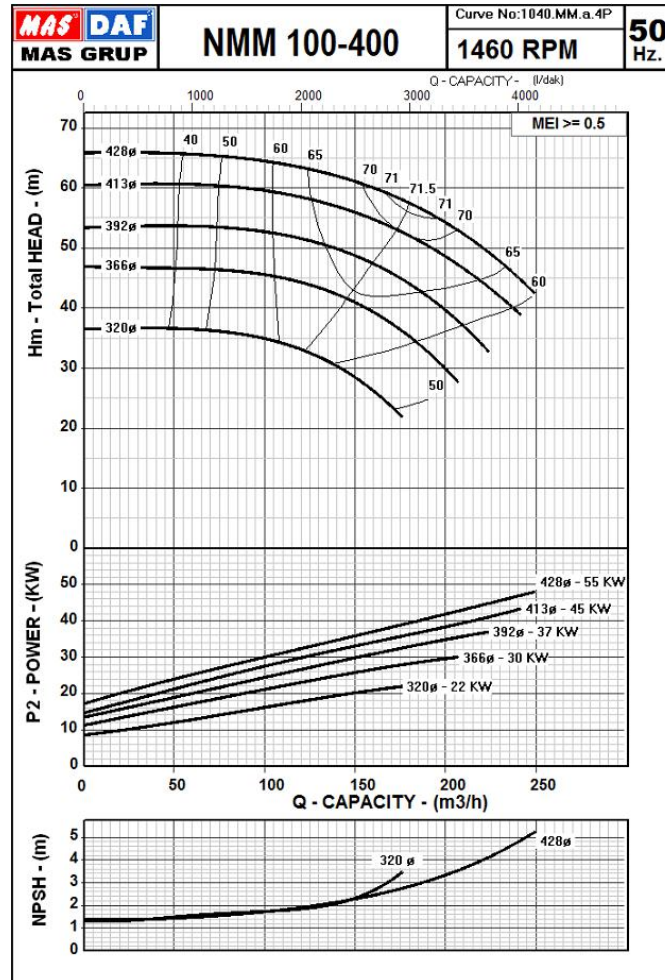
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

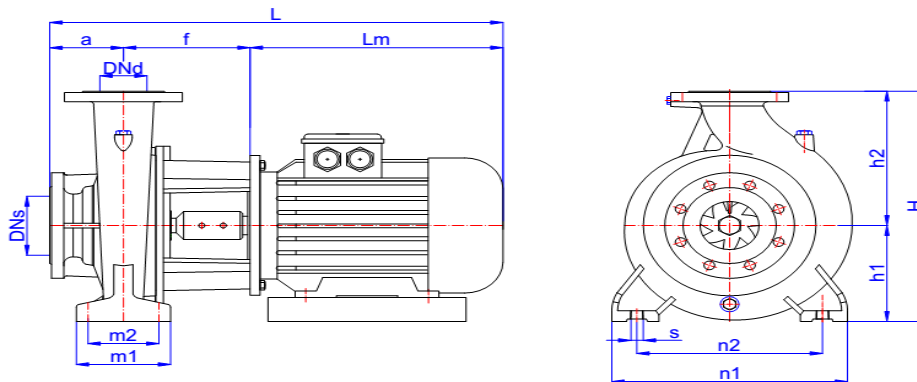
NMM 100-400



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity $1 \text{ mm}^2/\text{s}$ and density $1\text{g}/\text{cm}^3$. Tolerances are acc. to ISO 9906 Annex A.



| 100-400 | MOTOR | | FLANGES | | GENERAL | PUMP | | | | | | | | | | Mechanical Seal |
|---------|-------|------|---------|-----|---------|------|-----|-----|-----|-----|-----|-----|-----|-----|----|---------------------------|
| | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter |
| | | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | |
| 4 poles | 22 | 180L | 519 | 100 | 125 | 909 | 140 | 250 | 280 | 355 | 500 | 400 | 200 | 150 | 20 | 45 |
| | 30 | 200L | 555 | | | 975 | | 280 | | | | | | | | |
| | 37 | 225M | 625 | | | 1095 | | 330 | | | | | | | | |
| | 45 | 225M | 625 | | | 1095 | | 330 | | | | | | | | |
| | 55 | 250M | 746 | | | 1216 | | 330 | | | | | | | | |

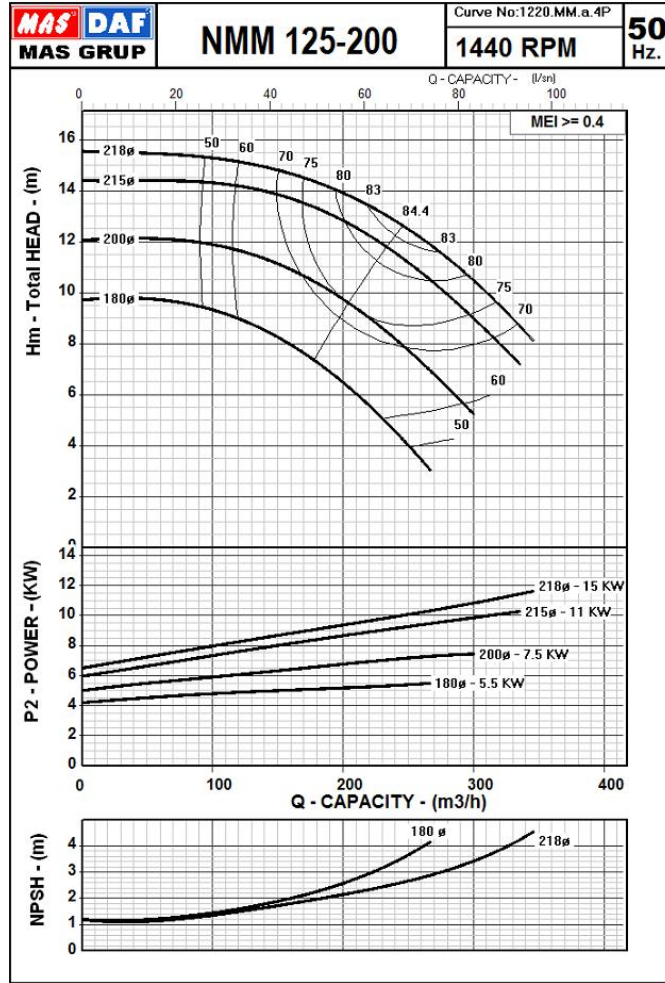
MAS DAF MAKİNA SAN. A.Ş. reserves the right to change specifications without prior notice.

NMM Series
Close Coupled Centrifugal Pump
Performance Curves

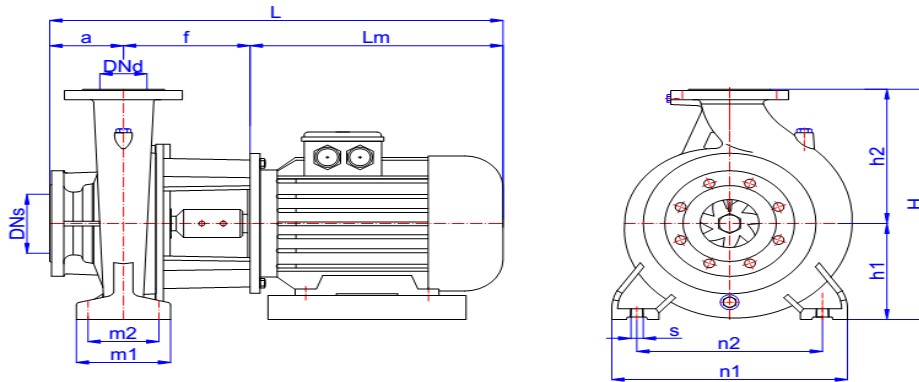
NMM 125-200



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| 125-200 | 4 poles | MOTOR | | FLANGES | | GENERAL | PUMP | | | | | | | | | Mechanical Seal | |
|---------|---------|-------|-----|---------|-------|---------|------|-----|-----|-----|-----|-----|-----|----|----|-----------------|---------------------------|
| | | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter |
| | | | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | |
| 5.5 | 132M | 395.5 | 125 | 150 | 750.5 | 140 | 215 | 250 | 315 | 400 | 315 | 160 | 120 | 16 | 30 | | |
| 7.5 | 132M | 395.5 | | | 750.5 | | 215 | | | | | | | | | | |
| 11 | 160M | 666 | | | 1046 | | 240 | | | | | | | | | | |
| 15 | 160L | 666 | | | 1046 | | 240 | | | | | | | | | | |

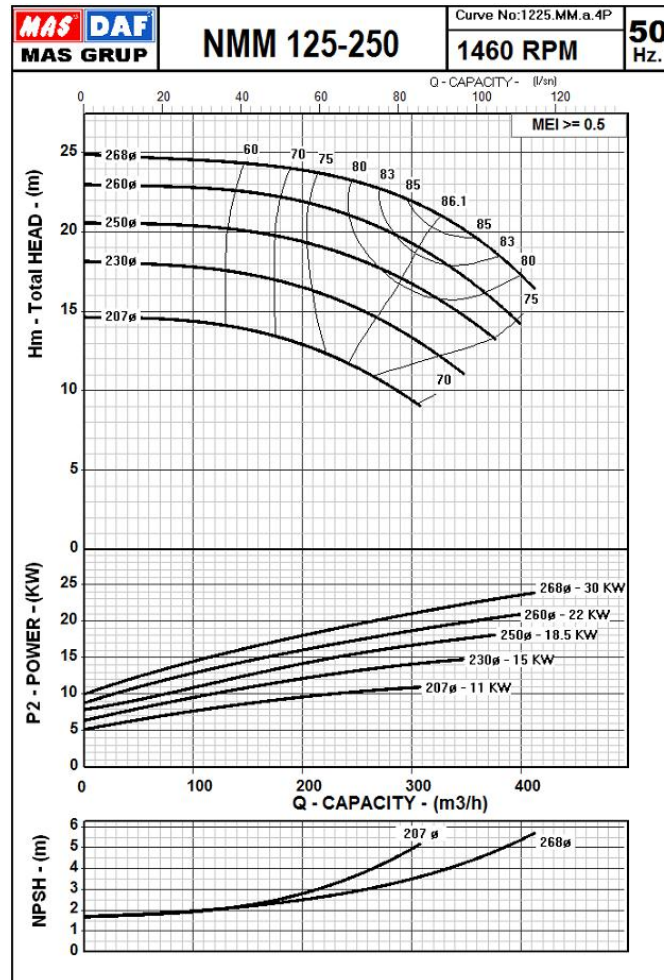
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

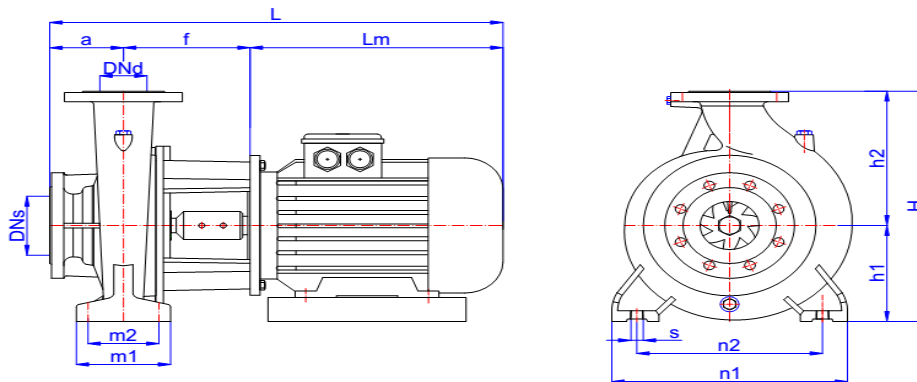
NMM 125-250



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| 125-250 | 4 poles | MOTOR | | FLANGES | | GENERAL | PUMP | | | | | | | | | Mechanical Seal | |
|---------|---------|-------|-----|---------|------|---------|------|-----|-----|-----|-----|-----|-----|----|----|-----------------|---------------------------|
| | | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter |
| | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | |
| 11 | 160M | 666 | 125 | 150 | 1056 | 140 | 250 | 250 | 355 | 400 | 315 | 160 | 120 | 16 | 30 | | |
| 15 | 160L | 666 | | | 1056 | | 250 | | | | | | | | | | |
| 18.5 | 180M | 519 | | | 909 | | 250 | | | | | | | | | | |
| 22 | 180L | 519 | | | 909 | | 250 | | | | | | | | | | |
| 30 | 200L | 555 | | | 975 | | 280 | | | | | | | | 35 | | |

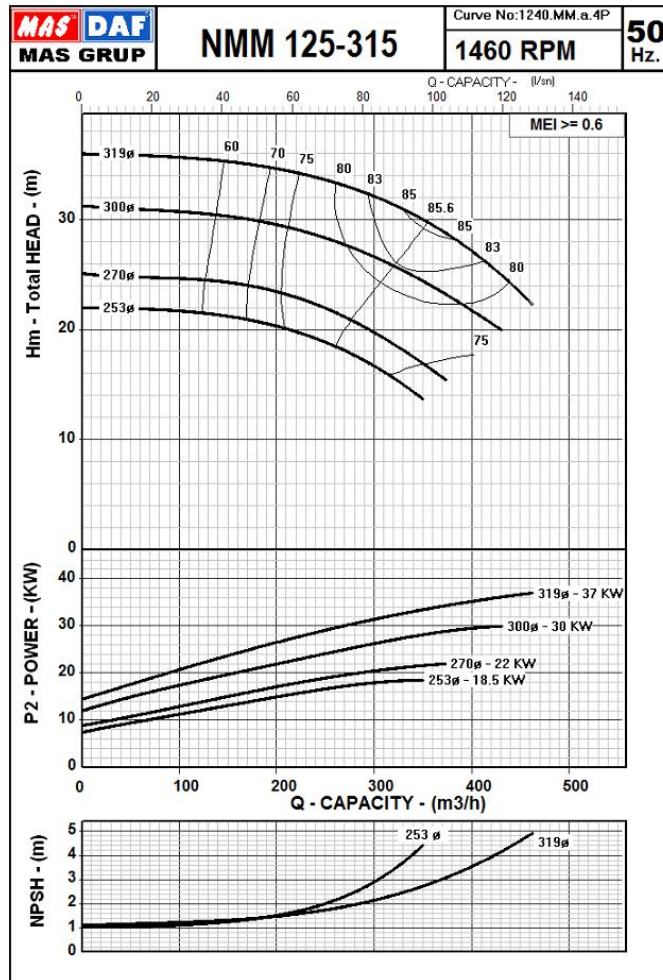
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

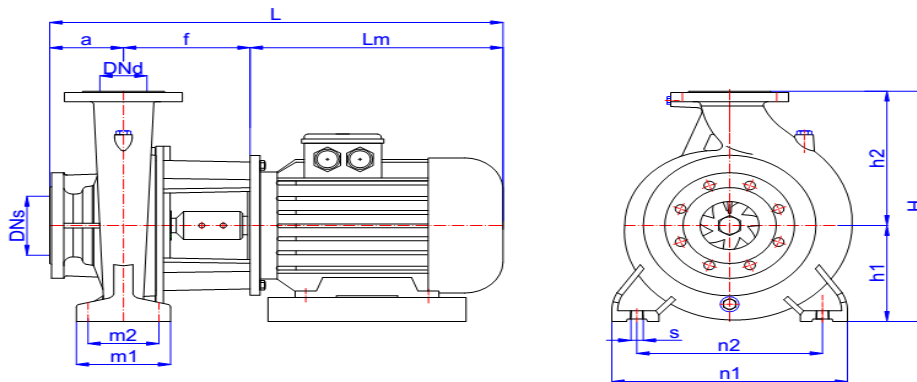
NMM 125-315



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| 125-315 | 4 poles | MOTOR | | FLANGES | | GENERAL | PUMP | | | | | | | | | Mechanical Seal | |
|---------|---------|-------|-----|---------|------|---------|------|-----|-----|-----|-----|-----|-----|----|----|-----------------|---------------------------|
| | | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter |
| | | | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | |
| 18.5 | 180M | 519 | 125 | 150 | 914 | 140 | 255 | 280 | 355 | 500 | 400 | 200 | 150 | 20 | 35 | | |
| 22 | 180L | 519 | | | 914 | | 255 | | | | | | | | | | |
| 30 | 200L | 555 | | | 980 | | 285 | | | | | | | | | | |
| 37 | 225M | 625 | | | 1080 | | 315 | | | | | | | | | | |

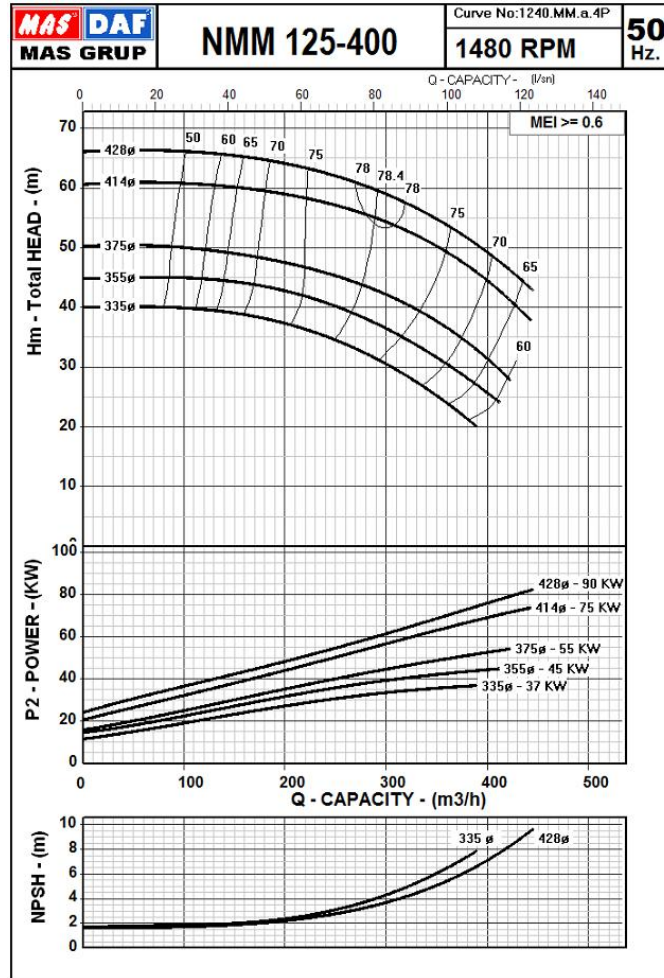
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NMM Series
Close Coupled Centrifugal Pump
Performance Curves

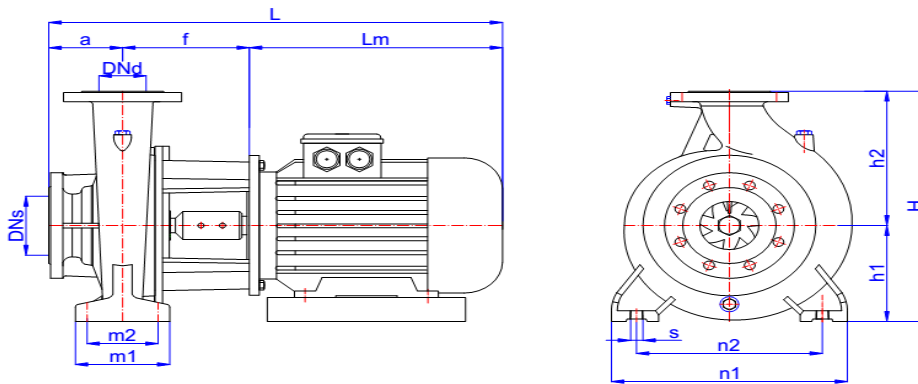
NMM 125-400



Mas Grup



The Performance Curves 50 Hz are based on the kinematic viscosity 1 mm²/s and density 1g/cm³. Tolerances are acc. to ISO 9906 Annex A.



| | MOTOR | | | FLANGES | | GENERAL | PUMP | | | | | | | | Mechanical Seal | | |
|---------|---------|-----|------|---------|-----|---------|------|-----|-----|-----|-----|-----|-----|-----|-----------------|---------------------------|----|
| | KW | IEC | Lm | DNd | DNs | L | a | f | h1 | h2 | n1 | n2 | m1 | m2 | s | Nominal Impeller Diameter | |
| | | | mm | | | | | | | | | | | | | | mm |
| 125-400 | 4 poles | 37 | 225M | 625 | 125 | 150 | 1095 | 140 | 330 | 315 | 400 | 500 | 400 | 200 | 150 | 20 | 45 |
| | | 45 | 225M | 625 | | | 1095 | | | | | | | | | | |
| | | 55 | 250M | 746 | | | 1216 | | | | | | | | | | |
| | | 75 | 280S | 767 | | | 1237 | | | | | | | | | | |
| | | 90 | 280M | 818 | | | 1288 | | | | | | | | | | |

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NMM Series

Close Coupled Centrifugal Pump

Exploded View (Without Coupling)



Mas Grup

| PUMP TYPE | MOMENT OF INERTIA I [kgm ²] | | | | | |
|-------------|---|------------|--|------------|--|------------|
| | Impeller GG 25 (ρ=7,3 kg/dm ³) | | Impeller Bronze (ρ=8,7 kg/dm ³) | | Impeller Cast Steel (ρ=7,8 kg/dm ³) | |
| | Without Water | With Water | Without Water | With Water | Without Water | With Water |
| NMM 32-160 | 0,0062 | 0,0072 | 0,0074 | 0,0084 | 0,0066 | 0,0076 |
| NMM 32-200 | 0,0123 | 0,0142 | 0,0147 | 0,0166 | 0,0131 | 0,0150 |
| NMM 32-250 | 0,0212 | 0,0272 | 0,0309 | 0,0381 | 0,293 | 0,345 |
| NMM 40-160 | 0,0065 | 0,0072 | 0,0078 | 0,0085 | 0,0070 | 0,0077 |
| NMM 40-200 | 0,0124 | 0,0145 | 0,0148 | 0,0169 | 0,0132 | 0,0153 |
| NMM 40-250 | 0,0293 | 0,0355 | 0,0349 | 0,0411 | 0,0313 | 0,0375 |
| NMM 50-160 | 0,0075 | 0,0087 | 0,0219 | 0,0231 | 0,0080 | 0,0092 |
| NMM 50-200 | 0,0136 | 0,0160 | 0,0142 | 0,0186 | 0,0125 | 0,0169 |
| NMM 50-250 | 0,0318 | 0,0380 | 0,0379 | 0,0441 | 0,0340 | 0,0402 |
| NMM 50-315 | 0,0645 | 0,0800 | 0,0788 | 0,0943 | 0,0696 | 0,0941 |
| NMM 65-160 | 0,0077 | 0,0100 | 0,0092 | 0,0115 | 0,0082 | 0,0105 |
| NMM 65-200 | 0,0150 | 0,0192 | 0,0179 | 0,0221 | 0,0160 | 0,0202 |
| NMM 65-250 | 0,0375 | 0,0465 | 0,0447 | 0,0537 | 0,0401 | 0,0491 |
| NMM 65-315 | 0,0745 | 0,0900 | 0,0888 | 0,1043 | 0,0796 | 0,0951 |
| NMM 65-400 | 0,2100 | 0,2575 | 0,2522 | 0,2997 | 0,2251 | 0,2726 |
| NMM 80-160 | 0,0098 | 0,0127 | 0,0117 | 0,0146 | 0,0105 | 0,0134 |
| NMM 80-200 | 0,0195 | 0,0255 | 0,0232 | 0,0292 | 0,0208 | 0,0268 |
| NMM 80-250 | 0,0400 | 0,0525 | 0,0477 | 0,0602 | 0,0427 | 0,0552 |
| NMM 80-315 | 0,0845 | 0,1077 | 0,1007 | 0,1239 | 0,0903 | 0,1135 |
| NMM 80-400 | 0,2200 | 0,2675 | 0,2622 | 0,3097 | 0,2351 | 0,2826 |
| NMM 100-160 | 0,0127 | 0,0165 | 0,0145 | 0,0188 | 0,0135 | 0,0175 |
| NMM 100-200 | 0,0253 | 0,0327 | 0,0302 | 0,0376 | 0,0270 | 0,0344 |
| NMM 100-250 | 0,0448 | 0,0625 | 0,0534 | 0,0711 | 0,0479 | 0,0656 |
| NMM 100-315 | 0,0895 | 0,1205 | 0,1067 | 0,1377 | 0,0956 | 0,1266 |
| NMM 100-400 | 0,2108 | 0,2650 | 0,2512 | 0,3054 | 0,2252 | 0,2794 |
| NMM 125-200 | 0,0375 | 0,0545 | 0,0447 | 0,0617 | 0,0401 | 0,0571 |
| NMM 125-250 | 0,0520 | 0,0740 | 0,0556 | 0,0776 | 0,0620 | 0,0840 |
| NMM 125-315 | 0,1058 | 0,1480 | 0,1261 | 0,1683 | 0,1130 | 0,1552 |
| NMM 125-400 | 0,2358 | 0,3098 | 0,2810 | 0,3550 | 0,2520 | 0,3260 |

For the water filling $\rho=1 \text{ kg/dm}^3$ is used. In case the handled liquid has a different density or the impeller is made of other materials having also a different density, calculate moment of inertia according to the following examples.

Example: Pump Size NMM 100-250

Handled liquid density $\rho=1.25 \text{ kg/dm}^3$, impeller cast iron GG $\rho=7.3 \text{ kg/dm}^3$

$$I = (0.0625 - 0.0448) \times 1.25 + 0.0448 = 0.0669 \text{ kgm}^2$$

Handled liquid density $\rho=1 \text{ kg/dm}^3$, impeller $\rho=8 \text{ kg/dm}^3$ (conversion from GG $\rho=7.3 \text{ kg/dm}^3$)

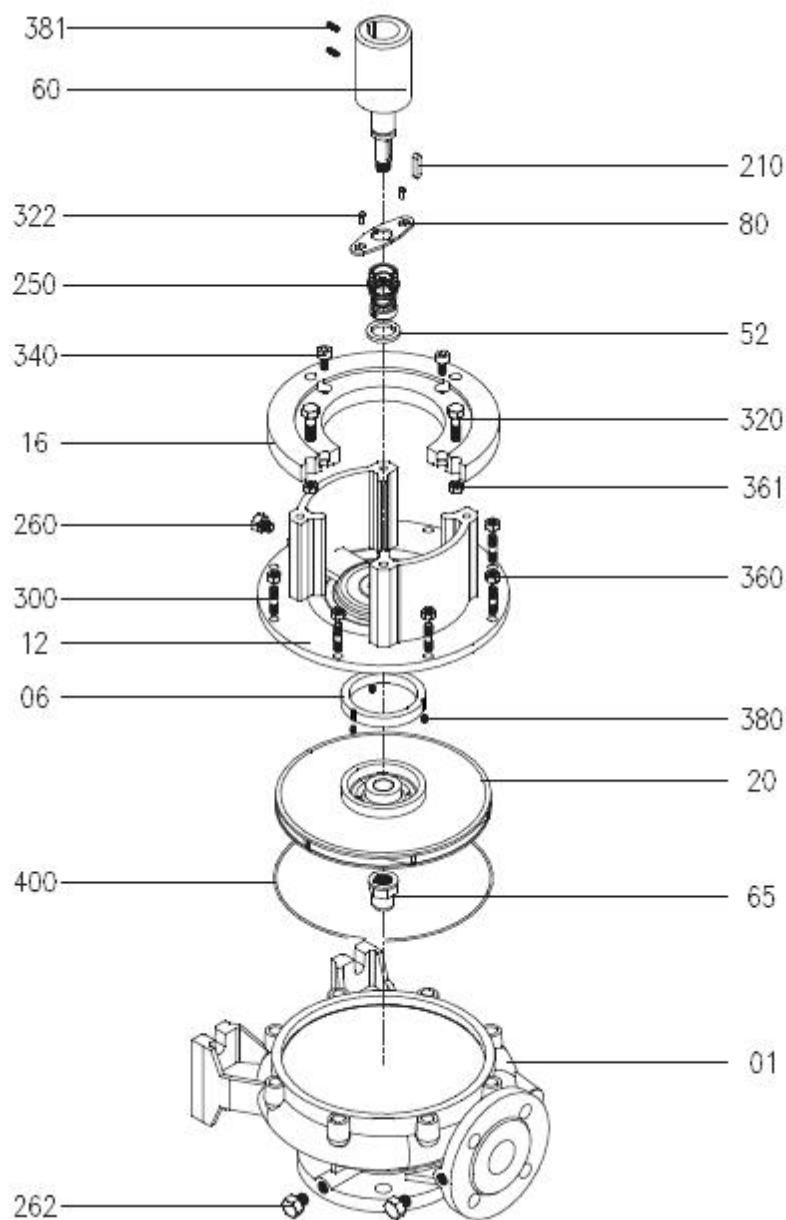
$$I = 0.0448 \times 8 / 7.3 + (0.0625 - 0.0448) = 0.0668 \text{ kgm}^2$$

Handled liquid density $\rho=1.25 \text{ kg/dm}^3$, impeller $\rho=8 \text{ kg/dm}^3$

(Conversion from GG $\rho=7.3 \text{ kg/dm}^3$ and water $\rho=1 \text{ kg/dm}^3$)

$$I = 0.0448 \times 8 / 7.3 + (0.0625 - 0.0448) \times 1.25 = 0.0712 \text{ kgm}^2$$

NMM Series
Close Coupled Centrifugal Pump
Exploded View (Without Coupling)

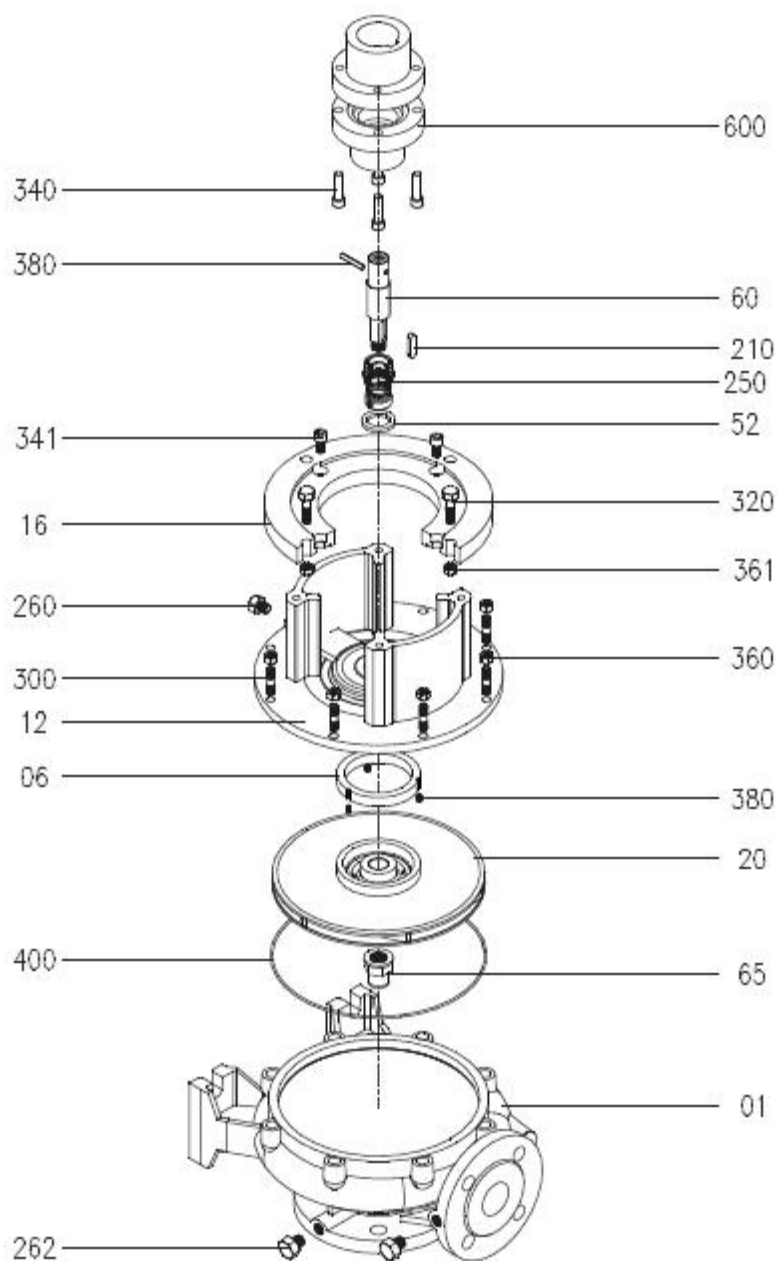


| PART NO | PART NAME | PART NO | PART NAME |
|---------|----------------------|---------|---------------------|
| 01 | Volute Casing | 260 | Plug, Adapter |
| 06 | Wear Ring | 262 | Plug, Volute Casing |
| 12 | Adapter | 300 | Stud, Volute Casing |
| 16 | Adapter Flange | 320 | Hex Bolt |
| 20 | Impeller | 322 | Hex Bolt |
| 52 | Mechanical Seal Ring | 340 | Cap Screw |
| 60 | Pump Shaft | 360 | Nut |
| 65 | Impeller Nut | 361 | Nut |
| 80 | Shackle | 380 | Setscrew |
| 210 | Impeller Key | 381 | Setscrew |
| 250 | Mechanical Seal | 400 | O-Ring |

NMM Series
Close Coupled Centrifugal Pump
Exploded View (With Coupling)



Mas Grup



| PART NO | PART NAME | PART NO | PART NAME |
|---------|----------------------|---------|---------------------|
| 01 | Volute Casing | 262 | Plug, Volute Casing |
| 06 | Wear Ring | 300 | Stud, Volute Casing |
| 12 | Adapter | 320 | Hex Bolt |
| 16 | Adapter Flange | 340 | Cap Screw |
| 20 | Impeller | 341 | Cap Screw |
| 52 | Mechanical Seal Ring | 360 | Nut |
| 60 | Pump Shaft | 361 | Nut |
| 65 | Impeller Nut | 380 | Setscrew |
| 210 | Impeller Key | 381 | Setscrew |
| 250 | Mechanical Seal | 400 | O-Ring |
| 260 | Plug, Adapter | 600 | Rigid Coupling |



Mas Grup

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