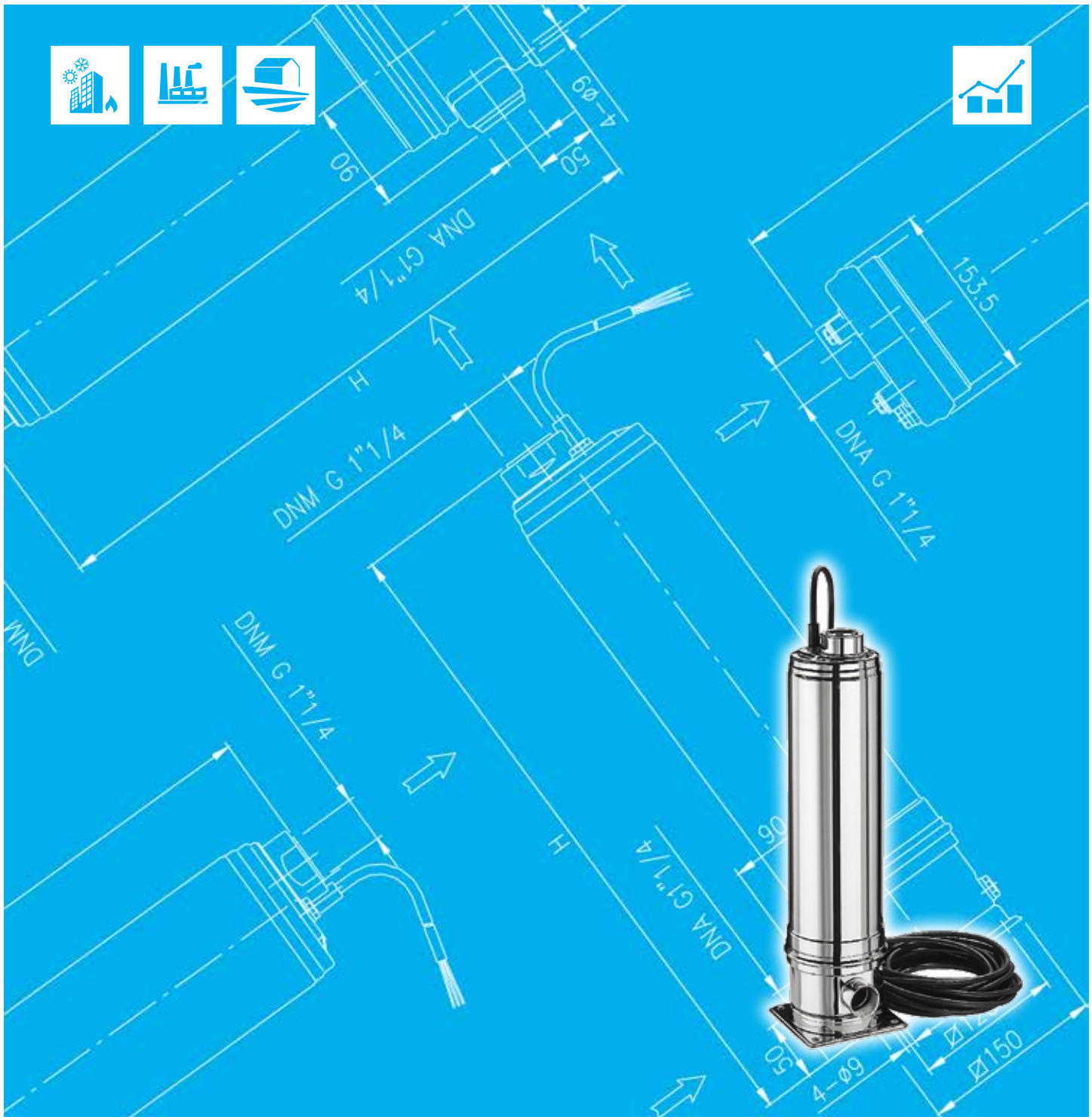




Japanese Technology since 1912

MULTIGO

Data Book 50Hz



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SPECIFICATION

50Hz

Rev. I

| PUMP | | |
|---|------------------|---|
| Liquid Handled | Type of liquid | Clean water |
| | Temperature [°C] | max. +40 |
| Maximum working pressure | [MPa] | 1 |
| Maximum available negative suction head | [m] | -6 |
| Construction | Impeller | Closed centrifugal type (multiple stages) |
| | Shaft seal type | Double mechanical seal |
| | Bearing | Sealed ball bearing |
| Pipe Connection | Suction | G 1¼ UNI ISO 228 |
| | Discharge | G 1¼ UNI ISO 228 |
| Material | Casing | EN 1.4301 (AISI 304) |
| | Casing cover | EN 1.4301 (AISI 304) |
| | Impeller | PPE+PS Glass fibre reinforced |
| | Diffuser | PPE+PS Glass fibre reinforced |
| | Shaft | EN 1.4057 (AISI 431) |
| | Shaft seal | Pump side: Carbon/Ceramic/NBR Motor side: Carbon/Ceramic/NBR |
| | Lubricating oil | White mineral oil: Esso Marcol 172 (90cc) |
| Applicable standard of test | | ISO 9906 – Annex A |

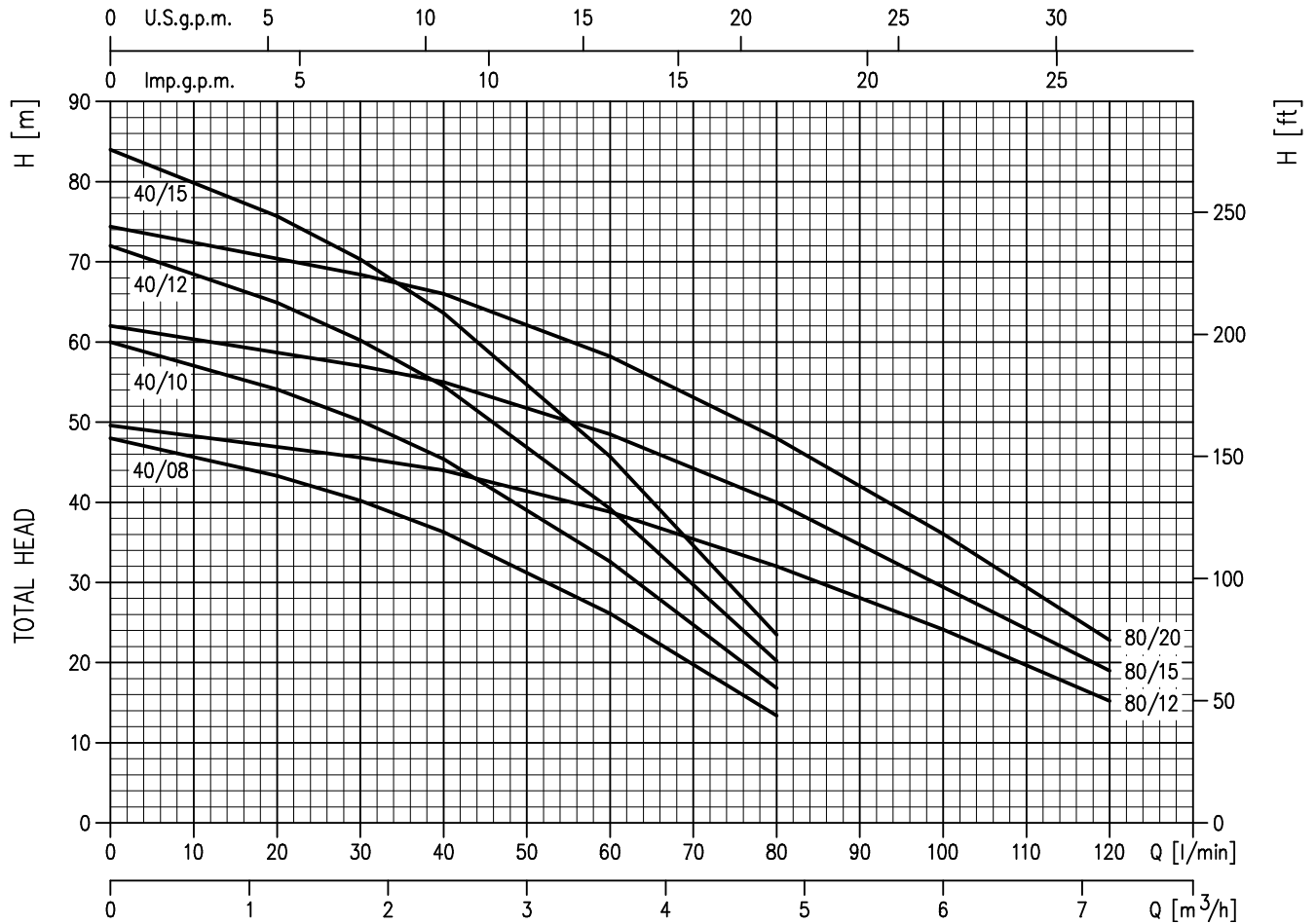
| MOTOR | | |
|-------------------------------------|----------------------------------|----------------------|
| Type | Submersible dry type | |
| | Single Phase | Three Phase |
| No. of Poles | 2 | |
| Rotation speed [min ⁻¹] | 2800 | |
| Insulation Class | Class F | |
| Protection degree (CEI EN 60034-5) | IP 68 | |
| Power rating | [kW] | 0.6 ÷ 1.1 |
| | [HP] | 0.8 ÷ 1.5 |
| Frequency [Hz] | 50 | |
| Voltage [V] | 230 ±10% | 230/400 ±10% |
| Capacitor | Built in | - |
| Over load protection | Built in | Provided by the user |
| Upper bearing bracket | Aluminium | |
| Lower bearing bracket | Brass | |
| Motor frame | AISI 304 | |
| material | H07RN-F | |
| Power cable size | 3G1 (40/08, 40/10, 40/12, 40/15) | 4G1 |
| | 3G1.5 (80/12, 80/15) | |
| length [m] | 5 | |
| Type of cable entry | Cable Gland | |

* ON REQUEST IN-LINE VERSION ONLY SINGLE PHASE MODELS

SELECTION CHART

50Hz

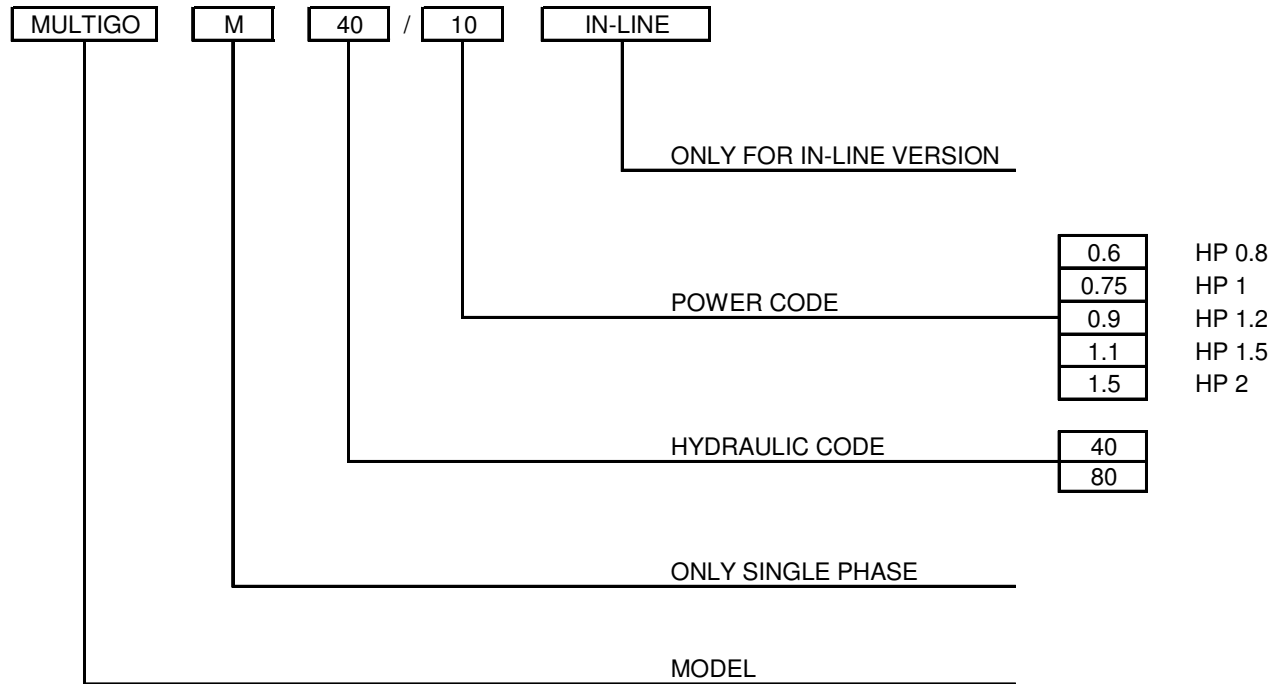
Rev. I



| Pump type | | Power | | Q=Capacity | | | | | | | | |
|-----------------------------------|---------------|-------|------|------------|------|------|------|------|------|------|------|-----|
| Single Phase | Three Phase | [kW] | [HP] | l/min | 0 | 20 | 30 | 40 | 60 | 80 | 100 | 120 |
| | | | | m³/h | 0 | 1.2 | 1.8 | 2.4 | 3.6 | 4.8 | 6 | 7.2 |
| H=Total manometric head in meters | | | | | | | | | | | | |
| MULTIGO M40/08 | MULTIGO 40/08 | 0.6 | 0.8 | 48 | 43.3 | 40.2 | 36.3 | 26.1 | 13.4 | - | - | - |
| MULTIGO M40/10 | MULTIGO 40/10 | 0.75 | 1 | 60 | 54.1 | 50.2 | 45.4 | 32.6 | 16.8 | - | - | - |
| MULTIGO M40/12 | MULTIGO 40/12 | 0.9 | 1.2 | 72 | 64.9 | 60.2 | 54.5 | 39.2 | 20.2 | - | - | - |
| MULTIGO M40/15 | MULTIGO 40/15 | 1.1 | 1.5 | 84 | 75.7 | 70.3 | 63.6 | 45.7 | 23.5 | - | - | - |
| MULTIGO M80/12 | MULTIGO 80/12 | 0.9 | 1.2 | 49.6 | - | 45.6 | 44 | 38.8 | 32 | 23.2 | 15.2 | - |
| MULTIGO M80/15 | MULTIGO 80/15 | 1.1 | 1.5 | 62 | - | 57 | 55 | 48.5 | 40 | 28 | 19 | - |
| - | MULTIGO 80/20 | 1.5 | 2 | 74.4 | - | 68.4 | 66 | 58.2 | 48 | 34.8 | 22.8 | - |

* ON REQUEST IN-LINE VERSION ONLY SINGLE PHASE MODELS

TYPE KEY



PERFORMANCE CURVE SPECIFICATIONS

The specifications below qualify the curves shown on the following pages.

Tolerances according to ISO 9906 Annex A

The curves refer to effective speed of asynchronous motors at 50 Hz

Measurements were carried out with clean water at 20°C of temperature and with a kinematic viscosity of $\nu = 1 \text{ mm}^2/\text{s}$ (1 cSt)

The NPSH curve is an average curve obtained in the same conditions of performance curves.

The continuous curves indicate the recommended working range. The dotted curve is only a guide.

In order to avoid the risk of over-heating, the pumps should not be used at a flow rate below 10% of best efficiency point.

Symbols explanation:

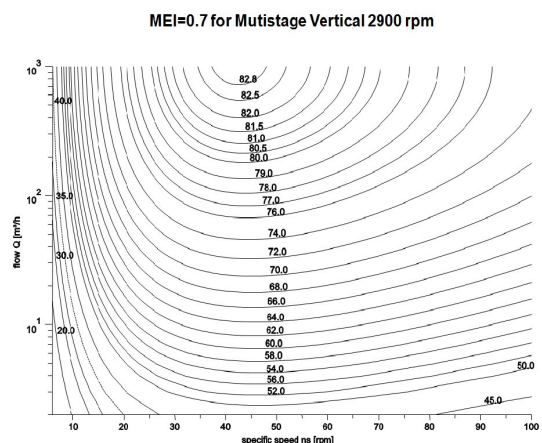
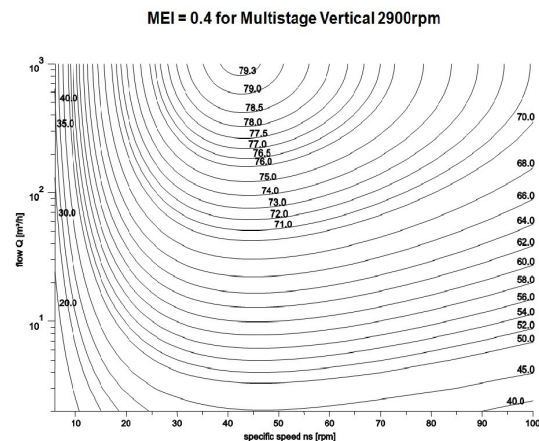
- Q = volume flow rate
- H = total head
- P_2 = pump power input (shaft power)
- η = pump efficiency
- NPSH = net positive suction head required by the pump
- MEI = minimum efficiency index

The minimum efficiency index (MEI) is a measure of the quality of a pump size in respect to its mean efficiency. The minimum efficiency index is based on the hydraulic efficiency and on the head at the best efficiency point.

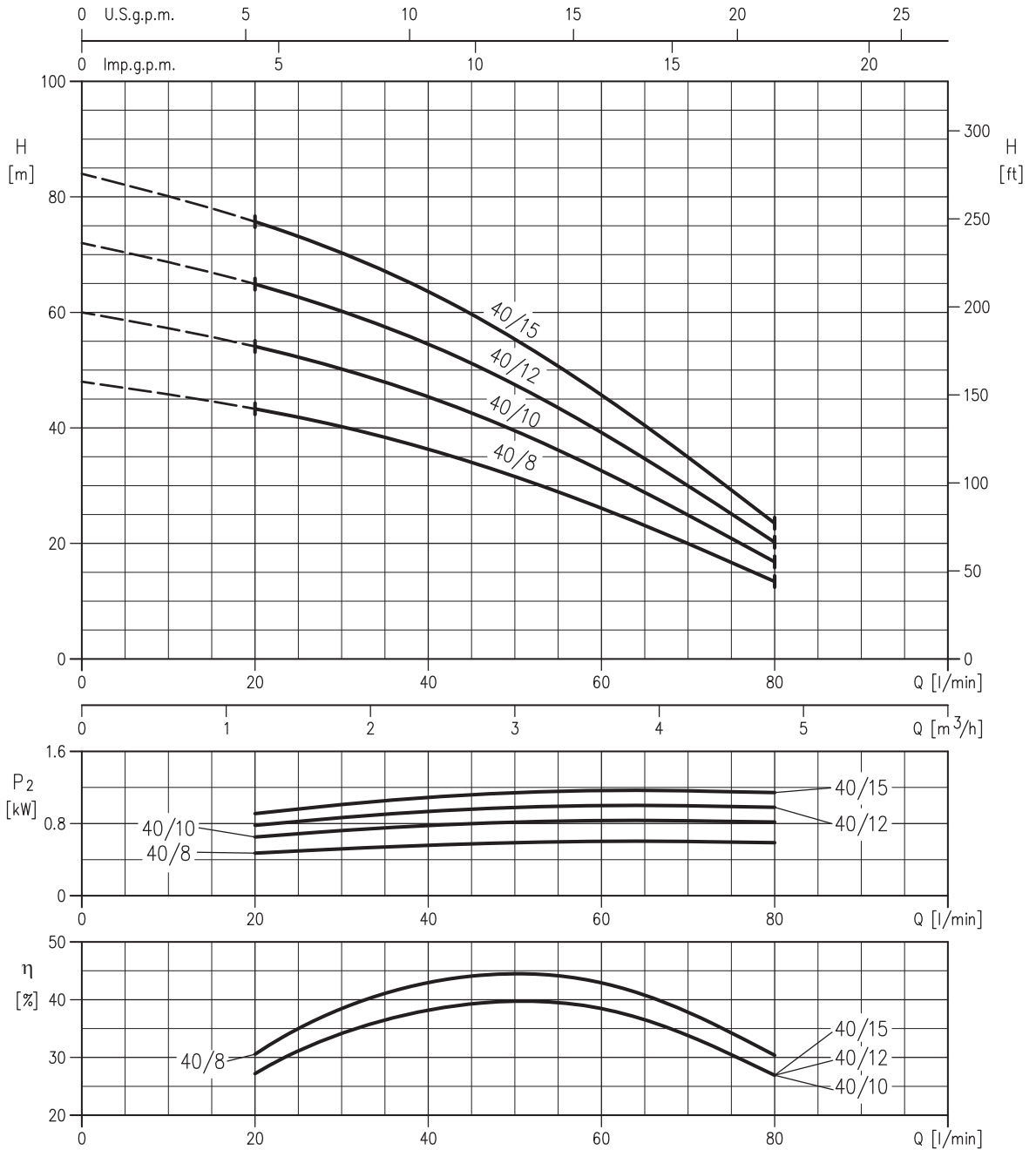
The benchmark for most efficient water pumps is $MEI \geq 0,70$. Information on benchmark efficiency is Available at: www.ebara.eu

The efficiency of a pump with trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, leading to reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter.

The operation of these water pumps with variable duty points may be more efficient and economic when controlled, for example, by the use of a variable speed drive that matches the pump duty to the system.

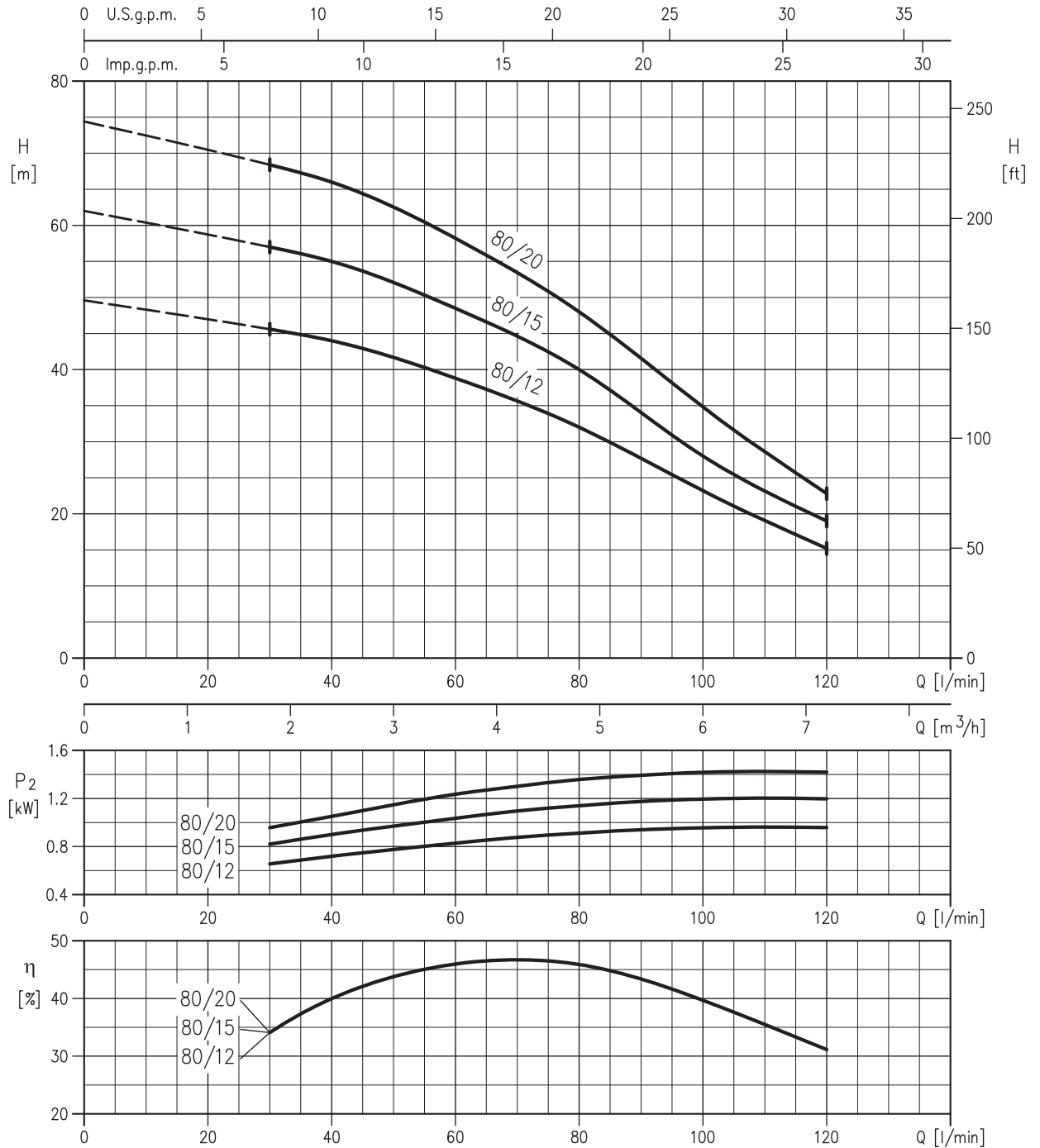


MULTIGO 40/08 (0.60 kW) MEI > 0.40 - Impeller diameter = 104
MULTIGO 40/10 (0.75 kW) MEI > 0.40 - Impeller diameter = 104
MULTIGO 40/12 (0.90 kW) MEI > 0.40 - Impeller diameter = 104
MULTIGO 40/15 (1.10 kW) MEI > 0.40 - Impeller diameter = 104



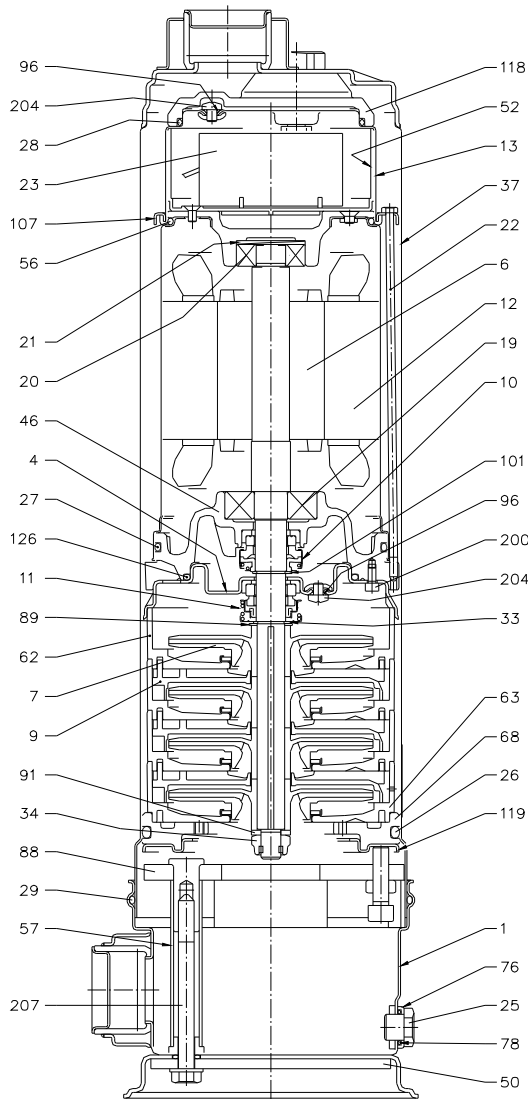
Rotation speed ≈ 2800 min⁻¹
 Test fluid: clean water at 20°C
 Test standard: ISO 9906 – Annex A

MULTIGO 80/12 (0.9 kW) MEI > 0.70 - Impeller diameter = 102
MULTIGO 80/15 (1.1 kW) MEI > 0.70 - Impeller diameter = 102
MULTIGO 80/20 (1.5 kW) MEI > 0.70 - Impeller diameter = 102

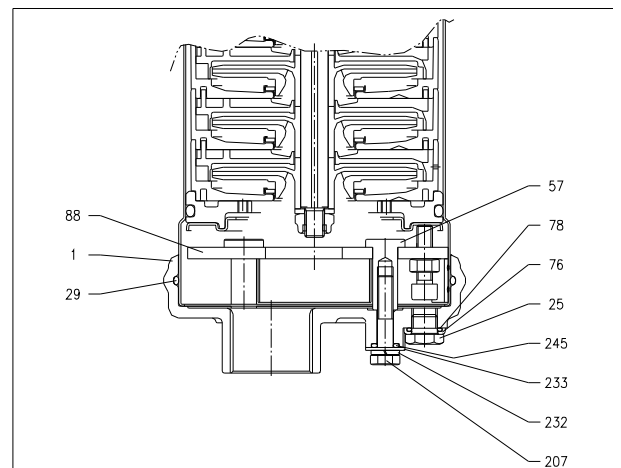
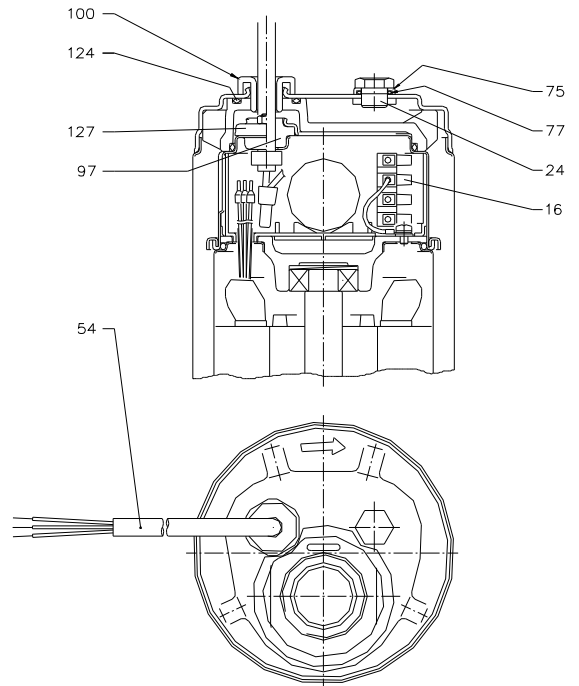


Rotation speed $\approx 2800 \text{ min}^{-1}$
 Test fluid: clean water at 20°C
 Test standard: ISO 9906 – Annex A

SECTIONAL VIEW



STANDARD VERSION



IN-LINE VERSION

| N° | PART NAME | MATERIAL | DIMENSIONS | STANDARD | Q.TY |
|-----|--------------------------------|-------------------------------|-----------------|----------------|------|
| 1 | Casing | EN 1.4301 (AISI 304) | | | 1 |
| 4 | Casing ring | EN 1.4301 (AISI 304) | | | 1 |
| 6 | Shaft with rotor | EN 1.4057 (AISI 431) | | | 1 |
| 7 | Impeller | PPE+PS Glass fibre reinforced | | | [3] |
| 9 | Diffuser | PPE+PS Glass fibre reinforced | | | [3] |
| 10 | Motor side mechanical seal [2] | Carbon/Ceramic/NBR | See table p.302 | | 1 |
| 11 | Pump side mechanical seal [2] | Carbon/Ceramic/NBR | See table p.302 | | 1 |
| 12 | Motor frame with stator | - | | | 1 |
| 13 | Motor cover | EN 1.4301 (AISI 304) | | | 1 |
| 16 | Terminal | - | | | 1 |
| 19 | Lower side ball bearing | - | 6303 ZZ | | 1 |
| 20 | Upper side ball bearing | - | 6302 ZZ | | 1 |
| 21 | Adjusting ring | Steel C70 | | | 1 |
| 22 | Tie rod | EN 1.4301 (AISI 304) | M4 | | 3 |
| 23 | Capacitor [1] | - | | | 1 |
| 24 | Header plug | EN 1.4305 (AISI 303) | G 1/4" | | 1 |
| 25 | Drain plug | EN 1.4305 (AISI 303) | G 1/4" | | 1 |
| 26 | O ring | NBR | Ø 120.7X5.34 | OR 201 | 1 |
| 27 | O ring | NBR | Ø 110.7X3.53 | OR 4437 | 1 |
| 28 | O ring | NBR | Ø 88.5X3.53 | OR 4350 | 1 |
| 29 | O ring | NBR | Ø 138X3.5 | | 1 |
| 33 | Seeger ring | EN 1.4301 (AISI 304) | Ø 14 | JIS B2804-1978 | 1 |
| 34 | Impeller nut | EN 1.4301 (AISI 304) | M10x1.25 | U7474 | 1 |
| 37 | External pump casing | EN 1.4301 (AISI 304) | | | 1 |
| 46 | Bearing housing | Brass | | | 1 |
| 50 | Casing support | EN 1.4301 (AISI 304) | | | 1 |
| 52 | Terminal insulating box | PA66 glass fibre reinforced | | | 1 |
| 54 | Power cable | - | | | 1 |
| 56 | O ring | NBR | Ø 98.02x3.53 | OR 4387 | 1 |
| 57 | Bolt | EN 1.4305 (AISI 303) | | | 2 |
| 62 | Stage housing | PPE+PS Glass fibre reinforced | | | [3] |
| 63 | Stage housing with hall | PPE+PS Glass fibre reinforced | | | 1 |
| 68 | Lower spacer | PPE+PS Glass fibre reinforced | | | 1 |
| 75 | Washer | EN 1.4301 (AISI 304) | G 1/4" | | 1 |
| 76 | Washer | EN 1.4301 (AISI 304) | G 1/4" | | 1 |
| 77 | O ring | NBR | Ø 13.1x2.62 | OR 117 | 1 |
| 78 | O ring | NBR | Ø 13.1x2.62 | OR 117 | 1 |
| 88 | Retainer ring | EN 1.4301 (AISI 304) | | | 1 |
| 89 | Washer | EN 1.4301 (AISI 304) | Ø 14.1x22x1 | | 1 |
| 91 | Washer | EN 1.4301 (AISI 304) | Ø 10.2x20x2.5 | | 1 |
| 96 | O ring | NBR | Ø 4.48x1.78 | OR 2018 | 3 |
| 97 | Cable entry | NBR | Ø 16.5x20 | | 1 |
| 100 | Lock screw | EN 1.4305 (AISI 303) | | | 1 |
| 101 | Seeger ring | EN 1.4021 (AISI 420) | Ø 15 | U7435 | 1 |
| 107 | Retainer ring | EN 1.4301 (AISI 304) | Ø119X1.2 | | 1 |
| 118 | Upper spacer | Brass | | | 1 |
| 119 | Flange | EN 1.4301 (AISI 304) | | | 1 |
| 124 | O ring | NBR | Ø25.8X3.53 | OR 134 | 1 |
| 126 | O ring | NBR | Ø82.14X3.53 | OR 4325 | 1 |
| 127 | Cable connector | EN 1.4301 (AISI 304) | | | 1 |
| 200 | Screw | Stainless steel A2 UNI 7323 | M4x8 | UNI 5931 | 3 |
| 204 | Screw | Stainless steel A2 UNI 7323 | M5x6 | UNI 7687 | 3 |
| 207 | Screw | Stainless steel A2 UNI 7323 | M8X80 | UNI 5737 | 4 |
| 232 | Washer | Stainless steel A2 UNI 7323 | | | 4 |
| 233 | Washer | Stainless steel A2 UNI 7323 | Ø8.5x20x2 | | 4 |
| 245 | O ring | NBR | Ø8x3 | | 4 |

[1] Only for single phase

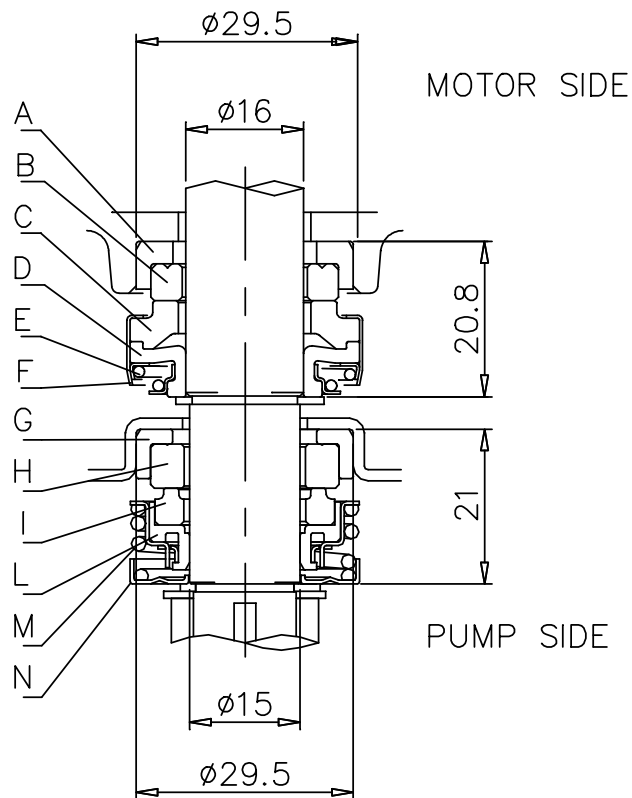
[2] See constructions mechanical seal page 303

[3] See table page 302

QUANTITY FOR MODEL

| Pump type | | N°7 Impeller | N°9 Diffuser | N°62 Stage housing |
|----------------|---------------|--------------|--------------|--------------------|
| Single Phase | Three Phase | | | |
| MULTIGO M40/08 | MULTIGO 40/08 | 4 | 3 | 4 |
| MULTIGO M40/10 | MULTIGO 40/10 | 5 | 4 | 5 |
| MULTIGO M40/12 | MULTIGO 40/12 | 6 | 5 | 6 |
| MULTIGO M40/15 | MULTIGO 40/15 | 7 | 6 | 7 |
| MULTIGO M80/12 | MULTIGO 80/12 | 4 | 3 | 4 |
| MULTIGO M80/15 | MULTIGO 80/15 | 5 | 4 | 5 |
| - | MULTIGO 80/20 | 6 | 5 | 6 |

MECHANICAL SEAL

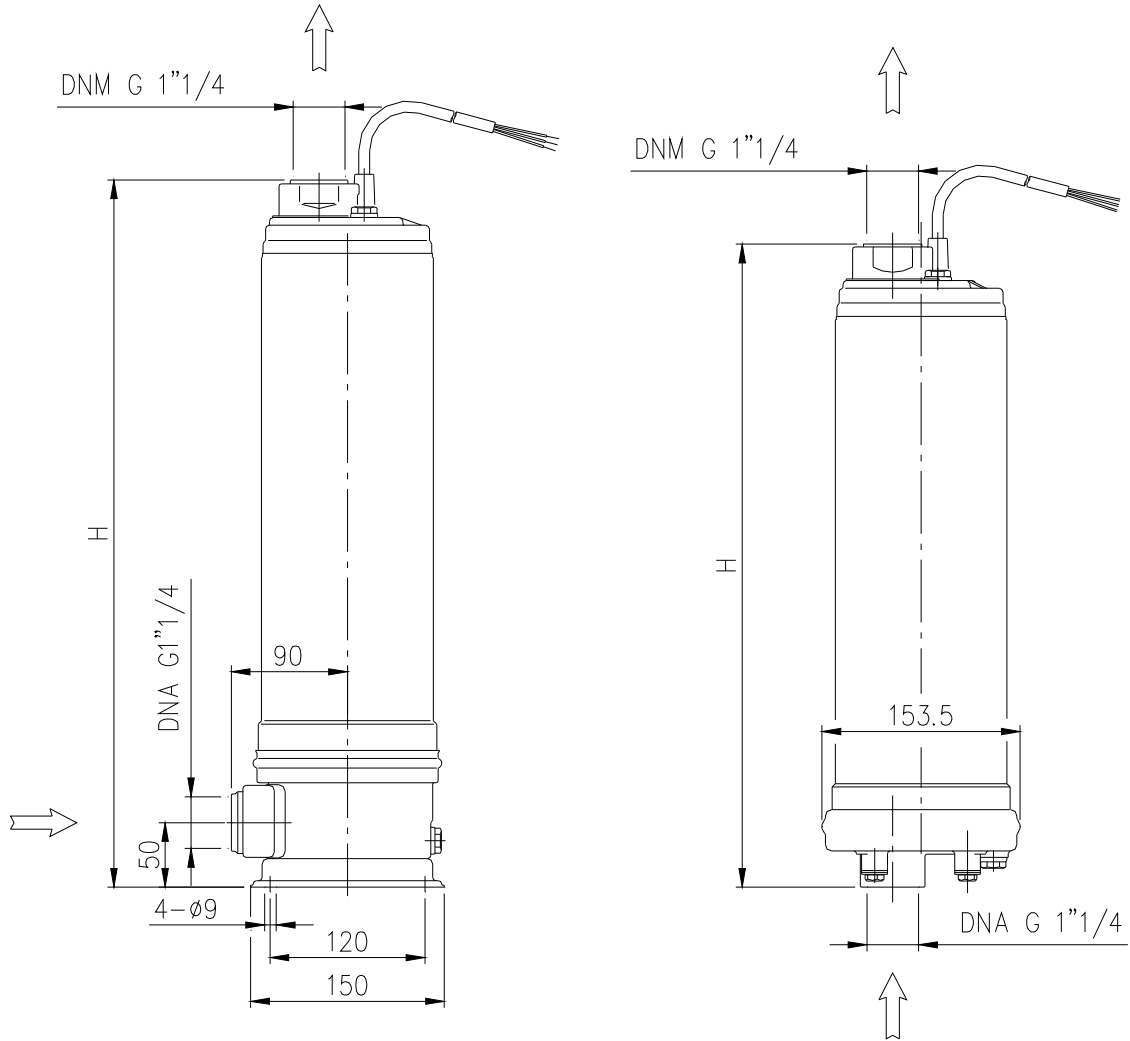


| REF | PART NAME | MATERIAL Standard version (MULTIGO) |
|-----|-----------------|---|
| A | Rubber seat | NBR |
| B | Stationary ring | Cearmic |
| C | Rotary ring | Carbon |
| D | Rotary seal | NBR |
| E | Coil spring | AISI 304 |
| F | Seal cover | AISI 304 |
| G | Rubber seat | NBR |
| H | Stationary ring | Ceramic |
| I | Rotary ring | Carbon |
| L | Rotary seal | NBR |
| M | Coil spring | AISI 304 |
| N | Seal cover | AISI 304 |

BEARINGS

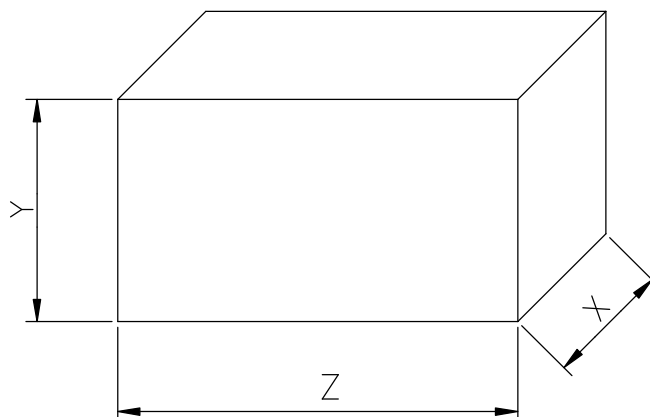
| Type pumps | | Ball Bearing | |
|----------------|---------------|--------------|----------|
| Single Phase | Three Phase | Pump side | Fan side |
| MULTIGO M40/08 | MULTIGO 40/08 | 6303 ZZ | 6202 ZZ |
| MULTIGO M40/10 | MULTIGO 40/10 | 6303 ZZ | 6202 ZZ |
| MULTIGO M40/12 | MULTIGO 40/12 | 6303 ZZ | 6202 ZZ |
| MULTIGO M40/15 | MULTIGO 40/15 | 6303 ZZ | 6202 ZZ |
| MULTIGO M80/12 | MULTIGO 80/12 | 6303 ZZ | 6202 ZZ |
| MULTIGO M80/15 | MULTIGO 80/15 | 6303 ZZ | 6202 ZZ |
| - | MULTIGO 80/20 | 6303 ZZ | 6202 ZZ |

PUMP



| Pump type | | H [mm] | H [mm] |
|----------------|---------------|------------------|-----------------|
| Single Phase | Three Phase | STANDARD VERSION | IN-LINE VERSION |
| MULTIGO M40/08 | MULTIGO 40/08 | 547 | 501 |
| MULTIGO M40/10 | MULTIGO 40/10 | 573 | 527 |
| MULTIGO M40/12 | MULTIGO 40/12 | 624 | 578 |
| MULTIGO M40/15 | MULTIGO 40/15 | 650 | 604 |
| MULTIGO M80/12 | MULTIGO 80/12 | 573 | 527 |
| MULTIGO M80/15 | MULTIGO 80/15 | 598 | 552 |
| - | MULTIGO 80/20 | 624 | - |

PACKING



| Pump type | | Packing [mm] | | | Weight [kgf] | |
|----------------|---------------|--------------|-----|-----|--------------|------|
| Single Phase | Three Phase | X | Y | Z | [1~] | [3~] |
| MULTIGO M40/08 | MULTIGO 40/08 | 200 | 200 | 320 | 15.3 | 16 |
| MULTIGO M40/10 | MULTIGO 40/10 | 200 | 200 | 320 | 16.5 | 17 |
| MULTIGO M40/12 | MULTIGO 40/12 | 200 | 200 | 700 | 17.7 | 18 |
| MULTIGO M40/15 | MULTIGO 40/15 | 200 | 200 | 700 | 18.8 | 18.7 |
| MULTIGO M80/12 | MULTIGO 80/12 | 200 | 200 | 320 | 17 | 17.4 |
| MULTIGO M80/15 | MULTIGO 80/15 | 200 | 200 | 700 | 18.2 | 18.2 |
| - | MULTIGO 80/20 | 200 | 200 | 700 | - | 19.2 |

MOTOR DATA

| Pump type | | Power | | Capacitor | | Input [kW] | | Full load current [A] | | | Locked rotor current [A] | | |
|----------------|---------------|-------|------|-------------------|------------------|--------------|-------------|-----------------------|-------------------|-------------------|--------------------------|-------------------|-------------------|
| Single Phase | Three Phase | [kW] | [HP] | Single Phase [μF] | Single Phase [V] | Single Phase | Three Phase | Single Phase 230 V | Three Phase 230 V | Three Phase 400 V | Single Phase 230 V | Three Phase 230 V | Three Phase 400 V |
| MULTIGO M40/08 | MULTIGO 40/08 | 0.6 | 0.8 | 16 | 450 | 1 | 0.95 | 4.3 | 3.3 | 1.9 | 16 | 17.3 | 10 |
| MULTIGO M40/10 | MULTIGO 40/10 | 0.75 | 1 | 20 | 450 | 1.25 | 1.18 | 5.7 | 3.8 | 2.2 | 20 | 20.8 | 12 |
| MULTIGO M40/12 | MULTIGO 40/12 | 0.9 | 1.2 | 20 | 450 | 1.42 | 1.33 | 6.8 | 4.2 | 2.4 | 23 | 24.2 | 14 |
| MULTIGO M40/15 | MULTIGO 40/15 | 1.1 | 1.5 | 31.5 | 450 | 1.6 | 1.55 | 7.3 | - | 3.0 | 25 | - | 16.5 |
| MULTIGO M80/12 | MULTIGO 80/12 | 0.9 | 1.2 | 20 | 450 | 1.33 | 1.22 | 6.4 | 4.0 | 2.3 | 23 | 24.2 | 14 |
| MULTIGO M80/15 | MULTIGO 80/15 | 1.1 | 1.5 | 31.5 | 450 | 1.62 | 1.52 | 7.5 | 5.4 | 3.1 | 25 | 28.6 | 16.5 |
| - | MULTIGO 80/20 | 1.5 | 2 | - | - | - | 1.9 | - | 6.1 | 3.5 | - | 28.6 | 16.5 |

NOISE DATA

| Pump type | | Power | | L _{pA} - dB(A) * |
|----------------|---------------|-------|------|---------------------------|
| Single Phase | Three Phase | [kW] | [HP] | |
| MULTIGO M40/08 | MULTIGO 40/08 | 0.6 | 0.8 | 58 |
| MULTIGO M40/10 | MULTIGO 40/10 | 0.75 | 1 | |
| MULTIGO M40/12 | MULTIGO 40/12 | 0.9 | 1.2 | |
| MULTIGO M40/15 | MULTIGO 40/15 | 1.1 | 1.5 | |
| MULTIGO M80/12 | MULTIGO 80/12 | 0.9 | 1.2 | 59 |
| MULTIGO M80/15 | MULTIGO 80/15 | 1.1 | 1.5 | |
| - | MULTIGO 80/20 | 1.5 | 2 | |

* Mean value of several measures at 1m distance around the pump.
Tolerance ± 2.5 dB.