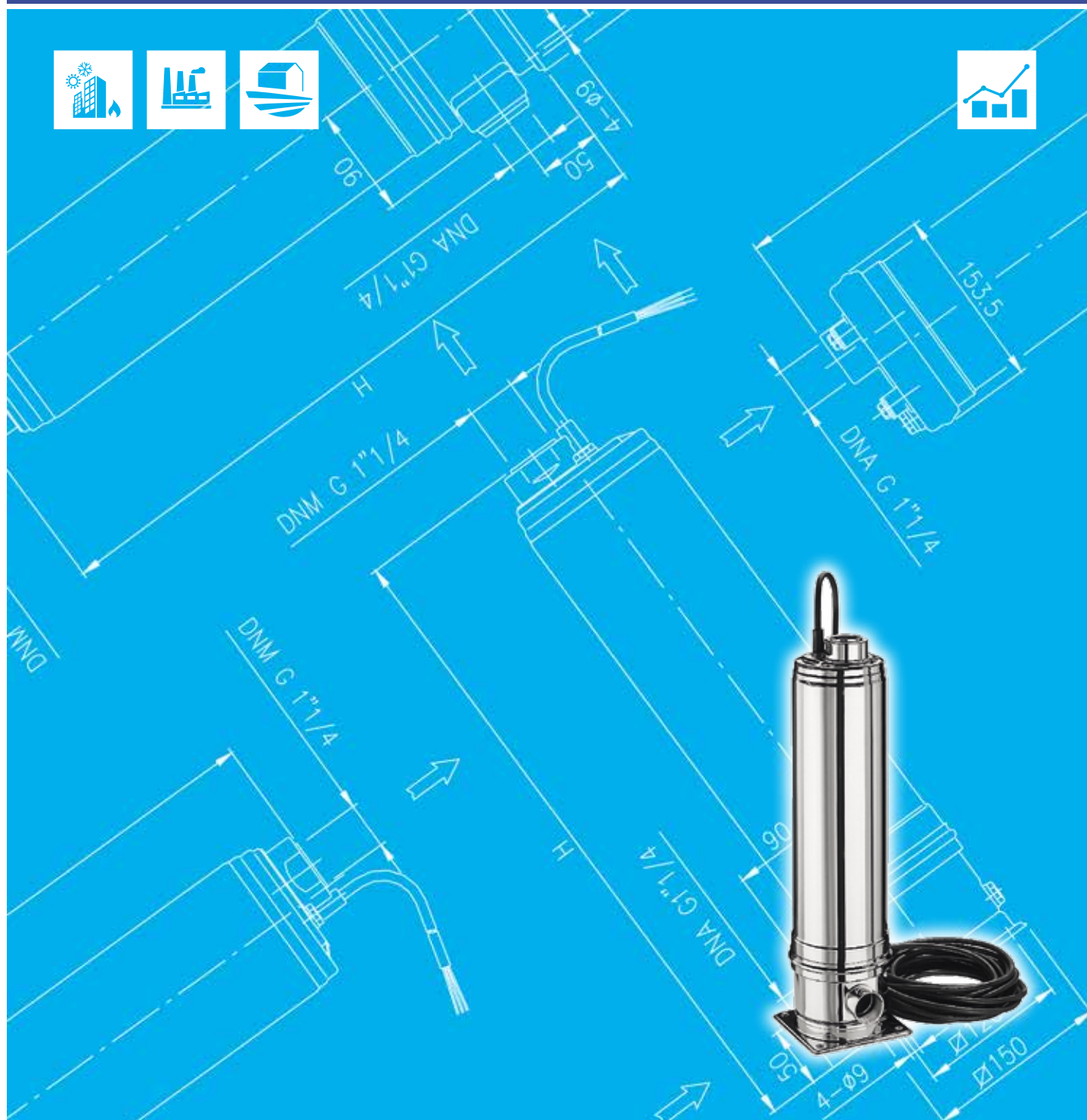




Japanese Technology since 1912

MULTIGO

Data Book 50Hz



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SPECIFICATION

50Hz

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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

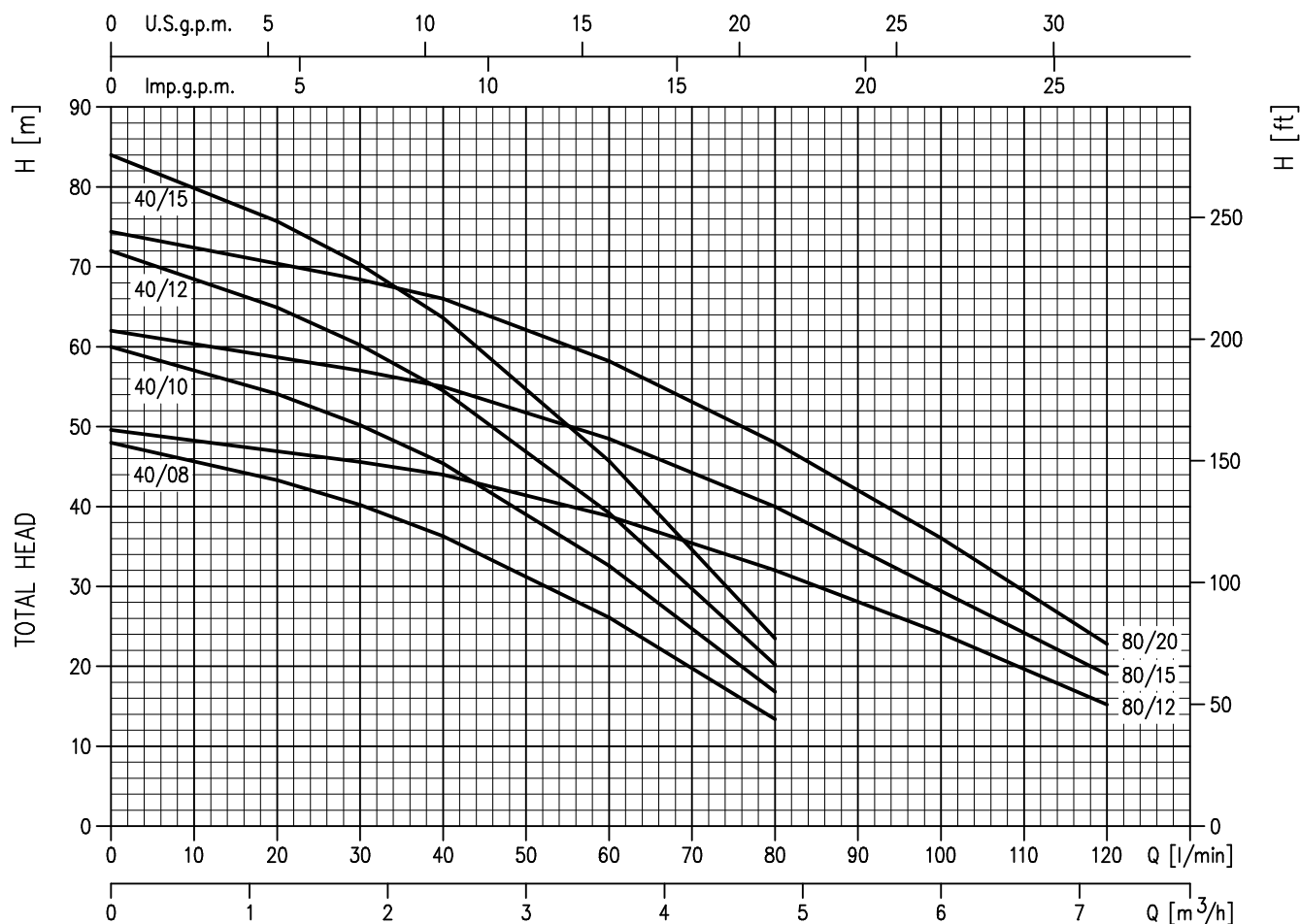
MOTOR		
Type	Submersible dry type	
	Single Phase	Three Phase
No. of Poles	2	
Rotation speed [min ⁻¹]	2800	
Insulation Class	Class F	
Protection degree (CEI EN 60034-5)	IP 68	
Power rating	[kW]	0.6 ÷ 1.1
	[HP]	0.8 ÷ 1.5
Frequency	[Hz]	50
	[V]	230 ±10%
Voltage	230/400 ±10%	
Capacitor	Built in	-
Over load 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

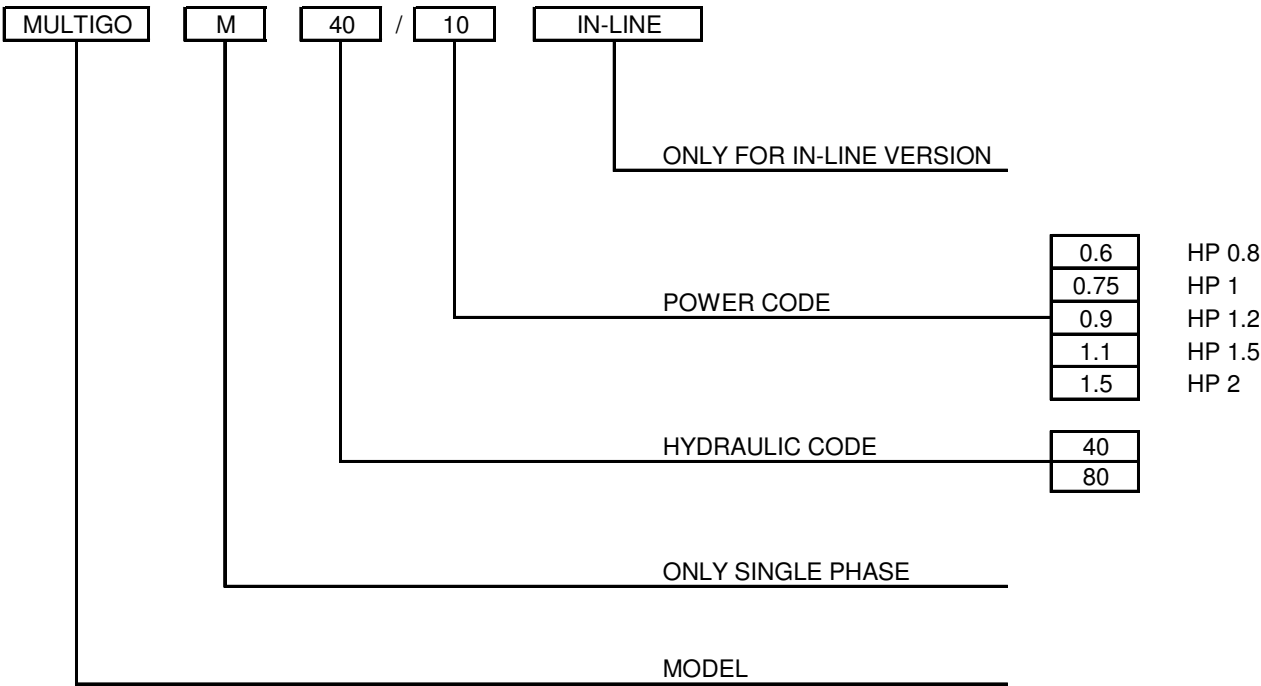
Rev. J



Pump type		Power		Q=Capacity								
				l/min	0	20	30	40	60	80	100	120
Single Phase	Three Phase	[kW]	[HP]	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:

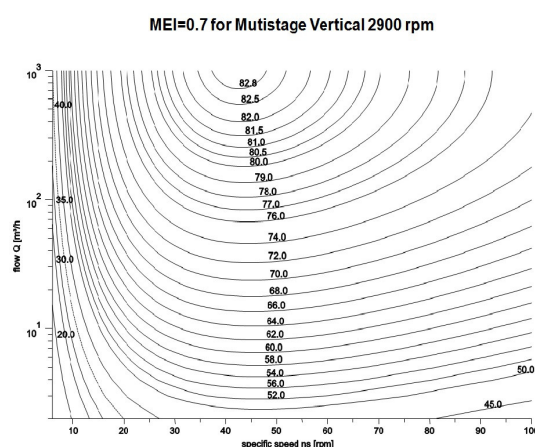
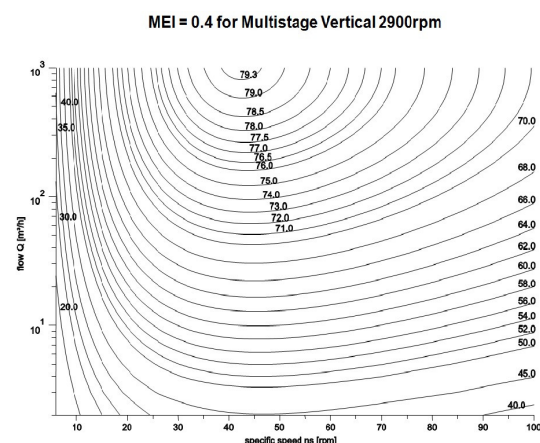
- Q = volume flow rate
- H = total head
- P_2 = pump power input (shaft power)
- η = pump efficiency
- NPSH = net positive suction head required by the pump
- MEI = minimum efficiency index

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.

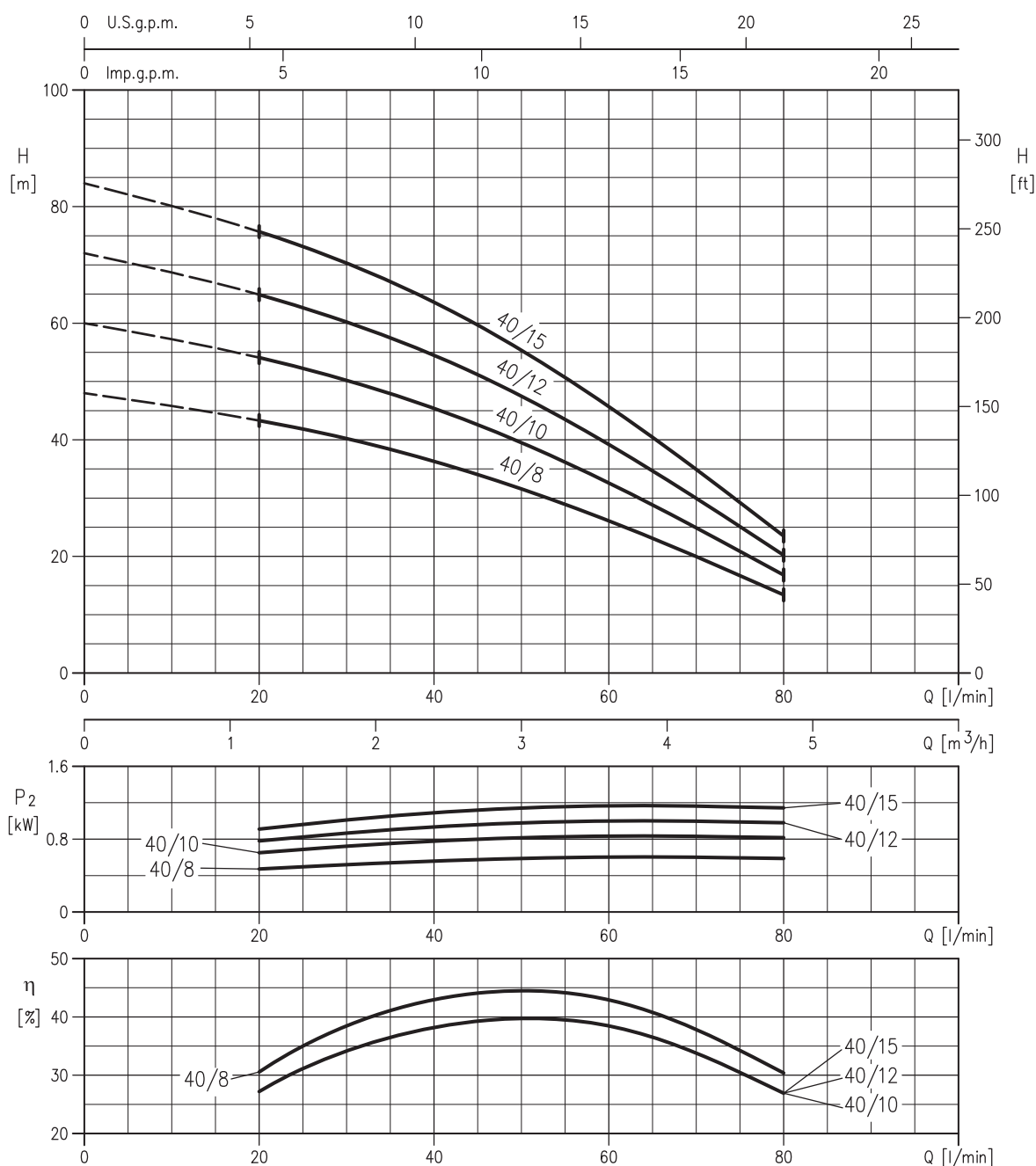
The benchmark for most efficient water pumps is $MEI \geq 0,70$. Information on benchmark efficiency is Available at: www.ebara-europe.com

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

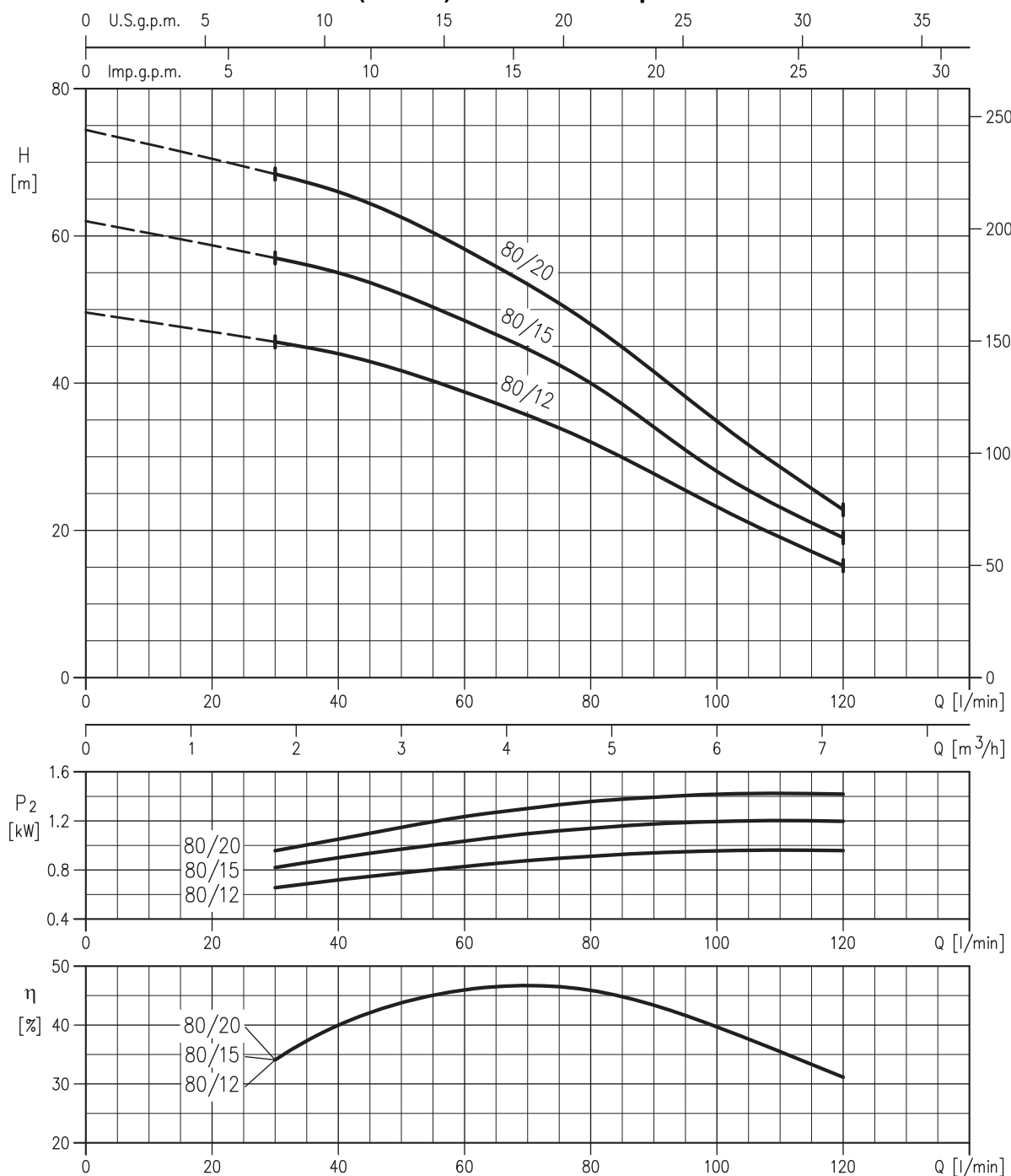


Rotation speed $\approx 2800 \text{ min}^{-1}$
 Test fluid: clean water at 20°C
 Test standard: ISO 9906 – Annex A

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

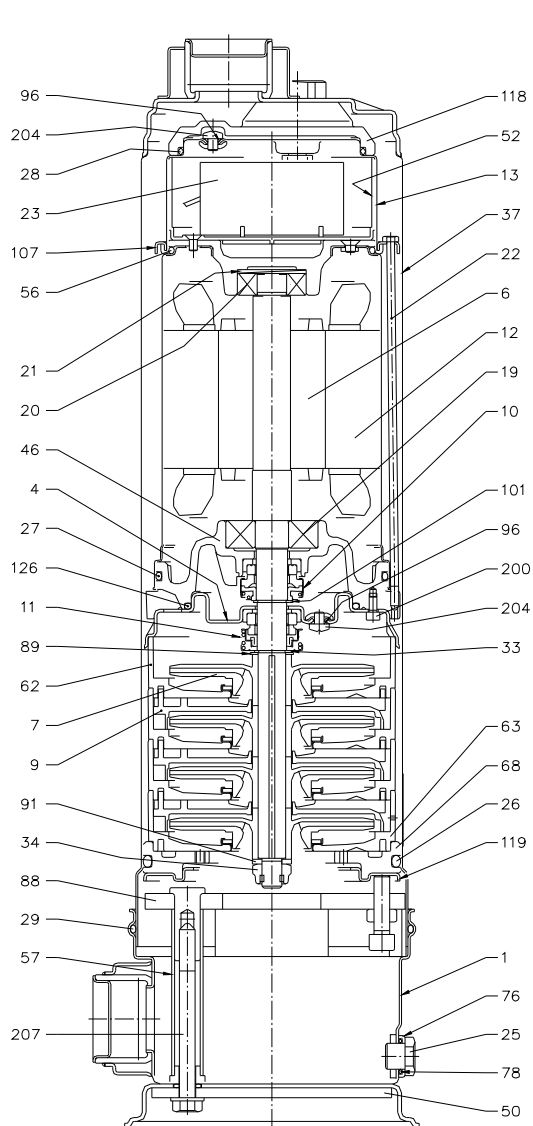
MULTIGO 80/15 (1.1 kW) MEI > 0.70 - Impeller diameter = 102

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

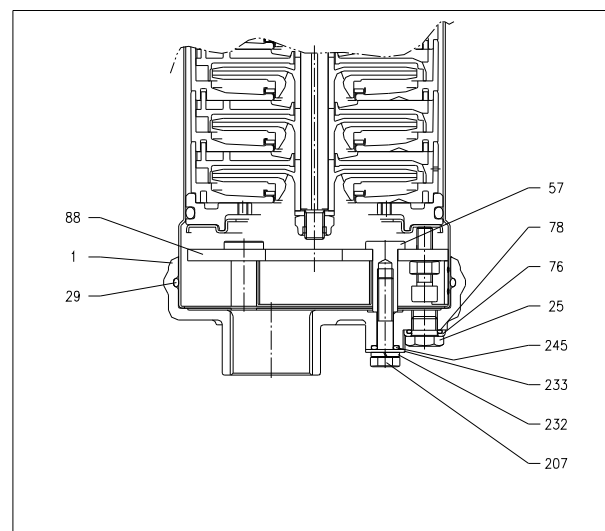
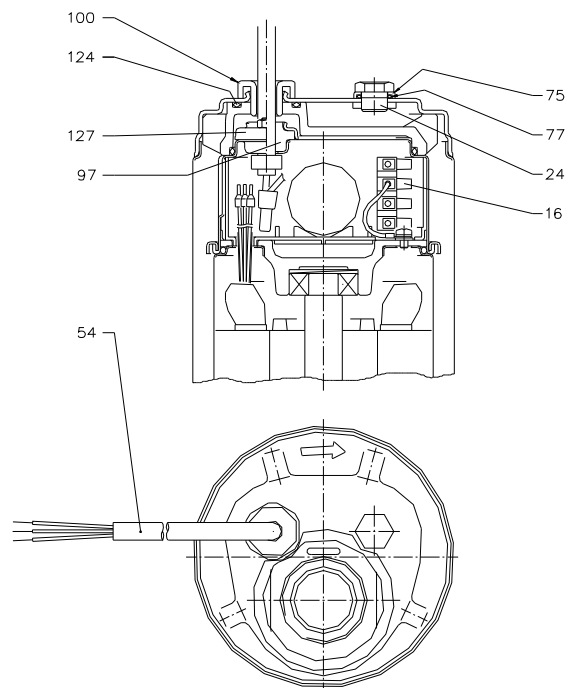


Rotation speed $\approx 2800 \text{ min}^{-1}$
 Test fluid: clean water at 20°C
 Test standard: ISO 9906 – Annex A

SECTIONAL VIEW



STANDARD VERSION



IN-LINE VERSION

CONSTRUCTION

50Hz

Rev. J

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

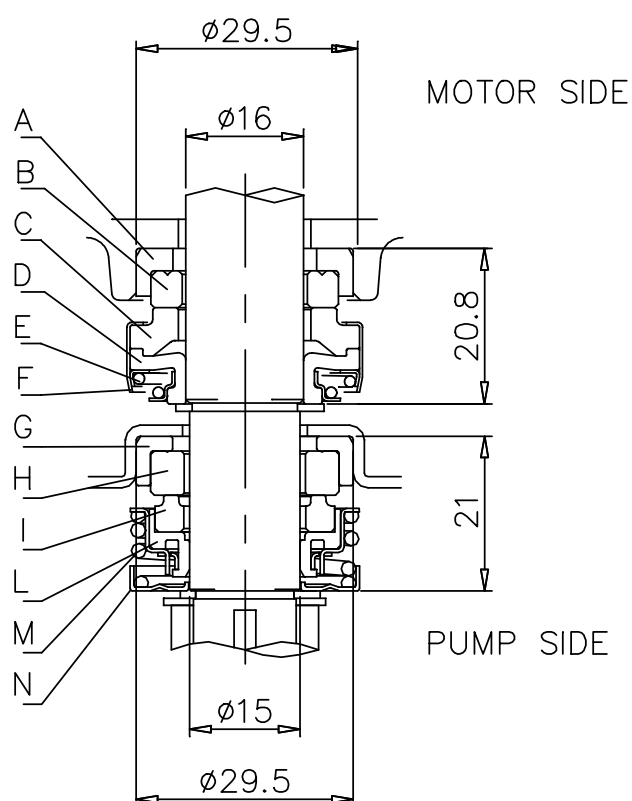
[2] See constructions mechanical seal page 303

[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

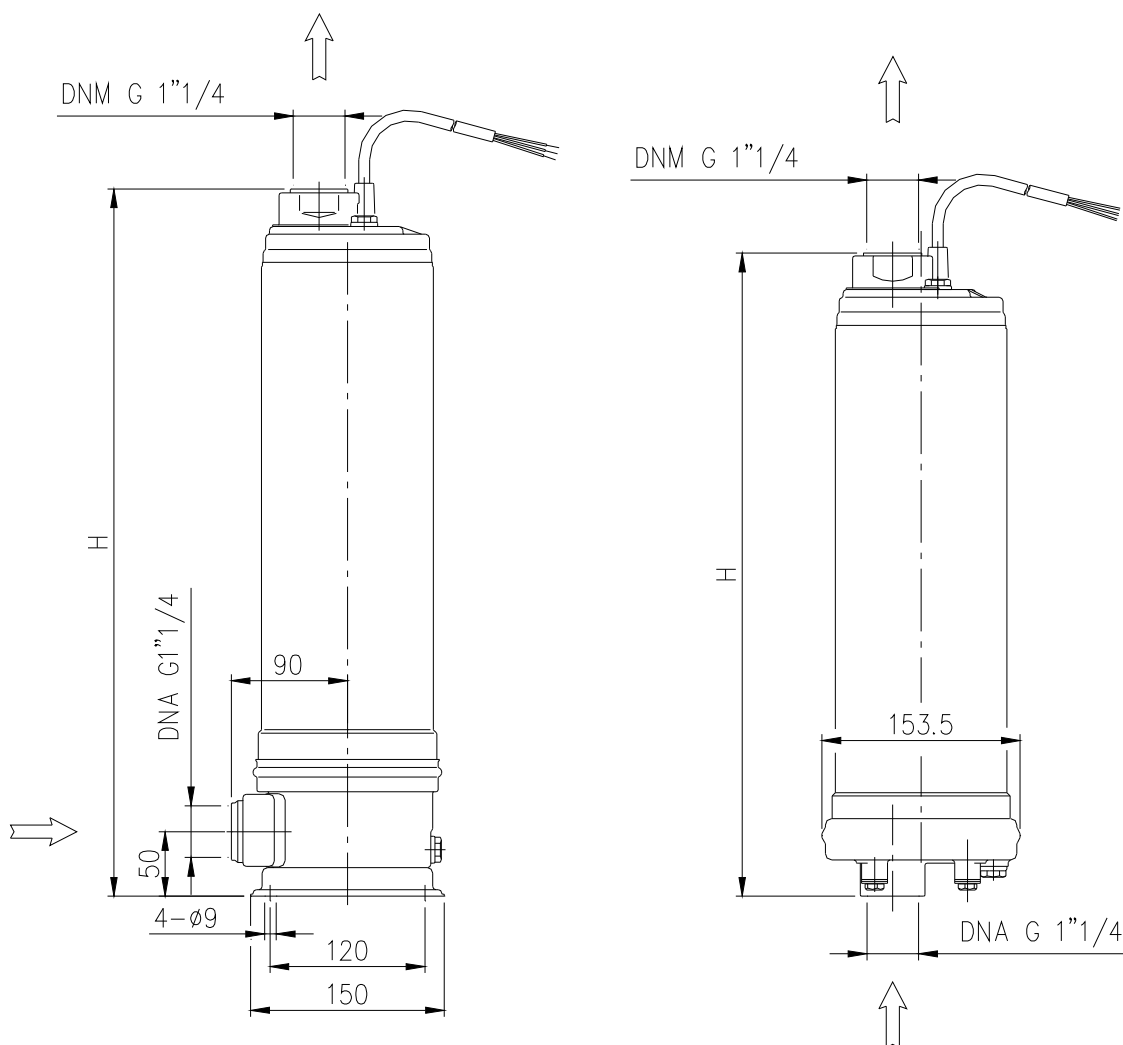


REF	PART NAME	MATERIAL Standard version (MULTIGO)
A	Rubber seat	NBR
B	Stationary ring	Cearmic
C	Rotary ring	Carbon
D	Rotary seal	NBR
E	Coil spring	AISI 304
F	Seal cover	AISI 304
G	Rubber seat	NBR
H	Stationary ring	Ceramic
I	Rotary ring	Carbon
L	Rotary seal	NBR
M	Coil spring	AISI 304
N	Seal cover	AISI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

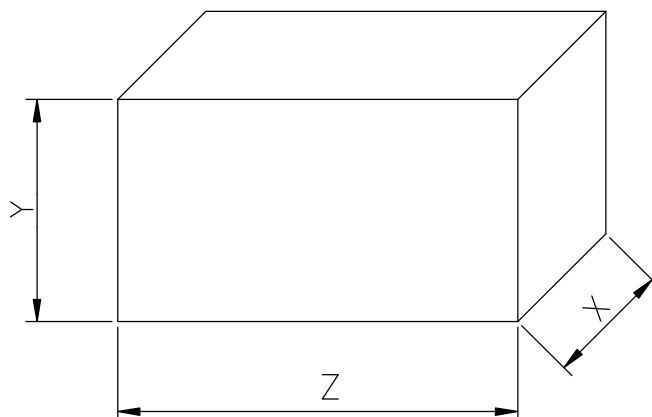
BEARINGS

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	552	501
MULTIGO M40/10	MULTIGO 40/10	578	527
MULTIGO M40/12	MULTIGO 40/12	629	578
MULTIGO M40/15	MULTIGO 40/15	655	604
MULTIGO M80/12	MULTIGO 80/12	578	527
MULTIGO M80/15	MULTIGO 80/15	603	552
-	MULTIGO 80/20	629	-

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.