

FIRE PUMPS SET / NON – UL LISTED

Q	=	500 GPM	@	7 BAR = ELECTRIC DRIVEN PUMP
Q	=	500 GPM	@	7 BAR = DIESEL FIRE PUMP
Q	=	50 GPM	@	7.5 BAR = JOCKEY PUMP

PUMP OFFERED :

ONE COMPLETE PRE- ASSEMBLED FIRE PUMP SET, CONSISTING OF THE FOLLOWING :

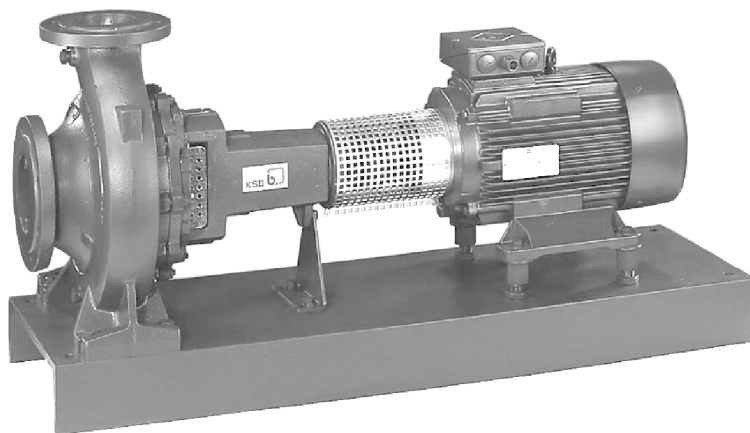
- ONE MAIN ELECTRIC DRIVEN PUMP, **KSB Water Pump** MODEL : **ETA 65-200** , HORIZONTAL END SUCTION, CENTRIFUGAL PUMP, COUPLED WITH **TEFC** , ELECTRIC MOTOR, 3500 RPM, **50 HP** , 380V/3PH/60HZ a e a Tw ear warra t E ert e
- ONE DIESEL ENGINE DRIVEN PUMP, **KSB Water Pump** , MODEL : **ETA 65-250**, HORIZONTAL END SUCTION , CENTRIFUGAL PUMP COUPLED WT T P WE A IESEL ENGINE **5 HP**, DIESEL ENGINE
- JOCKEY PUMP, **KSB Water Pump** , MODEL : **Movetic V10-6** , **5.5 HP** , VERTICAL MULTISTAGE IN – LINE CENTRIFUGAL PUMP
- CONTROL PANEL TO OPERATE THE ABOVE FIRE PUMPS SET .
- S VALVES & BATTERY CHARGER IN THE CONTROL PANEL

THE ABOVE FIRE PUMPS WILL BE DELIVERED PRE – ASSEMBLED ON ONE COMMON STEEL BASE FRAME INCLUDING ALL NECESSARY VALVES, PRESSURE SWITCH , PRESSURE GAUGE, MANIFOLDS .

ELECTRIC DRIVEN FIRE PUMP

(**Non – UL Listed**)

MANUFACTURER	KSB Water Pump
TYPE	HORIZONTAL END SUCTION
MODEL	ETA 65-200
RATED FLOW CAPACITY	500 GPM
RATED DYNAMIC HEAD	7 BAR
ELECTRIC MOTOR DATA	
MANUFACTURER	ELECTRIC MOTOR
RATED POWER	50 HP
RATED SPEED	3500 RPM
VOLTAGE	380V/3PH/60HZ



Standardized Pumps

Automation products available:

- PumpExpert
- PumpDrive (MM)
- Hyamaster
- hyatronic

Fields of Application

- Water supply
- Fire-fighting systems
- Sprinkling
- Irrigation
- Drainage
- Heating
- Air-conditioning systems
- Drinking water
- Service water
- Hot water
- Cooling water
- Swimming pool water
- Sea water
- Fire-fighting water
- Brackish water
- Condensate
- Brine
- Oils
- Cleaning agents

Fluid

Pure liquids not chemically or mechanically aggressive to the pump materials.

Operating Data

Q up to 1900 m³/h, (528 l/s)
H up to 102 m
t -30 °C to +140 °C
p₂ up to 16 bar ¹⁾

¹⁾ see pressure/temperature limits, page 5

Design

Horizontal volute casing pump, single-stage (pump size 125-200/2 two-stage), with power ratings and main dimensions to EN 733 up to DN 200 / extension Etanorm-R, with bearing bracket, in back pull-out design.

Shaft with replaceable shaft sleeve/shaft protecting sleeve in the shaft seal area.

Volute casing and impeller with replaceable wear rings.

Volute casing with integrally cast pump feet.

Bearings

Deep-groove ball bearings, grease-lubricated.

Shaft Seal

Mechanical seal to EN 12756 (Standard for Etanorm, for Etanorm-R as option) or gland packing.

Designation

EN(-R) 40 - 160 [43 (6238) G 10^{*)}

Type series Etanorm _____
Pump size, e.g. _____
Actual impeller diameter - 100 mm, e.g. 143 mm
= (angular reduction of impeller vanes)
e.g. actual diameter 162/138 mm = _____
Casing material, e.g. JL 1040 ²⁾ _____
Shaft seal, e.g. mechanical seal Q₁ Q₁ X4GG _____
²⁾ to EN 1561 = GJL-250
^{*)} for Etanorm only

Accessories

Drive

Surface-cooled KSB-IEC three-phase squirrel cage motor

Winding: up to 2.2 kW: 220-240 V/380-420 V
3 kW and above: 380-420 V/660-725 V

Design: IMB 3

Enclosure: IP 55

Thermal class: F with temperature sensors: 3 PTC resistors

Operating mode: continuous operation S1
or

surface-cooled three-phase squirrel cage motor as described above, but West European brand to KSB's choice.

Coupling

Flexible coupling with/without spacer sleeve.

Contact Guard

Coupling guard as per EN 294.

Baseplate

Sectional steel / folded steel plate, fabricated sectional steel for the complete unit (pump and motor) in torsion-resistant design.

Certification

Certified quality management ISO 9001.

Materials

	Etanorm G / Etanorm-RG	Etanorm-R GC1	Etanorm M	Etanorm-RM	Etanorm B
Volute casing	Grey cast iron JL 1040 ¹⁾		Grey cast iron JL 1040 ¹⁾		Tin bronze CC 480 K-GS ³⁾
Discharge cover	Grey cast iron JL 1040 ¹⁾		Grey cast iron JL 1040 ¹⁾		Tin bronze CC 480 K-GS ³⁾
Impeller	Grey cast iron JL 1040 ¹⁾	1.4408	Tin bronze CC 480 K-GS ³⁾		Tin bronze CC 480 K-GS ³⁾
Spaltringe	Grey cast iron GG	1.4408	Grey cast iron/Bleibronze GG/G-CuPb10Sn		Leaded bronze CC 495 K-GS ³⁾
Shaft	Tempering steel C45		Tempering steel C45		Chrome nickel molybdenum steel 1.4462
Shaft sleeve	Chrome nickel molybdenum steel 1.4571	1.4122	Chrome nickel molybdenum steel 1.4571	1.4122	Chrome nickel molybdenum steel 1.4571
Shaft protection sleeve	Chrome nickel molybdenum steel 1.4122		Chrome nickel molybdenum steel 1.4122		Chrome nickel molybdenum steel 1.4571
Bearing bracket	Grey cast iron JL 1040 ¹⁾		Grey cast iron JL 1040 ¹⁾		Grey cast iron JL 1040 ¹⁾

	Etanorm S	Etanorm-RS	Etanorm C
Volute casing	Nodular cast iron JS 1025 ²⁾		Cast chrome nickel molybdenum steel 1.4408
Discharge cover	Nodular cast iron JS 1025 ²⁾		Cast chrome nickel molybdenum steel 1.4408
Impeller	Grey cast iron JL 1040 ¹⁾		Cast chrome nickel molybdenum steel 1.4408
Wear rings	Grey cast iron GG		Cast chrome nickel molybdenum steel 1.4408
Shaft	Tepering steel C45		Chrome nickel molybdenum steel 1.4462
Shaft sleeve	Chrome nickel molybdenum steel 1.4571	1.4122	Chrome nickel molybdenum steel 1.4571
Shaft protection sleeve	Chrome nickel molybdenum steel 1.4122		Chrome nickel molybdenum steel 1.4571
Bearing bracket	Grey cast iron JL 1040 ¹⁾		Grey cast iron JL 1040 ¹⁾

- 1) to EN 1561 = GJL-250
2) to EN 1563 = GJS-400-18-LT
3) to EN 1982

Benefits at a Glance

Large material selection
Grey cast iron, tin bronze, nodular cast iron, cast chrome nickel molybdenum steel

Pressure jacket designed for 16 bar to guarantee high operating reliability

Connecting dimensions and power ratings to EN 733 (Etanorm)

Wear rings service-friendly

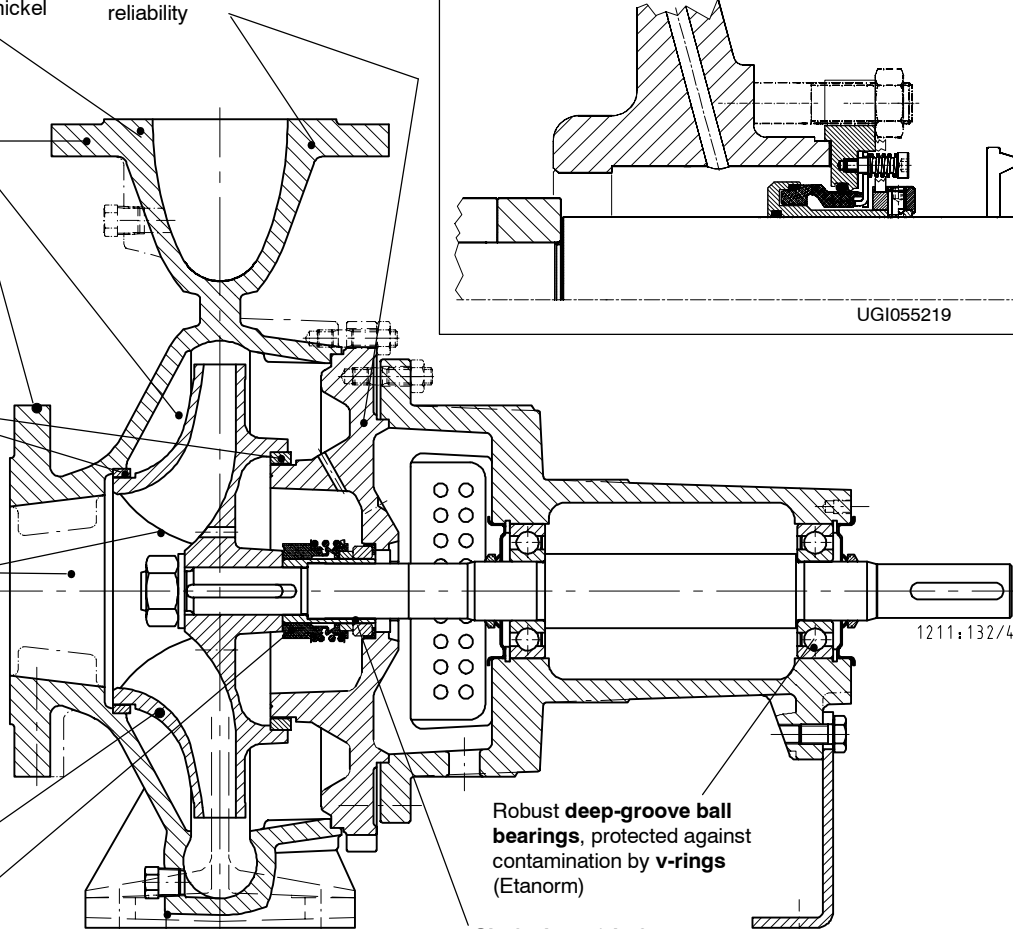
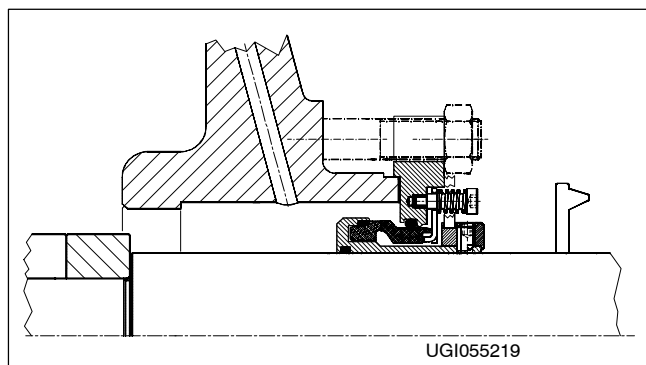
Suction geometry designed for max. suction capacity (NPSH) and optimal cavitation behaviour

Impeller with optimized hydraulics, excellent efficiencies and fine graduation of the QH-performance chart

Mechanical seal or gland packing, uncooled

Back pull-out design: easy dismantling, the casing may remain in the pipeline when the pump is dismantled

Type: Etanorm-R



Robust deep-groove ball bearings, protected against contamination by v-rings (Etanorm)

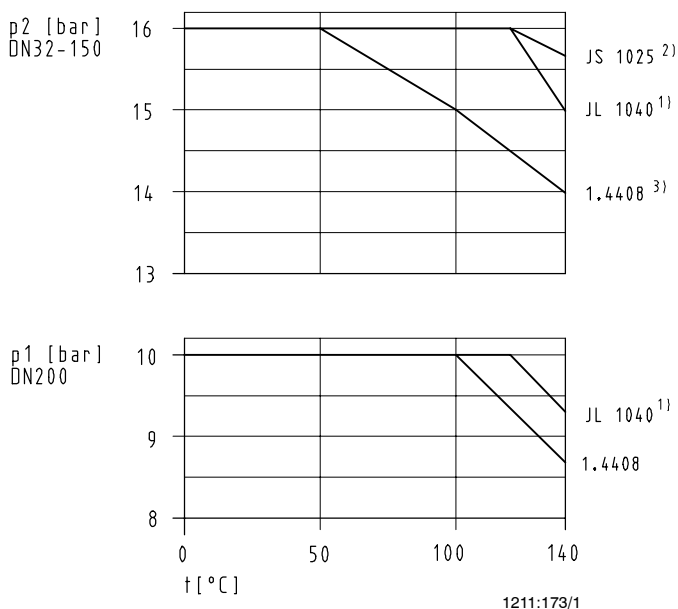
Shaft sleeve/shaft protecting sleeve prevents wear on the shaft

Pressure and Temperature Limits

Etanorm/ Etanorm-R	Product temperature 1)4)	Discharge pressure p_2 2)	Test pressure 3)	
			Etanorm	Etanorm-R
G	-30 °C up to + 140 °C		up to 21 bar	up to 15 bar
M	-30 °C up to + 140 °C		up to 21 bar	up to 15 bar
S	-30 °C up to + 140 °C 5)		up to 25 bar	up to 24 bar
B	-30 °C up to + 140 °C	10 bar	up to 13 bar	--
C	-30 °C up to + 140 °C 5)		up to 21 bar	--

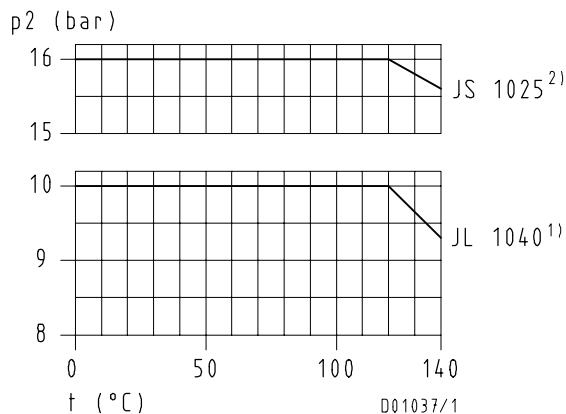
- 1) For hot water heating systems to DIN 4752, section 4.5, application limits must be observed.
- 2) The sum of inlet pressure and shut-off head must not exceed the values shown in the diagram.
- 3) The casing components are checked for leakage by means of an internal pressure test to AN 1897/75-03 D00 with water.
- 4) For product temperatures > 140 °C, Etanorm SYN shall be used.
- 5) See diagram

Pressure/Temperature Diagram for Flanges to EN 1092-1 and EN 1092-2



Etanorm-R

all size



Availability of pump sizes in the individual material variants

Pump size	Etanorm				
	G	M	S	B	C
32-125.1	X	X	X	X	-
32-160.1	X	X	X	X	X
32-200.1	X	X	X	X	X
32-250.1	X	X	-	-	X
32-125	X	X	X	X	X
32-160	X	X	X	X	X
32-200	X	X	X	X	X
32-250	X	X	X	X	X
40-125	X	X	-	-	X
40-160	X	X	X	X	X
40-200	X	X	X	X	X
40-250	X	X	X	X	X
40-315	X	X	X	-	X
50-125	X	X	-	-	X
50-160	X	X	X	X	X
50-200	X	X	X	X	X
50-250	X	X	X	X	X
50-315	X	X	X	-	X
65-125	X	X	-	-	X
65-160	X	X	X	X	X
65-200	X	X	X	X	X
65-250	X	X	X	X	X
65-315	X	X	X	-	X
80-160	X	X	X	X	X
80-200	X	X	X	X	X
80-250	X	X	X	X	X
80-315	X	X	X	X	X
80-400	X	X	-	-	X
100-160	X	X	X	X	X
100-200	X	X	X	X	X
100-250	X	X	X	X	X
100-315	X	X	X	X	X
100-400	X	X	-	-	X
125-200	X	X	X	X	X
125-250	X	X	X	X	X
125-315	X	X	X	X	X
125-400	X	X	X	-	X
150-200	X	X	-	-	X
150-250	X	X	-	X	X
150-315	X	X	X	X	X
150-400	X	X	X	X	X

Pump size	Etanorm-R			
	G	GC1	M	S
125-500/2	X	X	X	X
150-500.1	X	X	X	X
200-250	X	X	X	X
200-260	X	X	X	X
200-330	X	X	X	X
200-400	X	X	X	X
200-500	X	X	X	X
250-300	X	X	X	X
250-330	X	X	X	X
250-400	X	X	X	X
250-500	X	X	X	X
300-340	X	X	X	X
300-360	X	X	X	X
300-400	X	X	X	X
300-500	X	X	X	X

- 1) to EN 1561 = GJL-250
- 2) to EN 1563 = GJS-400-18-LT
- 3) only DN 65-150; DN 32-50 16 bar

Etanorm

Recommended Spare Parts Stock for 2 Years' Continuous Operation as per DIN 24 296

Part No.	Description	Number of pumps (including stand-by pumps)							
		2	3	4	5	6 and 7	8 and 9	10 and more	
Pumps with mechanical seals:		Quantity of spare parts							
210	Shaft	1	1	1	2	2	2	20 %	
230	Impeller (including Casing wear ring 502.2)	1	1	1	2	2	2	20 %	
321	Deep-groove ball bearing	2	2	4	4	6	8	100 %	
330	Bearing bracket	-	-	-	-	-	1	2 off	
412	O-ring	4	6	8	8	9	10	100 %	
433	Mechanical seal	1	1	2	2	2	3	25 %	
502.1/2	Casing wear ring	2	2	2	3	3	4	50%	
523	Shaft sleeve	1	1	2	2	2	3	25 %	
---	Gaskets (set)	4	6	8	8	9	12	150 %	
---	Torque-transmitting coupling elements (set)	1	1	2	2	3	4	30 %	
Pump with gland packing									
461	Gland packing (set)	} instead of parts 412, 433, 523	4	4	6	6	6	8	100 %
524	Shaft protecting sleeve		2	2	2	3	3	4	50 %

Etanorm-R

Recommended Spare Parts Stock for 2 Years' Continuous Operation as per DIN 24 296

Part No.	Description	Number of pumps (including stand-by pumps)							
		2	3	4	5	6 and 7	8 and 9	10 and more	
Pumps with mechanical seals:		Quantity of spare parts							
171	Diffuser ¹⁾	1	1	1	2	2	2	20 %	
210	Shaft	1	1	1	2	2	2	20 %	
230	Impeller ²⁾	1	1	1	2	2	2	20 %	
321	Deep-groove ball bearing	2	2	4	4	4	6	50 %	
330	Bearing bracket	-	-	-	-	-	1	2 off	
400./...	Gaskets (set)	4	6	8	8	9	12	150 %	
412	O-ring ¹⁾	4	6	8	8	9	12	150 %	
433	Mechanical seal	1	1	2	2	2	3	25 %	
456	Neck bush	1	1	2	2	2	3	30 %	
500.1	Ring	4	4	8	8	8	12	100 %	
500.3	Ring	1	1	2	2	2	3	25 %	
502.1/.2	Casing wear ring	2	2	2	3	3	4	50 %	
523	Shaft sleeve	2	2	2	3	3	4	50 %	
525	Spacer sleeve ¹⁾	1	1	1	2	2	2	20 %	
---	Torque-transmitting coupling elements (set)	1	1	2	2	3	4	30 %	
Pump with gland packing									
461	Gland packing (set)	} instead of parts 400.3, 433, 500.3, 523	4	4	6	6	6	8	180 %
524	Shaft protecting sleeve		2	2	2	3	3	4	50 %

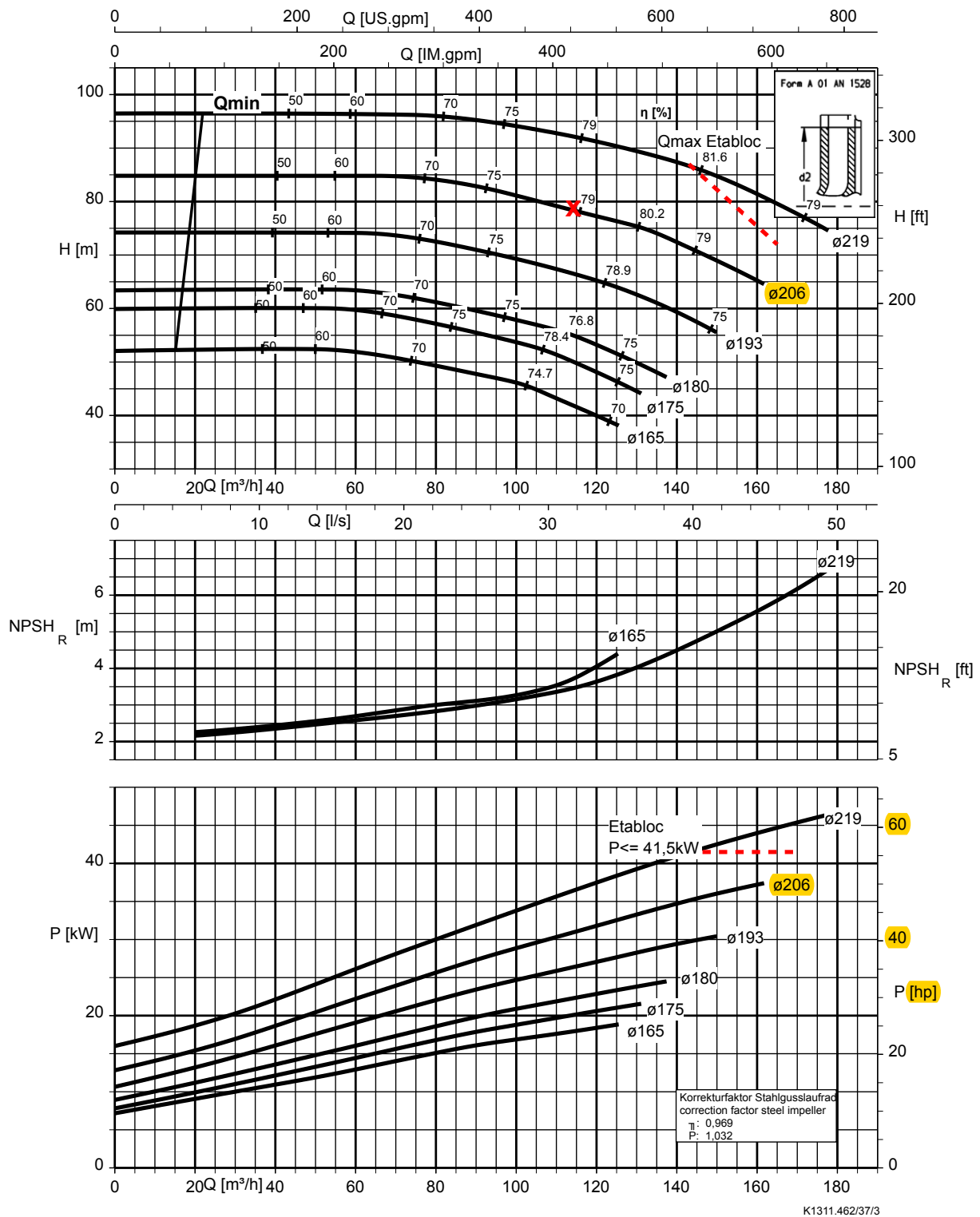
1) for Etanorm-R 125-500/2 only

2) double quantity for Etanorm-R 125-500/2



Etanorm 080-065-200, n = 3500 rpm

Etanorm SYT, Etabloc, Etabloc SYT



JM-D-SERIES CAST IRON THREE PHASE ASYMCHRONOUS MOTOR



JM-D series cast iron three-phase asynchronous motor

DESCRIPTION

JM-D-series cast iron motors in strict conformity to the IEC standard have been lately developed with our own design. D-series cast iron motors are defined as totally enclosed, fan cooled, squirrel cage type and has a lot of advantages such as novel design, beautiful modeling, light weight, low noise, high efficiency and large torque. The frames, end shields and terminal boxes are made of cast iron-alloy. The structure of the motors is very compact. Various mounting mode such as top terminal boxes, right terminal boxes, left terminal boxes and vertical are available for these motors. Compared with the fellow products, these motors have a unique characteristic as easy serving. They are adopted with F class insulation and design with assessing method for insulation system according to international practice. The protection degree reaches IP55, so that it greatly enhances motor's safety and reliability. Therefore, these motors have reached an international advanced level of such kind of products. D-series motors can be widely used as driving equipments of various machineries, such as machine tools, reducer's compressors, blowers, light industry and food processing.



Property and Features:

JM-D- Series motor is 3-phase cage induction motor, which is basic series for general uses. This series can meet requirements for general uses at home and abroad with frame range 80-315 and it's a new product with the rational unified design

JM-D- series has the advantages of high efficiency, energy saving, fine operation performance, small vibration, low noise, long service life, high reliability, convenient maintenance, big break away torque, Fixing measurement and power grade completely conform to IEC standard. It employs Grade F insulation, IP55 class for shell protection and IC411 cooling mode. The rated voltage and frequency of JM-D series are respectively 220V, 380V, 460V, 660V and 60Hz. JM-D-series motor is commonly applied in machinery and equipment without special requirements, such as agricultural machinery, food machinery, fan, agitator and air compressor, etc.

TECHNICAL DATA

Model	Rated Output		Full Load				Ist/In	TM/IN	Kgm2	Net weight (Kg)
			Rpm	Current (A)	Eff.(%)	Power factor (Cos E)				
	KW	HP			380/660	D				
380 / 660V 60Hz Synchronous Speed 3500 r/min (2poles)										
631-2	0.18	0.25	3500	0.53/0.29	65	0.80	5.5	2.2	0.00018	12
632-2	0.25	0.34		0.69/0.39	68	0.81			0.00019	13
711-2	0.37	0.5	3450	0.99 /0.45	70	0.81	6.1		0.00030	14
712-2	0.55	0.75		1.40 / 0.85	73	0.82			0.00035	15
801-2	0.75	1	3500	3.6 / 1.83	75	0.83	7.0		0.00075	16
802-2	1.1	1.5		2.58 / 1.9	77	0.84			0.00090	17
90S-2	1.5	2	3450	3.43 / 1.9	79		0.85		0.0012	22
90L-2	2.2	3		4.85 / 3.0	81	0.0014			25	
100L-2	3.0	4	3480	6.31 / 4.0	83	0.87	7.5		0.0029	33
112M-2	4.0	5.5	3500	8.10 / 4.5	85	0.88			0.0055	45
132S1-2	5.5	7.5	3450	11.0 / 6.5	86			0.0109	64	
132S2-2	7.5	10		14.9 / 8.0	87	0.0126		70		
160M1-2	11	15	3500	21.3 / 11.0	88	0.89		0.0377	117	
160M2-2	15	20		28.8 / 16.0	89			0.0449	125	
160L-2	18.5	25	3450	34.7 / 19.0	90		7.5		0.055	147
180M-2	22	30		42.0 / 22.0	91				0.075	180
200L1-2	30	40	3500	55.5 / 30.0	91.2			0.124	240	
200L2-2	37	50		67.9 / 38.0	92			0.139	255	
225M-2	45	60	3450	82.3 / 45.0	92.3			0.233	309	
250M-2	55	75		101 / 55	92.5			0.312	403	
280S-2	75	100	3480	134 / 70	93			0.579	544	
280M-2	90	125		160 / 85	93.8			0.675	620	
315S-2	110	150		195 / 103	94			1.18	980	
315M-2	132	180		233 / 130	94.5			1.82	1080	
315L1-2	160	220		279 / 150	94.6			2.08	1160	
315L2-2	185	250		348 / 195	94.8			2.41	1190	
355M-2	250	340		500 / 280	95.3			3.56	1760	
355L-2	315	430		544 / 300	95.6			4.16	1850	

JM-D-SERIES CAST IRON THREE PHASE ASYNCHRONOUS MOTOR

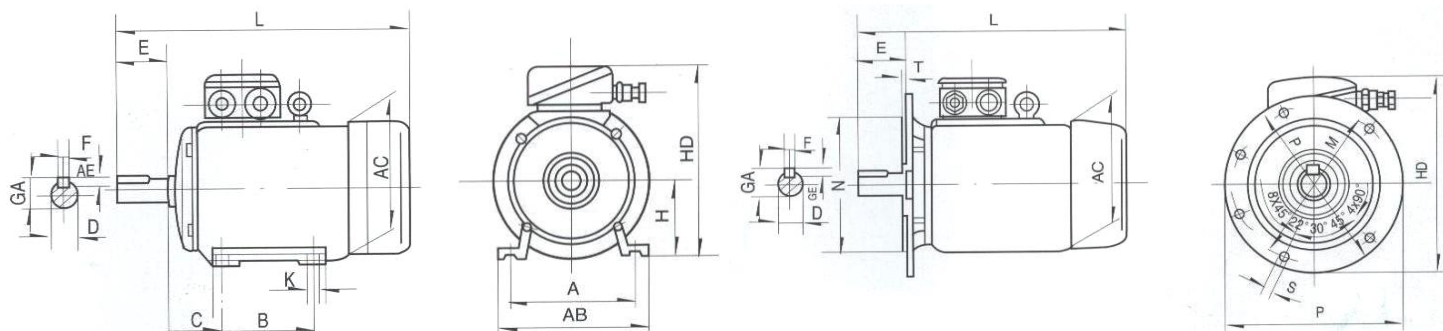


Quality

Every SEIPEE motor is thoroughly tested for performance and safety, enabling us to give all motors a full one-year warranty. Our manufacturing processes have achieved ISO 9001 and CSA accreditation, in addition to which we're BASEEFA and part-UL approved. Crompton Parkinson carries out a process of continuous improvement and implements the most up to date and effective manufacturing methods. Six Sigma techniques are used to reduce variation in products and processes. Lean Enterprise techniques are being implemented to streamline and further improve our business.

The JM-D-Type cast iron motor range covers products with outputs from as little as 0.25kW to 315kW in frame sizes D632 to D355L, in either 2,4,6 pole speeds . They are widely used as driving equipments of various machineries, such as machine tools, blowers, pumps, compressors, transporters, agricultural and processing.





Frame size	Flange No	poles	mounting dimensions																overall dimensions							
			A	A/2	B	C	D	E	F	G	H	K	M	N	P	R*	S	T	Flange holes	AB	AC	AD	HD	L	DH	
63	FF115	2, 4	110	50	80	40	11	23	4	8.5	63	7	115	95	140		10	3		135	130	70	180	230	M4X12	
71	FF130	2, 4, 6	112	56	90	45	14	30	5	11	71		130	110	160					150	145	80	195	255	M5X12	
80		4, 6, 8	125	62.5	100	50	19	40	6	15.5	80						12	3.5		165	175	145	220	295	M6X16	
90S	FF165		140	70	100	56	24	50		20	90	10	165	130	200					180	195	155	250	320	M8X19	
90L				125					8															345	M8X19	
100L	FF215		160	80	140	63	28	60		24	100		215	180	250						215	180	270	385	M10X22	
112M			190	95	140	70					112	12									230	240	190	300	400	M10X22
132S	FF265		216	108	140	89	38	80	10	33	132		265	230	300						270	275	210	345	470	M12X28
132M				178																				510	M12X28	
160M	FF300		254	127	210	108	42			12	37	160	15	300	250	350					320	330	255	422	615	M16X36
160L				254				110																670	M16X36	
180M			279	139.5	241	121	48		14	42.5	180										355	380	280	458	700	M16X36
180L			279																					740	M16X36	
200L	FF350	318	159	305	133	55		16	49	200		350	300	400					395	420	305	525	770	M20X42		
225S	FF400	4, 8			286	149	60	140	18	53		19												815	M20X42	
225M		2	256	178		311		55	110	16	49	225		400	350	450				435	470	335	574	820	M20X42	
		4, 6, 8																						845	M20X42	
250M	FF500	2	406	203	349	168	60			53										490	510	370	635	910	M20X42	
		4, 6, 8							18		250													M20X42		
2						65			58																	
4, 6, 8																										
280S	FF500	2			368							500	450	550									985	M20X42		
4, 6, 8		457	228.5		190		75	140	20	67.5	280								550	580	410	693				
2							65		18	58													1035	M20X42		
280M	FF500	4, 6, 8			419		75		20	67.5																
		2																								
2					406		65		18	58													1160	M20X42		
4, 6, 8, 10						80	170	22	71														1270			
315M	FF600	2	508	254	457	216	65	140	18	58	315		600	550	660					635	645	530	810	1190	M20X42	
		4, 6, 8, 10					80	170	22	71													1300			
2				508		65	140	18	58														1190	M20X42		
4, 6, 8, 10						80	170	22	71														1300			
355M	FF740	2					75	140	20	67.5														1500	M20X42	
		4, 6, 8, 10			560	254	95	170	25	86	355		740	680	800								1530			
355L		FF740	2	610	305		75	140	20	67.5										730	710	655	1010	1500	M20X42	
			4, 6, 8, 10			630		95	170	25	86													1530		

Note: R is the distance from the flange mounting-plane to the shaft-extension shoulder.

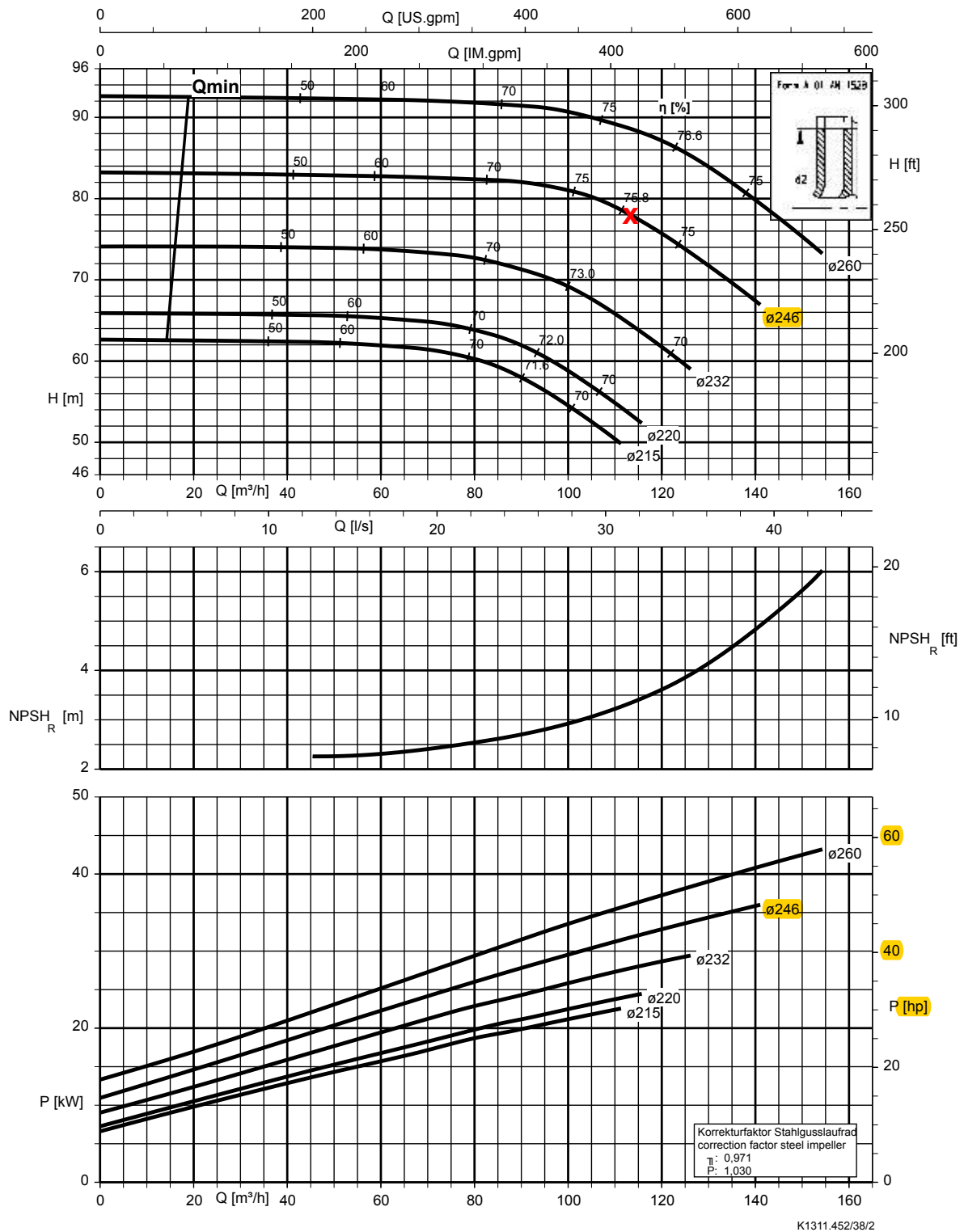
DIESEL ENGINE DRIVEN FIRE PUMP

(**Non – UL Listed**)

MANUFACTURER	KSB Water Pump
TYPE	HORIZONTAL END SUCTION
MODEL	ETETA A 65-250
RATED FLOW CAPACITY	500 GPM
RATED DYNAMIC HEAD	7 BAR
DIESEL ENGINE MOTOR DATA	
MANUFACTURER	T P wer - DIESEL ENGINE
RATED POWER	5757 HP
RATED SPEED	3000 RPM
VOLTAGE	-

Etanorm 080-065-250, $n = 2900$ rpm

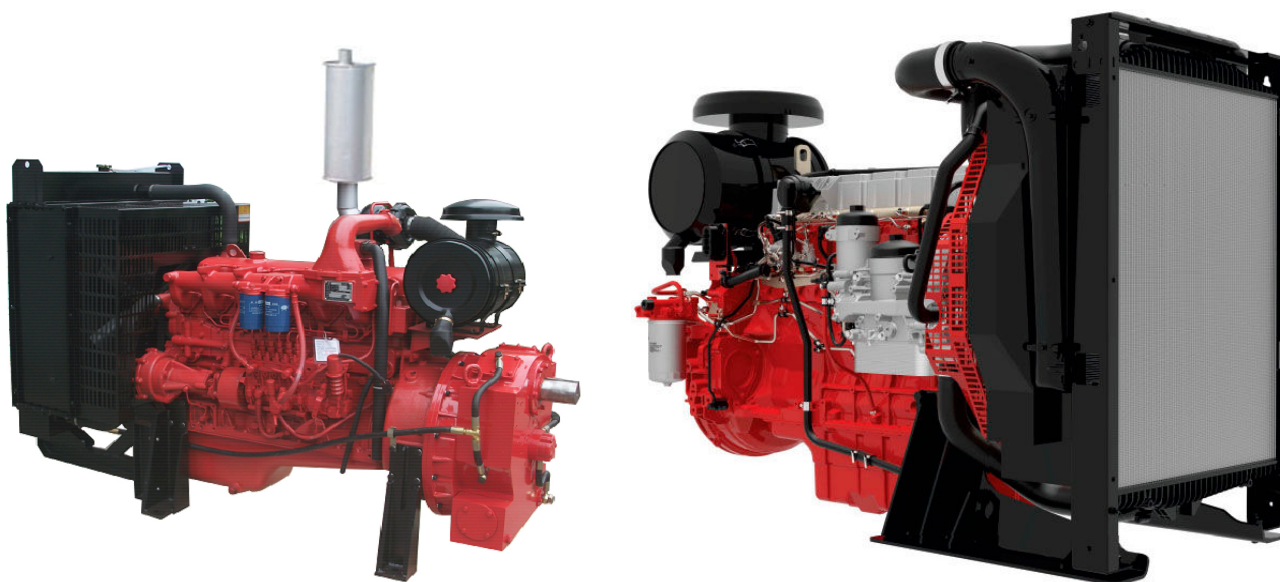
Etanorm SYT, Etabloc



DIESEL ENGINE DATASHEET

Diesel Engines

High specific power and torque, combined with high speed revolution, make the TD-type engine family the best compromise for fire fighting pumps. Their smaller dimensions and compactness make installation and maintenance easier. High quality and long service intervals reduce costs.



Engine type	TD 375	TD 380	TD 475	TD 480	TD 485	TD 490	TD 3100	TD 4100	TD 5100	TD 5170
Power (HP)	24.48	27	32.64	37.808	45	58.48	58	78	110	170
Bore - stroke	75 x 85	80 x 95	75 x 85	80 x 90	85 x 90	90 x 100	100 x 118	100 x 118	118 x 137	145 x 138
Power(KW)	18	20.5	24	27.8	32	43	42.7	57	82	124
Speed (rpm)	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
Torque (N.M.)	69.7	71.8	84	100	112	150	152	200	225	315
Weight(Kg)	160	165	185	195	200	230	280	320	425	630

Cooling Method	Cooling by water forced
Lubrication Method	Splashing under pressure
Starting method	Electric start

Your benefits

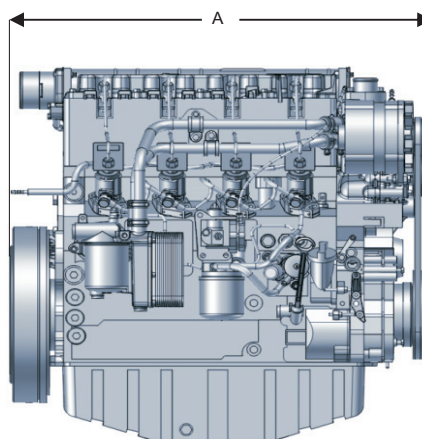
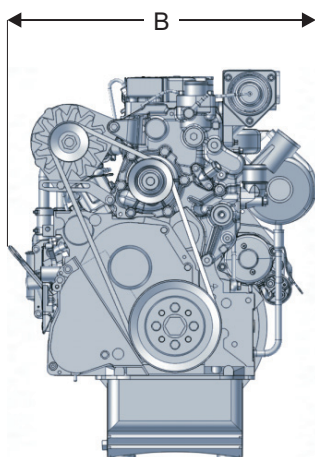
Fast and powerful response to changing operating duties, dynamic power development

Low cost for noise insulation measures, High comfort in the driver's cab because of low noise level. Low noise emission, low environmental impact

High operating economy thanks to low fuel consumption, long oil change intervals and low maintenance requirement

Low exhaust emission for a clean environment. Meets exhaust regulation (EU-RL 97/68 (Step 2) and US-EPA. Nonroad (Tier 2)

High reliability even under extreme working conditions



Engine type	Dimensions
TD 375	576 x 494 x 586
TD 380	587 x 494 x 610
TD 475	676 x 494 x 586
TD 480	687 x 494 x 610
TD 485	687 x 494 x 615

Engine type	Dimensions
TD 490	716 x 530 x 670
TD 3100	776 x 600 x 731
TD 4100	900 x 600 x 731
TD 5100	1200 x 750 x 900
TD 5170	1200 x 750 x 900

JOCKEY PUMP

MANUFACTURER	KSB Water Pump
TYPE	VERTICAL MULTISTAGE, IN – LINE
MODEL	et
RATED FLOW CAPACITY	50 GPM
RATED DYNAMIC HEAD	8.0 BAR
RATED POWER	KW
RATED SPEED	3500 RPM
VOLTAGE	380V/3PH/60HZ

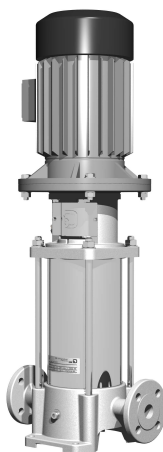
High-pressure In-line Pumps 60 Hz



Movitec VE



Movitec V



Movitec LHS

Fields of Application

Movitec VE are employed for general water supply, sprinkling, irrigation and pressure boosting duties, for warm water and cooling water recirculation. They are installed in domestic water supply systems, washing plants, water treatment and fire-fighting systems.

Movitec V(S) and **LHS** are employed for general water supply, sprinkling, irrigation and pressure boosting duties, for warm water, hot water and cooling water recirculation, and condensate transport. They are installed in boiler feed circuits, domestic water supply systems, washing plants, water treatment and filter systems. They are used for degreaser baths/alkaline cleaning baths, alkalines and oils/emulsions, as well as for fire-fighting, reverse osmosis and surface treatment applications.

Design

Multi-stage, vertical (horizontal installation on request) high-pressure centrifugal pumps, with suction and discharge nozzles of identical nominal diameters arranged opposite to each other (in-line design).

Materials

Standard variants:

VE, V: All hydraulic components are made of stainless steel AISI 304

VS, LHS: All hydraulic components are made of stainless steel AISI 316

Bearings

All V, VS and LHS pumps are supplied with tungsten carbide plain bearing at the hydraulic rotor.

Movitec VE is supplied without bearing at the hydraulic rotor.

Shaft Seal

Single-acting, uncooled mechanical seal in accordance with EN 12756.

Drive

Electric motor, 50 Hz, air-cooled, 2- and 4-pole, standard KSB motor with main dimensions to IEC. Other motor makes subject to prior consultation with KSB.

Movitec V, VS, LHS with PTC resistors from 3 kW and up.

Variants: single-phase a.c. motor, frequency-controlled drives.

Designation

Type-series	Movitec V	E	S	F	4	-	3
Movitec V							
Movitec VE (close-coupled design)							
Material variant							
Flange variant							
Pump size							
Number of stages							

Type-series	Movitec LHS	6	-	10
Pump size				
Number of stages				

Material variants:

Flange variants/connections:

blank or S, see page 3
blank = oval flange
F = round flange
V = Victaulic coupling
E = thread (male)

Operating Data

Movitec VE

Capacities	Q	up to 9.7 m ³ /h, (2.7 l/s)
Heads	H	up to 57 m
Operating pressures	p _d	up to 10 bar ¹⁾
Operating temperatures	t	-15 °C to +60 °C

Movitec V(S)

Capacities	Q	up to 90 m ³ /h, (25 l/s)
Heads	H	up to 258 m
Operating pressures	p _d	up to 25 bar ¹⁾
Operating temperatures	t	-15 °C to +120 °C

Movitec LHS

Capacities	Q	up to 8.6 m ³ /h, (2.4 l/s)
Heads	H	up to 415 m
Operating pressures	p _d	up to 40 bar ¹⁾
Operating temperatures	t	-15 °C to +120 °C

¹⁾ The sum of inlet pressure and head at zero flow point must not exceed the value stated.

Conformity Marks

CE - ATEX group II, cat. 2 and 3

Materials

Part No.	Description	Material			
		Movitec VE	Movitec V	Movitec VS	Movitec LHS
101	Pump casing	1.4308	1.4301	1.4401	1.4408
108	Stage casing	1.4301		1.4404	
160	Cover	1.4301		1.4404	
171	Diffuser	-	1.4301	1.4404	-
10-6	Pump shroud	1.4301		1.4404	
210	Shaft	1.4305		1.4401	
230	Impeller	1.4301		1.4404	
341	Motor stool	JL 1040			1.4408
412	O-ring	EPDM		VITON	
525	Spacer sleeve	1.4301		1.4404	
529	Bearing sleeve	-	Tungsten-carbide		
1)	Bearing	-	Ceramic		
890	Baseplate	JL 1040			-
905	Tie bolt	1.4057			
920	Nut	1.4301		1.4404	
932	Circlip	1.4571			

1) Rigidly connected to stage casing 108 or diffuser 171

Legend of materials

Description	Code and material no.	Standard	to ASTM
Cast iron	JL1040 / GJL-250	EN 1561	A48:40B
Nickel chrome steel	1.4301 / X5CrNi18-10	EN 10088	A276:304
Nickel chrome molybdenum steel	1.4404 / X2CrNiMo 17-12-2	EN 10088	A276:316L
Carbon nickel chromium molybdenum steel	1.4408 / GX5CrNiMo19-11-2	EN 10213	A743CF8M
Nickel chrome molybdenum steel	1.4571 / X6CrNiMoTi17-12-2	EN 10088	A276:316
Nickel chrome steel	1.4057+QT800 / X17CrNi16-2-QT800	EN 10088-3	A276:431
	1.4305 / X8CrNiS 18-9	EN 10088	A276:303
	1.4401 / X5CrNiMo 17-12-2	EN 10088	A276:316
	1.4308 / GX5CrNi 19-10	EN 10283	A743:CF8

Please note: The indication of the material designations to ASTM / AISI is not binding.

Material Codes

Mechanical seal	Description	Code letter to EN 12756	Material
	Spring-loaded ring	Q1 U3	Silicon carbide (sintered pressure less) Tungsten carbide (CrNiMo-binder)
	Seat ring	B U3	Resin-impregnated carbon graphite Tungsten carbide (CrNiMo-binder)
	Elastomer	E V X4	EPDM (Ethylene Propylene rubber) Fluorcarbon rubber (Viton) HNBR
	Spring	G	CrNiMo steel
	Other metal parts	G	CrNiMo steel
	Code number	13 14 15 16 17	Q1BEGG Q1BVGG U3U3X4GG U3U3VGG U3BVGG
			Silicon carbide/Carbon/EPDM Silicon carbide/Carbon/Viton Tungsten carbide/Tungsten carbide/HNBR Tungsten carbide/Tungsten carbide/Viton Tungsten carbide/Carbon/Viton (40 bar seal; only for Movitec LHS)

Pressure and Temperature Limits

Temperature of medium pumped t ³⁾	Flange variant / Connection	Material variant	Max. operating pressure p _s ¹⁾	Code number Mechanical seal	
				standard	optional
- 15 °C to + 60 °C	VE = thread	Movitec VE	up to 10 bar	13	-
- 15 °C to + 120 °C	V = oval flange	Movitec V Movitec VS	up to 16 bar up to 16 bar	13 14	14, 15, 16 13, 15, 16
- 15 °C to + 120 °C	VF = round flange ²⁾	Movitec VF Movitec VSF	16 up to 25 bar 16 up to 25 bar	13 14	14, 15, 16 13, 15, 16
- 15 °C to + 120 °C	VSV = Victaulic coupling	Movitec VV Movitec VSV	up to 25 bar up to 25 bar	13 14	14, 15, 16 13, 15, 16
- 15 °C to + 120 °C	LHS = round flange ²⁾	Movitec LHS	up to 40 bar	17	-

¹⁾ The sum of inlet pressure and head at zero flow point must not exceed the value stated.

²⁾ Drilled to EN 1092-2 PN 25 (optional ASME B 16.1 Class 250 or JIS B2238 16K)

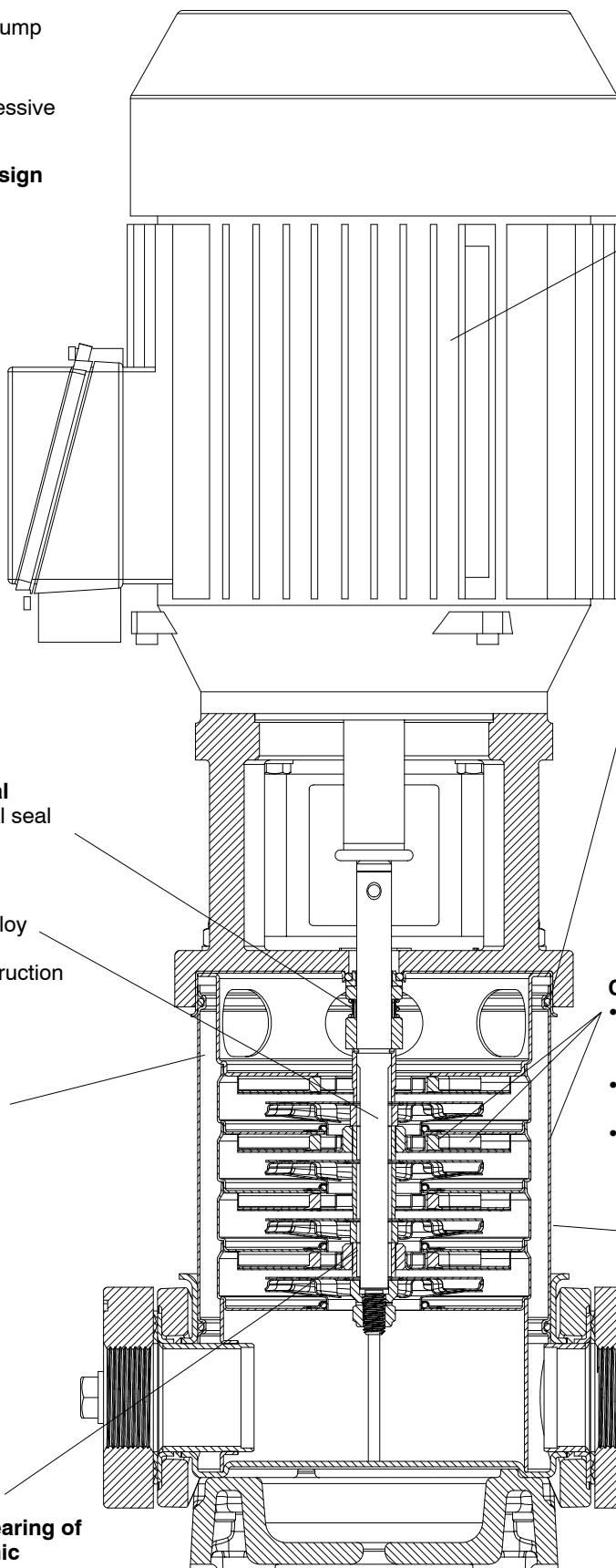
³⁾ Subject to application limits (see List of Media Handled)

Design Features Movitec V(S)

Universal high-pressure pump
up to 25 bar

- -15 °C to 120 °C
- also for chemically aggressive media

Space-saving vertical design



Reliable, easy-to-service shaft seal

- standardized mechanical seal to EN 12756

Easy-to-fit shaft of high-alloy steel with two flat faces for strong shaft/impeller construction

Low noise, since the flow noise is dampened by water-filled shroud

Highly wear-resistant and maintenance-free **plain bearing of tungsten carbide / ceramic** lubricated by the medium

- self-cleaning by forced flushing

Easy-to service, robust three-phase motor

- multi-range voltage / frequency
- type of enclosure IP 55
- insulation class F
- with PTC resistor

Leak-free and resistant to thermal shocks

- thanks to pump shroud
- due to confined O-rings

Corrosion-resistant:

- hydraulic parts and pump shroud of high-alloy stainless steel
- variant Movitec V features a pump of CrNi steelplate
- variant Movitec VS features a pump of CrNiMo steelplate

High operating reliability

- ensured by torsion-proof pump shroud
- no partition lines on the outside
 - only 2 seal elements

Simple installation

- and piping layout thanks to in-line design
- insusceptible to outside nozzle forces and moments

Casing

Pump casing with suction and discharge nozzles of identical nominal diameters arranged opposite to each other (in-line design).

Movitec VE and V(S): stainless steel pump casing and baseplate made of cast iron with powder coating.

Movitec LHS: stainless steel pump casing.

Shaft Seal

The shaft seal is an uncooled, maintenance-free mechanical seal to EN 12756.

Drive

Standard for V(S) and LHS:

- Electric motor, 50 Hz, air-cooled, 2- and 4-pole, standard KSB motor with main dimensions to IEC. Other motor makes subject to prior consultation with KSB, up to 2.2 kW 220-240 V/380-420 V, 3 kW and above 380-420 V/660-725 V, type of enclosure IP 55, insulation class F, up to 4 kW design V18, 5.5 kW and above design V1, all motors with PTC resistor from 3 kW and up.

Approved variants:

- Explosion-proof motor II 2 G Eexd/Eexe T3/T4, design V1/V18, make acc. to our choice.
- Motor for 500 V mains voltage, design V1/V18, make acc. to our choice.
- Motor make acc. to customer's choice (upon request).

Standard for VE:

- Electric motor, 50 Hz, air-cooled, 2- and 4-pole, standard KSB motor with main dimensions to IEC up to 2.2 kW 220-240 V/380-420 V, type of enclosure IP 55, insulation class F. Motors with extended shaft.

Direction of rotation:

Clockwise, seen from the drive side (see arrow indicating direction of rotation on the motor stool).

Coupling (not on Movitec VE):

- All pump sizes: rigid coupling
- The couplings are in accordance with the EC Machinery Safety Directive.

Installation

Vertical installation (horizontal installation on request)

Coating

Movitec VE and V(S): Cast iron motor stool and baseplate with powder coating.

Movitec V(S): Cast iron slide flanges protected by sheradising process.

All pumps: Stainless steel parts without any additional protective coating.

Tests

Standard:

Pressure test according to EN 809.

Leak test with water.

Approved variant (upon request):

Hydraulic test evidenced by test report. This test is always carried out using the original motor.

The NPSH or the suction head are not measured.

Materials testing

Certificate of Compliance with the Order (corresponds to EN 10204)

In the certificate of compliance with the order the manufacturing or processing works confirms by way of an informal report without specifying test results that the delivery complies with the stipulations of the purchase order (certificate to 2.2 and 3.1 available upon request).

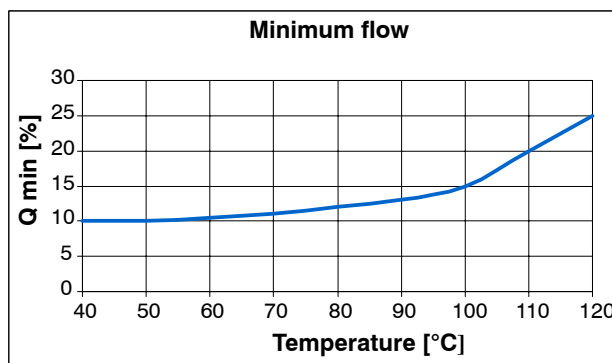
Characteristic Curves ²⁾

The characteristic curves are based on the following principles:

- Tolerances to ISO 9906, Class 2 / Annex A.
- The motors used for the measurements are standard KSB motors ¹⁾.
- The characteristic curves were obtained with deaerated water at a temperature of 20 °C and a density of 1.0 kg/dm³.
- The characteristic curves are valid for a kinematic viscosity of 1 mm²/s (1 cst) ¹⁾.
- A minimum permissible flow must be maintained to prevent the pump from overheating (see graph).

Movitec V	Q _{min} in m ³ /h
2	0.3
4	0.6
10	1.2
14	1.0
18	2.4
24	2.2
32	4.0
45	4.6
65	6.1
LHS 6	0.8

The following curve shows the minimum flow, corresponding to a percentage of the optimum flow Q_{opt}, as a function of the temperature of the medium pumped (flow rate at best efficiency point).



- Maximum pressure at the discharge nozzle:
10 bar – head at zero flow point with thread flange (VE).
16 bar – head at zero flow point with oval flange (V).
25 bar – head at zero flow point with round flange (VF) and Victaulic coupling (VSV).
40 bar – head at zero flow point with round flange (LHS)

● NPSH

The NPSH values of the individual characteristic curves are minimum values corresponding to the cavitation limit; they refer to deaerated water.

A safety allowance of at least 0.5 m must be added when selecting the pump to compensate for measuring inaccuracies and minor manufacturing deviations. The NPSH curve reflects mean values.

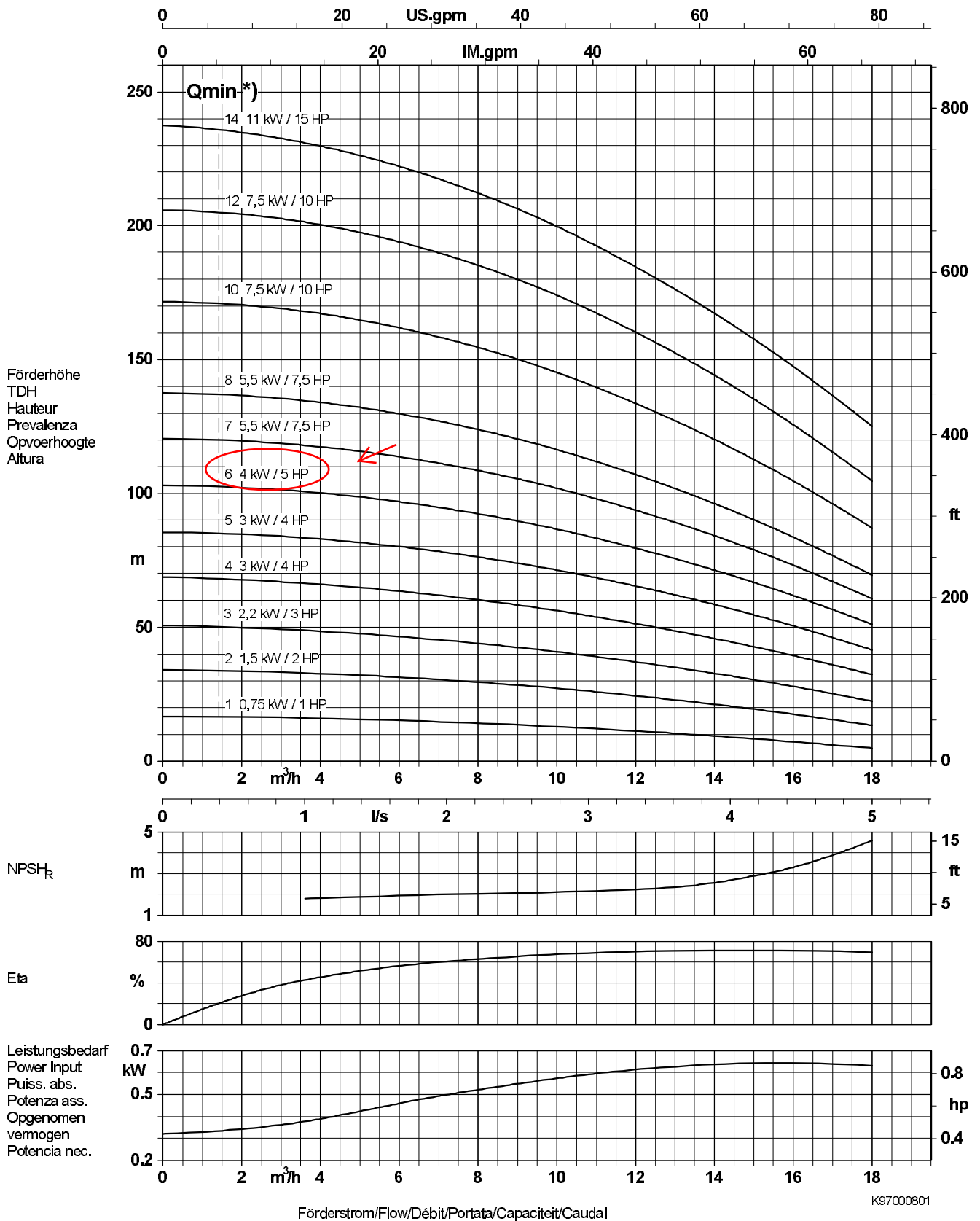
¹⁾ In case of different parameters, the performance data must be corrected accordingly.

²⁾ See example on the following page.

Recommended Spare Parts Stock for 2 Years' Continuous Operation

Number of pumps of identical size (including stand-by pumps) ->		2	3	4	5	6 and 7	8 and 9	10 and more
Part No.	Description	Quantity of spare parts						%
10-5	Stage casing compl. with bearing Kit Stage casing with bearing (108.02) + bearing sleeve (529) + impeller (230) + spacer sleeve, short (525.01)	1 set		2 sets			3 sets	30
433	1 Mechanical seal 433 2 O-rings 412.01 2 Gasket (Oval) 400 (only for pumps with V flange variant) 1 O-ring 412.05 (only for cartridge seal) 1 O-ring 412.06 (only for cartridge seal)	1 set		2 sets			3 sets	30

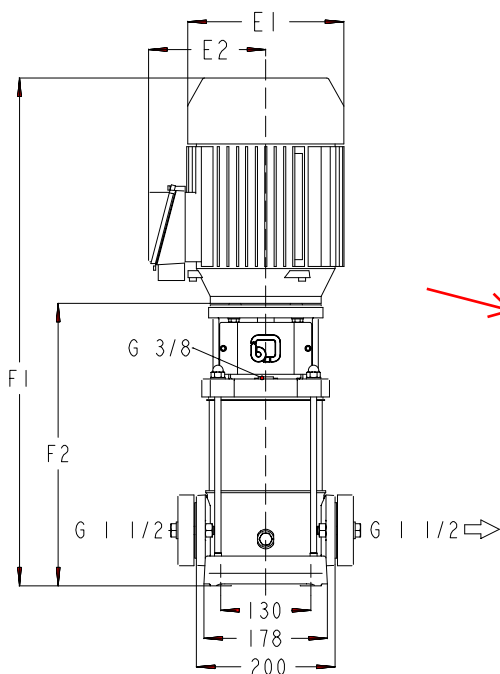
Baureihe-Größe Type-Size Modèle	Tipo Serie Tipo	Nenn Drehzahl Nom. speed Vitesse nom.	Velocità di rotazione nom. Nominaal toerental Revoluciones nom.	Lauf rad-Ø Impeller Dia. Diamètre de roue	Ø Girante Ø Waaier Ø Rodete	 KSB Aktiengesellschaft 67225 Frankenthal Johann-Klein-Straße 9 67227 Frankenthal
Movitec V (S) 10		≈ 3500 1/min		100 mm		
Projekt Project Projet	Progetto Project Proyecto	Angebots-Nr. Project No. No. de l'offre	Offerta-No. Offertenr. Offerta-No.	Pos.-Nr. Item No. No. de pos.	Pos.-Nr. Positiön. Pos.-Nr.	



*) Qmin up to 40 °C, temperatures >40 °C see table page 8

Dimension Tables

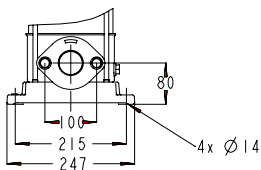
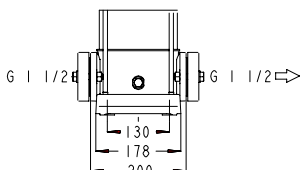
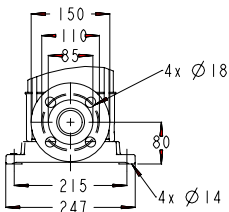
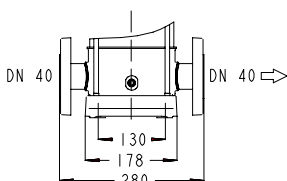
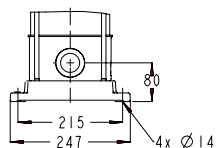
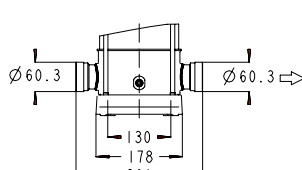
Movitec V 10 3500 1/min



V 10				
No. of stages	E1	E2	F1	F2
1	150	115	556	322
2	176	136	607	332
3	176	136	634	359
4	194	147	712	396
5	194	147	739	423
6	233	162	774	450
7	233	162	826	497
8	233	162	853	524
10	233	162	935	578
12	233	162	989	632
14	315	206	1218	716

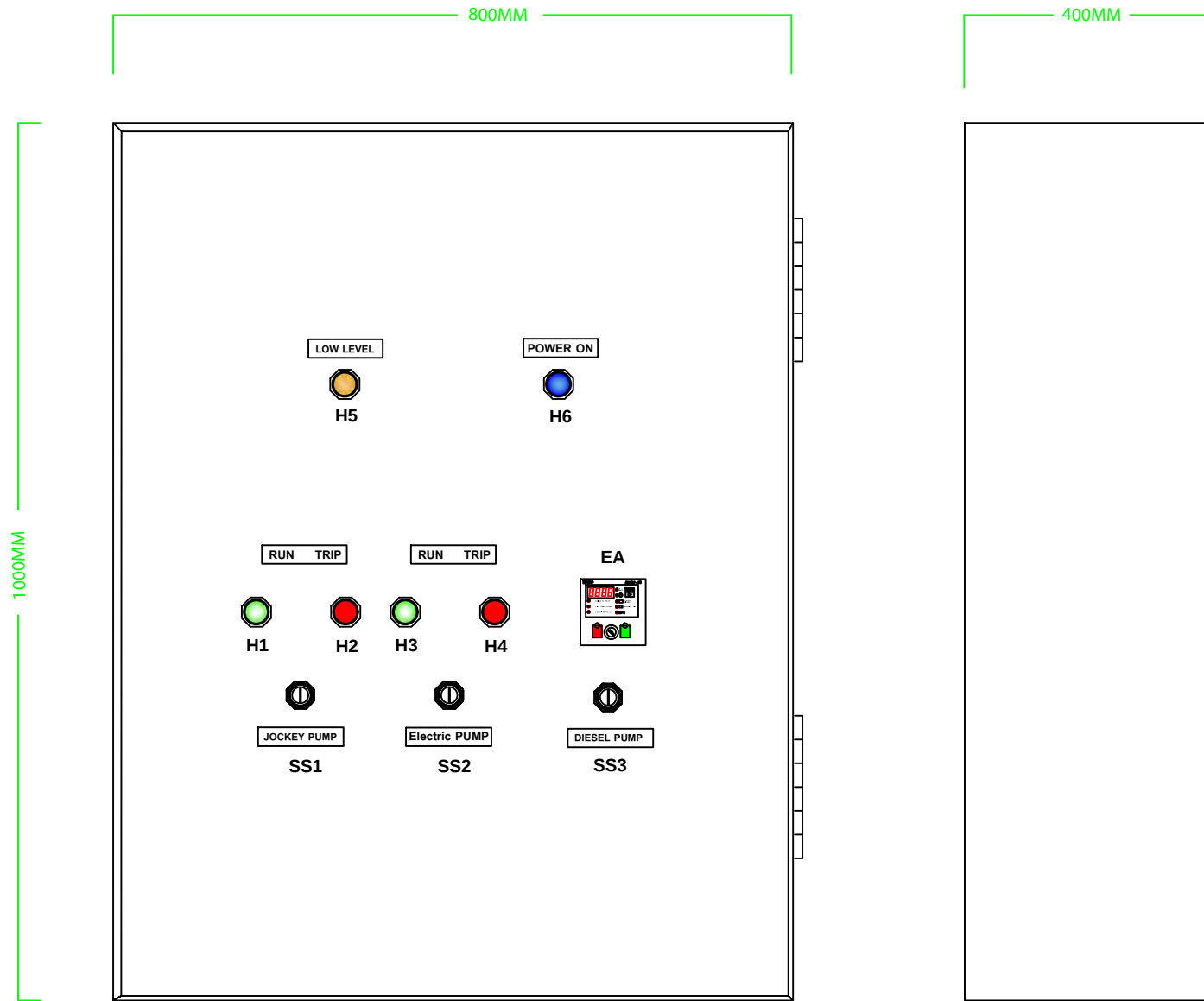
Dimensions in mm

Flange Variants

Oval flange PN 16 Movitec V(S)	Round flange PN 25 Movitec V(S) F	Victaulic PN 25 Movitec V(S) V
 	 	 

Terminal Box Position for all pump sizes see page 47

CONTROL PANEL WIRING DIAGRAM



Front view

side view

LAYOUT

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No.	REVESON	DATE

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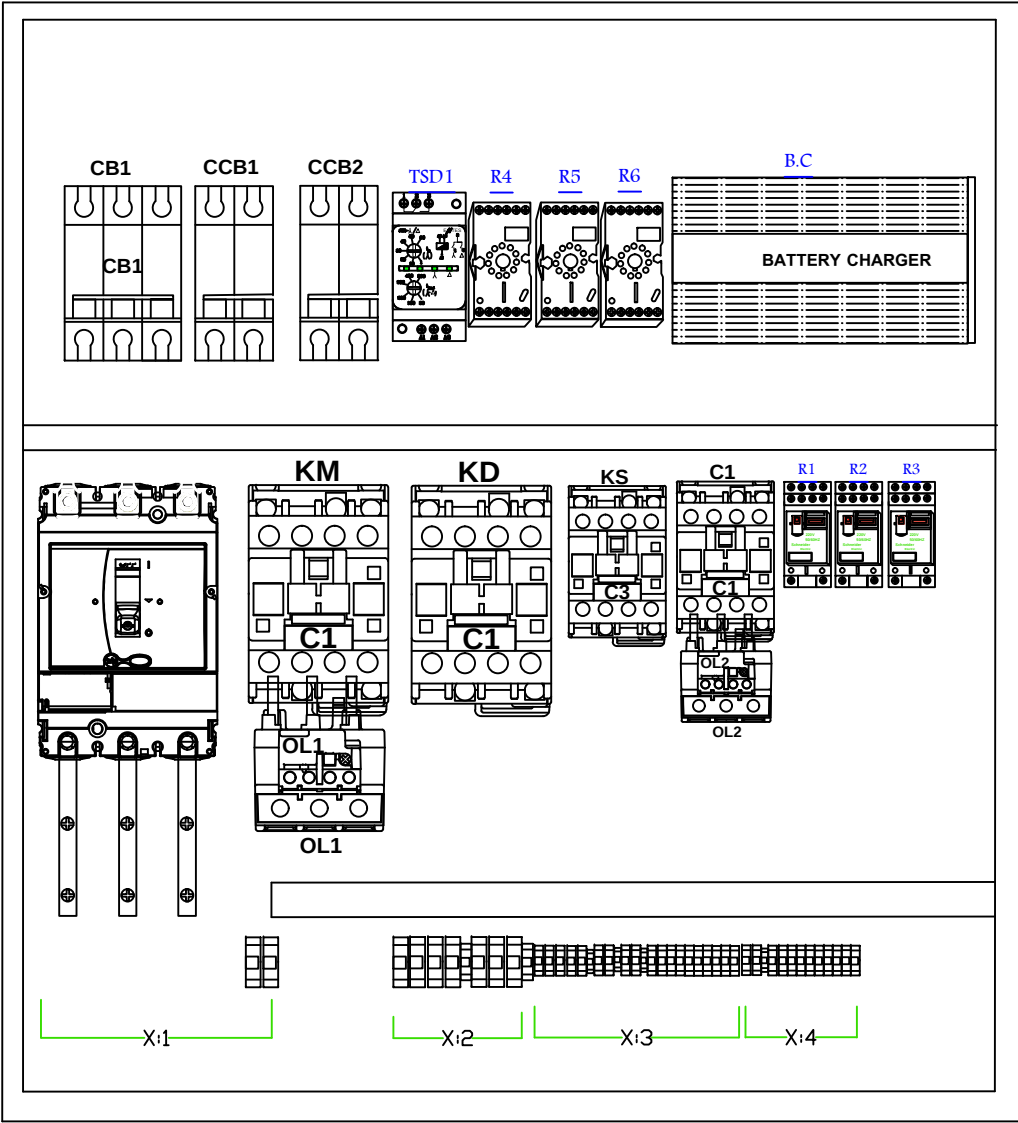
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DRAWN:	PROJ#:
CHECK:	DATE:
APPROV:	SCALE:
DRAWING#:	



3 FIRE PUMP
ELECTRIC JOCKEY DIESEL

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Rev	Date	Drawn	Chkd	Appd	Details of Revision	
Scale	Proj. No.		S.N.		Sht. No.	1 of ...

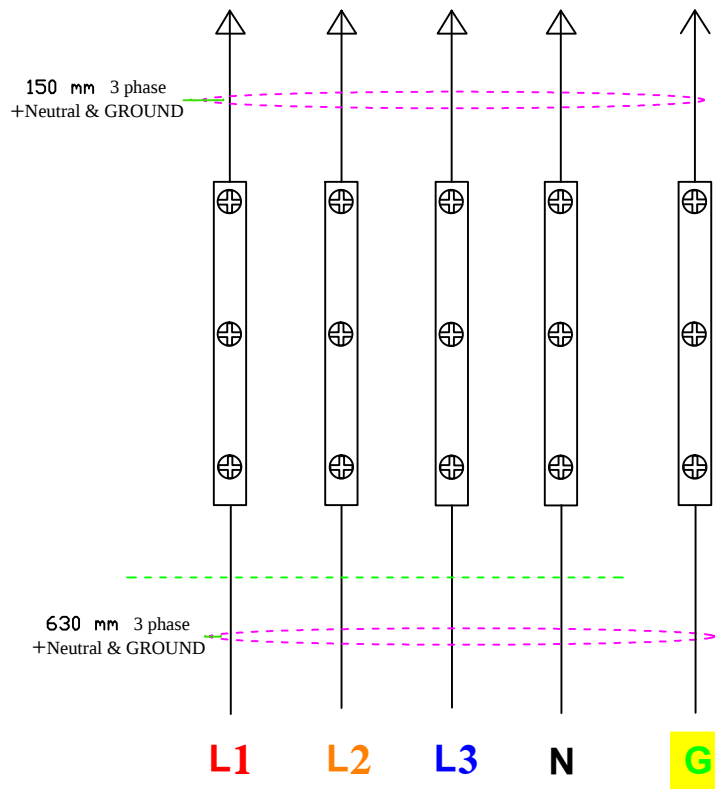


inside view

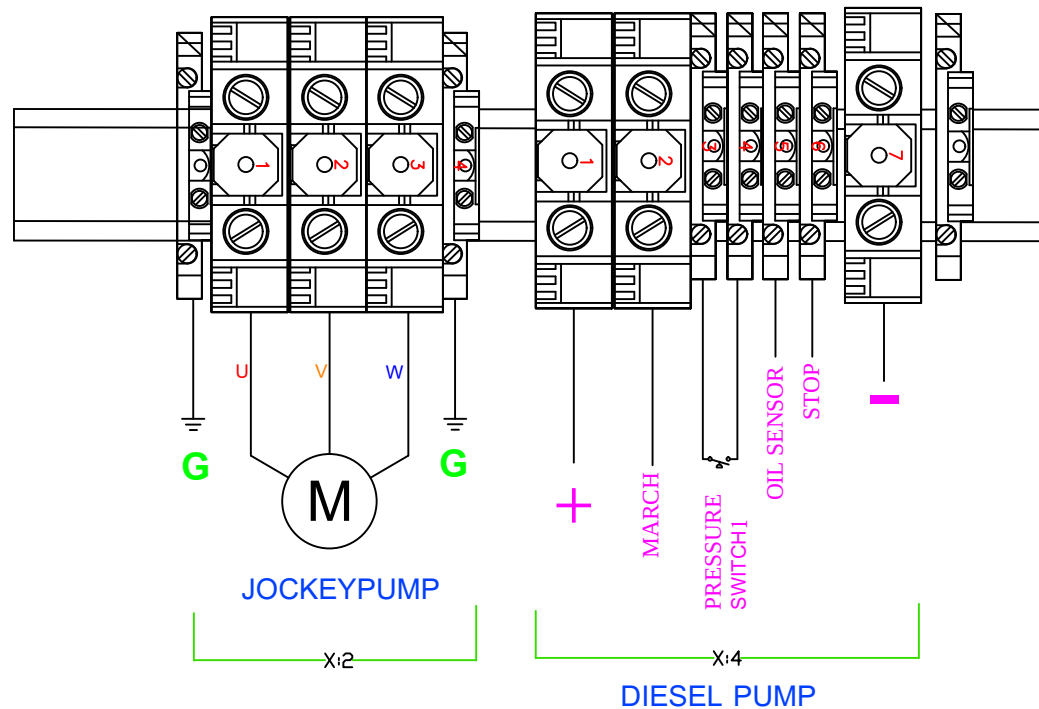
LAYOUT

1		
No.	REVESON	DATE
PROJECT:		
TITEL:		
DRAWN:	PROJ#:	
CHECK:	DATE:	
APPROV:	SCALE:	
DRAWING#:		

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3					
2					
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Rev	Date	Drawn	Chkd	Appd	Details of Revision
Scale	Proj. No.		S.N.		Shr. No. 1 of ...



380V 3PH60/HZ
 POWER SUPPLY
 3phase +
 neutral & Ground
 X:1



3 FIRE PUMP
ELECTRIC JOCKEY DIESEL

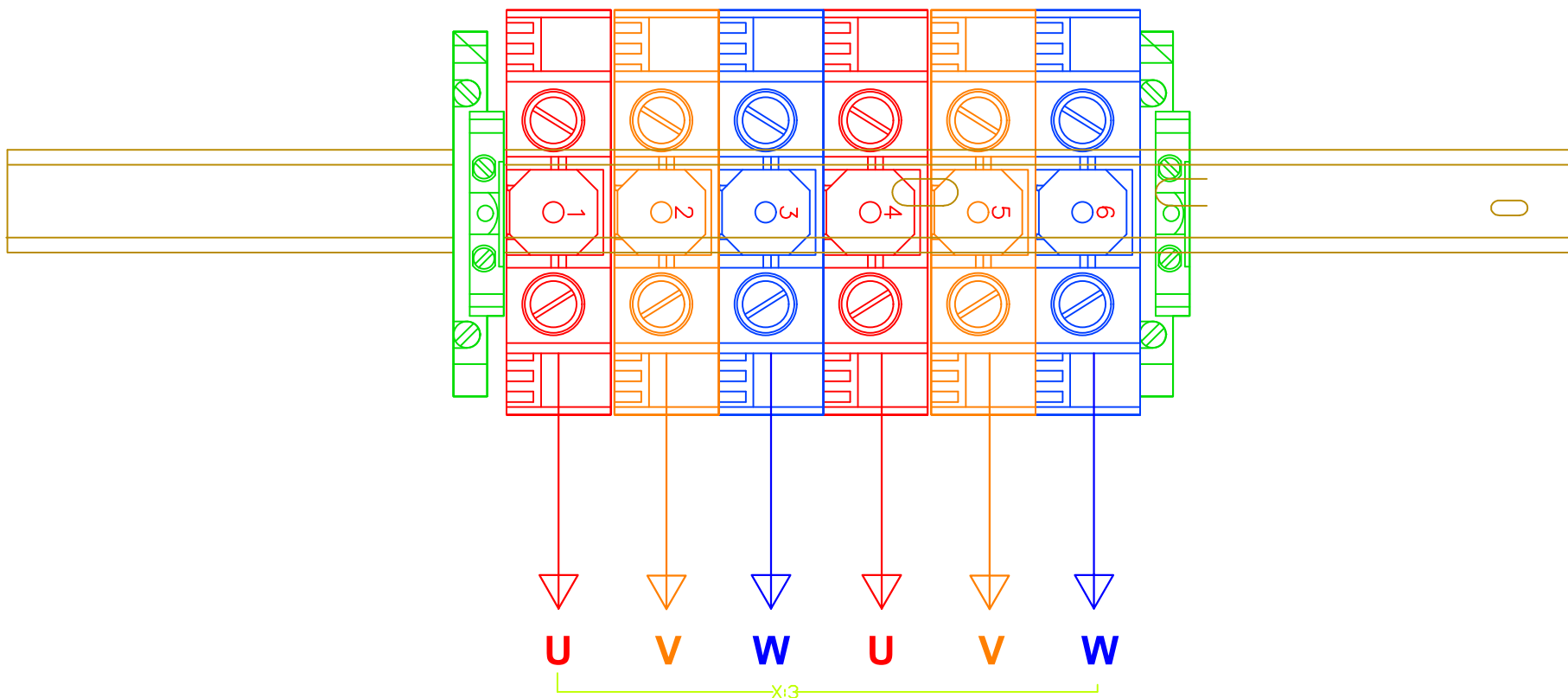
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3					
2					
1					
0					
Scale	Proj. No.		S.N.		Sht. No. 1 of 1

TERMINATION

Autodesk

DESIGN	DATE	REVISION	BY
DESIGN NO.	DATE	BY	
SCALE	No Scale	DATE	
DESIGN NO.			
DESIGN NO.			

OF



ELECTRIC PUMP
STAR DELTA



3 FIRE PUMP
ELECTRIC JOCKEY DIESEL

Rev	Date	Drawn	Chkd	Appd	Details of Revision
Scale	Proj. No.		S.N.		Sht. No. 1 of 1

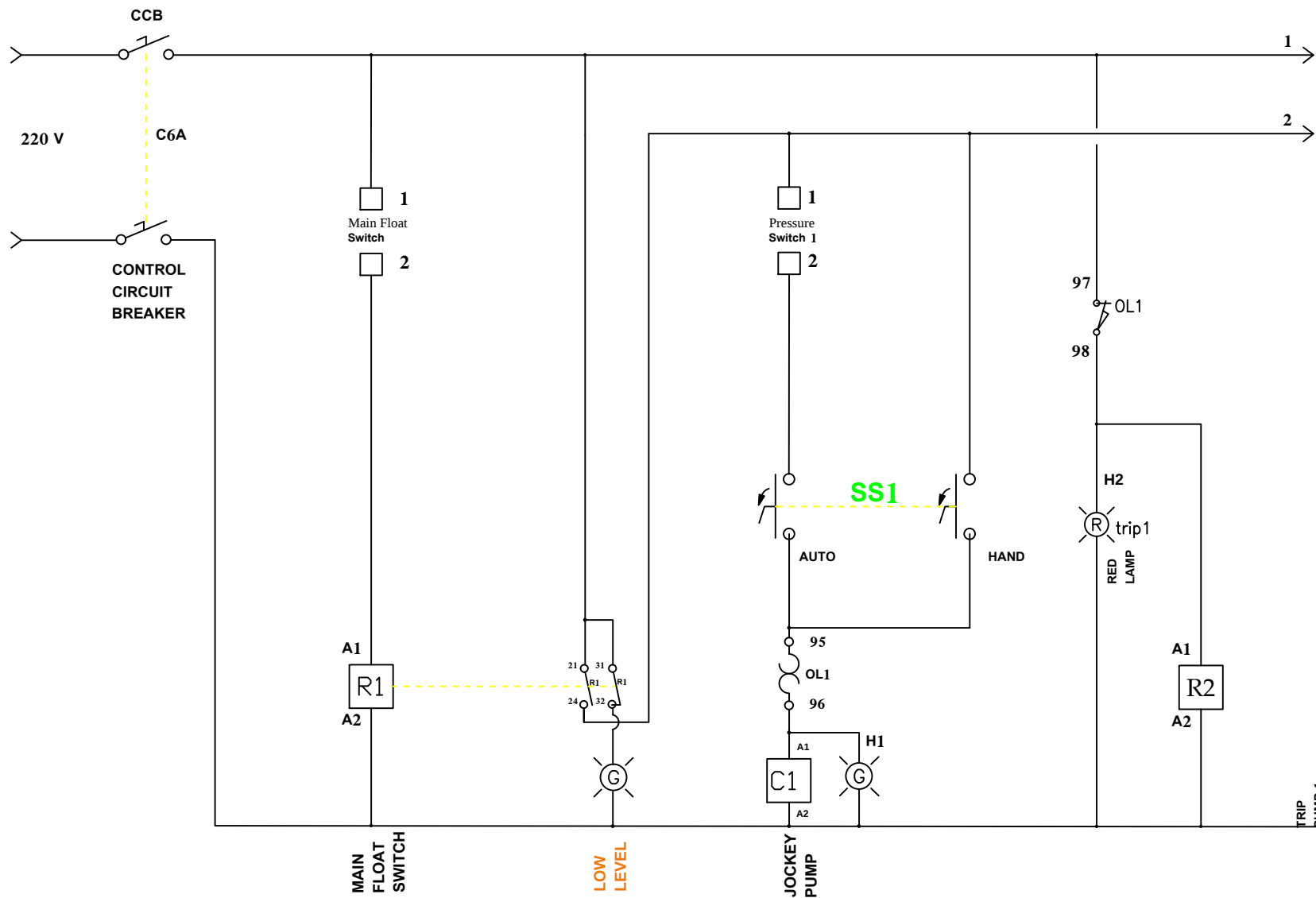
DESIGNED BY	DATE	REVISION	BY
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Autodesk

TERMINATION 3

OF

CONTROL



SS1 : THREE POSITION SELECTOR SWITCH

CCB : Control Circuit Breaker

OL1 : THERMAL OVERLOAD RELAY

A1.A2 : Both ends of coil for relay/Contactor

C1 : CONTACTOR FOR JOCKEY PUMP

□ : Terminal block

R1 : CONTROL RELAY

> : Current direction

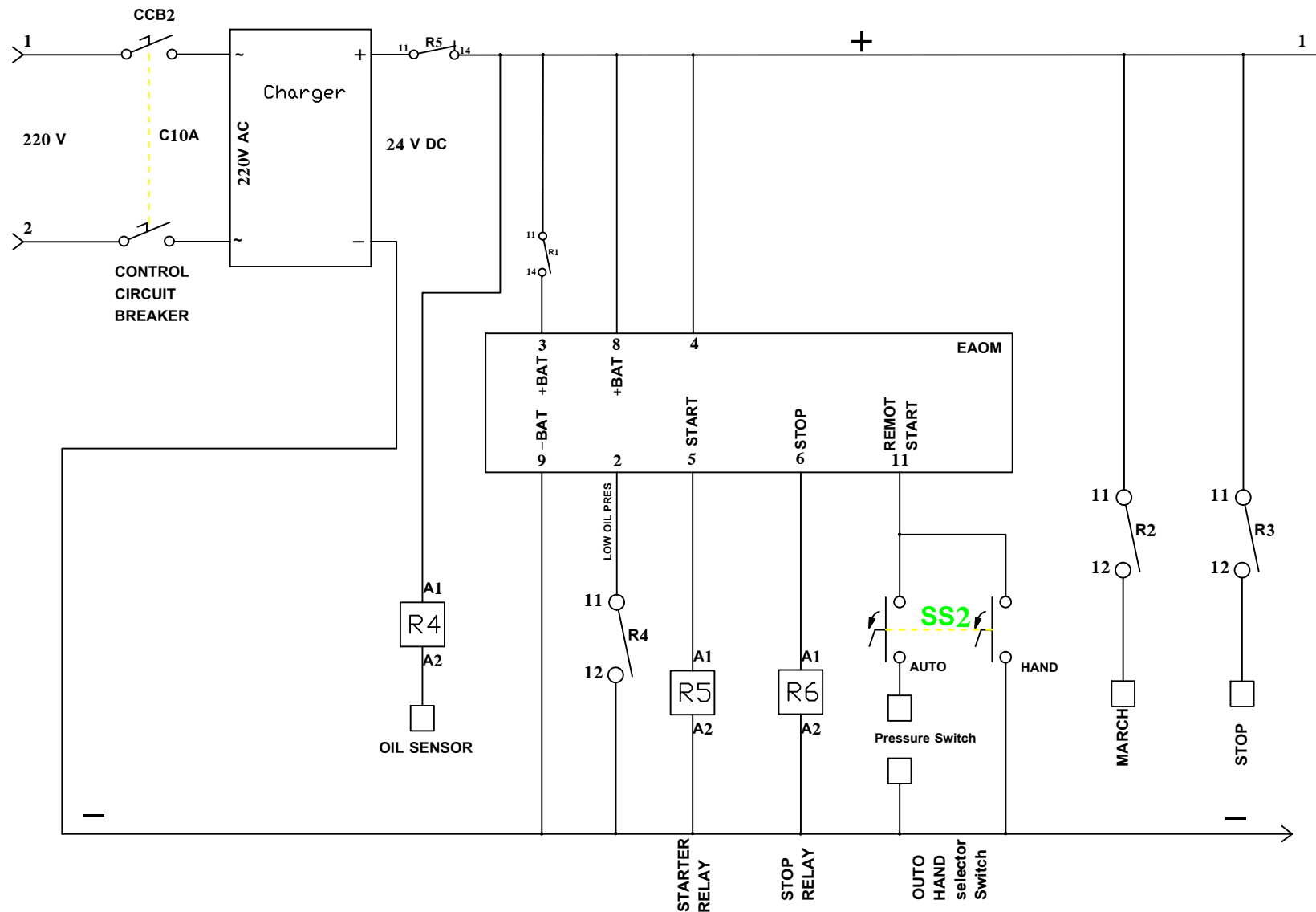
⊗ : Lamp indicating working status

1	REVESON	DATE
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3 FIRE PUMP
ELECTRIC JOCKEY DIESEL

4						
3						
2						
1						
0						
Rev	Date	Drawn	Chkd	Appd	Details of Revision	
Scale	Proj. No.		S.N.		Sht. No.	1 of ...



CONTROL

SS2 : THREE POSITION SELECTOR SWITCH

A1.A2 : Both ends of coil for relay/Contactor

□ : Terminal block

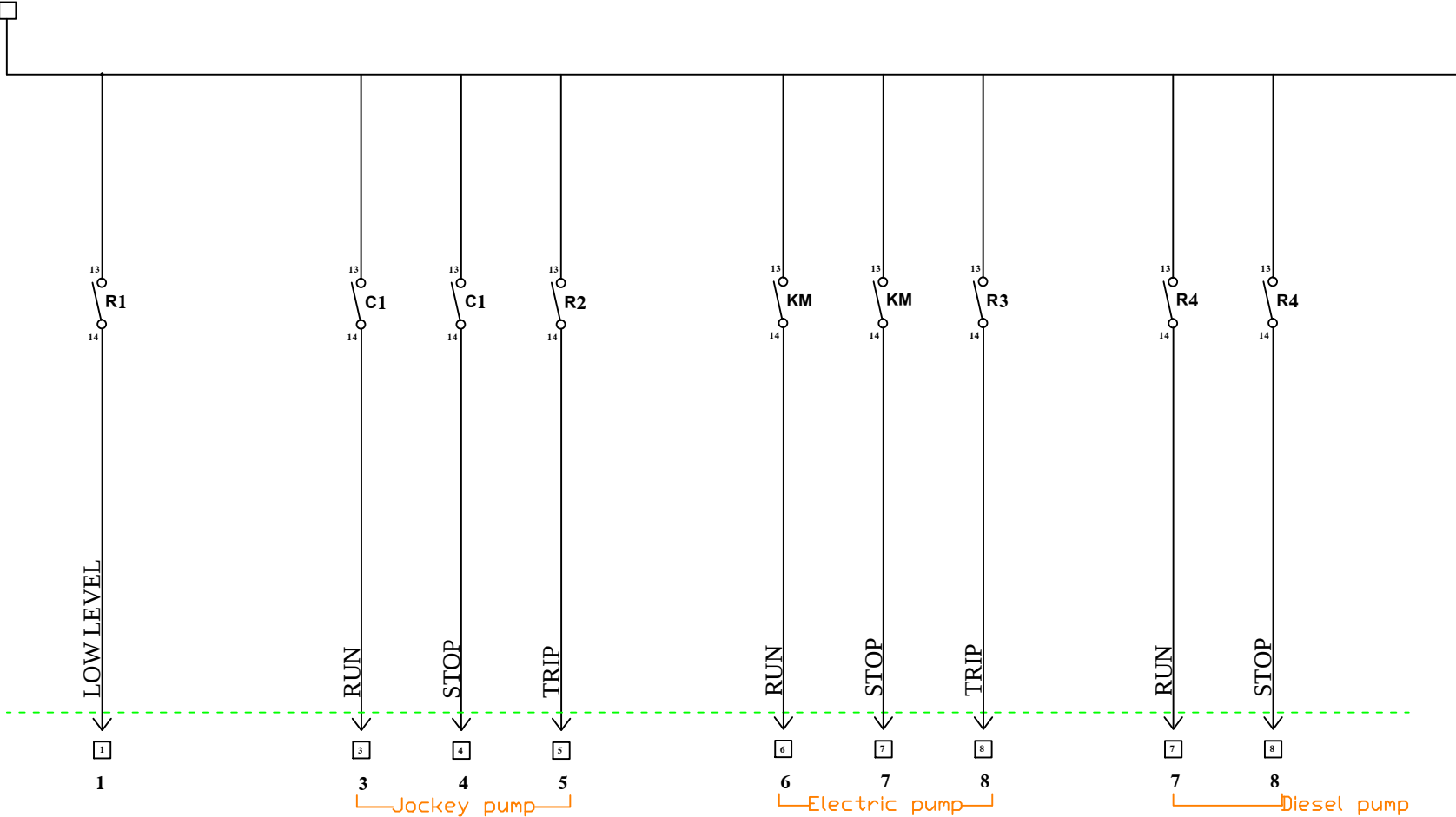
> : Current direction

⊗ : Lamp indicating working status

CCB : Control Circuit Breaker

R1 : START RELAY 24 V R2 : STOP RELAY 24 V

COMMON



B - M - S

CONTROL / B M S

1		
No.	REVISON	DATE

PROJECT:

TITEL:
Submersible

DRAWN:	PROJ#:
CHECK:	DATE:
APPROV:	SCALE:
DRAWING#:	



3 FIRE PUMP
ELECTRIC JOCKEY DIESEL

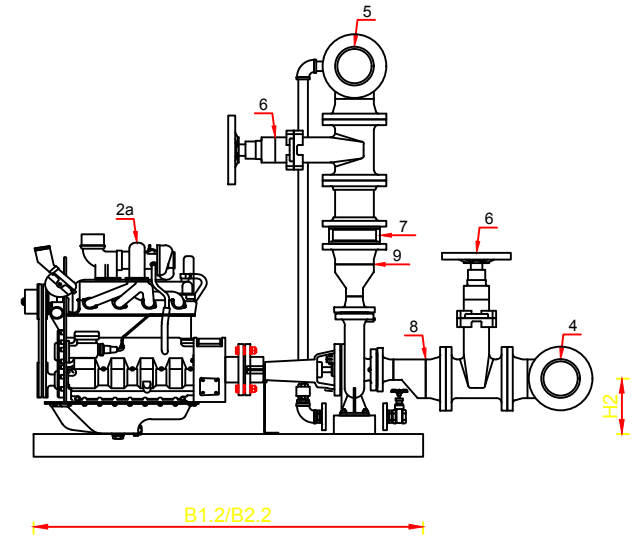
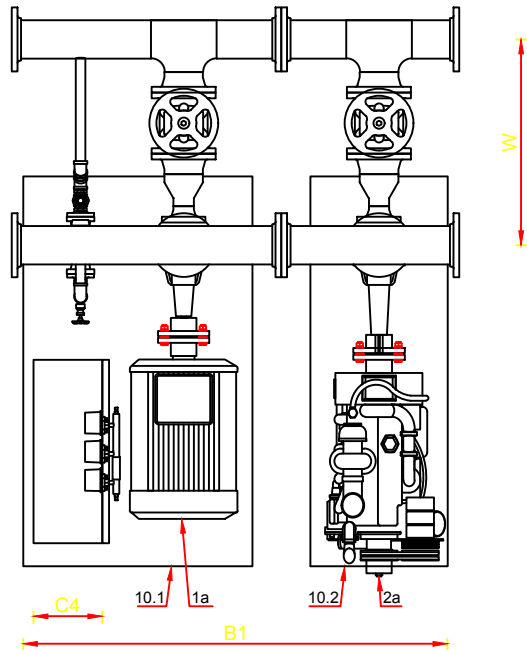
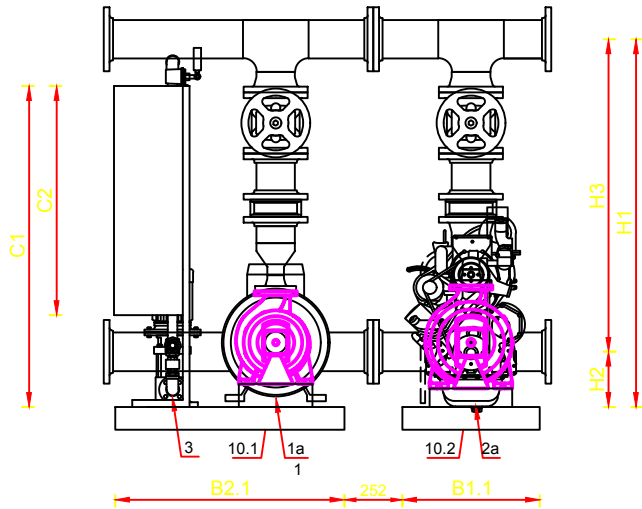
4							
3							
2							
1							
0							
Rev	Date	Drawn	Chkd	Appd	Details of Revision	Sht. No.	1 of ...
Scale	Proj. No.			S.N.			

DESCRIPTION			SYMBOL		LETTER CODE	DESCRIPTION			SYMBOL		LETTER CODE	DESCRIPTION		
SYMBOL	LETTER COOD	DESCRIPTION	SYMBOL	LETTER COOD	DESCRIPTION	SYMBOL	LETTER COOD	DESCRIPTION	SYMBOL	LETTER COOD	DESCRIPTION			
	E	EARTH			N.C. CONTACT		H	HORN						
	Q	MINIATURE CIRCUIT BREAKER			N.O. CONTACT		H	BUZZER						
	Q	CIRCUIT BREAKER			CHANGE OVER CONTACT		T	CURRENT TRANSFORMER						
	FU	ISOLATION FUSE SWITCH		H	INDICATING PILOT ALMP		T	VOLTAGE CONTROL TRANSFORMER						
	Q	SWITCH		RA1	AUXILIARY RELAY / COIL		T	POWER TRANSFORMER						
	K	CONTACTOR		KM	POWER CONTACTOR COIL		P1	AMMETER						
	S1	STOP PUSHBUTTON SPRING RETURN		K1	DELAY ON ENERGIZATION DEVICE COIL		P2	VOLTMETER						
	S2	START PUSHBUTTON SPRING RETURN		K2	DELAY ON DE-ENERGIZATION DEVICE COIL		P4	POWER FACCTOR METER						
		MAK CONTACTT LIMIT SWITCH		F	OVERCURRENT RELAY WITH MAGNETIC OPERATION			PANEL LIGHTION						
		BREAK CONTACT LIMIT SWITCH		F	OVERCURRENT RELAY WITH THERMAL OPERATION			SOCKET OUTLET						
	S3	TWO POSITION SELECTOR SWITCH			DIOD			VOLTMETER SELECTOR SWITCH						
	S4	THREE POSITION SELECTOR SWITCH			RESISTOR			AMMETER SELECTOR SWITCH						
		TIMED N.O AND N.C CONTACTS DELAY ON ENERGIZATION		Ø	TERMINAL BLOCK		TS	TEST BLOCK						

L I S T O F M A T E R I A L S

MARK	QTY	Description	REFERENCE	MAKE
ENC.	1	Enclosures 1000 X 800 X 400 MM	1200 X 800 X 400	Malaysia
MCB	1	CIRCUIT BREAKER 500 A 3P FOR ELECTRIC PUMP	ABN 803 3P C 500 A	L S
CB1	1	CIRCUIT BREAKER 32 A 3P FOR JOCKEY PUMP	BKN 3P C 32A	L S
C1	1	CONTACTOR FOR JOCKEY PUMP	MC 18 A	L S
MT1	1	THERMAL OVERLOAD RELAY FOR JOCKEY PUMP	MT-32 / 12 - 18 A	L S
KM + KD	2	MAIN + DELTA CONTACTOR FOR ELECTRIC PUMP	MC 185A	L S
KY	1	STAR CONTACTOR FOR ELECTRIC PUMP	MC 150A	L S
MT2	1	THERMAL OVERLOAD RELAY FOR ELECTRIC PUMP	MT-225 / 120 - 180 A	L S
TSD1	1	TIMER STAR DELTA FOR ELECTRIC PUMP	SER	ENTES
R1 - R2 - R3	3	PLUG - IN RELAY 14 PINS 220V AC	RQS4OL T	SP
R4 - R5 - R6	3	PLUG - IN RELAY 11 PINS 24V DC	RUMC2AB1BD	Schneider
C C B	1	CONTROL CIRCUIT BREAKER 6A 2P	BKN 2P C6	L S
SS1-SS2-SS3	3	Selector Switch 3 POSITIONS / ON - OFF - ON	XB4 BD33	XIDER
- - -	3	BASE OF RELAY 14 PINS	RXZE2M114	PRC
- - -	3	BASE OF RELAY 11 PINS	RUZC3M	Schneider
H1 - H3	2	Pilot light (GREEN) LED RUN PUMP1 & 2	AD22-22DS	XIDER
H2 - H4	2	Pilot light (RED) LED TRIP PUMP1 & 2	AD22-22DS	XIDER
H5	1	Pilot light (YELLOW) LED LOW LEVEL IN TANK	AD22-22DS	XIDER
H6	1	Pilot light (BLUE) LED POWER ON	AD22-22DS	XIDER
EA	1	Manual and auto start Unit With Key Switch for Diesel Engine	EAOM - 36	EMKO
BC	1	automatic Battery Charger input 220V AC 60Hz - output 24 V DC	GEN 524S	TR
X:1	1	COPPER BUSBAR 150MM	--	--
X:2	4	TERMINAL BLOCK 6 MM	ONKA 1032	ONKA
X:3	7	TERMINAL BLOCK 95 MM	ONKA 1072	ONKA
X:4	7	TERMINAL BLOCK 16 MM + 10 MM FOR Diesel Engine	ONKA --	ONKA
X:5	10	TERMINAL BLOCK 4 MM FOR B.M.S	ONKA --	ONKA

SKID ASSEMBLY DRAWING



NOTES:

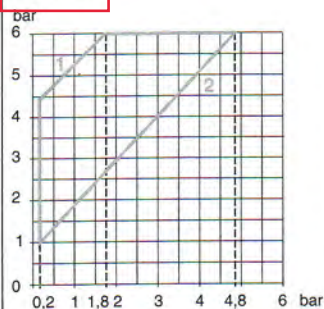
- ALL DIMENSIONS ARE IN MILIMETERS UNLESS OTHERWISE SPECIFIED.
- DIMENSIONS SHOWN ARE APPROXIMATE BASIS ONLY, ACCURATE DIMENSIONS WILL BE TAKEN ACTUAL ON SITE.

LEGEND

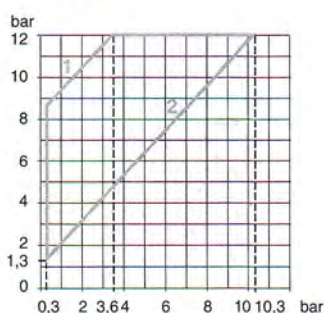
NO	DESCRIPTION	BRAND
1	MAIN PUMP 1: 1ETA65-200	KSB
1a	ELECTRIC MOTOR: 50.00 HP	
2	MAIN PUMP 2: 1ETA 65-250	KSB
2a	DIESEL ENGINE: 57.00 HP	
3	JOCKEY PUMP: 1 Moevtic V10-6	KSB
4	SUCTION MANIFOLD 6"	
5	DISCHARGE MANIFOLD 6"	
6	GATE VALVE 6" OS&Y	
7	CHECK VALVE 6" WAFER TYPE	
8	REDUCER 6"x3"	
9	REDUCER 6"x2-1/2"	
10.1	BASE FRAME 1	
10.2	BASE FRAME 2	
11	PRESSURE GAUGE 0-8 BAR	
12	PRESSURE SWITCH 0-10 BAR	
13	CONTROL PANEL: HIMEL IP54	
14	CONTROL PANEL COMPONENTS	

DIMENSIONS MM	
L	1952
L1	1176
L2	776
W	783
H1	1604
H2	241
H3	1363
C1	1400
C2	1000
C3	800
C4	300
B1	1852
B1.1	1000
B1.2	1700
B2.1	600
B2.2	1700
B3	120

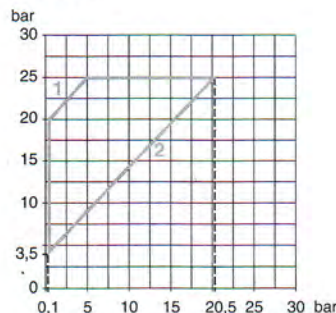
XM●-●06



XM●-●12

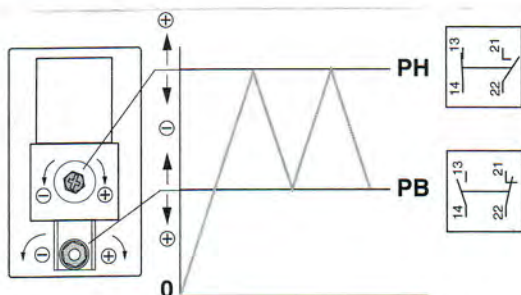


XM●-●25

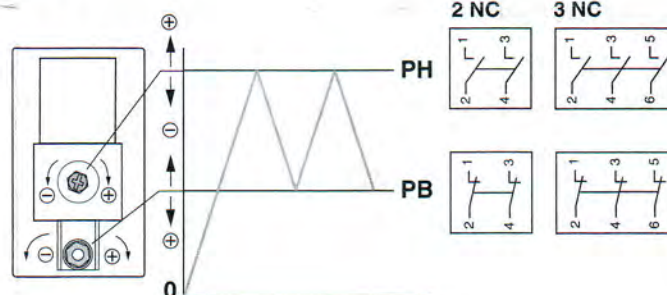


1 : Maximum differential - Ecart maxiaux - Maximale hysteresen - Intervalos máximos - Differenziali max - intervalos maximos
2 : Minimum differential - Ecart miniaux - Minimale hysteresen - Intervalos mínimos - Differenziali min - intervalos mínimos

XMx/XMA

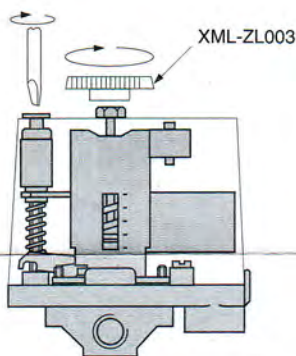


XMP



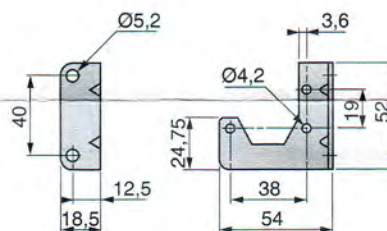
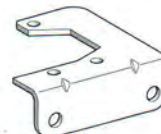
PH : High setting point - Point haut - Oberer Schaltungspunkt - Punto de disparo superior - Punto di scatto superiore - Ponto alto
PB : Low setting point - Point bas - Unterer Schaltungspunkt - Punto de disparo inferior - Punto di scatto inferiore - Ponto baixo

Setting
Réglage
Einsellungen
Adjustes
Regolazione
Reglagem



Fixing bracket
Equerre de fixation
Befestigungswinkel
Escuadra de fijación
Squadra de fissaggio
Esquadro de fixação

XMA-ZL001



DANGER / PELIGRO / DANGER

HAZARDOUS VOLTAGE

Disconnect all power before servicing equipment.

Electric shock will result in death or serious injury.

TENSION PELIGROSA

Desenergice el equipo antes de realizarle servicio.

Una descarga eléctrica podrá causar la muerte o lesiones serias.

TENSION DANGEREUSE

Couper l'alimentation avant de travailler sur cet appareil.

Une électrocution entrainera la mort ou des blessures graves.

FOR XMA/XMX ONLY

SCALE MUST BE READ WHEN THE PRODUCT IS NOT TRIPPED

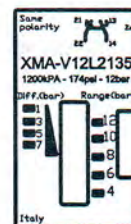
SEULEMENT POUR XMA/XMX

LECTURE DE L'ECHELLE A EFFECTUER AVEC PRODUIT NON ENCLANCHE

SOLO PER XMA/XMX

LETTURA ETICHETTA DA EFFETTUARE CON PRODOTTO A RIPOSO

EXAMPLE
EJEMPLO
ESEMPIO

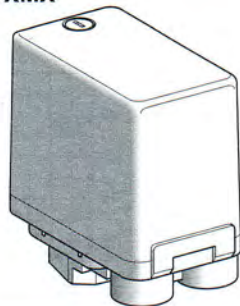


PRECISION: ±10%
PRECISION: ±10%
PRECISION: ±10%

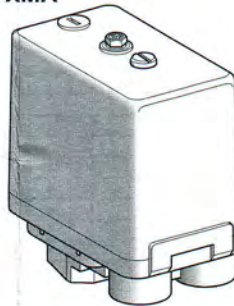


Pressure switches
 Pressostats
 Druckwaechter
 Presostatos
 Pressostati
 Pressostatos

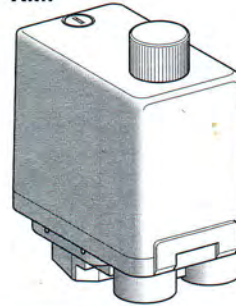
XMX



XMA

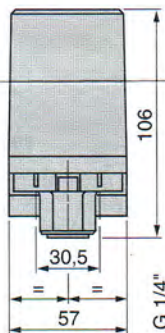
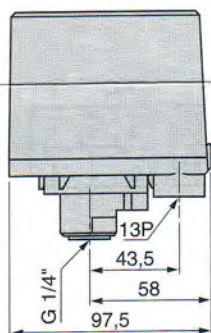


XMP

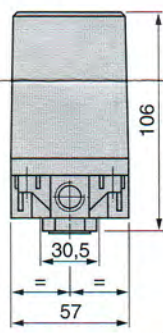
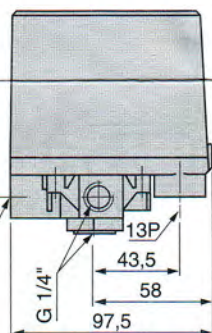


Dimensions - Encombrements - Abmessungen - Dimensiones - Dimensioni - Atravancamentos

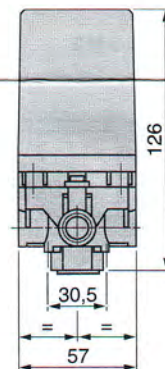
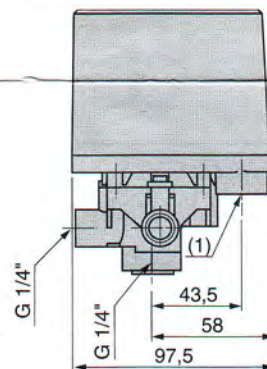
XMX/XMP-A06●21●●/A12●21●●



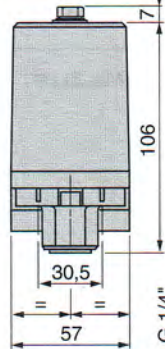
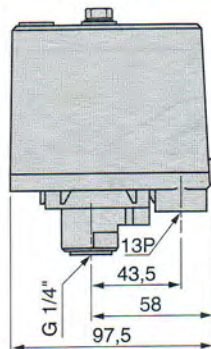
XMX/XMP-A06●24●●/A12●24●●



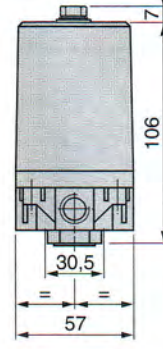
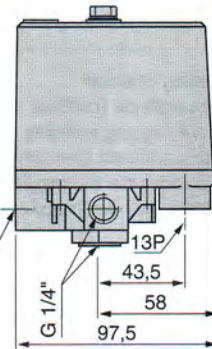
XMX/XMP-A25●21●●



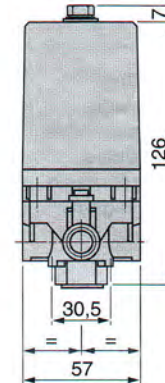
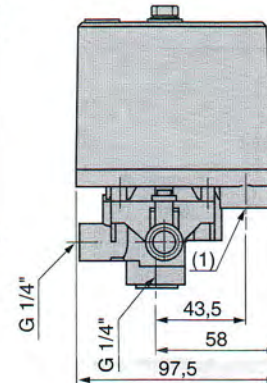
XMA-●06●21●●/XMA-●12●21●●



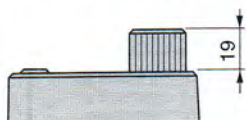
XMA-●06●24●●/XMA-●12●24●●



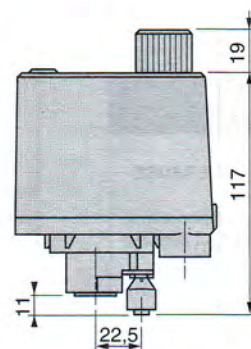
XMA-●25●21●●



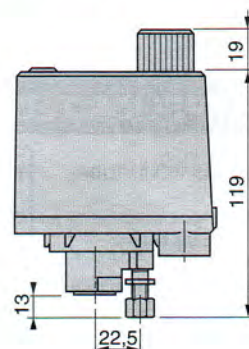
XMP-B/C●●●●●●●●



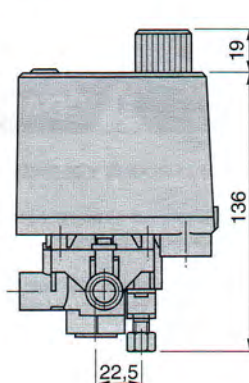
XMP-D/E06/12●●●●●●



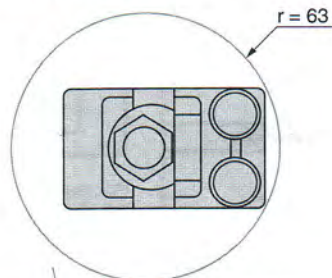
XMP-R06/12●●●●●●



XMP-R25●●●●●●



XMX/XMAXMP



عوامة التحكم في مستوى السوائل

بفضل التقنيات المتقدمة والبناءة، جودة العناصر المستخدمة، التصميم المميز والمراقبة الصارمة نقوم بانتاج منظم مستوى السوائل TECNO وهو جهاز بمصادقية قصوى وتوفير عالي للاستخدامات المدنية والصناعية مثل الآبار، الصهاريج والخزانات، ينر المراحيض، أنظمة التصفية وجميع الحالات الأخرى التي نحتاج فيها الى تنظيم مستوى السوائل الغير عنيفة. الغطاء الخارجي مصنوع من البوليبروبيلين المقاوم للصدمات والمناسب لملاسة الأغذية ومقوالب في اطار مصنوع من نفس المادة ومعرض لضغط يصل لـ 250 درجة مئوية.



GENERAL INFORMATION		TECNO	TECNO2 IMQ APPROVED
Temperature of functioning		80° C max	
Temperature of storage		-20 ÷ +80° C	
protection		IP67	
Commutation angle		±45	
Contact rating EN-61058			
Resistive charged Amp.		10	10
Inductive charged Amp.		4	8
Electrical life (minimum operations)	nr	50.000	10.000
Service		Heavy	Light
Applicable max voltage		250V a.c.	
Dimensions	mm	91 x 128 x 42	
Weight	gr.	155	
Volume	decimeter ³	0.280	
Floating switch thrust	gr.	125	
Floating switch shell material		Polipropilene Atox	
Functioning class		II	

Filling	Emptying
Use of the Black and Blue terminals. In this condition, the level regulator closes the lower part at the minimum level. By changing the distance between the regulator and the counterweight, the control of the Min. and Max, levels is obtained.	Use of the Black and Brown terminals. In this condition, the level regulator closes the upper part at the maximum level. By changing the distance between the regulator and the counterweight, the control of the Min. and Max, levels is obtained.

Standard Cable	
PVC A05VV-F3x1 Cable Filling – Emptying	
A07 RN-F3x1 Neoprene cable Filling – Emptying	
H07 RN-F3x1 “HAR” Neoprene cable Emptying Length of standard cables ranges from 0.5mt to 20mt.	

The floating switches are supplied with sets of cables. For determining the length required use the code of order as indicated afterwards.

RLT	A	B	C	D
-----	---	---	---	---

RLT = Suffix that's always the same

A + B = cable length, indicate

A e B	Cable length	02 – 2 meters 03 – 3 meters 05 – 5 meters 10 – 10 meters
C	Cable type	P – PVC A05VV-F 3x1 N – Neoprene A07 RN-F 3x1 H - Neoprene H07 RN-F 3x1
D	Counterweight	C – with counterweight S – without counterweight
RLT 05 P C = will be a PVC A05 VV-F3x1 cable, 5 meters long and with a counterweight		

Bourdon Tube Pressure Gauges Stainless Steel, Solid Front Case Type 232.30 - Dry Case Type 233.30 - Liquid-filled Case

WIKA Datasheet 23X.30

Applications

- With liquid filled case for applications with high dynamic pressure pulsations or vibration
- Suitable for corrosive environments and gaseous or liquid media that will not obstruct the pressure system
- Process industry: chemical/petrochemical, power stations, mining, on and offshore, environmental technology, mechanical engineering and plant construction

Special features

- Solid-front stainless steel case
- Excellent load-cycle stability and shock resistance
- All stainless steel construction
- Positive pressure ranges to 20,000 PSI

Standard Features

Design

ASME B40.100 & EN 837-1

Sizes

2½", 4" & 6" (63, 100 and 160 mm)

Accuracy class

2½": ± 2/12% of span (ASME B40.100 Grade A)
4" & 6": ± 1.0% of span (ASME B40.100 Grade 1A)

Ranges

Vacuum / Compound to 200 psi
Pressure from 0/15 to 0/15,000 psi - 2½" & 4"
Pressure from 0/10 to 0/20,000 psi - 6"
or other equivalent units of pressure or vacuum

Working pressure

2½": Steady: full scale value
Fluctuating: 0.9 x full scale value
Short time: 1.1 x full scale value

4 & 6": Steady: full scale value
Fluctuating: 1.1 x full scale value
Short time: 1.3 x full scale value

Operating temperature

Ambient: -40°F to +140°F (-40°C to +60°C) - dry
-4°F to +140°F (-20°C to +60°C) - glycerine filled
-40°F to +140°F (-40°C to +60°C) - silicone filled
Medium: +392°F (+200°C) maximum - dry
+212°F (+100°C) maximum - liquid filled



Bourdon Tube Pressure Gauge Model 232.30

Temperature error

Additional error when temperature changes from reference temperature of 68°F (20°C) ±0.4% for every 18°F (10°C) rising or falling. Percentage of span.

Weather protection

Weather tight (NEMA 4X / IP65)

Pressure connection

Material: 316L stainless steel
Lower mount (LM)
Lower back mount (LBM) - 2½" & 4" only
1/4" NPT or 1/2" NPT limited to wrench flat area

Bourdon tube

Material: 316L stainless steel
≤ 1,000 PSI: C-type
≥ 1,500 PSI: helical type

Movement

Stainless steel

Dial

White aluminum with black lettering, 2½" with stop pin

Pointer

Black aluminum, adjustable

Case

304 stainless steel, case with solid baffle wall and blowout back (safety case)

Window

Polycarbonate (2½") and Safety Glass (4" & 6") with Buna-N gasket

Bezel ring

Stainless steel, bayonet-type

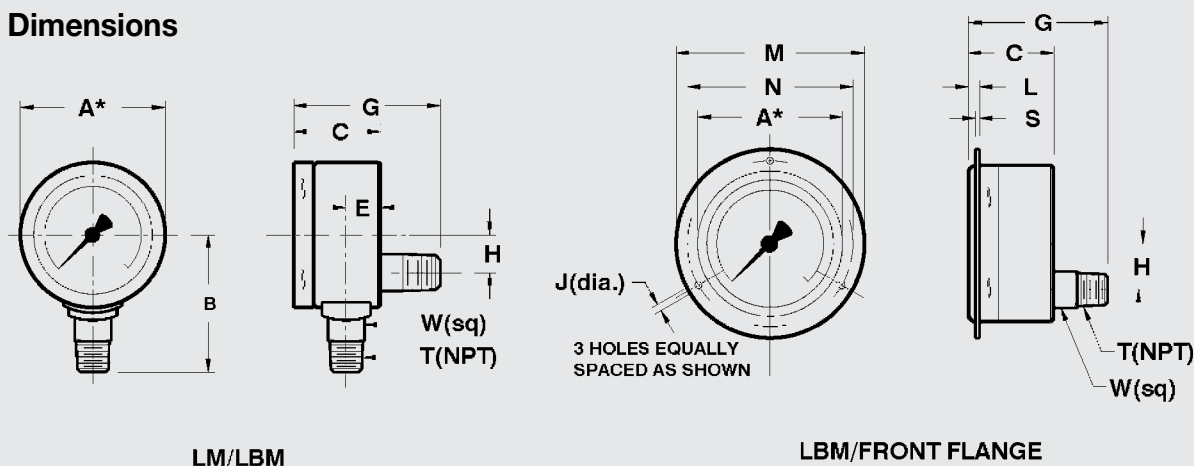
Case fill:

Glycerine 99.7% - Type 233.30 (LM only)

Optional extras

- Other pressure connections
- Monel wetted parts (Type 26X.30)
- Front flange, SS (LBM only)
- Mounting lugs for wall mounting (4" size only)
- Silicone or Halocarbon case filling (LM only)
- Red drag pointer or mark pointer
- Non-adjustable pointer
- Safety glass window
- Custom dial layout
- Integral alarm contacts or transmitters
- Other pressure scales available
bar, kPa, MPa, kg/cm² and dual scales

Dimensions



Size		A	B	C ¹	E	G	H	J	L	M	N	S	T	W	Weight ²	
2.5"	mm	63	48	42	17.5	63	18.5	4	3	85	75	2		14	0.44 lb.	dry
	in	2.48	1.89	1.65	0.69	2.48	0.73	0.16	0.12	3.35	2.95	0.08	1/4"	0.55	0.57 lb.	filled
4"	mm	101	85	57.5	24	93	30	4.8	3	132	116	2		22	1.43 lb.	dry
	in	3.98	3.35	2.26	0.94	3.66	1.18	0.19	0.12	5.20	4.57	0.08	1/2"	0.87	2.38 lb.	filled
6"	mm	161	116	58	24	-	-	5.8	3	196	178	2		22	2.86 lb.	dry
	in	6.34	4.57	2.28	0.94	-	-	0.23	0.12	7.72	7.01	0.08	1/2"	0.87	5.15 lb.	filled

¹ For 6" LM range 20,000 psi, C dimension changes to 75.5 mm / 2.97 in.

² Weight without optional accessories

Note: For 2½" size, front flange is a 2-piece design. Hole panel cutout dimension for this option is 66.5 mm

Ordering information

Pressure gauge model / Nominal size / Scale range / Size of connection / Optional extras required
Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing.
Modifications may take place and materials specified may be replaced by others without prior notice.



WIKI Instrument Corporation

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	3/8"	1/2"	3/4"	1"	1"1/4	1"1/2	2"	2"1/2	3"	4"
DN	10	15	20	25	32	40	50	65	80	100
A	55	58,5	65	74,5	83	93	101	122	141,5	158,5
B	34,5	34,5	41,5	48	60,5	71	87	120	140	172
Kg/cm ² bar	25	25	25	25	18	18	18	12	12	12
LBS - psi	362,5	362,5	362,5	362,5	261	261	261	174	174	174

INSTALLATION

Installation

The EUROPA® check valves are uni-directional; that means they manage the flow in one direction only, which is indicated by the arrow on the body. The valves are composed by a spring, a little valve and a couple of parts made of brass (body and end-adapter) which contain them and that are assembled but means of thread and a sealed material to obtain their aim. In order to avoid that the sealed material gets broken and then the valve loses the connection between the body and the end-adapter, it's necessary to avoid to submit the two parts under the influence of a torque. For the installation normal hydraulic practices must be used, and especially:

- For a proper installation of the valve, near curves and circulation pumps, the valve must be mounted at a distance equal to 10 times the diameter of the pipe;
- The installer has to be sure that the two pipes are correctly aligned;
- During the assembling process the installer has to apply its assembling tools at the end that is nearest to the pipe;
- The application of the sealing materials by the fitter (PTFE or hempen cloth) must be limited at the thread zone. An excess should interfere in the ball gasket's closure zone, compromising the tightness;
- In case the fluid transported has got some impurities (dust, too hard water, and so on) it's necessary to remove impurities by or filter them, otherwise they could damage the seal.

Disassembly the installed valve

To remove the valve from the pipe line or anyhow before unscrewing the connections linked:

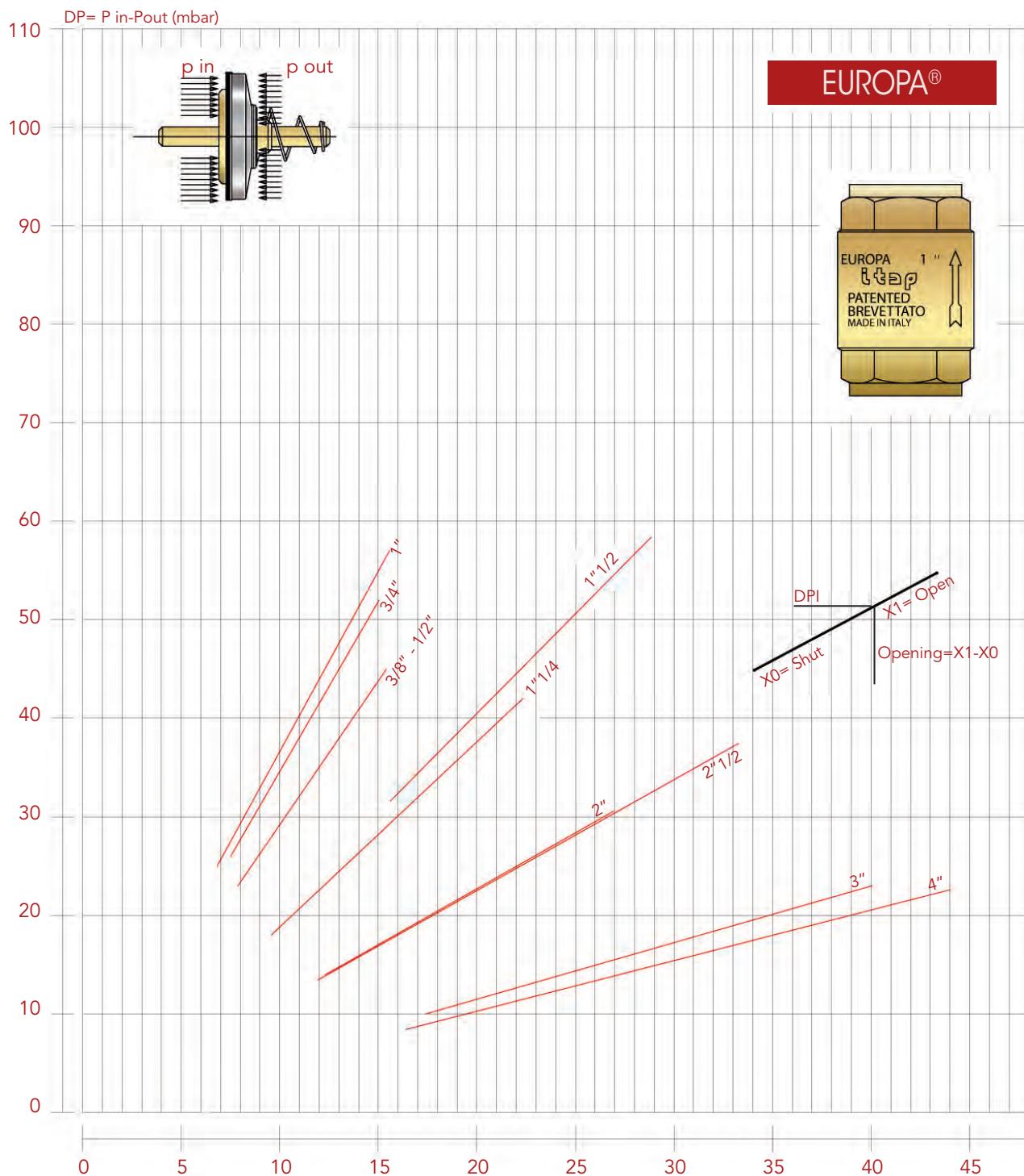
- Wear the protective clothing normally required to work with carried fluids;
- Depressurize the line;
- During the disassembling process, apply the key at the end of the valve, the one nearest the pipe

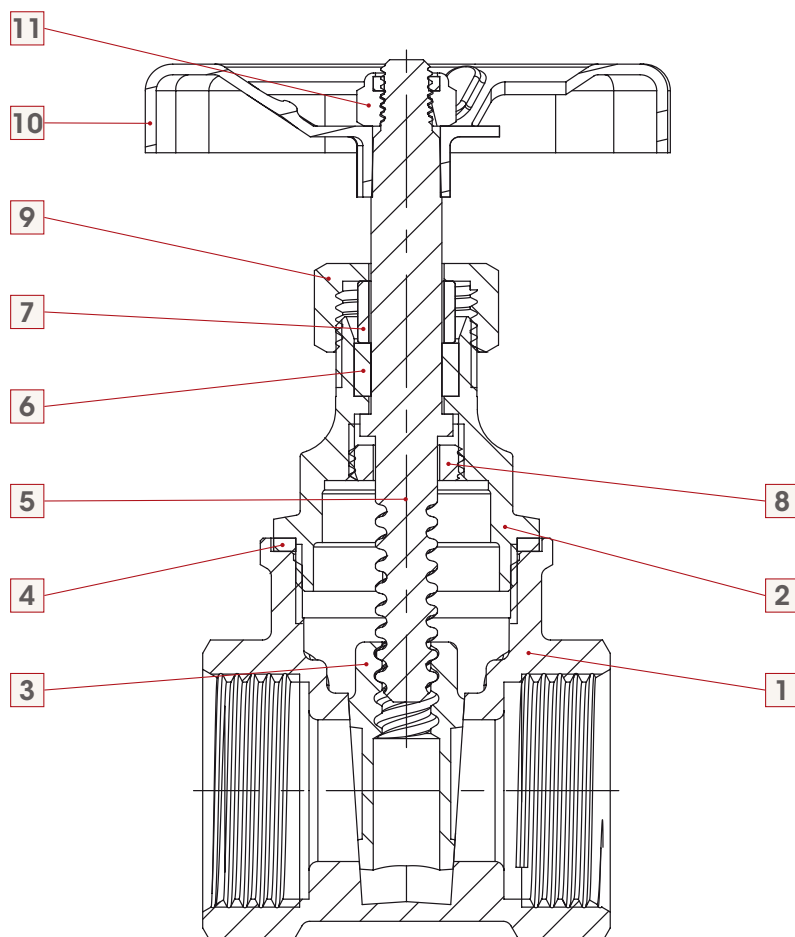
Maintenance

Verify the valve periodically, according to its application's field and its works' field and its work's conditions, in order to be sure that the valve works correctly. In case of losses of tightening, take note that these can be caused by a deposit of foreign bodies (dirty, calcareous) on the rubber seal. In order to solve this inconvenient, it's necessary to unmount the valve and remove the foreign body with compressed air tools.

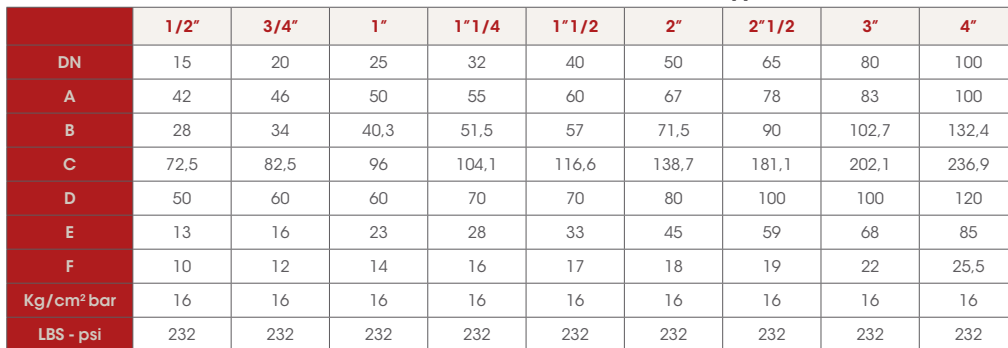
DIAGRAM MINIMUM PRESSURE TO GET THE VALVES OPENING

Art: 100 - 105

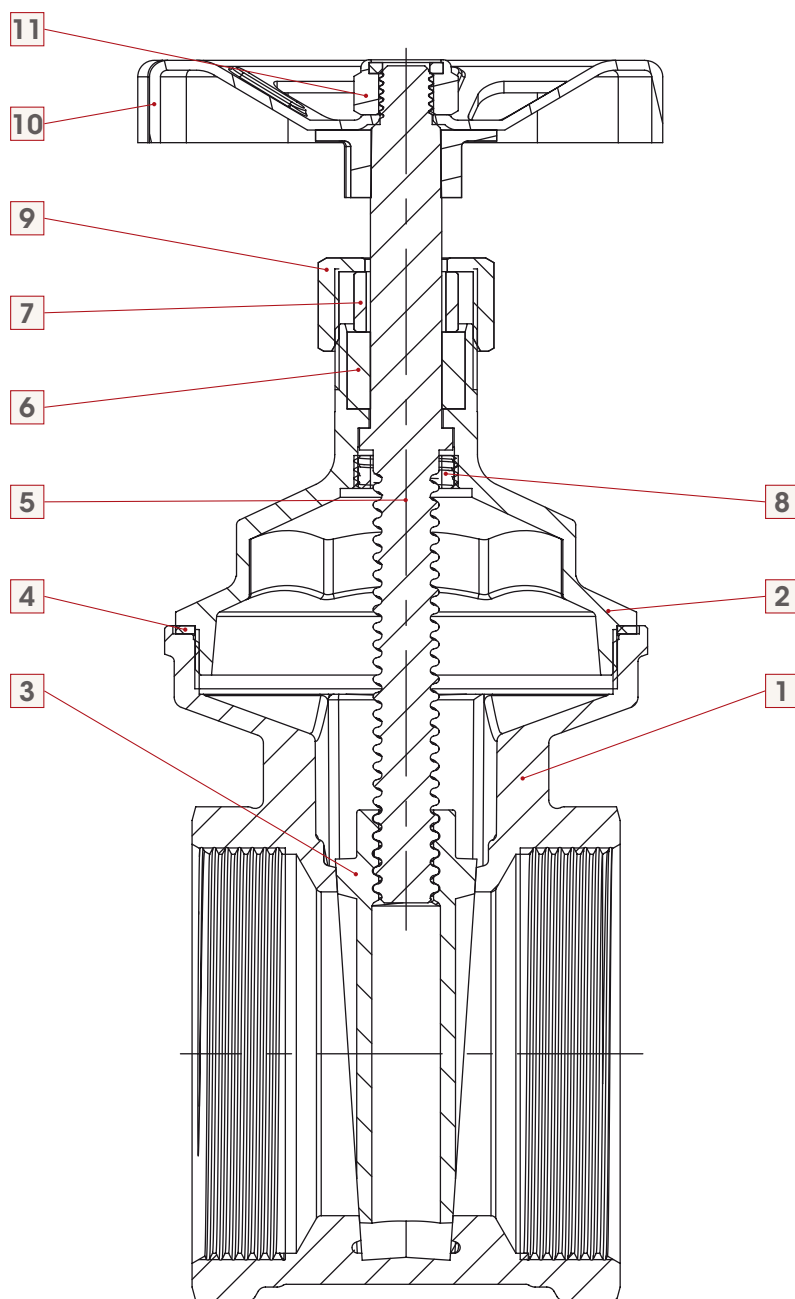




Pos.	DESCRIZIONE / DESCRIPTION	Qt.	MATERIALE / MATERIAL
1	Corpo / Body	1	Ottone / Brass CW617N
2	Vitone / Bonnet	1	Ottone / Brass CW617N
3	Disco / Disk	1	Ottone / Brass CW617N
4	Guarnizione / Washer	1	NA-1002
5	Asta / Stem	1	Ottone / Brass CW617N
6	Guarnizione calcatreccia / Packing-gland washer	1	FE1000
7	Calcatreccia / Packing-gland	1	Ottone / Brass CW617N
8	Ferma asta / Stem stopper	1	Ottone / Brass CW617N
9	Calotta / Cap	1	Ottone / Brass CW617N
10	Volantino / Handle	1	Acciaio / Steel P11
11	Dado autobloccante / Self-locking nut	1	Acciaio / Steel CL8



156 - 2" 1/2, 3", 4"



Pos.	DESCRIZIONE / DESCRIPTION	Qt.	MATERIALE / MATERIAL
1	Corpo / Body	1	Ottone / Brass CC754S
2	Vitone / Bonnet	1	Ottone / Brass CW617N
3	Disco / Disk	1	Ottone / Brass CW617N
4	Guarnizione / Washer	1	NA-1002
5	Asta / Stem	1	Ottone / Brass CW617N
6	Guarnizione calcatreccia / Packing-gland washer	1	FE1000
7	Calcatreccia / Packing-gland	1	Ottone / Brass CW617N
8	Ferma asta / Stem stopper	1	Ottone / Brass CW617N
9	Calotta / Cap	1	Ottone / Brass CW617N
10	Volantino / Handle	1	Acciaio / Steel P11
11	Dado autobloccante / Self-locking nut	1	Acciaio / Steel CL8