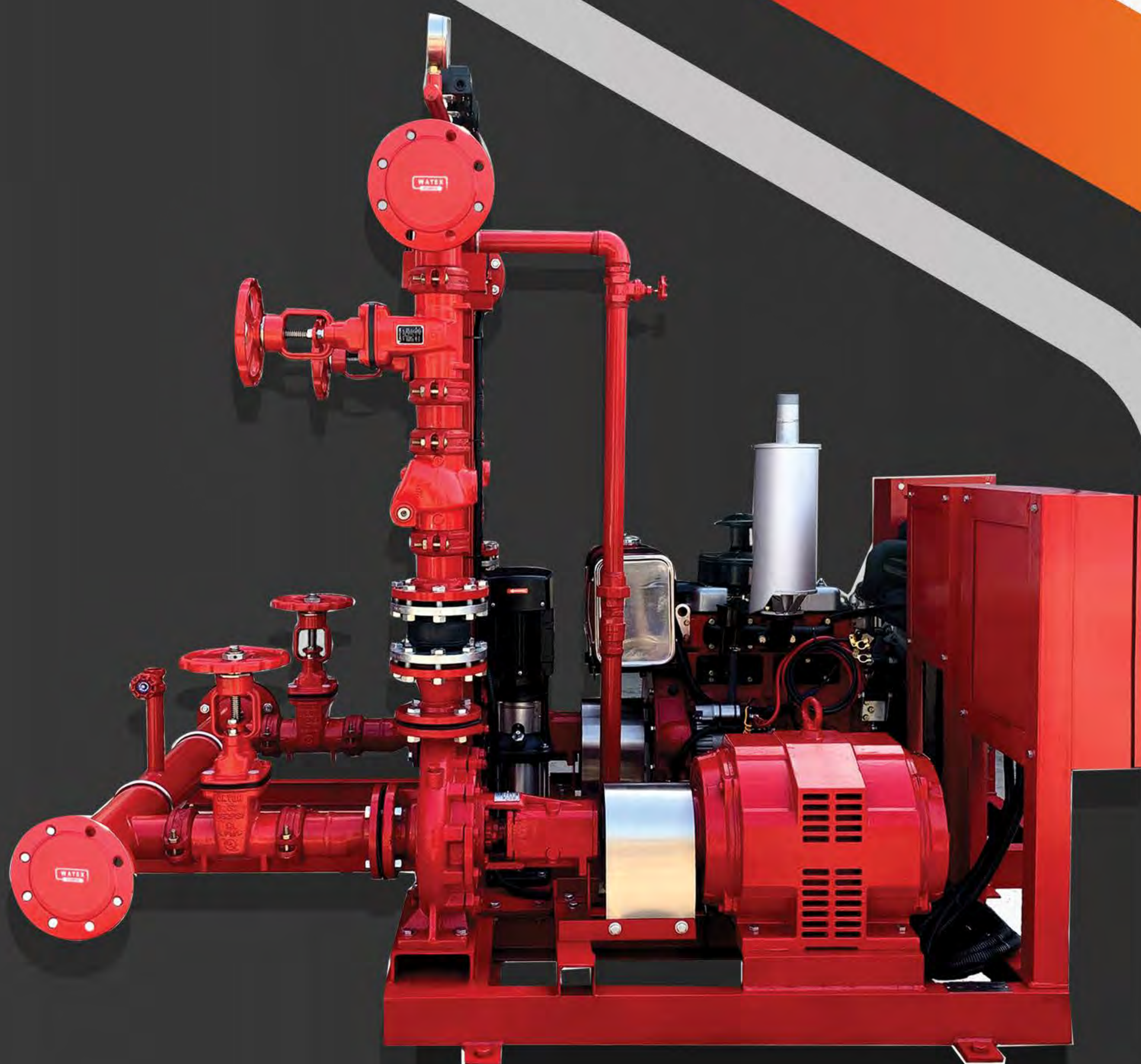




DEGREE[®]

www.fire-degree.com

FIRE PUMP SYSTEM



■ MAIN ELECTRIC PUMP - NFPA PERFORMANCE

BRAND	FIRE DEGREE
MODEL	WE 65-250
CAPACITY	500GPM
HEAD	8 BAR
PUMP CASING	CAST IRON
IMPELLER	CAST IRON
SHAFT	STAINLESS STEEL
SHAFT SEAL	MECH. SEAL
MOTOR/MODEL	MARATHON/WATEX 326TSTD4009/WDC326TS60U2B
VOLTAGE	380V,50HZ, 3PH
POWER	60HP
SPEED	2962/2940 RPM
INSULATION	CLASS F
PROTECTION	IP 23

■ STANDBY DIESEL PUMP- NFPA PERFORMANCE

BRAND	FIRE DEGREE
MODEL	WE 65-250
CAPACITY	500 GPM
HEAD	8 BAR
PUMP CASING	CAST IRON
IMPELLER	CAST IRON
SHAFT	STAINLESS STEEL
SHAFT SEAL	MECH. SEAL
ENGINE/MODEL	POWER / 490 /3000 RPM
VOLTAGE	12VDC
POWER /SPEED / DIESEL TANK	60 HP / Built in
PIPE SIZE	6" WELDING TYPE

■ JOCKEY PUMP

MODEL	RV4-14 25GPM/9BAR - 3KW - 50HZ
IMPELLER / SHAFT	STAINLESS STEEL
PRESSURE SWITCH	PACIFIC
VALVES	ONTOR /WINGROU/GALA 4" UL/FM
CONTROLLERS	3 INDIVIDUAL CONTROLLERS-LS Brand - Made in Korea

* NOTE: MATERIAL SELECTION SUBJECTS TO FACTORY'S CHOICE

Pump Performance Datasheet

Customer

Customer reference

Item number 040

Service Horizontal end suction pump

Quantity 1

Quote number

Size WE 65-250

Stages 1

Based on curve number WE 65-250

Date last saved 29 Sep 2022 4:26 PM

Operating Conditions

Flow, rated 500.0 USgpm

Differential head / pressure, rated (requested) 8.00 bar

Differential head / pressure, rated (actual) 8.03 bar

Suction pressure, rated / max 0.00 / 0.00 bar.g

NPSH available, rated Ample

Site Supply Frequency 50 Hz

Liquid

Liquid type Water

Additional liquid description

Solids diameter, max 0.0 mm

Solids concentration, by volume 0.00 %

Temperature, max 20.00 deg C

Fluid density, rated / max 0.999 / 0.999 kg/dm3

Viscosity, rated 1.00 cSt

Vapor pressure, rated 0.00 bar.a

Performance

Speed criteria Synchronous

Speed, rated 2950 rpm

Impeller diameter, rated 247 mm

Impeller diameter, maximum 264 mm

Impeller diameter, minimum 211 mm

Efficiency 70.66 %

NPSH required / margin required 2.70 / 0.00 m

nq (imp. eye flow) / S (imp. eye flow) 24 / 184 Metric units

MCSF

Head, maximum, rated diameter 8.28 bar

Head rise to shutoff 3.26 %

Flow, best eff. point 753.8 USgpm

Flow ratio, rated / BEP 66.33%

Diameter ratio (rated / max) 93.56%

Head ratio (rated dia / max dia) 85.67%

Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010] 1.00 / 1.00 / 1.00 / 1.00

Selection status Acceptable

Material

Material selected

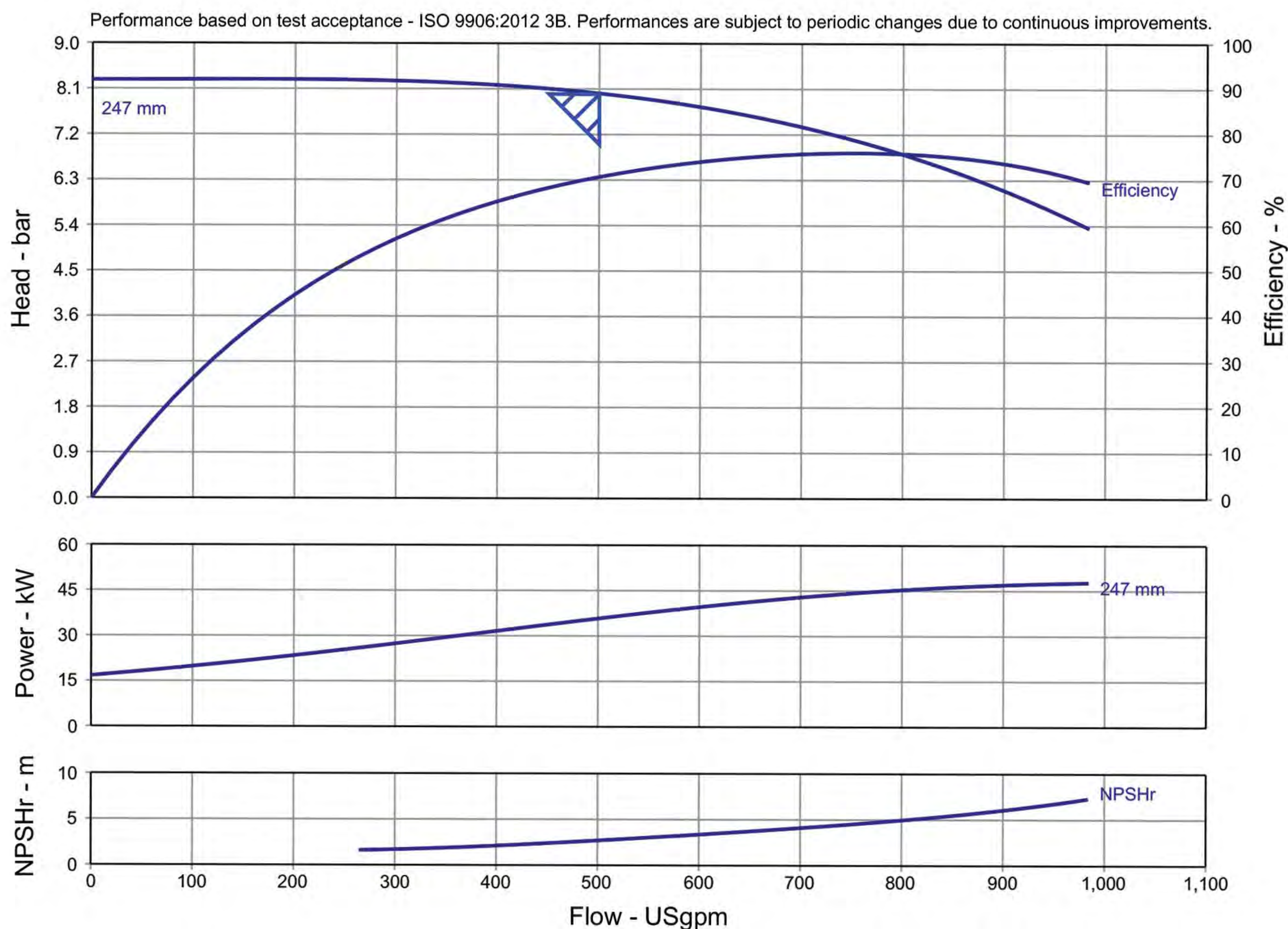
Standard

Pressure Data

Maximum working pressure	8.28 bar.g
Maximum allowable working pressure	16.00 bar.g
Maximum allowable suction pressure	2.50 bar.g
Hydrostatic test press	24.00 bar.g

Driver & Power Data (@Max density)

Driver sizing specification	Rated power
Margin over specification	0.00 %
Service factor	1.00
Power, hydraulic	25.28kW
Power, rated	35.77kW
Power, maximum, rated diameter	47.75 kW
Minimum recommended motor rating	44.74 kW / 60.00 hp



Construction

Single-stage bare shaft end-suction pumps

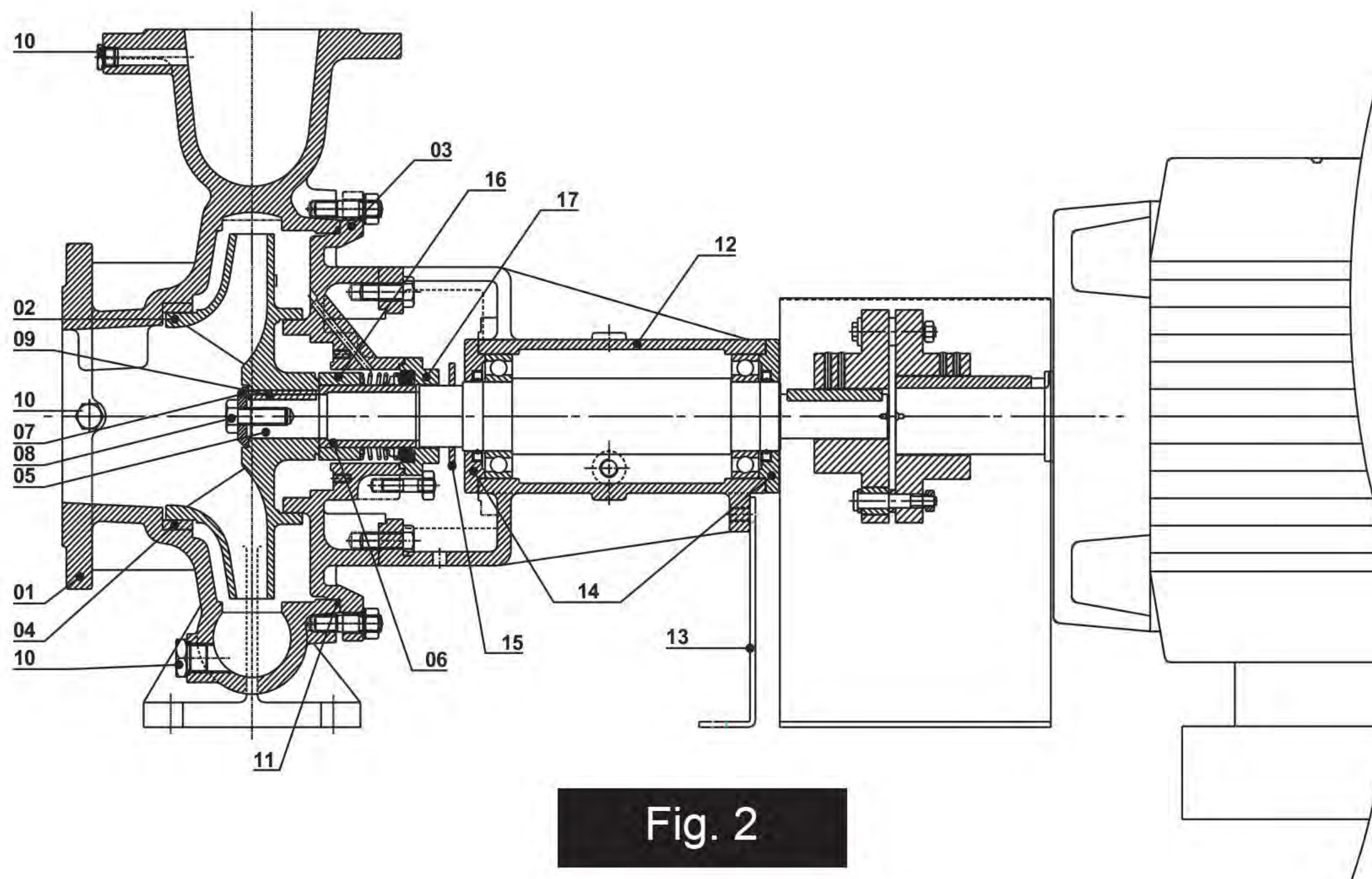


Fig. 2

Materials

Pos.	Component	A-version	B-version	C-version	D-version	E-version	F-version	G-version
1	Volute casing	Cast iron	Cast iron	Cast iron	Cast iron	Bronze	CF-8	CF-8M
2	Impeller	Cast iron	Bronze	CF-8	CF-8M	Bronze	CF-8	CF-8M
3	Back cover	Cast iron	Cast iron	Cast iron	Cast iron	Bronze	CF-8	CF-8M
5	Shaft	Carbon Steel	AISI 410	AISI 304	AISI 316	AISI 304	AISI 304	AISI 316
6	Shaft sleeve	AISI 410	AISI 410	AISI 304	AISI 316	Bronze	AISI 304	AISI 316
7	Impeller washer	AISI 410	AISI 410	AISI 304	AISI 316	Bronze	AISI 304	AISI 316
8	Impeller lock pin	AISI 410	AISI 410	AISI 304	AISI 316	AISI 410	AISI 304	AISI 316
9	Impeller key	AISI 410	AISI 410	AISI 304	AISI 316	AISI 410	AISI 304	AISI 316
10	Plugs	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel	Bronze	AISI 304	AISI 316
11	O-ring	NBR	NBR	NBR	NBR	Viton	Viton	Viton
12	Bearing bracket	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron
13	Foot	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel
14	Bearing cover	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron
15	Water thrower	NBR	NBR	NBR	NBR	NBR	NBR	NBR
16	Spacer	AISI 410	AISI 410	AISI 304	AISI 316	AISI 304	AISI 304	AISI 316
17	Gland followe	Cast iron	Cast iron	Cast iron	Cast iron	Bronze	CF-8	CF-8M
4	Wear ring*	Cast iron	Bronze	AISI 304	AISI 316	Bronze	CF-8	CF-8M

* Wear ring is available on request only.

CONSTRUCTION

Single-stage bare shaft end-suction pumps

Construction features

Volute casing

The volute casing of the pumps are designed to be robust in construction to take the undue stresses offered by the pipe work. They have an axial suction port and radial discharge port. Standard flanges are PN 16 as per DIN standard EN 1092-2 and PN 25 as per DIN standard EN 1092-2. ANSI 125 and ANSI 250 as per ASME B16.1 are available on request.

The volute casing are provided with a priming & drain hole closed by plugs.



Fig. 3
Volute casing

Motor Adaptor & Back cover

Motor adaptors are robust in construction and are provided with an air vent screw in the shaft seal chamber.

Shaft & bearing bracket

The bearing bracket is provided with 2 properly sized antifriction ball bearings which are permanently lubricated for life. The bearing bracket is made of cast iron of high tensile strength. The shaft are available in carbon steel as well as stainless steel. A shaft sleeve of stainless steel is provided in the stuffing box to protect the shaft from wear and corrosion.

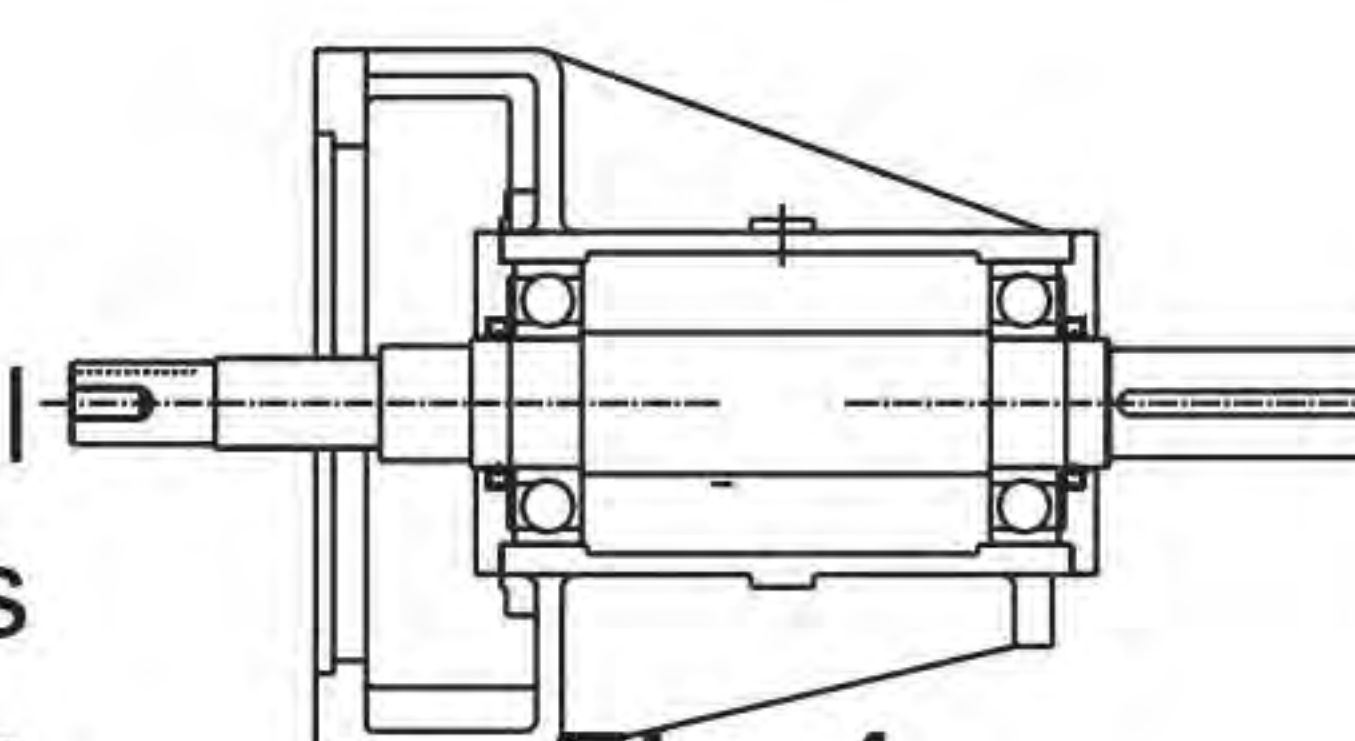


Fig. 4
Shaft & bearing
bracket

All pumps are provided with one of four shaft, shaft seal and bearing brackets. As shaft and bearings are strong and properly sized the pump can be driven by a belt drive or diesel engine without any problem. A water thrower is provided on the shaft to prevent liquid from entering the bearing bracket and damaging the bearing.

Coupling

All pumps can be provided with two types of couplings.

- Standard coupling
- Spacer coupling

The use of spacer coupling is helpful since pumps fitted with them can be serviced without dismantling the motor from the base frame and also without removing the pipe work or volute casing. Realignment of pump and motor is also not necessary after servicing.

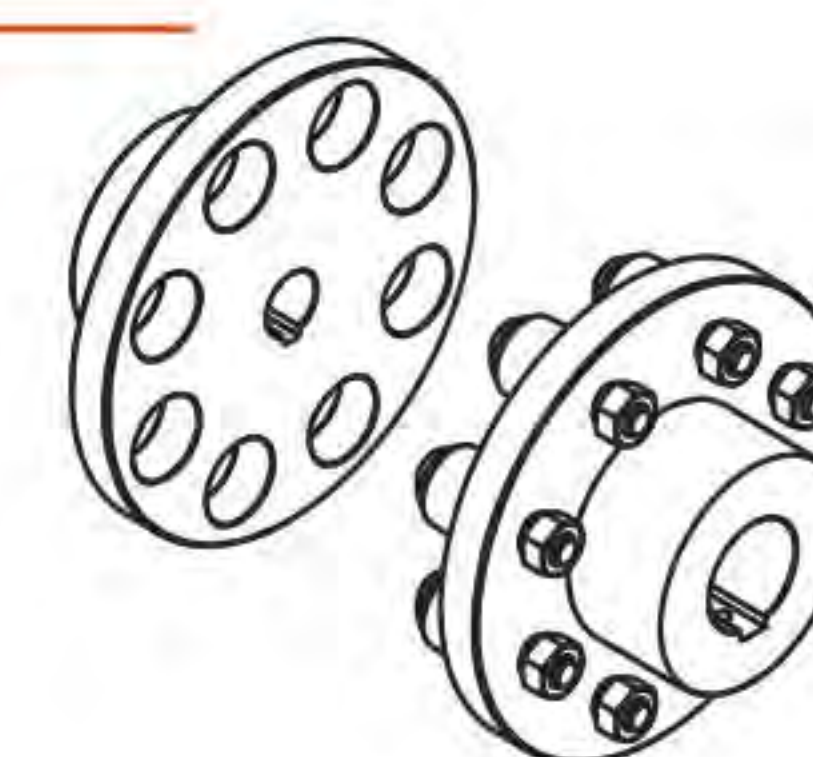


Fig. 5
Standard coupling

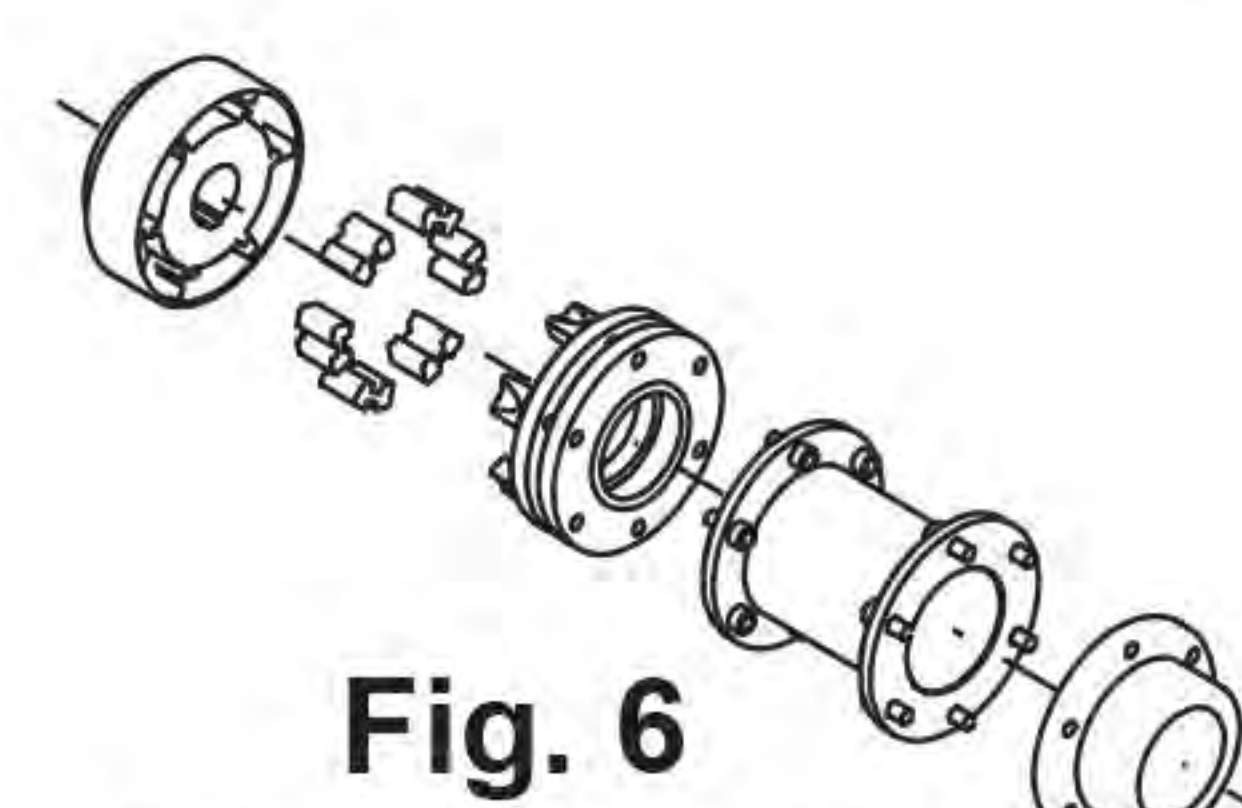


Fig. 6
Spacer coupling

Impeller

The impellers are closed impellers with extra smooth surface finish and machined completely from outside to ensure high efficiency.

The direction of rotation of impeller is clock wise when viewed from the motor non-driving end.

They are dynamically balanced to grade 6.3 of ISO 1940.

All impellers can be trimmed to adopt them for the duty point requested by the customer.

Suggested trimmed impeller diameter as shown on the performance curves are theoretical. Performance may vary from what is shown on the performance curve



Fig. 7
Impeller

Base frame

Pump and motor are mounted on a common steel base frame.

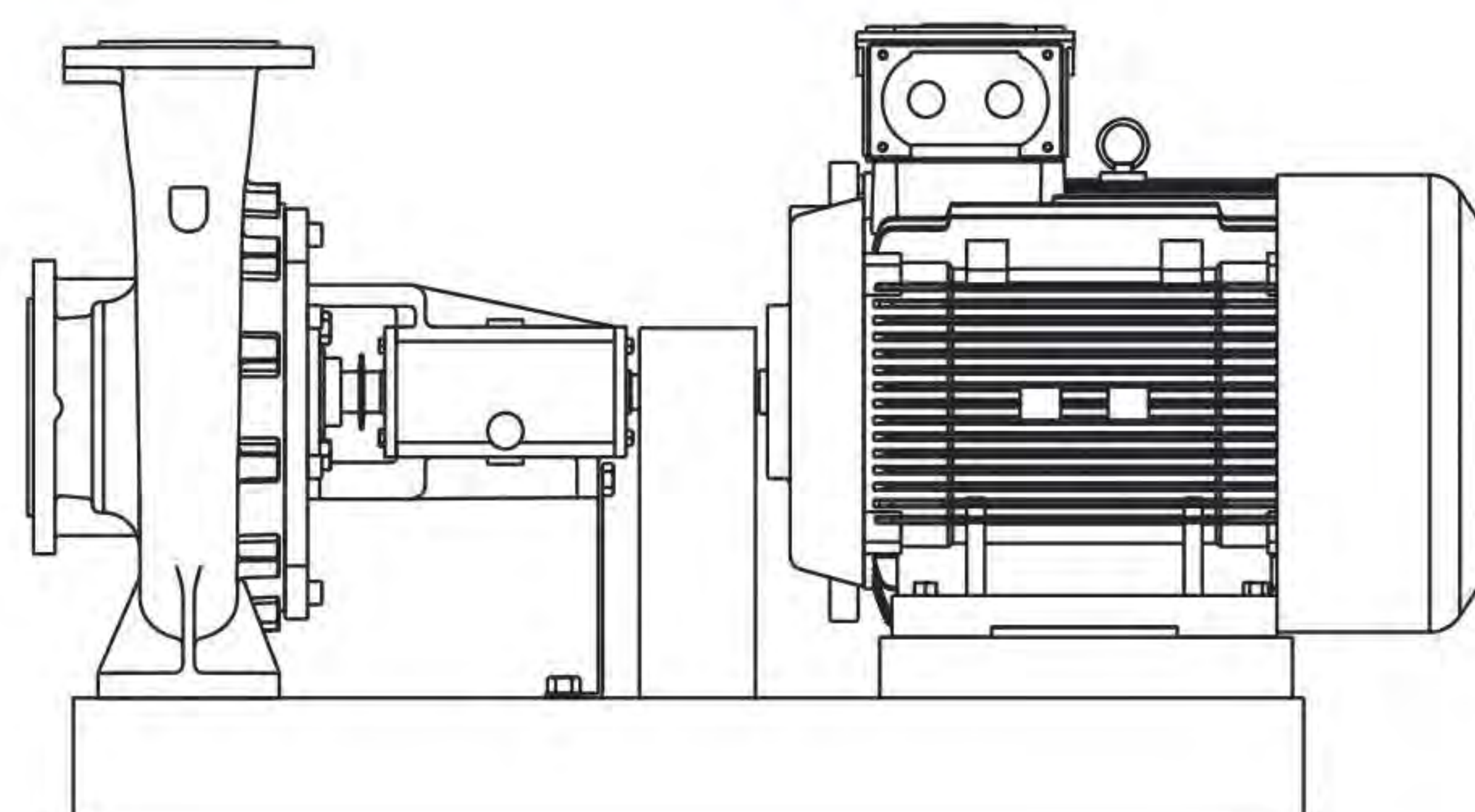


Fig. 8

we pump motor unit mounted on a base frame

Test pressure

All pumps are hydrostatic tested for leakage as per the following test pressure using water containing corrosion inhibitor at room temperature.

Pressure rating	Operating pressure	Test pressure
PN 16	16 bar	24 bar
PN 25	25 bar	37.5 bar
ANSI 125	125 psi	188 psi
ANSI 250	250 psi	375 psi

Motors

The motors are squirrel cage induction motors, totally enclosed fan cooled with main dimension to IEC standards.

The standard motors with the pumps are all as per EFF2 efficiency.

EFF1 efficiency motors can be available on request.

ELECTRIC MOTORS DATA SHEET



FIRE PUMP MOTORS





MARATHON[®]

The impellers are closed impellers with extra smooth surface finish and In 1913, the founders of a new motor company that they named Marathon Electric had a simple vision:

- Serve our customers according to their needs.
- Produce the most efficient and long-lasting motors.
- Commit to new technology and research.
- Expand and diversify into new markets.

The company was located in the heartland of America, Wausau, Wisconsin, where it remains today, over one hundred years later. The company continues to be one of the innovators in the motor industry, built on a history of industry first! Marathon engineered, designed, and built the first fire pump motor and we continue to lead the life safety industry with Marine Duty UL fire pump motors, medium voltage, vertical hollow shaft UL fire pump motors, and specialty UL Fire Pump motors.

When a fireman needs a trusted friend in an emergency, he knows Marathon will do the job, offering protection, high performance, and reliability as we have for over one hundred years ... that's a legacy!

PRODUCT LINE

ODP

- Available in NEMA or IEC construction these motors are ideal for in-door applications. Lower cost and longer product life due to lower temperature windings make these a best value option.
- These motors are available from 25-500HP, 2 and 4 poles, Epact Efficiency. All motors are 12 leads for wye-delta or across-the-line start, part winding start is available in single voltage or at lower voltage for dual voltage motors. All motors have 1.15 service factor for all voltages. years ... that's a legacy!

TEFC

- Available in NEMA or IEC construction, TEFC motors are ideal for applications in tough environments.
- These motors are available from 25-500HP, 2 and 4 poles, Epact Efficiency. All motors are 12 leads for wye-delta or across the line start, part winding start is available in single voltage or at lower voltage for duo voltage motors. All motors have 1.15 service factor for all voltages.

CLOSE COUPLED PUMP

- Available as JP or JM constructions, these motors are ideal when space is an issue. This integrated design enables a lower system cost.
- 2 and 4 poles, Epact Efficiency. Horizontal or vertical ODP construction.
- All motors have 1.15 service factor for all voltages.

VSS AND VHS

- Vertical solid shaft and hollow shaft constructions are ideal for deep well applications with turbine pumps. These motors are designed to handle the highest thrust loads of this system.
- VSS motors are available from 3-400 HP, 2 to 8 poles and are designed for normal and medium thrust, Epact Efficiency.
- All motors are 12 leads for wye-delta or across the line start, part winding start is available in single voltage or at lower voltage for duo voltage motors. All motors have 1.15 service factor for all voltages.
- VHS motors are available from 7.5HP to 300HP, 2 and 4 poles, WP1, Epact Efficiency.
- All motors are 12 leads for wye-delta or across-the-line start, part winding start is available in single voltage or at lower voltage for dual voltage motors. All motors have 1.15 service factor for all voltages.

MEDIUM VOLTAGE

- Regal also offers Medium Voltage products in NEMA and IEC constructions designed specifically for Fire Pump Applications.
- NEMA Construction, from 200 to 700HP, 2300V & 4000V 50/60HZ, 2 and 4 poles, IP22, 1.15 service factor. IEC Construction, from 185kW to 2800kW, 3kV through 10kV 50HZ & 4kV through 13.8kV 60HZ, 4 poles, IP23.



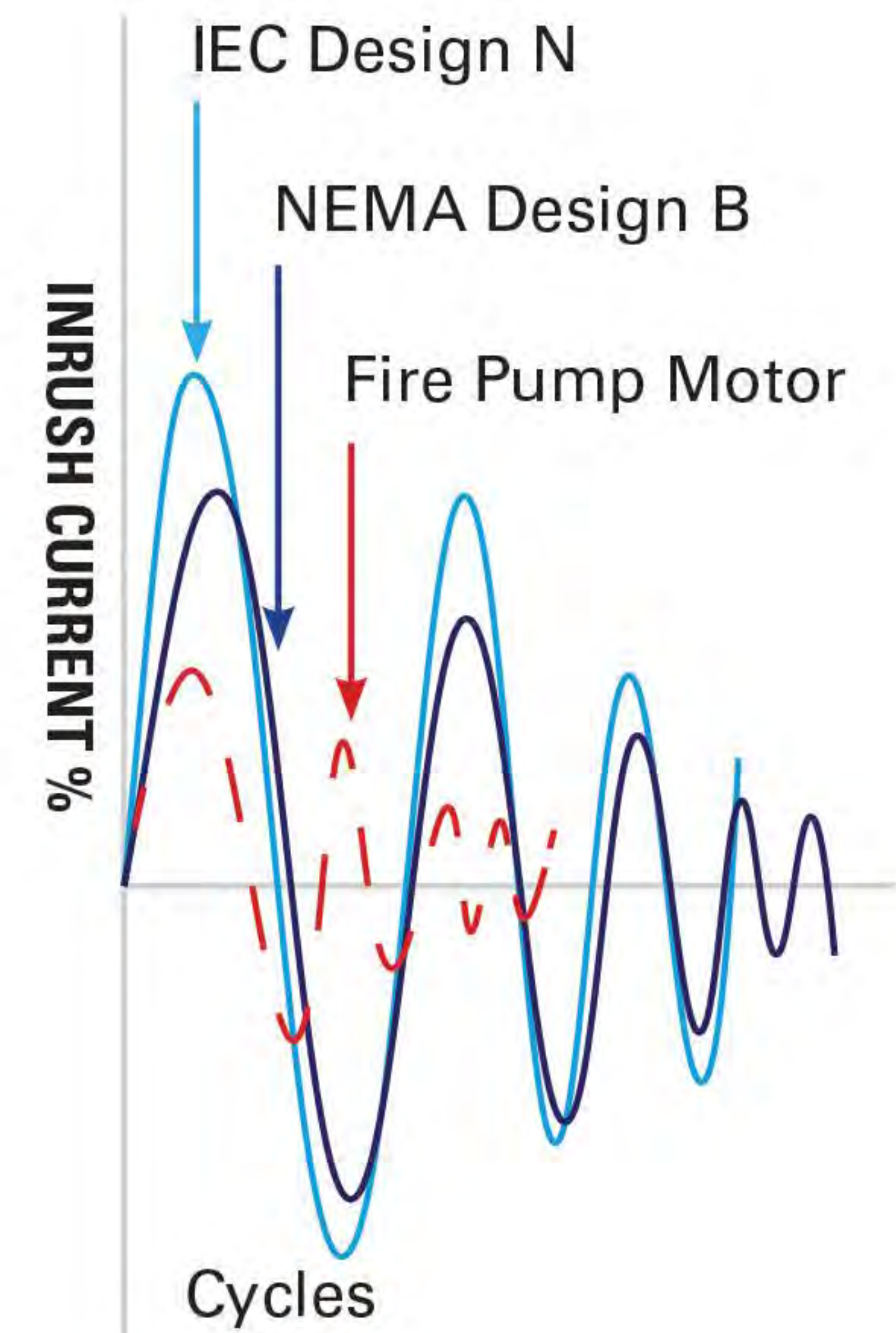
UL LISTED MOTORS

NAMEPLATES

Fire pump motors have two nameplates, the normal nameplate with UL label and special fire pump nameplate with the UL listing for fire pumps.



FIRE PUMP MOTOR INRUSH CURRENTS

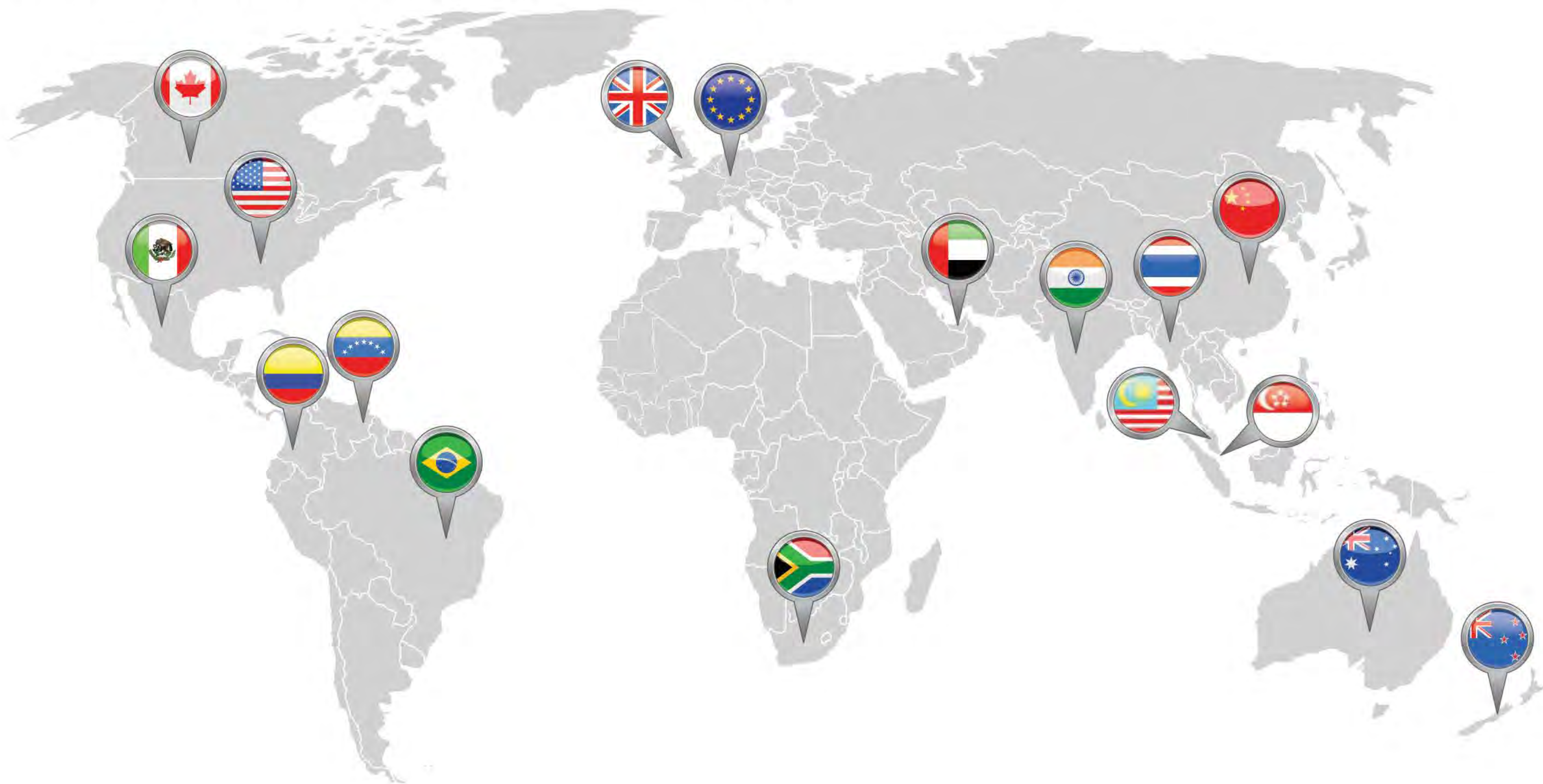


Classification	Locked-Rotor Torque (% Rated-Load Torque)	Breakdown Torque (% Rated-Load Torque)	Locked-Rotor Current (% Rated-Load Current)
UL Fire Pump Motor	70-275*	175-300*	300-600
Design B – Normal locked-rotor torque and normal locked-rotor current	70-275*	175-300*	600-700
IEC 34-12 Design N locked-rotor torques and currents	75-190*	160-200*	800-1000

*Higher values are for motors having lower horsepower ratings.

REGAL WORLD FOOTPRINT

The motor you want, where you are, when you need.



CODES & CERTIFICATIONS

FIRE PUMP SYSTEM

A fire pump system is part of a fire sprinkler system's water supply either connected to the public underground water supply piping, or a static water source.

A fire pump system is tested and listed for its use specifically for fire service by a third-party accredited testing and listing laboratory, such as FM, LPCB, UL, VdS. Additionally, installation of fire pump systems is coordinated by Comité Européen Des Assurances in Europe and the National Fire Protection Code in the U.S.

FIRE PUMP MOTORS

A fire pump motor is a definite purpose motor designed to meet UL Standard of Safety 1004-1 Rotating Electrical Machines - General Requirements - and UL 1004-5 Fire Pump Motors. These motors are designed and built with a low KVA code to reduce inrush currents, offer extended life, and are tested to meet the highest standards in the industry.

Fire pump motors consist of low voltage NEMA Open Dripproof motors, NEMA JM/JMV/JP/JPV Close-Coupled pump motors, NEMA vertical solid shaft P-base motors, NEMA vertical hollow shaft motors, NEMA Totally Enclosed motors. We manufacture a line of low voltage IEC Totally Enclosed motors and Marine Duty IEC Totally Enclosed motors. These motors carry the UL mark and file number for fire pump motors. Additionally, we manufacture a line of low voltage IEC non-UL motors in IE1, IE2, and IE3 efficiencies for Europe, certain areas of the Middle East, Asia, Africa, and portions of Latin America.

UL also defines requirements for fire pump motors above 500 HP and greater than 600 volts, Marathon markets a line of high efficiency 2300V, 4160V and 7.2kV NEMA and IEC open motors for fire pump applications. These motors meet the same high standards as Marathon's low voltage UL listed motors.

COMITÉ EUROPÉEN DES ASSURANCES (CEA)

Insurance Europe (known as Comité Européen des Assurances until March 2012) is the European insurance and reinsurance federation. Through its 34 member bodies - the national insurance associations - it represents all types of insurance and reinsurance undertakings. Standard CEA 4046 – CEA Rules for the approval of Installers of Fire Fighting Systems in accordance with CEA 4046 covers the installation of fire pump systems.

FACTORY MUTUAL (FM)

Factory Mutual specializes in loss prevention services throughout the world in the Highly Protected Risk (HPR) property insurance market sector. The company employs a business model whereby risk and premiums are determined by engineering analysis as opposed to historically based actuarial calculations. FM engineering personnel regularly visit insured locations to evaluate hazards and recommend improvements.

FM Approved fire pump packages are produced using components that have been subjected to rigorous tests to ensure that they will perform when called upon throughout the duration of a fire event. A FM Approved fire pump system will test the driver (motor, diesel or steam), pump and controller as a system to assure the performance characteristics of the system meet the protection requirements for the property.

LOSS PREVENTION CERTIFICATION BOARD (LPCB)

The LPCB has been working with industry and government for more than 100 years to set the standards necessary to ensure that fire and security products and services work effectively.

In that time the LPCB Mark has become an internationally recognized mark of trust. Under the LPCB label, third-party certification and listing of fire and security products and services are available, so that: architects and specifiers can be sure that those they select will perform as required, and manufacturers and suppliers can demonstrate the quality of their products and services.

NATIONAL FIRE PROTECTION CODE 20 (NFPA 20)

NFPA 20 – The Standard for Installation of Stationary Pumps for Fire Protection codifies the requirements for safe electrical installations of a fire pump system into a single, standardized source. The NFPA 20 code covers water supply requirements, pump requirements, pump sizing, pump types, pump drivers, and accessory equipment such as valves and flow meters used in a fire pump system. It is part of the National Fire Codes series published by the National Fire Protection Association (NFPA), and while not itself a U.S. law, NEC use is commonly mandated by state or local law.

UNDERWRITERS LABORATORY

Underwriters Laboratories (UL) is a global independent safety science company with more than a century of expertise innovating safety solutions. UL helps safeguard people, products and places by certify, validating, testing, inspecting, auditing, advising, and educating. The UL Mark is the single most accepted certification for fire pump systems and motors in the world.

VDS 2095 – VdS

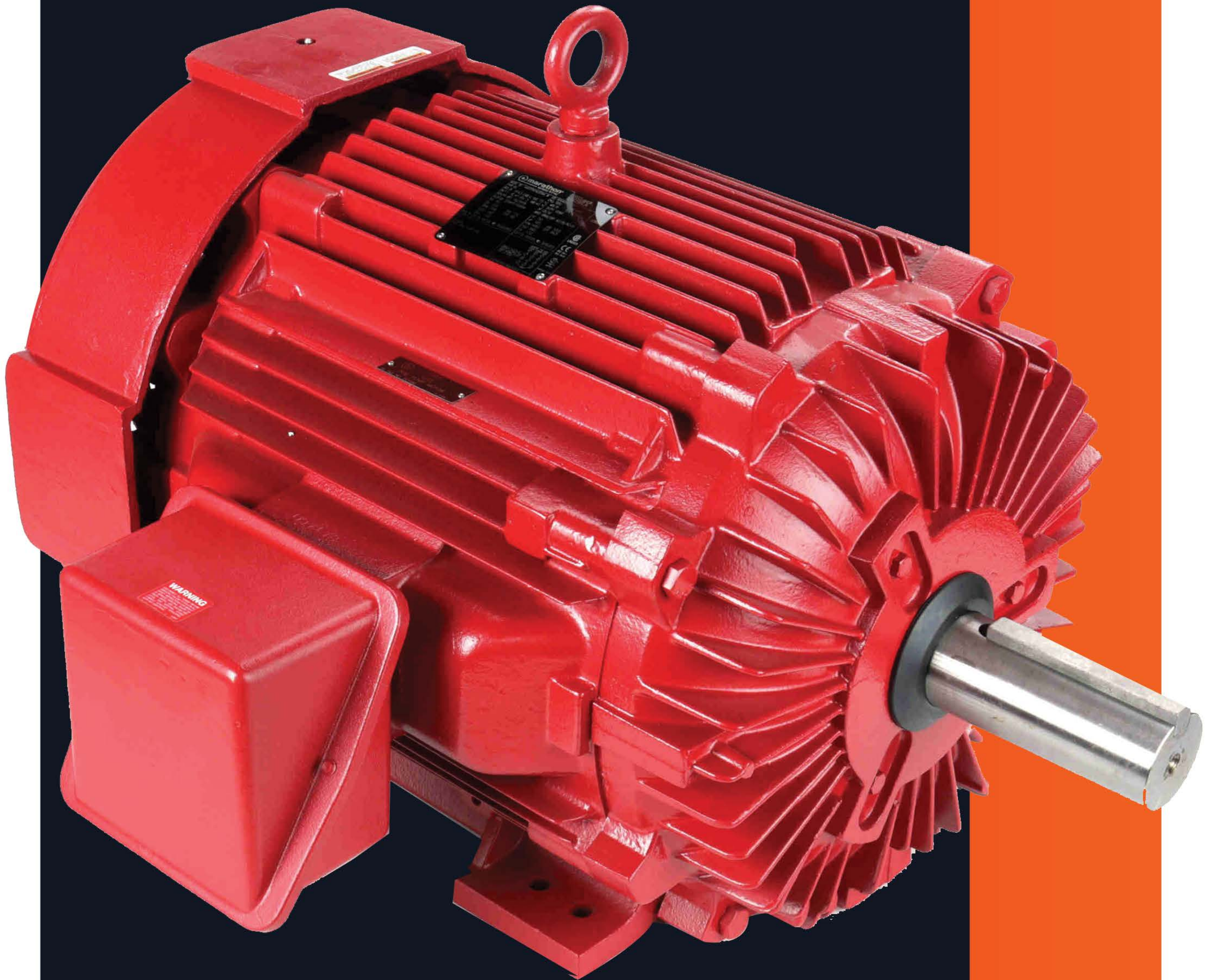
is an independent institution which has been ensuring safety and trust in the fields of fire protection and security for many decades. The activities of VdS in the field of fire protection are targeted at the effectiveness and reliability of installed fire protection systems. The basis of the VdS approval process are the coordinated European specifications for installers of fire protection and security systems (CEA 4048 and CEA 4049) of the Comité Européen des Assurances (CEA). Furthermore, the approval process takes full account of the requirements of DIN 14675 with regard to the proof of competence of the installers (described in DIN 14675 as specialist companies). VdS is accredited for the certification of BMA installers by Deutsche Akkreditierungs GmbH (DAkkS) according to DIN EN 45011.

ODP 50 HZ

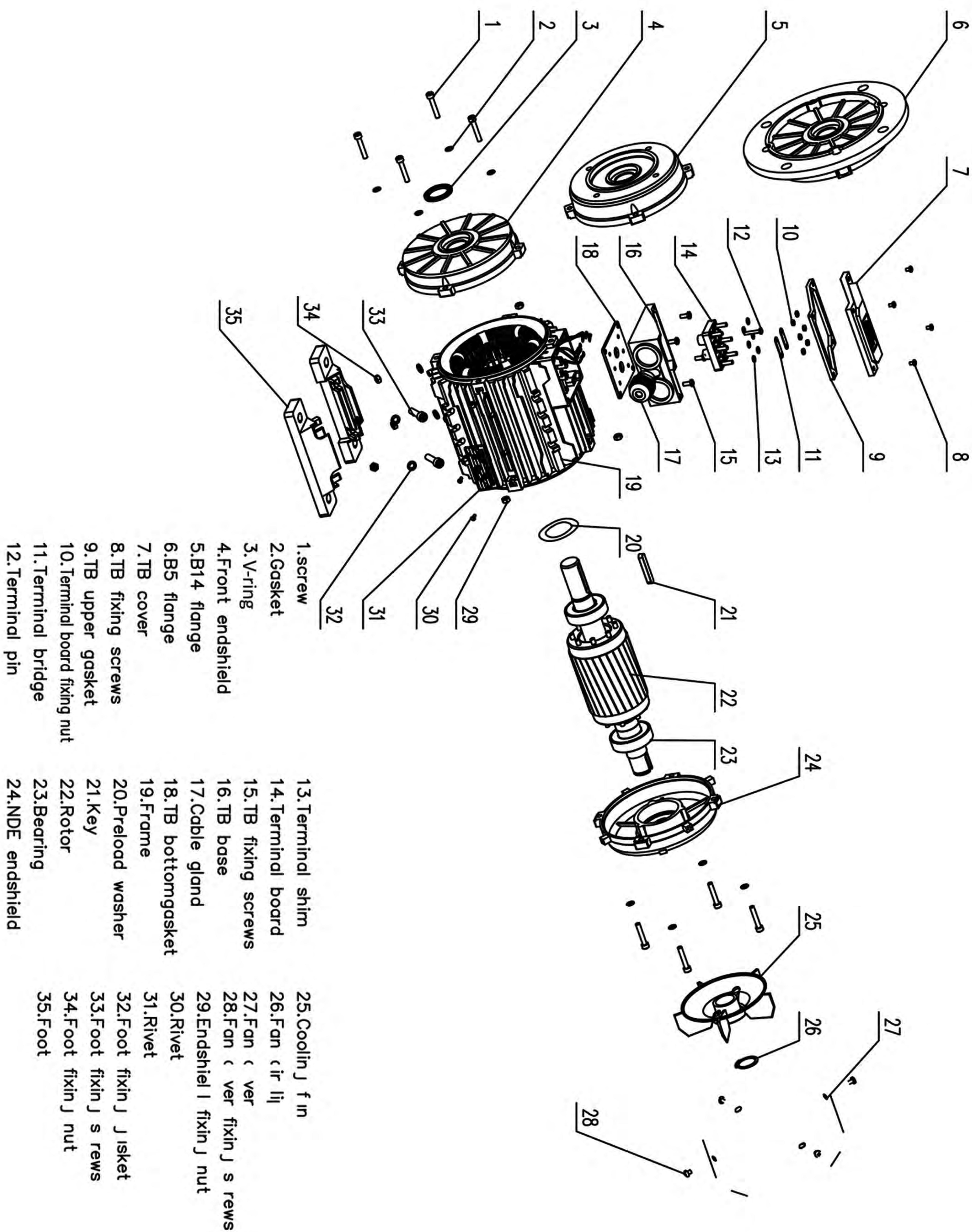
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256TTDBD4024	256T	2	25	89.5	0.88	208/415	50	66/33	492/246	2940	1.3	2
256TTDBD4024	256T	2	20	90.2	0.87	200/400	50	54/27	409/204	2950	1.3	2
284TSTDBD4002	284TS	2	25	90.2	0.86	190/380	50	72/36	539/269	2955	1.3	2
284TSTDBD4002	284TS	2	30	90.2	0.85	208/415	50	81/40.6	591/296	2955	1.3	2
284TSTDBD4002	284TS	2	25	90.2	0.85	200/400	50	70/35	512/256	2960	1.3	2
286TSTDBD4022	286TS	2	30	91	0.87	190/380	50	87/43.5	647/323	2958	1.3	2
286TSTDBD4022	286TS	2	40	90.2	0.86	208/415	50	106/53	788/395	2950	1.25	2
286TSTDBD4022	286TS	2	30	91	0.85	200/400	50	84/42	614/307	2962	1.3	2
324TSTD4010	324TS	2	40	91.7	0.88	190/380	50	110/55	863/431	2965	1.25	2
324TSTD4010	324TS	2	50	91.7	0.88	208/415	50	128/64	985/493	2965	1.2	2
324TSTD4010	324TS	2	40	91.7	0.87	200/400	50	108/54	819/409	2970	1.25	2
326TSTD4024	326TS	2	50	92.4	0.88	190/380	50	139/70	1078/539	2962	1.2	2
326TSTD4009	326TS	2	60	91.7	0.88	380/415	50	152/76	1182/592	2962	1.2	2
326TSTD4024	326TS	2	50	92.4	0.87	200/400	50	132/66	1024/512	2965	1.2	2
364TSTD4025	364TS	2	60	92.4	0.88	190/380	50	166/83	1294/647	2970	1.2	2
364TSTD4025	364TS	2	75	92.4	0.88	208/415	50	190/95	1478/740	2965	1.05	2
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365TSTD4025	365TS	2	75	92.4	0.88	190/380	50	210/105	1618/809	2970	1.05	2
365TSTD4025	365TS	2	100	92.4	0.88	208/415	50	256/128	1970/987	2965	1.05	2
365TSTD4025	365TS	2	75	93	0.87	200/400	50	200/100	1537/768	2972	1.05	2
404TSTD4017	404TS	2	100	93	0.88	380	50	135	1078	2975	1.05	2
404TSTD4017	404TS	2	125	93	0.89	415	50	155	1234	2970	1	2
404TSTD4017	404TS	2	100	93	0.87	400	50	130	1024	2978	1.05	2
405TSTD4006	405TS	2	125	93	0.89	380	50	168	1348	2970	1	2
405TSTD4006	405TS	2	150	93	0.89	415	50	185	1481	2970	1	2
405TSTD4006	405TS	2	125	93	0.88	400	50	160	1281	2975	1	2
444TSTD4010	444TS	2	150	94.1	0.88	380	50	200	1618	2978	1	2
444TSTD4010	444TS	2	200	94.1	0.89	415	50	245	1975	2975	1	2
444TSTD4010	444TS	2	150	94.5	0.87	400	50	190	1537	2980	1	2
445TSTD4007	445TS	2	200	94.1	0.88	380	50	265	2157	2975	1	2
445TSTD4007	445TS	2	250	94.1	0.89	415	50	305	2469	2975	0.7	1.75
445TSTD4007	445TS	2	200	94.2	0.87	400	50	252	2049	2978	1	2
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	447TS	2	300	95	0.91	415	50	360	2963	2975	0.7	1.75
	447TS	2	300	95	0.91	400	50	374	3074	2975	0.7	1.75
	449TS	2	350	95	0.91	380	50	459	3775	2975	0.7	1.75
	449TS	2	350	95	0.91	415	50	420	3457	2975	0.7	1.75
	449TS	2	350	95	0.91	400	50	436	3586	2975	0.7	1.75
	449TS	2	400	95.4	0.91	380	50	522	4315	2975	0.7	1.75

	449TS	2	400	95.4	0.91	415	50	478	3951	2975	0.7	1.75
	449TS	2	400	95.4	0.91	400	50	496	4099	2975	0.7	1.75
284TTDBD4027	284T	4	20	90.2	0.83	190/380	50	60/30	431/215	1472	1.5	2
284TTDBD4027	284T	4	25	90.2	0.83	208/415	50	70/35	492/246	1470	1.5	2
284TTDBD4027	284T	4	20	91	0.82	200/400	50	58/29	409/204	1475	1.5	2
286TTDBD4041	286T	4	25	91	0.85	190/380	50	73/37	539/269	1468	1.5	2
286TTDBD4041	286T	4	30	91	0.84	208/415	50	82/41	591/296	1468	1.4	2
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324TTDCD4038	324T	4	30	92.4	0.85	190/380	50	86/43	647/323	1478	1.5	2
324TTDCD4038	324T	4	40	91.7	0.84	208/415	50	108/54	788/395	1475	1.4	2
324TTDCD4038	324T	4	30	92.4	0.83	200/400	50	84/42	614/307	1480	1.5	2
326TTDCD4345	326T	4	40	92.4	0.85	190/380	50	115/57.5	863/431	1475	1.4	2
326TTDCD4345	326T	4	50	91.7	0.84	208/415	50	136/68	985/493	1472	1.4	2
326TTDCD4345	326T	4	40	92.4	0.84	200/400	50	111/55.5	819/409	1478	1.4	2
364TSTDCD4332	364TS	4	50	93	0.87	190/380	50	140/70	1078/539	1478	1.4	2
364TSTDCD4332	364TS	4	60	92.4	0.86	208/415	50	155/77.5	1182/592	1478	1.4	2
364TSTDCD4332	364TS	4	50	93	0.86	200/400	50	134/67	1024/512	1480	1.4	2
365TSTDCD4332	365TS	4	60	93.6	0.87	190/380	50	165/82.5	1294/647	1480	1.4	2
365TSTDCD4332	365TS	4	75	93.6	0.87	208/415	50	190/95	1478/740	1478	1.4	2
365TSTDCD4332	365TS	4	60	93.6	0.86	200/400	50	157/78.5	1229/614	1482	1.4	2
404TSTDCD4332	404TS	4	75	93.6	0.87	190/380	50	210/105	1618/809	1485	1.4	2
404TSTDCD4332	404TS	4	100	93.6	0.87	208/415	50	256/128	1970/987	1485	1.25	2
404TSTDCD4332	404TS	4	75	93.6	0.86	200/400	50	200/100	1537/768	1488	1.4	2
405TSTDCD4332	405TS	4	100	94.1	0.87	380	50	138	1078	1485	1.25	2
405TSTDCD4332	405TS	4	125	93.6	0.87	415	50	158	1234	1482	1.1	2
405TSTDCD4332	405TS	4	100	94.1	0.86	400	50	132	1024	1485	1.25	2
444TSTDCD4332	444TS	4	125	94.5	0.87	380	50	172	1348	1485	1.1	2
444TSTDCD4332	444TS	4	150	94.5	0.87	415	50	190	1481	1486	1.1	2
444TSTDCD4332	444TS	4	125	94.5	0.86	400	50	164	1281	1488	1.1	2
445TSTDCD4332	445TS	4	150	95	0.87	380	50	205	1618	1488	1.1	2
445TSTDCD4332	445TS	4	200	95	0.87	415	50	250	1975	1486	1	2
445TSTDCD4332	445TS	4	150	95.4	0.86	400	50	195	1537	1490	1.1	2
445TSTDCD14051	445TS	4	200	95.5	0.86	380	50	278	2157	1488	1	2
	445TS	4	250	95.4	0.86	415	50	316	2469	1486	0.8	1.75
	445TS	4	200	95.4	0.86	400	50	262	2049	1488	1	2
	447TS	4	300	95.4	0.86	380	50	414	3236	1480	0.8	1.75
	447TS	4	300	95.4	0.86	415	50	379	2963	1480	0.8	1.75
	447TS	4	300	95.4	0.86	400	50	394	3074	1480	0.8	1.75
	449TS	4	350	95.4	0.86	380	50	484	3775	1480	0.8	1.75
	449TS	4	350	95.4	0.86	415	50	443	3457	1480	0.8	1.75
	449TS	4	350	95.4	0.86	400	50	459	3586	1480	0.8	1.75
	449TS	4	400	95.4	0.86	380	50	553	4315	1480	0.8	1.75
	449TS	4	400	95.4	0.86	415	50	506	3951	1480	0.8	1.75
	449TS	4	400	95.4	0.86	400	50	525	4099	1480	0.8	1.75

FIRE PUMP MOTOR



Fire Pump Motor Exploded Drawing



FIRE PUMP MOTORS

W series - Fire Pump Motor - UL Listed - IEC Std

Watex fire pump motors meet NFPA 20 Standards and are fully compliant with UL 1004 - 5

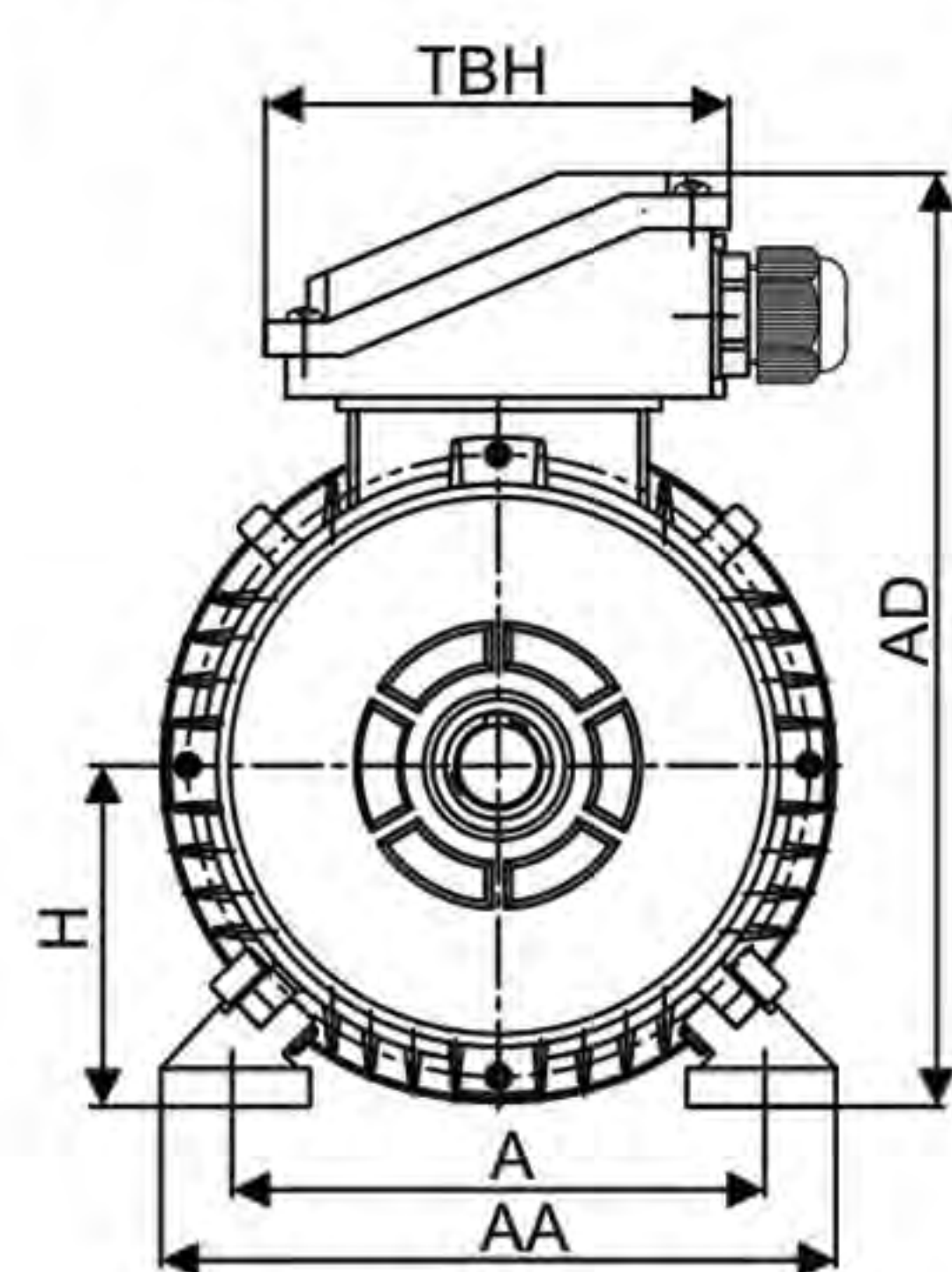
FEATURES

- » 11 kW thru 355 kW
- » 2, 4 pole
- » Energy Saving, High Efficiency
- » Ball Bearings
- » Operation Conditions : Temperature -20 °C ~ 40°C altitude ≤ 1000m
- » Red paint Standard
- » B Temperature Rise, S 1 Duty
- » IP 55 Protection, Class F Insulation
- » Designs are available with C-face, D-flange or P-base mounting.
- » Various custom "Voltage-Hertz" combinations are available.

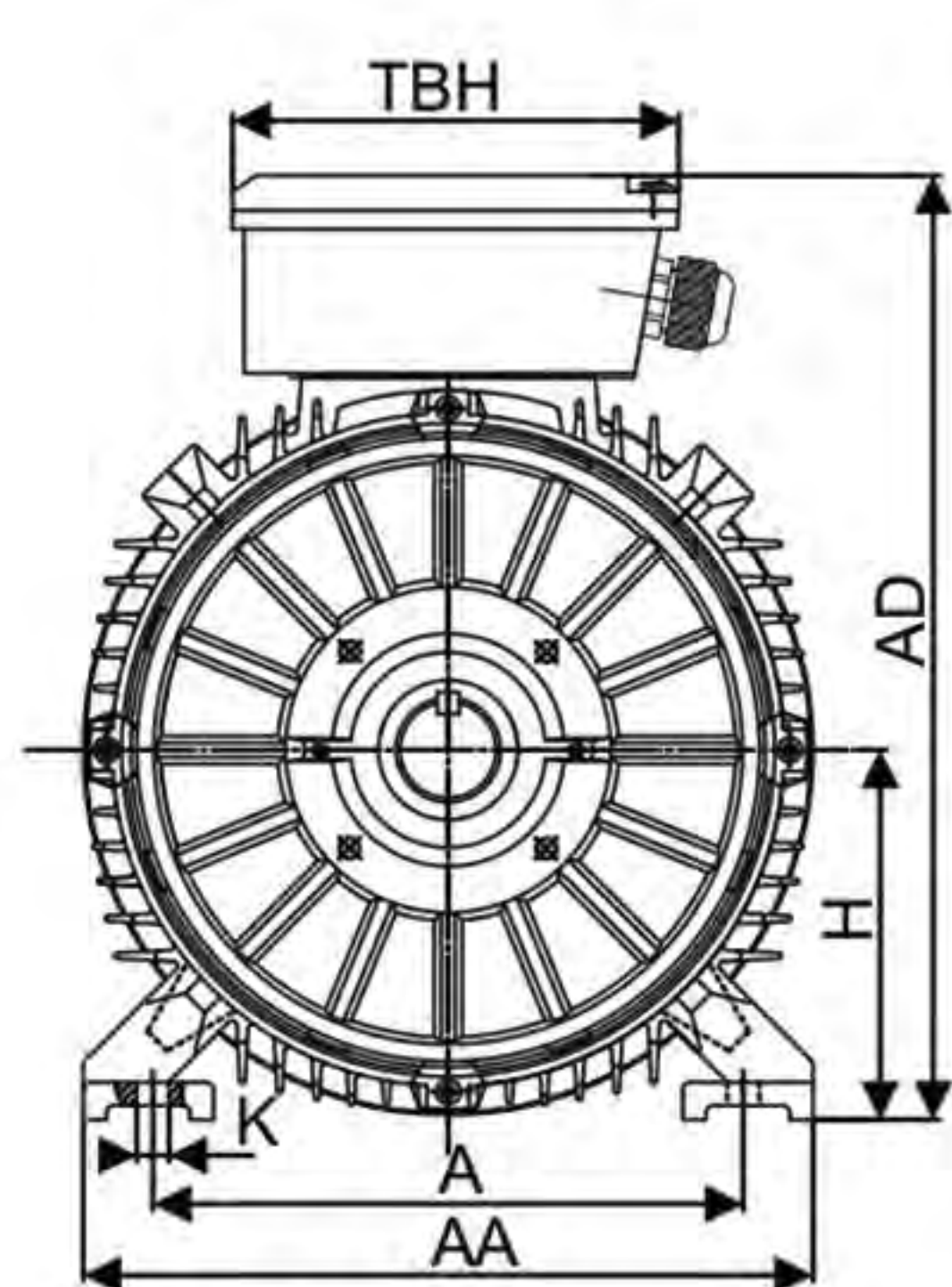
APPLICATIONS

- » Pump
- » Waste water treatment plants.
- » Air compressors, Fans.
- » Should be " Material handling equipment ".
- » Pump
- » Pulp and Paper mills.
- » Steel mill.
- » Conveyors, elevators
- » Agricultural application.
- » Gear reduced and power transmission.
- » Mining equipment.
- » Hydraulic equipment.

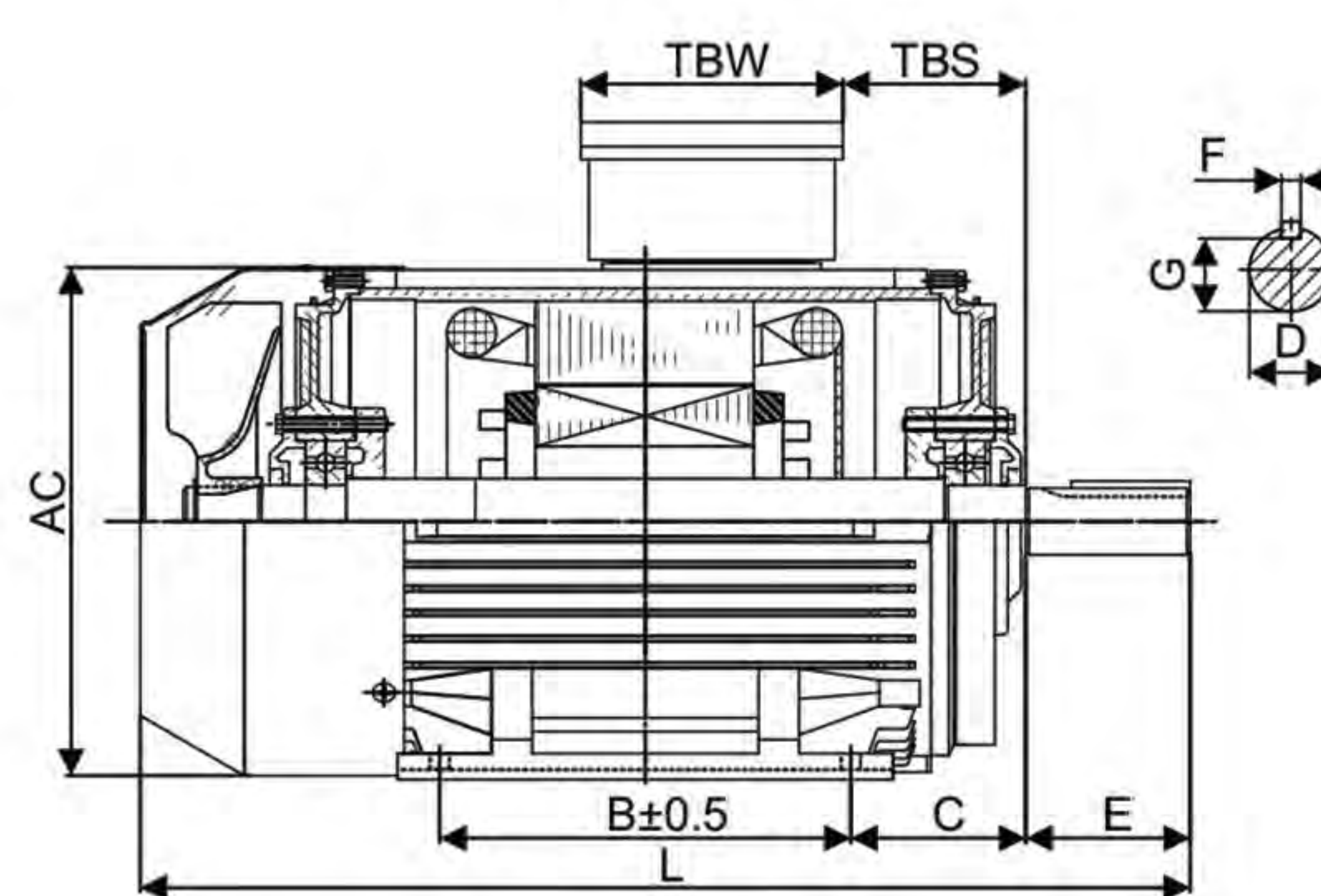
SERIES



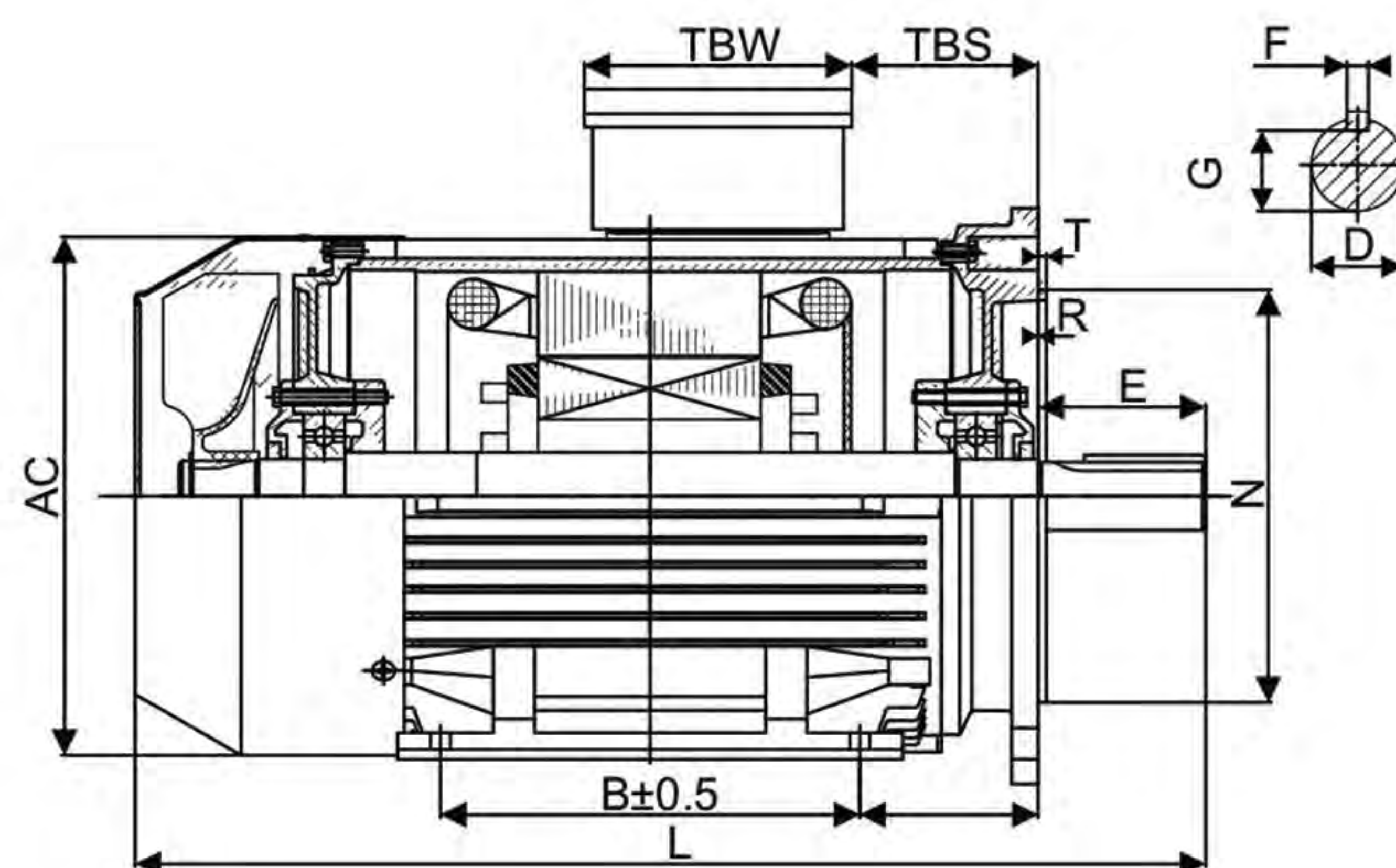
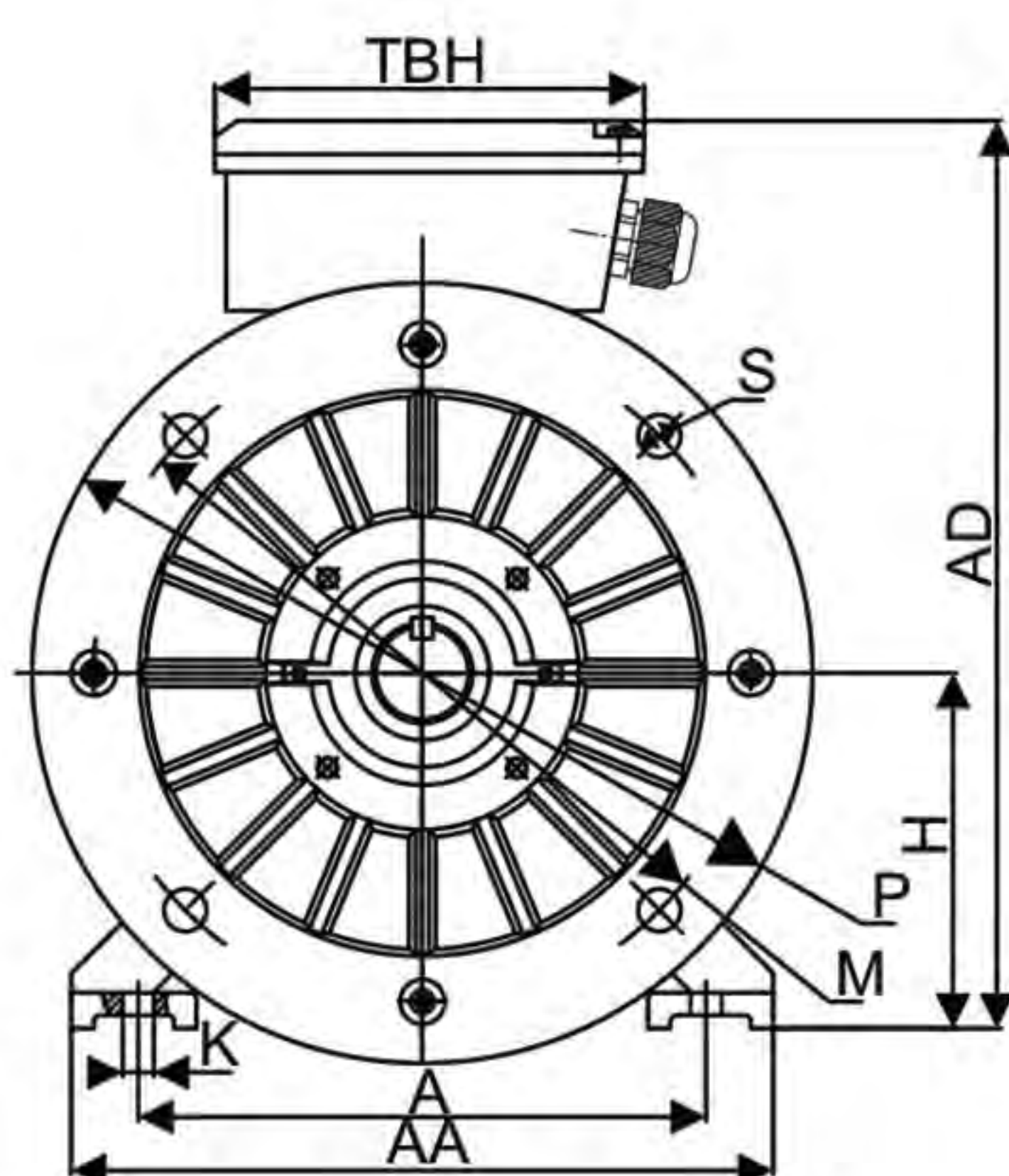
Alu.housing



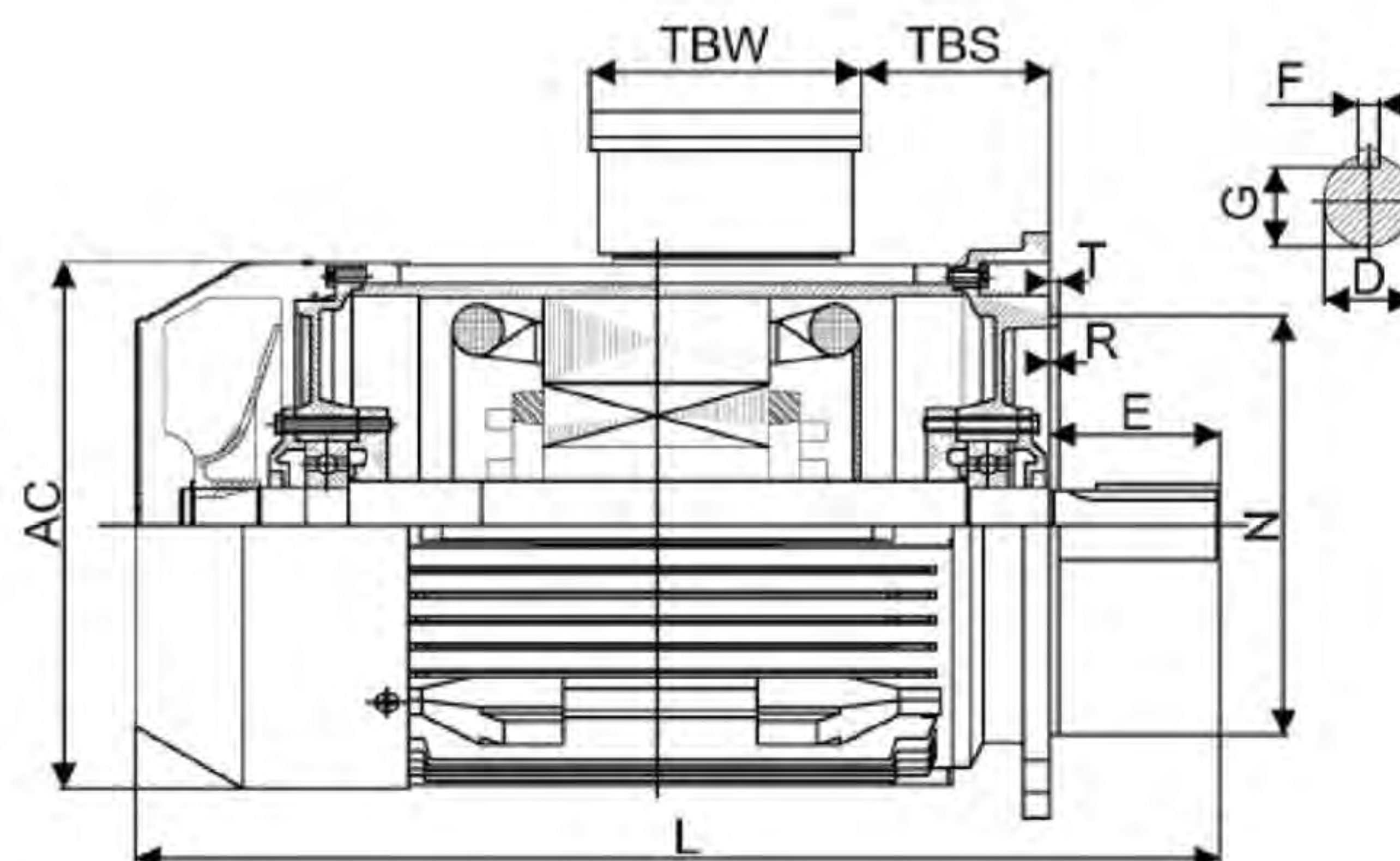
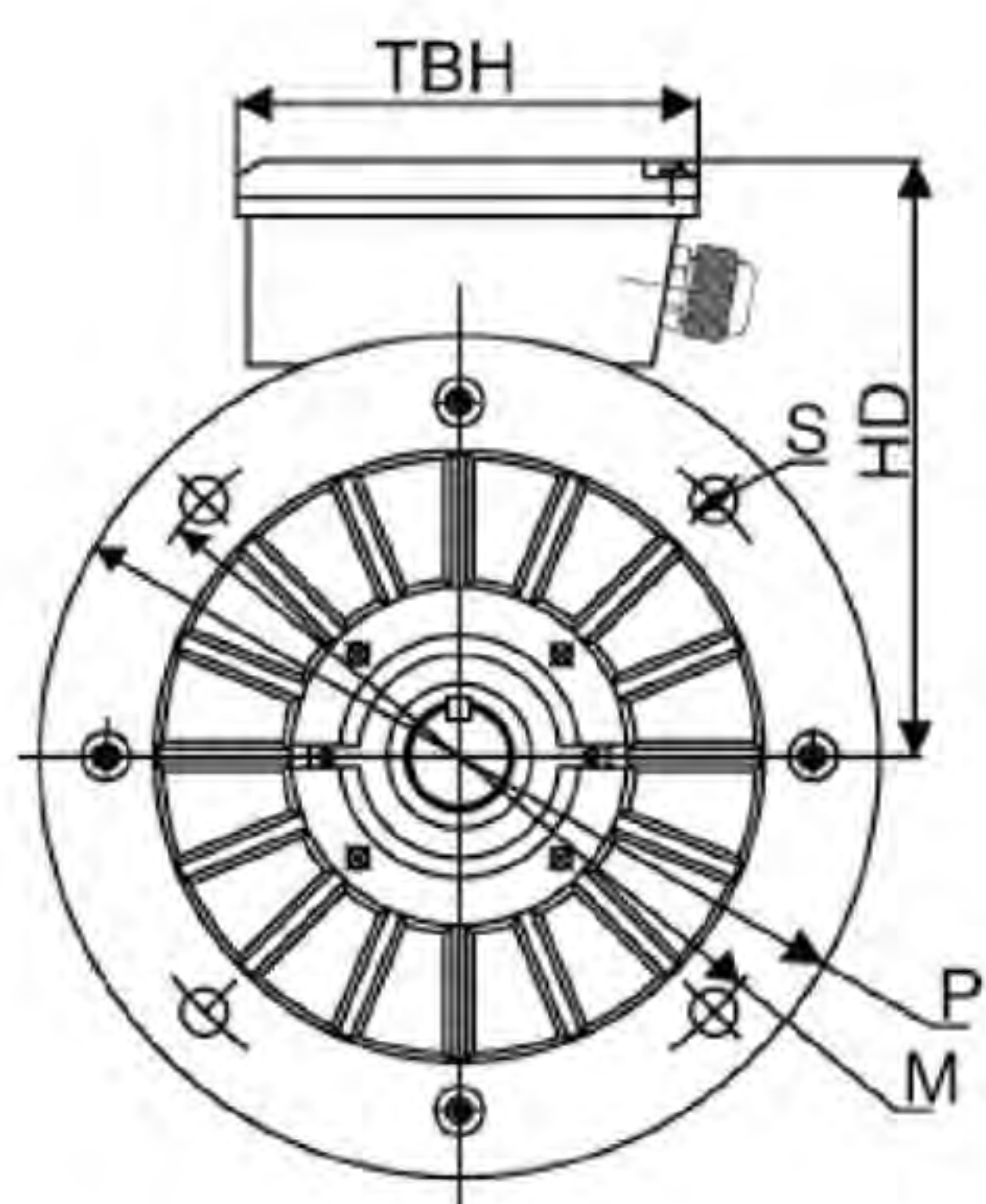
C.I.housing



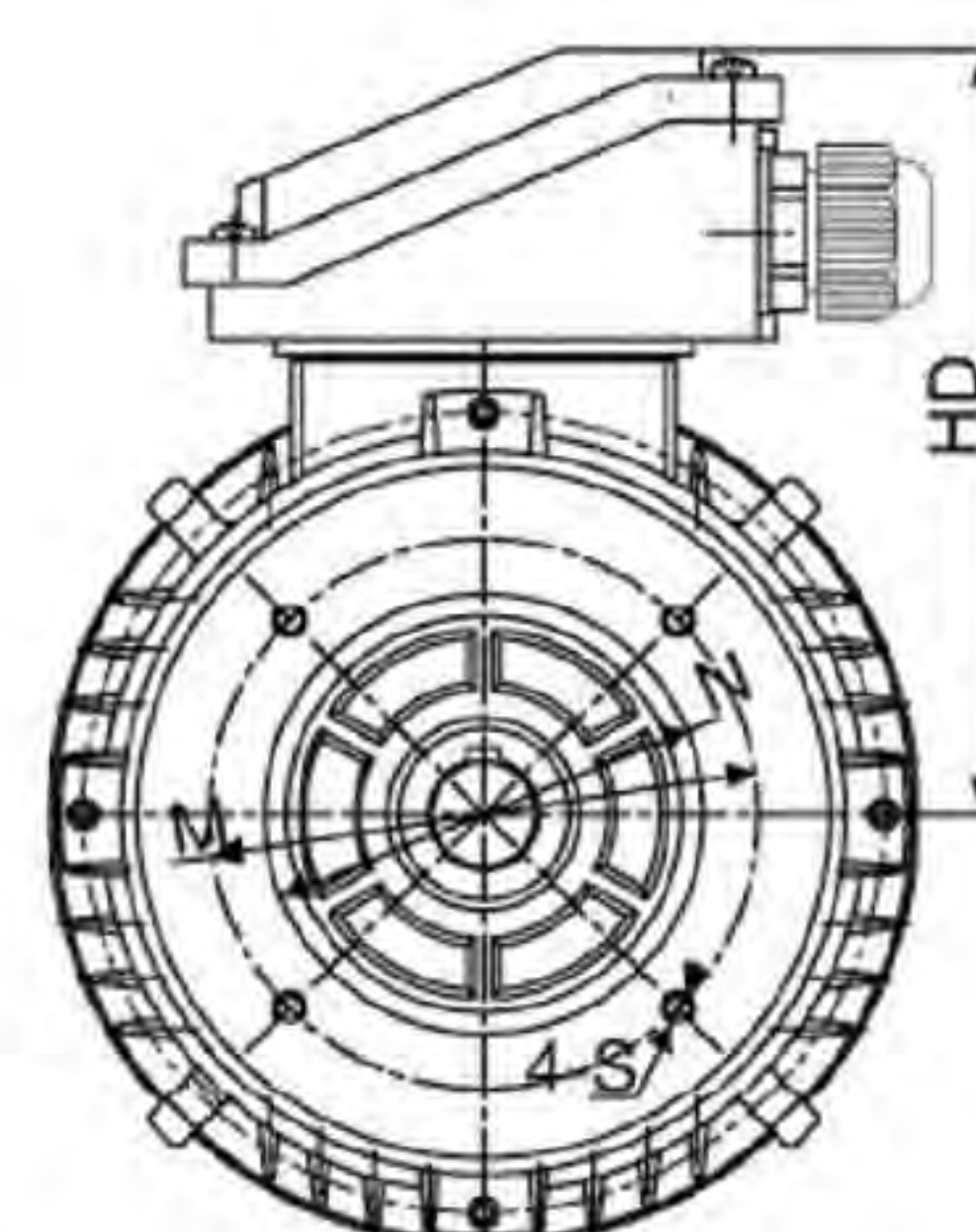
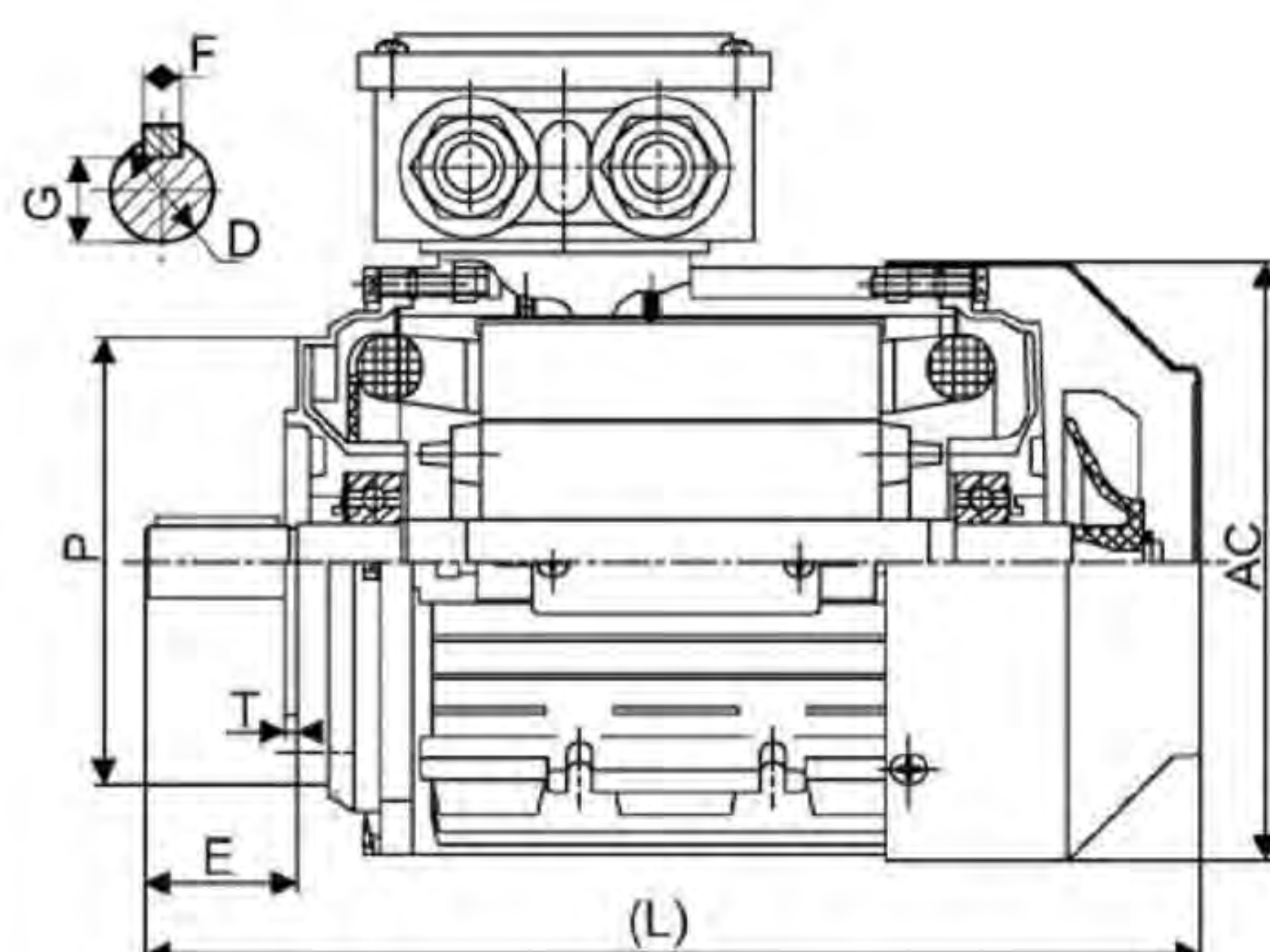
IM B3



IM B35



IM B5



IM B14

VERALL & INSTALLATION DIMENSIONS

Frame		Foot Mounting				Shaft					General							
		H	A	B	C	D	E	F	G	K	AA	AD	HD	AC	L	TBS	TBW	TBH
80		80	125	100	50	Φ19	40	6	15.5	Φ9	160	220	140	Φ158	280	16	97	97
90S/L		90	140	100/125	56	Φ24	50	8	20	Φ10	175	240	150	Φ176	325/350	16	97	97
100		100	160	140	63	Φ28	60	8	24	Φ12	200	265	165	Φ199	388	20	118	118
112		112	190	140	70	Φ28	60	8	24	Φ12	230	291	179	Φ220	405	29	118	118
132S/M		132	216	140/178	89	Φ38	80	10	33	Φ12	255	332	200	Φ259	467/505	29	118	118
160M/L		160	254	210/254	108	Φ42	110	12	37	Φ15	314	402	242	Φ313	605/650	91	162	187
180M/L		180	279	241/279	121	Φ48	110	14	42.5	Φ15	348	439	259	Φ360	687/725	160/180	162	187
200L		200	318	305	133	Φ55	110	16	49	Φ19	388	497	297	Φ399	768	192	186	233
225S	4,8	225	356	286	149	Φ60	140	18	53	Φ19	436	553	328	Φ465	814	190	186	233
225M	2	225	356	311	149	Φ55	110	16	49	Φ19	436	553	328	Φ465	809	202	186	233
	4,6,8	225	356	311	149	Φ60	140	18	53	Φ19	436	553	328	Φ465	839	202	186	233
250M	2	250	406	349	168	Φ60	140	18	53	Φ24	484	616	366	Φ506	918	233	218	260
	4,6,8	250	406	349	168	Φ65	140	18	58	Φ24	484	616	366	Φ506	918	233	218	260
280S/M	2	280	457	368/419	190	Φ65	140	18	58	Φ24	557	668	388	Φ559	984/1035	265	218	260
	4,6,8	280	457	368/419	190	Φ75	140	20	67.5	Φ24	557	668	388	Φ559	984/1035	265	218	260
315S	2	315	508	406	216	Φ65	140	18	58	Φ28	630	845	530	Φ680	1205	130	280	320
	4,6,8	315	508	406	216	Φ80	170	22	71	Φ28	630	845	530	Φ680	1235	130	280	320
315M/L	2	315	508	457/508	216	Φ65	140	18	58	Φ28	630	845	530	Φ680	1355	130	280	320
	4,6,8	315	508	457/508	216	Φ80	170	22	71	Φ28	630	845	530	Φ680	1385	130	280	320
355M/L	2	355	610	560/630	254	Φ75	140	20	67.5	Φ28	740	1010	655	Φ820	1500	140	330	380
	4,6,8	355	610	560/630	254	Φ100	210	28	90	Φ28	740	1010	655	Φ820	1570	140	330	380

Frame		Bearings		Cable Gland	B5					B14						
		Drive End	Non-Drive End		N	M	P	S	T	R	N	M	P	S	T	R
80		6204ZZ		1-M20×1.5	Φ130	Φ165	Φ198	4-Φ12	3.5	0	Φ80	Φ100	Φ118	M6	3	0
90S/L		6205ZZ		1-M20×1.5	Φ130	Φ165	Φ198	4-Φ12	3.5	0	Φ95	Φ115	Φ138	M8	3	0
100		6206ZZ		1-M20×1.5	Φ180	Φ215	Φ250	4-Φ15	4	0	Φ110	Φ130	Φ158	M8	3.5	0
112		6306ZZ		2-M25×1.5	Φ180	Φ215	Φ250	4-Φ15	4	0	Φ110	Φ130	Φ158	M8	3.5	0
132S/M		6308ZZ		2-M25×1.5	Φ230	Φ265	Φ300	4-Φ15	4	0	Φ130	Φ165	Φ198	M10	3.5	0
160M/L		6309C3		2-M32×1.5	Φ250	Φ300	Φ350	4-Φ19	5	0						0
180M/L		6311C3		2-M32×1.5	Φ250	Φ300	Φ350	4-Φ19	5	0						0
200L		6312C3		2-M40×1.5	Φ300	Φ350	Φ400	4-Φ19	5	0						0
225S	4,8	6313C3		2-M50×1.5	Φ350	Φ400	Φ450	8-Φ19	5	0						0
225M	2				Φ350	Φ400	Φ450	8-Φ19	5	0					0	
	4,6,8				Φ350	Φ400	Φ450	8-Φ19	5	0					0	
250M	2	6314C3		2-M50×1.5	Φ400	Φ500	Φ550	8-Φ19	5	0						0
	4,6,8				Φ400	Φ500	Φ550	8-Φ19	5	0					0	
280S/M	2	6316C3		2-M50×1.5	Φ400	Φ500	Φ550	8-Φ19	5	0						0
	4,6,8				Φ400	Φ500	Φ550	8-Φ19	5	0					0	
315S/M/L	2	6317C3		2-M63×1.5	Φ550	Φ600	Φ660	8-Φ24	6	0						0
	4,6,8	NU319	6319C3		Φ550	Φ600	Φ660	8-Φ24	6	0					0	
355M/L	2	6319C3		2-M63×1.5	Φ680	Φ740	Φ800	8-Φ24	6	0						0
	4,6,8	NU322	6322C3		Φ680	Φ740	Φ800	8-Φ24	6	0					0	

TECHNICAL DATA

Model No.	Output	Hz/DC	VOLTS	FL AMPS	Service Factor	Poles	Number of Speeds	RPM	Phases	Ins Class	Prot. Type	Rated Ambient(*C)
2 POLE - 3000 RPM SYNCHRONOUS SPEED 50 HZ												
W132M2-2	11kW	50	380-415	20.36-18.64	-	2	1	2920	3	F	-	50
	11kW	50	660-720	11.72-10.75	-	2	1	2920	3	F	-	50
W132M3-2	15kW	50	380-415	27.25-24.95	-	2	1	2918	3	F	-	50
	15kW	50	660-720	15.69-14.38	-	2	1	2918	3	F	-	50
W160L1-2	18.5kW	50	380-415	33.06-30.28	-	2	1	2922	3	F	-	50
	18.5kW	50	660-720	19.04-17.45	-	2	1	2922	3	F	-	50
W160L2-2	22kW	50	380-415	40.51-37.10	-	2	1	2930	3	F	-	50
	22kW	50	660-720	23.33-21.38	-	2	1	2930	3	F	-	50
W160M1-2	11kW	50	380-415	20.36-18.64	-	2	1	2920	3	F	-	50
	11kW	50	660-720	11.72-10.75	-	2	1	2920	3	F	-	50
W160M2-2	15kW	50	380-415	27.25-24.95	-	2	1	2918	3	F	-	50
	15kW	50	660-720	15.69-14.38	-	2	1	2918	3	F	-	50
W180L-2	30kW	50	380-415	54.89-50.26	-	2	1	2925	3	F	-	50
	30kW	50	660-720	31.6-28.97	-	2	1	2925	3	F	-	50
W180M-2	22kW	50	380-415	40.51-37.10	-	2	1	2930	3	F	-	50
	22kW	50	660-720	23.33-21.38	-	2	1	2930	3	F	-	50
W200L1-2	30kW	50	380-415	54.89-50.26	-	2	1	2925	3	F	-	50
	30kW	50	660-720	31.6-28.97	-	2	1	2925	3	F	-	50
W200L2-2	37kW	50	380-415	66.66-61.04	-	2	1	2930	3	F	-	50
	37kW	50	660-720	38.38-35.18	-	2	1	2930	3	F	-	50
W200L3-2	45kW	50	380-415	82.65-75.68	-	2	1	2930	3	F	-	50
	45kW	50	660-720	47.59-43.62	-	2	1	2930	3	F	-	50
W225M-2	45kW	50	380-415	82.65-75.68	-	2	1	2930	3	F	-	50
	45kW	50	660-720	47.59-43.62	-	2	1	2930	3	F	-	50
W225M2-2	55kW	50	380-415	100.70-92.21	-	2	1	2940	3	F	-	50
	55kW	50	660-720	57.98-53.15	-	2	1	2940	3	F	-	50
W250M1-2	55kW	50	380-415	100.70-92.21	-	2	1	2940	3	F	-	50
	55kW	50	660-720	57.98-53.15	-	2	1	2940	3	F	-	50
W250M2-2	75kW	50	380-415	130.79-119.76	-	2	1	2940	3	F	-	50
	75kW	50	660-720	75.3-69.03	-	2	1	2940	3	F	-	50
W280M-2	90kW	50	380-415	156.45-143.26	-	2	1	2940	3	F	-	50
	90kW	50	660-720	90.08-82.57	-	2	1	2940	3	F	-	50
W280M2-2	110kW	50	380-415	195.06-178.61	-	2	1	2940	3	F	-	50
	110kW	50	660-720	112.31-102.95	-	2	1	2940	3	F	-	50
W280S-2	75kW	50	380-415	130.79-119.76	-	2	1	2940	3	F	-	50
	75kW	50	660-720	75.3-69.03	-	2	1	2940	3	F	-	50
W315L1-2	160kW	50	380-415	281.95-258.17	-	2	1	2945	3	F	-	50
	160kW	50	660-720	162.33-148.81	-	2	1	2945	3	F	-	50
W315L2-2	200kW	50	380-415	356.39-326.34	-	2	1	2945	3	F	-	50
	200kW	50	660-720	205.2-188.1	-	2	1	2945	3	F	-	50
W315M-2	132kW	50	380-415	231.01-211.53	-	2	1	2940	3	F	-	50
	132kW	50	660-720	133.01-121.92	-	2	1	2940	3	F	-	50
W315S-2	110kW	50	380-415	195.06-178.61	-	2	1	2940	3	F	-	50
	110kW	50	660-720	112.31-102.95	-	2	1	2940	3	F	-	50
W355L1-2	280kW	50	380-415	493.4-451.7	-	2	1	2945	3	F	-	50
	280kW	50	660-720	284.1-260.4	-	2	1	2945	3	F	-	50
W355L2-2	315kW	50	380-415	561.32-513.98	-	2	1	2945	3	F	-	50
	315kW	50	660-720	323.18-296.25	-	2	1	2945	3	F	-	50
W355M-2	200kW	50	380-415	356.39-326.34	-	2	1	2945	3	F	-	50
	200kW	50	660-720	205.2-188.1	-	2	1	2945	3	F	-	50
W355M1-2	220kW	50	380-415	387.68-354.98	-	2	1	2945	3	F	-	50
	220kW	50	660-720	223.21-204.61	-	2	1	2945	3	F	-	50
W355M2-2	250kW	50	380-415	440.54-403.39	-	2	1	2945	3	F	-	50
	250kW	50	660-720	253.65-232.51	-	2	1	2945	3	F	-	50
4 Pole - 1500 RPM, Synchronous Speed 50 Hz												
W225M-4	45kW	50	380-415	82.48-75.52	-	4	1	1480	3	F	-	50
	45kW	50	660-720	47.49-43.52	-	4	1	1480	3	F	-	50
W225M2-4	55kW	50	380-415	100.38-91.91	-	4	1	1480	3	F	-	50
	55kW	50	660-720	57.79-52.98	-	4	1	1480	3	F	-	50
W250M1-4	55kW	50	380-415	100.38-91.91	-	4	1	1480	3	F	-	50
	55kW	50	660-720	57.79-52.98	-	4	1	1480	3	F	-	50
W250M2-4	75kW	50	380-415	131.81-120.69	-	4	1	1480	3	F	-	50
	75kW	50	660-720	75.89-69.57	-	4	1	1480	3	F	-	50
W280M-4	90kW	50	380-415	156.13-142.96	-	4	1	1480	3	F	-	50
	90kW	50	660-720	89.89-82.4	-	4	1	1480	3	F	-	50
W280M2-4	110kW	50	380-415	194.65-178.24	-	4	1	1480	3	F	-	50
	110kW	50	660-720	112.07-102.73	-	4	1	1480	3	F	-	50
W280S-4	75kW	50	380-415	131.81-120.69	-	4	1	1480	3	F	-	50
	75kW	50	660-720	75.89-69.57	-	4	1	1480	3	F	-	50
W315L1-4	160kW	50	380-415	278.85-255.33	-	4	1	1480	3	F	-	50
	160kW	50	660-720	160.55-147.17	-	4	1	1480	3	F	-	50
W315L2-4	200kW	50	380-415	351.70-322.04	-	4	1	1480	3	F	-	50
	200kW	50	660-720	202.49-185.62	-	4	1	1480	3	F	-	50
W315M-4	132kW	50	380-415	230.53-211.09	-	4	1	1480	3	F	-	50
	132kW	50	660-720	132.73-121.67	-	4	1	1480	3	F	-	50
W315S-4	110kW	50	380-415	194.65-178.24	-	4	1	1480	3	F	-	50
	110kW	50	660-720	112.07-102.73	-	4	1	1480	3	F	-	50
W355L1-4	280kW	50	380-415	497.91-455.92	-	4	1	1480	3	F	-	50
	280kW	50	660-720	286.68-262.79	-	4	1	1480	3	F	-	50
W355L2-4	315kW	50	380-415	553.93-507.21	-	4	1	1480	3	F	-	50
	315kW	50	660-720	318.93-292.35	-	4	1	1480	3	F	-	50
W355L3-4	355kW	50	380-415	624.2-571.6	-	4	1	1480	3	F	-	50
	355kW	50	660-720	359.4-329.5	-	4	1	1480	3	F	-	50
W355M1-4	220kW	50	380-415	391.22-358.22	-	4	1	1480	3	F	-	50
	220kW	50	660-720	225.25-206.48	-	4	1	1480	3	F	-	50
W355M2-4	250kW	50	380-415	444.56-407.07	-	4	1	1480	3	F	-	50
	250kW	50	660-720	255.96-234.63	-	4	1	1480	3	F	-	50

TECHNICAL DATA

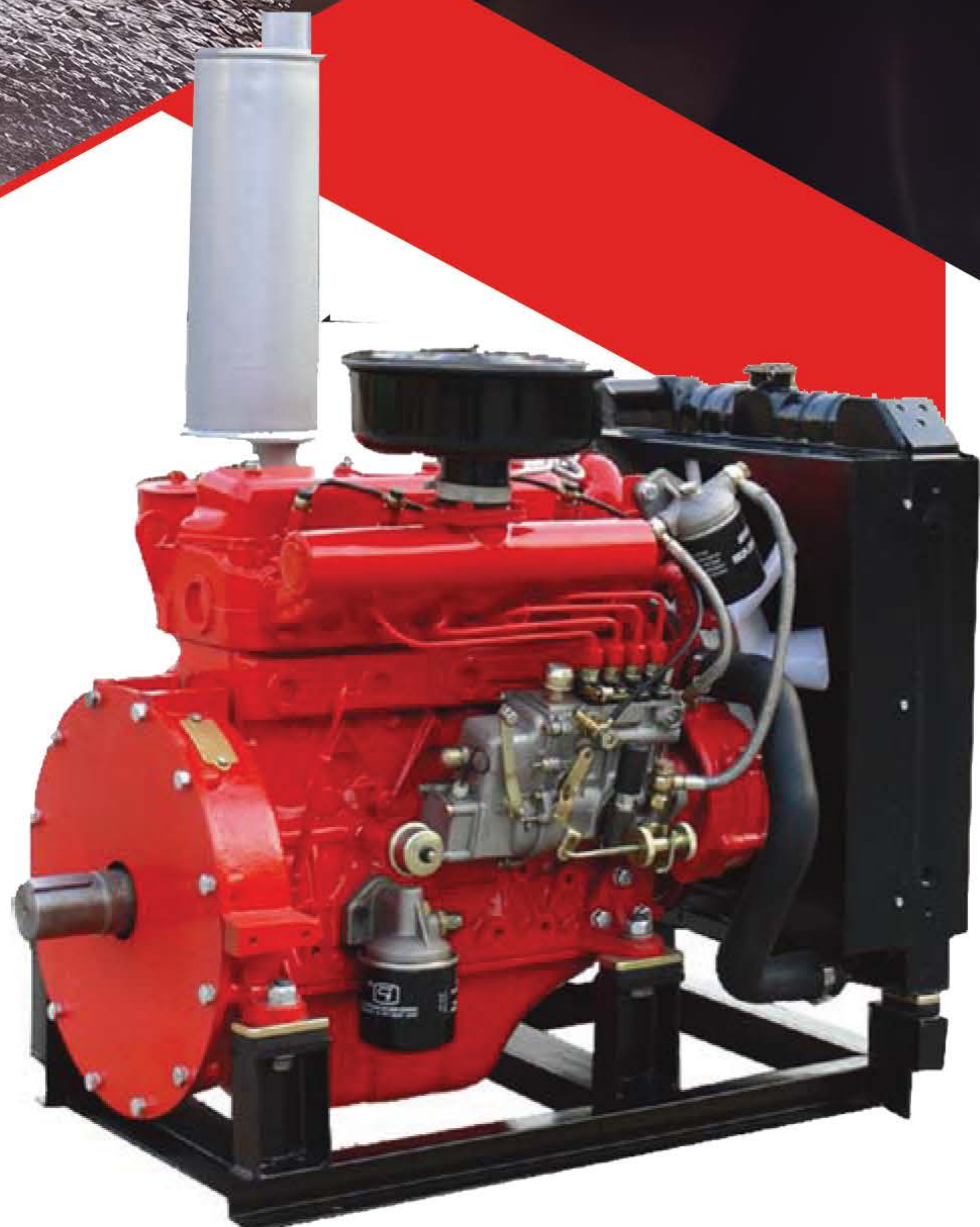
Model No.	Output	HZ/DC	VOLTS	FL AMPS	Service Factor	Poles	Number of Speeds	RPM	Phases	Ins Class	Prot. Type	Rated Ambient(*C)
WTDC256T20U2B	20hp	60	208-230	51.4-46.5	1.15	2	1	3530	3	F	-	50
	20hp	60	460	23.2	1.15	2	1	3530	3	F	-	50
	20hp	50	415	25.9	1.15	2	1	2920	3	F	-	50
	20hp	60	575	18.6	1.15	2	1	3530	3	F	-	50
WDC284TS25U2B	25hp	60	208-230	63.8-57.7	1.15	2	1	3550	3	F	-	50
	25hp	60	460	28.8	1.15	2	1	3550	3	F	-	50
	25hp	50	415	31.9	1.15	2	1	2930	3	F	-	50
	25hp	60	575	23.1	1.15	2	1	3550	3	F	-	50
WDC286TS30U2B	30hp	60	208-230	75.7-68.4	1.15	2	1	3550	3	F	-	50
	30hp	60	460	34.2	1.15	2	1	3550	3	F	-	50
	30hp	50	415	38.8	1.15	2	1	2930	3	F	-	50
	30hp	60	575	27.4	1.15	2	1	3550	3	F	-	50
WDC286TS40U2B	40hp	60	208-230	101.3-91.6	1.15	2	1	3560	3	F	-	50
	40hp	60	460	45.8	1.15	2	1	3560	3	F	-	50
	40hp	50	415	50.5	1.15	2	1	2925	3	F	-	50
WDC324TS40U2B	40hp	60	208-230	101.3-91.6	1.15	2	1	3560	3	F	-	50
	40hp	60	460	45.8	1.15	2	1	3560	3	F	-	50
	40hp	50	415	50.6	1.15	2	1	2930	3	F	-	50
	40hp	60	575	36.6	1.15	2	1	3560	3	F	-	50
WDC324TS50U2B	50hp	60	208-230	124.4-112.5	1.15	2	1	3560	3	F	-	50
	50hp	60	460	56.2	1.15	2	1	3560	3	F	-	50
	50hp	50	415	61.3	1.15	2	1	2930	3	F	-	50
WDC326TS50U2B	50hp	60	208-230	124.4-112.5	1.15	2	1	3560	3	F	-	50
	50hp	60	460	56.2	1.15	2	1	3560	3	F	-	50
	50hp	50	415	63	1.15	2	1	2930	3	F	-	50
	50hp	60	575	45	1.15	2	1	3560	3	F	-	50
WDC326TS60U2B	60hp	60	208-230	149.9-135.6	1.15	2	1	3560	3	F	-	50
	60hp	60	460	67.8	1.15	2	1	3560	3	F	-	50
	60hp	50	415	75.8	1.15	2	1	2935	3	F	-	50
WDC364TS60U2B	60hp	60	208~230	149.9-135.6	1.15	2	1	3560	3	F	-	50
	60hp	60	460	67.8	1.15	2	1	3560	3	F	-	50
	60hp	50	415	75.4	1.15	2	1	2930	3	F	-	50
	60hp	60	575	54.2	1.15	2	1	3560	3	F	-	50
WDC364TS75U2B	75hp	60	208-230	185.4-167.6	1.15	2	1	3560	3	F	-	50
	75hp	60	460	83.8	1.15	2	1	3560	3	F	-	50
	75hp	50	415	92.2	1.15	2	1	2940	3	F	-	50
WDC365TS100U2B	100hp	60	208-230	248.8-225	1.15	2	1	3570	3	F	-	50
	100hp	60	460	112.5	1.15	2	1	3570	3	F	-	50
	100hp	50	415	119.8	1.15	2	1	2940	3	F	-	50
WDC365TS75U2B	75hp	60	208-230	185.4-167.6	1.15	2	1	3560	3	F	-	50
	75hp	60	460	83.8	1.15	2	1	3560	3	F	-	50
	75hp	50	415	93.6	1.15	2	1	2940	3	F	-	50
	75hp	60	575	67	1.15	2	1	3560	3	F	-	50
WDC404TS125U2B	125hp	50	415	143.5	1.15	2	1	2940	3	F	-	50
	125hp	60	460	139	1.15	2	1	3575	3	F	-	50
WDC405TS100U2B	100hp	60	208-230	247.1-223.5	1.15	2	1	3570	3	F	-	50
	100hp	60	460	111.7	1.15	2	1	3570	3	F	-	50
	100hp	50	415	124.5	1.15	2	1	2940	3	F	-	50
	100hp	60	575	89.4	1.15	2	1	3570	3	F	-	50
WDC405TS150U2B	150hp	50	415	178.6	1.15	2	1	2940	3	F	-	50
	150hp	60	460	165	1.15	2	1	3575	3	F	-	50
WDC444TS125U2B	125hp	50	415	155.3	1.15	2	1	2940	3	F	-	50
	125hp	60	460	139	1.15	2	1	3575	3	F	-	50
	125hp	60	575	111.2	1.15	2	1	3575	3	F	-	50
WDC444TS200U2B	200hp	50	415	258.2	1.15	2	1	2945	3	F	-	50
	200hp	60	460	219.9	1.15	2	1	3575	3	F	-	50
WDC445TS150U2B	150hp	50	415	182.9	1.15	2	1	2940	3	F	-	50
	150hp	60	460	165	1.15	2	1	3575	3	F	-	50
	150hp	60	575	132	1.15	2	1	3575	3	F	-	50
WDC447TS200U2B	200hp	50	415	243	1.15	2	1	2940	3	F	-	50
	200hp	60	460	219.9	1.15	2	1	3575	3	F	-	50
WDC447TS300U2B	300hp	50	415	355	1.15	2	1	2945	3	F	-	50
	300hp	60	460	326	1.15	2	1	3580	3	F	-	50
WDC447TS350U2B	350hp	50	415	451.5	1.15	2	1	2945	3	F	-	50
	350hp	60	460	388.5	1.15	2	1	3580	3	F	-	50
WDC449TS250U2B	250hp	50	415	302	1.15	2	1	2940	3	F	-	50
	250hp	60	460	299.7	1.15	2	1	3580	3	F	-	50
WDC449TS300U2B	300hp	50	415	355	1.15	2	1	2945	3	F	-	50
	300hp	60	460	326	1.15	2	1	3580	3	F	-	50
WDC449TS350U2B	350hp	50	415	451.5	1.15	2	1	2945	3	F	-	50
	350hp	60	460	388.5	1.15	2	1	3580	3	F	-	50
WDC449TS400U2B	400hp	60	460	449.5	1.15	2	1	3580	3	F	-	50

DIESEL ENGINE DATA SHEET



- **HIGH SPEED DIESEL ENGINE**
- **PUMP SET FOR FIRE FIGHTING**
- **FIRE FIGHTING PUMP SYSTEM**

Power



Speiflcation Of Diesel Engines

Model	380	480	485	490	4100	4102	4105	4108	61028 Q	6102 BZQ	6102 BZS	6112 T	6120 T	6120 TI	6120 TI-1	6120 TI-2
Type	VERTICAL , WATER-COOLED, FOUR- STROKE, DIRECTION- INJECTOR															
Number of cylinders	3	4	4	4	4	4	4	4	6	6	6	6	6	6	6	6
Borestroke (mm)	80*90	80*90	85*95	90*100	100*105	102*118	102*118	105*118	102*118	102*118	102*118	112*135	112*130	120*130	126*130	126*130
Rate power (kw)	20	27.8	34	42	55	63.8	55	70	80	95	110	125	150	200	245	275
Rate power (hp)	27	37	46	57	75	84	75	95	110	130	150	170	204	272	334	374
Rate speed (r/min)	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
Total displacement (l)	1.357	1.809	2.156	2.54	3.298	3.857	3.298	4.087	4.324	5.785	5.785	5.785	7.98	8.82	9.73	9.73
Max. torque(n.m)	72.6	99.8	118.2	149.7	193.1	193.1	193.1	260	280	372	420	470	760	1250	1640	1640
Min specific fuel Consumption at full load	247	247	262	247	247	238	238	380	238	205	205	205	201	201	203	203
Direction of crankshaft Rotation (facing to flywheel)	COUNTER-CLOCKWISE															
Lubrication method	PRESSURE AND SPLASH LUBRICATING															
Starting method	ELECTRIC STARTING															
Net mass (kg)	230	250	260	300	350	360	350	360	400	580	580	580	1200	1300	1400	1400

JOCKEY PUMP DATA SHEET



RV.RVA
VERTICAL MULTISTAGE
CENTRIFUGAL PUMP
50HZ

Product introduction

Pump

RVA and RV are non-self priming vertical multistage centrifugal pump, the pumps are available with standard motor, the inlet and outlet are located at the pump bottom at the same plane (inline type).

All pumps are equipped with a maintenance-free mechanical seal set of the cartridge type.

Motor

RVA and RV are fitted with a totally enclosed fan-cooled 2-pole three-phase standard motor.

From 0.37kW to 2.2kW, are also available with single-phase motor. (1*220-230V/240V).

Motor Protection

Single-phase motor have a built-in thermal overload switch.

Three-phase motors must be connected to a motor protective circuit breaker according to local regulations.

Ambient temperature

Ambient temperature: maximum +40, if the ambient temperature exceeds +40, or the pump is installed at an altitude exceeding 1000 meters, the motor must not be fully loaded due to the risk of overheating.

Overheating may result from excessive ambient temperatures or the low density and consequently low cooling effect of the air.

In such cases, it may be necessary to use a motor with a higher rated output.

Terminal box positions

If necessary, disassembling the protective cover of the shaft connector, but

1. did not disassembling the shaft connector.

Disassembling the motor fixation screws.

Turn the motor to the required direction.

2. Fasten the motor screws.

3. Install the shaft connector's protective cover.

4. The voltage and frequency are marked on the label, the correct power should be confirmed with the label before usage.

The voltage and frequency are marked on the label, the correct power should be confirmed with the label before usage.

To ensure the electric connection is conformity to the drawing marked on the label inside the terminal box.

Viscosity

The pumping of liquids with densities or kinematic viscosities higher than those of water will cause a considerable pressure drop, a drop in the hydraulic performance and a rise in the power consumption.

In such situations the pump should be fitted with a larger motor, if in doubt, contact.

Example:

From the Fig.3, the pump is installed at an altitude exceeding 1000 meters, P2 will decrease to 88%, if the ambient temperature is up to 70°C, P2 will decrease to 78%.

Fig.1 RVA

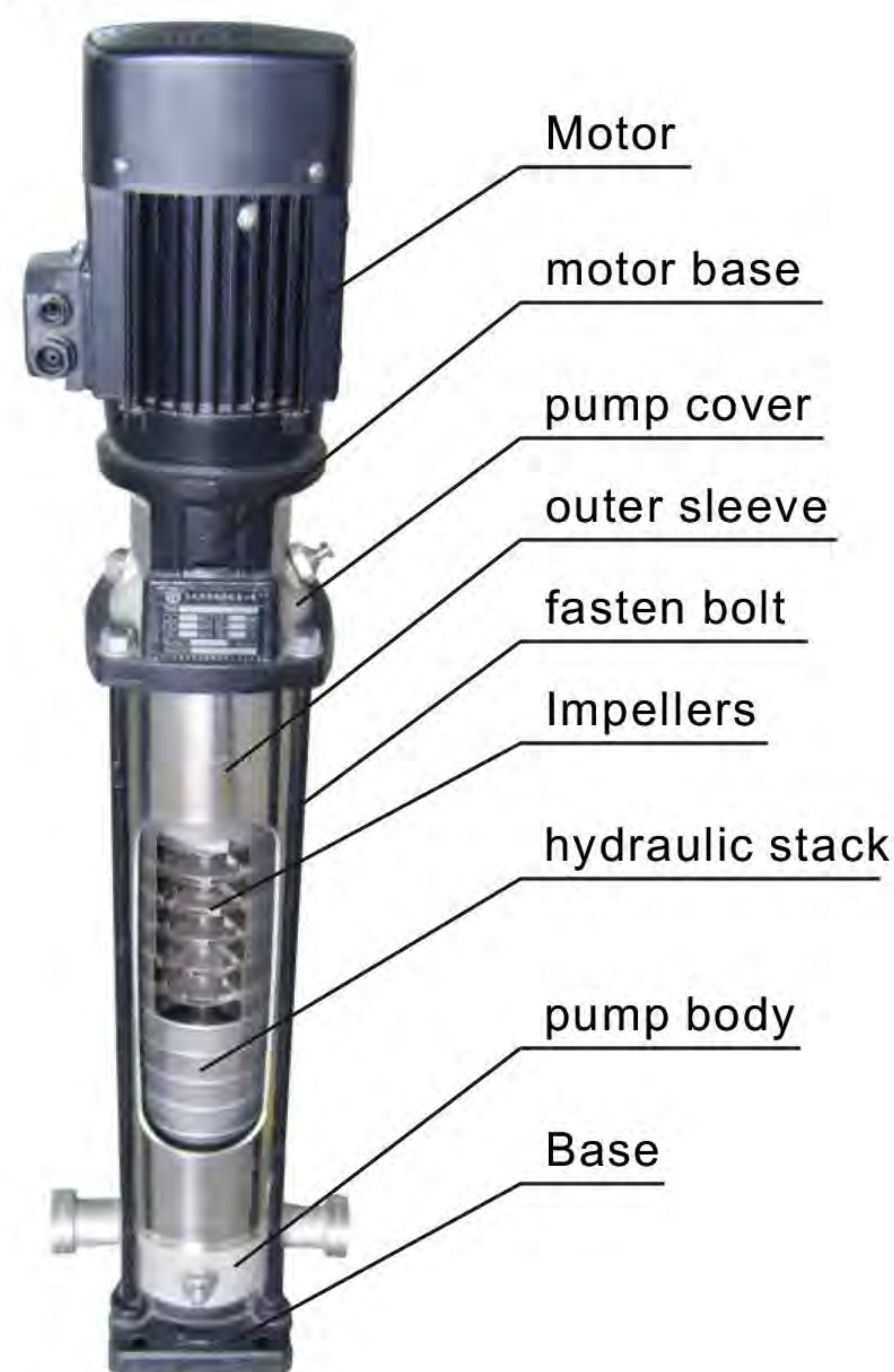


Fig2. Terminal box positions

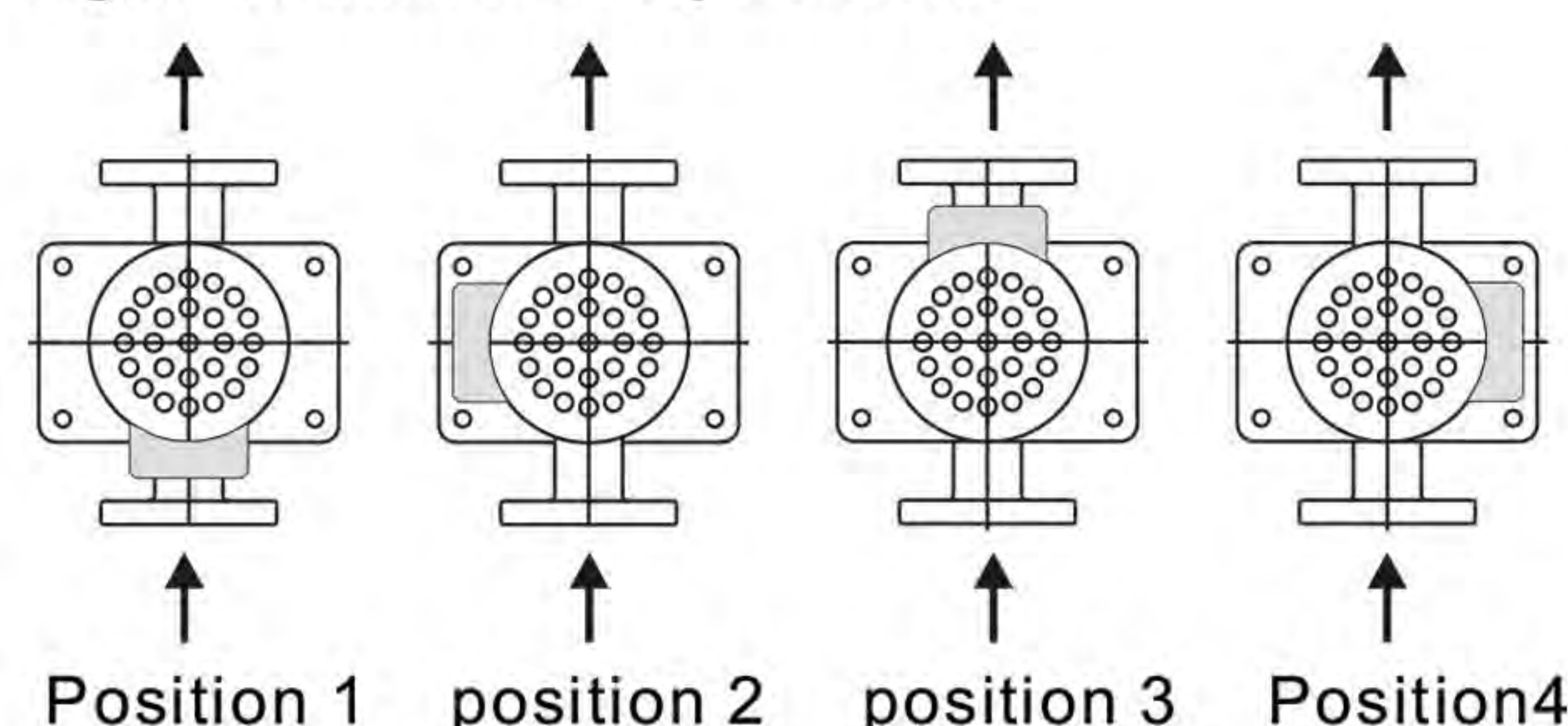
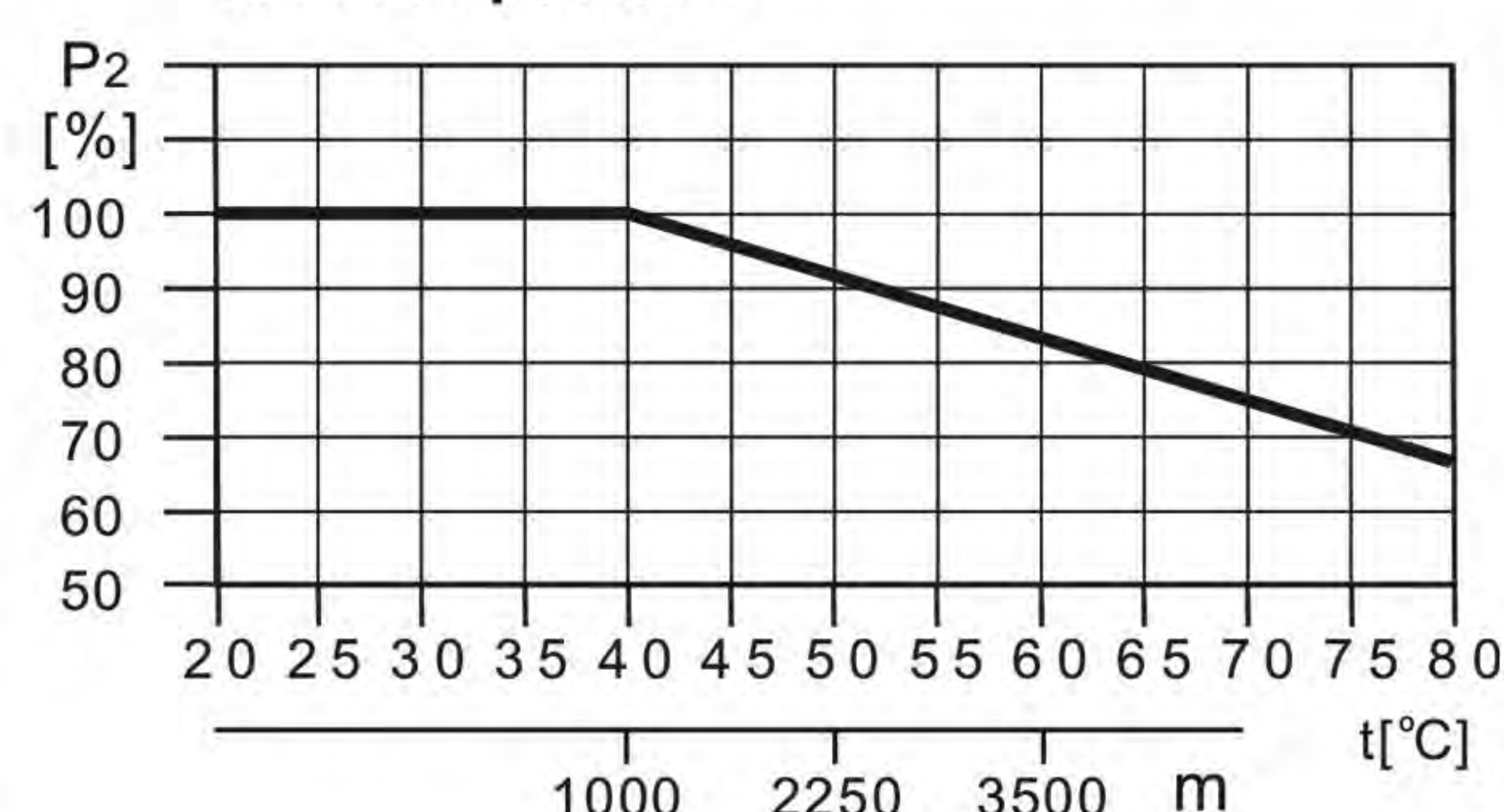


Fig.3 Relationship between motor output (P2) and temperature



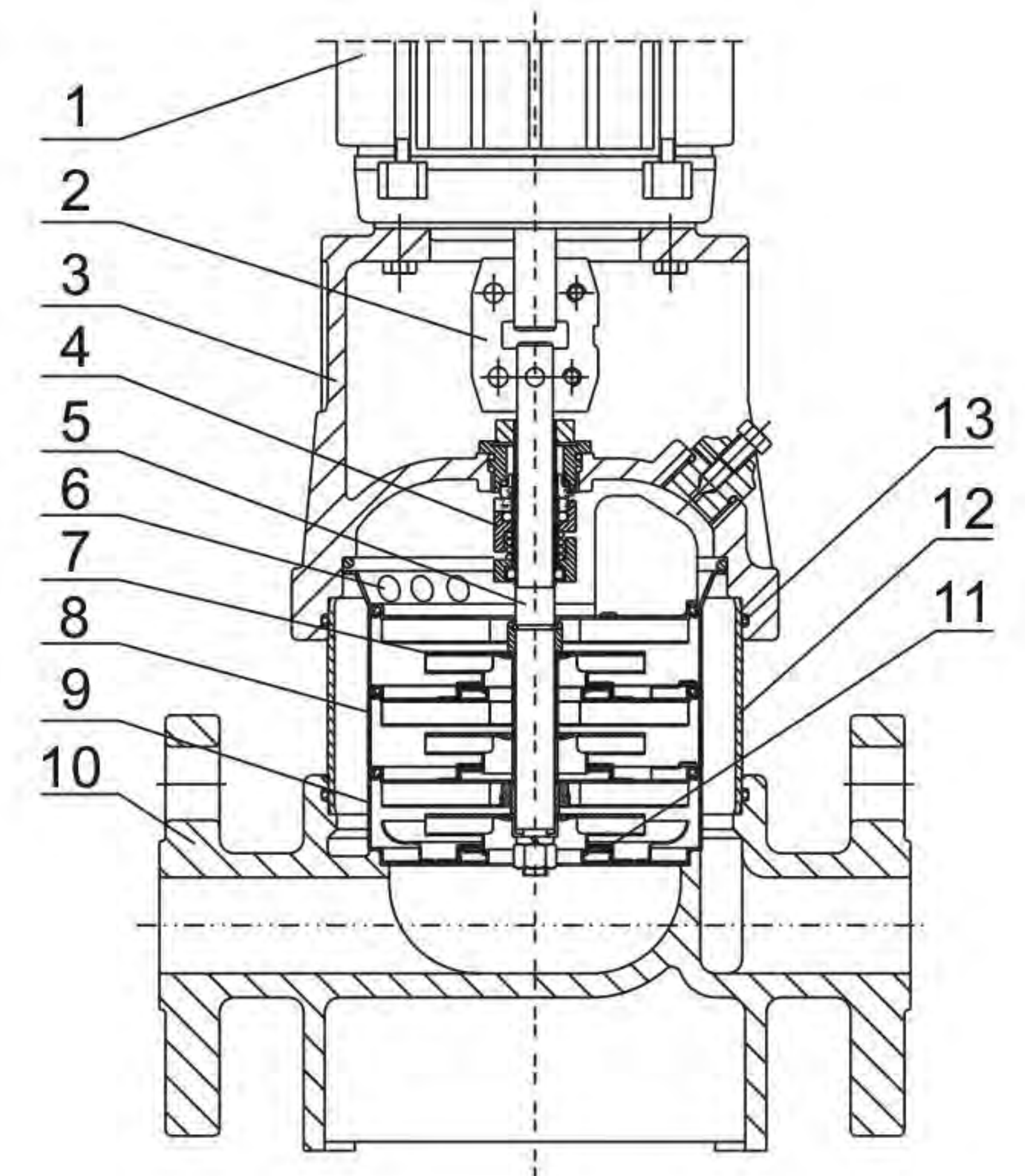
Construction

Vertical Multistage Centrifugal Pump

Material RV

No.	Description	Material	EN/DIN	AISI/ASTM
1	Motor			
2	Shaft connector			
3	Pump head	Cast iron	EN-JL 1030	ASTM25B
4	Mechanical seal			
5	Shaft	S.S		AISI420
6	Outlet	S.S	1.4301	AISI304
7	Impeller	S.S	1.4301	AISI304
8	Hydraulic stack	S.S	1.4301	AISI304
9	Inlet	S.S	1.4301	AISI304
10	Pump body	Cast iron	EN-JL 1030	ASTM25B
11	Neck ring	PTFE		
12	Outer sleeve	S.S	1.4301	AISI304
13	O-ring	EPDM/FKM		

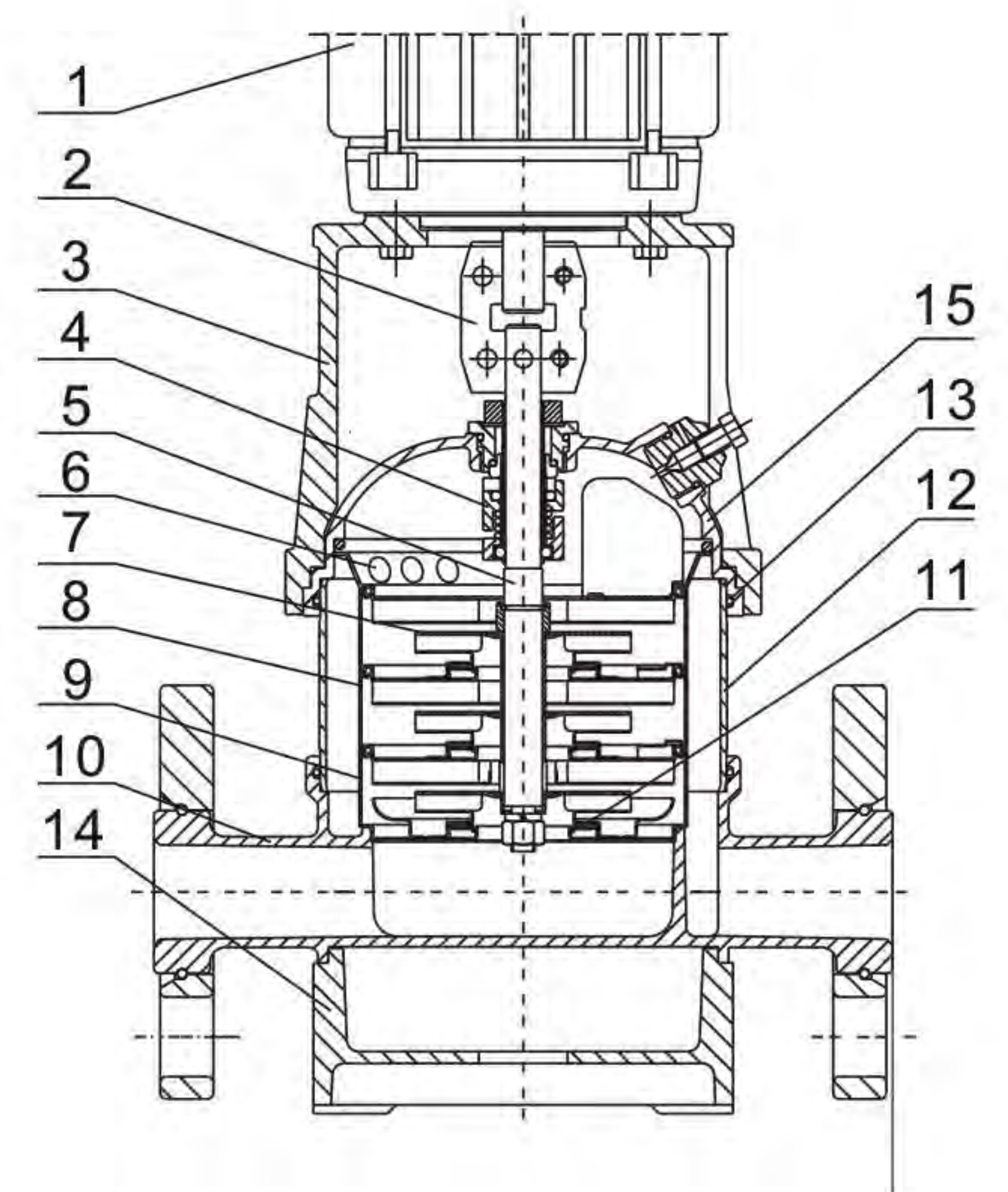
RV1,2,3,4,5 Sectional drawing



Material RVA

No.	Description	Material	EN/DIN	AISI/ASTM
1	Motor			
2	Shaft connector			
3	Pump head	Cast iron	EN-JL 1030	ASTM25B
4	Mechanical seal			
5	Shaft	S.S	1.4057	AISI431
6	Outlet	S.S	1.4301	AISI304
7	Impeller	S.S	1.4301	AISI304
8	Hydraulic stack	S.S	1.4301	AISI304
9	Inlet	S.S	1.4301	AISI304
10	Pump body	S.S	1.4301	AISI304
11	Neck ring	PTFE		
12	Outer sleeve	S.S	1.4301	AISI304
13	O-ring	EPDM/FKM		
14	Bottom base	Cast iron	EN-JL 1030	ASTM25B
15	Pump cover	S.S	1.4301	AISI304

RVA1,2,3,4,5 Sectional drawing



Operating and inlet pressures

Vertical Multistage Centrifugal Pump

Maximum operating pressure and temperature range

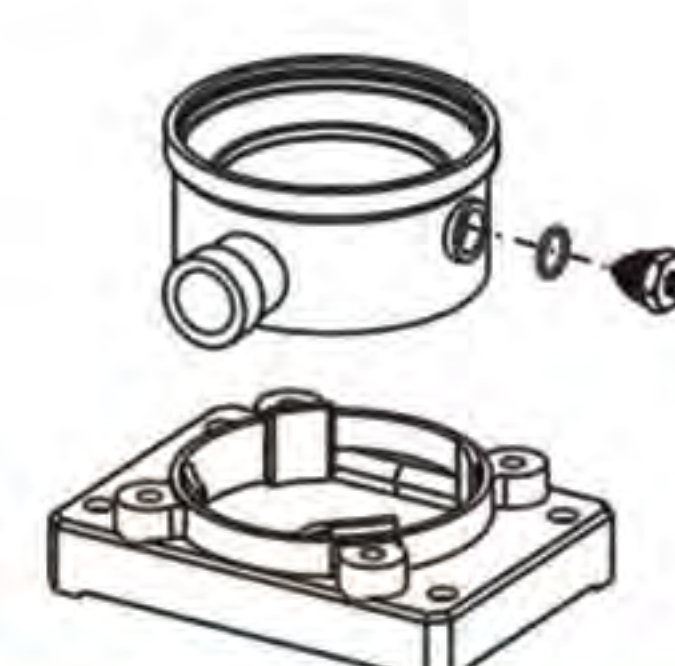
DIN-FGJ



UNION



PJE



Max. permissible operating pressure

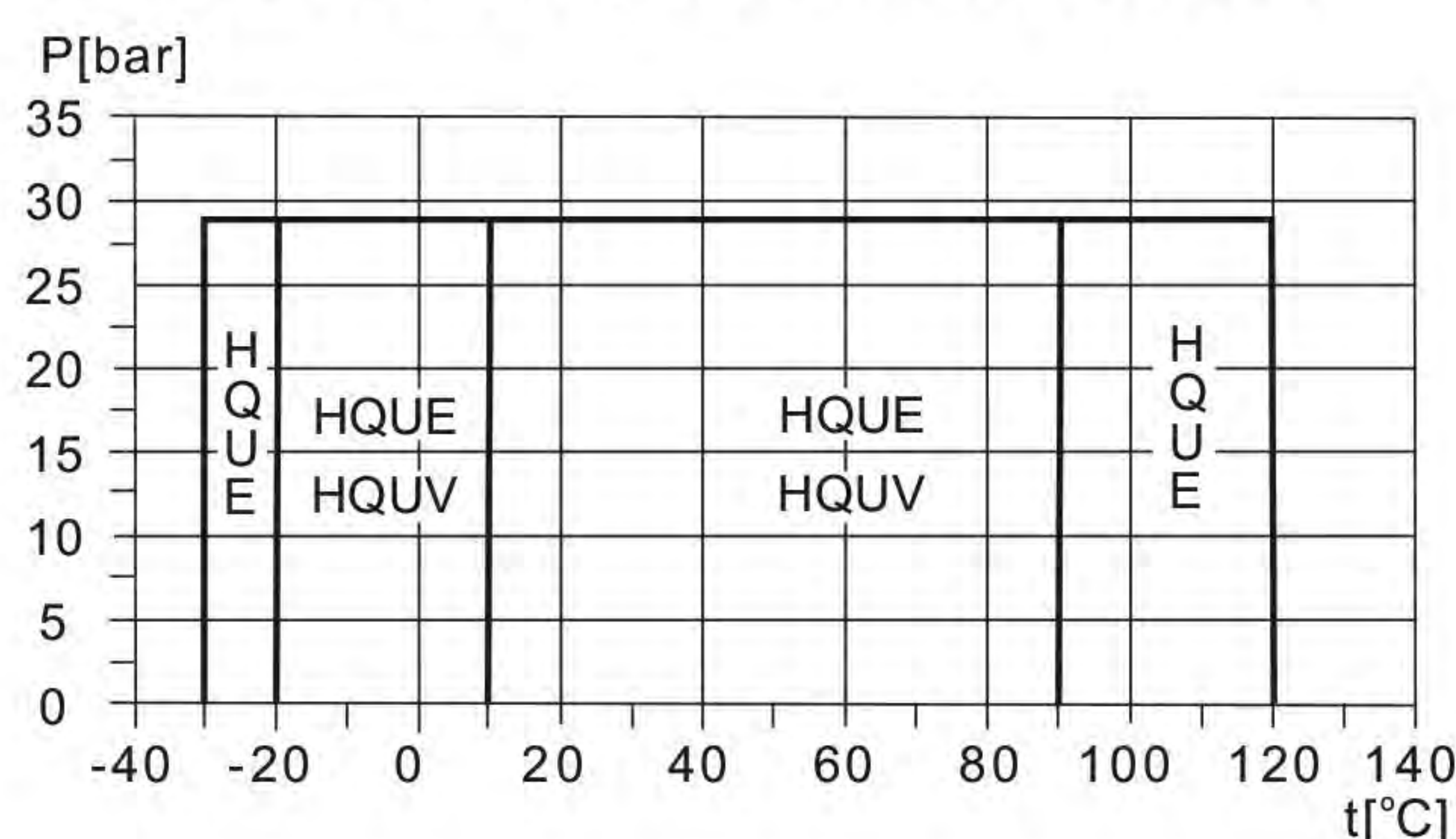
Liquid temperature range

RV,RVA1	25bar	-20 C to +104 C
RV,RVA2	25bar	-20 C to +104 C
RV,RVA3	25bar	-20 C to +104 C
RV,RVA4	25bar	-20 C to +104 C
RV,RVA5	25bar	-20 C to +104 C
RV,RVA10-1 RV,RVA10-10	16bar	-20 C to +104 C
RV,RVA10-12 RV,RVA10-17	25bar	-20 C to +104 C
RV,RVA15-1 RV,RVA15-8	16bar	-20 C to +104 C
RV,RVA15-9 RV,RVA15-12	25bar	-20 C to +104 C
RV,RVA20-1 RV,RVA20-7	16bar	-20 C to +104 C
RV,RVA20-8 RV,RVA20-10	25bar	-20 C to +104 C
RV,RVA32-1-1 RV,RVA32-5	16bar	-20 C to +104 C
RV,RVA32-6-2 RV,RVA32-8	25bar	-20 C to +104 C
RV,RVA32-9-2 RV,RVA32-10-2	30bar	-20 C to +104 C
RV,RVA45-1-1 RV,RVA45-4	16bar	-20 C to +104 C
RV,RVA45-5-2 RV,RVA45-6-1	25bar	-20 C to +104 C
RV,RVA45-6 RV,RVA45-7	30bar	-20 C to +104 C
RV,RVA64-1-1 RV,RVA64-3	16bar	-20 C to +104 C
RV,RVA64-4-2 RV,RVaA64-5-2	25bar	-20 C to +104 C
RV,RVA90-1-1 RV,RVA90-3	16bar	-20 C to +104 C
RV,RVA90-4-2	25bar	-20 C to +104 C

Operating range of the shaft seal

The operating range of the shaft seal depends on operating pressure, pump type, type of shaft seal and liquid temperature. The range shown in fig 4. Applies to clean water and water with glycol liquids.

Fig.4 Operating range of standard shaft seals



Selection and sizing

Vertical Multistage Centrifugal Pump

Minimum inlet pressure-NPSH

Calculation of the inlet pressure "H" is recommended in these situations :

- the liquid temperature is high.
- the flow is significantly higher than the rated flow.
- water is drawn from depths.
- water is drawn through long pipes.

inlet conditions are poor. o avoid cavitation, make sure that there is a minimum pressure on the suction side of the pump.

The maximum suction lift "H" in metres head can be calculated as follows:

$$H = P_b \cdot 10.2 - \text{NPSH} - H_f - H_v - H_s$$

Pb = Barometric pressure in bar.

(Barometric pressure can be set to 1 bar).

in closed systems, Pb indicates the system pressure in bar.

NPSH = Net positive suction Head in metres head.

(To be read from the NPSH curve at the highest flow the pump will be delivering)

Hf = Friction loss in suction pipe(unit:m).

(At the highest flow the pump will be delivering.)

Hv = Vapour pressure (unit:m).

(To be read from the vapour pressure scale).

Hs = safety margin=minimum 0.5 metres head.

If the "H" calculated is positive, the pump can operate at a suction lift of maximum "H" metres head. If the "H" calculated is negative, an inlet pressure of minimum "H" metres head is required.

Example:

Pb=1bar

pump model:RVA10,50Hz

flow: 10m /h

NPSH(P36 reference:2.1 metres head.

liquid temperature:+50C

Hv(reference picture4):1.3metres head.

$$H = P_b \cdot 10.2 - \text{NPSH} - H_f - H_v - H_s$$

$$H = 1 \cdot 10.2 - 2.1 - 3.0 - 1.3 - 0.5 = 3.3(\text{metres})$$

It means the pump can operate at a suction lift of maximum 3.3 metres head.

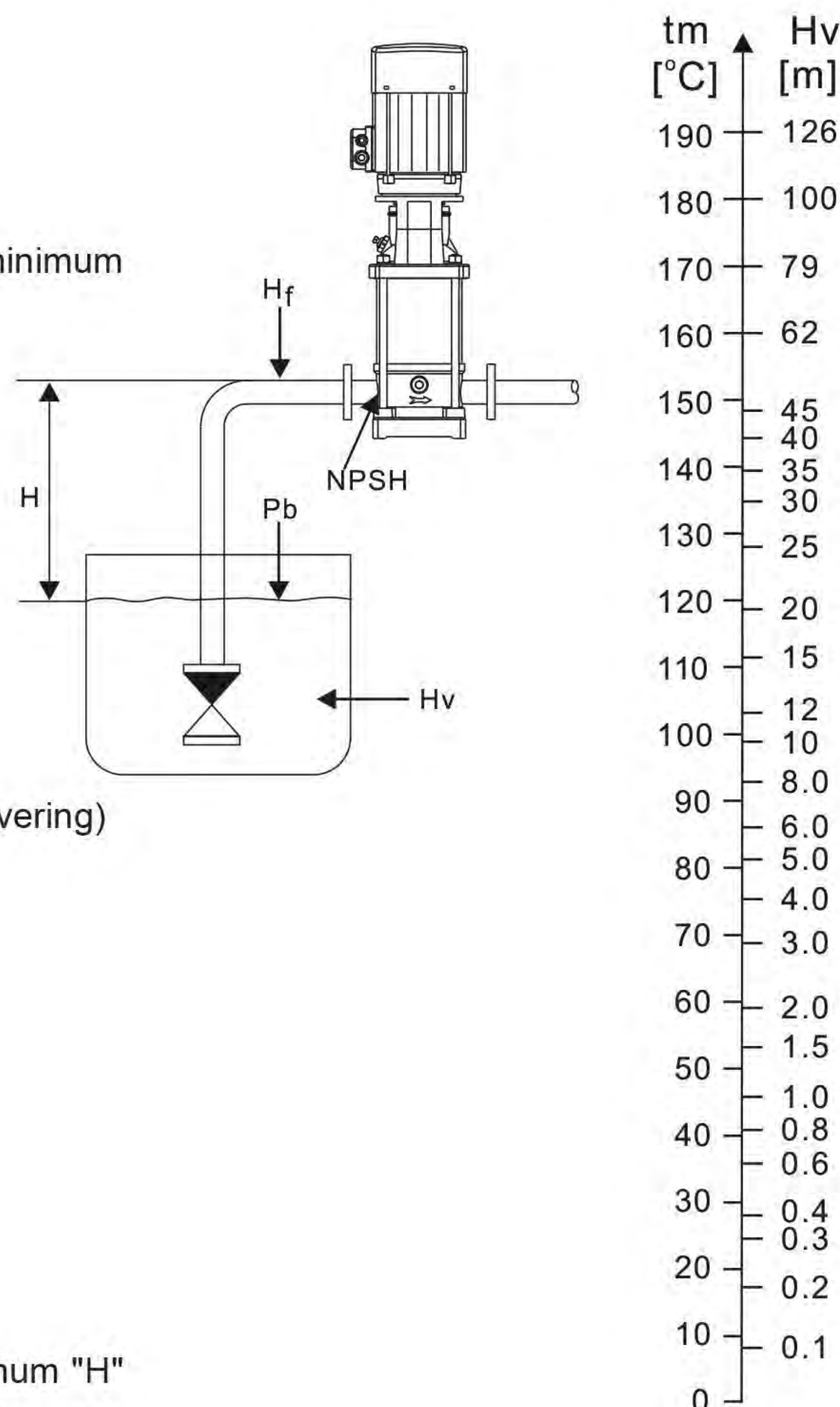
exchanged meter head to bar:

$$1 \text{ metre head} = 1 \cdot 0.0981 = 0.0981 \text{ bar}$$

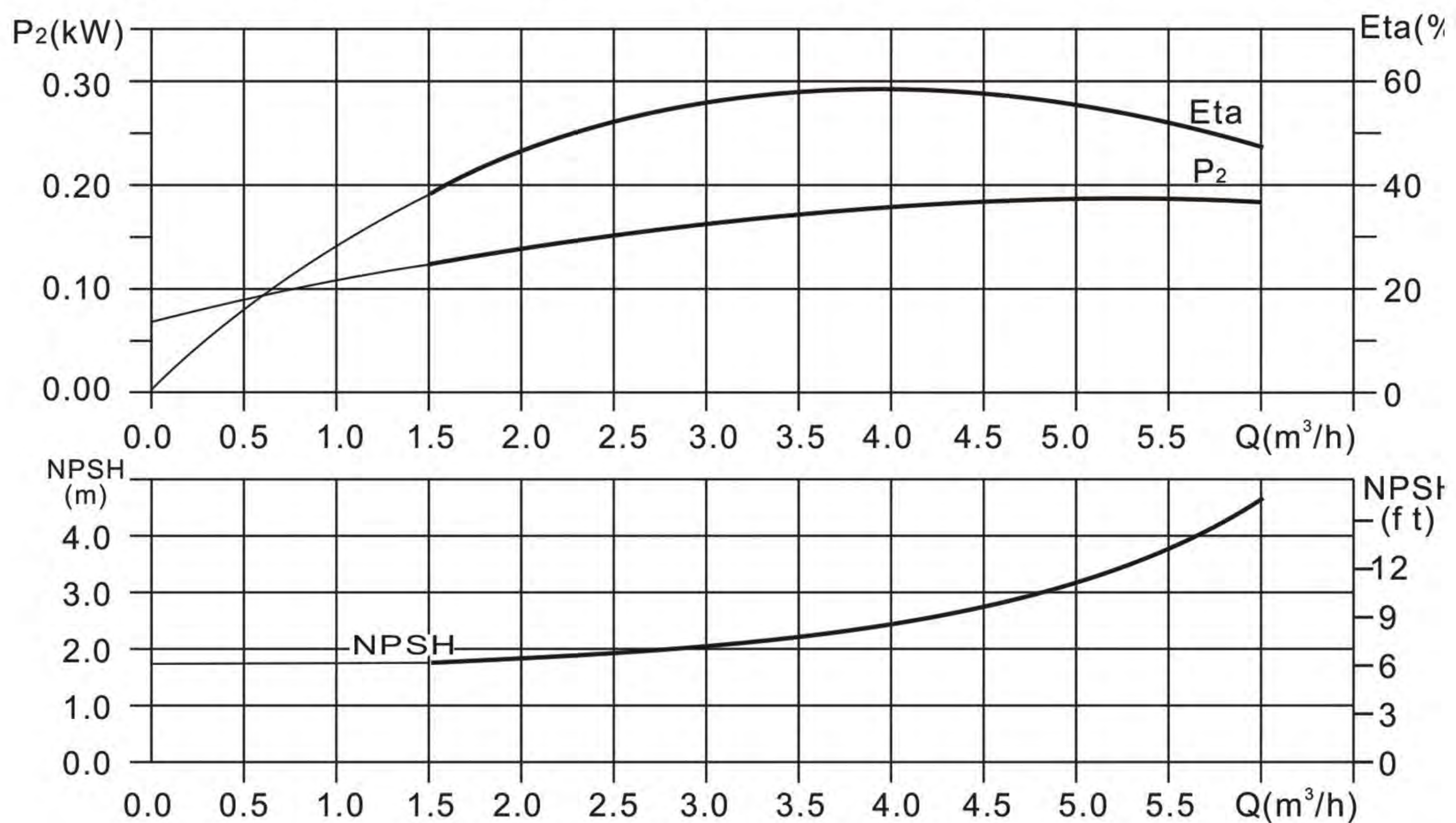
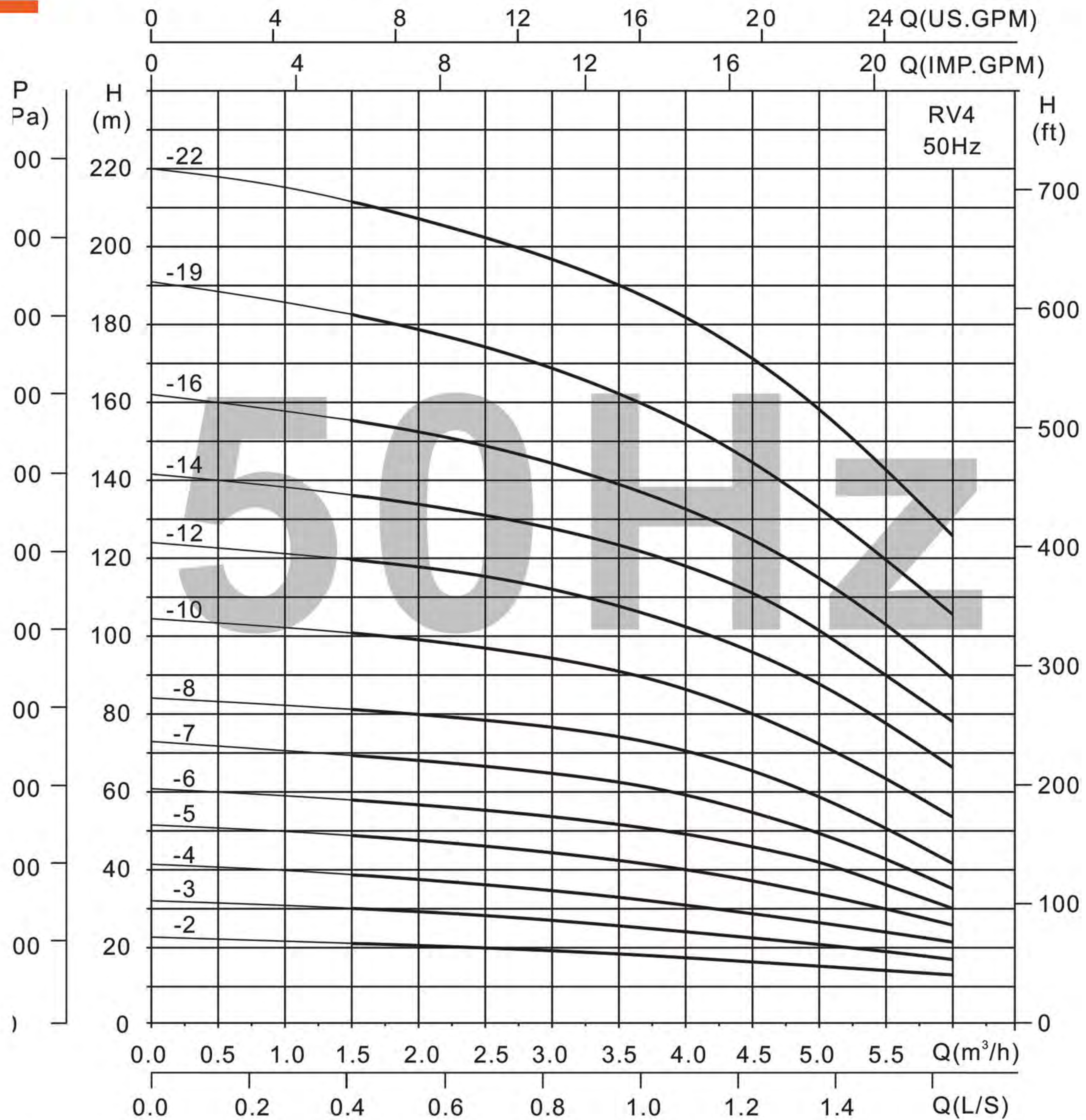
exchanged metre head to kpa:

$$1 \text{ metre head} = 1 \cdot 9.81 = 9.81 \text{ kpa.}$$

Fig.13 Mimimum inlet pressure-NPSH



Performance Curve



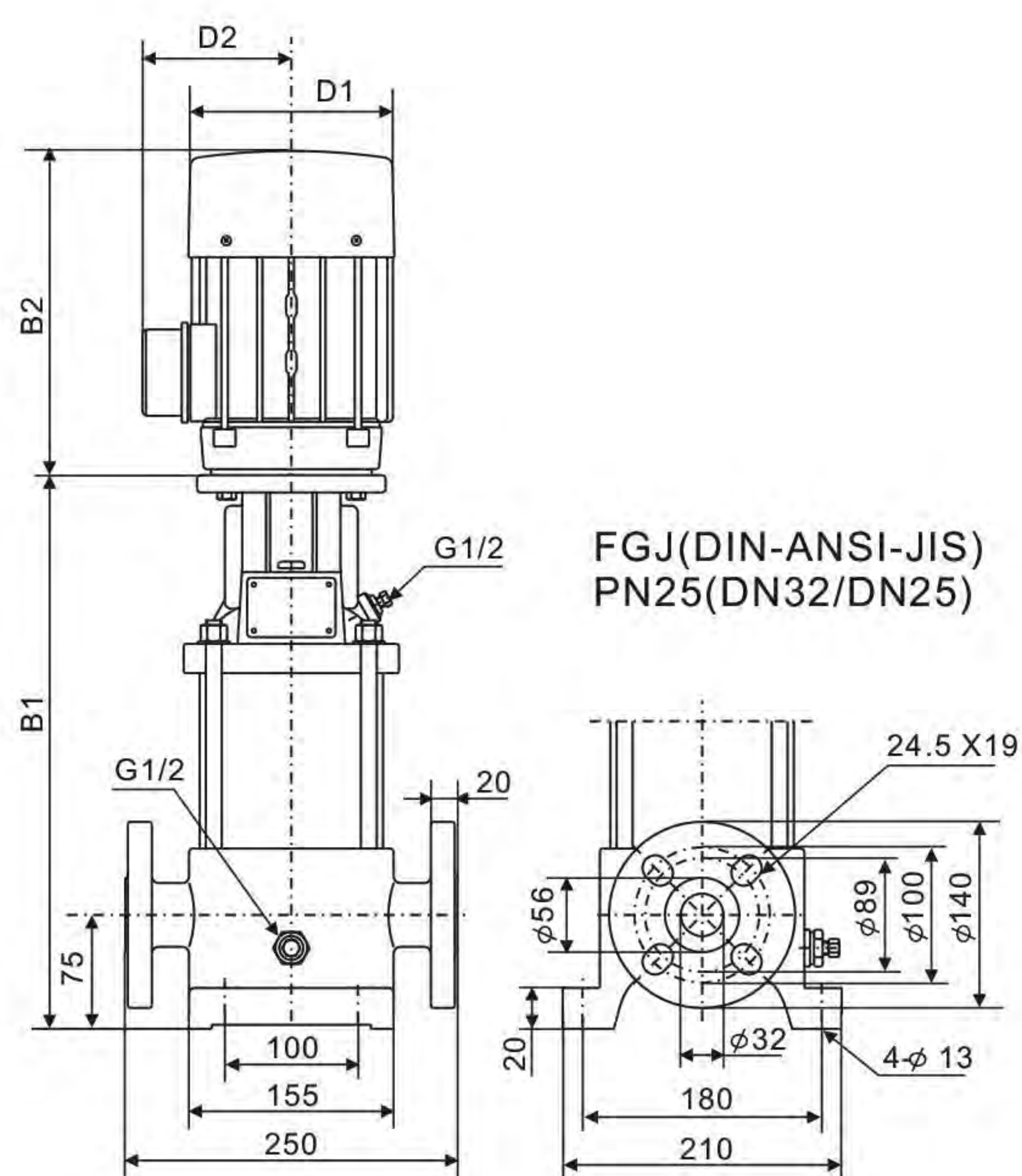
Technical Data

Performance table

Model	Power P ₂ (kW)	Q (m ³ /h)	1.0	2.0	3.0	4.0	4.5	5.0	5.5	6.0
RV4-2	0.37	H (m)	22	21	19.5	18	17	16	14	13
RV4-3	0.55		31	29.5	28	24	22	21	19	18
RV4-4	0.75		40	38	35	31	29	27	24	22
RV4-5	1.1		50	48	44	40	38	34	30	26
RV4-6	1.1		59	57	53	49	45	41	36	30
RV4-7	1.5		71	69	65	59	55	50	43	36
RV4-8	1.5		83	80	78	71	65	59	51	42
RV4-10	2.2		103	100	95	87	80	79	73	54
RV4-12	2.2		122	119	113	103	96	88	78	68
RV4-14	3.0		139	134	128	118	111	102	90	79
RV4-16	3.0		158	153	145	134	126	116	103	89
RV4-19	4.0		186	180	170	155	145	133	117	98
RV4-22	4.0		216	208	197	182	172	159	143	126

Installation sketch

Dimensions and weights



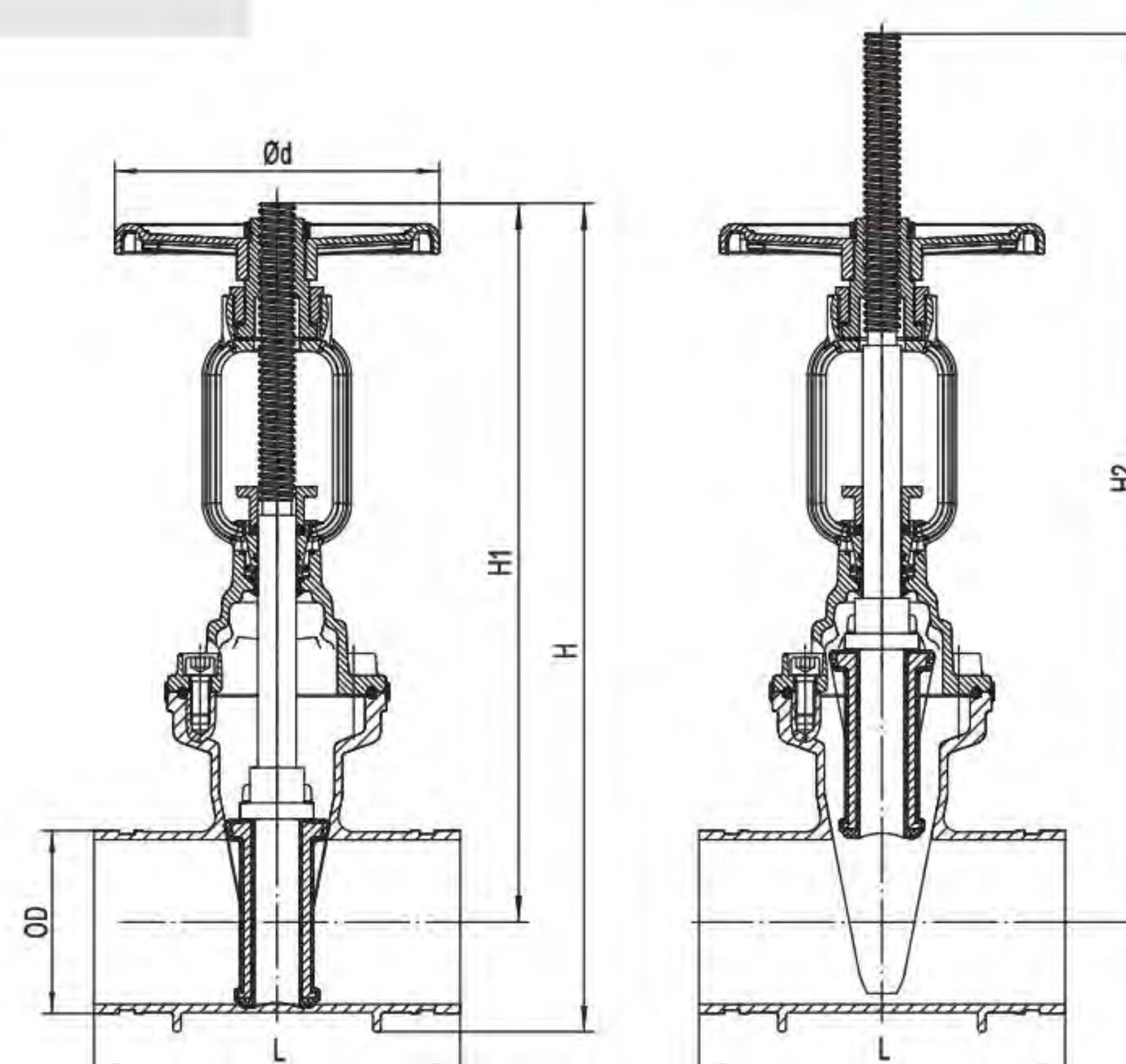
Model	Dimensions(mm)					Weight (kg)
	B1	B2	B1+B2	D1	D2	
RV4-2	262	205	467	133	102	25
RV4-3	280	205	485	133	102	25
RV4-4	299	205	504	133	102	26
RV4-5	322	241	563	154	111	26
RV4-6	340	241	581	154	111	28
RV4-7	358	241/293	599/651	154	111	33
RV4-8	376	241/293	617/669	154	111	33
RV4-10	420	275/293	695/713	177	116	35
RV4-12	456	275/293	731/749	177	116	35
RV4-14	492	275/293	767/785	177	116	38
RV4-16	528	275/293	803/821	197	116	38
RV4-19	602	305	907	197	148	48
RV4-22	656	305	961	197	148	53

VALVES

DATA SHEET

Resilient seated os& y gate valve- grooved end

Name of parts	Material
Body	ductile iron
Wedge	ductile iron+epdm
Stem nut	bronze
Stem	ss431 or ss304 , ss316, bronze
Bonnet	ductile iron
Bonnet gasket	epdm
Sealing ring	epdm
Yoke	ductile iron
Sliding disc	bronze
Screw	carbon steel with hot galvanization
O-rings	epdm
Hadwheel	ductile iron



Technical data

Size : dn50/60-dn200/219

working pressure : pn25,36

Valve standard: awwwa c515

Grooved standard : awwwa c606

temperature range : 0-80c

Dimensions		Pressure rating	Size (mm)					
DN	inch	psi	OD	L	H1	H2	H	Φd
50	2	362	60.3	178	358.5	420.5	403.5	203
65	2.5	362	73	190	359.5	429.5	411	203
			76.1					
80	3	362	88.9	203	378	462	437.5	203
100	4	362	114.3	229	449.5	553	518.5	203
125	5	362	139.7	254	549.5	677	631	300
			141.3					
150	6	362	165.1	267	591.5	747	686	300
			168.3					
200	8	362	219.1	292	735.5	938	865	330

Swing check valve with grooved end

Name of parts	Material
Body	Ductile iron
Seat Ring	Bronze
disc Sealing Ring	EPDM
disc Plate	SS304
Disc	Ducile iron
Clapper Arm	Ductile iron
Bonnet Gasket	Epdm
bonnet	Ductile iron
Hinge Pin	SS304
Hinge Bushing	Bronze
hinge plug	SS304



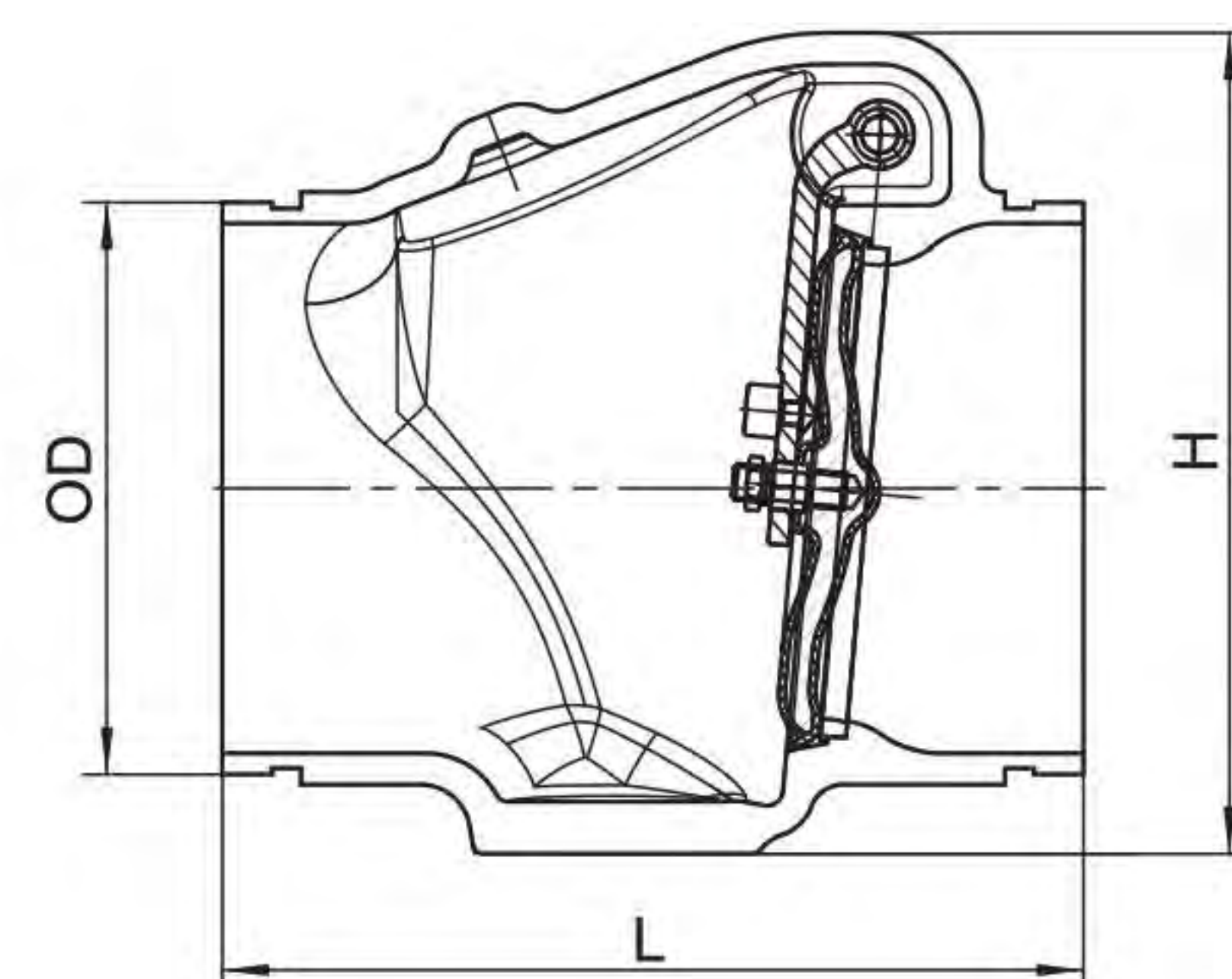
Technical data

Size : 2"~12"

working pressure : 362 PSI

Grooved standard: awwa c606

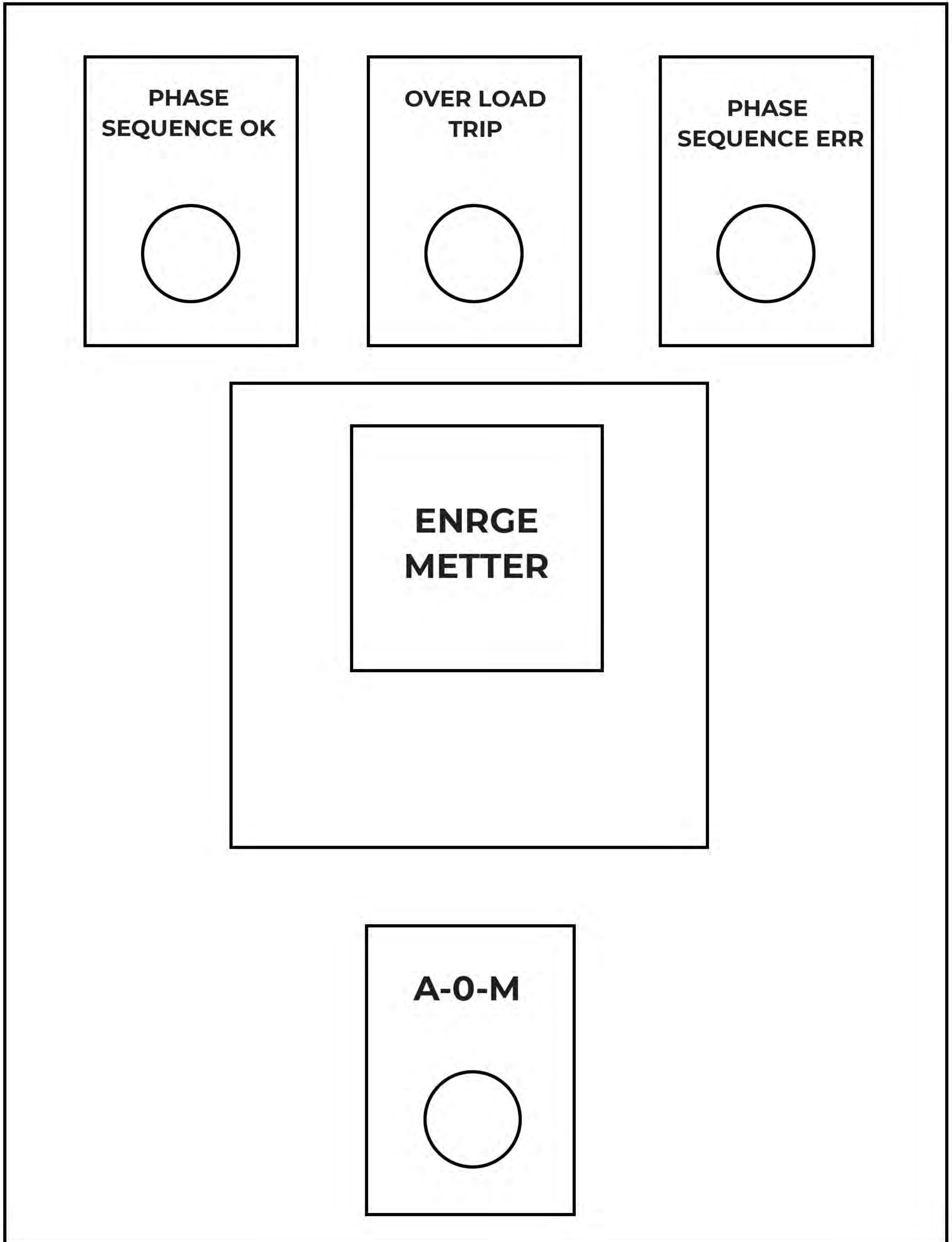
Temperature range : 0-80c



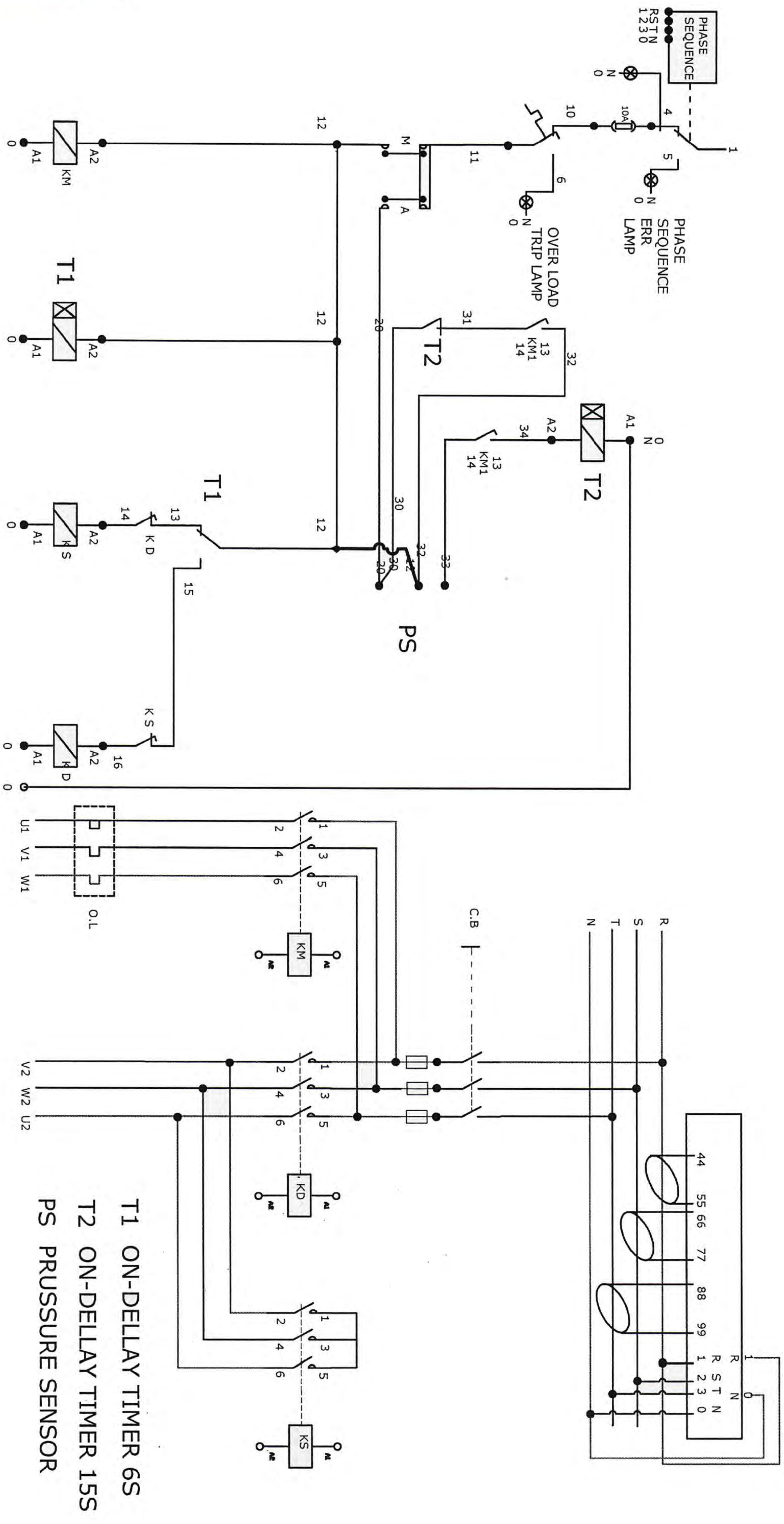
Dimensions		Pressure rating	Size (mm)		
DN	inch	psi	OD	L	H
50	2	362	60.3	167	122.5
65	2.5	362	73	180	136.5
			76.1		
80	3	362	88.9	198	165.5
100	4	362	114.3	229	193.6
125	5	362	139.7	254	235.5
			141.3		
150	6	362	165.1	272	252
			168.3		
200	8	362	219.1	330	314.5

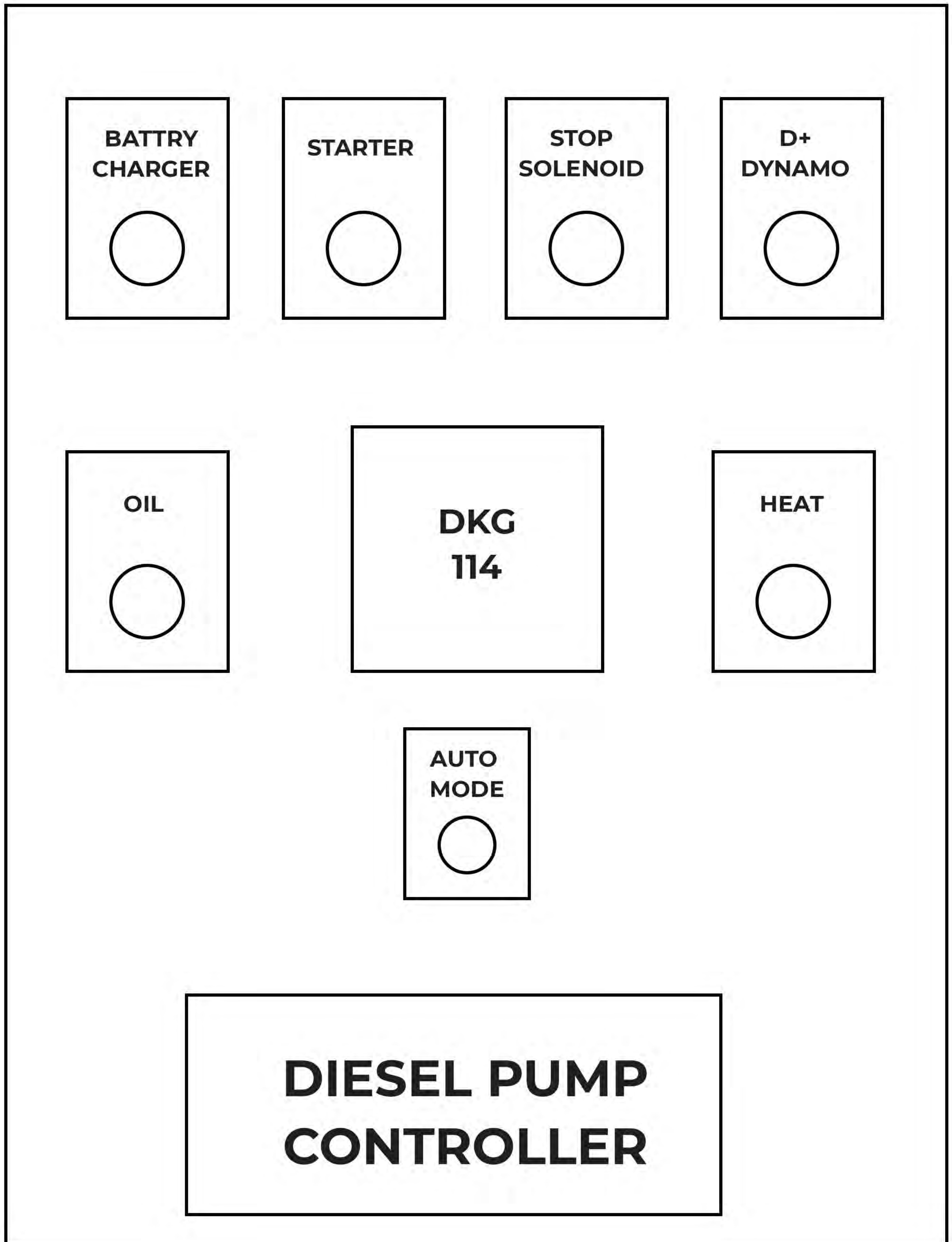
CONTROL PANELS

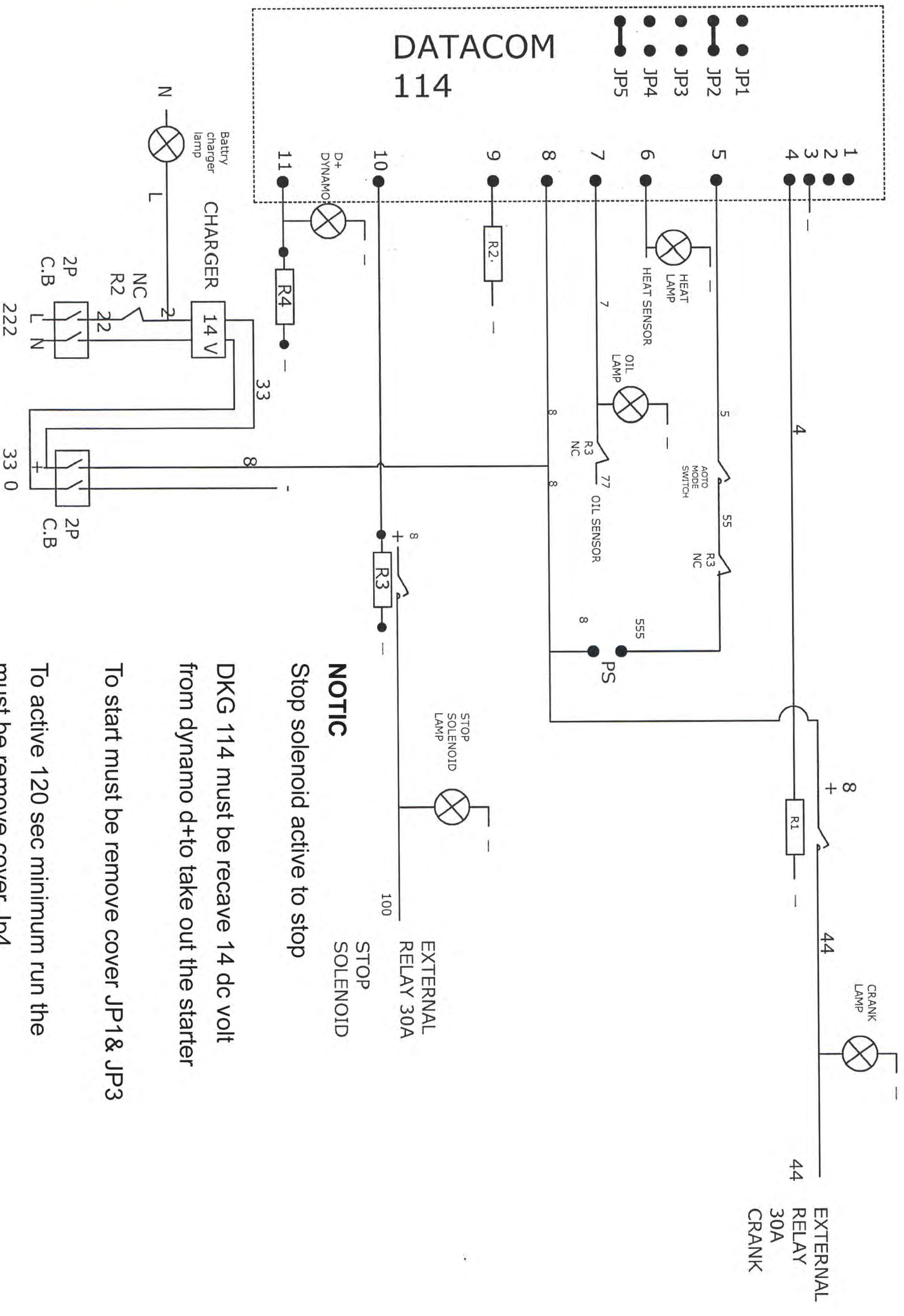
Wiring Diagrams



Electric pump control panel







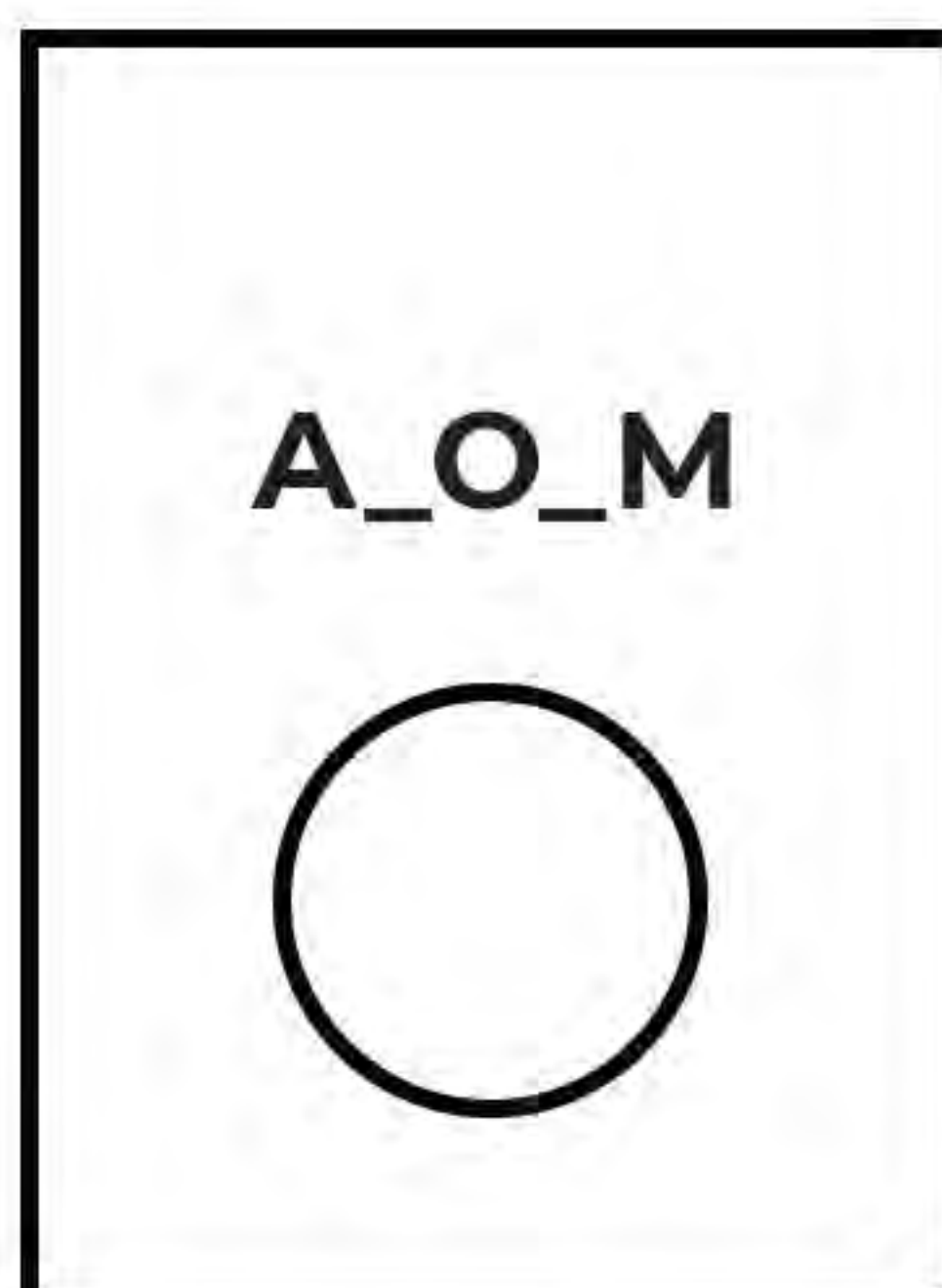
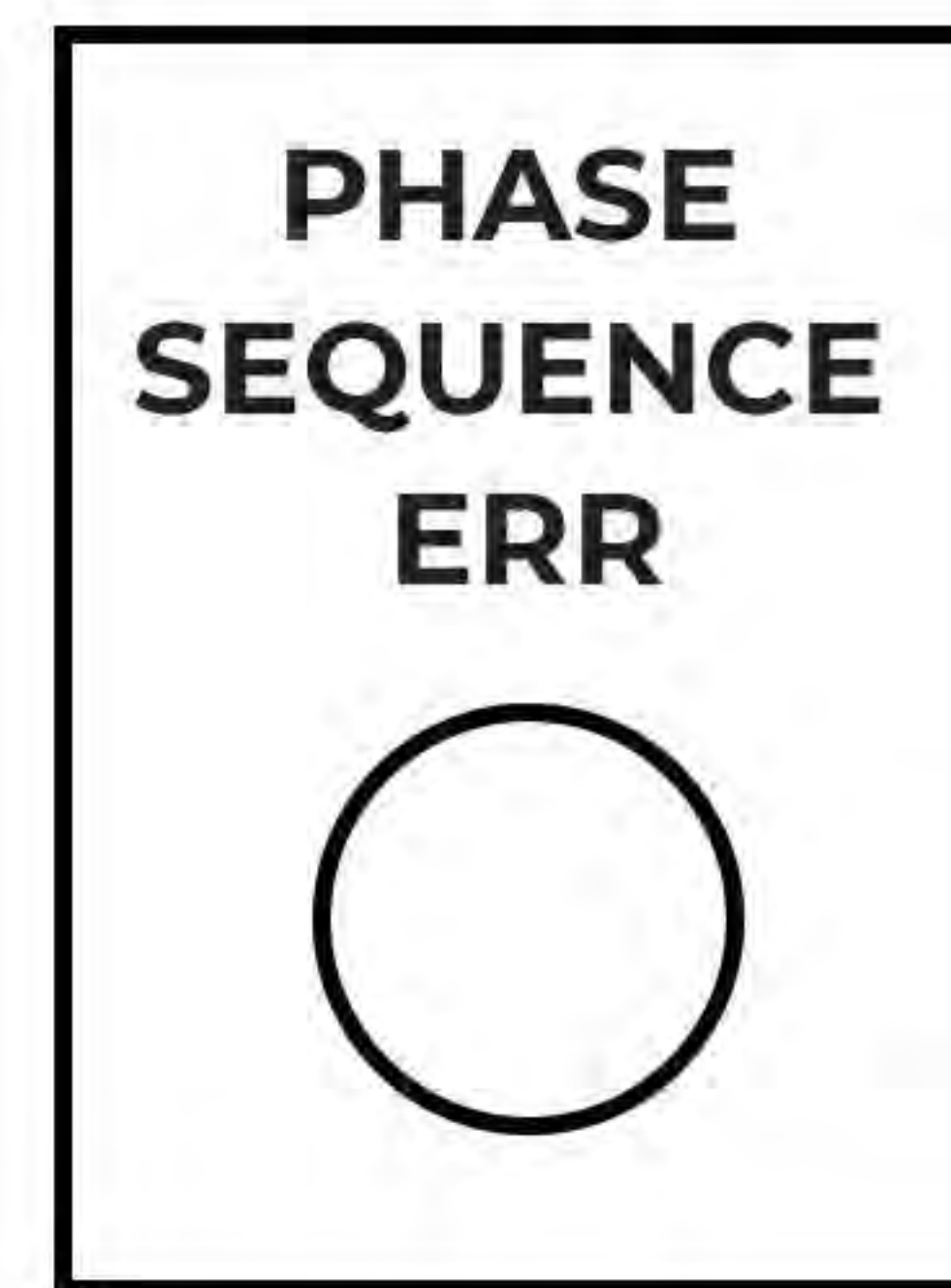
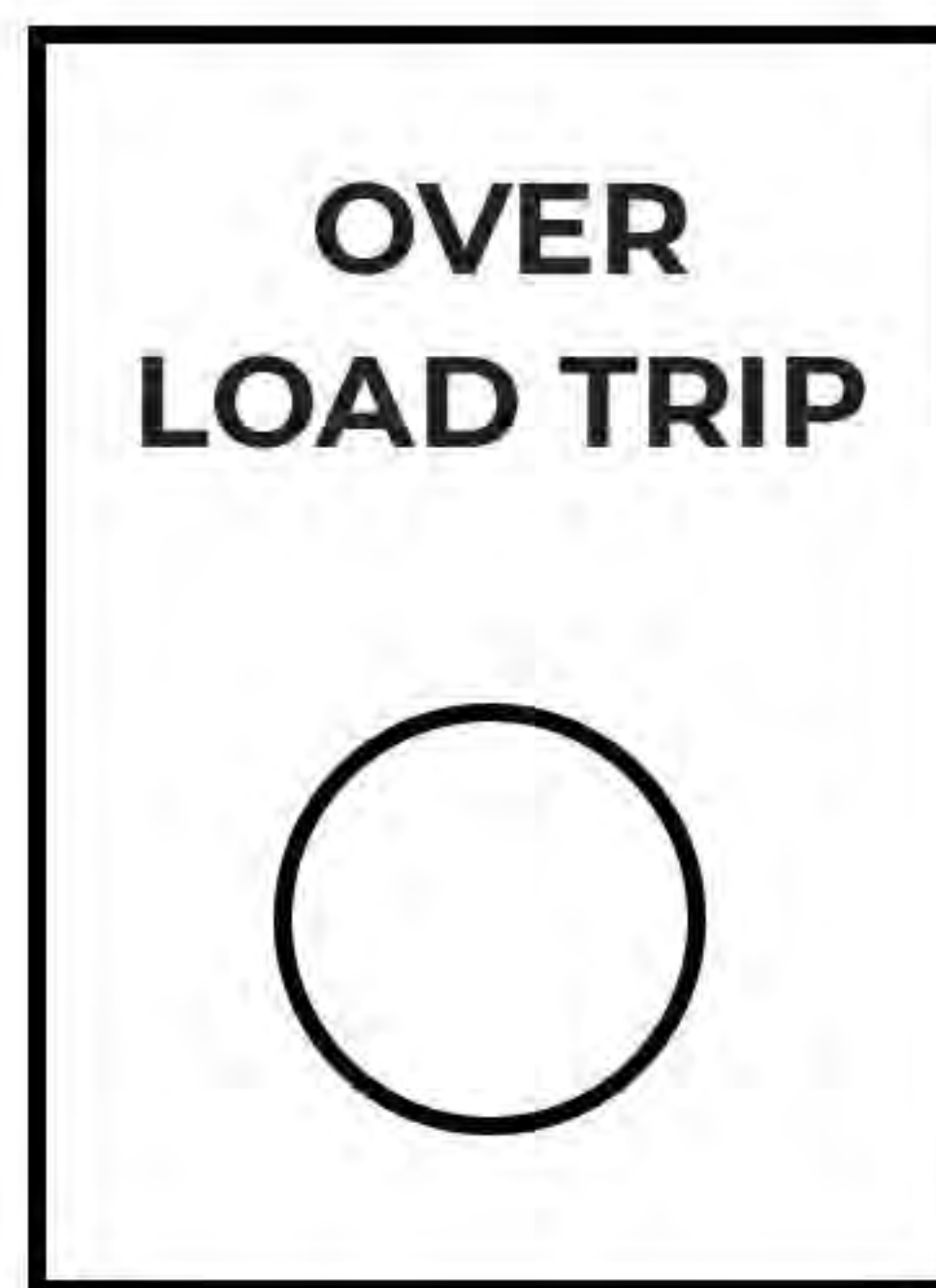
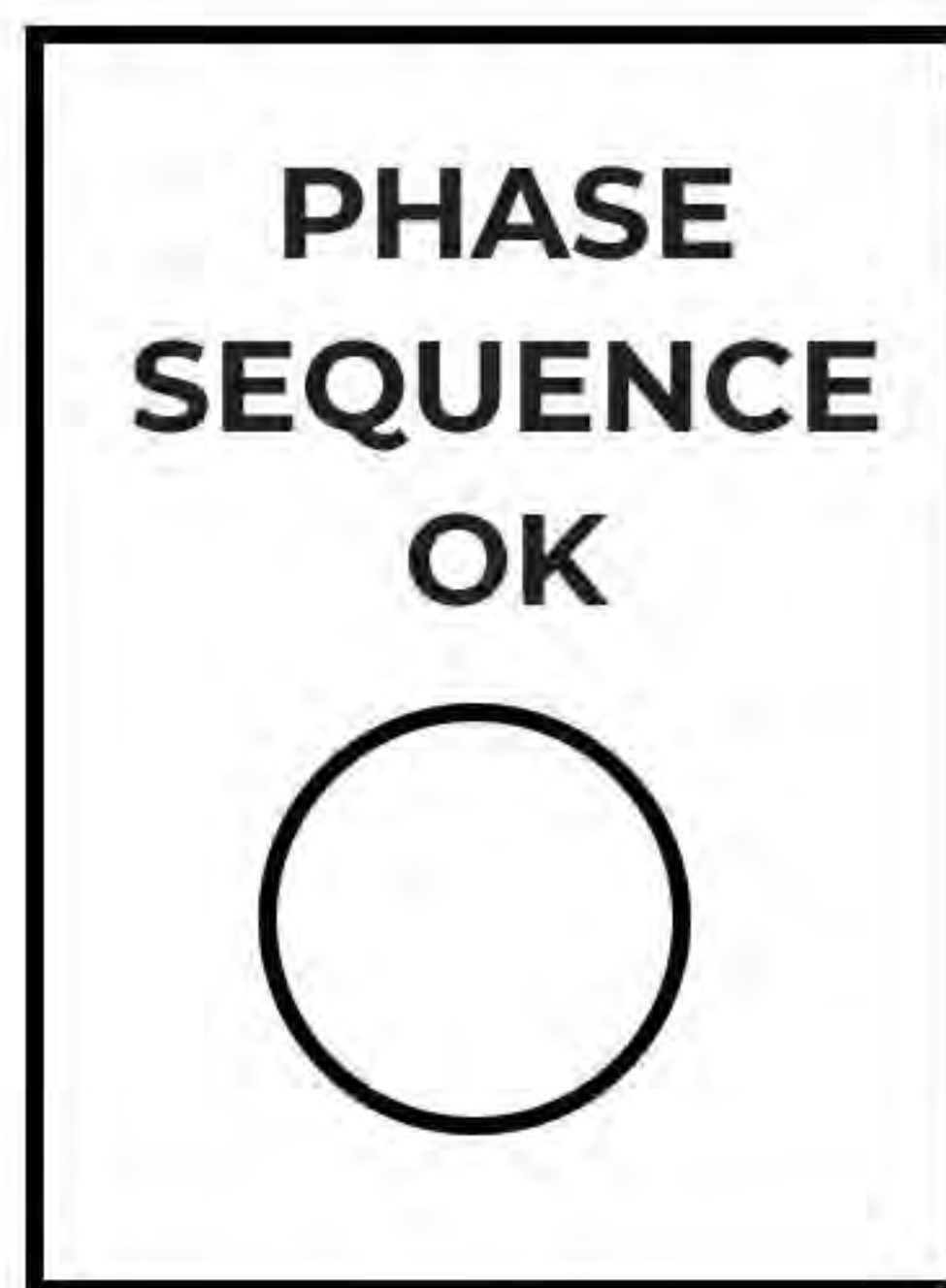
NOTIC

Stop solenoid active to stop

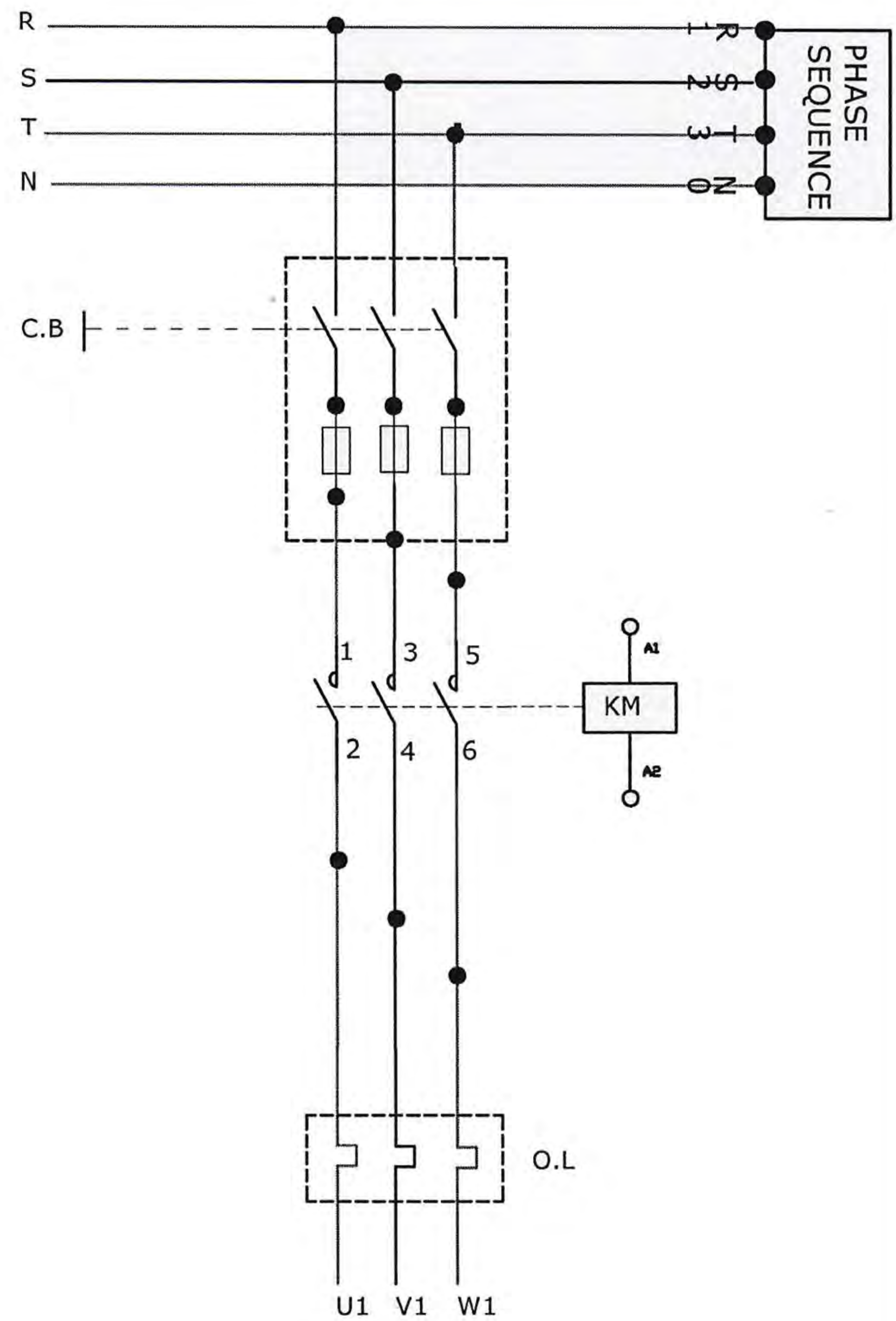
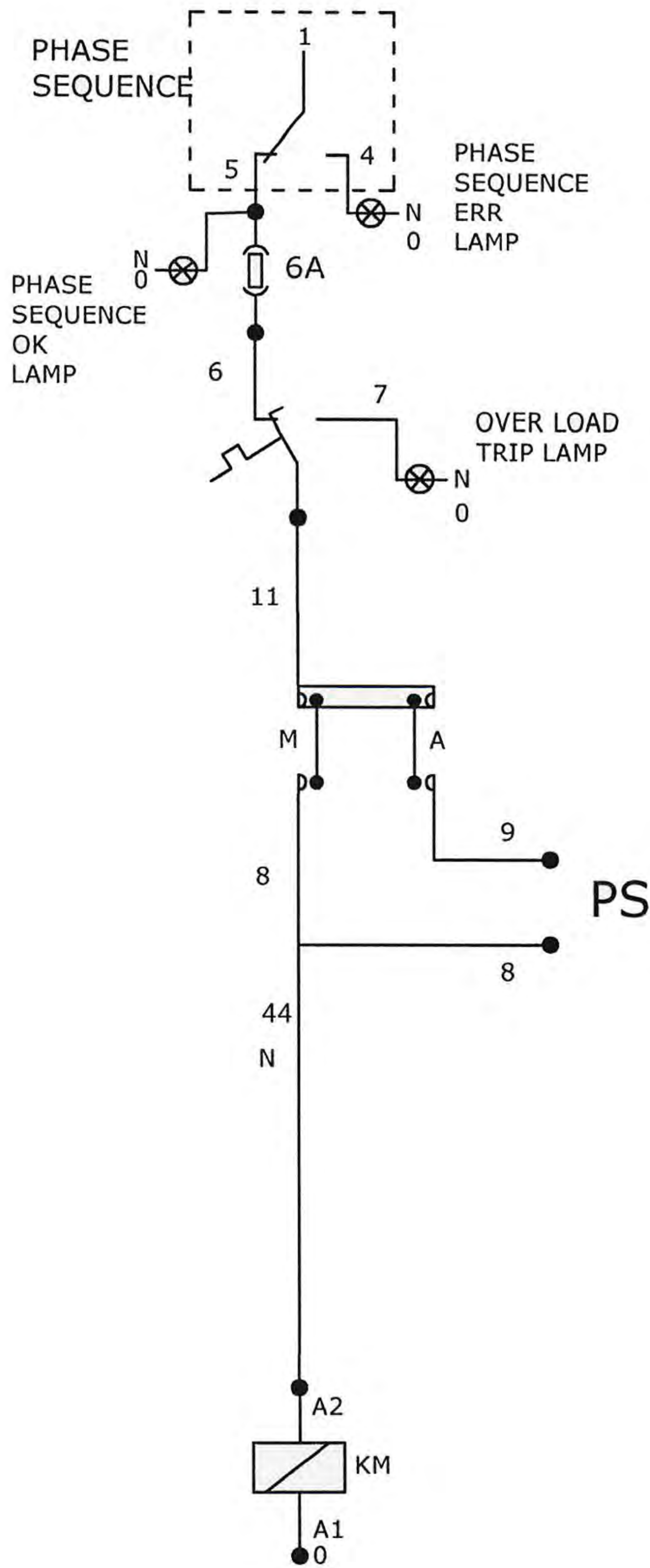
DKG 114 must be recave 14 dc volt from dynamo d+to take out the starter

To start must be remove cover JP1& JP3

To active 120 sec minimum run the must be remove cover Jp4



JOCKY PUMP CONTROLLER



(JOCKY PUMP) CONTROL PAEL



Egypt Head Office Address

3A arab organization for
industrialization bulidings,
makram abeed street 10th
floor, Cairo , Egypt

CONTACT US

☎ +202 23494024
+202 23494024
☎ +201017474300
☎ +201017474300

UAE Branch Office Address

Bayan Business Center
Dubai investment park first,
297-0, united Arab Emarets

✉ Sales@fire-degree.com
✉ Marketing@fire-degree.com
✉ Dubia@fire-degree.com
✉ Logistics@fire-degree.com

www.fire-degree.com