SHAKTI®

PUMPING LIFE

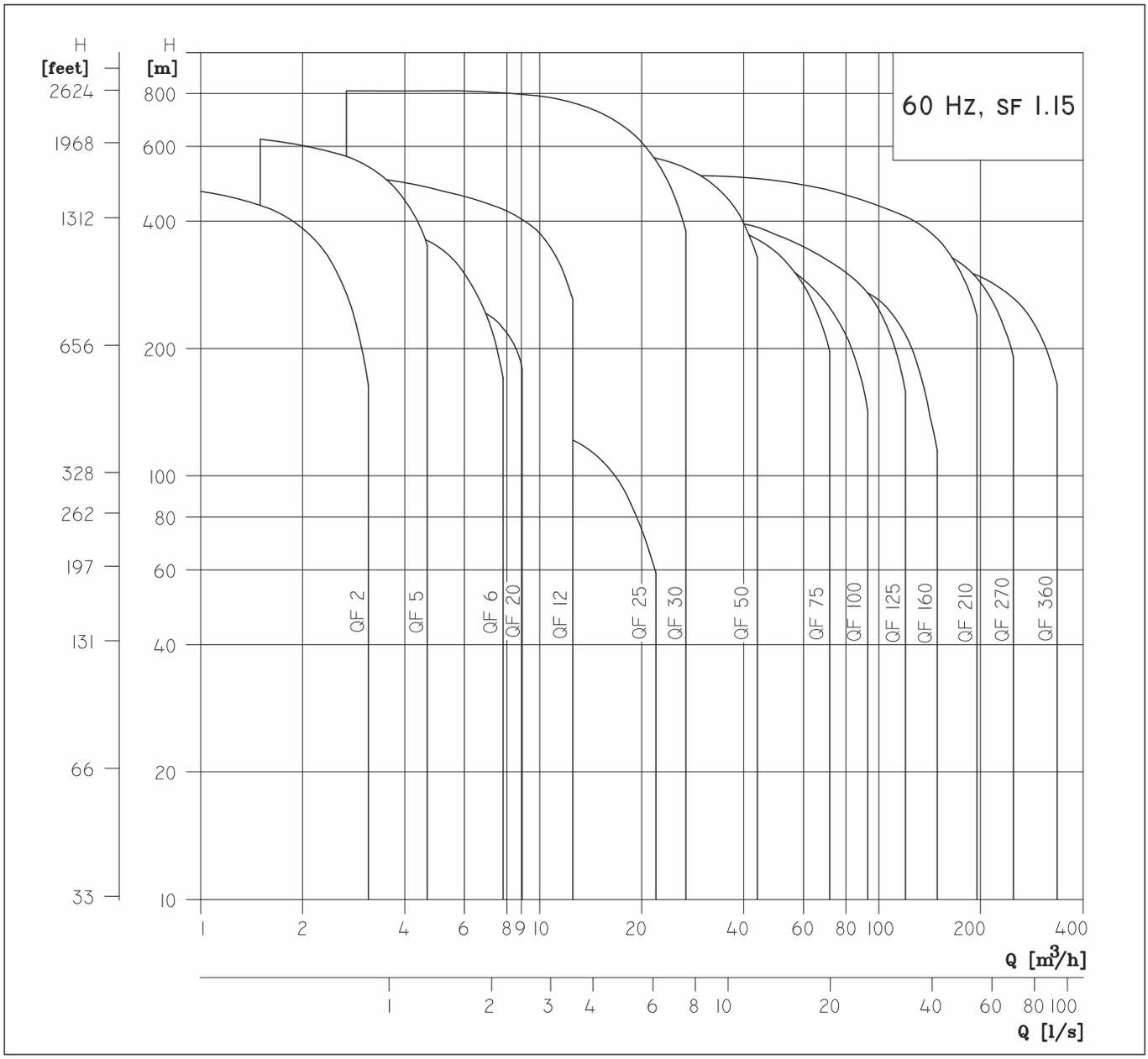
SUBMERSIBLE PUMPS & MOTORS

QF SERIES - 60Hz

CONTENT

SUBMERSIBLE PUMP QF

PERFORMANCE RANGE



SUBMERSIBLE PUMP QF

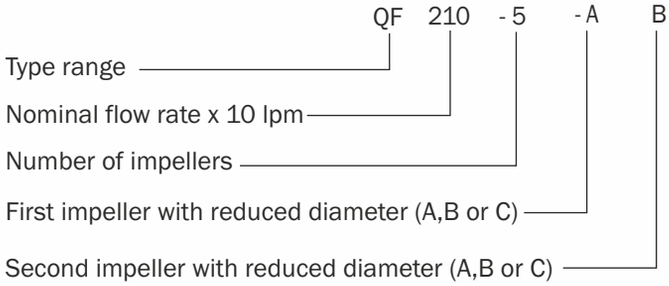
APPLICATIONS

The pumps are suitable for the following applications :

- Raw water supply
- Irrigation systems
- Groundwater lowering
- Pressure boosting
- Industrial applications

TYPE KEY

Example



PUMPED LIQUIDS

Clean, thin, non-aggressive liquids without solid particles or fibres.

OPERATING CONDITIONS

Flow rate, Q : 0.1 - 335 m^3/h.
Head, H: Maximum 810m.

Maximum Liquid Temperature:

Motor	Installation		
	Flow velocity-past motor	Vertical	Horizontal
Shakti 4", 6" & 8"	0.15 m/s	40^0c	40^0c

Operating pressure: Maximum 810m (81 bar)

CURVE CONDITIONS

The conditions below apply to the curves shown on the following pages :

GENERAL

- Curve tolerance according to ISO 9906, Annex A.
- The performance curves show pump performance at actual speed cf. standard motor range.
  The speed of the motors is approximately :
  4" motors : n=3460 min^{-1}
  6" motors : n=3450 min^{-1}
  8" to 12" motors : n=3500 min^{-1}
- The measurements were made with airless water at a temperature of 20^0c.The curves apply to a kinematic viscosity of $1mm^2/s$. When pumping liquids with a density higher than that of water, motors with correspondingly higher outputs must be used.
- The bold curves indicate the recommended performance range.
- The performance curves are inclusive of possible losses such as non-return valve loss.

QF2, QF5, QF6, QF12, QF20, QF25 CURVE

- **Q/H :** The curves are inclusive of valve and inlet losses at the actual speed.
- **Power Curve :** BPkW/Stage shows pump power input per stage.
- **Efficiency Curve :** Efficiency shows pump stage efficiency.

QF10, QF15, QF30, QF50, QF75, QF100, QF125, QF160, QF210, QF270, QF360 CURVE

- **Q/H :** The curves are inclusive of valve and inlet losses at the actual speed.
  Operation without non-return valve will increase the actual head at nominal performance by 0.5 to 1.0 m.
- **NPSH** The curve is inclusive of suction case and shows required inlet pressure.
- **Power Curve:** It shows pump power input at the actual speed for each individual pump size.
- **Efficiency Curve :** Efficiency shows pump stage efficiency.

SUBMERSIBLE PUMP QF

PUMP RANGE

Type	QF 2	QF 5	QF 6	QF 12	QF 20	QF 25	QF 30	QF 50	QF 75	QF 100	QF 125	QF 160	QF 210	QF 270	QF 360
Steel : AISI SS 304	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Connection : Rp (Inches) BSP Thread	$1^1/_4$	$1^1/_4$	$1^1/_2$	2	2	2	$2^1/_2$	3	3 4	3 4	5	5	6	6	6
NPT Thread	$1^1/_4$	$1^1/_4$	$1^1/_2$	2	2	2	3	3	3 4	3 4	5	5	6	6	6
Flange Connection											5"	5"	6"	6"	6"

MOTOR RANGE

MOTOR OUTPUT [KW]	0.37	0.55	0.75	1.1	1.5	2.2	3.0	4.0	5.5	7.5	9.2	11	13	15	18.5	22	26	30	37	45	55	75	93	110	132	147	170	190	220
Single Phase	+	+	+	+	+	+	+	+																					
Three Phase	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Rewindable Motor	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Steel : AISI 304	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+								
Steel : AISI 304 & Cast Iron	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

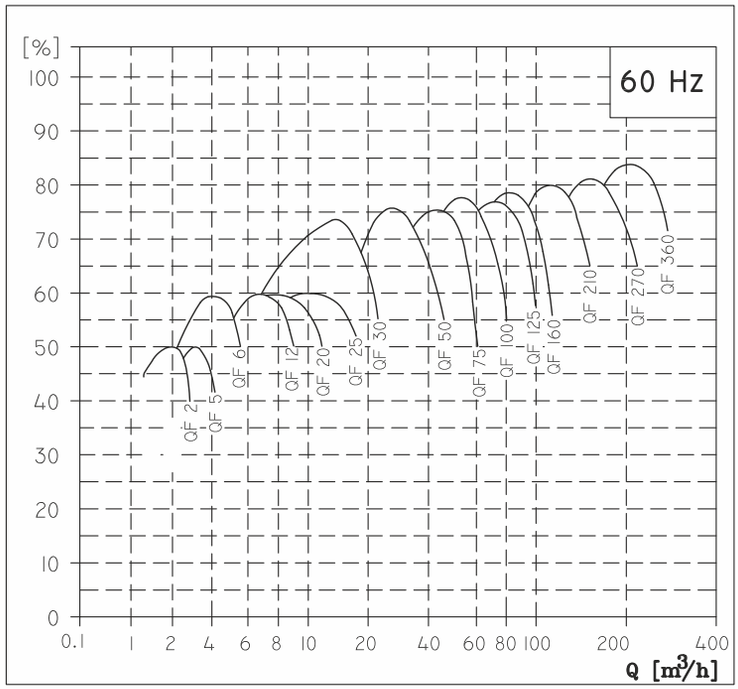
Direct-on-Line starting is recommended up to 75 kW.
Soft starter or auto transformer is recommended above 75 kW.
Motors with star / delta are available from 4.0 kW.

SUBMERSIBLE PUMP QF

FEATURES AND BENEFITS

A WIDE PUMP RANGE

We offers submersible pumps with energy- efficient duty points ranging from 0.1 to 335 m^3/h. The pump range consists of many pump sizes - and each pump size is available with an optional number of stages to match any duty point.



HIGH PUMPS EFFICIENCY

Often pump efficiency is a neglected factor compared to the price however, the observant user will notice that price variations are without importance to water supply economics compared to the importance of pump and motor efficiencies.

EXAMPLE:

When pumping 125 m^3/h with a head of 200m for a period of 10 years $ 60,000 will be saved if a pumps and motors having a 10% higher efficiency is chosen and the price is $ 0.10 per kWh.

APPLICATIONS

We offers a complete range of pumps and motors which as a standard are made completely of stainless steel AISI - 304. This provides for good wear resisrance and a reduced risk of corrosion when pumping ordinary cold water with a minor content of chloride.

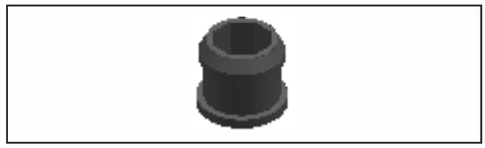
LOW INSTALLATION COSTS

Stainless steel means low weight facilitating the handling of pumps and resulting in low equipment costs and reduced installation and service time. In addition pumps will be as new after service due to the high wear resistance of stainless steel.

SUBMERSIBLE PUMP QF

BEARINGS WITH SAND CHANNELS

All bearings are water- lubricated and have a square shape, enabling sand particles, if any, to leave the pump together with the pumped liquid.



INLET STRAINER

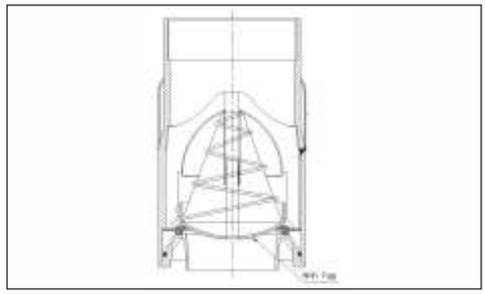
The inlet strainer prevents particles over a certain size from entering the pump.

NON - RETURN VALVE

All pumps are equipped with a reliable non-return valve in the valve casing preventing back flow in connection with pump stoppage.

Furthermore , the short closing time of the non-return valve means that the risk of destructive water hammer is reduced to a minimum.

The valve casing is designed for optimum hydraulic properties to minimize the pressure loss across the valve and, thus, contributes to the high efficiency of the pump.

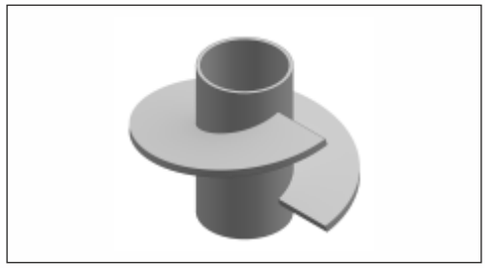


PRIMING SCREW

All QF and QF 30 pumps are fitted with a priming screw. Consequently, dry running is prevented because the priming screw will make sure that pump bearing are always lubricated.

Due to the semi-axial impellers of large QF pumps (except for QF 30) this priming is automatically provided.

However, it applies to all pump types that if the water table is lowered to a level below the pump inlet neither pump nor motor will be protected against dry running.



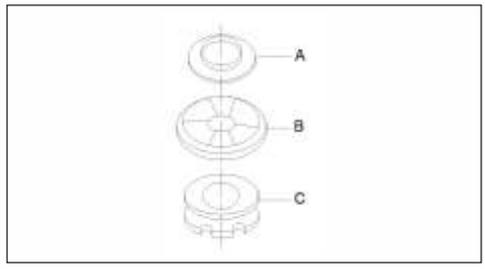
STOP RING

The stop ring prevents damage to the pump during transport and in case of up-thrust in connection with start-up.

The stop ring, which is designed as a thrust bearing limits axial movements of the pump shaft.

EXAMPLE : QF 125

The stationary part of the stop ring (A) is secured in the top bowl (Upper intermediate chamber). The rotating part (B) is fitted above the collet [split cone (C)].

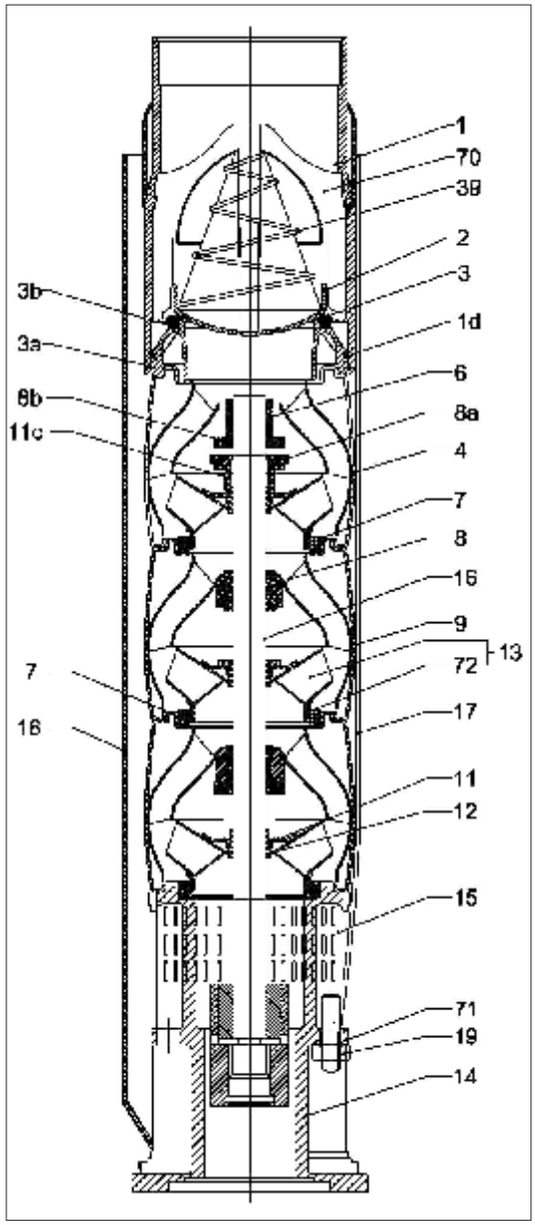


SUBMERSIBLE PUMP QF

MATERIAL SPECIFICATION

POS.	DESCRIPTION	MATERIAL	STANDARD	N-VERSION
1	VALVE CASING	STAINLESS STEEL	304	316
1d	O-RING	NBR		
2	VALVE CAP	STAINLESS STEEL	304	316
3	VALVE SEAT	STAINLESS STEEL	304	316
3a	LOWER VALVE SEAT RETAINER	STAINLESS STEEL	304	316
3b	UPPER VALVE SEAT RETAINER	STAINLESS STEEL	304	316
4	TOP CHAMBER CUP	STAINLESS STEEL	304	316
6	UPPER BEARING	STAINLESS STEEL	304	316
7	NECKRING	NBR/PPS		
8	BEARING	NBR		
8a	WASHER FOR STOP RING	CARBON/GRAPHITE		
		HY22 IN PTFE MASS		
8b	STOP RING	STAINLESS STEEL	304	316
9	CHAMBER	STAINLESS STEEL	304	316
11	SPLIT CONE NUT	STAINLESS STEEL	304	316
11c	NUT FOR STOP RING	STAINLESS STEEL	304	316
12	SPLIT CONE	STAINLESS STEEL	304	316
13	IMPELLER	STAINLESS STEEL	304	316
14	SUCTION INTERCONNECTOR	STAINLESS STEEL	304	316
15	STRAINER	STAINLESS STEEL	304	316
16	SHAFT COMPLETE	STAINLESS STEEL	304	316
17	STRAP	STAINLESS STEEL	304	316
18	CABLE GAURD	STAINLESS STEEL	304	316
19	NUT FOR STRAP	STAINLESS STEEL	304	316
39	SPRING FOR VALVE CUP	STAINLESS STEEL	304	316
70	VALVE GUIDE	STAINLESS STEEL	304	316
71	WASHER	STAINLESS STEEL	304	316
72	WEAR RING	STAINLESS STEEL	304	316

EXAMPLE : QF - 125



SUBMERSIBLE MOTOR

FEATURES AND BENEFITS

A COMPLETE MOTOR RANGE

We offer a complete submersible motor range in different voltages :

- 4" motors, single - phase up to 4 kW. (Encapsulated & Rewindable)
- 4" motors, three-phase up to 7.5 kW. (Encapsulated & Rewindable)
- 6" motors, three-phase from 2.2 kW to 37 kW. (Rewindable)
- 8" motors, three-phase from 11 kW to 220 kW. (Rewindable)

HIGH MOTOR EFFICIENCY

Within the area of high motor efficiency Star is a market leader. This is due to newly developed motor concept which is introduced with the MS 100, MS 101 and MS 150.

SHAFT SEAL

The choice of material is ceramic/ tungsten carbide providing optimum sealing, optimum wear resistance and long life.

The spring loaded shaft seal is designed with a large surface and a sand shield. The result is a minimum exchange of pumped and motor liquids and no penetration of particles.

PROTECTION AGAINST UPTHRUST

In case of a very small counter pressure in connection with start-up there is a risk that the entire pump body may rise. This is called upthrust. Upthrust may damage both pump and motor. Therefore, both pumps and motors are protected against upthrust as standard, preventing upthrust from occurring in the critical start-up phase. The protection consists of either a built-in stop ring or hydraulic balancing.

BUILT -IN COOLING CHAMBERS

In all submersible motors an efficient cooling is ensured by cooling chambers at the top and at the bottom of the motor, and by an internal circulation of motor liquid. As long as the required flow velocity cooling of the motor will be efficient.

REWINDABLE

REWINDABLE

SUBMERSIBLE MOTOR

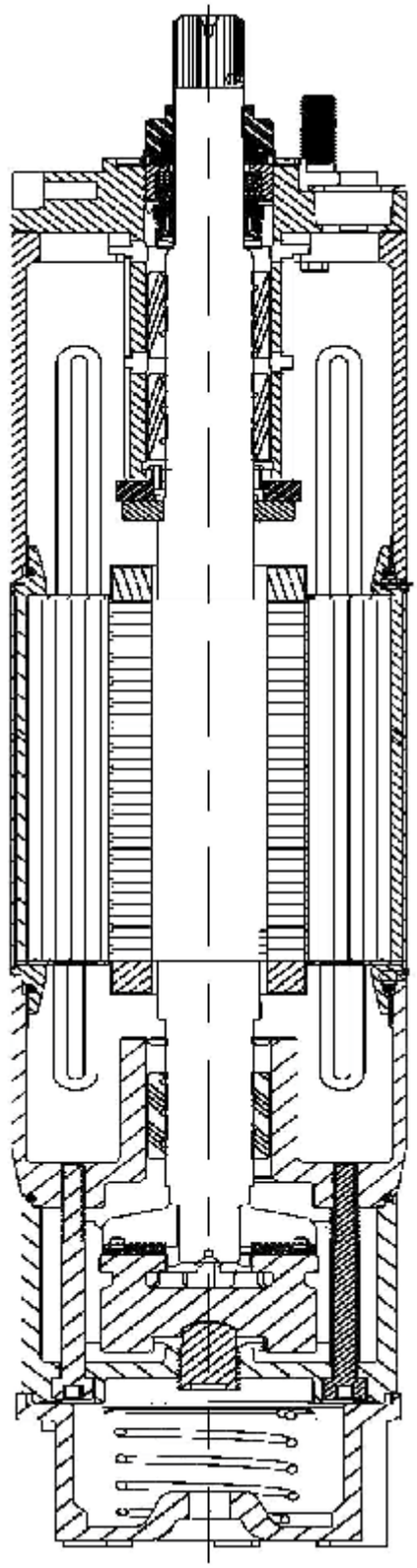
FEATURES AND BENEFITS

OVER TEMPERATURE PROTECTION

For Shakti submersible motors accessories Pt100 for protection against over temperature is available. When the temperature becomes too high, the protection device will cut-out and damage to the pump and motor be avoided.

PROTECTION AGAINST UPTHRUST

in case of a very small counter pressure in connection with start-up there is a risk that the entire pump body may rise. This is caller upthrust. Upthrust may damage both pump and motor. Therefore both Shakti pumps and motors are protected against upthrust as standard, preventing upthrust form occurring in the critical startup phase. The protection consists of a built-in upthrust ring.

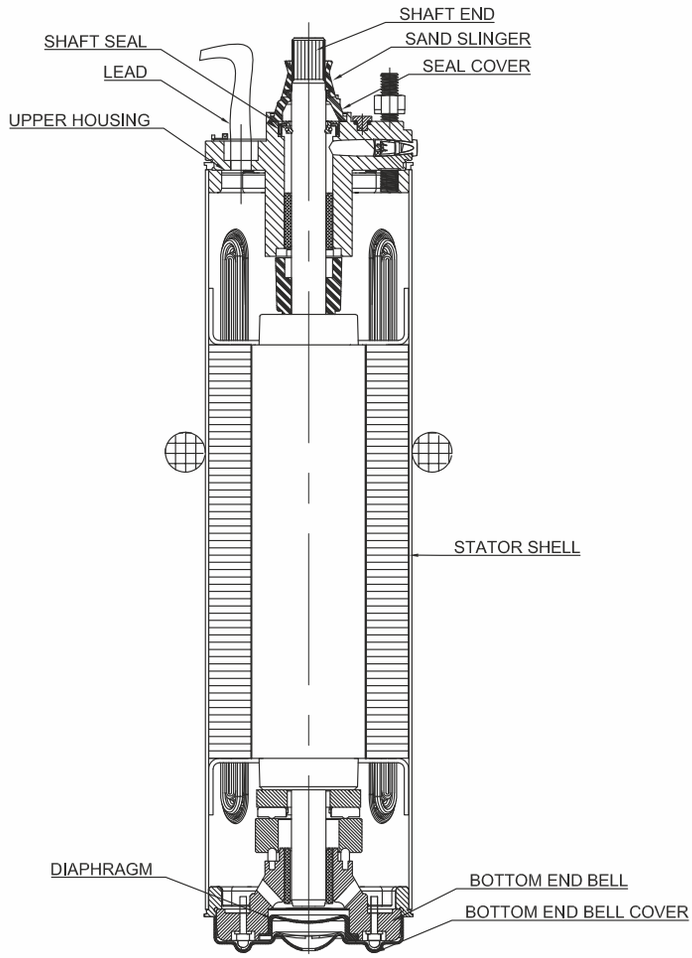


SUBMERSIBLE MOTOR

MATERIAL SPECIFICATION MCIP-100

PART	MATERIAL		
	CI	AISI SS 304	AISI SS 316
SAND SLINGER	NBR	NBR	NBR
SEAL COVER	PPS	PPS	PPS
UPPER HOUSING	CAST IRON POWER COATED	AISI SS 304	AISI SS 316
STATOR SHELL	AISI SS 304	AISI SS 304	AISI SS 316
SEALS	NBR	NBR	NBR
SHAFT END	DUPLEX	DUPLEX	DUPLEX
SHAFT SEAL	EPDM + AISI SS 304	EPDM + AISI SS 304	EPDM + AISI SS 304
BOTTOM END BELL	CAST IRON POWER COATED	CAST IRON POWER COATED	CAST IRON POWER COATED
BOTTOM END BELL COVER	AISI SS 304	AISI SS 304	AISI SS 316
DIAPHRAGM	EPDM	EPDM	EPDM
LEAD	EPR	EPR	EPR

SECTION VIEW MCIP 100

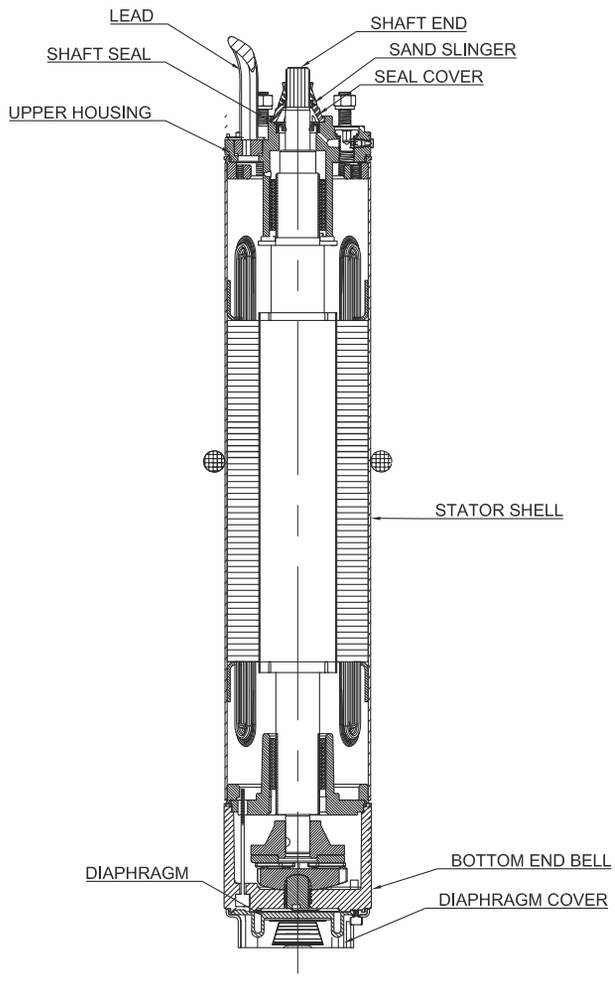


SUBMERSIBLE MOTOR

MATERIAL SPECIFICATION MCIP-101

PART	MATERIAL		
	CI	AISI SS 304	AISI SS 316
SAND SLINGER	NBR	NBR	NBR
SEAL COVER	PPS	PPS	PPS
UPPER HOUSING	CAST IRON POWER COATED	AISI SS 304	AISI SS 316
STATOR SHELL	AISI SS 304	AISI SS 304	AISI SS 316
SEALS	NBR	NBR	NBR
SHAFT END	DUPLEX	DUPLEX	DUPLEX
SHAFT SEAL	EPDM + AISI SS 304	EPDM + AISI SS 304	EPDM + AISI SS 304
BOTTOM END BELL	CAST IRON POWER COATED	CAST IRON POWER COATED	CAST IRON POWER COATED
THRUST HOUSING	CAST IRON POWER COATED	AISI SS 304	AISI SS 316
DIAPHRAGM	AISI SS 304	AISI SS 304	AISI SS 316
DIAPHRAGM	EPDM	EPDM	EPDM
LEAD	EPR	EPR	EPR

SECTION VIEW MCIP 101

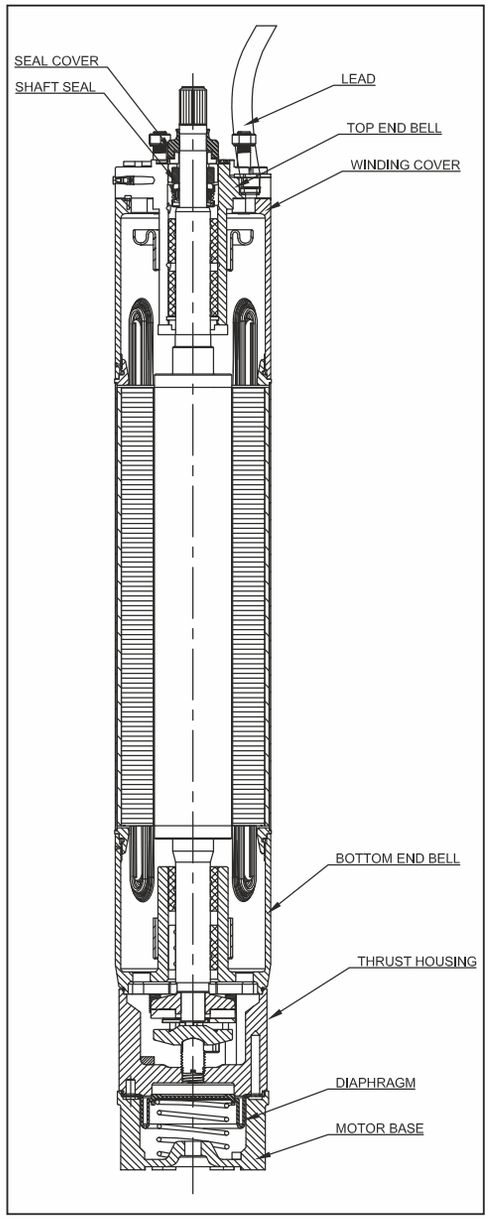


SUBMERSIBLE MOTOR

MATERIAL SPECIFICATION MTSF-150

PART	MATERIAL		
	CI	AISI SS 304	AISI SS 316
TOP END BELL	CAST IRON POWER COATED	AISI SS 304	AISI SS 316
WINDING COVER	CAST IRON POWER COATED	AISI SS 304	AISI SS 316
STATOR SHELL	AISI SS 304	AISI SS 304	AISI SS 316
SEALS	NBR	NBR	NBR
SEAL COVER	AISI SS 304	AISI SS 304	AISI SS 316
SHAFT END	DUPLEX	DUPLEX	DUPLEX
SHAFT SEAL	SIC	SIC	SIC
MOTOR BASE	CAST IRON POWER COATED	AISI SS 304	AISI SS 316
THRUST HOUSING	CAST IRON POWER COATED	AISI SS 304	AISI SS 316
BOTTOM END BELL	CAST IRON POWER COATED	AISI SS 304	AISI SS 316
DIAPHRAGM	EPDM	EPDM	EPDM
LEAD	EPR	EPR	EPR

SECTION VIEW MTSF 150

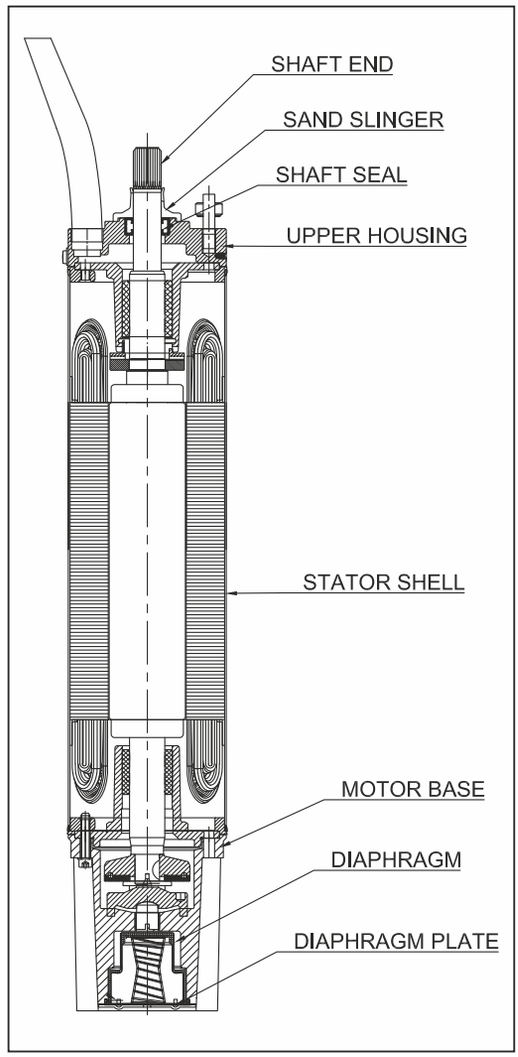


SUBMERSIBLE MOTOR

MATERIAL SPECIFICATION SML-150

PART	MATERIAL		
	CI	AISI SS 304	AISI SS 316
UPPER HOUSING	CAST IRON POWER COATED	AISI SS 304	AISI SS 316
STATOR SHELL	AISI SS 304	AISI SS 304	AISI SS 316
SEALS	NBR	NBR	NBR
SAND SLINGER	NBR	NBR	NBR
SHAFT END	DUPLEX	DUPLEX	DUPLEX
SHAFT SEAL	EPDM + AISI SS 304	EPDM + AISI SS 304	EPDM + AISI SS 304
MOTOR BASE	CAST IRON POWER COATED	AISI SS 304	AISI SS 316
DIAPHRAGM	EPDM	EPDM	EPDM
LEAD	EPR	EPR	EPR

SECTION VIEW SML 150

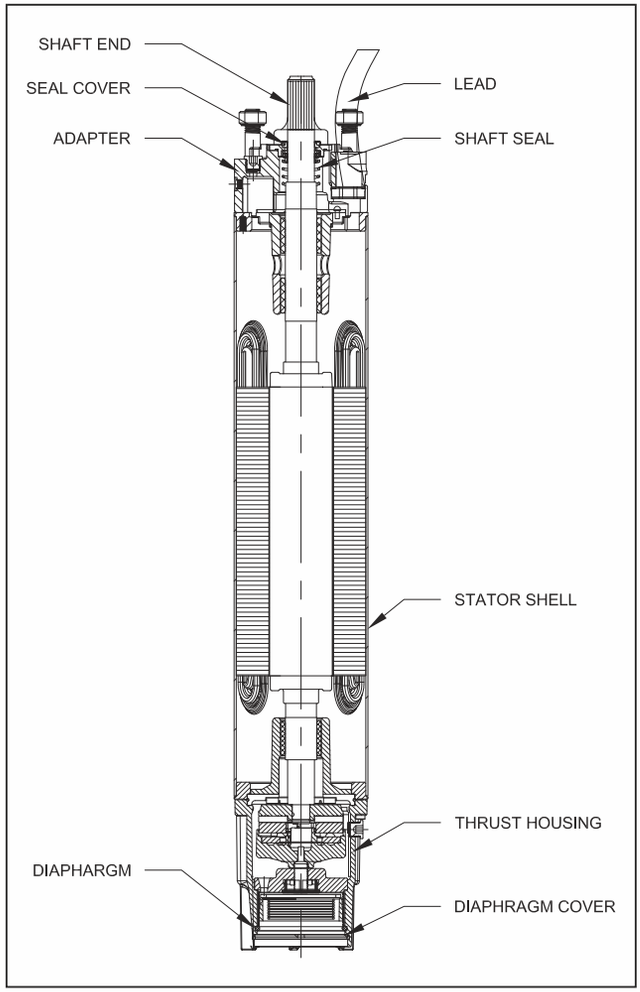


SUBMERSIBLE MOTOR

MATERIAL SPECIFICATION MTSF-200

PART	MATERIAL		
	CI	AISI SS 304	AISI SS 306
ADAPTER	CAST IRON POWER COATED	AISI SS 304	AISI SS 316
STATOR SHELL	AISI SS 304	AISI SS 304	AISI SS 316
SEALS	NBR	NBR	NBR
SEAL COVER	AISI SS 304	AISI SS 304	AISI SS 316
SHAFT SEAL	SIC	SIC	SIC
MOTOR BASE	CAST IRON POWER COATED	AISI SS 304	AISI SS 316
DIAPHRAGM	EPDM	EPDM	EPDM
DIAPHRAGM COVER	AISI SS 304	AISI SS 304	AISI SS 316
LEAD	EPR	EPR	EPR

SECTION VIEW MTSF 200

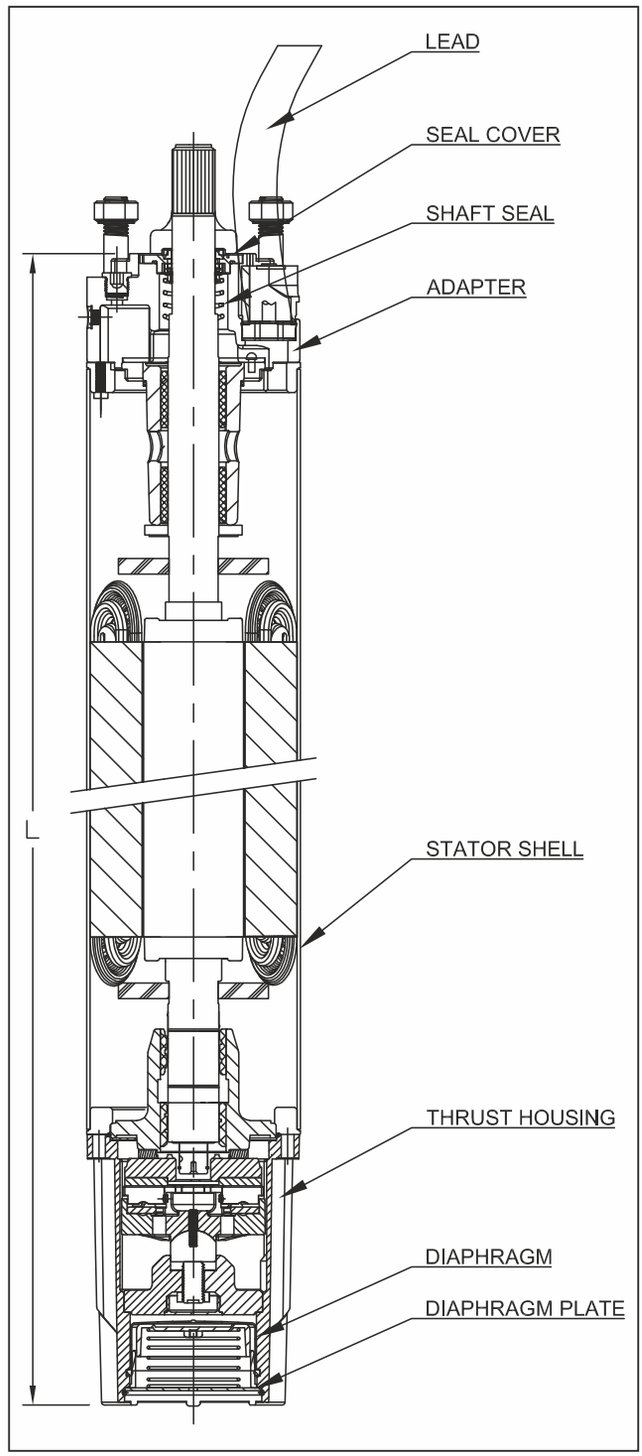


SUBMERSIBLE MOTOR

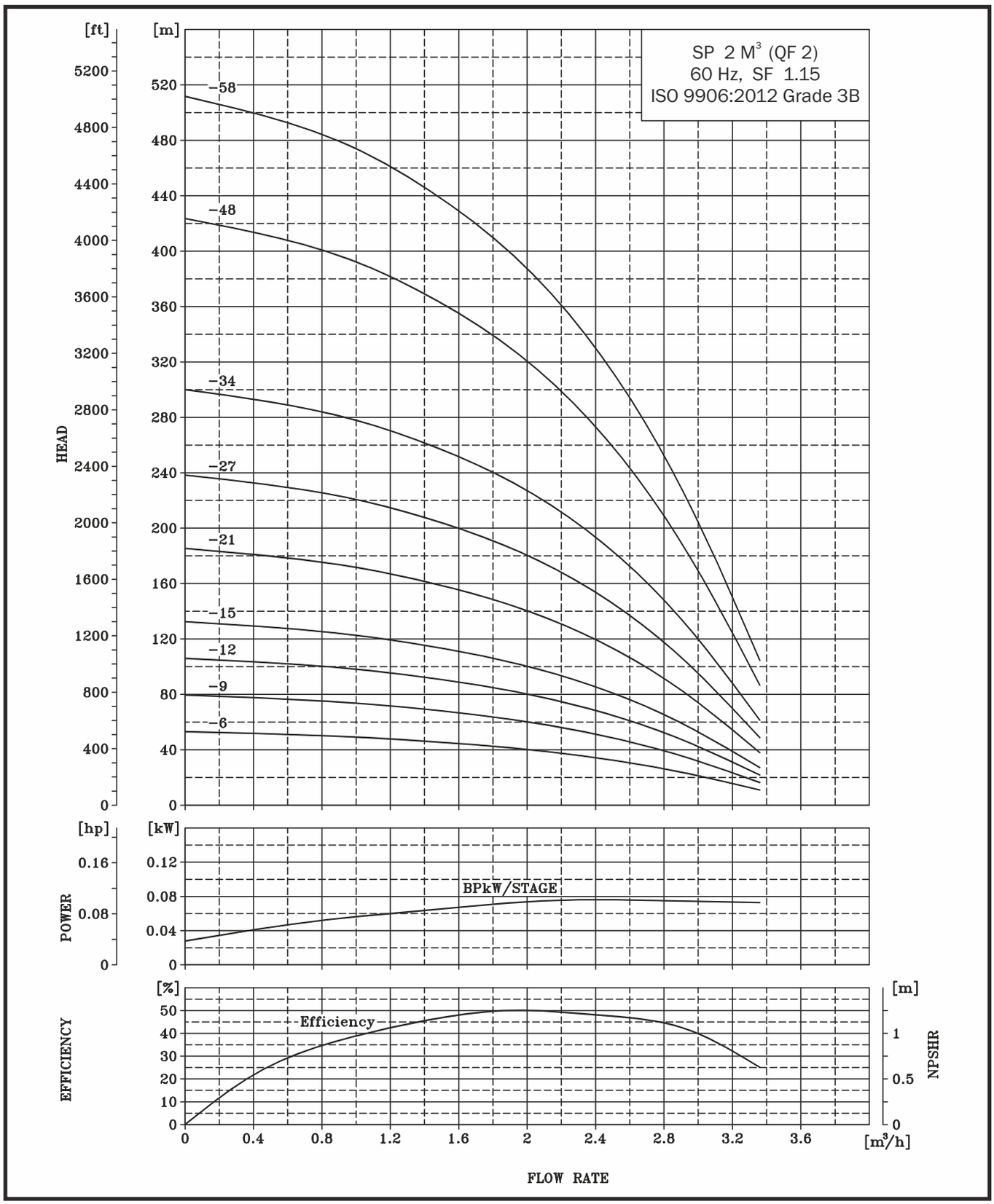
MATERIAL SPECIFICATION MTSF 10

PART	MATERIAL		
	CI	AISI SS 304	AISI SS 306
ADAPTER	CAST IRON POWER COATED	AISI SS 304	AISI SS 316
STATOR SHELL	AISI SS 304	AISI SS 304	AISI SS 316
SEALS	NBR	NBR	NBR
SEAL COVER	AISI SS 304	AISI SS 304	AISI SS 316
SHAFT SEAL	SIC	SIC	SIC
MOTOR BASE	CAST IRON POWER COATED	AISI SS 304	AISI SS 316
DIAPHRAGM	EPDM	EPDM	EPDM
DIAPHRAGM COVER	AISI SS 304	AISI SS 304	AISI SS 316
LEAD	EPR	EPR	EPR

SECTION VIEW MTSF 10

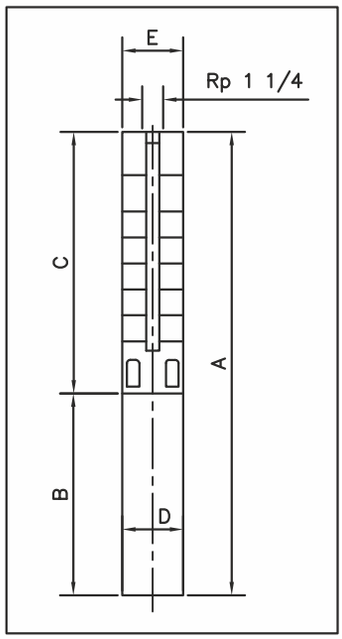


SUBMERSIBLE PUMP QF 2



SUBMERSIBLE PUMP QF 2

DIMENSIONS AND WEIGHTS



QF 2-58 are mounted in sleeve
for Rp 1¼ connection

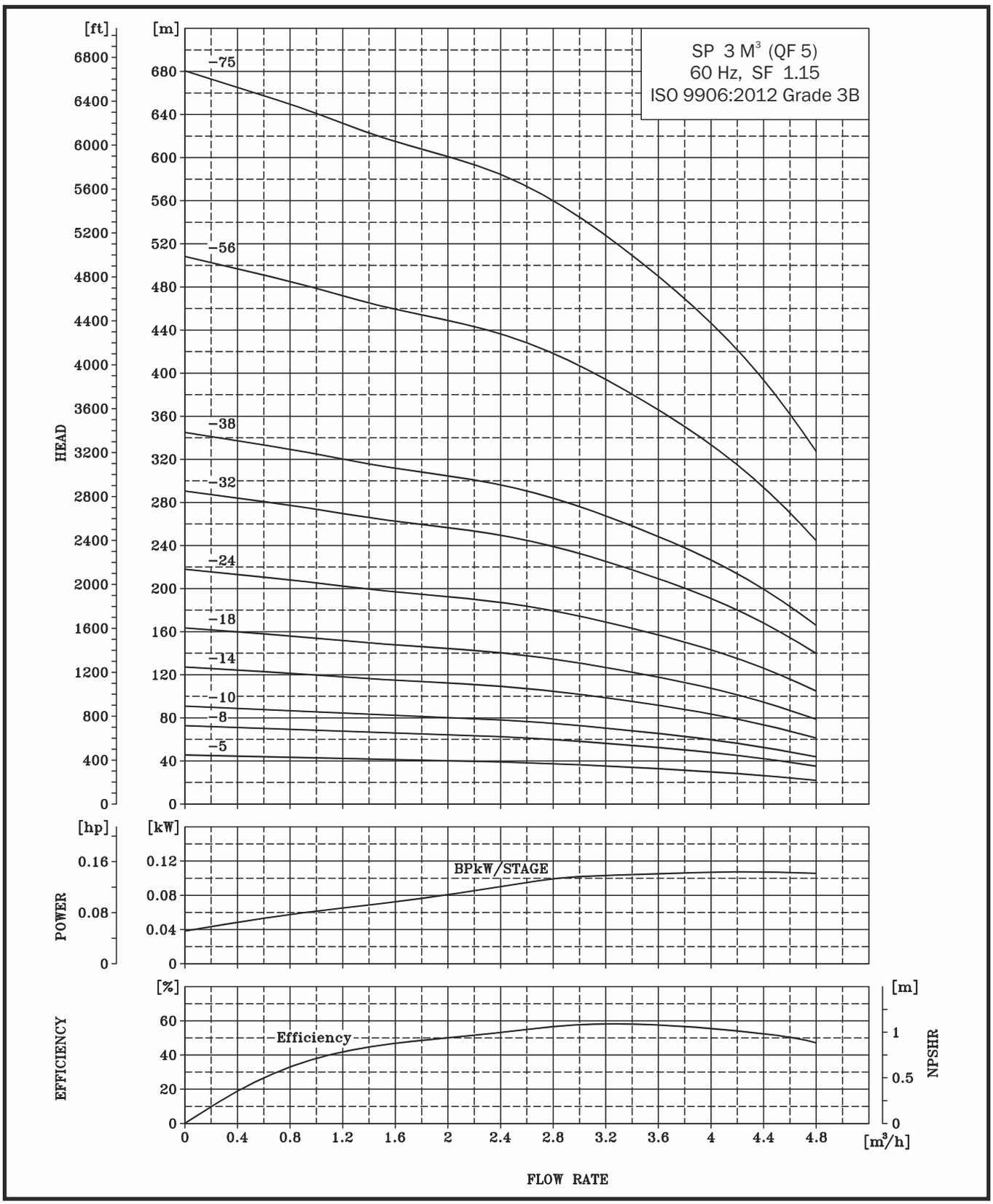
Pump Type	Motor		C	Dimension [mm]						Net Weight [Kg]
	Type	Power [Kw]		B		A		D	E	
				1x230V	1x220V 3x380V 3x460V	1x230V	1x220V 3x380V 3x460V			
QF 2-6	PREMIUM 100	0.37	316	239	267	555	583	95	97	5.4
QF 2-9	PREMIUM 100	0.4	379	239	267	618	646	95	97	6
QF 2-12	PREMIUM 100	0.55	442	287	264	729	706	95	97	6.6
QF 2-15	PREMIUM 100	0.8	505	287	287	792	792	95	97	7.2
QF 2-21	PREMIUM 100	1.1	631	335	335	966	966	95	97	8.5
QF 2-27	PREMIUM 100	1.5	757	399	399	1156	1156	95	97	9.8
QF 2-34	PREMIUM 100	2.2	904	546	546	1450	1450	95	97	11.3
QF 2-48	MCIP 101	4.0	1524	-	774	-	2298	95	97	14.3
QF 2-58	MCIP 101	4.0	1789	-	774	-	2563	95	97	16.5

E = Maximum diameter of pump inclusive of cable guard & motor.

* Motor type may change as per requirement .

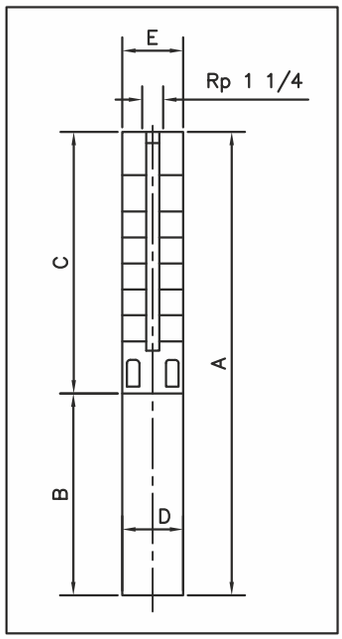
PERFORMANCE CURVE

SUBMERSIBLE PUMP QF 5



SUBMERSIBLE PUMP QF 5

DIMENSIONS AND WEIGHTS



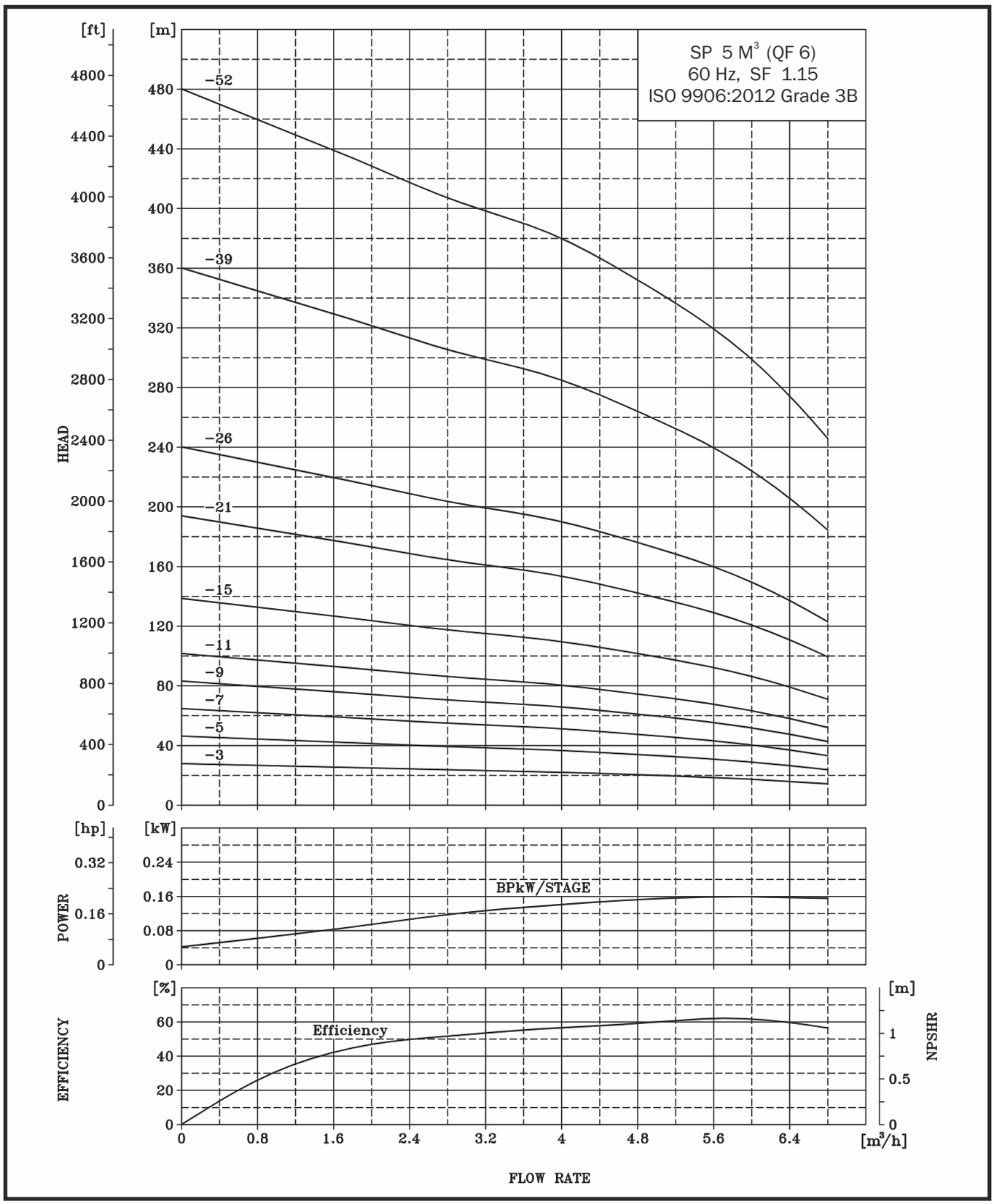
QF 5 - 56 to QF 5 - 75 are mounted in sleeve for Rp 1¼ connection

Pump Type	Motor		C	Dimension [mm]						Net Weight [Kg]
	Type	Power [Kw]		B		A		D	E	
				1x230V	1x220V 3x380V 3x460V	1x230V	1x220V 3x380V 3x460V			
QF 5-5	PREMIUM 100	0.37	295	239	267	534	562	95	97	5.14
QF 5-8	PREMIUM 100	0.55	358	287	264	645	622	95	97	5.8
QF 5-10	PREMIUM 100	0.75	400	287	287	687	687	95	97	6.24
QF 5-14	PREMIUM 100	1.1	484	335	335	819	819	95	97	7.12
QF 5-18	PREMIUM 100	1.5	568	399	399	967	967	95	97	8
QF 5-24	PREMIUM 100	2.2	694	546	546	1240	1240	95	97	9.3
QF 5-32	MCIP 101	3.0	862	-	774	-	1636	95	97	11
QF 5-38	MCIP 101	4.0	988	-	774	-	1762	95	97	12.4
QF 5-56	PREMIUM 100	5.5	1767	-	775	-	2542	95	97	16.36
QF 5-56	MTSF 150	5.5	1816	-	699	-	2515	145	145	21.7
QF 5-75	MTSF 150	7.5	2320	-	719	-	3039	145	145	28.35

E = Maximum diameter of pump inclusive of cable guard and motor.

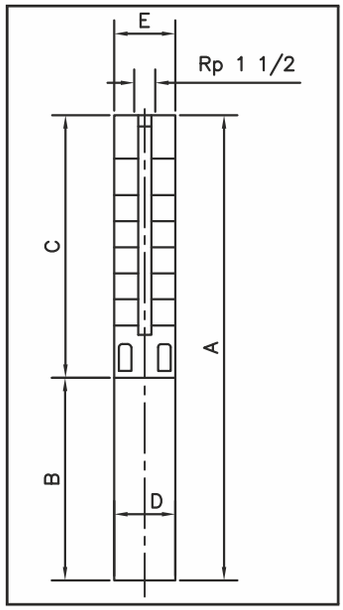
* Motor type may change as per requirement .

SUBMERSIBLE PUMP QF 6



SUBMERSIBLE PUMP QF 6

DIMENSIONS AND WEIGHTS



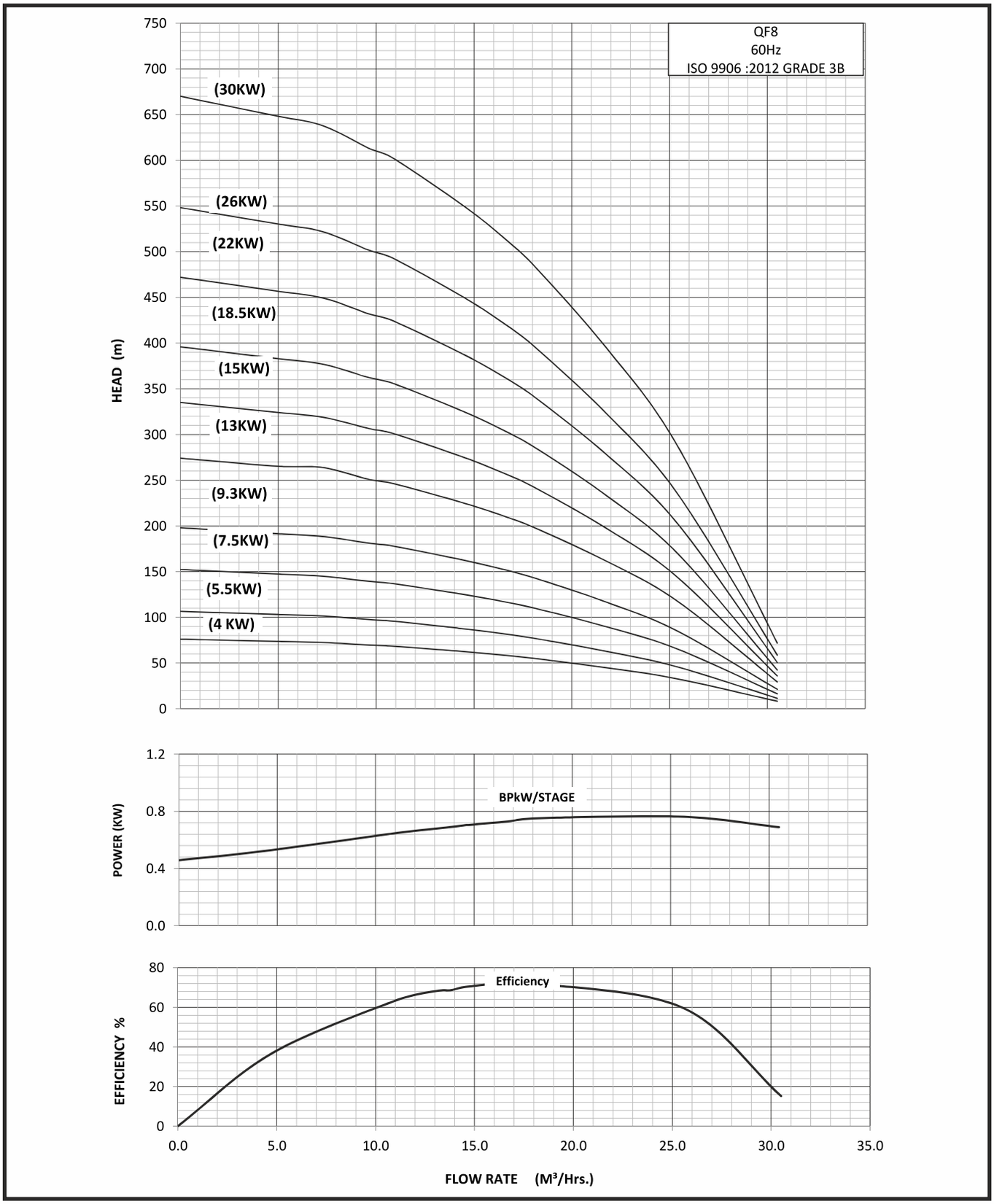
QF 6 - 52 are mounted in sleeve
for Rp 1½ connection.

Pump Type	Motor		Dimension [mm]							Net Weight Kg
	Type	Power [Kw]	C	B		A		D	E	
				1x230V	3x220V 3x380V 3x460V	1x230V	3x220V 3x380V 3x460V			
QF 6-3	PREMIUM 100	0.37	253	239	267	492	520	95	97	4.7
QF 6-5	PREMIUM 100	0.55	295	287	264	582	559	95	97	5.2
QF 6-7	PREMIUM 100	0.75	337	287	287	624	624	95	97	5.6
QF 6-9	PREMIUM 100	1.1	379	335	335	714	714	95	97	6
QF 6-11	PREMIUM 100	1.5	421	399	399	820	820	95	97	6.5
QF 6-15	PREMIUM 100	2.2	505	546	546	1051	1051	95	97	7.4
QF 6-21	MCIP 101	3.0	631	-	774	-	1405	95	97	8.7
QF 6-26	MCIP 101	4.0	736	-	774	-	1510	95	97	9.8
QF 6-39	PREMIUM 100	5.5	1009	-	775	-	1784	95	97	12.7
QF 6-39	MTSF 150	5.5	1058	-	699	-	1757	145	145	17.2
QF 6-52	MTSF 150	7.5	1679	-	719	-	2398	145	145	21.7

E = Maximum diameter of pump inclusive of cable guard and motor.

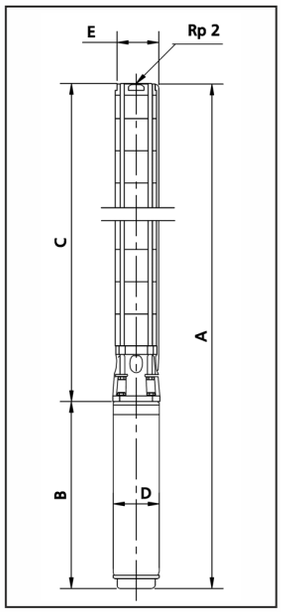
* Motor type may change as per requirement .

SUBMERSIBLE PUMP QF 8



SUBMERSIBLE PUMP QF 8

DIMENSIONS AND WEIGHTS



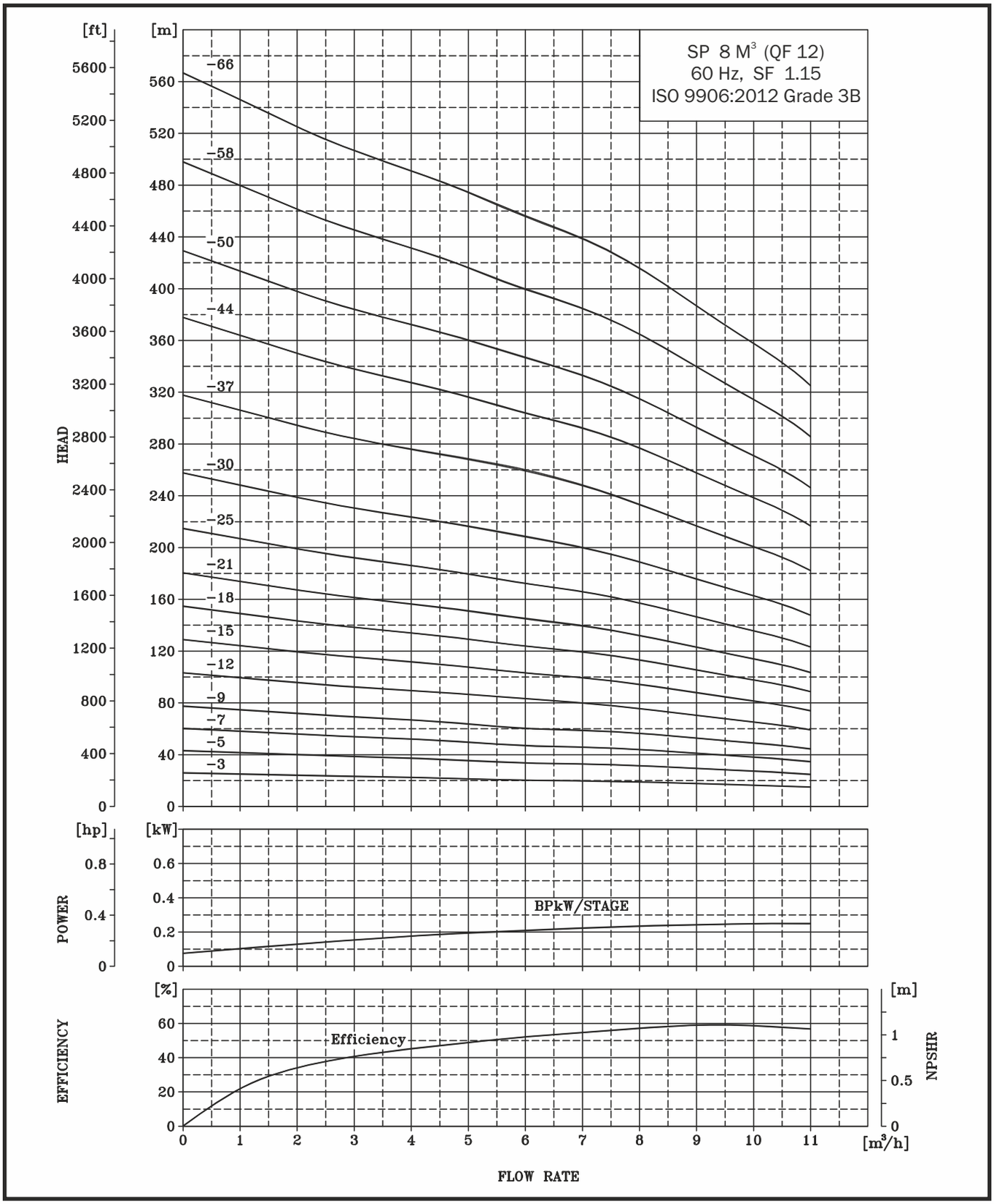
Pump Type	Motor		Dimension [mm]					Net Weight
	Type	Power [Kw]	C	B	A	D	E*	[Kg]
QF8-5	MATASF 150	4.0	553	699	1252	145	145	13.2
QF8-7	MATASF 150	5.5	674	699	1373	145	145	15.8
QF8-10	MATASF 150	7.5	855	719	1574	145	145	19.7
QF8-13	MATASF 150	9.3	1037	749	1786	145	145	23.6
QF8-18	MATASF 150	13.0	1339	829	2168	145	145	30.1
QF8-22	MATASF 150	15.0	1581	874	2455	145	145	35.3
QF8-26	MATASF 150	18.5	1823	919	2742	145	145	40.5
QF8-31	MATASF 150	22.0	2144	1009	3153	145	145	47
QF8-36	MATASF 150	26.0	2446	1114	3560	145	145	54
QF8-44	MATASF 150	30.0	2930	1214	4144	145	145	64.5

E = Maximum diameter of pump inclusive of cable guard and motor.

* Motor type may change as per requirement .

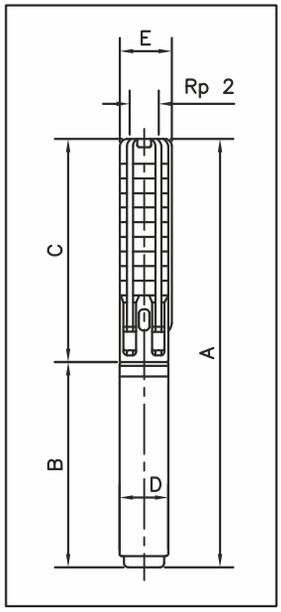
PERFORMANCE CURVE

SUBMERSIBLE PUMP QF 12



SUBMERSIBLE PUMP QF 12

DIMENSIONS AND WEIGHTS

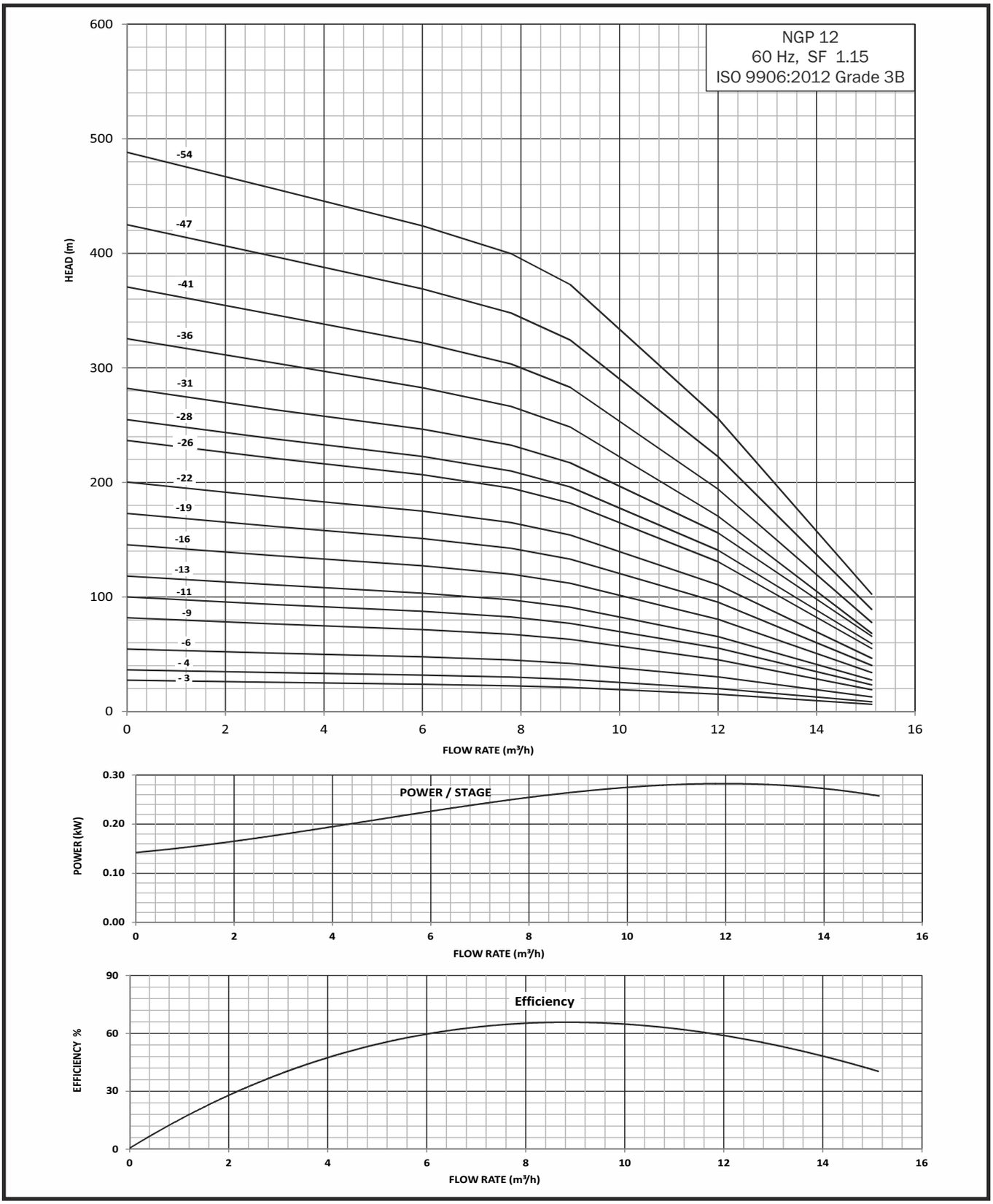


QF 12 - 50 to QF 12 - 66 are mounted in sleeve for Rp 2 connection

Pump Type	Motor		Dimension [mm]							Net Weight [Kg]
	Type	Power [Kw]	C	B		A		D	E	
				1x230V	3x220V 3x380V 3x460V	1x230V	3x220V 3x380V 3x460V			
QF 12-3	PREMIUM 100	0.55	316	287	264	603	580	95	97	4.8
QF 12-5	PREMIUM 100	1.1	400	335	335	735	735	95	97	5.8
QF 12-7	PREMIUM 100	1.5	484	399	399	883	883	95	97	6.8
QF 12-9	PREMIUM 100	2.2	568	546	546	1114	1114	95	97	7.8
QF 12-12	MCIP 101	3.0	694	-	774	-	1468	95	97	9.2
QF 12-15	MCIP 101	4.0	820	-	774	-	1594	95	97	10.6
QF 12-18	PREMIUM 100	5.5	946	-	775	-	1721	95	97	12.1
QF 12-21	PREMIUM 100	5.5	1072	-	775	-	1847	95	97	13.5
QF 12-25	PREMIUM 100	5.5	1240	-	775	-	2015	95	97	15.5
QF 12-18	MTSF 150	5.5	995	-	699	-	1694	145	145	13.7
QF 12-21	MTSF 150	5.5	1121	-	699	-	1820	145	145	15.2
QF 12-25	MTSF 150	5.5	1289	-	699	-	1988	145	145	17.2
QF 12-30	MTSF 150	7.5	1499	-	719	-	2218	145	145	19.7
QF 12-37	MTSF 150	9.3	1793	-	749	-	2542	145	145	23.2
QF 12-44	MTSF 150	11.0	2087	-	779	-	2866	145	145	26.6
QF 12-50	MTSF 150	13.0	2339	-	829	-	3168	145	145	29.5
QF 12-58	MTSF 150	15.0	2675	-	874	-	3549	145	145	33.4
QF 12-66	MTSF 150	15.0	3011	-	874	-	3885	145	145	37.7

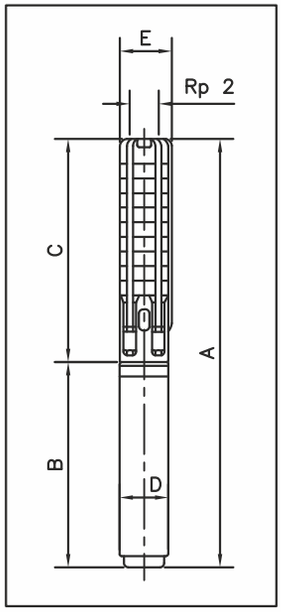
E = Maximum diameter of pump inclusive of cable guard and motor.
* Motor type may change as per requirement .

SUBMERSIBLE PUMP NGP 12



SUBMERSIBLE PUMP NGP 12

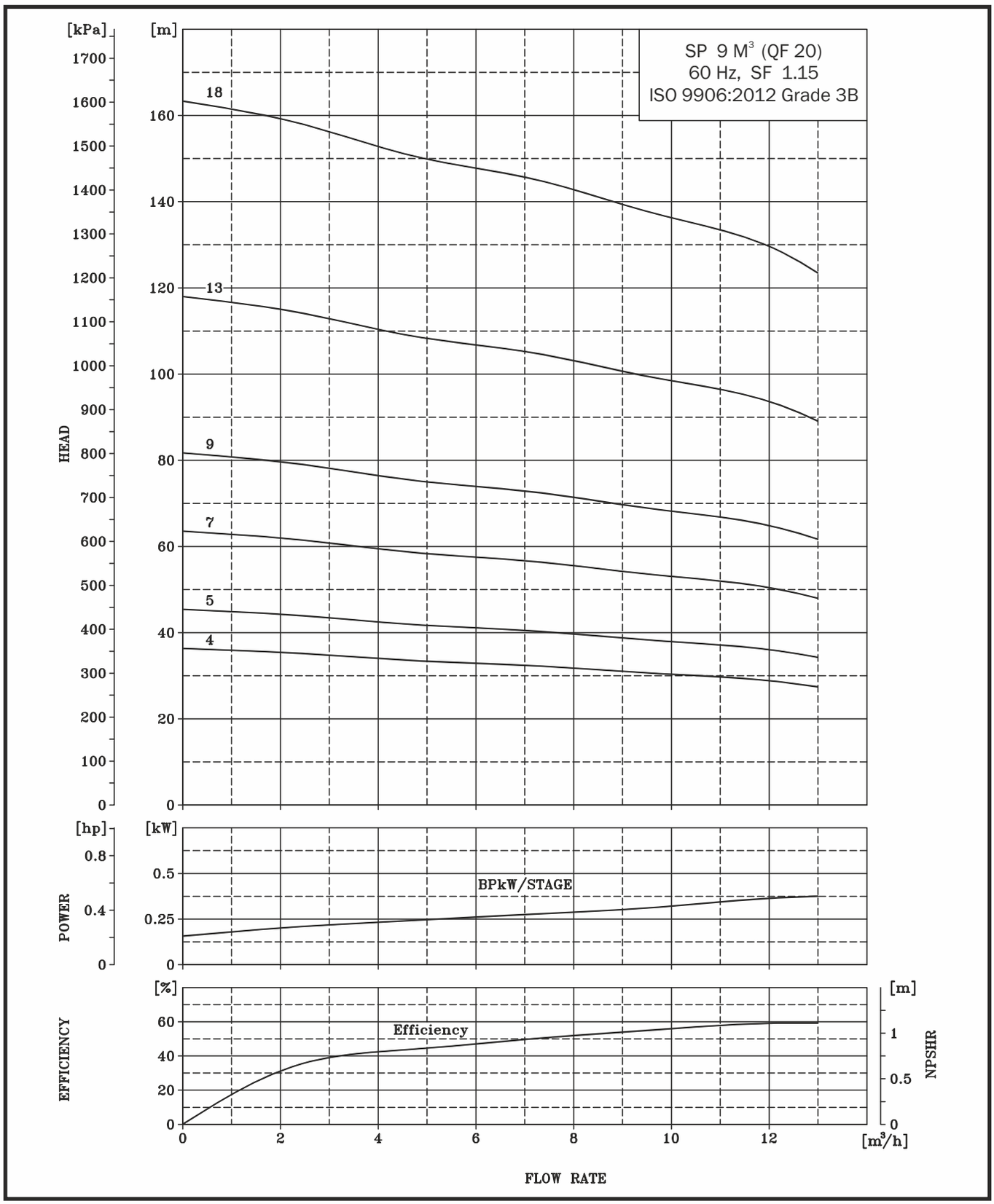
DIMENSIONS AND WEIGHTS



Pump Type	Motor		C	Dimension [mm]						Net Weight [Kg]
	Type	Power [Kw]		B		A		D	E	
				1x230V	1x220V 3x380V 3x460V	1x230V	1x220V 3x380V 3x460V			
NGP12 -3	PREMIUM 100	0.75	335	287	287	622	622	95	97	5.2
NGP12 -4	PREMIUM 100	1.1	385	335	335	720	720	95	97	5.8
NGP12 -6	PREMIUM 100	1.5	485	399	399	884	884	95	97	7
NGP12 -9	PREMIUM 100	2.2	635	546	546	1181	1181	95	97	8.8
NGP12 -11	MCIP 101	3.0	735	-	774	-	1509	95	97	10
NGP12 -13	PREMIUM 100	3.7	835	696	584	1531	1419	95	97	11.2
NGP12 -16	MCIP 101	4.0	985	-	774	-	1759	95	97	13
NGP12 -19	PREMIUM 100	5.5	1135	-	775	-	1910	95	97	14.8
NGP12 -22	PREMIUM 100	5.5	1285	-	775	-	2060	95	97	16.6
NGP12 -26	MTSF 150	7.5	1537	-	719	-	2256	145	145	21.2
NGP12 -28	MTSF 150	7.5	1637	-	719	-	2356	145	145	22.5
NGP12 -31	MTSF 150	9.3	1787	-	749	-	2536	145	145	24.4
NGP12 -36	MTSF 150	9.3	2037	-	749	-	2786	145	145	27.6
NGP12 -41	MTSF 150	11.0	2287	-	779	-	3066	145	145	30.8
NGP12 -47	MTSF 150	13.0	2587	-	829	-	3416	145	145	34.6
NGP12 -54	MTSF 150	13.0	2937	-	829	-	3766	145	145	39

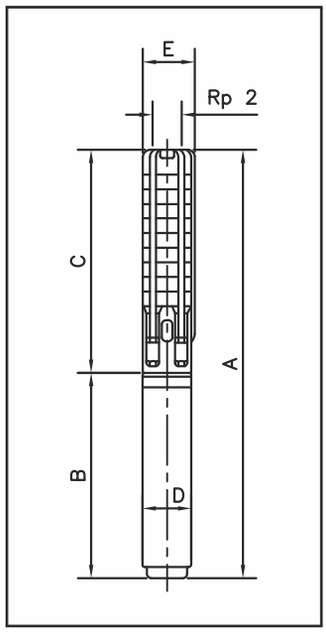
E = Maximum diameter of pump inclusive of cable guard and motor.
* Motor type may change as per requirement .

SUBMERSIBLE PUMP QF 20



SUBMERSIBLE PUMP QF 20

DIMENSIONS AND WEIGHTS

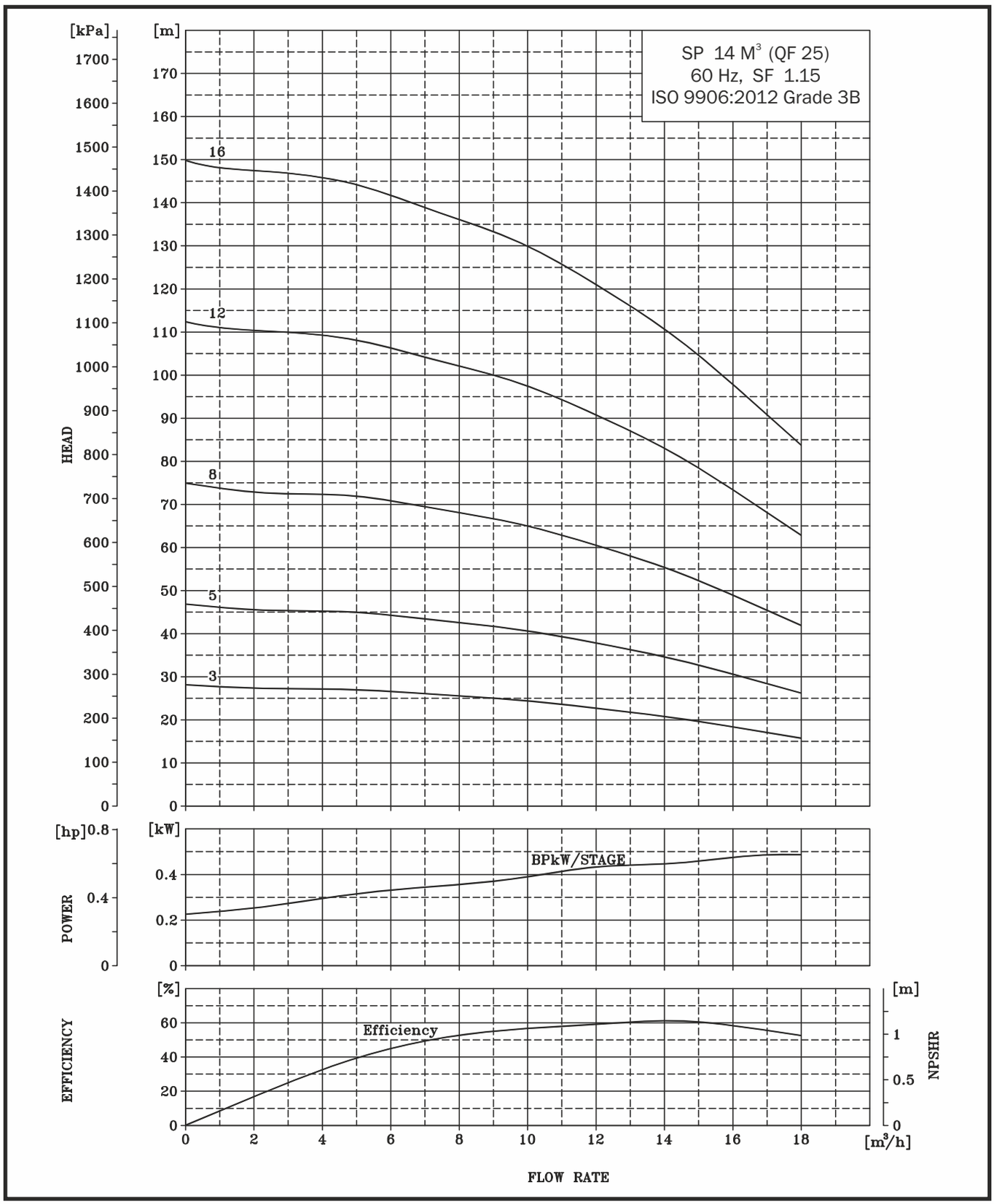


Pump Type	Motor		Dimension [mm]							Net. Weight [Kg]
	Type	Power [Kw]	C	B		A		D	E	
				1x230V	3x220V 3x380V 3x460V	1x230V	3x220V 3x380V 3x460V			
QF 20-4	PREMIUM 100	1.5	448	399	399	847	847	95	97	6.5
QF 20-5	PREMIUM 100	2.2	513	546	546	1059	1059	95	97	7.2
QF 20-7	MCIP 101	4.0	643	-	774	-	1417	95	97	8.5
QF 20-9	MCIP 101	4.0	773	-	774	-	1547	95	97	9.7
QF 20-13*	PREMIUM 100	5.5	1033	-	775	-	1808	95	97	12.4
QF 20-18	MTSF 150	7.5	1407	-	719	-	2126	145	145	16.4

E = Maximum diameter of pump inclusive of cable guard and motor.

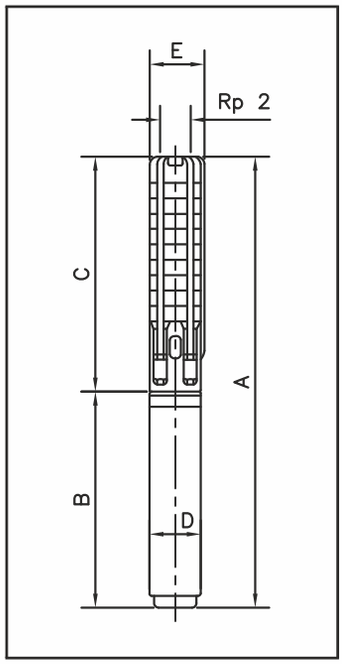
* Motor type may change as per requirement .

SUBMERSIBLE PUMP QF 25



SUBMERSIBLE PUMP QF 25

DIMENSIONS AND WEIGHTS



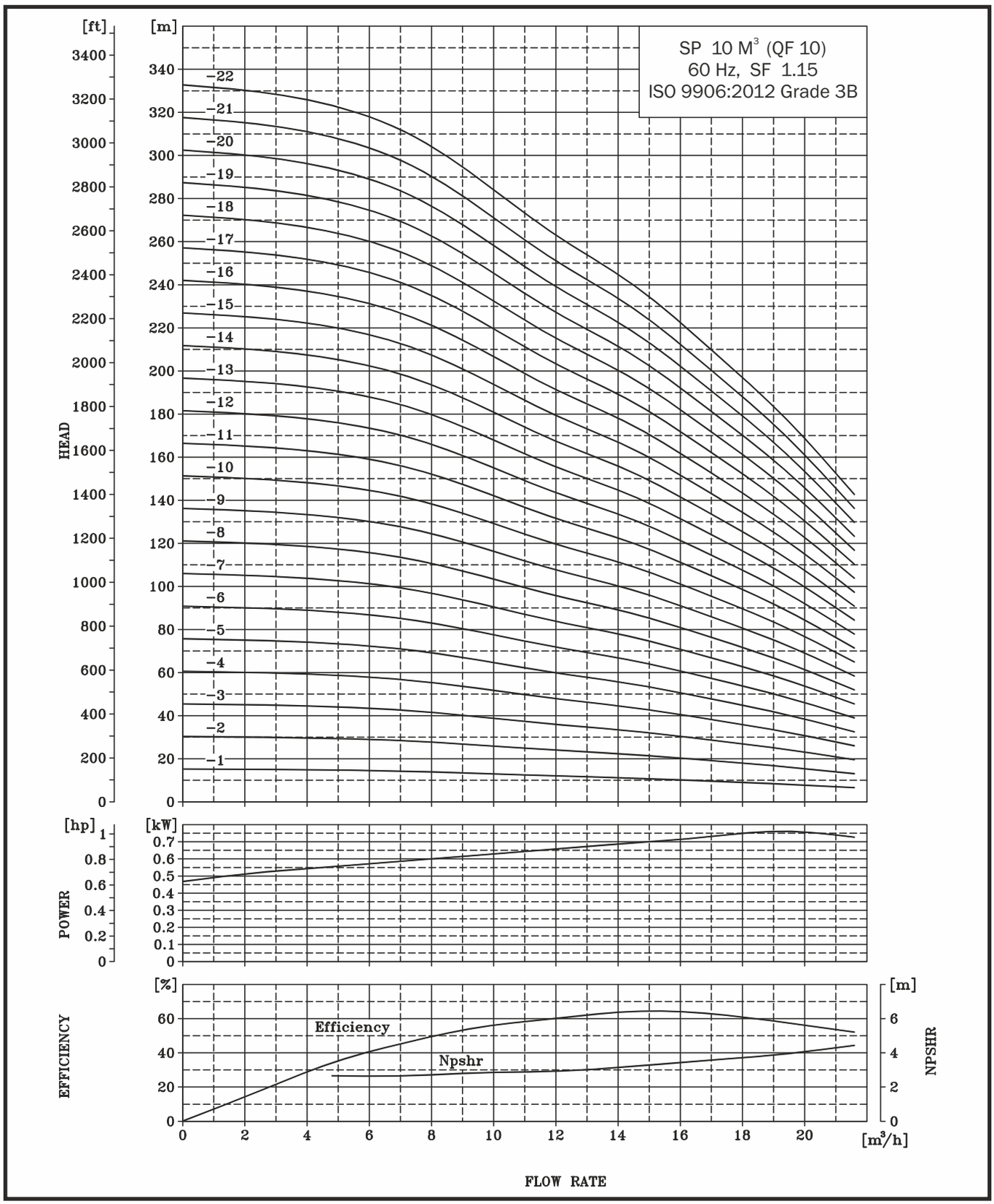
Pump Type	Motor		Dimension [mm]					Net Weight [Kg]
	Type	Power [Kw]	C	B 3x220V 3x380V 3x460V	A 3x220V 3x380V 3x460V	D	E	
QF 25-3	PREMIUM 100	1.5	383	399	782	95	97	5.9
QF 25-5	PREMIUM 100	2.2	513	546	1059	95	97	7.2
QF 25-8	MCIP 101	4.0	708	774	1482	95	97	9.1
QF 25-12	PREMIUM 100	5.5	968	775	1743	95	97	11.7
QF 25-12	MTSF 150	5.5	1017	699	1716	145	145	12.4
QF 25-16	MTSF 150	7.5	1277	719	1996	145	145	15.0

E = Maximum diameter of pump inclusive of cable guard and motor.

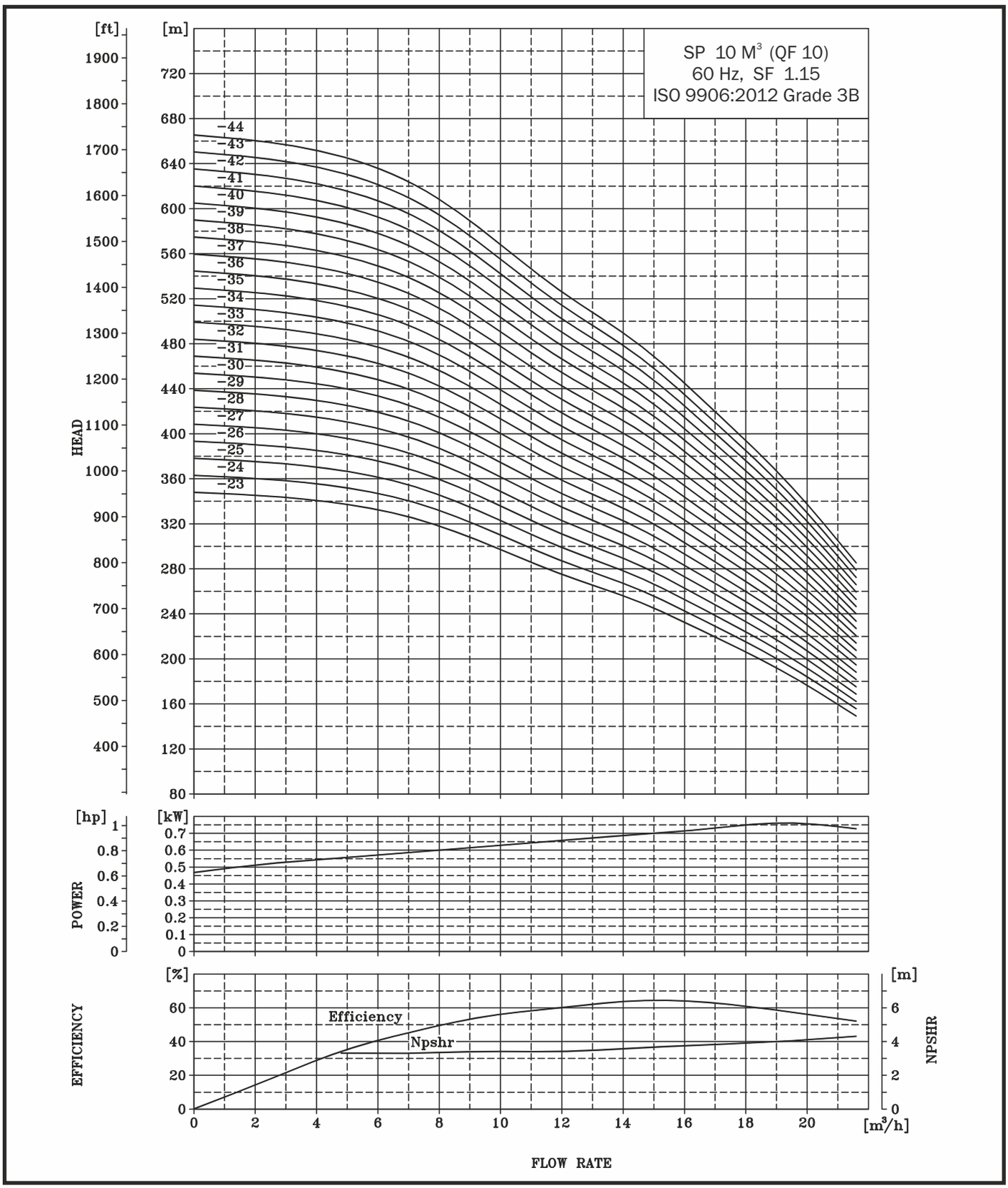
* Motor type may change as per requirement .

PERFORMANCE CURVE

SUBMERSIBLE PUMP QF 10

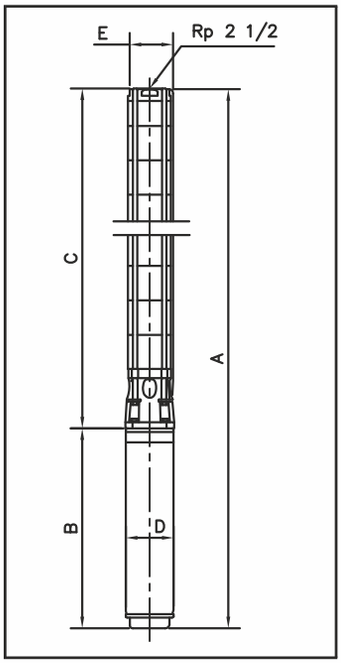


SUBMERSIBLE PUMP QF 10



SUBMERSIBLE PUMP QF 10

DIMENSIONS AND WEIGHTS



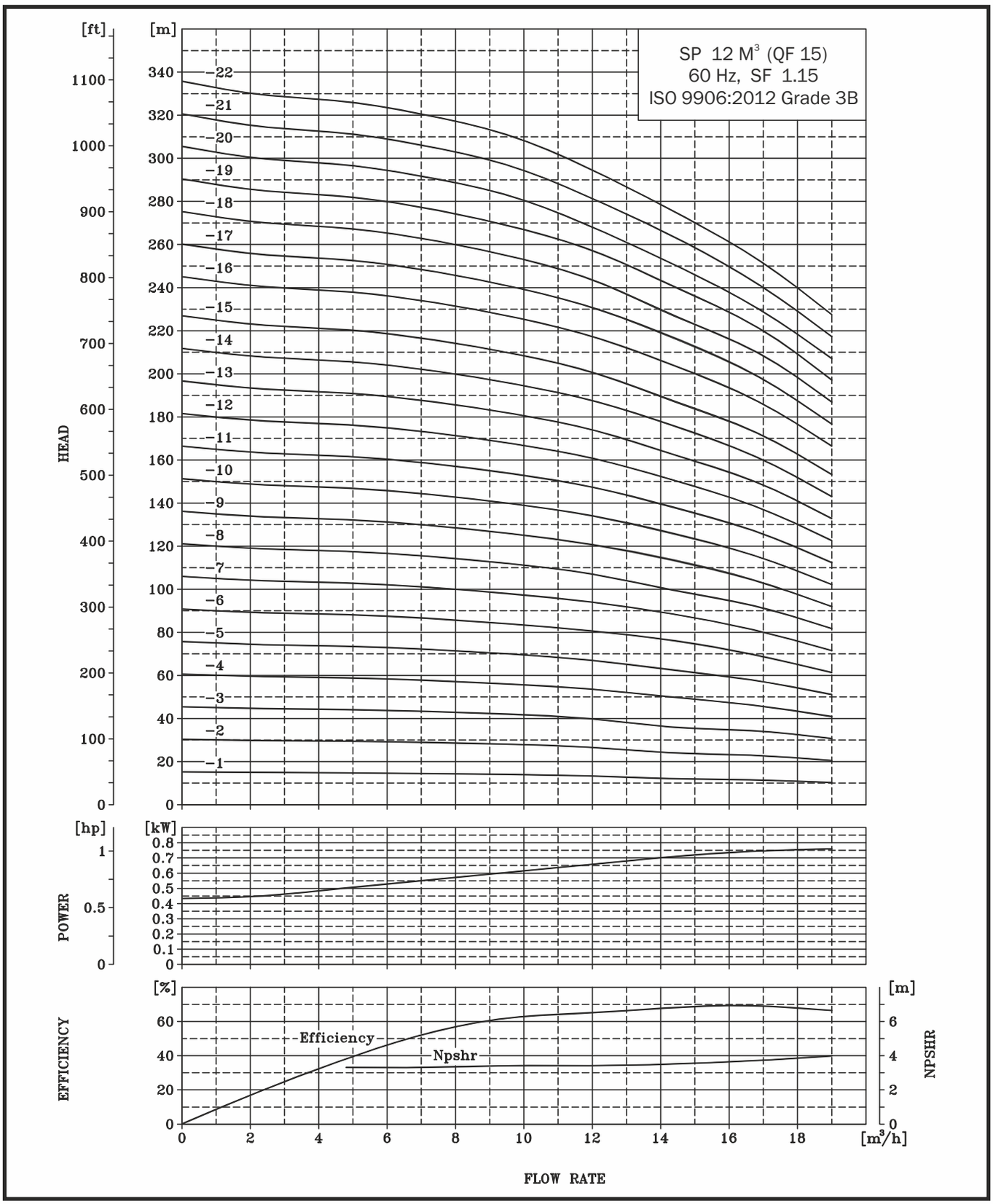
QF 10 - 33 to QF 10-50 are mounted in sleeve for Rp 2.5 connection.

Pump Type	Motor		Dimension [mm]					Net Weight [Kg]
	Type	Power [Kw]	C	B	A	D	E*	
QF 10-1	PREMIUM 100	0.75	295	287	582	95	128	6.7
QF 10-2	PREMIUM 100	1.5	356	399	755	95	128	8
QF 10-3	PREMIUM 100	2.2	416	546	962	95	128	9.3
QF 10-4	MCIP 101	3.0	477	774	1251	95	128	10.6
QF 10-5	MCIP 101	3.0	537	774	1311	95	128	11.9
QF 10-6	MCIP 101	4.0	598	774	1372	95	128	13.2
QF 10-7	PREMIUM 100	5.5	658	775	1433	95	128	14.5
QF 10-8	PREMIUM 100	5.5	719	775	1494	95	128	15.8
QF 10-9	PREMIUM 100	5.5	779	775	1554	95	128	17.1
QF 10-10	MTSF 150	7.5	855	719	1574	145	145	19.7
QF 10-11	MTSF 150	7.5	916	719	1635	145	145	21
QF 10-12	MTSF 150	7.5	976	719	1695	145	145	22.3
QF 10-13	MTSF 150	9.3	1037	749	1786	145	145	23.6
QF 10-14	MTSF 150	9.3	1097	749	1846	145	145	24.9
QF 10-15	MTSF 150	9.3	1158	749	1907	145	145	26.2
QF 10-16	MTSF 150	11.0	1218	779	1997	145	145	27.5
QF 10-17	MTSF 150	11.0	1279	779	2058	145	145	28.8
QF 10-18	MTSF 150	11.0	1339	779	2118	145	145	30.1
QF 10-19	MTSF 150	13.0	1400	829	2229	145	145	31.4
QF 10-20	MTSF 150	13.0	1460	829	2289	145	145	32.7
QF 10-21	MTSF 150	13.0	1521	829	2350	145	145	34
QF 10-22	MTSF 150	13.0	1581	829	2410	145	145	35.3
QF 10-23	MTSF 150	15.0	1642	874	2516	145	145	36.6
QF 10-24	MTSF 150	15.0	1702	874	2576	145	145	37.9
QF 10-25	MTSF 150	15.0	1763	874	2637	145	145	39.2
QF 10-26	MTSF 150	18.5	1823	919	2742	145	145	40.5
QF 10-27	MTSF 150	18.5	1884	919	2803	145	145	41.8
QF 10-28	MTSF 150	18.5	1944	919	2863	145	145	43.1
QF 10-29	MTSF 150	18.5	2005	919	2924	145	145	44.4
QF 10-30	MTSF 150	18.5	2083	919	3002	145	145	45.7
QF 10-31	MTSF 150	18.5	2144	919	3063	145	145	47
QF 10-32	MTSF 150	22.0	2204	1009	3213	145	145	48.3
QF 10-33	MTSF 150	22.0	2265	1009	3274	145	145	49.6
QF 10-34	MTSF 150	22.0	2325	1009	3334	145	145	51.4
QF 10-35	MTSF 150	22.0	2386	1009	3395	145	145	52.7
QF 10-36	MTSF 150	22.0	2446	1009	3455	145	145	54
QF 10-37	MTSF 150	22.0	2507	1009	3516	145	145	55.3
QF 10-38	MTSF 150	26.0	2567	1114	3681	145	145	56.6
QF 10-39	MTSF 150	26.0	2628	1114	3742	145	145	57.9
QF 10-40	MTSF 150	26.0	2688	1114	3802	145	145	59.2
QF 10-41	MTSF 150	26.0	2749	1114	3863	145	145	60.5
QF 10-42	MTSF 150	26.0	2809	1114	3923	145	145	61.9
QF 10-43	MTSF 150	26.0	2870	1114	3984	145	145	63.2
QF 10-44	MTSF 150	26.0	2930	1114	4044	145	145	64.5

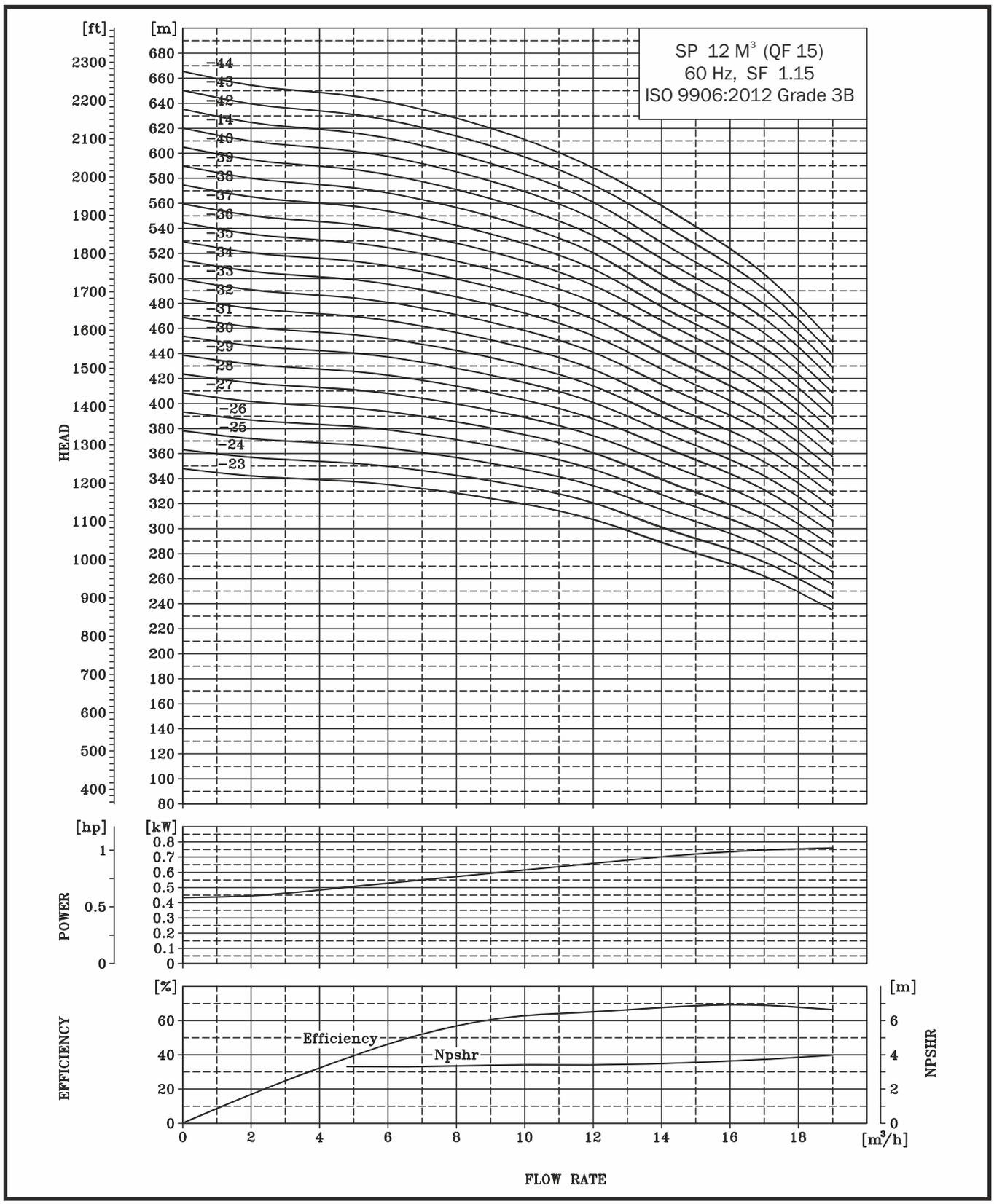
E* = Maximum diameter of pump inclusive of cable guard and motor.
* Motor type may change as per requirement .

PERFORMANCE CURVE

SUBMERSIBLE PUMP QF 15

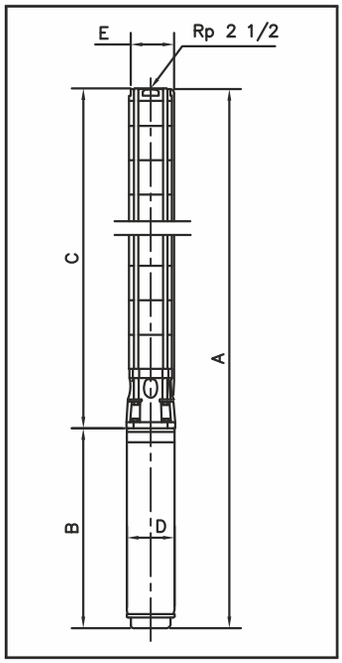


SUBMERSIBLE PUMP QF 15



SUBMERSIBLE PUMP QF 15

DIMENSIONS AND WEIGHTS



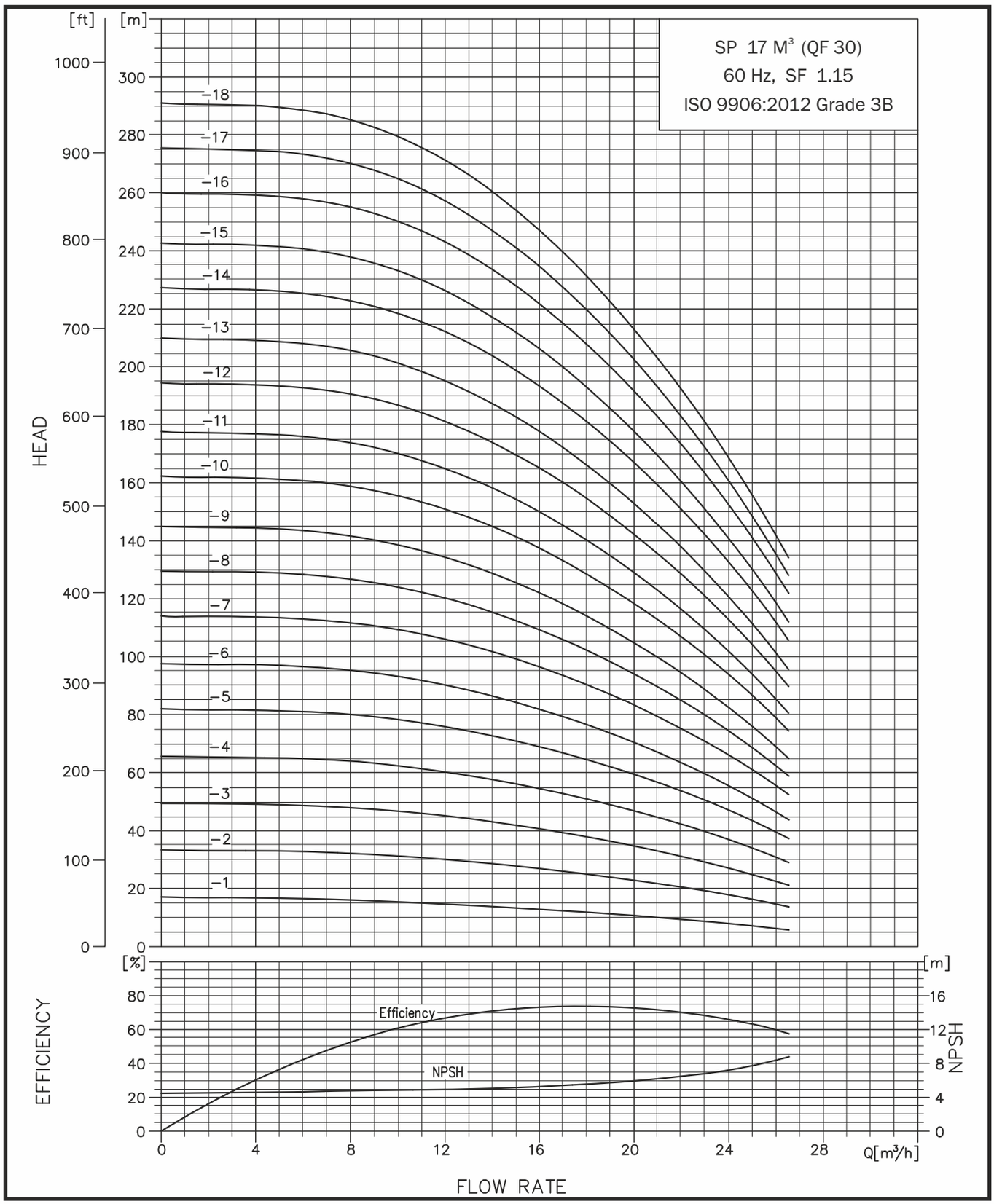
QF 15 - 33 to QF 15-50 are mounted in sleeve for Rp 2.5 connection.

Pump Type	Motor		Dimension [mm]					Net Weight [Kg]
	Type	Power [Kw]	C	B	A	D	E*	
QF 15-1	PREMIUM 100	0.75	295	287	582	95.25	128	6.7
QF 15-2	PREMIUM 100	1.5	356	399	754.5	95.25	128	8
QF 15-3	PREMIUM 100	2.2	416	546	962	95.25	128	9.3
QF 15-4	MCIP 101	3.0	477	774	1251	95.25	128	10.6
QF 15-5	MCIP 101	4.0	537	774	1311	95.25	128	11.9
QF 15-6	PREMIUM 100	5.5	597.5	775	1373	95.25	128	13.2
QF 15-7	PREMIUM 100	5.5	658	775	1433	95.25	128	14.5
QF 15-8	MTSF 150	7.5	734	719	1453	144.5	145	17.1
QF 15-9	MTSF 150	7.5	794.5	719	1514	144.5	145	18.4
QF 15-10	MTSF 150	7.5	855	719	1574	144.5	145	19.7
QF 15-11	MTSF 150	9.3	915.5	749	1665	144.5	145	21
QF 15-12	MTSF 150	9.3	976	749	1725	144.5	145	22.3
QF 15-13	MTSF 150	9.3	1037	749	1786	144.5	145	23.6
QF 15-14	MTSF 150	11.0	1097	779	1876	144.5	145	24.9
QF 15-15	MTSF 150	11.0	1158	779	1937	144.5	145	26.2
QF 15-16	MTSF 150	13.0	1218	829	2047	144.5	145	27.5
QF 15-17	MTSF 150	13.0	1279	829	2108	144.5	145	28.8
QF 15-18	MTSF 150	13.0	1339	829	2168	144.5	145	30.1
QF 15-19	MTSF 150	15.0	1400	874	2274	144.5	145	31.4
QF 15-20	MTSF 150	15.0	1460	874	2334	144.5	145	32.7
QF 15-21	MTSF 150	15.0	1521	874	2395	144.5	145	34
QF 15-22	MTSF 150	18.5	1581	919	2500	144.5	145	35.3
QF 15-23	MTSF 150	18.5	1642	919	2561	144.5	145	36.6
QF 15-24	MTSF 150	18.5	1702	919	2621	144.5	145	37.9
QF 15-25	MTSF 150	18.5	1763	919	2682	144.5	145	39.2
QF 15-26	MTSF 150	18.5	1823	919	2742	144.5	145	40.5
QF 15-27	MTSF 150	22.0	1884	1009	2893	144.5	145	41.8
QF 15-28	MTSF 150	22.0	1944	1009	2953	144.5	145	43.1
QF 15-29	MTSF 150	22.0	2005	1009	3014	144.5	145	44.4
QF 15-30	MTSF 150	22.0	2083	1009	3092	144.5	145	45.7
QF 15-31	MTSF 150	22.0	2144	1009	3153	144.5	145	47
QF 15-32	MTSF 150	26.0	2204	1114	3318	144.5	145	48.3
QF 15-33	MTSF 150	26.0	2265	1114	3379	144.5	145	49.6
QF 15-34	MTSF 150	26.0	2325	1114	3439	144.5	145	51.4
QF 15-35	MTSF 150	26.0	2386	1114	3500	144.5	145	52.7
QF 15-36	MTSF 150	26.0	2446	1114	3560	144.5	145	54
QF 15-37	MTSF 150	26.0	2507	1114	3621	144.5	145	55.3
QF 15-38	MTSF 150	30.0	2567	1214	3781	144.5	145	56.6
QF 15-39	MTSF 150	30.0	2628	1214	3842	144.5	145	57.9
QF 15-40	MTSF 150	30.0	2688	1214	3902	144.5	145	59.2
QF 15-41	MTSF 150	30.0	2749	1214	3963	144.5	145	60.5
QF 15-42	MTSF 150	30.0	2809	1214	4023	144.5	145	61.9
QF 15-43	MTSF 150	37.0	2870	1294	4164	144.5	145	63.2
QF 15-44	MTSF 150	37.0	2930	1294	4224	144.5	145	64.5

E = Maximum diameter of pump inclusive of cable guard and motor.

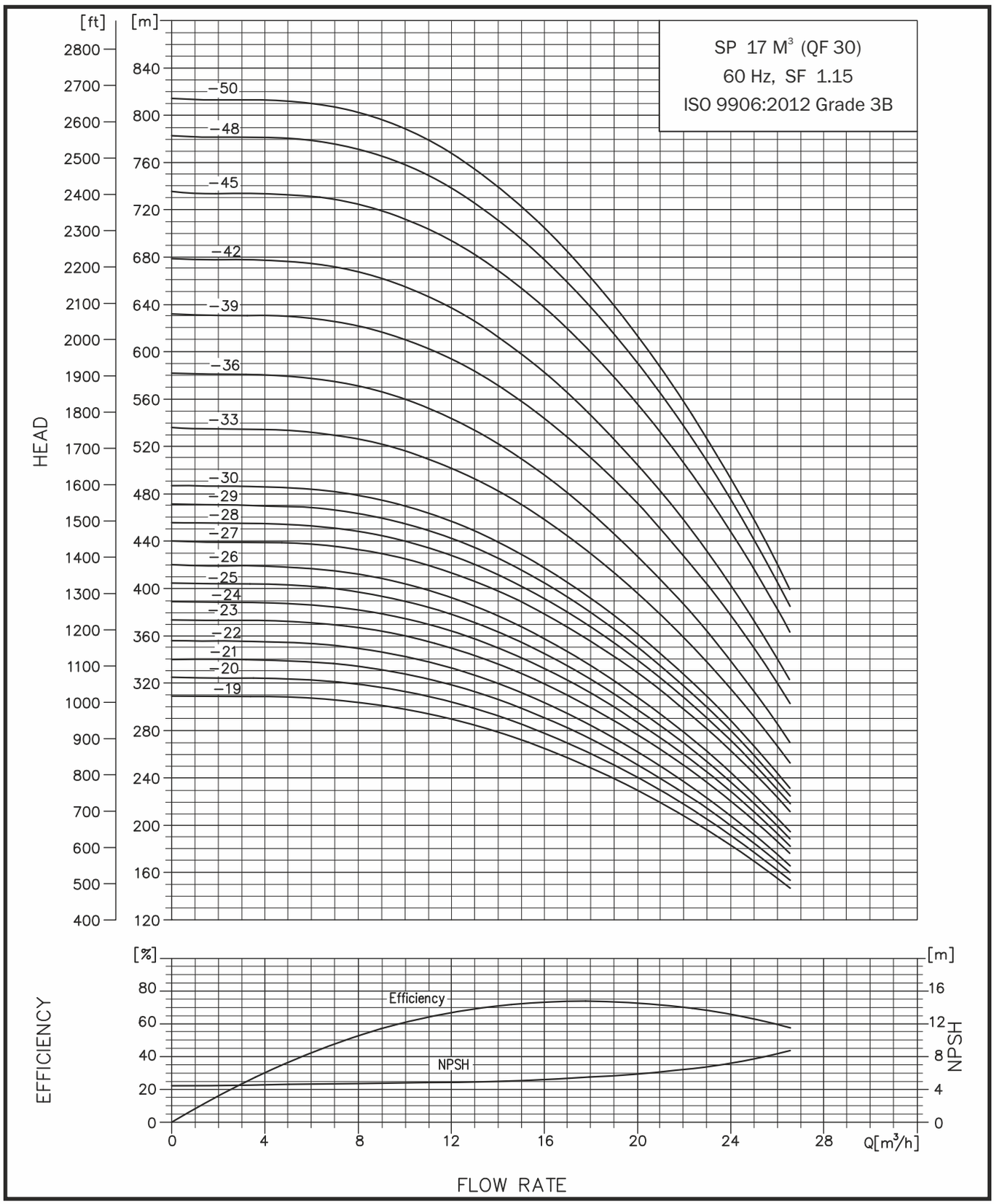
* Motor type may change as per requirement .

SUBMERSIBLE PUMP QF 30



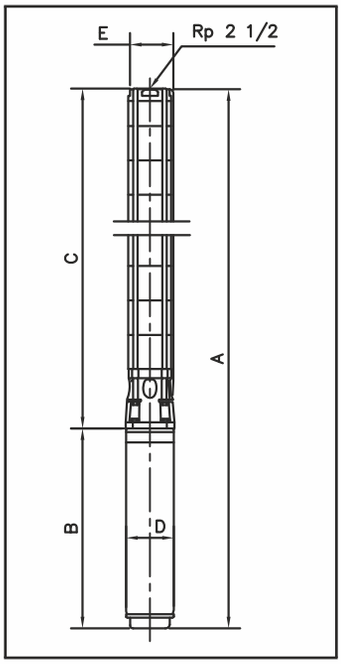
PERFORMANCE CURVE

SUBMERSIBLE PUMP QF 30



SUBMERSIBLE PUMP QF 30

DIMENSIONS AND WEIGHTS

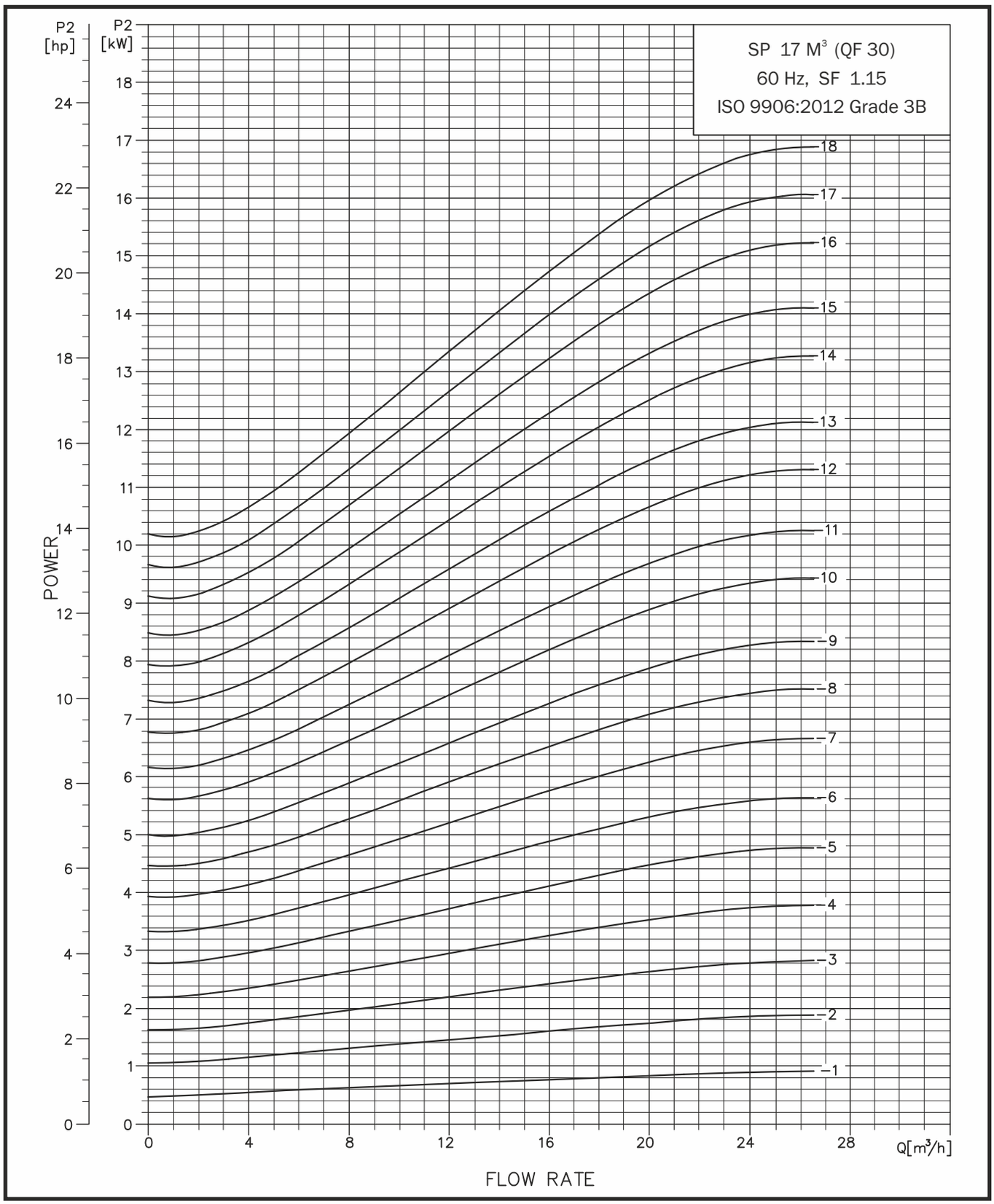


Qf30 - 33 to QF30 -50 are mounted in sleeve for Rp 3 connection.

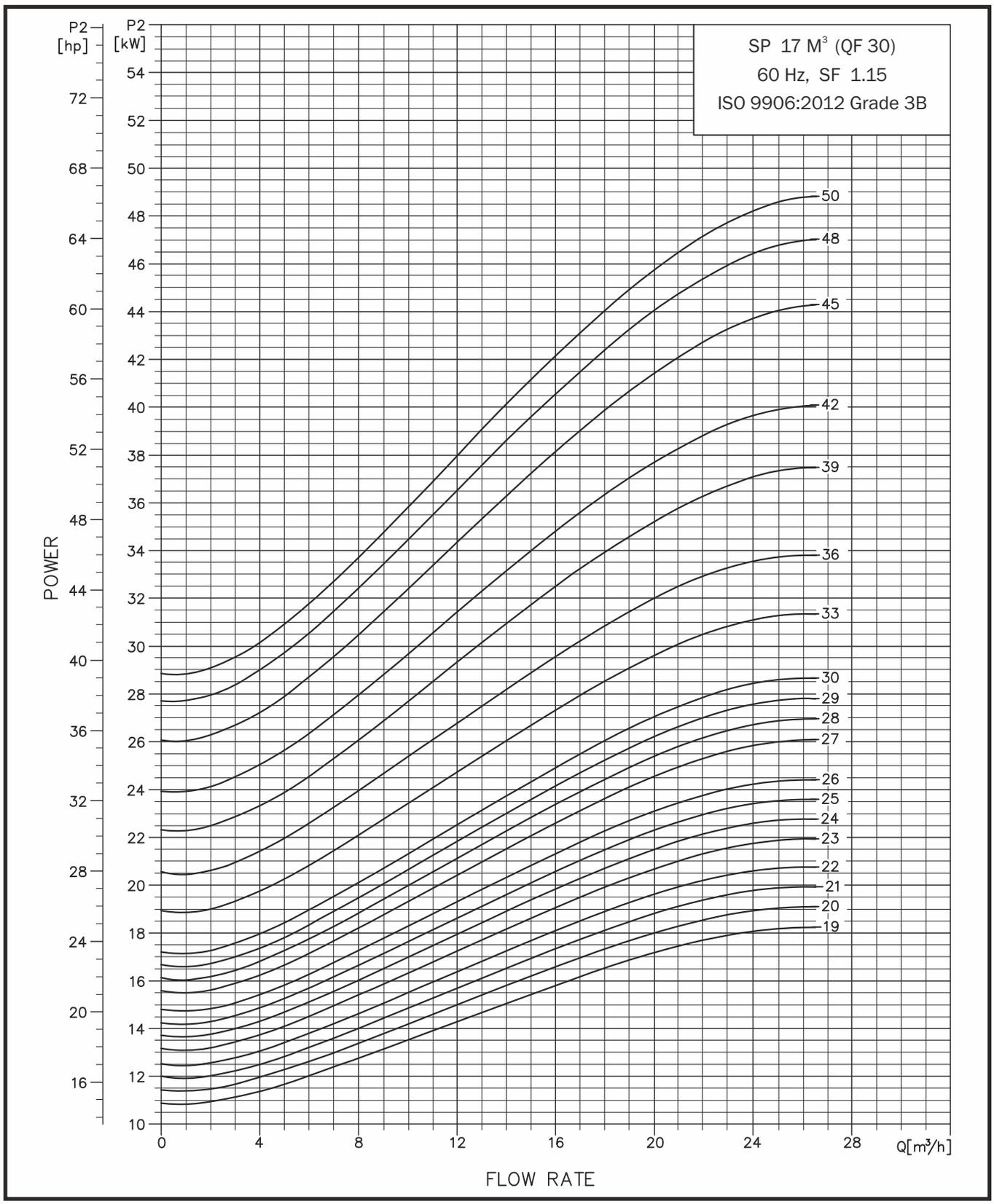
Pump Type	Motor		Dimension [mm]					Net Weight [Kg]
	Type	Power [Kw]	C	B	A	D	E*	
QF 30-1	PREMIUM 100	1.10	295	335	630	95	128	6.01
QF 30-2	PREMIUM 100	2.2	356	546	902	95	128	7.24
QF 30-3	MCIP 101	3.0	416	774	1190	95	128	8.46
QF 30-4	MCIP 101	4.0	477	774	1251	95	128	9.68
QF 30-5	PREMIUM 100	5.5	537	775	1312	95	128	10.91
QF 30-6	PREMIUM 100	5.5	598	775	1373	95	128	12.13
QF 30-5	MTSF 150	5.5	553	699	1252	145	145	10.71
QF 30-6	MTSF 150	5.5	613	699	1312	145	145	13.17
QF 30-7	MTSF 150	7.5	674	719	1393	145	145	14.4
QF 30-8	MTSF 150	7.5	734	719	1453	145	145	15.63
QF 30-9	MTSF 150	7.5	795	719	1514	145	145	16.86
QF 30-10	MTSF 150	9.3	855	749	1604	145	145	18.09
QF 30-11	MTSF 150	9.3	916	749	1665	145	145	19.32
QF 30-12	MTSF 150	11.0	976	779	1755	145	145	20.55
QF 30-13	MTSF 150	11.0	1037	779	1816	145	145	21.78
QF 30-14	MTSF 150	13.0	1097	829	1926	145	145	23.01
QF 30-15	MTSF 150	13.0	1158	829	1987	145	145	24.24
QF 30-16	MTSF 150	15.0	1218	874	2092	145	145	25.48
QF 30-17	MTSF 150	15.0	1279	874	2153	145	145	26.71
QF 30-18	MTSF 150	15.0	1339	874	2213	145	145	27.94
QF 30-19	MTSF 150	18.5	1400	919	2319	145	145	29.17
QF 30-20	MTSF 150	18.5	1460	919	2379	145	145	30.4
QF 30-21	MTSF 150	18.5	1521	919	2440	145	145	31.63
QF 30-22	MTSF 150	18.5	1581	919	2500	145	145	32.86
QF 30-23	MTSF 150	22.0	1642	1009	2651	145	145	34.09
QF 30-24	MTSF 150	22.0	1702	1009	2711	145	145	35.32
QF 30-25	MTSF 150	22.0	1763	1009	2772	145	145	36.55
QF 30-26	MTSF 150	22.0	1823	1009	2832	145	145	37.78
QF 30-27	MTSF 150	26.0	1884	1114	2998	145	145	39.01
QF 30-28	MTSF 150	26.0	1944	1114	3058	145	145	40.24
QF 30-29	MTSF 150	26.0	2005	1114	3119	145	145	41.48
QF 30-30	MTSF 150	26.0	2083	1114	3197	145	145	43.63
QF 30-33	MTSF 150	30.0	2265	1214	3479	145	145	47.32
QF 30-36	MTSF 150	30.0	2446	1214	3660	145	145	51.67
QF 30-39	MTSF 150	37.0	2628	1294	3922	145	145	55.41
QF 30-42	MTSFC 200	37.0	2838	1140	3978	194	194	63.29
QF 30-45	MTSFC 200	45.0	3019	1230	4249	194	194	67.06
QF 30-48	MTSFC 200	45.0	3201	1230	4431	194	194	70.83
QF 30-50	MTSFC 200	45.0	3322	1230	4552	194	194	73.34

E = Maximum diameter of pump inclusive of cable guard and motor.
* Motor type may change as per requirement .

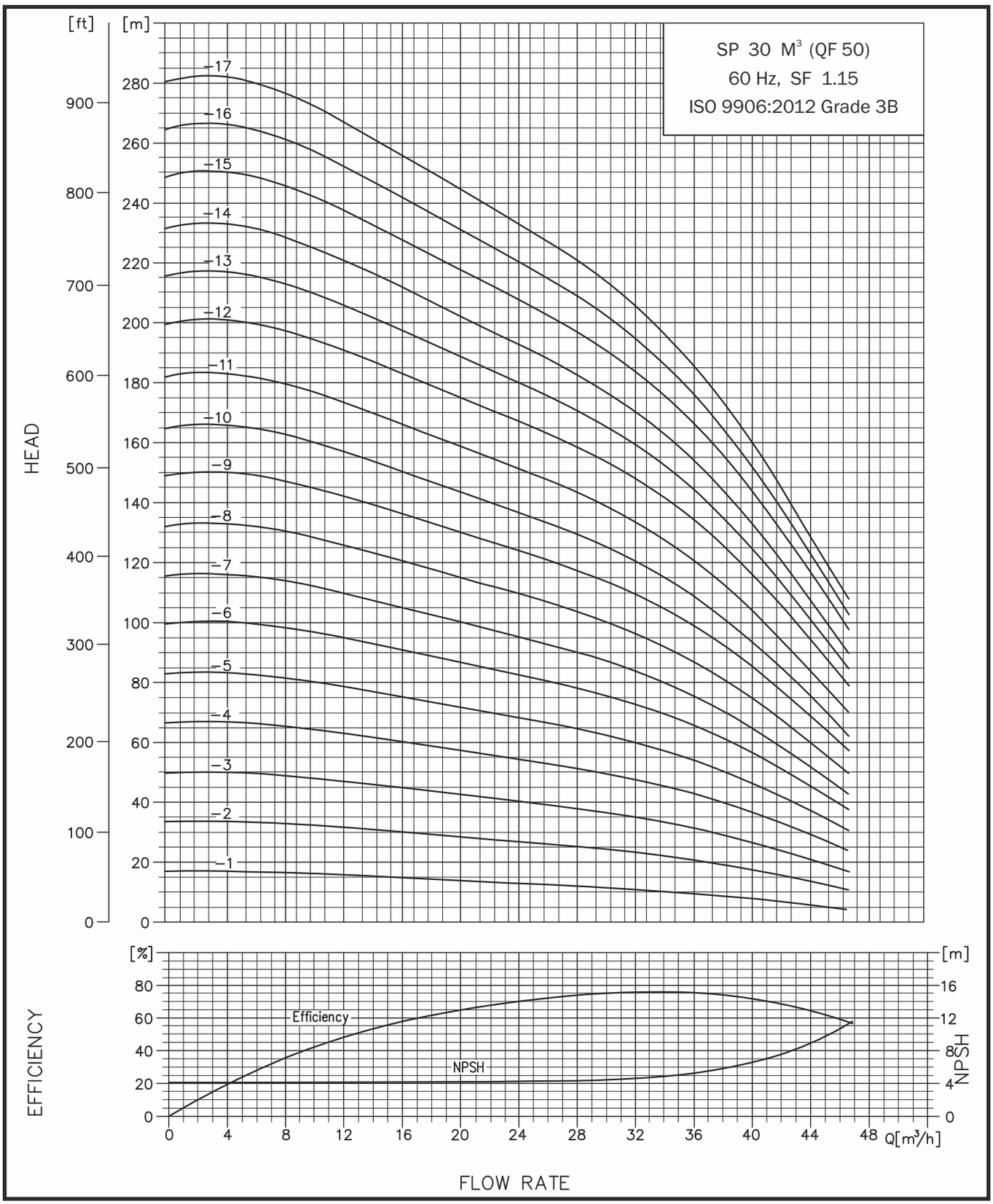
SUBMERSIBLE PUMP QF 30



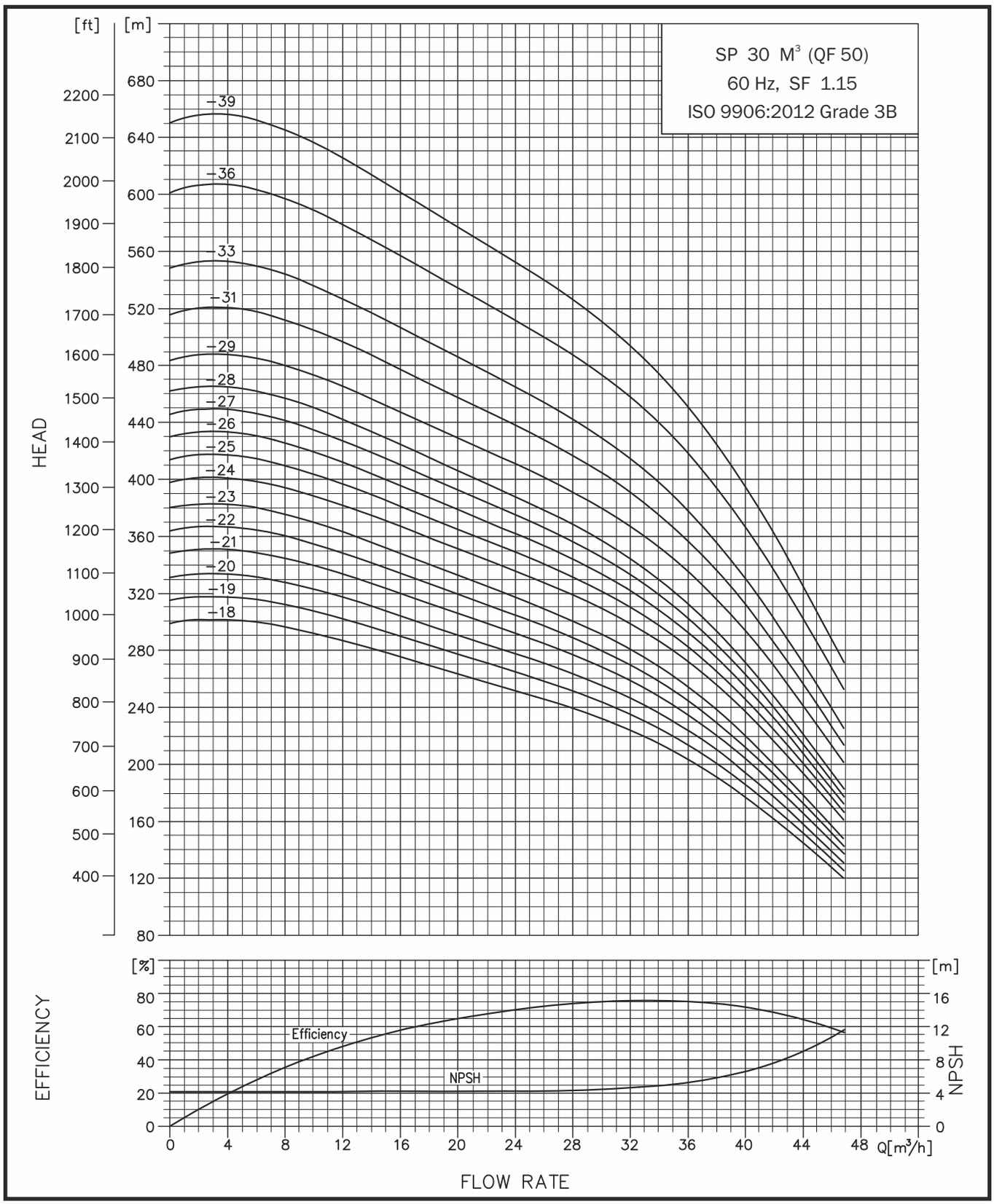
SUBMERSIBLE PUMP QF 30



SUBMERSIBLE PUMP QF 50

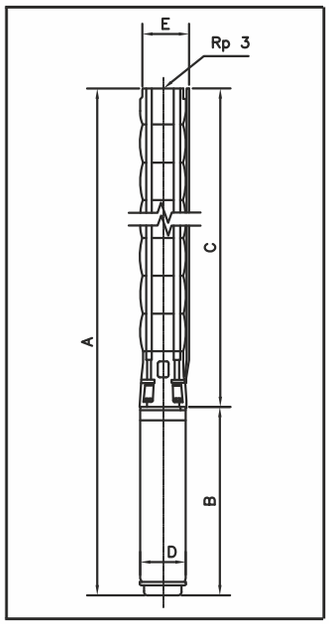


SUBMERSIBLE PUMP QF 50



SUBMERSIBLE PUMP QF 50

DIMENSIONS AND WEIGHTS



QF 50-24 to QF 50-39 are mounted in sleeve for Rp 3 connection.

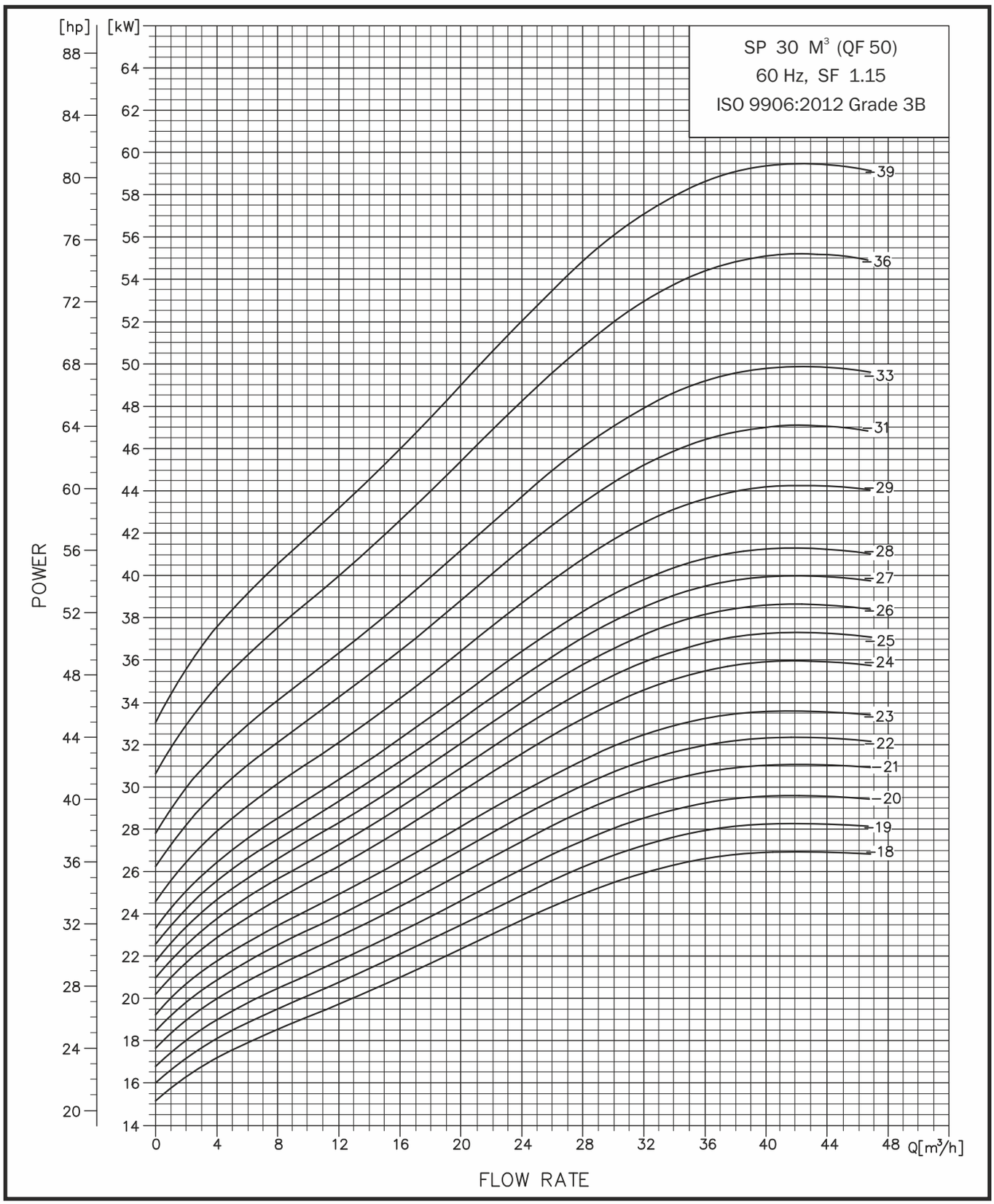
Pump Type	Motor		Dimension [mm]						Net Weight [Kg]
	Type	Power [Kw]	C	B	A	D	E*	E**	
QF 50-1	PREMIUM 100	1.5	331	399	729.5	95	128	-	6.63
QF 50-2	MCIP 101	3.0	427	774	1201	95	128	-	8.46
QF 50-3	MCIP 101	4.0	523	774	1297	95	128	-	10.28
QF 50-4	PREMIUM 100	5.5	619	775	1394	95	128	-	12.11
QF 50-4	MTSF 150	5.5	634	699	1333	145	145	145	12.99
QF 50-5	MTSF 150	7.5	730	719	1449	145	145	145	14.83
QF 50-6	MTSF 150	9.3	826	749	1575	145	145	145	16.67
QF 50-7	MTSF 150	9.3	922	749	1671	145	145	145	18.51
QF 50-8	MTSF 150	11.0	1018	779	1797	145	145	145	20.34
QF 50-9	MTSF 150	13.0	1114	829	1943	145	145	145	22.18
QF 50-10	MTSF 150	13.0	1210	829	2039	145	145	145	24.02
QF 50-11	MTSF 150	15.0	1306	874	2180	145	145	145	25.86
QF 50-12	MTSF 150	18.5	1402	919	2321	145	145	145	27.69
QF 50-13	MTSF 150	18.5	1498	919	2417	145	145	145	29.53
QF 50-14	MTSF 150	18.5	1594	919	2513	145	145	145	31.37
QF 50-15	MTSF 150	22.0	1690	1009	2699	145	145	145	33.21
QF 50-16	MTSF 150	22.0	1786	1009	2795	145	145	145	35.05
QF 50-17	MTSF 150	22.0	1882	1009	2891	145	145	145	36.88
QF 50-18	MTSF 150	26.0	1978	1114	3092	145	145	145	38.72
QF 50-19	MTSF 150	26.0	2074	1114	3188	145	145	145	40.56
QF 50-20	MTSF 150	26.0	2170	1114	3284	145	145	145	42.4
QF 50-21	MTSF 150	30.0	2266	1214	3480	145	145	145	44.23
QF 50-22	MTSF 150	30.0	2362	1214	3576	145	145	145	46.7
QF 50-23	MTSF 150	30.0	2458	1214	3672	145	145	145	48.57
QF 50-24	MTSF 150	37.0	2554	1294	3848	145	145	145	50.43
QF 50-25	MTSF 150	37.0	2650	1294	3944	145	145	145	52.3
QF 50-26	MTSF 150	37.0	2746	1294	4040	145	145	145	54.16
QF 50-27	MTSF 150	37.0	2842	1294	4136	145	145	145	56.03
QF 50-28	MTSF 150	37.0	2938	1294	4232	145	145	145	57.89
QF 50-29	MTSFC 200	45.0	3063	1230	4293	194	194	194	64.04
QF 50-31	MTSFC 200	45.0	3255	1230	4485	194	194	194	67.8
QF 50-33	MTSFC 200	45.0	3447	1230	4677	194	194	194	71.56
QF 50-36	MTSFC 200	55.0	3735	1340	5075	194	194	194	77.19
QF 50-39	MTSFC 200	55.0	4023	1340	5363	194	194	194	82.83

E* = Maximum diameter of pump inclusive of one cable guard and motor.

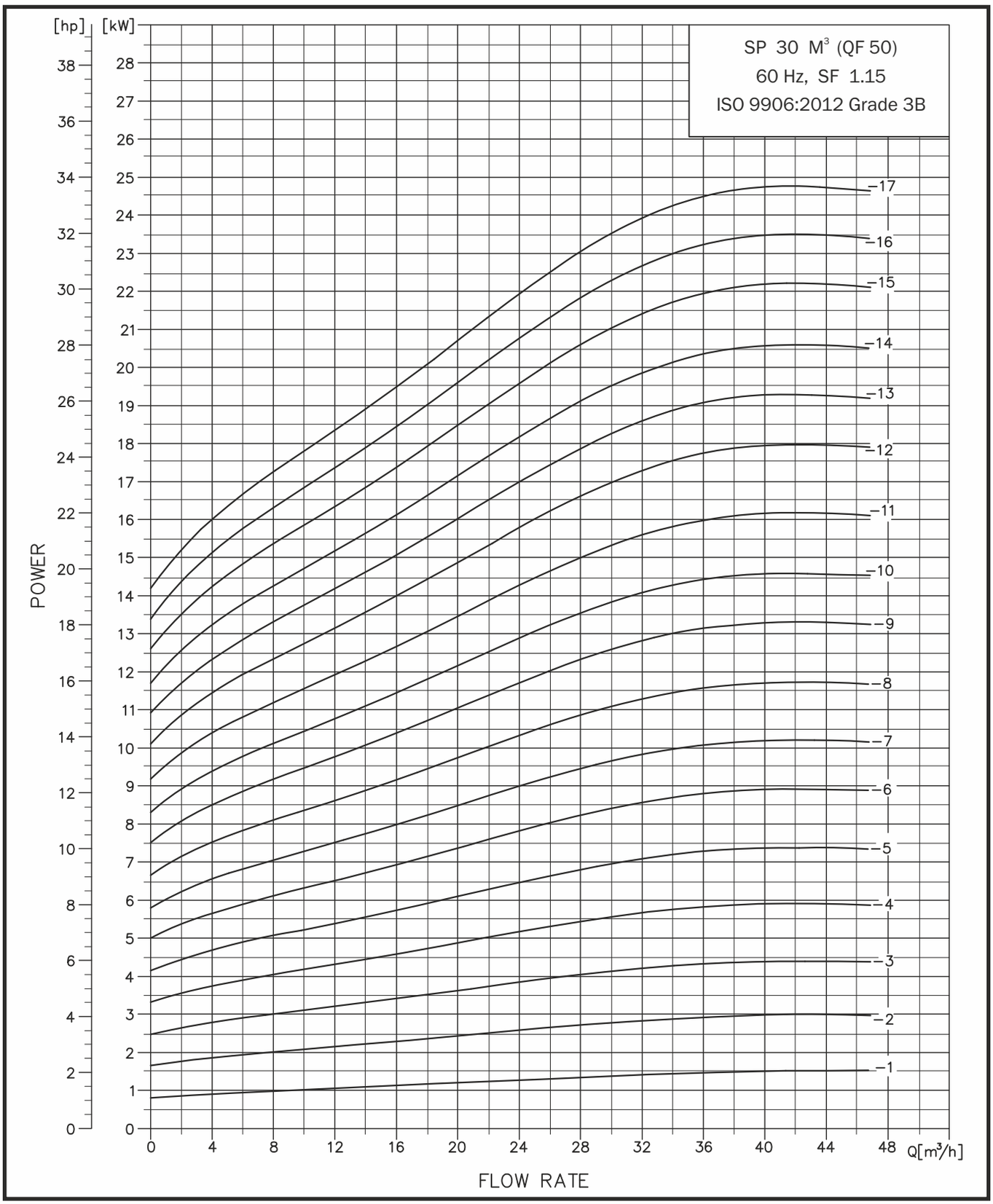
E** = Maximum diameter of pump inclusive of two cable guard and motor.

* Motor type may change as per requirement .

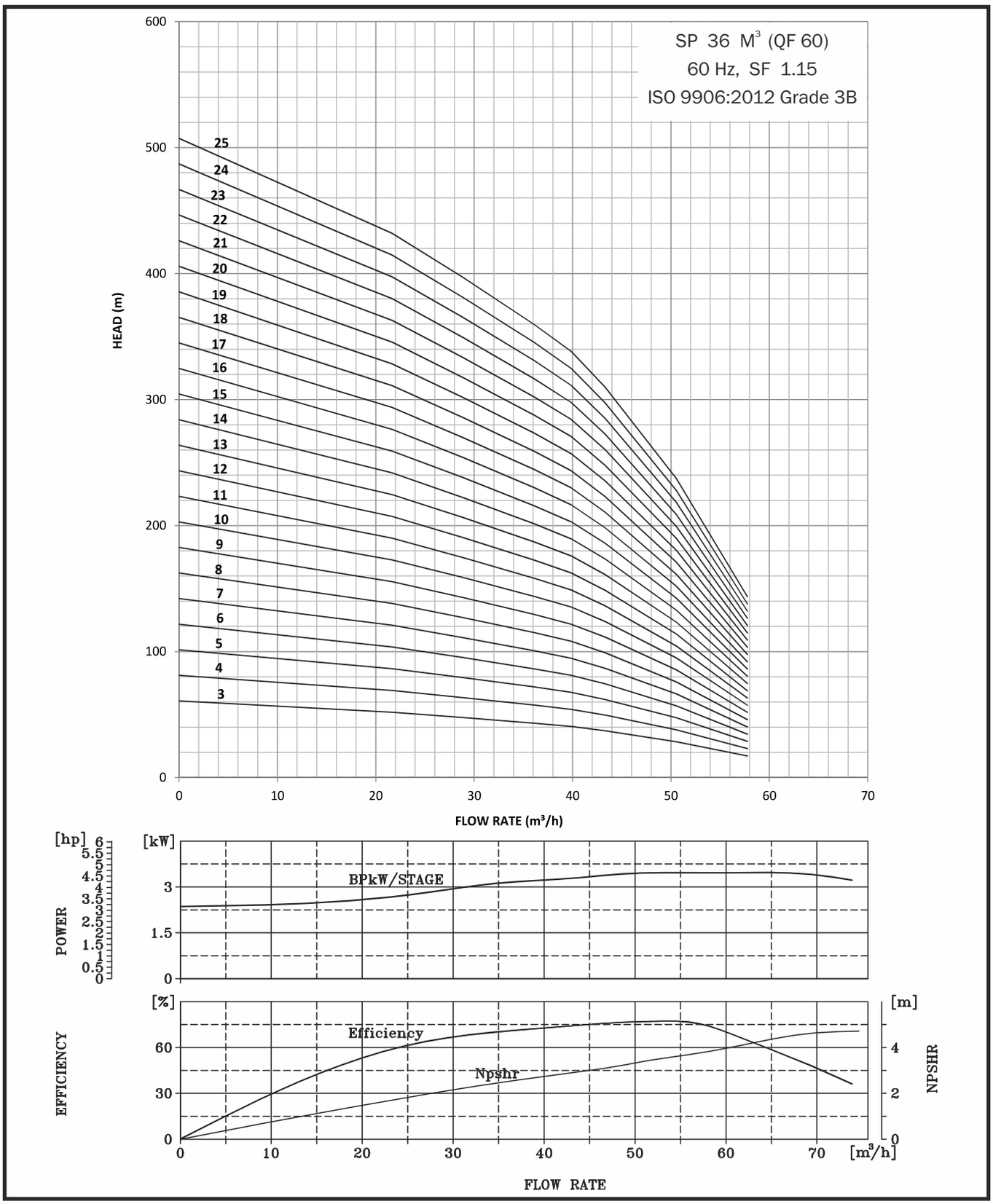
SUBMERSIBLE PUMP QF 50



SUBMERSIBLE PUMP QF 50

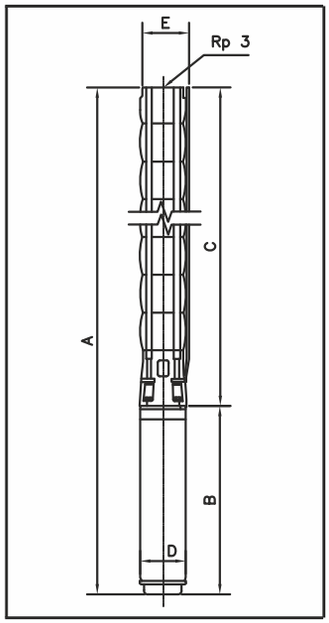


SUBMERSIBLE PUMP QF 60



SUBMERSIBLE PUMP QF 60

DIMENSIONS AND WEIGHTS



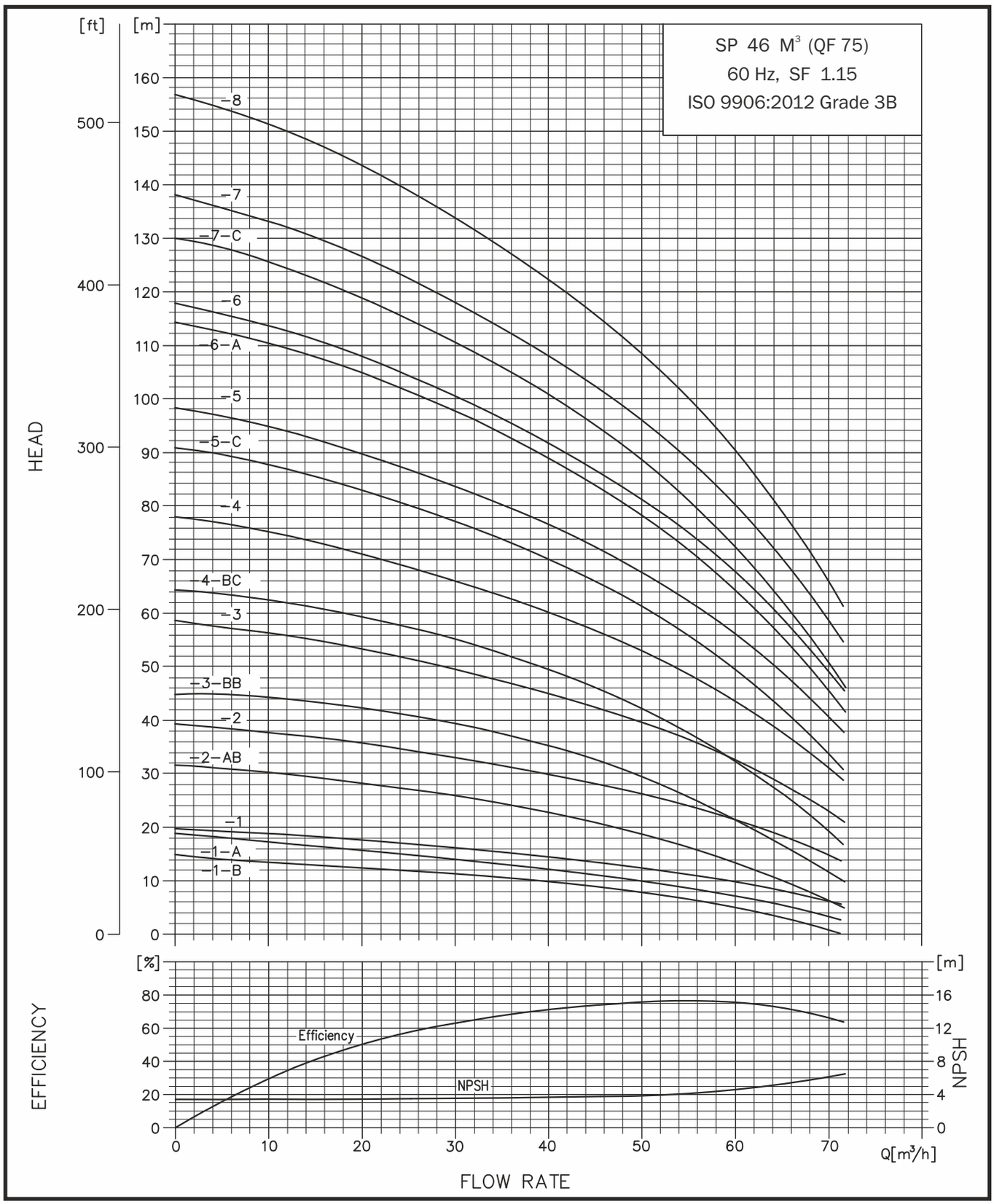
PUMP TYPE	MOTOR		DIMENSIONS (mm)						NET WEIGHT [kg]
	TYPE	POWER [Kw]	C	B	A	D	E*	E**	
QF60-3	MATASF 150	7.5	521	719	1240	144.5	145	145	13
QF60-4	MATASF 150	9.3	606	749	1355	144.5	145	145	15
QF60-5	MATASF 150	9.3	692	749	1441	144.5	145	145	17
QF60-6	MATASF 150	13.0	777	829	1606	144.5	145	145	19
QF60-7	MATASF 150	13.0	863	829	1692	144.5	145	145	21
QF60-8	MATASF 150	15.0	948	874	1822	144.5	145	145	23
QF60-9	MATASF 150	18.5	1034	919	1953	144.5	145	145	25
QF60-10	MATASF 150	18.5	1119	919	2038	144.5	145	145	27
QF60-11	MATASF 150	22.0	1205	1009	2214	144.5	145	145	29
QF60-12	MATASF 150	22.0	1290	1009	2299	144.5	145	145	31
QF60-13	MATASF 150	26.0	1376	1114	2490	144.5	145	145	33
QF60-14	MATASF 150	30.0	1461	1214	2675	144.5	145	145	35
QF60-15	MATASF 150	30.0	1547	1214	2761	144.5	145	145	37
QF60-16	MATASF 150	30.0	1632	1214	2846	144.5	145	145	39
QF60-17	MATASF 150	30.0	1718	1214	2932	144.5	145	145	41
QF60-18	MATASF200	37.0	1832	1140	2972	193.5	194	194	45
QF60-19	MATASF200	37.0	1917	1140	3057	193.5	194	194	47
QF60-20	MATASF200	37.0	2003	1140	3143	193.5	194	194	49
QF60-21	MATASF200	45.0	2088	1230	3318	193.5	194	194	51
QF60-22	MATASF200	45.0	2174	1230	3404	193.5	194	194	53
QF60-23	MATASF200	45.0	2259	1230	3489	193.5	194	194	55
QF60-24	MATASF200	55.0	2345	1340	3685	193.5	194	194	57
QF60-25	MATASF200	55.0	2430	1340	3770	193.5	194	194	59

E* = Maximum diameter of pump inclusive of one cable guard and motor.

E** = Maximum diameter of pump inclusive of two cable guard and motor.

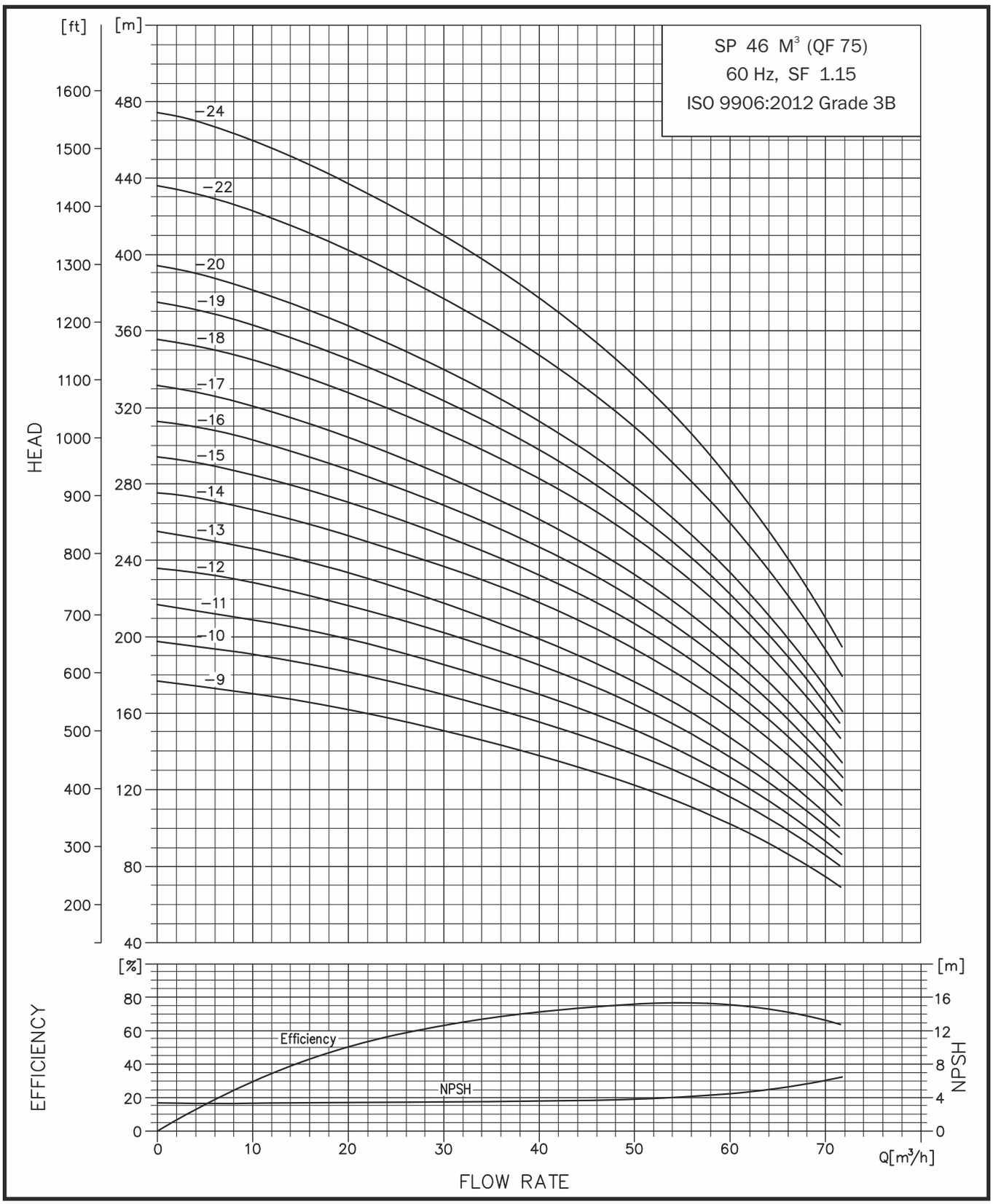
* Motor type may change as per requirement .

SUBMERSIBLE PUMP QF 75



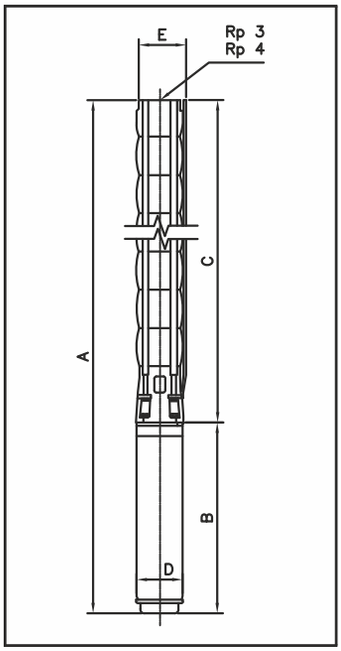
PERFORMANCE CURVE

SUBMERSIBLE PUMP QF 75



SUBMERSIBLE PUMP QF 75

DIMENSIONS AND WEIGHTS



QF 75 - 20 to QF 75 - 24 are mounted in sleeve for Rp 3 connection.

Pump Type	Motor		Dimension [mm]										Net Weight Kg
	Type	Power [Kw]	Rp 3 Connection				Rp 4 Connection				B	D	
			A	C	E*	E**	A	C	E*	E**			
QF 75-1-B	PREMIUM 100	1.5	751	352	138	-	747.5	349	138	-	399	95.25	9.37
QF 75-1-A	PREMIUM 100	2.2	898	352	138	-	894.5	349	138	-	546	95.25	9.37
QF 75-1	MCIP 101	3.0	1126	352	138	-	1122.5	349	138	-	774	95.25	9.37
QF 75-2-AB	MCIP 101	4.0	1239	465	138	-	1235.5	462	138	-	774	95.25	11.62
QF 75-2	PREMIUM 100	5.5	1240	465	138	-	1236.5	462	138	-	775	95.25	11.62
QF 75-3-BB	PREMIUM 100	5.5	1353	578	138	-	1349.5	575	138	-	775	95.25	13.93
QF 75-4	MTSF 150	9.3	1455.5	706.5	145	145	1452	703	145	145	749	144.5	17
QF 75-5-C	MTSF 150	11.0	1598.5	819.5	145	145	1595	816	145	145	779	144.5	19.26
QF 75-5	MTSF 150	13.0	1648.5	819.5	145	145	1645	816	145	145	829	144.5	19.26
QF 75-6-A	MTSF 150	13.0	1761.5	932.5	145	145	1758	929	145	145	829	144.5	21.52
QF 75-6	MTSF 150	15.0	1806.5	932.5	145	145	1803	929	145	145	874	144.5	21.52
QF 75-7-C	MTSF 150	15.0	1919.5	1045.5	145	145	1916	1042	145	145	874	144.5	23.78
QF 75-7	MTSF 150	18.5	1964.5	1045.5	145	145	1961	1042	145	145	919	144.5	23.78
QF 75-8	MTSF 150	18.5	2077.5	1158.5	145	145	2074	1155	145	145	919	144.5	26.04
QF 75-9	MTSF 150	22.0	2280.5	1271.5	145	145	2277	1268	145	145	1009	144.5	28.31
QF75-10	MTSF 150	22.0	2393.5	1384.5	145	145	2390	1381	145	145	1009	144.5	30.57
QF75-11	MTSF 150	26.0	2611.5	1497.5	145	145	2608	1494	145	145	1114	144.5	32.83
QF 75-12	MTSF 150	30.0	2824.5	1610.5	145	145	2821	1607	145	145	1214	144.5	35.09
QF 75-13	MTSF 150	30.0	2937.5	1723.5	145	145	2934	1720	145	145	1214	144.5	37.35
QF 75-14	MTSF 150	37.0	3130.5	1836.5	145	145	3127	1833	145	145	1294	144.5	39.61
QF 75-15	MTSF 150	37.0	3243.5	1949.5	145	145	3240	1946	145	145	1294	144.5	41.88
QF 75-16	MTSF 150	37.0	3356.5	2062.5	145	145	3353	2059	145	145	1294	144.5	44.13
QF 75-17	MTSF 150	37.0	3469.5	2175.5	145	145	3466	2172	145	145	1294	144.5	46.39
QF 75-18	MTSFC 200	45.0	3547	2317	194	194	3543.5	2314	194	194	1230	193.5	52.79
QF 75-19	MTSFC 200	45.0	3660	2430	194	194	3656.5	2427	194	194	1230	193.5	55.07
QF 75-20	MTSFC 200	45.0	3773	2543	194	194	3769.5	2540	194	194	1230	193.5	57.35
QF 75-22	MTSFC 200	55.0	4109	2769	194	194	4105.5	2766	194	194	1340	193.5	62.64
QF 75-24	MTSFC 200	55.0	4335	2995	194	194	4331.5	2992	194	194	1340	193.5	67.26

E* = Maximum diameter of pump inclusive of one cable guard and motor.

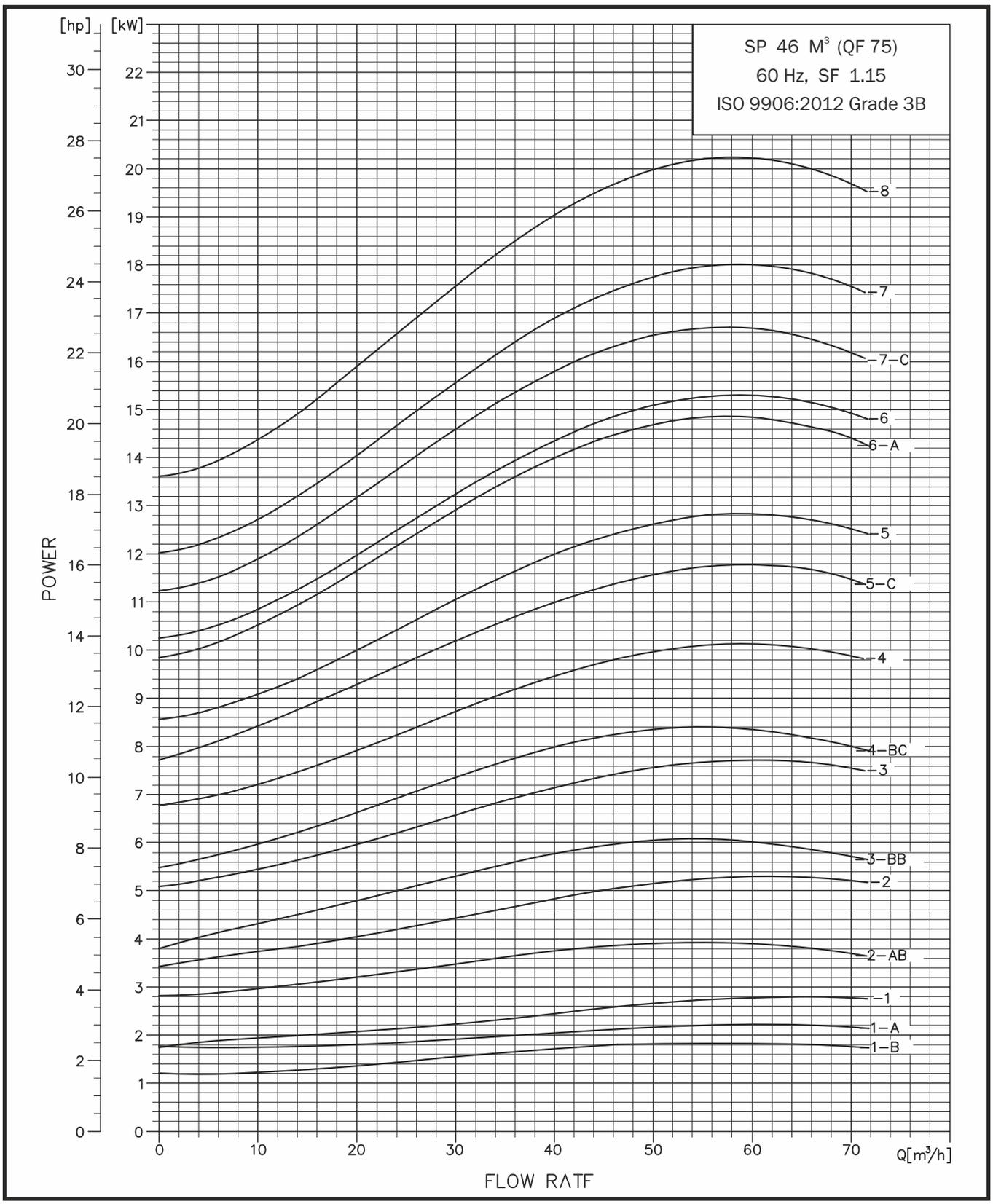
E** = Maximum diameter of pump inclusive of two cable guard and motor.

Other type of connection are possible by means of connecting flanges.

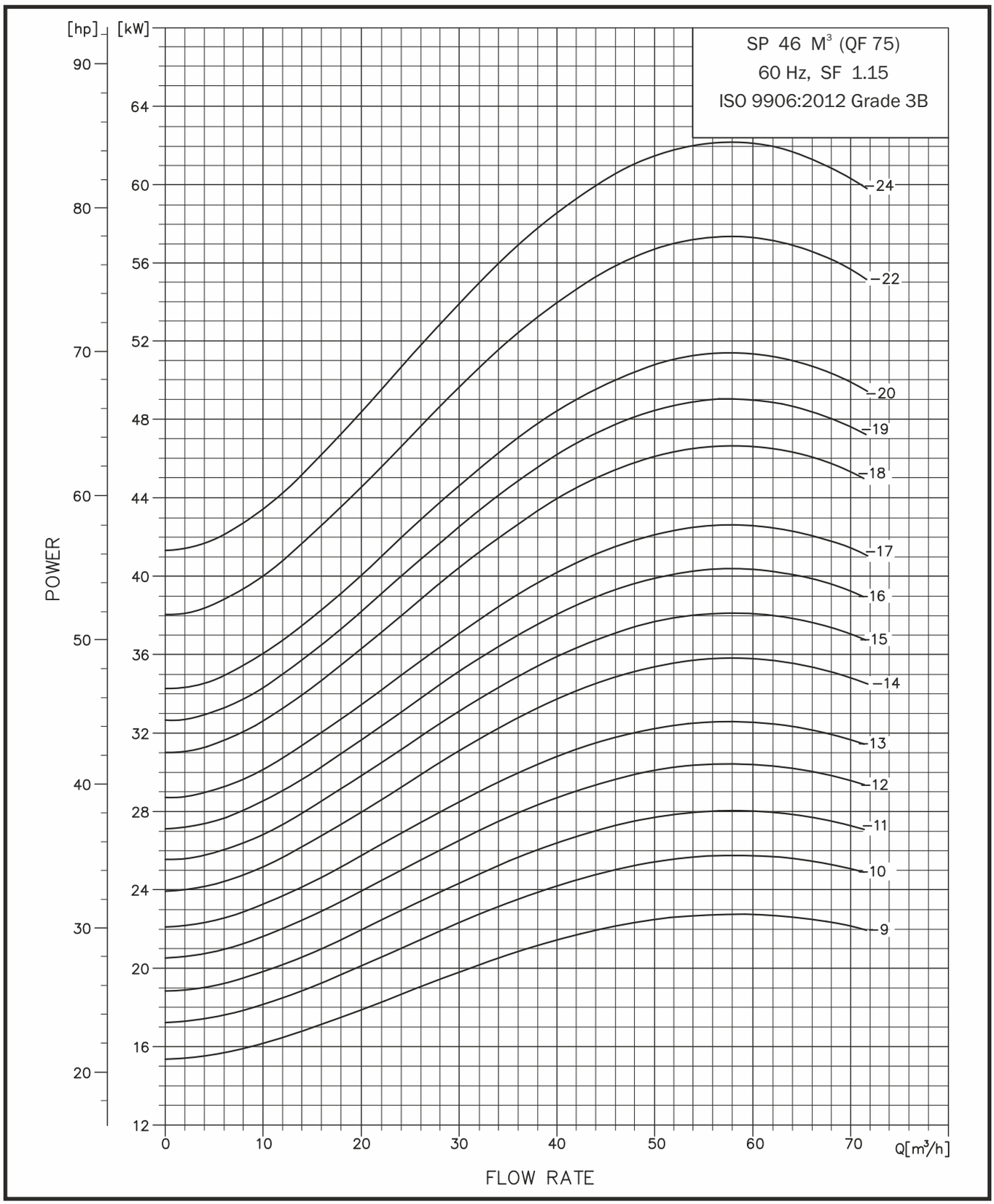
* Motor type may change as per requirement .

PERFORMANCE CURVE

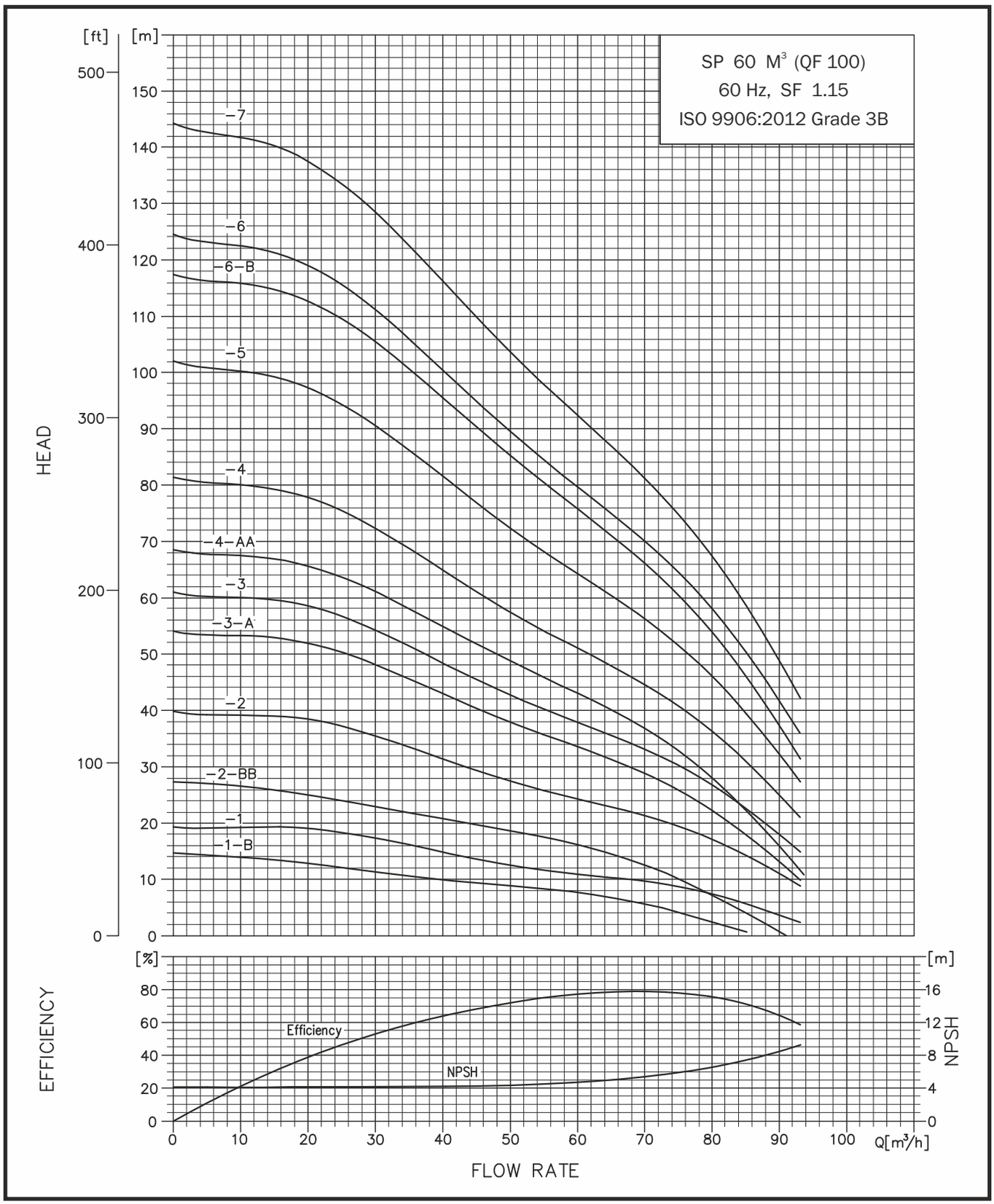
SUBMERSIBLE PUMP QF 75



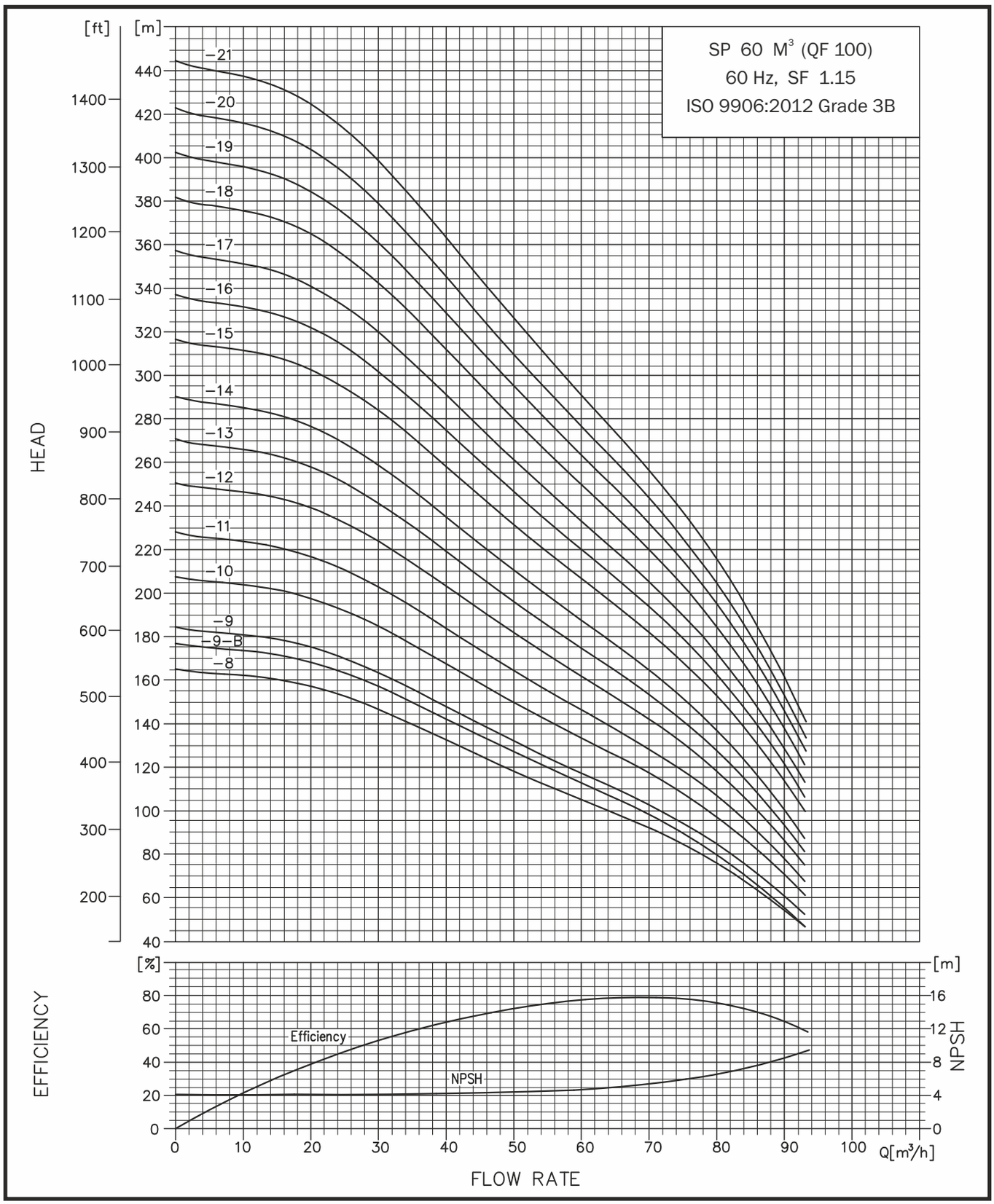
SUBMERSIBLE PUMP QF 75



SUBMERSIBLE PUMP QF 100

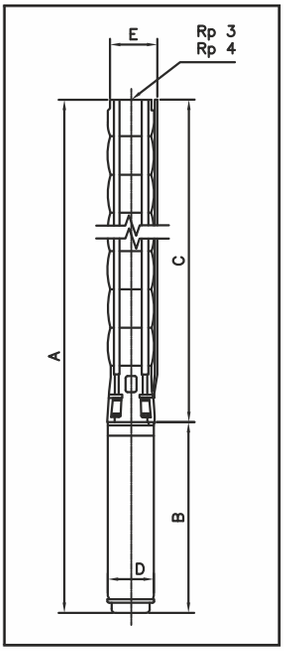


SUBMERSIBLE PUMP QF 100



SUBMERSIBLE PUMP QF 100

DIMENSIONS AND WEIGHTS



Pump Type	Motor		Dimension [mm]										Net Weight Kg
	Type	Power [Kw]	Rp 3 Connection				Rp 4 Connection				B	D	
			A	C	E*	E**	A	C	E*	E**			
QF 100-1-B	PREMIUM 100	2.2	898	352	138	-	894.6	349	138	-	546	95.25	9.36
QF 100-1	MCIP 101	4.0	1126	352	138	-	1122.5	349	138	-	774	95.25	9.36
QF 100-2-BB	MCIP 101	4.0	1239	465	138	-	1235.5	462	138	-	774	95.25	11.57
QF 100-2	PREMIUM 100	5.5	1240	465	138	-	1236.2	462	138	-	775	95.25	11.57
QF 100-3-A	MTSF 150	7.5	1312.5	593.5	145	145	1309	590	145	145	719	144.5	14.66
QF 100-3	MTSF 150	9.3	1342.5	593.5	145	145	1339	590	145	145	749	144.5	14.66
QF 100-4-AA	MTSF 150	9.3	1455.5	706.5	145	145	1452	703	145	145	749	144.5	16.88
QF 100-4	MTSF 150	11.0	1485.5	706.5	145	145	1482	703	145	145	779	144.5	16.88
QF 100-5	MTSF 150	13.0	1648.5	819.5	145	145	1645	816	145	145	829	144.5	19.11
QF 100-6-B	MTSF 150	15.0	1806.5	932.5	145	145	1803	929	145	145	874	144.5	21.33
QF 100-6	MTSF 150	18.5	1851.5	932.5	145	145	1848	929	145	145	919	144.5	21.33
QF100-7	MTSF 150	18.5	1964.5	1045.5	145	145	1961	1042	145	145	919	144.5	23.56
QF 100-8	MTSF 150	22.0	2167.5	1158.5	145	145	2164	1155	145	145	1009	144.5	25.78
QF 100-9-B	MTSF 150	22.0	2280.5	1271.5	145	145	2277	1268	145	145	1009	144.5	28.02
QF 100-9	MTSF 150	26.0	2385.5	1271.5	145	145	2382	1268	145	145	1114	144.5	28.02
QF 100-10	MTSF 150	26.0	2498.5	1384.5	145	145	2495	1381	145	145	1114	144.5	30.24
QF 100-11	MTSF 150	30.0	2711.5	1497.5	145	145	2708	1494	145	145	1214	144.5	32.46
QF 100-12	MTSF 150	37.0	2904.5	1610.5	145	145	2901	1607	145	145	1294	144.5	34.69
QF 100-13	MTSF 150	37.0	3017.5	1723.5	145	145	3014	1720	145	145	1294	144.5	36.91
QF 100-14	MTSF 150	37.0	3130.5	1836.5	145	145	3127	1833	145	145	1294	144.5	39.14
QF 100-15	MTSFC 200	45.0	3208	1978	194	194	3204.5	1975	194	194	1230	193.5	45.45
QF 100-16	MTSFC 200	45.0	3321	2091	194	194	3317.5	2088	194	194	1230	193.5	47.69
QF 100-17	MTSFC 200	45.0	3434	2204	194	194	3430.5	2201	194	194	1230	193.5	49.93
QF 100-18	MTSFC 200	55.0	3657	2317	194	194	3653.5	2314	194	194	1340	193.5	52.17
QF 100-19	MTSFC 200	55.0	3770	2430	194	194	3766.5	2427	194	194	1340	193.5	54.42
QF 100-20	MTSFC 200	55.0	3883	2543	194	194	3879.5	2540	194	194	1340	193.5	56.66
QF 100-21	MTSFC 200	63.0	4126	2656	194	194	4122.5	2653	194	194	1470	193.5	61.88

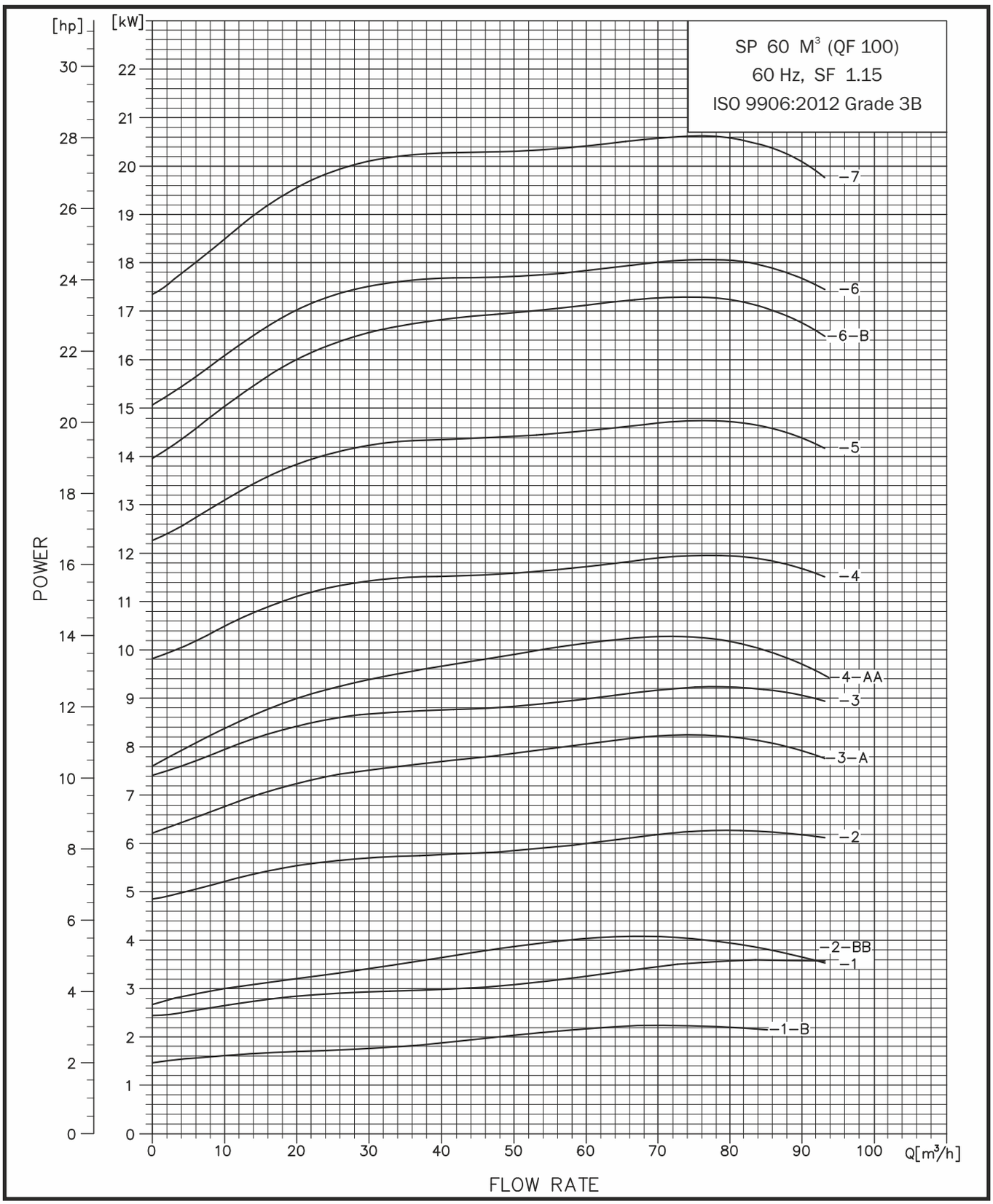
E* = Maximum diameter of pump inclusive of one cable guard and motor.

E** = Maximum diameter of pump inclusive of two cable guard and motor.

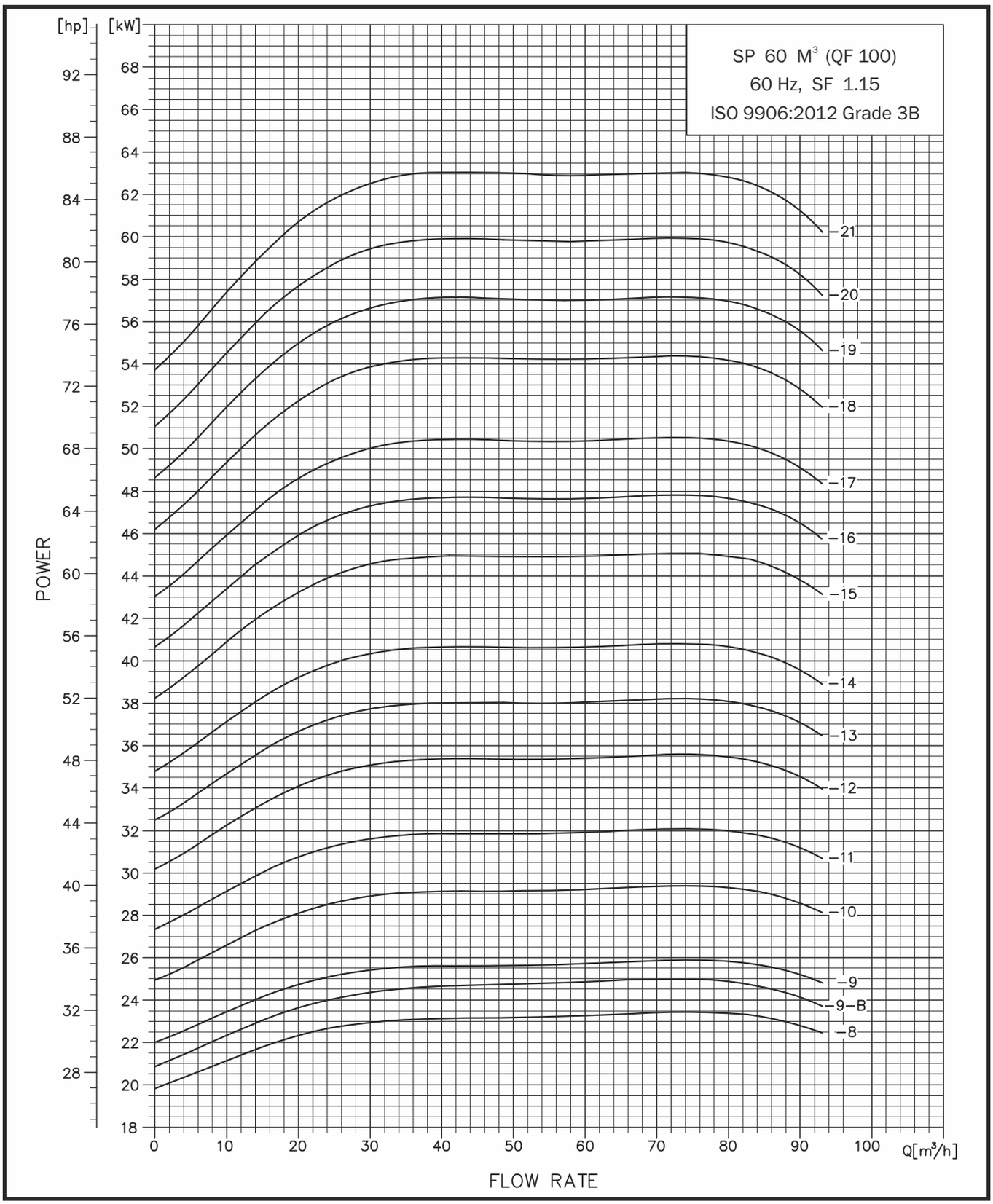
Other type of connection are possible by means of connecting flanges.

* Motor type may change as per requirement .

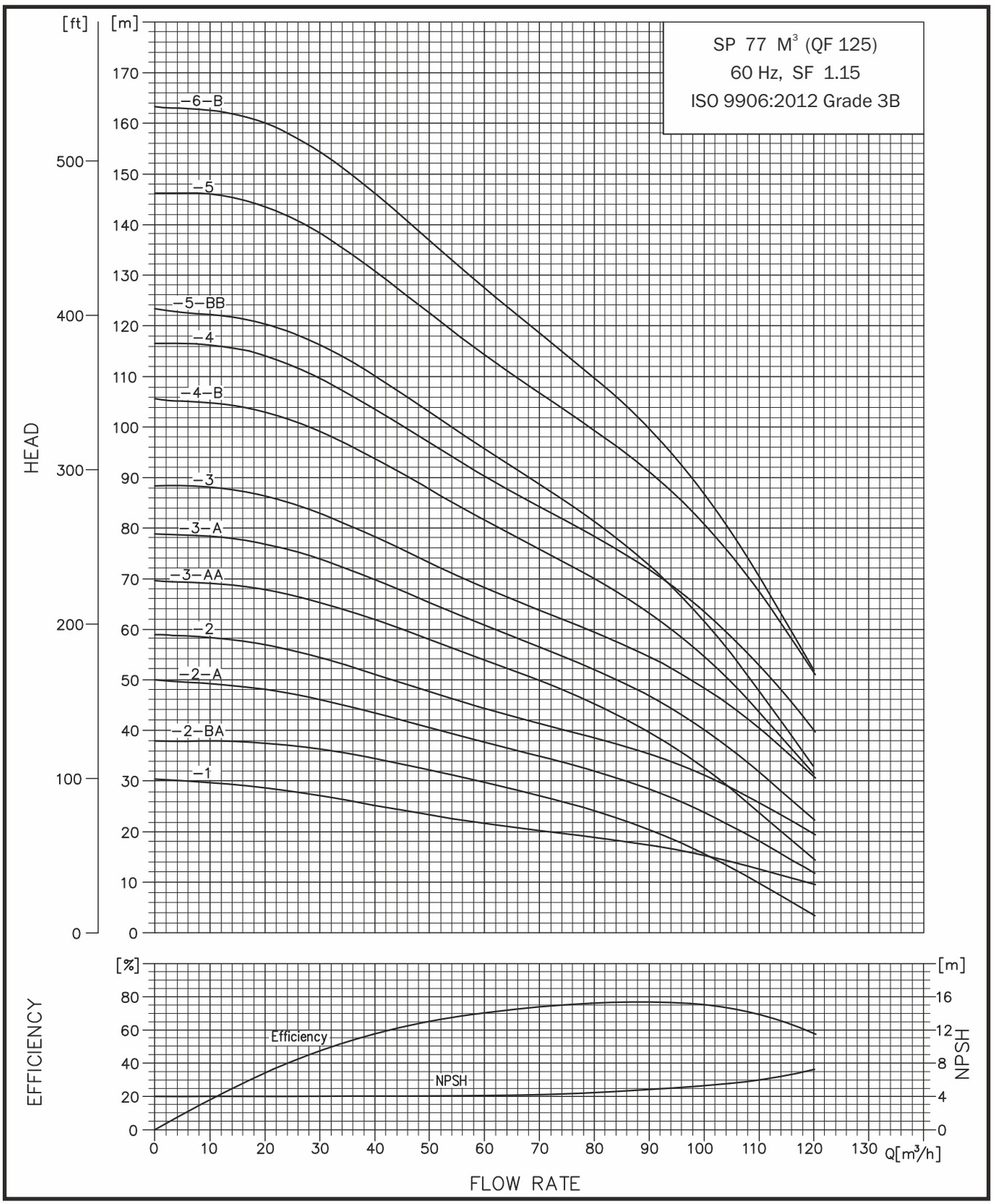
SUBMERSIBLE PUMP QF 100



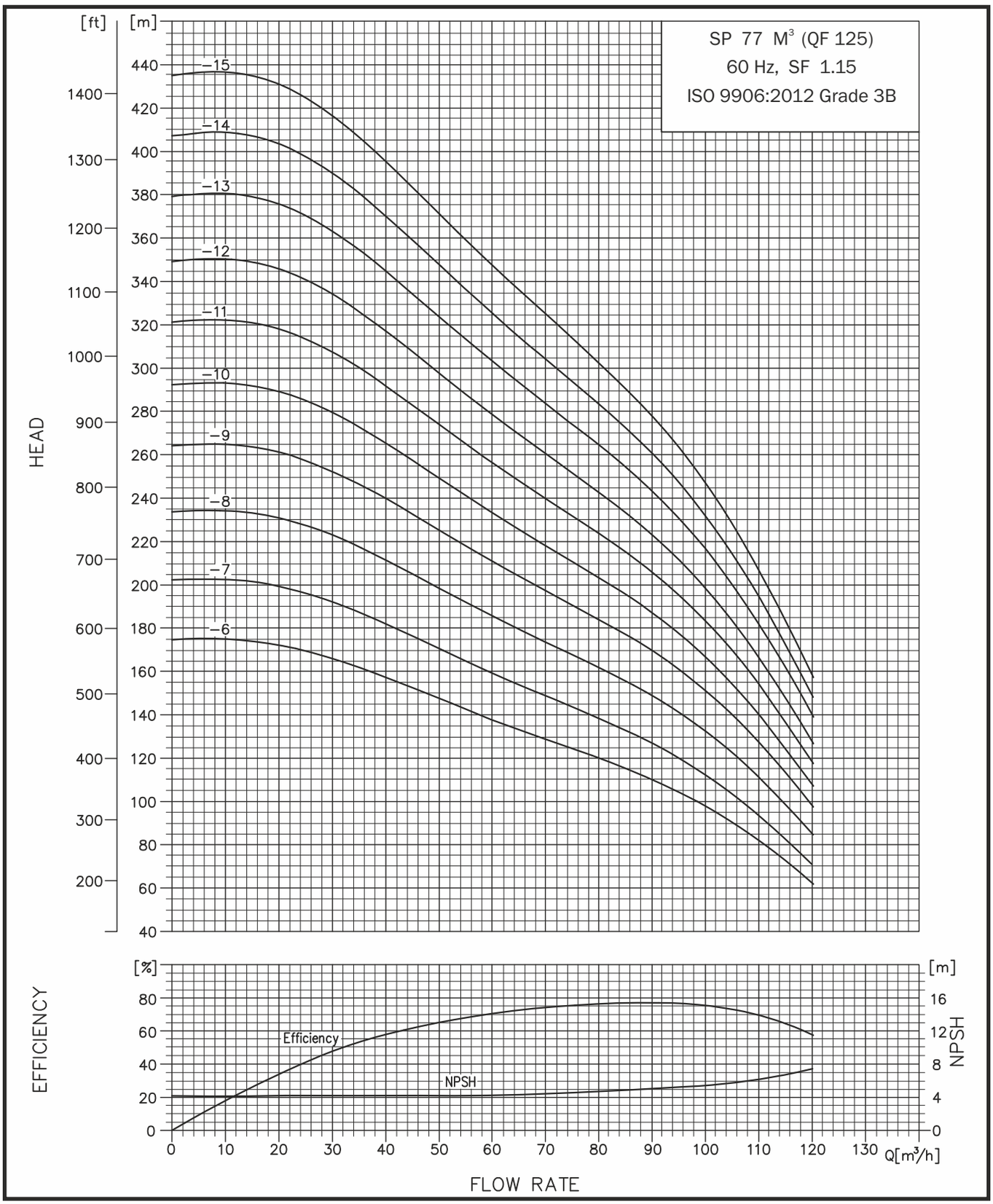
SUBMERSIBLE PUMP QF 100



SUBMERSIBLE PUMP QF 125

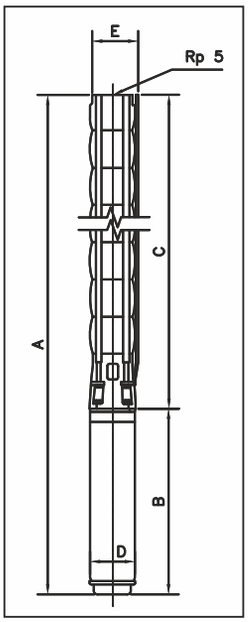


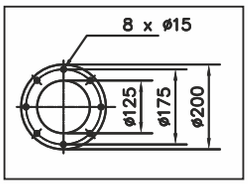
SUBMERSIBLE PUMP QF 125



SUBMERSIBLE PUMP QF 125

DIMENSIONS AND WEIGHTS





Pump Type	Motor		Dimension [mm]						Net Weight [Kg]
	Type	Power [Kw]	Rp 5 Connection				B	D	
			A	C	E*	E**			
QF 125-1	MTSF 150	5.5	1198	499	168	172	699	145	18.68
QF 125-2-BA	MTSF 150	7.5	1346	627	168	172	719	145	22.35
QF 125-2-A	MTSF 150	9.3	1376	627	168	172	749	145	22.35
QF 125-2	MTSF 150	11.0	1406	627	168	172	779	145	22.35
QF 125-3-AA	MTSF 150	13.0	1584	755	168	172	829	145	26.01
QF 125-3-A	MTSF 150	15.0	1629	755	168	172	874	145	26.01
QF 125-3	MTSF 150	18.5	1674	755	168	172	919	145	26.01
QF 125-4-B	MTSF 150	18.5	1819	900	168	172	919	145	30.97
QF 125-4	MTSF 150	22.0	1909	900	168	172	1009	145	30.97
QF 125-5-BB	MTSF 150	22.0	2037	1028	168	172	1009	145	34.64
QF 125-5	MTSF 150	26.0	2142	1028	168	172	1114	145	34.64
QF 125-6-B	MTSF 150	30.0	2370	1156	168	172	1214	145	38.31
QF 125-6	MTSF 150	37.0	2450	1156	168	172	1294	145	38.31
QF 125-7	MTSF 150	37.0	2578	1284	168	172	1294	145	41.97
QF 125-8	MTSFC 200	45.0	2656	1426	194	194	1230	194	46.64
QF 125-9	MTSFC 200	55.0	2894	1554	194	194	1340	194	50.32
QF 125-10	MTSFC 200	55.0	3022	1682	194	194	1340	194	54.66
QF 125-11	MTSFC 200	63.0	3280	1810	194	194	1470	194	58.4
QF 125-12	MTSFC 200	63.0	3408	1938	194	194	1470	194	62.15
QF 125-13	MTSFC 200	75.0	3626	2066	194	194	1560	194	65.89
QF 125-14	MTSFC 200	93.0	3934	2194	194	194	1740	194	69.63
QF 125-15	MTSFC 200	93.0	4062	2322	194	194	1740	194	73.37

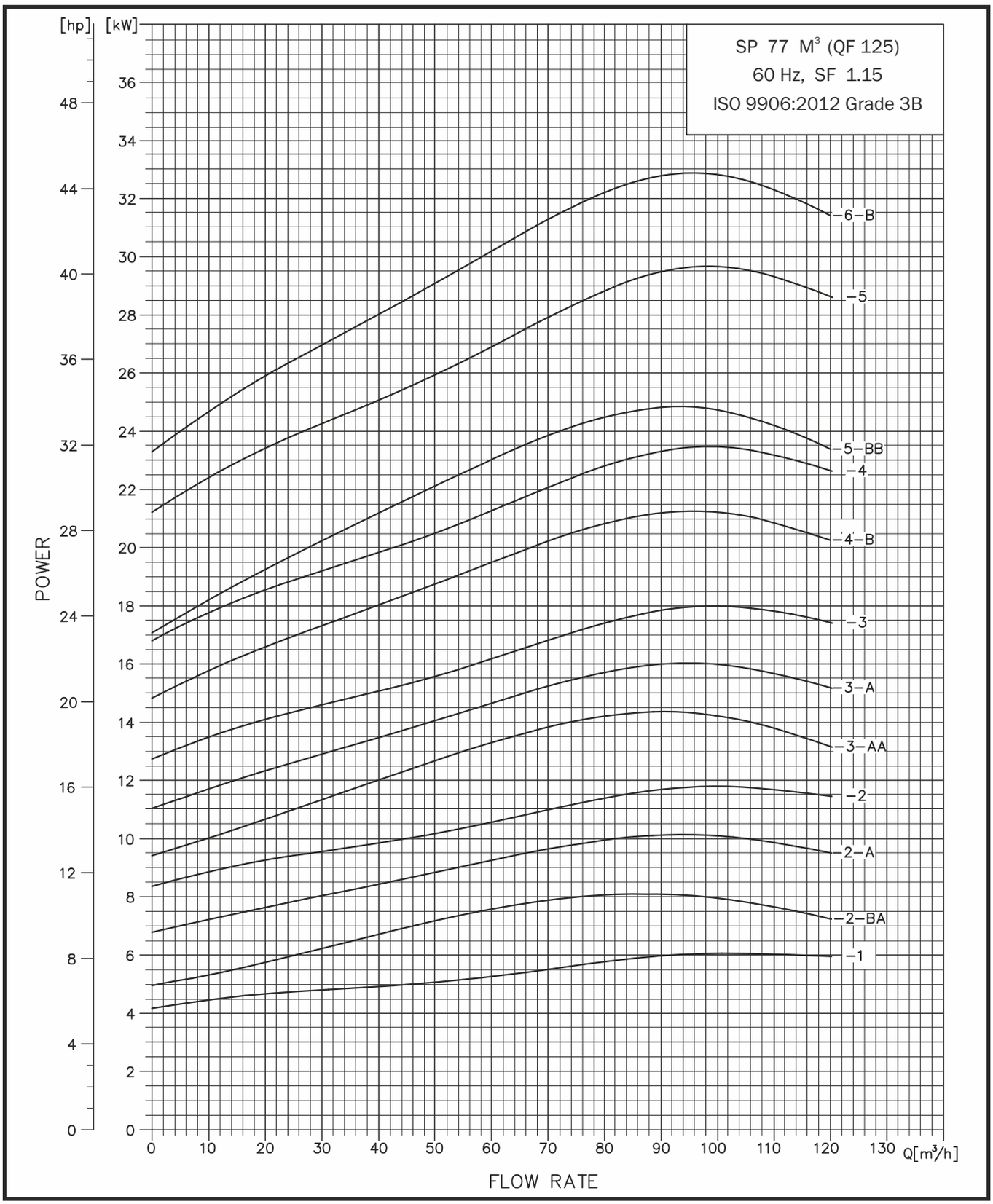
E* = Maximum diameter of pump inclusive of one cable guard and motor.

E** = Maximum diameter of pump inclusive of two cable guard and motor.

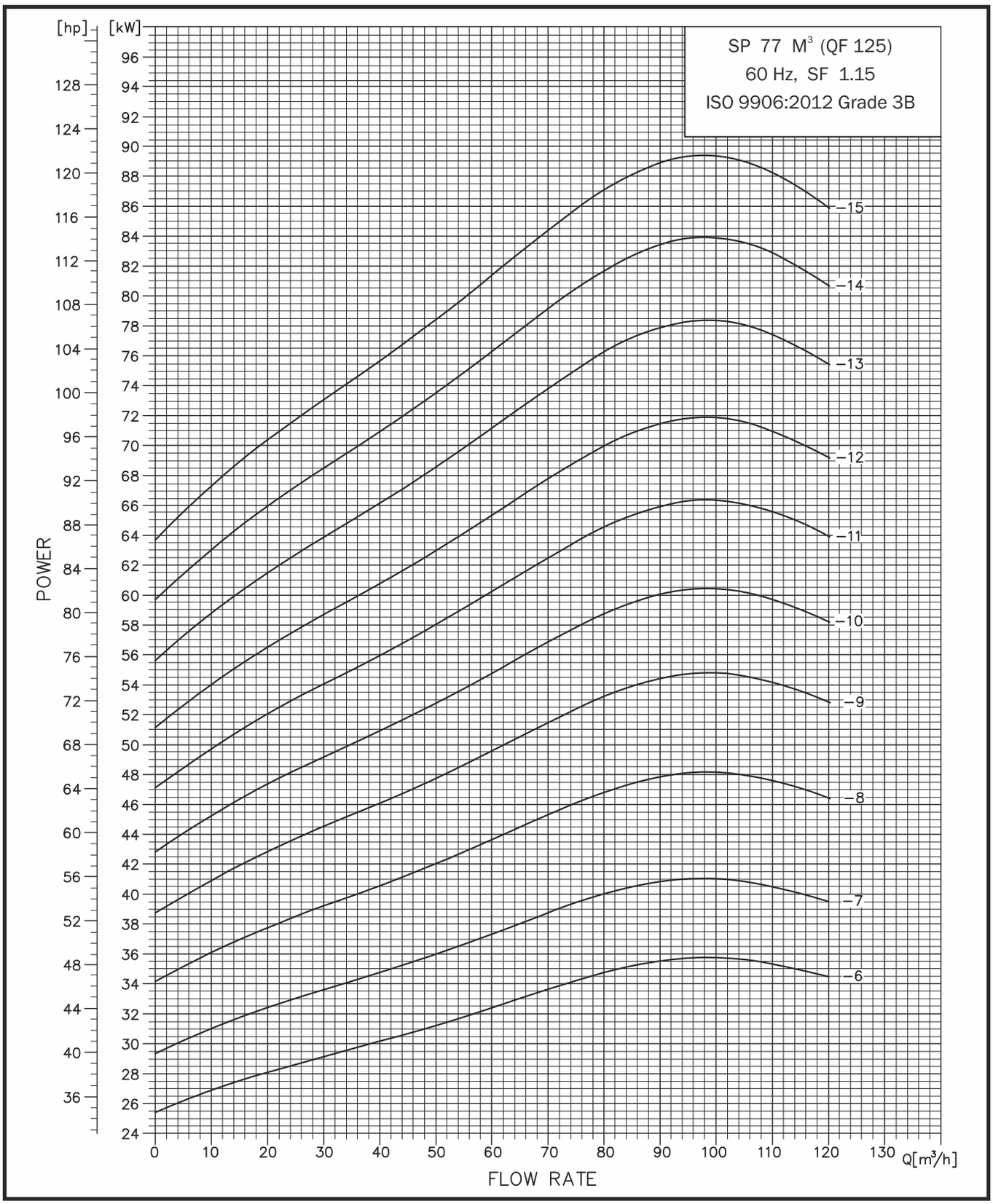
Other type of connection are possible by means of connecting flanges.

* Motor type may change as per requirement .

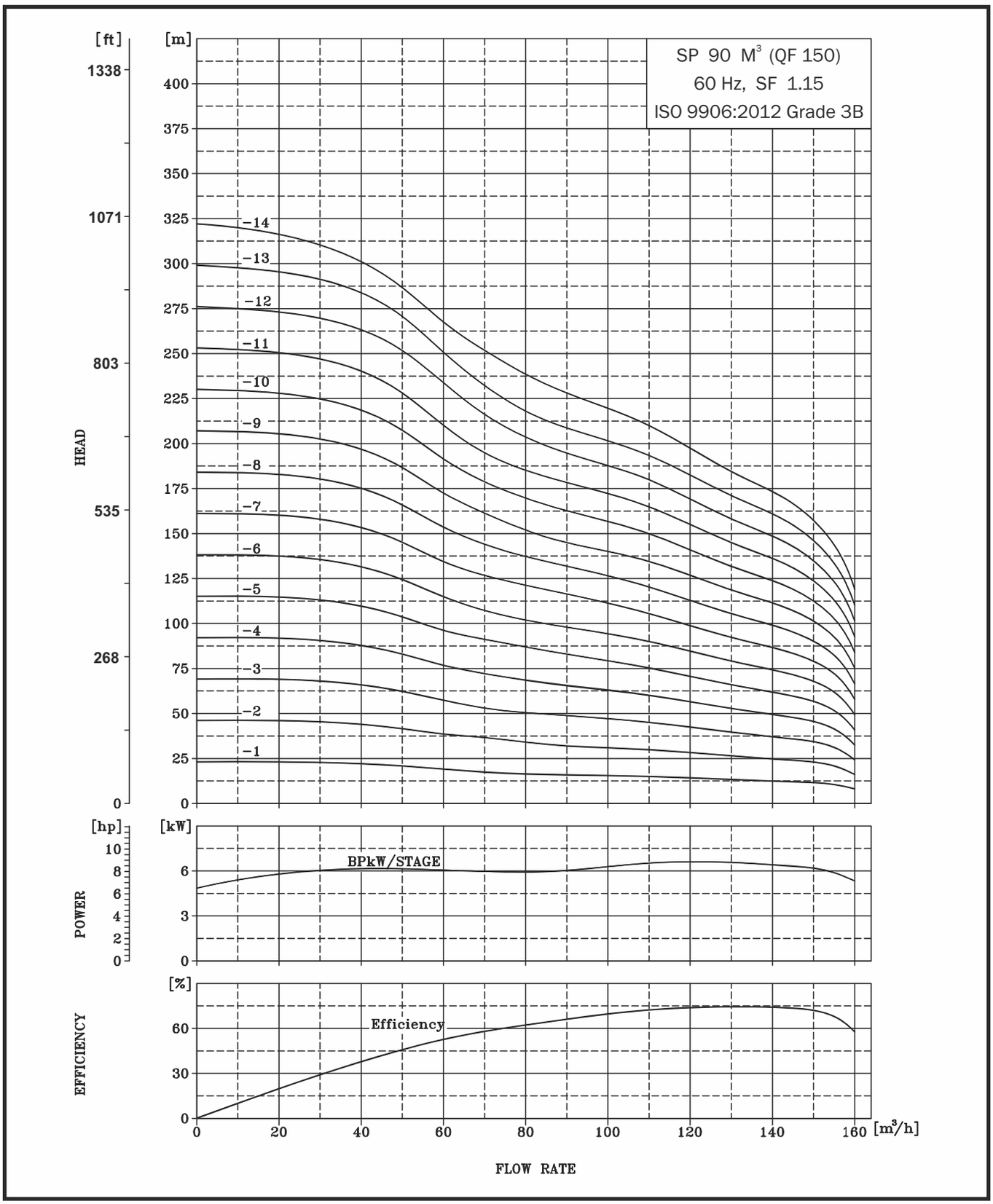
SUBMERSIBLE PUMP QF 125



SUBMERSIBLE PUMP QF 125

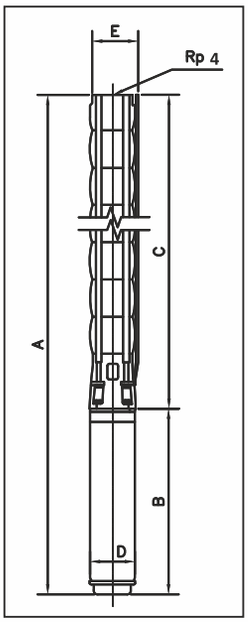


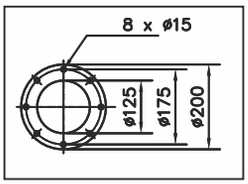
SUBMERSIBLE PUMP QF 150



SUBMERSIBLE PUMP QF 150

DIMENSIONS AND WEIGHTS





Pump Type	Motor		Dimension [mm]						Net Weight Kg
	Type	Power [Kw]	Rp 4 Connection				B	D	
			A	C	E*	E**			
QF150-1	MTSF 150	7.5	1200	481	150	155	719	145	11
QF150-2	MTSF 150	15.0	1496	622	150	155	874	145	14
QF150-3	MTSF 150	22.0	1773	764	150	155	1009	145	17
QF150-4	MTSF 150	30.0	2119	905	150	155	1214	145	21
QF150-5	MTSF 150	30.0	2261	1047	150	155	1214	145	24
QF150-6	MTSF 150	37.0	2482	1188	150	155	1294	145	27
QF150-7	MTSFC 200	45.0	2589	1359	195	195	1230	194	32
QF150-8	MTSFC 200	55.0	2840	1500	195	195	1340	194	37
QF150-9	MTSFC 200	55.0	2982	1642	195	195	1340	194	42
QF150-10	MTSFC 200	75.0	3343	1783	195	195	1560	194	47
QF150-11	MTSFC 200	75.0	3485	1925	195	195	1560	194	52
QF150-12	MTSFC 200	75.0	3626	2066	195	195	1560	194	57
QF150-13	MTSFC 200	93.0	3948	2208	195	195	1740	194	62
QF150-14	MTSFC 200	93.0	4089	2349	195	195	1740	194	67

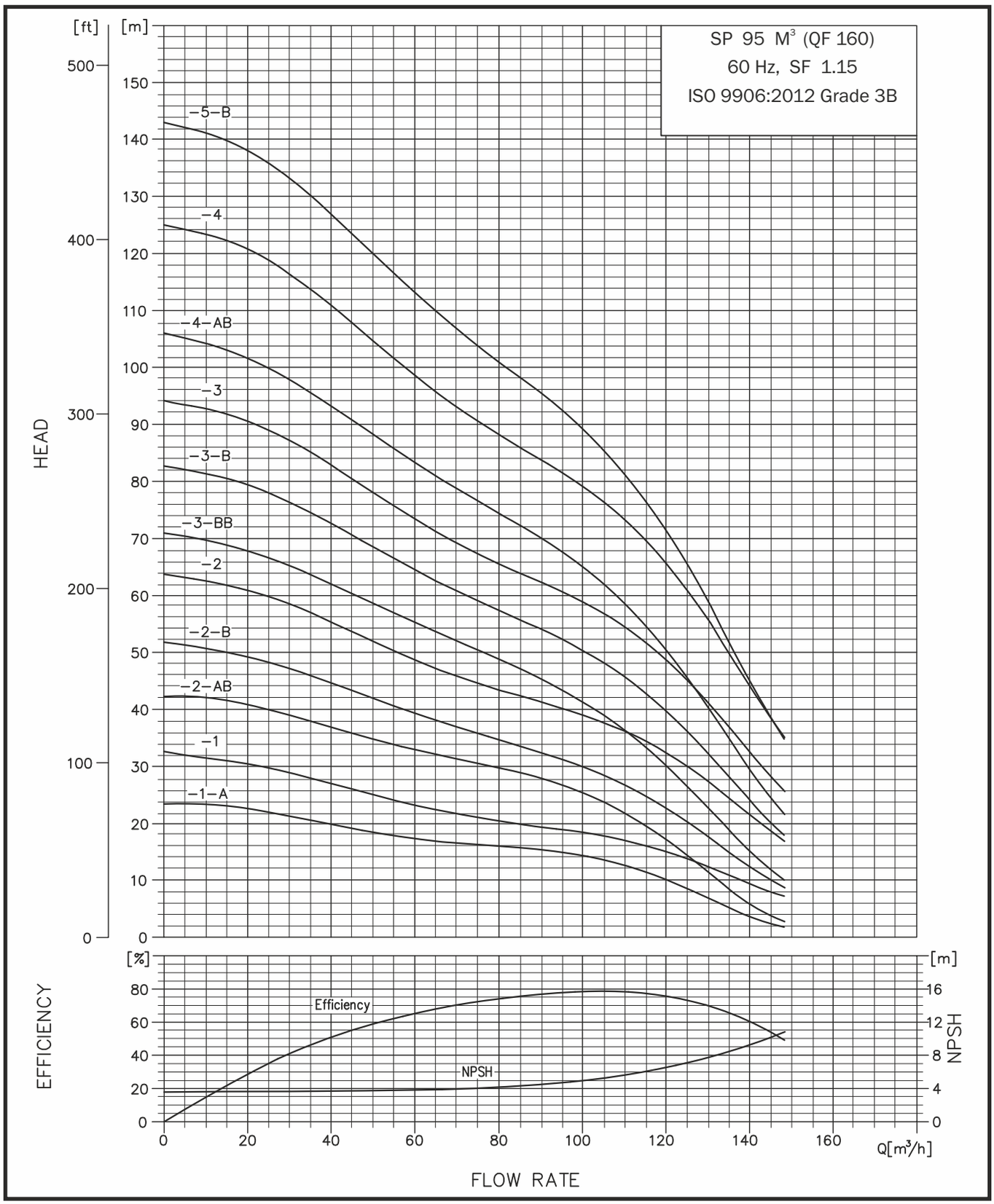
E* = Maximum diameter of pump inclusive of one cable guard and motor.

E** = Maximum diameter of pump inclusive of two cable guard and motor.

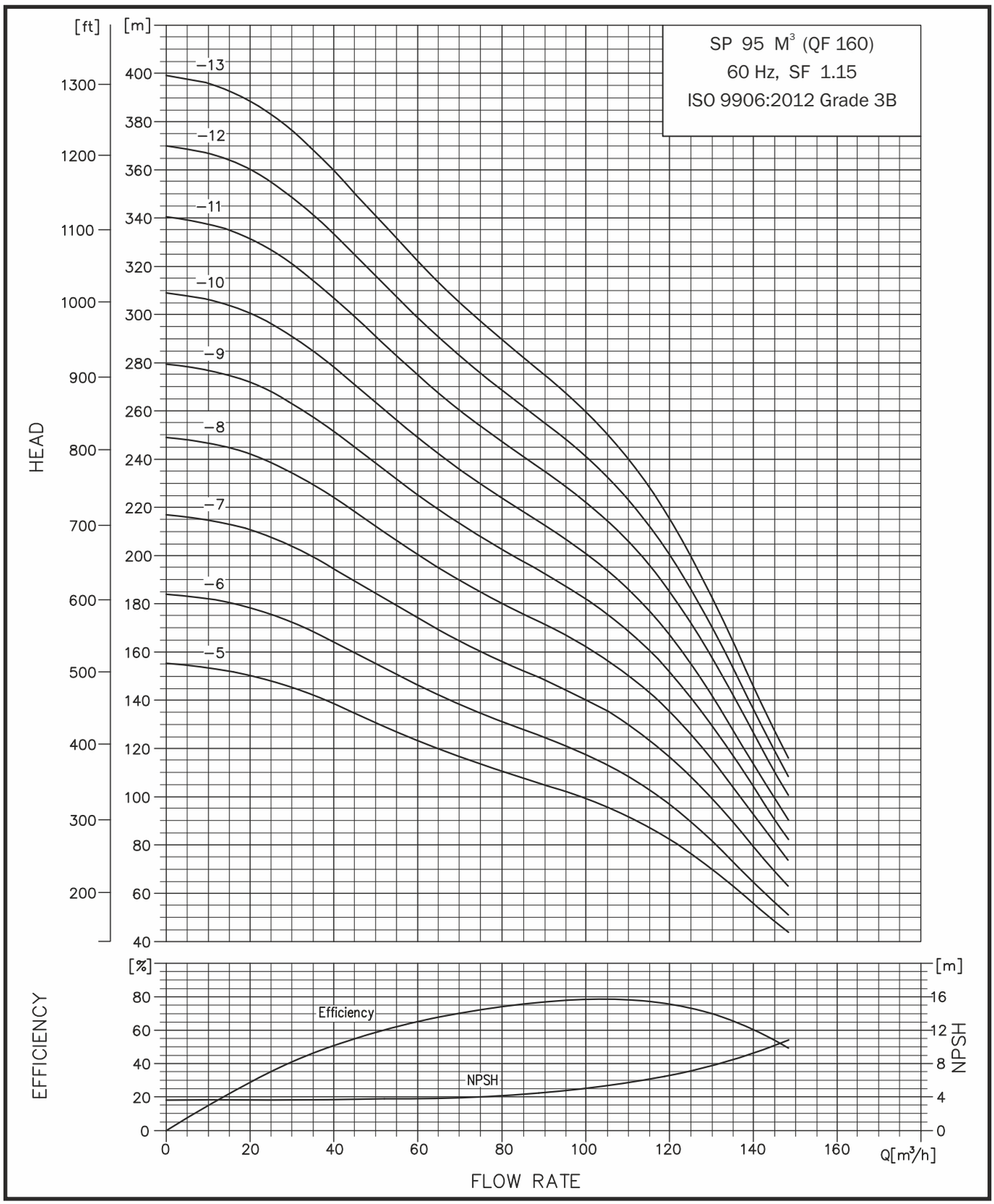
Other type of connection are possible by means of connecting flanges.

* Motor type may change as per requirement .

SUBMERSIBLE PUMP QF 160

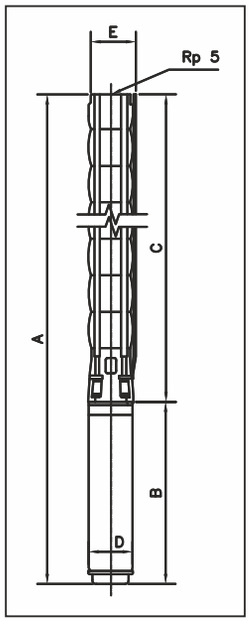


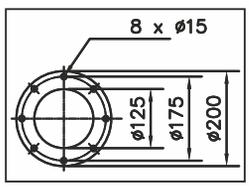
SUBMERSIBLE PUMP QF 160



SUBMERSIBLE PUMP QF 160

DIMENSIONS AND WEIGHTS





Pump Type	Motor		Dimension [mm]						Net Weight [Kg]
	Type	Power [Kw]	Rp 5 Connection				B	D	
			A	C	E*	E**			
QF 160-1-A	MTSF 150	5.5	1198	499	168	172	699	145	18.63
QF 160-1	MTSF 150	7.5	1218	499	168	172	719	145	18.63
QF 160-2-AB	MTSF 150	9.3	1376	627	168	172	749	145	22.29
QF 160-2-B	MTSF 150	11.0	1406	627	168	172	779	145	22.29
QF 160-2	MTSF 150	13.0	1456	627	168	172	829	145	22.29
QF 160-3-BB	MTSF 150	15.0	1629	755	168	172	874	145	25.95
QF 160-3-B	MTSF 150	18.5	1674	755	168	172	919	145	25.95
QF 160-3	MTSF 150	22.0	1764	755	168	172	1009	145	25.95
QF 160-4-AB	MTSF 150	22.0	1909	900	168	172	1009	145	30.92
QF 160-4	MTSF 150	26.0	2014	900	168	172	1114	145	30.92
QF 160-5-B	MTSF 150	30.0	2242	1028	168	172	1214	145	34.58
QF 160-5	MTSF 150	37.0	2322	1028	168	172	1294	145	34.58
QF 160-6	MTSF 150	37.0	2450	1156	168	172	1294	145	38.25
QF 160-7	MTSFC 200	45.0	2528	1298	194	194	1230	194	42.89
QF 160-8	MTSFC 200	55.0	2766	1426	194	194	1340	194	46.57
QF 160-9	MTSFC 200	63.0	3024	1554	194	194	1470	194	50.25
QF 160-10	MTSFC 200	63.0	3152	1682	194	194	1470	194	54.58
QF 160-11	MTSFC 200	75.0	3370	1810	194	194	1560	194	58.32
QF 160-12	MTSFC 200	93.0	3678	1938	194	194	1740	194	62.06
QF 160-13	MTSFC 200	93.0	3806	2066	194	194	1740	194	65.8

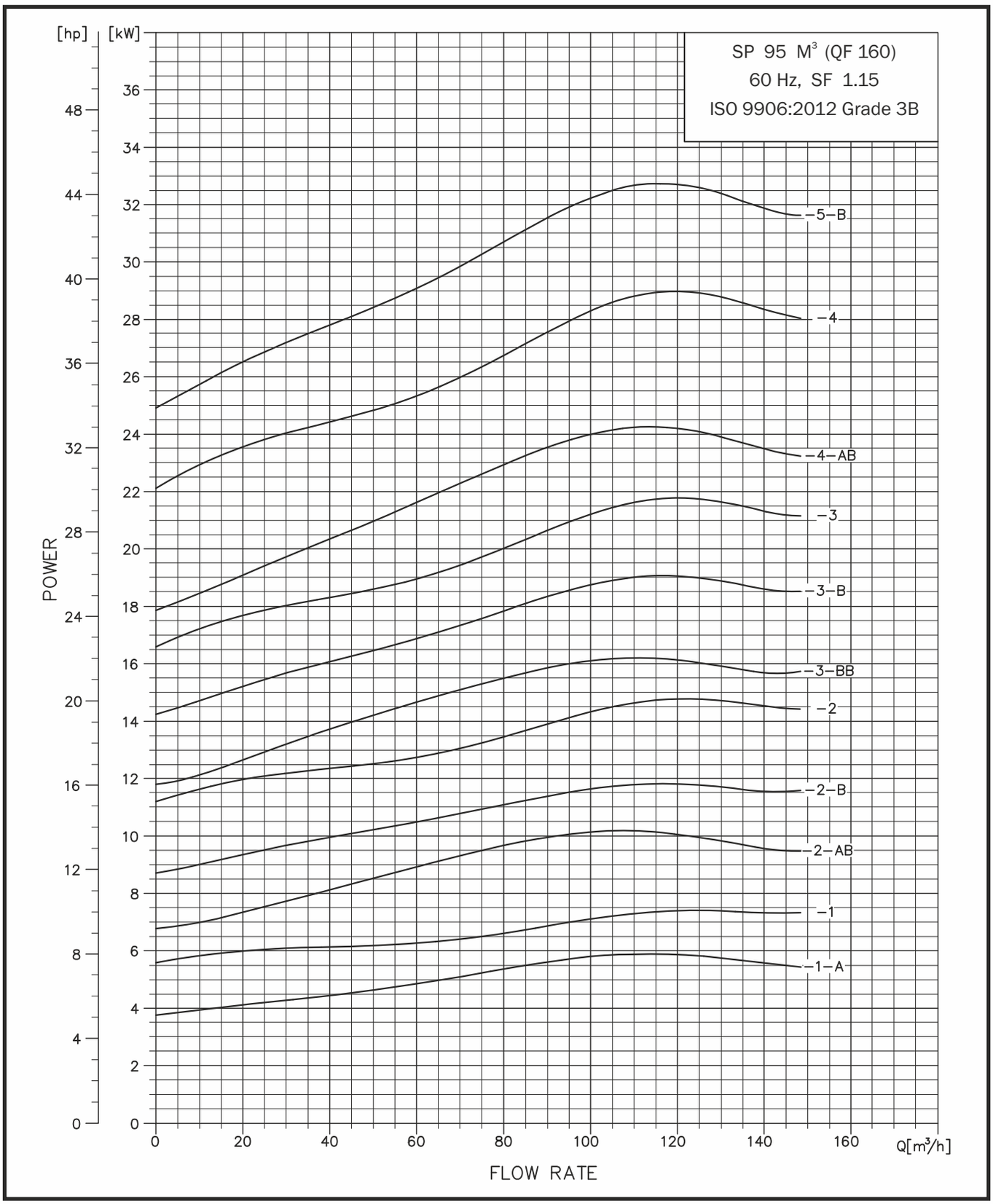
E* = Maximum diameter of pump inclusive of one cable guard and motor.

E** = Maximum diameter of pump inclusive of two cable guard and motor.

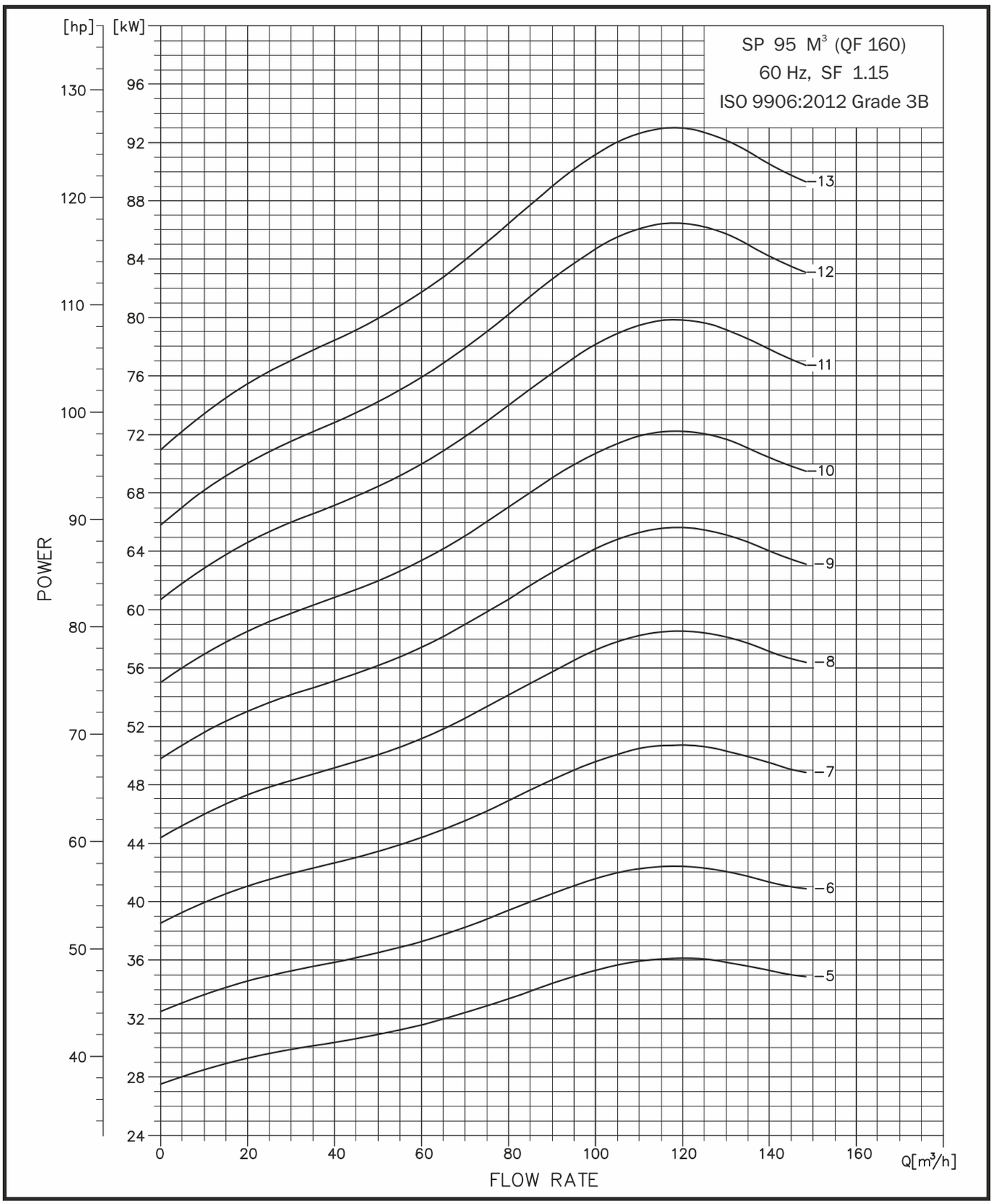
Other type of connection are possible by means of connecting flanges.

* Motor type may change as per requirement .

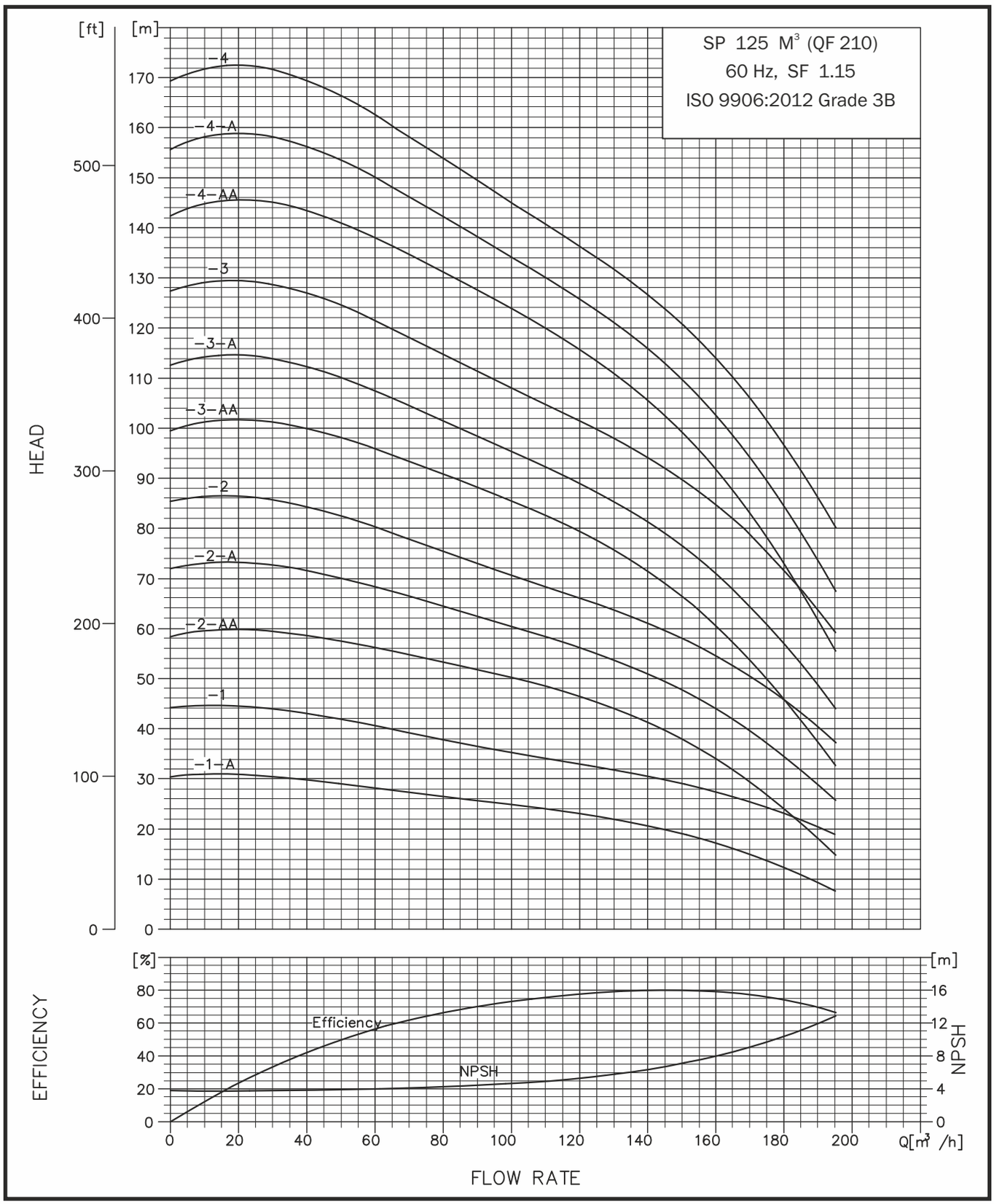
SUBMERSIBLE PUMP QF 160



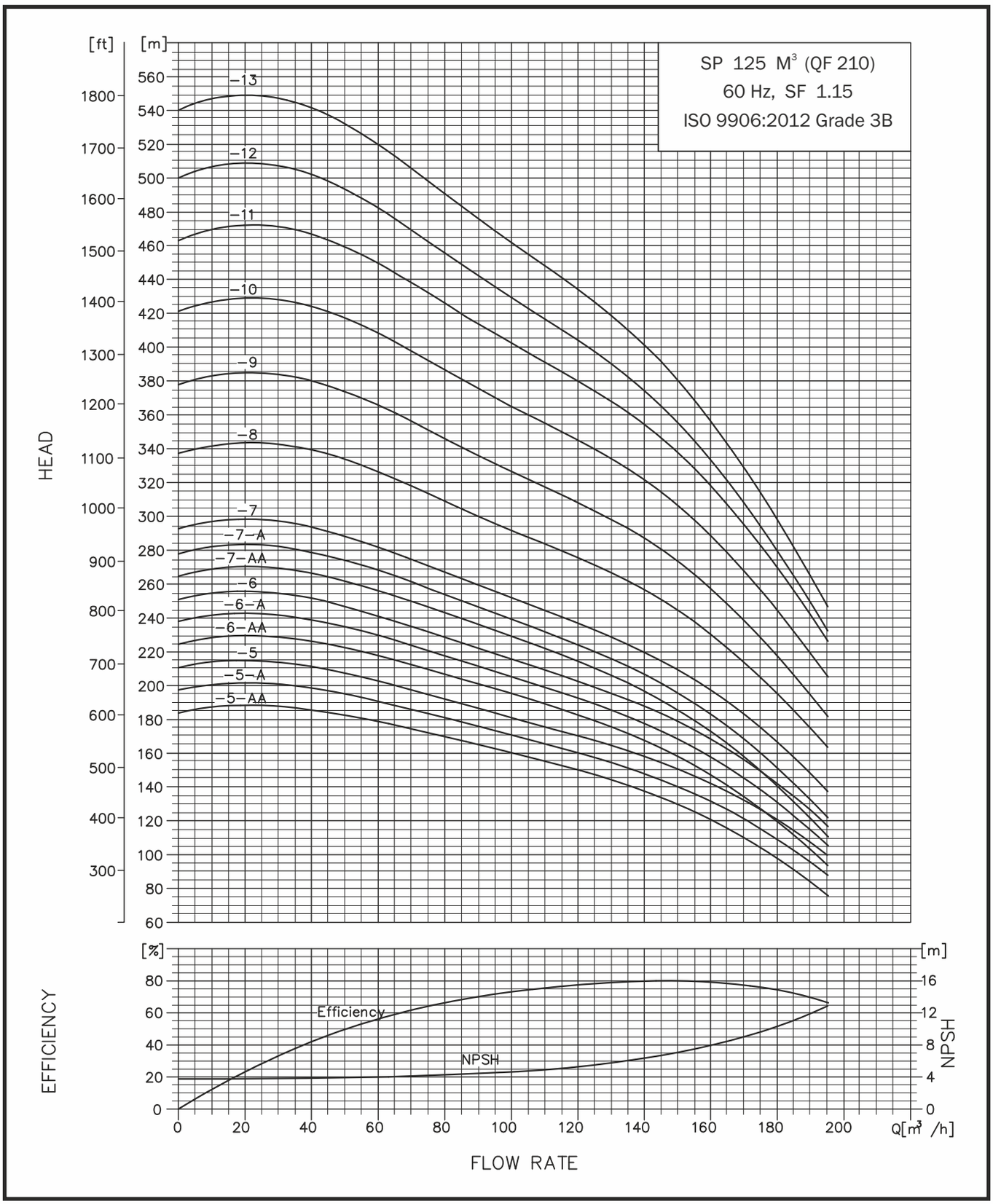
SUBMERSIBLE PUMP QF 160



SUBMERSIBLE PUMP QF 210

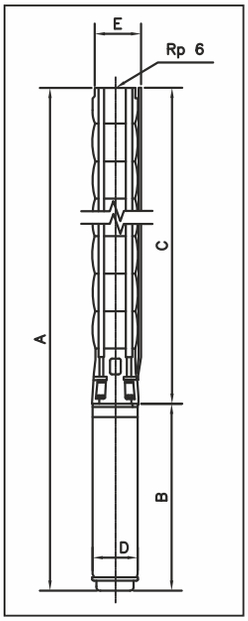


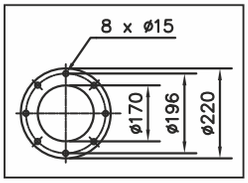
SUBMERSIBLE PUMP QF 210



SUBMERSIBLE PUMP QF 210

DIMENSIONS AND WEIGHTS





Pump Type	Motor		Dimension [mm]						Net Weight [Kg]
	Type	Power [Kw]	Rp 6 Connection				B	D	
			A	C	E*	E**			
QF 210-1-A	MTSF 150	11.0	1321	542	203	206	779	145	27.85
QF 210-1	MTSF 150	18.5	1461	542	203	206	919	145	27.85
QF 210-2-AA	MTSF 150	22.0	1707	698	203	206	1009	145	34.12
QF 210-2-A	MTSF 150	26.0	1812	698	203	206	1114	145	34.12
QF 210-2	MTSF 150	30.0	1912	698	203	206	1214	145	34.12
QF 210-3-AA	MTSF 150	37.0	2148	854	203	206	1294	145	40.39
QF 210-3-A	MTSF 150	37.0	2148	854	203	206	1294	145	40.39
QF 210-3	MTSFC 200	45.0	2084	854	205	208	1230	194	86.52
QF 210-4-AA	MTSFC 200	55.0	2350	1010	205	208	1340	194	92.88
QF 210-4-A	MTSFC 200	55.0	2350	1010	205	208	1340	194	92.88
QF 210-4	MTSFC 200	63.0	2480	1010	205	208	1470	194	92.88
QF 210-5-AA	MTSFC 200	75.0	2726	1166	205	208	1560	194	99.25
QF 210-5-A	MTSFC 200	75.0	2726	1166	205	208	1560	194	99.25
QF 210-5	MTSFC 200	75.0	2726	1166	205	208	1560	194	99.25
QF 210-6-AA	MTSFC 200	75.0	2882	1322	205	208	1560	194	105.61
QF 210-6-A	MTSFC 200	93.0	3062	1322	205	208	1740	194	105.61
QF 210-6	MTSFC 200	93.0	3062	1322	205	208	1740	194	105.61
QF 210-7-AA	MTSFC 200	93.0	3218	1478	205	208	1740	194	111.97
QF 210-7-A	MTSFC 200	93.0	3218	1478	205	208	1740	194	111.97
QF 210-7	MOTOR 10”	110.0	3007	1478	235	235	1529	235	111.97
QF 210-8	MOTOR 10”	132.0	3293	1634	235	235	1659	235	118.34
QF 210-9	MOTOR 10”	132.0	3449	1790	235	235	1659	235	124.7
QF 210-10	MOTOR 10”	150.0	3715	1946	235	235	1769	235	131.07
QF 210-11	MOTOR 10”	170.0	4021	2102	235	235	1919	235	131.07
QF 210-12	MOTOR 10”	185.0	4177	2258	235	235	1919	235	131.07
QF 210-13	MOTOR 10”	185.0	4333	2414	235	235	1919	235	131.07

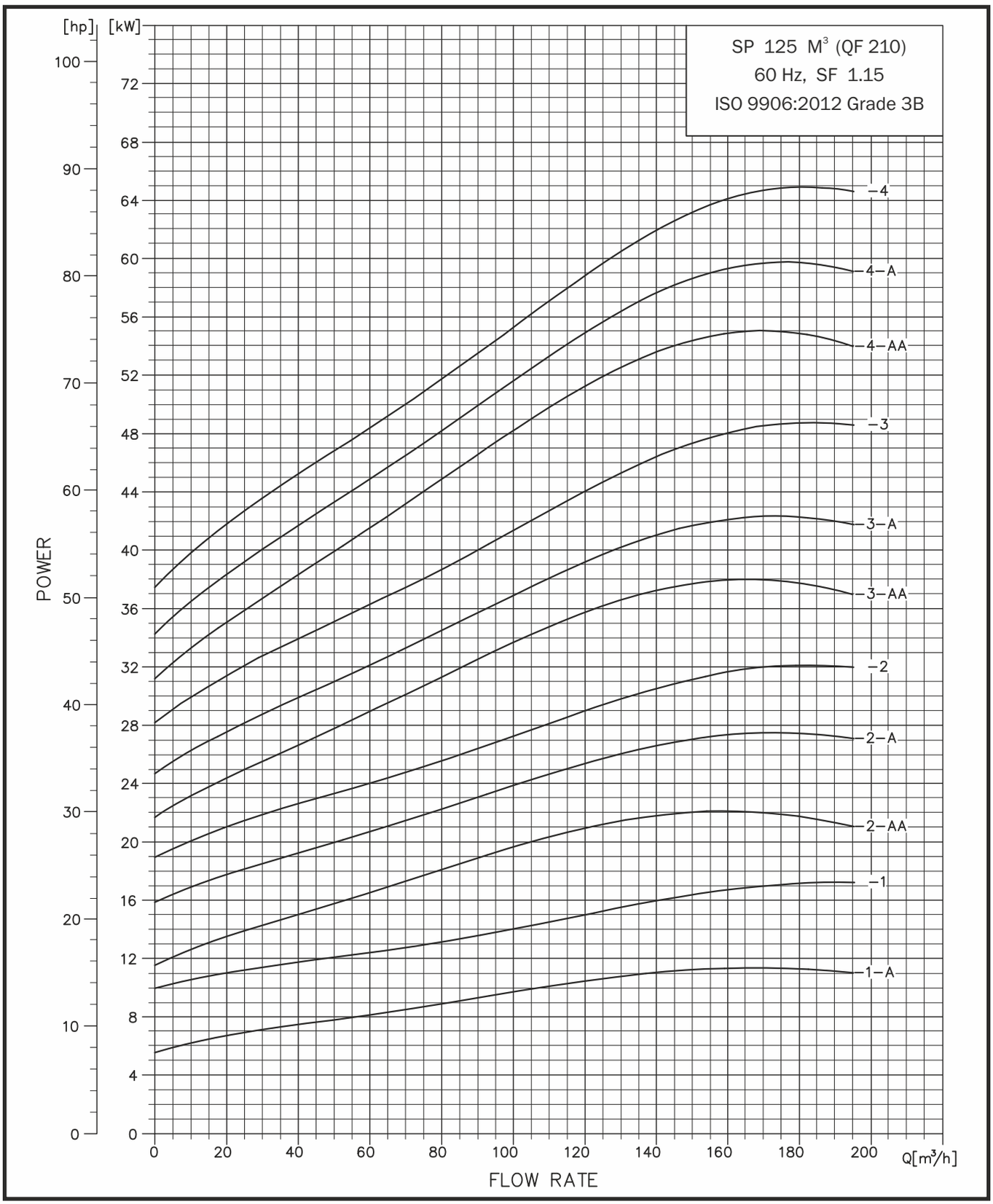
E* = Maximum diameter of pump inclusive of one cable guard and motor.

E** = Maximum diameter of pump inclusive of two cable guard and motor.

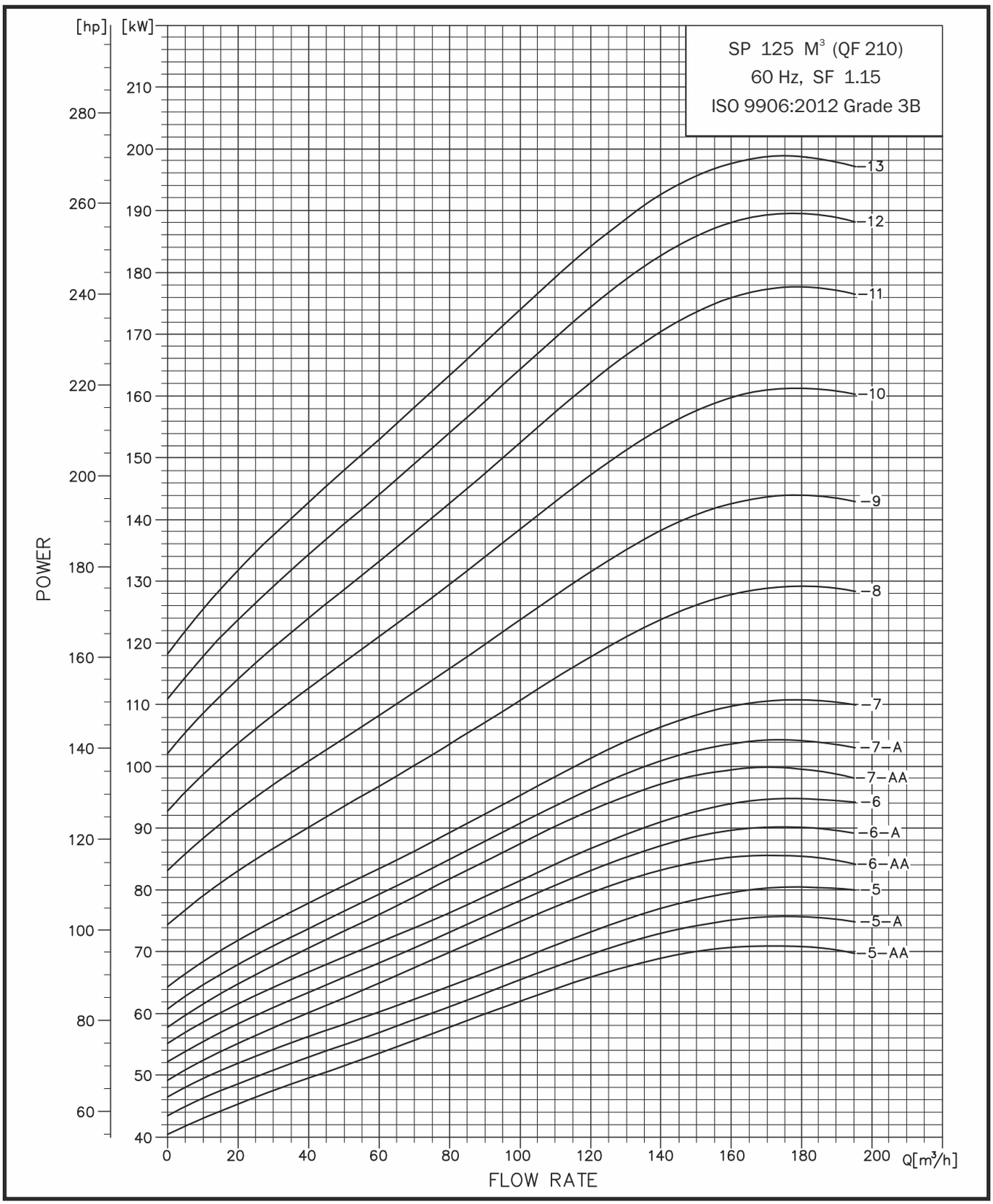
Other type of connection are possible by means of connecting flanges.

* Motor type may change as per requirement .

SUBMERSIBLE PUMP QF 210

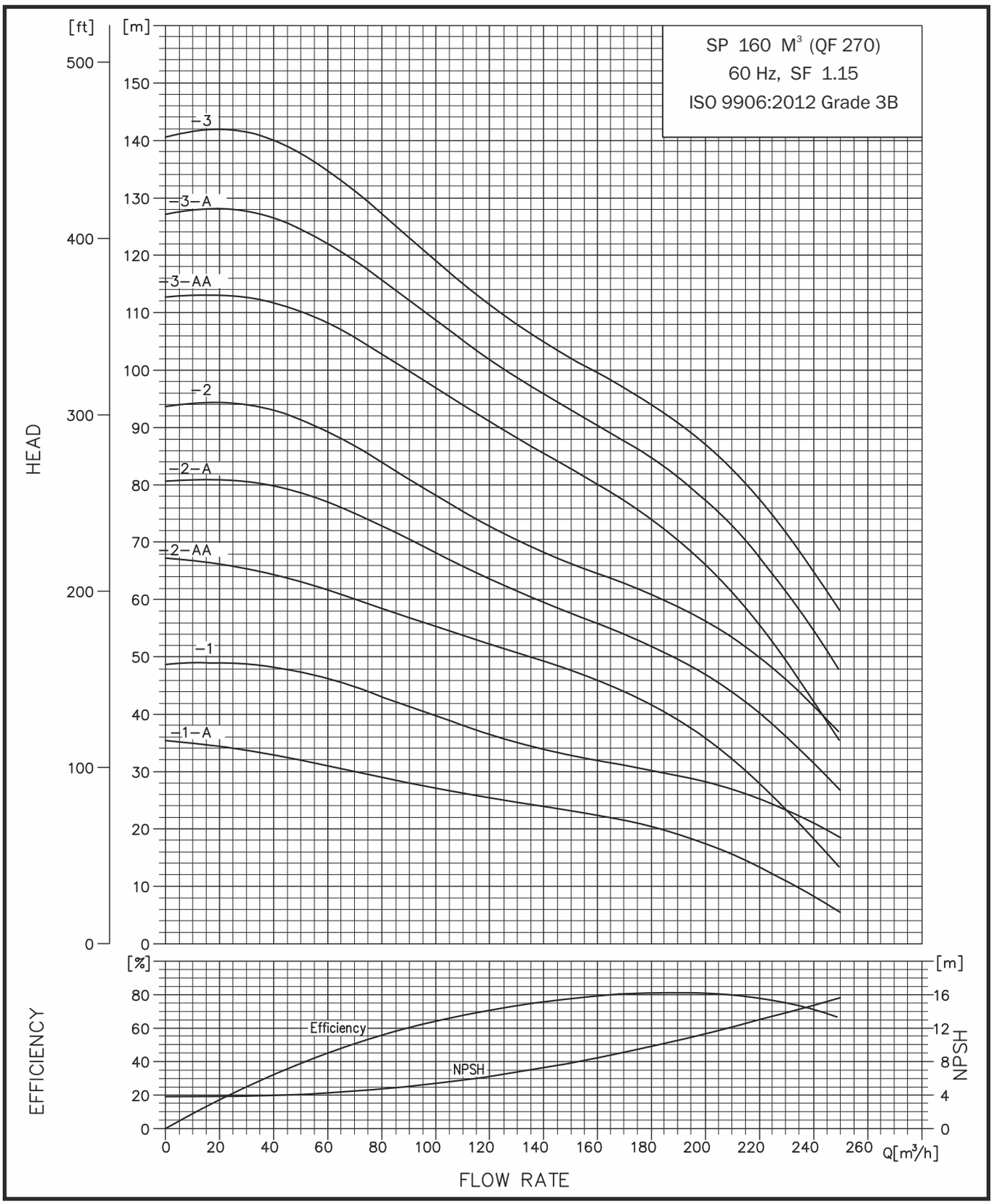


SUBMERSIBLE PUMP QF 210

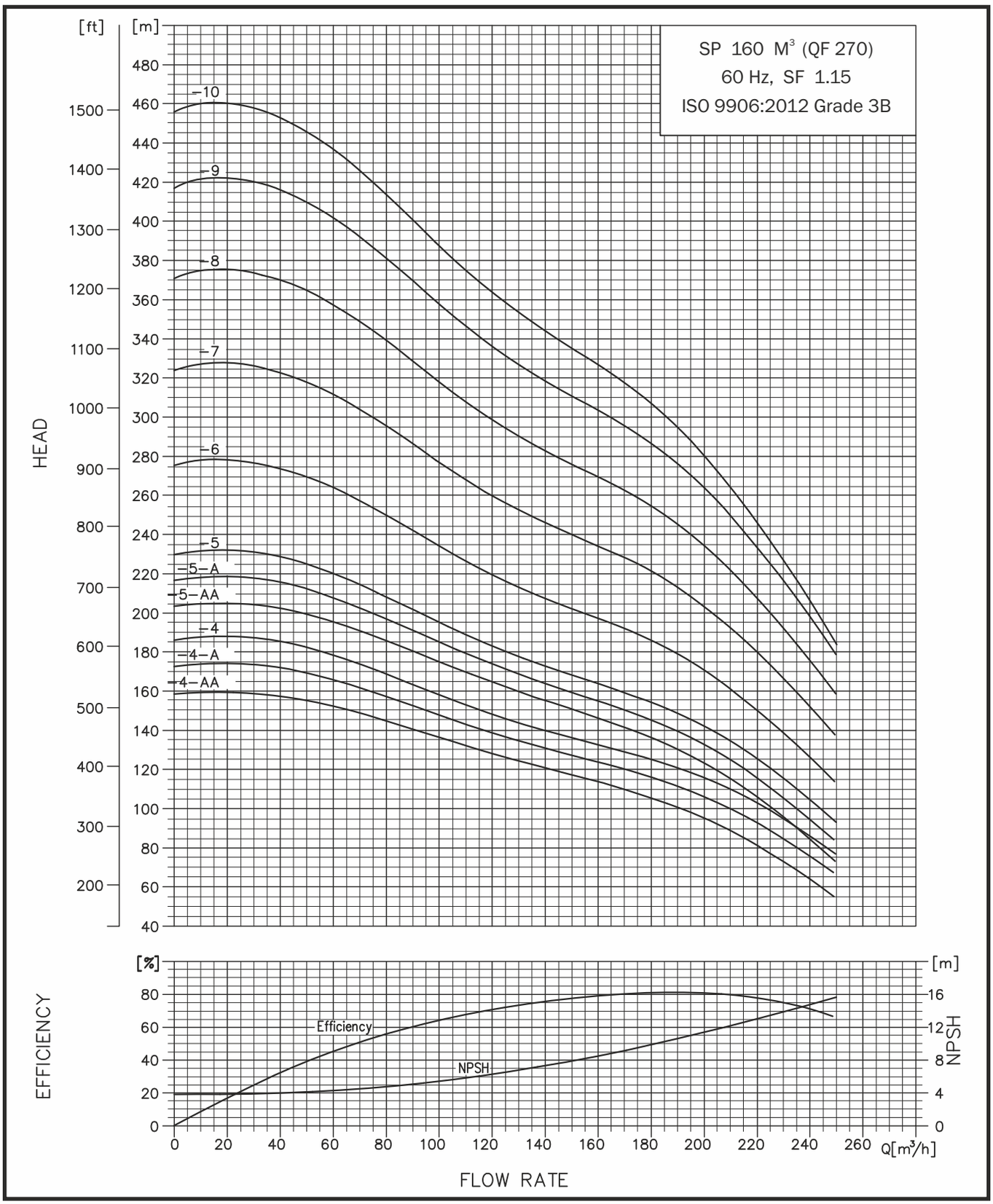


PERFORMANCE CURVE

SUBMERSIBLE PUMP QF 270

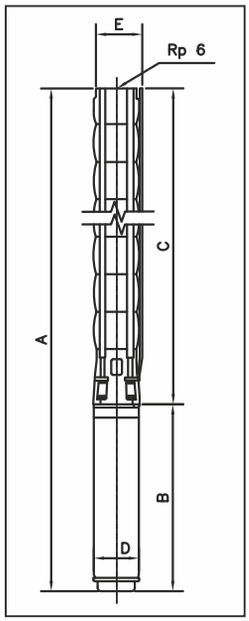


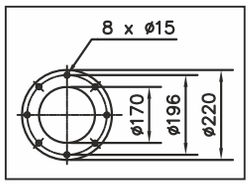
SUBMERSIBLE PUMP QF 270



SUBMERSIBLE PUMP QF 270

DIMENSIONS AND WEIGHTS





Pump Type	Motor		Dimension [mm]						Net Weight [Kg]
	Type	Power [Kw]	Rp 6 Connection				B	D	
			A	C	E*	E**			
QF 270-1-A	MTSF 150	15.0	1416	542	203	206	874	145	27.85
QF 270-1	MTSF 150	22.0	1551	542	203	206	1009	145	27.85
QF 270-2-AA	MTSF 150	26.0	1812	698	203	206	1114	145	34.12
QF 270-2-A	MTSF 150	37.0	1992	698	203	206	1294	145	34.12
QF 270-2	MTSF 150	37.0	1992	698	203	206	1294	145	34.12
QF 270-3-AA	MTSFC 200	45.0	2084	854	205	208	1230	194	86.52
QF 270-3-A	MTSFC 200	55.0	2194	854	205	208	1340	194	86.52
QF 270-3	MTSFC 200	55.0	2194	854	205	208	1340	194	86.52
QF 270-4-AA	MTSFC 200	63.0	2480	1010	205	208	1470	194	92.88
QF 270-4-A	MTSFC 200	75.0	2570	1010	205	208	1560	194	92.88
QF 270-4	MTSFC 200	75.0	2570	1010	205	208	1560	194	92.88
QF 270-5-AA	MTSFC 200	93.0	2906	1166	205	208	1740	194	99.25
QF 270-5-A	MTSFC 200	93.0	2906	1166	205	208	1740	194	99.25
QF 270-5	MTSFC 200	93.0	2906	1166	205	208	1740	194	99.25
QF 270-6	MOTOR 10”	110.0	2851	1322	235	235	1529	235	105.61
QF 270-7	MOTOR 10”	132.0	3137	1478	235	235	1659	235	111.97
QF 270-8	MOTOR 10”	150.0	3403	1634	235	235	1769	235	118.34
QF 270-9	MOTOR 10”	170.0	3709	1790	235	235	1919	235	124.7
QF 270-10	MOTOR 10”	185.0	3865	1946	235	235	1919	235	131.07

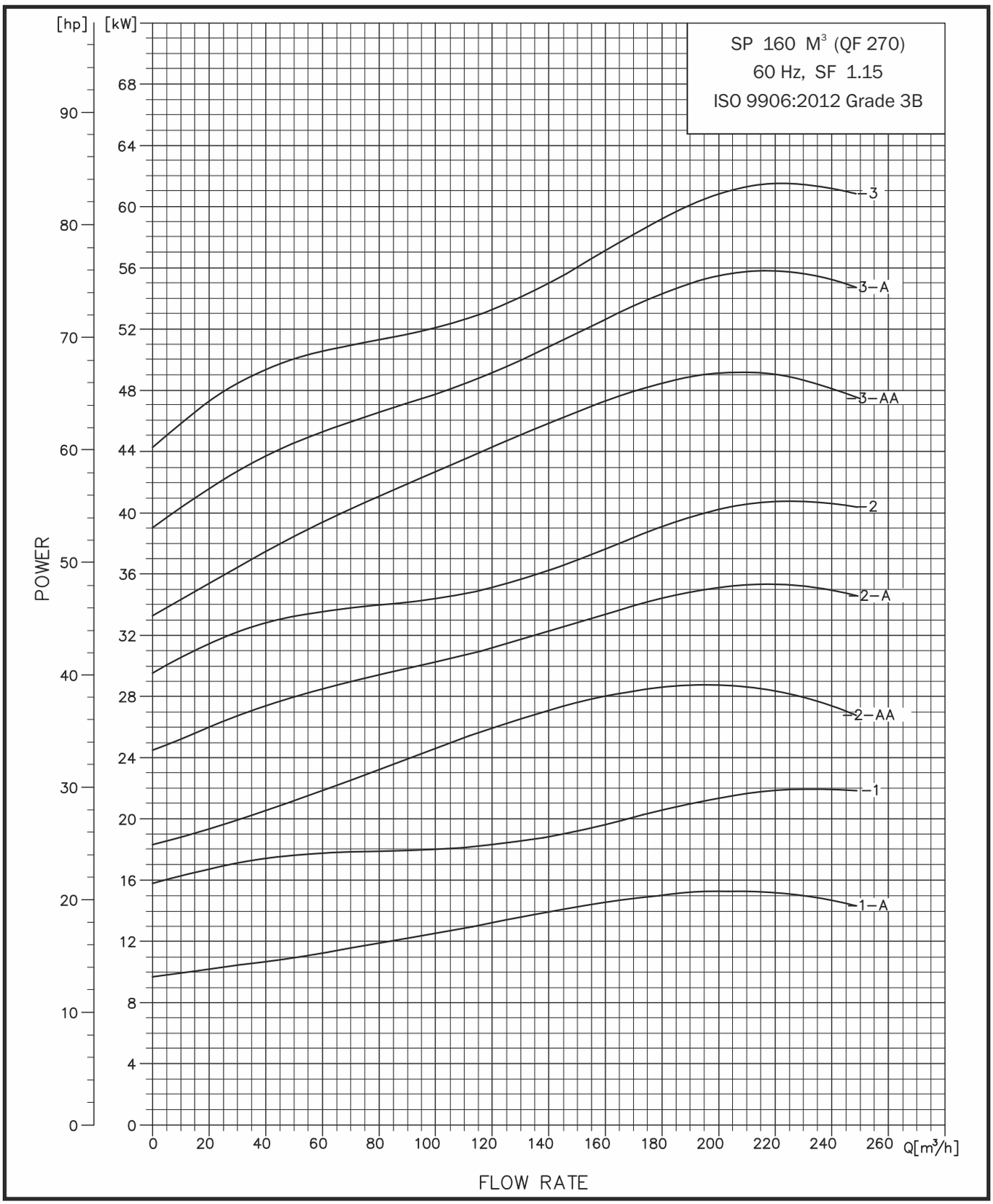
E* = Maximum diameter of pump inclusive of one cable guard and motor.

E** = Maximum diameter of pump inclusive of two cable guard and motor.

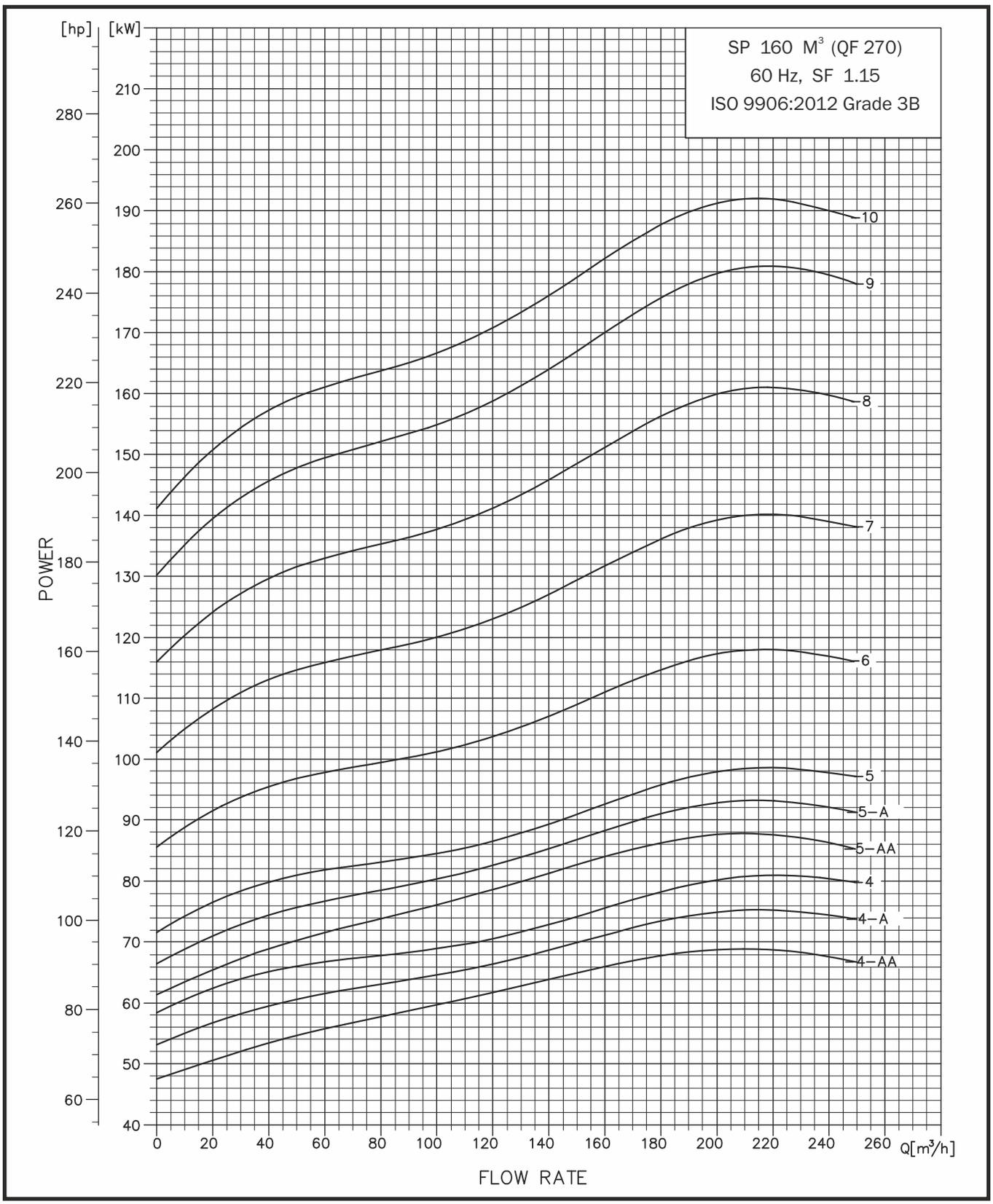
Other type of connection are possible by means of connecting flanges.

* Motor type may change as per requirement .

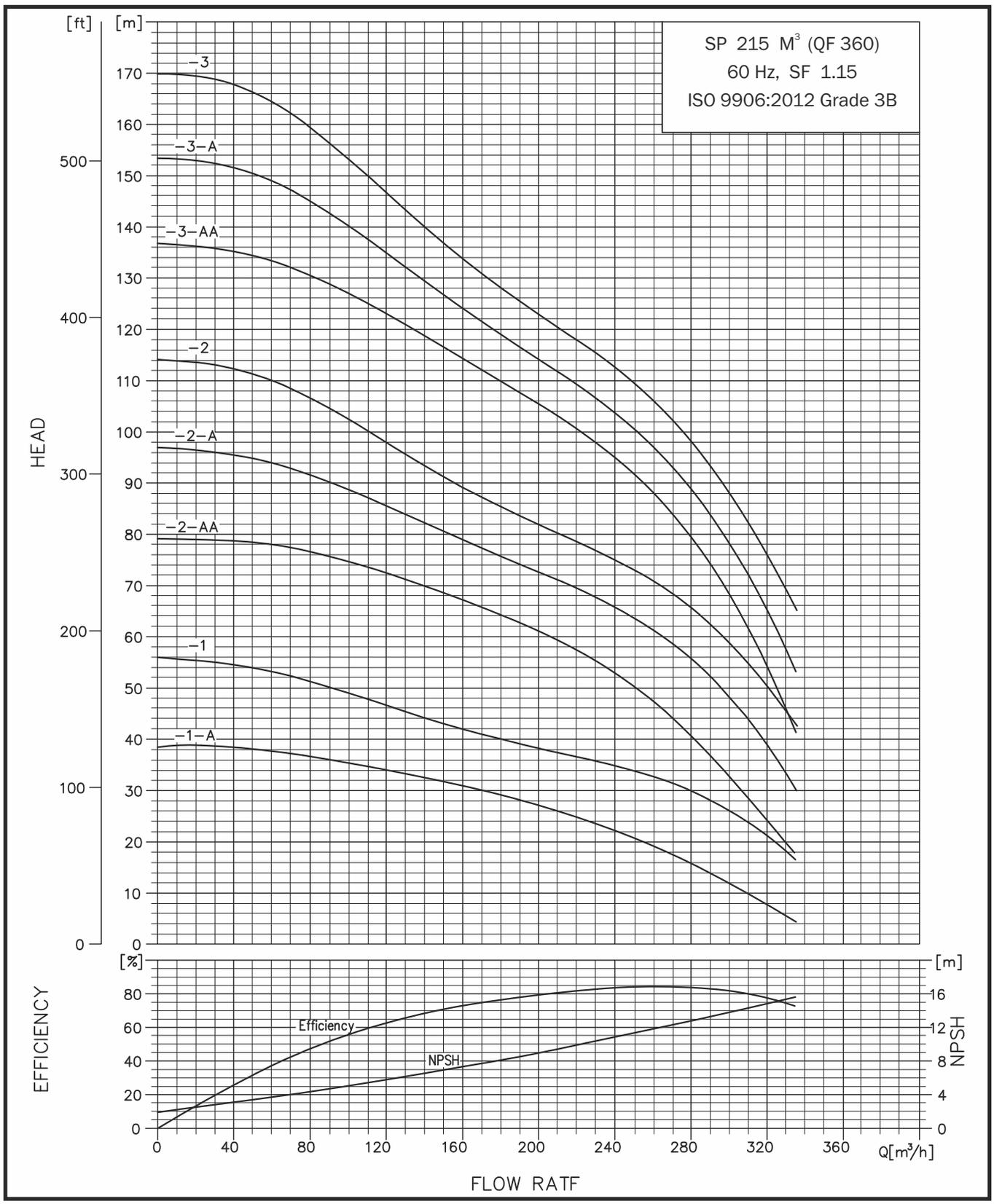
SUBMERSIBLE PUMP QF 270



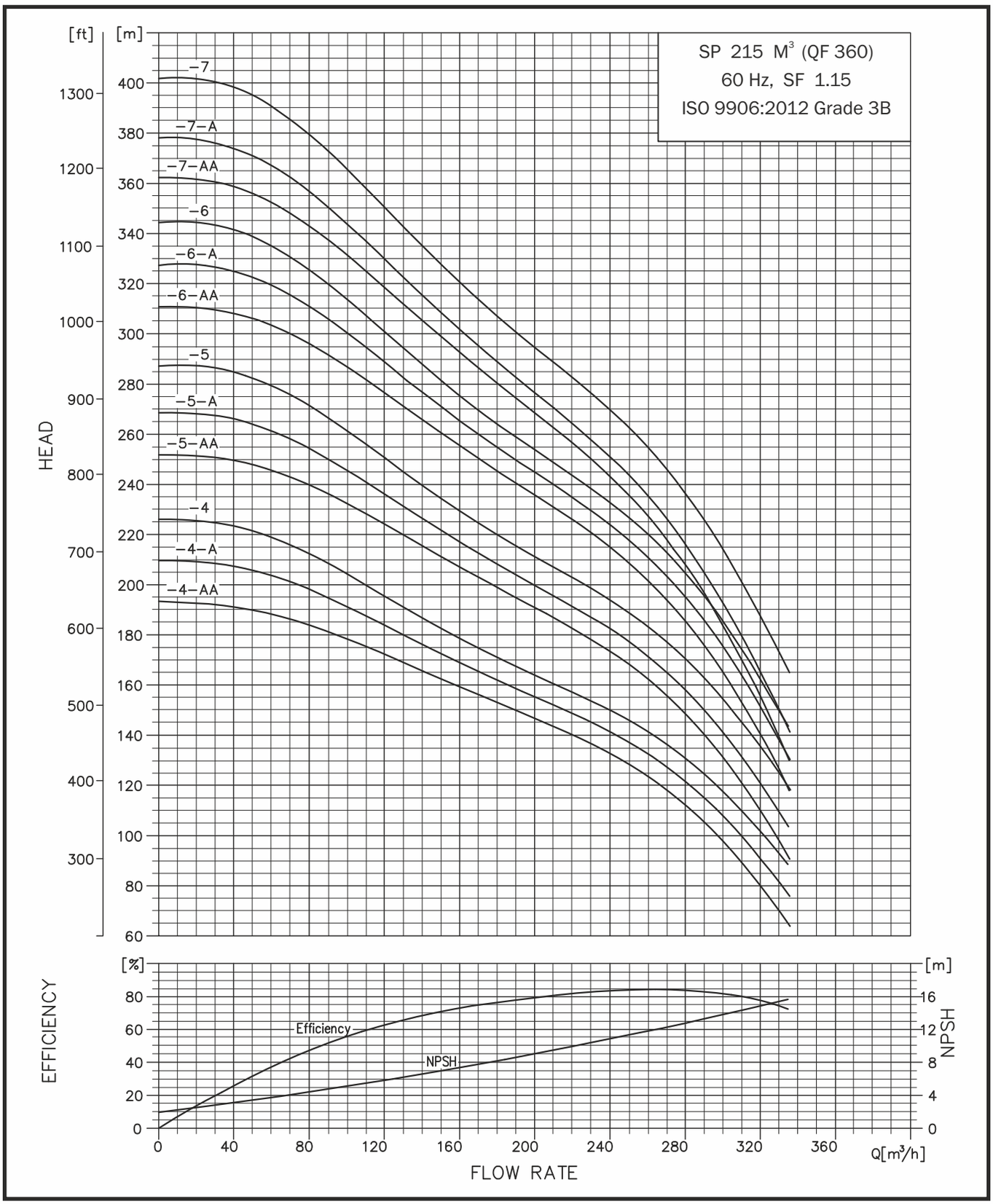
SUBMERSIBLE PUMP QF 270



SUBMERSIBLE PUMP QF 360

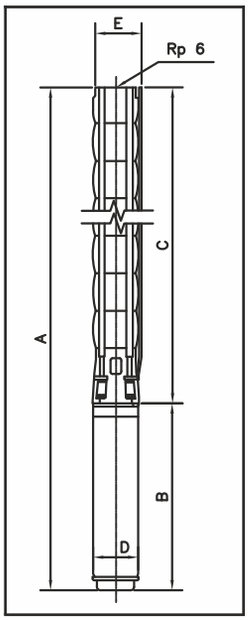


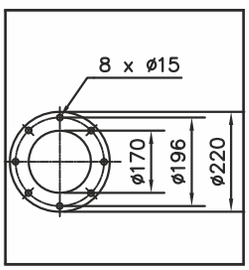
SUBMERSIBLE PUMP QF 360



SUBMERSIBLE PUMP QF 360

DIMENSIONS AND WEIGHTS





Pump Type	Motor		Dimension [mm]						Net Weight [Kg]
	Type	Power [Kw]	Rp 6 Connection				B	D	
			A	C	E*	E**			
QF 360-1-A	MTSF 150	22	1704	695	227	230	1009	145	37.8
QF 360-1	MTSF 150	30	1909	695	227	230	1214	145	37.8
QF 360-2-AA	MTSFC 200	45	2174	944	233	236	1230	194	57.1
QF 360-2-A	MTSFC 200	55	2284	944	233	236	1340	194	57.1
QF 360-2	MTSFC 200	63	2414	944	233	236	1470	194	57.1
QF 360-3-AA	MTSFC 200	75	2680	1120	233	236	1560	194	67.3
QF 360-3-A	MTSFC 200	93	2860	1120	233	236	1740	194	67.3
QF 360-3	MTSFC 200	93	2860	1120	233	236	1740	194	67.3
QF 360-4-AA*	MOTOR 10”	110	2825	1296	235	236	1529	235	78.7
QF 360-4-A*	MOTOR 10”	110	2825	1296	235	236	1529	235	78.7
QF 360-4	MOTOR 10”	110	2825	1296	235	236	1529	235	78.7
QF 360-5-AA	MOTOR 10”	132	3131	1472	235	236	1659	235	88.8
QF 360-5-A	MOTOR 10”	132	3131	1472	235	236	1659	235	88.8
QF 360-5	MOTOR 10”	150	3241	1472	235	236	1769	235	88.8
QF 360-6-AA	MOTOR 10”	170	3567	1648	235	236	1919	235	98.9
QF 360-6-A	MOTOR 10”	170	3567	1648	235	236	1919	235	98.9
QF 360-6	MOTOR 10”	170	3567	1648	235	236	1919	235	98.9
QF 360-7-AA	MOTOR 10”	185	3743	1824	235	236	1919	235	109
QF 360-7-A	MOTOR 10”	185	3743	1824	235	236	1919	235	109
QF 360-7	MOTOR 12”	220	3717	1824	286	286	1893	286	108.8

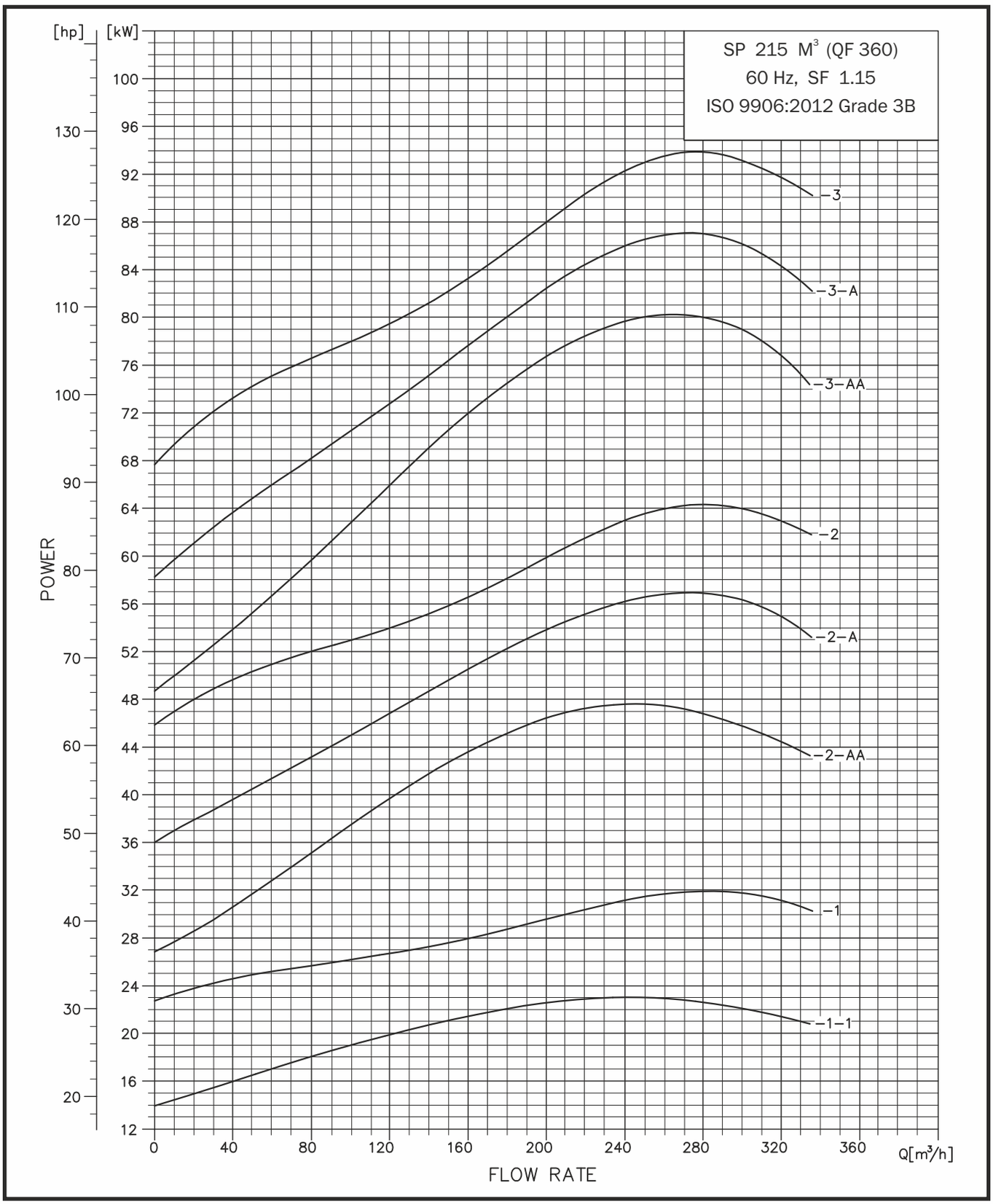
E* = Maximum diameter of pump inclusive of one cable guard and motor.

E** = Maximum diameter of pump inclusive of two cable guard and motor.

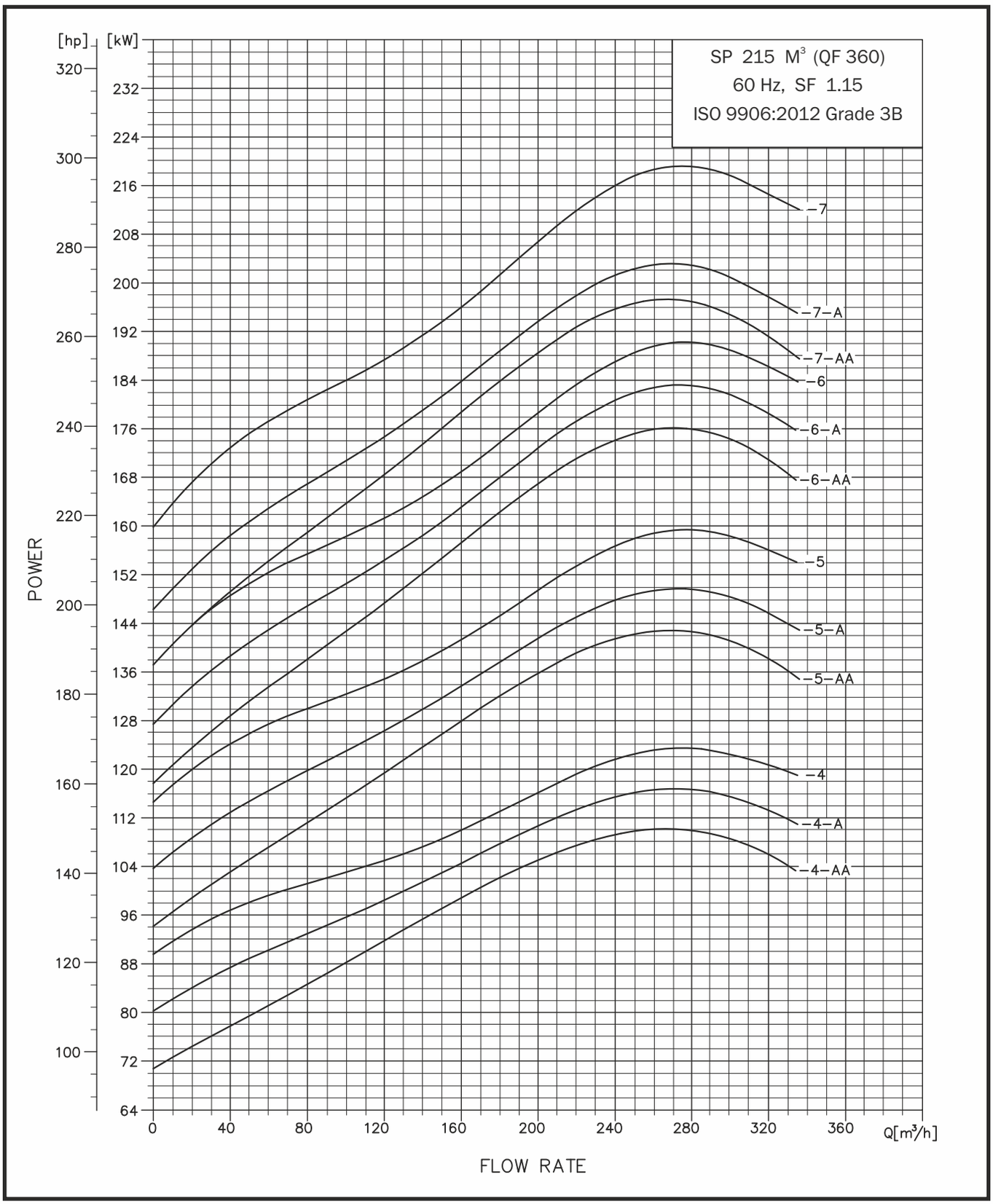
Other type of connection are possible by means of connecting flanges.

* Motor type may change as per requirement .

SUBMERSIBLE PUMP QF 360



SUBMERSIBLE PUMP QF 360



SUBMERSIBLE MOTORS QF

SINGLE -PHASE MOTOR SPECIFICATION (60 HZ) 3450 RPM

TYPE	RATING					FULL LOAD	MAXIMUM	EFFICIENCY %		POWER FACTOR		LOCK
	HP	KW	VOLTS	HZ	S.F	AMPS	LOAD	S.F	F.L	S.F	F.L	ROTOR
4" 3-WIRE	0.5	0.37	230	60	1.6	Y5.0	Y6.0	62	56	0.70	0.60	23
						B5.0	B6.0					
						R0	R0					
	0.75	0.5	230	60	1.5	Y6.8	Y8.0	64	59	0.70	0.60	34.2
						B6.8	B8.0					
						R0	R0					
	1	0.75	230	60	1.4	Y8.2	Y10.4	65	62	0.70	0.60	41.8
						B8.2	B10.4					
						R0	R0					
4" 3-WIRE	0.5	0.37	230	60	1.6	Y3.6	Y4.3	67	57	0.90	0.80	23
						B3.7	B4.0					
						R2.0	R2.0					
	0.75	0.5	230	60	1.5	Y4.9	Y5.7	69	60	0.90	0.80	34.2
						B5.0	B5.2					
						R3.2	R3.1					
	1	0.75	230	60	1.4	Y6.0	Y7.1	70	64	0.90	0.80	41.8
						B5.7	B6.4					
						R3.4	R3.3					
4" 3-WIRE	1.5	1.1	230	60	1.3	Y10.0	Y11.5	70	69	0.85	0.80	51.4
						B9.9	B11					
						R1.3	R1.3					
	2	1.5	230	60	1.25	Y10.0	Y13.2	73	74	0.95	0.90	53.1
						B9.3	B11.9					
						R2.6	R2.6					
	3	2.2	230	60	1.15	Y14	Y17.0	75	75	0.90	0.90	83.4
						B11.2	B12.6					
						R6.1	R6.0					
	5	3.7	230	60	1.15	Y23	Y27.5	78	77	0.90	0.90	129
						B15.9	B19.1					
						R11	R10.8					

Y Yellow lead Line amps
B Black lead main winding amps
R Red lead Start or auxiliary winding amps

SUBMERSIBLE MOTORS QF

THREE -PHASE MOTOR SPECIFICATION (60 HZ) 3450 RPM

TYPE	RATING					FULL	MAXIMUM	EFFICIENCY %		POWER		LOCK
	HP	KW	VOLTS	HZ	S.F	LOAD	LOAD AMPS	S.F	F.L	S.F	F.L	ROTOR
4" 3-WIRE	0.5	0.37	230	60	1.6	2.4	2.9	70	64	0.7	0.6	15.2
			380	60	1.6	1.4	2.1	70	64	0.7	0.6	9.2
			460	60	1.6	1.2	1.5	70	64	0.7	0.6	7.6
	0.75	0.5	230	60	1.5	3.1	3.8	73	69	0.7	0.6	21.4
			380	60	1.5	1.9	2.5	73	69	0.7	0.6	13
			460	60	1.5	1.6	1.9	73	69	0.7	0.6	10.7
	1.0	0.75	230	60	1.4	3.9	4.7	72	70	0.7	0.6	26.9
			380	60	1.4	2.3	2.8	72	70	0.7	0.6	16.3
			460	60	1.4	2	2.4	72	70	0.7	0.6	13.5
	1.5	1.1	230	60	1.3	5	5.9	76	76	0.8	0.7	33.2
			380	60	1.3	3	3.6	76	76	0.8	0.7	20.1
			460	60	1.3	2.5	3.1	76	76	0.8	0.7	16.6
	2	1.5	230	60	1.25	6.7	8.1	76	76	0.8	0.7	45
			380	60	1.25	4.1	4.9	76	76	0.8	0.7	26.6
			460	60	1.25	3.4	4.1	76	76	0.8	0.7	22.5
	3	2.2	230	60	1.15	9.5	10.9	77	77	0.8	0.7	60.3
			380	60	1.15	5.8	6.6	77	77	0.8	0.7	37.5
			460	60	1.15	4.8	5.5	77	77	0.8	0.7	31
	5	3.7	230	60	1.15	15.9	17.8	78	78	0.9	0.9	102
			380	60	1.15	9.6	10.8	78	78	0.9	0.9	60.2
			460	60	1.15	8	8.9	78	78	0.9	0.9	53.7
	7.5	5.5	230	60	1.15	23	26.4	78	78	0.9	0.9	152
			380	60	1.15	13.9	16	78	78	0.9	0.9	92.7
			460	60	1.15	11.5	13.2	78	78	0.9	0.9	83.8
	10	7.5	230	60	1.15	30	35	75	75	0.9	0.9	200
			380	60	1.15	19.3	21	75	75	0.9	0.9	140
			460	60	1.15	15.9	17.3	75	75	0.9	0.9	116

SUBMERSIBLE MOTORS QF

6” REWINDABLE MOTORS PERFORMANCE DATA 60Hz

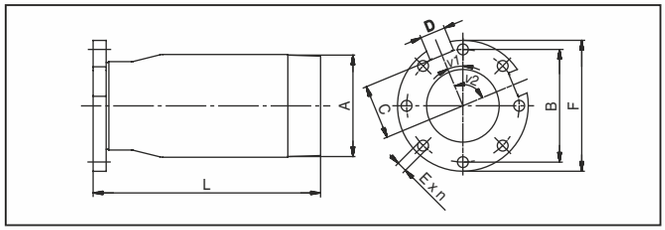
HP	P_N [kW]	P_{max} [kW]	Thrust F [N]	U_N [V]	[min-1]	I_N [A]	I_A [A]	η (Eff.) [%] at % load			COSØ [PF] at % load			T_N [Nm]	T_A [Nm]
								50	75	100	50	75	100		
5.5	4.0	4.6	15500	230	3520	21.0	106.0	0.70	0.75	0.77	0.52	0.64	0.73	12.5	18.6
				380	3530	13.3	61.0	0.66	0.72	0.77	0.51	0.63	0.71	12.4	15.0
				460	3520	10.1	51.0	0.70	0.76	0.78	0.56	0.67	0.75	12.5	15.3
7.5	5.5	6.3	15500	230	3490	26.1	106.0	0.74	0.78	0.78	0.61	0.73	0.80	17.3	15.9
				380	3480	15.4	61.0	0.76	0.78	0.78	0.64	0.75	0.81	17.3	15.0
				460	3480	12.9	51.0	0.74	0.77	0.77	0.65	0.76	0.82	17.3	15.1
10	7.5	8.6	15500	230	3490	35.9	146.0	0.75	0.79	0.79	0.58	0.71	0.78	23.6	22.4
				380	3480	20.8	81.0	0.76	0.79	0.79	0.64	0.75	0.81	23.6	20.2
				460	3470	17.2	64.0	0.75	0.78	0.78	0.67	0.77	0.82	23.7	19.4
12.5	9.3	10.7	15500	230	3490	44.4	183.0	0.75	0.79	0.79	0.59	0.71	0.78	29.3	28.9
				380	3470	25.6	100.0	0.77	0.80	0.80	0.64	0.75	0.81	29.4	25.9
				460	3460	20.8	78.0	0.78	0.80	0.80	0.67	0.78	0.82	29.4	24.4
15	11.0	12.7	15500	230	3490	51.2	220.0	0.77	0.80	0.81	0.60	0.72	0.79	34.6	35.6
				380	3490	30.3	129.0	0.77	0.81	0.81	0.62	0.74	0.80	34.5	34.3
				460	3480	25.0	98.0	0.78	0.81	0.80	0.68	0.77	0.83	34.7	31.5
17.5	13.0	15	15500	230	3500	62.4	288.0	0.76	0.80	0.81	0.55	0.68	0.76	40.7	50.5
				380	3500	36.3	164.0	0.77	0.81	0.82	0.59	0.71	0.78	40.7	47.2
				460	3490	29.0	125.0	0.78	0.81	0.81	0.65	0.76	0.82	40.9	43.3
20	15.0	17.3	15500	230	3500	65.9	325.0	0.80	0.83	0.83	0.63	0.74	0.81	47.0	49.5
				380	3490	39.1	188.0	0.81	0.83	0.83	0.66	0.77	0.82	47.2	56.5
				460	3490	32.1	151.0	0.80	0.83	0.83	0.68	0.78	0.84	47.1	55.6
25	18.5	21.3	27500	230	3490	85.4	402.0	0.77	0.81	0.82	0.59	0.71	0.78	58.1	81.8
				380	3490	52.5	249.0	0.76	0.80	0.81	0.58	0.70	0.77	58.1	83.6
				460	3480	40.6	184.0	0.80	0.82	0.82	0.65	0.76	0.81	58.4	74.5
30	22.0	25.3	27500	230	3510	100.2	520.0	0.82	0.84	0.84	0.65	0.74	0.77	68.8	96.6
				380	3510	59.9	309.0	0.82	0.84	0.84	0.67	0.75	0.78	68.8	94.9
				460	3500	47.1	232.0	0.83	0.84	0.84	0.72	0.79	0.82	69.1	85.8
35	26.0	29.9	27500	230	3510	118.3	657.0	0.83	0.85	0.85	0.63	0.72	0.76	81.3	135.0
				380	3500	67.5	360.0	0.83	0.85	0.85	0.62	0.74	0.81	81.6	121.4
				460	3500	55.7	287.0	0.83	0.85	0.85	0.64	0.76	0.84	81.6	117.2
40	30.0	34.5	27500	230	3510	135.7	758.0	0.78	0.82	0.83	0.58	0.71	0.78	93.8	139.6
				380	3510	79.6	436.0	0.79	0.83	0.84	0.64	0.75	0.82	94.0	126.4
				460	3500	64.4	346.0	0.81	0.84	0.83	0.58	0.71	0.78	93.8	139.6
50	37.0	42.6	27500	230	3510	135.7	758.0	0.78	0.82	0.83	0.58	0.71	0.78	93.8	139.6
				380	3510	102.8	567.0	0.77	0.81	0.82	0.59	0.71	0.78	115.8	193.6
				460	3500	79.1	430.0	0.82	0.84	0.85	0.63	0.75	0.81	116.0	177.8

SUBMERSIBLE PUMPS QF

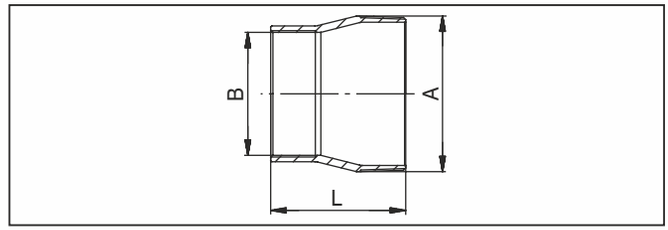
CONNECTING PIECES

The tables below show the range of connecting pieces for connection of thread to flange and thread to thread.

Thread - Flange



Thread



Type	Pump outlet	Connecting piece	Thread - Flange										Product number	
			A	Dimensions [mm]					V_1	V_2	n		DIN W - Nr 1.4301	DIN W - Nr 1.4401
				B	C	D	E	F	L					
QF 30	Rp 2.5	R 2½ → JIS 2	R 2½	100	50.5	30	ø11	125	200	30	120	6	32420220	32420260
		R 2½ → JIS 2.5	R 2½	115	57	30	ø11	140	200	22.5	90	8	32420221	32420261
		R 2½ → DIN 50 PN 16	R 2½	125	62.5	22	ø18	165	95	45	180	4	32420222	32420262
		R 2½ → DIN 50 PN 40	R 2½	125	62.5	22	ø18	165	97	45	180	4	32420223	32420263
		R 2½ → DIN 65 PN 16	R 2½	145	72.5	22	ø18	185	100	45	180	4	32420224	32420264
		R 2½ → DIN 65 PN 40	R 2½	145	72.5	25	ø18	185	110	22.5	180	8	32420225	32420265
		R 2½ → DIN 80 PN 16	R 2½	160	80	25	ø18	200	95	22.5	180	8	32420226	32420266
		R 2½ → DIN 80 PN 40	R 2½	160	80	25	ø18	200	99	22.5	180	8	32420227	32420267
QF 50	Rp 3	R 3 → JIS 3	R3	136	66	35	ø15	165	200	22.5	90	8	32420228	32420268
		R 3 → DIN 65 PN 16	R 3	145	72.5	22	ø18	185	105	45	180	4	32420229	32420269
		R 3 → DIN 65 PN 40	R 3	145	72.5	25	ø18	185	109	22.5	180	8	32420230	32420270
		R 3 → DIN 80 PN 16	R 3	160	80	25	ø18	200	110	22.5	180	8	32420231	32420271
		R 3 → DIN 80 PN 40	R 3	160	80	25	ø18	200	120	22.5	180	8	32420232	32420272
		R 3 → DIN 100 PN 16	R 3	180	90	25	ø18	220	107	22.5	180	8	32420233	32420273
		R 3 → DIN 100 PN 40	R 3	190	95	25	ø22	220	109	22.5	180	8	32420234	32420274
QF 75 QF 100	Rp3 Rp4	R 4 → JIS 4	R 4	155	72	35	ø15	180	200	22.5	90	8	32420235	32420275
		R 3 → DIN 65 PN 16	R 3	145	72.5	22	ø18	185	105	45	180	4	32420236	32420276
		R 3 → DIN 65 PN 40	R 3	145	72.5	25	ø18	185	109	22.5	180	4	32420237	32420277
		R 3 → DIN 80 PN 16	R 3	160	80	25	ø18	200	110	22.5	180	8	32420238	32420278
		R 3 → DIN 80 PN 40	R 3	160	80	25	ø18	200	120	22.5	180	8	32420239	32420279
		R 3 → DIN 100 PN 16	R 3	180	90	25	ø18	220	107	22.5	180	8	32420240	32420280
		R 3 → DIN 100 PN 40	R 3	190	95	25	ø22	220	109	22.5	180	8	32420241	32420281
		R 4 → DIN 100 PN 40	R 4	180	90	25	ø18	220	120	22.5	180	8	32420242	32420282
		R 4 → DIN 100 PN 40	R 4	190	95	25	ø22	235	130	22.5	180	8	32420243	32420283
QF 125 QF 160	Rp 5	R 5 → JIS 4	R 5	155	75	35	ø15	180	313	22.5	90	8	32420244	32420284
		R 5 → JIS 5	R 5	190	97	45	ø19	225	315	22.5	90	8	32420245	32420285
		R 5 → DIN 100 PN 16	R 5	180	95	45	ø18	225	315	22.5	90	8	32420246	32420286
		R 5 → DIN 100 PN 40	R 5	190	102.5	45	ø22	240	314	22.5	90	8	32420247	32420287
		R 5 → DIN 125 PN 16	R 5	210	110	45	ø18	250	317	22.5	90	8	32420248	32420288
		R 5 → DIN 125 PN 40	R 5	220	120	45	ø26	270	317	22.5	90	8	32420249	32420289
		R 5 → DIN 150 PN 16	R 5	240	127.5	45	ø22	285	317	22.5	90	8	32420250	32420290
		R 5 → DIN 150 PN 40	R 5	250	135	45	ø26	300	323	22.5	90	8	32420251	32420291
QF 210 QF 270 QF 360	Rp 6	R 6 → JIS 5	R 6	190	97	45	ø19	225	316	22.5	90	8	32420252	32420292
		R 6 → JIS 6	R 6	224	111	45	ø19	252	317	22.5	90	8	32420253	32420293
		R 6 → DIN 125 PN 16	R 6	210	110	45	ø18	250	317	22.5	90	8	32420254	32420294
		R 6 → DIN 125 PN 40	R 6	220	120	45	ø26	270	321	22.5	90	8	32420255	32420295
		R 6 → DIN 150 PN 16	R 6	240	127.5	45	ø22	285	317	22.5	90	8	32420256	32420296
		R 6 → DIN 150 PN 40	R 6	250	1385	45	ø26	300	323	22.5	90	8	32420257	32420297
		R 6 → DIN 200 PN 16	R 6	295	155	45	ø22	340	317	15	90	12	32420258	32420298
		R 6 → DIN 200 PN 40	R 6	320	172.5	45	ø30	375	327	15	90	12	32420259	32420299

Type	Pump outlet	Connecting piece	Thread - Flange		Product number	
			A	Dimension [mm]	DIN W - Nr 1.4301	DIN W - Nr 1.4401
QF 125 QF 160	Rp 5	R 5 → Rp 5	R 5	121	32420301	32420307
		R 5 → Rp 6	R 5	150	32420302	32420308
	NPT 5	NPT5 → NPT4	NPT 5	121	32420303	32420309
		NPT5 → NPT6	NPT 5	150	32420304	32420310
QF 210 QF 270 QF 360	Rp 6	R 6 → Rp 5	R 5	150	32420305	32420311
	NPT 6	NPT6 → NPT5	NPT 6	150	32420306	32420312

SUBMERSIBLE PUMPS QF

Flow sleeves

Shakti offers a complete range of stainless steel flow sleeves for both vertical and horizontal operation. Flow sleeves are recommended for all applications in which motor cooling is insufficient. The result is a general extension of motor life. Flow sleeves are to be fitted:

- if the submersible pump is exposed to high thermal load like current unbalance, dry running, overload, high ambient temperature, bad cooling conditions.
- if aggressive liquids are pumped, since corrosion is doubled for every 10°C the temperature rises.
- If sedimentation or deposits occur around and/or on the motor.

Note : More information about accessories is available on request.

ZINC ANODES

Application

Cathodic protection by means of zinc can be used for corrosion protection of SP pumps in chloride-containing liquids such as brackish water and sea water.

Sacrificial anodes are placed on the outside of the pump and motor as protection against corrosion.

The number of anodes required depends on the pump and motor in question.

Please contact Shakti for further details.

Liquid temperatures

Sea water: Up to 35°C.

Brackish water (min. 1500 g/m³ chloride): Up to 35°C.

Anode life

The zinc anodes have a life of one to four years, depending on operating conditions (temperature, flow and chloride content).

Product numbers of zinc anodes

Zinc anodes for pumps									
Product Number	Used for pump type								
	QF 30	QF 50	QF 75	QF 100	QF 125	QF 150	QF 210	QF 270	QF 300
ZA 01	●	●	●	●					
ZA 02					●	●			
ZA 03						●			
ZA 04							●		
ZA 05							●	●	●

Zinc anodes for motors			
4" Motors	6" Motors	6" Motors	6" Motors
ZA 06	ZA 07	ZA 07	ZA 08

MISCELLANEOUS

HEAD LOSSES IN ORDINARY WATER PIPES

UPPER FIGURES INDICATE THE VELOCITY OF WATER IN M/SEC. LOWER FIGURES INDICATE HEAD IN METERS PER 100 METERS STRAIGHT PIPES													
QUANTITY OF WATER			HEAD LOSSES IN ORDINARY WATER PIPES										
			NOMINAL PIPE DIAMETER IN INCHES AND INTERNAL DIAMETER IN (MM)										
m^3/h	Litres/min.	Litres/sec.	½"	¾"	1	11/4"	11/2	2"	21/2"	3"	3 ½"	4"	5"	6"
			15.75	**21.25**	**27.00**	**35.75**	**41.25**	**52.50**	**68.00**	**80.25**	**92.50**	**105.0**	**130.0**	**155.5**
0.6	10	0.16	0.855 9.910	0.470 2.470	0.292 0.784									
0.9	15	0.25	1.282 20.11	0.705 4.862	0.438 1.570	0.249 0.416								
1.2	20	0.33	1.710 33.53	0.940 8.035	0.584 2.588	0.331 0.677	0.249 0.346							
1.5	25	0.42	2.138 49.93	1.174 11.91	0.730 0.834	0.415 1.004	0.312 0.510							
1.8	30	0.50	2.565 69.34	1.491 16.50	0.876 5.277	0.498 1.379	0.374 0.700	0.231 0.223						
2.1	35	0.58	2.993 91.54	1.644 21.75	1.022 6.949	0.581 1.811	0.436 0.914	0.269 0.291						
2.4	40	0.67		1.879 27.66	1.168 8.820	0.664 2.290	0.499 1.160	0.380 0.368						
3	50	0.83		2.349 41.40	1.460 13.14	0.830 3.403	0.623 1.719	0.385 0.544	0.229 0.159					
3.6	60	1.00		2.819 57.74	1.751 18.28	0.996 4.718	0.748 2.375	0.462 0.751	0.275 0.218					
4.2	70	1.12		3.288 76.49	2.043 24.18	1.162 6.231	0.873 3.132	0.539 0.988	0.321 0.287	0.231 0.131				
4.8	80	1.33			2.335 30.87	1.328 7.940	0.997 3.988	0.616 1.551	0.367 0.363	0.263 6.164				
5.4	90	1.50			2.627 38.30	1.494 9.828	1.122 4.927	0.770 1.875	0.413 0.449	0.269 0.203				
6	100	1.67			2.919 46.49	1.660 11.90	1.247 5.972	0.962 2.802	0.459 0.542	0.329 0.244	0.248 0.124			
7.5	125	2.08			3.649 70.41	2.075 17.93	1.558 8.967	1.154 3.903	0.574 0.809	0.412 0.365	0.310 1.185	0.241 0.101		
9	150	2.50				2.490 25.11	1.870 12.53	1.347 5.179	0.668 1.124	0.494 0.506	0.372 0.256	0.289 0.140		
10.5	175	2.92				2.904 33.32	2.182 16.66	1.539 6.624	0.803 1.488	0.576 0.670	0.434 0.338	0.337 0.184		
12	200	3.33				3.319 42.75	2.493 21.36	1.924 10.03	0.918 1.901	0.659 0.855	0.496 0.431	0.385 0.234	0.251 0.084	
15	250	4.17				4.149 64.86	3.117 32.32	2.309 14.04	1.147 2.860	0.823 1.282	0.620 0.646	0.481 0.350	0.314 0.126	
18	300	5.00					3.740 15.52	3.078 24.04	1.377 4.009	0.988 1.792	0.744 0.903	0.577 0.488	0.377 0.175	0.263 0.074
24	400	6.67					4.987 78.17	3.848 36.71	1.836 6.828	1.317 3.053	0.992 1.530	0.770 0.829	0.502 0.294	0.351 0.124
30	500	8.33						3.848 36.71	2.295 10.40	1.647 4.622	1.240 2.315	0.962 1.254	0.628 0.445	0.439 0.187
36	600	10.0						46.18 51.84	2.753 14.62	1.976 6.505	1.488 3.261	1.155 1.757	0.753 0.623	0.526 0.260
42	700	11.7							3.212 19.52	2.306 8.693	1.736 4.356	1.347 2.345	0.879 0.831	0.614 0.347
48	800	13.3							3.671 25.20	2.635 11.18	1.984 5.582	1.540 3.009	1.005 1.066	0.702 0.445
54	900	15.0							4.130 31.51	2.964 13.97	2.232 6.983	1.732 3.762	1.130 1.328	0.790 0.555
60	1000	16.7							4.589 38.43	3.294 17.06	2.480 8.521	1.925 4.595	1.256 1.616	0.877 0.674
75	1250	20.8								4.117 26.10	3.100 13.00	2.406 7.010	1.570 2.458	1.097 1.027
90	1500	25.0								4.941 36.97	3.720 18.42	2.887 9.892	1.883 3.458	1.316 1.444
105	1750	29.2									4.340 24.76	3.368 13.30	1.883 3.468	1.535 1.934
120	2000	33.3									4.960 31.94	3.850 17.16	2.197 4.665	1.754 2.496
150	2500	41.7										4.812 26.26	2.511 5.995	2.193 3.807
180	3000	50.5											3.139 9.216	2.632 5.417
240	4000	66.7											3.767 13.05	3.509 8.926
300	5000	83.3											5.523 22.72	4.386 14.42
900C BENDS SLIDE VALVES			½"	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.6	1.6	1.7	2.5
T-PIECES, NON –RETURN VALVES			15.75	4.0	4.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0	7.0	9.0

The table is calculated in accordance with H. Lang's new formula a=0.02 and for a water temperature of 10°C

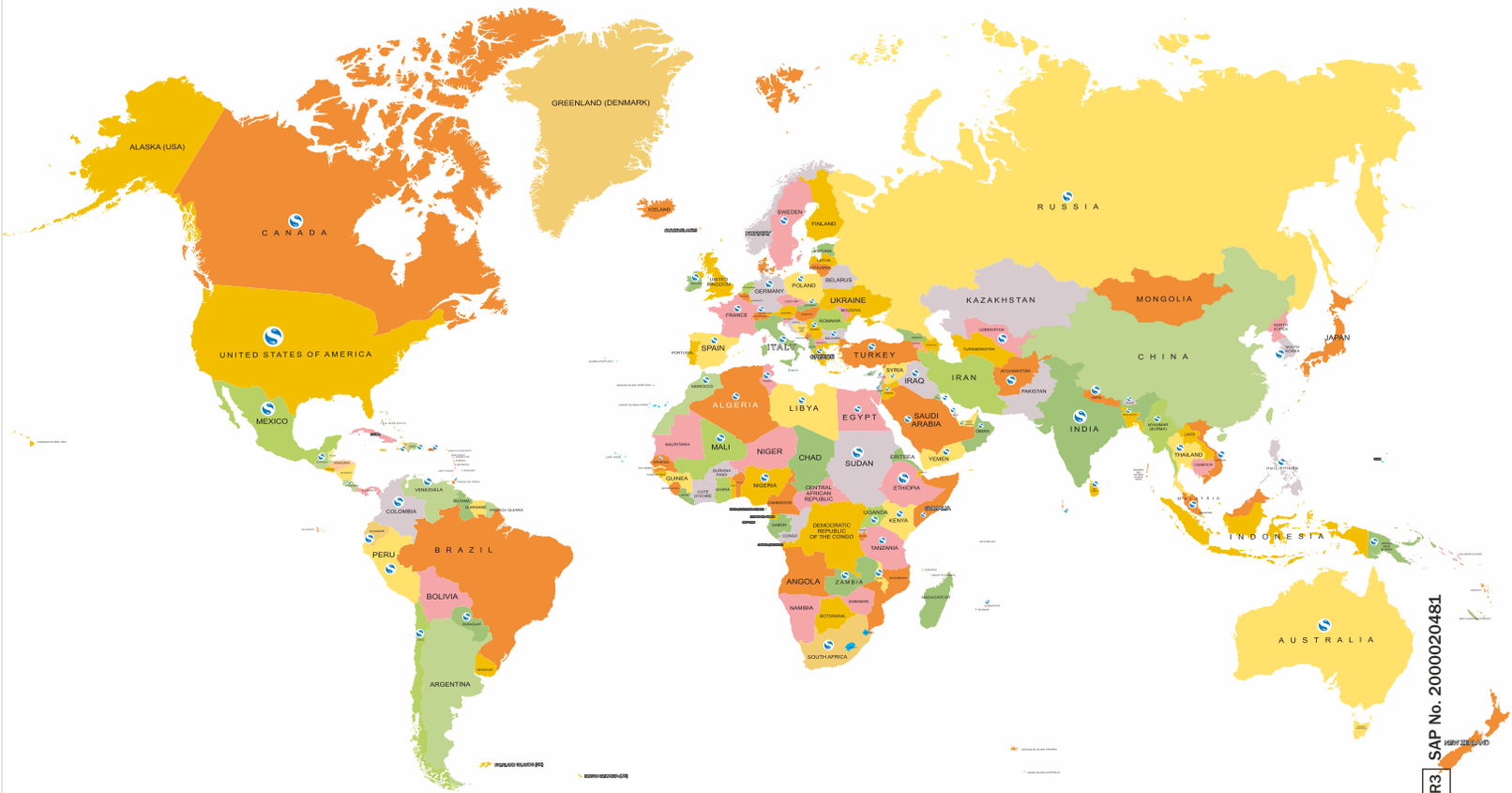
The head loss in bends, slide valves. T-Pieces and non-return is equivalent to the meters of straight of straight pipes stated in the last two lines of the table. To fine the head loss in foot valves multiply the loss in T-pieces by two.

MISCELLANEOUS

HEAD LOSSES IN PLASTIC PIPES

FIGURES INDICATE HEAD LOSS IN METRES PER 100 METRES OF STRAIGHT PIPES													
QUANTITY OF WATER			HEAD LOSSES IN PLASTIC PIPES										
			PELM/PEH PN 10										
			PELM				PEH						
			NOMINAL PIPE SIZE IN MM										
m^3/h	Litres/min.	Litres/sec.	25	32	40	50	63	75	90	110	125	140	160	180
			20.4	26.2	32.6	40.8	51.4	61.4	73.6	90.0	102.2	114.6	130.8	147.2
0.6	10	0.16	1.80	0.66	0.27	0.09								
0.9	15	0.25	4.00	1.14	0.60	0.18	0.63							
1.2	20	0.33	6.40	2.20	0.90	0.28	0.11							
1.5	25	0.42	10.00	3.50	1.40	0.43	0.17	0.07						
1.8	30	0.50	13.00	4.60	1.90	0.57	0.22	0.09						
2.1	35	0.58	16.00	6.00	2.00	0.7	0.27	0.12						
2.4	40	0.67	22.00	7.50	3.30	0.93	0.35	0.16	0.06					
3	50	0.83	37.00	11.00	4.80	1.4	0.5	0.22	0.09					
3.6	60	1.00	43.00	15.00	6.50	1.9	0.7	0.32	0.13	0.05				
4.2	70	1.12	50.00	18.00	8.00	2.5	0.83	0.38	0.17	0.07				
4.8	80	1.33		25.00	10.50	3	1.2	0.5	0.22	0.08				
5.4	90	1.50		30.00	12.00	3.5	1.3	0.57	0.26	0.09	0.05			
6	100	1.67		39.00	16.00	4.6	1.8	0.73	0.3	0.12	0.07			
7.5	125	2.08		50.00	24.00	6.6	2.5	1.1	0.5	0.18	0.1	0.06		
9	150	2.50			33.00	8.6	3.5	1.4	0.63	0.24	0.13	0.08		
10.5	175	2.92			38.00	11	4.3	1.8	0.78	0.3	0.18	0.09		
12	200	3.33			50.00	14	5.5	2.4	1	0.4	0.22	0.12	0.07	
15	250	4.17				21	8	3.7	1.5	0.57	0.34	0.18	0.11	0.06
18	300	5.00				28	10.5	4.6	1.95	0.77	0.45	0.25	0.13	0.09
24	400	6.67					19	8	3.6	1.4	0.78	0.44	0.23	0.15
30	500	8.33					28	11.5	5	2	1.2	0.63	0.33	0.21
36	600	10.00					37	15	6.6	2.6	1.5	0.82	0.45	0.28
42	700	11.70					47	24	8	3.5	1.9	1.1	0.6	0.4
48	800	13.30						26	11	4.5	2.6	1.4	0.81	0.48
54	900	15.00						33	13.5	5.5	3.2	1.7	0.95	0.58
60	1000	16.70						40	16	6.7	3.9	2.2	1.2	0.75
75	1250	20.80							25	9	5	3	1.6	0.95
90	1500	25.00							33	13	8	4.1	2.3	1.4
105	1750	29.20							44	17.5	9.7	5.7	3.2	1.9
120	2000	33.30								23	13	7	4	2.4
150	2500	41.70								34	18	10.5	6	3.5
180	3000	50.00								45	27	14	7.6	4.4
240	4000	66.70									43	24	13	7.5
300	5000	83.30										33	18	11

The table is based on a nomogram.
Roughness: K = 0.01 mm.
Water temperature: t = 10 °C.



Feb./2024-25/L7/000 VC - Feb.2025/R3 SAP No. 2000020481

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SHAKTI PUMPS (INDIA) LIMITED

Plot No. 401, 402, & 413, Industrial Area, Sector - 3, Pithampur, Dist. Dhar - 454774 (M.P.) India
Fax: +91-7292 410645, E-mail: info@shaktipumps.com, Visit us at : www.shaktipumps.com