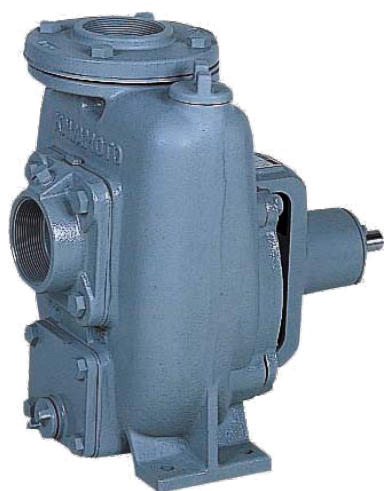


FS(4)-M

FS-F

FSR-F

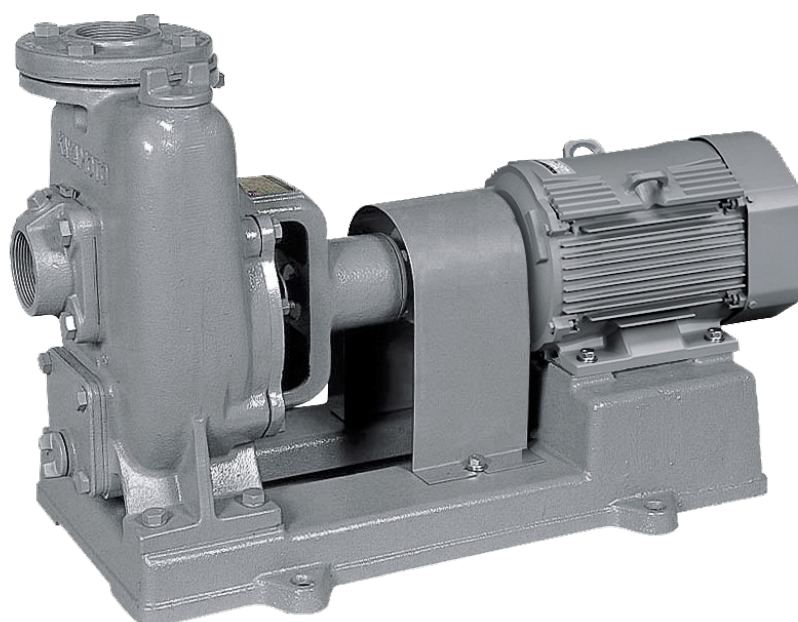
KAWAMOTO SELF-PRIMING PUMP



FS-F



FSR-F



FS(4)-M

APPLICATIONS AND FEATURES

■ APPLICATIONS

- Irrigation
- Industry
- Building service
- Civil working
- Fish and shellfish nurseries
- Other water supply

■ FEATURES

- Self-priming construction does not require foot valve and makes priming works easier.
- High performance is obtained at a wide range of application.
- High efficiency and high suction performance are assured by KAWAMOTO's years of experience.
- Back pull out construction assures easy maintenance and inspection.
- Sealed ball bearings requires no oiling.

SPECIFICATIONS

Type		FS(4)-M	FS-F	FSR-F
Rotation		Clockwise	Clockwise	Counterclockwise
Liquid	Kind	Clean water and waste water		
	Temperature	0°C ~ 40°C		
Material	Casing	Cast iron		
	Impeller	Cast iron		
	Shaft	SUS403		
Shaft sealing		Gland packing (Non asbestos)		

SUCTION PERFORMANCE

Liquid temperature 20°C

Bore (mm)	FS(4)-M (m)	FS-F (m)	FSR-F (m)
25	3	3	-
32	5	5 ※1	-
40	6	6 ※2	-
50	6	6	6
65	6	6	6
80	6	6	6
100	6	6	6
125	6	6	-
150	6	6	-
200	4	4	-

※1 3.5m when 1,450 rpm ※2 5.5m when 1,450 rpm

ACCESSORIES

Type	FS(4)-M	FS-F	FSR-F
Motor	○		
Shaft coupling	○		
Coupling guard	○		
Base	○		
Flange (discharge)	○	○	○
Suction check valve	○	○	○
Strainer	○	○	○

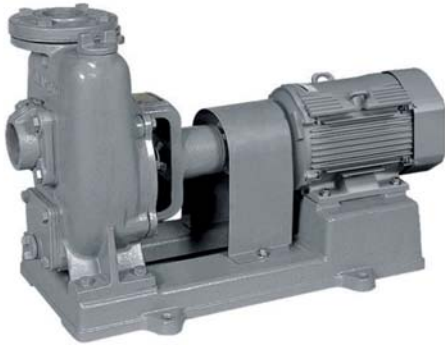
※If you need these model with coupling, please ask us before.

LOCAL ASSEMBLING

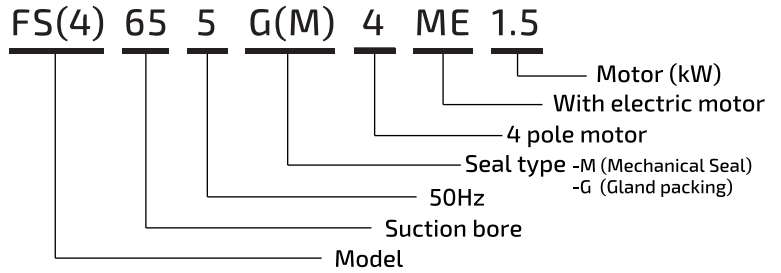
FS(4)-M, FS-F	FSR
<p>Type FS and FS-F rotate clockwise. Use shaft couplings when connection pumps directory with counterclockwise motor (engine). See that shafts of pump and motor (engine) are accurately aligned. If this alignment is done improperly, pump will vibrate abnormally orgenerate unusual sound, resulting in a shorter life of pump or motor(engine).</p> <div style="text-align: center;"> <p>COUNTERCLOCKWISE</p> </div>	<p>Type FSR rotates counterclockwise. Drive it by an engine or motor using belt when driver rotates counterclockwise.</p> <div style="text-align: center;"> <p>COUNTERCLOCKWISE rotation V-belt driven type</p> <p>CLOCKWISE rotation V-belt driven type</p> </div>

※Firmly fix pump and motor (engine) on common base. Properly make shaft alignment of pump and motor (engine).

TYPE : FS(4)-M



MODEL CODE

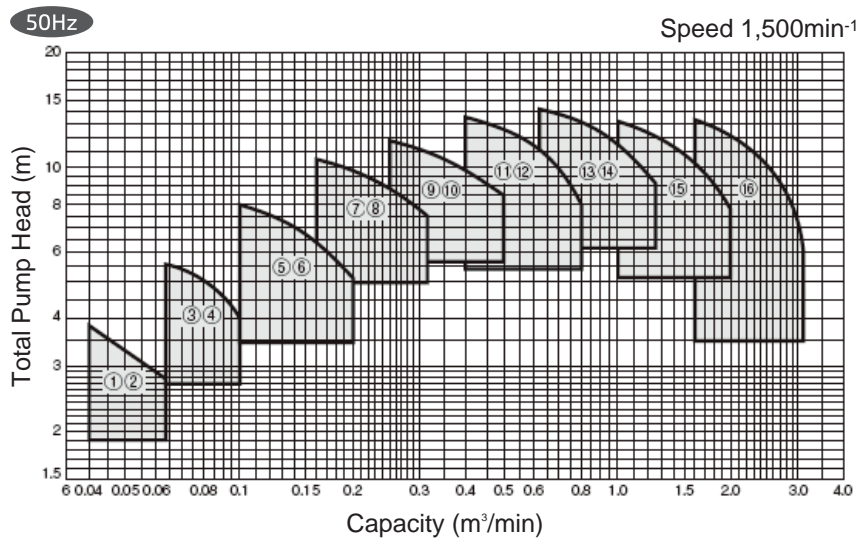


ALTERNATE SPECIFICATION

FS-505-M0.75 / FS-655-M1.5 / FS-805-M2.2 / FS-1005-M3.7

These only 4 models, you can change mechanical seal type or grand packing type.

PERFORMANCE CHART

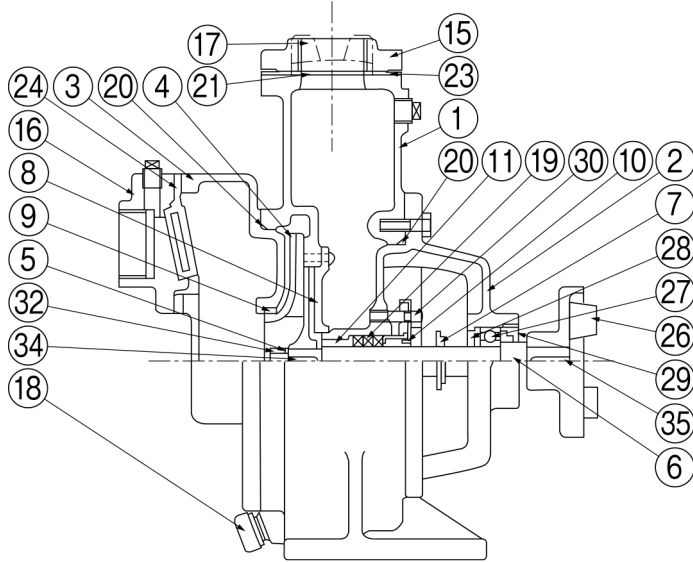


No.	Bore (mm)	Model	Motor		Performance					
			kW	Phase	Capacity (m³/min)	Total head (m)	Capacity (m³/min)	Total head (m)	Capacity (m³/min)	Total head (m)
1	25	FS4-255-M0.2S2	0.2	1	0.04	3.8	0.05	3.2	0.06	2.8
2		FS4-255-MN0.2T	0.2	3	0.04	3.8	0.05	3.2	0.06	2.8
3	32	FS4-325-M0.2S2	0.2	1	0.06	5.5	0.08	5.0	0.10	4.0
4		FS4-325-MN0.2T	0.2	3	0.06	5.5	0.08	5.0	0.10	4.0
5	40	FS4-405-M0.4S2	0.4	1	0.10	8.0	0.14	7.0	0.20	5.2
6		FS4-405-MN0.4T	0.4	3	0.10	8.0	0.14	7.0	0.20	5.2
7	50	FS505G4ME0.75	0.75	3	0.16	10.5	0.22	9.5	0.32	7.5
8		FS505M4ME0.75 ※1	0.75	3	0.16	10.5	0.22	9.5	0.32	7.5
9	65	FS655G4ME1.5	1.5	3	0.25	11.8	0.36	10.5	0.50	8.5
10		FS655M4ME1.5 ※1	1.5	3	0.25	11.8	0.36	10.5	0.50	8.5
11	80	FS805G4ME2.2	2.2	3	0.40	13.5	0.56	12.0	0.80	8.2
12		FS805M4ME2.2 ※1	2.2	3	0.40	13.5	0.56	12.0	0.80	8.2
13	100	FS1005G4ME3.7	3.7	3	0.63	14.5	0.90	12.5	1.25	9.2
14		FS1005M4ME3.7 ※1	3.7	3	0.63	14.5	0.90	12.5	1.25	9.2
15	125	FS1255G4ME5.5	5.5	3	1.00	13.2	1.40	11.5	2.00	7.8
16	150	FS1505G4ME7.5	7.5	3	1.60	13.2	2.24	11.2	3.15	6.0

※1 Mechanical seal type

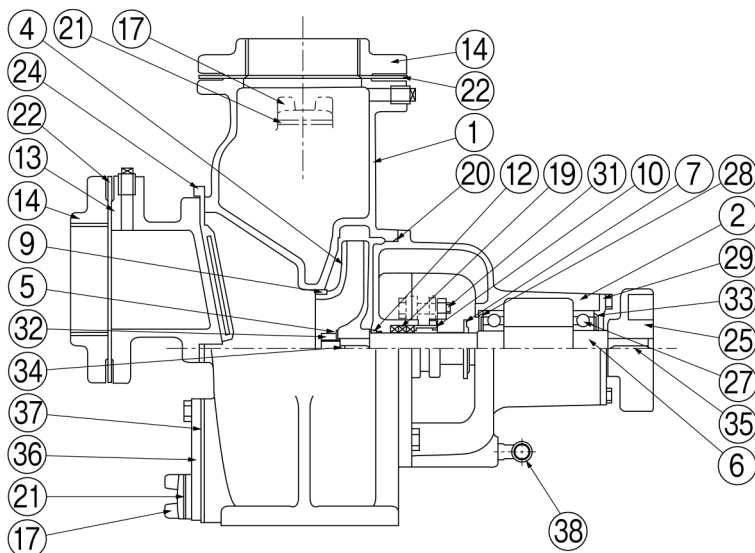
SECTION VIEW - FS(4)-ME (Gland packing seal type)

FS4



FS

※ The bore size is more than 80mm in this figure.

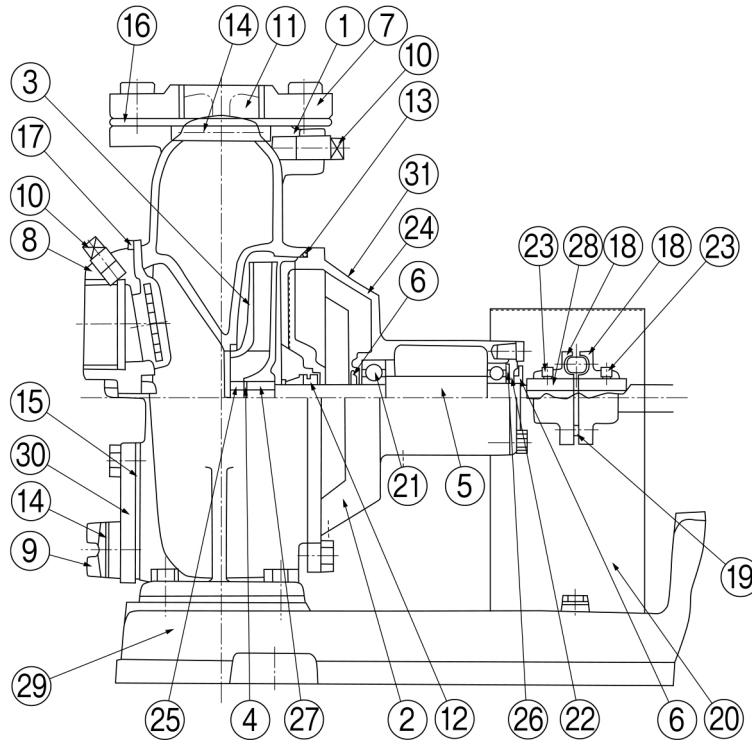


No.	Part name	Material
1	Casing	Cast iron
2	Bearing box with cover	Cast iron
3	Suction cover	Cast iron
4	Impeller	Cast iron
5	Impeller washer	C1201
6	Shaft	SUS403
7	Deflector	Rubber
8	Plate	Cast iron
9	Liner ring	Bronze
10	Packing gland	SUS304CP
11	Lantern ring	Bronze
12	Bush	Bronze
13	Connecting pipe with valve sheet	Cast iron
14	Flange	Cast iron
15	Square flange	Cast iron
16	Square flange with valve sheet	Cast iron
17	Plug	Resin
18	Cap	Resin
19	Gland packing	Non asbestos
20	O-Ring	Rubber
21	Ring packing	Rubber
22	Flange packing	Rubber
23	Square flange packing	Rubber
24	Check valve	Rubber
25	Coupling	Cast iron
26	Coupling	Cast iron
27	Bearing	-
28	Bearing cover	Resin
29	Bearing cover	Cast iron
30	Double end stud bolt	C3604
31	T bolt	C2700
32	Nut	C3604
33	Wave washer	S65CM
34	Key	SUS304
35	Key	S45C
36	Cover	Cast iron
37	Packing	Rubber
38	Elbow	FCMB28

SECTION VIEW - FS(4)-ME (Mechanical seal type)

FS

※ The bore size is less than 65mm in this figure.

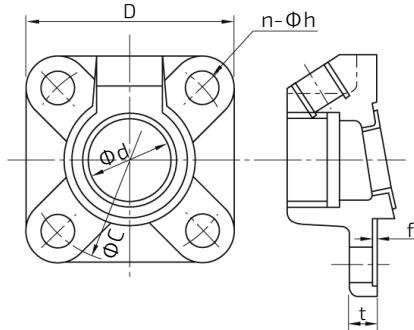


No.	Part name	Material	No.	Part name	Material
1	Casing	Cast iron	16	Flange packing	Rubber
2	Bearing box with cover	Cast iron	17	Check valve	Rubber
3	Impeller	Cast iron	18	Coupling	Cast iron
4	Impeller washer	C1201	19	Cushion	Rubber
5	Shaft	SUS403	20	Coupling guard	SPCC
6	Deflector	Rubber	21	Bearing	SUJ2
7	Flange	Cast iron	22	Bearing cover	Cast iron
8	Square flange with valve sheet	Cast iron	23	Screw	SCM435
9	Plug	Resin	24	Screw	SWRM10
10	Plug	SWCH10K	25	Nut	C3604
11	Plug	Resin	26	Wave washer	S65CM
12	Mechanical seal	Ceramic x Carbon	27	Key	SUS403
13	O-Ring	Rubber	28	Key	S45C
14	Ring packing	Rubber	29	Baseplate	Cast iron
15	Packing	Rubber	30	Cover	Cast iron
			31	Nameplate	A1100P-H2

PUMP DIMENSION - FS(4)-M

(BORE : 25 mm ~ 40 mm)

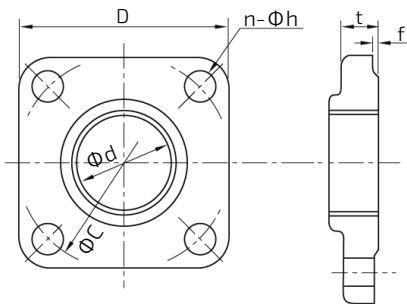
Square flange with valve sheet (Suction)



Unit:mm

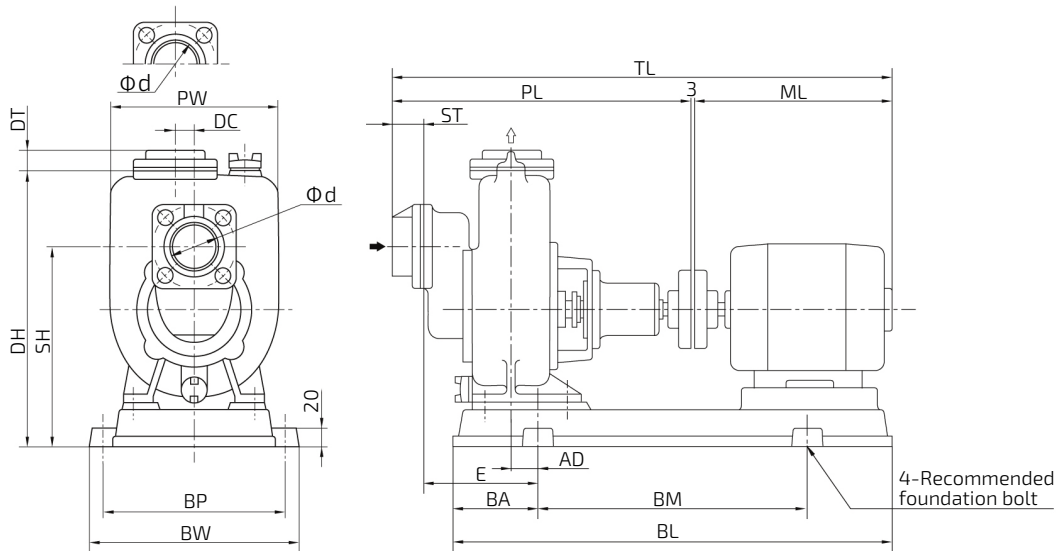
Bore (mm)	d	C	D	t	f	n	h (Bolt)
25	Rc1	75	75	11	0	4	12 (M10)
32	Rc1¼	90	90	11	0	4	15 (M12)
40	Rc1½	95	95	15	2.5	4	15 (M12)

Square flange (Discharge)



Unit:mm

Bore (mm)	d	C	D	t	f	n	h (Bolt)
25	Rc1	75	75	13	1	4	12 (M10)
32	Rc1¼	90	90	14.5	2	4	15 (M12)
40	Rc1½	95	95	14.5	2	4	15 (M12)



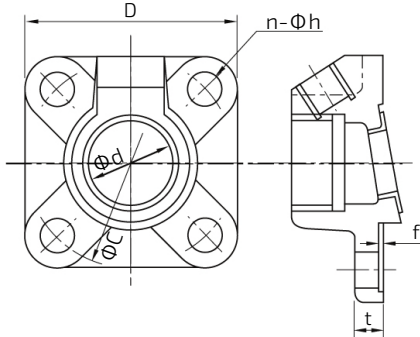
Unit:mm

Bore (mm)	Model	Motor (kW)	Pump				Baseplate					Combination				Bolt	Weight (kg)			
			PW	DC	PL	SL	DT	BL	BA	BM	BW	BP	DH	SH	TL			E	AD	ML
25	FS4-255-M0.2S2	0.2	158	25	272	41	22	408	79	250	280	240	285	195	495	156	32.5	220	M12 x 160	29
	FS4-255-MN0.2T	0.2	158	25	272	41	22	420	70	280	270	230	285	195	498	127	3.5	223		26
32	FS4-325-M0.2S2	0.2	190	30	316	41	23	430	89.5	250	320	280	350	245	540	182	35	221		38
	FS4-325-MN0.2T	0.2	190	30	316	41	23	420	70	280	320	280	348	243	543	179	22	224		37
40	FS4-405-M0.4S2	0.4	236	40	309	38.5	25	470	125	220	370	335	383	268	576	208	70.5	264		50
	FS4-405-MN0.4T	0.4	236	40	309	38.5	25	470	95	280	340	300	383	268	559	165	27.5	247		48

PUMP DIMENSION - FS(4)-M

(BORE : 50 mm ~ 150 mm)

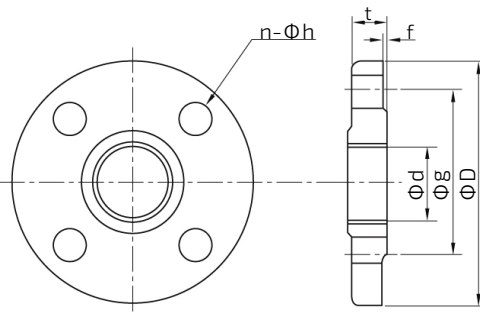
Square flange with valve sheet (50mm • 65mm) (Suction)



Unit:mm

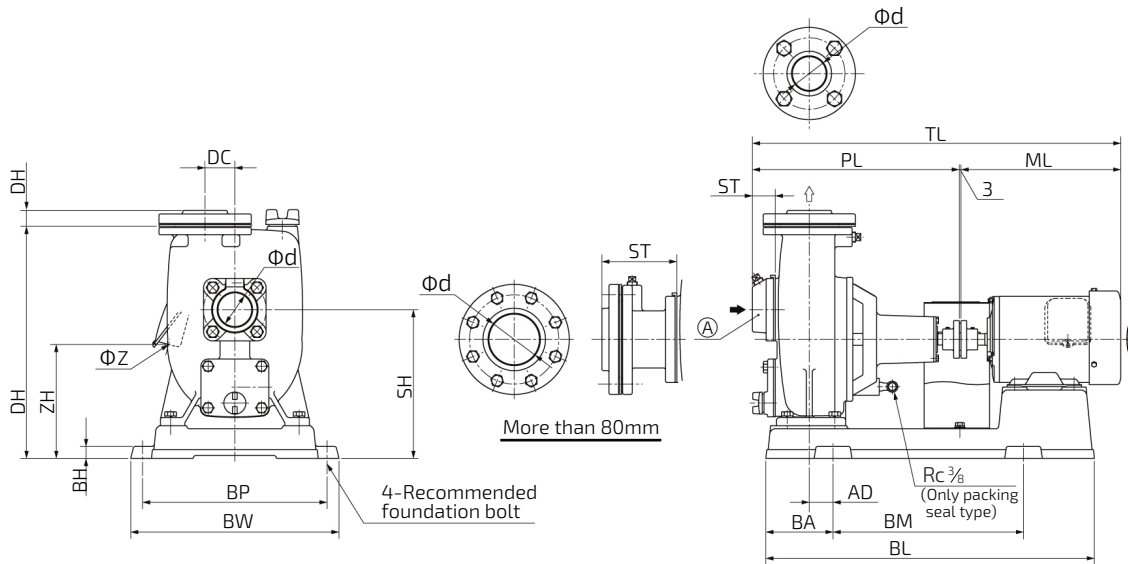
Bore (mm)	d	g	D	t	f	n	h (Bolt)
50	Rc 2	105	105	15	2.5	4	15 (M12)
60	Rc 2½	130	130	14	0	4	15 (M12)

Flange (JIS 10K)



Unit:mm

Bore (mm)	d	g	D	t	f	n	h (Bolt)
50	Rc 2	120	155	18	2	4	15 (M12)
65	Rc 2½	140	175	18	2	4	15 (M12)
80	Rc 3	150	185	18	2	8	15 (M12)
100	Rc 4	175	210	20	2	8	15 (M12)
125	Rc 5	210	250	22	2	8	20 (M16)
150	Rc 6	240	280	22	2	8	20 (M16)



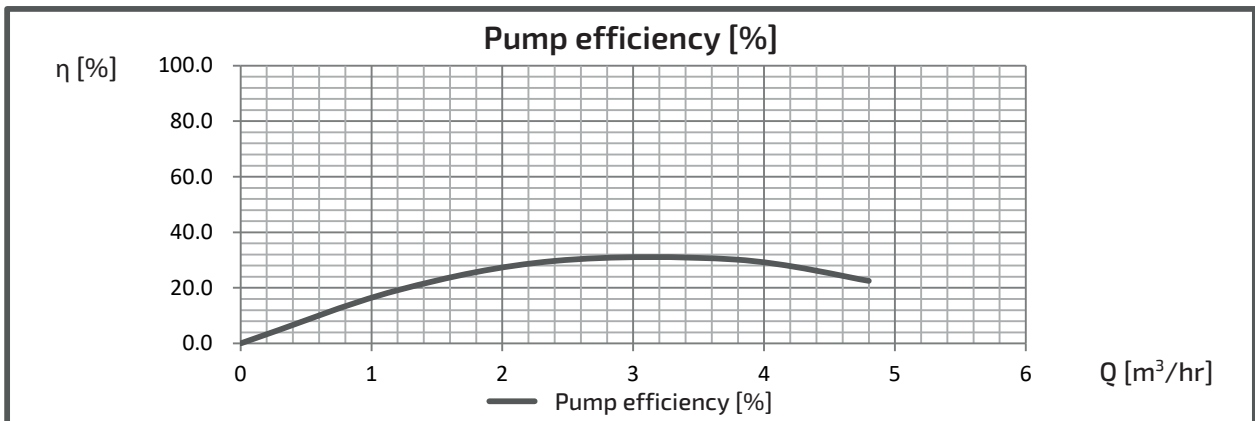
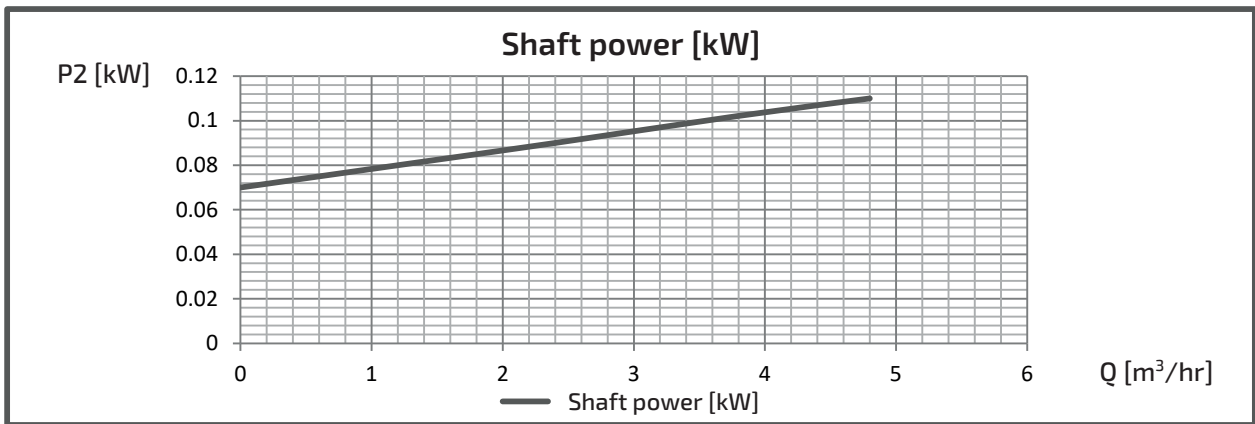
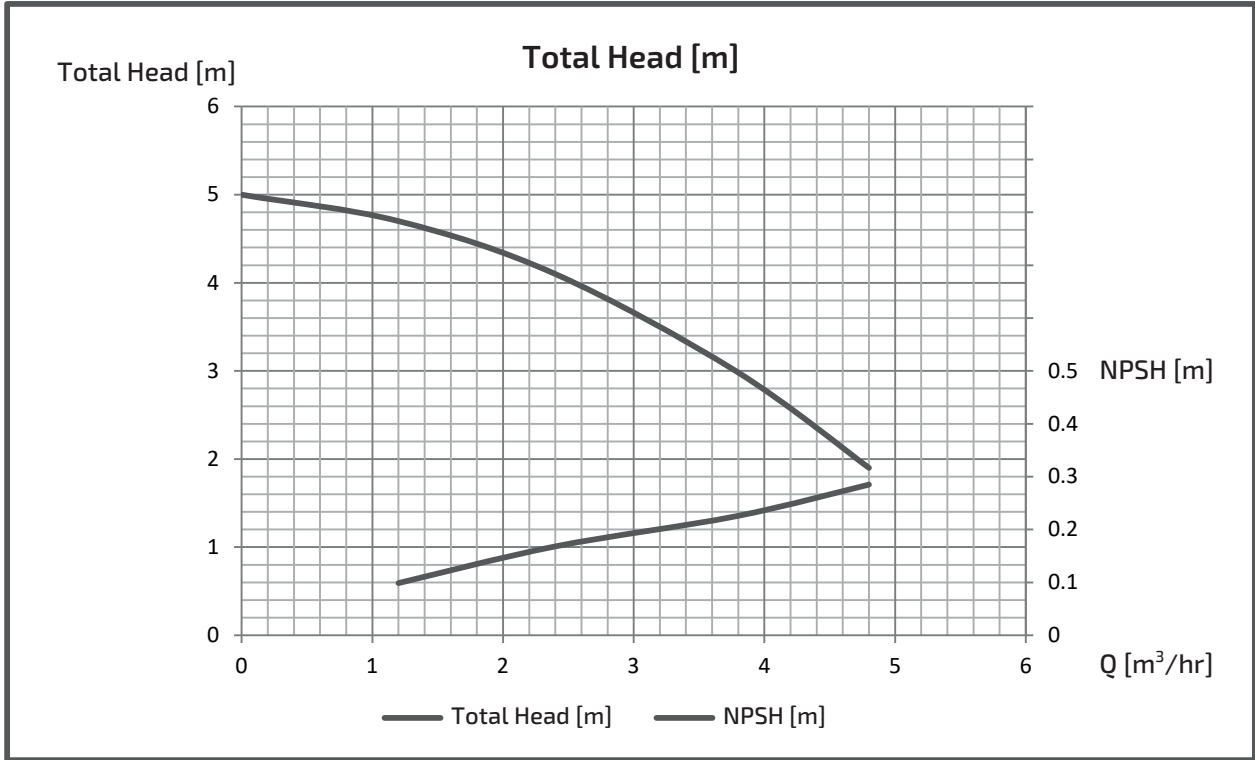
Unit:mm

Bore d	Model	Motor (kW)	Pump				Baseplate					Combination			Other		Bolt	Weight (kg)			
			DC	PL	SL	DT	BI	BL	BA	BM	BW	BP	DH	SH	TL	AD			ML	ZH	Z
50	FS505G(M)4ME0.75	0.75	50	348	39	27	20	552	113	320	350	310	390	250	633	40	283	175	22	M12x160	60
65	FS655G(M)4ME1.5	1.5	50	372	43	31	20	581	128	320	350	310	390	250	708	73	333	175	22	M12x160	75
80	FS805G(M)4ME2.2	2.2	40	482	33	33	20	700	148	400	380	340	455	270	860	57	375	186	28	M12x160	113
100	FS1005G(M)4ME3.7	3.7	45	552	39	39	25	761	133	500	424	380	523	318	947	37	392	219	28	M16x200	148
125	FS1255G4ME5.5	5.5	45	577	43	43	25	831	163	500	464	420	578	348	1034	61	454	219	35	M16x200	197
150	FS1505G4ME7.5	7.5	50	672	43	43	25	944	223	500	464	420	623	403	1167	103	492	244	35	M16x200	225

EXPECTED PERFORMANCE CURVE

MODEL : FS4-255-M0.2S2

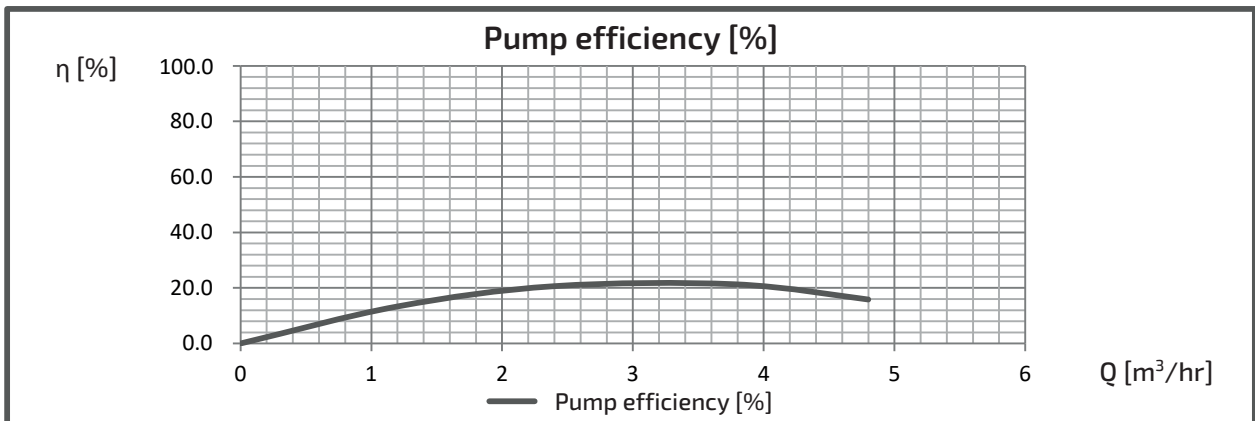
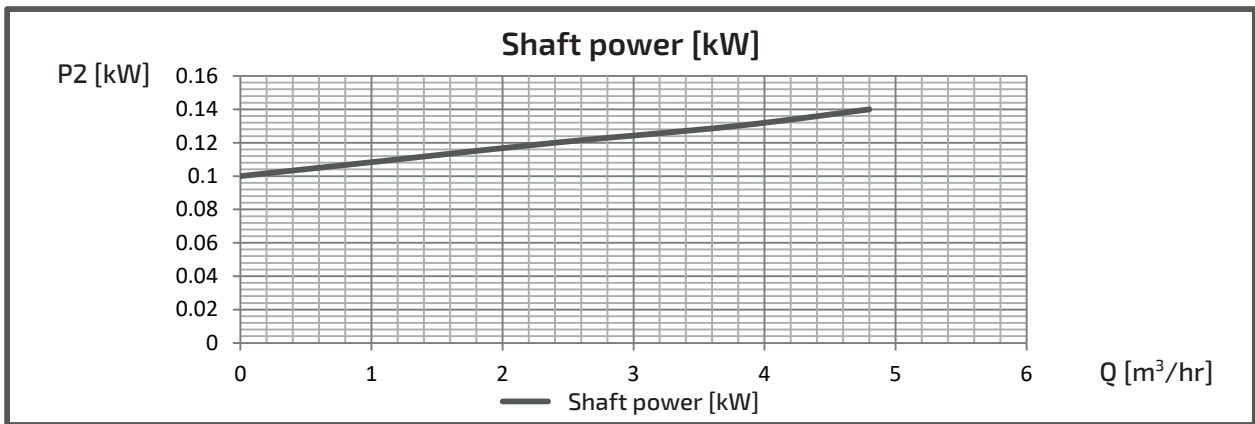
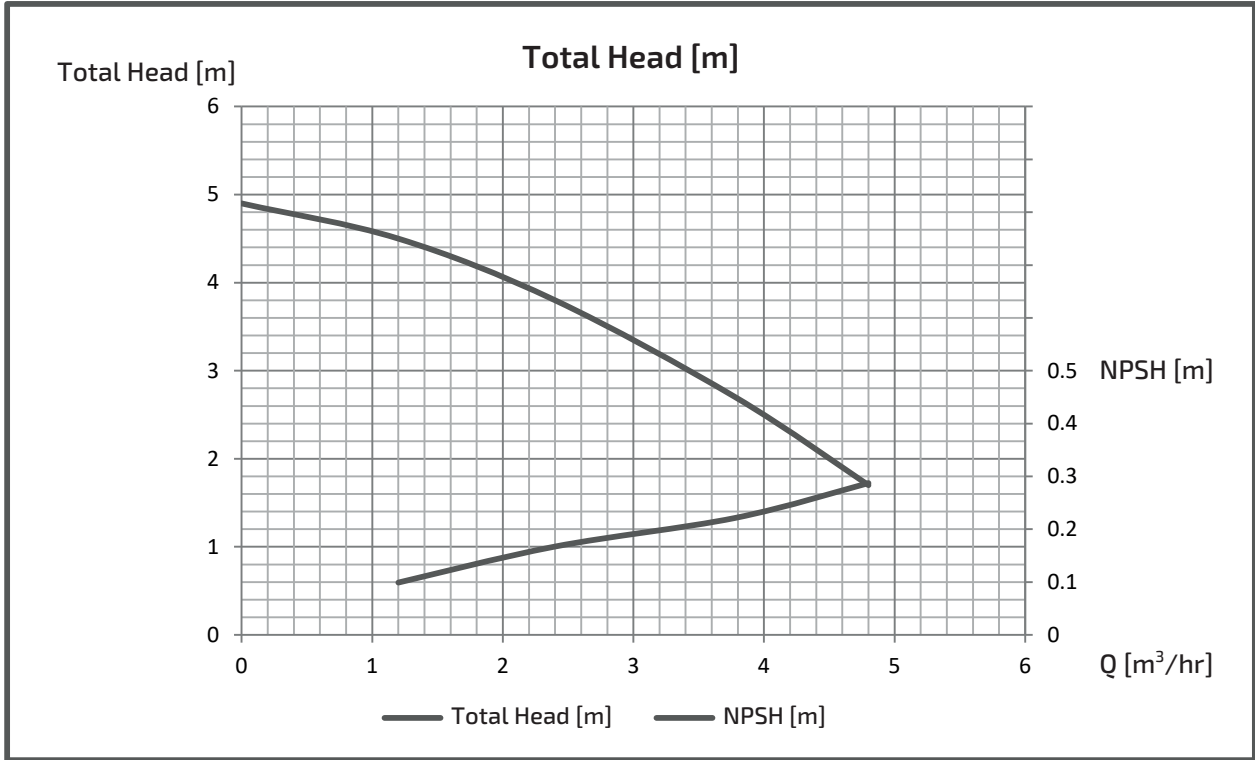
■ PERFORMANCE CURVES



EXPECTED PERFORMANCE CURVE

MODEL : FS4-255-MN0.2T

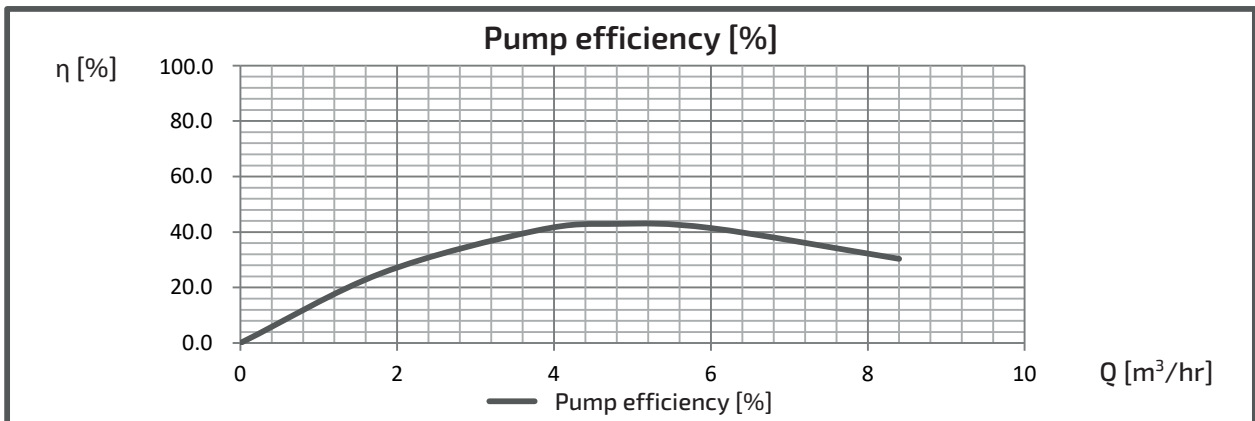
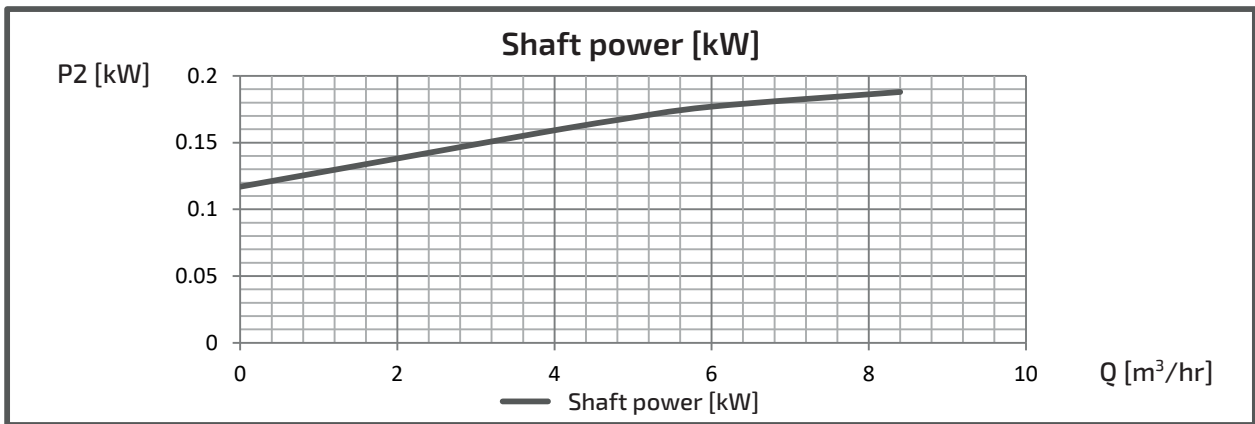
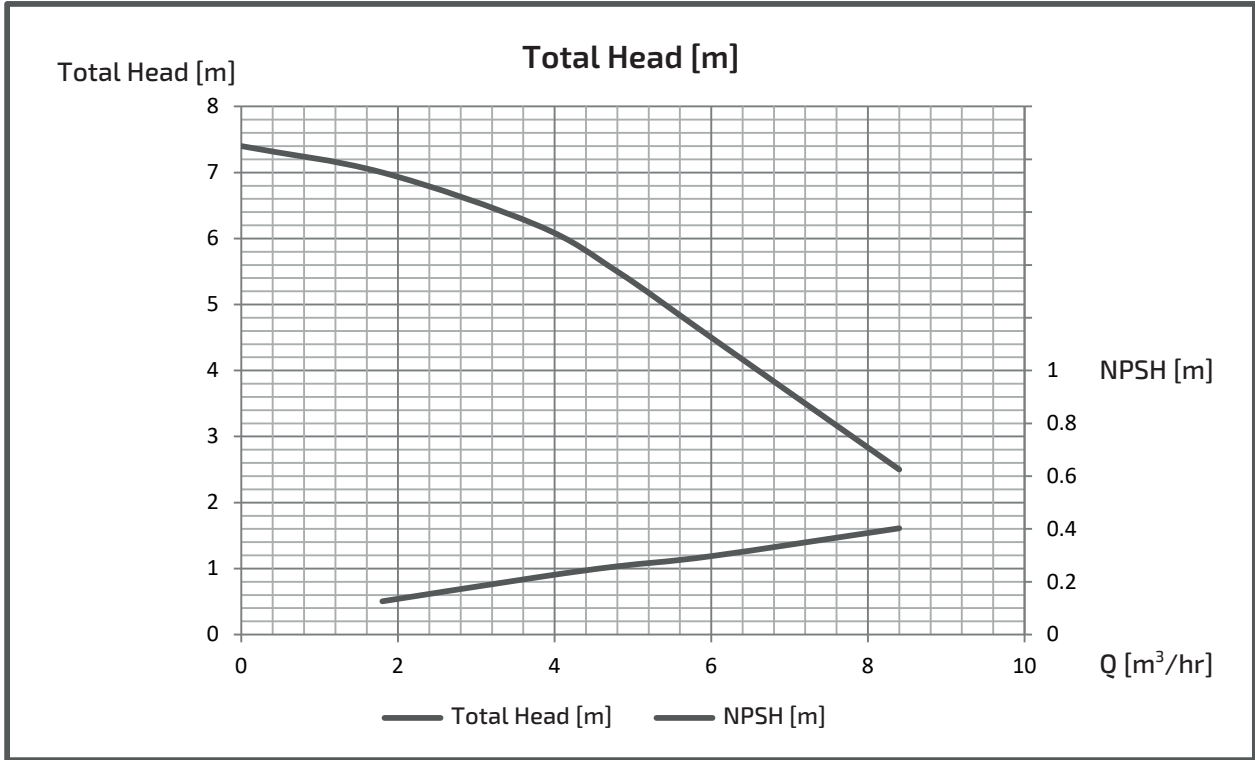
■ PERFORMANCE CURVES



EXPECTED PERFORMANCE CURVE

MODEL : FS4-325-M0.2S2

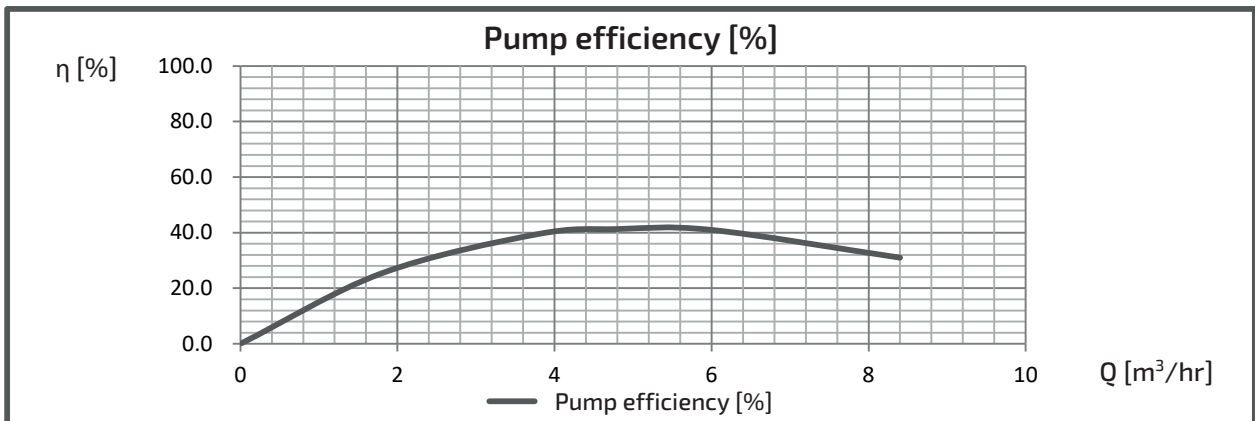
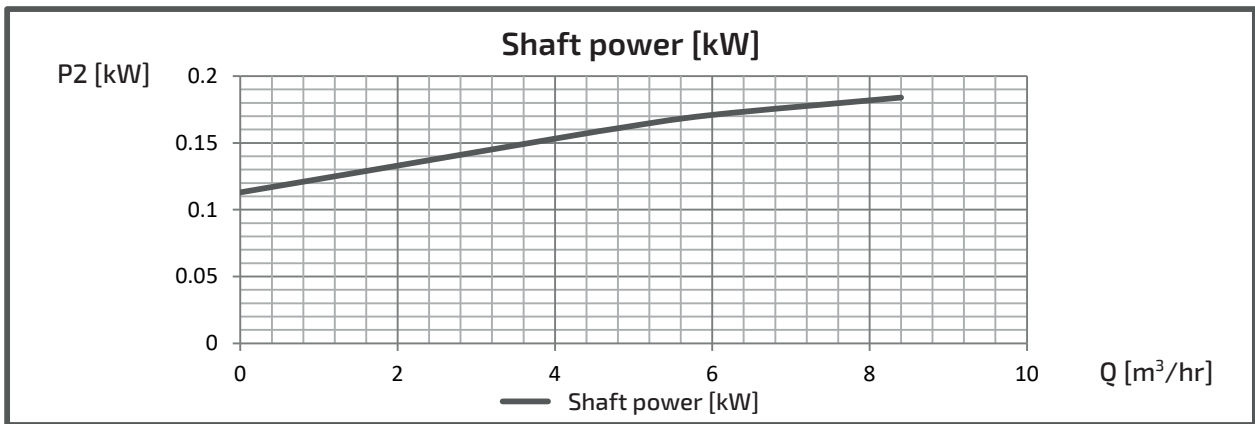
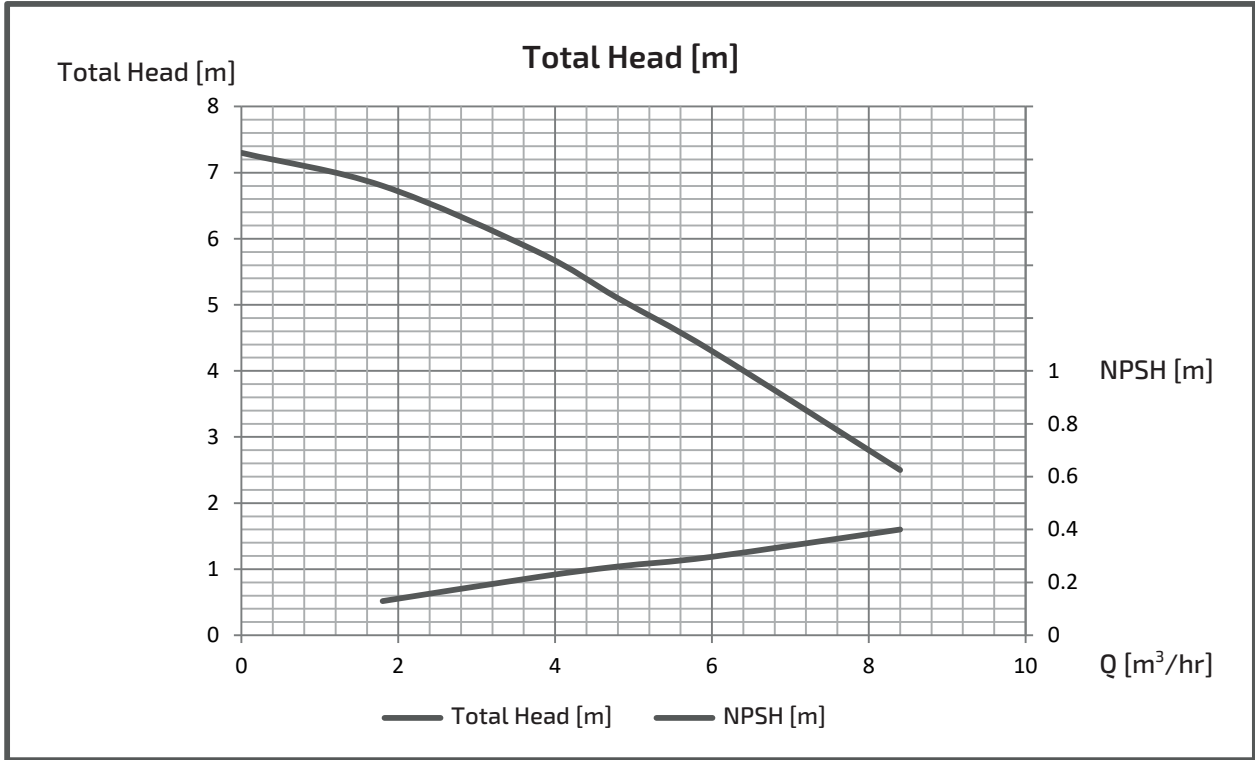
■ PERFORMANCE CURVES



EXPECTED PERFORMANCE CURVE

MODEL : FS4-325-MN0.2T

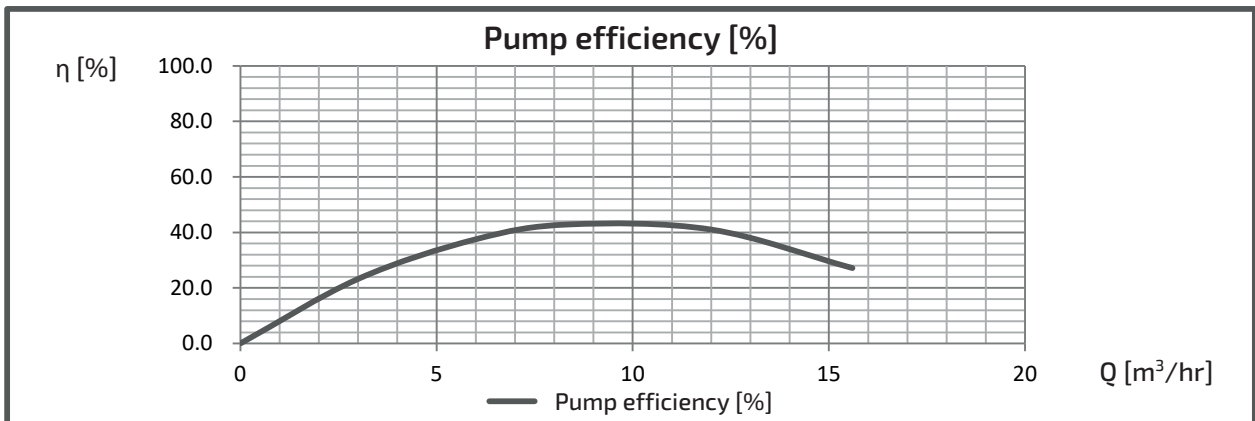
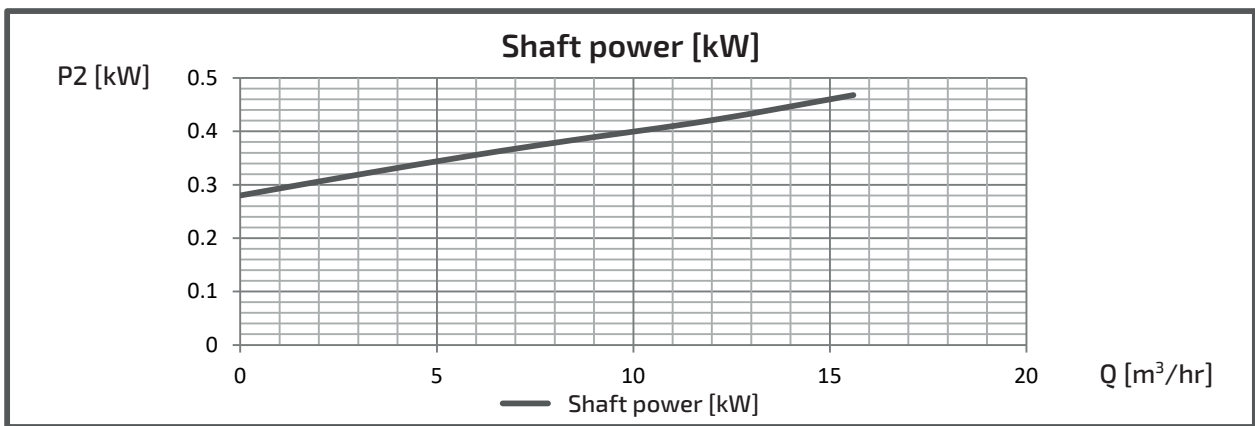
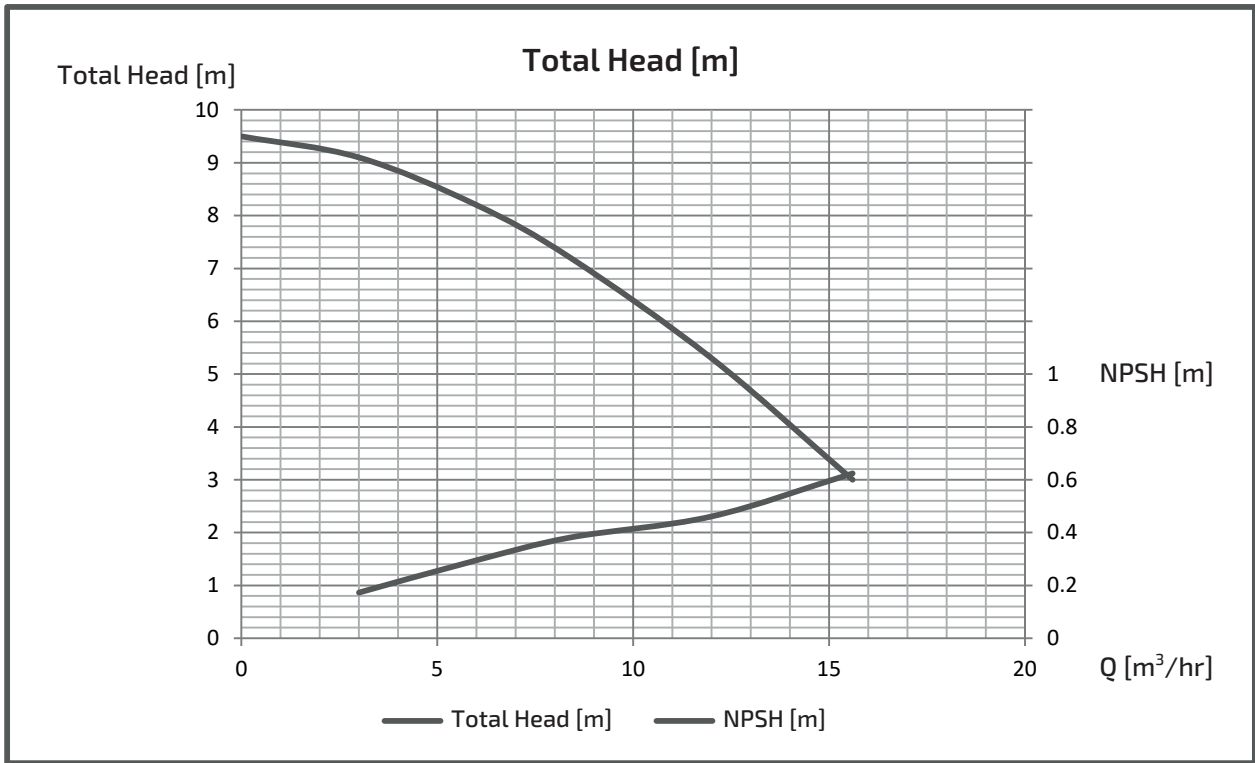
■ PERFORMANCE CURVES



EXPECTED PERFORMANCE CURVE

MODEL : FS4-405-M0.2S2

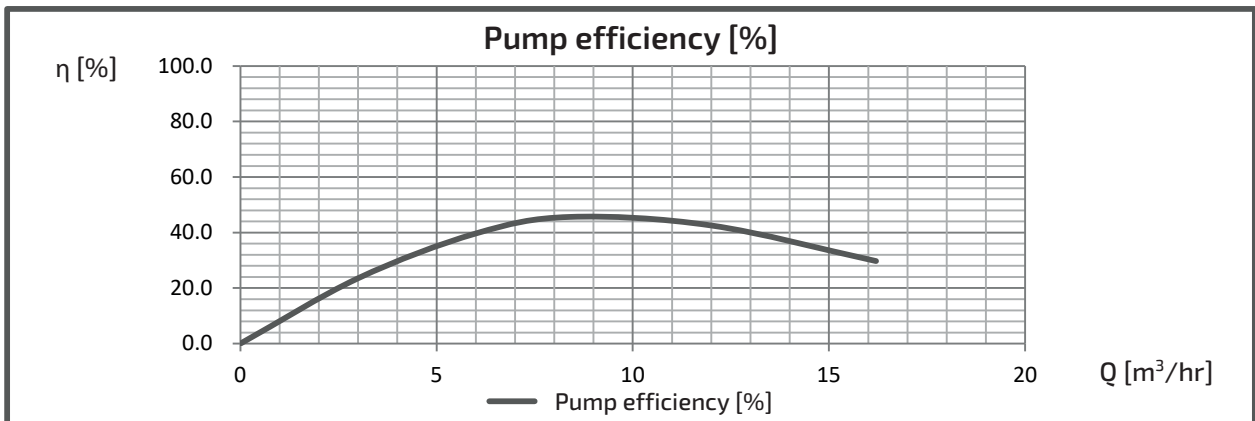
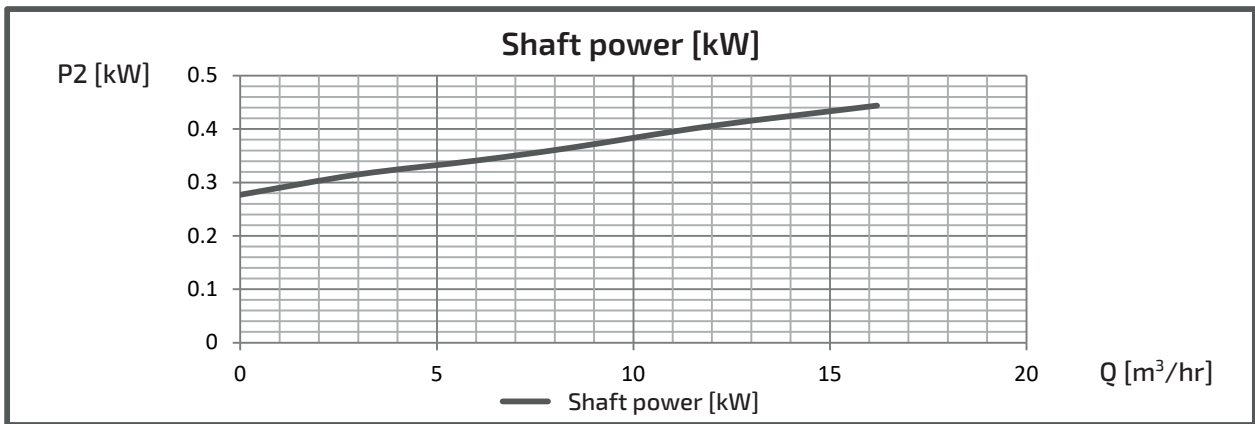
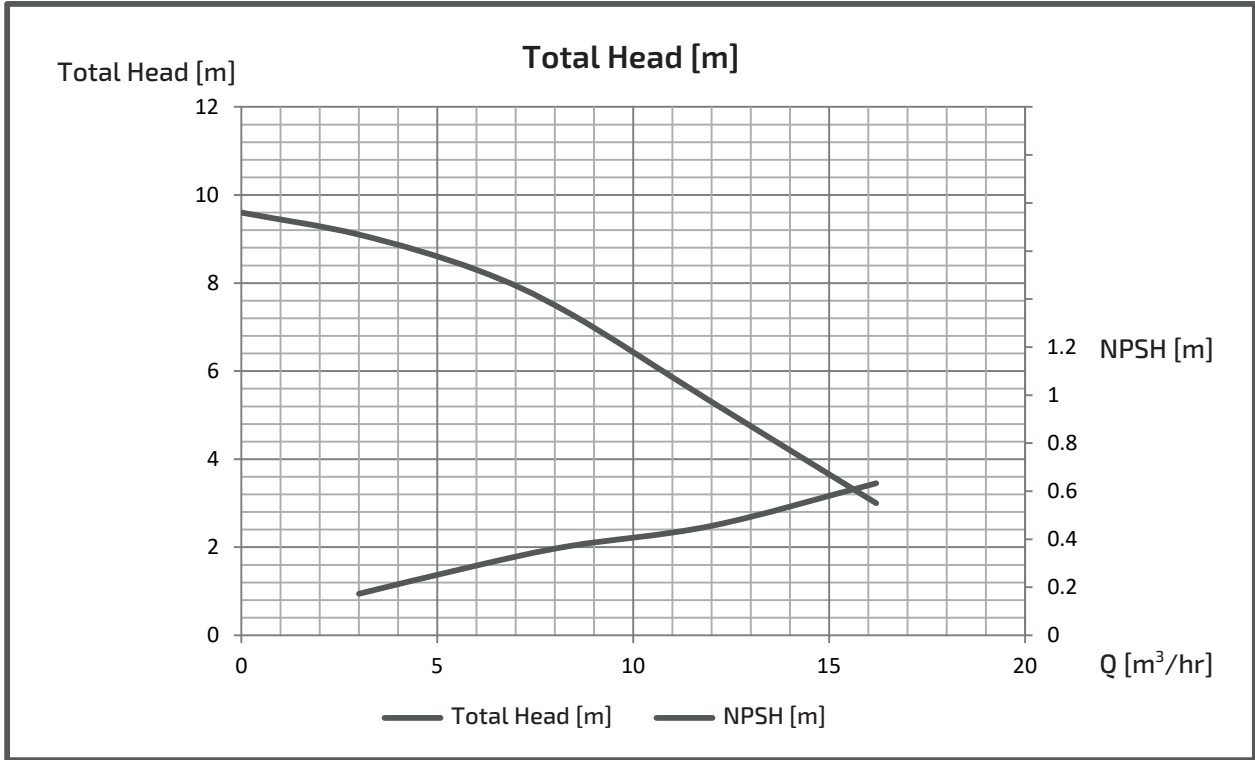
■ PERFORMANCE CURVES



EXPECTED PERFORMANCE CURVE

MODEL : FS4-405-MN0.4T

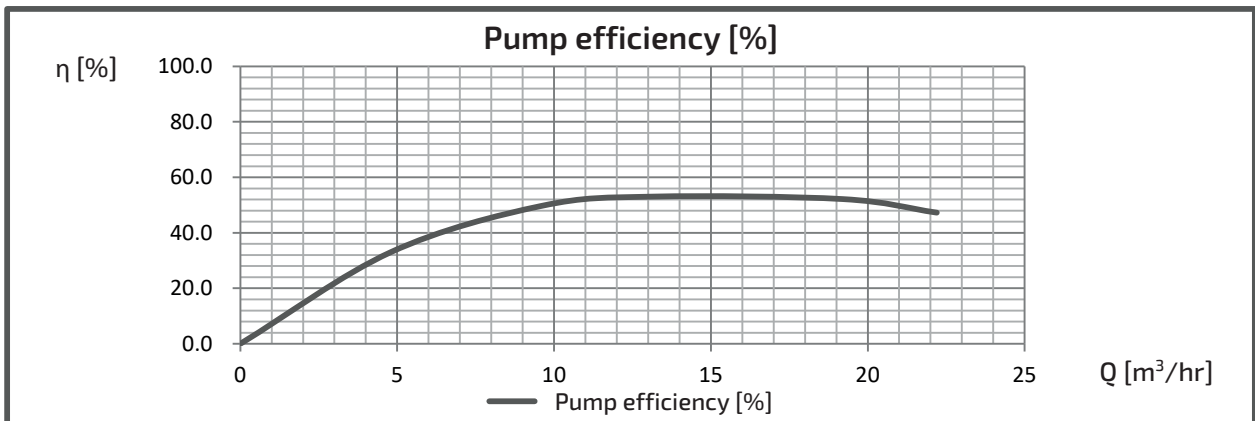
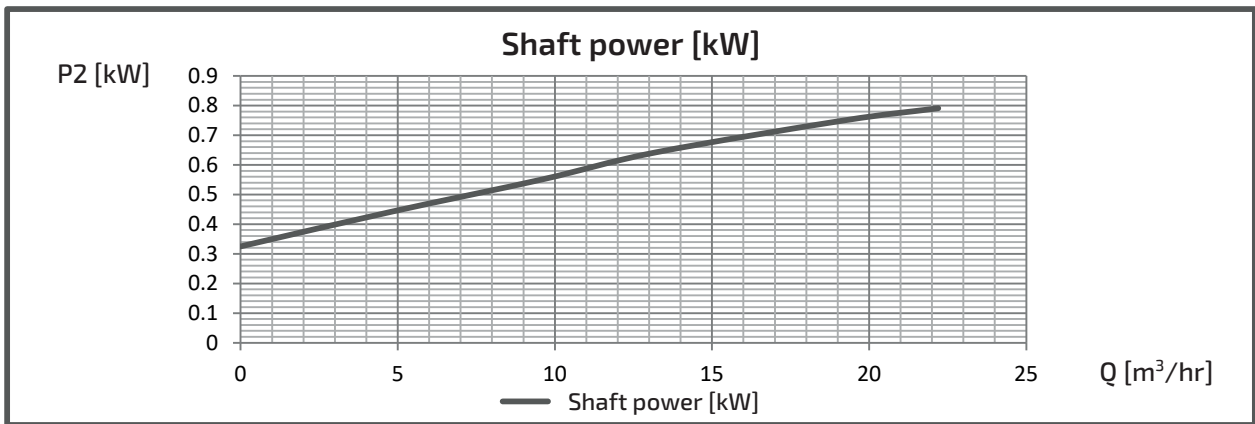
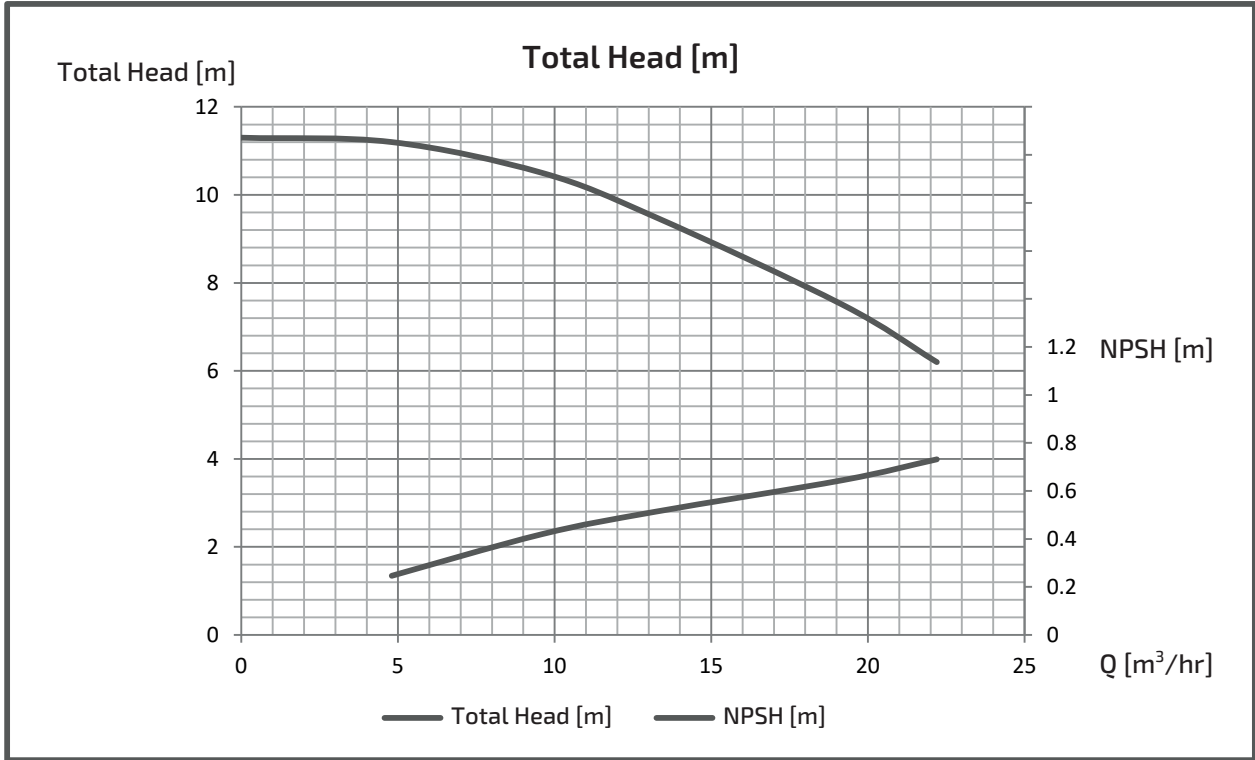
■ PERFORMANCE CURVES



EXPECTED PERFORMANCE CURVE

MODEL : FS505G(M)4ME0.75

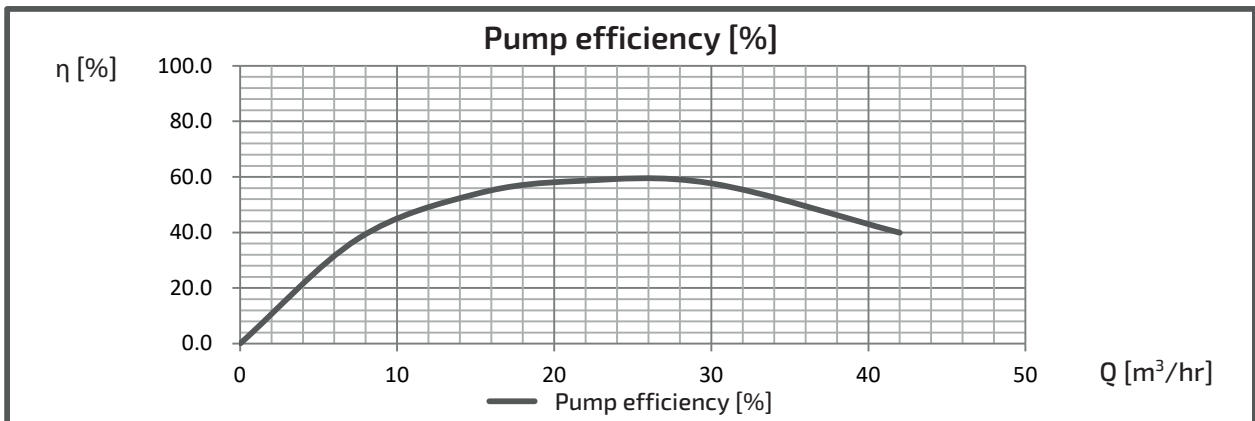
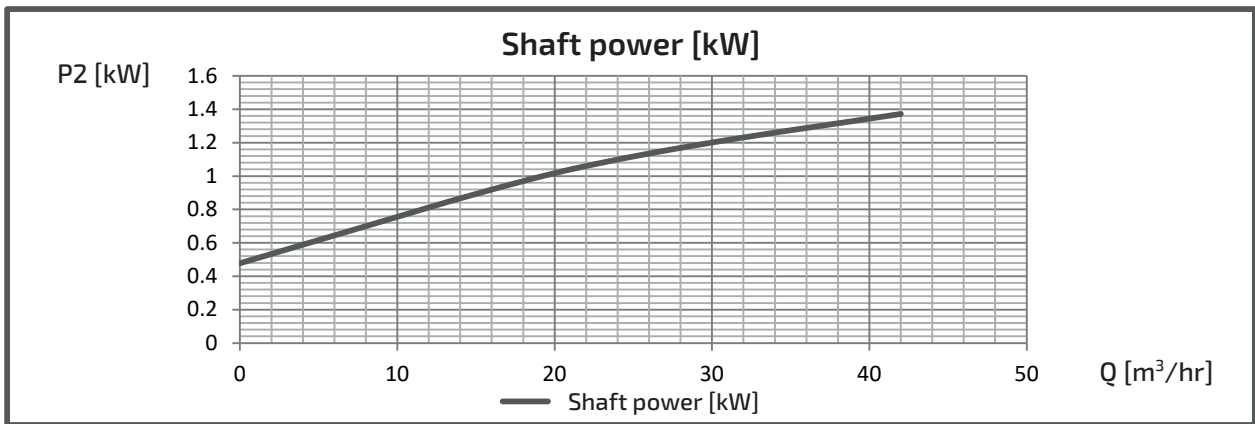
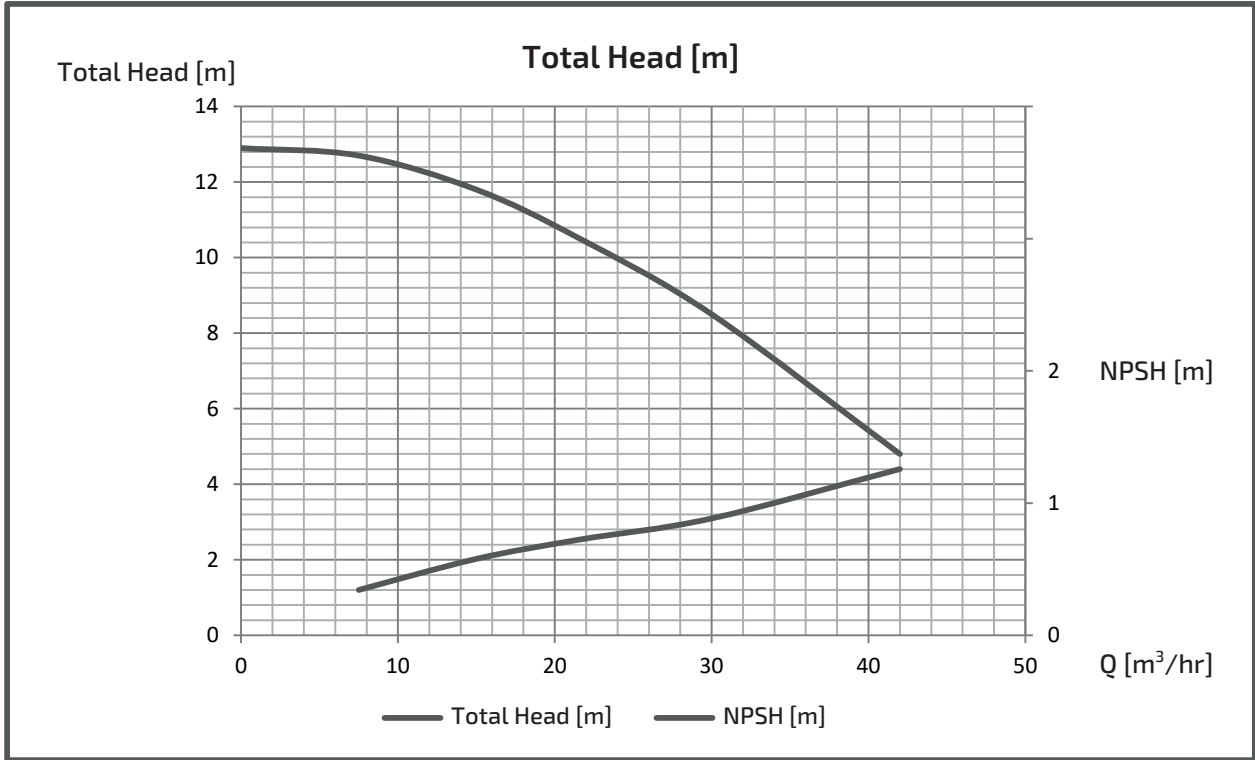
■ PERFORMANCE CURVES



EXPECTED PERFORMANCE CURVE

MODEL : FS655G(M)4ME1.5

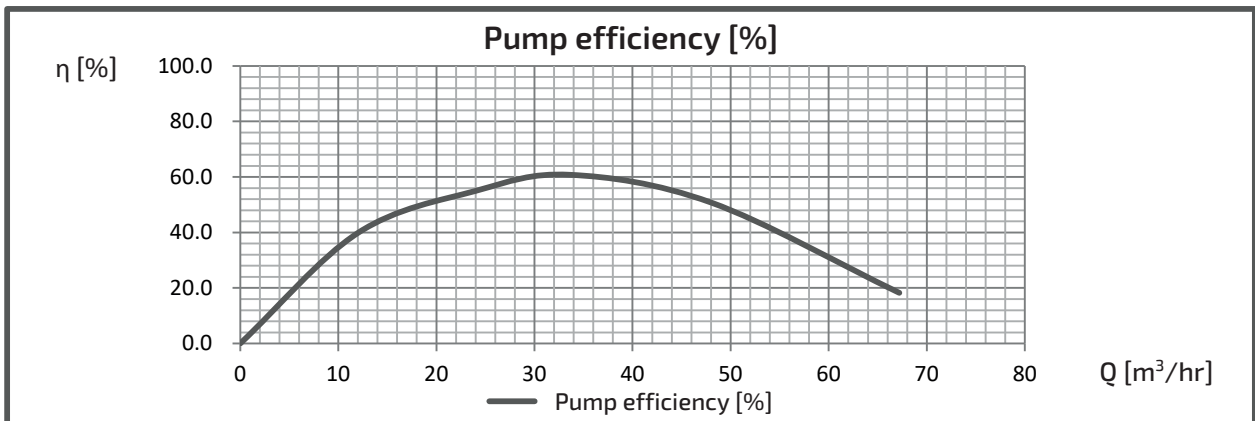
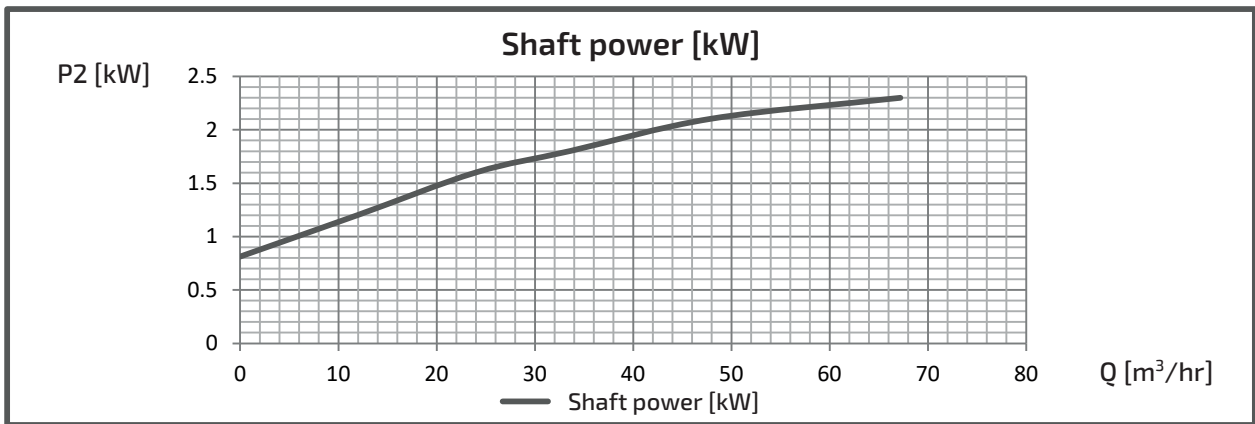
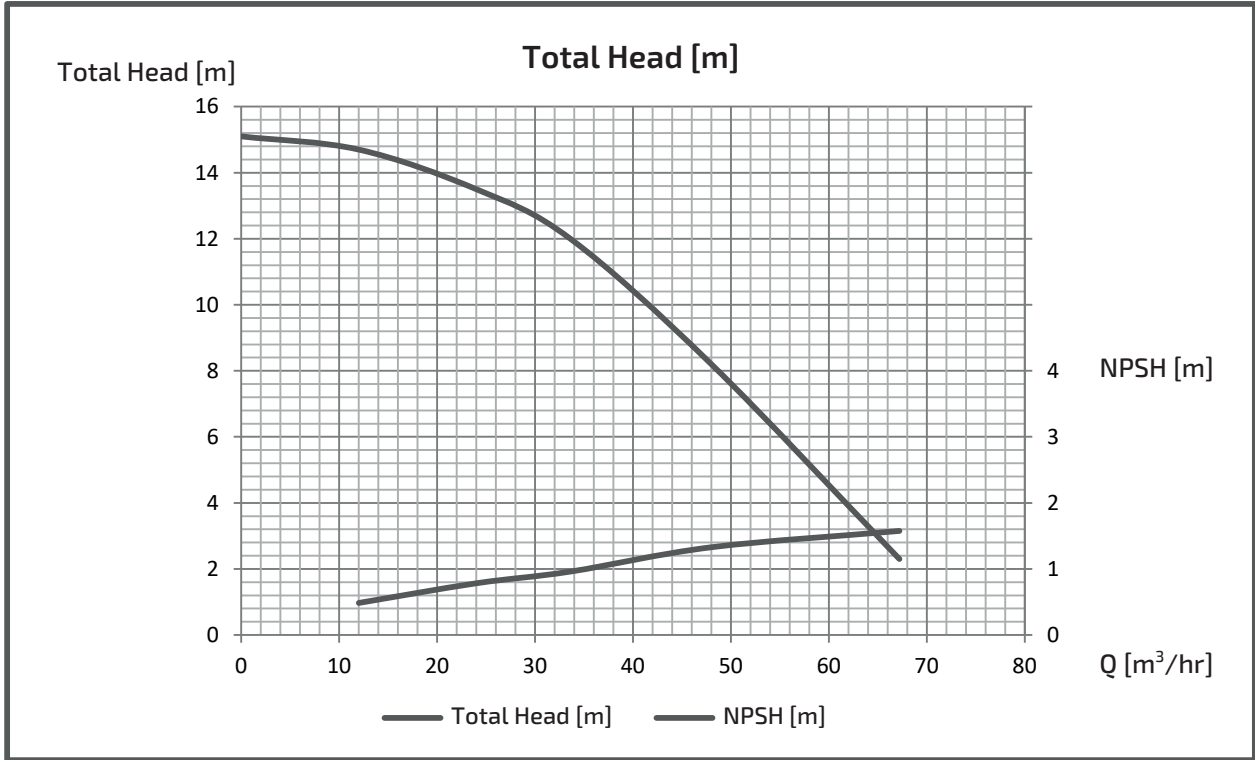
■ PERFORMANCE CURVES



EXPECTED PERFORMANCE CURVE

MODEL : FS805G(M)4ME2.2

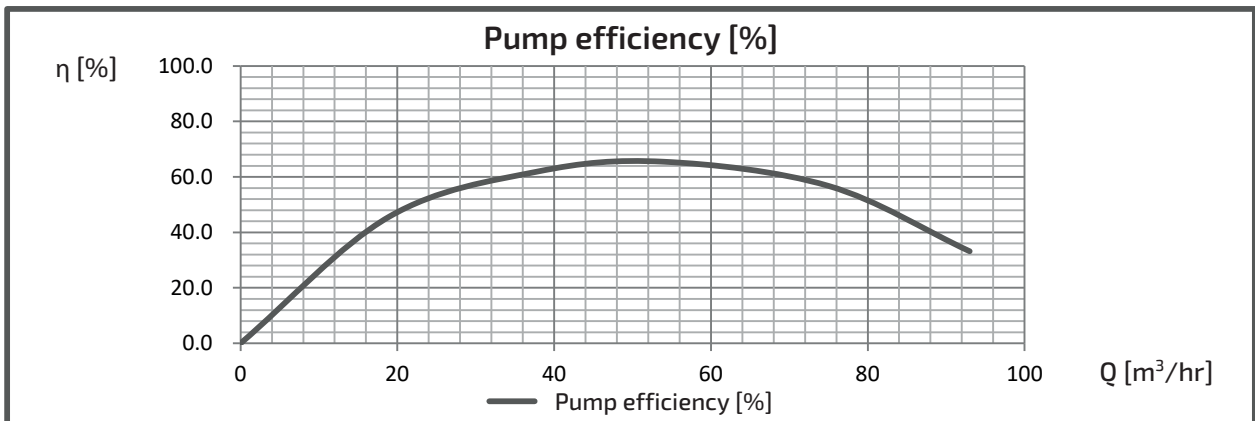
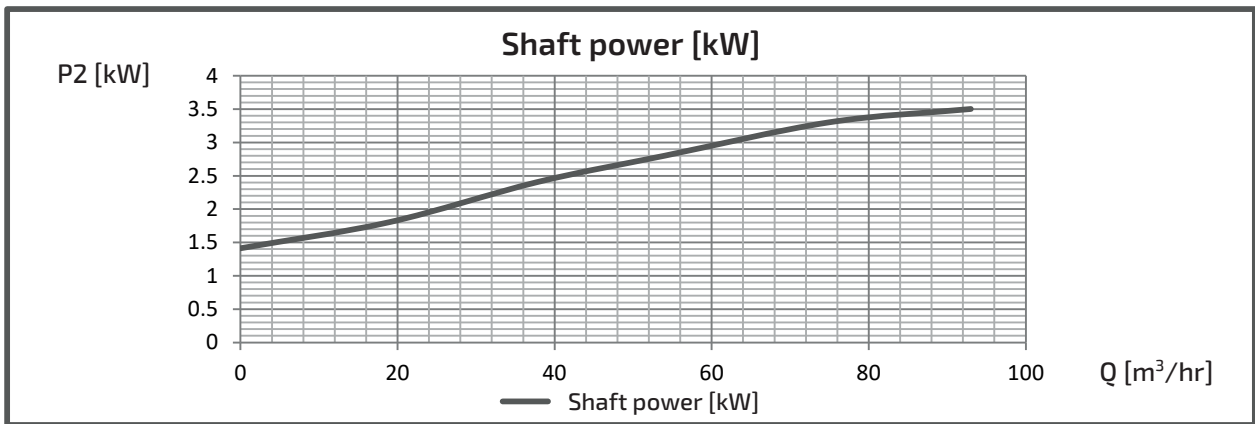
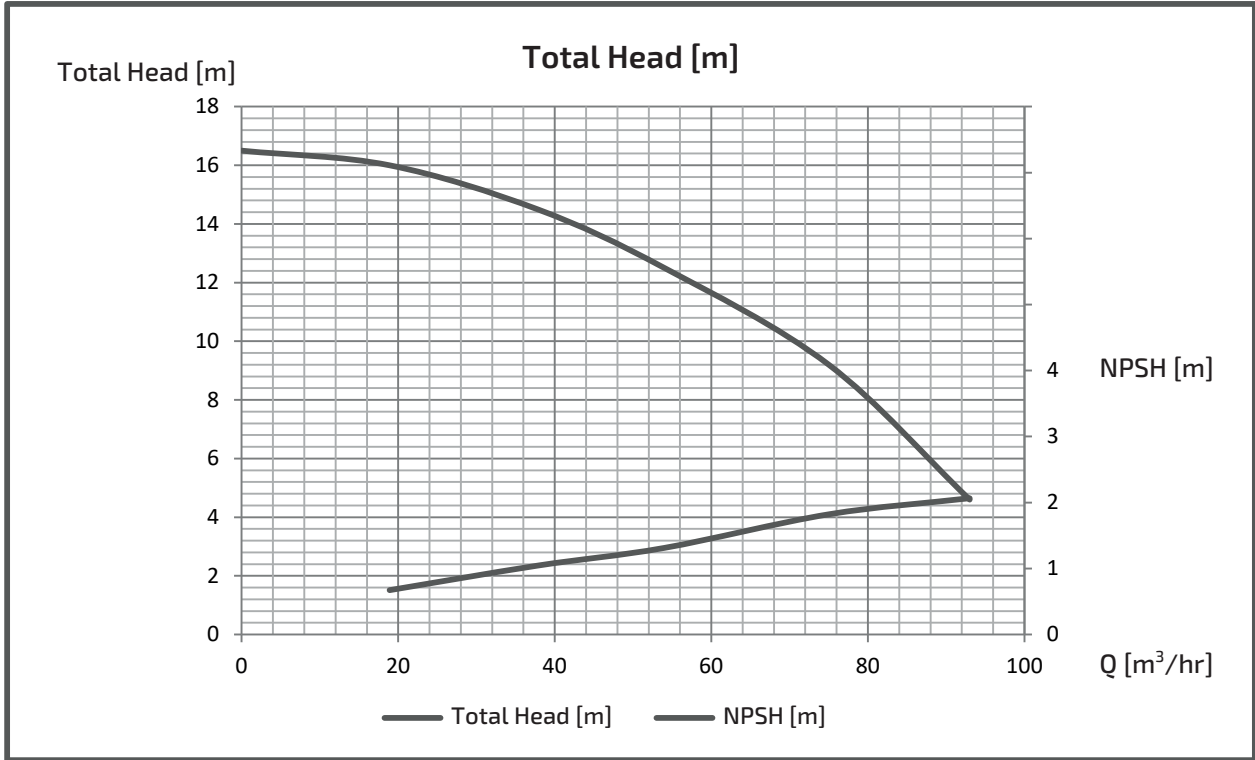
■ PERFORMANCE CURVES



EXPECTED PERFORMANCE CURVE

MODEL : FS1005G(M)4ME3.7

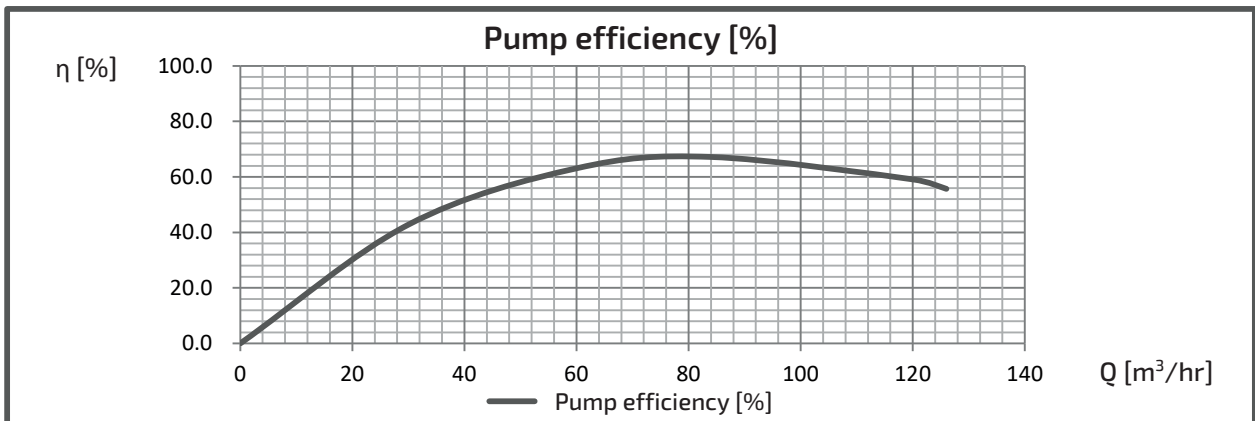
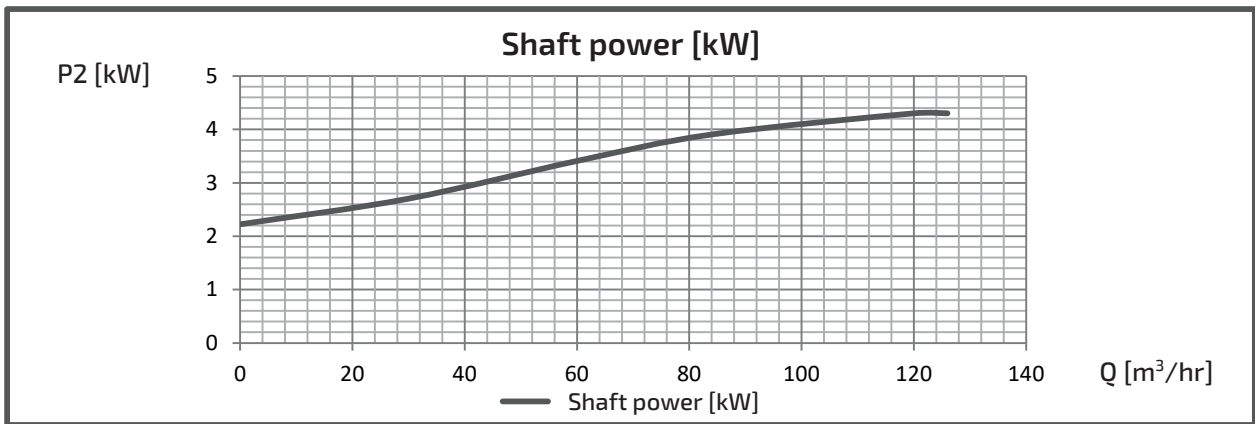
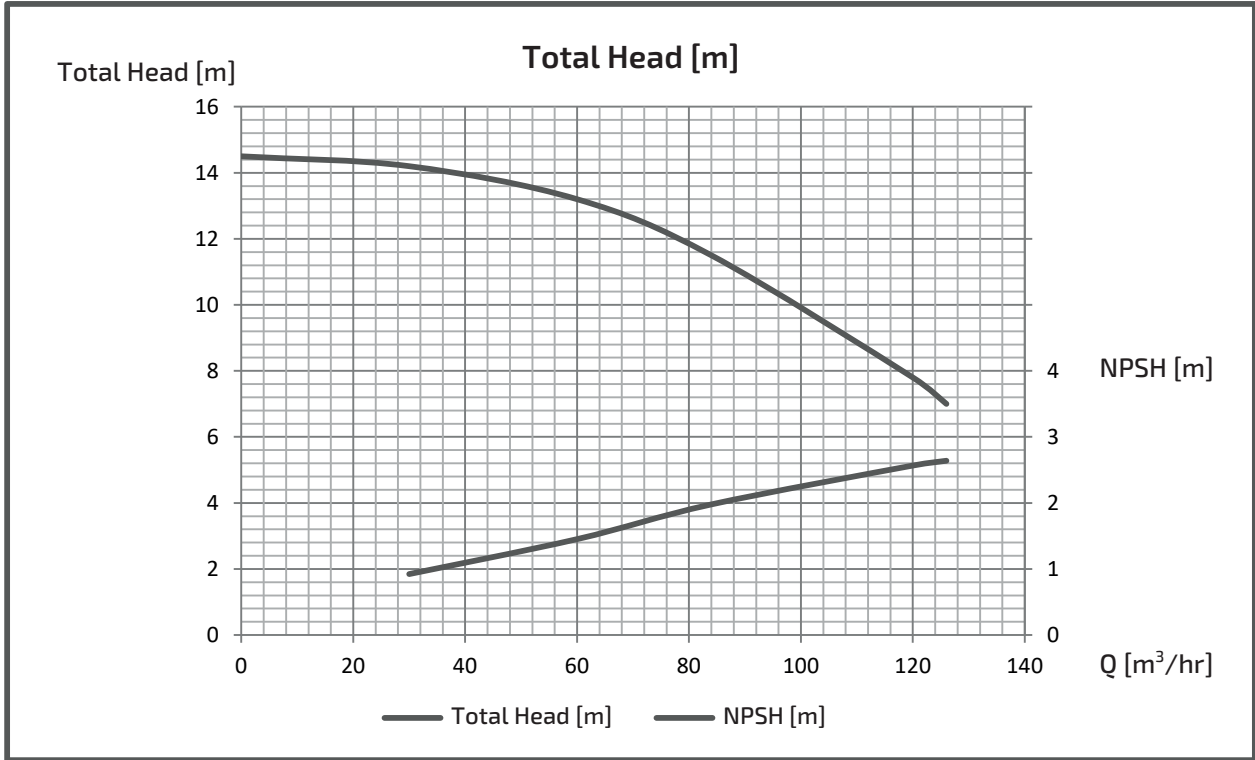
■ PERFORMANCE CURVES



EXPECTED PERFORMANCE CURVE

MODEL : FS1255G4ME5.5

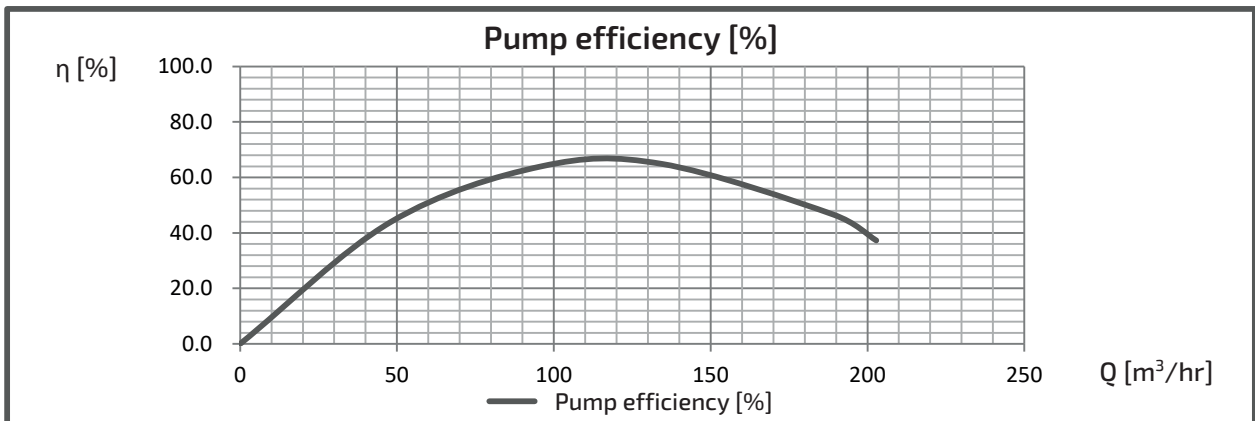
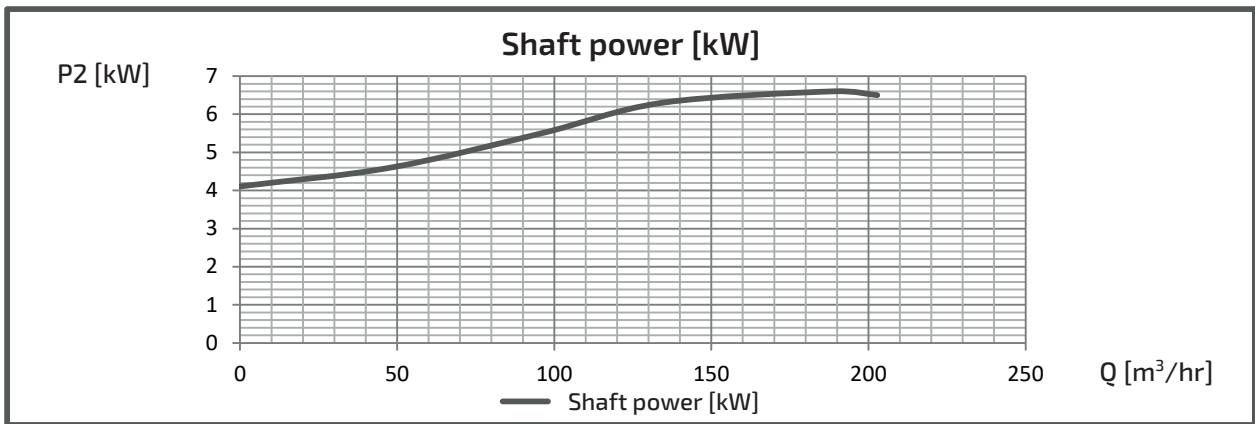
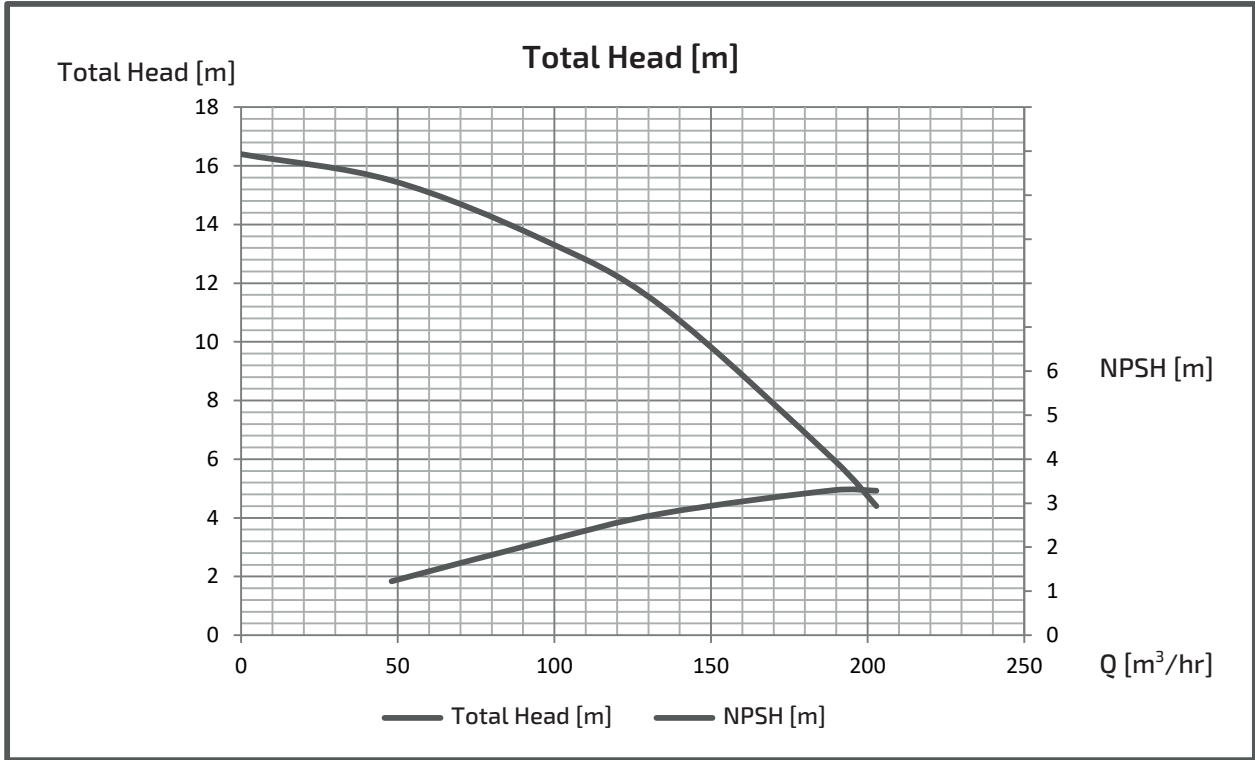
■ PERFORMANCE CURVES



EXPECTED PERFORMANCE CURVE

MODEL : FS1505G4ME7.5

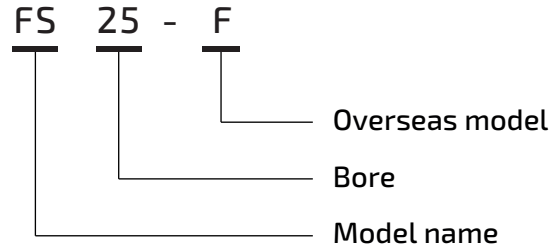
■ PERFORMANCE CURVES



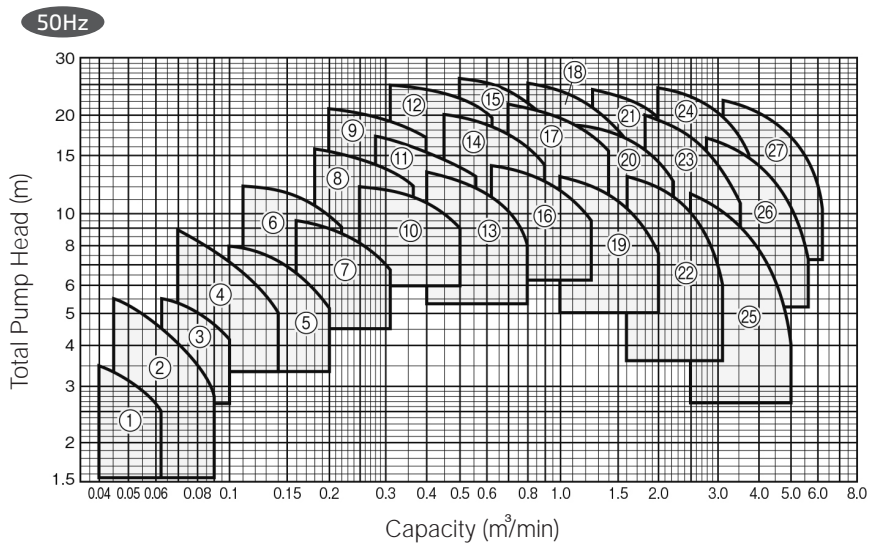
TYPE : FS-F



MODEL CODE



PERFORMANCE CHART

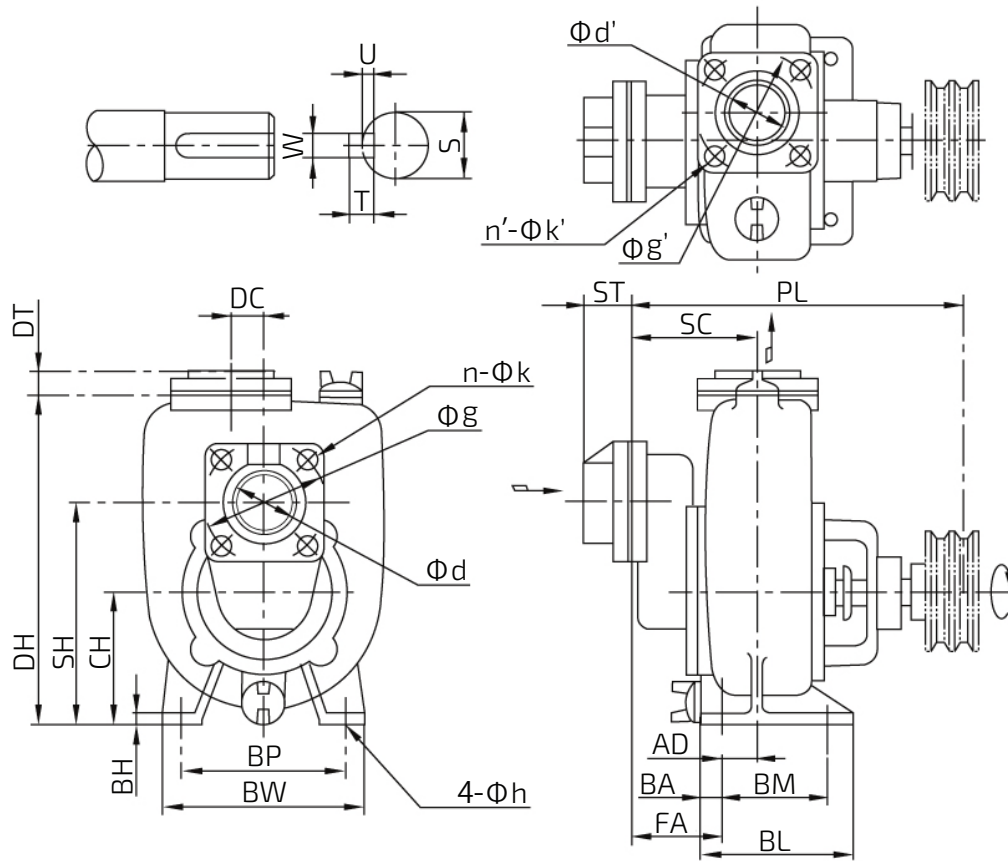


No.	Bore (mm)	Model	rpm	Power		Performance				
				PS	Capacity (m ³ /min)	Total head (m)	Capacity (m ³ /min)	Total head 4.5(m)	Capacity (m ³ /min)	Total head (m)
1	25	FS25-F	1,450	0.25	0.04	3.5	0.05	3.2	0.063	2.5
2			1,750	0.25	0.045	5.5	0.063	4.5	0.09	2.8
3	32	FS32-F	1,450	0.25	0.063	5.5	0.08	5	0.1	4.2
4			1,750	0.5	0.071	8.8	0.1	7.2	0.14	5
5	40	FS40-F	1,450	0.5	0.1	8	0.14	7.2	0.2	5.2
6			1,750	1	0.11	12.2	0.16	11.2	0.22	9.2
7	50	FS50-F	1,400	1	0.16	9.5	0.22	8.8	0.32	6.8
8			1,770	2	0.18	15.8	0.25	14.8	0.36	12.2
9			2,050	3	0.2	21	0.28	19.8	0.4	17
10	65	FS65-F	1,500	2	0.25	12.2	0.36	11.2	0.5	9.2
11			1,750	3	0.28	17.2	0.4	15.5	0.56	12.8
12			2,100	5	0.32	24.8	0.45	23	0.63	19.8
13	80	FS80-F	1,450	3	0.4	13.2	0.56	12	0.8	8
14			1,750	5	0.45	20	0.63	18.2	0.9	13.8
15			2,000	7.5	0.5	26	0.71	23.5	1	18
16	100	FS100-F	1,450	5	0.63	14.2	0.9	12.5	1.25	9.5
17			1,750	7.5	0.71	21.5	1	19.5	1.4	15.5
18			1,900	10	0.8	25.2	1.12	22.5	1.6	17
19	125	FS125-F	1,450	7.5	1	12.8	1.4	11.2	2	7.5
20			1,750	10	1.12	19	1.6	17	2.24	12.5
21			1,950	15	1.25	23.5	1.8	21	2.5	15.5
22	150	FS150-F	1,450	10	1.6	13.2	2.24	11	3.15	5.8
23			1,750	15	1.8	20.2	2.5	17.2	3.55	10.8
24			1,950	20	2	24.2	2.8	21.2	4	12.5
25	200	FS200-F	1,450	15	2.5	11.2	3.5	8.8	5	3.5
26			1,750	20	2.8	17	4	14	5.6	7.2
27			2,000	30	3.15	22.2	4.5	18.5	6.3	10

※ 1PS = 0.7355kW

PUMP DIMENSION - FS-F

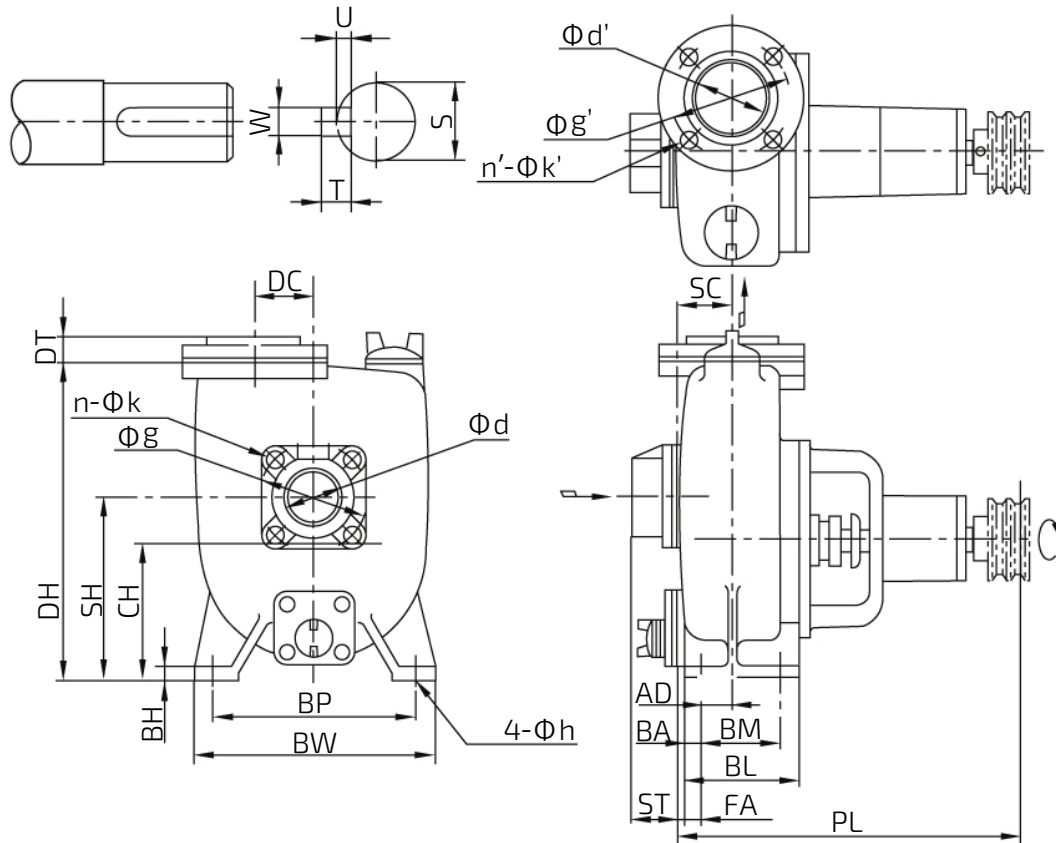
(Bore : 25 ~ 40 mm)



Bore (mm)	Model	Pump														Weight (kg)	
		CH	DC	DH	AD	PL	SC	FA	SH	BA	BM	BL	BH	BP	BW		h
25	FS25-F	85	25	230	19.5	222	82.5	63	140	13	60	90	12	150	180	12	21
32	FS32-F	125	30	295	16	247	107	91	190	25	70	120	15	175	215	12	33
40	FS40-F	135	40	330	10.5	264	98.5	89	215	23	90	138	15	205	236	12	45
Bore (mm)	Model	Flange					Shaft						Weight (kg)				
		d, d'	g, g'	n, n'	k, k'	ST	DT	S	U	W	T						
25	FS25-F	25	75	4	M10	41	23	17	3	5	5	16					
32	FS32-F	32	90	4	M12	41	23	20	3.5	6	6	26					
40	FS40-F	40	95	4	M12	41	25	20	3.5	6	6	36					

PUMP DIMENSION - FS-F

(Bore : 50 ~ 200 mm)



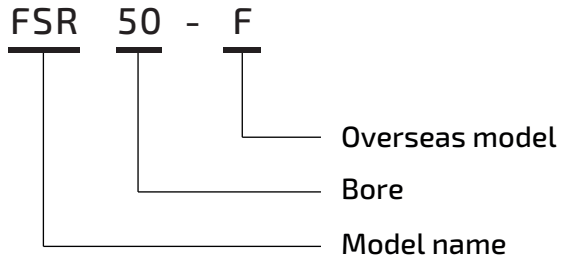
Bore (mm)	Model	Pump														Weight (kg)	
		CH	DC	DH	AD	PL	SC	FA	SH	BA	BM	BL	BH	BP	BW		h
50	FS50-F	145	50	335	37	299	57	20	195	18	80	116	14	216	250	12	28
65	FS65-F	145	50	335	30	319	70	40	195	18	80	116	14	216	250	12	35
80	FS80-F	160	40	400	53	378	80	27	215	18	110	146	16	254	290	15	42
100	FS100-F	180	45	455	65	444	100	35	250	18	140	176	20	279	320	15	63
125	FS125-F	200	45	510	60	459	105	45	280	23	140	186	20	318	360	19	87
150	FS150-F	225	50	555	78	553	138	60	335	23	168	206	20	318	360	19	100
200	FS200-F	225	45	595	75	602	150	75	375	23	180	226	20	356	400	19	135

Bore (mm)	Model	Flange							Shaft					Weight (kg)	
		d, d'	g	g'	n	n'	k	k'	ST	DT	S	U	W		T
50	FS50-F	50	105	120	4	4	M12	M12	38.5	27	19	3.5	6	6	28
65	FS65-F	65	130	140	4	4	M12	M12	43	31	19	3.5	6	6	35
80	FS80-F	80	145	150	4	8	M16	M12	48	33	28	4	8	7	42
100	FS100-F	100	165	175	4	8	M16	M12	60	39	32	5	10	8	63
125	FS125-F	125	210	210	8	8	M16	M16	65	43	32	5	10	8	87
150	FS150-F	150	240	240	8	8	M16	M16	65	43	42	5	12	8	100
200	FS200-F	200	290	290	8	8	M16	M16	79	55	48	5.5	14	9	135

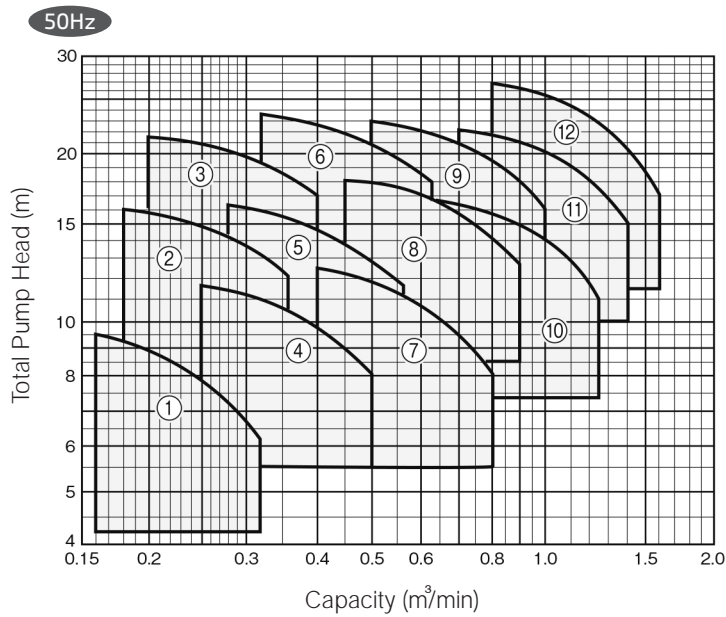
TYPE : FSR-F



MODEL CODE



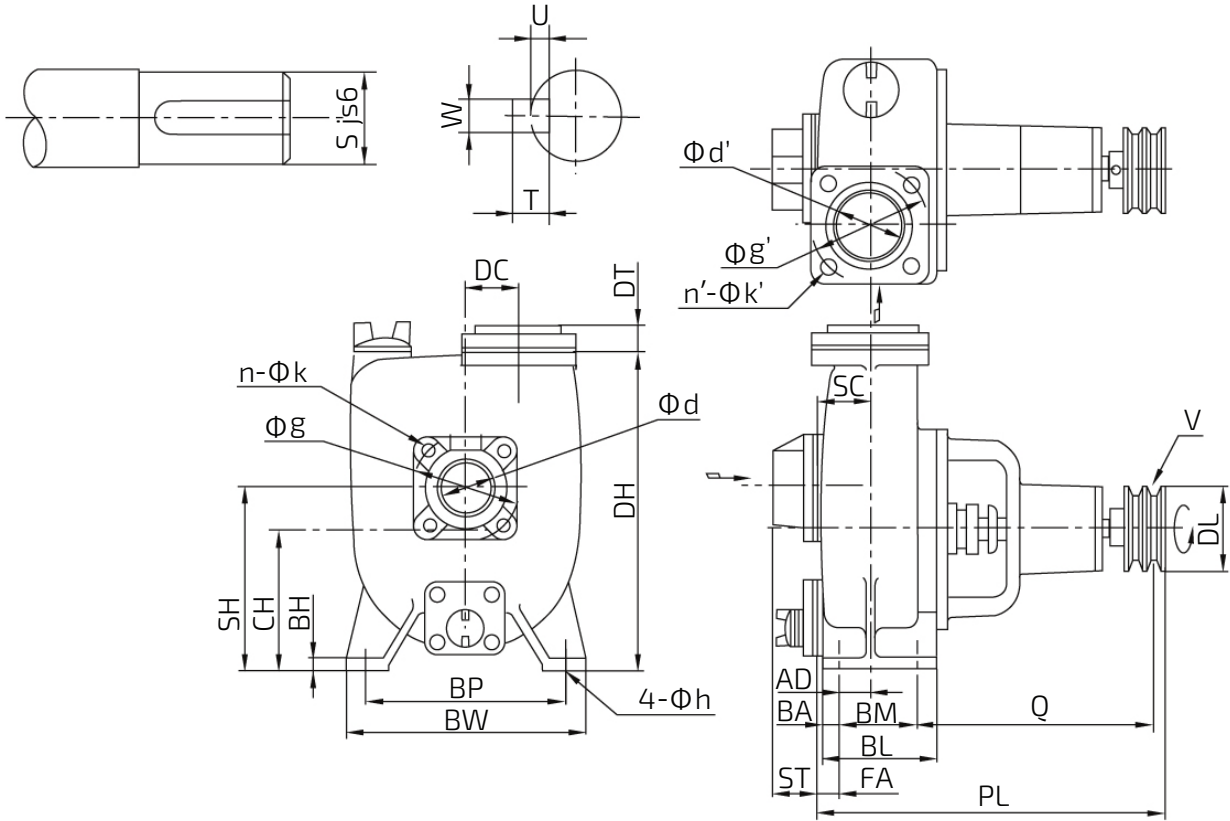
PERFORMANCE CHART



No.	Bore (mm)	Model	rpm	Power	Performance					
				PS	Capacity (m ³ /min)	Total head (m)	Capacity (m ³ /min)	Total head 4.5(m)	Capacity (m ³ /min)	Total head (m)
1	50	FSR50-F	1,750	1	0.16	9.5	0.22	8.5	0.32	6.2
2			2,250	2	0.18	16	0.25	15	0.36	12.2
3			2,600	3	0.2	21.5	0.28	20.2	0.4	17
4	65	FSR65-F	1,750	2	0.25	11.8	0.36	10.5	0.5	8.2
5			2,050	3	0.28	16.2	0.4	14.8	0.56	11.8
6			2,450	5	0.32	23.5	0.45	21.8	0.63	18
7	80	FSR80-F	1,750	3	0.4	12.5	0.56	11.2	0.8	8.2
8			2,100	5	0.45	18	0.63	16.5	0.9	12.8
9			2,350	7.5	0.5	22.8	0.71	20.8	1	16.2
10	100	FSR100-F	1,750	5	0.63	16.5	0.9	15	1.25	11
11			2,000	7.5	0.71	22	1	20	1.4	15
12			2,200	10	0.8	26.5	1.12	24	1.6	17

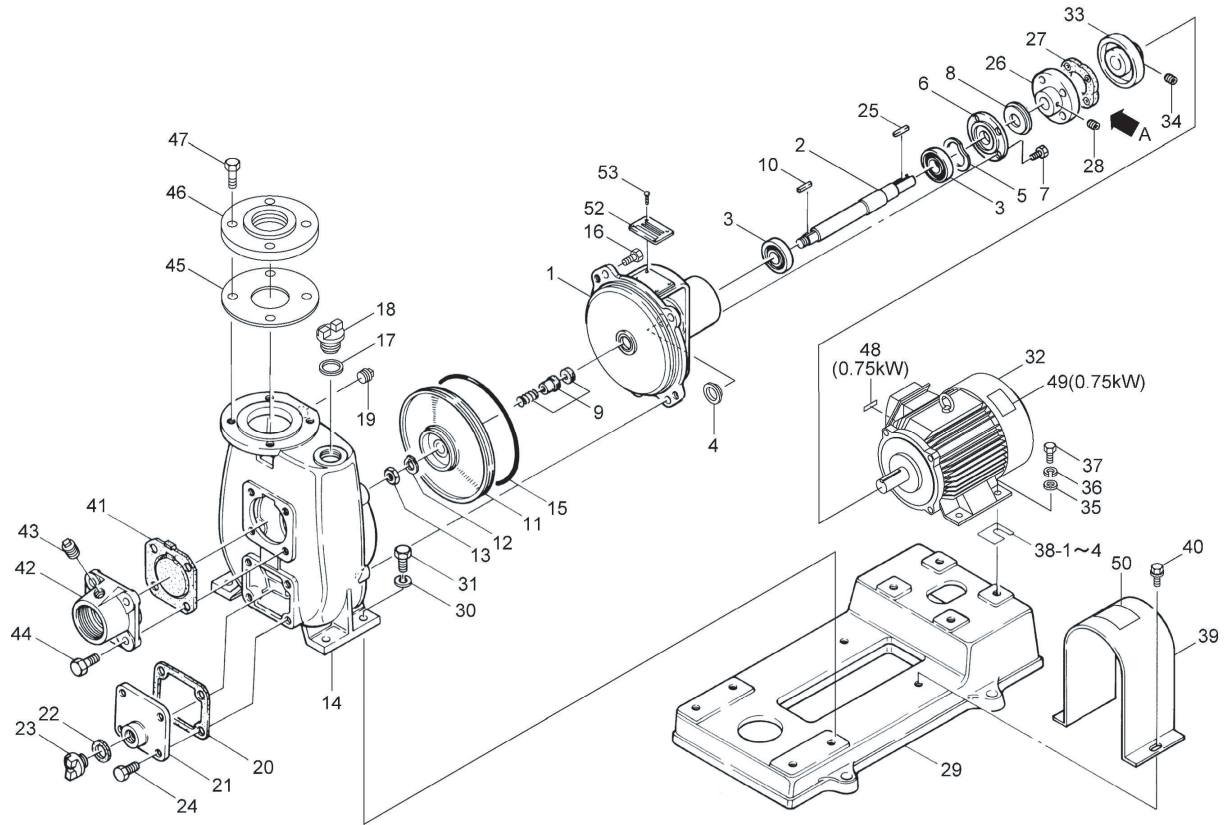
※ 1PS = 0.7355kW

PUMP DIMENSION - FSR-F



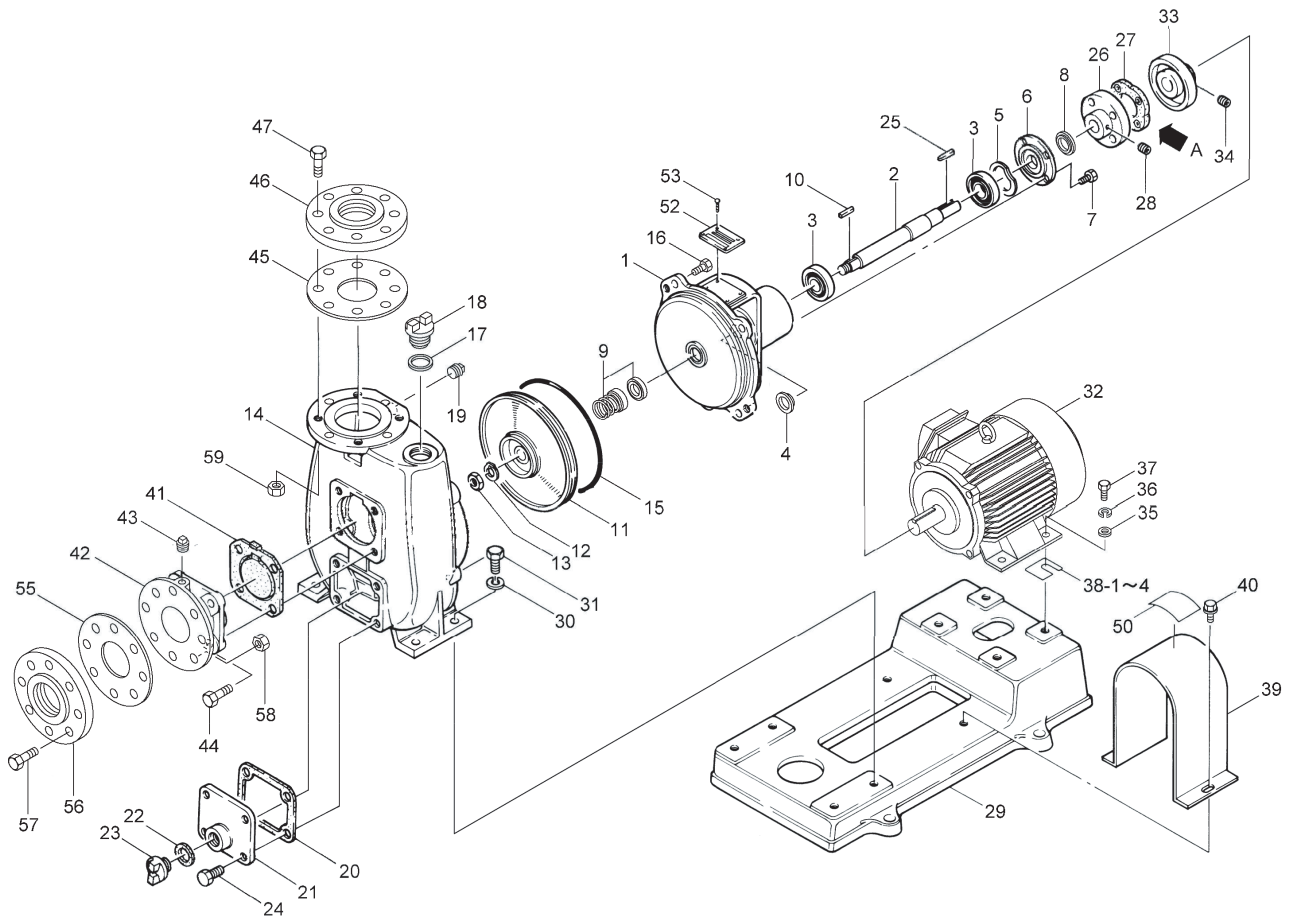
Bore (mm)	Model	Pump																Weight (kg)
		CH	DC	DH	AD	Q	PL	SC	FA	SH	BA	BM	BL	BH	BP	BW	h	
50	FSR50-F	120	35	285	30	215	325	60	30	160	18	70	106	14	190	220	12	22
65	FSR65-F	132	40	312	32	216	341	67	35	182	18	80	116	14	216	250	12	28
80	FSR80-F	145	40	345	45	243.5	391	80	35	200	18	100	136	14	216	250	12	35
100	FSR100-F	170	45	390	70	257.5	490	100	30	240	18	140	176	14	254	290	15	48
Bore (mm)	Model	Flange						Shaft				Weight (kg)						
		d, d'	g, g'	n, n'	k, k'	ST	DT	S	U	W	T							
50	FSR50-F	50	105	4	M12	43	27	19	3.5	6	6	22						
65	FSR65-F	65	130	4	M12	43	29	19	3.5	6	6	28						
80	FSR80-F	80	145	4	M16	48	33	24	4	7	8	35						
100	FSR100-F	100	165	4	M16	60	39	28	4	7	8	48						

SPARE PARTS (FS-ME) LESS THAN 80mm



No.	Part name	No.	Part name	No.	Part name	No.	Part name
1	Bearing box	15	O-Ring	29	Baseplate	43	Plug
2	Shaft	16	Bolt	30	Spring washer	44	Bolt
3	Bearing	17	Ring packing	31	Bolt	45	Flange packing
4	Deflector	18	Plug	32	Motor	46	Flange
5	Wave washer	19	Plug	33	Coupling	47	Bolt
6	Bearing cover	20	Packing	34	Screw	48	-
7	Bolt	21	Cover	35	Plane washer	49	-
8	Deflector	22	Ring packing	36	Spring washer	50	Caution label
9	Mechanical seal	23	Plug	37	Bolt	51	-
10	Key	24	Bolt	38	Shim	52	Nameplate
11	Impeller	25	Key	39	Coupling guard	53	Screw
12	Impeller washer	26	Shaft coupling	40	Bolt		
13	Nut	27	Coupling cushion	41	Check valve		
14	Casing	28	Screw	42	Connecting pipe		

SPARE PARTS (FS-ME) MORE THAN 80mm



No.	Part name	No.	Part name	No.	Part name	No.	Part name
1	Bearing box	16	Bolt	31	Bolt	46	Flange
2	Shaft	17	Ring packing	32	Motor	47	Bolt
3	Bearing	18	Plug	33	Coupling	48	-
4	Deflector	19	Plug	34	Screw	49	-
5	Wave washer	20	Packing	35	Plane washer	50	Caution label
6	Bearing cover	21	Cover	36	Spring washer	51	-
7	Bolt	22	Ring packing	37	Bolt	52	Nameplate
8	Deflector	23	Plug	38	Shim	53	Screw
9	Mechanical seal	24	Bolt	39	Coupling guard	54	-
10	Key	25	Key	40	Bolt	55	Packing
11	Impeller	26	Shaft coupling	41	Check valve	56	Flange
12	Impeller washer	27	Coupling cushion	42	Connecting pipe	57	Bolt
13	Nut	28	Screw	43	Plug	58	Nut
14	Casing	29	Baseplate	44	Bolt	59	Nut
15	O-Ring	30	Spring washer	45	Flange packing		

IMPORTANT SAFETY PRECAUTIONS

Always read the manual thoroughly and fully comprehend the contents for safe operation before starting use. Precautions for using products safely and for preventing personal injuries or physical damage are given in the manual.

- Matters falling under the following may not be covered by the warranty: uses out of the specified scope of application, failure to comply with precautions, improper repairs and alterations, matters arising from natural disasters, matters arising from the installation environment (improper power source, foreign objects, sand etc.), non-compliance with laws and regulations or standards pertaining thereto, accidental or intentional damage or injury, replacement of consumable parts, defects due to resale, etc.
- Do not use the product for applications out of the product specifications. Doing so may cause electric shock, fire, water leakage, etc.
- Have spare equipment ready when using pumps for equipment for living things (fish farms, fish tanks, aquariums, etc.) or critical equipment.
- Pump failure may cause lack of oxygen and water quality deterioration, and may affect the lives of the living things.
When using pumps for equipment for living things (fish farms, fish tanks, aquariums, etc.), do not install the pump in the tank where the living things are put into. The current leakage or sealing liquid leak from the mechanical seal may cause the death of the living things.
- If used to transport food-related items, give due consideration to the materials used. Contamination by foreign objects may occur.
- Avoid using for living things which disagrees with copper alloy. It may affect the lives of the living things.
- Select a product which is appropriate for your application. Inappropriate use of products may cause accidents.
- Conduct construction in accordance with the applicable laws and regulations (the Technical Standards of Electric Installation, interior wiring regulation, Building Standards Act, Water Supply Law, etc.). Not only does it violate the laws and regulations, but it also may cause injuries due to electric shock, fire, falling and tipping over.
- Do not use in places where people are assumed to get in contact with the product (baths, pools, lakes, etc.). Electric leak may occur and cause electric shock.
- Depending on the equipment, attach a filter etc. appropriate for your application on the discharge side before use, perform thorough flushing to check that there is no contamination. Cutting oil, rubber mold releasing agent, foreign objects etc. from the manufacturing line and cutting oil, foreign objects etc. from the pipeline may contaminate the liquid which is to be handled.
- Do not operate pumps with a specification of 50Hz at 60Hz. It may cause damage due to overpressure or burn damage of motors etc. due to overload. Do not operate pumps with a specification of 60Hz at 50Hz. Pump performance may be reduced.
- Only repair technicians may disassemble, repair, modify the product or replace cables. Defects may cause failure, damage, electrification or fire.
- It is recommended that both periodic and daily inspections be performed in order to ensure that the pump will operate reliably for as long as possible. Failure to perform inspections may lead to pump failure, accidents etc. For periodic inspections, please consult your distributor or our nearest sales office.

Note

Specifications/Configurations may be altered as a result of improvements and such.
Unauthorized reproduction of this document is prohibited.