

CS-R



Submersible motors

CS-R



kW	4" 1 ~	4" 3 ~	6" 3 ~		8" 3 ~		10" 3 ~		kW
	CS-R	CS-R	CS-R	I-CS-R 316	CS-R	I-CS-R 316	CS-R	I-CS 316	
0,37	•	•							0,37
0,55	•	•							0,55
0,75	•	•							0,75
1,1	•	•							1,1
1,5	•	•							1,5
2,2	•	•							2,2
3		•							3
4		•	•	•					4
5,5		•	•	•					5,5
7,5		•	•	•					7,5
9,2			•	•					9,2
11			•	•					11
13			•	•					13
15			•	•					15
18,5			•	•					18,5
22			•	•					22
26			•	•					26
30			•	•	•	•			30
37			•	•	•	•			37
45			•	•	•	•			45
51					•	•			51
59					•	•			59
66					•	•			66
75					•	•	•	•	75
92					•	•	•	•	92
110					•	•	•	•	110
130							•	•	130
150							•	•	150
165							•	•	165
185							•	•	185

Rewindable motor CS-R series

Operating conditions

Motor	Motor P2	Max. Liquid temperature	Cooling minimum flow velocity	Max n° of starting x hour
4CS-R	all	35 °C	0,1 m/s	30
6CS-R	4÷15 kW	40 °C	0,5 m/s	20
6CS-R	18,5÷30 kW	35 °C	0,5 m/s	20
6CS-R	37÷45 kW	30 °C	0,5 m/s	20
8CS-R	30÷45 kW	30 °C	0,2 m/s	10
8CS-R	51 kW	30 °C	0,2 m/s	8
8CS-R	59÷75 kW	30 °C	0,5 m/s	8
8CS-R	92÷110 kW	30 °C	0,5 m/s	6
10CS-R	all	25 °C	0,15 m/s	6

Continuous duty.

CS-R



Rewindable motor CS-R series

The CS-R 6/8/10" motors are in a water bath with the wire being coated with polyvinyl chloride, while the CS-R 4" motors have a special food grade dielectric fluid that gives a better lubricant effect, increasing the life of all moving parts and the copper wires.

The special design of all our motors allows easy access to the various components, simplifying maintenance and repair.

All CS, CS-R series motors can be rewound and are NEMA compliant.

CS-R:Standard construction

I-CS-R:AISI 316 construction.

Operation data

2-pole induction motor, 50 Hz ($n \approx 2900$ rpm).

Sized for connection to the pumps according to NEMA Standards (10" excluded).

Standard voltages:

single-phase 230 V - up to 2,2 kW for 4" motors.

three-phase 230 V; 400 V, for 4" motors.

400 V; 400/690 V for 6-8-10" motors.

Voltage tolerance : $\pm 10\%$

In order to limit both current and torque at each starting, for rated motor powers equal to or higher than 7.5 kW, one of the following types of starting is necessary: star/delta, soft starter, stator impedance or autotransformer.

Insulation class:

- class F for 4" motors,

- class E for 6" motors, PVC for I-6" (I-6" 45 kW PE2+PA).

- PVC for 8"

- PVC for 10" (10" 170kW and 190 kW PE2+PA)

Protection IP 68.

Installation below water level: 100 m for 4", 150 m for 6", 500 m for 8,10" 4" motor

Motor suitable operation with frequency converter (with suitable filter dv/dt).

Horizontal installation (6" 37-45kW, 8" 92kW, 10" 170-190 kW excluded)

Cable

Motor 230V - 50 Hz - 1 ~	Sezione	Lunghezza
4CS-R 0,37 ÷ 2,2 kW	4 x 1,5 mm ²	1,7 m

Motor 400V - 50 Hz - 3 ~	Sezione	Lunghezza
4CS-R 0,37 ÷ 3 kW	4 x 1,5 mm ²	1,7 m
4CS-R 4 ÷ 7,5 kW	4 x 2 mm ²	2,7 m
6CS-R 4 ÷ 11 kW	3 x (1x2,5) mm ²	3,5 m
6CS-R 13 ÷ 22 kW	3 x (1x4) mm ²	3,5 m
6CS-R 26 - 30 kW	3 x (1x6) mm ²	3,5 m
6CS-R 37 - 45 kW	3 x (1x10) mm ²	4,5 m
8CS-R 30 ÷ 45 kW	3 x (1x16) mm ²	4 m
8CS-R 51 ÷ 92 kW	3 x (1x25) mm ²	4 m
8CS-R 110 kW	3 x (1x35) mm ²	4 m
10CS 75 ÷ 92 kW	3x(1x25) mm ²	4 m
10CS 110 ÷ 150 kW	3x(1x50) mm ²	4 m
10CS 165 ÷ 185 kW	3x(1x70) mm ²	4 m

Materials

Components	4"	
External frame	Chrome-nickel steel 1.4301 EN 10088 (AISI 304)	
Motor flange	Cast iron with cathoporesis treatment and protected with a Cr-Ni steel AISI 304 cover	
Shaft	Chrome-nickel steel 1.4301 EN 10088 (AISI 304)	
Thrust bearing	Oil wetted	
Components	6", 8", 10" standard	6", 8", 10" 1.4401 EN 10088 (AISI 316)
External frame	Cr-Ni steel 1.4301 EN 10088 (AISI 304) (Steel AISI 316 for 6")	Steel 1.4401 EN 10088 (AISI 316)
Motor flange	Cast iron GJL 250 EN 1561 (Cast iron G 25 EN 1561 for 8,10")	Steel 1.4401 EN 10088 (AISI 316)
Shaft	Cr-Ni steel 1.4057 EN 10088 (AISI 431) (Steel AISI 630 for 8,10")	Duplex 1.4462 (Steel AISI 630 for 8,10")
Thrust bearing	Brass skids	Brass skids

Special features on request

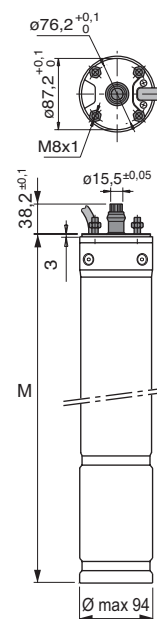
- Other voltage.
- Frequency 60 Hz.
- Higher liquid temperature.
- PT100 temperature sensor
- PE2 / PA winding insulation
- Cooling jackets
- Special Coupling Flange

Performance, dimensions and weights

4" CS-R - 1 ~

Pump type	PN		IN 230 V A	Power factor cos φ		Efficiency η %	R.P.M.	Direct start		Axial thrust N	M mm	Weight kg
	kW	HP		IA	μF							
4CS-R 0,37MC	0,37	0,5	3.6	0.93	50	2805	10.5	20	2000	311.3	6.45	
4CS-R 0,55MC	0,55	0,75	4.7	0.92	56	2790	14.5	25	2000	331.4	7.2	
4CS-R 0,75MC	0,75	1	5.6	0.97	61	2830	16.5	35	2000	356.4	8.45	
4CS-R 1,1MC	1,1	1,5	7.6	0.94	68	2845	22	40	2000	396.4	10.2	
4CS-R 1,5MC	1,5	2	10.7	0.92	66	2840	32	60	2000	436.5	11.65	
4CS-R 2,2MC	2,2	3	14.6	0.93	69	2810	43	80	2000	491.5	14.9	

4" NEMA



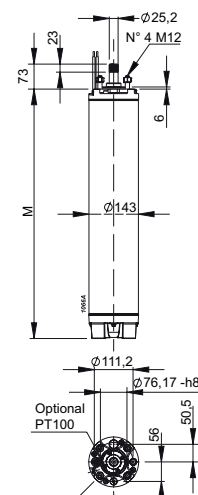
4" CS-R - 3 ~

Pump type	PN		IN 400 V A	Power factor cos φ		Efficiency η %	R.P.M.	Direct start		Axial thrust N	M mm	Weight kg
	kW	HP		IA	μF							
4CS-R 0,37TC	0,37	0,5	1.7	0.61	52	2830	6	2000	2000	311.3	6.45	
4CS-R 0,55TC	0,55	0,75	2	0.66	60	2815	7	2000	2000	331.4	7.2	
4CS-R 0,75TC	0,75	1	2.5	0.69	62	2820	8.5	2000	2000	356.4	8.45	
4CS-R 1,1TC	1,1	1,5	3.3	0.76	67	2810	11.5	2000	2000	371.4	9.35	
4CS-R 1,5TC	1,5	2	4.4	0.71	69	2815	15.5	2000	2000	396.4	10.2	
4CS-R 2,2TC	2,2	3	6.1	0.73	71	2815	21	2000	2000	436.5	11.65	
4CS-R 3TC	3	4	6.9	0.85	74	2820	24	3000	3000	450	12.1	
4CS-R 4TC	4	5,5	9.4	0.84	75	2820	33	5000	5000	505	15.1	
4CS-R 5,5TC	5,5	7,5	13.4	0.77	77	2820	47	5000	5000	589	19.8	
4CS-R 7,5TC	7,5	10	16.4	0.81	81	2840	88	5000	5000	800	29	

6" CS-R, I-6"CS-R

Pump type	PN		IN 400 V A	Power factor cos φ		Efficiency η %		R.P.M.	Direct start		Axial thrust N	M mm	Weight kg	
	Standard	AISI 316		4/4	3/4	4/4	3/4		IA/IN	CA/CN				
6CS-R 4	I-6CS-R 4	4	5,5	9,5	0,79	0,72	76,6	76	2895	4,35	1	30000	570	34,6
6CS-R 5,5	I-6CS-R 5,5	5,5	7,5	12,4	0,83	0,79	77,2	78,1	2875	4	0,9	30000	615	39,6
6CS-R 7,5	I-6CS-R 7,5	7,5	10	16,6	0,83	0,78	78,5	77,7	2885	4,45	1	30000	670	44,4
6CS-R 9,2	I-6CS-R 9,2	9,2	12,5	20,8	0,81	0,74	79,1	76,8	2880	4,2	0,9	30000	700	47,7
6CS-R 11	I-6CS-R 11	11	15	25,4	0,79	0,7	79,4	79	2870	4,75	1,4	30000	715	52
6CS-R 13	I-6CS-R 13	13	17,5	28,3	0,83	0,75	79,9	80,9	2870	4,75	1,3	30000	750	56
6CS-R 15	I-6CS-R 15	15	20	32,5	0,83	0,75	80,4	82,2	2880	4,2	1	30000	790	59,8
6CS-R 18,5	I-6CS-R 18,5	18,5	25	40,4	0,81	0,73	81,3	82,9	2870	4,8	1,5	30000	830	64,2
6CS-R 22	I-6CS-R 22	22	30	46,6	0,82	0,75	83	84,2	2870	4,9	1,5	30000	920	74,5
6CS-R 26	I-6CS-R 26	26	35	55,8	0,8	0,73	84	85,4	2880	5,25	1,7	30000	1055	89,3
6CS-R 30	I-6CS-R 30	30	40	62,5	0,83	0,77	83,5	85,4	2870	4,6	1,3	30000	1165	101,9
6CS-R 37	I-6CS-R 37	37	50	76,6	0,84	0,78	83,5	85,2	2860	4,55	1,3	30000	1245	111
6CS-R 45	I-6CS-R 45	45	60	96,3	0,82	0,75	82,5	84,3	2855	4,65	1,5	30000	1322	123,3

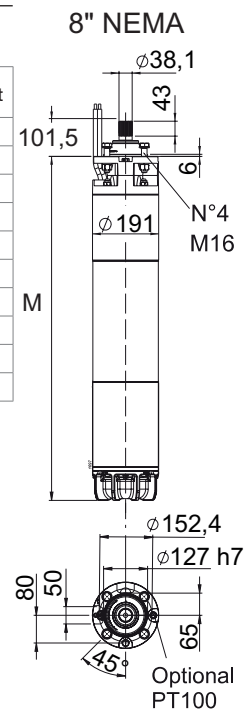
6" NEMA



Performance, dimensions and weights

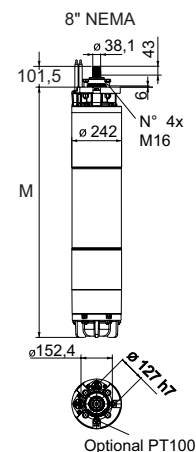
8" CS-R, I-8"CS-R

Pump type		PN		IN 400 V	Power factor cos φ		Efficiency η %		R.P.M.	Direct start		Axial thrust	M	Weight
Standard	AISI 316	kW	HP	A	4/4	3/4	4/4	3/4	R.P.M.	IA/IN	CA/CN	N	mm	kg
8CS-R 30	I-8CS-R 30	30	40	61	0,86	0,83	82,6	83,3	2900	5,5	1,8	50000	1060	143
8CS-R 37	I-8CS-R 37	37	50	76,2	0,83	0,78	84,6	84,5	2910	5,9	1,8	50000	1115	155
8CS-R 45	I-8CS-R 45	45	60	91,9	0,83	0,79	84,8	85,2	2905	5,85	1,9	50000	1195	172
8CS-R 51	I-8CS-R 51	51	70	101,1	0,85	0,8	85,9	86,5	2910	6	1,9	50000	1290	192
8CS-R 59	I-8CS-R 59	59	80	116,7	0,84	0,79	86,8	87,2	2915	6,2	2	50000	1395	210
8CS-R 66	I-8CS-R 66	66	90	131,2	0,84	0,79	86,6	87,1	2905	6,1	2	50000	1430	219
8CS-R 75	I-8CS-R 75	75	100	145,4	0,86	0,82	86,6	87,5	2895	5,9	2	50000	1500	235
8CS-R 92	I-8CS-R 92	92	125	179,2	0,85	0,8	86,9	87,8	2900	6,3	2,1	50000	1685	265
8CS-R 110	I-8CS-R 110	110	150	213,8	0,86	0,81	86,9	87,8	2895	6	1,9	50000	1760	283

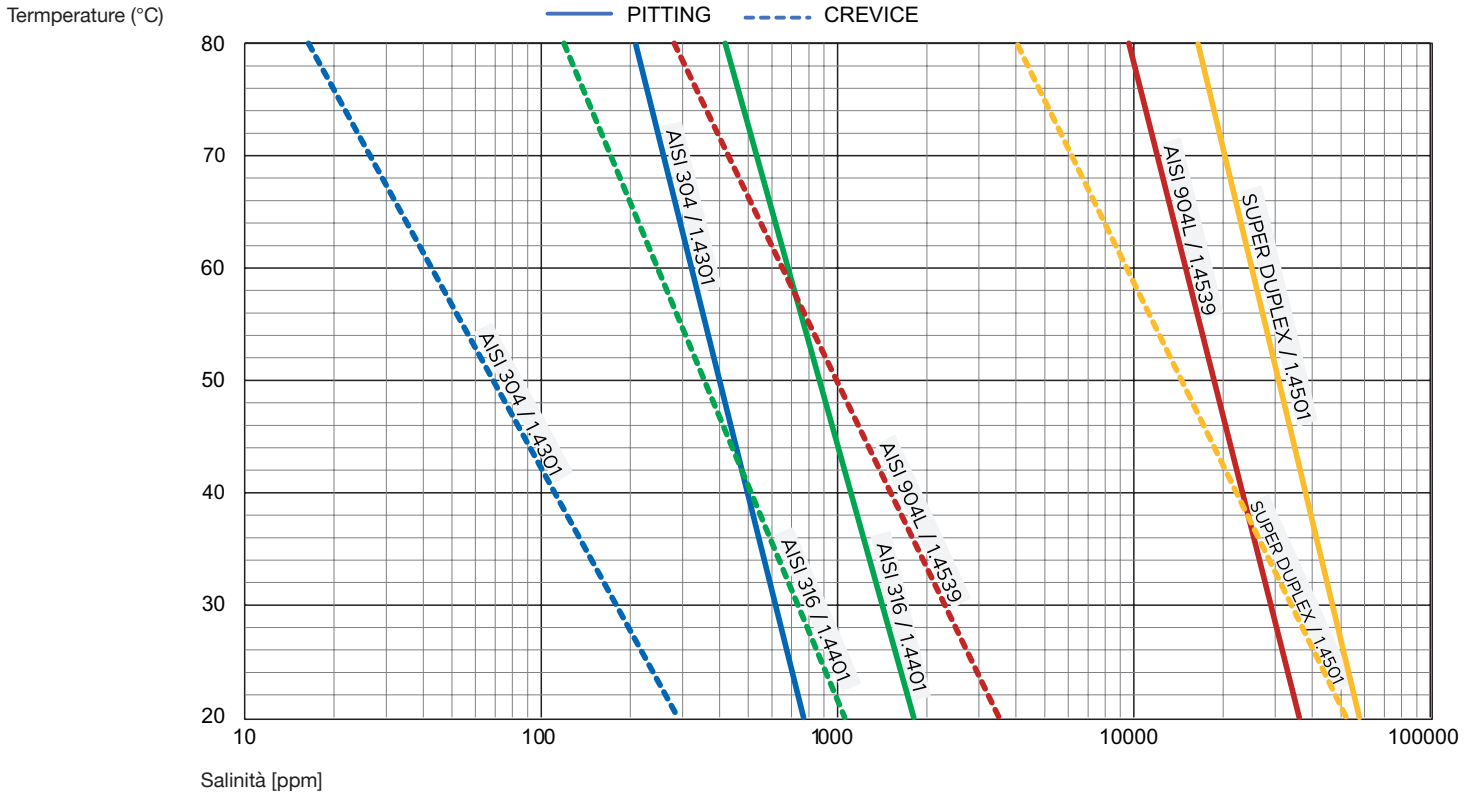


10" CS-R, I-10"CS-R

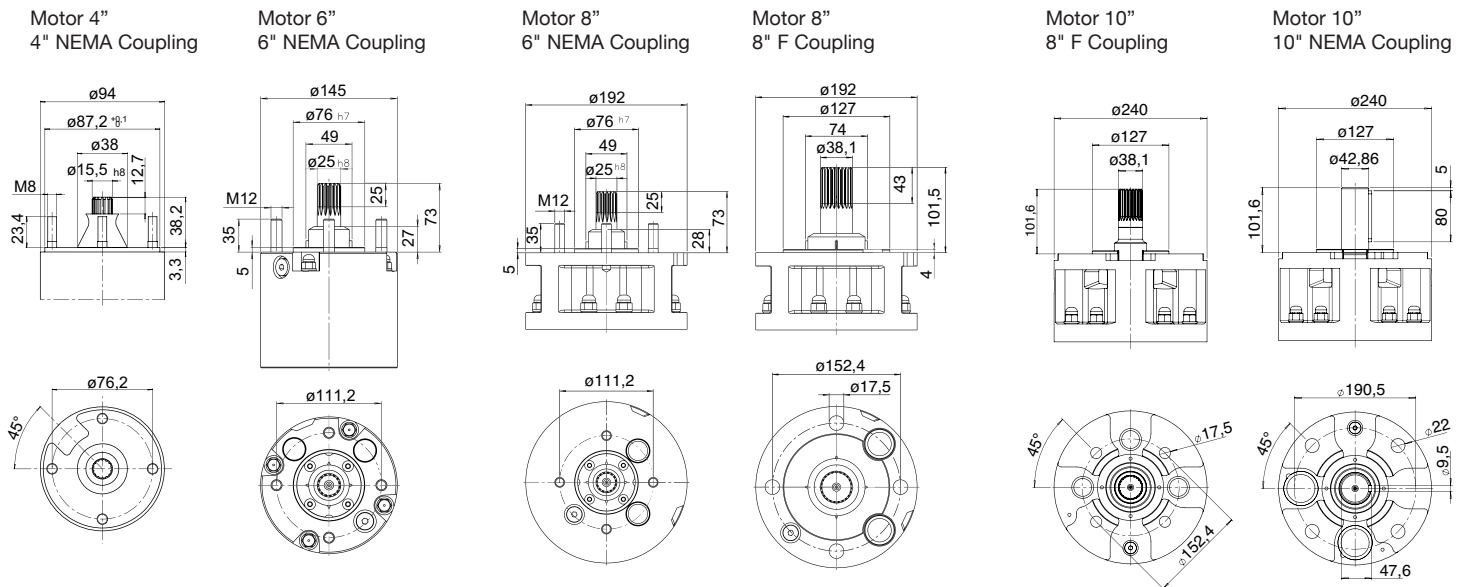
Pump type		PN		IN 400 V	Power factor cos φ		Efficiency η %		R.P.M.	Direct start		Axial thrust	M	Weight
Standard	AISI 316	kW	HP	A	4/4	3/4	4/4	3/4	R.P.M.	IA/IN	CA/CN	N	mm	kg
10CS 75	I-10CS 75	75	100	145,5	0,87	0,85	85,9	86,6	2925	6,1	1,4	70000	1406	300
10CS 92	I-10CS 92	92	125	177,2	0,86	0,84	87	87,3	2925	6,7	1,6	70000	1536	338
10CS 110	I-10CS 110	110	150	209,7	0,86	0,83	87,8	88,2	2930	6,3	1,5	70000	1641	373
10CS 130	I-10CS 130	130	175	251,1	0,86	0,83	87,9	88,4	2930	6,6	1,6	70000	1766	408
10CS 150	I-10CS 150	150	200	284,3	0,86	0,83	88,4	88,8	2930	6,7	1,7	70000	1866	436
10CS 165	I-10CS 165	165	220	317,5	0,85	0,81	88,3	88,6	2930	6,9	1,7	70000	2026	466
10CS 185	I-10CS 185	185	250	358,5	0,84	0,8	88,4	88,6	2935	6,7	1,6	70000	2126	499



Relationship between temperature and salinity



Coupling flange



Maximum length of electric cables

IN	230 Volt - 50 Hz - 1 ~				
	1 cavo quadripolare 4 xmm2				
A	1,5	2,5	4	6	10
cables max m					
2	142	235			
4	71	118	189		
6	47	78	126	189	
8	35	59	94	142	231
10	28	47	76	113	185
12	24	39	63	95	154
14	20	34	54	81	132
16	18	29	47	71	115
18		26	42	63	103
20		24	38	57	92
25			30	45	74
30			25	38	62

Voltage drop 3%.
Maximum ambient temperature + 30 °C.

Direct-starting

IN	230 Volt - 50 Hz - 3 ~														
	1 cavo quadripolare 4 xmm2							4 cables 1 xmm2							
A	1,5	2,5	4	6	10	16	25	35	50	70	95	120	150	cables max m	
2	164	272													
4	82	136	218												
6	55	91	145	218											
8	41	68	109	164	267										
10	33	54	87	131	213										
12	27	45	73	109	178										
14	23	39	62	94	152	239									
16	20	34	55	82	133	209									
18		30	48	73	118	186									
20		27	44	65	107	167	257								
25			35	52	85	134	206								
30			29	44	71	111	171	233							
35				37	61	95	147	200							
40				33	53	83	129	175	227						
45					47	74	114	155	202						
50					43	67	103	140	181	249					
60						56	86	116	151	207					
70						48	73	100	130	178	230				
80							64	87	113	155	201	241			
90							57	78	101	138	179	214			
100							51	70	91	124	161	193	224		
110								64	82	113	146	175	203		
120								58	76	104	134	161	186		
130									70	96	124	148	172		
140									65	89	115	138	160		
150									60	83	107	128	149		
160									57	78	101	120	140		
170									53	73	95	113	132		
180									50	69	89	107	124		
190									48	65	85	101	118		
200									45	62	81	96	112		
220										57	73	88	102		
240										52	67	80	93		
260											62	74	86		
280												58	69	80	
300												54	64	75	

IN	400 Volt - 50 Hz - 3 ~																		
	1 cavo quadripolare 4 xmm2								4 cables 1 xmm2										
A	1,5	2,5	4	6	10	16	25	35	50	70	95	120	150	185	240	cables max m			
2	285	473																	
4	143	236	379																
6	95	158	253																
8	71	118	190	285															
10	57	95	152	228															
12	48	79	126	190	309														
14	41	68	108	163	265														
16	36	59	95	142	232														
18		53	84	127	206	323													
20		47	76	114	185	290													
25			61	91	148	232	358												
30			51	76	124	194	298												
35				65	106	166	256	347											
40					57	93	145	224	304										
45						82	129	199	270										
50						74	116	179	243	316									
60							97	149	203	263									
70							83	128	174	225	309								
80								112	152	197	270								
90								99	135	175	240	311							
100								89	122	158	216	280							
110									110	143	197	255	305						
120										101	132	180	233	279					
130											121	166	216	258	299				
140											113	155	200	239	278				
150											105	144	187	223	259	302			
160											99	135	175	209	243	283			
170											93	127	165	197	229	267			
180											88	120	156	186	216	252	297		
190											83	114	147	176	205	239	281		
200											79	108	140	168	195	227	267		
220												98	127	152	177	206	243		
240												90	117	140	162	189	223		
260													108	129	150	174	206		
280														100	120	139	162	191	
300															93	112	130	151	178

Maximum length of electric cables

Star-delta starting

IN	230 Volt - 50 Hz - 3 ~ Y/Δ																
	2 four-wires cables 4 Gmm2							7 cables 1 xmm2									
	A	1,5	2,5	4	6	10	16	25	35	50	70	95	120	150			
	cables max m																
30	19	31	50	76	123	193											
35		27	43	65	105	165											
40		24	38	57	92	144											
45		21	34	50	82	128	198										
50			30	45	74	116	178										
60				38	62	96	148	201									
70				32	53	83	127	173	224								
80					46	72	111	151	196								
90					41	64	99	134	174								
100						58	89	121	157	215							
110						53	81	110	143	196							
120						48	74	101	131	179							
130						44	68	93	121	166	214						
140							64	86	112	154	199						
150							59	81	105	143	186						
160							56	76	98	134	174	208					
170							52	71	92	127	164	196					
180								67	87	120	155	185					
190								64	83	113	147	175	204				
200									78	108	139	167	194				
220										98	127	152	176				
240											90	116	139	161			
260												83	107	128	149		
280													77	100	119	138	
300														7	93	111	129

IN	400 Volt - 50 Hz - 3 ~ Y/Δ															
	2 four-wires cables 4 Gmm2							7 cables 1 xmm2								
	A	1,5	2,5	4	6	10	16	25	35	50	70	95	120	150		
	cables max m															
30	33	55	88	131	214	335										
35		47	75	113	183	287										
40		41	66	99	160	251										
45			58	88	143	223	344									
50			53	79	128	201	310									
60				66	107	167	258	350								
70				56	92	144	221	300								
80					80	126	193	263	341							
90					71	112	172	234	303							
100					64	100	155	210	273	374						
110					58	91	141	191	248	340						
120						84	129	175	228	312						
130						77	119	162	210	288	373					
140							111	150	195	267	346					
150							103	140	182	249	323					
160							97	131	171	234	303	362				
170								124	161	220	285	341				
180								117	152	208	269	322				
190								111	144	197	255	305	354			
200									137	187	242	290	337			
220										170	220	264	306			
240											156	202	242	280		
260												186	223	259		
280													173	207	240	
300														162	193	224

Against short-circuits and overloads to the electric pumps system we advise to follow the usually applied normative.

- To avoid a possible dry working of the electric pump in is better to install a level control.
- In order to avoid overheatings, tension drops above 3%, we advise to use suitable starting motors systems.
- All the cable wave to respect the usually applied normative and to present excellent insulation characteristics.

The tables show the maximum length of the cable depending on the current absorbed by the motor and the cross section area of the cable, at different voltages. The maximum voltage drop equal to 3%, cable temperature of 80°C, water installation similar to air installation at a temperature of 30°C.

Choice of electric cable by calculation

For dimensioning the phase cross section area for the submersible motor need the following information:

- V: Rated voltage (V)
- I: Motor current (A)
- L: Length of cable (km)
- cos φ: power factor
- Ambient temperature (°C)

The choice of the minimum cross section area of the phase conductor is determined by the rated motor current and the values reported in Table 1.

Table 1

Type of cable*	Cable cross section mm ²	Maximum cable current			Resistance R at 80°C Ω/ km 4)	Reactance X at 50 Hz Ω/km 4)
		1 Ader		2 Ader		
		A 1)	A 2)	A 3)		
four-wires cable	1,5	18		15	15,1	0,142
four-wires cable	2,5	24		20	9,08	0,131
four-wires cable	4	32		27	5,63	0,121
four-wires cable	6	41		35	3,73	0,115
four-wires cable	10	57		48	2,27	0,103
four-wires cable	16	76		65	1,43	0,098
four-wires cable	25	96		82	0,91	0,097
four-wires cable	35		119	101	0,65	0,094
single-wire cable	50		167	142	0,473	0,121
single-wire cable	70		216	184	0,328	0,116
single-wire cable	95		264	224	0,236	0,118
single-wire cable	120		308	262	0,188	0,113
single-wire cable	150		356	303	0,153	0,112
single-wire cable	185		409	348	0,123	0,109
single-wire cable	240		485	412	0,094	0,110

- 1) IEC 60364-5-52:2009 Tab.B52.4 / C
- 2) IEC 60364-5-52:2009 Tab.B52.6
- 3) 1)x0,85 IEC 60364-5-52:2009 Tab.B52.17 ITEM2
- 4) UNEL 35023-70

* Up to 35 mm² sections four-wire cable are used, from 50 mm² single core cables are recommended as well.Tab.1

Le portate massime dei cavi indicate nella Tabella 1 sono valide per temperatura ambiente di 30°C, qualora la temperatura ambiente fosse diversa, le portate massime dei cavi devono essere corrette con un coefficiente moltiplicativo riportato in Tabella 2.

Table 2 (IEC 60364-5-52:2009 Tab.B.52.14)

Ambient Temperature	10	15	20	25	30	35	40	45	50	55	60
Correction factor	1,22	1,17	1,12	1,06	1	0,94	0,87	0,79	0,71	0,61	0,5

Minimum power cable cross-sections

The cross section area of the phase conductor is chosen by checking the voltage drop along the line , through the following equation:

$$DU\% = 1,73 \cdot I \cdot L \cdot (R \cdot \cos \phi + X \cdot \sin \phi) / (V \cdot 1000)$$

K= 1.73 for three-phase motors and 2 for single-phase motors

DU% the voltage drop should not be greater than 3%

R, X = cable resistance and reactance in ohms/km (indicated in Table 1)

$$\sin \phi = \sqrt{1 - (\cos \phi)^2}$$

In case of star / delta starting the rated current of the motor should be divided by 1.73.

Determination of minimal sections of the protective conductor PE.

The minimum cross-section of the PE protective conductor can be determined from Table 3.

Table 3 (CEI 64-8:2007 Tab.54F)

Phase cross section area S mm ²	PE cross section area SPE mm ²
S ≤ 16	S
16 < S ≤ 25	16
S > 25	S/2

Control panels

M COMP Control panel for 1 single-phase submersible pump



Pump type	Protection max A	Capacitor 450Vc	Motor	Dimensions
			220V-240V - 1~ kW	HxBxP mm
M COMP 4-16	4,5	16 µF	0,37	220x210x110
M COMP 4-20	4,5	20 µF	0,55	220x210x110
M COMP 5-20	5	20 µF	0,55	220x210x110
M COMP 5-25	5	25 µF	0,55	220x210x110
M COMP 6-20	6	20 µF	0,75	220x210x110
M COMP 6-35	6	35 µF	0,9	220x210x110
M COMP 7-25	7	25 µF	0,9	220x210x110
M COMP 7-30	7	30 µF	0,9	220x210x110
M COMP 8-25	8	25 µF	1,1	220x210x110
M COMP 8-30	8	30 µF	1,1	220x210x110
M COMP 10-35	10	35 µF	1,1	220x210x110
M COMP 10-40	10	40 µF	1,1	220x210x110
M COMP 12-35	12	35 µF	1,5	220x210x110
M COMP 12-50	12	50 µF	1,5	220x210x110
M COMP 12-60	12	60 µF	1,5	220x210x110
M COMP 16-70	16	70 µF	2,2	220x210x110

Construction

Control panel with ON-OFF switch and capacitor for 1 submersible pump with single-phase motor. Suitable for use with LVBT board for level control. Protection is provided by means of a main bipolar switch with a phase protected against overload by means of a thermal element. N.B. Not suitable for pumps with internal capacitor.

PFC-M Control panel for 1 submersible pump with single-phase motor, PF control



Pump type	Protection max A	Capacitor 450Vc	Motor	Dimensions
			220 V - 240 V - 1~ kW	HxBxP mm
PFC-M 18-16	1 - 18	16 µF	0,37	220x210x110
PFC-M 18-20	1 - 18	20 µF	0,55	220x210x110
PFC-M 18-25	1 - 18	25 µF	0,55	220x210x110
PFC-M 18-30	1 - 18	30 µF	0,75	220x210x110
PFC-M 18-35	1 - 18	35 µF	0,75	220x210x110
PFC-M 18-40	1 - 18	40 µF	1,1	220x210x110
PFC-M 18-50	1 - 18	50 µF	1,5	220x210x110
PFC-M 18-60	1 - 18	60 µF	1,5	220x210x110
PFC-M 18-70	1 - 18	70 µF	2,2	220x210x110

Construction

Control panel for controlling one submersible pump with single-phase motor. Electronic control of the operation and dryrunning protection through the power factor (PF) control. The installation of level probes into the well is not required. It stops the pump in case of lack of air cushion in the pressure vessel (patented system). Displayed operating data and alarms available in four languages. N.B. Not suitable for pumps with internal capacitor and float mounted on the pump.

QML/A 1 D Control panel for 1 pump with single-phase motor, direct starting



Pump type	Motor 230V - 1~	Setting	Dimensions HxBxP
	kW	A	mm
QML/A 1 D 12A-FA	0,25 - 1,5	1 - 12	250x205x115
QML/A 1 D 12A-FA 20	0,25 - 1,5	1 - 12	250x205x115
QML/A 1 D 12A-FA 25	0,25 - 1,5	1 - 12	250x205x115
QML/A 1 D 3 FT	2,2 - 3	13 - 18	400x300x160

Construction

Control panel for 1 pump with single-phase motor, direct starting for pressure booster sets, with a patented working time-measuring system that stops the pump in case of lack of air cushion in the pressure vessel. Dry-running protection with float switch. Arranged for the capacitor internal connection (for pumps without built-in capacitor). Pump operation controlled by an electronic card type MPS 3000 with microprocessor which allows three different modes of operation of the pump: standard, emergency and timed.

T COMP Control panel for 1 submersible pump with three-phase motor



Pump type	Protection A	Motor 230V - 3~	Motor 400V - 3~	Dimensions HxBxP
		kW	kW	mm
T COMP 8	1 ÷ 8	0,37 ÷ 1,5	0,5 ÷ 2,2	170x145x85
T COMP 10	7 ÷ 10	---	3 ÷ 3,7	230x180x155
T COMP 12	9 ÷ 12	2,2	4	230x180x155
T COMP 16	11 ÷ 16	3	5,5	230x180x155
T COMP 20	14 ÷ 20	3,7 - 4	7,5	230x180x155

Construction

Control panel and protection for 1 pump with three-phase motor. Arranged for the LVBT level control internal connection against dry running (T COMP8 model has the level control as a standard). Control pumps with pressure switch and float-type switch.

Control panels

PFC-T Control panel for 1 submersible pump with three-phase motor, PF control



Pump type	Protection	Motor 230V - 3~	Motor 400V - 3~	Dimensions HxBxP	kg
	A	kW	kW	mm	
PFC-T 16/A	1 - 16	0,37 - 5,5	250x205x105	1,7	1,7

Construction

Control panel for controlling 1 pump with three-phase motor. Electronic control of the operation and dry-running protection through the power factor (PF) control. It stops the pump in case of lack of air cushion in the pressure vessel (patented system). Displayed operating data and alarms available in four languages.

QTL/A 1 D Control panel for 1 pump with three-phase motor, direct starting



Pump type	Motor 400V - 3~	Setting A	Dimensions HxBxP
	kW		mm
QTL/A 1 D 12A-FA	0,25 - 5,5	1 - 12	250x205x105
QTL/A 1 D 7,5 FT	7,5	13 - 18	400x300x160
QTL/A 1 D 9,2 FT	9,2	17 - 23	400x300x160
QTL/A 1 D 11 FT	11	20 - 25	400x300x160

Construction

Control panel for 1 pump with three-phase motor, direct starting for pressure booster sets, with a patented working time-measuring system that stops the pump in case of lack of air cushion in the pressure vessel. Dry-running protection with float switch. Pump operation controlled by an electronic card type MPS 3000 with microprocessor which allows three different modes of operation of the pump: standard, emergency and timed.

QTL 1 D FTE Control panel for 1 pump with three-phase motor, direct starting



Pump type	Motor 400V - 3~	Setting A	Dimensions HxBxP
	kW		mm
QTL 1 D 4 FTE	4	6,3 - 10	400x300x160
QTL 1 D 5,5 FTE	5,5	9 - 12	400x300x160
QTL 1 D 7,5 FTE	7,5	13 - 18	400x300x160
QTL 1 D 9,2 FTE	9,2	17 - 23	400x300x160
QTL 1 D 11 FTE	11	20 - 25	400x300x160
QTL 1 D 15 FTE	15	24 - 32	500x350x200
QTL 1 D 18,5 FTE	18,5	32 - 38	500x350x200
QTL 1 D 22 FTE	22	35 - 50	500x350x200
QTL 1 D 30 FTE	30	46 - 65	500x350x200

Construction

Electromechanical control panel for 1 pump with three-phase motor, direct starting. Operating signals by E 1000 led card. Dry-running protection with float switch.

QTL/A 1 ST FT Control panel for 1 pump with three-phase motor, Y/Δ starting



Pump type	Motor 400V - 3~		Dimensions
	Rated motor power kW	Current A	HxBxP mm
QTL/A 1 ST 5,5 FT	5,5	11 - 15	600x400x200
QTL/A 1 ST 7,5 FT	7,5	12 - 17	600x400x200
QTL/A 1 ST 11 FT	9,2 - 11	16 - 24	600x400x200
QTL/A 1 ST 15 FT	15	23 - 31	600x400x200
QTL/A 1 ST 18,5 FT	18,5	30 - 39	600x400x200
QTL/A 1 ST 22 FT	22	35 - 43	700x500x200
QTL/A 1 ST 30B FT	30	42 - 55	700x500x200
QTL/A 1 ST 30A FT	30	55 - 65	700x500x200
QTL/A 1 ST 37 FT	37	61 - 84	800x600x250
QTL/A 1 ST 45 FT	45	80 - 105	800x600x250

Construction

Electromechanical control panel for 1 submersible pump with three-phase motor, with Stator Impedance starter. Pump operation controlled by an electronic card type MPS 3000 with microprocessor with different pump operating modes. Dry-running protection with float switch or level control probes.

Control panels

QTL 1 ST FTE Control panel for 1 pump with three-phase motor, Y/Δ starting



Pump type	Motor 400V - 3~		Dimensions
	Rated motor power	Current	HxBxP
	kW	A	mm
QTL 1 ST 5,5 FTE	5,5	11 - 15	500x350x200
QTL 1 ST 7,5 FTE	7,5	12 - 17	500x350x200
QTL 1 ST 11 FTE	9,2 - 11	16 - 24	500x350x200
QTL 1 ST 15 FTE	15	23 - 31	500x350x200
QTL 1 ST 18,5 FTE	18,5	30 - 39	500x350x200
QTL 1 ST 22 FTE	22	35 - 43	600x400x200
QTL 1 ST 30B FTE	30	42 - 55	600x400x200
QTL 1 ST 30A FTE	30	55 - 65	600x400x200
QTL 1 ST 37 FTE	37	61 - 84	700x500x200
QTL 1 ST 45 FTE	45	80 - 105	700x500x200
QTL 1 ST 55 FTE	55	100 - 125	700x500x200
QTL 1 ST 75 FTE	75	120 - 160	800x600x250
QTL 1 ST 92 FTE	92	140 - 198	800x600x250
QTL 1 ST 110 FTE	110	180 - 250	800x600x250

Construction

Electromechanical control panel for 1 pump with three-phase motor, Y/Δ starting.
Operating signals by E 1000 led card.
Dry-running protection with float switch.

QTL 1 SS E Control panel for 1 pump with three-phase motor, start/stop with soft starter



Pump type	Motor 400V - 3~		Dimensions
	Rated motor power	Current	HxBxP
	kW	A	mm
QTL 1 SS 7,5 E	7,5	17	700x500x250
QTL 1 SS 9,2 E	9,2	22	700x500x250
QTL 1 SS 15 E	11 - 15	34	700x500x250
QTL 1 SS 22 E	18,5 - 22	48	700x500x250
QTL 1 SS 26 E	26	58	900x600x300
QTL 1 SS 30 E	30	68	900x600x300
QTL 1 SS 37 E	37	82	900x600x300
QTL 1 SS 45 E	45	92	900x600x300
QTL 1 SS 55 E	55	114	900x600x300
QTL 1 SS 63 E	63	126	1100x700x300
QTL 1 SS 75 E	75	150	1100x700x300
QTL 1 SS 92 E	92	196	1200x800x400
QTL 1 SS 110 E	110	231	1200x800x400
QTL 1 SS 132 E	132	245	1200x800x400

Construction

Control panel for 1 pump with three-phase motor, start/stop with soft starter
Operating signals by E 1000 led card.
Application: control of submersible motor with great cable length and surface motors.
Dry-running protection with float switch.

QTL 1 IS FTE Control panel for 1 pump with three-phase motor, with Stator Impedance starter



Pump type	Motor 400V - 3~		Dimensions
	Rated motor power	Current	HxBxP
	kW	A	mm
QTL 1 IS 5,5 FTE-2RL	5,5	11 - 15	
QTL 1 IS 7,5 FTE-2RL	7,5	12 - 17	
QTL 1 IS 11 FTE-2RL	9,2 - 11	16 - 24	
QTL 1 IS 15 FTE-2RL	15	23 - 31	
QTL 1 IS 18,5 FTE-2RL	18,5	30 - 39	
QTL 1 IS 22 FTE-2RL	22	35 - 43	
QTL 1 IS 30 FTE-2RL	30	42 - 65	
QTL 1 IS 37 FTE-2RL	37	61 - 84	
QTL 1 IS 45 FTE-2RL	45	80 - 105	
QTL 1 IS 55 FTE-2RL	55	100 - 125	
QTL 1 IS 75 FTE-2RL	75	120 - 160	
QTL 1 IS 92 FTE-2RL	92	140 - 198	
QTL 1 IS 110 FTE-2RL	110	180 - 250	

Construction

Electromechanical control panel for 1 submersible pump with three-phase motor, with Stator Impedance starter.
Operating signals by E 1000 led card.
Application : submersible motors control with great cable length.

Control panels

QML 1 VFT Control panel for 1 pump with variable speed three-phase motor



Pump type	Motor 400V - 3~		Dimensions
	Rated motor power kW	Current A	HxBxP mm
QML 1 VFT 0,4	0,37 - 0,45	2,6	500x350x200
QML 1 VFT 0,75	0,55 - 0,75	4	500x350x200
QML 1 VFT 1,5	1,1 - 1,5	7,1	500x350x200
QML 1 VFT 2,2	2,2	10	500x350x200

Construction

Single-phase mains supply control panel with frequency converter for 1 pump with three-phase variable speed motor, for constant pressure booster sets. Arranged for SRL 3 level control application for probes connection against dry-running. Pump operation controlled by an electronic board type MPS 4000 with microprocessor.

QTL 1 VFT Control panel for 1 pump with variable speed three-phase motor



Pump type	Motor 400V - 3~		Dimensions
	Rated motor power kW	Current A	HxBxP mm
QTL 1 VFT 0,4	0,4	1,5	500x350x200
QTL 1 VFT 0,75	0,55 - 0,75	2,3	500x350x200
QTL 1 VFT 1,5	1,1 - 1,5	4,1	500x350x200
QTL 1 VFT 2,2	2,2	5,5	500x350x200
QTL 1 VFT 4	3 - 4	9,5	500x350x200
QTL 1 VFT 5,5	5,5	14,3	600x400x250
QTL 1 VFT 7,5	7,5	17	600x400x250
QTL 1 VFT 11	9,2 - 11	27,7	700x500x250
QTL 1 VFT 15	15	33	700x500x250
QTL 1 VFT 18,5	18,5	46,3	800x600x250
QTL 1 VFT 22	22	61,5	800x600x250
QTL 1 VFT 30	30	74,5	900x600x250
QTL 1 VFT 37	37	88	1100x700x300
QTL 1 VFT 45	45	106	1200x800x300
QTL 1 VFT 55	55	145	1200x800x300
QTL 1 VFT 75	75	173	1200x800x300

Construction

Control panel with frequency converter for 1 pump with three-phase variable speed motor, for constant pressure booster sets. Arranged for SRL 3 level control application for probes connection against dry-running. Pump operation controlled by an electronic board type MPS 4000 with microprocessor.

Cooling jacket

When the submersible motor is installed: below the well inlet points (picture A) in tanks, lakes, basins, etc... (pictures B and C) an external jacket must be installed to create a cooling flow around the motor. Only in this way a safe operation can be assured avoiding any overheating which can

Fig. A

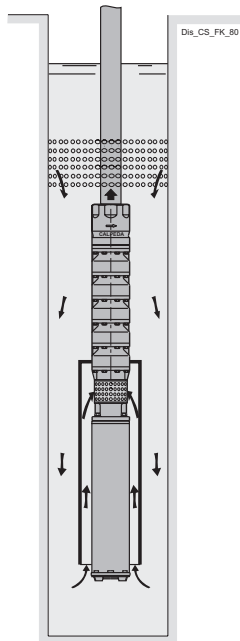


Fig. B

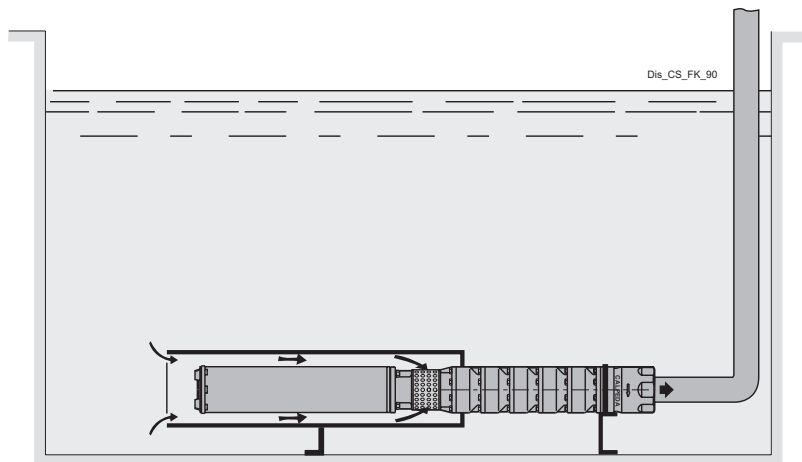


Fig. C

