PRODUCT CATALOGUE

6” BOREHOLE PUMPS

2020

KELi PUMPS

INDEX

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6VP BOREHOLE RANGE (6”)

6VP BOREHOLE RANGE (6”)

PUMP FEATURES

This borehole pump’s key feature is its high pressure and delivery ratio.

The reduced stages ensure extended pump life and ease of operation.

OPERATING RANGE

These pumps are for domestic, agricultural, mining and industrial use.

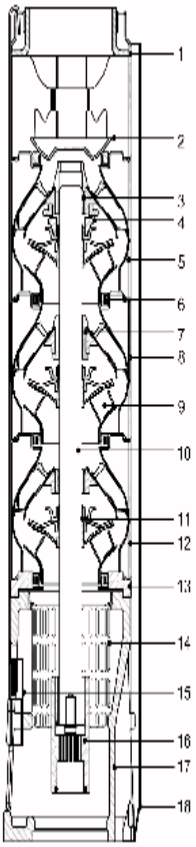
Head range:	4m - 489m
Flow rate:	70 l/m - 1300 l/m
Minimum immersion:	1m
Maximum sand content:	50g/m³

KEY MATERIALS

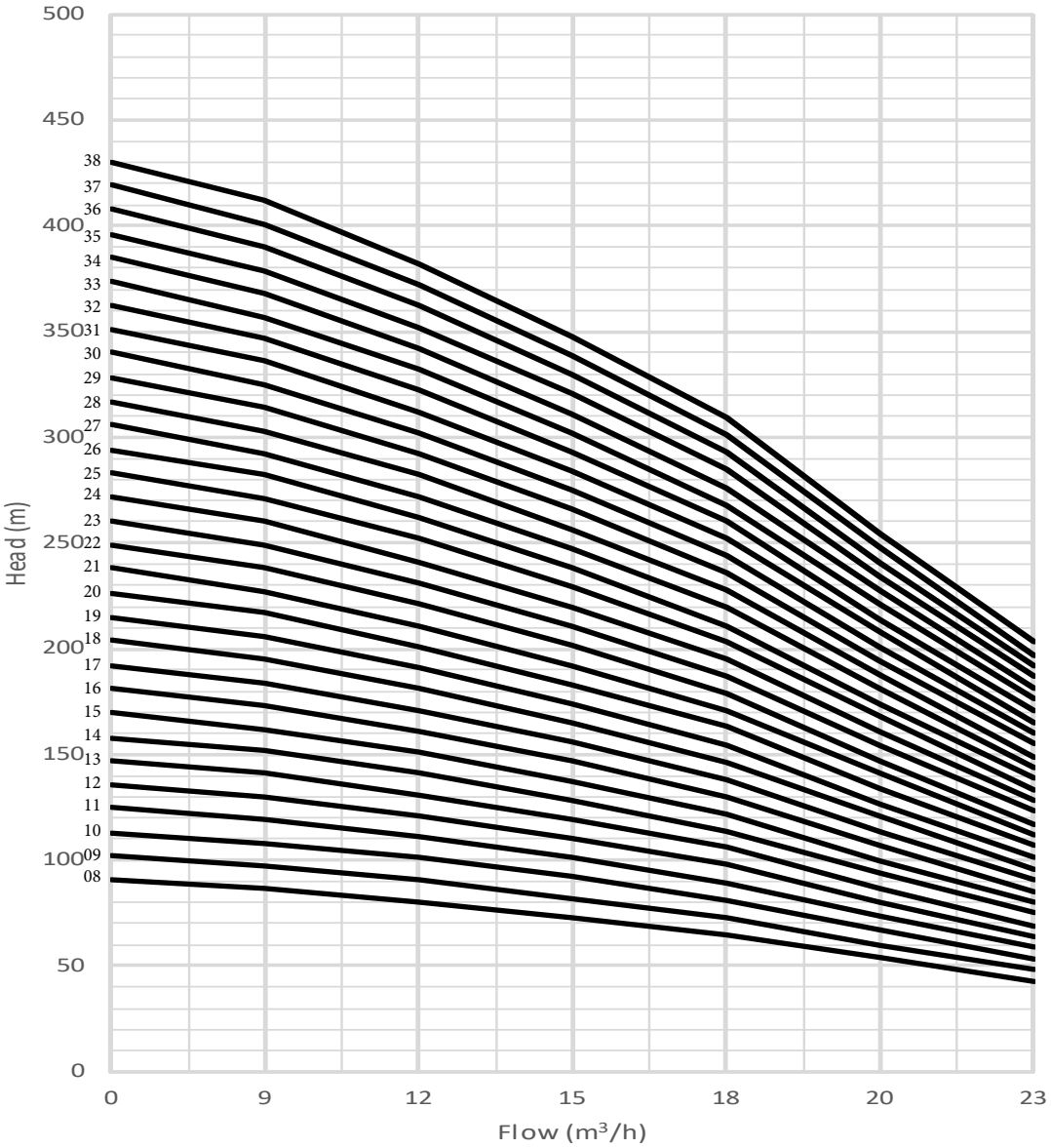
Suction, stage casing and discharge outlets:	stainless steel 304
Impellers:	stainless steel 304
Pump shaft:	SS AISI 431
Bearing bush:	anti friction rubber
Non return valve:	stainless steel 304
Cable guard and strainer:	stainless steel 304

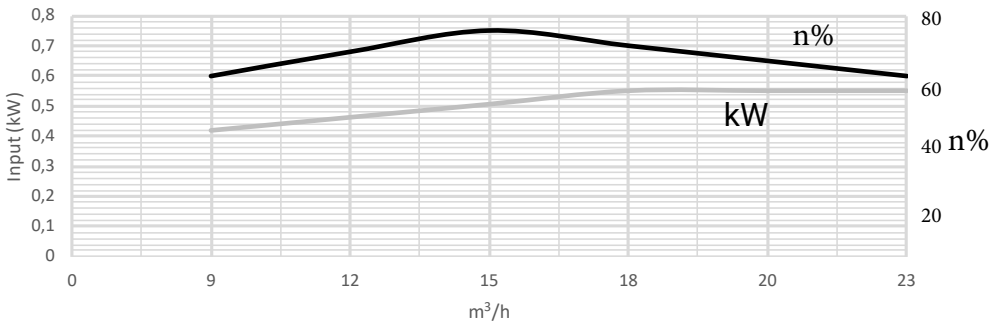
Pump motor couplings are as per NEMA standards.

NO.	PART NAME	MATERIAL	STANDARD
1	Discharge Chamber	Stainless Steel	304
2	Valve	Stainless Steel	304
3	Top & First Bearing Bush	Stainless Steel + NBR	304
4	Spacing Washer	25CFT	
5	Intermediate Chamber Top	Stainless Steel	304
6	Neckring	NBR+PPS	
7	Bearing Bush	NBR	
8	Intermediate Chamber	Stainless Steel	304
9	Impeller	Stainless Steel	304
10	Pump Shaft	Stainless Steel	431
11	Collet & Collet Nut	Stainless Steel	304
12	Intermediate Chamber 1st	Stainless Steel	304
13	Suction Connector	Stainless Steel	304
14	Strainer	Stainless Steel	304
15	Clamping Strip	Stainless Steel	304
16	NEMA Coupling	Stainless Steel	304
17	Suction Interconnector	Stainless Steel	304
18	Cable Guard	Stainless Steel	304



VP-18


Head (m)
500
450
400
350
300
250
200
150
100
50
0
38
37
36
35
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
09
08
0
9
12
15
18
20
23
Flow (m³/h)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kW
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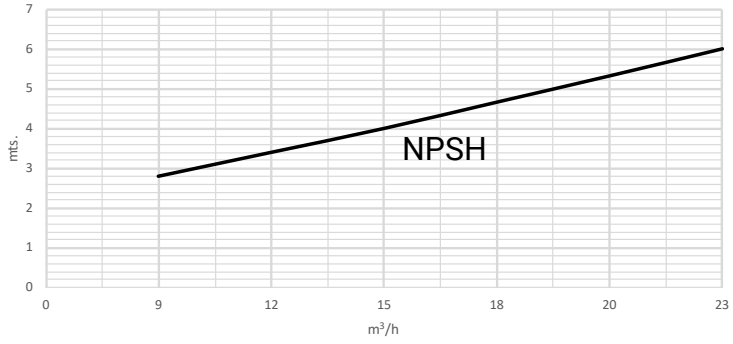
40
20
n%
0
9
12
15
18
20
23
m³/h

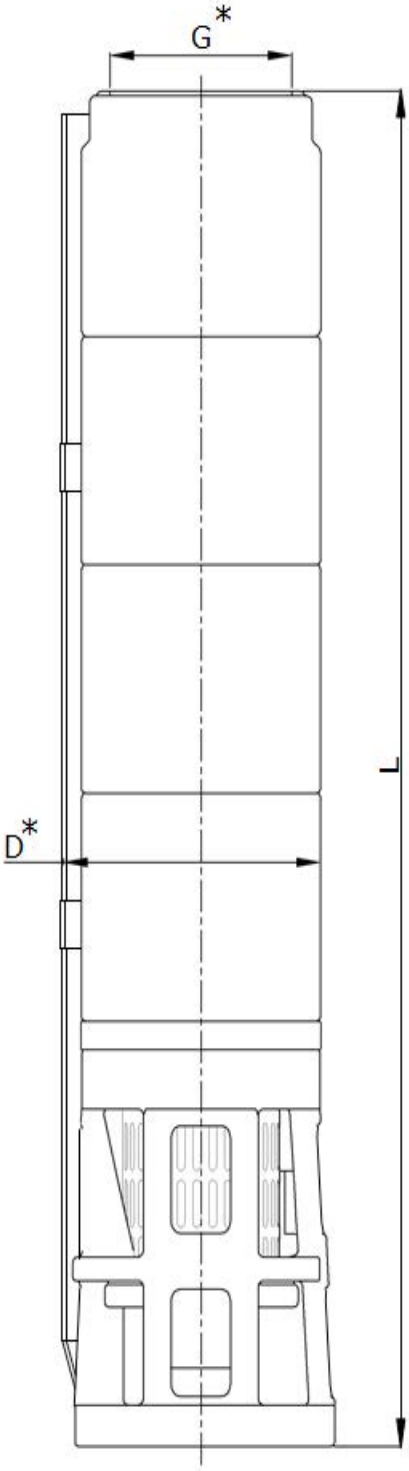

mts.
7
6
5
4
3
2
1
0
NPSH
0
9
12
15
18
20
23
m³/h

VP-18

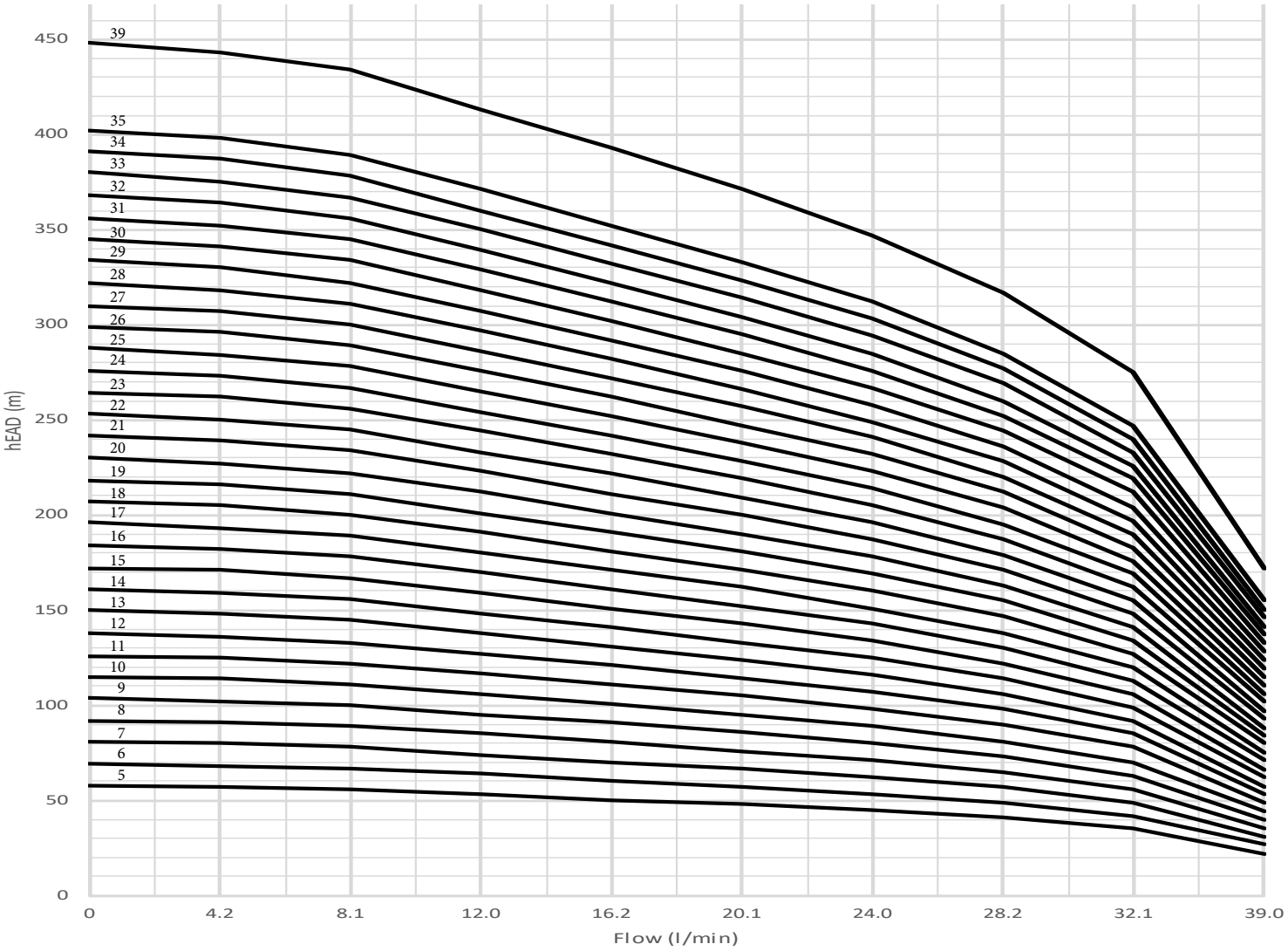
MODELNAME		RATING		DISCHARGE						
Three-Phase	Stage	kW	HP	l/min	0	150	200	250	300	333	383
				m^3/h	0	9	12	15	18	20	23
VP-18 A 08	8	5.5	7.5	Head (m)	91	87	80	73	65	54	43
VP-18 A 09	9	5.5	7.5		102	97	91	82	73	60	48
VP-18 A 10	10	5.5	7.5		113	108	101	92	81	67	53
VP-18 A 11	11	7.5	10		125	119	111	101	89	74	59
VP-18 A 12	12	7.5	10		136	130	121	110	98	80	64
VP-18 A 13	13	7.5	10		147	141	131	119	106	87	69
VP-18 A 14	14	9.3	12.30		158	152	141	128	114	94	75
VP-18 A 15	15	9.3	12.30		170	162	151	137	122	100	80
VP-18 A 16	16	9.3	12.30		181	173	161	147	130	107	85
VP-18 A 17	17	9.3	12.30		192	184	171	156	138	114	91
VP-18 A 18	18	11	15		204	195	181	165	146	121	96
VP-18 A 19	19	11	15		215	206	191	174	154	127	101
VP-18 A 20	20	11	15		226	217	201	183	163	134	107
VP-18 A 21	21	13	17.5		238	227	211	192	171	141	112
VP-18 A 22	22	13	17.5		249	238	221	202	179	147	117
VP-18 A 23	23	13	17.5		260	249	231	211	187	154	123
VP-18 A 24	24	13	17.5		272	260	241	220	195	161	128
VP-18 A 25	25	15	20		283	271	252	229	203	168	133
VP-18 A 26	26	15	20		294	282	262	238	211	174	139
VP-18 A 27	27	15	20		306	292	272	247	220	181	144
VP-18 A 28	28	18.5	25		317	303	282	256	228	188	149
VP-18 A 29	29	18.5	25		328	314	292	266	236	194	155
VP-18 A 30	30	18.5	25		340	325	302	275	244	201	160
VP-18 A 31	31	18.5	25		351	336	312	284	252	208	165
VP-18 A 32	32	18.5	25		362	347	322	293	260	214	171
VP-18 A 33	33	18.5	25		374	357	332	302	268	221	176
VP-18 A 34	34	22	30		385	368	342	311	276	228	181
VP-18 A 35	35	22	30		396	379	352	321	285	234	187
VP-18 A 36	36	22	30		408	390	362	330	293	241	192
VP-18 A 37	37	22	30		419	401	372	339	301	248	197
VP-18 A 38	38	22	30		430	412	382	348	309	255	203

VP-18

SPECIFICATIONS				
MODEL NAME	D (mm)	L (mm)	Pump Weight (kg)	Total Weight [incl packaging] (kg)
VP-18 A 08	140	755	17	19
VP-18 A 09	140	815	18	20
VP-18 A 10	140	876	19	22
VP-18 A 11	140	936	21	23
VP-18 A 12	140	997	22	24
VP-18 A 13	140	1057	23	25
VP-18 A 14	140	1118	24	27
VP-18 A 15	140	1178	26	28
VP-18 A 16	140	1239	27	29
VP-18 A 17	140	1299	28	30
VP-18 A 18	140	1360	29	32
VP-18 A 19	140	1420	31	33
VP-18 A 20	140	1481	32	34
VP-18 A 21	140	1541	33	35
VP-18 A 22	140	1602	34	37
VP-18 A 23	140	1662	36	38
VP-18 A 24	140	1723	37	39
VP-18 A 25	140	1783	38	40
VP-18 A 26	140	1844	39	42
VP-18 A 27	140	1904	41	43
VP-18 A 28	140	1965	42	44
VP-18 A 29	140	2025	43	45
VP-18 A 30	140	2086	44	47
VP-18 A 31	140	2146	46	48
VP-18 A 32	140	2207	47	49
VP-18 A 33	140	2267	48	50
VP-18 A 34	140	2328	49	52
VP-18 A 35	140	2388	51	53
VP-18 A 36	140	2449	52	54
VP-18 A 37	140	2509	53	55
VP-18 A 38	140	2570	54	57



VP-32


hEAD (m)
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400
350
300
250
200
150
100
50
0
39
35
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
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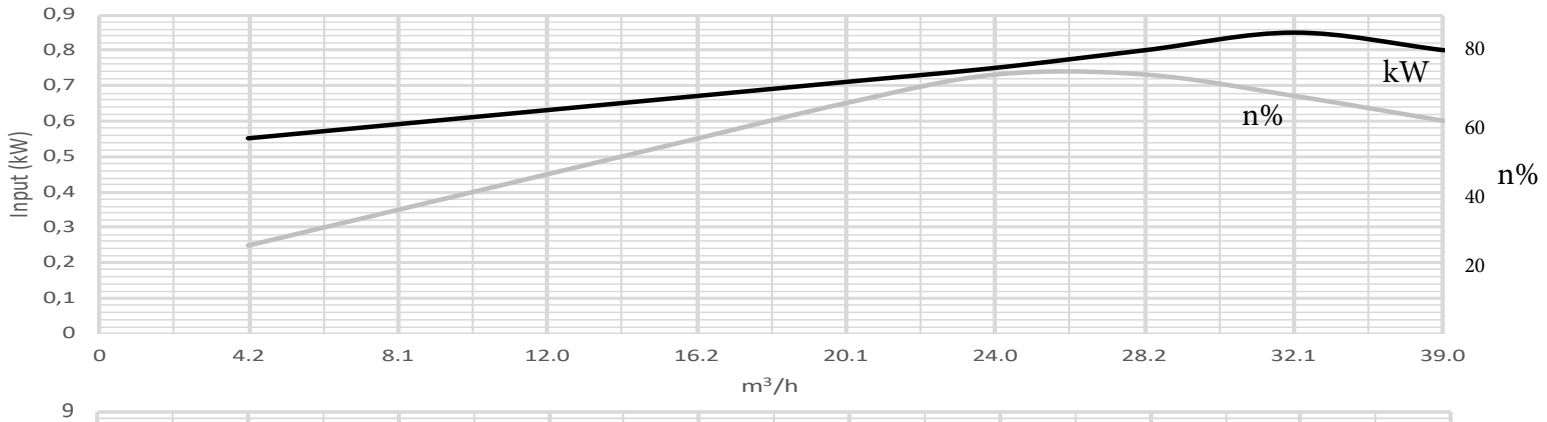
8.1
12.0
16.2
20.1
24.0
28.2
32.1
39.0
Flow (l/min)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80
60
40
20
n%
0
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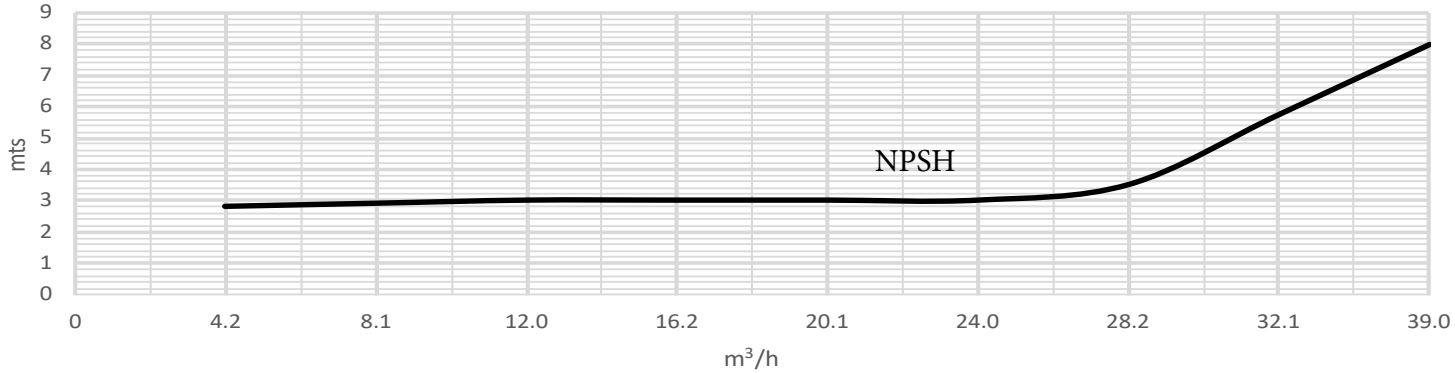
8.1
12.0
16.2
20.1
24.0
28.2
32.1
39.0
m³/h


mts
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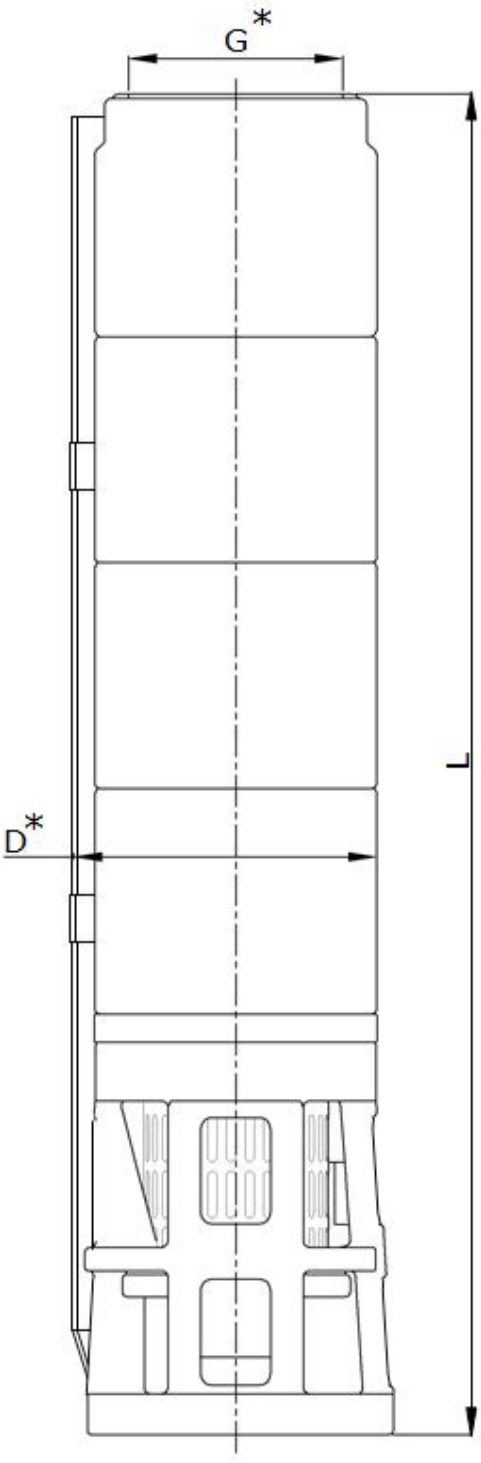
8
7
6
5
4
3
2
1
0
NPSH
0
4.2
8.1
12.0
16.2
20.1
24.0
28.2
32.1
39.0
m³/h

VP-32

MODEL NAME		RATING		DISCHARGE										
Three-Phase	Stage	kW	HP	l/min	0	70	135	200	270	335	400	470	535	650
				m^3/h	0	4.2	8.1	12.0	16.2	20.1	24.0	28.2	32.1	39.0
VP32A-05	5	5.50	7.50	Head (m)	58	57	56	53	50	48	45	41	35	22
VP32A-06	6	5.50	7.50		69	68	67	64	60	57	53	49	42	27
VP32A-07	7	7.50	10.00		80.5	80	78	74	70	67	62	57	49	31
VP32A-08	8	7.50	10.00		92	91	89	85	81	76	71	65	56	35
VP32A-09	9	9.20	12.30		104	102	100	95	91	86	80	73	63	40
VP32A-10	10	9.20	12.30		115	114	111	106	101	95	89	81	70	44
VP32A-11	11	9.20	12.30		126	125	122	117	111	105	98	90	78	49
VP32A-12	12	11.00	15.00		138	136	133	127	121	114	107	98	85	53
VP32A-13	13	11.00	15.00		150	148	145	138	131	124	116	106	92	57
VP32A-14	14	13.00	17.50		161	159	156	148	141	133	125	114	99	62
VP32A-15	15	13.00	17.50		172	171	167	159	151	143	134	122	106	66
VP32A-16	16	15.00	20.00		184	182	178	170	161	152	143	130	113	71
VP32A-17	17	15.00	20.00		196	193	189	180	171	162	151	138	120	75
VP32A-18	18	18.50	25.00		207	205	200	191	181	171	160	147	127	80
VP32A-19	19	18.50	25.00		218	216	211	201	191	181	169	155	134	84
VP32A-20	20	18.50	25.00		230	227	222	212	201	190	178	163	141	88
VP32A-21	21	18.50	25.00		242	239	234	223	211	200	187	171	148	93
VP32A-22	22	22.00	30.00		253	250	245	233	222	209	196	179	155	97
VP32A-23	23	22.00	30.00		264	262	256	244	232	219	205	187	162	102
VP32A-24	24	22.00	30.00		276	273	267	254	242	228	214	195	169	106
VP32A-25	25	22.00	30.00		288	284	278	265	252	238	223	204	176	110
VP32A-26	26	22.00	30.00		299	296	289	276	262	247	232	212	183	115
VP32A-27	27	26.00	35.00		310	307	300	286	272	257	241	220	190	119
VP32A-28	28	26.00	35.00		322	318	311	297	282	266	249	228	197	124
VP32A-29	29	26.00	35.00		334	330	322	307	292	276	258	236	204	128
VP32A-30	30	26.00	35.00		345	341	334	318	302	285	267	244	212	133
VP32A-31	31	26.00	35.00		356	352	345	329	312	295	276	252	219	137
VP32A-32	32	30.00	40.00		368	364	356	339	322	304	285	260	226	141
VP32A-33	33	30.00	40.00		380	375	367	350	332	314	294	269	233	146
VP32A-34	34	30.00	40.00		391	387	378	360	342	323	303	277	240	150
VP32A-35	35	30.00	40.00		402	398	389	371	352	333	312	285	247	155
VP32A-39	39	37.00	50.00		448	443	434	413	393	371	347	317	275	172

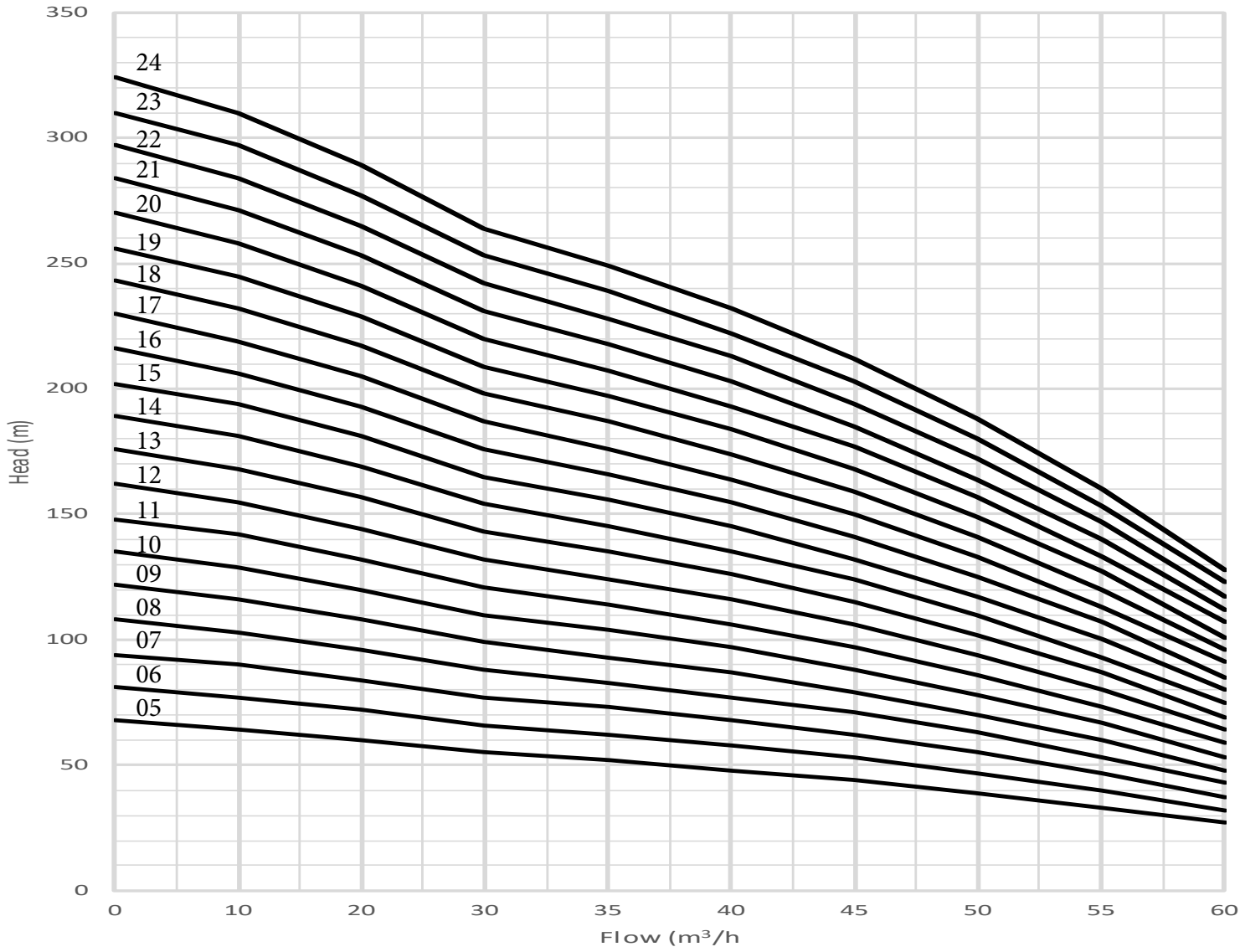
VP-32

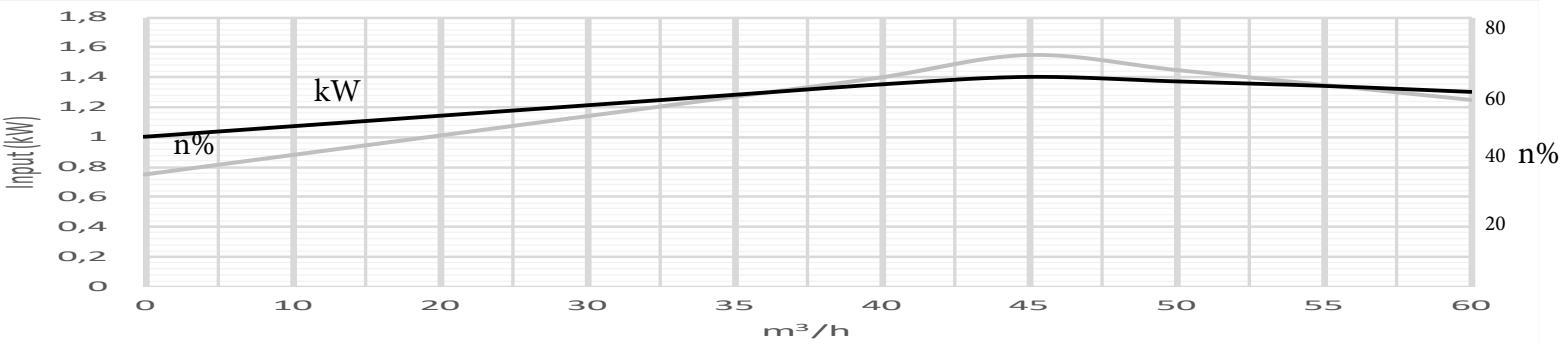
SPECIFICATIONS				
MODEL NAME	D (mm)	L (mm)	Pump Weight (kg)	Total Weight [incl packaging] (kg)
VP32A-05	142	763	17	22
VP32A-06	142	859	19	24
VP32A-07	1042	955	21	26
VP32A-08	142	1051	23	28
VP32A-09	142	1147	25	30
VP32A-10	142	1243	27	32
VP32A-11	142	1339	29	34
VP32A-12	142	1435	31	36
VP32A-13	142	1531	33	38
VP32A-14	142	1627	35	40
VP32A-15	142	1723	37	47
VP32A-16	142	1819	39	48
VP32A-17	142	1915	41	51
VP32A-18	142	2011	43	53
VP32A-19	142	2107	45	55
VP32A-20	142	2203	47	57
VP32A-21	142	2299	49	59
VP32A-22	142	2395	51	63
VP32A-23	142	2491	53	65
VP32A-24	142	2587	55	67
VP32A-25	142	2683	57	69
VP32A-26	142	2779	59	71
VP32A-27	142	2875	61	73
VP32A-28	142	2971	63	75
VP32A-29	142	3067	65	76
VP32A-30	142	3163	67	79
VP32A-31	142	3259	69	81
VP32A-32	142	3355	71	83
VP32A-33	142	3451	73	85
VP32A-34	142	3547	75	87
VP32A-35	142	3643	77	89
VP32A-39	142	4027	85	97



*G: available oulet size 3” & 4”
*D: with cable guard

VP-48


Head (m)
350
300
250
200
150
100
50
0
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
09
08
07
06
05
0
10
20
30
35
40
45
50
55
60
Flow (m³/h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0,2
0
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n%
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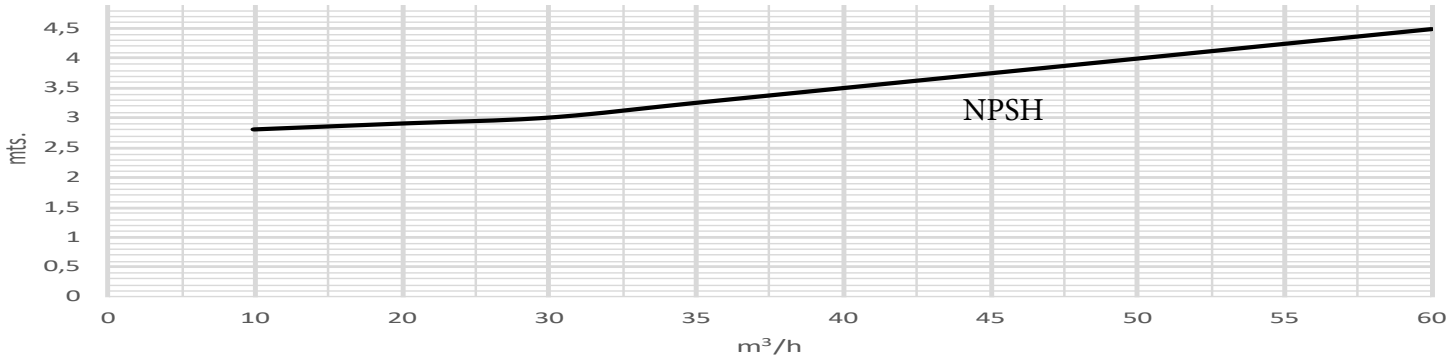
10
20
30
35
40
45
50
55
60
m³/h


mts.
4,5
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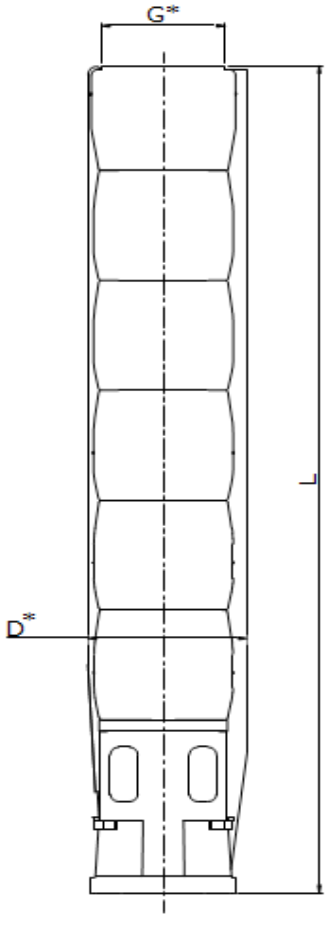
3,5
3
2,5
2
1,5
1
0,5
0
NPSH
0
10
20
30
35
40
45
50
55
60
m³/h

VP-48

MODEL NAME		RATING		DISCHARGE										
Three-Phase	Stage	kW	HP	l/min	0	167	335	500	585	670	750	835	917	1000
				m^3/h	0	10.0	20.1	30.0	35.1	40.2	45.0	50.1	55.0	60.0
VP48A-05	5	7.50	10.00	Head (m)	68	64	60	55	52	48	44	39	33	27
VP48A-06	6	9.20	12.30		81	77	72	66	62	58	53	47	40	32
VP48A-07	7	11.00	15.00		94	90	84	77	73	68	62	55	47	37
VP48A-08	8	13.00	17.50		108	103	96	88	83	77	71	63	53	43
VP48A-09	9	15.00	17.50		122	116	108	99	93	87	79	70	60	48
VP48A-10	10	15.00	17.50		135	129	120	110	104	97	88	78	67	53
VP48A-11	11	18.50	25.00		148	142	132	121	114	106	97	86	73	59
VP48A-12	12	18.50	25.00		162	155	144	132	124	116	106	94	80	64
VP48A-13	13	22.00	30.00		176	168	157	143	135	126	115	102	87	69
VP48A-14	14	22.00	30.00		189	181	169	154	145	135	124	110	93	75
VP48A-15	15	22.00	30.00		202	194	181	165	156	145	132	117	100	80
VP48A-16	16	26.00	35.00		216	206	193	176	166	155	141	125	107	85
VP48A-17	17	26.00	35.00		230	219	205	187	176	164	150	133	113	91
VP48A-18	18	30.00	40.00		243	232	217	198	187	174	159	141	120	96
VP48A-19	19	30.00	40.00		256	245	229	209	197	184	168	149	127	101
VP48A-20	20	30.00	40.00		270	258	241	220	207	193	177	157	133	107
VP48A-21	21	37.00	50.00		284	271	253	231	218	203	185	164	140	112
VP48A-22	22	37.00	50.00		297	284	265	242	228	213	194	172	147	117
VP48A-23	23	37.00	50.00		310	297	277	253	239	222	203	180	153	123
VP48A-24	24	37.00	50.00		324	310	289	264	249	232	212	188	160	128

MODEL NAME	SPECIFICATIONS			
	D (mm)	L (mm)	Pump Weight (kg)	Total Weight [incl packaging] (kg)
VP48A-05	147	848	20	24
VP48A-06	147	961	18	23
VP48A-07	147	1074	20	25
VP48A-08	147	1187	22	28
VP48A-09	147	1300	24	29
VP48A-10	147	1413	26	34
VP48A-11	147	1526	28	36
VP48A-12	147	1639	32	42
VP48A-13	147	1752	34	44
VP48A-14	147	1865	36	46
VP48A-15	147	1987	38	48
VP48A-16	147	2091	40	50
VP48A-17	147	2204	42	52
VP48A-18	147	2317	44	54
VP48A-19	147	2430	46	56
VP48A-20	147	2543	48	58
VP48A-21	147	2656	55	60
VP48A-22	147	2769	57	62
VP48A-23	147	2882	60	65
VP48A-24	147	2995	62	67



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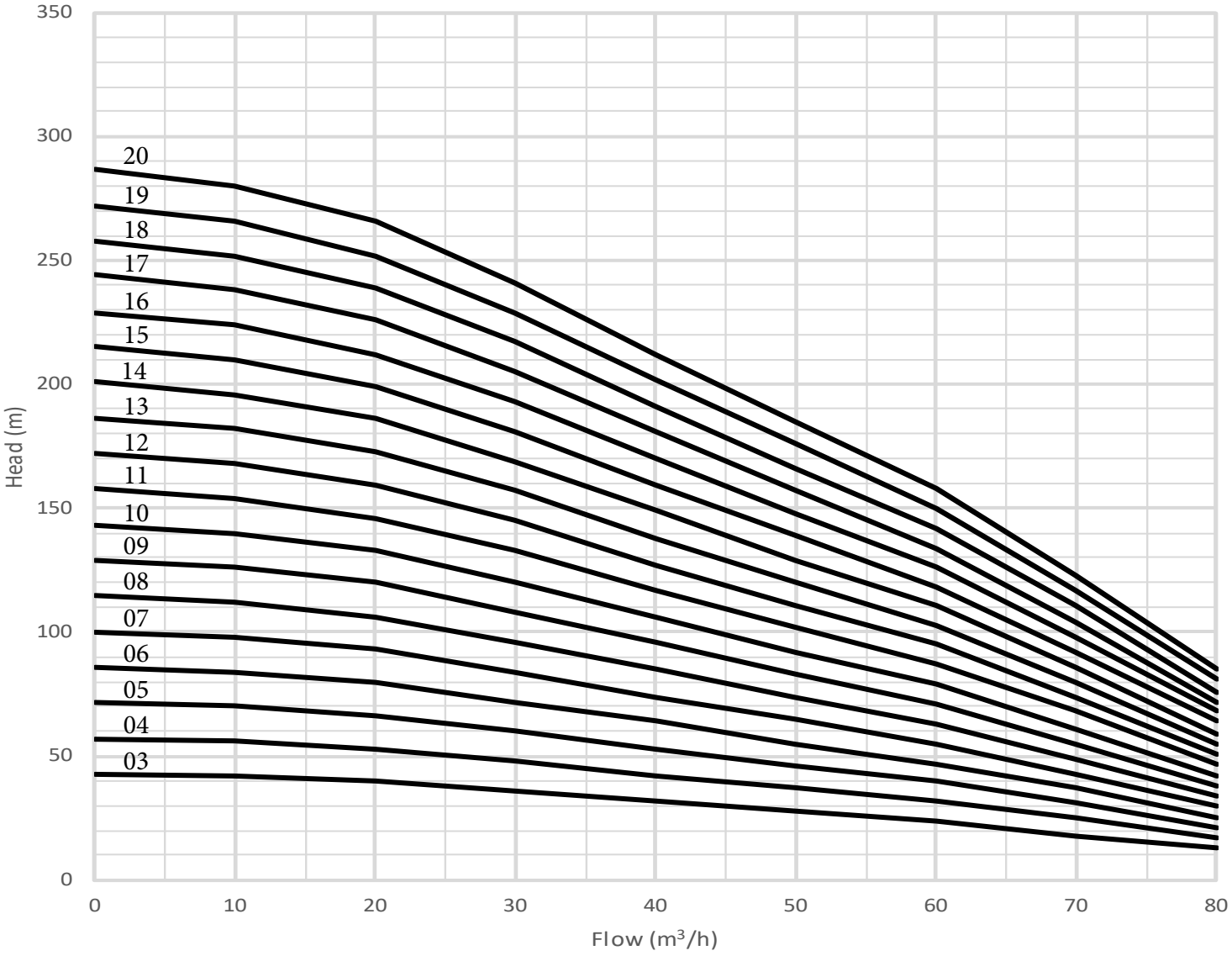
Head (m)
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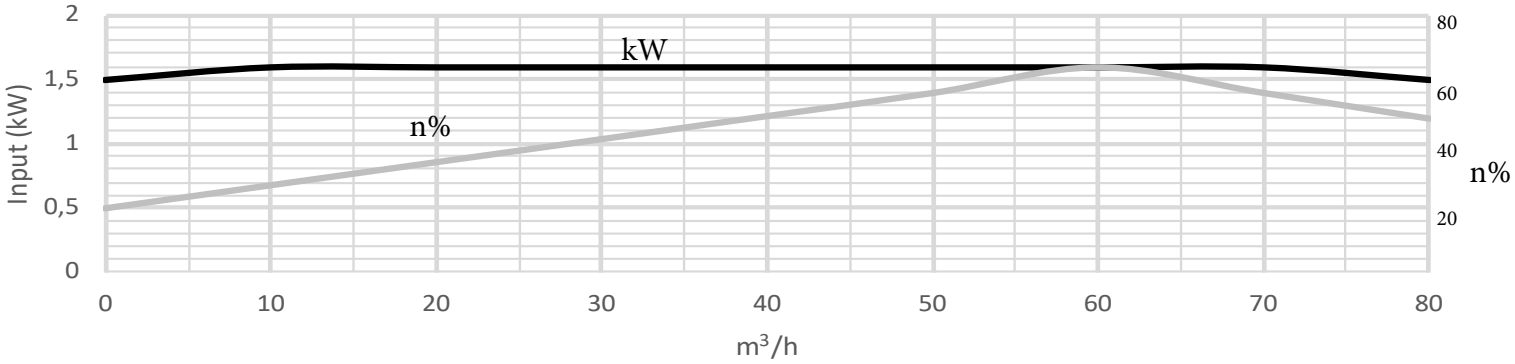
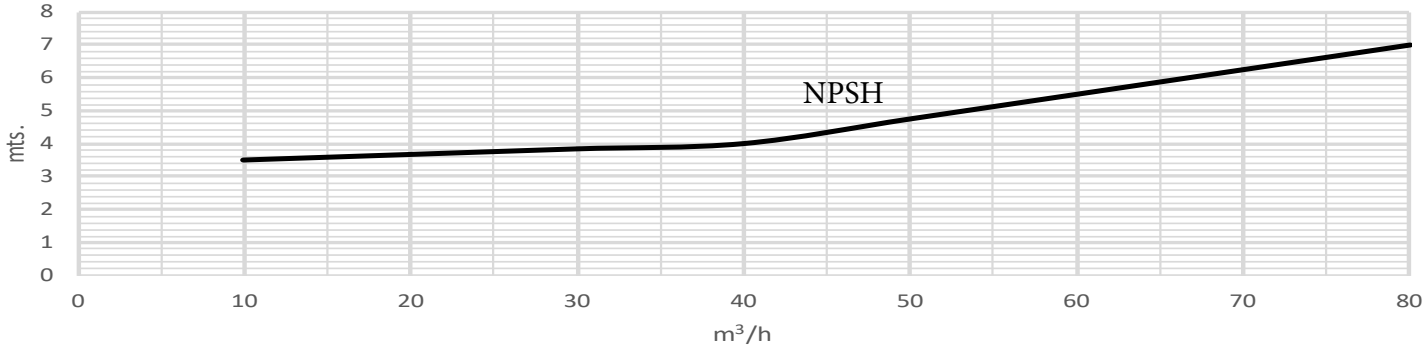
300
250
200
150
100
50
0
20
19
18
17
16
15
14
13
12
11
10
09
08
07
06
05
04
03
0
10
20
30
40
50
60
70
80
Flow (m³/h)

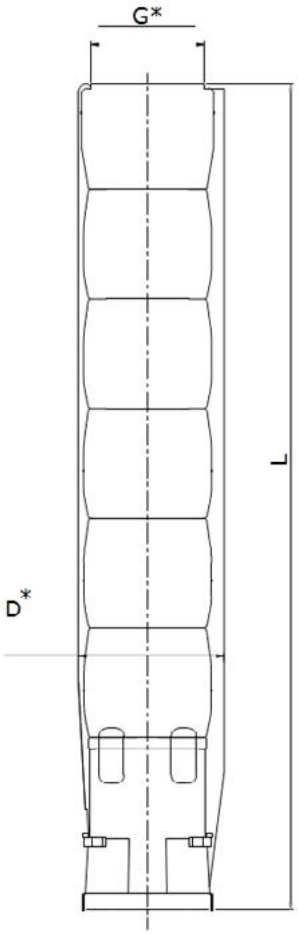

Input (kW)
2
1,5
1
0,5
0
kW
n%
80
60
40
20
n%
0
10
20
30
40
50
60
70
80
m³/h


mts.
8
7
6
5
4
3
2
1
0
NPSH
0
10
20
30
40
50
60
70
80
m³/h

VP-62

MODEL NAME		RATING		DISCHARGE								
Three-Phase	Stage	kW	HP	l/min	0	170	335	500	670	835	1000	1167	1300
				m^3/h	0	10.2	20.1	30.1	40.2	50.1	60.0	70.0	78.0
VP62A-03	3	5.50	7.50	Head (m)	43	42	40	36	32	28	24	18	13
VP62A-04	4	7.50	10.00		57	56	53	48	42	37	32	25	17
VP62A-05	5	9.20	12.50		72	70	66	60	53	46	40	31	21
VP62A-06	6	11.00	15.00		86	84	80	72	64	55	47	37	25
VP62A-07	7	13.00	17.50		100	98	93	84	74	65	55	43	30
VP62A-08	8	15.00	20.00		115	112	106	96	85	74	63	49	34
VP62A-09	9	18.50	25.00		129	126	120	108	96	83	71	55	38
VP62A-10	10	18.50	25.00		143	140	133	120	106	92	79	61	42
VP62A-11	11	22.00	30.00		158	154	146	133	117	102	87	68	47
VP62A-12	12	22.00	30.00		172	168	159	145	127	111	95	74	51
VP62A-13	13	26.00	35.00		186	182	173	157	138	120	103	80	55
VP62A-14	14	26.00	35.00		201	196	186	169	149	129	111	86	59
VP62A-15	15	26.00	35.00		215	210	199	181	159	139	118	92	64
VP62A-16	16	30.00	40.00		229	224	212	193	170	148	126	98	68
VP62A-17	17	30.00	40.00		244	238	226	205	181	157	134	104	72
VP62A-18	18	37.00	50.00		258	252	239	217	191	166	142	111	76
VP62A-19	19	37.00	50.00		272	266	252	229	202	176	150	117	81
VP62A-20	20	37.00	50.00		287	280	266	241	212	185	158	123	85
VP62A-21	21	37.00	50.00		301	294	279	253	223	194	166	129	89

MODEL NAME	SPECIFICATIONS			
	D (mm)	L (mm)	Pump Weight (kg)	Total Weight [incl packaging] (kg)
VP62A-03	147	622	16	14
VP62A-04	147	735	18	21
VP62A-05	147	848	20	24
VP62A-06	147	961	22	23
VP62A-07	147	1074	23	25
VP62A-08	147	1187	24	28
VP62A-09	147	1300	25	29
VP62A-10	147	1413	26	34
VP62A-11	147	1526	28	36
VP62A-12	147	1639	32	42
VP62A-13	147	1752	34	44
VP62A-14	147	1865	36	46
VP62A-15	147	1978	38	48
VP62A-16	147	2091	40	50
VP62A-17	147	2204	42	52
VP62A-18	147	2317	44	54
VP62A-19	147	2430	46	56
VP62A-20	147	2543	48	58
VP62A-21	147	2656	50	60



6” BOREHOLE MOTOR
OIL FILLED

MOTOR RANGE

Three phase 5.5 to 30kW (7.5~ 40HP) 380V ~ 415V

APPLICATIONS

This motor is designed for reliable operation in wells, dams, canals, rivers and boreholes (with a minimum diameter of 6 inches).

BASIC FEATURES

IEC34-1 standard squirrel motor - hermetically sealed

All stainless steel support and double flange design

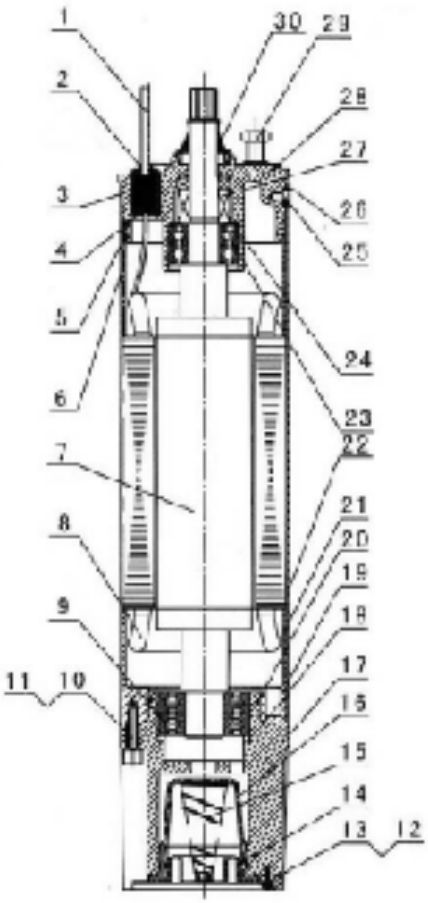
Thrust load:	2500N
Degree of protection:	IP68
Maximum ambient temperature:	40°C
Water pH range:	6.5 - 8.0
Maximum submerged depth:	250m
Insulation:	Class F
Mounting:	Vertical/horizontal
Minimum cooling flow along the motor:	8cm/s
Maximum starts per hour:	10-30 (dependent on motor size)

Flat, waterproof lead out cable with separate earth wire.

Designed for vertical and horizontal installation.

TECHNICAL DATA

MOTOR PARTS



NO.	DESCRIPTION	NO.	DESCRIPTION
1	Cable: YQSB	16	O-ring
2	Cable holder	17	Flange
3	Cable protector	18	O-ring
4	Cable protector washer	19	Insulation paper
5	O-ring	20	Lower motor cover
6	Insulation paper	21	Ball bearing
7	Rotor	22	Insulation paper
8	Stator and wire	23	Mechanical seal
9	Bearing	24	Ball bearing
10	Screw	25	Leaf spring
11	Washer	26	Screw
12	Screw	27	Pin
13	Spring	28	Top motor cover
14	Cup ring	29	Screw
15	Motor base	30	Washer

PERFORMANCE DATA

MODEL	POWER		CURRENT	COSΦ	SPEED	LENGTH	WEIGHT
	kW	HP			RPM	mm	kg
HTY6-5.5	5.5	7.5	12.3	0.83	2835	580	42
HTY6-7.5	7.5	10	16.5	0.85	2835	620	46
HTY6-9.2	9.2	12.3	20.2	0.86	2835	655	50
HTY6-11	11	15	23.6	0.86	2835	685	53
HTY6-13	13	17.5	27.6	0.86	2850	715	56
HTY6-15	15	20	31.8	0.86	2850	755	59
HTY6-18.5	18.5	25	38.2	0.86	2850	820	66
HTY6-22	22	30	45.2	0.86	2850	880	73
HTY6-26	26	35	53.5	0.86	2850	930	80
HTY6-30	30	40	61.6	0.86	2850	980	86

6” BOREHOLE MOTOR

WATER FILLED 380 & 525V

MOTOR TECHNICAL DATA

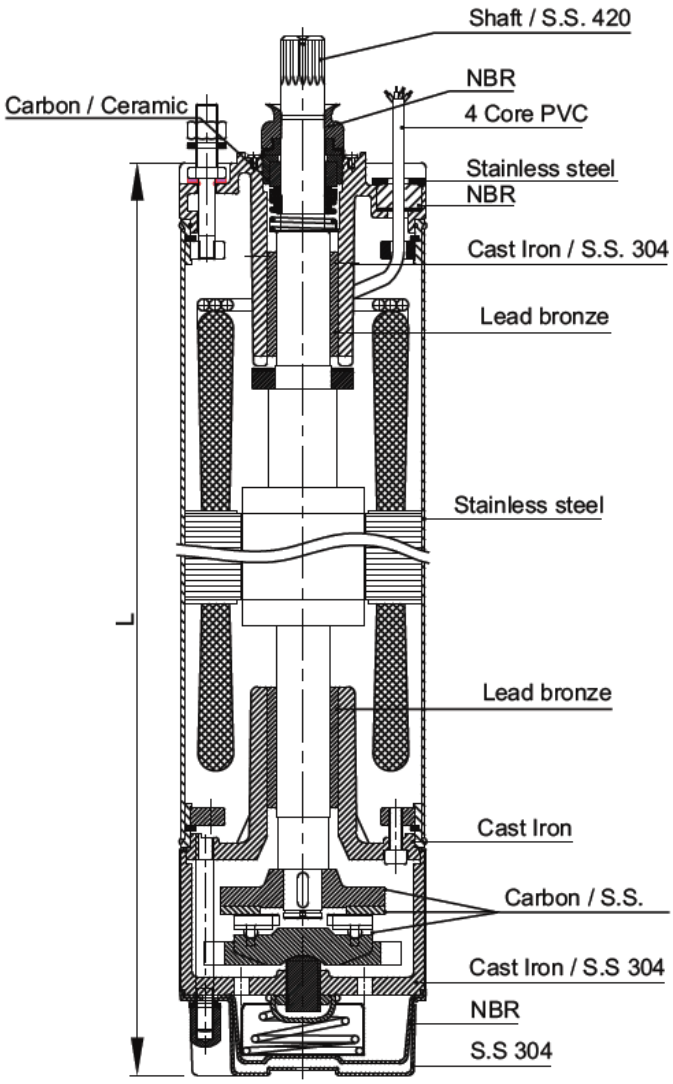
Winding wire:	Polywrapped winding
Degree of protection:	IP68
Maximum water temperature:	35°C
Maximum starts per hour:	10 - 30 depending on kW size
Allowable voltage variation:	+6% - 10%
Motor shaft:	Stainless steel
Stator shell:	Stainless steel
Maximum immersion depth:	Unlimited
Mounting:	Vertical
Motor cable length:	3m3 Core with separate earthcable
Cooling flow:	V=0.2 m/s
Coolant:	Clear water

Stator replaceable

MOTOR TECHNICAL DATA

Three phase 5.5kW - 37.5kW

TECHNICAL DATA



MOTOR SPECIFICATIONS

MOTOR POWER		PWL	WEIGHT (MOTOR ONLY)		WEIGHT (INCL PACKAGING)	
(kW)	(HP)	(mm)	S.S. 304 (kg)	Cast Iron (kg)	S.S. 304 (kg)	Cast Iron (kg)
5.5	7.5	677	41.5	41.5	49.5	48.5
7.5	10	707	45.0	44.0	53.0	52.0
9.2	12.3	737	49.0	48.0	57.0	56.0
11	15	777	52.0	51.0	60.0	59.0
13	17.5	827	5.0	54.0	63.0	62.0
15	20	867	60.0	59.0	68.0	67.0
18.5	25	917	63.0	62.0	71.0	70.0
22	30	997	66.0	65.0	74.0	73.0
26	35	1057	69.0	68.0	77.0	76.0
30	40	1177	77.0	76.0	85.0	84.0
37.5	50	1277	84.0	83.0	92.0	91.0

TECHNICAL DATA

PERFORMANCE DATA OF 6” THREE PHASE SUBMERSIBLE MOTOR / 50HZ - 380V

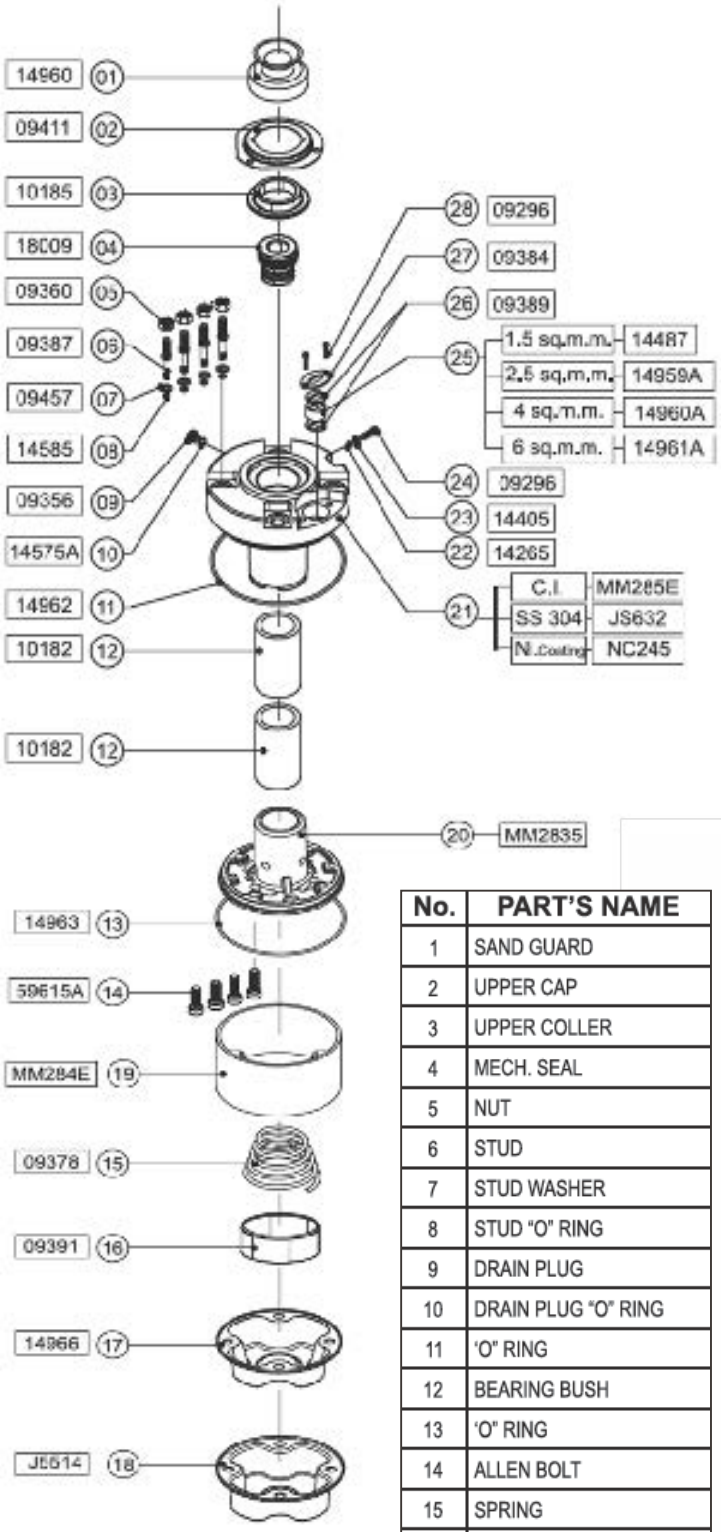
P_N		THRUST LOAD	U_N	n_N	I_N	I_A	η (%)			COSΦ			T_N	T_A
(kW)	(HP)	F(N)	(V)	(min-1)	(A)	(A)	50	75	100	50	75	100	(Nm)	(Nm)
5.5	7.5	15500	380	2860	13.7	48	74	76	75	0.67	0.78	0.83	18.3	15.5
7.5	10	15500	380	2860	18.3	59	77	78	76	0.70	0.80	0.84	25	19.2
9.2	12.5	15500	380	2850	22	74	79	80	78	0.71	0.80	0.84	31.1	25.9
11	15	15500	380	2860	25.8	93	78	80	78	0.71	0.80	0.85	36.7	31.5
13	17.5	15500	380	2880	30.1	118	80	81	80	0.68	0.79	0.84	43.1	45
15	20	15500	380	2880	33.9	140	81	82	81	0.71	0.81	0.85	49.7	53.9
18.5	25	15500	380	2860	42.3	172	81	82	81	0.68	0.78	0.84	61.7	75.2
22	30	15500	380	2880	49.1	218	82	84	83	0.68	0.78	0.84	72.6	91.2
26	35	15500	380	2880	57.5	268	83	84	83	0.68	0.79	0.86	86	120.4
30	40	15500	380	2900	66.4	328	82	84	83	0.67	0.78	0.84	98.8	135
37.5	50	15500	380	2890	82.0	409	83	84	83	0.67	0.78	0.84	122.1	192.8

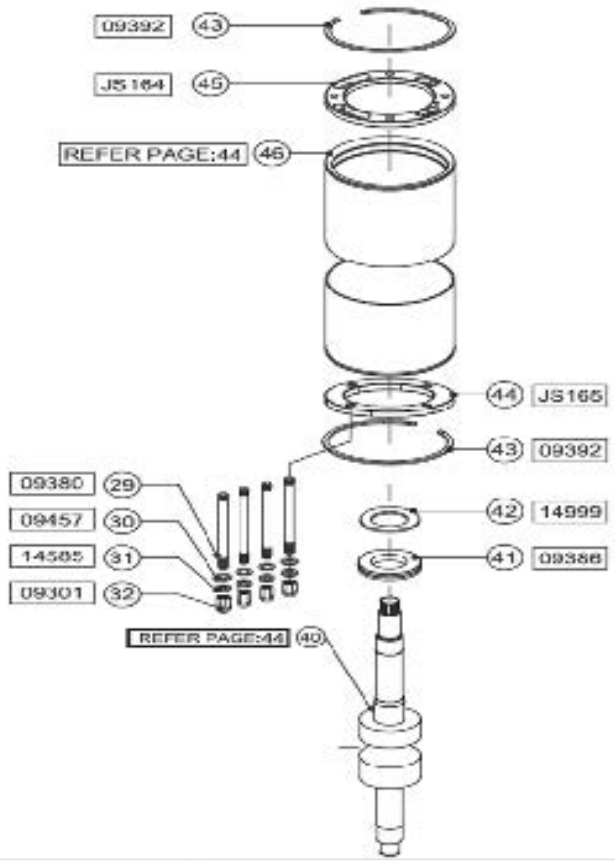
P_N - Rated Output
U_N - Rated Voltage
n_N - RPM
I_N - Full Load Current
I_A - Starting Current
η - Motor Efficiency
CosΦ - Power Factor
T_N - Full Load Torque
T_A - Starting Torque
$F_{[N[}$ - Axial Thrust Load

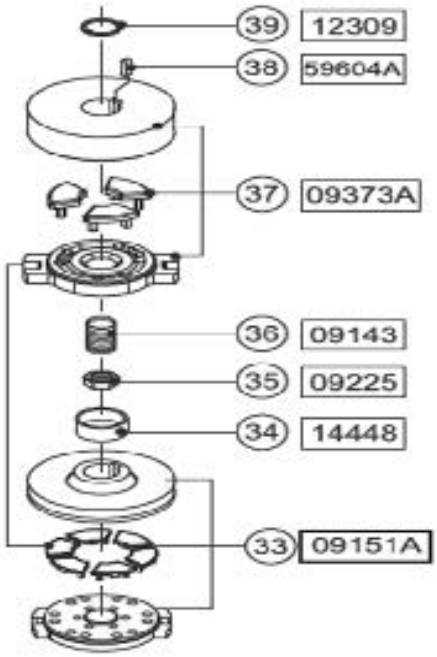
PERFORMANCE DATA OF 6” THREE PHASE SUBMERSIBLE MOTOR / 50HZ - 525V

kW	HP	AMPS			Hz	RPM			CosΦ			CONN.	THRUST LOAD	WIND	COOLING FLOW M/SEC	MAX WATER TEMP.	CLASS
		480	500	525		480	500	525	480	500	525						
22	30	36.4	35.6	35.6	50	2878	2878	2880	0.82	0.8	0.80	DELTA (1)	15500	PW	0.85	35	B
30	40	42.8	42	42	50	2880	2882	2885	0.85	0.85	0.84	DELTA (1)	27500	PW	0.5	35	B
37	50	54	53.2	53.2	50	2880	2882	2885	0.85	0.85	0.84	DELTA (1)	27500	PW	0.5	35	B

TECHNICAL DATA







No.	PART'S NAME
1	SAND GUARD
2	UPPER CAP
3	UPPER COLLER
4	MECH. SEAL
5	NUT
6	STUD
7	STUD WASHER
8	STUD "O" RING
9	DRAIN PLUG
10	DRAIN PLUG "O" RING
11	'O" RING
12	BEARING BUSH
13	'O" RING
14	ALLEN BOLT
15	SPRING
16	SPRING JACKET
17	PRESSURE CUP
18	MOTOR BASE
19	LOWER HOUSING PART-2
20	LOWER HOUSING PART-1
21	UPPER HOUSING
22	DRAIN PLUG "O" RING
23	DRAIN PLUG WASHER

No.	PART'S NAME
25	CABLE GROMMET
26	CABLE WASHER
27	CABLE CLIP
28	CABLE CLIP SCREW
29	STUD
30	STUD WASHER
31	STUD "O" RING
32	DOME NUT
33	THRUST BEARING PAD SET 3 TO 12.5 H.P.
34	LOCK NUT CAP
35	LOCK NUT (FOR ROCKER)
36	ROCKER
37	THRUST BEARING PAD SET ABOVE 12.5 TO 40
38	KEY
39	CIRCLIP (EXTERNAL)
40	ROTOR SHFT
41	THRUST PLATE
42	THRUST RING
43	CIRCLIP (INTERNAL)
44	LOWER FLANGE
45	UPPER FLANGE
46	FINISH STATOR BODY

PUMP CONTROLLER

DY-T03 SERIES

PUMP CONTROLLER

DY-T03 SERIES

GENERAL DESCRIPTION

This three phase control panel is rated for use from 5.5 to 30kW, 380V. It will control and protect pump motors in the following capacity:

Basic control functions include:

1. Over current and under voltage protection

2. Unit can detect liquid levels at source and in delivery tank/reservoir and react according to parameters.

3. Power will be switched off in the event of power failure or loss of phase.

TECHNICAL INFORMATION

Input Voltage:	380VAC, -5% to +10%, 50Hz
Output Power:	5.5-30kW
Water Probe Voltage:	24 VAC
Operating Temperature:	-5°C to +40°C
Dimensions:	300 x 400 x 240mm
Level switching:	Dual level switch capability
Reaction time:	Loss of phase < 2 sec
	Overload 3-100 sec adjustable

OPERATION

Water level control between two reservoirs or tanks can be performed simultaneously or for any one tank independently.

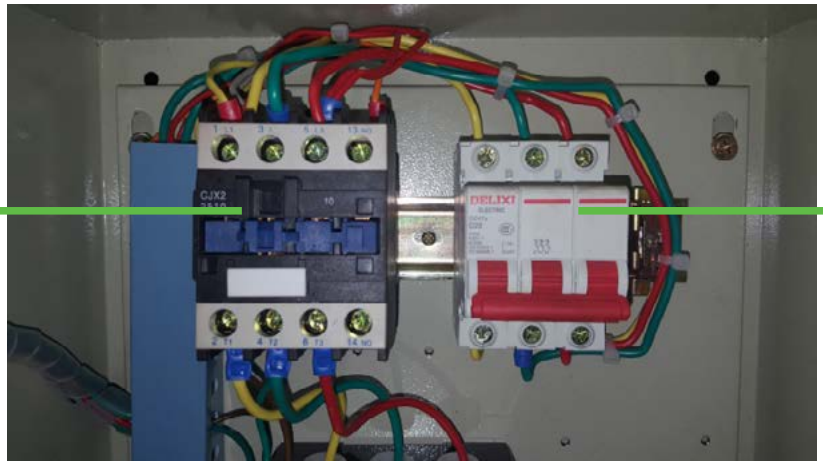
Over load protection: with the loss of a phase, the phase detection CCT will signal for the power contactor to drop out and switch the power supply to the pump motor off. Should the pump motor draw an over current the over current protection CCT will signal the power contactor to disengage and stop power supply to the pump motor. This will be done automatically within the time limits set by the installer. The higher the current overload the faster the switch-off time.

OPERATION

In the event of phase loss or an overload condition, the green and red LED lights on the electro motor protection (BHQ-S-C), inside the main unit, will light up and indicate the relevant condition.

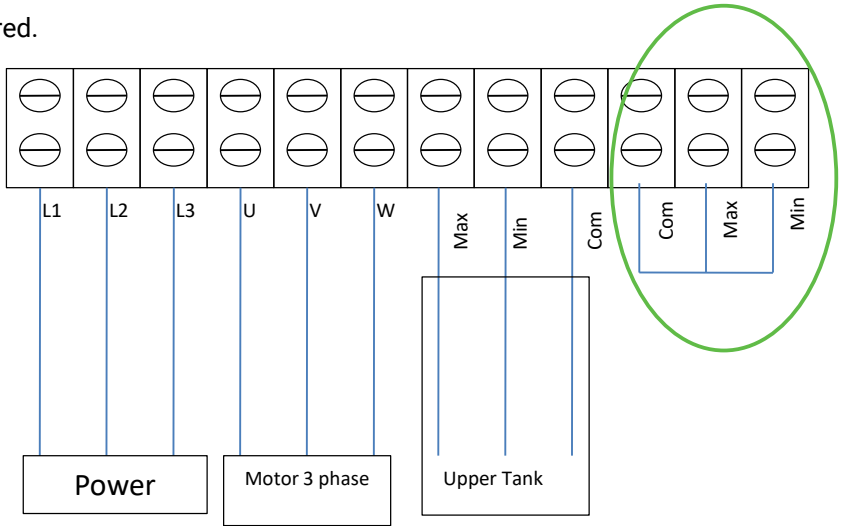
CCT SHORT PROTECTION

Should the power output connections be shorted out, either by electric motor problems or incorrect cabling, the protection sensing CCT will be activated and the power contactors will drop out and switch off the power to the motor. The control unit will react as if an overload condition (high Amperage) was detected and switch off.



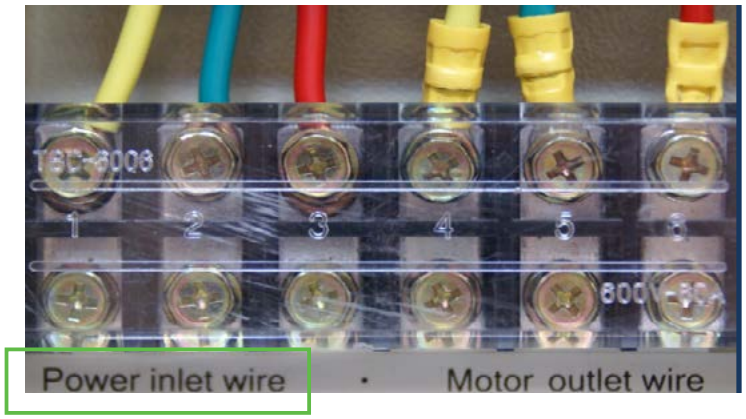
STOP / START SWITCH

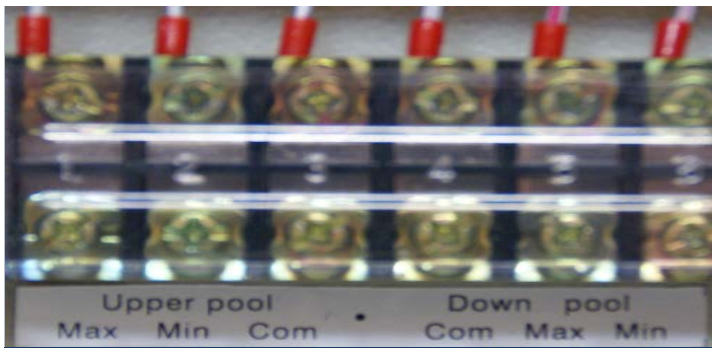
When in the off position power is cut to motor.
When in the start position, power is supply and motor protection aswell as dual level control is active. Dual level function to be bridged out when not required.

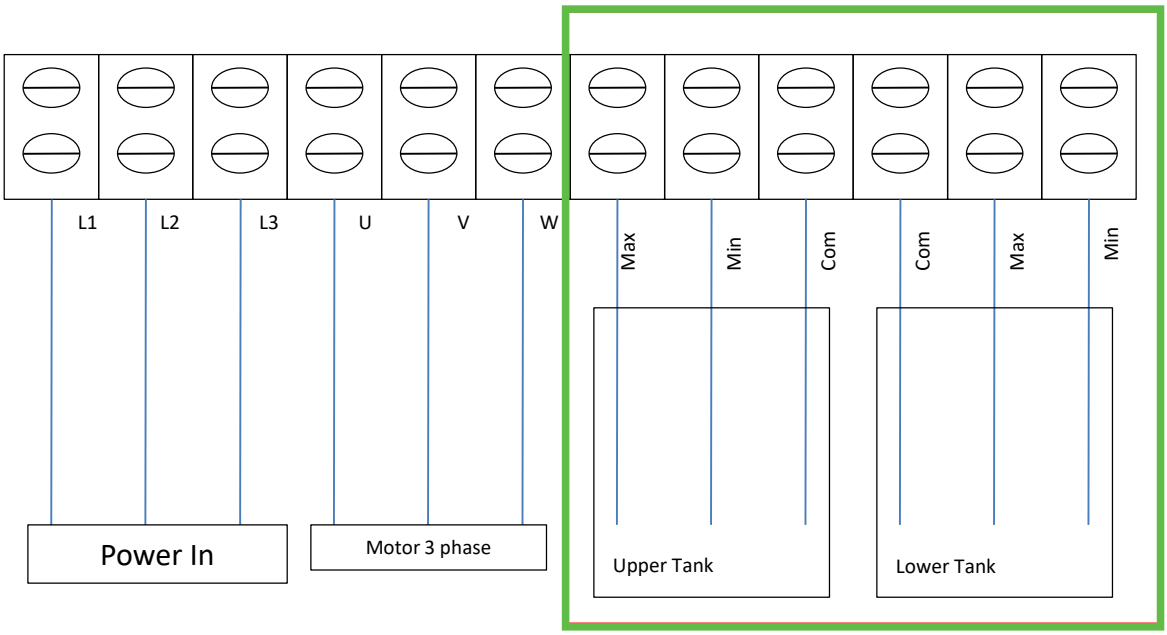


INSTALLATION

1. Fit the automatic control unit vertically to the appropriate area, avoiding direct sunlight, dust and rain.
2. Connect the input power to terminals as indicated.
3. Connect the appropriate float level or electrode cables to the water reservoir/tank points as indicated at the bottom of the unit.
4. The position marked “com” is for the electrode that must be installed at its lowest level in a tank. This common connection will measure the difference between the minimum and maximum electrodes, relaying the liquid levels to the control circuit.
5. Note that the liquid level probes/electrodes must be fixed to a pole or the side of the tank to the appropriate minimum and maximum positions.

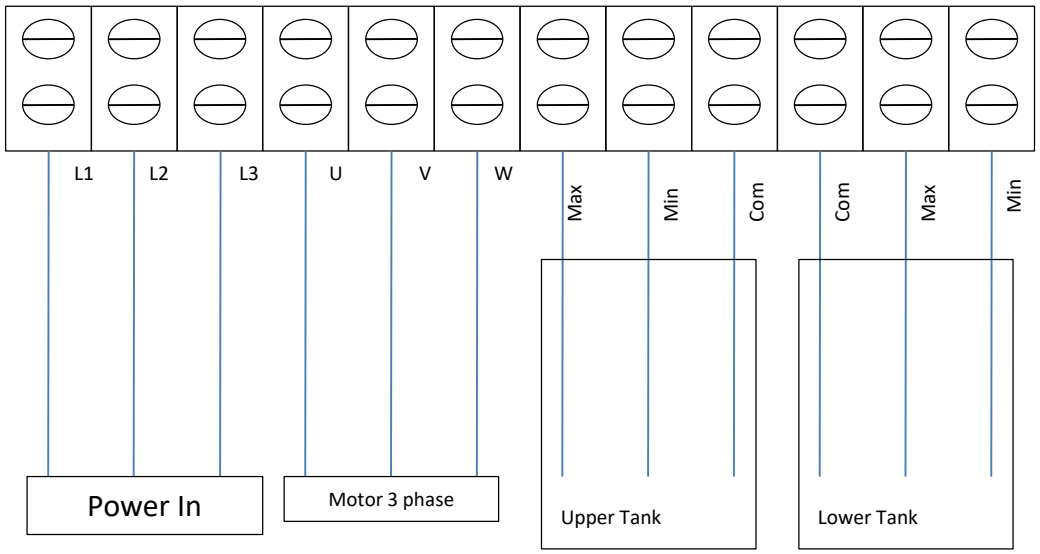






POWER CONNECTION

In the event of phase loss or an overload condition, the green and red LED lights on the electro motor protection (BHQ-S-C), inside the main unit, will light up and indicate the relevant condition.



SETTINGS AND ADJUSTMENTS

1. Switch off the 3 phase CCT breaker (DZ 47 D50) by pushing it down.

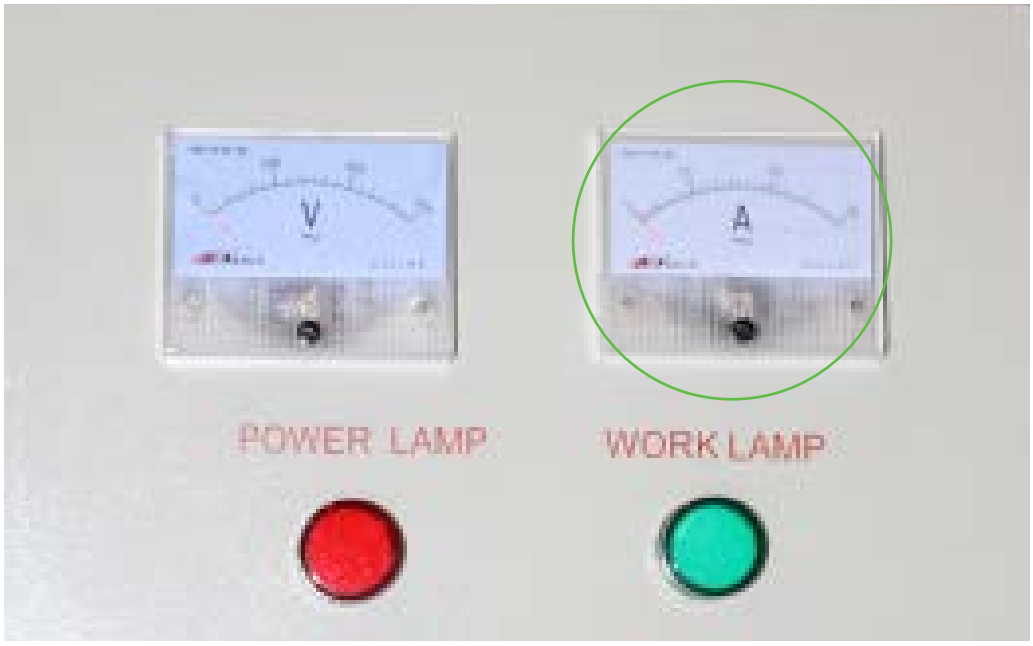
2. Adjust the “current setting screw” to the maximum on the electronic protector (BHQ-S-C) by turning it clockwise.

3. Switch to the appropriate position on the front of the panel.

4. To start the pump push the circuit breaker DZ47 up.

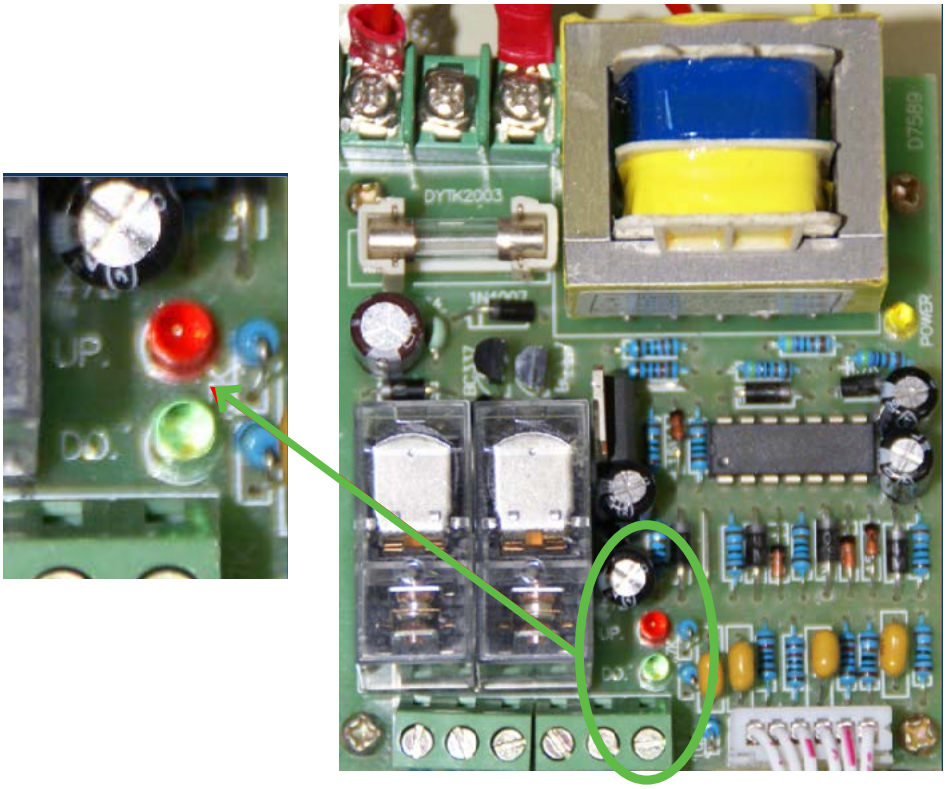
5. While the pump is running, the green LED “run” will be on. Slowly turn the “current setting screw” anti-clockwise until the red LED is on. Now turn the screw slowly clockwise so that the red LED goes off and does not flicker for at least 60 seconds. Lock your setting with the lock nut.

6. In order to set the “time delay setting” on the above mentioned unit, refer to the Amp meter on the front of the unit and set the delay for a bit longer than the starting time of the motor. The centre of the set screw should be around 150 seconds.



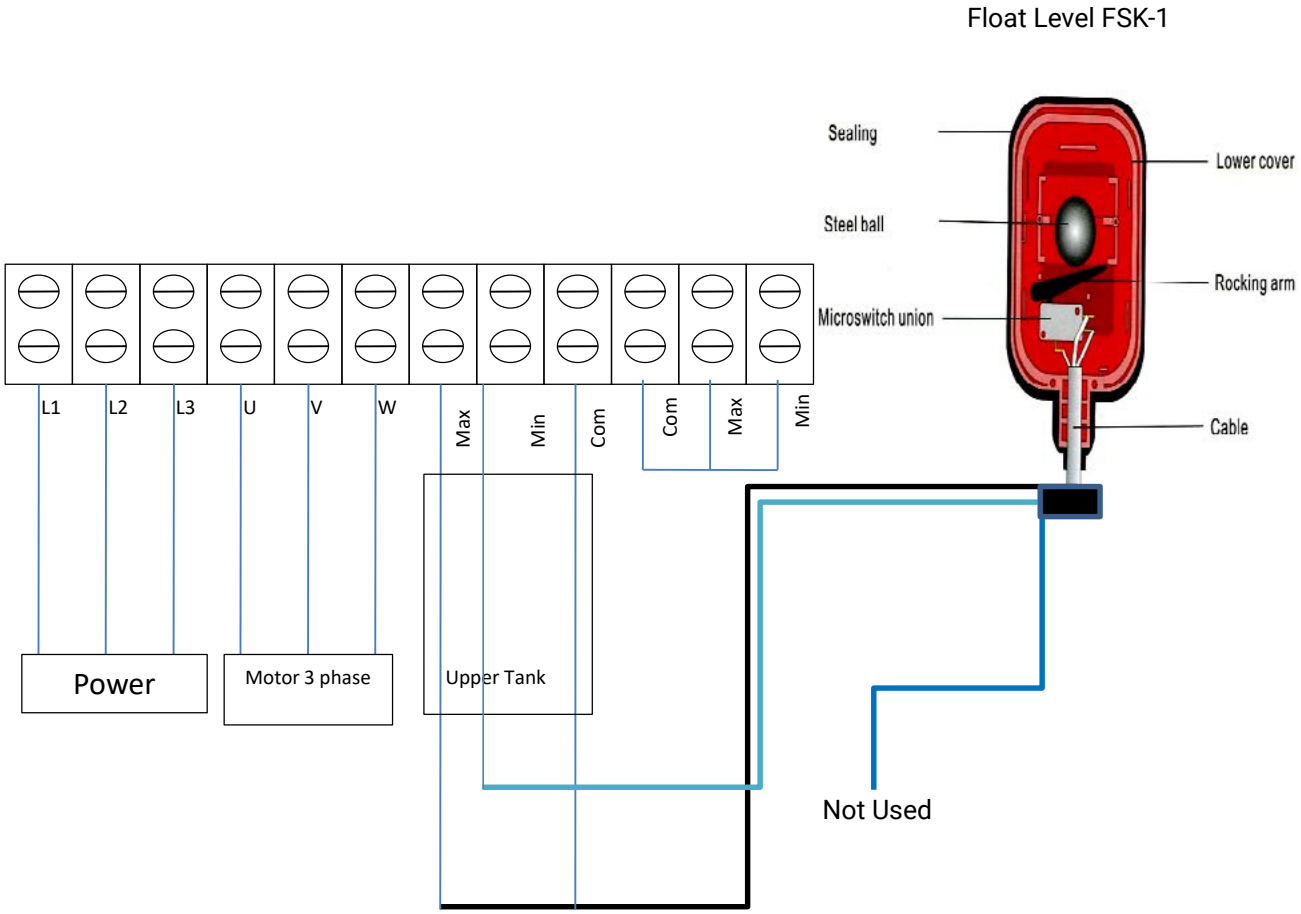
7 To test, switch the input power (at the 3 phase “outside supply”) off, and then back on again. The pump should run normally, indicating that the settings are correct.

8. Note that if the red and green LED’s on liquid level control PC Board is on, it means that both liquid monitoring functions are active and have reached level for ‘high / full’ sensing mode..



FLOAT LEVEL WIRING

Upper tank connection with float:

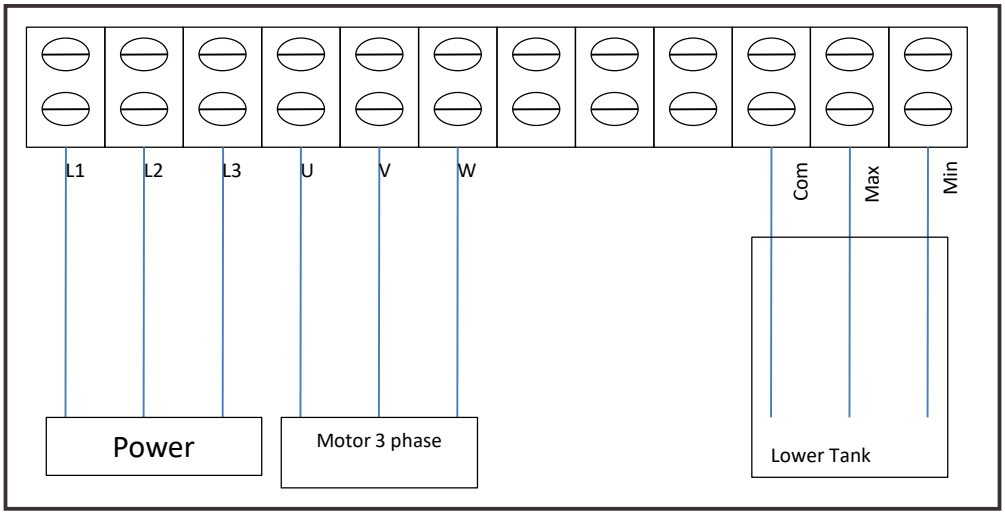


OPERATION DUAL LEVEL CONTROL

1. If the front panel is switched to “Start” then both level swithches / probes are active.

FLOAT LEVEL / PROBES - SWITCH 1			FLOAT LEVEL / PROBES - SWITCH 2		
Max	Min	Com	Max	Min	Com

2. The “start” switch on the front panel will activate both automatic CCT’s for level switch 1 and 2 as per diagram below.



3. Should the water levels in both reservoirs stay as it is, with “switch 1” at its minimum level and “switch 2” at its maximum level, power will not be switched to the pump motor.

PRECAUTIONS

1. In the event of a fault in the control panel, rectify the fault first before attempting to re-start the pump.
2. Make sure that the supply voltage is correct before adjusting load current.
3. The control unit must always be sheltered from dust and rain and be installed at least 1.5m from the ground level.

FAULT FINDING

If the control unit is connected to either a water tank or pressure system and the pump motor does not operate correctly as per the installation instructions and “operation water tank levels” then check the system as follows:

1. Switch power off at the CCT breaker in the unit.
2. Ensure that the up and down pool wiring is done correctly and that it is not faulty in any way, open or short CCT.
3. If the wiring is correct and the system still does not operate correctly, remove the wiring and insert a wire/copper link between the max., min. and com. connections. Now start the pump motor by switching the main CCT breaker “on”. If the pump runs normally, disconnect the links, connect it again and make sure the motor switches on and off normally. The above test will indicate that the control unit is in a good working conditionand that the water system or wiring is at fault.
4. Should the yellow LED “phase failure“ on the BHQ-S-C come on, the following must be performed: using a voltmeter, measure between the phases to establish the missing phase. If it is still missing, measure the outside 3 phase supply to establish faulty wiring from the supply. Should the 3 phase measure correctly at the input of the control unit, then check the CCT breaker and slow blow fuses, by replacing them all.
5. Should the red LED overload protection flicker on the same unit, check and make sure that the overload current setting is done correctly, then set a higher than normal running current.

PUMP CONTROLLER

380V DIGITAL 6”

PUMP CONTROLLER

RESPONSIBILITY

The manufacturer is not liable for malfunctioning if the product has not been installed correctly, damaged, modified, run outside the recommended work range or in contrast with other indications given in this manual. The manufacturer declines all responsibility for possible errors in this operation manual, if due to misprints or errors in copying. The manufacturer reserves the right to make any modifications to products that it may consider necessary or useful, without affecting the essential characteristics.

INTRODUCTION

The digital starter protection panel "Generation2" is useful in all cases we need to control and protect single pumps, managing its turn-on and turn off by different electric installations.

Typical usage scenarios include:

- Houses
- Flats
- Holidays houses
- Farms
- Water supply from wells
- Irrigations of greenhouses, gardens, agriculture
- Rain water reuse
- Industrial plants
- Waste water tank / Sewage sink

TECHNICAL PARAMETER & FEATURES

Main features:

• Built In function switch

- applied for water supply by liquid level control through float switch or liquid probe
- applied for water supply by pressure control through pressure switch and pressure tank
- applied for drainage by liquid level control through float switch or liquid probe

• Automaticly stops the pump in the case of water shortage, protecting it from dry running without installing float switch or liquid probe in the well

• Auto / Manual switch

• Dynamic LCD displaying pump running state

• Push Button Calibration

• Pump Accumulative Running Time Displaying

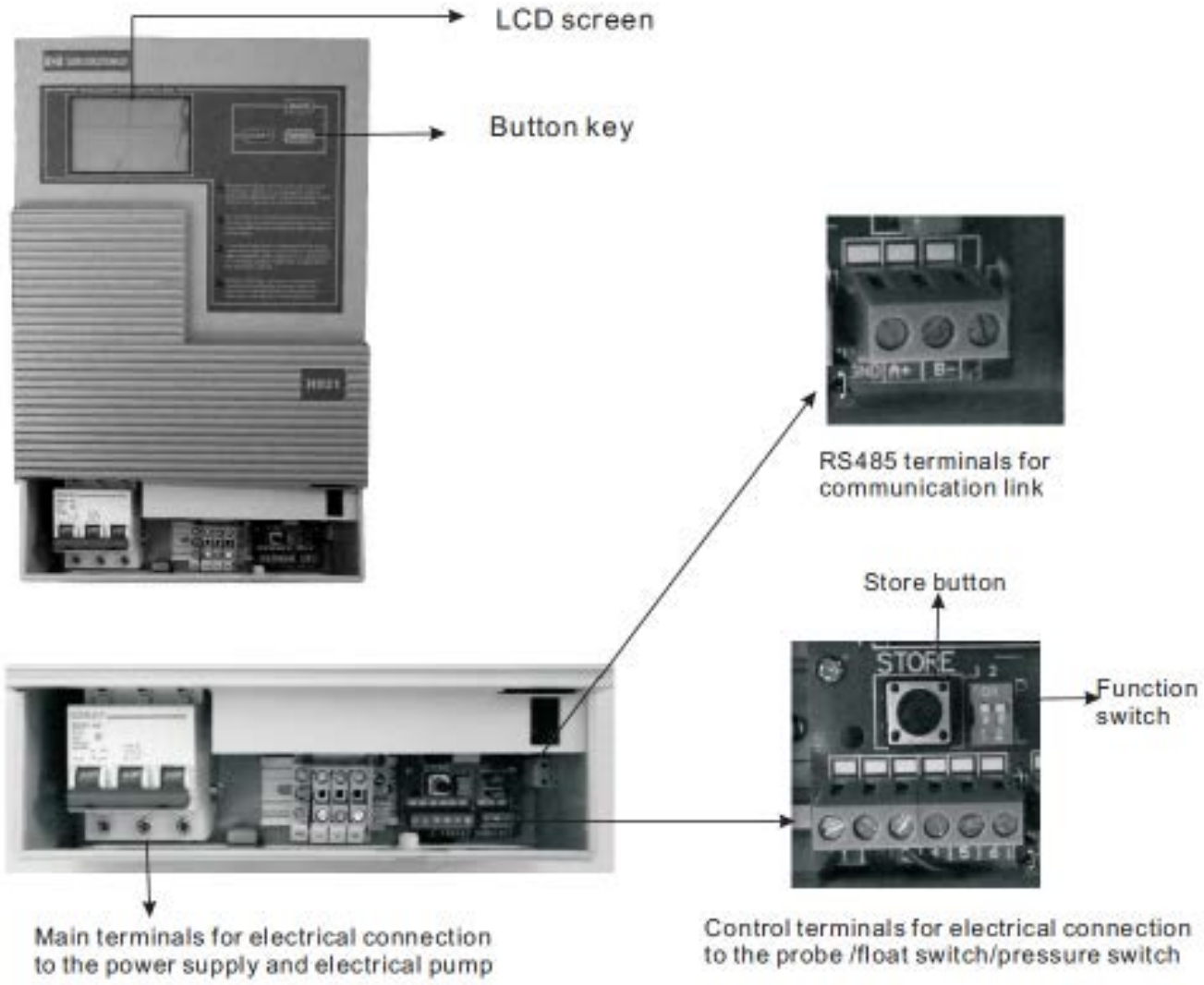
• Pump Last Five Fault Record Displaying

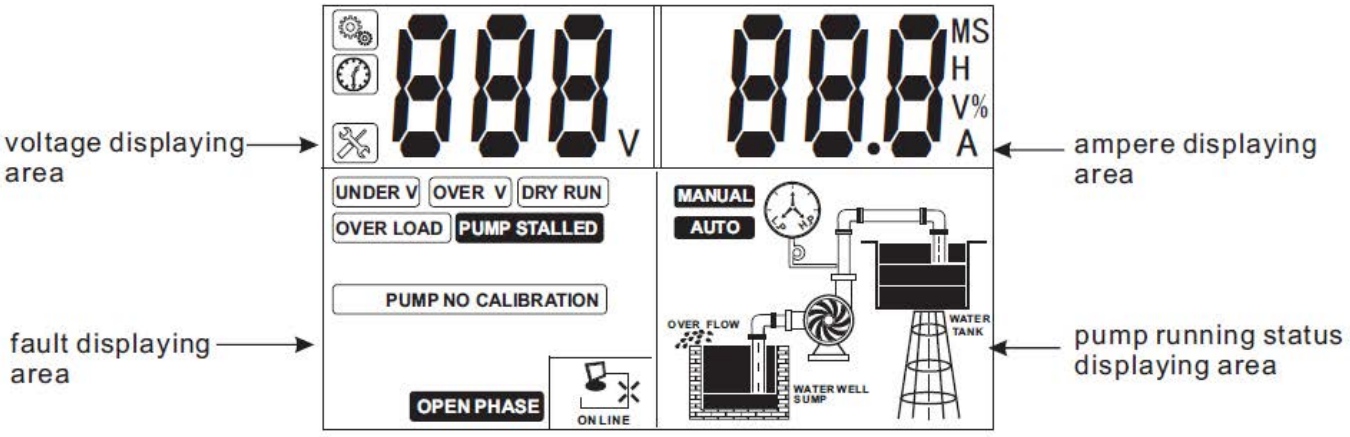
• RS485 Communication

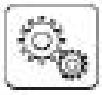
• Starts and stops the pump in accordance with the different liquid level or pressure setting

MAIN TECHNICAL CHARACTERISTIC	
Control characteristic	Double liquid level control
	Pressure control
Control method	Manual / Auto
Liquid level control characteristic	Pulse electrode probe & float switch
Pressure control characteristic	Pressure switch (n/c) & pressure tank
MAIN TECHNICAL DATA	
Rated output power	0.75-4KW-2.2KW (1HP-5.5HP) 5.5-11KW (7.5HP-15HP) 15KW (20HP)
Rated input voltage	AC500V/50HZ Three Phase
Trip response time of over load	5sec-5min
Trip response time of open phase	< 2 sec
Trip response time of short circuit	< 0.1sec
Trip response time of under / over voltage	< 5sec
Trip response time of dry run	6sec
Recovery time of over load	30min
Recovery time of under / over voltage	5min
Recovery time of dry run	30min
Trip voltage of over voltage	575V
Trip voltage of under voltage	425V
Liquid level transfer distance	≤1000m
Protection function	Dry run Over load Transient surge Under voltage Over voltage Open phase Pump stalled Short circuit
MAIN INSTALLATION DATA	
Working temperature	-25°C to 55°C
Working humidity	20% - 90%RH, no drips concreted
Degree of protection	IP22
Install position	Vertical
Unit dimensions (L x W x H)	37×12.5×27.6 cm
Unit weight (net)	3.6kg
RS485 TECHNICAL DATA	
Physics Interface	RS485 Bus Interface: asynchronism semiduplex
Baud rate	1200 bps, 2400 bps, 4800 bpsk, 9600bps Default: 9600bps
Protocol type	MODBUS Protocol (RTU)

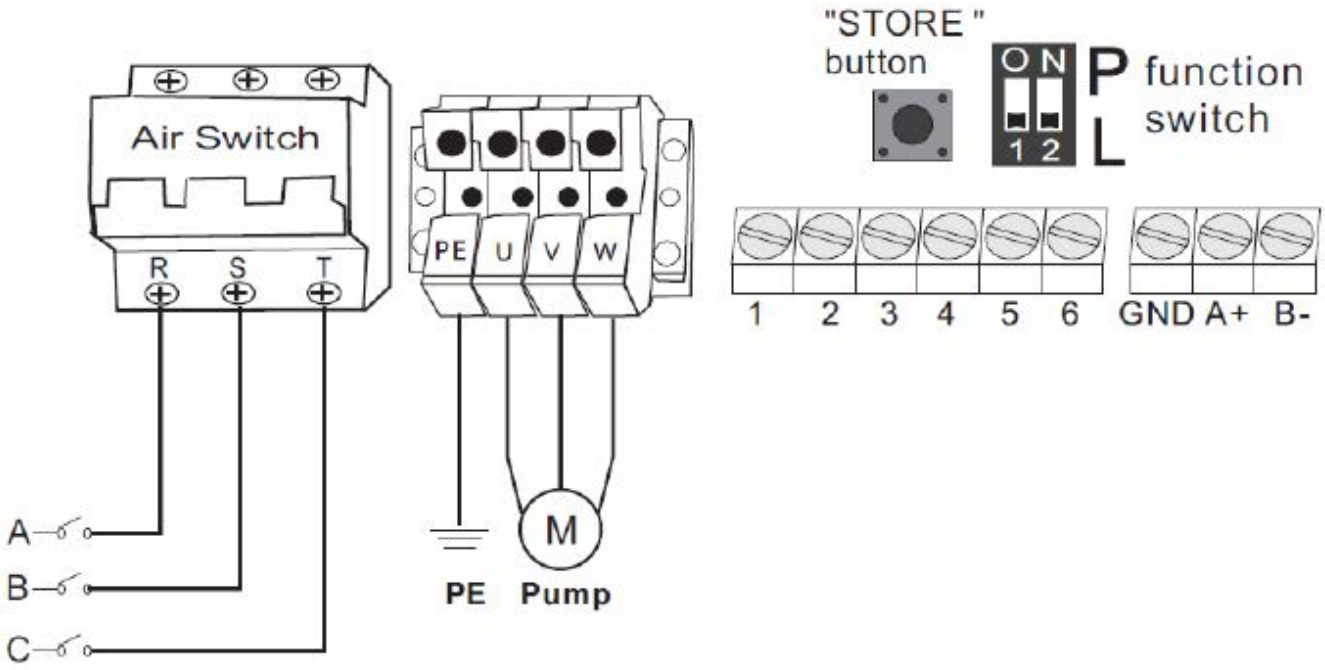
1.3 Controller components





Icon	Meaning/Description
	pump parameter configuration icon, when this icon appears, pump control box is in parameter adjusting manual;
	time displaying icon, when this icon appears, it means pump control box is displaying some parameter of time, eg: pump accumulative running time (unit: hour); counting down etc
	pump fault icon, when this icon appears, it means pump control box is displaying some fault information;
 ON LINE	network connection error icon, when this icon appears, it means there is no network connections or network connection error between pump control box and SC(slave controller) or computer;
 ON LINE	network normal connection icon, when this icon appears, it means the network connection between pump control box and SC (slave controller) or computer is normal;
V	voltage
M	minute
S	second
H	hour
%	percent
A	ampere
	pump running
	pump stops running
	low pressure or lack of pressure in the pipeline or pressure tank
	high pressure or full of pressure in the pipeline or pressure tank

2.1 Electrical connection to the power supply line and electrical pump



DANGER Electric shock risk
Before carrying out any installation or maintenance operation, the A18 should be disconnected from the power supply and one should wait at least 2 minutes before opening the appliance.

Never connect AC power to output UV W terminals.

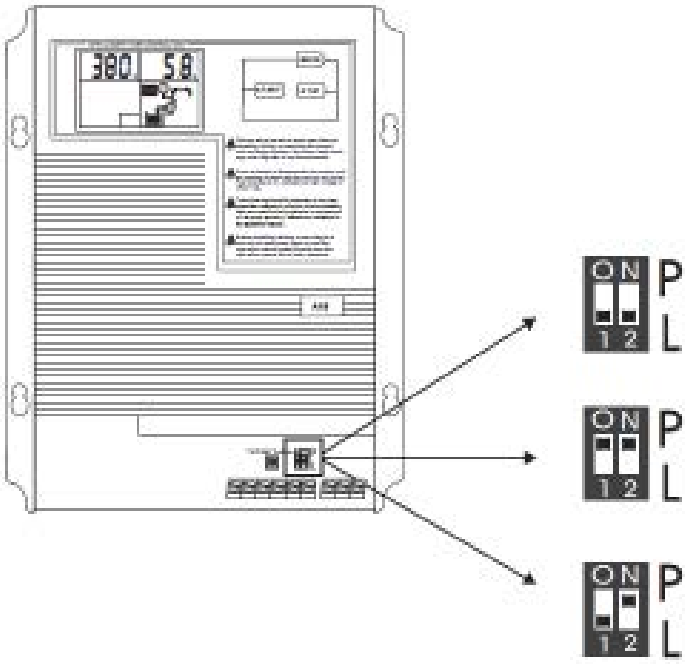
Don't put wire, metal bar filaments etc into the controller.

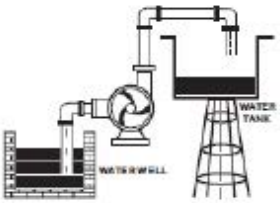
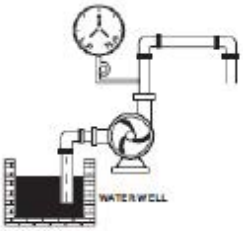
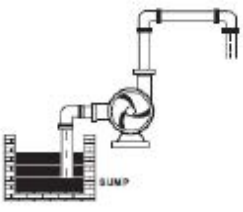
Ensure the motor, controller and power specifications matching.

The electrical and hydraulic connections must be carried out by competent, skilled, qualified personnel.

2.2 Function switch setting

Pump users can set the function switch to meet different application requirement, before setting the function switch, the A18 should be disconnected from the power supply, after complete the setting, apply power to A18 and observe the application sign displayed on the LCD conforming to the following list.



Item	Swith position	Messages & Graphic	Application
1			Applied for water supply or drainage by liquid level control through float switch or liquid sensor
2			Applied for water supply by pressure control through pressure switch & pressure tank
3			Applied for drainage by liquid level control through float switch & liquid probe

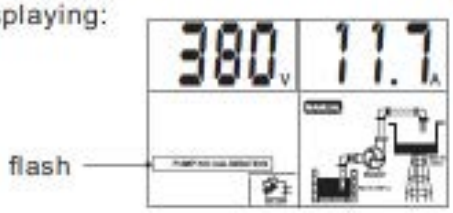
2.3 Parameter Calibration setting & erasing

To achieve best level of protection of the pump, it is essential that parameter calibration must be done immediately after successful pump installation or pump maintenance.

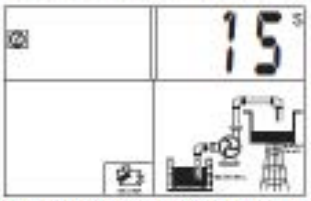
Setting the parameter calibration

- Press the MODE key to switch to manual state, make sure the pump not running and LCD screen displaying:

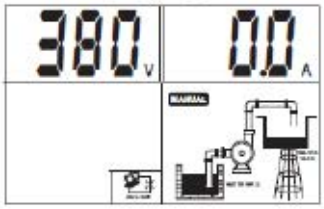
- Press the START key to run pump, confirm the pump and all pipe network in normal working state (including voltage, running ampere et); LCD screen displaying:



- Press the STORE button; The A18 makes a "Di" sound and starts 20 seconds countdown, LCD screen displaying:



- Pump stops running and parameter calibration completed, LCD screen displaying: A18 is ready for running.

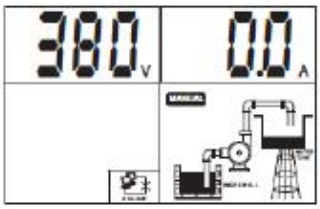


Erasing former parameter calibration

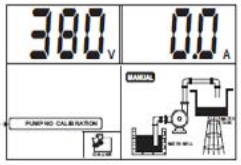
When pump is reinstalled after maintenance or new pump is installed, user must erase the former parameter calibration and a new calibration must be done.

Erasing the parameter calibration

- Press the MODE key to switch to manual state, make sure the pump not running and LCD screen displaying:



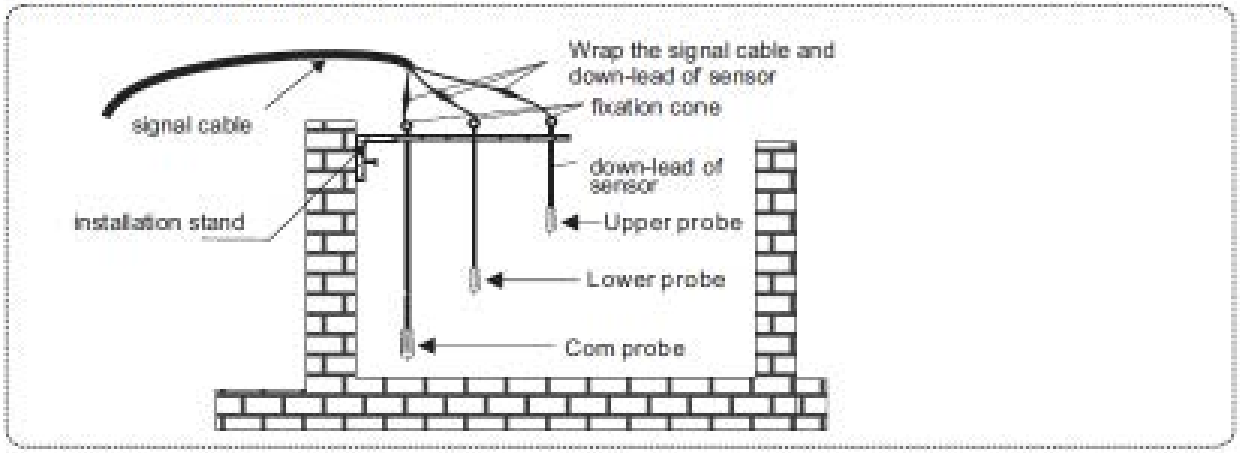
- Press the STOP key and release till A18 makes a "Di" sound, A18 recover the default factory setting and LCD screen displaying:



ELECTRICAL CONNECTION

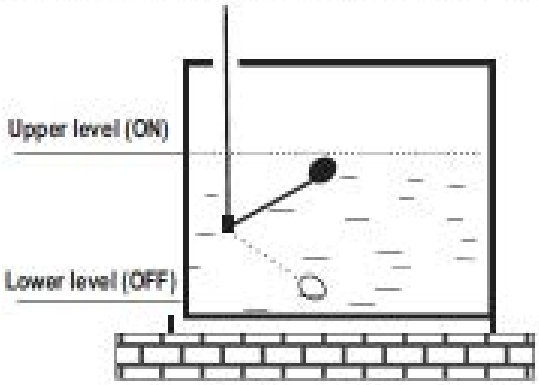
3.1 Installing liquid probe & float switch

Liquid probe installation



In event of high risk of electric storms (lightning) or when liquid medium in well or tank or sump is very dirty it is recommended float switch is used.

Float switch installation



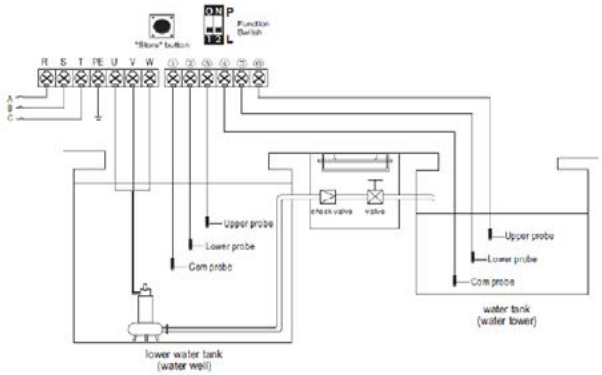
If the float switch is equipped with three wires use the BLACK and BROWN wires. In event of different colors use a multimeter to identify correct connections as follows:

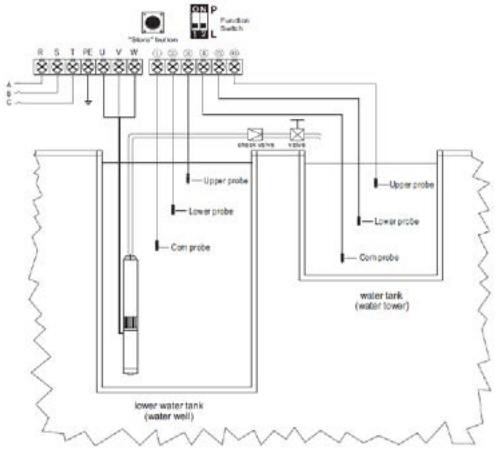
Lower level no reading OFF
Upper level-positive reading-ON

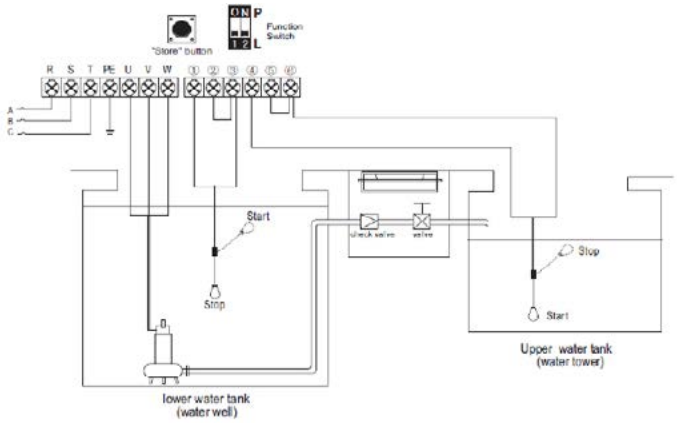
DO NOT ENCASE SENSOR LEADS, FLOAT SWITCH WIRE OR SIGNAL CABLES IN METAL PIPES. USE PVC OR PE TUBING.

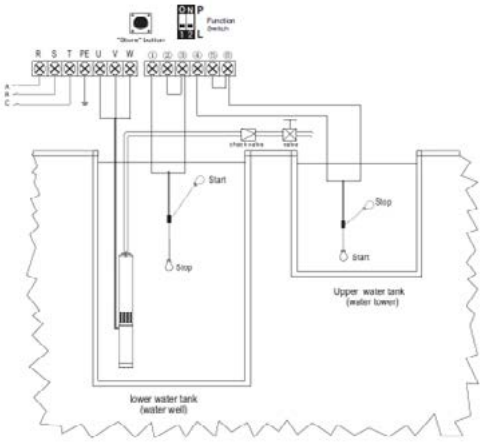
3.2 Electrical connection for different application

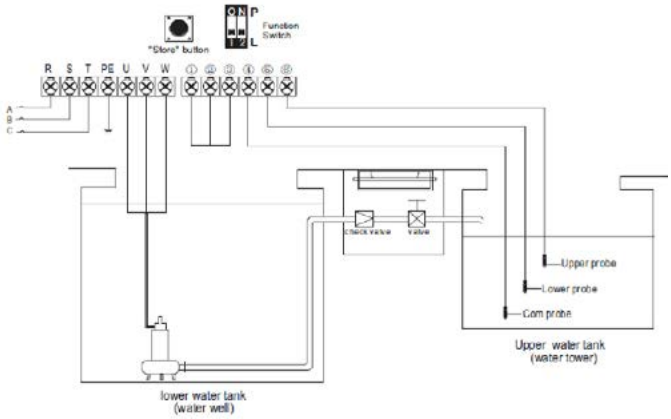
3.2.1 Water supply by liquid level control through float switch or liquid probe

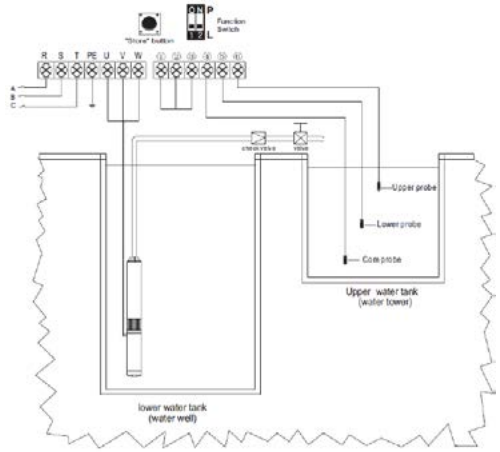


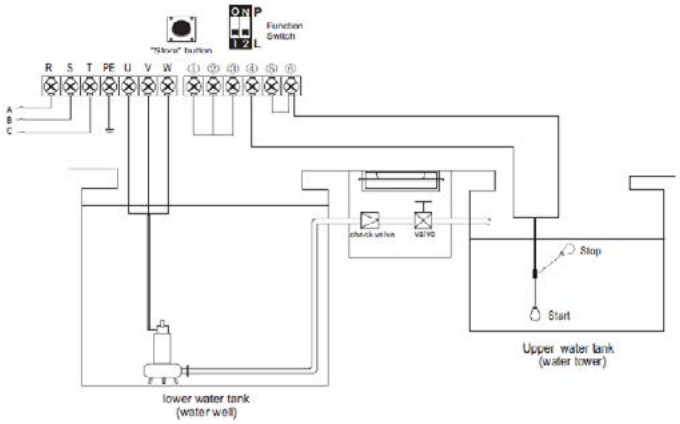


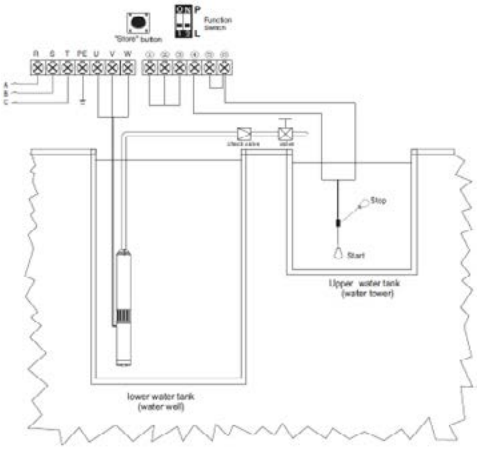












1). STARTING CONDITION

liquid level in the water tank is below Lower probe (float switch: Down level) and liquid level in the water well is above Lower probe (float switch: Up level), the panel will run pump;

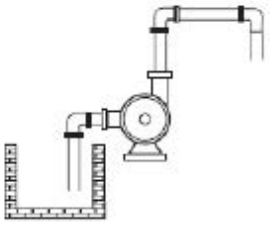
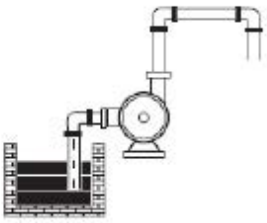
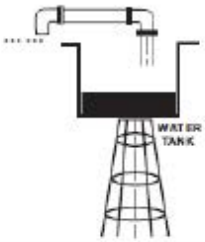
2). STOP CONDITION

liquid level in the water tank reaches Upper probe (float switch: Up level) or liquid level in the water well is below Lower probe (float switch: Down level); the panel will stop pump running;

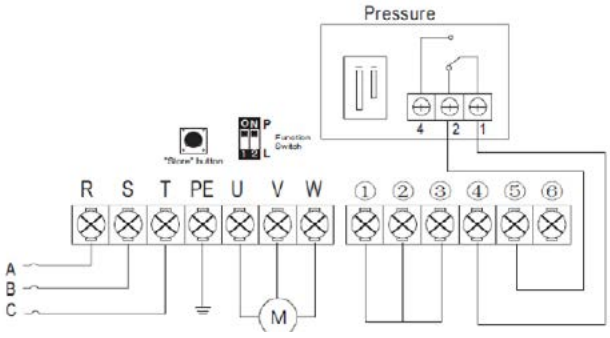
3). THE PROBE / SENSOR FREE IN THE WATER WELL

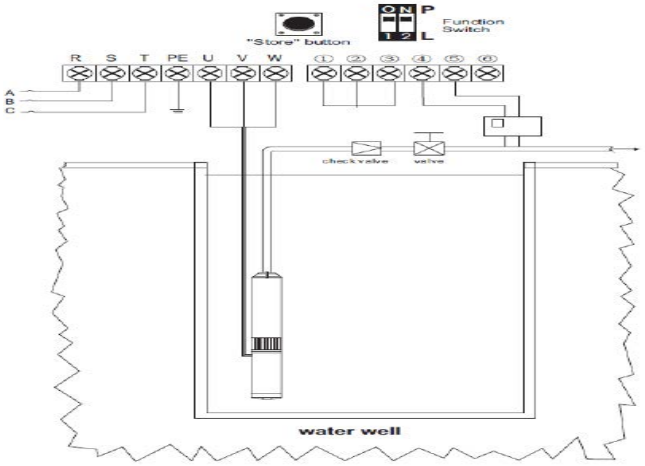
as the panel has reliable and automatic stop function against pump dry-run (dewatering), if it is used in submersible pump for deep well, pipeline pump or other situations when it is inconvenient to install lower liquid probe in the well, pump users can put terminals 1,2,3 in short circuit, which minimize the troubles and costs.

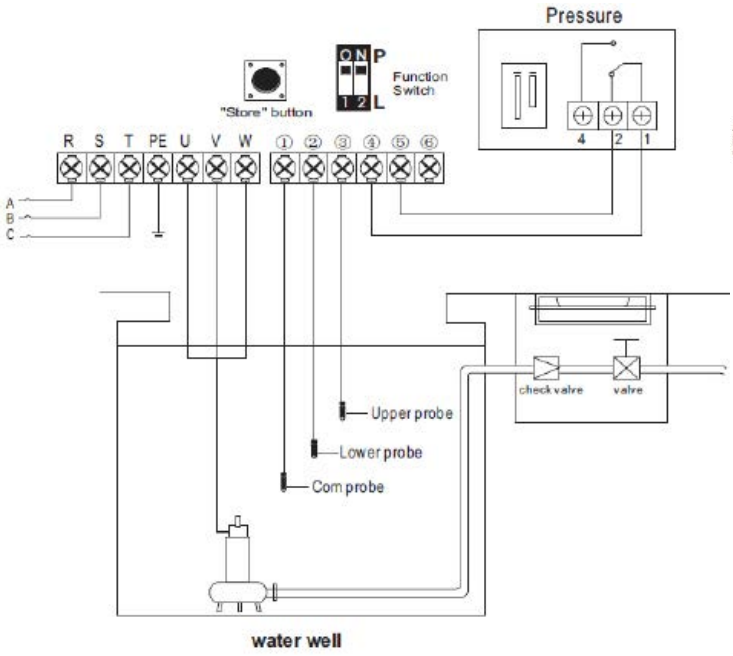
4). MEANING OF THE MESSAGES & GRAPHIC SHOWN ON THE LCD SCREEN:

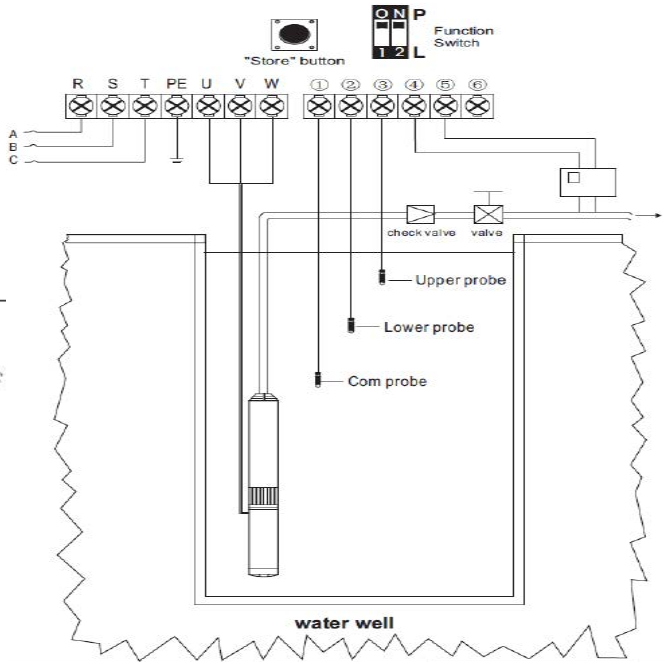
Messages & Graphic	Description
	Lack of water in water well
	Full of water in water well
	Lack of water in water tank
	Full of water in water tank

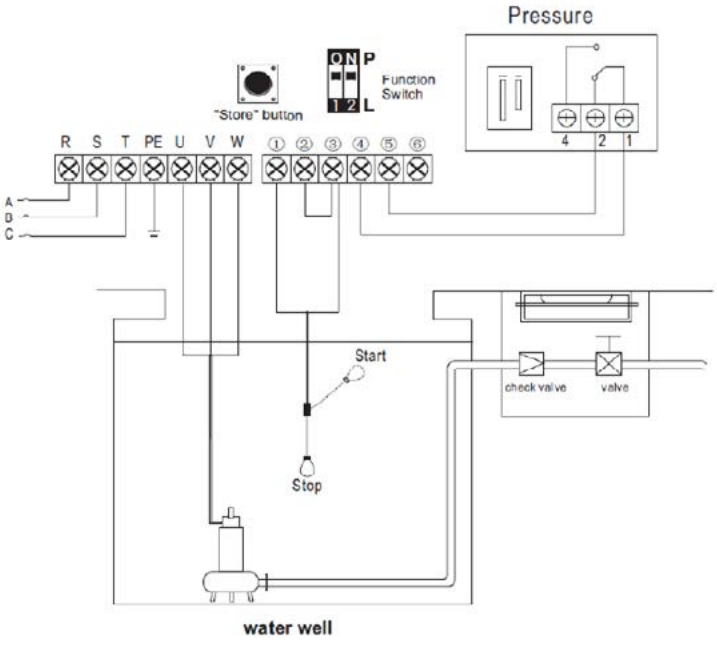
3.2.2 Water supply by pressure control through pressure switch & pressure tank

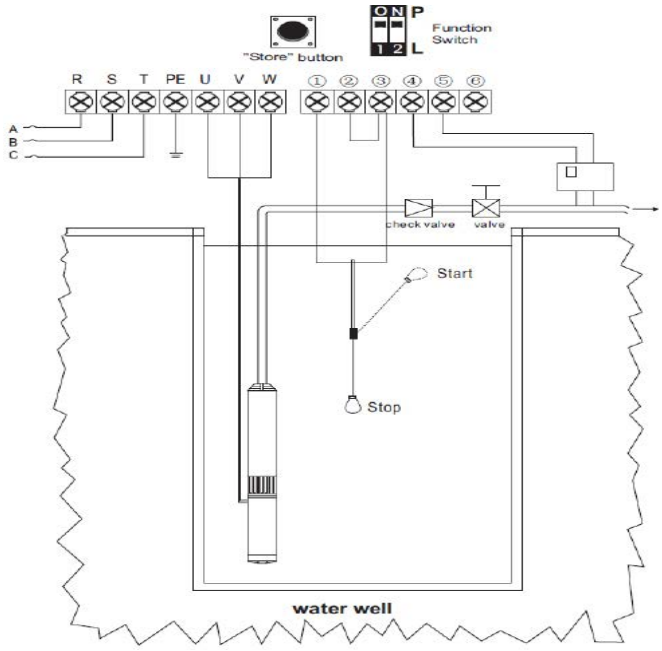












1). STARTING CONDITION

there is no pressure in the pipeline or pressure tank, contacting point of pressure switch is ON and liquid level in the water well is above Lower probe (float switch: Up level), the panel will run the pump.

2). STOP CONDITION

there is full pressure in the pipeline or pressure tank, contacting point of pressure switch is OFF, the panel will stop pump.

Note: pressure switch with N/C (normal close) contacting point: no pressure, contacting point is ON; meet the pressure setting, contacting point is OFF

3). THE PROBE / SENSOR FREE IN THE WATER WELL

as the panel has reliable and automatic stop function against pump dry-run (dewatering), if it is used in submersible pump for deep well, pipeline pump or other situations when it is inconvenient to install lower liquid probe in the well, pump users can put terminals 1, 2, 3 in short circuit, which minimize the troubles and costs.

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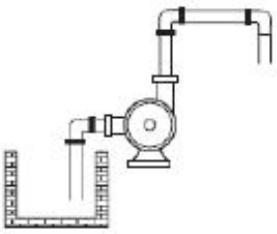
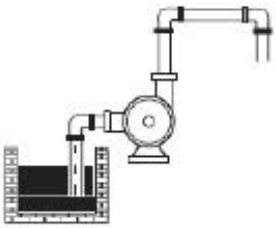
Messages & Graphic	Description
	Lack of water in water well
	Full of water in water well
	Full of pressure in pipeline or pressure tank
	Lack of pressure in pipeline or pressure tank


DANGER
HIGH VOLTAGE
DO NOT OPEN

RESPONSIBILITY

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INTRODUCTION

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Typical usage scenarios include:

- Houses
- Flats
- Holidays houses
- Farms
- Water supply from wells
- Irrigations of greenhouses, gardens, agriculture
- Rain water reuse
- Industrial plants
- Waste water tank / Sewage sink

TECHNICAL PARAMETER & FEATURES

Main features:

• Built In function switch

- applied for water supply by liquid level control through float switch or liquid probe
- applied for water supply by pressure control through pressure switch and pressure tank
- applied for drainage by liquid level control through float switch or liquid probe

• Automaticly stops the pump in the case of water shortage, protecting it from dry running without installing float switch or liquid probe in the well

• Auto / Manual switch

• Dynamic LCD displaying pump running state

• Push Button Calibration

• Pump Accumulative Running Time Displaying

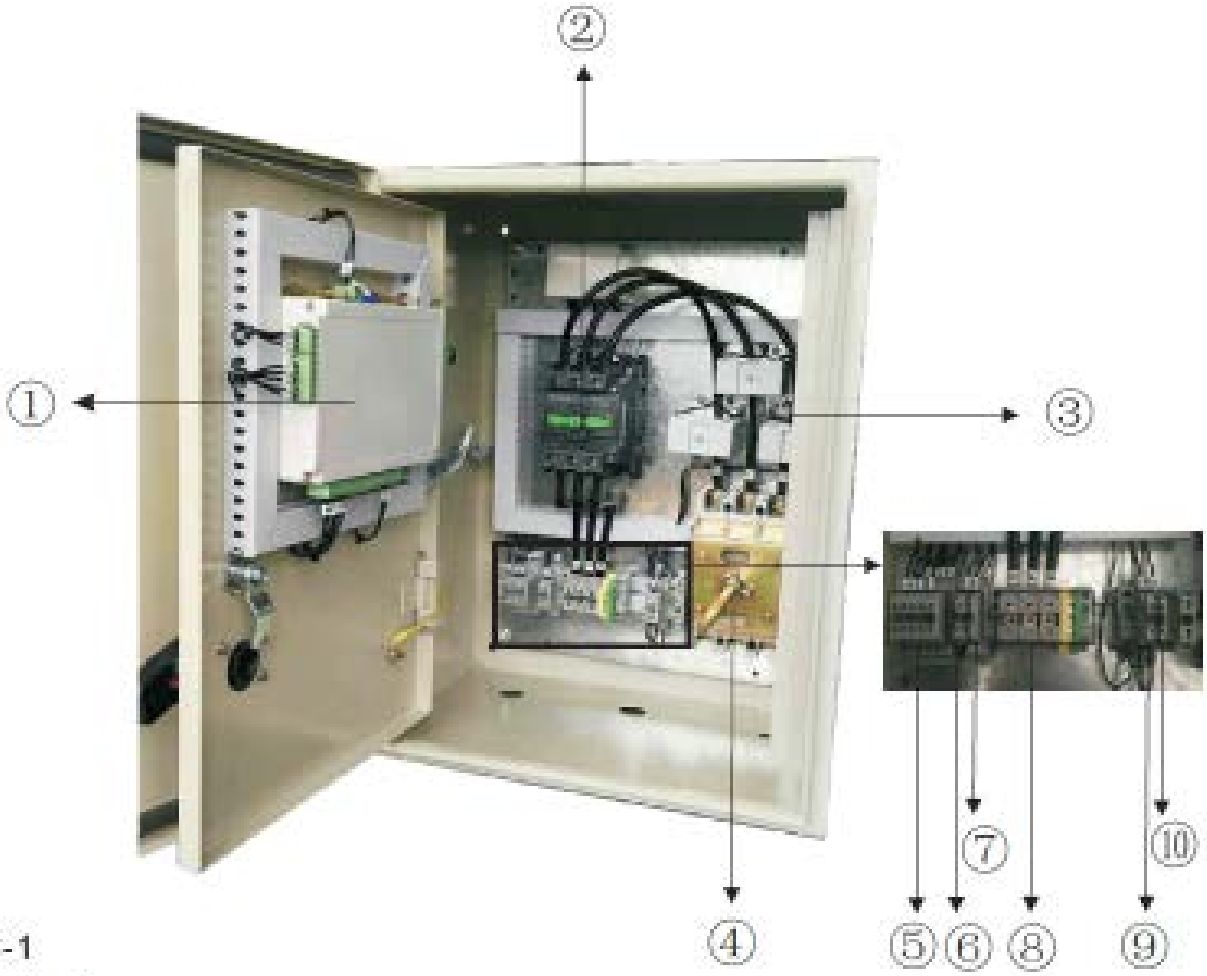
• Pump Last Five Fault Record Displaying

• RS485 Communication

• Starts and stops the pump in accordance with the different liquid level or pressure setting

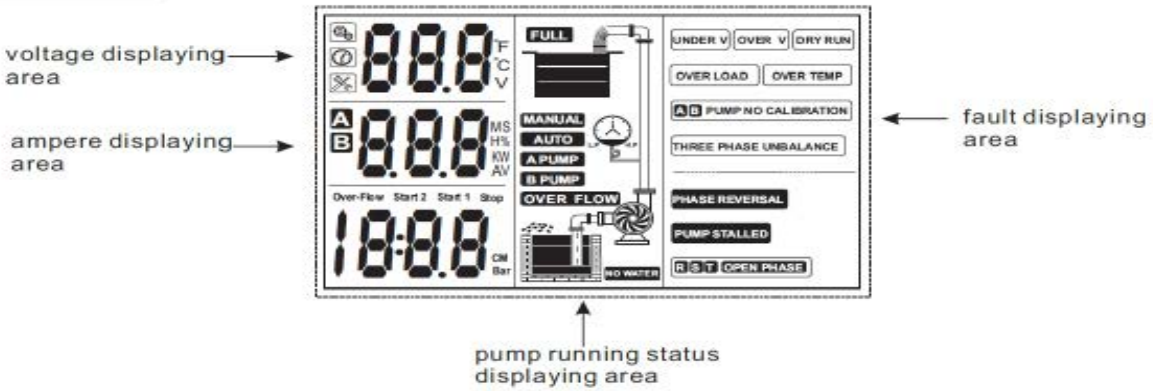
MAIN TECHNICAL CHARACTERISTIC	
Control characteristic	Double liquid level control
	Pressure control
Control method	Manual / Auto
Liquid level control characteristic	Pulse electrode probe & float switch
Pressure control characteristic	Pressure switch (n/c) & pressure tank
MAIN TECHNICAL DATA	
Rated output power	37kW
Rated input voltage	refer to the nameplate
Trip response time of over load	5sec-5min
Trip response time of open phase	< 2 sec
Trip response time of short circuit	< 0.1sec
Trip response time of under / over voltage	< 5sec
Trip response time of dry run	6sec
Recovery time of over load	30min
Recovery time of under / over voltage	5min
Recovery time of dry run	30min
Trip voltage of over voltage	115% of rated input voltage
Trip voltage of under voltage	80% of rated input voltage
Liquid level transfer distance	≤1000m
Protection function	Dry run Over load Transient surge Under voltage Over voltage Open phase Pump stalled Short circuit
MAIN INSTALLATION DATA	
Working temperature	-25°C to 55°C
Working humidity	20% - 90%RH, no drips concreted
Degree of protection	IP22
Install position	Vertical

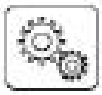
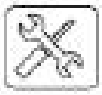
1.3 Pump control cabinet components



1.SPLC-1
2.AC Contactor
3.CTS
4.Door Isolator
5.Sensor port
6.RS 485
8.Output terminal
9.Overflow alarm dry contact point
10.Pump fault alarm dry contact point

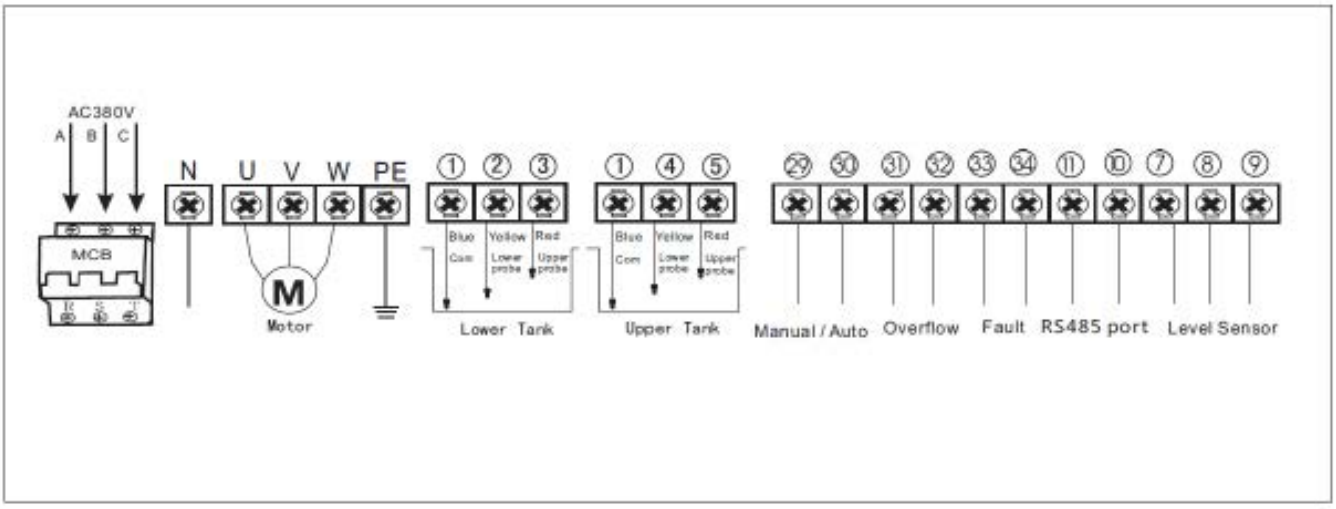
1.4 LCD screen



Icon	Meaning/Description
	pump parameter configuration icon, when this icon appears, pump control box is in parameter adjusting manual;
	time displaying icon, when this icon appears, it means pump control box is displaying some parameter of time, eg: pump accumulative running time (unit: hour); counting down etc
	pump fault icon, when this icon appears, it means pump control box is displaying some fault information;
 ON LINE	network connection error icon, when this icon appears, it means there is no network connections or network connection error between pump control box and SC(slave controller) or computer;
 ON LINE	network normal connection icon, when this icon appears, it means the network connection between pump control box and SC (slave controller) or computer is normal;
V	voltage
M	minute
S	second
H	hour
%	percent
A	ampere
	pump running
	pump stops running
	low pressure or lack of pressure in the pipeline or pressure tank
	high pressure or full of pressure in the pipeline or pressure tank

2 INSTALLATION

2.1 Electrical connection to the power supply line and electrical pump



DANGER Electric shock risk

Before carrying out any installation or maintenance operation, pump control cabinet should be disconnected from the power supply and one should wait at least 2 minutes before opening the appliance.

Never connect AC power to output U V W terminals.

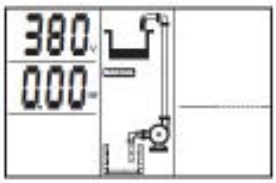
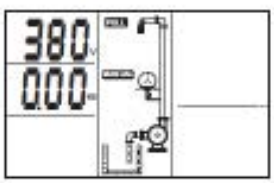
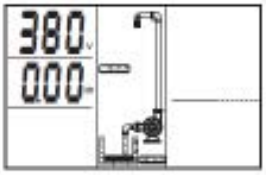
Don't put wire, metal bar filaments etc into the pump control cabinet .

Ensure the motor, pump control cabinet and power specifications matching.

The electrical and hydraulic connections must be carried out by competent, skilled, qualified personnel.

2.2 Function switch setting

Pump users can set the DIP switch to meet different application requirement, before setting the DIP switch, pump control cabinet should be disconnected from the power supply, after complete the setting, apply power to pump control cabinet and observe the application sign displayed on the LCD conforming to the following list.

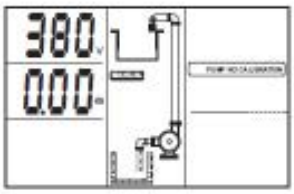
Item	Swith position	Messages & Graphic	Application
1			Applied for water supply or drainage by liquid level control through float switch or liquid sensor
2			Applied for water supply by pressure control through pressure switch & pressure tank
3			Applied for drainage by liquid level control through float switch & liquid probe

2.3 Parameter Calibration setting & erasing

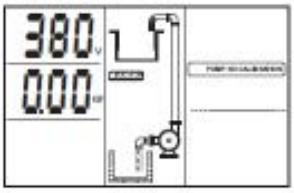
To achieve best level of protection of the pump, it is essential that parameter calibration must be done immediately after successful pump installation or pump maintenance.

Setting the parameter calibration

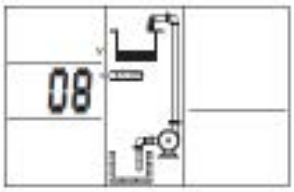
- Press the MODE key to switch to manual state, make sure the pump not running and LCD screen displaying:



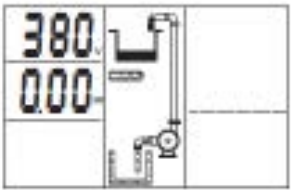
- Press the START key to run pump, confirm the pump and all pipe network in normal working state (including voltage, running ampere et); LCD screen displaying:



- Press the STOP/ST key; The product makes a "Di" sound and starts countdown, LCD screen displaying:



- Pump stops running and parameter calibration completed, LCD screen displaying: product is ready for running.

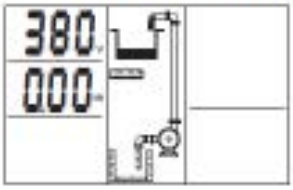


Erasing former parameter calibration

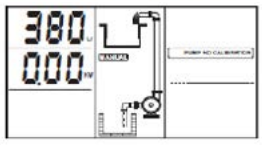
When pump is reinstalled after maintenance or new pump is installed, user must erase the former parameter calibration and a new calibration must be done.

Erasing the parameter calibration

- Press the MODE key to switch to manual state, make sure the pump not running and LCD screen displaying:



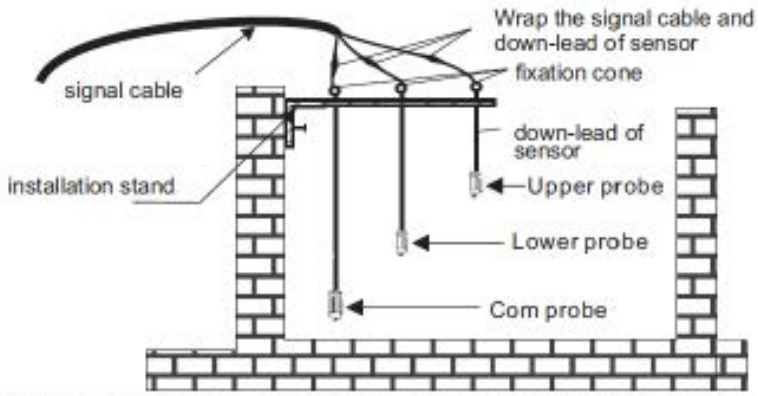
- Press the STOP key and release till pump control cabinet makes a "Di" sound, pump control cabinet recover the default factory setting and LCD screen displaying:



3 ELECTRICAL CONNECTION

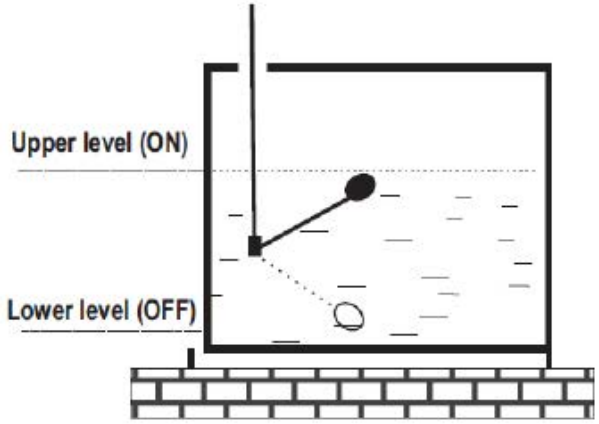
3.1 Installing liquid probe & float switch

Liquid probe installation



⚠ In event of high risk of electric storms (lightning) or when liquid medium in well or tank or sump is very dirty it is recommended float switch is used.

Float switch installation



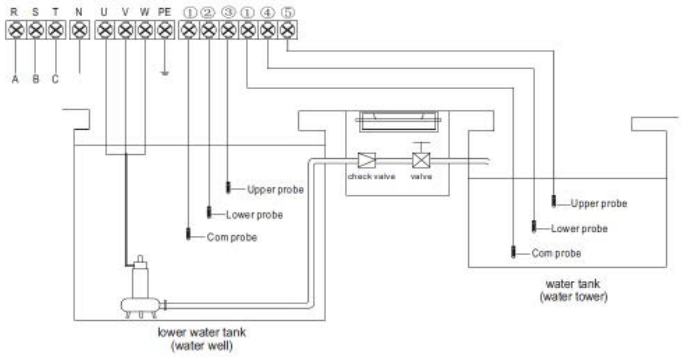
⚠ If the float switch is equipped with three wires use the BLACK and BROWN wires. In event of different colors use a multimeter to identify correct connections as follows:

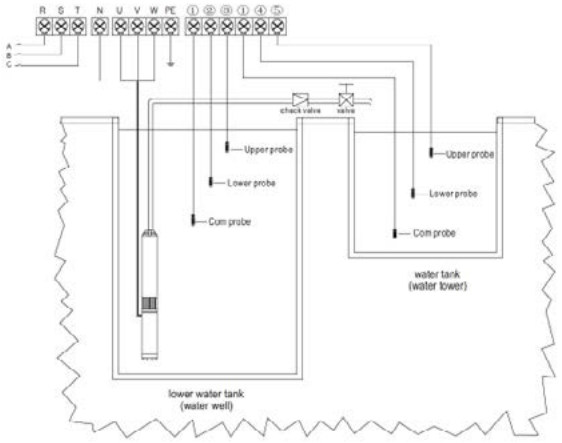
Lower level no reading OFF
Upper level-positive reading-ON

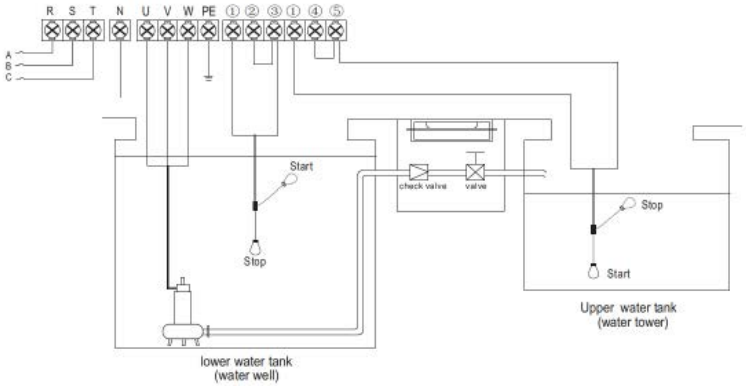
⚠ **DO NOT ENCASE SENSOR LEADS, FLOAT SWITCH WIRE OR SIGNAL CABLES IN METAL PIPES. USE PVC OR PE TUBING.**

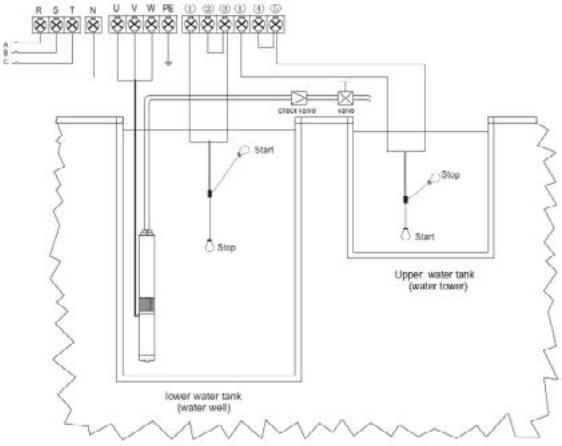
3.2 Electrical connection for different application

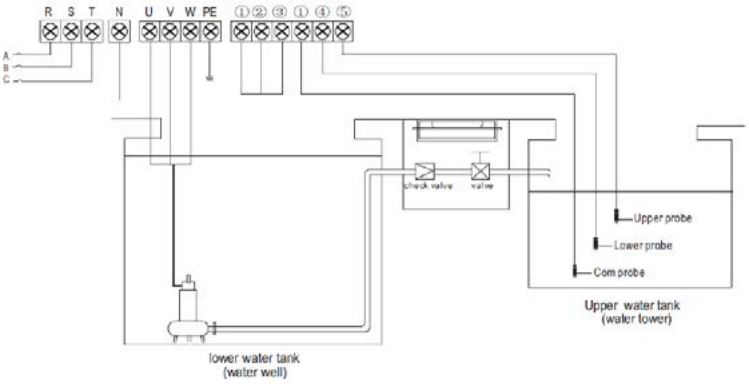
3.2.1 Water supply by liquid level control through float switch or liquid probe

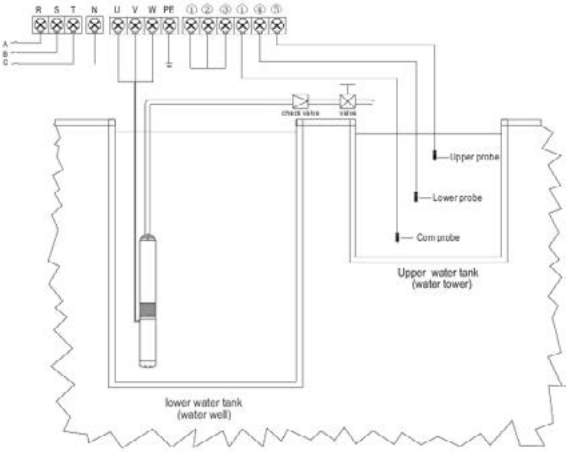


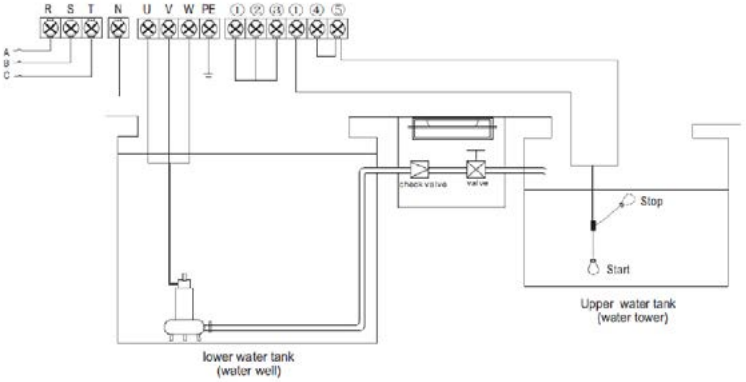


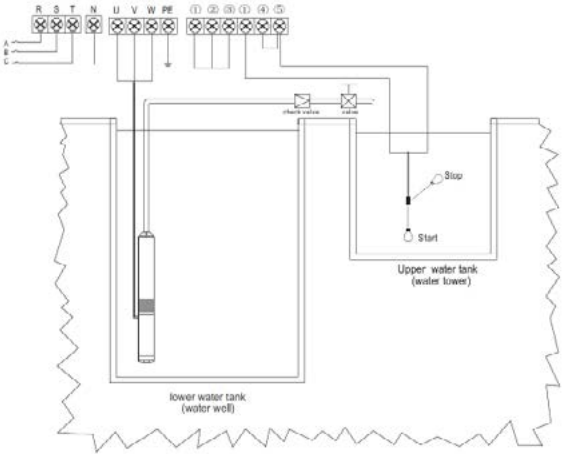












1). STARTING CONDITION

liquid level in the water tank is below Lower probe (float switch: Down level) and liquid level in the water well is above Lower probe (float switch: Up level), the panel will run pump;

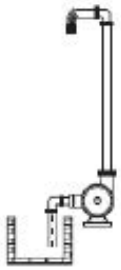
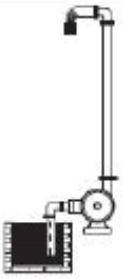
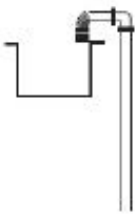
2). STOP CONDITION

liquid level in the water tank reaches Upper probe (float switch: Up level) or liquid level in the water well is below Lower probe (float switch: Down level); the panel will stop pump running;

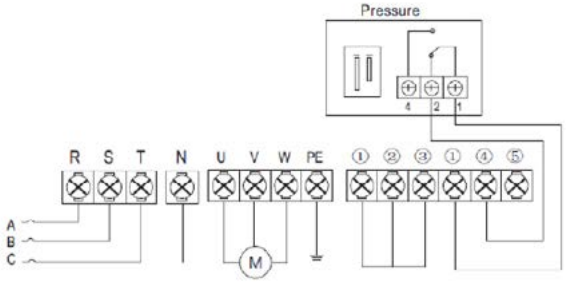
3). THE PROBE / SENSOR FREE IN THE WATER WELL

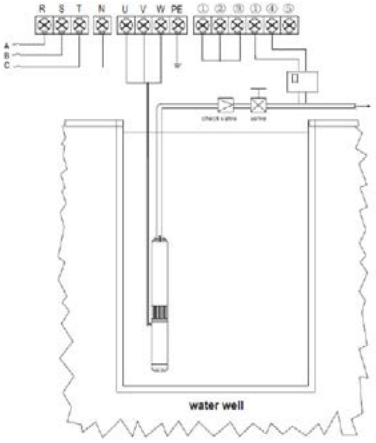
as the panel has reliable and automatic stop function against pump dry-run (dewatering), if it is used in submersible pump for deep well, pipeline pump or other situations when it is inconvenient to install lower liquid probe in the well, pump users can put terminals 1,2,3 in short circuit, which minimize the troubles and costs.

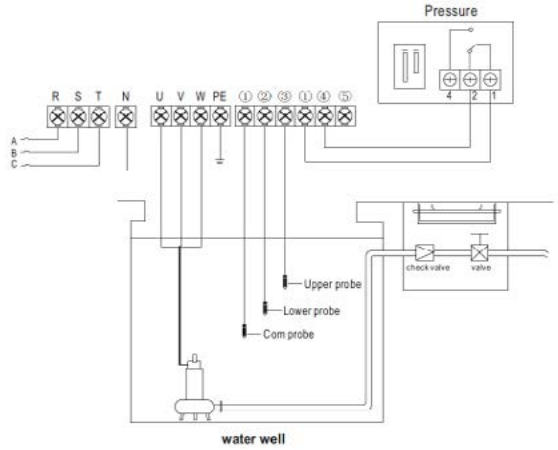
4). MEANING OF THE MESSAGES & GRAPHIC SHOWN ON THE LCD SCREEN:

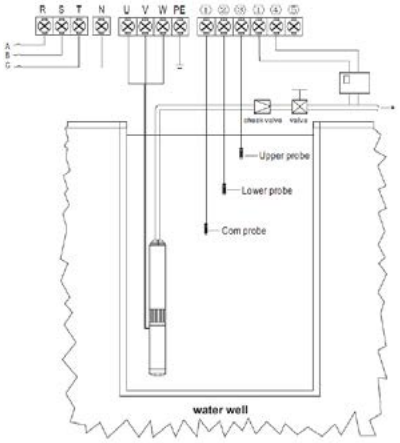
Messages & Graphic	Description
	Lack of water in water well
	Full of water in water well
	Lack of water in water tank
	Full of water in water tank

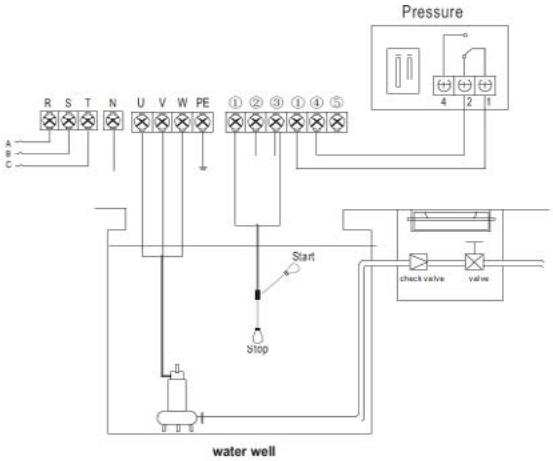
3.2.2 Water supply by pressure control through pressure switch & pressure tank

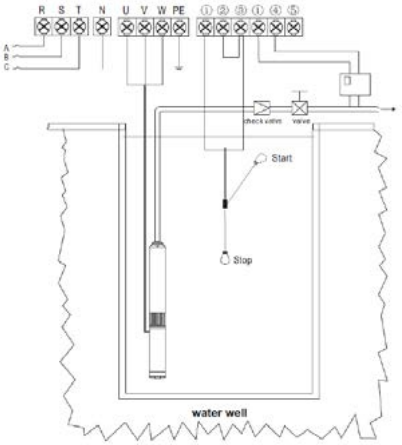












1). STARTING CONDITION

there is no pressure in the pipeline or pressure tank, contacting point of pressure switch is ON and liquid level in the water well is above Lower probe (float switch: Up level), the panel will run the pump.

2). STOP CONDITION

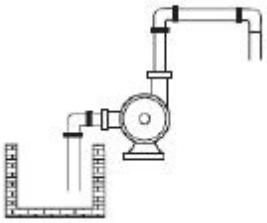
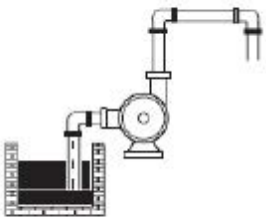
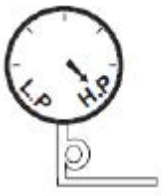
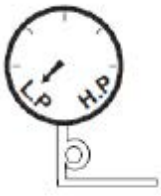
there is full pressure in the pipeline or pressure tank, contacting point of pressure switch is OFF, the panel will stop pump.

Note: pressure switch with N/C (normal close) contacting point: no pressure, contacting point is ON; meet the pressure setting, contacting point is OFF

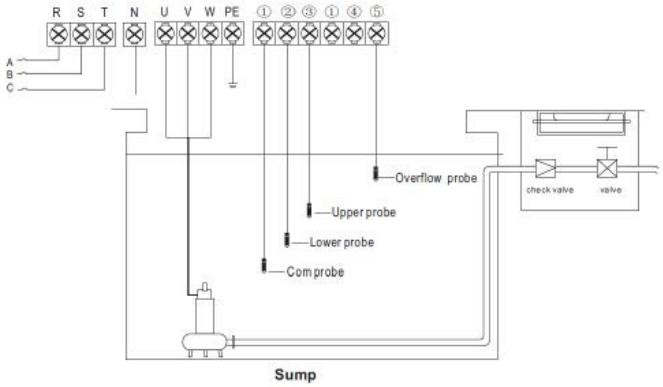
3). THE PROBE / SENSOR FREE IN THE WATER WELL

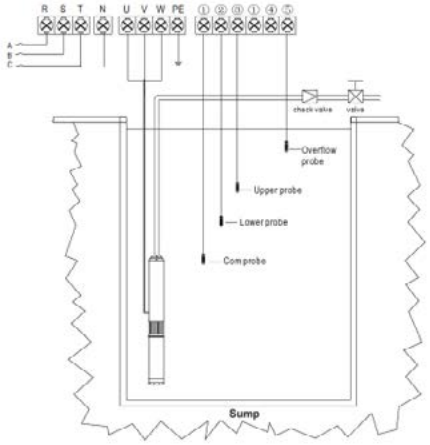
as the panel has reliable and automatic stop function against pump dry-run (dewatering), if it is used in submersible pump for deep well, pipeline pump or other situations when it is inconvenient to install lower liquid probe in the well, pump users can put terminals 1, 2, 3 in short circuit, which minimize the troubles and costs.

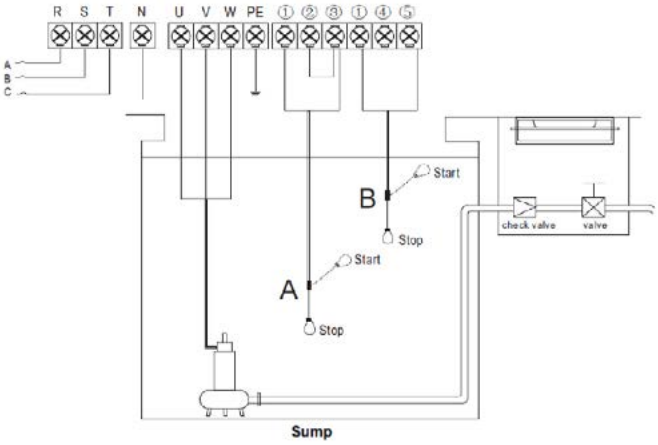
4). MEANING OF THE MESSAGES & GRAPHIC SHOWN ON THE LCD SCREEN:

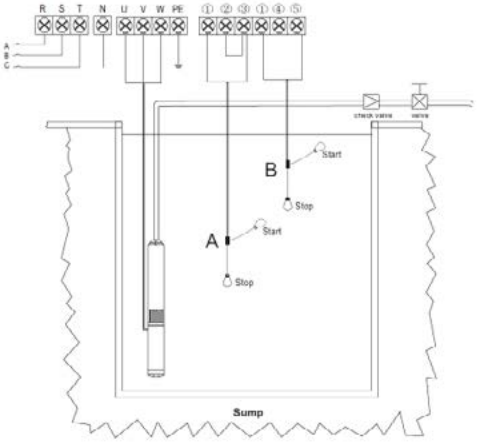
Messages & Graphic	Description
	Lack of water in water well
	Full of water in water well
	Full of pressure in pipeline or pressure tank
	Lack of pressure in pipeline or pressure tank

3.2.3 Drainage by liquid level control through float switch & liquid probe









1). STARTING CONDITION

Liquid level in the sump reaches Upper probe (float switch A: Up level), pump control cabinet will run pump;

2). STOP CONDITION

Liquid level in the sump is below Lower probe (float switch A: Down level), pump control cabinet will stop pump running;

3). OVER FLOW ALARM

When pump is draining water, liquid level in the sump is still rising to Overflow probe (float switch B: Up level), pump control cabinet will sound the overflow alarm to warn pump user to take further action.

4). MEANING OF THE MESSAGES & GRAPHIC SHOWN ON THE LCD SCREEN

Messages & Graphic	Description
	Lack of water in sump
	Overflow in sump

4.1 Switching to MANULA mode

Press the MODE key to switch to manual state, pump control cabinet is under the manual control state;under manual state, press the START key to run pump; press the STOP key to stop pump running;

Note: under manual state, pump control cabinet can not receive the signal from liquid level probe or pressure switch.

4.2 Switching to AUTO mode

Press the MODE key to switch to auto state, pump control cabinet is under the auto control state; under auto state, pump control cabinet will run or stop the pump according to the signal from liquid level probe or pressure switch.

Note: under auto state, if the pump is running and pump user wants to stop pump running compulsory, press the MODE key to switch to manual state and pump stops running;

Note: under auto state, if the input power being cut off and recovery power again, pump control cabinet will enter operation state after 10seconds countdown;

Note: no matter pump control cabinet is under auto or manual state, if the input power being cut off and recovery power again, pump control cabinet will resume its operation state as the operation state before power being cut off;

4.3 Pump protection

During pump running, if dry run, over load, under voltage, over voltage etc failures happened , pump control cabinet will immediately shut down the pump running and automatically execute a check for restarting conditions after a built in time delay has elapsed. pump control cabinet will not recover automatically until all the abnormal situation(s) have been cleared.

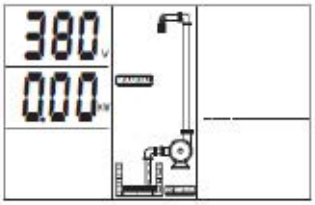
If pump stalled, open phase etc serious failures happened, pump user must check the pump and motor immediately and repair the pump.

4.4 Pump last five failure record displaying

Pump control cabinet can memorize the last five failures of pump, so it is very convenient for the pump users to analyse the pump running conditions.

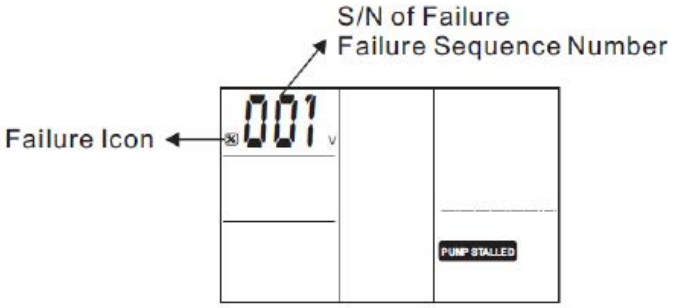
Displaying the pump last five failure record

- Press the MODE key to switch to manual state, make sure the pump not running and LCD screen displaying:



- Hold pressing STOP key and press MODE key, pump control cabinet makes a "Di" sound, pump control cabinet displays pump failure record;

- Press STOP key to quit the failure record displaying;



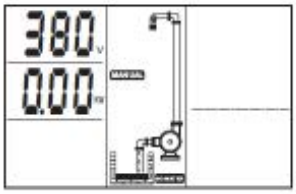
THE LATEST FAILURE IS PUMP STALLED

4.5 Pump accumulative running time displaying

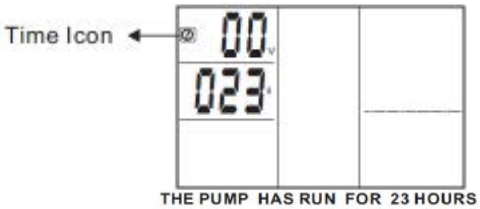
Pump control cabinet can memorize how many hours of pump running, so it is very convenient for the pump users to analyse the pump running conditions and do maintenance

Displaying the pump accumulative running time

- Press the MODE key to switch to manual state, make sure the pump not running and LCD screen displaying:



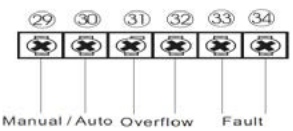
- Hold pressing STORE/SET button and press STOP key, pump control cabinet makes a "Di" sound, pump control cabinet displays pump failure record;



THE PUMP HAS RUN FOR 23 HOURS

- Press STOP key to quit the accumulative running time displaying;

5 DRY CONTACT POINT(PASSIVE DRY CONTACT) INTRODUCTION



Our intelligent soft start pump control cabinet supply three group passive dry contact which can connect with external alarm / light .

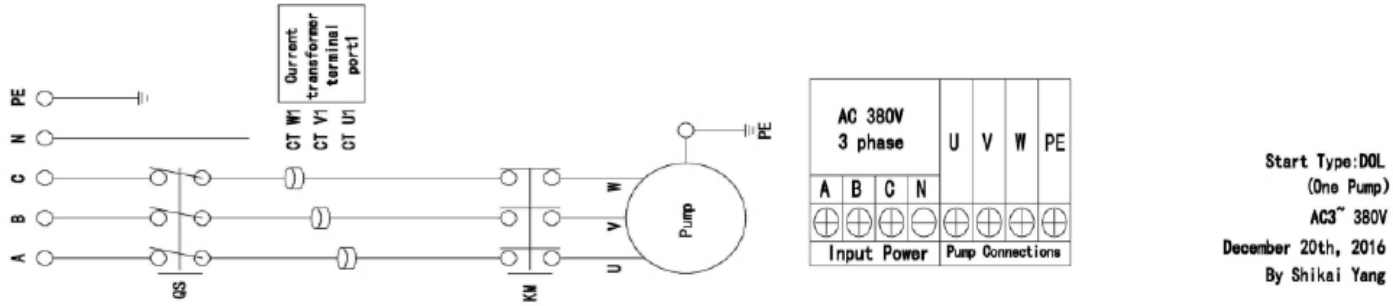
Note 1: dry contact point for manual/Auto mode.
Note 2: dry contact point for overflow.
Note 3: dry contact point for faults , including open phase / phase reversal / pump stalled.

6 TROUBLE SHOOTING GUIDE

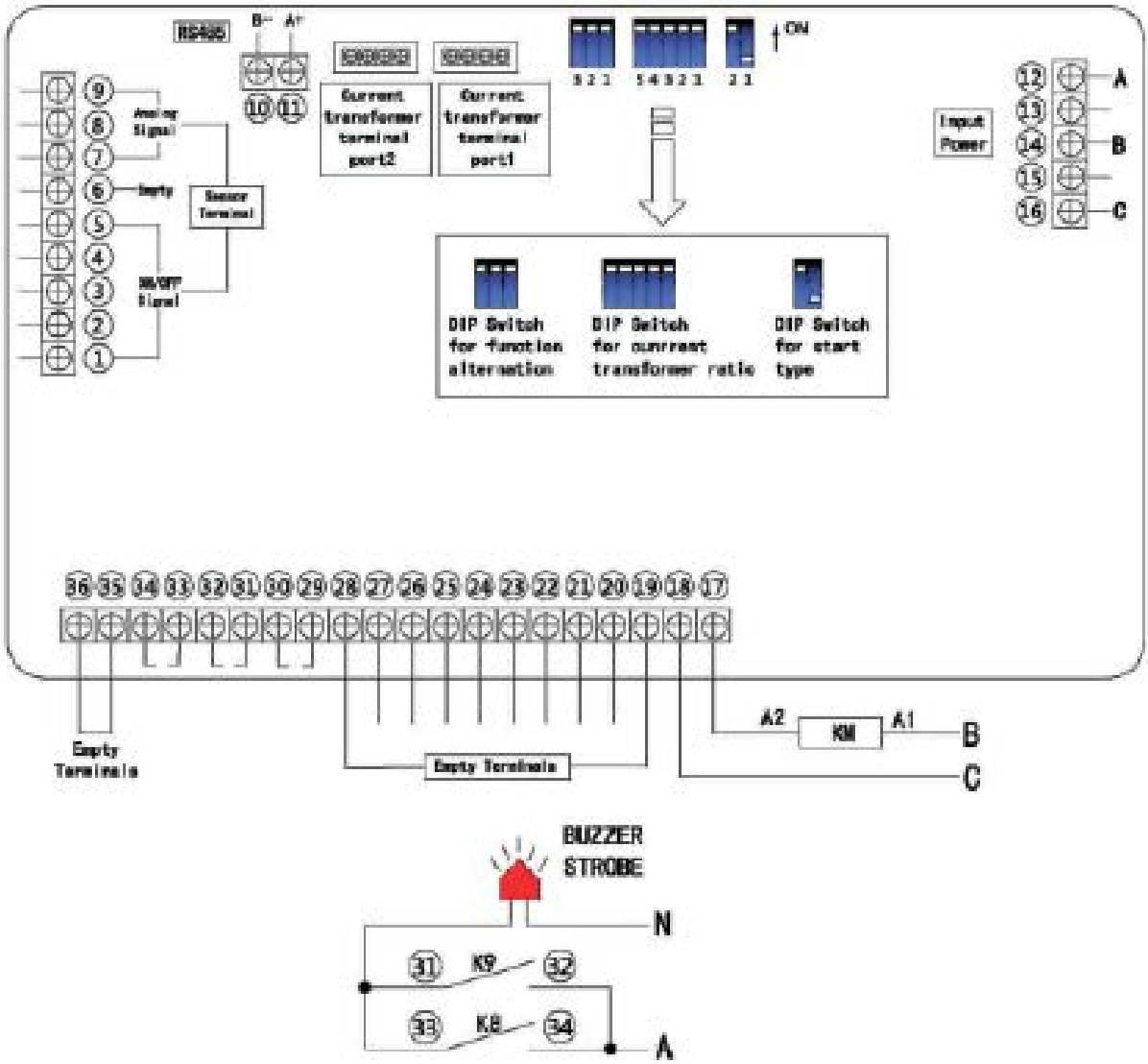
Fault Message	Possible Cause	Solutions
flashing of UNDER V	the real running voltage is lower than the calibrated voltage, pump is in under voltage protection state	report low line voltage to the power supply company
		pump control cabinet will attempt to restart the pump every 5minutes until line voltage is restored to normal
flashing of OVER V	the real running voltage is higher than the calibrated voltage, pump is in over voltage protection state	report high line voltage to the power supply company
		pump control cabinet will attempt to restart the pump every 5minutes until line voltage is restored to normal
flashing of OVER LOAD	the real running ampere is higher than the calibrated running ampere, pump is in over load protection state	pump control cabinet will attempt to restart the pump every 30minutes until running ampere is restored to normal
	pump impeller is jammed / pump motor dragging / pump bearing broken	check pump impeller or bearing
flashing of OPEN PHASE	power supply lose phase	report to the power supply company
	controller inlet wire or pumpcable broken	repair inlet wire or pump cable
flashing of PUMP NO CALIBRATION	parameter calibration not completed	refer to parameter calibration setting
flashing of DRY RUN	liquid level in the well / sump is below the pump intake, pump stops running	pump control cabinet will attempt to restart the pump every 30minutes until liquid level above the pump intake

Fault Message	Possible Cause	Solutions
flashing of **PUMP STALLED**	pump motor running ampere increasing was greater than the normal running ampere (calibrated ampere) by more than 200%	cut off power supply & repair or replace pump immediately
flashing of **THREE PHASE UNBALANCE**	the real voltage (ampere) between three phase(R/S/T) is not same and the difference is more than ±15%	report to the power supply company pump control cabinet will attempt to restart the pump every 5minutes until the voltage (ampere) between three phases restored to normal
flashing of **PHASE REVERSAL**	sequence of the three phase input voltage (R/S/T) error	change the sequence of the three phase (R/S/T)
flashing of **REPEATED START**	pump starts more than 5times per minutes	The most common cause for the rapid cycle condition is a waterlogged tank. Check for a ruptured bladder in the water tank. Check the air volume control or snifter valve for proper operation. Check the setting on the pressure switchand examine for defects Cut off the power supply & repair the water tank,pressure switch or valve
ON LINE	no communication link between SC / computer and intelligent pump controller	connecting pump control cabinet to SC / computer to realize long distance monitoring

7 FIRST WIRING DIAGRAM



8 SECONDARY WIRING DIAGRAM



Lower Tank			Top Tank			Analog Signal			RS485 terminal port		Manual or Auto		Over flow alarm		Pump Fault	
common porbe	Lower Probe	Upper Probe	common porbe	Lower Probe	Upper Probe	GND	VOUT	VCC	A+	B-						
1	2	3	1	4	5	7	8	9	11	10	29	30	31	32	33	34
Sensor Port									RS485		Fault Port					

Start Type:DOL
(One Pump)
AC3~ 380V
December 20th, 2016
By Shikai Yang