

HORIZONTAL OPENWELL

SUBMERSIBLE PUMPSET
50 Hz, 220V



Farming



Domestic



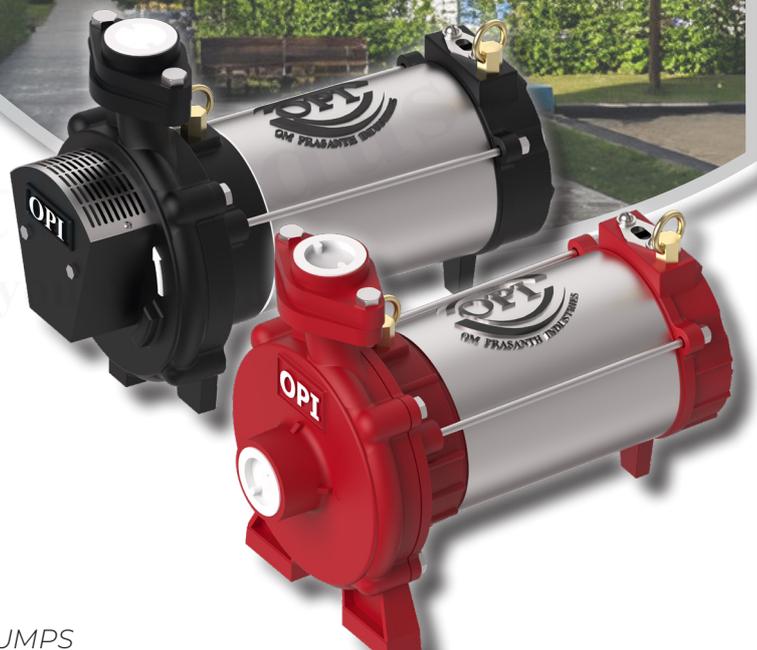
Gardening



Water Supply



Industrial



OM PRASANTH INDUSTRIES

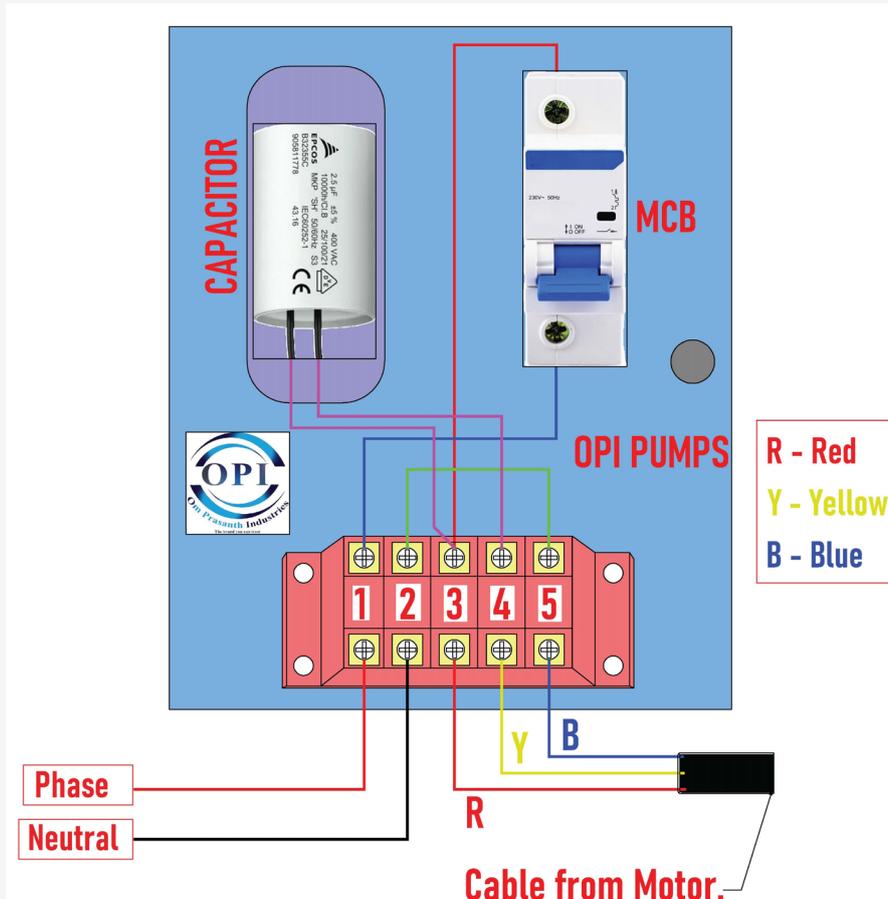
Mfg.by : OPI PUMPS

SINGLE PHASE
SUBMERSIBLE
OPENWELL



OPI HORIZONTAL OPENWELL

18. WIRING DIAGRAM FOR CONTROL PANEL : (Image.3.2.1)



CAPACITOR SELECTION CHART	
MOTOR POWER(H.P)	CAPACITOR VALUE (μ F)
0.5	25
1	40
1.5	72

19. WIRING PROCEDURE FOR CONTROL PANEL :

- **Phase and Neutral Connections :**
 - Connect the Phase wire (Red) to the terminal block at position 1.
 - Connect the Neutral wire (Black) to the terminal block at position 2.
- **Capacitor Connections :**
 - Connect one terminal of the capacitor to the terminal block at position 3.
 - Connect the other terminal of the capacitor to the terminal block at position 4.
- **MCB Connections :**
 - Connect the input of the MCB to the terminal block at position 1 (Phase).
 - Connect the output of the MCB to the terminal block at position 3.
 - Loop the connection Terminal block at position 2 & Terminal block at position 5.
- **Motor Cable Connections :**
 - Connect the Red wire (R) from the motor cable to the terminal block at position 3.
 - Connect the Yellow wire (Y) from the motor cable to the terminal block at position 4.
 - Connect the Blue wire (B) from the motor cable to the terminal block at position 5.
- **Colour Coding :**
 - > R - Red, > Y - Yellow, > B - Blue
- **Terminal Numbering:**
 - > 1 = Terminal Block 1, > 2 = Terminal Block 2, > 3 = Terminal Block 3, > 4 = Terminal Block 4
 - > 5 = Terminal Block 5.

NOTE :

- In View of the continous development the information, specificarion and performance chart are subjected to change without notice.
- The provided calculation is an example, The frictional loss will vary according to the Pipe diameter and pipe specifications.

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Cable Selection :

Select the appropriate cables for connecting the strater to submersible motor (415 V, 50 Hz, AC)

Motor Rating		Cable size in Sq.mm								
		1.5	2.5	4	6	10	16	25	35	50
KW	H P	Maximum Length of Cable in Metres								
1	0.75	262	437	705						
1.5	1.1	222	370	596	895					
2	1.5	160	267	430	646					
3	2.2	111	185	298	447	773				
4	3	84	141	228	342	590	933			
5	3.7	72	120	193	290	502	793			
6	4.5	60	100	161	242	426	661			
7.5 DOL	5.5		82	133	200	346	547			
7.5 SD	5.5	86	143	231	347	600	947			
9	6.7	89	115	186	279	483	763			
10	7.5	69	106	172	258	446	704			
12.5	9.3	64	83	134	201	348	549	852		
15	11		71	155	173	300	473	735		
17.5	13			98	148	256	404	626	822	
20	15			87	129	223	352	546	769	
25	18.5			78	117	202	319	495	697	
30	22.5				96	167	264	409	577	828
35	26					145	229	355	500	717
40	30					133	211	327	461	662

1. Voltage and Current Basis

The table provides the maximum allowable length of submersible cables for the specified full load current at a nominal voltage of 415 V.

Symbol: $V = 415 \text{ V}$

2. Adjustments for Different Voltages

For systems operating at voltages other than 415 V, the cable size and length must be adjusted using the formula:

$$\text{Calculated Length} = \left[\frac{V_{\text{nominal}}}{V_{\text{actual}}} \right] \times \text{Actual Length}$$

3. Special Consideration for SD Motors (7.5 H.P and Above)

- For motors with 7.5 HP and above (SD motors), the actual current is assumed to be $1 / \sqrt{3}$ of the full load current.
- Cable size and maximum allowable length are calculated accordingly.

$$I_{\text{actual}} = (1 / \sqrt{3}) \times I_{\text{FL}}$$

4. Derating Factors

- The cable length values in the table consider typical derating factor such as :
 - Ambient Temperature
 - Voltage drop limits (typically set to 3%)
 - Real- World resistance variations.

Symbol : K_{derating}

5. Permissible Voltage Drop

- The maximum allowable length is based on voltage drop not exceeding 3% of 415 V (approximately 12.45 V)
- For applications requiring stricter limits (eg: 2% voltage drop), length should be recalculated accordingly

Symbol : $V_d \leq 3\% \times V_{\text{nominal}}$

6. Copper Cables:

- The resistance values used in calculations assume annealed copper conductors with standard resistivity values (e.g.. $0.0172 \Omega/\text{mm}^2/\text{km}$)

Symbol : R_{Copper}

7. Safety Margins:

- The lengths in the table are conservative, ensuring compliance with safety standards and accounting for installation variations (e.g.. cable bundling or aging).

Symbol : $S_{\text{safety margin}}$

Disclaimer:

- The above shown selection chart is for general applications. For specific condition we recommend you to consult us or manufacturer for proper selection.
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