

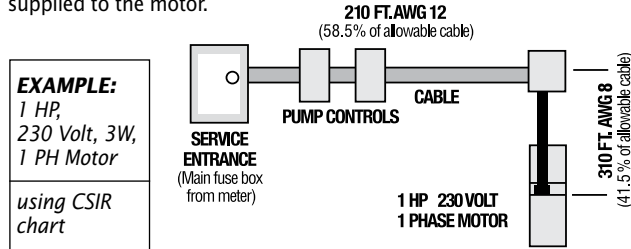


Cable Selection

4" submersible motors

Two different cable sizes can be used.

The example below is for reference and uses the CSIR chart below. Depending on the installation, any number of combinations may be used, as long as the total percentage length of the two cables used does not exceed 100%. This is to ensure that adequate voltage will be supplied to the motor.



EXAMPLE:
1 HP,
230 Volt, 3W,
1 PH Motor
using CSIR
chart

In a replacement installation, the well already has 210 feet of buried #12 cable between the service entrance and the well head. The question is: *What size cable is required in the well with a 1 HP, 230 Volt, 1 PH, 3W motor setting at 310 feet?*

1. According to the table, #12 cable is large enough for the 1 HP motor so the percent of the maximum allowable cable used by the 210-foot run is $210 \div 359 = 58.5\%$, since 359 feet is the total allowable.
2. With 58.5% of the total allowable cable already used between the service entrance and the well head, only 41.5% is left for the well. Therefore, the 310 feet needed in the well can only utilize 41.5% of the total feet allowed in the table.
3. From the table, 41.5% of the 573 feet for #10 cable equals only 238 feet, so a larger size is needed. For #8, 41.5% of 908 feet = 377 feet. As a result, #8 can be used for the 310 feet in the well.

CAUTION Use of wire size smaller than listed will void warranty.

MOTOR LEAD LENGTHS – PENTEK® 2-WIRE MOTORS

60 Hz Motor Rating		60C and 75C Insulation – AWG Copper Wire Size												
Volts	HP	14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0
230	1/2	115	183	293	463	721	1150	1445	1825	2299	2902	3662	4623	5824
	3/4	466	742	1183	1874	2915	4648	5843	7379	9295	11733			
	1	342	545	869	1376	2141	3413	4291	5419	6826	8617	10871		
	1-1/2	241	383	611	968	1506	2400	3018	3811	4801	6060	7646	9652	
	1-1/2	199	317	505	801	1246	1986	2496	3153	3972	5013	6325	7985	

MOTOR LEAD LENGTHS – PENTEK 3-WIRE MOTORS

CSIR Control Boxes

60 Hz Motor Rating		60C and 75C Insulation – AWG Copper Wire Size												
Volts	HP	14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0
230	1/2	87	138	221	349	544	867	1090	1376	1734	2188	2761	3485	4391
	3/4	348	553	883	1398	2175	3467	4359	5505	6935	8753			
	1	264	420	670	1061	1651	2632	3309	4178	5264	6644	8383		
	1-1/2	226	359	573	908	1413	2252	2831	3575	4504	5685	7173		

CSCR Control Boxes

60 Hz Motor Rating		60C and 75C Insulation – AWG Copper Wire Size												
Volts	HP	14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0
230	1/2	447	711	1135	1797	2796	4458	5604	7078	8916	11254			
	3/4	348	553	883	1398	2175	3467	4359	5505	6935	8753	11044		
	1	304	484	772	1223	1903	3034	3814	4817	6068	7659	9663		
	1-1/2	197	314	501	793	1234	1968	2474	3124	3936	4968	6268		
	2	180	286	456	722	1123	1790	2251	2843	3581	4520	5703		
	3	133	211	337	534	830	1324	1664	2102	2648	3342	4217	5323	
	5			206	326	507	809	1017	1284	1618	2042	2577	3253	

All lengths in feet.

NOTE: Based on service factor amps, 30C ambient and 5% voltage drop.

- (1) This table is based on copper wire. If aluminum wire is used it must be two sizes larger. *Example:* When the table calls for #12 copper wire you would use #10 aluminum wire.
- (2) Cables #14 to #0000 are AWG sizes.

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Cable Selection

4" submersible motors

MOTOR LEAD LENGTHS – PENTEK® 3-PHASE MOTORS

60 Hz Motor Rating		60C AND 75C Insulation – AWG Copper Wire Size												
Volts	HP	14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0
200	0.5	657	1045	1667	2641	4109								
	3/4	423	674	1074	1702	2648								
	1	346	551	879	1392	2166	3454	4342						
	1.5	265	421	672	1064	1655	2638	3317						
	2	217	344	549	870	1354	2158	2714	3427	4317	5449			
	3	159	253	403	638	993	1583	1990	2513	3166	3996			
	5	94	150	239	379	590	940	1182	1493	1881	2374	2995	3781	4764
7.5	64	101	161	255	397	633	796	1005	1266	1598	2017	2546	3207	
230	0.5	756	1202	1917	3037	4725	7532	9469						
	0.75	562	894	1426	2258	3513	5601	7041	8892					
	1	466	742	1183	1874	2915	4648	5843	7379					
	1.5	359	571	912	1444	2246	3581	4502	5685	7162	9040			
	2	288	459	732	1159	1803	2874	3613	4563	5748	7256	9155		
	3	217	345	551	872	1357	2163	2719	3434	4326	5460	6889	8696	10956
	5			318	503	783	1248	1569	1982	2496	3151	3976	5019	6323
7.5				334	519	827	1040	1314	1655	2089	2635	3327	4192	
460	0.5	2922	4648	7414										
	0.75	2191	3486	5560	8806									
	1	1753	2789	4448	7045									
	1.5	1370	2179	3475	5504									
	2	1153	1835	2926	4635	7212								
	3	827	1315	2098	3323	5171								
	5	516	820	1308	2072	3224	5140							
	7.5	325	516	824	1305	2030	3236	4068	5138	6472				
10	255	405	647	1024	1593	2540	3193	4033	5080					
575	1.5	2283	3631	5792										
	2	1660	2641	4212	6671									
	3	1336	2126	3390	5370									
	5	721	1147	1829	2897	4507								
	7.5	548	871	1390	2202	3426								

All lengths in feet.

NOTE: Based on service factor amps, 30C ambient and 5% voltage drop.

- (1) This table is based on copper wire. If aluminum wire is used it must be two sizes larger. *Example:* When the table calls for #12 copper wire you would use #10 aluminum wire.
- (2) The portion of the total cable that is between the service entrance and a 3-phase motor starter should not exceed 25% of the total maximum length to assure reliable starter operation.
- (3) Cables #14 to #0000 are AWG sizes.