

4" Submersible Well Pumps

FW1598
0723
Supersedes
0922



FIELD REFERENCE GUIDE

1/2 through 7 1/2 HP

5 through 85 GPM



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F&W Date Code Explanation



21 A K - 01 - 001

Calendar Year

Month

(A = Jan, etc.)

Letter "I" is not used)

Manufacturing

Facility

Sequence of Motor

Day of Month

5 thru 85 GPM

4 F 10 S 05 - 30 1

4-inch Minimum Well Diameter

Series

GPM

Material Construction

S - SS Castings, SS Shell

A - Cast Iron Castings, SS Shell

P - Thermoplastic Housing, SS Shell

Motor HP Size

Lead Type

1 - 3-wire

5 - 2-wire

Motor Voltage and Phase

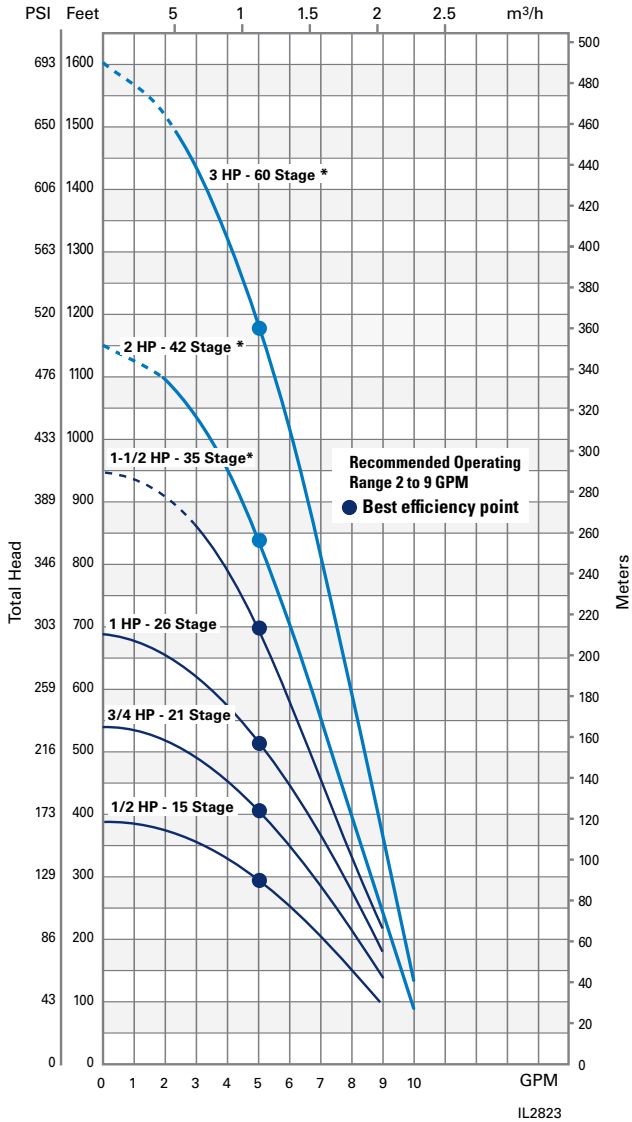
00 - 115 V 1 Ph

30 - 230 V 1 Ph

DOE Compliance

PUMP MODEL	Impeller Dia.	P.E.I.ct
4F35	3.072"	0.89
4F55	3.075"	0.93
4F85	3.070"	0.99

4" 5 GPM • 1/2 thru 3 HP



* Pumps marked with asterisks not to be operated at GPM flows indicated by dotted line.



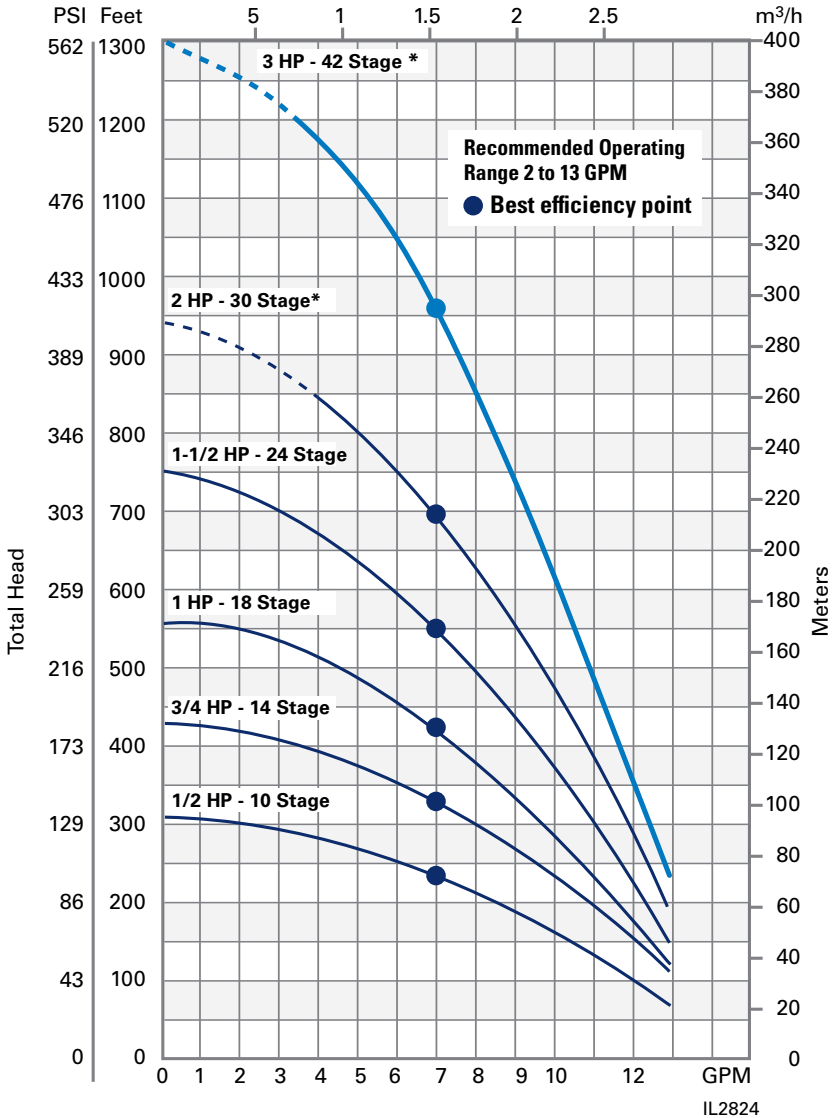
S Series Commander and A Series Captain 4" Submersible Pumps

HP Size and Model No.	Stages	Weight		Disch. Pressure PSI	DEPTH TO WATER LEVEL IN FEET																				Max. Pressure							
		Motor Type	Ship Wt.		CAPACITIES IN GALLONS PER MINUTE																				Ft.	PSI						
					20	40	60	80	100	120	140	160	180	200	225	250	275	300	325	350	400	450	500	550			600	650	700	800		
1/2 HP 4F05A05 4F05S05 4F05G05	15	1 PH 3 Wire 1 PH 2 Wire	29	0	8.9	8.5	8.2	7.8	7.4	7.0	6.5	5.9	5.3	4.7	4.0	3.2														390	168	
				20	8.8	8.4	8.1	7.7	7.3	6.9	6.5	6.0	5.5	4.8	4.1	3.3	2.3															
				40	8.3	7.9	7.5	7.1	6.7	6.3	5.9	5.4	4.9	4.2	3.5	2.4																
				60	7.5	7.1	6.7	6.2	5.8	5.3	4.8	4.2	3.6	2.7																		
3/4 HP 4F05A07 4F05S07	21	1 PH 3 Wire 1 PH 2 Wire	35	0	8.9	8.7	8.4	8.2	7.8	7.5	7.2	6.8	6.5	6.1	5.2	4.2	2.9													550	238	
				20	8.8	8.6	8.3	8.1	7.8	7.5	7.2	6.9	6.5	6.1	5.7	5.3	4.3	3.0														
				40	8.7	8.5	8.2	8.0	7.7	7.5	7.2	6.9	6.5	6.2	5.7	5.3	4.9	4.4	3.1													
				60	8.2	7.9	7.7	7.4	7.1	6.8	6.5	6.2	5.8	5.4	4.9	4.5	3.9	3.3	1.3													
1 HP 4F05A10 4F05S10	26	1 PH 3 Wire 1 PH 2 Wire	43	0	8.9	8.7	8.4	8.2	7.9	7.7	7.4	7.1	6.5	5.9	5.3	4.5	3.6	2.3												695	300	
				20	9.0	8.8	8.6	8.4	8.2	7.9	7.7	7.4	7.2	6.9	6.6	6.0	5.3	4.6	3.7	2.4												
				40	8.7	8.5	8.3	8.1	7.9	7.7	7.5	7.2	6.9	6.7	6.3	6.0	5.4	4.6	3.7	2.5												
				60	8.5	8.3	8.1	7.9	7.7	7.5	7.2	7.0	6.7	6.4	6.1	5.8	5.5	4.7	3.8	2.7												
1-1/2 HP 4F05A15 4F05S15	35	1 PH 3 Wire 3 PH 3 Wire	52	0	8.9	8.7	8.5	8.3	8.2	8.0	7.5	7.1	6.8	6.6	6.4	6.0	5.6	5.1	4.7	4.1	3.5									950	411	
				20	8.9	8.7	8.5	8.3	8.2	8.0	7.5	7.1	6.7	6.3	5.9	5.5	5.0	4.6	3.4													
				40	9.0	8.8	8.7	8.5	8.4	8.2	8.0	7.8	7.6	7.4	7.2	6.8	6.3	5.9	5.5	5.1	4.6	4.1	3.5									
				60	8.8	8.6	8.5	8.4	8.2	8.0	7.9	7.7	7.5	7.3	7.0	6.8	6.4	6.0	5.6	5.1	4.7	4.1	3.5									

HP Size and Model No.	Stages	Weight		Disch. Pressure PSI	DEEPSJET - DEPTH TO WATER LEVEL IN FEET																				Max. Pressure						
		Motor Type	Ship Wt.		CAPACITIES IN GALLONS PER MINUTE																				Ft.	PSI					
					50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	900	1000	1100	1200			1300	1400	1500	1600	
2 HP 4F05S20	42	1 PH 3 Wire 3 PH 3 Wire	30	0	8.9	8.6	8.3	8.0	7.7	7.3	7.0	6.7	6.4	6.0	5.7	5.3	4.4	3.4	1.9											1593	168
				20	9.0	8.6	8.3	8.0	7.7	7.4	7.0	6.7	6.4	6.0	5.7	5.3	4.9	4.0	2.8												
				40	9.0	8.7	8.3	8.0	7.7	7.4	7.1	6.7	6.4	6.1	5.7	5.3	4.9	4.5	3.5	2.1											
				60	9.0	8.7	8.4	8.0	7.7	7.4	7.1	6.8	6.4	6.1	5.7	5.4	5.0	4.5	4.1	2.9											
3 HP 4F05S30	60	1 PH 3 Wire 3 PH 3 Wire	38	0	8.9	8.6	8.4	8.2	8.0	7.8	7.5	7.3	7.1	6.8	6.1	5.5	4.9	4.2	3.3	2.2										1593	168
				20	8.9	8.7	8.4	8.2	8.0	7.8	7.6	7.3	7.1	6.8	6.3	5.8	5.2	4.6	3.8	2.8											
				40	8.9	8.7	8.5	8.3	8.0	7.8	7.6	7.3	7.1	6.9	6.6	6.1	5.5	4.9	4.2	3.4	2.3										
				60	8.9	8.7	8.5	8.3	8.0	7.8	7.6	7.4	7.1	6.9	6.6	6.4	5.8	5.3	4.6	3.9	2.9										

NOTE: Pipe friction loss in drop pipe is not included in charts above. 1/2 thru 2 HP, 1 PH pumps feature Flint & Walling motors.

4" 7 GPM • 1/2 thru 3 HP



* Pumps marked with asterisks not to be operated at GPM flows indicated by dotted line.



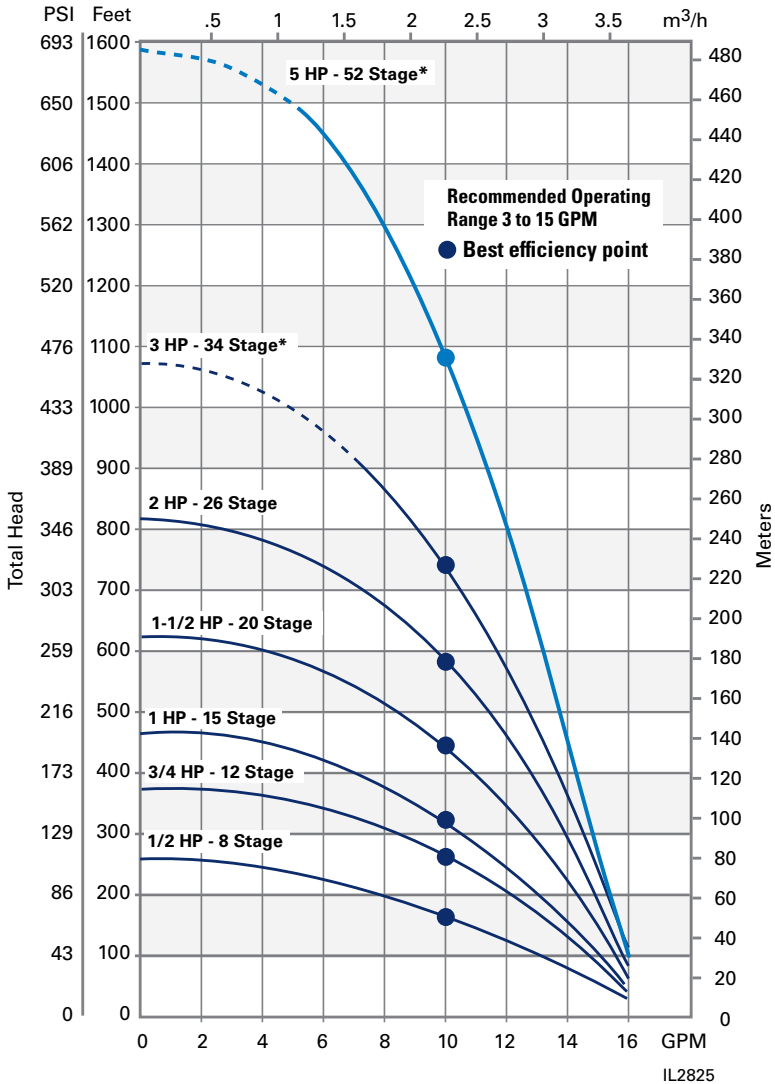
S Series Commander and A Series Captain 4" Submersible Pumps

HP Size and Model No.	Stages	Weight Motor Ship Type Wt.	Disch. Press PSI	DEPTH TO WATER LEVEL IN FEET																	Max. Pressure Ft.									
				CAPACITIES IN GALLONS PER MINUTE																										
				20	40	60	80	100	120	140	160	180	200	225	250	275	300	325	350	400		450	500	550	600	650	700	800		
1/2 HP 4F07A05 4F07S05 4F07G05	10	1 PH 3 Wire 28 1 PH 3 Wire 28 2 Wire	0 20 40 60 80	13.0	12.4	11.7	11.0	10.4	9.8	9.0	8.2	7.2	5.8	4.2	2.1												134			
				12.9	12.2	11.6	10.9	10.3	9.6	8.1	7.2	6.1	4.7	2.0																
				11.3	10.7	10.0	9.3	8.5	7.7	6.8	5.7	4.4	2.8																	
				9.8	9.1	8.3	7.5	6.5	5.3	4.0	2.3																			
3/4 HP 4F07A07 4F07S07 4F07G07	14	1 PH 3 Wire 33 1 PH 3 Wire 33 2 Wire	0 20 40 60 80	12.9	12.5	12.0	11.6	11.1	10.7	10.0	9.3	8.5	7.8	6.9	6.0	3.4												186		
				12.7	12.4	11.9	11.5	11.0	10.5	10.0	9.4	8.7	7.9	7.1	6.2	5.2	3.7													
				12.2	11.8	11.3	10.9	10.3	9.8	9.2	8.6	8.0	7.2	6.3	5.3	3.9	1.8													
				11.2	10.7	10.2	9.6	9.1	8.5	7.9	7.2	6.5	5.5	4.2	2.3															
1 HP 4F07A10 4F07S10 4F07G10	18	1 PH 3 Wire 37 1 PH 3 Wire 37 2 Wire	0 20 40 60 80	12.7	12.4	12.1	11.7	11.4	10.9	10.5	10.0	9.5	9.0	8.5	7.4	6.1	4.5	1.6										242		
				12.0	12.7	12.3	12.0	11.7	11.3	10.9	10.6	10.1	9.7	9.2	8.7	7.8	7.5	6.3	4.7	2.1										
				12.2	11.9	11.5	11.2	10.8	10.4	10.1	9.7	9.2	8.7	8.1	7.6	7.0	6.3	4.7	2.1											
				10.8	11.0	10.7	10.3	9.9	9.6	9.2	8.8	8.3	7.7	7.1	6.5	5.8	4.9	2.5												
1-1/2 HP 4F07A15 4F07S15	24	1 PH 3 Wire 51 1 PH 3 Wire 51 2 Wire 46 3 PH 3 Wire	0 20 40 60 80	12.7	12.4	12.1	11.8	11.5	11.2	10.8	10.5	10.1	9.4	8.7	7.8	6.9	5.9	4.6	3.9									322		
				12.8	12.6	12.3	12.1	11.8	11.6	11.3	10.9	10.6	10.2	9.8	9.5	8.7	7.9	7.0	6.0	4.8	3.2									
				12.2	12.0	11.7	11.5	11.2	10.9	10.6	10.2	9.9	9.5	9.1	8.7	7.9	7.0	6.0	4.8	3.2										
				11.6	11.4	11.1	10.8	10.5	10.3	9.9	9.6	9.2	8.8	8.4	8.0	7.1	6.1	4.9	3.3											
2 HP 4F07A20 4F07S20	30	1 PH 3 Wire 61 3 PH 3 Wire 51	0 20 40 60 80	13.0	12.8	12.5	12.3	12.0	11.8	11.5	11.3	10.7	10.2	9.6	9.0	8.3	7.7	6.9	5.2									409		
				12.7	12.5	12.3	12.1	11.9	11.6	11.3	11.1	10.8	10.5	10.2	9.6	9.1	8.4	7.7	7.0	6.2										
				12.3	12.1	11.9	11.6	11.3	11.1	10.8	10.5	10.2	9.7	9.1	8.4	7.7	7.0	6.3	5.3											
				11.8	11.6	11.4	11.1	10.9	10.6	10.3	10.0	9.7	9.1	8.5	7.8	7.1	6.3	5.5	4.4											

HP Size and Model No.	Stages	Weight Motor Ship Type Wt.	Disch. Press PSI	DEPTH TO WATER LEVEL IN FEET																	Max. Press. Ft.								
				CAPACITIES IN GALLONS PER MINUTE																									
				50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	900		1000	1100	1200	1300	1400	1500	1600	
3 HP 4F07S30	42	1 PH 3 Wire 30 3 PH 30 3 Wire	0 20 40 60 80	12.8	12.4	12.0	11.6	11.3	10.9	10.5	10.1	9.7	9.3	8.9	8.5	7.6	6.5	5.3	3.5									1293	
				12.8	12.4	12.0	11.7	11.3	10.9	10.5	10.2	9.8	9.4	8.9	8.5	8.1	7.1	6.0	4.5	2.3									
				12.8	12.5	12.1	11.7	11.3	10.9	10.6	10.2	9.8	9.0	8.6	8.1	7.6	6.6	5.4	3.7										
				12.9	12.5	12.1	11.7	11.3	11.0	10.6	10.2	9.8	9.4	9.0	8.6	8.1	7.7	7.2	6.1	4.7	2.5								

NOTE: Pipe friction loss in drop pipe is not included in charts above. 1/2 thru 2 HP, 1 PH pumps feature Flint & Walling motors.

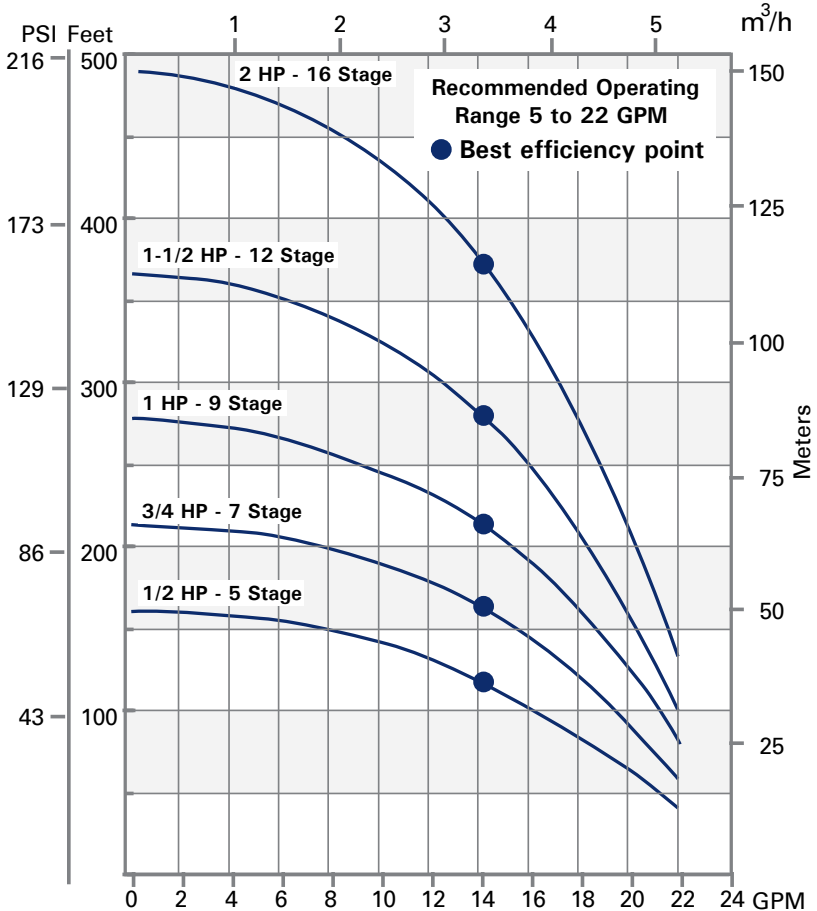
4" 10 GPM • 1/2 thru 5 HP



* Pumps marked with asterisks not to be operated at GPM flows indicated by dotted line.



4" 15 GPM • 1/2 thru 2 HP



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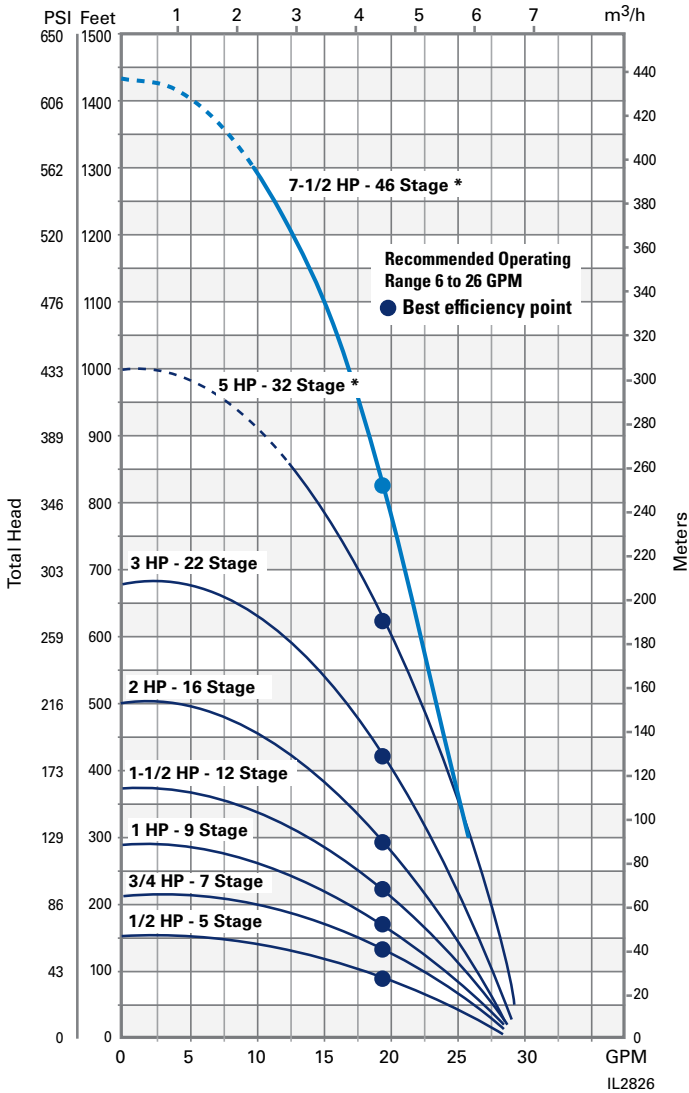


S Series Commander and A Series Captain 4" Submersible Pumps

HP Size and Model No.	Stage	Weight		Discharge Pressure PSI	DEPTH TO WATER LEVEL IN FEET																		Max. Press.							
		Motor Type	Ship Wt.		CAPACITIES IN GALLONS PER MINUTE																		FT.	PSI						
					20	40	60	80	100	120	140	160	180	200	225	250	275	300	350	400	450	500	550	600	650	700	800	900		
1/2 HP 4F15S05	5	1 PH	28	0																								159	69	
		3 Wire		20	22.0	20.5	18.5	16.2	13.7	10.2																				
		1 PH 2 Wire	28	40	19.8	17.7	15.5	12.7	8.8																					
3/4 HP 4F15S07	7	1 PH	33	0																								214	93	
		3 Wire		20	21.5	20.5	19.1	17.6	15.9	13.8	11.8	5.8																		
		1 PH 2 Wire	33	60	18.5	17.0	15.3	13.0	9.5	9.5																				
1 HP 4F15S10	9	1 PH	36	0																								279	121	
		3 Wire		20	21.6	20.7	19.6	17.2	16.6	14.9	12.7	9.8	4.6																	
		1 PH 2 Wire	36	80	18.6	17.2	15.5	13.6	10.9	7.7																				
1-1/2 HP 4F15S15	12	1 PH	33	0																								367	159	
		3 Wire		20	21.8	21.2	20.5	19.7	18.8	18.0	17.1	16.1	14.7	12.9	10.5	7.3														
		1 PH 2 Wire	33	60	20.0	19.1	18.2	17.5	16.6	15.5	14.2	13.8	10.8	8.4																
2 HP 4F15S20	16	1 PH	36	0																								489	212	
		3 Wire		20	21.7	21.2	20.7	20.2	19.5	18.9	18.1	17.2	16.3	15.4	13.8	8.9														
		1 PH 2 Wire	36	60	20.6	20.0	19.3	18.8	18.1	17.4	16.5	15.6	14.5	13.1	9.2															

NOTE: Pipe friction loss in drop pipe is not included in chart above. 1/2 thru 2 HP, 1 PH pumps feature Flint & Walling motors.

4" 19 GPM • 1/2 thru 7 1/2 HP



* Pumps marked with asterisks not to be operated at GPM flows indicated by dotted line.

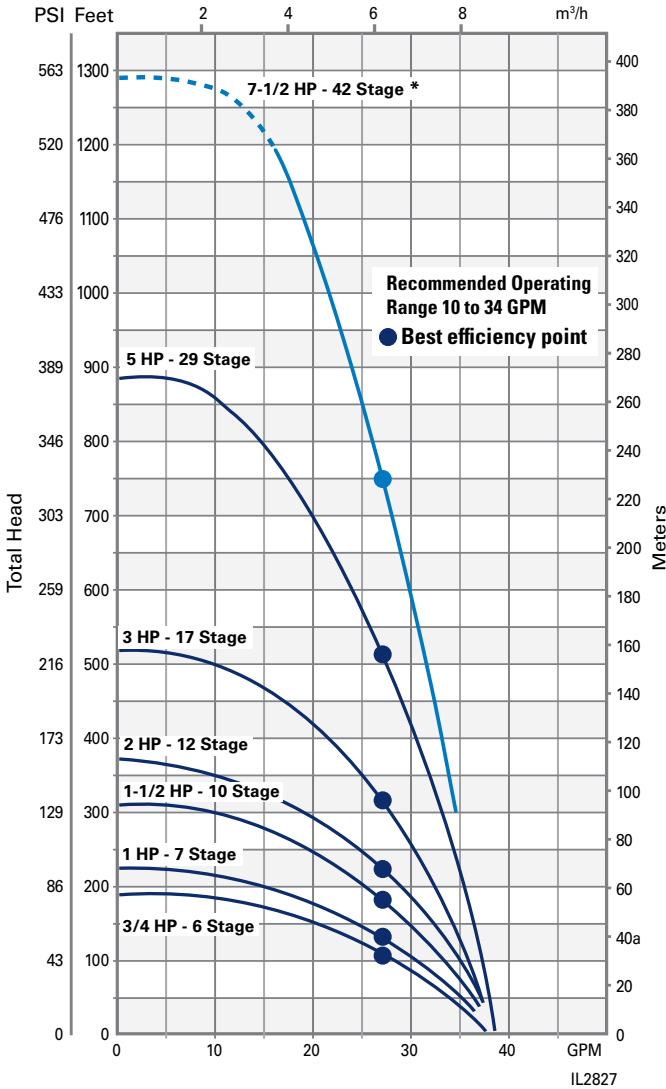


S Series Commander and A Series Captain 4" Submersible Pumps

HP Size and Model No.	Stg.	Weight Motor Type	Disch. Press. PSI	DEPTH TO WATER LEVEL IN FEET																				Max. Pressure PSI				
				CAPACITIES IN GALLONS PER MINUTE																								
				20	40	60	80	100	120	140	160	180	200	225	250	275	300	325	350	400	450	500	550		600	650	700	800
1/2 HP 4F19A05 4F19S05	5	1 PH 3 Wire 2 Wire	0 20 40	24.6	22.7	20.5	17.9	15.0	10.4																	155	67	
				22.0	19.8	17.1	14.0	5.9																				
3/4 HP 4F19A07 4F19S07	7	1 PH 3 Wire 2 Wire	0 40 80	24.6	23.3	21.7	20.0	18.2	16.0	13.3	9.6																215	93
				24.4	22.9	21.4	19.5	17.5	15.3	12.4	8.6																	
1 HP 4F19A10 4F19S10	9	1 PH 3 Wire	0 40	25.5	24.4	23.2	22.1	20.7	19.4	17.8	16.2	13.7	10.7	5.0													283	122
				25.2	24.0	22.9	21.7	20.4	19.0	17.4	15.6	13.7	11.4	6.2														
1-1/2 HP 4F19A15 4F19S15	12	1 PH 3 Wire	0 40	25.5	24.6	23.8	22.9	22.0	21.1	20.1	18.9	17.5	15.1	14.3	11.8	8.7											375	163
				25.2	24.4	23.5	22.7	21.7	20.7	19.9	18.9	17.7	16.3	14.3	12.2	9.5	3.6											
2 HP 4F19A20 4F19S20	16	1 PH 3 Wire	0 40	25.5	24.9	24.3	23.7	23.0	22.4	21.8	21.0	20.2	19.2	18.2	17.0	15.9	14.4	10.8	5.0								500	217
				25.3	24.6	24.1	23.5	22.8	22.2	21.5	20.8	20.1	19.3	18.3	17.2	15.9	14.6	12.9	11.0	5.3								
3 HP 4F19A30 4F19S30	22	1 PH 3 Wire	0 40	25.7	25.2	24.8	24.3	23.8	23.2	22.6	22.0	21.5	20.8	19.5	18.3	16.3	14.3	11.7	8.3								685	298
				25.8	25.4	25.0	24.5	24.1	23.6	23.2	22.7	22.2	21.7	21.0	20.3	19.8	19.0	18.2	16.6	14.7	12.2	9.2						
5 HP 4F19A50 4F19S50	32	1 PH 3 Wire	0 40	25.8	25.4	25.0	24.6	24.3	23.8	23.2	22.6	22.0	21.5	20.8	19.5	18.3	16.3	14.3	11.7	8.3							1000	435
				26.0	25.8	25.5	25.2	24.8	24.5	24.2	23.9	23.7	23.3	22.8	22.4	22.0	21.6	21.2	20.3	19.3	18.3	17.2	15.9	14.5	12.8			
7.5 HP 4F19S75	46	3 PH 3 Wire	0 40	25.9	25.3	24.7	24.1	23.5	22.9	22.3	21.6	21.0	20.3	19.7	19.0	17.5	15.9	14.0	11.6	8.1							1420	615
				26.1	25.5	24.9	24.2	23.6	23.0	22.4	21.8	21.1	20.5	19.8	19.1	18.4	17.6	16.0	14.1	11.8	8.5							

NOTE: Pipe friction loss in drop pipe is not included in charts above. 1/2 thru 2 HP, 1 PH pumps feature Flint & Walling motors.

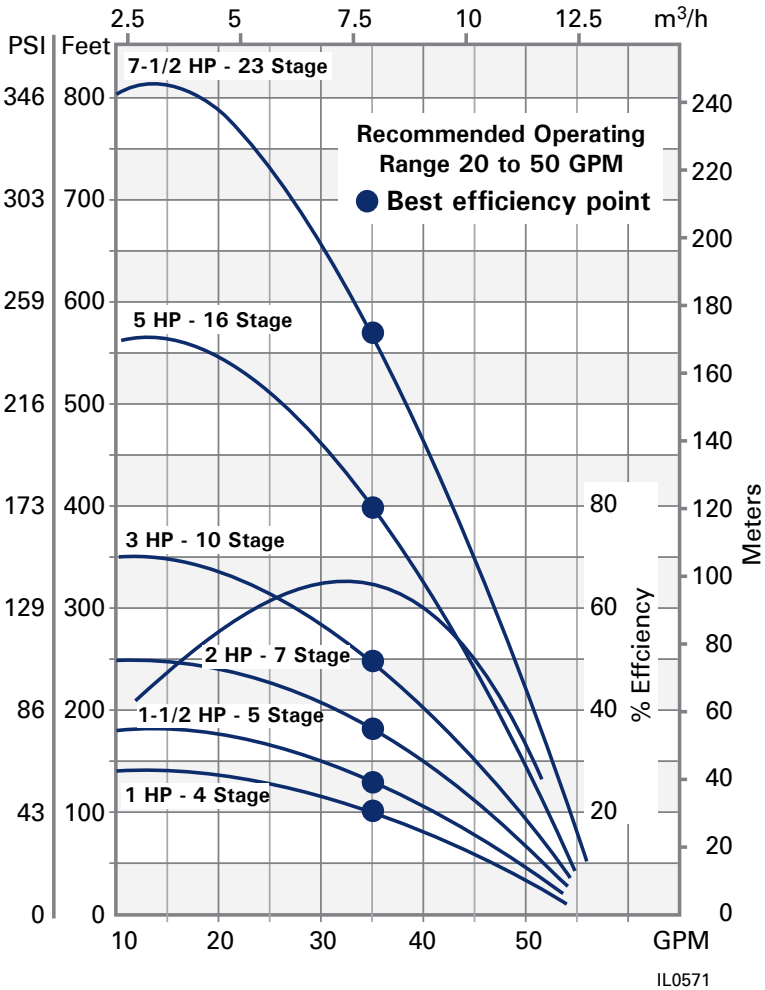
4" 27 GPM • 3/4 thru 7 1/2 HP



* Pumps marked with asterisks not to be operated at GPM flows indicated by dotted line.



4" 35 GPM • 1 thru 7 1/2 HP

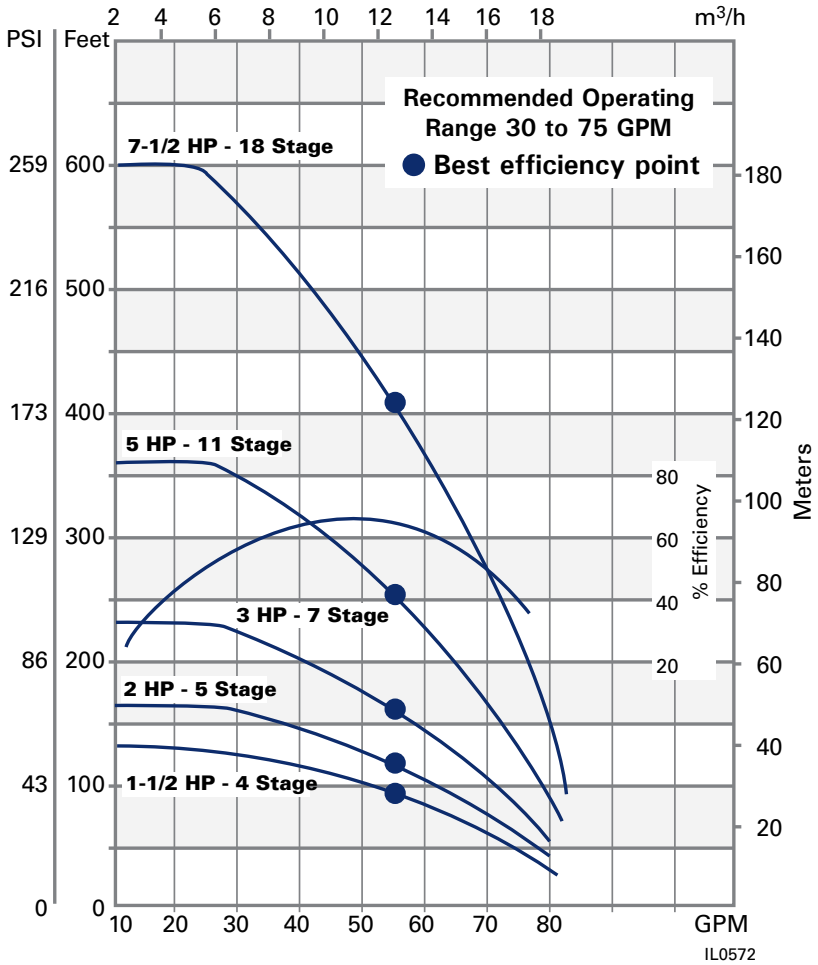


S Series Commander and A Series Captain 4" Submersible Pumps

HP Size And Model No.	Stages	Phase	WEIGHT		Disch. Press. PSI	DEPTH TO WATER LEVEL IN FEET																Max. Pressure							
			Pump End	Motor End		CAPACITIES IN GALLONS PER MINUTE																Ft.	PSI						
						20	40	60	80	100	120	140	160	180	200	220	240	260	300	350	400			450	500	550	600	650	700
1 HP 4F35A10 4F35S10	4	1	11	23	0	47	43	38	33	27															140	67			
						42	37	32	25																				
						30	22																						
1-1/2 HP 4F35A15 4F35S15	5	3	12	25	0	47	43	40	36	31	25	10													180	78			
						46	43	39	35	30	23																		
						38	33	28																					
2 HP 4F35A20 4F35S20	7	3	14	28	0	50	48	45	43	40	37	34	30	26	19										245	106			
						47	45	42	39	36	33	29	24																
						41	38	35	32	28	22																		
3 HP* 4F35A30 4F35S30	10	3	17	43	0	49	47	45	44	42	40	38	36	33	28	17									355	154			
						48	47	45	43	41	39	37	35	33	30	27	18												
						45	43	41	39	37	35	32	29	26	22	17													
5 HP* 4F35A50 4F35S50	16	3	23	53	0	49	48	47	46	45	44	42	40	38	37	35	32	28	22						560	245			
						50	49	48	47	46	45	44	43	41	39	36	32	27	21										
						49	48	47	46	45	44	42	41	40	38	37	35	32	28	22									
7-1/2 HP* 4F35A75 4F35S75	23	3	31	69	0	50	49	48	47	46	45	44	43	41	39	36	32	28	22						810	350			
						49	48	47	46	45	44	43	42	41	40	38	37	35	32	28	22								
						49	48	47	46	45	44	43	42	41	40	38	37	35	32	28	22								

NOTE: Pipe friction loss in drop pipe is not included in chart above.
 *For 3 HP and above, refer to motor manufacturer's handbook for proper flow rates to cool motor.
 1/2 thru 2 HP, 1 PH pumps feature Flint & Walling motors.

4" 55 GPM • 1 1/2 thru 7 1/2 HP



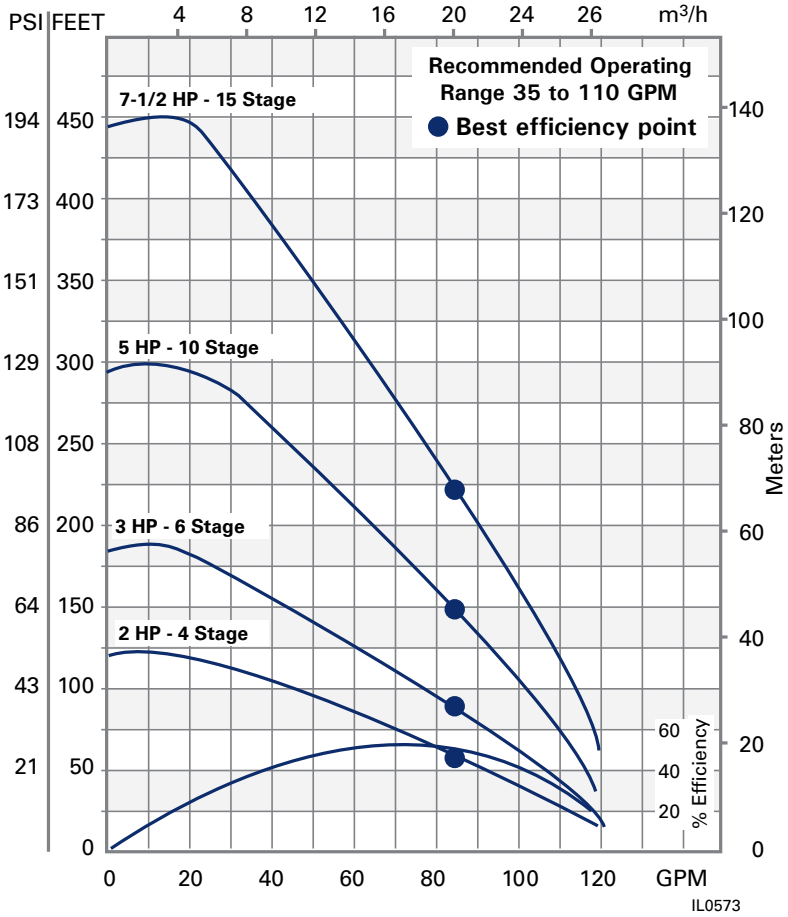
S Series Commander and A Series Captain 4" Submersible Pumps

HP Size and Model No.	Stages	Phase	Weight		Discharge Pressure PSI	DEPTH TO WATER LEVEL IN FEET																	Maximum Pressure																									
			Pump End	Motor End		CAPACITIES IN GALLONS PER MINUTE																	Fl.	PSI																								
						20	40	60	80	100	120	140	160	180	200	220	240	260	300	350	400	450			500	550																						
1-1/2 HP 4F55A15 4F55S15	4	1	12	28	0	71	62	50	36																		135	58																				
		3	12	25	60	70	60	47	33																																							
		42	23																																													
2 HP 4F55A20 4F55S20	5	1	14	30	0	75	69	61	42	29																		165	71																			
		3	14	28	60	74	68	59	50	38	15																																					
		56	45	34																																												
3 HP* 4F55A30 4F55S30	7	1	16	52	0	75	70	65	59	53	46	38	28	61	55	47	39	31																		235	101											
		3	16	43	60	63	57	50	43	34	15																																					
		48	40	32																																												
5 HP* 4F55A50 4F55S50	11	1	19	69	0	74	71	68	64	61	57	53	44	30	74	71	68	64	61	57	53	44	30																		365	158						
		3	19	53	60	73	70	67	64	60	56	52	47	42	31	74	71	68	64	60	56	52	47	42	31																							
		72	69	66	63	59	55	50	45	40	35	30	74	73	71	69	67	62	56	50	42	34	20																									
7-1/2 HP* 4F55A75 4F55S75	18	3	28	69	0	75	74	72	71	69	67	62	57	51	43	35	25	75	74	72	71	69	67	62	56	50	42	34	20																		600	259
		40	60	72	71	70	68	66	63	61	59	57	51	43	35	25	75	73	72	70	68	66	64	62	57	50	42	35	24																			
		72	71	70	68	66	63	61	59	57	51	43	35	25	74	73	71	66	62	56	49	41	33																									

NOTE: Pipe friction loss in drop pipe is not included in chart above.

*For 3 HP and above, refer to motor manufacturer's handbook for proper flow rates to cool motor.
1/2 thru 2 HP, 1 PH pumps feature Flint & Walling motors.

4" 85 GPM • 2 thru 7 1/2 HP



S Series Commander and A Series Captain 4" Submersible Pumps

HP Size and Model No.	Stages	Phase	Weight		Discharge Pressure PSI	DEPTH TO WATER LEVEL IN FEET																Max. Pressure								
			Pump End	Motor End		20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	Ft.	PSI			
2 HP 4F85A20 4F85S20	4	1	13	30	0	105	85	64	45																120	52				
						80	60	40																						
						35																								
3 HP* 4F85A30 4F85S30	6	1	15	52	0	103	91	77	63	51	38														185	80				
						101	88	75	61	48	34																			
						70	56	43	30																					
5 HP* 4F85A50 4F85S50	10	1	20	69	0	110	103	95	87	79	71	63	55	48	40	32									300	130				
						108	102	94	86	78	70	62	54	46	38	30														
						100	91	83	75	67	59	51	43	36	25															
7-1/2 HP* 4F85A75 4F85S75	15	3	27	69	0	103	97	92	87	81	76	70	65	59	54	49	43	38	32	25					450	195				
						106	101	95	90	85	79	74	68	63	57	52	47	41	36	30										
						109	104	99	94	88	83	77	72	66	61	56	50	45	40	34	27									

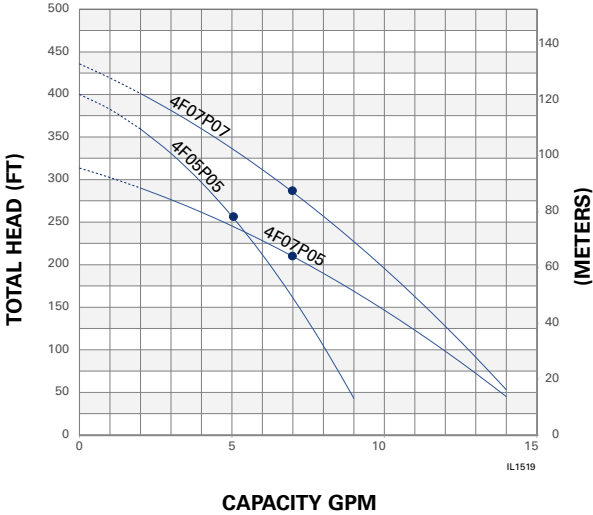
NOTE: Pipe friction loss in drop pipe is not included in chart above.

*For 3 HP and above, refer to motor manufacturer's handbook for proper flow rates to cool motor.

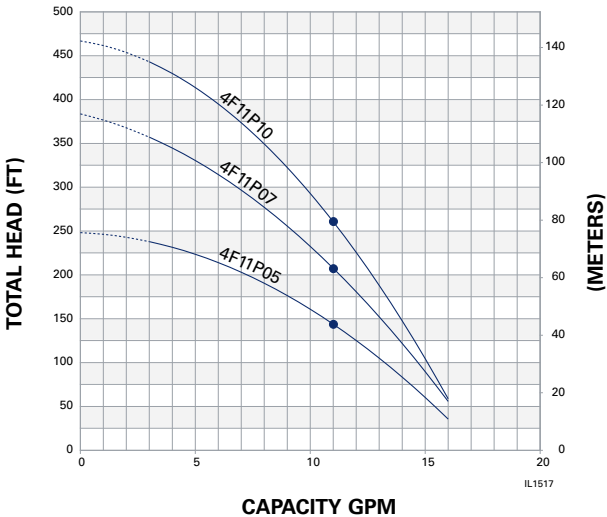
1/2 thru 2 HP, 1 PH pumps feature Flint & Walling motors.

5 to 27 GPM • 1/2 to 1 HP Composite Performance Curves

5 & 7 GPM



11 GPM



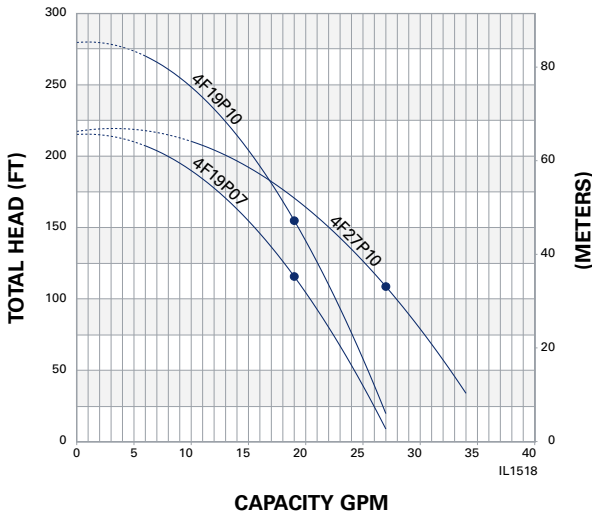
P Series Patriot 4" Submersible Pumps



Model	HP	Wire	A - Pump length (in)	B - Motor length (in)
4F05P05	0.5	2 & 3	20.13	10.50
4F07P05	0.5	2 & 3	16.19	10.50
4F07P07	0.75	2 & 3	19.37	11.63
4F11P05	0.5	2 & 3	15.38	10.50
4F11P07	0.75	2 & 3	18.94	11.63
4F11P10	1	2 & 3	21.56	12.50
4F19P07	0.75	2 & 3	15.12	11.63
4F19P10	1	2 & 3	17.06	12.50
4F27P10	1	2 & 3	15.37	12.50

All dimensions are rounded to the nearest 100th of an inch.

19 and 27 GPM



5 to 27 GPM • 1/2 to 1 HP Performance Chart

HP Size, GPM and Model No.	Stages	Motor Type	Ship Wt.	Disch. Press. PSI	DEPTH TO WATER LEVEL IN FEET																	Maximum Pressure	
					CAPACITIES IN GALLONS PER MINUTE																	Ft.	PSI
					20	40	60	80	100	120	140	160	180	200	225	250	275	300	350	400	450		
1/2 HP 5 GPM 4F05P05	15	1 PH 3 Wire	25	0				8.1	7.7	7.3	7.0	6.6	6.1	5.7	5.3	4.6	4.0	3.2	2.4	390	168		
					8.0	7.6	6.8	6.4	6.0	5.6	5.1	4.6	4.1	3.3	2.5	1.6							
					7.1	6.7	6.3	5.9	5.4	5.0	4.4	3.9	3.3	2.6	1.7								
					6.2	5.7	5.3	4.8	4.3	3.7	3.1	2.4	1.7										
1/2 HP 7 GPM 4F07P05	10	1 PH 3 Wire	22	0	13.4	12.6	11.8	11.0	10.2	9.3	8.5	7.6	6.4	5.0	3.3	310	134						
					13.2	12.3	11.5	10.7	9.9	9.1	8.2	7.3	6.3	5.2	3.5								
					11.3	10.5	9.6	8.8	8.0	7.0	6.0	4.8	3.4										
					9.4	8.6	7.7	6.7	5.7	4.4	3.0												
3/4 HP 7 GPM 4F07P07	14	1 PH 3 Wire	27	0	13.1	12.5	12.0	11.4	10.9	10.3	9.8	9.1	8.3	7.6	6.7	4.7	2.1	430	186				
					13.5	12.9	12.4	11.8	11.2	10.7	10.2	9.6	9.0	8.5	7.7	6.9	5.9			4.9	2.3		
					12.2	11.6	11.1	10.5	10.0	9.4	8.9	8.3	7.7	7.0	6.1	5.1	3.9			2.5			
					10.9	10.4	9.8	9.3	8.7	8.1	7.5	6.8	6.0	5.2	4.1	2.8							
1/2 HP 11 GPM 4F11P05	8	1 PH 3 Wire	22	0	14.9	13.9	13.0	12.1	11.2	10.3	9.1	7.6	4.6	277	120								
					14.6	13.6	12.7	11.8	11.0	10.0	8.7	7.0	4.4										
					12.4	11.6	10.7	9.6	8.2	6.3	3.5												
					10.4	9.2	7.7	5.5	2.4														
3/4 HP 11 GPM 4F11P07	12	1 PH 3 Wire	26	0	15.2	14.5	13.9	13.2	12.6	11.9	11.3	10.4	9.4	8.3	7.0	3.5	401	173					
					15.0	14.3	13.7	13.0	12.4	11.7	11.1	10.4	9.6	8.5	7.2	5.7			3.8				
					14.1	13.5	12.8	12.2	11.5	10.9	10.1	9.3	8.5	7.5	6.0	4.1							
					12.6	12.0	11.3	10.6	9.9	9.1	8.2	7.1	5.9	4.4	2.2								
					11.1	10.4	9.7	8.8	7.9	6.8	5.5	3.9											

P Series Patriot 4" Submersible Pumps

HP Size, GPM and Model No.	Stages	Motor Type	Ship Wt.	Disch. Press. PSI	DEPTH TO WATER LEVEL IN FEET																Maximum Pressure	
					CAPACITIES IN GALLONS PER MINUTE																Fl.	PSI
					20	40	60	80	100	120	140	160	180	200	225	250	275	300	350	400		
1 HP 11 GPM 4F11P10	15	1 PH 3 Wire	30	0				14.6	14.1	13.6	14.3	13.7	13.2	12.6	12.0	11.3	10.6	9.8	8.0	5.6	504	218
					14.5	13.9	13.4	12.8	12.3	11.7	11.2	10.6	10.0	9.2	8.3	7.3	6.0	4.8	3.0			
					13.8	13.2	12.7	12.1	11.6	11.0	10.4	9.8	9.2	8.5	7.5	6.2	4.8	3.0				
3/4 HP 19 GPM 4F19P07	7	1 PH 3 Wire	26	0	23.4	21.9	20.3	18.8	17.0	14.7	11.6	6.9									215	93
					23.0	21.4	19.9	18.3	16.4	13.9	10.3	5.1										
					19.4	17.7	15.7	12.9	8.9													
1 HP 19 GPM 4F19P10	9	1 PH 2 Wire	27	0	23.7	22.3	20.9	19.7	18.5	17.3	15.9	13.4	9.5								283	122
					23.3	21.8	20.5	19.3	18.2	16.9	15.3	13.2	10.2	4.5								
					21.4	20.1	19.0	17.8	16.5	14.8	12.4	9.0	4.2									
1 HP 27 GPM 4F27P10	7	1 PH 2 Wire	27	0	18.6	17.4	16.0	14.1	11.5	7.7										215	93	
					15.5	13.4	10.4	6.2														
					31.6	28.9	26.7	25.0	23.6	21.8	18.7	12.8										
					30.8	28.2	26.1	24.5	23.1	21.0	17.2	10.2										
					25.6	24.1	22.6	20.1	15.5	7.1												
					22.0	19.0	13.4															

NOTE: Pipe friction loss in drop pipe is not included in chart above.

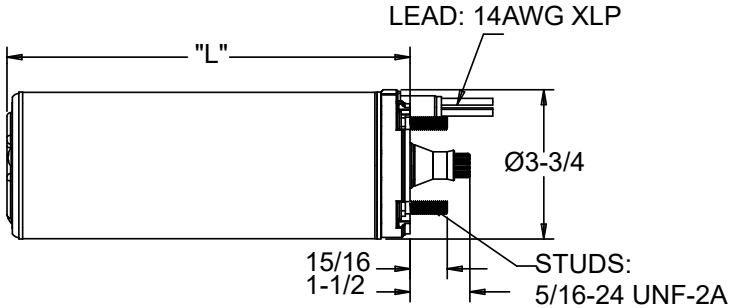
Submersible Control Boxes



Model	HP	Volt	Amp	KW	Phase	Weight		Size (In.)
						Lbs.	KG	
022875	1/2	115	12	0.37	1	3	1.4	9 x 3.5 x 5.5
022876	1/2	230	6	0.37	1	3	1.4	9 x 3.5 x 5.5
022877	3/4	230	8	0.55	1	3	1.4	9 x 3.5 x 5.5
022878	1	230	10.4	0.75	1	3	1.4	9 x 3.5 x 5.5
022879	1-1/2	230	8.0/11.5	1.10	1	6.8	3.1	9.5 x 5.9 x 7.7
025242	2	230	13.2	1.50	1	7.1	3.2	9.5 x 5.9 x 7.7
025243	3	230	17	2.20	1	7.1	3.2	9.5 x 5.9 x 7.7
025244	5	230	27.5	3.70	1	10	4.5	15.7 x 5.9 x 7.8



Motor Dimensions



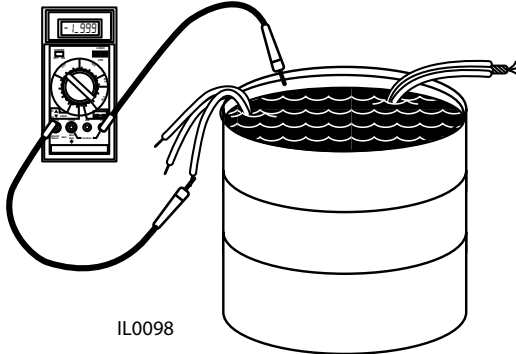
SINGLE PHASE		"L"	
HP	Wire	SS	E
1/2	2 and 3	10.10	10.47
3/4	2 and 3	11.23	11.60
1	2 and 3	12.10	12.47
1-1/2	2	15.43	N/A
1-1/2	3	14.06	14.35
2	3	15.43	N/A

THREE PHASE		"L"
HP	Wire	SS
1/2	3	10.10
3/4	3	11.23
1	3	11.23
1-1/2	3	12.10
2	3	14.06
3	3	15.56

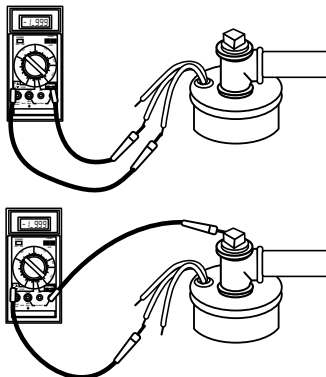


Insulation Resistance Test

1. This test is recommended when the splicing is complete and pump is being test run in a tank of water or installed in the well.
2. Confirm multimeter ohmmeter function by clipping the leads together and verifying resistance readings $<0.2\Omega$
3. Clip one multimeter lead to bare cable end.
4. Clip the other lead to motor ground wire with pump and cable submerged.
5. Insulation Readings for installed motor:
 - A. 2,00,000 ohms or greater indicates excellent insulation condition.
 - B. 500,000-2,000,000 ohms indicates motor is in good condition.
 - C. Less than 500,000 ohms indicates damaged insulation.



IL0098



IL0099



Motor Specifications

60HZ SINGLE PHASE MOTOR TABLE

HP	KW	Voltage	Full Load			S.F.	Service Factor Load (Maximum Values)			Winding Res.		LR Amps	KVA Code
			Amps	Watts	%Eff FL		S.F.	Watts	%Eff S.F.	Ohms	Ohms		
2 Wire	1/2	0.37	10	740	50	1.6	12	960	62	1.1-1.4	64	R	
	1/2	0.37	5	740	50	1.5	6	960	62	4.1-5.3	32	R	
	3/4	0.55	230	1050	52	1.6	8	1350	61	2.9-3.7	40	N	
	1	0.75	230	1350	56	1.4	10.4	1800	58	2.2-2.8	48	N	
	1-1/2	1.1	230	1880	59	1.3	13.1	2390	60	1.8-2.0	65.5	M	
	1/2	0.37	115	10	740	50	1.6	12	960	62	M 1.1-1.4 A 4.3-5.3	48	M
3 Wire	1/2	0.37	5	740	50	1.6	6	960	62	M 4.1-5.3 A 18.0-21.9	23	M	
	3/4	0.55	230	1050	52	1.5	8	1350	61	M 2.9-3.7 A 11.0-13.5	39	M	
	1	0.75	230	1350	56	1.4	10.4	1800	58	M 2.2-2.8 A 10.2-12.6	42	L	
	1-1/2	1.1	230	1800	61	1.3	11.5	2280	63	M 1.7-2.2 A 7.8-9.6	52	J	
	2	1.5	230	2380	63	1.25	13.2	2800	67	M 1.8-2.5 A 5.4-7.0	50	G	
											M = Main Res. (Yellow to Black) A = Aux. Res. (Yellow to Red)		

60HZ THREE PHASE MOTOR TABLE

HP	KW	Voltage	Full Load			S.F.	Service Factor Load (Maximum Values)			Winding Res.		LR Amps	KVA Code
			Amps	Watts	%Eff FL		S.F.	Watts	%Eff S.F.	Ohms	Ohms		
3 Wire	1/2	0.37	2.4	585	64	1.6	2.9	860	70	9.5-10.9	15.2	N	
	1/2	0.37	1.2	585	64	1.6	1.5	860	70	38.4-44.1	7.6	N	
	3/4	0.55	230	3.1	810	69	1.5	3.8	1150	73	6.8-7.8	21.4	N
	1	0.75	230	3.9	1070	70	1.4	4.7	1440	72	27.2-30.9	10.7	N
	1-1/2	1.1	230	5	1460	76	1.3	5.9	1890	76	4.9-5.6	26.9	M
	1-1/2	1.1	460	2.5	1460	76	1.3	3.1	1890	76	19.9-23.0	13.5	M
3 Wire	2	1.50	230	6.7	1960	76	1.25	8.1	2430	76	3.2-4.0	33.2	K
	2	1.50	460	3.4	1960	76	1.25	4.1	2430	76	13.0-16.0	16.6	K
	3	2.2	230	9.5	2920	77	1.15	10.9	3360	77	9.2-12.0	22.5	K
	3	2.2	460	4.8	2920	77	1.15	5.5	3360	77	1.8-2.2	60.3	K
											7.2-8.8	31	K

Submersible Pump Cable Selection

60°C Insulation		WIRE SIZE (AWG)												
VOLTS	HP	LENGTH IN FEET												
		14	12	10	8	6	4	3	2	1	0	00	000	0000
115	1/2	105	160	265	400	625	950	1150	1470	1780	2140	2475	3010	3510
	1/2	420	650	1070	1615	2500	3810	4620	5680	7115	8570			
230	3/4	315	485	800	1210	1875	2855	3465	4410	5335	6425	7425		
	1	245	375	615	930	1440	2200	2685	3390	4105	4945	5710		
	1.5 (3W)	205	320	530	800	1240	1905	2320	2965	3615	4375	5085		
	1.5 (2W)	190	295	490	740	1145	1745	2115	2690	3260	3925	4535		
2	160	250	415	635	1000	1550	1905	2465	3060	3750	4415			

75°C Insulation		WIRE SIZE (AWG)												
VOLTS	HP	LENGTH IN FEET												
		14	12	10	8	6	4	3	2	1	0	00	000	0000
115	1/2	100	155	255	385	595	910	1105	1410	1710	2060	2384	2905	3400
	1/2	400	620	1020	1540	2390	3645	4420	5635	6836	8245			
230	3/4	300	465	765	1155	1790	2735	3315	4230	5130	6185	7155	8720	
	1	230	355	590	890	1380	2100	2250	3255	3945	4755	5500	6705	7845
	1.5 (3W)	200	305	505	765	1190	1825	2220	2840	3470	4205	4890	6010	7085
	1.5 (2W)	185	280	465	705	1095	1670	2025	2580	3130	3775	4368	5325	6230
2	155	240	395	605	955	1480	1820	2360	2925	3590	4230	5315	6395	

Three-Phase 60°C & 75°C Insulation		WIRE SIZE (AWG)												
VOLTS	HP	LENGTH IN FEET												
		14	12	10	8	6	4	3	2	1	0	00	000	0000
230	1/2	930	1490	2350	3700	5760	8910							
	3/4	670	1080	1700	2580	4190	6490	8060	9880					
460	1	560	910	1430	2260	3520	5460	6780	8290					
	1.5	420	670	1060	1671	2610	4050	5030	6160	7530	9170			
	2	320	510	810	1280	2010	3130	3880	4770	5860	7170	8780		
	3	240	390	620	990	1540	2400	2980	3660	4480	5470	6690	8020	9680
460	1/2	3770	6020	9460										
	3/4	2730	4350	6850										
	1	2300	3670	5770	9070									
	1.5	1700	2710	4270	6730									
2	1300	2070	3270	5150	8050									
3	1000	1600	2520	3970	6200									

Lengths listed meet the NEC ampacity requirements for either individual conductors or jackets 60°C or 75°C cable and can be in conduit or direct buried.

NEC and local codes should be followed and observed for any other cable being used.

Cable lengths listed are calculated to allow a 5% voltage drop per NEC for alternating current. If a 3% voltage drop is desired, the values listed should be multiplied by 0.6 to obtain the maximum cable length.

Problem Diagnosis Chart

Symptom	Possible Cause(s)	Corrective Action
Circuit breaker trips or fuses blow when motor starts.	1. Incorrect voltage	1. Contact power company if voltage is incorrect after first checking for correct wire size. See Wire Size Chart.
	2. Incorrect fuses or circuit breaker.	2. Replace with correctly sized components.
	3. Defective pressure switch	3. Replace pressure switch or clean contacts.
	4. Control box malfunction	4. Correct faulty wiring or tighten loose contacts.
	5. Bound pump	5. Sand bound pump can sometimes be corrected by temporarily reversing black and red leads in control box then returning to normal. If pump does not rotate freely, it must be pulled and cleaned or realigned and the well condition corrected.
	6. Defective cable or motor winding	6. The pump must be pulled and the cable disconnected and inspected. Damaged cable should be correctly spliced or replaced. If cable is good, the motor winding is grounded
	7. Shorted or open motor winding	7. The pump must be pulled and motor or drop cable repaired or replaced.
Motor runs but circuit breaker, fuses or motor overload trips.	1. Incorrect voltage	1. Contact power company.
	2. Overheated protectors	2. Shade box, provide ventilation or move box away from heat source.
	3. Improperly wired control box	3. Confirm motor and line connections.
	4. Defective motor or cable	4. If ground, short or open circuit is indicated pump must be pulled for repair.
	5. Defective pump	5. Pull pump, clean and repair to ensure pump staging is free of excess sand or debris.
Motor does not start and circuit breaker or fuses not tripped.	1. No power	1. Replace fuses or reset circuit breaker. Contact power company if no power is reaching box.
	2. Defective pressure switch	2. Clean contact points or replace switch.
	3. Defective wiring	3. Correct faulty wiring or connections/splices.
Pump runs, but delivers little or no water.	1. Air locked pump	1. Not enough water over pump. Raise and lower the pump at a fast rate to purge air from pump body.
	2. Low water level in well	2. Throttle pump delivery through restricting valve. Lower pump setting if depth of well is adequate.
	3. Check valve stuck or installed improperly	3. Replace or reinstall properly, ensure water check valve arrow oriented with flow.
	4. Leak in drop pipe	4. Raise pipe, check for leak and replace damaged section.
	5. Pump screen blocked	5. Clean screen and reset at less depth. It may be necessary to clean well.
	6. Worn pump	6. Pull pump and replace staging or pump end.
Pump keeps running	1. Pressure switch	1. Clean points or replace switch. Verify pressure switch setting and function.
	2. Low level well	2. Throttle pump output or reset pump to lower level. Do not lower if sand may clog pump.
	3. Leak in system	3. Replace damaged section. Replace all piping and joints to eliminate leaks.
	4. Misapplied pump	4. Verify pump depth/static water level vs. pump performance curve. For guidance, contact Tech Support at 1-800-742-5044.
Pump starts too often	1. Pressure switch	1. Reset limits or replace switch.
	2. Leak in system	2. Repair or replace tank or pipes.
	3. Check valve	3. Replace if column of water leaking by check valve.
	4. Water-logged tank	4. Replace tank.
	5. Pressure tank too small	5. Install larger tank.



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