

22000 Series

A.Y. McDonald offers a full line of four inch submersibles ranging from 1/2 through 1 1/2 horsepower (HP), with flow rates ranging from 5 through 25 gallons per minute (GPM).

Our 22000 submersibles offer peak capacity performance in 5, 7, 10, 15, 20, and 25 GPM models.

Powered by NEMA approved A.Y. McDonald stainless steel motors on all single phase pumps.

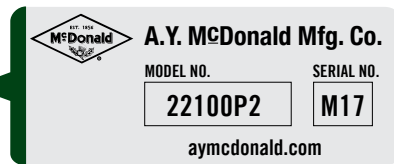
The charts on the following page will assist you in choosing the pump that meets your needs.



Features:

- Sizes - 1/2, 3/4, 1, 1 1/2 HP
- Reinforced thermoplastic motor bracket and discharge with built-in guide bearing
- 300 series stainless steel motor coupling
- Stainless steel pump shell
- Thermoplastic diffusers
- Thermoplastic impellers
- Stainless steel pump shaft
- Internal, anti-spin check valve standard
- Thermoplastic intake screen and cable guard
- 1 1/4" FNPT discharge
- Standard is 230V, single phase, 60 Hz

Locating the code number on the pump



A code appears on each A.Y. McDonald submersible pump. Contained in this code is the following information:

- Pump Model
- Serial Number

Features

Discharge Head

Incorporates built-in hex fluted guide bearing with rubber insert surrounding the stainless steel shaft which provides superior wear resistance against the harshest conditions. Self lubricating for long life. Large wrenching surfaces and 1 1/4" NPT female outlet threads standard. McDonald is molded into discharge head.

Rope Hook Attachments

Cable Guard

Cable guard fits into motor bracket to assure smooth entry into well casing.

Diffuser

Polycarbonate Durable and corrosion/abrasion resistant. Designed for efficient performance and superior sand handling capability.

Impeller

Glass Bead Acetal. This smooth and flexible material is precision engineered for maximum performance.

Pump Shaft

Large stainless steel 7/16" hex for strength and positive impeller drive.

Once assembled, each pump is individually tested to ensure performance within design specifications.

Check Valve

Internal anti-spin check valve with o-ring seal. Molded from engineered polymer.

Pump Shell

High grade, heavy wall stainless steel for excellent corrosion resistance. Left hand threaded at both ends to prevent loosening. Easily repairable in the field.

A.Y. McDonald uses it's time proven captured stack design. The captured stack design incorporates sand notches into the diffusers, which has proven, over time, to keep sand flowing thru the stack.

Motor Bracket

Rigid and accurate alignment to Nema standard fitted motors.

Hardware

All screws, washers, and assembly nuts are corrosion resistant stainless steel.

Intake Screen



J Series - 5 GPM

A.Y. McDonald offers a full line of thermoplastic submersible pumps built for years of trouble free operation, with high-efficiency impellers and diffusers. These submersibles offer peak capacity performance in 5, 7, 10, 15, 20, and 25 gallons per minute (GPM). Other features include thermoplastic discharge head with a built-in check valve, and stainless steel shaft and coupling.

All J Series Thermoplastic pumps have 1 1/4" discharge with internal check valve and sizes range from 1/2 to 1 horse power (HP). Two or three wire models up to 1 horse power (HP).

Two Wire Single Phase

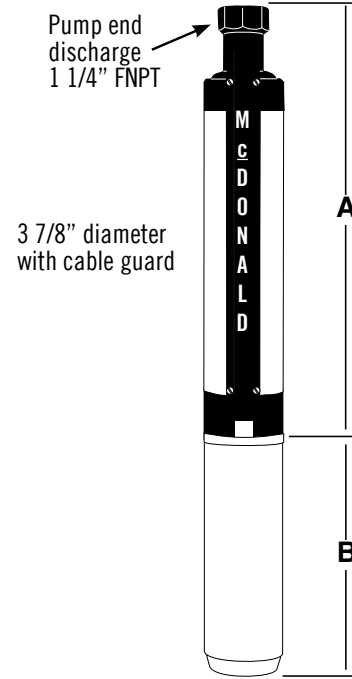
Model No.	HP	Stages	Volt	A	B	Wt.
22050J2	1/2	13	230	17.43"	9.53"	23
22075J2	3/4	18	230	21.42"	10.66"	28
22100J2	1	23	230	26.68"	11.75"	33

Three Wire Single Phase

Model No.	HP	Stages	Volt	A	B	Wt.
22050J3	1/2	13	230	17.43"	9.53"	28
22075J3	3/4	18	230	21.42"	10.66"	36
22100J3	1	23	230	26.68"	11.75"	39

4" Thermoplastic Pump Ends

Model No.	HP	Wt.
22050J	1/2	7
22075J	3/4	11
22100J	1	13



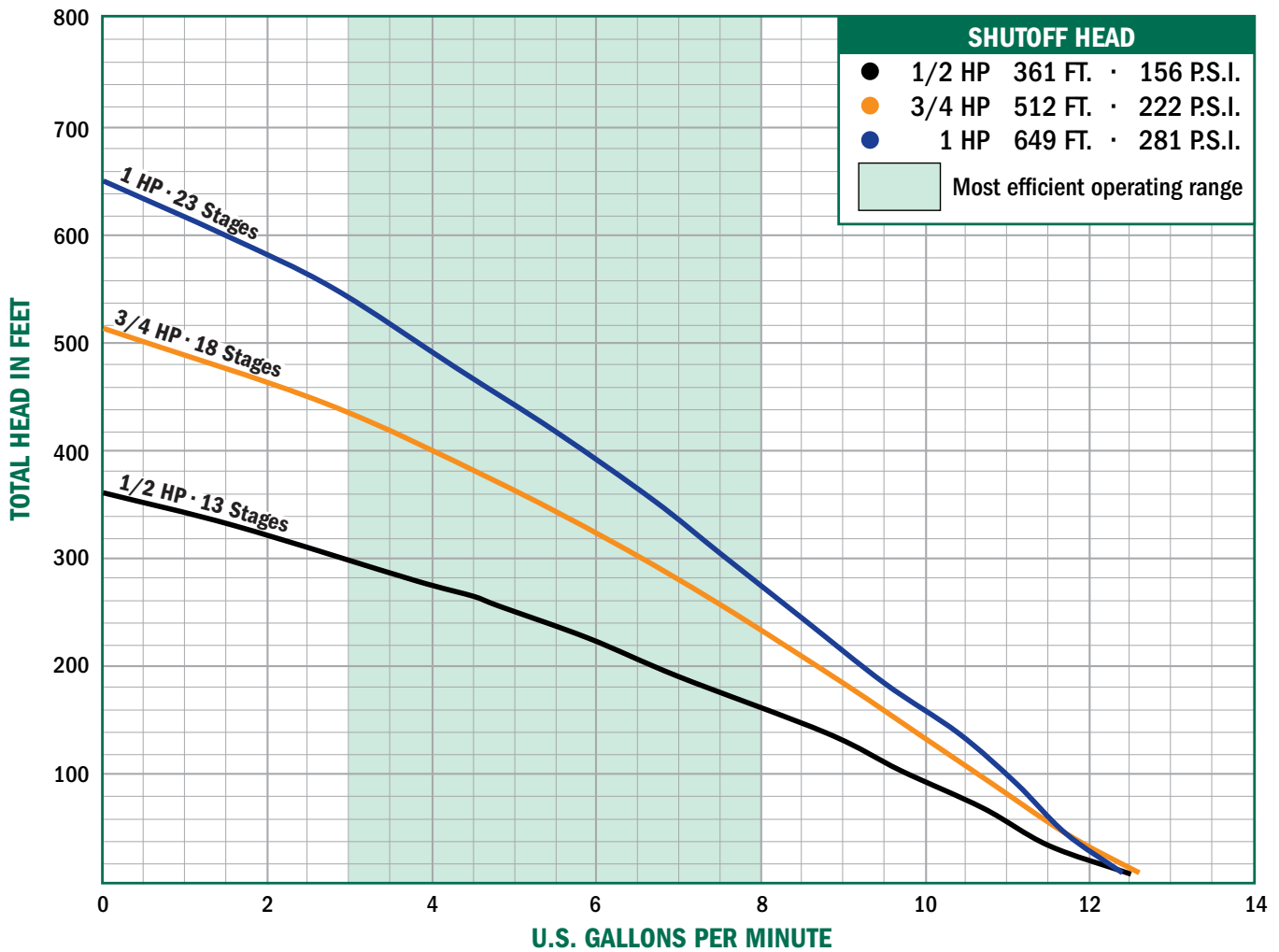
Output - in Gallons Per Minute (Depth to Water)

1/2 HP	PSI	25'	50'	75'	100'	125'	150'	175'	200'	225'	250'	275'	300'	325'
	0	11.9	11.2	10.5	9.8	9.1	8.4	7.6	6.8	6.0	5.0	4.1	3.0	1.8
30	10.0	9.2	8.5	7.8	7.0	6.1	5.3	4.3	3.2	2.1				
40	9.3	8.6	7.8	7.0	6.2	5.3	4.4	3.3	2.2					
50	8.6	7.9	7.1	6.3	5.4	4.4	3.4	2.3						
60	7.9	7.2	6.3	5.5	4.5	3.5	2.3							

3/4 HP	PSI	25'	50'	75'	100'	125'	150'	175'	200'	225'	250'	275'	300'	325'	350'	375'	400'	425'	450'
	0	12.2	11.7	11.2	10.7	10.2	9.7	9.2	8.7	8.1	7.6	7.1	6.5	5.9	5.3	4.7	4.0	3.3	2.6
30	0.8	10.3	9.8	9.3	8.8	8.3	7.7	7.2	6.6	6.1	5.5	4.9	4.2	3.5	2.7	1.9			
40	10.3	9.8	9.3	8.8	8.3	7.8	7.2	6.7	6.1	5.5	4.9	4.3	3.6	2.8	2.0				
50	9.9	9.4	8.9	8.3	7.8	7.3	6.7	6.2	5.6	4.9	4.3	3.6	2.9	2.0					
60	9.4	8.9	8.4	7.9	7.3	6.8	6.2	5.6	5.0	4.4	3.7	2.9	2.1						

FRICITION LOSSES IN RISER PIPE HAVE NOT BEEN CALCULATED

J Series - 5 GPM



Submersible Pumps

1 HP	PSI	50'	100'	150'	200'	250'	300'	350'	400'	450'	500'	550'	600'
	0	11.7	10.9	10.1	9.3	8.4	7.6	6.7	5.8	4.9	3.9	2.7	1.5
30	0.6	9.8	9.0	8.1	7.3	6.4	5.5	4.5	3.4	2.3			
40	10.2	9.4	8.6	7.7	6.9	6.0	5.0	4.0	2.9	1.7			
50	9.9	9.0	8.2	7.3	6.4	5.5	4.6	3.5	2.4				
60	9.5	8.6	7.8	6.9	6.0	5.1	4.1	3.0	1.8				

FRICTION LOSSES IN RISER PIPE
HAVE NOT BEEN CALCULATED

V Series - 7 GPM

A.Y. McDonald offers a full line of thermoplastic submersible pumps built for years of trouble free operation, with high-efficiency impellers and diffusers. These submersibles offer peak capacity performance in 5, 7, 10, 15, 20, and 25 gallons per minute (GPM). Other features include thermoplastic discharge head with a built-in check valve, and stainless steel shaft and coupling.

All V Series Thermoplastic pumps have 1 1/4" discharge with internal check valve and sizes range from 1/2 to 1 1/2 horse power (HP). Two or three wire models up to 1 1/2 horse power (HP).

Two Wire Single Phase

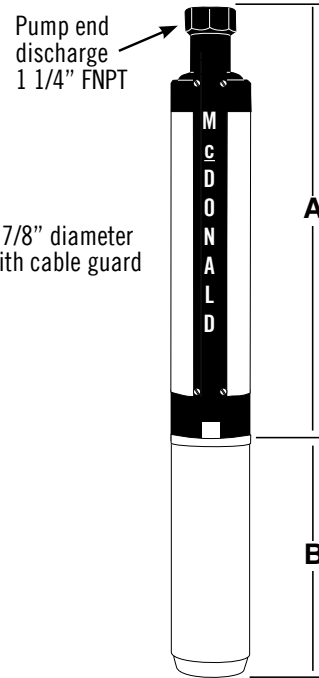
Model No.	HP	Stages	Volt	A	B	Wt.
22050V2A	1/2	9	115	14.23"	9.53"	23
22050V2	1/2	9	230	14.23"	9.53"	22
22075V2	3/4	12	230	16.67"	10.66"	26
22100V2	1	16	230	19.86"	11.75"	29
22150V2	1 1/2	21	230	24.33"	15.12"	40

Three Wire Single Phase

Model No.	HP	Stages	Volt	A	B	Wt.
22050V3A	1/2	9	115	14.23"	9.53"	23
22050V3	1/2	9	230	14.23"	9.53"	23
22075V3	3/4	12	230	16.67"	10.66"	26
22100V3	1	16	230	19.86"	11.75"	30
22150V3	1 1/2	21	230	24.33"	13.62"	38

4" Thermoplastic Pump Ends

Model No.	HP	Wt.
22050V	1/2	6
22075V	3/4	9
22100V	1	9
22150V	1 1/2	13



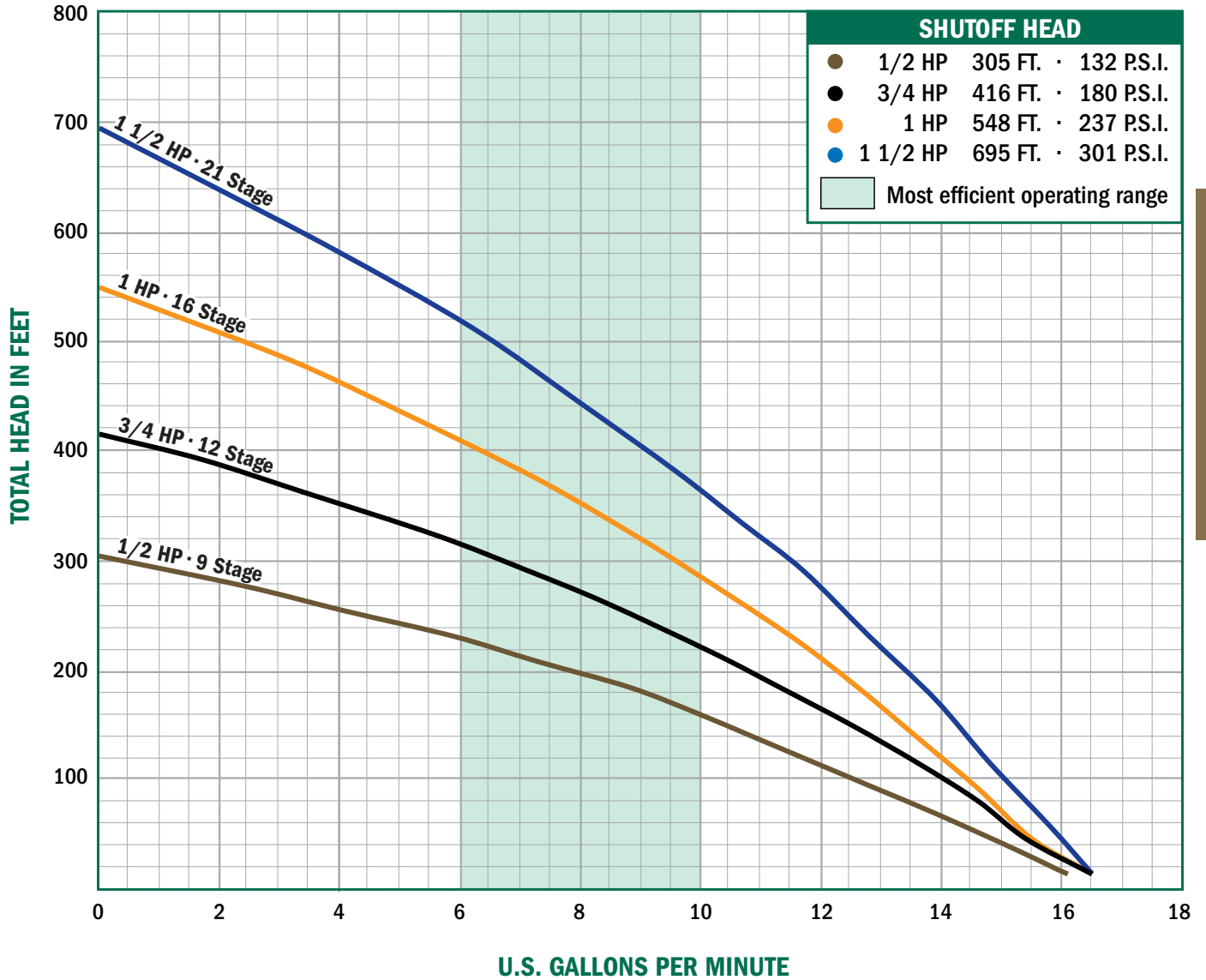
Output - in Gallons Per Minute (Depth to Water)

1/2 HP	PSI	25'	50'	75'	100'	125'	150'	175'	200'	225'	250'	275'
	0	15.6	14.6	13.6	12.6	11.5	10.4	9.2	7.8	6.3	4.5	2.5
30	12.8	11.8	10.7	9.5	8.2	6.7	5.0	3.0				
40	11.9	10.8	9.6	8.3	6.8	5.1	3.1					
50	10.9	9.7	8.4	6.9	5.2	3.3						
60	9.8	8.5	7.0	5.4	3.4	1.3						

3/4 HP	PSI	25'	50'	75'	100'	125'	150'	175'	200'	225'	250'	275'	300'	325'	350'	375'
	0	16.1	15.5	14.8	14.0	13.3	12.5	11.6	10.8	9.9	8.9	7.8	6.7	5.5	4.2	2.8
30	14.2	13.4	12.7	11.8	11.0	10.1	9.1	8.1	7.0	5.8	4.5	3.1	1.5			
40	13.5	12.7	11.9	11.0	10.1	9.2	8.2	7.1	5.9	4.6	3.2	1.7				
50	12.8	12.0	11.1	10.2	9.3	8.2	7.2	6.0	4.7	3.3	1.8					
60	12.0	11.2	10.3	9.3	8.3	7.2	6.1	4.8	3.4	1.9						

FRICITION LOSSES IN RISER PIPE HAVE NOT BEEN CALCULATED

V Series - 7 GPM



Submersible Pumps

1 HP	PSI	25'	50'	75'	100'	125'	150'	175'	200'	225'	250'	275'	300'	325'	350'	375'	400'	425'	450'	475'
	0	16.1	15.5	15.0	14.4	13.9	13.3	12.8	12.2	11.6	11.0	10.3	9.6	8.9	8.1	7.2	6.3	5.4	4.5	3.5
30	14.5	14.0	13.5	12.9	12.3	11.8	11.1	10.5	9.8	9.1	8.3	7.4	6.6	5.6	4.7	3.7	2.7			
40	14.0	13.5	12.9	12.4	11.8	11.2	10.5	9.9	9.1	8.3	7.5	6.6	5.7	4.7	3.8	2.8				
50	13.5	13.0	12.4	11.8	11.2	10.6	9.9	9.2	8.4	7.6	6.7	5.8	4.8	3.8	2.8					
60	13.0	12.5	11.9	11.3	10.6	10.0	9.2	8.5	7.6	6.8	5.8	4.9	3.9	2.9	1.9					

1 1/2 HP	PSI	50'	100'	150'	200'	250'	300'	350'	400'	450'	500'	550'	600'	650'
	0	15.9	15.1	14.3	13.4	12.4	11.4	10.4	9.2	7.9	6.5	5.0	3.4	1.6
30	14.8	13.9	13.0	12.1	11.0	9.9	8.7	7.4	5.9	4.4	2.7			
40	14.4	13.5	12.6	11.6	10.5	9.4	8.1	6.7	5.2	3.6	1.9			
50	14.0	13.1	12.1	11.1	10.0	8.8	7.5	6.0	4.5	2.8				
60	13.6	12.7	11.7	10.6	9.5	8.2	6.8	5.3	3.7	2.0				

FRICITION LOSSES IN RISER PIPE HAVE NOT BEEN CALCULATED

K Series - 10 GPM

A.Y. McDonald offers a full line of thermoplastic submersible pumps built for years of trouble free operation, with high-efficiency impellers and diffusers. These submersibles offer peak capacity performance in 5, 7, 10, 15, 20, and 25 gallons per minute (GPM). Other features include thermoplastic discharge head with a built-in check valve, and stainless steel shaft and coupling.

All K Series Thermoplastic pumps have 1 1/4" discharge with internal check valve and sizes range from 1/2 to 1 1/2 horse power (HP). Two or three wire models up to 1 1/2 horse power (HP).

Two Wire Single Phase

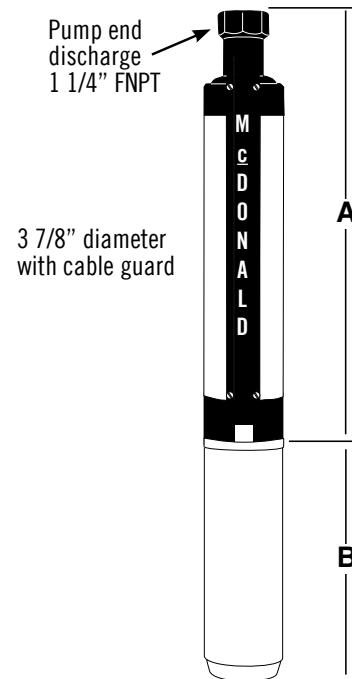
Model No.	HP	Stages	Volt	A	B	Wt.
22050K2A	1/2	7	115	12.3"	9.53"	23
22050K2	1/2	7	230	12.3"	9.53"	23
22075K2	3/4	9	230	13.7"	10.66"	27
22100K2	1	12	230	16.0"	11.75"	30
22150K2	1 1/2	16	230	19.7"	15.12"	41

Three Wire Single Phase

Model No.	HP	Stages	Volt	A	B	Wt.
22050K3A	1/2	7	115	12.3"	9.53"	27
22050K3	1/2	7	230	12.3"	9.53"	27
22075K3	3/4	9	230	13.7"	10.66"	29
22100K3	1	12	230	16.0"	11.75"	34
22150K3	1 1/2	16	230	19.7"	13.62"	42

4" Thermoplastic Pump Ends

Model No.	HP	Wt.
22050K	1/2	6
22075K	3/4	6
22100K	1	7
22150K	1 1/2	10



Output - in Gallons Per Minute (Depth to Water)

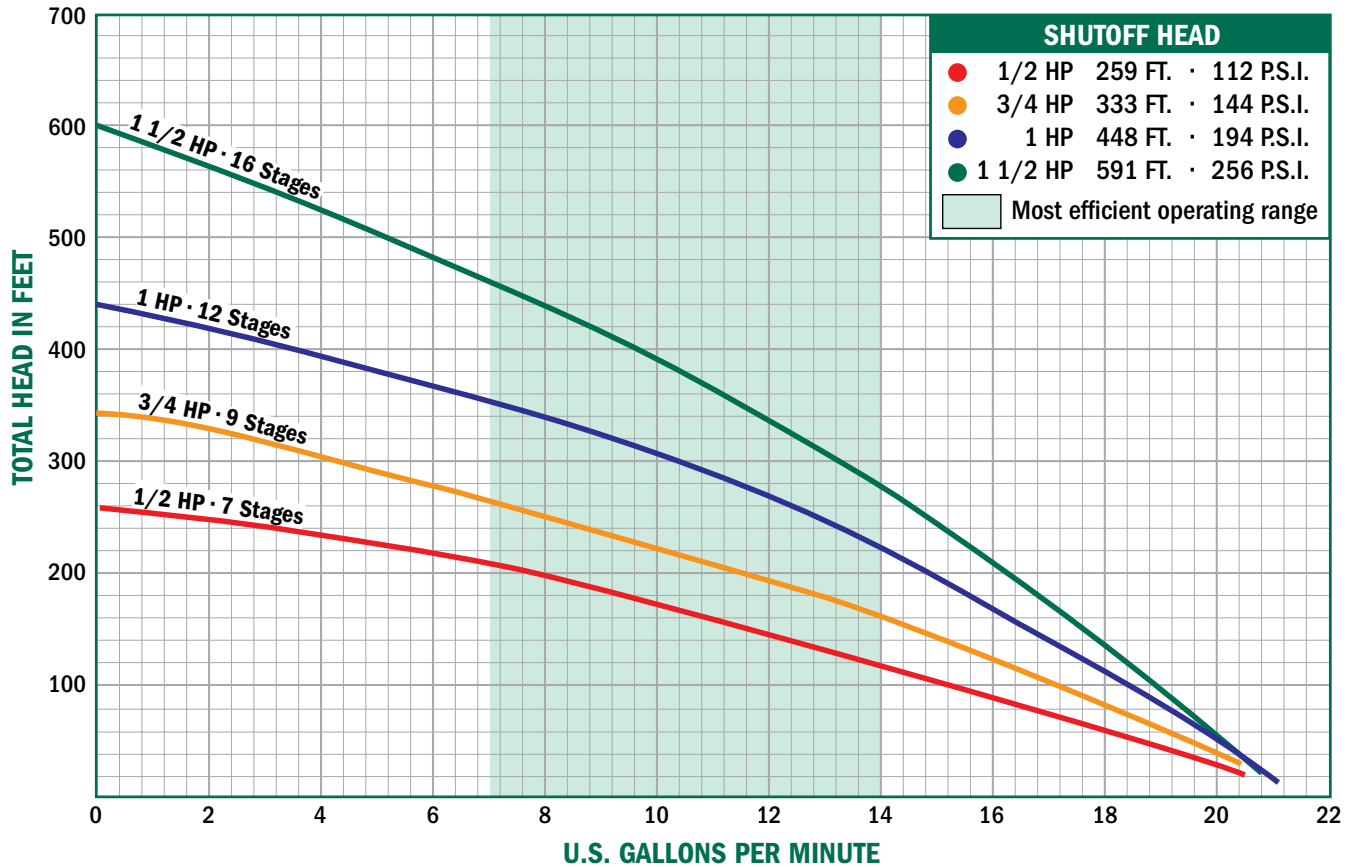
1/2 HP	PSI	25'	50'	75'	100'	125'	150'	175'	200'	225'	250'
	0	19.90	18.49	16.99	15.40	13.69	11.84	9.79	7.49	4.78	1.32
30	15.77	14.09	12.27	10.28	8.04	5.44	2.21				
40	14.22	12.42	10.44	8.22	5.66	2.49					
50	12.56	10.60	8.40	5.87	2.76						
60	10.75	8.58	6.08	3.03							

3/4 HP	PSI	25'	50'	75'	100'	125'	150'	175'	200'	225'	250'	275'	300'	325'
	0	20.36	19.26	18.12	16.93	15.67	14.35	12.95	11.45	9.83	8.05	6.06	3.75	0.89
30	17.20	15.97	14.66	13.28	11.80	10.21	8.47	6.54	4.31	1.61				
40	16.06	14.76	13.39	11.92	10.34	8.61	6.69	4.49	1.84					
50	14.86	13.49	12.03	10.46	8.75	6.85	4.67	2.07						
60	13.60	12.15	10.59	8.89	7.00	4.85	2.29							

FRICION LOSSES IN RISER PIPE HAVE NOT BEEN CALCULATED

K Series - 10 GPM

Submersible Pumps



1 HP	PSI	25'	50'	75'	100'	125'	150'	175'	200'	225'	250'	275'	300'	325'	350'	375'	400'	425'
	0	20.86	20.05	19.22	18.36	17.47	16.55	15.60	14.61	13.57	12.48	11.33	10.10	8.79	7.37	5.81	4.06	2.00
30	18.56	17.68	16.77	15.82	14.84	13.81	12.73	11.59	10.39	9.10	7.71	6.18	4.48	2.51	0.09			
40	17.75	16.84	15.89	14.91	13.89	12.81	11.68	10.48	9.20	7.82	6.30	4.61	2.67	0.29				
50	16.91	15.97	14.99	13.97	12.90	11.77	10.58	9.30	7.93	6.42	4.75	2.83	0.50					
60	16.04	15.06	14.05	12.98	11.86	10.67	9.40	8.04	6.54	4.89	2.99	0.70						

1 1/2 HP	PSI	50'	100'	150'	200'	250'	300'	350'	400'	450'	500'	550'
	0	20.18	18.95	17.66	16.31	14.87	13.34	11.69	9.89	7.88	5.58	2.80
30	18.46	17.15	15.76	14.29	12.72	11.01	9.14	7.03	4.58	1.51		
40	17.86	16.52	15.09	13.58	11.95	10.17	8.20	5.95	3.27			
50	17.25	15.87	14.41	12.84	11.15	9.29	7.20	4.78	1.78			
60	16.62	15.21	13.70	12.08	10.31	8.36	6.14	3.49	0.02			

FRICITION LOSSES IN RISER PIPE HAVE NOT BEEN CALCULATED

L Series - 15 GPM

A.Y. McDonald offers a full line of thermoplastic submersible pumps built for years of trouble free operation, with high-efficiency impellers and diffusers. These submersibles offer peak capacity performance in 5, 7, 10, 15, 20, and 25 gallons per minute (GPM). Other features include thermoplastic discharge head with a built-in check valve, and stainless steel shaft and coupling.

All L Series Thermoplastic pumps have 1 1/4" discharge with internal check valve and sizes range from 1/2 to 1 1/2 horse power (HP). Two or three wire models up to 1 1/2 horse power (HP).

Submersible Pumps

Two Wire Single Phase

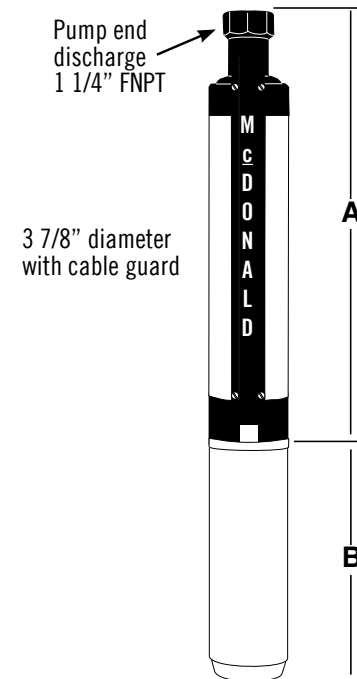
Model No.	HP	Stages	Volt	A	B	Wt.
22050L2A	1/2	6	115	13.55"	9.53"	23
22050L2	1/2	6	230	13.55"	9.53"	23
22075L2	3/4	8	230	15.71"	10.66"	27
22100L2	1	10	230	17.85"	11.75"	31
22150L2	1 1/2	13	230	21.07"	15.12"	39

Three Wire Single Phase

Model No.	HP	Stages	Volt	A	B	Wt.
22050L3A	1/2	6	115	13.55"	9.53"	23
22050L3	1/2	6	230	13.55"	9.53"	23
22075L3	3/4	8	230	15.71"	10.66"	27
22100L3	1	10	230	17.85"	11.75"	31
22150L3	1 1/2	13	230	21.07"	13.62"	36

4" Thermoplastic Pump Ends

Model No.	HP	Wt.
22050L	1/2	6
22075L	3/4	6
22100L	1	9
22150L	1 1/2	9



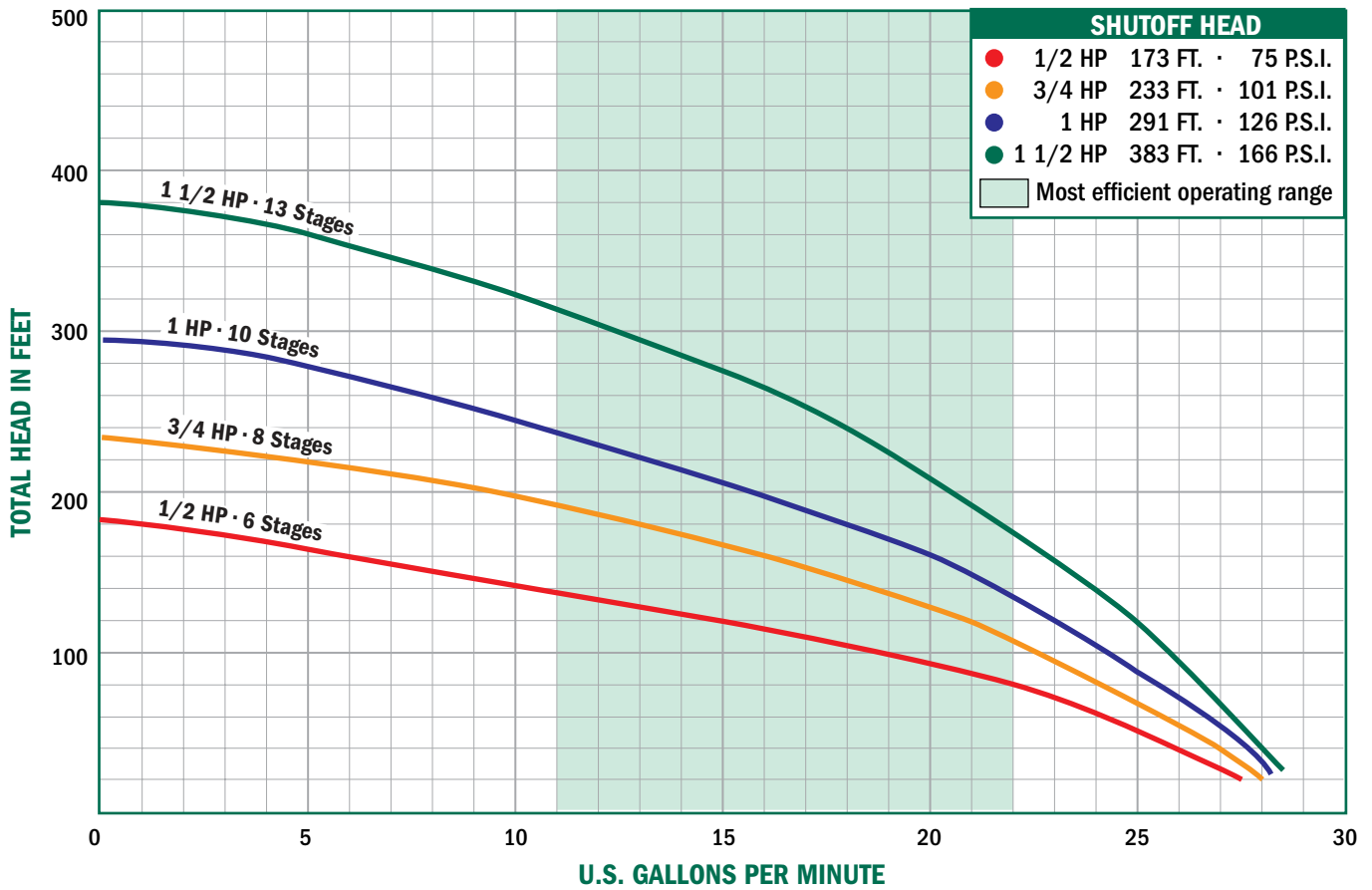
Output - in Gallons Per Minute (Depth to Water)

1/2 HP	PSI	25'	50'	75'	100'	125'	150'
	0	28.28	25.58	22.58	19.18	15.14	9.84
30	20.00	16.14	11.23	2.99			
40	16.46	11.66	3.99				
50	12.08	4.85					
60	5.63						

3/4 HP	PSI	25'	50'	75'	100'	125'	150'	175'	200'	225'
	0	28.58	26.69	24.66	22.46	20.05	17.33	14.17	10.21	4.08
30	22.98	20.62	17.98	14.94	11.22	5.91				
40	20.81	18.19	15.19	11.54	6.43					
50	18.40	15.44	11.85	6.92						
60	15.68	12.15	7.38							

FRICION LOSSES IN RISER PIPE HAVE NOT BEEN CALCULATED

L Series - 15 GPM



Submersible Pumps

1 HP	PSI	25'	50'	75'	100'	125'	150'	175'	200'	225'	250'	300'
	0	28.92	27.42	25.84	24.16	22.37	20.44	18.33	15.97	13.26	9.96	5.33
30	24.55	22.79	20.89	18.83	16.53	13.92	10.78	6.60				
40	22.93	21.04	18.99	16.72	14.13	11.05	6.99					
50	21.19	19.15	16.90	14.34	11.31	7.36						
60	19.31	17.08	14.55	11.56	7.71	0.50						

1 1/2 HP	PSI	50'	100'	150'	200'	250'	300'	350'
	0	28.02	25.72	23.20	20.39	17.15	13.20	7.62
30	24.78	22.16	19.20	15.74	11.35	4.06		
40	23.60	20.84	17.68	13.87	8.68			
50	22.37	19.44	16.03	11.73	4.93			
60	21.06	17.94	14.19	9.16				

FRICITION LOSSES IN RISER PIPE HAVE NOT BEEN CALCULATED

P Series - 20 GPM

A.Y. McDonald offers a full line of thermoplastic submersible pumps built for years of trouble free operation, with high-efficiency impellers and diffusers. These submersibles offer peak capacity performance in 5, 7, 10, 15, 20, and 25 gallons per minute (GPM). Other features include thermoplastic discharge head with a built-in check valve, and stainless steel shaft and coupling.

All P Series Thermoplastic pumps have 1 1/4" discharge with internal check valve and sizes range from 1/2 to 1 1/2 horse power (HP). Two or three wire models up to 1 1/2 horse power (HP).

Two Wire Single Phase

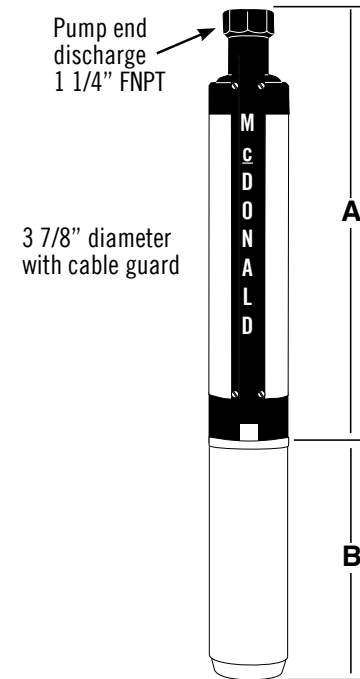
Model No.	HP	Stages	Volt	A	B	Wt.
22050P2A	1/2	5	115	12.48"	9.53"	23
22050P2	1/2	5	230	12.48"	9.53"	23
22075P2	3/4	7	230	14.63"	10.66"	27
22100P2	1	9	230	16.78"	11.75"	31
22150P2	1 1/2	12	230	20.00"	15.12"	41

Three Wire Single Phase

Model No.	HP	Stages	Volt	A	B	Wt.
22050P3A	1/2	5	115	12.02"	9.53"	23
22050P3	1/2	5	230	12.02"	9.53"	23
22075P3	3/4	7	230	14.17"	10.66"	26
22100P3	1	9	230	16.78"	11.75"	31
22150P3	1 1/2	12	230	20.00"	13.62"	37

4" Thermoplastic Pump Ends

Model No.	HP	Wt.
22050P	1/2	5
22075P	3/4	6
22100P	1	7
22150P	1 1/2	8



Output - in Gallons Per Minute (Depth to Water)

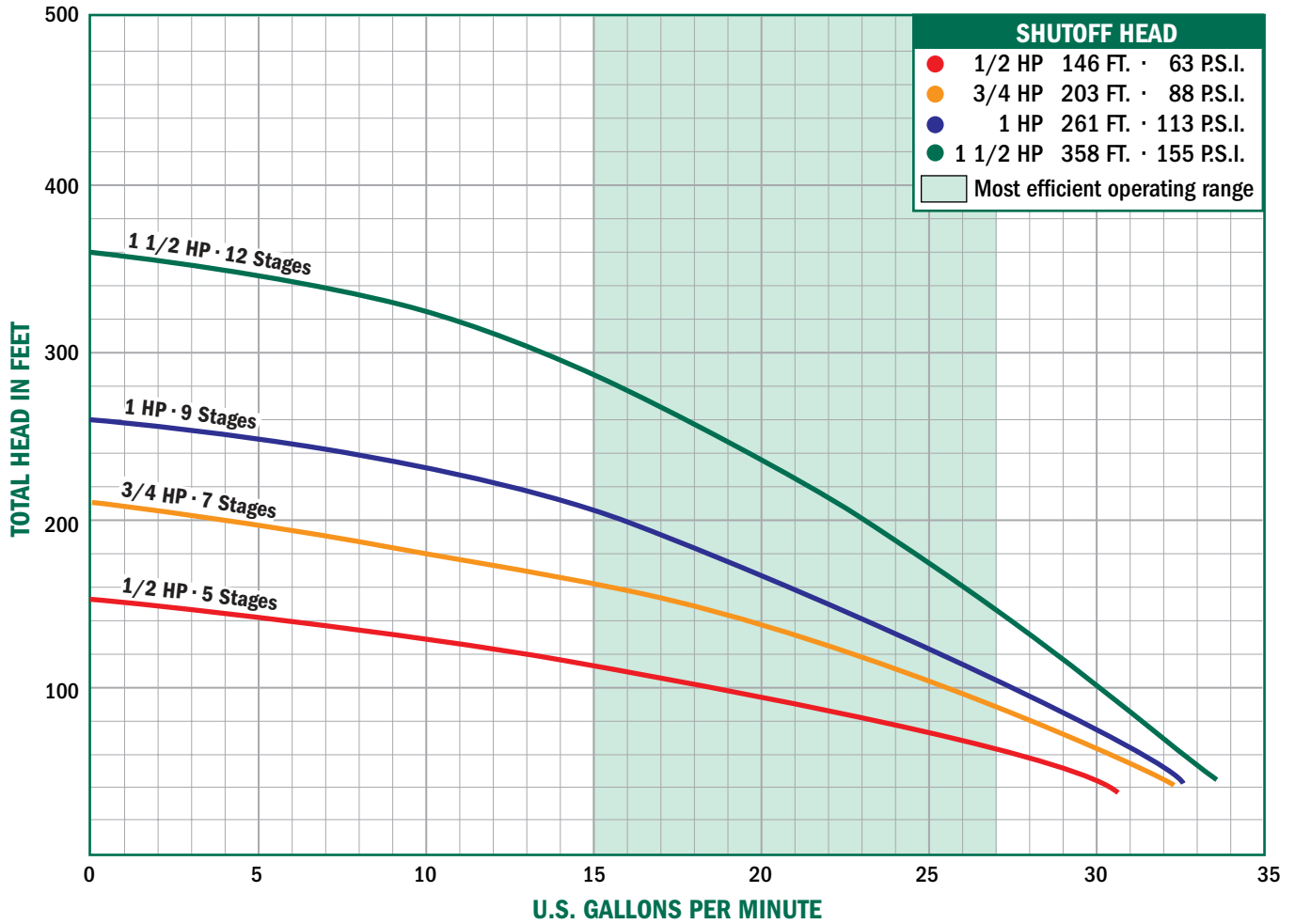
1/2 HP	PSI	25'	50'	75'	100'	125'
	0	32.34	28.61	24.35	19.26	12.48
	30	20.53	14.28	2.68		
	40	14.83	4.36			
	50	5.68				

3/4 HP	PSI	25'	50'	75'	100'	125'	150'	175'	200'
	0	32.36	29.82	27.06	24.01	20.58	16.54	11.39	2.53
	30	24.74	21.40	17.53	12.71	5.44			
	40	21.67	17.85	13.13	6.20				
	50	18.16	13.54	6.91					
	60	13.93	7.56						

FRICITION LOSSES IN RISER PIPE HAVE NOT BEEN CALCULATED

P Series - 20 GPM

Submersible Pumps



PSI	25'	50'	75'	100'	125'	150'	175'	200'	225'	250'
	0	33.30	31.39	29.36	27.19	24.84	22.26	19.37	16.02	11.88
30	27.70	25.39	22.87	20.06	16.84	12.92	7.49			
40	25.57	23.07	20.29	17.10	13.26	8.01				
50	23.27	20.51	17.36	13.58	8.50					
60	20.73	17.62	13.90	8.97						

PSI	50'	100'	150'	200'	250'	300'	350'
	0	32.95	29.95	26.64	22.90	18.50	12.88
30	28.71	25.26	21.30	16.53	10.04		
40	27.17	23.50	19.23	13.86	5.38		
50	25.53	21.62	16.93	10.65			
60	23.80	19.58	14.33	6.32			

FRICITION LOSSES IN RISER PIPE HAVE NOT BEEN CALCULATED

M Series - 25 GPM

A.Y. McDonald offers a full line of thermoplastic submersible pumps built for years of trouble free operation, with high-efficiency impellers and diffusers. These submersibles offer peak capacity performance in 5, 7, 10, 15, 20, and 25 gallons per minute (GPM). Other features include thermoplastic discharge head with a built-in check valve, and stainless steel shaft and coupling.

All M Series Thermoplastic pumps have 1 1/4" discharge with internal check valve and sizes range from 1/2 to 1 1/2 horse power (HP). Two or three wire models up to 1 1/2 horse power (HP).

Two Wire Single Phase

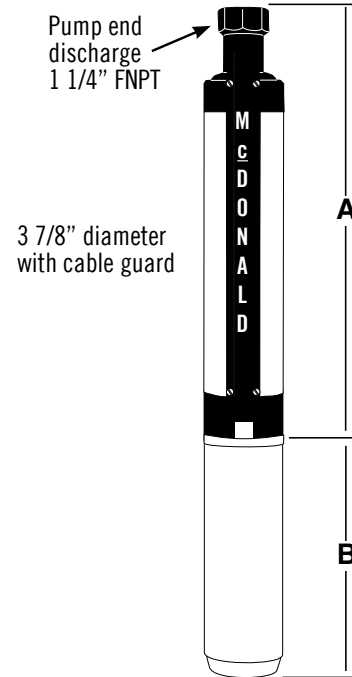
Model No.	HP	Stages	Volt	A	B	Wt.
22050M2A	1/2	4	115	10.94"	9.53"	23
22050M2	1/2	4	230	10.94"	9.53"	23
22075M2	3/4	5	230	12.48"	10.66"	25
22100M2	1	7	230	14.63"	11.75"	30
22150M2	1 1/2	9	230	16.78"	15.12"	39

Three Wire Single Phase

Model No.	HP	Stages	Volt	A	B	Wt.
22050M3A	1/2	4	115	10.94"	9.53"	23
22050M3	1/2	4	230	10.94"	9.53"	23
22075M3	3/4	5	230	12.48"	10.66"	25
22100M3	1	7	230	14.17"	11.75"	29
22150M3	1 1/2	9	230	16.78"	13.62"	35

4" Thermoplastic Pump Ends

Model No.	HP	Wt.
22050M	1/2	5
22075M	3/4	5
22100M	1	6
22150M	1 1/2	7



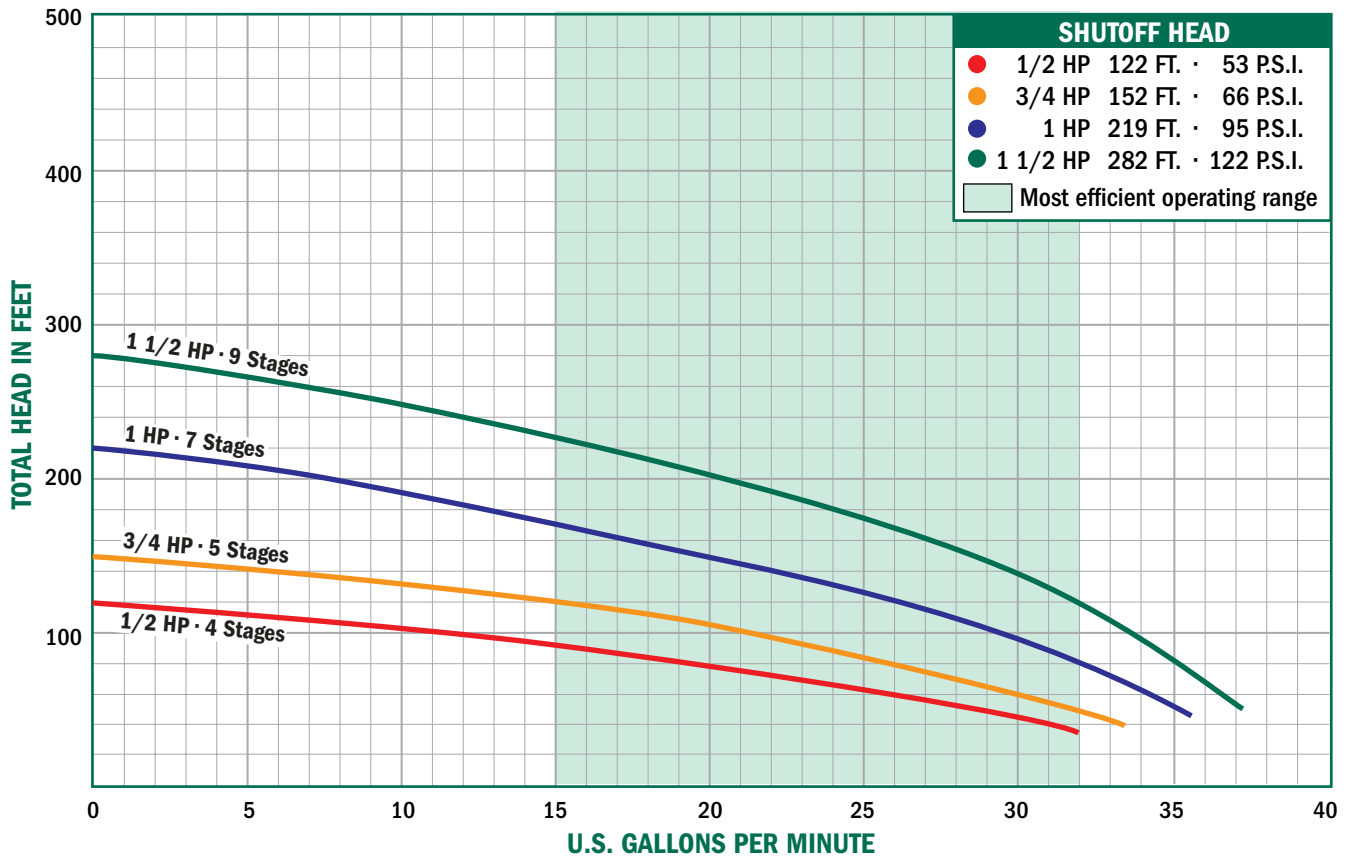
Output - in Gallons Per Minute (Depth to Water)

1/2 HP	PSI	25'	50'	75'	100'
	0	34.97	29.23	22.43	13.64
	30	15.93	2.93		
	40	4.38			

3/4 HP	PSI	25'	50'	75'	100'	125'	150'
	0	36.08	31.97	27.33	21.88	14.91	2.74
	30	23.22	16.71	6.80			
	40	17.27	7.85				
	50	8.81					

FRICITION LOSSES IN RISER PIPE HAVE NOT BEEN CALCULATED

M Series - 25 GPM



1 HP	PSI	25'	50'	75'	100'	125'	150'	175'	200'
	0	38.23	35.39	32.34	29.02	25.34	21.13	16.10	9.38
30	29.81	26.22	22.15	17.35	11.16				
40	26.50	22.48	17.75	11.71	1.28				
50	22.80	18.14	12.24	2.61					
60	18.53		3.73						

1 1/2 HP	PSI	25'	50'	75'	100'	125'	150'	175'	200'	225'	250'	275'
	0	40.00	37.82	35.52	33.08	30.47	27.63	24.52	21.01	16.91	11.76	3.56
30	33.65	31.08	28.30	25.26	21.85	17.91	13.07	6.06				
40	31.28	28.52	25.50	22.13	18.24	13.49	6.76					
50	28.74	25.74	22.40	18.56	13.90	7.42						
60	25.98		18.87	14.29	8.04							

FRICITION LOSSES IN RISER PIPE HAVE NOT BEEN CALCULATED

