



CHOOSING THE PERFECT PUMP

BY CALCULATING TOTAL DYNAMIC HEAD

CHART KEY:
■ Best Efficiency Point
■ Recommended Operating Range
■ Do Not Operate Range

1 PICK A LOOK AND SPECIFY A FLOW



THE LOOK YOU WANT IN GPH/FT \times THE WIDTH OF WATERFALL IN FEET = RECOMMENDED FLOW (GPH)

≈ 750 GPH PER FOOT

≈ 1500 GPH PER FOOT

≈ 2250 GPH PER FOOT

2 CHART A

GPH	FRICTION LOSS PER FOOT OF TUBING						
	TUBING SIZE						
	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	3"
100	0.10	0.01					
200	0.38	0.05	0.01				
300	0.83	0.10	0.02				
400	1.00	0.18	0.04	0.01			
500	2.23	0.27	0.06	0.02			
750		0.50	0.14	0.04	0.02		
1000		0.84	0.21	0.07	0.03		
1250		1.20	0.33	0.10	0.04	0.01	
1500			0.43	0.15	0.06	0.02	
2000			0.94	0.26	0.10	0.03	
3000			2.07	0.52	0.22	0.05	
4000				1.10	0.43	0.09	0.01
5000				1.80	0.67	0.15	0.02
6000					0.96	0.22	0.03
8000					1.77	0.38	0.05
10000						0.59	0.07
12000						0.84	0.10
15000							0.15
18000							0.25

(Example) GPH: 3000 Multiplier: 0.05 Tubing: 2"
 ** For flows over 10,000 GPH or lengths over 100 ft. please contact us.

CHART B

PVC Fittings	FRICTION IN EQUIVALENT FEET OF STRAIGHT PIPE						
	FITTING SIZE						
	3/4"	1"	1 1/4"	1 1/2"	2"	3"	
Std Elbow, 90 degree	4.5	5.5	7.0	7.5	8.5	11.0	
Std Elbow, 45 degree	1.0	1.5	2.0	2.5	3.0	4.0	
Male / Female Adapter	1.5	2.0	3.0	3.5	4.5	6.5	
Tee (Straight Thru)	2.5	3.0	5.0	6.0	8.0	12.0	
Tee (Thru Branch)	5.5	7.0	9.0	10.0	12.0	17.0	
Swing Check Valve	9.0	11.0	13.0	15.0	19.0	27.0	

SELECT TUBING & MULTIPLIER

Find the dark blue cell that corresponds with the **Recommended Flow (GPH)** in CHART A (left). The column indicates the recommended tubing size and the number in the cell is the **Multiplier**, the friction in every foot of tubing.

For existing systems, use the **Multiplier** that corresponds to the actual flow and tubing size.

ADD EQUIVALENT TUBING LENGTHS

Add the equivalent lengths of all the fittings in the system, from CHART B (below left), to the tubing length from pump to falls to find **Equivalent Tubing Length**.

FITTING LENGTH IN FEET + TUBING LENGTH IN FEET = EQUIVALENT TUBING LENGTH IN FEET

CALCULATE FRICTION HEAD

Multiply the **Equivalent Tubing Length** in feet by the **Multiplier** in the dark blue cell from CHART A (above left), to find the **Friction Head** in feet of tubing and fittings.

EQUIVALENT TUBING LENGTH IN FEET \times MULTIPLIER FROM CHART = FRICTION HEAD IN FEET

3 FIND THE TOTAL DYNAMIC HEAD

Add the **Friction Head in Feet** to the **Vertical Head** of this feature. Vertical Head is the height in feet from the surface of the water the pump will be sitting in, to the highest point the water is pumped to.

FRICTION HEAD IN FEET + VERTICAL HEAD IN FEET = TDH

4 CHOOSE YOUR PUMP

Locate your **Total Dynamic Head** at the top of the CHART C (right), follow that column down to find a corresponding dark blue cell with the **Recommended Flow**. Now you have found the right pump(s) with the right **Flow** at the right **TDH**!

CHART C

Model #	Watts	TOTAL DYNAMIC HEAD (TDH) IN FEET												
		Max	5'	10'	15'	20'	25'	30'	35'	40'	45'	50'	55'	
MD-SERIES														
MD250	15	300												
MD350	25	370	145											
MD550	40	650	385											
MD750	50	790	465											
MD1000	90	1080	785	275										
MD1250	120	1330	1040	580										
MD1500	165	1560	1255	780										
MD2000	250	2010	1695	1320	695									
TT-SERIES														
TT1500	101	1640	1060	350										
TT2000	115	2640	1760	715										
TT3000	173	3000	2180	1215	475									
TT4000	230	4490	3330	1785	700									
TT5000	310	5150	4255	3170	1615	395								
TT6000	334	6600	4915	3065	1480	265								
TT9000	587	9200	7795	6210	4490	2695	1125							
TW-SERIES														
TW1200	110	1290	1080	720										
TW1900	130	1900	1440	900										
TW2400	175	2400	1950	1390	825									
TW3700	355	3730	3010	2230	1425									
TW4800	425	4800	4000	3140	2230	1260								
TW6000	495	6000	5040	4050	3000	1930								
SH-SERIES														
SH1450	240	1450	1170	650										
SH2050	320	2050	1700	1130										
SH3600	575		3245	2750	2090									
SH5000	950		4350	3620	2800									
SH6500	1000			4875	4000	3080								
PAF-SERIES														
PAF-20	360		2800	1950	1080									
PAF-25	545		3900	3150	2300									
PAF-40	650			4350	3570	2700								
PAF-75	900				4560	3750	2830							
A-SERIES														
A-05	645				2155	1875	1450	935						
A-05L	725			4320	3600	2820	1920							
A-21	1060				4335	3770	3140	2400						
A-31	1160			8150	6830	5535	4120	2535						
A-32	2055						8280	7560	6780	5580	4920			
L-SERIES														
L-305	710		10380	7380										
L-310	1105		13500	10560	7380									

