

PMT-IP Sizing Table



Pipe Inside Diameter		Throat Diameter		Beta Ratio	Overall Length		Outlet Diameter		ΔP = Differential Pressure of 100" wc (24.864 kPa)						
(inches)	(mm)	(inches)	(mm)		(inches)	(mm)	(inches)	(mm)	Water Flow at 60 F (16 C)				ΔH = Headloss		
									US GPM	US MGD	LPS	m ³ /d	R _D (10 ⁻³)	in. wc	kPa
3.000	76.2	1.609	40.87	0.5363	6.30	160.0	2.50	63.5	128.02	0.184	8.08	697.86	121	4.1	1.02
3.000	76.2	1.798	45.67	0.5993	5.55	140.97	2.60	66.0	160.16	0.231	10.10	873.01	151	3.7	0.92
3.000	76.2	2.171	55.14	0.7237	4.05	102.9	2.70	68.6	239.64	0.345	15.12	1306.29	226	2.9	0.73
4.000	101.6	1.800	45.72	0.4500	9.80	248.9	3.30	83.8	161.16	0.232	10.17	878.50	114	4.9	1.21
4.000	101.6	2.203	55.96	0.5508	8.20	208.3	3.40	86.4	239.98	0.346	15.14	1308.12	170	4.0	0.99
4.000	101.6	2.814	71.48	0.7035	5.75	146.1	3.60	91.4	399.78	0.576	25.22	2179.22	282	3.1	0.76
6.000	152.4	2.529	64.24	0.4215	15.25	387.4	4.90	124.5	319.37	0.460	20.15	1740.86	150	5.3	1.31
6.000	152.4	3.114	79.10	0.5190	13.10	332.7	5.10	129.5	479.75	0.691	30.27	2615.10	226	4.2	1.05
6.000	152.4	4.000	101.60	0.6667	8.70	221.0	5.20	132.1	800.08	1.152	50.48	4361.26	377	3.3	0.82
6.000	152.4	4.428	112.47	0.7380	7.60	193.0	5.50	139.7	1002.89	1.444	63.27	5466.74	472	2.8	0.71
8.000	203.2	3.466	88.04	0.4333	20.00	508.0	6.50	165.1	598.84	0.862	37.78	3264.27	211	5.1	1.27
8.000	203.2	4.018	102.06	0.5023	18.00	457.2	6.70	170.2	799.35	1.151	50.43	4357.27	282	4.3	1.08
8.000	203.2	4.919	124.94	0.6149	14.60	370.8	7.05	179.1	1200.38	1.729	75.73	6543.25	424	3.6	0.90
8.000	203.2	5.978	151.84	0.7473	10.50	266.7	7.40	188.0	1835.83	2.644	115.82	10007.10	648	2.8	0.69
10.000	254.0	3.991	101.37	0.3991	26.25	666.8	8.00	203.2	798.27	1.150	50.36	4351.38	226	5.7	1.41
10.000	254.0	4.919	124.94	0.4919	22.85	580.4	8.40	213.4	1198.83	1.726	75.63	6534.83	339	4.4	1.10
10.000	254.0	6.343	161.11	0.6343	15.90	403.9	8.55	217.2	2000.64	2.881	126.22	10905.48	565	3.5	0.87
10.000	254.0	6.907	175.44	0.6907	12.50	317.5	8.60	218.4	2399.48	3.455	151.38	13079.57	678	3.2	0.79
12.000	304.8	4.892	124.26	0.4077	31.15	791.2	9.70	246.4	1197.62	1.725	75.56	6528.24	282	5.5	1.37
12.000	304.8	5.675	144.15	0.4729	28.30	718.8	10.00	254.0	1598.10	2.301	100.82	8711.24	376	4.6	1.14
12.000	304.8	6.966	176.94	0.5805	23.45	595.6	10.35	262.9	2401.22	3.458	151.49	13089.04	565	3.8	0.95
12.000	304.8	8.000	203.20	0.6667	17.25	438.2	10.40	264.2	3200.34	4.608	201.91	17445.02	753	3.3	0.82
14.000	355.6	5.600	142.24	0.4000	36.65	930.9	11.30	287.0	1571.43	2.263	99.14	8565.86	317	5.7	1.41
14.000	355.6	6.958	176.73	0.4970	30.35	770.9	11.45	290.8	2397.87	3.453	151.28	13070.78	484	4.4	1.09
14.000	355.6	8.044	204.32	0.5746	24.00	609.6	11.50	292.1	3201.12	4.610	201.96	17449.26	646	3.9	0.96
14.000	355.6	9.757	247.83	0.6969	22.45	570.2	12.00	304.8	4796.68	6.907	302.62	26146.69	968	3.1	0.78
16.000	406.4	6.932	176.07	0.4333	40.00	1016.0	13.10	332.7	2395.36	3.449	151.12	13057.09	423	5.1	1.27
16.000	406.4	8.036	204.11	0.5023	35.10	891.5	13.25	336.6	3197.41	4.604	201.73	17429.08	565	4.3	1.08
16.000	406.4	9.838	249.89	0.6149	24.40	619.8	13.30	337.8	4801.51	6.914	302.93	26173.02	848	3.6	0.90
16.000	406.4	11.255	285.88	0.7034	21.15	537.2	13.35	339.1	6395.28	9.209	403.48	34860.64	1129	3.1	0.77
18.000	457.2	8.011	203.48	0.4451	44.20	1122.7	14.80	375.9	3194.15	4.600	201.52	17411.30	501	4.9	1.23
18.000	457.2	8.984	228.19	0.4991	39.80	1010.9	15.00	381.0	3997.05	5.756	252.17	21787.88	627	4.4	1.08
18.000	457.2	9.849	250.16	0.5472	34.75	882.7	15.05	382.3	4796.52	6.907	302.61	26145.79	753	4.0	1.00
18.000	457.2	11.350	288.29	0.6306	25.80	655.3	15.10	383.5	6402.53	9.220	403.94	34900.14	1005	3.5	0.88
18.000	457.2	12.592	319.84	0.6996	30.85	783.6	15.80	401.3	7995.36	11.513	504.43	43582.66	1255	3.1	0.77
20.000	508.0	8.959	227.56	0.4480	48.90	1242.1	16.50	419.1	3993.44	5.751	251.95	21768.23	564	4.9	1.22
20.000	508.0	9.839	249.91	0.4920	45.60	1158.2	16.75	425.5	4796.26	6.907	302.60	26144.36	678	4.4	1.10
20.000	508.0	11.377	288.98	0.5689	36.80	934.7	16.80	426.7	6402.11	9.219	403.91	34897.88	904	3.9	0.97
20.000	508.0	13.813	350.85	0.6907	29.80	756.9	16.85	428.0	9596.26	13.819	605.43	52309.16	1356	3.2	0.79
24.000	609.6	9.783	248.49	0.4076	62.10	1577.3	19.40	492.8	4789.55	6.897	302.17	26107.81	564	5.5	1.37
24.000	609.6	11.349	288.26	0.4729	56.40	1432.6	20.00	508.0	6391.31	9.203	403.23	34838.97	752	4.6	1.14
24.000	609.6	13.931	353.85	0.5805	43.90	1115.1	20.50	520.7	9603.49	13.829	605.89	52348.54	1131	3.8	0.95
24.000	609.6	16.000	406.40	0.6667	31.50	800.1	20.60	523.2	12801.35	18.434	807.64	69780.09	1507	3.3	0.82
30.000	762.0	11.265	286.13	0.3755	81.70	2075.2	24.00	609.6	6388.62	9.200	403.06	34824.32	602	6.2	1.54
30.000	762.0	12.645	321.18	0.4215	76.65	1946.9	24.40	619.8	7984.15	11.497	503.72	43521.56	752	5.3	1.31
30.000	762.0	16.086	408.58	0.5362	64.05	1626.9	25.70	652.8	12796.05	18.426	807.31	69751.20	1205	4.1	1.02
30.000	762.0	17.975	456.57	0.5992	57.00	1447.8	26.40	670.6	16006.49	23.049	1009.85	87251.26	1507	3.7	0.92
30.000	762.0	21.711	551.46	0.7237	40.40	1026.2	27.40	696.0	23966.72	34.512	1512.07	130642.44	2257	2.9	0.73
36.000	914.4	16.022	406.96	0.4451	85.00	2159.0	29.00	736.6	12776.60	18.398	806.08	69645.18	1003	4.9	1.23
36.000	914.4	19.705	500.51	0.5474	71.50	1816.1	30.35	770.9	19199.71	27.648	1211.31	104657.48	1507	4.0	1.00
36.000	914.4	22.004	558.90	0.6112	62.90	1597.7	31.20	792.5	24011.01	34.576	1514.86	130883.85	1884	3.6	0.91
36.000	914.4	25.183	639.65	0.6995	50.70	1287.8	32.40	823.0	31978.64	46.049	2017.54	174315.31	2510	3.1	0.77
42.000	1066.8	17.889	454.38	0.4259	102.60	2606.0	33.65	854.7	15968.98	22.995	1007.49	87046.81	1074	5.2	1.29
42.000	1066.8	19.653	499.19	0.4679	96.25	2444.8	34.30	871.2	19175.04	27.612	1209.76	104523.00	1290	4.7	1.16
42.000	1066.8	22.023	559.38	0.5244	87.50	2222.5	35.20	894.1	23991.09	34.547	1513.60	130775.25	1614	4.2	1.04
42.000	1066.8	25.414	645.52	0.6051	74.90	1902.5	36.40	924.6	32011.92	46.097	2019.64	174496.77	2153	3.7	0.91
42.000	1066.8	30.664	778.87	0.7301	54.70	1389.4	38.35	974.1	47931.20	69.021	3023.99	261272.64	3224	2.9	0.72
48.000	1219.2	19.567	497.00	0.4076	121.80	3093.7	38.40	975.4	19160.10	27.591	1208.81	104441.57	1128	5.5	1.37
48.000	1219.2	21.957	557.71	0.4574	113.10	2872.7	39.25	997.0	23960.63	34.503	1511.68	130609.21	1410	4.8	1.19
48.000	1219.2	25.437	646.10	0.5299	100.50	2552.7	40.50	1028.7	32001.03	46.081	2018.95	174437.38	1884	4.1	1.03
48.000	1219.2	31.045	788.54	0.6468	79.40	2016.8	42.55	1080.8	48015.77	69.143	3029.32	261733.63	2826	3.4	0.85
48.000	1219.2	35.353	897.97	0.7365	62.80	1595.1	44.20	1122.68	63885.85	91.996	4030.57	348241.34	3760	2.9	0.71

This sizing table can be used as a guide to aid the user in choosing the proper insert PMT for a given application and reflects the most commonly-used sizes. Other sizes and special geometries are available, often at no additional cost. Depending on the details of your application, a more appropriate selection, or a more accurate estimation of the performance of a given selection, may be available. Wyatt Engineering encourages users to contact their local Wyatt-Badger representatives, or call us directly, for definitive sizing information.

Incompressible Flow Relationships:

$\Delta P_N = 100 (Q_N / Q)^2$
 $\Delta H_N = \Delta H (Q_N / Q)^{1.88}$
 $Q_N = Q (\Delta P / 100)^{0.5}$

Examples:

For a 30.00" x 21.711" PMT-IP or PMT-IL, find
 ΔP at 50 000 US GPM
 ΔH at 50 000 US GPM
 Q_N at 750" wc

Solutions:

Found using the "Incompressible Flow Relationships"
 $\Delta P_N = 100 (50\ 000 / 23\ 966.72)^2 = 435.24"$ wc
 $\Delta H_N = 2.9 (50\ 000 / 23\ 966.72)^{1.88} = 11.6"$ wc
 $Q_N = 23\ 966.72 (750 / 100)^{0.5} = 65\ 635.57$ US GPM