Measuring Flow (Orifice Method)

200.E.07

Measuring Water Using An Orifice

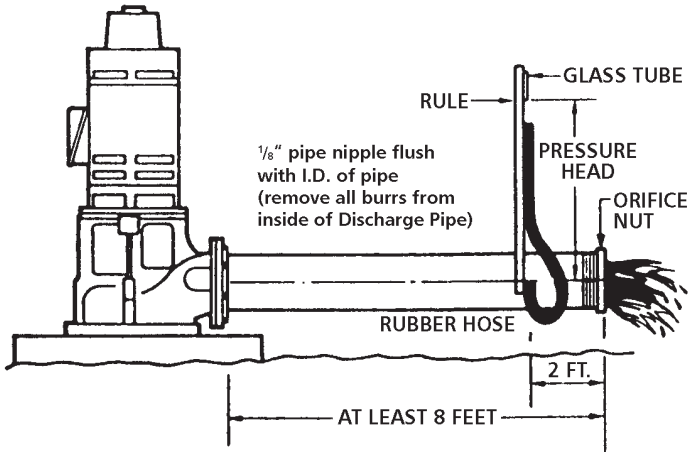
The use of an orifice is one of the simplest methods of accurately measuring the discharge from a vertical turbine pump in the field. The equipment and method is as illustrated.

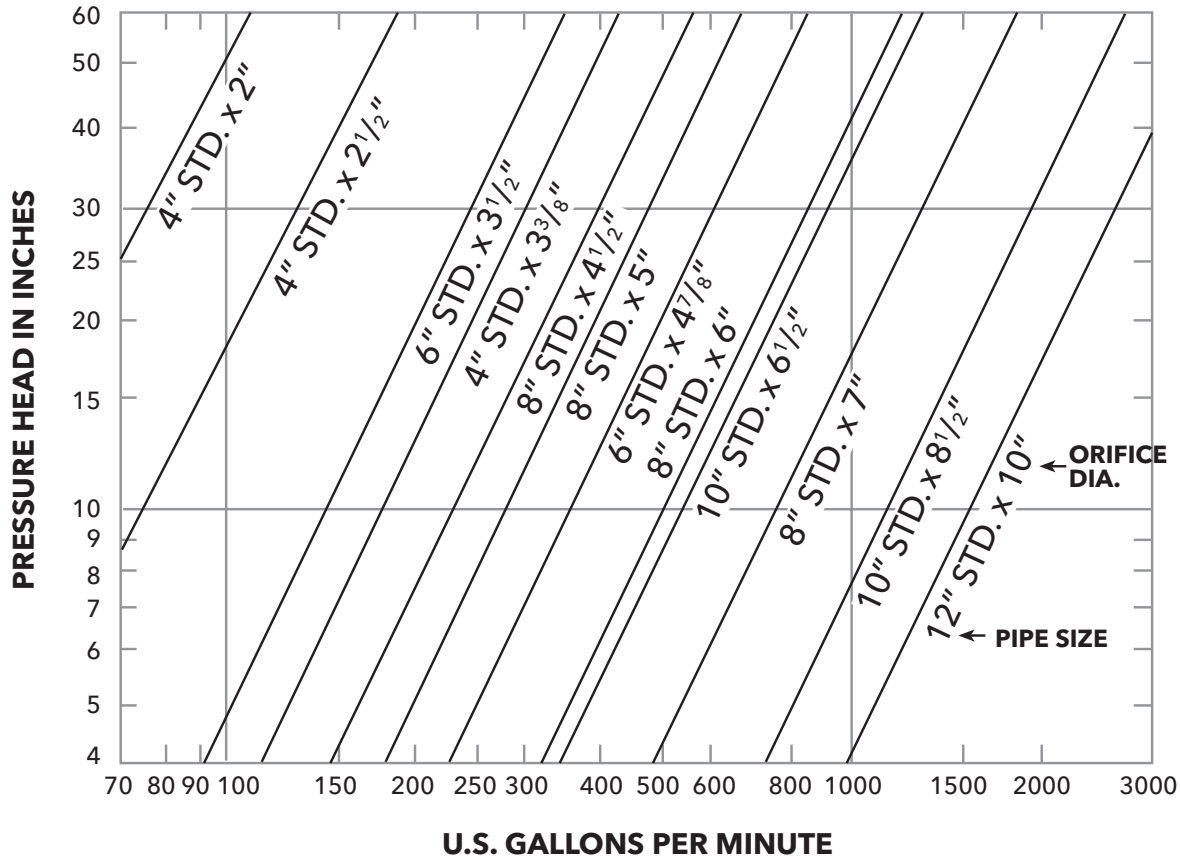
a. Discharge pipe must be horizontal and measuring tube connection in center of pipe.

b. Pipe must be flowing full with clear water free of sand and air, with a minimum pressure head 2" above top of pipe.

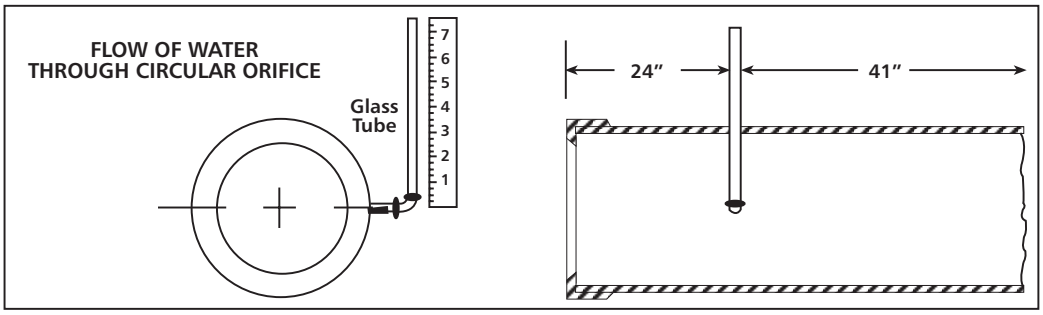
c. Pressure head is the vertical distance from the horizontal center line of the orifice to the level of the water in the measuring tube.

d. Rubber hose and glass tube must be free of air bubbles.





Measuring Flow (Orifice Method for Water)
200.E.08



Flow in Gallons Per Minute

Head in Inches	3.000" Orifice 4" Pipe	4.000" Orifice 6" Pipe	5.000" Orifice 6" Pipe	6.000" Orifice 8" Pipe	8.000" Orifice 10" Pipe	10.000" Orifice 12" Pipe
6	108	160	305	408	825	1200
6½	111	167	316	421	850	1250
7	115	172	328	433	878	1300
7½	119	179	339	446	906	1350
8	122	185	350	458	935	1400
8½	125	190	361	471	963	1440
9	128	195	372	483	992	1480
9½	130	200	383	495	1016	1520
10	133	205	393	508	1040	1560
10½	137	210	402	521	1060	1600
11	140	215	412	533	1080	1635
11½	143	220	421	545	1100	1670
12	146	225	430	556	1120	1705
12½	149	230	439	567	1139	1740
13	151	234	448	578	1158	1775
13½	154	239	457	589	1176	1810
14	157	243	465	599	1194	1845
14½	159	247	473	609	1212	1875
15	162	250	480	618	1230	1905
15½	164	254	488	637	1248	1940
16	167	257	495	636	1266	1970
16½	170	261	503	645	1284	2000
17	172	264	510	654	1302	2030
17½	175	268	517	663	1319	2060
18	178	271	524	672	1336	2089
18½	180	275	530	681	1353	2118
19	183	278	536	690	1370	2146
19½	185	282	542	699	1387	2175
20	187	285	548	708	1404	2204
20½	190	289	554	717	1421	2232
21	192	292	560	726	1438	2260
21½	195	295	566	735	1455	2288
22	197	299	572	744	1471	2316
22½	199	302	578	752	1486	2343
23	201	305	584	760	1500	2360
23½	203	307	590	768	1515	2382
24	205	310	596	776	1529	2409
24½	207	314	602	784	1543	2435
25	210	317	608	791	1557	2461
25½	212	320	614	798	1571	2487
26	214	323	620	805	1585	2513
26½	216	326	626	812	1599	2539
27	219	329	632	818	1613	2565
27½	221	332	638	825	1627	2590
28	222	335	644	831	1641	2610
28½	224	337	650	838	1655	2630
29	226	340	656	844	1669	2650
29½	228	343	662	851	1683	2670
30	230	346	668	857	1697	2690
30½	232	348	674	863	1711	2713
31	235	351	680	869	1725	2736
31½	236	354	686	876	1739	2759
32	239	357	692	882	1753	2782
32½	240	360	697	889	1767	2806
33	242	363	703	895	1781	2828
33½	244	366	709	901	1795	2850
34	246	369	715	907	1809	2873

Head in Inches	3.000" Orifice 4" Pipe	4.000" Orifice 6" Pipe	5.000" Orifice 6" Pipe	6.000" Orifice 8" Pipe	8.000" Orifice 10" Pipe	10.000" Orifice 12" Pipe
34½	248	372	720	913	1823	2896
35	250	375	726	919	1837	2919
35½	252	377	732	925	1851	2941
36	254	380	737	931	1865	2964
36½	256	383	743	937	1879	2980
37	257	385	748	943	1893	3002
37½	259	388	754	949	1904	3024
38	260	390	759	955	1915	3046
38½	262	393	765	961	1926	3068
39	263	396	770	967	1936	3088
39½	265	398	776	974	1948	3110
40	266	401	781	979	1960	3130
40½	267	403	786	985	1972	3146
41	269	406	790	990	1983	3160
41½	271	408	795	996	1994	3179
42	272	411	800	1001	2006	3199
42½	274	413	805	1007	2018	3219
43	275	415	810	1012	2030	3230
43½	277	418	815	1018	2041	3250
44	278	420	820	1023	2052	3263
44½	280	422	824	1029	2063	3280
45	281	425	828	1034	2074	3298
45½	283	427	832	1040	2085	3316
46	284	429	837	1045	2096	3334
46½	285	432	842	1051	2107	3351
47	287	434	847	1056	2118	3368
47½	289	437	851	1062	2129	3389
48	290	440	855	1067	2140	3405
48½	292	442	859	1073	2151	3426
49	293	444	863	1078	2162	3443
49½	294	446	868	1084	2172	3460
50	296	448	872	1089	2182	3477
50½	298	450	876	1095	2192	3494
51	300	453	880	1100	2202	3511
51½	301	455	884	1105	2212	3527
52	302	457	888	1110	2222	3544
52½	303	459	892	1115	2232	3560
53	304	461	896	1120	2242	3575
53½	305	463	900	1125	2252	3591
54	307	465	904	1130	2262	3602
54½	309	467	908	1135	2272	3618
55	310	469	912	1140	2282	3634
55½	311	471	915	1145	2291	3650
56	313	472	919	1150	2300	3667
56½	314	474	923	1155	2309	3684
57	315	476	927	1160	2318	3702
57½	316	478	930	1165	2326	3719
58	317	480	934	1170	2334	3736
58½	318	482	938	1175	2341	3752
59	320	485	942	1180	2348	3768
59½	321	487	945	1185	2355	3784
60	323	489	948	1190	2362	3800

CAUTION: Orifice pipe must be level. Piezometer tube must enter at center of pipe. Piezometer tube must be flush with inside of pipe. Orifice opening must be accurately sized. Edges of orifice must be sharp. Water must be free of gas and air.

Xylem Inc.
www.xyleminc.com/brands/gouldswatertechnology

GOULDS WATER TECHNOLOGY
a xylem brand