SIZING AND PLACEMENT OF HYDROTROLS

All Sizing and Placement Data is in Accordance with Plumbing and Drainage Institute Standard PDI WH-201

SIZING - Single and Multiple Fixture Branch Lines

Most engineers employ the fixture unit method of sizing water piping systems. Smith uses the P.D.I. simplified method of sizing HYDROTROLS based on fixture unit weight. The correct size HYDROTROL can therefore be specified and located at the same time that the pipe sizes are determined.

Table 1 indicates the fixture unit weights for most popular plumbing fixtures and is based upon information offered in the National Plumbing Code. Certain local codes may vary and should be reviewed prior to using Table 1.

Fixture	Type of Supply Control	Weight in Fixture Units Public C.W.	Public H.W.	Private C.W.	Private H.W.
Water Closet	Flush Valve	10	-	6	-
Water Closet	Flush Tank	5	-	3	-
Pedestal Urinal	Flush Valve	10	-	-	-
Stall or Wall Urinal	Flush Valve	5	-	-	-
Stall or Wall Urinal	Flush Tank	3	-	-	-
Lavatory	Faucet	1 1/2	1 1/2	1	1
Bathtub	Faucet	2	3	1 1/2	1 1/2
Shower Head	Mixing Valve	2	3	1	2
Bathroom Group	Flush Valve Closet	-	-	8	3
Bathroom Group	Flush Tank Closet	-	-	6	3
Separate Shower	Mixing Valve	-	-	1	2
Service Sink	Faucet	3	3	-	-
Laundry Tubs (1-3)	Faucet	-	-	3	3
Combination Fixture	Faucet	-	-	3	3

Table 1

Table 2 indicates fixture unit ratings for P.D.I. certified water hammer arrester categories and the corresponding Smith HYDROTROL for each category. Where several fixtures are installed in a branch usually only one fixture valve at a time will be closed. Table 2 takes into consideration other design factors including the simultaneous usage of one or more fixtures, pipe size, length, flow pressure and velocity. Therefore, this method offers a simple fast determination of the proper size water hammer arrester for a given battery of plumbing fixtures.

HYDROTROL SIZING TABLE

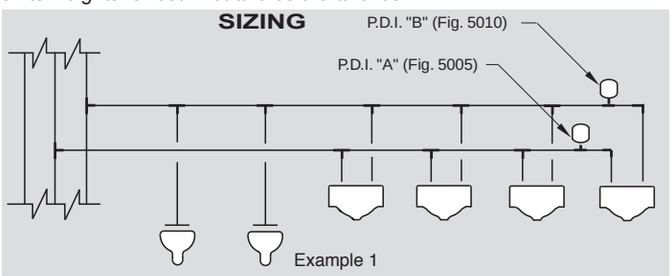
P.D.I. ▲SYMBOLS	A	B	C	D	E	F
HYDROTROL	5005	5010	5020	5030	5040	5050
Fixture Unit Rating	1-11	12-32	33-60	61-113	114-154	155-330

NOTE: When Water Pressure in line exceeds 65 psi, specify the next larger Hydrotrol.

Table 2

▲Plumbing and Drainage Institute established these size symbols to correspond to those units covered by the Certification and Testing Program described in P.D.I. Standard Manual WH-201.

Find fixture unit weight of each fixture using Table 1. Total the fixture units weights for both hot and cold branches.



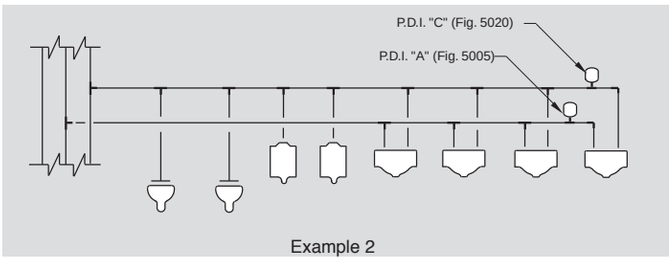
Cold Water Branch
2 WC. at 10 F.U. ea. = 20
4 Lav. at 1 1/2 F.U. ea. = 6
Total 26

Hot Water Branch
4 Lav. at 1 1/2 F.U. ea. = 6
Total 6

Select P.D.I. "B" Unit — Select P.D.I. "A" unit

Select correct size HYDROTROL using Table 2.

Cold Water Branch Fig. 5010 — Hot Water Branch Fig. 5005



Find fixture unit weight of each fixture using Table 1. Total the fixture unit weights for both hot and cold water branches.

PLACEMENT

Cold Water Branch
2 WC. at 10 F.U. ea. .= 20
2 Ur. at 5 F.U. ea. ..... = 10
4 Lav. at 1 1/2 F.U. ea. = 6
Total 36

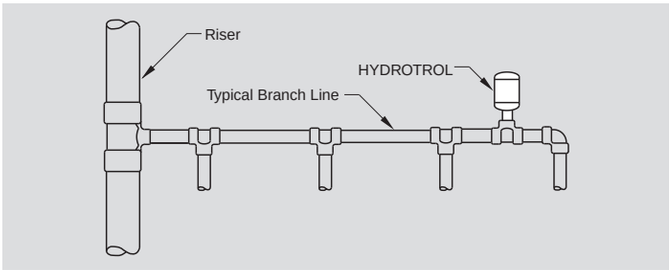
Hot Water Branch
4 Lav. at 1 1/2 F.U. ea. = 6
Total 6

Select P.D.I. "C" unit — Select P.D.I. "A" unit

Select correct size HYDROTROL using Table 2.

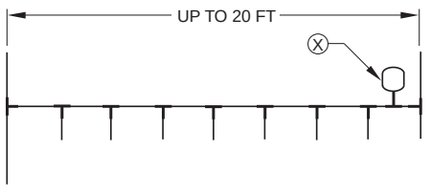
Cold Water Branch Fig. 5020 — Hot Water Branch Fig. 5005

It has been established that the preferred location for the water hammer arrester is at the end of the branch line between the last two fixtures served.



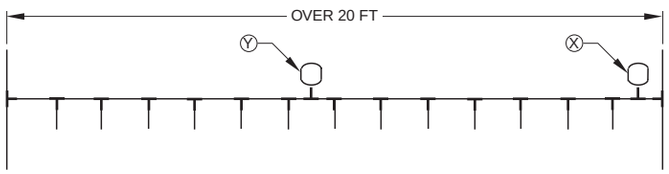
Two basic rules were established - one for branches up to 20 ft. in length, and another for branches over 20 ft. in length.

Rule 1



Rule 1, covers multiple fixture branch lines which do not exceed 20 ft. in length. Hydrotrol Sizing Table 2 is used to select the required unit.

Rule 2



Rule 2, covers multiple fixture branch lines which do exceed 20 ft. in length. Hydrotrol Sizing Table 2 is used to select the required units. The sum of the Fixture Unit Ratings of units X and Y shall be equal to or greater than the demand of the branch.