

FLOW CHARACTERISTICS and RESISTANCE

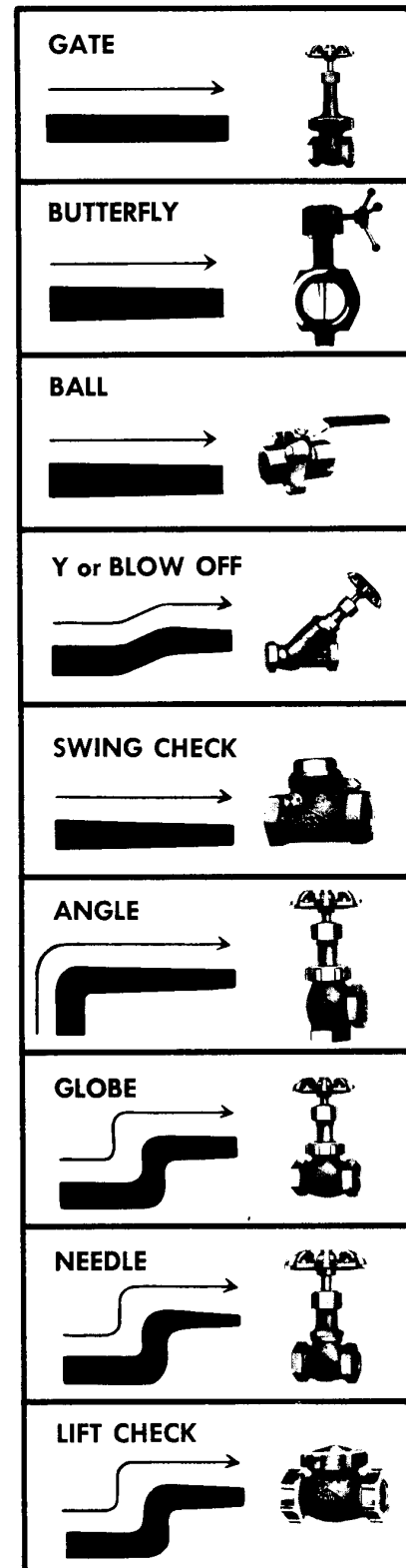
The amount of fluid permitted to pass through a valve varies with its basic pattern. Generally, the greater the degree of pressure control, the greater the restriction of flow, pressure drop and energy loss. Many formulas and equations have been developed to determine precisely pressure drops and energy losses for specific sizes of valves, types of valves, fluids, and flow conditions.

To assist in making average calculations, the diagrams on the right indicate the **relative capacity and direction of flow permitted by several basic valve patterns**, and the table at the bottom of the page gives the approximate **flow resistance of full open valves compared to the equivalent feet of schedule 40 pipe**.

As indicated, gate valves allow maximum flow, with butterfly, ball, Y, swing check, angle, globe, and lift check patterns following in increasing order of flow resistance.

VALVE TYPE

VALVE SIZE, IN.	GATE	B L V	B F V	Y	SWING CHECK	ANGLE	GLOBE
1/2	0.4	2	—	3.6	4	8	16
3/4	0.5	1.5	—	4.5	5	12	22
1	0.6	1.9	—	6.3	7	15	27
1 1/4	0.8	2.4	—	8.0	9	18	37
1 1/2	0.9	2.8	—	10.0	11	21	44
2	1.2	3	2.2	12.5	14	28	55
2 1/2	1.4	—	2.6	13.5	15	32	65
3	1.6	4.7	2.9	18.0	19	41	80
3 1/2	2.0	—	—	20.0	22	50	100
4	2.2	4.4	3.9	22.5	25	55	120
5	2.9	—	5.4	28.0	32	70	140
6	3.5	9.7	6.3	36	40	80	160
8	4.5	—	6.8	45	50	110	220
10	5.5	—	7.5	58	65	140	280
12	6.5	—	9.0	68	75	160	340
14	8.0	—	—	81	90	190	380
16	9.0	—	—	95	105	220	430
18	10.0	—	—	108	120	250	500
20	12.0	—	—	117	130	270	550
24	14.0	—	—	135	150	380	650



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