HB Control Valves

Electric Actuators for 2-Way or 3-Way

VaporTec® Especialistas en Vapor

Models	**2 & 3-Way Valves with E -Series or SK-Series Electric Actuators**
Service **2-Way Valve**	Steam, Air, Water
Service **3-Way Valve**	Liquid ONLY **(NO STEAM)**
Sizes	**1/2" - 4"**
Connections	**NPT, 150# FLG, 300# FLG**
Body Material	**316 Stainless Steel**
Plug and Seat Material	**Stainless Steel (Std.)**
PMO Max. Operating Pressure	720 PSIG @ 100˚F
TMO Max. Operating Temperature	450˚F @ 497 PSIG
Min Operating Temperature	-20˚F
Max Air Supply Pressure	50 PSIG
Max Ambient Temperature	Actuator Dependent

EC
Super Capacitor

ES
Spring Return

SKD
Spring Return

DESIGN PRESSURE/TEMPERATURE RATING – PMA/TMA

NPT	497 PSIG	@ 450˚F
150# FLG	182 PSIG	@ 450˚F
300# FLG	497 PSIG	@ 450˚F

CONTROL VALVES

The **HB Series** Stainless Steel 2-Way & 3-Way Control Valves with **Electric Actuators** are a robust, user-friendly alternative to the Pneumatically-Actuated unit. They are ideal for installations where an instrument air source is not available or when the benefits for electric actuation are preferred.

Electric Actuators utilize either **Super Capacitors** or **Spring Return** which allow for the valve to fail in either the fully-open or fully-closed position in the event of power loss or signal failure.

The **EC Model** using Super Capacitor should be selected when Ultra-fast response times are needed such as in instantaneous hot water heater applications. The **EC Model Actuator** will cycle from Open to Close in approximately 6 seconds.

The **ES Model** using Spring Return are an economical choice when medium response times are sufficient. They have Fail-Open and Fail-Close options as well as 24 VDC service.

TECHNICAL INFORMATION

Plug Design	Equal Percentage
	Linear
	Soft-Seat
Leakage Rating	ANSI/FCI-70-2 Class IV, VI
Rangeability	50:1
Travel (1/2" - 2" Body)	3/4"
(2 1/2" - 4" Body)	1 1/8"
Body Design Rating	ASME 150/300
Action Options	Fail Open*
	Fail Closed
Actuator Options	Fast-acting, Super Capacitors
	On-Off, Spring Return

* 2-way HB-Series with SK-Series Actuators are Fail-Closed only.

Valve Design conforms to ANSI/ASME B 16.34

The **SK Series Electric Actuators** are used for general purpose applications where medium response times are sufficient. They are an economical choice for **Heating, Boiler Feed Water** applications as well as **On/Off HVAC Steam Control**.

SK Actuators Fail Closed, typically not used for Cooling applications.

	E-Series			SK-Series		
Fail-Safe Operator	Capacitor		Spring	Spring		
Actuator	EC10	EC	ES	SKB	SKC	SKD
Voltage	115VAC / 24VAC / 24VDC			24VAC*		
Max Ambient Temp	140˚F			130˚F		122˚F
Enclosure Rating	IP65			IP54 / NEMA 1		
Stroke (in)	1.97	1.97	1.57	0.75	1.50	0.75
Thrust (lbs)	2,248	1,011	449	629		224
Cycle Time open (s)	15	8	120	120	120	60
Cycle Time close (s)	15	8	90	15	20	15
Weight (lbs)	22	18	12.4	18.9	22.5	8.5

* 115VAC service available with optional power adapter.

Electric Actuators for 2-Way or 3-Way

Size	Connection	Valve Model Code	Cv	E-Series Actuator: EC Super Capacitor	E-Series Actuator: EC10 Super Capacitor	E-Series Actuator: ES Spring Return	SK-Series Actuator: SKD STANDARD	SK-Series Actuator: SKB	SK-Series Actuator: SKC
		Full Port		Max Close-Off Pressure (PSI△P)					
1/2"	NPT	HB1000F-12N	5	720	N/A	605	290	720	720
3/4"	NPT	HB1000F-13N	6.5	720	N/A	605	290	720	720
1"	NPT	HB1000F-14N	10	720	N/A	605	290	720	720
1 1/2"	NPT	HB1000F-16N	22	720	N/A	315	150	450	450
2"	NPT	HB1000F-17N	42	380	N/A	160	75	280	230
1/2"	150# FLG	HB1000F-121	5	275*	N/A	275*	275*	275*	275*
3/4"	150# FLG	HB1000F-131	6.5	275*	N/A	275*	275*	275*	275*
1"	150# FLG	HB1000F-141	10	275*	N/A	275*	275*	275*	275*
1 1/2"	150# FLG	HB1000F-161	22	275*	N/A	275*	150	275*	275*
2"	150# FLG	HB1000F-171	42	275*	N/A	160	75	230	230
2 1/2"	150# FLG	HB1000F-181	70	175	380	74	N/A	N/A	108
3"	150# FLG	HB1000F-191	110	134	290	54	N/A	N/A	80
4"	150# FLG	HB1000F-201	170	72	160	29	N/A	N/A	43
1/2"	300# FLG	HB1000F-123	5	720	N/A	605	290	720	720
3/4"	300# FLG	HB1000F-133	6.5	720	N/A	605	290	720	720
1"	300# FLG	HB1000F-143	10	720	N/A	605	290	720	720
1 1/2"	300# FLG	HB1000F-163	22	720	N/A	315	150	450	450
2"	300# FLG	HB1000F-173	42	380	N/A	160	75	230	230
2 1/2"	300# FLG	HB1000F-183	70	175	380	74	N/A	N/A	108
3"	300# FLG	HB1000F-193	110	134	290	54	N/A	N/A	80
4"	300# FLG	HB1000F-203	170	72	160	29	N/A	N/A	43

* Shut-off pressure limited by flange class rating.

CONTROL VALVES

To complete Full Model Code, Must Specify: Trim, Packing, Port, Actuator, Power Supply and Control Signal Type

Example: (Spring-Fail Closed): **HB1000F-12N-ESA10**
Example: (Spring-Fail Open): **HB1000F-12N-ESB10**

Model Code Configuration Chart

HB Series; 1/2" - 4", Electrically-Actuated, 2-Way or 3-Way Valve Bodies

VALVE BODY Selection

Model	Code	Trim Style*
HB1	0	Equal Percentage (2-way)
	1	Linear (2-way)
	3	3-Way

Code	Seat Type
0	Metal Seat Stainless Steel
1	Soft Seat Teflon
	Elastomers
C.F	EPDM
C.F.	Viton

Code	Packing
0	Teflon
1	Graphite

Code	Port Type
F	Full Port
R	Reduced Port

CONNECTION

Code	Size
12	1/2"
13	3/4"
14	1"
16	1 1/2"
17	2"
18	2 1/2"
19	3"
20	4"

Code	Connection
N	NPT
1	150# FLG
3	300# FLG
6	600# FLG
B	BSP
P	PN16 FLG
Q	PN25 FLG

* Note: For 2-Way Valves Equal Percentage trim style should be used for steam service. Linear trim style should be used for water service.

EC ACTUATOR -Super Capacitor Fail-Safe

Code	Actuator
ECA	Capacitor-Fail-Closed
EC10A	
ECB	Capacitor-Fail-Open
EC10B	

Code	Power Supply
1	115 VAC
2	24 VAC/DC

Code	Control Signal
0	4-20mA
1	0-10V
2	0-20mA
3	2-10V
4	12-20mA
6	Split-range

ES ACTUATOR - Spring Fail-Safe

Code	Actuator
ESA	Spring-Fail-Closed
ESB	Spring-Fail-Open

Code	Power Supply
1	115 VAC
2	24 VAC/DC

Code	Control Signal
0	4-20mA
1	0-10V
2	0-20mA
3	2-10V

SK ACTUATOR - Spring Fail-Safe

Code
SKD62UA
SKB62UA
SKC62UA

SK Actuators are standard 24VAC with 4-20mA control signal. For 115VAC, add Power Adapter. 0-10V control signal option can be field set.

Failure Mode on SK Actuators:
2-Way Valves Fail-Closed.
3-Way Valves close-off the "A" Port.

ELECTRIC ACTUATOR OPTIONS

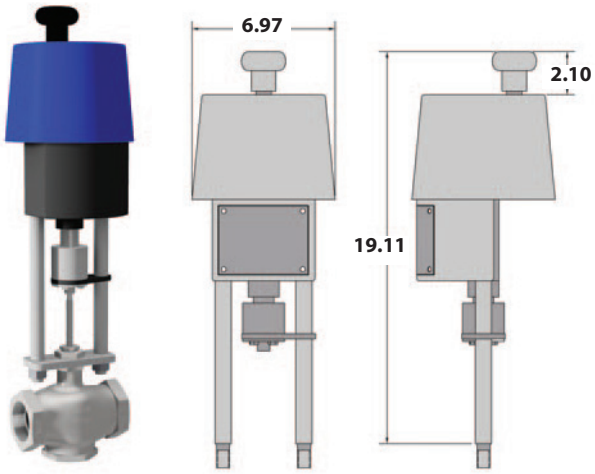
EC Series		ES Series	SK Series	
Heating Resistor for protection in cold outdoor climates	Contact Factory	None	Weather Shield Assembly Kit for outdoor use. UL Listed to meet NEMA 3R rating.	Contact Factory
Communication Kit for field adjustments, data access, etc.	EC-COMM-KIT		115 VAC Power Adapter	266010
Transformer for 230 VAC Service	Contact Factory			

E-Series Electric Actuators for 2-Way or 3-Way

EC/EC10 Electric Actuator

Uses Super Capacitors as the Fail-Safe Operator

Extrememly Fast Acting

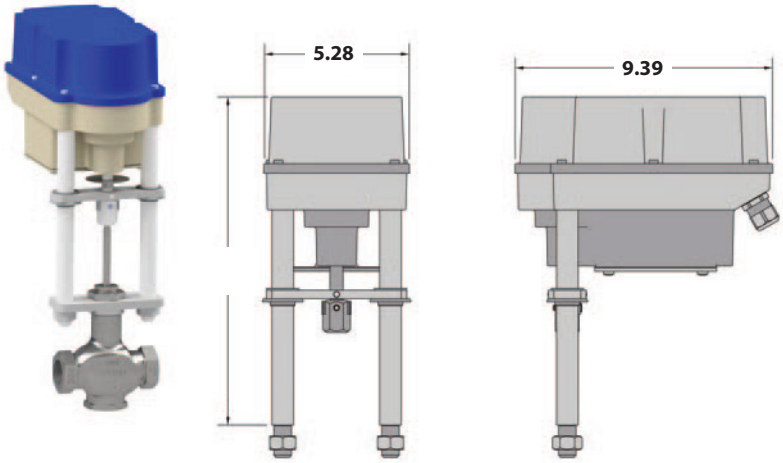


The **EC/EC10 Electric Actuator** are used for High-performance applications such as instantaneous hot water heaters.

ES Electric Actuator

Uses a Spring as the Fail-Safe Operator

Reduced Response Time & Close-Off Pressures



The **ES Electric Actuator** are used where high-speed actuation is not required.

CONTROL VALVES

Actuator Specifications	EC			EC10			ES	
Power Supply	**115VAC**	**24VAC**	**24VDC**	**115VAC**	**24VAC**	**24VDC**	**115VAC**	**24VAC**	**24VDC**
Force	1,100 lbs			2,248 lbs			448 lbs		
Velocity	0.177 in/sec			0.067 in/sec			0.012 in/sec		
Nominal 1" Travel Time	**8 sec**			**15 sec**			**60 sec**		
Nominal Current (A)	0.66	3.15	2	.84	4	2.5	0.14	.35	
Max Current (A)	0.86	4.1	2.6	1.1	5.3	3.3	0.14	.35	
Max Power Consumption	57	53	48	78	73	61	9	9	
Duty Cycle, IEC 60034-1, 8	S2 30 min S4 50% ED @ 77° F						S2 30min S4-1200c/h-50%ED		

Motor Protection	Electric motor current monitoring with safety cut-off
Set Value Feedback	0 (4)-20mA or 0 (2)-10V selectable, split range operation
Binary Control	24V for On/Off Control (1s min pulse duration)
Valve Positioner Function	Integrated positioner, deadband adjustable from 0.5 to 5%, shutoff min.
Automatic Start-up	Recognizing the end position(s) and autoscaling set and feedback values
Internal Fault Monitoring	Torque, set value, temperature, power supply, positioning deviation, etc.
Diagnostics Function EC-Series ONLY	Stores accumulated operation data (motor & total run time, number of starts) and data of current values (set value, feedback value, torque, temp, and error message
Communication Interface	USB interface with Software / enables parameter adjustments
Cable Glands	2x M20x1.5 & 1x M16x1.5

Options for EC
Transformer for 230 VAC Service
Limit Switch
Heater Element

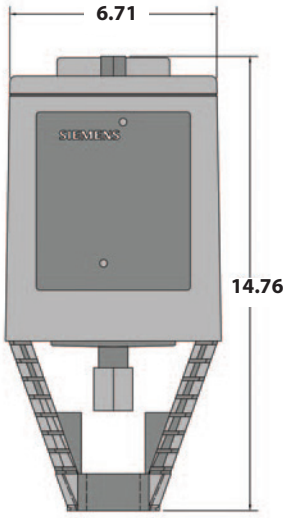
The EC Actuator can be factory set or field configurable (with COMM-KIT) as follows:

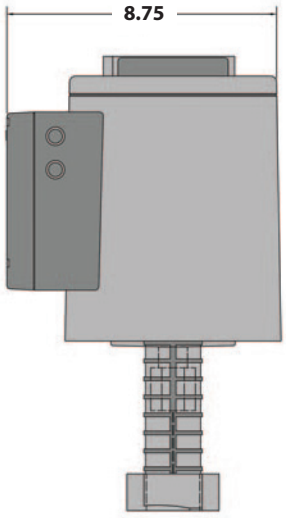
- Stroke adjustment
- Stroke velocity
- Response time
- Fail-safe direction and position
- Flow characteristic (i.e. equal %, linear, quick open)

SK-Series Electric Actuators for 2-Way or 3-Way

SKB • SKC • SKD

Electric Actuators





The **SK Series Electric Actuator**s are a robust choice for **Boiler Feed Water** applications as well as **On/Off HVAC Steam Control** applications where ***Fail-Closed is required***. For general purpose applications, where medium response times are sufficient. In the event of a signal failure, the stem of the SK Actuator retracts. Therefore the Failure Mode of a 2-Way valve is closed and a 3-Way valve will close off the "A" port.

Actuator Specifications	SKB	SKC	SKD
Power Supply	24VAC		
Force	629 lbs		224 lbs
Velocity	0.006 in/s	0.013 in/s	0.025 in/s
Nominal 1" Travel Time	120	60	30
Nominal Current (A)	.5	.84	.5
Max Current (A)	.5	.84	.5
Max Power Consumption (W)	12	20	12
Agency Certification	UL873, CE 89/336/EEC		

Option:

Power Adapter for 115 VAC Service

Actuator Selection

SKD Series

Standard for 1/2" to 2" valve bodies where a 30 second stroke time is prefereable.

SKC Series

Standard for 2½" to 4" valve bodies and also when higher shut-off pressures are required for 1/2" to 2" valve bodies.

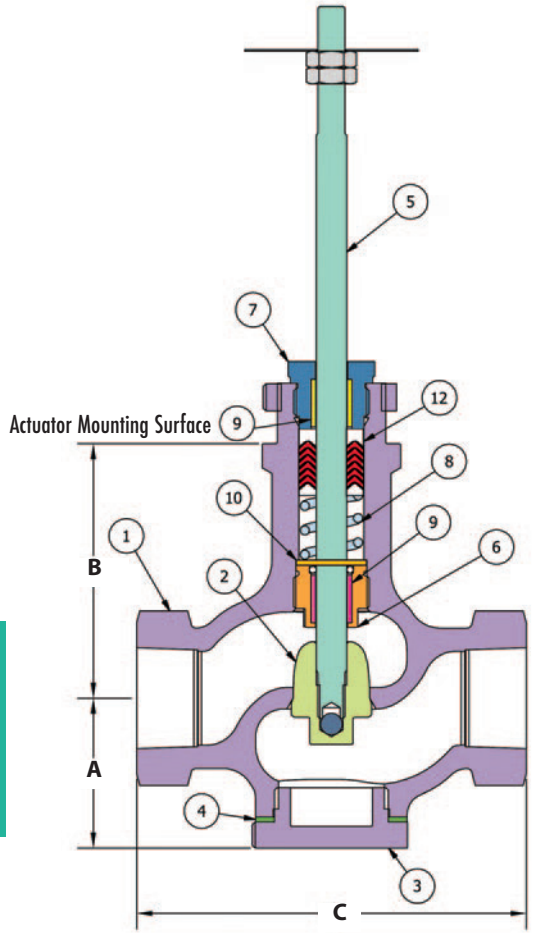
SKB Series

Option for higher shut-off pressure applications where increased stroke time can be tolerated.

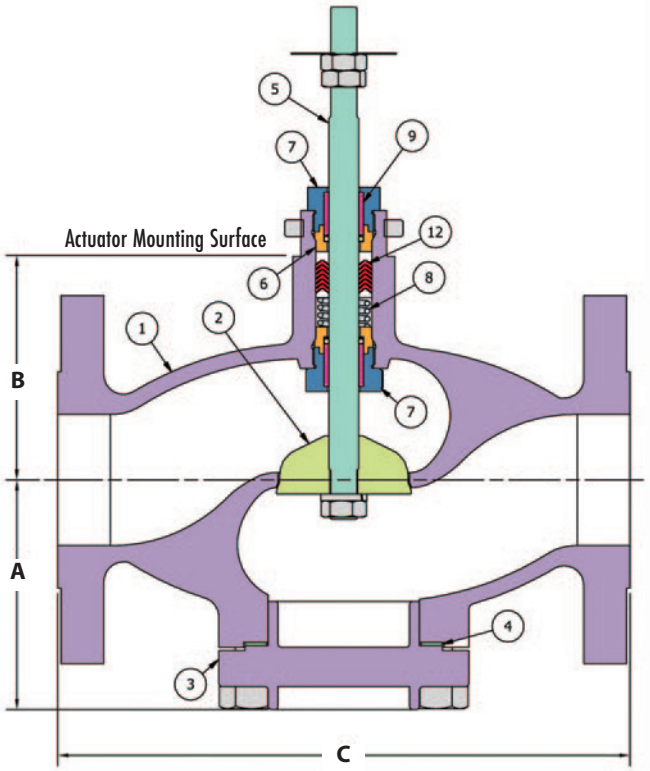
2-Way Valves with Electric Actuators

for HEATING • COOLING • FLUID TRANSFER • Steam, Air, & Water **2-Way • 1/2" – 4"**

1/2" to 2" Threaded & Flanged



2½" to 4" Flanged



Item	Description	Material
1	Body	316 Stainless Steel
2	Valve Plug*	Hardened Stainless Steel
3	Body Plug	316 Stainless Steel
4	Body Gasket*	303 Stainless Steel
5	Stem*	316 Stainless Steel
6	Lower Seal Bushing	303 Stainless Steel
7	Gland Nut	303 Stainless Steel
8	Stem Seal Spring*	302 Stainless Steel
9	Guide Bushing*	Rulon 641 / PTFE
10	Washer	303 Stainless Steel
12	V-ring Stem Seals*	PTFE

* Recommended Spare Parts

Size	A	B	C NPT	C 150#	C 300#	Weight (lbs) NPT	Weight (lbs) 150#	Weight (lbs) 300#
1/2"	1.76	2.95	4.50	7.25	7.75	3.5	6	7
3/4"	1.76	2.95	4.50	7.25	7.75	3.5	7	9
1"	1.74	2.95	4.50	7.25	7.75	5.5	10	13
1½"	2.15	2.95	5.00	8.75	9.25	6.8	14	19
2"	2.31	2.95	6.00	10	10.5	10	21	25
2½"	4.38	4.25	-	10.88	11.5	-	41	46
3"	5.56	4.25	-	11.75	12.5	-	65	74
4"	6.19	4.25	-	13.88	14.5	-	92	112

Insulation Blankets; Contact Factory

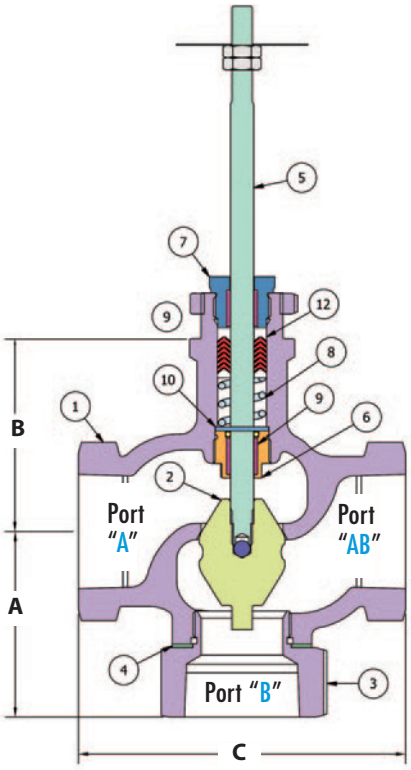
Note: Insulation blankets are recommended for electrically actuated valves when steam supply pressure exceeds 55 PSIG or fluid temperature 300 ° F and above.

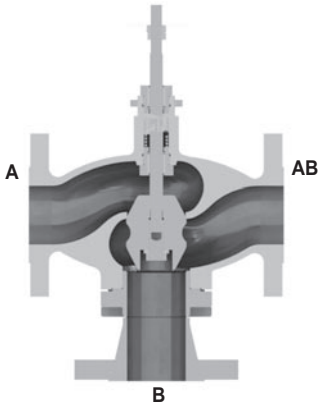
MAXIMUM FLOW COEFFICIENT (C_V)

Valve Body Size	1/2" (Reduced Port)	1/2"	3/4"	1"	1½"	2"	2½"	3"	4"
	3.5	5	6.5	10	22	42	70	110	170

3-Way for Mixing or Diverting

1/2" to 2"
Threaded & Flanged

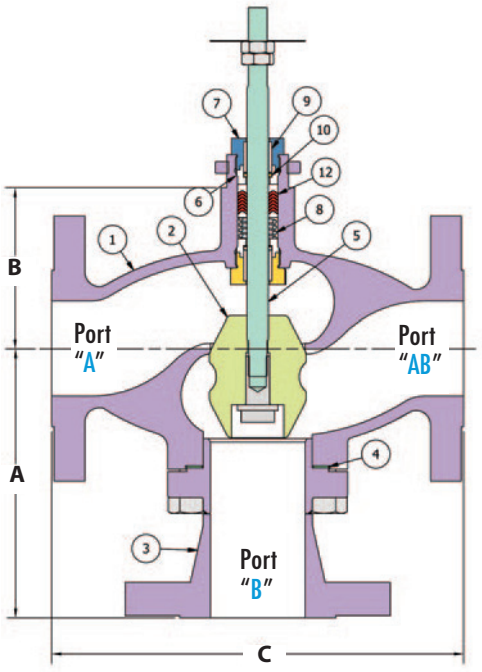




Mixing:
Ports "A" and "B" are Inlets
Port "AB" is Outlet

Diverting:
Port "AB" is Inlet
Ports "A" and "B" are Outlets

2 1/2" to 4"
Flanged



Item	Description	Material
1	Body	316 Stainless Steel
2	Valve Plug*	Hardened Stainless Steel
4	Body Gasket*	303 Stainless Steel
5	Stem*	316 Stainless Steel
6	Lower Seal Bushing	303 Stainless Steel
7	Gland Nut	303 Stainless Steel
8	Stem Seal Spring*	302 Stainless Steel
9	Guide Bushing*	Rulon 641 / PTFE
10	Washer	303 Stainless Steel
12	V-ring Stem Seals*	PTFE

* Recommended Spare Parts

Size	A NPT	B	A 150	A 300	C NPT	C 150#	C 300#	Weight (lbs) NPT	Weight (lbs) 150#	Weight (lbs) 300#
1/2"	2.31	2.95	4	4	4.50	7.25	7.75	4	8.5	9
3/4"	2.31	2.95	4	4	4.50	7.25	7.75	4	8.5	9
1"	2.31	2.95	4	4	4.50	7.25	7.75	5.5	12	13.5
1 1/2"	2.84	2.95	4.3	4.3	5.00	8.75	9.25	7	18.5	22
2"	3.19	2.95	5	5	6.00	10	10.5	11	26	35
2 1/2"	-	4.25	7.13	7.38	-	10.88	11.5	-	50	58
3"	-	4.25	8.32	8.5	-	11.75	12.5	-	74	88
4"	-	4.25	9.19	9.5	-	13.88	14.5	-	106	136

Insulation Blankets; Contact Factory

Note: Insulation blankets are recommended for electrically-actuated valves when fluid temperature 300 ° F and above.

MAXIMUM FLOW COEFFICIENT (C_V)

Valve Body Size	1/2" (Reduced Port)	1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"
	3.5	5	6.5	10	22	42	70	110	170

CONTROL VALVES

STEAM

CAPACITIES – Steam (lbs/hr)

Inlet Pressure (PSIG)	Outlet Pressure (PSIG)	ΔP PSI	Reduced Port 1/2"	1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"
	C_V Factors		3.5	5.0	6.5	10	22	42	70	110	170
	Orifice Size (in)		0.88	0.88	0.88	0.88	1.25	1.75	2.5	2.88	3.88
5	4	1	48	68	89	136	300	573	955	1501	2320
	0	5	96	137	178	274	602	1149	1915	3009	4650
	-4	9	114	162	211	325	714	1363	2272	3570	5518
	-8	13	119	170	220	339	746	1424	2374	3730	5765
10	9	1	53	76	99	153	336	641	1068	1678	2593
	5	5	110	156	203	313	689	1315	2191	3443	5321
	0	10	138	197	255	393	865	1651	2751	4324	6682
	-7	17	148	211	274	422	929	1773	2955	4643	7176
15	10	5	122	174	226	348	765	1460	2433	3824	5909
	5	10	156	223	290	447	983	1876	3127	4913	7593
	0	15	172	246	320	492	1082	2066	3444	5412	8364
	-5	20	177	252	328	505	1110	2119	3532	5550	8578
20	15	5	133	189	246	379	833	1591	2652	4167	6440
	10	10	173	247	321	494	1088	2076	3460	5438	8404
	5	15	194	277	361	555	1221	2330	3883	6103	9431
	-3	23	205	293	381	587	1291	2464	4106	6453	9972
30	25	5	152	217	282	434	955	1822	3037	4773	7377
	15	15	232	331	431	663	1459	2785	4641	7293	11271
	5	25	260	371	482	742	1631	3115	5191	8157	12606
	0	30	262	375	487	750	1649	3149	5248	8247	12745
50	40	10	250	357	464	714	1570	2997	4995	7850	12132
	30	20	324	463	601	925	2035	3886	6476	10177	15728
	15	35	370	529	687	1057	2326	4440	7399	11628	17970
	7	43	376	537	697	1073	2361	4507	7511	11804	18242
80	70	10	307	438	570	877	1929	3682	6136	9643	14903
	50	30	472	675	877	1350	2970	5670	9450	14850	22950
	30	50	534	763	992	1525	3356	6407	10678	16780	25932
	17	63	544	777	1010	1554	3418	6526	10876	17091	26413
100	85	15	406	580	754	1160	2552	4872	8121	12761	19722
	60	40	586	837	1089	1675	3684	7034	11723	18422	28470
	40	60	643	918	1193	1836	4039	7710	12851	20194	31209
	23	77	655	936	1217	1872	4119	7864	13107	20596	31831
125	110	15	452	645	839	1290	2838	5418	9030	14190	21930
	85	40	668	954	1240	1908	4199	8015	13359	20993	32443
	50	75	782	1117	1452	2233	4913	9380	15634	24567	37968
	31	94	794	1135	1475	2270	4993	9532	15887	24965	38582
150	130	20	560	800	1040	1600	3519	6718	11197	17595	27192
	100	50	800	1143	1485	2285	5027	9598	15996	25137	38847
	70	80	904	1291	1678	2582	5680	10844	18074	28402	43893
	40	110	933	1333	1733	2666	5865	11196	18661	29324	45319
175	150	25	666	952	1237	1903	4187	7994	13323	20936	32356
	115	60	931	1329	1728	2659	5850	11167	18612	29248	45201
	75	100	1052	1503	1953	3005	6612	12622	21037	33058	51089
	48	127	1072	1531	1990	3062	6736	12859	21432	33679	52049
200	175	25	713	1018	1324	2037	4481	8554	14257	22404	34625
	130	70	1061	1515	1970	3031	6668	12730	21216	33340	51425
	90	110	1183	1690	2196	3379	7434	14192	23654	37170	57444
	56	144	1210	1729	2247	3457	7606	14521	24202	38031	58775
250	225	25	798	1140	1482	2281	5017	9578	15964	25086	38770
	170	80	1273	1819	2364	3637	8002	15276	25259	40008	61830
	120	130	1443	2062	2680	4124	9072	17319	28865	45359	70100
	73	177	1487	2125	2762	4249	9348	17846	29744	46740	72235
300	270	30	951	1359	1766	2718	5979	11414	19023	29894	46199
	200	100	1535	2193	2850	4385	9648	18418	30697	48238	74549
	140	160	1723	2461	3199	4922	10828	20672	34454	54142	83674
	89	211	1765	2521	3277	5042	11093	21177	35296	55465	85718

Note: The Steam Capacity Chart is based on ISA Standard 75.01.01-2007 (60534-2-1 Mod). It assumes pipe sizes equal to the size of the valve ports, with no attached fittings.

CONTROL VALVES

Sizing & Capacity Chart

WATER

CAPACITIES – **Water** *(GPM)*

Inlet Pressure (PSIG)	Outlet Pressure (PSIG)	ΔP PSI	Reduced Port 1/2"	1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"
	C_V Factors		3.5	5.0	6.5	10	22	42	70	110	170
	Orifice Size (in)		0.88	0.88	0.88	0.88	1.25	1.75	2.5	2.88	3.88
5	4	1	3.5	5.0	6.5	10	22	42	70	110	170
	0	5	7.8	11	15	22	49	94	157	246	380
10	7	3	6.1	8.7	11	17	38	73	121	191	294
	5	5	7.8	11	15	22	49	94	198	311	481
	0	10	11	16	21	32	70	133	251	246	380
15	10	5	7.8	11	15	22	49	94	157	246	380
	5	10	11	16	21	32	70	133	221	348	538
	0	15	14	20	26	39	86	165	275	432	668
30	25	5	7.8	11	15	22	49	94	157	246	380
	15	15	14	19	25	39	85	163	271	426	658
	7	23	17	24	31	48	106	203	338	531	821
50	40	10	11	16	21	32	70	133	221	348	528
	30	20	16	22	29	45	98	188	313	492	760
	16	34	20	29	38	58	128	244	407	640	898
80	70	10	11	16	21	32	70	133	221	348	538
	50	30	19	27	36	55	120	230	383	602	931
	30	50	25	35	46	70	155	296	493	775	1198
100	85	15	14	19	25	39	85	163	271	426	658
	65	35	21	30	38	59	130	248	414	651	1006
	40	60	27	39	50	78	171	326	543	853	1319
125	110	15	14	19	25	39	85	163	271	426	658
	85	40	22	32	41	63	139	266	443	696	1075
	52	73	30	43	56	86	188	360	600	492	760
150	130	20	16	22	29	45	98	188	313	492	760
	100	50	25	35	46	71	156	297	495	778	1202
	63	87	33	47	60	93	205	391	651	1023	1581
200	175	25	18	25	33	50	110	210	350	550	850
	130	70	29	42	54	84	184	351	586	920	1422
	87	113	37	53	69	106	234	446	744	1169	1806
250	225	25	18	25	33	50	110	210	350	550	850
	170	80	31	45	58	89	197	376	626	984	1521
	111	139	41	59	77	118	260	495	826	1298	2006
300	270	30	19	27	36	55	120	230	383	602	931
	200	100	35	50	65	100	220	420	700	1100	1700
	134	166	45	64	84	129	283	540	901	1415	2187

Notes: 1) Capacities based on 70°F water (SG = 1.00).
2) Capacities based on 100% of Cv.
3) Maximum capacities are based on pressure drop at constant cavitation at 70°F.
4) Cavitation adapters available to prevent cavitation.

HB Series Mixing & Diverting (3-Way Valves)

CAPACITIES – Water (GPM) **3-WAY VALVES**

Inlet pressures should be within 5% of each other. Specify if service is for other than water.

Pressure Drop (PSI△P)	Size, Body Number & Coefficient (Cv) 1/2" Cv = 5	3/4" Cv = 6.5	1" Cv = 10	1 1/2" Cv = 22	2" Cv = 42	2 1/2" Cv = 70	3" Cv = 110	4" Cv = 170
1	5	6.5	10	22	42	70	110	170
3	8.7	11.3	17.3	38	73	121	191	294
5	11.2	15	22	49	94	157	246	380
10	15.8	21	32	70	133	221	348	538
15	19	25	39	85	163	271	426	658
20	22	29	45	98	188	313	492	760
25	25	33	50	110	210	350	550	850
30	27	36	55	120	230	383	602	931
40	32	41	63	139	266	443	696	1075
50	35	46	71	156	297	495	778	1202
60	39	50	77	170	325	542	852	1317
70	42	54	84	184	351	586	920	1422
80	45	58	89	197	376	626	984	1521
90	47	62	95	209	398	664	1044	1613
100	50	65	100	220	420	700	1100	1700
125	56	73	112	246	470	783	1230	1901
150	61	80	122	269	514	857	1347	2082
175	66	86	132	291	556	926	1455	2249
200	71	92	141	311	594	990	1556	2404
225	75	98	150	330	630	1050	1650	2550
250	79	103	158	348	664	1107	1739	2688

Notes: 1) Capacities based on 70°F water (SG = 1.00).
2) Capacities based on 100% of Cv.
3) Maximum capacities are based on pressure drop at constant cavitation at 70°F.
4) Cavitation adapters available to prevent cavitation.