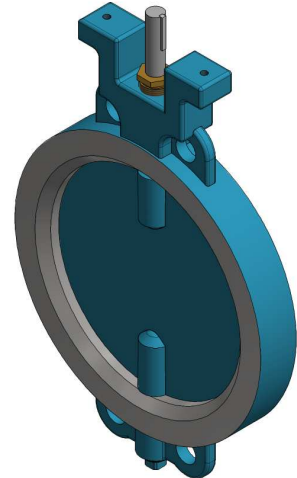


WBV Series

WBV Butterfly Valves



Description

WBV... series butterfly valves control the flow of air, FGR, natural gas, propane, or butane.

Features

- 2" through 24" valves available
- High-temperature versions available for hot air or FGR up to 900°F
- 90° clockwise or counterclockwise rotation
- Manual handle kit available for fixed position adjustment
- Valve actuator assemblies available (see Document No. VA-3500)
- Accommodates flow in either direction

Application

WBV... series butterfly valves control the flow of air, FGR, natural gas, propane, or butane. Valves are positioned using either a manual handle or rotary actuator. WBV... series butterfly valves are not intended for use as shutoff valves. The valve body is wafer type for use with 125/150# ANSI flanges.

Product Part Numbers

The part number structure for WBV... series butterfly valves is shown below. All possible part number combinations are available.

10 WBV -HT

Valve Size¹

- 2 = 2" butterfly valve
- 2.5 = 2-1/2" butterfly valve
- 3 = 3" butterfly valve
- 4 = 4" butterfly valve
- 6 = 6" butterfly valve
- 8 = 8" butterfly valve
- 10 = 10" butterfly valve
- 12 = 12" butterfly valve
- 14 = 14" butterfly valve
- 16 = 16" butterfly valve
- 18 = 18" butterfly valve
- 20 = 20" butterfly valve
- 22 = 22" butterfly valve
- 24 = 24" butterfly valve

Valve Series

WBV

Max. Temperature Rating²

- Blank = 450°F
- HT = 900°F

Accessories

- Blank = None
- MH = Manual handle kit attached to valve for fixed position adjustment

¹ Valves larger than 24" are available if required. Contact SCC Inc. for more information.

² Temperature ratings above 900°F are available if required. Contact SCC Inc. for more information.

Product Part Numbers (continued)

WBV... series butterfly valve part numbers and ratings are tabulated below.

Table 1: WBV... Butterfly Valve Part Numbers and Ratings

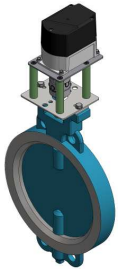
Part Number	Valve Size ¹	Temperature Range ²	Max. Operating Pressure psig [bar]	Port Diameter inch [mm]	Weight lb [kg]
2WBV	2"	-20 to 450°F [-29 to 232°C]	150 [10.3]	2.00 [51]	9.0 [4.1]
2.5WBV	2.5"		150 [10.3]	2.50 [64]	10.0 [4.5]
3WBV	3"		150 [10.3]	3.00 [76]	11.0 [5.0]
4WBV	4"		125 [8.6]	4.00 [102]	12.0 [5.4]
6WBV	6"		80 [5.5]	6.00 [152]	17.0 [7.7]
8WBV	8"		90 [6.2]	8.00 [203]	32.0 [14.5]
10WBV	10"		70 [4.8]	10.00 [254]	40.0 [18.1]
12WBV	12"		50 [3.4]	12.00 [305]	50.0 [22.7]
14WBV	14"		30 [2.1]	13.13 [333]	70.0 [31.8]
16WBV	16"		40 [2.8]	15.13 [384]	122.0 [55.3]
18WBV	18"		30 [2.1]	17.13 [435]	155.0 [70.3]
20WBV	20"		25 [1.7]	19.13 [486]	192.0 [87.1]
22WBV	22"		20 [1.4]	21.13 [537]	232.0 [105.2]
24WBV	24"		17 [1.2]	23.13 [587]	276.0 [125.2]
2WBV-HT	2"	-20 to 900°F [-29 to 482°C]	37 [2.6]	2.00 [51]	9.0 [4.1]
2.5WBV-HT	2.5"		37 [2.6]	2.50 [64]	10.0 [4.5]
3WBV-HT	3"		37 [2.6]	3.00 [76]	11.0 [5.0]
4WBV-HT	4"		31 [2.1]	4.00 [102]	12.0 [5.4]
6WBV-HT	6"		20 [1.4]	6.00 [152]	17.0 [7.7]
8WBV-HT	8"		22 [1.5]	8.00 [203]	32.0 [14.5]
10WBV-HT	10"		15 [1.0]	10.00 [254]	40.0 [18.1]
12WBV-HT	12"		12 [0.8]	12.00 [305]	50.0 [22.7]
14WBV-HT	14"		7 [0.5]	13.13 [333]	70.0 [31.8]
16WBV-HT	16"		10 [0.7]	15.13 [384]	122.0 [55.3]
18WBV-HT	18"		7 [0.5]	17.13 [435]	155.0 [70.3]
20WBV-HT	20"		6 [0.4]	19.13 [486]	192.0 [87.1]
22WBV-HT	22"		5 [0.3]	21.13 [537]	232.0 [105.2]
24WBV-HT	24"		4 [0.3]	23.13 [587]	276.0 [125.2]

¹ Valves larger than 24" are available if required. Contact SCC Inc. for more information.

² Temperature ratings above 900°F are available if required. Contact SCC Inc. for more information.

Accessories

VA... Valve Actuator Assemblies

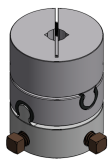


Valve actuator assemblies ensure proper shaft alignment and engagement. A WBV... valve, SQM... actuator, coupling, and bracket are built, tested, and shipped as a VA... assembly. Valve actuator assemblies are available with the following Siemens actuators:

- SQM48...
- SQM40/41...
- SQM5...

For additional information see Document No. VA-3500.

CH... Couplings



Couplings are available for mounting Siemens SQM... actuators to any WBV... butterfly valve. Choose the proper coupling depending on the SQM... actuator and WBV... valve being assembled.

CHM14KCB-E8KSA: SQM48... to 2-6" WBV... valve

CHM14KCB-E12KSA: SQM48... to 8-14" WBV... valve

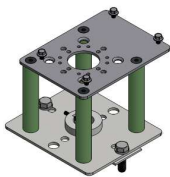
CHM14KCB-E16KSA: SQM48... to 16-24" WBV... valve

CHE6SCA-E8KSA: SQM5... (3/8" square shaft) to 2-6" WBV... valve

CHE6SCA-E12KSA: SQM5... (3/8" square shaft) to 8-14" WBV... valve

CHE6SCA-E16KSA: SQM5... (3/8" square shaft) to 16-24" WBV... valve

BR-WBV... Bracket Kits



Bracket kits are available for mounting Siemens SQM... actuators to WBV... butterfly valves with a maximum temperature rating of 450°F. No bracket kits are available for WBV-HT... valves with a maximum temperature rating of 900°F. BR-WBV... bracket kits are to be used with CH... couplings. Choose the proper bracket kit depending on the SQM... actuator and WBV... valve being assembled.

BR-WBV-0206: Standard SQM48... to 2-6" WBV... valve

BR-WBV-0814: Standard SQM48... to 8-14" WBV... valve

BR-WBV-1624: Standard SQM48... to 16-24" WBV... valve

BR-WBV-0206-N4: NEMA 4 SQM48... to 2-6" WBV... valve

BR-WBV-0814-N4: NEMA 4 SQM48... to 8-14" WBV... valve

BR-WBV-1624-N4: NEMA 4 SQM48... to 16-24" WBV... valve

BR-WBV-0206-SQM5: NEMA 4 SQM5... to 2-6" WBV... valve

BR-WBV-0814-SQM5: NEMA 4 SQM5... to 8-14" WBV... valve

BR-WBV-1624-SQM5: NEMA 4 SQM5... to 16-24" WBV... valve

Materials

Materials used in the WBV... butterfly valves are listed below.

Table 2: WBV... Valve Materials

Valve Part	Material	
	Max. Temperature Rating = 450°F	Max. Temperature Rating = 900°F
Valve body	Cast Iron	High Temperature Iron
Disc	Cast Iron (2-14" Valves) Ductile Iron (16-24" Valves)	High Temperature Iron
Shaft	416 Stainless Steel	316 Stainless Steel
Bushing	Graphited Bronze (2-14" Valves) Bronze (16-24" Valves)	Metcar
Packing	Graphited Teflon Braid	High Temperature Braid
Packing Nut	Brass	316 Stainless Steel

Installation

- Mount the valve between flanges conforming to ANSI #125/#150
- Use flange gaskets that are suitable for the type of gas being used
- Any mounting position is allowed, though it is preferred to mount the valve shaft horizontal when possible
- The packing gland should be inspected occasionally for leaks. If a leak exists, tighten the packing nut in one-quarter turn increments until the leak is gone.
- The butterfly valve can accommodate flow in either direction
- No special tools or adjustment required

Flow Data

Full open flow through the valve body is tabulated below at common differential pressures. The air flow values can be converted to other gas flows using the multipliers below. Cv values can be used to calculate any operating condition.

Multiplier to convert air flow (SCFH) to:

- FGR (S.G. = 1.00) – **1.00**
- Natural Gas (S.G. = 0.64) – **1.25**
- Propane (S.G. = 1.52) – **0.81**
- Butane (S.G. = 2.00) – **0.70**

For Tables 3, 4, and 5, flow is calculated with an inlet pressure of 10" WC. The air temperature varies by table.

Table 3: Air Flow (70°F) in SCFH at Fully Open Position

Valve Size	Cv	Differential Pressure (in WC) - Air							
		0.5	1	1.5	2	3	4	6	8
2"	90	2771	3917	4796	5537	6777	7821	9567	11033
2-1/2"	194	5973	8444	10339	11934	14608	16858	20621	23783
3"	370	11391	16105	19718	22762	27860	32151	39330	45359
4"	747	22998	32514	39809	45954	56248	64911	79403	91576
6"	1999	61543	87008	106531	122974	150522	173703	212486	245061
8"	3853	118621	167705	205335	237029	290125	334806	409558	472346
10"	6361	195834	276868	338991	391316	478974	552739	676149	779807
12"	9164	282129	398871	488369	563751	690036	796306	974097	1123432
14"	10981	338068	477958	585201	675529	826853	954194	1167236	1346181
16"	12266	377629	533888	653681	754579	923612	1065854	1303827	1503712
18"	15725	484120	684444	838018	967370	1184070	1366424	1671505	1927757
20"	19612	603788	853630	1045165	1206490	1476755	1704185	2084677	2404271
22"	23929	736694	1041531	1275227	1472063	1801819	2079310	2543557	2933500
24"	28674	882777	1248061	1528098	1763966	2159111	2491627	3047932	3515199

Flow Data (continued)**Table 4: Air Flow (450°F) in SCFH at Fully Open Position**

Valve Size	Cv	Differential Pressure (in WC) - Air							
		0.5	1	1.5	2	3	4	6	8
2"	90	2115	2990	3660	4225	5172	5968	7301	8420
2-1/2"	194	4558	6444	7890	9108	11148	12865	15738	18150
3"	370	8693	12290	15048	17371	21262	24537	30015	34616
4"	747	17551	24813	30381	35070	42926	49537	60598	69887
6"	1999	46967	66401	81300	93850	114873	132564	162161	187022
8"	3853	90527	127986	156704	180892	221413	255512	312560	360477
10"	6361	149453	211295	258705	298638	365535	421830	516012	595120
12"	9164	215310	304404	372705	430234	526610	607711	743394	857361
14"	10981	258001	364760	446603	515538	631024	728205	890791	1027355
16"	12266	288193	407444	498865	575867	704866	813420	995032	1147577
18"	15725	369463	522343	639545	738261	903638	1042804	1275630	1471192
20"	19612	460789	651458	797631	920749	1127005	1300570	1590948	1834851
22"	23929	562218	794858	973206	1123424	1375081	1586852	1941148	2238739
24"	28674	673703	952474	1166188	1346193	1647753	1901517	2326068	2682669

Table 5: Air Flow (900°F) in SCFH at Fully Open Position

Valve Size	Cv	Differential Pressure (in WC) - Air							
		0.5	1	1.5	2	3	4	6	8
2"	90	1730	2445	2994	3456	4231	4882	5972	6888
2-1/2"	194	3728	5271	6454	7450	9119	10524	12873	14847
3"	370	7111	10054	12309	14209	17392	20071	24552	28316
4"	747	14357	20297	24851	28687	35114	40521	49569	57168
6"	1999	38419	54316	66503	76769	93965	108437	132647	152983
8"	3853	74051	104692	128183	147969	181115	209008	255673	294869
10"	6361	122252	172839	211620	244284	299006	345055	422096	486805
12"	9164	176123	249001	304871	351929	430765	497105	608094	701318
14"	10981	211044	298372	365320	421708	516175	595669	728664	840373
16"	12266	235741	333287	408070	471057	576578	665375	813932	938713
18"	15725	302219	427274	523145	603895	739172	853010	1043461	1203430
20"	19612	376923	532890	652459	753169	921886	1063862	1301389	1500901
22"	23929	459892	650190	796079	918957	1124811	1298039	1587852	1831279
24"	28674	551086	779120	953937	1101181	1347856	1555434	1902715	2194413

Flow Data (continued)

Full closed flow (leak by) through the valve body is tabulated below at common differential pressures. The air flow values can be converted to other gas flows using the multipliers below. Cv values can be used to calculate any operating condition.

Multiplier to convert air flow (SCFH) to:

- FGR (S.G. = 1.00) – **1.00**
- Natural Gas (S.G. = 0.64) – **1.25**
- Propane (S.G. = 1.52) – **0.81**
- Butane (S.G. = 2.00) – **0.70**

For Table 6, full closed flow (leak by) is calculated with an atmospheric outlet pressure and an air temperature of 70°F.

Table 6: Air Flow (70°F) in SCFH at Full Closed Position¹

Valve Size	Cv	Inlet Pressure (in WC) - Air							
		1	2	4	8	12	16	20	24
2"	1.6	70	98	139	196	240	276	308	336
2-1/2"	2.1	91	129	182	257	315	362	404	442
3"	2.7	118	166	235	331	404	466	520	568
4"	4.0	174	246	348	490	599	690	770	841
6"	7.5	326	461	652	919	1123	1294	1443	1577
8"	11.3	492	695	982	1385	1693	1950	2174	2376
10"	16.6	723	1021	1442	2035	2486	2864	3194	3490
12"	22.0	958	1353	1912	2697	3295	3796	4233	4626
14"	26.0	1132	1599	2259	3187	3894	4486	5003	5467
16"	48.0	2089	2953	4171	5884	7189	8281	9236	10093
18"	58.0	2525	3568	5040	7110	8687	10007	11161	12196
20"	70.0	3047	4306	6083	8581	10485	12077	13470	14719
22"	82.0	3569	5044	7125	10053	12282	14147	15779	17242
24"	96.0	4178	5906	8342	11769	14379	16563	18473	20186

¹ Valves with tighter shutoff are available if required. Contact SCC Inc. for more information.

Flow Data (continued)

Flow rate (SCFH) through the valve body can be estimated using the equation below and the C_v values from Tables 3, 4, and 5.

$$Q = 1360 \times C_v \times \left(\sqrt{\frac{P_1 + P_2}{GT_f}} \right) \times \left(\sqrt{\frac{P_1 - P_2}{2}} \right)$$

...where...

C_v = Flow coefficient (see Table 3, 4, or 5)

G = Specific gravity of gas (see Table 7)

P_1 = Absolute inlet pressure in PSIA (PSIG + 14.7)

P_2 = Absolute outlet pressure in PSIA (PSIG + 14.7)

Q = Flow rate in SCFH

T_f = Media temperature in degrees Rankine ($^{\circ}\text{F} + 460$)

Once the flow rate is calculated in SCFH, this value can be multiplied by the Higher Heating Value (HHV) to obtain the heat input for a given flow rate.

Table 7: Gas Properties

Type of Gas	Specific Gravity	Higher Heating Value (BTU/SCF)
Air	1.00	-
FGR*	1.00	-
Natural Gas	0.64	1000
Propane	1.52	2500
Butane	2.00	3200

* The specific gravity of FGR can be approximated to 1. The equation above can be used to compensate for higher temperatures.

Actuator Torque

Table 8: Torque Required to Operate WBV Valves at Various Differential Pressures (in-lb)¹

Valve Size	Pressure Drop Across Valve (PSI)					
	0.5	1	5	10	15	20
2"	50	50	52	53	55	56
2-1/2"	50	51	53	55	58	60
3"	50	51	54	57	61	64
4"	51	52	59	67	78	84
6"	52	54	69	88	107	126
8"	124	128	158	195	233	270
10"	129	137	205	290	375	460
12"	132	143	235	350	465	580
14"	139	157	305	490	675	860
16"	223	245	425	650	875	1100
18"	235	270	550	900	1250	1600
20"	245	290	650	1100	1550	2000
22"	261	322	810	1420	2030	2640
24"	280	359	995	1790	2585	-

¹ Torque values listed assume a normally adjusted packing nut. Higher torques are possible if the packing nut is overtightened.

Dimensions

450°F WBV... Valves

Dimensions in inches [mm]

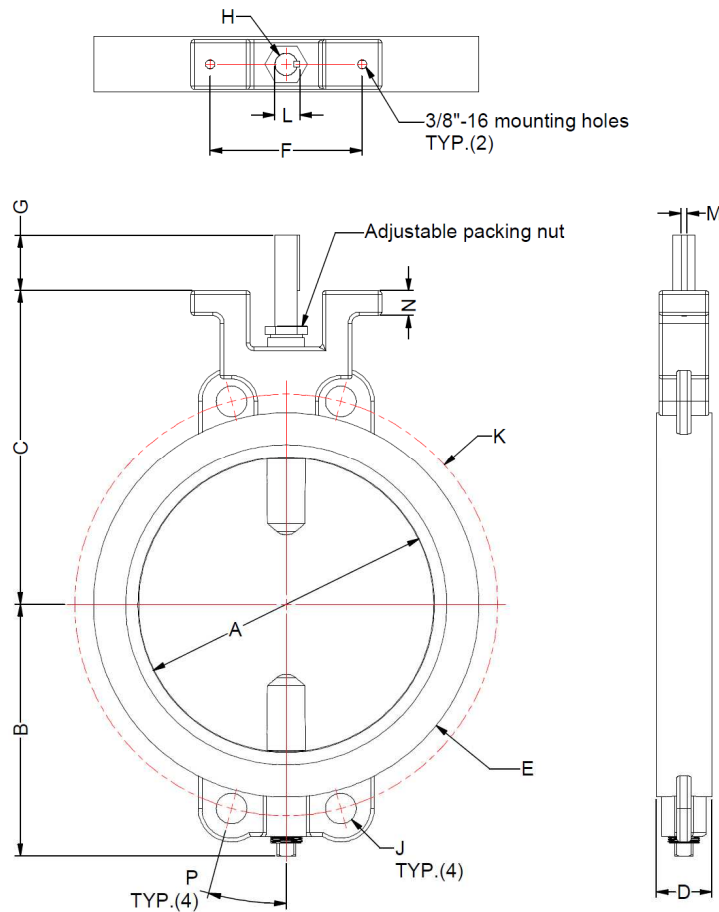


Table 9: 450°F WBV... Valve Dimensions

Valve Size	A	B	C	D	E	F	G
2"	2.00 [51]	2.75 [70]	5.38 [137]	1.50 [38]	3.88 [98]	4.25 [108]	1.86 [47]
2.5"	2.50 [64]	3.00 [76]	5.63 [143]	1.50 [38]	4.63 [117]	4.25 [108]	1.86 [47]
3"	3.00 [76]	3.13 [79]	5.88 [149]	1.50 [38]	5.13 [130]	4.25 [108]	1.86 [47]
4"	4.00 [102]	4.25 [108]	6.38 [162]	1.50 [38]	6.38 [162]	4.25 [108]	1.86 [47]
6"	6.00 [152]	5.38 [137]	7.38 [187]	1.50 [38]	8.50 [216]	4.25 [108]	1.86 [47]
8"	8.00 [203]	6.50 [165]	9.63 [244]	1.88 [48]	10.75 [273]	5.13 [130]	1.86 [47]
10"	10.00 [254]	8.00 [203]	10.63 [270]	1.88 [48]	13.00 [330]	5.13 [130]	1.86 [47]
12"	12.00 [305]	9.50 [241]	11.63 [295]	1.88 [48]	15.25 [387]	5.13 [130]	1.86 [47]
14"	13.13 [333]	10.50 [267]	12.13 [308]	1.88 [48]	16.38 [416]	5.13 [130]	1.86 [47]
16"	15.13 [384]	12.75 [324]	14.50 [368]	2.38 [60]	18.25 [464]	5.13 [130]	1.76 [45]
18"	17.13 [435]	13.88 [352]	15.50 [394]	2.38 [60]	20.75 [527]	5.13 [130]	1.76 [45]
20"	19.13 [486]	14.88 [378]	16.50 [419]	2.38 [60]	22.75 [578]	5.13 [130]	1.76 [45]
22"	21.13 [537]	16.50 [419]	17.50 [445]	2.38 [60]	25.00 [635]	5.13 [130]	1.76 [45]
24"	23.13 [587]	17.25 [438]	18.50 [470]	2.38 [60]	27.00 [686]	5.13 [130]	1.76 [45]

Dimensions (continued)

450°F WBV... Valves

Dimensions in inches [mm]

Table 9: 450°F WBV... Valve Dimensions (continued)

Valve Size	H	J	K	L	M	N	P
2"	0.50 [13]	0.75 [19]	4.75 [121]	0.56 [14]	0.13 [3]	0.50 [13]	45°
2.5"	0.50 [13]	0.75 [19]	5.50 [140]	0.56 [14]	0.13 [3]	0.50 [13]	45°
3"	0.50 [13]	0.75 [19]	6.00 [152]	0.56 [14]	0.13 [3]	0.50 [13]	45°
4"	0.50 [13]	0.75 [19]	7.50 [191]	0.56 [14]	0.13 [3]	0.63 [16]	22.5°
6"	0.50 [13]	0.88 [22]	9.50 [241]	0.56 [14]	0.13 [3]	0.63 [16]	22.5°
8"	0.75 [19]	0.88 [22]	11.75 [298]	0.83 [21]	0.19 [5]	0.85 [22]	22.5°
10"	0.75 [19]	1.00 [25]	14.25 [362]	0.83 [21]	0.19 [5]	0.85 [22]	15°
12"	0.75 [19]	1.00 [25]	17.00 [432]	0.83 [21]	0.19 [5]	0.85 [22]	15°
14"	0.75 [19]	1.13 [29]	18.75 [476]	0.83 [21]	0.19 [5]	0.90 [23]	15°
16"	1.00 [25]	1.13 [29]	21.25 [540]	1.11 [28]	0.25 [6]	0.81 [21]	11.25°
18"	1.00 [25]	1.25 [32]	22.75 [578]	1.11 [28]	0.25 [6]	0.81 [21]	11.25°
20"	1.00 [25]	1.25 [32]	25.00 [635]	1.11 [28]	0.25 [6]	0.81 [21]	9°
22"	1.00 [25]	1.38 [35]	27.25 [692]	1.11 [28]	0.25 [6]	0.81 [21]	9°
24"	1.00 [25]	1.38 [35]	29.50 [749]	1.11 [28]	0.25 [6]	0.81 [21]	9°

Dimensions (continued)

900°F WBV-HT... Valves

Dimensions in inches [mm]

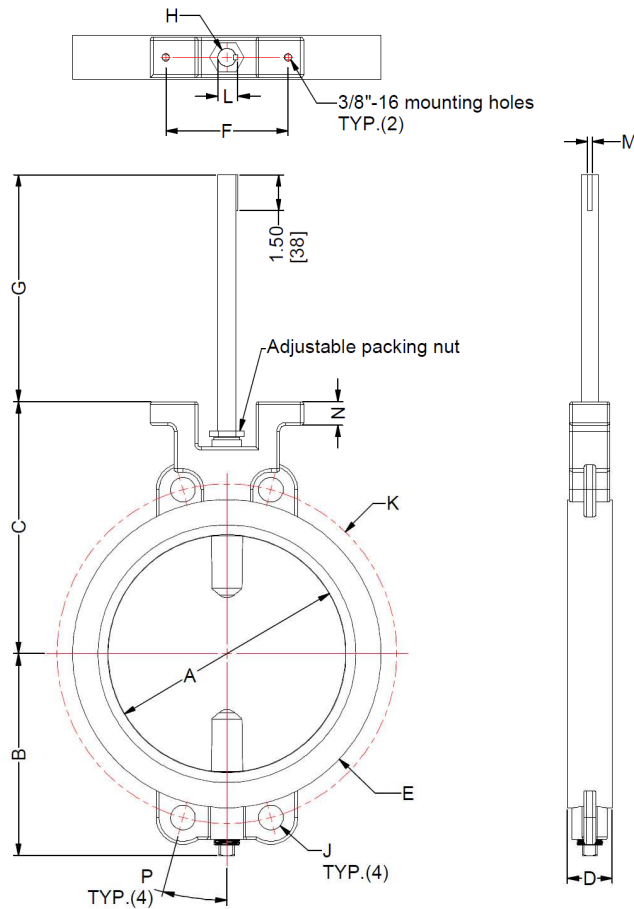


Table 10: 900°F WBV-HT... Valve Dimensions

Valve Size	A	B	C	D	E	F	G
2"	2.00 [51]	3.88 [98]	5.38 [137]	1.50 [38]	3.88 [98]	4.25 [108]	9.59 [244]
2.5"	2.50 [64]	4.13 [105]	5.63 [143]	1.50 [38]	4.63 [117]	4.25 [108]	9.59 [244]
3"	3.00 [76]	4.38 [111]	5.88 [149]	1.50 [38]	5.13 [130]	4.25 [108]	9.59 [244]
4"	4.00 [102]	4.88 [124]	6.38 [162]	1.50 [38]	6.38 [162]	4.25 [108]	9.59 [244]
6"	6.00 [152]	5.88 [149]	7.38 [187]	1.50 [38]	8.50 [216]	4.25 [108]	9.59 [244]
8"	8.00 [203]	7.75 [197]	9.63 [244]	1.88 [48]	10.75 [273]	5.13 [130]	9.59 [244]
10"	10.00 [254]	8.75 [222]	10.63 [270]	1.88 [48]	13.00 [330]	5.13 [130]	9.59 [244]
12"	12.00 [305]	9.75 [248]	11.63 [295]	1.88 [48]	15.25 [387]	5.13 [130]	9.59 [244]
14"	13.13 [333]	10.50 [267]	12.13 [308]	1.88 [48]	16.38 [416]	5.13 [130]	9.59 [244]
16"	15.13 [384]	12.75 [324]	14.50 [368]	2.38 [60]	18.25 [464]	5.13 [130]	9.49 [241]
18"	17.13 [435]	13.88 [352]	15.50 [394]	2.38 [60]	20.75 [527]	5.13 [130]	9.49 [241]
20"	19.13 [486]	14.88 [378]	16.50 [419]	2.38 [60]	22.75 [578]	5.13 [130]	9.49 [241]
22"	21.13 [537]	16.50 [419]	17.50 [445]	2.38 [60]	25.00 [635]	5.13 [130]	9.49 [241]
24"	23.13 [587]	17.25 [438]	18.50 [470]	2.38 [60]	27.00 [686]	5.13 [130]	9.49 [241]

Dimensions (continued)

900°F WBV-HT... Valves

Dimensions in inches [mm]

Table 10: 900°F WBV-HT... Valve Dimensions (continued)

Valve Size	H	J	K	L	M	N	P
2"	0.50 [13]	0.75 [19]	4.75 [121]	0.56 [14]	0.13 [3]	0.63 [16]	45°
2.5"	0.50 [13]	0.75 [19]	5.50 [140]	0.56 [14]	0.13 [3]	0.63 [16]	45°
3"	0.50 [13]	0.75 [19]	6.00 [152]	0.56 [14]	0.13 [3]	0.63 [16]	45°
4"	0.50 [13]	0.75 [19]	7.50 [191]	0.56 [14]	0.13 [3]	0.75 [19]	22.5°
6"	0.50 [13]	0.88 [22]	9.50 [241]	0.56 [14]	0.13 [3]	0.75 [19]	22.5°
8"	0.75 [19]	0.88 [22]	11.75 [298]	0.83 [21]	0.19 [5]	1.00 [25]	22.5°
10"	0.75 [19]	1.00 [25]	14.25 [362]	0.83 [21]	0.19 [5]	1.00 [25]	15°
12"	0.75 [19]	1.00 [25]	17.00 [432]	0.83 [21]	0.19 [5]	1.00 [25]	15°
14"	0.75 [19]	1.13 [29]	18.75 [476]	0.83 [21]	0.19 [5]	1.00 [25]	15°
16"	1.00 [25]	1.13 [29]	21.25 [540]	1.11 [28]	0.25 [6]	0.81 [21]	11.25°
18"	1.00 [25]	1.25 [32]	22.75 [578]	1.11 [28]	0.25 [6]	0.81 [21]	11.25°
20"	1.00 [25]	1.25 [32]	25.00 [635]	1.11 [28]	0.25 [6]	0.81 [21]	9°
22"	1.00 [25]	1.38 [35]	27.25 [692]	1.11 [28]	0.25 [6]	0.81 [21]	9°
24"	1.00 [25]	1.38 [35]	29.50 [749]	1.11 [28]	0.25 [6]	0.81 [21]	9°

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