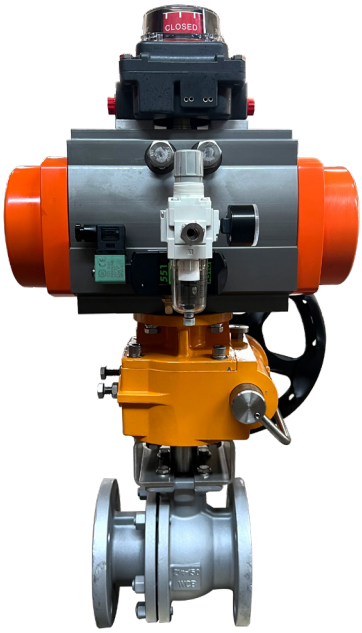
UV792Q Metal-Seated Floating Ball Valve

The UV792Q ball valve from UNIVALS is designed with an advanced innovation concept, which includes unique design and high-quality manufacturing processes. The UV792Q ball valve is capable of delivering a longer service life, and better sealing performance to meet safety, emission, and performance requirements in numerous applications with in the Oil & Gas, Petrochemical and Chemical industries.
UV792Q ball valves can provide various configuration to meet different application requirements, such as abrasive service, and high temperature, etc..



Features

Proven features provide long service life, low leakage and low operating torques in tough applications.

- Integral emission control system
  Low emission packing kits
  Double packing design
  Design of Spring Elastic Loaded packing
- Unique long-lasting seat sealing
- Optimized ball design
- Fire safe structure design
- Anti-blow stem design

Technical Summary

- Size: 0.5~4 inch
- Rating: Class 150 ~ Class 300
- Body: Carbon Steel, Alloy Steel, Stainless Steel
- Trim: Alloy Steel, Stainless Steel
- Seat: Hard Faced

Please consult with UNIVALS for more material options.

Advantage

- Tight shut-off sealing
- Long service life
- Heavy-duty
- Reliable safety

Design Standards

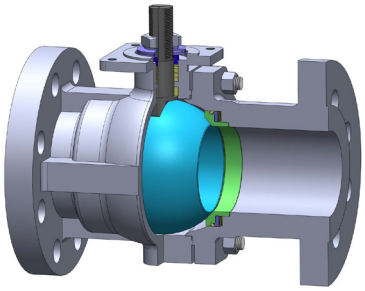
- **Design**
  API 608 or ISO 17292
- **Pressure / Temperature Rating**
  ASME B16.34 or DIN EN 12516-1
- **Face-to-face Dimensions**
  ASME B16.10 or DIN EN 558
- **Flange End Dimensions**
  ASME B16.5 or DIN EN 1092
- **NACE**
  MR 0103 or MR 0175
- **Fugitive Emission**
  ISO15848, TA-LUFT
- **Fire-safe Type Test**
  API607

Available Configurations

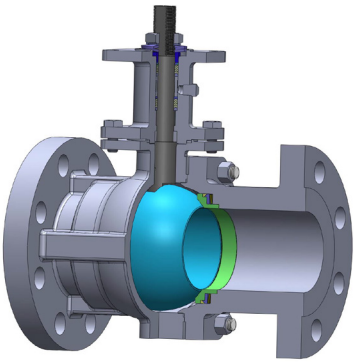
UV792Q ball valves are easily adapted to a variety of standard and severe service applications. Configurable elements include:

- High temperature
- Abrasive service
- Extended stem
- Multi-way
- Customized designs

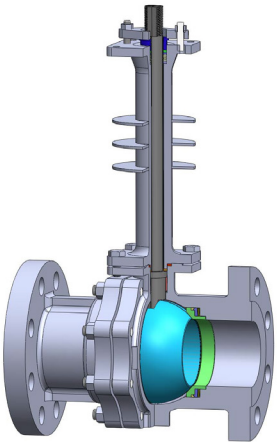
Configurations



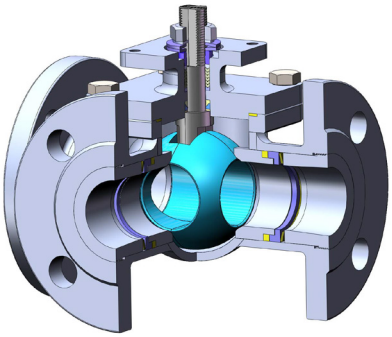
STANDARD



EXTENDED STEM



HIGH TEMPERATURE



MULTI-WAY

Size and Pressure Range

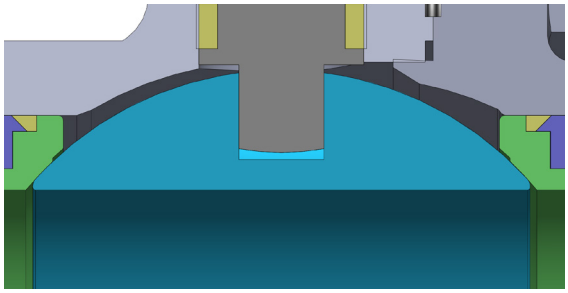
Product Supply Scope for ASME B16.5 Flange									
ASME	NPS								
Class	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
150Lb	✓	✓	✓	✓	✓	✓	✓	✓	✓
300Lb	✓	✓	✓	✓	✓	✓	✓	✓	✓

Product Supply Scope for DIN-EN-1092 Flange									
DIN	DN								
PN	15	20	25	32	40	50	65	80	100
10	✓	✓	✓	✓	✓	✓	✓	✓	✓
16	✓	✓	✓	✓	✓	✓	✓	✓	✓
25	✓	✓	✓	✓	✓	✓	✓	✓	✓
40	✓	✓	✓	✓	✓	✓	✓	✓	✓

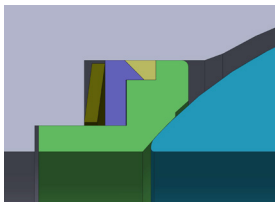
Technical Specifications

Bidirectional Seal

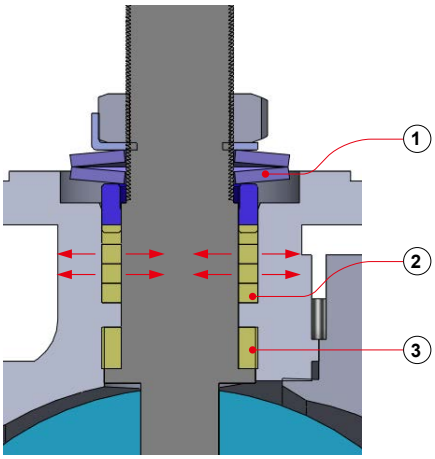
- With a bidirectional seal design, UV792Q can prevent flow in either direction to facilitate customer installation.
- Seat springs maintain constant sealing contact between ball and seats.
- Allows for thermal expansion of trim.
- Cavity pressure self-relief design.



The scraper-type seat cleans the surface of ball during switching.



Integral Emission Control System – Stem Sealing



Benefit

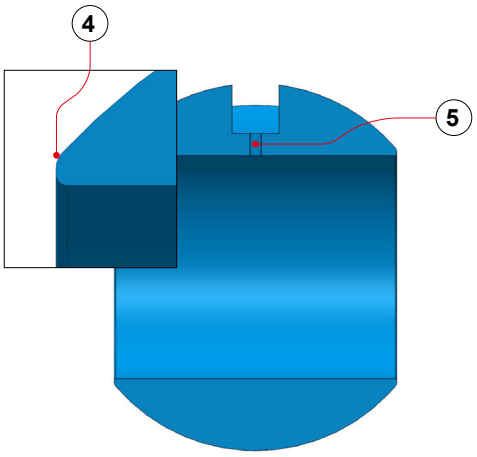
With integral emission control system design, UV792Q can meet tough fugitive emission requirement, meanwhile offer longer tight sealing performance.

With the pressure of medium, the stem will generate extra force against the secondary seal and packing, which can offer extra tight sealing. When medium pressure relieved, stem packing back to pre-tight condition, which avoid over pressurizing on packing, also avoid extra torque force.

Optimized Ball Designs

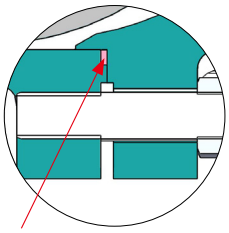
(4) Specially designed bi-angles rounded ball can improve seat usage.

(5) Pressure balanced hole design, to avoid over pressure in bore area.

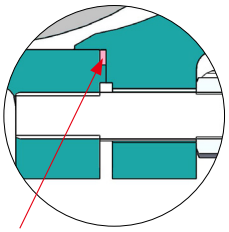


Fire Safe Body

To maintain the integrity between end cap and body, the independent flange bolts or studs are screwed to body. It eliminates the joint from thermal expansion and contraction resulted from the fire and make fire resistance encapsulated grafoil body gasket to function as the way it should be and prevent the line fluid permeation and resultant leakage to external. See figure 1 and 2.



Before Fire
Figure 1.



After Fire
Figure 2.

Stem Packing for Fire Safe

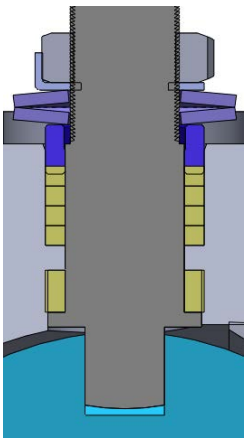
Stem packing, seal arrangement remained unaffected due to Grafoil for fire resistance.

Anti-blow Stem Design

Designed with anti flying steps stem. See figure 3.

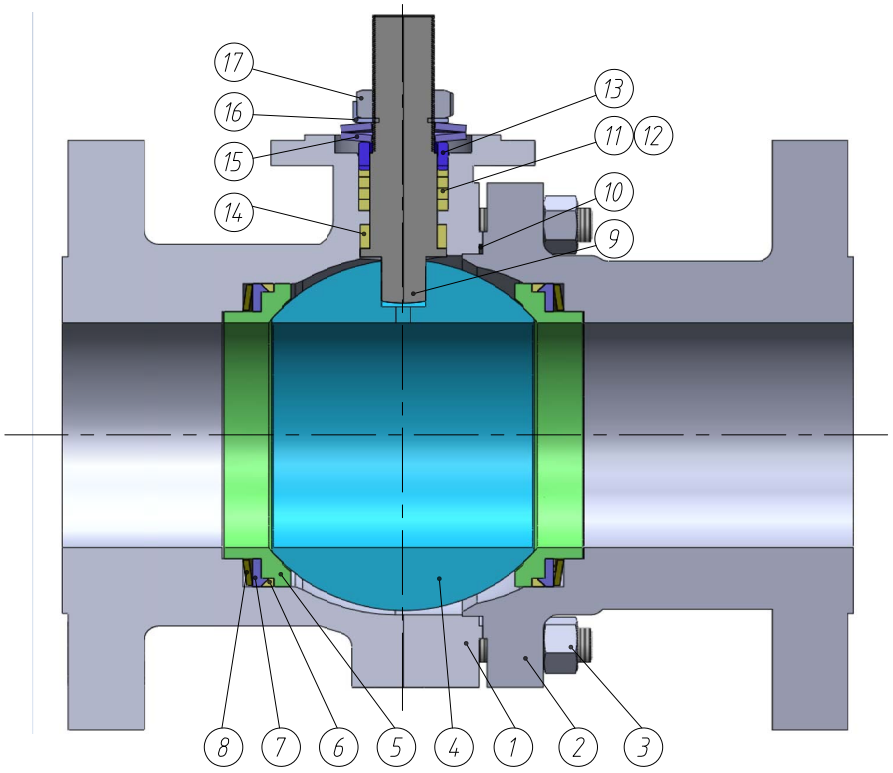
Optional Sealing Surface Material

In addition to the standard Ni layer, optional such as TCC, CrC, etc., as well as special needs ceramic, super coating and so on.



Blowout prevention
Figure 3.

Section Drawing



No.	Description	No.	Description
1	Body	10	Gasket
2	End Connection	11	Thrust ring down & top
3	Stud and Nut	12	Packing Ring
4	Ball	13	Packing Bushing
5	Seat	14	Bearing
6	Down Pressure ring	15	Belleville Washer
7	Seat-Press Ring	16	Lock Saddle
8	Belleville Spring	17	Stem Nut
9	Stem		

Materials of Construction

Max. Temperature	350°C	350°C	350°C
Min. Temperature	-29°C	-29°C	-29°C
Body	A216 WCB	A 351 CF8M	A 351 CF3M
End Connection	A216 WCB	A 351 CF8M	A 351 CF3M
Stud and Nut	A193 B7 A194 2H	A193 B8M A194 8M	A193 B8M A194 8M
Ball	F316/Ni60	F316/Ni60	F316L/Ni60
Seat	F316/Ni55	F316/Ni55	F316L/Ni55
Down Pressure Rring	Graphite	Graphite	Graphite
Seat-Press Ring	A182 F316L	A182 F316L	A182 F316L
Belleville Spring	Inconel x750	Inconel x750	Inconel x750
Stem	S17400	S17400	S17400
Body/Bonnet Gasket	GRAPHITE	GRAPHITE	GRAPHITE
Thrust Ring Down & Top	E-Carbon	E-Carbon	E-Carbon
Packing Ring	Graphite	Graphite	Graphite
Packing Bushing	A276 316	A276 316	A276 316L
Bearing	E-Carbon	E-Carbon	E-Carbon
Belleville Washer	Inconel x750	Inconel x750	Inconel x750
Lock Saddle	Stainless Steel	Stainless Steel	Stainless Steel
Stem Nut	A194 8M	A194 8M	A194 8M

Torque (Nm)

Class 150

Size		**Differential Pressure (bar)**					
NPS	DN	10			20		
		BTO,ETC	RTO,RTC	ETO,BTC	BTO,ETC	RTO,RTC	ETO,BTC
1/2	15	16	11	12	18	13	14
3/4	20	18	13	14	20	14	15
1	25	30	21	23	40	28	30
1-1/4	32	35	25	26	51	36	38
1-1/2	40	52	36	39	68	48	51
2	50	100	70	75	120	84	90
2-1/2	65	190	133	143	230	161	173
3	80	220	154	165	280	196	210
4	100	300	210	225	460	322	345

Class 300

Size		**Differential Pressure (bar)**											
NPS	DN	10			20			30			50		
		BTO,ETC	RTO,RTC	ETO,BTC	BTO,ETC	RTO,RTC	ETO,BTC	BTO,ETC	RTO,RTC	ETO,BTC	BTO,ETC	RTO,RTC	ETO,BTC
1/2	15	16	11	12	18	13	14	24	17	18	35	25	26
3/4	20	18	13	14	20	14	15	32	22	24	56	39	42
1	25	30	21	23	40	28	30	50	35	38	70	49	53
1-1/4	32	35	25	26	51	36	38	68	48	51	100	70	75
1-1/2	52	52	36	39	68	48	51	82	57	62	110	77	83
2	50	100	70	75	120	84	90	140	98	105	190	133	143
2-1/2	65	190	133	143	230	161	173	270	189	203	350	245	263
3	80	*	*	*	*	*	*	*	*	*	*	*	*
4	100	*	*	*	*	*	*	*	*	*	*	*	*

Assumptions:

- Seat sealing: F316/Ni
- Operating temperature: −29 to 38°C
- Medium characteristic: Lubricating
- Cycle frequency: Daily
- Stem sealing: ISO 15848

*Please consult with the factory

Torque — MAST (Ambient Temperature)

NPS	Material	Class 150	Class 300
		MAST(Nm)	MAST(Nm)
1/2	17-4PH	54	54
3/4	17-4PH	153	153
1	17-4PH	153	153
1-1/4	17-4PH	153	153
1-1/2	17-4PH	257	257
2	17-4PH	460	460
2-1/2	17-4PH	824	824
3	17-4PH	824	-
4	17-4PH	1415	-

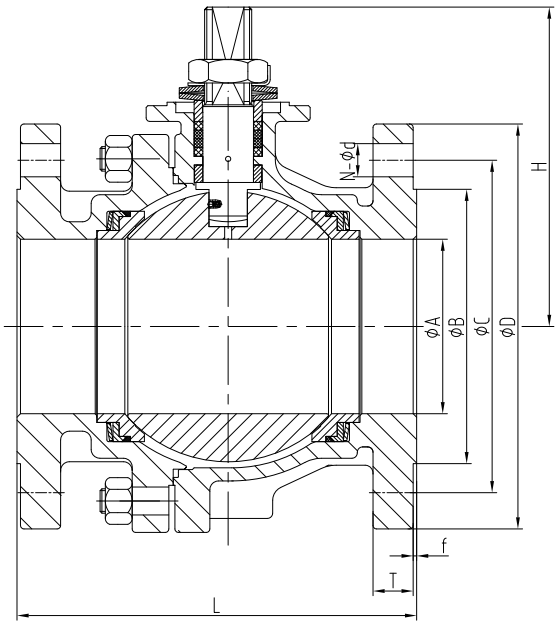
Leakage Allowable

Size		API 598		
NPS	DIN	Test Water (ml/min)	Test Gas (ml/min)	Testing Time (s)
1/2	15	0	0	15
3/4	20	0	0	15
1	25	0	0	15
1-1/4	32	0	0	15
1-1/2	40	0	0	15
2	50	0	0	15
2-1/2	65	0.312	0.1	60
3	80	0.375	0.12	60
4	100	0.5	0.16	60

Test Procedures

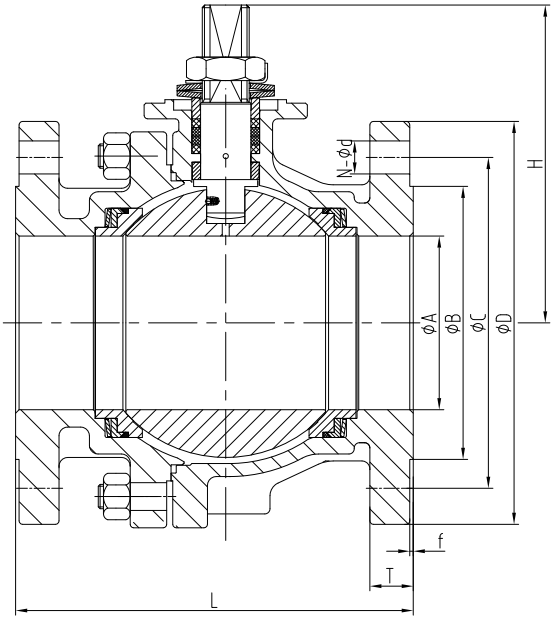
API 598	Test water	Water	1.1 PN
API 598	Test gas	Air-N2	1.1 PN or 5.5 bar

Ball Valve Dimensions



Size	ASME Class 150 Approximate Dimensions in mm										Weight (kg)
NPS	ØB	ØD	L	N	T	Ø d	ØC	Ø A	f	H	
1/2	35.1	89	108	4	9.7	16	60.5	13	1.6	59	1.82
3/4	42.9	99	117	4	11.2	16	69.8	20	1.6	66	2.12
1	50.8	108	127	4	12.7	16	79.2	25	1.6	77	3.04
1-1/4	63.5	117	140	4	14.2	16	88.9	32	1.6	82	4.45
1-1/2	73	127	165	4	15.9	16	98.6	38	1.6	96	5.8
2	91.9	152	178	4	17.5	19	120.6	50	1.6	108	8.36
2-1/2	104.6	178	190	4	20.6	19	139.7	65	1.6	135	15
3	127	190	203	4	22.4	19	152.4	76	1.6	150	19.92
4	157.2	229	229	8	22.4	19	190.5	100	1.6	183	32.9

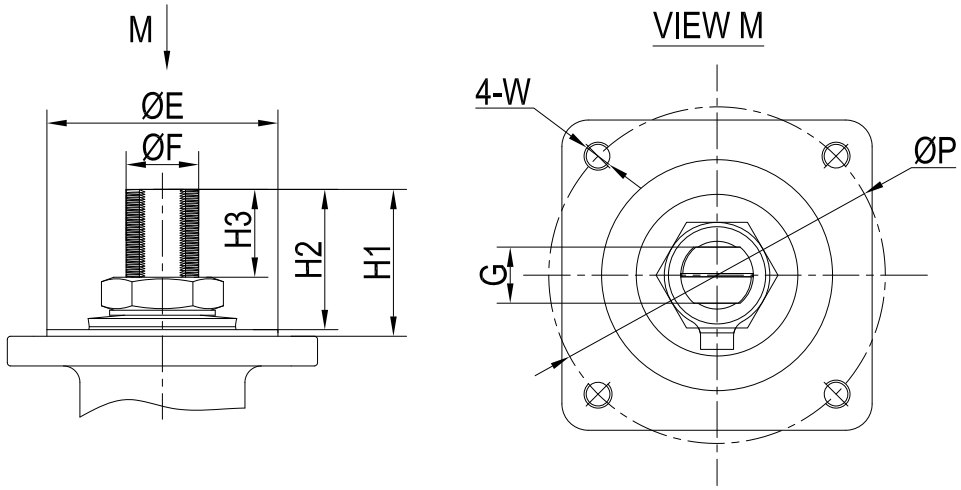
Size	ASME Class 300 Approximate Dimensions in mm										Weight (kg)
NPS	ØB	ØD	L	N	T	Ø d	ØC	Ø A	f	H	
1/2	35.1	95	140	4	12.7	16	66.5	15	1.6	59	2.2
3/4	42.9	117	152	4	14.2	19	82.6	20	1.6	66	3.25
1	50.8	124	165	4	15.7	19	88.9	25	1.6	77	4.48
1-1/4	63.5	133	178	4	17.5	19	98.6	32	1.6	82	5.8
1-1/2	73	155	190	4	19	22	114.3	38	1.6	96	8.7
2	91.9	165	216	8	20.6	19	127	50	1.6	108	11.2
2-1/2	104.6	190	241	8	23.9	22	149.4	65	1.6	135	19
3	127	210	283	8	26.9	22	168.1	76	1.6	150	28
4	157.2	254	305	8	30.2	22	200.2	100	1.6	183	43.7



Size	ASME Class 150 Approximate Dimensions in mm										Weight (kg)
DN	ØB	ØD	L	N	T	Ø d	ØC	Ø A	f	H	
15	45	95	115	4	16	14	65	15	2	59	2.46
20	58	105	120	4	18	14	75	20	2	66	3.08
25	68	115	125	4	18	14	85	25	2	77	4.18
32	78	140	165	4	18	18	100	32	2	82	5.62
40	88	150	140	4	18	18	110	38	3	96	7.95
50	102	165	150	4	18	18	125	50	3	108	10.5
65	122	185	170	8	18	18	145	65	3	135	17
80	138	200	180	8	20	18	160	80	3	150	21.5
100	158	220	190	8	20	18	180	100	3	183	34

Size	DIN-EN PN25/PN40 Approximate Dimensions in mm										Weight (kg)
DN	ØB	ØD	L	N	T	Ø d	ØC	Ø A	f	H	
15	45	95	115	4	16	16	65	15	2	59	2.46
20	58	105	120	4	18	18	75	20	2	66	3.08
25	68	115	125	4	18	18	85	25	2	77	4.18
32	78	140	165	4	18	18	100	32	2	82	5.62
40	88	150	140	4	18	18	110	38	3	96	7.95
50	102	165	150	4	20	18	125	50	3	108	10.5
65	122	185	170	8	22	18	145	65	3	135	18.3
80	138	200	180	8	24	20	160	80	3	150	24.9
100	162	235	190	8	24	22	190	100	3	183	37.2

Ball Valve Dimensions



Size		Dimensions for Mounting Pad in mm							
NPS	DN	G	ΦF	W	ΦE	ΦP	H1	H2	H3
1/2	15	6.3	10	M5	30	42	19.5	17.5	8
3/4	20	6.3	10	M5	30	42	19.5	17.5	8
1	25	9	14	M6	35	50	20.5	19.5	8.5
1-1/4	32	9	14	M6	35	50	20.5	19.5	8.5
1-1/2	40	11	16	M8	55	70	31.5	30	17.5
2	50	14	18	M8	55	70	34.5	33	17.5
2-1/2	65	17	22	M10	70	102	46.5	44.5	26
3	80	17	22	M10	70	102	46.5	44.5	26
4	100	20	27	M10	70	102	56.5	54.5	32

Bolting Torque

Torque (Nm)						
MATERIAL ASTM	Stud Size					
	M10×1.5	M14×1.5	M16×1.5	M18×1.5	M22×1.5	M27×1.5
A193 B8M Class 2	6	15	20	22	25	30

Body Stud Torque (Nm)								
MATERIAL ASTM	Stud Size							
	M8	M10	M12	M14	M16	M20	M24	M27
A193 B7	20	38	64	103	157	305	527	768
A193 B8M Class 2	23	44	74	118	181	354	513	613

Flow Rates (Cv and Kv) — Full Bore

NPS	DN	Cv 90°	Kv 90°
1/2	15	25	21
3/4	20	50	43
1	25	80	68
1-1/2	40	240	204
2	50	460	391
2-1/2	65	820	697
3	80	1250	1062
4	100	2230	1896

Data for Calculation of Flow

The coefficient of flow Cv expresses the rate of flow in gallons per minute at 60°F water with a pressure drop 1 psig across the valve. The Cv coefficients for the various types and sizes. Shown in the tables, have been determined from actual flow tests. Note: The relationship between Cv and Kv can be express as: Cv=1.156Kv

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