World Class Clampseal® Throttling Valves

- *Replaceable Seat/Venturi*
- *Low Velocity Across Main Seat*
- *Precise Flow Control*
- *Pressure Seal Bonnet*

Conval Clampseal® Throttling Valves are designed for a wide range of severe service applications requiring repeatable flow control and dependable shutoff.

STANDARD SIZES
1/2" through 4"

PRESSURE RATING
ASME Class 900 through 4095

STANDARD MATERIALS
Forged Alloy Steel 182 F22
Other materials available upon request

STANDARD ACCESSORIES
Actuators - Air, Motor, Hydraulic

DESIGN FEATURES

Replaceable 4400 Stainless Steel Seat/Venturi

The venturi is an integral part of the removable seat. It is readily changed in-line should different flow characteristics be required or replacement be necessary from excessive wear. The orifice is sized to keep fluid velocity across the seat below damaging levels. The exit orifice angle is designed to minimize down stream piping erosion and noise. Several erosion-resistant materials are available. Consult factory.

Position Indicator

The position indicator is easy to read and an accurate indication of valve stem position.

Axially-loaded Packing System

The packing is uniformly axially loaded. The bonnet cartridge packing chamber with a secure leakproof bonnet allows rapid access to valve trim for ease of inspection and maintenance.

Mated Stem Assembly

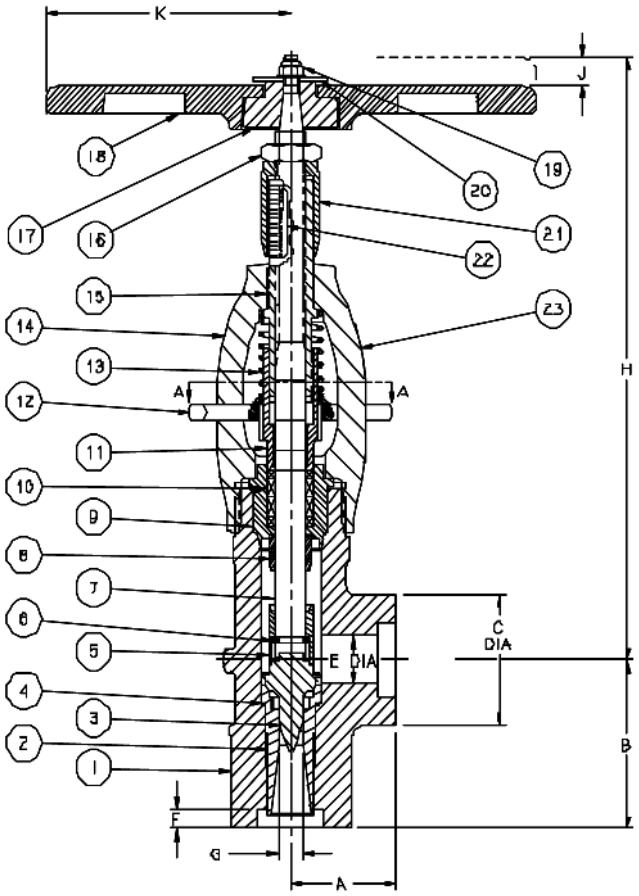
The stem assembly is mated to the orifice for proper control. Like the orifice seat assembly, it is readily changeable should different flow characteristics be required or excessive erosion or corrosion be a problem.

Pressure Seal Bonnet

A secure, leakproof bonnet allows rapid access to valve trim for inspection and maintenance. The pressure boundary is sealed at the smallest diameter possible to ensure maximum sealing capability.

Two-Year Warranty

Conval is committed to unsurpassed quality. We are so confident of the quality of our product, that we offer a two-year warranty.



LIST OF MATERIALS

NO.	NAME	QTY	MATERIAL	SPECIFICATIONS
1	BODY	1	*FORGED ALLOY STEEL	SA182 F22
2	SEAT/ORIFICE	1	STAINLESS 440C	AMS 5352
3	NEEDLE DISC	1	STELLITE NO. 6	AMS 5387
4	O-RING	1	STAINLESS	MFR. STD.
5	RETAINER	1	STAINLESS	ASTM A582-416
6	SPLIT RING	2	STAINLESS	ASME SA479-316
7	STEM	1	STAINLESS	ASTM A 582-416
8	BACKSEAT	1	NITRONIC 60	ASME SA479 UNS S 21800
9	BONNET CHAMBER	1	STAINLESS	ASME SA479-410
10	PACKING RING	2	END/WIPER RINGS	BRAIDED CARBON YARN
		2	DIE FORMED RINGS	FLEXIBLE GRAPHITE
11	GLAND	1	STAINLESS	ATSTM A582-416
12	IGW	1	CAST STAINLESS	AMS 5360
13	SPRING	1	STAINLESS	MFR. STD.
14	YOKE	1	*FORGED ALLOY STEEL	SA 182 F22
15	YOKE BUSHING	1	ALUMINUM BRONZE	ASME SB-150 UNS C64200
16	CHECK NUT	1	STEEL	MFR. STD.
17	ADAPTER	1	MALLEABLE IRON	ASTM A47 GR. 32510
18	HANDLE	1	MALLEABLE IRON	ASTM A47 GR. 32510
19	LOCKNUT	1	STEEL	MFR. STD.
20	WASHER	1	STEEL	MFR. STD.
21	INDICATOR SLEEVE	1	STEEL	MFR. STD.
22	INDICATOR TAG	1	ALUMINUM	MFR. STD.
23	I.D. PLATE	1	STAINLESS	ASME SA240-304
24	CLAMPBOLT	1	STAINLESS	MFR. STD.

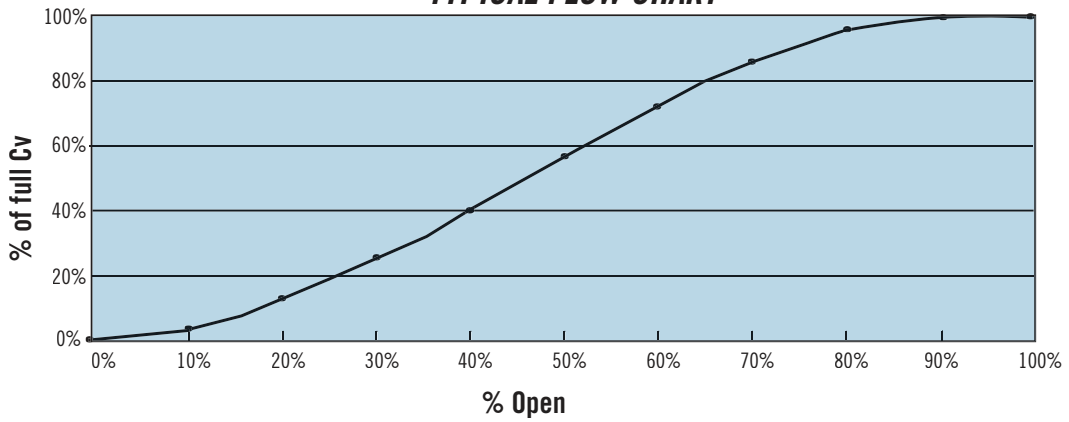
* A105, and SA 182 F3 16 Material combinations available upon request.

DIMENSIONS

PRESSURE CLASS	Size Code	Pipe Size	A	B	C	D	E	Wgt
	5E	1/2 15	2 5/16 59	4 100	3 5/16 84	9 3/4 248	8 200	13 59
	5E	3/4 20	2 5/16 59	4 100	3 5/16 84	9 3/4 248	8 200	13 59
NOMINAL	5E	1 25	2 5/16 59	4 100	3 5/16 84	9 3/4 248	8 200	13 59
900	7G	1 25	2 3/4 70	4 1/4 108	3 1/4 88	13 3/8 340	12 300	26 118
	7G	1 1/4 32	2 3/4 70	4 1/4 108	3 1/4 88	13 3/8 340	12 300	26 118
INTERMEDIATE	7G	1 1/2 40	2 3/4 70	4 1/4 108	3 1/4 88	13 3/8 340	12 300	26 118
1155	7G	2 50	2 3/4 70	4 1/4 108	3 1/4 88	13 3/8 340	12 300	26 118
	8H	2 50	3 80	4 1/2 114	3 15/16 100	15 1/8 384	12 300	40 182
	8H	2 1/2 65	3 80	4 1/2 114	3 15/16 100	15 1/8 384	12 300	40 182
	10K	3 80	5 125	6 152	4 7/8 124	18 5/8 473	18 450	86 390
	10K	4 100	5 125	6 152	4 7/8 124	18 5/8 473	18 450	86 390
	5E	1/2 15	2 5/16 59	4 100	3 5/16 84	9 3/4 248	8 200	13 59
	5E	3/4 20	2 5/16 59	4 100	3 5/16 84	9 3/4 248	8 200	13 59
	5E	1 25	2 5/16 59	4 100	3 5/16 84	9 3/4 248	8 200	13 59
NOMINAL	7G	1 25	2 3/4 70	4 1/4 108	3 1/4 88	13 3/8 340	12 300	26 118
1500	7G	1 1/4 32	2 3/4 70	4 1/4 108	3 1/4 88	13 3/8 340	12 300	26 118
	8H	1 1/4 32	3 80	4 1/2 115	3 15/16 100	15 1/8 384	12 300	40 182
INTERMEDIATE	7G	1 1/2 40	2 3/4 70	4 1/4 108	3 1/4 88	13 3/8 340	12 300	26 118
2155	8H	1 1/2 40	3 80	4 1/2 115	4 7/8 124	15 1/8 384	12 300	40 182
	8H	2 50	3 80	4 1/2 115	4 7/8 124	15 1/8 384	12 300	40 182
	10K	2 1/2 65	5 125	6 150	4 7/8 124	18 5/8 473	18 450	86 390
	10K	3 80	5 125	6 150	4 7/8 124	18 5/8 473	18 450	86 390
	10K	4 100	5 125	6 150	4 7/8 124	18 5/8 473	18 450	86 390
	5E	1/2 15	2 5/16 59	4 100	3 5/16 84	9 3/4 248	8 200	13 59
	5E	3/4 20	2 5/16 59	4 100	3 5/16 84	9 3/4 248	8 200	13 59
NOMINAL	5E	1 25	2 5/16 59	4 100	3 5/16 84	9 3/4 248	8 200	13 59
2500	7G	1 1/4 32	2 3/4 70	4 1/4 108	3 1/4 88	13 3/8 340	12 300	26 118
	8H	1 1/4 32	3 80	4 1/2 115	3 15/16 100	15 1/8 384	12 300	40 182
INTERMEDIATE	7G	1 1/2 40	2 3/4 70	4 1/4 115	3 1/4 88	13 3/8 340	12 300	26 118
3045	8H	1 1/2 40	3 80	4 1/2 115	3 15/16 100	15 1/8 384	12 300	40 182
	8H	2 50	3 80	4 1/2 115	3 15/16 100	15 1/8 384	12 300	40 182
	10K	2 50	5 125	6 150	4 7/8 124	18 5/8 473	18 450	86 390
	10K	2 1/2 65	5 125	6 150	4 7/8 124	18 5/8 473	18 450	86 390
	10K	3 80	5 125	6 150	4 7/8 124	18 5/8 473	18 450	86 390

* Socket Weld dimensions shown; Consult factory for Butt Weld dimensions.
Numbers shown in Black indicate dimensions in inches, weightin pounds. Numbers shown in blue indicate dimensions in mm, weights in kilograms.
Butt Weld dimensions determined by pipe schedule.
NOTE: All weights are approximate for shipping purposes only.

TYPICAL FLOW CHART



SPECIFICATIONS

Size Code Fig. No.	Pipe Size (Inches)	Cv Standard Orifice Size 1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1	Wt. (lbs.)
5E	1/2 3/4 1	0.3	0.6	1.1	-	-	-	-	-	-	-	-	-	-	-	-	12
7G	1 1 1/4 1 1/2 2	-	-	1.1	1.7	2.5	3.3	4.3	5	-	-	-	-	-	-	-	26
8H	1 1/4 1 1/2 2	-	-	-	-	-	3.5	4.6	6	7	9	10	-	-	-	-	40
10K	2 2 1/2 3 4	-	-	-	-	-	-	-	6	7	9	10	12	14	16	19	86

-Socket Weld Specifications Shown. Butt Weld Available. Other orifices available upon request.

Size Code Fig. No.	Pipe Size (mm)	Cv Standard Orifice Size 3	5	6	8	10	11	13	14	16	17	19	21	22	24	25	Wt. (kg.)
5E	13 19 25	0.3	0.6	1.1	-	-	-	-	-	-	-	-	-	-	-	-	5.4
7G	25 32 38 51	-	-	1.1	1.7	2.5	3.3	4.3	5	-	-	-	-	-	-	-	11.8
8H	32 38 51	-	-	-	-	-	3.3	4.6	6	7	9	10	-	-	-	-	18.2
10K	51 64 76 102	-	-	-	-	-	-	-	6	7	9	10	12	14	16	19	39.0

Example:

Given:

Steam
P1 = 1000 (psi) Super heat = 105(F deg)
P2 = 800 (psi)
T = 650 (deg.F)
Flow Rate = 20,000 (lbs/hr)

1) Calculate outlet pressure as % of inlet pressure

$\frac{P2}{P1} = 0.8$

Since outlet pressure is greater than 55% of inlet pressure, we must multiply capacity by the correction factor. From the curve, the correction factor = .85.

.85 (20,000) = 17,000 (lbs/hr)

2) If steam is super heated, adjust capacity.

For 105 (F deg) Super Heated Steam:

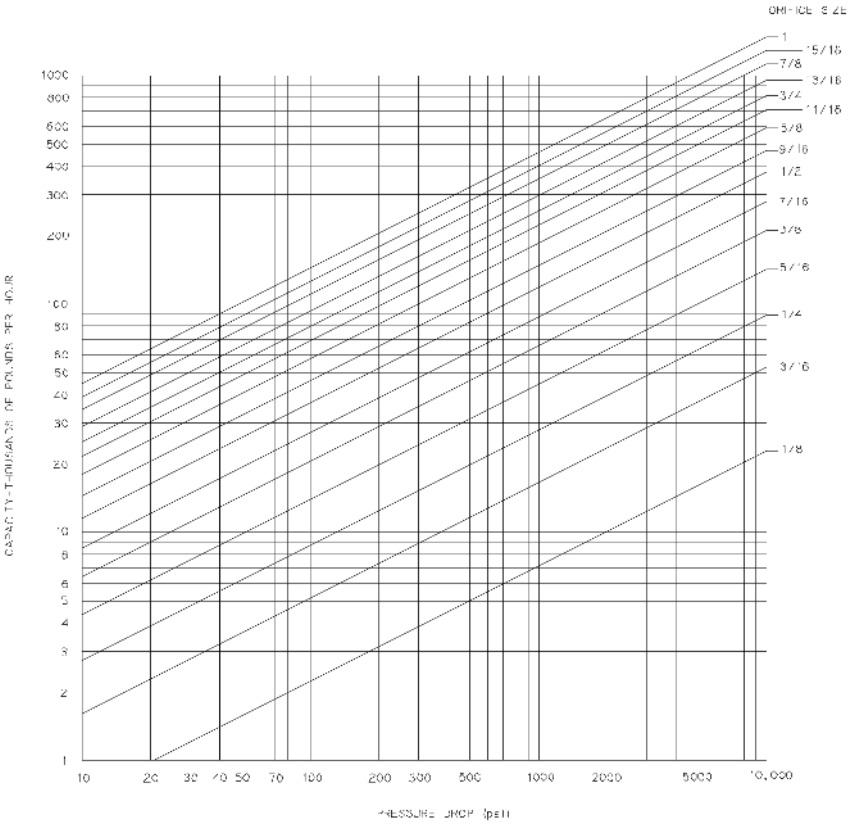
Capacity = 17,000 [1 + .00065(105)] = 18,160 (lbs/hr)

3) Size Orifice from chart above using:

Inlet Pressure = 1,000 (psi)
Flow Rate = 18,160 (lbs/hr)

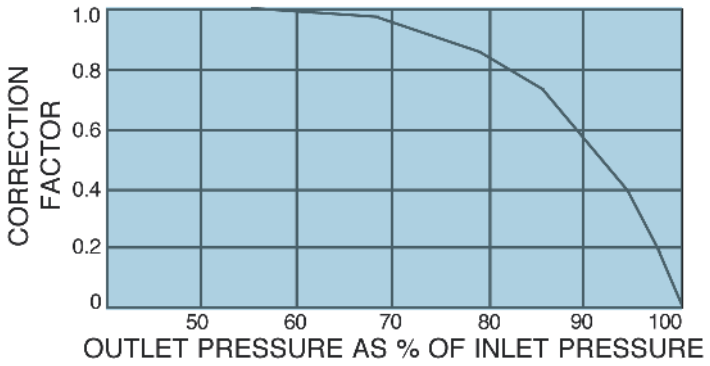
Find the intersection point on chart. Correct orifice size is directly above and to the left of the intersection point. In this case we would use an 11/16" orifice. Adjust for superheat conditions by multiplying the required flow rate by (1 + .00065 x degrees superheat) prior to cross referencing.

Saturated Steam



Correction Factor

If outlet pressure is greater than 55% of the inlet pressure, multiply capacity by the correction factor below:



Example:

Given:

Water
P1 = 1000 (psi)
△ P = 1000 (psi)
T = 350 (deg.F)
Flow Rate = 10,000 (lbs/hr)
Vapor Pressure = 135 (psi)

1) Since T>300, we must use a corrected max. pressure drop.

△ P = .9 x (1000 - .83 x 135)

△ P = 799.155

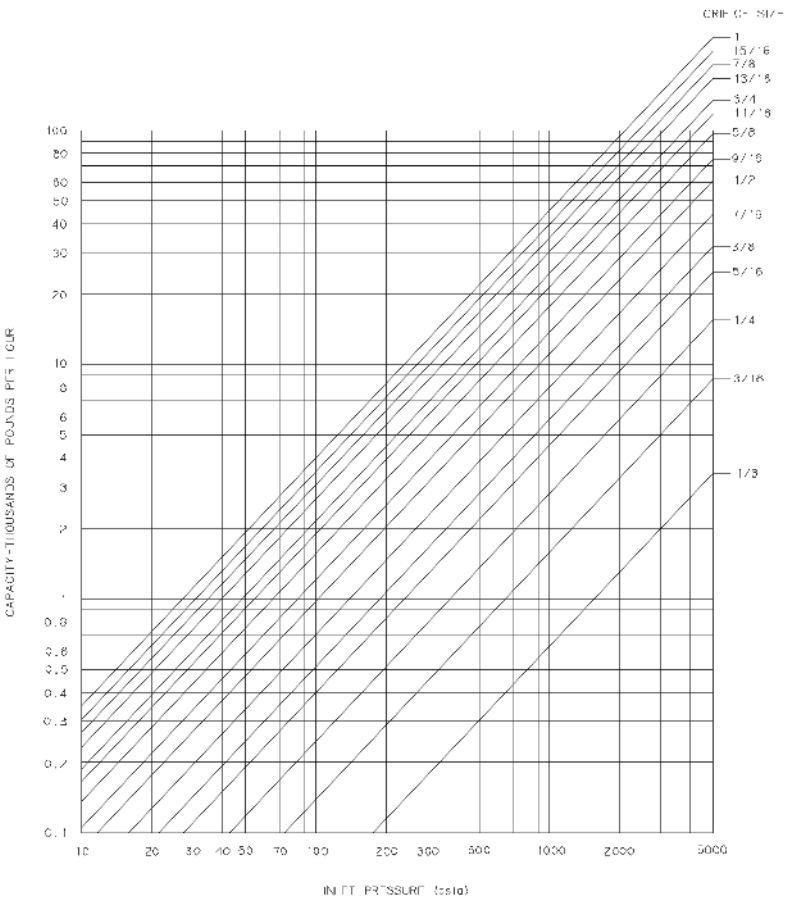
2) Size orifice from chart using:

△ P = 799.155

Flow Rate = 10,000

Find the intersection point on the chart. Correct orifice size is directly above and to the left of the intersection point. In this case we would use a 3/16" orifice.

Liquid



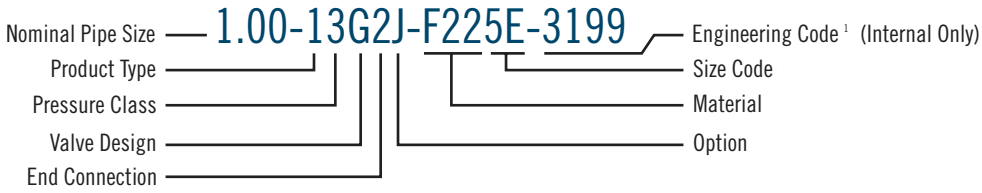
Correction Factor

If temperature is greater than 300°F chocked flow may occur.
Therefore the maximum pressure drop used for sizing is given by:

P = .9 (P1 - .83 x Pv)

Where P1 = inlet pressure
Pv = vapor pressure

Figure Number Description



VALVE DESIGN

A Angle Pattern Stop
B Tandem Blowdown: 2 Angle Bodies
C Y-Pattern Check
D Angle Pattern Check
E T-Pattern Check
F Gate
G Y-Pattern Stop
H Bellows Seal
J Cryogenic
K Tandem Bowdown: 1 Angle Body, 1 Y-Pattern
L Leak Off
N Continuous Blowdown
P T-Pattern Stop
R Y-Pattern Stop Check
S Angle Pattern Stop Check
T T-Pattern Stop Check
U Throttling
V Tandem Blowdown: 2 Y-Pattern Bodies
W Strainer W/Blowoff Valve
X Strainer W/Blowoff Fitting
Y Strainer
Z 3-Way
1 Bonnetless
2 Tandem Blowdown: 1- Ball Valve 1-Throttling Valve
8 Hemiseal Ball Valve
9 Camseal Ball Valve

PRODUCT TYPE

1 Globe Valve
2 Whisperjet
3 Y-Body - Extended Body
4 Desuperheater
5 Gate
8 Ball

ASME PRESSURE CLASS

	Nominal	Intermediate
0	Under 900	
1	900	1195
2	1500	2155
3	2500	3045
4	3500	4095
8	4500	

END CONNECTIONS

1 Threaded
2 Socket Weld Full Port
3 Socket Weld Reduced Port
4 Butt Weld Full Port
5 Butt Weld Reduced Port
6 But Weld Double Reduced Port
7 Clamp Connector
8 Flanged - Standard
9 Flanged - Special
0 Other

OPTIONS

A AUMA Actuator
B EIM Actuator
C Handwheel
D Fisher Actuator
E Orifice Port
F Micrometer Dial
G Bendix Actuator
H Spinner Handle
J I.G.W.
K Drain Connection
L Locking Handle
M Stem Shroud
N Copes Actuator
P Limitorque Actuator
Q L.L.G. W/I.G.W.
R Rotork Actuator
S Single Limitswitch
T Ball Check
U Double Limitswitch
V Valtek Actuator
W Needle Disc
X Chain Wheel
Y Conval Actuator
Z Other

MATERIAL

Carbon

105 Standard
A05 Stainless Steel Internals
B05 Ductile Iron Bushing
C05 17-4 PH Stem
E05 Monel Trim
N05 Navy Special
S05 Cobalt Free
P05 Polymer Trim
R05 N60 Bushing

Alloy

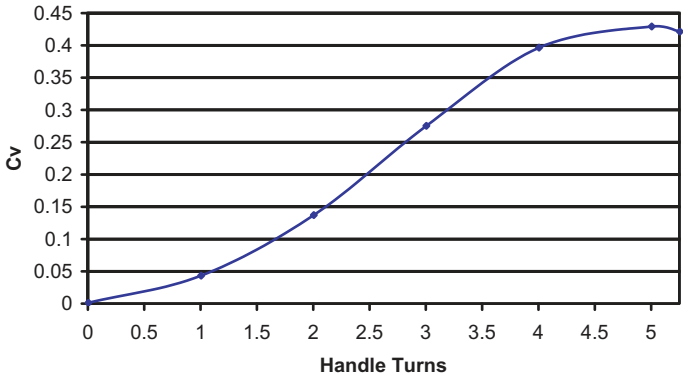
F22 Standard
F91 Standard
A22 Stainless Steel Internals
B22 Ductile Iron Bushing
C22 F22 Body /A105 Yoke
E22 Monel Trim
N22 Navy Special
S22 Cobalt Free
P22 Polymer Trim
R22 N60 Bushing

Stainless

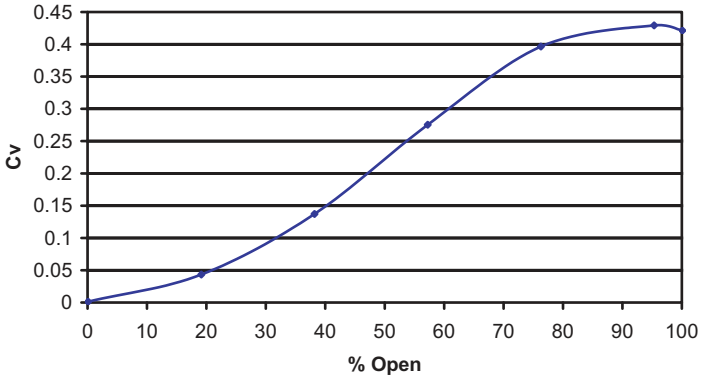
316 Standard
B16 Ductile Iron Bushing
D16 316 Body Only
E16 Monel Trim
L16 316L Body
N16 Navy Special
S16 Cobalt Free
P16 Polymer Trim
R16 N60 Bushing

[1] Engineering Code assigned by Conval is a key to Engineering Bill of Material and will appear on all packing lists and invoices. This code need not be supplied when ordering unless a specific configuration is being reorderd.

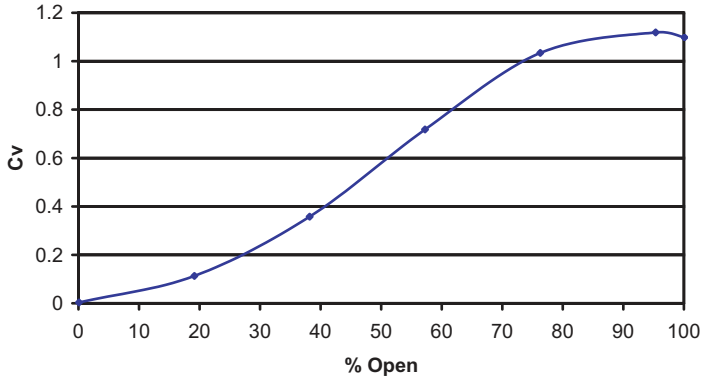
Cv vs Handle Turns for a 5E Throttle Valve with 1/8" Orifice



Cv vs % Open for a 5E Throttle Valve with 1/8" Orifice

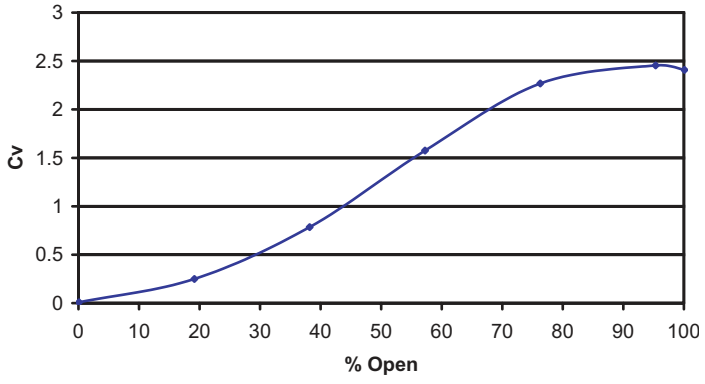


Cv vs % Open for a 5E Throttle Valve with 3/16" Orifice



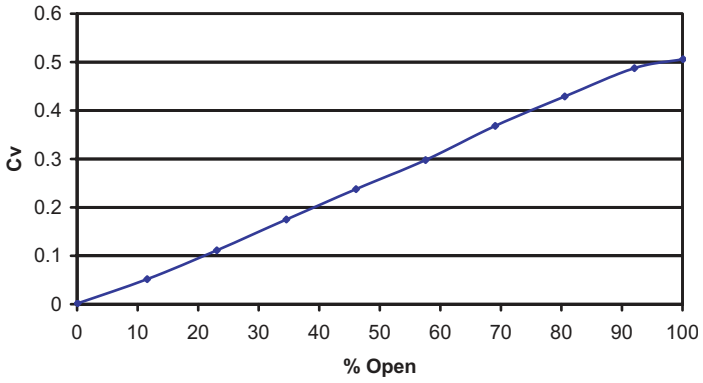
Cv vs Handle Turns for a 5E Throttle Valve with 3/16" Orifice

Cv vs % Open for a 5E Throttle Valve with 1/4" Orifice

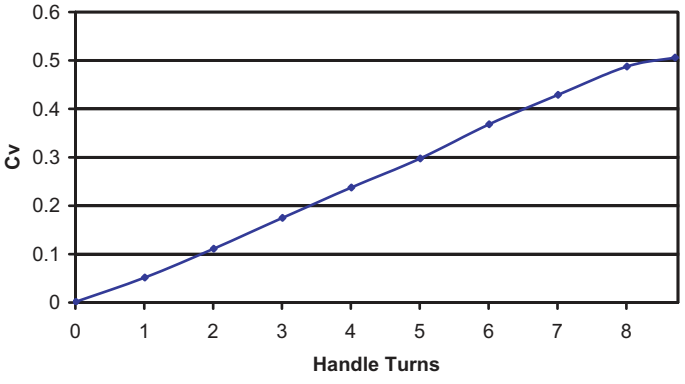


Cv vs Handle Turns for a 5E Throttle Valve with 1/4" Orifice

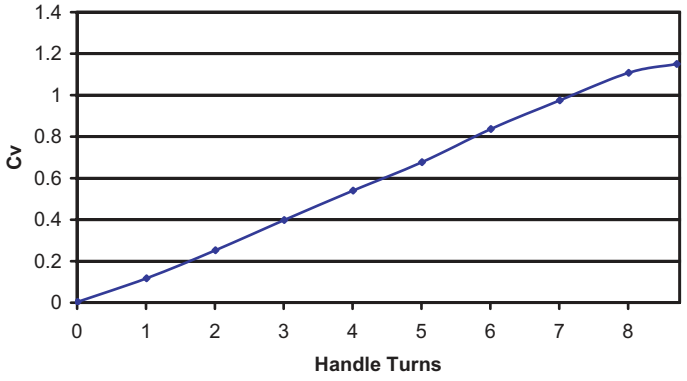
Cv vs % Open for a 7G Throttle Valve with 1/8" Orifice



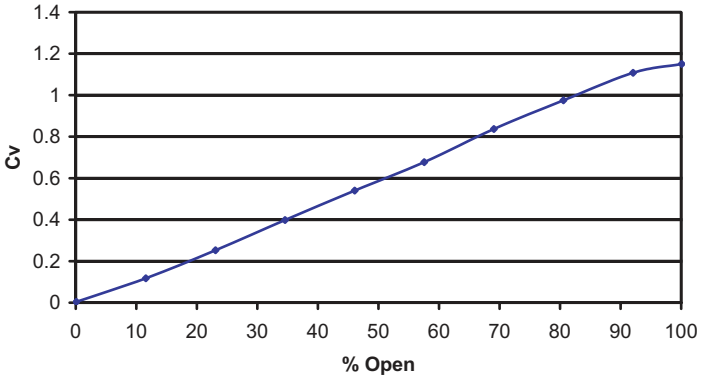
Cv vs Handle Turns for a 7G Throttle Valve with 1/8" Orifice



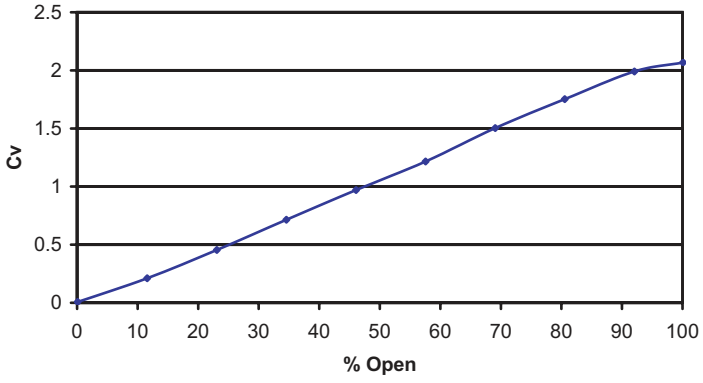
Cv vs Handle Turns for a 7G Throttle Valve with 3/16" Orifice



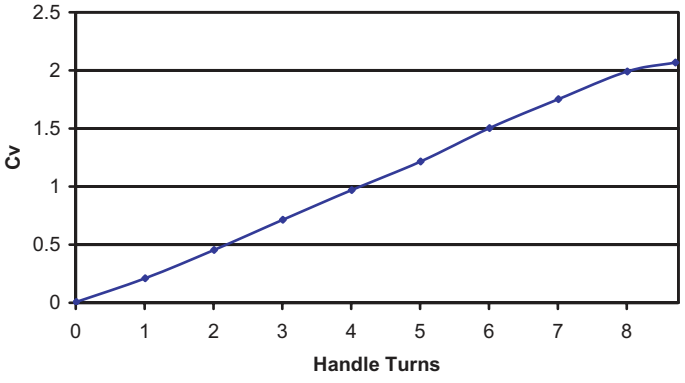
Cv vs % Open for a 7G Throttle Valve with 3/16" Orifice



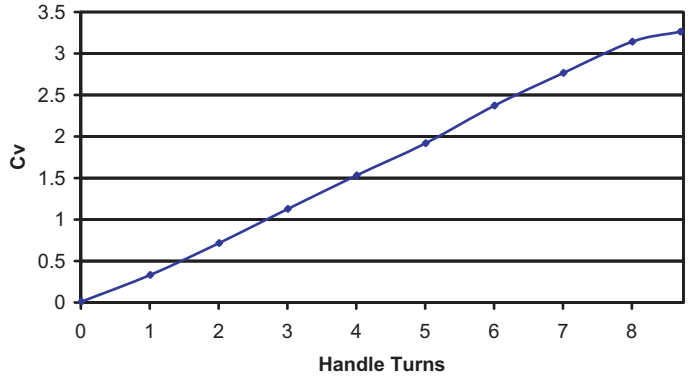
Cv vs % Open for a 7G Throttle Valve with 1/4" Orifice



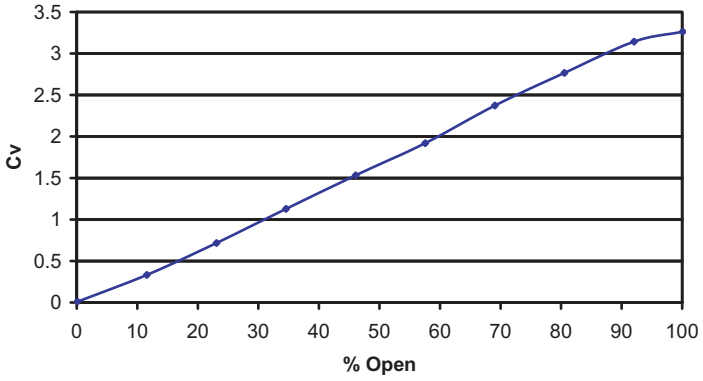
Cv vs Handle Turns for a 7G Throttle Valve with 1/4" Orifice



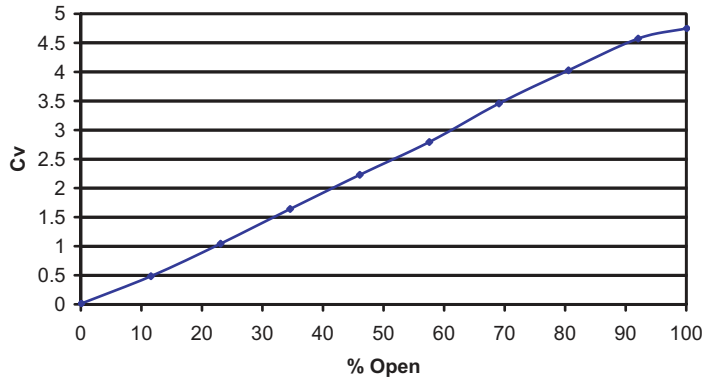
Cv vs Handle Turns for a 7G Throttle Valve with 5/16" Orifice



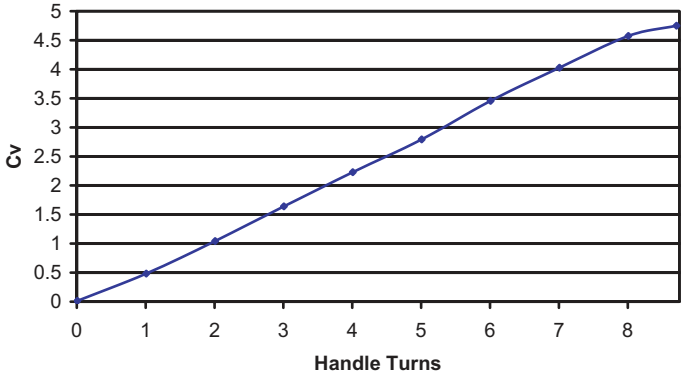
Cv vs % Open for a 7G Throttle Valve with 5/16" Orifice



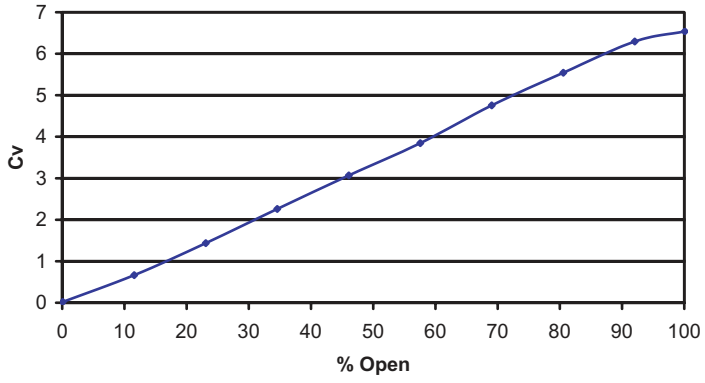
Cv vs % Open for a 7G Throttle Valve with 3/8" Orifice



Cv vs Handle Turns for a 7G Throttle Valve with 3/8" Orifice

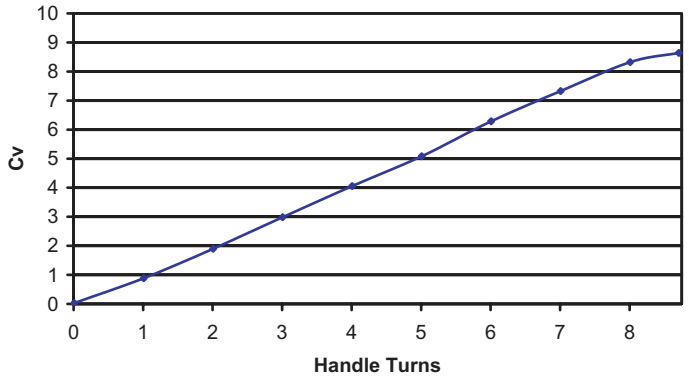


Cv vs % Open for a 7G Throttle Valve with 7/16" Orifice

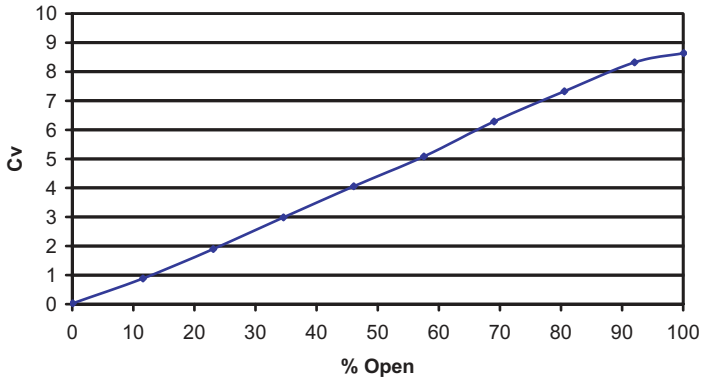


Cv vs Handle Turns for a 7G Throttle Valve with 7/16" Orifice

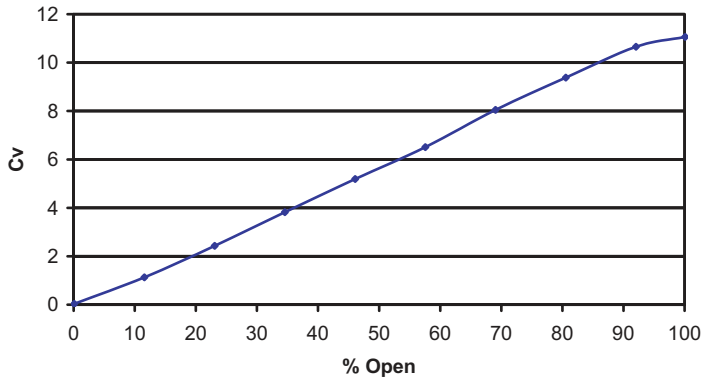
Cv vs Handle Turns for a 7G Throttle Valve with 1/2" Orifice



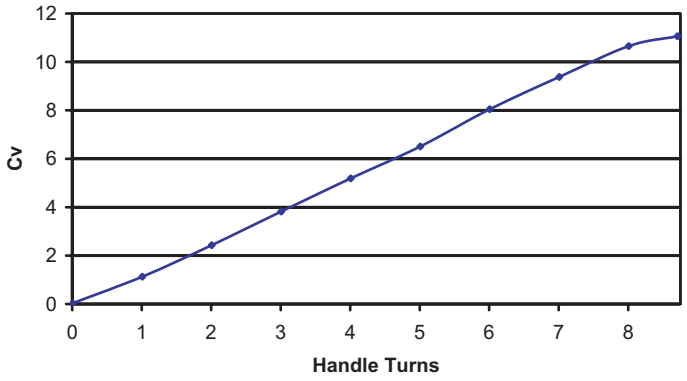
Cv vs % Open for a 7G Throttle Valve with 1/2" Orifice



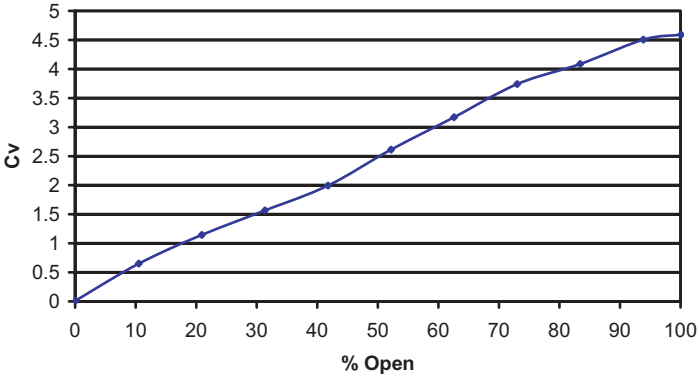
Cv vs % Open for a 7G Throttle Valve with 9/16" Orifice



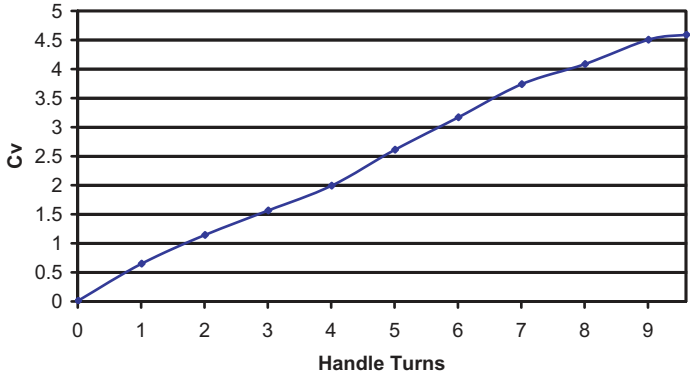
Cv vs Handle Turns for a 7G Throttle Valve with 9/16" Orifice



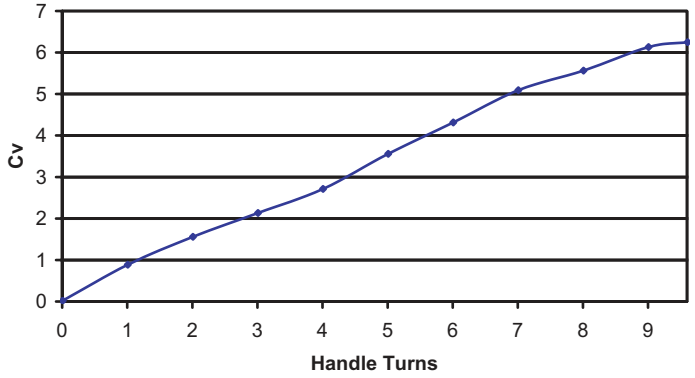
Cv vs % Open for a 8H Throttle Valve with 3/8" Orifice



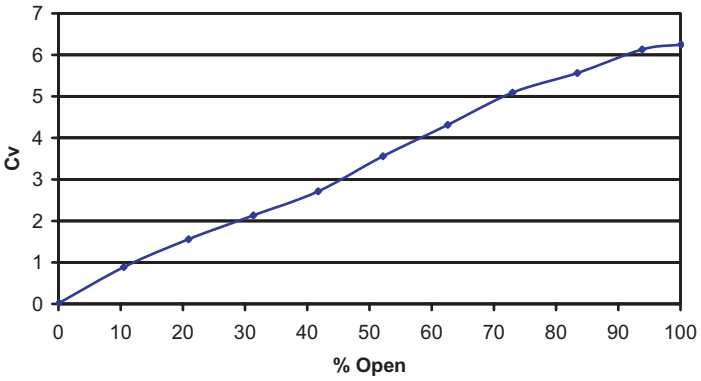
Cv vs Handle Turns for a 8H Throttle Valve with 3/8" Orifice



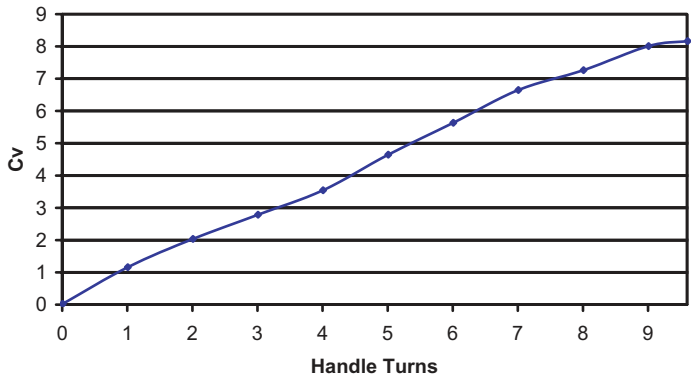
Cv vs Handle Turns for a 8H Throttle Valve with 7/16" Orifice



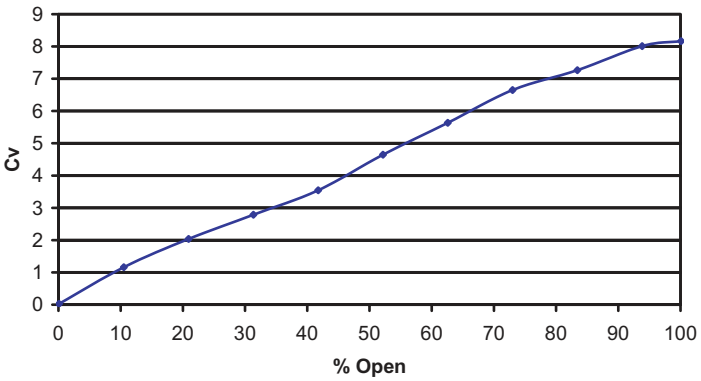
Cv vs % Open for a 8H Throttle Valve with 7/16" Orifice



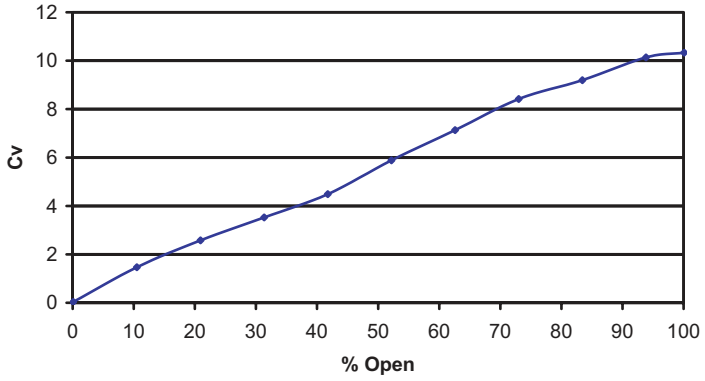
Cv vs Handle Turns for a 8H Throttle Valve with 1/2" Orifice



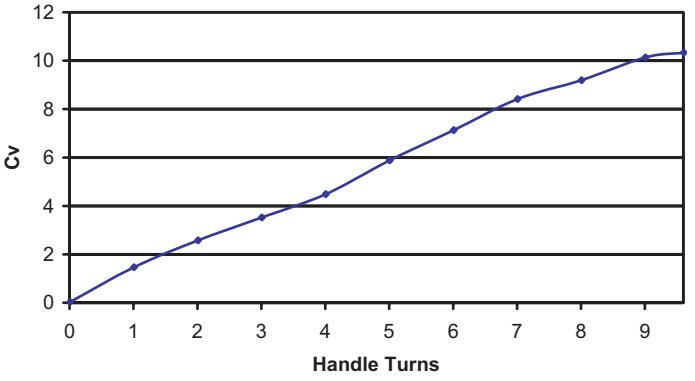
Cv vs % Open for a 8H Throttle Valve with 1/2" Orifice



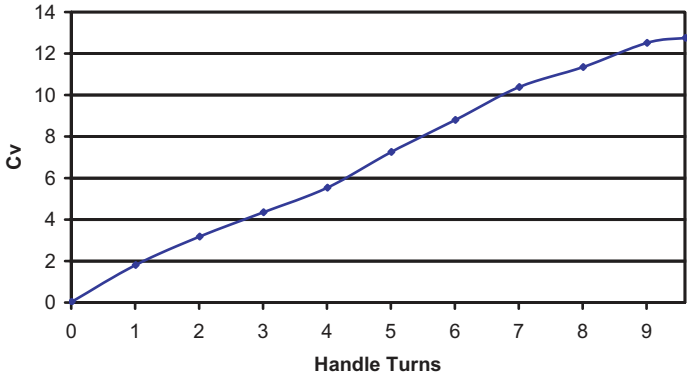
Cv vs % Open for a 8H Throttle Valve with 9/16" Orifice



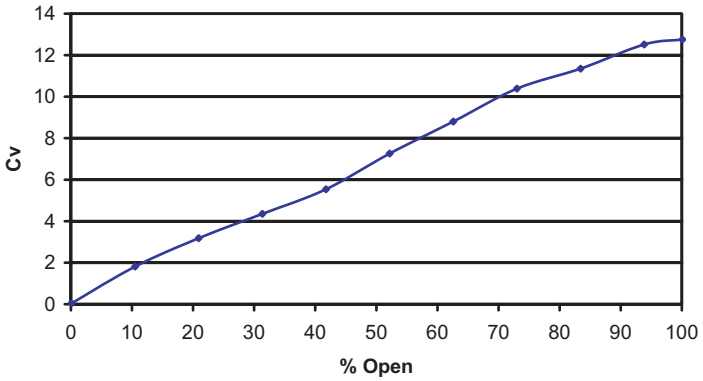
Cv vs Handle Turns for a 8H Throttle Valve with 9/16" Orifice



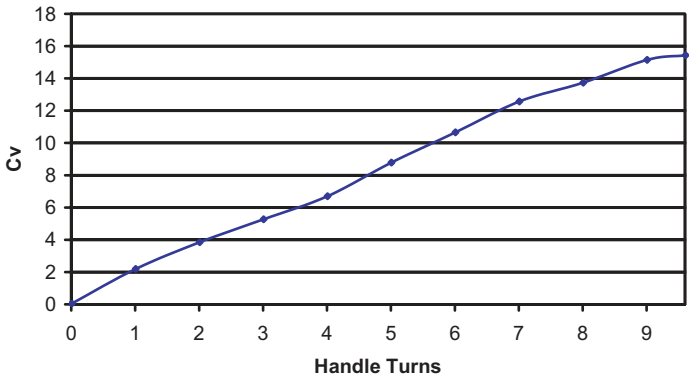
Cv vs Handle Turns for a 8H Throttle Valve with 5/8" Orifice



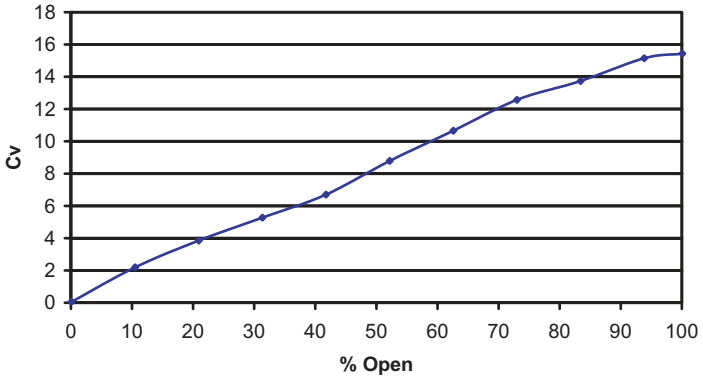
Cv vs % Open for a 8H Throttle Valve with 5/8" Orifice



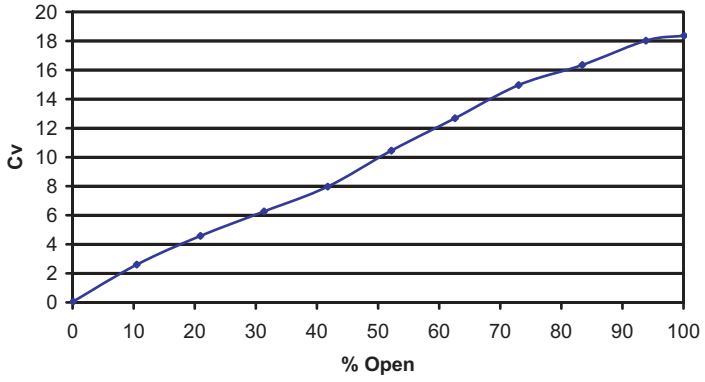
Cv vs Handle Turns for a 8H Throttle Valve with 11/16" Orifice



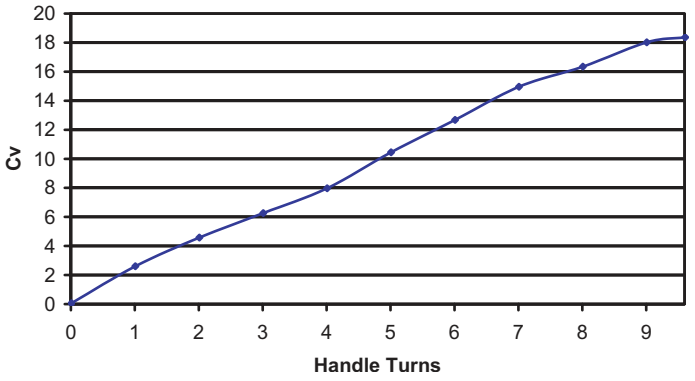
Cv vs % Open for a 8H Throttle Valve with 11/16" Orifice



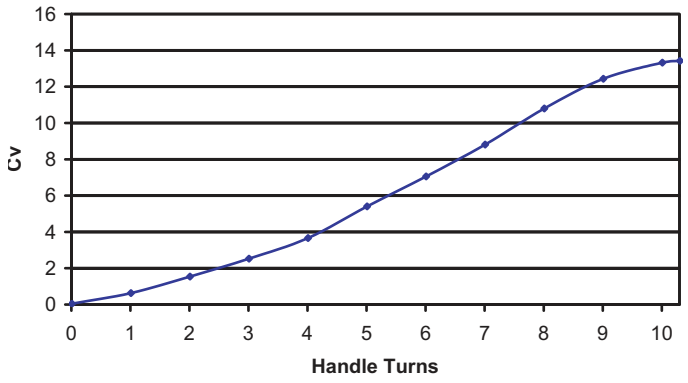
Cv vs % Open for a 8H Throttle Valve with 3/4" Orifice



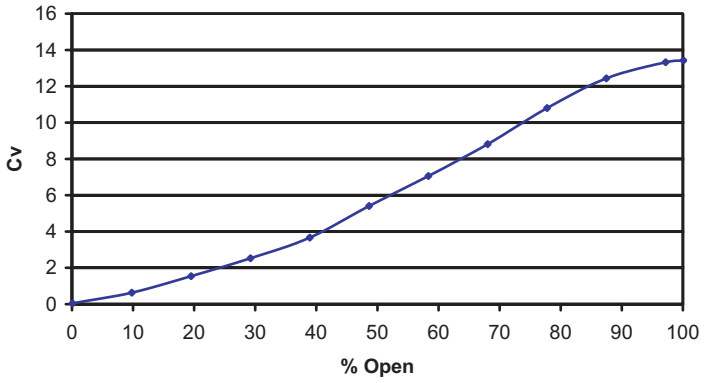
Cv vs Handle Turns for a 8H Throttle Valve with 3/4" Orifice



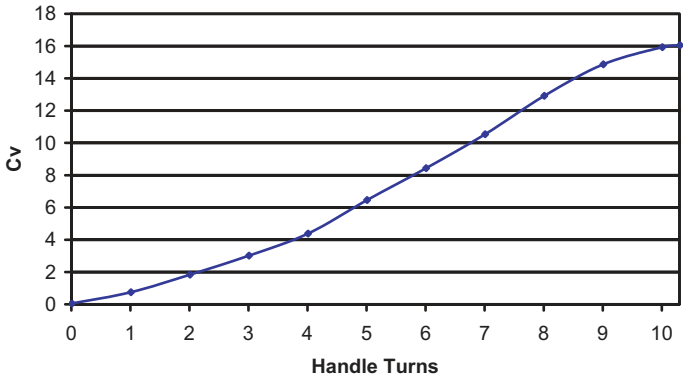
Cv vs Handle Turns for a 10K Throttle Valve with 9/16" Orifice



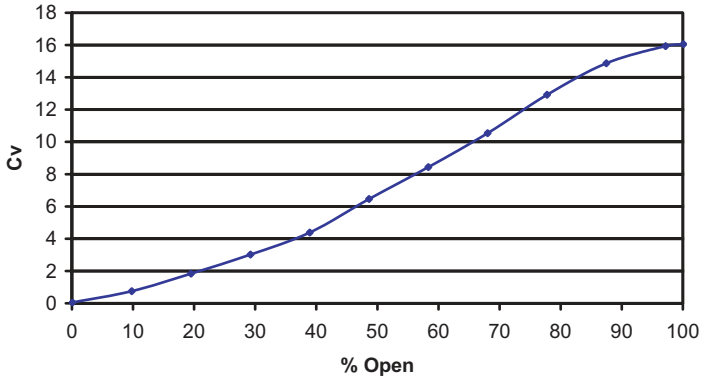
Cv vs % Open for a 10K Throttle Valve with 9/16" Orifice



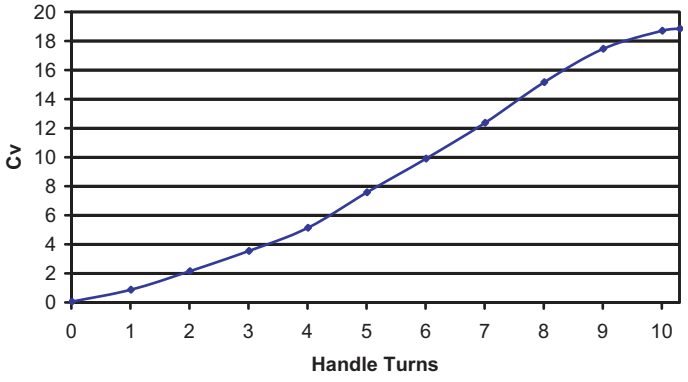
Cv vs Handle Turns for a 10K Throttle Valve with 5/8" Orifice



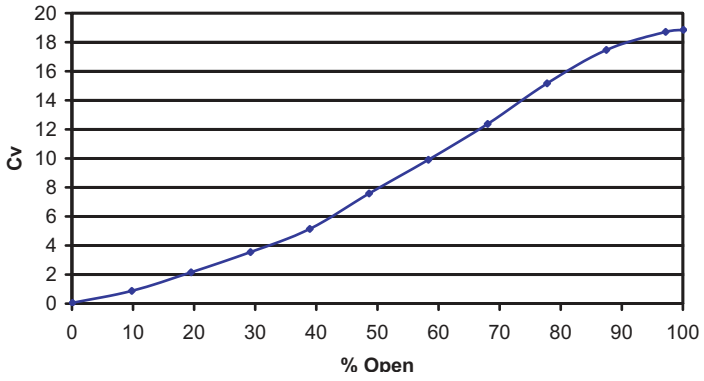
Cv vs % Open for a 10K Throttle Valve with 5/8" Orifice



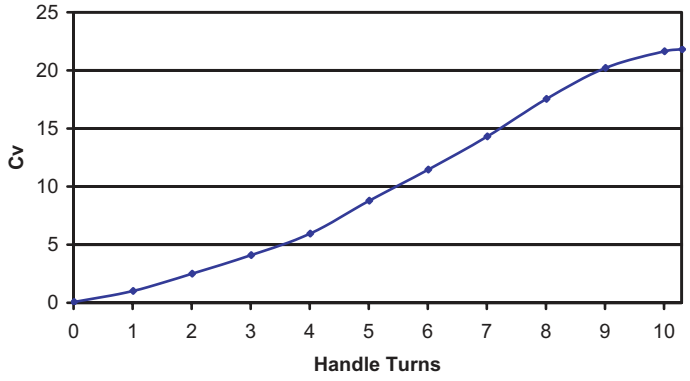
Cv vs Handle Turns for a 10K Throttle Valve with 11/16" Orifice



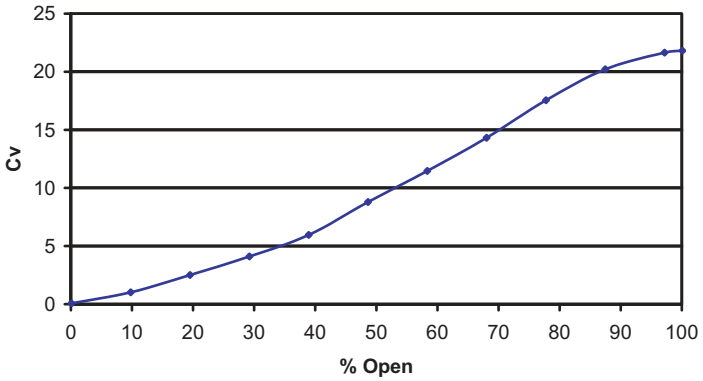
Cv vs % Open for a 10K Throttle Valve with 11/16" Orifice



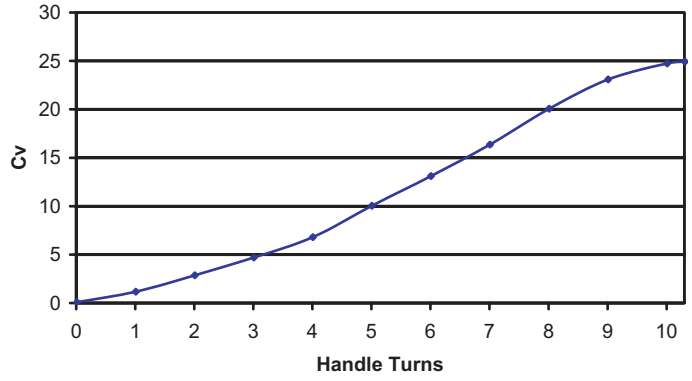
Cv vs Handle Turns for a 10K Throttle Valve with 3/4" Orifice



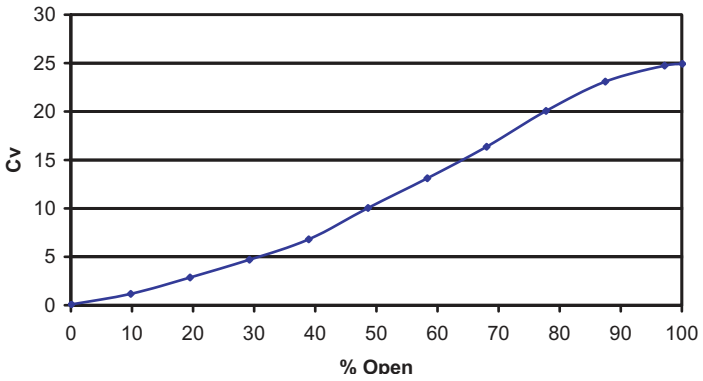
Cv vs % Open for a 10K Throttle Valve with 3/4" Orifice



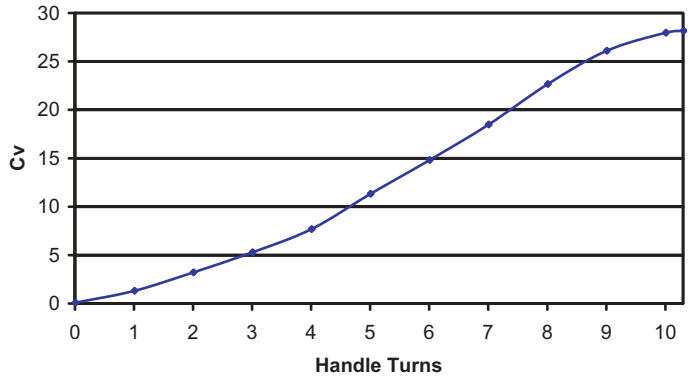
Cv vs Handle Turns for a 10K Throttle Valve with 13/16" Orifice



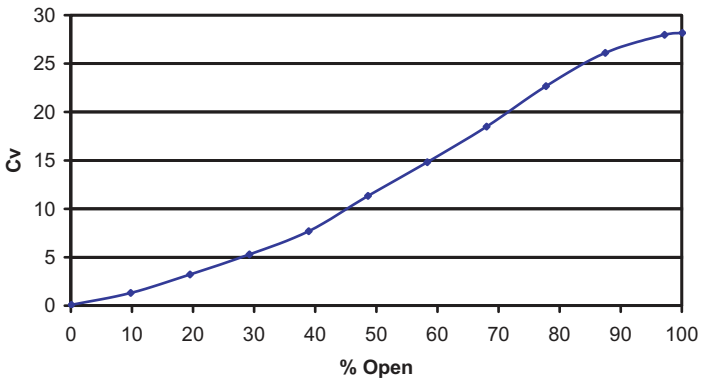
Cv vs % Open for a 10K Throttle Valve with 13/16" Orifice



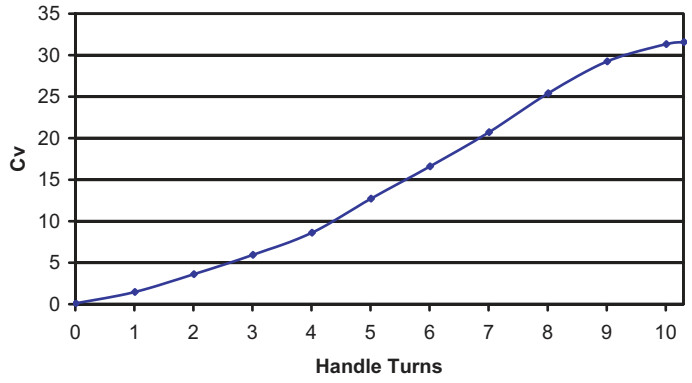
Cv vs Handle Turns for a 10K Throttle Valve with 7/8" Orifice



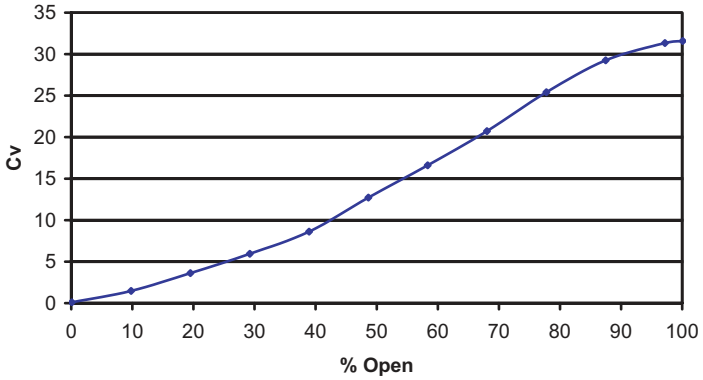
Cv vs % Open for a 10K Throttle Valve with 7/8" Orifice



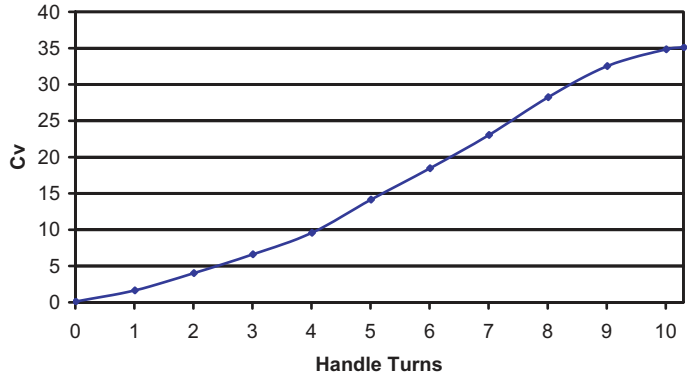
Cv vs Handle Turns for a 10K Throttle Valve with 15/16" Orifice



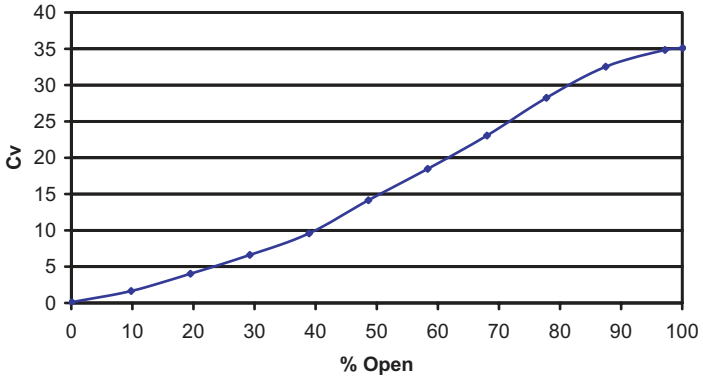
Cv vs % Open for a 10K Throttle Valve with 15/16" Orifice



Cv vs Handle Turns for a 10K Throttle Valve with 1" Orifice



Cv vs % Open for a 10K Throttle Valve with 1" Orifice



The Conval Story

In 1962, Mr. Chester Siver completed designs for a revolutionary line of high-pressure, forged steel valves. Hamilton Standard (now Hamilton Sunstrand), a division of United Technologies Corporation, was asked to use their then-new Electron Beam Welding technology for joining of parts into valves for subassemblies. Hamilton Standard became intrigued with the valve as an ideal application of the Electron Beam Welding technique, and negotiated a contract for the rights to manufacture and sell the valve. Mr. Siver served as manager of the valve project.

The first CLAMPSEAL® valves were introduced to the market by Hamilton Standard in 1964. However, in the mid-1960's, growing demand for the firm's popular aerospace products forced Hamilton Standard to make the decision to abandon its industrial products projects. The rights to the CLAMPSEAL valve reverted back to Mr. Siver. Since CLAMPSEAL valves were born in Connecticut, Mr. Siver founded "Conval" (short for Connecticut Valve) in 1967. Today, the valves are still manufactured in Connecticut, a state with a longstanding reputation for technological innovation and manufacturing excellence.

Conval is celebrating its 40th anniversary in 2007 with the launch of the new Camseal Ball Valve. Conval has grown into a leader in valves for the world's most demanding applications. We have a global team of experts to help to meet your most challenging needs. We invite you to contact us today.

High-pressure, high-temperature ball, bellows, bonnetless, check, gate, globe, throttling, and urea service valves for the world's most demanding applications.

1967-2007
Celebrating 40+ years of excellence!
Thank you for your business.

MADE IN USA

ISO 9001 certified since
September 11, 1992

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