Masoneilan® 30000 Series Varimax™ Rotary Control Valve

Specification Data

CN3002

10/04

Rotary Globe Valve with Lo-dB Trim, Adjustable C_v, and Adjustable Torque Actuator

DRESSER®

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Foreword

The new **Varimax** represents a major advance in the evolution of automatic throttling control valves. Its application envelope extends into the realm of globe valves.

The **Varimax** combines globe valve performance with the cost efficiency and compactness of a rotary design. A patented seating concept permits rotation of the valve plug with zero break away torque. The result is globe valve performance previously unavailable in a rotary valve design.

The new **ATA** (**A**djustable **T**orque **A**ctuator) incorporates a new concept in control valve design which leads to improved dynamic control characteristics.

Varimax is the only control valve in today's market with these unique design features.

Varimax Lo-dB® valves provide control of high pressure compressible fluids without the erosion, vibration and high noise levels associated with conventionally designed rotary valves. Because of relatively large flow passages, Varimax Lo-dB valves are particularly well suited for applications involving gases. For high pressure ratios, Lo-dB cartridges in the globe adaptor are recommended.

A Major Advance in Control Valve Technology

Valve Body Subassembly

Rotary Globe

The Rotary Globe Body is designed in accordance with the I.E.C. 534-3-2 Standard.

This body will fit in place of any conventional rotary valve meeting this standard.

Trim

A New Seating Concept

The trim (aerodynamically tested and patented) has been designed to reduce the unbalanced forces to a minimum; requiring lower actuator torque.

Seat Ring

Soft Seat Ring
Detail of the Section

Standard Plug

Lo-dB® Plug

Actuator Subassembly

The **ATA** (**A**djustable **T**orque **A**ctuator) is the first rotary actuator offering variable C_V through adjustment of the output travel while amplifying the output torque.

ATA Features

- The dynamic control characteristics are improved as input travel remains constant regardless of the output travel adjustments. In this way the sensitivity of the positioner remains constant for any C_V adjustment.
- Engineering modifications and changing process dynamics are handled simply through actuator adjustment without changing control valve trim.

Higher Pressure Drop Capabilities with Smaller Actuators

- About 80% of all applications are handled with the Standard actuator size. However, a High Torque model is available for very high pressure drop applications.

Convenient Yoke Design

- Allows actuator servicing, removal and remounting with valve under line pressure.
- High Torque actuator will mount without modification.
- C_V adjustment is possible without removing the valve from the line.

Rugged Handwheel Design

- Field mountable, requiring no modification or additional parts.
- Install or remove “in-line” without disassembling valve.

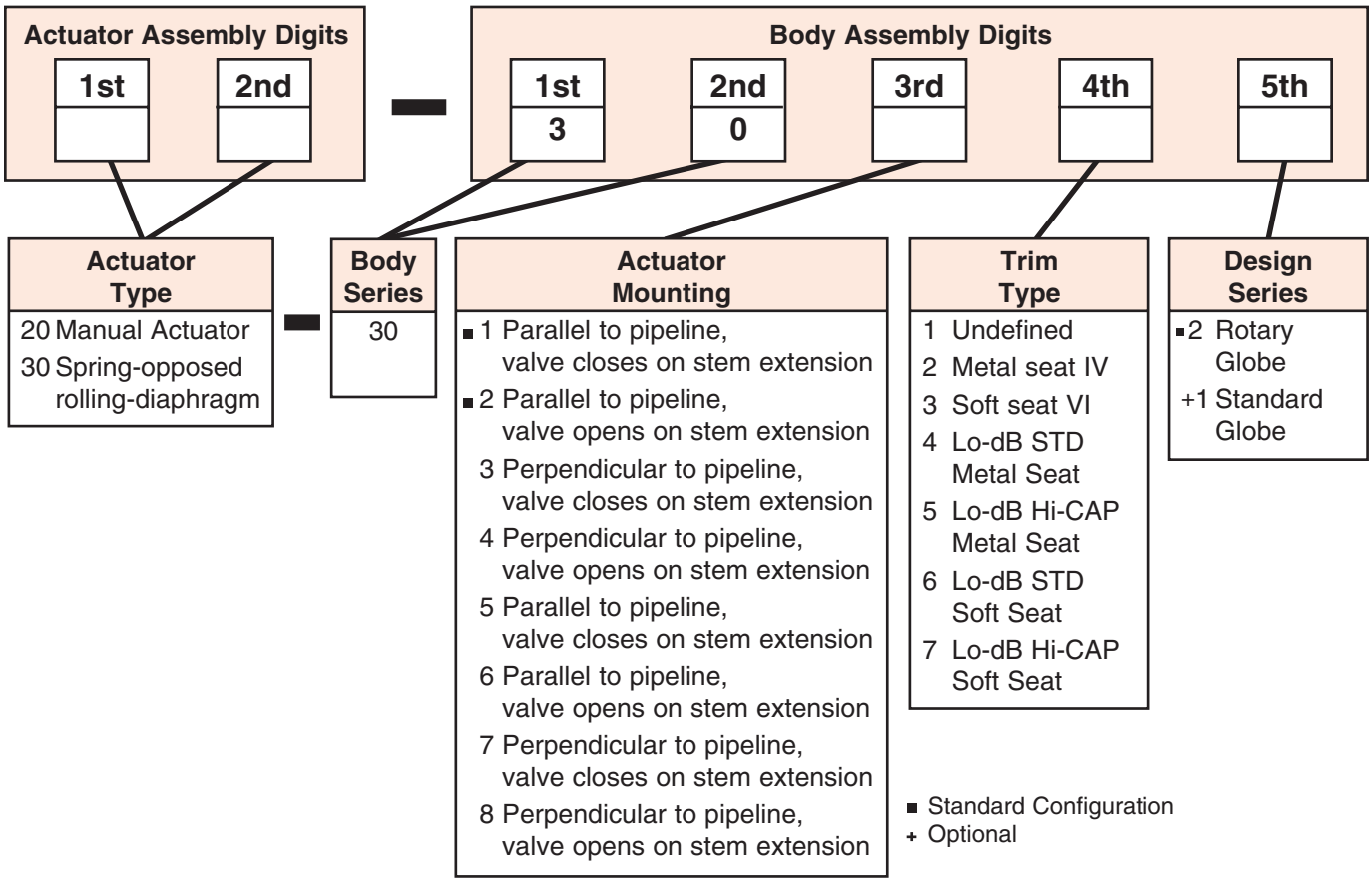
Standard Adjustable Torque Limiter

- Automatic over torque limitation in seated position.

Optional Adjustable Travel Limit stop

- Limits travel in both directions.

Numbering System



■ Standard Configuration
+ Optional

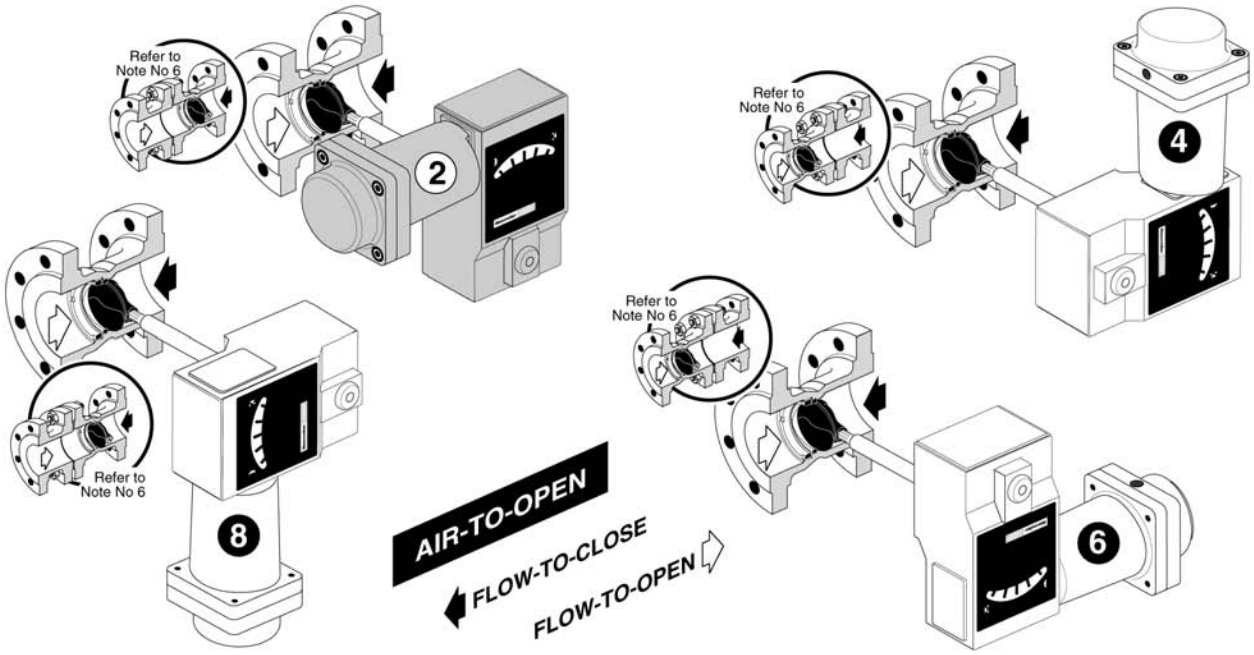
Connections

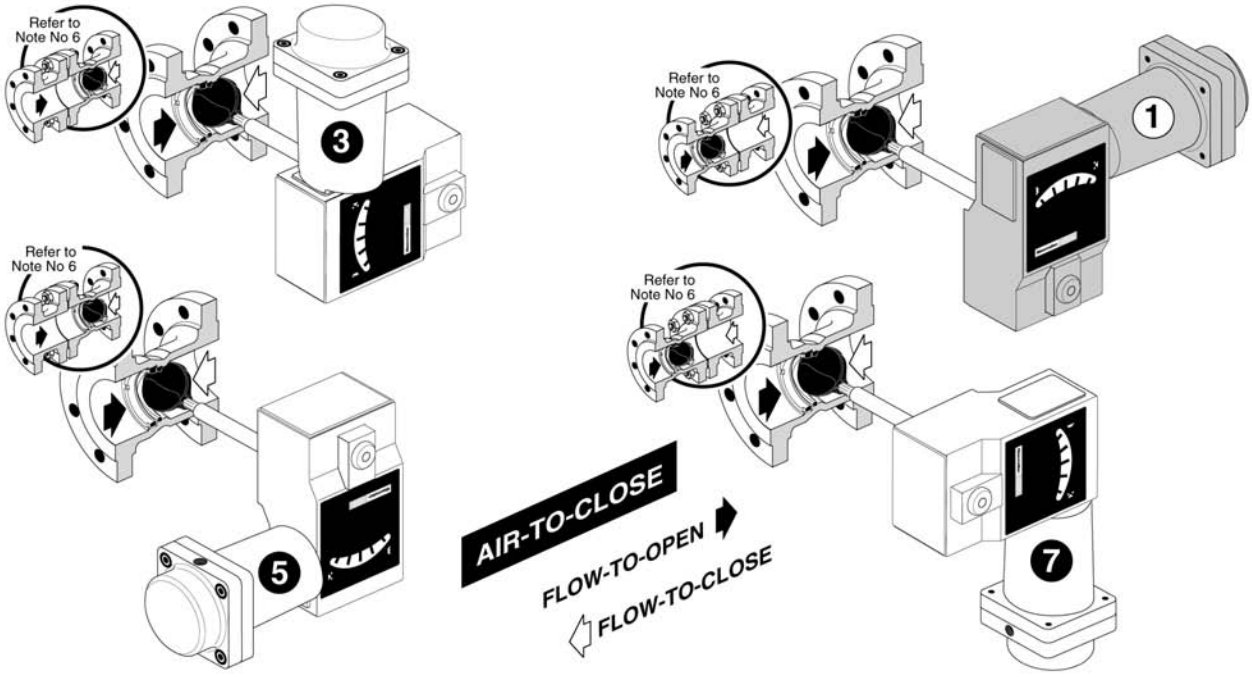
Connections and Face-to-Face

Valve Size		Standard Configuration		Optional Configuration	
		Rotary Globe Body Face-to-face IEC-534-3-2 EN558-1&2 Flanged		Standard Globe Body Face-to-face IEC-534-3 EN558-1&2 (ANSI B16.10) Flanged	
inches	mm	For ANSI Class RF Flanges 150-300	600	150-300	600
6 to 16	150 to 400	❑	❑	❑	❑

❑ Available
① Refer to page 16 for dimensions.

Actuator Positions





Notes:

1. Recommended actuator mounting positions are shaded.
2. Recommended flow directions are shown by the black arrows.

} When no specific position is indicated on the specification sheet, the Varimax will be delivered: Air-to-Open, Position 2

3. Plug positions are shown in the initial position without air on actuator.
4. All available configurations are shown in order to meet requirements of all field situations.
5. Action and orientation field reversible without additional parts.
6. To minimize the overall dimensions of a Std. Globe configuration with face-to-face dimensions corresponding to the IEC 534-3 (ANSI B16.10) standard, the globe adapter will be mounted on the same side as the ATA cylinder.

General Data

Body

type: Rotary Globe
face-to-face conforms to
I.E.C. 534-3-2*

size: 6" to 16" (150mm to 400mm)

rating: ANSI Class 150, 300, 600
(per B 16.34) standard
6" to 16" (150mm to 400mm)

flow direction: flow to open or flow to close

materials: Carbon Steel ASTM A216 Gr. WCC

Stainless Steel ASTM A351 Gr. CF8M

packing: PTFE/Kevlar® (285 K - asbestos free); flexible graphite (optional)

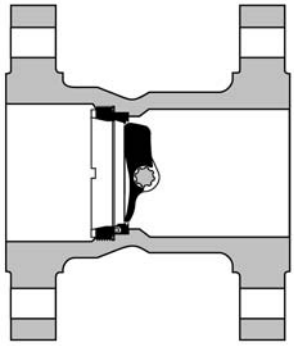
end connections: flanged ANSI 150, 300 or 600

temperature range: -20 to 650°F (-29 to 343°C)
(carbon steel bodies)
-320 to 750°F (-196 to 399°C)
(stainless steel bodies)

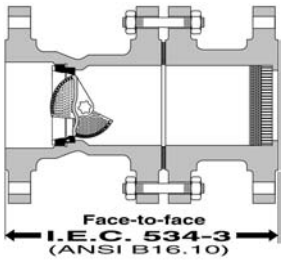
yoke: Carbon Steel

body option: in addition to its standard **Rotary Globe** body, Varimax offers the additional advantage of two supplementary body options for specific application:

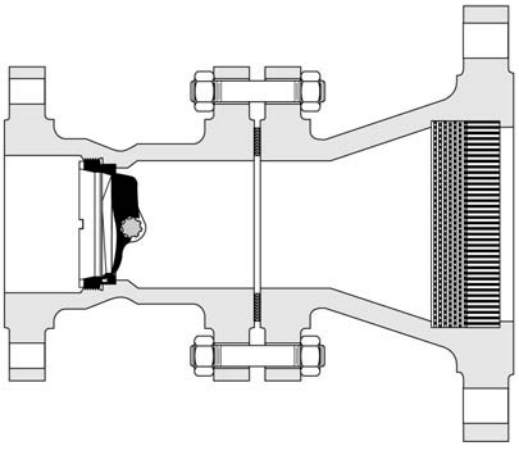
- The **Standard Globe** which conforms to I.E.C. 534-3 (ANSI B16.10) face-to-face, can be supplied with a built-in downstream Lo-dB® cartridge which conforms to I.E.C. 534-3 (ANSI B16.10) face-to-face. The Lo-dB cartridge is mounted directly in the globe adaptor. With this combination, a noise reduction of up to 20 dBA can be economically achieved. The Standard Globe body with a built-in Lo-dB cartridge can replace a conventional globe valve that generates excessive noise levels due to changes in service conditions. The globe adaptor can also be supplied with an oversized outlet connection which includes an oversized Lo-dB cartridge.



Rotary Globe
I.E.C. 534-3-2 face-to-face*
(Standard Plug)
*EN Standard: EN558-1 & 2

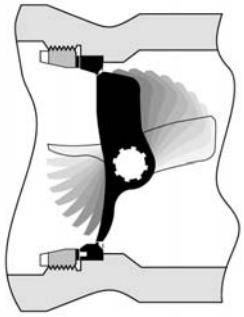


Optional Standard Globe Body with a Lo-dB® Trim and a Built-in Downstream Lo-dB® cartridge I.E.C 534-3 (ANSI B16. 10) face-to-face*

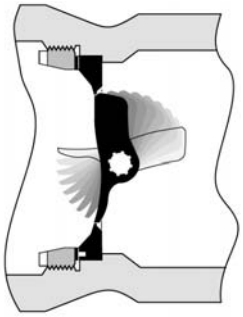


Standard Globe Body
with an Oversized Outlet Connection
*EN Standard: EN558-1 & 2

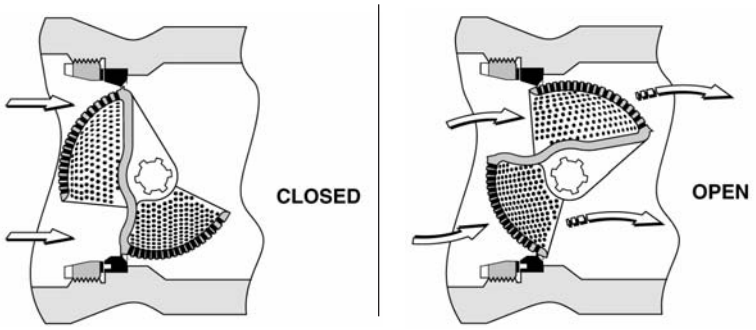
General Data



Standard Trim



Reduced One Size Trim
(Flashing Service)



Lo-dB® Trim

Trim

standard plug type: eccentrically rotating, aerodynamically shaped to reduce unbalanced forces and to increase flow coefficient.

seat type: solid clamped

Lo-dB: The Lo-dB® Trim is designed for severe service application on compressible fluids

Two basic trim designs:

types 4 & 6: Lo-dB® standard

types 5 & 7: Lo-dB® HI-CAP

capacity:
- seven different rated C_V values are available for each valve size, (see page 10).
- reduced trim/one size reduction (optional) for flashing service, (ex. 4"x3"x4") denotes a 3" trim in a 4" body).

soft seat: 6" to 16" (150mm to 400mm) (See detail page 2)

materials: **plug**
- 316 stainless steel or
- solid stellite #6 or
- 316 stainless steel with hard surfaced seat

shaft (blow-out proof)
- splined type
- for carbon steel bodies: —17-4 PH
- for stainless steel bodies:

—for chemical applications: 316 St. St. (Nitronic 50® optional)

—for saturated steam applications: 17-4 PH

materials (cont.): **metal seat ring**
- 316 stainless steel or
- Solid stellite #6 or
- 316 stainless steel with hard surfaced seat

soft seat ring
- 316 stainless steel with PTFE-Ni insert (to 450°F)

spacing washer (Lo-dB only) positioning washer and seat ring retainer
- 316 stainless steel

flow characteristic: linear (equal percentage and linear split range are available depending on the selection of the positioner cam)

C_V ratio: 100: 1 for all 7 rated C_V

seat leakage: class IV as per ANSI/FCI 70-2/IEC 534-4 (with metal seat ring)

class VI as per ANSI/FCI 70-2/IEC 534-4 (with soft seat ring)

General Data

Actuator

type ATA®: **A**djustable **T**orque **A**ctuator allows simultaneous C_V and torque adjustments. Spring opposed/Rolling Diaphragm type

sizes: Nos 5, 7, 9 and 13

spring range: 7-25 psi (w/ Standard or Hi-torque ATA)

limit stop: limitation of torque in closed position avoids shaft damage for any C_V adjustment

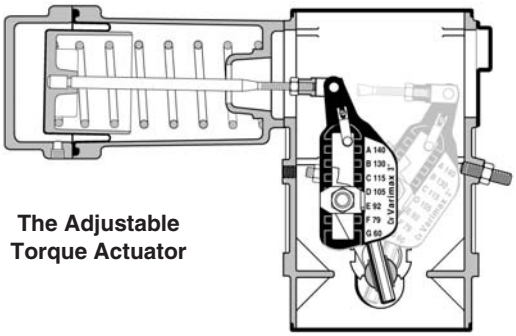
material:
- die cast aluminum (bracket, spring-barrel, diaphragm case and piston),
- Buna-N diaphragm with dacron fabric,
- carbon steel levers

action: air to close or air to open

air connection: 1/4" NPT (1/2" for ATA 13)

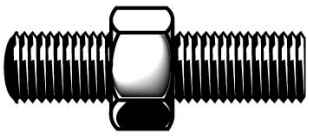
handwheel: optional
- separate subassembly unit,
- may be easily mounted during installation or while valve is in service,
- low rim force,
- Type No 5, 7, 9

Handwheel



The Adjustable Torque Actuator

limit stop: optional, adjustable between 70 and 100% in open position; 0 and 30% in closed position.



Direct Handwheel

model 20: **ATA** with direct handwheel (without pneumatic cylinder)

Model 20 Direct Handwheel

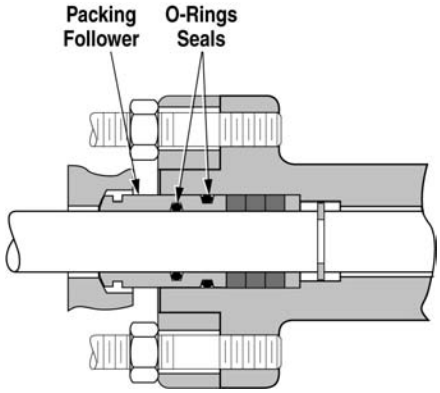
EF Seal® (Emission Free)

EF Seal
Double O-Ring Seal Packing Follower

Fugitive Emission Containment Packing for low emissions

To prevent fugitive emissions, Masoneilan offers a double O-ring sealed packing box.

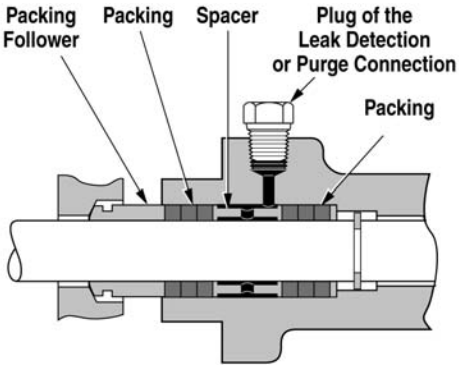
This economical solution to fugitive emissions will not compromise control performance as it is used in environmentally sensitive applications.



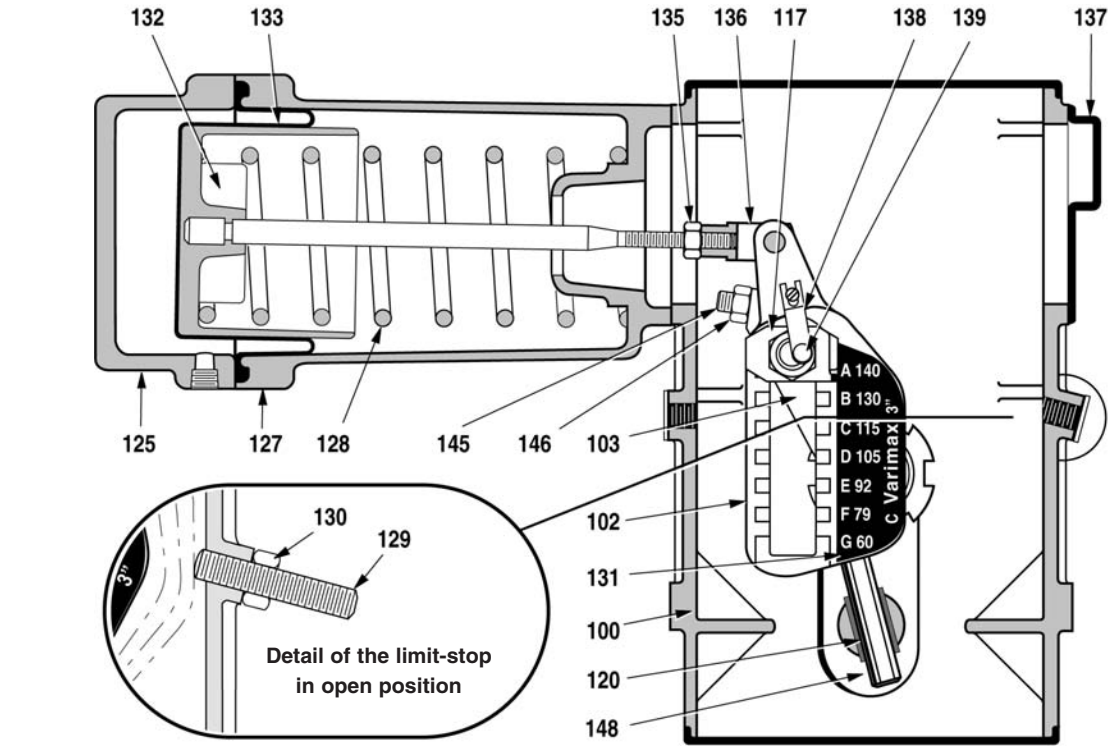
Leak Detection or Purge Connection

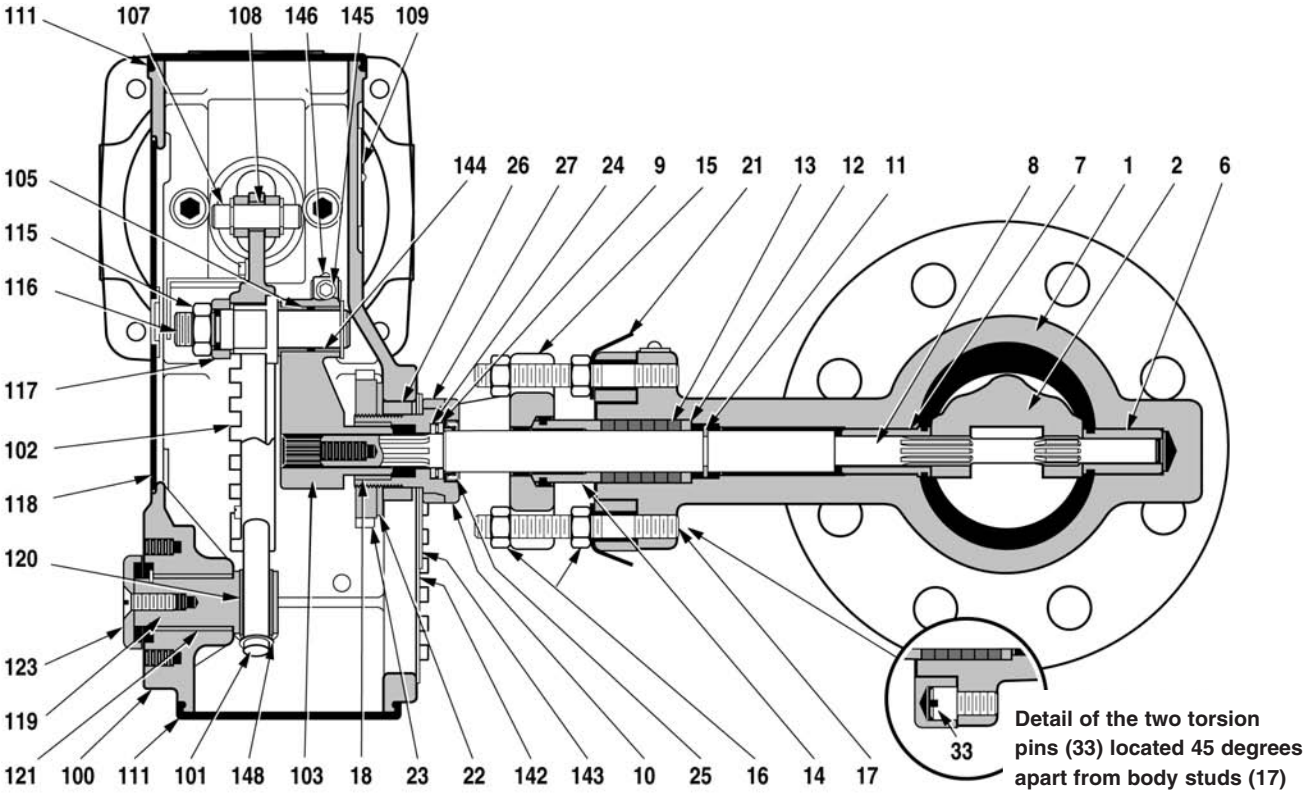
Double Packing with Leak Detection or Purge Connection

Double packing design offers a monitoring port or purge connection.



Materials of Construction

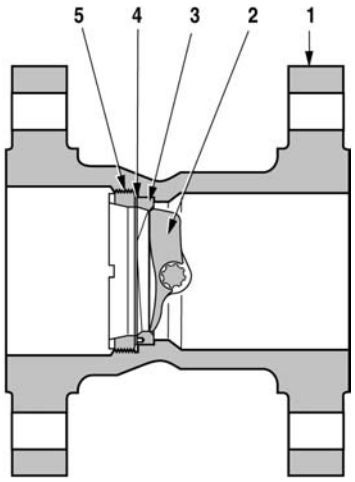




Materials of Construction

Standard Valve Body Subassembly Materials

Ref. No	Part	Material	
		Carbon Steel Construction	Stainless Steel Construction
1	Rotary Globe Body ❶	A216 Gr. WCC	A351 Gr. CF8M
	Std. Globe Body ❷		
2	Plug	316 St. St.	
		Stellite or 316 St. St. w/ Hardfaced Seating Surface	
3	Seat Ring	316 St. St.	
		Stellite or 316 St. St. w/ Hardfaced Seating Surface	
4	Positioning Washer	316 St. St.	
5	Seat Ring Retainer	316 St. St.	
6	Lower Guide Bushing	440 C	Stellite
7	Upper Guide Bushing	440 C	Stellite
8	Shaft	17-4 PH St. St.	316 St. St. (Nitronic 50 optional)
9	Needle Bearing	Stainless Steel	
10	Yoke	Carbon Steel	
11	Retaining Ring	17-4 PH	
12	Packing Washer	316 St. St.	
13	Packing	PTFE/Kevlar – Graphite (optional)	
14	Packing Follower	Stainless Steel	
15	Packing Flange	A105	
16	Stud Nut	A194 Gr 8	
17	Body Stud	A193 Gr B8	
18	Bearing	Steel/ Brass/ PTFE - Pb	
21	Warning Plate	Stainless Steel	
22	Yoke Washer	Carbon Steel	
23	Yoke Nut	Carbon Steel	
24	Counter Plate	Stainless Steel	
25	Radial Seal Ring	Buna-N	
26	Spacer	Carbon Steel	
27	Yoke Connection Plate	Aluminum	
33	Torsion Pin	17-4 PH	
40	Globe Adaptor ❸	A216 Gr. WCC	A351 Gr. CF8M
41	Gasket ❸	316 St. St. + Graphite	
44	Bolting Set ❸	A193 Gr B7 & A194 Gr 2H	A193 304 St. St. & A194 304 St. St.



Standard Actuator Subassembly Materials

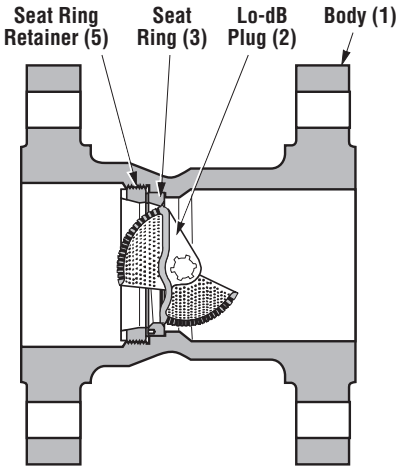
Ref. No	Part	Material
100	Case	Die Cast Aluminum (or Cast Iron*)
101	Lever Sliding Rod	17-4 PH
102	Adjustment Lever	Carbon Steel
103	Valve Lever	Carbon Steel
105	Valve Lever Bearing	Steel/ Brass/ PTFE - Pb
107	Clevis Pin	Martensitic Stainless Steel
108	Adjustment Lever Bearing	Duralon
109	Serial Plate	Stainless Steel
111	Top & Bottom Covers	Polycarbonate (or Carbon Steel*)
115	Clamping Nut	Stainless Steel
116	Driving Link Spindle	Martensitic Stainless Steel
117	Clamping Plate	Carbon Steel
118	Front Cover	Polycarbonate
119	Pivot	Martensitic Stainless Steel
120	Pivot Bearing	Steel/ Brass/ PTFE - Pb
121	Case Bearing	Steel/ Brass/ PTFE - Pb
123	Pivot Cover	Polycarbonate
125	Diaphragm Case	Die Cast Aluminum
127	Spring Barrel	Die Cast Aluminum
128	Actuator Spring	Spring Carbon Steel
129	Limit Stop Screw	Stainless Steel
130	Limit Stop Nut	Stainless Steel
131	C_V Indicator Plate	Aluminum
132	Piston	Die Cast Aluminum
	Piston Stem	Stainless Steel
133	Diaphragm	Buna N with Dacron Insert
135	Nut	Carbon Steel
136	Clevis	Carbon Steel
137	Side Cover	Polycarbonate (or Carbon Steel *)
138	Indicator Stamping	Stainless Steel
139	Indicator Dot	Vinyl
142	Rear Cover 1	Stainless Steel
143	Rear Cover 2	Stainless Steel
144	Valve Lever Bearing	Steel/ Brass/ PTFE - Pb
145	Torque Stop Screw	Stainless Steel
146	Torque Stop Nut	Stainless Steel
148	Retaining Clip	17-4 PH

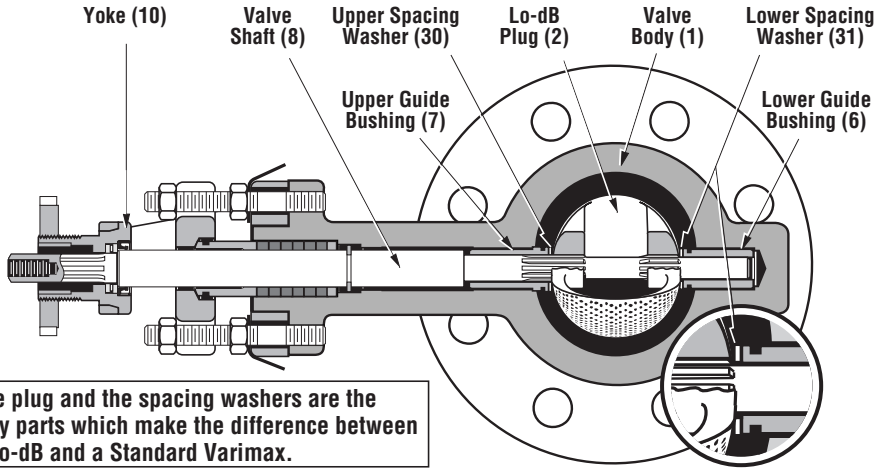
* On ATA No 9 & No 13

❶ Standard Configuration.
❷ Optional.
❸ Included in Optional Standard Globe (Not Shown).

Note: Available with NACE Certified Materials.

Lo-dB Valve Body Subassembly Materials





Note: The plug and the spacing washers are the only parts which make the difference between a Lo-dB and a Standard Varimax.

Ref. No	Part	Carbon Steel Construction				Stainless Steel Construction			
1	Body	A216 Gr. WCC				A351 Gr. CF8M			
10	Yoke	Carbon Steel				Carbon Steel			
5	Seat Ring Retainer	A351 Gr. CF8M				A351 Gr. CF8M			
8	Shaft	17-4 PH (H1075) St. St.				316 St. St. (Nitronic 50 optional)			
6 & 7	Guide Bushings	440 C				Stellite #6 ①			
30 & 31	Spacing Washers	316 St. St.				316 St. St.			
	Trim Set	**T1 ②**	**T2 ②**	**T3 ③**	**T4 ④**	**T1 ②**	**T2 ②**	**T3 ③**	**T4 ④**
2	Lo-dB Plug	316 St. St.	316 St. St.	Stellite ①	316 St. St.	316 St. St.	316 St. St.	Stellite ①	316 St. St.
3	Seat Ring	316 St. St.	Stellite ①	Stellite ①	316 St. St.+PTFE-Ni	316 St. St.	Stellite ①	Stellite ①	316 St. St.+PTFE-Ni

① Stellite denotes either Solid Stellite or 316 St. St. with Stellite Hardfacing (as per following table).

Size (in.)	6	8	10	12	16
Seat Ring	S	S	HF	HF	HF

S denotes:
Solid Stellite No 6

HF denotes:
316 St. St. with Hardfaced (Stellite No 6) seating surface.

② **T2** is mandatory when ΔP shut-off exceeds:

180 psi/12 bar for 6" (150mm) valves.

120 psi/8 bar for 8" to 16" (200mm to 400mm) valves.

③ **T3** is available in std. plug configuration only.

④ **T4** corresponds to class VI seat leakage.
(**T1** thru **T3** are all class IV seat leakage.)

Materials Versus Temperature

Choice of Materials Versus Temperature

Ref. No	Temperature ►	-320°F -260°F -20°F -196°C -162°C -29°C		+450°F +650°F +750°F +232°C +343°C +399°C
	Part Name	Material		
1	Body		A216 Carbon Steel	
		316 St. St. A351 Gr. CF8M		
2	Plug	A351 Type 316		
		A351 Type 316 w/stellite hardfacing		
3	Seat Ring	A351 Type 316		
			316 St. St. w/PTFE - Ni	
		A351 Type 316 w/stellite hardfacing		
6	Lower Guide Bushing		A276 Type 440	
		Stellite No 6 ①		
7	Upper Guide Bushing		A276 Type 440	
		Stellite No 6 ①		
8	Shaft	A479 Type 316 ② (Nitronic 50 optional) ④		
			A564 Type 17-4 PH ③	
		Inconel® (optional) ④		

Notes
① Standard bushing material for Stainless Steel Construction
② Standard Shaft Material for Stainless Steel Construction, optional for Carbon Steel Construction
③ Standard Shaft Material for Carbon Steel Construction
④ Optional Shaft Material for Carbon Steel or Stainless Steel Construction

Rated Flow Coefficient C_V - Standard Plug Configuration

Valve Size (Full Area Trim)		Flow Direction	Actuator Adjustment						
inches	mm		A	B	C	D ①	E	F	G
6	150	Flow to Open Flow to Close	595 550	545 510	500 460	435 405	365 355	290 315	215 240
8	200	Flow to Open Flow to Close	1100 950	1010 890	920 800	805 705	675 620	540 545	395 420
10	250	Flow to Open Flow to Close	1800 1600	1670 1450	1430 1295	1155 1110	910 935	730 785	535 610
12	300	Flow to Open Flow to Close	2600 2400	2235 2140	1875 1810	1540 1520	1260 1260	1005 1035	750 805
16	400	Flow to Open Flow to Close	4830 4460	4150 3975	3485 3365	2860 2825	2340 2340	1865 1925	1395 1495

① When no specific adjustment is indicated on the specification sheet, the Varimax will be set at mid band setting or "D" adjustment and Flow-to-Close.

Percent Rated C_V, Versus Percentage Plug Rotation - Standard Plug Configuration

Percent of Rotation	Actuator Adjustment													
	A		B		C		D		E		F		G	
	FTO	FTC	FTO	FTC	FTO	FTC	FTO	FTC	FTO	FTC	FTO	FTC	FTO	FTC
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
90	87.0	84.5	87.0	85.0	87.0	85.0	87.0	85.0	87.0	85.0	87.0	86.0	87.0	86.0
80	75.0	70.5	75.0	70.5	75.0	71.0	74.0	71.0	74.0	71.0	74.0	72.0	73.0	72.0
70	63.0	57.0	64.0	57.0	63.0	57.0	62.0	57.0	62.0	58.0	62.0	58.0	61.0	58.0
60	52.0	45.0	52.0	45.0	51.0	45.0	50.0	45.0	49.0	45.0	48.0	45.0	47.0	45.0
50	40.5	34.0	45.5	34.0	40.0	34.0	40.0	34.0	39.0	34.0	38.0	33.0	37.0	33.0
40	30.0	24.0	30.0	24.0	29.0	24.0	28.0	24.0	27.0	24.0	26.0	24.0	25.0	24.0
30	20.0	15.5	20.0	15.5	20.0	15.5	18.0	15.0	17.0	15.0	15.0	15.0	14.0	15.0
20	11.0	8.0	11.0	8.0	10.0	7.0	9.0	7.0	9.0	6.0	7.0	5.0	5.5	5.0
10	3.0	2.5	3.0	2.5	2.5	2.0	2.0	2.0	2.0	1.5	1.5	1.0	1.0	1.0

FTO: Flow-to-Open FTC: Flow-to-Close

Critical Flow Factor F_L Versus Percentage Plug Rotation

Percent of Rotation	Actuator Adjustment													
	A		B		C		D		E		F		G	
	FTO	FTC	FTO	FTC	FTO	FTC	FTO	FTC	FTO	FTC	FTO	FTC	FTO	FTC
100	0.77	0.79	0.80	0.81	0.80	0.81	0.81	0.81	0.83	0.82	0.86	0.84	0.89	0.85
90	0.80	0.81	0.80	0.81	0.82	0.81	0.83	0.82	0.85	0.83	0.87	0.85	0.89	0.85
80	0.80	0.81	0.81	0.82	0.83	0.82	0.86	0.84	0.87	0.83	0.89	0.85	0.90	0.86
70	0.81	0.81	0.83	0.82	0.85	0.83	0.86	0.84	0.89	0.85	0.89	0.86	0.90	0.86
60	0.83	0.82	0.86	0.84	0.87	0.84	0.89	0.85	0.89	0.86	0.90	0.86	0.91	0.87
50	0.86	0.84	0.89	0.85	0.89	0.85	0.90	0.86	0.90	0.87	0.90	0.87	0.91	0.88
40	0.89	0.85	0.90	0.86	0.90	0.86	0.90	0.86	0.90	0.87	0.91	0.88	0.92	0.89
30	0.90	0.86	0.90	0.87	0.90	0.88	0.91	0.88	0.91	0.88	0.92	0.89	0.93	0.90
20	0.91	0.88	0.91	0.89	0.91	0.90	0.92	0.90	0.92	0.91	0.93	0.90	0.93	0.91
10	0.93	0.90	0.93	0.90	0.93	0.91	0.94	0.92	0.94	0.92	0.95	0.93	0.95	0.93

FTO: Flow-to-Open FTC: Flow-to-Close

Rated Flow Coefficient C_V - Lo-dB Trim Configuration

Valve Size		Actuator Adjustment													
		A		B		C		D①		E		F		G	
inches	mm	Stand. Cap.	High Cap.	Stand. Cap.	High Cap.	Stand. Cap.	High Cap.	Stand. Cap.	High Cap.	Stand. Cap.	High Cap.	Stand. Cap.	High Cap.	Stand. Cap.	High Cap.
6	150	210	260	190	220	170	185	145		125		105		85	
8	200	360	435	325	370	290	310	250		215		180		145	
10	250	620	745	560	645	495	535	435		370		310		250	
12	300	1000	1200	900	1035	800	865	700		600		500		400	
16	400	1750	2100	1575	1810	1400	1510	1225		1050		875		700	

① When no specific adjustment is indicated on the specification sheet, the Varimax will be delivered:
Set at mid band setting or "D" adjustment and Flow-to-Close

Critical Flow Factor F_L - Lo-dB Trim - Nominal Travel

Lo-dB Plug	Actuator Adjustment						
	A	B	C	D	E	F	G
Standard Capacity	.85	.83	.82	.81	.81	.81	.81
High Capacity	.80	.80	.80	.81	.81	.81	.81

Percent Rated C_V, Versus Percentage Plug Rotation - Lo-dB Trim

Flow Direction	Lo-dB Trim Type	Actuator Adjustment	Percent Nominal Opening									
			10	20	30	40	50	60	70	80	90	100
Flow to Open and Flow to Close	High Capacity Types 5 & 7	A	8.3	16.7	25.0	33.3	41.7	50.0	58.3	72.2	86.1	100.0
		B	8.7	17.4	26.1	34.8	43.5	52.3	61.0	71.0	85.5	100.0
		C	9.2	18.5	27.7	36.9	46.2	55.4	64.6	73.8	84.6	100.0
	Standard Capacity Types 4 & 6 & High Capacity Types 5 & 7	D E F G	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0

Flashing Service - ATA No. and Rated C_V

Flashing Service Valve Size Inlet Fl. x Trim x Outlet Fl.		ATA No		Flow Direction	Rated Flow Coeff. C_V, Acc. to Act. Adjustment						
inches	mm	Stand.	High Torque		A	B	C	D ①	E	F	G
6 x 4 x 6	150 x 100 x 150	5		Flow-to-Open Flow-to-Close	275 250	245 225	215 205	185 185	155 160	125 140	91 105
8 x 6 x 8	200 x 150 x 200	5	7	Flow-to-Open Flow-to-Close	595 550	545 510	500 460	435 405	365 355	290 315	215 240
10 x 8 x 10	250 x 200 x 250	7		Flow-to-Open Flow-to-Close	1100 950	1010 890	920 800	805 705	675 620	540 545	395 420
12 x 10 x 12	300 x 250 x 300	7	9	Flow-to-Open Flow-to-Close	1800 1600	1670 1450	1430 1295	1155 1110	910 935	730 785	535 610
16 x 12 x 16	400 x 300 x 400	9		Flow-to-Open Flow-to-Close	2600 2400	2235 2140	1875 1810	1540 1520	1260 1260	1005 1035	750 805

① When no specific adjustment is indicated on the specification sheet, the Varimax will be set at mid band setting or "D" adjustment and Flow-to-Close.

Adjustable Travel /Torque Actuator - (Characteristics and Travel Times)

Valve Size		ATA No	
in.	mm	Standard	High Torque
6	150	5	7
8	200	5	7
10	250	7	9
12	300	7	9
16	400	9	13*

* Only in positions A, B, and C.

ATA No.	Diaphragm Effective Area		Actuator Stroke		Travel Time (sec.)			
					4700A		4800A	
	sq. in.	cm^2	in.	mm	Increasing Instrument Signal	Decreasing Instrument Signal	Increasing Instrument Signal	Decreasing Instrument Signal
5	17.7	114	5.1	132	2.9	3.6	1.1	1
7	34.8	225	5.9	152	5.6	8.9	1.6	1.5
9	74.7	482	7.6	195	17	24	4.5	3.7
13	149	962	7.6	195			10	8

Measured with direct positioner at 40psi (2.8 bar).
4700A positioner with tubing size 1/4 in. (4 x 6mm).
4800A positioner with tubing size 3/8 in. (6 x 8mm).

Temperature Range/Seat Leakage

Valve Size		Seat Type	Temperature Range				Seat Leakage ANSI/FCI 70-2 Class
			Minimum		Maximum		
in.	mm		US	Metric	US	Metric	
6 to 16	150 to 400	Metal	- 320°F *	- 196°C	+ 750°F	+ 399°C	IV
		Soft Seat	- 260°F *	- 162°C	+ 450°F	+ 232°C	VI

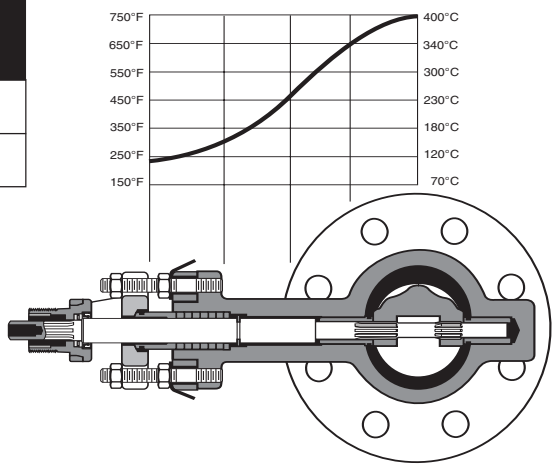
* Stainless Steel Bodies Only

The technology of the Varimax valve significantly reduces the required plug torque.

This advantage allows a smaller shaft diameter and a smaller external diameter of the integrally cast bonnet neck.

The resulting accelerated thermal gradient reduces the temperature at the packing.

Temperature Gradient Across Bonnet



Dimensions and Weights / Metric

Dimensions in mm

Valve Size mm	ATA No	ANSI Class	A* Standard Globe	A* Rotary Globe	B	C	D	E	F	G	H* Standard Globe	H* Rotary Globe	J	L	M❶	Valve Weight❷ (kg) Standard Globe	Rotary Globe	H/W
150	5	150	451	229	205 min. 295 max.	420	205	240	165	145 max. 55 min.	337	114	472	389.5	317 min.	87	56	4
		300	473								359					121	71	
		600	508								394					174	92	
	7	150	451	229	245 min. 353 max.	510	245	240	216	210 max. 102 min.	337	114	494	386.0	317 min.	105	74	5
		300	473								359					139	89	
		600	508								394					192	110	
200	5	150	543	243	205 min. 295 max.	420	205	240	165	145 max. 55 min.	422	121	513	430.5	317 min.	109	70	4
		300	568.5								447					161	95	
		600	609.5								488					277	147	
	7	150	543	243	245 min. 353 max.	510	245	240	216	210 max. 102 min.	422	121	535	427.0	317 min.	127	88	5
		300	568.5								447					179	113	
		600	609.5								488					295	165	
250	7	150	673	297	245 min. 353 max.	510	245	240	216	210 max. 102 min.	525	148	660	552.0	370 min.	201	130	5
		300	708								560					282	166	
		600	752.5								604					468	248	
	9	150	673	297	340 min. 475 max.	670	330	400	305	257 max. 122 min.	525	148	692	539.5	370 min.	247	176	9
		300	708								560					328	212	
		600	752.5								604					514	294	
300	7	150	737	338	245 min. 353 max.	510	245	240	216	210 max. 102 min.	568	169	690	582.0	370 min.	269	174	5
		300	775								606					375	221	
		600	819								650					590	313	
	9	150	737	338	340 min. 475 max.	670	330	400	305	257 max. 122 min.	568	169	722	569.5	370 min.	315	220	9
		300	775								606					421	267	
		600	819								650					636	359	
400	9	150	1016	400	340 min. 475 max.	670	330	400	305	257 max. 122 min.	816	200	829	676.5	370 min.	619	400	9
		300	1057								857					815	480	
		600	1108								908					1225	648	
400	13	150	1016	400	340 min. 475 max.	904			450	257 max. 122 min.	816	200	829	500	370 min.	694	474	
		300	1057								857					890	554	
		600	1108								908					1300	723	

* Standard Globe (IEC 534-3 — *ANSI B16-10*)

* Rotary Globe (IEC 534-3-2)

❶ ATA Adjusting clearance.

❷ Shipping weights are approximately 10% higher.

Dimensions and Weights - Inches

Dimensions in inches

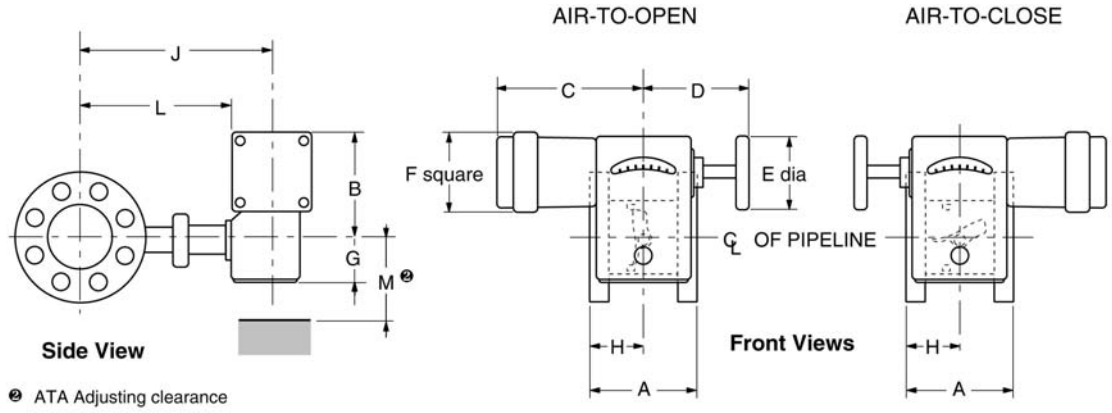
Valve Size	ATA No	ANSI Class	A* Standard Globe	A* Rotary Globe	B	C	D	E	F	G	H* Standard Globe	H* Rotary Globe	J	L	M❶	Valve Weight❷ (lbs.) Standard Globe	Valve Weight❷ (lbs.) Rotary Globe	H/W
6"	5	150	17.75	9.00	8.1 min. 11.6 max.	16.5	8.0	9.4	6.5	5.7 max. 2.2 min.	13.25	4.50	18.6	15.3	12.5 min.	191	123	9
		300	18.62								14.12					266	156	
		600	20.00								15.50					383	202	
	7	150	17.75	9.00	9.6 min. 13.9 max.	20.0	9.6	9.4	8.5	8.3 max. 4.0 min.	13.25	4.50	19.4	15.2	12.5 min.	231	163	11
		300	18.62								14.12					305	195	
		600	20.00								15.50					422	242	
8"	5	150	21.38	9.56	8.1 min. 11.6 max.	16.5	8.0	9.4	6.5	5.7 max. 2.2 min.	16.60	4.78	20.2	16.9	12.5 min.	239	154	9
		300	22.38								17.60					355	209	
		600	24.00								19.22					610	323	
	7	150	21.38	9.56	9.6 min. 13.9 max.	20.0	9.6	9.4	8.5	8.3 max. 4.0 min.	16.60	4.78	21.1	16.8	12.5 min.	278	193	11
		300	22.38								17.60					394	248	
		600	24.00								19.22					650	363	
10"	7	150	26.50	11.69	9.60 min. 13.9 max.	20.0	9.6	9.4	8.5	8.3 max. 4.0 min.	20.66	5.85	26.0	21.7	14.5 min.	443	286	11
		300	27.88								22.04					620	365	
		600	29.62								23.78					1030	545	
	9	150	26.50	11.69	13.4 min. 18.7 max.	26.4	13.0	15.7	12.0	10.1 max. 4.8 min.	20.66	5.85	27.2	21.2	14.5 min.	544	387	19
		300	27.88								22.04					721	466	
		600	29.62								23.78					1131	646	
12"	7	150	29.00	13.31	9.6 min. 13.9 max.	20.0	9.6	9.4	8.5	8.3 max. 4.0 min.	22.35	6.66	27.2	22.9	14.5 min.	592	382	11
		300	30.50								23.85					826	486	
		600	32.25								25.60					1300	688	
	9	150	29.00	13.31	13.4 min. 18.7 max.	26.4	13.0	15.7	12.0	10.1 max. 4.8 min.	22.35	6.66	28.4	22.4	14.5 min.	694	484	19
		300	30.50								23.85					927	587	
		600	32.25								25.60					1401	789	
16"	9	150	40.00	15.75	13.4 min. 18.7 max.	26.4	13.0	15.7	12.0	10.1 max. 4.8 min.	32.13	7.88	32.6	26.6	14.5 min.	1364	880	19
		300	41.62								33.75					1795	1056	
		600	43.62								35.74					2695	1427	
	13	150	40.00	15.75	13.4 min. 16.0 max.	35.6			17.7	10.1 max. 7.5 min.	32.13	7.88	32.6	19.7	14.5 min.	1527	1043	
		300	41.62								33.75					1958	1219	
		600	43.62								35.74					2858	1590	

* Standard Globe (IEC 534-3 — *ANSI B16.10*)
* Rotary Globe (IEC 534-3-2)

❶ ATA adjusting clearance
❷ Shipping weights are approximately 10% higher

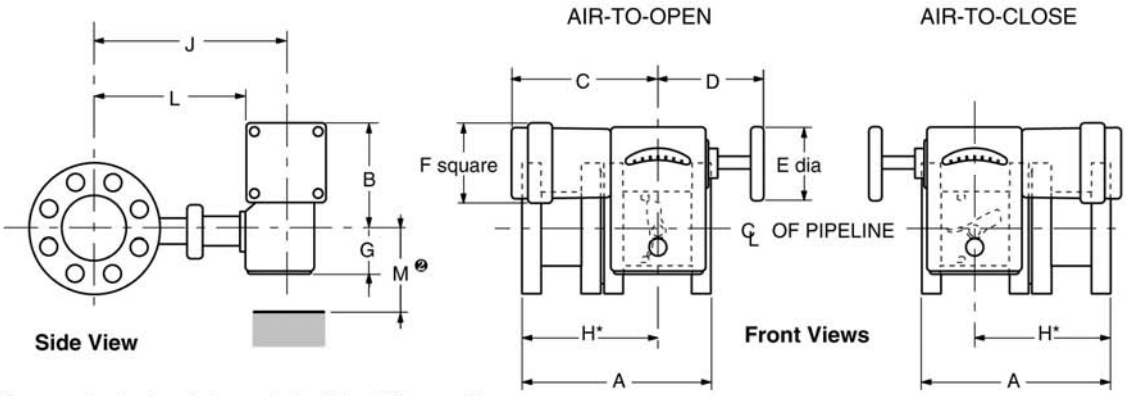
Dimensions and Weights

Rotary Globe (Standard Configuration)



❷ ATA Adjusting clearance

Standard Globe



* "H" is a constant value, independent of the ATA mounting position. Refer to figures and note 6 page 4.

❷ ATA Adjusting clearance

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CN3002 SD - 10/04
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