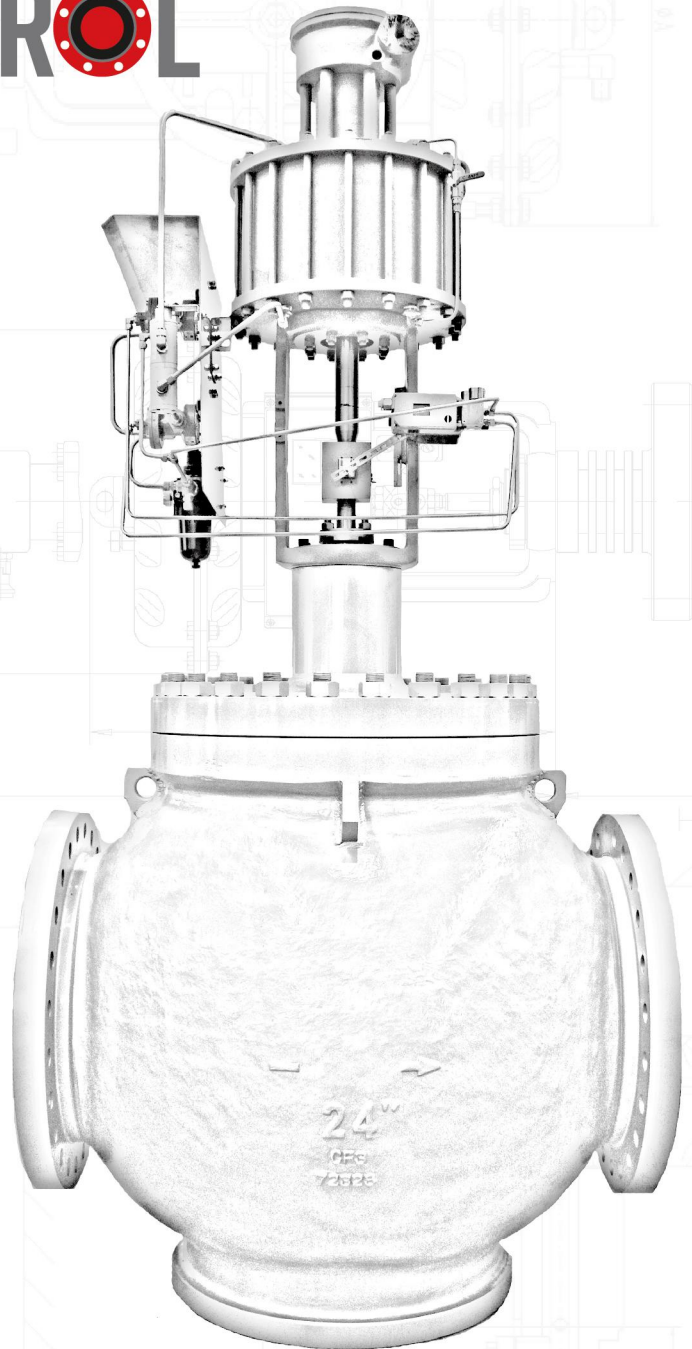


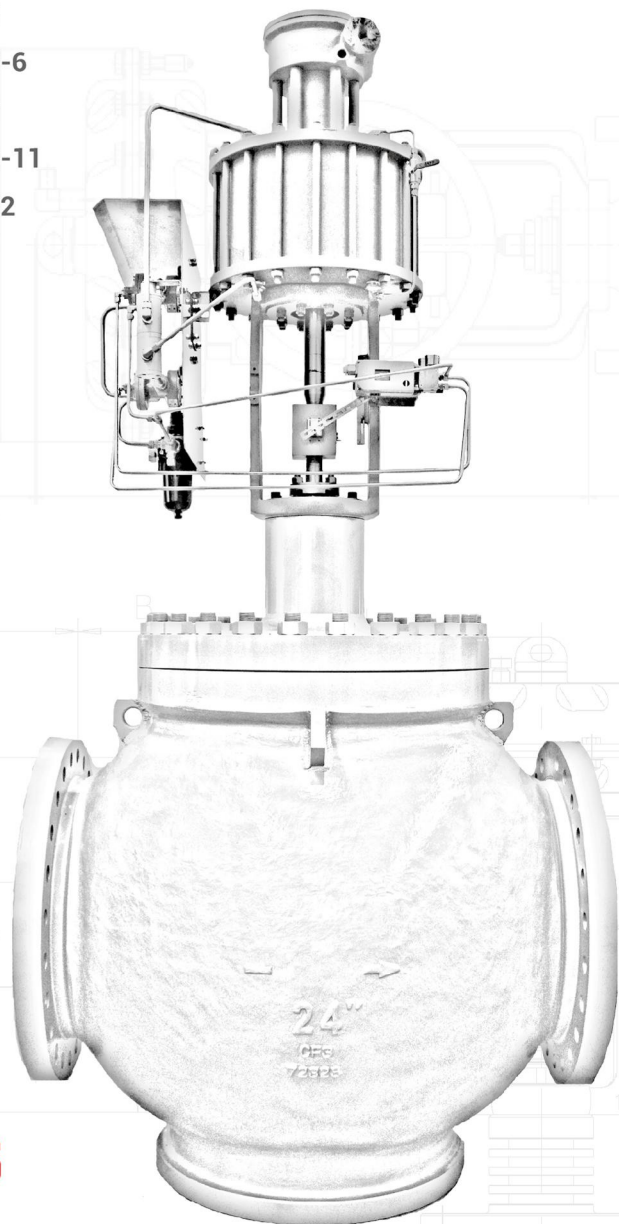
WZIFLOW CONTROL



SERIES APM PRESSURE BALANCED CAGE CONTROL VALVE

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SERIES APM FEATURES

- **Quick Change, Pressure Balanced** Cage Control Valve
- **Low Noise**, Drilled Hole Plug
- For Use in **Noisy Gas** and **Cavitating Applications**
- **Equal Percentage** or **Linear** Control Characteristics
- Shutoff to **ANSI/FCI70-2, Class IV, V**
- **Class 600-Class 1500**
- **Valve Sizes 3" (DN80)-24" (DN600)**

CAGE QUICK CHANGE TRIM GLOBE VALVES

KEY COMPONENTS

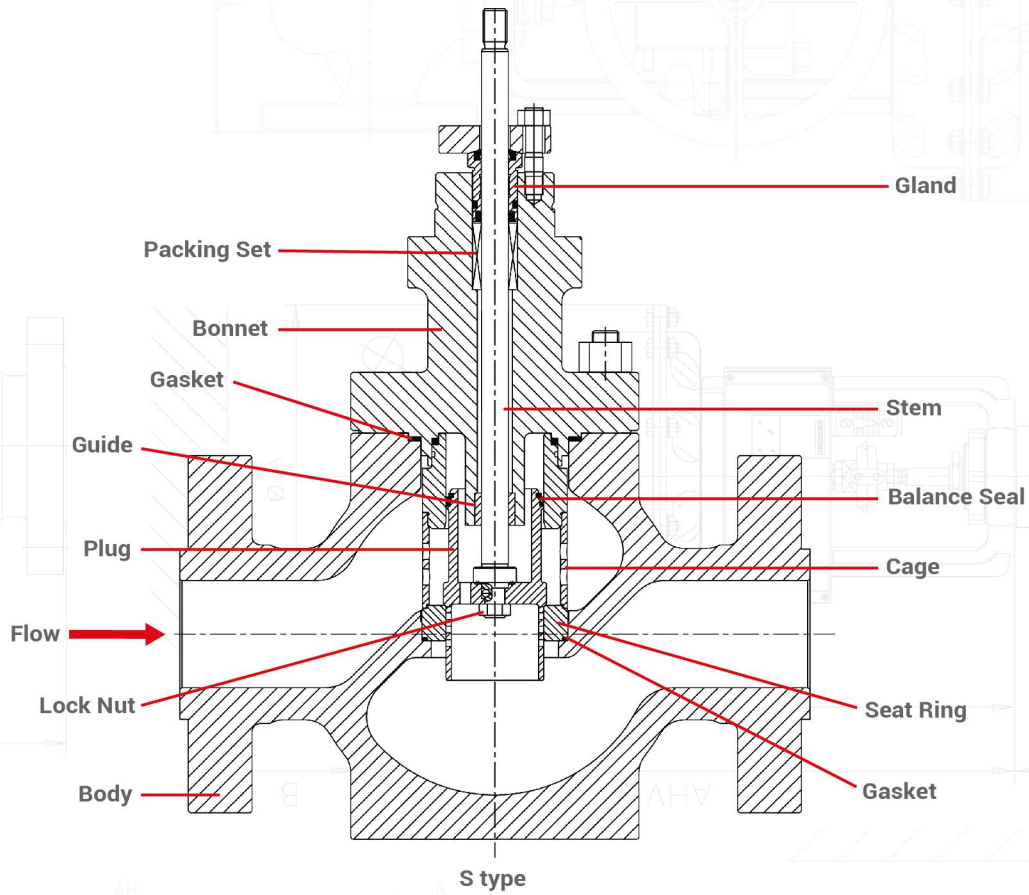
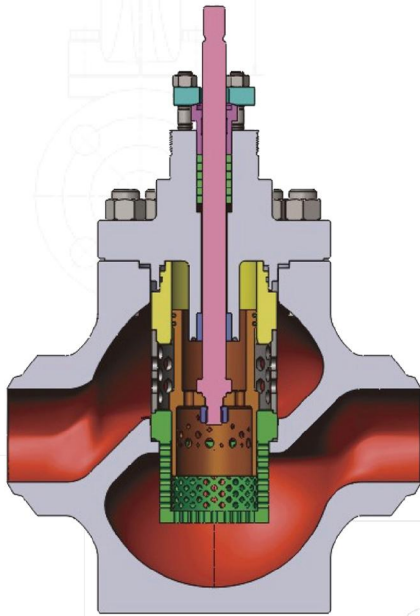


Table 1: Key Components

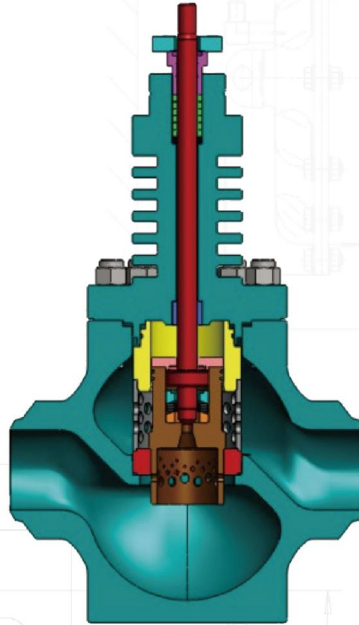
Type	Pressure Balanced Cage Control Valve
Body Size	3"-24"
Plug Characteristics	Drilled Hole Plug-Equal Percentage, Linear
Pressure Classes	Class 600-Class 1500
Body Connections	RF,RTJ,BW
Face to Face Dimensions	IEC60534-3/ASME B16.10, See Pages 9-11
Stem Packing	PTFE V-Ring, PTFE V-Ring Double, PTFE Filled, Grafoil®/Graphite
Gasket	316 SS with Grafoil®
Balance Seal	S type,PTFE U-cup,<270°C,(518F),class IV/V;P type,metal piston ring, class IV, V

VALVE TRIM DESIGN OPTIONS

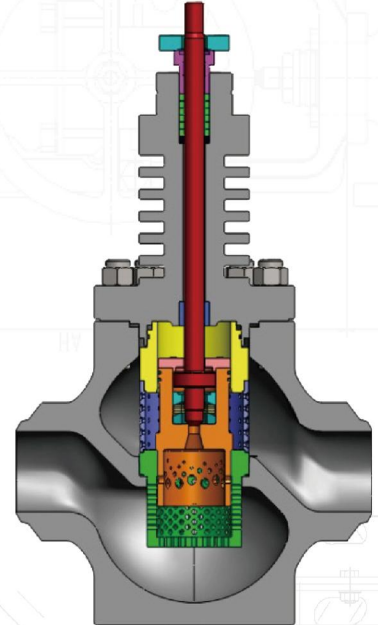
- Variety of Standard and Customizable Configurations
- Diverse Critical Applications High Pressure, High Temperature Designs
- Precision Control with Smooth Open/Closing Design
- High Cv with Stable and Repeatable Flow Parameters



P Type Normal Temperature With Additional Seat Basket

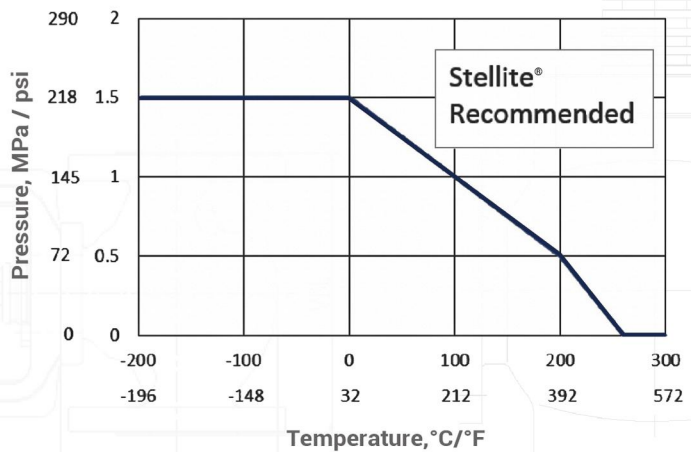


P Type High Temperature Pressurized Seat Design



P Type High Temperature with Pressurized Seat and Additional Seat Basket

Pressure/Temperature Recommendation for Stellite®



TRIM HARDFACING VS OPERATING
PRESSURE-TEMPERATURE RATINGS

MATERIALS OF CONSTRUCTION

BODY/TRIM STANDARD MATERIAL COMBINATION OPERATING TEMPERATURE AND SEAT LEAKAGE

Table 2-1 Body Material: Carbon And Chrome Moly Steel

Body Material		A216 - WCB, A217 - WC6, A217 - C5, A217 - WC9, A352 - LCB			
Plug	Material	420 SS	3Cr17NiMo	440B	316 SS
	Treatment	HT	NT	HT	NT NT
Seat	Material	420 SS	3Cr17NiMo	440B	316 SS
	Treatment	HT	HT	HT	HF —
Guide	Material	440B	440B	440B	316 SS
	Treatment	HT	HT	HT	NT
Gasket		316+Grafoil			
Seat Leakage	ANSI/FCI 70-2	Class IV or V	Class IV or V	Class IV or V	Class IV or V
Body Operating Temperature °F/°C	A216-WCB	23°F-800°F (-5°C-425°C)	23°F-800°F (-5°C-425°C)	23°F-800°F (-5°C-425°C)	23°F-800°F (-5°C-425°C)
	A217-WC6	23°F-1000°F (-5°C-538°C)	23°F-1000°F (-5°C-538°C)	23°F-1000°F (-5°C-538°C)	23°F-1000°F (-5°C-538°C)
	A217-C5				
	A217 WC9				
A352-LCB	-49°F-445°F (-45°C-230°C)	-49°F-445°F (-45°C-230°C)	-49°F-445°F (-45°C-230°C)	-49°F-445°F (-45°C-230°C)	

NOTES:

- 1) Stellite® plug is not recommended to use
- 2) HT=Hardening Treatment, NT=Nitriding Treatment HF=Stellite®
- 3) 316ss trim limited to 600F (315°C) in a carbon steel body or chrome-moly
- 4) Pressure boundary components are supplied to ASTM certification
- 5) Trim components are supplied to ASTM/JIS/DIN/GB equivalent

Table 2-2 Body Material: Stainless Steel

Body Material		A351-CF8M		A351-CF8M
Plug		316 SS	304 SS	316 SS
		NT	NT	NT
Seat		316 SS	304 SS	316 SS
		HF	HF	HF
Guide		304 SS	304 SS	316 SS
		NT	NT	NT
Gasket		316 SS+Grafoil		316 SS+Grafoil
Seat Leakage	ANSI/FCI 70-2	Class IV or V		Class IV or V
Body Operating Temperature °F/°C	A351-CF8	-50°F-1000°F (-45°C-538°C)		-50°F-1000°F (-45°C-538°C)
	A351-CF8M	-50°F-1000°F (-45°C-538°C)		-50°F-1000°F (-45°C-538°C)

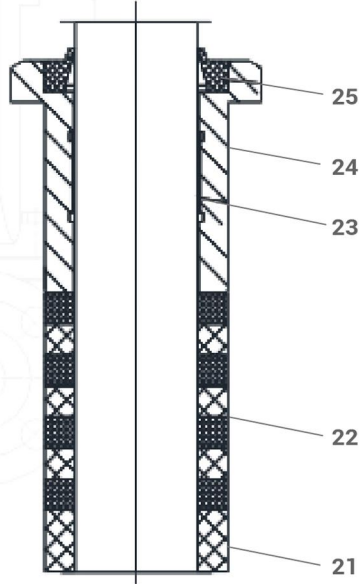
ADDITIONAL NOTES:

- 6) Several stainless steels such as ASTM A-890-99 Grade 3A (1.4468) duplex stainless steel steel and Hastelloy® can be supplied according to clients' requirements

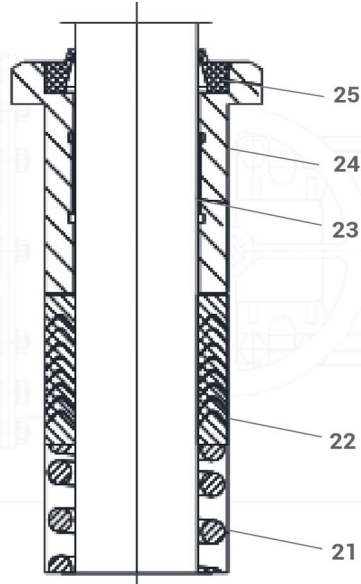
MATERIALS OF CONSTRUCTION

VALVE PACKING BOXES AND OPTIONS

Graphite Packing



V-Ring Packing



PACKING BOX BILL OF MATERIAL AND TEMPERATURE SELECTION

Table 3: Packing Box Materials

Item	Component	Temperature, °C/°F							
		-196	-46	-29	200	260	345	425	566
		-320	-50	-20	392	500	650	800	1050
21	Spacer, Graphite Packing	Carbon							
	Spring, V-Ring Packing	-	300 SS				-	-	-
	Spacer, NACE Service	-	Carbon						-
22	Packing, Standard Bonnet	-	PTFE			-	-	-	-
		-	Filled PTFE				-	-	-
		-	Grafoil®/Graphite						-
	Packing Extended/Finned Bonnet	PTFE				-	-	-	-
		Filled PTFE				-	-	-	-
		Grafoil®/Graphite						-	-
23	Guide Standard Bonnet	-	Metaloplast™				-	-	-
	Guide Extended Bonnet	Metaloplast™						-	-
24	Packing Follower	316 SS							
25	Wiper Ring, Standard Bonnet	-	Buna-N				-	-	-
	Wiper Ring, Extended Bonnet	Buna-N						-	-

NOTES:

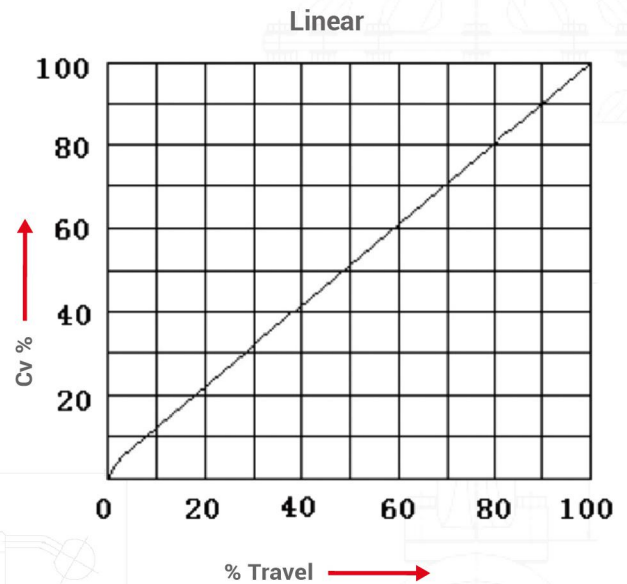
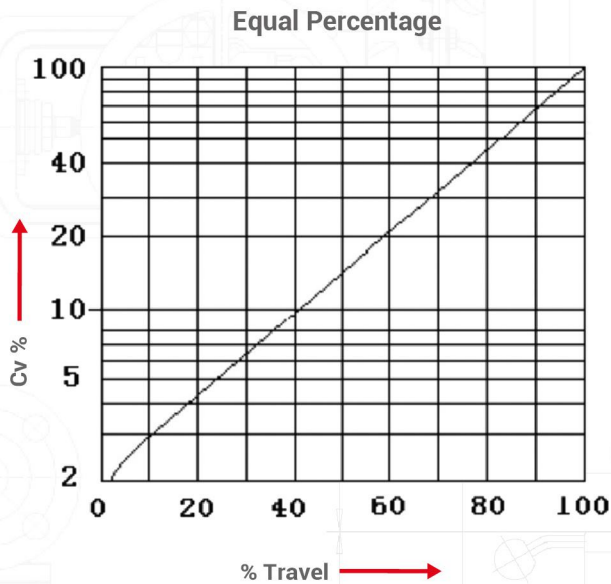
Standard packing boxes are shown; Fugitive Emission qualified and live loading options are available

FLOW CHARACTERISTICS

Table 4: Valve Size,Cv,And Stroke

Plug Type		Drilled Hole Plug					
Flow Characteristics		Linear			Equal Percentage		
Rated Size	Stroke inch(mm)	Cv1	Cv2	Cv3	Cv1	Cv2	Cv3
3"(80)	1.2" (30)	94	70	65	65	50	44
4"(100)		129	94	70	80	65	50
6"(150)	2.4" (60)	445	304	198	246	176	146
8"(200)		527	445	304	304	246	176
10"(250)	3.9" (100)	1053	761	445	608	445	375
12"(300)		1521	1053	761	842	698	445
14"(350)		2106	1521	1053	995	842	608
16"(400)	4.7" (120)	2925	2106	1638	1463	1053	878
18"(450)	6.9" (175)	3900	3100	2106	2106	1638	1053
20"(500)	7.9" (200)	4650	3900	3100	2480	2106	1638
24"(600)	11.8" (300)	6700	5808	4650	3250	2925	2480

Cv vs STROKE CURVES



DIMENSIONS & WEIGHTS

WITH PNEUMATIC ACTUATOR

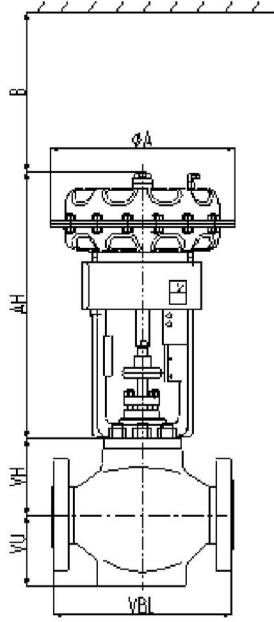


Fig. 5-1: Overall drawing with top mounted handwheel for DN80-DN400(3"-16")

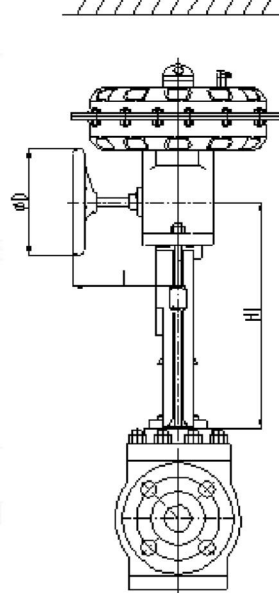
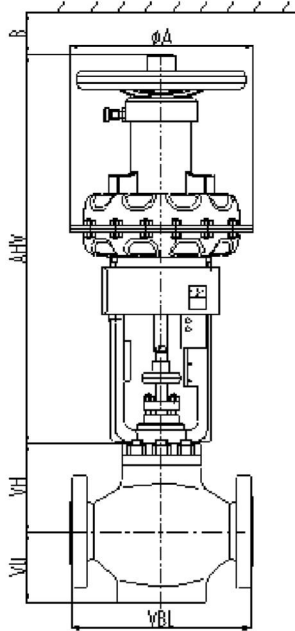


Fig. 5-2: Overall drawing with side mounted handwheel for DN80-DN200(3"-8")(Only MF2,MF3)

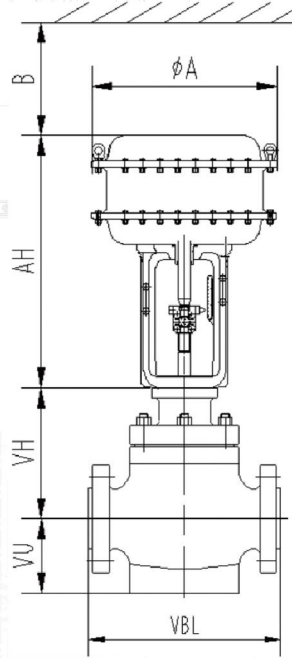
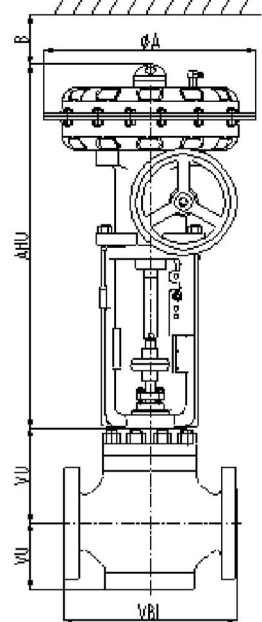
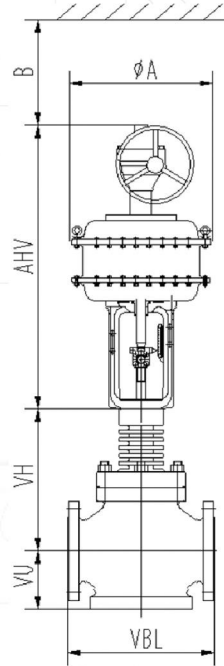


Fig. 5-3: Overall drawing with MF5 Actuator DN150-DN400(6"-16")



DIMENSIONS & WEIGHTS

WITH PNEUMATIC ACTUATOR

Table 5.1: Outline Dimensions And Weight DN80-400 (3"-16"), Class (600/900/1500), See Fig. 5-1, 5-2, And 5-3 For Overall Drawing

Main outline sizes(mm),connection sizes of flange comply with ANSI class 600/900/1500,RF/RTJ All dimensions are in mm											
Valve	DN		80	100	150	200	250	300	350	400	
	VBL Cl. 600	RF	356	432	559	660	752	850	972	1108	
		RJ	359	435	562	664					
	VBL Cl. 900	RF	381	457	610	737	-	-	-	-	
		RJ	384	460	613	740					
	VBL Cl. 1500	RF	470	546	705	832	-	-	-	-	
		RJ	473	549	711	841					
	VH	<300°C	236	268	363	413	373	409	472	534	
≥300°C		361	400	504	557	620	674	726	787		
VU		153	178	228	260	300	330	390	458		
Actuator	A dia.	MF3	400				-				
		MF5	-				630				
	AH	MF2	425	-				-			
		MF3	505	645				-			
		MF5	-	920				820			
	AHV	MF2	580	-				-			
		MF3	780	920				-			
		MF5	-	1265-(direct action) 1370-(reverse action)				1295-(direct action) 1400-(reverse action)			
	AHU	MF2	545	-				-			
		MF3	685	825				-			
	D dia.	MF2	200	-				-			
		MF3	250				-				
	L	MF2	159	-				-			
		MF3	197				-				
	H1	MF2	308	-				-			
		MF3	424				-				
B		150			200			450			
Approximate weight, kg	MF2	104	138	-	-	-	-	-	-		
	MF3	130	164	317	607	-	-	-	-		
	MF5	-			462	752	830	940	1595	2490	

NOTES:

- 1) Weight:valve+actuator without handwheel
- 2) 600# valves comply with ASME B16.10 face to face dimensions

DIMENSIONS & WEIGHTS

WITH PNEUMATIC ACTUATOR

Table 5.2: Outline Dimensions And Weight 3"-16" (DN80-400), Class (600/900/1500), See Fig. 5-1, 5-2, And 5-3 For Overall Drawing

Main outline sizes(mm),connection sizes of flange comply with ANSI class 600/900/1500,RF/RTJ All dimensions are in inches											
	Inch		3"	4"	6"	8"	10"	12"	14"	16"	
	Valve	VBL Cl. 600	RF	14.00	17.00	22.00	26.00	29.6	33.5	38.3	43.6
RJ			14.13	17.13	22.13	26.13					
VBL Cl. 900		RF	15.00	18.00	24.00	29.00	-	-	-	-	
		RJ	15.13	18.13	24.13	29.13					
VBL Cl. 1500		RF	18.50	21.50	27.75	32.75	-	-	-	-	
		RJ	18.62	21.62	28.00	33.13					
VH		<572°F	9.3	10.6	14.3	16.3	14.7	16.1	18.6	21.0	
		≥572°F	14.2	15.7	19.8	21.9	24.4	26.5	28.6	31.0	
VU			6.0	7.0	9.0	10.2	11.8	13.0	15.4	18.0	
Actuator		A dia.	MF3	15.75				-			
	MF5		-		24.8				-		
	AH	MF2	16.7		-				-		
		MF3	19.9		25.4		-				
		MF5	-		36.2		32.3				
	AHV	MF2	22.8		-				-		
		MF3	30.7		36.2		-				
		MF5	-		49.8-(direct action) 53.9-(reverse action)		51.0-(direct action) 55.1-(reverse action)				
	AHU	MF2	21.5		-				-		
		MF3	27.0		32.5		-				
	D dia.	MF2	7.9		-				-		
		MF3	9.8				-				
	L	MF2	6.3		-				-		
		MF3	7.8				-				
	H1	MF2	12.1		-				-		
		MF3	16.7				-				
	B		5.9		7.9		17.7				
	(lb.) Approximate weight	MF2	229	304	-	-	-	-	-	-	
		MF3	286	361	697	1335	-	-	-	-	
MF5		-		1016	1654	1826	2068	3509	5478		

NOTES:

- 1) Weight:valve+actuator without handwheel
- 2) 600# valves comply with ASME B16.10 face to face dimensions

DIMENSIONS & WEIGHTS

WITH PNEUMATIC ACTUATOR

Table 5.3: Outline Dimensions And Weight With Pneumatic Actuator (18"-24", Class600), See Fig. 5-4 For Overall Drawing

Main outline sizes (mm),connection sizes of flange comply with Class600 RF/RTJ/BW Dimensions are in inches and (mm)					
Valve	inch(DN)		18"(450)	20"(500)	24"(600)
	VBL Cl. 600		50.2(1275)	53.3(1354)	65.7(1670)
	VH	<572°F/300°C	23.8(605)	32.1(815)	45.3(1150)
		≥572°F/300°C	31.7(805)	40.7(1035)	55.5(1410)
	VU		19.1(485)	22.5(570)	28.0(710)
Actuator	A dia.	MP500	23.4(595)		–
		MP500-SR/SD			
		MP650	–		29.3(745)
		MP650-SR/SD			
	AH	MP500	45.5(1115)		–
		MP500-SR/SD	76.6(1945)		–
		MP650	–		41.0(1041)
		MP650-SR/SD	–		77.2(1960)
	AHV	MP500	59.6(1515)		–
		MP650	–		56.7(1441)
B		11.8(300)	11.8(300)	13.8(350)	
Weight Approximately lb. (kg)		8525(3875)	1980(5445)	18380(8354)	

NOTES:

1) Weight:valve+actuator without handwheel

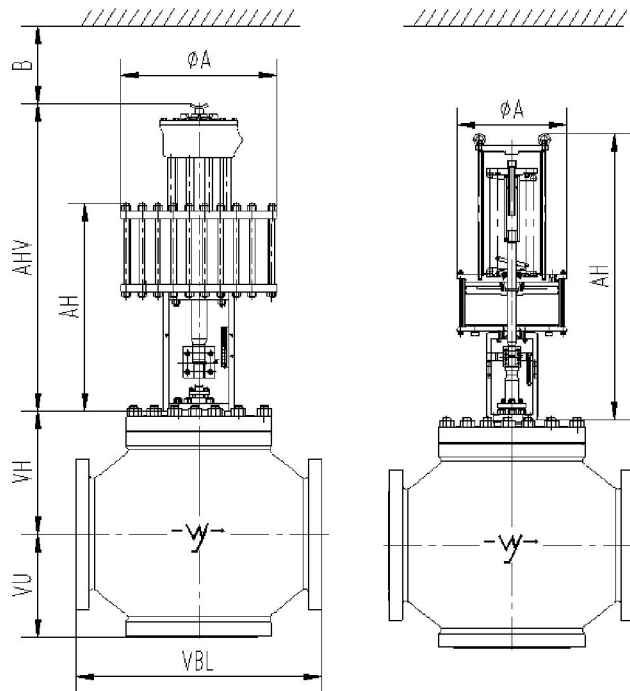


Fig.5-4: Overall drawing with pneumatic piston actuator for DN450-DN600(18"-24")

WHO WE ARE

WZI Flow Control, Ltd., a subsidiary of WuZhong Instrument Company, Ltd., began business in 1959. As China's largest control valve manufacturer, WZI has a state of the art 2.8M ft² production, foundry and corporate office campus. With over 1000 employees, WZI is expanding globally with increased manufacturing, sales and service capabilities to better serve our rapidly growing global customer base.

As a member of the highly acclaimed China Automation Group (www.cag.com.hk), WZI has successfully supplied over 1 million valves for the global market. With our 100% Testing and Serialization Program, WZI prides itself on our high quality, competitively priced products with superior delivery from our new sales and service center located in Houston, Texas. Our Southern California office designs new products and makes continuous improvements to our broad existing product offering.

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WE'RE QUALIFIED

As a global manufacturing company, WZI Flow Control verifies that we are operating in full compliance with this partial list of industry standards. Our compliance includes additional standards not shown here. Please contact the factory for additional details.

> ISO 9001
> ISO 14001
> OHSAS 18001

> API Spec Q1
> API 6A
> API 6D

> API 6DSS
> API 17D
> API 609 Cat B

> API 607, 7th Edition
> API 6FA, 3rd Edition
> SIL-capable

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