

# Control Valve 8020



GS 3 series

1/2" up to 10"

**Pneumatic Control Valve for the control and switching of neutral through to highly aggressive media in process engineering, chemical industries and for plant equipment. Ideal for steam and flashing liquids.**

- Space saving wafer type construction
- Lowest possible weight
- Quiet operation
- Fast response time
- Control of high differential pressures with small actuators
- Greatly reduced energy consumption rates due to short stroke and low actuating forces
- High Cv-values
- Side mount positioners with various communication protocols including HART, Fieldbus and Device Net



## Technical Information

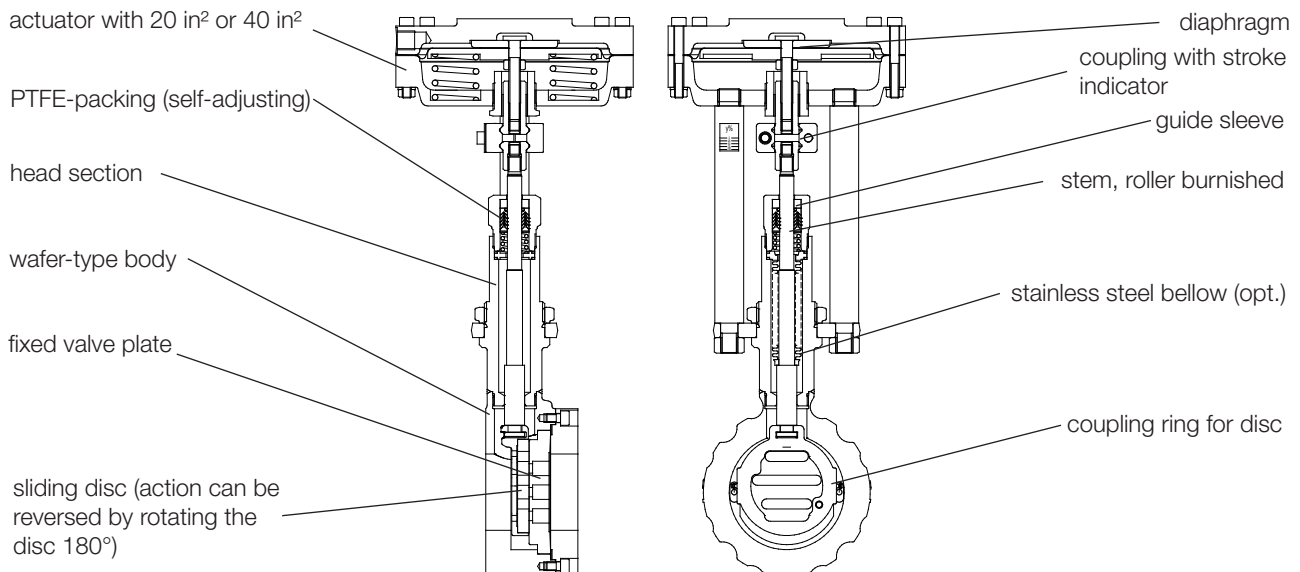
Body design	ANSI flange wafer (self-aligning)		
Nominal sizes	1/2" up to 10"		
Nominal pressure acc.	580 psi	1/2" - 6"	
	(fits also to 145-365 psi)		
DIN 2401 for flanges with facing type B	1450 psi	1/2" - 3"	
	235 psi	8" - 10"	
Nominal pressure acc.	ANSI 150	1/2" - 10"	
	ANSI 300	1/2" - 6"	
for flanges acc. ASME B16.5 RF	ANSI 600	1/2" - 3"	
	10K	1/2" - 2"	
Nominal pressure acc. JIS for "raiced face" flanges	20K	1/2" - 1 1/2"	
Supply air pressure	max. 90 psi		
Media temperature	carbon steel body	+14°F up to +572°F	
	stainless steel body	-76°F up to +662°F (+572°F for SFC)	
Ambient temperature*	standard diaphragm	-22°F up to +212°F	
	silicone diaphragm	-58°F up to +212°F	
Leakage rate (% of Cv-value)	carbon, FUY	SFC	STN2
	< 0.0001	< 0.0005	< 0.001

\* Please consider the limitation of use of the positioner!

## Options

- bellows (stainless steel)
- positioner
  - pneumatic
  - electro-pneumatic
  - electro-pneumatic for hazardous location use
- limit switches

Cvs-values see data sheet 8001.



## Admissible Pressures (For temperatures of up to 250°F)

**For temperatures exceeding 250°F:  
consider operation limits**

### Disc pair: carbon - stainless steel coated SFC - stainless steel coated

Diaphragm area	20 in <sup>2</sup>					40 in <sup>2</sup>				
Spring range (psi)	3 to 15	15 to 29	22 to 44	26 to 55	30 to 65	3 to 15	12 to 20	17 to 32	20 to 39	25 to 46
Supply air (psi)	17	41	61	75	87	17	30	46	58	67
Size	Maximum pressures					Maximum pressures				
1/2"	65	1450	1450	1450	1450	275	1450	1450	1450	1450
3/4"	55	1450	1450	1450	1450	240	1450	1450	1450	1450
1"	45	1450	1450	1450	1450	200	1450	1450	1450	1450
1 1/4"	40	1450	1450	1450	1450	165	1450	1450	1450	1450
1 1/2"	30	955	1450	1450	1450	125	1450	1450	1450	1450
2"	-	520	825	1015	1220	85	915	1405	1450	1450
2 1/2"	-	420	655	810	970	70	740	1130	1160	1160
3"	-	245	375	480	565	45	435	655	695	695
4"	-	145	230	290	350	-	260	390	480	480
5"	-	95	145	190	220	-	175	260	320	335
6"	-	75	110	130	160	-	125	190	230	230
8"	-	35	65	80	95	-	75	110	130	145
10"	-	25	40	50	60	-	30	70	85	95
Springconfiguration	D	2	3	4	5	D	2	3	4	5

Standard

P max.	Pressure limits DIN and ANSI					
	PN16	PN40	PN100	ANSI 150	ANSI 300	ANSI 600
	235	580	1450	235	580	1160

### Disc pair: STN 2

Diaphragm area	20 in <sup>2</sup>					40 in <sup>2</sup>				
Spring range (psi)	3 to 15,0	15 to 29,0	22 to 44,0	26 to 55,0	30 to 65,0	3 to 15,0	12 to 20,0	17 to 32,0	20 to 39,0	25 to 46,0
Supply air (psi)	17	41	61	75	87	17	30	46	58	67
Size	Maximum Pressure					Maximum Pressure				
1/2"	45	1450	1450	1450	1450	195	1450	1450	1450	1450
3/4"	35	825	1450	1450	1450	150	1450	1450	1450	1450
1"	25	825	1275	1450	1450	110	1450	1450	1450	1450
1 1/4"	20	550	855	1060	1260	85	955	1450	1450	1450
1 1/2"	15	335	535	655	785	55	595	915	1045	1045
2"	-	190	290	365	435	35	335	510	610	710
2 1/2"	-	145	230	290	350	30	260	405	495	580
3"	-	85	130	160	205	15	145	230	275	335
4"	-	50	80	100	125	-	95	145	175	205
5"	-	35	50	65	80	-	60	95	115	130
6"	-	20	35	50	60	-	45	65	80	95
Springconfiguration	D	2	3	4	5	D	2	3	4	5

Standard

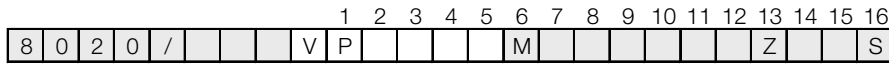
P max.	Pressure limits DIN and ANSI					
	PN16	PN40	PN100	ANSI 150	ANSI 300	ANSI 600
	235	580	1450	235	580	1160

The supply air pressure stated in the table is the minimum supply air pressure that has to be available. This is valid for use without a positioner. When utilizing a positioner the required supply air pressure is determined by the adjustment of the positioner. For the standard version it is 60 psi. The spring configuration „D“ allows the usage of a control valve without a positioner but with limited performance. The valve can be controlled directly by a process controller with a signal of 3 to 15 psi.

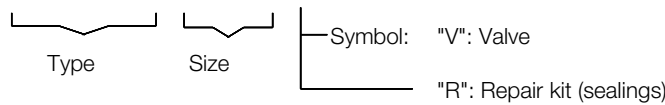
## Materials

Body	Stainless steel 316 Ti/318	Carbon steel ASTM A572, A216	
Head section	Stainless steel 316 Ti /318		
Diaphragm housing	Aluminium, KTL coated		
Packing	PTFE (Carbon filled), spring SST 301		
Actuating stem	Stainless steel 316 Ti, roller burnished		
Bellows	Stainless steel 316 Ti		
Fixed disc	Stainless steel 316 Ti coated	STN2-disc	
Sliding disc	Special carbon material	SFC-disc	STN2-disc
Guide ring for sliding disc	Stainless steel 316 Ti		

## Ordering Number System



1 - 5 : Please quote all 5 sections.  
6 - 16: Quote only if required.



1. Function	2. Body design	3. Body materials	4. Pilot function	5. Actuator	6. Special versions	7. Springs	8. Stem sealing
P Control valve with pneumatic actuator (8020)	E GS3 - flangeless design acc. ANSI 150 F GS3 - flangeless design acc. ANSI 300 K GS3 - flangeless design acc. ANSI 600 G GS3 - flangeless design acc. DIN, (145psi - 580 psi) H GS3 - flangeless design acc. DIN, 1450 psi	0 Carbon-Steel ASTM A572 ASTM A216  1 Stainless Steel 316 Ti / 318	0 spring to close  1 spring to open	6 Diaphragm actuator 20 in² (NPT)  7 Diaphragm actuator 40 in² (NPT)	M to state, if some sections 7-16 are quoted	- Standard 1 2 springs 2 4 springs 3 6 springs 4 8 springs 5 10 springs D Set of springs 3 -15 psi (4 springs)	- PTFE-V-shaped seal, self-adjusting (standard)  1 Additional stainless steel bellow 316 Ti
9. Sliding disc	10. Fixed disc	11. Cv-values	12. Flow characteristic	13. Accessories	14. Positioner	15. Signalling equipment	16. Special version
- carbon material B carbon material fibre forced 9 STN2/STN3 S Stainless Steel SFC-coated	- Stainless steel/Stellite 1 STN 2 - plate (only in combination with the position "9") 3 STN 3 - plate (only in combination with the position "9")	- 100 % (Stand.) A red. to 63 % 1 red. to 40 % B red. to 25 % 2 red. to 16 % C red. to 10 % 3 red. to 6,3 % 4 red. to 2,5 % 5 red. to 1 % 6 red. to 20 % 7 red. to 12 % 8 red. to 2 % 9 red. to 0,4 %	- linear 1 equal percentage	Z To state, if in sections 14 and 15 accessories are quoted	- without 1 p/p - without gauges 2 p/p - with gauges 3 i/p - without gauges 4 dto. with gauges 6 i/p - intrinsically without gauges 7 dto. with gauges	- without 0 2 limit switches inductive, M12x1 10-30 V DC PNP 1 2 limit switches inductive, integr. in positioner 2 i/p-converter 5 2 limit switches inductive, M 12x1 10-55 V DC PNP/NPN	S Other special versions have to be quoted in letters

Ordering example: 8020/080VPE103M5 - - - - - Z3  
GS3 control valve with pneumatic actuator, 3", ANSI 150, stainless steel, NC, actuator 5" with 10 springs, PTFE-V-shaped seal, disc pair carbon material - stainless steel 316Ti coated, linear characteristics, i/p-positioner ex-proof

## Pressure - Temperature ratings for GS3 Valves

### ANSI #150

Size	Sliding unit: carbon/SFC* - stainless steel, coated maximum diff. pressures for GS3-valves (psi)					
	210 °F	300 °F	400 °F	480 °F	570 °F	660 °F
1/2" - 5"	230	220	190	175	145	115
6"	230	220	190	175	145	115
8"	230	220	190	175	145	115
10"	150	145	140	120	105	100

Size	Sliding unit: carbon - STN2 maximum diff. pressures for GS3-valves (psi)					
	210 °F	300 °F	400 °F	480 °F	570 °F	660 °F
1/2" - 5"	230	220	190	175	145	115
6"	230	220	190	160	140	115
8"	-	-	-	-	-	-
10"	-	-	-	-	-	-

Limitation for SFC-sliding discs: 570°F

### ANSI #300

Size	Sliding unit: carbon/SFC - stainless steel, coated maximum diff. pressures for GS3-valves (psi)					
	210 °F	300 °F	400 °F	480 °F	570 °F	660 °F
1/2" - 2 1/2"	580	550	510	480	450	435
3"	580	550	510	480	450	435
4"	480	450	420	390	365	350
5"	335	305	290	275	260	245
6"	230	220	205	190	175	175

Size	Sliding unit: STN2 maximum diff. pressures for GS3-valves (psi)					
	210 °F	300 °F	400 °F	480 °F	570 °F	660 °F
1/2" - 2 1/2"	580	550	510	465	450	420
3"	520	495	480	375	320	275
4"	480	450	375	350	290	245
5"	320	305	245	230	190	160
6"	230	220	190	160	130	115

Limitation for SFC-sliding discs: 570°F

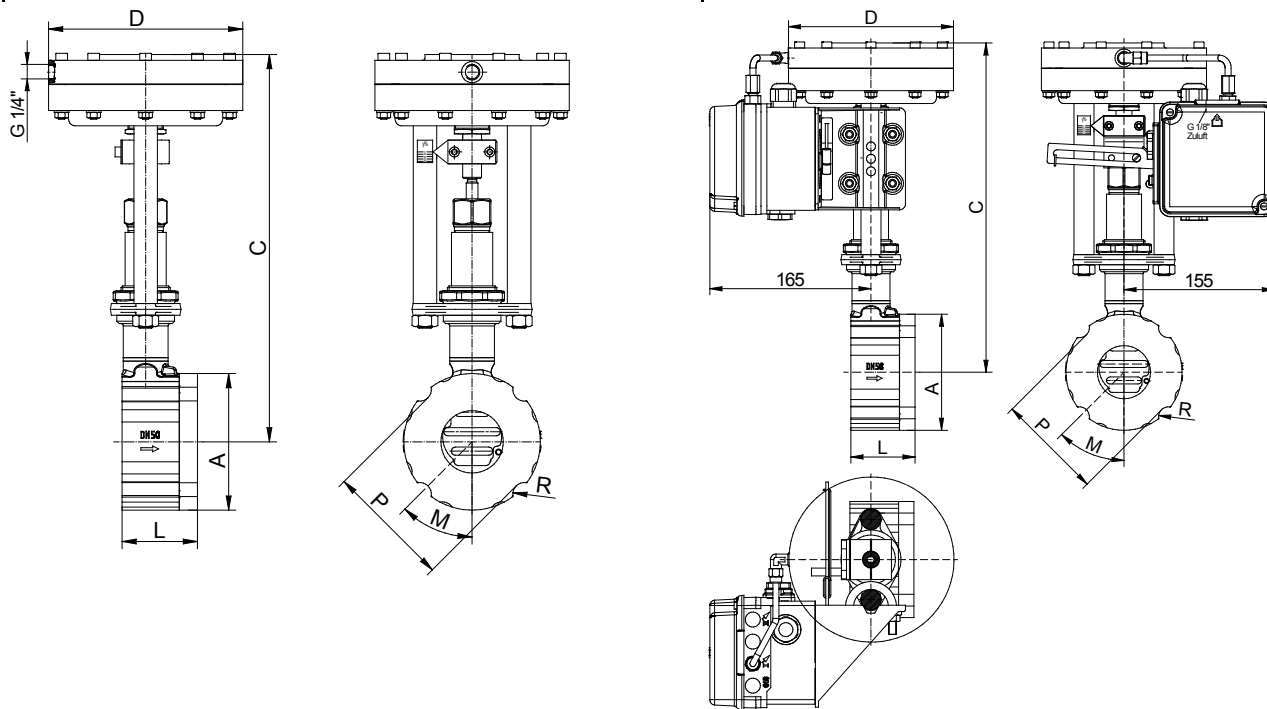
### ANSI #600

Size	Sliding unit: carbon/SFC - stainless steel, coated maximum diff. pressures for GS3-valves (psi)					
	210 °F	300 °F	400 °F	480 °F	570 °F	660 °F
1/2" - 1 1/4"	1160	1115	1030	955	915	870
1 1/2"	1160	1115	1030	955	915	870
2"	1160	1115	1030	955	915	870
2 1/2"	1160	1100	1030	955	900	870
3"	695	655	625	580	535	520

Size	Sliding unit: STN2 maximum diff. pressures for GS3-valves (psi)					
	210 °F	300 °F	400 °F	480 °F	570 °F	660 °F
1/2" - 1 1/4"	1160	1115	1030	955	915	870
1 1/2"	1045	1000	945	770	625	535
2"	1115	1060	1015	810	665	580
2 1/2"	900	855	810	655	535	465
3"	520	495	480	375	320	275

Limitation for SFC-sliding discs: 570°F

## Dimensions and Weights



with side-mount positioner

Size	A inch	C inch	Ø D actuator size		L inch	Weight lbs actuator size		Stroke inch
			20 in <sup>2</sup>	40 in <sup>2</sup>		20 in <sup>2</sup>	40 in <sup>2</sup>	
1/2"	2.5	12	6.5	8.75	2.2	14.3	19.1	0.24
3/4"	2.85	12.2	6.5	8.75	2.2	14.7	19.6	0.24
1"	3.25	12.4	6.5	8.75	2.2	15.8	20.7	0.24
1 1/4"	3.5	12.6	6.5	8.75	2.2	16.5	21.3	0.24
1 1/2"	3.9	12.8	6.5	8.75	2.2	17.6	22	0.24
2"	4.55	13.2	6.5	8.75	2.5	20.9	26.4	0.31
2 1/2"	5.45	13.6	6.5	8.75	2.7	25.3	30.8	0.31
3"	6	14	6.5	8.75	2.75	27.5	33	0.31
4"	7.25	14.35	6.5	8.75	2.95	34.1	39.6	0.33
5"	8.35	14.95	6.5	8.75	3.15	40.7	46.2	0.33
6"	9.55	15.55	6.5	8.75	3.15	48.4	52.8	0.33
8"	11.9	16.75	6.5	8.75	3.65	85.8	90.2	0.33
10"	14.15	17.7	6.5	8.75	3.8	97.9	102.3	0.33

Dimensions in inch

## Flow Coefficients - Cv-values

Ordering code		-	A	1	B	6	2	7	C	3	4	8	5	9
Size	Charact.	100 %	63 %	40 %	25 %	20%	16 %	12 %	10 %	6,3 %	2,5 %	2 %	1 %	0,4%
1/2"	(mod.) linear	4.6	3	2	1.6	-	0.82	0.57	0.51	0.3	0.16	0.09	0.05	-
	eq. perc.	2	-	1.3	-	-	-	-	-	0.12	-	-	-	-
3/4"	(mod.) lin.	7.4	-	-	-	-	1.16	-	-	-	-	0.15	-	-
	eq. perc.	3.5	-	-	-	-	-	-	-	-	-	-	-	-
1"	(mod.) linear	13	7.4	4.6	-	-	1.9	-	1.08	0.72	0.3	-	0.16	0.05
	eq. perc.	5.8	-	2.8	-	1.3	-	-	-	-	-	-	-	-
1 1/4"	(mod.) linear	19	12	-	-	-								
	eq. perc.	9.3	-	-	-	-								
1 1/2"	(mod.) lin.	30	19	13	8.1	-								
	eq. perc.	13	9.9	-	3.2	-								
2"	(mod.) linear	52	32	23	14	12								
	eq. perc.	22	14	-	-	-								
2 1/2"	(mod.) linear	60	41	-	17									
	eq. perc.	35	-	-	9.3									
3"	(mod.) linear	107	67	46										
	eq.perc.	56	41	-										
4"	(mod.) linear	179	110	72										
	eq.perc.	89	56	-										
5"	(mod.) linear	275	-	110										
	eq.perc.	135	-	-										
6"	(mod.) linear	392	246	-										
	eq.perc.	171	104	-										
8"	(mod.) linear	650	408	-										
	eq.perc.	-	-	-										
10"	(mod.) linear	1056												
	eq.perc.	-												

Text and pictures are not binding. We reserve the right, to alter the equipment.