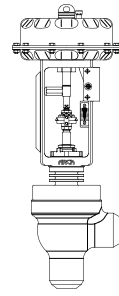


Technical Data Sheet Control Valve Series 190



TD_190 FORGEVENT

General Data

Series	190 Single seated control valve in forged design globe and angle style
Nominal size DN / NPS	15 - 65 / 1/2" - 2 1/2"
Nominal pressure PN / ANSI	up to PN400 / up to ANSI Class 2500 (angle type Class 4500)
Connections	butt-weld ends acc. to DIN EN 12627 butt-weld ends acc. to ASME B16.25 socket weld ends acc. to DIN EN 12760* socket weld ends and threaded connections acc. to ASME B16.11**
Characteristic	equal percentage or linear
Rangeability	Parabolic plug: 50:1 Perf. plug: 40:1
Plug guide	stem guided
Seat leakage	metal sealing: IEC 60534-4 leakage class IV (0,01% of Kvs value); optional: leakage class V
Heating jacket (optional)	connections: DN 15 PN 40 (1/2" ANSI 300) flanged or butt-weld ends

* : up to max. DN 50 PN 100

** : up to max. 2" Class 1500

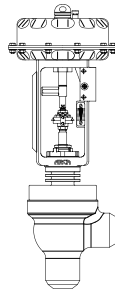
Materials

	EN	for temperatures	ASTM	for temperatures
Body material	1.0460 C 22.8 P250GH	-10 to 420°C	A105	-29°C to 425°C
	1.5415 16Mo3	-10 to 530°C	---	---
	1.7383 11CrMo9-10	-10 to 600°C	A182 F22 Cl.3	-29°C to 650°C
	1.4903 X10CrMoVNb 9-1	-10 to 600°C	A182 F91	-29°C to 650°C
Bonnet material	same as body material; bonnet 1.7383 (11CrMo9-10) on 1.5415 (16Mo3) body			

Valve trim materials						
Material no.	Parabolic plug		Perforated plug		Seat seal	max. operating temperature
	Plug P1	Seat	Plug L1	Seat		
1	1.4122	1.4021	1.4122	1.4021 nitrided	metal	400°C
2	1.4571	1.4571	1.4571	1.4571 nitrided	metal	500°C*
3	1.4112 hardened	1.4112 hardened	1.4112 hardened	1.4112 hardened	metal	400°C
4	1.4922	1.4922	1.4922	1.4922 nitrided	metal	500°C
5	1.4922 hardened	1.4922 hardened	1.4922 hardened	1.4922 hardened	metal	650°C

* with parabolic plug P1 up to 650°C

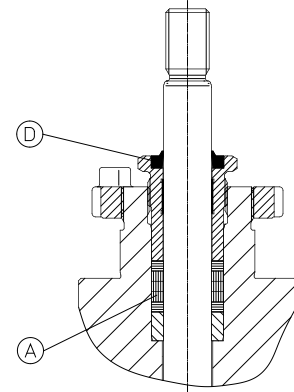
Technical Data Sheet Control Valve Series 190



TD_190 FORGEVENT

Stem sealing

Seal type	Packing (pos. A)	Wiper ring (pos. D)	Medium-temperature	Bonnet flange
adjustable	reinforced graphite / Inconel	NBR	-29 ~ 400°C	cooling fins
adjustable	graphite	NBR	-29 ~ 650°C	cooling fins
adjustable	graphite / PTFE braided	NBR	-29 ~ 250°C	cooling fins

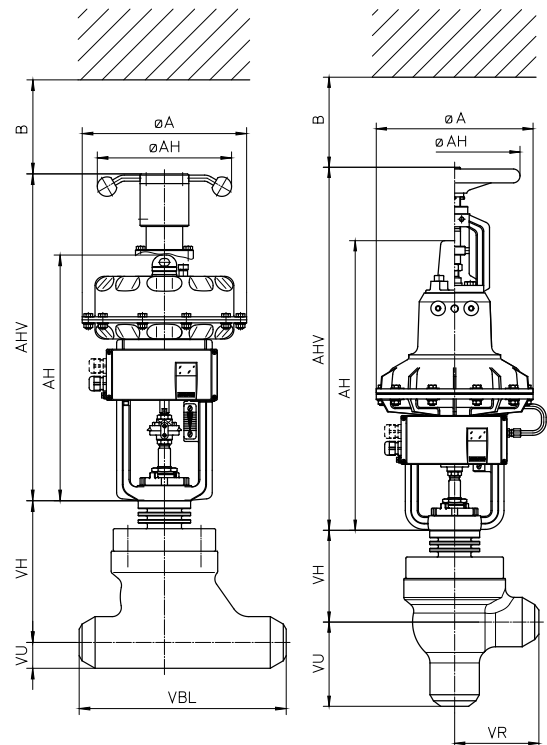


Weight and dimensions

Series 190 globe and angle style

Dimensions (in mm) for valves
with butt-weld ends acc. to DIN EN ISO 9692-1 / DIN EN 12627
as well as acc. to ASME B16.25
with socket weld ends acc. to DIN EN 12760
with socket weld ends or threaded connections acc. to ASME B16.11

	DN		15	25	32	40	50	65	15 - 65	
	ANSI NPS		1/2"	1"	1 1/4"	1 1/2"	2"	2 1/2"	1/2"-2 1/2"	
			up to PN400/ ANSI Class 2500						Class 4500	
Globe style	VBL		308			340			-	
	VU		26			43			-	
	VH		197			233			-	
Angle style	VR		125			145			200	
	VU		125			145			200	
	VH		142			158			220	
Actuator type 812	ØA	MFI-30				270				
		MFIII-30				400				
		MFIII(v)-30				400				
	AH	MFI-30				404				
		MFIII-30				489				
		MFIII(v)-30				551				
	AHV	MFI-30				551				
		MFIII-30				651				
		MFIII(v)-30				814				
	ØAH	MFI-30				220				
MFIII-30					335					
MFIII(v)-30					335					
valve + actuator weight* ca. kg	MFI-30	34			49			78		
	MFIII-30	60			75			104		
	MFIII(v)-30	62			77			106		
	B				200					
Actuator type 811	UV-60	ØA				530				
		AH				1006				
		AHV				1301				
		ØAH				400				
	valve + actuator weight* ca. kg				-	118		147		
		B				250				

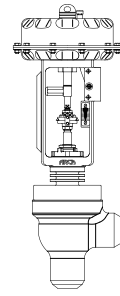


Series 193
globe style
actuator type 812

Series 190
angle style
actuator type 811

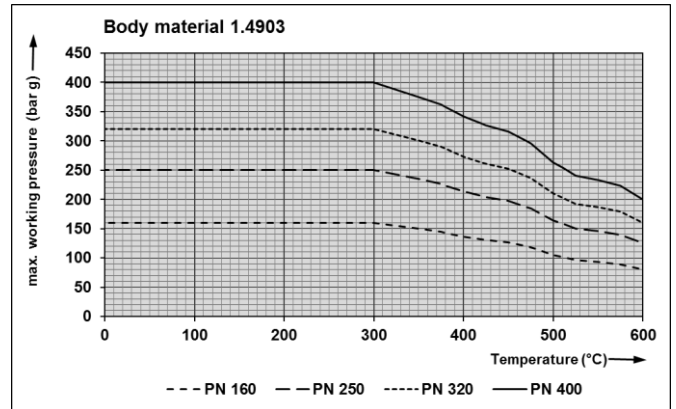
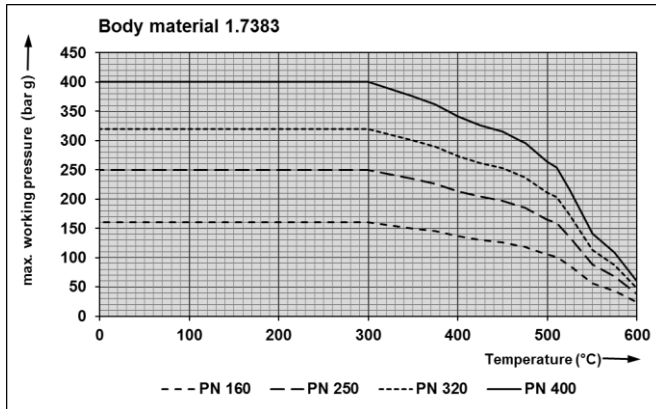
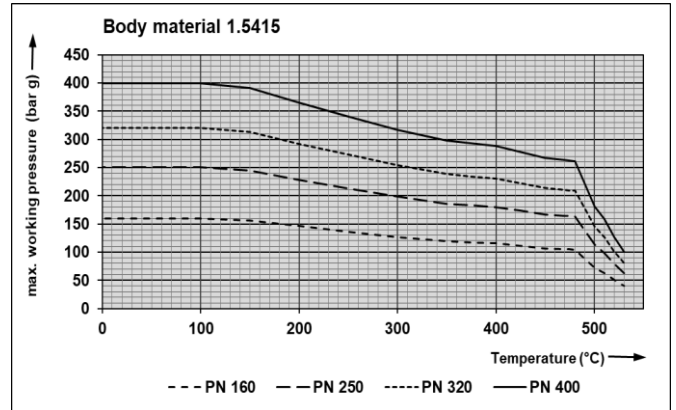
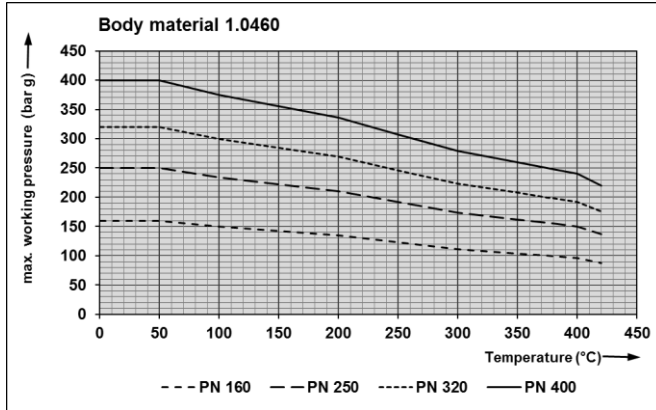
* Weight: Valve (with DEK3 cooling fins) + actuator without handwheel

Technical Data Sheet Control Valve Series 190

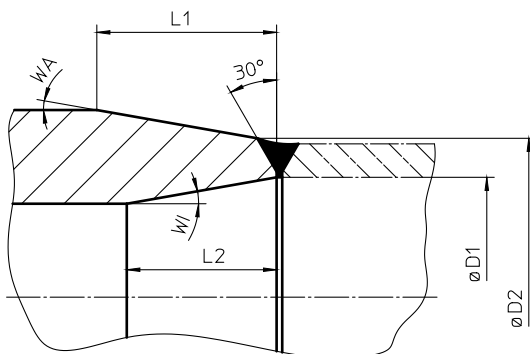


TD_190 FORGEVENT

Series 190 pressure / temperature diagram acc. to EN 12516-1

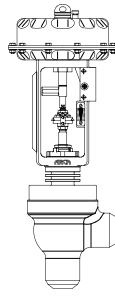


Butt-weld ends acc. to DIN EN 12627



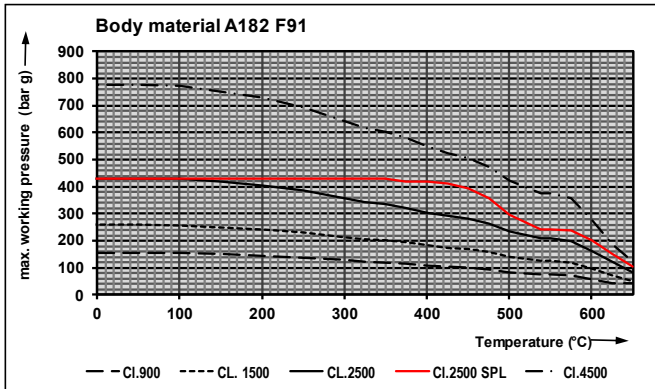
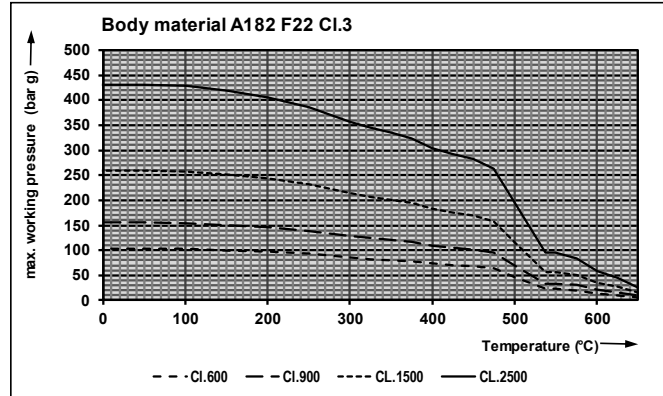
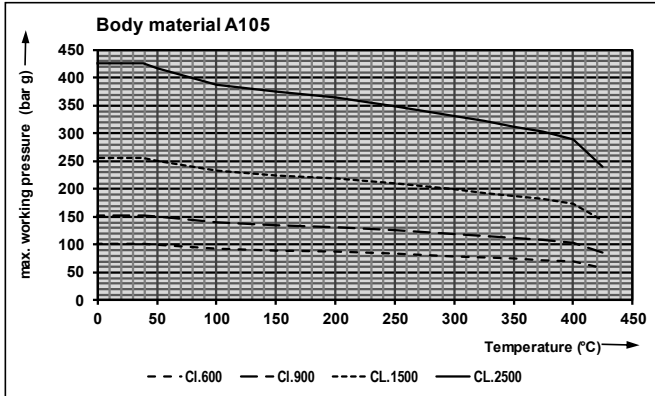
DN	PN	butt-weld ends	pipe AD	ØD1	ØD2	L1	WA	L2	WI
15	100	SED100	21,3	17,3	22	>48	10°	>33,6	0°
	160	SED160	21,3	17,3	22	>48	10°	>33,6	0°
	250	SED250	21,3	16,1	22	>48	10°	>33,6	0°
	320	SED320	21,3	14,9	22	>48	10°	>33,6	0°
	400	SED400	26,9	16,9	28	>48	10°	>33,6	0°
25	100	SED100	33,7	28,5	35	>48	10°	>33,6	0°
	160	SED160	33,7	27,9	35	>48	10°	>33,6	0°
	250	SED250	33,7	26,5	35	>48	10°	>33,6	0°
	320	SED320	33,7	23,7	35	>48	10°	>33,6	0°
	400	SED400	42,4	28,2	44	>48	10°	>33,6	0°
32	100	SED100	42,4	36,6	44	>48	10°	>33,6	0°
40	100	SED100	48,3	41,9	50	>48	10°	>33,6	0°
	160	SED160	48,3	41,1	50	>48	10°	>33,6	0°
	250	SED250	48,3	38,3	50	>48	10°	>33,6	0°
	320	SED320	48,3	35,7	50	>48	10°	>33,6	0°
	400	SED400	60,3	40,3	61,5	>48	10°	>33,6	0°
50	100	SED100	60,3	53,1	61,5	>48	10°	>33,6	0°
	160	SED160	60,3	52,3	61,5	>48	10°	>33,6	0°
	250	SED250	60,3	47,7	61,5	>48	10°	>33,6	0°
	320	SED320	63,5	47,5	65	>48	10°	>33,6	0°
	400	SED400	76,1	51,1	77	>48	5°	>33,6	0°
65	100	SED100	76,1	68,1	77	>48	5°	>33,6	0°
	160	SED160	76,1	66,1	77	>48	5°	>33,6	0°
	250	SED250	76,1	60,1	77	>48	5°	>33,6	0°

Technical Data Sheet Control Valve Series 190

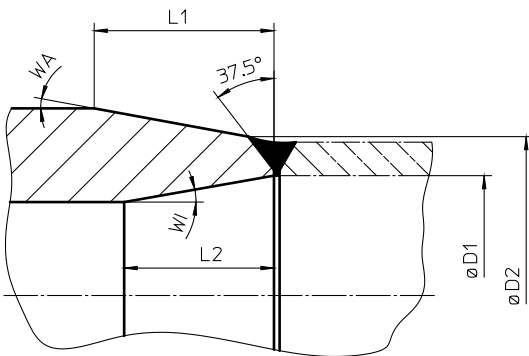


TD_190 FORGEVENT

Series 190 pressure / temperature diagram acc. to ASME B16.34

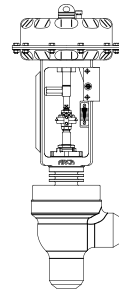


Butt-weld ends acc. to ASME B16.25 or acc. to order



NPS	Sched.	butt-weld ends	pipe AD	ØD1	ØD2	L1	WA	L2	WI
1/2"	40	SEA40	21,3	15,76	22	>48	10°	>33,6	0°
	80	SEA80	21,3	13,84	22	>48	10°	>33,6	0°
	160	SEA160	21,3	11,74	22	>48	10°	>33,6	0°
	XXS	SEAXXS	21,3	6,36	22	>48	10°	>33,6	0°
1"	40	SEA40	33,7	26,94	35	>48	10°	>33,6	0°
	80	SEA80	33,7	24,6	35	>48	10°	>33,6	0°
	160	SEA160	33,7	21	35	>48	10°	>33,6	0°
	XXS	SEAXXS	33,7	15,52	35	>48	10°	>33,6	0°
1 1/4"	40	SEA40	42,2	35,08	44	>48	10°	>33,6	0°
	80	SEA80	42,2	32,5	44	>48	10°	>33,6	0°
	160	SEA160	42,2	29,5	44	>48	10°	>33,6	0°
	XXS	SEAXXS	42,2	22,8	44	>48	10°	>33,6	0°
1 1/2"	40	SEA40	48,3	40,94	50	>48	10°	>33,6	0°
	80	SEA80	48,3	38,14	50	>48	10°	>33,6	0°
	160	SEA160	48,3	34,02	50	>48	10°	>33,6	0°
	XXS	SEAXXS	48,3	28	50	>48	10°	>33,6	0°
2"	40	SEA40	60,3	52,48	61,5	>48	10°	>33,6	0°
	80	SEA80	60,3	49,22	61,5	>48	10°	>33,6	0°
	160	SEA160	60,3	42,82	61,5	>48	10°	>33,6	0°
	XXS	SEAXXS	60,3	38,16	61,5	>48	10°	>33,6	0°
2 1/2"	40	SEA40	73	62,68	75	>48	5,5°	>33,6	0°
	80	SEA80	73	58,98	75	>48	5,5°	>33,6	0°
	160	SEA160	73	53,94	75	>48	5,5°	>33,6	0°
	XXS	SEAXXS	73	44,96	75	>48	5,5°	>33,6	0°

Technical Data Sheet Control Valve Series 190



TD_190 FORGEVENT

Max. shut-off differential pressure in bar

Series 190 PN100 - PN400 as well as ANSI Class 600 - ANSI Class 2500 (Class 4500)

Valid for valves w/o pressure balancing with graphite packing and for leakage class IV

Flow to open (FTO) (at P2 = 0 bar g)

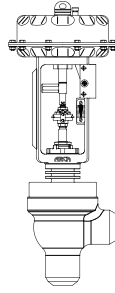
Actuator series 812										Air to open spring to close No. of springs				Air to close spring to open No. of springs				
										3	6	9	12	3	3	3	6	6
DN	Stroke (mm)	Actuator size	P1		L1 lin		L1 =%		Seat-Ø (mm)	bar	bar	bar	bar	Min. air supply (bar)				
			Kv	Cv	Kv	Cv	Kv	Cv						3.0	4.5	6.0	4.5	6.0
*1) 15 - 32 ½" - 1 ¼"	20	MFI-30 (320 cm²) 812-234..	0,1	0,12	-	-	-	-	4	33	130	-	-	106	251	396	130	275
			0,16	0,19	-	-	-	-	4	33	130	-	-	106	251	396	130	275
			0,25	0,29	-	-	-	-	5	33	130	-	-	106	251	396	130	275
			0,4	0,46	-	-	-	-	5	33	130	-	-	106	251	396	130	275
			0,63	0,73	-	-	-	-	5	33	130	-	-	106	251	396	130	275
			1	1,16	-	-	-	-	8	33	130	-	-	106	251	396	130	275
			1,6	1,9	-	-	-	-	10	33	130	-	-	106	251	396	130	275
			2,5	2,9	-	-	-	-	12	33	130	-	-	106	251	396	130	275
			4	4,6	4	4,6	4	4,6	16	33	130	-	-	106	251	396	130	275
			6,3	7,3	6,3	7,3	6,3	7,3	20	22	119	-	-	95	240	385	119	264
10	11,6	10	11,6	8,5	9,9	25	12	74	-	-	59	152	244	74	167			
*1) 15 - 32 ½" - 1 ¼"	20	MFIII-30 (720 cm²) 812-334..	0,1	0,12	-	-	-	-	4	148	372	400	-	317	-	-	372	-
			0,16	0,19	-	-	-	-	4	148	372	400	-	317	-	-	372	-
			0,25	0,29	-	-	-	-	5	148	372	400	-	317	-	-	372	-
			0,4	0,46	-	-	-	-	5	148	372	400	-	317	-	-	372	-
			0,63	0,73	-	-	-	-	5	148	372	400	-	317	-	-	372	-
			1	1,16	-	-	-	-	8	148	372	400	-	317	-	-	372	-
			1,6	1,9	-	-	-	-	10	148	372	400	-	317	-	-	372	-
			2,5	2,9	-	-	-	-	12	148	372	400	-	317	-	-	372	-
			4	4,6	4	4,6	4	4,6	16	148	372	400	-	317	-	-	372	-
			6,3	7,3	6,3	7,3	6,3	7,3	20	137	361	400	-	306	-	-	361	-
10	11,6	10	11,6	8,5	9,9	25	85	229	290	360	194	400	-	229	400			

*1) DN15 / ½" max. Kv 4,0 – DN20 ¾" max. Kv 6,3 – DN25 / 1" max. Kv 10 – DN32 / 1 ¼" max. Kv 10.

Please pay attention to the pressure / temperature rating of the valve body!

For other valve/packing versions, refer to ARCA-VENA valve sizing.

Technical Data Sheet Control Valve Series 190



TD_190 FORGEVENT

Max. shut-off differential pressure in bar

Series 190 PN100 - PN400 as well as ANSI Class 600 - ANSI Class 2500 (Class 4500)
Valid for valves w/o pressure balancing with graphite packing and for leakage class IV
Flow to open (FTO) (at P2 = 0 bar g)

Actuator series 812										Air to open spring to close No. of springs				Air to close spring to open No. of springs				
DN	Stroke (mm)	Actuator size	P1		L1 lin		L1 =%		Seat-Ø (mm)	3	6	9	12	Min. air supply (bar)				
			Kv	Cv	Kv	Cv	Kv	Cv		bar	bar	bar	bar	3.0	4.5	6.0	4.5	6.0
*2) 40 - 65 1 1/2"- 2 1/2"	20	MFI-30 (320 cm ²) 812-234..	4	4,6	4	4,6	4	4,6	16	33	130	-	-	106	251	396	130	275
			6,3	7,3	6,3	7,3	6,3	7,3	20	22	119	-	-	95	240	385	119	264
			10	11,6	10	11,6	8,5	9,9	25	12	74	-	-	59	152	244	74	167
			16	19	12	14	10	11,6	30	7	50	-	-	39	104	168	50	115
			25	29	21	24	18	21	37	3	32	-	-	24	67	109	32	74
			40	46	35	41	20	23	48	-	17	-	-	13	38	64	17	43
		MFIII-30 (720 cm ²) 812-334..	4	4,6	4	4,6	4	4,6	16	148	372	400	-	317	-	-	372	-
			6,3	7,3	6,3	7,3	6,3	7,3	20	137	361	400	-	306	-	-	361	-
			10	11,6	10	11,6	8,5	9,9	25	85	229	290	360	194	400	-	229	400
			16	19	12	14	10	11,6	30	58	158	200	249	133	279	400	158	303
			25	29	21	24	18	21	37	37	102	130	162	86	182	277	102	198
			40	46	35	41	20	23	48	20	59	76	95	50	107	163	59	116
		MFIII-30(v) (720 cm ²) 812-336..	4	4,6	4	4,6	4	4,6	16	205	400	-	-	372	-	-	400	-
			6,3	7,3	6,3	7,3	6,3	7,3	20	194	400	-	-	252	-	-	400	-
			10	11,6	10	11,6	8,5	9,9	25	122	294	364	400	159	368	-	299	-
			16	19	12	14	10	11,6	30	83	203	251	306	109	254	399	206	351
			25	29	21	24	18	21	37	53	132	164	200	70	166	261	134	229
			40	46	35	41	20	23	48	30	77	96	117	40	97	154	78	135

*2) DN40 max. Kv 25.

Please pay attention to the pressure / temperature rating of the valve body!

For other valve/packing versions, refer to ARCA-VENA valve sizing.

Actuator series 811										Air to open spring to close						
										811.41	811.44	811.41		811.44		
										Control range (bar)		Min. air supply (bar)				
DN	Stroke (mm)	Actuator size	P1		L1 lin		L1 =%		Seat-Ø (mm)	bar	bar	3.0	4.5	6.0	4.5	6.0
			Kv	Cv	Kv	Cv	Kv	Cv				bar	bar	bar	bar	bar
*2) 40 - 65 1 1/2" - 2 1/2"	20	UV-60 (811.41)	10	11,6	10	11,6	8,5	9,9	25	368	-	400	-	-	-	-
			16	19	12	14	10	11,6	30	254	400	293	-	-	400	-
			25	29	21	24	18	21	37	166	299	191	382	-	268	400
		UV-60v (811.44)	40	46	35	41	20	23	48	97	177	112	226	339	158	271

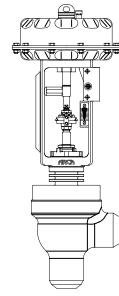
*2) DN40 max. Kv 25.

Please pay attention to the pressure / temperature rating of the valve body!

For other valve/packing versions, refer to ARCA-VENA valve sizing.



Technical Data Sheet Control Valve Series 190



TD_190 FORGEVENT

Model code series 190

0. Operating data		7. Connections		16. Seat wear / tear protection ¹⁾	
Medium:		SEA80	Butt-weld for pipe Sched.80	0	w/o
Temperature:	°C	SEA160	Butt-weld for pipe Sched.160	1	Nitrided
Pressure P ₁ :	bar abs.	SEAXXS	Butt-weld for pipe Sched.XXS	2	Hardened
Pressure P ₂ :	bar abs.	SMD	Socket weld acc. to EN 12760	3	Sealing surface stellited
P Design	bar g	SMA	Socket weld acc. to ASME B16.11	4	Completely stellited
T Design	°C	GA	Thread.conn. acc. to ASME B16.11	5	Colsterised
1. Series		VE(Ø / t)	Butt-weld with spool pieces (Ø / wall thickness)	9	Others (acc. to spec.)
19	High pressure control valve	8. Body materials ¹⁾		17. Seat / plug sealing	
2. Top flange		2	1.0460 / A105	0	Leakage class IV metal to metal
3	Globe type with cooling fins	4	1.5415	1	Leakage class V
4	Globe type with bellows sealing	5	1.7383 / A182 F22 Cl.3	18. Seat retainer ¹⁾	
3	Angle type with cooling fins	6	1.4903 / A182 F91	0	Standard
4	Angle type with bellows sealing	9	Others (acc. to spec.)	1	LN (Low Noise) not controlled
3. Plug design		9. Stem guide		2	LN (Low Noise) controlled
P1, P3 ¹⁾	Parabolic plug (1-step, 3-step)	0	Stem guided (Standard)	19. Perforated cage	
L1, L2 ¹⁾	Perforated plug (1-step, 2-step)	10. KVs Value		0	w/o
4. Design		XXX	acc. to table	20. Stem seal ¹⁾	
D	Globe type	11. Flow characteristic		3	Reinforced graphite / Inconel
E	Angle type	g	=%	4	Pure graphite
5. Valve size		l	linear	5	Graphite / PTFE braided
15	DN 15 / ANSI 1/2"	12. Plug materials ¹⁾		9	Others (acc. to spec.)
25	DN 25 / ANSI 1"	1	1.4122	21. Special designs	
32	DN 32 / ANSI 1 1/4"	2	1.4571	0	Standard
40	DN 40 / ANSI 1 1/2"	3	1.4112	1	AD2000
50	DN 50 / ANSI 2"	4	1.4922	2	ASME B16.34 / B31.3
65	DN 65 / ANSI 2 1/2"	9	Others (acc. to spec.)	3	TRD 110 Gr.1
6. Pressure rating (PN)		13. Plug wear / tear protection ¹⁾		4	TRD 110 Gr.2
100	PN 100	0	w/o	7	NACE
160	PN 160	1	Nitrided	9	Others (acc. to spec.)
250	PN 250	2	Hardened	22. Material certificates (pressure retaining parts)	
400	PN 400	3	Sealing surface stellited	0	w/o
600	ANSI B16.34 Class 600	4	Completely stellited	1	EN 10204-2.1
900	ANSI B16.34 Class 900	5	Colsterised	2	EN 10204-3.1
1500	ANSI B16.34 Class 1500	9	Others (acc. to spec.)	3	EN 10204-3.2
2500	ANSI B16.34 Class 2500	14. Pressure balancing		9	Others (acc. to spec.)
2500SP	ANSI B16.34 Special Class 2500	0	w/o	23. Final inspections	
4500	ANSI B16.34 Special Class 4500	15. Seat materials ¹⁾		0	None
7. Connections		1	1.4021	1	EN 10204-2.1
SED100	Butt-weld for pipe PN 100	2	1.4571	2	EN 10204-2.2
SED160	Butt-weld for pipe PN 160	3	1.4112	3	EN 10204-3.1
SED250	Butt-weld for pipe PN 250	4	1.4922	4	EN 10204-3.2
SED320	Butt-weld for pipe PN 320	9	Others (acc. to spec.)	9	Others (acc. to spec.)
SED400	Butt-weld for pipe PN 400				
SEA40	Butt-weld for pipe Sched.40				

^{*)} with P3 and L2 reduced KVs-value and seat- Ø

¹⁾ In accordance with customer specification, otherwise selected by the manufacturer in accordance with customer process data (medium, pressure, temperature, etc.).

Example:

19 - 3 - L1 - E - 50 - 1500 - SEA160 - 6 *Position 1-8 / basic data*

Series 193 – with cooling fins – 1-step perf. plug – angle type DN 50 / 2" – Class 1500 – butt-weld ends for pipe Sch.160 – body material A182 F91

0 - 18 - g - 4 - 0 - 0 - 4 - 1 - 0 - 0 - 0 - 3 *Position 9-20 / valve trims*

Stem guided – KVs 18 (Cv 21) – equal perc. – plug material 1.4922 – no wear/tear protection – not balanced – seat made of 1.4922 – seat ring nitrided – leakage class IV – standard cage retainer – no perf. cage – stem seal reinforced graphite/Inconel adjustable

2 - 2 - 3 *Position 21-23 / special designs / inspections*

Design acc. to B16.34 - material inspection acc. to EN 10204 3.1 - final inspection acc. to EN 10204 3.1