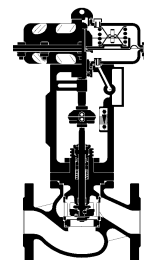


Technical Data Sheet ECOTROL® Control Valve



TD_6N

General Data

Series	6N
Nominal Size DN /NPS	125 - 700 / 5" – 28" (1)
Nominal Pressure PN / ANSI	10 - 63 / Class 150 - 600
Characteristics	equal percentage or linear
Rangeability	40:1
Plug guide	stem guided, option: double guiding (retrofitable)
Seat leakage	metal sealing: IEC 50534-4 leakage class IV (0,01% KVs- value); option: leakage class V soft sealing: IEC 50534-4 leakage class VI
Bellow sealing (option)	seamless, two-ply, made of 1.4571, option: Hastelloy and other materials
Heating jacket (option)	connections DN 15 PN 40 (1/2" ANSI 300) flanges
Low temperature design (option)	down to -196°C

Materials

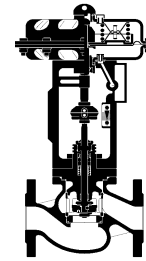
	EN	Temperature range	ASTM	Temperature range
	Body Materials	1.0619 GP240GH*	-29 to 400°C	A 216 WCB*
1.4408 G-X 5 CrNiMo 19 11 2*		-196 to 400°C	A 351 CF8M*	-196°C to 400°C
1.6220 G20Mn5		-40 to 400°C	A 352 LCB	-50°C to 400°C
1.7357 G17CrMo5-5		-10 to 530°C	A 217 WC6	-29°C to 530°C
1.7379 G17CrMo9-10		-10 to 600°C	A 217 WC9	-29°C to 595°C
1.4931 G X 22 CrMoV 12 1		-10 to 600°C	A 217 C12A	-29°C to 650°C
Bonnet Materials	Same material as body, stuffing box sleeve made of 1.4571 (AISI 316TI)			

Trim material					
Material Nr.	Parabolic plug P1	Perforated plug L1	Seat	Seat sealing	max. fluid temperature
1	1.4122*	1.4122 *	1.4021* (2)	metallic	same as stem sealing
2	1.4571	1.4571	1.4571 (2)	metallic	same as stem sealing
3	1.4112 hardened	1.4112 hardened	1.4112 hardened	metallic	same as stem sealing
4	-	1.4308/1.4122 (3)	1.4021	metallic	same as stem sealing
5	-	1.4408/1.4571 (3)	1.4571	metallic	same as stem sealing
6	1.4122*	1.4122	1.4021 (2)	PTFE/FKM	-50 ~ 160°C
7	1.4122*	1.4122	1.4021 (2)	PTFE/EPDM	-50 ~ 140°C
8	1.4122*	1.4122	1.4021 (2)	PTFE	-196 ~ 180°C

- (1) Valve size DN800 / 32" on request
- (2) Execution with perforated plug the seat is nitrated
- (3) From valve size DN250 / 10" upwards perforated plug can be out of casting

* Standard

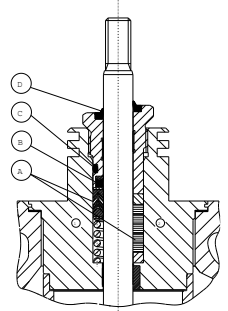
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Temperature range for stem sealings

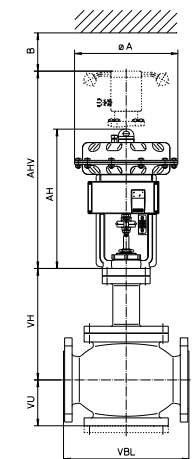
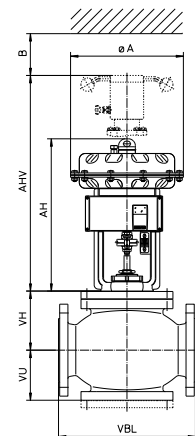
Sealing type	Packing Ring (Item A)	Micro sealing (Item B)	O-Ring (Item C)	Wiper ring (Item D)	Temp. range	Top flange design	Remarks
Maintenance free double sealing	PTFE V-Ring	EPDM (FKM)	EPDM	NBR	-25 ~ 180 (200)°C (≤ PN 63)	Standard	preloaded with stainless steel spring
Maintenance free double sealing	PTFE V-Ring	FKM	FKM	NBR	-20 ~ 200°C (≤ PN 63)	Standard	preloaded with stainless steel spring
adjustable	PTFE braided	-	-	NBR	-196 ~ 250°C	Standard Cooling fins	manually adjustable
adjustable	reinforced Graph./Inconel	-	-	NBR	-29 ~ 400°C	Standard Cooling fins	manually adjustable
adjustable	Pure Graphite	-	-	NBR	-29 ~ 530°C	Standard Cooling fins	manually adjustable
Maintenance free double sealing	PTFE V-Ring	EPDM	EPDM	NBR	-196 ~ 200°C (≤ PN 63)	Extended bonnet	low temperature
Bellows sealing 1.4571 or Hastelloy C	PTFE V-Ring	EPDM (FKM)	EPDM (FKM)	NBR	-100 ~ 500°C	Bellows sealing	preloaded with stainless steel spring



Weights and dimensions

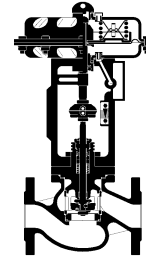
Dimensions (in mm) for valves acc. to DIN EN 1092-1 resp. ANSI Class 150/300/600 RF/RTJ

Valve series	DN	125	150	200	250	300	350	400	500	600	700		
		ANSI NPS	5"	6"	8"	10"	12"	14"	16"	20"	24"	28"	
6N	VBL PN10-PN40	400	480	600	730	850	980	1100	1250	1450	1650		
	VBL PN63	500	550	650	775	900	1025	1150	-	-	-		
	VBL Class 150 RF	400	451	543	673	737	889	1016	1250	1450	1650		
	VBL Class 150 RTJ	-	463	556	686	749	902	1029	-	-	-		
	VBL Class 300 RF	420	473	568	708	775	927	1057	1250	1450	1650		
	VBL Class 300 RTJ	-	489	584	724	791	943	1073	-	-	-		
	VBL Class 600 RF	-	508	610	752	819	972	1108	-	-	-		
	VBL Class 600 RTJ	-	511	613	755	822	975	1111	-	-	-		
	VH	DEK1/7	255	260	295	360	395	465	520	600	725	890	
		DEK2	355	355	410	510	545	615	670	-	-	-	
DEK3/8		355	355	410	510	545	615	670	900	1025	(1)		
DEK4		570	575	605	975	1080	1145	(1)	(1)	(1)	(1)		
DEK5							(1)						
VU	150	190	240	305	335	395	445	540	680	750			
Actuator ^{*)}	ØA	MFIII	400										
		UV				530							
		MA.60				598							
		814							700				
	AH	MFIII	625										
		UV	1006			1135			1175				
		MA.60				max. 1340							
		814							1430				
	AHV	MFIII	888										
		UV	1301			1430			1475				
		B	200			340			440			440	480
	Weight * approx. kg	MFIII	170	200	300								
		UV	210	240	340	530	830	1160	1460				
		MA.60		330	390	600	1000	1300	1770				
		814										2600	3700



^{*)} Weight: Valve with actuator w/o handwheel with standard bonnet (1) On request

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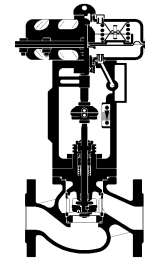
Standard KVs/ Cvs and seat diameters of series 6N

DN	Seat-Ø (mm)	Characteristics	Kvs [m³/h]		Cvs [gal/min]	
			Parabolic plug	Perforated plug	Parabolic plug	Perforated plug
125 5"	80	= %	100	100	117	117
		linear				
	100	= %	160	160	187	187
		linear				
	113	= %	260	240	304	281
		linear		260		304
150 6"	100	= %	160	160	187	187
		linear				
	113	= %	260	240	304	281
		linear		260		304
	143	= %	380	320	445	374
		linear		380		445
200 8"	113	= %	260	240	304	281
		linear		260		304
	143	= %	380	320	445	374
		linear		380		445
	198	= %	600	380	702	445
		linear		600		702
250 10"	143	= %	380	320	445	374
		linear		380		445
	198	= %	600	380	702	445
		linear		600		702
	220	= %	900	600	1053	702
		linear		900		1053
300 12"	198	= %	600	380	702	445
		linear		600		702
	220	= %	900	600	1053	702
		linear		900		1053
	282	= %	1300	900	1521	1053
		linear		1300		1521
350 14"	220	= %	900	600	1053	702
		linear		900		1053
	282	= %	1300	900	1521	1053
		linear		1300		1521
	313	= %	1800	1000	2106	1170
		linear		1800		2106
400 16"	282	= %	1300	900	1521	1053
		linear		1300		1521
	313	= %	1800	1000	2106	1170
		linear		1800		2106
	400	= %	2500	1400	2925	1638
		linear		2500		2925

DN	Seat-Ø (mm)	Characteristics	Kvs [m³/h]		Cvs [gal/min]	
			Piston plug	Perforated plug	Piston plug	Perforated plug
500 20"	400	= %	2500	1400	2925	1638
		linear		2500		2925
	500	= %	4000	3000	4680	3510
		linear		4000		4680
600 24"	600	= %	6000	3500	7020	4095
		linear		6000		7020
700 28"	695	linear	7000	7000	8155	8155

Further Kvs-values on request

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Max. shut off differential pressures (valve closed) in bar
(PTFE V-Ring packing, leakage class IV, unbalanced¹⁾, flow to open)

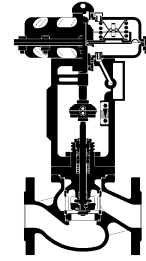
For valves DEK1 unbalanced Actuator series 812 MFIII-60 (multi-spring actuator)		Air to open / Spring to close No. of springs				Air to closed / Spring to open No. of springs				
		3	6	9	12	3	3	3	6	6
DN / NPS	Seat-Ø (mm)	bar								
							Min. supply air pressure [bar]			
125 5"	80	3,8	12,7	16,3	19,9	23,8	43,2	63,0	34,8	54,1
	100	2,1	7,8	10,1	12,4	14,9	27,3	40,1	21,9	34,3
	113	1,4	5,9	7,7	9,5	11,5	21,2	31,2	17,0	26,7
150 6"	100	2,0	7,8	10,1	12,4	14,9	27,2	40,0	21,9	34,3
	113	1,4	5,9	7,7	9,5	11,5	21,2	31,2	17,0	26,6
	143	-	3,4	4,5	5,7	6,9	12,9	19,2	10,3	16,4
200 8"	143	-	3,4	4,5	5,6	6,9	12,9	19,2	10,3	16,3
	172	-	2,2	2,9	3,7	4,6	8,8	13,1	6,9	11,1
	198	-	1,5	2,1	2,7	3,3	6,5	9,7	5,1	8,3

For valves DEK1 unbalanced Actuator series 811 UV-60 (single spring actuator, adjustable)		Air to open / Spring to close				Air to close / Spring to open				
		Standard spring		Reinforced spring		Standard spring		Reinforced spring		
DN	Seat-Ø (mm)	Min.	Max.	Min.	Max.	Min. supply air pressure [bar]				
		bar	bar	bar	bar	3,0	4,5	6,0	4,5	6,0
125 5"	80	-	20,1	-	38,9	49,0	63,0	63,0	63,0	63,0
	100	-	12,5	-	24,5	31,0	55,7	63,0	43,4	63,0
	113	-	9,6	-	19,0	24,1	43,5	62,9	33,8	53,2
150 6"	100	-	12,5	-	24,5	31,0	55,7	63,0	43,3	63,0
	113	-	9,6	-	19,0	24,1	43,4	62,8	33,8	53,1
	143	-	5,7	-	11,6	14,8	26,9	39,0	20,8	32,9
200 8"	143	-	5,7	-	11,6	14,7	26,8	38,9	20,8	32,9
	172	-	3,8	-	7,8	10,0	18,4	26,7	14,2	22,6
	198	-	2,7	-	5,8	7,4	13,7	20,1	10,6	16,9

For valves with DEK7 unbalanced* Actuator series 812 MFIII-60 (multi-spring actuator)		Air to open / Spring to close No. of springs				Air to closed / Spring to open No. of springs				
		3	6	9	12	3	3	3	6	6
DN	Seat-Ø (mm)	bar								
							Min. supply air pressure [bar]			
125 5"	100	35,1	63,0	63,0	63,0	63,0	63,0	63,0	63,0	63,0
	113	29,3	63,0	63,0	63,0	63,0	63,0	63,0	63,0	63,0
150 6"	113	25,8	63,0	63,0	63,0	63,0	63,0	63,0	63,0	63,0
	143	12,3	63,0	63,0	63,0	63,0	63,0	63,0	63,0	63,0
200 8"	172	-	63,0	63,0	63,0	63,0	63,0	63,0	63,0	63,0
	198	-	63,0	63,0	63,0	63,0	63,0	63,0	63,0	63,0

*Piston or quad rings

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For valves with DEK7 unbalanced* Actuator series 811 UV-100 (single spring actuator, adjustable)		Air to open / Spring to close				Air to close / Spring to open				
		Standard spring		Reinforced spring		Standard spring			Feder verstärkt	
		Min.	Max.	Min.	Max.	Min. supply air pressure [bar]				
DN	Seat-Ø (mm)	bar	bar	bar	bar	3,0	4,5	6,0	4,5	6,0
250 10"	198	-	20,9	-	63,0	63,0	63,0	63,0	63,0	63,0
	220	-	16,5	-	63,0	63,0	63,0	63,0	63,0	63,0
300 12"	220	-	12,0	-	63,0	63,0	63,0	63,0	63,0	63,0
	282	-	-	-	63,0	63,0	63,0	63,0	63,0	63,0
350 14"	282	-	-	-	63,0	63,0	63,0	63,0	63,0	63,0
	313	-	-	-	61,6	63,0	63,0	63,0	63,0	63,0

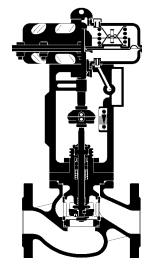
For valves with DEK7 unbalanced* Actuator series 811 UV-120 (single spring actuator, adjustable)		Air to open / Spring to close				Air to close / Spring to open				
		Reinforced spring		Standard spring		Reinforced spring			Standard spring	
		Min.	Max.	Min.	Max.	Min. supply air pressure [bar]				
DN	Seat-Ø (mm)	bar	bar	bar	bar	3,0	4,5	6,0	4,5	6,0
400 16"	313	-	-	-	2,4	63,0	63,0	63,0	63,0	63,0
	400	-	-	-	-	63,0	63,0	63,0	63,0	63,0

*Piston or quad rings

¹⁾ For higher differential pressures, balanced trim is required. With a balanced plug, differential pressure up to design pressure is possible. Please contact ARCA!

For valves with DEK1 unbalanced Actuator series MA60.. (multi-spring actuator)			Air to open / Spring to close No. of springs				Air to closed / Spring to open No. of springs				
			2	4	6	8	2	2	2	4	4
DN	MA 60..	Seat-Ø (mm)	bar								
			Min. supply air pressure [bar]								
			3,0	4,5	6,0	4,5	6,0				
125 5"	D6	80	18,0	41,2	63,0	63,0	62,8	63,0	63,0	63,0	63,0
	D6	100	11,2	26,0	40,8	55,7	39,8	63,0	63,0	63,0	63,0
	D6	113	8,6	20,2	31,8	43,4	31,0	53,7	63,0	49,9	63,0
150 6"	D6	100	11,1	26,0	40,8	55,6	39,8	63,0	63,0	63,0	63,0
	D6	113	8,5	20,2	31,8	43,4	31,0	53,7	63,0	49,9	63,0
	D6	143	5,1	12,3	19,6	26,8	19,1	33,3	47,4	30,9	45,1
200 8"	D6	143	5,3	12,6	19,8	27,1	19,3	33,5	47,7	31,1	45,3
	D6	172	3,5	8,5	13,5	18,5	13,2	23,0	32,8	21,3	31,2
	D6	198	2,4	6,2	9,9	13,7	9,7	17,1	24,5	15,9	23,3
250 10"	D6	172	1,6	5,0	8,4	11,7	10,7	20,1	29,6	13,6	23,1
	D6	198	-	3,5	6,1	8,6	7,8	14,9	22,1	10,0	17,1
	D6	220	-	2,8	4,8	6,9	6,2	12,0	17,8	8,0	13,8
300 12"	D6	198	-	3,5	6,0	8,6	7,8	14,9	22,1	10,0	17,1
	D6	220	-	2,8	4,8	6,9	6,2	12,0	17,8	8,0	13,8
	D6	282	-	1,5	2,8	4,0	3,6	7,2	10,7	4,7	8,3
350 14"	D6	220	-	2,7	4,8	6,9	6,2	12,0	17,8	8,0	13,8
	D6	282	-	1,5	2,8	4,0	3,6	7,2	10,7	4,7	8,2
	D6	313	-	1,2	2,2	3,2	2,9	5,8	8,6	3,8	6,6
400 16"	C6	282	-	-	1,9	2,8	2,9	6,3	9,6	3,6	6,9
	C6	313	-	-	1,5	2,2	2,3	5,0	7,7	2,8	5,5
	C6	400	-	-	-	1,3	1,3	3,0	4,6	1,6	3,3

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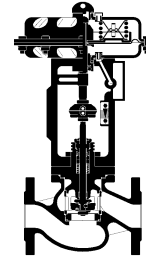


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For valves with DEK7 balanced Actuator series MA60... (multi-spring actuator)			Air to open / Spring to close No. of springs				Air to close / Spring to open No. of springs				
			2	4	6	8	2	2	2	4	4
DN	MA 60..	Seat-Ø (mm)	bar				Min. supply air pressure [bar]				
							3,0	4,5	6,0	4,5	6,0
250 10"	D6	198	63,0	63,0	63,0	63,0	63,0	63,0	63,0	63,0	63,0
	D6	220	63,0	63,0	63,0	63,0	63,0	63,0	63,0	63,0	63,0
300 12"	D6	220	63,0	63,0	63,0	63,0	63,0	63,0	63,0	63,0	63,0
	D6	282	57,4	63,0	63,0	63,0	63,0	63,0	63,0	63,0	63,0
350 14"	D6	282	53,0	63,0	63,0	63,0	63,0	63,0	63,0	63,0	63,0
	D6	313	46,8	63,0	63,0	63,0	63,0	63,0	63,0	63,0	63,0
400 16"	C6	313	42,3	63,0	63,0	63,0	63,0	63,0	63,0	63,0	63,0
	C6	400	24,9	63,0	63,0	63,0	63,0	63,0	63,0	63,0	63,0

Valves with DEK7 balanced Actuator series 814 (piston actuator)			Air to open / Spring to close No. of springs		Air to close / Spring to open No. of springs				
			1	2	1	1	1	2	2
DN	Actuator size	Seat-Ø (mm)	bar		Min. supply air pressure [bar]				
					3,0	4,5	6,0	4,5	6,0
500 20"	814 180	400	2,5	34,6	63,0	63,0	63,0	63,0	63,0
600 24"	814 200	600	-	10,5	63,0	63,0	63,0	63,0	63,0
700 28"	814 250	695	-	1,3	63,0	63,0	63,0	63,0	63,0

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ECOTROL® 6N type code

0. Operating Conditions		7. Body materials		16. Seat/ plug seal ¹⁾	
Fluid:		2	1.0619	0	Leakage class IV (metal to metal)
Temp.:	°C	3	1.4408	1	Leakage class V (metal to metal)
Press P ₁ :	bar abs	4	1.7357	2	Leakage class VI PTFE/EPDM
Press P ₂ :	bar abs	5	1.6220	3	Leakage Class VI PTFE/FKM
P Design	bar g	6	A216WCB	4	Leakage Class VI PTFE/Trapez
T Design	°C	7	A351CF8M	9	other (in acc. with order)
1. Baureihe		8	A217WC6	17. Cage retainer ¹⁾	
6N		9	other (in acc. with order)	0	Standard
2. Bonnet		8. Guiding ¹⁾		1	LN (Low Noise) fix stage
1	Standard	0	Stem guided (standard)	2	LN controlled stage
2	Double stuffing box	1	Bottom guided	9	other (in acc. with order)
3	Cooling fins	9	other (in acc. with order)	18. Seat retainer ¹⁾	
4	Bellows	9. KVs value		1	LK1
5	Extension (insulating column)	xxx	in acc. with order	2	LK2
7	Standard balanced	10. Characteristics		3	LK3
8	Cooling fins balanced	l	linear	4	LK4
9	Special design in acc. with order	g	equal percentage	5	SLK1
3. Kegelausführung		m	modified	6	SLK2
P1-P3-P5	Parabolic plug (1-3-5 step)	s	on / off	9	other (in acc. with order)
L1-L2-L3	Perforated plug (1-2-3 step)	11. Plug materials ¹⁾		19. Stem seal ¹⁾	
S	On/Off plug	1	1.4571	1	PTFE/V-Ring/EPDM quad ring
K	Piston plug	3	1.4112	2	PTFE V-Ring / VITON quad ring
4. Nominal diameter (DN) – DIN/ ANSI		4	1.4122	3	Latty 6118/ETF Inconel
125	DN 125 / ANSI 5"	9	other (in acc. with order)	4	Graphite 0901
150	DN 150 / ANSI 6"	12. Plug wear/ tear protection ¹⁾		5	Graphite / PTFE 6226/6232
200	DN 200 / ANSI 8"	0	standard (without)	9	other (in acc. with order)
250	DN 250 / ANSI 10"	1	nitrated	20. Special design	
300	DN 300 / ANSI 12"	2	hardened	0	DIN EN 16668
350	DN 350 / ANSI 14"	3	sealing surface stellite	1	AD2000
400	DN 400 / ANSI 16"	4	completely stellite	2	NACE
500	DN 500 / ANSI 20"	5	colsterised	3	Oxygen design
600	DN 600 / ANSI 24"	9	other (in acc. with order)	9	other (in acc. with order)
700	DN 700 / ANSI 28"	13. Balancing ¹⁾		21. Material inspection (pressure retaining)	
800	DN 800 / ANSI 32"	1	Piston rings	0	without
5. Nominal pressure (PN)		2	EPDM-quad rings	1	EN 10204-2.1
10	PN 10	3	FKM-quad rings	2	EN 10204-3.1
16	PN 16	5	PTFE spring loaded	3	EN 10204-3.2
40	PN 40	9	other (in acc. with order)	9	other (in acc. with order)
63	PN 63	14. Seat materials		22. Final inspection	
150	Class 150 acc. to ANSI B16.10	1	1.4571	0	without
300	Class 300 acc. to ANSI B16.10	3	1.4112	1	EN 10204-2.1
600	Class 600 acc. to ANSI B16.10	4	1.4122	2	EN 10204-2.2
6. Connections		9	other (in acc. with order)	3	EN 10204-3.1
0	Flanges with raised face (Standard)	15. Seat wear/ tear protection ¹⁾		4	EN 10204-3.2
1	Flanges with groove	0	standard (without)	9	other (in acc. with order)
2	Flanges with tongue	1	nitrated		
3	Flanges with projection/ recess	2	hardened		
4	Butt weld ends	3	sealing surface stellite		
5	Butt weld ends with spool pieces	4	completely stellite		
7	RTJ	5	colsterised		
9	other (in acc. with order)	9	other (in acc. with order)		
7. Body materials ¹⁾					
2	1.0619				
3	1.4408				

¹⁾ in accordance with customer's specification, or selected by manufacturer in accordance with customer's specification (fluid, pressure, etc.)

Example:

6N - 1 - P1 - 150 - 40 - 0 - 2 Position 1-7 / basic data

Series 6N - c/w standard bonnet - c/w parabolic plug - DN150 - PN40 - flanges acc. to EN1092 B1 - body 1.0619

0 - 260 - g - 1 - 0 - 0 - 1 - 0 - 0 - 0 - 1 Position 8-19 / trim

Single stem guiding - KVs 260 - equal percentage - plug made of 1.4571 - w/o wear/tear protection - w/o balancing - seat made of 1.4571 - w/o wear/tear protection - leakage class IV - cage retainer standard - w/o low noise cage - stem sealing PTFE-V-Ring/EPDM quad ring

0 - 1 - 1 Position 20-22 / Design/ inspections

Standard design - Material inspection acc. to EN 10204 3.1 - Final inspection acc. to EN 10204 3.1