SEMPELL HIGH PRESSURE STOP AND CHECK VALVES

MODEL NICO 4000

Designed for all application of stop valves in nuclear power plants up to a nominal diameter of two inches.

FEATURES

- Die-forged body
- Antinit DUR 300 hardfaced seat (Co-free)
- Stem nut drive sealed against contamination
- Visual position indicator
- Low driving forces
- Low pressure loss
- Simple on-line actuator mounting
- Designed for stall torque conditions
- Earthquake resident
- References in German Pressurized Water Reactor Sweden & Finland BWR, Russian Pressurized Water Reactor (VVER)

GENERAL APPLICATIONS

The high pressure stop valve series NICO 4000 contains different designs including valves with bellows and check valves with spring. The valves are installed in all steam and water systems of a NPP using different actuators, electrical or pneumatically, additionally there are the option of a lot of accessories.

TECHNICAL DATA

Size:	NVS ½ – 2 (DN 10 – 25)
Pressure rating:	Up to class 2500 / PN 400
Temperature:	up to +400°C
Body material:	DIN 1.0460, 1.4404, 1.4550 ASME SA105, SA182F316L, SA182F347

Easy actuation change-over.

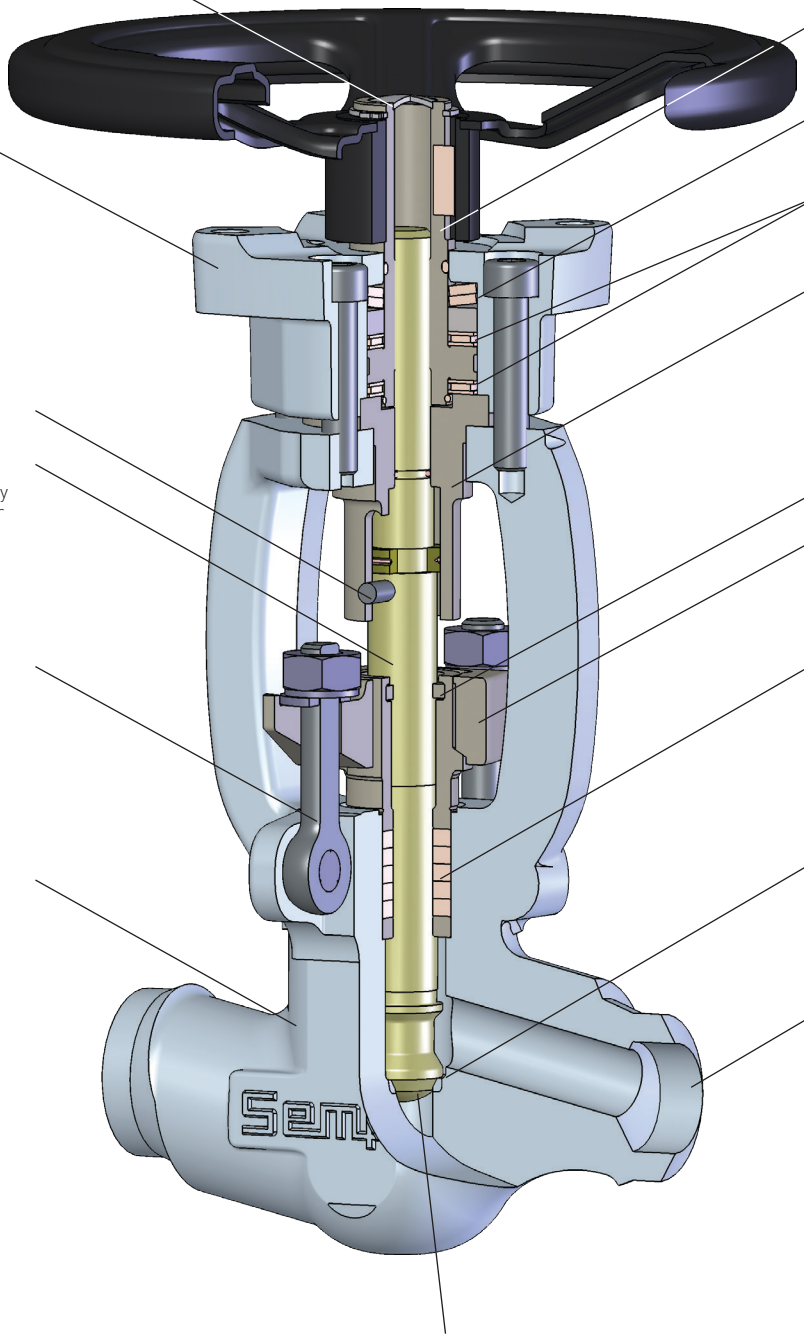
Equipped with a mounting flange acc. to ISO 5210. No additional adaptor needed. An electric actuator can be easily fitted while the valve is in service.

Visual position indicator.

One-piece, non-rotating stem made of 17% Cr steel to ensure long life time of packing and easy mounting of a multiturn actuator without changing any parts.

Gland screws designed as eye bolts fixed to the valve, i.e. they cannot get lost during disassembly.

One-piece die-forged body. The bonnet is an integral part of the body without any additional cover seal.



Capsuled valve yoke for protection against environmental influences.

Thermal extension compensation by cup springs.

Low friction roller bearings for small driving forces.

Capsuled valve yoke for protection against environmental influences.

Stripper-ring sealing of packing protects the stem/packing area against dirt and avoids leakage.

Two-piece gland for quick disassembly and repacking.

Pure graphite packing with non-extrusion ring prevents packing migration and ensure long service life.

Wear resistant Antinit DUR 300 seat ring welded and repairable. A special tool kit for lapping the seat is available.

The sufficiency long cylindrical connections permits UT of the welding edge.

Low pressure loss due to optimized flow path and large channel borings.

BODY MATERIAL

All standard bodies are die-forged and available in carbon steel and stainless steal, Parts are manufactured according to customer's specification and nuclear requirements. The bodies are purchased with double-certified materials. This enables Sempell to deliver those valves with DIN- or ASME- materials.

MODEL 110 - 212

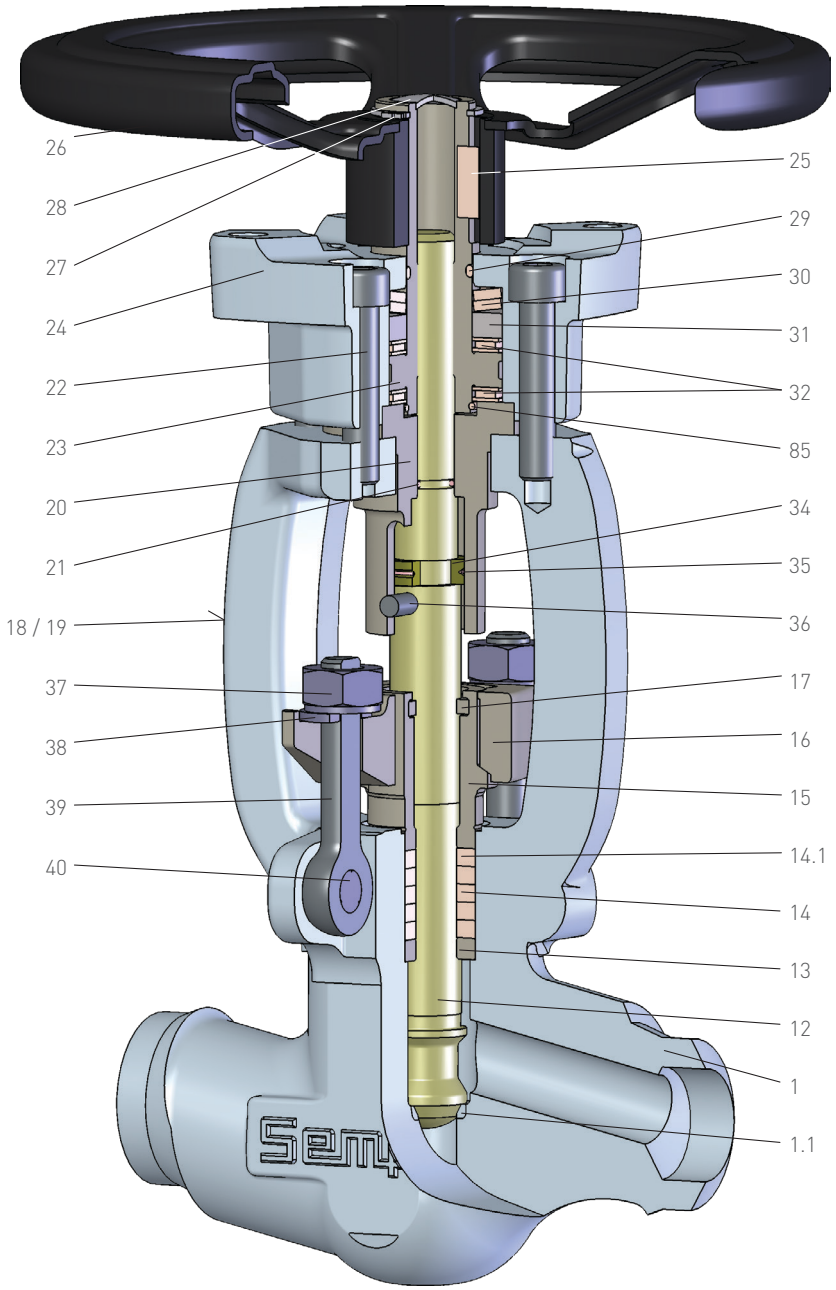
DESIGN
The body of this standard valve is a die-forged, one-piece body, that means the bonnet is an internal part of the body, without additional cover seal. The valve is prepared for the additional mounting of electrical or pneumatically actuators.

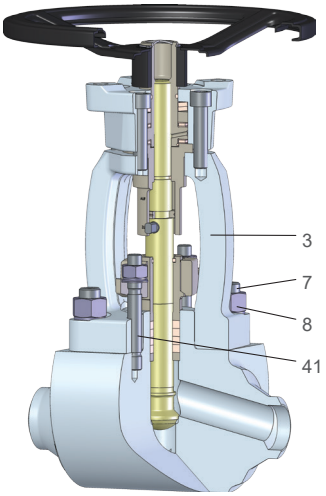
SIZE
NVS ½ - 2 / DN 15 – 50

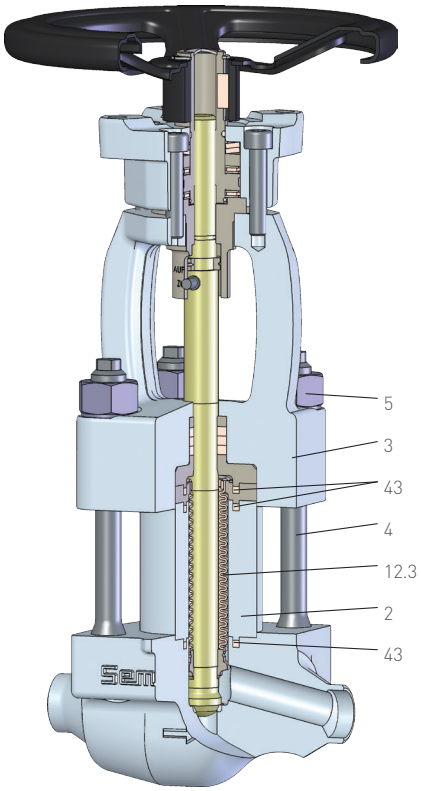
PRESSURE RATING
Class 2680 / PN 420

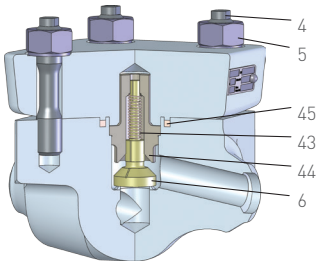
BODY MATERIAL
SA105 / 1.0460
SA182F347 / 1.4550

QUALIFICATION
TUV – Type-tested









MODEL 111 - 212

DESIGN
In comparison to the standard model the two-piece body has an integrated backseat. The separate bonnet is attached to the body by large screw-necked-down-bolts. The stem is assembled into the bonnet from below with packing.

SIZE
NVS ½ - 2 / DN 15 – 50

PRESSURE RATING
Class 2680 / PN 420

BODY MATERIAL
Different special materials available on request

MODEL 111 - 246

DESIGN
Bellows valves are available for applications requiring extreme tightness to outside. Designed for high pressures and temperatures, the bellows is braced by cylindrical intermediate piece and welded to the bottom of the non-rotating stem. The design is not welded, which guarantees easy maintenance and exchange of damaged bellows.

SIZE
NVS ½ - 2 / DN 15 – 50

PRESSURE RATING
Class 2680 / PN 420

BODY MATERIAL
SA105 / 1.0460
SA182F347 / 1.4550
SA182F316L / 1.4404
others on request

MODEL 211 - 231

DESIGN
The series is completed by a check valve, with the same body as model 111-246. The disc is normally equipped with a spring, which allows easy vertical installation. A separate guide piece guarantees free movement.

SIZE
NVS ½ - 2 / DN 15 – 50

PRESSURE RATING
Class 2680 / PN 420

BODY MATERIAL
SA105 / 1.0460
SA182F347 / 1.4550

MATERIALS ASME / DIN

		111-246 / 211-231		
		110-212		111-211
		51 / 01	81 / 31	66 / 16
No.	**Part name**	**Material**		
1	Body	SA105 / 1.0460	SA182F347 / 1.4550	SA182F316L / 1.4404
1.1	Body seat	Antinit DUR 300		
1.2	Welding neck flange	SA105 / 1.0460	SA182F347 / 1.4550	SA182F316L / 1.4404
1.3	Welding neck flange	SA105 / 1.0460	SA182F347 / 1.4550	SA182F316L / 1.4404
2	Spacer	SA105 / 1.0460	SA182F347 / 1.4550	
3	Bonnet / Cover	SA105 / 1.0460	SA182F347 / 1.4550	
4	Screw bolt	SA193B16 / 1.7709	SA453GR660B / 1.4980	
5	Hexagonal nut	SA194GR2H / 1.7218	SA453GR660B / 1.4980	
6	Disc	17 % Cr		
7	Stud	Steel		
8	Hexagonal nut	Steel		
12	Stem	17 % Cr		
12.3	Balanced bellows	316Ti / 1.4571 or Alloy625 / 2.4856		
13	Base ring	13 % Cr		
14 •	Packing	Graphite		
14.1 •	Packing	Graphite with Stainless Steel		
15	Gland shaft	13 % Cr		
16	Gland flange	13 % Cr		
17 •	Stripper	Graphite / Grafit		
18	Nameplate	Stainless steel		
19	Notched nail	Stainless steel		
20	Guide bush	13 % Cr		
21	Sealing ring	FPM		
22	Allen screw	Steel		
23	Threaded bush	Brass		
24	Cover	Steel		
25	Parallel key	Steel		
26	Handwheel	Steel		
27	Retaining ring	Spring steel		
28	Lock washer	Steel		
29	Sealing ring	FPM		
30	Cup spring	Spring steel		
31	Disc ring	13 % Cr		
32	Needle bearing	Steel		
34	Split ring	17 % Cr		
35	Ring	Stainless steel		
36	Guide bolt	17 % Cr		
37	Hexagonal nut	Steel		
38	Washer	Steel		
39	Eye bolt	Steel		
40	Slotted pin	Stainless steel		
41	Stud	Steel		
43 •	Gasket	Graphite		
44	Guide bush	17 % Cr		
45	Spring	Alloy 750		
85 •	Snap ring	Spring steel		

• = commissioning parts

NOTES:

SA182F347 / 1.4550 with carbon content ⩽ 0,03

Screws and nuts corrosion protected

Application ranges:
ASME / DIN -Materials for butt weld or socketweld (barg / °C)

MODEL 110-212, 111-212, 211-231

Body material			Design temperature °C								
ASME	**DIN**	**DIN-No.**	**20**	**100**	**150**	**200**	**250**	**300**	**350**	**365**	**400**
SA105	P250GH	1.0460	431	430	425	421	421	421	394	368	308
SA182F347	X6CrNiNb18-10	1.4550	431	421	395	371	351	335	323	320	315
SA182F316L	X2CrNiMo17-12-2	1.4404	385	323	292	271	255	242	233	231	226

Shell Test max. 650 barg

TYPE / TYP 111-246 I (ONLY NPS 2 / DN40/50)

Body material			Design temperature ° C								
ASME	**DIN**	**DIN-No.**	**20**	**100**	**150**	**200**	**250**	**300**	**350**	**365**	**400**
SA105	P250GH	1.0460	140	113	107	102	97	91	88	87	86
SA182F347	X6CrNiNb18-10	1.4550	140	113	107	102	97	91	88	87	86
SA182F316L	X2CrNiMo17-12-2	1.4404	140	113	107	102	97	91	88	87	86

Shell Test max. 210 barg

TYPE / TYP 111-246 III

Body material			Design temperature ° C								
ASME	**DIN**	**DIN-No.**	**20**	**100**	**150**	**200**	**250**	**300**	**350**	**365**	**400**
SA105	P250GH	1.0460	287	262	254	246	235	218	212	210	185
SA182F347	X6CrNiNb18-10	1.4550	287	262	254	246	235	218	212	210	185
SA182F316L	X2CrNiMo17-12-2	1.4404	287	262	254	246	235	218	212	210	185

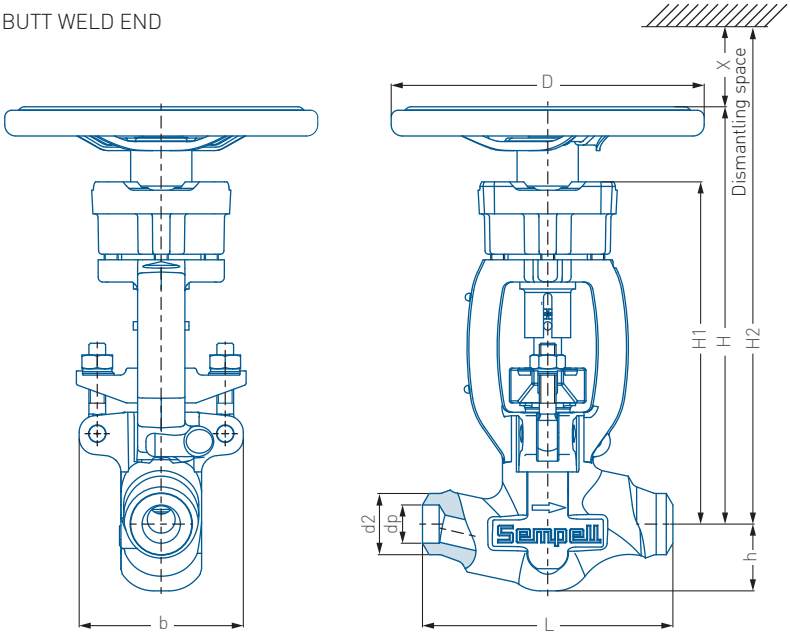
Shell Test max. 400 barg

NOTES:
Allowable working pressure (barg, plain welding ends)
For type 111-246 allowable pressures are limited by bellows
SA182F347 / 1.4550 with carbon content <=0,03
Other materials on request

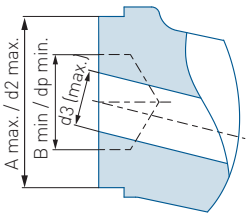
SEMPELL HIGH PRESSURE STOP AND CHECK VALVES

MODEL NICO 4000

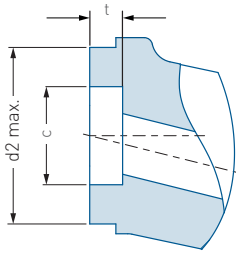
BUTT WELD END



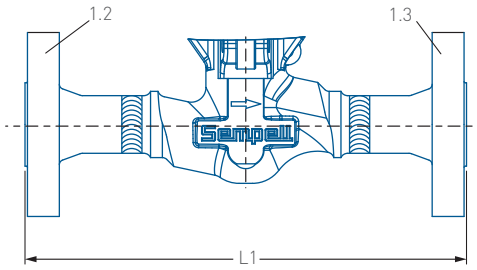
PLAIN



SOCKET WELD END



FLANGES ACC. TO ASME / DIN SPECIFICATIONS



DIMENSIONS / WEIGHT (mm/kg)

Model	110-212			111-212			111-246 I	111-246 III			211-231		
Class max.	2500			2500			900	2500			2500		
PN max.	400			400			160	400			400		
NVS	½	1	2	½	1	2	2	½	1	2	½	1	2
DN	10/15	25	40/50	10/15	25	40/50	40/50	10/15	25	40/50	10/15	25	40/50
L	160	180	300	160	180	300	300	160	180	300	160	180	300
L1	300	360	530	300	360	530	530	300	360	530	300	360	530
b	120	130	170	140	140	220	180	130	130	180	130	130	180
H	250	300	455	250	300	455	550	390	390	640	130	130	185
H1	195	245	385	195	245	385	470	355	355	560	-	-	-
H2*	620	650	820	620	650	820	650	550	550	740	550	550	580
h	35	45	75	35	45	75	75	45	45	75	45	45	75
D	200	225	350	200	225	350	350	225	225	350	-	-	-
Stroke	10	15	30	10	15	30	12	8	8	13	6	6	12
Weight	8	12	40	19	19	72	58	23	23	65	10	10	32

Required dimension for mounting with handwheel or maintenance

SOCKETWELD ENDS ACC. TO ORDER REQUIREMENTS ASME B16.11 (mm)

Class	2500						
NPS	⅜	½	¾	1	1 ¼	1 ½	2
NVS	½		1		2		
c	17.5	21.7	27.1	33.8	42.5	48.6	61.1
t	10	13	13	13	13	13	16

BUTTWELD ENDS ACC. TO FORMER DIN 3239

PN	100					160					250					320					400				
DN	10	15	25	40	50	10	15	25	40	50	10	15	25	40	50	10	15	25	40	50	10	15	25	40	50
dp	13	17	28.5	43	54	13	17	27	41	52.5	12	16	26.5	38.5	45	12	15	24	36	49.5	10	17	29	40	49.5
d2	18	22	35	49	61	18	22	35	49	61	18	22	35	49	61	18	22	35	49	61	18	22	44	61	77
dp min.	6	6	18	27	27	6	6	18	27	27	6	6	18	27	27	6	6	18	27	27	6	6	18	27	27
d2 max.	40	40	56	97	97	40	40	56	97	97	40	40	56	97	97	40	40	56	97	97	40	40	56	97	97
d3 max.*	13	13	20	40	40	13	13	20	40	40	13	13	20	40	40	13	13	20	40	40	13	13	20	40	40

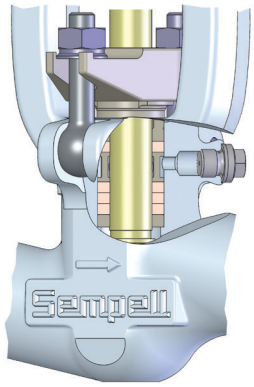
* acc. to requirements
Socketweld on request

BUTTWELD ENDS ACC. ASME B16.25 (B36.10M) (mm)

Sched.	80								160							XXS							
NPS	⅜	½	¾	1	1 ¼	1 ½	2	2 ½	½	¾	1"	1 ¼	1 ½	2	2 ½	½	¾	1	1 ¼	1 ½	2	2 ½	3
NVS	½		1		2				½		1		2			½			1		2		
B	10.7	13.9	18.8	24.3	32.5	38.1	49.2	59	11.8	15.6	20.7	29.5	34	42.8	54	6.4	11	15.2	22.8	27.9	38.2	45	58.4
A	18	22	27	35	44	49	61	75	22	27	35	44	49	61	75	22	27	35	44	49	61	75	90
B min.	6		18		27				6		18		27			6			18		27		
A max.	40		56		97				40		56		97			40			56		97		
d3 max*	13		20		40				13		20		40			13			20		40		

* acc. to order requirements / entsprechend Bestellerangaben

ACCESSORIES



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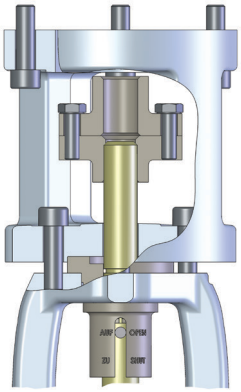

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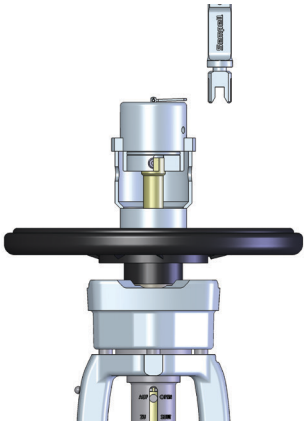

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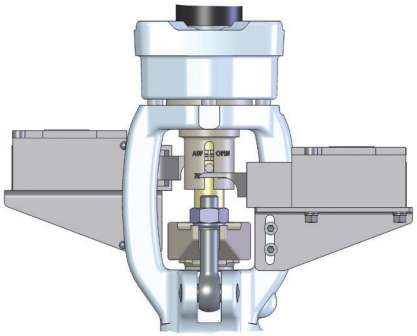

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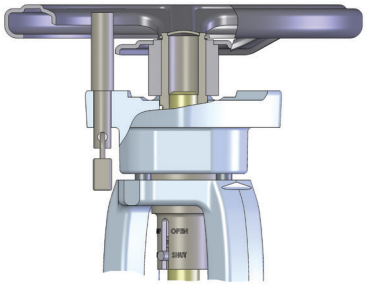

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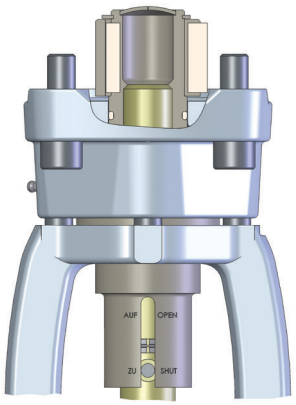

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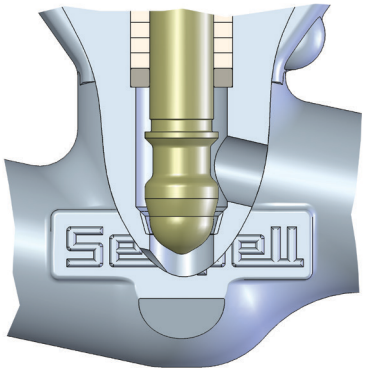

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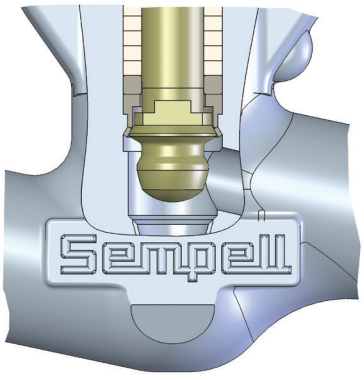

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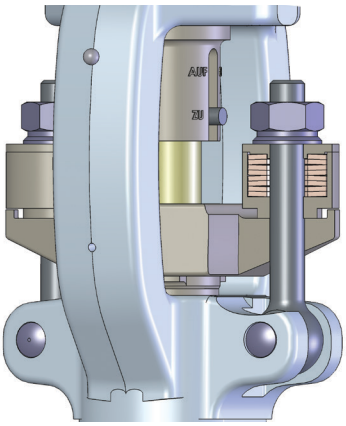


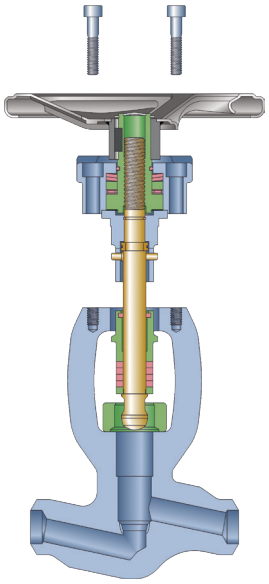
SN160

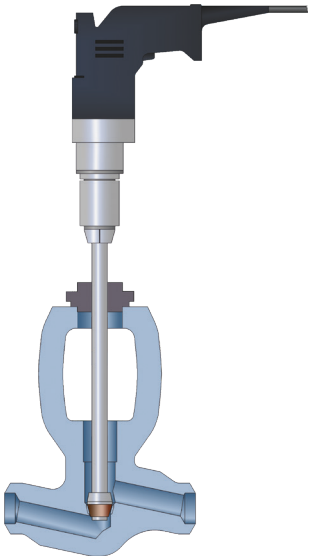
ACCESSORIES

SN	Designation	SN	Designation
25	Copper free materials	43.3	Welding ring outlet side
30	Sealing water gland (lantern ring)	45.1	Throttling disc, inlet below disc
33A/B	Valve yoke with connection acc. to ISO 5210 size F10/F14	53	Back seat
34A-C	Connection for linear actuator acc. to DIN 3358	160.1	Spring-loaded gland
34F	Connection for linear actuator special design	177	Nameplate operating pressure in MPa
36/37	Electrical limit switches for position indicator	178	Nameplate, foreign language
38.1	Handwheel with pad lock	182	Lubrication of stem thread
41	Stellited disc seat	183	Inlet above seat
41.5	Stem and threaded bush nitrided	371	Valve lock A4-A5, locking position OPEN
43.0	Welding rings inlet and outlet side	372	Valve lock A4-A5, locking position CLOSED
43.2	Welding ring inlet side	373	Valve lock A3, locking position OPEN or CLOSED

TOOL KIT

The available maintenance tool kit in metal boxes allows quick and thorough disassembl, maintenance, test and reassembly on all NICO 4000-Series valves.The necessary overhaul can be reduced to a minimum of time.
More information on request.





SELECTION GUIDE

Example:		NICO4000	110-212	01	400	25	G	S	XXX
Valve type									
110-212	HP stop valve with stuffing box								
111-212	HP stop valve with stuffing box (special material)								
111-246	HP stop valve with bellows								
211-231	HP piston check valve								
Material specification									
110-212	01 / 31 / 51 / 81								
111-212	16 / 66								
111-246	01 / 16 / 31 / 51 / 66 / 81								
211-231	01 / 16 / 31 / 51 / 66 / 81								
Pressure rating weld end									
100-400	PN 100-400								
900-2500	Class 900-2500								
Nominal pipe size (NPS)									
10-50	DN 10-50								
½ -2	½ -2								
Body design									
G	Globe type (T-pattern)								
Pipe connection									
S	Butt weld end acc. to DIN								
F	Flanges acc. to DIN								
W	Welding ends acc. to ASME								
M	Socket weld end acc. to ASME								
A	Flanges acc. to ASME								
U	Plain ends								
Accessories									
Standardized accessories									

MATERIAL SPECIFICATION

	Material	DIN - No.
01	P250GH	1.0460
16	X2CrNiMo17-12.2	1.4404
31	X6CrNiNb18-10	1.4550
51	SA105	-
66	SA182F316L	-
81	SA182F347	-