SCHUBERT SALZER INC.

Ball Sector Technology by Schubert & Salzer

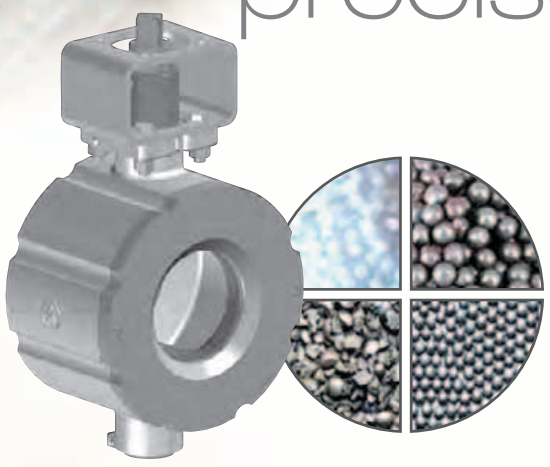
robust

Ball Sector Valves

The Ball Sector Valve especially designed to handle harsh duties, slurries and viscous fluids is suitable for control and isolation.

With pneumatic and electrical actuators available, it is the best choice for very precise control within a broad range of process industries.

precise



efficient

Technical Information

Design		Flangeless, wafertype (size 12” flanged)
Nominal sizes		1” up to 12”
Body material	Cast parts Turned parts	CF8M (1.4408) 316 L (1.4404)
Bearing material		High temperature plain bearing (Iglidur Z)
Actuator Mount		Mounting kit DIN/ISO 5211
Nominal pressure	1” - 2” 3” - 4” 6” - 12”	ANSI300, ANSI150, 580 psi (for flanges 145 psi - 580 psi) ANSI150, 365 psi ANSI150, 235 psi Other pressure ranges on request
Fluid temperature		-76°F up to +446°F
Ambient temperature		-40°F up to +176°F (special version on request)
Characteristic		Almost equal percentage
Rangeability		300:1

Valve Sizes, C_V-Values, Torques

Nominal size	C_V	Orifice inch	Rotation angle nominal (1)	Max. pressure nominal	Max. pressure nominal ANSI	Req. torque (lbf ft) on/off-operation	Req. torque (lbf ft) control operation	Standard mounting kit DIN/ISO
1” (50%)	14.5	0.59	65°	580 psi	ANSI 300	11	18	F05/SW14
1”	24.4	0.75	90°	580 psi	ANSI 300	11	18	F05/SW14
1 1/2” (50%)	39.4	0.98	60°	580 psi	ANSI 300	22	37	F05/SW14
1 1/2”	74.2	1.26	90°	580 psi	ANSI 300	22	37	F05/SW14
2”	109	1.57	90°	580 psi	ANSI 300	22	37	F05/SW14
3”	295.8	2.52	90°	365 psi	ANSI 150	44	74	F07/SW17
4”	452.4	3.15	90°	365 psi	ANSI 150	66	111	F07/SW17
6”	939.6	4.72	90°	235 psi	ANSI 150	111	184	F10/SW22
8”	1583.4	6.1	90°	235 psi	ANSI 150	155	258	F10/SW27
10”	2575.2	7.68	90°	235 psi	ANSI 150	266	443	F12/SW27
12”	4454.4	9.84	90°	235 psi	ANSI 150	664	1106	F14/SW36

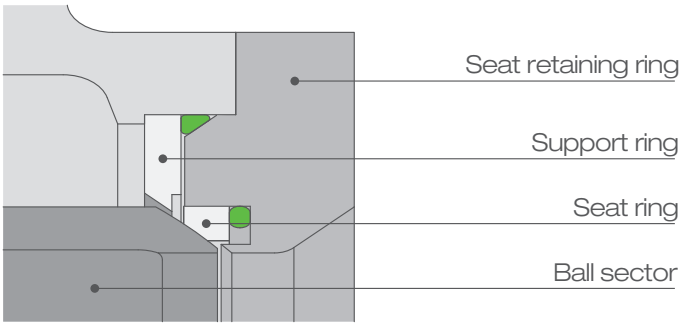
Maximum Working Pressure

Nominal size	Maximum differential pressure (Δp)									
	Seat ring PTFE			Seat ring PEEK				Seat ring Stellite		
	up to 176°F psi	248°F psi	338°F psi	up to 176°F psi	248°F psi	338°F psi	428°F psi	up to 176°F psi	338°F psi	428°F psi
1” - 2”	365	230	85	580	580	365	230	580	580	365
3” - 4”	230	175	75	365	365	230	145	365	365	230
6” - 12”	230	175	60	230	230	175	115	230	230	175

Shaft Seals (O-Ring)

	Min. temp (°F)	Max. temp (°F)
Viton (standard)	14	338
EPDM	-4	275
FEP-Viton	-4	392
PFA-Silicone	-76	446

Special material on request

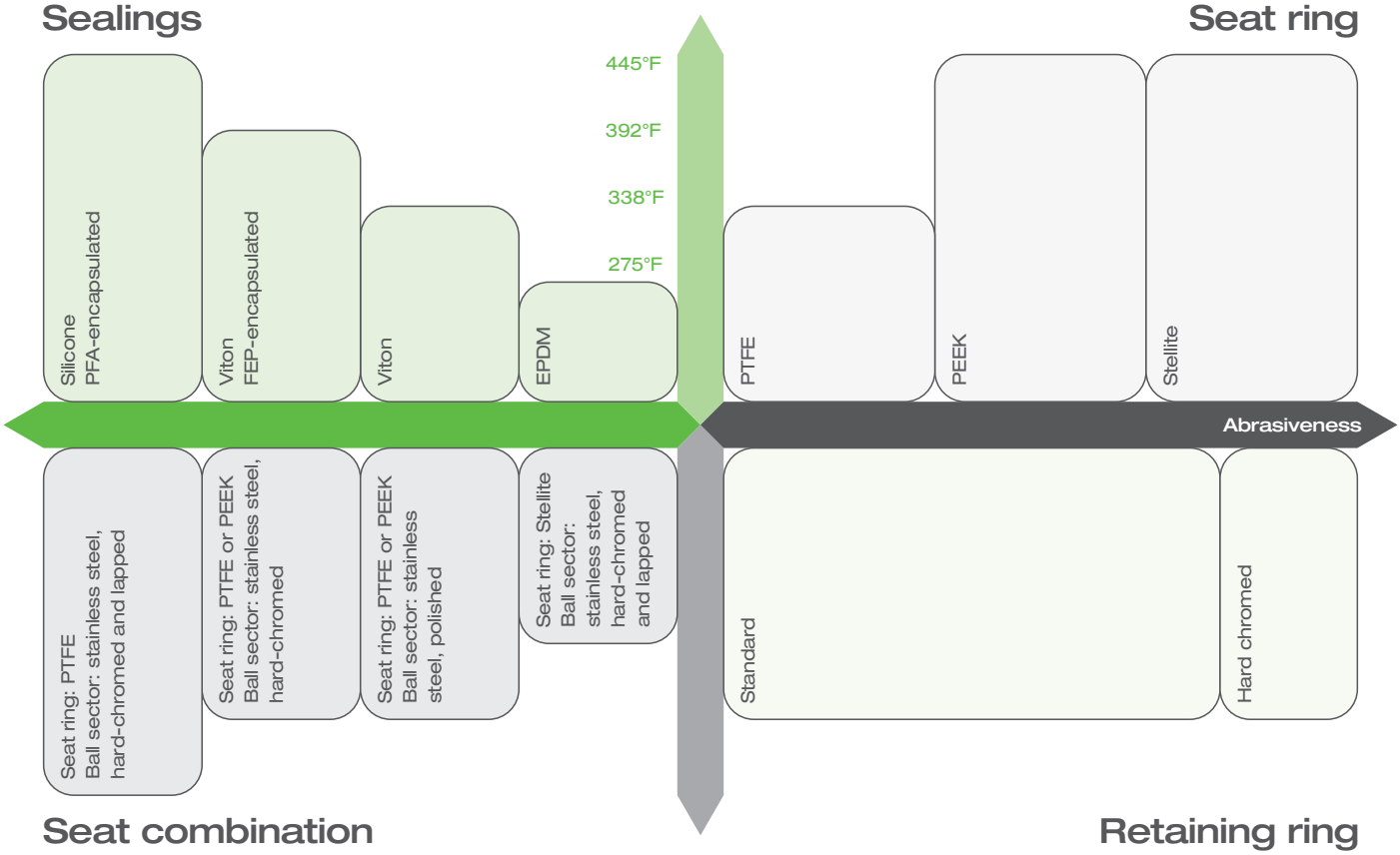


Valve Seat Combinations

Seat ring	Ball sector	Leakage	Min. temp (°F)*
PTFE	Stainless steel polished	5×10^{-7} from max. C_V	-76 up to +338°F
PEEK	Stainless steel polished	5×10^{-7} from max. C_V	-76 up to +428°F
PTFE	Stainless steel, hard chrome plated	5×10^{-7} from max. C_V	-76 up to +338°F
PEEK	Stainless steel, hard chrome plated	5×10^{-7} from max. C_V	-76 up to +428°F
Stellite	Stainless steel, hard chrome plated and lapped	Class IV-S1 acc. EN 1349 (IEC 534-4) 5×10^{-6} from max. C_V	-76 up to +446°F
PTFE	Stainless steel, hard chrome plated and lapped	Class VI acc. EN 1349 (IEC 534-4)	-76 up to +338°F

* Please note the restrictions of the o-ring material!

Material Selection Matrix



The Details That Matter

Compact top mount
Schubert & Salzer
digital positioner

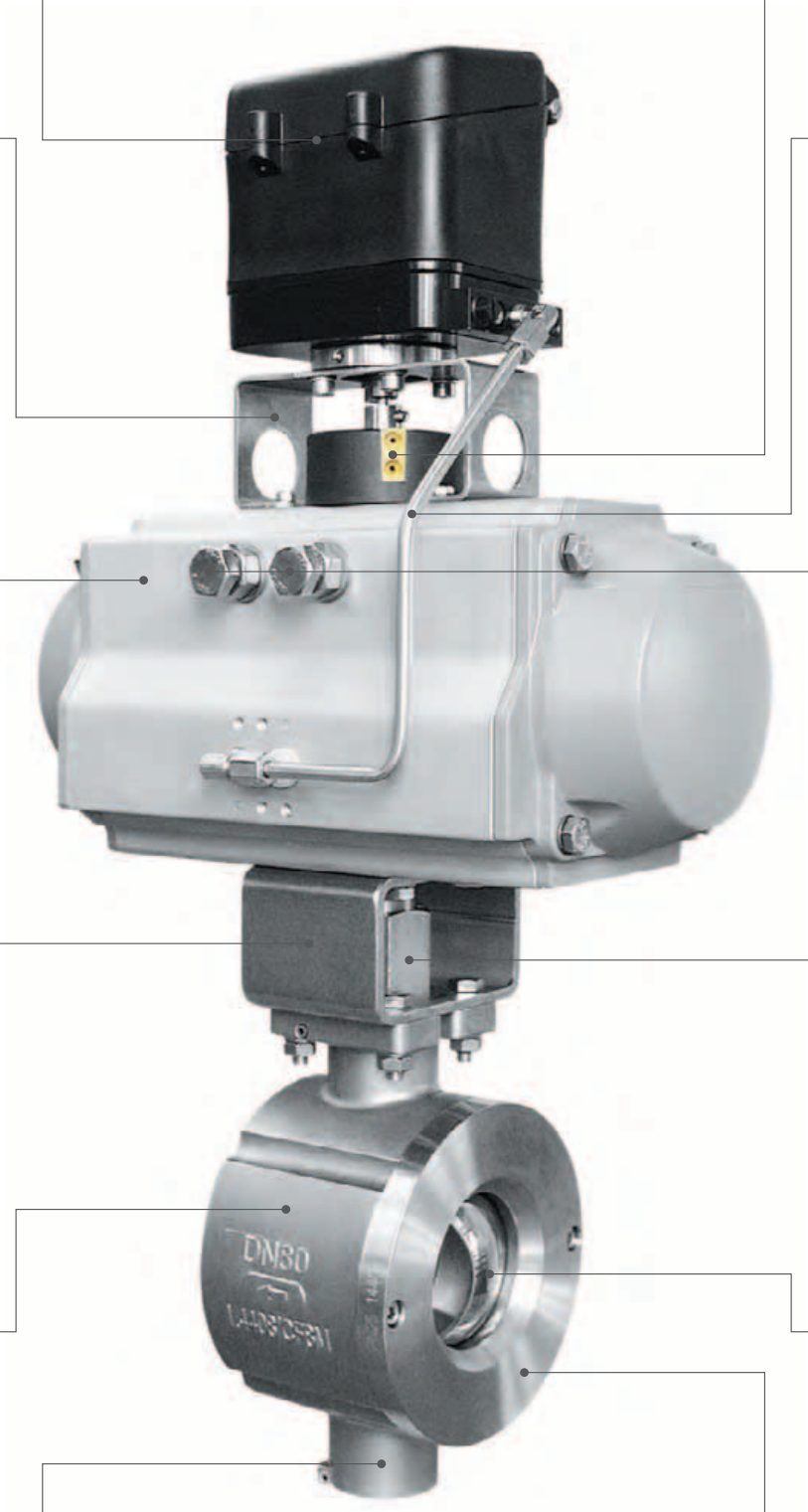
Visual position
indication

Wide range of 3rd party
postioners are available,
mounting to
NAMUR standard

Rugged
stainless steel
tubing and fittings

Pneumatic
actuator (double or
single acting)
or motor actuator
mounting to
DIN/ISO 5211

Adjustable travel
stops



Mounting kit
according to
DIN/ISO 5211

Close tolerance
coupling to ensure
precise positioning
and repeatability

Ball sector
optional with
hardened surface
treatments for de-
manding media and
equal percentage
flow characteristic
with rangeability of
300:1

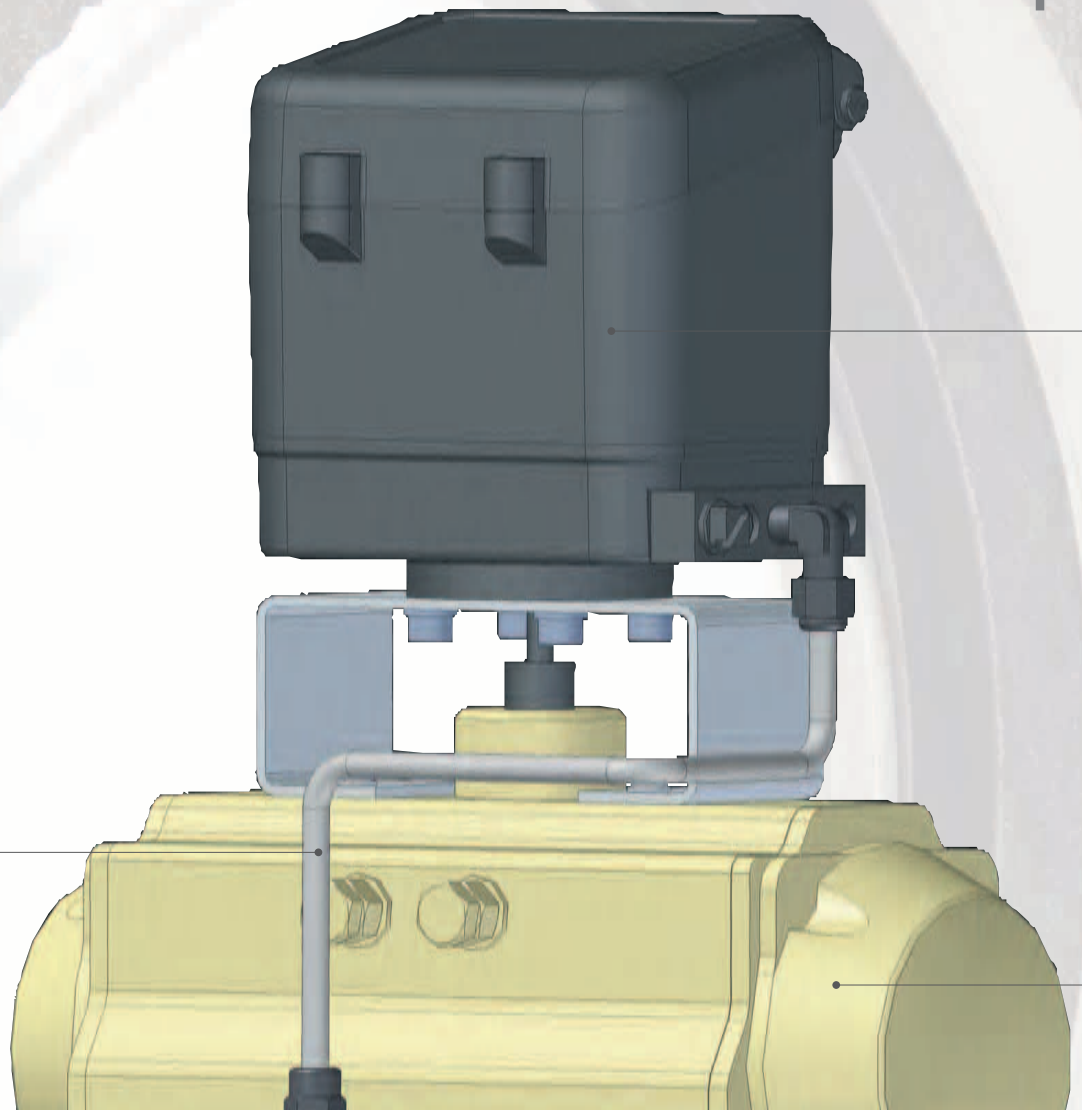
Wafer body
designed to suit
ANSI or DIN
standards

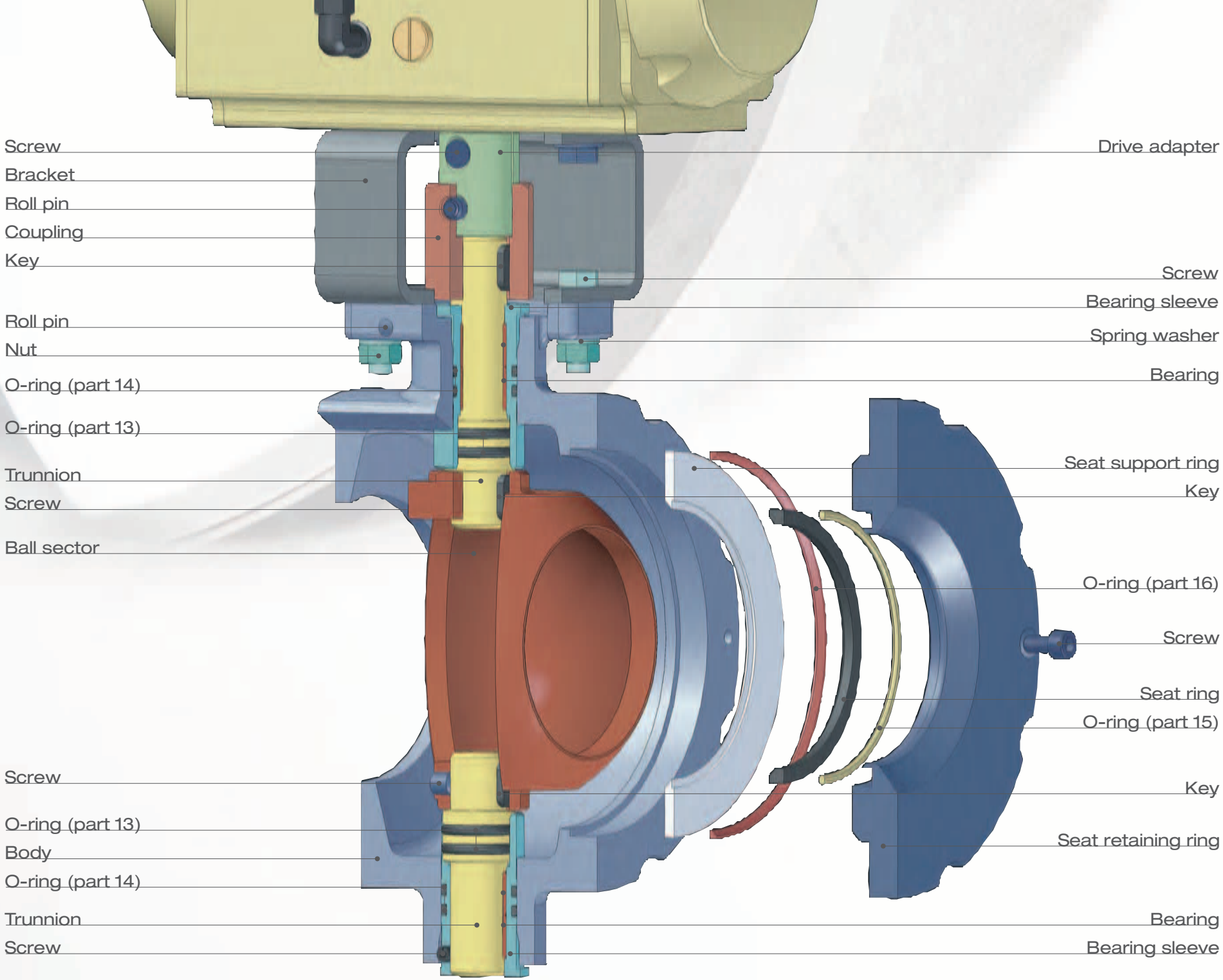
Seat retaining ring
and valve seat
available in
various material
combinations;
easy to install and
maintain

Centric and
maintenance-free,
high temperature
bearings

Ball Sector Valve 4040 - Sectional Drawing

precise
reliable
robust



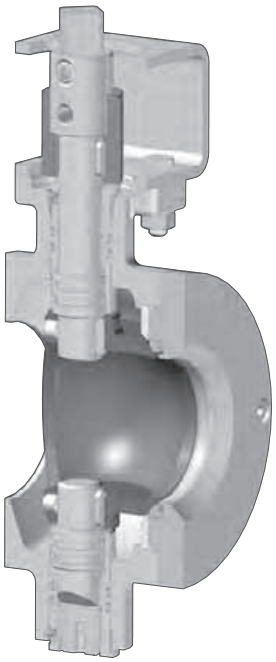

Screw
Bracket
Roll pin
Coupling
Key
Roll pin
Nut
O-ring (part 14)
O-ring (part 13)
Trunnion
Screw
Ball sector
Screw
O-ring (part 13)
Body
O-ring (part 14)
Trunnion
Screw
Drive adapter
Screw
Bearing sleeve
Spring washer
Bearing
Seat support ring
Key
O-ring (part 16)
Screw
Seat ring
O-ring (part 15)
Key
Seat retaining ring
Bearing
Bearing sleeve

Construction and Benefits

General Construction

Ball Sector Valves type **4040** and **4030** provide outstanding performance in challenging applications.

In a closed position conventional butterfly and segmented ball valves expose their critical sealing components to the highest wear in the valve (see picture below). In order to avoid abrasion caused leakage the Ball Sector Valve facilitates sealing through less exposed areas of the ball sector. The design of the valve opening protects the sealing areas from wear by reduced exposure to flow velocities and thus increases life span. Twin sealed trunnion shafts protect the bearing against intrusion of media particles.



Wear Resistance

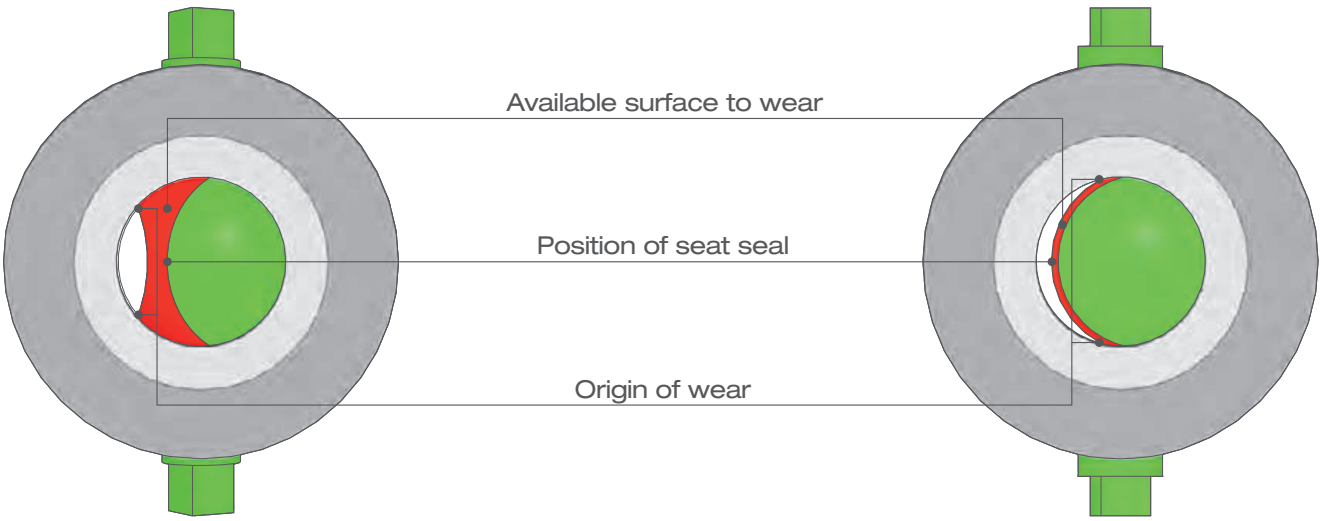
Generally segmented ball or rotary globe valves use excentric shafts, which cause the ball or plug to lift up from the valve seat when starting to open. Thus, sealing areas are instantly exposed to permanent wear. Particulate can land between the seal ring and ball/plug, where they can cause damage leading to leakage. The Ball Sector Valve has centric and robust trunnions which allows the ball sector to maintain constant contact with the valve seat, eliminating contamination by the media. The constant actuation torque is not affected by changes in the differential pressure.

Life Span

This smart sealing design, combined with a variety of finishing degrees for the ball sector and valve seat increases the life span of the valve substantially over other valves. It is particularly suitable for abrasive, high viscosity or fiber containing media.

Schubert & Salzer Ball Sector Valve

Segmented Ball, Rotary Globe and Butterfly Valve



Ordering System Ball Sector Valve 4040

Ordering number:	4040/									M					Z	...

Size

e.g. nominal size 1" = 025	xxx

Article

Valve	V
Repair-kit	R
Seat kit	D

Connection

Flangeless design according DIN EN 1092-1	1
Flangeless design according ASME B 16.5, ANSI 150	E
Flangeless design according ASME B 16.5, ANSI 300	F

Body material

Stainless steel CF8M (1.4408) / 1.4404	1

Material combination

Seat ring: PTFE; ball sector: CF8M, polished	1
Seat ring: PTFE; ball sector: CF8M, hard chrome plated	A
Seat ring: Stellit; ball sector: CF8M, hard chrome plated and lapped	B
Seat ring: Stellite; ball sector: 1.4408, hard chrome plated and lapped; holding ring: hard chromed	C
Seat ring: PTFE; ball sector: CF8M, hard chrome plated and lapped	E
Seat ring: TECAPEEK; ball sector: CF8M, hard chrome plated	P

Seal combination

FV3: dynamic seals (part 13): VITON, FEP-coated; static seals (parts 14-16): VITON	0
FE3: dynamic seals (part 13): VITON, FEP-coated; static seals (parts 14-16): EPDM	E
F4: all seals (parts 13-16): VITON, FEP-coated	F
P4: all seals (parts 13-16): in PFA-coated silicone	P

Actuator

Without mounting kit, without actuator	0
Without actuator, with standard mounting kit according DIN/ISO 5211	1
Pneumatic quarter-turn actuator with mounting kit according DIN/ISO 5211	T
Hand lever	H

Safety position

Without	0
Single acting, spring to close	1
Double acting, without safety position	2
Single acting, spring to open	3

Positioner

Without	-
Without positioner, with mounting kit according VDI/VDE 3845 for positioners	0
Digital positioner Schubert & Salzer Type 8049, 4-wire	L
Digital positioner Schubert & Salzer Type 8049, 2-wire	R
i/p-positioner SIPART PS2	2
i/p-positioner PMV Type EP5	8

Additional specifications for the positioner

Without	-
Positioner single acting	1
Positioner double acting	2
Positioner single acting with gauge	3
Positioner double acting with gauge	4

Positioner settings

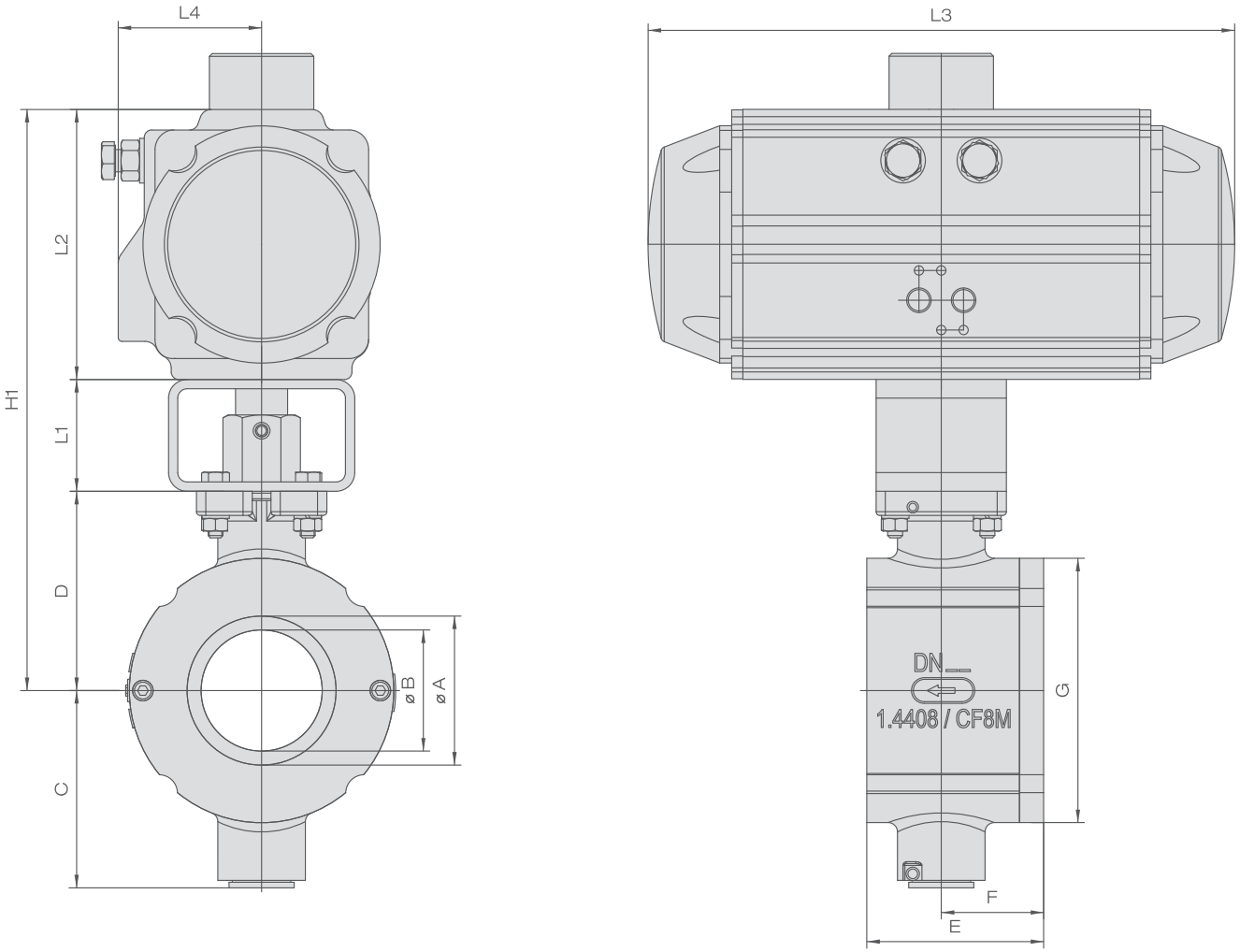
Standard	-
Double acting 20 - 4 mA (20 mA closed, 4 mA open)	1
Single acting 20 - 4 mA (inverse function, safety position at 20 mA)	2

C_V-value

100%	-
50% (1" and 1 1/2" only)	1

Further options and type 4030 with electrical actuator on request

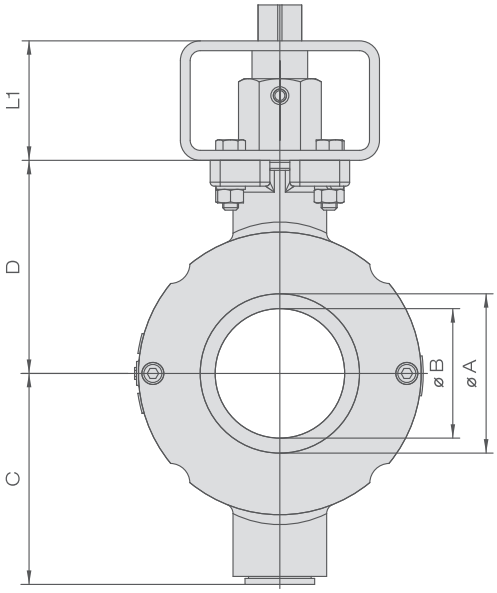
Dimensions with Pneumatic Actuator

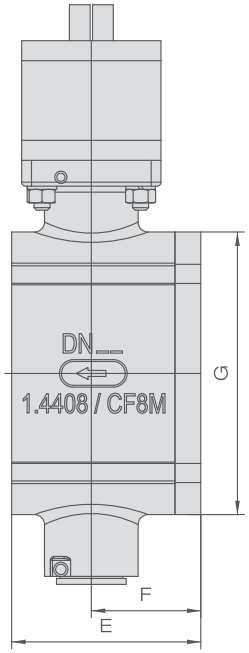


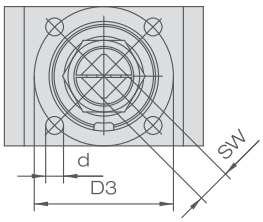
Size	A	B	C	D	E	F	G	L1	Single acting				Double acting			
									L2	L3	L4	H1	L2	L3	L4	H1
1”	0.98	0.79(0.59)	2.87	2.91	1.95	1.02	2.87	2.36	4.02	8.29	2.05	9.29	3.35	6.24	1.85	8.62
1 1/2”	1.61	1.26(0.98)	3.11	3.15	2.3	1.22	3.7	2.36	4.53	9.74	2.24	10.04	4.02	8.29	2.05	9.53
2”	2.09	1.57	3.23	3.27	2.8	1.5	4.41	2.36	4.53	9.74	2.24	10.16	4.02	8.29	2.05	9.65
3”	3.15	2.56	4.17	4.21	3.75	2.17	5.59	2.36	5.71	12.4	3.03	12.28	4.53	9.74	2.24	11.1
4”	3.94	3.15	4.61	4.65	4.4	2.44	6.85	2.36	6.18	13.58	3.23	13.19	5	10.57	2.64	12.01
6”	5.91	4.72	6.1	6.14	6.7	3.74	8.66	3.15	6.97	16.08	3.6	16.26	6.18	13.58	3.23	15.47
8”	7.87	6.1	7.24	7.28	8.25	4.72	11.02	3.15	8.68	19.17	4.13	19.11	6.97	16.08	3.6	17.4
10”	9.84	7.68	8.98	9.02	10.65	5.71	13.31	3.15	9.65	21.38	4.41	21.81	7.72	17.22	3.9	19.88
Dimensions for 12” and for motorized versions on request																

Dimension in inch

Dimensions without Actuator (with Mounting Kit ISO 5211)







Size	A	B	C	D	E	F	G	L1	d	D3	SW	DIN/ISO 5211
1”	0.98	0.79(0.59)	2.87	2.91	1.97	1.02	2.87	2.36	0.26	1.97	0.55	F 05
1 1/2”	1.61	1.26(0.98)	3.11	3.15	2.28	1.22	3.7	2.36	0.26	1.97	0.55	F 05
2”	2.09	1.57	3.23	3.27	2.8	1.5	4.41	2.36	0.26	1.97	0.55	F 05
3”	3.15	2.56	4.17	4.21	3.74	2.17	5.59	2.36	0.35	2.76	0.67	F 07
4”	3.94	3.15	4.61	4.65	4.41	2.44	6.85	2.36	0.35	2.76	0.67	F 07
6”	5.91	4.72	6.1	6.14	6.69	3.74	8.66	3.15	0.43	4.02	0.87	F 10
8”	7.87	6.1	7.24	7.28	8.27	4.72	11.02	3.15	0.53	4.92	1.06	F 12
10”	9.84	7.68	8.98	9.02	10.63	5.71	13.31	3.15	0.53	4.92	1.06	F 12
Dimensions for 12” on request												

Dimension in inch

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