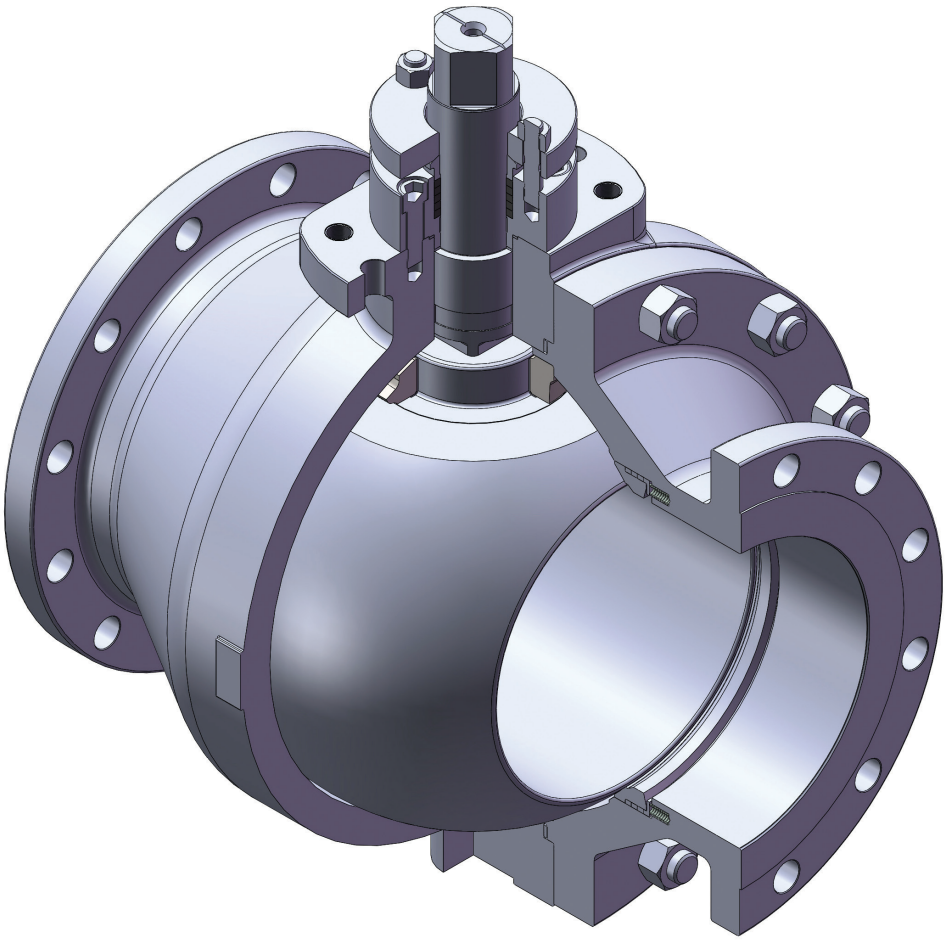
FLOWSERVE

TECHNICAL BULLETIN

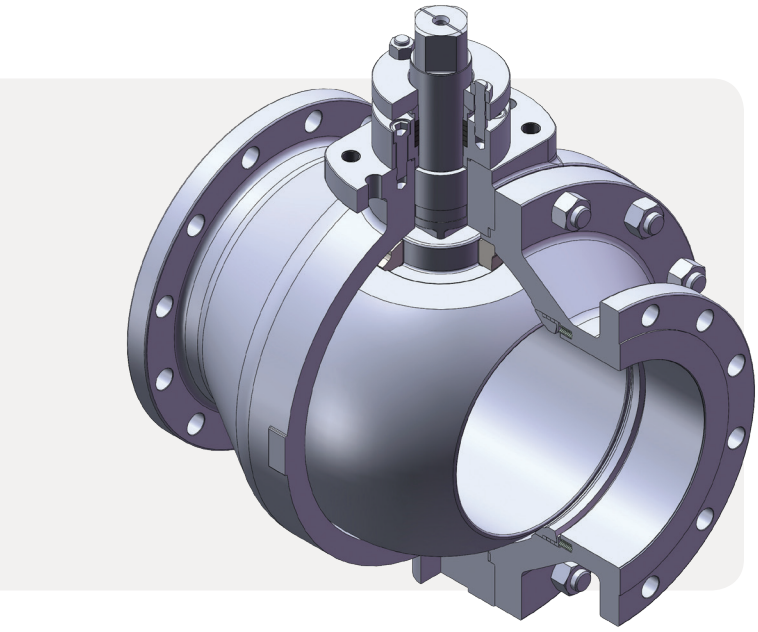
Argus™ FK76C Metal Seated, Trunnion-Mounted Ball Valve



Experience In Motion

Built to the highest standards

The FK76C split-body, full-bore, trunnion-mounted ball valve represents the highest standards in valve technology. Its superfine-finished, trunnion-mounted ball design is just one of its many important design features. Among them are an anti-blow out stem, long-life, double-stem seal system and stem supported in bearings to ensure seals are free from operation loads.



Technical design features

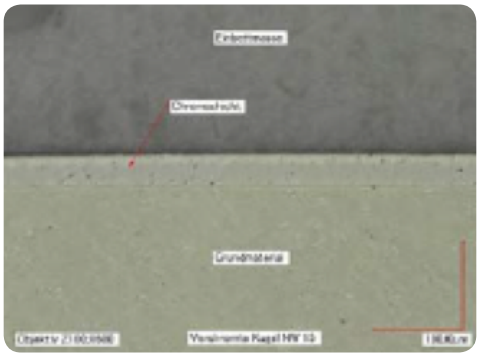
- Sizes: NPS 6 – 12 in; DN 150 – 300
- ASME pressure classes: Class 150 – 300
- Valve maximum temperature: 300°C (572°F)
- Designed to: ASME B16.34 (PED 97/23/EC optional) trunnion
- Materials: ASME Section II
- Pressure/temperature rating: ASME B16.34/B16.5
- Wall thickness: ASME B16.34
- Face-to-face dimensions: ASME B16.10
- Flange connection/end type: ASME B16.5 raised face
- Fire-safe: ISO 10497
- Bi-directional, metal-to-metal sealing: ANSI B16.104, FCI 70-2 class V
- Stem sealing system: ISO 15848-1
- Anti-static design: DIN EN ISO 17292, chapter 5.2.7

Materials

Description	NPS 6–8 in ASTM Material	DN 150–200 Material DIN EN	NPS 10–12 in ASTM Material
Body	A352 Gr. LCB	LCS casting DIN EN 1.6220	A352 Gr. LCB
	A351 Gr. CF8M	SS DIN EN 1.4408	A351 Gr. CF8M
Ball	A351 CF8M chrome plated	SS DIN 1.4408 chrome plated	A351 CF8M Crabide HVOF
Stem	A182 F51	Duplex DIN EN 1.4462	A182 F51
Stem seals	Graphite		
Seats	ASTM A182 F51 Crabide HVOF	Duplex DIN 1.4462 Crabide HVOF	ASTM A182 F51 Crabide HVOF
Body seals	Spiral-wound gasket A316L/graphite		
Bolts	A193 B7; A193 B8M CL2		
Nuts	A194 Grs. 4, 7 or 8M		

Metal coatings

Chrome hardplated (ball)

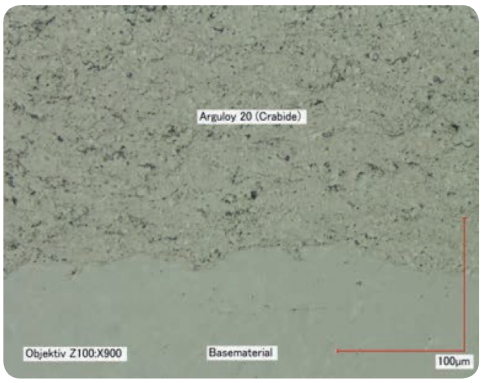


Basis	Chromium
Hardness	900 – 1100 HV0,3 (>67 HRC)
Temperature limit	Max. 350°C (662°F) (depending on base material and process conditions)
Thickness	>30 – 50 µm (average)
Chemical properties	High chemical resistance as well as under high temperature
Mechanical properties	High resistance against abraision and adhesive wear

- Einbettmasse = embedding compound
- Chromschichi = chromium coating
- Grundmaterial = base material

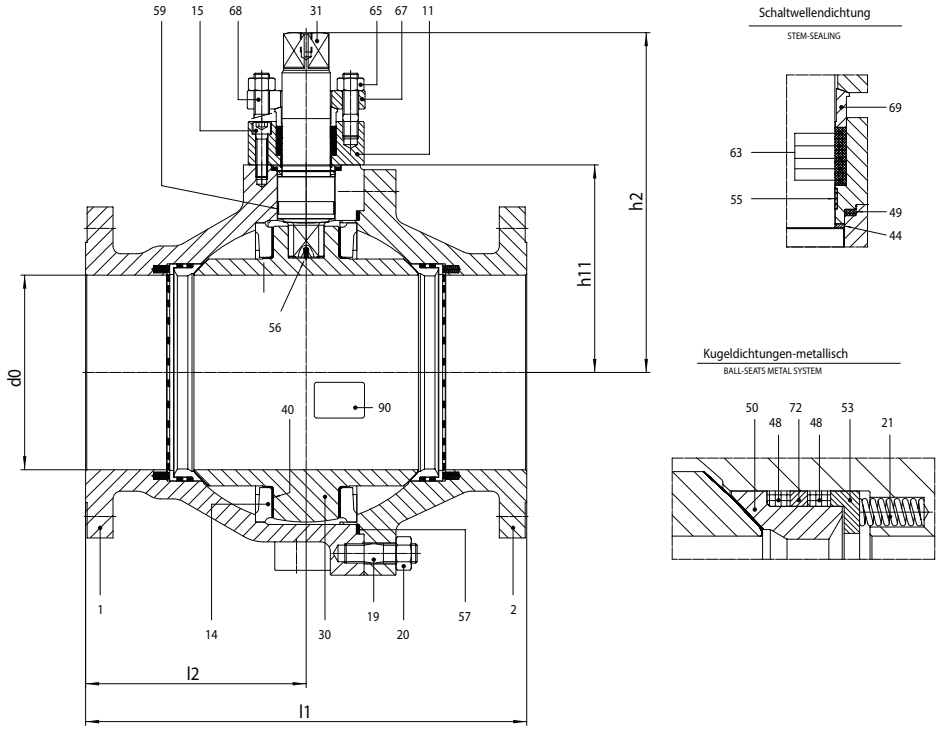
Crabide (ball and/or seats)

Crabide is a hard metal alloy based on chromium-carbide and nickel/chromium.



Composition	Cr_2C_2/Ni-Cr 75/25
Hardness	900 – 1100 HV0,3 (>67 HRC)
Temperature limit	Max. 660°C (1112°F) (depending on base material and process conditions)
Thickness	200 – 300 µm (usual)
Chemical properties	Resistance versus media in the range of pH 5 to pH 12, as well under high-temperature conditions
Mechanical properties	High resistance, especially against abrasion and adhesive wear and sliding abrasion

Sectional drawing



Dimensions

ASME Class 150
mm (in)

DN (NPS)	Flange/ End Type	l1	l2	h2	h11	d0	Topwork DIN/ ISO 5211
150 (6)	RF	394 (15.51)	197 (7.76)	317 (12.48)	180 (7.09)	150 (5.91)	Note 1
200 (8)	RF	457 (17.99)	228.5 (9.00)	352 (13.86)	215 (8.46)	201.6 (7.94)	
250 (10)	RF	533 (20.98)	266.5 (10.49)	446.5 (17.58)	290 (11.42)	254 (10.00)	
300 (12)	RF	610 (24.02)	305 (12.01)	483.5 (19.04)	327 (12.87)	305 (12.01)	

ASME Class 300
mm (in)

DN (NPS)	Flange/ End Type	l1	l2	h2	h11	d0	Topwork DIN/ ISO 5211
150 (6)	RF	403 (15.87)	201.5 (7.93)	317 (12.48)	180 (7.09)	150 (5.91)	Note 1
200 (8)	RF	502 (19.76)	251 (9.88)	352 (13.86)	215 (8.46)	201 (7.91)	
250 (10)	RF	568 (22.36)	284 (11.18)	446.5 (17.58)	290 (11.42)	254 (10.00)	
300 (12)	RF	648 (25.51)	324 (12.76)	483.5 (19.04)	327 (12.87)	305 (12.01)	

Pressure/temperature rating per ASME B16.34

Temperature, °F	A352 Gr. LCB		A351 Gr. CF8M	
	Working Pressures by Class, psig		Working Pressures by Class, psig	
	Class 150	Class 300	Class 150	Class 300
-20 to 100	265	695	275	720
200	255	660	235	620
300	230	640	215	560
400	200	615	195	515
500	170	585	170	480
600	140	550	140	450

Temperature, °C	A352 Gr. LCB		A351 Gr. CF8M	
	Working Pressures by Class, bar		Working Pressures by Class, bar	
	Class 150	Class 300	Class 150	Class 300
-29 to 38	18.4	48.0	19.0	49.6
50	18.2	4705	18.4	48.1
100	17.4	45.3	16.2	42.2
150	15.8	43.9	14.8	38.5
200	13.8	42.5	13.7	35.7
250	12.1	40.8	12.1	33.4
300	10.2	38.7	10.2	31.6

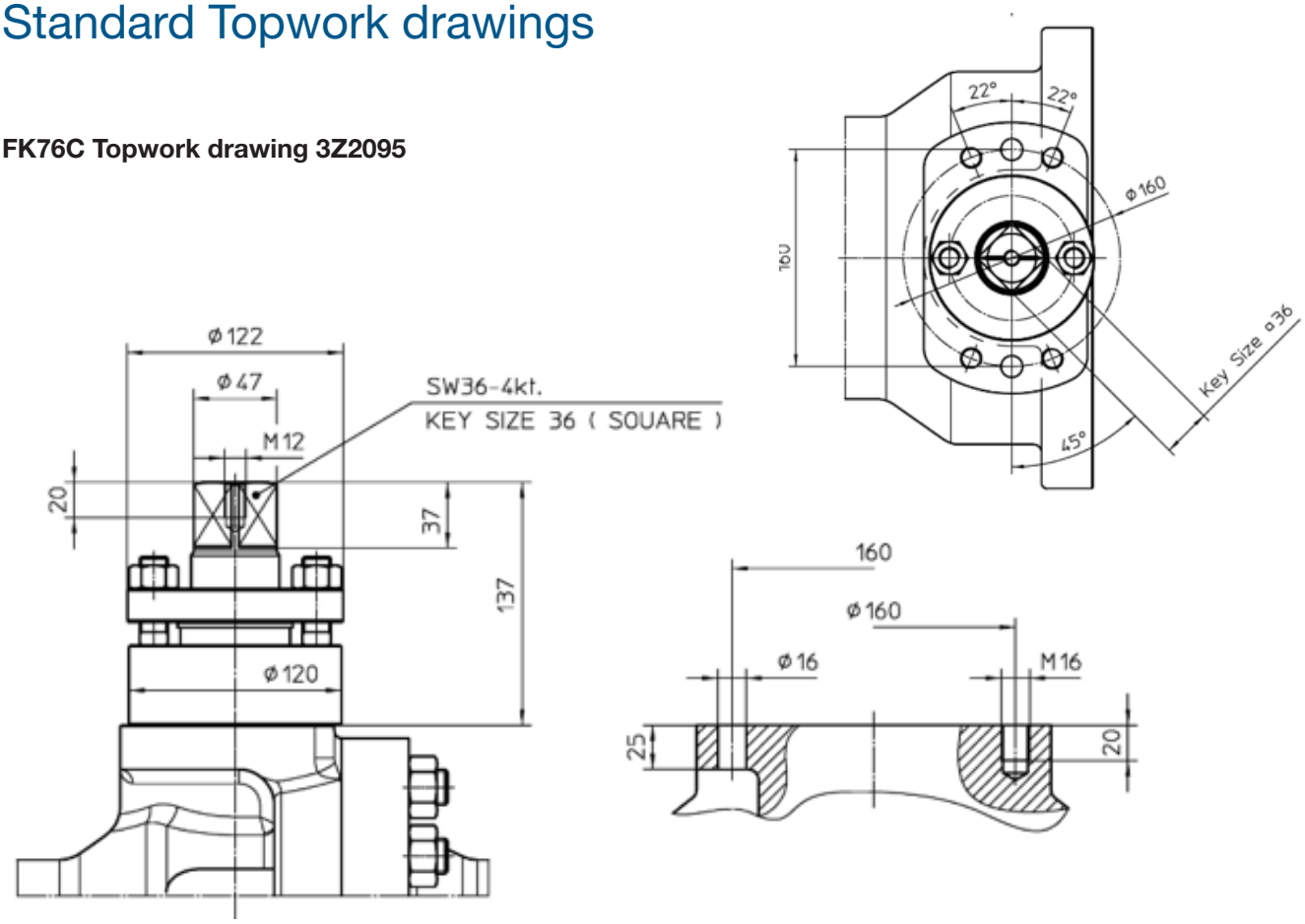
Part numbers

ASME Class 150

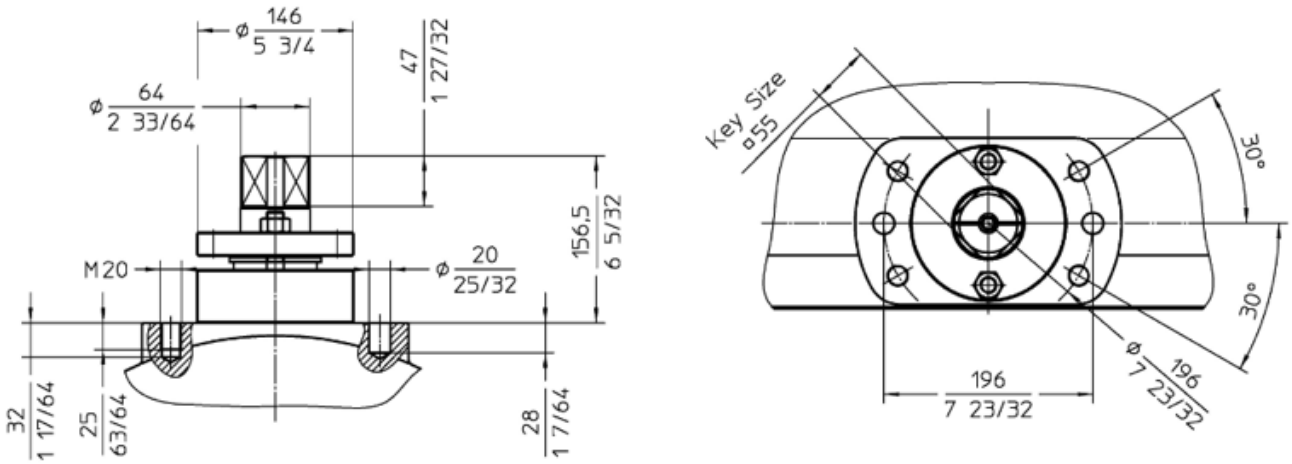
NPS	Class	Ends	Body	Sectional	Assembly	Topwork	Valve number
6	150	RF	CS	4M0985	4M4839	3Z2095	765617-ETG
8	150			4M0986	4M4841	3Z2095	765621-ETG
10	150			4M1022	4M4904	3Z2102	765625-ETG
12	150			4M1023	4M4906	3Z2102	765629-ETG
6	300			4M0985	4M0840	3Z2095	765618-ETG
8	300			4M0986	4M4842	3Z2095	765622-ETG
10	300			4M1022	4M4905	3Z2102	765626-ETG
12	300			4M1023	4M4907	3Z2102	795630-ETG
6	150		SS	4M0985	4M4839	3Z2095	765455-ETG
8	150			4M0986	4M4841	3Z2095	765459-ETG
10	150			4M1022	4M4904	3Z2102	765627-ETG
12	150			4M1023	4M4906	3Z2102	765631-ETG
6	300			4M0985	4M0840	3Z2095	765456-ETG
8	300			4M0986	4M4842	3Z2095	765460-ETG
10	300			4M1022	4M4905	3Z2102	765628-ETG
12	300			4M1023	4M4907	3Z2102	765632-ETG

Standard Topwork drawings

FK76C Topwork drawing 3Z2095



FK76C Topwork drawing 3Z2102



Torque tables

Pressure Class: Class 150 and Class 300
Seat System: bidirectional “N”

Pressure (psi)	NPS 6 (lb-in)	NPS 8 (lb-in)	NPS 10 (lb-in)	NPS 12 (lb-in)
116	3018	5062	10 036	13 700
145	3310	5558	10 355	15 134
181	3664	6186	11788	16 727
232	4168	7071	13063	18 320
290	4744	8071	15134	20 390
363	5452	9328	17 523	23 576
464	6461	11 089	19 913	27 081
580	7602	13 098	24 214	31 541
725	9036	15 611	27 878	38 232

Pressure Class: Class 150 and Class 300
Seat System: bidirectional “N”

Pressure bar	DN 150 (Nm)	DN 200 (Nm)	DN 250 (Nm)	DN 300 (Nm)
8	341	572	1134	1548
10	374	628	1170	1710
12,5	414	699	1332	1890
16	471	799	1476	2070
20	536	912	1710	2304
25	616	1054	1980	2664
32	730	1253	2250	3060
40	859	1480	2736	3564
50	1021	1764	3150	4320

Values included

- Metal seated: Chrome/Crabide and Crabide/Crabide
- Stem sealing system: ISO 15848

Additional multiplication factors

Application

- Daily operation: 1.0
- Operation after longer periods of disuse (≥ 2 days): 1.1
- Operation after longer periods of disuse (≥ 5 days): 1.2

Media

- Lubricating: 1.0
- Non-lubricating: 1.3

Example

DN100/differential pressure 32 bar/operation every 3 days/lubricating media

Md = 501 Nm x 1.1 x 1.0 = 551 Nm

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