

DUNCAN Full Bore & Reduced Bore Flanged Ball valve

Series F & Series R

The full bore-flanged seated (Series F) and reduced bore flanged seated (Series R) supported ball valve is designed for durability and dependable operation. Its robust body construction, featuring a dual seal design, is capable of enduring significant piping stresses and varying temperature conditions. Additionally, the spring-loaded v-ring packing ensures an extended cycle life while requiring minimal maintenance.

The ability to mount actuators directly simplifies automation while ensuring precise alignment. This solution offers comprehensive reliability and a single point of accountability for actuators, switches, and intelligent valve controllers. Additionally, the cavity fill option for the F series minimizes the dead volume in the ball cavity located between the seats.



TECHNICAL DESCRIPTION

- Sizes DN15 to 300 (NPS 1/2 to 10)
- ASME Class 150 or Class 300
- Rugged two-piece body construction
- Live-loaded stem packing
- Bi-directional bubble-tight shut-off to full rated pressure
- Suitable for vacuum service

APPLICATION

- Chemical and petrochemicals
- Food and beverage
- Water & wastewater
- Pharmaceutical
- HVAC
- Mining

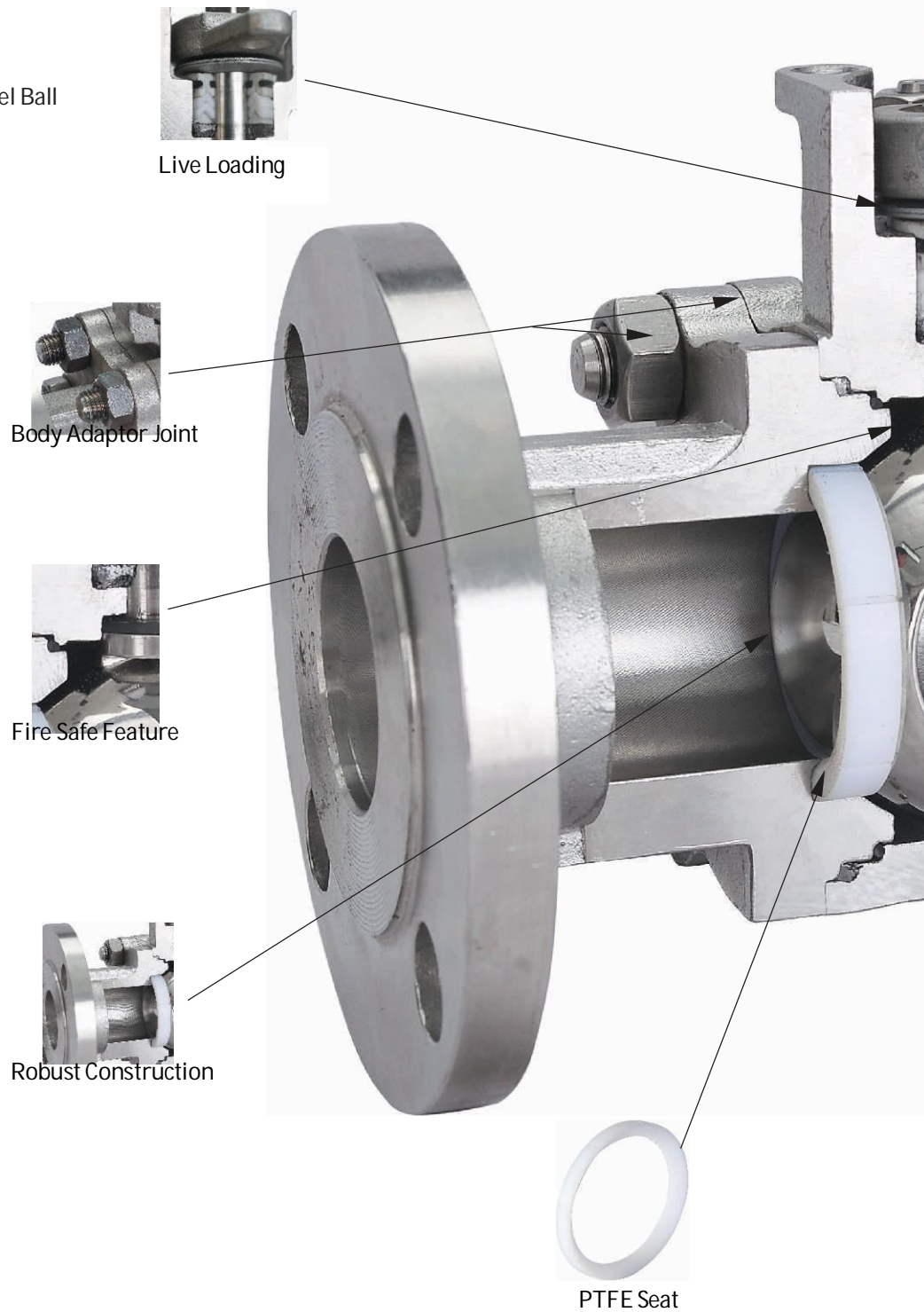
FEATURES

- The innovative low torque seat design ensures a secure shut-off during pressure and temperature fluctuations.
- Features an ISO 5211 mounting pad for easy attachment of hand levers, gear operators, manual overrides, or actuators.
- Incorporates a blow-out proof stem design for enhanced internal safety.
- The spring-loaded stem seal guarantees extended cycle life and reduced emissions with minimal upkeep.
- A precise fit between the stem and ball allows for reliable and consistent shut-off and control.
- Standard anti-static grounding is provided between the ball and stem, as well as between the stem and body.
- Optionally available with a lockable hand lever for added security.
- The cavity fill option reduces the amount of media trapped in the cavity between the seats when the valve is in the open position.
- Each valve undergoes factory testing, is serialized, and quality tagged before shipment.

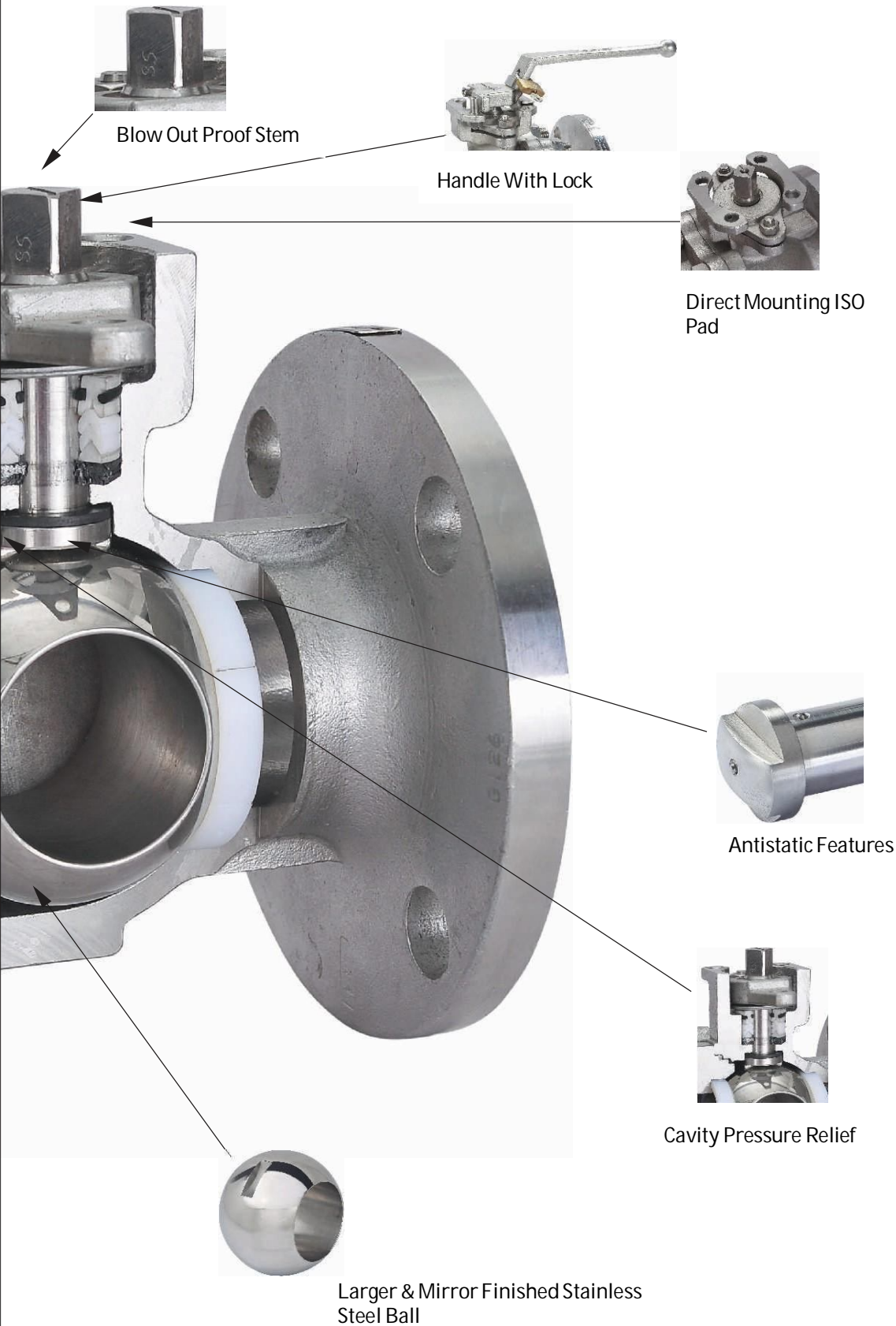
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SALIENT FEATURE

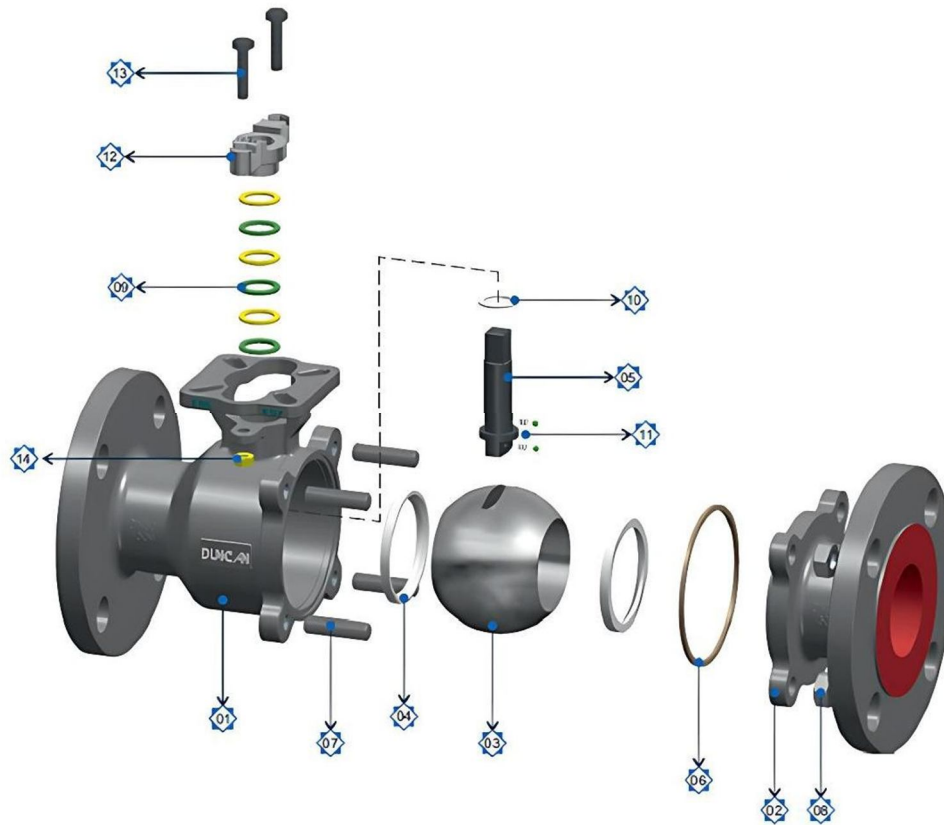
- Antistatic Feature
- Fire Safe Feature
- Blow-Out Proof Stem
- Cavity Pressure Relief
- BODY ADAPTOR JOINT
- Larger & Mirror Finished Stainless Steel Ball
- Handle With Lock
- Live Loading
- Direct Mounting ISO PAD
- Gland Plate Can Access Without Removing Actuator
- Robust Construction



SALIENT FEATURE



EXPLODED VIEW AND MATERIAL OF CONSTRUCTION OF FLOATING BALL VALVE



ITEM NO.	PART NAME	MATERIAL	
		CARBON STEEL	STAINLESS STEEL
1	BODY	ASTM A 216 WCB, ASTM A 352 LCB	ASTM A 351 CF8M/CF8/CF3/CF3M ASTM A 995 4A/5A/6A
2	END CONNECTOR	ASTM A 216 WCB, ASTM A 352 LCB	ASTM A 351 CF8M/CF8/CF3/CF3M ASTM A 995 4A/5A/6A
3	BALL	ASTM A 351 CF8M/CF8, ASTM A 182 F316/ F304	ASTM A 351 CF8M/CF8/CF3/CF3M, ATM A 995 4A/5A/6A, ASTM A182 F316/F304/F304L/F316L/F51/F53/F55
4	SEAT	PTFE/RPTFE/ULTRA/PEEK/METAL	PTFE/RPTFE/ULTRA/PEEK
5	STEM	ASTM A 479 SS316/SS316L SS304/XM-19/531803 ASTM A 564 17-4PH	ASTM A 479 SS316/SS316L SS304/XM-19/531803 ASTM A 564 17-4PH
6	BODY GASKET	GRAPHITE SS316	GRAPHITE SS316+GRAPHITE
7	STUD	ASTM A 193 B7/L7	ASTM A 193 B8/B8M
8	NUT	ASTM A 194 2H/GR 7	ASTM A194 B8/B8M
9	STEM SEAL	RPTFE/ULTRA/PEEK	RPTFE/ULTRA/PEEK
10	STEM PACKING	GRAPHITE	GRAPHITE
11	ANTISTATIC	ASTM A 479 SS304	ASTM A 479 SS316/SS316L, ASTM A 240 SS304/SS316
12	STUD	ASTM A 193 B7/L7	ASTM A 193 B8/B8M
13	NUT	ASTM A 194 2H/GR 7	ASTM A 194 B8/B8M

Note: Special / Other material can be provided on request

Metal seated ball valve can be provided with TCC/ST-6/ST-21 as per request.

PRESSURE TEMPERATURE RATING

VALVE BODY RATINGS

These are the maximum working pressure ratings of the valve body. The seat ratings, shown on the next page, determine the practical temperature and pressure limitations according to actual service conditions. Test pressures are recommended pressures for hydrostatic test with the valve ball half open.

TEMPERATURE °C	MAXIMUM WORKING PRESSURE, BARG			
	CLASS 150		CLASS 300	
	CARBON STEEL (WCB)	STAINLESS STEEL (CF8M)	CARBON STEEL (WCB)	STAINLESS STEEL (CF8M)
-29 to +38	19.6	19.0	51.1	49.6
100	17.7	16.2	46.6	42.2
150	15.8	14.8	45.1	38.5
200	13.8	13.7	43.8	35.7
250	12.1	12.1	41.9	33.4
Test Pressure	30	29	77	75

Temperature °F	Maximum working pressure, psig			
	Class 150		Class 300	
	Carbon Steel (WCB)	Stainless Steel (CF8M)	Carbon Steel (WCB)	Stainless Steel (CF8M)
-20 to +100	-285	275	740	720
200	260	235	680	620
300	230	215	655	560
400	200	195	635	515
500	170	170	605	480
Test Pressure	450	425	1125	1100

Note: For other MOC refer ASME B 16.34.

VALVE SEAT RATING

Seat ratings, indicated by solid line in the chart, are based on differential pressure with the valve ball in the fully closed position. The dotted lines indicate the maximum working pressures for carbon steel valve bodies. The combination of dotted and solid lines indicates the maximum valve rating at specific pressure and temperature conditions.

Soft seat compatibility:

Acid & chemicals: PTFE / Teflon with temperature up to 175°C, at below pressure 20 barg.

Metal seat compatibility:

For metal seated -29 °C to 525 °C



TORQUE AND REFERENCE STANDARD

MAXIMUM OPERATING TORQUE FLOATING BALL VALVE IN (Nm)

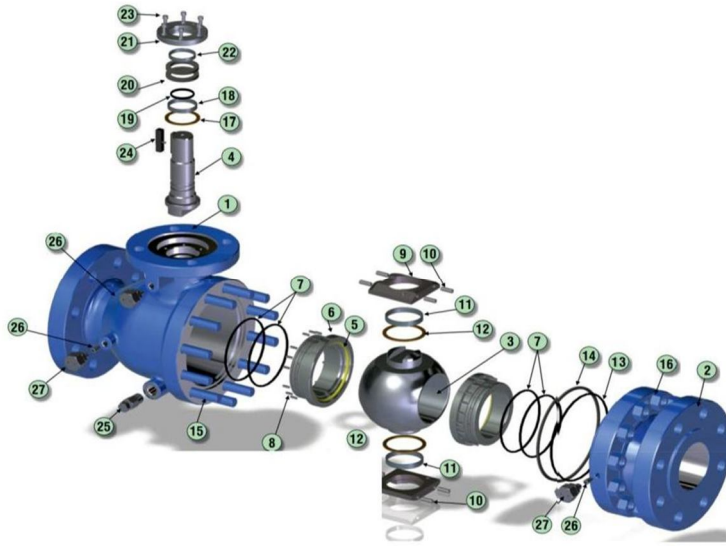
Torque Full Bore Class 150														
VALVE SIZE	Inch	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"
	DN	15	20	25	32	40	50	65	80	100	125	150	200	250
$\Delta P \approx$ 20 Bar		5	6.5	9.5	15.5	21	26	41	66	112	221	332	753	1180
Torque Full Bore Class 300														
$\Delta P \approx$ 50 Bar		6	8	15	21	32	40	60	100	170	330	460	720	

Note: Above mentioned torques are applicable for soft seated.

REFERENCE STANDARD

SR. NO.	DESCRIPTION OF STANDARD	REF. STANDARD
1	DESIGN	API 6D, BS EN ISO 17292, ASME B 16.34
2	FACE TO FACE	API 6D, ASME B 16.10
3	TESTING	API 6D, API 598, ISO 5208
4	PRESSURE TEMPERATURE	ASME B 16.34
5	FLANGE ACCOMODATION	ASME B 16.5, BS EN 1092
6	NACE	MR0175 / ISO 15156-1
7	FUGITIVE EMISSION	API 641 / ISO 15848-1&2
8	BODY STYLE	RAISED FACE / FLAT FACE
9	RATING	CLASS 150 TO CLASS 300
10	TEMPERATURE RANGE	-46 TO 400 °C
11	SIZE RANGE	DN 15 TO 250 (1/2" TO 10")
12	COMPLIANCE	FIRE SAFE ACCORDING TO API 607, API 6FA AND DIN EN ISO 10497.
		SIL 3
		ATEX 2014/34/EU
		TYPE TEST CERTIFICATE TTC (OPTIONAL)
13	CERTIFICATIONS AND QUALITY INSPECTION	ISO 15848-1&2
		EN/ISO 10204 TYPE 3.1/3.2 AVAILABLE ON REQUEST

EXPLODED VIEW AND MATERIAL OF CONSTRUCTION OF TRUNNION BALL VALVE



ITEM NO.	PART NAME	MATERIAL
1	BODY	ASTM A 216 WCB/ ASTM A352 LCB, ASTM A 351 CF8M, CF8, CF3M / ASTM A 995 4A, 5A,6A
2	CONNECTOR	
3	BALL	ASTM A 105+ENP/ASTM A316 WCC+ENP/ ASTM A 350 LFZ+ENP/ASTM A 182 F316, F304, F316L, F351, F53, F55
4	STEM	ASTM A 322 4130+ENP/ ASTM A 479 SS316, SS304, XM-19, SS410-COND.2/ ASTM A 564 TYPE 630 17-4PH
5	SEAT INSERT / SEAT	PEEK /DEVLON/PCTFE / METAL+TCC / ST-21 / ST-6
6	SEAT RING	ASTM A 150+ENP/ASTM A350LF2+ENP/ ASTM A 182 F316, F304,F316L,F51,53,55
7	SEAT SEAL	VITON (FKM), HNBR
8	SEAT SPRING	INCONEL B367 X-750
9	TRUNNION	ASTM A 516 GR 70/ ASTM A 105/ASTM A 350 LF2/ ASTM A 240 SS316, SS304, DUPLEX SS, SUPER DUPLEX SS
10	PIN	ASTM A 479 SS316
11	TRUNNION BEARING	SS/DSS/BACKED PTFE
12	THRUST BEARING	SS/DSS/BACKED PTFE
13	CONNECTOR SEAL	VITON (FKM), HNBR
14	BODY GASKET	SWG ASTM A240 SS316/ SS316L GRAPHITE
15	STUD	ASTM A 193 B7M, B8MA/ ASTM A 320 L7M
16	HEX NUT	ASTM A 194 2HM, 8MA, 7M
17	STEM THRUST BEARING	SS/DSS/BACKED PTFE
18	STEM BEARING	SS/DSS/BACKED PTFE
19	STEM SEALING	VITON (FKM), HNBR
20	STEM PACKING	GRAPHITE
21	GLAND	ASTM A 479 Gr. SS316
22	GLAND BEARING	SS/DSS/BACKED PTFE
23	SOC HEAD CAP SCREW	ISO 3506 A2-70
24	KEY	BS 970 EN8
25	BLEED FITTING / VENT FITTING (AS APPLICABLE)	ASTM A105 / ASTM A479 Gr. SS316 / ASTM S182 F51, F55
26	CHECK VALVE (AS APPLICABLE)	ASTM A479 Gr. SS316 / ASTM S182 F51, F55
27	SEALANT FITTING (AS APPLICABLE)	ASTM A105 / ASTM A479 Gr. SS316 / ASTM S182 F51,F55

Due to constant process of design improvement, dimensions may change without notice.

TORQUE IN NM

MAXIMUM OPERATING TORQUE TRUNNION MOUNTED

VALVE IN (Nm)

Torque Full Bore Class 150							
VALVE SIZE	Inch	2"	3"	4"	6"	8"	10"
	DN	50	80	100	150	200	250
$\Delta P \approx 20$ Bar		44	162	205	426	740	1033
Torque Full Bore Class 300							
$\Delta P \approx 50$ Bar		71	223	303	681	1082	

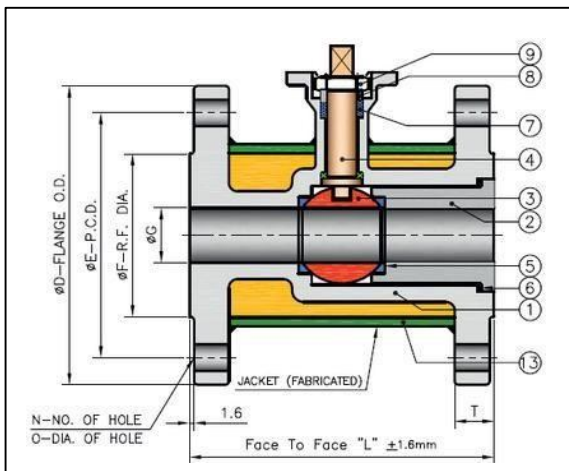
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7	FUGITIVE EMISSION	API 641 / ISO 15848-1&2
8	BODY STYLE	RAISED FACE / FLAT FACE
9	RATING	CLASS 150 TO CLASS 300
10	TEMPERATURE RANGE	-46 TO 400 °C
11	SIZE RANGE	DN 15 TO 250 (1/2" TO 10")
12	FIRE SAFE CERTIFIED	API 6FA / API 607
12	COMPLIANCE	FIRE SAFE ACCORDING TO API 607, API 6FA AND DIN EN ISO 10497.
		SIL 3
		ATEX 2014/34/EU
		TYPE TEST CERTIFICATE TTC (OPTIONAL)
13	CERTIFICATIONS AND QUALITY INSPECTION	ISO 15848-1&2
		EN/ISO 10204 TYPE 3.1/3.2 AVAILABLE ON REQUEST

FULL JACKETED METAL / SOFT SEATED BALL VALVE

DUNCAN Jacketed ball valves are specifically engineered heating jacket valves, perfect for applications on that require the media to stay in a liquid state through heat retention or cold insulation. Featuring a high-performance design, these valves' flanges are ideal for managing substances such as chocolate, grease, benzene, sulphur, molten sulphur, asphalt, bitumen, wax, polyurethane, resin, fatty alcohol, and other materials that solidify rapidly at room temperature.

DUNCAN provides an extensive selection of fully jacketed ball valves, with the jacket covering the entire body from flange to flange. The valve body is enhanced with oversized flanges to fit the jacket. For instance, a 2"X3" jacketed ball valve has a 2" (DN 50) nominal bore and a 3" (DN 80) flange, ensuring sufficient space for bolting clearance.



Items	Description	Standard Material
01	BODY	A 216 GR. WCB, A 351 GR.
02	INSERT	CF8/CF8M/CF3/CF3M
03	BALL	AISI 304 / 316 / 304L / 316L / CF8 / CF8M / CF3 / CF3M
04	STEM	AISI 304 / 316 / 304L / 316L
05	BALL SEAT	PTFE / GFT / CARBON FILLED / METAL
06	BODY SEAL	PTFE / GFT / CARBON FILLED / GRAPHITE
07	GLAND SEAL	PTFE / GFT / CARBON FILLED
08	GLAND BUSH	AISI 304 / 306 / 304L / 316L
09	GLAND NUT	CS / 194 GR 2H / SS304/316
10	JACKET	MS / SS 304 / 316

TEMPERATURE LIMITS

TEST PR. IN KG/CM ²				
TEST	HYDROSTATIC		AIR	
PR. RATING	150#	300#	150#	300#
BODY	29.3	78		
SEAT	20.7	52	7	7

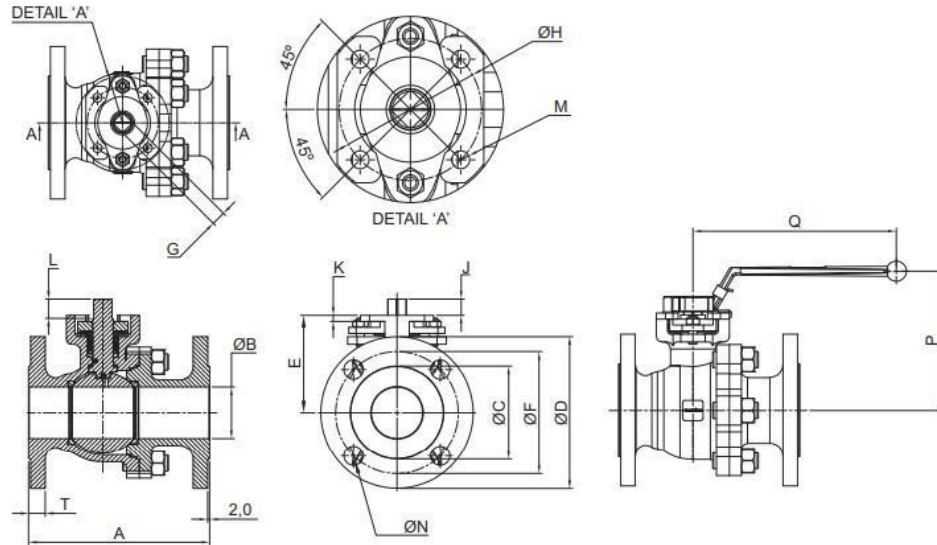
FEATURES

- Low operating torque
- Leak tight stem sealing
- Pneumatic / gear operation sealing

TECHNICAL SPECIFICATIONS

- Pressure rating: 150#, 300#
- End Connection: Flanges End
- Flanged Drilling: ANSI B 16.5 Class 150
- Face to Face: ANSI B 16.10 Series A / B
- Operation: Manual Hand Lever Operated

DIAMENSIONS (All Dimensions are in mm)



TWO-PIECE FULL-BORE CLASS 150

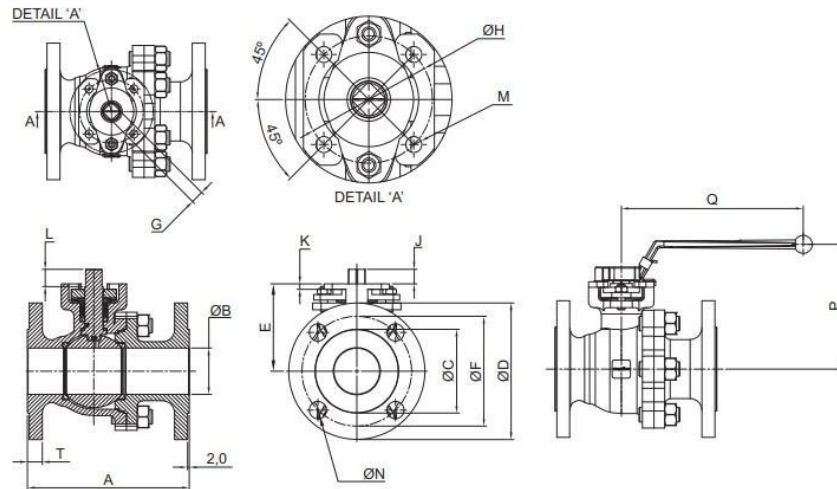
VALVE SIZE	Inch	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"	8"	10"
	DN	15	20	25	32	40	50	65	80	100	150	200	250
A		108	117	127	140	165	170	178	203	229	267	292	330
T		10	10.9	11.6	13.2	14.7	16.6	17.9	19.5	24.3	25.9	27	31
ØB		12.8	19.1	25.4	32	38.1	50.8	64.1	76.2	100	150.8	203	252
ØC		35	43	51	63.5	73	92.1	105	127	157.2	216	269.9	324
ØD		90	100	110	115	125	152	180	190	230	280	345	405
G		8	9	9	9	11	11	14	17	16.95	22	27	36
ØF		60.3	69.9	79.4	88.9	98.4	120.7	139.7	152.4	190.5	241.3	298.5	362
ØN		15.9	15.9	15.9	15.9	15.9	19.0	19.1	19.1	19.1	22.4	22.4	25.4
NO. OF HOLES		4	4	4	4	4	4	4	4	8	8	8	12
J		1.5	8.5	10	11	11	15	16	14	16	21	27	35
K		5	6.5	6.5	6	6	6	6	12	12	13	13	18
L		11	10.5	12	12	13	19	19	17	22	25	35	40
E		38.3	52.5	57.8	64.6	77.7	84	105.8	133	135	207	255	352
ØH		50	50	50	50	50	70	70	102	102	125	140	165
ISO 5211 MTG		F05	F05	F05	F05	F05	F07	F07	F10	F10	F12	F14	F16
HOLE Ø		M6*	M6*	M6*	M6*	M6*	Ø8	Ø9	Ø9	Ø11	Ø11	Ø13	Ø22
NO. OF HOLES		4	4	4	4	4	4	4	4	4	4	4	4
P		150	150	150	150	150	150	200	200	250	250	-	-
Q		68	81	85	95	106	137	146	168	189	-	-	-
WEIGHT OF (Kg.)		2.5	3.5	4.5	5	6	7	16	20	25	74	118	180

Note: Above mentioned parameters may change subject to material of construction.

FOR CLASS 150 VALVES UP TO 150 mm ARE LEVER OPERATED

ABOVE 150 mm ARE GEAR OPERATED.

DIAMENSIONS (All Dimensions are in mm)



TWO-PIECE FULL-BORE CLASS 300

VALVE SIZE	Inch DN	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"	8"
A		140	152	165	178	190	216	241	282	305	403	419
T		14.7	16.3	17.9	19.5	21.1	22.7	25.9	29	32.2	37	41.7
ØB		12.8	19.1	25.4	32	38.1	50.8	64.1	76.2	102	150.8	203
ØC		34.9	42.9	50.8	63.5	73	92	104.8	127	157.2	215.9	269.9
ØD		95	115	125	135	155	165	190	210	255	320	380
G		8	9	11	11	11	14	14	22	22	27	27
ØF		66.7	82.6	88.9	98.4	114.3	127	149.2	168.3	200	269.9	330.2
ØN		16	19.1	19.1	19.1	22.4	19.1	22.4	22.4	22.4	22.4	25.4
NO. OF HOLES		4	4	4	4	4	4	8	8	8	12	12
J		1.5	8.5	10	10	11	16	16	14	16	21	47.7
K		5	6.5	6.5	6.5	6	6	6	12	12	13	13
L		11	10.5	12	12	13	19	19	17	18.5	39	40
E		38.3	52.5	57.8	64.6	77.7	96	105.8	133	153	227.6	255
ØH		50	50	50	50	50	70	70	102	102	125	140
ISO 5211 MTG		F05	F05	F05	F05	F05	F07	F07	F10	F10	F12	F12
HOLE Ø		M6*	M6*	M6*	M6*	M6*	Ø8	Ø9	Ø9	Ø11	Ø11	Ø13
NO. OF HOLES		4	4	4	4	4	4	4	4	4	4	4
P		150	150	150	150	150	200	200	250	250	-	-
Q		68	81	85	95	106	137	146	168	189	-	-
WEIGHT OF (Kg.)		2.9	4.5	5.7	7.8	9.5	14	19.8	27.7	46	105	130

*TAPPED HOLES ON ISO PAD.

FOR 300 CLASS VALVES UP TO 100 mm ARE LEVER OPERATED.

ABOVE 100 mm ARE GEAR OPERATED

ORDERING CODE FOR SERIES F & SERIES R BALL VALVE

1		2		3		4	
SERIES		PIECE AND CLASS		TYPE		RANGE	
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
F	FULL BORE	01	Single Piece Ball Valve #150	1	FLOATING	015	DN 15
R	REDUCED BORE	02	Single Piece Ball Valve #300	2	TRUNNION	020	DN 20
		03	Single Piece Ball Valve #800			025	DN 25
		04	Two-piece Ball valve #150			032	DN 32
		05	Two-piece Ball valve #300			040	DN 40
		06	Three-piece Ball valve #800			050	DN 50
						065	DN 65
						080	DN 80
						100	DN 100
						150	DN 150
						200	DN 200
						250	DN 250

5		6		7		8	
BODY & END PIECE MATERIAL		BALL & STEM MATERIAL		SEAT		CERTIFICATIONS	
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
3	SS 304/CF3	3	SS 304/CF3/CF3M	P	PTFE	S	NON-FIRE SAFE
4	SS 304/CF8	4	SS 304/CF8	M	METAL	F	FIRE SAFE
5	SS 316L/CF8M	5	SS 316L/CF8M	R	RPTFE		
6	SS316/CF8M	6	SS316/CF8M	E	PEEK		
A	CA 15	O	OTHER THAN ABOVE	D	DEVLON		
C	WCB			U	ULTRA		
L	LCB						
O	OTHER THAN ABOVE						

ORDERING EXAMPLE FOR FULL BORE

F - 04 - 1 - 020 - 4 - 3 - P - S

CODE	DESCRIPTION
F	FULL BORE
04	Two-piece Ball valve #150
1	FLOATING
020	DN20
4	SS304/CF8
3	SS304/ CF3
P	PTFE
S	Non-Fire Safe

ORDERING EXAMPLE FOR REDUCED BORE

R - 04 - 1 - 015-C - 4 - M - S

CODE	DESCRIPTION
R	REDUCE BORE
04	Two-piece Ball valve #150
1	FLOATING
015	DN15
C	WCB
4	SS304/ CF8
M	Metal
S	Non-Fire Safe

AVAILABLE VARIETIES



S-Series Scotch Yoke Actuator



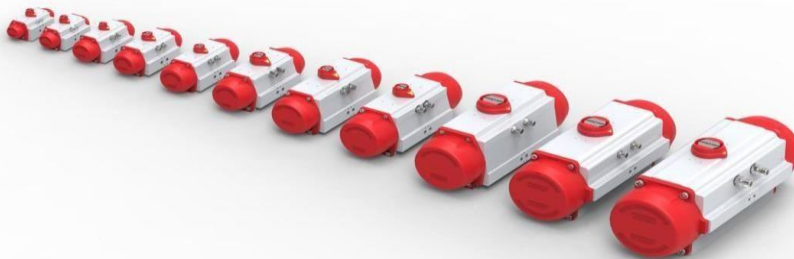
Fully Automated Ball Valve



Three Piece Ball Valve



Extended Neck Ball Valve



M- Series Rack & Pinion Actuator

CAUTION !

Pressure-temperature ratings and other performance data published in this catalog have been developed from our design calculation, In-house testing, and field reports provided by our customers and/or published official standards or specifications. They are good only to cover typical applications as a general guideline to users of DUNCAN products introduced in this catalog.

For any specific application, users are kindly requested to contact DUNCAN Engineering Limited for technical advice, or to carry out their own study and evaluation for providing suitability of these products to such an application failure to follow this request could result in property damage and/or personal injury, for which we shall not be liable.

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DUNCAN ENGINEERING LIMITED

"Formerly known as Schrader Duncan Limited"

F-33, MIDC, Ranjangaon, Karegaon, Tal-Shirur, Pune - 412 220, Maharashtra, INDIA.

• Tel : +91-2138-660066 • E-mail: pbu@duncanengg.com

Regional Sales Representatives at : Ahmedabad, Bangalore, Chennai, Coimbatore, Hyderabad, Kolkata, Mumbai, Pune, New Delhi.

Due to constant process of design improvements, dimensions may change without notice.

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CAT NO. YOKE-ACT/05/24