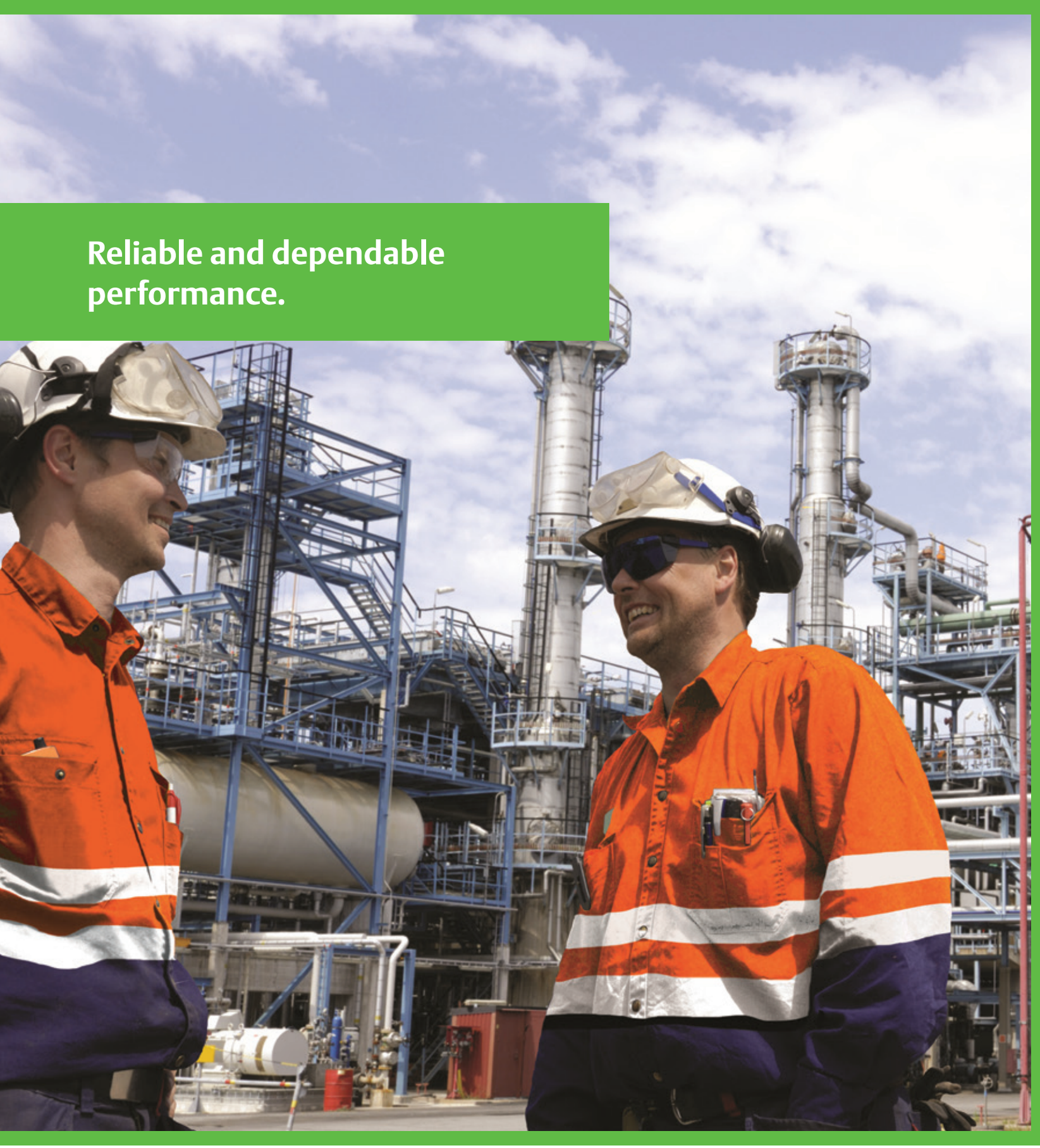
Reliable and dependable performance.



KTM Mecafrance Ball Valves

Innovative, high quality ball valves offering lasting, dependable service.

EMERSON™

KTM Mecafrance has been recognized as a world class manufacturer of high quality and an innovative range of ball valves, which are used in the major process industries of the world.

EXPERIENCE AND REPUTATION

With 50 years of valve manufacturing experience, KTM Mecafrance has developed a reputation for high quality, dependable valves.

TOTALLY INTEGRATED MANUFACTURING FACILITY

KTM Mecafrance ball valves are renowned for lasting, dependable service. Each valve is precision manufactured from foundry casting or forgings to final assembly.

Total quality control for every component is maintained from start to finish.

DEPENDABLE QUALITY PRODUCTS AND PERFORMANCE

In addition, unique design features add to the lifetime expectation and performance of KTM Mecafrance ball valves.

QUALITY ASSURANCE (ISO 9001: 2000)

KTM Mecafrance fully complies with the global ISO 9001: 2000 quality system requirements, one of the first major ball valve manufacturers to do so. This achievement is a confirmation of the many years of commitment KTM Mecafrance has put forth towards product quality.

R&D

KTM Mecafrance has an elaborated engineering and R&D department dedicated to the design, development and upgrading of valves and accessories.

They have the help of modern and state of the art tools such as CAD and 3D modeling.

ADDED VALUE

We add value to the supply chain through reliable logistics and IT systems, investment in inventory, repair and after sales service.

Most important of all, our dedication, technical capabilities and service are the senses of accomplishment that come with customer satisfaction and a job well done.

3 PIECE BALL VALVES

SERIES RA, ISO MOUNTED VALVES

- Integrated ISO top flange for easy automation
- Cast body materials
- Stainless steel, carbon steel
- Full bore and reduced bore
- 'Swing-out' center part for easy seat and gasket replacements
- Butt weld, socket weld, threaded ends and flanged version
- Size range: DN 8 - DN 200
- Pressure range: PN10 - PN100, ANSI 150/300
- Temperature range: -50°C to +400°C

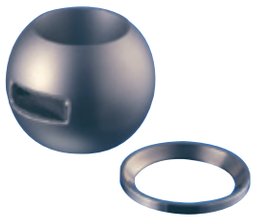
For details see page 15 and 16

MICRO-CLEAN VALVES

- Cast body
- Stainless steel version
- Full and reduced bore
- Butt weld, OD, extended OD, clamped version
- Optional electro-polished body
- Internal surface roughness: 0.2 µm < Ra ⩽ 0.8 µm
- Size range: DN 8 - DN 200
- Pressure range: PN10 - PN100, ANSI 150/300
- Temperature range: -50°C to +400°C

For details see page 24 and 25

METAL SEATED VALVES



- Full metal seated version for corrosive and abrasive services at elevated temperatures up to 400°C
- The sealing system can directly be installed in all standard KTM Mecafrance 3 piece ball valves without further modifications

For details see page 20 and 21

Note: for detailed body and seat P/T rating information see pages 8 and 9.

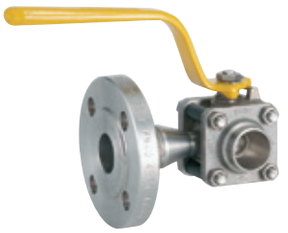
3 PIECE BALL VALVES

CRYOGENIC VALVES

- Cast body materials
- Stainless steel version only
- Full and reduced bore
- Butt weld, socket weld, threaded ends and flanged versions
- With 150 or 300 mm cryo extensions (other lengths on request)
- In compliance with EN 1626 (on request)
- Size range: DN 8 - DN 150
- Pressure range: PN10 - PN100, ASME 150/300 mono-directional
- Temperature range: -196°C to +80°C

For details see page 22 and 23

3-WAY VALVES



- Cast body materials
- Stainless and carbon steel versions
- Full and reduced bore
- Flanged, socket, threaded or butt weld center and side connections
- L-bore, T-bore, horizontal and vertical connections
- Size range: DN 8 - DN 150
- Pressure range: PN10 - PN100 / ASME 150/300
- Temperature range: -50°C to +280°C

For details see page 27 and 28

VALVES WITH HEATING JACKET

- Cast body materials
- Stainless steel version only
- Reduced and full bore versions
- Butt weld, socket weld and threaded version (c/w 1 piece jacket), double versions (c/w 1 piece or 3 piece jacket)
- 1 Piece jacket: body piece only
- 3 Piece jacket: body piece including end connections
- Suitable for tracing with steam, thermal oil, hot water
- Size range: DN 8 - DN 200
- Pressure range valve: PN10 - PN100, ASME 150/300
  Pressure range jacket: PN10 standard (ASME 150 optional)
- Temperature range: -50°C to +400°C

For details see page 18 and 19

Note: for detailed body and seat P/T rating information see pages 8 and 9.

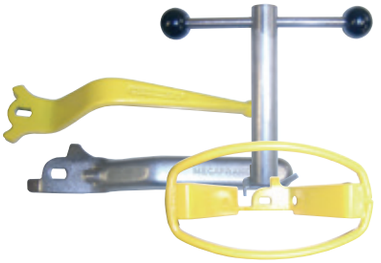
SPECIAL APPLICATION VALVES AND ACTUATION

VALVES WITH SECONDARY CONTAINMENT UNIT

- Cast body materials
- Carbon steel and stainless steel versions
- Full and reduced bore
- To be mounted on series RA
- Size range: DN 8 - DN 150

For details see page 22

MANUAL OPERATORS



- Stainless steel and carbon steel versions
- High and low profile handles
- Lockable handle
- Round and oval operators

For details see page 30

SPRING RETURN HANDLE (DEAD MAN'S LEVER)

- Action: spring-to-open, spring-to-close
- Double inside stop avoids risk of injury
- Maintenance free due to grease filling
- Compact, closed housing guaranteeing functionality
- To be mounted on series RA
- ISO interface enabling standard mounting kits
- Maximum valve size: DN 50 reduced bore, and DN 40 full bore (PTFE or RTFE seats)

For details see page 29

PNEUMATIC ACTUATORS

- Single and double acting pneumatic actuators
- Double rack and pinion design
- Conforming EN ISO 5211
- Adjustable, integrated travel stops
- Anti blow out drive pinion
- Torque range up to 2.500 Nm
- 2.75 to 8.3 bar air supply

Note: for detailed body and seat P/T rating information see pages 8 and 9.

QUALITY PACKAGES FOR TOTAL PEACE OF MIND

THE KTM MECAFRANCE SOLUTION
FOR ACTUATED BALL VALVE PACKAGES

BALL VALVE PACKAGES FROM KTM MECAFRANCE COMBINE HIGH QUALITY VALVES WITH RELIABLE ACTUATORS AND ACCESSORIES TO PROVIDE A PRE-ASSEMBLED AND TESTED PRODUCT READY FOR ON-SITE INSTALLATION.

All valves and actuators are manufactured in plants certified to ISO 9001: 2000 and comply with the most stringent requirements of the European Directives and harmonized standards including Pressure Equipment Directive (97/23/EC PED). However the real benefits of sourcing valve packages from KTM Mecafrance are the savings achieved through dealing with one company able to provide a complete unit specifically designed to operate as an assembly, factory tested and ready for immediate installation and commissioning on site.

KTM Mecafrance ball valves include full and reduced bore designs with 3 piece construction. They are available in diameters from DN 8 to DN 200 with a full range of connections and ratings and can be supplied in carbon steel, stainless steel with special materials available on request.

GENERAL APPLICATIONS

KTM Mecafrance actuated ball valve packages are suitable for most applications from industrial and utilities to heavy duty working conditions including corrosive or hazardous services.

BENEFITS

- Single source of supply
- Designed to operate as an assembly
- Manufactured in ISO 9001: 2000 certified plants
- All actuated valve packages are individually tested before shipping
- Packages are suitable for incorporation in assemblies requested under the Machinery Directive 98/37/EC. Special ESD valves compliant with this Directive are also available.

FEATURES

- Actuator attachment flanges are EN ISO 5211 compliant
- Brackets and couplings are manufactured to EN standards
- Valves, actuators and accessories comply with the following standards:

Pressure Equipment Directive (97/23/EC PED)

- Valves certified following module H of PED, allowing applications up to and including category III (highest category for industrial valves, table 6 of the PED annex II)
- Actuators falling under article 3, paragraph 3 of the PED are produced in an environment certified to both ISO 9001 and PED module H

Antistatic devise for use on ATEX atmospheres

- Valves could be antistatic with A2 marking, suitable for installation in all zones 1 & 21 and zones 2 & 22 (according to the ATEX Directive 1999/92/EC annex II). Max. temperature +150°C.

- Large range of valve diameters, PN or Class designated
- Carbon steel; stainless steel valves as standard, special materials on request
- Valves suitable for On/Off and control service
- Choice of full or reduced bore valves with 3 piece body construction
- Control accessories can be mounted on actuator top works and solenoid connections that comply with VDI/VDE 3845.

FUNCTION

BALL SEALING

The principle of the ball valves lies in the use of a ported spherical plug which is rotated between two seats normally made of PTFE. The seats have flexible lips designed so that the ball, when rotated, follows the spherical contours of the port way. This floating bearing permits movement in the direction of flow, thereby ensuring optimal sealing of the port way.

Figure 1: in the absence of pressure, a proper seal is assured in that the spring action of the seats presses the sealing lips to the ball; the sealing lips' contact area with the ball is the same on both the upstream and downstream sides.

Figure 2: pressure increases on the upstream side move the ball slightly towards the seat on the downstream side, increasing its pressure against the seat on the downstream side.

The seats are designed so that the increase in pressure of the ball on the downstream seat results in all increase in the service contact area, thus preventing any leakage. In addition, such a pressure increase decreases the pressure against the sealing lips on the upstream side. As a result, the operating torque for the valves remains constant throughout the valve's entire pressure range.

FIGURE 1

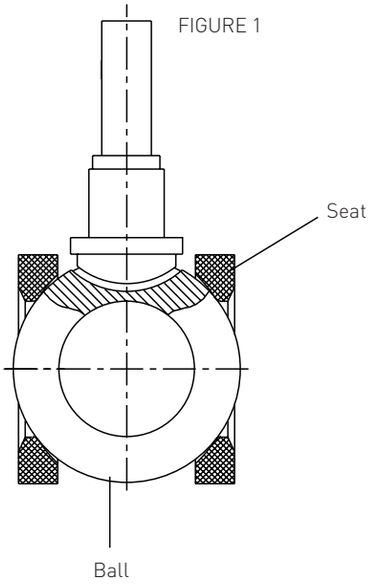
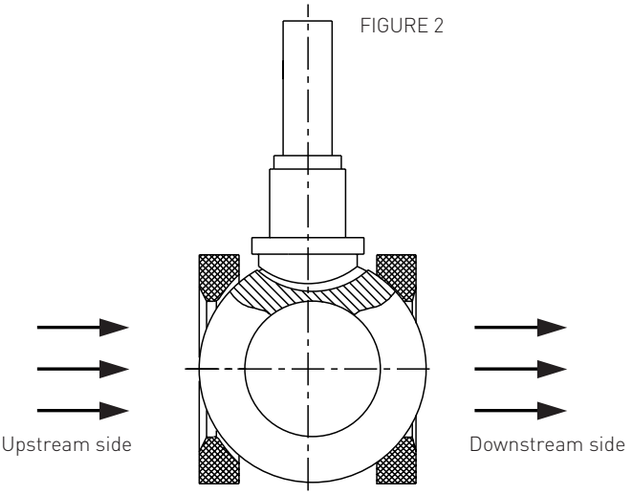


FIGURE 2



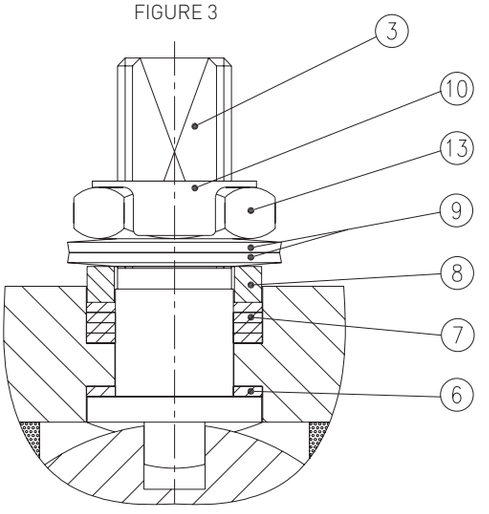
SEALING THE STEM

The stem of the KTM Mecafrance ball valve is fitted from inside. A collar, which is larger than the bore in the body, keeps the stem from being pressed out even under extreme internal pressures. The seat washer inside the stem provides the primary seal. Any increase in the internal pressure automatically increases the pressure on the stem collar which, in turn, raises the pressure on the seat seal and the tightness to the outside. For the depressurized state and vacuum mode, the seals are tightened with the secured stem nut acting on Belleville spring washers and a stem seal follower; this prevents any leakage. During the vacuum mode, the situation is reversed to the evacuated side. Figure 3 shows the situation when both sides have been evacuated.

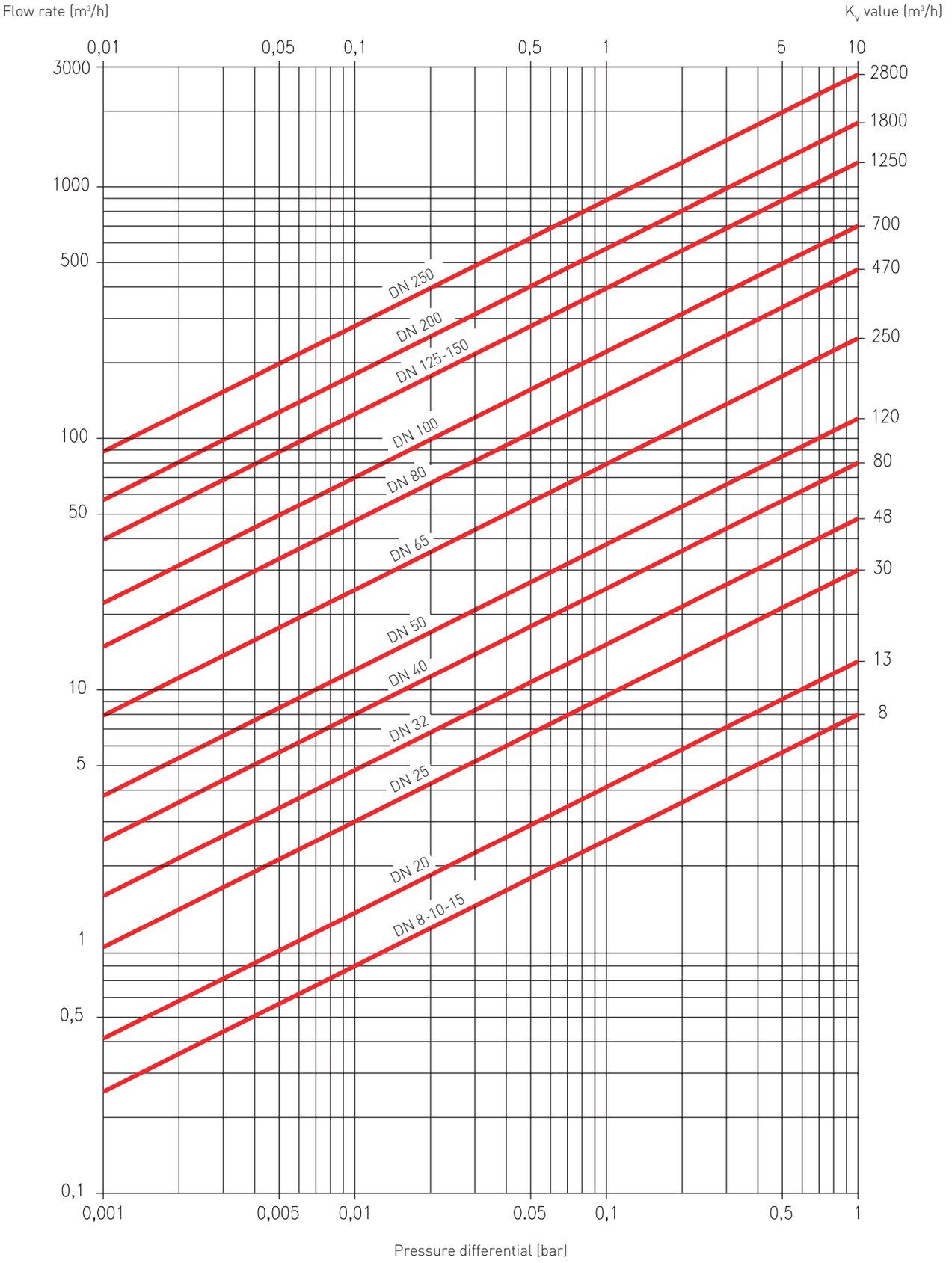
PARTS LIST

No.	Description
3	Stem
6	Stem seal
7	Stem packing
8	Stem packing follower
9	Belleville washer
10	Lock washer
13	Stem nut

FIGURE 3

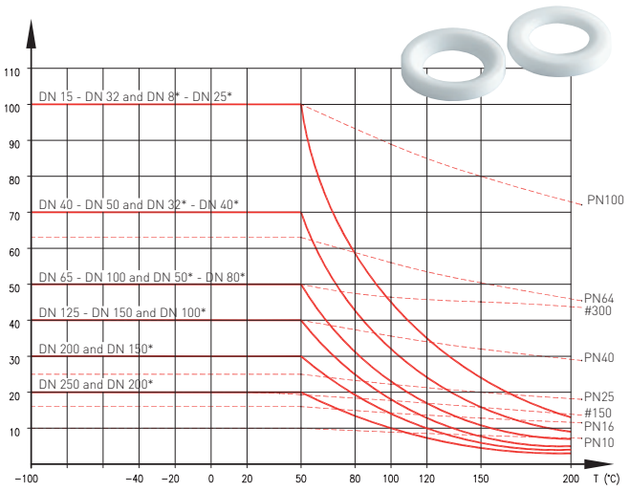


Kv VALUES AND PRESSURE LOSSES FOR 2-WAY VALVES

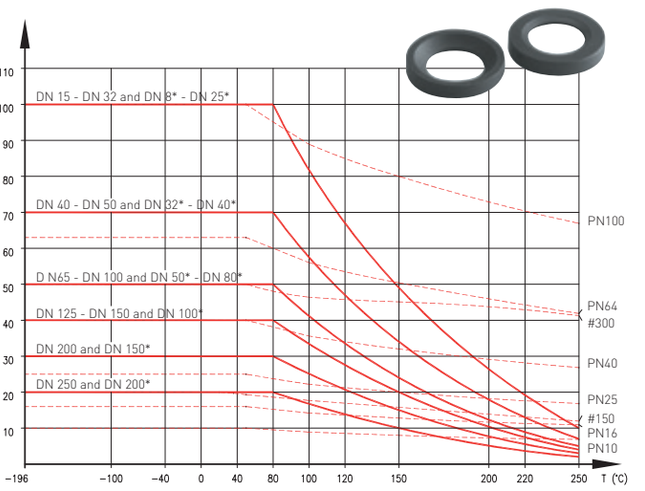


PRESSURE/TEMPERATURE SEAT RATINGS

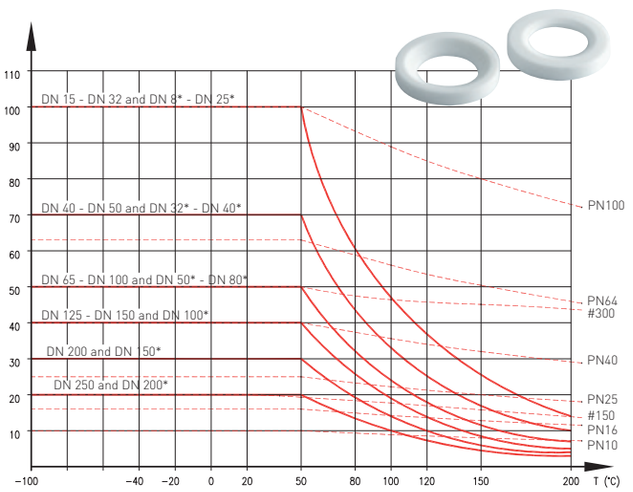
PTFE
FOR MOST INDUSTRIAL APPLICATIONS



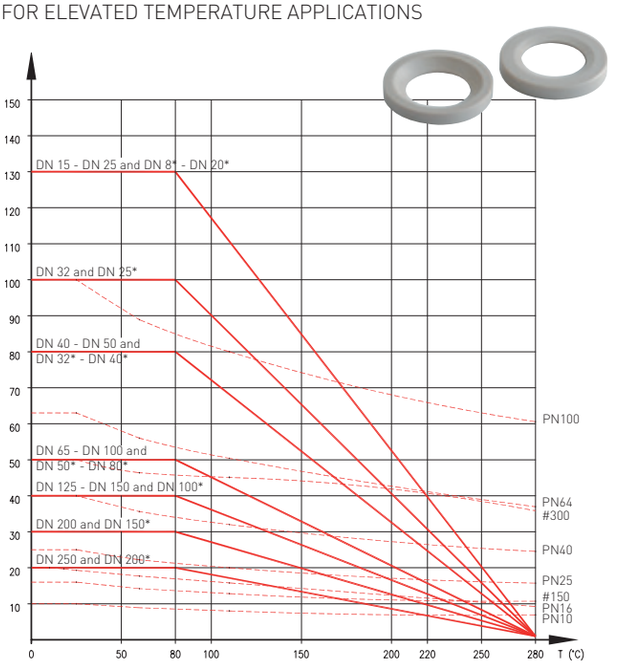
PTFE CARBON FILLED (TF4215)®
FOR HIGH TEMPERATURE AND CRYOGENIC APPLICATIONS



TFM1600 PTFE/PFA COPOLYMER

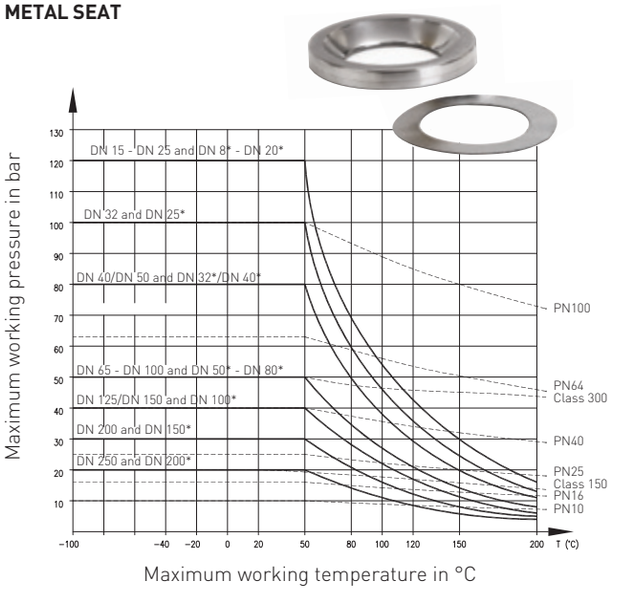


PEEK
FOR ELEVATED TEMPERATURE APPLICATIONS

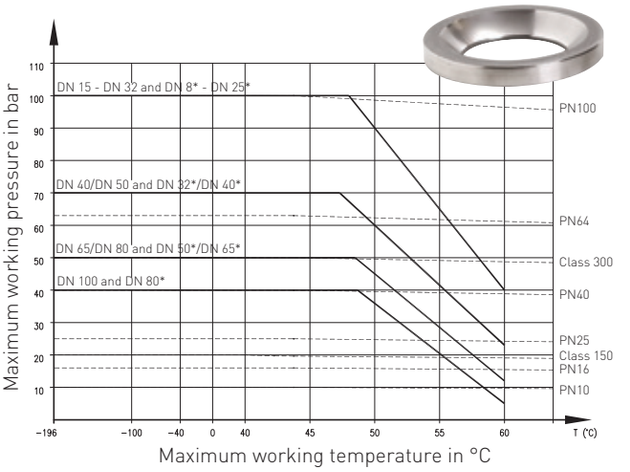


PRESSURE/TEMPERATURE SEAT AND BODY RATINGS

METAL SEAT



POLYETHYLENE



NOTES

* Full bore
- Please always verify maximum body ratings as each above mentioned diagram presents data for the seat material only
- For other material options, please contact your nearest KTM Mecafrance representative

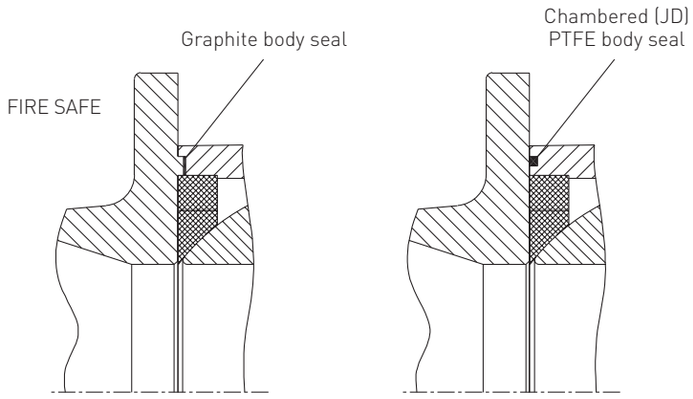
BODY RATINGS (bar)

				DN													
			RB		15	20	25	32	40	50	65	80	100	125	150	200	250
Valve type	**Flange connection**	**FTF [1]**	**FB**	**8**	**10**	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**	**-**	**100**	**150**	**200**
3 Piece valves																	
	Butt weld	-	FB and RB	100	100	100	100	80	70	70	50	50	50	40	40	30	20
	Socket weld, Threaded	-	FB and RB	100	100	100	100	80	70	70	50	50	50	-	-	-	-
RA and	Flanged PN10 - PN100	Series 1	FB and RB	-	100	100	100	63	63	63	40	40	40	40	40	16	16
3 way valve	Flanged ASME 150 (PN20)	Series 1	FB and RB	-	20 *	20	20	20	20	20	20	20	20	20	20	20	20
	Flanged ASME 300 (PN50)	Series 1	FB and RB	-	50 *	50	50	50	50	50	50	50	50	-	-	-	-
	Flanges ASME 300 (PN50)	Series 4	FB and RB	-	50 *	50	50	50	50	50	50	50	50	-	-	-	-

NOTES

1. = according to EN 558
FTF = Face-to-Face
RB = reduced bore
FB = full bore
\- = not available
* = DN 15 reduced bore only

BODY SEALS DETAILS, OPERATING TORQUES



BODY SEAL

A specially formed PTFE ring, the body gasket, provides the seal to the outside between the body gaskets and the opposing flange.

The KTM Mecafrance fire-safe design use a tongue and groove connection sealed with temperature-resistant graphite material. High temperatures cause the PTFE seat to vaporize; this, in turn, causes the floating ball to be pressed against the sealing lip during pressure equalization. This results in a metallic linear seal of very high specific are pressure and great reliability. The stem, which has been fitted from inside, is prevented from being pushed out by means of its collar. Even if the PTFE steam seals are completely destroyed, the collar is still pressed against the turned face in the duct, and the tightness increases as the pressure rises.

Both the ball and the stem are sealed off by a metal-to-metal seal if the valve is closed in case of a fire.

VALVE BREAK AWAY TORQUES (Nm)

DN		PTFE seats Δp (bar)							
RB	**FB**	**0**	**6**	**10**	**16**	**25**	**40**	**64**	**100**
15	8/10	5	5	5	5	5	9	16	26
20	15	6	6	6	6	6	10	17	27
25	20	11	11	11	11	11	13	19	30
32	25	18	18	18	18	18	22	27	36
40	32	24	24	24	24	24	30	40	55
50	40	30	30	30	30	30	35	35	60
65	50	60	60	60	65	78	102	140	-
80	65	95	95	95	105	120	155	215	-
100	80	155	155	155	165	180	215	275	-
125/150	100	215	215	215	230	250	300	-	-
200	150	325	360	385	400	420	505	-	-
250	200	420	480	720	765	840	-	-	-

DN		PTFE/GFK, HT, HP (Delrin®), CI, PEEK seats Δp (bar)							
RB	**FB**	**0**	**6**	**10**	**16**	**25**	**40**	**64**	**100**
15	8/10	6	6	6	6	6	11	19	31
20	15	7	7	7	7	7	13	20	32
25	20	13	13	13	13	13	17	24	36
32	25	22	22	22	22	22	26	34	43
40	32	29	29	29	29	29	36	48	65
50	40	36	36	36	36	36	43	55	72
65	50	72	72	72	81	94	122	170	-
80	65	115	115	115	125	145	190	260	-
100	80	180	180	180	190	210	250	315	-
125/150	100	250	250	250	265	290	350	-	-
200	150	370	415	450	460	485	580	-	-
250	200	480	550	830	885	970	-	-	-

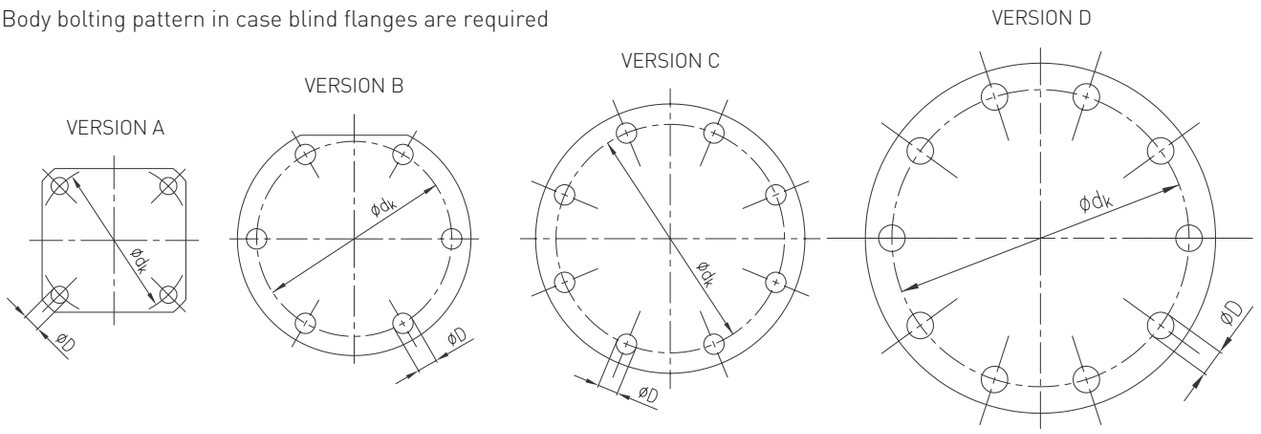
DN		Cryogenic PTFE seats Δp (bar)							
RB	**FB**	**0**	**6**	**10**	**16**	**25**	**40**	**64**	**100**
15	8/10	7	7	7	7	7	14	24	40
20	15	10	10	10	10	10	16	26	41
25	20	17	17	17	17	17	20	29	46
32	25	28	28	28	28	28	32	42	54
40	32	36	36	36	36	36	46	60	82
50	40	46	46	46	46	46	54	68	88
65	50	90	90	90	100	118	154	210	-
80	65	144	144	144	155	180	235	320	-
100	80	235	235	235	250	270	325	410	-
125/150	100	325	325	325	345	380	450	-	-
200	150	485	540	575	595	630	755	-	-
250	200	630	720	1080	1150	1260	-	-	-

NOTES

- RB = reduced bore
- FB = full bore
- Operating torque in Nm, in clean water at room temperature
- For the actuator torque, multiply above value by 1.5
- For non lubricating media, please add 20% to the torques specified

BODY BOLTING PATTERN, FLANGE BOLTING TORQUES, PACKING TORQUES

Body bolting pattern in case blind flanges are required



DIMENSIONS FOR MASTER GAUGE FOR HOLES (mm)

DN						
RB	**FB**	**Ø D**	**Ø dk**	**Screws**	**Series**	**Version**
15	8/10	6.5	45.0	4 x M6	RA	A
20	15	8.5	53.1	4 x M8	RA	A
25	20	8.5	62.8	4 x M8	RA	A
32	25	8.5	71.8	4 x M8	RA	A
40	32	10.5	80.9	4 x M10	RA	A
50	40	10.5	94.2	4 x M10	RA	A
65	50	13.0	114.0 [1] 119.5 [2]	6 x M12	RA	B
80	65	13.0	140.0	6 x M12	RA	C
100	80	15.0	175.0	8 x M14	RA	C
125/150	100	15.0	206.0	8 x M14	RA	C
200	150	19.0	314.0	8 x M18	RA	C
250	200	22.0	388.0	10 x M20	RA	D

TORQUE SERIES RA

Body screws and nuts			
DN			Md
RB*	**FB***	**Thread**	**(Nm)**
-	8	M6	11-13
15	10	M6	11-13
20	15	M8	14-18
25	20	M8	14-18
32	25	M8	14-18
40	32	M10	27-33
50	40	M10	27-33
65	50	M12	72-88
80	65	M12	72-88
100	80	M14	108-132
125/150	100	M14	108-132
200	150	M18	180-220
250	200	M20	243-297

TORQUE SERIES RA

Stem nuts**		
DN		Md
RB*	**FB***	**(Nm)**
15/20	8/10/15	8
25/32	20/25	14
40/50/65	32/40/50	20
65 [3]	50 [3]	39
80/100/125/150	65/80/100	85
200	150	200
250	200	270

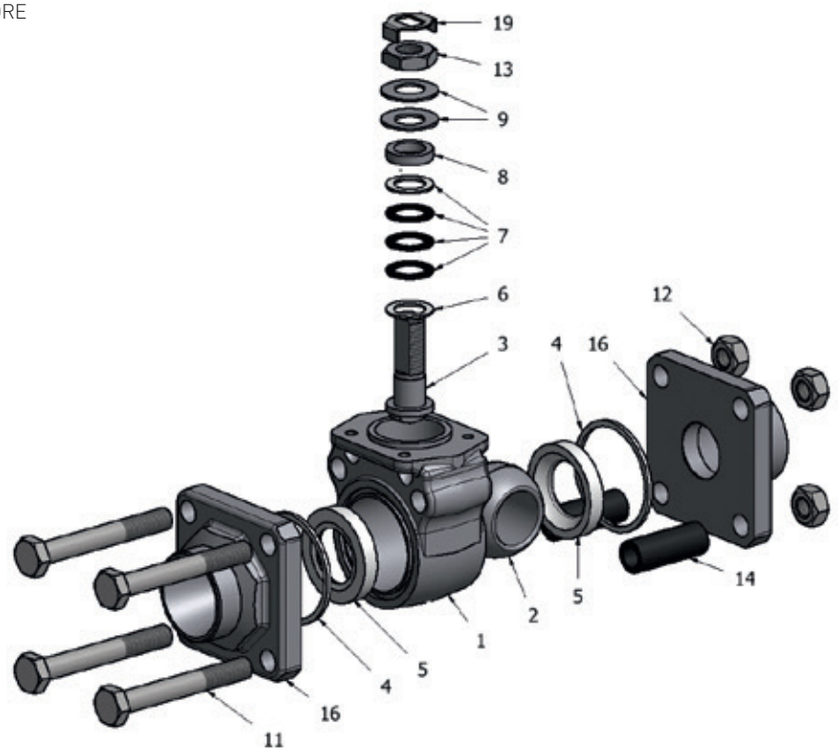
** PTFE/GFK antistatic packing assembly

NOTES

- Direct from the factory, body screws are tightened with the indicated torques. These torques are for undamaged threads, direct from the factory.
- After tightening the stem nut with the specified torque, the correct position of the lock washer according to our assembly and maintenance instructions has been ensured.
- Indicated torques are applied during the assembly process.
- * RB = reduced bore (standard), FB = full bore
- [1] = stainless steel, [2] = carbon steel
- [3] = reinforced version stem 18 mm

EXPLODED VIEW **3 PIECE BALL VALVES SERIES RA**

BALL VALVE OF SERIES RA WITH REDUCED BORE
DN 15 - DN 50; CBS

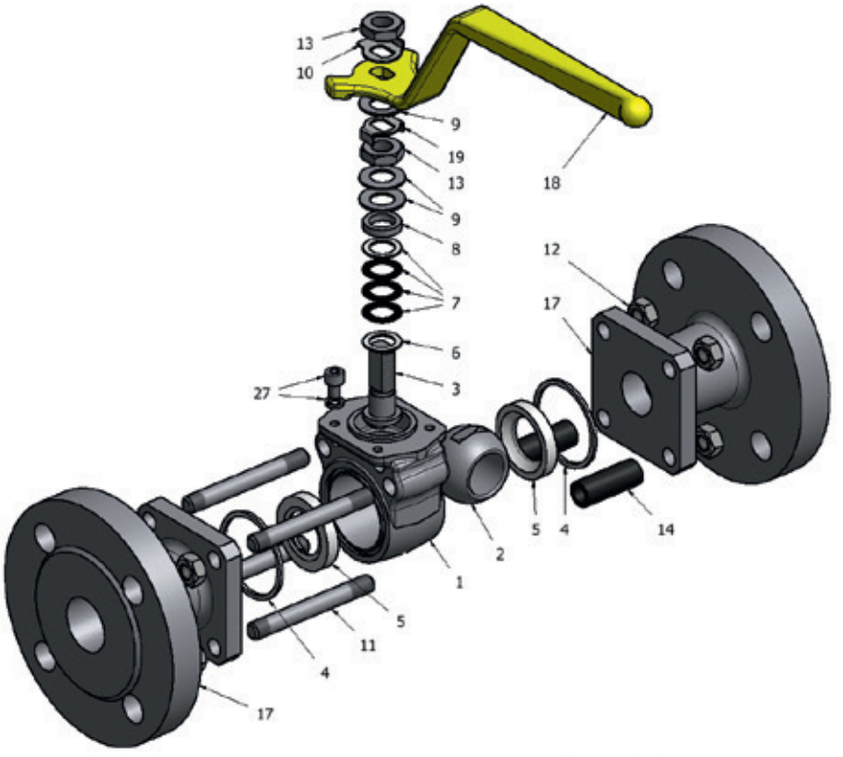


Please follow assembly and
maintenance instructions carefully.

BALL VALVE SERIES RA WITH REDUCED BORE
DN 15 - DN 50; CBF

PARTS LIST

No.	Description
1	Body
2	Ball
3	Stem
4	Body gasket
5	Seat
6	Stem seal
7	Stem packing
8	Stem packing follower
9	Belleville washer
10	Lock washer
11	Bolt/Body bolt
12	Nut
13	Stem nut
14	Sleeve
16	End connection
17	Flange end
18	Handle
19	Lock washer
27	Travel stop



Please follow assembly and
maintenance instructions carefully.

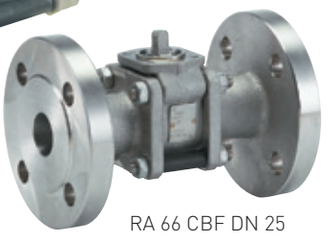
MATERIAL SPECIFICATION

		Valves of carbon steel		Valves of stainless steel	
No	**Description**	**DIN**	**AISI/ASTM**	**DIN**	**AISI/ASTM**
1	Body	1.0352/1.0460/1.0619/ P250GH/P240GH	A105/A216 WCB	1.4404/1.4408	316L/CF8M
2	Ball	1.4404/1.4408	1.4404/1.4408	1.4404/1.4408	316L/CF8M
3	Stem	1.4404/1.4462	316L	1.4404/1.4462	316L
4	Body gasket	PTFE/PTFE stainless/ PTFE-graphite (TF4215)®/ graphite/PEEK/ polyethylene/PCTFE/ FPM/TFM1600	PTFE/PTFE stainless/ PTFE-graphite (TF4215)®/ graphite/PEEK/ polyethylene/PCTFE/ FPM/TFM1600	PTFE/PTFE stainless/ PTFE-graphite (TF4215)®/ graphite/PEEK/ polyethylene/PCTFE/ FPM/TFM1600	PTFE/PTFE stainless/ PTFE-graphite (TF4215)®/ graphite/PEEK/ polyethylene/PCTFE/ FPM/TFM1600
5	Seat	PTFE/ PTFE-graphite (TF4215)®/ PTFE glass filled/ PEEK/ polyethylene/ TFM1600/ metal	PTFE/ PTFE-graphite (TF4215)®/ PTFE glass filled/ PEEK/ polyethylene/ TFM1600/ metal	PTFE/ PTFE-graphite (TF4215)®/ PTFE glass filled/ PEEK/ polyethylene/ TFM1600/ metal	PTFE/ PTFE-graphite (TF4215)®/ PTFE glass filled/ PEEK/ polyethylene/ TFM1600/ metal
6	Stem seal	PTFE-glass-reinforced/ PTFE-graphite/PE Nitralon (HP)/TFM1600/ PTFE trame inox/ graphite/PEEK/ FPM/PCTFE	PTFE-glass-reinforced/ PTFE-graphite/PE Nitralon (HP)/TFM1600/ PTFE trame inox/ graphite/PEEK/ FPM/PCTFE	PTFE-glass-reinforced/ PTFE-graphite/PE Nitralon (HP)/TFM1600/ PTFE trame inox/ graphite/PEEK/ FPM/PCTFE	PTFE-glass-reinforced/ PTFE-graphite/PE Nitralon (HP)/TFM1600/ PTFE trame inox/ graphite/PEEK/ FPM/PCTFE
7	Stem packing (antistatic)	PTFE-GFK antistatic/ PTFE graphite/ PTFE FPM®/ TFM1600/polyethylene PTFE trame inox/ graphite/PEEK/ FPM/PCTFE	PTFE-GFK antistatic/ PTFE graphite/ PTFE FPM®/ TFM1600/polyethylene PTFE trame inox/ graphite/PEEK/ FPM/PCTFE	PTFE-GFK antistatic/ PTFE graphite/ PTFE FPM®/ TFM1600/polyethylene PTFE trame inox/ graphite/PEEK/ FPM/PCTFE	PTFE-GFK antistatic/ PTFE graphite/ PTFE FPM®/ TFM1600/polyethylene PTFE trame inox/ graphite/PEEK/ FPM/PCTFE
8	Stem packing follower	1.4301	304	1.4301	304
9	Belleville washer	1.431	302	1.431	302
10	Lock washer	1.4306	304L	1.4306	304L
11	Body screw/bolts	8.8	A 193 B 7	A 2-70	A 193 B 8
12	Nut	8	A 194 2 H	A 2-70	A 194 8
13	Stem nut	1.0715	115	1.4301	304
14	Sleeve	PTFE	PTFE	PTFE	PTFE
15	Centering ring	PTFE-glass-reinforced/ stainless steel/ polyethylene	PTFE-glass-reinforced/ stainless steel/ polyethylene	PTFE-glass-reinforced/ stainless steel/ polyethylene	PTFE-glass-reinforced/ stainless steel/ polyethylene
16	End connection (welded or threaded)	1.0460	A105	1.4404	316L
17	Flange end	1.0619/1.0460	A105/A216 WCB	1.4404/1.4408	316L/CF8M
18	Lever	C15/ stainless steel	A105/ stainless steel	C15/ stainless steel	A105/ stainless steel
19	Lock washer	1.4306	304L	1.4306	304L
20	Stop	Cast iron	Cast iron	1.4308	CF-8
23	Washer	1.4301	304	1.4301	304
24	Fixing screw	1.4301	304	1.4301	304
	Sight glass	Borosilicate glass	Borosilicate glass	Borosilicate glass	Borosilicate glass
	Protective screen	1.4301	304	1.4301	304
	Chain	Steel/stainless steel	Steel/stainless steel	Steel/stainless steel	Steel/stainless steel
	Sealing cap	PE/1.4408	PE/CF8M	PE/1.4408	PE/CF8M
	Stem extension	1.4306	A312	1.4306	A312

SERIES RA

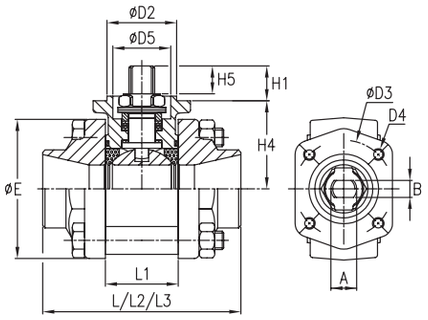
3 PIECE BALL VALVES WITH ISO TOP FLANGE DN 8 - DN 50
BUTT WELD, THREADED, SOCKET WELD AND FLANGED VERSION

RA 66 CBS DN 25

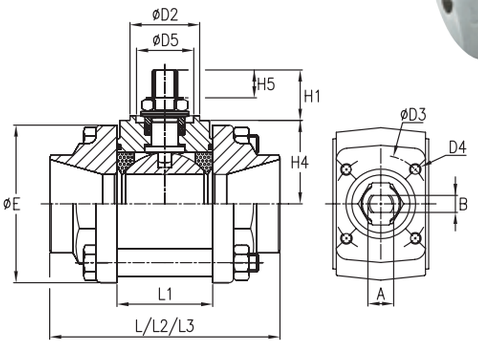


RA 66 CBF DN 25

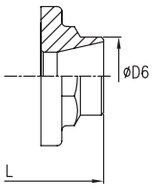
DN 8 - DN 25



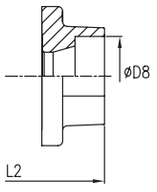
DN 32 - DN 50



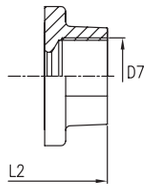
AVAILABLE END CONNECTION OPTIONS:



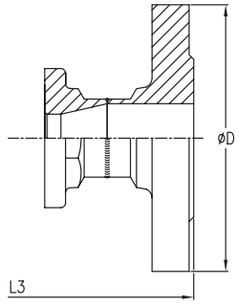
Butt weld: CBS



Socket weld: CBSW



Threaded: CBG



Flanged: CBF
(Cast versions available on request)

DESIGN FEATURES

- ISO top flange according DIN/ISO 5211/DIN 3337 available with or without handle
- Easy installation of all types of actuators
- Swing out body for easy maintenance
- Flexible installation features due to modular design
- Reduced and full bore options available
- Carbon steel and stainless steel body, stainless steel trim
- Forged end connections
- Cast body materials
- Wide variety of seat material options available

DETAILED TECHNICAL INFORMATION

- Threaded ends: BSPP, BSPT according to ISO 7, BSPP according to ISO 228-1, DIN 259 (CBB) NPT according ANSI B 1.20
- Socked weld (CBSW): Female socket weld ANSI B16.11
- Butt weld (CBS): ISO, DIN, ASME, OD, extended OD
- Flanged (CBF): Cast and forged design EN 1092-1, EN 1759-1 Standard Face-to-Face according EN 558 series 1
- Design codes: DIN 3840, EN 13445
- Special end connections are available on request
- Pressure rating: PN10 - PN100

DIMENSIONS (mm)

																				Weight (kg)		
	ISO				L3														Ball	CBSW		
DN	5211	L	L1	L2	series 1	H1	H4	H5	øE	øD	øD2	øD3	D4	øD5	øD6	D7	øD8	A	B	bore	CBS	CBG	CBF
8	F03	65.0	20.4	65.0	-	10	30	7	45	-	25	36	M5	22	13.5	¼"	14.2	9.5	5.4	11.1	0.5	0.5	-
10	F03	65.0	20.4	65.0	130	10	30	7	45	90	25	36	M5	22	17.2	⅜"	17.6	9.5	5.4	11.1	0.5	0.5	2.2
15	F03	65.0	20.4	65.0	130	10	30	7	45	95	25	36	M5	22	21.3	½"	21.8	9.5	5.4	11.1	0.5	0.5	2.3
20	F03	72.5	24.5	72.5	150	10	32	7	52	105	25	36	M5	22	26.9	¾"	27.4	9.5	5.4	14.2	0.8	0.9	3.0
25	F04	85.4	31.4	85.4	160	15	38	12	60	115	30	42	M5	25	33.7	1"	34.2	11.1	7.5	20.6	1.1	1.3	3.8
32	F04	99.3	41.3	99.3	180	22	36	12	68	140	30	42	M5	25	42.4	1¼"	43.0	11.1	7.5	25.4	1.7	1.9	6.0
40	F05	110.4	48.4	110.4	200	29	42	16	76	150	35	50	M6	30	48.3	1½"	49.0	14.3	8.9	31.7	2.7	2.7	7.3
50	F05	126.3	56.3	126.3	230	30	46	16	88	165	35	50	M6	30	60.3	2"	61.1	14.3	8.9	38.0	3.8	4.1	10.0

NOTES

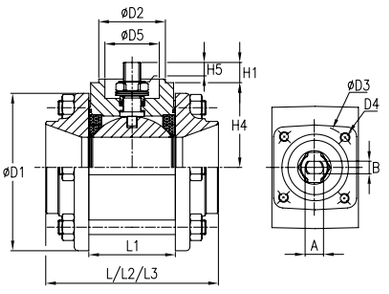
- All dimensions are related to reduced bore valves. For full bore valves please apply the dimensions of the next diameter (except L3, ØD, ØD6, D7 and ØD8 which is identical in both instances)

SERIES RA

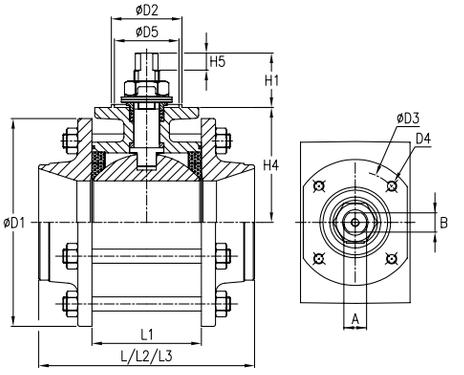
3 PIECE BALL VALVES WITH ISO TOP FLANGE DN 65 - DN 250
BUTT WELD, THREADED, SOCKET WELD AND FLANGED VERSION

RA 66 CBF DN 100

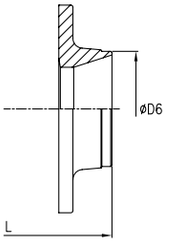
DN 65



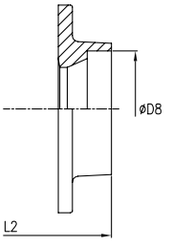
DN 80 - DN 250



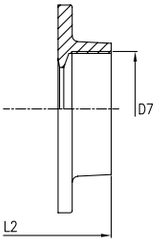
AVAILABLE END CONNECTION OPTIONS:



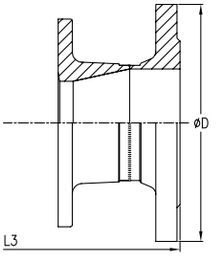
Butt weld: CBS



Socket weld: CBSW



Threaded: CBG



Flanged: CBF
(Cast versions available on request)

APPROVALS AND CERTIFICATES

- TA-Luft according VDI 2440
- Fire tested according to EN ISO 10497-2010, API 607 5th Ed., API 6FA 3rd Ed.
- Lloyds register type approval
- Tü.AGG and TÜV A type approval

CE PED module H up to category III

DIMENSIONS (mm)

																				Weight (kg)		
	ISO				L3				øD											Ball	CBSW		
DN	5211	L	L1	L2	series 1	H1	H4	H5	PN16	øD1	øD2	øD3	D4	øD5	øD6	D7	øD8	A	B	bore	CBS	CBG	CBF
65	F07	142.6	71.4	160	290	16	70	16	185	143	55	70	M8	45	76.1	2½"	77.0	14.3	8.9	50.0	6.6	6.8	16
80	F07	169.5	88.9	180	310	54	99	17	200	165	55	70	M8	45	88.9	3"	90.0	22.5	19.0	62.0	12.6	13.0	26
100	F10	214.0	108.5	214	350	54	114	17	220	206	70	102	M10	64	114.3	4"	115.5	22.5	19.0	82.4	23.0	23.0	34
125	F10	277.0	134.6	-	400	54	128	17	250	234	70	102	M10	64	139.7	-	-	22.5	19.0	100.0	37.0	-	47
150	F10	307.0	134.6	-	480	54	128	17	285	234	70	102	M10	64	168.3	-	-	22.5	19.0	100.0	40.0	-	56
200	F12	409.0	189.1	-	600	72	186	28	340	345	85	125	M12	65	219.1	-	-	35.0	28.5	150.0	84.0	-	133
250	F14	460.0	248.0	-	730	77	228	28	405	428	100	140	M16	-	273.0	-	-	38.0	30.0	200.0	150.0	-	200

NOTES

- All dimensions are related to reduced bore valves. For full bore valves please apply the dimensions of the next diameter (except L3, ØD, ØD6, D7 and ØD8 which is identical in both instances)

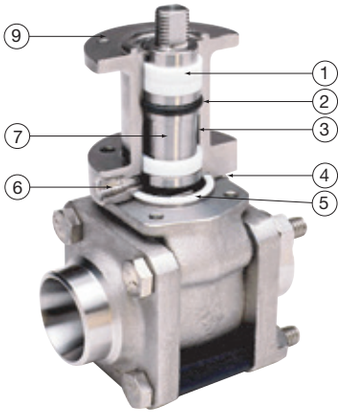
SECONDARY CONTAINMENT UNIT

THIS BOLT-IN SECONDARY SHAFT SEALING UNIT CAN BE BOLTED DIRECTLY ON ALL KTM MECAFRANCE SERIES RA, CA AND EM VALVES. IN THIS WAY, THE PRIMARY SHAFT SEALING CAN BE MONITORED.

FEATURES

- No modifications are needed
- Secondary shaft seal (1)
- Supporting ring (2)
- Robust stainless steel housing (3)
- Exact centering feature thru spigot (4)
- Additional PTFE sealing (5)
- Optional leak detection port (6)
- One piece stainless steel shaft (7)
- ISO 5211 top flange (9)

Size range series RA, CA, EM: DN 8 - DN 150



ADVANTAGES

- No product leakage, nor spillage
- Increased plant and environment safety
- In compliance with current and future government regulations

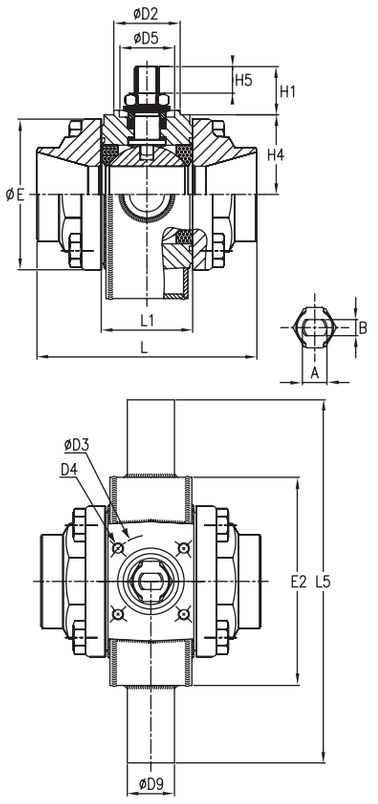
Valves are in compliance with TA-Luft and Clean Air Acts

VALVES WITH **SINGLE HEATING JACKET**

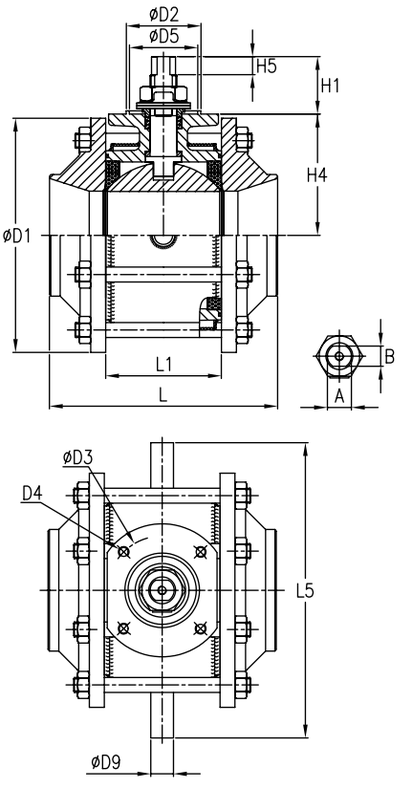
3 PIECE BALL VALVES WITH ISO TOP FLANGE DN 8 - DN 150 FULL BORE / DN 15 -DN 200 REDUCED BORE
(SERIES CA FOR DN 15 - DN 50, SERIES RA FOR DN 65 - DN 200)
DOUBLE FLANGED, BUTT WELD VERSION WITH HEATING JACKET ON BODY SECTION

CA DN 25, flanged single jacket

Series CA DN 15 - DN 50, butt weld



Series RA, DN 65 - DN 200, butt weld



TECHNICAL DETAILS

- Stainless steel versions only
- For further details on end connections and top flange variations, see valve details Series CA and RA
- Optional metal seated version for high temperature and abrasive applications
- Jacket parameters: standard PN10 rating, optional PN20, maximum temperature 200°C
- Tracing with steam, thermal oil or hot water
- Optional jacket connections are male or femal threaded, flanged, welding neck or butt weld

CE PED module H up to category III

DIMENSIONS (mm)

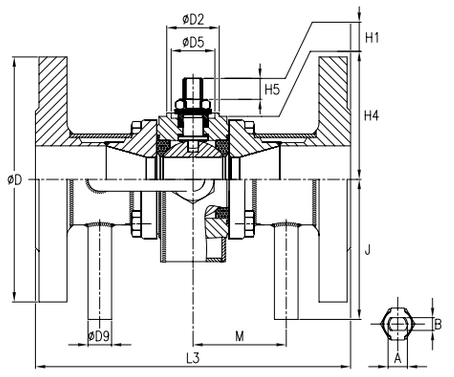
DN	ISO 5211	L	L1	L5	H1	H4	H5	øE	E2	øD1	øD2	øD3	D4	øD5	øD9	A	B	Ball bore
8	F03	65.0	20.4	112.0	10	30	7	45	62	-	25	36	M5	22	13.5	9.5	5.4	11.1
10	F03	65.0	20.4	112.0	10	30	7	45	62	-	25	36	M5	22	13.5	9.5	5.4	11.1
15	F03	65.0	20.4	112.0	10	30	7	45	62	-	25	36	M5	22	13.5	9.5	5.4	11.1
20	F03	72.5	24.5	127.0	10	32	7	52	77	-	25	36	M5	22	13.5	9.5	5.4	14.2
25	F04	85.4	31.4	184.0	15	38	12	60	84	-	30	42	M5	25	17.2	11.1	7.5	20.6
32	F04	99.3	41.3	194.0	22	36	12	68	94	-	30	42	M5	25	21.3	11.1	7.5	25.4
40	F05	110.4	48.4	202.0	29	42	16	76	102	-	35	50	M6	30	21.3	14.3	8.9	31.7
50	F05	126.3	56.3	224.0	30	46	16	88	114	-	35	50	M6	30	21.3	14.3	8.9	38.0
65	F07	142.6	71.4	214.0	16	70	16	-	-	143	55	70	M8	45	21.3	14.3	8.9	50.0
80	F07	169.5	88.9	245.0	54	99	17	-	-	165	55	70	M8	45	21.3	22.5	19.0	62.0
100	F10	214.0	108.5	277.5	54	114	17	-	-	206	70	102	M10	64	21.3	22.5	19.0	82.4
125	F10	277.0	134.6	308.0	54	128	17	-	-	234	70	102	M10	64	21.3	22.5	19.0	100.0
150	F10	307.0	134.6	308.0	54	128	17	-	-	234	70	102	M10	64	21.3	22.5	19.0	100.0
200	F12	409.0	189.1	302.0	72	186	28	-	-	345	85	125	M12	65	21.3	35.0	28.5	150.0

VALVES WITH **3 PIECE HEATING JACKET**

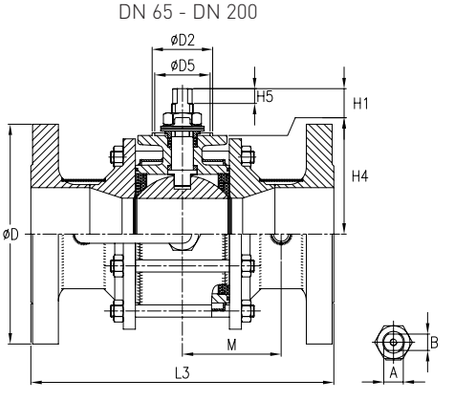
3 PIECE BALL VALVES WITH ISO TOP FLANGE DN 8 - DN 150 FULL BORE / DN 15 -DN 200 REDUCED BORE
HEATING JACKET ON BODY AND END CONNECTIONS
FLANGED VERSION

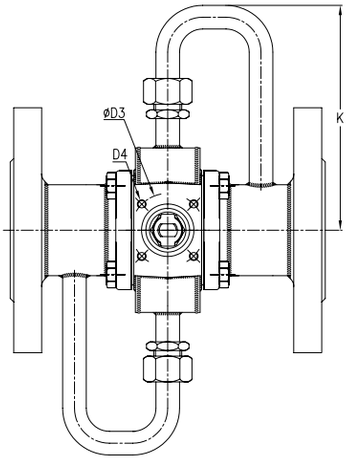
RA DN 65, 3 piece jacket

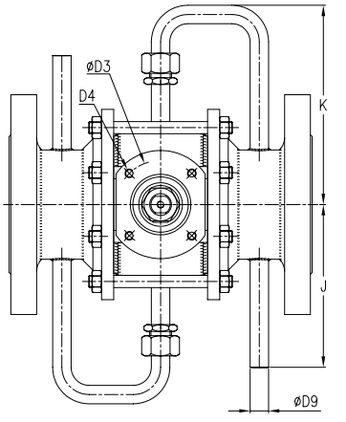
DN 15 - DN 50



DN 65 - DN 200







TECHNICAL DETAILS

- Stainless steel versions only
- For further details on end connections and top flange variations, see valve details Series RA
- Optional metal seated version for high temperature and/or abrasive applications
- Jacket parameters: standard PN10 rating, optional PN20, maximum temperature 200°C
- Tracing with steam, thermal oil or hot water
- Optional jacket connection are male or femal threaded, flanged, welding neck or butt weld

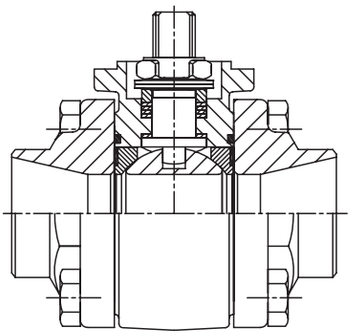
CE PED module H up to category III

DIMENSIONS (mm)

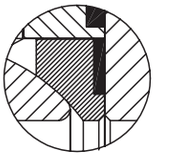
DN	ISO 5211	L3 series 1	M	J	K	H1	H4	H5	øD PN16	øD2	øD3	D4	øD5	øD9	A	B	Ball bore
10	F03	130	33	55	115	10	30	7	90	25	36	M5	22	10.2	9.5	5.4	11.1
15	F03	130	33	60	115	10	30	7	95	25	36	M5	22	13.5	9.5	5.4	11.1
20	F03	150	38	65	120	10	32	7	105	25	36	M5	22	13.5	9.5	5.4	14.2
25	F04	160	44	70	125	15	38	12	115	30	42	M5	25	13.5	11.1	7.5	20.6
32	F04	180	51	80	145	22	36	12	140	30	42	M5	25	13.5	11.1	7.5	25.4
40	F05	200	58	85	150	29	42	16	150	35	50	M6	30	13.5	14.3	8.9	31.7
50	F05	230	67	95	160	30	46	16	165	35	50	M6	30	13.5	14.3	8.9	38.0
65	F07	290	85	105	150	16	70	16	185	55	70	M8	45	21.3	14.3	8.9	50.0
80	F07	310	95	110	160	54	99	17	200	55	70	M8	45	21.3	22.5	19.0	62.0
100	F10	350	110	120	180	54	114	17	220	70	102	M10	64	21.3	22.5	19.0	82.4
125	F10	400	130	135	200	54	128	17	250	70	102	M10	64	21.3	22.5	19.0	100.0
150	F10	480	150	155	200	54	128	17	285	70	102	M10	64	21.3	22.5	19.0	100.0
200	F12	600	190	180	240	72	186	28	340	85	125	M12	65	21.3	35.0	28.5	150.0

METAL SEATED

3 PIECE BALL VALVES
DN 20 - DN 150 FULL BORE / DN 25 - DN 200 REDUCED BORE
HIGH TEMPERATURE APPLICATIONS UPTO 400°C



RA DN 40 with metal seats



Metal seat type

KTM MECAFRANCE METAL SEALING SYSTEM AND THE GRAPHITE SEALING SYSTEMS ARE FULLY INTERCHANGEABLE WITH THE STANDARD PTFE SYSTEMS OF THE VALVE SERIES RA. NO FURTHER MODIFICATIONS TO THE VALVE BODY OR ENDS PIECES ARE REQUIRED MAKING THESE DESIGNS EXTREMELY VERSATILE.

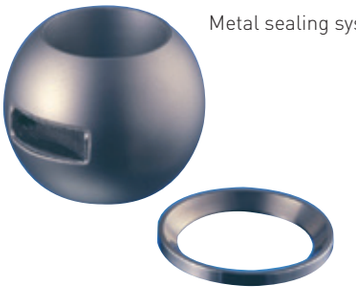
METAL SEALING SYSTEM

For the metal sealing system Tungsten Carbides are sprayed with ultrasonic speeds, in cold condition, on the surfaces of the ball and seats. As no catalysts or additives are applied the surface layer is of a 100% homogeneous structure, resulting in an optimum protection of the under laying materials. Seats and ball are then ground, polished and lapped for a perfect match. Ball and seats are a complete set and do not have to be exchanged by an other ball or seats. The seats are loaded with graphite Belleville washers ensuring a bi-directional tight shut off performance.

This unique, high quality sealing system can be applied on all abrasive applications such as granulate transport, water glass, PTFE powder transport, pulp handling, polymerizing MMA, phosphate powder transport, sugar production, and wet steam.

METAL SEATED

2 AND 3 PIECE BALL VALVES
DN 20 - DN 200 FULL BORE / DN 25 - DN 250 REDUCED BORE



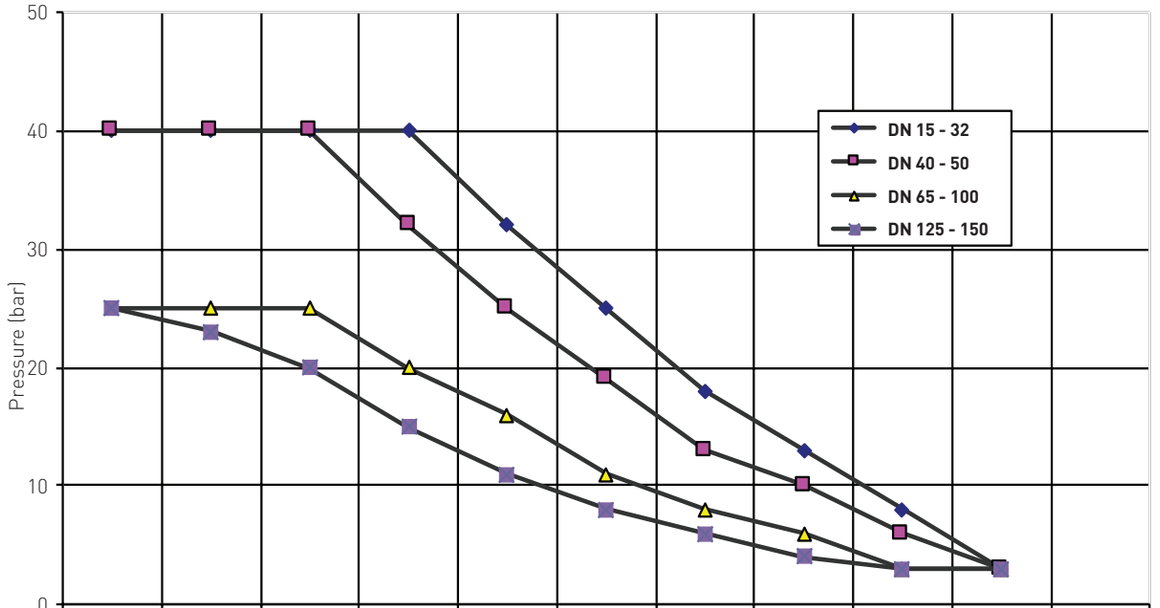
Metal sealing system

TECHNICAL DETAILS

- For dimensional details refer to Series RA valves with carbon and metal sealing systems
- Stainless steel and carbon steel bodies
- Metal sealing system:
  - Titanium stabilized stainless steel ball and seats (DIN 1.4571)
  - Tungsten Carbide layers applied on ball and seat surfaces
  - Seats are axially compressed with graphite washers
  - Maximum temperature: 400°C (for higher temperatures contact your local KTM Mecafrance representative)
  - Maximum pressure rating: PN40 in function of temperature and valve size
  - Bi-directional gas tight shut off performance due to optional lapping process
  - Can be installed in standard KTM Mecafrance ball valves: No modifications required
  - Excellent chemical and abrasion resistance
- The unique sealing system can be installed in all standard KTM Mecafrance 3 piece ball valves without modifying the end pieces or body. In this way standard PTFE seats can be replaced with this solution.

EMERSON™

METAL SEATED
preloaded with Graphite 1.65 mm, 0.35 mm and 0.20 mm
06 / 2017



Temperature (C°)	20 C°	50 C°	100 C°	150 C°	200 C°	250 C°	300 C°	350 C°	400 C°	450 °C
DN 15 - 32	40	40	40	40	32	25	18	13	8	3
DN 40 - 50	40	40	40	32	25	19	13	10	6	3
DN 65 - 100	25	25	25	20	16	11	8	6	3	3
DN 125 - 150	25	23	20	15	11	8	6	4	3	3

NOTES

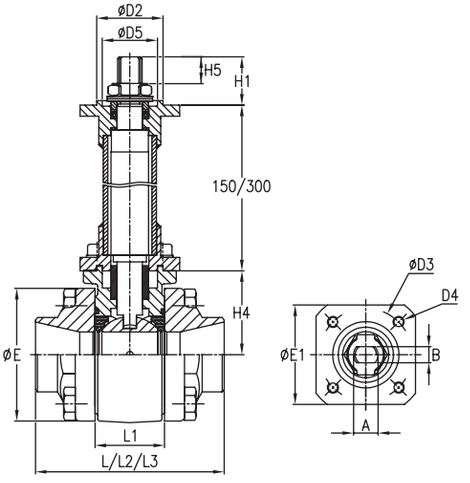
* Full bore
- Please always verify maximum body ratings as each above mentioned diagram presents data for the seat material only
- For other material options, please contact your nearest KTM Mecafrance representative

CRYOGENIC VALVES
DN 8 -DN 40 FULL BORE / DN 15 - DN 50 REDUCED BORE

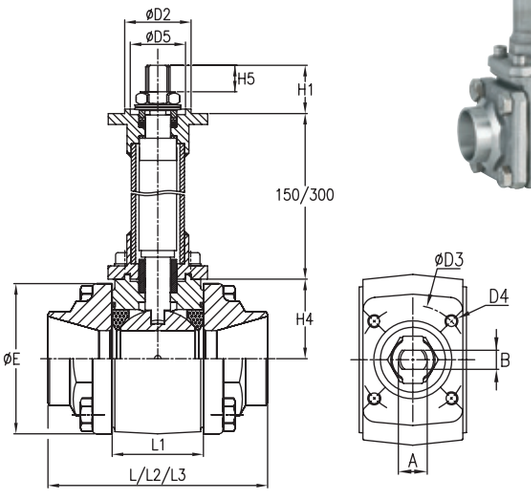
3 PIECE BALL VALVES WITH ISO TOP FLANGE, SERIES RA-CRYO
BUTT WELD, THREADED, SOCKET WELD AND FLANGED VERSION

RA 66 CBS DN 25

DN 8 - DN 25

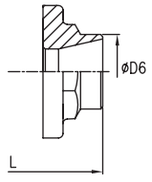


DN 32 - DN 50

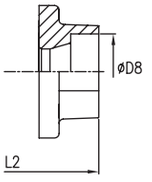


RA 66 CBS DN 25

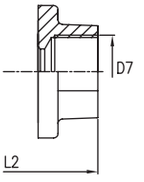
AVAILABLE END CONNECTION OPTIONS:



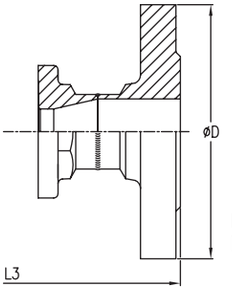
Butt weld: CBS



Socket weld: CBSW



Threaded: CBG



Flanged: CBF
(Cast versions available on request)

DESIGN FEATURES

- Reduced and full bore options available
- Stainless steel trim
- Forged end connections
- Integrated ISO 5211 top flange for easy automation
- Wide variety of seat material options available
- Temperature range: -196°C to +80°C
- Pressure balancing hole in upstream side of the ball
- Scalloped seat design
- DN 15 - DN 65 in compliance with EN 1626 (on request)
- Cryo extensions to be mounted uniquely vertically
- Pressure rating: maximum PN100 in function of valve size and seat material selection
- Valve design according EN 13445
- Valves are degreased according EN 12300
- Valves are individually packed in polyethylene bags
- Size range: DN 15 - DN 150: RA version

DIMENSIONS (mm)

DN	ISO 5211	L	L1	L2	L3 series 1	H1	H4	H5	øE	øE1	øD	øD2	øD3	D4	øD5	øD6	D7	øD8	A	B	Ball bore
15	F03	65.0	20.4	65.0	130	10.5	30	7.0	45	45	95	25	36	M5	22	21.3	½"	21.8	9.5	5.4	11.1
20	F03	72.5	24.5	72.5	150	10.5	32	7.0	52	45	105	25	36	M5	22	26.9	¾"	27.4	9.5	5.4	14.2
25	F04	85.4	31.4	85.4	160	22.0	38	12.0	60	45	115	30	42	M5	25	33.7	1"	34.2	11.1	7.5	20.6
32	F04	99.3	41.3	99.3	180	22.0	36	12.0	68	45	140	30	42	M5	25	42.4	1¼"	43.0	11.1	7.5	25.4
40	F05	110.4	48.4	110.4	200	29.0	42	16.5	76	52	150	35	50	M6	30	48.3	1½"	49.0	14.3	8.9	31.7
50	F05	126.3	56.3	126.3	230	29.0	46	16.5	88	52	165	35	50	M6	30	60.3	2"	61.1	14.3	8.9	38.0

NOTES

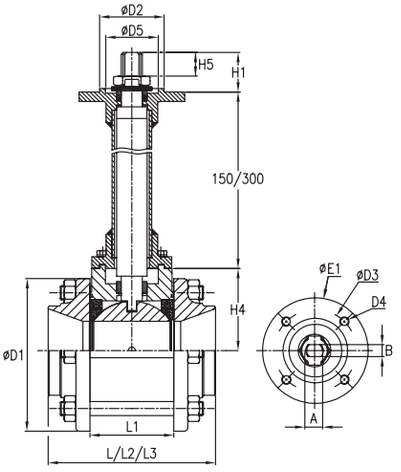
- All dimensions are related to reduced bore valves. For full bore valves please apply the dimensions of the next diameter (except L3, ØD, ØD6, D7 and ØD8 which is identical in both instances)

CRYOGENIC VALVES
SERIES DN 65 - DN 150

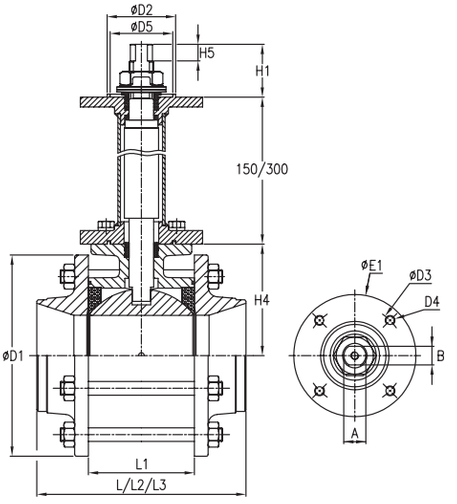
3 PIECE BALL VALVES WITH ISO TOP FLANGE, SERIES RA-CRYO
BUTT WELD, THREADED, SOCKET WELD AND FLANGED VERSION

TF4215/TFM1600

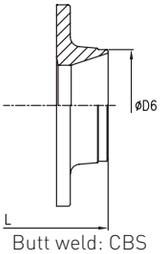
DN 65



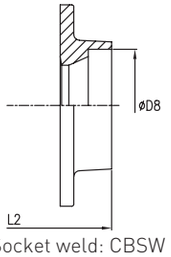
DN 80 - DN 150



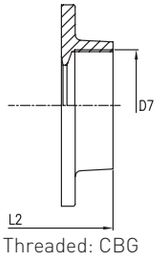
AVAILABLE END CONNECTION OPTIONS:



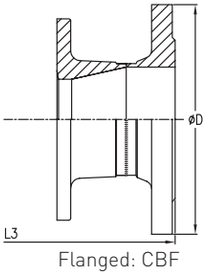
Butt weld: CBS



Socket weld: CBSW



Threaded: CBG



Flanged: CBF

APPROVALS AND CERTIFICATES

- TA-Luft according VDI 2440
- For 3-way valve version, please contact you local KTM Mecafrance representative

CE PED module H up to category III

DIMENSIONS (mm)

	ISO				L3					øD										Ball
DN	5211	L	L1	L2	series 1	H1	H4	H5	øE1	PN16	øD1	øD2	øD3	D4	øD5	øD6	D7	øD8	A	B	bore
65	F07	142.6	71.4	160	290	35	70	21.5	90	185	143	55	70	M8	45	76.1	2½"	77.0	18.0	12	50.0
80	F07	169.5	88.9	180	310	54	99	28.0	76	200	165	55	70	M8	45	88.9	3"	90.0	22.5	19	62.0
100	F10	214.0	108.5	214	350	54	114	28.0	125	220	206	70	102	M10	64	114.3	4"	115.5	22.5	19	82.4
125	F10	277.0	134.6	-	400	54	128	28.0	125	250	234	70	102	M10	64	139.7	-	-	22.5	19	100.0
150	F10	307.0	134.6	-	480	54	128	28.0	125	285	234	70	102	M10	64	168.3	-	-	22.5	19	100.0

NOTES

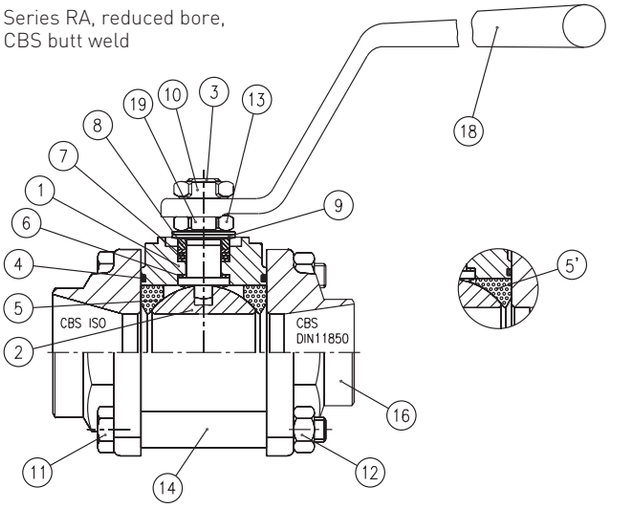
- All dimensions are related to reduced bore valves. For full bore valves please apply the dimensions of the next diameter (except L3, ØD, ØD6, D7 and ØD8 which is identical in both instances)

MICRO-CLEAN

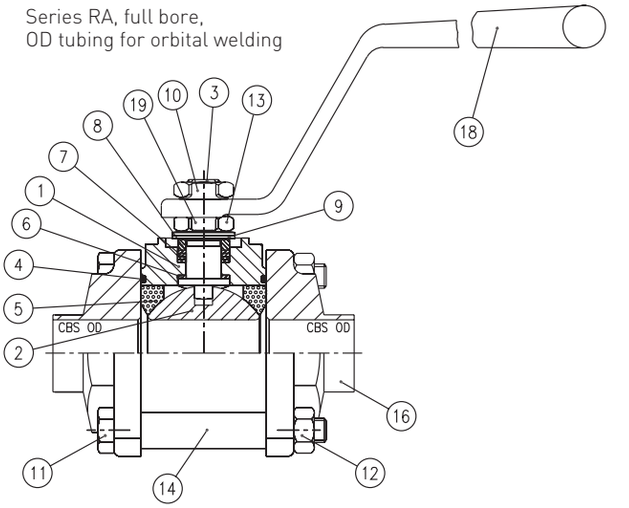
3 PIECE BALL VALVES WITH ISO TOP FLANGE DN 8 - DN 200
FOR HYGIENIC AND SANITARY APPLICATIONS

RA66 DN 25, CBK Tri-Clamp with extension and round handwheel

Series RA, reduced bore,
CBS butt weld



Series RA, full bore,
OD tubing for orbital welding



DESIGN FEATURES

- For dimensional details, see series RA
- Valves are degreased according EN 12300
- Valves are individually packed in polyethylene bags
- Electro-polished internal/external surface (optional)
- Cavity fillers (optional)
- External polishing (optional)
- FDA approval on components

APPLICATIONS

- Pharmacy
- Biotechnology
- Photomechanical industry
- Food industry
- Manufacturing of microchips
- Beverage

CE PED module H up to category III

PARTS LIST

			Standard version	
Parts no.	**Description**	**Ball valve**	**Standard processing**	**Micro-Clean version**
1	Body	Body, internal	3.2 - 6.3 µm	0.8 µm
2	Ball	Ball, internal	3.2 - 6.3 µm	0.8 µm
3	Stem	Ball, external	0.4 µm	0.4 µm
4	Body seal			
5	Seat	Butt weld end	3.2 - 6.3 µm	0.8 µm
5'	Cavity filler			
6	Stem seal			
7	Stem packing			
8	Stem packing follower			
9	Belleville washer			
10	Lock washer			
11	Body screw/bolting			
12	Nut			
13	Stem Nut			
14	Sleeve			
16	End connections			
18	Lever			
19	Lock washer			

MICRO-CLEAN

3 PIECE BALL VALVES WITH ISO TOP FLANGE DN 8 - DN 200
FOR HYGIENIC AND SANITARY APPLICATIONS

THIS UNIQUE KTM MECAFRANCE BALL VALVE RANGE IS EXTREMELY SUITABLE FOR SANITARY AND HYGIENIC APPLICATIONS AS ITS CONSTRUCTION CAN BE FULLY CLEANED.

The surface cleaning is guaranteed as the Micro-Clean's internal surfaces of the ball, body and the ends are mechanically machined and polished (upon request down to 0.2 µ). After the polishing these components are electro-polished. This refined process does smoothen the shape of the surface so that potential pollutions or sources for contamination can not get trapped in the surface.

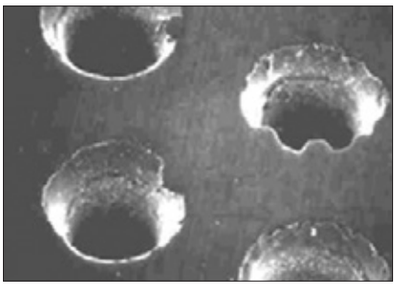
The picture below clearly explain the advantages of the electro-polishing process.

The internal cavity cleaning is obtained either by applying external CIP nipples, or by using the unique and patented KTM Mecafrance IPC technology as described elsewhere in this brochure. In addition, cavity fillers are installed on request, thus reducing the 'dead area' inside the valves to an absolute minimum (the number of fillers varies per valve type and size).

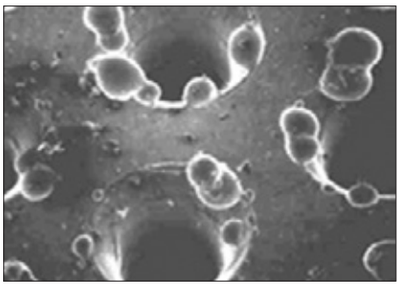
Micro-Clean valves can be provided with most common flange ends, but also with Tri-Clamps connections, or extended OD-tubing for orbital welding robots.

After assembly and testing, all Micro-Clean valves are degreased according EN 1300 and wrapped individually in polyethylene bags.

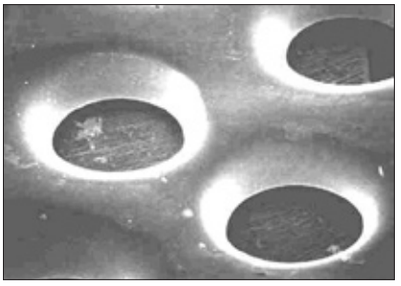
Micro-Clean valves are applied worldwide successfully into the food and beverage industry, and into numerous pharmaceutical and biotechnological applications.



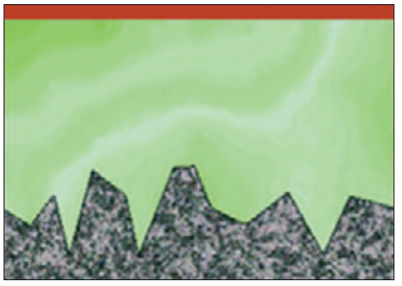
Mechanically machined surface



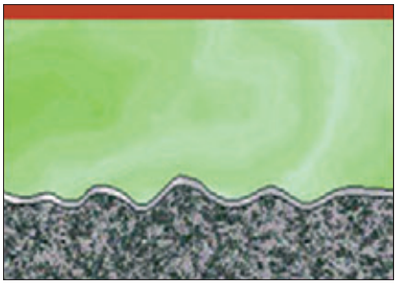
Bacteriological polluted surface



Electro-polished surface

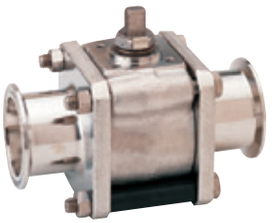


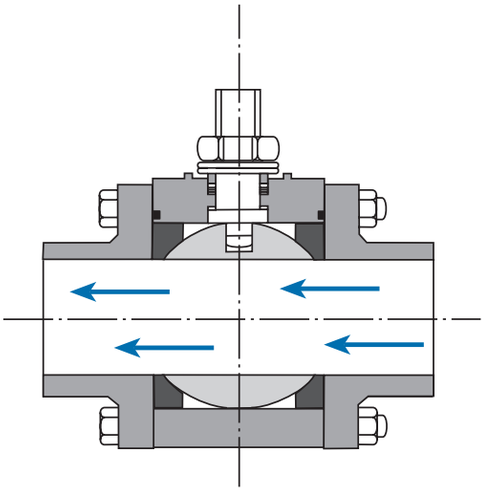
Before the electro-polishing



After the electro-polishing

TRUE-TUBE™





A NATURAL EXTENSION OF OUR STANDARD MICRO-CLEAN DESIGN IS THE KTM MECAFRANCE TRUE-TUBE™ RANGE.

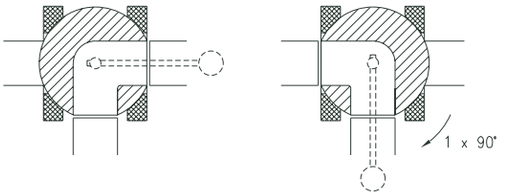
This range is designed in accordance with ASME BPE-1997, Bio processing equipment. Being a truly straight through design, the True-Tube™ range is the ultimate choice to reduce the risk of product contamination and/or pressure drops. The internal dimension of the tube type end pieces are the same. There are no lips or crevices to harbor harmful media deposits. The tube butt weld ends have a sulphur content between 0.005% and 0.017% ensuring weld quality to comparable tubing. Manual or automated, KTM Mecafrance Micro-Clean ball valves provide reliable, contaminate free, flow control in the high purity gases, fluids and vacuum services, biotechnological applications.

Details and options			Code
Port	-	True-Tube (Port ID of the valve matches the ID of the SS OD tubing)	T/T
Internal surface finish designation	-	25 µin / 0.625 µm Ra	V3
	-	20 µin / 0.5 µm Ra (optional/on request)	V2
	-	15 µin / 0.375 µm Ra (optional/on request)	V1
Body and end pieces	-	Bodies DN 10 - DN 50 (NPS 1/2 to NPS 2) DIN 1.4404 (A182-316L)	6
		Bodies DN 65 - DN 100 (NPS 2 1/2 - NPS 4) DIN 1.4408 (A351-CF8M)	6
Ball and stem	-	DIN 1.4408 (316)	6
Seats	-	Virgin PTFE	TF
	-	TFM 1600	TE
	-	TF-4215® enhanced 25% carbon filled PTFE	HT
	-	UHMWPE	UU
Body seals	-	Virgin PTFE	T
	-	UHMWPE	U
	-	TF-4215® enhanced 25% carbon filled PTFE	H
End connections	-	O.D. tube (SS) extended length for automatic/orbital welding DN 15 - DN 80 (NPS ½ to NPS 3) OD tube WT = 1.65 mm (0.065"), DN 100 (NPS 4) OD tube WT = 2.1 mm (0.083")	TBX
	-	Tri-Clamp style	KCE
Valve body style/design (standard feature)	-	ISO 5211 flange and bolting pattern design	I
Handle options	-	SS lever handle (except for DN 100 (NPS 4) and larger valves, H - CS pipe lever handle)	H
	-	SS oval handle (for DN 40 (NPS 1½) and smaller valves)	O
	-	SS round handle (for DN 40 (NPS 1½) and smaller valves)	R
	-	SS latch locking handle (for DN 50 (NPS 2) and smaller valves)	L
	-	Gear operator (recommended for DN 100 (NPS 4) valves)	G

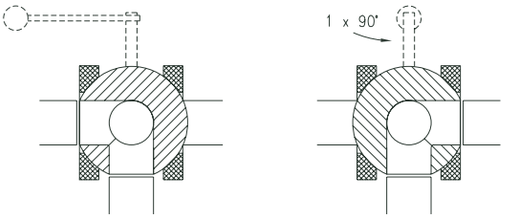
3-WAY VALVES

3 PIECE BALL VALVES WITH ISO TOP FLANGE DN 8 - DN 150 FULL BORE / DN 15 - DN 200 REDUCED BORE

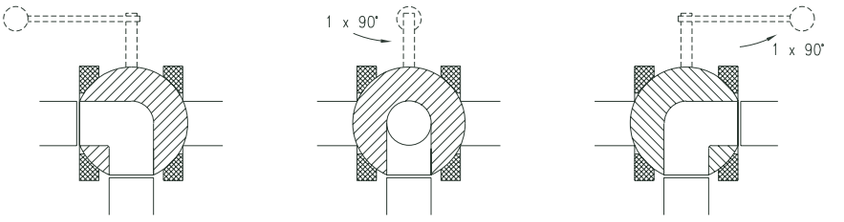
Ball with L-bore
Horizontal center connection
90° rotation



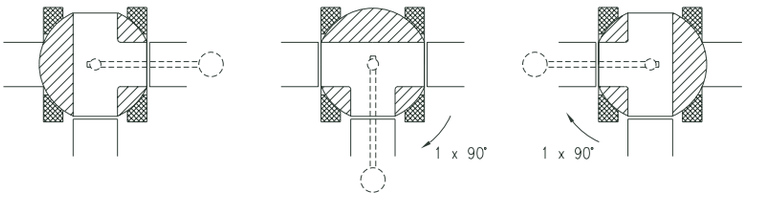
Ball with L-bore
Vertical center connection
90° rotation



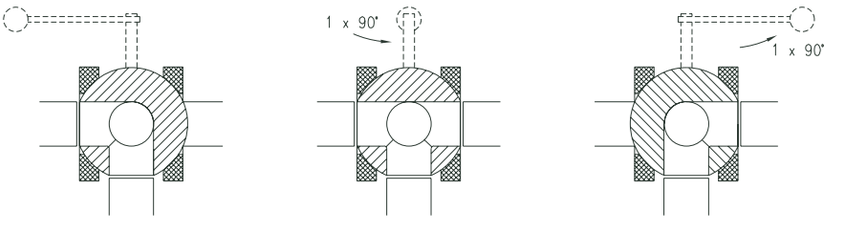
Ball with L-bore
Vertical center connection
180° rotation



Ball with T-bore
Horizontal center connection
180° rotation



Ball with T-bore
Vertical center connection
180° rotation



DESIGN FEATURES

- Maximum differential pressure = 6 bar
- Carbon steel and stainless steel body, stainless steel trim
- Not seated center connection of the ball. In case of T-bores the medium can flow around the ball and can exit through the center connection. The third way will not be tighted.
- For valve details: see RA pages

CE PED module H up to category III

ORDERING EXAMPLE

3 6 L H 4 1 1 Type

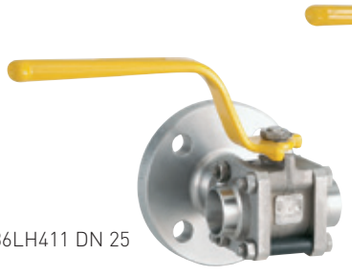
- Side connection type left (see code below)
- Side connection type right (see code below)
- Center connection type (see code below)
- Position of center connection (H = horizontal; V = vertical)
- Ball bore (L = L-shaped; T = T-shaped)
- Material (5 = carbon steel; 6 = stainless steel)
- Series (3 = three-way version)

CODE FOR CONNECTION TYPE

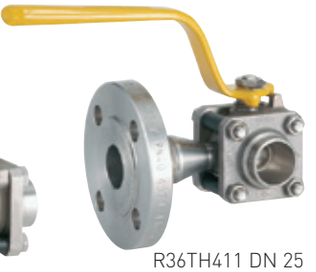
1 = weld ends
2 = BSPP according to ISO 228-1 and BSPT according to ISO 7
3 = NPT according to ANSI B1.20
4 = flange connection

3-WAY VALVES

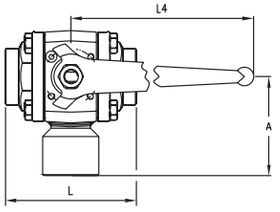
3 PIECE BALL VALVES WITH ISO TOP FLANGE DN 8 - DN 150



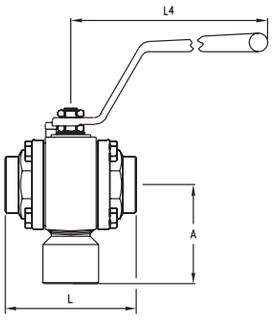
R36LH411 DN 25

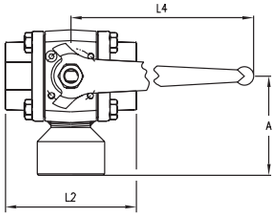


R36TH411 DN 25

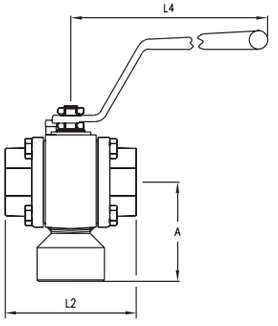


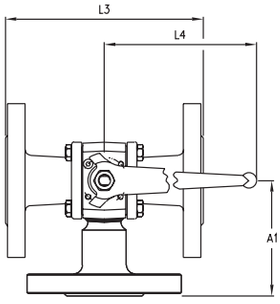
DN 15 - DN 200
Butt weld side connections
and center connection





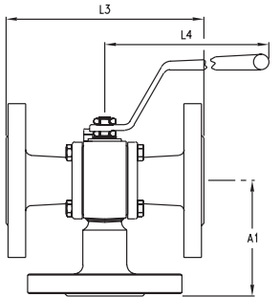
DN 15 - DN 100
Threaded side connections
and socket weld
center connection





Horizontal connection
(top view)

DN 15 - DN 200
Flanged side connections
and center connection



Vertical connection
(side view)
(Body shown for DN 15 - DN 50)

DIMENSIONS (mm)

DN	A	A1	L	L2	L3 series 1	L4	Ball bore	Inside diameter of center connection
8	54	-	65.0	65.0	-	140	11.1	10
10	54	90	65.0	65.0	130	140	11.1	10
15	54	90	65.0	65.0	130	140	11.1	10
20	64	95	72.5	72.5	150	140	14.2	12
25	64	100	85.4	85.4	160	180	20.6	18
32	75	105	99.3	99.3	180	180	25.4	25
40	80	115	110.4	110.4	200	200	31.7	30
50	90	125	126.3	126.3	230	200	38.0	35
65	115	145	142.6	160.0	290	250	50.0	35 [1]
80	175	155	169.5	180.0	310	480	62.0	62
100	210	175	214.0	214.0	350	480	82.4	82
125	-	240	277.0	-	400	480	100.0	96
150	-	240	307.0	-	480	480	100.0	96

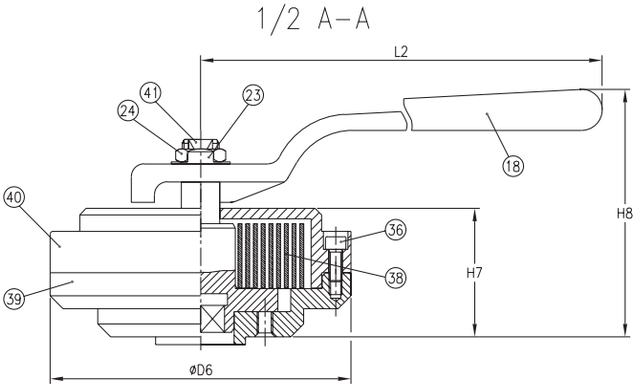
NOTES
- All dimensions are related to reduced bore valves. For full bore valves please apply the dimensions of the next diameter (except L3, which is identical in both instances)
- [1] 45 on request

SPRING RETURN HANDLE ('DEAD MAN'S LEVER')

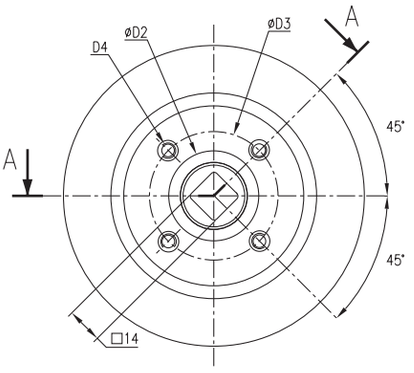
RA DN 25, butt weld with spring return handle

PARTS LIST

No.	Qty	Description
18	1	Lever
23	1	Lock washer
24	1	Stem nut
36	6	Screw
38	1	Spring
39	1	Lower part of housing
40	1	Upper part of housing
41	1	Control shaft



Type indication: BHM



Connection details

DESIGN FEATURES

- Action: spring-to-open, spring-to-close
- Double inside stop avoids risk on injury
- Maintenance free due to internal grease filling
- Compact, closed housing guaranteeing functionality
- To be mounted on RA valves
- ISO interface enabling standard mounting kits
- Maximum valve size: DN 50 reduced bore, and DN 40 full bore (PTFE or RTFE seats)

APPLICATIONS

- Safety device
- Loading and unloading of dangerous media
- To avoid unintentional use of the valve
- All valves which are operated only for short period of time

ADVANTAGES OF THE SPRING RETURN HANDLE

- The ISO interface enables the use of standard mounting kits
- The torque can be changed through a differentiated pre-tensioning of the spring. In this way, the KTM Mecafrance spring return handle can be used for different nominal diameters
- The double stop on the inside avoids the risk of injury and, through its form stability, it ensures that the switching radius of 90 is adhered to
- A grease filling in the housing prevents spring corrosion
- The compact, closed housing rules out the possibility of any dirt foreign particles infiltrating, which could affect the function of the KTM Mecafrance spring return handle
- It can easily be assembled on Series RA KTM Mecafrance ball valves - even after valve is in service
- It can be used in either of the two switching positions, 'spring to close' or 'spring to open'
- The spring return handle must be operated fully open or fully close. Intermediate position can damage the seats and prevent proper operation of the spring return handle when returning to original position so they must therefore be avoided.

DIMENSIONS (mm)

RB	FB									Md (Nm)		Weight
DN	DN	ISO 5211	L2	øD2	øD3	D4	øD6	H7	H8	Close	Open	(kg)
15	8-10	F05	200	35	50	M6	117	50	95	5	10	2.3
20	15	F05	200	35	50	M6	117	50	95	5	10	2.3
25	20	F05	200	35	50	M6	117	50	95	9	15	2.3
32	25	F05	250	35	50	M6	117	50	96	15	25	2.5
40	32	F05	250	35	50	M6	117	50	96	17	27	2.5
50	40	F05	250	35	50	M6	117	50	96	20	30	2.5

MANUAL OPERATORS

For Series RA

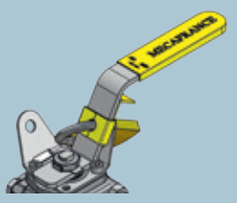
DN 15 - DN 65, high profile
forged carbon steel handle

For Series RA

DN 15 - DN 65, high profile
forged stainless steel handle

For Series RA

DN 15 - DN 65, high profile
stainless steel, lockable handle



For Series RA

DN 80 - DN 250, straight forged carbon steel handle
(Option: bolt-on pad lock provision)

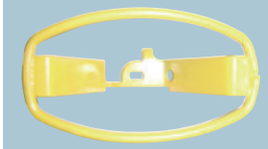
For Series RA

DN 15 - DN 50, stainless steel
extension with bakelite balls,
type RP

For Series RA

DN 15 - DN 50, round carbon
steel handwheel

For Series RA



DN 15 - DN 50, oval carbon steel
handwheel

For Series RA

DN 15 - DN 50, oval stainless
steel handwheel

APPROVALS AND CERTIFICATION

KTM MECAFRANCE RETAINS THE FOLLOWING APPROVALS AND CERTIFICATES

1. Design to EN 13445 / EN 12516 / EN 10213
2. Testing to EN 12266-1/2
3. ISO 9001 (Development, construction, production, mounting and service)
4. Deliveries according AD 2000 – A4
5. TA-Luft according VDI 2440
6. Type approval for transportation according TÜ.AGG
   Acceptance criteria: GGVE/RID, GGVS/ADR
   Test criteria: TRT 024 und TRT 224
7. Type approval according TÜV A
   Acceptance criteria: AD-Regelwerk, Druckbeh-VO, VbF/TRbF, Gas-HL-VO, WHG
   Test criteria: DIN 3230 T5, DIN 3230 T6.
8. Type approval for cryogenic ball valves according § 22 of the Pressure Vessel Code: DruckbehV - i.d.F. dated 21.04.1989 (BGBl. I S. 843)
9. Fire tested according to EN ISO 10497-2010, API 607 5th Ed., API 6FA 3rd Ed.
10. Type approval according Lloyd's Register for Shipping, Offshore, Industrial environment: Report-No. 98/20036
11. Declaration of compliance with regulation EN 1935/2004, material and articles intended to come into contact with food
12. Anti-Static according VGF
13. Oxygen service according BAM VBG 62
14. Food and Drug Approval from the Department of Health and Human Services, USA
15. Type approval Nr. 3131 for the Danish gas industry
16. CE-certification by TÜV Rheinland: CE 0035 - Module H
17. ISO 14001
18. ISO 18001
19. OHSAS 18001

APPROVALS AND **CERTIFICATION**

Certificate

Quality-Assurance System

acc. to Directive 97/23/EC

Certificate no.: 01 202 TWN/Q-01 0001

Name and address of the manufacturer: Taiwan Valve Company Ltd.
No. 3, 24th Road, Industrial Park, Taichung 408,
Taiwan, R.O.C.

Herewith we certify that the above mentioned manufacturer operates a quality system according to the European Directive 97/23/EC. The manufacturer has the permission to affix the following CE marking to pressure equipment described and manufactured in accordance to the scope covered by this Quality-Assurance System:

CE 0035

Tested acc. to Directive 97/23/EC: QS-System (Module H)
(the QS-Modules E1, E, D1 and D are covered by Module H)

Audit report no.: TWN/Q-01 0001

Area of validity: Design and Manufacturing of Industrial Valves, see annex to certificate

Manufacturing plant: Taiwan Valve Company Ltd.
No. 3, 24th Road, Industrial Park, Taichung 408,
Taiwan, R.O.C.

Valid until: January 31 2018

Cologne, November 21, 2014 Dipl.-Ing. Svenja Kreß

TÜV Rheinland-Certification Body for Pressure Equipment
TÜV Rheinland Industrie Service GmbH
Notified Body, ID-No. 0035
Am Grauen Stein, D-51105 Köln

E-014-Rev7

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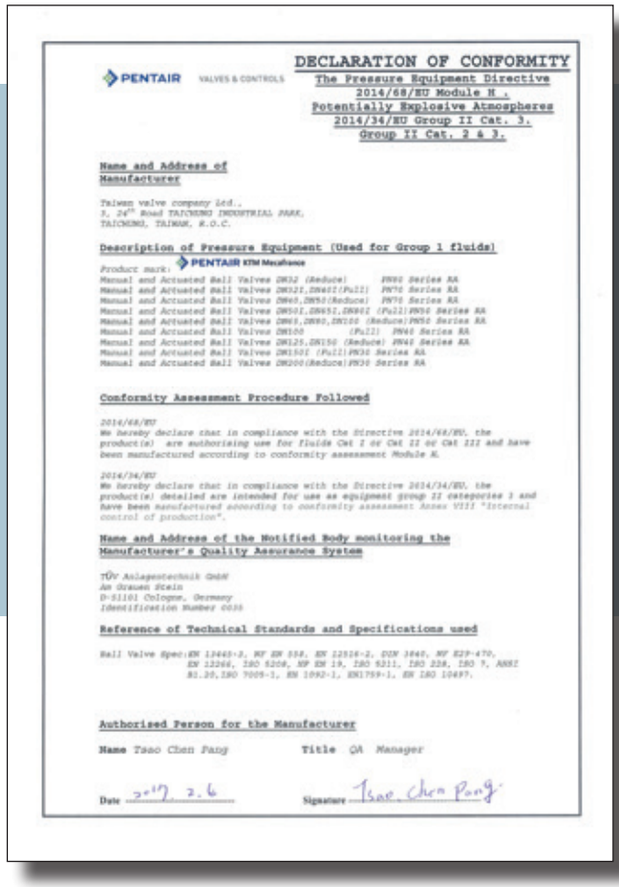


PENTAIR VALVES & CONTROLS

DECLARATION OF CONFORMITY

The Pressure Equipment Directive
2014/68/EU Module H ,
Potentially Explosive Atmospheres
2014/34/EU Group II Cat. 3,
Group II Cat. 2 & 3.

Name and Address of Manufacturer

Taiwan valve company Ltd.,
3, 24TH Road TAICHUNG INDUSTRIAL PARK,
TAICHUNG, TAIWAN, R.O.C.

Description of Pressure Equipment (Used for Group 1 fluids)

Product mark: PENTAIR KTM Mecafrance

Manual and Actuated Ball Valves DN32 (Reduce) DN80 Series HA
Manual and Actuated Ball Valves DN32I,DN40I(Pu2I) PN76 Series HA
Manual and Actuated Ball Valves DN40,DN50(Reduce) PN76 Series HA
Manual and Actuated Ball Valves DN50I,DN65I,DN80I (Pu2I)PN56 Series HA
Manual and Actuated Ball Valves DN65,DN80,DN100 (Reduce)PN56 Series HA
Manual and Actuated Ball Valves DN100 (Pu2I) PN40 Series HA
Manual and Actuated Ball Valves DN125,DN150 (Reduce) PN40 Series HA
Manual and Actuated Ball Valves DN150I (Pu2I)PN30 Series HA
Manual and Actuated Ball Valves DN200(Reduce)PN30 Series HA

Conformity Assessment Procedure Followed

2014/68/EU
We hereby declare that in compliance with the Directive 2014/68/EU, the product(s) are authorising use for fluids Cat I or Cat II or Cat III and have been manufactured according to conformity assessment Module H.

2014/34/EU
We hereby declare that in compliance with the Directive 2014/34/EU, the product(s) detailed are intended for use as equipment group II categories 3 and have been manufactured according to conformity assessment Annex VIII "Internal control of production".

Name and Address of the Notified Body monitoring the Manufacturer's Quality Assurance System

TÜV Anlagentechnik GmbH
Am Grauen Stein
D-51101 Cologne, Germany
Identification Number 0035

Reference of Technical Standards and Specifications used

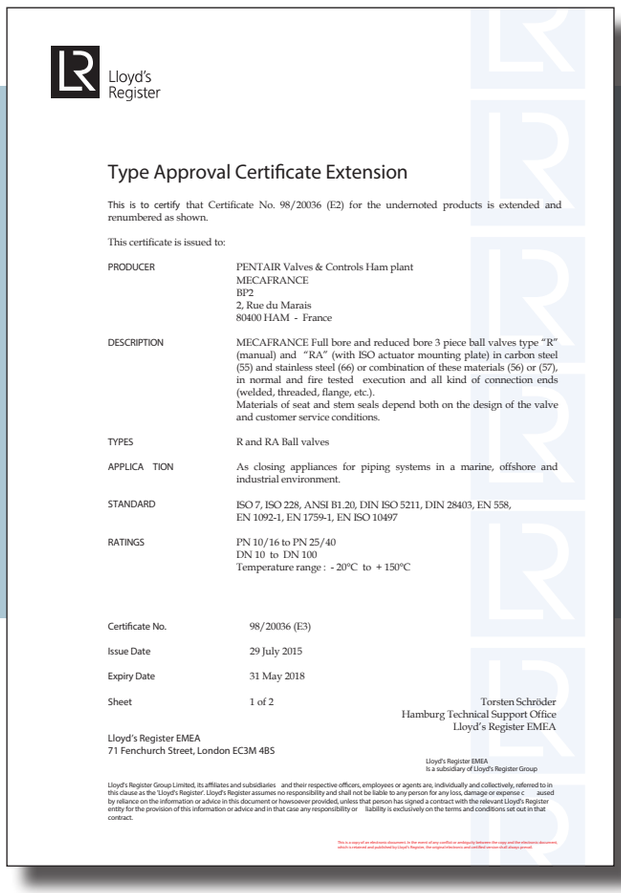
Ball Valve Spec:EN 13463-3, NF EN 558, EN 12516-2, DIN 3840, NF E29-470, EN 12266, ISO 5208, NF EN 19, ISO 5211, ISO 226, ISO 7, ANSI B1.20,ISO 7005-1, EN 1092-1, EN1759-1, EN ISO 10497.

Authorised Person for the Manufacturer

Name Tsao Chen Pang Title QA Manager

Date 2017. 2. 6 Signature Tsao Chen Pang

APPROVALS AND **CERTIFICATION**



Lloyd's Register

Type Approval Certificate Extension

This is to certify that Certificate No. 98/20036 (E2) for the undernoted products is extended and renumbered as shown.

This certificate is issued to:

PRODUCER	PENTAIR Valves & Controls Ham plant MECAFRANCE BP2 2, Rue du Marais 80400 HAM - France
DESCRIPTION	MECAFRANCE Full bore and reduced bore 3 piece ball valves type "R" (manual) and "RA" (with ISO actuator mounting plate) in carbon steel (55) and stainless steel (66) or combination of these materials (56) or (57), in normal and fire tested execution and all kind of connection ends (welded, threaded, flange, etc.). Materials of seat and stem seals depend both on the design of the valve and customer service conditions.
TYPES	R and RA Ball valves
APPLICA TION	As closing appliances for piping systems in a marine, offshore and industrial environment.
STANDARD	ISO 7, ISO 228, ANSI B1.20, DIN ISO 5211, DIN 28403, EN 558, EN 1092-1, EN 1759-1, EN ISO 10497
RATINGS	PN 10/16 to PN 25/40 DN 10 to DN 100 Temperature range : - 20°C to + 150°C

Certificate No.	98/20036 (E3)
Issue Date	29 July 2015
Expiry Date	31 May 2018
Sheet	1 of 2

Torsten Schröder
Hamburg Technical Support Office
Lloyd's Register EMEA

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