TI-P133-99
CMGT Issue 2

M21SiJ ISO and M21ViJ ISO Jacketed Reduced Bore Ball Valves DN40 to DN100 Flanged PN40

Description

The M21_iJ ISO are jacketed reduced bore ball valves, having a single piece body and ISO mounting as standard. They have been designed for applications that use heating fluid to maintain the product viscosity passing through the ball valve (e.g. chocolate, tar, fat and others). These valves are isolating valves, not control valves.

Available types

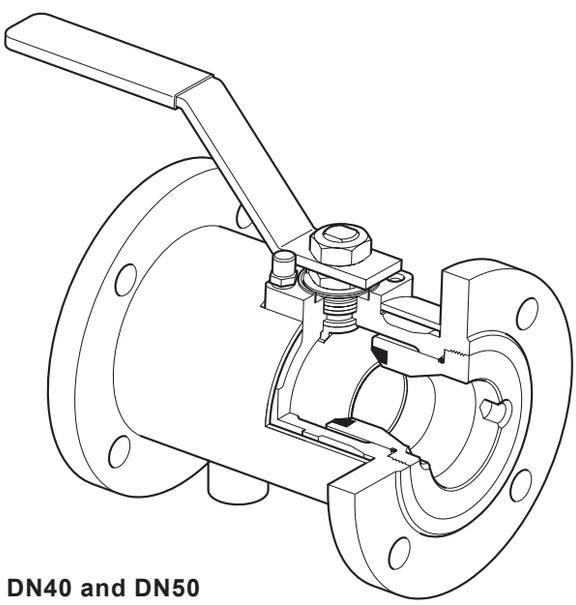
M21SiJ2 ISO	Carbon steel body, PDR 0.8 seats.
M21SiJ3 ISO	Stainless steel body, PDR 0.8 seats.
M21ViJ2 ISO	Carbon steel body, PTFE seats.
M21ViJ3 ISO	Stainless steel body, PTFE seats.

Standards

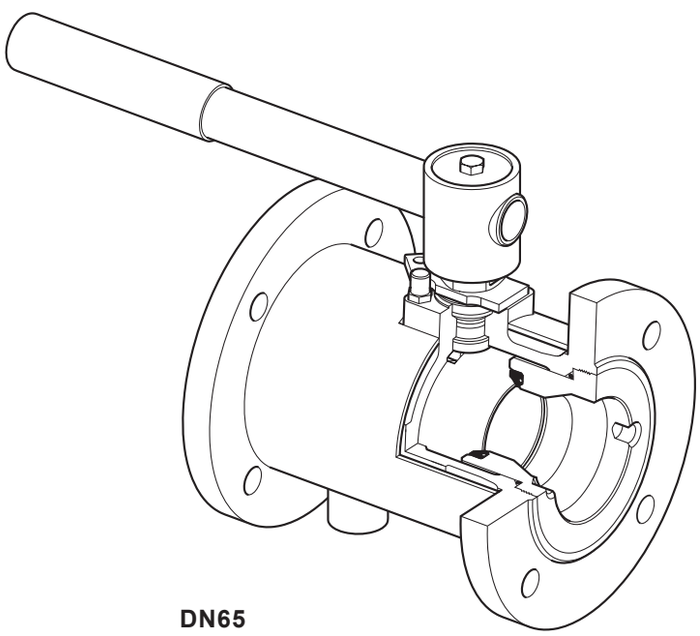
These products fully comply with the requirements of the Pressure Equipment Directive (PED) and carry the CE mark when so required.

Certification

These products are available with certification to EN 10204 3.1.
Note: All certification/inspection requirements must be stated at the time of order placement.



DN40 and DN50



DN65

Polígono Industrial O Rebullón s/n. 36416 - Mos - España - rodavigo@rodavigo.com

Sizes and pipe connections

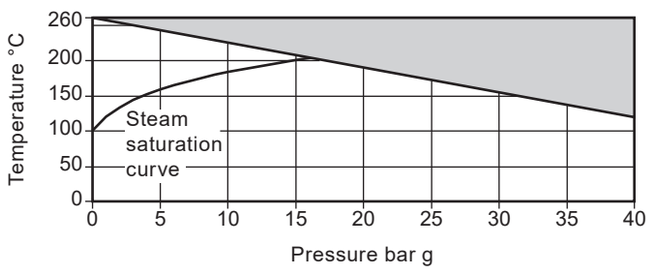
DN40, DN50, DN65, DN80 and DN100
Standard flange: EN 1092 PN40
Face-to-face dimensions are in accordance with DIN 3202 F4
Jacket input and output connections: Threaded ½" BSPT

Technical data

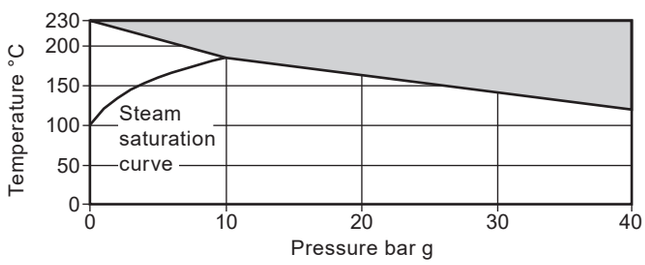
Flow characteristic	Modified linear
Port	Reduced bore
Leakage test procedure to ISO 5208 (Rate A)/EN 12266-1 (Rate A)	
Antistatic device (optional)	Complies with ISO 7121 and BS 5351

Pressure/temperature limits

M21Si - PDR 0.8 seats



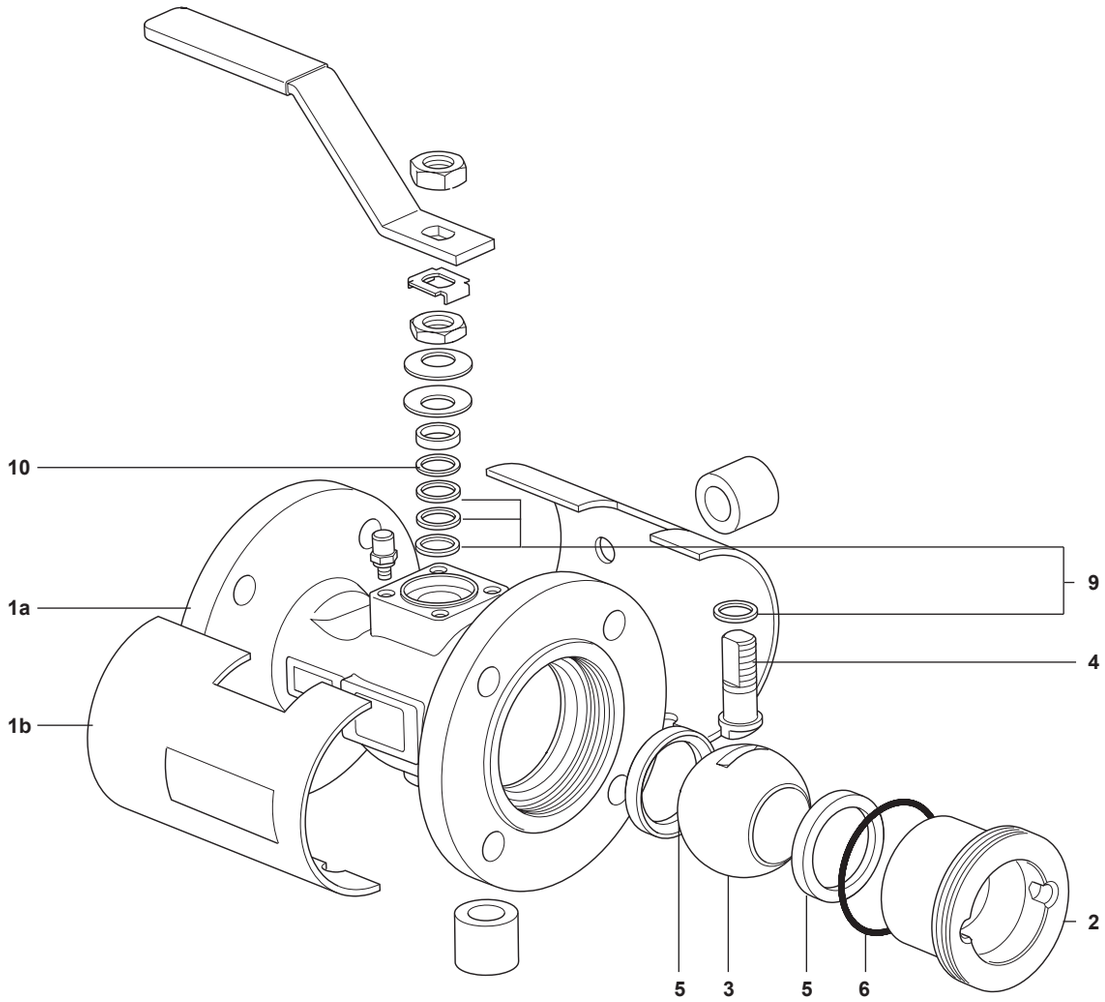
M21Vi - PTFE seats



The product **must not** be used in this region.

Body design conditions			PN40
PMA	Maximum allowable pressure	M21SiJ	40 bar g @ 120 °C
		M21ViJ	40 bar g @ 120 °C
TMA	Maximum allowable temperature	M21SiJ	260 °C @ 0 bar g
		M21ViJ	230 °C @ 0 bar g
PMO	Maximum operating pressure for saturated steam service	M21SiJ	17.5 bar g
		M21ViJ	10 bar g
PMO	Jacket		10 bar g
TMO	Maximum operating temperature	M21SiJ	260 °C @ 0 bar g
		M21ViJ	230 °C @ 0 bar g
ΔPMX	Maximum differential pressure is limited to the PMO		
Designed for a maximum cold hydraulic test pressure of:		Valve	60 bar g
		Jacket	15 bar g

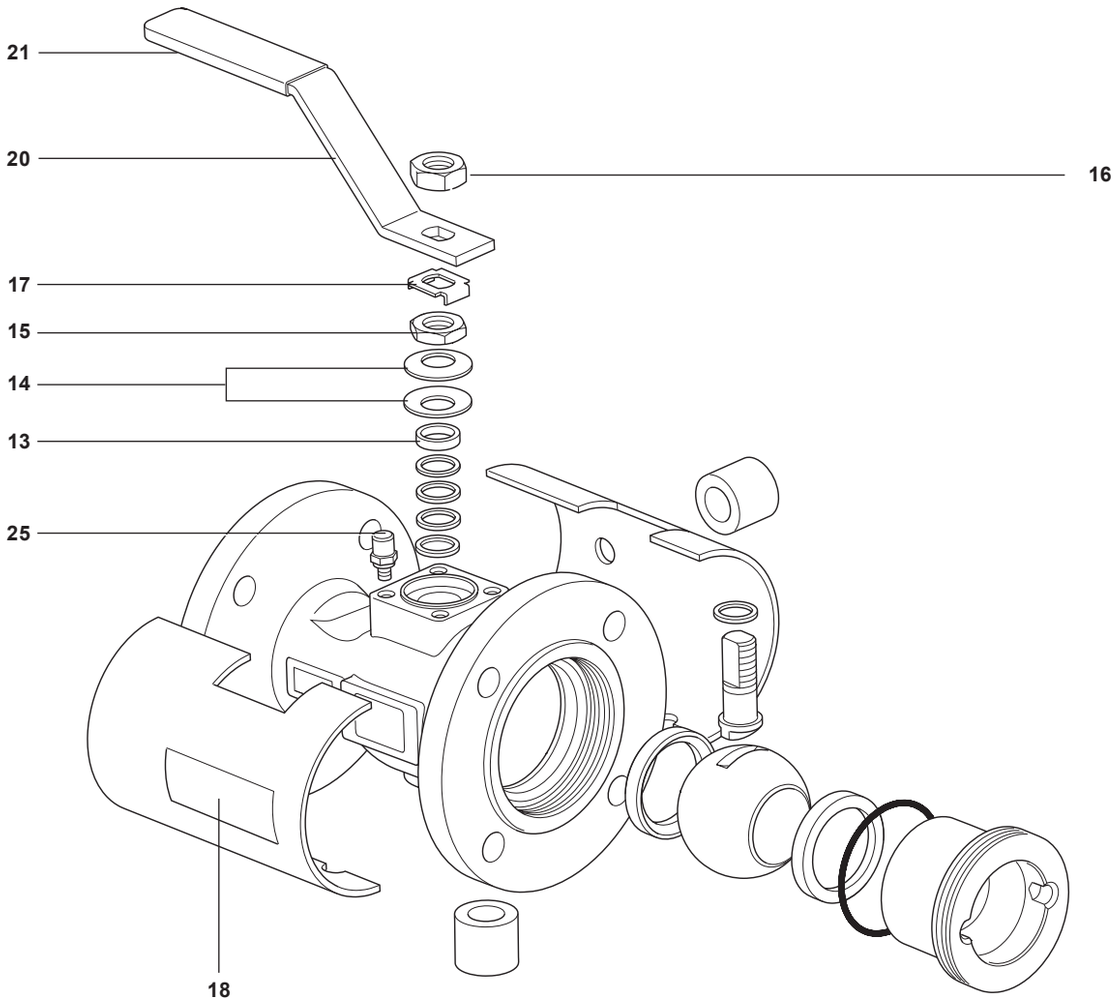
Materials - DN40 and DN50



No.	Part		Material	
1a	Body	M21SiJ2 ISO and M21ViJ2 ISO	Carbon steel	ASTM A216 WCB
		M21SiJ3 ISO and M21ViJ3 ISO	Stainless steel	ASTM A351 CF8M
1b	Jacket	M21SiJ2 ISO and M21ViJ2 ISO	Carbon steel	SAE 1010/SAE 1020
		M21SiJ3 ISO and M21ViJ3 ISO	Stainless steel	AISI 304
2	Insert	M21SiJ2 ISO and M21ViJ2 ISO	Carbon steel	SAE 1040
		M21SiJ3 ISO and M21ViJ3 ISO	Stainless steel	AISI 316
3	Ball		Stainless steel	AISI 316
4	Stem		Stainless steel	AISI 316
5	Seat	M21SiJ2 ISO and M21SiJ3 ISO	Carbon and graphite reinforced PTFE	PDR 0.8
		M21ViJ2 ISO and M21ViJ3 ISO	Virgin PTFE	
6	Insert 'O' ring		EPDM	Geothermal
9	Stem seal		Antistatic R-PTFE	
10	Stem seal		Stainless steel	AISI 304

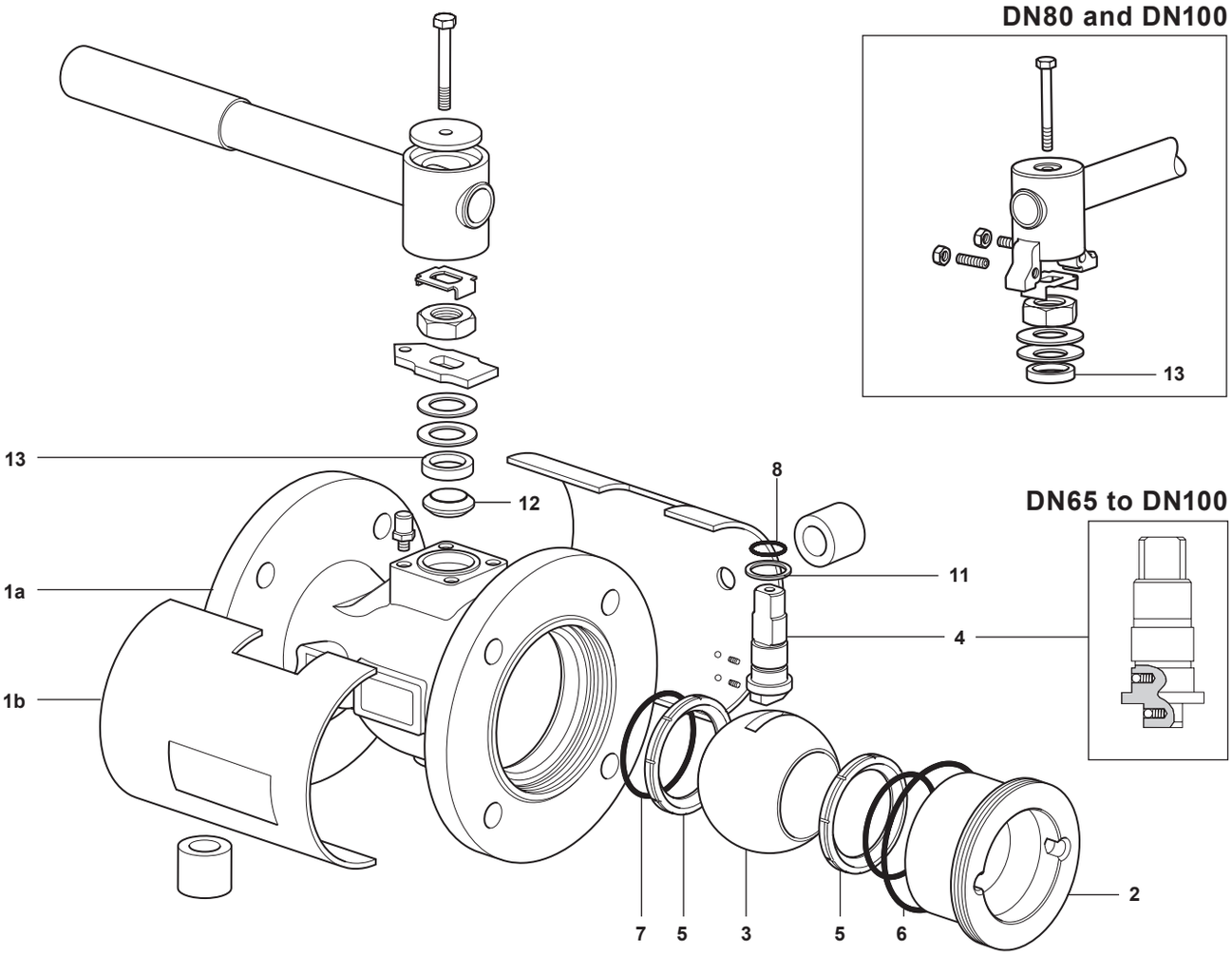
Materials continued on next page

Materials - DN40 and DN50 (continued)



No.	Part	Material	
13	Separator	Zinc plated carbon steel	SAE 1010
14	Belleville washer	Stainless steel	AISI 301
15	Gland nut	Zinc plated carbon steel	SAE 1010/SAE 12L14
16	Upper steam nut	Zinc plated carbon steel	SAE 1010/SAE 12L14
17	Locking plate	Stainless steel	AISI 304
18	Nameplate	Stainless steel	AISI 430
20	Lever	Zinc plated carbon steel	SAE 1010
21	Grip	Vinyl	
25	Stop screw	Zinc plated carbon steel	SAE 12L14

Materials - DN65



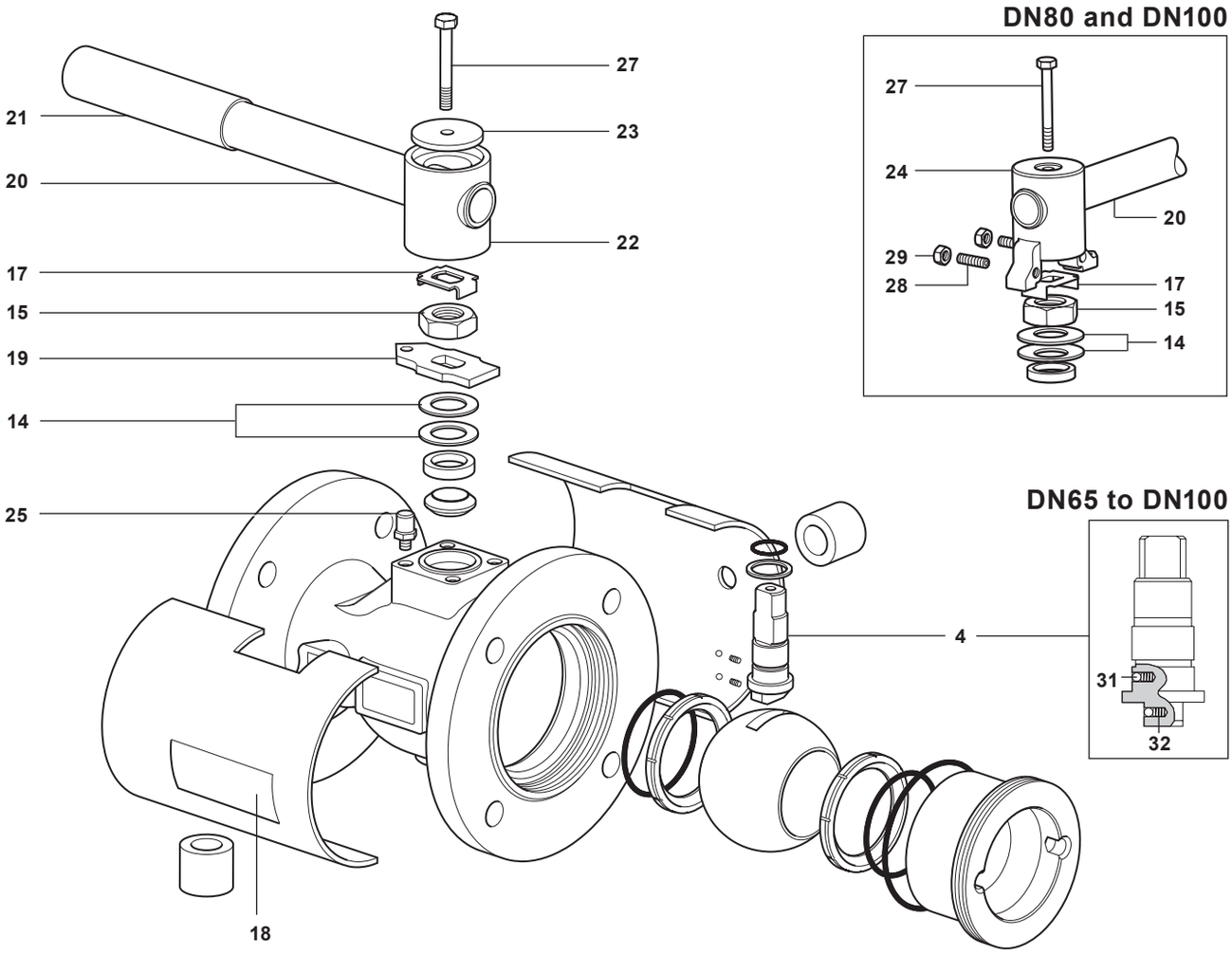
No.	Part		Material	
1a	Body	M21SiJ2 ISO and M21ViJ2 ISO	Carbon steel	ASTM A216 WCB
		M21SiJ3 ISO and M21ViJ3 ISO	Stainless steel	ASTM A351 CF8M
1b	Jacket	M21SiJ2 ISO and M21ViJ2 ISO	Carbon steel	SAE 1010/SAE 1020
		M21SiJ3 ISO and M21ViJ3 ISO	Stainless steel	AISI 304
2	Insert	M21SiJ2 ISO and M21ViJ2 ISO	Carbon steel	SAE 1040
		M21SiJ3 ISO and M21ViJ3 ISO	Stainless steel	AISI 316
3	Ball		Stainless steel	AISI 316
4	Stem		Stainless steel	AISI 316/AISI 420
5	Seat	M21SiJ2 ISO and M21SiJ3 ISO	Carbon and graphite reinforced PTFE	PDR 0.8
		M21ViJ2 ISO and M21ViJ3 ISO	Virgin PTFE	
6	Insert 'O' ring		EPDM	Geothermal
7	Seat 'O' ring		EPDM	Geothermal
8	Stem 'O' ring		EPDM	Geothermal
11	Lower stem seal		Antistatic R-PTFE	
12	Upper stem packing		Virgin PTFE	
13	Separator		Zinc plated carbon steel	SAE 1010

Materials continued on next page

Pipeline ancillaries

Ball valves

Materials - DN65 (continued)

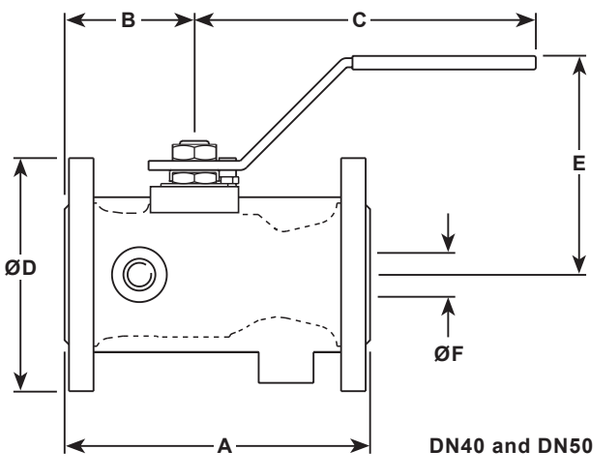


No.	Part		Material	
14	Belleville washer		Stainless steel	AISI 301
15	Gland nut		Zinc plated carbon steel	SAE 1010/SAE 12L14
17	Locking plate		Stainless steel	AISI 304
18	Nameplate		Stainless steel	AISI 430
19	Stop plate with indicator	DN65 only	Zinc plated carbon steel	SAE 1010
20	Lever		Zinc plated carbon steel	SAE 1010
21	Grip		Vinyl	
22	Adaptor	DN65 only	Zinc plated SG iron	
23	Adaptor plate	DN65 only	Zinc plated carbon steel	SAE 1010
24	Adaptor with indicator	DN80 and DN100	Zinc plated SG iron	
25	Stop screw	DN80 and DN100	Zinc plated carbon steel	SAE 12L14
27	Adaptor screw		Zinc plated carbon steel	Grade 5
28	Stop screw		Carbon steel	
29	Adaptor hex. nut	DN80 and DN100	Zinc plated carbon steel	
31	Antistatic device ball		Stainless steel	AISI 302
32	Antistatic device spring		Stainless steel	AISI 301

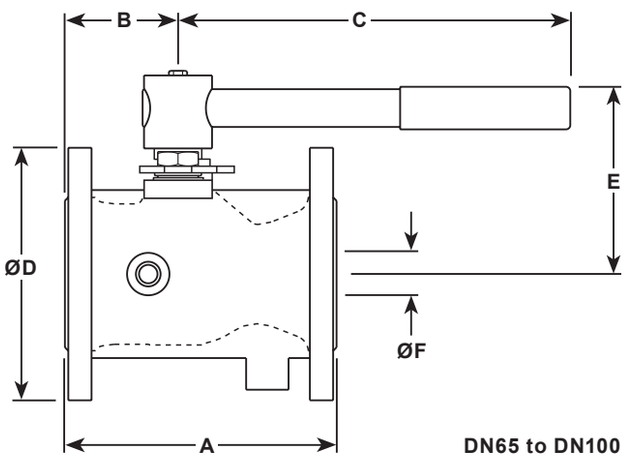
Dimensions/weights (approximate) in mm and kg

PN40 DIN 3202 F4 flanges

Size	A	B	C	D	E	F	Weight
DN40	140	70	186	150	118	30	7.1
DN50	150	75	186	165	123	37	9.5
DN65	170	79	278	185	144	50	13.7
DN80	180	91	417	200	157	57	18.0
DN100	190	98	517	235	172	75	25.4



DN40 and DN50



DN65 to DN100

Flange connections

Size	Number of flange holes	Hole thread size
DN40	4	M16 x 2
DN50	4	M16 x 2
DN65	8	M16 x 2
DN80	8	M16 x 2
DN100	8	M20 x 2.5

Pipeline ancillaries
Ball valves

K_v values

DN	40	50	65	80	100
K_v	81	103	197	248	581

For conversion:
C_v (UK) = K_v x 0.963
C_v (US) = K_v x 1.156

Operating torque (N m)

DN	40	50	65	80	100
N m	20	25	50	70	100

Note: The torque figures shown are for a valve that is frequently operated at the maximum operating pressure. Valves that are subject to long static periods, may require a greater break-out torque.

Safety information, installation and maintenance
For full details see the Installation and Maintenance Instructions supplied with the product.

Welding
Only the models that have connections designed for welding (SW, BW, Imperial Tube connections) should be welded. Valves with flanged connections must not be welded to avoid damages to the soft parts.

How to order

Specify	Model	Seat material	Si	=	Carbon and graphite reinforced PTFE - PDR 0.8
			Vi	=	Virgin PTFE
	Body type		J	=	Jacketed body
	Material	Body material	2	=	Carbon steel
			3	=	Stainless steel

Example: 1 off Spirax Sarco DN50 M21SiJ2 ISO ball valve having flanged EN 1092 PN40 connections.

Optional extras:
- Self-venting ball.
- Extended stems to allow full insulation: 50 mm (2") for DN40 and DN50 sizes and 100 mm (4") for DN40 to DN100 sizes.
- Lockable handle.
- 100 mm extended stem with lockable handle.

DN40 and DN50 - Spare parts (see page 10 for sizes DN65 - DN100)

The spare parts available are shown in solid outline. Parts drawn in a grey line are not supplied as spares.

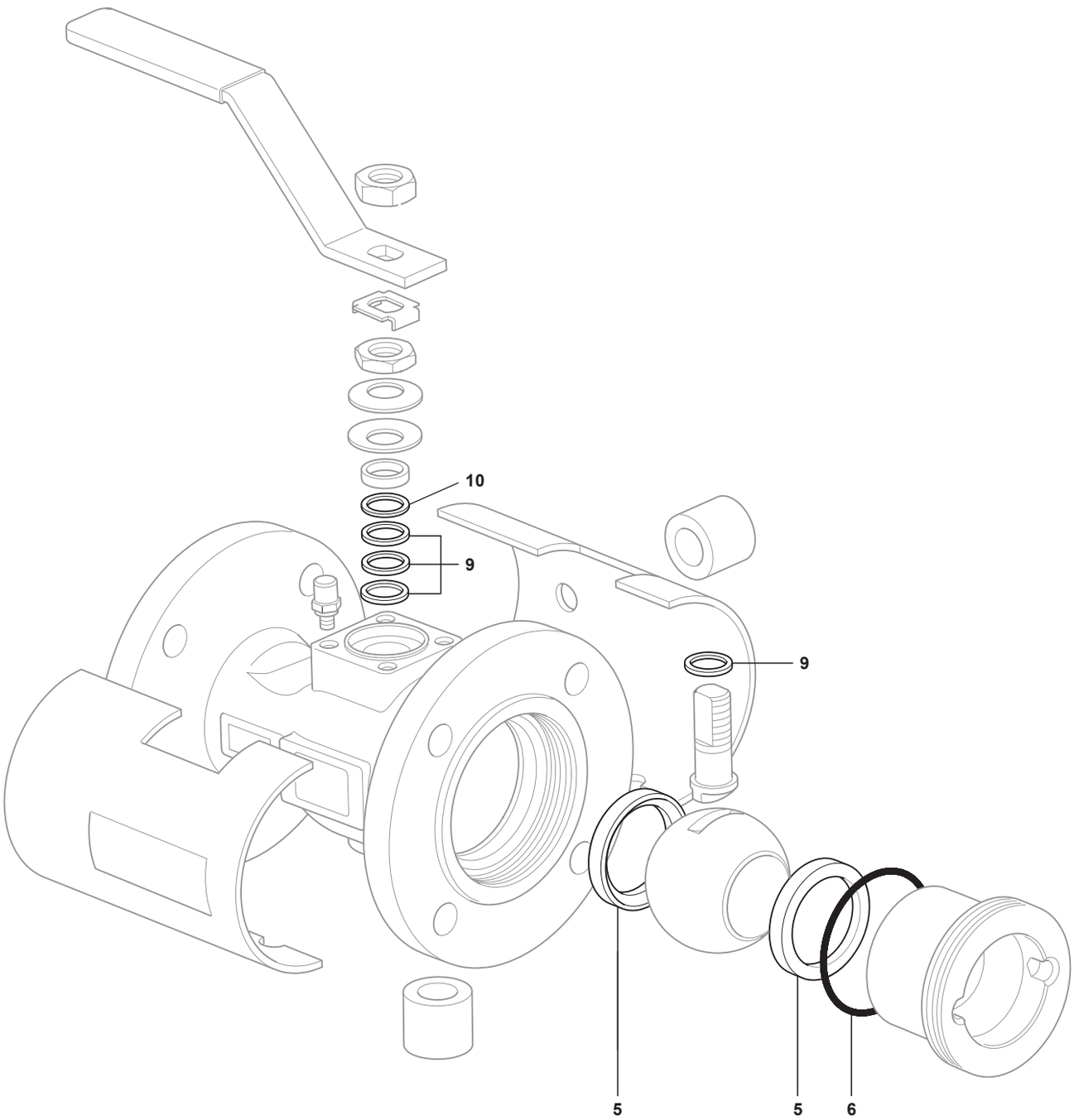
Available spares

Seats, insert 'O' ring and stem seals	**5, 6, 9, 10**

How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state the size and type of ball valve.

Example: 1 set of seats, insert 'O' ring and stem seals for a Spirax Sarco DN50 flanged PN40 M21SiJ2 ball valve.



DN40 and DN50

Pipeline ancillaries

Ball valves

DN65 to DN100 - Spare parts (see page 9 for sizes DN40 and DN50)

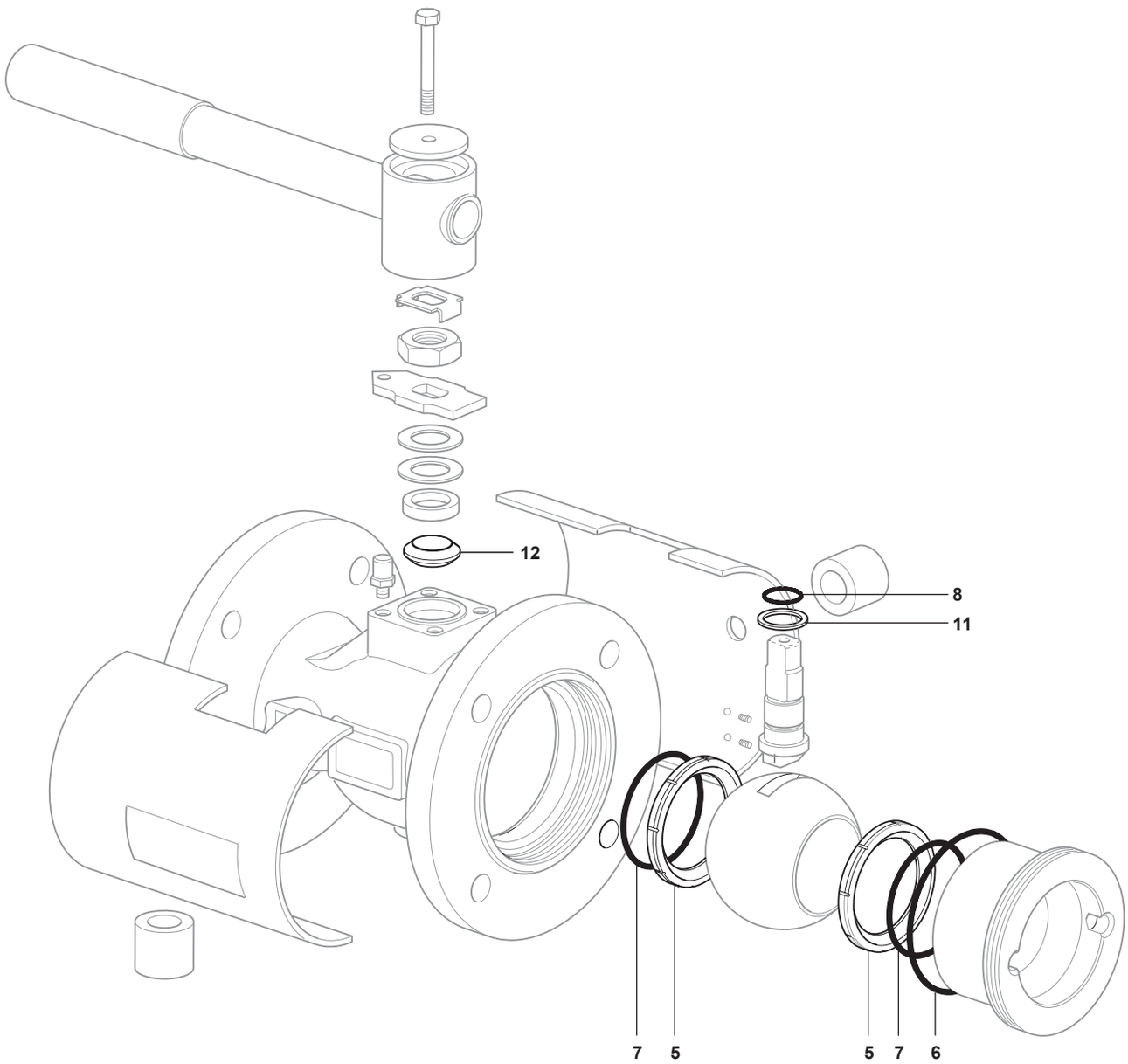
The spare parts available are shown in solid outline. Parts drawn in a grey line are not supplied as spares.

Available spares	
Seats, insert 'O' ring, seat 'O' rings, stem 'O' ring, lower stem seals and upper stem packing	**5, 6, 7, 8, 11, 12**

How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state the size and type of ball valve.

Example: 1 set of seats, insert 'O' rings, seat 'O' ring, stem 'O' ring, lower stem seals and upper stem packing for a Spirax Sarco DN80 flanged PN40 M21SiJ2 ball valve.



DN65 to DN100

TI-P133-100
ST Issue 1

M40SiJ ISO and M40ViJ ISO Jacketed Reduced Bore Ball Valves DN40 to DN100 Flanged ASME 150

Description

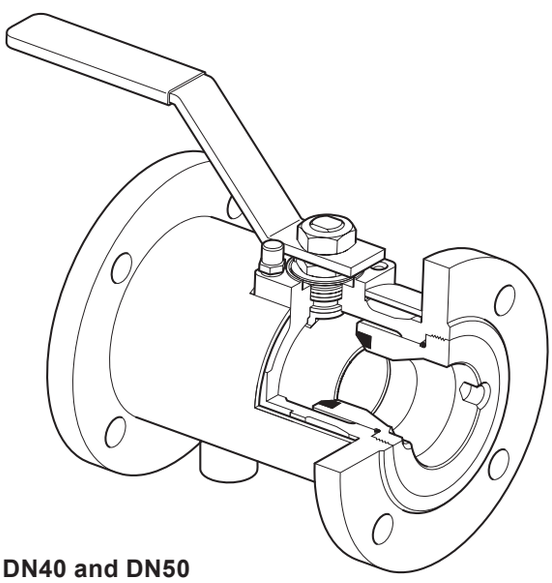
The M40_iJ ISO are jacketed reduced bore ball valves, having a single piece body and ISO mounting as standard. They have been designed for applications that use heating fluid to maintain the product viscosity passing through the ball valve (e.g. chocolate , tar, fat and others). These valves are isolating valves, not control valves.

Available types

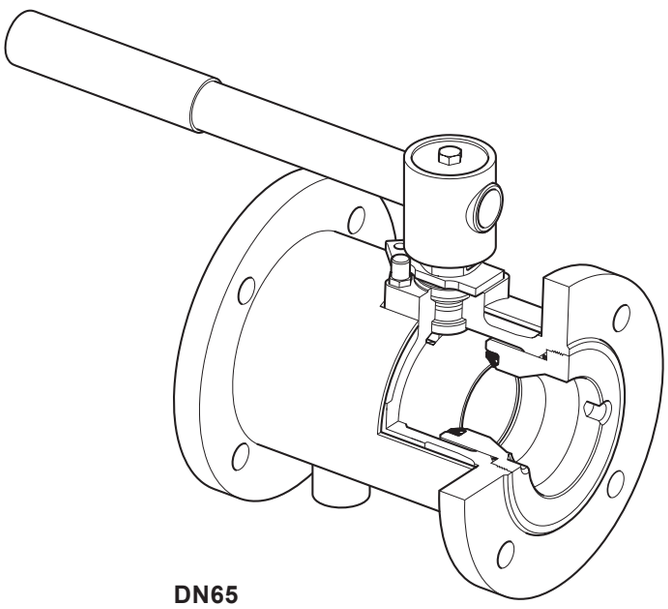
M40SiJ2 ISO	Carbon steel body, PDR 0.8 seats.
M40SiJ3 ISO	Stainless steel body, PDR 0.8 seats.
M40ViJ2 ISO	Carbon steel body, PTFE seats.
M40ViJ3 ISO	Stainless steel body, PTFE seats.

Standards - These products fully comply with the requirements of the European Pressure Equipment Directive 97/23/EC and carry the CE mark when so required.

Certification - These products are available with certification to EN 10204 3.1. **Note:** All certification/inspection requirements must be stated at the time of order placement.



DN40 and DN50



DN65

Sizes and pipe connections

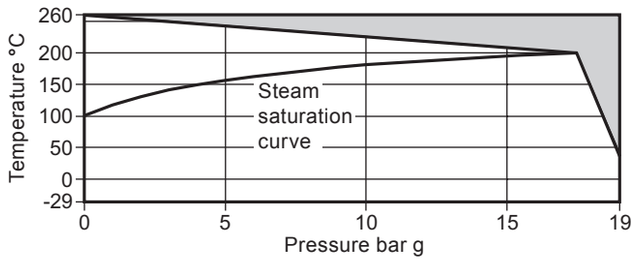
DN40, DN50, DN65, DN80 and DN100
Standard flange: ASME 150 with face-to-face dimensions according to ASME 16.10
Jacket input and output connections: Threaded ½" BSPT

Technical data

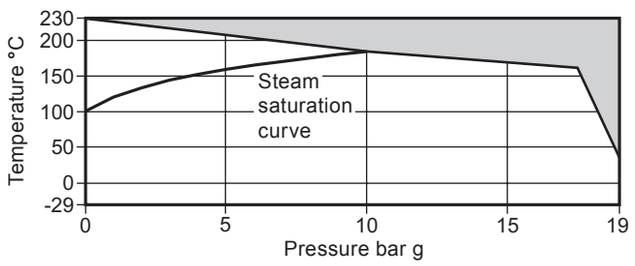
Flow characteristic	Modified linear
Port	Reduced bore
Leakage test procedure to ISO 5208 (Rate A)/EN 12266-1 (Rate A)	
Antistatic device (optional) complies with ISO 7121 and BS 5351	

Pressure / temperature limits

M40SiJ - PDR 0.8 seats



M40ViJ - PTFE seats

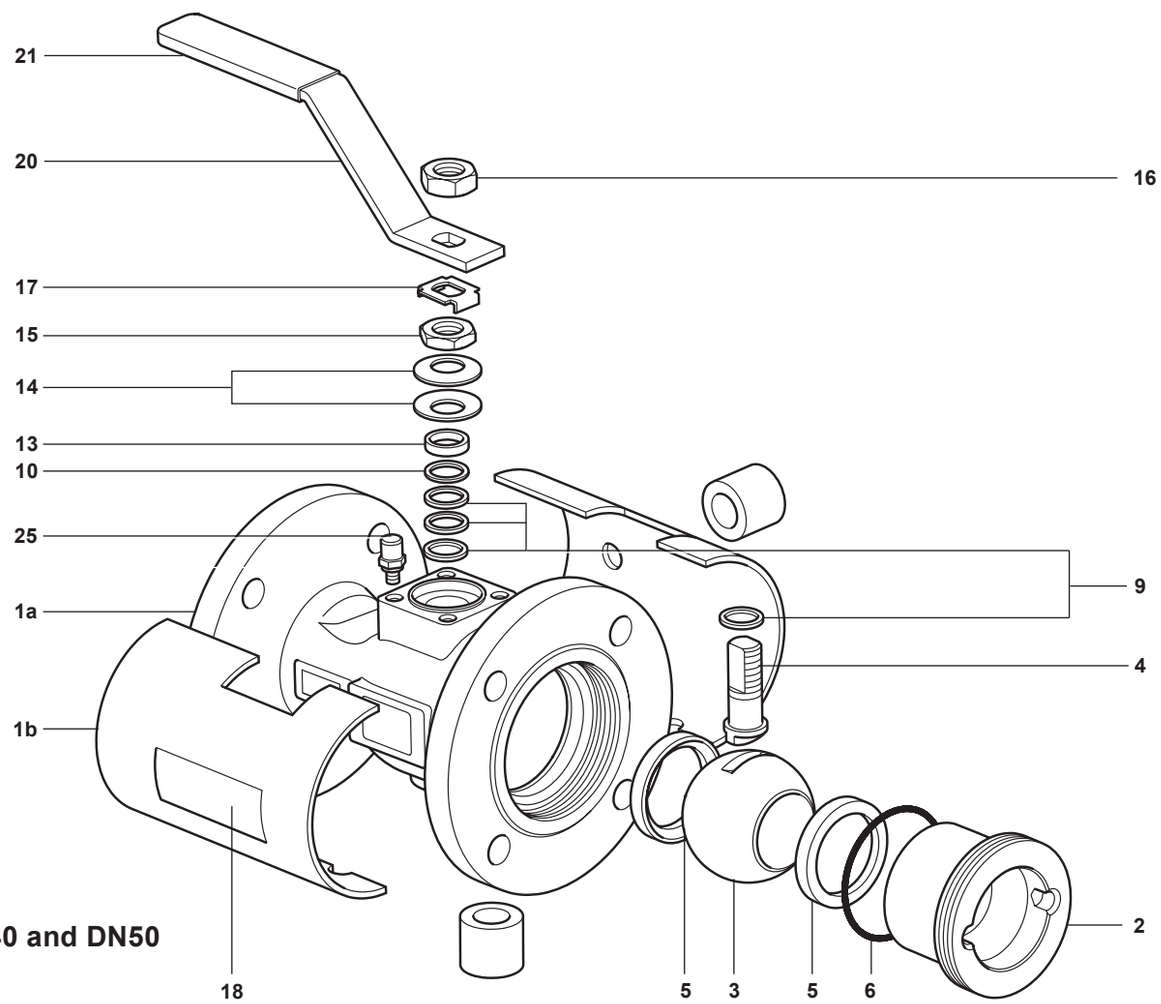


The product **must not** be used in this region.

Body design conditions			ASME 150
PMA	Maximum allowable pressure		19 bar g @ 38°C
TMA	Maximum allowable temperature	M40SiJ	260°C @ 0 bar g
		M40ViJ	230°C @ 0 bar g
PMO	Maximum operating pressure for saturated steam service	M40SiJ	17.5 bar g
		M40ViJ	10 bar g
PMO	Jacket		10 bar g
TMO	Maximum operating temperature	M40SiJ	260°C @ 0 bar g
		M40ViJ	230°C @ 0 bar g
∆ PMX	Maximum differential pressure is limited to the PMO		
Designed for a maximum cold hydraulic test pressure of:		Valve	28.5 bar g
		Jacket	15 bar g

Materials

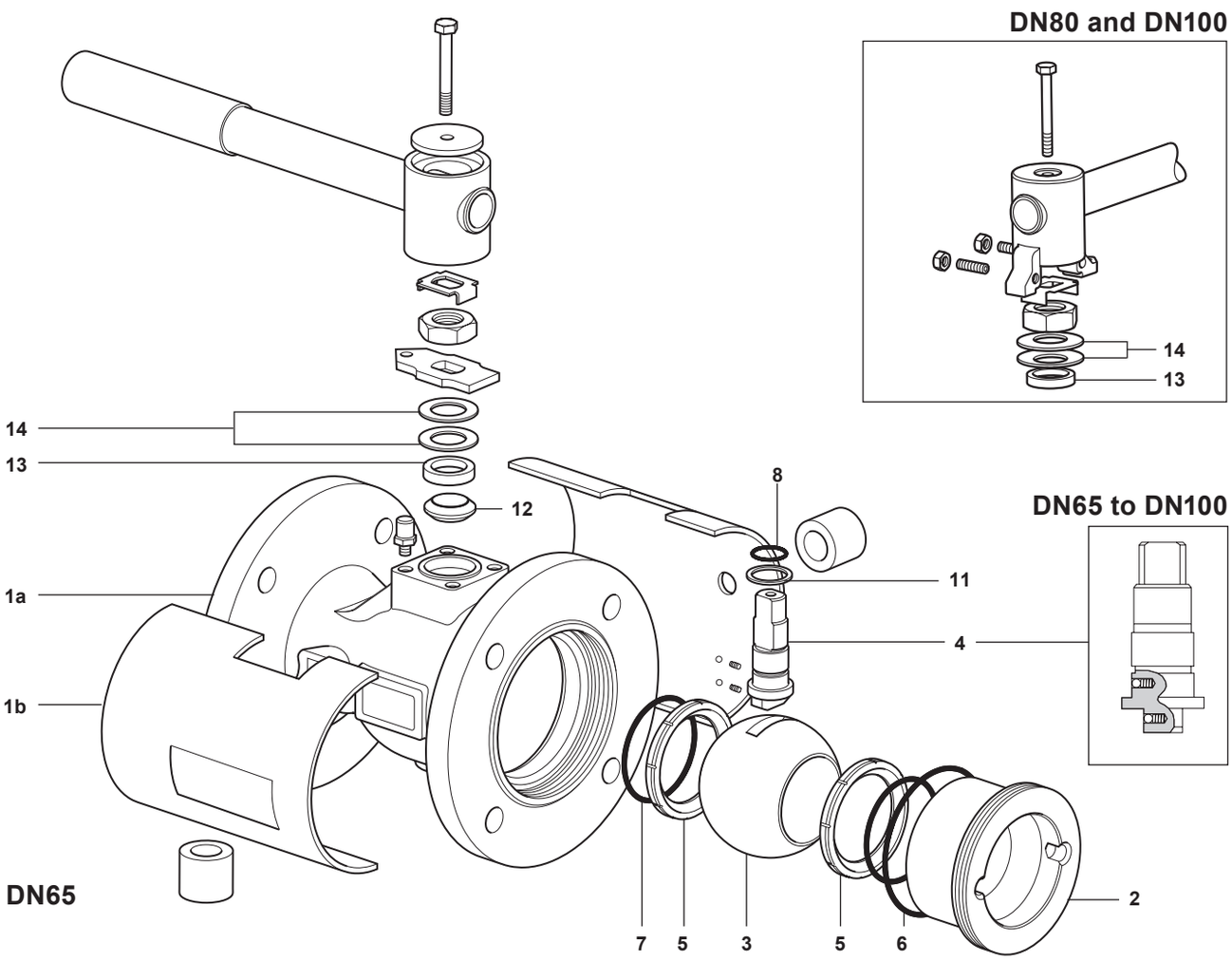
No.	Part		Material	
1a	Body	M40SiJ2 ISO and M40ViJ2 ISO	Carbon steel	ASTM A216 WCB
		M40SiJ3 ISO and M40ViJ3 ISO	Stainless steel	ASTM A351 CF8M
1b	Jacket	M40SiJ2 ISO and M40ViJ2 ISO	Carbon steel	SAE 1010 / SAE 1020
		M40SiJ3 ISO and M40ViJ3 ISO	Stainless steel	AISI 304
2	Insert	M40SiJ2 ISO and M40ViJ2 ISO	Carbon steel	SAE 1040
		M40SiJ3 ISO and M40ViJ3 ISO	Stainless steel	AISI 316
3	Ball		Stainless steel	AISI 316
4	Stem		Stainless steel	AISI 316
5	Seats	M40SiJ2 ISO and M40SiJ3 ISO	Carbon and graphite reinforced PTFE	PDR 0.8
		M40ViJ2 ISO and M40ViJ3 ISO	Virgin PTFE	
6	Insert 'O' ring		EPDM	Geothermal
9	Stem seal		Antistatic R-PTFE	
10	Stem seal		Stainless steel	AISI 304
13	Separator		Zinc plated carbon steel	SAE 1010
14	Belleville washer		Stainless steel	AISI 301
15	Gland nut		Zinc plated carbon steel	SAE 1010/SAE 12L14
16	Upper stem nut		Zinc plated carbon steel	SAE 1010/SAE 12L14
17	Locking plate		Stainless steel	AISI 304
18	Nameplate		Stainless steel	AISI 430
20	Lever		Zinc plated carbon steel	SAE 1010
21	Grip		Vinyl	
25	Stop screw		Zinc plated carbon steel	SAE 12L14



DN40 and DN50

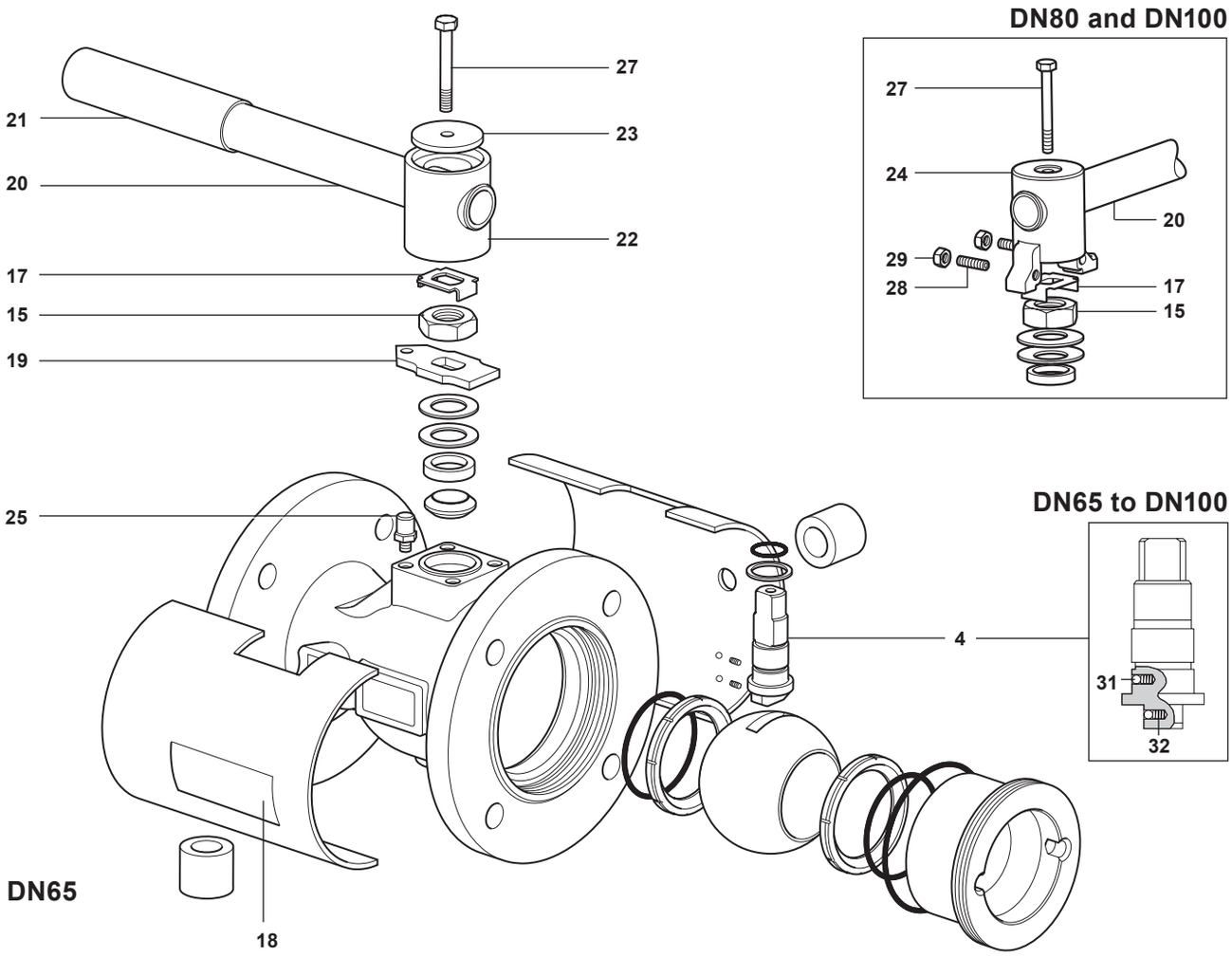
Materials (parts 1 - 14)

No.	Part		Material	
1a	Body	M21SiJ2 ISO and M21ViJ2 ISO	Carbon steel	ASTM A216 WCB
		M21SiJ3 ISO and M21ViJ3 ISO	Stainless steel	ASTM A351 CF8M
1b	Jacket	M21SiJ2 ISO and M21ViJ2 ISO	Carbon steel	SAE 1010 / SAE 1020
		M21SiJ3 ISO and M21ViJ3 ISO	Stainless steel	AISI 304
2	Insert	M21SiJ2 ISO and M21ViJ2 ISO	Carbon steel	SAE 1040
		M21SiJ3 ISO and M21ViJ3 ISO	Stainless steel	AISI 316
3	Ball		Stainless steel	AISI 316
4	Stem		Stainless steel	AISI 316 / AISI 420
5	Seat	M21SiJ2 ISO and M21SiJ3 ISO	Carbon and graphite reinforced PTFE	PDR 0.8
		M21ViJ2 ISO and M21ViJ3 ISO	Virgin PTFE	
6	Insert 'O' ring		EPDM	Geothermal
7	Seat 'O' ring		EPDM	Geothermal
8	Stem 'O' ring		EPDM	Geothermal
11	Lower stem seals		Antistatic R-PTFE	
12	Upper stem packing		Virgin PTFE	
13	Separator		Zinc plated carbon steel	SAE 1010
14	Belleville washer		Stainless steel	AISI 301



Materials (parts 15 - 32)

No.	Part		Material	
15	Gland nut		Zinc plated carbon steel	SAE 1010/SAE 12L14
17	Locking plate		Stainless steel	AISI 304
18	Nameplate		Stainless steel	AISI 430
19	Stop plate with indicator	DN65 only	Zinc plated carbon steel	SAE 1010
20	Lever		Zinc plated carbon steel	SAE 1010
21	Grip		Vinyl	
22	Adaptor	DN65 only	Zinc plated SG iron	
23	Adaptor plate	DN65 only	Zinc plated carbon steel	SAE 1010
24	Adaptor with indicator	DN80 and DN100	Zinc plated SG iron	
25	Stop screw	DN80 and DN100	Zinc plated carbon steel	SAE 12L14
27	Adaptor screw		Zinc plated carbon steel	Grade 5
28	Stop screw		Carbon steel	
29	Adaptor hex. nut	DN80 and DN100	Zinc plated carbon steel	
31	Antistatic device ball		Stainless steel	AISI 302
32	Antistatic device spring		Stainless steel	AISI 301



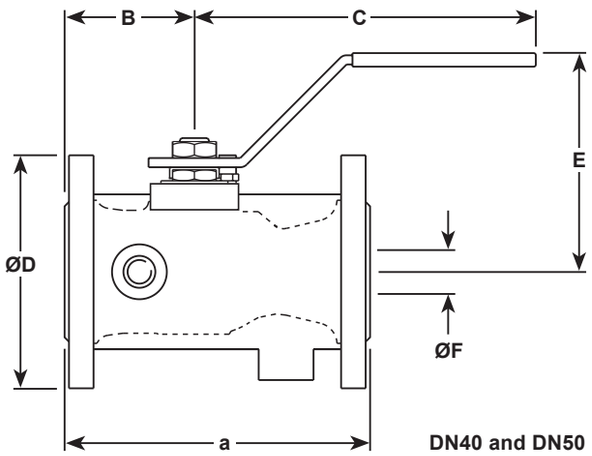
Dimensions/weights (approximate) in mm and kg

Flanged ASME 150

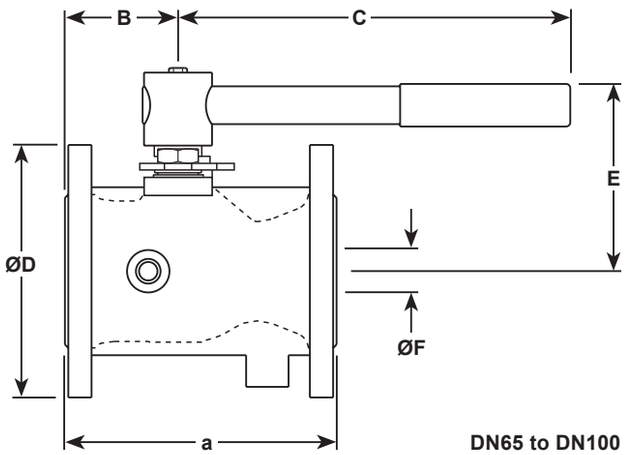
Size	A	B	C	D	E	F	Weight
DN40	165	70	186	127	118	30	5.6
DN50	178	75	186	152	123	37	8.1
DN65	190	79	278	178	144	50	12.3
DN80	203	91	417	191	157	57	16.0
DN100	229	98	517	229	172	75	25.2

Flange connections

Size	Number of flange holes	Hole thread size
DN40	4	½" NC
DN50	4	⅝" NC
DN65	4	⅝" NC
DN80	4	⅝" NC
DN100	8	⅝" NC



DN40 and DN50



DN65 to DN100

K_V values

DN	40	50	65	80	100
K_V	81	103	197	248	581

For conversion C_V (UK) = K_V x 0.963 C_V (US) = K_V x 1.156

Operating torque (N m)

DN	40	50	65	80	100
N m	20	25	50	70	100

Note: The torque figures shown are for a valve that is frequently operated at the maximum operating pressure. Valves that are subject to long static periods, may require a greater break-out torque.

Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions supplied with the product.

Welding

Only the models that have connections designed for welding (SW, BW, Imperial Tube connections) should be welded. Valves with flanged connections must not be welded to avoid damages to the soft parts.

How to order

Specify	Model	Seat material	Si	=	Carbon and graphite reinforced PTFE - PDR 0.8
			Vi	=	Virgin PTFE
	Body type		J	=	Jacketed body
	Material	Body material	2	=	Carbon steel
			3	=	Stainless steel

Example: 1 off Spirax Sarco DN50 M40ViJ2 ISO ball valve having flanged ASME 150 connections.

Optional extras:

- Self-venting ball.
- Extended stems to allow full insulation: 50 mm (2") for DN40 and DN50 sizes and 100 mm (4") for DN40 to DN100 sizes.
- Lockable handle.
- 100 mm extended stem with lockable handle.

DN40 and DN50 - Spare parts (see page 8 for sizes DN65 - DN100)

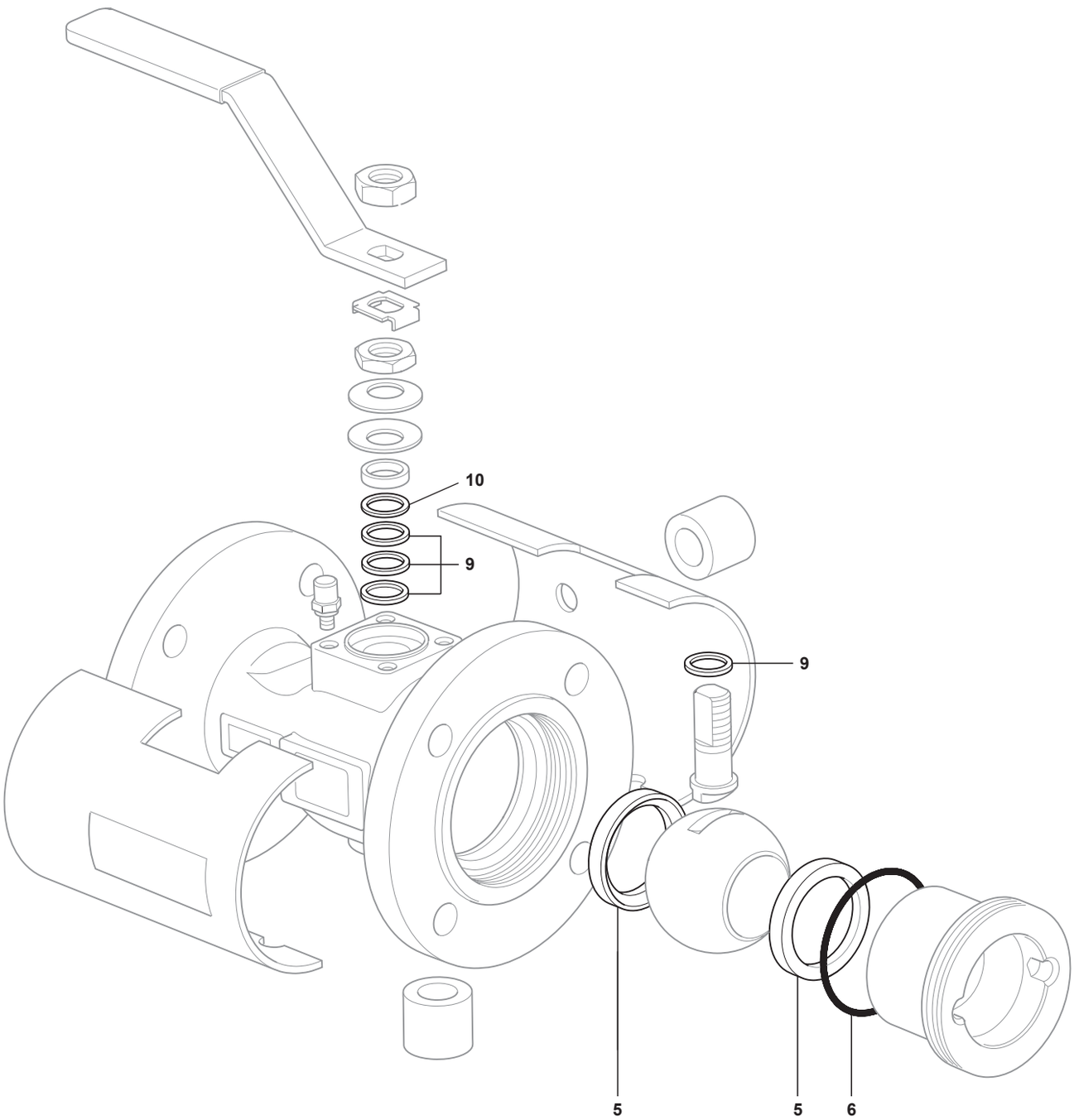
The spare parts available are shown in solid outline. Parts drawn in a grey line are not supplied as spares.

Available spares	
Seats, insert 'O' ring and stem seals	**5, 6, 9, 10**

How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state the size and type of ball valve.

Example: 1 set of seats, insert 'O' ring and stem seals for a Spirax Sarco DN50 flanged ASME 150 M40SiJ2 ball valve.



DN40 and DN50

DN65 to DN100 - Spare parts (see page 7 for sizes DN40 and DN50)

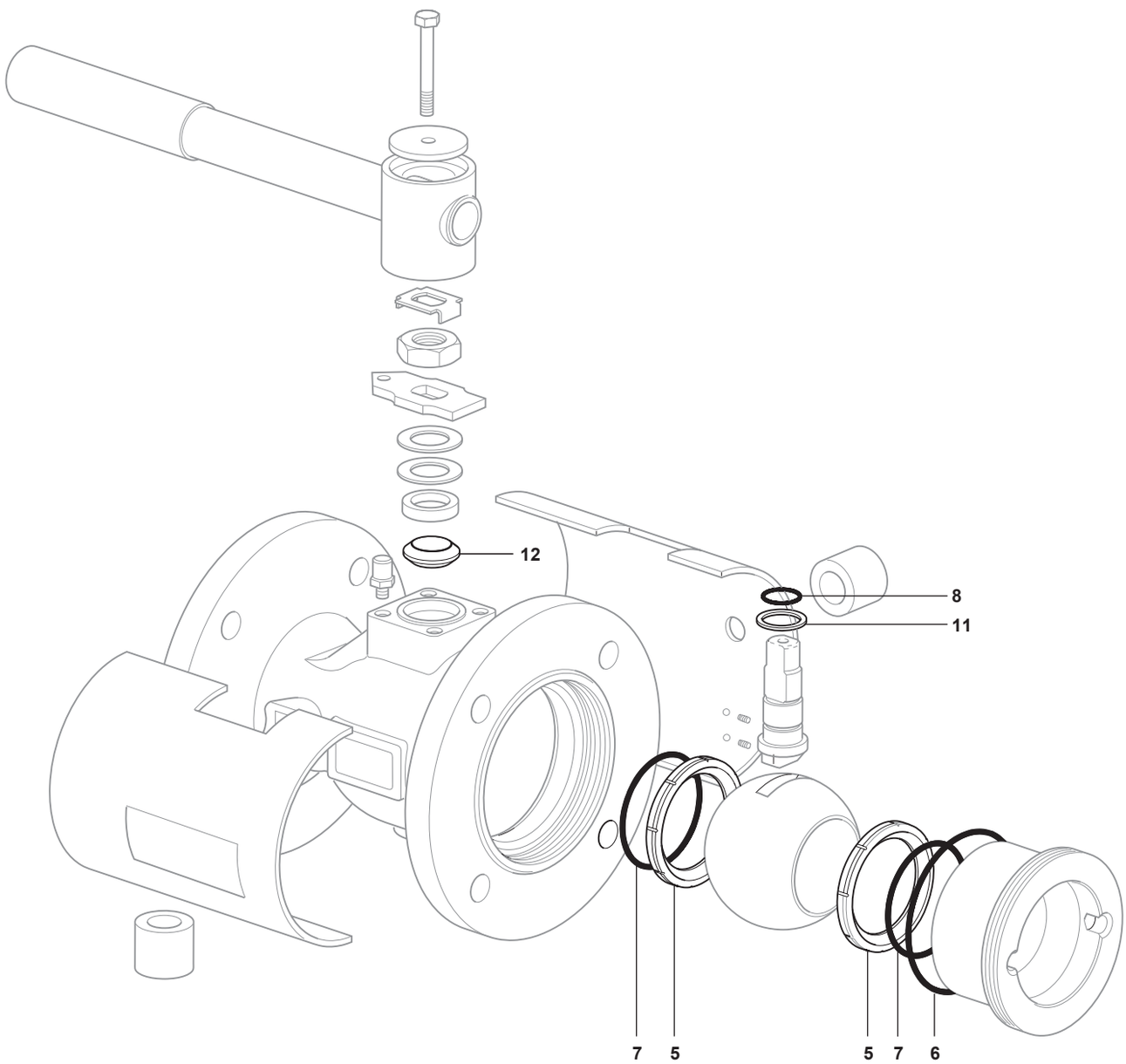
The spare parts available are shown in solid outline. Parts drawn in grey line are not supplied as spares.

Available spares	
Seats, insert 'O' ring, seat 'O' rings, stem 'O' ring, lower stem seals and upper stem packing	**5, 6, 7, 8, 11, 12**

How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state the size and type of ball valve.

Example: 1 set of seats, insert 'O' ring, seat 'O' rings, stem 'O' ring, lower stem seals and upper stem packing for a Spirax Sarco DN80 flanged ASME 150 M40SiJ2 ball valve.



DN65 to DN100