

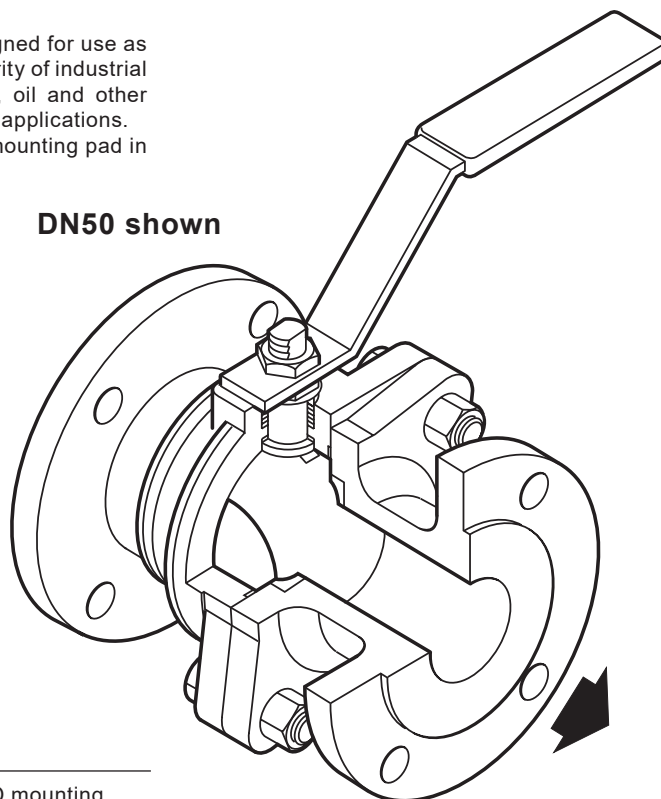
TI-P133-31  
CMGT Issue 10

## M31V ISO Full Bore Ball Valve DN50 to DN200 DIN PN16 (F1 and F4)

### Description

The M31V ISO full bore two-piece body ball valve, has been designed for use as an isolating valve, not a control valve. It can be used with the majority of industrial fluids on applications, which include steam, condensate, water, oil and other fluids within its operating range. It is not recommended for gases applications. The M31V ISO DIN has antistatic seats as standard and an ISO mounting pad in accordance with ISO 5211.

DN50 shown



### Available types

**M31V2 ISO** Zinc plated carbon steel body, PTFE seats and ISO mounting.

**M31V3 ISO** Stainless steel body, PTFE seats and ISO mounting.

### Standards

This product fully complies with the requirements of the Pressure Equipment Directive (PED) and carries the **CE** mark when so required.

### Certification

This product is available with certification to EN 10204 3.1.

**Note:** All certification/inspection requirements must be stated at the time of order placement.

### Options

- Self-venting ball.
- Operation by manual handwheel for bigger sizes (DN100 to 200).
- Operation by pneumatic actuator BVA200 series for all sizes.
- Other ball materials are available on request (i.e: 11-13% Cr).

### Sizes and pipe connections

DN50, DN65, DN80, DN100, DN150 and DN200.

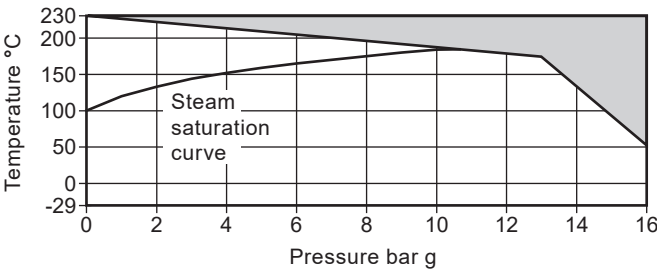
Standard flange EN 1092 PN16 with face-to-face dimensions according to DIN 3202 F1 and F4/F5.

Pipeline ancillaries  
Ball valves

Technical data

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

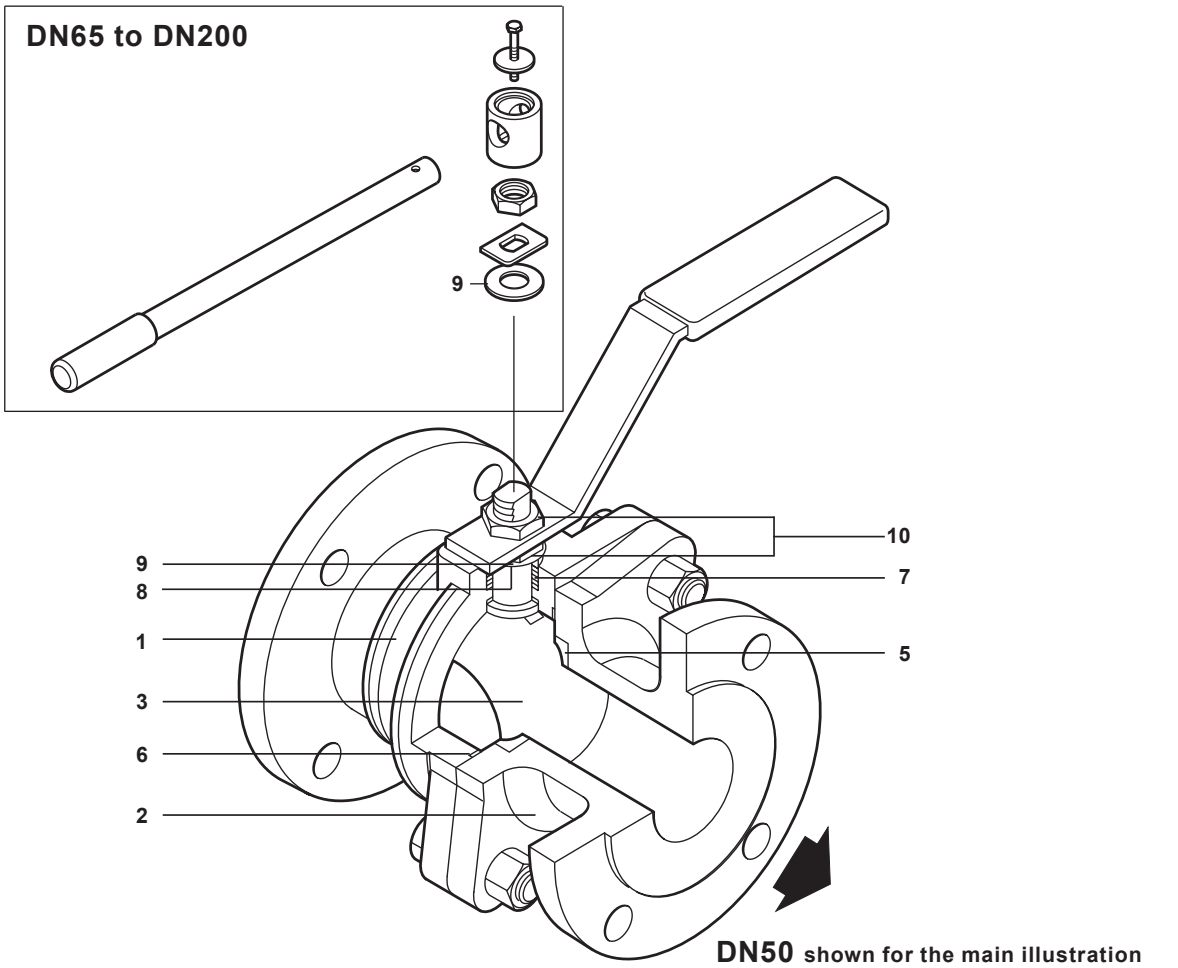
Pressure/temperature limits



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

Body design conditions		BS 5351
PMA	Maximum allowable pressure	16 bar g @ 50 °C
TMA	Maximum allowable temperature	230 °C @ 0 bar g
Minimum allowable temperature		-29 °C
PMO	Maximum operating pressure for saturated steam service	10 bar g
TMO	Maximum operating temperature	230 °C @ 0 bar g
Minimum operating temperature		-29 °C
<b>Note:</b> For lower operating temperatures consult Spirax Sarco.		
ΔPMX Maximum differential pressure is limited to the PMO		
Designed for a maximum cold hydraulic test pressure of:		24 bar g

Materials

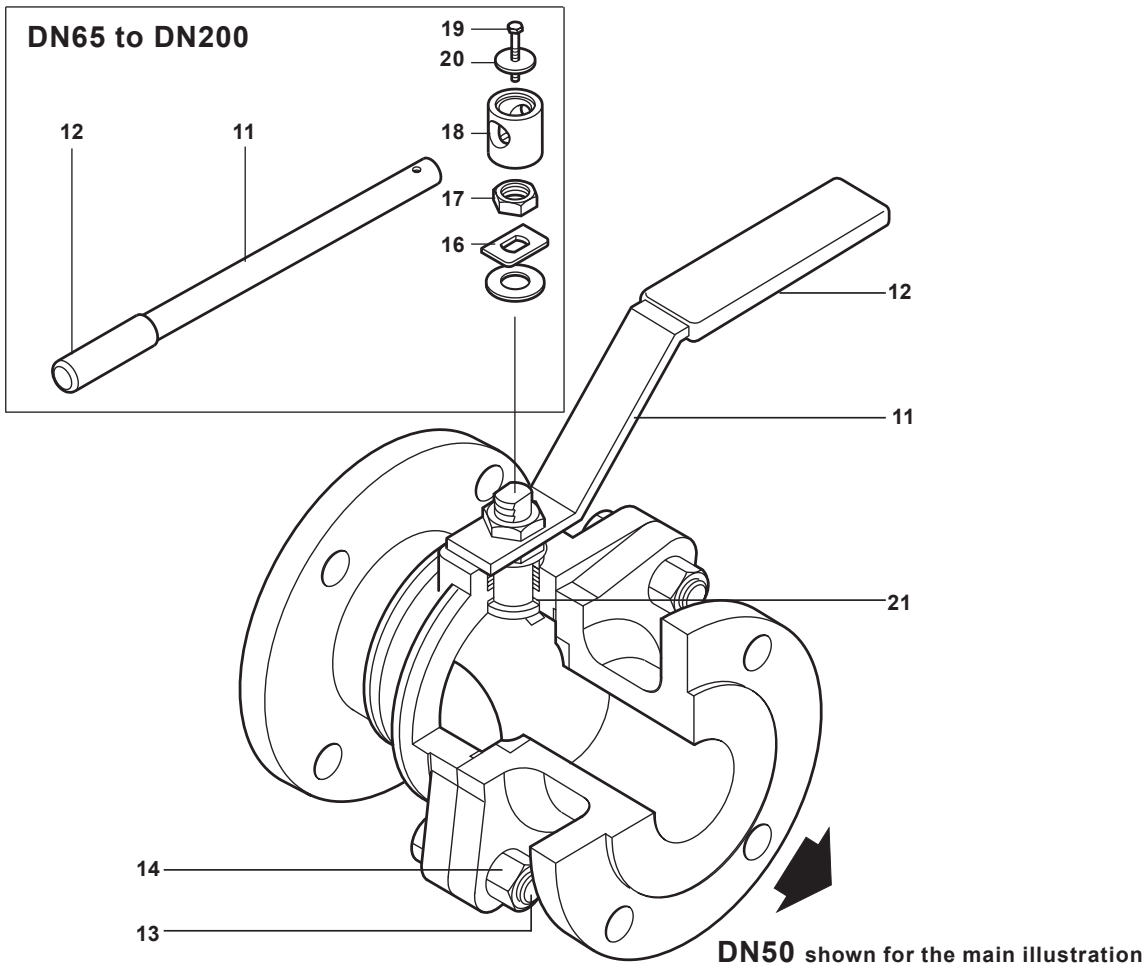


No.	Part	Material		
1	Body	M31V2 ISO	Zinc plated carbon steel	ASTM A216 WCB
		M31V3 ISO	Stainless steel	ASTM A 351 CF8M
2	Insert	M31V2 ISO	Zinc plated carbon steel	ASTM A216 WCB
		M31V3 ISO	Stainless steel	ASTM A 351 CF8M
3	Ball	Stainless steel		AISI 316
4	Stem	Stainless steel		AISI 316/AISI 420
5	Seats	PTFE		
6	Body gasket	Graphoil		
7	Stem seals	PTFE		
8	Separator	Zinc plated carbon steel		SAE 1010
9	Belleville washer	Stainless steel		AISI 316
		Carbon steel (DN150 and DN200)		
10	Nut	Zinc plated carbon steel		SAE 12L14

Materials continued on page 4

Pipeline ancillaries  
Ball valves

Materials (continued)



No.	Part	Material	
11	Handle	Zinc plated carbon steel	SAE 1010
12	Grip	Vinyl (Orange)	
13	Bolt	Zinc plated carbon steel	Grade 5
14	Nut	Zinc plated carbon steel	
15	Stop screw (Not shown)	Zinc plated carbon steel	SAE 12L14
16	Stop plate	Zinc plated carbon steel	SAE 1010
17	Nut	Zinc plated carbon steel	Grade 5
18	Handle adaptor	Zinc plated SG iron	
19	Screw	Carbon steel	Grade 5
20	Adapter washer	Carbon steel	SAE 1045
21	Stem seal	PTFE	

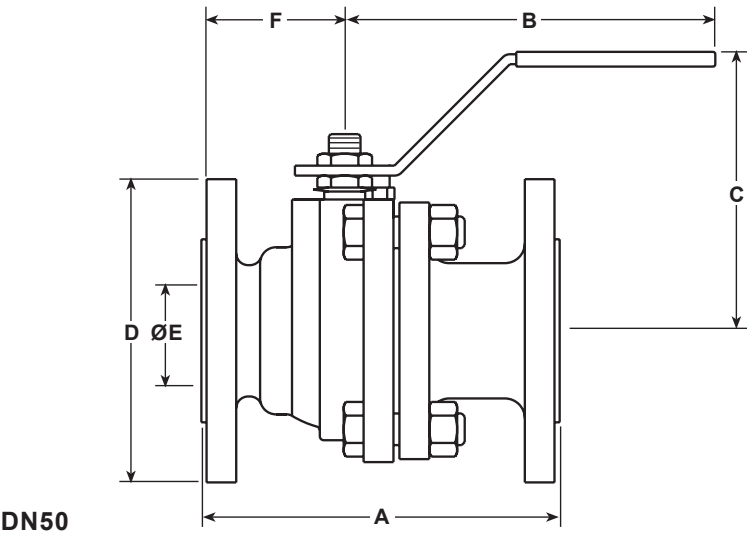
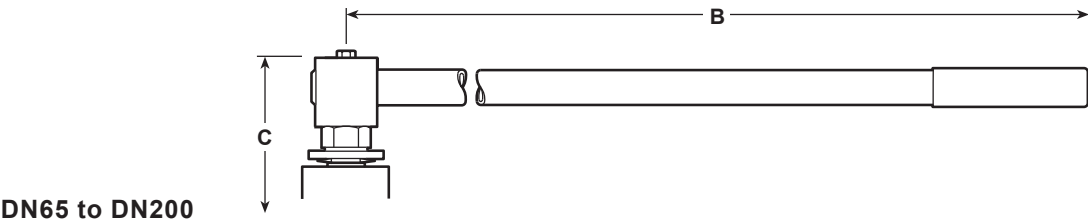
Dimensions/weights (approximate) in mm and kg

PN16 DIN F1 flanges

Size	A	B	C	D	E	F	Weight
DN50	230	185	140	165	50	60	12.0
DN65	290	415	166	185	64	74	18.0
DN80	310	415	180	200	75	88	22.0
DN100	350	700	218	220	100	105	34.3
DN150	480	850	266	285	150	197	77.8
DN200	600	950	311	340	200	228	128.5

PN16 DIN F4/F5 flanges

Size	A	B	C	D	E	F	Weight
DN50	150	185	140	165	50	60	11.4
DN65	170	415	166	185	64	74	16.2
DN80	180	415	180	200	75	88	19.0
DN100	190	700	218	220	100	105	29.9
DN150	350	850	266	285	150	197	72.4
DN200	400	950	311	340	200	228	119.3



K<sub>v</sub> values

DN	50	65	80	100	150	200	For conversion: C <sub>v</sub> (UK) = K <sub>v</sub> x 0.963 C <sub>v</sub> (US) = K <sub>v</sub> x 1.156
K <sub>v</sub>	300	430	770	1030	2390	4530	

Pipeline ancillaries  
Ball valves

Operating torque (N m)

DN	50	65	80	100	150	200	The torque figures shown are for a valve at maximum operating pressure that is operated frequently. Valves that are subject to long static periods, may require greater break-out torque.
N m	40	50	70	200	600	750	

Safety information, installation and maintenance

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

How to order

Specify:	Size	Seats		V	=	PTFE	<b>Example:</b> 1 off Spirax Sarco DN80 flanged EN 1092 PN16 F1 M31V2 ISO ball valve.
	Model						
	Seats			2	=	Carbon steel	
	Material	Body material		3	=	Stainless steel	

Spare parts

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

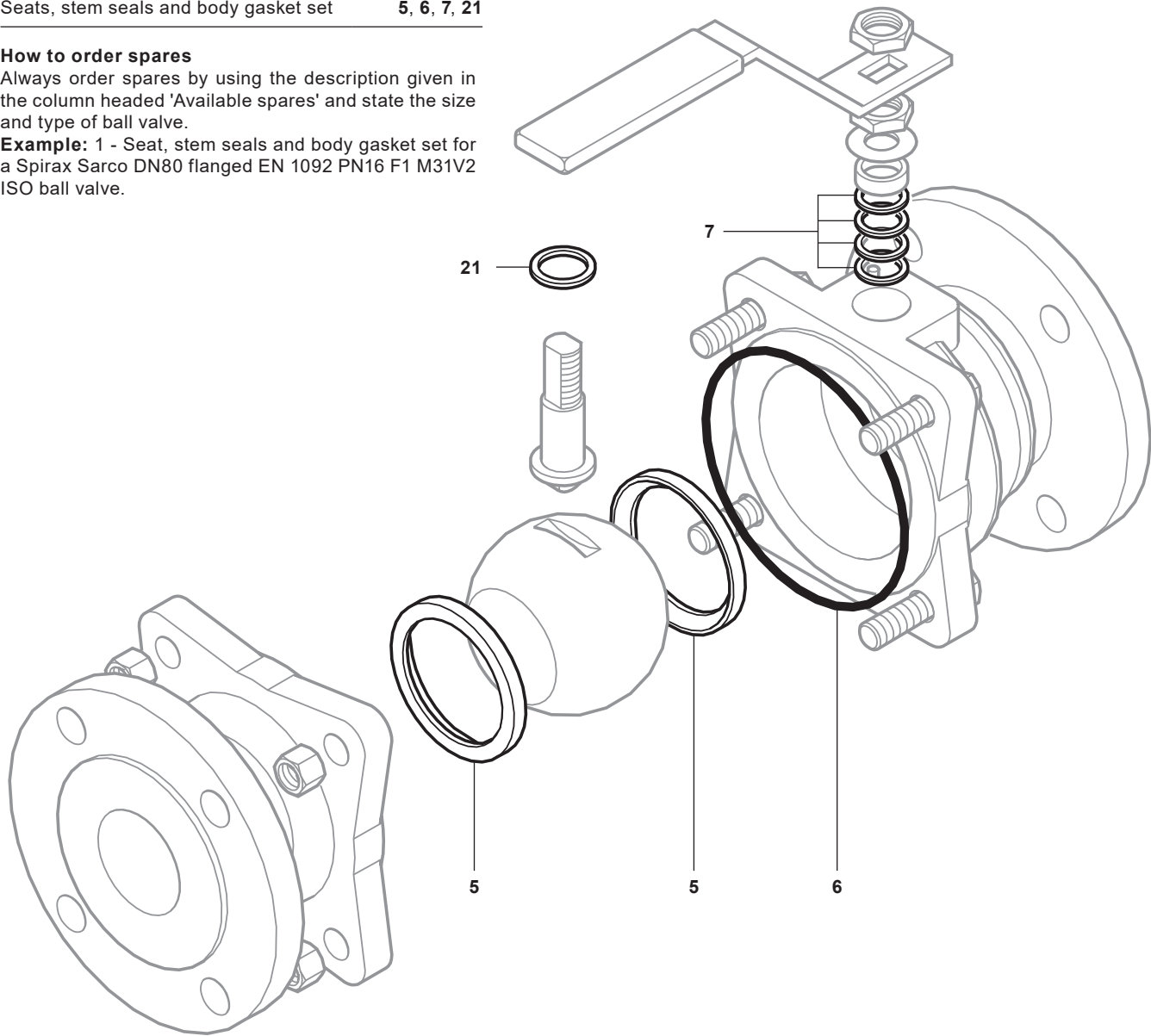
Available spares

Seats, stem seals and body gasket set	5, 6, 7, 21
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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 - Seat, stem seals and body gasket set for a Spirax Sarco DN80 flanged EN 1092 PN16 F1 M31V2 ISO ball valve.



**spirax  
sarco**TI-P133-28  
CMGT Issue 11

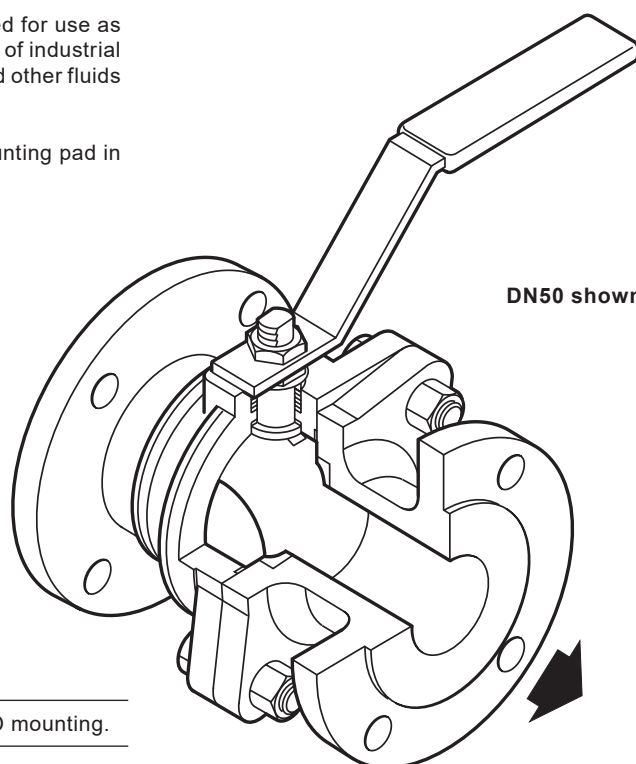
## M31S ISO Full Bore Ball Valve DN50 to DN200 DIN PN16 (F1 and F4)

### Description

The M31S ISO full bore two-piece body ball valve, has been designed for use as an isolating valve, not a control valve. It can be used with the majority of industrial fluids on applications, which include steam, condensate, water, oil, and other fluids within its operating range.

It is not recommended for gases applications.

The M31S ISO DIN has antistatic seats as standard and an ISO mounting pad in accordance with ISO 5211.



### Available types

**M31S2 ISO** Zinc plated carbon steel body, PDR 0.8 seats and ISO mounting.

**M31S3 ISO** Stainless steel body, PDR 0.8 seats and ISO mounting.

### Standards

This product fully complies with the requirements of the Pressure Equipment Directive (PED) and carries the **CE** mark when so required.

### Certification

This product is available with certification to EN 10204 3.1.

**Note:** All certification/inspection requirements must be stated at the time of order placement.

### Options

- Self-venting ball.
- Operation by manual handwheel for bigger sizes (DN100 to 200).
- Operation by pneumatic actuator BVA200 series for all sizes.
- Other ball materials are available on request (i.e: 11-13% Cr).

### Sizes and pipe connections

DN50, DN65, DN80, DN100, DN150 and DN200.

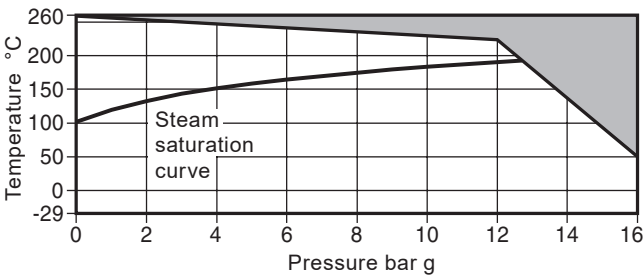
Standard flange EN 1092 PN16 with face-to-face dimensions according to DIN 3202 F1 and F4/F5.

Pipeline ancillaries  
Ball valves

Technical data

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

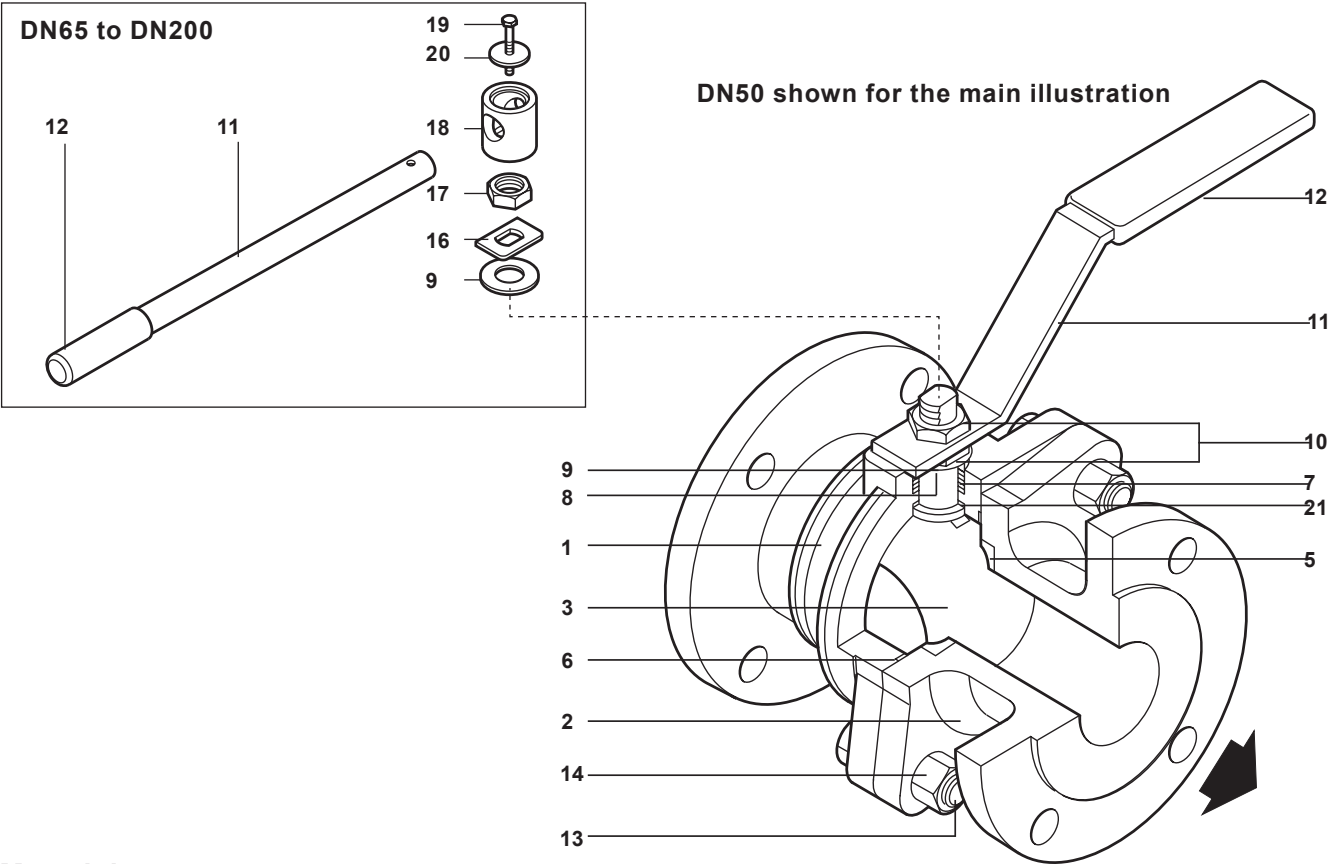
Pressure/temperature limits



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

Body design conditions		BS 5351
PMA	Maximum allowable pressure	16 bar g @ 50 °C
TMA	Maximum allowable temperature	260 °C @ 0 bar g
Minimum allowable temperature		-29 °C
PMO	Maximum operating pressure for saturated steam service	12.5 bar g
TMO	Maximum operating temperature	260 °C @ 0 bar g
Minimum operating temperature		-29 °C
<b>Note:</b> For lower operating temperatures consult Spirax Sarco		
$\Delta$ PMX Maximum differential pressure is limited to the PMO		
Designed for a maximum cold hydraulic test pressure of		24 bar g





Materials

No.	Part	Material		
1	Body	M31S2 ISO	Zinc plated carbon steel	ASTM A216 WCB
		M31S3 ISO	Stainless steel	ASTM A 351 CF8M
2	Insert	M31S2 ISO	Zinc plated carbon steel	ASTM A216 WCB
		M31S3 ISO	Stainless steel	ASTM A 351 CF8M
3	Ball		Stainless steel	AISI 316
4	Stem		Stainless steel	AISI 316/AISI 420
5	Seats		Carbon and graphite R-PTFE	PDR 0.8
6	Body gasket		Graphoil	
7	Stem seals		Carbon and graphite R-PTFE	PDR 0.8
8	Separator		Zinc plated carbon steel	SAE 1010
9	Belleville washer		Stainless steel	AISI 316
			Carbon steel (DN150 and DN200)	
10	Nut		Zinc plated carbon steel	SAE 12L14
11	Handle		Zinc plated carbon steel	SAE 1010
12	Grip		Vinyl (Orange)	
13	Bolt		Zinc plated carbon steel	Grade 5
14	Nut		Zinc plated carbon steel	
15	Stop screw (Not shown)		Zinc plated carbon steel	SAE 12L14
16	Stop plate		Zinc plated carbon steel	SAE 1010
17	Nut		Zinc plated carbon steel	Grade 5
18	Handle adaptor		Zinc plated SG iron	
19	Screw		Carbon steel	Grade 5
20	Adapter washer		Carbon steel	SAE 1045
21	Stem seal		Carbon and graphite R-PTFE	PDR 0.8

Pipeline ancillaries  
Ball valves

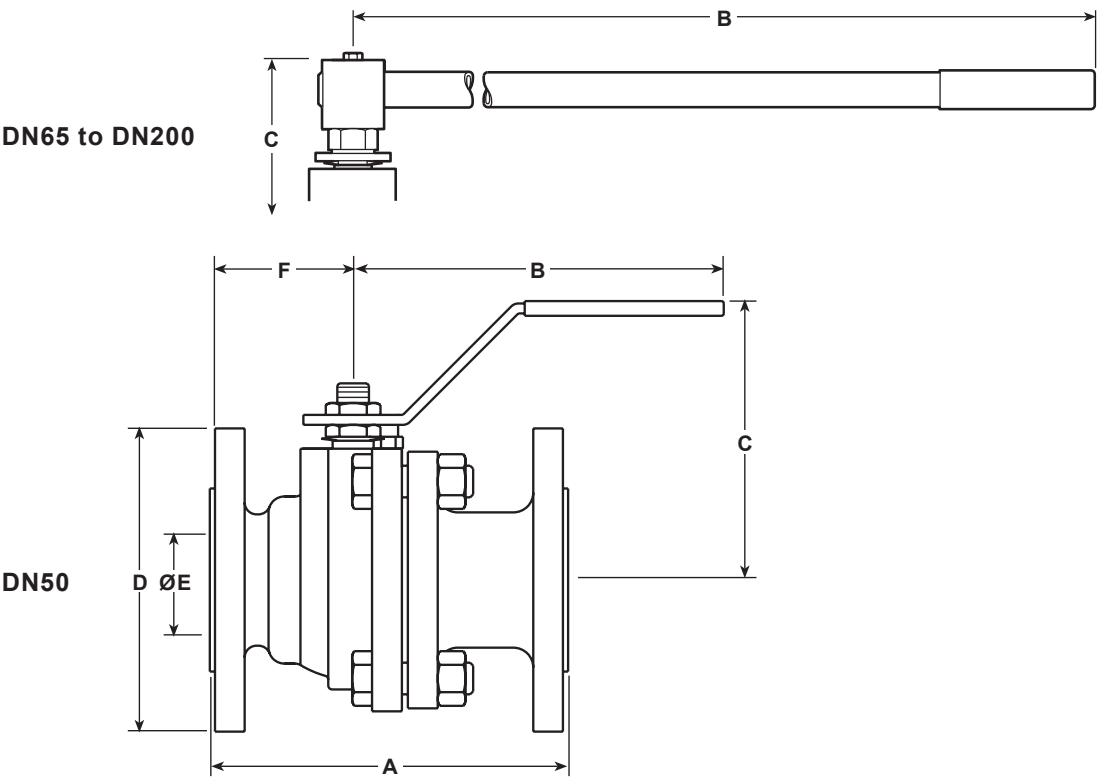
Dimensions/weights (approximate) in mm and kg

PN16 DIN F1 flanges

Size	A	B	C	D	E	F	Weight
DN50	230	185	140	165	50	60	12.0
DN65	290	415	166	185	64	74	18.0
DN80	310	415	180	200	75	88	22.0
DN100	350	700	218	220	100	105	34.3
DN150	480	850	266	285	150	197	77.8
DN200	600	950	311	340	200	228	128.5

PN16 DIN F4/F5 flanges

Size	A	B	C	D	E	F	Weight
DN50	150	185	140	165	50	60	11.4
DN65	170	415	166	185	64	74	16.2
DN80	180	415	180	200	75	88	19.0
DN100	190	700	218	220	100	105	29.9
DN150	350	850	266	285	150	197	72.4
DN200	400	950	311	340	200	228	119.3



K<sub>v</sub> values

DN	50	65	80	100	150	200
K <sub>v</sub>	300	430	770	1030	2390	4530

For conversion:  
C<sub>v</sub> (UK) = K<sub>v</sub> x 0.963  
C<sub>v</sub> (US) = K<sub>v</sub> x 1.156

Operating torque (N m)

DN	50	65	80	100	150	200	The torque figures shown are for a valve at maximum operating pressure that is operated frequently. Valves that are subject to long static periods, may require greater break-out torque.
N m	40	50	70	200	600	750	

Safety information, installation and maintenance

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

How to order

Specify:	Size	Seats	S = PDR 0.8	<b>Example:</b> 1 off Spirax Sarco DN80 flanged EN 1092 PN16 F1 M31S2 ISO ball valve.
	Model		2 = Carbon steel	
	Seats Material	Body material	3 = Stainless steel	

Spare parts

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

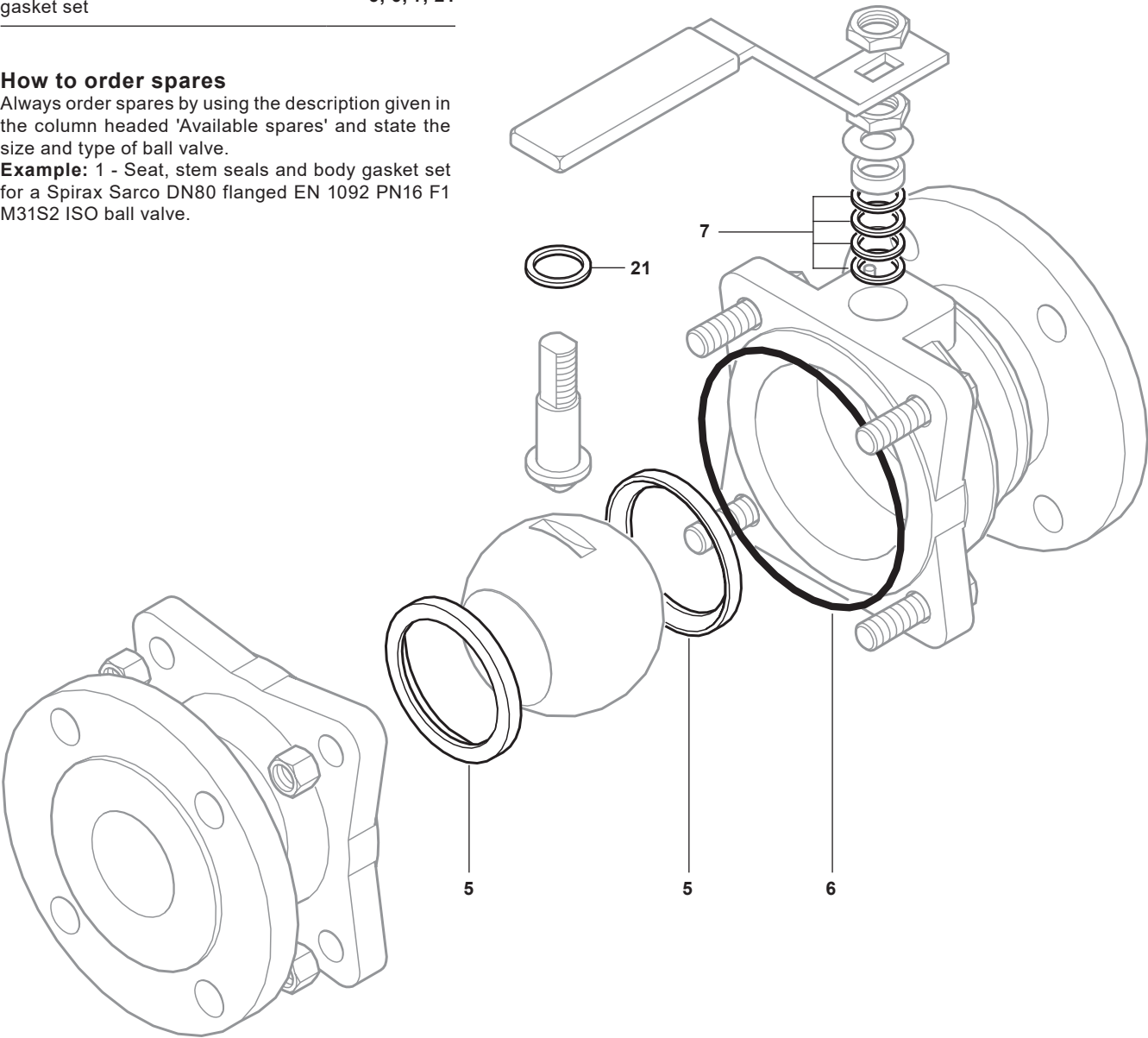
Available spares

Seats, stem seals and body gasket set	5, 6, 7, 21
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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 - Seat, stem seals and body gasket set for a Spirax Sarco DN80 flanged EN 1092 PN16 F1 M31S2 ISO ball valve.





**spirax  
sarco**  
**M33V ISO**

TI-P133-62  
CMGT Issue 5

**Full Bore Ball Valve API 6D  
DN50 to DN200 ASME (ANSI) 150 and 300**

**Description**

Produced in accordance with API 6D the M33V ISO full bore two-piece body ball valve with floating ball, has been designed for use as an isolating valve, not a control valve. It can be used with the majority of industrial fluids on applications, which include steam, condensate, water, oil, and other fluids within its operating range. It is not recommended for gases applications.

The M33V ISO ANSI has as standard an ISO mounting pad in accordance with ISO 5211.

**Available types**

<b>M33V2 ISO</b>	Zinc plated carbon steel body, PTFE seats and ISO mounting.
<b>M33V3 ISO</b>	Stainless steel body, PTFE seats and ISO mounting.

**Standards**

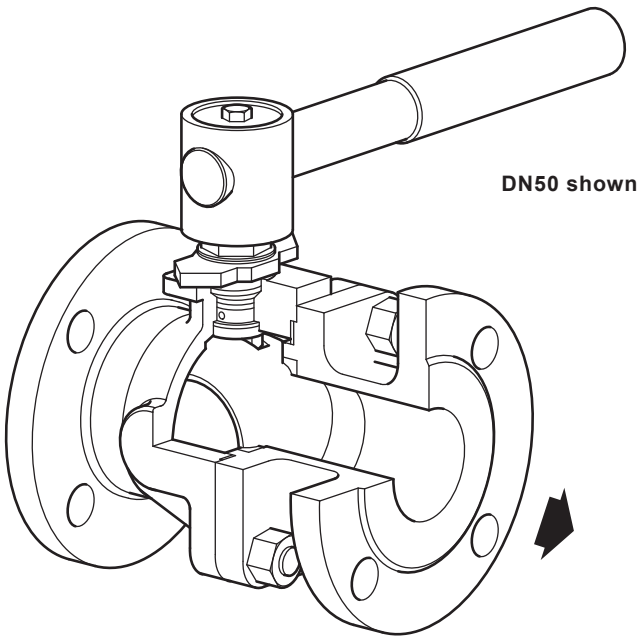
This product fully complies with the requirements of the Pressure Equipment Directive (PED) and carries the **CE** mark when so required.

**Certification**

This product is available with certification to EN 10204 3.1.  
**Note:** All certification/inspection requirements must be stated at the time of order placement.

**Options**

- Hollow ball for DN150 and DN200 sizes - Not API 6D rated.
- Self-venting ball.
- Ring joint flanges.
- Extended stems to allow full insulation.
- Operation by mechanical or pneumatic actuator BVA300 series for all sizes.
- Operation by pneumatic actuator BVA300 series and mechanical declutchable actuator.
- Lockable handle.
- Materials according to NACE MR 0175.
- Surge valve.
- Drain plug.



**Sizes and pipe connections**

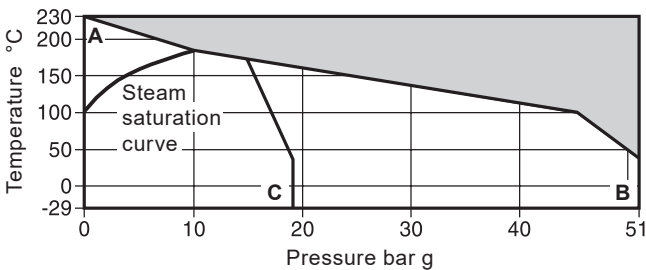
DN50, DN65, DN80, DN100, DN150 and DN200.  
Standard flange ASME (ANSI) B 16.5 Class 150 and 300 with face-to-face dimensions according to B 16.10.

Pipeline ancillaries  
Ball valves

Technical data

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

Pressure/temperature limits



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

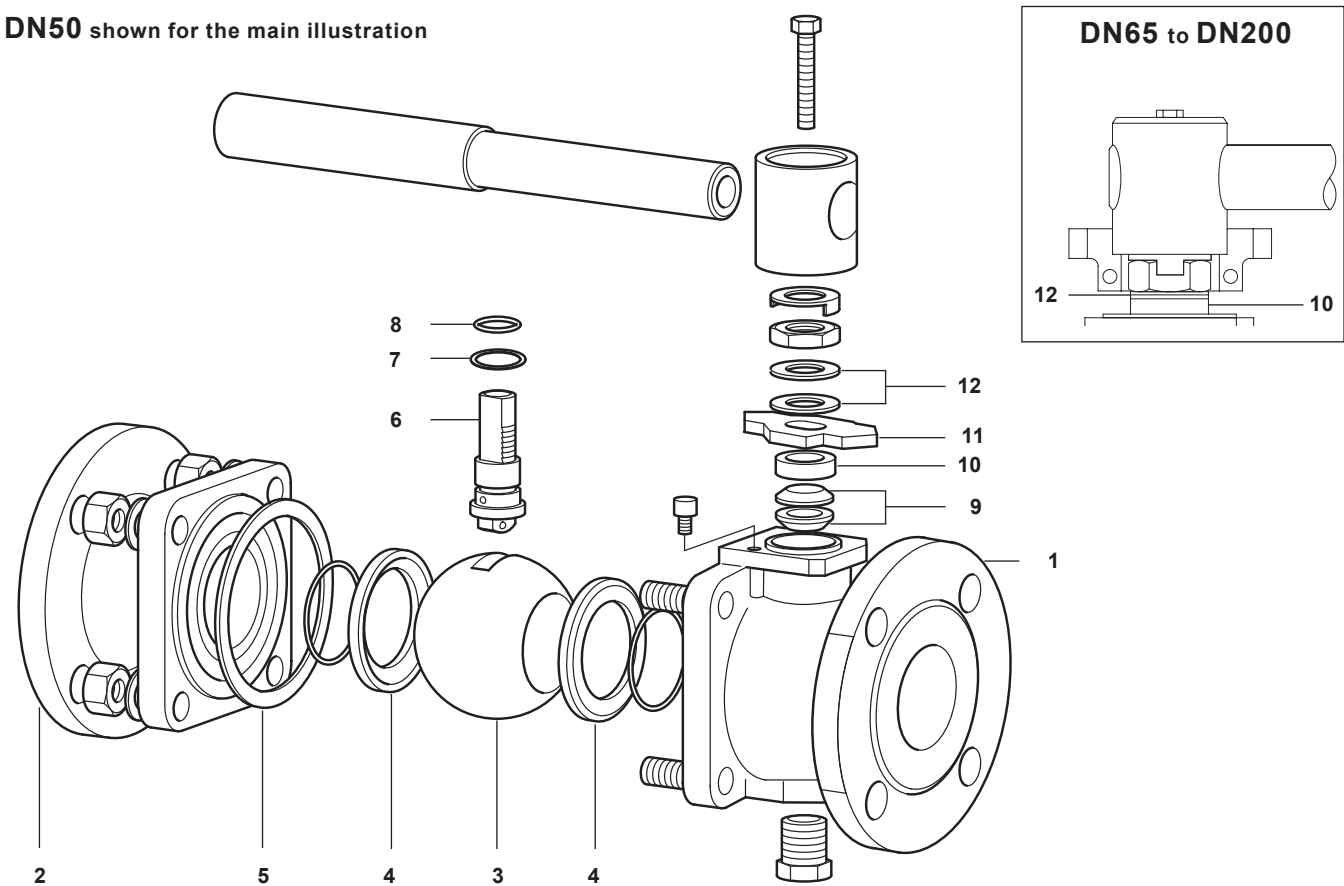
**A - B** Flanged ASME (ANSI) 300.

**A - C** Flanged EN 1092 PN40.

Body design conditions		ASME B 16.34
PMA	Maximum allowable pressure	ASME 150 19 bar g @ 38 °C
		ASME 300 51 bar g @ 38 °C
TMA	Maximum allowable temperature	230 °C @ 0 bar g
Minimum allowable temperature		-29 °C
PMO	Maximum operating pressure for saturated steam service	10 bar g
TMO	Maximum operating temperature	230 °C @ 0 bar g
Minimum operating temperature		-29 °C
<b>Note:</b> For lower operating temperatures consult Spirax Sarco		
ΔPMX Maximum differential pressure is limited to the PMO		
Designed for a maximum cold hydraulic test pressure of:	ASME 150	28.5 bar g
	ASME 300	76.5 bar g

Materials

DN50 shown for the main illustration



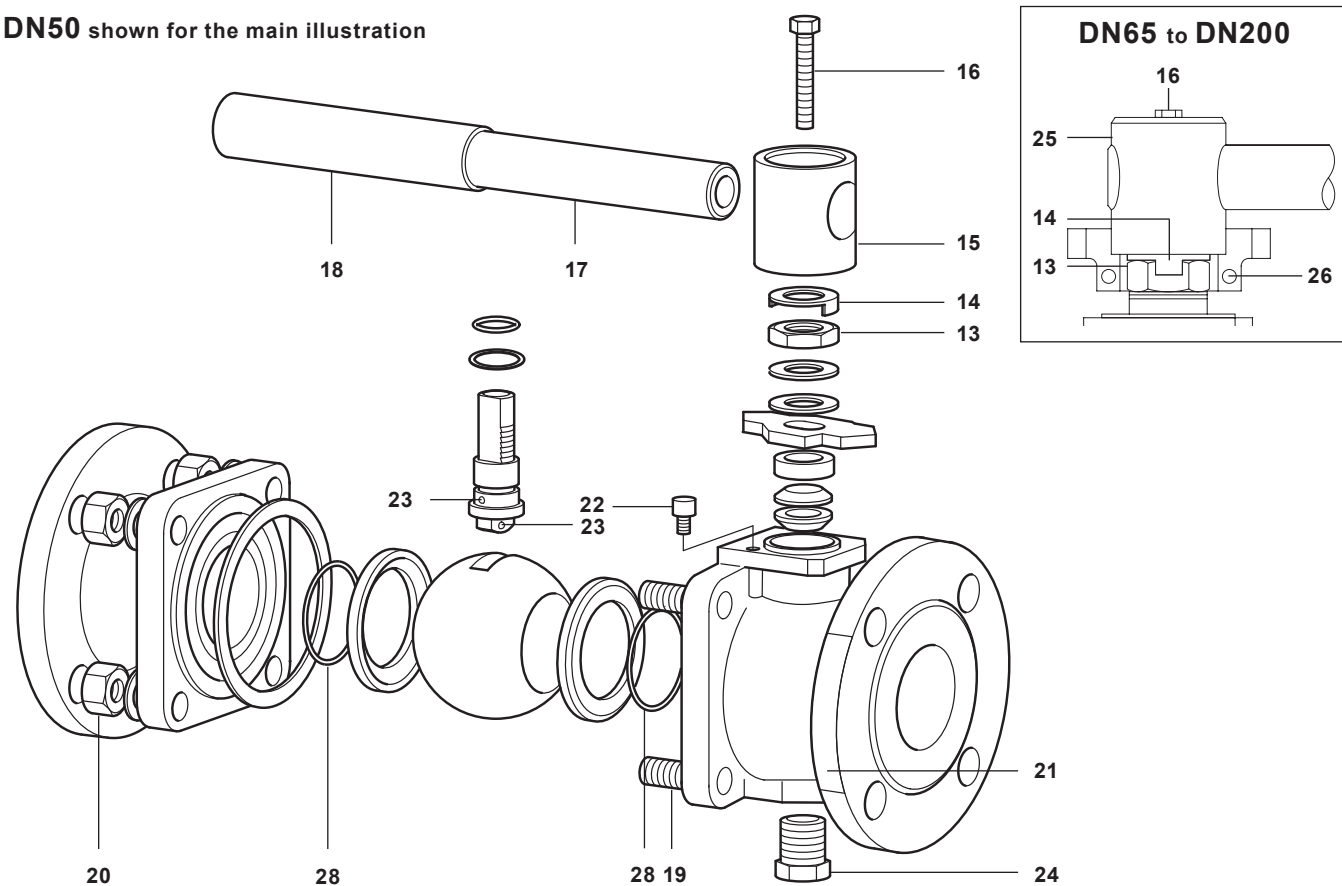
No.	Part	Material		
1	Body	M33V2 ISO	Zinc plated carbon steel	ASTM A 216 WCB
		M33V3 ISO	Stainless steel	ASTM A 351 CF8M
2	Insert	M33V2 ISO	Zinc plated carbon steel	ASTM A 21 6 WCB
		M33V3 ISO	Stainless steel	ASTM A 351 CF8M
3	Solid ball		Stainless steel	AISI 316
4	Seats		PTFE	
5	Body gasket		Grafoil with metal insert	
6	Stem		Stainless steel	AISI 316/AISI 420
7	Lower stem seal		Carbon and graphite R-PTFE	
8	'O' ring		Viton	
9	Upper stem packing		PTFE	
10	Separator		Zinc plated carbon steel	SAE 1010
11	Stop plate with indicator for DN50		Zinc plated carbon steel	SAE 1010
12	Belleville stem washer		Carbon steel/stainless steel	

For parts 13 to 28, go to page 4

Pipeline ancillaries  
Ball valves

Materials

DN50 shown for the main illustration



No.	Part	Material	
13	Gland nut	Carbon steel	SAE 12L14
14	Locking plate	Stainless steel	AISI 304
15	Adaptor DN50	Zinc plated SG iron	
16	Screw	Carbon steel	Grade 5
17	Handle	Zinc plated carbon steel	SAE 1010
18	Grip	Vinyl (Orange)	
19	Stud	Carbon steel	A193-B7
20	Nut	Zinc plated carbon steel	A194-2H
21	Photochemical name-plate	Stainless steel	AISI 304
22	Stop screw	Zinc plated carbon steel	SAE 12L14
23	Antistatic device ball	Stainless steel	AISI 304
24	Drain plug (optional)	Carbon steel	
25	Adaptor with indicator for DN65 to DN200	Zinc plated SG iron	
26	Stop screw for DN65 to DN200	Carbon steel	
27	Lifting eye (DN200 only) - not shown	Zinc plated carbon steel	SAE 1010
28	'O' ring	Viton	

For parts 1 to 12, go to page 3



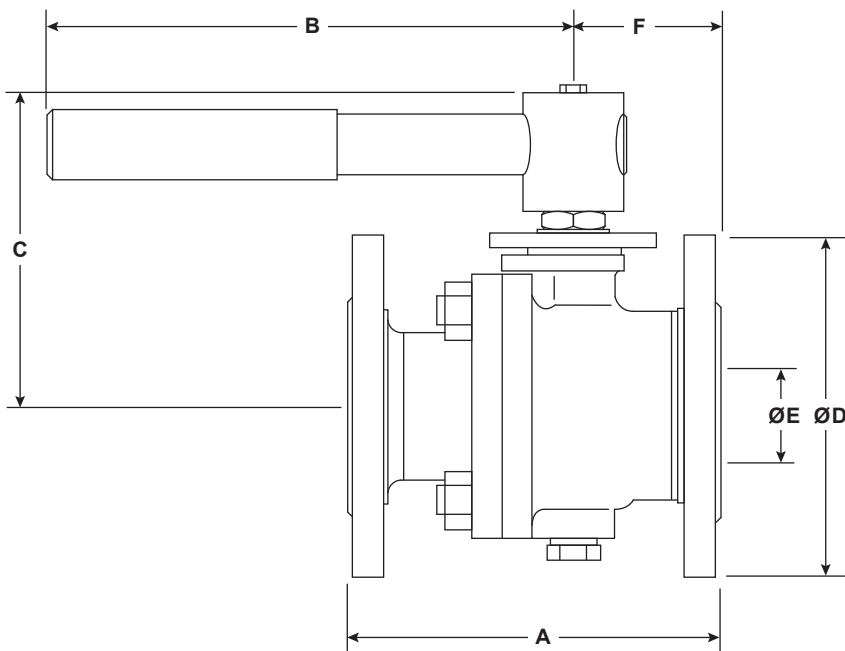
Dimensions/weights (approximate) in mm and kg

Flanged ASME (ANSI) 150

Size	A	B	C	D	E	F	Weight
DN50	178	275	140	152	50	70	10.8
DN65	190	415	160	178	63	82.5	16.2
DN80	203	515	168	191	74	87	20.0
DN100	229	700	202	229	100	106	35.3
DN150	394	850	283	279	150	197	80.2
DN200	457	950	317	343	201	228	140.0

Flanged ASME (ANSI) 300

Size	A	B	C	D	E	F	Weight
DN50	216	275	140	165	50	85.5	14.8
DN65	241	415	160	191	63	90.5	22.8
DN80	283	515	168	210	74	99	30.0
DN100	305	700	202	254	100	122	50.0
DN150	403	850	283	318	150	179	111.2
DN200	502	950	317	381	201	213	185.3



K<sub>v</sub> values

DN	50	65	80	100	150	200
K <sub>v</sub>	300	430	750	1030	2410	4800

For conversion:  
C<sub>v</sub> (UK) = K<sub>v</sub> x 0.963  
C<sub>v</sub> (US) = K<sub>v</sub> x 1.156

Operating torque (N m)

DN	50	65	80	100	150	200
N m	75	120	190	250	720	1 150

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

Pipeline ancillaries  
Ball valves

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

How to order

Specify:	Size	DN50, DN65, DN80, DN100, DN150, DN200
	Model	M33V_ISO
	Body material	2 = Carbon steel
		3 = Stainless steel
	Flanges	ASME 150 or ASME 300

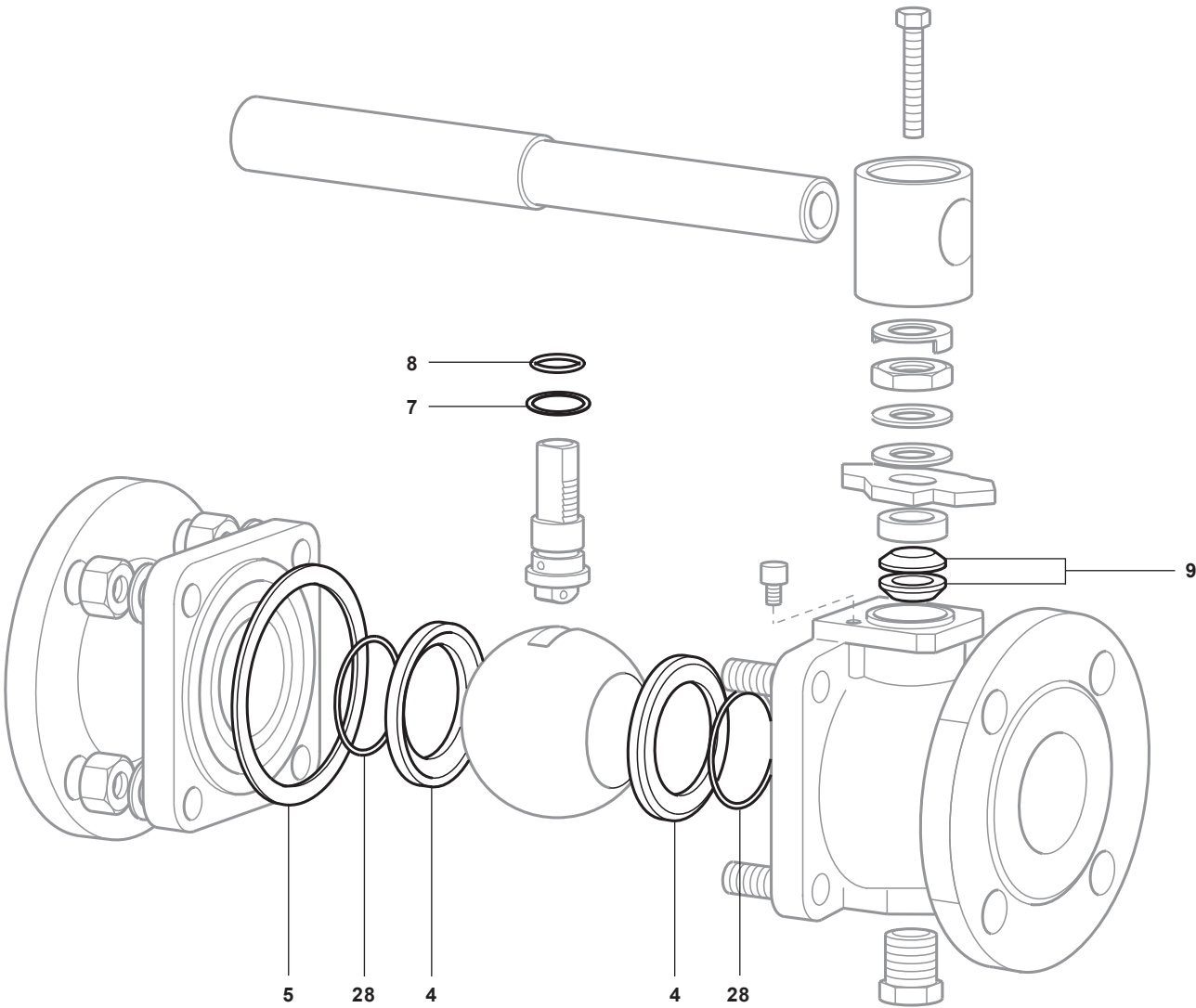
**Example:** 1 off Spirax Sarco DN50 flanged ASME 150 M33V2 ISO ball valve.

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

Available spares

Seats, body gasket, steam seals, stem 'O' ring and seat 'O' ring set	4, 5, 7, 8, 9, 28
----------------------------------------------------------------------	-------------------

**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 - Seats, body gasket, stems seals and stem 'O' ring set for a Spirax Sarco DN80 flanged ASME M33V2 ISO ball valve.



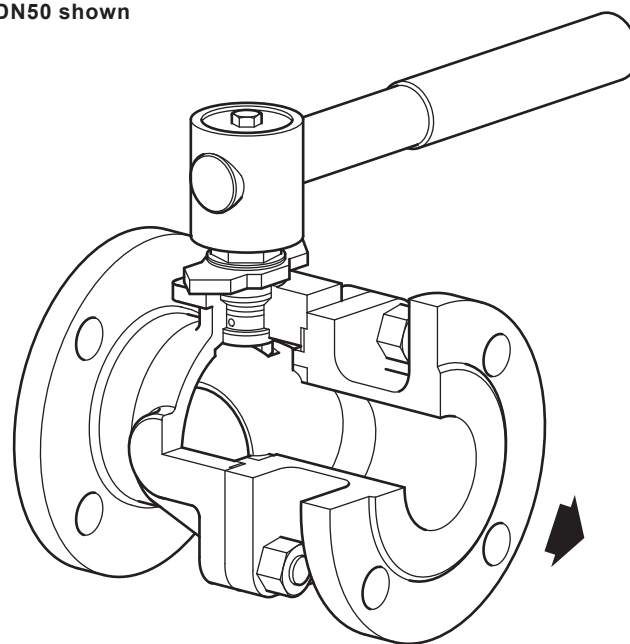
# spirax sarco

## M33S ISO

TI-P133-63  
CMGT Issue 3

## Full Bore Ball Valve API 6D DN50 to DN200 Flanged ASME 150 and ASME 300

DN50 shown



### Description

Produced in accordance with API 6D the M33S ISO full bore two-piece body ball valve with floating ball, has been designed for use as an isolating valve, not a control valve. It can be used with the majority of industrial fluids on applications, which include steam, condensate, water, oil, and other fluids within its operating range. It is not recommended for gases applications. The M33S ISO ANSI has as standard an ISO mounting pad in accordance with ISO 5211.

### Available types

<b>M33S2 ISO</b>	Zinc plated carbon steel body, PDR 0.8 seats (for high temperatures) and ISO mounting.
<b>M33S3 ISO</b>	Stainless steel body, PDR 0.8 seats (for high temperatures) and ISO mounting.

### Standards

This product fully complies with the requirements of the Pressure Equipment Directive (PED) and carries the **CE** mark when so required.

### Certification

This product is available with certification to EN 10204 3.1.

**Note:** All certification/inspection requirements must be stated at the time of order placement.

### Options

- Hollow ball for DN150 and DN200 sizes - Not API 6D rated.
- Self-venting ball.
- Ring joint flanges.
- Extended stems to allow full insulation.
- Operation by pneumatic actuator BVA300 series for all sizes.
- Operation by pneumatic actuator BVA300 series and declutchable gearbox.
- Operation by gearbox
- Lockable handle.
- Relief valve.
- Drain plug.

10.3

123

Pipeline ancillaries  
Ball valves

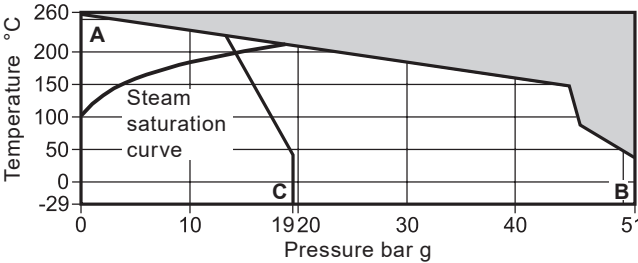
Sizes and pipe connections

DN50, DN65, DN80, DN100, DN150 and DN200.  
Standard flange ASME B 16.5 Class 150 and 300 with face-to-face dimensions according to ASME B 16.10.

Technical data

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

Pressure/temperature limits



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

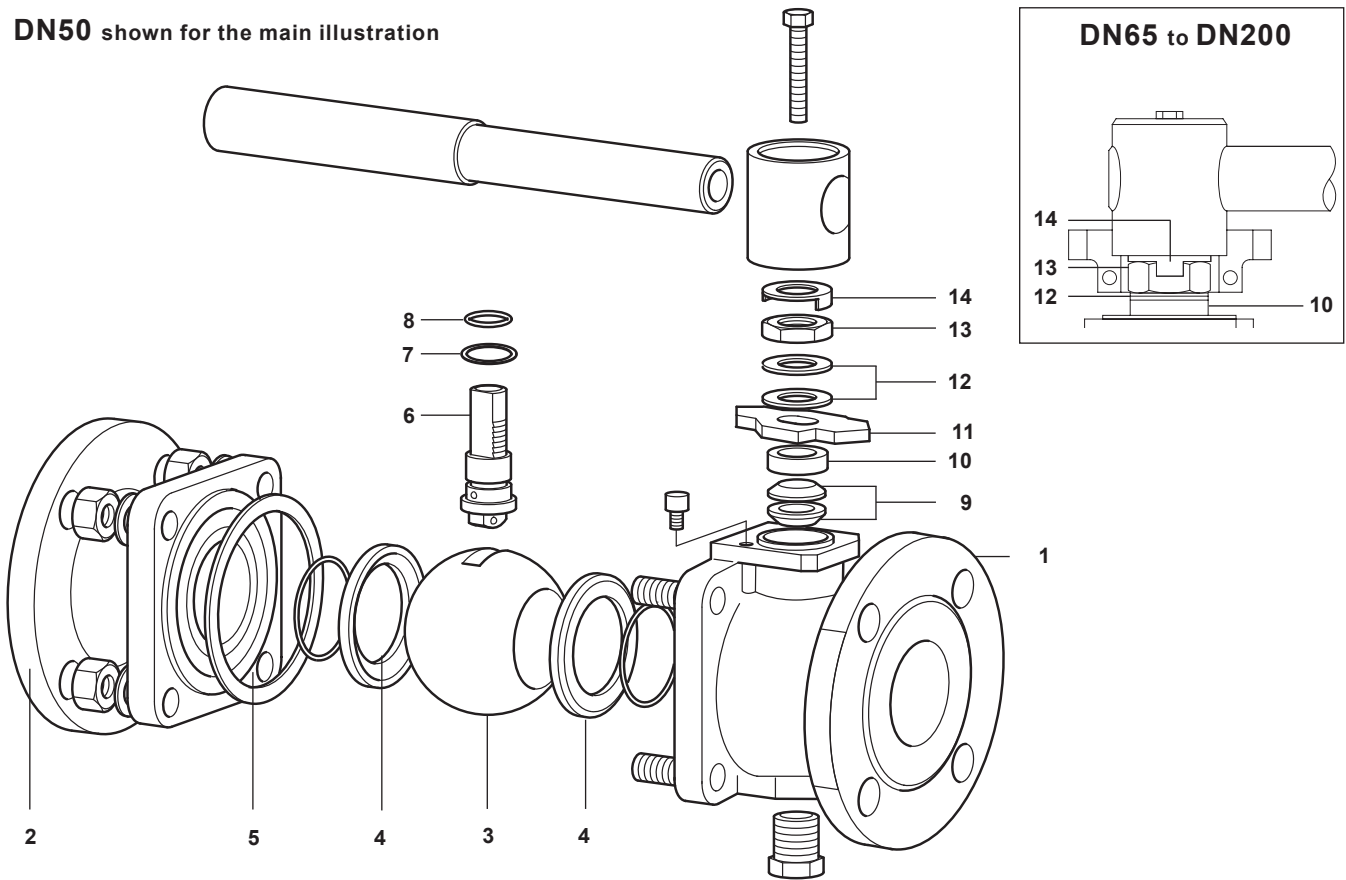
**A - B** Flanged ANSI 300.

**A - C** Flanged ANSI 150.

Body design conditions		ANSI B 16.34
PMA	Maximum allowable pressure	ANSI 150 19 bar g @ 38 °C
		ANSI 300 51 bar g @ 38 °C
TMA	Maximum allowable temperature	260 °C @ 0 bar g
Minimum allowable temperature		-29 °C
PMO	Maximum operating pressure for saturated steam service	17.5 bar g
TMO	Maximum operating temperature	260 °C @ 0 bar g
Minimum operating temperature		-29 °C
<b>Note:</b> For lower operating temperatures consult Spirax Sarco		
ΔPMX Maximum differential pressure is limited to the PMO		
Designed for a maximum cold hydraulic test pressure of:	ASME 150	28.5 bar g
	ASME 300	76.5 bar g

Materials

DN50 shown for the main illustration



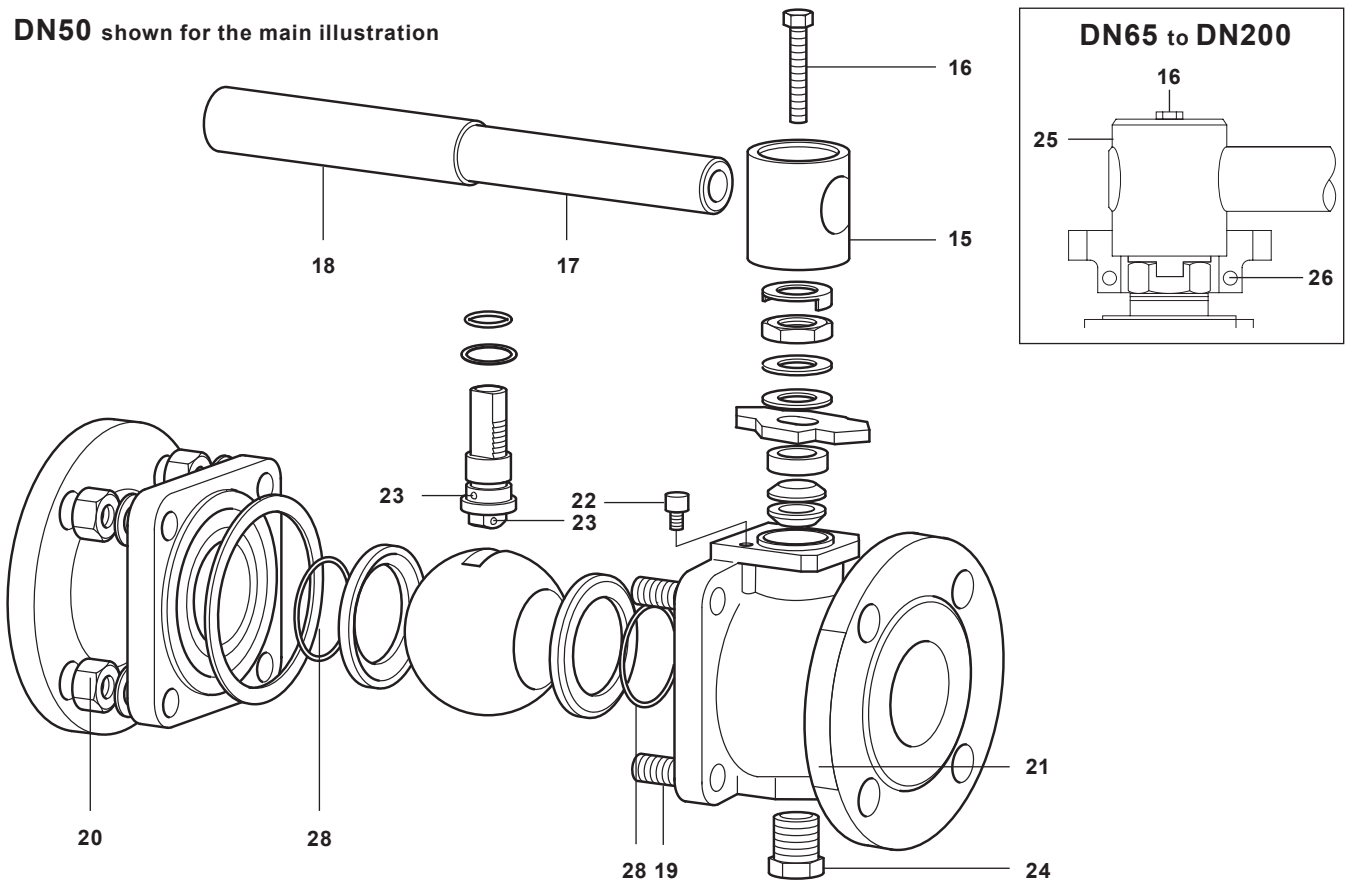
No.	Part	Material		
1	Body	M33S2 ISO	Zinc plated carbon steel	ASTM A 216 WCB
		M33S3 ISO	Stainless steel	ASTM A 351 CF8M
2	Insert	M33S2 ISO	Zinc plated carbon steel	ASTM A 21 6 WCB
		M33S3 ISO	Stainless steel	ASTM A 351 CF8M
3	Solid ball		Stainless steel	AISI 316
4	Seats		Carbon and graphite R-PTFE	PDR 0.8
5	Body gasket		Graphoil with metal insert	
6	Stem		Stainless steel	AISI 316/AISI 420
7	Lower stem seal		Carbon and graphite R-PTFE	
8	'O' ring		Viton	
9	Upper stem packing		PTFE	
10	Separator		Zinc plated carbon steel	SAE 1010
11	Stop plate with indicator for DN50		Zinc plated carbon steel	SAE 1010
12	Belleville stem washer		Carbon steel/stainless steel	
13	Gland nut		Carbon steel	SAE 12L14
14	Locking plate		Stainless steel	AISI 304

Materials continued on page 4

Pipeline ancillaries  
Ball valves

Materials (continued from page 3)

DN50 shown for the main illustration



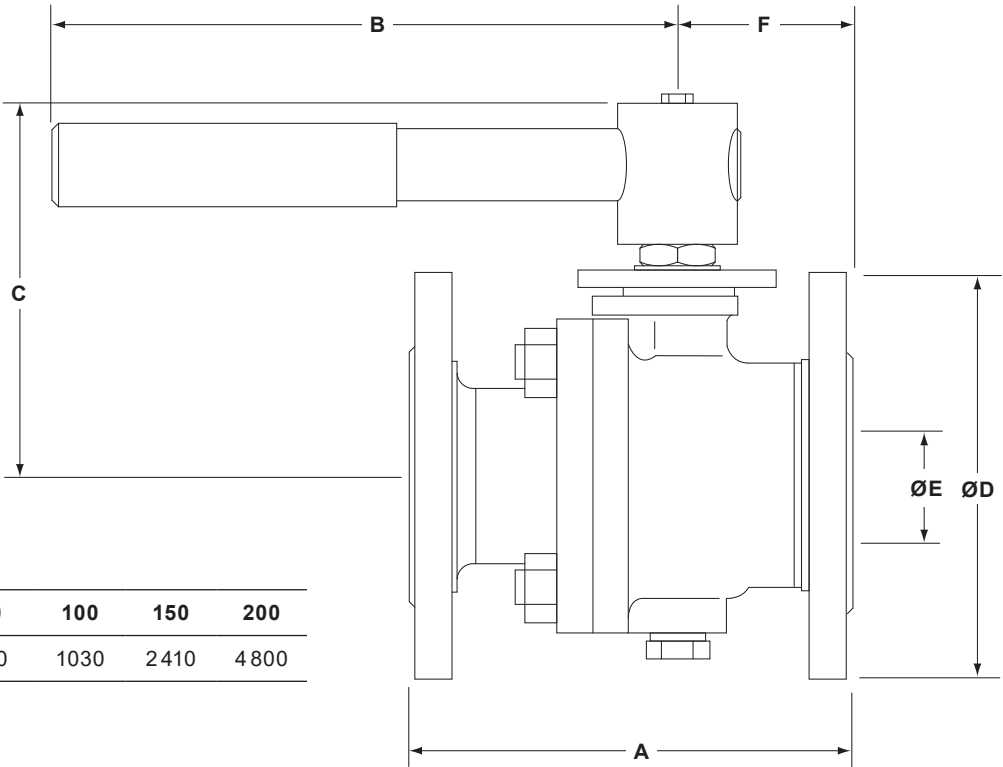
No.	Part	Material	
15	Adaptor DN50	Zinc plated SG iron	
16	Screw	Carbon steel	Grade 5
17	Handle	Zinc plated carbon steel	SAE 1010
18	Grip	Vinyl	Blue
19	Stud	Zinc plated alloy	A193-B7
20	Nut	Zinc plated carbon steel	A194-2H
21	Nameplate	Stainless steel	AISI 430
22	Stop screw	Zinc plated carbon steel	SAE 12L14
23	Antistatic device ball	Stainless steel	AISI 302
24	Plug	M33S2 ISO	Carbon steel
		M33S3 ISO	Stainless steel
25	Adaptor with indicator for DN65 to DN200	Zinc plated SG iron	
26	Stop screw for DN65 to DN200	Carbon steel	
27	Lifting eye (DN200 only) - not shown	Zinc plated carbon steel	SAE 1010
28	'O' ring	EPDM	

Dimensions/weights (approximate) in mm and kg  
Flanged ANSI 150

Size	A	B	C	D	E	F	Weight
DN50	178	275	140	152	50	70	10.8
DN65	190	415	160	178	63	82.5	16.2
DN80	203	515	168	191	74	87	20.0
DN100	229	700	202	229	100	106	35.3
DN150	394	850	283	279	150	197	80.2
DN200	457	950	317	343	201	228	140.0

Flanged ANSI 300

Size	A	B	C	D	E	F	Weight
DN50	216	275	140	165	50	85.5	14.8
DN65	241	415	160	191	63	90.5	22.8
DN80	283	515	168	210	74	99	30.0
DN100	305	700	202	254	100	122	50.0
DN150	403	850	283	318	150	179	111.2
DN200	502	950	317	381	201	213	185.3



K<sub>v</sub> values

DN	50	65	80	100	150	200
K <sub>v</sub>	300	430	750	1030	2410	4800

For conversion:  
C<sub>v</sub> (UK) = K<sub>v</sub> x 0.963  
C<sub>v</sub> (US) = K<sub>v</sub> x 1.156

Operating torque (N m)

DN	50	65	80	100	150	200
N m	75	120	190	250	720	1150

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

Pipeline ancillaries  
Ball valves

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. Carbon steel valves with flanged connections must not be welded to avoid damages to the valve and/or injury to personnel.

How to order

Specify:	Size	DN50, DN65, DN80, DN100, DN150, DN200
	Model	M33S_ISO
	Body material	2 = Carbon steel
		3 = Stainless steel
	Flanges	ANSI 150 or ANSI 300

Example: 1 off Spirax Sarco DN50 flanged ANSI 150 M33S2 ISO ball valve.

Spare parts

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

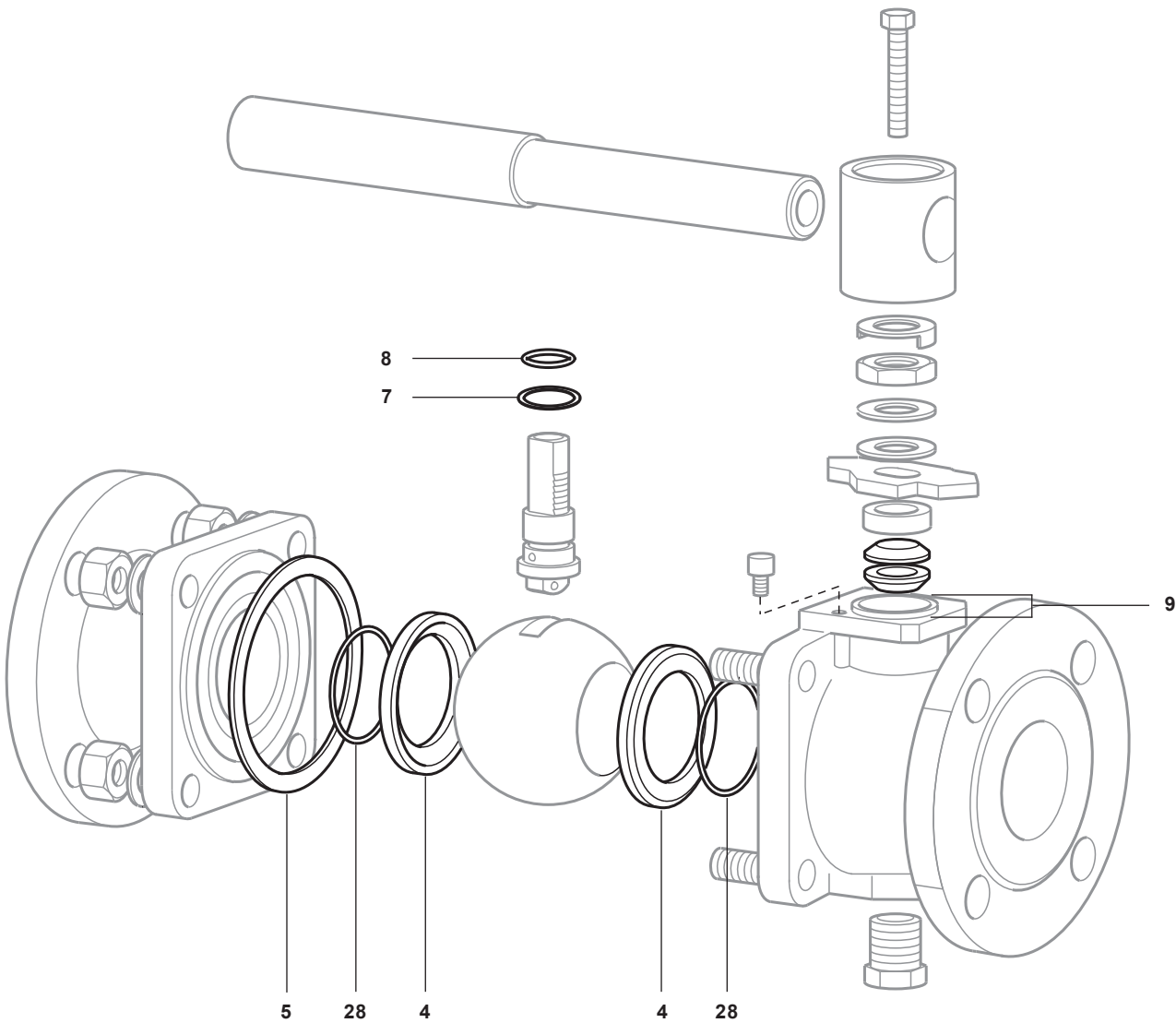
Available spares

Seats, body gasket, steam seals, stem 'O' ring and seat 'O' ring set	4, 5, 7, 8, 9, 28
----------------------------------------------------------------------	-------------------

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 - Seats, body gasket, stems seals and stem 'O' ring set for a Spirax Sarco DN80 flanged ANSI M33S2 ISO ball valve







TI-P133-64  
CMGT Issue 4

M33F ISO Full Bore  
Ball Valve API 6D Firesafe API 607  
DN50 to DN200 ANSI 150 and ANSI 300

Description

Produced in accordance with API 6D the M33F ISO full bore two-piece body ball valve with floating ball, has an API 607 firesafe proof design. It is designed for use as an isolating valve, not a control valve. It can be used with the majority of industrial fluids on applications, which include steam, condensate, water, oil, and other fluids within its operating range. It is not recommended for gases applications. The M33F ISO ANSI has as standard an ISO mounting pad in accordance with ISO 5211.

Firesafe design

In normal working conditions, the ball rests against two PDR 0.8 seats ensuring total closure. When the valve is submitted to temperature above the limits the seats can withstand, the seat becomes deformed and renders to extrusion. When the seats have been totally destroyed, the ball will come to rest firmly against the metal seat in the cap, producing a metal-to-metal closing. This secondary seat in the valve cap ensures the valve will operate to international API 607 standards.

Available types

**M33F2 ISO** Zinc plated carbon steel body, PDR 0.8 seats (for high temperatures) and ISO mounting.

**M33F3 ISO** Stainless steel body, PDR 0.8 seats (for high temperatures) and ISO mounting.

Standards

This product fully complies with the requirements of the Pressure Equipment Directive (PED) and carries the **CE** mark when so required.

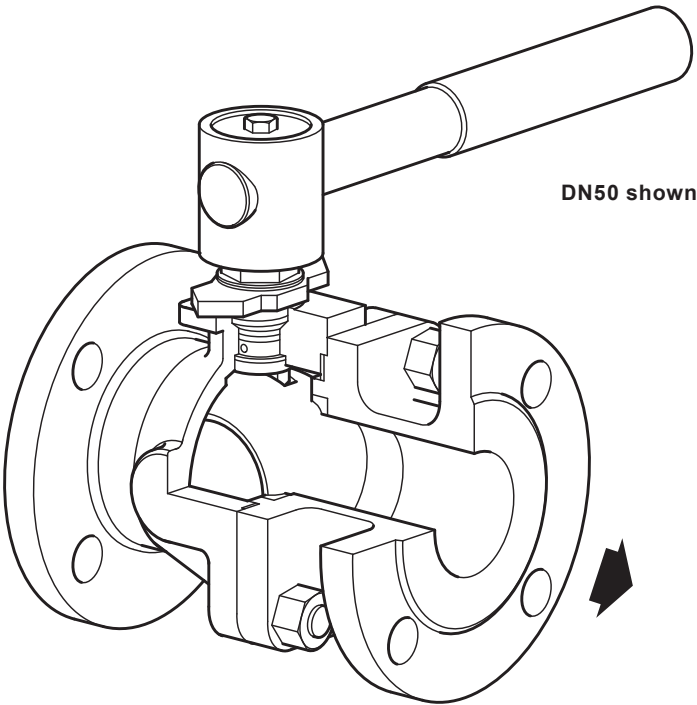
Certification

This product is available with certification to EN 10204 3.1.

**Note:** All certification/inspection requirements must be stated at the time of order placement.

Options

- Hollow ball for DN150 and DN200 sizes - Not API 6D rated.
- Self-venting ball.
- Ring joint flanges.
- Extended stems to allow full insulation.
- Operation by mechanical or pneumatic actuator BVA300 series for all sizes.
- Operation by pneumatic actuator BVA300 series and mechanical declutchable actuator.
- Lockable handle.
- Materials according to NACE MR 0175.
- Surge valve.
- Drain plug.



DN50 shown

10.3

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Pipeline ancillaries  
Ball valves

Sizes and pipe connections

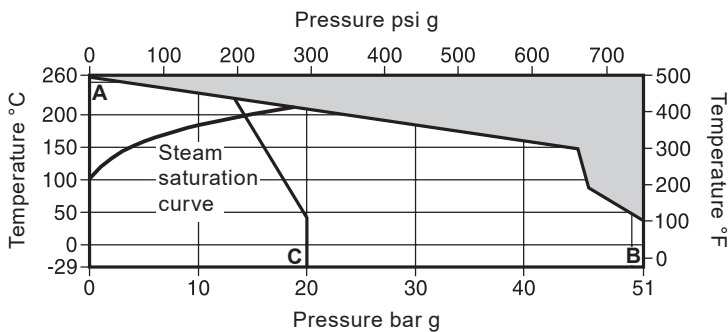
DN50, DN65, DN80, DN100, DN150 and DN200.

Standard flange ANSI B 16.5 Class 150 and 300 with face-to-face dimensions according to B 16.10.

Technical data

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

Pressure/temperature limits



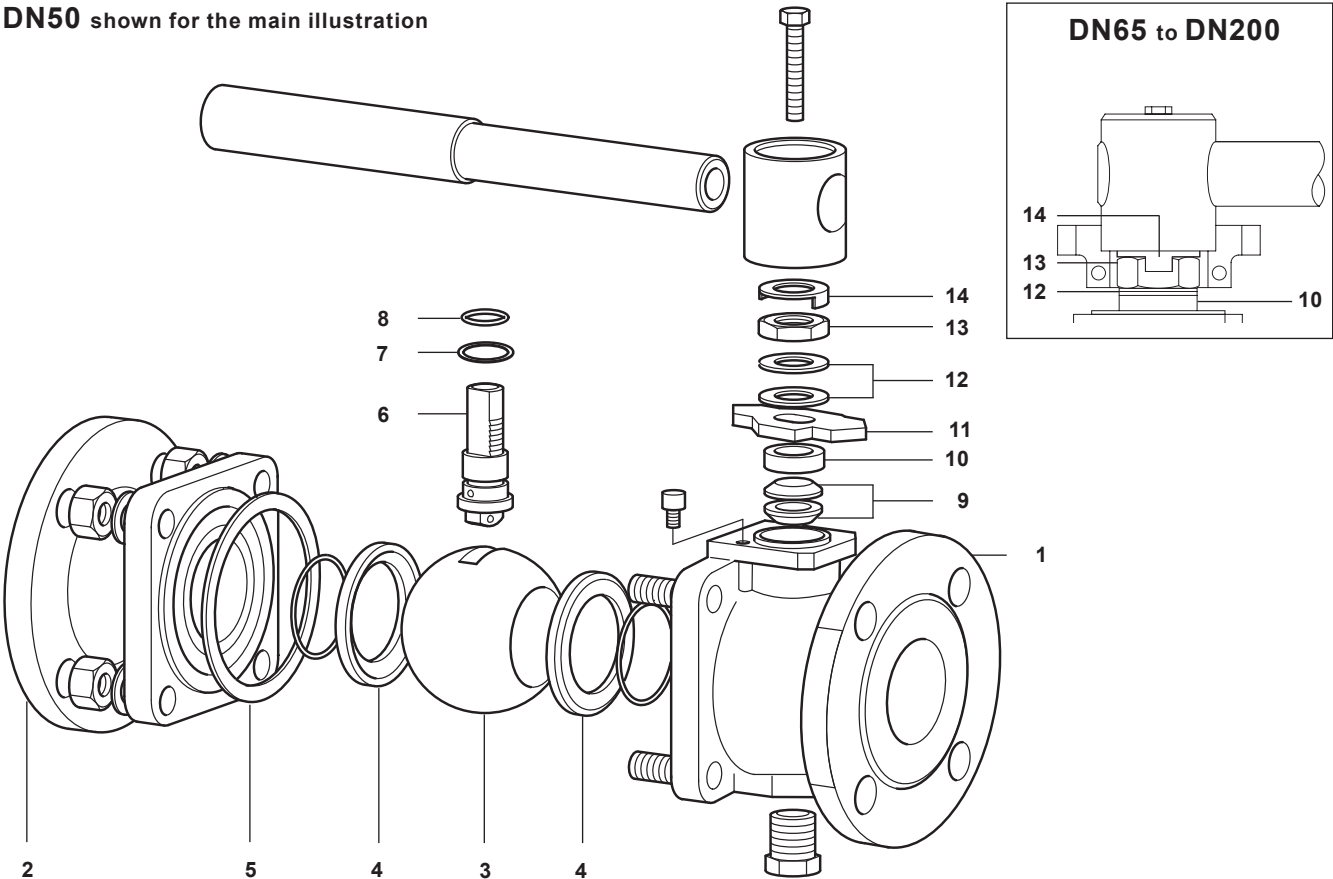
The product **must not** be used in this region.

**A - B** Flanged ASME 300.

**A - C** Flanged ASME 150.

Body design conditions		ASME B 16.34	
PMA	Maximum allowable pressure	ASME 150	20 bar g @ 38 °C    290 psi g @ 100 °F
		ASME 300	51 bar g @ 38 °C    740 psi g @ 100 °F
TMA	Maximum allowable temperature		260 °C @ 0 bar g    500 °F @ 0 psi g
	Minimum allowable temperature		-29 °C    -20 °F
PMO	Maximum operating pressure for saturated steam service		17.5 bar g    254 psi g
TMO	Maximum operating temperature		260 °C @ 0 bar g    500 °F @ 0 psi g
	Minimum operating temperature		-29 °C    -20 °F
<b>Note:</b> For lower operating temperatures consult Spirax Sarco			
ΔPMX Maximum differential pressure is limited to the PMO			
Designed for a maximum cold hydraulic test pressure of:		ASME 150	28.5 bar g    413 psi g
		ASME 300	76.5 bar g    1109 psi g

DN50 shown for the main illustration



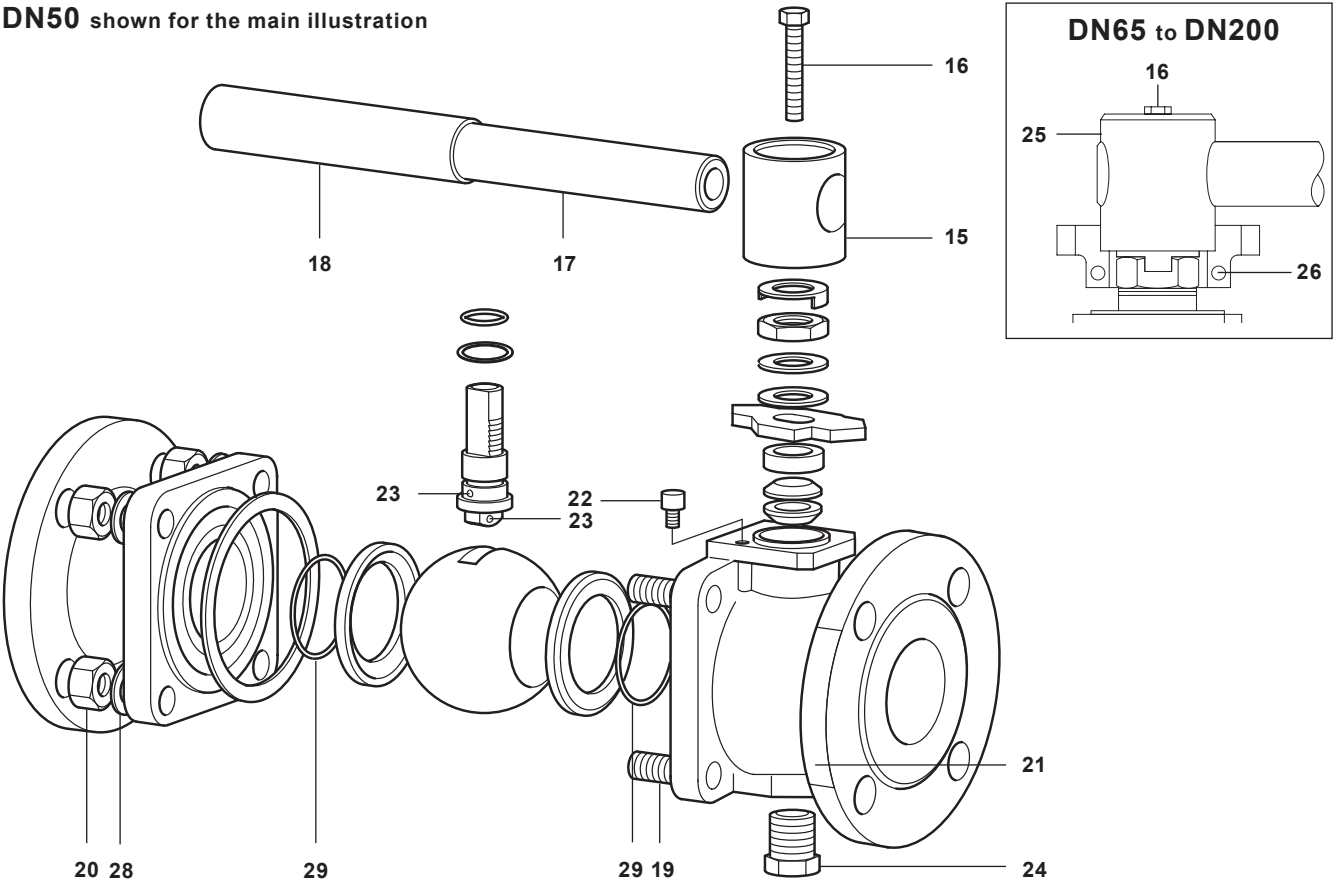
Materials

No.	Part	Material		
1	Body	M33F2 ISO	Zinc plated carbon steel	ASTM A 216 WCB
		M33F3 ISO	Stainless steel	ASTM A 351 CF8M
2	Insert	M33F2 ISO	Zinc plated carbon steel	ASTM A 21 6 WCB
		M33F3 ISO	Stainless steel	ASTM A 351 CF8M
3	Solid ball		Stainless steel	AISI 316
4	Seats		Carbon and graphite R-PTFE	PDR 0.8
5	Body gasket		Graphoil with metal insert	
6	Stem		Stainless steel	AISI 316/AISI 420
7	Lower stem seal		Carbon and graphite R-PTFE	
8	'O' ring		Viton	
9	Upper stem packing		Graphoil	
10	Separator		Zinc plated carbon steel	SAE 1010
11	Stop plate with indicator for DN50		Zinc plated carbon steel	SAE 1010
12	Belleville stem washer		Carbon steel/stainless steel	
13	Gland nut		Carbon steel	SAE 12L14
14	Locking plate		Stainless steel	AISI 304

For parts 15 to 29 see page 4

Pipeline ancillaries  
Ball valves

DN50 shown for the main illustration



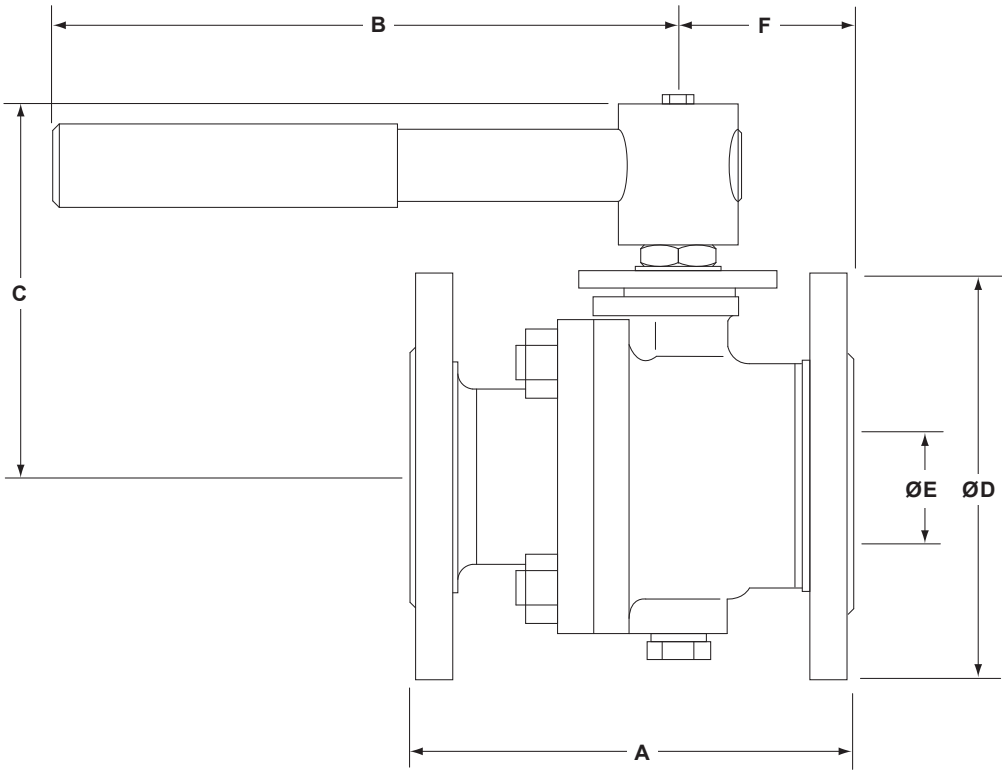
No.	Part	Material	
15	Adaptor DN50	Zinc plated SG iron	
16	Screw	Carbon steel	Grade 5
17	Handle	Zinc plated carbon steel	SAE 1010
18	Grip	Vinyl (Red)	
19	Stud	Stainless steel	A193-B8
20	Nut	Stainless steel	A194-8MA
21	Photochemical name-plate	Stainless steel	AISI 304
22	Stop screw	Zinc plated carbon steel	SAE 12L14
23	Antistatic device ball	Stainless steel	AISI 304
24	Drain plug (optional)	Carbon steel	
25	Adaptor with indicator for DN65 to DN200	Zinc plated SG iron	
26	Stop screw for DN65 to DN200	Carbon steel	
27	Lifting eye (DN200 only) - not shown	Zinc plated carbon steel	SAE 1010
28	Belleville stud washer	Stainless steel	
29	'O' ring	Viton	

For parts 1 to 14 see page 3

Dimensions/weights (approximate) in mm and kg

Flanged ANSI 150							
Size	A	B	C	D	E	F	Weight
DN50	178	275	140	152	50	70	10.8
DN65	190	415	160	178	63	82.5	16.2
DN80	203	515	168	191	74	87	20.0
DN100	229	700	202	229	100	106	35.3
DN150	394	850	283	279	150	197	80.2
DN200	457	950	317	343	201	228	140.0

Flanged ANSI 300							
Size	A	B	C	D	E	F	Weight
DN50	216	275	140	165	50	85.5	14.8
DN65	241	415	160	191	63	90.5	22.8
DN80	283	515	168	210	74	99	30.0
DN100	305	700	202	254	100	122	50.0
DN150	403	850	283	318	150	179	111.2
DN200	502	950	317	381	201	213	185.3



Pipeline ancillaries

Ball valves

K<sub>v</sub> values

DN	50	65	80	100	150	200
K <sub>v</sub>	300	430	750	1030	2410	4800

For conversion:  
C<sub>v</sub> (UK) = K<sub>v</sub> x 0.963  
C<sub>v</sub> (US) = K<sub>v</sub> x 1.156

Operating torque (N m)

DN	50	65	80	100	150	200
N m	75	120	190	250	720	1150

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

Safety information, installation and maintenance

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

How to order

Size	DN50, DN65, DN80, DN100, DN150, DN200
Model	M33F/ ISO
Body material	2 = Carbon steel 3 = Stainless steel
Flanges	ANSI 150 or ANSI 300

**Example:** 1 off Spirax Sarco DN50 flanged ANSI 150 M33F2 ISO ball valve

Spare parts

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

Available spares

Seats, body gasket, stem seals, stem 'O' ring and seat 'O' ring set	4, 5, 7, 8, 9, 29
---------------------------------------------------------------------	-------------------

CMGT Issue 4

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 - Seats, body gasket, stems seals and stem 'O' ring set for a Spirax Sarco DN80 flanged ANSI M33F2 ISO ball valve

TI-P133-93  
CMGT Issue 3

## M33H ISO

### Full Bore Ball Valve

## DN50 to DN200 Flanged ASME 150 and ASME 300

#### Description

The M33H ISO is a full bore, two-piece body, ball valve with floating ball and has ISO mounting as a main feature, the valve has a special ball which has received a surface hardening and also benefits from having reinforced PEEK seats.


The M33H ISO has been designed for use as an isolating valve, not a control valve, and can be installed in high temperature applications, such as steam up to 39 bar g and thermal oils. It is not recommended for gases applications.

#### Available types

**M33H2 ISO** Zinc plated carbon steel body, reinforced PEEK seats and ISO mounting.

**M33H3 ISO** Stainless steel body, reinforced PEEK seats and ISO mounting.

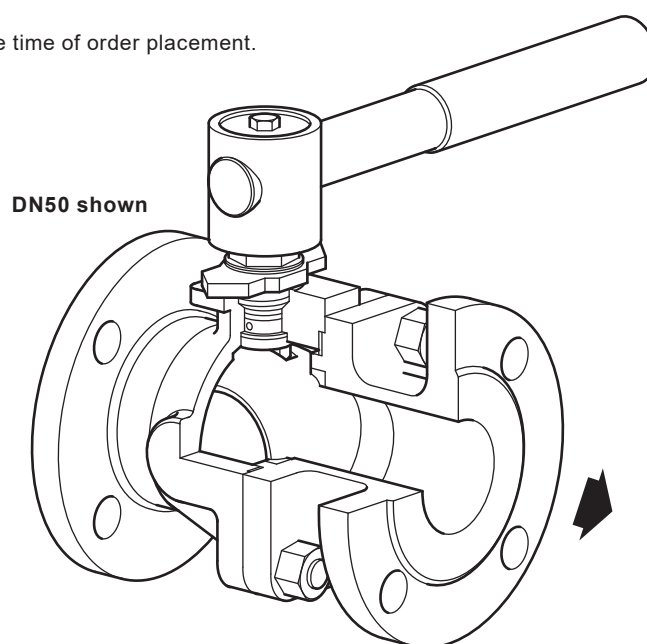
#### Standards

This product fully complies with the requirements of the Pressure Equipment Directive (PED) and carries the  mark when so required.

#### Certification

This product is available with certification to EN 10204 3.1.

**Note:** All certification/inspection requirements must be stated at the time of order placement.



#### Options

- Hollow ball for DN150 and DN200 sizes - Not API 6D rated.
- Self-venting ball.
- Ring joint flanges.
- Extended stems to allow full insulation.
- Operation by pneumatic actuator BVA300 series for all sizes.
- Operation by pneumatic actuator BVA300 series and declutchable gearbox.
- Operation by gearbox.
- Materials according to NACE MR0175
- Lockable handle.
- Relief valve.
- Drain plug.

10.3

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Pipeline ancillaries  
Ball valves

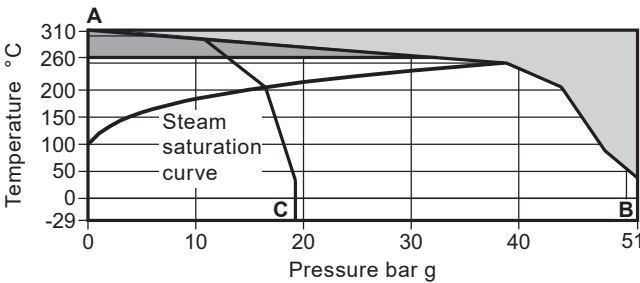
Sizes and pipe connections

DN50, DN65, DN80, DN100, DN150 and DN200.  
Standard flange ASME 150 and ASME 300 with face-to-face dimensions according to ASME B 16.10.

Technical data

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

Pressure/temperature limits



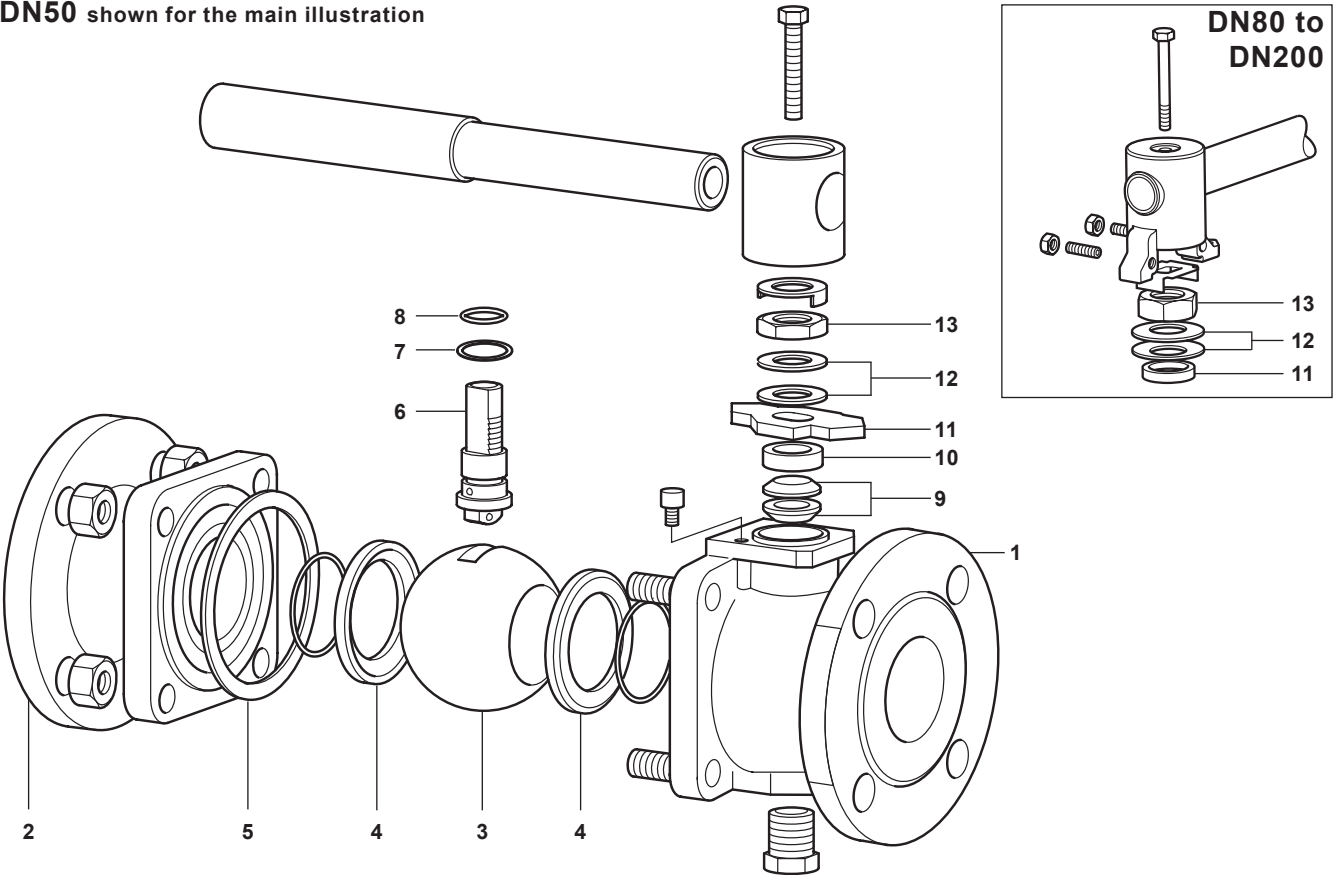
- The product **must not** be used in this region.
- The product must only be used in this area for short periods of time \*
- A - B Flanged ASME 300.
- A - C Flanged ASME 150.

Body design conditions		ASME 150 and ASME 300	
PMA	Maximum allowable pressure	ASME 150	19 bar g @ 38 °C
		ASME 300	51 bar g @ 38 °C
TMA	Maximum allowable temperature	310 °C @ 0 bar g	
Minimum allowable temperature		-29 °C	
PMO	Maximum operating pressure for saturated steam service	ASME 150	17.5 bar g
		ASME 300	39 bar g
TMO	Maximum operating temperature. For continuous operation, the maximum operating temperature is 260 °C	For short periods*	310 °C @ 0 bar g
		ASME 150	260 °C @ 11.7 bar g
		ASME 300	260 °C @ 39 bar g
Minimum operating temperature		-29 °C	
<b>Note:</b> For lower operating temperatures consult Spirax Sarco			
ΔPMX	Maximum differential pressure is limited to the PMO		
Designed for a maximum cold hydraulic test pressure of:		ASME 150	28.5 bar g
		ASME 300	76.5 bar g



Materials

DN50 shown for the main illustration



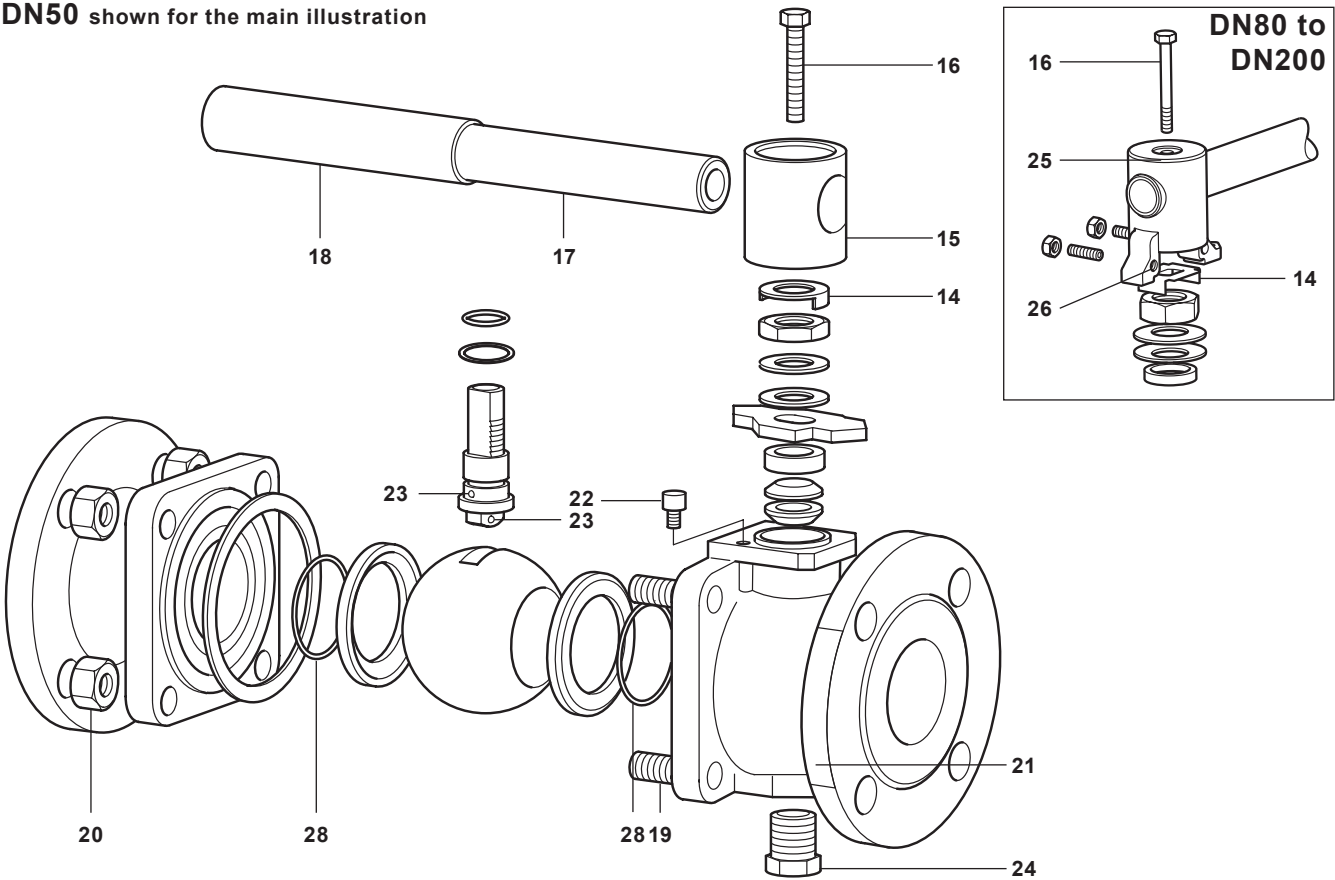
No.	Part	Material		
1	Body	M33H2 ISO	Zinc plated carbon steel	ASTM A 216 WCB
		M33H3 ISO	Stainless steel	ASTM A 351 CF8M
2	Insert	M33H2 ISO	Zinc plated carbon steel	ASTM A 216 WCB
		M33H3 ISO	Stainless steel	ASTM A 351 CF8M
3	Solid ball		Stainless steel	AISI 316 hardened surface
4	Seat		Reinforced PEEK	
5	Body gasket		Graphite with metal insert	
6	Stem	DN50 to DN80	Duplex stainless steel	AISI 318 LN
		DN100 to DN200	Stainless steel	AISI 316/AISI 420
7	Lower stem seal		Reinforced PEEK	
8	Stem 'O' ring		EPDM	Geothermal
9	Upper stem packing		Graphite	
10	Separator		Zinc plated carbon steel	SAE 1010
11	Stop plate with indicator for DN50	Zinc plated carbon steel	SAE 1010	
12	Belleville stem washer		Carbon steel/stainless steel	Geothermal
13	Gland nut		Zinc plated carbon steel	SAE 1010/SAE 12L14

Materials continued on page 4

Pipeline ancillaries  
Ball valves

Materials

DN50 shown for the main illustration



No.	Part	Material	
14	Locking plate	Stainless steel	AISI 304
15	Adaptor DN50	Zinc plated SG iron	
16	Adaptor screw	Zinc plated carbon steel	Grade 5
17	Handle	Zinc plated carbon steel	SAE 1010
18	Grip	Vinyl	Yellow
19	Stud	Zinc plated alloy steel	A193-B7
20	Nut	Zinc plated carbon steel	A194-2H
21	Nameplate	Stainless steel	AISI 430
22	Stop screw	Zinc plated carbon steel	SAE 12L14
23	Antistatic device ball	Stainless steel	AISI 302
24	Drain plug (optional)	M33H2 ISO	Carbon steel
		M33H3 ISO	Stainless steel
25	Adaptor with indicator for DN65 to DN200	Zinc plated SG iron	
26	Stop screw for DN65 to DN200	Zinc plated carbon steel	SAE 12L 14
27	Lifting eye (DN200 only) - not shown	Zinc plated carbon steel	SAE 1010
28	Seat 'O' ring	EPDM	Geothermal

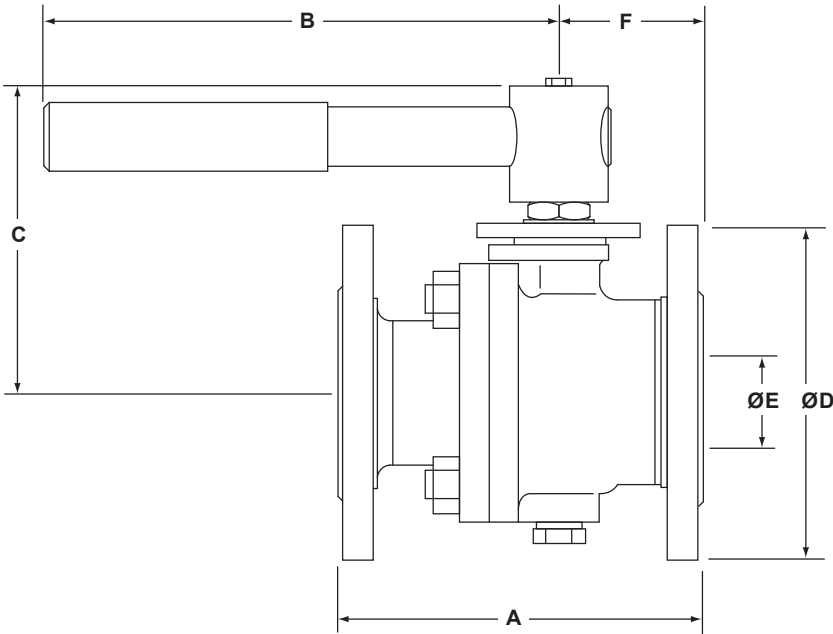
Dimensions/weights (approximate) in mm and kg

Flanged ASME 150

Size	A	B	C	D	E	F	Weight
DN50	178	275	140	152	50	70	10.8
DN65	190	415	160	178	63	82.5	16.2
DN80	203	515	168	191	74	87	20.0
DN100	229	700	202	229	100	106	35.3
DN150	394	850	283	279	150	197	80.2
DN200	457	950	317	343	201	228	140.0

Flanged ASME 300

Size	A	B	C	D	E	F	Weight
DN50	216	275	140	165	50	85.5	14.8
DN65	241	415	160	191	63	90.5	22.8
DN80	283	515	168	210	74	99	30.0
DN100	305	700	202	254	100	122	50.0
DN150	403	850	283	318	150	179	111.2
DN200	502	950	317	381	201	213	185.3



K<sub>v</sub> values

DN	50	65	80	100	150	200	For conversion: C <sub>v</sub> (UK) = K <sub>v</sub> x 0.963 C <sub>v</sub> (US) = K <sub>v</sub> x 1.156
K <sub>v</sub>	300	430	750	1030	2410	4800	

Operating torque (N m)

DN	50	65	80	100	150	200	The torque figures shown are for a valve at maximum operating pressure that is operated frequently. Valves that are subject to long static periods, may require greater break-out torque.
N m	90	120	190	350	750	1150	

Pipeline ancillaries  
Ball valves

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 valve and/or injury to personnel.

How to order

Specify:	Size	DN50, DN65, DN80, DN100, DN150, DN200	<b>Example:</b> 1 off Spirax Sarco DN50 flanged ASME 150 M33H2 ISO ball valve.
	Model	M33H_ISO	
	Body material	2 = Carbon steel	
		3 = Stainless steel	
	Flanges	ASME 150 or ASME 300	

Spare parts

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

Available spares

Seats, body gasket, lower stem seal, upper stem packing, stem 'O' ring and seat 'O' ring set	4, 5, 7, 8, 9, 28
----------------------------------------------------------------------------------------------	-------------------

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 - Seats, body gasket, lower stem seal, upper stem packing, stem 'O' ring and seat 'O' ring set for a Spirax Sarco DN80 flanged ASME 150 M33H2 ISO ball valve.

