



***Worchester 53/54 Series
Reduced Bore Flanged Ball Valves to DIN 3202***



Experience In Motion

General Description

Since its introduction to industry, the Series 53/54 ball valve has become a major force in the world of fluid control. Its modular design, integrity and cost effectiveness have rendered almost all other valve types obsolete on a wide range of services.

Flowserve Worcester Controls, a world leader in the manufacture of industrial ball valves and actuators, has adopted a policy of continuous development in technology, expertise and service and has produced a range of reliable products which perform in virtually any fluid control service throughout the world.

The Series 53/54 is Worcester's range of metric, integrally flanged valves conforming to DIN 3202. The valves are designed to BS 5159 and are supplied as F53/54 anti-static and fire rated. Other standard variants can be supplied, some of which are described later.

This product is suitable for sole isolation purposes as per PED. All pressure bearing components are manufactured from approved materials, are traceable and comply in all respects with the PED.

Quality

Valves are designed and manufactured in accordance with the Pressure Equipment Regulation 1999 and BS EN ISO 9001.

Flanges

Integral to the body and fully machined to DIN 2543/4/5, PN 16/25/40. Alternatively, metric flanges are available to BS 4504 (PN16/40).

Face to face lengths are to DIN3202, F4/F5 (53 Series), FI (54 Series).

Sizes / Body Design

Series 53-PN 16/25/40 one-piece valve (15-50 mm)
Series 53-PN 16/25/40 two-piece valve (65-250 mm)
Series 54-PN 16/25/40 one-piece valve (15-50mm)
Series 54-PN 16/25/40 two-piece valve (65-100 mm)

Fire-tested Design

The Series 53/54 is certified to BS 6755 Part 1 (production test) and Part 2 (fire type test which also equates to ISO 10497 and API 607/6FA).

Features include the use of spring-loaded stem plungers which provide the stem assembly with full mechanical anti-static capability for greater safety when handling flammable media.

The stem is assembled to the valve from inside the body providing blow-out proof safety.

Stem sealing is achieved through the use of graphite packings although other stem builds are available to satisfy other application requirements, while through-leakage is prevented by secondary metal seating in contact with the ball.

Secondary metal body seals ensure overall integrity in the event of a fire.

NOTE: The use of a fail-safe Norbro 40R spring-return actuator in critical applications will open/close the valve in the event of loss of electrical/pneumatic supply.

Seats

A range of seat materials is available to suit a wide variety of pressure and temperature requirements.

Materials of Construction

In addition to the low temperature carbon steel and stainless steel body other materials are available, including Duplex™, Hastelloy™, Monel, etc. Valve trim components can be supplied in a wide range of materials.

All pressure bearing materials are impact tested at the lowest operation temperature (27 joules/min).

Special Application Variations

Enviro-Safe

The Enviro-Safe range of valves are specifically designed for use on toxic media (e.g. phosgene, chlorine) and/or high cycling duties. It features Worcester's unique dual sealing stem design enabling monitoring of primary seal integrity whilst maintaining overall containment of the media.

The Enviro-Safe range comprises the E53/54 and all Worcester flanged valves, three piece and multi-way valves.

Series 18/19 Multi-Way

To complement the 53/54, Worcester produce a multi-ported flanged valve enabling 3, 4 or 5 port options and a variety of ball port designs to facilitate various flow diversion requirements. This valve can simplify process systems by replacing, in some cases, two, three or even four standard valves and their associated control equipment.

Optional Features

The following optional features can be supplied on request:-

- Manual gearbox or pneumatic or electric actuators.
- Vacuum build.
- NACE sour gas specification MR.01.75.
- Spring return handle.
- A wide range of different seat materials including PEEK, UHMWPE, Fluorofill and metal
- Locking devices.
- Steam jacket.
- Lagging extensions.
- Micro-switches.
- Characterised or round seats with matched ball and stem for modulation (15-50 mm).



15mm Series 53 with spring return handle



V-Flow control valve assembly comprising 25mm Series 53, Norbro 40R actuator and positioner

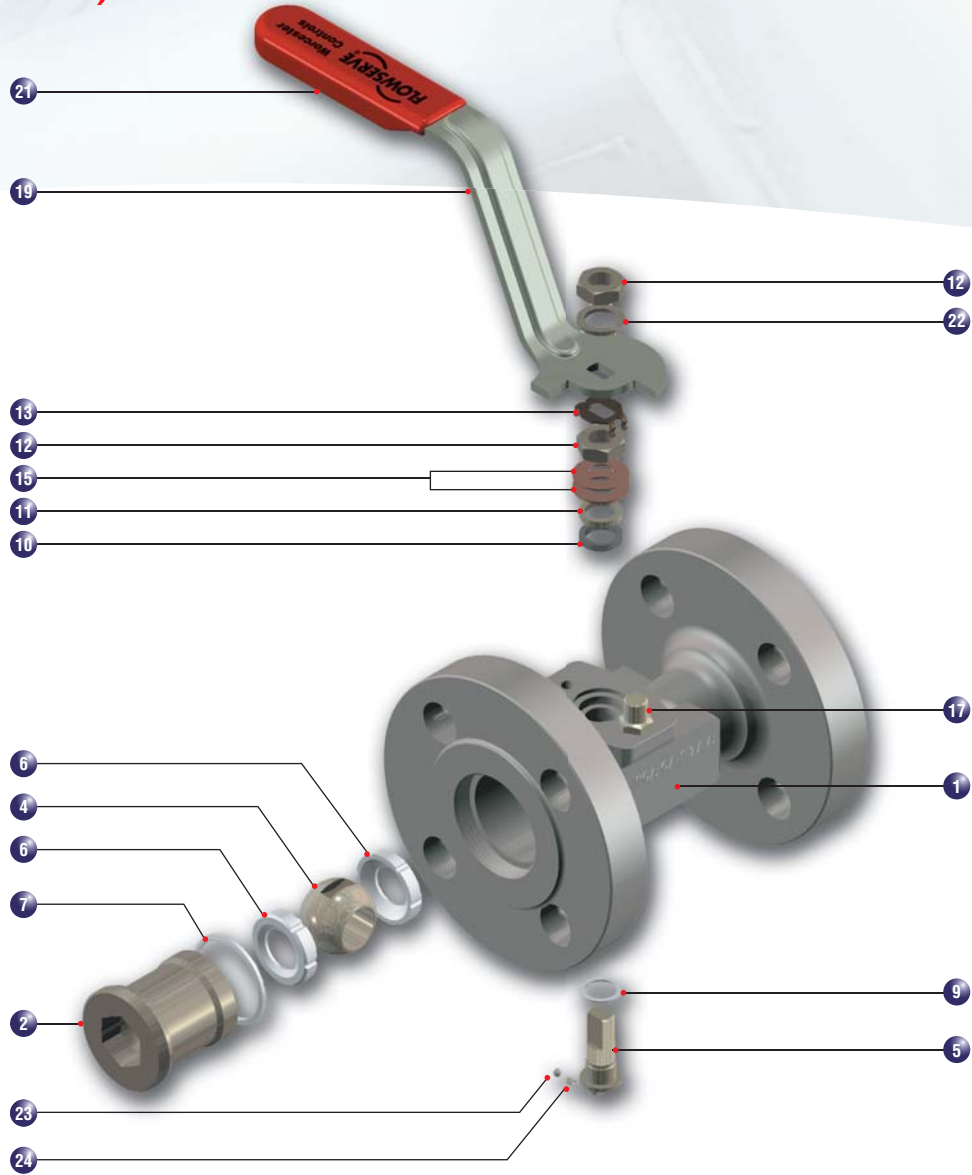
Features

- Simple one and two-piece designs
- Extensive range of seat variants
- Range of body and trim materials
- Graphite seals
- Precision machined mounting platform
- Large diameter stems
- Size range (15-250 mm)
- TA Luft approved

Benefits

- Ease of on-site maintenance
- To handle extremes in pressure/temperature
- Optimises compatibility of service
- Gives long sealing life and fire integrity
- Ease of actuation
- Increased safety and reliability
- Suitable for a variety of pipe sizes and flow rates
- European endorsement of stem integrity

(15-50mm)

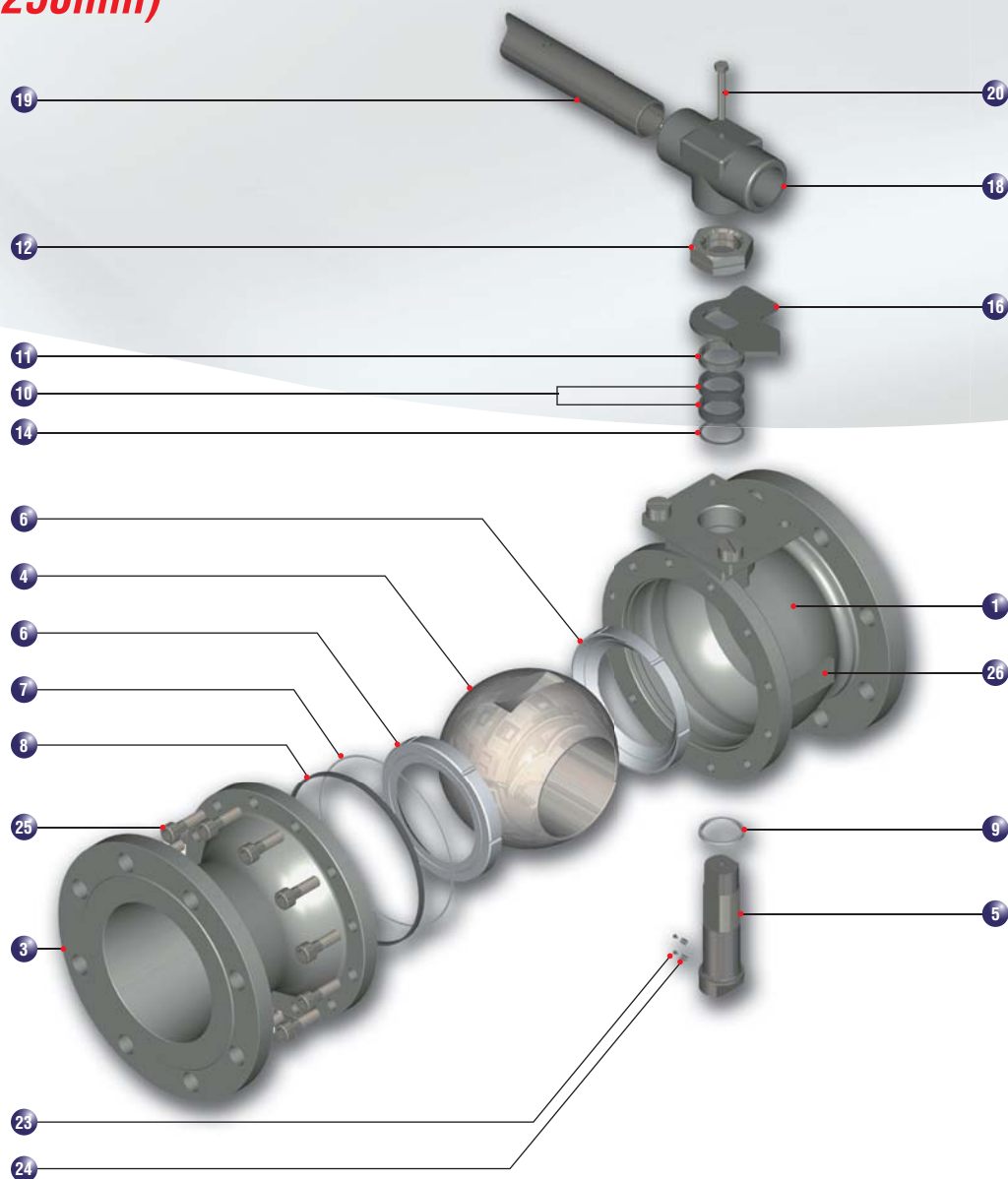


Parts / Materials List

NOTE: Drawings shows bottom entry design with integral body seat/seal.

ITEM	DESCRIPTION	MATERIAL
1.	Body	Stainless Steel ASTM A182 F316 (15-25mm) or A351 CF8M A479 316 Carbon Steel ASTM A105 (15-25mm) or ASTM 216 WCB BS-EN 10083-1 GRADE 2 C22
2.	Insert	Stainless Steel/Carbon Steel A479 316/A182 F316, ASTM A350 LF2 ASTM A216 WCB / A351 CF8M
3.	Body Connector	Stainless Steel CF8M/Carbon Steel LCB
4.	Ball	Stainless Steel A479 316/CF8M
5.	Stem	Stainless Steel AISI 316
6.*	Seat Ring	PTFE Virgin, PTFE 15% glass filled, Fluorofill, VXI, PEEK, metal or other options
7.*	Body Seal	PTFE Virgin
8.*	Secondary Body Seal	Stainless Steel/Flexible graphite
9.*	Stem Thrust Seal	PTFE 25% glass filled
10.*	Gland Packing	Flexible Graphite
11.	Gland	Stainless Steel AISI 316
12.*	Gland/Wrench Nut	Stainless Steel (15-200mm) Carbon Steel (250mm only)
13.*	Gland Nut Locking Clip (Sizes 15-65mm)	Carbon Steel Rustproofed / Stainless Steel 304515

(65-250mm)



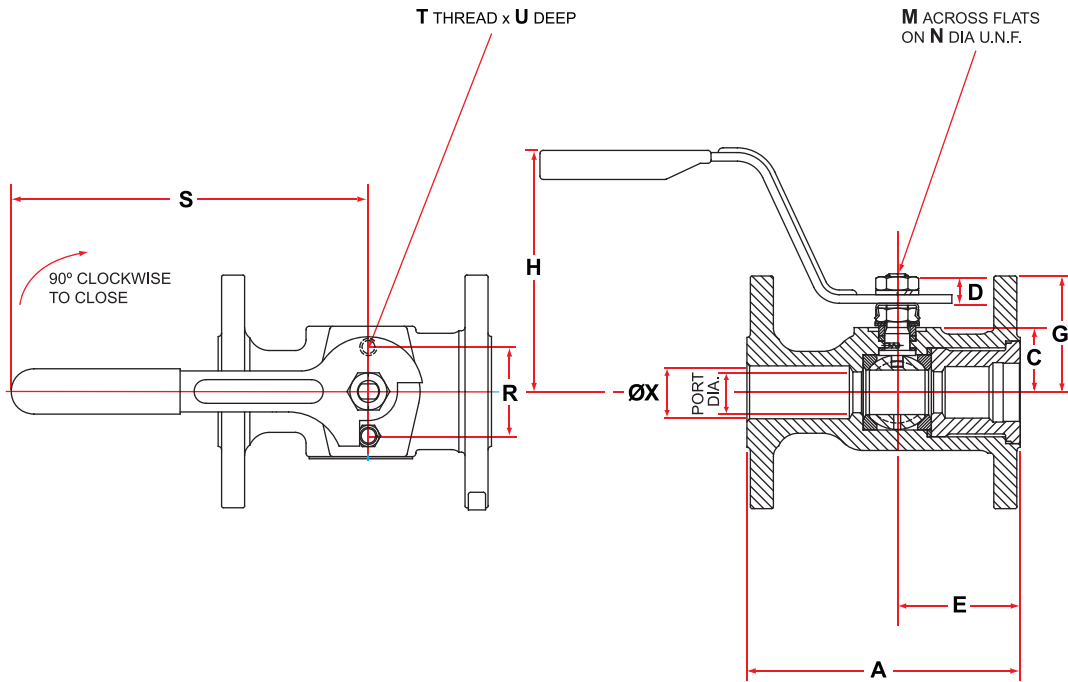
Parts / Materials List

NOTE: Drawings shows bottom entry design with integral body seat/seal.

ITEM	DESCRIPTION	MATERIAL
14.	Stem Location Washer	Stainless Steel
15.*	Disc Spring	Stainless Steel
16.**	Stop Indicator	Stainless Steel/Carbon Steel Rustproofed
17.	Stop Pin	Stainless Steel/Carbon Steel
18.**	Wrench Head	Malleable Iron
19.**	Wrench	Stainless Steel (15-50mm Stainless Steel valves) Carbon Steel (all other valves)
20.**	Wrench Fixing Bolt	Stainless Steel
21.*	Wrench Sleeve	Vinyl Plastisol
22.	Spring Washer	Stainless Steel
23.	Anti-static Plunger (Note 5 back page)	Stainless Steel
24.	Anti-static Spring (Note 5 back page)	Stainless Steel
25.	Body Connector Screw	Stainless Steel
26.	Identification Plate	Stainless Steel

* Items marked thus denote component supplied in repair kit. ** Wrench assembly not fitted on size 250mm.

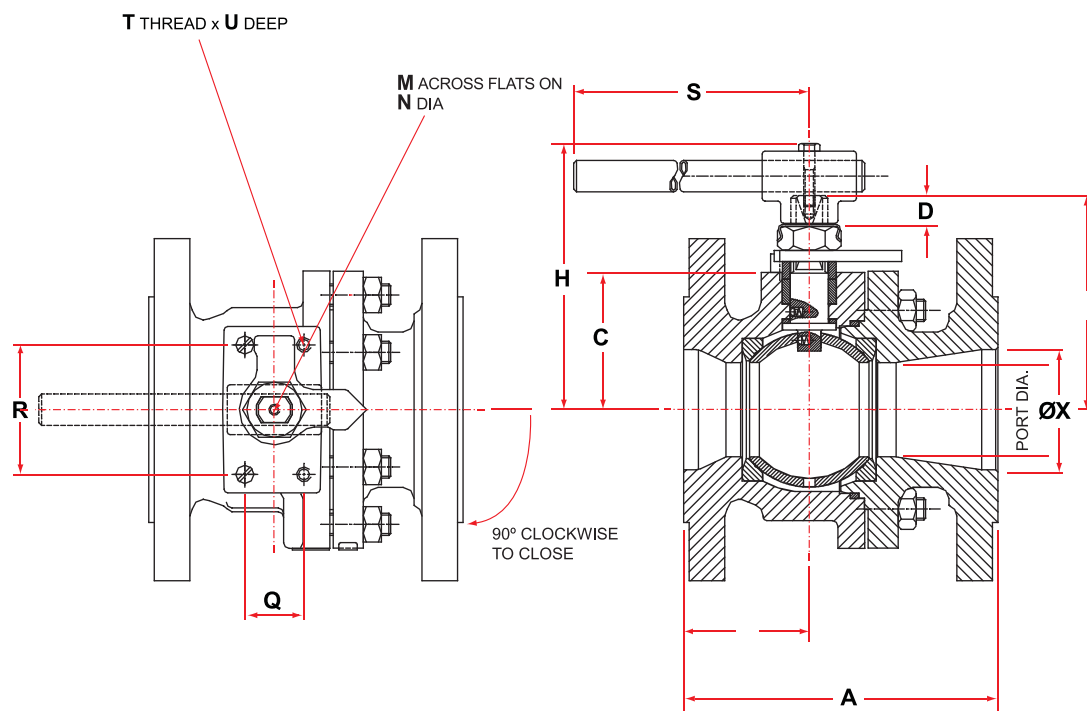
53/54 (15-50mm)



Valve Dimensions (mm) - Series 53 (15-250mm)

Valve Size (mm)	Port Dia.	A	C	D	E	G	H	M Max.	N	Q	R	S	T	U	X	Weight (kg)
15	11.1	115.0	20.65	11.1	46.0	38.1	90.0	5.54	3/8 U.N.F.	-	31.8	152.0	M6	9.2	15.0	2.0
20	14.3	120.0	23.01	11.1	49.3	40.5	92.5	5.54	3/8 U.N.F.	-	31.8	152.0	M6	9.2	20.0	3.0
25	20.6	125.0	30.95	15.9	57.2	55.7	113.5	7.54	7/16 U.N.F.	-	41.3	165.0	M8	9.7	25.0	3.6
40	31.8	140.0	42.1	19.1	62.3	73.1	117.5	8.71	9/16 U.N.F.	-	44.5	190.5	M8	9.7	40.0	6.9
50	38.1	150.0	46.8	19.1	67.8	77.8	122.2	8.71	9/16 U.N.F.	-	44.5	190.5	M8	9.7	50.0	9.8
65	50.8	170.0	74.2	17.1	68.0	116.0	143.0	14.0	M20	32.0	70.0	254.0	M8	14.0	63.5	12.6
80	63.5	180.0	98.4	16.7	77.8	145.3	185.3	15.87	23.0	44.5	85.7	350.0	M10	11.1	80.0	18.5
100	82.6	190.0	113.9	16.7	84.1	161.1	201.1	15.87	23.0	44.5	85.7	558.0	M10	11.1	100.0	24.8
150	111.1	350.0	157.2	26.2	120.6	226.2	283.5	23.8	35.3	76.2	101.6	850.0	M12	14.3	150.0	59.0
200	144.5	400.0	184.9	26.2	136.5	254.0	311.3	23.8	35.3	76.2	101.6	850.0	M12	15.9	200.0	86.5
250	203.2	450.0	260.4	30.9	228.6	343.0	475.0	30.3	2-6UN	31.8	209.6	-	M16	28.6	255.6	-

53 (65-250mm) & 54 (65-100mm)

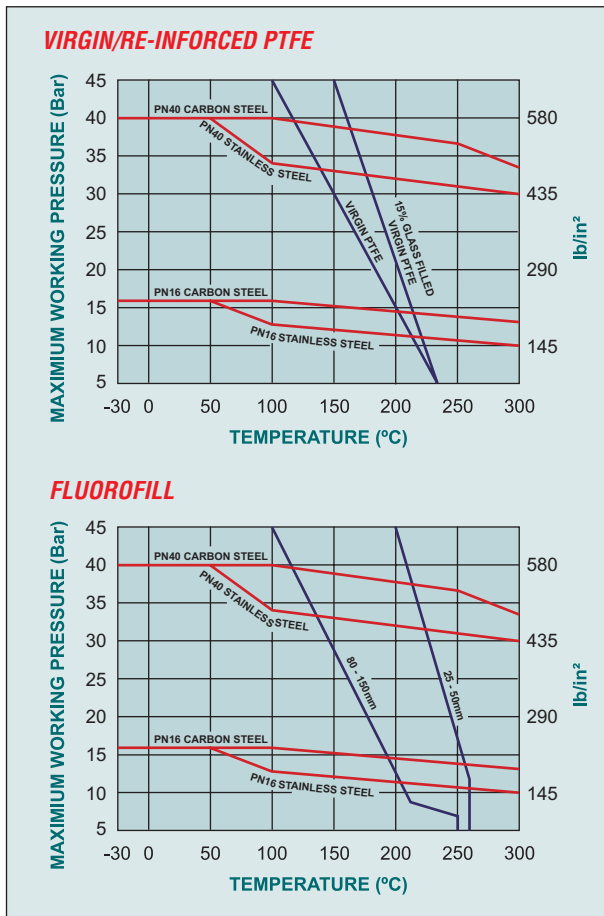


Valve Dimensions (mm) - Series 54 (15-100mm)

Valve Size (mm)	Port Dia.	A	C	D	E	G	H	M Max.	N	Q	R	S	T	U	X	Weight (kg)
15	11.1	130.0	20.65	11.1	46.0	38.1	89.0	5.54	3/8 U.N.F.	-	31.8	152.0	M6	9.2	15.0	2.2
20	14.3	150.0	23.01	11.1	49.3	40.5	91.3	5.54	3/8 U.N.F.	-	31.8	152.0	M6	9.2	20.0	3.3
25	20.6	160.0	30.95	15.9	57.2	55.6	111.1	7.54	7/16 U.N.F.	-	41.3	165.0	M8	9.7	25.0	4.5
32	25.4	180.0	35.72	15.9	60.4	60.4	115.9	7.54	7/16 U.N.F.	-	41.3	165.0	M8	9.7	32.0	6.6
40	31.8	200.0	42.1	19.1	62.3	73.1	117.5	8.71	9/16 U.N.F.	-	44.5	190.5	M8	9.7	40.0	7.3
50	38.1	230.0	46.8	19.1	67.8	77.8	122.2	8.71	9/16 U.N.F.	-	44.5	190.5	M8	9.7	50.0	10.3
65	50.8	290.0	74.2	17.1	68.0	116.0	143.0	14.0	M20	32.0	70.0	254.0	M8	14.0	63.5	15.1
80	63.5	310.0	98.4	16.7	77.8	145.3	185.3	15.87	23.0	44.5	85.7	350.0	M10	11.1	80.0	21.7
100	82.6	350.0	113.9	16.7	84.1	161.1	201.1	15.87	23.0	44.5	85.7	558.0	M10	11.1	100.0	30.3

Due to continuous development of our product range, we reserve the right to alter the dimensions and information contained in this leaflet as required

Pressure Temperature Ratings



Standards of Compliance

Design Specification	Generally in accordance with BS 5159 (Face to Face as shown below)
Flanges	DIN 2543 PN16 DIN 2544 PN25 DIN 2545 PN40
Face to Face Length	DIN 3202 Series 53 15-100mm Col F4 Series 53 150-250mm Col F5 Series 54 15-100mm Col F1
Pressure Test Specification	BS 6755 Pt.1
Firesafe Specification	BS 6755 ISO 10497/API 6FA BS 5146
Third Party Approvals	TA Luft

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Notes

1. Stainless steel valves sizes 15-50mm have stainless steel wrenches as standard. Other sizes are carbon steel.
3. When wrench not fitted, flats on stem when parallel to pipeline axis, denote ball open position.
4. Installation, Operating and Maintenance instructions are available on request.
5. For valve sizes 15-50mm only one anti-static spring and plunger is fitted.

Flow Coefficients

Valve Size		Flow Coefficients	
mm	in	Cv	Kv
15	½	6	7
20	¾	8.7	10
25	1	26	30
40	1½	77	89
50	2	112.5	130
65	2½	230	267
80	3	303	350
100	4	623	720
150	6	882	1020
200	8	1557	1800
250	10	2560	2970

Cv - Flow in US GPM Pressure - psi
Kv - Flow in M³/hr Pressure - bar

Limiting Stem Input Torque

Valve Size		Limiting Stem Input Torque	
mm	in	Nm	Lbf in
15	½	13.2	117
20	¾	13.2	117
25	1	24.4	216
40	1½	48.6	430
50	2	48.6	430
65	2½	192	1700
80	3	385	3400
100	4	385	3400
150	6	1570	13900
200	8	1570	13900
250	10	2640	23400

How to order Worcester Valves and other Worcester products

Please order Worcester Valves and other products by description, not by part number. We need a precise description of the valve you require. We will then translate this information into our own coding for order processing and production. Please state the despatch address and desired date of delivery.



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