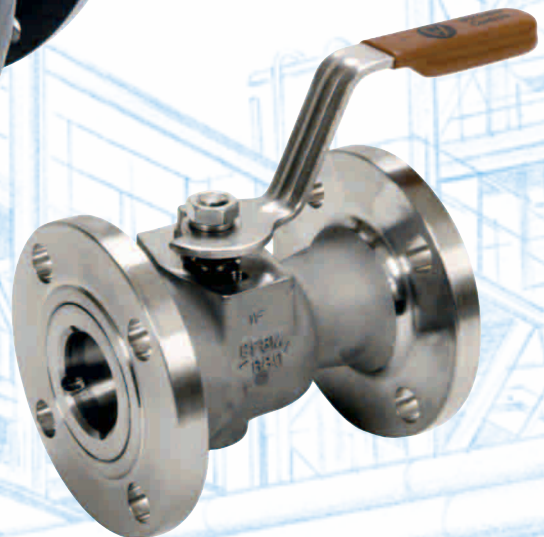




# 51/52 <sup>55/56</sup>

**Worcester Controls** reduced bore fire tested, flanged ball valves

**Designed for hydrocarbon,  
chemical and general  
process lines.**



**BS EN ISO 9001**



**FM 00707**

## General Description

For many years, Worcester's Series 51/52 valves have been the flagship product in the reduced bore flanged valve market, copied by many but bettered by none.

The series 51/52 is Lloyds Type Approved to BS5351, incorporating BS.6755, Parts 1 (production test) and Part 2, (fire type test).

This high level of certification makes this valve ideally suited to the most demanding services in the hydrocarbon, chemical and process industries.

The Series 51/52 is Worcester's one-piece range of reduced bore ANSI Class 150/300 flanged valves in 9 sizes ranging from 15-200 mm. Complementing this range is the 55 Series two-piece Class 150 design from 65-250 mm, and the 56 Series two-piece Class 300 design in 250 mm only.

### Flanges

Integral to the body and fully machined to BS 1560 (ANSI B16.5). Alternatively, metric flanges are available to BS 4504 (PN16/40). Face to face lengths are to BS 2080 and ANSI B16.10.

### Sizes/Body Design

Series 51 - Class 150 one-piece valve (15-200 mm)  
 Series 52 - Class 300 one-piece valve (15-200 mm)  
 Series 55 - Class 150 two-piece valve (65-250 mm)  
 Series 56 - Class 300 two-piece valve (250 mm)

**Note:** the 65 mm size is available only in the Series 55 design.

### Fire-tested design

Certified by Lloyds Register, in accordance with BS 6755 Part 2, 10497 and API 607/API 6FA (fire testing).

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 inflammable 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 standard carbon and stainless steel body, other materials are available including low temperature carbon steel, Duplex\*, Hastelloy\*, Monel, etc. Valve trim components can be supplied in a wide range of materials, including ceramics as well as the above.

### 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 E51/52 and all Worcester flanged valves, three piece, fully welded and multi-way valves.

#### Low Temperature

Worcester's C51/52 is recommended for use on low temperature applications including liquid gases (e.g. CO<sub>2</sub>, LPG, etc.) for temperatures down to - 196°C.

#### Multi-way

To complement the 51/52, 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. The 18/19 Series valve can simplify process systems by replacing, in some cases, two, three or even four standard valves and their associated control equipment.

#### Full Bore

For maximum flow and pigging applications, Worcester manufacture the 819/829 range of full bore valves to ANSI Class 150/300 specification.

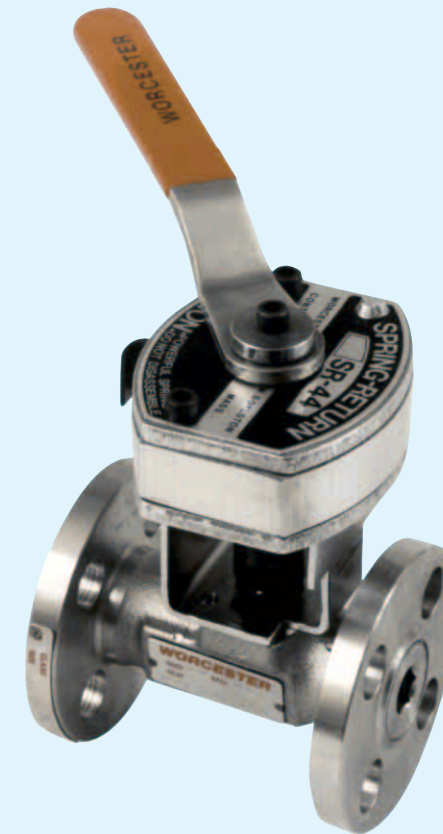
For further information, contact Invensys Flow Control's technical sales office.



\*Duplex and Hastelloy are registered trade marks.

**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.
- Characterised or round port control valves.
- Micro-switches.
- Lagging extensions.
- Steam jacket.



Series 51 with spring return handle



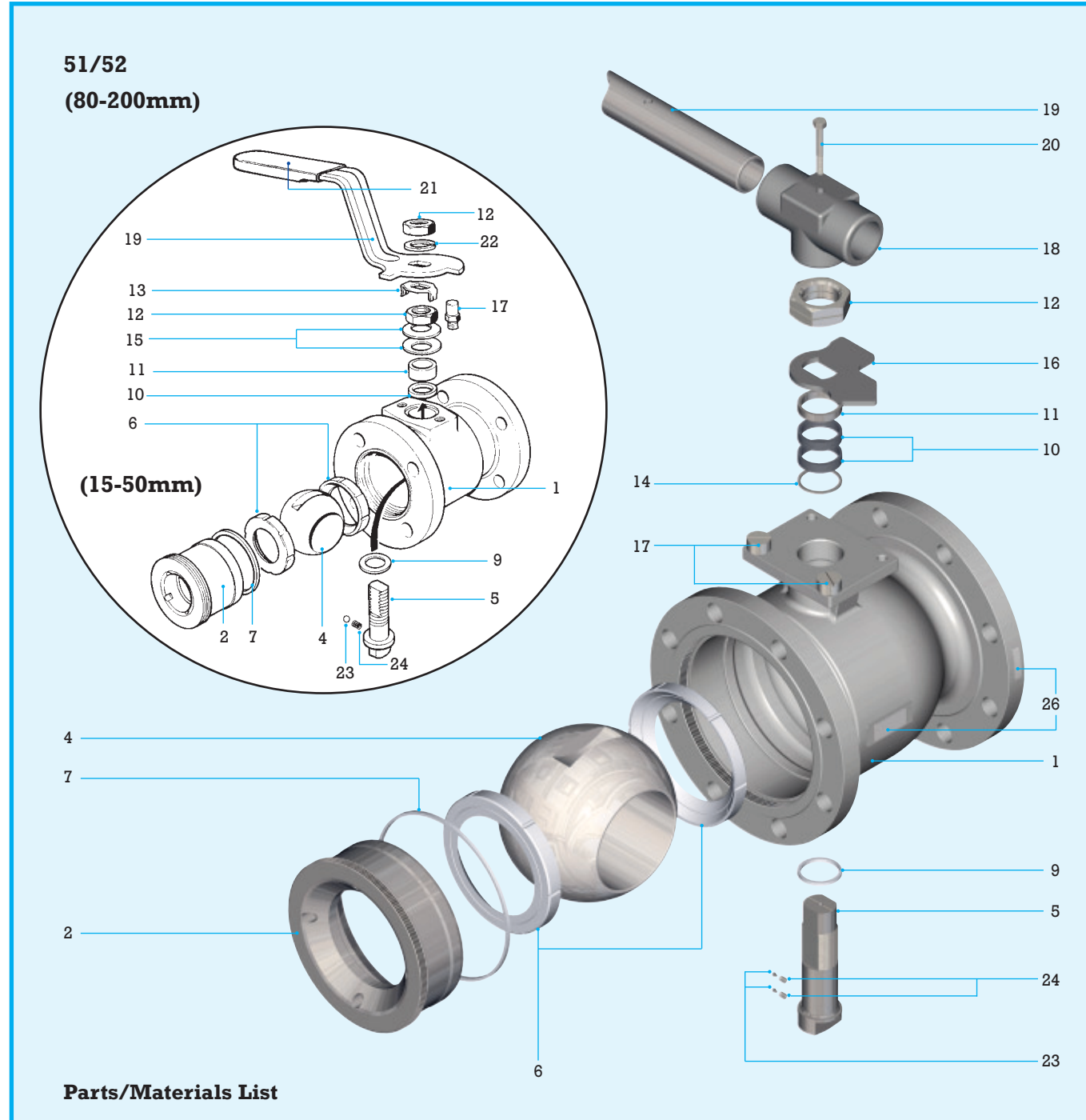
V-Flow control valve assembly comprising Series 51, Norbro 40R actuator and positioner

### Features

- \* Lloyds Type approval to BS 5351 design
- \* Seat variants
- \* Range of body and trim materials
- \* Graphite seals
- \* Precision machined mounting platform
- \* Floating ball design
- \* Size range (15-250mm)
- \* TA Luft

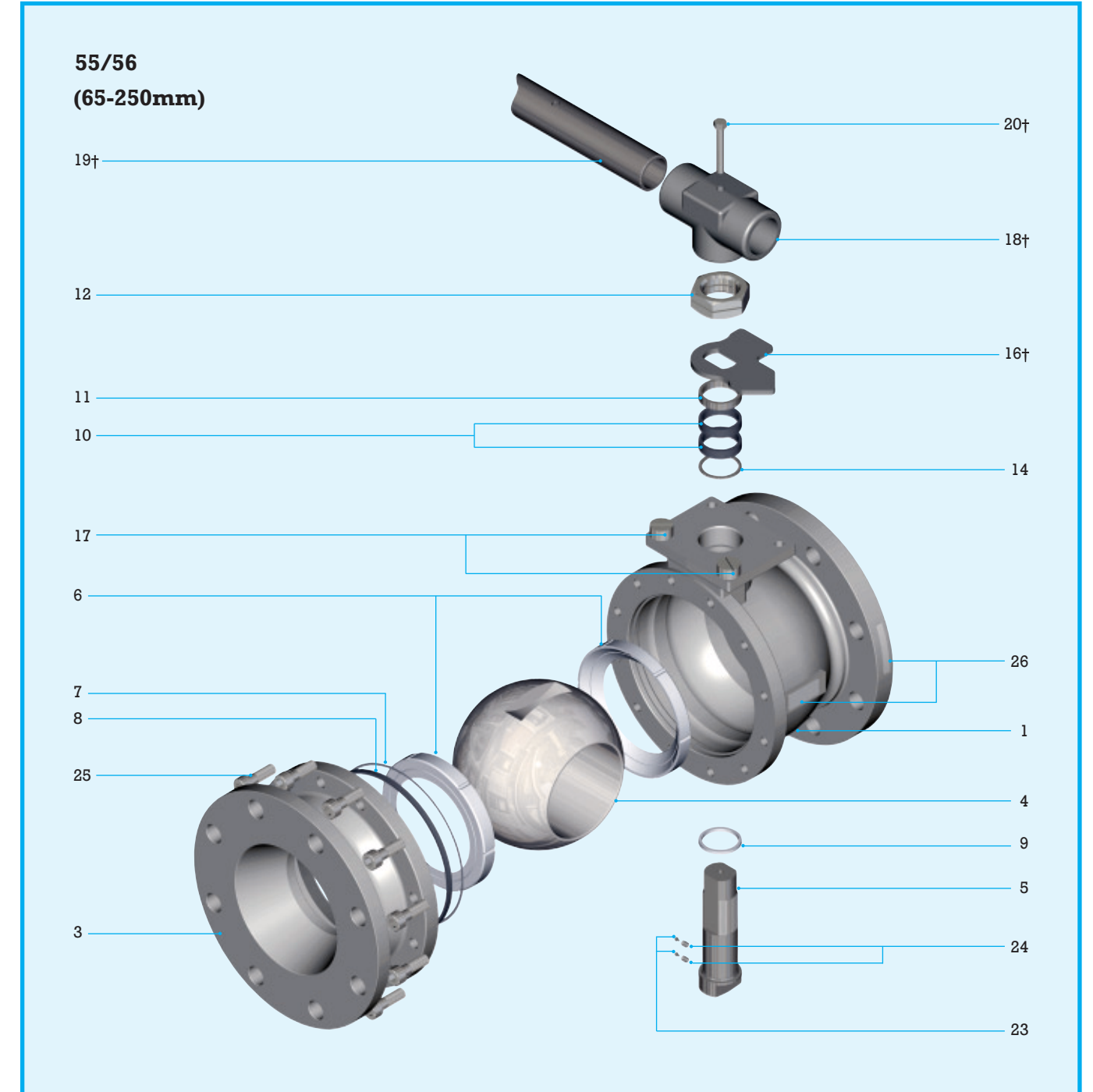
### Benefits

- \* Endorses industry accepted design standard
- \* To handle extremes in pressure/temperature
- \* Optimises compatibility in service
- \* Gives long sealing life and fire integrity
- \* Ease of actuation
- \* Long term sealing reliability
- \* Suitable for a variety of pipe sizes and flow rates
- \* European endorsement of stem integrity



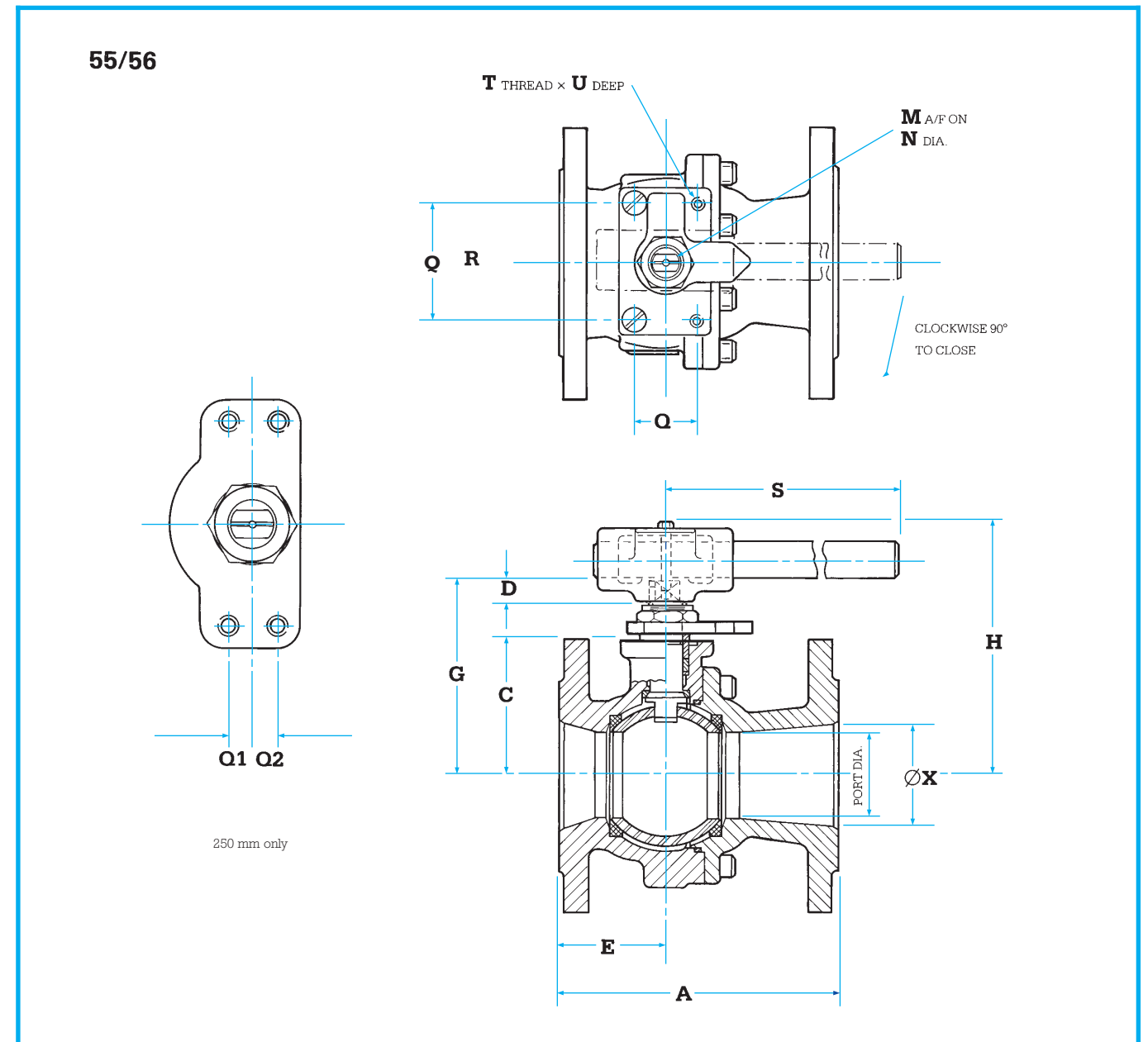
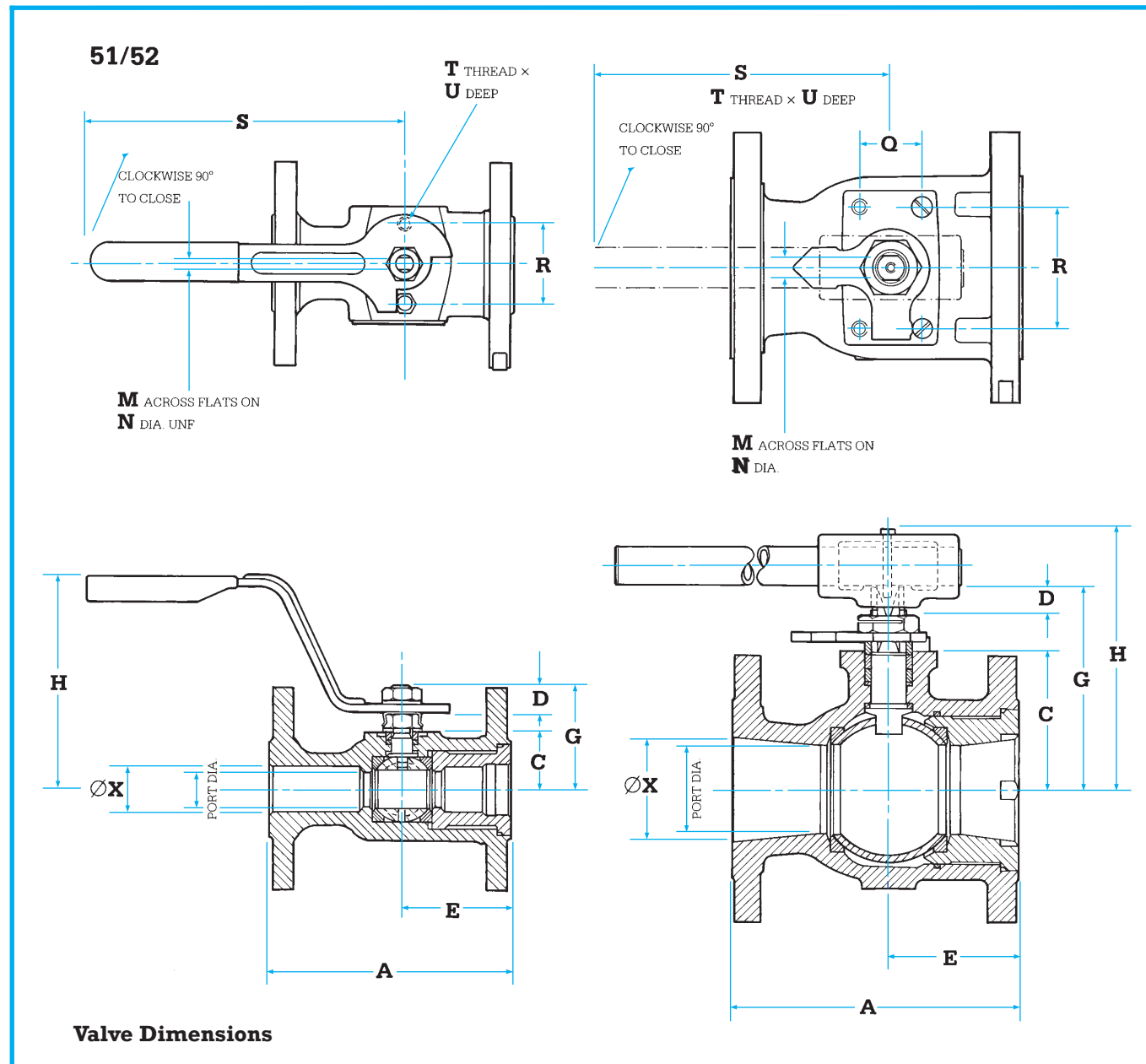
ITEM	DESCRIPTION	MATERIAL
1.	Body	Stainless Steel ASTM A182 F316 (15-25mm) ASTM A351 CF8M (40-250mm) Carbon Steel ASTM A105 (15-25mm) ASTM A216 WCB (40-250mm)
2.	Insert	Stainless Steel 316/A182 F316/Carbon Steel BS 970 070M20/ASTM A352
3.	Body Connector	Stainless Steel/Carbon Steel ASTM A351 CF8M ASTM A216 WCB
4.	Ball	Stainless Steel 316L
5.	Stem	Stainless Steel 316L
6.	Seat ring	PTFE Virgin, PTFE 15% glass filled, Fluorofill, VXI, PEEK, metal or other options.
7.	Body Seal	PTFE Virgin (15-50mm) PTFE 25% glass filled (80-200mm)
8.	Secondary Body Seal	Stainless steel/flexible graphite
9.	Stem Thrust Seal	PTFE 25% glass filled
10.	Gland packing	Flexible graphite
11.	Cland	Stainless Steel
12.	Gland/Wrench Nut	Stainless Steel (8-50mm) Carbon Steel/Stainless Steel (80-250mm)
13.	Gland Nut Locking Clip (Sizes 15-65mm)	Carbon Steel Rustproofed

\* Items marked thus denote component supplied in repair kit



ITEM	DESCRIPTION	MATERIAL
14.	Stem Location Washer	Stainless Steel
15.	Disc Spring	Stainless Steel
16.	Indicator Stop	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 (See Note 5 on back page)	Stainless Steel
24.	Anti-static spring (See Note 5 on back page)	Stainless Steel
25.	Body connector screw	Carbon Steel
26.	Identification Plate	Stainless Steel

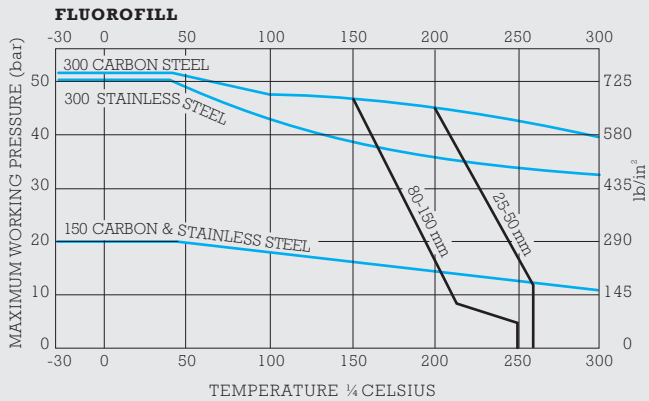
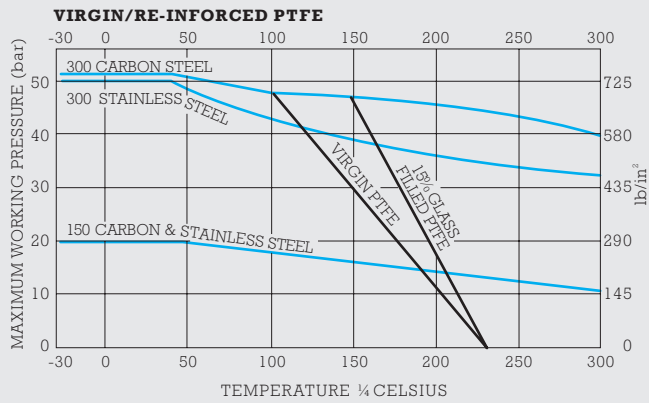
† Wrench assembly not fitted on size 250mm



Valve Dimensions

Valve Size (mm)	Valve Series	Port Diameter	A		C	D	E		G	H	M (Max.)	N Dia.	Q	R	S	T	U	X	Approx. Weight Kgs		
			Cl.150	Cl.300			51 / 52	55 / 56											51	52/56	55
15	51/52	11.1	108	140	20.6	11.1	46.0	-	38.1	89.0	5.54	9.5	-	31.8	152.0	M6	9.2	13.5	1.9	2.1	-
20	51/52	14.3	117	152	23.0	11.1	49.3	-	40.5	91.3	5.54	9.5	-	31.8	152.0	M6	9.2	17.5	2.5	3.8	-
25	51/52	20.6	127	165	31.0	15.9	57.2	-	55.7	111.0	7.54	11.1	-	41.3	165.0	M8	9.7	24.5	3.2	4.8	-
40	51/52	31.8	165	190	42.0	19.1	62.3	-	73.1	117.5	8.71	14.3	-	44.5	190.5	M8	9.7	37.0	5.5	8.6	-
50	51/52	38.1	178	216	46.8	19.1	67.8	-	77.8	122.2	8.71	14.3	-	44.5	190.5	M8	9.7	48.0	8.0	10.0	-
65	55	50.8	190	-	74.2	17.1	-	68.0	116.0	143.0	14.00	20.0	32.0	70.0	254.0	M8	14.0	63.5	-	-	13.0
80	51/52/55	63.5	203	283	98.4	16.7	91.9	77.8	144.8	183.7	15.87	23.0	44.5	85.7	350.0	M10	11.1	77.8	17.7	26.7	20.0
100	51/52/55	82.6	229	305	114.0	16.7	101.4	84.1	160.5	199.4	15.87	23.0	44.5	85.7	558.0	M10	11.1	102.4	28.2	39.5	26.7
150	51/52/55	111.1	267	403	157.2	26.2	107.8	120.6	226.1	283.6	23.80	35.3	76.2	101.6	850.0	M12	14.3	154.0	52.0	76.6	58.2
200	51/52/55	144.5	292	419	185.0	26.2	144.3	126.5	253.6	311.0	23.80	35.3	76.2	101.6	850.0	M12	15.9	203.2	82.0	120.0	89.0
250	55/56	203	330	457	260.4	31.8	-	165 / 228.5	343.0	-	30.40	44.6	31.8 25.4	209.5	-	M16	28.6	255.6	-	204.0	145.0

## Pressure/Temperature Ratings – Seat Options



### Standards of Compliance

Design Specification	BS 5351
Test Specification	BS 6755 Part 1 pressure test BS 6755 Part 2 fire type test
Face to Face Dimensions	ISO 5752, ANSI B16.10, API 6D, BS 2080
Flange Dimension	BS 1560, BS 4504, ANSI B16.5, ISO 7005-1, DIN 2543/4/5
Third party approvals	Lloyds Type Approval, TA Luft

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

### 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.



250 mm Series 55 with manual gearbox and Norbro 40R pneumatic actuator (1) and Series 51 with Norbro's Series 75 electric actuator

### NOTES

1. Stainless steel valves sizes 15-50 mm have stainless steel wrenches as standard. Other sizes are carbon steel.
2. Limiting stem input torque figures are based on random practical laboratory tests. For critical applications where a guaranteed figure is essential, consult Worcester.
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 15-50 mm only one anti-static ball and spring is fitted.

### Flow Coefficients

Valve Size		Flow Coefficient	
mm	in	Kv	Cv
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 (See Note 2)	
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



TM

**Worcester Controls**

**Invensys Flow Control (UK) Ltd**

Burrell Road, Haywards Heath, West Sussex RH16 1TL

T: +44 (0)1444 314400 F: +44 (0)1444 314401

Website: [www.worcestercontrols.co.uk](http://www.worcestercontrols.co.uk)

TM indicates a trade mark of Worcester Controls

Information given in this leaflet is made in good faith and based upon specific testing but does not, however, constitute a guarantee



Flow Control