

# Pressure relief with Broady Flow Control

Series **2600**

Safety Relief Valves

Broady Flow Control



**BROADY**  
FLOW CONTROL

# The Company

**Broady Flow Control** is an **Independent Valve Manufacturer**, specialising in **Innovative** and effective **Solutions** to satisfy it's increasing customer demands, challenges and problems in flow control.



## MARKET SECTORS

- Naval & Marine
- Chemical & Petrochemical
- Food & Beverages
- Industrial gases
- Biotechnology
- Mining
- Fire protection
- Oil & Gas
- Pharmaceutical
- Power generation

## Four key divisions

1 Relief. Safety relief. Pressure reducing & sustaining valves.



2 Valves for Naval, Marine and other specialist applications.



3 Pattern makers & Master founders of corrosion resistant copper based alloys.



4 Overhaul & Refurbishment of Broady valves and other selected valve manufacturer's products and equipment.



# Introduction

*The Type 2600 Series of valves are direct acting full lift safety relief valves that are designed to open rapidly and re-seat at a controlled pressure, essential in such diverse applications as petro-chemical, power generation and pharmaceutical.*

## The Series 2600 - relief valves.

### THE 2600 FEATURES

- Direct acting, full lift Safety Relief Valve
- Pop action design
- Gas, vapour and liquid service
- Manufactured in Carbon Steel and Stainless Steel as Standard
- Other materials on request
- Screwed or Flanged from 15mm x 25mm to 25mm x 25mm
- Maximum Set pressure 140 Barg



# Series 2600 - Operation, Installation

The Type 2600 Relief / Safety Relief valves are designed to have a short 'simmer', then to open rapidly to the full open position, and to re-seat at a controlled pressure. When the valve is in its fully lifted position, the discharge area is controlled by the bore of the nozzle, which ensures that the flow calculations for various mediums can be reliably made.

Valves are supplied in sizes 1/2" to 1" and can be manufactured in gunmetal, cast steel and stainless steel with ends screwed male x female, female x female or flanged to customers requirements.

Valves can also be supplied with a packed lever lifting device, limit switch to indicate opening and closing of the valve, governing ring to limit adjustment of the spring to the set point, for ease of re-setting.

## Installation

During installation of the valve avoid bumping or shaking to prevent damaging the flange faces and misalignment of the trim. Blow through the circuit line on which the valve is to be installed, this is to remove any foreign bodies. Clean the

valve and nozzle connections thoroughly; foreign bodies on the nozzle may damage the valve seat during popping. Install the valve in a vertical position only, with the inlet downwards. After the valve has been installed, make it pop at least twice to allow automatic alignment of the trim. Misalignment may be caused accidentally during transport or during installation.

## Maintenance

The most frequent operation to be carried out is a precise check, made at regular intervals, to observe whether any obvious faults exist in the different parts of the valve. It should be checked first of all that there are no leakages; these must be avoided, especially when the fluid is poisonous, highly volatile or very explosive.

Carry out periodic venting for valves with a lifting device to check regular operation (at least two or three times a year).

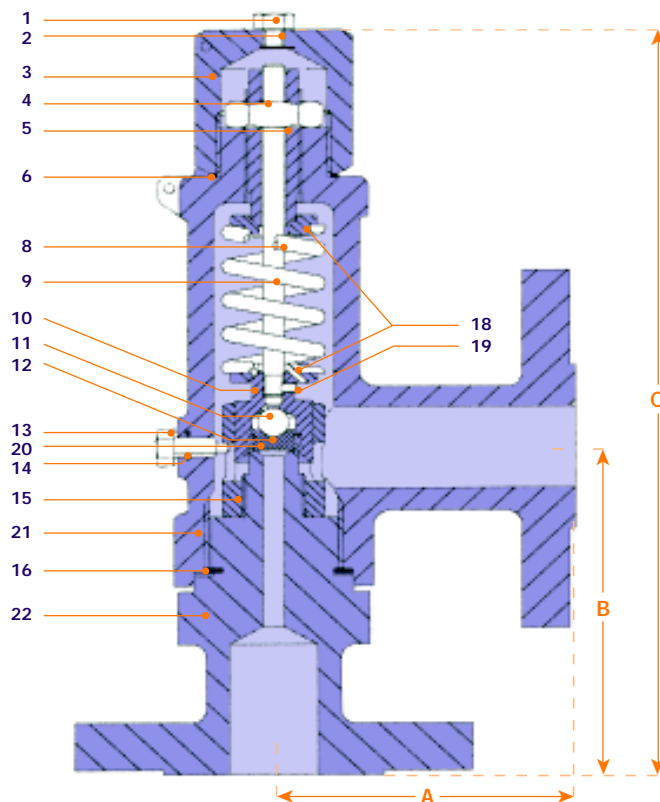
During these tests the pressure must be at least 75% of the full working pressure.



## OVERALL DIMENSIONS

valve size	A	B	C	weight
<b>Screwed valves</b>				
1/2" x 1"				
3/4" x 1"	44.5	85.5	219	3.0 kg
1" x 1"				
<b>Flanged valves</b>				
1/2" x 1"				
3/4" x 1"	81*	97*	231*	6.0 kg
1" x 1"				

\*Dimensions given are only for ANSI150 RF flanges



## PARTS LIST

item	description	material (C <sub>2</sub> )	material (S <sub>2</sub> )
1	cap plug/gag	stainless steel	stainless steel
2	joint (plug gag)	non asbestos	non asbestos
3	cap	carbon steel	stainless steel
4	adjusting screw	stainless steel	stainless steel
5	locknut	carbon steel	stainless steel
6	joint (cap)	non asbestos	non asbestos
8	spring	stainless steel	stainless steel
9	spindle	stainless steel	stainless steel
10	disc holder	stainless steel	stainless steel
11	ball	stainless steel	stainless steel
12	disc	stainless steel	stainless steel
13	lockscrew	stainless steel	stainless steel
14	joint (lockscrew)	non asbestos	non asbestos
15	blowdown ring	stainless steel	stainless steel
16	joint (body)	non asbestos	non asbestos
18	spring carrier	stainless steel	stainless steel
19	grubscrew	stainless steel	stainless steel
20	circlip	stainless steel	stainless steel
21	body	carbon steel	stainless steel
22	nozzle	stainless steel	stainless steel

# Series 2600 - Overhaul

PRESSURE AND TEMPERATURE LIMITS								
type number	orifice area (sq.in.)		inlet x outlet	temperature	max. set pressure		max. back pressure	
	cm <sup>2</sup>	sq.inch			kg/cm <sup>2</sup>	psi	kg/cm <sup>2</sup>	psi
26001-C	0,258	0.04	1/2" x 1"	+200°C to +400°C +392°F to +752°F	140	2000	28,1	400
26002-C			3/4" x 1"					
26003-C			1" x 1"					
26001-S	0,258	0.04	1/2" x 1"	-190°C to +538°C -310°F to +1000°F	140	2000	28,1	400
26002-S			3/4" x 1"					
26003-S			1" x 1"					

## Overhaul

To overhaul the valve the following must be carried out:

- 1 Remove the cap, mark the position of the adjusting screw relevant to the locknut, so the correct position may be found during re-setting.
- 2 Loosen the adjusting screw and locknut to relax the spring.
- 3 Remove the lockscrew from the body, to free the blowdown ring.
- 4 Unscrew the nozzle from the body and remove the complete assembly from the inside of the the body.
- 5 Check the contact faces of the seat and disc, should any scratching or pitting be present the surfaces will need to be relapped.
- 6 Replace all of the joints then assemble the valve in reverse order.

To prevent damage to the disc and nozzle faces, place a screwdriver in the spindle slot. This will stop the spindle turning whilst resetting the valve.

PERFORMANCE								
air capacities in Nm <sup>3</sup> /hr (10% accumulation)			water capacities in L/min (25% accumulation)			saturated steam capacities in kg/hr (10% accumulation)		
set pressure Bar (G)	orifice area (cm <sup>2</sup> )		set pressure Bar (G)	orifice area (cm <sup>2</sup> )		set pressure Bar (G)	orifice area (cm <sup>2</sup> )	
	0.387	0.258		0.387	0.258		0.387	0.258
1	52.7	35.1	1	23.2	15.5	1	40.6	27.1
2	78.8	52.6	2	32.8	21.9	2	60.7	40.5
4	131.2	87.5	4	46.4	31.0	4	101.1	67.4
6	183.5	122.4	6	56.9	37.9	6	141.4	94.3
8	235.9	157.2	8	65.7	43.8	8	181.7	121.1
10	288.2	192.1	10	73.4	49.0	10	222.1	148.0
15	419.1	279.4	15	89.9	60.0	15	322.9	215.2
20	549.9	366.6	20	103.8	69.2	20	423.7	282.4
25	680.7	453.8	25	116.1	77.4	25	524.5	349.7
30	811.6	541.1	30	127.2	84.8	30	625.3	416.9
35	942.4	628.3	35	137.4	91.6	35	726.1	484.1
40	1073.3	715.5	40	146.9	97.9	40	826.9	551.3
50	1335.0	890.0	50	164.2	109.5	50	1028.5	685.7
60	1596.7	1064.4	60	179.9	119.9	60	1230.2	820.1
70	1858.4	1238.9	70	194.3	129.5	70	1431.8	954.5
80	2120.1	1413.4	80	207.7	138.5	80	1633.4	1088.9
90	2381.7	1587.8	90	220.3	146.9	90	1835.0	1223.4
100	2643.4	1762.3	100	232.2	154.8	100	2036.6	1357.8
110	2905.1	1936.8	110	243.5	162.4	110	2238.3	1492.2
120	3166.8	2111.2	120	254.4	169.6	120	2439.9	1626.6
130	3428.5	2285.7	130	264.7	176.5	130	2641.5	1761.0
140	3690.2	2460.1	140	274.7	183.2	140	2843.1	1895.4
150	3951.9	2634.6	150	284.4	189.6	150	3044.8	2029.8

Numbering system code: *To simplify the selection and specifying of Safety Relief valves, a numbering system is used in which the digits have a distinct significance.*

**EXAMPLE**

1 A 1/2" ANSI #300 RF inlet x 1" ANSI #150 RF Outlet, Stainless Steel Body, trim and spring with a 0.04 sq in nozzle is: 26311-SN-000.

The first and second digit indicate the valve series.

26	2600
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The third and fourth digit identify inlet and outlet ratings respectively.

third digit	inlet rating
0	NPT(M)
1	150
3	300
5	600
6	900
7	1500

forth digit	Outlet rating
0	NPT(F)
1	150
2	300

The fifth digit identifies: the orifice for flanged valves.

fifth digit	inlet rating
1	1/2" x 1"
2	3/4" x 1"
3	1" x 1"

The sixth digit identifies the Nozzle, body and spring material.

sixth digit	nozzle	body	spring
C	316SS	A216 WCB	316SS
S	316SS	A351 CF8M	316SS
L	316SS	A352 LC1	316SS
A	316SS	A217 WC6	Inconel
M	Monel	BS3071 NA1	Inconel
GM	Gun Metal	BS1400 LG2	Inconel
AB	Aluminium Bronze	BS1400 AB2	Inconel

**How to order**

To enable Broady Flow Control to offer the most suitable valve for your service please provide the following information at the enquiry stage:

- 1 Set Pressure
- 2 Back Pressure, built up or constant
- 3 Medium, with any relevant data, specific gravity or molecular weight etc.
- 4 Flowrate
- 5 Temperature
- 6 PED/CE Category\*
- 7 Normal working pressure
- 8 Accumulation (10%, 21% or 25%)
- 9 Blowdown
- 10 Material requirements
- 11 Accessories, lifting lever etc.
- 12 Material Certification requirements
- 13 Any special testing requirements

The first six are required as a basic minimum to enable our sales team to proceed with a quotation.

\*According to the Pressure Equipment Directive (PED) Safety Valves are categorised as a safety accessory and as such the normal level is category IV, unless the system to which they are to be fitted is of a lower level in which case the lower level should be used. The PED is only applicable to Countries within the European Union.

Valves from the Broady range.



Reducing Valves A, AB, CL, CN, CH, D, B2



Safety relief valves to API and ASME - Type 3500



Fire Fighting Hydrant Reducing Valves



Sustaining Valves Type A, Type D, Type 9



Pilot Operated Safety Valves Flowsafe

- Speciality casting from in-house foundry in non-ferrous metals
- Full repair facilities
- The Series 3500 Safety Relief valve has been combination flow tested with bursting discs from continental (CDC) Disc Corporation.

The seventh digit indicates the type of construction.

N	Standard
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The eighth digit identifies the bonnet open or closed

0	Closed
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The ninth digit identifies the lifting device.

0	None
2	Packed lever

The tenth digit refers to the gag.

0	Without Gag
1	With Gag

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