



**HALE HAMILTON®**

Excellence in Pressure & Flow Control

A CIRCOR International, Inc. Company

## RS Industrial (9.5mm) Differential Relief Valve

### Description

The RS Series Differential Relief Valves are suitable for use with non-corrosive gases as well as for oxygen and other oxidising gases. They can also be used for hydraulic service.

Differential operation (see How it Works) results in a compact design that opens quickly as soon as the set pressure is exceeded.

Each valve is adjustable within its range of pressures and can be wire locked at your desired set pressure if required.

RS valves are available with either direct or banjo bolt mounting and there is also a cartridge version for use in our manifolds (Please request our Relief Valve Manifold datasheet for more information).

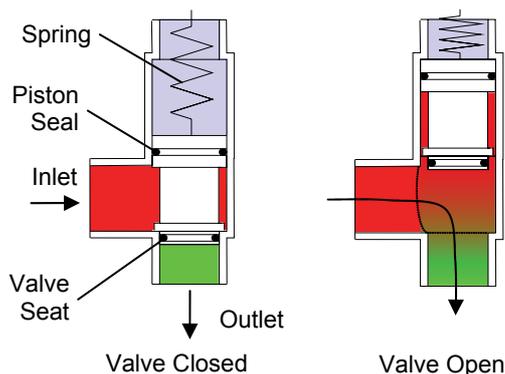
The range includes valves specifically designed for use with medical oxygen and type approved by CTE for adiabatic shock resistance. Contact sales for more information and a copy of the CTE test report.



### How it Works

The valve is operated by an internal piston. The area under the piston seal is larger than that under the valve seat. The process pressure acts on the difference in these areas (hence "differential"). This means that the spring can be relatively small even for high pressures. The design can accommodate a large range of pressures by changing the piston seal diameter as well as the strength of the spring. The valve seat is the same size in all models.

RS9, RS11 and RS12 have progressively smaller pistons to give higher set pressures. RS23 and RS32 have the same size piston as RS12 but have stronger springs requiring larger spring housings.



We design, machine, build and test all our products on one site in Uxbridge. If you don't see what you want in our standard ranges, contact us and we'll do our best to meet your needs.

Hale Hamilton (Valves) Ltd  
Cowley Road, Uxbridge, UB8 2AF, UK  
Tel: 01895 236 525  
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## Standard Specification

See next page for specification of individual types

- Maximum working pressure - direct mounting type: 420 bar (6090 psi)
- Maximum working pressure - banjo bolt type: 360 bar (5220 psi)
- Nominal Bore: 9.5 mm
- Exhaust port: 3/8" NPT or BSP female
- Inlet port – direct mounting type: 3/8" NPT or BSP female
- Inlet port – banjo bolt type: 3/8" BSP male

## Standard Materials

Alternative materials can be supplied

- Body: Brass
- Piston: Stainless Steel or Phosphor Bronze
- Body and Piston Seals: Nitrile, Viton, EPDM or Chemraz
- Seat seal: HNBR, PTFE or Nylon

The materials used for Oxygen service are suitable for medical use (no fluorocarbons)  
See the Order Code table for options

## Temperature Rating

Valve seat Material	Piston Seal Material	Temperature range
HNBR*	Medium Nitrile	-20 to +100°C
HNBR*	Viton	-15 to +140°C
PTFE	Medium Nitrile	-20 to +100°C
PTFE	Viton	-15 to +200°C
PTFE	Chemraz	-20 to +232°C
PTFE	EPDM	-20 to +120°C
Nylon**	EPDM	-20 to +70°C

\* up to 172 bar, \*\* for Oxygen service

## Certification

- All models are suitable for use as "Safety Accessories" according to PED Category 4
- All models are suitable for ATEX
- Some models are type approved by CTE for adiabatic shock resistance
- Some models have TUV approval

## Ordering Information

Please supply the following information when ordering

- Set pressure – we can supply valves pre-set to your required pressure
- Wire locking (please state set pressure)
- Flow medium
- Required flow rate
- Port configuration
- Operating and storage temperature ranges
- Certification and QA requirements

## Specification

Type		RS9	RS11	RS12	RS23	RS32
Piston Size (inch)		11/16"	1/2"	7/16"	7/16"	7/16"
Piston Size (mm)		17.5	12.7	11.1	11.1	11.1
Pressure Ranges (bar)	P1	3.5 to 7	17 to 35	120 to 172	214 to 310	250 to 420 <sup>†</sup>
	P2	7 to 17	35 to 69	172 to 248	-	-
	P3	-	69 to 120	-	-	-
Pressure Ranges (psi)	P1	51 to 102	247 to 508	1740 to 2494	3596 to 4495	3625 to 6090 <sup>†</sup>
	P2	102 to 247	508 to 1001	2494 to 3596		
	P3		1001 to 1740			
Weight (kg)		0.9	0.9	0.9	1.1	1.7

<sup>†</sup>maximum 360bar (5220psi) for banjo bolt types

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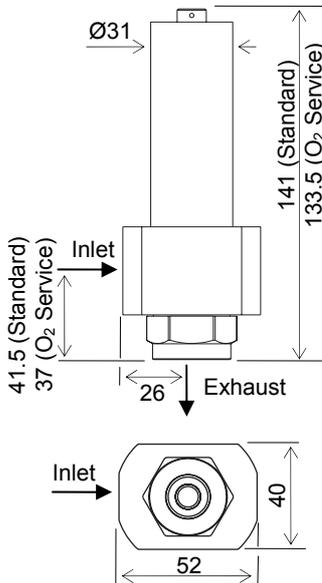
# RS Industrial (9.5mm) Differential Relief Valve

## Typical Dimensions

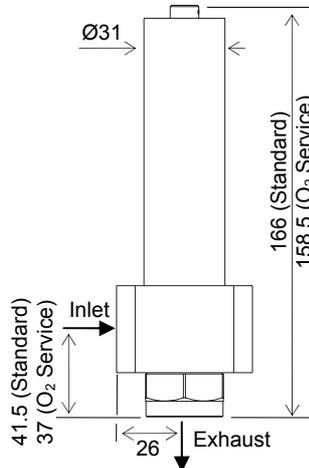
in mm except where shown otherwise

### Direct Mounting Type

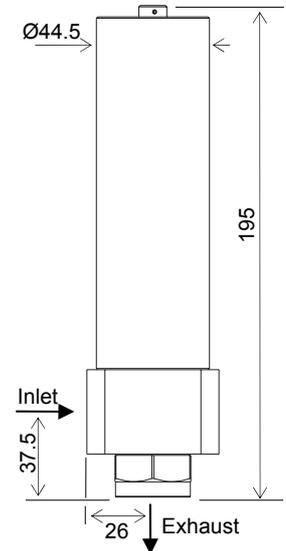
#### RS9, RS11 & RS12



#### RS23

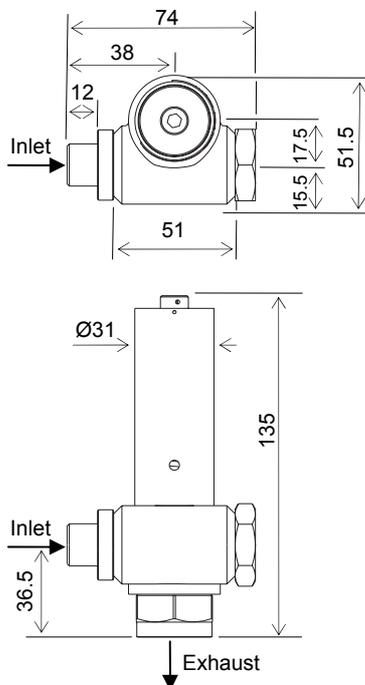


#### RS32

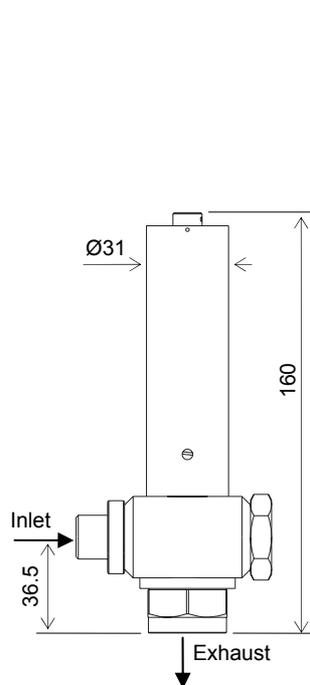


### Banjo Bolt Mounting Type

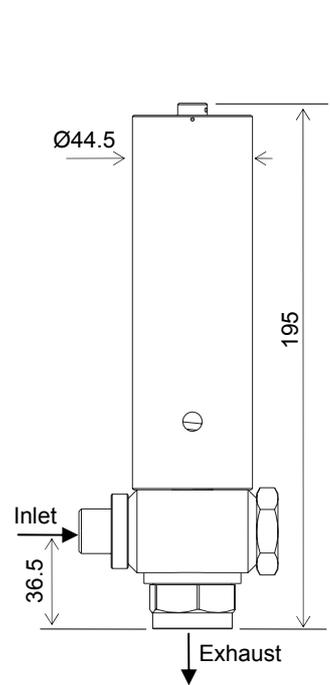
#### RS9, RS11 & RS12



#### RS23



#### RS32



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## RS Industrial (9.5mm) Differential Relief Valve

### Order Code

<b>Valve Type</b>	RS9	RS09							
	RS11	RS11							
	RS12	RS12							
	RS23	RS23							
	RS32	RS32							
<b>Body</b>	Fixed		F						
	Banjo		B						
<b>Ports<sup>1</sup></b>	3/8" BSP			G					
	3/8" NPT			N					
<b>Seat</b>	HNBR				1				
	PTFE				2				
	Nylon				3				
<b>O rings</b>	Nitrile					01			
	Viton					02			
	Chemraz					03			
	EPDM					04			
<b>Pressure Range<sup>2</sup></b>	Low						P1		
	Medium						P2		
	High						P3		
<b>Special Features<sup>3</sup></b>	Wire Locking							01	
	Gauge port							02	
	Wire Locking + Gauge port							03	
	No special features							XX	
<b>Gas Service<sup>4</sup></b>	Standard								
	Oxygen Service								OX

### Notes

Some combinations of features are not available. Please contact the Sales department to discuss your requirements.

1. The inlet for all banjo bolt types is G3/8 male. The exhaust port may be G3/8 or 3/8"NPT female. For direct mounting types the inlet and exhaust port may be G3/8 or 3/8"NPT female but they are always the same.
2. The pressure range depends on the valve type – see the specification table.
3. Special features are given a number reference by the Sales department. XX designates "No Special Features".
4. Valves suitable for use with Oxygen are designated "OX". This part of the code is left blank for valves suitable for compressed air or similar gases such as Nitrogen.

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