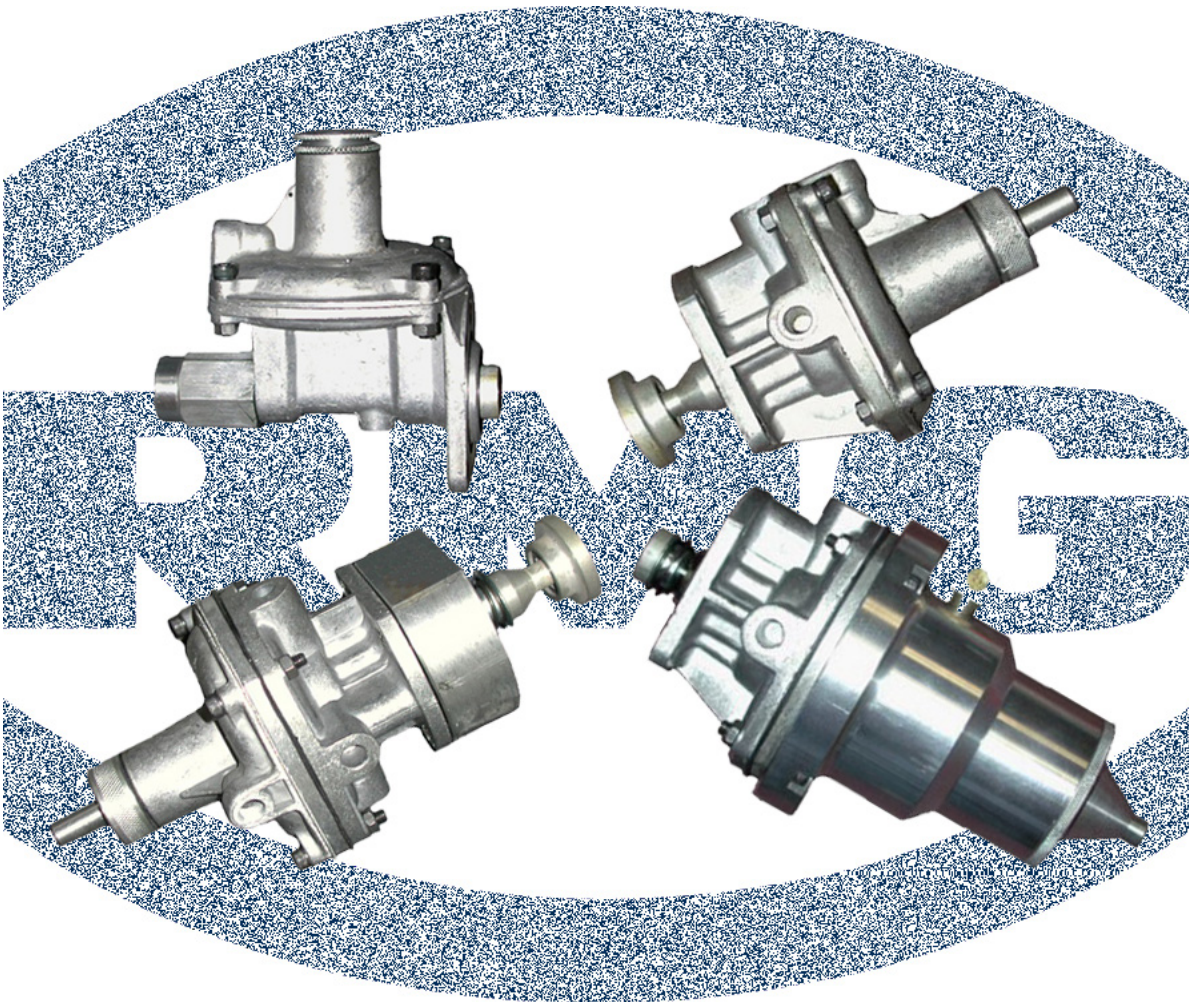


MODEL 290 – 309LP – 309LP2 – 309LP4 Safety Slam-Shut Valves

General Description



Edition
GDSSV.06



BRYAN DONKIN RMG CANADA LIMITED
Serving the Gas Industry—WORLDWIDE



MODEL 290 – 309LP – 309LP2 – 309LP4

Safety Slam-Shut Valves

General Description

Applications

- Specifically designed to protect the downstream system or equipment from either under and/or over pressure conditions
- Special models for protection against fire or high temperatures
- Can be incorporated with any of our pressure regulators or can be fitted to an independent body
- For natural gas and all non-corrosive gaseous media

Characteristics

- Specifically designed to measure downstream pressure and 100% completely shut off the forward flow of gas if a predetermined pressure limit is reached
- Model 290 Safety Slam-Shut Valve is only available in an Over Pressure Cut-Off (OPCO) version
- Models 309LP, 309LP2 and 309LP4 are available in Over Pressure Cut-Off (OPCO) and Under & Over Pressure Cut-Off (UPCO/OPCO) versions
- Maximum inlet and operating pressure 150 psig (10 bar)
- Under pressure cut off range from 4” w.c. – 4.5 psig (10 – 315 mbar)
- Over pressure cut off range from 14” w.c. – 66 psig (35 mbar – 4.5 bar)
- T-Type thermal protection version shuts the gas supply off if the assembly is engulfed in a fire or is subject to temperatures above 212°F (100°C)
- 6 different inlet/outlet thread diameters (National or British Pipe Standards – NPT, BSPT, BSPP)
- Inline body (180°) design
- 1” and 2” flanged version available in ANSI150 or PN16 with flat or raised face profiles
- Available with Internal Impulse or Control Line (I.C.L.) or External Impulse or Control Line Connections (E.C.L.)
- Ease of maintenance due to interchangeable diaphragm casing cartridge accessible via a union nut to the body
- Custom designed and pre-fabricated regulator assemblies and pressure reducing stations available

MODEL 290 – 309LP – 309LP2 – 309LP4 Safety Slam-Shut Valves

General Description

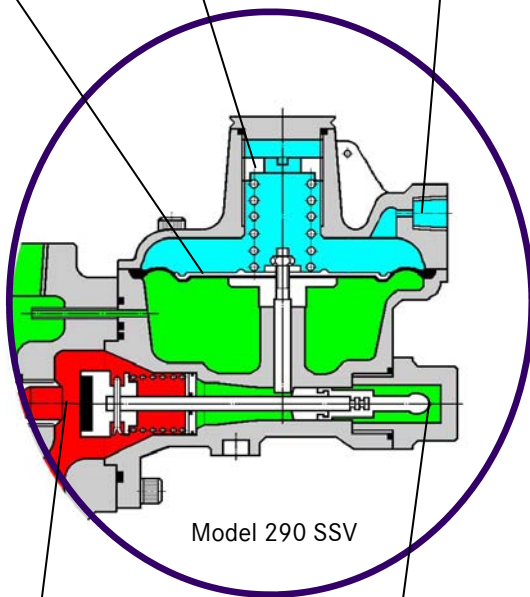
◇ Cartridge style regulator diaphragm casing design so retrofitting new regulator casings is very easy without removing regulator body from the pipe-work.

◇ Thermal protection device available (T-Type) to shut the gas off, if the assembly is engulfed in a fire or subject to high temperatures.

◇ Reinforced diaphragm for increased speed of response and durability.

◇ Available with over pressure cut-off range from 14" w.c. – 8 psig (35 – 560 mbar) over 3 spring ranges

◇ 1/8" threaded vent connections



◇ Shuts off the forward flow of gas at the orifice on the high pressure

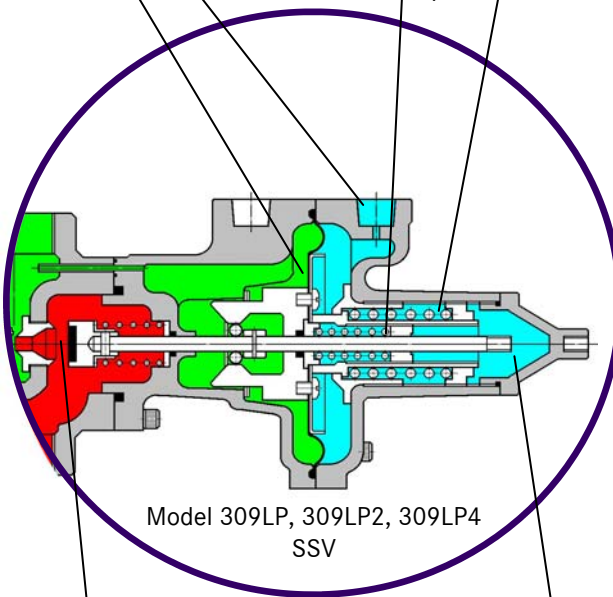
◇ Manual reset required

◇ Reinforced diaphragm for increased speed of response and durability.

◇ Available with under pressure cut-off range from 4" w.c. – 4.5 psig (10 – 315 mbar) over 5 spring ranges

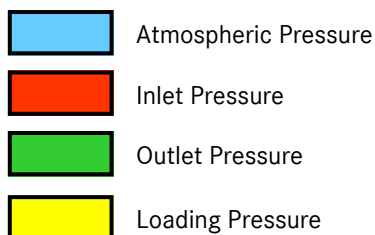
◇ 1/8" threaded vent connections

◇ Available with over pressure cut-off range from 20" w.c. – 66 psig (50 mbar – 4.5 bar) over 9 spring ranges



◇ Shuts off the forward flow of gas at the orifice on the high pressure

◇ Manual reset required



◇ Available with Internal Impulse or Control Line (I.C.L.) or External Impulse or Control Line Connections (E.C.L.)

◇ Pressure test points available at inlet & outlet chambers of the body, as an option.

◇ 6 different pipe thread diameters available on an inline (180°) body designs with 1/2", 3/4", 1", 1 1/4", 1 1/2", 2" NPT, BSPT or BSPP.

◇ 1" & 2" flanged connections available in ANSI150 or PN16 with flat or raised face profiles



MODEL 290 – 309LP – 309LP2 – 309LP4 Safety Slam-Shut Valves

General Description

Available Constructions

290 OPCO: Over pressure cut-off valve

- Over pressure cut-off range 14" w.c. – 8 psig (35 – 560 mbar)

309LP OPCO: Over pressure cut-off valve

- Over pressure cut-off range 20" w.c. – 8 psig (50 – 560 mbar)

309LP UPCO/OPCO: Under and over pressure cut-off valve

- Under pressure cut-off range 4" w.c. – 60" w.c. (10 – 150 mbar)
- Over pressure cut-off range 20" w.c. – 8 psig (50 – 560 mbar)

309LP2 OPCO: Over pressure cut-off valve

- Over pressure cut-off range 6 – 22 psig (0.42 – 1.5 bar)

309LP2 UPCO/OPCO: Under and over pressure cut-off valve

- Under pressure cut-off range 8" w.c. – 4.5 psig (20 – 315 mbar)
- Over pressure cut-off range 5 – 22 psig (0.42 – 1.5 bar)

309LP4 OPCO: Over pressure cut-off valve

- Over pressure cut-off range 15 – 66 psig (1.0 – 4.5 bar)

309LP4 UPCO/OPCO: Under and over pressure cut-off valve

- Under pressure cut-off range 8" w.c. – 4.5 psig (20 – 315 mbar)
- Over pressure cut-off range 15 – 66 psig (1.0 – 4.5 bar)

Thermal Protection (T-Type): no internal relief capacity with safety diaphragms and integral safety slam-shut valve (OPCO or UPCO/OPCO) that has shut-off protection if assembly is engulfed in a fire. Assembly has many steel component parts. Only available up to cut off pressures of 12 psig.

I.C.L. Type: Internally sensing or internal control line to measure outlet pressure

E.C.L. Type: Externally sensing or external control line required to measure outlet pressure in downstream pipe-work. Diaphragm casings drilled and tapped ½" NPT or BSPT to connect downstream sensing line.

F version: complete with inlet mess filter

Body Sizes and Connection Types

Inline Screwed Type Body

- ½", ¾", 1", 1¼", 1½" & 2" screwed
- NPT, BSPT or BSPP threaded types

Flanged Type Body

- 1" & 2" flanged inlet/outlet
- ANSI150RF, ANSI150FF, PN16RF, PN16FF types



MODEL 290 – 309LP – 309LP2 – 309LP4 Safety Slam-Shut Valves

General Description

Pressure Ratings

Maximum Recommended Inlet Pressure

- 150 psig (10 bar)

Materials of Construction

Screwed Body	Cast Iron
Flanged Body (standard)	Cast Iron
Flanged Body (optional)	Ductile Iron, Cast Steel
Diaphragm Casings	Die Cast Aluminum
Diaphragm Casings (T-Type)	Cast Steel
Diaphragm	Molded Nitrile Rubber with Nylon Reinforcing
Valve Head (Seat)	Polyurethane
Diaphragm Plates	Steel
Orifice	Brass or Stainless Steel (T-type)
Fasteners	Steel
Top Cap (standard)	Aluminum

Weights

- w/ screwed body (1/2", 3/4", & 1") – add 2 lb. (0.9 kg)
- w/ screwed body (1 1/4", 1 1/2" & 2") – add 8 lb. (3.6 kg)
- w/ cast iron flanged body – add 15 lb. (6.8 kg)
- w/ ductile iron flanged body – add 17 lb. (7.7 kg)
- w/ cast steel flanged body – add 23 lb. (10.5 kg)
- w/ 290 – add 2.0 lb. (0.9 kg)
- w/ 309 LP - add 2.2 lb. (0.9 kg)
- w/ 309 LP2 – add 2.5 lb. (1.0 kg)
- w/ 309 LP4 – add 8.0 lb. (3.2 kg)
- w/ 309 T-Type – add 5.0 lb. (2.0 kg)

Temperature Rating

- -40° to 60° Celsius
- -40° to 120° Fahrenheit



MODEL 290 – 309LP – 309LP2 – 309LP4 Safety Slam-Shut Valves

General Description

Spring Selection and Cut-Off Ranges

Model 290 Safety Slam-Shut Valve

Range (imperial)	Range (metric)	Spring Number/Colour
14" – 28" w.c.	35 – 70 mbar	861 (brown)
27" – 67" w.c.	68 – 168 mbar	868 (green)
2 – 8 psig	140 – 560 mbar	1254 (red)

Model 309LP Safety Slam-Shut Valve

UPCO Spring and Ranges

4" – 10" w.c.	10 – 25 mbar	1138 (blue/green)
10" – 60" w.c.	25 – 150 mbar	638 (blue)

OPCO Spring and Ranges

20" – 50" w.c.	50 – 110 mbar	1175 (dark blue/black)
40" – 97" w.c.	100 – 243 mbar	1174 (dark blue/orange)
3 – 6 psig	210 – 420 mbar	1173 (dark blue/grey)
7 – 8 psig	490 – 560 mbar	1254 (red)

Model 309LP2 Safety Slam-Shut Valve

UPCO Spring and Ranges

8" – 22" w.c.	20 – 55 mbar	1138 (blue/green)
0.8 – 2.5 psig.	56 – 175 mbar	638 (blue)
2.5 – 4.5 psig	175 – 315 mbar	IA/006 (green)

OPCO Spring and Ranges

6 – 12 psig	0.4 – 0.8 bar	1173 (dark blue/grey)
12 – 17 psig	0.8 – 1.2 bar	1254 (red)
17 – 22 psig	1.2 – 15 bar	1255 (green)

Model 309LP4 Safety Slam-Shut Valve

UPCO Spring and Ranges

8" – 22" w.c.	20 – 55 mbar	1138 (blue/green)
0.8 – 2.5 psig.	56 – 175 mbar	638 (blue)
2.5 – 4.5 psig	175 – 315 mbar	IA/006 (green)

OPCO Spring and Ranges

15 – 30 psig	1.0 – 2.0 bar	1030 (brown)
30 – 45 psig.	2.0 – 3.1 mbar	1031 (green)
45 – 66 psig	3.1 – 4.5 mbar	1032 (dark blue)

MODEL 290 – 309LP – 309LP2 – 309LP4 Safety Slam-Shut Valves

General Description

Thermal Protection (T-Type)

- Designed to shut off and limit the forward flow off gas, if the assembly is engulfed in a fire or exposed to temperatures above 212°F (100°C)
- Spring adjuster separates to release the spring force of the closing mechanism that shuts off the gas supply
- Available with 309LP and 309LP2 S.S.V. only
- Shut off pressure up to 22 psig (1.5 bar)
- Orifice, valve head, lower diaphragm casing and closing spindle are made of steel rather than aluminum to withstand higher temperatures
- All closing component parts are designed to withstand temperatures up to 1200°F (650°C)

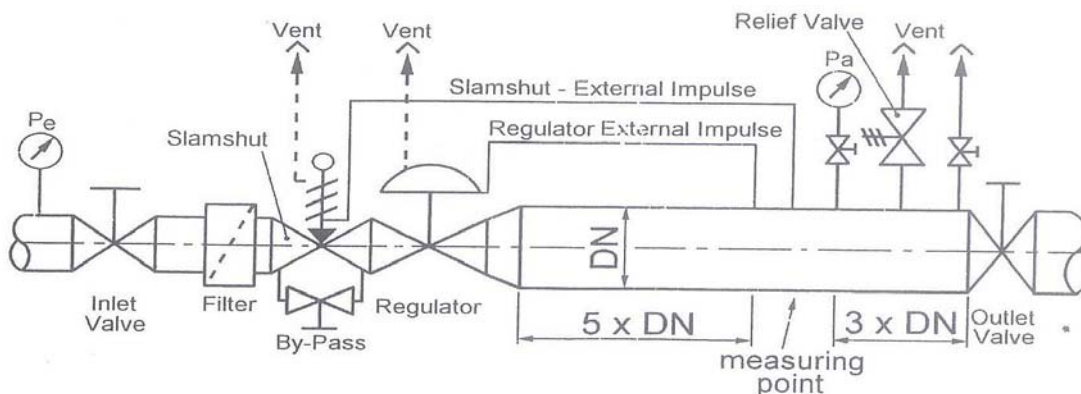
Internal Control Line or Internal Sensing (I.C.L.)

- The safety slam-shut valve senses the downstream pressure internally via a control line to the outlet chamber
- The version is often installed downstream of the pressure regulator or incorporated with a pressure regulator

External Control Line or Internal Sensing (I.C.L.)

- The safety slam-shut valve senses the downstream pressure externally via a control line to the outlet chamber
- The version is often installed upstream of the pressure regulator or incorporated with a pressure regulator
- The E.C.L. connection on the safety slam-shut valve body is tapped 1/8"

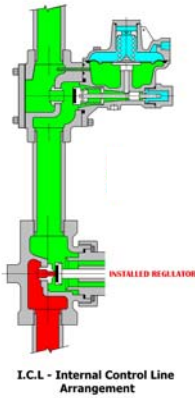
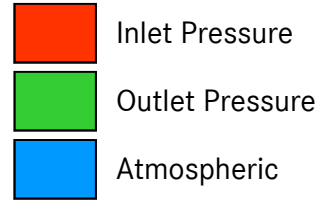
Diagram of Regulator Station and Recommended Location of External Control Line (E.C.L.) Connections



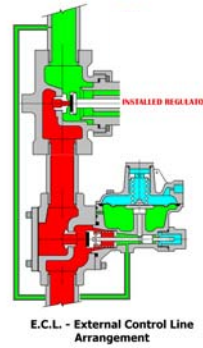
MODEL 290 – 309LP – 309LP2 – 309LP4 Safety Slam-Shut Valves

General Description

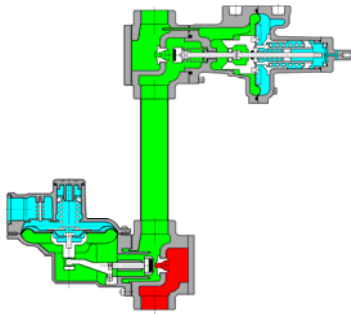
Sectional Diagrams



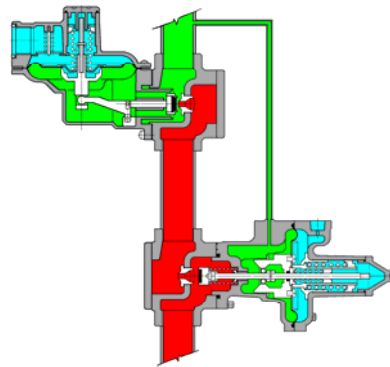
290 (ICL) OPCO



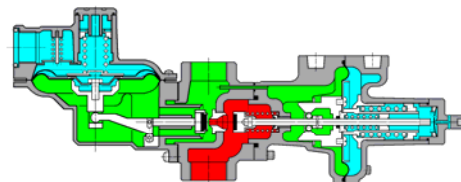
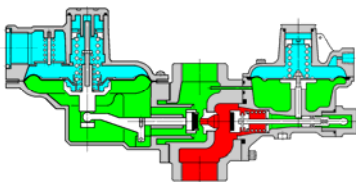
290 (ECL) OPCO



309 (ICL) UPCO/OPCO



309 (ECL) UPCO/OPCO



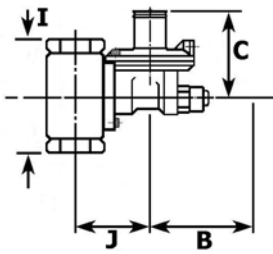
Regulator with Incorporated Integral Safety Slam-Shut Valve

MODEL 290 – 309LP – 309LP2 – 309LP4 Safety Slam-Shut Valves

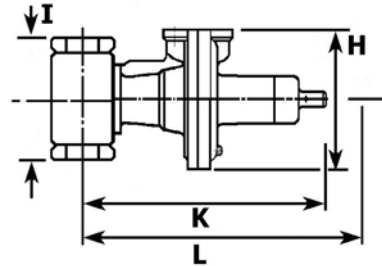
General Description

Dimensional Drawings

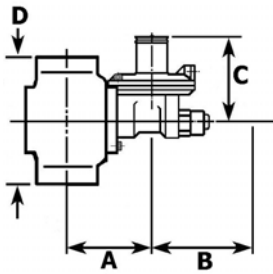
290 (1/2", 3/4", 1" body)



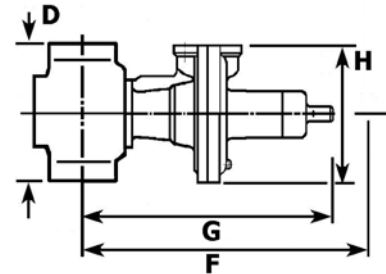
309 (1/2", 3/4", 1" body)



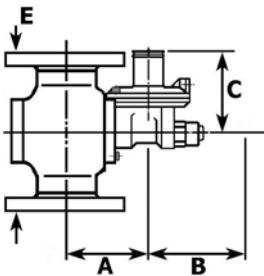
290 (1 1/4", 1 1/2" & 2" body)



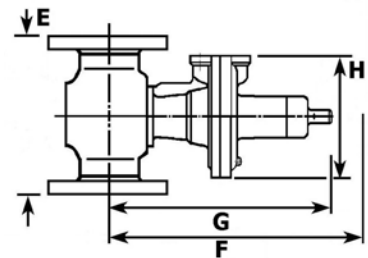
309 (1 1/4", 1 1/2" & 2" body)



290 (2" flanged body)



309 (2" flanged body)



Body Size	A	B	C	D	E	F	G	H	I	J	K	L
290 & 309 LP	4"	2 1/2"	3 1/2"	5 3/4"	7 1/2"	n/a	n/a	4 1/4"	4"	4 1/4"	12"	9 3/4"
309LP2	4"	2 1/2"	3 1/2"	5 3/4"	7 1/2"	13"	10 3/4"	4 1/4"	4"	4 1/4"	n/a	n/a
309LP4	4"	2 1/2"	3 1/2"	5 3/4"	7 1/2"	15"	12 3/4"	4 1/4"	4"	4 1/4"	n/a	n/a



MODEL 290 – 309LP – 309LP2 – 309LP4 Safety Slam-Shut Valves

General Description

Commissioning and Installation Instructions

Please contact one of our representatives for the installation and commissioning instructions. Additionally, the commissioning and installation instructions are found in each box that the equipment is shipped in and can be downloaded from the website.

Ordering Information

1. Inlet pressure (minimum and maximum)
2. Shut-off pressure requirements (over or under & over)
3. Flow requirement (minimum and maximum)
4. Type of gas
5. Temperature
6. Pipe connections (inlet and outlet)
7. Internal or external impulse (sensing)
8. Pressure regulator options or requirements (SRV and/or SSV)
9. Other critical information (system design or description)
10. Shipping and billing information

Product Portfolio

- Pressure regulators for every application from domestic, commercial, industrial to transmission line, city gate stations and other gas utility applications.
- Safety relief valves
- Safety slam shut valves
- Metering equipment (rotary displacement, turbine, vortex shedding, ultrasonic)
- Volume correctors (temperature and pressure)
- Filters
- Underground pressure regulator and metering modules
- Ball valves
- Station design and assembly (prefabricated stations, skid-mounted assemblies, small regulator/meter-set assemblies)
- Flame arrestors
- Data logging and software
- Check and non-return valves
- Training and after-sales service



MODEL 290 – 309LP – 309LP2 – 309LP4 Safety Slam-Shut Valves

General Description

Contact Information



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