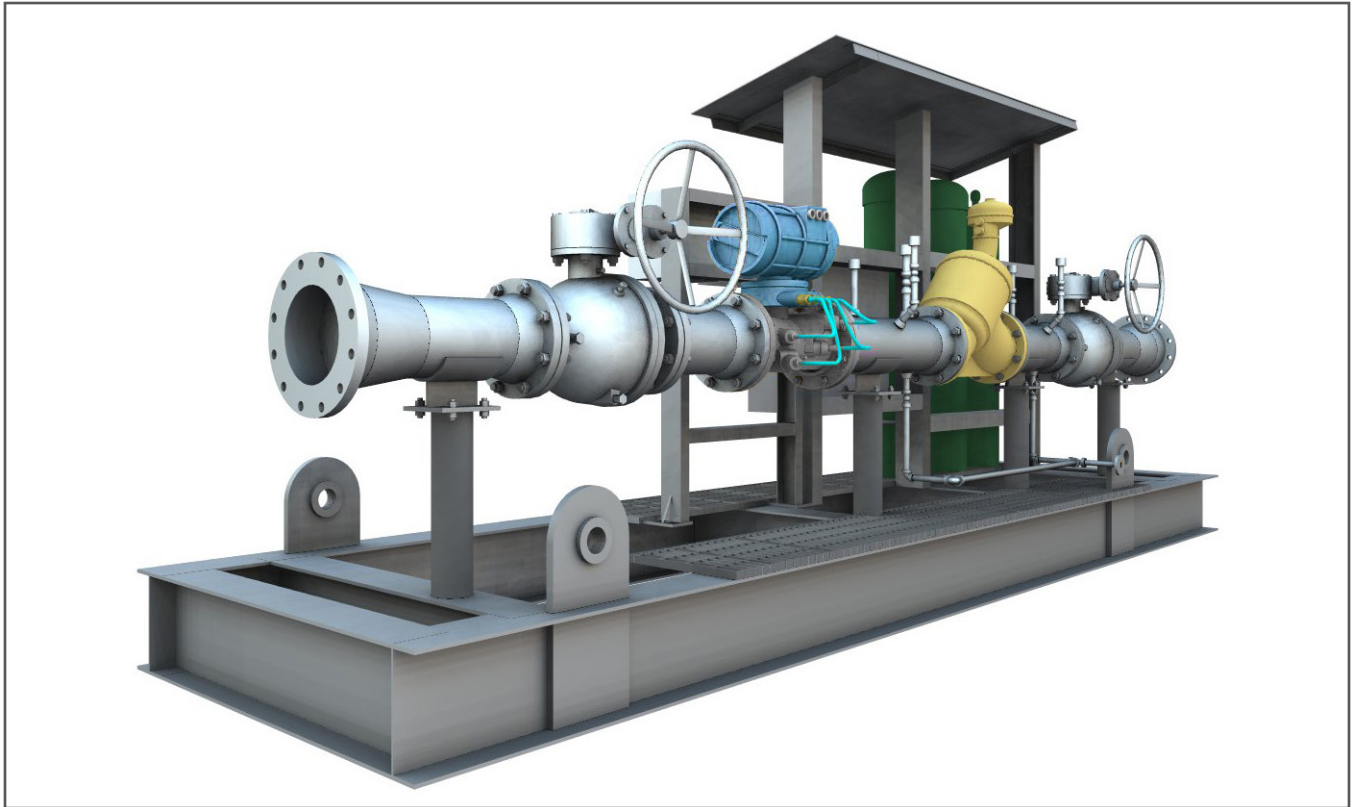


# Surge Relief Systems

The total solution



# Surge Relief Systems

## Compact, Reliable Integrated Safety Solutions

Protect your assets by ensuring pipeline integrity. Emerson's Surge Relief Systems combine field proven technologies and deep application expertise to ensure a total solution that offers the ultimate line of defense for surge protection. Each system delivers exceptional value by continuously regulating and controlling maximum pipeline pressures to protect assets and extend the lifecycle of equipment.

### Applications

- Liquid pipelines
- Refineries
- Tank farms
- Marine loading and unloading
- Terminals
- Floating, production, storage and off-loading (FPSO)

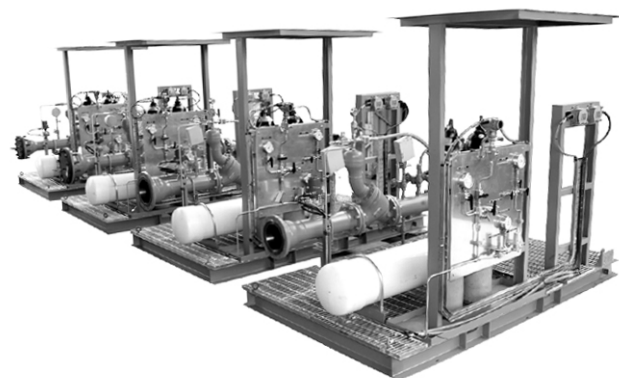
### Features and Benefits

- Packaged, easy-to-integrate total solution for surge detection and measurement
- Exceptionally fast response speed
- Integrated Nitrogen supply and control system designed to optimize valve performance
- Minimal Nitrogen consumption
- Tight and stable set point control
- Tolerant of dirty or viscous products
- High flow capacity reduces system size and weight
- 45° piston valve operation minimizes maintenance
- Inline testing port
- Factory tested to ensure system integrity
- Lifecycle Service System Audits and Services



### Principles of Operation

Emerson's Surge Relief Systems are fast acting, high capacity systems designed to track and abate surge pressures. Each system utilizes a Daniel 765 surge relief control valve and a Nitrogen control system composed of other core Emerson technologies that work in tandem to quickly open and relieve surge pressure from the line. The Daniel 765 control valve is a normally closed valve and a light spring combined with pressurized Nitrogen gas on the valve piston keeps the valve in the closed position during normal operating conditions. The pressurized Nitrogen gas is maintained under tight set point control and is regulated by the Nitrogen control system, which is a closed loop system comprised of Nitrogen supply bottles, a Nitrogen control panel, and a plenum. The control panel features TESCOM regulators designed to efficiently maintain the accuracy and stability of the Nitrogen set point and minimize Nitrogen consumption. The system operates on a hydraulically balanced-piston principle. When the line pressure on the inlet side of the valve exceeds the Nitrogen gas pressure and force of the spring on the piston, the valve will quickly begin to open and relieve the surge pressure. Once the surge pressure is relieved, the valve will close again.



# Specifications and Materials of Construction

Please consult our system specialists if your requirements are outside the specifications noted below. Other material offerings may be available depending on the application. For world area locations and contact information, refer to the back cover.

## System Specifications

### Characteristics

- Daniel 765 gas loaded surge relief valve
- Nitrogen control and supply system
- Complete field instrumentation
- Millisecond response time
- Inline testing port
- Surge relief and/or measurement
- Stream manual isolation valves
- Flow meter (optional)
- All piping and supports

## Mechanical Ratings

### Pipeline Surge System Sizes

- 100 mm to 1250 mm (4-in to 50-in)

### Valve Sizes

- 50 mm to 400 mm (2-in to 16-in)

### Temperature<sup>(1)</sup>

- -29°C to +66°C (-20°F to +150°F)

Flow Capacity (Cv)		
Nominal Meter Size	GPM	M <sup>3</sup> /hr
DN50 (2-in)	86	20
DN75 (3-in)	186	42
DN100 (4-in)	309	70
DN150 (6-in)	688	156
DN200 (8-in)	1296	294
DN250 (10-in)	2040	463
DN300 (12-in)	2920	663
DN400 (16-in)	5360	1217

Flange Connections/Ratings		
150 ANSI MWP at +38°C (+100°F)	300 ANSI MWP at +38°C (+100°F)	600 ANSI MWP at +38°C (+100°F)
285 PSI	740 PSI	1,480 PSI
20 kg/cm <sup>2</sup> g	54 kg/cm <sup>2</sup> g	104 kg/cm <sup>2</sup> g

Paint Specifications		
Carbon Steel External Surface Non-Insulated with Temperature	<+100°C	+100°C to +200°C
<b>Blast Clean</b>	SA 2.5 (Profile 50-75Mic)	SA 2.5 (Profile 50-75Mic)
<b>Primer</b>	Zinc-rich epoxy	Inorganic Zinc Silicate
<b>Intermediate</b>	Epoxy MIO	-
<b>Finish</b>	Polyurethane Acrylic	Aluminium Silicate

## Material Specifications

Structural Material: ASTM A36 Carbon Steel		
150 ANSI	300 ANSI	600 ANSI
-29°C to +149°C (-20°F to +300°F)	-29°C to +149°C (-20°F to +300°F)	-29°C to +427°C (-20°F to +800°F)
20 to 16 kg/cm <sup>2</sup> g	52 to 46 kg/cm <sup>2</sup> g	104 to 58 kg/cm <sup>2</sup> g

### Piping Material

- Carbon steel base ASTM A106

### Control Valve Material

#### Main Valve Body

- ASTM A352 Gr LCC steel

#### Main Valve Cylinder: 150 to 600 ANSI

- Stainless steel, 50 mm to 100 mm (2-in to 4-in)
- Steel, nickel coated, 150 mm to 400 mm (6-in to 16-in)

#### Main Valve Piston

- Stainless steel standard 50 mm to 400 mm (2-in to 16-in)

#### Seat Ring

- Stainless steel on 600 ANSI  
50 mm to 400 mm (2-in to 16-in)
- Steel, nickel coated on 150 to 300 ANSI  
50 mm to 400 mm (2-in to 16-in)
- O-Rings
  - Standard: Viton<sup>®</sup> Dynamic, Buna-N Static
  - Optional: Neoprene, EPR, all Viton, GFLT, all Buna-N, aggressive product (AP) options
- Other internal parts: Stainless steel
  - Reservoir: ASTM A333 carbon steel
  - Cylinder head: ASTM A516 Gr 70
  - Elbow, cap, reducers: ASTM A350 LF2
  - Studs and nuts: A193 Gr BT, 194 Gr 2H

### Approvals

- NACE

1) Subject to material specifications

# Surge Relief Systems

**Product Datasheet**

	SRV	XXX	XX	X	X	X	
		↓	↓	↓	↓	↓	
<b>Valve Type</b>							<b>Primary Feature</b>
Daniel 765 Control Valve .....	765					S .....	Surge Relief
						M .....	Surge Relief and Flow Measurement
<b>Line Size</b>							<b>Flow Configuration</b>
DN 50 (2 in) .....	02					1 .....	1 - 1 X 100%
DN 75 (3 in) .....	03					2 .....	2 - 2 X 50%
DN 100 (4 in) .....	04					3 .....	3 - 3 X 33%
DN 150 (6 in) .....	06						
DN 200 (8 in) .....	08						
DN 250 (10 in) .....	10						<b>Class Code</b>
DN 300 (12 in) .....	12					1 .....	1 - 150 #
DN 400 (16 in) .....	16					2 .....	2 - 300 #
						3 .....	3 - 600 #

This is for informational purposes only. Please consult factory for assistance in designing your optimal Surge Relief System.

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[www.EmersonProcess.com/SurgeRelief](http://www.EmersonProcess.com/SurgeRelief)

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