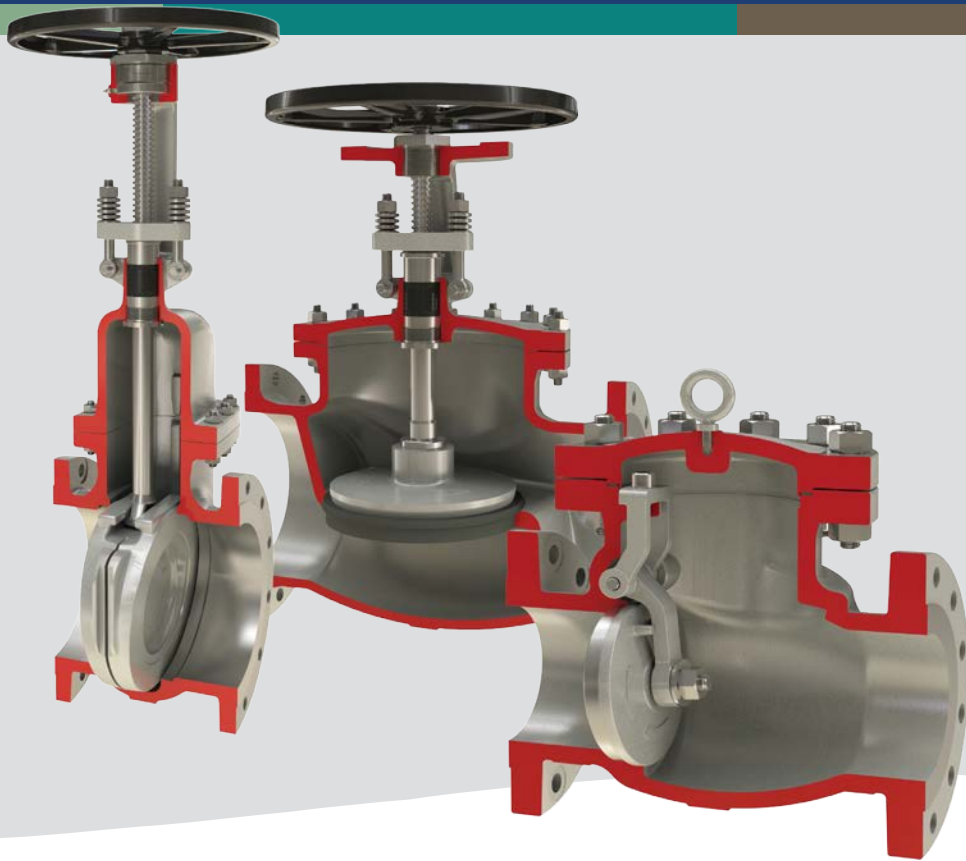




brands you trust.



Pacific®CSV  
Cast Steel Valves Overview

**CRANE**®

Crane ChemPharma & Energy

[www.cranecpe.com](http://www.cranecpe.com)



# Table of Contents

## A Continuing Story of Success

### Dependable Operation

Engineers know they can trust Pacific® Valves. They set the industry standard for dependable, consistent operation, even in the most adverse conditions with years of trouble-free performance.

### Customer Service

Customers know they can depend on Pacific® for after sales service and technical support from one of our many locally based sales associates and distribution partners.

### Global Compliance

Pacific®CSV valves are fully compliant to all relevant global standards.

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# Introduction to Crane • Crane Co.

## FOUNDED IN 1855

- 1 FLUID HANDLING
- 2 AEROSPACE & ELECTRONICS
- 3 MERCHANDISING SYSTEMS AND PAYMENT TECHNOLOGIES
- 4 ENGINEERED MATERIALS

### Crane Co.

Crane Co. is a diversified global manufacturer of engineered industrial products traded on the New York Stock Exchange (NYSE: CR). One of its segments, Crane Fluid Handling, provides highly engineered products for fluid handling applications worldwide.

### The Fluid Handling Segment

Crane Fluid Handling provides highly-engineered products including **valves, pumps, controls and water treatment equipment for fluid handling applications worldwide.** Its operating units include Crane ChemPharma & Energy, Crane Nuclear, Crane Building Services, Crane Pumps & Systems, Crane Supply, Barksdale Control Products.

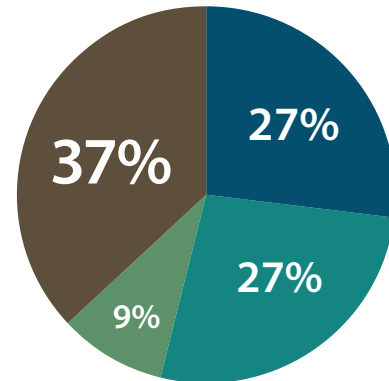
### Crane ChemPharma & Energy (CPE)

Crane CP&E designs and manufactures a variety of high-performance products including: highly-engineered **check valves, sleeved plug valves, lined valves, process ball valves, high performance butterfly valves,** bellows sealed globe valves, aseptic and industrial diaphragm valves, multi/quarter-turn valves, actuation, sight glasses, lined pipe, **fitting and hoses, and air-operated diaphragm and peristaltic pumps.** Its trusted brands are in use worldwide in many industries, including **Oil & Gas, Oil Refining, Petrochemical, Power Generation, Chemical Processing, Biotechnology, and Pharmaceutical.**

### Crane (CPE) Brands

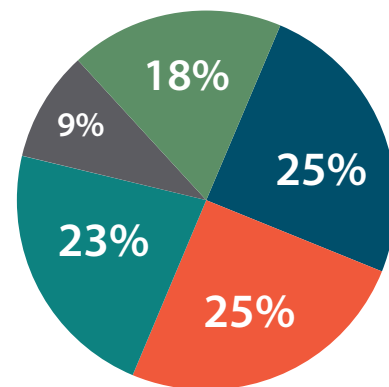
ALOYCO • CENTER LINE • COMPAC-NOZ • CRANE • DEPA  
DUO-CHEK • ELRO • FLOWSEAL • JENKINS • KROMBACH  
NOZ-CHEK • PACIFIC • RESISTOFLEX • REVO • SAUNDERS  
STOCKHAM • TRIANGLE • UNI-CHEK • WTA • XOMOX

### Crane Co.



- Fluid Handling
- Aerospace & Electronics
- Merchandising and Payment Technologies
- Engineered Materials

### Key Markets



- Chemical/Petrochemical
- Energy
- Building Services
- Municipal
- General Industry

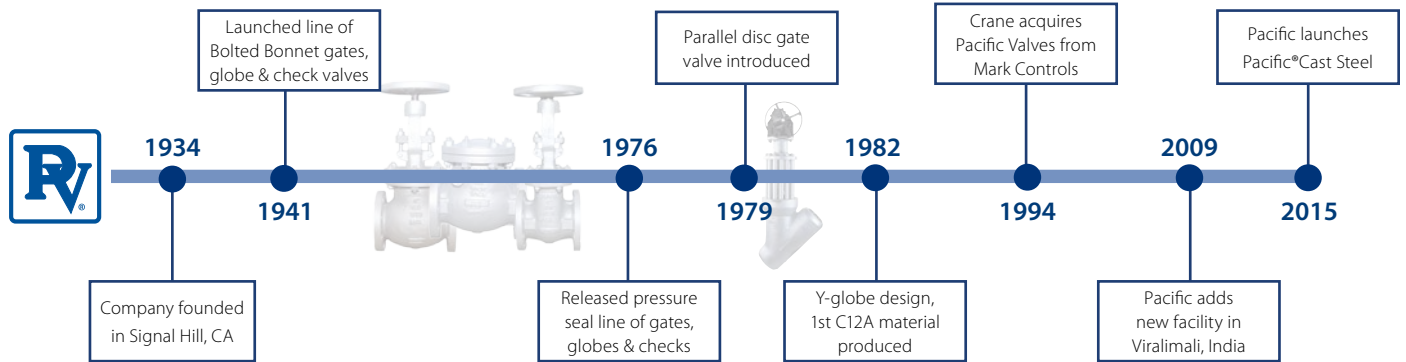


# Pacific® Valves

## Company History and Introduction

Pacific® Valves was established in Signal Hill, California in 1934, as a company devoted to reconditioning all makes, models, types and sizes of valves. During this time, the manufacturing engineers quickly noticed a pattern of design flaws in the valves that consistently drove repair business. By using this unique experience, Pacific quickly developed its own line

of Gate, Globe and Check valves and we've never looked back. The cornerstones of our success are continuous quality improvement, reliable service and support, and robust investment into product innovation. These are the hallmarks that have enabled Pacific Valves to become one of the most proven and respected brands in the world.



## Manufacturing Locations

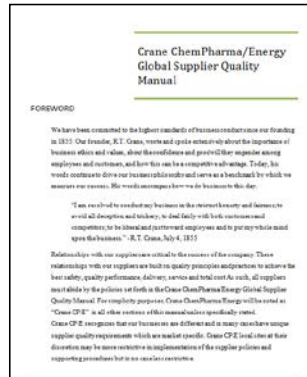


# Pacific Quality

Crane is built on quality principles and practices to achieve the best safety, quality, performance, delivery, service and total cost. As such, all suppliers must abide by the policies set forth in the Crane Global Supplier Quality Manual.

## Process-driven Results

Years of research and development, together with practical experience in reconditioning all types of valves, have gone into design and manufacture of Pacific® Valves. High quality materials and workmanship, combined with the modern manufacturing methods used in producing these valves are your assurance of a dependable, uniform product. Pacific Valves are designed in accordance with the latest edition of industry requirements and design standards.



## Certified Quality

The following is a partial list held by Crane, and/or Crane affiliates. All certificates are available upon request.

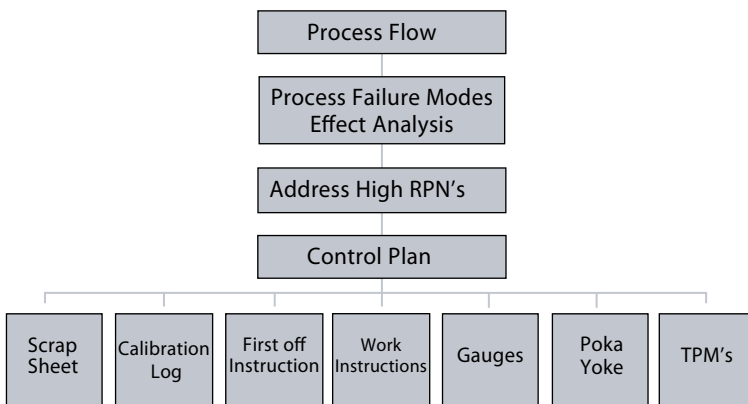
- API 622
- CE/PED
- Indian Boiler Regulation (IBR)
- ISO 15848-1
- ISO 9001:2008

These valves comply with the applicable requirements of the following standards:

- API 600
- API 623
- API 598
- ASME B 16.34
- ASME B 16.10
- ASME B 16.5
- ASME B 16.25

## Crane processes are audited by global customers.

**Process Failure Mode Effects Analysis (PFMEA)** is a structured tool used to evaluate and document ways in which a product might fail to meet customers' expectations.



**Control Plan Process - Defining expectations before production.**

**Consistent Quality. Replicable Results.**

## Traceability

Pacific®CSV has partnered with a world renowned foundry to deliver the highest quality valves within the industry. By being in a joint venture, Pacific now has control over the entire process flow map from the pour to delivery of assembled valve.

Being in a joint venture provides confidence that the product we deliver will be assembled with the utmost care. With that care, also comes the ability to trace each and every component back to its original source, so if an error was to occur, we can get to the root of the problem to ensure that it will never happen again. Our world-class manufacturing and traceability processes from the pour to delivery of assembled valves, provide the highest quality assurance established to meet or exceed our customers' requirements.



# Product Portfolio and Customer Support



## Customer Support

Our Cullman stocking and Long Beach locations allow us to provide:

- Responsive Customer Service for Quotes and Project Support
- Quick Ship Capabilities
- Consistent On Time Delivery
- US based Technical and Application Support
- US Country of Origin option available via Long Beach facility



## Peace of Mind.

Pacific® Valves are a preferred supplier for OEMs, EPCs, and end users around the world because our customers know that we have a superior selection, offered in a wide array of materials, available in an almost unlimited variety of customizations. If you need a cast solution, our application engineers work with you to provide the right offering to meet your valve requirements.

### Pacific®CSV

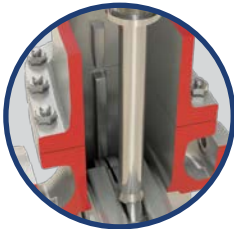
- Proven designs available in WCB, LCB, LCC, WC6, WC9, C5, C12, CF3M, CF8, CF8M
- Full product design range, sizes 2" – 24", pressure classes #150 - #600

Valve Type & Class	IN	2	2.5	3	4	6	8	10	12	14	16	18	20	24
	DN	50	65	80	100	150	200	250	300	350	400	450	500	600
Gate	150	•	•	•	•	•	•	•	•	•	•	•	•	•
	300	•	•	•	•	•	•	•	•	•	•	•	•	•
	600	•	•	•	•	•	•	•	•	•	•	•	•	•
Globe	150	•	•	•	•	•	•	•	•	•	•	•		
	300	•	•	•	•	•	•	•	•	•	•	•		
	600	•	•	•	•	•	•	•	•					
Check	150	•	•	•	•	•	•	•	•	•	•	•	•	•
	300	•	•	•	•	•	•	•	•	•	•	•	•	•
	600	•	•	•	•	•	•	•	•	•	•	•	•	•

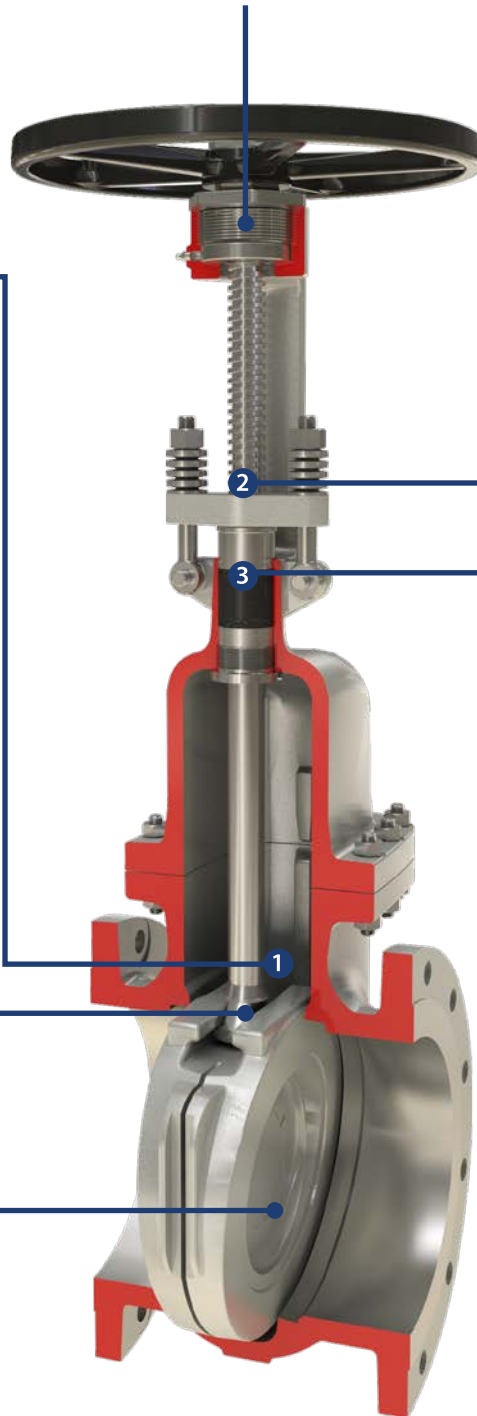
Larger sizes and higher pressure classes – available upon request.

# Key Features - Gate Valve

Stem and stem nuts have been designed to minimize torque



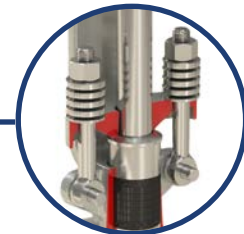
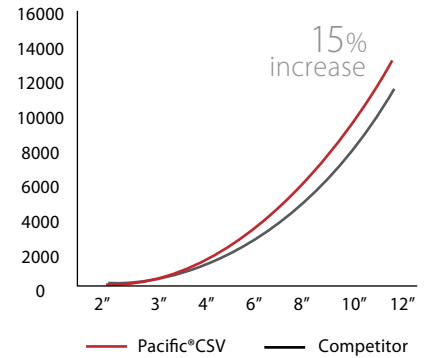
Fully-guided wedge ensures smooth operation in both horizontal and vertical orientations to help prevent sticking



T-slot stem designed for simple installation and maintenance

Available in solid or flexible wedge, which provides a better seal

Gate Valve Cv



Live loading option extends fugitive emissions performance by eliminating the need for manual packing adjustment



Modular stuffing box facilitates changeover for low fugitive emissions and monitoring port options



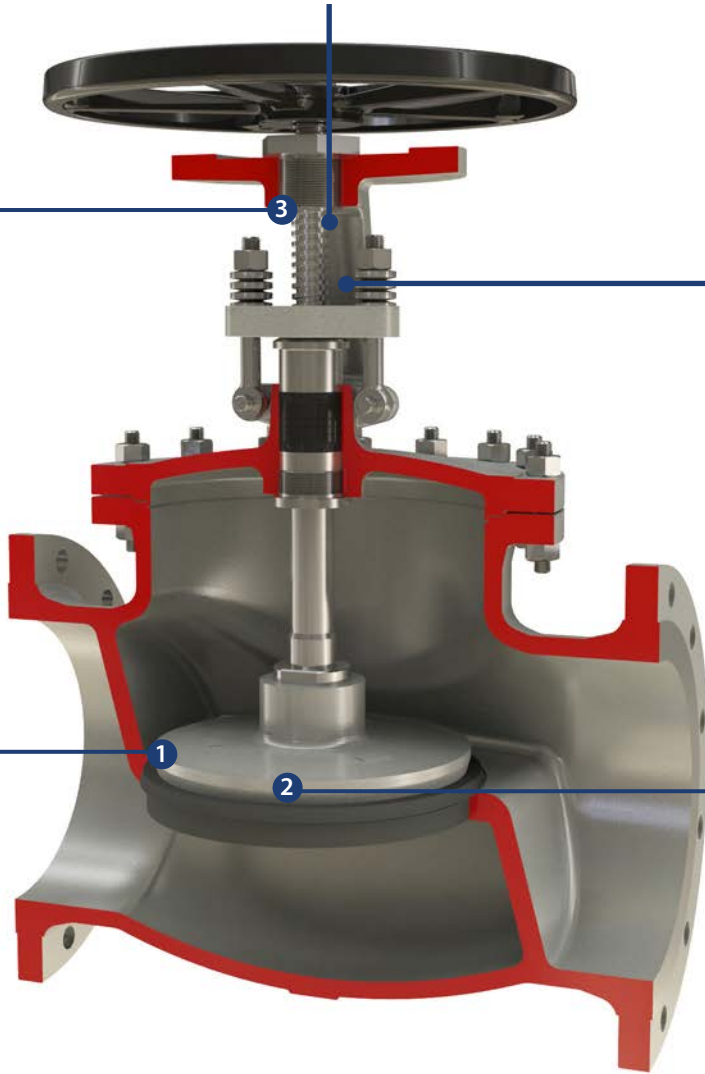
# Key Features Globe Valve

Stem and stem nuts have been designed to minimize torque

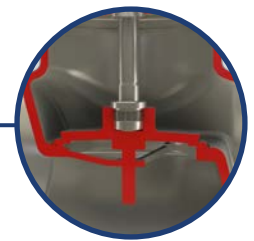


Integral ISO 5210 mounting is available in larger sizes for ease of actuation

Modular stuffing box facilitates changeover for low fugitive emissions and monitoring port options



Uniquely designed line contact between disc and seat results in lower seating torque, permitting faster set up

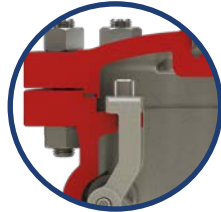
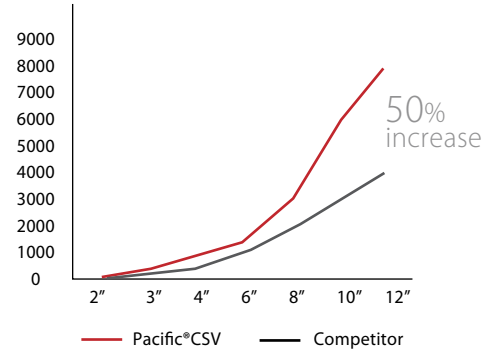


The guided disc option facilitates seating and prevents vibration during high velocities and pressure drops



# Key Features Swing Check

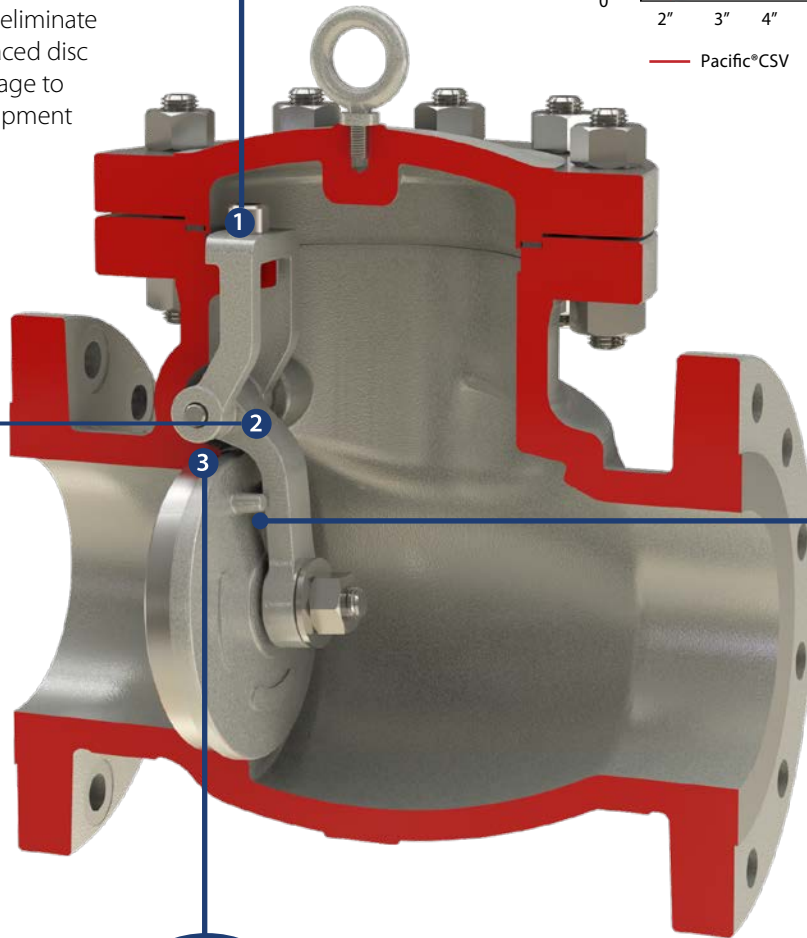
Swing Check Valve Cv



Disc fastener is restrained by the bonnet to eliminate the risk of a displaced disc and prevent damage to downstream equipment



Internal hung disc pin arrangement eliminates leak path from pressure boundary



Anti rotation pins



Modular design enables easy change to an optional external pin arrangement if counterweights are required



# Applications

Pacific® Valves valves offer economical solutions for the vast majority of refining applications while maintaining the highest possible degree of performance in terms of in-line leakage and fugitive emissions.

They are commonly used within the following industries:

- Refining
- Oil
- Chemical
- Petrochemical
- Power
- Pharmaceutical

Within these industries, Pacific valves have superior performance in the following applications

- Oil
- Steam
- Sea Water
- Ethylene

## Performance Chart

		Gate	Globe	Check
FUNCTION	On / Off	●	●	●
	Throttling	○	●	○
	Diversion	○	○	○
	Flow Reversal	○	○	●
MEDIA TYPES	Clean Liquids & Gasses	●	●	●
	Dirty Liquids & Gasses	●	●	●
	Corrosive Liquids & Gasses	●	●	●
	Hazardous Liquids & Gasses	●	●	●
	Viscous Liquids	●	●	●
	Scaling Liquids & Slurries	●	●	●
	Abrasive Slurries	●	●	●
	Fibrous Slurries	●	●	●
	Dry Materials	○	○	○
	Vacuum Service	●	●	●
APPLICATION REQUIREMENTS	High Flow Capacity	●	●	●
	Low Torque	●	●	○
	Fugitive Emissions Control	●	●	○
	Reduced Maintenance	●	●	●
	Extended Service Life	●	●	●
	Sizes	2" - 24" DN15/DN600	2" - 18" DN15/DN450	2" - 24" DN15/DN600
	Pressure Ratings	Class 150, 300, 600	Class 150, 300, 600	Class 150, 300, 600

● Superior Performance    ● Limited Application    ○ Not Applicable

Source: Crane Engineering

# Engineering Approach

## Concept Design

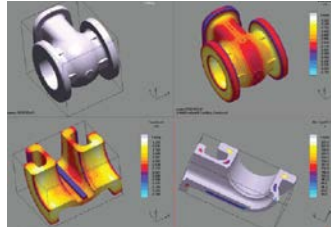
Robust design methodology and use of world class engineering tools to design products based on customer needs. Full compliance of relevant industry standards like API 600, API 623, ASME B 16.34, ASME B16.10. Well structured design process followed for the entire product range. This enables us to provide engineering data, general arrangement drawings with high quality and accuracy.

## Manufacturing Feasibility

Manufacturing feasibility was proven for castings – both sand and investment parts.



Rigorous product testing.



Magma Flow simulation for superior quality castings.

## Fugitive Emissions

Pacific believes in ensuring a safer environment, and is taking a proactive approach towards reducing fugitive emissions. Fugitive emissions occur from spills, leaks, and evaporation. Pacific®CSV will ensure some of the lowest fugitive emission ratings within the industry.

To make sure Pacific® Cast Steel valves will be industry leading in fugitive emission, API 622 packing will be a standard offering.

**API Standard 624, First Edition, 2014**  
**Test Report**  
 "Type Testing of Rising Stem Valves Equipped with Graphite Packing for Fugitive Emissions"  
 Performed for  
**Crane Energy**  
<http://www.cranecpe.com>

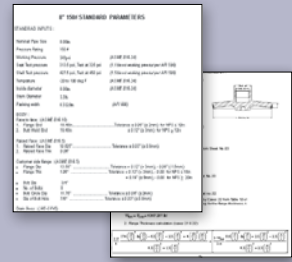
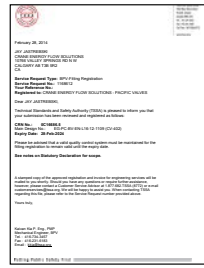
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4 inch Class 150 Gate Valve  
 Product Code: 2355

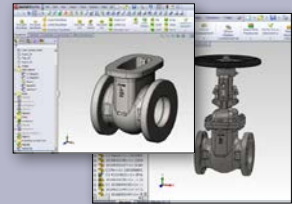
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 Test Start Date: March 10, 2015

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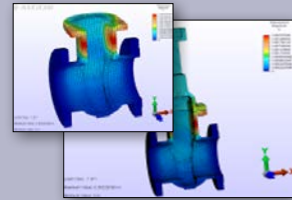
Performed by  
**YARMOUTH RESEARCH AND TECHNOLOGY, LLC**  
 434 Walnut Hill Road  
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 (207) 829-5359  
[info@yarmouthresearch.com](mailto:info@yarmouthresearch.com)  
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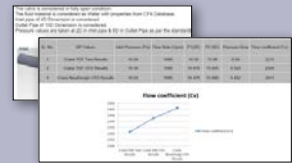
**Calculations:  
Standard Templates  
Developed**



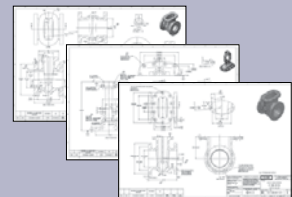
**Master Templates  
Developed**



**Analysis:  
Stress & Deflection  
Evaluation**



**CV & Pressure drop  
Calculations**



**Drawings:  
General Arrangement  
Drawings**



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Fax: +1 256-775-3860

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