

**CURTISS -
WRIGHT**

Valve Group



**The First Line
of Safety**

Farris Engineering



Our Company

Farris Engineering, a business unit of Curtiss-Wright, has been at the forefront in the design and manufacture of spring-loaded and pilot-operated pressure relief valves since the early 1940's. With over 70 years of proven performance, Farris has provided automatic and positive protection against overpressure situations in thousands of industrial plants and facilities around the globe. Our reputation as "the First Line of Safety" is a result of Farris innovations that have evolved into industry standards for pressure relief valve design.

Farris provides products and solutions serving many industries including, hydrocarbon processing, refinery, petrochemical, fossil and nuclear power generation, natural gas production and transmission, pharmaceutical, and general processing.

Curtiss-Wright is a worldwide leader in delivering solutions that improve safety, plant flexibility, reliability, and efficiency. The businesses of Curtiss-Wright pioneer highly engineered solutions to deliver profound value to their customers and enable them to transform the way their business is done.





Value Beyond the Valve

With Farris, a trustworthy valve is only part of our promise. Farris provides customers with total pressure relief management solutions that support a facility's entire lifecycle, transforming the way you ensure plant safety:

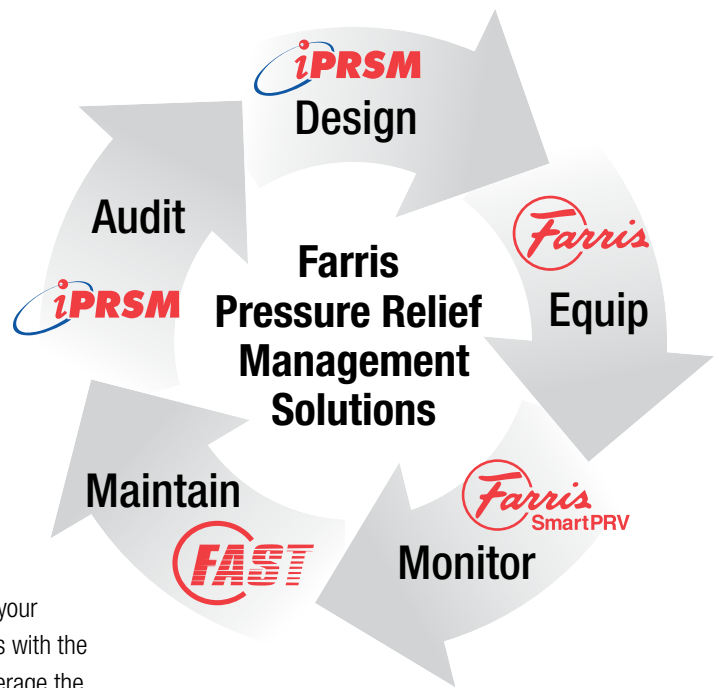
Design—Using the power of iPRSM technology and our Farris Engineering Services team, correctly design your pressure relief system to respond to every overpressure scenario.

Equip—Equip your plant with Farris' full line of spring loaded and pilot operated PRV hardware, knowing your plant is protected by over 70 years of manufacturing experience.

Monitor—Monitor your pressure relief valves with the SmartPRV™ and leverage the power of wireless technology.

Maintain—Utilize the Farris Authorized Service Team – FAST Centers to maintain your relief valves with localized aftermarket service and repair.

Audit—Our Farris Engineering Services team and iPRSM technology will keep your pressure relief systems audited and in compliance.



Farris SmartPRV technology

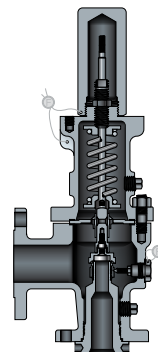
Farris Products

Process Valves



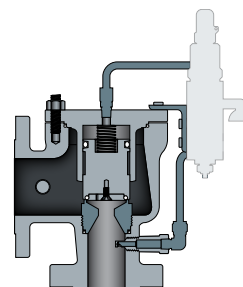
SERIES 2600/2600L

- ASME NB Certified: Air, Steam and Water
- 2600L – Single Trim Design for Multiple Services (Air, Steam, Water and Two-Phase Flow)
- Conforms to API 526
- CE Approved
- Sizes: 1" x 2" to 20" x 24"
- Pressure Range: 15 to 6000 psig, 1.0 to 413 barg
- Temperature Range: -320 to 1500°F, -195 to 815°C
- Materials: Carbon Steel, Stainless Steel, Low/High Temp. Alloy Steels, Monel®, Hastelloy C®, Duplex, & NACE Compliant Materials
- Options: Balanced Bellows, O-Ring Seat, Open Bonnet, and others
- Applications: Air, Gas, Vapor, Steam & Liquids



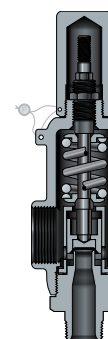
SERIES 3800/3800L

- ASME NB Certified: Air, Steam & Water
- Conforms to API Standard 526
- CE Approved
- Sizes: 1" x 2" to 12" x 16"
- Pressure Range: 15 to 6170 psig, 1.0 to 425 barg
- Temperature Range: -320 to 500°F, -195 to 260°C
- Actuation: Snap or Modulating
- Materials: Carbon Steel, Stainless Steel, Low/High Temp. Alloy Steels, Monel®, Hastelloy C®, Duplex, & NACE Compliant Materials
- Options: Full Port Design, Field Test Connections, Reverse Flow Preventer, Remote Depressurizing & Auxiliary Filters, and others
- Applications: Air, Gas, Vapor, Steam & Liquids

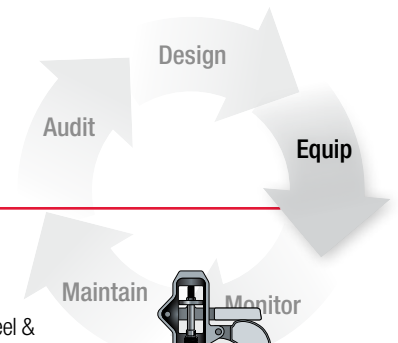


SERIES 2700

- ASME NB Certified: Air, Steam & Water
- CE Approved
- Sizes: 1/2" x 1" to 1-1/2" x 2-1/2"
- Pressure Range: 15 to 6500 psig, 1.0 to 448 barg
- Temperature Range: -320 to 750°F, -195 to 399°C
- Materials: Carbon Steel, Stainless Steel, Low/High Temp. Alloy Steels, Monel®, Hastelloy C®, Duplex, & NACE Compliant Materials
- Options: O-Ring Seat, Balanced Design, Flanged, Socket Weld, Welding Nipple & Sanitary Connections, and others
- Applications: Air, Gas, Vapor, Steam & Liquids



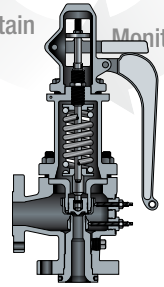
Steam Safety Valves



SERIES 4200

- ASME NB Section I & VIII Certified: Air & Steam
- CE Approved
- Sizes: 1-1/4" x 1-1/2" to 6" x 8"
- Pressure Range: 15 to 1000 psig, 1.0 to 68.9 barg
- Temperature Range: -20 to 1000°F, 538°C

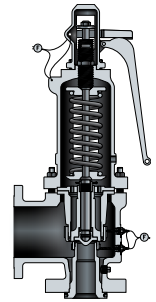
- Materials: Carbon Steel, Stainless Steel & Chrome-Moly
- Options: Test Gag
- Applications: Steam Service



SERIES 6400

- ASME NB Section I & VIII Certified: Air & Steam
- Sizes: 1" x 2" to 4" x 6"
- Pressure Range: 15 to 1500 psig, 1.0 to 103 barg

- Temperature Range: -20 to 1000°F, -29 to 538°C
- Materials: Carbon Steel, Stainless Steel & Chrome-Moly
- Options: Closed Bonnet (6600) & Test Gag
- Applications: Steam Service



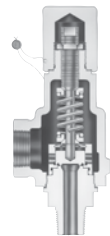
Specialty Valves



SERIES 1890/1896M

- ASME Certified: Air, Steam and Water
- Sizes: 1/2" x 3/4" to 3/4" x 1"
- Pressure Range: 15 psig to 800 psig

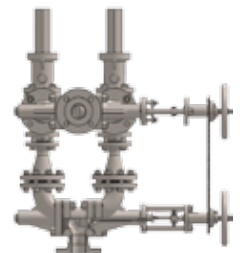
- Temperature Range: -320 to +750°F
- Materials: Stainless Steel Body & Trim/Carbon Steel Bonnet, Brass Body & Trim/Bronze Bonnet
- Applications: Air, Steam, Gas & Water



SERIES 320B/370B

- CE Approved, ASME BPVC, ASME B 16.34, API 520-2, AD 2000 S1, ISO 4126
- Standard sizes: 1/2" to 20"
- Pressure rating: Class 150 to 300, 10.3 to 20.7 barg
- Temperature Range: -320 to 1202°F, -196 to 650°C

- Materials: Low Carbon Steel, Carbon Steel, High Temperature Carbon Steel, Stainless Steel, Inconel, Hastelloy, Chrome-Moly and other special Alloys
- Options: Combination Units, Hand Wheel with Locking Device, Final Position Switch, Heating Jacket, Drain & Flushing Hole
- Applications: Air, Steam, Gas, Water, & Chemicals, Service Conditions include toxic, aggressive, flammable fluids, VOCs



Special applications available in higher pressure ranges, consult factory.

Software & Engineering Solutions

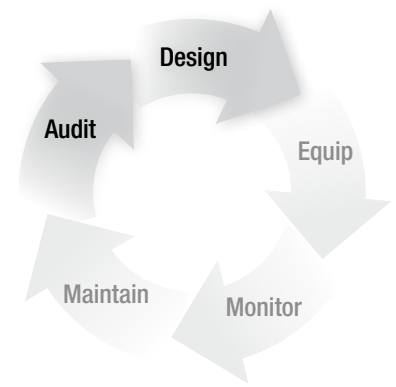
Engineering Services for Relief Systems

Relief System Design – experts in over-pressure scenarios, the Farris Engineering Service (FES) team can design your relief system to optimize process production while minimizing unnecessary equipment costs.

Relief System Audit – the FES team provides the most comprehensive relief system audit available in industry today. Services

include relief system validation and recommendations for mitigation of relief system deficiencies. Our staff will help your facility achieve PSM compliance.

Relief System Training – Let the FES experts train your team in all aspects of safety system operation, sizing methodology and pressure relief valve design.



iPRSM® Pressure Relief System Management Software

iPRSM is a patented, web-enabled software for intelligent pressure relief system management. iPRSM provides cost effective management of pressure relief system documentation. It assures compliance with regulatory codes and company standards over your facility's lifecycle. iPRSM delivers features and benefits beyond anything available in industry today:

- Web Enabled / LAN Software Application
- Data Import / Export Capability
- Centralized Document Repository

- Integration to Flash Calculation Engine and Thermophysical Properties System
- Management of Change
- Cause of Overpressure Analysis
- Maintenance Database
- Navigation through P&IDs
- Relief Load Calculations
- Inlet / Outlet Pipe Calculations
- Two-Phase Flow Calculations
- Header / Blow Down Systems
- System Revision Control



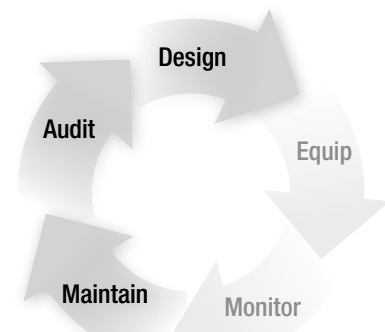
Aftermarket Support

FAST Center

The Farris Authorized Service Team – or FAST Centers – provide the aftermarket support facilities need to keep their pressure relief valves in operation and plants safe. Each Farris FAST Center has:

- ASME and VR Certification for valve repair facilities
- Ability to diagnose and solve pressure relief valve problems
- Factory trained technicians
- Capability to track and manage PRV maintenance and repair history

- Local service including inventory, inline testing and field service capabilities to reduce plant downtime
- Inventory Exchange – FAST Centers have access to an online inventory exchange allowing them to purchase Farris relief valves from anyone within the FAST network
- Valve Expertise – FAST Centers are all supported by Farris Engineering



Farris Aftermarket Support

The Farris Aftermarket Program is designed to bring world-class service and support for any pressure relief valve requirement around the globe. Our program includes:

Farris' FAST Track – quotation and supply of pressure relief valves and OEM parts on an expedited basis for both planned shutdowns and emergencies.

24/7/365 eS3 – Emergency Service, Supply and Support. Farris will work with our aftermarket resources along with our FAST Network to provide emergency after hours support.

Aftermarket Service and Sales Locations

– Located in Corby, UK and Sao Carlos, Brazil, both locations hold ASME, ISO and

VR certifications. They can provide valve and OEM parts to their local markets as well as commercial and technical sales support fluent in the local languages.

Sizing and Selection Support



SizeMaster® Pressure Relief Valve Sizing & Selection Software

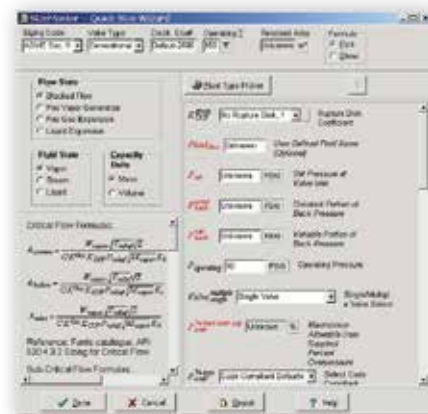
Farris' SizeMaster program enables the accurate sizing and selection of a pressure relief valve for any combination of process applications. Windows® based (all versions), SizeMaster provides integration of standard engineering practices to the task of sizing and selecting PRVs. SizeMaster sizes and specifies PRVs in strict accordance to ASME Code, API 526 and other industry standards.

SizeMaster's scenario matrix allows users to define as few as one or as many as 64 different sizing scenarios, including blocked flow, fire, thermal and tube rupture.

Selection of the pressure relief valve is automatically based on the relief area of the worst case scenario. SizeMaster features various Wizards which simplify complicated tasks. The Capacity Wizard, for instance, allows users to determine accurate vapor generation for vessels of all types.

In support of SizeMaster, Farris' application engineering team is a knowledgeable resource supporting users in sizing and selecting PRVs. Our application engineers evaluate technical issues associated with customer's relief valves sizing challenges or with applications that fall outside the standard product scope. These applications may include high pressure, high temperatures or cryogenic temperatures and specialized

SizeMaster Screen Shot



areas such as non-destructive examination, special chemical or mechanical requirements among others.

Farris Worldwide

Farris' headquarters is located in Brecksville, Ohio, USA, and supports manufacturing, engineering, design and testing, including an ASME accepted flow test facility. Farris provides the global marketplace with sales and operations support through our facilities in

Canada, the United Kingdom, Brazil, China, and India. All manufacturing facilities are ISO 9000 certified.

Products are designed and manufactured to ASME Code Sections I, III and VIII with capacities certified by the National Board of

Boiler and Pressure Vessel Inspectors. Our valves meet API standards and hold PED/CE, CRN, ATEX, CSQ, CSA B51, TR CU 010 and TR CU 032 certificates as well as many other country, industry and customer specific approved.

Brecksville, OH, USA



Brantford, ON, Canada



Legend	
■	Manufacturing Facility
■	FAST Center
■	Representative



São Carlos-SP, Brazil



Corby, UK



Tianjin, China

To contact your local Farris Representative, please visit our website at www.cw-valvegroup.com/Sales/Distributors.aspx and select Farris under product brand.

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Facilities: Brecksville, OH, USA; Brantford, Ontario and Edmonton, Alberta, CA; Corby, Northants, UK; São Carlos-SP, Brazil; Tianjin and Beijing, China; Delhi, India

Offices Worldwide: For a listing of our global sales network, visit our website at www.cw-valvegroup.com/farris.

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