Schneider Electric™

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MANUFACTURERS OF STEAM FIRED SPECIALTY EQUIPMENT
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Industrial Instrumentation Group

Robertshaw Industrial Products Catalog

Level Controls
Vibration Switches / Monitors
Controllers and Accessories
Control Valves
Self-Actuated Regulators
Control System Components

Phone 704-940-1228

"What We Know Makes A Beautiful Flow"

Applications Engineering 704-907-6662

Serving major control markets worldwide

Schneider Electric Systems USA, Inc., is a major supplier to the industrial control markets worldwide. We have a broad product line of standard control devices to meet demanding customer requirements. Our product versatility and in-depth experience in this diverse market provide examples of our customer-driven, problem-solving capability.

Schneider Electric Systems USA, Inc., is a division of **Schneider Electric Global Solutions Group**. As a global leader in resource productivity, Schneider Electric Co. offers products and services, expertise, and technologies that enable you to maximize return on investments, conserve resources and optimize performance across your value chain.

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Our entire operation is guided by Lean Manufacturing processes, which assure the superiority of the products and services our customers receive from us.
Schneider Electric Systems USA, Inc., is an **ISO9001 registered** company.

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Schneider Electric Systems USA, Inc., designs and manufactures the following industrial control devices:

RF / Capacitance Microprocessor Level Controls, Monitors, and Probes
Vibration Switches and Monitors
Self-Actuated Temperature and Pressure Regulators
Diaphragm Control Valves
Pneumatic Control Systems Components

Call toll free **1-800-228-7429** to receive immediate assistance.
Or visit our web site **www.robertshawindustrial.com**

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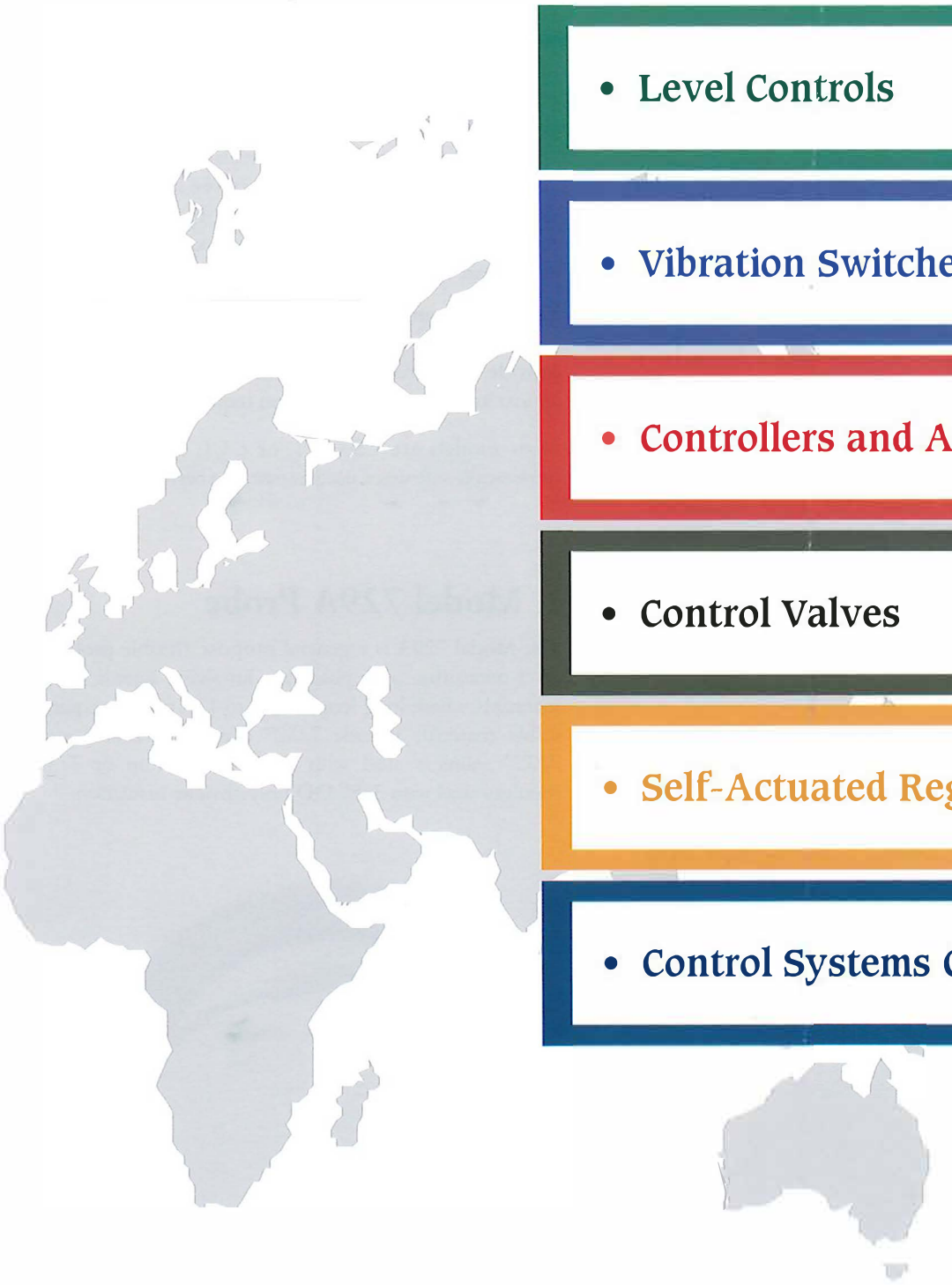


- Level Controls
- Vibration Switches / Monitors
- Controllers and Accessories
- Control Valves
- Self-Actuated Regulators
- Control Systems Components

Level Controls

Complete RF & Micro-processor Controls

Robertshaw level instrumentation uses the latest "state-of-the-art" solid state digital circuitry design for on/off and continuous level measurement in tanks, sumps, silos, and other vessels or containers. Products to be measured may include liquids, powders, granular, lump, and flake materials. No other equipment available from a single source can perform this variety of functions with so many different products.

Versatile Sensor Choices

Robertshaw sensing probes are the primary elements used with Robertshaw Level-Tek®, Level-Tel®, and microprocessor-based Level-Lance® instruments for level indication or control of granular or liquid materials, whether they are conductive, non-conductive, viscous, or low density powders.

Robertshaw probe design allows for easy installation. Entrance glands may have pipe threads or they can be supplied with standard ANSI B16.5 flange construction. The top end of the probe has an NPT fitting to accept the Robertshaw control instruments for direct mounting, or a cable conduit outlet box or transmitter for remote mounted instruments.

• Model 740A / 741A Probes

The Model 740A / 741A is a general purpose rigid probe (Model 741A is a high gain) for level measuring applications involving liquids or dry materials. Available either bare (non-insulated) or Teflon insulated for use in conductive solutions.

Probes may be used in a wide variety of applications. Design categories include: rigid, flexible, concentric shielded, heavy-duty rigid, high temperature/ pressure. There are a number of options - such as insulated Teflon rods for applications involving a conductive material or bare rods where the material is a good insulator. Other options: bent probes for applications where probe installation is not easily accomplished, sheath options to ignore build-up near the side of the vessel, Teflon facing on the process side of the flange where corrosive materials are used which will attack bare metal.

Rigid probes are available in lengths up to 20 feet, flexible probes are available up to 150 feet. Robertshaw can provide measurement or control of process level for almost any industrial application required.

Most models are CSA, UL or c-UL certified intrinsically safe when used as part of a certified I.S. system.

• Model 729A Probe

The Model 729A is a general purpose flexible probe for level measuring in applications involving liquids or dry materials where long lengths (up to 150 ft.) are required. Cable materials include 7/32" diameter stainless steel, 7/32" stainless steel with 3/8" OD Teflon or 7/32" stainless steel with 3/8" OD polyethylene insulation.

Other Typical Sensing Probes

• Model 702A General Purpose Two-Piece Gland Probe

Basically the same as 740A except it has a two-piece gland for applications requiring a bent probe. The two-piece gland permits locating the bent portion of the probe in the tank or vessel.

• Model 727A High Pressure/Temperature Probe

Same as 732A except the temperature/pressure rating is 1000 psig at 800°F.

• Model 728B Heavy Duty Probe

For rugged, heavy duty service where side-loading is a factor.

• Model 736B Teflon Faced Flange Probe

For corrosive environments. All wetted parts are Teflon.

• Model 738A High Temperature/Pressure Ceramic Insulated Probe

For very high pressure or temperature applications. Available in lengths up to 3 feet maximum. Rated 3000 psig at 300°F, 2000 psig at 500°F, and 1000 psig at 1000°F.

• Model 739B Sanitary Flanged Probe

For applications where ease of cleaning and/or removal is a requirement. Flange is a Tri-Clover fitting 16 Amp end cap welded and polished to meet 3A standards. Optional fittings (ferrule, gasket, and clamp) are available.

• Model 310 Level-Tek® - CSA Certified

Model 310 is a remotely mounted on/off control unit that allows the electronics to be located away from the process. Electronics are connected to the sensing probe by means of a special triaxial cable. Unique circuit design eliminates the effects of temperature or cable capacitance to ensure measurement accuracy. Optional enclosures are explosion-proof (without lights) or CSA enclosure 5 (meets NEMA 4, 12 requirements) with red and green alarm lights. Model 310 uses a DPST relay for contact closures to external control, and provides field selectable high or low fail-safe modes, adjustable differential and time delay. Built-in LED for simple calibration. Most models provide an intrinsically safe probe input circuit (no safety barriers required).

• Model 314B Duplex Level-Tek®

Model 314B is a self-contained on/off duplex control unit providing two independently adjustable set points, each with its own output control relay. Each set point has adjustable differential. The 314B mounts directly on a vertically-mounted Robertshaw probe assembly with the control point being adjustable throughout the length of the sensing probe. This Level-Tek is field changeable for a variety of fail-safe modes and has LED's (Light Emitting Diodes) to indicate relay operation as an aid in initial calibration. Enclosure is explosion-proof (also meets NEMA 4 requirements).

• Model 5318B Level-Tek® $_{c}$ETL$_{us}$ Approvals, RoHS compliant

Capacitance point level (On/Off) switch, which employs all solid state electronics for detecting predetermined product level changes in tanks, sumps, silos and other vessels or containers. The model 5318B is capable of detecting a wide variety of products, including liquids, powders, granular, lump and flake materials. The product can be either conductive or non-conductive. The Model 5318B is self-contained and uses microprocessor based digital circuits to ensure long-term stability, reliability and reduced maintenance. Control signals are provided through the contacts of a DPDT relay. The instrument features adjustable time-delays that are individually adjustable for both "Alarm" and "Return-to-Normal". There are either fixed or adjustable differential settings available. The unit is available for either AC or DC supply voltages. RoHS Compliant

• Model 352 Conductivity Switch

For simple and economical on/off control of conductive liquids. Self-contained unit that mounts directly on the probe. Can detect conductive liquid level or interface between non-conductive and conductive liquids. Features include adjustable threshold resistance (200 ohms to 2 megaohms), plug in DPDT 5 Amp, 120/240 VAC relay, and field changeable fail-safe mode. Enclosure is explosion-proof (also meets NEMA 4 requirements).

Continuous Level RF Transmitter

• Model 167 Vessel Mounted Level-Tel®- CSA Certified

Self-contained sensing transmitter used for accurate level measurement independent of coatings or build-up on probe. Mounts directly on a Robertshaw sensing probe. Provides a true current output signal for indication, recording or control. Simple calibration with zero and span adjustments. Easy, minimum cost installation with 2-wire or 4-wire system. Built-in protection from lightning, reverse polarity, EMI. Explosion-proof housing (also meets NEMA 4 requirements). Two-wire version is intrinsically safe (requires approved safety barriers) and has CSA certified, intrinsically safe probe input circuit.

Microprocessor Based Controls

• A Patented Design

Robertshaw's patented PFM (Pulse Frequency Modulation) and microprocessor-based controllers solve many problems and inconveniences prevalent in previous generation instruments. The advantages of remotely locating the main electronic chassis and calibration controls away from heat and vibrations often encountered at the point of measurement are obvious.

All microprocessor Level-Lance® systems consist of our patented PFM transmitter and remote mounted level controller. The various controllers available provide either on/off, continuous, or multi-point control. The transmitter converts the probe signal to a variable period digital pulse output. The pulses, the duration of which are proportional to level, are transmitted via two ordinary wires (up to one mile transmission capability) to the microprocessor controller. The microprocessor manipulates the pulses by means of a program stored in ROM, in turn providing a 4-20 mA DC signal, relay actuation for alarm, or both, depending on the particular model. The transmitters contain no tuning or calibration adjustments. No primary power lines are required since the unit is powered by the same two wires which transmit the pulses to the controller. Normally the transmitter is mounted directly on the probe, but a remote mount type (15 feet maximum) is available if temperature or vibration is excessive. The remote type is connected to the probe via coaxial or triaxial cable (if short-stop model). The PFM transmitter is mounted in an explosion-proof enclosure. Power levels are designed to meet intrinsic safety requirements.

Entry of set point data is by means of a simple toggle switch, pushbutton, or keypad (depending on the model), thereby eliminating the need for tools and providing consistent results regardless of operator skill.

Several different programs are stored and manually selected, making one simple instrument a truly versatile and economical controller. The various features for each particular instrument are shown below and are such that almost every type of application can be handled by one or the other.

• Model 5100 Level-Lance® Microprocessor - based single point on/off level controller

The Model 5100 is a microprocessor-based advanced technology on/off level controller. Seven pre-programmed control modes allow the user to select the "type" of on/off control action best suited for his application. Control modes are field selectable by a 10-position rotary switch. Four of these modes permit calibration without varying the process level and/or with the vessel empty or full. "Auto-set" calibration eliminates screwdriver or knob adjustments. The patented PFM transmitter allows one mile transmission to the remote receiver using standard twisted pair wire (no coax or triax). Digital transmission assures no-loss accuracy and the transmitter (non-short-stop version) is UL and c-UL certified intrinsically safe with the use of safety barriers. Optical isolation between transmitter and receiver provides enhanced noise immunity. Standard features include DPDT 10AMP relay, digitally set time delays, adjustable differential, field selectable fail-safe modes, self-diagnostics with test mode. Optional features include indicating lights and explosion proof enclosures.

• Model 5400A Level-Lance® Microprocessor-based multi-point on/off level controller UL and c-UL Certified

This microprocessor-based multi-point on/off level control system provides economical 1-4 point control using only one sensing element. The Model 5400A is designed with plug-in type relay output modules to allow for easy configuration changes. Relay outputs can be easily added in the field by the user. The control unit PFM input circuit is also a plug-in module for easier field servicing. Standard features include heavy-duty DPDT 10 Amp relays, non-volatile memory, "Auto-Set" push-button calibration, independent time delay and adjustable differential for each relay, high or low fail-safe selection, lead-lag program for automatic

• Model 5400A Level-Lance® Microprocessor-based multi-point on/off level controller (continued)

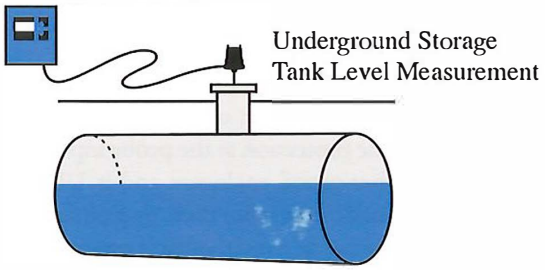
pump alteration, self-diagnostics with LED failure indication (indicates transmitter, sensor, or digital circuitry failure), EMI/RFI rejection, optical isolation between PFM transmitter and controller, electro-static protection at the probe input, and a test program to verify functional operation. The PFM transmitter is mounted in a weather-proof enclosure and is UL and c-UL certified intrinsically safe without a safety barrier. The PFM transmitter does not require any calibration or primary power and can be mounted up to one mile from the control unit using two ordinary wires - no coaxial or triaxial cable is required. Optional features include: 1-4 relay output modules; red/green alarm indicating lights on instrument door; NEMA 4, NEMA 4X (stainless steel), NEMA 4X (non-metallic), or explosion-proof enclosures; and 18-30 VDC or 120/240 VAC switch-selectable supply power. This exceptionally versatile on/off controller provides economical 1-4 point level control with a host of added features and options to fit almost any application

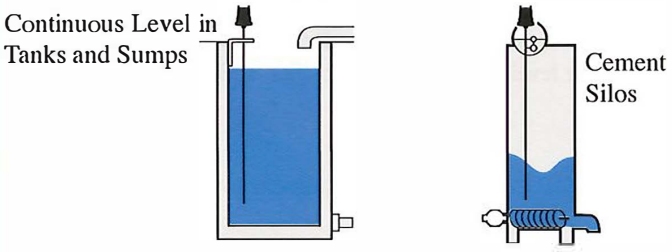
• Excalibur 7000 Level Control

Robertshaw's Excalibur 7000 offers two controls for the price of one. Both a smart Level transmitter and PID Controller, this unique instrument provides the flexibility to meet all your level application requirements. The Excalibur 7000 has built-in PID Control with auto tune to eliminate offset and provide accuracy and stability. The auto tune feature eliminates periodic on-line tuning by automatically matching control action with your particular process characteristics. Robertshaw's patented PFM transmitter technology provides digital transmission up to one mile using economical twisted pair wire (no coaxial cable required). Built-in field selectable input linearization allow open channel flow measurement and level control with volume conversion for non-cylindrical or horizontal cylindrical vessels. Simple menu prompts guide you step-by-step through setup and calibration. Calibration can be accomplished without completely emptying or filling the vessel. Two or four SPDT 10 AMP alarm relays with differential and time delay are optional. All have field selectable high or low level fail-safe.

Continuous self-diagnostics and test/verify pushbutton ensure you of constant reliability and safety. The transmitter and sensing probe are UL and c-UL certified intrinsically safe with the use of safety barriers. Analog Communication is isolated 4-20 mA DC.

• Typical Applications



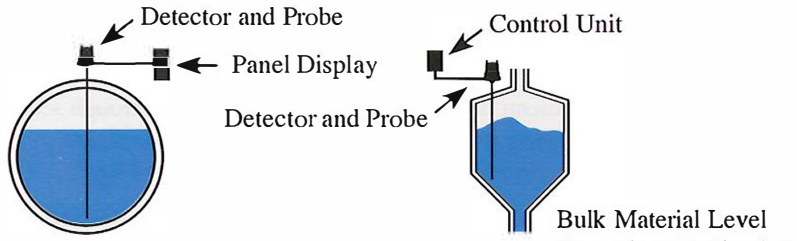


Continuous Level Control

• Principle of Operation

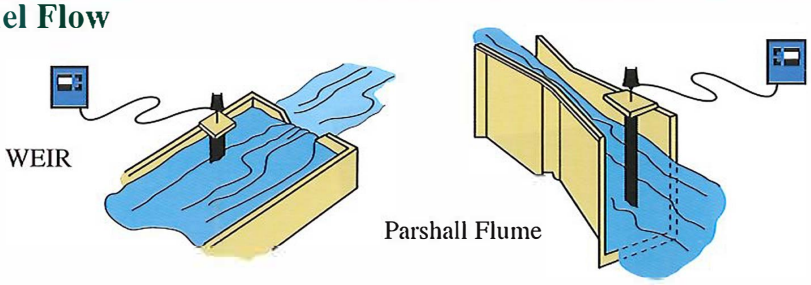
The basic principle of operation for continuous level measurement is the same as for on / off controllers (see page 8), except the output is proportional rather than relay actuation. However, some models have both. The Excalibur 7000 is an outstanding achievement in patented digital technology. This unit gives you two controls for the price of one; a SMART Level Transmitter and complete PID Process Controller – with auto tune. This versatile instrument provides the flexibility to meet all your level application requirements – saving time, and money, and reducing parts inventory.

• Tank Volume/Level Indication



A variety of sensing probes are available to suit your applications; high temperature / pressure, sanitary, flanged, inactive lengths, grounded for non-metal tanks, rigid, flexible, bare or insulated.

• Open Channel Flow



On / Off Control

• Principle of Operation

An electrode (sensing probe) installed in a vessel becomes a variable capacitor, the electrode being one side / plate and the tank wall (and the material itself, if conductive) the other, or ground, side / plate of the capacitor.

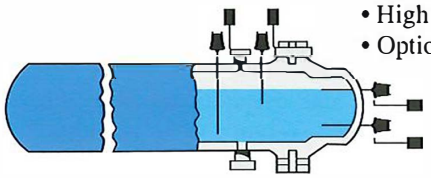
Robertshaw RF and microprocessor-based controls utilize the basic principle that a capacitor will change its electrical value directly proportional to dielectric value and / or plate area change, and inversely proportional to the distance between the plates. Therefore, the capacitance value will increase or decrease as the product being measured rises or falls within the vessel, thus providing a simple and maintenance-free (no moving parts) method of level measurement.

Three different measurement techniques are used, each a state-of-the-art concept having a special place in the broad applications spectrum. Special consideration is given to build-up of conductive materials on the surface of the probe. Robertshaw's short-stop circuitry and probes completely eliminate false trips due to build-up and are offered as options.

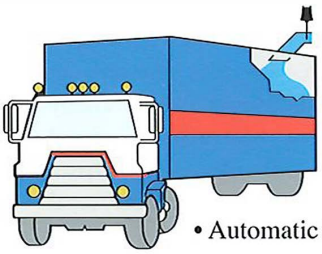
Accurate measurements can be made of dry products (ranging from light powders to heavy, dense materials) and liquids (ranging from light hydrocarbons to highly conductive materials, such as water, and acids). Measurements can be made with immersed type probes or non-contacting proximity types. Numerous sensing probe types are available, so tailoring to meet your exact needs is a simple procedure.

Outputs on the Level-Tek® and on / off Level-Lance® microprocessor-based instruments are relays. Models including one, two, three, or four relays are available and include adjustable differential (deadband) for cyclic control action, adjustable time delay to prevent sporadic relay actuation due to turbulent level (wave action), and lead-lag pump control modes.

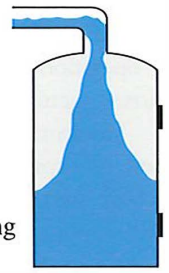
• Typical Applications



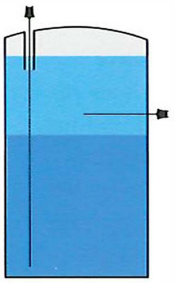
• High or low level
• Optional locations



• Automatic filling

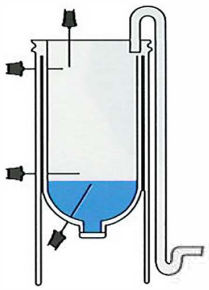


• Product flow or non-flow in conveying systems

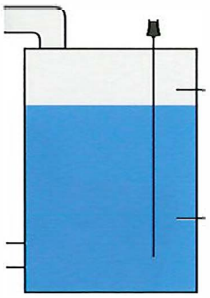


• Interface level detection

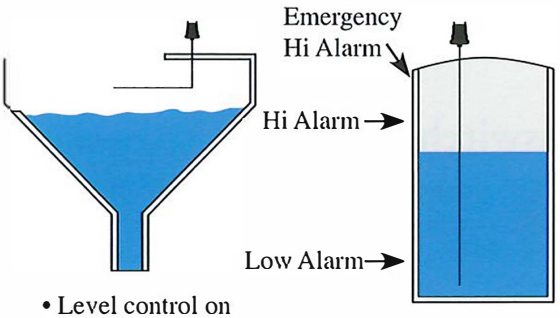
• Plugged chute



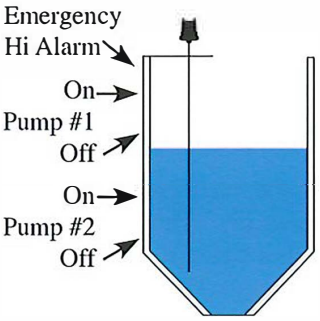
• High-low levels

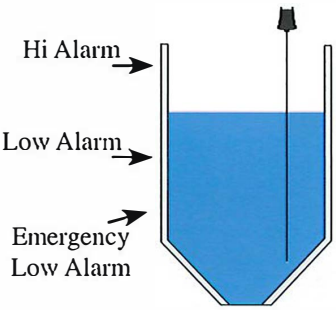


• Differential control



• Level control on filling machines





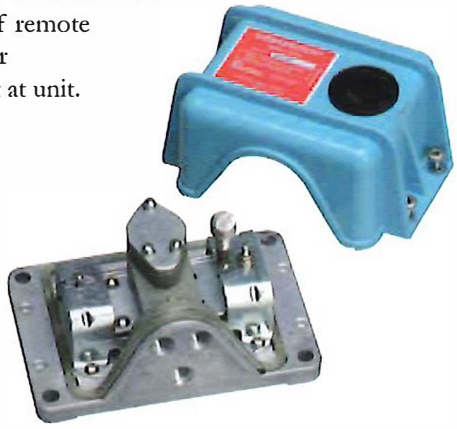
Vibration

Monitoring and Control

Robertshaw vibration switches and monitors measure the total acceleratory force (shock) present on a machine. Acceleration measurements made are the summation of all the individual accelerations giving a total destructive force acting on the machine; the result is positive protection. When the vibration level of a Vibraswitch protected machine exceeds normal operation by a pre-selectable amount, an internal switch closes, actuating a shutdown before costly damage occurs. Monitors provide a 4-20 mA DC signal for trending and/or contacts for shutdown or alarm. Versions also provide start/monitor delays and remote/local reset.

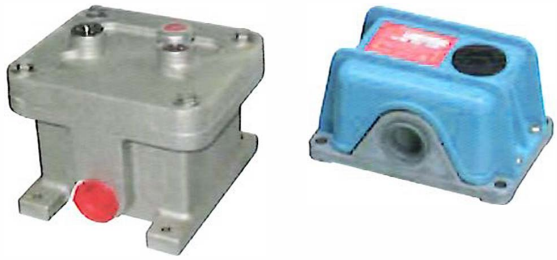
• Models 368 Pneumatic Vibraswitch

The Model 368 is a pneumatic acceleration sensitive instrument that measures the total acceleratory shock present on the machine. Being non-electric, the Model 368 may be employed in hazardous locations without the usual necessity of an explosion-proof housing. The Model 368 does not require any form of external power to operate. The device has one setpoint adjustment for the range from 0-4.5 G's and features the choice of remote pneumatic or manual reset at unit.



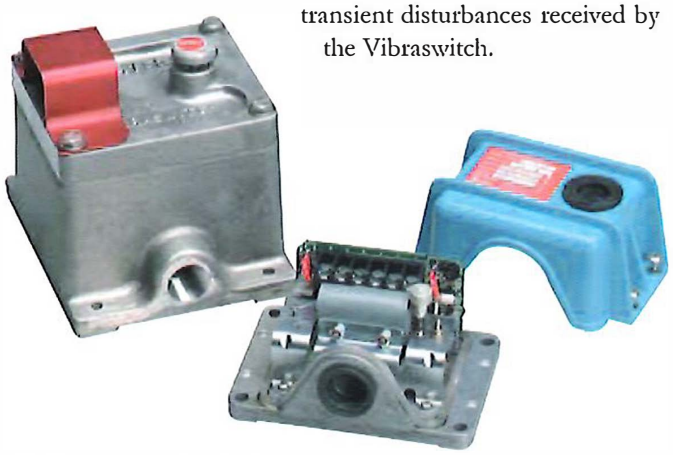
• Models E365A/366 Vibraswitches

Models E365A/366 Vibraswitches are acceleration sensitive instruments that measure the total acceleratory shock present on the machine. The Model E365A is designed for hazardous areas and is housed in an explosion-proof and weather-proof enclosure. The Model 366 is housed in a weathertight enclosure for non-hazardous areas. The Vibraswitches feature a manual reset and coil for remote electrical reset. Easily calibrated by means of one setpoint adjustment for a range of 0-4.5 G's. An optional internal space heater is available to prevent moisture inside the housing.



• Models 375A/376A Vibraswitches

Models 375A/376A are identical to Models E365A/366 except that they incorporate built-in electronic starting, monitoring, or combination starting and monitoring time delay circuits. The integral time delay circuits will not take alarm or shutdown action on false transient disturbances received by the Vibraswitch.



• Models 563A Vibraswitch Monitor

Microprocessor-controlled "supervisory" control for multiple Models E365A/366 Vibraswitches. This solid state electronic system will "sort out" false signals received by the Vibraswitch so that alarm and/or shutdown will not result from false transient disturbances. Model 563A offers start and monitor delays that are field settable - start time delay from 0 to 999 seconds, monitor time delay from 0 to 99 seconds. Optional NEMA 4 or explosion-proof enclosures.

• Model EURO366 & EURO366G Vibration Switches with ATEX Approvals

The Model EURO366 VIBRASWITCH® is primarily intended for indoor and outdoor hazardous and non-hazardous areas in those countries requiring ATEX and CE certifications. The EURO366 employs the same time proven switch design found in Robertshaw's family of vibration switches. The Model EURO366 VIBRASWITCH® is a vibration sensitive device that protects rotating and reciprocating machinery from extensive damage resulting from mechanical malfunction. When the vibration level of a VIBRASWITCH® protected machine exceeds normal by a pre-selected amount, the normally open contacts of an internal switch close and the normally closed contacts open. This can be used to actuate either an audible warning system or a shutdown circuit before costly damage occurs.

EURO366 (Cast Aluminum)

EURO366G (Cast Iron)

• Model 566 Velocity-Acceleration Vibration Monitor - FM Approved - CSA Certified

Robertshaw's Model 566 vibration monitor is an all solid state instrument that encompasses a variety of functions in one unit. Vibration can be monitored in either velocity or acceleration. The standard ranges are 0 to 1.5 inches/second or 0 to 3 inches/second when sensing velocity, and 0 to 5 G's or 0 to 10 G's when sensing acceleration. A 4-20 mA DC output is standard.

The Model 566 includes two solid state Triacs (2 Amp at 120/240 VAC) which can be operated in a Normally Open or Normally Closed configuration. Alarms are capable of being latched or non-latched. A time delay function is also a standard feature and is adjustable from 0.5 to 15 seconds. LED setpoint indicators are provided to indicate the alarm condition. Options include P/S (120 or 240 VAC) and remote sensor. The remote sensor can be located up to 1,000 feet away using only a standard ungrounded pair of twisted wires.

The Model 566 enclosure is weatherproof and explosion-proof. It is CSA certified and FM approved for Class I, Division I, Groups C and D; Class II, Division I, Groups E, F, and G hazardous locations. Housing for the remote mounted transducer has the same ratings and is also FM approved for Class I, Division I, Group B.

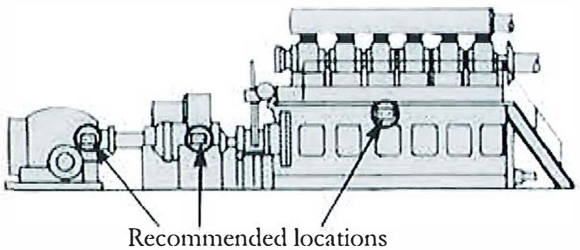
• Model 570B and 571A Loop Powered Stud Mount Vibration Transmitters

Model 570B is a loop powered (10-30 Vdc) transmitter which provides a 4-20 mA DC output proportionate to vibration. It is available in 6 ranges, 0-5 G, 0-10 G or 0-20 G acceleration or 0-0.5 IPS, 0-1 IPS or 0-2 IPS velocity. The frequency range is 2Hz to 2KHz. This rugged compact unit provides continuous monitoring of machine vibration for trending, alarm and/or shutdown when used with a PLC, computer, DCS, data logger or current relays. The enclosure is 316L Stainless Steel, NEMA 4X (hermetically sealed), and meets IP68. Installation is simple and no calibration is required. An integral 1/4-28 stud is provided for mounting. The unit has a 2 pin connector and mates with a standard MIL-C-5015 2 socket connector with a splash proof connection. Optional cable assemblies are available in lengths of 16, 34, 64, and 112 feet. Model 571A is an intrinsically safe (14-30 Vdc) version of the model 570B. The model 571A is CSA Certified for the US and Canada and is ATEX Certified for Europe. A safety barrier is required.

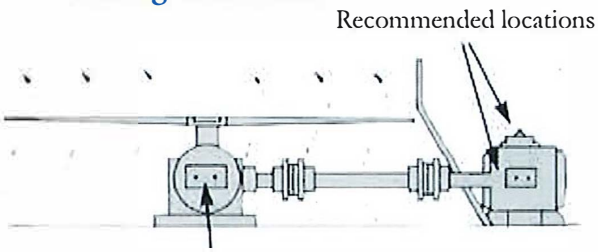
• Typical Vibraswitch Installations

The following line drawings show the recommended locations for mounting the Vibraswitch on various machines.

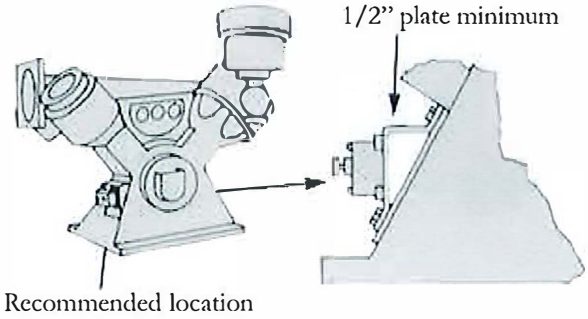
• Engine - Gear Centrifugal Compressor



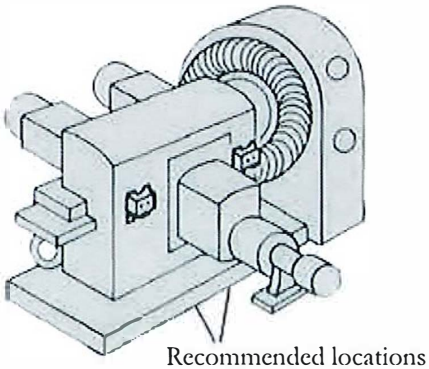
• Cooling Tower Fan



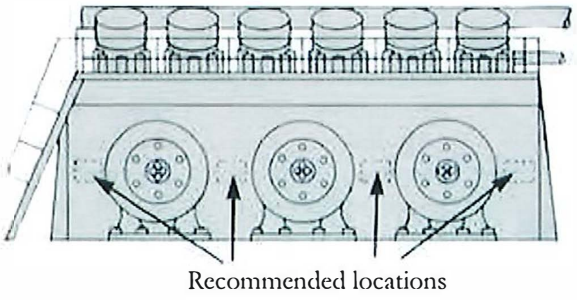
• Reciprocating Compressor "Y" Type



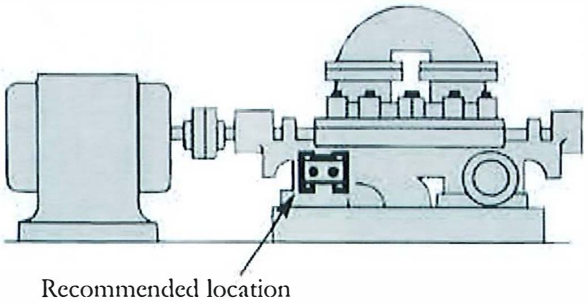
• Horizontal Opposed Reciprocating Compressor



• Diesel Engine Compressor Unit



• Centrifugal Pump

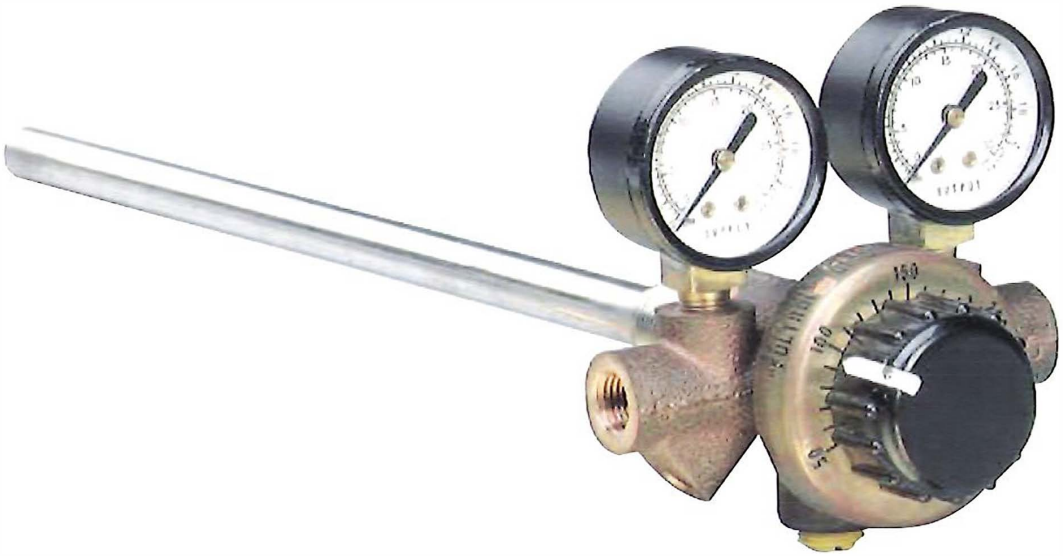


Controllers and Accessories

Model DT-700 Temperature Controller

Model DT-700 Fultrol pilot temperature controller uses rod and tube differential expansion principle to control pilot valve position and resultant signal pressure is applied to final control actuator. It may be used for heating or for cooling applications. Control action may be direct or reverse, facilitating choice of final control valves to seek either full-open or full-closed position upon loss of supply pressure.

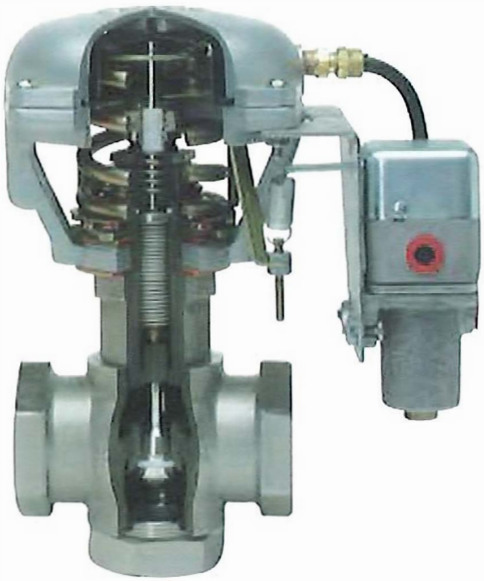
Ranges: Any 200°F span between -50°F and 350°F
Output Signal: 3 to 15 psig standard; 6 to 30 psig available
Supply: Air, gas, low-viscosity oil
Throttling Band Adjustment: 5°F to 25°F (2 1/2 psig/°F to 1/2 psig/°F)



• Models 443A/445A Current to Pneumatic Converters

Models 443A/445A electro-pneumatic relays convert a DC signal to a proportional pneumatic signal. They broaden the scope of pneumatic instrumentation by utilizing the speed of electrical transmission, reducing time-distance factors. Compact design with direct or reverse action, excellent frequency response and dampening. Explosion-proof housing for Class I, Groups C and D, Div. 1 hazardous locations. High accuracy with ± 0.50% (standard), ± 0.25% (optional). FM/CSA certified.

Control Valves



• 'Mini-Max' VC-210 Valve

Model VC-210 diaphragm actuated control valves are compact, ruggedly constructed and designed for control of water, gas, steam, or vacuum. Single-seated valves are bellows sealed to prevent stem leakage. Valves may be two-way, fail-open or fail closed, or three way, operated by a 10 sq. in. BUNA-N 2 ply dacron reinforced diaphragm in a die-cast aluminum housing and frame assembly.

Valve sizes: 1/2", 3/4" and 1"
Ends: screwed
Body Material: 316 Stainless Steel investment castings
Trim Material: 316 Stainless Steel
Flow Coefficient (Cv): 0.3 to 9.5
Primary Packing: stainless steel bellows

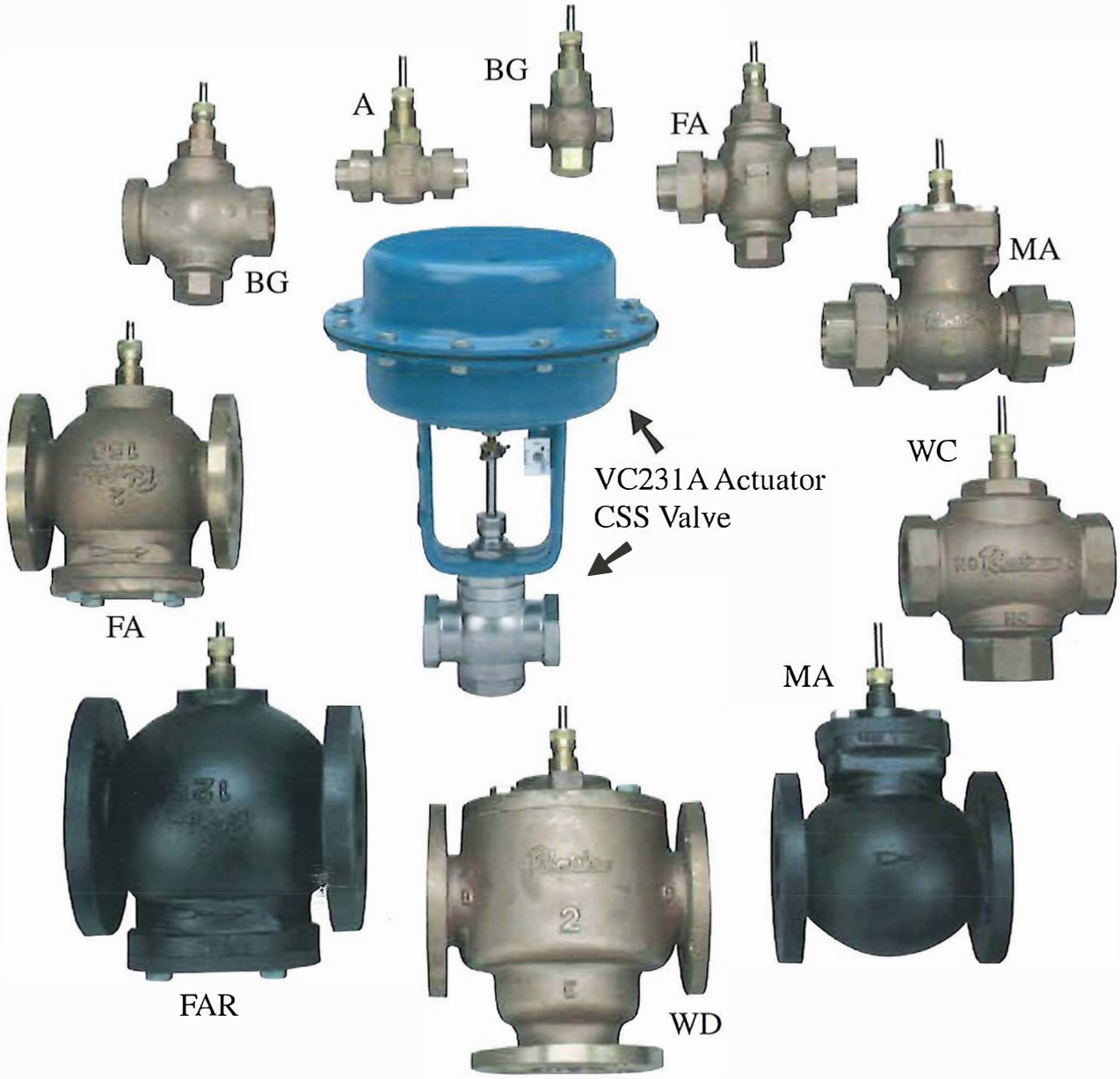
• VC-210B Valve

Model VC-210B is the ECONOMICAL (BRASS) version of the VC- 210 Series. Similar in design to the "Mini-Max", it is rugged and compact. The major difference is the body and bellows materials.

Valve sizes: 1/2", 3/4", and 1"
Ends: Screwed
Body Material: Brass
Trim Material: 2-way valves - stainless steel, 3-way valves - brass
Primary Packing: Nickel plated Beryllium Copper bellows

• Model P2 Side-Mounted Valve Positioner

Converts 3-15 psig control air signal to proportional output air signal. 30 psig maximum output pressure increases control sensitivity and provides greater close-off pressure. Also used for split-range applications.



• Models VC-230A / VC-231A

Models VC-230A and VC-231A diaphragm actuated control valves feature a 30 sq. in. multi-spring actuator with a molded BUNA-N diaphragm in a steel casing. Lower frame is cast iron. Springs are wound from high quality alloy steel. A wide choice of valves includes single seated and double seated two way valves in sizes 1/2" to 4". Three-way valves are single plug between two seats (1/2" to 6"). Flanged, screwed, and union ends connections available.

Actuator Action:
VC-230A — Air to push down
VC-231A — Air to push up

Maximum Travel: 1 1/32"

Spring Range: 3-15 psig (20 to 107 kPa) standard.
Other ranges available.

Valve Specifications: Varied — contact factory.

Self-Actuated Regulators

Robertshaw SATR's (self-actuated temperature regulators) have thermal systems combining the responsiveness of vapor pressure and the positive action of liquid transmission. Robertshaw seamless metal bellows actuators are offered in three sizes to provide the correct combination of power, speed of response and stability for many temperature control applications.

The full range of available valve styles includes sizes 1/4" thru 6", single-seated and double-seated in selected sizes. Direct and reverse-acting valves are offered for heating or cooling service. A single-seated fully-balanced direct-acting valve, style MA, is standard for 3/4" thru 2" sizes. Three-way valves are offered for blending, mixing, or diverting service. Robertshaw has now added stainless steel bodies in 1/2" thru 2".

Adjustable temperature ranges are provided from 10°F to as high as 480°F. Exact range limits and setpoint adjustment spans are determined by operating characteristics of individual regulator styles.

Temperature overrun protection is standard. A variety of thermal bulb styles and armored capillary tube lengths up to 50 feet are offered.

Model RP-1070

• Model RP-1065 and RP-1066

The RP-1065 and RP-1066 are the diaphragm type pressure regulator/relief valves. Same service as the RP-1070/RP-1073 Series, but includes a Nylon reinforced, molded Buna-N diaphragm in lieu of the metal bellows.

- Ranges 3-150 psig
- Sizes 1/4" – 4"

• Model RP-1070 and RP-1073

The RP-1070 and RP-1073 bellows actuated pressure regulators are simple, self-operated and offer sensitive, accurate control of reduced pressures. Or, fitted with a reversed-acting valve they can be used for pressure relief service. They may be used to control steam pressures for heating systems, industrial processes and steam-driven pumps, as well as many other fluid pressure controlling and limiting applications.

- Choice of set point control ranges
- Quick detach valve stem design
- "Lifetime" spring-loaded Teflon hevron stem packing
- Ranges 3-55 psig

• Model RP-1072 Series

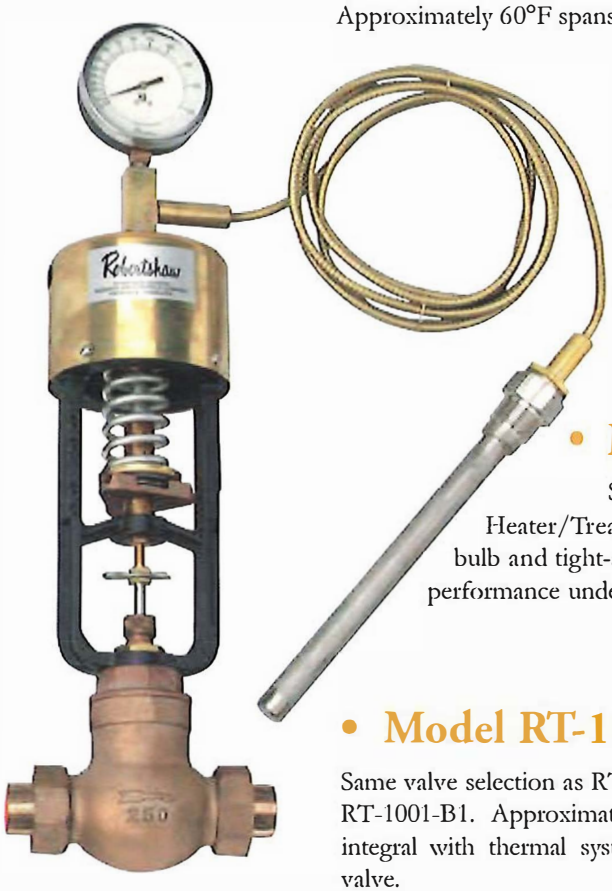
The RP-1072 Series regulators are restricted to vacuum applications. The range of pressures under control cannot vary beyond 0 psig and -14.7 psig.

- All metal construction
- Large 2-ply seamless bellows
- Sizes 1/4" – 4"

Self-Actuated Regulators

• Model RT-1001-B1

Two-way single-seated and double-seated valves, direct and reverse-acting. Three-way valves for mixing or diverting. Sizes 1/4" to 4". Wide throttling band for maximum stability. Approximately 60°F spans from 15°F to 480°F.



Model RT-1001

• Model RT-1001-P thru S "Quick Ship"

Fixed specification of the RT-1001-B1 SATR sizes 1/2" to 2" for heating or cooling, built to order.

• Model RT-1001-T2 Heater/Treater SATR

Specific model of RT-1001-B1 designed to meet requirements of the Heater/Treater market. Combines rugged durability of our SATR's with small bulb and tight-shutoff stainless steel valve assembly to provide longer life and higher performance under demanding conditions of the oil and gas field .

• Model RT-1003 / RT-1009 Series

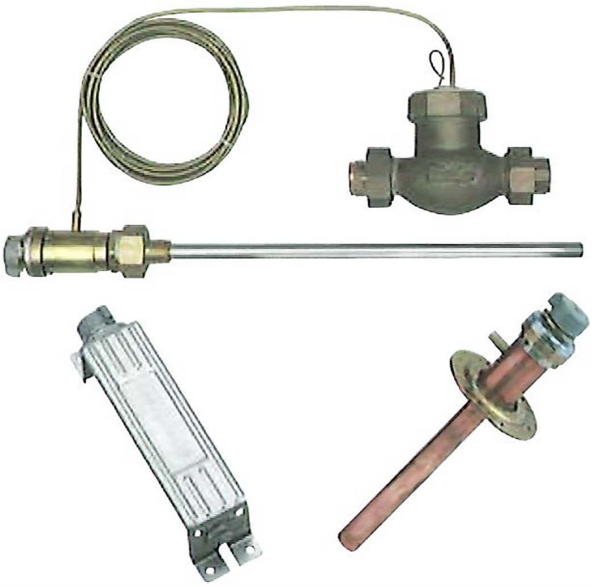
Same valve selection as RT-1001-B1. Medium throttling band. More power and sensitivity than RT-1001-B1. Approximately 60°F spans between 10°F and 455°F. Available with thermometer integral with thermal system for indication. RT-1009 has override for manually positioning valve.

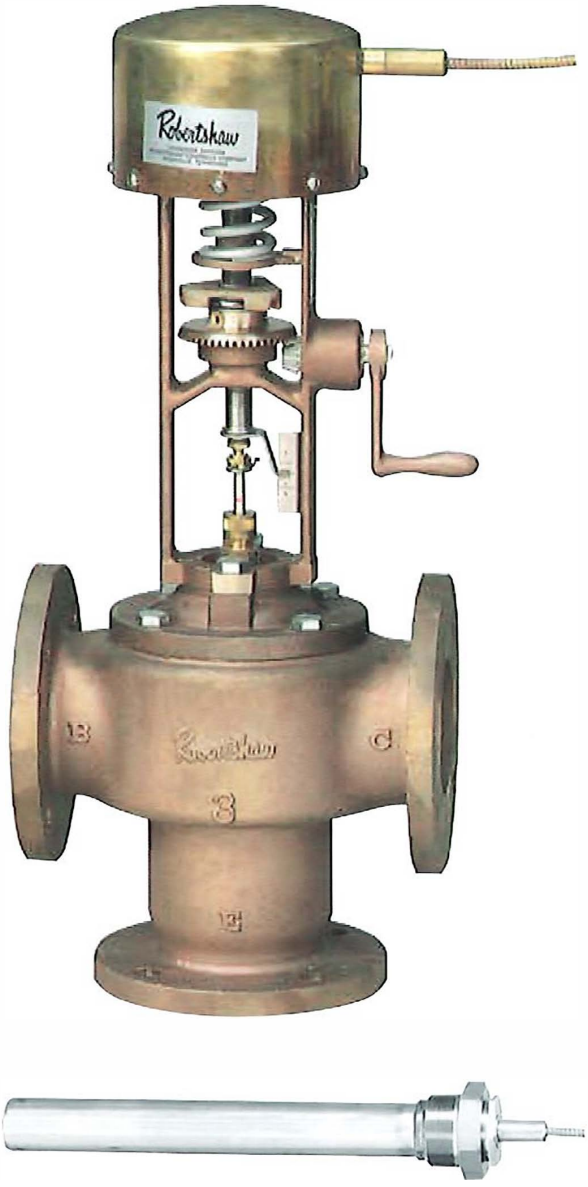
• Model RT-1004 Series

Same valve selection as RT-1001-B1. Extra large actuating bellows for narrow throttling band, maximum power and sensitivity. Larger thermal bulbs. Approximately 45°F spans between 35° F and 425°F.

Model RT-1006-B1 / RT-1007-A1

Fail-safe design. Should damage to thermal system cause loss of thermal charge, direct-acting valve (heating service) closes and reverse-acting valve (cooling service) opens to prevent overheating. Valve sizes 1/4" to 1" on RT-1006-B1; 1 1/4" to 4" for RT-1007-A1 with extra large bellows actuator. Approximately 30°F spans between -50°F and 325°F.

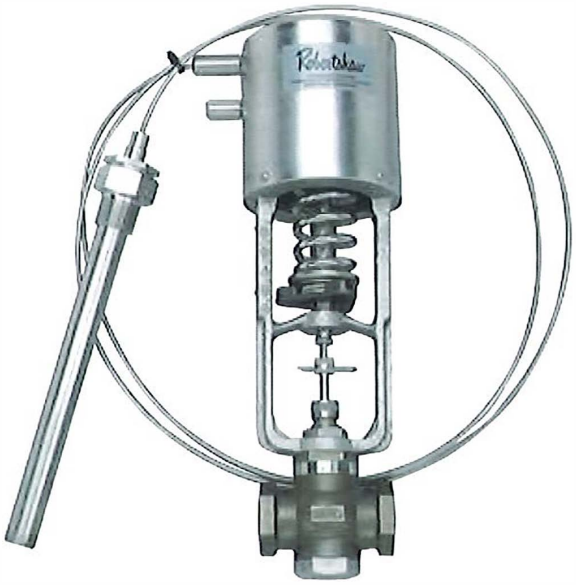




Model RT-200 Compact Hot Chamber Temperature Regulators

The RT-200 Series compact self-actuated temperature regulators are designed for steam heating service, 15 psig or 75 psig maximum.

Units are available with remote sensing bulbs designed for wall or duct mounting or liquid immersion. The small valves are packless bellows sealed. Setpoint adjustment is possible over 60°F maximum spans between 35°F and 170°F.



Model RT-1010-A Series

Extra large bellows actuator for power and stroke necessary to operate large three-way valves. 3" to 6" balanced sleeve-type valves. Manual valve positioning with side-mounted hand crank. Approximately 30°F spans between -35°F and 415°F.

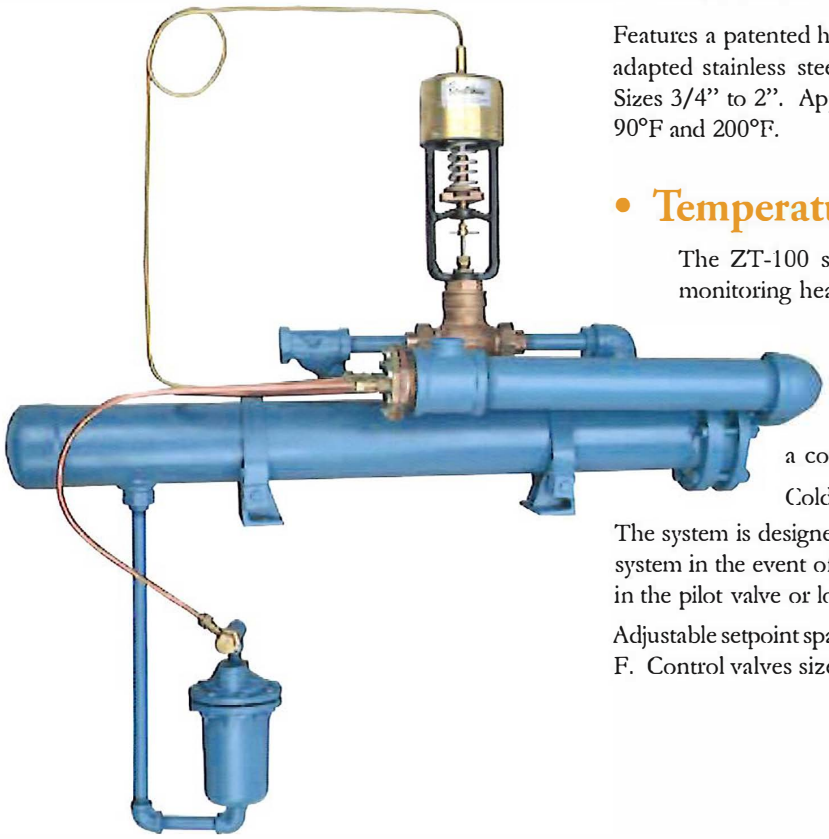
Model RT-1011-B1 Series

From the bulb head through the regulator frame, all parts exposed to the atmosphere are made of 18-8 stainless steel. Specifications similar to RT-1003 Series.

Instantrol® Steam/Fluid Heater Package

Instant hot water or other fluids on demand at controlled temperature regardless of load variations or length of no-load standby. Package includes heat exchanger, trap, strainer, and specially designed temperature regulator featuring single-seated, fully balanced, dead-end steam valve and patented heat-anticipating thermal system. Regulator alone is also available as Model RT-711.

Features: Small overall size; height 43" to 60"; length 44" to 50"; width 10" to 16" depending on model. Single packages 2 to 130 gpm. May be paralleled for greater capacities. Steam valve size: 3/4" to 2". Maximum steam supply: 40 psig. 70°F adjustable setpoint spans between 90°F and 200°F.



• Instantrol® Temperature Regulator

Features a patented heat-anticipating, temperature sensing bulb. Specially adapted stainless steel trimmed single-seated valve for deadend service. Sizes 3/4" to 2". Approximately 70°F setpoint adjustment spans between 90°F and 200°F.

• Temperature Monitoring/Shutdown

The ZT-100 shutoff system offers an improved means of monitoring heated liquid temperatures and initiating preventive action in the event of a temperature overshoot or damage to the heating system. It includes a single-seated diaphragm control valve, a temperature sensing pilot with a manual relief feature and a combination pressure regulator-strainer-relief valve.

Cold water supply is used as the operating medium. The system is designed to operate in a fail-safe mode, shutting down the system in the event of temperature overruns, loss of thermostatic charge in the pilot valve or loss of cold water supply.

Adjustable setpoint spans are approximately 30°F between 100°F and 210° F. Control valves sizes are 1 1/4", 1 1/2", and 2 1/2".

• Model 908-A Cooling Water Regulators, Self-Contained

These compact regulators provide accurate control of cooling water. They are modulating and are easily installed on plastic molds, die casting molds, small condensers, air compressors, etc. Model 908-A has port sizes 3/8" and 9/16". Process connections 3/4" and 1" for both port sizes. Measures coolant temperature as it flows through valve body. Setpoint infinitely adjustable within ranges of 100-160°F and 140-200°F for 3/8" port and 50-115°F and 100-160°F for 9/16" port.

• Models I-1284 / I-1285 Thermostatic Valves

Models I-1284 / I-1285 thermostatic valves are compact, self-contained and self-powered three-way valves. Designed to control cooling water and lubricating oil temperatures in internal combustion engines. The valves are identical in their thermostatic mode of operation. Model I-1284 contains a manual valve positioning feature which permits manual control of engine temperatures in the event of thermostatic assembly failure.

Valve sizes are 2" to 6" in Class 150 cast bronze bodies; 3" to 6" in, Class 150 cast steel bodies. Mid-fl w operating temperatures between 60°F to 200°F are available in 10°F steps.

Control Systems Components

• Receiver Indicator Relay - 82059 Series

The 82059 Series is a pneumatic annunciator relay that monitors remote sensors and provides rst-out indication and initiates system shutdown or alarm when the sensor setpoint is exceeded. Diaphragm actuators and positive detents ensure consistent reliable operation.

Mounting: Panel
Supply Pressure: 20-50 psig (140-344.7 kPa)
Maximum Pressure: 60 psig (413.67 kPa)

• Temperature Sensors - 85026 Series

The No. 85026 temperature sensor vents to initiate immediate shutdown - safely. It provides reliable protection for either increasing or decreasing temperature applicatins with quick response due to a metal bellows - actuated, liquid- filled thermostatic element. This rugged and compact device offers predictable linear adjustment. Super-conductive thermowells are optional.

Setpoint Range: 0°F to 400°F
Material: Aluminum or stainless steel
Reset Differential: 6°F to 16°F
Repeatability: ± 5°F
Thermowell Ratings: 5000 psig and 10,000 psig

• Pressure Sensors - 8437x / 8439x Series

These rugged, weatherproof pressure sensors are designed to vent system control pressure and initiate system shutdown - safely (should measured variable setpoint be exceeded). They provide total protection for either increasing or decreasing pressure or differential pressure applications with the added feature of field reversibility. Independent setpoint and reset adjustments are non-interacting. Piped vent connection for gas applications is provided. Pilot operation ensures crisp snap action unaffected by control pressure changes.

Setpoint Range: 7" H_20 to 6500 psig
Control Pressure: 20 psig to 60 psig
Maximum Process Pressure: Up to 9000 psig
Repeatability: ± 1% of setpoint
Materials: Anodized aluminum for general purpose. 316 stainless for offshore environments.

• CR Series Relays

A wide variety of arithmetic functions can be performed with these pneumatic relays. Such functions include addition, subtraction, multiplication, biasing and reversing. They may be used singly, in multiples, or as an integrated system to solve complex process problems. Fully pneumatic, they eliminate any explosion hazard.

Inlet pressure range:
0-1.4 bar (0-20 psig) nominal
0-3.5 bar (0-50 psig) maximum

Output pressure range:
0-1.4 bar (0-20 psig) nominal
0-3.5 bar (0-50 psig) maximum

Supply pressure:
2.1 bar (30 psig) nominal
3.5 bar (50 psig) maximum

Ultimate Sensitivity: 0.1" H_20

Models Available:
CR-100-A1 Volume Booster: 1:1 gain (output to input)
CR-100 Series A/B Ratio Relay: Amplifying ratios 1:2 to 1:6; reducing ratios 6:1 to 2:1.
CR-101-A1 Volume Booster: with adjustable bias, ratio 1:1
CR-101 Series A/B Ratio Relay: with adjustable bias, ratios same as CR-100 Series A/B.
CR-102 Reversing Relay with adjustable bias 1:1 ratio
CR-10 3 Averaging Relay 2 inputs through 7 inputs
CR-104 Summation Relay - Add / Subtract

Logic Relays - 83939 Series

These multi-function, field-selectable logic rel ys are the basic building blocks for pneumatic logic circuits.

Features:
Multi-function operation
Poppet design for non-interfl w and large capacity
Diaphragm actuators for consistent, predictable transfer points
Anodized aluminum and all 316 stainless steel materials
Tapped pipe ports permit use of standard industrial tubing fitting

• Fuel Gas / Starting Air Valve - 85380 Series

The 85380 Series valve is designed for use either as a fuel gas valve or a starting air valve. Pneumatically actuated, the vent port will close before the main port will open as pressure is applied to the actuator diaphragm. As pressure is removed, the main port will close before the vent port will open.

Material: Cast steel bodies with stainless steel trim
Sizes: 2" and 3" with Class 150 or Class 300 Flanges
Vent Size: 3/4" NPT
Maximum Diaphragm Pressure: 50 psig

• Engine Safety Control - I-530 Series

The I-530 Series is a dependable, self-contained safety shutdown device which may be used to monitor lube oil pressure, jacket water temperature and overspeed. This safety device will provide a signal to sound an alarm and vent a fuel line as needed. It is field adjustable. Reset lock lever permits startup bypass for oil pressure function.

Housing Material: Cast brass
Temperature Range: 135°F to 340°F
Pressure Range: 5 to 40 psig (35 kPa to 275 kPa)

• Temperature-Pressure Switch - I-542 Series

This rugged, low-cost engine-mounted switch is designed to provide dependable protection against damage from equipment or process. Suitable for applications ranging from safety shutdown in hazardous atmospheres to temperature and pressure monitoring of various processes.

Rating: U/L Class I, Group D, hazardous atmosphere
Temperature Range: 130°F to 345°F in 20°F spans
Pressure Range: 5 to 25 psig (35 kPa to 175 kPa)

Schneider Electric

Notes:

Maryville, Tennessee facility

Schneider Electric Systems USA, Inc.
1602 Mustang Drive
Maryville, TN 37801
Phone: 865-981-3100
Fax: 865-981-3168

Call Toll Free 1-800-228-7429
www.robertshawindustrial.com

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