



Application Guide

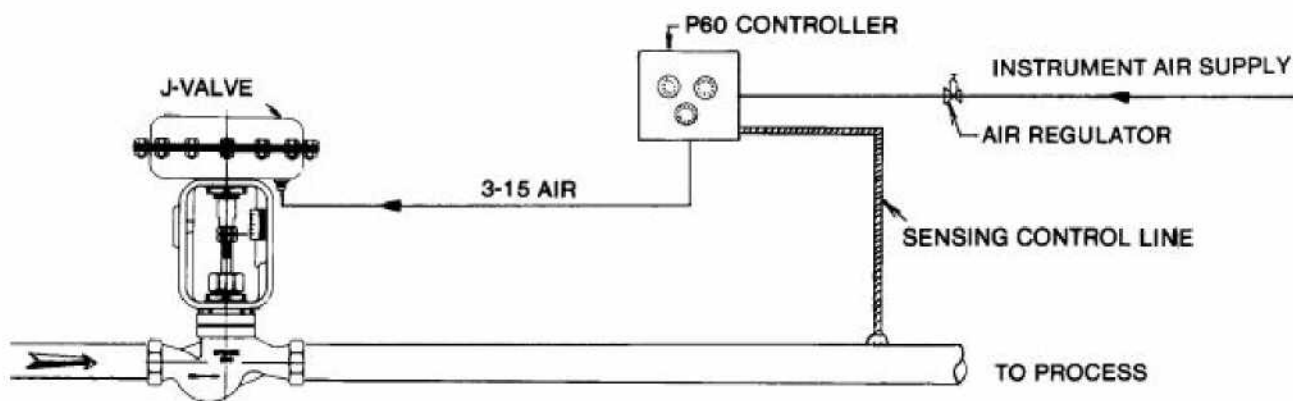
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SPENCE ENGINEERING COMPANY, INC. 150 GOLDENHAM ROAD, WALDEN, NY 12586-2035

INTIMIDATOR TYPE J CONTROL VALVE and P60 PRESSURE CONTROLLER for FAST LOAD CHANGES and VARYING PRESSURES

APPLICATION:

To provide accurate regulation to a process requiring fast load changes and varying outlet pressures.



SELECT VALVE:

Flow.....1200-2100#/hr.

Inlet.....100 psig Saturated Steam

Delivery.....20 psig

Fail closed, air to open

a 1" J Valve with a 7/8" port will flow 2275#/hr.

A 7/8" port at 100 psig will require an Actuator A 36-in² and 3-15 air signal.

APPLICATION GUIDE ID60 EOP EAST



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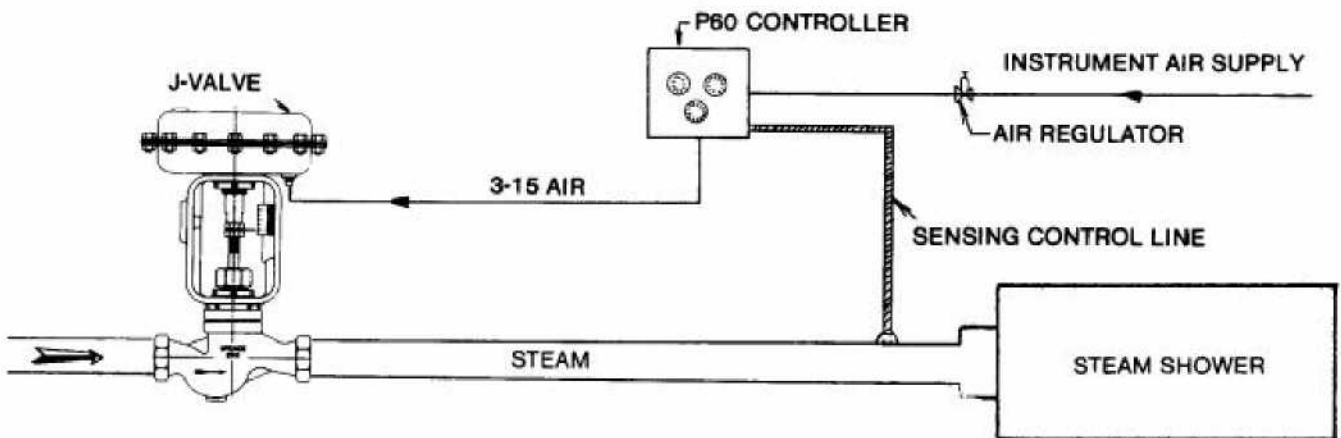
SPENCE ENGINEERING COMPANY, INC. 150 GOLDENHAM ROAD, WALDEN, NY 12586-2035

INTIMIDATOR TYPE J CONTROL VALVE and P60 PRESSURE CONTROLLER for STEAM SHOWERS

INDUSTRY: Paper

APPLICATION:

Providing accurate pressure regulation to steam showers to hasten paper drying process.



JP60 FOR PAPER
 PROCESS SHOWERS
 APPLICATION GUIDE
 CONTROL VALVES

SELECT VALVE:

- Flow 830 #/hr.
- Inlet 75 psig Saturated Steam
- Delivery 10 psig

a 1" J Valve with a 5/8" port will flow 920 #/hr.

A 5/8" port at 75 psig will require an Actuator A 36-in² and 3-15 air signal.

Compliments of Crane Paper Co.



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SPENCE ENGINEERING COMPANY, INC. 150 GOLDENHAM ROAD, WALDEN, NY 12586-2035

INTIMIDATOR TYPE J CONTROL VALVE and LIQUID LEVEL CONTROLLER for BOILERS

APPLICATION:

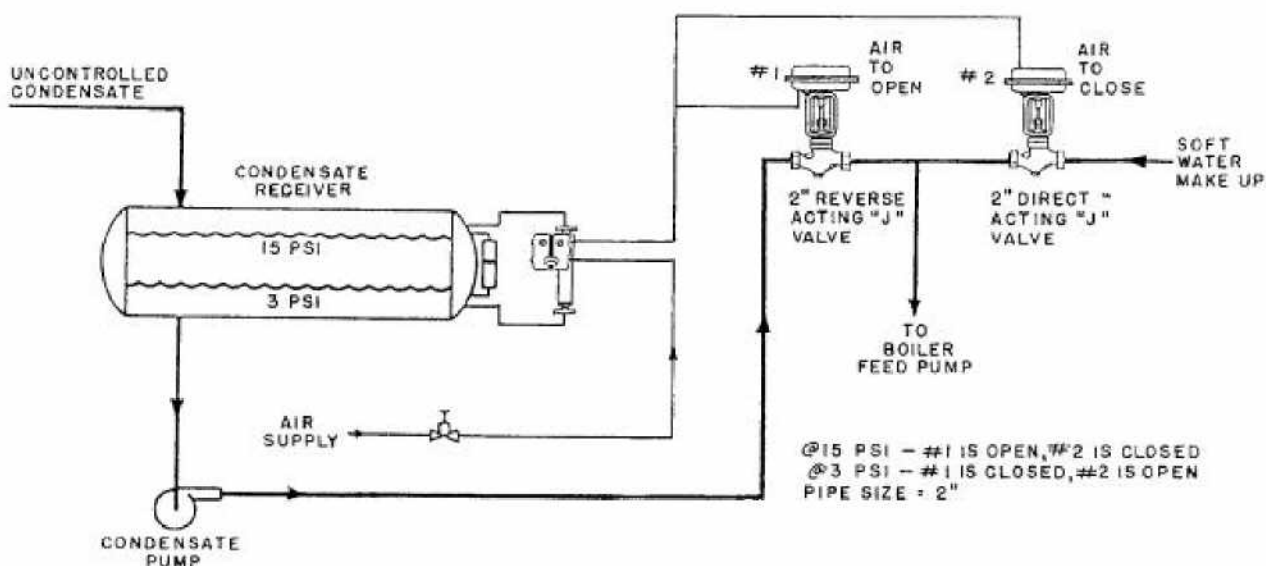
To provide water to a boiler at all times, even if water in condensate tank falls too low.

OPERATION:

As the level in the condensate receiver increases, an output signal from the pilot controller causes the number one J control valve to open and the number two control valve (make-up) to close.

As the level continues to increase, valve number one fully opens, admitting water from the condensate receiver to the boiler feed pump, valve two simultaneously closes, cutting off the soft water make-up supply.

Should the level in the condensate receiver decrease, reverse action of the above occurs and, at low level, all water to the boiler feed pump is obtained from the soft water make-up supply.



TYPE LIQUID
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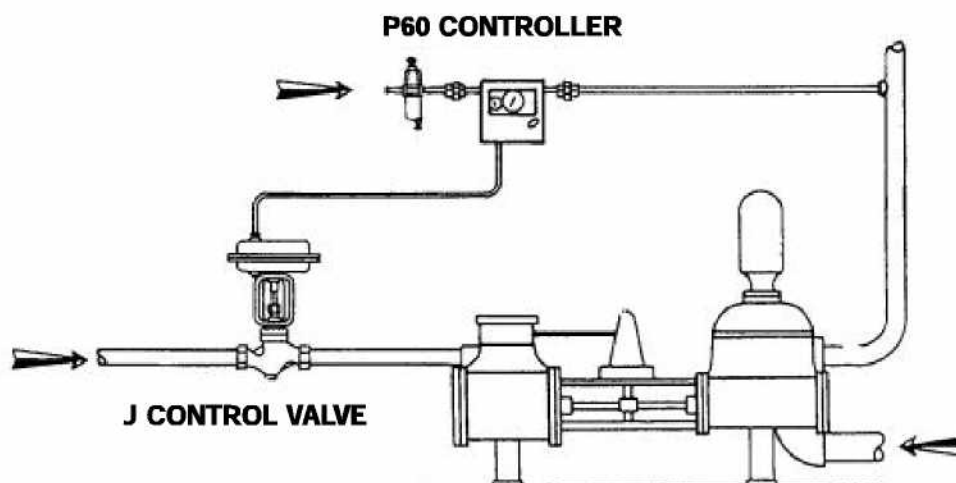
INTIMIDATOR TYPE JP60 for PUMP GOVERNOR

APPLICATION:

To provide control of the pump discharge pressure of a steam driven pump.

OPERATION:

The Type P60 Controller monitors the pump discharge pressure, while the J Control Valve controls the steam supply to turbine or piston engine driving the pump. As the pump's discharge pressure fluctuates with demand, the P60 sends a corrective signal to the control valve. The J Valve responds by supplying either more or less steam to the turbine or piston engine, as necessary to maintain the desired pump discharge pressure.



ADVANTAGES:

Precise control of pump discharge pressure.

The standard modified equal percent plug contour provides superior throttling action.

JP60 PUMP GOVERNOR
APPLICATION GUIDE
CONTROL VALVES



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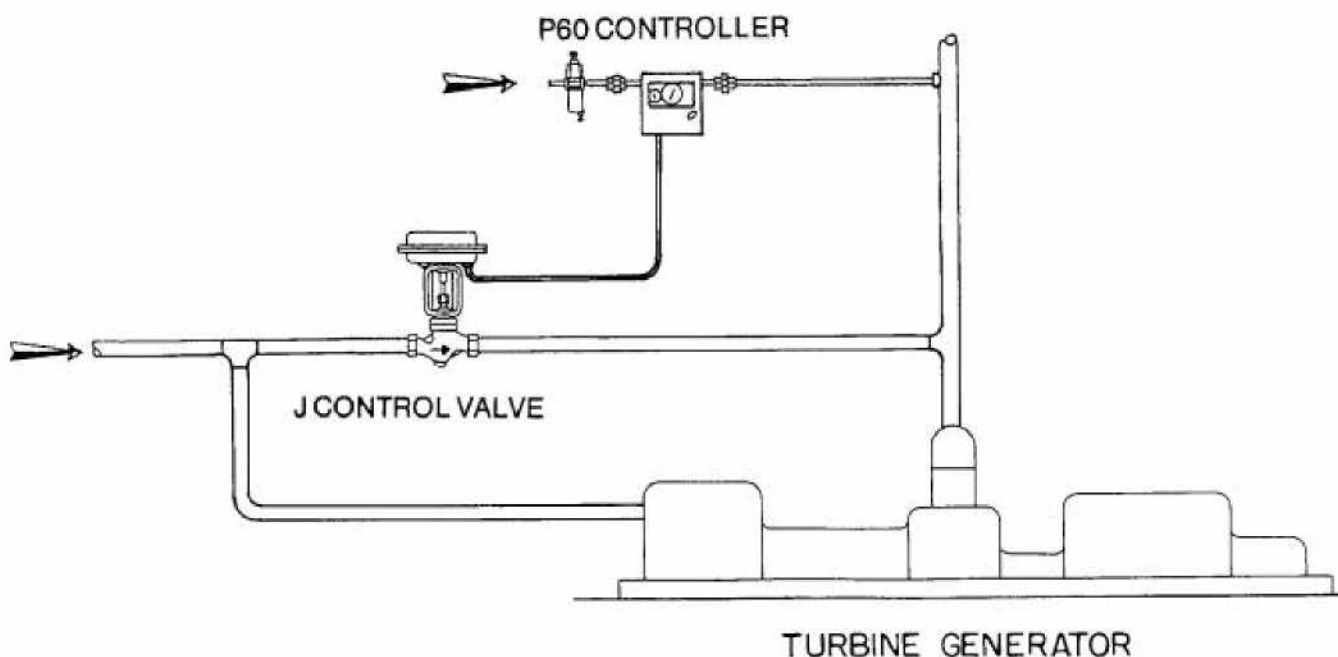
INTIMIDATOR TYPE J CONTROL VALVE with P60 CONTROLLER for TURBINE EXHAUST MAKE-UP

APPLICATION:

To provide additional (make-up) steam to a generating turbine's exhaust in order to maintain a minimum exhaust pressure and flow for secondary usage.

OPERATION:

When the generating load on the turbine is insufficient to maintain the desired pressure and flow for the secondary steam demand, the P60 controller senses the sagging turbine exhaust pressure and signals the Type J Control Valve to open the by-pass line to the extent necessary to maintain the desired operating conditions.



P = 140 psig

P¹ = 17 psig

W² = 8000 lbs/hr

2" J Valve, 1 3/4" Port

0-30 psig P60

For Pilot-operated equivalent, see previous page



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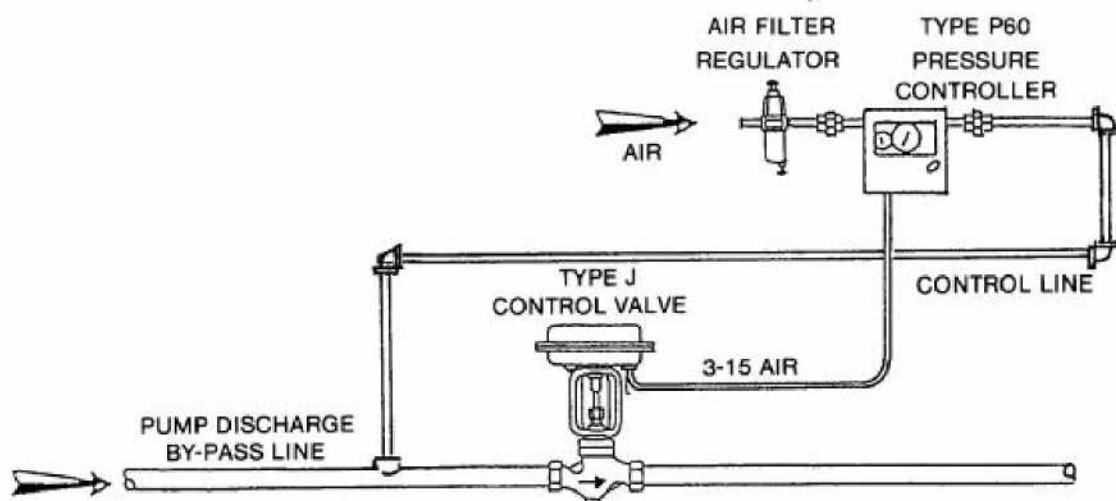
INTIMIDATOR TYPE J CONTROL VALVE and P60 BACK PRESSURE CONTROLLER for PUMP DISCHARGE

APPLICATION:

To provide accurate regulation of pump discharge pressure. Excess pressure is by-passed to return line.

OPERATION:

When used on a glycol system, the P60 controller is set to open the J valve at a pressure less than the safety valve setting. If system pressure increases to setting of control valve, it opens and discharges to the return line and liquid is not lost through safety valve.



JP60 FOR PUMP DISCHARGE
APPLICATION GUIDE
CONTROL VALVES

Courtesy of: Martin Engineering Co., Boston, MA



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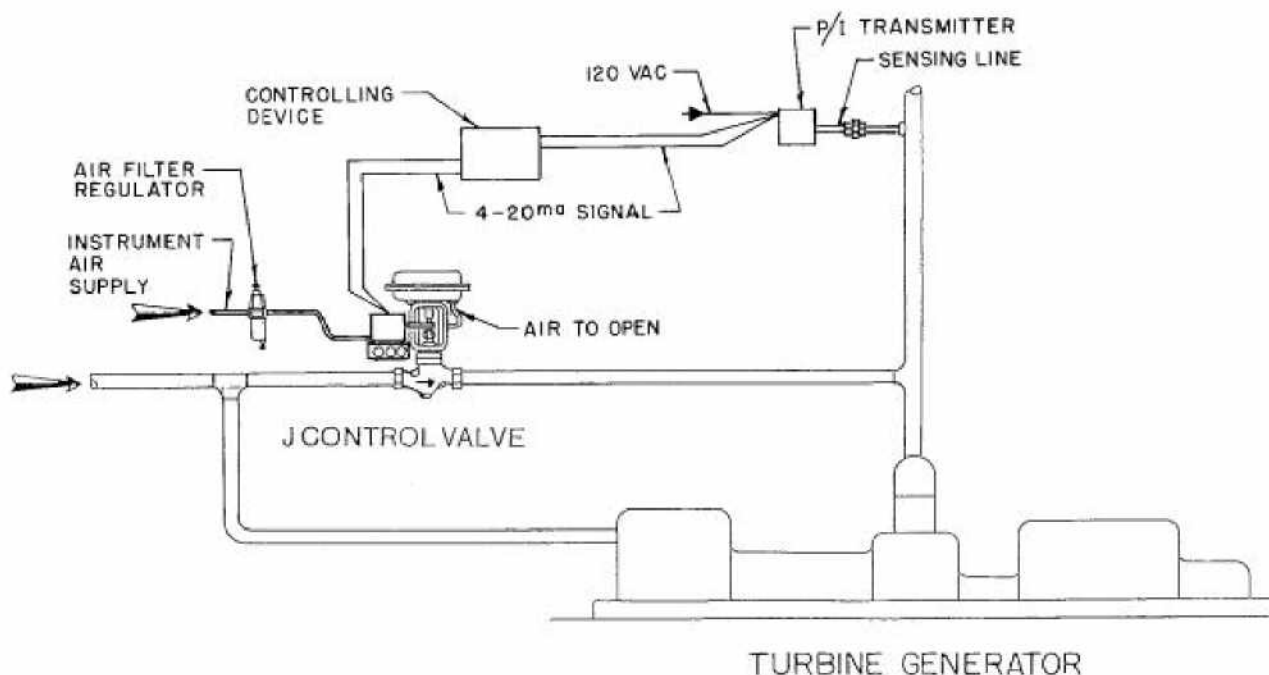
INTIMIDATOR TYPE J CONTROL VALVE with ELECTRO-PNEUMATIC POSITIONER for COMPUTERIZED COGENERATION CONTROL

APPLICATION:

To interface either a computerized cogeneration control, or electronic controller, to a turbine exhaust make-up valve in order to control the generating turbine's exhaust pressure and flow for secondary steam usage.

OPERATION:

A pre-programmed computer, or electronic controller receiving a 4-20 MA signal from a P/I Transmitter, is used as the controlling device for a Type J Control Valve with an electro-pneumatic positioner opening the by-pass line to the extent necessary to maintain the desired operating conditions.



P = 140 psig

P¹ = 17 psig

W² = 8000 lbs/hr

2" J Valve, 1 3/4" Port

APPLICATION GUIDE TYPE J COMPUTER



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INTIMIDATOR TYPE J CONTROL VALVE with P60 CONTROLLER for GAYLORD SHOWER CONTROL

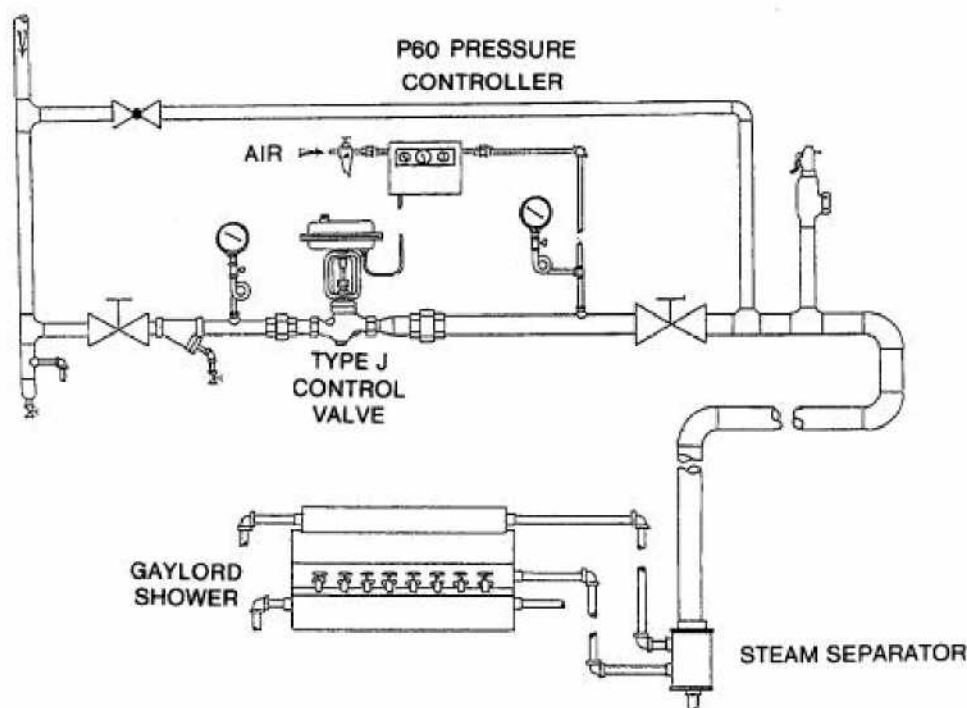
APPLICATION:

To improve paper conditioning and reduce steam consumption by utilizing reduced pressure saturated steam instead of high pressure dry steam at the Gaylord Shower.

OPERATION:

A Spence Type J Control Valve with positioner and Type P60 Pressure Controller are installed in the steam supply line to the Gaylord Shower and Steamer Pipe (if used) to reduce the steam pressure used. When high pressure saturated steam is reduced in a single step to 0 psi, the quality of the steam may be so enhanced as to introduce a certain degree of superheat. In comparison to low pressure saturated steam, low pressure superheated steam is a rather inefficient transmitter of heat and moisture to the paper.

JP60 FOR
GAYLORD SHOWER
APPLICATION GUIDE
CONTROL VALVES



ADVANTAGES:

- Improved control of paper conditioning.
- Reduced steam consumption.
- Repeatable, remote adjustment control.
- Precise control of low flows.
- Compact size permits easy installation.



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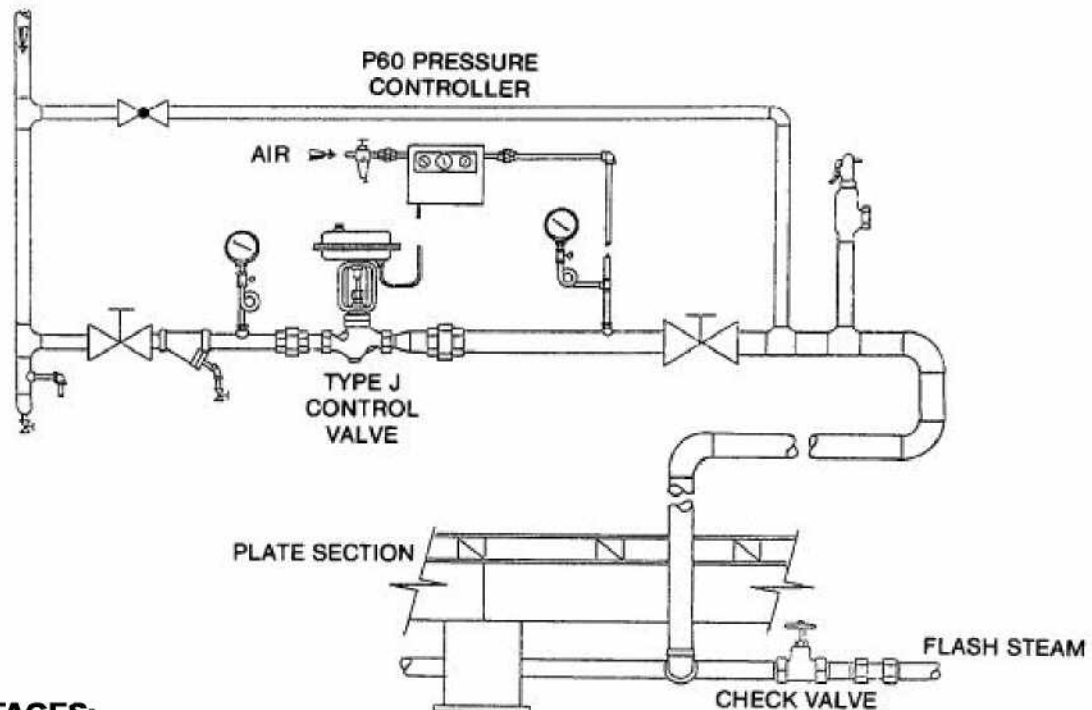
INTIMIDATOR TYPE J CONTROL VALVE with P60 CONTROLLER for PLATE SECTIONS of a CORRUGATOR

APPLICATION:

When corrugator process speed is increased to the point that the flash steam available to the plate sections is insufficient, high pressure steam is admitted to the plate sections to permit increased process speed.

OPERATION:

A Type P60 Pressure Controller is connected to the flash steam supply of a plate section. A Type J Control Valve is connected between a high pressure steam main and the flash steam supply of the plate section. The prescribed pressure for the product and process speed is the P60's set point. When insufficient flash steam is available to maintain the set pressure, the Type J Control Valve will open and admit sufficient steam to maintain the set pressure.



ADVANTAGES:

- Process speed can be increased.
- Controller can be remotely located.
- Maximizes capacity at minimal pressure differentials.
- Compact size permits easy installation.
- Able to maintain control at low flow rates.



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INTIMIDATOR TYPE J CONTROL VALVE with P60 CONTROLLER for BACK PRESSURE CONTROL of a DEAERATOR

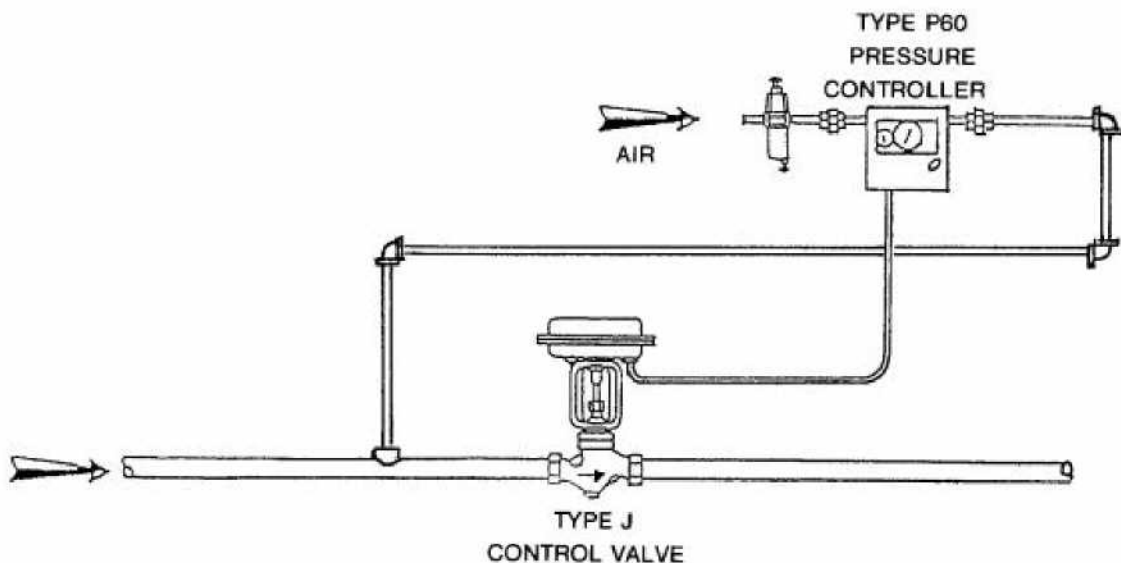
APPLICATION:

When the pressure in a Deaerator increases to the set pressure of the Controller, the Control Valve opens and exhausts the amount of steam necessary to maintain the set pressure.

OPERATION:

A Spence Type J Control Valve is installed between the Deaerator Tank and the exhaust vent, usually to the roof. A Type P60 Pressure Controller is installed to sense either the pressure in the Deaerator Tank or the supply pressure to the Type J Control Valve. When the pressure in the Deaerator Tank reaches the set pressure of the Type P60 Controller, the Type P60 Controller sends a proportional 3 to 15 psig pneumatic signal to the Actuator of the Type J Control Valve. The Type J Control Valve opens, closes or throttles in response to the Type P60 Controller's pneumatic signal, enabling the set pressure to be maintained in the Deaerator.

JP60 DEAERATOR
BACK PRESSURE
APPLICATION GUIDE
CONTROL VALVES



ADVANTAGES:

- Controller can be remotely located.
- Maximizes capacity at minimal pressure differentials.
- Compact size permits easy installation.
- Able to maintain control at low flow rates.



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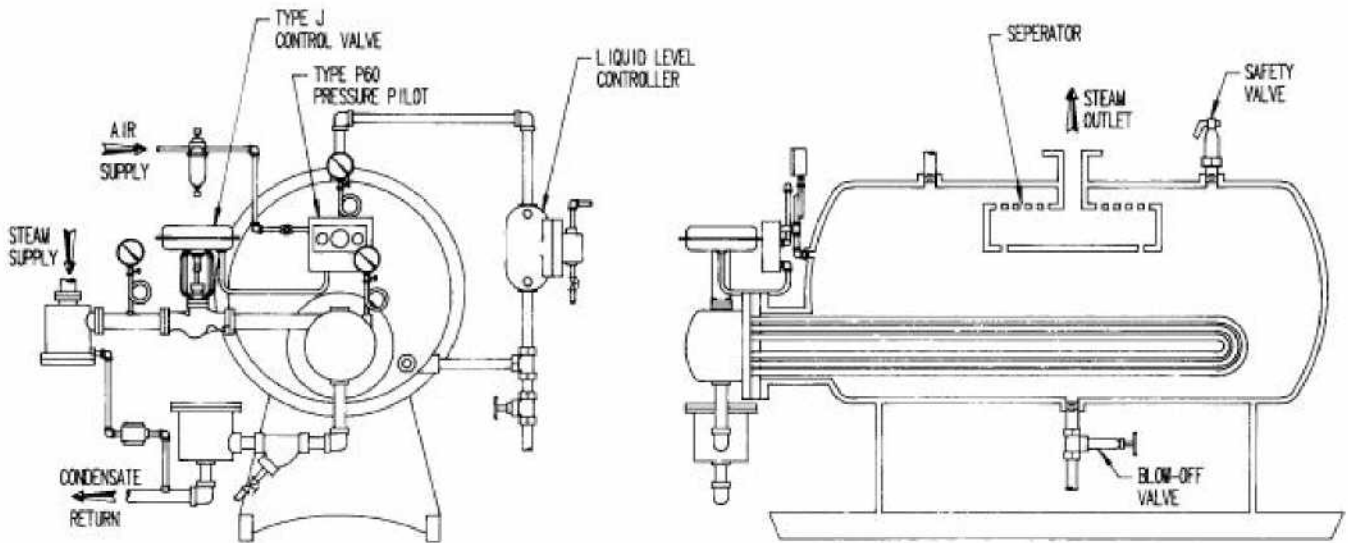
INTIMIDATOR TYPE J CONTROL VALVE with P60 CONTROLLER for UNFIRED STEAM GENERATOR

APPLICATION:

To provide pneumatic control for an Unfired Steam Generator.

OPERATION:

The Spence Type P60 Pneumatic Pressure Controller senses the boiler's operating pressure and sends a proportional 3 to 15 psig air signal to the Spence Type J Pneumatic Control Valve. The Spence Type J Pneumatic Control Valve then opens, closes or throttles the supply of heating medium, either steam or high-temperature water, in order to maintain the boiler's operating pressure set point.



ADVANTAGES:

Can utilize a sophisticated PID controller for exceptionally accurate control.

Permits lower operating differential pressures across the control valve than a self-contained regulator.

APPLICATION GUIDE P60 LINEPEDIA



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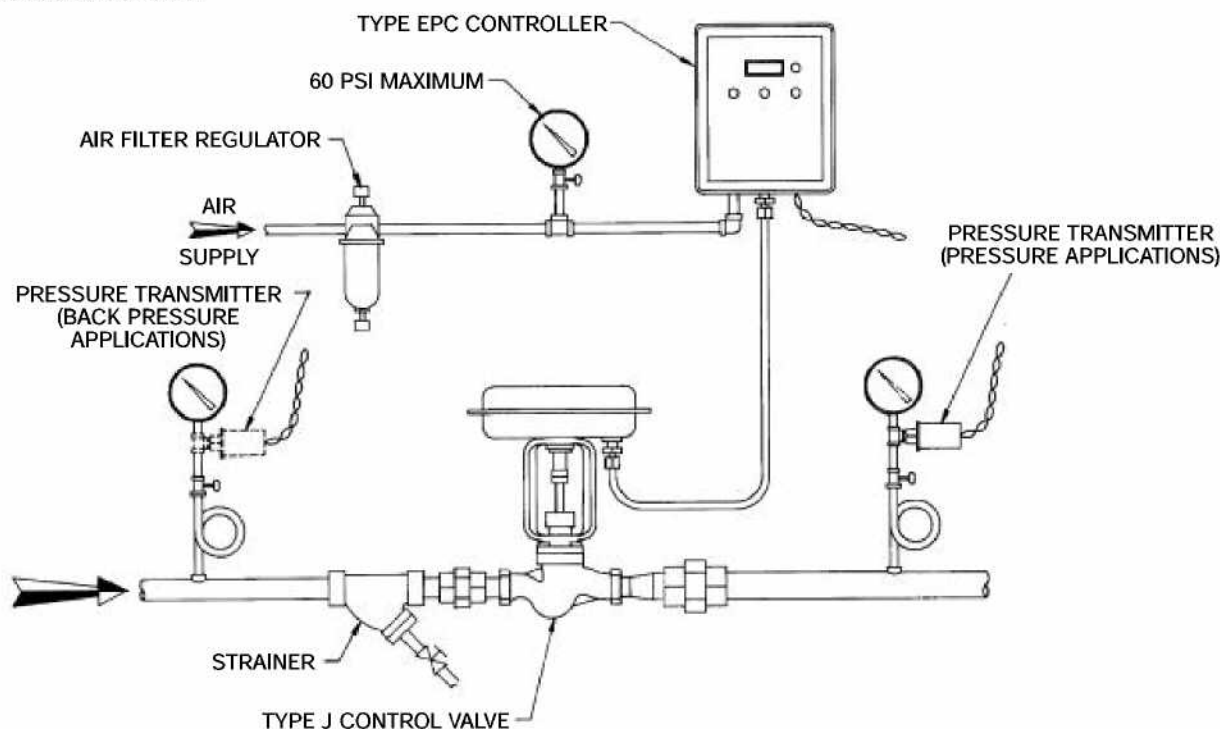
INTIMIDATOR TYPE J CONTROL VALVE with EPC ELECTRO-PNEUMATIC CONTROLLER as a PRESSURE or BACK PRESSURE CONTROLLER

APPLICATION:

To provide a modulating pneumatic signal of up to 60 psig to a Type J Control Valve utilized in pressure or back pressure control.

OPERATION:

An appropriate pressure transmitter is connected to the EPC's transmitter input terminals. The EPC provides the 24 VDC power to the transmitter and compares the returned 4-20 mA signal to the EPC's setpoint. Using a series of short pneumatic pulses, the EPC either increases or decreases the pneumatic signal to the control valve to maintain the desired pressure control.



ADVANTAGES:

- Control action can be set for either direct or reverse action.
- Utilizes standard plant air up to 60 psig maximum.
- Use of a Valve Positioner can be eliminated with sufficient supply air pressure.
- Easy to install and operate.

JEPC FOR
BACK PRESSURE
APPLICATION GUIDE
CONTROL VALVES



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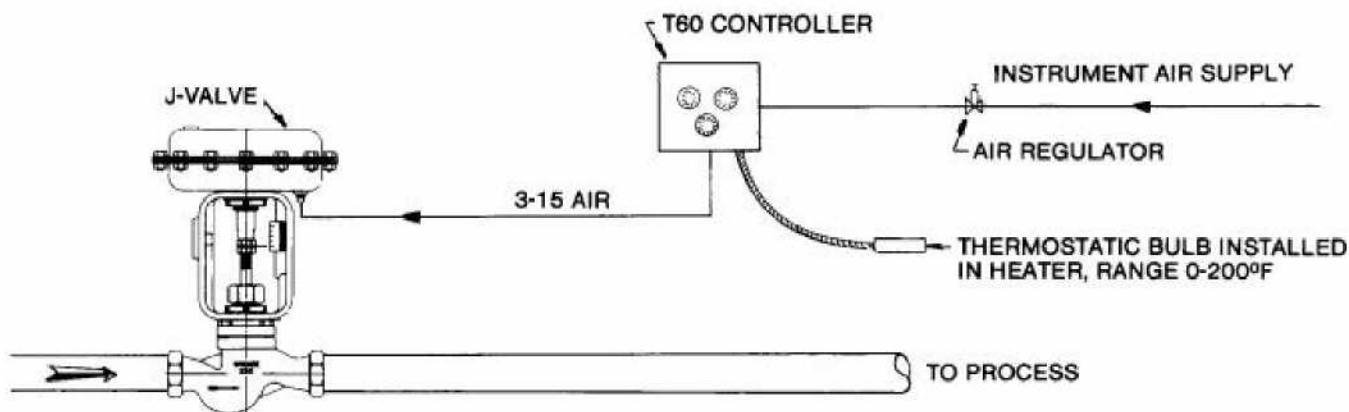
INTIMIDATOR TYPE J CONTROL VALVE and T60 CONTROLLER for INSTANTANEOUS HEATERS

APPLICATION:

To provide fast, accurate control on instantaneous heaters and difficult process applications.

OPERATION:

Temperature variations at thermostat bulb of the T60 changes output air signal going to the J valve. The changing air signal positions the control valve to maintain temperature setting.



SELECT VALVE:

Flow.....1400#/hr.

Inlet Pressure15 psig

Heater Pressure.....5 psig

Temperature Setting.....140° F.

Fail closed, air to open

a 2" J Valve with a 1 3/4" port will flow 1655#/hr.

With 15 psig inlet pressure, a 36 square inch Actuator can be used. A T60 with a 0-200° temperature range and a 3-15 psig air signal is required.

APPLICATION GUIDE T60 INSTANT



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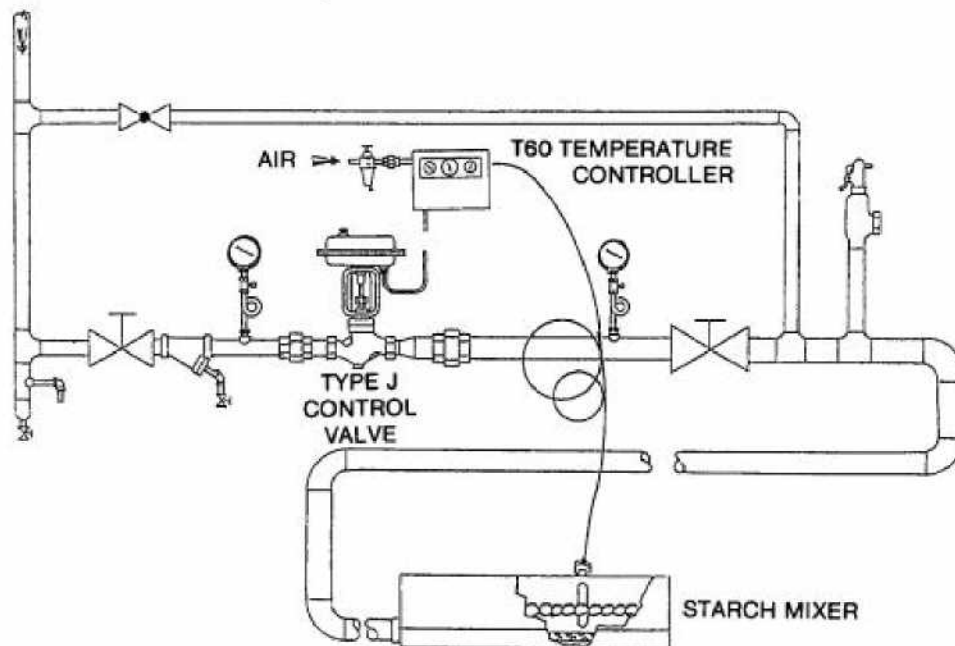
INTIMIDATOR TYPE J CONTROL VALVE with T60 CONTROLLER for STARCH MIXER

APPLICATION:

To provide accurate temperature control in a Starch Mixer for corrugated adhesive usage.

OPERATION:

A Starch Mixer is essentially an open topped, agitated sparge tube storage heater, in which the adhesive is prepared before being placed in storage. The temperature probe of a Type T60 Temperature Controller is placed in an active area of the Starch Mixer. Once activated, the Type J Control Valve flows steam to the heater until the T60 senses that the proper temperature has been reached. Then the T60 varies its 3 to 15 psi pneumatic signal to the J Control Valve to close, open or throttle, as necessary, to maintain a preset temperature.



ADVANTAGES:

- Use of the T60 Controller permits remote setting and read out of starch temperature.
- Permits highly accurate temperature control.
- Precise control of low flows.
- Minimum pressure differential across the J Valve permissible.



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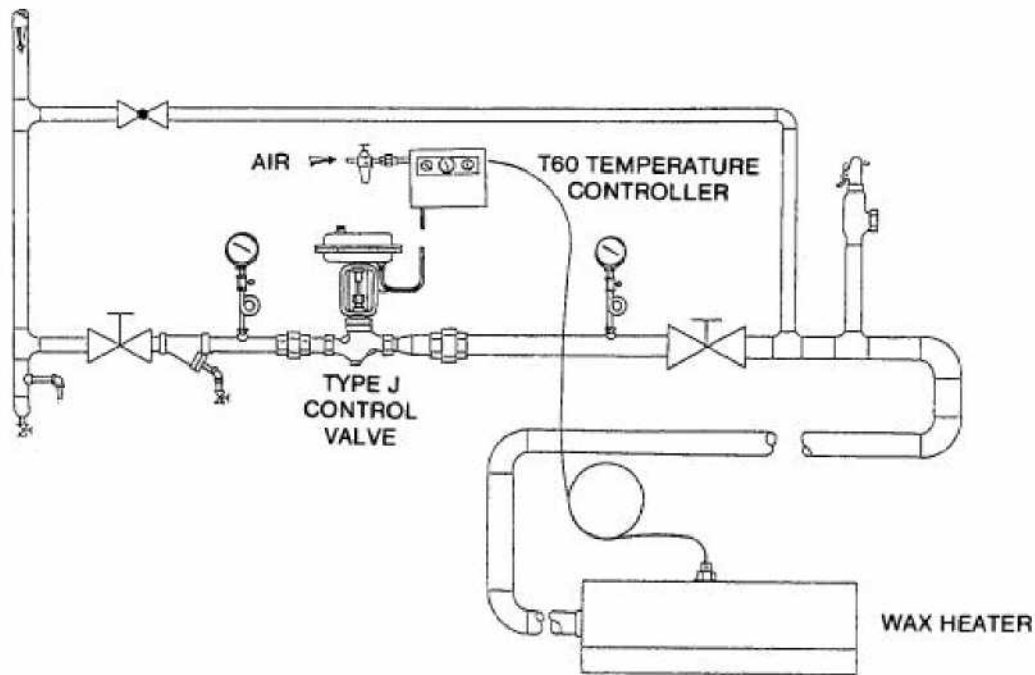
INTIMIDATOR TYPE J CONTROL VALVE with T60 CONTROLLER for WAX APPLICATION CONTROL

APPLICATION:

To provide accurate control of the wax temperature in order to assure the proper coating of the product.

OPERATION:

The temperature probe of the Type T60 Temperature Controller is placed into the wax at the point of application. The T60 compares the wax temperature to its temperature setting and sends a 3 to 15 psi pneumatic signal to the Type J Control Valve, which opens, closes or throttles to maintain the desired wax temperature.



ADVANTAGES:

- Improved control of wax temperature.
- Capable of maintaining precise control down to very low flow rates.
- Maximum valve capacity at low differential pressures.



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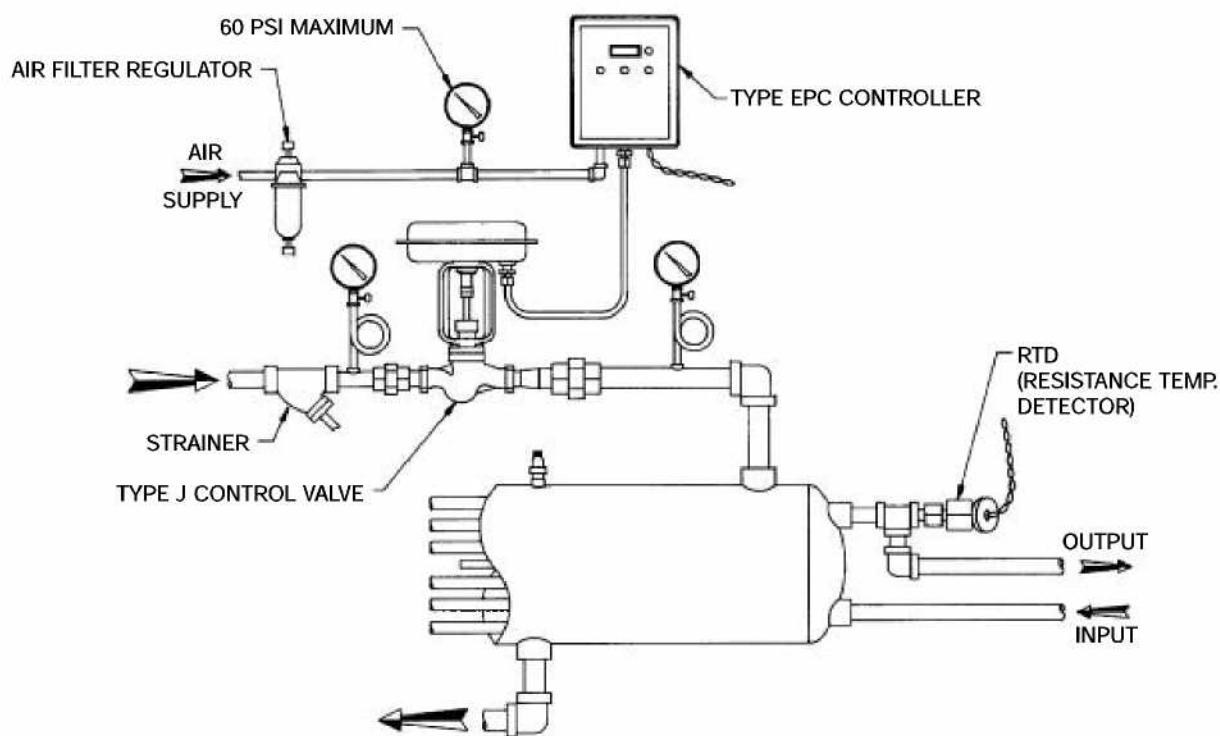
INTIMIDATOR TYPE J CONTROL VALVE with EPC ELECTRO-PNEUMATIC CONTROLLER as a TEMPERATURE CONTROLLER

APPLICATION:

To provide a modulating pneumatic signal of up to 60 psig to a Type J Control Valve utilized in temperature control.

OPERATION:

An appropriate RTD (Resistance Temperature Detector) is connected to the EPC's RTD input terminals. The EPC compares the RTD's output to the EPC's setpoint. Using a series of short pneumatic pulses, the EPC either increases or decreases the pneumatic signal to the control valve to obtain the desired temperature control.



ADVANTAGES:

- Control action can be set for either direct or reverse action.
- Utilizes standard plant air up to 60 psig maximum.
- Use of a Valve Positioner can be eliminated with sufficient supply air pressure.
- Easy to install and operate.

JEPC FOR TEMPERATURE
APPLICATION GUIDE
CONTROL VALVES



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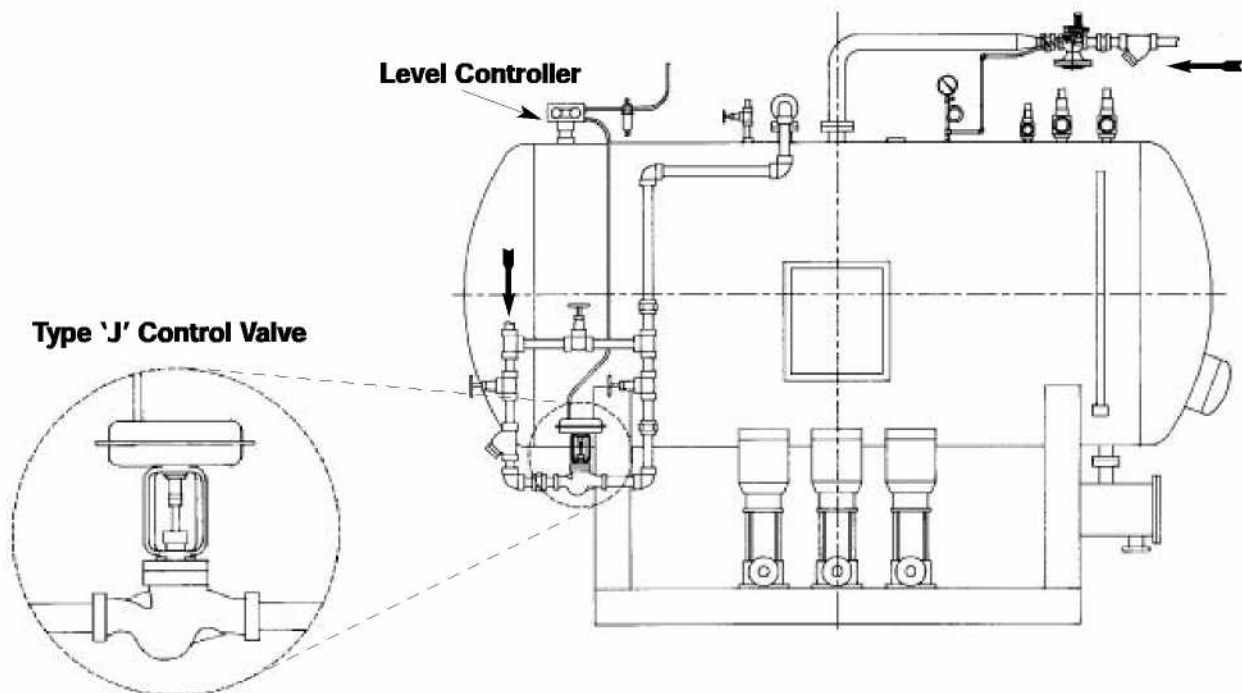
INTIMIDATOR TYPE J CONTROL VALVE for LEVEL/MAKE-UP on a DEAERATOR

APPLICATION:

When insufficient condensate to meet the demand for boiler feedwater is returned to the deaerator, the make-up water control valve is opened to satisfy this requirement.

OPERATION:

When the Deaerator's Pneumatic Level Controller senses low water level, it sends a proportional 3 to 15 psia pneumatic signal to the Type 'J' Control Valve. The Type 'J' Control Valve responds by opening, closing or modulating the flow of raw make-up water into the Deaerator, thereby satisfying the demand for boiler feedwater.



ADVANTAGES:

- Precise control of make-up water
- The standard modified equal percent plug contour provides superior throttling action



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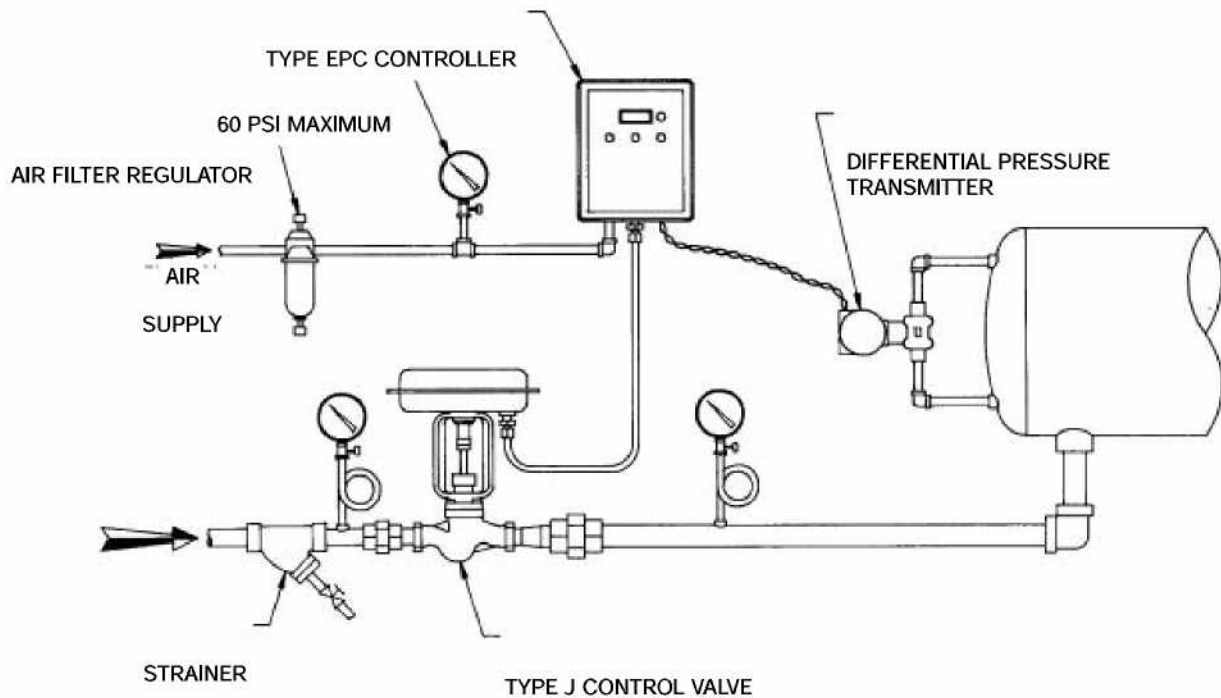
INTIMIDATOR TYPE J CONTROL VALVE with EPC ELECTRO-PNEUMATIC CONTROLLER as a DIFFERENTIAL (LEVEL) CONTROLLER

APPLICATION:

To provide a modulating pneumatic signal of up to 60 psig to a Type J Control Valve unitized as a Differential Pressure Valve.

OPERATION:

An appropriate Differential Pressure Transmitter is connected to the EPC's transmitter input terminals. The EPC provides the 24 VDC power to the transmitter and compares the returned 4-20 mA signal to the EPC's setpoint. Using a series of pneumatic pulses, the EPC



JEPD DIFFERENTIAL (LEVEL) CONTROL VALVES

either increases or decreases the pneumatic signal to the control valve to maintain the desired differential pressure (level).

ADVANTAGES:

- Control action can be set for either direct or reverse action.
- Utilizes standard plant air up to 60 psig maximum.
- Use of a Valve Positioner can be eliminated with sufficient supply air pressure.
- Easy to install and operate.