PRODUCT REVIEW

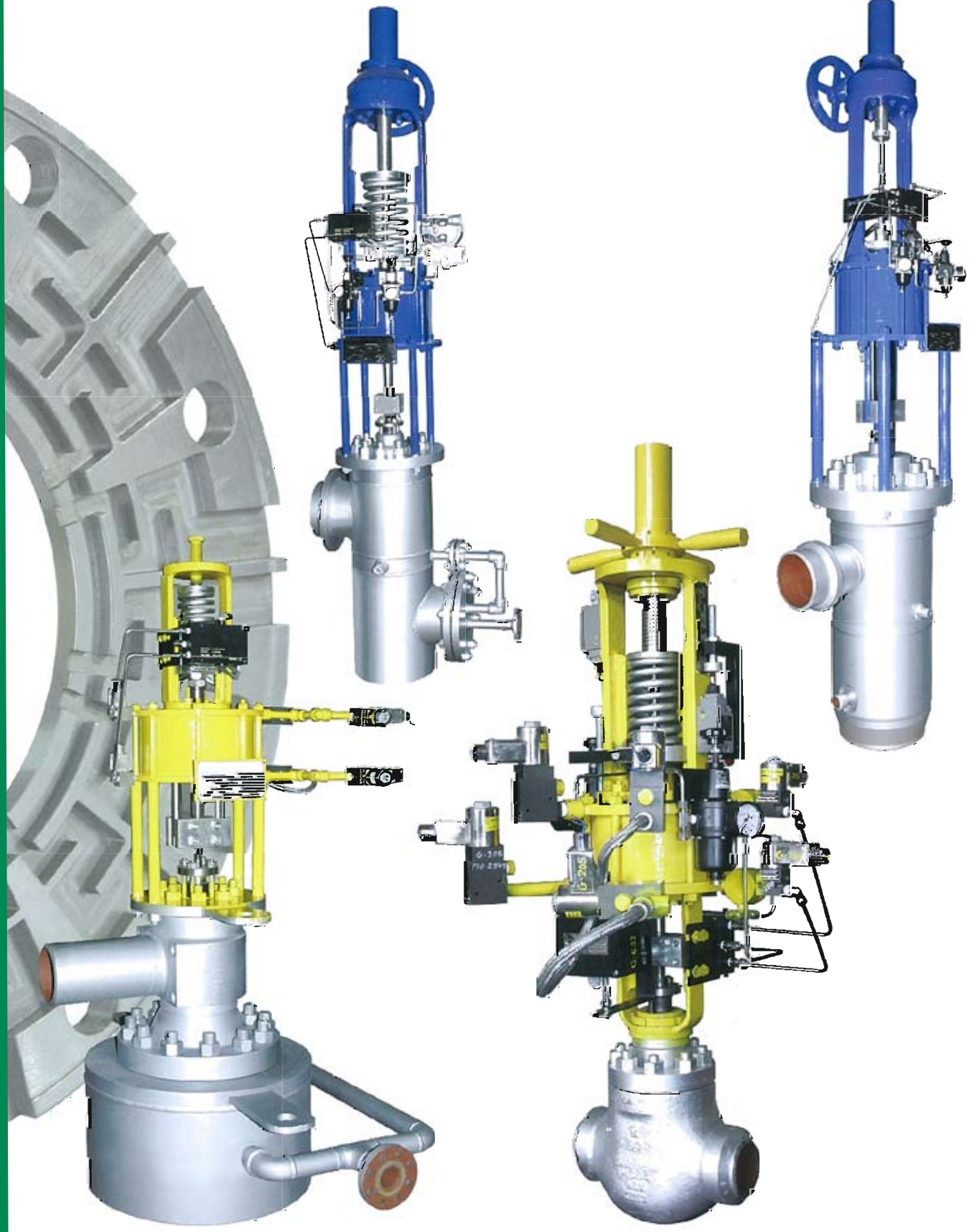
Customized solutions from leading technologies

- Bypass Valves / Systems
- Desuperheaters
- Automatic Recirculation Valves
- Self acting Pressure Reducing Valves
- Safety Relief Valves
- Pressure Reducing Stations
- Control Valves
- Pressure Reducing cum Desuperheating Stations

RTK®
REGELTECHNIK KORNWESTHEIM
A division of CIRCOR International, Inc.

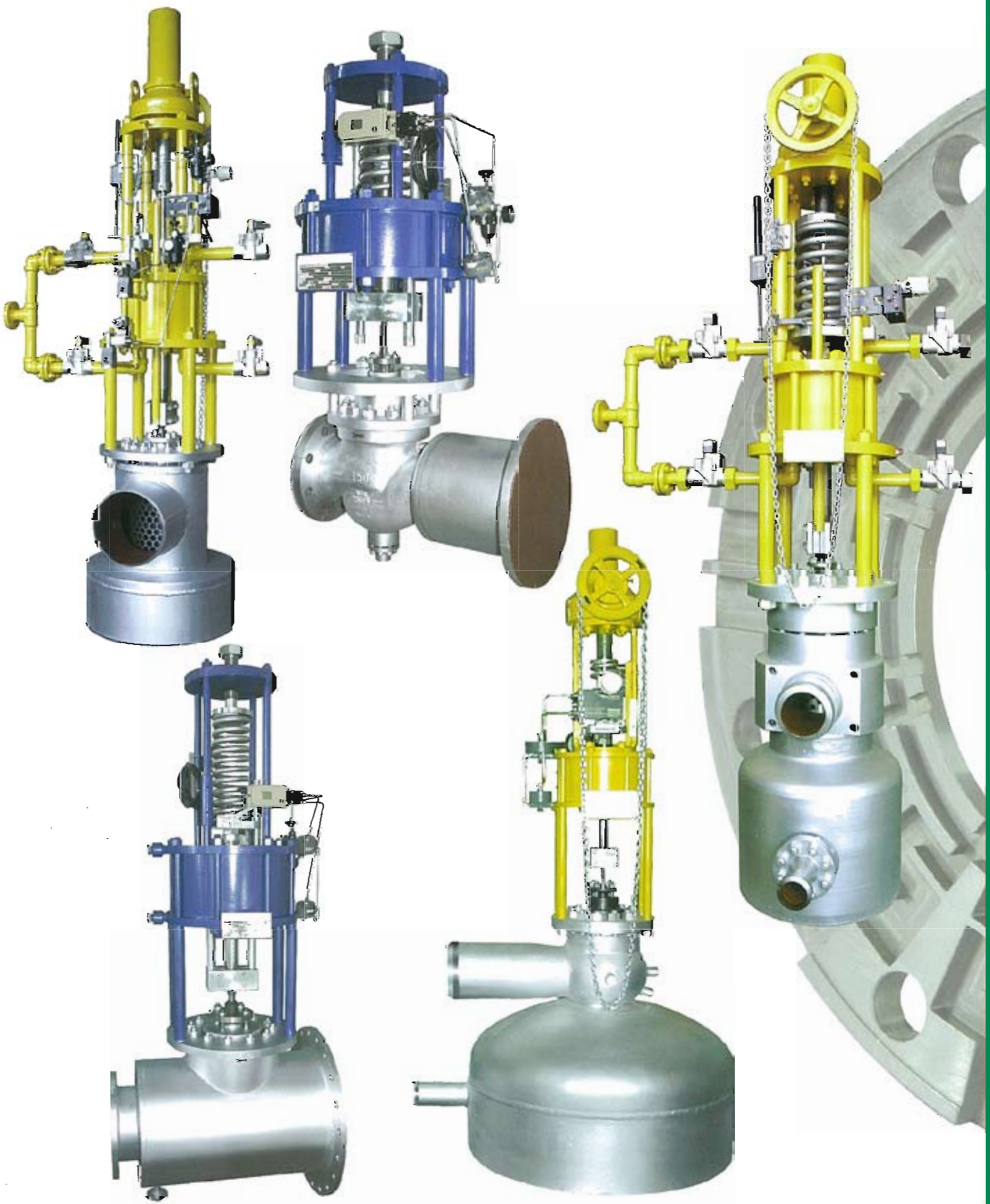
REGELTECHNIK
KORNWESTHEIM
A division of CIRCOR International, Inc.

An assortment of Turbine bypass, Steam



REGELTECHNIK
KORNWESTHEIM
A division of CIRCOR International, Inc.

conditioning and severe service Control valves

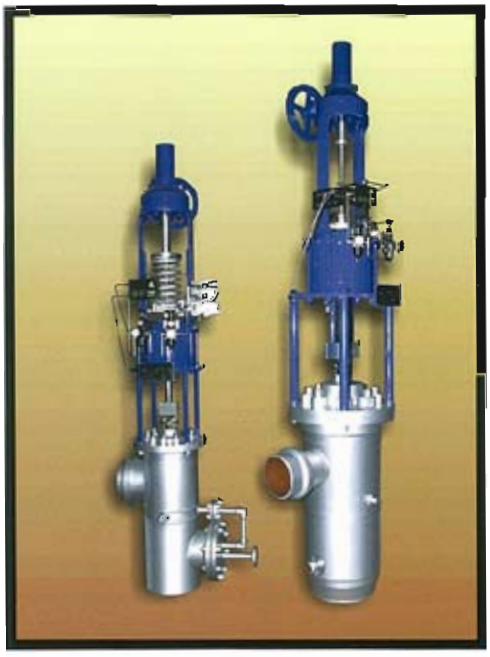


Valves ready to be shipped for Doosan Heavy Industries Korea

HP & LP Bypass valves for Atomic power plant

Valves ready for shipment for BHEL - BINA REFINERY

HP Bypass valve along with Dump Tube



HP and LP Bypass valves shipped to a Paper plant

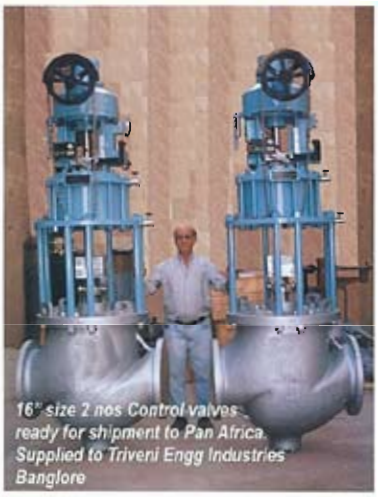
PRDS Systems for L&T - IOCL Panipat plant

Leslie is the leading name for high performance, innovative and reliable equipment manufacturer for all segments of industry. Design, production and test facilities are second to none in the global market and the largest in Asia.

Applications vary from conditioning of the steam, reducing and maintaining steam pressures, crystallization, deaeration, vacuum distillation and a wide range of critical valves for power plants.

Leslie now has an enviable position in the global market. Its manufacturing base in Ahmedabad caters to exports all over the world.

Leslie also manufactures hyper-critical control valves for power plants and have already supplied Automatic Recirculation Valves to Nuclear power Plants as an import substitute, thereby saving valuable foreign exchange for the country.



16" size 2 nos Control valves ready for shipment to Pan Africa. Supplied to Triveni Engg Industries Banglore

Testing of Bypass valve being carried out at our works by our collaborators from Germany

High pressure PRDS valve ready for shipment to Reliance Jamnagar Refinery alongwith spray water control valves.

PRODUCT RANGE

- Bypass Valves / Systems
- Desuperheaters
- Automatic Recirculation Valves
- Control Valves
- Self acting pressure Reducing Valves
- Safety Relief Valves
- Pressure Reducing Stations
- Pressure Reducing cum Desuperheating Stations

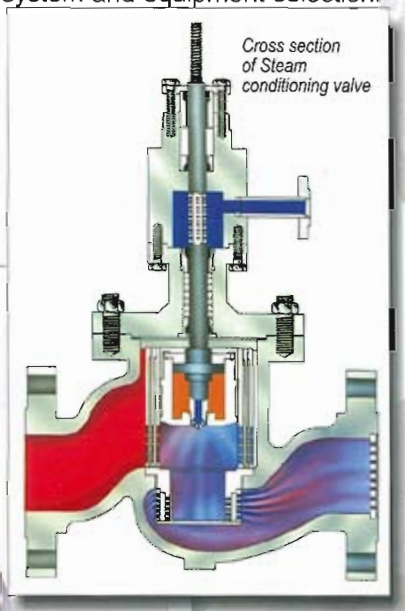
DESUPERHEATERS

PRESSURE REDUCING AND DESUPERHEATING VALVE (STEAM CONDITIONING VALVE)

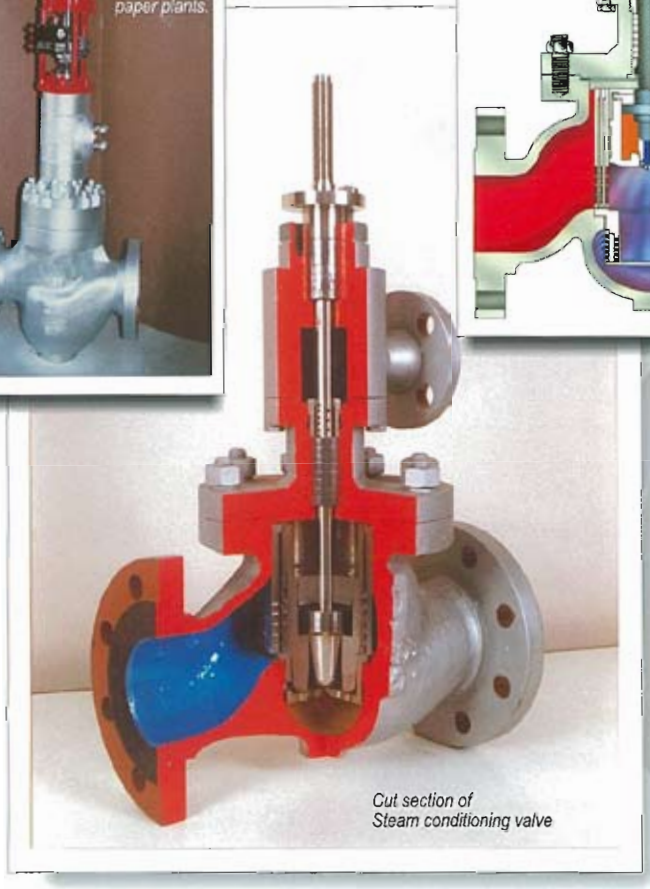
The principle function of any desuperheater is to accelerate the phenomena of absorption of the spray water by the steam so that steady conditions of steam temperature are reached within a short distance from the outlet at all loads. This ensures that poor quality of steam or water droplets are not carried downstream in the steam pipeline. The purpose therefore, is to develop methods by which heat transfer between steam and water can be hastened. The main purpose is to break spray water droplets into very fine particles at all loads to ensure increased surface area for water to come in contact with the steam is available, thereby increasing the rate of evaporation. It is very clear that the size of the water droplets should be smallest, utmost surface area available, absorption will be almost instantaneous and true temperature will be measured within the shortest distance.

In all instances of desuperheating, the nature of the downstream steam and the avoidance of large spray water droplets that can be propelled at high speed to damage elbows, valve seats, heat exchanger tubes, or process material are very important factors while designing desuperheating system and equipment selection.

Steam conditioning valve ready for shipment to one of the paper plants.



Cross section of Steam conditioning valve



Cut section of Steam conditioning valve

STEAM CONDITIONING VALVE 'SC'

Leslie series `SC' steam conditioning valve with revolutionary multinozzle atomizer and feed forward design adds to our latest generation of quality valves. The equipment is utilized for simultaneous pressure and temperature reduction of steam. The cooling water is introduced in the highest turbulent zone of the steam. High steam velocity at this point, results in the highest coefficient of heat transfer between the steam and water. The feed forward design assures soft misty spray and instantaneous temperature control over the full range of steam flow.

- For high pressure let-down, pressure drop is taken across concentric flow cages rather than across seating surface, resulting in minimal seat wear.
- Pilot operated cage design to achieve extremely tight shut off (leakage classification ANSI # V)
- Balanced design with heavy duty pilot spring greatly improves throttling stability at high Δ P.
- Larger outlet and outlet diffuser options give noise attenuation at optimum design conditions guaranteeing outlets sound pressure level to 85 dBA.
- Stellited trim increases its resistance to corrosion, erosion by abrasion, galling and sticking.

Sizes	:	2" to 20" with Cv ranging from 35 to 2600
Rangeability	:	50:1
Rating	:	up to ANSI 2500#
Superior Water pressure	:	Cooling water at approximately 5 bar above the steam operating pressure OR high pressure BFW.

STEAM CONDITIONING VALVE

Leslie series SC steam conditioning valves are available in a variety of combinations. These valves are made as per tailor made requirements of customers. The valves are manufactured in angle, Z and globe forms. Spray water entry is from the top through hollow stem as well as from the bottom, depending upon the process parameters.

Steam conditioning valves shipped to Germany

MARK-I
MULTI NOZZLE (ORIFICE) LANCER DESUPERHEATER

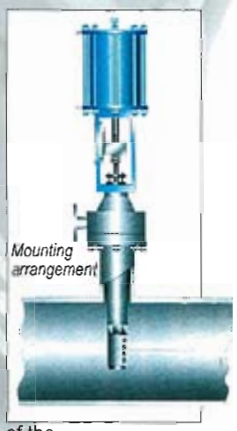
Leslie multi orifice lancer desuperheater regulates the amount of injected water by varying the number of orifices during operation.

This insures that the spray water pressure remains constant at all loads and an excellent and almost uniform spray quality is achieved over the full operating range, thereby minimizing the tendency of spray water to accumulate in the steam line.

Opening of the orifices is regulated by the positioning of a piston operated actuator directly mounted on the desuperheater.

A high turndown of 20:1 is standard. Higher turndowns can be accommodated on request.

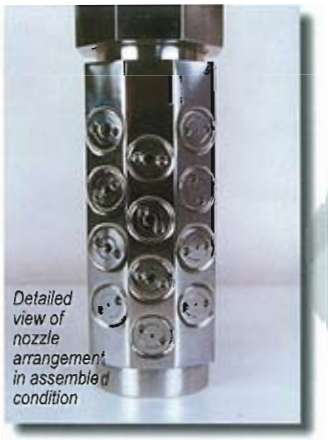
Lancer Multinozzle Desuperheater



Mounting arrangement

Sizes	: Mounting of the desuperheater in the steam piping of size 6" onward (regardless of pipe size) is always 4" and 1"(or 2") for water inlet.
Rangeability	: 350:1 can be accommodated.
Rating	: up to ANSI 2500#.
Superior Water Pressure	: 5 bar above the line pressure OR high pressure BFW.
Actuator	: Leslie R50 positioning cylinder.
Flow characteristics	: Modified, Equal %, Linear

Internals



Detailed view of nozzle arrangement in assembled condition

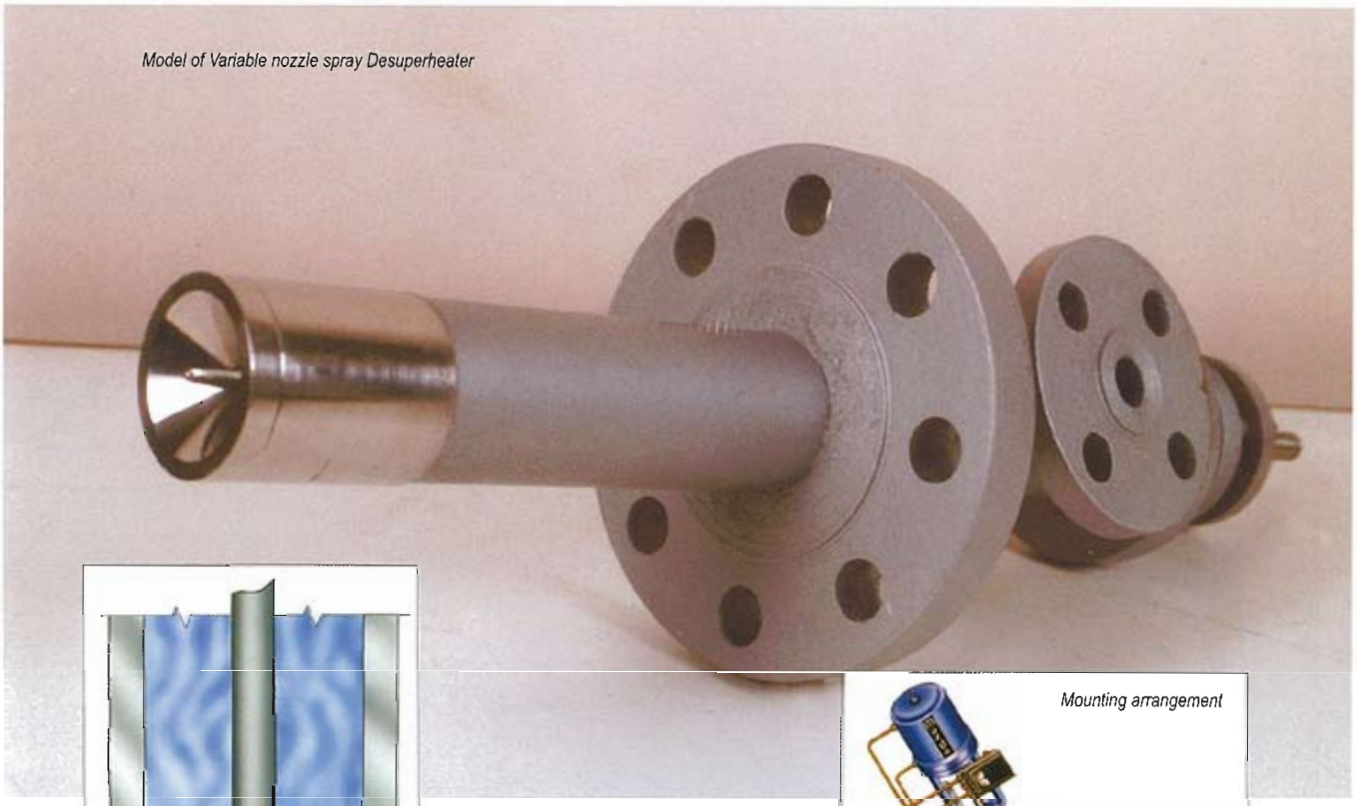
Battery of Desuperheaters ready for shipment to BASF Petronnas, Malaysia. Consultants: Bechtel - Singapore. Inspection Agency: Moody International

VARIABLE NOZZLE SPRAY DESUPERHEATER (VA 6)

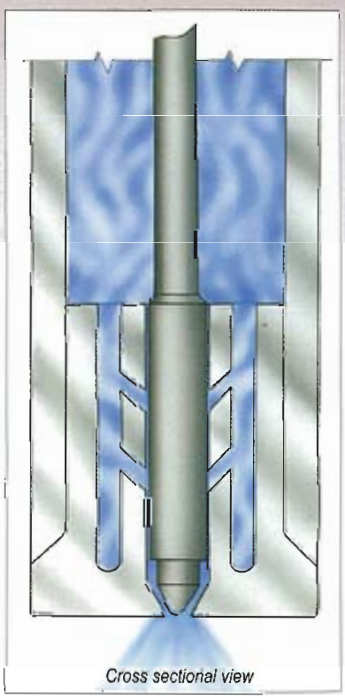
Leslie variable nozzle spray desuperheater are installed at an inclined angle. This facilitates installation at site where vertical installations are not possible owing to piping constraints.

This desuperheater ensures a fine conical spray, that evaporates almost instantaneously avoiding pipe impingement and eliminates the need of separate coolant valve.

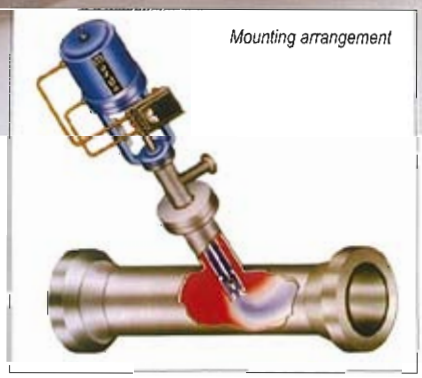
Reliability is at its maximum owing to hard faced trim and single moving part. It utilizes full pressure drop at all conditions thereby maintaining its characteristic even at low loads.
Turndown ratios of 40 : 1 are offered as standard. Units are available with modified, parabolic, equal and linear characteristics as per requirements.



Model of Variable nozzle spray Desuperheater



Cross sectional view



Mounting arrangement

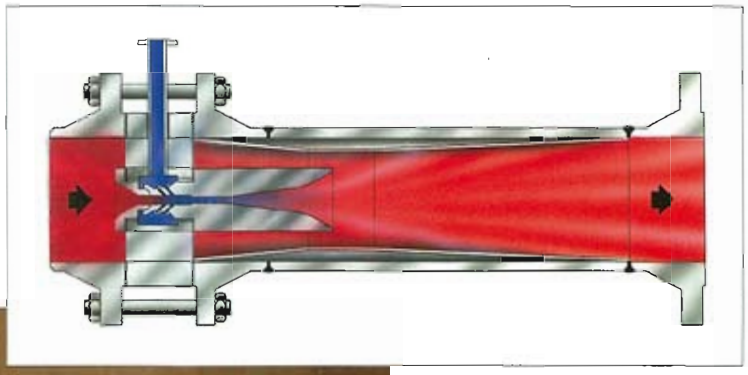
Sizes	:	Mounting in the steam pipe of 6" onwards is always 3" and 1" (or 2") for water inlet.
Rangeability	:	40:1
Rating	:	upto ANSI 2500#
Superior Water Pressure	:	5 bar above the line pressure OR high pressure BFW.
Actuator	:	Leslie R50 positioning cylinder.
Flow chracteristics	:	Modified, Equal %, Linear.

VENTURI AND DOUBLE VENTURI DESUPERHEATERS (6201 V AND 6201 DV)

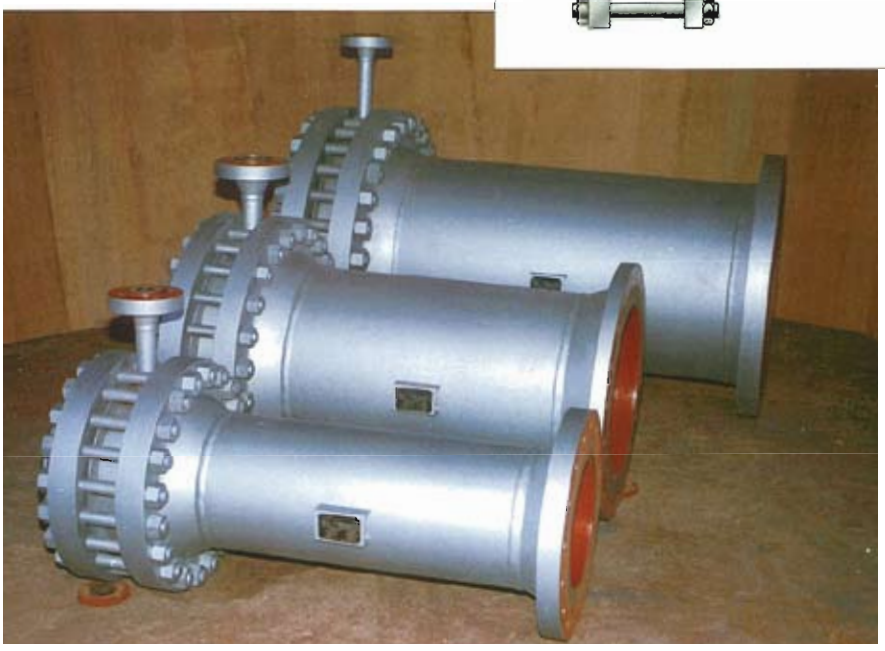
Leslie venturi desuperheaters consist of a De Laval nozzle which utilizes a part of the incoming steam flow to create a reduced pressure zone into which spray water is drawn and atomized by steam energy, and then exits in a short expanding throat which allows pressure recovery.

The desuperheating performance remains constant at all loads from 100% or less, because of the atomizing steam effect of the steam jet. The design is unique such that the spray water can be supplied at the same pressure as that of the steam pressure. High turndowns are possible depending upon installations.

Ready for shipment to a power plant in America



Cross sectional view of Double Venturi Desuperheater

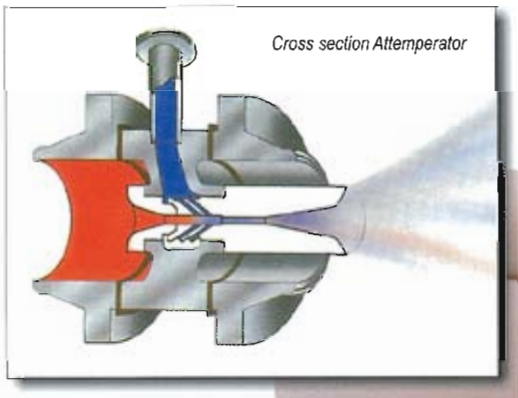


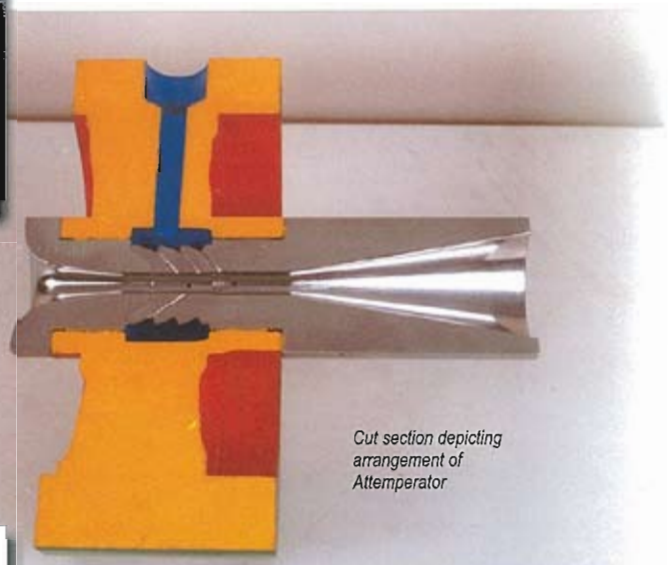
12", 20" and 26" size large units awaiting shipment to a Fertilizer plant

Sizes	:	2" to 30"
Rangeability	:	6 : 1 for single venturi type and 12 : 1 for double venturi.
Rating	:	upto ANSI 2500#
Superior Water pressure	:	Cooling water can be fed at steam operating pressure.

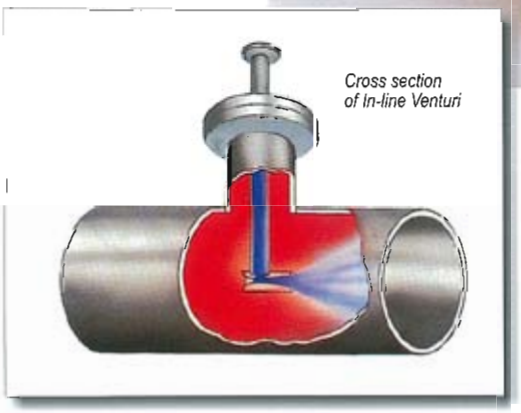
ATTEMPERATOR (MA - 6202)

This special case of venturi without the venturi tail can be mounted easily and quickly in the existing pipeline. The unit can be clamped between two flanges. Suitable for use where lower pressure drop is required and little flow variation is encountered. Sizes are between 1 1/2" to 30"



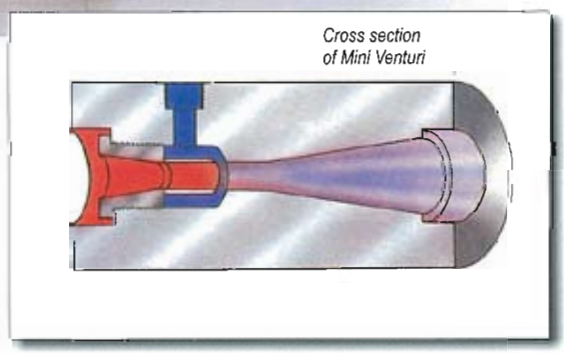


Cut section depicting arrangement of Attemperator



IN-LINE VENTURI (MI - 6205)

A version of single venturi desuperheater has the same operating conditions. Specially employed on large flow applications where pipe sizes are between (16" to 40")



MINI VENTURI (MS - 6200)

Available in sizes 1/2" to 1 1/2", suitable for use in very low flow applications. The unit can be supplied in either screwed or socket welded connections.

TURBINE BYPASS VALVES

Leslie Turbine Bypass Valves and high tech control valves for the power industry has gained an enviable reputation as extremely efficient and reliable equipments for safe handling of massive pressure drops and sonic velocities associated with steam power generation.

Applications are normally classified in two types:

1 Bypass systems which are occasionally in operation. Among these are startup and shutdown conditions and emergency conditions, for example after turbine trip.

2 Bypass systems which are often or permanently in operation, for example for Process steam or heating application.

Cut section of HP Bypass valve at our works

HP Bypass valve awaiting shipment

Seat/cage assembly

Plug/cone assembly

TURBINE BYPASS VALVES

Leslie Turbine Bypass valves play a major role in Power Plant applications.

Within a short period of twenty-four hours, a power plant may be required to operate at minimum load, increase to maximum capacity for a major part of the day, immediately lower back to minimum load, and then back to maximum capacity.

Bypass System permit unit - start up and shutdown in a life saving manner for critical heavy components in boilers and turbines.

Bypass valves are supplied with hydraulic, electric or pneumatic actuators as per the process requirements along with complete control systems as an option.

HP Bypass valve awaiting shipment for 155 MW plant

TURBINE BYPASS VALVES

Leslie Turbine bypass valves are manufactured considering in detail each aspect of the customer's requirement. The HP and LP Bypass valves as shown in the picture were custom made as per a paper plant's requirements.

After seeing the performance of the earlier supplied valve, this customer place a repeat order for these valves.

Water injection for HP Bypass was through a laval nozzle incorporated in the valve while for LP Bypass it was through a separate steam atomizing nozzle installed at the outlet of the valve.

HP and LP Bypass valves shipped to a Paper plant


HP Bypass steam Control valve

TURBINE BYPASS VALVES

FUNCTIONS OF HP & LP BYPASS VALVES:

1. To perform quick and economic start up, including cold start, warm start and hot start in a life saving manner for critical heavy components in boiler and turbine.
2. To operate boiler with the turbine shut down.
3. To perform warm and hot startup in a short time after a trip i.e Bring the unit back to Load.
4. To run the unit down to house load.
5. To perform real "two-shift operation".
6. To avoid condensate losses to the atmosphere and reduce the start up noise to the ambient outside the plant.

TURBINE BYPASS VALVES

LP - BYPASS - SYSTEM:

Usually the LP-Bypass valve is located in the area around condenser, below turbine floor and integrated in turbine/condenser concept.

The hot reheat steam is desuperheated on the downstream side of the pressure control valve by mixing it with condensate from the hotwell, branched off behind the condensate pumps.

LP Bypass steam Control valve

HP Bypass steam Control valve

TURBINE BYPASS VALVES

Leslie Bypass valves can be supplied with pneumatic spring return Cylinder Piston, Electric or Hydraulic Actuators along with power pack as per the requirement.

Various accessories viz Valve positioners, Air lock relays, Solenoid valves for quick opening and closing function, limit switches, position transmitters, Air filter regulators interconnecting tubing, Air receiver, Safety valves, etc can also be supplied as a complete package depending upon customer's requirements.

DUMP TUBES

- Dump tubes are combined with a Steam conditioning valve or Turbine bypass valve for dumping the steam in the Condenser.
- These tubes are deployed so as to reduce the Bypass valve size and thereby reduce the overall cost of the system.
- By installing dump tubes large pipe sizes between the Bypass valve and the Condenser are reduced and made very short.
- Each dump tube is a tailor made device for each application.

Fig.1 Dump Tube

Function and application

Dump Tubes are an important part of a system discharging in a condenser. These devices are primarily deployed to minimize the size of the bypass valve outlet where the specific volume of steam dramatically increases at low or sub-atmospheric pressures.

These dump tubes are normally fitted into the condenser inlet duct and are carefully designed to achieve the final pressure reduction stage and allow the steam to expand and cool prior to entering the turbine exhaust or condenser.

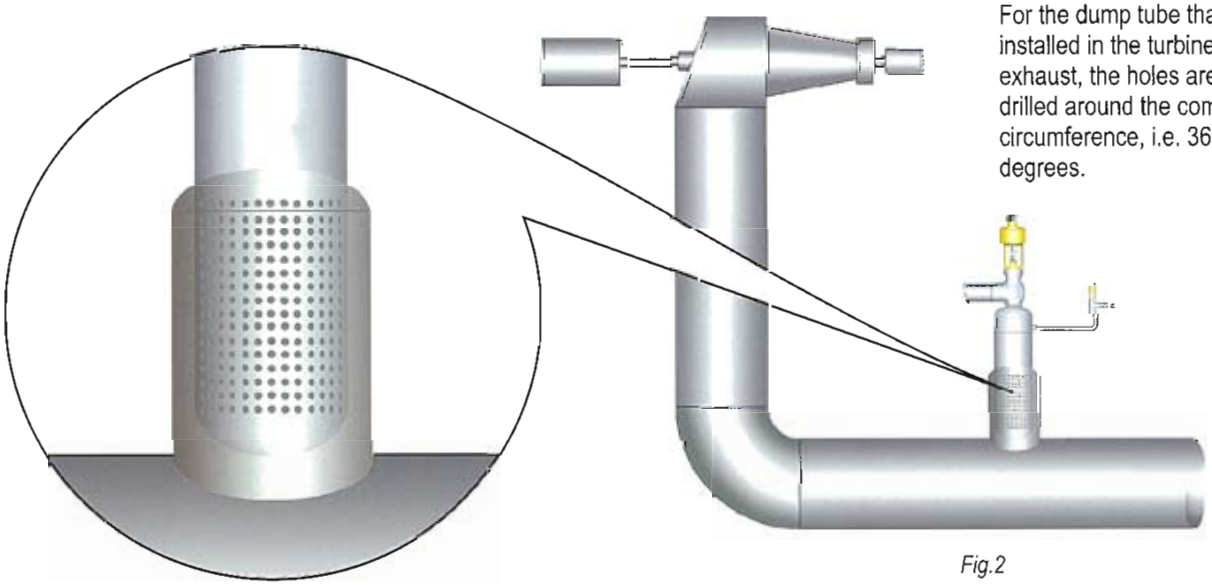
It is recommended to ensure that the dump tube is designed properly with respect to size, shape and profile to avoid interference with the turbine exhaust steam path under normal turbine operation.

The arrangement and the size of the holes in the dump tube are selected to minimize noise generation and direct the steam path away from the duct walls and towards the condenser inlet depending upon the installation.

Depending upon the installation, the arrangement of the holes are selected. In case the dump tube is installed in the condenser, then the arrangement of the holes is such that the holes are drilled in two 90-degree sectors.

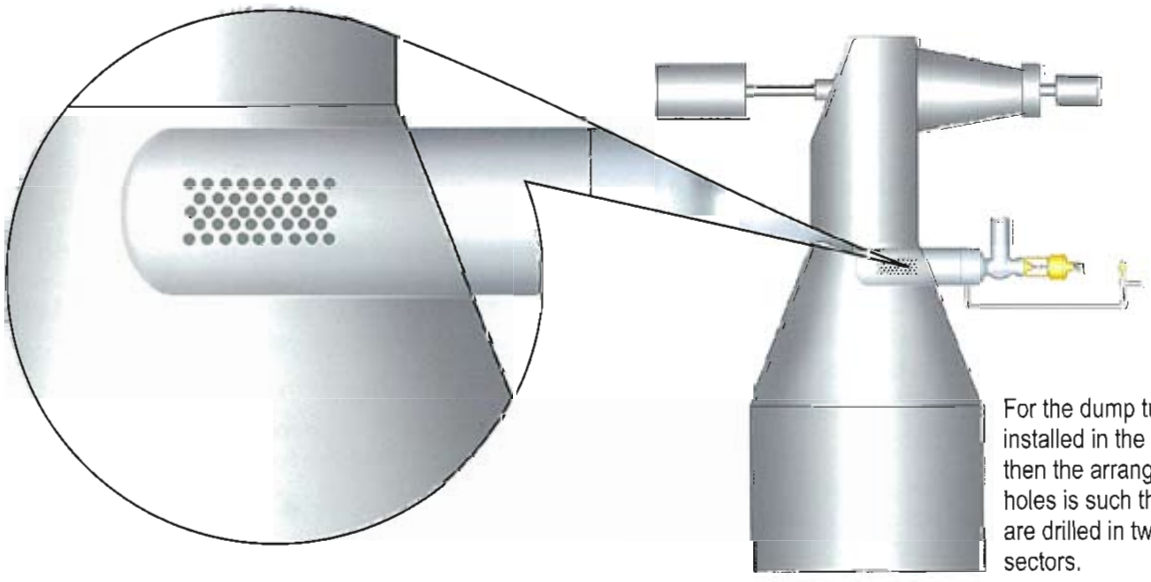
This does not allow the steam to go up the turbine exhaust or directly down on to the tubes in the condenser.

In case the dump tube is installed in the turbine exhaust, the holes are drilled around the complete circumference, i.e. 360 degrees.



For the dump tube that is installed in the turbine exhaust, the holes are drilled around the complete circumference, i.e. 360 degrees.

Fig.2
Dump tube installation for Air cooled Condenser.



For the dump tube that is installed in the condenser then the arrangement of the holes is such that the holes are drilled in two 90-degree sectors.

Fig.3
Dump tube installation for Water cooled Condenser.

AUTOMATIC RECIRCULATION VALVES

Leslie ARC valves are built strictly as per the stringent requirement and installed for Boiler feed Pump protection. Also termed as Minimum Flow valve, are deployed to cater to most demanding conditions and are one of the most critical valves installed in a power plant.

Available in globe and angle form as per the plant layout requirements. Material of construction is normally carbon steel with 17% Cr plasma nitrided trim ensures smooth, trouble-free and everlasting performance.

A typical application would be to reduce water pressure from 120 Bar down to 1 Bar. Leslie ARC valves can be found in Nuclear power plants in India that served as an import substitute, thereby saving valuable foreign exchange for the country.

ARC valves are supplied for ON/OFF as well as regulating service. The sizes range from 15 mm to 150 mm and the ratings are up to 2500#.

Higher sizes are available on request.

Cut section view

Battery of valves ready for shipment to Nuclear power plant at Tarapore. Served as an import substitute for imported valves

Internals duly plasma nitrided

Sizes	:	1/2" to 6"
Rangeability	:	30 : 1
Rating	:	upto ANSI 2500#
Characteristics	:	ON/OFF, Equal % Linear, Modified
Actuator	:	Leslie R50 positioning cylinder.

PRESSURE REDUCING VALVES

Leslie Mark I series of self-contained regulators are pilot and piston operated type. The simplest form of this series is a "Pressure Reducing Valve". While control valve may be utilized to handle most regulator type applications, there are distinct advantages in using regulators:

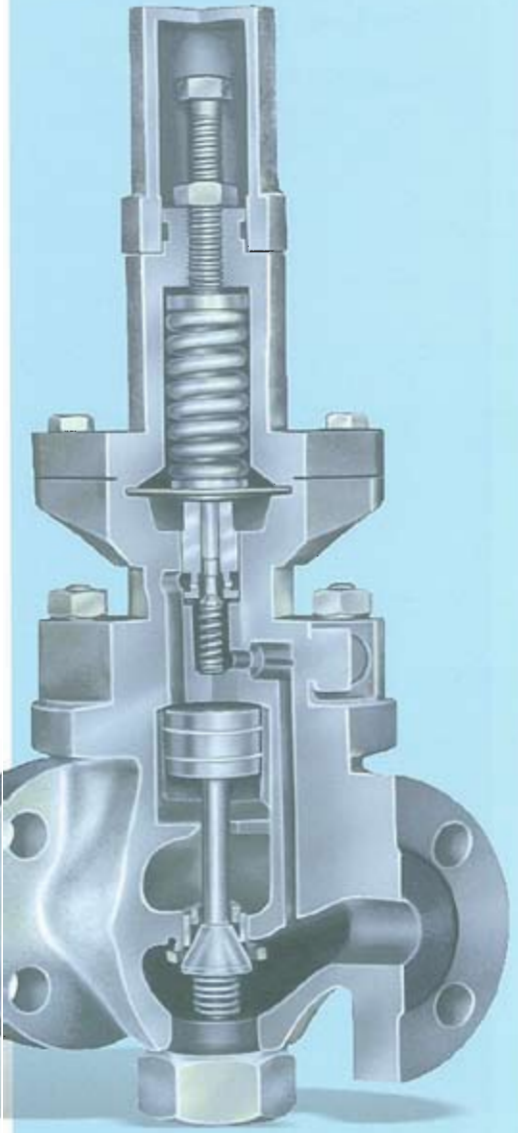
- A regulator is a self-contained design and needs little or no external tubing.
- A regulator acts instantaneously.
- A regulator requires no external power source - no downtime due to loss of air and electricity.
- A regulator has less chance of external leakage because of its packless construction.
- A regulator is economical.
- A regulator, if properly sized, is efficient and reliable. (The engineering data/graphs are available for sizing on request.)

FULL LIFT PRESSURE REDUCING VALVE

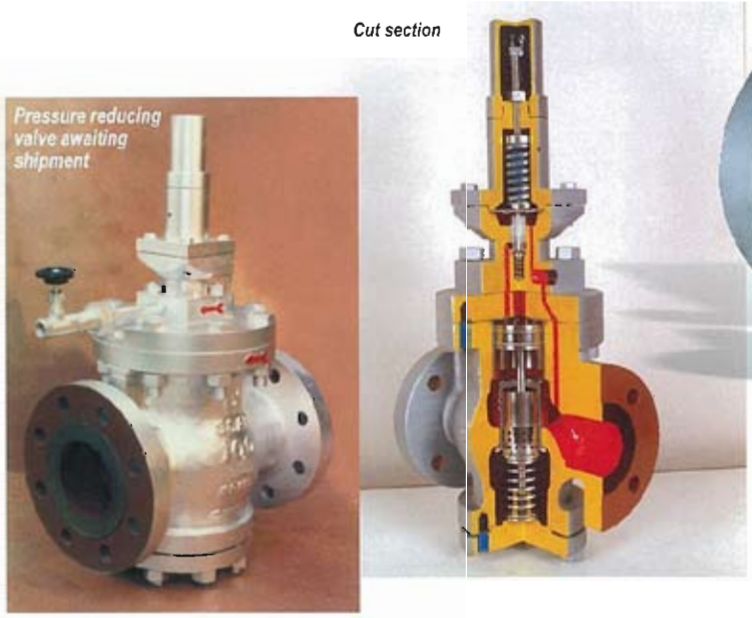
Pilot and Piston operated self-actuating `PRV' controls the downstream pressures with an accuracy of ± 1%, regardless of fluctuations in upstream pressure or flowrate. It can be used for steam, air, gases or liquids. Constant downstream is maintained from full flow to 10% of flow (Rangeability 10:1). In the Mark I design, main valve is single seated and normally closed. Initial pressure exerted on the main valve assisted by a main spring force ensure tight shut-off. Irrespective of valve size, pilot assembly remains the same. At the same time, the main valve can be converted from a reducing valve to a Back Pressure Regulator or a Differential Pressure Regulator.

- Balance design unaffected by variations in inlet pressure.
- Instantaneous response to changes in demand.
- Full lift design achieves high flow rates.

- Effective" LowFlow" control due to single seat design.
- Increased seat/chest ratio for lower velocities and quiet operation.
- Stellited trim ensures tight shut-off even after prolonged use.



Detailed view of Pressure reducing valve



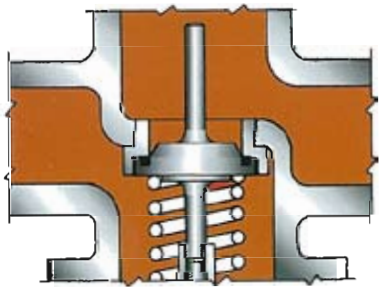
Cut section

Sizes	:	1/2" to 4"
Cv	:	0.05 to 105
End connections	:	Screwed or flanged up to 600 # rating
Temperature Limit	:	Upto 270°c with stainless steel spring and 410°c with Inconel spring
Pressure Limit	:	46 bar

VARIATIONS

Soft Seat Arrangement

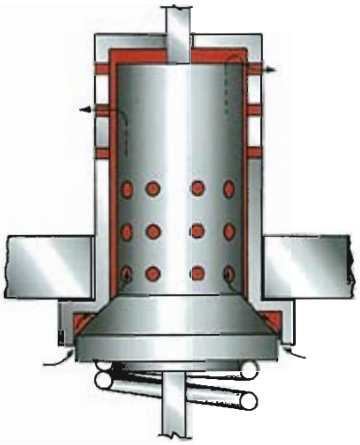
In order to avoid seat leakage on light gas services, the main valve/seat and pilot valve/seat are provided with elastomer seat seals. The elastomer material are selected to suit the duty conditions. Another important application for this type of valve, is an explosive nature of gases, e.g. Hydrogen. When the gas passes through the valve at high velocity, static charges are created leading to the possibility of spark, this can be disastrous in explosive gas atmosphere. Under these circumstances, the soft seated valve is always recommended.



Cage Guided Trim

In order to obtain high pressure drop, normally two or more valves are installed, which is expensive and often disappointing, when the leakage of the upstream valve throws all the Δ P on the downstream valve. In such cases, a PRV with multijet caging is recommended. The three stage pressure reduction (number of stages are decided based on critical Δ P ratio) is achieved with the help of multistage perforated cage. The design offers the following advantages :

- Flow distribution leads to the noise attenuation.
- Pressure drop is distributed across different stages and not at the throttling point between main valve and seat, thus reducing the trim wear.
- Low cost installation and maintenance of only one valve.
- Increased overall system performance.



Reduced Capacity Trim

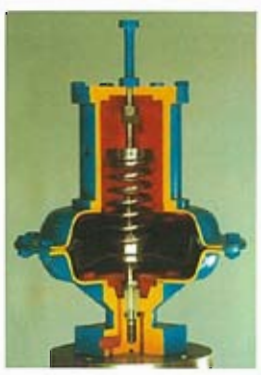
- In cases where it is more convenient, on account of the pipe connection, to have a valve larger than is necessary to deal with the quantity of steam, we can fit smaller seats so that regulation will be satisfactory.

- To avoid replacing the valve body with another of a different size when a future increase in the flow is expected in relation to that at the start of operation.

- When the pressure drop across the valve is considerable, it is better to use a larger body for the advantage of rigidity.

Low Pressure Pilot :

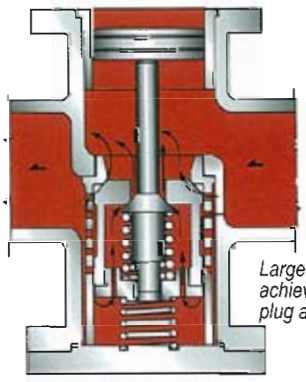
When set pressure are in the range of 50mm WC to 2000 mm WC, the regular pilot assembly cannot provide enough of controlling thrust. In order to achieve this, Leslie offers Pressure Reducing Valve with a special low pressure top assembly. The assembly is supplied as a complete conversion unit for fitting to the regular pilot assembly. It incorporates a larger diaphragm, thus providing a greater effective area and improved sensitivity to very low outlet pressure conditions.



Auxiliary Valve

The limitation on regulator sizing is rangeability (10:1 in conventional valves). Very low rangeability is observed in case of the steam regulator, because of its limitation to operate the main valve close to its seat (because of wire drawing). There are several ways of increasing rangeability, mainly by design/selection of proper trim characteristics.

The best way to control the Cv minimum is to provide the auxiliary plug. It regulates in the range of minimum flowrate to the minimum controllable flow rate. Once the minimum flow is achieved, the main valve takes over and operates till the maximum flow is obtained. Thus the twin plug arrangement offers multiple rangeability from 20:1 to several hundred.



Large turndown achieved by twin plug arrangement

REFORMER VALVE

STEAM REFORMER BY LESLIE TO IMPROVE PLANT PERFORMANCE AND PRODUCT QUALITY

Reformer without valve

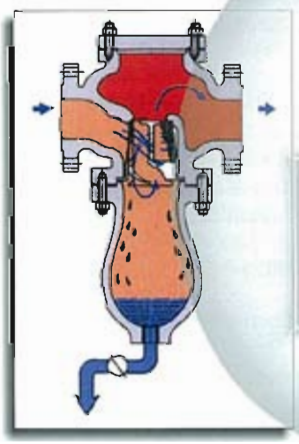
A new advanced design to help you improve the efficiency and effectiveness of your business by offering you unrivaled knowledge of improving steam quality at minimum capital outlay and running costs.

Clean steam and compressed air means maximum efficiency and minimum maintenance. Dust, scale, rust, jointing material, weld metal and other foreign particles will clog valves, put drain traps out of action, block orifices and ruin processes.

Separators can promote higher production for lower fuel cost because steam contains more heat than hot water at the same pressure. Steam as dry as possible at the point of use is important. Steam Separators improve the rate of heat transfer.

Detail of Reformer without valve

Reformer with Valve



Cross section of Reformer showing drain arrangement

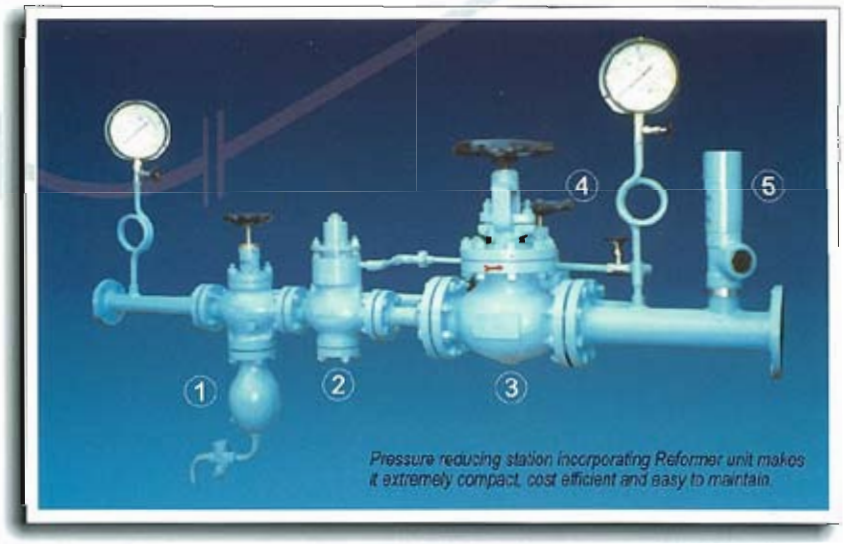
PRESSURE REDUCING STATION

In order to obtain the right pressure at the consumption point it requires CONSISTENCY, ACCURACY and RELIABILITY from a reducing valve. Thus it is necessary to install: A bypass and isolating valve, to ensure continuation of supply when the reducing valve is being serviced.

Reformer Valve in a reducing station will improve steam quality, productivity and pressure reducing valve service life is extended, since the effective removal of condensate and scale protects the main valve from erosion.

Safety valve is installed on the downstream of a PRV. Since the pressure vessels are fed with low steam pressure (through a PRV) they need complete protection especially where there is a risk of explosion. The safety valve should be sized for a total quantity of steam that passes when the PRV is fully open.

For the best possible operation of a Pressure Reducing Station, correct sizing of pipework and Associated fitting / components is extremely important. Leslie designs, manufactures and tests all the components of PRS unit in its own facilities, thereby guaranteeing **"Single Unit Responsibility"**.



Pressure reducing station incorporating Reformer unit makes it extremely compact, cost efficient and easy to maintain.

1) Reformer Valve
2) Pressure Reducing Valve
3) Isolating Valve
4) Bypass Valve
5) Safety Valve

PNEUMATIC CONTROL VALVES

Pneumatic Control Valves

Leslie SR 300 pneumatically operated globe valves are designed for process control of high/low pressure steam, clean dirty, corrosive liquids and gases. They are available in sizes ranging from ½" to 20" in pressure classes 150 through 2500.

SR 300 control valves are supplied with either piston cylinder or spring & diaphragm actuator (direct or reverse acting) and a number of optional accessories to suit the duty requirement. These valves permit field interchangeability of actuator and trim types, thus proving to be economical in case of field conversion

In continuation to Leslie's traditional success in process control application, SR 300 provides optimum solution to the needs of the Fertilizer, Petrochemical, Refinery, Chemical, Power, and other process industries.

Body:

Variety of standard (reversible) body material are available to suit the duty conditions. They are Cast Steel (A 216 WCB) Stainless Steel (A 351 CF 8/8 M) Chrome-Molly (A 217 WC1,6 & 9), Hastelloy (A 494), Monel (A 296) or Alloy 20 (A 351 GR CN 7M). The body and bonnet are built as per ANSI standard. The extra wall thickness provide strength and corrosion allowance.

Bonnet:

Leslie control valves are fitted with different types of bonnet. For general applications, plain bonnet are incorporated and for operating temperatures beyond 235°c finned (radiator) bonnets are provided for dissipation of heat. In order to protect the packing gland from extreme cold, in case of cryogenic service, extended bonnet can be fitted.

Trim:

The trim being responsible for the control of fluid process, is the most important assembly of a control valve. It is expected to give long trouble free operation without a damage, owing to wire drawing, cavitation, vibration (noise). At the same time, the selection of proper trim characteristic is equally responsible to get the desired performance. Leslie offers a variety of trim options depending on the application. They are modified Parabolic, Linear, Quick Acting or Equal Percentage. Standard trim components like plug, seat, cage and cylinders are 410/420 (hardened) SS Alloys, Optional materials are stellited.

Packing:

Regular packing material are PTFE & Graphite Asbestos. However, for most applications like steam and other hazardous fluids, Grafoil (pure graphite) is recommended by Leslie. Grafoil contains no resins/binders or fillers and offers outstanding high temperature characteristics.

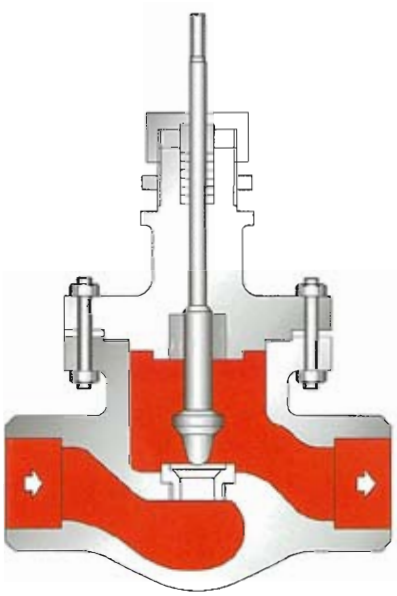
Actuators:

Our experience shows that the control valve with pneumatic piston cylinder actuator gives the best performance. This control valve with valve positioner has a very high frequency response and positioning accuracy. However, if required we can supply control valves with spring and diaphragm actuator.

Body forging and trim material incorporated in high pressure Control valves

Single Seated Low Flow Valve (300 M)

Model 300 M pneumatic control valve is capable of precise performance and is compact & sturdy. The valve is normally used for the control of low capacity. This series of valves, present a large choice of types, depending on duty conditions.

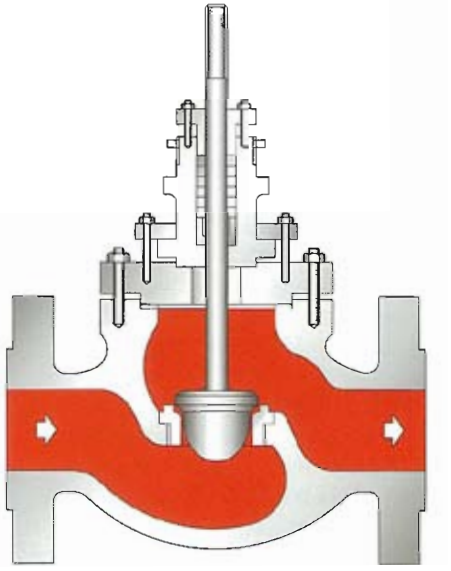


Type	:	Single seated, Straight Through
Material	:	Carbon Steel, Stainless Steel or Other Alloys.
Sizes	:	½", ¾" and 1"
Cv	:	0.25 through 10.
End Connections	:	Flanged/Socket Weld/Screwed
Ratings	:	150# through 2500#
Actuator	:	Leslie positioning piston cylinder or spring and diaphragm
Trim Characteristics	:	Needle, Contoured, Equal %, Linear

Single Seated Valve (300 S)

This globe type single seated valve has a top guided plug with a suitable type of actuator, air action (from "air to close to air to open") can be reversed at site. This type of valve is generally used when tight seal is required

At fully closed position (shutoff corresponding to ANSI B 16.104) # V). With the PTFE soft insert, even "bubble-tight" shutoff can be achieved. Hefty stem guiding provides rigidity, thereby eliminating the possibility of vibration. Different trim options are available to suit the duty conditions.



Type	:	Single seated, Straight Through
Material	:	Carbon Steel, Stainless Steel or Other Alloys.
Sizes	:	1" through 20"
Cv	:	8 through 2500.
End Connections	:	Flanged / BW
Ratings	:	150# through 900#
Actuator	:	Leslie positioning piston cylinder or spring and diaphragm
Trim Characteristics	:	Equal % - V Port/ Modified Parabolic, Equal%, Linear, on-off

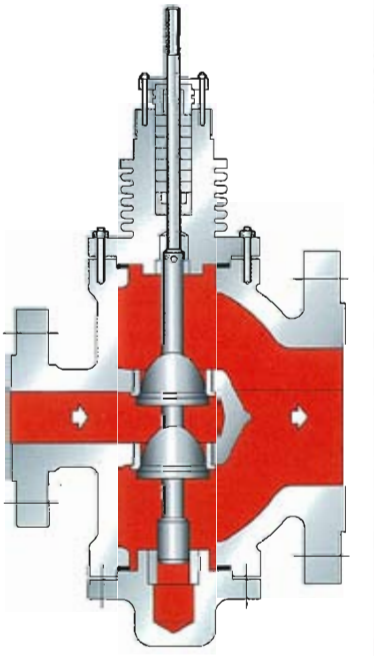
High pressure spray water control valve with BW ends. Supplied to Reliance Jamnagar refinery.

16" size On/Off Control valve supplied to Khanna Paper. Valve opened in 0.5 secs and was supplied with air receiver and other instruments as a complete package.

Double Seated Valve (300 D)

This valve achieves practically balanced fluid thrust on the plug and is suitable for use with high differential pressures at shut-off.

It can be used with smaller actuators than those required for single seated valve. This series of valve may be used in flow regulation because of its higher Cv value compared to that of a single seated valve. However, its seal is limited to ANSI B 16.104 class III at shut off. This limitation is inherent in the design itself because it is hardly likely for the two plugs to simultaneously match with the seating on both ports.



Type	:	Double seated, Straight Through
Material	:	Carbon Steel, Stainless Steel or Other Specialty Metals
Sizes	:	1½ " through 12"
Cv	:	14 through 2100.
End Connections	:	Flanged
Ratings	:	150# through 1500#
Actuator	:	Leslie positioning piston Cylinder or spring And diaphragm
Trim Characteristics	:	Equal % - Cage type, Linear modified

High Pressure Let-Down Valve (300 EO)

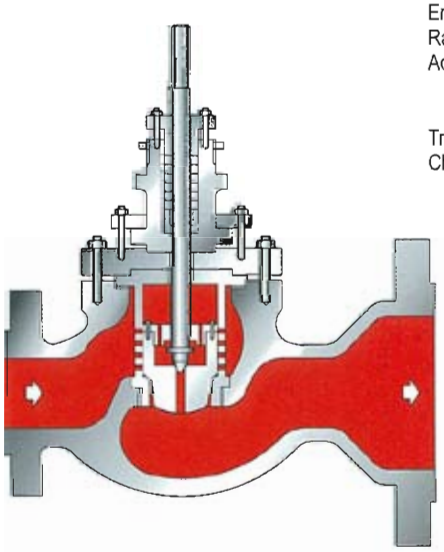
With the growth of plant size, demands for high performance control valve for high Δ P and capacity have been steadily increasing. This type of performance cannot be expected from conventional valves.

The increase in Δ P not only makes the valve noisy, but also results in high velocity and rapid deterioration of the trim, even if they are made of special materials. It is necessary to distribute the pressure drop across various stages. In order to accomplish this, Leslie offers "300 EO" with multiple-cages.

Each stage of pressure reduction takes place in the Subcritical region and the multiplicity of stages permits large Δ P to be achieved accurately and quietly.

The valve is provided with expanded outlet to control steam exit velocity thereby restricting noise level to 85 dBA. For improved performance, with standard actuator, Leslie provides Pilot Balance Design for rigidity and stability at high pressure drop.

Type	:	Double seated, Straight Through
Material	:	Carbon Steel (SCPH2) Stainless Steel, Low Alloy Steel or Other Alloys.
Sizes	:	2" x 4", 3" x 6" , 4" x 8", 6" x 12", 8" x 16".
Cv	:	14 through 2100.
End Connections	:	Flanged (FF, RF, RJ)
Ratings	:	150# through 1500#
Actuator	:	Leslie positioning piston cylinder or spring and diaphragm
Trim Characteristics	:	Equal % - Cage type, Linear Cage

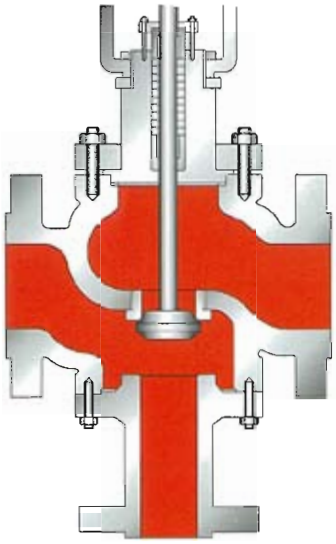


Machining of 20" size plug being carried out at in-house facility

6" size 900# valve waiting for shipment to Reliance 55 MW power plant at Goa

Three-Way Diverting Valve (303)

This valve is especially suitable for divergent service when a fluid is to be mixed in variable proportions, but it may also be used for convergent service. The valve can perform the function of two single seated valves acting in opposite direction. The main applications include circulation of water, thermic fluid, oil, sea water in heating or cooling application involving heat exchanger by pass control, blending and on-off selector system.



Type	: Three-way
Material	: Carbon Steel, Stainless Steel or Other Alloys.
Sizes	: 1" through 6"
End Connections	: Flanged
Ratings	: 150# through 600#
Actuator	: Leslie positioning piston cylinder or spring and diaphragm

Comprehensive Test Facilities

Leslie designs, manufactures and type tests every control valve in its' established in-house engineering test laboratory. Before and after assembly, each valve is subjected to a series of tests to establish its soundness and functional ability. The valves are offered for following tests to the visiting inspecting authority.

- Cv test as per ISA
- Seat leakage as per ANSI B16.104.
- Shell hydraulic test as per ANSI B16.5
- Hysterisis & Linearity as per BS 4151.
- Calibration of performance on pneumatic test bench.
- Dimensional & Documentary check.

1 no 20" size Control valve ready for shipment to Pan Africa Paper mills.Supplied to Triveni, Banglore for their export order

2 nos 16" size Control valves ready for shipment to Pan Africa Paper mills. Supplied to Triveni, Banglore for their export order.

Regeltechnik Kornwestheim GmbH
Max-Planck-Straße 3
70806 Kornwestheim
Germany

Telefon +49 7154 1314-0
Telefax +49 7154 1314-333
Internet: http://www.rtk.de
e-mail: info@rtk.de

REGELTECHNIK KORNWESTHEIM
A division of CIRCOR International, Inc.