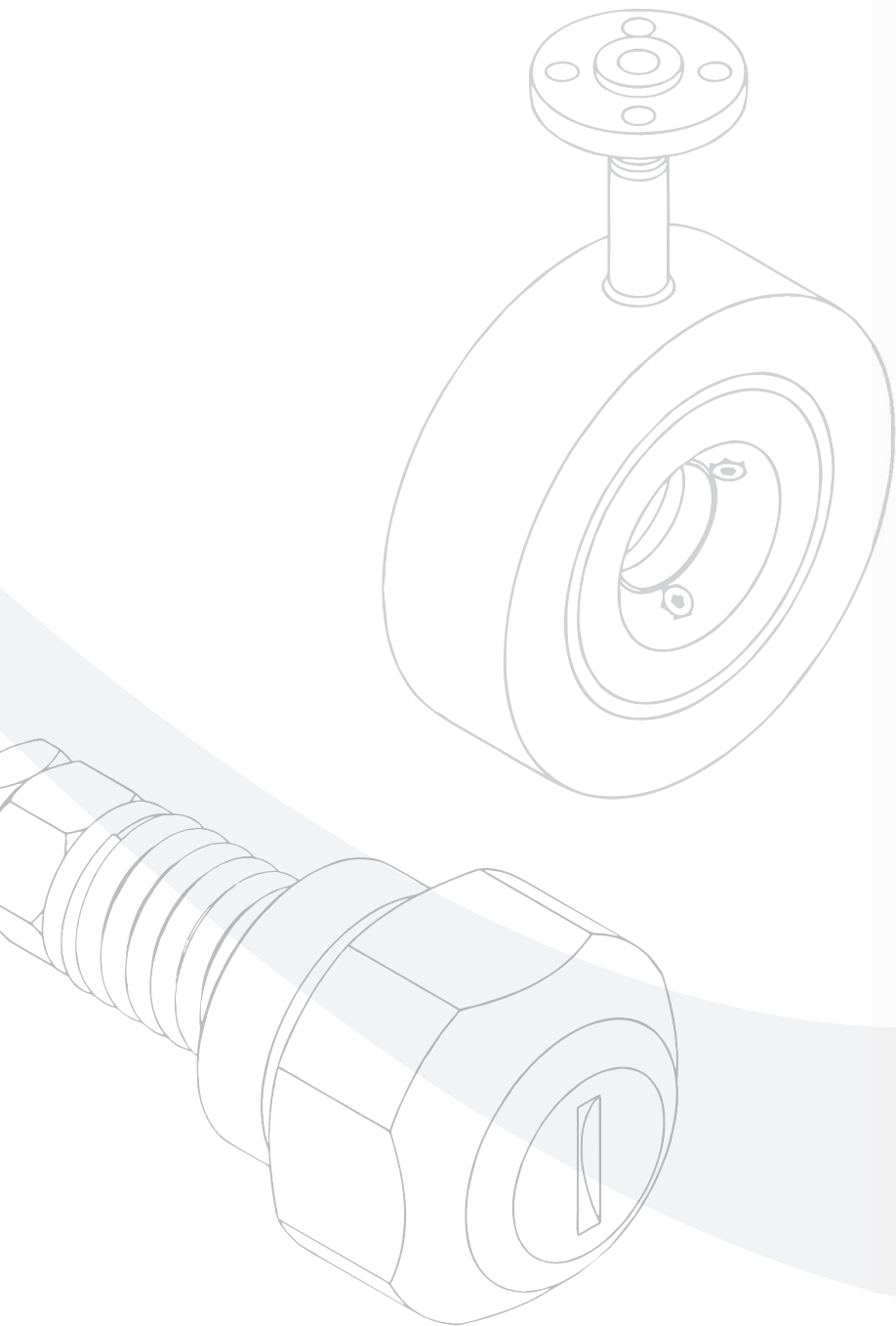




CIR 3200 Desuperheaters

Versatile. Reliable





CIRCOR is a market - leading, global provider of integrated flow control solutions specializing in the manufacture of highly engineered valves, pumps, fittings, pipeline products & services and associated products, for critical and severe service applications in the oil and gas power generation and process industries.

Comprised of best-in - class, historically significant product brands, we consistently satisfy our customers mission - critical application needs by utilizing advanced technologies that can with stand extreme temperature and pressure from land - based to sub- sea and in between.

The CIR 3200 range of Desuperheaters are engineered solutions serving various markets on a global scale including,



Upstream
Oil and Gas



Power
Generation



Midstream
Oil and Gas



General Industry



Downstream
Oil and Gas



Processing



Renewables

Desuperheater is a critical component used in the management of steam from power generation sources to industrial uses of steam. Also used for accurate temperature control in various process gas applications. The CIR 3200 Desuperheaters accelerate the process of spray fluid evaporation in process steam/gas and thereby achieving steady conditions within short distance from the outlet. Our Desuperheater designs are effective enough, leading to efficient heat transfer and less maintenance.

CIR 3200 product range is bundled with various types of desuperheaters to meet any temperature control requirements. Our Solution includes Venturi, Fixed & Spring-loaded nozzles with various mounting options to meet market & process piping needs. Customized solutions are offered no matter what your desuperheating need is.

OUR DESUPERHEATERS FEATURES

TEMPERATURE CONTROL

- Fast response to changes in steam/gas flow & temperature
- Accurate temperature control
- Ability to attemperate to near steam saturation temperature

PREVENT OVERSPRAY OR WATER ACCUMULATION

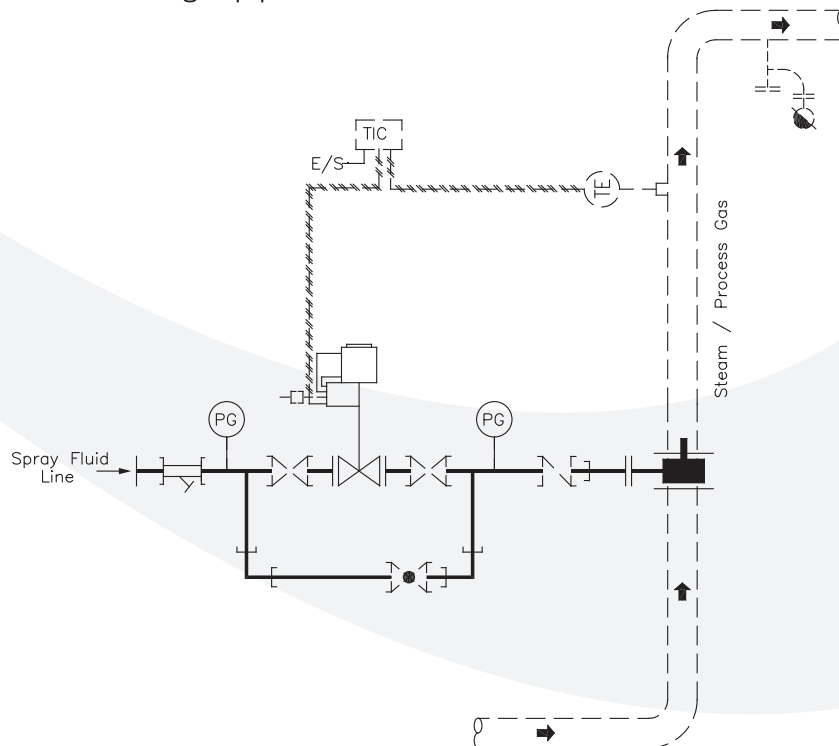
- Prevent excess spray fluid from being injected into flow stream
- Avoid thermal shock to the steam/gas pipe.

TURNDOWN / RANGEABILITY

- High ratio of maximum to minimum controllable flow
- Excellent temperature control over the full flow range

ELIMINATE WATER DROPLET IMPACT

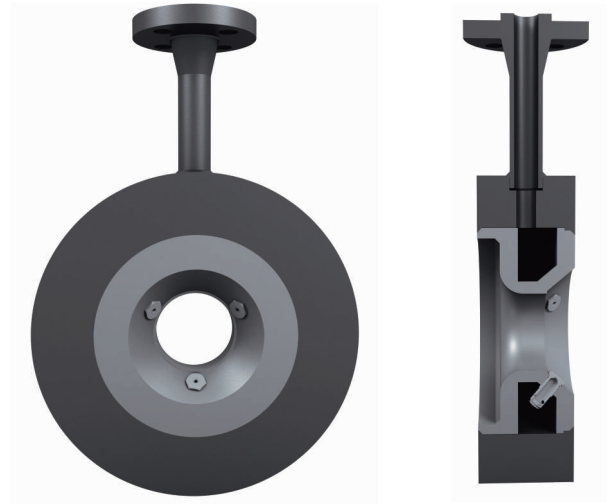
- Minimize spray fluid droplet size for good atomization
- Ensure attemperation spray does not impact pipe wall



VENTURI DESUPERHEATER | CIR 3210

CIR 3210 Venturi desuperheaters offers benefits of low cost, no moving parts & very low maintenance. Venturi desuperheaters offer multiple desuperheating choices which are well suited for cogeneration and combined heat power plants.

A wide range of choices and custom engineered nozzle enables tailored desuperheating solution.



Venturi Desuperheater

SPECIFICATIONS

Size	1" to 16"
Rating	150# to 2500#
Types	Wafer, Lugged – Wafer Flanged, Flanged
End Connections	RF, RTJ, SWE ¹ , BWE ¹
Spray Nozzle Type	Fixed Area Nozzle
Body Material	A105, A182 Gr F11, A182 Gr F22, A182 Gr F91, A182 Gr F316
Nozzle Material	SS 316, SS 316 Stellite
Nozzle Cv	Refer Table 1
Nozzle Quantity	Refer Table 2
Turndown	4:1
Certifications/Compliance	IBR, NACE, PED/CE

Nozzle	Nozzle Cv
VN1	0.05
VN2	0.1
VN3	0.2
VN4	0.3

Table 1

Desuperheater Size	Max. No. of Nozzles
2"-3"	Integral
4"-8"	3
10"-16"	4

Table 2

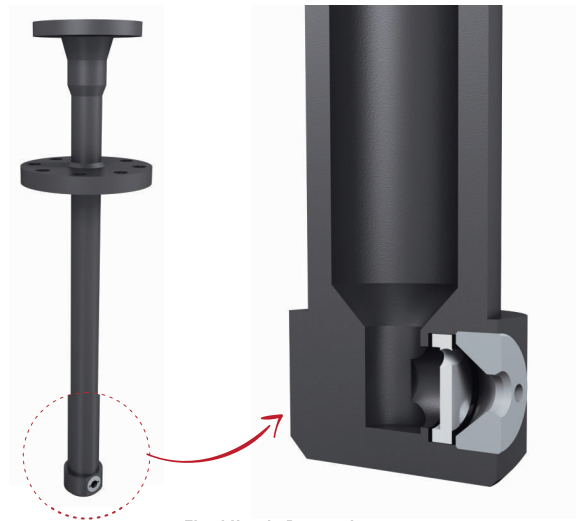
FEATURES

- Quick Replaceable Nozzle
- Simple Construction
- No Moving Parts
- Customizable for Low Velocity Operations⁽²⁾
- Forged Body Design

FIXED NOZZLE DESUPERHEATER | CIR 3220

CIR 3220 Fixed Nozzle(FN) Probe style desuperheater is offered with single or combination of Fixed Cv nozzles. Numbers of nozzles are limited depending on the pipeline diameter, spray fluid flow rate.

The Fixed Nozzle desuperheater can be offered from pipe sizes of 4 inch and above. Nozzle Cv as low as 0.05 can be offered in conjunction with spray fluid control valve systems.



Fixed Nozzle Desuperheater

SPECIFICATIONS

Stub size	3" & 4"
Rating	150# to 2500#
End Connection	BLRF, BLRTJ
Spray Nozzle Type	Fixed Area Nozzle
Body Material	A105, A182 Gr F11, A182 Gr F22, A182 Gr F91, A182 Gr F316
Nozzle Material	SS 316 Nitrided/Stellite, SS410 Nitrided, DIN 1.4122 Nitrided
Nozzle Cv	Refer Table 3
Turndown	4:1
Certifications/Compliance	IBR, NACE, PED/CE

Nozzle No	Nozzle Cv
FN1	0.04
FN2	0.06
FN3	0.12
FN4	0.18
FN5	0.19

Nozzle No	Nozzle Cv
FN6	0.24
FN7	0.31
FN8	0.49
FN9	0.79
FN10	0.93

Nozzle No	Nozzle Cv
FN11	0.96
FN12	1.07
FN13	1.2
FN14	1.4
FN15	1.6

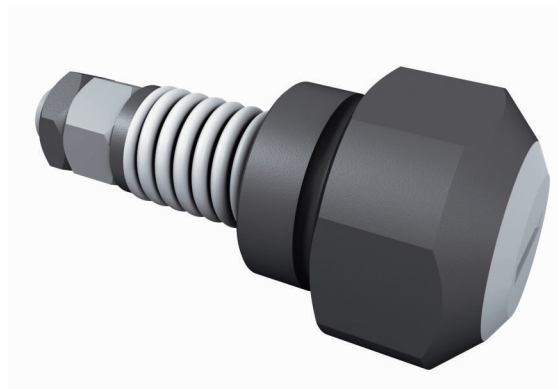
Table 3

FEATURES

- Simple installation
- No moving parts - Ensures ease of maintenance and long life.
- Ability to work at lower pressures and larger pipe sizes - Ensures increased utility.

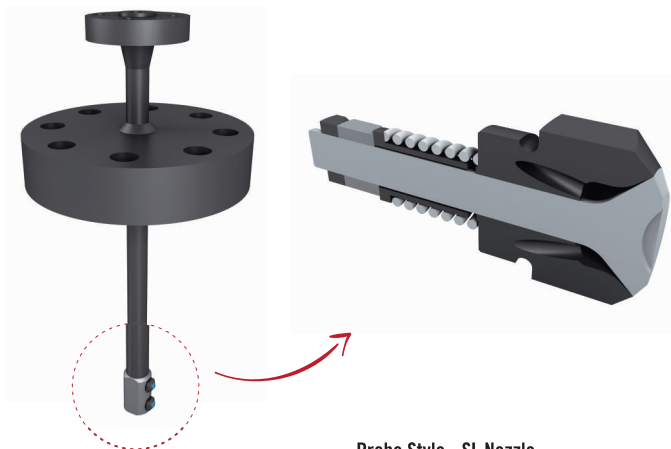
SL NOZZLE DESUPERHEATER | CIR 3230/40

CIR 3200 Spring Loaded (SL) nozzle type is of variable area with spring loading in which the nozzle opening varies with the differential pressure. Spring loading and the varying flow area ensures that the spray velocity is sufficiently high to produce a good atomized spray even at low flow rates. This also ensures a good rangeability to the desuperheating system.



SL Nozzle

DESUPERHEATER OPTIONS



Probe Style - SL Nozzle

1. Probe Style | CIR 3230

Probe style SL nozzle desuperheater is provided with single or multiple SL nozzles. Numbers of nozzles are dependent on the steam/gas pipeline diameter and spray fluid flow requirement.

This desuperheater can be offered from pipe sizes of 6 inch and above. It can have a high turndown based on the TCV turndown ratio.

2. Wall Mounted | CIR 3240

Wall mounted desuperheater has SL nozzles mounted on steam/gas pipe wall with a branched or circular header around the steam/gas pipe.

The cooling water is sprayed perpendicular to the steam/gas flow through the nozzles. This mounting type also ensures good spray fluid distribution along the pipe.

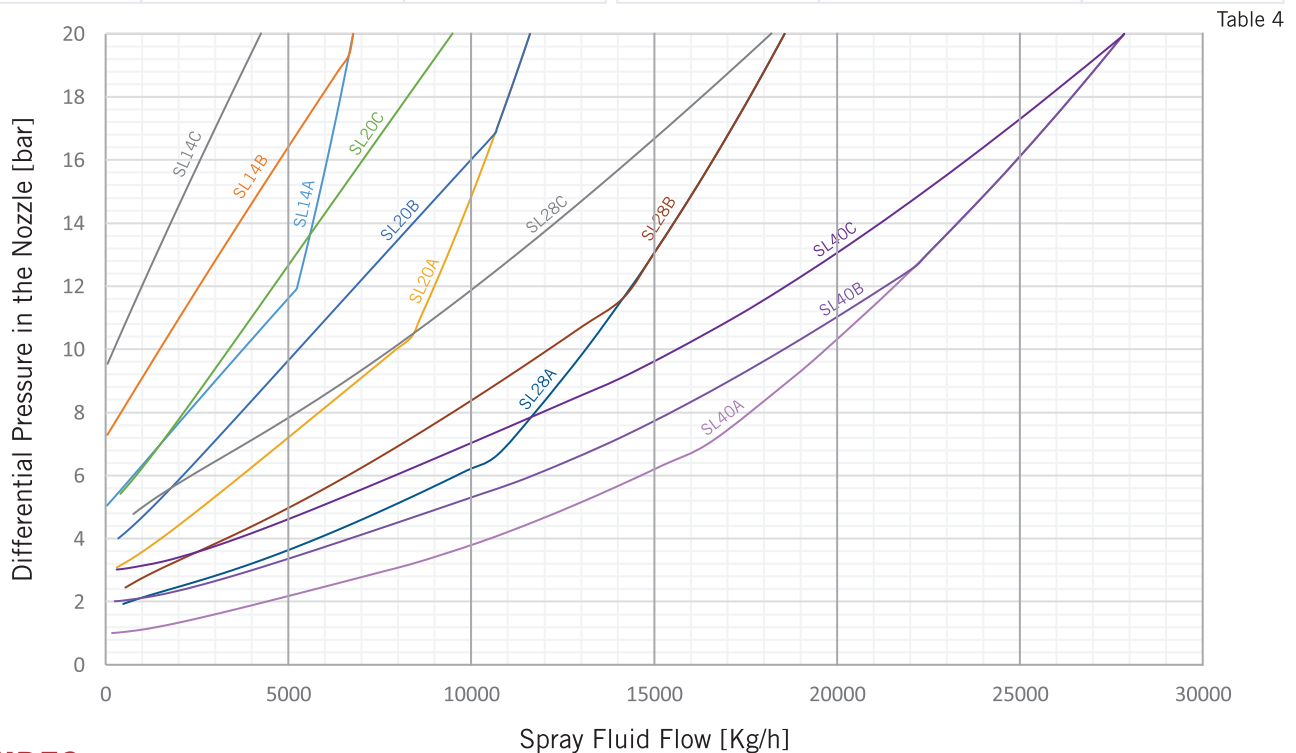


Wall Mounted - SL Nozzle

SPECIFICATIONS

TYPE	PROBE STYLE	WALLMOUNTED
Size	3",4", 6" Stub	6" & above – Pipes
Rating	150# to 2500#	
End Connection	BLRF, BLRTJ	RF, RTJ, BWE
Spray Nozzle Type	Variable Area Nozzle	
Body Material	A105, A182 Gr F11, A182 Gr F22, A182 Gr F91, A182 Gr F316	
Nozzle Material	A565 Gr 616 / Alloy 422	
Nozzle Specification	Refer Table 4	
Turndown	Based on Temperature Control Valve	
Certifications/Compliance	IBR, NACE, PED/CE	

Nozzle	Cracking pressure(bar)	Nozzle Cv	Nozzle	Cracking pressure(bar)	Nozzle Cv
SL14A	5	1.75	SL28A	2	4.8
SL14B	7.25	1.75	SL28B	2.5	4.8
SL14C	9.5	1.75	SL28C	4.75	4.8
SL20A	3	3.0	SL40A	1	7.2
SL20B	4	3.0	SL40B	2	7.2
SL20C	5	3.0	SL40C	3	7.2



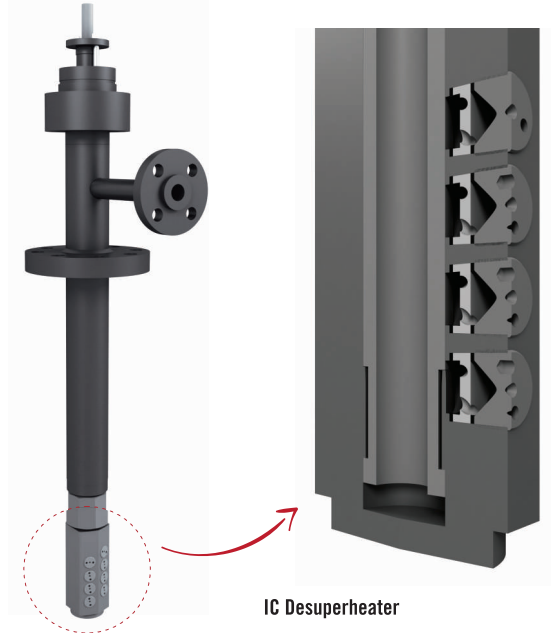
FEATURES

- Fine Atomization
- Can serve steam pipe size as low as 6"
- Negligible pressure drop

IC DESUPERHEATER | CIR 3250/60/70

CIR 3250/60/70 IC desuperheater systems provides the most convenient, accurate and economical means of reducing the superheated steam or other vapors/gases to temperatures nearing saturation.

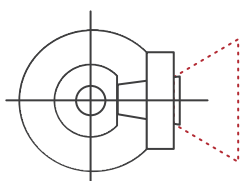
CIR 3250/60/70 IC desuperheater regulates the amount of injected water by varying the number of spray orifices during operation. This ensures that the spray fluid pressure remains constant at all loads with an excellent and almost uniform spray quality, thereby minimizing the tendency of spray fluid accumulation in the line. Opening of the orifices is regulated by the throttling plug connected to actuator mounted on the desuperheater. This compact & simple design eliminates usage of separate temperature control valve.



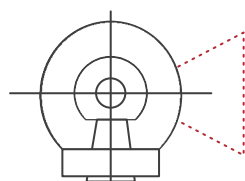
SPECIFICATIONS

Stub Size	3",4",6"
Rating	150# to 2500#
End Connection	RF, RTJ
Trim	Std-Drilled Cone (CIR 3250), Zick Twist ³ (CIR 3260), MZ plug ³ (CIR 3270)
Spray Nozzle Type	Fixed/Variable Area Nozzle
Body Material	A105, A182 Gr F11, A182 Gr F22, A182 Gr F91, A182 Gr F316
Trim/Nozzle Material	Ss316 Stellite, SS410 Nitrided, DIN 1.4122 Nitrided
Nozzle Cv	Refer Table 5
Turndown	20:1
Certifications/Compliance	IBR, NACE, PED/CE

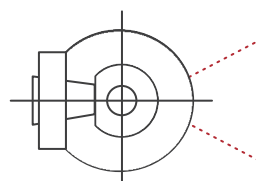
NOZZLE ORIENTATION



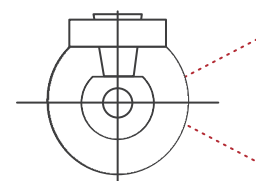
Option A



Option B



Option C



Option D

Stub Size & Rating	Nozzle Model	Cv
3" 150#-600# & 4" 900#-1500#	R1	0.4
	R2	0.5
	R3	0.7
	R4	0.9
	R5	1.2
	R6	1.5
	R7	2
	R8	2.5
	R9	3
	R10	3.5
	R11	4

Stub Size & Rating	Nozzle Model	Cv
3" 150#-600# & 4" 900#-1500#	R12	4.5
	R13	5
	R14	6
4" 150#-1500# & 6" 2500#	R15	7
	R16	8
	R17	9
	R18	10
	R19	11
	R20	12
	R21	13
	R22	14

Table 5

FEATURES

- Hollow cone spray enables good absorption
- Heavy duty construction, Double stem guiding
- Integral spray fluid control
- High turndown
- Compact design

ACTUATION & ACCESSORIES

The CIR 3250/60/70 desuperheaters are offered with pneumatic actuator as standard but can also be offered with electric actuation or any other customized actuation too.

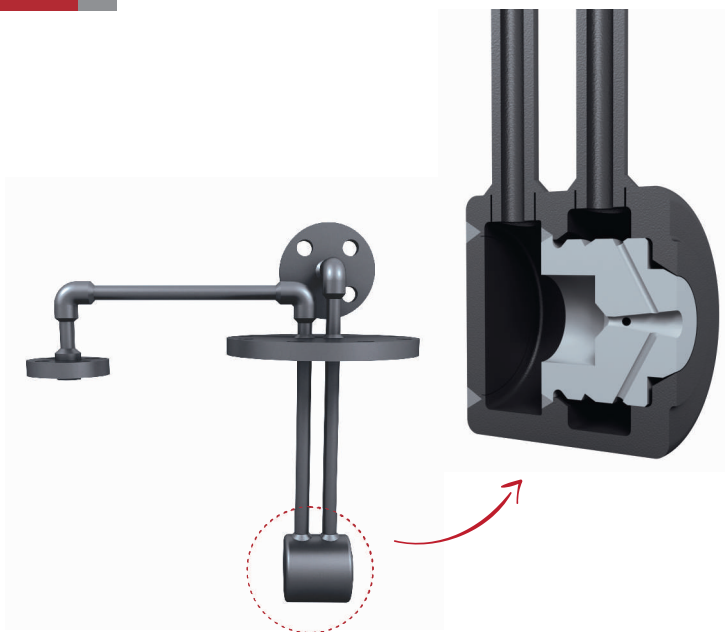
The pneumatic actuators are selected & bundled with appropriate accessories like Air filter regulator, Positioner, Solenoid valves, Volume booster etc. based on the minimum operating site conditions & also any speed or control requirement with respect to each desuperheater.



SA DESUPERHEATER | CIR 3280

CIR 3280 SA nozzle desuperheater is offered as a viable solution when high turndown is required and separate high-pressure steam is available.

The CIR 3280 SA nozzle allows designated quantity of high pressure steam (about 1-2% of the main steam flow) into the nozzle along with cooling water. The high pressure steam aids to atomize the cooling water for effective desuperheating downstream.



SA Desuperheater

SPECIFICATIONS

Size	6" and above
Rating	150# to 2500#
End Connection	RF, RTJ
Spray Nozzle Type	Steam Assist Fixed Area Nozzle
Body Material	A105, A182 Gr F11, A182 Gr F22, A182 Gr F91, A182 Gr F316
Nozzle Material	SS 316, A182 Gr F11, A182 Gr F22, A182 Gr F91
Atomizing steam	1.5 to 2 times of steam pressure
Turndown	50:1
Certifications/Compliance	IBR, NACE, PED/CE

FEATURES

- Steam Atomization
- Economical Solution
- Negligible Pressure Drop
- High Turndown

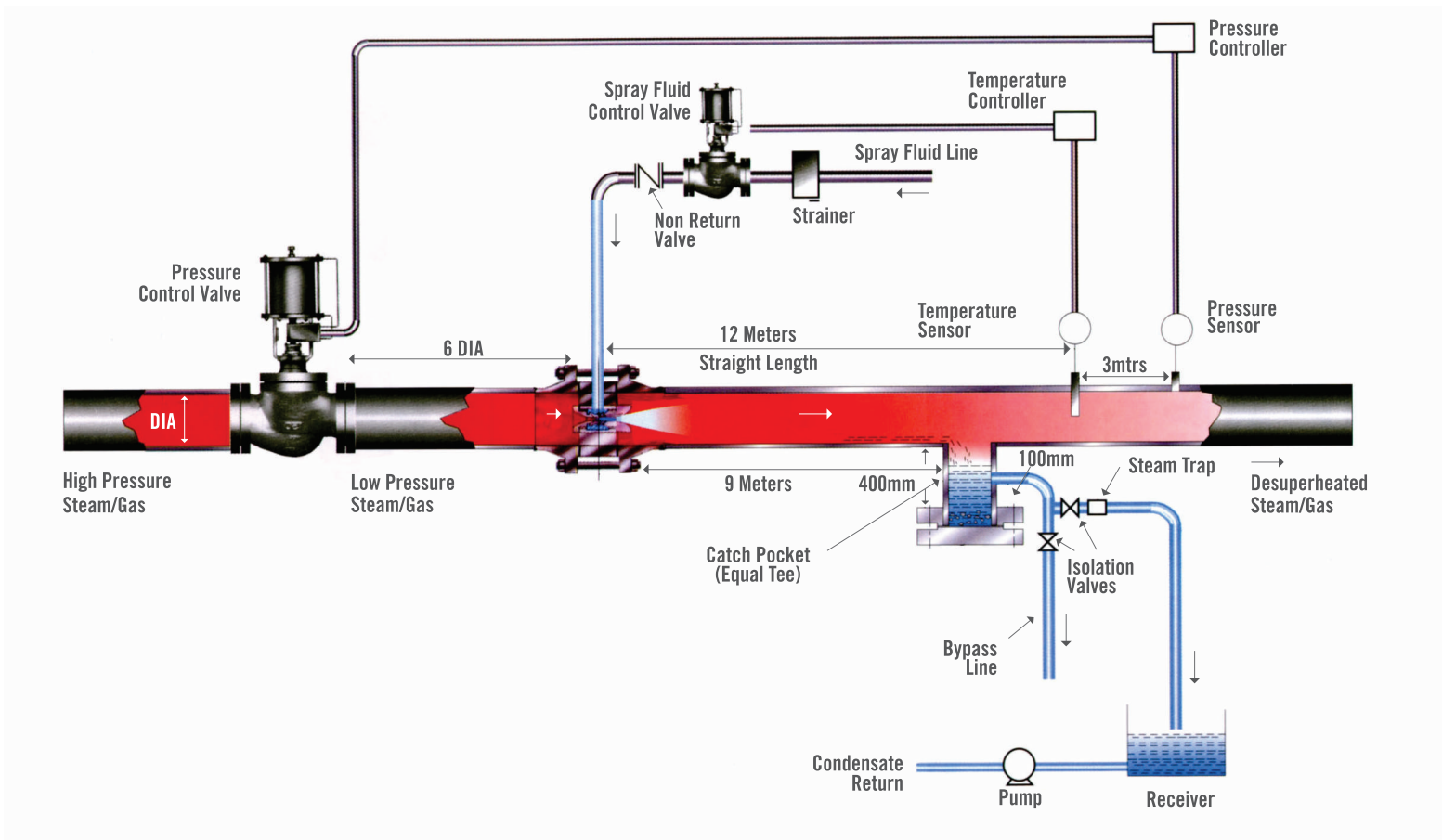
SUMMARY

DESUPERHEATER	TURN DOWN	STEAM/GAS PIPE SIZE	ADVANTAGE
Venturi	4:1	1" - 14"	<ul style="list-style-type: none"> • Venturi flow design aids in turbulence • Steam/Gas aided atomization • Inner peripheral spray aids in even fluid distribution
Fixed Nozzle	4:1	4" & above	<ul style="list-style-type: none"> • Economical design • Less maintenance required
SL Nozzle	Based on Temp. Control Valve	6" & above	<ul style="list-style-type: none"> • Pressure loaded spring aids in fine atomization • High rangeability can be achieved • Inner peripheral spray aids in even fluid distribution
IC Desuperheater	20:1	6" & above	<ul style="list-style-type: none"> • Integral control system eliminates usage of separate control valve • Compact design
SA Nozzle	50:1	6" & above	<ul style="list-style-type: none"> • Steam assisted design • High Turndown

NOTES

CIRCOR RECOMMENDATIONS

- Minimum steam velocity of 10 m/s
- Maintain recommended downstream straight length
- Strainer needs to be installed in front of spray water valve or desuperheater
- Drain pot at the downstream of desuperheater
- Regular scheduled maintenance of desuperheater nozzles



NOTE

- Temperature control valve should be located close to the desuperheater
- Temperature sensor should be inserted appropriately in the stem/gas flow to obtain an even temperature control
- If the required straight length after the desuperheater is not available, consult factory
- Pressure and temperature sensors should be installed close to the point of usage, but before steam distribution

CIR3200 – Ordering Code

1&2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Model	DSH Type	Nozzle Model	Steam Side Size	Steam Side Rating	Stem Side Conn	C.W Pipe Size	C.W. Side Rating	C.W Side Conn	Qty of Nozzles	DSH Mat'l	Nozzle & Trim Mat'l	Compliance	Specials	Actuator Type	Actuator Model	Accessories
32	1	A	3	A	A	1	A	A	A	A	1	1	X	A	1	1

Position - 1&2 | Model

32

Position - 3 | DSH Type

1 - Venturi
 2 - Probe Type - FN
 3 - Probe Type - SL
 4 - Wall Mounted - SL
 5 - IC DSH with Actuator - DC Trim
 6 - IC DSH with Actuator - ZT Trim
 7 - IC DSH with Actuator - MZ Trim
 8 - Probe - SA
 Z - Special

Position - 4 | Nozzle Model

Venturi Nozzle

A - VN1 B - VN2 C - VN3 D - VN4

Probe-FN

A - FN1 E - FN5 J - FN9 N - FN13
 B - FN2 F - FN6 K - FN10 P - FN14
 C - FN3 G - FN7 L - FN11 Q - FN15
 D - FN4 H - FN8 M - FN12

SL Nozzle

A - SL14A D - SL20A G - SL28A K - SL40A
 B - SL14B E - SL20B H - SL28B L - SL40B
 C - SL14C F - SL20C J - SL28C M - SL40C

IC DSH Nozzle

A - R1 G - R7 N - R13 U - R19
 B - R2 H - R8 P - R14 V - R20
 C - R3 J - R9 Q - R15 W - R21
 D - R4 K - R10 R - R16 Y - R22
 E - R5 L - R11 S - R17
 F - R6 M - R12 T - R18

SA Nozzle

Z - Custom

Position - 5 | Steam Side Size

3 - 1" 9 - 8" F - 20" M - 32"
 4 - 1.5" A - 10" G - 22" N - 34"
 5 - 2" B - 12" H - 24" P - 36"
 6 - 3" C - 14" J - 26" Z - Other
 7 - 4" D - 16" K - 28"
 8 - 6" E - 18" L - 30"

Position - 6 | Steam Side Rating

A - 150# H - 150# SPL
 B - 300# J - 300# SPL
 C - 600# K - 600# SPL
 D - 900# L - 900# SPL
 E - 1500# M - 1500# SPL
 F - 2500# N - 2500# SPL
 G - 4500# Z - Special/Other

Position - 7 | Stem Side Conn

A - RF Q - BWE 40
 B - RTJ S - BWE XS
 C - Wafer RF T - BWE 60
 D - Lugged RF U - BWE 80
 E - Wafer RTJ 1 - BWE 100
 F - Lugged RTJ 2 - BWE 120
 G - SWE 3 - BWE 140
 K - BWE 10 4 - BWE 160
 M - BWE 20 5 - BWE XXS
 N - BWE 30 Z - Special
 P - BWE STD

Position - 8 | C.W Pipe Size

1 - 1/2" 4 - 1.5" 7 - 4"
 2 - 3/4" 5 - 2" 8 - 6"
 3 - 1" 6 - 3" Z - Other

Position - 9 | C.W. Side Rating

A - 150# H - 150# SPL
 B - 300# J - 300# SPL
 C - 600# K - 600# SPL
 D - 900# L - 900# SPL
 E - 1500# M - 1500# SPL
 F - 2500# N - 2500# SPL
 G - 4500# Z - Special/Other

Position - 10 | C.W Side Conn

A - RF Q - BWE STD 3 - BWE 120
 B - RTJ R - BWE 40 4 - BWE 140
 G - SWE T - BWE XS 5 - BWE 160
 L - BWE 10 U - BWE 60 6 - BWE XXS
 N - BWE 20 V - BWE 80 Z - Special/Other
 P - BWE 30 2 - BWE 100

Position - 11 | Qty of Nozzles

A - 1 G - 7 X - N.A
 B - 2 H - 8 Z - Special
 C - 3 J - 9 /Other

D - 4 K - 10
 E - 5 L - 11
 F - 6 M - 12

Position - 12 | DSH Mat'l

A - A 105 / A106 Gr B
 B - A182 Gr F11 / A335 Gr P11
 C - A182 Gr F22 / A335 Gr P22
 D - A182 Gr F91 / A335 Gr P91
 E - A182 Gr F316 / A312 TY 316
 Z - Special / Other

Position - 13 | Nozzle & Trim Mat'l

1 - SS316 Nt
 2 - SS316 + St
 3 - SS316 + Nt
 4 - SS410 + Nt

5 - DIN 1.4122 Nt

6 - DIN 1.4122 Nt & SS410 Nt

7 - A565 Gr 616/ AISI 422

X - N.A

Z - Special

Position - 14 | Compliance

1 - IBR 2 - PED / CE 3 - NACE
 X - NA Z - Special/Other

Position - 15 | Specials

X - NA Z - Special/Other

Position - 16 | Actuator Type

A - Multi Spring & Diaphragm w/o HW
 B - Multi Spring & Diaphragm w/ TMH
 C - Multi Spring & Diaphragm w/ SMH
 D - Single Spring & Diaphragm w/o HW
 E - Single Spring & Diaphragm w/ TMH
 F - Single Spring & Diaphragm w/ SMH
 G - Piston - SASR w/o HW
 H - Piston - SASR w/ SMH
 J - Piston - DASR w/o HW
 K - Piston - DASR w/ SMH
 L - Piston - DA w/o HW
 M - Piston - DA w/ SMH
 N - Electric
 R - Manual Handwheel
 X - None
 Z - Special

Position - 17 | Actuator Model

1 - ST-6115 G - PA250
 2 - ST-6135 H - PA330
 3 - ST-6160 J - PA400
 4 - ST-6175 K - PA500
 5 - M-230 L - SMH 250
 6 - M-385 M - SMH 330
 7 - M-700 N - SMH 400
 8 - M-1400 P - SMH 500
 9 - S-225 Q - 12"
 A - S-320 R - 14"
 B - S-550 S - 16"
 C - S-700 T - 20"
 D - S-960 U - 24"
 E - S-1400 X - N.A
 F - PA 150 Z - Special/Other

Position - 18 | Accessories

1 - 1 5 - 5 9 - 9
 2 - 2 6 - 6 X - N.A
 3 - 3 7 - 7
 4 - 4 8 - 8

SPECIFICATION - CIR 3200

Plant Name : Project Name : End User : Application :

Tag No: Qty: Fluid :

Sizing Parameters	Units	Min Flow	Norm Flow	Max Flow	Shut-Off
SERVICE/CONDITIONS	Steam/Gas Inlet Flow Rate				—
	Steam/Gas Pressure				—
	Steam/Gas Inlet Temperature				—
	Steam/Gas Outlet Temperature				—
	Steam/Gas Outlet Flow Rate				—
	Spray Fluid Flow Rate				—
	Spray Fluid Pressure				—
	Spray Fluid Temperature				—

LINE
 Steam/Gas Pipe Size & Matl.
 Spray Fluid Pipe Size & Matl.
 Liner Pipe Size & Matl.

VALVE BODY/BONNET
 DSH Type
 DSH Size
 Steam/Gas Design Press. & Temp.
 Spray Fluid Design Press. & Temp.
 Pressure Class
 DSH Matl.
 Steam/Gas Side End Conn.
 Spray Fluid Side End Conn.

TRIM
 Trim Type
 Trim Material
 Nozzle Type
 Nozzle Material

LOC.
 Equip. Location
 Amb. Temp. Min/Max
 Area Classification
 PED Category

ACTUATOR
 Type
 Service
 Air Fail Action
 Min & Max. Allow. Press.
 Orientation
 Handwheel
 Tubing & Fittings

POSITIONER
 Input Signal
 Type/Protocol
 Gauges
 By-Pass
 Position Feedback
 Certification / Compliance

AIR SET
 Range
 Filter
 Gauge
 Set Pressure

SOL
 Type
 Quantity
 Voltage
 Certification / Compliance

SWITCHES
 Type
 Contacts/Rating
 Actuation Points
 Certification / Compliance

TEST
 Hydrotest
 Seat Leakage
 Special Testing

Special Notes

OUR CREDENTIALS

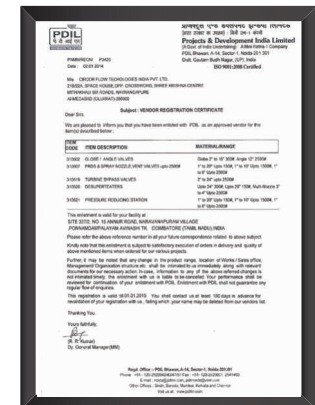
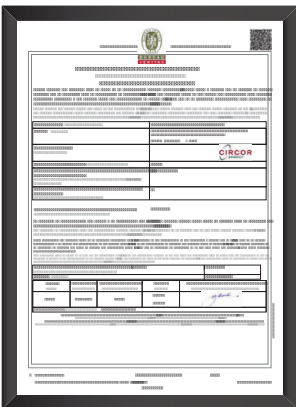
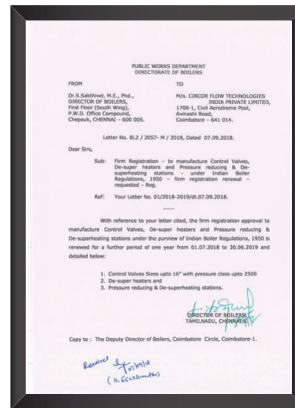
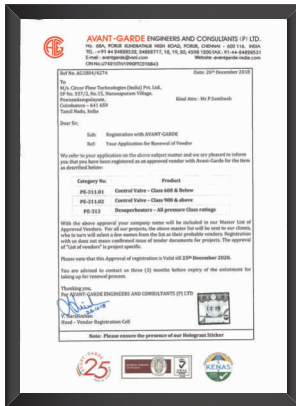
ISO 9001:2015

IMS: ISO 14001:2015 & ISO 45001:2018

Indian Boiler Regulation approved

Certified PED 2014/68/EU & CE Marked

Enlisted / Approved by major customers



Your plant/process may also require,
 Control Valves : CIR 3100
 Steam Conditioning Valves : CIR 3300 & CIR 3400
 Skid Solutions & Dump Tube: CIR 3500
 Please contact us at sales.india@circor.com / Ph: +91- 421-232-1600



CIRCOR is a market-leading, global provider of integrated flow control solutions, specializing in the manufacture of highly engineered valves, instrumentation, pumps, pipeline products and services, and associated products, for critical and severe service applications in the oil and gas, power generation, process, aerospace, and defense industries.

Excellence In Flow Control

Asia | Europe | Middle East | North America | South America

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Mallard Control	GO Regulator	RTK	Circle Seal Controls	Houttin
Contromatics	Texas Sampling	Schroedahl	Industria	IMO
Hydroseal	CIRCOR Tech	Spence Engineering	Bodet	Tushaco
Pibiviesse	Dopak	Nicholson	Atlas Productions	Warren
Pipeline Engineering		CIRCOR	Aerodyne Controls	Zenith
DeltaValve		R.G. Laurence	Hale Hamilton	
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