



## AVK MULTI NOZZLE DESUPERHEATER, MODEL TECTEMP, HD

235/1-001

Heavy duty quarter turn, mechanical water atomization w. integrated water control, standard steel

The series 235 desuperheater allows for extremely precise regulation of water injection for cooling of superheated steam. Water control and injection parts are combined to one unit and the water shut-off is secured by an integral ball/seat ring system at the inlet of the desuperheater resulting in a very high leakage class. The opening is controlled by a quarter turn rotation allowing for a rack & pinion actuator to be applied with the subsequent advantages in price and accuracy. The design incorporates up to 15 individually opened nozzles with individually sized bores. This ensures an optimal atomization of the spray water for every load case. Due to the high quantity of nozzles most load cases can be handled in a very precise manner. Even steam velocities down to 1.5 m/s are controllable thanks to the installation of nozzles with very small bores. A micro fine spray of 20 µm droplets, even for Kv-values as low as 0.01 m<sup>3</sup>/h, in combination with bigger drilled nozzles allow for widely controllable turn down ratios.

### Product description:

Multi nozzle desuperheater applicable for steam pipes from DN150 and a maximum temperature of 580°C with a control ratio up to 250:1; see pressure/temperature diagram p. 5.

### Standards:

- Designed acc. to EN 12516; EN12952; ASME 16.34
- Flange drilling acc. to EN 1092-2; ASME B16.5

### Test/Approvals:

- Hydraulic test acc. to EN 112266; ASME B16.34
- Approved acc. to CE type examination

### Features:

- Applicable for a maximum pressure difference of 30 bar
- Available lance diameters: 64, 71 or 76 mm
- Lance length up to 750 mm
- Controllable Kv-value down to 0.01 m<sup>3</sup>/h, for max. values see p. 5
- Hardened stem and nozzles
- Steam flanges:
  - DN 80 from PN 25 to 400 / 3" from class 150 to 2500
  - DN 100 from PN 25 to 250 / 4" from class 150 to 1500
- Cooling water flanges
  - DN 25 to 40 from PN 25 to 400 / 1" to 1½" class 150 to 2500
  - DN 50 from PN 25 to 250 / 2" class 150 to 1500
- 4 different positions for water connection, see p. 5

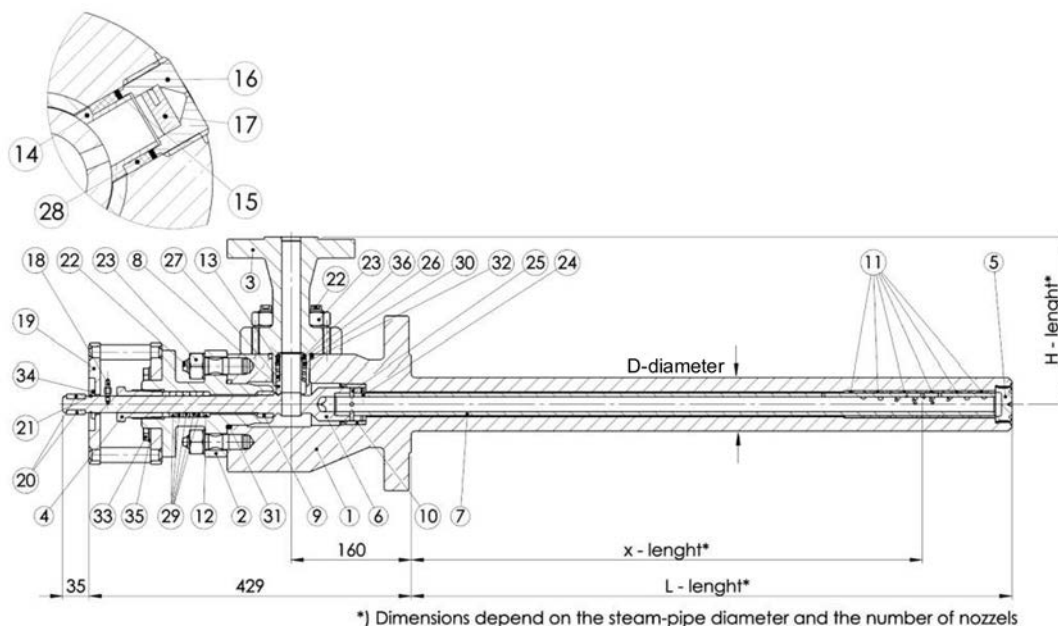
### Certificates, code in AVK-ref. no.:

- E = 1: Inspection APZ3.1 / Material APZ3.1
- E = 2: Inspection APZ3.1 / Material APZ3.1/APZ3.2
- E = 3: Inspection APZ3.2 / Material APZ3.1/APZ3.2

### Accessories:

Actuator (electrical, pneumatic, hydraulic), strainer, steam/water mixing pipe with thermo shock pipe and studs for sensors (e.g. temperature or pressure)





**Component list:**

1. Body	Steel 1.5415	18. Position indicator	Stainless steel A2
2. Packing	Steel 1.5415	19. Bracket	Steel
3. Flange, water	Steel 1.5415	20. Key	Steel
4. Seal	Steel 1.4541	21. Lock ring	Steel C75 (1.0605)
5. Plug	Steel 1.5415	22. Stud bolt	Steel C75 (1.0605)
6. Upper stem	Steel 1.4122	25. Nut	Steel 1.4923
7. Lower stem	Stainless steel 1.4301	26. Seal ring	PTFE
8. Seat ring	Steel 1.4122	27. Spring	Steel 1.4310
9. Bearing ring	Steel 1.4541	28. Gasket	Graphite
10. Bushing	Steel 1.4541	29. Gasket	Graphite
11. Bushing	Steel	30. Gasket	Graphite
12. Ring	Steel 1.4541	31. Gasket	Graphite
14. Bushing	Steel 1.4122	32. Ring	Steel C75 (1.0605)
15. Spacer	Steel 1.4122	33. Bolt	Steel gr. 8.8
16. Nozzle	Stellite 6b	34. Washer	Steel
17. Swirl	Steel 1.4541	35. Spring washer	Steel C75 (1.0605)

Components may be substituted with equivalent or higher class materials without prior notification.

**Reference nos. and dimensions:**

AVK ref. no.	No. of nozzles	Press.red.steps /leak. class	D mm	L mm	Theoretical weight / kg
235-1-111E	6	1 ST/CL.IV	64	<750	90
235-1-113E	6	1 ST/CL.IV	71	<750	90
235-1-115E	6	1 ST/CL.IV	76	<750	90
235-1-121E	6	2 ST/CL.IV	64	<750	90
235-1-123E	6	2 ST/CL.IV	71	<750	90
235-1-125E	6	2 ST/CL.IV	76	<750	90
235-1-131E	6	1 ST/CL.V	64	<750	90
235-1-133E	6	1 ST/CL.V	71	<750	90
235-1-135E	6	1 ST/CL.V	76	<750	90
235-1-141E	6	2 ST/CL.V	64	<750	90
235-1-143E	6	2 ST/CL.V	71	<750	90
235-1-145E	6	2 ST/CL.V	76	<750	90
235-1-151E	6	1 ST/CL.VI	64	<750	90
235-1-153E	6	1 ST/CL.VI	71	<750	90
235-1-155E	6	1 ST/CL.VI	76	<750	90
235-1-161E	6	2 ST/CL.VI	64	<750	90
235-1-163E	6	2 ST/CL.VI	71	<750	90
235-1-165E	6	2 ST/CL.VI	76	<750	90
235-1-211E	9	1 ST/CL.IV	64	<750	90
235-1-213E	9	1 ST/CL.IV	71	<750	90
235-1-215E	9	1 ST/CL.IV	76	<750	90
235-1-221E	9	2 ST/CL.IV	64	<750	90
235-1-223E	9	2 ST/CL.IV	71	<750	90
235-1-225E	9	2 ST/CL.IV	76	<750	90
235-1-231E	9	1 ST/CL.V	64	<750	90
235-1-233E	9	1 ST/CL.V	71	<750	90
235-1-235E	9	1 ST/CL.V	76	<750	90
235-1-241E	9	2 ST/CL.V	64	<750	90
235-1-243E	9	2 ST/CL.V	71	<750	90
235-1-245E	9	2 ST/CL.V	76	<750	90
235-1-251E	9	1 ST/CL.VI	64	<750	90
235-1-253E	9	1 ST/CL.VI	71	<750	90
235-1-255E	9	1 ST/CL.VI	76	<750	90
235-1-261E	9	2 ST/CL.VI	64	<750	90
235-1-263E	9	2 ST/CL.VI	71	<750	90
235-1-265E	9	2 ST/CL.VI	76	<750	90
235-1-311E	12	1 ST/CL.IV	64	<750	90
235-1-313E	12	1 ST/CL.IV	71	<750	90
235-1-315E	12	1 ST/CL.IV	76	<750	90
235-1-321E	12	2 ST/CL.IV	64	<750	90
235-1-323E	12	2 ST/CL.IV	71	<750	90
235-1-325E	12	2 ST/CL.IV	76	<750	90
235-1-331E	12	1 ST/CL.V	64	<750	90
235-1-333E	12	1 ST/CL.V	71	<750	90
235-1-335E	12	1 ST/CL.V	76	<750	90
235-1-341E	12	2 ST/CL.V	64	<750	90
235-1-343E	12	2 ST/CL.V	71	<750	90
235-1-345E	12	2 ST/CL.V	76	<750	90
235-1-351E	12	1 ST/CL.VI	64	<750	90
235-1-353E	12	1 ST/CL.VI	71	<750	90
235-1-355E	12	1 ST/CL.VI	76	<750	90
235-1-361E	12	2 ST/CL.VI	64	<750	90
235-1-363E	12	2 ST/CL.VI	71	<750	90
235-1-365E	12	2 ST/CL.VI	76	<750	90
235-1-411E	15	1 ST/CL.IV	64	<750	90
235-1-413E	15	1 ST/CL.IV	71	<750	90
235-1-415E	15	1 ST/CL.IV	76	<750	90
235-1-421E	15	2 ST/CL.IV	64	<750	90
235-1-423E	15	2 ST/CL.IV	71	<750	90
235-1-425E	15	2 ST/CL.IV	76	<750	90
235-1-431E	15	1 ST/CL.V	64	<750	90

The designs, materials and specifications shown are subject to change without notice due to the continuous development of our product range.

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AVK ref. no.	No. of nozzles	Press.red.steps /leak. class	D mm	L mm	Theoretical weight / kg
235-1-433E	15	1 ST/CL.V	71	<750	90
235-1-435E	15	1 ST/CL.V	76	<750	90
235-1-441E	15	2 ST/CL.V	64	<750	90
235-1-443E	15	2 ST/CL.V	71	<750	90
235-1-445E	15	2 ST/CL.V	76	<750	90
235-1-451E	15	1 ST/CL.VI	64	<750	90
235-1-453E	15	1 ST/CL.VI	71	<750	90
235-1-455E	15	1 ST/CL.VI	76	<750	90
235-1-461E	15	2 ST/CL.VI	64	<750	90
235-1-463E	15	2 ST/CL.VI	71	<750	90
235-1-465E	15	2 ST/CL.VI	76	<750	90

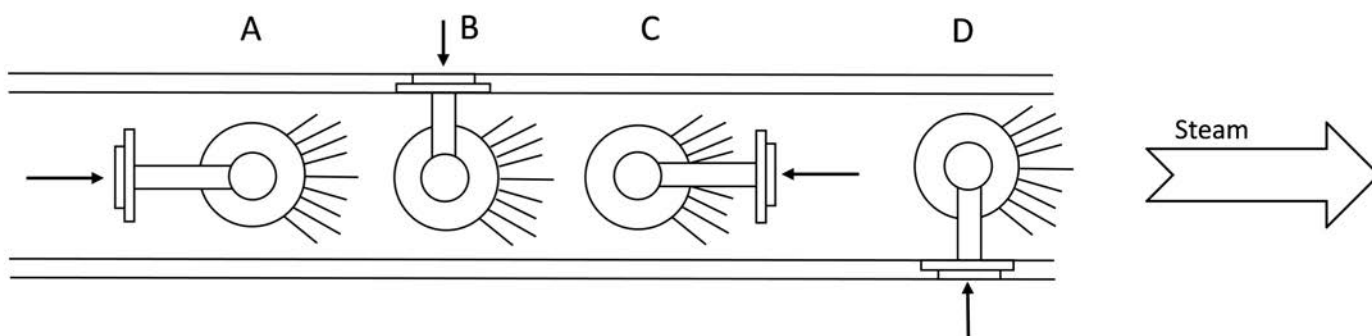
**Comments:**

Alternative flanges on request.

Optional body materials:

- 1.4903 / A182 F91
- 1.4901 / A182 F92
- 1.4541 / A182 F321

## Position Cooling Water Connection



## Max. controllable Kv-value

6 nozzles	4.9 m <sup>3</sup> /h	min. DN150 steam line
9 nozzles	7.4 m <sup>3</sup> /h	min. DN200 steam line
12 nozzles	9.8 m <sup>3</sup> /h	min. DN250 steam line
15 nozzles	12.3 m <sup>3</sup> /h	min. DN300 steam line

## Pressure/Temperature Diagram

