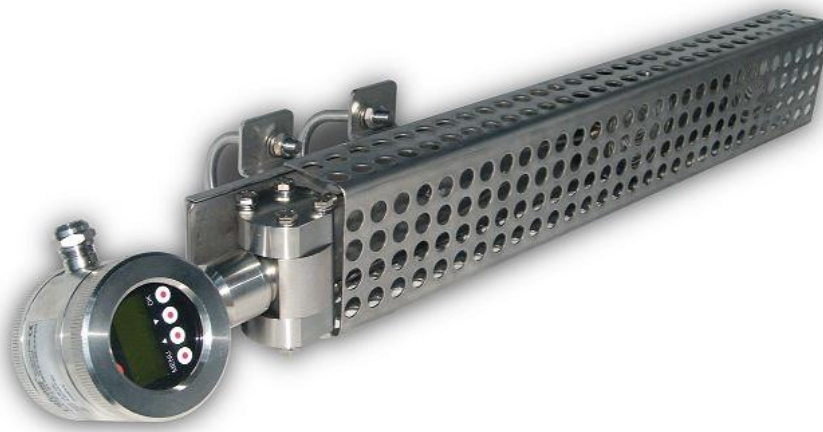


## SERIES T7S



T7S series are Smart electronic transmitters with 4 ÷ 20 mA output and HART® digital communication protocol.

Sensors are always calibrated individually together with their own seal.

These transmitters allow the measurement of specific gravity of fluids as liquids or cement slurry.

The instrument gives the specific gravity value of the product by measuring the static differential pressure between the two seals ( $\Delta p$ ) and applying the formula  $\rho = \Delta p / d$  where “ $\rho$ ” is the specific gravity, “ $\Delta p$ ” is the differential pressure and “ $d$ ” is the distance between the two seals.

Configurations and adjustments can be made locally by means of push buttons and display or remotely using HART® protocol compatible communicators.

A bracket for wall or for 2” stand pipe mounting is also supplied.

### APPLICATION FIELDS

- Specific gravity measurement;
- Installation on chemical, Oil & Gas, pharmaceutical, alimentary, marine plants
- etc; Installation in areas with persistence of potentially explosive mixtures.

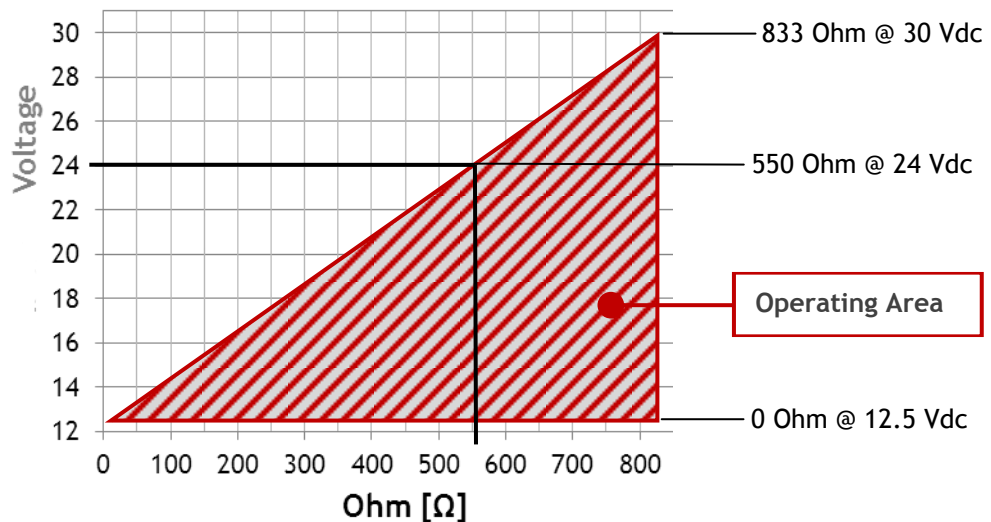



**SCIGATE AUTOMATION (S) PTE LTD**  
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Business Hours: Monday - Friday 8.30am - 6.15pm

## TECHNICAL FEATURES

### Electrical parameters

Supply:	12.5 ÷ 30 Vdc
Output signal:	4 ÷ 20 mA + Hart® Rev6
Alarm values:	3.85 mA \ 21 mA
Maximum load:	As per chart 220 Ω < R <sub>L</sub> < 600 Ω (Hart®)



### Measurement performance

Total accuracy(*):	± 5 g/lt for span of 1000 g/lt
Sensitivity:	0.1 g/l
Measured value update frequency:	4 ÷ 20 mA + Hart®: ≈ 1 s Hart®: ≈ 500 ms (On request)
Polling time:	4 ÷ 20 mA + Hart®: ≈ 800 ms Hart®: ≈ 500 ms (On request)
Response time:	< 256 ms (Standard Hart®)
Standard compensation:	0 ÷ 50 °C
Damping:	0 ÷ 60 s
Long term stability:	< 0.1 % FS for year

## ENVIRONMENTAL FEATURES

### Environmental Conditions

Temperature class:	T6, T85 °C: $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq 60^{\circ}\text{C}$ T5, T100 °C: $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq 75^{\circ}\text{C}$
Specific gravity of the fluid:	$0.5 \text{ kg} / \text{dm}^3 \div 5 \text{ kg} / \text{dm}^3$
Maximum working pressure:	10 bar
Process temperature:	Standard: $-10 \div +130^{\circ}\text{C}$
LCD working temperature:	$-10 \div +65^{\circ}\text{C}$
Storage temperature:	$-40 \div +90^{\circ}\text{C}$
Ingress protection degree:	AISI 316 Housing: IP67 Aluminum Housing: IP66

### Notes

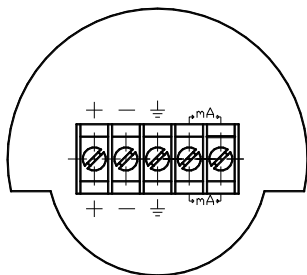
(\*) Including hysteresis, non-linearity, non-conformity and non-repeatability (IEC 60770) Accuracy and drifts may vary according to sensor type and diameter, thickness and material of the diaphragm.

## APPROVALS

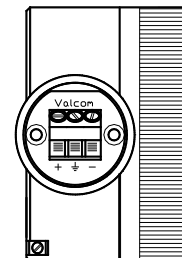
### Type approvals

Directive 2014/34/EU (ATEX)	II 1G Ex ia IIC T6, T5 Ga and II 1D Ex ia IIIC T85 °C, T100 °C Da or II 1/2G Ex ia IIC T6, T5 Ga/Gb
Directive 2014/68/EU (PED)	Up to Category II, for fluids in Group 1
Directive 2014/30/EU (EMC)	Adequate level of electromagnetic compatibility
Functional Safety	SIL2 SFF = 78.13 % PFH [Hours <sup>-1</sup> ] = $9.2352 \cdot 10^{-8}$ DC = $\lambda_{DD} / (\lambda_{DD} + \lambda_{DU}) = 83.7 \%$

## ELECTRICAL WIRING

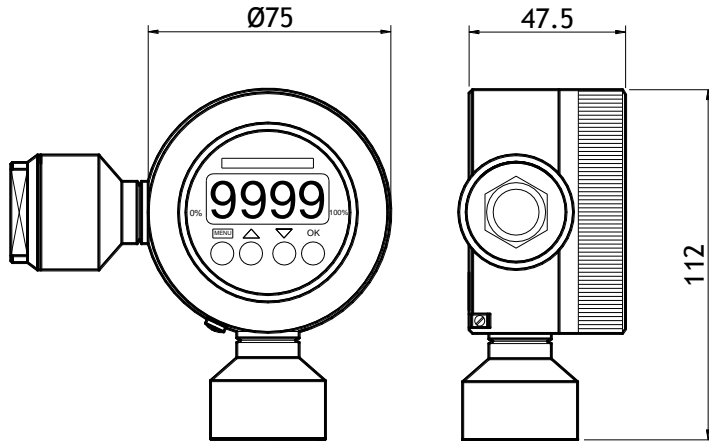


AISI 316 Housing 2 covers & Aluminum housing



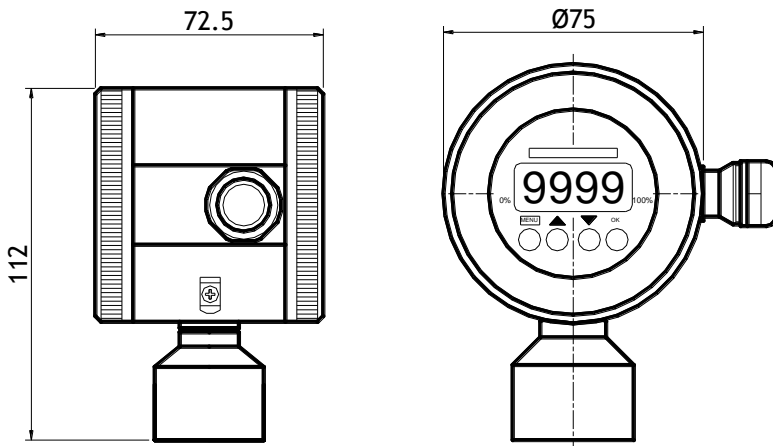
AISI 316 Housing 1 cover

## HOUSING MATERIAL AND TYPE



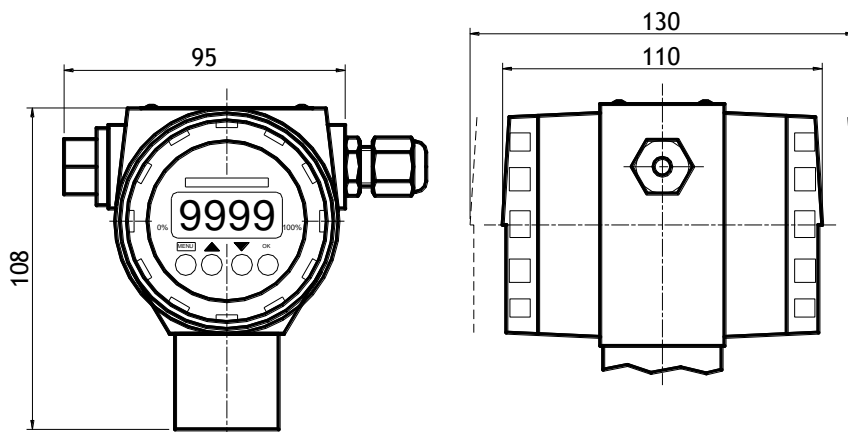
AISI 316 Ø 75 mm bottom connection

- Material: AISI 316 \ AISI 316
- Zone: II 1GD
- Protection Degree: IP67



A16 - Fixed head

- Material: AISI 316
- Zone: II 1GD
- Protection Degree: IP67

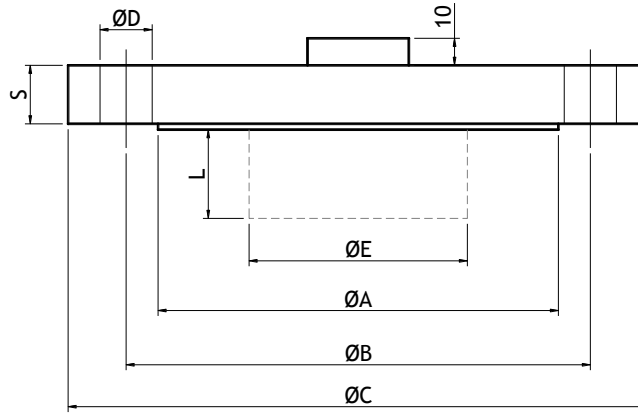


D04 - Alluminum housing

- Material: Aluminum
- Zone: II 1/2G
- Protection Degree: IP66

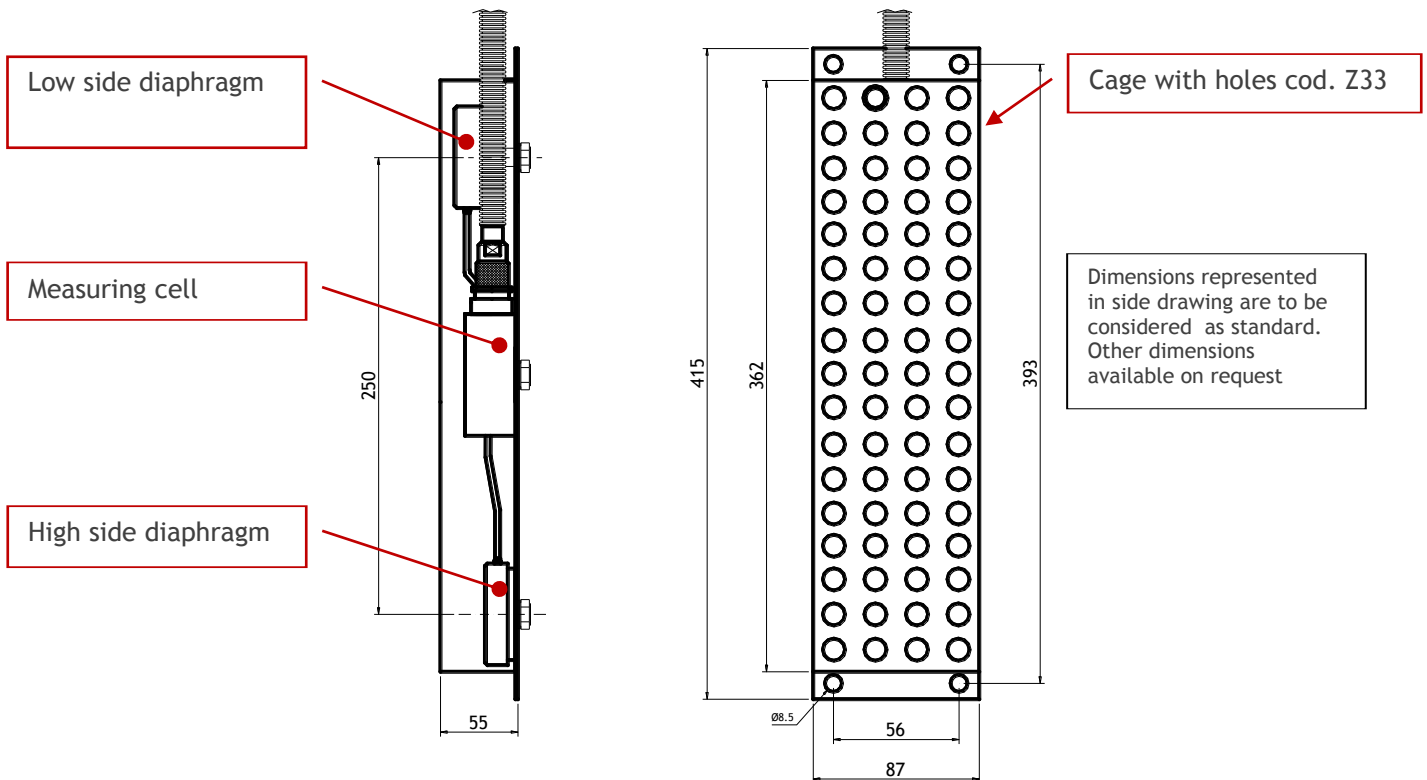
## PROCESS CONNECTIONS

### Standard flanges

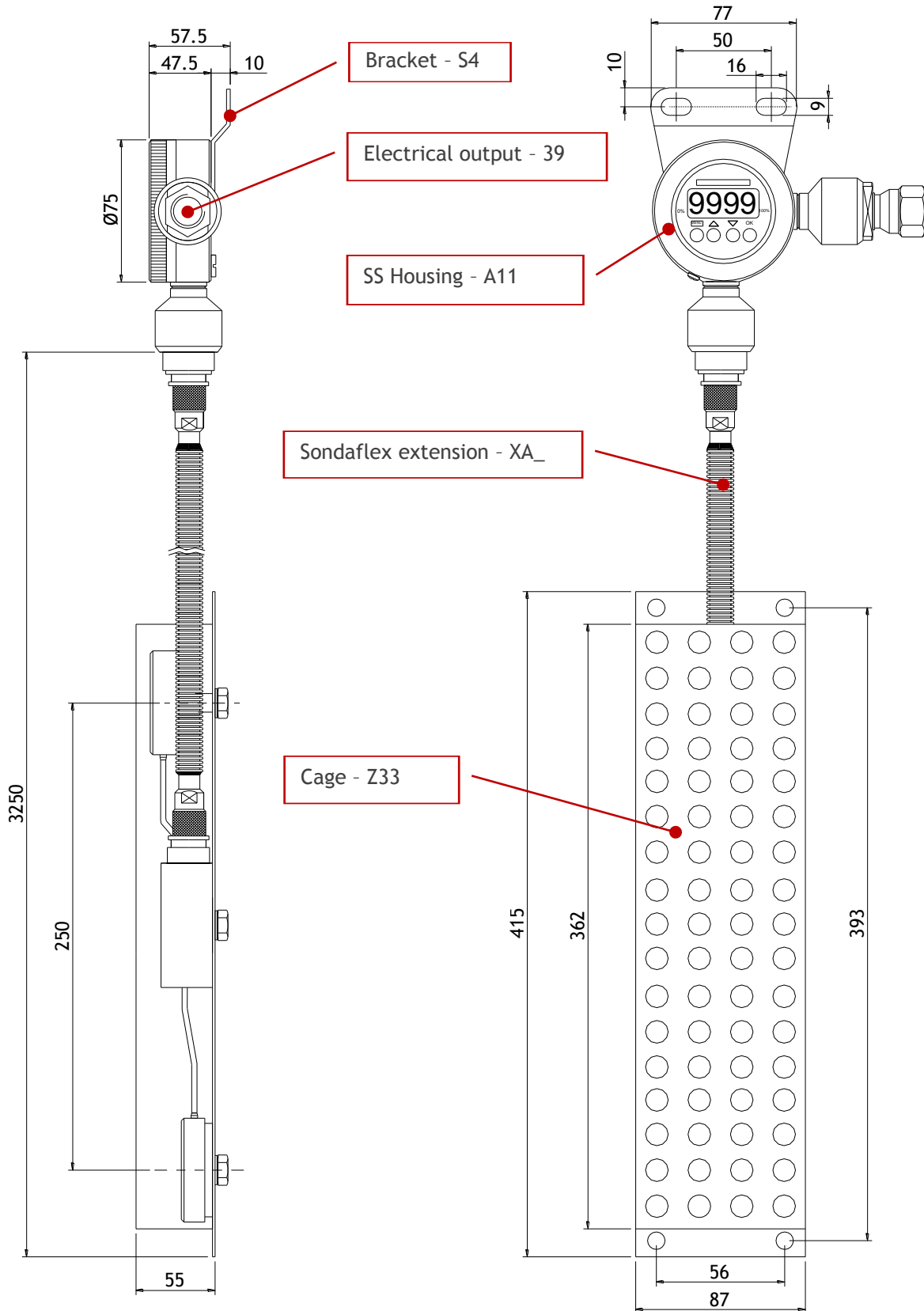


Code	DN	PN	ØA [mm]	ØB [mm]	ØC [mm]	ØD [mm]	S [mm]
F52	100	16	158	180	220	18	20
F55	100	40	162	190	235	22	24
F57	100	64	170	200	250	25	30
F85	4"	ANSI 150	157.2	190.5	228.6	19	23.8
F87	4"	ANSI 300	157.2	200	254	22	31.7
F89	6"	ANSI 150	215.9	241.3	279.4	22	25.4

### Cage with holes



## DIMENSIONAL DRAWINGS



T7S - standard configuration

## ORDERING CODE

**T7S** Electronic Smart specific gravity transmitter

### 01 Type of measure

G Density

### 02 Sensor type

PR Piezoresistive Remote

### 03 Measuring range

D01 0...250 gr/lt

D02 0...600 gr/lt

D03 0...1600 gr/lt

D04 0...3000 gr/lt

ZZ Special

### 04 Filling oil

8 Standard siliconic Oil -40/+200°C

9 Oil for food use -10/+220°C

N No filling

### 05 Process temperature limits

B -40 ÷ 85°C

### 06 Housing material and type

A11 AISI 316 Bottom connection

A16 AISI 316 Fixed head

D04 Aluminum housing

### 07 Process connection

F52 Flange DN 100 PN 16

F61 Flange DN 150 PN 6 / 10

Z31 Cage with holes L = 1200 mm c / w fixing bracket

Z32 Cage with holes L = 2420 mm c / w fixing bracket

Z33 C. with h. L = 415 mm c / w fixing bracket Ø 8.5

Z99 Special

### 08 Extension length

XA1 Sondaflex DN 16 5/8" AISI 316 OVP 25 < 1 m

XA2 Sondaflex DN 16 5/8" AISI 316 OVP 25 < 2 m

XA3 Sondaflex DN 16 5/8" AISI 316 OVP 25 < 3 m

XA4 Sondaflex DN 16 5/8" AISI 316 OVP 25 < 4 m

XA5 Sondaflex DN 16 5/8" AISI 316 OVP 25 < 5 m

Z99 Special

### 09 Sensor material (diaphragm)

A AISI 316

K Hastelloy C

### 10 Process gasket material

T All welded

### 11 Wetted parts material

A AISI 316

N Hastelloy C

## ORDERING CODE




### 12 Electrical connection

- 19 AISI 316 Cable Gland PG9 IP67 cable  $\varnothing$  5 ÷ 7 mm
- 20 AISI 316 Cable Gland PG13 IP67 for cable  $\varnothing$  8 ÷ 12 mm
- 36 Nipple AISI 316 1/2" G-F
- 37 Nipple AISI 316 1/2" NPT-F
- 39 Nipple AISI 316 M20 x 1.5 F
- 81 Screwed M20 x 1.5

### 13 Electrical output

- F 4 ÷ 20 mA 2 wires + HART (std 0.25 % FS) With LCD and blind cover
- G 4 ÷ 20 mA 2 wires + HART (std 0.25 % FS) With LCD and transparent cover

### 14 Ex type approval

- A1  II 1G Ex ia IIC T6, T5 Ga and  II 1D Ex ia IIIC T85°C, T100°C Da
- A5  II 1/2G Ex ia IIC T6, T5 Ga/Gb
- N0 No Ex certification

### 15 Options and accessories

- 02 Marine type approval
- 22 PED Certificate
- 21 SIL Certificate
- 10 Calibration report on 5 points
- 01 Test and material report according to EN 10204
- S4 Wall mounting bracket
- R4 Finned pipe HTx4 (T<150°C)
- R5 Finned pipe HTx11 (T<280°C)
- R7 Cooling syphon Sch Std in AISI 316 Tmax=235°C
- NN No options



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