



CONDENSER & HEAT EXCHANGER ENGINEERING
DIVISION – BHEL BHOPAL

ANNEXURE –A to 241101078 Rev.02

Double Tube Specification and dimensional details.

- Material:
- a) Outer tube: Copper to SB 359 C 12000/12200
of ASME Sec. II Part B: Latest
 - b) Inner tube : 70-30 Cu – Ni to SB 111 C 71500
of ASME Sec. II Part B: Latest

Dimensional details:-

A: Outer tube :- (having outer integral low fins and spiral grooves on ID)

a) Plain section

OD – 19.0 mm (+0 / -0.1 mm)
Thk – 1.65 mm (± 0.11 mm)

b) Finned section

Outside	{	Dia. over fins	18.8 mm (± 0.15 mm)
		Root dia.	15.8 mm (± 0.15 mm)
		Wall thickness (Excluding groove depth)	0.65 mm (+0.1 / -0 mm)
		Internal diameter	13.8 mm (+0 / -0.1 mm)
		Fin thickness	0.3 mm (min.)
		No of fins	19 per inch.
Inside	{	No of grooves	34 (spiral, 30 deg. angle)
		Depth of grooves	0.35 mm
		External Surface area	0.15 m ² /m

(Important: Spiral Grooves on ID to continue till starting point of fin on outside of the tube)

B: Inner tube: (Plain)

OD – 13.6 mm (+0 / -0.1 mm)
Thk – 1.0 mm (± 0.1 mm)

C: Tolerance:

No negative tolerance is acceptable on thickness of 0.65 mm at outer tube finned portion.



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D: Length of outer tube: Total 1618 mm (+3 /-0 mm)
Un-finned portion from ends 40 mm.

Length of inner tube: Total 1695 mm (+3/-0 mm)

Note:-

1. Supplier to furnish the drawing as per the above details in case of order. Same need to be approved from BHEL before start of manufacturing.
2. For all QAP and testing requirements, BHEL QAP CDE-14-3037 Rev.06 (as enclosed with the enquiry) to be complied fully.
3. Supplier to ensure assembly of inner tube in outer tube at their end so that it is ensured that inner tubes can be inserted in outer tube without any problem (i.e. not loose and should fit as push fit along the length).

Important: Supplier to submit the above specification with duly signed and stamped along-with their offer as an acceptance of all the points as mentioned there-in. Supplier to also furnish the drawing of the subject tubes showing all the dimensional details and weight of inner & outer tubes separately during enquiry stage.

Revision History:-

Rev.01 - Earlier Material for outer tube was Copper to SB 359 C 12000.
Rev.02 – Lengths of inner & outer tubes corrected.



CONDENSER & HEAT EXCHANGER ENGINEERING
DIVISION - BHEL BHOPAL

ANNEXURE -A to 241181521 Rev.01

Double Tube Specification and dimensional details.

- Material :
- a) Outer tube : Copper to SB 359 C 12000/12200
of ASME Sec. II Part B: 2015
 - b) Inner tube : 90-10 Cu - Ni to SB III C 70600
of ASME Sec. II Part B: 2015

Dimensional details :-

A : Outer tube :- (having outer integral low fins and spiral grooves on ID)

a) Plain section

OD – 19.0 mm (+0 / -0.1 mm)
Thk – 1.65 mm (\pm 0.11 mm)

b) Finned section

Outside	{	Dia over fins	18.8 mm (\pm 0.15 mm)
		Root dia	15.8 mm (\pm 0.15 mm)
		Wall thickness (Excluding groove depth)	0.65 mm (+0.1 / -0 mm)
		Internal diameter	13.8 mm (+0 / -0.1 mm)
		Fin thickness	0.3 mm (min.)
		No of fins	19 per inch.
Inside	{	No of grooves	34 (spiral, 30 deg. angle)
		Depth of grooves	0.35 mm
		External Surface area	0.15 m ² /m

(Important : Spiral Grooves on ID to continue till starting point of fin on outside of the tube)

B : Inner tube : (Plain)

OD – 13.6 mm (+0 / -0.1 mm)
Thk – 1.0 mm (\pm 0.1 mm)

C: Tolerance :

No negative tolerance is acceptable on thickness of 0.65 mm at outer tube finned portion.

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CONDENSER & HEAT EXCHANGER ENGINEERING
DIVISION – BHEL BHOPAL

ANNEXURE –A to 241181521 Rev.01

D: Length of outer tube : Total 1815 mm (+3 /-0 mm)
Un-finned portion from ends 40 mm.

Length of inner tube : Total 1890 mm(+3/-0 mm)

Note :-

1. Supplier to furnish the drawing along-with the offer as per the above details during enquiry stage. In case of order, same need to be approved from BHEL before start of manufacturing.
2. For all QAP and testing requirements, BHEL QAP CDE-14-3037 Rev.05 (as enclosed with the enquiry) to be complied fully.
3. Supplier to ensure assembly of inner tube in outer tube at their end so that it is ensured that inner tubes can be inserted in outer tube without any problem (i.e. not loose and should fit as push fit along the length).

Important : Supplier to submit the above specification with duly signed and stamped along-with their offer as an acceptance of all the points as mentioned there-in. Supplier to also furnish the drawing of the subject tubes showing all the dimensional details and weight of inner & outer tubes separately during enquiry stage.

Revision History:-

Rev.01 - Earlier Material for outer tube was Copper to SB 359 C 12000.