

GROOVED TUBE

Product Specifications

Turbotec's line of grooved stainless steel tubing has been taken to the next level by Turbotec to better serve the boiler industry and provide a superior tube to the market capable of meeting ASME specifications.

Turbotec's tubes can come in several different pitch and groove depth configurations. Contact the factory for more options and custom designs.

The application data presented below is for combustion gas inside the tube. The correlations are intended for design calculations. Customers should conduct their own rating tests.



Grooved Tube Description	a	b	c
Smooth Un-grooved Tube	0.00204	0.50	0.0216
Low Pitch Shallow Groove Tube	0.00452	0.50	0.0366
"Standard" Groove Tube	0.00412	0.50	0.0399
High Pitch Shallow Groove Tube	0.00513	0.50	0.0382
High Pitch Deep Groove Tube	0.00789	0.50	0.0494

INTERNAL HEAD LOSS

$$\Delta H = f (L/D)(V^2/2g)$$

f - friction factor (dimensionless - see below)

L - Length (ft)

D - Diameter (ft) ≈ 0.04425 ft

V - Velocity (ft/sec)

g - Gravitational constant (32.17 ft/sec²)

$$f = a/Re^b$$

a - obtain from table above

b - obtain from table above

Re - Reynolds Number (dimensionless)

INTERNAL HEAT TRANSFER

$$h_i = c Re^{0.8} Pr^{0.4} (k/D)$$

h_i - inside heat transfer coefficient (BTU/hr/ft²/°F)

c - obtain from table above (see note 2 below)

Re - Reynolds Number (dimensionless)

k - gas conductivity (Btu/hr-ft-°F)

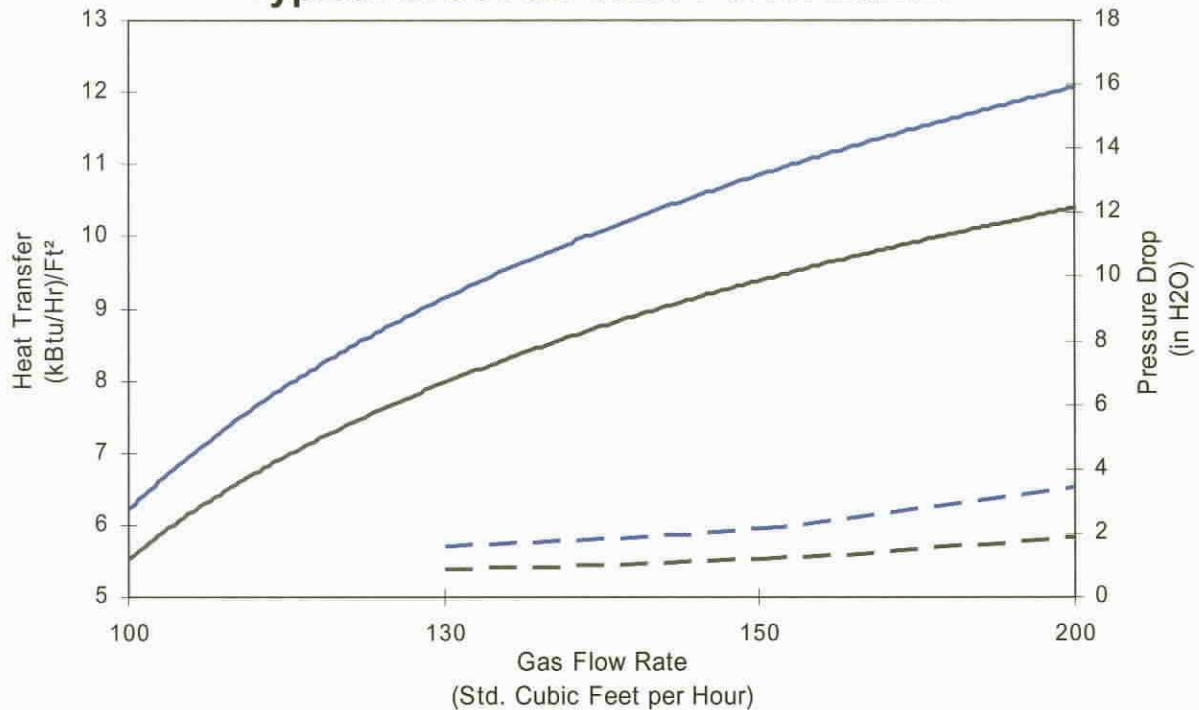
Pr - gas Prandtl Number (dimensionless)

D - tube Hydraulic Diameter ≈ 0.04425 ft

NOTES:

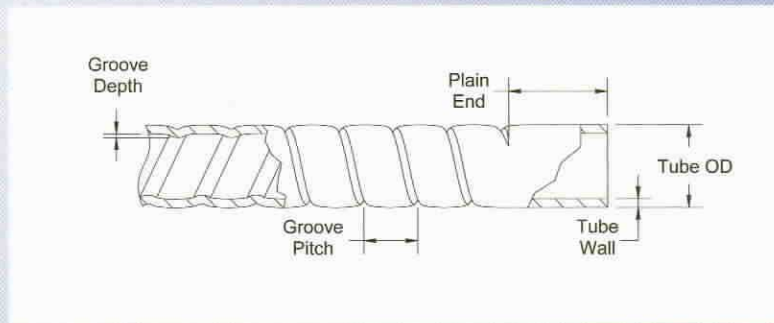
- 1) Use fluid properties evaluated at the average of inlet and outlet temperatures.
- 2) The standard McAdams value for c is 0.023

Typical Grooved Tube Performance



— SS Un-grooved tube - Heat Trans.
— SS "Standard" Groove Tube - Heat Tran.
— SS Un-grooved tube - Psid
— SS "Standard" Groove Tube - Psid

Grooved Tube Dimensional Specifications *



	Groove Pitch	Groove Depth	Plain End
Smooth Un-grooved Tube	-----	-----	-----
Low Pitch Shallow Groove Tube	0.400"	0.024"	0.75"
"Standard" Groove Tube	0.360"	0.024"	0.75"
High Pitch Shallow Groove Tube	0.315"	0.024"	0.75"
High Pitch Deep Groove	0.315"	0.035"	0.75"

Standard tube wall thickness is 0.065" and the standard tube outside diameter is 0.625"

* Dimensions in table are average values

Turbotec is continually working to improve the products it offers and as such the information contained herein may be subject to change without notice.