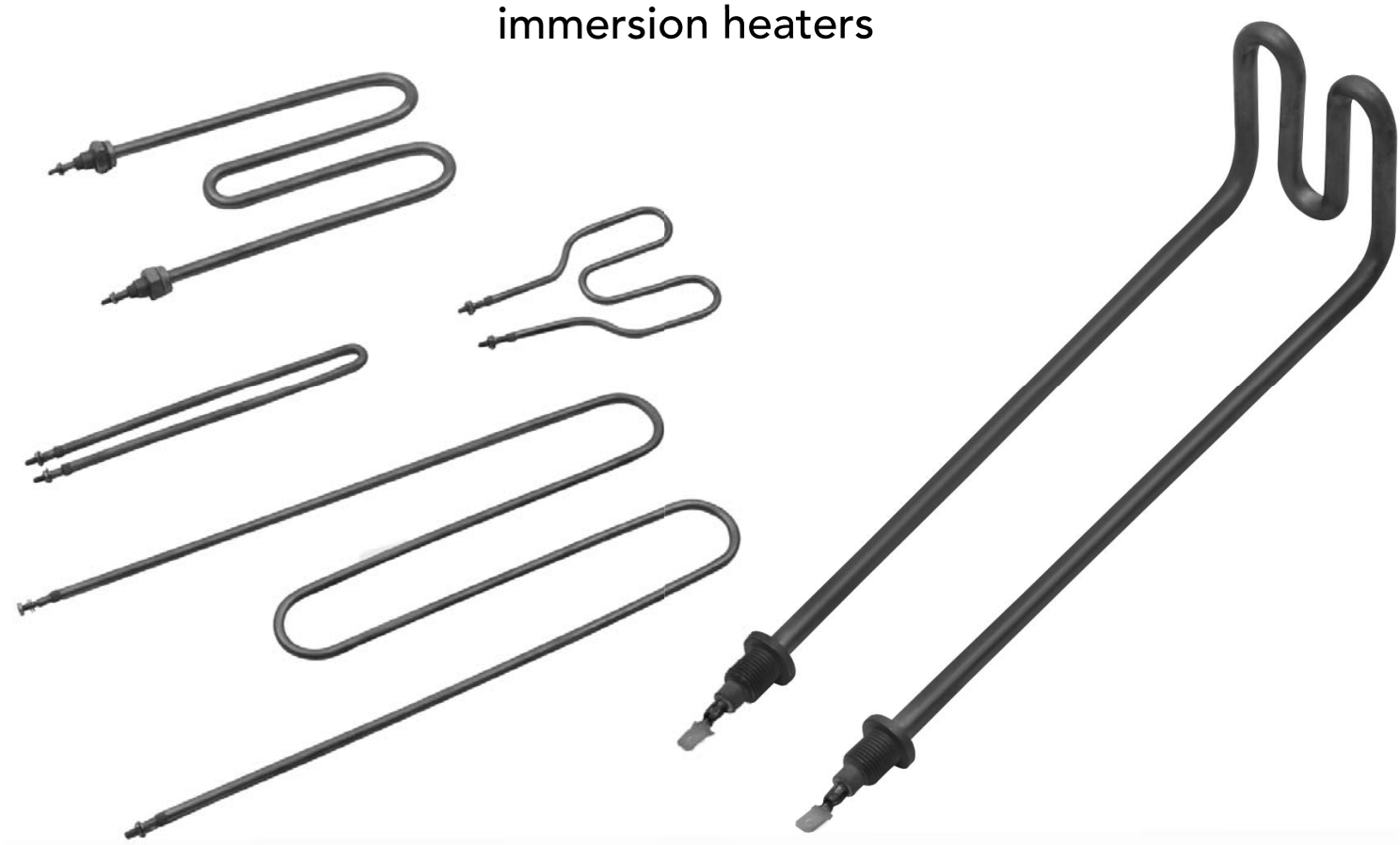
TUBULAR HEATERS

immersion heaters



WATTCO™

OVERVIEW

WATTCO™ tubular elements are the most versatile and best suited solutions to a large number of applications. This is why they are found in major modern heating applications and are known for their superior qualities. Tubular elements can be:

- Clamped
- Immersed
- Cast into metal
- Easily removable

Surface tubular elements are used for surface heating and are sold separately or made into process heating assemblies including:

- Flange heaters
- Screwplug heaters
- Circulation heaters, vessels
- Strip elements
- Over-the-side heaters
- Cartridge heaters
- Duct heaters
- Band heaters
- Infrared heaters

FEATURES

KEY FEATURES

- Standard diameters: 0.260", 0.315", 0.375", 0.430", 0.475" and 0.625"
- Available in a broad variety of sheaths, diameters and ratings
- Supplied with electrically isolated sheath
- Provide superior internal electrical insulation and heat conduction

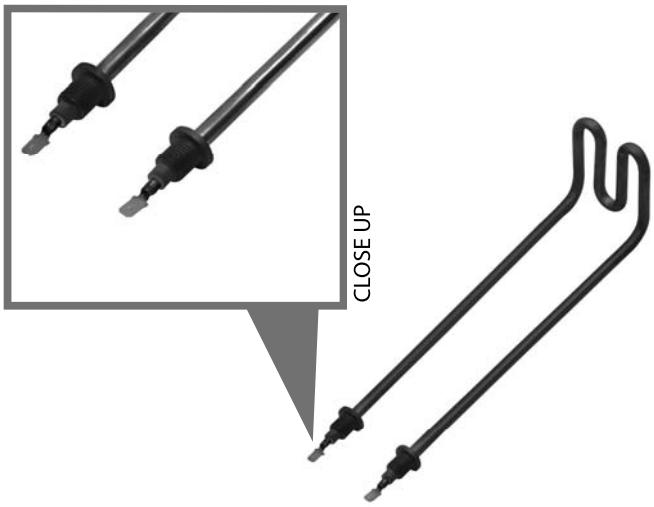
BENEFITS

- Easy to install
- Configurable to virtually any shape
- Compact
- Precise and easy control of heat output
- Durable
- Easy to maintain

SELECTING

WATTCO™ TUBULAR HEATER

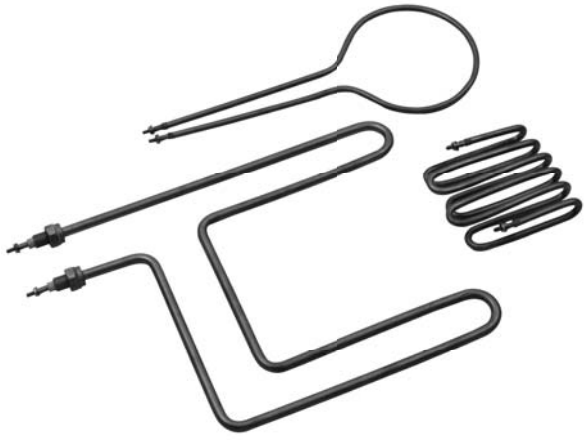
Depending on their rating, sheath and shape, WATTCO™ tubular elements are used in a variety of heat applications (conduction, convection, radiation heating) that require process temperatures of up to 750°C (1 382°F) to heat liquids, gases and solids.



FACTORS

Please consider the following factors to select the ideal WATTCO™ tubular heater for your application:

- Heating element watt density
- Sheath material (corrosive or non corrosive)
  - o Temperature of the corrodent
  - o Degree of aeration of the corrodent
  - o Velocity of the corrodent
  - o Ambient temperature



APPLICATIONS	SHEATH MATERIAL
Water Water solutions non-corrosive to copper	Copper
Oil Grease Alkaline cleaning solutions Tars Asphalt	Steel
Corrosive liquids Food processing equipment	Stainless steel
Air heating Radiant heating Cleaning and degreasing solutions Plating and pickling solutions Corrosive liquids	Incoloy®, Inconel®
Acid Corrosive liquids	Titanium

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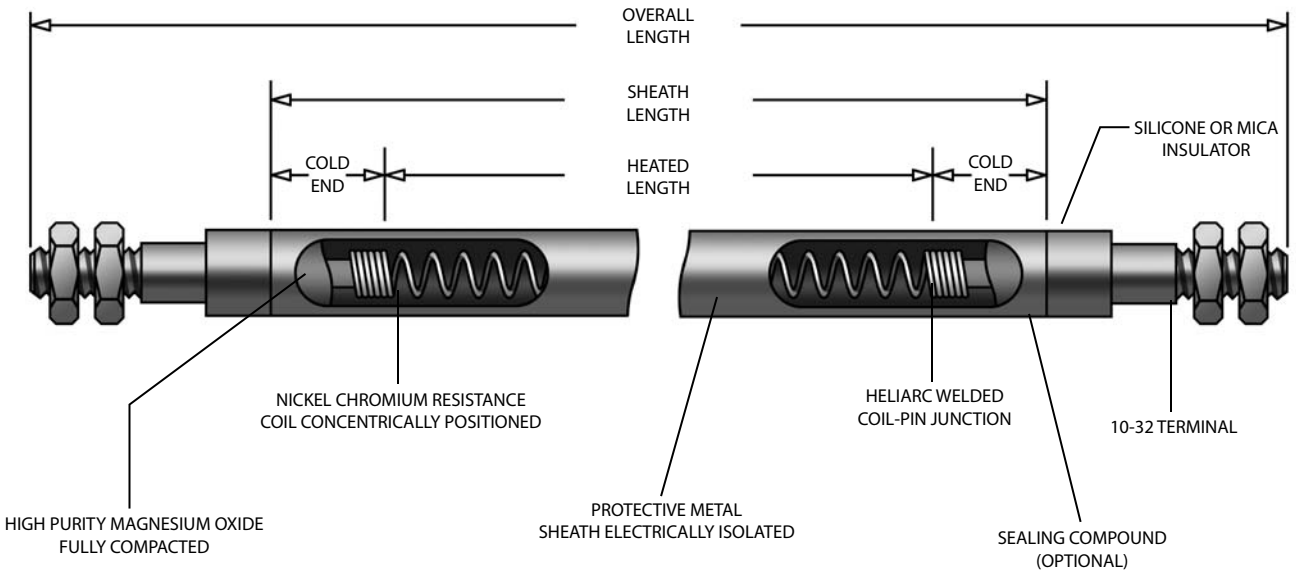
CONSTRUCTION

TUBULAR ELEMENTS – FEATURES AND COMPONENTS



STANDARD SHAPES

BENDING

WATTCO™ tubular heaters are factory-configured to almost any shape or size. Custom bending diameters can be made upon request.

Figures A to K show some of the most popular element shapes. Select the shape that meets your requirements and refer to it when ordering or requesting prices.

FIG. A

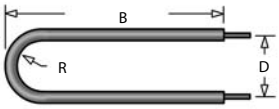


FIG. B

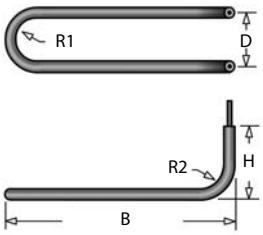


FIG. C

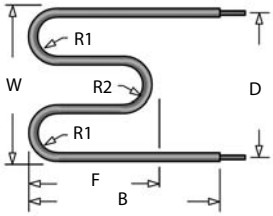


FIG. D

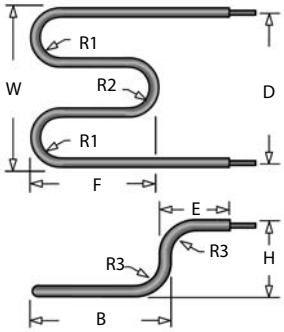
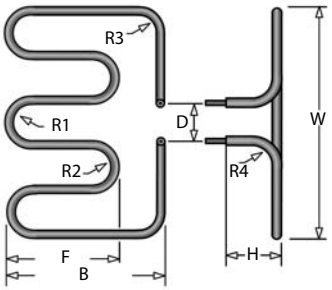


FIG. E



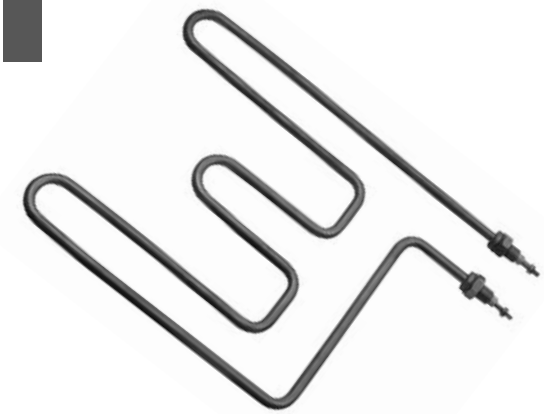


FIG. F

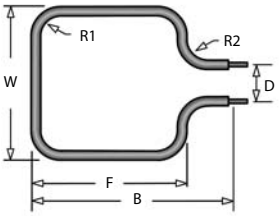


FIG. G

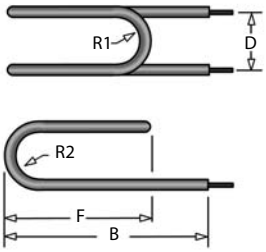


FIG. H

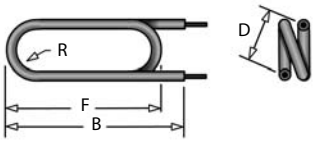


FIG. I

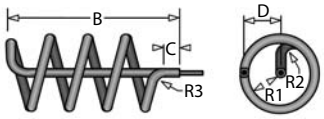


FIG. J

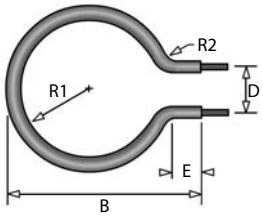
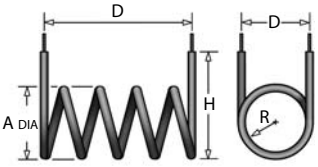


FIG. K



STANDARD INSTALLATIONS

Figures L to W show some of the most popular type of installations. Select the installation that meets your needs and make reference to it before placing an order or requesting prices.

KEY FEATURES

- Unlimited number of custom bends available.
- Magnesium Oxide insulating properties.
- Great flexibility to meet application needs.
- Watt Densities of up to 120 WPSI available.
- Thicker sheath wall are available for intensive applications.
- Silicone seals to ensure moisture resistance in humid environments.
- Custom made cold sections are available.

BENEFITS

- Sheath temperatures of up to 1200ºF.
- Numerous types of terminations available.

FIG. L - Ovens or cabinets

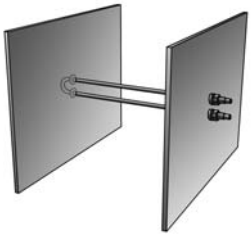


FIG. O - High wattage resistors or load banks

FIG. M - Ducts

FIG. P - Radiating heat

FIG. N - Pipe wells

FIG. Q - To be immersed in liquids

FIG. R - Clamped to walls, hoppers, and pipes

FIG. S - To be inserted in drilled holes, plates or cylinders

FIG. T - In between plates

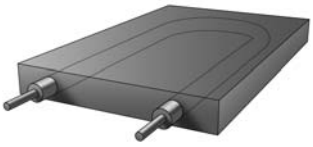


FIG. U - Cast-in iron, aluminum, or copper

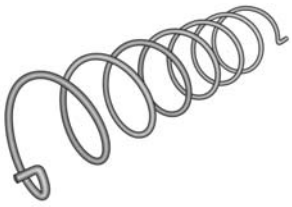


FIG. V - Bent to fit system shape

FIG. W - Finned heater assemblies

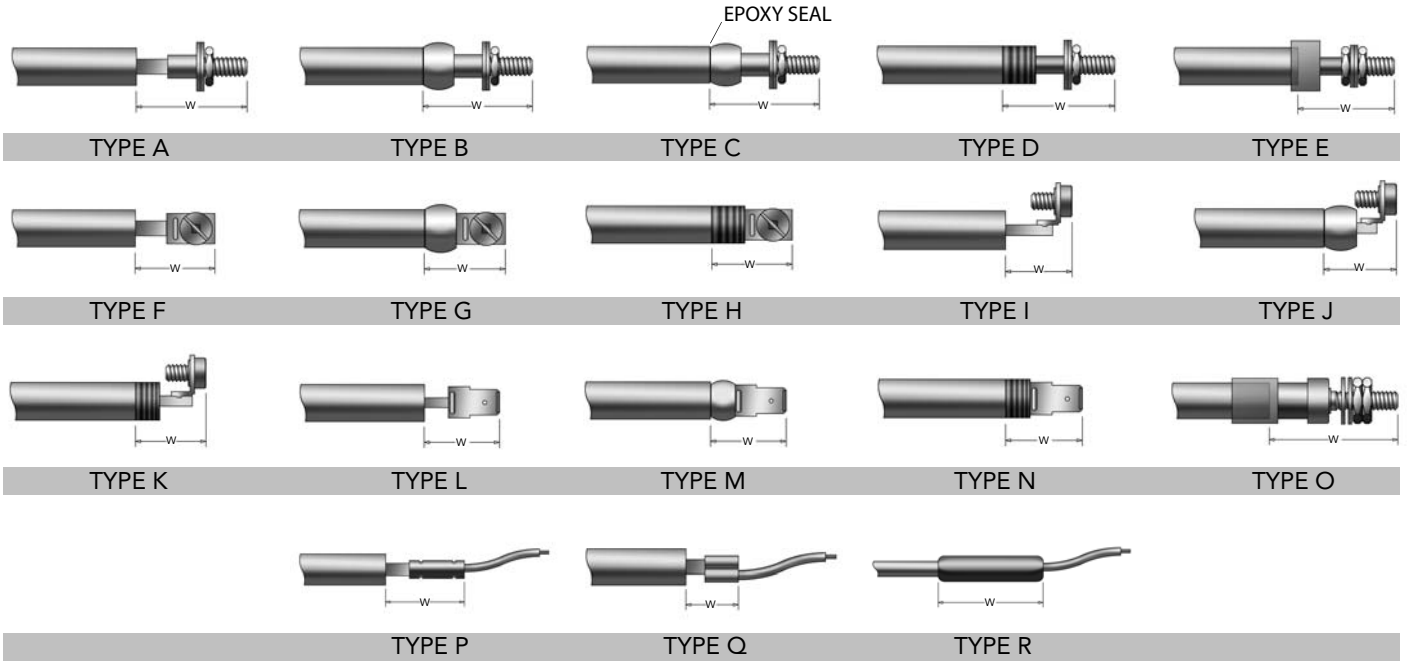
TABLE 1
Terminal Type Specification

TERM. TYPE	DIM. 'W'	THD. SIZE	MAX. VOLTS	MAX. TEMPS	SUITABLE FOR ELEMENT DIAMETERS (in.) 0.260	0.315	0.375	0.430	0.475
A	1 1/8"*	#10-32*	600	400°C	✓	✓	✓	✓	✓
B	1 1/8"*	#10-32*	600	200°C	✓	✓	✓	✓	✓
C	1 1/8"*	#10-32*	600	150°C	✓	✓	✓	✓	✓
D	1 1/8"*	#10-32*	600	400°C	✓	✓	✓	✓	✓
E	1 1/8"*	#10-32*	600	400°C	—	—	—	✓	—
F	13/16"	#10-32*	250	400°C	✓	✓	✓	✓	✓
G	13/16"	#10-32*	250	200°C	✓	✓	✓	✓	✓
H	13/16"	#10-32*	250	400°C	✓	✓	✓	✓	✓
I	11/16"	#10-32*	250	400°C	✓	✓	✓	✓	✓
J	11/16"	#10-32*	250	200°C	✓	✓	✓	✓	✓
K	11/16"	#10-32*	250	400°C	✓	✓	✓	✓	✓
L	15/16"	N/A	250	250°C	✓	✓	✓	✓	✓
M	15/16"	N/A	250	200°C	✓	✓	✓	✓	✓
N	15/16"	N/A	250	250°C	✓	✓	✓	✓	✓
O	1 1/8"	#8-32	250	400°C	✓	—	—	—	—
O	1 3/8"	#10-32	250	400°C	—	✓	—	—	—
O	1 3/8"	#10-32	250	400°C	—	—	✓	—	—
O	1 5/8"	1/4"-28	250	400°C	—	—	—	✓	—
P	1	N/A	300	200°C	✓	✓	✓	✓	✓
Q	1/2"	N/A	300	200°C	✓	✓	✓	✓	✓
R*	1 5/8"	N/A	300	90°C	✓	✓	✓	✓	—

* 1 1/8" available as 1"; #10-32 available in #8-32; type R, W = 2 1/4" for 0.375 and 2 3/4" for 0.430

STANDARD TERMINAL TYPES

The following section shows the most common terminal types. Select the terminal type that meets your application and make reference to it before placing an order or requesting prices.



NOTE: THE APPROPRIATE CURRENT OF EACH TERMINAL TYPE PARTLY DEPENDS ON THE APPLICATION. CALL US FOR DETAILS AT 1.800.492.8826

EXTRA FEATURES

THREADED FITTING (FIG. 1)

- Brazed, crimped or welded to the element's cold section.
- Used as a tight joint to the heater, which is fixed in open tanks or vessels.
- Supplied in brass, steel, or stainless steel.

COMPRESSION FITTING (FIG. 2)

- Available in nickel-plated brass for field installation on elements of 0.375", 0.430", 0.475" elements diameter.

TERMINAL BOX (FIG. 3)

Moisture resistant terminal boxes are:
- Factory installed

Note:
- Special requests can be made to have holes predrilled into the terminal boxes. This can provide easier tubular installation on site.
- Elements can require fittings to connect to the terminal box.

ELEMENT CLAMP (FIG. 4)

- The two-piece stainless steel clamps shown to the right can serve as element standoffs in ovens or tanks.
- Use half of the clamp with a stud welded to the tank or plate to suit clamp-on applications.
- Available "C" dimensions: 1 1/4", 1 7/16", 1 5/8" and 1 15/16".

MOUNTING BRACKETS (FIGS. 5-7)

- WATTCO™ can crimp standard mounting brackets to elements to help with installation.
- Special brackets can be configured on to your elements.

PART NUMBERS

When ordering extra features, please provide the following catalogue numbers:

FIG.	DESCRIPTION	CAT. NO.
FIG. 2.....	Compression Fitting	X10347
FIG. 3.....	Terminal Box (small diameter)	X10643
FIG. 3.....	Terminal Box (large diameter)	BX0508
FIG. 4.....	Element Clamp	BX0517
FIG. 5.....	Bracket	CL5975
FIG. 6.....	Bracket	FN4322
FIG. 7.....	Bracket	CL7654

FIG. 1

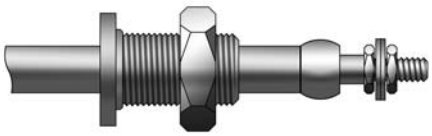


FIG. 2

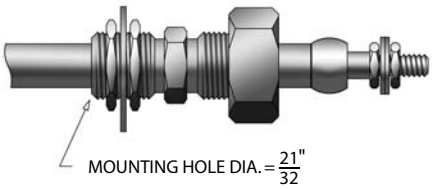


FIG. 3

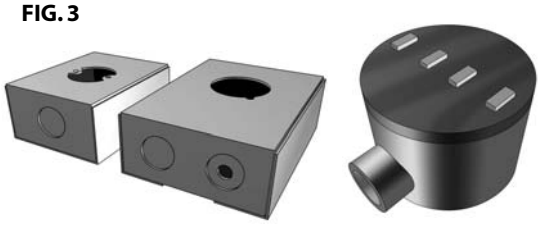


FIG. 4

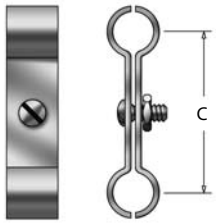


FIG. 5

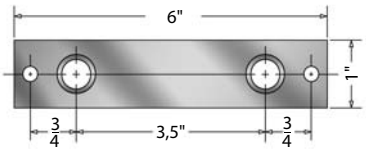


FIG. 6

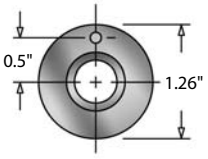
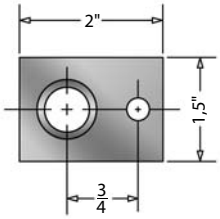


FIG. 7



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