Titanium Flexible Hose

Former Titanium flexible Hose used to be pointed out some defects such as stiff to install, easy to crack when bending, or weak against vibration, etc. However, our products solved these defects and have the following features:

- Easy to install.
- Strong against vibration.
- Good flexibility.
- Cleared bending crack problem.

Besides, followings are available:

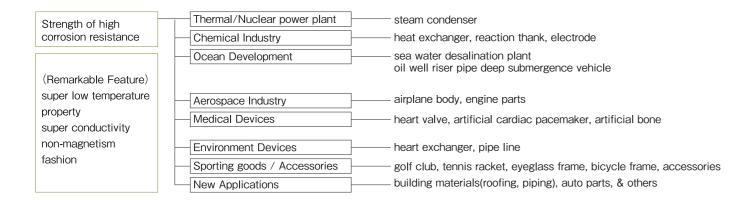
- Flange or other fittings can be selected.
- Length can be changed upon arrangement.
- All fluid contact portions are titanium as standard.
- Special packing type is also available.



Titanium has high corrosion resistance, namely long life. Less or no expense for replacement and compensation for business suspension. Thus, titanium can be advantageous according to condition.

Feature and Use of Titanium

- Titanium is hard to be ionized and excellent in corrosion resistance. It shows excellent efficiency against galvanic action, corrosion, solvent, chemicals, sea water, and for biological non-toxicity. So, it can be used at places where stainless steel or copper alloy are not suitable. Especially in sea water, it shows high anti-corrosion effect which is equivalent to platinum.
- It is suitable for those equipments in peculiar fields like severe condition required atomosphere, place, machine, or plant, such as salt water damge place, hot spring, industrial plants of chemicals, organic synthetic chemistry, petrochemistry, or IC industry.
- Further, efficiency drop by temperature in titanium is lower than that in Teflon. So, it can be used in wide range of temperature which Teflon cannot cover.
- Titanium has light and strong character. Specific gravity of pure titanium is 4.51, which is about 60% of stainless steel. Tensile strength is 270~510N/mm² which is equivalent to low carbon steel.
- It is excellent in biological suitability, and hard to incur metallic allergy. It is a gentle-to-mankind metal.
- It has particular characters which other metals do not have, such as super low temperature property, super conductivity, or non-magnetism.
- It is a material which can be recycled.



Corrosion resistance of Titanium

comparison with other metals

			corrosive resistance			
corrosive media	composition (%)	temperature (°C)	titanium	SUS 304	SUS 316L	
	10	24	0	×	×	
HYDROCHLORIC	30	24	×	×	×	
ACID	10	80	×	_	_	
	30	80	×	_	_	
	10	24	Δ	_	0	
SULFURIC ACID	50	24	×	×	×	
	10	100	×	_	×	
	50	100	×	_	×	
	10	24	0	0	0	
NITTRIC ACID	50	24	0	0	0	
NITRIC ACID	10	100	0	0	0	
	50	100	0	0	0	
AOUA DECIA	Hcl:HNO₃	24	0	×	×	
AQUA REGIA	3:01	100	0	_	_	
CHROMIC ACID	5	24	0	_	0	
HYDROGEN FLUORIDE	5	30	×	×	×	
	10(ventilation)	24	0	0	0	
PHOSPHORIC ACID	50(ventilation)	24	Δ	0	0	
PHOSPHORIC ACID	10(ventilation)	100	×	0	0	
	50(ventilation)	100	×	0	0	
	10	24	0	×	×	
IDON/III) CHI ODIDE	30	24	0	×	×	
IRON(III) CHLORIDE	10	100	0	_	_	
	30	100	0	_	_	
	10	24	0	×	×	
COPPER(II) CHLORIDE	30	24	0	×	×	
COPPER(II) CHLORIDE	10	100	0	_	_	
	30	100	0	_	_	
	10	24	0	0	0	
SODIUM CHLORIDE	40	24	0	0	0	
30DIOW CHLORIDE	10	100	0	0	0	
	40	100	0	0	0	
	10	24	0	0	0	
CALCIUM CHLORIDE	50	24	0	0	0	
	10	100	0		_	
	50	100	0	×	_	
	10	24	0	Δ	0	
AMMONIUM CHLORIDE	40	24	0			
	10	100	0		0	
	40	100	0	_	_	
MAGNESIUM CHLORIDE	10	24	0	Δ	0	
	40	24	0	0	0	
	10	100	0	Δ		
	40	100	0	_	_	
	10	24	0	0	0	
IRON(II) SULFATE	50	24	0	0	0	
	10	100	0		0	
	50	100	0		_	

	composition	temperature	corrosive resistance			
corrosive media	(%)	(°C)	titanium	SUS 304	SUS 316L	
	10	24	0	0	0	
AMMONIA	30	24	0	0	0	
	10	80	0	0	0	
	30	80	0	0	0	
	10	24	0	0	0	
CODILINA LIVEROVIDE	50	24	0	0	0	
SODIUM HYDROXIDE	10	100	0	0	0	
	50	100	0	0	0	
	10	24	0	0	0	
000000000000000000000000000000000000000	30	24	_	_	_	
SODIUM CARBONATE	10	100	0	0	0	
	30	100	0	0	0	
11VDD00511.01	dry gas	24	0	Δ	0	
HYDROGEN SULFIDE	wet gas	24	0	0	0	
	dry gas	30-60	0		_	
SULFUR DIOXIDE	wet gas	30-60	0		_	
	dry gas	24	×	_		
	wet gas	24	0	_	×	
CHLORINE	dry gas	100				
	wet gas	90	0		×	
	high speed flow	24	0		0	
SEAWATER	calm water	100	0			
	10	24	0	(i)	0	
	60	24	0		0	
ACETIC ACID	10	100	0		0	
	60	100	0		0	
	10	24	0		Δ	
	50	24	0		Δ	
FORMIC ACID	10	100	0		Δ	
	30	100	×		Δ	
	10	24	× ©			
	50	24	0		0	
LACTIC ACID	10	100	0			
	50	100	0	×	0	
	10	24	0	^		
OXALIC ACID	20	52	×			
	50	24			0	
	10	100				
					×	
	50	100		×	×	
CITRIC ACID	10	24	0	0	0	
	50	24	0	0	0	
	10	100	0	0	0	
	50	100	×	×	0	

meaning of marks [mm/year] \bigcirc : <0.051 \bigcirc : <0.508 \triangle : 0.508-1.27 \times : >1.27

General Purpose type

Fluid contact portion Titanium Flexible Hose with Flanges

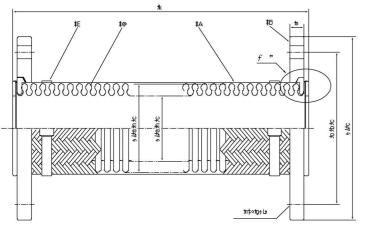
Good for pipe lines in various industrial plants such as chemicals, organic synthetic chemistry, petrochemistry, or IC industry, utilizing excellent corrosion resistance of Titanium, and it is general purpose type. It is equipped with loose flanges at both ends. Hose is covered by stainless steel wire braid.

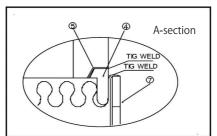
It is so designed to endure pressure. All fluid contact portions are Titanium which increase corrosion resistance.

Size and kind of flanges can be selected according to application, and packing face can be

selected based on kind of packing. And, stainless steel wire braid can be designed as single braid or double braid according to pressure.

- Packing Ring: Both end packing faces are made of Titanium.
- Flange materials: SUS304, JIS 10K for standard product. SS and Titanium are also available. And, JIS, ANSI, JPI standards can be prepared.
- For the others, please inquire us.





- ①Tube(titanium)
- ③Flange(material selectable)
- ⑤Hold ring(SUS304)
- ⑦Packing(titanium)
- ②Steel wire braid(SUS304 or SUS316)
 - ④Split ring(material selectable)
 - ⑥Band

Fluid contact portion Titanium Flexible Hose with Screwed Ends

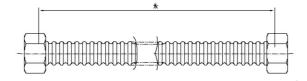
Good for very ordinary pipe lines where it is difficult to make replacement caused by corrosion or other reasons. Please apply this hose as versatile joint at those places where easy to occur alkali corrosion of concrete, salt water corrosion, deterioration by direct sunshine.

N.B.	Maximum working thread	throad	thickness	pipe I. D.		length	
IN.D.	working pressure	uneau	ti iicki iess	d	d₁	iengui	
13A	1.0MPa	1/2PF	0.3mm	13	16	100~1000mm	
20A	1.0MPa	3/4PF	0.3mm	16	19	100~1000mm	

*Other various threads are also available.



nut (brass, stainless steel, titanium)



Examples of Order-made We will cope with various kinds of customer requirements

We will investigate structure of flexible hose according to customer's specification. Also we can manufacture Expansion Joints.



Example of flange face alteration. Gasket face is titanium. Good for vortex gasket of titanium hoop in a plant where corrosive chemicals are treated.



Simple annular tube flexible hose Good for low pressure fluid. As it is not covered by braid, you can save cost and can lower the



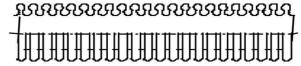
Large diameter (Φ600) bellows. We can manufacture big Expansion Joint like this.

Products Line-up

Kind of Products		Connecting Fittings		Tube	Thickness (mm)	N.B.	Length (mm)
whole Titanium or Fluid contact portion Titanium	General type	5KF 10KF	with 5K flange with 10K flange	annular tube	0.3~	25~300	300~3000
	·with braid ·with or without FM r	parallel(F) × parallel(F) parallel(F) × parallel(M) parallel(F) × taper(M)	H-tube	0.3~0.4	13~25	300~3000	
	T-FLEX	16FF 19FF	parallel(F) × parallel(F) parallel(F) × parallel(F)	one pitch tube	0.3~0.4	13~20	100~6000
	H-FLEX	16FF 19FF 25FF	parallel(F) × parallel(F) parallel(F) × parallel(F) parallel(F) × parallel(F)	H-tube	0.3~0.4	13~25	150~1000
	Wave type	13FF 20FF 25FF 30FF 40FF 50FF	16.0 parallel(F) × parallel(F) 22.2 parallel(F) × parallel(F) 28.8 parallel(F) × parallel(F) 34.0 parallel(F) × parallel(F) 42.7 parallel(F) × parallel(F) 48.6 parallel(F) × parallel(F)	large pitch- height wave type tube	0.3~1.2	13~50	300~3000
	R-FLEX	16FF 19FF 25FF	16R parallel(F) × parallel(F) 19R parallel(F) × parallel(F) 25.4R parallel(F) × parallel(F)	spiral tube	0.3~0.4	13~25	100~6000
	Expansion Joint	Cope with required specification		bellows	0.3~3.0	25~2000	100~2000

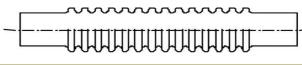
^{*}Beside the above, we can change fittings or parts structute, depending on customer's requirements. Please contact us.

Shapes of Flexible Tube



Annular Tube

Having independent salient portions, high flexibility and pliability. Good for pipes from small diameter to large diameter. Strong against vibration.



H-Tube

A kind of anular tubes, having straight portions. Can make a few groups of bellows portions.

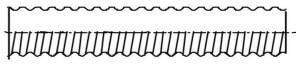


Large pitch-height wave type Tube

A kind of annular tubes. General purpose type.

One Pitch Tube

Same as H-Tube, but big difference between pitch-top and pitch-bottom. Excellent flexibility.



Spiral Tube

Having spirally continued salient portions, easy to transform when bending and less stress concentration. Can make straight portions.

[%]For under-ground type, cover rubber will be mounted or not, depending on application.