

Instruction Manual of TOYOSILICONE THERMO hose

Be sure to read this manual before use the hose.

17

To make the best and safe use of the hose, read carefully and observe the cautions described in this manual. If the precautions are not observed, injuries or physical damages may occur.

Cautions for safe use of TOYOSILICONE THERMO Hose

Note: In this manual, the parts written in bold and headed by  represent **warning**, and other parts headed by  represent **cautions**.

 Warning	Indicates the hazardous state which may cause death or heavy injury.
 Caution	Indicates the hazardous state which may cause light or moderate injury or damages to properties.

Cautions for using the hose

Applications ...① The TOYOSILICONE THERMO Hose products (hoses and couplings) have been developed and manufactured for general industrial applications. For applications that require attention to safety, please confirm in advance by the user. Never use for implant or injection application or other applications where there is a possibility of the product partially remaining in the body.
Toyox makes no guarantee of the adaptability or safeness related to such applications.

Working pressure ... May cause burst of the hose or removal or fitting if not observed.

- ② Use the hose within the range of the working pressure.
- ③ The hose may be extended or and shrunk by the internal pressure, so arrange its layout with a margin.
- ④ When applying pressure to the hose, open or close the valve slowly to avoid applying impact pressure.

Fluid used ... May cause sudden degradation of the hose or damage to the hose, removal of the fitting, etc.

- ⑤ Never use with the hose nonpolar organic solvents (benzene, toluene, hexane, etc.), hydrocarbon halogenide (methylene chloride, trichloroethane, etc.), high-concentrate strong acid or alkali, mineral oil, materials for steam piping, or vegetable or animal oil of 70 degrees centigrade or higher.
- ⑥ Use the hose in a range of temperature, -30 to 120 degrees centigrade.
Do not use for high temperature water at exceeding 100° C. When washing the TOYOSILICONE THERMO hose with steam, use saturated steam pressure 0.2 MPa (120° C) or less for a short time.
- ⑦ Silicone rubber has the property of high gas permeability. If fluid of a hose is gas, please note that the gas may pass through the surface of the hose and cut surfaces of the hose.

Bending tolerance ... Surpassing the bending tolerance may cause burst of the hose, etc., shortening the life of the hose.

- ⑧ Don't use the hose bent more sharply than the minimum bend radius, or in a condition bent forcibly or sharply or twisted.
- ⑨ Don't use the hose bent excessively near the fitting.

Cautions for assembling

Fitting ... We recommend to use "TOYOCONNECTOR," our special joint made for TOYOSILICONE THERMO Hoses . When installing the hose, please read the handling guide attached to the product first and install the hose properly. Please be aware of the following items when using anything other than special joints. The burst of the hose, removal of fitting, etc., may result in burst out of the fluid, jumping around of the hose, etc., causing an accident involving injuries.

- ① Use a coupling, hose nipple, etc., compatible with the hose size.
- ② The tip of the hose nipple and the edges of the bamboo-shoot section may damage the inner tube of the hose, causing leak and burst of the hose. Be sure to use a hose nipple which has chamfered corners (more than 0.3R).
- ③ When connecting the nipple with the hose, don't apply lubricant to the hose or nipple, warm them with fire, or pound the hose.

Hose Clamp ... May cause broken hose or removal of nipple, and resulted leak or burst out of fluid, etc., may lead to an accident involving injuries.

- ④ Never use a steel wire, etc., as a substitute of the band.
- ⑤ Tighten the band covering the center of the bamboo-shoot section of the nipple, and take care so that the outer layer of the hose may not be cut.
- ⑥ After attaching the band or coupling fitting, check that the connection is safe (no leak or removal of the fitting).
- ⑦ Multiple fixtures involving two or more bands should be used on hoses of size 19 mm and larger. All bands must be tightened uniformly.
- ⑧ The specifications of the hose bands vary from their manufacturer to manufacturer. Choose one after inquiring its manufacturer of details.

Cautions for inspection

- ① Every-day's check up ... ● Before using the hose, check for any abnormalities found in the appearance of the hose (flaw on the exterior, dusts on the surface, wastes, etc.).
- ② Regular inspection ... ● Be sure to inspect the hose once a month on a regular basis as long as you use it.
● If any cut is found on the surface, etc., of the hose, replace it with a new one. Or, the tearing may develop from the cut as the hose is used, leading to its burst.

- ③ The life of the hose can vary substantially depending on factors such as the physical properties of the fluid, the temperature and flow rate, and frequency of compression and decompression. If any of the following abnormalities is found at the every-day's check up or the regular inspection, stop using the hose immediately, and repair it or replace it with a new one:
 1. Problem with a hose around fitting ... Localized stretch, curvature, leakage or expansion, or less deep insertion into nipple
 2. Damage ... Large scratch, crack, or an inundated reinforcement layer.
 3. Internal damage: internal swelling, peeling, or friction damage (such as when hose reinforcing materials are exposed)
(Note) If the interior damage occurs, foreign objects peeled off the hose or fragments of the reinforcing material may mix with the fluid.
 4. Other damage such as hardening, swelling, cracks, expansion, etc.



Cautions for maintenance and control

※ Such application may cause problems with safe use of the hose over a long period of time.

Storage of the hose after use

- ① After using the hose, remove any residual objects inside the hose.
- ② Store the hose at a place which is not exposed to direct sunshine and is well ventilated.
- ③ Avoid storing the hose in a condition bent excessively, twisted, or bent sharply. In particular, avoid hanging it on a nail on a wall to store it.

Storage of the hose as inventory

- ④ Store the hose in a container at a place which is not exposed to direct sunshine, has low moisture and is well ventilated. If the hose is not stored in a box, encourages build-up of electric charge, attracting dirt and dust to the hose surface. This can cause the hose to become dirty and unhygienic.
- ⑤ During storage, avoid placing the hose near rubber products. Doing so may cause changes in the color, even if direct contact is not made.



Cautions for disposal

- ① To dispose of the hose, follow the regulations on segregation of wastes in your district.



Other cautions

- ① Don't touch the surface of the hose with bare hand immediately after cleaning the hose, or accidents such as burn may be caused.
- ② If heated over 100 degrees centigrade with hot water, steam, or a furnace, the hose may become nebulous. But this does not mean degradation; the hose will restore the original conditions if heating is stopped and some time elapses.
- ③ Please be aware that when fluids with strong colors are passed through, the color may be transferred to the hose.
- ④ Because " hose materials are hard to be removed when bacteria and mold stick, please be careful ".
- ⑤ In order to retain pressure- and heat-resistant performance, the threads are specially braided for reinforcement. (If improperly cut, the threads may unravel and fall out; handle with due care.)
- ⑥ When cutting a hose, use as new a cutting blade as possible and make sure that the edge face of the hose is cut perpendicularly. If it is not squarely perpendicular, the hose may leak or become disconnected.
- ⑦ Do not allow anything other than the inner surface of the couplings or hose to come in contact with fluids, because the fluids may permeate the hose reinforcement layer or remain inside the couplings, and bacteria may propagate (attach to the parts) or the hose may deteriorate. Also, dust and hose fragments (reinforcement material) to the outer surface may be mixed in.

Specification of TOYOSILICONE THERMO Hose

Code	I.D.×O.D.	Working Pressure	Length	Working Temp	Min.bending radius
	mm	MPa	m	℃	mm
TSITH- 6	6.3×12.3	0~1.0	40	-30~120	80
TSITH- 9	9.5×16.0	0~1.0	40		100
TSITH-12	12.7×19.5	0~0.5	20		130
TSITH-15	15.9×24.0	0~0.5	20		150
TSITH-19	19.0×28.0	0~0.5	20		180
TSITH-25	25.4×35.5	0~0.5	20		220