



TOZEN INDUSTRIAL COMPANY LIMITED

Product: Stainless steel flexible hose

Document: Safety Issues, Inspections, Installation and Handling


Document No: SD-ENG-07-08

Rev.	Description	Date	Prepared	Checked	Approved
01	Update Installation	12-04-19	Wuthipan	Wuthipan	Somkraitsada
00	Original	13-09-18	Wuthipan	Wuthipan	Somkraitsada

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1.0 General

There are several factors to consider when using metal hose assemblies. The most crucial is safety, as the assemblies are often used in applications that can pose significant risk to people and property in the event of a failure. Another important factor is the manner in which the assembly is installed since installation procedures have a significant effect on the performance and service life of the assembly. This section will address these issues and give practical advice on ways to maximize the performance and service life of the assembly, while minimizing the risk of injury and property damage. Employees who work with or around these assemblies should be adequately trained about the potential risks as well as proper installation, handling, and maintenance procedures.

2.0 References and standards

The following standards refer the requirements of ISO 10380 and NAHAD

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3.0 Safety Issues

Below are listed some of the potential safety risks that can lead to injury or property damage. This is not a complete list of all possible safety concerns. All users of hose assemblies must evaluate their particular hose applications, assess the potential risks and take preventative steps to address these risks.

3.1 Fluid/Gas injections

Fine streams of fluid or gas can penetrate skin and enter the body. These wounds may cause severe damage. Consider the use of guards and shields to reduce the risk of these injections.

3.2 Fire and Explosions from Conveyed Media


Many of the media conveyed through hose assemblies are flammable. Media that escapes from the assembly can explode upon contact with a source of ignition (e.g. open flames, sparks, and hot manifolds). These explosions can be very severe, causing injury, death, or serious property damage. Care should be taken to eliminate all possible ignition sources from contact with escaping media. Select and route hose assemblies in a way that minimizes the risk of combustion.

3.3 Burns from Conveyed Fluids

Media conveyed may reach temperatures or may be of a chemical composition that can cause burns. If there is a risk of burns, consider guards or shields to prevent exposure to escaping media.

3.4 Fluid Controlled Mechanisms

Mechanisms controlled by fluids in hose assemblies can become hazardous if the assembly fails. For example, if a hose assembly fails, objects supported by the fluid pressure within the hose assembly will no longer be supported and may fall.

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3.5 Whipping Hose

If a pressurized hose assembly is disconnected or comes apart, it can flail or whip with great force, throwing fittings at high speeds. This risk is particularly great in compressed gas systems. If the risk of hose whipping exists, consider the use of guards, whip checks, or other restraints.

3.6 Burns from Contact with the hose

Metal hose assemblies conduct heat. Care should be taken to avoid contact with the hose assembly since the temperature of the hose assembly may be similar to that of the media being conveyed. The use of sleeves should be considered if contact with the hose assembly is possible.

3.7 Electrical Shock

Metal hose assemblies are electrically conductive. Always use proper grounding to minimize the risk of electrical discharge and electrocution.

4. Inspections


4.1 Pre-installation Inspection

Before installing the hose assembly check for:

4.2 Damage

The assembly should be inspected for the following damage:

- Deformed or twisted braid
- Braid is excessively loose on the hose
- Broken or unattached braid wires

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4.3 Damage (continue)

- Kinks or sharp bends in the hose, particularly behind the fittings
- Damaged fitting threads
- Nicked or out-of-round sealing surfaces
- Damaged flange gasket surfaces
- Incorrect fitting alignment, particularly flanged or elbow fittings
- Improper fitting orientation
- Swivels or loose nuts not rotating freely

4.3 Dimensions

Verify the following dimensions:

- Assembly OAL
- Fitting size

4.4 Correct Components

Verify that the hose assembly's components are as specified:

- Fitting type
- Required guard, covers, liners
- Required tagging

4.5 Other Checks

- No solid debris in fittings or hose (e.g. dirt, metal shavings)
- No fluid contamination in hose (e.g. water, grease, oil)



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5. Preventative Maintenance

After the hose assembly has been installed, it should be periodically inspected. The frequency of the inspection is based upon the nature and severity of the application, past history, and any manufacturer's recommendations. If an appropriate inspection schedule has not been established, the assembly should be inspected daily. When conducting an inspection, look for the following:

- Loose, broken, bulged, frayed, or worn braid
- Deformation of the hose, including twisting
- Traces of media on or around the assembly
- Loose or damaged guard or covers
- Indications of corrosion on hose assembly
- Loose fitting attachments
- Hose assembly rubbing or making contact with adjacent machinery or piping
- Fluids or solids accumulating on the assembly



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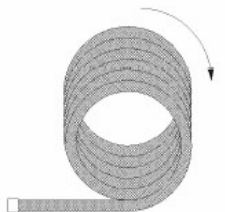
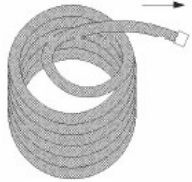
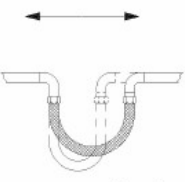
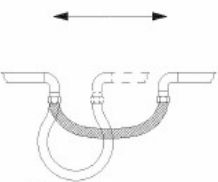
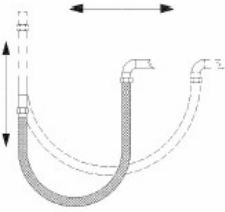
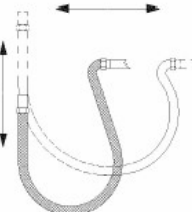
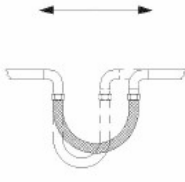
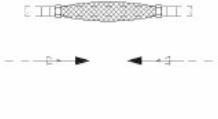
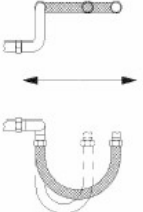
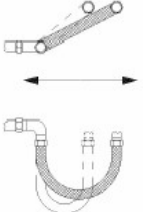
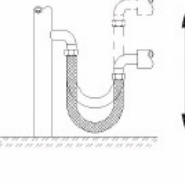
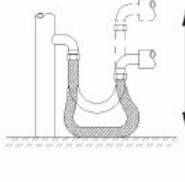
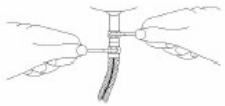
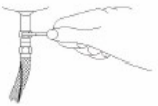
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6. Installation and Handling

<u>Right</u>	<u>Wrong</u>	<u>Right</u>	<u>Wrong</u>
			
Do Not Kink Hose		Use the Correct Length	
			
Adjust Piping to Avoid Kinking		Do Not Axially Compress Hose	
			
Keep Hose in One Plane to Avoid Torsion		Avoid Contact with Other Items	
		* Do Not Apply Wrench to Hose or Braid Sleeve	



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6. Installation and Handling

DON'T

DO

	Don't pull the hose off - uncoil it	
	Don't twist the hose – install torsion-free	
	Size the hose adequately – make sure the flexible length is not too short	
	Avoid excessive bending of the hose - use pipe bends	
	Don't move the hose obliquely to the installation plane - move in axis only	
	Avoid sagging of the hose - use a support	
	Don't install the hose in straight line - U-shaped bend for larger movement	
	Avoid torsional twist when fittings are not in line - install in one plane only	
	Avoid <u>overbending</u> when suspending the hose - use a support roll	
	Avoid excessive bending of the hoses at their ends - use pipe bends	
	Don't absorb vibrations axially - install vertically to the movement	



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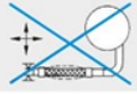
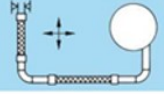


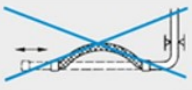
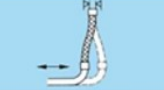

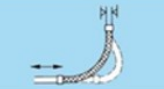

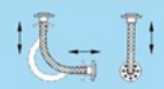



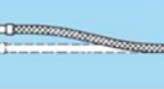



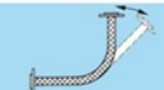

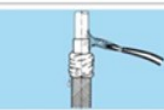


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6. Installation and Handling

DON'T

DO

	Install two hoses in 90° angle line to absorb vibrations in several directions	
	Centre the hose to move in both directions absorbing half of movement	
	Don't permit axial movements - install the hose vertically to the movement	
	Avoid large lateral movement - install the hose in a 90° bend	
	Avoid torsion - bend and movements must be in the same plane	
	Avoid excessive bending of the hoses at their ends - use pipe bends	
	Don't use any length - dimension the exact length	
	Take care that the flexible length is not too long - dimension the exact length	
	Avoid torsion due to angular movements – move in hose axis only	
	Keep the welding torch away from the hose connecting seam	
	Don't drag the hose on the floor without any protection cover	



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