Operating Instructions for Hose Assemblies

1 Important Information

Before installing and commissioning an Avintos hose assembly, these operating instructions must be read carefully. Particular attention must be paid to the safety instructions. These operating instructions apply on the assumption that the hose assembly (hose and hose fittings) has been correctly selected for its intended use. The selection and design of the hose assembly are not part of these operating instructions.
Failure to observe these operating instructions will void any product liability and warranty.

2 Safety Instructions for the Installation and Operation of Hose Assemblies

Failure of hose assemblies due to incorrect selection, improper use, damage, or wear can lead to fatal accidents as well as personal injury and damage to property.
Therefore, the following safety instructions must be read and complied with before installing hose assemblies:

- All locally applicable occupational health and safety regulations and requirements must be observed
- Hose assemblies must be connected, commissioned, and dismantled only by trained and qualified personnel
- Working with hose assemblies requires the use of appropriate personal protective equipment (safety shoes, gloves, safety glasses, helmet, hearing protection where required, etc.)
- Only work with safe systems and tools
- Time spent in hazardous areas must be kept to a minimum
    - Hose assemblies may be thrown around by the pressure of the medium if a coupling becomes loose or breaks off
    - The medium may escape under pressure
    - Heavy components may fall when handling the hose assembly
- Hose assemblies change shape and position during operation; there is a risk of crushing in confined spaces
- Hose assemblies may be set into vibration by the medium. Vibrating hose assemblies should not be held by hand for extended periods, as this may lead to injury
- Hot media result in hot surfaces, creating a risk of burns
- Hose assemblies must never be operated outside the operating parameters specified on the nameplate

- Hose assemblies must always be in a faultless condition to ensure safe operation. Damaged or worn hose assemblies must not be operated and must be taken out of service immediately

3 Intended Use

Pressure:
Do not exceed the maximum permissible operating overpressure (as specified on the nameplate).
Vacuum:
Do not fall below the maximum permissible operating vacuum (as specified on the nameplate).
Temperature:
The maximum permissible operating temperature (as specified on the nameplate) must not be exceeded. Observe the pressure–temperature relationship.
Chemical Compatibility:
The materials of the hose assembly must be resistant to the conveyed media under operating conditions. The composition of the medium, pressure, temperature, and concentration influence chemical compatibility. Compatibility tables may assist in selecting materials; however, these values are generally based on individual laboratory tests and should therefore be considered as recommendations only.
In case of doubt, the components must be tested under actual operating conditions. Responsibility for chemical compatibility lies with the system operator.

4 Installation / Commissioning

To ensure the functionality of hose assemblies and to avoid reducing their service life due to additional stresses, the following must be observed:

- Only tested hose assemblies in accordance with SN EN 12115 may be used
- For safe operation, hose assemblies must be periodically inspected during operation. The operator is responsible for defining inspection intervals based on a risk assessment
- Hose assemblies must not be subjected to tensile, torsional, or compressive loads during operation unless they are specifically designed for such loads
- Hose assemblies must be installed in such a way that their natural position is not restricted by operational movements (due to pressure and temperature changes)
- For freely suspended hose assemblies, the weight of the medium must be considered; suitable supports must be provided if necessary
- The minimum bending radius specified by the manufacturer must not be exceeded
- Kinking, particularly behind the hose fitting, must be avoided

- Hose assemblies must be protected from damage caused by external mechanical, thermal, or chemical influences
- Hose assemblies routed across traffic routes must be protected by vehicle ramps
- Before installation and commissioning, ensure that the system operating data do not exceed the maximum permissible values of the hose assembly. If necessary, appropriate safety systems must be installed in the system
- The hose assembly connections must match the system connections (nominal diameter, type, pressure rating, etc.)
- Depending on the type of connection, ensure that the correct seals are used and that they are in good condition
- Before commissioning, detachable connections must be checked for secure fastening
- Suitable lifting and handling equipment must be used for transport and installation

5 Maintenance, Servicing, Inspection

5.1 Dismantling

Before opening hose connections, the system must always be depressurized, drained, and cleaned.
Pressurized hoses must never be disconnected, as they may be violently ejected (whip effect).
If a hose assembly cannot be drained and/or cleaned for technical reasons, maintenance personnel must be informed accordingly. Precautions must be taken to collect escaping media and to ensure that it does not pose a hazard to operating or maintenance personnel.
Suitable lifting and/or transport equipment must be used for dismantling and transport.

5.2 Cleaning / Sterilization

Before inspection, storage, or disposal, hose assemblies must be cleaned so that they can be handled safely without additional protective measures.
When using cleaning agents, ensure that all components of the hose assembly are resistant to the cleaning agents used. The hose manufacturer’s cleaning recommendations must always be observed.

The following table is based on tests and publicly available sources and is intended only as a general recommendation. These values cannot cover all conditions (pressure, temperature, medium) that may occur in combination during the cleaning process.

	Medium	Hose Material	Concentration	Temperature
Rinsing	Hot Water	NR/NBR/SILICONE/ EPDM/IIR/UPE/PTFE	-	Max 90°C
Physical Disinfection	Steam	NR/NBR	-	Max 110°C Max 10 min
		EPDM/IIR/UPE/PTFE	-	Max 130°C Max 30 min
		SILICONE	-	Max 135°C Max 18 min
Chemical Disinfection	Acids (e.g. Salpeter)	NR/NBR/SILICONE	0.1%	Max 65°C
			2%	Max 25°C
		EPDM/IIR/UPE/PTFE	0.1%	Max 85°C
			3%	Max 25°C
	Alkaline Solutions (e.g. Sodium Hydroxide)	NR/NBR/SILICONE	2%	Max 65°C
			4%	Max 25°C
		EPDM/IIR/UPE/PTFE	2%	Max 85°C
			5%	Max 25°C
	Disinfectant (e.g. Peracetic Acid)	NR/NBR/SILICONE	1%	Max 25°C
		EPDM/IIR/UPE/PTFE		Max 40°C

5.3 Inspection Intervals / Inspections

Failure of hose assemblies due to damage or wear can result in fatal accidents as well as personal injury and damage to property. Therefore, the condition of hose assemblies must be checked periodically to ensure safe operation.

Inspection intervals depend on operating conditions and the hazard potential of the conveyed media. The operator must define and monitor inspection intervals based on a risk assessment.

Inspections may be carried out by the operator or by a specialized service provider. In all cases, inspections must be performed by appropriately trained and qualified personnel.

According to SN EN 12115, periodic inspection of a hose assembly must include at least a pressure test, and for electrically conductive hose assemblies, a resistance test.

The results must be documented, and the hose assembly must be marked with the date of the next inspection.

In addition to pressure testing, the hose assembly should undergo a visual inspection for external damage and wear.

5.4 Repairs

Hoses with external damage must not be repaired. A damaged hose must be taken out of service immediately and must not be reused (see also SN EN ISO 8331).

Leaks at crimped hose fittings must not be repaired (re-crimped). If a fitting needs to be replaced on a hose assembly (with clamp shells or crimp ferrules), the new fitting must not be attached to the previously crimped hose end. The deformed hose end must be cut off or a new hose must be used. After replacement, the hose assembly must be properly tested and labeled.

6 Transport / Storage

For transport and storage, hose assemblies must be packed in such a way that they cannot kink. No other objects may be placed on hose assemblies, as this may cause damage.

6.1 Transport

Loose hose ends and fittings may fall during transport and cause injury or damage. They must be secured accordingly. Hose assemblies must be protected against external impacts during transport.

6.2 Storage

Hose assemblies must be stored so that they are not subjected to excessive loads, stretching, or deformation. Contact with sharp, pointed, or rough objects or surfaces must be avoided.
Hose assemblies should preferably be stored flat. Rolled hose assemblies in particular should not be stacked (the specified minimum bending radius must be maintained).
Requirements for storage areas (see also SN EN ISO 8331):

- Dry, clean environment (relative humidity max. 70%)
- Storage temperature 0–25 °C
- Dark and ozone-free

Recommended storage periods:

- 4 years as hose (bulk material)
- 2 years as hose assembly

These periods are recommended as maximum storage durations. If these periods are exceeded, the hose assembly must undergo a complete inspection before commissioning.

7 Customer Service

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