

# SPIR STAR® High-Pressure Hose Assemblies

## Instructions on Installing and Operating



### Important Comment

Before installing and operating the product, these Installing and Operating Instructions have to be read carefully. Comments and remarks regarding dangers have to be observed in particular.

These Instructions are valid on condition that the proper product has been selected for the application. Selection and dimensioning of the product is not the subject of these Instructions. If these Instructions are not observed or if they are misinterpreted, SPIR STAR® AG will be exempt from any product liability and guarantee. This applies also if our product is taken apart or if it is modified.

These Instructions shall be kept in a safe place and – if our product is passed on, whether individually or as a part of a machine – shall be passed along in order to be at the disposal of the user.

### Safety Information

- Only trained personnel may execute the installation of our product and set it into operation.
- Check the high-pressure hose assemblies for kinks, wear and tear, corrosion, cracks and other damages each time before using them.
- High-pressure hose assemblies showing kinks, cracks, corrosion, leaking fittings or damages of the outer cover reaching down to the reinforcing steel wires have to be exchanged.
- Use only high-pressure hose assemblies the allowable working pressure of which you know.
- Do not use leaking high-pressure hose assemblies.
- Use only clean, filtered media in order to extend the “life span” of the high-pressure hoses.
- If a malfunction is suspected, the product or the machine it was mounted to shall be put out of operation immediately and the high-pressure hose assembly exchanged.

### Hazards

- Hazard by a bursting hose assembly.  
A hazard may originate from fragments flying around.
- Hazard by a leaking hose assembly.  
Leaking media, especially if emerging in a very thin jet, may cause severe cuts and even cut off limbs. Hot media may lead to scalding. Admixtures to the water may cause irritations and burns.
- Hazard by a hot medium inside the hose assembly.  
Touching the hot surface of the hose assembly may lead to severe burns.
- Hazard by the alteration of the length of the hose assembly.  
High-pressure hose assemblies shorten under pressure. This can make the operator lose his stability, and the hose assembly may lose its operational safety.
- Hazard by hose fittings and components joining hose assemblies.  
Hazards may originate from hose fittings and components joining hose assemblies if these become unfastened, break off or are pulled out as this may lead to an uncontrollable lashing movement of the hose assembly (whip effect).
- Hazard by hoses lying about.  
Hoses lying about create a potential stumbling hazard.

## 1. Marking

Hose type and batch number are printed on the hose at regular distances. The ferrules are marked with the max. allowable working pressure, the name of the manufacturer, the date of production (month of the year and year), the serial number and, upon the customer's request, identified with a customer's serial number.



## 2. Intended purpose

SPIR STAR® High-pressure hose is thought for applications with water using pressure sources with low pulsation rates ( $\pm 5\%$ ).

The following working temperatures are allowed:

Product series	Allowed working temperatures
In general	-30°C to +60°C
Series HT	-20°C to +150°C
Series PPA	-20°C to +80°C
Series F*)	-70°C to +200°C

\*) The max. allowable working pressure of the product series „F“ decreases by 5% in the temperature range between 24°C and 100°C, by 10% in the range between >100°C and 150°C, and by 20% in the range between >150°C and 200°C

If SPIR STAR® High-pressure hoses are to be used with aggressive media like alkaline solutions and acids for example, it is necessary to send a written inquiry on the resistance to SPIR STAR® AG before using them.

If SPIR STAR® High-pressure hoses are to be used with gaseous media, a safety factor of 1:6 between working pressure and burst pressure is to be observed. In this case the outer cover of the hose has to be pricked (perforated) every 10 mm with a suitable device or a spring-actuated prick punch.

The maximum working pressure given on the ferrules must not be exceeded under any circumstances. This applies also to pressure peaks.

### 3. Installing / Setting into operation

While tightening the nuts of the fittings, care must be taken that the fittings are not turned within the ferrules.

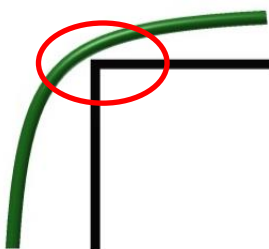
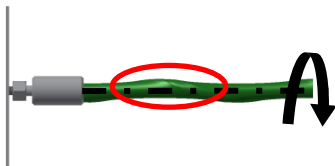
The nuts of the fittings must never be tightened while the high-pressure hose assembly is under pressure.

The hose assembly must be secured in an appropriate way if its weight might lead to excessive tensile strain, e.g. by hanging off high buildings.

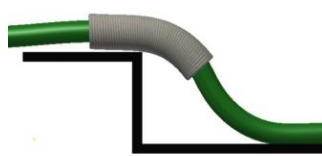
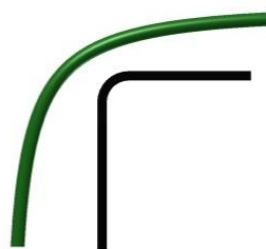
The high-pressure hose assembly must not be secured at the ferrule by means of a vise or a heavy pipe wrench.

The high-pressure hose assembly should be secured at both ends by an appropriate retaining device (hose arrestor) against lashing about in the case of the hose fitting breaking or being pulled out.

#### Wrong



#### Right



#### Comment

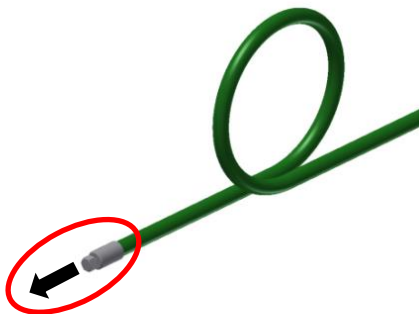
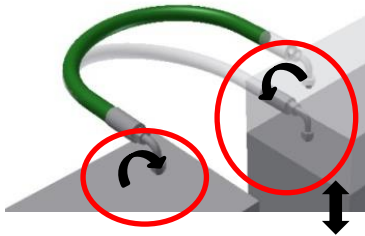
At installing, make sure that the required length exists to avoid "buckling" and tensioning of the hose during operation. The recommended minimum bend radius must not be exceeded. This can be achieved by using a bend restrictor. The bending of a hose may begin only after a length of  $\geq 1.5 \times d$ .

Twisting the hose during installation and operation, e.g. by blocking a rotary joint or installing the hose under a torsional load, must be avoided by all means.

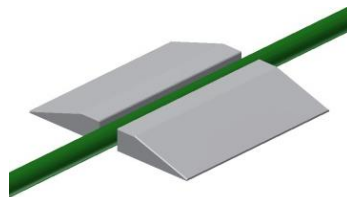
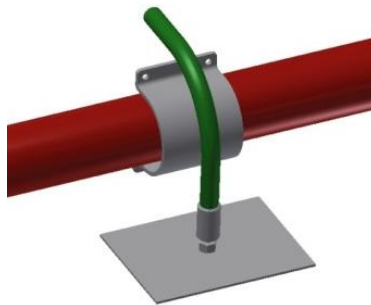
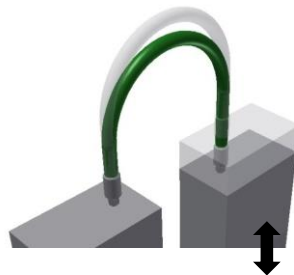
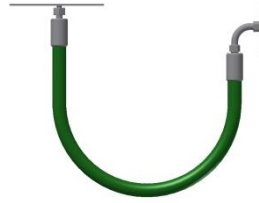
Because of their outer cover hoses have a certain abrasion resistance, but a hose may not be pulled over sharp edges because this may cause considerable damage to the hose.

Hose assemblies must be protected against damage that may lead to abrasion and cracking and thus to an early failure of the hose.

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## Comment

Hose assemblies must not be bent exceeding the permitted bend radius. The figures for the minimum bend radius given in our catalogue refer to the inflexible laying of hose assemblies. In such cases elbow pieces or bends should be used. The bend of the hose may only start after a length of  $\geq 1.5 \times d$ .

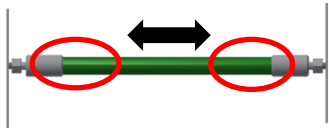
A twist of the hose assembly through movement should be avoided because of torsional loads acting on the valve or the tube cross section which might lead to failures.

Hose assemblies must be protected against the effect of temperatures if these exceed the values given in the catalog. Particular attention should be paid to the laying of hose assemblies in the range of heat sources. Hose assemblies should be protected by protecting equipment such as protecting hose.

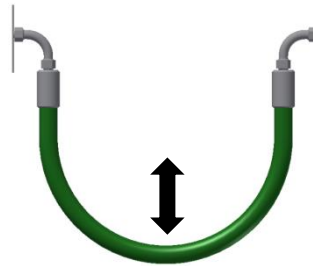
The development of hose loops must be avoided and counteracted. Tensile forces by pulling at those loops are also to be avoided.

Driving over unprotected hose assemblies with vehicles is not permitted. Ramps or similar are specifically to be used if driving over is necessary.

## Wrong



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## Comment

Hose assemblies must not be installed under tension or pressure in the axial direction. You need working space where a lengthening and shortening may occur during use. In such cases, elbow pieces or bends are to be used. The bend of the hose may start only after a length of  $\geq 1.5 \times d$ .

Based on these examples, it is not possible to display all kinds of faulty or correct installing. In particularly difficult installation conditions, please contact SPIR STAR® AG.

In exceptional cases of application, special tests may be needed before selecting the hose.

### 4. Packing and Storage

If stored properly (in a dry place, at 23°C, no direct solar radiation etc.), SPIR STAR® High-pressure hose and fittings can be stored indefinitely.

After a storage period of more than 12 months, ready made hose assemblies should be pressure tested at 1.5 times the working pressure but not more than 4.000 bar for 30 seconds in an appropriate pressure test stand before using them.

If storing the hose assembly at temperatures near the freezing point, it must be emptied completely (danger of frost).

### 5. Duration of Use

The duration of the use of SPIR STAR® High-pressure hose assemblies depends very much on the respective operating conditions.

For that reason it is not possible to make a general statement.