



**Handling and assembly**

Hose assemblies must be protected from external mechanical damage. They should therefore not be dragged along the ground or over sharp edges. Physical contact with other hoses or surrounding objects must be avoided during operation.

**The hose assembly must be checked for damage before installation!**

The hose should not be bent tighter than the minimum **bending radius**. The values can be found in the tables for the selected hose type.

**Torsion** must be avoided since this can result in premature failure. Therefore make sure you adhere to the following assembly sequence:

First, fully tighten the connection fitting of the hose assembly at one end. Where the hose assembly has one fixed fitting and one swivel fitting, start with the fixed fitting. In the case of hose assemblies that are intended to absorb movements, first connect the other end loosely. Then per-

form the expected movement of the hose 2 to 3 times in the relevant direction in order to align it without torsion. You can now tighten this end too.

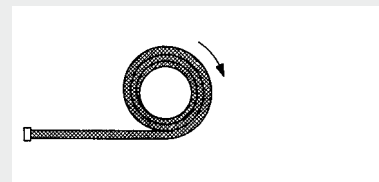
In the case of screwed joints, it is essential to use a second spanner to brace the hose against twisting. When selecting the connection fittings, make sure at least one end of the hose assembly is connected by means of a swivel joint.

Where there will be movements in operation, fit the hose so that hose axis and direction of movement are in one plane so that no torsion can arise.

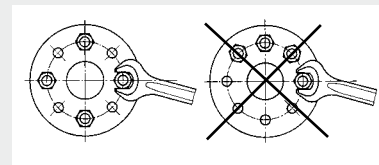
**During welding or soldering**, the hose assemblies must be protected from welding or soldering flux spatter. Carefully remove any flux residue. Appropriate measures must be taken to protect soldered joints of the fittings from overheating / unsoldering. Be sure to prevent short-circuits through welding electrodes or earthing cables, since this can destroy the hose.

**Example 1**

Lay hose assembly out straight by unrolling the hose coil. Avoid pulling on one end of the hose coil, as this will bend the hose tighter than the minimum permissible radius while subjecting the hose to too much torsional stress.

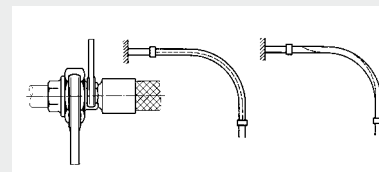
**Example 2**

Tighten mating flanges evenly (crosswise). The bolt holes of the two flanges must be precisely aligned. Use a loose flange on one side.

**Examples 3**

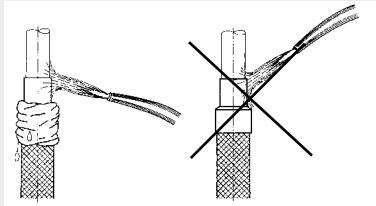
Make sure hose assembly is not twisted when connecting. If using swivel hose connections, use a second spanner to brace the hose end.

If the hose serves to absorb **expansion or vibration**, a reliable anchor must be fixed to the pipe section directly after the hose.

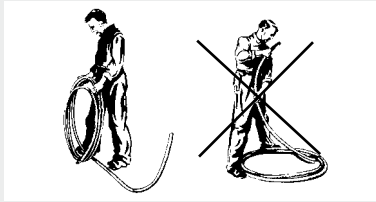


**Example 4**

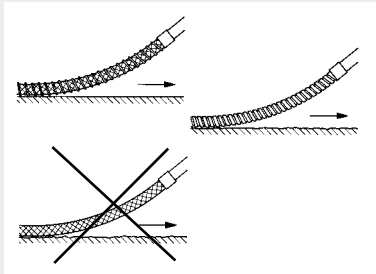
When making soldered joints, use a wet tape or heat insulating paste to protect the end of the hose as assembly is soldered to be soldered from overheating and unsoldering. Keep the gas torch away from the hose assembly. Carefully remove any flux residue.

**Example 5**

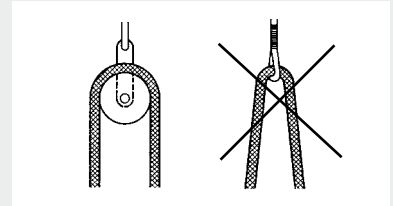
Make sure you handle metal hoses correctly, any damage to the hose can cause leaks. Avoid pulling on a rolled-up hose to straighten it out, uncoil it instead.

**Example 6**

If it is impossible to avoid mechanical stresses (for example, through frequent dragging along the ground), it may be necessary to protect the hose assembly from damage by using either an external round wire spiral or a protective hose.

**Example 7**

Avoid excessive bending stress on the hose by using a roller with a diameter at least as large as the minimum bending radius of the hose.

**Example 8**

Even when using the hose manually, the hose end should be protected from excessive bending stress by the use of a rigid elbow.

