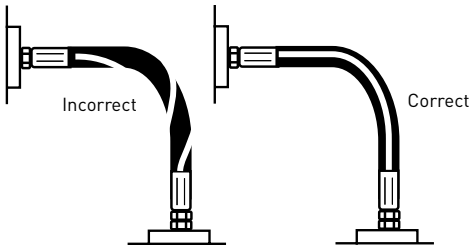


**FIGURE 8 — TWIST ANGLE AND ORIENTATION**

**7.4 Securement and Protection –** Install necessary restraints and protective devices. Determine that such devices do not create additional stress or wear points.

**7.5 Routing –** Review proper routing practices provided in Section 5 and make appropriate corrections to obtain optimum performance.

**7.6 Assembly Torque –** The connection end of a hose is normally threaded to obtain a tight pressure seal when attached to a port, an adapter, or another fitting. Sometimes bolts or screws provide the threaded connection. Each size and type of connection requires different torque values, and these may vary due to type of material or exterior coating.

**7.7 System Checkouts –** In hydraulic or other liquid systems, eliminate all air entrapment after completing the installation. Follow manufacturers' instructions to test the system for possible malfunctions and leaks.

**7.7.1 To avoid injury during system checkouts:**

A. Do not touch any part of the system when checking for leaks (see 4.1).

B. Stay out of potentially hazardous areas while testing hose systems (see Section 4).

C. Relieve system pressure before tightening connections.

**8. Maintenance Inspection –** A hose and fitting maintenance program may reduce equipment downtime, maintain peak operating performance, and reduce the risk of personal injury and/or property damage. The user should design and implement a maintenance program that suits the specific application and each specific hose in that application.

**8.1 Inspection Frequency –** Evaluate factors such as the nature and severity of the application, past history, and manufacturers' information to establish the frequency of visual inspections and functional tests.

**8.2 Visual Inspection (Hose and Fittings) –** Visually inspect hose and fittings for:

A. Leaks at hose fitting or in hose.
B. Damaged, cut or abraded cover.
C. Exposed reinforcement.
D. Kinked, crushed, flattened, or twisted hose.
E. Hard, stiff, heat cracked, or charred hose.
F. Blistered, soft, degraded, or loose cover.
G. Cracked, damaged, or badly corroded fittings.
H. Fitting slippage on hose.
I. Other signs of significant deterioration. If any of these conditions exist, evaluate the hose assemblies for correction or replacement.

**8.3 Visual Inspection (All Other Components) –** When visually inspecting hose and fittings, inspect for related items including:

A. Leaking ports.
B. Damaged or missing hose clamps, guards or shields.
C. Excessive dirt and debris around hose.
D. System fluid: Level, type, contamination, condition and air entrainment. If any of these are found, address them appropriately.

**8.4 Functional Test –** Functional tests determine if systems are leak free and operating properly. Carry out functional tests per information from equipment manufacturers.

**9. Hose Storage –** Age control and the manner of storage can affect hose life. Use the following practices when storing hose.

**9.1 Age Control –** Maintain a system of age control to determine that hose is used before its shelf life has expired. Shelf life is the period of time when it is reasonable to expect the hose to retain full capabilities for rendering the intended service.
Store hose in a manner that facilitates age control and first-in, first-out usage based on manufacturing date on hose or hose assembly. Per SAE J517:

A. Shelf life of rubber hose in bulk form, or in hose assemblies passing visual inspection and proof test, is forty quarters (ten years) from the date of vulcanization.
B. Shelf life of thermoplastic and polytetrafluoroethylene hose is considered to be unlimited.

**9.2 Storage –** Store hose and hose assemblies in a cool, dark, dry area with the ends capped. When storing hose, take care to avoid damage that could reduce hose life, and follow the manufacturers' information for storage and shelf life. Examples of factors that can adversely affect hose product in storage are:

A. Temperature
B. Ozone
C. Oils
D. Corrosive liquids and fumes
E. Rodents
F. Humidity
G. Ultraviolet light
H. Solvents
I. Insects
J. Radioactive materials

If there are any questions regarding the quality or usability of hose or hose assemblies, evaluate appropriately:

A. Flex the hose to the minimum bend radius and compare it with new hose. After flexing, examine the cover and tube for cracks. If any appear, no matter how small, reject the hose.
B. If the hose is wire reinforced, and the hose is unusually stiff, or a cracking sound is heard during flexing, check for rust by cutting away a section of the cover from a sample. Rust would be another reason for rejection.
C. If doubt still persists, contact hose assembler to conduct proof-pressure tests or any other tests needed to verify hose quality.

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