5.24 Hose Movement and Bending – Hose allows relative motion between system components. Analyze this motion when designing hose systems. The number of cycles per day may significantly affect hose life. Also avoid multiple planes of motion and twisting motion. Consider the motion of the hose when selecting hose and predicting service life. In applications that require hose to move or bend, refer to Figures 6 and 7; and use these practices:

5.24.1 Bend in Only One Plane to Avoid Twisting

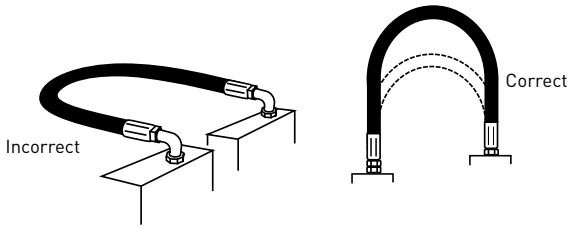

FIGURE 6 — BEND IN ONLY ONE PLANE TO AVOID TWISTING

5.24.2 Prevent Hose Bending in More Than One Plane – If hose follows a compound bend, couple it into separate segments, or clamp into segments that flex in only one plane.

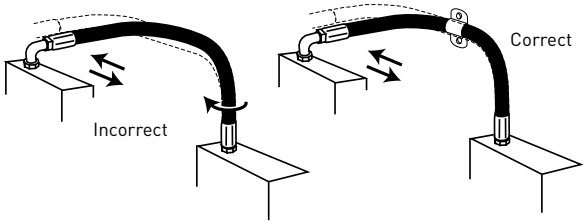

FIGURE 7 — PREVENT HOSE BENDING IN MORE THAN ONE PLANE

6. Hose-Assembly Fabrication – Persons fabricating hose assemblies should be trained in the proper use of equipment and materials. The manufacturers' instructions and the practices listed as follows must be followed. Properly assembled fittings are vital to the integrity of a hose assembly. Improperly assembled fittings can separate from the hose and may cause serious injury or property damage from whipping hose, or from fire or explosion of vapor expelled from the hose.

6.1 Component Inspection – Prior to assembly, examine components for:

A. Style or type
B. Cleanliness
C. Loose covers
D. Nicks
E. Size
F. Inside obstructions
G. Visible defects
H. Damage
I. Length
J. Blisters
K. Burrs

6.2 Hose Fittings – Hose fitting components from one manufacturer are not usually compatible with fittings components supplied by another manufacturer. For example, do not use a hose fitting nipple from one manufacturer with a hose socket from another manufacturer. It is the responsibility of the fabricator to consult the manufacturer's written instructions or the manufacturer directly for information on proper fitting components.

6.3 Hose and Fitting Compatibility – Care must be taken to determine proper compatibility between the hose and fitting. Base selection on the manufacturers' recommendations substantiated by testing to industry standards such as SAE J517. Hose from one manufacturer is not usually compatible with fittings from another. Do not intermix hose and fittings from two manufacturers without approval from both manufacturers.

6.4 Hose Assembly Equipment – Assembly equipment from one manufacturer is usually not interchangeable with that from another manufacturer. Hoses and fittings from one manufacturer should not generally be assembled with the equipment of another manufacturer.

6.5 Safety Equipment – During fabrication, use proper safety equipment, including eye protection, breathing apparatus, and adequate ventilation.

6.6 Reuse of Hose and Fittings – When fabricating hose assemblies, do not reuse:

A. Field-attachable fittings that have blown or pulled off hose.

B. Any part of hose fittings that were permanently crimped or swaged to hose.

C. Hose that has been in service after system check out (see 7.7).

6.7 Cleanliness of Hose Assemblies – Hose assemblies may be contaminated during fabrication. Clean hoses to specified cleanliness levels (see 5.13).

7. Hose Installation and Replacement – Use the following practices when installing hose assemblies in new systems or replacing hose assemblies in existing systems:

7.1 Pre-Installation Inspection – Before installing hose assemblies, examine:

A. Hose length and routing for compliance with original design.

B. Assemblies for correct style, size, length and visible nonconformities.

C. Fitting sealing surfaces for burrs, nicks, or other damage.

NOTE: When replacing hose assemblies in existing systems, verify that the replacement is of equal quality to the original assembly.

7.2 Handling During Installation – Handle hose with care during installation. Kinking hose, or bending at less than minimum bend radius may reduce hose life. Avoid sharp bending at the hose/fitting juncture (see 5.21).

7.3 Twist Angle and Orientation – Pressure applied to a twisted hose may shorten the life of the hose or loosen the connections. To avoid twisting, use the hose lay line or marking as a reference (see Figure 8).