

**5.14 Hose Fittings** – Selection of the proper hose fittings for the hose and application is essential for proper operation and safe use of hose and related assembly equipment. Hose fittings are qualified with the hose. Therefore, select only hose fittings compatible with the hose for the applications.

Improper selection of hose fittings or related assembly equipment for the application can result in injury or damage from leaks, or from hose assemblies blowing apart (see 4.2, 6.2, 6.3 and 6.4).

**5.15 Vibration** – Vibration can reduce hose service life. If required, conduct tests to evaluate the frequency and amplitude of system vibration. Clamps or other means may be used to reduce the effects of vibration. Consider the vibration requirements when selecting hose and predicting service life.

**5.16 Hose Cover Protection** – Protect the hose cover from abrasion, erosion, snagging and cutting. Special abrasion-resistant hoses and hose guards are available for additional protection. Route hose to reduce abrasion from hose rubbing other hose or objects that may abrade it.

**5.17 External Physical Abuse** – Route hose to avoid:

- A. Tensile loads
- B. Side loads
- C. Flattening
- D. Thread damage
- E. Kinking
- F. Damage to sealing surfaces
- G. Abrasion
- H. Twisting

**5.18 Swivel-Type Adapters** – Swivel-type fittings or adapters do not transfer torque to hose while being tightened. Use these as needed to prevent twisting during installation.

**5.19 Live Swivels** – If two components in the system are rotating in relation to each other, live swivels may be necessary. These connectors reduce the torque transmitted to the hose.

**5.20 Slings and Clamps** – Use slings and clamps to support heavy or long hose and to keep it away from moving parts. Use clamps that prevent hose movement that will cause abrasion.

**5.21 Minimum Bend Radius** – The minimum bend radius is defined in SAE J343 and is specified in other SAE standards and hose manufacturer’s product literature. Routing at less than minimum bend radius may reduce hose life. Sharp bending at the hose/fitting juncture may result in leaking, hose rupturing, or the hose assembly blowing apart (see 4.2 and Figure 1).

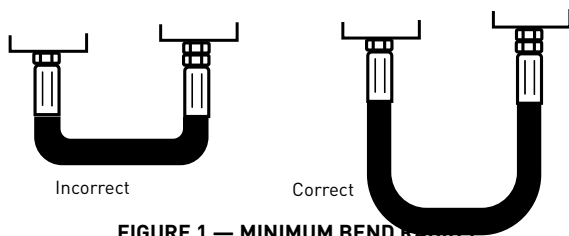


FIGURE 1 — MINIMUM BEND RADIUS

**5.22 Elbows and Adapters** – In special cases, use elbows and adapters to relieve hose strain (see Figure 2).

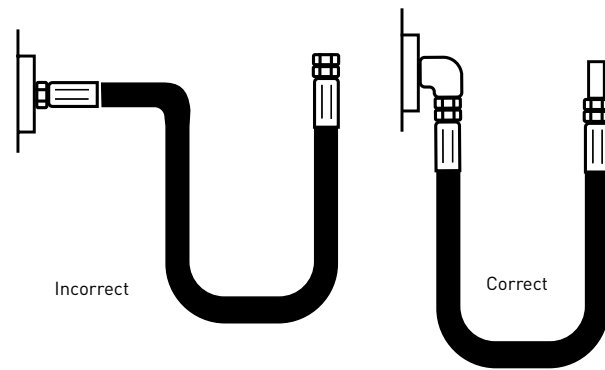


FIGURE 2 — ELBOWS AND ADAPTERS

**5.23 Lengths** – Unnecessarily long hose can increase pressure drop and affect system performance. When pressurized, hose that is too short may pull loose from its fittings, or stress the fitting connections, causing premature metallic or seal failures. When establishing hose length, refer to Figures 3, 4, and 5; and use the following practices:

**5.23.1 Motion Absorption** – Provide adequate hose length to distribute movement and prevent bends smaller than the minimum bend radius.

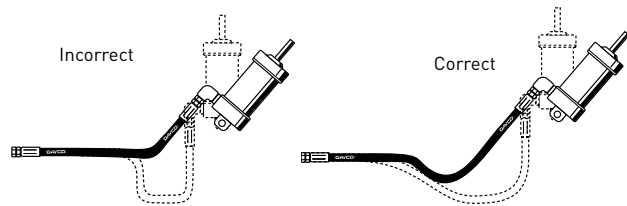


FIGURE 3 — MOTION ABSORPTION

**5.23.2 Hose and Machine Tolerances** – Design hose to allow for changes in length due to machine motion and tolerances.

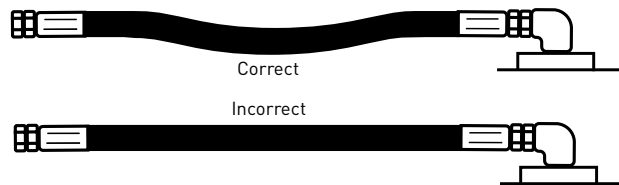


FIGURE 4 — HOSE AND MACHINE TOLERANCES

**5.23.3 Hose Length Due To Pressure** – Design hose to accommodate length changes from changing pressures. Do not cross or clamp together high- and low-pressure hoses. The difference in length changes could wear the hose covers.

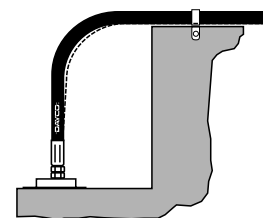


FIGURE 5 — HOSE LENGTH DUE TO PRESSURE