

SECTION 18. CONDUITS

11-248. GENERAL. Conduit is manufactured in metallic and nonmetallic materials and in both rigid and flexible forms. Primarily, its purpose is for mechanical protection of cables or wires. Conduit should be inspected for: proper end fittings; absence of abrasion at the end fittings; proper clamping; distortion; adequate drain points which are free of dirt, grease, or other obstructions; and freedom from abrasion or damage due to moving objects, such as aircraft control cables or shifting cargo.

11-249. SIZE OF CONDUIT. Conduit size should be selected for a specific wire bundle application to allow for ease in maintenance, and possible future circuit expansion, by specifying the conduit inner diameter (I.D.) about 25 percent larger than the maximum diameter of the wire bundle.

11-250. CONDUIT FITTINGS. Wire is vulnerable to abrasion at conduit ends. Suitable fittings should be affixed to conduit ends in such a manner that a smooth surface comes in contact with the wire. When fittings are not used, the end of the conduit should be flared to prevent wire insulation damage. Conduit should be supported by use of clamps along the conduit run.

11-251. CONDUIT INSTALLATION. Conduit problems can be avoided by following these guidelines:

a. Do not locate conduit where passengers or maintenance personnel might use it as a handhold or footstep.

b. Provide drainholes at the lowest point in a conduit run. Drilling burrs should be carefully removed.

c. Support conduit to prevent chafing against structure and to avoid stressing its end fittings.

11-252. RIGID CONDUIT. Conduit sections that have been damaged should be repaired to preclude injury to the wires or wire bundle which may consume as much as 80 percent of the tube area. Minimum acceptable tube bend radii for rigid conduit are shown in table 11-23. Kinked or wrinkled bends in rigid conduits are not recommended and should be replaced. Tubing bends that have been flattened into an ellipse and the minor diameter is less than 75 percent of the nominal tubing diameter should be replaced because the tube area will have been reduced by at least 10 percent. Tubing that has been formed and cut to final length should be deburred to prevent wire insulation damage. When installing replacement tube sections with fittings at both ends, care should be taken to eliminate mechanical strain.

TABLE 11-23. Bend radii for rigid conduit.

Nominal Tube O.D. (inches)	Minimum Bend Radii (inches)
1/8	3/8
3/16	7/16
1/4	9/16
3/8	15/16
1/2	1 1/4
5/8	1 1/2
3/4	1 3/4
1	3
1 1/4	3 3/4
1 1/2	5
1 3/4	7
2	8

11-253. FLEXIBLE CONDUIT. Flexible aluminum conduit conforming to Specification MIL-C-6136 is available in two types: Type I, Bare Flexible Conduit, and Type II, Rubber Covered Flexible Conduit. Flexible brass conduit conforming to Specification MIL-C-7931 is available and normally used instead of flexible aluminum where necessary to minimize radio interference. Also available is a plastic flexible tubing. (Reference MIL-T-8191A.) Flexible conduit may be used where it is impractical to use rigid conduit, such as areas that have motion between conduit ends or where complex bends are necessary. The use of transparent adhesive tape is recommended when cutting flexible tubing with a hacksaw to minimize fraying of the braid. The tape should be centered over the cutting reference mark with the saw

cutting through the tape. After cutting the flexible conduit, the transparent tape should be removed, the frayed braid ends trimmed, burrs removed from inside the conduit, and coupling nut and ferrule installed. Minimum acceptable bending radii for flexible conduit are shown in table 11-24.

TABLE 11-24. Minimum bending radii for flexible aluminum or brass conduit.

Nominal I.D. of conduit (inches)	Minimum bending radius inside (inches)
3/16	2 1/4
1/4	2 3/4
3/8	3 3/4
1/2	3 3/4
5/8	3 3/4
3/4	4 1/4
1	5 3/4
1 1/4	8
1 1/2	8 1/4
1 3/4	9
2	9 3/4
2 1/2	10

11-254.—11-259. [RESERVED.]