

adjoining section butting against the swage. The sections are held in place by rivets, sheet-metal screws, or by soldering.

Rectangular ducts are generally constructed by breaking the corners and grooving the longitudinal seam, although some fabricators still use the standing seam. Elbows and transformation sections are generally formed with Pittsburgh corner seams because this seam is easier to lock in place

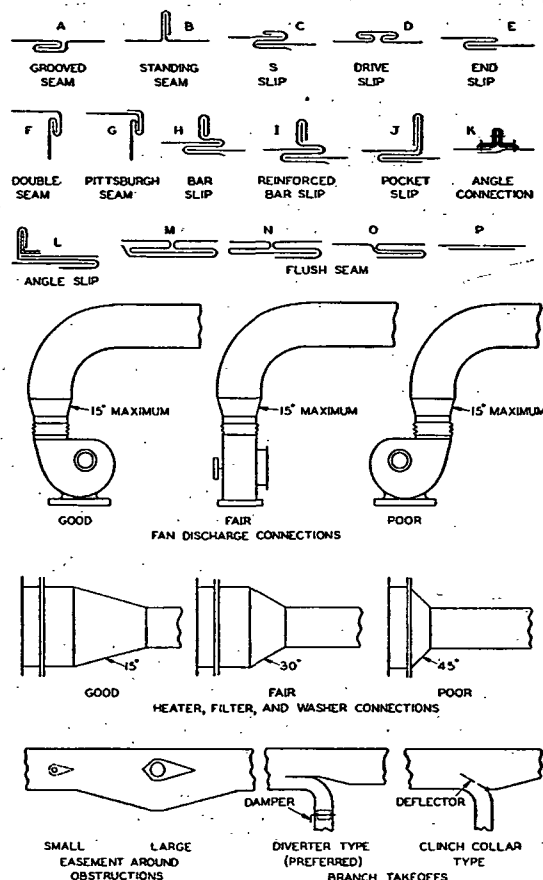


FIG. 16. SHEET METAL DUCT AND ARRANGEMENT DETAILS

than the double seam, but complicated fittings such as double-compounded elbows are usually constructed with double seam corners. The constructions of these various seams, as well as the types of girth connections, are shown in Fig. 16. The application of the various slips and connections is outlined in Table 9. The end slip may be used wherever S slips are recommended. Where drive slips are used, the end slip may be applied on the narrow side of the duct, and the drive slips on only the maximum side.

Designs M to P of Fig. 16 are for flush type seams on ductwork where

joints are to be concealed. For smooth appearance the seams may be soldered flush or filled with auto-body filler. Screws or rivets used should be of flat-head type.

Ducts 25 to 30 in. in size should be reinforced between the joints, but not necessarily at the joint. Ducts 31 in. and up should be reinforced at the joint and between the joints; if drive slips are used the angles are usually riveted to the duct about 2 in. from the slips. It is good practice

TABLE 9. RECOMMENDED SHEET METAL GAGES FOR RECTANGULAR DUCT CONSTRUCTION^a

ALUMINUM B. & S. GAGE	STEEL U. S. STD. GAGE	MAXIMUM SIDE, INCHES	TYPE OF TRANSVERSE JOINT CONNECTIONS ^b	BRACING
24	26	Up to 12	S. Drive, Pocket or Bar Slips, on 7 ft 10 in. centers	None
22	24	13 to 24	S, Drive, Pocket or Bar Slips, on 7 ft 10 in. centers	None
		25 to 30	S, Drive, 1 in. Pocket or 1 in. Bar Slips, on 7 ft 10 in. centers ^c	1 x 1 x 1/4 in. angles 4 ft from joint
20	22	31 to 40	Drive, 1 in. Pocket or 1 in. Bar Slips, on 7 ft 10 in. centers ^c	1 x 1 x 1/4 in. angles 4 ft from joint
		41 to 60	1 1/2 in. Angle Connections, or 1 1/2 in. Pocket or 1 1/2 in. Bar Slips with 1 1/2 in. x 3/4 in. bar reinforcing on 7 ft 10 in. centers ^c	1 1/2 x 1 1/2 x 1/4 in. angles 4 ft from joint
18	20	61 to 90	1 1/2 in. Angle Connections, or 1 1/2 in. Pocket or 1 1/2 in. Bar Slips 3 ft 9 in. maximum centers with 1 1/2 x 3/4 in. bar reinforcing	1 1/2 x 1 1/2 x 1/4 in. diagonal angles, or 1 1/2 x 1 1/2 x 1/4 in. angles 2 ft from joint
16	18	91 and up	2 in. Angle Connections or 1 1/2 in. Pocket or 1 1/2 in. Bar Slips 3 ft 9 in. maximum centers with 1 1/2 x 3/4 in. bar reinforcing ^d	1 1/2 x 1 1/2 x 1/4 in. diagonal angles, or 1 1/2 x 1 1/2 x 1/4 in. angles 2 ft from joint

^a For normal pressures and velocities (see Table 6) utilized in typical ventilating and air conditioning systems. Where special rigidity or stiffness is required, ducts should be constructed of metal two gages heavier. All uninsulated ducts 18 in. and larger should be cross-braced. Cross-bracing may be omitted on uninsulated ducts if two gages of heavier metal are used.

^b Other joint connections of equivalent mechanical strength and air tightness may be used.

^c Duct sections of 3 ft 9 in. may be used with bracing angles omitted, instead of 7 ft 10 in. lengths with joints indicated.

^d Ducts 91 in. and larger require special field study for hanging and supporting methods.

to cross-break or kink all flat surfaces to prevent vibration or buckling due to the air flow and accompanying variations in internal pressure.

The construction of elbows and changes of shape cannot be definitely outlined, because of the varied conditions encountered in the field, but in general, long radius elbows and gradual changes in shape tend to maintain uniform velocities accompanied by decreased turbulence, lower resistance and a minimum of noise.

Heavy canvas connections (asbestos cloth if there is a fire hazard) are recommended on both the inlet and outlet to all fans. Self-vulcanizing