

all correlated. Similarly in the case of return ducts, the selection specifies a complete unit consisting of return grille, return duct, and shoe connection.

Recommended Standard Sizes

For the purpose of simplification and standardization, selected combinations of commercial sizes of warm air pipes, return air pipes, ducts, grilles, fittings, and registers are designated as Combination Numbers. The numbers assigned and the combinations selected as standard are listed in the following tables ³.

Table 1—Combination Numbers 1 to 5—First Story Warm Air Ducts and Registers.

Table 2—Combination Numbers 11 to 16—Second Story Warm Air Ducts, Single Wall Stacks, Fittings, and Registers.

Table 3—Combination Numbers 21 to 24—Second Story Warm Air Ducts, Double Wall Stacks, Fittings, and Registers.

Table 4—Combination Numbers 31 to 38—Return Air Ducts, Fittings, and Grilles.

TABLE 1. FIRST STORY WARM-AIR DUCTS^a

COMBINATION No.	LEADER PIPE DIAMETER, IN.	REGISTER SIZE, IN.		
		Floor	Baseboard	
			Size	Extension
1	8	8 x 10	10 x 8	2 1/4
2	9	9 x 12	12 x 8	2 1/4
3	10	10 x 12	12 x 9	3 1/4
4	12	12 x 14	13 x 11	5 1/4
5	14	14 x 16	-----	-----

^aWhen the calculations indicate a requirement for a given room greater than Combination No. 4, two or more smaller units totalling the required capacity are recommended.

TABLE 2. SECOND STORY WARM-AIR DUCTS—SINGLE WALL STACKS AND FITTINGS

COMBINATION No.	LEADER PIPE DIAMETER, IN.	STACK SIZE IN.	REGISTER SIZE, IN.			
			Floor	Baseboard		Sidewall
				Size	Extension	
11	8	10 x 3 1/4	8 x 10	10 x 8	2 1/4	10 x 8
12	9	12 x 3 1/4	9 x 12	12 x 8	2 1/4	12 x 8
14	10	14 x 3 1/4	10 x 12	12 x 8	2 1/4	12 x 8
15	12	12 x 5 1/4	-----	12 x 9	3 1/4	-----
16	12	14 x 5 1/4	-----	13 x 11	5 1/4	-----

^bRecommended stack sizes. Tables may also be applied to 3 in. and 3 1/4 in. stack depths.

TABLE 3. SECOND STORY WARM-AIR DUCTS—DOUBLE WALL STACKS AND FITTINGS

COMBINATION No.	LEADER PIPE DIAMETER, IN.	STACK SIZE, IN.		REGISTER SIZE, IN.			
		Internal	External	Floor	Baseboard		Sidewall
					Size	Extension	
21	8	2 1/2 ^c x 10	3 1/8 ^c x 10 5/8	8 x 10	10 x 8	2 1/4	10 x 8
22	8	3 x 10	3 5/8 x 10 5/8	8 x 10	10 x 8	2 1/4	10 x 8
23	9	2 1/2 ^c x 12	3 1/8 ^c x 12 5/8	9 x 12	12 x 8	2 1/4	12 x 8
24	9	3 x 12	3 5/8 x 12 5/8	9 x 12	12 x 8	2 1/4	12 x 8

^cCommercial sizes vary 1/4 in. from values shown.

TABLE 4. RETURN AIR DUCTS

COMBINATION No.	DUCT DIA. IN.	AREA AT SHOE CONNECTION, SQ. IN.	METAL GRILLE SIZES			WHEN JOIST LINING IS USED ^a		WHEN DUCT IS USED	
			Choose One			No. of Joists Lined	Minimum ^a Depth, In.	Choose One	
			A	B	C				
31	10					1	7	14 x 6	12 x 8
32	12		6 x 30	8 x 24	12 x 14	1	9	22 x 6	16 x 8
33	14	170	8 x 30	10 x 24	14 x 16	1	12	28 x 6	22 x 8
34	16	220	10 x 30	12 x 24		2	8	28 x 8	22 x 10
35	18	280	12 x 30	14 x 24		2	10	36 x 8	28 x 10
36	20	340	14 x 30	18 x 24		2	12.5	36 x 10	30 x 12
37	22	420	18 x 30			2	15.0	42 x 10	36 x 12
38	24	500	20 x 30			2	18.0	42 x 12	36 x 14

^aBased on 14 in. space between joists.

^bUse full depth of joist except when joist depth is less than minimum depth required, when pan must be used.

The selected types of boots are shown in Fig. 2 and their resistances expressed in equivalent elbows are shown in Table 5. It is essential that free areas be maintained throughout fittings.

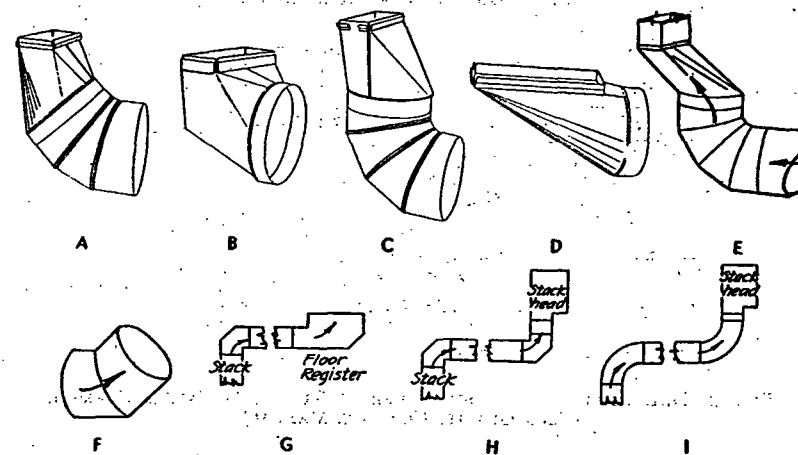


FIG. 2. TYPICAL WARM AIR BOOTS

TABLE 5. RESISTANCES OF WARM AIR BOOT COMBINATIONS EXPRESSED IN ELBOW EQUIVALENTS

WARM AIR BOOT	NAME OF COMBINATION	EQUIVALENT NO. OF 90-DEG ELBOWS
A	45-Deg Angle Boot and 45-Deg Elbow	1
B	90-Deg Angle Boot	1
C	Universal Boot and 90-Deg Elbow	1
D	End Boot	2
E	Offset Boot	2 1/2
F	45-Deg Angle	1/2
G	Floor Register—Second Story	3
H	Offset	3
I	Offset	2