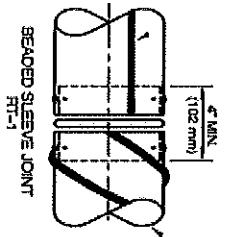


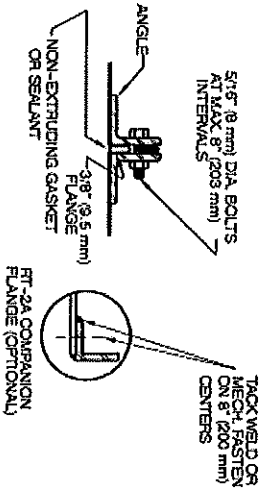
Chapter 3

Round, Oval and Flexible Duct



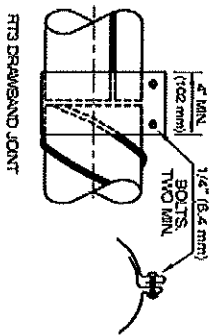
SEAMED SLEEVE JOINT
RT-1

- Longitudinal or Spiral Seam
- Sleeve to be at least the same gage as duct
- Screws must be used at uniform intervals of at least 15 in. along the circumference
- Three screws minimum on 14 in. or less diameter



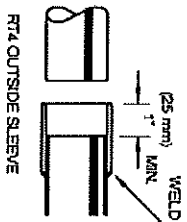
FT-2A COMPANION
FLANGE (OPTIONAL)

- Longitudinal or spiral seam
- Minimum Flange Sizes:
 - 1 in. \times 1 in. \times 10 ga up to 14 in. Dia.
 - 1 1/2 in. \times 1 1/2 in. \times 1/4 in. over 14 in. Dia.



FT-3 DRAWBAND JOINT

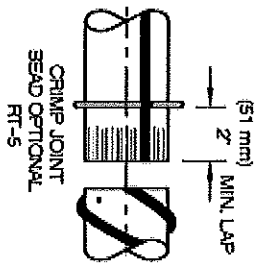
- Longitudinal or spiral seam
- Drawband to be at least same gage as duct



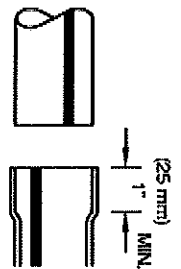
RT-4 OUTSIDE SLEEVE

- Longitudinal seam only
- See RT-1 for screw requirements

FIGURE 3-1 ROUND DUCT TRANSVERSE JOINTS

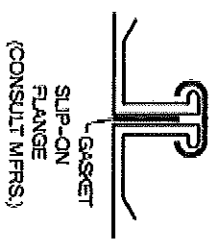


- Longitudinal or spiral seam
- See RT-1 for screw requirements



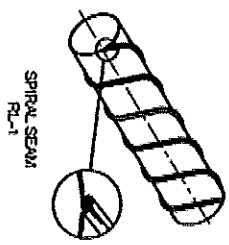
SWEDGE (BELL)
RT-6

- Longitudinal seam only
- See RT-1 for screw requirements



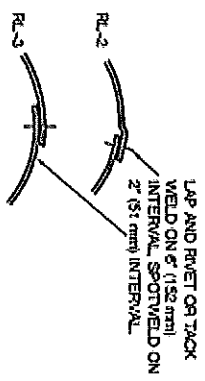
- Consult manufacturer for ratings established by performance documented to functional criteria in Chapter 11.

FIGURE 3-1 ROUND DUCT TRANSVERSE JOINTS (CONTINUED)

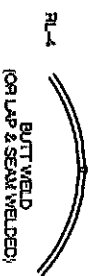


SPIRAL SEAM
RL-1

- To ± 10 in. wg

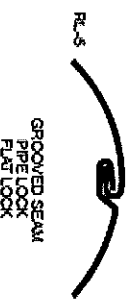


- To ± 4 in. wg
- Acceptable to 10 in. wg if spot welded on 1 in. intervals or tack welded on 3 in. intervals



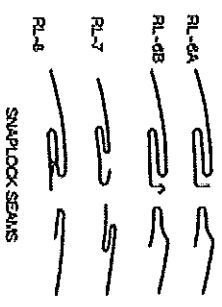
RL-4 BUTT WELD
(OR LAP & SEAM WELDED)

- To ± 10 in. wg



RL-5 GROOVED SEAM
PIPE LOOK
FLAT LOOK

- To ± 10 in. wg
- To - 3 in. wg



RL-6A
RL-6B
RL-7
RL-8 SNAPLOCK SEAMS

- To + 2 in. wg
- To - 1 in. wg

FIGURE 3-2 ROUND DUCT LONGITUDINAL SEAMS

Diameter, in.	Longitudinal Seam	Spiral Seam
4	28	28
6	28	28
8	28	28
10	28	28
12	28	28
14	28	28
16	26	26
18	26	26
20	24	26
22	24	26
24	24	26
30	22	24
36	22	24
42	22	24
48	20	22
54	20	22
60	20	22
66	18	22
72	18	20
78	18	20
84	18	20
90	18	20
96	18	20

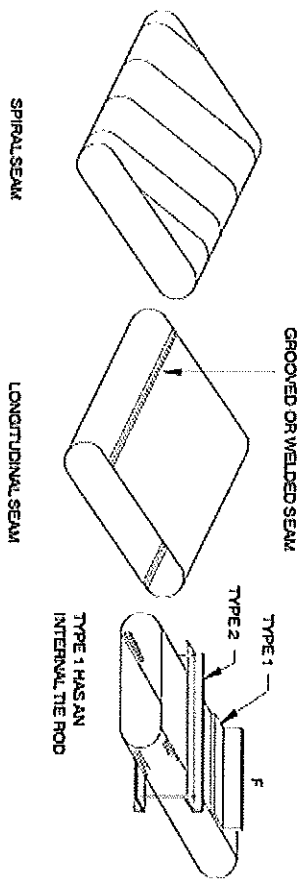
**Table 3-5 Round Duct Gage Unreinforced
Positive Pressure To 10 in. wg**

Neg. Pressure 2 in. wg	Stiffener Spacing													
	Unstiff		20 ft		12 ft		10 ft		6 ft		5 ft			
Diameter, in.	GA	R	GA	R	GA	R	GA	R	GA	R	GA	R	GA	R
4	28	NR	28	A	28	A	28	A	28	A	28	A	28	A
6	28	NR	28	A	28	A	28	A	28	A	28	A	28	A
8	28	NR	28	A	28	A	28	A	28	A	28	A	28	A
10	28	NR	28	A	28	A	28	A	28	A	28	A	28	A
12	26	NR	28	A	28	A	28	A	28	A	28	A	28	A
14	24	NR	28	A	28	A	28	A	28	A	28	A	28	A
16	24	NR	26	A	28	A	28	A	28	A	28	A	28	A
18	22	NR	26	A	28	A	28	A	28	A	28	A	28	A
20	22	NR	24	A	28	A	28	A	28	A	28	A	28	A
22	22	NR	24	A	26	A	28	A	28	A	28	A	28	A
24	20	NR	24	A	26	A	26	A	28	A	28	A	28	A
30	18	NR	22	A	24	A	26	A	28	A	28	A	28	A
36	16	NR	22	A	24	A	24	A	26	A	28	A	28	A
42	16	NR	22	A	22	A	24	A	26	A	26	A	26	A
48	N/A	NR	20	B	22	A	22	A	24	A	24	A	26	A
54	N/A	NR	20	B	22	B	22	A	24	A	24	A	24	A
60	N/A	NR	20	B	22	B	22	B	24	A	24	A	24	A
66	N/A	NR	18	C	20	B	22	B	24	B	24	A	24	A
72	N/A	NR	18	C	20	B	20	B	22	B	24	B	24	A
78	N/A	NR	18	D	20	C	20	C	22	B	22	B	22	B
84	N/A	NR	18	E	20	C	20	C	22	B	22	B	22	B
90	N/A	NR	18	E	18	D	20	C	22	B	22	B	22	B
96	N/A	NR	18	E	18	E	20	D	22	C	22	C	22	B

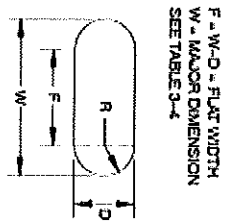
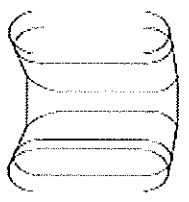
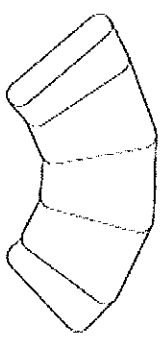
**Table 3-6 Min. Required Gage for Longitudinal Seam Duct
Under Neg. Pressure**

NOTES:

- a. N/A - Not Applicable
- b. NR - Not Required
- c. R - Reinforcement (stiffener) Class



JOINTS AND CONNECTIONS ARE SIMILAR TO ROUND DUCT SIZE REINFORCEMENTS AS FOR RECTANGULAR DUCT OF F DIMENSION ATTACH REINFORCEMENT TO DUCT AT ENDS AND 12" (305 MM) MAX. SPACING



FABRICATE FITTINGS AND CONNECTIONS AS FOR ROUND DUCT

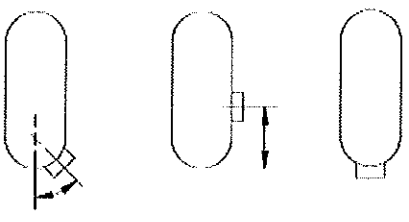


FIGURE 3-7 FLAT OVAL DUCTS

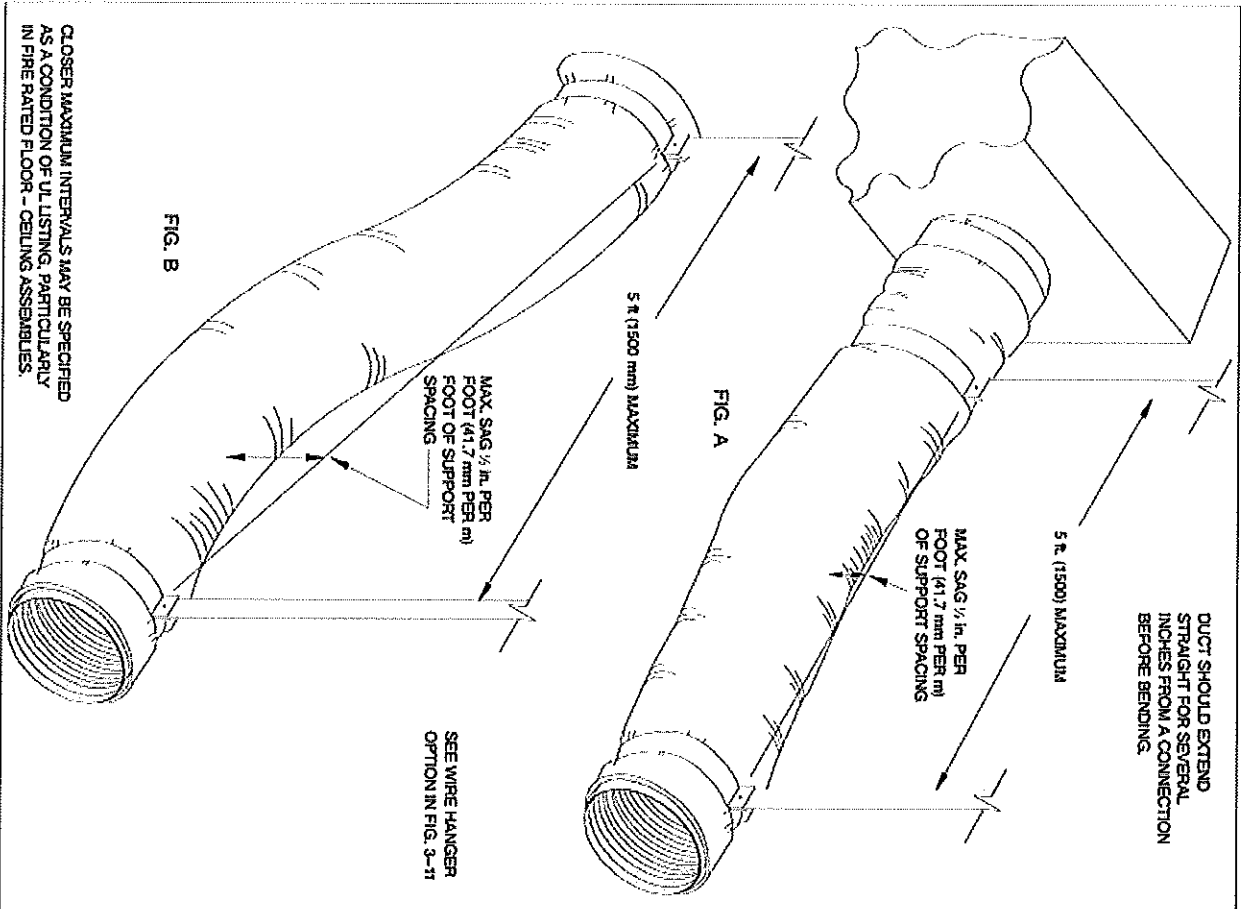


FIGURE 3-10 FLEXIBLE DUCT SUPPORTS

Maximum Half of Duct Perimeter	Pair at 10 ft Spacing		Pair at 8 ft Spacing		Pair at 5 ft Spacing		Pair at 14 ft Spacing		
	Strap	Wire/ Rod	Strap	Wire/ Rod	Strap	Wire/ Rod	Strap	Wire/ Rod	
P/2 = 30"	1" x 22 ga	10 ga (135")	1" x 22 ga	10 ga (135")	1" x 22 ga	12 ga (106")	1" x 22 ga	12 ga (106")	
P/2 = 72"	1" x 18 ga	3/8"	1" x 20 ga	1/4"	1" x 22 ga	1/4"	1" x 22 ga	1/4"	
P/2 = 96"	1" x 16 ga	3/8"	1" x 18 ga	3/8"	1" x 20 ga	3/8"	1" x 22 ga	1/4"	
P/2 = 120"	1 1/2" x 16 ga	1/2"	1" x 16 ga	3/8"	1" x 18 ga	3/8"	1" x 20 ga	1/4"	
P/2 = 168"	1 1/2" x 16 ga	1/2"	1 1/2" x 16 ga	1/2"	1" x 16 ga	3/8"	1" x 18 ga	3/8"	
P/2 = 192"	Not Given	1/2"	1 1/2" x 16 ga	1/2"	1" x 16 ga	3/8"	1" x 16 ga	3/8"	
P/2 = 193" up	Special Analysis Required								
When Straps are Lap Joined Use These Minimum Fasteners:		Single Hanger Maximum Allowable Load						Wire or Rod (Dia.)	
		Strap							
		1" x 22 ga - 260 lbs. 1" x 20 ga - 320 lbs. 1" x 18 ga - 420 lbs. 1" x 16 ga - 700 lbs. 1 1/2" x 16 ga - 1100 lbs.							
		1" x 18, 20, 22 ga - two #10 or one 1/2" bolt 1" x 16 ga - two 3/4" dia. 1 1/2" x 16 ga - two 3/8" dia Place fasteners in series, not side by side.							
		0.106" - 80 lbs. 0.135" - 120 lbs. 0.162" - 160 lbs. 1/4" - 270 lbs. 3/8" - 680 lbs. 1/2" - 1250 lbs. 5/8" - 2000 lbs. 3/4" - 3000 lbs.							

Table 5-1 Rectangular Duct Hangers Minimum Size

Dia.	Maximum Spacing	Wire Dia.	Rod	Strap
10 in. dia 250 mm dia	12 ft 3.7 m	One 12 ga One 2.75 mm	¼ in. 6.4 mm	1 in. × 22 ga 25.4 × 0.85 mm
11-18 in. 460 mm	12 ft 3.7 m	Two 12 ga or One 8 ga One 4.27 mm	¼ in. 6.4 mm	1 in. × 22 ga 25.4 × 0.85 mm
19-24 in. 610 mm	12 ft 3.7 m	Two 10 ga Two 3.51 mm	¼ in. 6.4 mm	1 in. × 22 ga 25.4 × 0.85 mm
25-36 in. 900 mm	12 ft 3.7 m	Two 8 ga Two 2.7 mm	⅝ in. 9.5 mm	1 in. × 20 ga 25.4 × 1.00 mm
37-50 in. 1270 mm	12 ft 3.7 m	————— ↓	Two ⅝ in. Two 9.5 mm	Two 1 in. × 20 ga (2) 25.4 × 1.00 mm
51-60 in. 1520 mm	12 ft 3.7 m	————— ↓	Two ⅝ in. Two 9.5 mm	Two 1 in. × 18 ga (2) 25.4 × 1.31 mm
61-84 in. 2130 mm	12 ft 3.7 m	————— ↓	Two ⅝ in. Two 9.5 mm	Two 1 in. × 16 ga (2) 25.4 × 1.61 mm
85-96 in. 2400 mm	12 ft 3.7 m	————— ↓	Two ½ in. Two 12 mm	Two 1½ in. × 16 ga (2) 38 × 1.61 mm

Table 5-2 Minimum Hanger Sizes for Round Duct

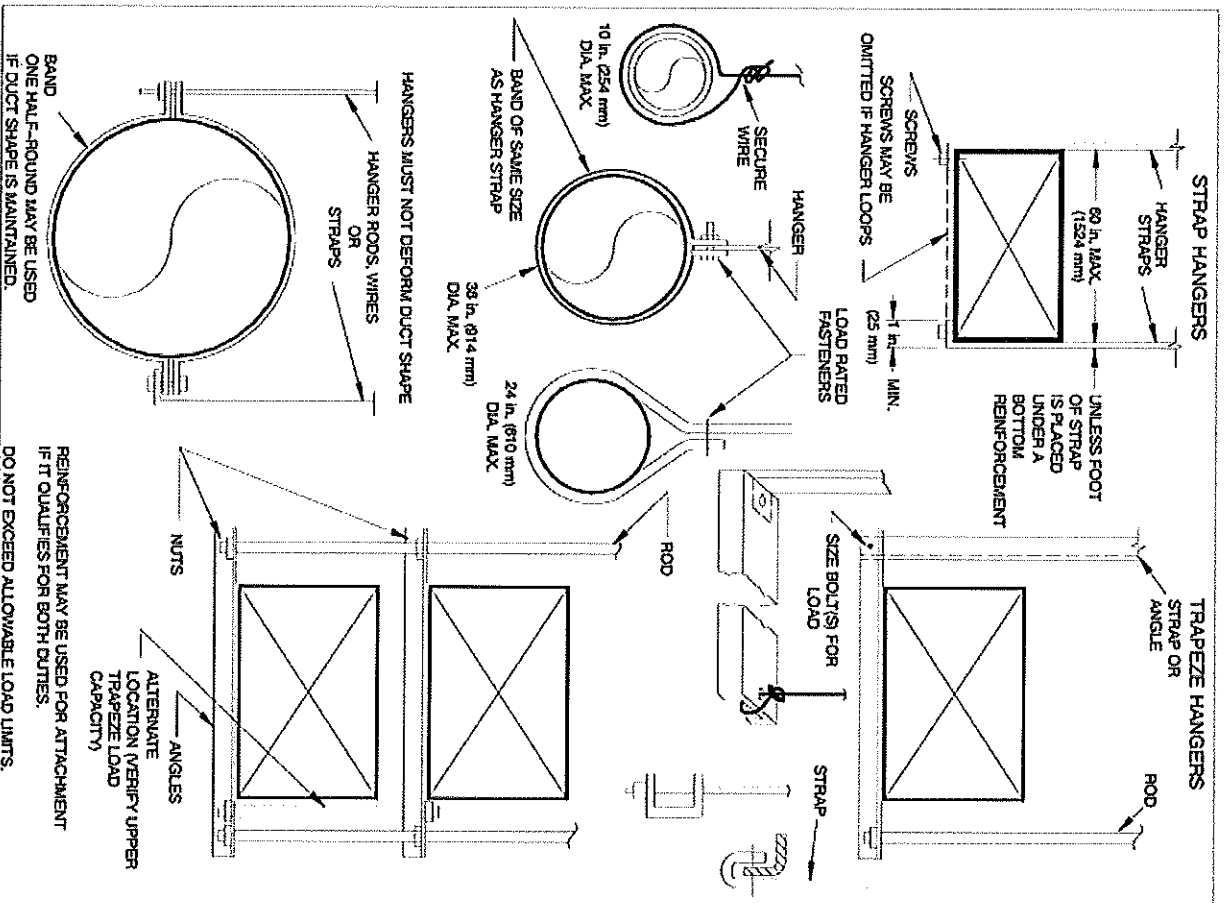


FIGURE 5-5 LOWER HANGER ATTACHMENTS

Trapeze	Angles										Channels							
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P		
Length, in.	18	80	150	180	350	510	650	650	940	1230	1500	1960	1960	-	-	-		
	24	75	150	180	350	510	650	650	940	1230	1500	1960	1960	-	-	-		
	30	70	150	180	350	510	650	650	940	1230	1500	1960	1960	-	-	-		
	36	60	130	160	340	500	620	620	920	1200	1480	1940	1940	-	-	-		
	42	40	110	140	320	480	610	610	900	1190	1470	1930	1930	-	-	-		
	48	-	80	110	290	450	580	580	870	1160	1440	1900	1900	-	-	-		
	54	-	-	-	250	400	540	540	840	1120	1400	1860	1860	-	-	-		
	60	-	-	-	190	350	490	490	780	1060	1340	1800	1800	-	-	-		
	66	-	-	-	100	270	400	400	700	980	1260	1720	1720	-	-	-		
	72	-	-	-	-	190	320	320	620	900	1180	1640	1640	-	-	-		
	78	-	-	-	-	-	210	210	500	790	1070	1530	1530	-	-	-		
	84	-	-	-	-	-	-	-	380	660	940	1400	1400	2310	4680	5980	9080	
	96	-	-	-	-	-	-	-	-	320	600	1060	1060	1970	4340	5870	4950	8740
	108	-	-	-	-	-	-	-	-	-	600	1240	1240	2510	7240	9760	7780	15650
120	-	-	-	-	-	-	-	-	-	-	-	-	1220	5950	8120	5950	13200	
132	-	-	-	-	-	-	-	-	-	-	-	-	-	4350	5820	4350	10820	
144	-	-	-	-	-	-	-	-	-	-	-	-	-	2420	3240	2420	8330	
Section Properties	I_x	0.012	0.022	0.041	0.078	0.110	0.139	0.190	0.272	0.348	0.547	0.705	1.240	3.040	1.660	2.070	3.850	
	Z	0.016	0.031	0.037	0.072	0.104	0.13	0.130	0.190	0.247	0.503	0.594	0.577	1.050	1.100	1.380	1.950	
A	0.120	0.234	0.180	0.359	0.527	0.688	0.484	0.715	0.938	0.902	1.190	1.440	1.940	1.210	1.760	1.590		
B/ft	0.440	0.800	0.660	1.230	1.800	2.340	1.650	2.440	3.190	3.070	4.100	4.900	6.600	4.100	6.000	5.400		

Table 5-3 Allowable Loads in Pounds for Trapeze Bars