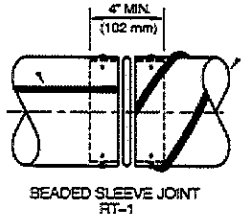
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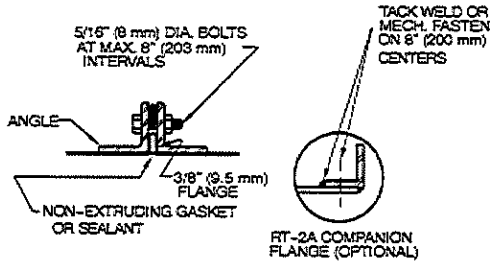
Chapter 3

Round, Oval and Flexible Duct

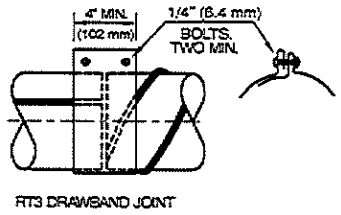
Reviewed for Code Compliance
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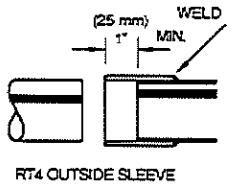
- Longitudinal or Spiral Seam
- Sleeve to be at least the same gage as duct
- Screws must be used at uniform intervals of at least 15 in. along the circumference
- Three screws minimum on 14 in. or less diameter



- Longitudinal or spiral seam
- Minimum Flange Sizes:
- 1 in. × 1 in. × 10 ga up to 14 in. Dia.
- 1 ½ in. × 1 ½ in. × ⅛ in. over 14 in. Dia.



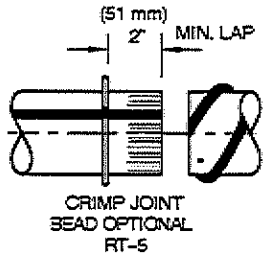
- Longitudinal or spiral seam
- Drawband to be at least same gage as duct



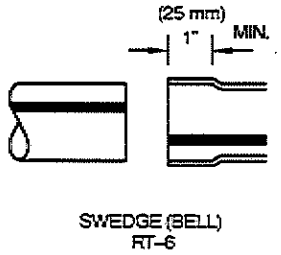
- Longitudinal seam only
- See RT-1 for screw requirements

FIGURE 3–1 ROUND DUCT TRANSVERSE JOINTS

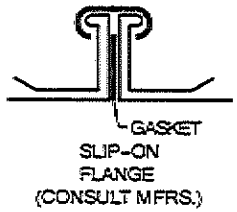
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- Longitudinal or spiral seam
- See RT-1 for screw requirements



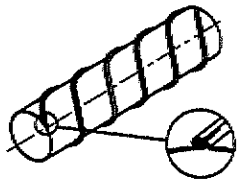
- Longitudinal seam only
- See RT-1 for screw requirements



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

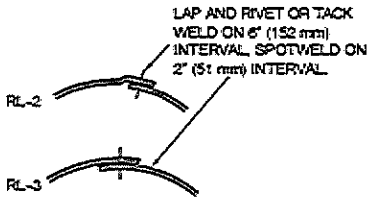
FIGURE 3–1 ROUND DUCT TRANSVERSE JOINTS (CONTINUED)

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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



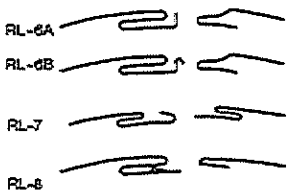
BUTT WELD
(OR LAP & SEAM WELDED)

- To ± 10 in. wg



GROOVED SEAM
PIPE LOCK
FLAT LOCK

- To ± 10 in. wg
- To – 3 in. wg



SNAPLOCK SEAMS

- To + 2 in. wg
- To – 1 in. wg

FIGURE 3–2 ROUND DUCT LONGITUDINAL SEAMS

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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

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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
4	28	NR	28	A	28	A	28	A	28	A	28	A
6	28	NR	28	A	28	A	28	A	28	A	28	A
8	28	NR	28	A	28	A	28	A	28	A	28	A
10	28	NR	28	A	28	A	28	A	28	A	28	A
12	26	NR	28	A	28	A	28	A	28	A	28	A
14	24	NR	28	A	28	A	28	A	28	A	28	A
16	24	NR	26	A	28	A	28	A	28	A	28	A
18	22	NR	26	A	28	A	28	A	28	A	28	A
20	22	NR	24	A	28	A	28	A	28	A	28	A
22	22	NR	24	A	26	A	28	A	28	A	28	A
24	20	NR	24	A	26	A	26	A	28	A	28	A
30	18	NR	22	A	24	A	26	A	28	A	28	A
36	16	NR	22	A	24	A	24	A	26	A	28	A
42	16	NR	22	A	22	A	24	A	26	A	26	A
48	N/A	NR	20	B	22	A	22	A	24	A	26	A
54	N/A	NR	20	B	22	B	22	A	24	A	24	A
60	N/A	NR	20	B	22	B	22	B	24	A	24	A
66	N/A	NR	18	C	20	B	22	B	24	B	24	A
72	N/A	NR	18	C	20	B	20	B	22	B	24	B
78	N/A	NR	18	D	20	C	20	C	22	B	22	B
84	N/A	NR	18	E	20	C	20	C	22	B	22	B
90	N/A	NR	18	E	18	D	20	C	22	B	22	B
96	N/A	NR	18	E	18	E	20	D	22	C	22	B

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

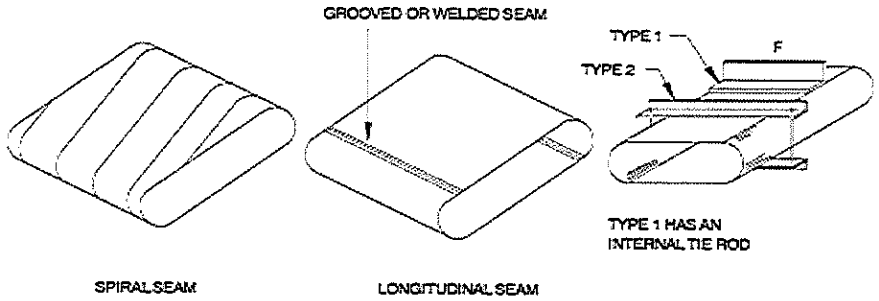
NOTES:

a. N/A – Not Applicable

b. NR – Not Required

c. R – Reinforcement (stiffener) Class

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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

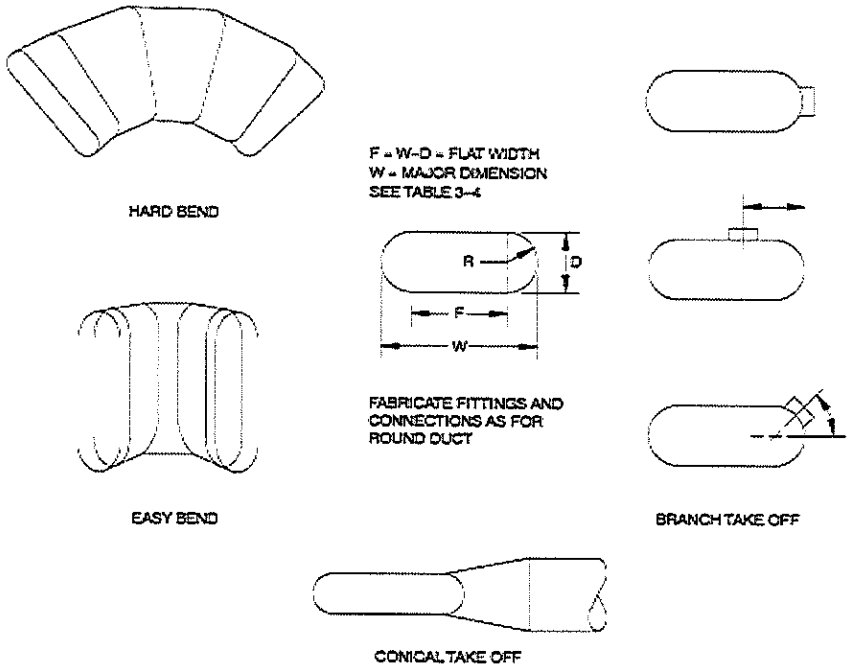


FIGURE 3–7 FLAT OVAL DUCTS

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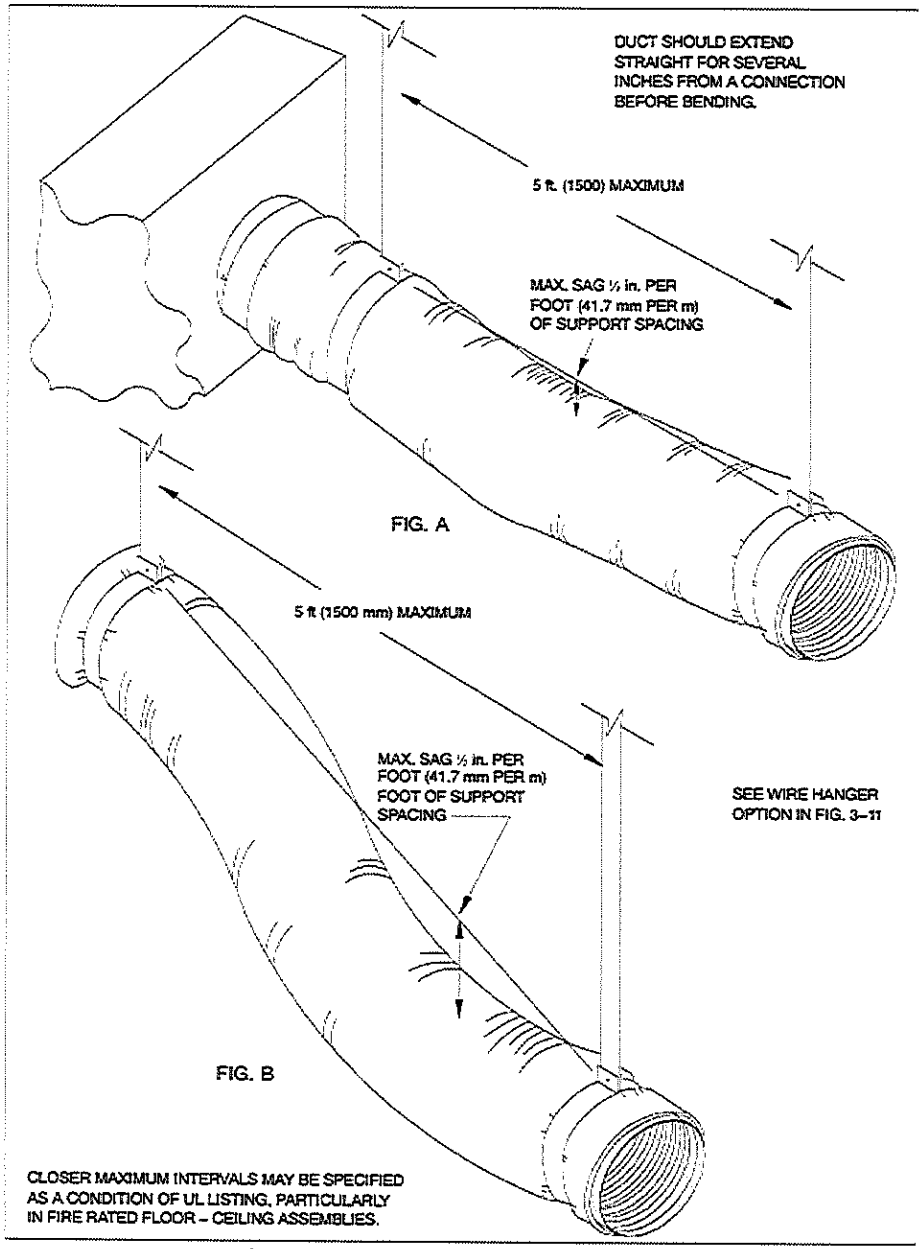


FIGURE 3–10 FLEXIBLE DUCT SUPPORTS

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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" × 22 ga	10 ga (.135")	1" × 22 ga	10 ga (.135")	1" × 22 ga	12 ga (.106")	1" × 22 ga	12 ga (.106")
P/2 = 72"	1" × 18 ga	⅜"	1" × 20 ga	¼"	1" × 22 ga	¼"	1" × 22 ga	¼"
P/2 = 96"	1" × 16 ga	⅜"	1" × 18 ga	⅜"	1" × 20 ga	⅜"	1" × 22 ga	¼"
P/2 = 120"	1½" × 16 ga	½"	1" × 16 ga	⅜"	1" × 18 ga	⅜"	1" × 20 ga	¼"
P/2 = 168"	1½" × 16 ga	½"	1½" × 16 ga	½"	1" × 16 ga	⅜"	1" × 18 ga	⅜"
P/2 = 192"	Not Given	½"	1 ½" × 16 ga	½"	1" × 16 ga	⅜"	1" × 16 ga	⅜"
P/2 = 193" up	Special Analysis Required							

When Straps are Lap Joined Use These Minimum Fasteners:	Single Hanger Maximum Allowable Load	
	Strap	Wire or Rod (Dia.)
1" × 18, 20, 22 ga -two #10 or one ¼" bolt 1" × 16 ga -two ¼" dia. 1½" × 16 ga -two ⅜" dia Place fasteners in series, not side by side.	1" × 22 ga - 260 lbs. 1" × 20 ga - 320 lbs. 1" × 18 ga - 420 lbs. 1" × 16 ga - 700 lbs. 1½" × 16 ga - 1100 lbs.	0.106" - 80 lbs. 0.135" - 120 lbs. 0.162" - 160 lbs. ¼" - 270 lbs. ⅜" - 680 lbs. ½" - 1250 lbs. ⅝" - 2000 lbs. ¾" - 3000 lbs.

Table 5–1 Rectangular Duct Hangers Minimum Size

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Dia.	Maximum Spacing	Wire Dia.	Rod	Strap
10 in. dn 250 mm dn	12 ft 3.7 m	One 12 ga One 2.75 mm	¼ in. 6.4 mm	1 in. × 22 ga 25.4 x 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	⅜ in. 9.5 mm	1 in. × 20 ga 25.4 × 1.00 mm
37-50 in. 1270 mm	12 ft 3.7 m	→	Two ⅜ 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 ⅜ 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 ⅜ 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

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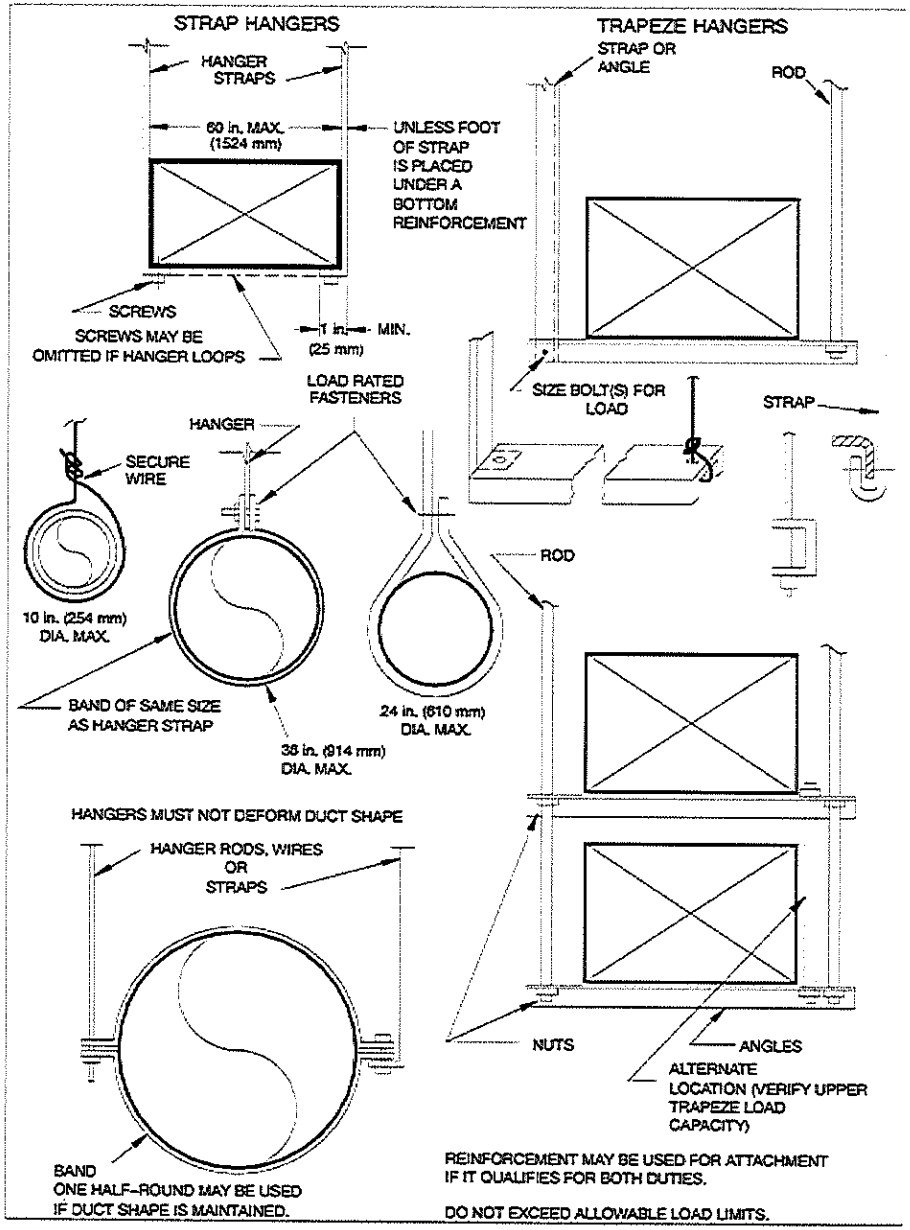


FIGURE 5–5 LOWER HANGER ATTACHMENTS

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Trapeze	Angles													Channels		
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Length, in.	1in. 1in. 16 ga	1in. 1in. ⅛in	1-½in. 1-½in. 16 ga	1-½in. 1-½in. ⅛in	1-½in. 1-½in. 3/16in	1-½in. 1-½in. ¼in	2in. 2in. ⅛in	2in. 2in. 3/16in	2in. 2in. ¼in	2-½in. 2-½in. 3/16in	2-½in. 2-½in. ¼in	3in. 3in. ¼in	4in. 4in. ¼in	3in. 4.1 lb/ft	3in. 6.0 lb/ft	4in. 5.4 lb/ft
18	80	150	180	350	510	650	650	940	1230	1500	1960	-	-	-	-	-
24	75	150	180	350	510	650	650	940	1230	1500	1960	-	-	-	-	-
30	70	150	180	350	510	650	650	940	1230	1500	1960	-	-	-	-	-
36	60	130	160	340	500	620	620	920	1200	1480	1940	-	-	-	-	-
42	40	110	140	320	480	610	610	900	1190	1470	1930	-	-	-	-	-
48	-	80	110	290	450	580	580	870	1160	1440	1900	-	-	-	-	-
54	-	-	-	250	400	540	540	840	1120	1400	1860	-	-	-	-	-
60	-	-	-	190	350	490	490	780	1060	1340	1800	-	-	-	-	-
66	-	-	-	100	270	400	400	700	980	1260	1720	-	-	-	-	-
72	-	-	-	-	190	320	320	620	900	1180	1640	-	-	-	-	-
78	-	-	-	-	-	210	210	500	790	1070	1530	-	-	-	-	-
84	-	-	-	-	-	-	-	380	660	940	1400	2310	4680	4650	5980	9080
96	-	-	-	-	-	-	-	-	320	600	1060	1970	4340	3870	4950	8740
108	-	-	-	-	-	-	-	-	-	-	-	2510	7240	5760	7780	15650
120	-	-	-	-	-	-	-	-	-	-	-	1220	5950	4120	5930	13200
132	-	-	-	-	-	-	-	-	-	-	-	-	4350	2540	3920	10820
144	-	-	-	-	-	-	-	-	-	-	-	-	2420	-	2000	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	0.703	1.240	3.040	1.660	2.070	3.850
Section Properties Z	0.016	0.031	0.037	0.072	0.104	0.13	0.130	0.190	0.247	0.303	0.394	0.577	1.050	1.100	1.380	1.930
Section Properties 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
Section Properties lb/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