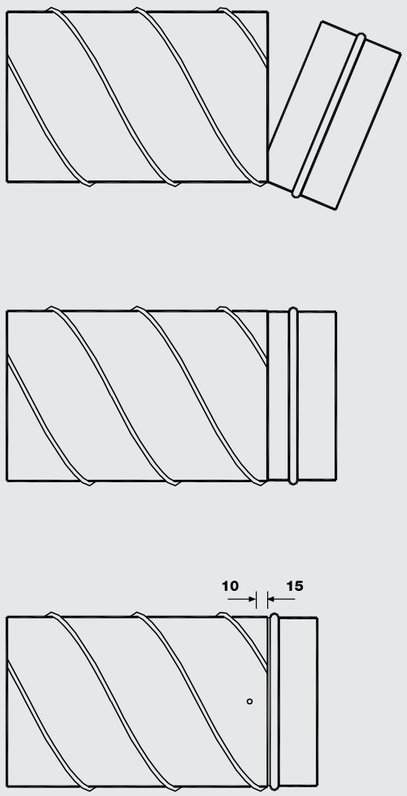
AIR DUCTS.

TABLE OF CONTENTS.

ROUND DUCT & FITTINGS

SPIRAL DUCT



Description

SAFID Vent must be assembled according to these instructions:

Before Assembly
The duct must be free from dirt.

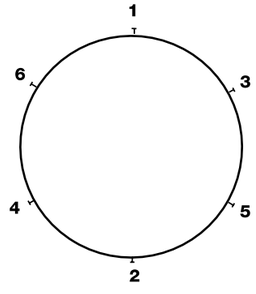
Shortening Ducts
Ducts must be cut at right angles and carefully deburred.

Assembly of Fittings
- Check that ducts and fittings are undamaged.
- Push the fittings into the duct right to the stop. Turning the fitting a little makes insertion easier.
- Fasten the fittings to the duct with self-tapping screws or pop rivets.

The following numbers and dimensions of steel screws and pop rivets are recommended:

Ø$_d$ mm	Min. Diameter mm	Number
63 - 125	3.2	2
140 -250	3.2	3
280 - 630	3.2	4
710 - 1250	4.0	6
1400 - 1600	4.8	12

Distribute the screws or pop rivets evenly around the circumference. In the event of incorrect assembly, holes caused by screws or pop rivets must be sealed.



STANDARDS FOR SPIRAL DUCT CONSTRUCTION

Comparison between the standards of various countries for spiral seam ventilation tubes in respect of the material thickness.

Dimensions	DW 144	BFS 1988:18	Din 24145	NF P-50-401	DS447	DVS 36002	SMACNA L/P	SMACNA H/P
63	0.6	0.4	0.4	0.5	0.5	0.5	28	28
71	0.6	0.4	0.4	0.5	0.5	0.5	28	28
80	0.6	0.4	0.4	0.5	0.5	0.5	28	28
90	0.6	0.5	0.4	0.5	0.5	0.5	28	28
100	0.6	0.5	0.6	0.5	0.5	0.5	28	28
112	0.6	0.5	0.6	0.5	0.5	0.5	28	28
125	0.6	0.5	0.6	0.5	0.5	0.5	28	28
140	0.6	0.5	0.6	0.5	0.5	0.5	28	28
160	0.6	0.5	0.6	0.5	0.5	0.5	28	28
180	0.6	0.6	0.6	0.6	0.5	0.5	28	28
200	0.6	0.6	0.6	0.6	0.5	0.6	28	28
224	0.8	0.6	0.6	0.6	0.5	0.6	28	28
250	0.8	0.6	0.6	0.6	0.5	0.6	28	28
280	0.8	0.6	0.8	0.6	0.6	0.6	28	26
315	0.8	0.6	0.8	0.6	0.6	0.6	28	26
355	0.8	0.8	0.8	0.6	0.6	0.6	28	26
400	0.8	0.8	0.8	0.8	0.6	0.8	26	24
450	0.8	0.8	0.8	0.8	0.6	0.8	26	24
500	0.8	0.8	0.8	0.8	0.6	0.8	26	24
560	0.8	0.8	0.8	0.8	0.7	0.8	26	24
630	0.8	0.8	1.0	0.8	0.7	0.8	26	24
710	0.8	0.8	1.0	1.0	0.7	0.8	24	22
800	1.0	0.8	1.0	1.0	0.7	0.9	24	22
900	1.0	0.9	1.0	1.0	0.9	0.9	24	22
1000	1.0	0.9	1.2	1.0	0.9	0.9	22	20
1120	1.2	0.9	1.2	1.0	0.9	0.9	22	20
1250	1.2	0.9	1.2	1.2	0.9	0.9	22	20
1400	1.2		1.5		0.9		20	18
1600	1.2		1.5		0.9		18	18
	British Standard	Swedish Standard	German Standard	French Standard	Danish Standard	Danish Standard	American Standard	American Standard

CONVERSION CHART

RECTANGULAR TO EQUIVALENT ROUND FOR EQUAL FRICTION & CAPACITY

b \ a	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	900	1000	1200	1400	1600	1700	1800	1900	2000
100	109																							
125	122																							
150	133	164																						
175	143	177																						
200	152	189	219																					
225	161	200	232																					
250	169	210	244	273																				
275	176	220	256	287																				
300	183	229	266	299	328																			
350	195	245	286	322	354	383																		
400	207	260	305	343	378	409	437																	
450	217	274	321	363	400	433	464	492																
500	227	287	337	381	420	455	488	518	547															
550	236	299	352	398	439	477	511	543	573	601														
600	245	310	365	414	457	496	533	567	598	628	656													
650	253	321	378	429	474	515	553	589	622	653	683	711												
700	261	331	391	443	490	533	573	610	644	677	708	737	765											
750	268	341	402	457	506	550	592	630	666	700	732	763	792	820										
800	275	350	414	470	520	567	609	649	687	722	755	787	818	847	875									
900	289	367	435	494	548	597	643	686	726	763	799	833	866	897	927	984								
1000	301	384	454	517	574	626	674	719	762	802	840	876	911	944	976	1037	1093							
1100	313	399	473	538	598	652	703	751	795	838	878	916	953	988	1022	1086	1146							
1200	324	413	490	558	620	677	731	780	827	872	914	954	993	1030	1066	1133	1196	1312						
1300	334	426	506	577	642	701	757	808	857	904	948	990	1031	1069	1107	1177	1244	1365						
1400	344	439	522	595	662	724	781	835	886	934	980	1024	1066	1107	1146	1220	1289	1416	1530					
1500	353	452	536	612	681	745	805	860	913	963	1011	1057	1100	1143	1183	1260	1332	1464	1584					
1600	362	463	551	629	700	766	827	885	939	991	1041	1088	1133	1177	1219	1298	1373	1511	1635	1749				
1700	371	475	564	644	718	785	849	908	964	1018	1069	1118	1164	1209	1253	1335	1413	1555	1684	1803	1858			
1800	379	485	577	660	735	804	869	930	988	1043	1096	1146	1195	1241	1286	1371	1451	1598	1732	1854	1912	1968		
1900	387	496	590	674	751	823	889	952	1012	1068	1122	1174	1224	1271	1318	1405	1488	1640	1778	1904	1964	2021	2077	
2000	395	506	602	688	767	840	908	973	1034	1092	1147	1200	1252	1301	1348	1438	1523	1680	1822	1952	2014	2073	2131	2186
2100	402	516	614	702	782	857	927	993	1055	1115	1172	1226	1279	1329	1378	1470	1558	1719	1865	1999	2063	2124	2183	2240
2200	410	525	625	715	797	874	945	1013	1076	1137	1195	1251	1305	1356	1406	1501	1591	1756	1906	2044	2110	2173	2233	2292
2300	417	534	636	728	812	890	963	1031	1097	1159	1218	1275	1330	1383	1434	1532	1623	1793	1947	2088	2155	2220	2283	2343
2400	424	543	647	740	826	905	980	1050	1116	1180	1241	1299	1355	1409	1461	1561	1655	1828	1986	2131	2200	2266	2330	2393
2500	430	552	658	753	840	920	996	1068	1136	1200	1262	1322	1379	1434	1488	1589	1685	1862	2024	2173	2243	2311	2377	2441
2600	437	560	668	764	853	935	1012	1085	1154	1220	1283	1344	1402	1459	1513	1617	1715	1896	2061	2213	2285	2355	2422	2487
2700	443	569	678	776	866	950	1028	1102	1173	1240	1304	1366	1425	1483	1538	1644	1744	1929	2097	2253	2327	2398	2466	2533
2800	450	577	688	787	879	964	1043	1119	1190	1259	1324	1387	1447	1506	1562	1670	1772	1961	2133	2292	2367	2439	2510	2578
2900	456	585	697	798	891	977	1058	1135	1208	1277	1344	1408	1469	1529	1586	1696	1800	1992	2167	2329	2406	2480	2552	2621

$D_e = 1.30\ [(ab)^{0.625}/(a+b)^{0.250}]$ where,
a = Length of one side of rectangular duct (mm)
b = Length of adjacent side of rectangular duct (mm)
D_e = Circular equivalent of rectangular duct for equal friction and capacity (mm)

Example:

Convert rectangular duct 500 × 500 to equivalent round.
a = 500, b = 500; from above table D_e = 547

SPIRAL DUCTS & ROUND FITTINGS

Table 1-1: Spiral Duct Wall Thickness Schedule (Positive Pressure)

Duct Diameter (mm)	+500 Pa (2" W.G.) Positive Pressure			Duct Diameter (mm)	+1000 Pa (4" W.G.) Positive Pressure			Duct Diameter (mm)	+2500 Pa (10" W.G.) Positive Pressure			Transverse Joints
	Spiral Seam		Longitudinal Seam Gauge		Spiral Seam		Longitudinal Seam Gauge		Spiral Seam		Longitudinal Seam Gauge	
	Gauge	Profile			Gauge	Profile			Gauge	Profile		
051 - 497	26	KG	24	051 - 497	26	KG	24	051 - 497	26	KG	24	Coupling
500 - 608	26	PKG	24	500 - 608	26	PKG	24	500 - 608	26	PKG	24	Coupling
623 - 900	24	PKG	22	623 - 900	24	PKG	22	623 - 900	24	PKG	22	Coupling
936 - 1000	24	PKG	20	936 - 1000	24	PKG	20	936 - 1000	24	PKG	20	Coupling
1020 - 1062	24	PKG	20	1020 - 1062	24	PKG	20	1020 - 1062	24	PKG	20	Flange @ 6m
1100 - 1250	22	PKG	20	1100 - 1250	22	PKG	20	1100 - 1250	22	PKG	20	Flange @ 6m
1300 - 1700	22	PKG	18	1300 - 1700	22	PKG	18	1300 - 1700	22	PKG	18	Flange @ 6m
1750 - 2500	18	TR	18	1750 - 2500	18	TR	18	1750 - 2500	18	TR	18	Flange @ 3m

- Round fittings shall have a wall thickness not less than specified for longitudinal seam ducts in above Table 1-1.
- Longitudinal seam ducts are continuously welded and supplied in 1 meter as standard length.
- The standard size of flange for ducts in Table 1-1 is 50×50×50mm angles.
- The above schedule meets the requirements of SMACNA HVAC Duct Construction Standards, Metal and Flexible, Third Edition 2005.

NOTE

SMACNA Standards specify that the flange joint can be used in spiral ducts over 1524mm diameter to retain it's circular shape.

Despite the above SMACNA Standards and in order to avoid potential damage or deformation of its circular shape due to transport or transferring of products at the project site, we recommend that the spiral ducts over 1000mm diameter be paired with flange transverse joints. The transverse joints of spiral ducts applies to a maximum length of 6 meters.

TABLE 1-2: SPIRAL DUCT WALL THICKNESS SCHEDULE (NEGATIVE PRESSURE)

Duct Diameter (mm)	-500 Pa (2" W.G.) Negative Pressure			Duct Diameter (mm)	-1000 Pa (4" W.G.) Negative Pressure			Duct Diameter (mm)	-2500 Pa (10" W.G.) Negative Pressure			Transverse Joints
	Spiral Seam		Longitudinal Seam Gauge		Spiral Seam		Longitudinal Seam Gauge		Spiral Seam		Longitudinal Seam Gauge	
	Gauge	Profile			Gauge	Profile			Gauge	Profile		
051 - 305	26	KG	24	051 - 305	26	KG	24	051 - 180	26	KG	24	COUPLING
315 - 403	26	KG	24	315 - 403	24	KG	22	200 - 250	26	KG	24	COUPLING
418 - 497	24	KG	22	404 - 497	22	KG	20	280 - 305	24	KG	22	COUPLING
500 - 550	24	PKG	22	500 - 508	22	PKG	20	315 - 355	22	KG	20	COUPLING
552 - 900	24	PKG	22	518 - 1000	22	PKG	20	372 - 750	22	PKG	20	FLANGE @ 6M
936 - 1062	24	PKG	20	1020 - 1250	22	PKG	20	770 - 1000	20	PKG	20	FLANGE @ 6M
1100 - 1250	22	PKG	20	1300 - 1500	22	PKG	18	1020 - 1200	20	PKG	20	FLANGE @ 6M
1300 - 1700	22	PKG	18	1550 - 1700	20	PKG	18	1250 - 1700	20	PKG	18	FLANGE @ 6M
1750 - 1800	18	TRG	18	1750 - 1800	18	TRG	18	1750 - 1800	18	PKG	18	FLANGE @ 3M
1850 - 1900	18	TRG	18	1850 - 1900	18	TRG	18	1850 - 1900	18	TRG	18	FLANGE @ 3M
2000 - 2500	18	TRG	18	2000 - 2500	18	TRG	18	2000 - 2500	18	TRG	16	FLANGE @ 3M +1 REINF FOR 10"W.G.

- Round fittings shall have a wall thickness not less than specified for longitudinal seam ducts in above Table 1-2.
- Longitudinal seam ducts are continuously welded and supplied in 1 meter length.
- The above Schedule meets the requirements of SMACNA HVAC Duct Construction Standards Metal and Flexible, Third Edition 2005.

Consult SAFID for more details of flange transverse joints construction of ducts in above Table 1-2.

Table 1-3: Spiral Duct Wall Thickness Schedule (as per DW 144)

Maximum Diameter (mm)	Spiral Duct	Longitudinal Seam Low+ Medium Pressure	Longitudinal Seam High Pressure	Fittings
205	0.6 mm	0.6 mm	0.8 mm	0.7 mm
206 - 510	0.8 mm	0.8 mm	0.8 mm	0.7 mm
511 - 630	0.8 mm	0.8 mm	1.0 mm	0.8 mm
631 - 762	0.8 mm	0.8 mm	1.0 mm	1.0 mm
763 - 913	0.8 mm	0.8 mm	1.2 mm	1.0 mm
914 - 1020	1.0 mm	1.0 mm*	1.2 mm*	1.0 mm
1021 - 1525	1.2 mm*	1.2 mm*	1.2 mm*	1.2 mm*

- Longitudinal seam ducts are continuously welded and supplied in 1 meter length.
- The above schedule meets all requirements of DW/144 specifications for sheet metal ductworks.

*Spiral Ducts should be helically beaded (corrugated). Longitudinal ducts and fittings must be reinforced with angles. For more details on constructions schedule consult SAFID.

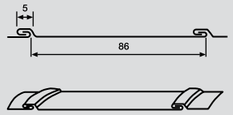
Table 1-4: Spiral Duct Wall Thickness Schedule (Eurovent)

Diameter (mm)	Operating Pressure	
	160 mm W.G. Max	250 mm W.G.Max
63 - 125	0.60	0.75
180 - 259	0.75	0.88
280 - 500	0.88	1.00
560 - 1000	1.00	1.13
1120 - 1400	1.13	1.25
1600 - 2000	1.13	-

- Circular fittings shall be one gauge heavier than the spiral ducts gauge in above Table 1-4.
- Corrugated ducts are not reflected in the above schedule.
- Longitudinal seam ducts should be one gauge heavier than spiral duct gauge and shall be continuously welded and supplied in 1 meter length.

PROFILE KG

Dimensions



- Types: KG KH, KA
- Spirally Wound Round Duct
- Diameter Range: 51 - 1600 mm
- Thickness Range: 26 - 18 gauge
- Materials:

KG - Galvanized Steel
KH - Stainless Steel (max 20 gauge)
KA - Aluminum

Description

Standard products are normally manufactured from hot dip galvanized steel coil (as per ASTM A653) lock forming quality grade and as specified in SMACNA Standards and DW144 sheet metal ductworks.

Ordering

Product Code: KG - aaa

Type
ød

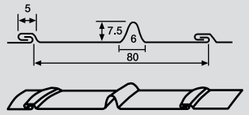
Duct Diameter (mm) KG, KH, KA

ød mm	L1 mm	L2 mm	Circumference πd m	Area πd²/4 m²
51	6	3	0.160	0.002
63	6	3	0.198	0.003
80	6	3	0.251	0.005
100	6	3	0.314	0.008
125	6	3	0.393	0.012
152	6	3	0.478	0.018
160	6	3	0.503	0.020
180	6	3	0.565	0.025
200	6	3	0.628	0.031
224	6	3	0.704	0.039
250	6	3	0.785	0.049
305	6	3	0.958	0.073
355	6	3	1.115	0.099
400	6	3	1.257	0.126
450	6	3	1.414	0.159
500	6	3	1.571	0.196
550	6	3	1.728	0.238
600	6	3	1.885	0.283
630	6	3	1.979	0.312
650	6	3	2.042	0.332
700	6	3	2.199	0.385
750	6	3	2.356	0.442
800	6	3	2.513	0.503
850	6	3	2.670	0.567
900	6	3	2.827	0.636
950	6	3	2.985	0.709
1000	6	3	3.142	0.785
1100	6	3	3.456	0.950
1150	6	3	3.613	1.039
1200	6	3	3.770	1.131
1250	6	3	3.927	1.227
1300	6	3	4.084	1.327
1350	6	3	4.241	1.431
1400	6	3	4.398	1.539
1450	6	3	4.555	1.651
1500	6	3	4.712	1.767
1600	6	3	5.027	2.011

Non- standard lengths available on request.
Non-standard sizes available as longitudinally seamed ducts with a maximum length of 1 meter.

PROFILE PKG

Dimensions



- Types: PKG, PKH, PKA
- Spirally Wound Corrugated Round Duct
- Diameter Range: 160 - 1600 mm
- Thickness Range: 26 - 18 gauge
- Materials:

PKG - Galvanized Steel
PKH - Stainless Steel (max 20 gauge)
PKA - Aluminum

Description

Standard products are normally manufactured from hot dip galvanized steel coil (as per ASTM A653) lock forming quality grade and as specified in SMACNA Standards and DW144 sheet metal ductworks.

Ordering

Product Code: PKG - aaa

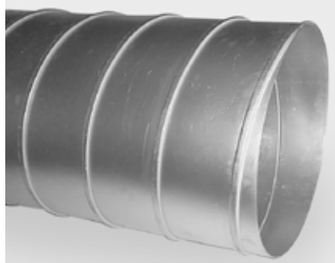
Type
ød

Duct Diameter (mm) PKG, PKH, PKA

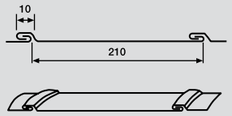
ød mm	L1 mm	L2 mm	Circumference πd m	Area πd²/4 m²
160	6	3	0.503	0.020
180	6	3	0.565	0.025
200	6	3	0.628	0.031
224	6	3	0.704	0.039
250	6	3	0.785	0.049
280	6	3	0.880	0.062
305	6	3	0.958	0.073
350	6	3	1.100	0.096
400	6	3	1.257	0.126
450	6	3	1.414	0.159
500	6	3	1.571	0.196
550	6	3	1.728	0.238
560	6	3	1.759	0.246
600	6	3	1.885	0.283
630	6	3	1.979	0.312
650	6	3	2.042	0.332
700	6	3	2.199	0.385
710	6	3	2.231	0.396
750	6	3	2.356	0.442
800	6	3	2.513	0.503
850	6	3	2.670	0.567
900	6	3	2.827	0.636
950	6	3	2.985	0.709
1000	6	3	3.142	0.785
1062	6	3	3.336	0.886
1100	6	3	3.456	0.950
1150	6	3	3.613	1.039
1200	6	3	3.770	1.131
1250	6	3	3.927	1.227
1300	6	3	4.084	1.327
1350	6	3	4.241	1.431
1400	6	3	4.398	1.539
1450	6	3	4.555	1.651
1500	6	3	4.712	1.767
1600	6	3	5.027	2.011

Non- standard lengths available on request.
Non-standard sizes available as longitudinally seamed ducts with a maximum length of 1 meter.

PROFILE TRG



Dimensions



- Types: TRG, TRH
- Spirally Wound Heavy Duty Round Duct
- Diameter Range: 315 - 3150 mm
- Thickness Range: 20 - 12 gauge
- Materials:

TRG - Galvanized Steel
TRH - Stainless Steel

Description

Standard products are normally manufactured from hot dip galvanized steel coil (as per ASTM A653) lock forming quality grade and as specified in SMACNA Standards and DW144 sheet metal ductworks.

Ordering

Product Code: TRG - aaa

Type
ⱷd

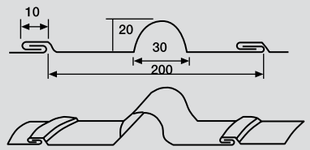
Duct Diameter (mm) TRG, TRH

ⱷd mm	L_1 mm	L_2 mm	Circumference πd m	Area πd²/4 m²
315	6	3	0.990	0.078
400	6	3	1.257	0.126
500	6	3	1.571	0.196
630	6	3	1.979	0.312
800	6	3	2.513	0.503
900	6	3	2.827	0.636
1000	6	3	3.142	0.785
1100	6	3	3.456	0.950
1250	6	3	3.927	1.227
1400	6	3	4.398	1.539
1600	6	3	5.027	2.011
1800	6	3	5.655	2.545
2000	6	3	6.283	3.142
2500	6	3	7.854	4.909
3150	6	3	9.896	7.793

Non- standard lengths available on request.
Non-standard sizes available as longitudinally seamed ducts with a maximum length of 1 meter.

PROFILE PTRG

Dimensions



- Types: PTRG, PTRH
- Spirally Wound Corrugated Heavy Duty Round Duct
- Diameter Range: 315 - 3150 mm
- Thickness Range: 20 - 12 gauge
- Materials:

PTRG - Galvanized Steel
PTRH - Stainless Steel

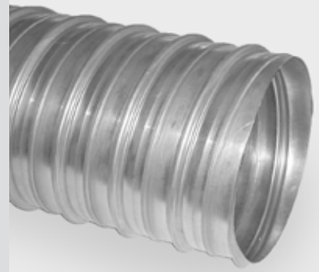
Description

Standard products are normally manufactured from hot dip galvanized steel coil (as per ASTM A653) lock forming quality grade and as specified in SMACNA Standards and DW144 sheet metal ductworks.

Ordering

Product Code: PTRG - aaa

Type
ⱷd



Duct Diameter (mm) PTRG, PTRH

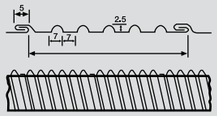
ⱷd mm	L_1 mm	L_2 mm	Circumference πd m	Area πd²/4 m²
315	6	3	0.990	0.078
400	6	3	1.257	0.126
500	6	3	1.571	0.196
630	6	3	1.979	0.312
800	6	3	2.513	0.503
900	6	3	2.827	0.636
1000	6	3	3.142	0.785
1100	6	3	3.456	0.950
1250	6	3	3.927	1.227
1400	6	3	4.398	1.539
1600	6	3	5.027	2.011
1800	6	3	5.655	2.545
2000	6	3	6.283	3.142
2500	6	3	7.854	4.909
3150	6	3	9.896	7.793

Non- standard lengths available on request.
Non-standard sizes available as longitudinally seamed ducts with a maximum length of 1 meter.

SPIRAL DUCT

PROFILE KKG

Dimensions



- Types: KKG
- Spirally Wound Multi-Corrugated Round Duct
- Diameter Range: 63 - 152 mm
- Thickness Range: 26 - 24 gauge
- Materials:

KKG - Galvanized Steel

Description

Standard products are normally manufactured from hot dip galvanized steel coil (as per ASTM A653) lock forming quality grade and as specified in SMACNA Standards and DW144 sheet metal ductworks.

Ordering

Product Code: KKG - aaa

Type
ⱷd

Duct Diameter (mm) KKG

ⱷd mm	L_1 mm	L_2 mm	Circumference πd m	Area $\pi d^2/4$ m^2
63	6	3	0.198	0.003
66	6	3	0.207	0.003
70	6	3	0.220	0.004
71	6	3	0.223	0.004
75	6	3	0.236	0.004
80	6	3	0.251	0.005
90	6	3	0.283	0.006
100	6	3	0.314	0.008
112	6	3	0.352	0.010
125	6	3	0.393	0.012
140	6	3	0.440	0.015
152	6	3	0.478	0.018

Non- standard lengths available on request.
Non-standard sizes available as longitudinally seamed ducts with a maximum length of 1 meter.

SPIRAL DUCT I STANDARD SIZES

Duct Diameter (mm)
KG, KH, KA, PKG, PKH, PKA

ⱷd mm	ⱷd mm	ⱷd mm	ⱷd mm	ⱷd mm
51	341	570	833	1500
55	350	590	850	1600
63	355	600	860	
70	372	608	873	
71	385	623	900	
75	400	630	936	
80	403	645	950	
90	418	650	1000	
100	430	680	1020	
112	434	685	1062	
125	445	700	1100	
140	450	710	1120	
152	466	724	1124	
160	476	725	1150	
180	482	736	1187	
200	497	748	1200	
224	500	750	1250	
250	518	770	1300	
280	526	776	1315	
305	550	780	1350	
315	552	800	1400	
325	560	811	1450	

TRG, TRH, PTRG, PTRH

ⱷd mm	ⱷd mm	ⱷd mm	ⱷd mm
315	800	1250	2000
400	900	1400	2500
500	1000	1600	3150
630	1100	1800	

Standard Length - 6 meters

Non- standard lengths available on request.
Non-standard sizes available as longitudinally seamed ducts with a maximum length of 1 meter.

WEIGHTS

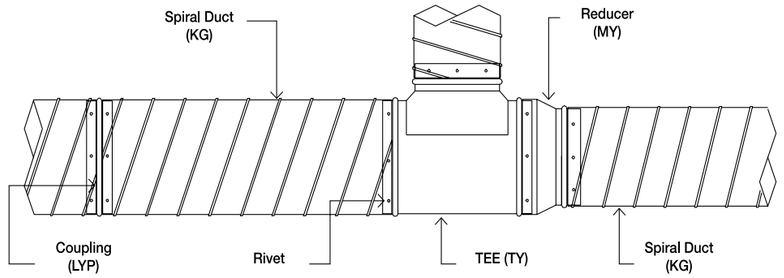
Table 1-5: Weights (kg/m)

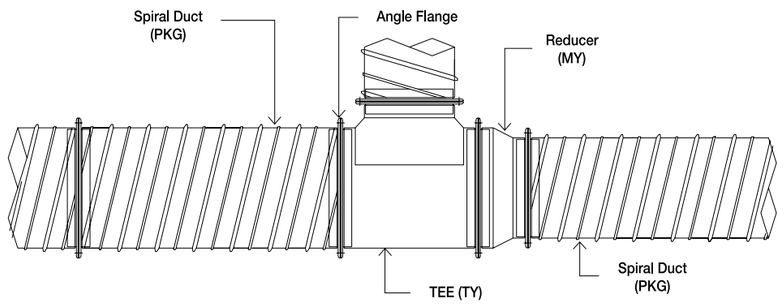
Thickness Gauge / Dia (mm)	KG, KH				
	26	24	22	20	18
63	1.0				
80	1.3				
100	1.6	2.0			
112	1.8	2.3			
125	2.0	2.5			
140	2.2	2.8	3.4		
160	2.5	3.2	3.9		
180	2.8	3.7	4.4		
200	3.2	4.1	4.9	5.8	
224	3.5	4.5	5.5	6.5	
250	4.0	5.1	6.1	7.2	9.4
280	4.4	5.7	6.9	8.1	10.6
315	5.0	6.4	7.7	9.1	11.9
355	5.6	7.2	8.7	10.3	13.4
400	6.3	8.1	9.8	11.6	15.1
450	7.1	9.1	11.0	13.0	17.0
500	7.9	10.1	12.3	14.5	18.8
550	8.7	11.1	13.5	15.9	20.7
630	10.0	12.7	15.4	18.2	23.7
710			17.4	20.5	26.8
800			19.7	23.1	30.1
900			22.1	26.0	33.9
1000				28.9	37.7
1120				32.4	42.2
1250				36.2	47.1
1400					52.7
1600					60.3

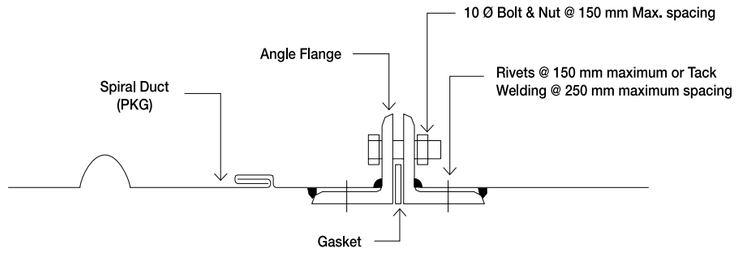
Above weights are per L.M. for galvanized steel and stainless steel spiral ducts.

TRANSVERSE CONNECTIONS

Table 1-6: Typical Transverse Joints

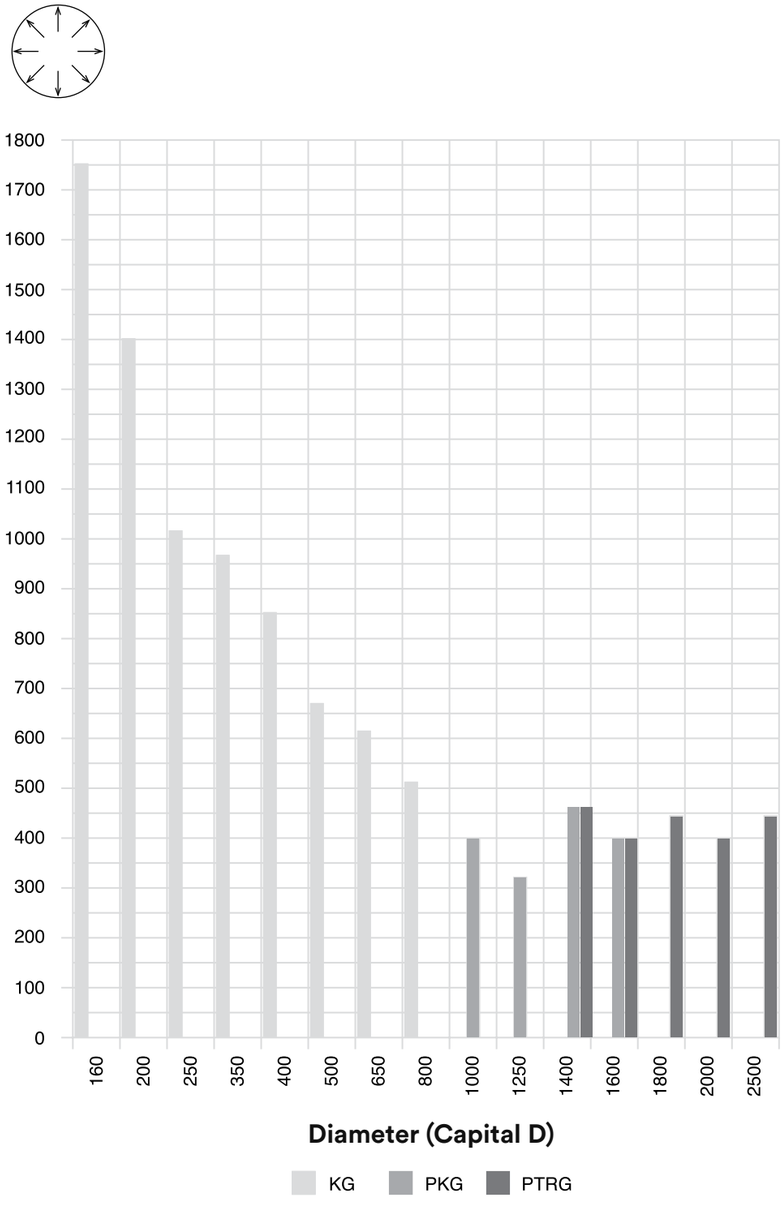






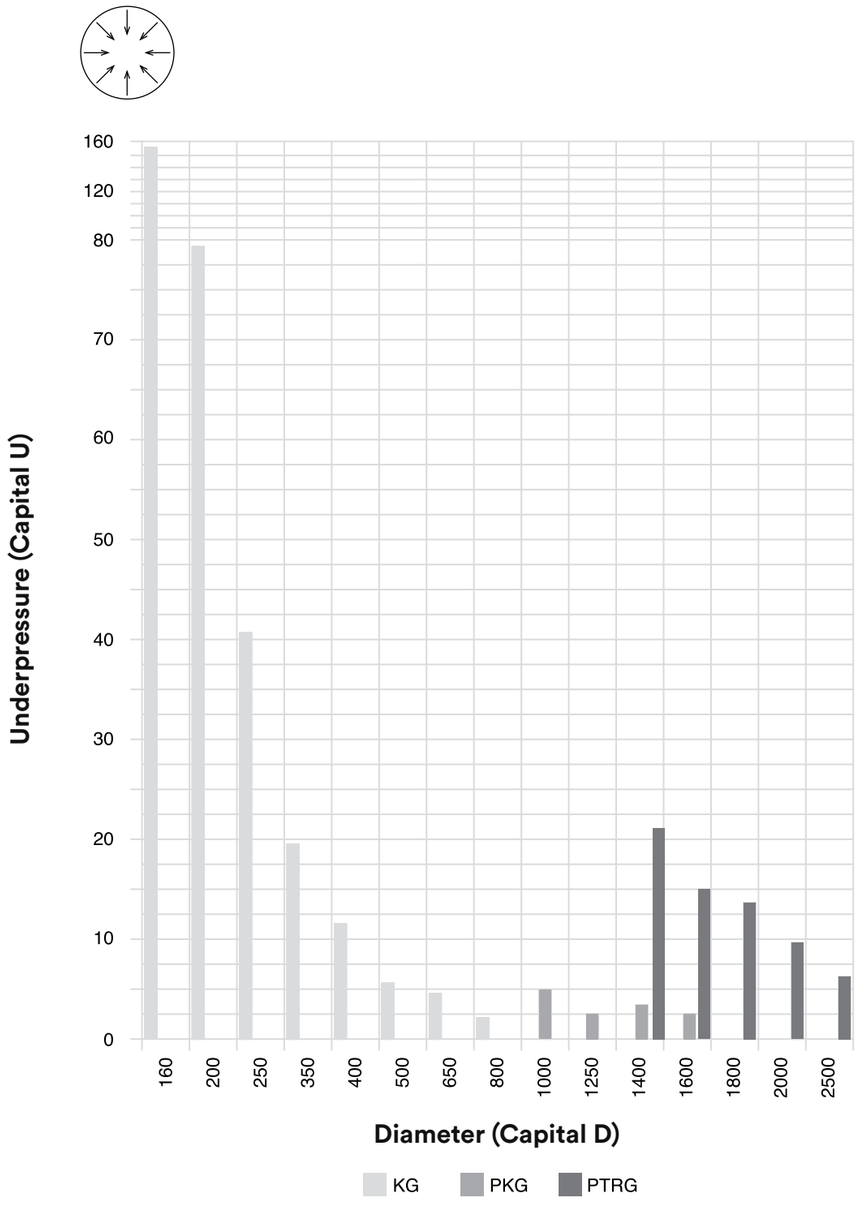
PRESSURE CAPABILITIES

Table 1-7: Ultimate Overpressure Inside Duct



PRESSURE CAPABILITIES

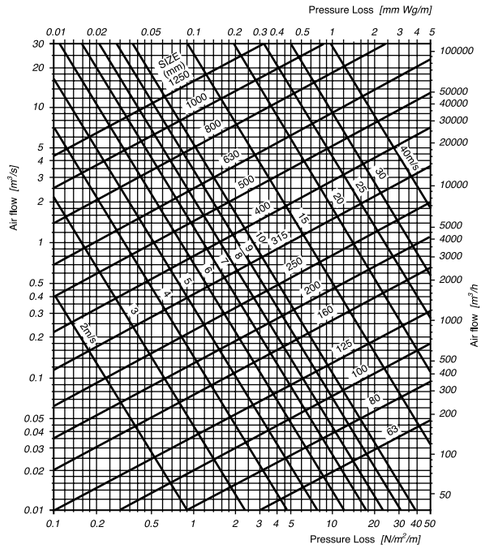
Table 1-8: Ultimate Underpressure Inside Duct



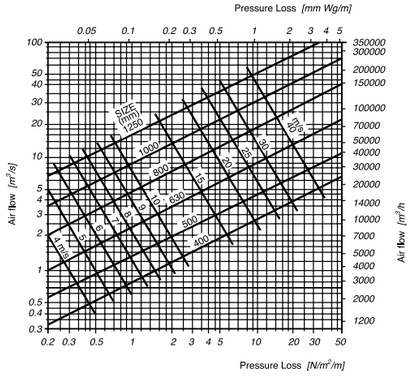
PRESSURE LOSS

Technical Data

KG, KH, KA



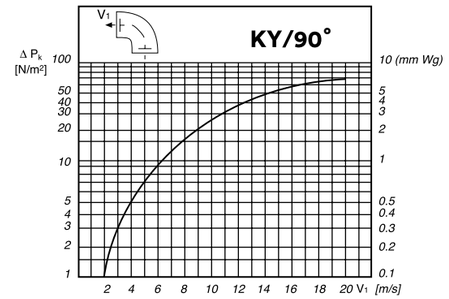
PKG, PKA

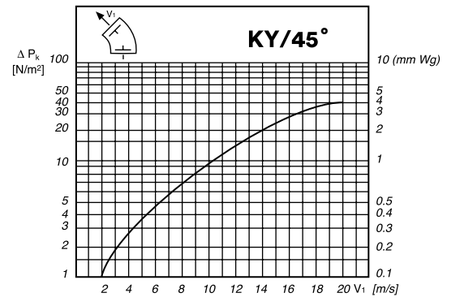


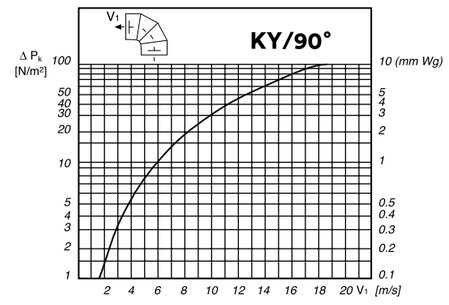
PRESSURE LOSS

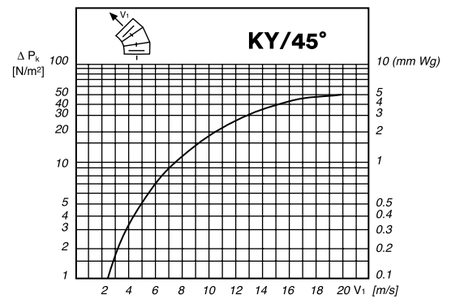
Technical Data

BENDS

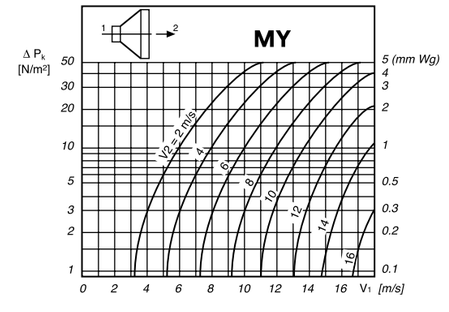


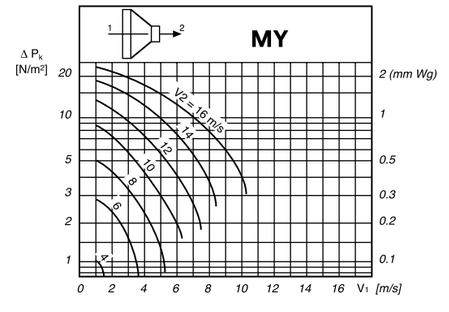






REDUCERS

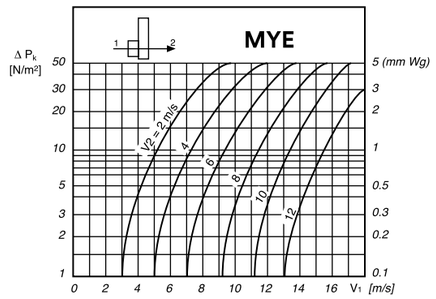


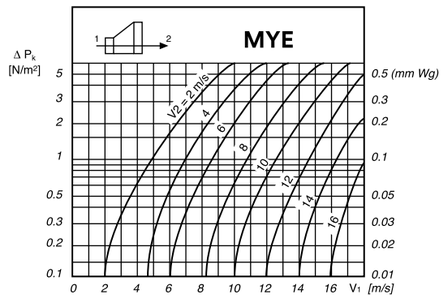


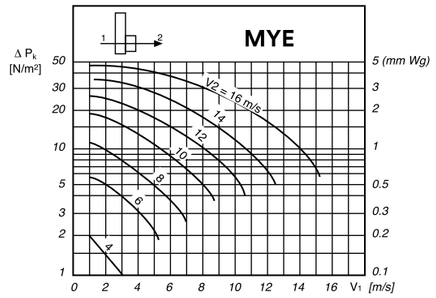
PRESSURE LOSS

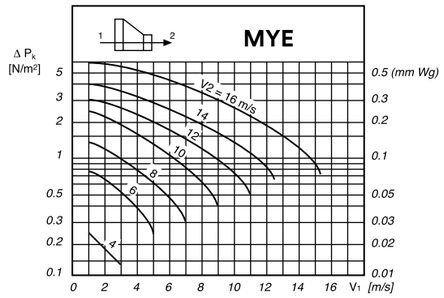
Technical Data

Reducers

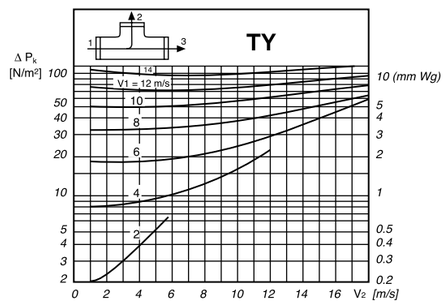


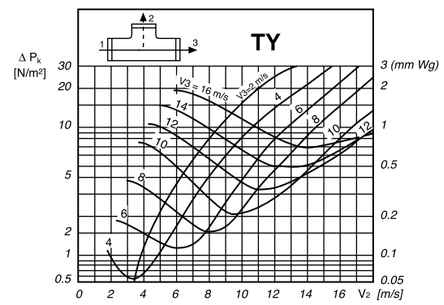






Tees

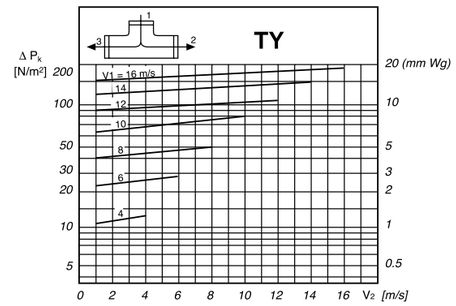


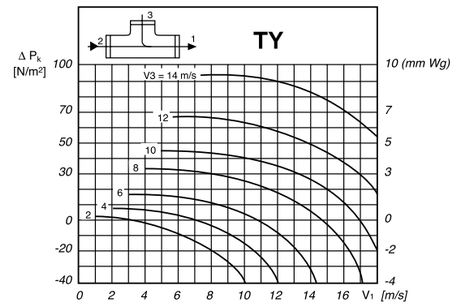


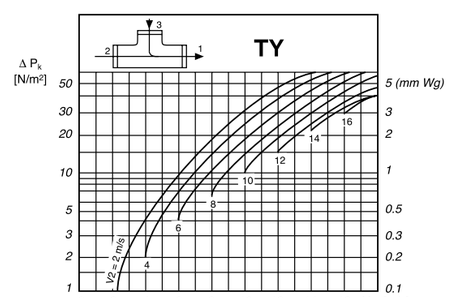
PRESSURE LOSS

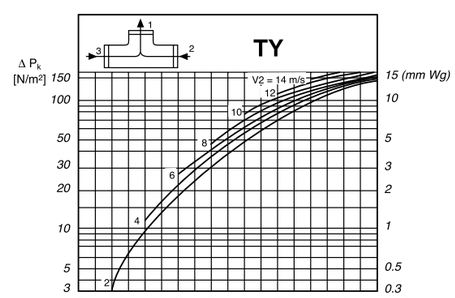
Technical Data

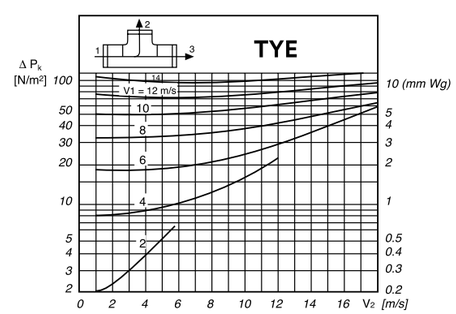
Tees

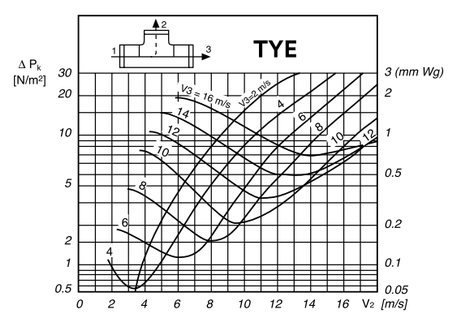








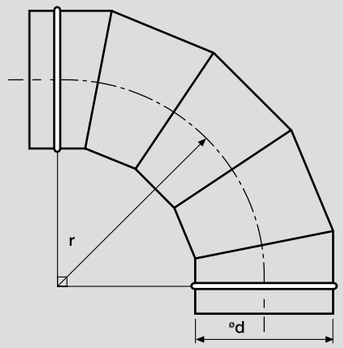




BEND 90°

KY/90°

Dimensions



Description

- 90° Bend
- r = 1.5 d
- 5 - Gore Bend (segmented) as a standard
- Fabricated with either standing seam, continuous seam or stitch welding.

Ordering

Product Code: KY/90 - aaa

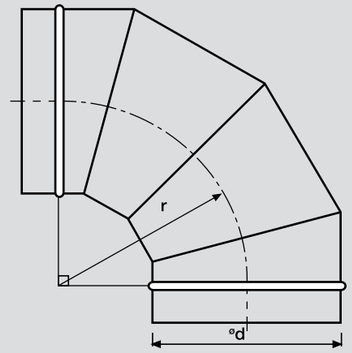
Type
ød

ød mm	r mm
63	95
80	120
100	150
125	188
160	240
200	300
250	375
315	473
355	533
400	600
500	750
630	945
800	1200
1000	1500
1250	1875
1400	2100
1600	2400

* For other available sizes, see page 17.

BEND 90°

Dimensions



KYD/90°

Description

- 90° Bend
- r = d
- 4 - Gore Bend (segmented) as a standard
- Fabricated with either standing seam, continuous seam or stitch welding.

Ordering

Product Code: KYD/90 - aaa

Type
ød

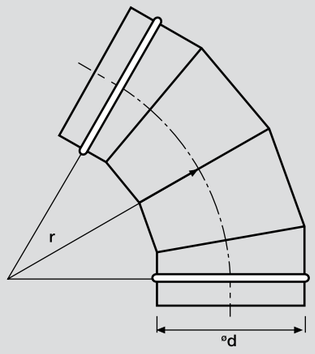
ød mm	r mm
63	100
80	100
100	100
125	125
160	160
200	200
250	250
315	315
355	355
400	400
500	500
630	630
800	800
1000	1000
1250	1250
1400	1400
1600	1600

* For other available sizes, see page 17.

BEND 60°

KY/60°

Dimensions



Description

- 60° Bend
- r = 1.5 d
- 4 - Gore Bend (segmented) as a standard
- Fabricated with either standing seam, continuous seam or stitch welding.

Ordering

Product Code: KY/60 - aaa

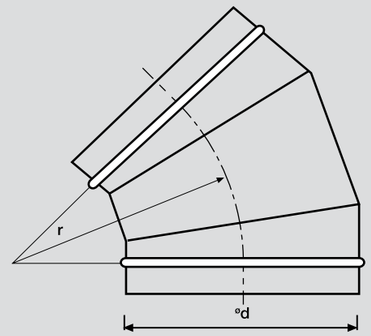
Type
ød

ød mm	r mm
63	95
80	120
100	150
125	188
160	240
200	300
250	375
315	473
355	533
400	600
500	750
630	945
800	1200
1000	1500
1250	1875
1400	2100
1600	2400

* For other available sizes, see page 17.

BEND 45°

Dimensions



KY/45°

Description

- 45° Bend
- r = 1.5 d
- 3 - Gore Bend (segmented) as a standard
- Fabricated with either standing seam, continuous seam or stitch welding.

Ordering

Product Code: KY/45 - aaa

Type
ød

ød mm	r mm
63	95
80	120
100	150
125	188
160	240
200	300
250	375
315	473
355	533
400	600
500	750
630	945
800	1200
1000	1500
1250	1875
1400	2100
1600	2400

* For other available sizes, see page 17.

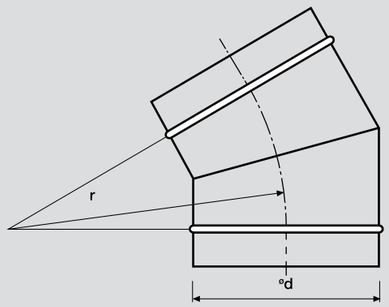
BEND 30°

KY/30°

Description

- 30° Bend
- r = 1.5 d
- 2 - Gore Bend (segmented) as a standard
- Fabricated with either standing seam, continuous seam or stitch welding.

Dimensions



Ordering

Product Code: KY/30 - aaa

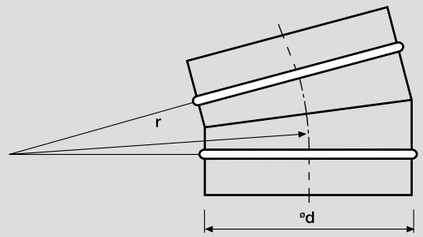
Type
ød

ød mm	r mm
63	95
80	120
100	150
125	188
160	240
200	300
250	375
315	473
355	533
400	600
500	750
630	945
800	1200
1000	1500
1250	1875
1400	2100
1600	2400

* For other available sizes, see page 17.

BEND 15°

Dimensions



KY/15°

Description

- 15° Bend
- r = 1.5 d
- 2 - Gore Bend (segmented) as a standard
- Fabricated with either standing seam, continuous seam or stitch welding.

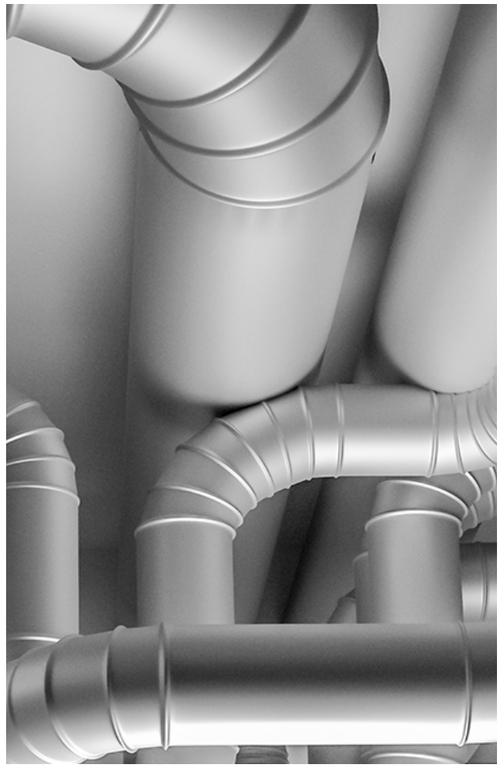
Ordering

Product Code: KY/15 - aaa

Type
ød

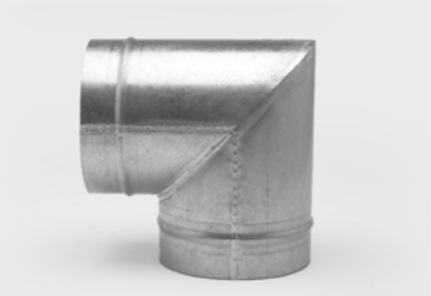
ød mm	r mm
63	95
80	120
100	150
125	188
160	240
200	300
250	375
315	473
355	533
400	600
500	750
630	945
800	1200
1000	1500
1250	1875
1400	2100
1600	2400

* For other available sizes, see page 17.

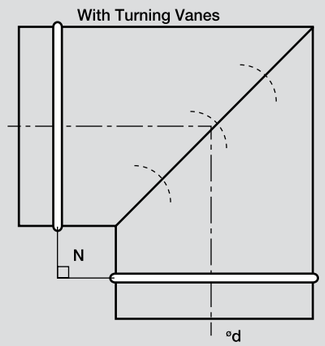


MITERED BEND 90°

KYM/90°



Dimensions



Description

- 90° Miltered Bend
- N=100
- 2 - Gore Bend (segmented) as a standard
- With turning vanes
- Fabricated with either standing seam, continuous seam or stitch welding.

Ordering

Product Code: KYM/90 - aaa

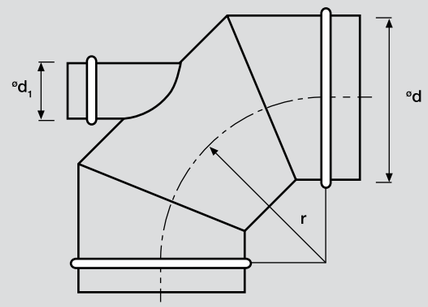
Type
ød

ød mm	N mm
63	100
80	100
100	100
125	100
160	100
200	100
250	100
315	100
355	100
400	100
500	100
630	100
800	100
1000	100
1250	100
1400	100
1600	100

* For other available sizes, see page 17.

HEEL TAPPED BEND 90°

Dimensions



KYT/90°

Description

- 90° Heel Tapped Bend
- r = d
- 3 - Gore Bend (segmented) as a standard
- Fabricated with either standing seam, continuous seam or stitch welding.

Ordering

Product Code: KYT/90 - aaa / bbb

Type
ød
ød1

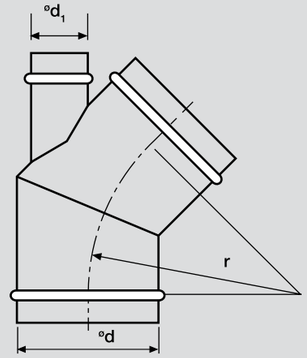
ød mm	ød1 mm	r mm
63	55	95
80	63	120
100	80	150
125	100	188
160	125	240
200	160	300
250	200	375
315	250	473
355	315	533
400	355	600
500	400	750
630	500	945
800	630	1200
1000	800	1500
1250	1000	1875
1400	1250	2100
1600	1400	2400

* For other available sizes , see page 17.

HEEL TAPPED BEND 45°

KYT/45°

Dimensions



Description

- 45° Heel Tapped Bend
- r = d
- 2 - Gore Bend (segmented) as a standard
- Fabricated with either standing seam, continuous seam or stitch welding.

Ordering

Product Code: KYT/45 - aaa / bbb

Type
ød
ød1

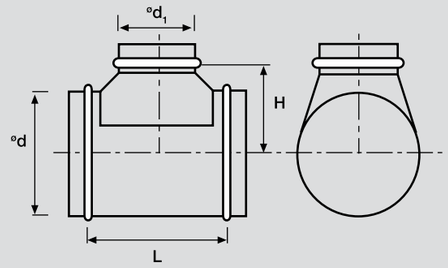
ød mm	ød1 mm	r mm
63	55	95
80	63	120
100	80	150
125	100	188
160	125	240
200	160	300
250	200	375
315	250	473
355	315	533
400	355	600
500	400	750
630	500	945
800	630	1200
1000	800	1500
1250	1000	1875
1400	1250	2100
1600	1400	2400

* For other available sizes, see page 17.

TEE

TY

Dimensions



Description

- Equal Tee
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: TY - aaa / bbb

Type
ød
ød1

ød mm	ød1 mm	L mm	H mm
63	63	233	106
80	80	250	115
	63	233	115
100	100	270	125
	80	250	125
	63	233	125
125	125	295	137
	100	270	137
	80	270	137
152	152	322	151
	125	295	151
	10	270	151
	80	250	151
160	160	330	155
	152	322	155
	125	395	155
	100	270	155
	80	250	155
180	180	370	165
	160	330	165
	152	322	165

ød mm	ød1 mm	L mm	H mm
	125	295	165
	100	270	165
	80	250	165
200	200	370	175
	180	350	175
	160	330	175
	152	322	175
	125	295	175
	100	270	175
	80	250	175
224	224	394	187
	200	370	187
	180	350	187
	160	330	187
	152	322	187
	125	295	187
	100	270	187
	80	250	187
250	250	420	200
	224	394	200

* For other available sizes, see page 17.

TEE

⌀d mm	⌀d₁ mm	L mm	H mm
250	200	370	200
	180	350	200
	160	330	200
	152	322	200
	125	295	200
	100	270	200
	80	250	200
280	280	450	215
	250	420	215
	224	394	215
	200	370	215
	180	350	215
	160	330	215
	152	322	215
	125	295	215
	100	270	215
305	305	475	227
	280	450	227
	250	420	227
	224	394	227
	200	370	227
	180	350	227
	160	330	227
	152	322	227
	125	295	227
	100	270	227
315	315	485	232
	305	475	232
	280	450	232
	250	420	232
	224	394	232
	200	370	232
	180	350	232
	160	330	232
	152	322	232
	125	295	232
	100	270	232
355	355	525	252
	315	485	252
	305	475	232
	280	450	252

سـافيد SAFID

⌀d mm	⌀d₁ mm	L mm	H mm
355	250	420	252
	224	394	252
	200	370	252
	180	350	252
	160	330	252
	152	322	252
	125	295	252
	100	270	252
400	400	570	275
	355	525	275
	315	485	275
	305	475	275
	280	450	275
	250	420	275
	224	394	275
	200	370	275
	180	350	275
	160	330	275
	152	322	275
450	450	620	300
	400	570	300
	355	525	300
	315	485	300
	305	475	300
	280	450	300
	224	394	300
	200	370	300
	180	350	300
	160	330	300
	152	322	300
500	500	670	325
	450	620	325
	400	570	325
	355	525	325
	315	485	325
	305	475	325
	280	450	325
	250	420	325
	224	384	325
	200	370	325
	160	330	325

* For other available sizes, see page 17.

سـافيد SAFID

TY

⌀d mm	⌀d₁ mm	L mm	H mm
560	560	730	355
	500	670	355
	450	620	355
	400	570	355
	355	525	355
	315	485	355
	305	475	355
	280	450	355
	250	420	355
	224	394	355
	200	370	355
600	600	770	375
	560	730	375
	500	670	375
	450	620	375
	400	570	375
	355	525	375
	315	485	375
	305	475	375
630	630	800	390
	600	770	390
	560	730	390
	500	670	390
	450	620	390
	400	570	390
	355	525	390
	315	485	390
650	650	820	400
	630	800	400
	600	770	400
	560	730	400
	500	670	400
	450	620	400
	400	570	400
	355	525	400
680	680	850	415
	650	820	415
	630	800	415
	600	770	415
	560	730	415
	500	670	415

⌀d mm	⌀d₁ mm	L mm	H mm
680	450	620	415
	400	570	415
	355	525	415
710	710	880	430
	680	850	430
	650	820	430
	630	800	430
	600	770	430
	560	730	430
	500	670	430
	450	620	415
	400	570	430
800	800	970	475
	710	880	475
	680	850	475
	650	820	475
	630	800	475
	600	770	475
	560	730	475
	500	670	475
	450	620	475
	400	570	475
850	850	1020	500
	800	970	500
	710	880	500
	680	850	500
	650	820	500
	630	800	500
	600	770	500
	560	730	500
	500	670	500
	450	620	500
900	900	1070	525
	850	1020	525
	800	970	525
	750	920	525
	710	880	525
	680	850	525
	650	820	525
	630	800	525
	600	770	525

* For other available sizes, see page 17.

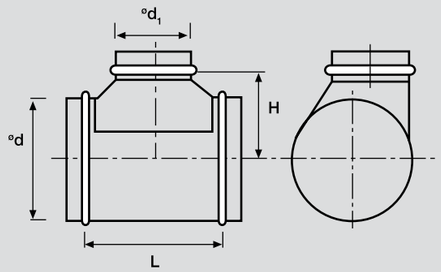
TEE/TY

⌀d mm	⌀d_1 mm	L mm	H mm
900	569	730	525
	500	670	525
	450	620	525
950	950	1120	550
	900	1070	550
	850	1020	550
	800	970	550
	710	880	550
	680	850	550
	650	820	550
	630	800	550
	600	770	550
	560	730	550
	500	670	550
1000	1000	1170	575
	950	1120	575
	900	1070	575
	850	1020	575
	800	970	575
	710	880	575
	680	850	575
	650	820	575
	630	800	575
	600	770	575
	560	730	575
	500	670	575
1062	1062	1232	591
	1000	1170	591
	950	1120	591
	900	1070	591
	850	1020	591
	800	970	591
	710	880	591
	680	850	591
	650	820	591
	630	800	591
	600	770	591
1100	1100	1270	625
	1062	1232	625
	1000	1170	625
	950	1120	625
	900	1070	625
	850	1020	625
	800	970	625
	710	880	625
	680	850	625
	650	820	625
1200	1200	1370	675
	1100	1270	675
	1062	1232	675
	1000	1170	675
	950	1120	675
	900	1070	675
	850	1020	675
	800	970	675
1250	1250	1420	700
	1200	1370	700
	1100	1270	700
	1062	1232	700
	1000	1170	700
	950	1120	700
	900	1070	700
	850	1020	700
	800	970	700

* For other available sizes, see page 17.

ECCENTRIC TEE

Dimensions



TYE

Description

- Eccentric Tee
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: TYE - aaa / bbb

Type
⌀d
⌀d_1

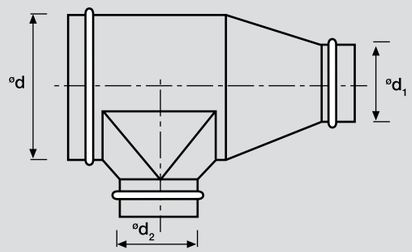
⌀d mm	⌀d_1 mm	L mm	H mm
400	315	485	280
	250	420	280
	200	375	280
500	400	570	330
	315	485	330
	250	420	330
630	500	670	395
	400	570	395
	315	485	395
800	630	800	480
	500	670	480
	400	570	480
1000	800	970	580
	630	800	580
	500	670	580
1250	1000	1220	730
	800	970	705
	630	800	705

* For other available sizes, see page 17.

REDUCING TEE

TYR

Dimensions



Description

- Reducing Tee
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: TYR - aaa / bbb / ccc

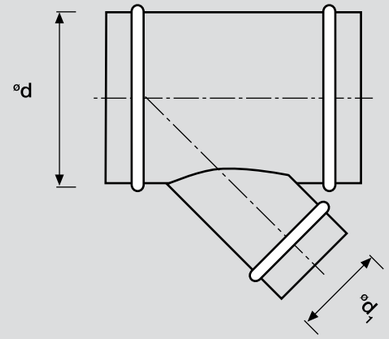
Type
ød
ød1
ød2

ød mm	ød1 mm	ød2 mm
80	63	63
100	80	80
	63	63
125	100	100
	80	80
160	125	125
	100	100
	80	80
200	160	160
	125	125
	100	100
250	200	200
	160	160
	125	125
	100	100
315	250	250
	200	200
	160	160
355	315	315
	250	250
	200	200
400	355	355
	315	315
	250	250
	200	200
500	400	400
	355	355
	315	315
	250	250
630	500	500
	400	400
	355	355
	315	315
800	630	630
	500	500
	400	400
1000	800	800
	500	500
1250	1000	1000
	800	800
	630	630

* For other available sizes, see page 17.

LATERAL TEE

Dimensions



TY/45°

Description

- 45° Lateral Tee
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: TY/45 - aaa / bbb

Type
ød
ød1

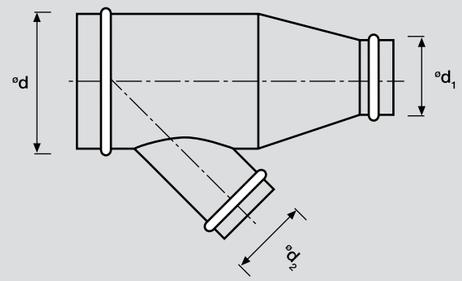
ød mm	ød1 mm
80	63
100	80
	63
125	100
	80
160	125
	100
	80
200	160
	125
	100
250	200
	160
	125
	100
315	250
	200
	160
355	315
	250
	200
400	355
	315
	250
	200
500	400
	355
	315
	250
630	500
	400
	355
	315
800	630
	500
	400
1000	800
	500
1250	1000
	800
	630

* For other available sizes, see page 17.

REDUCING LATERAL TEE

TYR/45°

Dimensions



Description

- 45° Reducing Lateral Tee
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: TYR /45 - aaa / bbb / ccc

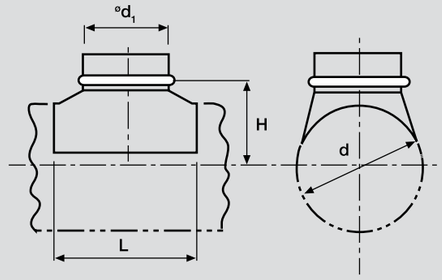
- Type
- ød
- ød1
- ød2

ød mm	ød1 mm	ød2 mm
80	63	63
100	80	80
	63	63
125	100	100
	80	80
160	125	125
	100	100
	80	80
200	160	160
	125	125
	100	100
250	200	200
	160	160
	125	125
	100	100
315	250	250
	200	200
	160	160
355	315	315
	250	250
	200	200
400	355	355
	315	315
	250	250
	200	200
500	400	400
	355	355
	315	315
	250	250
630	500	500
	400	400
	355	355
	315	315
800	630	630
	500	500
	400	400
1000	800	800
	500	500
1250	1000	1000
	800	800
	630	630

* For other available sizes, see page 17.

COLLAR SADDLE

Dimensions



LKP

Description

- Collar Saddle
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: LKP - aaa / bbb

- Type
- ød
- ød1

ød mm	ød1 mm	L mm	H mm
63	63	183	110
80	63	183	120
100	63	183	130
80	80	200	120
100	80	200	130
125	80	200	140
160	80	200	160
200	80	200	180
250	80	200	205
100	100	220	130
125	100	220	140
160	100	220	160
200	100	220	180
250	100	220	205
315	100	220	237
125	125	245	140
160	125	245	160
200	125	245	180
250	125	245	205
315	125	245	237
400	125	245	280

ød mm	ød1 mm	L mm	H mm
160	160	280	160
200	160	280	180
250	160	280	205
315	160	280	237
400	160	280	280
500	160	280	330
200	200	320	180
250	200	320	205
315	200	320	237
400	200	320	280

* For other available sizes, ssee page 17.

COLLAR SADDLE I LKP

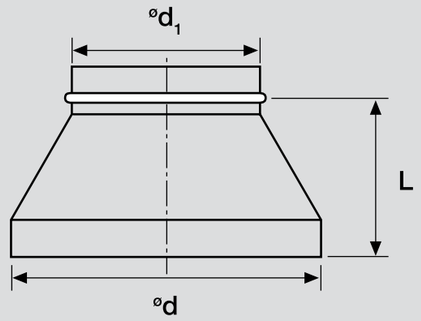
⌀d mm	⌀d_1 mm	L mm	H mm
355	125	245	257
355	160	280	257
355	200	320	257
500	200	320	330
630	200	320	395
250	250	370	205
315	250	370	237
355	250	370	257
400	250	370	280
500	250	370	330
630	250	370	395
800	250	370	480
315	315	435	237
355	315	435	257
400	315	435	280
500	315	435	330
630	315	435	395
800	315	435	480
1000	315	435	580
1250	315	435	705
355	355	475	257
400	355	475	280
500	355	475	330
630	355	475	395
800	355	475	480
1000	355	475	580
1250	355	475	705
400	400	520	280
500	400	520	330
630	400	520	395
800	400	520	480
1000	400	520	580
1250	400	520	705
500	500	620	330
630	500	620	395
800	500	620	480
1000	500	620	580
1250	500	620	705
630	630	750	395
800	630	750	480
1000	630	750	580
1250	630	750	580
800	800	920	480
1000	800	920	580
1250	800	920	705
1000	1000	1170	730
1250	1000	1170	730
1250	1250	1420	730

* For other available sizes, see page 17.

REDUCER

MY

Dimensions



Description

- Reducer Centric = Female / Male
- ⌀d_1 - Connected straight to spiral duct
- ⌀d - Connected straight to fittings
- Fabricated with continous seam or stitch welding.

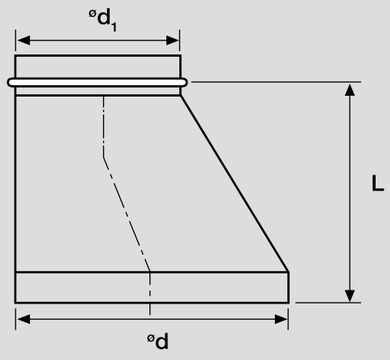
Ordering

Product Code: MY - aaa / bbb

Type
⌀d
⌀d_1

MYE

Dimensions



Description

- Reducer Eccentric = Female / Male
- ⌀d_1 - Connected straight to spiral duct
- ⌀d - Connected straight to fittings
- Fabricated with continous seam or stitch welding.

Ordering

Product Code: MYE - aaa / bbb

Type
⌀d
⌀d_1

REDUCER

⌀d mm	⌀d_1 mm	MY L (mm)	MYE L (mm)
80	63	117	115
100	53	117	149
	80	122	120
112	63	127	170
	80	117	140
	100	107	130
125	63	139	192
	80	124	163
	100	132	128
	112	109	108
140	63	152	218
	80	137	189
	100	120	154
	112	134	134
	125	112	111
152	63	162	239
	80	147	210
	100	130	175
	112	120	154
	125	135	132
	140	107	130
160	63	169	253
	80	154	224
	100	137	189
	112	127	168
	125	115	146
	140	122	120
	152	115	115
180	80	172	258
	100	154	224
	112	144	203
	125	133	180
	140	120	154
	152	137	136
	160	122	120
200	80	189	293
	100	172	258
	112	161	238
	125	150	215
	140	137	189
	152	127	168

⌀d mm	⌀d_1 mm	MY L (mm)	MYE L (mm)
200	160	120	154
	180	122	120
224	100	192	300
	112	182	279
	125	171	257
	140	158	231
	152	147	210
	160	140	196
	180	123	161
	200	130	127
250	100	215	345
	112	205	324
	125	193	302
	140	180	276
	152	170	255
	160	163	241
	180	146	206
	200	128	172
	224	134	130
280	125	133	180
	140	120	154
	152	196	307
	160	189	293
	180	172	258
	200	154	224
	224	134	182
	250	141	137
305	125	241	397
	140	228	371
	152	218	350
	160	211	336
	180	193	302
	200	176	267
	224	155	225
	250	133	180
	280	132	128
315	125	250	414
	140	237	388
	152	226	367
	160	219	354
	180	202	319

* For other available sizes, see page 17.

⌀d mm	⌀d_1 mm	MY L (mm)	MYE L (mm)
315	200	185	285
	224	164	243
	250	141	198
	280	115	146
	305	123	122
355	160	254	423
	180	237	388
	200	219	354
	224	199	312
	250	176	267
	280	150	215
	305	128	172
	315	120	154
400	160	293	501
	180	276	466
	200	258	432
	224	238	390
	250	215	345
	280	189	293
	301	167	250
	315	159	232
	355	124	163
450	200	302	518
	224	281	477
	250	258	432
	280	232	380
	305	211	336
	315	202	319
	355	167	250
	300	128	172
500	200	345	605
	224	324	563
	250	302	518
	280	276	466
	305	254	423
	315	245	406
	355	211	336
	400	172	258
	450	128	172
550	250	345	605
	280	319	553

MY/MYE

⌀d mm	⌀d_1 mm	MY L (mm)	MYE L (mm)
	305	297	510
	315	289	492
	355	254	423
	500	215	345
	450	172	258
	500	128	172
560	250	354	622
	280	328	570
	305	306	527
	315	297	510
	355	263	440
	400	224	362
	450	163	241
	500	137	189
600	250	388	692
	280	362	640
	305	341	596
	315	332	579
	355	297	510
	400	258	432
	450	215	345
	500	172	258
	550	128	172
	560	120	154
630	250	414	744
	280	388	692
	305	367	648
	315	358	631
	355	323	477
	400	284	484
	450	241	397
	500	198	310
	550	154	224
	560	146	206
	600	141	137
650	305	381	683
	315	375	666
	355	341	596
	400	302	518
	450	258	432
	500	215	345

* For other available sizes, see page 17.

REDUCER

⌀d mm	⌀d_1 mm	MY L (mm)	MYE L (mm)
650	550	172	258
	560	163	241
	600	128	172
	630	122	120
680	305	410	735
	315	401	717
	355	367	648
	400	328	570
	450	284	484
	500	241	397
	550	198	310
	560	189	293
	600	154	224
	630	128	172
	650	141	137
700	315	418	752
	355	384	683
	400	345	605
	450	302	518
	500	258	432
	550	215	345
	560	206	328
	600	172	258
	630	146	206
	650	128	172
	680	122	120
710	355	393	700
	400	354	622
	450	310	536
	500	267	449
	550	224	362
	560	215	345
	600	180	276
	630	154	224
	650	137	189
	680	141	137
750	400	388	692
	450	345	605
	500	302	518
	550	258	432
	560	250	414

سـافيد SAFID

⌀d mm	⌀d_1 mm	MY L (mm)	MYE L (mm)
750	600	215	345
	630	189	293
	650	172	258
	680	146	206
	700	128	172
	710	120	154
800	400	432	778
	450	388	692
	500	345	605
	550	302	518
	560	293	501
	600	258	432
	630	232	380
	650	215	345
	680	189	293
	700	172	258
	710	163	241
	750	128	172
850	400	475	865
	450	432	778
	500	388	692
	550	345	605
	560	336	588
	600	302	518
	630	276	466
	650	258	432
	680	232	380
	700	215	345
	710	206	328
	750	172	258
	800	128	172
900	450	475	865
	500	432	778
	550	388	692
	560	380	674
	600	345	605
	630	319	553
	650	302	518
	680	276	466
	700	258	432
	710	250	414

* For other available sizes, see page 17.

سـافيد SAFID

⌀d mm	⌀d_1 mm	MY L (mm)	MYE L (mm)
900	750	215	345
	800	172	258
	850	128	172
950	450	518	952
	500	475	865
	550	432	778
	560	423	761
	600	388	692
	630	362	640
	650	345	605
	680	319	553
	700	302	518
	710	293	501
	750	258	432
	800	215	345
	850	172	258
	900	128	172
1000	500	518	952
	550	475	865
	560	466	848
	600	432	778
	630	406	726
	650	388	692
	680	362	640
	700	345	605
	710	336	588
	750	302	518
	800	258	432
	850	215	345
	900	172	258
	950	128	172
1050	500	562	1038
	550	518	952
	560	510	934
	600	475	865
	630	449	813
	650	432	778
	680	406	726
	700	388	692
	710	380	674
	750	345	605

MY/MYE

⌀d mm	⌀d_1 mm	MY L (mm)	MYE L (mm)
1050	800	302	518
	850	258	432
	900	215	345
	950	172	258
	1000	128	172
1062	500	572	1059
	550	529	972
	560	520	955
	600	485	886
	630	459	834
	650	442	799
	680	416	747
	700	399	712
	710	390	695
	750	355	626
	800	312	539
	850	269	452
	900	225	366
	950	182	279
	1000	140	192
1100	600	518	9522
	630	492	900
	650	475	865
	700	432	778
	710	423	761
	750	388	692
	800	345	605
	850	302	528
	900	258	432
	950	215	345
	1000	172	258
	1062	118	151
1120	560	570	1056
	600	536	986
	630	510	934
	650	492	900
	680	466	848
	700	449	813
	710	440	796
	750	491	726
	800	362	640

* For other available sizes, see page 17.

SAFID VENT

ROUND DUCT & FITTINGS

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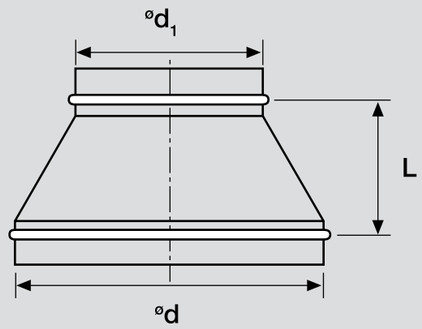
REDUCER I MY/MYE

⌀d mm	⌀d_1 mm	MY L (mm)	MYE L (mm)
1120	850	315	553
	900	276	466
	1000	189	293
	1050	146	206
	1062	135	185
1150	600	562	1038
	630	536	986
	650	518	952
	700	475	865
	710	466	848
	750	432	778
	800	388	692
	850	345	605
	900	302	518
	950	258	432
	1000	215	345
	1050	172	258
	1062	161	238
	1100	128	172
1200	600	605	1125
	630	579	1073
	650	562	1038
	680	536	986
	700	518	952
	710	510	934
	750	475	865
	800	432	778
	850	388	692
	900	345	605
	950	302	518
	1000	258	432
	1050	215	345
	1062	205	324
	1100	172	258
	1120	154	224
	1150	128	172
1250	600	648	1213
	630	622	1160
	650	605	1125
	680	579	1073
	700	562	1038

⌀d mm	⌀d_1 mm	MY L (mm)	MYE L (mm)
1250	710	533	1021
	750	518	952
	800	475	865
	850	432	778
	900	388	692
	950	345	605
	1000	302	518
	1050	258	432
	1062	248	411
	1100	215	345
	1120	198	310
	1150	172	258
	1200	128	172

* For other available sizes, see page 17.

Dimensions



MYP

Description

- Reducer Centric = Male / Male
- ⌀d_1 - Connected straight to spiral duct
- ⌀d - Connected straight to spiral ducts
- Fabricated with continous seam or stitch welding.

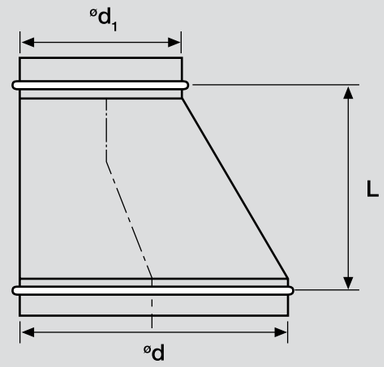
Ordering

Product Code: MYP - aaa / bbb

Type
⌀d
⌀d_1

MYEP

Dimensions



Description

- Reducer Eccentric = Male / Male
- ⌀d_1 - Connected straight to spiral duct
- ⌀d - Connected straight to spiral duct
- Fabricated with continous seam or stitch welding.

Ordering

Product Code: MYEP - aaa / bbb

Type
⌀d
⌀d_1

REDUCER

⌀d mm	⌀d_1 mm	MYP L (mm)	MYEP L (mm)
80	63	82	79
100	53	82	114
	80	87	85
112	63	92	135
	80	82	105
	100	72	95
125	63	104	157
	80	89	128
	100	97	98
	112	74	73
140	63	117	183
	80	102	154
	100	85	119
	112	99	99
	125	78	76
152	63	127	204
	80	112	175
	100	95	140
	112	85	119
	125	100	97
	140	72	95
160	63	134	218
	80	119	189
	100	102	154
	112	92	133
	125	80	111
	140	87	85
	152	80	80
180	80	137	223
	100	119	189
	112	109	168
	125	98	145
	140	85	119
	152	102	101
	160	87	85
200	80	154	258
	100	137	223
	112	126	203
	125	115	180
	140	102	154
	152	92	133

سـافيد SAFID

⌀d mm	⌀d_1 mm	MYP L (mm)	MYEP L (mm)
200	160	85	119
	180	87	85
224	100	157	265
	112	197	244
	125	136	222
	140	123	196
	152	112	175
	160	105	161
	180	88	126
	200	95	92
250	100	180	310
	112	170	289
	125	158	267
	140	145	241
	152	135	220
	160	128	206
	180	111	171
	200	93	137
	224	99	95
280	125	98	145
	140	85	119
	152	161	272
	160	154	258
	180	137	223
	200	119	189
	224	99	147
	250	106	102
305	125	206	362
	140	193	336
	152	183	315
	160	176	301
	180	158	267
	200	141	232
	224	120	190
	250	98	145
	280	97	93
315	125	215	379
	140	202	353
	152	191	332
	160	184	319
	180	167	284

* For other available sizes, see page 17.

سـافيد SAFID

⌀d mm	⌀d_1 mm	MYP L (mm)	MYEP L (mm)
315	200	150	250
	224	129	208
	250	106	163
	280	80	111
	305	88	87
355	160	219	388
	180	202	353
	200	184	319
	224	164	277
	250	141	232
	280	115	180
	305	93	137
	315	85	119
400	160	258	466
	180	241	431
	200	223	397
	224	203	355
	250	180	310
	280	154	258
	301	132	215
	315	124	197
	355	89	128
450	200	267	483
	224	246	442
	250	223	397
	280	197	345
	305	176	301
	315	167	284
	355	132	215
	300	93	137
500	200	310	570
	224	289	528
	250	267	483
	280	241	431
	305	219	388
	315	210	371
	355	176	301
	400	137	223
	450	93	137
550	250	310	570
	280	284	518

MYP/MYEP

⌀d mm	⌀d_1 mm	MYP L (mm)	MYEP L (mm)
	305	262	475
	315	354	457
	355	219	388
	500	180	310
	450	137	223
	500	93	137
560	250	319	587
	280	293	535
	305	271	492
	315	262	475
	355	228	405
	400	189	327
	450	128	206
	500	102	154
600	250	353	657
	280	327	605
	305	306	561
	315	297	544
	355	262	475
	400	223	397
	450	180	310
	500	137	223
	550	93	137
	560	85	119
630	250	379	709
	280	353	657
	305	332	613
	315	323	596
	355	288	442
	400	249	449
	450	206	362
	500	163	275
	550	119	189
	560	111	171
	600	106	101
650	305	349	648
	315	340	631
	355	306	561
	400	267	483
	450	223	397
	500	180	310

* For other available sizes, see page 17.

SAFID VENT

ROUND DUCT & FITTINGS

REDUCER

⌀d mm	⌀d_1 mm	MYP L (mm)	MYEP L (mm)
650	550	137	223
	560	128	206
	600	93	137
	630	87	85
680	305	375	700
	315	366	682
	355	332	613
	400	293	535
	450	249	449
	500	206	362
	550	163	275
	560	157	258
	600	119	189
	630	93	137
	650	106	102
700	315	384	717
	355	349	648
	400	310	570
	450	267	483
	500	223	397
	550	180	310
	560	171	293
	600	137	223
	630	116	171
	650	93	137
	680	87	85
710	355	358	665
	400	319	587
	450	275	501
	500	232	414
	550	186	327
	560	180	310
	600	145	241
	630	119	189
	650	102	154
	680	106	102
750	400	353	667
	450	310	570
	500	267	483
	550	223	397
	560	215	379

⌀d mm	⌀d_1 mm	MYP L (mm)	MYEP L (mm)
750	600	180	310
	630	154	258
	650	137	223
	680	111	171
	700	93	137
	710	83	119
800	400	397	743
	450	335	667
	500	310	570
	550	267	483
	560	258	466
	600	223	397
	630	197	345
	650	180	310
	680	154	258
	700	137	223
	710	128	206
	750	93	137
850	400	440	830
	450	397	743
	500	353	667
	550	310	570
	560	301	553
	600	267	483
	630	241	431
	650	223	397
	680	197	345
	700	180	310
	710	171	293
	750	137	223
	800	93	137
900	450	440	830
	500	397	743
	550	353	667
	560	345	639
	600	310	570
	630	284	518
	650	267	483
	680	241	431
	700	223	397
	710	215	379

* For other available sizes, see page 17.

⌀d mm	⌀d_1 mm	MYP L (mm)	MYEP L (mm)
900	750	180	310
	800	137	223
	850	93	137
950	450	483	917
	500	440	830
	550	397	743
	560	388	726
	600	353	667
	630	327	605
	650	310	570
	680	284	518
	700	267	483
	710	258	466
	750	223	397
	800	280	310
	850	137	223
	900	93	137
1000	500	483	917
	550	440	830
	560	431	813
	600	397	743
	630	371	691
	650	353	667
	680	327	605
	700	310	570
	710	301	553
	750	267	483
	800	223	397
	850	180	310
	900	137	223
	950	93	137
1050	500	527	1003
	550	483	917
	560	475	899
	600	440	830
	630	414	778
	650	397	743
	680	371	591
	700	353	667
	710	345	639
	750	310	570

MYP/MYEP

⌀d mm	⌀d_1 mm	MYP L (mm)	MYEP L (mm)
1050	800	267	483
	850	223	397
	900	180	310
	950	137	223
	1000	93	137
1062	500	537	1024
	550	494	937
	560	485	920
	600	450	851
	630	424	799
	650	407	764
	680	381	712
	700	364	677
	710	355	660
	750	320	591
	800	277	504
	850	237	417
	900	190	331
	950	147	244
	1000	105	157
1100	600	483	915
	630	457	865
	650	440	830
	680	397	743
	700	388	726
	710	353	667
	750	310	570
	800	267	483
	850	223	397
	900	180	310
	950	137	223
	1000	83	116
1120	560	537	1021
	600	501	951
	630	475	899
	650	457	865
	680	431	813
	700	414	778
	710	405	761
	750	456	691
	800	327	605

* For other available sizes, see page 17.

REDUCER I MYP/MYEP

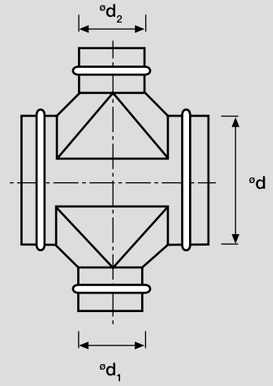
⌀d mm	⌀d_1 mm	MYP L (mm)	MYEP L (mm)
1120	850	284	518
	900	241	431
	1000	154	258
	1050	111	171
	1062	100	150
1150	600	527	1003
	630	501	951
	650	483	917
	700	440	830
	710	431	813
	750	397	743
	800	353	667
	850	310	570
	900	267	483
	950	223	397
	1000	180	310
	1050	137	223
	1062	126	203
	1100	93	137
1200	600	570	1090
	630	544	1038
	650	527	1003
	680	501	951
	700	483	917
	710	475	899
	750	440	830
	800	397	743
	850	353	667
	900	310	570
	950	267	483
	1000	223	397
	1050	180	310
	1062	170	289
	1100	137	223
	1120	119	189
	1150	93	137
1250	600	613	1178
	630	587	1090
	650	570	1038
	680	544	1003
	700	527	

⌀d mm	⌀d_1 mm	MYP L (mm)	MYEP L (mm)
1250	710	518	986
	750	483	917
	800	440	830
	850	397	743
	900	353	667
	950	310	570
	1000	267	483
	1050	223	397
	1062	213	376
	1100	180	310
	1120	163	275
	1150	137	223
	1200	93	137

* For other available sizes, see page 17.

CROSS

Dimensions



RK

Description

- Cross
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: RK - aaa / bbb / ccc

- aaa: Type
- bbb: ⌀d
- ccc: ⌀d_1
- ⌀d_2

⌀d mm	⌀d_1 mm	⌀d_2 mm
80	63	63
100	80	80
	63	63
125	100	100
	80	80
160	125	125
	100	100
	80	80
200	160	160
	125	125
	100	100
250	200	200
	160	160
	125	125
	100	100
315	250	250
	200	200
	160	160
355	315	315
	250	250
	200	200

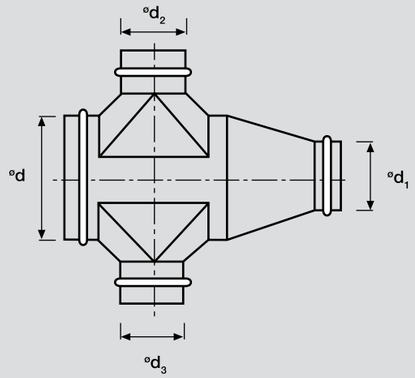
⌀d mm	⌀d_1 mm	⌀d_2 mm
400	355	355
	315	315
	250	250
	200	200
500	400	400
	355	355
	315	315
	250	250
630	500	500
	400	400
	355	355
	315	315
800	630	630
	500	500
	400	400
1000	800	800
	500	500
1250	1000	1000
	800	800
	630	630

* For other available sizes, ssee page 17.

REDUCING CROSS

RKR

Dimensions



Description

- Reducing Cross
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: RKR - aaa / bbb / ccc / ddd

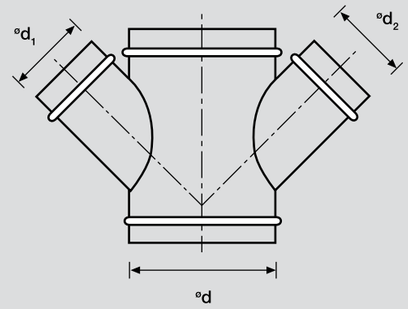
Type
ød
ød1
ød2
ød3

ød mm	ød1 mm	ød2 mm	ød3 mm
80	63	55	55
100	80	63	63
112	100	80	80
125	112	100	100
140	125	112	112
160	140	125	125
180	160	140	140
200	180	160	160
224	200	180	180
250	224	200	200
280	250	224	224
315	280	250	250
355	315	280	280
400	355	315	315
450	400	355	355
500	450	400	400
560	500	450	450
630	560	500	500
710	630	560	560
800	710	630	630
900	800	710	710
1000	900	800	800
1120	1000	900	900
1250	1120	1000	1000
1300	1250	1120	1120

* For other available sizes, see page 17.

LATERAL CROSS

Dimensions



RK/45°

Description

- 45° Lateral Cross
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: RK/45 - aaa / bbb / ccc

Type
ød
ød1
ød2

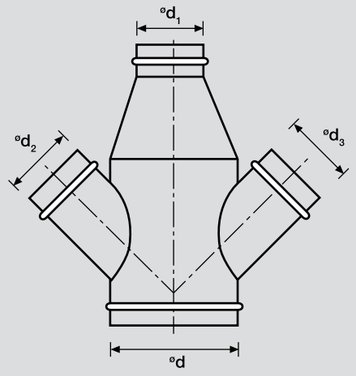
ød mm	ød1 mm	ød2 mm
80	63	63
100	80	80
	63	63
125	100	100
	80	80
160	125	125
	100	100
	80	80
200	160	160
	125	125
	100	100
250	200	200
	160	160
	125	125
	100	100
315	250	250
	200	200
	160	160
355	315	315
	250	250
	200	200
400	355	355
	315	315
	250	250
	200	200
500	400	400
	355	355
	315	315
	250	250
630	500	500
	400	400
	355	355
	315	315
800	630	630
	500	500
	400	400
1000	800	800
	500	500
1250	1000	1000
	800	800
	630	630

* For other available sizes, see page 17.

LATERAL REDUCING CROSS

RKR/45°

Dimensions



Description

- 45° Lateral Reducing Cross
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: RKR/45 - aaa / bbb / ccc / ddd

- Type
- ød
- ød1
- ød2
- ød3

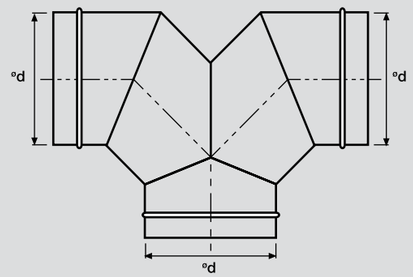
ød mm	ød1 mm	ød2 mm	ød3 mm
80	63	55	55
100	80	63	63
112	100	80	80
125	112	100	100
140	125	112	112
160	140	125	125
180	160	140	140
200	180	160	160
224	200	180	180
250	224	200	200
280	250	224	224
315	280	250	250
355	315	280	280
400	355	315	315
450	400	355	355
500	450	400	400
560	500	450	450
630	560	500	500
710	630	560	560
800	710	630	630
900	800	710	710
1000	900	800	800
1120	1000	900	900
1250	1120	1000	1000
1300	1250	1120	1120

* For other available sizes, see page 17.

TWINBEND

KKY/90°

Dimensions



Description

- 90° Twin Bend
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: KKY/90 - aaa

- Type
- ød

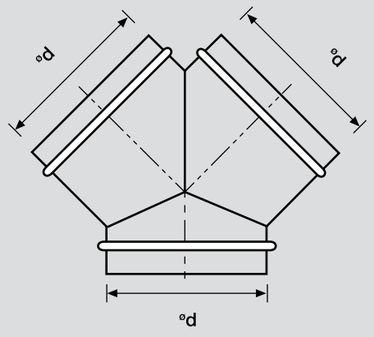
ød mm
63
80
100
112
125
140
160
180
200
224
250
280
315
355
400
450
500
560
630
710
800
1000
1120
1250

* For other available sizes, see page 17.

TWINBEND

KKY/45°

Dimensions



Description

- 45° Twinbend
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: KKY/45 - aaa

Type
ød

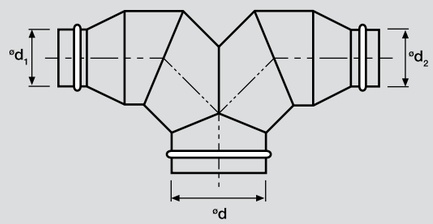
ød mm
63
80
100
112
125
140
160
180
200
224
250
280
315
355
400
450
500
560
630
710

ød mm
800
1000
1120
1250

* For other available sizes, see page 17.

REDUCING TWINBEND

Dimensions



KKYR/90°

Description

- 90° Reducing Twinbend
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: KKYR/90 - aaa / bbb / ccc

Type
ød
ød1
ød2

ød mm	ød1 mm	ød2 mm
80	63	55
100	80	63
112	100	80
125	112	100
140	125	112
160	140	125
180	160	140
200	180	160
224	200	180
250	224	200
280	250	224
315	280	250
355	315	280
400	355	315
450	400	355
500	450	400
560	500	450
630	560	500
710	630	560
800	710	630
900	800	710

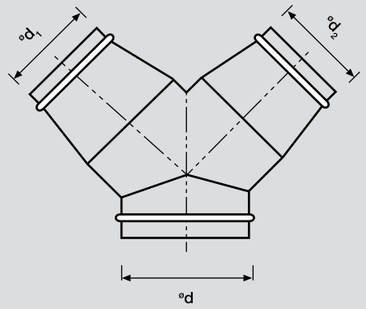
ød mm	ød1 mm	ød2 mm
1000	900	800
1120	1000	900
1250	1120	1000
1300	1250	1120

* For other available sizes, see page 17.

REDUCING TWINBEND

KKYR/45°

Dimensions



Description

- 45° Reducing Twinbend
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: KKYR/45 - aaa / bbb / ccc

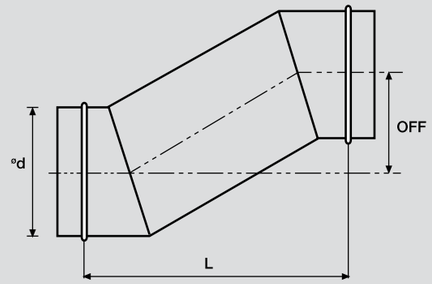
- Type
- ød
- ød1
- ød2

ød mm	ød1 mm	ød2 mm
80	63	55
100	80	63
112	100	80
125	112	100
140	125	112
160	140	125
180	160	140
200	180	160
224	200	180
250	224	200
280	250	224
315	280	250
355	315	280
400	355	315
450	400	355
500	450	400
560	500	450
630	560	500
710	630	560
800	710	630
900	800	710
1000	900	800
1120	1000	900
1250	1120	1000
1300	1250	1120

* For other available sizes, see page 17.

OFFSET

Dimensions



OFF

Description

- Offset
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: OFF - aaa / bbb / ccc

- Type
- ød
- ød1
- ød2

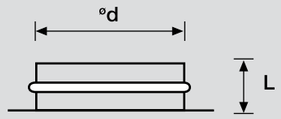
ød mm	OFF mm	L mm
63	250	519
80	250	524
100	250	529
112	250	532
125	250	536
140	250	540
160	250	546
180	250	551
200	250	556
224	250	562
250	250	570
280	250	578
315	250	587
355	250	598
400	250	610
450	250	623
500	250	636
560	250	652
630	250	671
710	250	692
800	250	716
900	250	743
1000	250	770
1120	250	802
1250	250	837

* For other available sizes, see page 17.

TAKE OFF

LYT

Dimensions



Description

- Take off
- To be fixed on rectangular duct.
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: LYT - aaa

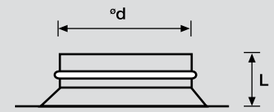
Type
ºd

ºd mm	L mm
63	85
80	85
100	85
112	85
125	85
140	85
160	85
180	85
200	85
224	85
250	85
280	85
315	85
355	85
400	85
450	85
500	85
560	85
630	85
710	85
800	85
1000	85
1120	85
1250	85

* For other available sizes, see page 17.

LKT

Dimensions



Description

- Take off
- With Radius.
- To be fixed on rectangular duct.
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: LKT - aaa

Type
ºd

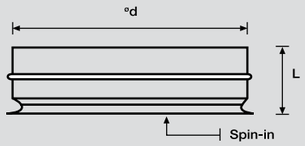
ºd mm	L mm
63	118
80	118
100	118
112	118
125	118
140	118
160	118
180	118
200	118
224	118
250	118
280	118
315	118
355	118
400	118
450	118
500	118
560	118
630	118
710	118
800	118
1000	118
1120	118
1250	118

* For other available sizes, see page 17.

SPIN-IN FITTING

SFL

Dimensions



Description

- Spin-in Fitting
- To be fixed on rectangular duct.
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: SFL - aaa

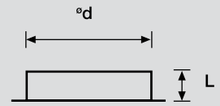
Type
ºd

ºd mm	L mm
63	85
80	85
100	85
112	85
125	85
140	85
160	85
180	85
200	85
224	85
250	85
280	85
315	85
355	85
400	85
450	85
500	85
560	85
630	85
710	85
800	85
1000	85
1120	85
1250	85

* For other available sizes, see page 17.

END CAP

Dimensions



TP

Description

- End cap
- To be fixed on spiral duct.
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: TP - aaa

Type
ºd

ºd mm	L mm
63	50
80	50
100	50
112	50
125	50
140	50
160	50
180	50
200	50
224	50
250	50
280	50
315	50
355	50
400	50
450	50
500	50
560	50
630	50
710	50
800	50
1000	50
1120	50
1250	50

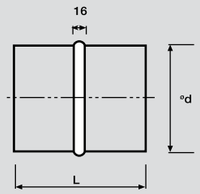
* For other available sizes, ssee page 17.

COUPLING

سـافيد SAFID

LYP

Dimensions



Description

- Coupling
- Duct Connector
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: LYP - aaa

Type
ød

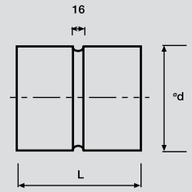
ød mm	L mm
63	100
80	100
100	100
112	100
125	100
140	100
160	100
180	100
200	100
224	100
250	100
280	100
315	100
355	100
400	100
450	100
500	100
560	100
630	100
710	100
800	100
1000	100
1120	100
1250	100

* For other available sizes, see page 17.

سـافيد SAFID

COUPLING

Dimensions



Description

- Coupling
- Fitting Connector
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: LYO - aaa

Type
ød

LYO

ød mm	L mm
63	100
80	100
100	100
112	100
125	100
140	100
160	100
180	100
200	100
224	100
250	100
280	100
315	100
355	100
400	100
450	100
500	100
560	100
630	100
710	100
800	100
1000	100
1120	100
1250	100

* For other available sizes, see page 17.

SAFID VENT
ROUND DUCT & FITTINGS

SPECIFICATIONS FOR DUCT AND FITTINGS

I. General

A. All round supply, return and exhaust ductwork shall be SAFID Vent as manufactured by Safid, or approved equal. The duct system shall consist of fittings that are factory fabricated and spiral duct which, when installed according to the manufacturer's instruction (seal the duct joints with the use of duct sealer and cold shrink tape) will render an air tight system.

B. The contractor may, at his option convert any or all rectangular ductwork to round provided that the project space limitations are properly addressed and that the overall system design static pressure not be exceeded.

II. Materials

A. Unless otherwise noted, all duct and fittings shall be a minimum of G-90 galvanized steel in accordance with ASTM A-653 and A-924 (Formerly A527, A525).

B. When specified on contract documents, stainless steel type 304 or type 316 in accordance with ASTM A-240 shall be provided.

III. Construction

A. Unless otherwise noted, all duct and fittings shall be constructed as per "SMACNA HVAC Duct Construction Standards Metal and Flexible" from 500 Pa to 2500 Pa (+ 2 to 10 inch W.G.) shown in the following table:

Diameter (mm) inches	Galvanized Spiral Duct	Galvanized Fitting
51 - 608	26	24
623 - 900	24	22
936 - 1062	24	20
1100 - 1250	22	20
1300 - 1700	22	18
1750 - 2500	18	18

B. Fittings:

1. All fitting ends shall be calibrated to manufacturer's published dimensional tolerance standard and associated spiral duct.

2. All elbows from 75mm (3") to 305mm (12") Dia. to be either 2 piece die stamped and stitch welded or continuously welded.

All elbows 355mm and larger shall be either standing seam gore lock construction or continuously welded.

3. The radius of all 90°, 60° and 45° elbows shall be 1.5 times the elbow diameter, unless otherwise noted on the contract documents to be 1.0 times the elbow diameter. The radius of all 15° and 30° elbows shall be 1.0 times the elbow diameter.

4. All fittings that are of either spot welded or button punched construction shall be internally sealed, while fittings that are continuously welded shall be without internal sealant. When contract documents require divided flow fittings, only full body fittings will be accepted. The use of collarsaddles is unacceptable except for retrofit installations.

C. Spiral Duct

1. Spiral duct shall be calibrated to manufacturer's published dimensional tolerance standard.

2. All spiral duct 355mm Dia. and larger can be supplied corrugated for added strength and rigidity.

IV. Performance

A. Duct system performance shall meet SMACNA's Leakage or DW/142 requirements at the system design static pressure as indicated on the contract documents not to exceed -5000 pa. (-20 in W.G.) or 3000 pa. (+12 in W.G.).

SPECIFICATIONS FOR DUCT AND FITTINGS

SAFID VENT

Description

SAFID Double Wall must be assembled according to these instructions:

Before Assembly
The Duct must be free from dirt.

Assembly of Fittings

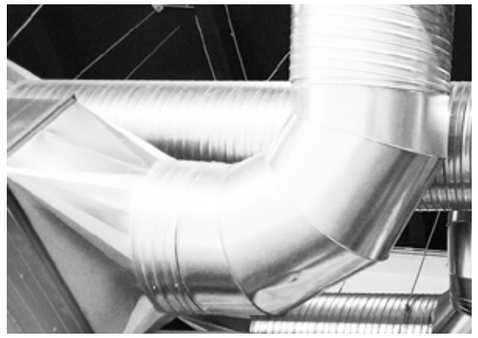
• Only use undamaged SafidDouble Wall duct and fittings. Double wall duct must be cut at a right angle and carefully deburred.

• Slip the inner shell of the double wall fitting into the inner shell of the double wall spiral duct. Use the inner shell extension to aid in guiding the outer shells together.

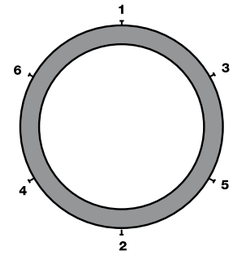
• Slip the outer shell of the double wall fitting into the outer shell of the double wall spiral duct up to the bead. Slightly rotating the fitting makes insertion easier.

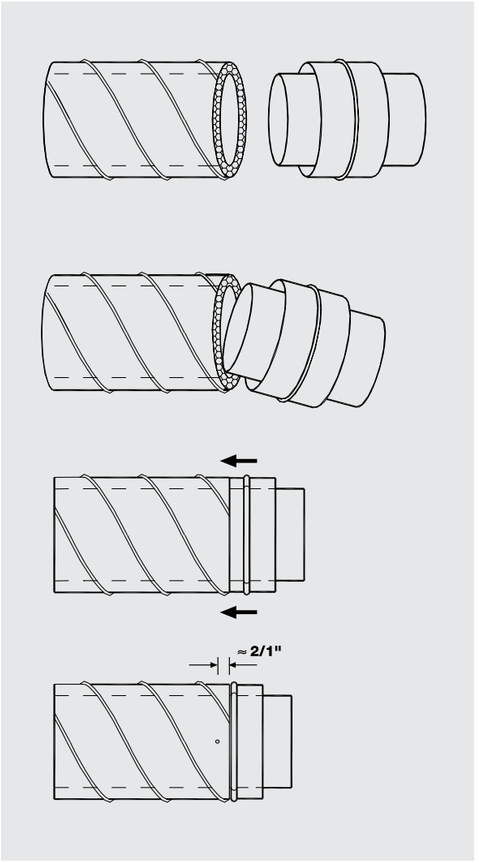
• Fasten the duct and fitting together with self tapping sheet metal screws or pressure proof pop rivets. Quantities and sizes to be used are in the following table:

Ø$_d$ mm	Min. Diameter mm	Number
63 - 125	3.2	2
140 - 250	3.2	3
280 - 630	3.2	4
710 - 1250	4.0	6
1400 - 1600	4.8	12



Placement of the fastening screws should be opposite from one another evenly spaced around the circumference, much like the procedure for tightening lug nuts on a tire (see diagram below). Start where the distance between the duct and the fitting is largest. In the event of incorrect installation, holescaused by screws or pop rivets must be sealed before re-assembly.





ROUND DUCT & FITTINGS

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سافيد
SAFID

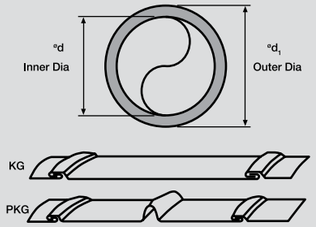
DOUBLE WALL ROUND DUCT & FITTINGS

PRE-INSULATED SPIRAL DUCT

سـافيد SAFID

KGL

Dimensions



Description

- Thermal Double Wall Duct
- Outer Shell: Solid Galvanized Steel
- Inner Shell: Solid Galvanized Steel
- Insulation 25mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities avaialble on request.

Note: PKG Profile is used for inner and outer shell to strengthen the duct when needed.

Ordering

Product Code: KGL - aaa / bbb

Type
ºd
ºd1

Duct Size (mm)			
ºd Inner	ºd1 Outer	L1 std.	L2 mm
100	152	6	3
125	180	6	3
140	180	6	3
160	200	6	3
180	224	6	3
200	250	6	3
224	280	6	3
250	305	6	3
280	325	6	3
305	355	6	3
350	400	6	3
400	450	6	3
450	500	6	3
500	550	6	3
550	600	6	3

ºd Inner	ºd1 Outer	L1 std.	L2 mm
630	680	6	3
700	750	6	3
800	850	6	3
900	950	6	3
1000	1062	6	3
1120	1187	6	3
1250	1300	6	3
1300	1350	6	3
1400	1450	6	3
1450	1500	6	3
1500	1550	6	3
1550	1600	6	3
1600*	1700	6	3

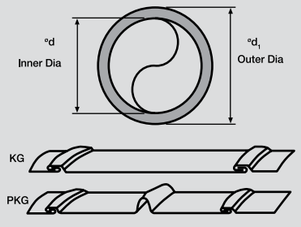
*50mm thick insulation for diameters 1600 mm and above.

سـافيد SAFID

PRE-INSULATED SPIRAL DUCT

KGS

Dimensions



Description

- Acoustic Double Wall Duct
- Outer Shell: Solid Galvanized Steel
- Inner Shell: Perforated Galvanized Steel
- Insulation 25mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities avaialble on request.

Note: PKG Profile is used for inner and outer shell to strengthen the duct when needed.

Ordering

Product Code: KGS - aaa / bbb

Type
ºd
ºd1

Duct Size (mm)			
ºd Inner	ºd1 Outer	L1 std.	L2 mm
100	152	6	3
125	180	6	3
140	180	6	3
160	200	6	3
180	224	6	3
200	250	6	3
224	280	6	3
250	305	6	3
280	325	6	3
305	355	6	3
350	400	6	3
400	450	6	3
450	500	6	3
500	550	6	3
550	600	6	3

ºd Inner	ºd1 Outer	L1 std.	L2 mm
630	680	6	3
700	750	6	3
800	850	6	3
900	950	6	3
1000	1062	6	3
1120	1187	6	3
1250	1300	6	3
1300	1350	6	3
1400	1450	6	3
1450	1500	6	3
1500	1550	6	3
1550	1600	6	3
1600*	1700	6	3

*50mm thick insulation for diameters 1600 mm and above.

DOUBLE WALL ROUND DUCT & FITTINGS

CONSTRUCTION & STANDARD SIZES

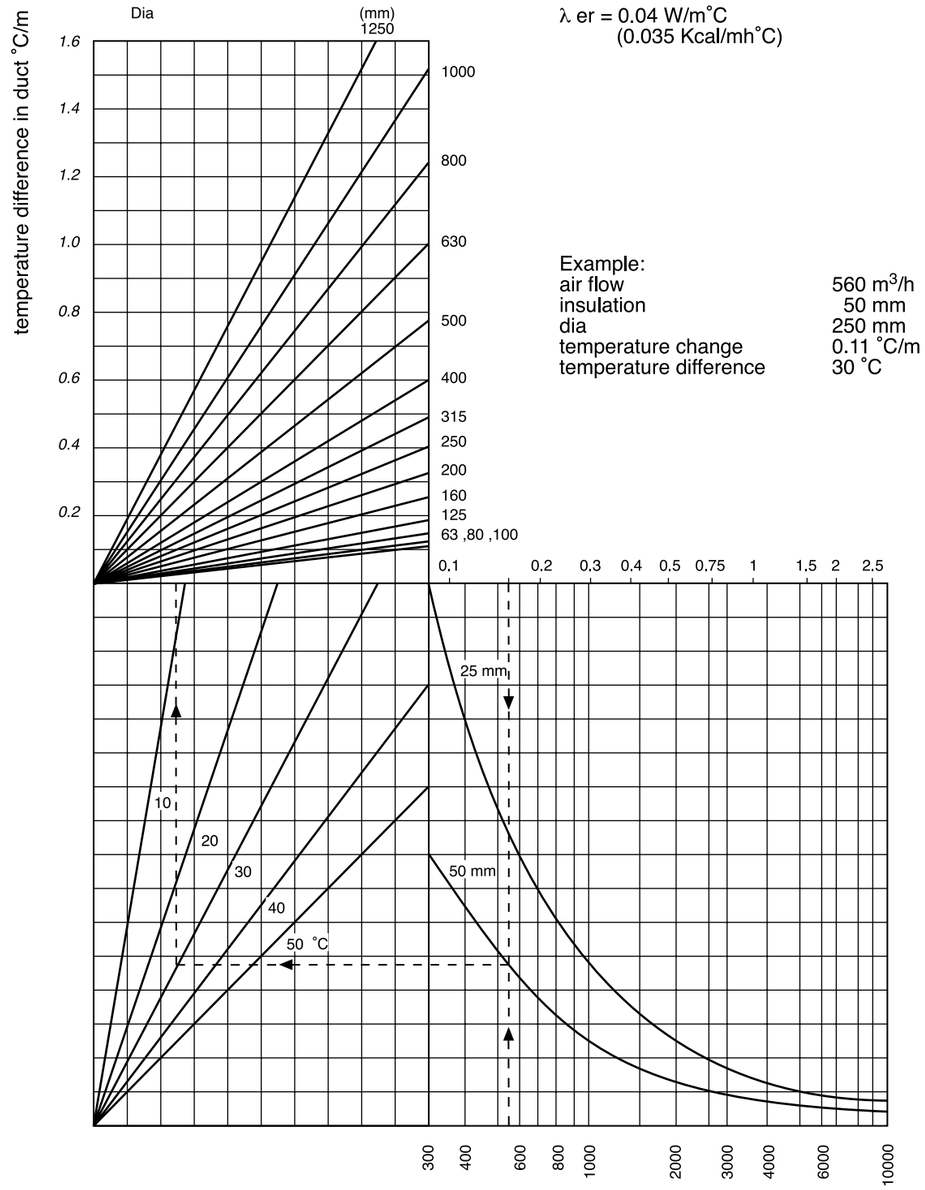
Standard Sizes (Insulation Thickness 25mm)

Duct Size (mm)		Spiral Ducts				Fittings	
		Inner Shell		Outer Shell		Inner	Outer
Inner	Outer	Gauge	Profile	Gauge	Profile	Gauge	Gauge
100	152	26	KG	26	PKG	24	24
125	180	26	KG	26	PKG	24	24
140	180	26	KG	26	PKG	24	24
160	200	26	KG	26	PKG	24	24
180	224	26	KG	26	PKG	24	24
200	250	26	KG	26	PKG	24	24
224	280	26	KG	26	PKG	24	24
250	305	26	KG	26	PKG	24	24
280	325	26	KG	26	PKG	24	24
305	355	26	KG	26	PKG	24	24
350	400	26	KG	26	PKG	24	24
400	450	26	KG	26	PKG	24	24
450	500	26	KG	26	PKG	24	24
500	550	26	PKG	26	PKG	24	24
550	600	26	PKG	26	PKG	24	24
600	650	26	PKG	24	PKG	24	22
650	700	24	PKG	24	PKG	22	22
700	750	24	PKG	24	PKG	22	22
750	800	24	PKG	24	PKG	22	22
800	850	24	PKG	24	PKG	22	22
850	900	24	PKG	24	PKG	22	22
900	950	24	PKG	24	PKG	22	20
950	1000	24	PKG	24	PKG	20	20
1000	1062	24	PKG	24	PKG	20	20
1120	1187	22	PKG	22	PKG	20	20
1250	1300	22	PKG	22	PKG	20	18
1300	1350	22	PKG	22	PKG	18	18
1400	1450	22	PKG	22	PKG	18	18
1450	1500	22	PKG	22	PKG	18	18
1500	1550	22	PKG	22	PKG	18	18
1550	1600	22	PKG	22	PKG	18	18
1600*	1700	22	PKG	22	PKG	18	18

- Standard fiberglass insulation thickness: 25mm
- Standard fiberglass insulation density: 24 kg/m³
- Various types, thickness and densities of insulation are available upon request.

*50mm thick insulation for diameters **1600** mm and above.

THERMAL DATA



λ er = 0.04 W/m°C
(0.035 Kcal/mh°C)

Example:

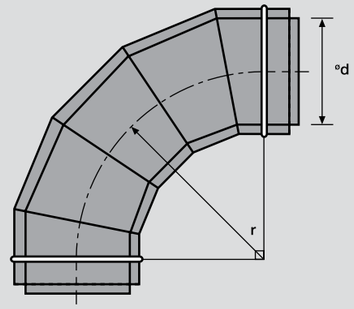
air flow	560 m³/h
insulation	50 mm
dia	250 mm
temperature change	0.11 °C/m
temperature difference	30 °C

ACOUSTIC DATA

Acoustical Data (Insulation Thickness 25mm)

Inner Diameter (mm)	Sound Absorption DB/lm of duct					
	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
100	2.7	3.8	6.2	7.3	7.1	6.6
125	2.2	3.5	6.1	7.3	7.1	6.6
140	1.9	3.2	6.0	7.3	7.1	6.6
160	1.7	3.0	5.9	7.3	7.1	6.4
180	1.5	2.9	5.8	7.3	7.1	6.2
200	1.3	2.8	5.7	7.3	7.1	6.0
224	1.2	2.6	5.5	7.3	7.1	5.7
250	1.1	2.5	5.3	7.3	7.1	5.4
280	1.0	2.4	5.1	7,3	7.1	5.1
315	1.0	2.3	5.0	7.3	7.1	4.8
355	0.9	2.2	4.6	6.9	6.3	4.1
400	0.9	2.1	4.2	6.6	5.5	3.5
450	0.8	2.0	4.0	6.3	4.7	3.1
500	0.8	1.9	3.8	6.0	4.1	2.6
560	0.7	1.8	3.5	5.8	3.4	2.0
630	0.7	1.8	3.3	5.4	3.0	1.7
710	0.6	1.7	3.0	4.9	2.5	1.7
800	0.5	1.5	2.8	4.2	2.3	1.7
900	0.4	1.4	2.5	3.6	2.0	1.7
1000	0.4	1.3	2.3	3.0	1.8	1.7
1120	0.3	1.2	2.0	2.4	1.6	1.6
1250	0.3	1.1	1.8	1.8	1.5	1.5

Dimensions



KYL/90°
KYS/90°

Description

- KYL/90° = Thermal Double Wall Bend 90°
- KYS/90° = Acoustic Double Wall Bend 90°
- Inner shell dia mm d
- Insulation 25 mm or 50 mm
- 5 gore bend (segmented) as a standard
- r = 1.5 d
- Insulation density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: KYL/90 - aaa

Type
ºd

ºd mm	r mm
63	95
80	120
100	150
125	188
160	240
200	300
250	375
315	473
355	533
400	600
500	750
630	945
800	1200
1000	1500
1250	1875
1400	2100
1600	2400

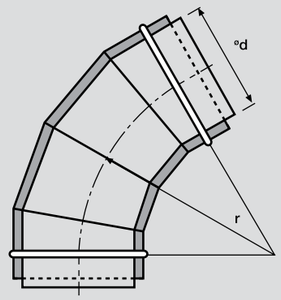
*For other available sizes, see pages 76 - 78.

PRE-INSULATED BEND 60°

سـافيد SAFID

KYL/60°
KYS/60°

Dimensions



Description

- KYL/60° = Thermal Double Wall Bend 60°
- KYS/60° = Acoustical Double Wall Bend 60°
- Inner shell dia mm d
- Insulation 25 mm or 50 mm
- 4 gore bend (segmented) as a standard
- r = 1.5 d
- Insulation density: 24 kg/m³ as standard other densities available on request.

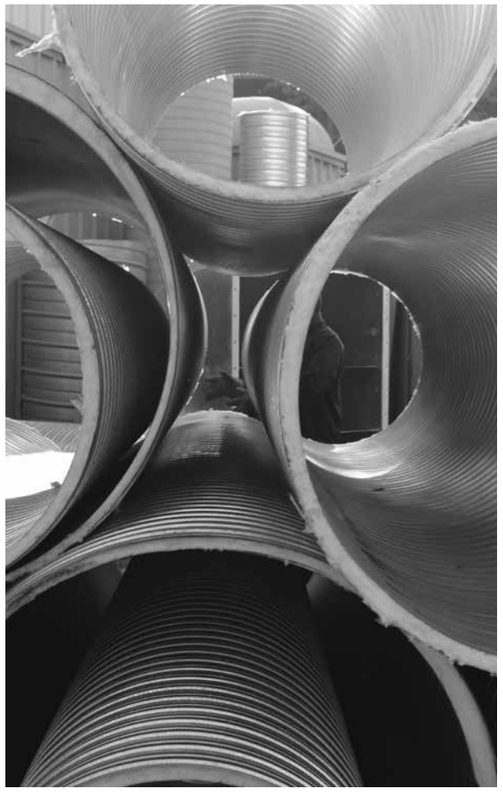
Ordering

Product Code: KYL/60 - aaa

Type
ºd

ºd mm	r mm
63	95
80	120
100	150
125	188
160	240
200	300
250	375
315	473
355	533
400	600
500	750
630	945
800	1200
1000	1500
1250	1875

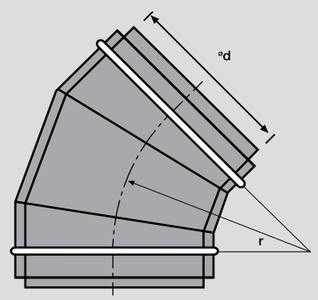
*For other available sizes, see pages 76 - 78.



سـافيد SAFID

PRE-INSULATED BEND 45°

Dimensions



KYL/45°
KYS/45°

Description

- KYL/45° = Thermal Double Wall Bend 45°
- KYS/45° = Acoustical Double Wall Bend 45°
- Inner shell dia mm d
- Insulation 25 mm or 50 mm
- 3 gore bend (segmented) as a standard
- r = 1.5 d
- Insulation density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: KYL/45 - aaa

Type
ºd

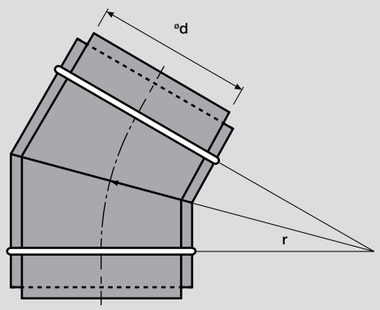
ºd mm	r mm
63	95
80	120
100	150
125	188
160	240
200	300
250	375
315	473
355	533
400	600
500	750
630	945
800	1200
1000	1500
1250	1875

*For other available sizes, see pages 76 - 78.

PRE-INSULATED BEND 30°

KYL/30°
KYS/30°

Dimensions



Description

- KYL/30° = Thermal Double Wall Bend 30°
- KYS/30° = Acoustical Double Wall Bend 30°
- Inner shell dia mm d
- Insulation 25 mm or 50 mm
- 2 gore bend (segmented) as a standard
- r = 1.5 d
- Insulation density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: KYL/30 - aaa

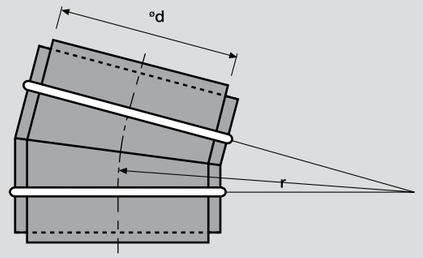
Type
ºd

ºd mm	r mm
63	95
80	120
100	150
125	188
160	240
200	300
250	375
315	473
355	533
400	600
500	750
630	945
800	1200
1000	1500
1250	1875

*For other available sizes, see pages 76 - 78.

PRE-INSULATED BEND 15°

Dimensions



KYL/15°
KYS/15°

Description

- KYL/15° = Thermal Double Wall Bend 15°
- KYS/15° = Acoustical Double Wall Bend 15°
- Inner shell dia mm d
- Insulation 25 mm or 50 mm
- 2 gore bend (segmented) as a standard
- r = 1.5 d
- Insulation density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: KYL/15 - aaa

Type
ºd

ºd mm	r mm
63	95
80	120
100	150
125	188
160	240
200	300
250	375
315	473
355	533
400	600
500	750
630	945
800	1200
1000	1500
1250	1875

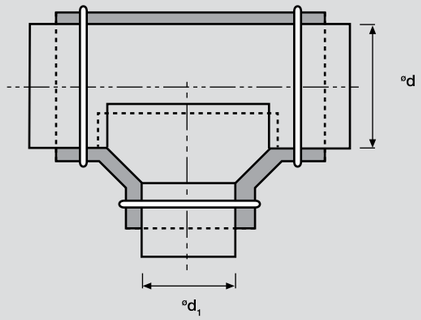
*For other available sizes, see pages 76 - 78.

PRE-INSULATED TEE

سـافيد SAFID

TYL
TYS

Dimensions



Description

- TYL = Thermal Double Wall Tee
- TYS = Acoustic Double Wall Tee
- Inner shell dia mm d, d_1
- Insulation 25 mm or 50 mm
- Insulation DensityL 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: TYL - aaa / bbb

Type
ºd
ºd1

ºd mm	ºd1 mm	L mm	H mm
63	63	233	106
80	80	250	115
	63	233	115
100	100	270	125
	80	250	125
	63	233	125
125	125	295	137
	100	270	137
	80	270	137
152	152	322	151
	125	295	151
	10	270	151
	80	250	151
160	160	330	155
	152	322	155
	125	295	155
	100	270	155
	80	250	155
180	180	350	165

ºd mm	ºd1 mm	L mm	H mm
	160	330	165
	152	322	165
	125	295	165
	100	270	165
	80	250	165
200	200	370	175
	180	350	175
	160	330	175
	152	322	175
	125	295	175
	100	270	175
	80	250	175
224	224	394	187
	200	370	187
	180	350	187
	160	330	187
	152	322	187
	125	295	187
	100	270	187

*For other available sizes, see pages 76 - 78.

سـافيد SAFID

ºd mm	ºd1 mm	L mm	H mm
224	80	250	187
250	250	420	200
	224	394	200
	200	370	200
	180	350	200
	160	330	200
	152	322	200
	125	295	200
	100	270	200
	80	250	200
280	280	450	215
	250	420	215
	224	394	215
	200	370	215
	180	350	215
	160	330	215
	152	322	215
	125	295	215
	100	270	215
305	305	475	227
	280	450	227
	250	420	227
	224	394	227
	200	370	227
	180	350	227
	160	330	227
	152	322	227
	125	295	227
	100	270	227
315	315	485	232
	305	475	232
	280	450	232
	250	420	232
	224	394	232
	200	370	232
	180	350	232
	160	330	232
	152	322	232

ºd mm	ºd1 mm	L mm	H mm
315	125	295	232
	100	270	232
355	355	525	252
	315	485	252
	305	475	252
	280	450	252
	250	420	252
	224	394	252
	200	370	252
	180	350	252
	160	330	252
	152	322	252
	125	295	252
	100	270	252
400	400	570	275
	355	525	275
	315	485	275
	305	475	275
	280	450	275
	250	420	275
	224	394	275
	200	370	275
	180	350	275
	160	330	275
	152	322	275
450	450	620	300
	400	570	300
	355	525	300
	315	485	300
	305	475	300
	280	450	300
	224	394	300
	200	370	300
	180	350	300
	160	330	300
	152	322	300
500	500	670	325
	450	620	325

*For other available sizes, see pages 76 - 78.

PRE-INSULATED TEE

⌀d mm	⌀d_1 mm	L mm	H mm
500	400	570	325
	355	525	325
	315	485	325
	305	475	325
	280	450	325
	250	420	325
	224	384	325
	200	370	325
	160	330	325
560	560	730	355
	500	670	355
	450	620	355
	400	570	355
	355	525	355
	315	485	355
	305	475	355
	280	450	355
	250	420	355
	224	394	355
	200	370	355
600	600	770	375
	560	730	375
	500	670	375
	450	620	375
	400	570	375
	355	525	375
	315	485	375
	305	475	375
630	630	800	390
	600	770	390
	560	730	390
	500	670	390
	450	620	390
	400	570	390
	355	525	390
	315	485	390
650	650	820	400
	630	800	400

⌀d mm	⌀d_1 mm	L mm	H mm
650	600	770	400
	560	730	400
	500	670	400
	450	620	400
	400	570	400
	355	525	400
680	680	850	415
	650	820	415
	630	800	415
	600	770	415
	560	730	415
	500	670	415
	450	620	415
	400	570	415
	355	525	415
710	710	880	430
	680	850	430
	650	820	430
	630	800	430
	600	770	430
	560	730	430
	500	670	430
	450	620	415
	400	570	430
800	800	970	475
	710	880	475
	680	850	475
	650	820	475
	630	800	475
	600	770	475
	560	730	475
	500	670	475
	450	620	475
	400	570	475
850	850	1020	500
	800	970	500
	710	880	500
	680	850	500

*For other available sizes, see pages 76 - 78.

⌀d mm	⌀d_1 mm	L mm	H mm
850	650	820	500
	630	800	500
	600	770	500
	560	730	500
	500	670	500
	450	620	500
900	900	1070	525
	850	1020	525
	800	970	525
	750	920	525
	710	880	525
	680	850	525
	650	820	525
	630	800	525
	600	770	525
	560	730	525
	500	670	525
	450	620	525
950	950	1120	550
	900	1070	550
	850	1020	550
	800	970	550
	710	880	550
	680	850	550
	650	820	550
	630	800	550
	600	770	550
	560	730	550
	500	670	550
1000	1000	1170	575
	950	1120	575
	900	1070	575
	850	1020	575
	800	970	575
	710	880	575
	680	850	575
	650	820	575
	630	800	575
	600	770	575

⌀d mm	⌀d_1 mm	L mm	H mm
1000	560	730	575
	500	670	575
1062	1062	1232	591
	1000	1170	591
	950	1120	591
	900	1070	591
	850	1020	591
	800	970	591
	710	880	591
	680	850	591
	650	820	591
	630	800	591
	600	770	591
1100	1100	1270	625
	1062	1232	625
	1000	1170	625
	950	1120	625
	900	1070	625
	850	1020	625
	800	970	625
	710	880	625
	680	850	625
	650	820	625
1200	1200	1370	675
	1100	1270	675
	1062	1232	675
	1000	1170	675
	950	1120	675
	900	1070	675
	850	1020	675
	800	970	675
1250	1250	1420	700
	1200	1370	700
	1100	1270	700
	1062	1232	700
	1000	1170	700
	950	1120	700
	900	1070	700
	850	1020	700

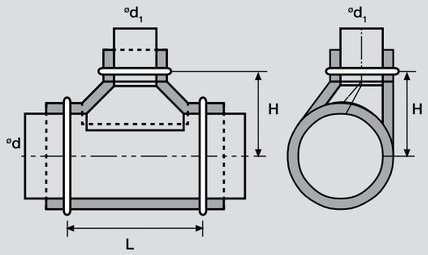
*For other available sizes, see pages 76 - 78.

PRE-INSULATED TEE ECCENTRIC

سـافيد SAFID

TYEL

Dimensions



Description

- TYEL = Thermal Double Wall Tee
- TYES = Acoustic Double Wall Tee
- Inner Shell dia mm d, d_1
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: TYEL - aaa / bbb

Type
ød
ød_1

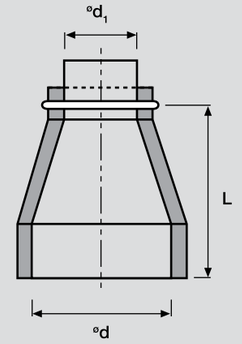
ød mm	ød_1 mm	L mm	H mm
400	315	485	280
	250	420	280
	200	375	280
500	400	570	330
	315	485	330
	250	420	330
630	500	670	395
	400	570	395
	315	485	395
800	630	800	480
	500	670	480
	400	570	480
1000	800	970	580
	630	800	580
	400	670	580
1250	1000	1220	730
	800	970	705
	630	800	705

*For other available sizes, see pages 76 - 78.

سـافيد SAFID

PRE-INSULATED REDUCER

Dimensions



MYL

Description

- Reducer Centric = Female / Male
- MYL = Thermal Double Wall Reducer
- MYS = Acoustic Double Wall Reducer
- ød_1 - Connected straight to Spiral Duct
- ød - Connected straight to fittings
- Inner Shell dia mm d, d_1
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: MYL - aaa / bbb

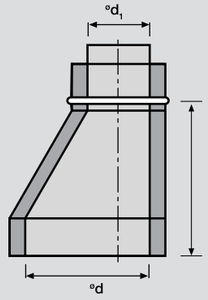
Type
ød
ød_1

*For other available sizes, see pages 76 - 78.

PRE-INSULATED ECCENTRIC REDUCER

MYEL

Dimensions



Description

- Reducer Centric = Female / Male
- MYEL = Thermal Double Wall Eccentric Reducer
- MYES = Acoustic Double Wall Eccentric Reducer
- ød1 - Connected straight to Spiral Duct
- ød - Connected straight to Fittings
- Inner Shell dia mm d, d1
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: MYEL - aaa / bbb

Type
ød
ød1

ød mm	ød1 mm	MYL L (mm)	MYEL L (mm)
100	63	117	149
	80	122	120
112	63	127	170
	80	117	140
	100	107	130
125	63	139	192
	80	124	163
	100	132	128
	112	109	108
140	63	152	218
	80	137	189
	100	120	154
	112	134	134
	125	113	111
152	63	162	239
	80	147	210
	100	130	175
	112	120	154
	125	135	132
	140	107	130
160	63	169	253
	80	154	224
	100	137	189
	112	127	168
	125	115	146
	140	122	120
	152	115	115
180	80	172	258
	100	154	224
	112	144	203
	125	133	180
	140	120	154
	152	137	136
	160	122	120
200	80	189	293
	100	172	258
	112	161	238
	125	150	215
	140	137	189

ød mm	ød1 mm	MYL L (mm)	MYEL L (mm)
200	152	127	168
	160	120	154
	180	122	120
224	100	192	300
	112	182	279
	125	171	257
	140	158	231
	152	147	210
	160	140	196
	180	123	161
	200	130	127
250	100	215	345
	112	205	324
	125	193	302
	140	180	276
	152	170	255
	160	163	241
	180	146	206
	200	128	172
	224	134	130
280	125	133	180
	140	120	154
	152	196	307
	160	189	293
	180	172	258
	200	154	224
	224	134	182
	250	141	137
305	125	241	397
	140	228	371
	152	218	350
	160	211	336
	180	193	302
	200	176	267
	224	155	225
	250	133	180
	280	132	128
315	125	250	414
	140	237	388

*For other available sizes, see pages 76 - 78.

PRE-INSULATED REDUCER

⌀d mm	⌀d_1 mm	MYL L (mm)	MYEL L (mm)
315	152	226	367
	160	219	354
	180	202	319
	200	185	285
	224	164	243
	250	141	198
	280	115	146
	305	123	122
355	160	254	423
	180	237	388
	200	219	354
	224	199	312
	250	176	267
	280	150	215
	305	128	172
	315	120	154
400	160	293	501
	180	276	466
	200	258	432
	224	238	390
	250	215	345
	280	189	293
	305	167	250
	315	159	232
	355	124	163
450	200	302	518
	224	281	477
	250	258	432
	280	232	380
	305	211	366
	315	202	319
	355	167	250
	400	128	172
500	200	345	605
	224	324	563
	250	302	518
	280	276	466
	305	254	423
	315	245	406

⌀d mm	⌀d_1 mm	MYL L (mm)	MYEL L (mm)
500	355	211	336
	400	172	258
	450	128	172
550	250	345	605
	280	319	553
	305	297	510
	315	289	492
	355	254	423
	400	215	345
	450	172	258
	500	128	172
560	250	354	622
	280	328	570
	305	306	527
	315	297	510
	355	263	440
	400	224	362
	450	163	241
	500	137	189
600	250	388	692
	280	362	640
	305	341	596
	315	332	579
	355	297	510
	400	258	432
	450	215	345
	500	172	258
	550	128	172
	560	120	154
630	250	414	744
	280	388	692
	305	367	648
	315	358	631
	355	323	477
	400	284	484
	450	241	397
	500	198	310
	550	154	224
	560	146	206

*For other available sizes, see pages 76 - 78.

MYL, MYEL, MYS, MYES

⌀d mm	⌀d_1 mm	MYL L (mm)	MYEL L (mm)
650	600	141	137
	305	381	683
	315	375	666
	355	341	596
	400	302	518
	450	258	432
	500	215	345
	550	172	258
	560	163	241
	600	128	172
	630	122	120
680	305	410	735
	315	401	717
	355	367	648
	400	328	570
	450	284	484
	500	241	397
	550	198	310
	560	189	293
	600	154	224
	630	128	172
	650	141	137
700	315	418	752
	355	384	683
	400	345	605
	450	302	518
	500	258	432
	550	215	345
	560	206	328
	600	172	258
	630	146	206
	650	128	172
	680	122	120
710	355	393	700
	400	354	622
	450	310	536
	500	267	449
	550	224	362
	560	215	345

⌀d mm	⌀d_1 mm	MYL L (mm)	MYEL L (mm)
750	600	180	276
	630	154	224
	650	137	189
	680	141	137
	400	388	692
	450	345	605
	500	302	518
	550	258	432
	560	250	414
	600	215	345
	630	189	293
	650	172	258
	680	146	206
	700	128	172
	710	120	154
800	400	432	778
	450	388	692
	500	345	605
	550	302	518
	560	293	501
	600	258	432
	630	232	380
	650	215	345
	680	189	293
	700	172	258
	710	163	241
	750	128	172
850	400	475	865
	450	432	778
	500	388	692
	550	345	605
	560	336	588
	600	302	518
	630	276	466
	650	258	432
	680	232	380
	700	215	345
	710	206	328
	750	172	258

*For other available sizes, see pages 76 - 78.

PRE-INSULATED REDUCER

⌀d mm	⌀d_1 mm	MYL L (mm)	MYEL L (mm)
850	800	128	172
900	450	475	865
	500	432	778
	550	388	692
	560	380	674
	600	345	605
	630	319	553
	650	302	518
	680	276	466
	700	258	432
	710	250	414
	750	215	345
	800	172	258
	850	128	172
950	450	518	952
	500	475	865
	550	432	778
	560	423	761
	600	388	692
	630	362	640
	650	345	605
	680	319	553
	700	302	518
	710	293	501
	750	258	432
	800	215	345
	850	172	258
	900	128	172
1000	500	518	952
	550	475	865
	560	466	848
	600	432	778
	630	406	726
	650	388	692
	680	362	640
	700	345	605
	710	336	588
	750	302	518
	800	258	432

⌀d mm	⌀d_1 mm	MYL L (mm)	MYEL L (mm)
1000	850	215	345
	900	172	258
	950	128	172
1050	500	562	1038
	550	518	952
	560	510	934
	600	475	865
	630	449	813
	650	432	778
	680	406	726
	700	388	692
	710	380	674
	750	345	605
	800	302	518
	850	258	432
	900	215	345
	950	172	258
	1000	128	172
1062	500	572	1059
	550	529	972
	560	520	955
	600	485	886
	630	459	834
	650	442	799
	680	416	747
	700	399	712
	710	390	695
	750	355	626
	800	312	539
	850	269	452
	900	225	366
	950	182	279
	1000	140	192
1100	600	518	9522
	630	492	900
	650	475	865
	700	432	778
	710	423	761
	750	388	692

*For other available sizes, see pages 76 - 78.

سافيد SAFID

MYL, MYEL, MYS, MYES

⌀d mm	⌀d_1 mm	MYL L (mm)	MYEL L (mm)
1100	800	345	605
	850	302	528
	900	258	432
	950	215	345
	1000	172	258
	1062	118	151
1120	560	570	1056
	600	536	986
	630	510	934
	650	492	900
	680	466	848
	700	449	813
	710	440	796
	750	491	726
	800	362	640
	850	315	553
	900	276	466
	1000	189	293
	1050	146	106
	1062	135	185
1150	600	562	1038
	630	536	986
	650	518	952
	700	475	865
	710	466	848
	750	432	778
	800	388	692
	850	345	605
	900	302	518
	950	258	432
	1000	215	345
	1050	172	258
	1062	161	238
	1100	128	172
1200	600	605	1125
	630	579	1073
	650	562	1038
	680	536	986
	700	518	952

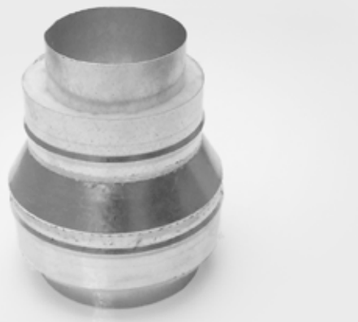
⌀d mm	⌀d_1 mm	MYL L (mm)	MYEL L (mm)
1200	710	510	934
	750	475	865
	800	432	778
	850	388	692
	900	345	605
	950	302	518
	1000	258	432
	1050	215	345
	1062	205	324
	1100	172	258
	1120	154	224
	1150	128	172
1250	600	648	1213
	630	622	1160
	650	605	1125
	680	579	1073
	700	562	1038
	719	533	1021
	750	518	952
	800	475	865
	850	432	778
	900	388	692
	950	345	605
	1000	302	518
	1050	258	432
	1062	248	411
	1100	215	345
	1120	198	310
	1150	172	258
	1200	128	172

*For other available sizes, see pages 76 - 78.

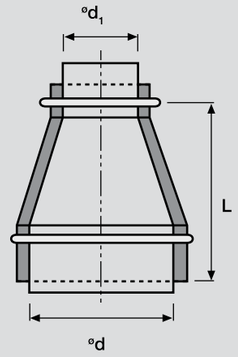
SAFID DOUBLE WALL
DOUBLE WALL ROUND DUCT & FITTINGS

PRE-INSULATED REDUCER

MYPL



Dimensions



Description

- Reducer Centric = Male / Male
- MYPL = Thermal Double Wall Reducer
- MYPS = Acoustic Double Wall Reducer
- ⌀d_1 - Connected straight to Spiral Duct
- ⌀d - Connected straight to Fittings
- Inner Shell dia mm d, d_1
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.
- Fabricated with continuous seam or stitch welding.

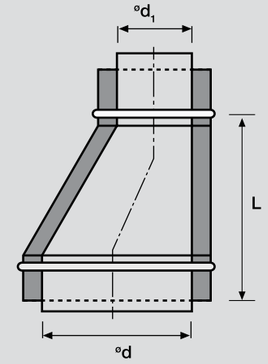
Ordering

Product Code: MYPL - aaa / bbb

Type
⌀d
⌀d_1

PRE-INSULATED ECCENTRIC REDUCER

Dimensions



MYEPL

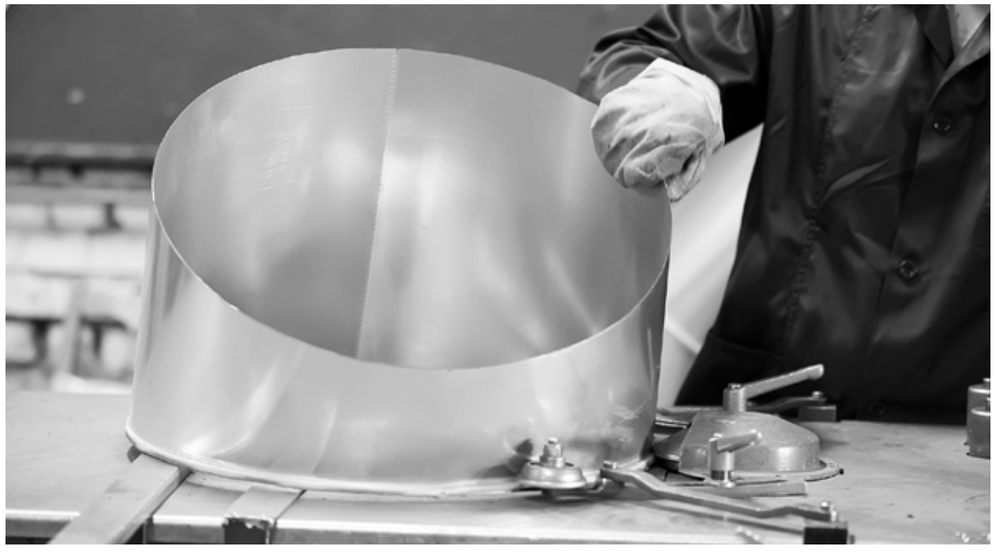
Description

- Reducer Centric = Male / Male
- MYEPL = Thermal Double Wall Eccentric Reducer
- MYEPS = Acoustic Double Wall Eccentric Reducer
- ⌀d_1 - Connected straight to Spiral Duct
- ⌀d - Connected straight to Fittings
- Inner Shell dia mm d, d_1
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.
- Fabricated with continuous seam or stitch welding.

Ordering

Product Code: MYEPL - aaa / bbb

Type
⌀d
⌀d_1



PRE-INSULATED REDUCER

⌀d mm	⌀d_1 mm	MYPL L (mm)	MYEPL L (mm)
100	63	117	149
	80	122	120
112	63	127	170
	80	117	140
	100	107	130
125	63	139	192
	80	124	163
	100	132	128
	112	109	108
140	63	152	218
	80	137	189
	100	120	154
	112	134	134
	125	113	111
152	63	162	239
	80	147	210
	100	130	175
	112	120	154
	125	135	132
	140	107	130
160	63	169	253
	80	154	224
	100	137	189
	112	127	168
	125	115	146
	140	122	120
	152	115	115
180	80	172	258
	100	154	224
	112	144	203
	125	133	180
	140	120	154
	152	137	136
	160	122	120
200	80	189	293
	100	172	258
	112	161	238
	125	150	215
	140	137	189
200	152	127	168
	160	120	154
	180	122	120
224	100	192	300
	112	182	279
	125	171	257
	140	158	231
	152	147	210
	160	140	196
	180	123	161
	200	130	127
250	100	215	345
	112	205	324
	125	193	302
	140	180	276
	152	170	255
	160	163	241
	180	146	206
	200	128	172
	224	134	130
280	125	133	180
	140	120	154
	152	196	307
	160	189	293
	180	172	258
	200	154	224
	224	134	182
	250	141	137
305	125	241	397
	140	228	371
	152	218	350
	160	211	336
	180	193	302
	200	176	267
	224	155	225
	250	133	180
	280	132	128
315	125	250	414
	140	237	388
315	152	226	367
	160	219	354
	180	202	319
	200	185	285
	224	164	243
	250	141	198
	280	115	146
	305	123	122
355	160	254	423
	180	237	388
	200	219	354
	224	199	312
	250	176	267
	280	150	215
	305	128	172
	315	120	154
400	160	293	501
	180	276	466
	200	258	432
	224	238	390
	250	215	345
	280	189	293
	305	167	250
	315	159	232
	355	124	163
450	200	302	518
	224	281	477
	250	258	432
	280	232	380
	305	211	366
	315	202	319
	355	167	250
	400	128	172
500	200	345	605
	224	324	563
	250	302	518
	280	276	466
	305	254	423
	315	245	406
500	355	211	336
	400	172	258
	450	128	172
550	250	345	605
	280	319	553
	305	297	510
	315	289	492
	355	254	423
	400	215	345
	450	172	258
	500	128	172
560	250	354	622
	280	328	570
	305	306	527
	315	297	510
	355	263	440
	400	224	362
	450	163	241
	500	137	189
600	250	388	692
	280	362	640
	305	341	596
	315	332	579
	355	297	510
	400	258	432
	450	215	345
	500	172	258
	550	128	172
	560	120	154
630	250	414	744
	280	388	692
	305	367	648
	315	358	631
	355	323	477
	400	284	484
	450	241	397
	500	198	310
	550	154	224
	560	146	206

*For other available sizes, see pages 76 - 78.

*For other available sizes, see pages 76 - 78.

PRE-INSULATED REDUCER

⌀d mm	⌀d_1 mm	MYPL L (mm)	MYEPL L (mm)
650	600	141	137
	305	381	683
	315	375	666
	355	341	596
	400	302	518
	450	258	432
	500	215	345
	550	172	258
	560	163	241
	600	128	172
	630	122	120
680	305	410	735
	315	401	717
	355	367	648
	400	328	570
	450	284	484
	500	241	397
	550	198	310
	560	189	293
	600	154	224
	630	128	172
	650	141	137
700	315	418	752
	355	384	683
	400	345	605
	450	302	518
	500	258	432
	550	215	345
	560	206	328
	600	172	258
	630	146	206
	650	128	172
	680	122	120
710	355	393	700
	400	354	622
	450	310	536
	500	267	449
	550	224	362
	560	215	345

⌀d mm	⌀d_1 mm	MYPL L (mm)	MYEPL L (mm)
750	600	180	276
	630	154	224
	650	137	189
	680	141	137
	400	388	692
	450	345	605
	500	302	518
	550	258	432
	560	250	414
	600	215	345
	630	189	293
	650	172	258
	680	146	206
	700	128	172
	710	120	154
800	400	432	778
	450	388	692
	500	345	605
	550	302	518
	560	293	501
	600	258	432
	630	232	380
	650	215	345
	680	189	293
	700	172	258
	710	163	241
	750	128	172
850	400	475	865
	450	432	778
	500	388	692
	550	345	605
	560	336	588
	600	302	518
	630	276	466
	650	258	432
	680	232	380
	700	215	345
	710	206	328
	750	172	258

*For other available sizes, see pages 76 - 78.

⌀d mm	⌀d_1 mm	MYPL L (mm)	MYEPL L (mm)
850	800	128	172
900	450	475	865
	500	432	778
	550	388	692
	560	380	674
	600	345	605
	630	319	553
	650	302	518
	680	276	466
	700	258	432
	710	250	414
	750	215	345
	800	172	258
	850	128	172
950	450	518	952
	500	475	865
	550	432	778
	560	423	761
	600	388	692
	630	362	640
	650	345	605
	680	319	553
	700	302	518
	710	293	501
	750	258	432
	800	215	345
	850	172	258
	900	128	172
1000	500	518	952
	550	475	865
	560	466	848
	600	432	778
	630	406	726
	650	388	692
	680	362	640
	700	345	605
	710	336	588
	750	302	518
	800	258	432

⌀d mm	⌀d_1 mm	MYPL L (mm)	MYEPL L (mm)
1000	850	215	345
	900	172	258
	950	128	172
1050	500	562	1038
	550	518	952
	560	510	934
	600	475	865
	630	449	813
	650	432	778
	680	406	726
	700	388	692
	710	380	674
	750	345	605
	800	302	518
	850	258	432
	900	215	345
	950	172	258
	1000	128	172
1062	500	572	1059
	550	529	972
	560	520	955
	600	485	886
	630	459	834
	650	442	799
	680	416	747
	700	399	712
	710	390	695
	750	355	626
	800	312	539
	850	269	452
	900	225	366
	950	182	279
	1000	140	192
1100	600	518	9522
	630	492	900
	650	475	865
	700	432	778
	710	423	761
	750	388	692

*For other available sizes, see pages 76 - 78.

PRE-INSULATED REDUCER

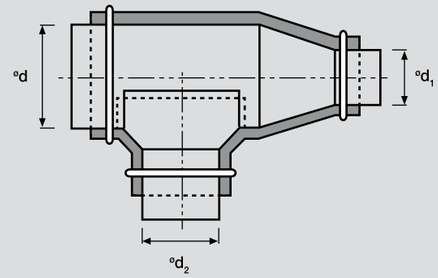
⌀d mm	⌀d_1 mm	MYPL L (mm)	MYEPL L (mm)
1100	800	345	605
	850	302	528
	900	258	432
	950	215	345
	1000	172	258
	1062	118	151
1120	560	570	1056
	600	536	986
	630	510	934
	650	492	900
	680	466	848
	700	449	813
	710	440	796
	750	491	726
	800	362	640
	850	315	553
	900	276	466
	1000	189	293
	1050	146	106
	1062	135	185
1150	600	562	1038
	630	536	986
	650	518	952
	700	475	865
	710	466	848
	750	432	778
	800	388	692
	850	345	605
	900	302	518
	950	258	432
	1000	215	345
	1050	172	258
	1062	161	238
	1100	128	172
1200	600	605	1125
	630	579	1073
	650	562	1038
	680	536	986
	700	518	952

⌀d mm	⌀d_1 mm	MYPL L (mm)	MYEPL L (mm)
1200	710	510	934
	750	475	865
	800	432	778
	850	388	692
	900	345	605
	950	302	518
	1000	258	432
	1050	215	345
	1062	205	324
	1100	172	258
	1120	154	224
	1150	128	172
1250	600	648	1213
	630	622	1160
	650	605	1125
	680	579	1073
	700	562	1038
	719	533	1021
	750	518	952
	800	475	865
	850	432	778
	900	388	692
	950	345	605
	1000	302	518
	1050	258	432
	1062	248	411
	1100	215	345
	1120	198	310
	1150	172	258
	1200	128	172

*For other available sizes, see pages 76 - 78.

PRE-INSULATED REDUCING TEE

Dimensions



TYRL
TYRS

Description

- TYRL = Thermal Double Wall Reducing Tee
- TYRS = Acoustic Double Wall Reducing Tee
- Inner Shell dia mm d, d_1 , d_2
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: TYRL - aaa / bbb / ccc

Type
⌀d
⌀d_1
⌀d_2

⌀d mm	⌀d_1 mm	⌀d_2 mm
80	63	63
100	80	80
	63	63
125	100	100
	80	80
160	125	125
	100	100
	80	80
200	160	160
	125	125
	100	100
250	200	200
	160	160
	125	125
315	250	250
	200	200
	160	160
355	315	315
	250	250
	200	200

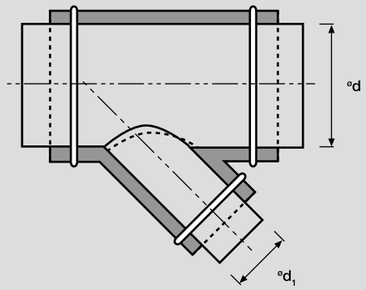
⌀d mm	⌀d_1 mm	⌀d_2 mm
400	355	355
	315	315
	250	250
500	400	400
	355	355
	315	315
630	500	500
	400	400
	355	355
800	630	630
	500	500
	400	400
1000	800	800
	500	500
1250	1000	1000
	800	800
	630	630

*For other available sizes, see pages 76 - 78.

PRE-INSULATED LATERAL TEE

TYL/45°
TYS/45°

Dimensions



Description

- TYL/45° = Thermal Double Wall Lateral Tee 45°
- TYS/45° = Acoustic Double Wall Lateral Tee 45°
- Inner Shell dia mm d, d_1
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: TYL/45 - aaa / bbb

- Type
- ød
- $ød_1$

ød mm	$ød_1$ mm
80	63
100	80
	63
125	100
	80
160	125
	100
	80
200	160
	125
	100
250	200
	160
	125
315	250
	200
	160
355	315
	250

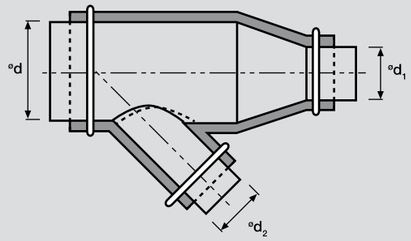
ød mm	$ød_1$ mm
	200
400	355
	315
	250
500	400
	355
	315
630	500
	400
	355
800	630
	500
	400
1000	800
	500
1250	1000
	800
	630

*For other available sizes, see pages 76 - 78.

PRE-INSULATED LATERAL REDUCING TEE

TYRL/45°
TYRS/45°

Dimensions



Description

- TYRL/45° = Thermal Double Wall Lateral Reducing Tee 45°
- TYRS/45° = Acoustic Double Wall Lateral Reducing Tee 45°
- Inner Shell dia mm d, d_1 , d_2
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: TYRL/45 - aaa / bbb / ccc

- Type
- ød
- $ød_1$
- $ød_2$

ød mm	$ød_1$ mm	$ød_2$ mm
80	63	63
100	80	80
	63	63
125	100	100
	80	80
160	125	125
	100	100
	80	80
200	160	160
	125	125
	100	100
250	200	200
	160	160
	125	125
315	250	250
	200	200
	160	160
355	315	315
	250	250
	200	200

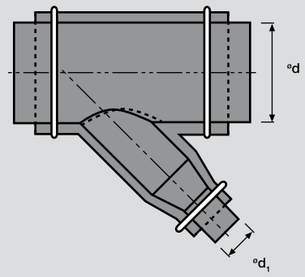
ød mm	$ød_1$ mm	$ød_2$ mm
400	355	355
	315	315
	250	250
500	400	400
	355	355
	315	315
630	500	500
	400	400
	355	355
800	630	630
	500	500
	400	400
1000	800	800
	500	500
1250	1000	1000
	800	800
	630	630

*For other available sizes, see pages 76 - 78.

PRE-INSULATED CONICAL LATERAL TEE

TYCL/45°
TYCS/45°

Dimensions



Description

- TYCL/45° = Thermal Double Wall Conical Reducing Tee 45°
- TYCS/45° = Acoustic Double Wall Conical Reducing Tee 45°
- Inner Shell dia mm d, d_1
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other

Ordering

Product Code: TYCL/45 - aaa / bbb

Type
ød
ød1

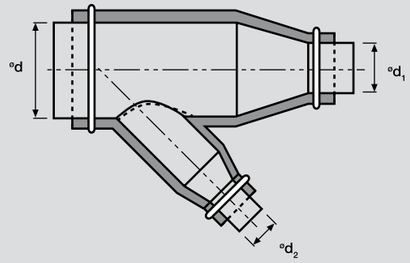
ød mm	ød1 mm
80	63
100	80
	63
125	100
	80
160	125
	100
	80
200	160
	125
	100
250	200
	160
	125
315	250
	200
	160
355	315
	250

ød mm	ød1 mm
	200
400	355
	315
	250
500	400
	355
	315
630	500
	400
	355
800	630
	500
	400
1000	800
	500
1250	1000
	800
	630

*For other available sizes, see pages 76 - 78.

PRE-INSULATED CONICAL LATERAL REDUCING TEE

Dimensions



TYCRL/45°
TYCRS/45°

Description

- TYCRL/45° = Thermal Double Wall Conical Lateral Reducing Tee 45°
- TYCRS/45° = Acoustic Double Wall Conical Lateral Reducing Tee 45°
- Inner Shell dia mm d, d_1 , d_2
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: TYCRL/45 - aaa / bbb / ccc

Type
ød
ød1
ød2

ød mm	ød1 mm	ød2 mm
80	63	63
100	80	80
	63	63
125	100	100
	80	80
160	125	125
	100	100
	80	80
200	160	160
	125	125
	100	100
250	200	200
	160	160
	125	125
315	250	250
	200	200
	160	160
355	315	315
	250	250
	200	200

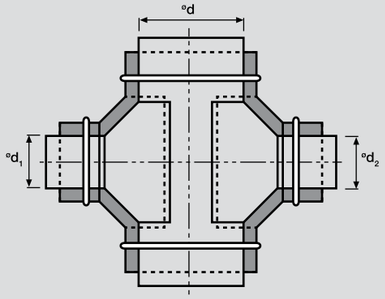
ød mm	ød1 mm	ød2 mm
400	355	355
	315	315
	250	250
500	400	400
	355	355
	315	315
630	500	500
	400	400
	355	355
800	630	630
	500	500
	400	400
1000	800	800
	500	500
1250	1000	1000
	800	800
	630	630

*For other available sizes, see pages 76 - 78.

PRE-INSULATED CROSS

RKL

Dimensions



Description

- RKL = Thermal Double Wall Cross
- RKS = Acoustic Double Wall Cross
- Inner Shell dia mm d, d_1 , d_2
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: RKL - aaa / bbb / ccc

- Type
- ød
- $ød_1$
- $ød_2$

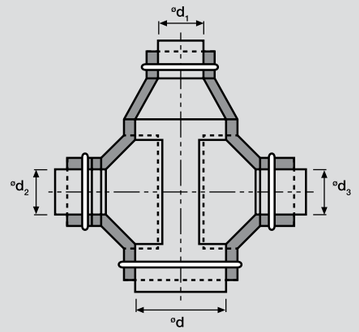
ød mm	$ød_1$ mm	$ød_2$ mm
80	63	63
100	80	80
	63	63
125	100	100
	80	80
160	125	125
	100	100
	80	80
200	160	160
	125	125
	100	100
250	200	200
	160	160
	125	125
315	250	250
	200	200
	160	160
355	315	315
	250	250
	200	200

ød mm	$ød_1$ mm	$ød_2$ mm
400	355	355
	315	315
	250	250
500	400	400
	355	355
	315	315
630	500	500
	400	400
	355	355
800	630	630
	500	500
	400	400
1000	800	800
	500	500
1250	1000	1000
	800	800
	630	630

*For other available sizes, see pages 76 - 78.

PRE-INSULATED REDUCING CROSS

Dimensions



RKRL

Description

- RKRL = Thermal Double Wall Reducing Cross
- RKRS = Acoustic Double Wall Reducing Cross
- Inner Shell dia mm d, d_1 , d_3
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: RKRL - aaa / bbb / ccc / ddd

- Type
- ød
- $ød_1$
- $ød_2$
- $ød_3$

ød mm	$ød_1$ mm	$ød_2$ mm	$ød_3$ mm
80	63	55	55
100	80	63	63
112	100	80	80
125	112	100	100
140	125	112	112
160	140	125	125
180	160	140	140
200	180	160	160
224	200	180	180
250	224	200	200
280	250	224	224
315	280	250	250
355	315	280	280
400	355	315	315
450	400	355	355
500	450	400	400
560	500	450	450
630	560	500	500
710	630	560	560

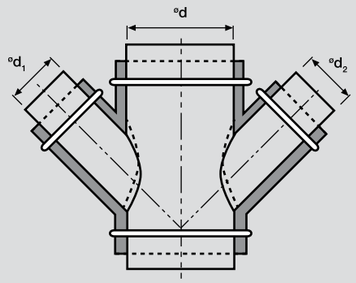
ød mm	$ød_1$ mm	$ød_2$ mm	$ød_3$ mm
800	710	630	630
900	800	710	710
1000	900	800	800
1120	1000	900	900
1250	1120	1000	1000
1300	1250	1120	1120

*For other available sizes, see pages 76 - 78.

PRE-INSULATED LATERAL CROSS

RKL/45°

Dimensions



Description

- RKL/45° = Thermal Double Wall Lateral Cross 45°
- RKS/45° = Acoustic Double Wall Lateral Cross 45°
- Inner Shell dia mm d, d_1 , d_2
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: RKL/45 - aaa / bbb / ccc

Type
ød
ød1
ød2

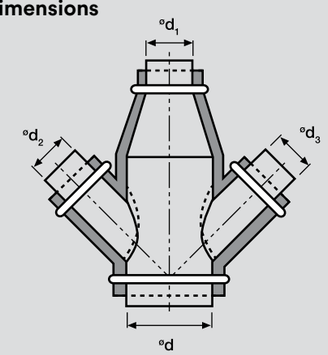
ød mm	ød1 mm	ød2 mm
80	63	63
100	80	80
	63	63
125	100	100
	80	80
160	125	125
	100	100
	80	80
200	160	160
	125	125
	100	100
250	200	200
	160	160
	125	125
315	250	250
	200	200
	160	160
355	315	315
	250	250
	200	200

ød mm	ød1 mm	ød2 mm
400	355	355
	315	315
	250	250
500	400	400
	355	355
	315	315
630	500	500
	400	400
	355	355
800	630	630
	500	500
	400	400
1000	800	800
	500	500
1250	1000	1000
	800	800
	630	630

*For other available sizes, see pages 76 - 78.

PRE-INSULATED REDUCING LATERAL CROSS

Dimensions



RKRL/45°

Description

- RKRL/45° = Thermal Double Wall Reducing Cross 45°
- RKRS/45° = Acoustic Double Wall Reducing Cross 45°
- Inner Shell dia mm d, d_1 , d_2, d_3
- Insulation 25 mm or 50 mm

Ordering

Product Code: RKRL/45 - aaa / bbb / ccc / ddd

Type
ød
ød1
ød2
ød3

ød mm	ød1 mm	ød2 mm	ød3 mm
80	63	55	55
100	80	63	63
112	100	80	80
125	112	100	100
140	125	112	112
160	140	125	125
180	160	140	140
200	180	160	160
224	200	180	180
250	224	200	200
280	250	224	224
315	280	250	250
355	315	280	280
400	355	315	315
450	400	355	355
500	450	400	400
560	500	450	450
630	560	500	500
710	630	560	560

ød mm	ød1 mm	ød2 mm	ød3 mm
800	710	630	630
900	800	710	710
1000	900	800	800
1120	1000	900	900
1250	1120	1000	1000
1300	1250	1120	1120

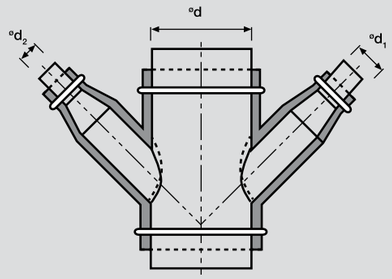
*For other available sizes, see pages 76 - 78.

PRE-INSULATED CONICAL LATERAL CROSS

سـافيد SAFID

RKCL/45°

Dimensions



Description

- RKCL/45° = Thermal Double Wall Conical Lateral Cross 45°
- RKCS/45° = Acoustic Double Wall Conical Lateral Cross 45°
- Inner Shell dia mm d, d_1 , d_2
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m^3 as standard other

Ordering

Product Code: RKCL/45 - aaa / bbb / ccc

Type
ød
$ød_1$
$ød_2$

ød	$ød_1$	$ød_2$
mm	mm	mm
80	63	63
100	80	80
	63	63
125	100	100
	80	80
160	125	125
	100	100
	80	80
200	160	160
	125	125
	100	100
250	200	200
	160	160
	125	125
315	250	250
	200	200
	160	160
355	315	315
	250	250
	200	200

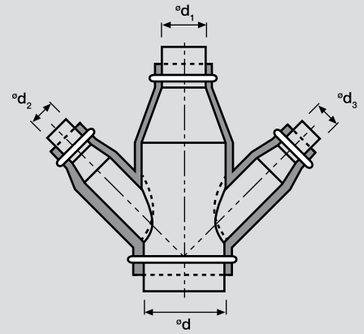
ød	$ød_1$	$ød_2$
mm	mm	mm
400	355	355
	315	315
	250	250
500	400	400
	355	355
	315	315
630	500	500
	400	400
	355	355
800	630	630
	500	500
	400	400
1000	800	800
	500	500
1250	1000	1000
	800	800
	630	630

*For other available sizes, see pages 76 - 78.

سـافيد SAFID

PRE-INSULATED CONICAL LATERAL REDUCING CROSS

Dimensions



RKCRL/45°
RKCRS/45°

Description

- RKCRL/45° = Thermal Double Wall Conical Lateral Reducing Cross 45°
- RKCRS/45° = Acoustic Double Wall Conical Lateral Reducing Cross 45°
- Inner Shell dia mm d, d_1 , d_2, d_3
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m^3 as standard other densities available on request.

Ordering

Product Code: RKCRL/45 - aaa / bbb / ccc / ddd

Type
ød
$ød_1$
$ød_2$
$ød_3$

ød	$ød_1$	$ød_2$	$ød_3$
mm	mm	mm	mm
80	63	55	55
100	80	63	63
112	100	80	80
125	112	100	100
140	125	112	112
160	140	125	125
180	160	140	140
200	180	160	160
224	200	180	180
250	224	200	200
280	250	224	224
315	280	250	250
355	315	280	280
400	355	315	315
450	400	355	355
500	450	400	400
560	500	450	450
630	560	500	500
710	630	560	560

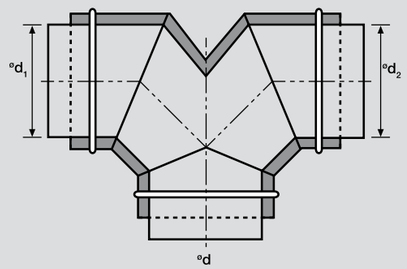
ød	$ød_1$	$ød_2$	$ød_3$
mm	mm	mm	mm
800	710	630	630
900	800	710	710
1000	900	800	800
1120	1000	900	900
1250	1120	1000	1000
1300	1250	1120	1120

*For other available sizes, see pages 76 - 78.

PRE-INSULATED TWINBEND

KKYL/90°
KKYS/90°

Dimensions



Description

- KKYL/90° = Thermal Double Wall Twinbend 90°
- KKYS/90° = Acoustic Double Wall Twinbend 90°
- Inner Shell dia mm d, d_1, d_2
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: KKYL/90 - aaa

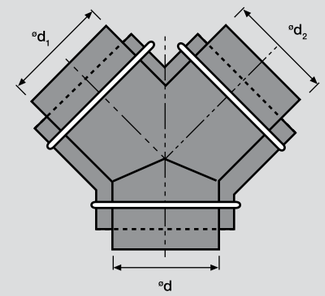
Type
ød

ød mm
63
80
100
112
125
140
160
180
200
224
250
280
315
355
400
450
500
560
630

ød mm
710
800
1000
1120
1250

*For other available sizes, see pages 76 - 78.

Dimensions



KKYL/45°
KKYS/45°

Description

- KKYL/45° = Thermal Double Wall Twinbend 45°
- KKYS/45° = Acoustic Double Wall Twinbend 45°
- Inner Shell dia mm d, d_1, d_2
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: KKYL/45 - aaa

Type
ød

ød mm
63
80
100
112
125
140
160
180
200
224
250
280
315
355
400
450
500
560
630

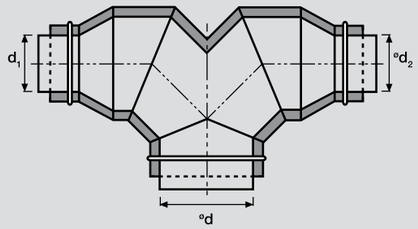
ød mm
710
800
1000
1120
1250

*For other available sizes, see pages 76 - 78.

PRE-INSULATED REDUCING TWINBEND

KKYRL/90°
KKYRS/90°

Dimensions



Description

- KKYRL/90° = Thermal Double Wall Reducing Twinbend 90°
- KKYRS/90° = Acoustic Double Wall Reducing Twinbend 90°
- Inner Shell dia mm d, d_1, d_2
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: KKYRL/90 - aaa / bbb / ccc

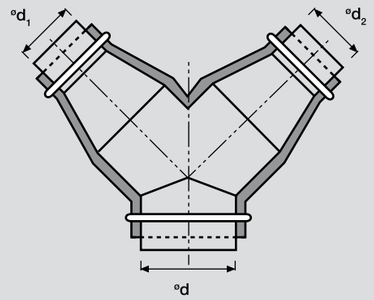
- Type
- $ød$
- $ød_1$
- $ød_2$

$ød$ mm	$ød_1$ mm	$ød_2$ mm
80	63	55
100	80	63
112	100	80
125	112	100
140	125	112
160	140	125
180	160	140
200	180	160
224	200	180
250	224	200
280	250	224
315	280	250
355	315	280
400	355	315
450	400	355
500	450	400
560	500	450
630	560	500
710	630	560
800	710	630
900	800	710
1000	900	800
1120	1000	900
1250	1120	1000

*For other available sizes, see pages 76 - 78.

PRE-INSULATED REDUCING TWINBEND

Dimensions



KKYRL/45°
KKYRS/45°

Description

- KKYRL/45° = Thermal Double Wall Reducing Twinbend 45°
- KKYRS/45° = Acoustic Double Wall Reducing Twinbend 45°
- Inner Shell dia mm d, d_1, d_2
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: KKYRL/45 - aaa / bbb / ccc

- Type
- $ød$
- $ød_1$
- $ød_2$

$ød$ mm	$ød_1$ mm	$ød_2$ mm
80	63	55
100	80	63
112	100	80
125	112	100
140	125	112
160	140	125
180	160	140
200	180	160
224	200	180
250	224	200
280	250	224
315	280	250
355	315	280
400	355	315
450	400	355
500	450	400
560	500	450
630	560	500
710	630	560
800	710	630
900	800	710
1000	900	800
1120	1000	900
1250	1120	1000

*For other available sizes, see pages 76 - 78.

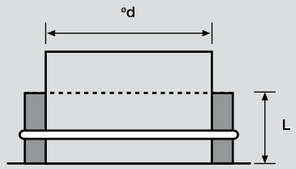
DOUBLE WALL ROUND DUCT & FITTINGS

PRE-INSULATED TAKE OFF

سـافيد
SAFID

LYTL
LYTS

Dimensions



Description

- LYTL = Thermal Double Wall Take off
- LYTS = Acoustic Double Wall Take off
- Inner Shell dia mm d
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: LYTL - aaa

Type
ºd

ºd mm	L mm
63	85
80	85
100	85
112	85
125	85
140	85
160	85
180	85
200	85
224	85
250	85
280	85
315	85
355	85
400	85
450	85
500	85
560	85
630	85
710	85
800	85

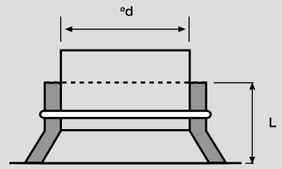
ºd mm	L mm
1000	85
1120	85
1250	85

*For other available sizes, see pages 76 - 78.

سـافيد
SAFID

PRE-INSULATED TAKE-OFF

Dimensions



Description

- LKTL = hermal Double Wall Take off
- LKTS = Acoustic Double Wall Take off
- Inner Shell dia mm d
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: LKTL - aaa

Type
ºd

LKTL
LKTS

ºd mm	L mm
63	68
80	68
100	68
112	68
125	68
140	68
160	68
180	68
200	68
224	68
250	68
280	68
315	68
355	68
400	68
450	68
500	68
560	68
630	68
710	68
800	68

ºd mm	L mm
1000	68
1120	68
1250	68t

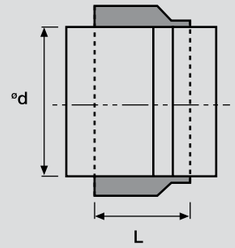
*For other available sizes, see pages 76 - 78.

INSULATION END

سـافيد SAFID

EPP-O, EPP-P
EPO-O, EPO-P

Dimensions



Description

- L= Thermal Double Wall Insulation End
- S = Acoustic Double Wall Insulation End
- Inner Shell dia mm d
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.
- From double wall to single wall
- EPP-O = from duct to fitting
- EPO-O = from fitting to fitting
- EPP-P = from duct to duct
- EPO-P = from fitting to duct

NOTE: If 50 mm insulation, add 43 mm to the length.

Ordering

Product Code: EPP-O - aaa

Type
ºd

ºd mm	EPP-O L (mm)	EPP-P L (mm)	EPO-P L (mm)	EPO-P L (mm)
63	118	93	143	118
80	118	93	143	118
100	118	93	143	118
112	118	93	143	118
125	118	93	143	118
140	118	93	143	118
160	118	93	143	118
180	118	93	143	118
200	118	93	143	118
224	118	93	143	118
250	118	93	143	118
280	118	93	143	118
315	118	93	143	118
355	118	93	143	118
400	118	93	143	118
450	118	93	143	118
500	118	93	143	118
560	118	93	143	118

ºd mm	EPP-O L (mm)	EPP-P L (mm)	EPO-P L (mm)	EPO-P L (mm)
630	118	93	143	118
710	118	93	143	118
800	118	93	143	118
900	118	93	143	118
1000	118	93	143	118
1120	118	93	143	118
1250	118	93	143	118

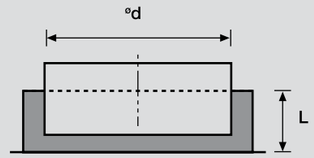
*For other available sizes, see pages 76 - 78.

سـافيد SAFID

PRE-INSULATED END CAP

TPL
TPS

Dimensions



Description

- TPL = Thermal Double Wall End Cap
- TPS = Acoustic Double Wall End Cap
- Inner Shell dia mm d
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: TPL - aaa

Type
ºd

ºd mm	L mm
63	50
80	50
100	50
112	50
125	50
140	50
160	50
180	50
200	50
224	50
250	50
280	50
315	50
355	50
400	50
450	50
500	50
560	50
630	50
710	50
800	50

ºd mm	L mm
1000	50
1120	50
1250	50

*For other available sizes, see pages 76 - 78.

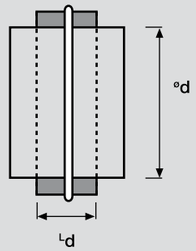
DOUBLE WALL ROUND DUCT & FITTINGS

INSULATION COUPLING

سـافيد SAFID

LYPL
LYPS

Dimensions



Description

- LYPL = Thermal Double Wall Coupling
- LYPS = Acoustic Double Wall Coupling
- LYP = for joining duct to duct
- Inner Shell dia mm d
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: LYPL - aaa

Type
ød

ød mm	L mm
63	100
80	100
100	100
112	100
125	100
140	100
160	100
180	100
200	100
224	100
250	100
280	100
315	100
355	100
400	100
450	100
500	100
560	100
630	100
710	100
800	100

ød mm	L mm
1000	100
1120	100
1250	100

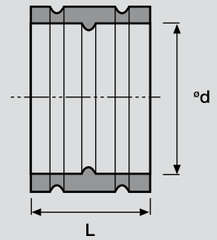
*For other available sizes, see pages 76 - 78.

سـافيد SAFID

PRE-INSULATED COUPLING

LYOL
LYOS

Dimensions



Description

- LYOL = Thermal Double Wall Coupling
- LYOS = Acoustic Double Wall Coupling
- LYO = for joining fitting to fitting
- Inner Shell dia mm d
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: LYOL - aaa

Type
ød

ød mm	L mm
63	200
80	200
100	200
112	200
125	200
140	200
160	200
180	200
200	200
224	200
250	200
280	200
315	200
355	200
400	200
450	200
500	200
560	200
630	200
710	200
800	200

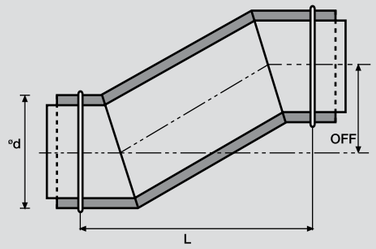
ød mm	L mm
1000	200
1120	200
1250	200

*For other available sizes, see pages 76 - 78.

PRE-INSULATED OFFSET

OFFL
OFFS

Dimensions



Description

- OFFL = Thermal Double Wall Offset
- OFFS = Acoustical Double Wall Offset
- Inner Shell dia mm d
- Insulation 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard other densities available on request.

Ordering

Product Code: OFFL - aaa / bbb

Type
ød
ød$_1$

ød mm	ød$_1$ mm
63	55
80	63
100	80
112	100
125	112
140	125
160	140
180	160
200	180
224	200
250	224
280	250
315	280
355	315
400	355
450	400
500	450
560	500
630	560

ød mm	ød$_1$ mm
710	630
800	710
900	800
1000	900
1120	1000
1250	1120

*For other available sizes, see pages 76 - 78.

SPECIFICATION FOR DUCT & FITTINGS

I. General

A. All round supply, return and exhaust ductwork shown on the plans or indicated in the project specification to be insulated shall be SafidDouble Wall as manufactured by Safid or approved equal. The duct system shall consist of fittings that are factory fabricated and spiral duct which, when installed according to the manufacturer's instructions, (seal duct joints with duct sealer and cold shrink band) will render an air tight system.

B. The contractor may, at his option, convert any or all double wall rectangular or oval ductwork to double wall round provided that the project space limitations are properly addressed and that the overall system design static pressure not be exceeded.

II. Materials

A. Unless otherwise noted, all duct and fittings shall be a minimum of G-90 galvanized steel in accordance with ASTM A-924 and A-653 (Formerly A-527, A-525).

B. Perforated liner shall consist of 3 mm perforations on 6 mm staggered centers corresponding to an overall open area of 22.5%.

C. Fiberglass insulation shall have a maximum conductivity factor (K) of 0.038 w/m.°C at 24°C mean ambient temperature (0.26 BTU-in/hr • ft2 • °F at 75°F mean ambient temperature).

D. When specified on contract documents, stainless steel type 304 or 316 in accordance with ASTM A-240 shall be provided.

III. Construction

A. Unless otherwise noted, all double wall duct and fittings shall be constructed as shown in the following table:

Diameter (mm)	Spiral Duct		Fittings	
	Inner	Outer	Inner	Outer
100 - 305	26	26	24	24
350 - 600	26	26	22	22
650 - 850	24	24	20	20
900 - 950	24	22	20	20
1000 - 1200	22	22	20	20
1250 - 1500	22	20	20	18

B. Fittings:

1. All fitting shall be factory fabricated and calibrated to manufacturer's published dimensional tolerance standard.

2. Double wall duct and fittings shall consist of a perforated or solid inner liner, a 25mm, 24kg/m3 (1 inch, 1.50 lb/ft3 unless otherwise specified) layer of fiberglass insulation and a solid outer pressure shell. For 25mm (1-inch) thick insulation, the outer pressure shell diameter shall be 50mm (2 inches) larger than the inner liner.

3. Double wall to single wall transitions shall be provided where insulated duct connects to noninsulated, single wall duct. Transitions also act as insulation ends reducing the double wall outer shell diameter to inner shell diameter.

4. When contract documents require divided flow fittings, only full body fittings will be accepted. Double wall saddle taps are unacceptable.

5. All double wall duct and fittings shall be furnished with both an inner liner and a outer pressure shell coupling. The inner liners shall not be fastened together to allow for expansion and contraction.

C. Spiral Duct

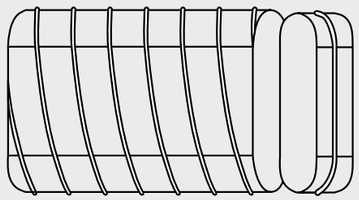
1. Spiral duct shall be calibrated to manufacturer's published dimensional tolerance standard.

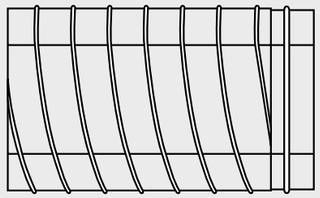
2. All outer shell of spiral duct 350 Dia. and larger can be corrugated for added strength and rigidity. Inner and outer duct will be of spiral lockseam construction.

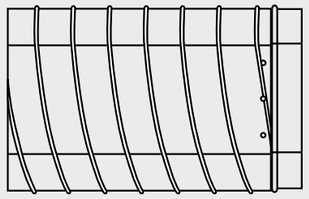
IV. Performance

A. Duct system performance shall meet SMACNA's Leakage Class 3 requirements at the system design static pressure as indicated on the contract documents not to exceed -5000 pa. (-20 in W.G.) or 3000 pa. (+12 in W.G.)

OVAL DUCT & FTTINGS







Description

SAFID Oval must be assembled according to these instructions:

Before Assembly
The Duct must be free from dirt.

Assembly of Instructions:
- Only use undamaged Safid Oval duct and fittings.
- Slip the fitting into the flat oval duct up to the bead.
- Fasten the duct and fitting together with self-tapping sheet metal screws or pressure-proof pop rivets.

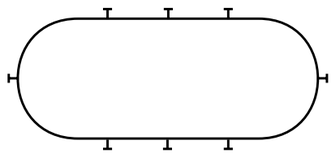
The below numbers and dimensions of steel screws or pop rivets are recommended:

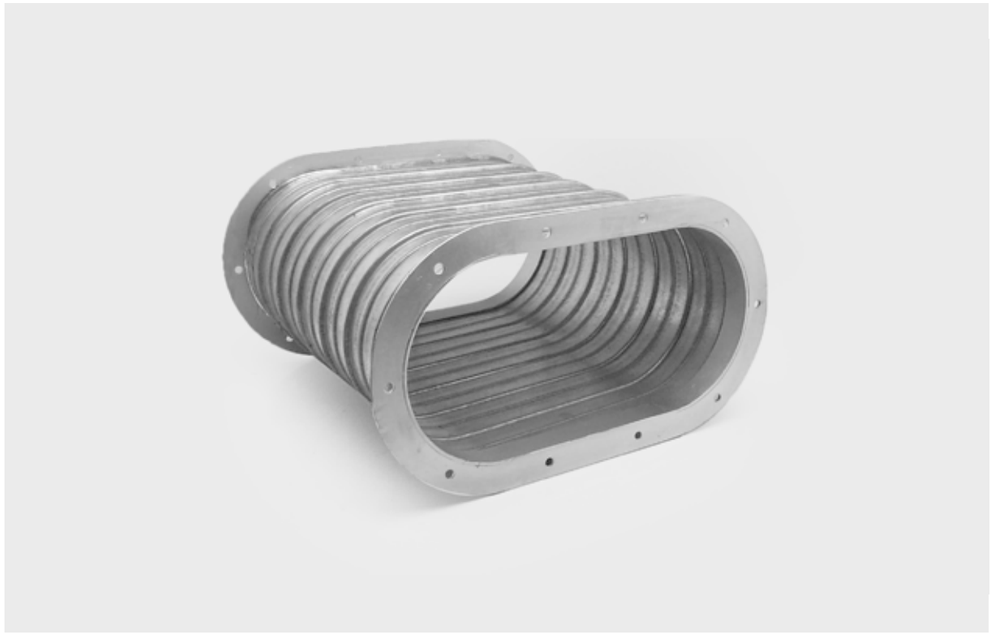
Circumference mm	Min. Diameter mm	Number
1171 - 1222	3.2	4
1228 - 1829	4.0	6
1835 - 2442	4.0	8
2478 - 3043	4.0	10
3056 - 3671	4.8	12
3685 - 4171	4.8	14

Placement of the fastening screws should be opposite from one another evenly spaced around the circumference, much like the procedure for tightening lug nuts on a tire. Start where the distance between the duct and the fitting is largest. In event of incorrect installation, holes caused by screws or pop rivets must be sealed before re-assembly.

Circumference = (W-H)x2 + (H x 3.1416)

Where: W = Major Dimension ; H = Minor Dimension





OVAL DUCT

Introduction

The SAFID Oval duct system requires both lower installation costs and operating cost due to the system's low leakage and reduced pressure loss performance. This system is available for low, medium and high pressure systems meeting SMACNA 2005 3rd Edition and DW144 specifications and requirements.

Construction

SAFID Oval is produced by stretching circular spiral wound ductwork over semicircular forming heads to preset dimensions. Sizes are from 500mm x 150mm to 1800mm x 500mm and delivered in lengths of 2 meters and 4 meters as standards - with other lengths available on request. Flat oval duct is available with a longitudinal seam construction for applications that require very heavy gauges or large sizes. The ducts longitudinal seam is fully welded. Standard products are normally manufactured from hot dip galvanized steel sheet or coil all as specified in SMACNA and DW 144 standards.

Application

The SAFID Oval duct system is designed for use in places with restricted headroom and is especially suitable for lengthy duct systems with relatively few branchings and outlets. SAFID Oval is ideal for voids with space limitations, risers with the added bonus of lower airflow resistance and fewer joints and supports required.

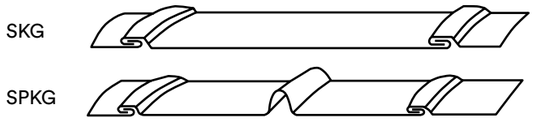
FLAT OVAL DUCT

Construction Standards (as per SMACNA 2005 3rd Edition - 500Pa to 2500Pa Pressure Class)

Major Dimension Duct Width	Spiral Seam Duct		Longitudinal Seam Duct Gauge	Fittings Gauge
	Gauge			
	Gauge	Profile		
500 - 600	24	SKG	20	20
650 - 900	24	SPKG	20	20
950 - 1200	24	SPKG	18	18
1250 - 1500	22	SPKG	18	18
1550 - 1650	22	SPKG	16	16
1700 - 1800	20	SPKG	16	16
1850 AND ABOVE	18	SMKG	16	16

* SPKG Profile offers a self supporting lower gauge construction, which is an economical alternative.

Profiles:



Standard Length

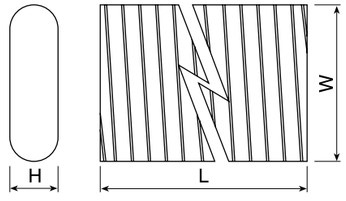
Spiral Seam Duct = 4 meters
Longitudinal Seam Duct = 1 meter

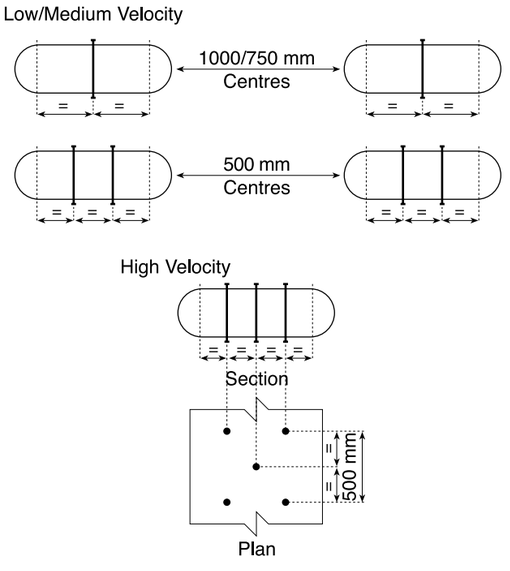
FLAT OVAL DUCT

Construction Standards (as per DW 144)

Major Dimension Duct Width	Spiral Seam Duct	Longitudinal Seam Duct Gauge	Fittings Gauge
	Gauge		
	SPKG		
500 - 850	22	20	20
875 - 1500	20	18	18
1525 - OVER	20	16	16

Dimensions





STANDARD FLAT OVAL DUCT SIZES

Flat Oval Size H	Flat Oval Size W	Equivalent Duct Diameter
150	500	283
150	525	289
150	550	296
150	575	302
150	600	307
150	625	313
150	650	318
150	675	324
150	700	329
150	725	334
150	750	339
150	775	343
150	800	348
150	825	353
150	850	357
150	875	361
150	900	366
150	925	370
150	950	374
150	975	378
150	1000	382
150	1025	386
150	1050	390
150	1075	394
150	1100	398
200	500	330
200	525	338
200	550	345
200	575	353
200	600	360
200	625	367
200	650	373
200	675	380
200	700	386
200	725	392
200	750	398
200	775	404
200	800	410
200	825	415
200	850	421
200	875	426
200	900	431

Flat Oval Size H	Flat Oval Size W	Equivalent Duct Diameter
200	925	437
200	950	442
200	975	447
200	1000	451
200	1025	456
200	1050	461
200	1075	466
200	1100	470
200	1125	475
200	1150	479
200	1175	483
200	1200	488
200	1225	492
200	1250	496
200	1275	500
200	1300	504
250	500	370
250	525	379
250	550	388
250	575	396
250	600	405
250	625	413
250	650	420
250	675	428
250	700	435
250	725	443
250	750	450
250	775	457
250	800	463
250	825	470
250	850	476
250	875	482
250	900	489
250	925	495
250	950	501
250	975	506
250	1000	512
250	1025	518
250	1050	523
250	1075	529
250	1100	534
250	1125	539

سافيد SAFID

STANDARD FLAT OVAL DUCT SIZES

Flat Oval Size H	Flat Oval Size W	Equivalent Duct Diameter
250	1150	544
250	1175	549
250	1200	554
250	1225	559
250	1250	564
250	1275	569
250	1300	574
250	1325	578
250	1350	583
250	1375	588
250	1425	597
250	1450	601
250	1475	605
250	1500	610
250	1525	614
250	1550	618
250	1575	622
250	1600	626
250	1625	630
250	1650	634
250	1675	638
250	1700	642
250	1725	646
250	1750	650
250	1775	654
300	600	444
300	625	453
300	650	462
300	675	470
300	700	479
300	725	487
300	750	495
300	775	503
300	800	511
300	825	518
300	850	525
300	875	533
300	900	540
300	925	546
300	950	553
300	975	560
300	100	566

Flat Oval Size H	Flat Oval Size W	Equivalent Duct Diameter
300	1025	573
300	1050	579
300	1075	585
300	1100	591
300	1125	597
300	1150	603
300	1175	609
300	1200	614
300	1225	620
300	1250	626
300	1275	631
300	1300	636
300	1325	642
300	1350	647
300	1400	657
300	1425	662
300	1450	667
300	1475	672
300	1500	677
300	1525	682
300	1550	687
300	1575	691
300	1600	696
300	1625	701
300	1650	705
300	1675	710
300	1700	714
300	1725	719
300	1750	723
300	1800	732
400	600	508
400	625	520
400	650	531
400	675	542
400	700	552
400	725	562
400	750	572
400	775	582
400	800	591
400	825	601
400	850	610
400	875	619

SAFID OVAL

OVAL DUCT & FITTINGS

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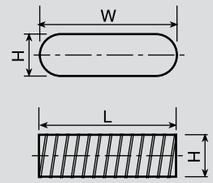
STANDARD FLAT OVAL DUCT SIZES

Flat Oval Size H	Flat Oval Size W	Equivalent Duct Diameter
400	900	627
400	925	636
400	950	644
400	975	652
400	1000	660
400	1025	668
400	1050	676
400	1075	683
400	1100	691
400	1125	698
400	1150	705
400	1175	712
400	1200	719
400	1225	726
400	1250	733
400	1275	740
400	1300	746
400	1350	759
400	1375	766
400	1400	772
400	1425	778
400	1450	784
400	1475	790
400	1500	796
400	1525	802
400	1550	808
400	1575	814
400	1600	819
400	1625	825
400	1650	831
400	1675	836
400	1700	841
400	1725	847
400	1750	852
400	1775	857
400	1800	863
500	600	560
500	625	573
500	675	599
500	700	612
500	725	624
500	750	636

Flat Oval Size H	Flat Oval Size W	Equivalent Duct Diameter
500	775	647
500	800	658
500	825	669
500	850	680
500	875	690
500	900	700
500	925	711
500	950	720
500	975	730
500	1000	739
500	1025	749
500	1050	758
500	1075	767
500	1100	775
500	1125	784
500	1150	793
500	1175	801
500	1200	809
500	1225	817
500	1250	825
500	1275	833
500	1300	841
500	1325	849
500	1350	856
500	1375	864
500	1400	871
500	1425	878
500	1450	885
500	1475	892
500	1500	899
500	1525	906
500	1550	913
500	1575	920
500	1600	926
500	1625	933
500	1650	940
500	1675	946
500	1700	952
500	1725	959
500	1750	965
500	1775	971
500	1800	977

FLAT OVAL SPIRAL SEAMED DUCT

Dimensions



Description

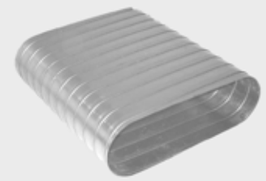
- Flat Oval Spiral Seamed Duct.
- Standard Length is 4000 mm.

Ordering

Product Code: SKG - aaa x bbb

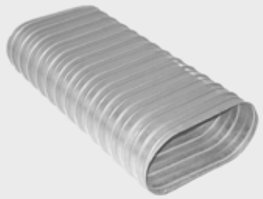
Type
W
H

SKG



SPKG

(with External Corrugations)



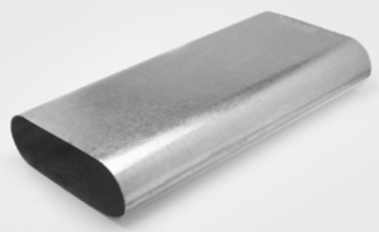
W mm	H mm
500	150
600	150
600	200
800	200
500	250
600	250
800	250
1000	250
600	300
800	300
1000	300
1200	300
600	400
800	400
1000	400
1200	400
1400	400
1600	400

W mm	H mm
1000	500
1200	500
1400	500
1600	500
1700	500
1800	500

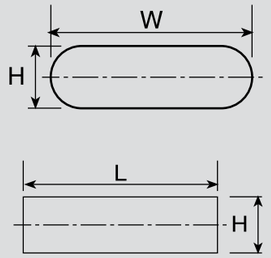
- Non standard sizes available as longitudinal seamed flat oval duct.
- For other available sizes, see pages 134 - 136.

LONGITUDINAL SEAMED DUCT

SMKG



Dimensions



Description

- Longitudinal Seam Flat Oval Straight Duct
- Standard Length is 1000 mm.

Ordering

Product Code: SMKG - aaa x bbb

Type
W
H

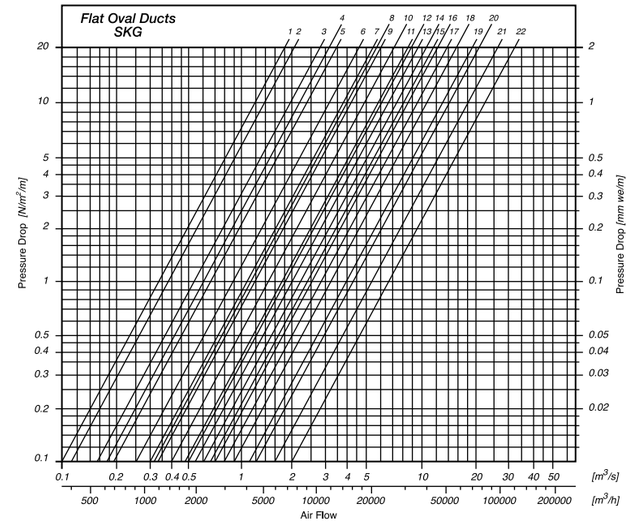
W mm	H mm
500	150
600	150
600	200
800	200
500	250
600	250
800	250
1000	250
600	300
800	300
1000	300
1200	300
600	400
800	400
1000	400
1200	400
1400	400

W mm	H mm
1600	400
1000	500
1200	500
1400	500
1600	500
1700	500
1800	500

• For other avaliable sizes, see pages 134 - 136.

FLAT OVAL DUCT

Technical Data



SIZES

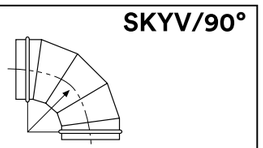
	W x H
1	550 x 150
2	625 x 150
3	600 x 200
4	875 x 150
5	675 x 200
6	650 x250
6	850 x 200
7	1000 x 200
8	625 x 300
9	800 x 250
10	775 x 300
10	950 x 250
11	1125 x 250

	W x H
12	950 x 300
13	725 x 400
14	1100 x 300
15	675 x 500
16	875 x 400
17	1425 x 300
18	825 x 500
18	1050 x 400
19	975 x 500
20	1375 x 400
21	1300 x 500
22	1625 x 500

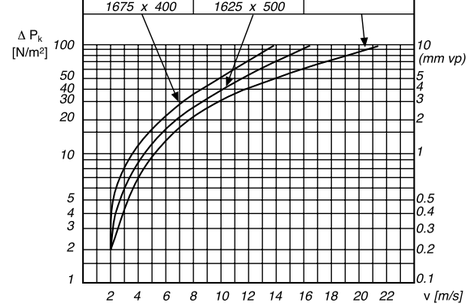
FLAT OVAL FITTINGS

Technical Data

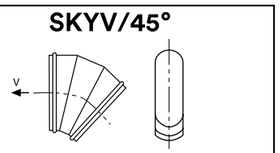
SKYV/90°



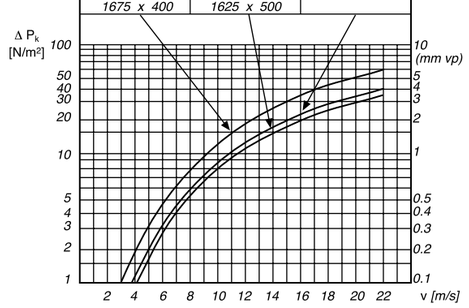
550 x 150	600 x 200	625 x 300
625 x 150	675 x 200	725 x 400
875 x 150	650 x 250	875 x 400
850 x 200	800 x 250	675 x 500
1000 x 200	775 x 300	825 x 500
950 x 250	950 x 300	975 x 500
1125 x 250	1050 x 400	
1100 x 300	1375 x 400	
1425 x 300	1300 x 500	
1675 x 400	1625 x 500	



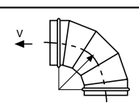
SKYV/45°

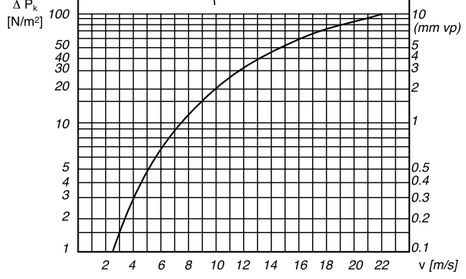


550 x 150	600 x 200	625 x 300
625 x 150	675 x 200	725 x 400
875 x 150	650 x 250	875 x 400
850 x 200	800 x 250	675 x 500
1000 x 200	775 x 300	825 x 500
950 x 250	950 x 300	975 x 500
1125 x 250	1050 x 400	
1100 x 300	1375 x 400	
1425 x 300	1300 x 500	
1675 x 400	1625 x 500	

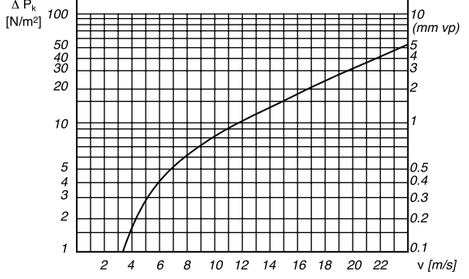


SKYP/90°





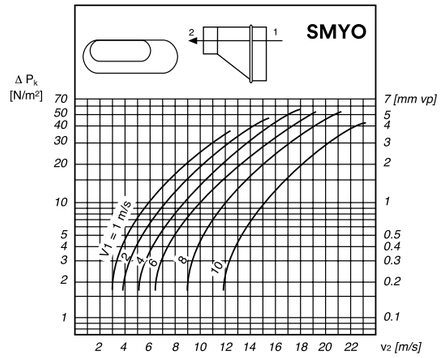
SKYP/45°



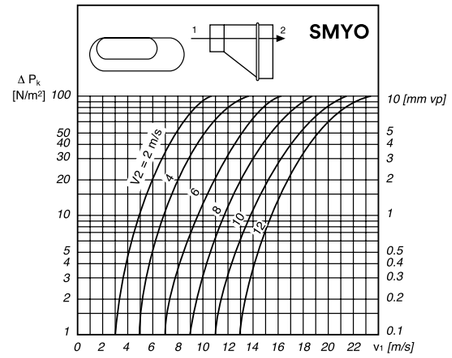
FLAT OVAL FITTINGS

Technical Data

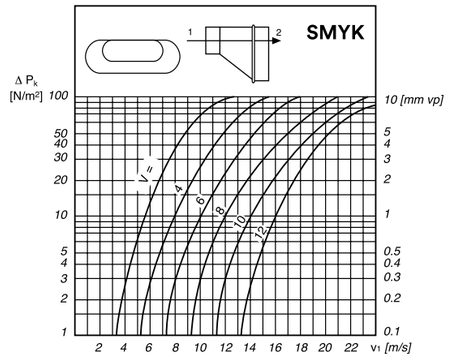
SMYO



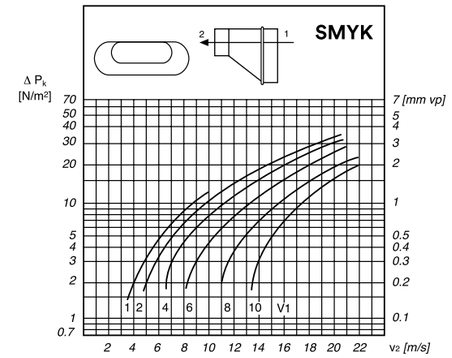
SMYO



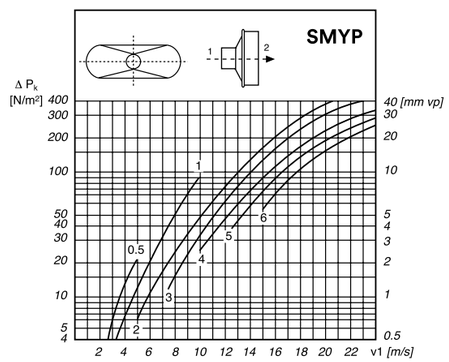
SMYK



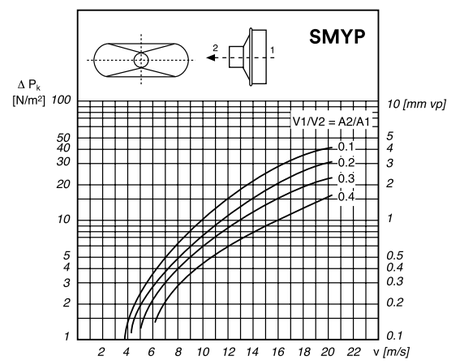
SMYK



SMYP

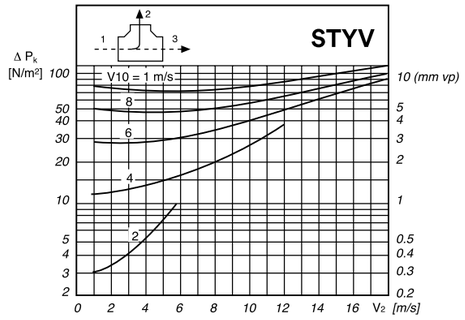


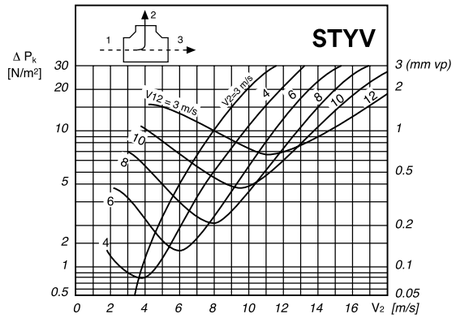
SMYP

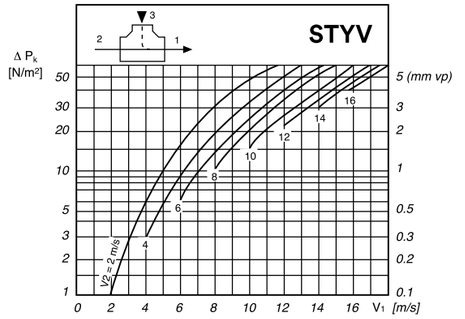


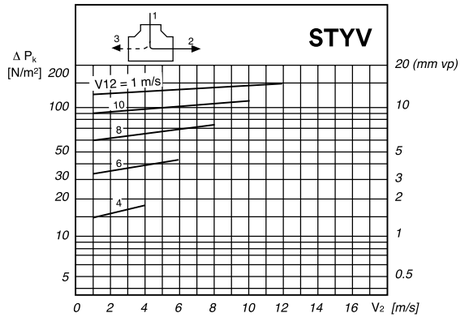
FLAT OVAL FITTINGS

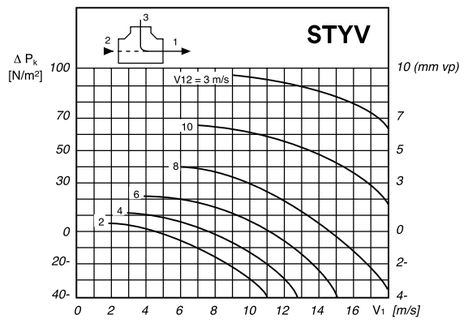
Technical Data

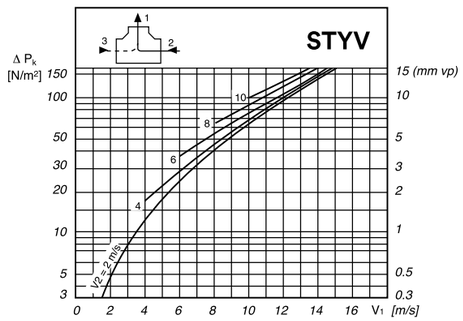






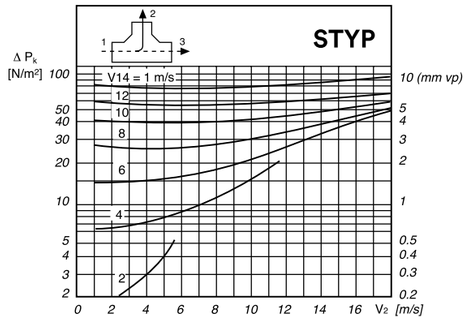


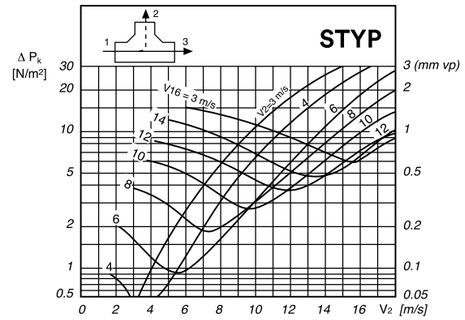


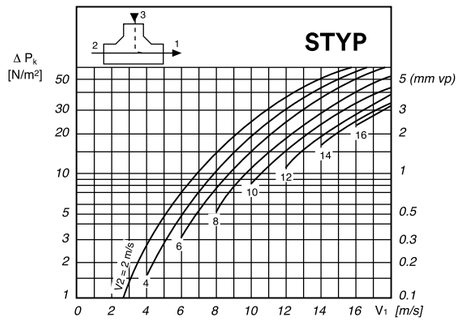


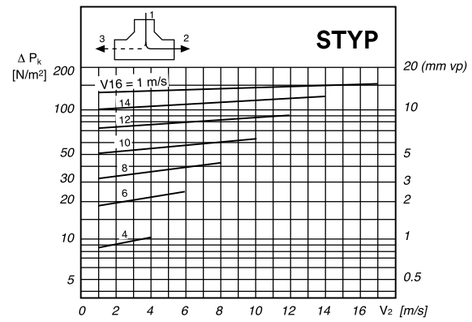
FLAT OVAL FITTINGS

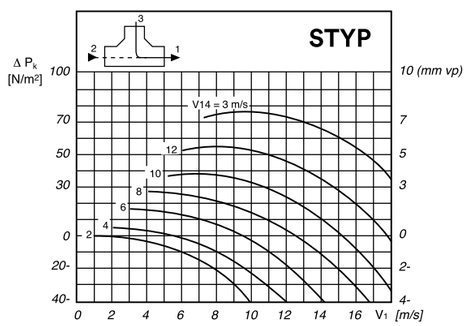
Technical Data

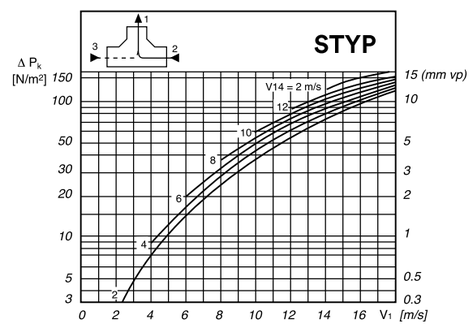






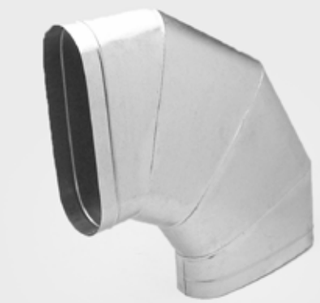




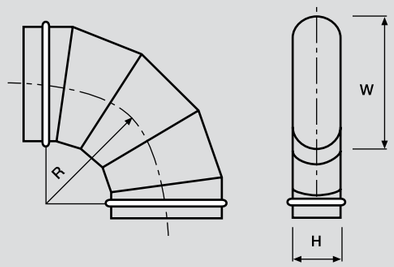


HARD BEND 90°

SKYV/90°



Dimensions



Description

Segmented Five Section Hard Bend 90° - Angle from 1° - 135°
- Joints and seams by continuous seam or stitch welding.
- R = 1.5 W, 5-gore bend
- R = W, 4-gore bend

Ordering

Product Code: SKYV/90 - aaa x bbb

Type
W
H

W mm	H mm
500	150
600	150
600	200
800	200
500	250
600	250
800	250
1000	250
600	300
800	300
1000	300
1200	300
600	400
800	400
1000	400
1200	400

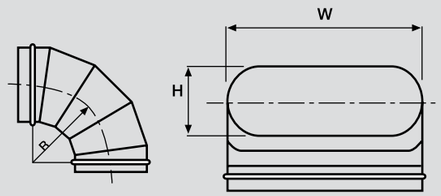
W mm	H mm
1400	400
1600	400
1000	500
1200	500
1400	500
1600	500
1700	500
1800	500

• For other avaliable sizes, see pages 134 - 136.

EASY BEND 90°

SKYP/90°

Dimensions



Description

Segmented Five Section Easy Bend 90° - Angle from 1° - 135°
- Joints and seams by continuous seam or stitch welding.
- R = 1.5H, 5-gore bend
- R = H, 4-gore bend

Ordering

Product Code: SKYP/90 - aaa x bbb

Type
W
H

W mm	H mm
500	150
600	150
600	200
800	200
500	250
600	250
800	250
1000	250
600	300
800	300
1000	300
1200	300
600	400
800	400
1000	400
1200	400

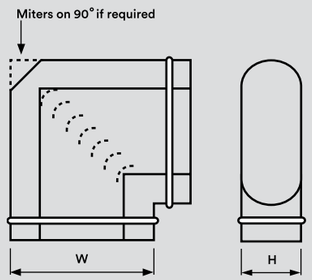
W mm	H mm
1400	400
1600	400
1000	500
1200	500
1400	500
1600	500
1700	500
1800	500

• For other avaliable sizes, see pages 134 - 136.

MITERED HARD BEND

SKYVM/90°

Dimensions



Description

Mitered Hard Bend - Angle from 1° - 90°
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: SKYVM/90 - aaa x bbb

Type
W
H

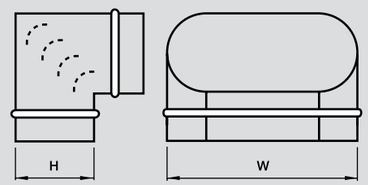
W mm	H mm
500	150
600	150
600	200
800	200
500	250
600	250
800	250
1000	250
600	300
800	300
1000	300
1200	300
600	400
800	400
1000	400
1200	400
1400	400

W mm	H mm
1600	400
1000	500
1200	500
1400	500
1600	500
1700	500
1800	500

• For other avaliable sizes, see pages 134 - 136.

MITERED EASY BEND

Dimensions



SKYPM/90°

Description

Mitered Easy Bend - Angle from 1° - 90°
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: SKYPM/90 - aaa x bbb

Type
W
H

W mm	H mm
500	150
600	150
600	200
800	200
500	250
600	250
800	250
1000	250
600	300
800	300
1000	300
1200	300
600	400
800	400
1000	400
1200	400
1400	400

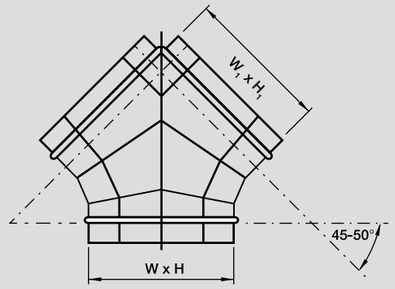
W mm	H mm
1600	400
1000	500
1200	500
1400	500
1600	500
1700	500
1800	500

• For other avaliable sizes, see pages 134 - 136.

TWIN BEND

SKKY/45° - 50°

Dimensions



Description

Twin Bend - Angle from 45° - 50°
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: SKKY/45 - aaa x bbb / ccc x ddd

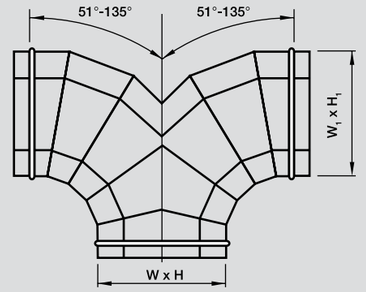
Type
W
H
W_1
H_1

W mm	H mm	W_1 mm	H_1 mm
500	150	500	150
600	150	600	150
600	200	600	200
800	200	800	200
500	250	500	250
600	250	600	250
800	250	800	250
1000	250	1000	250
600	300	600	300
800	300	800	300
1000	300	1000	300
1200	300	1200	300
600	400	600	400
800	400	800	400
1000	400	1000	400
1200	400	1200	400
1400	400	1400	400

W mm	H mm	W_1 mm	H_1 mm
1600	400	1600	400
1000	500	1000	500
1200	500	1200	500
1400	500	1400	500
1600	500	1600	500
1700	500	1700	500
1800	500	1800	500

• For other avaliable sizes, see pages 134 - 136.

Dimensions



SKKY/51° - 135°

Description

Twin Bend - Angle from 51° - 135°
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: SKKY/51° - aaa x bbb / ccc x ddd

Type
W
H
W_1
H_1

W mm	H mm	W_1 mm	H_1 mm
500	150	500	150
600	150	600	150
600	200	600	200
800	200	800	200
500	250	500	250
600	250	600	250
800	250	800	250
1000	250	1000	250
600	300	600	300
800	300	800	300
1000	300	1000	300
1200	300	1200	300
600	400	600	400
800	400	800	400
1000	400	1000	400
1200	400	1200	400
1400	400	1400	400

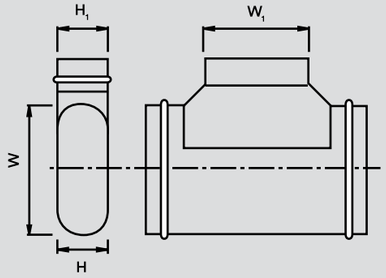
W mm	H mm	W_1 mm	H_1 mm
1600	400	1600	400
1000	500	1000	500
1200	500	1200	500
1400	500	1400	500
1600	500	1600	500
1700	500	1700	500
1800	500	1800	500

• For other avaliable sizes, see pages 134 - 136.

HORIZONTAL TEE

STYV

Dimensions



Description

Horizontal Tee
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: STYV - aaa x bbb / ccc x ddd

Type
W
H
W_1
H_1

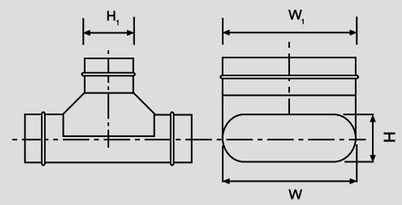
W mm	H mm	W_1 mm	H_1 mm
550	150	500	150
600	150	500	150
600	200	500	200
800	200	500	200
550	250	500	250
600	250	500	250
800	250	500	250
1000	250	600	250
600	300	500	300
800	300	500	300
1000	300	600	300
1200	300	700	300
600	400	500	400
800	400	500	400
1000	400	600	400
1200	400	700	400
1400	400	700	400

W mm	H mm	W_1 mm	H_1 mm
1600	400	800	400
1000	500	800	500
1200	500	800	500
1400	500	900	500
1600	500	900	500
1700	500	1000	500
1800	500	1000	500

• For other avaliable sizes, see pages 134 - 136.

VERTICAL TEE

Dimensions



STYP

Description

Vertical Tee
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: STYP - aaa x bbb / ccc x ddd

Type
W
H
W_1
H_1

W mm	H mm	W_1 mm	H_1 mm
500	150	500	150
600	150	600	150
600	200	600	200
800	200	800	200
500	250	500	250
600	250	600	250
800	250	800	250
1000	250	1000	250
600	300	600	300
800	300	800	300
1000	300	1000	300
1200	300	1200	300
600	400	600	400
800	400	800	400
1000	400	1000	400
1200	400	1200	400
1400	400	1400	400

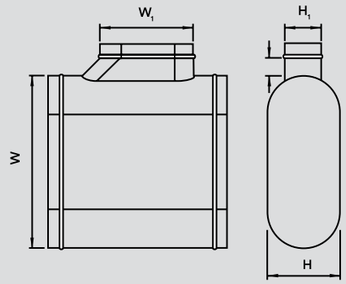
W mm	H mm	W_1 mm	H_1 mm
1600	400	1600	400
1000	500	1000	500
1200	500	1200	500
1400	500	1400	500
1600	500	1600	500
1700	500	1700	500
1800	500	1800	500

• For other avaliable sizes, see pages 134 - 136.

BOOT TEA

STYVB

Dimensions



Description

Boot Tee
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: STYVB - aaa x bbb / ccc x ddd

Type
W
H
W_1
H_1

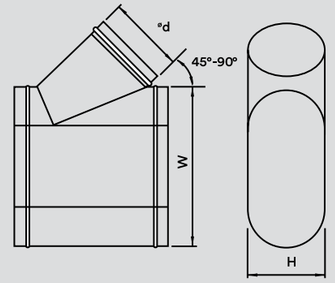
W mm	H mm	W_1 mm	H_1 mm
550	150	500	150
600	150	500	150
600	200	500	150
800	200	500	150
550	250	500	200
600	250	500	200
800	250	500	200
1000	250	600	200
600	300	500	250
800	300	500	250
1000	300	600	250
1200	300	600	250
600	400	500	300
800	400	500	300
1000	400	600	300
1200	400	600	300
1400	400	650	300

W mm	H mm	W_1 mm	H_1 mm
1600	400	700	300
1000	500	600	400
1200	500	600	400
1400	500	650	400
1600	500	700	400
1700	500	750	400
1800	500	800	400

• For other avaliable sizes, see pages 134 - 136.

LATERAL TEE

Dimensions



STYP / 45° - 90°

Description

Lateral Tee - 45° - 90°
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: STYP/45 - aaa x bbb / ccc

Type
W
H
ød

W mm	H mm	ød mm
500	150	150
600	150	150
600	200	200
800	200	200
500	250	250
600	250	250
800	250	250
1000	250	250
600	300	300
800	300	300
1000	300	300
1200	300	300
600	400	400
800	400	400
1000	400	400
1200	400	400
1400	400	400

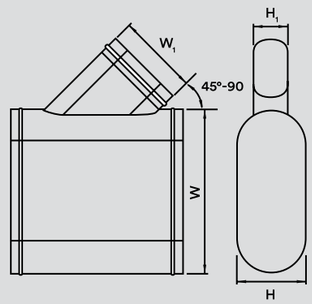
W mm	H mm	ød mm
1600	400	400
1000	500	500
1200	500	500
1400	500	500
1600	500	500
1700	500	500
1800	500	500

• For other avaliable sizes, see pages 134 - 136.

LATERAL TEE

STYVS/45° - 90°

Dimensions



Description

Lateral Tee - 45° - 90°
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: STYVS/45 - aaa x bbb / ccc x ddd

Type
W
H
W_1
H_1

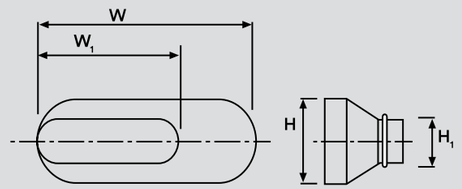
W mm	H mm	W_1 mm	H_1 mm
550	150	500	150
600	150	500	150
600	200	500	150
800	200	500	150
550	250	500	200
600	250	500	200
800	250	500	200
1000	250	600	200
600	300	500	250
800	300	500	250
1000	300	600	250
1200	300	600	250
600	400	500	300
800	400	500	300
1000	400	600	300
1200	400	600	300
1400	400	650	300

W mm	H mm	W_1 mm	H_1 mm
1600	400	700	300
1000	500	600	400
1200	500	600	400
1400	500	650	400
1600	500	700	400
1700	500	750	400
1800	500	800	400

• For other avaliable sizes, see pages 134 - 136.

ECCENTRIC REDUCER

Dimensions



SMYO

Description

Eccentric Reducer
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: SMYO - aaa x bbb / ccc x ddd

Type
W
H
W_1
H_1

W mm	H mm	W_1 mm	H_1 mm
550	150	500	150
600	150	500	150
600	200	500	150
800	200	600	150
550	250	500	200
600	250	500	200
800	250	600	200
1000	250	800	200
600	300	500	250
800	300	600	250
1000	300	800	250
1200	300	1000	250
700	400	600	300
800	400	700	300
1000	400	800	300
1200	400	1000	300
1400	400	1200	300

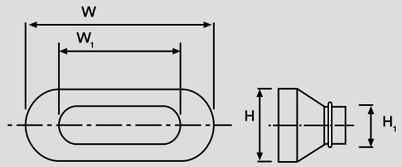
W mm	H mm	W_1 mm	H_1 mm
1600	400	1400	300
1000	500	900	400
1200	500	1000	400
1400	500	1200	400
1600	500	1400	400
1700	500	1500	400
1800	500	1600	400

• For other avaliable sizes, see pages 134 - 136.

CENTRIC REDUCER

SMY

Dimensions



Description

Centric Reducer
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: SMY - aaa x bbb / ccc x ddd

Type
W
H
W1
H1

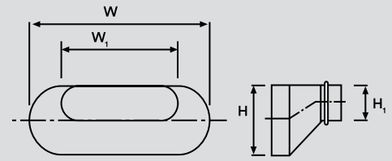
W mm	H mm	W1 mm	H1 mm
550	150	500	150
600	150	500	150
600	200	500	150
800	200	600	150
550	250	500	200
600	250	500	200
800	250	600	200
1000	250	800	200
600	300	500	250
800	300	600	250
1000	300	800	250
1200	300	1000	250
700	400	600	300
800	400	700	300
1000	400	800	300
1200	400	1000	300
1400	400	1200	300

W mm	H mm	W1 mm	H1 mm
1600	400	1400	300
1000	500	900	400
1200	500	1000	400
1400	500	1200	400
1600	500	1400	400
1700	500	1500	400
1800	500	1600	400

• For other avaliable sizes, see pages 134 - 136.

CENTRIC - ECCENTRIC REDUCER

Dimensions



SMYK

Description

Centric - Eccentric Reducer
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: SMYK - aaa x bbb / ccc x ddd

Type
W
H
W1
H1

W mm	H mm	W1 mm	H1 mm
550	150	500	150
600	150	500	150
600	200	500	150
800	200	600	150
550	250	500	200
600	250	500	200
800	250	600	200
1000	250	800	200
600	300	500	250
800	300	600	250
1000	300	800	250
1200	300	1000	250
700	400	600	300
800	400	700	300
1000	400	800	300
1200	400	1000	300
1400	400	1200	300

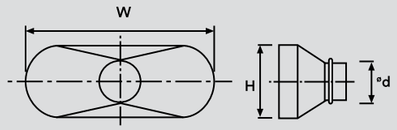
W mm	H mm	W1 mm	H1 mm
1600	400	1400	300
1000	500	900	400
1200	500	1000	400
1400	500	1200	400
1600	500	1400	400
1700	500	1500	400
1800	500	1600	400

• For other avaliable sizes, see pages 134 - 136.

OVAL TO ROUND TRANSITION

SMYP

Dimensions



Description

Oval to Round Transition
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: SMYP - aaa x bbb / ccc

Type
W
H
ød

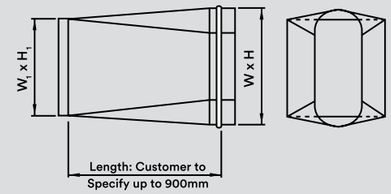
W mm	H mm	ød mm
500	150	160
600	150	200
600	200	250
800	200	250
500	250	200
600	250	250
800	250	250
1000	250	250
600	300	315
800	300	315
1000	300	315
1200	300	400
600	400	400
800	400	400
1000	400	500
1200	400	500
1400	400	500

W mm	H mm	ød mm
1600	400	630
1000	500	500
1200	500	630
1400	500	630
1600	500	630
1700	500	630
1800	500	630

• For other avaliable sizes, see pages 134 - 136.

SQUARE TO OVAL TRANSITION

Dimensions



Longer lengths available on request

SMYR

Description

Concentric and Eccentric, Square to Oval Transformation
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: SMYR - aaa x bbb / ccc x ddd

Type
W
H
W_1
H_1

W mm	H mm	W_1 mm	H_1 mm
500	150	400	200
600	150	450	200
600	200	500	250
800	200	600	250
500	250	400	300
600	250	500	300
800	250	600	300
1000	250	800	300
600	300	500	350
800	300	600	350
1000	300	800	350
1200	300	1000	350
600	400	550	450
800	400	700	450
1000	400	850	450
1200	400	1050	450
1400	400	1100	500

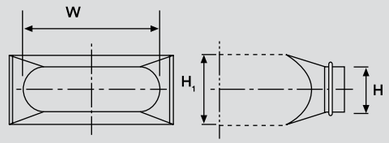
W mm	H mm	W_1 mm	H_1 mm
1600	400	1250	500
1000	500	900	550
1200	500	1100	550
1400	500	1250	550
1600	500	1450	550
1700	500	1500	550
1800	500	1600	550

• For other avaliable sizes, see pages 134 - 136.

COLLAR SADDLE

SLKP

Dimensions



Description

Collar Saddle
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: SLKP - aaa x bbb / ccc

Type
W
H
H_1

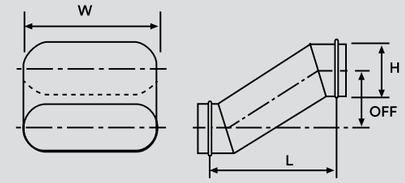
H_1 mm	W mm	H mm
150	500	150
150	600	150
200	600	200
200	800	200
250	500	250
250	600	250
250	800	250
250	1000	250
300	600	300
300	800	300
300	1000	300
300	1200	300
400	600	400
400	800	400
400	1000	400
400	1200	400
400	1400	400

H_1 mm	W mm	H mm
400	1600	400
500	1000	500
500	1200	500
500	1400	500
500	1600	500
500	1700	500
500	1800	500

• For other avaliable sizes, see pages 134 - 136.

OFFSET

Dimensions



SOF

Description

Offset
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: SOF - aaa x bbb / ccc

Type
W
H
Off

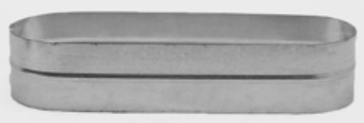
W mm	H mm	Off mm	L mm
500	150	200	447
600	150	200	447
600	200	200	461
800	200	200	461
500	250	300	646
600	250	300	464
800	250	300	646
1000	250	300	646
600	300	350	747
800	300	350	747
1000	300	350	747
1200	300	350	747
600	400	450	946
800	400	450	946
1000	400	450	946
1200	400	450	946
1400	400	450	946

W mm	H mm	Off mm	L mm
1600	400	450	946
1000	500	550	1147
1200	500	550	1147
1400	500	550	1147
1600	500	550	1147
1700	500	550	1147
1800	500	550	1147

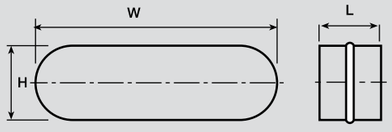
• For other avaliable sizes, see pages 134 - 136.

MALE COUPLING

SLYP



Dimensions



Description

Male Coupling
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: SLYP - aaa x bbb

Type
W
H

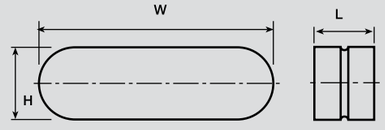
W mm	H mm	L mm
500	150	100
600	150	100
600	200	100
800	200	100
500	250	100
600	250	100
800	250	100
1000	250	100
600	300	100
800	300	100
1000	300	100
1200	300	100
600	400	100
800	400	100
1000	400	100
1200	400	100
1400	400	100
1600	400	100

W mm	H mm	L mm
1000	500	100
1200	500	100
1400	500	100
1600	500	100
1700	500	100
1800	500	100

• For other avaliable sizes, see pages 134 - 136.

FEMALE COUPLING

Dimensions



SLYO

Description

Female Coupling

Ordering

Product Code: SLYO - aaa x bbb

Type
W
H

W mm	H mm	L mm
500	150	100
600	150	100
600	200	100
800	200	100
500	250	100
600	250	100
800	250	100
1000	250	100
600	300	100
800	300	100
1000	300	100
1200	300	100
600	400	100
800	400	100
1000	400	100
1200	400	100
1400	400	100
1600	400	100

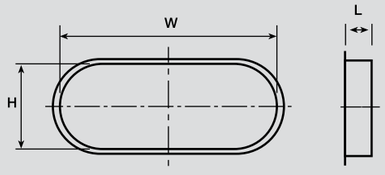
W mm	H mm	L mm
1000	500	100
1200	500	100
1400	500	100
1600	500	100
1700	500	100
1800	500	100

• For other avaliable sizes, see pages 134 - 136.

END CAP

STP

Dimensions



Description

End Cap
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: STP - aaa x bbb

Type
W
H

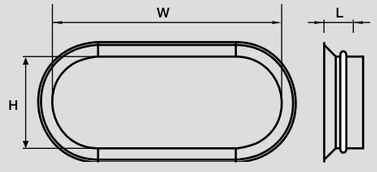
W mm	H mm	L mm
500	150	50
600	150	50
600	200	50
800	200	50
500	250	50
600	250	50
800	250	50
1000	250	50
600	300	50
800	300	50
1000	300	50
1200	300	50
600	400	50
800	400	50
1000	400	50
1200	400	50
1400	400	50
1600	400	50

W mm	H mm	L mm
1000	500	50
1200	500	50
1400	500	50
1600	500	50
1700	500	50
1800	500	50

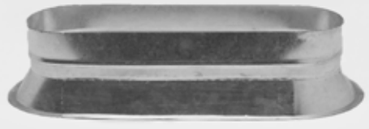
• For other avaliable sizes, see pages 134 - 136.

TAKE OFF

Dimensions



SLKT



Description

Take off
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: SLKT - aaa x bbb

Type
W
H

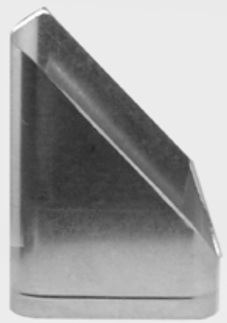
W mm	H mm	L mm
500	150	118
600	150	118
600	200	118
800	200	118
500	250	118
600	250	118
800	250	118
1000	250	118
600	300	118
800	300	118
1000	300	118
1200	300	118
600	400	118
800	400	118
1000	400	118
1200	400	118
1400	400	118
1600	400	118

W mm	H mm	L mm
1000	500	118
1200	500	118
1400	500	118
1600	500	118
1700	500	118
1800	500	118

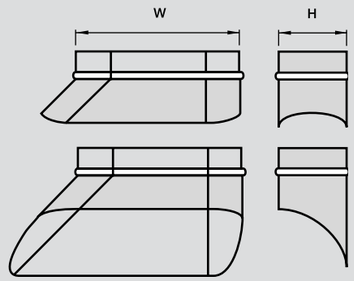
• For other avaliable sizes, see pages 134 - 136.

BOOT

SBLKP



Dimensions



Description

Hard Boot
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: SBLKP - aaa x bbb

Type
W
H

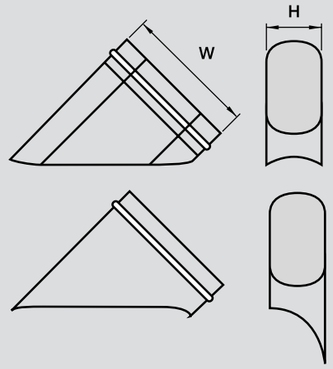
W mm	H mm
500	150
600	150
600	200
800	200
500	250
600	250
800	250
1000	250
600	300
800	300
1000	300
1200	300
600	400
800	400
1000	400
1200	400
1400	400

W mm	H mm
1600	400
1000	500
1200	500
1400	500
1600	500
1700	500
1800	500

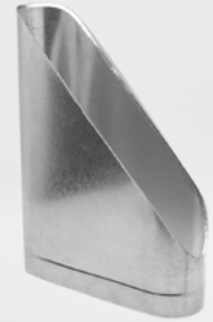
• For other avaliable sizes, see pages 134 - 136.

BRANCH

Dimensions



SSLKP/45°



Description

Tangenitial and Centric Branch
• Joints and seams by continuous seam or stitch welding.

Ordering

Product Code: SSLKP/45 - aaa x bbb

Type
W
H

W mm	H mm
500	150
600	150
600	200
800	200
500	250
600	250
800	250
1000	250
600	300
800	300
1000	300
1200	300
600	400
800	400
1000	400
1200	400
1400	400

W mm	H mm
1600	400
1000	500
1200	500
1400	500
1600	500
1700	500
1800	500

• For other avaliable sizes, see pages 134 - 136.

SPECIFICATIONS FOR DUCT AND FITTINGS

I. General

A. All single wall flat oval supply, return and exhaust ductwork shall be SAFID Oval as manufactured by SAFID or approved equal.

B. The contractor may, at his option, convert any or all rectangular ductwork to round and/or flat oval ductwork provided that the project space limitations are properly addressed and that the overall system design static pressure is not exceeded.

II. Materials

A. Unless otherwise noted, all duct and fittings shall be G90 galvanized steel in accordance with ATSM A-924 and A-653 (previously known as A-527).

B. When specified on contract documents, stainless steel type 304 or type 316 in accordance with ASTM A-240 shall be provided.

C. All duct materials must be of such condition and quality that no solvents are required as surface preparation for painting.

III. Construction

A. All duct and fittings shall be constructed as per SMACNA's Duct Construction Standards 2500 Pa (+10 in W.G.) as shown in the table below:

Flat Oval Duct and Fittings

Major Axis (mm)	Galvanized Spiral Duct	Galvanized Fittings (ga)
500 - 600	24	20
650 - 900	24	20
950 - 1200	24	18
1250 - 1500	22	18
1550 - 1650	22	16
1700 - 1800	20	16
1800 AND ABOVE	18	16

*For more details, see page 130

B. Fittings:

1. All fittings/ends will be calibrated according to the manufacturers published dimensional tolerance standards.

2. The radius of all 90° and 45° elbows shall be 1.5 times the major axis for hard bend elbows and 1.5 times the minor axis for easy bend elbows.

3. All fittings that are of either spot welded or button punched construction shall be internally sealed. Fittings that are of continously welded construction are not to be internally sealed.

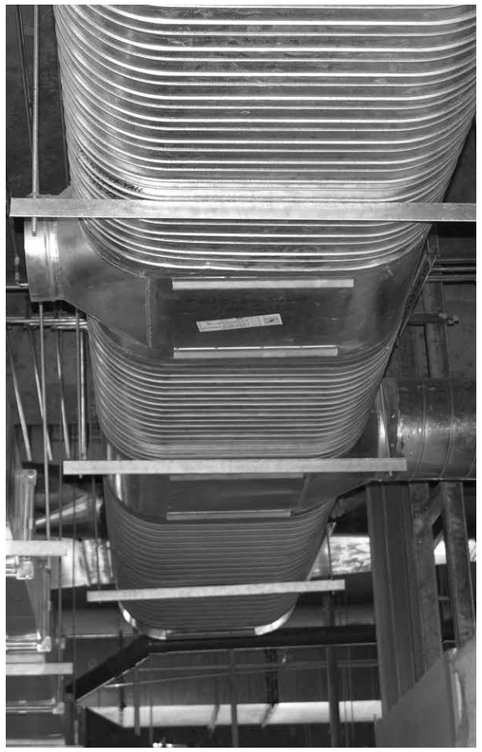
C. Flat Oval Spiral Duct:

1. All flat oval duct will be fabricated using spiral lockseam sheetmetal construction.

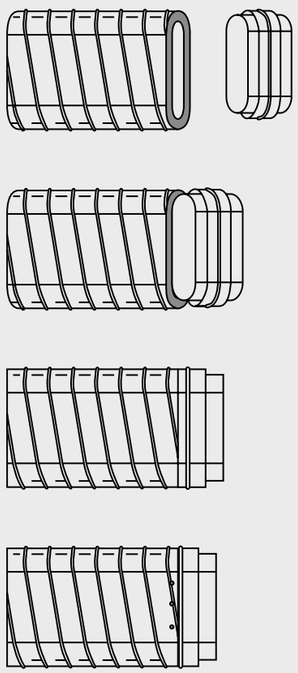
2. All flat oval spiral ducts are to be constructed with a corrugation between each spiral lockseam for added strength and rigidness - with the exception of duct from 500mm to 600mm wide.

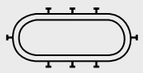
IV. Performance

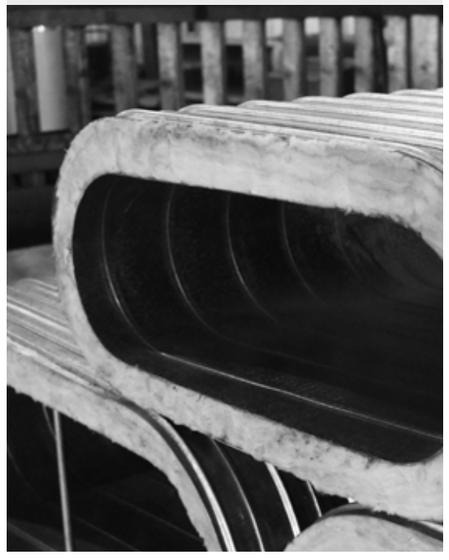
A. The flat oval duct system performance will meet SMACNA's leakage Class 3 requirements.



DOUBLE WALL OVAL DUCT & FITTINGS







Description

SAFID Oval Double Wall must be assembled according to these instructions:

Before Assembly
The duct must be free from dirt.

Assembly of Instructions

- Only use undamaged SAFID Oval Double Wall duct and fittings. Double wall duct must be cut at a right angle and carefully deburred.

- Slip the inner shell of the double wall fitting into the inner shell of the double wall flat oval duct. Use the inner shell extension to aid in guiding the outer shells together.

- Slip the outer shell of the double wall fitting into the outer shell of the double wall flat oval duct up to the bead.

- Fasten the duct and fitting together with self tapping sheet metal screws or pressure proof pop rivets.

The following numbers and dimensions of steel screws and pop rivets are recommended:

Circumference mm	Min. Diameter mm	Number
1171 - 1222	3.2	4
1228 - 1829	4.0	6
1835 - 2442	4.0	8
2478 - 3043	4.0	10
3056 - 3671	4.8	12
3685 - 4171	4.8	14

Placement of the fastening screws should be opposite from one another evenly spaced around the circumference, much like the procedure for tightening lug nuts on a tire. Start where the distance between the duct and the fitting is largest. In event of incorrect installation, holes caused by screws or pop rivets must be sealed before re-assembly.

Circumference = (W-H)x2 + (H x 3.1416)
Where: W = Major Dimension, H = Minor Dimension

SAFID OVAL DOUBLE WALL

Application

For applications in which space restrictions prohibit the use of round duct, SAFID offers double wall, flat oval duct in spiral lockseam and longitudinal seam constructions. Each piece is constructed of a solid metal pressure shell and a metal inner liner (either perforated or solid metal) with a layer of insulation sandwiched between. Flat oval duct provides a more efficient alternative to rectangular duct in these applications where space is restricted. SAFID manufactures flat oval duct with the same techniques used to make round duct. As a result, flat oval duct shares many of the performance characteristics of round duct.

Spiral lockseam duct is constructed with an interlocking helical seam that runs the length of the duct's outer pressure shell. As with round spiral lockseam duct, the flat oval type combines efficient performance with a structural strength equal to that of heavier gauges of other types of duct.

Flat oval duct is available with a longitudinal seam construction for applications that require very heavy gauges or large sizes. The longitudinal seam of the ducts outer pressure shell is fully welded.

Description

The SAFID Oval Double Wall system is designed for use in places with restricted headroom and especially suitable for lengthy duct systems with relatively few branchings and outlets. The duct is made of galvanized spiral duct and supplied in 2 m length as standard.

Pre insulated flat oval ducts are available with a full range of matching fittings and accessories. Sizes are from 500mm x 150mm to 1700mm x 400mm (inner dimension). The flat oval represents the ultimate in ducting, combining the best properties of rectangular and round spiral ducts.

Standard products are normally (as per ASTM A653, lock forming quality) manufactured from hot dip, galvanized sheet or coil - all as specified in SMACNA and DW 142 sheet metal ductwork.

- Standard Length: 2 meters
- Standard Profile of Inner and Outer Shell: SPKG
- Standard Insulation Thickness: 25 mm

CONSTRUCTION AND STANDARD SIZES

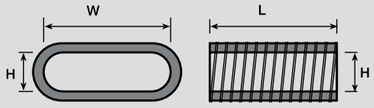
OVAL DOUBLE WALL DUCT & FITTINGS

Standard Sizes (for Insulation Thickness 25 mm & 50 mm)

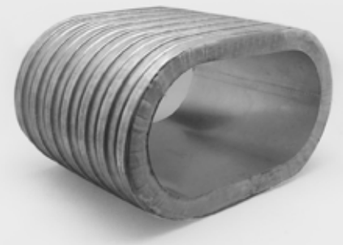
Duct Sizes				Flat Oval Ducts			Fittings & SMKGS	
				Inner Shell		Outer Shell		
W	H	W	H	Gauge - Profile		Gauge - Profile	Inner Shell	Outer Shell
Inner		Outer		SKG	SPKG	SPKG	Gauge	Gauge
500	150	550	200	24	26	26	20	20
500	200	550	250	24	26	26	20	20
500	250	550	300	24	26	26	20	20
550	150	600	200	24	26	26	20	20
550	200	600	250	24	26	26	20	20
550	250	600	300	24	26	26	20	20
600	150	650	200	24	26	26	20	20
600	200	650	250	24	26	26	20	20
600	250	650	300	24	26	26	20	20
700	150	750	200		24	26	20	20
700	200	750	250		24	24	20	20
700	250	750	300		24	24	20	20
800	1500	850	200		24	24	20	20
800	200	850	250		24	24	20	20
800	250	850	300		24	24	20	20
900	180	950	200		24	24	20	18
900	200	950	250		24	24	20	18
900	250	950	300		24	24	20	18
1000	150	1050	200		24	24	18	18
1000	200	1050	250		24	24	18	18
1000	250	1050	300		24	24	18	18
1100	150	1150	200		24	24	18	18
1100	200	1150	250		24	24	18	18
1100	250	1150	300		24	24	18	18
1200	150	1250	200		24	22	18	18
1200	200	1250	250		24	22	18	18
1200	250	1250	300		24	22	18	18
1200*	300	1300	400		24	22	18	18
1200*	400	1300	500		24	22	18	18
1300*	300	1400	400		22	22	18	18
1300*	400	1400	500		22	22	18	18
1400*	300	1500	400		22	22	18	18
1400*	400	1500	500		22	22	18	18
1500*	300	1600	400		22	22	18	16
1500*	400	1600	500		22	22	18	16
1600*	300	1700	400		22	20	16	16
1600*	400	1700	500		22	20	16	16
1700*	300	1800	400		20	20	16	16
1700*	400	1800	500		20	20	16	16

* For 50 mm insulation thickness.

Dimensions



SKGL
SKGS



Description

SKGL: Thermal Double Wall Duct
- Outer Shell: Solid Galvanized Steel
- Inner Shell: Solid Galvanized Steel
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m3 as standard, other densities available on request.

SKGS: Acoustic Double Wall Duct
- Outer Shell: Solid Galvanized Steel
- Inner Shell: Perforated Galvanized Steel
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m3 as standard, other densities available on request.

Standard length is 2000 mm

Ordering

Product Code: SKGL - aaa x bbb

Type
W
H

Internal Dimensions

W mm	H mm
500	150
550	200
600	250
700	150
700	250
800	150
800	200
800	250
900	200
900	250
1000	200
1000	250

Internal Dimensions

W mm	H mm
1100	200
1100	250
*1200	300
*1200	400
*1300	300
*1300	400
*1400	300
*1400	400
*1500	300
*1500	400

* For 50 mm insulation thickness.

• For other available sizes, see page 174.

PRE INSULATED LONGITUDINAL SEAMED DUCT

SMKGL
SMKGS

Dimensions

Description

SMKGL: Thermal Double Wall Duct
- Outer Shell: Solid Galvanized Steel
- Inner Shell: Solid Galvanized Steel
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m3 as standard, other densities available on request.

SMKGS: Acoustic Double Wall Duct
- Outer Shell: Solid Galvanized Steel
- Inner Shell: Perforated Galvanized Steel
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m3 as standard, other densities available on request.

Standard length is 1000 mm

Ordering

Product Code: SMKGL - aaa x bbb

Type
W
H

Internal Dimensions

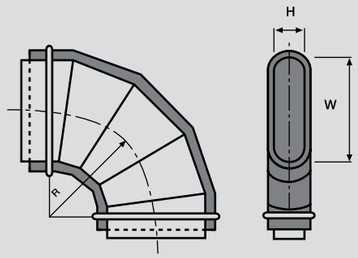
W mm	H mm
500	150
550	200
600	250
700	150
700	250
800	150
800	200
800	250
900	200
900	250
1000	200
1000	250
1100	200
1100	250
*1200	300
*1200	400
*1300	300
*1300	400
*1400	300
*1400	400
*1500	300
*1500	400

* For 50 mm insulation thickness.

• For other available sizes, see page 174.

HARD BEND 90°

Dimensions



SKYVL/90°
SKYVS/90°

Description

Segmented Five Section Hard Bend - Angle from 1° - 135°: joints and seams by continuous seam or stitch welding.
- R = 1.5 W, 5 - gore bend
- R = W, 4 - gore bend

SKYVL/90°: Thermal Double Wall 90° Hard Bend
SKYVS/90°: Acoustic Double Wall 90° Hard Bend
- Inner Shell Dimension (mm): W x H
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: SKYVL/90 - aaa x bbb

Type
W
H

Internal Dimensions

W mm	H mm
500	150
550	200
600	250
700	150
700	250
800	150
800	200
800	250
900	200
900	250
1000	200
1000	250
1100	200
1100	250
*1200	300
*1200	400
*1300	300
*1300	400
*1400	300
*1400	400
*1500	300
*1500	400

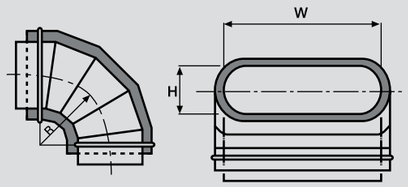
* For 50 mm insulation thickness.

• For other available sizes, see page 174.

EASY BEND 90°

SKYPL/90°
SKYPS/90°

Dimensions



Description

Segmented Five Section Easy Bend - Angle from 1° - 90°: joints and seams by continuous seam or stitch welding.
- R = 1.5 H, 5 - gore bend
- R = H, 4 - gore bend

SKYPL/90°: Thermal Double Wall 90° Easy Bend
SKYPS/90°: Acoustic Double Wall 90° Easy Bend

Ordering

Product Code: SKYPL/90 - aaa x bbb

Type
W
H

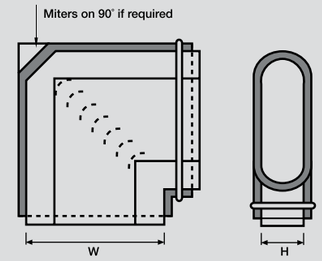
Internal Dimensions

W mm	H mm
500	150
550	200
600	250
700	150
700	250
800	150
800	200
800	250
900	200
900	250
1000	200
1000	250
1100	200
1100	250
*1200	300
*1200	400
*1300	300
*1300	400
*1400	300
*1400	400
*1500	300
*1500	400

* For 50 mm insulation thickness.
- For other available sizes, see page 174.

MITERED BEND HARD

Dimensions



SKYVML/90°
SKYVMS/90°

Description

Mitered Hard Bend - Angle from 1° - 90°: joints and seams by continuous seam or stitch welding.

SKYVML/90°: Thermal Double Wall 90° Mitered Hard Bend
SKYVMS/90° :Acoustic Double Wall 90° Mitered Hard Bend

- Inner Shell Dimension (mm): W x H
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: SKYVML/90 - aaa x bbb

Type
W
H

Internal Dimensions

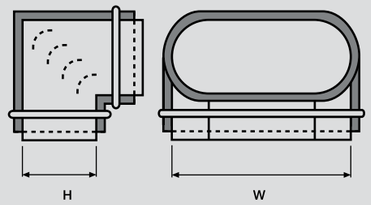
W mm	H mm
500	150
550	200
600	250
700	150
700	250
800	150
800	200
800	250
900	200
900	250
1000	200
1000	250
1100	200
1100	250
*1200	300
*1200	400
*1300	300
*1300	400
*1400	300
*1400	400
*1500	300
*1500	400

* For 50 mm insulation thickness.
- For other available sizes, see page 174.

MITERED BEND EASY

SKYPML/90°
SKYPMS/90°

Dimensions



Description

SKYPML/90°: Thermal Double Wall 90° Easy Bend

SKYPMS/90°: Acoustic Double Wall 90° Easy Bend

- Inner Shell Dimension (mm): W x H
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: SKYPML/90 - aaa x bbb

Type
W
H

Internal Dimensions

W mm	H mm
500	150
550	200
600	250
700	150
700	250
800	150
800	200
800	250
900	200
900	250
1000	200
1000	250
1100	200
1100	250
*1200	300
*1200	400

Internal Dimensions

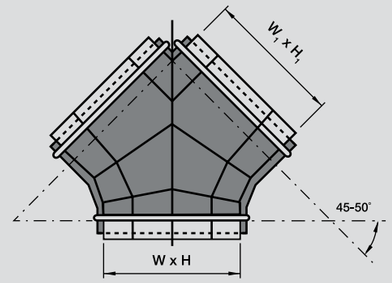
W mm	H mm
*1300	300
*1300	400
*1400	300
*1400	400
*1500	300
*1500	400

* For 50 mm insulation thickness.
• For other available sizes, see page 174.

TWIN BEND

SKKYL/45°-50°
SKKYS/45°-50°

Dimensions



Description

Twin Bend - Angle from 45° - 50° : joints and seams by continuous seam or stitch welding.

SKKYL/45°: Thermal Double Wall Twin Bend
SKKYS/45°: Acoustic Double Wall Twin Bend

- Inner Shell Dimension (mm): W x H, W_1 x H_1
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: SKKYL/45 - aaa x bbb / ccc x ddd

Type
W
H
W_1
H_1

W mm	H mm	W_1 mm	H_1 mm
500	150	500	150
550	200	550	200
600	250	600	250
700	150	700	150
700	250	700	250
800	150	800	150
800	200	800	200
800	250	800	250
900	200	900	200
900	250	900	250
1000	200	1000	200
1000	250	1000	250
1100	200	1100	200
1100	250	1100	250

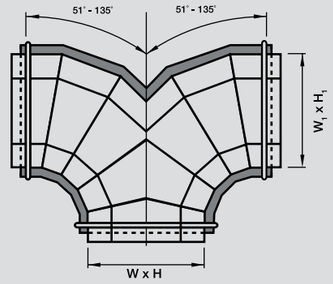
W mm	H mm	W_1 mm	H_1 mm
*1200	300	1300	400
*1200	400	1300	500
*1300	300	1400	400
*1300	400	1400	500
*1400	300	1500	400
*1400	400	1500	500
*1500	300	1600	400
*1500	400	1600	500

* For 50 mm insulation thickness.
• For other available sizes, see page 174.

TWIN BEND

SKKYL/51°
SKKYS/51°-135°

Dimensions



Description

Twin Bend - Angle from 51° - 135°: joints and seams by continuous seam or stitch welding.

SKKYL/90°: Thermal Double Wall Twin Bend
SKKYS/90°: Acoustic Double Wall Twin Bend

- Inner Shell Dimension (mm): W x H, W_1 x H_1
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: SKKYL/90 - aaa x bbb / ccc x ddd

Type
W
H
W_1
H_1

W mm	H mm	W_1 mm	H_1 mm
500	150	500	150
550	200	550	200
600	250	600	250
700	150	700	150
700	250	700	250
800	150	800	150
800	200	800	200
800	250	800	250
900	200	900	200
900	250	900	250
1000	200	1000	200
1000	250	1000	250
1100	200	1100	200
1100	250	1100	250

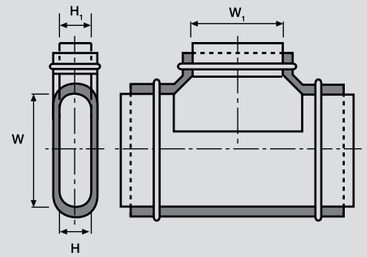
W mm	H mm	W_1 mm	H_1 mm
*1200	300	1300	400
*1200	400	1300	500
*1300	300	1400	400
*1300	400	1400	500
*1400	300	1500	400
*1400	400	1500	500
*1500	300	1600	400
*1500	400	1600	500

* For 50 mm insulation thickness.
• For other available sizes, see page 174.

HORIZONTAL TEE

STYVL
STYVS

Dimensions



Description

Horizontal Tee: joints and seams by continuous seam or stitch welding.

STYVL: Thermal Double Wall Horizontal Tee
STYVS: Acoustic Double Wall Horizontal Tee

- Inner Shell Dimension (mm): W x H, W_1 x H_1
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: STYVL - aaa x bbb / ccc x ddd

Type
W
H
W_1
H_1

W mm	H mm	W_1 mm	H_1 mm
500	150	500	150
550	200	500	200
600	250	500	250
700	150	500	150
700	250	500	250
800	150	500	150
800	200	500	200
800	250	500	250
900	200	500	200
900	250	500	250
1000	200	550	200
1000	250	550	250
1100	200	550	200
1100	250	550	250

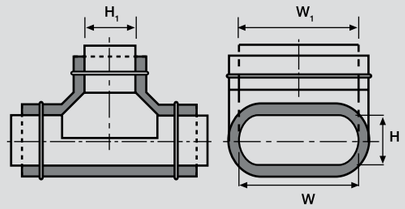
W mm	H mm	W_1 mm	H_1 mm
*1200	300	600	300
*1200	400	600	400
*1300	300	650	300
*1300	400	650	400
*1400	300	700	300
*1400	400	700	400
*1500	300	800	300
*1500	400	800	400

* For 50 mm insulation thickness.
• For other available sizes, see page 174.

VERTICAL TEE

STYPL
STYPS

Dimensions



Description

Vertical Tee : joints and seams by continuous seam or stitch welding.

STYPL: Thermal Double Wall Vertical Tee
STYPS: Acoustic Double Wall Vertical Tee

- Inner Shell Dimension (mm): W x H, W_1 x H_1
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: STYPL/45 - aaa x bbb / ccc x

- Type
- W
- H
- W_1
- H_1

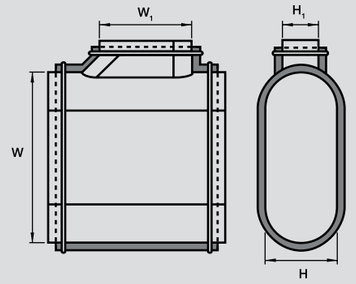
W mm	H mm	W_1 mm	H_1 mm
500	150	500	150
550	200	550	200
600	250	600	250
700	150	700	150
700	250	700	250
800	150	800	150
800	200	800	200
800	250	800	250
900	200	900	200
900	250	900	250
1000	200	1000	200
1000	250	1000	250
1100	200	1100	200
1100	250	1100	250

W mm	H mm	W_1 mm	H_1 mm
*1200	300	1300	400
*1200	400	1300	500
*1300	300	1400	400
*1300	400	1400	500
*1400	300	1500	400
*1400	400	1500	500
*1500	300	1600	400
*1500	400	1600	500

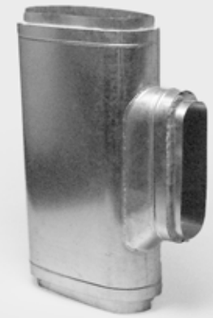
* For 50 mm insulation thickness.
• For other available sizes, see page 174.

BOOT TEE

Dimensions



STYVBL
STYVBS



Description

Boot Tee: joints and seams by continuous seam or stitch welding.

STYVBL: Thermal Double Wall Boot Tee
STYVBS: Acoustic Double Wall Boot Tee

- Inner Shell Dimension (mm): W x H, W_1 x H_1
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: STYVBL - aaa x bbb / ccc x ddd

- Type
- W
- H
- W_1
- H_1

W mm	H mm	W_1 mm	H_1 mm
500	150	500	150
550	200	500	200
600	250	500	250
700	150	500	150
700	250	500	250
800	150	500	150
800	200	500	200
800	250	500	250
900	200	500	200
900	250	500	250
1000	200	550	200
1000	250	550	250
1100	200	550	200
1100	250	550	250

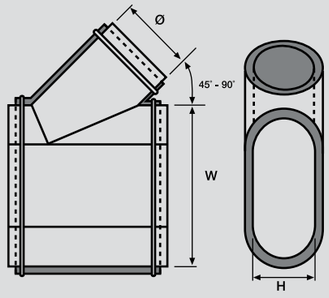
W mm	H mm	W_1 mm	H_1 mm
*1200	300	600	200
*1200	400	600	300
*1300	300	650	200
*1300	400	650	300
*1400	300	700	300
*1400	400	700	400
*1500	300	800	300
*1500	400	800	400

* For 50 mm insulation thickness.
• For other available sizes, see page 174.

LATERAL ROUND BRANCH TEE

STYPL/45° - 90°
STYPS/45° - 90°

Dimensions



Description

Lateral Tee 45° - 90° : joints and seams by continuous seam or stitch welding.

STYPL/45°: Thermal Double Wall Lateral Round Branch Tee
STYPS/45°: Acoustic Double Wall Lateral Round Branch Tee

- Inner Shell Dimension (mm): W x H, d
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: STYPL/45 - aaa x bbb / ccc

Type
W
H
ød

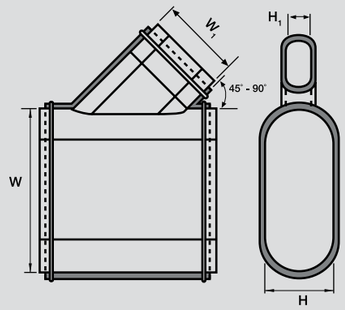
W mm	H mm	⌀d mm
500	150	150
550	200	200
600	250	250
700	150	150
700	250	250
800	150	150
800	200	200
800	250	250
900	200	200
900	250	250
1000	200	200
1000	250	250
1100	200	200

W mm	H mm	⌀d mm
1100	250	250
*1200	300	300
*1200	400	400
*1300	300	300
*1300	400	400
*1400	300	300
*1400	400	400
*1500	300	300
*1500	400	400

* For 50 mm insulation thickness.
• For other available sizes, see page 174.

LATERAL FLAT OVAL BRANCH TEE

Dimensions



STYVSL/45° - 90°
STYVSS/45° - 90°

Description

Lateral Tee 45° - 90° : joints and seams by continuous seam or stitch welding.

STYVSL/45°: Thermal Double Wall Lateral Flat Oval Branch Tee
STYVSS/45°: Acoustic Double Wall Lateral Flat Oval Branch Tee

- Inner Shell Dimension (mm): W x H, W_1 x H_1
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: STYVSL/45 - aaa x bbb / ccc x ddd

Type
W
H
W_1
H_1

W mm	H mm	W_1 mm	H_1 mm
500	150	500	150
550	200	500	200
600	250	500	250
700	150	500	150
700	250	500	250
800	150	500	150
800	200	500	200
800	250	500	250
900	200	500	200
900	250	500	250
1000	200	550	200
1000	250	550	250
1100	200	550	200

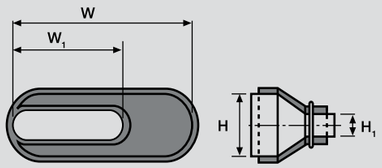
W mm	H mm	W_1 mm	H_1 mm
1100	250	550	250
*1200	300	600	200
*1200	400	600	300
*1300	300	650	200
*1300	400	650	300
*1400	300	700	300
*1400	400	700	400
*1500	300	800	300
*1500	400	800	400

* For 50 mm insulation thickness.
• For other available sizes, see page 174.

ECCENTRIC REDUCER

SMYOL
SMYOS

Dimensions



Description

Eccentric Reducer: joints and seams by continuous seam or stitch welding.

SMYOL: Thermal Double Wall Eccentric Reducer
SMYOS: Acoustic Double Wall Eccentric Reducer

- Inner Shell Dimension (mm): W x H, d
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: SMYOL - aaa x bbb / ccc x ddd

- Type
- W
- H
- W_1
- H_1

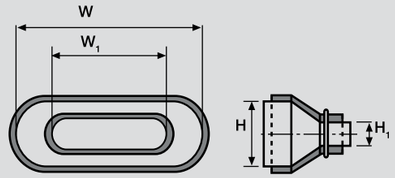
W mm	H mm	W_1 mm	H_1 mm
550	200	500	150
550	250	500	200
600	300	550	250
700	200	600	150
700	250	600	200
800	200	700	150
800	250	700	200
800	300	700	250
900	250	800	200
900	300	800	250
1000	250	900	200
1000	300	900	250
1100	250	1000	200
1100	300	1000	250

W mm	H mm	W_1 mm	H_1 mm
*1200	400	1100	300
*1200	500	1100	400
*1300	400	1200	300
*1300	500	1200	400
*1400	400	1300	300
*1400	500	1300	400
*1500	400	1400	300
*1500	500	1400	400

* For 50 mm insulation thickness.
• For other available sizes, see page 174.

CENTRIC REDUCER

Dimensions



SMYL
SMYS

Description

Centric Reducer: joints and seams by continuous seam or stitch welding.

SMYL: Thermal Double Wall Centric Reducer
SMYS: Acoustic Double Wall Centric Reducer

- Inner Shell Dimension (mm): W x H, d
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: SMYL - aaa x bbb / ccc x ddd

- Type
- W
- H
- W_1
- H_1

W mm	H mm	W_1 mm	H_1 mm
550	200	500	150
550	250	500	200
600	300	550	250
700	200	600	150
700	250	600	200
800	200	700	150
800	250	700	200
800	300	700	250
900	250	800	200
900	300	800	250
1000	250	900	200
1000	300	900	250
1100	250	1000	200
1100	300	1000	250

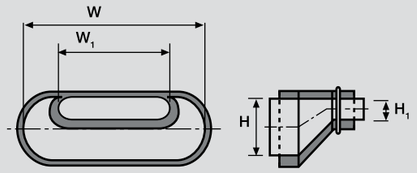
W mm	H mm	W_1 mm	H_1 mm
*1200	400	1100	300
*1200	500	1100	400
*1300	400	1200	300
*1300	500	1200	400
*1400	400	1300	300
*1400	500	1300	400
*1500	400	1400	300
*1500	500	1400	400

* For 50 mm insulation thickness.
• For other available sizes, see page 174.

CENTRIC - ECCENTRIC REDUCER

SMYKL
SMYKS

Dimensions



Description

Centric - Eccentric Reducer: joints and seams by continuous seam or stitch welding.

SMYKL: Thermal Double Wall Centric - Eccentric Reducer
SMYKS: Acoustic Double Wall Centric - Eccentric Reducer

- Inner Shell Dimension (mm): W x H, W_1 x H_1
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: SMYKL - aaa x bbb / ccc x ddd

- Type
- W
- H
- W_1
- H_1

W mm	H mm	W_1 mm	H_1 mm
550	200	500	150
550	250	500	200
600	300	550	250
700	200	600	150
700	250	600	200
800	200	700	150
800	250	700	200
800	300	700	250
900	250	800	200
900	300	800	250
1000	250	900	200
1000	300	900	250
1100	250	1000	200

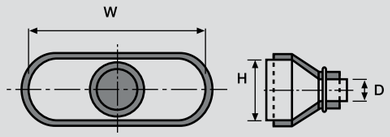
W mm	H mm	W_1 mm	H_1 mm
1100	300	1000	250
*1200	400	1100	300
*1200	500	1100	400
*1300	400	1200	300
*1300	500	1200	400
*1400	400	1300	300
*1400	500	1300	400
*1500	400	1400	300
*1500	500	1400	400

* For 50 mm insulation thickness.
- For other available sizes, see page 174.

OVAL TO ROUND TRANSITION

SMYPL
SMYPS

Dimensions



Description

Oval to Round Transition: joints and seams by continuous seam or stitch welding.

SMYPL: Thermal Double Wall Oval to Round Transition
SMYPS: Acoustic Double Wall Oval to Round Transition

- Inner Shell Dimension (mm): W x H, d
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: SMYPL - aaa x bbb / ccc

- Type
- W
- H
- ød

Internal Dimensions

W mm	H mm	ød mm
500	150	150
550	200	200
600	250	250
700	150	150
700	250	250
800	150	150
800	200	200
800	250	250
900	200	200
900	250	250
1000	200	200
1000	250	250
1100	200	200

Internal Dimensions

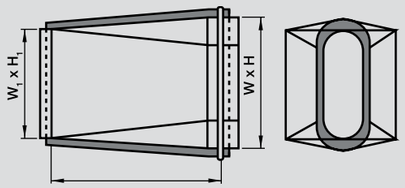
W mm	H mm	ød mm
1100	250	250
*1200	300	300
*1200	400	400
*1300	300	300
*1300	400	400
*1400	300	300
*1400	400	400
*1500	300	300
*1500	400	400

* For 50 mm insulation thickness.
- For other available sizes, see page 174.

SQUARE TO OVAL TRANSITION

SMYRL
SMYRS

Dimensions



Description

Concentric - Eccentric Square to Oval Transition: joints and seams by continuous seam or stitch welding.

SMYRL: Thermal Double Wall Centric - Eccentric Square to Oval Transition
SMYRS: Acoustic Double Wall Centric - Eccentric Square to Oval Transition

- Inner Shell Dimension (mm):, W x H, W_1 x H_1
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: SMYRL - aaa x bbb / ccc x ddd

- Type
- W
- H
- W_1
- H_1

W mm	H mm	W_1 mm	H_1 mm
500	150	400	200
550	200	450	250
600	250	500	300
700	150	550	200
700	250	600	300
800	150	600	200
800	200	650	250
800	250	700	300
900	200	750	250
900	250	750	300
1000	200	800	250
1000	250	850	300
1100	200	900	250

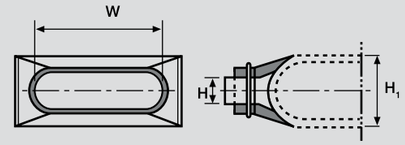
W mm	H mm	W_1 mm	H_1 mm
1100	250	950	300
*1200	300	1100	350
*1200	400	1100	450
*1300	300	1150	350
*1300	400	1200	450
*1400	300	1200	350
*1400	400	1250	450
*1500	300	1300	350
*1500	400	1350	450

* For 50 mm insulation thickness.
• For other available sizes, see page 174.

COLLAR SADDLE

SLKPL
SLKPS

Dimensions



Description

Collar Saddle: joints and seams by continuous seam or stitch welding.

SLKPL: Thermal Double Wall Collar Saddle
SLKPS: Acoustic Double Wall Collar Sadile

- Inner Shell Dimension (mm): W x H, H_1
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: SLKPL - aaa / bbb x ccc

- Type
- H_1
- W
- H

Internal Dimensions

H_1 mm	W mm	H mm
200	500	150
250	550	200
300	600	250
200	700	150
300	700	250
200	800	150
250	800	200
300	800	250
250	900	200
300	900	250
250	1000	200
300	1000	250
250	1100	200

Internal Dimensions

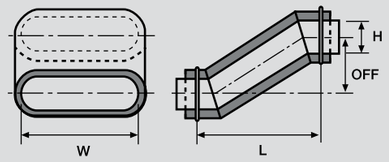
H_1 mm	W mm	H mm
300	1100	250
*400	1200	300
*500	1200	400
*400	1300	300
*500	1300	400
*400	1400	300
*500	1500	400
*400	1600	300
*500	1600	400

* For 50 mm insulation thickness.
• For other available sizes, see page 174.

OFFSET

SOFL
SOFS

Dimensions



Description

Offset: joints and seams by continuous seam or stitch welding.

SOFL: Thermal Double Wall Offset
SOFS: Acoustic Double Wall Offset

- Inner Shell Dimension (mm): W x H,
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: SOFL - aaa / bbb x ccc

- Type
- W
- H
- Off

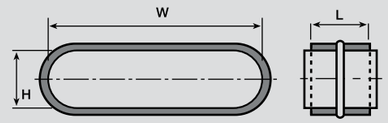
W mm	H mm	Off mm	L mm
500	150	200	459
550	200	200	473
600	250	300	658
700	150	200	459
700	250	300	658
800	150	200	459
800	200	200	473
800	250	300	658
900	200	200	473
900	250	300	658
1000	200	200	473
1000	250	300	658
1100	200	200	473

W mm	H mm	Off mm	L mm
1100	250	300	658
*1200	300	200	473
*1200	400	300	658
*1300	300	200	473
*1300	400	300	658
*1400	300	200	473
*1400	400	300	658
*1500	300	200	473
*1500	400	300	658

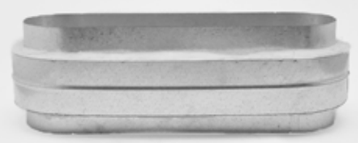
* For 50 mm insulation thickness.
- For other available sizes, see page 174.

MALE COUPLING

Dimensions



SLYPL
SLYPS



Description

Male Coupling: joints and seams by continuous seam or stitch welding.

SLYPL: Thermal Double Wall Male Coupling
SLYPS: Acoustic Double Wall Male Coupling

- Inner Shell Dimension (mm): W x H,
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: SLYPL - aaa x bbb

- Type
- W
- H

Internal Dimensions

W mm	H mm	L mm
500	150	100
550	200	100
600	250	100
700	150	100
700	250	100
800	150	100
800	200	100
800	250	100
900	200	100
900	250	100
1000	200	100
1000	250	100
1100	200	100

Internal Dimensions

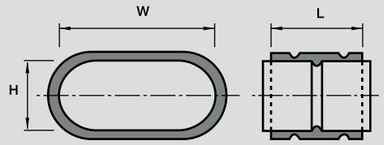
W mm	H mm	L mm
1100	250	100
*1200	300	100
*1200	400	100
*1300	300	100
*1300	400	100
*1400	300	100
*1400	400	100
*1500	300	100
*1500	400	100

* For 50 mm insulation thickness.
- For other available sizes, see page 174.

FEMALE COUPLING

SLYOL
SLYOS

Dimensions



Description

Female Coupling: joints and seams by continuous seam or stitch welding.

SLYOL: Thermal Double Wall Female Coupling
SLYOS: Acoustic Double Wall Female Coupling

- Inner Shell Dimension (mm): W x H
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: SLYOL - aaa x bbb

Type
W
H

Internal Dimensions

W mm	H mm	L mm
500	150	200
550	200	200
600	250	200
700	150	200
700	250	200
800	150	200
800	200	200
800	250	200
900	200	200
900	250	200
1000	200	200
1000	250	200
1100	200	200

Internal Dimensions

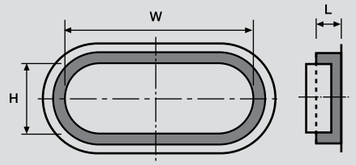
W mm	H mm	L mm
1100	250	200
*1200	300	200
*1200	400	200
*1300	300	200
*1300	400	200
*1400	300	200
*1400	400	200
*1500	300	200
*1500	400	200

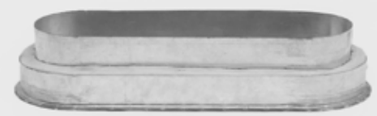
* For 50 mm insulation thickness.
• For other available sizes, see page 174.

END CAP

STPL
STPS

Dimensions





Description

End Cap: joints and seams by continuous seam or stitch welding.

STPL: Thermal Double Wall End Cap
STPS: Acoustic Double Wall End Cap

- Inner Shell Dimension (mm): W x H
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: STPL - aaa x bbb

Type
W
H

Internal Dimensions

W mm	H mm	L mm
500	150	50
550	200	50
600	250	50
700	150	50
700	250	50
800	150	50
800	200	50
800	250	50
900	200	50
900	250	50
1000	200	50
1000	250	50
1100	200	50

Internal Dimensions

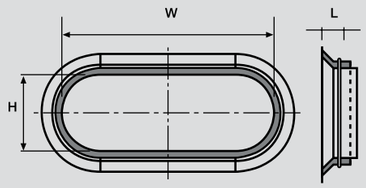
W mm	H mm	L mm
1100	250	50
*1200	300	50
*1200	400	50
*1300	300	50
*1300	400	50
*1400	300	50
*1400	400	50
*1500	300	50
*1500	400	50

* For 50 mm insulation thickness.
• For other available sizes, see page 174.

TAKE OFF

SLKTL
SLKTS

Dimensions



Description

Take off: joints and seams by continuous seam or stitch welding.

SLKTL: Thermal Double Wall Take Off
SLKTS: Acoustic Double Wall Take Off

- Inner Shell Dimension (mm): W x H
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: SLKTL - aaa x bbb

Type
W
H

Internal Dimensions

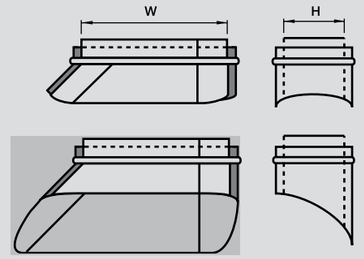
W mm	H mm	L mm
500	150	125
550	200	125
600	250	125
700	150	125
700	250	125
800	150	125
800	200	125
800	250	125
900	200	125
900	250	125
1000	200	125
1000	250	125
1100	200	125

Internal Dimensions

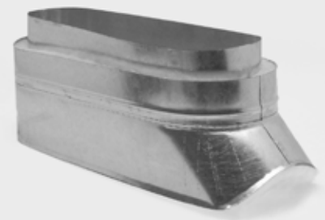
W mm	H mm	L mm
1100	250	125
*1200	300	125
*1200	400	125
*1300	300	125
*1300	400	125
*1400	300	125
*1400	400	125
*1500	300	125
*1500	400	125

* For 50 mm insulation thickness.
• For other available sizes, see page 174.

Dimensions



SBLKPL
SBLKPS



Description

Hard Boot: joints and seams by continuous seam or stitch welding.

SBLKPL: Thermal Double Wall Boot
SLKTS: Acoustic Double Wall Boot

- Inner Shell Dimension (mm): W x H
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: SBLKPL - aaa x bbb

Type
W
H

Internal Dimensions

W mm	H mm
500	150
550	200
600	250
700	150
700	250
800	150
800	200
800	250
900	200
900	250
1000	200
1000	250
1100	200
1100	250
*1200	300

Internal Dimensions

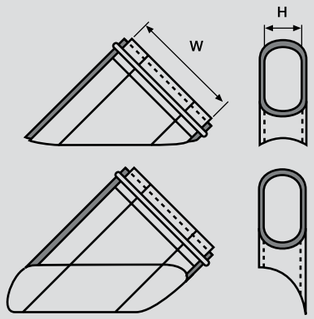
W mm	H mm
*1200	400
*1300	300
*1300	400
*1400	300
*1400	400
*1500	300
*1500	400

* For 50 mm insulation thickness.
• For other available sizes, see page 174.

BRANCH

SSLKPL/45°
SSLKPS/45°

Dimensions



Description

Tangential and Centric Branch 45°: joints and seams by continuous seam or stitch welding.

SSLKPL/45°: Thermal Double Wall Branch
SSLKPS/45°: : Acoustic Double Wall Branch

- Inner Shell Dimension (mm): W x H
- Insulation: 25 mm or 50 mm
- Insulation Density: 24 kg/m³ as standard, other densities available on request.

Ordering

Product Code: SSLKPL/45 - aaa x bbb

Type
W
H

Internal Dimensions

W mm	H mm
500	150
550	200
600	250
700	150
700	250
800	150
800	200
800	250
900	200
900	250
1000	200
1000	250
1100	200
1100	250
*1200	300

Internal Dimensions

W mm	H mm
*1200	400
*1300	300
*1300	400
*1400	300
*1400	400
*1500	300
*1500	400

* For 50 mm insulation thickness.
- For other available sizes, see page 174.

SPECIFICATIONS FOR DUCT AND FITTINGS

I. General

A. All double wall flat oval supply, return and exhaust ductwork shall be SAFID Oval Double Wall as manufactured by SAFID or approved equal.

B. The contractor may, at his option, convert any or all rectangular double wall ductwork to round and/ or flat oval double wall ductwork provided that the project space limitations are properly addressed and that the overall system design static pressure is not exceeded.

II. Materials

A. Unless otherwise noted, all double wall duct and fittings thermal or acoustical shall be G90 galvanized steel in accordance with ATSM A-924 and A-653 (previously known as A-527).

B. Unless otherwise noted, insulation for thermal and acoustical double wall duct and fittings shall be 25 mm in thickness and 24kg/m³ in density (50 mm thickness insulation with different densities can be supplied upon request).

C. When specified on contract documents, stainless steel type 304 or type 316 in accordance with ASTM A-240 shall be provided.

D. All duct materials must be of such condition and quality that no solvents are required as surface preparation for painting.

III. Construction

A. All duct and fittings shall be constructed per SMACNA's Duct Construction Standards 2500 Pa (+10 in W.G.) as shown in the table below:

Flat-Oval Duct & Fittings

Major Axis (mm)	Galvanized Spiral Duct	Galvanized Fittings (ga)
500 - 600	24	20
650 - 950	24	20
950 - 1200	24	18
1250 - 1500	22	18
1550 - 1650	22	16
1700 - 1800	20	16
1800 AND ABOVE	18	16

* For more details see page 174.

B. Fittings:

All fittings/ends will be calibrated according to the manufacturers published dimensional tolerance standards.

2. The radius of all 90° and 45° elbows shall be 1.5 times the major axis for hard bend elbows and 1.5 times the minor axis for easy bend elbows.

3. All fittings that are of either spot welded or button punched construction shall be internally sealed. Fittings that are of continously welded construction are not to be internally sealed.

C. Flat Oval Double Wall Duct:

1. All flat oval double wall duct shall be constructed using spiral lockseam sheetmetal construction.

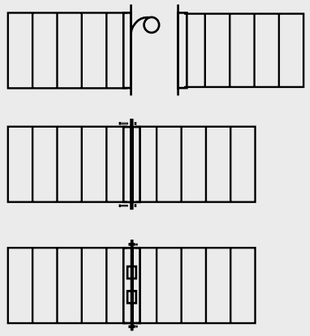
2. All flat oval spiral ducts are to be constructed with a corrugation between each spiral lockseam for added strength and rigidness.

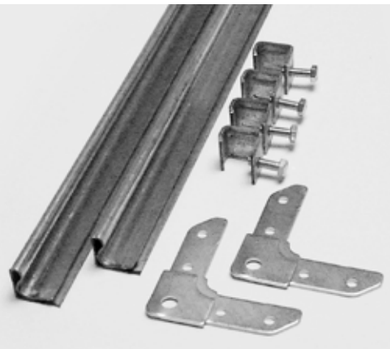
IV. Performance

A. The flat oval duct system performance will meet SMACNA's leakage Class 3 requirements.

RECTANGULAR DUCT & FITTINGS

ASSEMBLY INSTURCTIONS





Description

SAFID Rectangular Duct and Fittings must be assembled according to these instructions:

Before Assembly
The duct must be free from dirt.

Assembly of Instructions

- Only use undamaged SAFID rectangular duct and fittings.

- Apply continuous gasket to effectively seal flanges and corners.

- Fasten the duct and fitting together with bolts and nuts at four corners.

- Mating flanges shall be locked together by duct clamps spaced at centers not exceeding 200mm.

The following number of duct clamps are recommended for the respective dimensions:

Duct Dimension mm	Number
0-200	0
250-400	1
450-600	2
650-800	3
850-1000	4
1500-1200	5
1250-1400	6
1450-1600	7
1650-1800	8
1850-2000	9
2050-2200	10

STRAIGHT DUCTS

Description

SAFID's single wall rectangular duct and fittings are factory fabricated and supplied with factory applied sealant on all longitudinal joints for S & Drive slip ducts and additionally on transverse joints for all flanged end ducts and fittings.

SAFID's rectangular ducts can be supplied in either fully assembled form or knocked down form for straight ducts (minimum requirement for assembly of straight ducts on site) while fittings will be delivered fully assembled with factory applied sealant.

SAFID's rectangular duct line can be supplied in various materials:

- **G** - Galvanized Steel (in accordance with ASTM 653, G90 coating)
- **H** - Stainless Steel (in accordance with ASTM A240/480 and various material grades)
- **A** - Aluminum Metal (in accordance with ASTM B209, type alloy 3003, H14)
- **P** - Painted Galvanized Steel (as G, but with various paint system i.e. epoxy)

Ordering

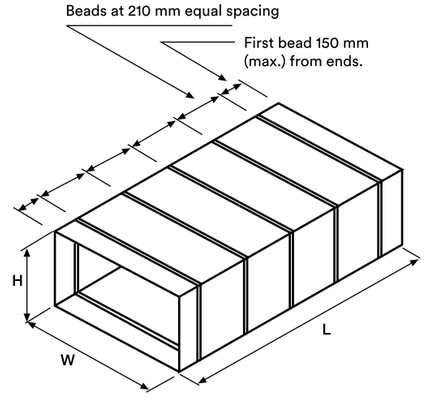
Product Code: SD - aaa - bbb - ccc

Type
W mm
H mm
L mm

Dimensions

All straight ducts are beaded or cross broken (except if ducts are double wall, internally lined, or gauge 18 and heavier). All fittings are cross broken from size 483 mm and above, or beaded on all sizes.

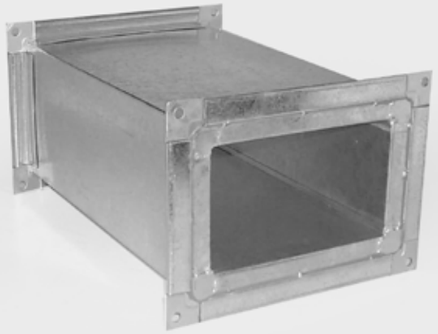
Standard Duct Length: 1200 mm (4 feet)



Beaded Duct

LINED DUCTS

SDL



Description

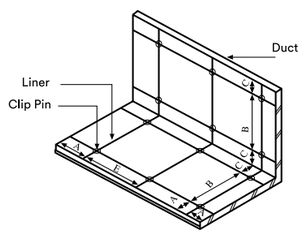
SAFID's lined rectangular duct and fittings are available with an insulating liner faced with a strong, dimensionally stable black Woven Fiber Fabric (WGF) to protect against erosion and microbial growth. This acoustic/thermal liner can be used with air velocities up to 5,000 fpm.

Standard Duct Length: 1200 mm (4 feet)

Standard Acoustic/Thermal Insulation: 25mm, 48 kg/m³, WGF facing. Other thicknesses and densities can be supplied on request.

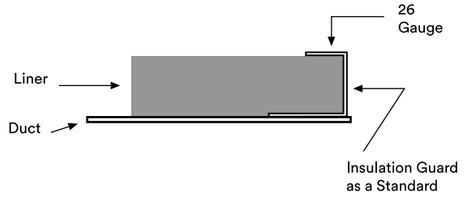
Insulation Edge Coverings: all insulation edges are covered by galvanized steel channels fixed to duct.

Dimensions



Velocity	Dimensions			
	A	B	C	E
2500 - 0 fpm	76	305	102	457
5000 - 2501 fpm	76	152	102	406

Liner bonded to duct with adhesive and welding pins at approximate centers as shown.



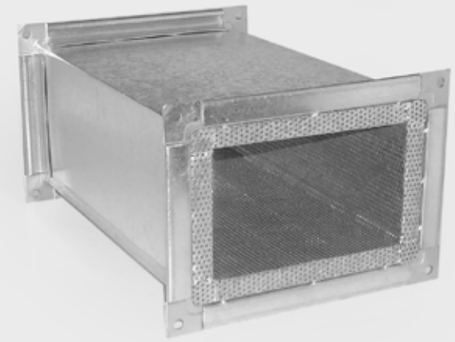
Liner to be 48 kg/m³ (3 lbs/ft³) density, 25 mm thick, unless otherwise specified.

Ordering

Product Code: SDL - aaa - bbb - ccc

- Type
- W mm
- H mm
- L mm

SDS



Description

SAFID's double wall rectangular duct and fittings provide exceptional noise control in air distribution systems. This double wall, insulated ductwork is constructed of solid metal outer shell and perforated inner shell with a layer of acoustic insulation sandwiched in-between.

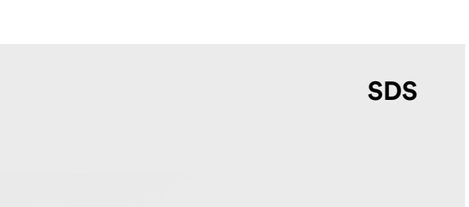
Our standard construction consists of: galvanized steel with a galvanized perforated inner wall and standard acoustic, thermal insulation of 25 mm thickness, 48 kg/m³ density with WGF facing.

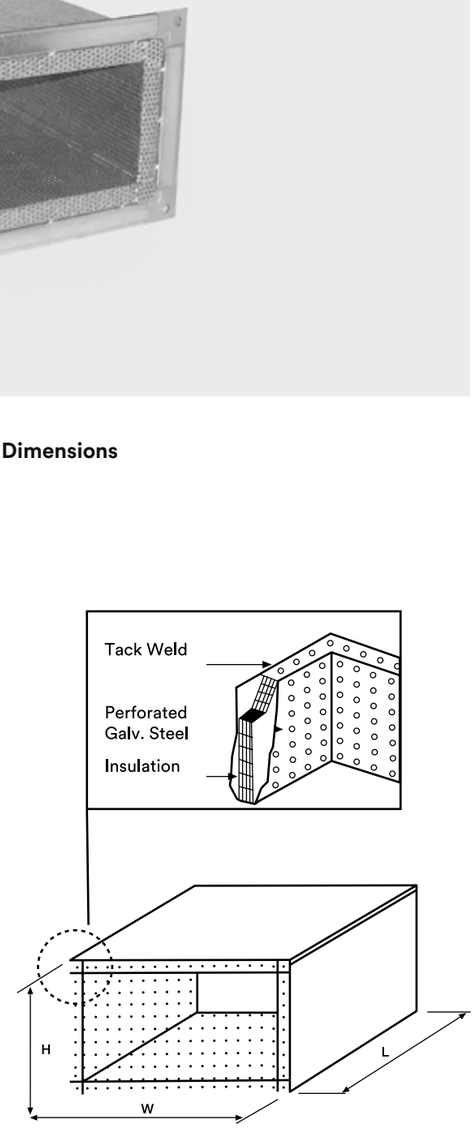
Other types of insulation material, density & thickness are available.

The outer shell can be supplied in galvanized steel, stainless steel, black steel, aluminum or painted steel while for the inner perforated shell only in galvanized steel or black steel.

Standard Duct Length: 1200 mm (4 feet)

Dimensions





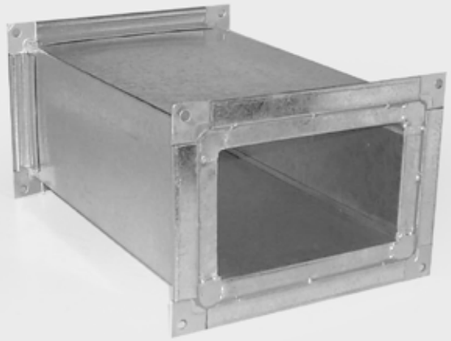
Ordering

Product Code: SDS - aaa - bbb - ccc

- Type
- W mm
- H mm
- L mm

DOUBLE WALL THERMAL DUCTS

SDT



Description

SAFID's double wall rectangular duct and fittings provide exceptional thermal control in air distribution systems and is ideal for external and roof ducts applications.

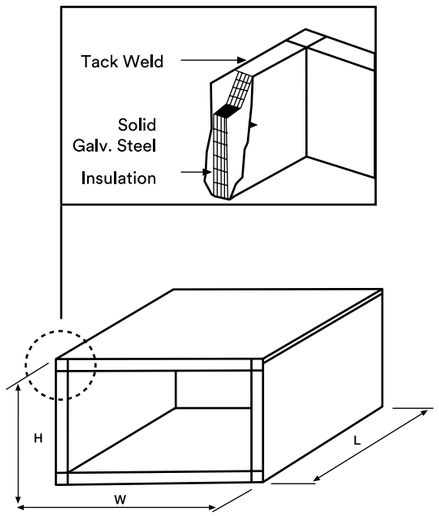
This double wall, insulated ductwork is constructed of solid metal outer shell and solid inner shell with a layer of insulation sandwiched in-between.

Our standard construction consists of: galvanized steel (solid) inner and outer shell, several types of insulation material, densities and thicknesses are available.

The outer and inner shell can be supplied in galvanized steel, black steel, aluminum, stainless steel and painted steel.

Standard Duct Length: 1200 mm (4 feet)

Dimensions

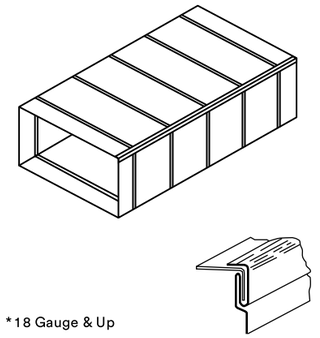


Ordering

Product Code: SDT - aaa - bbb - ccc

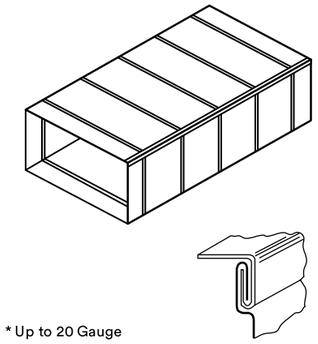
Type
W mm
H mm
L mm

Pittsburgh Lock



*18 Gauge & Up

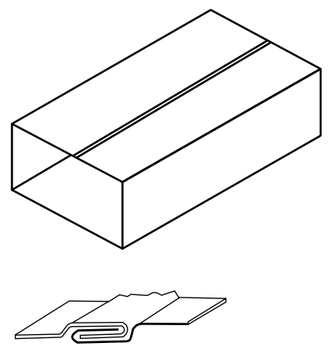
Double Corner Seam



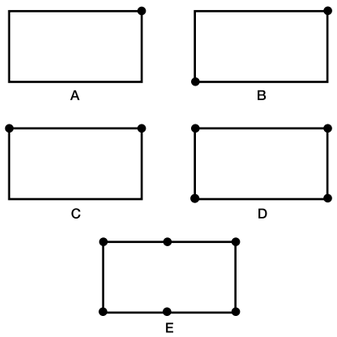
* Up to 20 Gauge

Grooved Seam

For Ducts Length L > 1200 mm



Seam Location



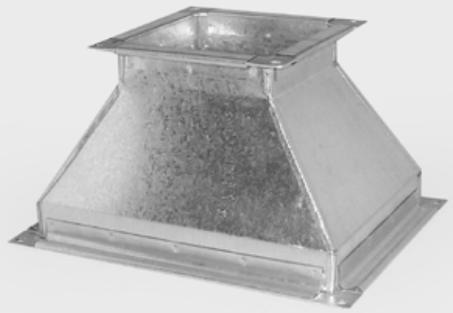
Seam Location

* Seam numbers and locations vary according to joint type and size.

REDUCER

سافيد SAFID

RED



Description

Reducer

Dimensions

Ordering

Product Code: RED - aaa - bbb - ccc - ddd - eee

- Type
- W_1 mm
- H_1 mm
- W_2 mm
- H_2 mm
- L mm

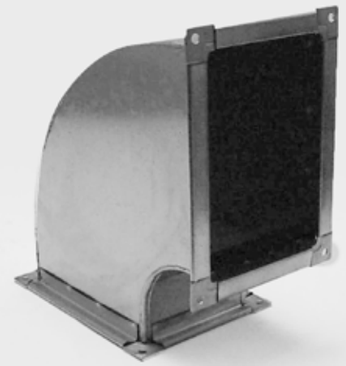
***All fittings are available with acoustic lining or double wall construction.**

سافيد SAFID

RADIUS BEND

SAFID RECTANGULAR

RE

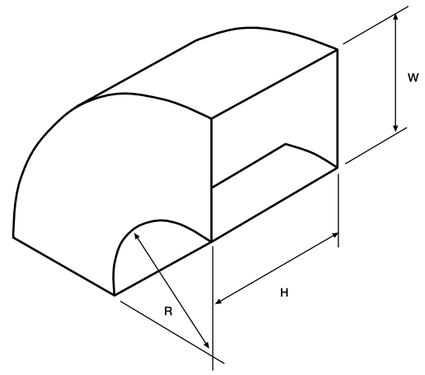


Description

Radius Bend without Splitter Vanes

Where the throat radius is equal to width (R = W).

Dimensions



Ordering

Product Code: RE - aaa - bbb - ccc

- Type
- W mm
- H mm
- R mm

***R = W**

***All fittings are available with acoustic lining or double wall construction.**

RECTANGULAR DUCT & FITTINGS

RADIUS BEND WITH SPLITTER VANES

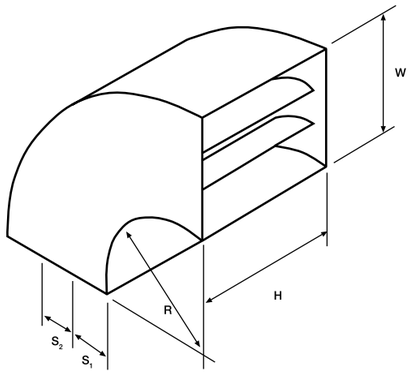
REV

Description

Radius Bend with Splitter Vanes

Where the throat radius is less than the width (R < W).

Dimensions



***All fittings are available with acoustic lining or double wall construction.**

Ordering

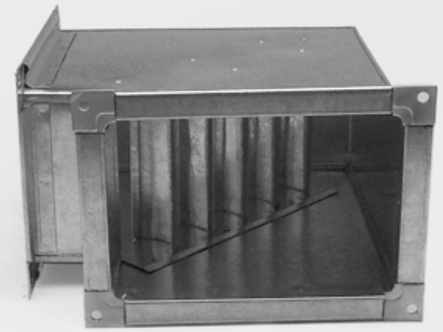
Product Code: REV - aaa - bbb - ccc - S1 - S2

- Type
- W mm
- H mm
- R mm
- Splitter Vane 1 mm
- Splitter Vane 2 mm

***For splitter vanes, please see page 230.**

SQUARE THROAT BEND WITH TURNING VANES

SQ

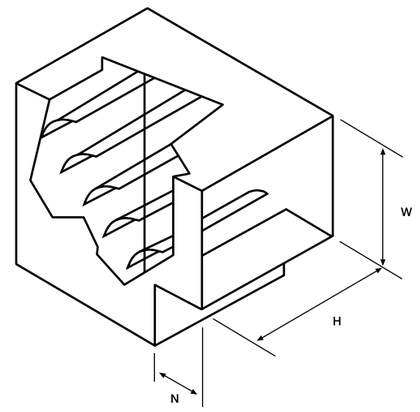


Description

Square Throat with Turning Vanes

Standard Square Throat Length (N): 100 mm

Dimensions



Ordering

Product Code: SQ - aaa - bbb - ccc

- Type
- W mm
- H mm
- R mm

N = Throat (SAFID's standard is 100 mm but can vary)

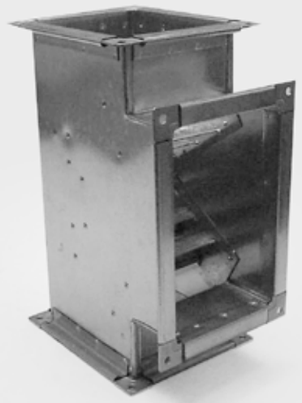
***For turning vanes, please see page 229.**

***All fittings are available with acoustic lining or double wall construction.**

TEE

سـافيد SAFID

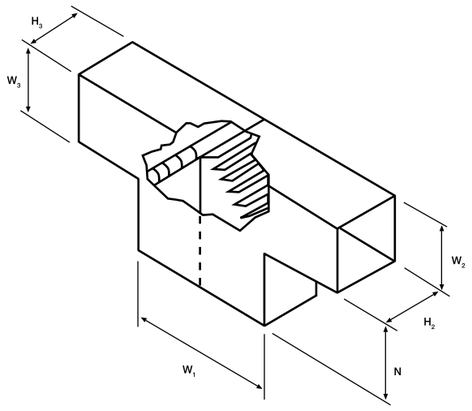
TSR



Description

Tee

Dimensions



Ordering

Product Code: TSR - aaa - bbb - ccc - ddd - eee - fff - ggg

- Type
- W_1 mm
- H_1 mm
- W_2 mm
- H_2 mm
- W_3 mm
- H_3 mm
- *N= Throat, Safid Standard is 100 mm but can vary

***For splitter vanes, please see page 229.**

***All fittings are available with acoustic lining or double wall construction.**

سـافيد SAFID

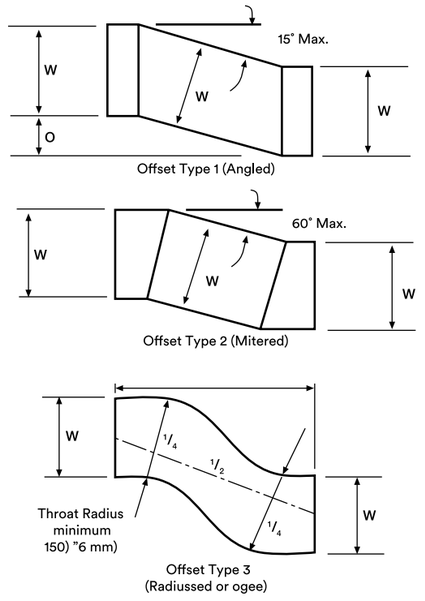
OFFSET

OFF

Description

Offset

Dimensions



Ordering

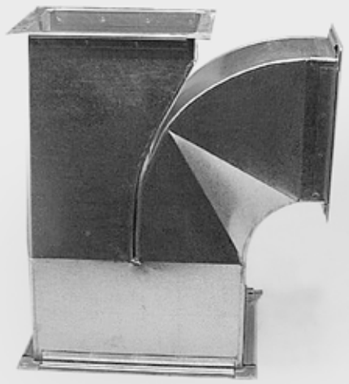
Product Code: OFF - aaa - bbb - ccc - ddd

- Type
- W mm
- H mm
- O mm
- L mm

***All fittings are available with acoustic lining or double wall construction.**

R-FITTING

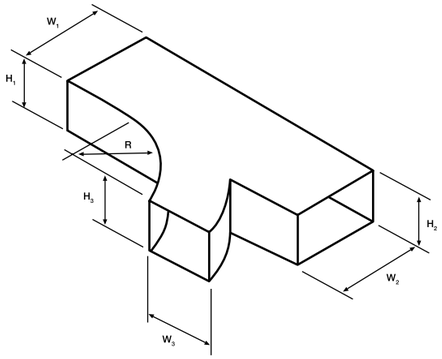
RF



Description

R-Fitting or Parallel Flow Branches

Dimensions



Ordering

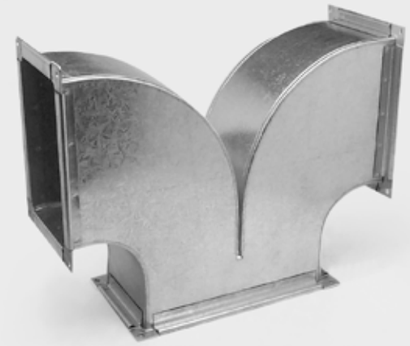
Product Code: RF - aaa - bbb - ccc - ddd - eee - fff - ggg

- Type
- W_1 mm
- H_1 mm
- W_2 mm
- H_2 mm
- W_3 mm
- H_3 mm
- R mm

***Can be supplied with splitter damper upon request.**
***All fittings are available with acoustic lining or double wall construction.**

SPLIT BEND

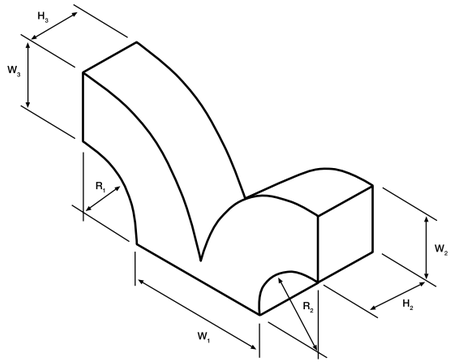
SE



Description

Split Bend

Dimensions



Ordering

Product Code: SE - aaa - bbb - ccc - ddd - eee - fff - ggg - hhh

- Type
- W_1 mm
- H_1 mm
- W_2 mm
- H_2 mm
- W_3 mm
- H_3 mm
- R_1 mm
- R_2 mm

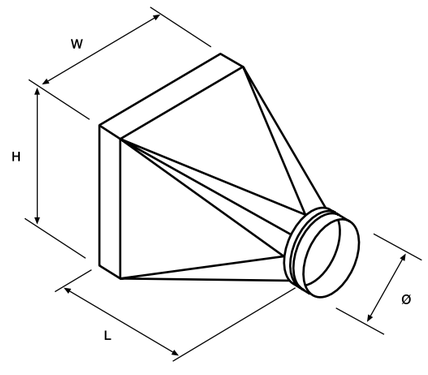
***Can be supplied with splitter damper upon request.**
***All fittings are available with acoustic lining or double wall construction.**

RECTANGULAR TO ROUND TRANSITION

سـافيد SAFID

TRANS

Description	Dimensions
Rectangular to Round Transition	



***All fittings are available with acoustic lining or double wall construction.**

Ordering

Product Code: TRANS - aaa - bbb - ccc - ddd

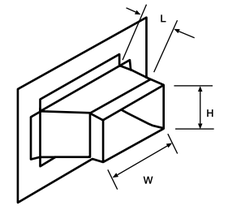
Type
W mm
H mm
ø mm
L mm

سـافيد SAFID

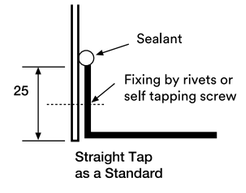
BRANCH CONNECTION - TAKE OFF

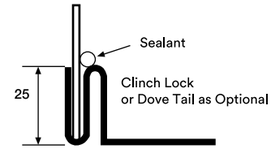
TO 45°

Description	Dimensions
45° Rectangular Branch Connection - Take Off	



$L = {}^{1}/_{4}$ W, Min. 100 mm





***Application of sealant after installation is recommended.**

***Can be supplied with a splitter damper upon request.**

***All fittings are available with acoustic lining or double wall construction.**

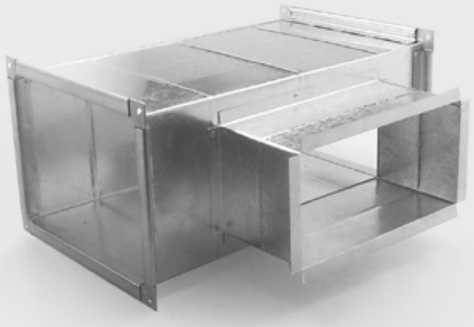
Ordering

Product Code: TO/45° - aaa - bbb - ccc

Type
W mm
H mm
L mm

BRANCH CONNECTION - TAKE OFF

TO 90°



Description

90° Rectangular Branch Connection - Take Off

Dimensions

L = 100 mm

Straight Tap
as a Standard

***Application of sealant after installation is recommended.**

***Can be supplied with a splitter damper upon request.**

***All fittings are available with acoustic lining or double wall construction.**

Ordering

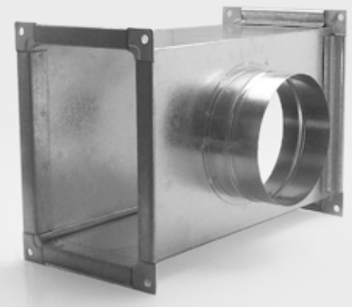
Product Code: TO/90° - aaa - bbb - ccc

- Type
- W mm
- H mm
- L mm

SAFID RECTANGULAR
RECTANGULAR DUCT & FITTINGS

BRANCH CONNECTION - TAKE OFF

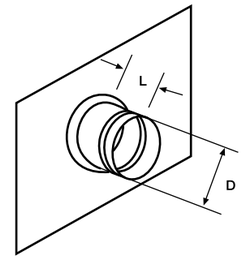
LYT



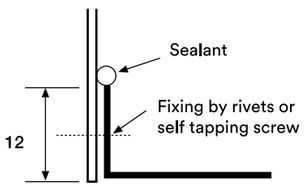
Description

90° Round Branch Connection - Take Off [Flanged]

Dimensions



L = 85 mm



Flanged

***Application of sealant after installation is recommended.**

***For "D" dimensions, please see the Flexible Duct catalogue or the Round Duct and Fittings catalogue for spiral duct dimensions.**

***All fittings are available with acoustic lining or double wall construction.**

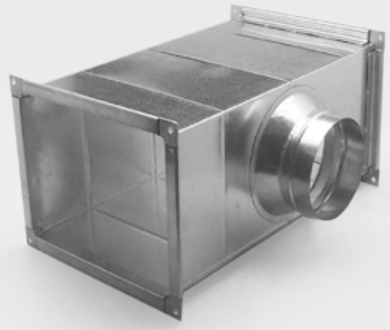
Ordering

Product Code: LYT - aaa

- Type
- D mm

BRANCH CONNECTION - TAKE OFF

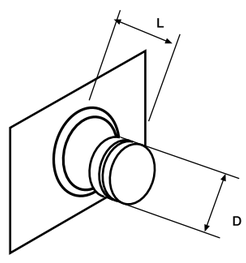
LKT



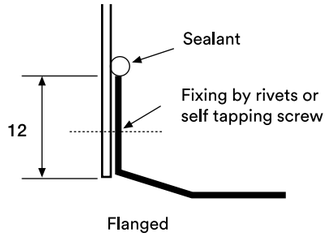
Description

90° Round Branch Connection - Take Off [Conical]

Dimensions



L = 118 mm



Flanged

***Application of sealant after installation is recommended.**

***For "D" dimensions, please see the Flexible Duct catalogue or the Round Duct and Fittings catalogue for spiral duct dimensions.**

***All fittings are available with acoustic lining or double wall construction.**

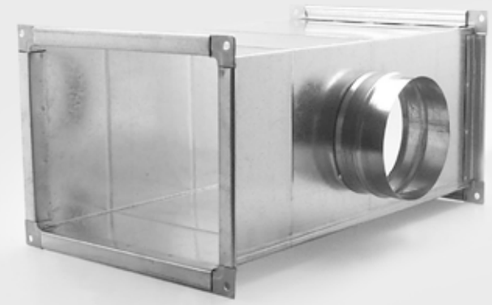
Ordering

Product Code: LKT - aaa

Type

D mm

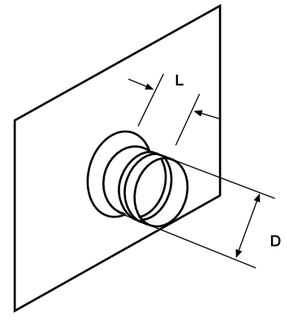
SFL



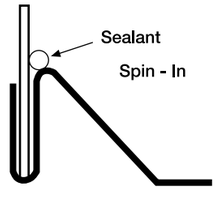
Description

Round Branch Connection - Take Off [Spin In]

Dimensions



L = 85 mm



***Application of sealant after installation is recommended.**

***For 'D' dimensions, please see the Flexible Duct catalogue or the Round Duct and Fittings catalogue for spiral duct dimensions.**

***All fittings are available with acoustic lining or double wall construction.**

Ordering

Product Code: SFL - aaa

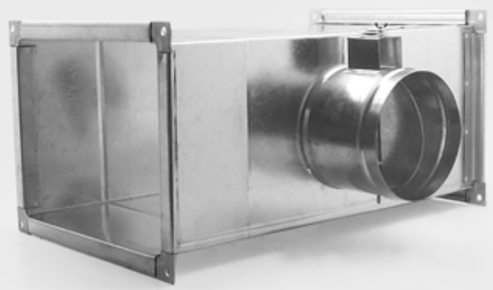
Type

D mm

BRANCH CONNECTION - TAKE OFF

سـافيد SAFID

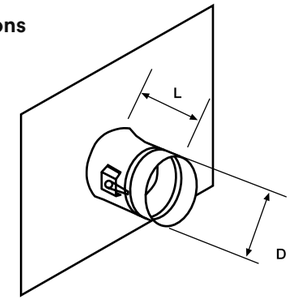
SFLD

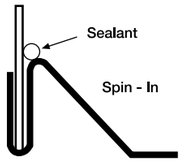


Description

Round Branch Connection - Take Off [Spin In with Damper]

Dimensions





Standard Dimensions	
Dia. Range (D) (mm)	Length (L) (mm)
80 - 315	150

***Application of sealant after installation is recommended.**

***For Pressure Loss and Installation Details, please see page 226.**

***All fittings are available with acoustic lining or double wall construction.**

Ordering

Product Code: SFLD - aaa

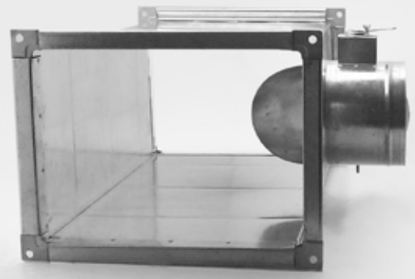
Type

D mm

سـافيد SAFID

BRANCH CONNECTION - TAKE OFF

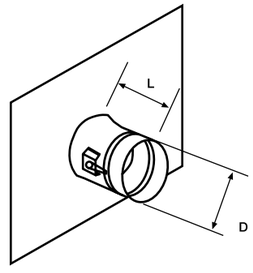
SFLDE

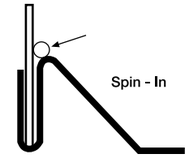


Description

Round Branch Connection - Take Off [Spin In with Damper and Scoop]

Dimensions





Standard Dimensions	
Dia. Range (D) (mm)	Length (L) (mm)
80 - 315	150

***Application of sealant after installation is recommended.**

***For Pressure Loss and Installation Details, please see page 226.**

***All fittings are available with acoustic lining or double wall construction.**

Ordering

Product Code: SFLDE - aaa

Type

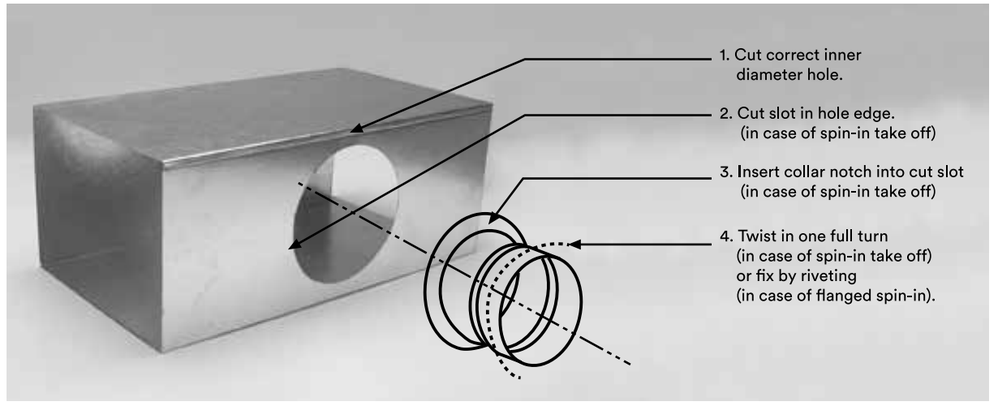
D mm

SAFID RECTANGULAR

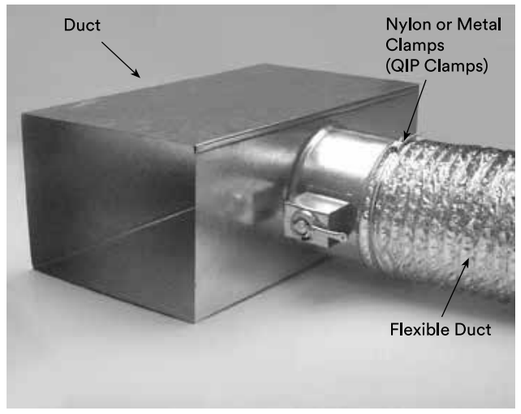
RECTANGULAR DUCT & FITTINGS

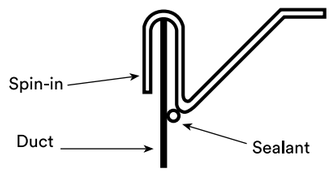
BRANCH CONNECTION - TAKE OFF

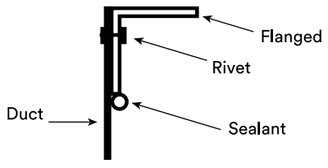
Installation Instructions



Installation Details: Spin In and Flanged Take Off

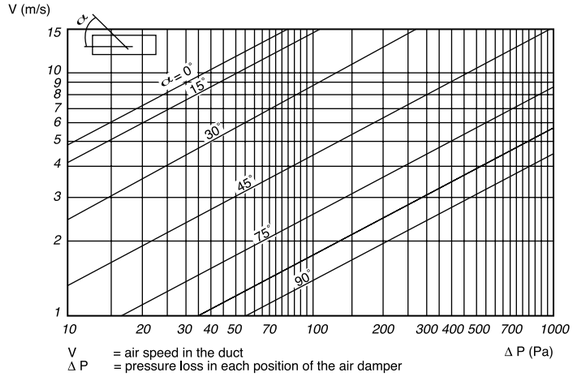






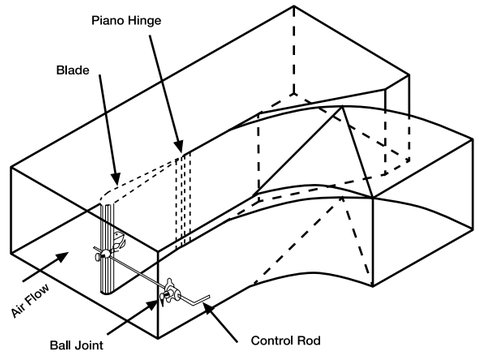
Technical Data

Pressure Loss

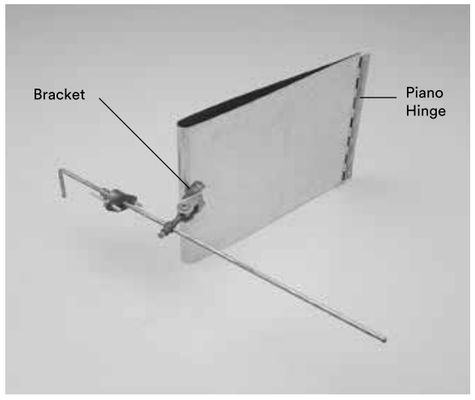


SPLITTER DAMPER

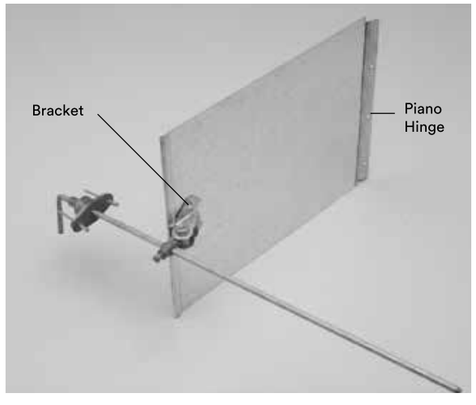
SPL



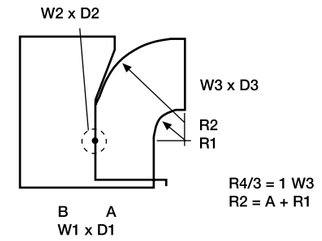
Aerofoil Blade Splitter Damper



Single Blade Splitter Damper (Standard)



Dimensions



Splitter Damper Length is Equal to 1.5 A

Where: A = 100 mm Min.

Trunk may be divided using:

$$A = \left[\frac{(W3 \times D3)}{(W2 \times D2) + (W3 \times D3)} \right] W1$$

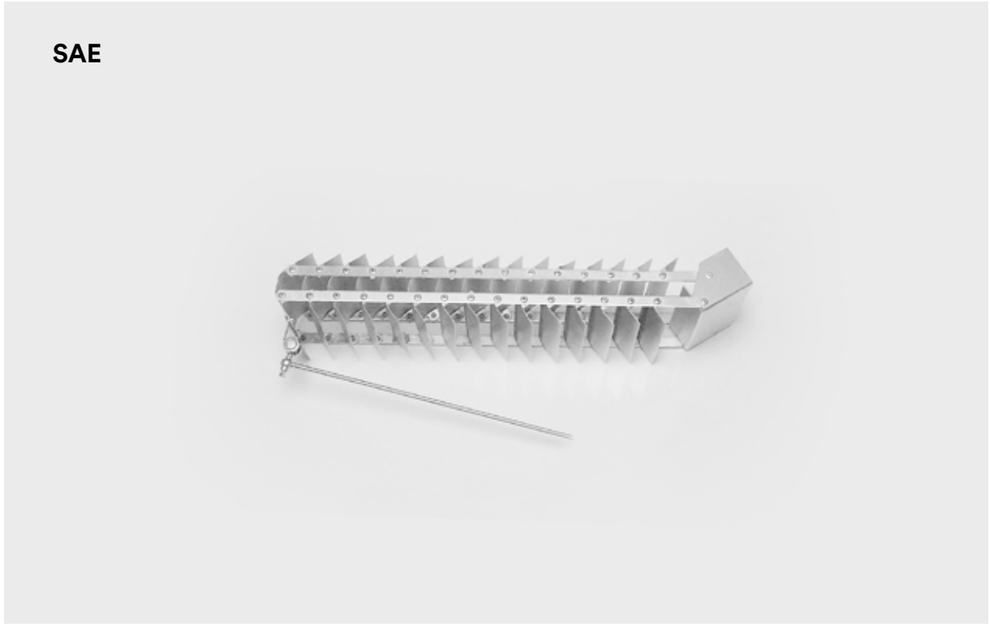
$$B = \left[\frac{(W2 \times D2)}{(W2 \times D2) + (W3 \times D3)} \right] W1$$

One rod up to 610 mm depth (D_1)
Two rods 635 mm to 1525 mm (D_1)
Three rods above 1525 mm depth (D_1)

AIR EXTRACTOR

سـافيد SAFID

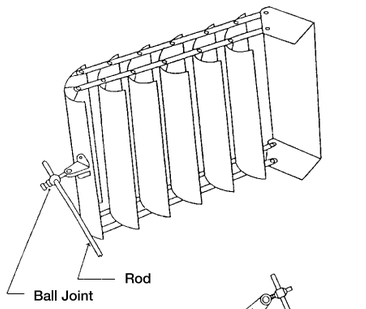
SAE

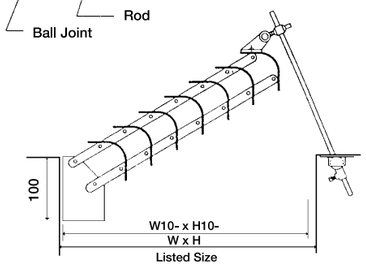


Description

Air Extractor

Dimensions





Ordering

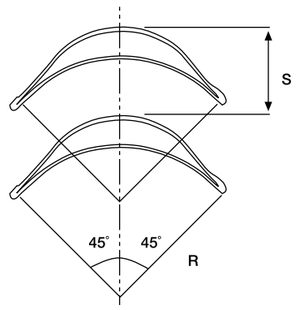
Product Code: SAE - aaa - bbb

Type
W mm
H mm

TURNING VANES

سـافيد SAFID

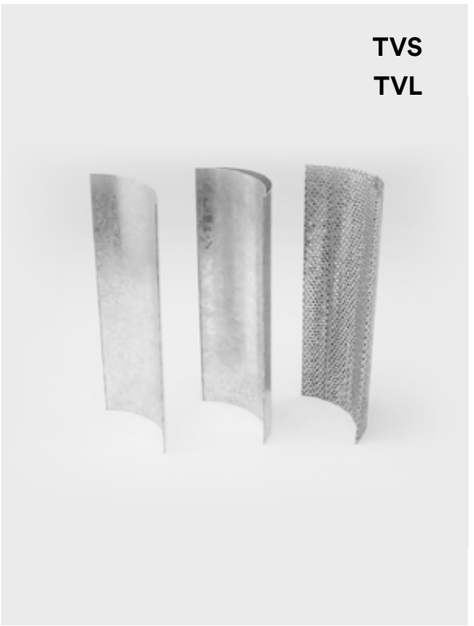
Dimensions



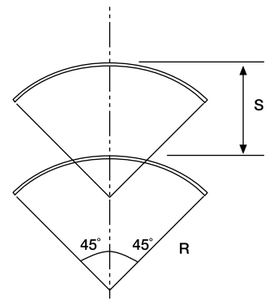
Duct Size	Double Vane Schedule			
	Type	R	S	Ga
1000-0	Small	50	54	26
1000 Up	Large	115	83	24

* 1500 Up Segmented

TVS
TVL



Dimensions

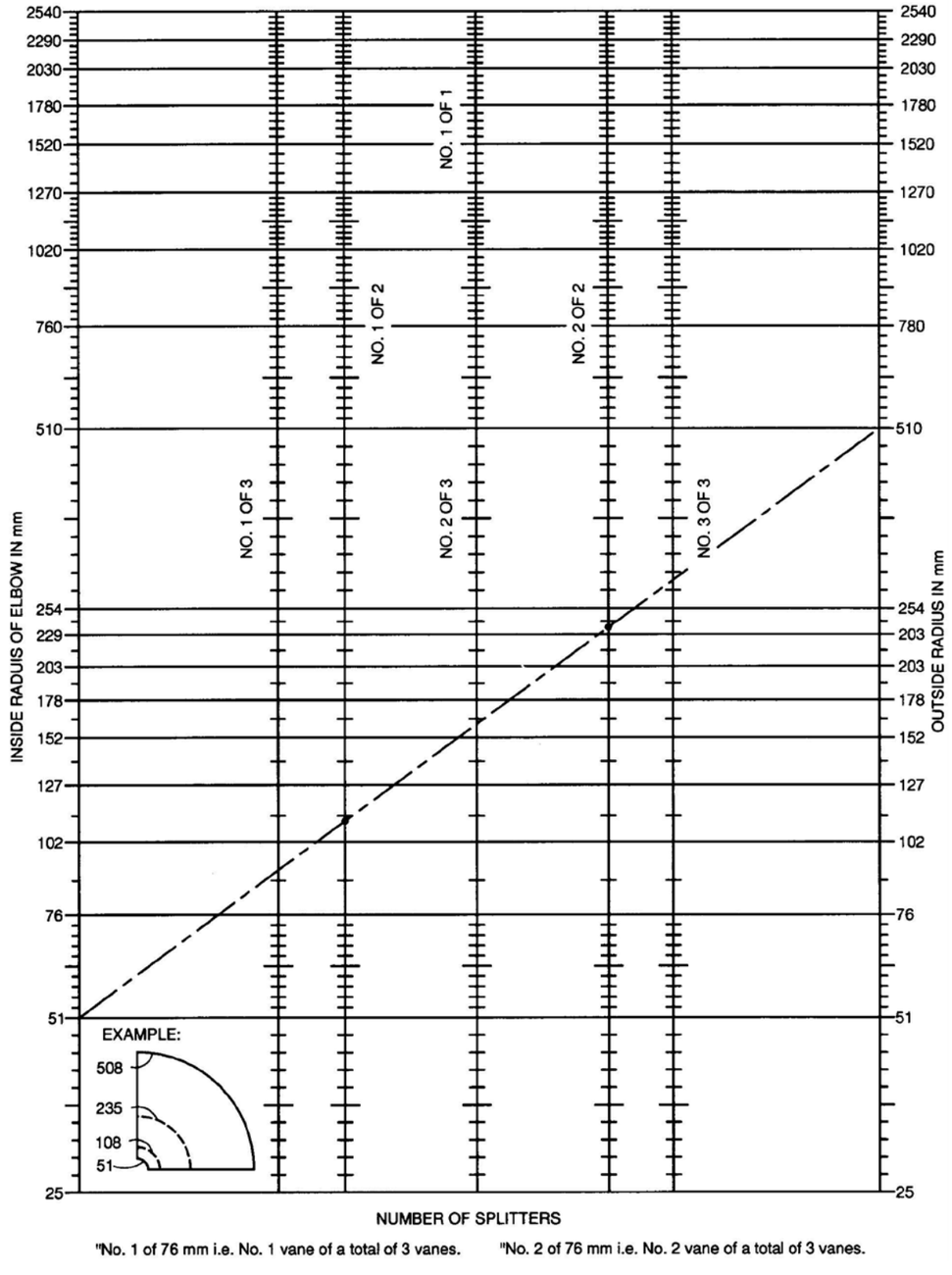


Duct Size	Single Vane Schedule			
	Type	R	S	Ga
900-0	Small	50	38	24
900 Up	Large	115	83	22

* 1500 Up Segmented

SPLITTER VANES

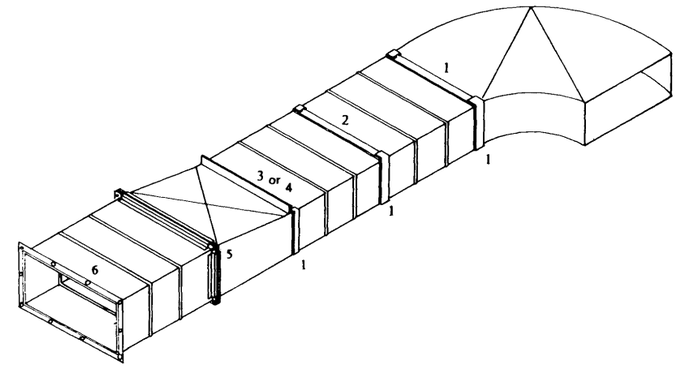
Number of Splitter Vanes for Bends



"No. 1 of 76 mm i.e. No. 1 vane of a total of 3 vanes. "No. 2 of 76 mm i.e. No. 2 vane of a total of 3 vanes.

CHART 4–1M NUMBER OF SHORT RADIUS VANES

Transverse Joints



Drive Slip & Hemmed “S” Slip

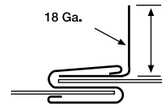
Drive Slip

1

Hemmed "S" Slip

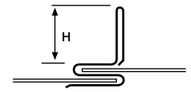
2

Reinforced “S” Slip & Standing S



Reinforced "S" Slip

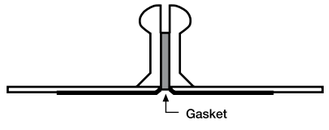
3



Standing S

4

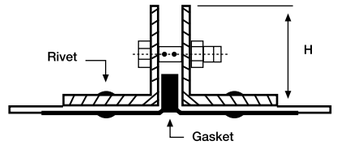
Slide on Flange: SAF - 30



Flange - SAF - 30

5

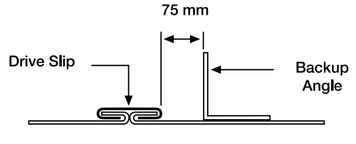
Companion Angles



Companion Angles

6

Backup Angle for Drive Slip

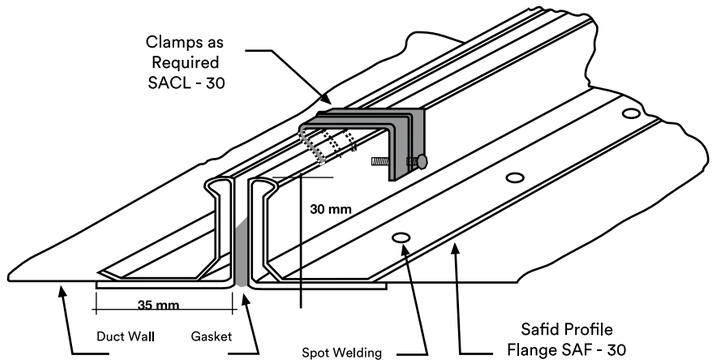


Applications

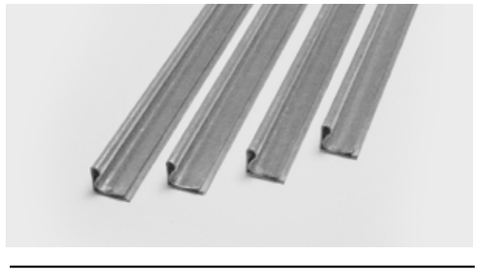
Pressure Class	Duct Height	Backup Angle Size
2” W.G.	458 - 915	25×25×3 mm
3” W.G.	458 - 559	25×25×3 mm
4” W.G.	407 - 508	25×25×3 mm

GASKETS I BOLTS AND NUTS

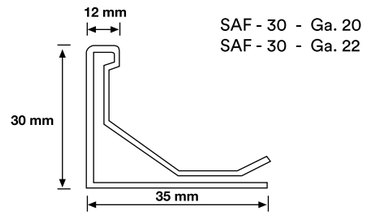
SAF - 30 Flange Joint System



Slide on Flange: SAF 30

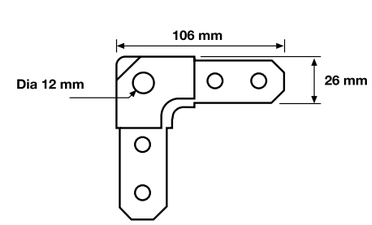


Dimensions



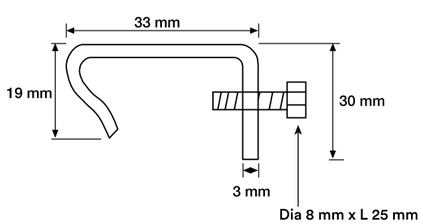
Corner Piece: SACP - 30

Dimensions

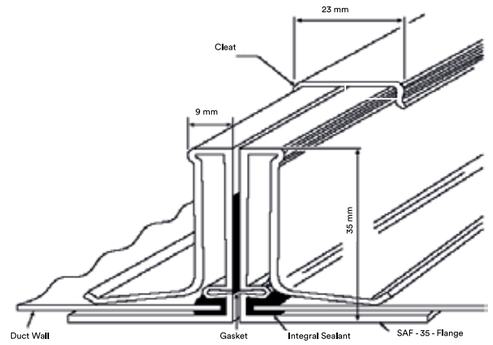


Clamp: SACL - 30, SACL - 35

Dimensions

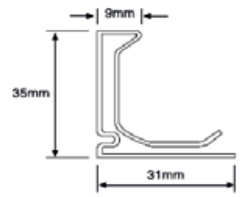


SAF - 35 Flange Joint System



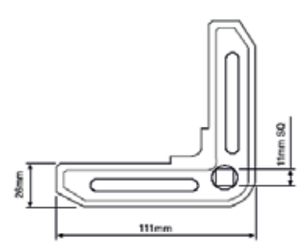
Slide on Flange: SAF - 35

Dimensions



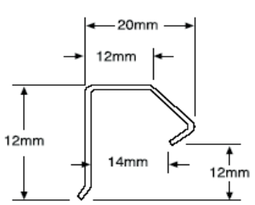
Corner Piece: SACP - 35

Dimensions



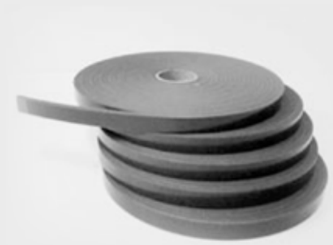
Cleat

Dimensions



GASKETS I BOLTS AND NUTS

GT - Tape



Description

The Gasket Tape (GT) is manufactured out of polyethelene foam with one side self adhesive and is appropriate for longlife in combination with a high air humidity and chemical inertness.

Standard Length: 10 meters per roll

Type & Size:

GT 4/12 mm: 4 mm thickness, 12 mm width (10 rolls per bag)
GT 6/19 mm: 6 mm thickness, 19 mm width (10 rolls per bag)

ET

Description

ET is an EPDM/Neoprene modified elastomeric closed cell self-adhesive foam gasket tape for cooling and heating air duct connections to prevent air leakage, reduce vibration/ noise and also serves as thermal insulation to prevent condensation and heat transfer. With acrylic pressure sensitive adhesive. ET is easily installed on the surfaceof the connection joint.

Standard Length: 10 meters per roll

Type & Size:

ET052010: 5 mm thickness, 20 mm width

Bolts and Nuts

Description

Bolts and Nuts are built of galvanized steel hexagonal cap screw full thread with galvanized hexagonal nut.

Bolts: M10 x 30 mm
Nuts: M10

DUCTWORK CONSTRUCTION SCHEDULE

Table 1-1: 2” W.G. Pressure Class as per SMACNA 2005 Third Edition

Maximum Duct Dimension	U.S. Gauge	Longitudinal Seams	Intermediate Reinforcement	Transverse Connections
0 - 457	26	Double Corner Seam	Not Required	Slide on Flange (SAF-20/25/30/35)
458 - 914	24	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
915 - 1219	22	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
1220 - 1524	20	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
1525 - 1829	18	Pittsburgh Lock Seam	Not Required	Slide on Flange (SAF-40/45)
1830 - 2438	18	Pittsburgh Lock Seam	40x40x4 mm Angle @ 600 mm max. c-c	Slide on Flange (SAF-40/45)
2439 - 2743	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm
2744 - 3048	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm

DUCTWORK CONSTRUCTION SCHEDULE

Table 1-2: 2” W.G. Pressure Class as per SMACNA 2005 Third Edition

Maximum Duct Dimension	U.S. Gauge	Longitudinal Seams	Intermediate Reinforcement	Transverse Connections
0 - 305	26	Double Corner Seam	Not Required	Hemmed “S” Slip Drive Slip (24 Ga.)
306 - 457	26	Double Corner Seam	Not Required	Slide on Flange (SAF-20/25/30/35)
458 - 914	24	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
915 - 1219	22	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
1220 - 1524	20	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
1525 - 1829	18	Pittsburgh Lock Seam	Not Required	Slide on Flange (SAF-40/45)
1830 - 2438	18	Pittsburgh Lock Seam	40x40x4 mm Angle @ 600 mm max. c-c	Slide on Flange (SAF-40/45)
2439 - 2743	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm
2744-3048	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm

DUCTWORK CONSTRUCTION SCHEDULE

Table 1-3: 2” W.G. Pressure Class as per SMACNA 2005 Third Edition

Maximum Duct Dimension	U.S. Gauge	Longitudinal Seams	Intermediate Reinforcement	Transverse Connections
0 - 305	26	Double Corner Seam	Not Required	Hemmed “S” Slip Drive Slip (24 Ga.)
306 - 457	26	Double Corner Seam	Not Required	Reinforced “S” Slip with 25x25x16 Ga. Drive Slip (24 Ga.)
458 - 914	24	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
915 - 1219	22	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
1220 - 1524	20	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
1525 - 1829	18	Pittsburgh Lock Seam	Not Required	Slide on Flange (SAF-40/45)
1830 - 2438	18	Pittsburgh Lock Seam	40x40x4 mm Angle @ 600 mm max. c-c	Slide on Flange (SAF-40/45)
2439 - 2743	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm
2744-3048	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm

SAFID RECTANGULAR
RECTANGULAR DUCT & FITTINGS

DUCTWORK CONSTRUCTION SCHEDULE

Table 1-4: 2” W.G. Pressure Class as per SMACNA 2005 Third Edition

Maximum Duct Dimension	U.S. Gauge	Longitudinal Seams	Intermediate Reinforcement	Transverse Connections
0 - 457	26	Double Corner Seam	Not Required	Companion Angle 30x30x3 mm
458 - 914	24	Double Corner Seam	Not Required	Companion Angle 30x30x3 mm
915 - 1067	22	Double Corner Seam	Not Required	Companion Angle 30x30x3 mm
1068 - 1219	22	Double Corner Seam	Not Required	Companion Angle 40x40x4 mm
1220 - 1524	20	Double Corner Seam	Not Required	Companion Angle 40x40x4 mm
1525 - 2134	18	Pittsburgh Lock Seam	Not Required	Companion Angle 50x50x5 mm
2135 - 2438	18	Pittsburgh Lock Seam	Not Required	Companion Angle 50x50x5 mm
2439 - 2743	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm
2744 - 3048	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm

DUCTWORK CONSTRUCTION SCHEDULE

Table 2-1: 3” W.G. Pressure Class as per SMACNA 2005 Third Edition

Maximum Duct Dimension	U.S. Gauge	Longitudinal Seams	Intermediate Reinforcement	Transverse Connections
0 - 457	24	Double Corner Seam	Not Required	Slide on Flange (SAF-20/25/30/35)
458 - 762	24	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
763 - 1067	22	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
1068 - 1219	20	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
1220 - 1829	18	Pittsburgh Lock Seam	Not Required	Slide on Flange (SAF-40/45)
1830 - 2438	18	Pittsburgh Lock Seam	40x40x4 mm Angle @ 600 mm max. c-c	Slide on Flange (SAF-40/45)
2439 - 2743	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm
2744 - 3048	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm

SAFID RECTANGULAR
RECTANGULAR DUCT & FITTINGS

DUCTWORK CONSTRUCTION SCHEDULE

سـافيد SAFID

Table 2-2: 3" W.G. Pressure Class as per SMACNA 2005 Third Edition

Maximum Duct Dimension	U.S. Gauge	Longitudinal Seams	Intermediate Reinforcement	Transverse Connections
0 - 305	24	Double Corner Seam	Not Required	Hemmed "S" Slip Drive Slip (24 Ga.)
306 - 457	24	Double Corner Seam	Not Required	Slide on Flange (SAF-20/25/30/35)
458 - 762	24	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
763 - 1067	22	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
1068 - 1219	20	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
1220 - 1829	18	Pittsburgh Lock Seam	Not Required	Slide on Flange (SAF-40/45)
1830 - 2438	18	Pittsburgh Lock Seam	40x40x4 mm Angle @ 600 mm max. c-c	Slide on Flange (SAF-40/45)
2439 - 2743	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm
2744 - 3048	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm

سـافيد SAFID

DUCTWORK CONSTRUCTION SCHEDULE

Table 2-3: 3" W.G. Pressure Class as per SMACNA 2005 Third Edition

Maximum Duct Dimension	U.S. Gauge	Longitudinal Seams	Intermediate Reinforcement	Transverse Connections
0 - 305	24	Double Corner Seam	Not Required	Hemmed "S" Slip Drive Slip (24 Ga.)
306 - 457	24	Double Corner Seam	Not Required	Reinforced "S" Slip with 25x25x16 Ga. Drive Slip (24 Ga.)
458 -762	24	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
763 - 1067	22	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
1068 - 1219	20	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
1220 - 1829	18	Pittsburgh Lock Seam	Not Required	Slide on Flange (SAF-40/45)
1830 - 2438	18	Pittsburgh Lock Seam	40x40x4 mm Angle @ 600 mm max. c-c	Slide on Flange (SAF-40/45)
2439 - 2743	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm
2744-3048	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm

SAFID RECTANGULAR
RECTANGULAR DUCT & FITTINGS

DUCTWORK CONSTRUCTION SCHEDULE

Table 2-4: 3” W.G. Pressure Class as per SMACNA 2005 Third Edition

Maximum Duct Dimension	U.S. Gauge	Longitudinal Seams	Intermediate Reinforcement	Transverse Connections
0 - 305	24	Double Corner Seam	Not Required	Companion Angle 30x30x3 mm
306 - 762	24	Double Corner Seam	Not Required	Companion Angle 30x30x3 mm
763 - 914	22	Double Corner Seam	Not Required	Companion Angle 30x30x3 mm
915 - 1067	22	Double Corner Seam	Not Required	Companion Angle 40x40x4 mm
1068 - 1219	20	Double Corner Seam	Not Required	Companion Angle 40x40x4 mm
1220 - 1829	18	Pittsburgh Lock Seam	Not Required	Companion Angle 50x50x5 mm
1830 - 2438	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm
2439 - 2743	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm
2744 - 3048	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm

Table 3-1: 4” W.G. Pressure Class as per SMACNA 2005 Third Edition

Maximum Duct Dimension	U.S. Gauge	Longitudinal Seams	Intermediate Reinforcement	Transverse Connections
0 - 457	24	Double Corner Seam	Not Required	Slide on Flange (SAF-20/25/30/35)
458 - 762	24	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
763- 914	22	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
915 - 1067	20	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
1068 - 1524	18	Pittsburgh Lock Seam	Not Required	Slide on Flange (SAF-40/45)
1525 - 2134	18	Pittsburgh Lock Seam	40x40x4 mm Angle @ 600 mm max. c-c	Slide on Flange (SAF-40/45)
2135 - 2438	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm
2439 - 2743	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c + 1 Tie Rod	Companion Angle 50x50x5 mm + 1 Tie Rod
2744-3048	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c + 1 Tie Rod	Companion Angle 50x50x5 mm + 1 Tie Rod

DUCTWORK CONSTRUCTION SCHEDULE

Table 3-2: 4” W.G. Pressure Class as per SMACNA 2005 Third Edition

Maximum Duct Dimension	U.S. Gauge	Longitudinal Seams	Intermediate Reinforcement	Transverse Connections
0 - 203	24	Double Corner Seam	Not Required	Hemmed “S” Slip Drive Slip (24 Ga.)
204 - 457	24	Double Corner Seam	Not Required	Slide on Flange (SAF-20/25/30/35)
458 - 762	24	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
763 - 914	22	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
915 - 1067	20	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
1068 - 1524	18	Pittsburgh Lock Seam	Not Required	Slide on Flange (SAF-40/45)
1525 - 2134	18	Pittsburgh Lock Seam	40x40x4 mm Angle @ 600 mm max. c-c	Slide on Flange (SAF-40/45)
2135 - 2438	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm
2439 - 2743	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c + 1 Tie Rod	Companion Angle 50x50x5 mm + 1 Tie Rod
2744 - 3048	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c + 1 Tie Rod	Companion Angle 50x50x5 mm + 1 Tie Rod

DUCTWORK CONSTRUCTION SCHEDULE

Table 3-3: 4” W.G. Pressure Class as per SMACNA 2005 Third Edition

Maximum Duct Dimension	U.S. Gauge	Longitudinal Seams	Intermediate Reinforcement	Transverse Connections
0 - 305	24	Double Corner Seam	Not Required	Reinforced “S” Slip with 25x25x16 Ga. Drive Slip (24 Ga.)
306 - 457	24	Double Corner Seam	Not Required	Slide on Flange (SAF-20/25/30/35)
458 - 762	24	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
763 - 914	22	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
915 - 1067	20	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
1068 - 1524	18	Pittsburgh Lock Seam	Not Required	Slide on Flange (SAF-40/45)
1525 - 2134	18	Pittsburgh Lock Seam	40x40x4 mm Angle @ 600 mm max. c-c	Slide on Flange (SAF-40/45)
2135 - 2438	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm
2439 - 2743	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c + 1 Tie Rod	Companion Angle 50x50x5 mm + 1 Tie Rod
2744 - 3048	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c + 1 Tie Rod	Companion Angle 50x50x5 mm + 1 Tie Rod

SAFID RECTANGULAR
RECTANGULAR DUCT & FITTINGS

DUCTWORK CONSTRUCTION SCHEDULE

Table 3-4: 4” W.G. Pressure Class as per SMACNA 2005 Third Edition

Maximum Duct Dimension	U.S. Gauge	Longitudinal Seams	Intermediate Reinforcement	Transverse Connections
0 - 406	24	Double Corner Seam	Not Required	Companion Angle 30x30x3 mm
407 - 762	24	Double Corner Seam	Not Required	Companion Angle 30x30x3 mm
763- 914	22	Double Corner Seam	Not Required	Companion Angle 40x40x4 mm
915 - 1067	20	Double Corner Seam	Not Required	Companion Angle 40x40x4 mm
1068 - 1524	18	Pittsburgh Lock Seam	Not Required	Companion Angle 50x50x5 mm
1525 - 2438	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm
2439 - 2743	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c + 1 Tie Rod	Companion Angle 50x50x5 mm + 1 Tie Rod
2744-3048	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c + 1 Tie Rod	Companion Angle 50x50x5 mm + 1 Tie Rod

DUCTWORK CONSTRUCTION SCHEDULE

Table 4-1: 6” W.G. Pressure Class as per SMACNA 2005 Third Edition

Maximum Duct Dimension	U.S. Gauge	Longitudinal Seams	Intermediate Reinforcement	Transverse Connections
0 - 457	24	Double Corner Seam	Not Required	Slide on Flange (SAF-20/25/30/35)
458 - 762	22	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
763- 914	20	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
915 - 1219	18	Pittsburgh Lock Seam	Not Required	Slide on Flange (SAF-40/45)
1220 - 1829	18	Pittsburgh Lock Seam	40x40x4 mm Angle @ 600 mm max. c-c	Slide on Flange (SAF-40/45)
1830 - 2134	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm
2135 - 2438	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c + 1 Tie Rod	Companion Angle 50x50x5 mm + 1 Tie Rod
2439 - 2743	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c + 1 Tie Rod	Companion Angle 50x50x5 mm + 1 TIE Rod
2744 - 3048	18	Pittsburgh Lock Seam	60x60x6 mm Angle @ 600 mm max. c-c + 1 Tie Rod	Companion Angle 60x60x6 mm + 1 Tie Rod

SAFID RECTANGULAR
RECTANGULAR DUCT & FITTINGS

DUCTWORK CONSTRUCTION SCHEDULE

Table 4-2: 6” W.G. Pressure Class as per SMACNA 2005 Third Edition

Maximum Duct Dimension	U.S. Gauge	Longitudinal Seams	Intermediate Reinforcement	Transverse Connections
0 - 559	24	Double Corner Seam	Not Required	Companion Angle 30x30x3 mm
560 - 660	22	Double Corner Seam	Not Required	Companion Angle 30x30x3 mm
661 - 762	22	Double Corner Seam	Not Required	Companion Angle 40x40x4 mm
763 - 914	20	Double Corner Seam	Not Required	Companion Angle 40x40x4 mm
915 - 1219	18	Pittsburgh Lock Seam	Not Required	Companion Angle 50x50x5 mm
1220 - 1524	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm
1525 - 2134	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm
2135 - 2743	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c + 1 Tie Rod	Companion Angle 50x50x5 mm + 1 Tie Rod
2744 - 3048	18	Pittsburgh Lock Seam	60x60x6 mm Angle @ 600 mm max. c-c + 1 Tie Rod	Companion Angle 60x60x6 mm + 1 Tie Rod

DUCTWORK CONSTRUCTION SCHEDULE

Table 5-1: 10” W.G. Pressure Class as per SMACNA 2005 Third Edition

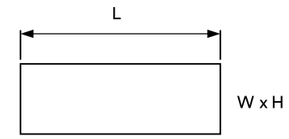
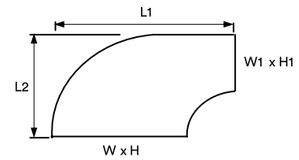
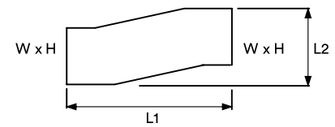
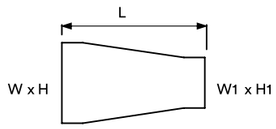
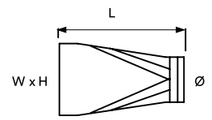
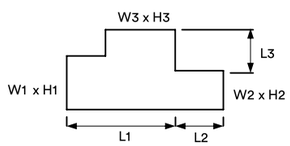
Maximum Duct Dimension	U.S. Gauge	Longitudinal Seams	Intermediate Reinforcement	Transverse Connections
0 - 305	24	Double Corner Seam	Not Required	Slide on Flange (SAF-20/25/30/35)
306 - 356	22	Double Corner Seam	Not Required	Slide on Flange (SAF-20/25/30/35)
357 - 457	20	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
458 - 660	20	Double Corner Seam	Not Required	Slide on Flange (SAF-30/35)
661 - 711	18	Pittsburgh Lock Seam	Not Required	Slide on Flange (SAF-30/35)
712 - 1067	18	Pittsburgh Lock Seam	Not Required	Slide on Flange (SAF-40/45)
1068 - 1372	18	Pittsburgh Lock Seam	40x40x4 mm Angle @ 600 mm max. c-c	Slide on Flange (SAF-40/45)
1373 - 1524	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm
1525 - 2134	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c + 1 Tie Rod	Companion Angle 50x50x5 mm + 1 Tie Rod
2135 - 2743	16	Pittsburgh Lock Seam	60x60x6 mm Angle @ 600 mm max. c-c + 1 Tie Rod	Companion Angle 60x60x6 mm + 1 Tie Rod
2744 - 3048	16	Pittsburgh Lock Seam	60x60x6 mm Angle @ 600 mm max. c-c + 1 Tie Rod	Companion Angle 60x60x6 mm + 1 Tie Rod

DUCTWORK CONSTRUCTION SCHEDULE

Table 5-2: 10” W.G. Pressure Class as per SMACNA 2005 Third Edition

Maximum Duct Dimension	U.S. Gauge	Longitudinal Seams	Intermediate Reinforcement	Transverse Connections
0 - 305	24	Double Corner Seam	Not Required	Companion Angle 30x30x3 mm
306 - 356	22	Double Corner Seam	Not Required	Companion Angle 30x30x3 mm
357 - 508	20	Double Corner Seam	Not Required	Companion Angle 30x30x3 mm
509 - 660	20	Double Corner Seam	Not Required	Companion Angle 40x40x4 mm
661 - 711	18	Pittsburgh Lock Seam	Not Required	Companion Angle 40x40x4 mm
712 - 1067	18	Pittsburgh Lock Seam	Not Required	Companion Angle 50x50x5 mm
1068 - 1524	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c	Companion Angle 50x50x5 mm
1525 - 2134	18	Pittsburgh Lock Seam	50x50x5 mm Angle @ 600 mm max. c-c + 1 Tie Rod	Companion Angle 50x50x5 mm + 1 Tie Rod
2135 - 3048	16	Pittsburgh Lock Seam	60x60x6 mm Angle @ 600 mm max. c-c + 1 Tie Rod	Companion Angle 60x60x6 mm + 1 Tie Rod

METHOD OF SURFACE AREA CALCULATION

Description	Formula	Detail
Straight Duct	A = 2 (W+H) L	
Elbow	A = 2 (W+H)(L1+L2)	
Offset	A = 2 (W+H)(L1+L2)	
Reducer	A = 2 (W+H) L	
Transition	A = 2 (W+H) L	
Tee	A = 2 (W1+H1) L1 +2 (W2+H2) L2 +2 (W3 + H3) L3	

SPECIFICATIONS FOR DUCT AND FITTINGS

I. General

A. All Single wall, internally lined or double wall rectangular supply, return and exhaust ductwork shall be SAFID Rectangular as manufactured by SAFID or approved equal.

II. Materials

A. Unless otherwise noted, all duct and fittings shall be G-90 galvanized steel in accordance with ATSM A-924 and A-653 (previously known as A-527).

B. Unless otherwise specified, reinforcement may be uncoated steel or galvanized steel.

C. When specified on contract documents, stainless steel type 304 or type 316 in accordance with ASTM A-240 shall be provided.

III. Construction

A. Where no specific duct pressure class designations are provided, all duct and fittings shall be constructed as per SMACNA's Duct Construction Standards 500 Pa (+2 in W.G.) as shown in the table below:

Rectangular Duct and Fittings	
Maximum Dimensions (mm)	**U.S. Gauge**
0 - 457	26
458 - 914	24
915 - 1219	22
1220 - 1524	20
1525 - 2438	18
2439 - 3048	18

*Longitudinal connections, intermediate reinforcement and transverse connections shall be in accordance with SMACNA 2005 Third Edition, or as the Ductwork Construction Schedule on page 235.

B. Rectangular Ducts and Fittings

1. Rectangular duct and fittings shall be factory fabricated with factory applied sealant for a dependable quality line of products, and must be sufficiently airtight to ensure economical and quiet system performance.

2. All straight ducts shall be beaded, except if duct is internally lined, double wall, Ga. 18 ducts, and 4" w.g. duct pressure class or above.

3. All fittings are cross broken from dimensions 483 mm and above unless if duct is internally lined, double wall, Ga. 18 ducts, and 4" w.g. duct pressure class or above.

4. All fitting ends shall be calibrated to manufacturer's published dimensional tolerance standard.

5. All fittings shall be reinforced like sections of straight duct. One size change fittings, the greater fitting dimension determines the duct gauge.

6. The throat radius of all 90° and 45° radius bends shall be equal to the width (R = W). Radius bend with splitter vanes is applicable if the throat radius is less than the width (R > W).

7. All fittings that are of either spot welded or button punched construction shall be internally sealed. Fittings that are continuously welded construction shall shall not be internally sealed.

IV. Performance

A. Duct system performance shall meet SMACNA's Leakage Class 6 requirements. [Exceed -5000Pa (-20 in W.G.) or 3000Pa (+12 in W.G.)].

FLEXIBLE DUCT

UNISULATED FLEXIBLE DUCT I ALUDEC STANDARD

ALUDEC - 45

Description

ALUDEC Standard are fully flexible, light weight, uninsulated, laminated ducts suitable for low and high pressure systems. The ducts consist of several layers of aluminum and polyester laminates encapsulating a high tensile steel wire helix. Aludec flexible ducts are easily installed over either round or oval connections. At high temperature, or in case of fire, no toxic or gas emission.

Ordering

Product Code: ALUDEC-45 - aaa

Type
diameter

Construction and Dimensions

Construction:
ALUDEC ducts constructed out of a “sandwich construction” laminates. This means the different layers of aluminum and polyester are overlapping each other completely and encapsulates a high tensile steel wire. The multiple laminates are adhered with fire retardant thermosetting adhesive.

Diameter:
All standard diameters ranging from 102mm to 508mm.

Wire Spacing:
All sizes 36 mm.

Wire:
3 thickness of wire are used:
0.9mm, from dia. 102mm - 178mm
1.2mm, from dia. 203mm - 315mm
1.6mm, from dia. 356mm - 508mm

Chemical Resistance:
- Good resistance to many solvents
- Moderate resistance to acid & base

Applications:
Aludec are appropriate for applications of general air supply and airconditioning systems.

Mechanical and Technical Data

Minimum Bending Radius:
0.58 x Ø

Temperature Range:
-30 °C to + 140 °C

Air Velocity:
Max. 30 m/s (5900 ft/min)

Working Pressure:
Max. 250mm WG (2500 Pa. or 10 inch WG)

Standard Color:
Aluminum

Fire Class:
Please see schedule on page 274.

Packing

Dia. Range		Std. Length	Carton Size
(mm)	(inches)	(meters)	(mm)
102 - 305	(4”- 12”)	10 meters	350 x 350 x 600
355	(14”)	10 meters	350 x 350 x 750
405	(16”)	10 meters	500 x 500 x 750
457	(18”)	10 meters	500 x 500 x 750

Standard Length:
10 meters for all sizes

UNINSULATED FLEXIBLE DUCT I ALUDEC PRIME

Description

ALUDEC Prime are fully flexible, light weight, uninsulated, laminated ducts suitable for low and high pressure systems. The ducts consist of several layers of aluminum and polyester laminates encapsulating a high tensile steel wire helix. Aludec flexible ducts are easily installed over either round or oval connections. At high temperature, or in case of fire, no toxic or gas emission.

ALUDEC - 70

Ordering

Product Code: ALUDEC-70 - aaa

Type
diameter

Construction and Dimensions

Construction:
ALUDEC ducts constructed out of a “sandwich construction” laminates. This means the different layers of aluminum and polyester are overlapping each other completely and encapsulates a high tensile steel wire. The multiple laminates are adhered with fire retardant thermosetting adhesive.

Diameter:
All standard diameters ranging from 102mm to 508mm.

Wire Spacing:
All sizes 25mm.

Wire:
3 thickness of wire are used:
0.9mm, from dia. 102mm - 178mm
1.2mm, from dia. 203mm - 315mm
1.6mm, from dia. 356mm - 508mm

Chemical Resistance:
- Good resistance to many solvents
- Moderate resistance to acid and base

Applications:
Aludec are appropriate for applications of general air supply & airconditioning systems.

Mechanical and Technical Data

Minimum Bending Radius:
0.58 x Ø

Temperature Range:
-30 °C to + 140 °C

Air Velocity:
Max. 30 m/s (5900 ft/min)

Working Pressure:
Max. 300mm WG (3000 Pa. or 12 inch WG)

Standard Color:
Aluminum

Fire Class:
Please see schedule on page 274.

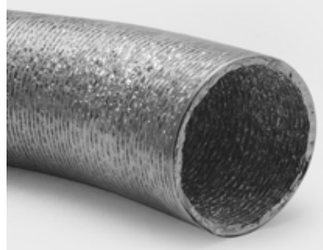
Packing

Dia. Range		Std. Length	Carton Size
(mm)	(inches)	(meters)	(mm)
102 - 305	(4”- 12”)	10 meters	350 x 350 x 600
355	(14”)	10 meters	350 x 350 x 750
405	(16”)	10 meters	500 x 500 x 750
457	(18”)	10 meters	500 x 500 x 750

Standard Length:
10 meters for all sizes

UNINSULATED FLEXIBLE DUCT I ALUDEC - A

ALUDEC - A



Description

ALUDEC - A are fully flexible, light weight, uninsulated, laminated ducts suitable for low and high pressure systems. The ducts consist of several layers of aluminized polyester laminates encapsulating a high tensile steel wire helix. ALUDEC flexible ducts are easily installed over either round or oval connections. At high temperature, or in case of fire, no toxic or gas emission.

Ordering

Product Code: ALUDEC-A - aaa

Type
diameter

Construction and Dimensions

Construction:
ALUDEC ducts constructed out of a “sandwich construction” laminates. This means the different layers of aluminized polyester are overlapping each other completely and encapsulates a high tensile steel wire. The multiple laminates are adhered with fire retardant thermosetting adhesive.

Diameter:
All standard diameters ranging from 102mm to 508mm.

Wire Spacing:
All sizes 36 mm.

Wire:
3 thickness of wire are used:
0.9mm, from dia. 102mm - 178mm
1.2mm, from dia. 203mm - 315mm
1.6mm, from dia. 356mm - 508mm

Chemical Resistance:
- Good resistance to many solvents
- Moderate resistance to acid and base

Applications:
Aludec are appropriate for applications of general air supply and airconditioning systems.

Mechanical & Technical Data

Minimum Bending Radius:
0.54 x Ø

Temperature Range:
-20 °C to + 120 °C

Air Velocity:
Max. 30 m/s (5900 ft/min)

Working Pressure:
Max. 300mm WG (3000 Pa. or 12 inch WG)

Standard Color:
Aluminum

Packing

Dia. Range		Std. Length	Carton Size
(mm)	(inches)	(meters)	(mm)
102 - 305	(4”- 12”)	10 meters	350 x 350 x 600
355	(14”)	10 meters	350 x 350 x 750
405	(16”)	10 meters	500 x 500 x 750
457	(18”)	10 meters	500 x 500 x 750

Standard Length:
10 meters for all sizes

THERMALLY INSULATED FLEXIBLE DUCT I ISODEC

Description

ISODEC ducts is fully flexible high quality thermally insulated ducts for various purposes. The ducts consist of an ALUDEC inner core shielding the fiberglass insulation from the airstream with a tough outerjacket/vapour barrier constructed of multiple layer of aluminum laminated construction and reinforced with fiberglass. The ducts are easily installed over either round or oval connection.

ISODEC - 25

Ordering

Product Code: ISODEC-25 - aaa

Type
diameter

Construction and Dimensions

Inner Core:
ALUDEC standard

Insulation
25mm thick highly efficient fiberglass with a density of 16kg/m³.
50mm thick insulation also available upon request.

Vapour Barrier:
A durable, scuff resistant outerjacket made of strong very tough spirally reinforced multiple layer aluminum laminated construction.

Diameter Range:
All standard diameters ranging from 102mm to 457mm.

Chemical Resistance:
- Good resistance to many solvents
- Moderate resistance to acid and base

Applications:
ISODEC are appropriate for applications of general air supply and airconditioning systems.

Mechanical and Technical Data

Minimum Bending Radius:
0.54 x Ø

Thermal Conductivity
0.04 W/mK

Temperature Range:
-30 °C to + 140 °C

Air Velocity:
Max. 25 m/s (4900 ft/min)

Working Pressure:
Max. 250mm (2500 Pa. or 10 inch WG)

Standard Color:
Aluminum

Fire Class:
Please see schedule on page 274.

Packing

Dia. Range		Std. Length	Carton Size
(mm)	(inches)	(meters)	(mm)
102 -305	(4”- 12”)	10 meters	350 x 350 x 600
355	(14”)	10 meters	350 x 350 x 750
405	(16”)	10 meters	500 x 500 x 750
457	(18”)	10 meters	500 x 500 x 750

Standard Length:
10 meters for all sizes (except 18” dia. L = 5M)

THERMALLY INSULATED FLEXIBLE DUCT I ISODEC - A

ISODEC - A - 25

Description

ISODEC - A ducts are fully flexible high quality thermally insulated ducts for various purposes. The ducts consist of an ALUDEC inner core shielding the fiberglass insulation from the airstream with a tough outerjacket/vapour barrier constructed of multiple layer of aluminum laminated construction and reinforced with fiberglass. The ducts are easily installed over either round or oval connection.

Ordering

Product Code: ISODEC-A - aaa

Type
diameter

Construction and Dimensions

Inner Core:
ALUDEC standard

Insulation:
25mm thick highly efficient fiberglass with a density of 16kg/m³.

50mm thick insulation also available upon request.

Vapour Barrier:
A durable, scuff resistant outerjacket made of strong very tough spirally reinforced multiple layer aluminum laminated construction.

Diameter Range:
All standard diameters ranging from 102mm to 457mm.

Chemical Resistance:
- Good resistance to many solvents
- Moderate resistance to acid and base

Applications:
ISODEC are appropriate for applications of general air supply and airconditioning systems.

Mechanical and Technical Data

Minimum Bending Radius:
0.54 x Ø

Thermal Conductivity:
0.04 W/mK

Temperature Range:
-20 °C to + 130 °C

Air Velocity:
Max. 25 m/s (4900 ft/min)

Working Pressure:
Max. 250mm WG (2500 Pa. or 10 inch WG)

Standard Color:
Aluminum

Packing

Dia. Range		Std. Length	Carton Size
(mm)	(inches)	(meters)	(mm)
102-305	(4”- 12”)	10 meters	350 x 350 x 600
355	(14”)	10 meters	350 x 350 x 750
405	(16”)	10 meters	500 x 500 x 750
457	(18”)	10 meters	500 x 500 x 750

Standard Length:
10 meters for all sizes (except 18” dia. L = 5M)

THERMALLY INSULATED FLEXIBLE DUCT I ISO - A

Description

ISO - A ducts are fully flexible high quality thermally insulated ducts for various purposes. The ducts consist of an ALUDEC-A inner core shielding the fiberglass insulation from the airstream with a tough outerjacket/vapour barrier constructed of multiple layer of aluminized polyester laminated construction and reinforced with fiberglass. The ducts are easily installed over either round or oval connection.

ISO - A - 25

Ordering

Product Code: ISO-A-25 - aaa

Type
diameter

Construction and Dimensions

Inner Core:
ALUDEC-A

Insulation:
25mm thick highly efficient fiberglass with a density of 16kg/m³.

50mm thick insulation also available upon request.

Vapour Barrier:
A durable, scuff resistant outerjacket made of strong very tough spirally reinforced multiple layer aluminized polyester construction.

Diameter Range:
All standard diameters ranging from 102mm to 457mm.

Chemical Resistance:
- Good resistance to many solvents
- Moderate resistance to acid and base

Applications:
ISO-A are appropriate for applications of general air supply and airconditioning systems.

Mechanical and Technical Data

Minimum Bending Radius:
0.54 x Ø

Thermal Conductivity
0.04 W/mK

Temperature Range:
-20 °C to + 120 °C

Air Velocity:
Max. 25 m/s (4900 ft/min)

Working Pressure:
Max. 250mm WG (2500 Pa. or 10 inch WG)

Standard Color:
Aluminum

Fire Class:
Please see schedule on page 274.

Packing

Dia. Range		Std. Length	Carton Size
(mm)	(inches)	(meters)	(mm)
102 - 305	(4”- 12”)	10 meters	350 x 350 x 600
355	(14”)	10 meters	350 x 350 x 750
405	(16”)	10 meters	500 x 500 x 750
457	(18”)	10 meters	500 x 500 x 750

Standard Length:
10 meters for all sizes (except 18” dia. L = 5M)

ACOUSTICALLY INSULATED FLEXIBLE DUCT I SONODEC

SONODEC - 25

Description

SONODEC ducts are fully flexible high quality thermally and acoustically insulated ducts for various purposes. The ducts consist of perforated type ALUDEC standard inner core shielding the fiberglass insulation from the airstream with a tough outerjacket/vapour barrier constructed of multiple layer of aluminum laminated construction and reinforced with fiberglass. The ducts are easily installed over either round or oval connection.

Ordering

Product Code: SONODEC-25 - aaa

Type

diameter

Construction and Dimensions

Inner Core:
Perforated ALUDEC standard

Insulation:
25mm thick highly efficient fiberglass with a density of 16kg/m³.

50mm thick insulation also available upon request.

Vapour Barrier:
A durable, scuff resistant outerjacket made of strong very tough spirally reinforced multiple layer aluminum laminated construction.

Diameter Range:
All standard diameters ranging from 102mm to 457mm.

Chemical Resistance:
- Good resistance to many solvents
- Moderate resistance to acid and base

Applications:
SONODEC are appropriate for applications of general air supply and airconditioning systems.

Mechanical and Technical Data

Minimum Bending Radius:
0.54 x Ø

Thermal Conductivity:
0.04 W/mK

Temperature Range:
-30 °C to + 140 °C

Air Velocity:
Max. 30 m/s (5900 ft/min)

Working Pressure:
Max. 250mm WG (2500 Pa. or 10 inch WG)

Standard Color:
Aluminum

Acoustical Data:
For insertion loss data, please see page 272.

Fire Class:
Please see schedule on page 274.

Packing

Dia. Range		Std. Length	Carton Size
(mm)	(inches)	(meters)	(mm)
102 - 305	(4”- 12”)	10 meters	350 x 350 x 600
355	(14”)	10 meters	350 x 350 x 750
405	(16”)	10 meters	500 x 500 x 750
457	(18”)	10 meters	500 x 500 x 750

Standard Length:
10 meters for all sizes (except 18” dia. L = 5M)

SEMI RIGID ALUMINUM FLEXIBLE DUCT I SEMIDEC TK - A

TK - A

Description

SEMIDEC TK - A - a bendable, flexible corrugated aluminum duct suitable for low, medium & high pressure H.V.A.C. and Exhaust systems.

SEMIDEC TK - A, is supplied as standard in 3 meters long, compressed to 800mm for ease of transport and storage.

SEMIDEC TK - A can be easily extended, compressed, wound and bend to suit your requirements.

Ordering

Product Code: TKA - aaa

Type

diameter

Construction and Dimensions

Construction:
Pure Aluminum - 100 microns

Diameter Range:
All standard diameters ranging from 76mm to 610mm.

Chemical Resistance:
- Good resistance to many solvents
- Moderate resistance to acid and base

Applications
SEMIDEC-TKA are appropriate for applications of general air supply, exhaust and return airconditioning and ventilation systems.

Mechanical and Technical Data

Minimum Bending Radius:
0.76 x Ø

Temperature Range:
-30 °C to + 250 °C

Air Velocity:
Max. 30 m/s (5900 ft/min)

Working Pressure
Max. 300mm WG (3000 Pa. or 12” WG)

Standard Color:
Aluminum

Fire Class:
Please see schedule on page 274.

Packing

Dia. Range		Std. Length	Carton Size
(mm)	(inches)	(meters)	(mm)
102 - 178	(4” - 7”)	3 meters	250 x 250 x 1200
200 - 305	(8” - 12”)	3 meters	350 x 350 x1 200
355	(14”)	3 meters	500 x 500 x 1200
405 - 508	(16”- 20”)	3 meters	Loose
558 - 610	(22” - 24”)	3 meters	Loose

Standard Length:
3 meters for all sizes compressed to 800mm for easy transport and storage.

THERMALLY INSULATED FLEXIBLE DUCT I ISO SEMIDEC TK - A - M

TK - A - M

Description

ISO SEMIDEC (TK - A - M) - are thermally insulated ducts for various purposes. The inner core made of corrugated pure aluminum and outer jacket/vapour barrier constructed of multiple layer of aluminized polyester construction.

ISO SEMIDEC (TK - A - M) is suitable for low, medium, high pressure HVAC and exhaust systems. Standard ISO SEMIDEC is supplied in 3 meters lengths.

Ordering

Product Code: TKA-M-25 - aaa

Type
diameter

Construction and Dimensions

Construction:
Inner Duct: Corrugated Aluminum (TK - A)

Insulation:
25mm thick highly efficient fiberglass with a density of 16kg/m³.

50mm thick insulation also available upon request.

Vapour Barrier:
A durable, scuff resistant outerjacket made of strong very tough spirally reinforced multiple layer aluminized polyester construction.

Diameter Range:
All standard diameters ranging from 76mm to 457mm.

Chemical Resistance:
- Good resistance to many solvents
- Moderate resistance to acid and base

Applications:
ISO SEMIDEC TK - A - M are appropriate for applications of general air supply and airconditioning systems.

Mechanical and Technical Data

Minimum Bending Radius:
0.76 x Ø

Thermal Conductivity:
0.04 W/mK

Temperature Range:
Inner duct: -30 °C to + 250 °C.
Outer duct: -30 °C to + 140 °C.

Air Velocity:
Max. 30 m/s (5900 ft/min)

Working Pressure:
Max. 300mm WG (3000 Pa. or 12 inch WG)

Standard Color:
Aluminum

Fire Class:
Please see schedule on page 274.

Packing

Dia. Range		Std. Length
(mm)	(inches)	(meters)
102 - 178	(4" - 7")	3 meters
200 - 305	(8" - 12")	3 meters
355	(14")	3 meters
405	(16")	3 meters
457	(18")	3 meters

Standard Length:
3 meters for all sizes

ACOUSTICALLY INSULATED FLEXIBLE DUCT I SOUND ATTENUATORS

Description

GLX - new generation of fully flexible easy to install silencers, for all low/medium/high pressure airconditioning and ventilation systems.
Easy to install either Oval or Round connections.
Standard micro-perforated ALUDEC innercore, separating the fiberglass insulation from the air stream, covered with a tough ALUDEC outer/jacket vapour barrier with a unique airtight sealing construction features.

GLX - 25

Ordering

Product Code: GLX -25 - aaa

Type
diameter

Construction and Dimensions

Inner Core:
Perforated type ALUDEC Standard

Insulation:
25mm thick highly efficient fiberglass with a density of 16kg/m³.

Vapour Barrier:
ALUDEC Standard

Diameter Range:
All standard diameters ranging from 102mm to 457mm.

Diameter Range:
Inner duct - 18mm
Outer duct - 36mm

Chemical Resistance:
- Good resistance to many solvents
- Moderate resistance to acid and base

Applications:
GLX are appropriate for applications of general air supply and airconditioning systems.

Mechanical and Technical Data

Minimum Bending Radius:
0.58 x Ø

Thermal Conductivity:
0.04 W/mK

Temperature Range:
-30 °C to + 140 °C

Air Velocity:
Max. 30 m/s (5900 ft/min)

Working Pressure:
Max. 300mm WG (3000 Pa. or 12 inch WG)

Standard Color
Aluminum

Acoustical Data:
For insertion loss data, please see page 273.

Fire Class:
Please see schedule on page 274.

Packing

Standard Length:
500mm - Packed into an individual carton
1000mm - Packed into an individual carton
1500mm - Packed into an individual carton
2000mm - Packed into an individual carton

Application Recommendations for Flexible Ducts

Recently the application of flexible ducting in air distribution systems has increased considerably. Knowledgeable application and skillful installation of the various types of flexible duct is therefore essential. Badly installed flexible ducts do have detrimental influences upon pressure losses in the air system. High, non-recoverable remedial costs are the inevitable penalties of attempting to enhance or replace a flexible duct system that was originally poorly installed.

Mounting Instructions

A-Support Hangers

Wherever possible flexible ducts should be installed in accordance with the manufacturers instructions. Should these be un-available, the following recommendations will generally result in a good installation.

• The flexible duct must be installed fully extended to produce optimum results, and accordingly this is the basis of all available pressure loss information in flexible ductwork products.

• The maximum allowable sag, between any two adjacent suspension points, should not exceed 50mm per metre. (Figure 1)

• The distance between any two adjacent suspension points may vary from 1.50 to 3.00 metres, dependent upon the type of flexible duct in use.

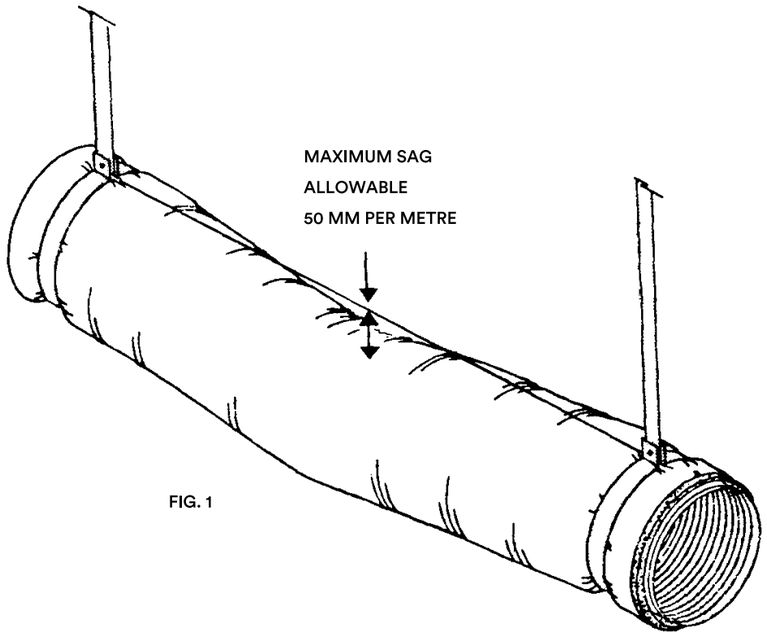


FIG. 1

Flexible ducts mounted above suspended ceilings should always be independently supported. Ducts mounted in these locations are susceptible to damaging whenever ceilings panels need to be periodically interchanged, unless they are separately supported.

B- Bending Radius

Minimum permissible radii are generally recommended by the manufacturer. (See Figure 2)

The following comparative dimensions can be recommended:
R = D for metal based products.
R = 0.8 x D for aluminium and plastic based products.

It is always advisable to make any bend radius as large as possible. This will reduce un-favourable pressure losses and is particularly important for metal based products which are more susceptible to stress rupturing. Double bends should be avoided, however if un-avoidable, ensure that each radius is not less than R=2 x D (See Figure 3).

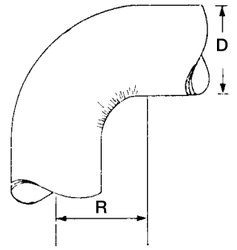


FIG. 2

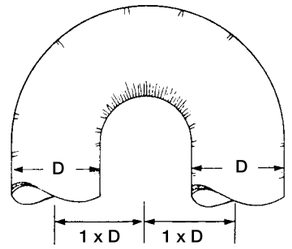


FIG. 3

C- Straps

Ideally the hanging straps should support the flexible duct with a minimum of half the circumference surface in contact, and without reducing the effective inside diameter of the duct. (See Figure 4 & 5). It is also recommended that the minimum width of material to be used for the hanging straps should be at least 25 mm.

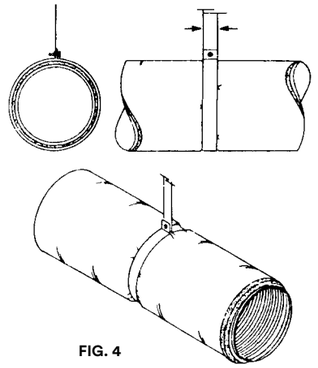


FIG. 4

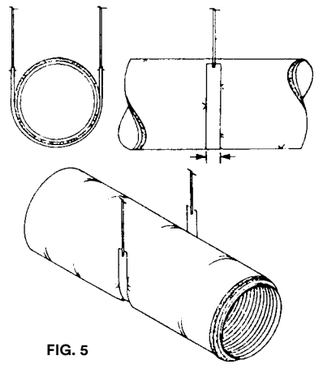


FIG. 5

D - Duct and Troffer Box Connections

Extra care should be taken when making flexible connections to fixedconventional ducts, etc. and ensure that they do not become too stressed. An additional support is recommended to obviate this problem. (See Figure 6)

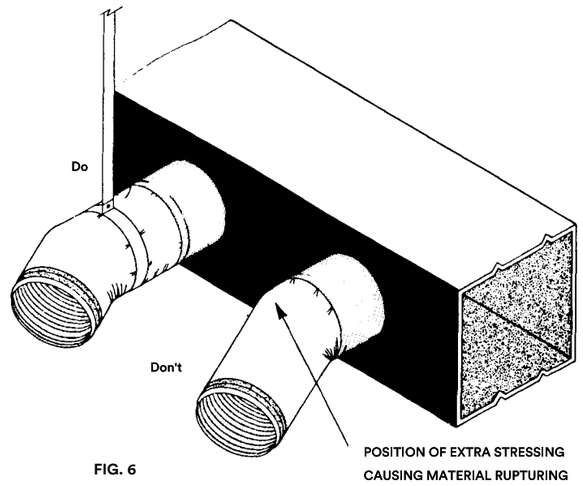


FIG. 6

Metal based flexible duct products are particularly prone to fracturing due to stress caused as a result of sharp connections. (figure 6) Connections to ceiling illumination “troffer boxes” should be served in the most direct manner similar to that described for conventional ducts. Too many bends, when connecting to “troffer boxes” and/or any other type of air supplying component, may result in excessive pressure loss and the generation of noise. Figure 7 illustrates a poor connection arrangement, and figure 8 shows the correct manner.

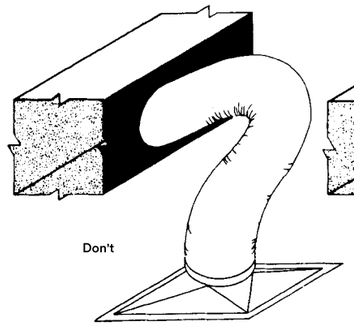


FIG. 7

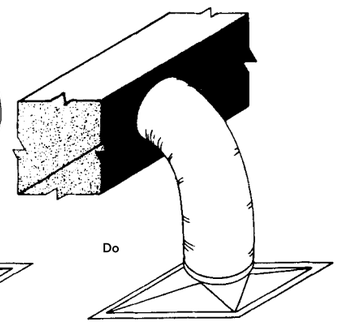


FIG. 8

E- Practical Situations

During installation, many circumstances present themselves justifying the use of longer flexible duct sections.
A typical example could be to “bridge-over” from one level to another, however certain limitations preclude the use of purpose prepared transformation sections. (Figure 9)

Or where space limitations are excessively restrictive, e.g. in a pipe or cable channel. Such cases are ideally solved by the skillful application of flexible duct. In the situation illustrated in figure 10, it should be emphasised that the flexible duct must not be in direct physical contact with un-insulated heating or hot process pipes.

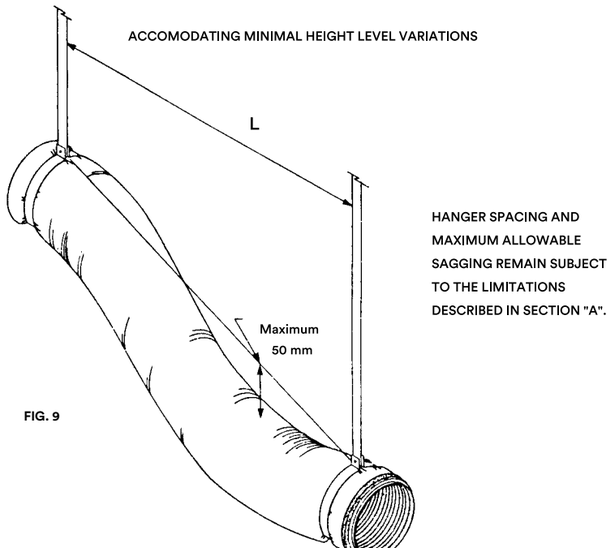


FIG. 9

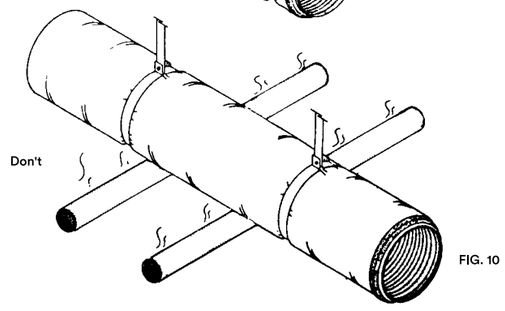
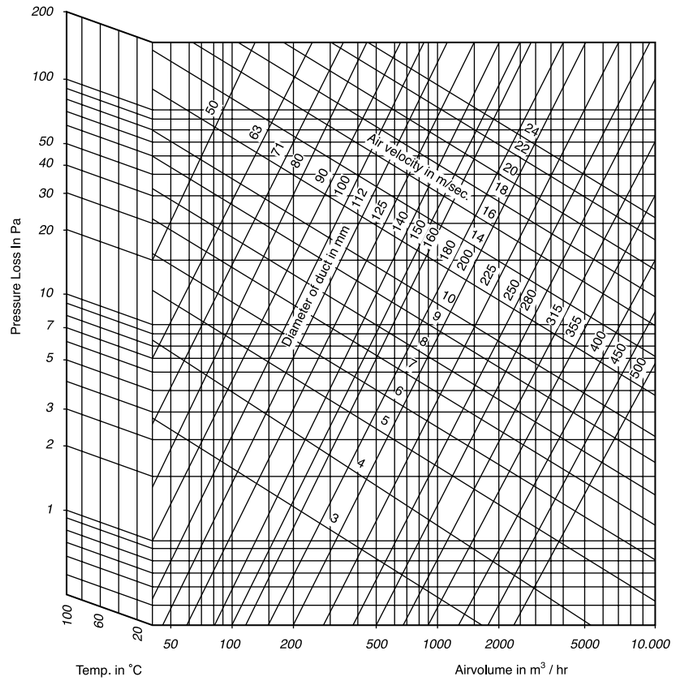
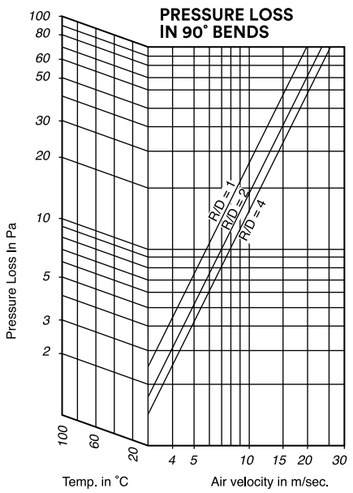


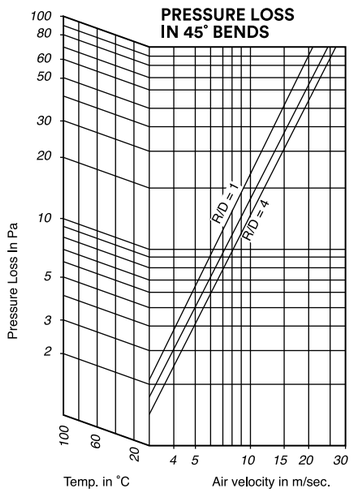
FIG. 10

These recommendations provide general procedures to most effectively satisfy many air distribution installations.
Special or unconventional applications of flexible ducting should always be referred to the manufacturers representative or authorised dealer.

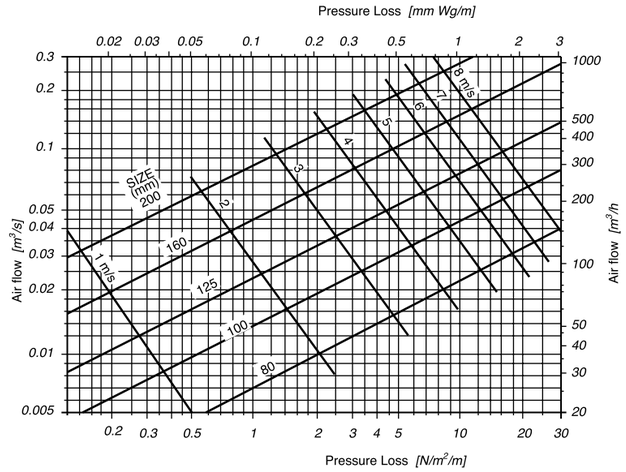
Pressure Loss Diagram

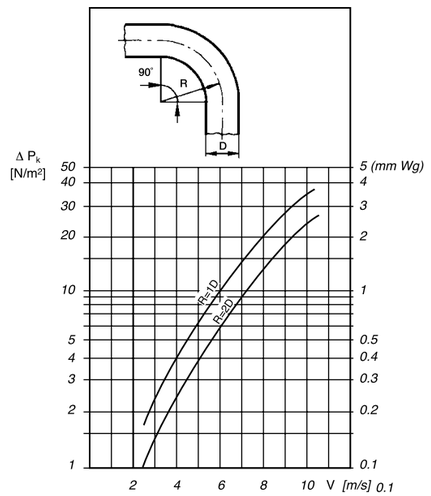


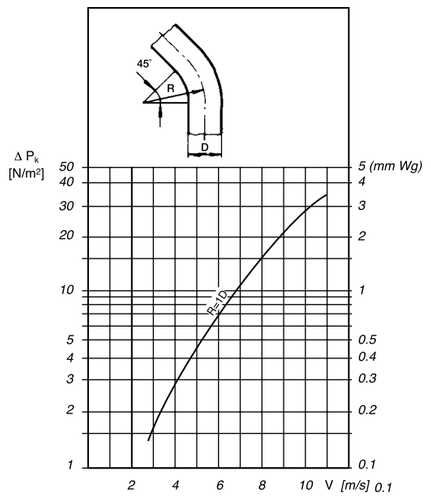




TK - A (SEMIDEC)







SONODEC - 25 Flexible Acoustic Ducting

INSERTION LOSS (in dB), calculated per 1 metre length of Acoustic Duct, through the Octave Band Frequencies 63 to 4000 Hz.

Freq. in Hz.	63*	125	250	500	1000	2000	4000
ø 100 mm	6	10	22	28	30	24	40
ø 125 mm	8	16	22	28	31	26	19
ø 160 mm	8	7	18	25	25	25	17
ø 250 mm	12	13	22	17	20	20	14

* Sound Testing Tolerance ± 2 dB.

INSERTION LOSS (in dB), calculated per 3 metre length of Acoustic Duct, through the Octave Band Frequencies 63 to 4000 Hz.

Freq. in Hz.	63*	125	250	500	1000	2000	4000
ø 100 mm	9	18	26	30	31	26	22
ø 125 mm	13	19	28	32	33	28	25
ø 160 mm	7	13	30	36	34	30	29
ø 250 mm	11	23	30	30	28	30	26

* Sound Testing Tolerance ± 2 dB.

General

The application of Acoustic Flexible Ducting and associated “break-out” noise needs to be considered at the H. V. A. C. design stage, as the Absorption Coefficient of the Insulation/Outer Jacket may allow a certain amount of noise emission into the surrounding air space. Therefore, Acoustic Flexible Ducting should be installed wherever possible over a SoundAbsorbing Ceiling (Acousting Ceiling) or in an area of the building which will not be sensitive to “break-out” noise.

Test Results of “BREAK-OUT” NOISE (in dB), calculated per Metre length of Sonodec-25 Acoustic Duct, throught the Octave Band Frequencies 63 to 4000 Hz.

INSERTION LOSS (in dB), calculated per 3 metre length of Acoustic Duct, through the Octave Band Frequencies 63 to 4000 Hz.

Freq. in Hz.	63*	125	250	500	1000	2000	4000
ø 100 mm	4	3	5	6	9	10	11
ø 125 mm	5	5	5	7	9	11	13
ø 160 mm	8	8	8	9	9	10	14
ø 250 mm	5	5	6	7	8	9	14

* Sound Testing Tolerance ± 2 dB.

GLX - 25 Sound Attenuators

INSERTION LOSS (in dB), calculated per 500 mm length of GLX 25 Sound Attenuators, through theOctave Band Frequencies 63 to 4000 Hz.

Freq. in Hz.	125	250	500	1000	2000	4000
ø 100 mm	0	5	10	20	18	10
ø 125 mm	0	5	10	21	24	14
ø 160 mm	2	3	8	16	25	14
ø 200 mm	2	3	8	13	9	8
ø 250 mm	1	3	7	13	10	7

INSERTION LOSS (in dB), calculated per 1000 mm length of GLX 25 Sound Attenuators, through the Octave Band Frequencies 63 to 4000 Hz.

Freq. in Hz.	125	250	500	1000	2000	4000
ø 100 mm	5	11	18	28	25	17
ø 125 mm	3	6	18	30	26	19
ø 160 mm	4	6	13	25	29	20
ø 200 mm	4	6	14	25	17	14
ø 250 mm	2	5	11	23	18	13

FIRE CLASS SCHEDULE

Fire Class	ALUDEC - 45	ALUDEC - 70	ISODEC - 25	ISODEC - 50	ISO SEMIDIC - 25
The Netherlands (NEN6065/6066)	1	1	1	1	1
Germany (DIN 4102)	B2	B2	B2	A2/B2	A1/B2
France (CSTB)	M1	x	M1	M0/M1	M0/M1
Switzerland (BKZ)	x	x	x	x	x
United Kingdom (BS 476)	7 & 20	7 & 20	6, 7 & 20	6, 7 & 20	6, 7 & 20
Austria (B 3800)	B1	B1	B1	B1	B1
Sweden (SP Fire 106)	x	x	x	x	x
Italy (CSI)	x	x	1-0	1-0	1-0
USA (UL 181)	x	x	UL 181, class 1	x	x

Fire Class	ISO - A - 25	SONODEC - 25	SONODEC - 50	SEMIDEC	GLX - 25
The Netherlands (NEN6065/6066)	x	1	1	1	1
Germany (DIN 4102)	x	B2	B2	A1	A2/B2
France (CSTB)	x	M1	M1	M0	M0/M1
Switzerland (BKZ)	x	x	x	6Q3	x
United Kingdom (BS 476)	x	6, 7 & 20	6, 7 & 20	4, 6 & 7	6, 7 & 20
Austria (B 3800)	x	B1	B1	A1	B1
Sweden (SP Fire 106)	x	x	x	A15[2)]	x
Italy (CSI)	x	1-0	1-0	0	0-0
USA (UL 181)	UL 181, class 1	x	x	x	x

x: not yet tested.

NOTES & STANDARDS

Introduction

The selection of spiral tube round ductwork systems, since their inception in the sixties, has enjoyed steady growth in ventilation and air conditioning applications.

This growing use of round over rectangular ductwork is the result of superior performance and economic advantages inherent in the round ductwork.
In summary here are its major features:

1. The trend in ductwork specification is toward round.

2. The air-tightness meets the highest classification (Eurovent/CEN CLASS 'C'), or class 3 leakage as per SMACNA.

3. Installation costs are significantly lower.

4. All products are standardized.

5. Requires often less space.

6. Airflow measurements are easier to make.

7. Superior strength allows for savings on metal.

8. Pressure drop is lower.

9. Inside cleaning of ducts is more effective.

10. Rubber gaskets make a leakproof system.

11. Naturally the strongest duct system.

12. A more beautiful solution.

Trend

The benefits of round ductwork are many and influential resulting many changes to traditional work patterns throughout Europe and Japan.
This can be illustrated by a study of the Scandinavian countries where the following development has taken place:

1960 and Before
Ductwork contractors manufactured and installed all system in rectangular form.

1961 - 1970
Some specialist companies started batch production of round ducts and fittings. The ductwork contractors started buying round which they installed alongside the rectangular made in their own work shops.

1971 - Onwards
A total change of behavior has taken place during which specialist manufacturer's raised their level of automation and intensified research and development.

During this period the ductwork contractors started sourcing more materials from specialist suppliers at lower cost than by producing in-house. The contractors gradually concentrated their resources on installing standardised prefabricated items which were readily available at short notice.

These changes were made possible through the contractors' ability to adapt their work patterns around the system that provides the greatest competitive edge. Consulting Engineers changed their designs and specifications from tailor made designs of specially constructed ductwork for every building, to designs built around a standardized product.

An International comparison gives the following picture of the market share of round ductwork and the way this has develop:

Fig. 1% of round in the total ductwork market

	1960	1965	1970	1975	1980	1985	1990	1992
Scandinavia	5	15	40	60	70	80	85	95
France	5	10	20	30	40	50	60	65
Great Britain	0	5	10	15	20	30	35	40
Germany	5	5	10	15	20	25	30	40
Japan	0	5	5	10	15	20	25	35

* US figures are not available, but it obvious that during the nineties (90's) the share of round duct has increased dramatically as so many manufacturer and contractor are finding round duct better product in overall comparison.

THE SELECTION OF THE DUCT SYSTEMS

Ducts with a high degree of air-tightness are increasingly in demand for many reasons:

• The need to have efficient installations; the cost for filtering, heating, cooling and distributing air is rising rapidly.

• Good indoor air quality (IAQ) has to be guaranteed today. An increasing number of existing buildings are being classified as "Sick Buildings". One of the remedies to this is to increase the amount of fresh air intake. With round "air-tight" ducts it is often easier and more economical to fulfill these increasingly stricter demands.

• In many countries air-tight specifications have been established. The present Eurovent and the future CEN standards define three leakage classes:

A: The Lowest Class
Leakage factor:1.320 litres/(s,m2) at 400 Pa
(=0.260 cfm/sqft at 8.4 lb/sqft)

B: The Medium Class
Leakage factor: 0.440 litres/(s,m2) at 400 Pa
(=0.087 cfm/sqft at 8.4 lb/sqft)

C: The Highest Class
Leakage factor: 0.15 litres/(s,m2) at 400 Pa
(=0.029 cfm/sqft at 8.4 lb/sqft)

Leakage Factor (l/s)m²

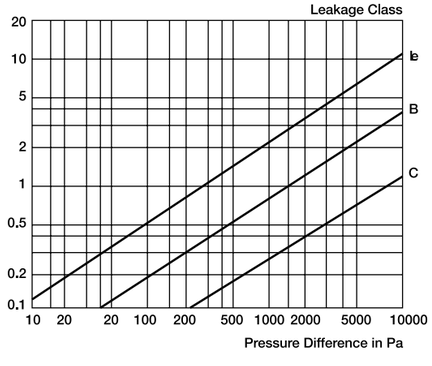


Fig. 2
Class C is thus three times tighter than Class B and nine times tighter than Class A.

Round Duct: More Air Tight than Rectangular

It is of utmost importance that the air within a ventilation system is delivered to the designed outlet points and that leakage through the duct system is minimized.

Leakage is largely a function of the number of connections and the ability to seal these connections:the way this has develop:

• Each length of straight tube is one piece of metal and thus meets the highest standards of airtightness.

• Round tube installation have significantly fewer duct-to-duct connections to leak. The typical length of a round tube is 3 to 6 m whereas a typical rectangular straight section is 1 to 1.5 m.

• Round fittings and system components can be supplied with a factory fit rubber seal. This seal provides an air-tight joint.

This feature is described in more detail on page 287. Whereas there is rubber gasketing on rectangular ductwork connections, it is a messy manual application; not a factory fit seal as provided with round ducts and fittings.

• Connecting two round ducts only requires one joint connection, whereas rectangular ducts are frequently connected by use of a completely separate double flanging system.

• The perimeter, that thas to be sealed is shorter on a round duct. For the same free cross sectional area, a square duct has 13% longer perimeter than the circular one, for a rectangular duct with side ratio 1:2, the perimeter is 20% longer, 1:3, 30%, 1:4, 41 % and 1:5, 51% longer.

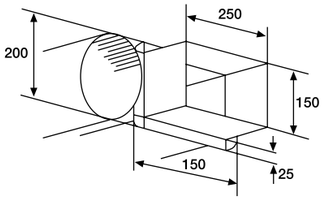


Fig. 3
A rectangular duct, 250 × 150 mm can, without any increase in pressure drop, be replaced by a duct of 200 mm diameter within the same space. The cost of circular ducts, is in most cases, less than 50% of the cost for the rectangular duct.

NOTES & STANDARDS

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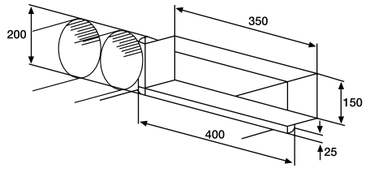


Fig. 4
Flat rectangular ducts can often be replaced by several circular ducts without any need for extra space.

The installed cost is lower as shown in Fig. 4. The use of two or more ducts instead of one rectangular gives the advantages of better airflow control, simplied air balancing and more flexible fire zone sectioning.

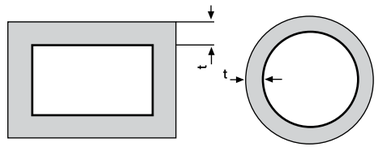


Fig. 5
Round ducts are approved with thinner layers of outside fire insulation material than the equivalent rectangular ducts.

The outer temperature must not exceed 140°C during the time (15,30 or 60 minutes) the fire is ongoing inside the duct with a fire curve as defined by ISO 834.

Insulation Type	Insulation Type	
	●	■
Net Meeting	30	40
A15: sheet	30	40
Net Meeting	50	70
A15: sheet	50	60
Net Meeting	100	140
A15: sheet	100	120

Lower Installation Cost

Installation costs are significantly lower. One man can install a round ductwork system where at least 2 are required with rectangular. Insulation standards for round ductwork call for less material.

One round duct is always installed at a lower overall cost than a rectangular of the same equivalent cross section (Fig. 3).

Using two round ducts instead of one rectangular also results in a lower overall cost (Fig. 4).

In some cases even several round ducts can results in a lower cost when replacing one rectangular duct.

There are several reasons for the lower cost of the round duct system:

- It consists of a limited number of standardised components and sizes.

- Manufacturing of the ducts and fittings is highly automated and subject to systematic, industrial quality control.

- The installation time for a round duct system can be as low as a third of that for a similar rectangular system.

- The cost for insulating material reduced due to several reason such as:

It is more accessible and therefore easier to lag.

The amount of insulating material is reduced due to the shorter perimeter of the round duct compared with the rectangular one. An example shows that a round duct, Dia. 500 mm, requires approximately 13% less insulation material than the equivalent rectangular duct, 500 × 400mm.

Round duct are in some markets approved with thinner layers of outside fire insulation than the equivalent rectangular ducts, Fig. 5. The same heat retention is achieved by using a thinner layer of insulation for round ducts than for rectangular.

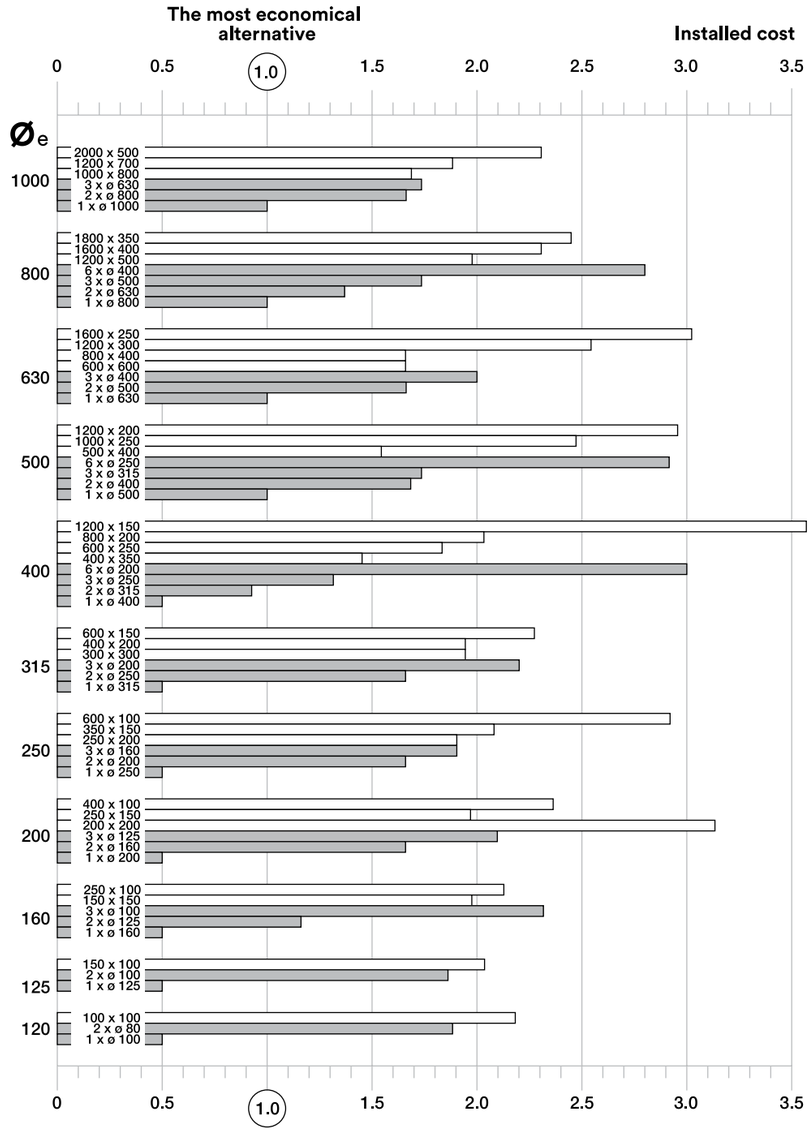
- The number and dimension of duct hangers is reduced. The space between two hangers is 2.5 m for a rectangular duct but 3.0 m for a round one, thus reducing the required number of hangers and the cost and installation time needed by some 20%.

- Round tubeformers can be taken to the jobsite. Automated rectangular duct system are large and permanently installed at the factory. This increases the transport cost and chance of damage during transit.

- The installed cost (inclusive of transportation, packaging, waste, etc.) is considerably lower for round ducts than for rectangular with the same equivalent cross section. As shown in Fig. 6 - 11.

THE SELECTION OF THE DUCT SYSTEMS

Fig. 6



The installed cost (inclusive of transportation, packaging and waste), for ducts with the equivalent diameter (Øe). In the bar chart the cost of, e.g. 2 ducts of 200 mm diameter (arranged as shown in Fig. 4), is compared to that of a rectangular duct 350 × 150 mm dimension. One round tube duct with the same equivalent cross section as the rectangular duct has been used as a base. This is always the most economical alternative.

NOTES & STANDARDS

The drawings below, Fig. 8-11, give round alternatives to the rectangular system shown in Fig. 7 at the top. All systems are calculated for the flow of 0.5 m3/s (q). The highest and lowest pressure drop (Pa) is shown for all systems as is the maximum velocity. To the right of each drawing the installed costs for the systems are shown in relation to that of the rectangular system.

Fig.7
System A
Rectangular

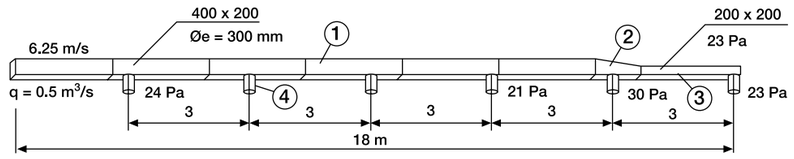


Fig. 8
System B
RoundCost for
B = 0.24 A

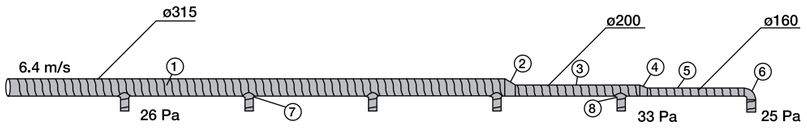


Fig. 9
System C
Round Cost for
C = 0.27 A

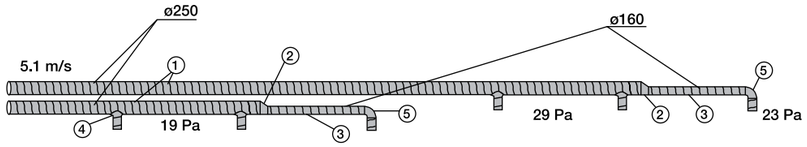


Fig. 10
System D
Round Cost for
D = 0.31 A

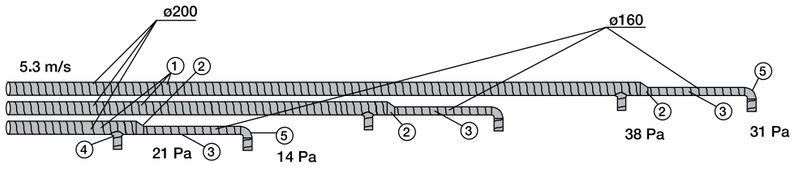
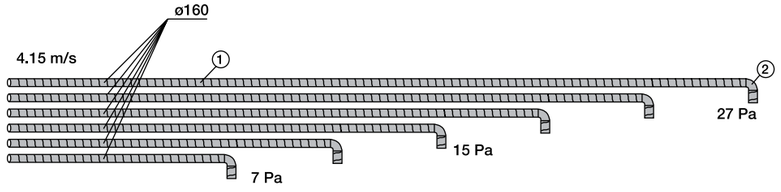


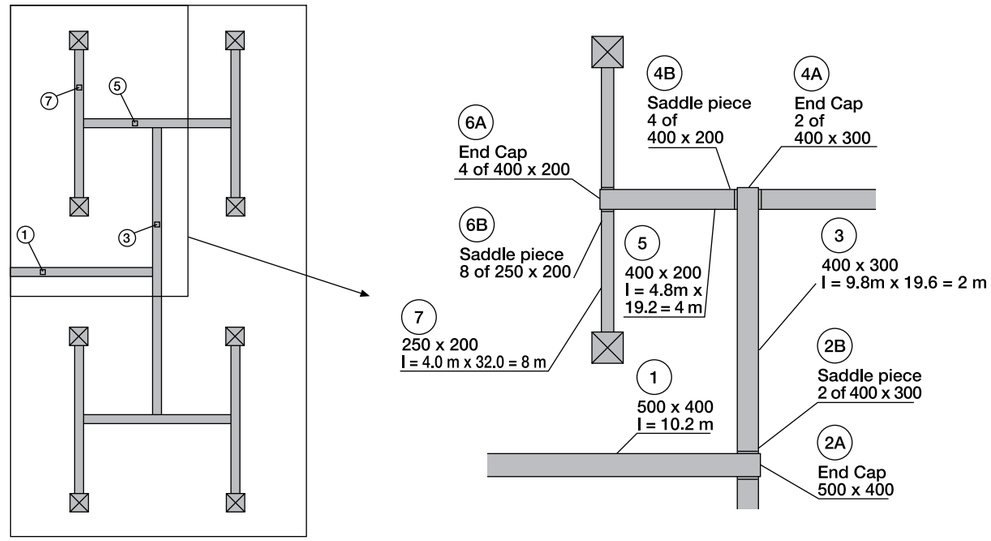
Fig. 11
System E
Round Cost for
E = 0.50 A



NOTES & STANDARDS

When the total air flow into a large room is to be supplied equally through a number of supply air registers, the design shown in the two examples below results in the same duct pressure drop through all the registers; the air passes through the same duct length and through the same number of bends on its way to each register. Also here, the cost is considerably lower and approximately halved when using round tubes.

Fig. 12
Installation with Rectangular Ducts.

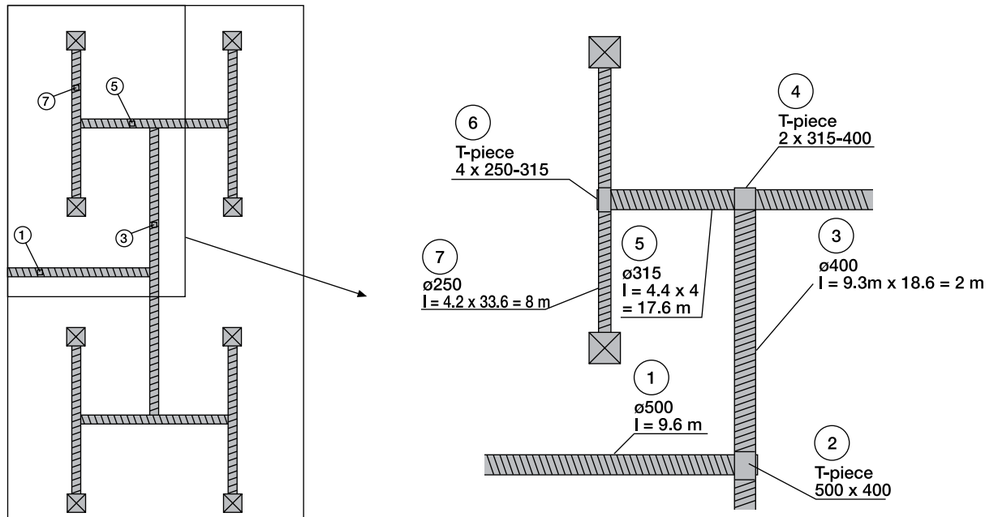


No.	Air Flow (l/s)	Duct Dim. (m/s)	Air Veloc. (m)	Duct Lgth. (m)	Nos. Off	Pressure	
						Drop Ea.	Tot. (Pa)
1	2,400	500 x 400	12.0	10.2	1	2.8	28.0
2A	-	500 x 400	-	-	1	-	-
2B	2,400/1,200	500 x 400 / 400 x 300	12.0 / 10.0	-	2	-	45.0
3	1,200	400 x 300	10.0	9.8 x 2 = 19.6	2	2.8	27.4
4A	-	400 x 300	-	-	2	-	-
4B	1,200/600	400 x 300 / 400 x 200	10.0 / 7.5	-	4	-	36.0
5	600	400 x 200	7.5	4.8 x 4 = 19.2	4	2.5	12.0
6A	-	400 x 200	-	-	4	-	-
6B	600/300	400 x 200 / 250 x 200	7.5 / 6.0	-	8	-	9.0
7	300	250 x 200	6.0	4.8 x 8 = 32.0	8	2.0	8.0

Total Pressure Drop (Pa) 165.4
Total Installation Cost: R

NOTES & STANDARDS

Fig. 13
Installation with round tubes and fittings.



No.	Air Flow (l/s)	Duct Dim. (m/s)	Air Veloc. (m)	Duct Lgth. (m)	Nos. Off	Pressure	
						Drop Ea.	Tot. (Pa)
1	2,400	ø 500	12.2	9.6	1	2.2	21.1
2	2,400 / 1,200	ø 500 / ø 400	12.2 / 9.5	-	1	-	44.0
3	1,200	ø 400	9.5	9.3 x 2 = 18.6	2	1.9	45.0
4	1,200 / 600	ø 400 / ø 315	9.5 / 7.7	-	2	-	27.4
5	600	ø 315	7.7	4.4 x 4 = 17.6	4	1.9	8.4
6	600/300	ø 315 / ø 250	7.7 / 6.1	-	4	-	21.0
7	300	ø 250	6.1	4.2 x 8 = 33.6	8	1.6	6.7

Total Pressure Drop (Pa) 165.4
Total Installation Cost: R

Fig. 14
Ducts with external fire insulation - comparisons between rectangular duct and round tube (Mineralwool covered with Aluminum foil)

Duct	Perimeter	Thickness (mm)			Insulation Material Volume (l/m duct)			Relative Installation Costs (cost/meter duct)		
		Fire Class			Fire Class			Fire Class		
		A15	A30	A60	A15	A30	A60	A15	A30	A60
Circular Duct ø 250	.785	30	50	100	24	39	78			
Relation Circular / Rectangular	.87	.75	.71	.71	.67	.62	.62	**.92**	**.85**	**.60**
Rectangular Duct 250 x 200	.900	40	70	140	36	63	126			

Standardized Ducts and Components

The components of a round ductwork system are generally standardized allowing for ease of stock keeping and shorter delivery times. Rectangular duct and fittings are generally custom made.

Due to standardization of sizes, a comprehensive range of fittings and ducts can be kept in stock. The duct diameters for the standard sizes follow a geometrical progression of cross sectional area with an approximate increase of the diameter of 25% over each step. The metric dimensions which are included in the coming CEN standard are shown in th table below.

Nominal Internal Diameter (mm)	Perimeter Area per meter length in m²	Nominal Internal Diameter (mm)	Perimeter Area per meter length in m²
63	0.198	500	1.571
80	0.251	560	1.760
100	0.314	630	1.979
125	0.393	710	2.229
160	0.502	800	2.512
200	0.628	900	2.826
250	0.785	1000	3.142
315	0.990	1120	3.517
355	1.115	1250	3.927
400	1.257	1400	4.400
450	1.413	1600	5.030

Rectangular and flat oval ducts are nearly always manufactured tailor made for every individual insulation, the variations are practically infinite as both widths and heights vary, eg. a bend can either turn around the cheek or the wrapper.

The round tubes can easily be cut to exact length on site and are thus much more amenable to alterations. The rectangular ducts have to be made exactly to measure, any site alteration and adjustment is more difficult.

The Space “Myth”

In most instances when all factors are considered, round ductwork takes up no more space than rectangular.

The space required to install tubes is often equal or even less than that of a rectangular with similar pressure characteristics. Many rectangular system rely on 4-bolt connector system which can add from 40 to 80mm in all dimensions.

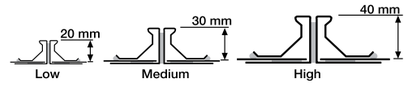
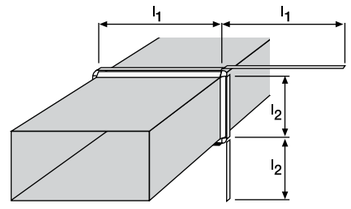
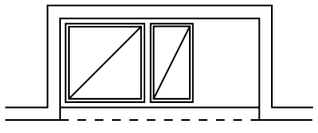


Fig. 15



As these slip joints cover the duct width, they require an available space of the same order on either side of the duct. Often, when space is restricted, e.g. when ducts are installed above the false ceiling in an office corridor or in a duct shaft and the ducts are only accessible from one side/end, severe problems arise duct to the inwards facing joint sections.

Fig. 16



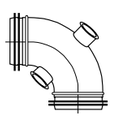
This will not only raise the costs of the installation and prolong the time needed for the job, but also reduce the air-tightness qualities of the ducts.

Air Flow Measurements Made Easy

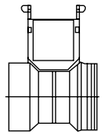
It is easier to measure the air flow passing through a round tube than a rectangular duct. There are many flowmeasurement units especially designed for round tubes available on the market below.

Fig. 17

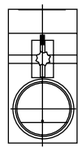
Measuring Bend MBU



Flow Measuring Unit FMU



Blastgate Damper SKMU

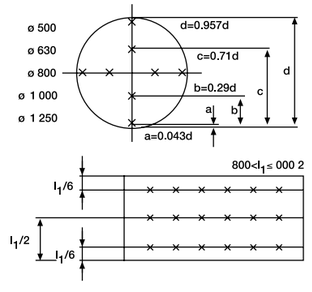


With these accurate but inexpensive devices the ventilation systems can be equipped with fixed measuring units a low cost method which enables regular check-ups or continuous monitoring.

A decreasing air flow has often been found to be the reason for a sound building turning “sick”. A fact that has been stressed on many air quality conferences during the last few years.Also when making site measurements for control purposes, the round ducts are easier to work with.

When using the classic Prandtl-method the round duct, regardless of size, has to be measured through two holes at right angles. The rectangular duct will have to be measured through several test holes, the larger duct, the higher the number of holes for collecting the data needed to get the same measuring accuracy as for the round duct.

Fig. 18



Round Duct: The Weight Saver

Superior structural integrity allows for thinner sheet metal to be used in equal situations. The weight and bulk of a round duct system is less than that of a rectangular, this influences the cost level and makes it easier to install.

One individual is able to install round tube systems up to 200mm diameter single handed, whilst two people are always needed to install rectangular of any size. For the same free cross sectional area the round tube is lessmaterial consuming. It has a shorter perimeter and uses simpler connections. The more rigid construction of a spiral wound round tube allows reduced steel gauge for the smaller and most frequently used duct dimensions due to the more rigid construction of a spiral wound round tube.

This is shown in the following Swedish standard specification for spiral wound ducts BFS 1988:18, chapter 4:13 for new buildings:

	Diameter mm				
	0-80	(80) - 160	(160) - 135	(315)-800	(800) - 1250
Thickness (mm)	0.4	0.5	0.6	0.8	0.9

However the English HVAC DW/142 specification for sheet metal ductwork specifies the gauges for spirally wound tubes:

	Max. Diameter mm			
	205	762	1020	1525
Thickness (mm)	0.6	0.8	1.0	1.2

The complete weight for a typical system comprising a normal conbination of straight duct ducts, bends and diffusers, is between 30 and 40% higher for a rectangular system than for a round system.

Reduction in Pressure Drop

Pressure drop through a round system is significantly less than a volumetrically equal rectangular system. This is due to the inherently superior streamlining through round duct and fittings (especially pressed LindabSafe fittings) and, of course, the superior air-tight characteristic already discussed in Section 1.
This lower pressure drop characteristic translates into lower system operating cost allowing more efficient fan selection.

Cleaning Round Duct

Some investigations of ventilation systems in building that have been classified as “sick” have shown that dust, fungus, etc., collected in supply and return air ducts have added to the emission load and thus to the “sick building” problem. The need for clean supply air ducts has been stressed on several international Healthy Building Conferences. New building regulations in some countries, e.g. Sweden, also require regular inspection of the ductwork and internal cleaning when needed. The cleaning methods (dry or wet) and cleaning tools (rotating brushes connected to heavy duty vacuum cleaners) used for internal duct cleaning are easier and cheaper to apply to round than to rectangular ducts, dueto the standard diameter of the round ducts and superior geometry.

THE SELECTION OF THE DUCT SYSTEMS

LindabSafe: The Patented Leakproof Duct System

LindabSafe is an approved range of quick-fitting, spiral seam tubes and fittings with factory-fitted double sealing gasket of EPDM rubber. The double sealing gasket provides a tight and reliable joint and is not affected by temperature fluctuations.

LindabSafe is available as a complete range with dimensions from 63mm diameter up to and including 1250mm diameter. LindabSafe complies with tightness class B (and C).

The high, uniform quality and the effective factory fitted sealing system system means that installation is fast and easy. LindabSafe is leakproof when fitted and does not require any retrosealing.

Construction

The LindabSafe sealing gasket is designed in the form of a U-profile of homogenius rubber. The rubber gasket is located in a groove at the end of fitting and is securely attached by a steel band.

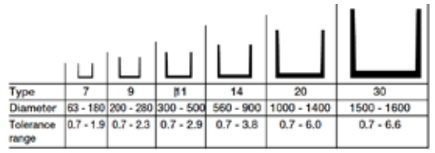
Fig. 19

When manufacture with a rolled over leading edge. LindaSafe meets leakage class C requirement for all sizes from 63mm to 1250mm diameter.

When the fitting is connected to the duct, the flange or the U-shaped seal will be compressed. The gasket withstands positive pressure with inherent elasticity; the gasket withstands negative pressure with inflation. The system withstands positive pressure up to 3000 Pa (300mm WG) and negative pressure downto 5000 Pa (500mm WG).

Under British and European standards, there is a greater tolerance range between duct and fitting as the diameters increase. In order to obtain the maximum seal for all dimensions, successively heavier rubber gasket are used for increasing ductdimensions in accordance with the group divisions in the table below.

Fig. 20

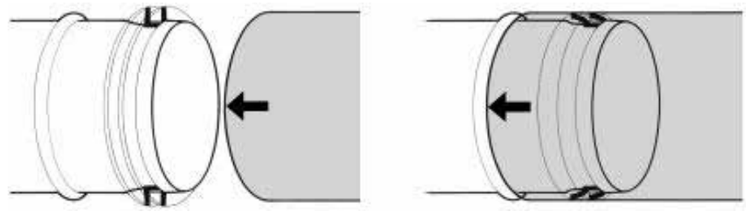


Type	7	9	11	14	20	30
Diameter	63 - 180	200 - 280	300 - 500	560 - 900	1000 - 1400	1500 - 1600
Tolerance range	0.7 - 1.9	0.7 - 2.3	0.7 - 2.9	0.7 - 3.8	0.7 - 6.0	0.7 - 6.6

LindabSafe: The Advantages

- Fast and easy installation.
- Factory-fitted gasket without any loose parts.
- Adjustable, twisting and fine adjustment involve no risk of leakage.
- Enviromentally friendly as it is fitted without putty which contains solvents.
- Can be fitted in all kinds of weather.
- Temperature resistant from -30 oC to +100 oC.
- Double sealing minimizes the risk of leakage in the event of damage.
- Withstands negative and positive pressure up to 3000 Pa (300mm WG).
- Internal and external production control.
- Aesthetic design; an advantage for visible installation.
- Tightness insured by the manufacturer.

Fig. 21



*Please refer to the separate Lindab Catalogue for the LindabSafe product range.

The LindabSafe Principle

The double sealing gasket fits tightly against the tube. The gasket is made in several dimensions to fit the diameter of the tubes.

NOTES & STANDARDS

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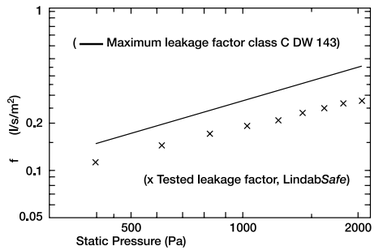
Leakage Classification Test

All ductwork and fittings fitted with the LindabSafe system, are included in the type approval certificates of leakage up to and including class C.

The leakage factor in (l/s)/m² gives the flow of air that leaks out of or into the system in l/s relative to the surface area of the ductwork in m².

Fig. 22



Total Pessure on Test Pa	Total System Leakage Flowrate l/s	Total System Leakage Recieved (l/s)/m2	Maximum Leackage Class C (l/s)/m2	Relation-ship Recieved againts Class C %
400	3.11	0.112	0.147	76.2
600	3.94	0.140	0.192	72.9
800	4.61	0.165	0.231	71.4
1000	5.16	0.184	0.267	68.9
1200	5.69	0.202	0.301	67.1
1400	6.19	0.222	0.333	66.7
1600	6.58	0.236	0.363	65.0
1800	6.94	0.249	0.392	63.5
2000	7.6	0.262	0.420	62.4

Testing and Classification

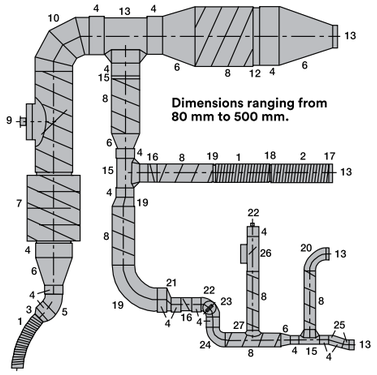
The first approval certificate (No. 1358/88) was obtained from the National Testing Institute of Sweden, carrying out a leakage classification test on the LindabSafe system. The test was carried out in accordance with Eurovent 2/2.

The graph in fig 22 shows the leakage limits for classification “C” along with the received leakage readings of the test.

Reverified tests in Switzerland have shown that the LindabSafe system by far exedes the CEN/Eurovent 2/2 Class “C” standard for air leakage.

Figure 23 shows the components and the layout of the system tested, constructed entirely of Safe fittings, accessories and spirally wound tubing. No other forms of sealing agent were used.

The joint length of the system was 41.8 metres. The perimeter area was calculated to be 27.9m2.



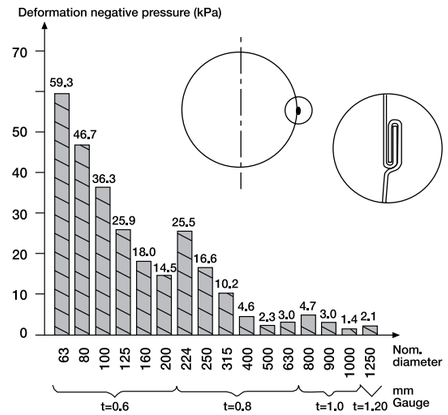
1. SRFA - Flexible aluminium duct
2. SRFG - Flexible galvanized duct
3. RCU - Pressed concentric reducer
4. MF - Female coupler
5. BU - Pressed bend 45°
6. RCLU - Elongated concentric reducer
7. SLU - Sound attenuator 3005
8. SR - Spiral duct
9. PSDRU - Clean-out damper
10. BFU - Segmented bend 90° radius 1.0 x d
11. TU - Excentric tee-piece 90°
12. NPEU - Expandable connector
13. EPF - Female end cup
14. NPU - Male coupler
15. TCU - Concentric tee-piece 90°
16. DRU - Regulating damper
17. SNPU - Male coupler for flexible ducts
18. SMF - Female coupler for flexible ducts
19. RLU - Eccentric elongated reducer
20. BSU - Pressed bend 90° radius 1.5 x d
21. RU - Eccentric short reducer
22. ESU - Male end cup
23. BKCU - 90° pressed bend with clean-out section
24. BU - Pressed bend 90° radius 1.0 x d
25. BU - Pressed bend 15° radius 1.0 x d
26. KLU - Constant flow unit
27. PSUU - 90° collar saddle with gasket

*Please refer to the separate Lindab Catalogue for the LindabSafe product range.

Strength

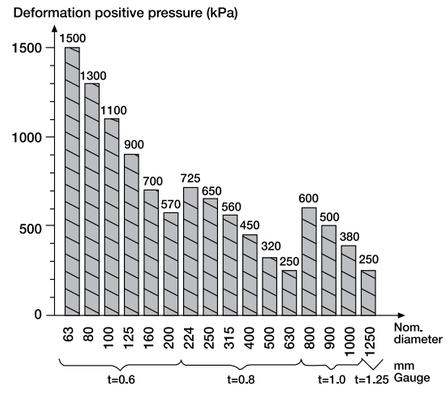
Round duct systems enjoy the strongest natural shape for withstanding pressure. Add to this a helical stiffener, 4 times the thickness of the tube in the form of the lockseam, and you have a very rigid structure. The bar-chart shows the maximum negative pressure an undamaged spirally wound duct can withstand without collapsing.

Fig. 24



The bar-chart shows the maximum positive pressure an undamaged duct can withstand without bursting.

Fig. 25



*Please refer to the separate Lindab Catalogue for the LindabSafe product range.

The Beauty of Round

Finally, there is no question that when ductwork must be exposed, round is the duct of choice for applications where the ductwork is an architectural feature.

Circular Equivalents of Rectangular Ducts for Equal Friction and Capacity (US Units): Dimensions in Inches

Side Rectangular Duct	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0
3.0	3.8	4.0	4.2	4.4	4.6	4.7	4.9	5.1	5.2	5.5	5.7	6.0	6.2	6.4	6.6	6.8	7.0
3.5	4.1	4.3	4.6	4.8	5.0	5.2	5.3	5.5	5.7	6.0	6.3	6.5	6.8	7.0	7.2	7.5	7.7
4.0	4.4	4.6	4.9	5.1	5.3	5.5	5.7	5.9	6.1	6.4	6.7	7.0	7.3	7.6	7.8	8.1	8.3
4.5	4.6	4.9	5.2	5.4	5.7	5.9	6.1	6.3	6.5	6.9	7.2	7.5	7.8	8.1	8.4	8.6	8.8
5.0	4.9	5.2	5.5	5.7	6.0	6.2	6.4	6.7	6.9	7.3	7.6	8.0	8.3	8.6	8.9	9.1	9.4
5.5	5.1	5.4	5.7	6.0	6.3	6.5	6.8	7.0	7.2	7.6	8.0	8.4	8.7	9.0	9.3	9.6	9.9

Side Rectangular Duct	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	22	24	26	28	30	Side Rectangular Duct
6	6.6																				6
7	7.1	7.7																			7
8	7.6	8.2	8.7																		8
9	8.0	8.7	9.3	9.8																	9
10	8.4	9.1	9.8	10.4	10.9																10
11	8.8	9.5	10.2	10.9	11.5	12.0															11
12	9.1	9.9	10.7	11.3	12.0	12.6	13.1														12
13	9.5	10.3	11.1	11.8	12.4	13.1	13.7	14.2													13
14	9.8	10.7	11.5	12.2	12.9	13.5	14.2	14.7	15.3												14
15	10.1	11.0	11.8	12.6	13.3	14.0	14.6	15.3	15.8	16.4											15
16	10.4	11.3	12.2	13.0	13.7	14.4	15.1	15.7	16.4	16.9	17.5										16
17	10.7	11.6	12.5	13.4	14.1	14.9	15.9	16.2	16.8	17.4	18.0	18.6									17
18	11.0	11.9	12.9	13.7	14.5	15.3	16.0	16.7	17.3	17.9	18.5	19.1	19.7								18
19	11.2	12.2	13.2	14.1	14.9	15.7	16.4	17.1	17.8	18.4	19.0	19.6	20.2	20.8							19
20	11.5	12.5	13.5	14.4	15.2	16.0	16.8	17.5	18.2	18.9	19.5	20.1	20.4	21.3	21.9						20
22	12.0	13.0	14.1	15.0	15.9	16.8	17.6	18.3	19.1	19.8	20.4	21.1	21.7	22.3	22.9	24.0					22
24	12.4	13.5	14.6	15.6	16.5	17.4	18.3	19.1	19.9	20.6	21.3	22.0	22.7	23.3	23.9	25.1	26.2				24
26	12.8	14.0	15.1	16.2	17.1	18.1	19.0	19.8	20.6	21.4	22.1	22.9	23.5	24.2	24.9	26.1	27.3	28.4			26
28	13.2	14.5	15.6	16.7	17.7	18.7	19.6	20.5	21.3	22.1	22.9	23.7	24.4	25.1	25.8	27.1	28.3	29.5	30.6		28
30	13.6	14.9	16.1	17.2	18.3	19.3	20.2	21.1	22.0	22.9	23.7	24.4	25.2	25.9	26.6	28.0	29.3	30.5	31.7	32.8	30
32	14.0	15.3	16.5	17.7	18.8	19.8	20.5	21.8	22.7	23.5	24.4	25.2	26.0	26.7	27.5	28.9	30.2	31.5	32.7	33.9	32
34	14.4	15.7	17.0	18.2	19.3	20.4	21.4	22.4	23.3	24.2	25.1	25.9	26.7	27.5	28.3	29.7	31.0	32.4	33.7	34.9	34
36	14.7	16.1	17.4	18.6	19.8	20.9	21.9	22.9	23.9	24.8	25.7	26.6	27.4	28.2	29.0	30.5	32.0	33.3	34.6	35.9	36
38	15.0	16.5	17.8	19.0	20.2	21.4	22.4	23.5	24.5	25.4	26.4	27.2	28.1	28.9	29.8	31.3	32.8	34.2	35.6	36.8	38
40	15.3	16.8	18.2	19.5	20.7	21.8	22.9	24.0	25.0	26.0	27.0	27.9	28.8	29.6	30.5	32.1	33.6	35.1	36.4	37.8	40
42	15.6	17.1	18.5	19.9	21.1	22.3	23.4	24.5	25.6	26.6	27.6	28.5	29.4	30.3	31.2	32.8	34.4	35.9	37.3	38.7	42
44	15.9	17.5	18.9	20.3	21.5	22.7	23.9	25.0	26.1	27.1	28.1	29.1	30.0	30.9	31.8	33.5	35.1	36.7	38.1	39.5	44
46	16.2	17.8	19.3	20.6	21.9	23.2	24.4	25.5	26.6	27.7	28.7	29.7	30.6	31.6	32.5	34.2	35.9	37.4	38.9	40.4	46
48	16.5	18.1	19.6	21.0	22.3	23.6	24.8	26.0	27.1	28.2	29.2	30.2	31.2	32.2	33.1	34.9	36.6	38.2	39.7	41.2	48
50	16.8	18.4	19.9	21.4	22.7	24.0	25.2	26.4	27.6	28.7	29.8	30.8	31.8	32.8	33.7	35.5	37.2	38.9	40.5	42.0	50
52	17.1	18.7	20.2	21.7	23.1	24.4	25.7	26.9	28.0	29.2	30.3	31.3	32.3	33.3	34.3	36.2	37.9	39.6	41.2	42.8	52
54	17.3	19.0	20.6	22.0	23.5	24.8	26.1	27.3	28.5	29.7	30.8	31.8	32.9	33.9	34.9	36.8	38.6	40.3	41.9	43.5	54
56	17.6	19.3	20.9	22.4	23.8	25.2	26.5	27.7	28.9	30.1	31.2	32.3	33.4	34.4	35.4	37.4	39.2	41.0	42.7	44.3	56
58	17.8	19.5	21.2	22.7	24.2	25.5	26.9	28.2	29.4	30.6	31.7	32.8	33.9	35.0	36.0	38.0	39.8	41.6	43.3	45.0	58
60	18.1	19.8	21.5	23.0	24.5	25.9	27.3	28.6	29.8	31.0	32.2	33.3	34.4	35.5	36.5	38.5	40.4	42.3	44.0	45.7	60
62		20.1	21.7	23.3	24.8	26.3	27.6	28.9	30.2	31.5	32.6	33.8	34.9	36.0	37.1	39.1	41.0	42.9	44.7	46.4	62
64		20.3	22.0	23.6	25.1	26.6	28.0	29.3	30.6	31.9	33.1	34.3	35.4	36.5	37.6	39.6	41.6	43.5	45.3	47.1	64
66		20.6	22.3	23.9	25.5	26.9	28.4	29.7	31.0	32.3	33.5	34.7	35.9	37.0	38.1	40.2	42.2	44.1	46.0	47.7	66
68		20.8	22.6	24.2	25.8	27.3	28.7	30.1	31.4	32.7	33.9	35.2	36.3	37.5	38.6	40.7	42.8	44.7	46.6	48.4	68
70		21.1	22.6	24.5	26.1	27.6	29.1	30.4	31.8	33.1	34.4	35.6	36.8	37.9	39.1	41.2	43.3	45.3	47.2	49.0	70
72			23.1	24.8	26.4	27.9	29.4	30.8	32.2	33.5	34.8	36.0	37.2	38.4	39.5	41.7	43.8	45.8	47.8	49.6	72
74			23.3	25.1	26.7	28.2	29.7	31.2	32.5	33.9	35.2	36.4	37.7	38.8	40.0	42.2	44.4	46.4	48.4	50.3	74
76			23.6	25.3	27.0	28.5	30.0	31.5	32.9	34.3	35.6	36.8	38.1	39.3	40.5	42.7	44.9	47.0	48.9	50.9	76
78			23.8	25.6	27.3	28.8	30.4	31.8	33.3	34.6	36.0	37.2	38.5	39.7	40.9	43.2	45.4	47.5	49.5	51.4	78
80			24.1	25.8	27.5	29.1	30.7	32.2	33.6	35.0	36.3	37.6	38.9	40.2	41.4	43.7	45.9	48.0	50.1	52.0	80
82				26.1	27.8	29.4	31.0	32.5	34.0	35.4	36.7	38.0	39.3	40.6	41.8	44.1	46.4	48.5	50.6	52.6	82
84				26.4	28.1	29.7	31.3	32.8	34.3	35.7	37.1	38.4	39.7	41.0	42.2	44.6	46.9	49.0	51.1	53.2	84
86				26.6	28.3	30.0	31.6	33.1	34.6	36.1	37.4	38.8	40.1	41.4	42.6	45.0	47.3	49.6	51.7	53.7	86
88				26.9	28.6	30.3	31.9	33.4	34.9	36.4	37.8	39.2	40.5	41.8	43.1	45.5	47.8	50.0	52.2	54.3	88
90				27.1	28.9	30.6	32.2	33.8	35.3	36.7	38.2	39.5	40.9	42.2	43.5	45.9	48.3	50.5	52.7	54.8	90
92					29.1	30.8	32.5	34.1	35.6	37.1	38.5	39.9	41.3	42.6	43.9	46.4	48.7	51.0	53.2	55.3	92
96					29.6	31.4	33.0	34.7	36.2	37.7	39.2	40.6	42.0	43.3	44.7	47.2	49.6	52.0	54.2	56.4	96

CIRCULAR EQUIVALENTS OF
RECTANGULAR DUCTS

Circular Equivalents of Rectangular Ducts for Equal Friction and Capacity (US Units): Dimensions in Inches

Side Rectangular Duct	32	34	36	38	40	42	44	46	48	50	52	56	60	64	68	72	76	80	84	88	Side Rectangular Duct
32	35.0																				32
34	36.1	37.2																			34
36	37.1	38.2	39.4																		36
38	38.1	39.3	40.4	41.5																	38
40	39.0	40.3	41.5	42.6	43.7																40
42	40.0	41.3	42.5	43.7	44.8	45.9															42
44	40.9	42.2	43.5	44.7	45.8	47.0	48.1														44
46	41.8	43.1	44.4	45.7	46.9	48.0	49.2	50.3													46
48	42.6	44.0	45.3	46.6	47.9	49.1	50.2	51.4	52.5												48
50	43.6	44.9	46.2	47.5	48.8	50.0	51.2	52.4	53.6	54.7											50
52	44.3	45.7	47.1	48.4	49.7	51.0	52.2	53.4	54.6	55.7	56.8										52
54	45.1	46.5	48.0	49.3	50.7	52.0	53.2	54.4	55.6	56.8	57.9										54
56	45.8	47.3	48.8	50.2	51.6	52.9	54.2	55.4	56.6	57.8	59.0	61.2									56
58	46.6	48.1	49.6	51.0	52.4	53.8	55.1	56.4	57.6	58.8	60.0	62.3									58
60	47.3	48.9	50.4	51.9	53.3	54.7	60.0	57.3	58.6	59.8	61.0	63.4	65.6								60
62	48.0	49.6	51.2	52.7	54.1	55.5	56.9	58.2	59.5	60.8	62.0	64.4	66.7								62
64	48.7	50.4	51.9	53.5	54.9	56.4	57.8	59.1	60.4	61.7	63.0	65.4	67.7	70.0							64
66	49.4	51.1	52.7	54.2	55.7	57.2	58.6	60.0	61.3	62.6	63.9	66.4	68.8	71.0							66
68	50.1	51.8	53.4	55.0	56.5	58.0	59.4	60.8	62.2	63.6	64.9	67.4	69.8	72.1	74.3						68
70	50.8	52.5	54.1	55.7	57.3	58.8	60.3	61.7	63.1	64.4	65.8	68.3	70.8	73.2	75.4						70
72	51.4	53.2	54.8	56.5	58.0	59.6	61.1	62.5	63.9	65.3	66.7	69.3	71.8	74.2	76.5	78.7					72
74	52.1	53.8	55.5	57.2	58.8	60.3	61.9	63.3	64.8	66.2	67.5	70.2	72.7	75.2	77.5	79.8					74
76	52.7	54.5	56.2	57.9	59.5	61.1	62.6	64.1	65.6	67.0	68.4	71.1	73.7	76.2	78.6	80.9	83.1				76
78	53.3	55.1	56.9	58.6	60.2	61.8	63.4	64.9	66.4	67.9	69.3	72.0	74.6	77.1	79.6	81.9	84.2				78
80	53.9	55.8	57.5	59.3	60.9	62.6	64.1	65.7	67.2	68.7	70.1	72.9	75.4	78.1	80.6	82.9	85.2	87.5			80
82	54.5	56.4	58.2	59.9	61.6	63.3	64.9	66.5	68.0	69.5	70.9	73.7	76.4	79.0	81.5	84.0	86.3	88.5			82
84	55.1	57.0	58.8	60.6	62.3	64.0	65.6	67.2	68.7	70.3	71.7	74.6	77.3	80.0	82.5	85.0	87.3	89.6	91.8		84
86	55.7	57.6	59.4	61.2	63.0	34.7	66.3	67.9	69.5	71.0	72.5	75.4	78.2	80.9	83.5	85.9	88.3	90.7	92.9		86
88	56.3	58.2	60.1	61.9	63.6	65.4	67.0	68.7	70.2	71.8	73.3	76.3	79.1	81.8	84.4	86.9	89.3	91.7	94.0	96.2	88
90	56.8	58.8	60.7	62.5	64.3	66.0	67.7	69.4	71.0	72.6	74.1	77.1	79.9	82.7	85.3	87.9	90.3	92.7	95.0	97.3	90
92	57.4	59.3	61.3	63.1	64.9	66.7	68.4	70.1	71.7	73.3	74.9	77.9	80.8	83.5	86.2	88.8	91.3	93.7	96.1	98.4	92
94	57.9	59.9	61.9	63.7	65.6	67.3	69.1	70.8	72.4	74.0	75.6	78.7	81.6	84.4	87.1	89.7	92.3	94.7	97.1	99.4	94
96	58.4	60.5	62.4	64.3	66.2	68.0	69.7	71.5	73.1	74.8	76.3	79.4	82.4	85.3	88.0	90.7	93.2	95.7	98.1	100.5	96

Equation for Circular Equivalent of a Rectangular Duct:

$$D_e = 1.30\ [(ab)^{0.625}/(a+b)^{0.250}]$$

where,

a = length of one side of rectangular duct, inches.
b = length of adjacent side of rectangular duct, inches.
D_e = circular equivalent of rectangular duct for equal friction and capacity, inches.

NOTES & STANDARDS

Circular Equivalents of Rectangular Ducts for Equal Friction and Capacity (Metric): Dimensions in Millimeters

Side Rectangular Duct	100	125	150	175	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	900	Side Rectangular Duct
100	109																				**100**
125	122	137																			**125**
150	133	150	164																		**150**
175	143	161	177	191																	**175**
200	152	172	189	204	219																**200**
225	161	181	200	216	232	246															**225**
250	169	190	210	228	244	259	273														**250**
275	176	199	220	238	256	272	287	301													**275**
300	183	207	229	248	266	283	299	314	328												**300**
350	195	222	245	267	286	305	322	339	354	383											**350**
400	207	235	260	283	305	325	343	361	378	409	437										**400**
450	217	247	274	299	321	343	363	382	400	433	464	492									**450**
500	227	258	287	313	337	360	381	401	420	455	488	518	547								**500**
550	236	269	299	326	352	375	398	419	439	477	511	543	573	601							**550**
600	245	279	310	339	365	390	414	436	457	496	533	567	598	628	656						**600**
650	253	289	321	351	378	404	429	452	474	515	553	589	622	653	683	711					**650**
700	261	298	331	362	391	418	443	467	490	533	573	610	644	677	708	737	765				**700**
750	268	306	341	373	402	430	457	482	506	550	592	630	666	700	732	763	792	820			**750**
800	275	314	350	383	414	442	470	496	520	567	609	649	687	722	755	787	818	847	875		**800**
900	289	330	367	402	435	465	494	522	548	597	643	686	726	763	799	833	866	897	927	984	**900**
1000	301	344	384	420	454	486	517	546	574	626	674	719	762	802	840	876	911	944	976	1037	**1000**
1100	313	358	399	437	473	506	538	569	598	652	703	751	795	838	878	916	953	988	1022	1086	**1100**
1200	324	370	413	453	490	525	558	590	620	677	731	780	827	872	914	954	993	1030	1066	1133	**1200**
1300	334	382	426	468	506	543	577	610	642	701	757	808	857	904	948	990	1031	1069	1107	1177	**1300**
1400	344	394	439	482	522	559	595	629	662	724	781	835	886	934	980	1024	1066	1107	1146	1220	**1400**
1500	353	404	452	495	536	575	612	648	681	745	805	860	913	963	1011	1057	1100	1143	1183	1260	**1500**
1600	362	415	463	508	551	591	629	665	700	766	827	885	939	991	1041	1088	1133	1177	1219	1298	**1600**
1700	371	425	475	521	564	605	644	682	718	785	849	908	964	1018	1069	1118	1164	1209	1253	1335	**1700**
1800	379	434	485	533	577	619	660	698	735	804	869	930	988	1043	1096	1146	1195	1241	1286	1371	**1800**
1900	387	444	496	544	590	633	674	713	751	823	889	952	1012	1068	1122	1174	1224	1271	1318	1405	**1900**
2000	395	453	506	555	602	646	688	728	767	840	908	973	1034	1092	1147	1200	1252	1301	1348	1438	**2000**
2100	402	461	516	566	614	659	702	743	782	857	927	993	1055	1115	1172	1226	1279	1329	1378	1470	**2100**
2200	410	470	525	577	625	671	715	757	797	874	945	1013	1076	1137	1195	1251	1305	1356	1406	1501	**2200**
2300	417	478	534	587	636	683	728	771	812	890	963	1031	1097	1159	1218	1275	1330	1383	1434	1532	**2300**
2400	424	486	543	597	647	695	740	784	826	905	980	1050	1116	1180	1241	1299	1355	1409	1461	1561	**2400**
2500	430	494	552	606	658	706	753	797	840	920	996	1068	1136	1200	1262	1322	1379	1434	1488	1589	**2500**
2600	437	501	560	616	668	717	764	810	853	935	1012	1085	1154	1220	1283	1344	1402	1459	1513	1617	**2600**
2700	443	509	569	625	678	728	776	822	866	950	1028	1102	1173	1240	1304	1366	1425	1483	1538	1644	**2700**
2800	450	516	577	634	688	738	787	834	879	964	1043	1119	1190	1256	1324	1387	1447	1506	1562	1670	**2800**
2900	456	523	585	643	697	749	798	845	891	977	1058	1135	1208	1277	1344	1408	1469	1529	1586	1696	**2900**
Side Rectangular Duct	**100**	**125**	**150**	**175**	**200**	**225**	**250**	**275**	**300**	**350**	**400**	**450**	**500**	**550**	**600**	**650**	**700**	**750**	**800**	**900**	Side Rectangular Duct

NOTES & STANDARDS

CIRCULAR EQUIVALENTS OF
RECTANGULAR DUCTS

Circular Equivalents of Rectangular Ducts for Equal Friction and Capacity (Metric): Dimensions in Millimeters

Side Rectangular Duct	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	Side Rectangular Duct
1000	1093																				**1000**
1100	1146	1202																			**1100**
1200	1196	1256	1312																		**1200**
1300	1244	1306	1365	1421																	**1300**
1400	1289	1354	1416	1475	1530																**1400**
1500	1332	1400	1464	1526	1584	1640															**1500**
1600	1373	1444	1511	1574	1635	1393	1749														**1600**
1700	1413	1486	1555	1621	1684	1745	1803	1858													**1700**
1800	1451	1527	1598	1667	1732	1794	1854	1912	1968												**1800**
1900	1488	1566	1640	1710	1778	1842	1904	1964	2021	2077											**1900**
2000	1523	1604	1680	1753	1822	1889	1952	2014	2073	2131	2186										**2000**
2100	1558	1640	1719	1793	1865	1933	1999	2063	2124	2183	2240	2296									**2100**
2200	1591	1676	1756	1833	1906	1977	2044	2110	2173	2233	2292	2350	2405								**2200**
2300	1623	1710	1793	1871	1947	2019	2088	2155	2220	2283	2343	2402	2459	2514							**2300**
2400	1655	1744	1828	1909	1986	2060	2131	2200	2266	2330	2393	2453	2511	2568	2624						**2400**
2500	1685	1776	1862	1945	2024	2100	2173	2243	2311	2377	2441	2502	2562	2621	2678	2733					**2500**
2600	1715	1808	1896	1980	2061	2139	2213	2285	2355	2422	2487	2551	2612	2672	2730	2787	2842				**2600**
2700	1744	1839	1929	2015	2097	2177	2253	2327	2398	2466	2533	2598	2661	2722	2782	2840	2896	2952			**2700**
2800	1772	1869	1961	2048	2133	2214	2292	2367	2439	2510	2578	2644	2708	2771	2832	2891	2949	3006	3061		**2800**
2900	1800	1898	1992	2081	2167	2250	2329	2406	2480	2552	2621	2689	2755	2819	2881	2941	3001	3058	3115	3170	**2900**
Side Rectangular Duct	**1000**	**1100**	**1200**	**1300**	**1400**	**1500**	**1600**	**1700**	**1800**	**1900**	**2000**	**2100**	**2200**	**2300**	**2400**	**2500**	**2600**	**2700**	**2800**	**2900**	Side Rectangular Duct

Equation for Circular Equivalent of a Rectangular Duct:

$D_e = 1.30\ [(ab)^{0.625}/(a+b)^{0.250}]$

Where:

a = length of one side of rectangular duct, mm.
b = length of adjacent side of rectangular duct, mm.
D_e = circular equivalent of rectangular duct for equal friction and capacity, mm.

* For available standard sizes of Spiral Duct within the SAFID product range, please see chapter 2, page 16.

NOTES & STANDARDS

Round duct diameter will have equivalent capacity
and friction of the actual duct size.

Dimensions in Inches

	3	4	5	6	7	8	9	10	11	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
7		5.7																						
8	5.1		6.6	6.9																				
9	5.6	6.2		7.7																				
10		6.7	7.3		8.7	9.0																		
11	6.0		7.9	8.4		9.8																		
12	6.4	7.2		8.9	9.4		10.8	11.0																
13		7.6	8.4		10.1	10.6		11.9																
14	6.7		8.8	9.6		11.2	11.5																	
15	7.0	8.0		10.1	10.7					13.8														
16			9.3					13.4	13.6															
17	7.3	8.4					12.9																	
18					11.7	12.4				15.3														
19			10.0	11.0					15.0		17.5													
20							14.0	14.7																
21					12.6	13.5				16.7			19.9											
22				11.8					16.3			19.5												
23							15.1	15.7			18.9		21.6											
24						14.4									23.9									
25				12.5						18.0		20.9		23.6										
26								16.7																
27						15.2					20.2		23.1			25.9								
28				13.2						19.1		22.3		25.2	25.6		27.9							
29								17.7			21.3					28.1								
30						15.9							24.5		27.2			29.9						
31				13.8						20.1														
32								18.5			22.4	23.5		26.6		29.3	29.7		32.0					
33													25.7		28.7		31.3	31.7		34.0				
34				14.3						20.9	23.4	24.7		27.9					33.7					
35						16.6		19.3																
36						17.3																		
37				14.9						21.9		25.7	27.0		30.0	30.8		33.4		35.8	36.0			
38								20.1			24.4			29.2			32.8		35.4		37.8	38.0		
39						17.9				22.7		26.8	28.1		31.3	32.2		34.9		37.4				
40				15.4				20.8															40.0	
41																								
42										23.5	25.3		29.1	30.3		33.5	34.3		37.0		39.5	39.8		42.0
43						18.6						27.7			32.5			36.4		39.0			41.8	
44				15.9				21.5			26.1		30.2	31.4		34.7	35.6		38.5		41.5			43.8
45						19.1																		
46																								
47										24.3		28.6		32.5	33.7		36.9	37.8		40.5	41.1		43.5	
48								22.1			26.9		31.1		34.8	35.9		39.1	39.9		42.6	43.1		45.6
49						19.6				25.0		29.4		33.4			38.1			42.0			45.2	
50								22.8																
51																								
52					20.2					25.7	27.7		32.0		35.8	37.0		40.3	41.2		44.1	44.7		47.2
53								23.3				30.2		34.4		38.1	39.3		42.5	43.3		46.2	46.7	
54										26.3	28.4		32.9					41.5			45.5			48.8
55																								
56																								
57								23.8			29.1	31.0		35.3	36.7		40.4		43.7	44.6		47.6	48.2	
58										26.9			33.7			39.2		42.6			46.8			50.4
59								24.4			29.6	31.8		36.1	37.8		41.3		44.5	45.9		48.5	49.7	
60										27.5			34.5			40.1		43.5			48.1			51.8
62																								
64								25.1			30.5	32.7		37.1	38.9		42.5		46.0		49.7	50.2		
66								25.4		28.3		33.3	35.4		39.6	42.0		44.8		48.0		51.9	52.4	54.5
68										28.6	31.2			38.0			44.4		47.1	49.4	50.9		54.1	
70								26.0			31.5	34.1	36.2		40.6			46.0			51.6	53.1		56.2
72								26.3		29.2									48.6					

SPIRAL FLAT OVAL DUCT
(NOMINAL SIZES - US UNITS)

Round duct diameter will have equivalent capacity
and friction of the actual duct size.

Dimensions in mm

	75	100	125	150	175	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
175		145																						
200	130		168	175																				
225	142	157		196																				
250		170	185		221	229																		
275	152		201	213		249																		
300	163	183		226	239		274	279																
325		193	213		257	269		302																
350	170		224	244		284	292			351														
375	178	203		257	272																			
400			236					340	345															
425	183	213				315	328			389														
450					297																			
475			254	279					381															
500							356	373			445													
525					320	342				424			505											
550				300					414			495												
575							384	399			480													
600						366							549											
625				318						457		531			607									
650								424						599										
675						386					513		587			658								
700				335						485					650									
725								450			566			640			709							
750						404					541					714								
775				351						511			622		691			759						
800								470			597			754										
825						422				531	569		653	676		744		805	813					
850				363											729					864				
875								490			627			709			795		856					
900						439					594													
925				378					556			653	686		762	782		848		909	914			
950								511			620			742			833		899		960			
975						455				577		681	714		795	818		886		950		1016		
1000																								
1025				391				528																
1050									597	643		739	770		851	871		925	939		1004	1011		
1075						472																		1067
1100				404							504			826						991		1054	1062	
1125								546		663		767	798		881	904			978					1113
1150						485																		
1175									617		726			856			937	960			1044		1105	
1200								561				790	826		912	937			1013	1029		1095		1158
1225						498				635	683			884			968	993			1082			
1250												747	848							1067			1148	
1275								579																
1300						513				653	704		813		909	940		1023	1046		1120		1199	
1325								592				767		874			998		1080	1100		1174	1186	
1350										668	721		836			968		1054		1156			1240
1375																								
1400																								
1425								605			739	787		897	932		1026		1110	1133		1209	1224	
1450										683			856			996		1082			1189			1280
1475								620			752	808		917	960		1049		1130	1166		1232	1262	
1500										699			876			1018		1105			1222			1316
1550																								
1600								638			775	830	899	942	988		1079		1168		1275			
1650								645		719		846			1006			1138		1219	1262		1331	
1700										726	792	866	919	965		1067	1128		1196		1318			1384
1750								660			800				1031			1168		1255	1293	1374		
1800								668		742									1234		1311	1379		1427

* For available standard sizes of Spiral Flat-Oval Duct within the SAFID product range, please see pages 132, 133 and 134.

NOTES & STANDARDS

GALVANIZED SHEET THICKNESS TOLERANCES

Gauge	Thickness in Inches			Weight				Thickness in Millimeters		
	Min.	Max.	Nom.	Min. lb/sf	Nom. lb/sf	Max. lb/sf	Nom. kg/m²	Min.	Max.	Nom.
33	.0060	.0120	.0090	.2409	.376	.486		.1524	.3048	.2286
32	.0104	.0164	.0134	.4204	.563	.665		.2642	.4166	.3404
31	.0112	.0172	.0142	.4531	.594	.698		.2845	.4369	.3607
30	.0127	.0187	.0157	.5143	.656	.759	3.20	.3188	.4788	.3988
29	.0142	.020	.0172	.5755	.719	.820		.3569	.5169	.4369
28	.0157	.0217	.0187	.6367	.781	.881	3.81	.3950	.5550	.4750
27	.0172	.0232	.0202	.6979	.844	.943		.4331	.5931	.5131
26	.0187	.0247	.0217	.7591	.906	1.004	4.42	.4712	.6312	.5512
25	.0217	.0287	.0247	.8407		1.167		.5274	.7274	.6274
24	.0236	.0316	.0276	.9590	1.156	1.285	5.64	.6010	.8010	.7010
23	.0266	.0346	.0306	1.0814		1.408		.6722	.8772	.7772
22	.0296	.0376	.0336	1.2038	1.406	1.530	6.86	.7534	.9534	.8534
21	.0326	.0406	.0366	1.3263		1.653		.8296	1.0296	.9296
20	.0356	.0436	.0396	1.4486	1.656	1.775	8.08	.906	1.106	1.006
19	.0406	.0506	.0456	1.6526		2.061		1.028	1.288	1.158
18	.0466	.0566	.0516	1.8974	2.156	2.305	10.52	1.181	1.441	1.311
17	.0525	.0625	.0575	2.1381		2.546		1.331	1.591	1.461
16	.0575	.0695	.0635	2.342	2.656	2.832	12.96	1.463	1.763	1.613
15	.0650	.0770	.0710	2.6481		3.138		1.653	1.953	1.803
14	.0705	.0865	.0785	2.8725	3.281	3.525	16.01	1.784	2.204	1.994
13	.0854	.1014	.0934	3.4804		4.133		2.162	2.5823	2.372
12	.0994	.1174	.1084	4.0516	4.531	4.786	22.11	2.523	2.983	2.753
11	.1143	.1323	.1233	4.6505		5.394		2.902	3.362	3.132
10	.1292	.1472	.1382	5.2675	5.781	6.002	28.21	3.280	3.740	3.510
9	.1442	.1622	.1532	2.8795		6.614		3.661	4.121	3.891
8	.1591	.1771	.1681	6.4874	6.875	7.222		4.040	4.500	4.270

NOTES

1. Based on ASTM A924/924M-94, Standard Specification for General Requirements for Sheet Steel, Metalic Coated by the Hot-Dip Process (formerly ASTM A525); and ASTM A653/A653M-94, Standard Specification for Sheet Steel, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvanized) by the Hot-Dip Process.
2. Tolerances are valid for 48" and 60" wide coil and cut length stock - other dimensions apply to other sheet widths and to strip.
3. The lock forming grade of steel will conform to ASTM A653 (formerly ASTM A527).
4. The steel producing industry recommends that steel be ordered by decimal thickness only. Thickness and zinc coating class can be stenciled on the sheet. The gauge designation is retained for residual familiarity reference only.
5. Minimum weight in this table on the following computation:
• Minimum sheet thickness minus 0.001" of G60 coating times 40.8 lb per s.f. per inch plus 0.0369 lb/sf of zinc.
G90 stock would be comparably calculated from:
• (t - .00153") 40.8 + 0.0564 - minimum weight.
However, scale weight may run 2% (or more) greater that theorical weight. Actual weight may be near 40.82 lb. per s.f. per inch.
6. G60 coating, per ASTM A653 and ASTM A90, has 0.60 oz/sf (triple spot test) total for two sides. 0.59 oz/sf of zinc equals 0.001". 1 oz is 0.0017" and is 305.15 g/m2.
G90 coating is 0.90 oz/sf (triple spot test), or 0.00153". Magnetic gauge measurement of zinc coating may have 15% error.
7. ASTM A2092, Practices for Preparation of Zinc-Coated Galvanized Steel Surfaces for Paint, includes mill phosphatizing.
8. ASTM A755 is the Specification for Sheet Steel, Metalic Coated by hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Building Products. Other information is available from the National Coil Coaters Association, Philadelphia, PA.
9. Much chemical and atmospheric corrosion information is available from ASM International in Metals Park, Ohio and from NACE International in Houston, TX.
10. A principle international standard is ISO 3575, Continuous Hot-Dip Process, Zinc-Coated Carbon Steel Sheet of Commercial, Lock Forming and Drawing Qualities.

STAINLESS STEEL SHEET THICKNESS

Gauge	Thickness in Inches				Weight				Thickness in Millimeters		
	Min.	Max.	Tolerance	Nom.	lb/sf		kg/m²		Nom.	Min.	Max.
					300	400	300	400			
31	.0089	.0129	.002	.0109	.459	.451	2.239	2.200	.2769	.2269	.3269
30	.0105	.0145	.002	.0125	.525.	.515	2.562	2.512	.3175	.2675	.3675
29	.0121	.0161	.002	.0141	.591	.579	2.883	2.825	.3581	.3081	.4081
28	.0136	.0176	.002	.0156	.656	.644	3.200	3.142	.3962	.3462	.4462
27	.0142	.0202	.003	.0172	.722	.708	3.522	3.454	.4369	.3569	.5169
26	.0158	.0218	.003	.0188	.788	.773	3.844	3.771	.4775	.3975	.5575
25	.0189	.0249	.003	.0219	.919	.901	4.483	4.395	.5562	.4762	.6362
24	.0220	.0280	.003	.0250	1.050	1.030	5.122	5.025	.6350	.5550	.7150
23	.0241	.0321	.004	.0281	1.181	1.159	5.761	5.654	.7137	.6137	.8137
22	.0273	.0353	.004	.0313	1.313	1.288	6.405	6.283	.7950	.6950	.8950
21	.0304	.0384	.004	.0344	1.444	1.416	7.044	6.908	.8738	.7738	.9738
20	.0335	.0415	.004	.0375	1.575	1.545	7.683	7.537	.9525	.8525	1.0525
19	.0388	.0488	.005	.0438	1.838	1.803	8.966	8.796	1.1125	.9835	1.2425
18	.0450	.0550	.005	.0500	2.100	2.060	10.245	10.050	1.2700	1.1400	1.400
17	.0513	.0613	.005	.0563	2.363	2.318	11.528	11.308	1.4300	1.300	1.5600
16	.0565	.0685	.006	.0625	2.625	2.575	12.806	12.562	1.5875	1.4375	1.7375
15	.0643	.0763	.006	.703	2.953	2.897	14.406	14.133	1.2856	1.6356	1.9356
14	.0711	.0851	.007	.0781	3.281	3.219	16.006	15.704	1.9837	1.8037	2.1637
13	.0858	.1018	.008	.0938	3.938	3.863	19.211	18.845	2.3825	2.1825	2.5825
12	.1000	.1184	.009	.1094	4.594	4.506	22.411	21.982	2.7788	2.5488	2.9788
11	.1150	.1350	.010	.1250	5.250	5.150	25.612	25.124	3.1750	2.9250	3.4250
10	.1286	.1526	.012	.1406	5.906	5.794	28.812	28.265	3.5712	3.2712	3.8712
9	.1423	.1703	.014	.1563	6.563	6.438	32.017	31.407	3.9700	3.6100	4.3300
8	.1579	.1859	.014	.1719	7.219	7.081	35.217	35.544	4.3663	4.0063	4.7263

ASTM-A167 - "Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip" (Properties of the 300 series)
ASTM-A480 - "Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip"

Finishes:

No. 1 Finish - Hot-rolled, annealed, and descaled.
No. 2 D Finish - Cold-rolled, dull finish.
No. 3 B Finish - Cold-rolled, bright finish.
Bright Annealed Finish - A bright cold-rolled finish retained by annealing in a controlled atmosphere furnace.
No. 3 Finish - Intermediate polished finish, one or both sides.
No. 4 Finish - General purpose polished finish, one or both sides.
No. 6 Finish - Dull satin finish, Tampico brushed, one or both sides.
No. 7 Finish - High luster finish.
No. 8 Finish - Mirror finish.

The 300 series weight is based on 41.99 lb per square foot per inch of thickness (or 504 lb/cf).

The 400 series weight is based on 41.20 lb per square foot per inch of thickness (or 494 lb/cf).

ASTM-A666 covers the structural grade of stainless steel (not used for ducts). For design criteria, generally, consult the AISI Stainless Steel Cold-Formed Structural Design Manual. For general application and corrosion data consult the AISI Design Guidelines for the Selection and Use of Stainless Steels and the Specialty Steel Industry of the United States in Washington, D.C.

ALLOY 3003 -H14

Thickness in Inches				Weight		Thickness in millimeters		
Nom.	Tolerance 48" & (60") Width	Min.	Max	lb/ft²	kg/m²	Nom.	Min.	Max.
.016	.0015	.0145	.0175	.228	1.114	.4068	.3683	.4445
.020	.002 (.003)	.018	.022	.285	1.393	.508	.4572	.5588
.024	.002 (.003)	.022	.026	.342	1.671	.6096	.5588	.6604
.025	.002 (.003)	.023	.027	.356	1.7398	.635	.5842	.6858
.032	.0025 (.0035)	.0295	.0345	.456	2.228	.8128	.7493	.8763
.040	.0035 (.0045)	.0365	0.435	.570	2.786	1.016	.9271	1.1049
.050	.0035 (.005)	.0465	.0535	.713	3.484	1.27	1.1811	1.3589
.063	.0035 (.005)	.0595	.0665	.898	4.389	1.600	1.5113	1.6891
.080	.0045 (.006)	.0755	.0845	1.140	5.571	2.032	1.9117	2.1463
0.090	.0045 (.006)	.0855	.0945	1.283	6.270	2.286	2.1717	2.4003
.100	.0055 (.007)	.0945	.1055	1.426	6.969	1.54	2.4003	2.6797
.125	.0055 (.007)	.1195	.1305	1.782	8.709	3.175	3.0353	3.3147

Weight is based on 14.256 lb per square foot per inch of thickness (or 171.1 lb/cf). Alloy 1100 is of slightly lower density.

Specification references: ASTM B209 Standard Specification of Aluminum Alloy Sheet and Plate which references ANSI Standard H- 35.2

Dimensional Tolerances for Aluminum Mill Products.

Other useful references are published by the Aluminum Association: Specification for Aluminum Structures; Engineering Data for Aluminum Structures; Aluminum Standards and Data.

Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process[1]

This standard is issued under the fixed designation A 653/A 653M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (e) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers steel sheet, zinc-coated (galvanized) or zinc-iron alloy-coated (galvannealed) by the hot-dip process in coils and cut lengths.

1.2 The product is produced in various zinc or zinc-iron alloycoating weights [masses] or coating designations as shown in Table 1.

1.3 Product furnished under this specification shall conform to the applicable requirements of the latest issue of Specification A 924/A 924M, unless otherwise provided herein.

1.4 The product is produced in a number of designations, types, grades and classes pertaining to chemical composition and typical mechanical properties of the steel sheet which are designed to be compatible with differing application requirements.

1.5 This specification is applicable to orders in either inchpound units (as A 653) or SI units (as A 653M). Values in inchpound and SI units are not necessarily equivalent. Within the text, SI units are shown in brackets. Each system shall be used independently of the other.

1.6 Unless the order specifies the "M" designation (SI units), the product shall be furnished to inch-pound units.

2. Referenced Documents

2.1 ASTM Standards:
A 90/A 90M /Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy coatings[2]
A 568/A 568M Specification for Steel, Sheet, Carbon, and High- Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for [3]
A 902 Terminology Relating to Mettallic Coated Steel Products [2]
A924/A924M Specification for General Requirements for Steel Sheet, Mettallic-coated by the Hot-Dip Process [2]
D 2092 Guide for Treatment of Zinc-Coated (Galvanized) Steel Surfaces for Prinitng [4]
E 517 Test Method for Plastic Strain Ratio r for Sheet Metal [5]
E 646 Test Method for Tensile Strain-Hardening Expo-nents (n values) of Metallic Sheet Materials [5]
2.2 ISO Standard:
ISO 3575 Continuous Hot-Dip Zinc-Coated Carbon Steel Sheet of Commercial, Lock-Forming, and Drawing Qualities [6]

3. Terminology

3.1 Definitions: See Terminology A 902 for definitions of general terminology relating to metallic-coated hot-dip products.
3.2 Descriptions of Terms Specific to This Standard:
3.2.1 Differentially Coated: n-galvanized steel sheet having a specified "coating designation" on one surface and a significantly lighter specified "coating designation" on the other surface.
3.2.1.1 Discussion: The single side relationship of either specified "coating designation" is the same as shown in the note of Table 1 regarding uniformity of coating.
3.2.2 High Strength-Low Alloy Steel (Type A sheet): n-steel sheet intended for applications where mechanical properties are specified and where improved formability is required compared to structural steel.
3.2.2.1 Discussion-Suppliers may use one or a combination of microalloying elements as strengthening agents.
3.2.3 High Strength-Low Alloy Steel (Type B sheet): n-steel sheet intended for applications where mechanical properties are specified and where improved formability is required compared to high strength-low alloy steel, Type A.
3.2.4.1 Discussion: Suppliers may use one or a combination of microalloying elements as strengthening agents and may alsotreat the steel with additional small alloy additions to effect sulfide inclusion control.
3.2.4 minimized spangle, n-the crystal structure produced on galvanized sheet by treating the regular coated sheet during solidification of the zinc to restrict normal spangle formation.
3.2.4.1 Discussion-Minimized spangle coating usually has a dull appearance that may be somewhat nonuniform, and dissimilarity from coil to coil is not unusual. Minimized spangle is normally produced in coating designations G90 [Z275] and lighter.
3.2.5 Regular Spangle: n-the unaltered, large, multifaceted crystal structure that occurs during normal solidification of a hot-dip zinc coating on steel sheet.
3.2.6 Zinc-Iron Alloy: n-a coating produced on galvanized sheet by processing the steel through the galvanizing line to produce a completely alloyed coating.
3.2.6.1 Discussion: Zinc-Iron Alloy coating is not spangled, is normally dull grey in appearance, and is suitable for immediate painting without further treatment except normal cleaning (refer to Guide D2092).

[1] This specification is under the jurisdiction of ASTM Committee A-5 on Metallic Coated Iron and Steel Products and is the direct responsibility of Subcommittee A05.11 on Sheet Specifications.
Current edition approved Oct. 10, 1996 and April 10, 1997. Published December 1997. Originally published as A 653/A 653M - 94. Last previous edition A 653/A 653M - 96.

[2] Annual Book of ASTM Standards, Vol 01.06.

[3] Annual Book of ASTM Standards, Vol 01.03.

[4] Annual Book of ASTM Standards, Vol 06.02.

[5] Annual Book of ASTM Standards, Vol 03.01.

[6] Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

Table 1: Weight [Mass] of Coating Requirements [A,B,C]

Note: The coating thickness may be estimated from the coating weight [mass] by using the information provided in 8.1.3.

		Minimum Requirement [D]		
		Triple-Spot Test		Single-Spot Test
Inch-Pount Units				
Type	**Coating Designation**	**Total Both Sides, oz/ft²**	**Coating Designation**	**Total Both Sides, oz/ft²**
Zinc	G360	3.60	1.28	3.20
	G300	3.00	1.04	2.60
	G235	2.35	0.80	2.00
	G210	2.10	0.72	1.80
	G185	1.85	0.64	1.60
	G165	1.65	0.56	1.40
	G140	1.40	0.48	1.20
	G115	1.15	0.40	1.00
	G90	0.90	0.32	0.80
	G60	0.60	0.20	0.50
	G40	0.40	0.12	0.30
	G30	0.30	0.10	0.25
	G01	no minimum	no minimum	no minimum
Zinc-Iron Alloy	A60	0.60	0.20	0.50
	A40	0.40	0.12	0.30
	A25	0.25	0.08	0.20
	A01	no minimum	no minimum	no minimum
SI Units				
Type	**Coating Designation**	**Total Both Sides, g/m²**	**Coating Designation**	**Total Both Sides, g/m²**
Zinc	Z1100	1100	390	975
	Z900	900	316	790
	Z700	700	238	595
	Z600	600	204	510
	Z450	450	154	385
	Z350	350	120	300
	Z275	275	94	235
	Z180	180	60	150
	Z120	120	36	90
	Z001	no minimum	no minimum	no minimum
Zinc-Iron Alloy	ZF180	180	60	150
	ZF120	120	36	90
	ZF75	75	24	60
	ZF001	no minimum	no minimum	no minimum

[A] The coating designation number is the term by which this product is specified. Because of the many variables and changing conditions that are characteristics of continuous hot-dip coating lines, the zinc or zinc-iron alloy coating is not always evenly divided between the two surfaces of a coated sheet; nor is it always evenly distributed from edge to edge. However, the minimum triple-spot average coating weight (mass) on any one side shall not be less than 40% of the single-spot requirement.

[B] As it is an established fact that the atmospheric corrosion resistance of zinc or zinc-iron alloy-coated sheet products is a direct function of coating thickness (weight (mass)), the selection of thinner (lighter) coating designations will result in almost linearly reduced corrosion performance of the coating. For example, heavier galvanized coatings perform adequately in bold atmospheric exposure whereas the lighter coatings are often further coated with paint or a similar barrier coating for increased corrosion resistance. Because of this relationship, products carrying the statement "meets ASTM A 653/A 653M requirements" should also specify the particular coating designation.

[C] International Standard, ISO 3575, continuous hot-dip zinc-coated carbon steel sheet commercial, lockforming, and drawing qualitites contains Z100 and Z200 designations and does not specify a ZF75 coating.

[D] No minimum means that there are no established minimum requirements for triple- and single-spot tests.

The lack of ductility of the alloy coating may result in powdering of the coating during fabrication. The zinc-iron coating ductility improves as the specified coating thickness is decreased. By the proper selection of a total coating system which includes the zinc-iron coating thickness, the pretreatment, organic primer, and organic topcoat detachment of the organic or metallic coatings, or both, can be avoided in subsequent forming operations. The user should discuss each potential application of prepainted zinc-iron alloy product with the supplier. Zinc-iron alloy coated sheet can be supplied in the four coating designations in Table 1 prefixed by the letter "A" ["ZF"].

Table 2 (A): Chemical Requirements

Composition, %-Heat Analysis Element, max (unless otherwise shown).

Designation	Carbon	Manganese	Phosphorus	Sulfur	Aluminum, min[F]	Comments
CS Type A [A,C]	0.10	0.60	0.030	0.035	...	...
CS Type B [A, B, C]	0.02 to 0.15	0.60	0.030	0.035	...	...
CS Type C [A,C]	0.08	0.60	0.100	0.035	...	...
FS Type A [C,G]	0.10	0.50	0.020	0.035	...	...
FS Type B [C,G]	0.02 to 0.10	0.50	0.020	0.030	...	...
DDS [D]	0.06	0.50	0.020	0.025	0.01	...
EDDS [E]	0.02	0.40	0.020	0.020	0.01	...

[A] For CS Designation, specify Type B to avoid carbon levels below 0.02 %.
[B] CS Type A describes the typical commercial quality product previously included in this specification.
[C] When a deoxidized steel is required for the application, CS and FS may be ordered to a minimum of 0.01 % total aluminum.
[D] May be furnished as a stabilized steel at producer's option.
[E] Shall be furnished as a stabilized steel.
[F] When an ellipsis (. . .) appears in this table, there is no requirement, but the analysis shall be reported.
G Shall not be furnished as a stabilized steel.

4. Classification

4.1 The material is available in several designations as follows:
4.1.1 Commercial Steel (CS Types A,B, and C),
4.1.2 Forming Steel (FS Types A and B),
4.1.3 Deep Drawing Steel (DDS),
4.1.4 Extra Deep Drawing Steel (EDDS),
4.1.5 Structural Steel (SS),
4.1.6 High Strength-Low Alloy Steel (HSLAS Type A), and
4.1.7 High Strength-Low Alloys Steel (HSLAS Type B).
4.2 Structural steel and high strength-low alloys steel are available in several grades based on mechanical properties. Structural Steel Grade 50 [340] is available in three classes based on tensile strength.
4.3 The material is available as either zinc-coated or zinc-iron alloy-coated in several coating weights [masses] or coating designations as shown in Table 1, and
4.3.1 The material is available with the same or different coating designations on each surface.

5. Ordering Information

5.1 Zinc-coated or zinc-iron alloy-coated sheet in coils and cut lengths is produced to thickness requirements expressed to 0.001 in. [0.01 mm]. The thickness of the sheet includes both the base metal and the coating.
5.2.1 Name of product (steel sheet, zinc-coated (galvanized) or zinc-iron alloy-coated (galvannealed)),
5.2.2 Designation of sheet [CS (Types A, B, and C), FS (Types A and B) DDS, EDDS, SS, or HSLAS (Types A and B)].
5.2.2.1 When a CS type is not specified, Type A will be furnished. When a FS type is not specified, FS Type B will be furnished.
5.2.3 When a SS or HSLAS designation is specified, state the type, grade, or class, or combination thereof.
5.2.4 ASTM designation number and year of issue, as A 653 for inch-pound units or A 653M for SI units.
5.2.5 Coating designation,
5.2.6 Chemically treated or not chemically treated,
5.2.7 Oiled or not oiled,
5.2.8 Minimized spangle (if required),
5.2.9 Extra smooth (if required),
5.2.10 Phosphatized (if required),
5.2.11 Dimensions (show thickness, minimum or nominal, width, flatness requirements and length, if cut lengths). The purchaser shall specify the appropriate table of thickness tolerances in Specification A 924/A 924M that applies to the order, that is, the table of thickness tolerances for 3/8-in. [10-mm] edge distance, or the table of thickness tolerances for 1-in. [25-mm] edge distance.
5.2.12 Coil size requirements (specify maximum outside diameter (OD), acceptable inside diameter (ID), and maximum weight (mass),
5.2.13 Packaging,

DESIGNATION: A 653/A 653M - 97

5.2.14 Certification, if required, heat analysis and mechanical property report,
5.2.15 Application (part identification and description), and
5.2.16 Special requirements (if any).
5.2.16.1 If required, the product may be ordered to a specified base metal thickness (see Supplementary Requirement S1.)

NOTE 1

Typical ordering descriptions are as follows: steel sheet, zinc-coated, commercial steel Type A, ASTM A 653,Coating DesignationG115, chemically treated, oiled, minimum 0.040 by 34 by 117 in., for stock tanks, or steel sheet, zinccoated, high strength-low alloy steel

Type A Grade 340, ASTM A 653M, Coating Designation Z275, minimized spangle, not chemically treated, oiled, minimum 1.00 by 920 mm by coil, 1520-mm maximum OD, 600-mm ID, 10,000-kg maximum, for tractor inner fender.

NOTE 2

The purchaser should be aware that there are variations in manufacturing practices among the producers and therefore is advised to establish the producer's standard (or default) procedures for thickness tolerances.

Table 2 (B): Chemical Requirements

Composition, %-Heat Analysis Element, max (unless otherwise shown)

Designation	Carbon	Manganese	Phosphorus	Sulfur	Copper, min (when specified)
SS Grd					
33 [230]	0.20	...	0.04	0.04	...
37 [255]	0.20	...	0.10	0.04	...
40 [275]	0.25	...	0.10	0.04	...
50 [340] Class 1 & 2	0.40	...	0.20	0.04	...
50 [340] Class 3	0.50	...	0.04	0.04	...
80 [550]	0.20	...	0.04	0.04	...
HSLAS Type A [B]					
50 [340]	0.20	1.20	...	0.035	...
60 [410]	0.20	1.35	...	0.035	...
70 [480]	0.20	1.65	...	0.035	...
80 [550]	0.20	1.65	...	0.035	...
HSLAS Type B [B, C]					
50 [340]	0.15	1.20	...	0.035	...
60 [410]	0.15	1.35	...	0.035	...
70 [480]	0.15	1.65	...	0.035	...
80 [550]	0.15	1.65	...	0.035	...

[A] Where an ellipsis (...) appears in this table there is no requirements, but the analysis shall be reported.

[B] Steel conforming to this designation commonly contains the strengthening elements columbium, nitrogen, phosphorus, or vanadium added single or in combination.

[C] Some steels may be treated by means of small alloy additions to effect sulfide inclusion control.

NOTES & STANDARDS

Table 2 (C): Chemical Requirements -Limits on Unspecified Elements

Copper, max % [A]	Heat Analysis Product Analysis	0.20 0.23
Nickel, max % [A]	Heat Analysis Product Analysis	0.20 0.23
Chromium, max % [A]	Heat Analysis Product Analysis	0.15 0.19
Molydenum, max % [A]	Heat Analysis Product Analysis	0.06 0.07
Vanadium, max % [B]	Heat Analysis Product Analysis	0.008 0.018
Columbium, max % [B,C]	Heat Analysis Product Analysis	0.008 0.018
Titanium, max %	Heat Analysis Product Analysis	0.30 0.33

[A] The sum of copper, nickel, chromium, and molybdenum shall not exceed 0.50 % on heat analysis. When one or more of these elements are specified, the sum does not apply; in which case, only the individual limits on the remaining unspecified elements will apply.

[B] The limits do not apply when HSLAS is specified.

c The limits for steel whose carbon content is 0.02 % or less are:
- Heat Analysis - 0.045%
- Product Analysis - 0.055%

6. Chemical Composition

6.1 Base Metal:

6.1.1 The heat analysis of the base metal shall conform to the requirements shown in Table 2(a) for CS (Types A, B, and C), FS (Types A and B), DDS, and EDDS, Table 2(b) for SS and HSLAS (Types A and B), and Table 2(c) for the unspecified elements.
6.1.2 Unspecified elements may be present. Limits shall be as stated in Table 2(c).
6.1.3 Each of the elements listed in Table 2(c) shall be included in the report of heat analysis. When the amount of copper, nickel. chromium, or molybdenum is less than 0.02 %, the analysis may be reported as <0.02 %. When the amount of vanadium. titanium or columbium is less than 0.008 %, the analysis may be reported as <0.008 %.
6.1.4 See Specification A 924/A 924M for chemical analysis procedures and product analysis tolerances.
6.2 Zinc Bath Analysis-The bath metal used in continuous hotdip galvanizing shall contain not less than 99 % zinc.

NOTE 3:
To control alloy formation and promote adhesion of the zinc coating with the steel base metal, the molten coating metal composition normally contains a percentage of aluminum usually in the range from 0.05 to 0.25. This aluminum is purposely supplied to the molten coating bath, either as a specified ingredient in the zinc spelter or by the addition of a master alloy containing aluminum.

7. Mechanical Properties

7.1 Structural steel and high-strength low-alloy steel shall conform to the mechanical property requirements in Table 3 for the type, grade, or class, or all, specified.
7.2 The typical mechanical properties for CS (Types A, B, and C), FS (Types A and B), DDS, and EDDS sheet designations are listed in Table 4. These mechanical property values are nonmandatory .They are intended solely to provide the purchaser with as much information as possible to make an informed decision on the steel to be specified. Values outside of these ranges are to be expected.
7.3 When base metal mechanical properties are required, all tests shall be conducted in accordance with the methods specified in Specification A 924/A 924M.
7.4 Bending Properties-Minimum Cold Bending Radius-Structural steel and high-strength low-alloy steel are commonly fabricated by cold bending. There are many interrelated factors that affect the ability of a steel to cold form over a given radius under shop conditions. These factors include; thickness, strength level, degree of restraint, relationship to rolling direction, chemistry, and base metal microstructure.
Table X1.1 in Appendix X1 lists the suggested minimum inside radius for 900 cold bending for structural steel and highstrength low-alloy steel. They presuppose “hard way” bending (bend axis parallel to rolling direction) and reasonably good shop forming practices. Where possible, the use of larger radius or “easy way” bends are recommended for improved performance.

8. Coating Properties

8.1 Coating Weight [Mass]:
8.1.1 The weight [mass] of coating shall conform to the triple and single-spot requirements shown in Table 1 for the specific coating designation. The weight [mass] of coating is the total amount on both sides of a sheet, expressed in ounces per square foot [grams per square metre] of sheet, except in the case of differential coating.
8.1.2 The test for coating weight [mass] shall be performed in accordance with Test Method A 90/A 90M on specimens taken an informed decision on the steel to be specified. Values outsideof these ranges are to be expected.

DESIGNATION: A 653/A 653M - 97

Table 3: Mechanical Requirements, Base Metal (Longitudinal)

Inch-Pount Units

Designation	Type	Grade	Yield Strength, min, ksi	Tensile Strength, min, ksi [E]	Elongation in 2 in., min, % [E]
SS [D]	...	33	33	45	20
		37	37	52	18
		40	40	55	16
		50 Class 1	50	65	12
		50 Class 2	50	...	12
		50 Class 3	50	70	12
		80 [A]	80 [B]	82	...
HSLAS	Type A	50	50	60 [C]	20
		60	60	70 [C]	16
		70	70	80 [C]	12
		80	80	90 [C]	10
HSLAS	Type B	50	50	60 [C]	22
		60	60	70 [C]	18
		70	70	80 [C]	14
		80	80	90 [C]	12

SI Units

Designation	Type	Grade	Yield Strength, min, MPa	Tensile Strength, min, MPa [E]	Elongation in 50 mm., min, % [E]
SS [D]	...	233	230	310	20
		255	255	360	18
		275	275	380	16
		340 Class 1	340	450	12
		340 Class 2	340	...	12
		340 Class 3	340	480	12
		550 [A]	550 [A]	570	...
HSLAS	Type A	340	340	410 [C]	20
		410	410	480 [C]	16
		480	480	550 [C]	12
		550	550	620 [C]	10
HSLAS	Type B	340	340	410 [C]	22
		410	410	480 [C]	18
		480	480	550 [C]	14
		550	550	620 [C]	12

[A] For sheet thickness of 0.028 in. (0.71 mm) no tension test is required if the hardness result is Rockwell B 85 or higher .
[B] As there is no discontinuous yield curve, the yield strength should be taken as the stress at 0.5 % elongation under load or 0.2 % offset.
[C] If a higher tensile strength is required, the user should consult the producer.
[D] No type indentification is applicable to the SS designation.
[E] Where an ellipsis (. . .) appears in this table there is no requirement.

NOTES & STANDARDS

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Table 4: Typical Ranges of Mechanical Properties [A,B] (Non-mandatory)

Designation	(Longitudinal Direction) Yield Strength ksi	Yield Strength [MPa]	Elongation in 2 in., [50mm], %	r_m Value [C]	n Value [D]
CS Type A	25/55	[170/380]	≥20	E	E
CS Type B	30/55	[205/380]	≥20	E	E
CS Type C	25/60	[170/410]	≥15	E	E
FS Types A &B [F]	25/45	[170/310]	≥26	1.0/1.4	0.17/0.21
DDS [G]	20/35	[140/240]	≥32	1.4/1.8	0.19/0.24
EDDS [H]	15/25	[105/170]	≥40t	1.6/2.1	0.22/0.27

[A] The typical mechanical property values presented here are nonmandatory. They are intended solely to provide the purchaser with as much information as possible to make an informed decision on the steel to be specified. Values outside of these ranges are to be expected. The purchaser may negotiate with the supplier if a specific range or a more restrictive range is required for the application.
[B] These typical mechanical properties apply to the full range of steel sheet thicknesses. The yield strength tends to increase and some of the formability values tend to decrease as the sheet thickness decreases.
[C] rm Value-Average plastic strain ratio as determined by method in Test Method E 517.
[D] n Value-Strain-hardening exponent as determined by method in Test Method E 646.
[E] No typical mechanical properties have been established.
[F] The FS designation encompasses the properties of the previous DQ grade in Specification A 528.
[G] The DDS designation encompasses the properties of the previous DQSK grade in Specification A 642.
[H] EDDS Sheet will be free from changes in mechanical properties over time, that is. nonaging.

taken in accordance with Specification A 924/A 924M.
8.1.3 The coating thickness may be estimated from the coating weight [mass] by using the following relationships:
8.1.3.1 1 oz/ft2 coating weight = 1.7 mils coating thickness, and
8.1.3.2 7.14 g/m2 coating mass = 1µmm coating thickness.
8.2 Coating Bend Test:
8.2.1 The bend test specimens of coated sheet designated by prefix “G” [“Z”] shall be capable of being bent through 180° in any direction without flaking of the coating on the outside of the bend only. The coating bend test inside diameter shall have a relation to the thickness of the specimen as shown in Table 5. Flaking of the coating within 0.25 in. [6 mm] of the edge of the bend specimen shall not be cause for rejection.
8.2.2 Because of the characteristics of zinc-iron alloy coatings designated by prefix “A” [“ZF”] as explained in 3.2.6, coating bend tests are not applicable.

9. Dimensions & Permissible Variations

9.1 All dimensions and permissible variations shall comply with the requirements of Specification A 924/A 924M, except forflatness of SS and HSLAS, which is specified in Tables 6 and 7, respectively.

10. Keywords

10.1 Alloyed coating; minimized spangle coating; spangle; sheet steel, high strength-low alloy; steel; steel sheet; zinc; zinc coated (galvanized); zinc iron-alloy; zinc iron-alloy coated.

DESIGNATION: A 653/A 653M - 97

Table 5: Coating Bend Test Requirements

Inch-Pount Units

Ratio of the Inside Bend Diameter to Thickness of the Specimen (Any Direction)

Coating Designation [A]	CS, FS, DDS, EDDS Sheet Thickness Through 0.039 in.	Over 0.039 Through 0.079 in.	Over 0.039 Over 0.079 in.	SS Grade [B] 33	37	40
G235	2	3	3	3	3	2 ½
G210	2	2	2	2	2	2 ½
G185	2	2	2	2	2	2 ½
G165	2	2	2	2	2	2 ½
G140	1	1	2	2	2	2 ½
G115	0	0	1	1 ½	2	2 ½
G90	0	0	1	1 ½	2	2 ½
G60	0	0	0	1 ½	2	2 ½
G40	0	0	0	1 ½	2	2 ½
G30	0	0	0	1 ½	2	2 ½
G01	0	0	0	1 ½	2	2 ½

Coating Designation [A]	HLAS Type A [B] 50	50	HLAS Type B 50	60	70	80
G115	1 ½	3	1	1	1 ½	1 ½
G90	1 ½	3	1	1	1 ½	1 ½
G69	1 ½	3	1	1	1 ½	1 ½
G40	1 ½	3	1	1	1 ½	1 ½
G30	1 ½	3	1	1	1 ½	1 ½
G01	1 ½	3	1	1	1 ½	1 ½

NOTES & STANDARDS

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SI Unitst						
Ratio of the Inside Bend Diameter to Thickness of the Specimen (Any Direction)						
	CS, FS, DDS, EDDS			SS Grade [C]		
Coating Designation [A]	Sheet Thickness					
	Over 1.0 mm			230	255	275
	Through 1.0 mm	Through 2.0 mm	Over 2.0 mm			
Z700	2	3	3	3	3	3
Z600	2	2	2	2	2	2 ½
Z450	1	1	2	2	2	2 ½
Z350	0	0	1	1 ½	2	2 ½
Z275	0	0	1	1 ½	2	2 ½
Z180	0	0	0	1 ½	2	2 ½
Z120	0	0	0	1 ½	2	2 ½
Z001	0	0	0	1 ½	2	2 ½

	HSLAS Type A [C]		HSLAS Type B			
	340	410	340	410	480	550
Z350	1 ½	3	1	1	1 ½	1 ½
Z275	1 ½	3	1	1	1 ½	1 ½
Z180	1 ½	3	1	1	1 ½	1 ½
Z120	1 ½	3	1	1	1 ½	1 ½
Z001	1 ½	3	1	1	1 ½	1 ½

[A] If other coatings are required, the user should consult the producer for availability and suitable bend test requirements.
[B] SS Grades 50 and 80 and HSLAS Type A Grades 70 and 80 are not subject to bend test requirements.
[C] SS Grades 340 and 550 and HSLAS Type A Grades 480 and 550 are not subject to bend test requirements.

Table 6: Structural Steel-Flatness Tolerances (Cut Lengths Only)

NOTE 1: This table also applies to sheets cut to length from coils by the consumer when adequate flattering measures are performed.

NOTE 2: For Grade 50 [340] (Classes 1, 2, and 3) use 11/2 times the values given in this table.

NOTE 3:-For Grade 80 [550], there are no defined flatness standards.

Specified Thickness, in. [mm]	Specified Width, in. [mm]	Flatness Tolerances (Maximum Deviation from a Horizontal Flat Surface), in. [mm]
Over 0.060 [1.5]	to 60 [1500], inclusive	½ [12]
	over 60 [1500] to 72 [1800], inclusive	¾ [20]
0.060 [1.5] and thinner	to 36 [900], inclusive	½ [12]
	over 36 [900] to 60 [1500], inclusive	¾ [20]
	over 60 [1500] to 72 [1800], inclusive	1 [25]

NOTES & STANDARDS

Table 7: High-Strength Low - Alloy Steel-Flatness Tolerances (Cut Lengths Only)

NOTE: This table also applies to sheets cut to length from coils by the consumer when adequate flattening measures are performed.

Inch-Pount Units					
		Flatness Tolerances (Maximum Deviation from a Horizontal Flat Surface), in. [mm]			
Specified Thickness, in.	Specified Width, in.	Grade			
		50	60	70	80
Over 0.060	to 60, inclusive	¾	⅞	1	1 ⅛
	over 60	1 ⅛	1 ¼	1 ⅜	1 ½
0.060 and thinner	to 36, inclusive	¾	⅞	1	1 ⅛
	over 36 to 60, inclusive	1 ⅛	1 ¼	1 ⅜	1 ½
	over 60	1 ½	1 ⅝	1 ¾	1 ⅞

SI Units					
		Flatness Tolerances(Maximum Deviation from a Horizontal Flat Surface), in. [mm]			
Specified Thickness, in.	Specified Width, in.	Grade			
		340	410	480	550
Over 1.5	to 1500, inclusive	20	22	25	30
	over 1500	30	32	35	38
1.5 and thinnes	to 900, inclusive	20	22	25	30
	over 900 to 1500, inclusive	30	32	35	33
	over 1500	38	40	45	48

Supplementary Requirements

The following standardized supplementary requirements are for use when desired by the purchaser. These additional requirements shall apply only when specified on the order.

S1. Base Metal Thickness

S1.1 The specified minimum thickness shall apply to the base metal only.

S1.2 The coating designation shown on the order indicates the coating to be applied to the specified minimum base metal thickness.

S1.3 The applicable tolerances for base metal thickness are shown in Tables 16 and 17, Thickness Tolerance of Cold-Rolled Sheet (Carbon and High-Strength, Low-Alloy Steel), of Specification A 568/A 568M.

NOTES & STANDARDS

APPENDIX (NON-MANDATORY INFORMATION)
X1. BENDING PROPERTIES

Table X1.1 Suggested Minimum Inside Radius for Cold Bending [A]

NOTE 1: (t) equals a radius equivalent to the steel thickness.
NOTE 2: The suggested radius should be used as minimum for 90° bends in actual shop practice.

Quality	Type	Grade	Minimum Inside Radius for Cold Bending [B]
SS		33 [230]	1 ½ t
		37 [255]	2t
		40 [275]	2t
		50 [340] Class 1	not applicable
		50 [340] Class 2	not applicable
		50 [340] Class 3	not applicable
		80 [550]	not applicable
HSLAS	Type A	50 [340]	2 ½ t
		60 [410]	3t
		70 [480]	4t
		80 [550]	4 ½ t
HSLAS	Type B	50 [340]	2t
		60 [410]	2t
		70 [480]	3t
		80 [550]	3t

[A] Material that does not perform satisfactorily, when fabricated in accordance with the requirements in Table X1.1, may be subject to rejection negotiation with the steel supplier.
[B] Bending capability may be limited by coating designation.

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Table 1: Conversion to SI Units

Multiply	By	To Obtain
Acre	0.4047	ha
Atmosphere (standard)	101.325	kPa
Bar	*100	kPa
Barrel (42 U.S. gal, petroleum)	159	L
	0.159	m^3
BTU (International Table)	1.055	kJ
BTU/ft^2	11.36	kJ/m^2
BTU/ft^3	37.3	kJ/m^3
BTU/gal	279	kJ/m^3
BTU•ft/h• ft^2•°F	1.731	W/(m•K)
BTU•ft/h• ft^2•°F (thermal conductivity, K)	0.1442	W/(m•K)
BTU/h	0.2931	W
BTU/h• ft^2	3.155	W/m^2
BTU•ft/h• ft^2•°F (overall heat transfer coeficcient, U)	5.678	W/(m^2•K)
BTU/lb	*2.326	kJ/kg
BTU/lb. °F (specific heat C_p)	4.184	kJ(kg•K)
bushel	0.03524	m^3
calorie, gram	4.184	J
calorie, kilogram (kilocalorie)	4.184	kJ
centipoise (dynamic viscosity, μ)	*1.00	mPa•s
centistokes (kinematic viscosity, v)	*1.00	mm^2/s
clo	0.155	m^2 K/W
dyne/cm^2	*0.100	Pa
EDR hot water (150 BTU/h)	44.0	W
EDR steam (150 BTU/H)	70.3	W
EER	0.293	COP
ft	*0.3048	m
	*304.8	mm
ft/min, fpm	*0.00508	m/s
ft/s, fps	*0.3048	m/s
ft of water	2.99	kPa
ft of water per 100 ft pipe	0.0981	kPa/m
ft^2	0.09290	m^2
ft^2 •h•°F/BTU (thermal resistance, R)	0.176	m^2 K/W
ft^2/s (kinematic viscosity, v)	92900	mm^2/s
ft^3	28.32	L
	0.02832	m^3
ft^3/min, cfm	0.4719	L/s
ft^3/s, cfs	28.32	L/s
ft•lb_f (torque moment)	1.356	N•m
ft•lb_f (work)	1.356	J
ft•lb_f /lb (specific energy)	2.99	J/kg
ft•lb_f /min (power)	0.0226	W
footcandle	10.76	lx
gallon (U.S., *231 in^3)	3.7854	L
gph	1.05	mL/s
gpm	0.0631	L/s
gpm/ ft^2	0.6791	L/(S•m^2)
gpm/ton refrigeration	0.0179	mL/J
grain (1/7000 lb)	0.0648	g
gr/gal	17.1	g/m^3
gr/lb	0.143	g/kg
horsepower (boiler) (33 470 BTU/h)	9.81	kW
horsepower (550 ft • lb_f /s)	0.746	kW
inch	*25.4	mm
in. of mercury (60 °F)	3.377	kPa
in. of water (60 °F)	249	Pa
in/100 ft. thermal expansion	0.833	mm/m
in•lb_f (torque or moment)	113	mN•m
in^2	645	mm^2
in^3 (volume)	16.4	mL
in^3/min (SCIM)	0.273	mL/s
in^3 (section modulus)	16400	mm^3
in^4 (section moment)	416 200	mm^4
km/h	0.278	m/s
kWh	*3.60	MJ
kW/1000 cfm	2.12	kJ/m^3
kilopond (kg force)	9.81	N
kip (1000 lb_f)	4.45	kN
kip/in^2 (ksi)	6.895	MPa
litre	*0.001	m^3
met	58.15	W/m^2
micron (μm) of mercury (60 °F)	133	mPa

The preparation of this chapter is assigned to TC 1.6, Terminology.

* Conversion factor is exact.

Notes: Units are U.S. values unless noted otherwise.

Litre is a special name for the cubic decimetre. 1 L = 1 dm^3 and 1 mL = 1 cm^3.

Multiply	By	To Obtain
mile	1.609	km
mile, nautical	*1.852	km
mph	1.609	km/h
	0.447	m/s
millibar	*0.100	kPa
mm of mercury (60 ^{0}F)	0.133	kPa
mm of water (60 ^{0}F)	9.80	Pa
ounce (mass, avoirdupois)	28.35	g
ounce (force or thrust)	0.278	N
ounce (liquid, U.S.)	29.6	mL
ounce inch (torque, moment)	7.06	mN.m
ounce (avoirdupois) per gallon	7.49	kg/m^3
perm (permeance)	57.45	ng/s•m^2•Pa)
perm inch (permeability)	1.46	ng/s•m•Pa
pint (liquid, U.S.)	473	mL
pound		
lb (mass)	0.4536	kg
	453.6	g
lb$_f$ (force or thrust)	4.45	N
lb/ft (uniform load)	1.49	kg/m
lb$_m$/ft•h (dynamic viscosity, μ)	0.413	mPa•s
lb$_m$/ft•s (dynamic viscosity, μ)	1490	mPa•s
lb$_f$•s/ft^2 (dynamic viscosity, μ)	47.88	Pa•s
lb/h	0.126	g/s
lb/min	0.00756	kg/s
lb/h [steam at 212 ^{0}F (100 ^{0}C)]	0.284	kW
lb$_f$ /ft^2	47.9	Pa
lb /ft^2	4.88	kg/m^2
lb/ft^3 (density, ρ)	16.0	kg/m^3
lb/gallon	120	kg/m^3
ppm (by mass)	*1.00	mg/kg
psi	6.895	kPa
quad (10^{15} BTU)	1.055	EJ
quart (liquid, U.S.)	0.946	L
square (100 ft^2)	9.29	m^2
tablespoon (approximately)	15	mL
teaspoon (approximately)	5	mL
therm (U.S)	105.5	MJ
ton, long (2240 lb)	1.016	Mg
ton, short (2000 lb)	0.907	Mg; t (tonne)
ton, refrigeration (12000 BTU/h)	3.517	kW
torr (1 mm Hg at 0^{0}C)	133	Pa

Multiply	By	To Obtain
watt per square foot	10.76	W/m^2
yd	*0.9144	m
yd^2	0.836	m^2
yd^3	0.7646	m^3

The preparation of this chapter is assigned to TC 1.6, Terminology.

* Conversion factor is exact.

Notes: Units are U.S. values unless noted otherwise.

Litre is a special name for the cubic decimetre. 1 L = 1 dm^3 and 1 mL = 1 cm^3.

Table 2: Conversion Factors

Pressure pai	in. of water (60 °F)	in. Hg (32 °F)	atmosphere	mmHg (32 °F)	bar	kgf/cm²	pascal
1	=27.708	=2.0360	=0.068046	=51.715	=0.068948	=0.07030696	=6894.8
0.036091	1	0.073483	2.4559 x 10 $^{-3}$	1.8665	2.4884 x 10 $^{-3}$	2.537 x 10 $^{-3}$	248.84
0.491154	13.609	1	0.033421	25.400	0.033864	0.034532	3386.4
14.6960	407.19	29.921	1	760.0	1.01325*	1.03323	1.01325 x 10 ^{5}*
0.0193368	0.53578	0.03937	1.31579 x 10 $^{-3}$	1	1.3332 x 10 $^{-3}$	1.3595 x 10 $^{-3}$	133.32
14.5038	401.86	29.530	0.98692	750.062	1	1.01972*	10 ^{5}*
14.223	394.1	28.959	0.96784	735.559	0.980665*	1	9.80665 x 10 ^{4}*
1.45035 x 10 $^{-4}$	4.0186 x 10 $^{-3}$	2.953 x 10 $^{-4}$	9.8692 x 10 $^{-6}$	7.50 x 10 $^{-3}$	10 $^{-5}$*	1.01972 x 10 $^{-5}$*	1

Mass	lb (avoir.)	grain	ounce (avoir.)	kg
	1	=7000*	=16*	=0.45359
	1.4286 x 10 $^{-4}$	1	2.2857 x 10 $^{-3}$	6.4800 x 10 $^{-5}$
	0.06250	437.5*	1	0.028350
	2.20462	1.5432 x 10 ^{4}	35.274	1

Volume	cubic inch	cubic foot	gallon	litre	cubic meter (m³)
	1	= 5.787 x 10 $^{-4}$	=4.329 x 10 $^{-3}$	=0.016387	=1.63871 x 10 $^{-5}$
	1728*	1	7.48055	28.317	0.028317
	231.0*	0.13368	1	3.7854	0.0037854
	61.02374	0.035315	0.264173	1	0.001*
	6.102374 x 10 ^{4}	35.315	264.173	1000*	1

Energy	Btu	ft.lb$_1$	calorie (cal)	Joule (J) = watt-second (W•s)	watt-hour (W•h)
	1	=778.17	=251.9958	=1055.056	=0.293071
	1.2851 x 10 $^{-3}$	1	0.32383	1.355818	3.76616 x 10 $^{-4}$
	3.9683 x 10 $^{-3}$	3.08803	1	4.1868*	1.163 x 10 $^{-3}$*
	9.4782 x 10 $^{-4}$	0.73756	0.23885	1	2.7778 x 10 $^{-4}$
	3.41214	2655.22	859.85	3600*	1

Density	lb/ft³	lb/gal	g/cm³	kg/m³
	1	=0.133680	=0.016018	=16.018463
	7.48055	1	0.119827	119.827
	62.4280	8.34538	1	1000*
	0.0624280	0.008345	0.001	1

Specific Volume	ft³/lb	gal/lb	cm³/g	m³/kg
	1	=7.48055	=62.4280	=0.062480
	0.133680	1	8.34538	0.008345
	0.016018	0.119827	1	0.001*
	16.018463	119.827	1000*	1

Vicosity (absolute)	poise	lb$_f$•s/ft^2	lb$_f$•h/ft^2	kg/(m•s) =N•s/m^2	lb$_m$ /ft•s
1 poise = 1 dyne-sec/ cm^2 = 0.1 Pa•s = 1g/(cm•s)	1	=2.0885 x 10 $^{-3}$	=5.8014 x 10 $^{-7}$	=0.1*	=0.0671955
	478.8026	1	2.7778 x 10 $^{-4}$	47.88026	32.17405
	1.72369 x 10 ^{6}	3600*	1	1.72369 x 10 ^{5}	1.15827 x 10 ^{5}
	10*	0.020885	5.8014 x 10 $^{-6}$	1	0.0671955
	14.8819	0.031081	8.6336 x 10 $^{-6}$	1.4882	1

UNITS AND CONVERSIONS

Temperature					
Scale		**K**	**°C**	**°R**	**°F**
Kelvin	x K =	x	x - 273.15	1.8x	1.8x - 459.67
Celsius	x °C =	x + 273.15	x	1.8x + 491.67	1.8x + 32
Rankine	x °R =	x/1.8	(x - 491.67)/1.8	x	x - 459.67
Fahrenheit	x °F =	(x + 459.67)/1.8	(x - 32)/1.8	(x +459.67)/1.8	x

Temperature Interval				
	K	**°C**	**°R**	**°F**
1 °K =	1	1	5/9=1.8	5/9=1.8
1 °C =	1	1	5/9=1.8	5/9=1.8
1 °R =	5/9	5/9	1	1
1 °F =	5/9	5/9	1	1

Notes:

- Coversions with * are exact.
- The Btu & calorie are based on the International Table.
- All temperature conversions and factors are exact.
- The term centigrade is odsolete and should not be used.

When making conversions, remember that a converted value is no more precise than the original value. For many applications, rounding off the converted value to the same number of significant figures as those in the original value provides sufficient accuracy.

Caution: The conversion values in Table 1 are rounded to three or four significant figures, which is sufficiently accurate for most applications. See ANSI Standard SI-10 (available from ASTM or IEEE) for additional conversions with more significant figures