



Composites USA

DualGuard 2000

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Fitting: **Round Duct**

Fitting No: **100**

Product Class: **Dual Guard 2000**

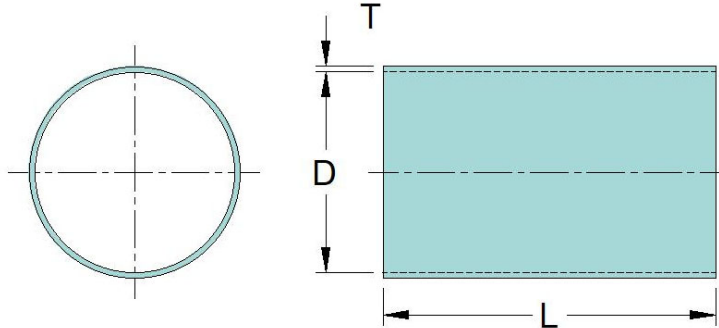
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#100: "D" / "L"**

#100 F x P: "D" / "L" for flange by plain end

#100 F x F: "D" / "L" for flange by flange end



D	T	L
inches	inches	inches
1	0.165	108
1-1/2	0.165	120
2	0.165	240
2-1/2	0.165	240
3	0.165	240
4	0.165	240
5	0.165	240
6	0.165	240
7	0.165	240
8	0.165	240
9	0.165	240
10	0.165	240
12	0.165	240
14	0.165	240
16	0.165	240
18	0.165	240
20	0.165	240
22	0.165	240

D	T	L
inches	inches	inches
24	0.204	240
26	0.204	240
28	0.204	240
30	0.204	240
32	0.204	240
34	0.204	240
36	0.204	240
42	0.286	240
48	0.286	240
54	0.286	240
60	0.286	240
66	0.286	240
72	0.375	240
78	0.375	240
84	0.375	240
90	0.375	240
96	0.375	240
102	0.375	240

Notes:

- 1) Custom lengths and larger sizes available up to 180"
- 2) Thicknesses shown are for $\pm 6"$ WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details.

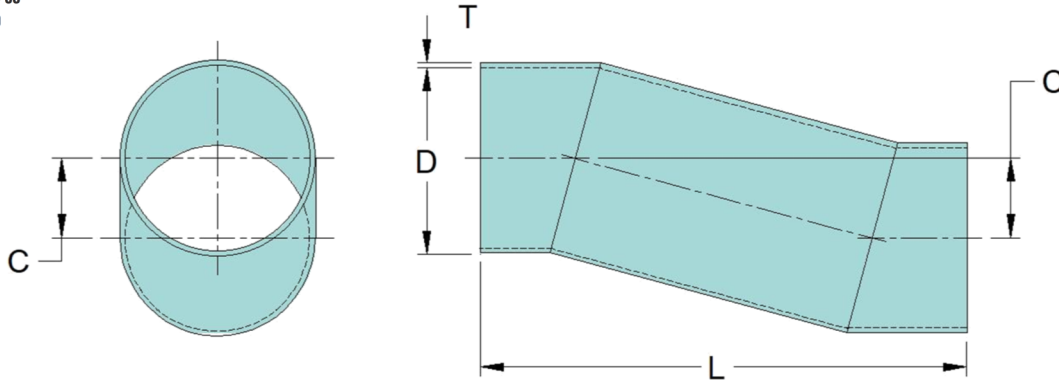
Fitting: Round Duct Offset

Fitting No: **101**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#101: "L" / "C"**
#101 F x P: "L" / "C" for flange by plain end
#101 F x F: "L" / "C" for flange by flange end


D	L	C
inches	inches	inches
Specify	Specify	Specify

D	L	C
inches	inches	inches

Notes:

- 1) Custom lengths and larger sizes available up to 180"

Fitting: **Rectangular Duct**

Fitting No: **105**

Product Class: **Dual Guard 2000**

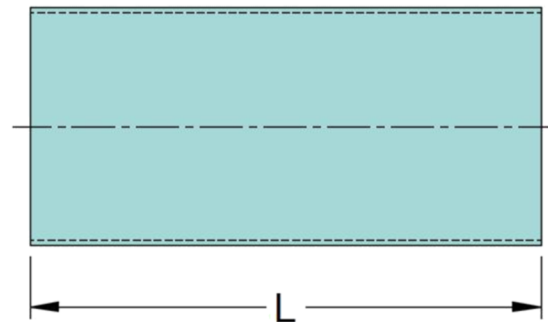
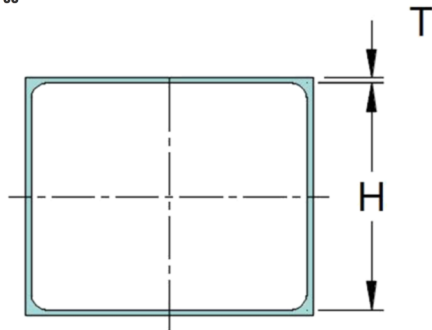
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#105: "W" / "H" / "L"**

#105 F x P: "W" / "H" / "L" for flange by plain end

#105 F x F: "W" / "H" / "L" for flange by flange end



W	H	L
inches	inches	inches
Specify	Specify	Specify

W	H	L
inches	inches	inches

Notes:

1) Custom lengths available

Fitting: **Rectangular Duct Offset**

Fitting No: **106**Product Class: **Dual Guard 2000**

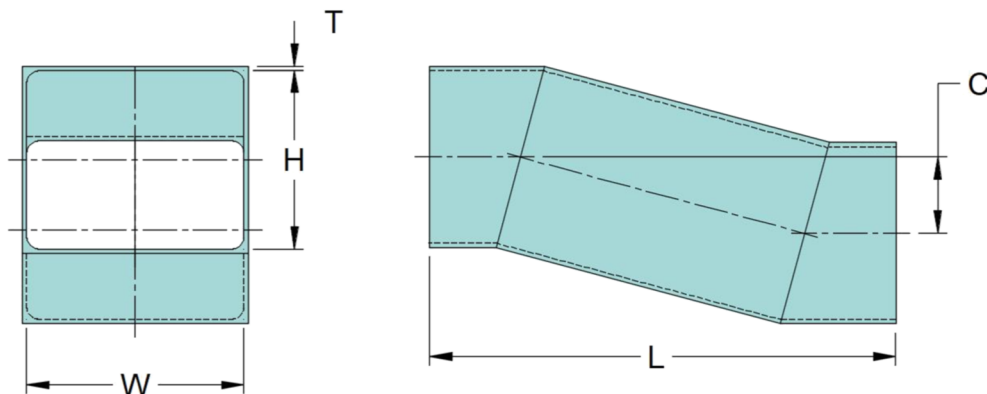
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: #106: "W" / "H" / "L" / "C"

#106 F x P: "W" / "H" / "L" / "C" for flange by plain end

#106 F x F: "W" / "H" / "L" / "C" for flange by flange end

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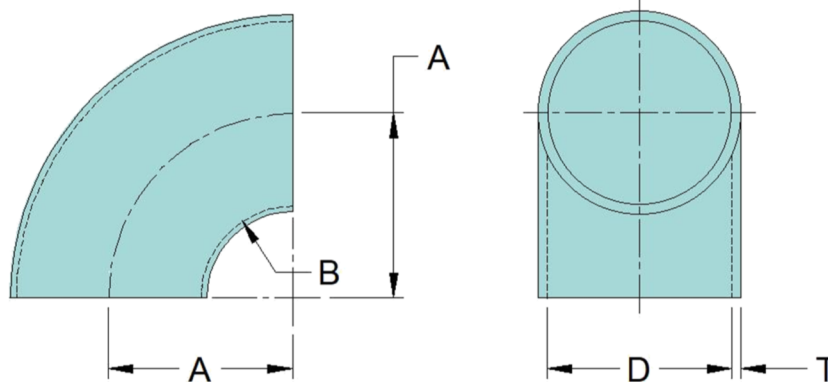
Fitting: 90° Short Radius Sweep Elbow

Fitting No: **111**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#111: "D"**
#111 F x P: "D" for flange by plain end
#111 F x F: "D" for flange by flange end


D	T	A	B
inches	inches	inches	inches
1	0.165	1.0	0.5
1-1/2	0.165	1.5	0.8
2	0.165	2.0	1.0
2-1/2	0.165	2.5	1.3
3	0.165	3.0	1.5
4	0.165	4.0	2.0
5	0.165	5.0	2.5
6	0.165	6.0	3.0
7	0.165	7.0	3.5
8	0.165	8.0	4.0
9	0.165	9.0	4.5
10	0.165	10.0	5.0
12	0.165	12.0	6.0
14	0.165	14.0	7.0
16	0.165	16.0	8.0
18	0.165	18.0	9.0
20	0.165	20.0	10.0
22	0.165	22.0	11.0

D	T	A	B
inches	inches	inches	inches
24	0.204	24.0	12.0
26	0.204	26.0	13.0
28	0.204	28.0	14.0
30	0.204	30.0	15.0
32	0.204	32.0	16.0
34	0.204	34.0	17.0
36	0.204	36.0	18.0
42	0.286	42.0	21.0
48	0.286	48.0	24.0
54	0.286	54.0	27.0
60	0.286	60.0	30.0
66	0.286	66.0	33.0
72	0.375	72.0	36.0
78	0.375	78.0	39.0
84	0.375	84.0	42.0
90	0.375	90.0	45.0
96	0.375	96.0	48.0
102	0.375	102.0	51.0

Notes:

- 1) Larger sizes available, check for tooling availability > 60"
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details.

Fitting: 90° Standard Long Radius Sweep Elbow

Fitting No: **110**

Product Class: **Dual Guard 2000**

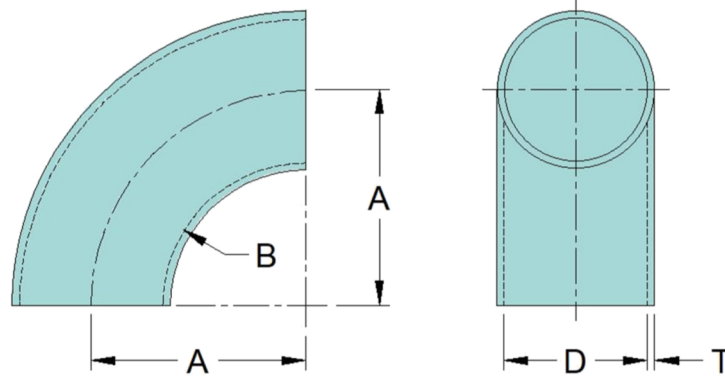
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#110: "D"**

#110 F x P: "D" for flange by plain end

#110 F x F: "D" for flange by flange end



D	T	A	B
inches	inches	inches	inches
1	0.165	1.5	1.0
1-1/2	0.165	2.3	1.5
2	0.165	3.0	2.0
2-1/2	0.165	3.8	2.5
3	0.165	4.5	3.0
4	0.165	6.0	4.0
5	0.165	7.5	5.0
6	0.165	9.0	6.0
7	0.165	10.5	7.0
8	0.165	12.0	8.0
9	0.165	13.5	9.0
10	0.165	15.0	10.0
12	0.165	18.0	12.0
14	0.165	21.0	14.0
16	0.165	24.0	16.0
18	0.165	27.0	18.0
20	0.165	30.0	20.0
22	0.165	33.0	22.0

D	T	A	B
inches	inches	inches	inches
24	0.204	36.0	24.0
26	0.204	39.0	26.0
28	0.204	42.0	28.0
30	0.204	45.0	30.0
32	0.204	48.0	32.0
34	0.204	51.0	34.0
36	0.204	54.0	36.0
42	0.286	63.0	42.0
48	0.286	72.0	48.0
54	0.286	81.0	54.0
60	0.286	90.0	60.0
66	0.286	99.0	66.0
72	0.375	108.0	72.0
78	0.375	117.0	78.0
84	0.375	126.0	84.0
90	0.375	135.0	90.0
96	0.375	144.0	96.0
102	0.375	153.0	102.0

Notes:

- 1) Check for tooling availability D > 60"
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details.

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Web: www.compositesusa.com Email: Info@compositesusa.com

Fitting: 45° Standard Long Radius Sweep Elbow

Fitting No: **115**

Product Class: **Dual Guard 2000**

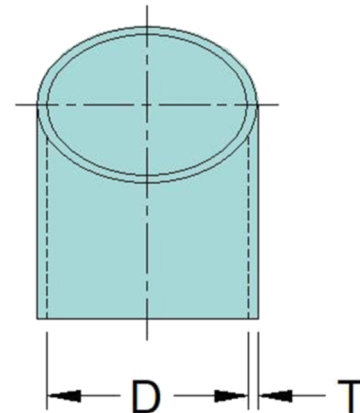
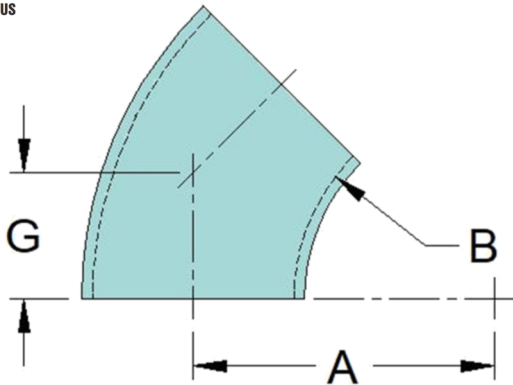
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#115: "D"**

#115 F x P: "D" for flange by plain end

#115 F x F: "D" for flange by flange end



D	T	A	B	G
inches	inches	inches	inches	inches
1	0.165	1.5	1.0	0.62
1-1/2	0.165	2.3	1.5	0.93
2	0.165	3.0	2.0	1.24
2-1/2	0.165	3.8	2.5	1.55
3	0.165	4.5	3.0	1.86
4	0.165	6.0	4.0	2.48
5	0.165	7.5	5.0	3.10
6	0.165	9.0	6.0	3.73
7	0.165	10.5	7.0	4.35
8	0.165	12.0	8.0	4.97
9	0.165	13.5	9.0	5.59
10	0.165	15.0	10.0	6.21
12	0.165	18.0	12.0	7.45
14	0.165	21.0	14.0	8.69
16	0.165	24.0	16.0	9.94
18	0.165	27.0	18.0	11.18
20	0.165	30.0	20.0	12.42
22	0.165	33.0	22.0	13.66

D	T	A	B	G
inches	inches	inches	inches	inches
24	0.204	36.0	24.0	14.90
26	0.204	39.0	26.0	16.15
28	0.204	42.0	28.0	17.39
30	0.204	45.0	30.0	18.63
32	0.204	48.0	32.0	19.87
34	0.204	51.0	34.0	21.11
36	0.204	54.0	36.0	22.35
42	0.286	63.0	42.0	26.08
48	0.286	72.0	48.0	29.81
54	0.286	81.0	54.0	33.53
60	0.286	90.0	60.0	37.26
66	0.286	99.0	66.0	40.98
72	0.375	108.0	72.0	44.71
78	0.375	117.0	78.0	48.44
84	0.375	126.0	84.0	52.16
90	0.375	135.0	90.0	55.89
96	0.375	144.0	96.0	59.61
102	0.375	153.0	102.0	63.34

Notes:

- 1) Check for tooling availability
- 2) Thicknesses shown are for $\pm 6"$ WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

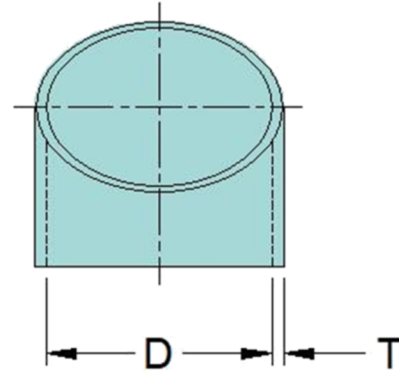
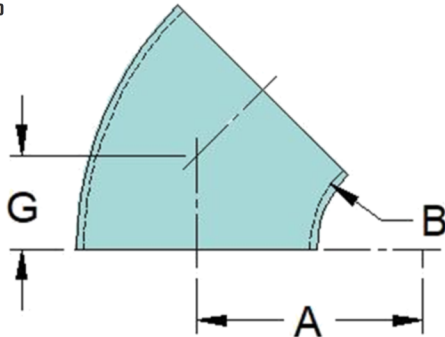
Fitting: 45° Short Radius Sweep Elbow

Fitting No: **116**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#116: "D"**
#116 F x P: "D" for flange by plain end
#116 F x F: "D" for flange by flange end


D	T	A	B	G
inches	inches	inches	inches	inches
1	0.165	1.0	0.5	0.41
1-1/2	0.165	1.5	0.8	0.62
2	0.165	2.0	1.0	0.83
2-1/2	0.165	2.5	1.3	1.03
3	0.165	3.0	1.5	1.24
4	0.165	4.0	2.0	1.66
5	0.165	5.0	2.5	2.07
6	0.165	6.0	3.0	2.48
7	0.165	7.0	3.5	2.90
8	0.165	8.0	4.0	3.31
9	0.165	9.0	4.5	3.73
10	0.165	10.0	5.0	4.14
12	0.165	12.0	6.0	4.97
14	0.165	14.0	7.0	5.80
16	0.165	16.0	8.0	6.62
18	0.165	18.0	9.0	7.45
20	0.165	20.0	10.0	8.28
22	0.165	22.0	11.0	9.11

D	T	A	B	G
inches	inches	inches	inches	inches
24	0.204	24.0	12.0	9.94
26	0.204	26.0	13.0	10.76
28	0.204	28.0	14.0	11.59
30	0.204	30.0	15.0	12.42
32	0.204	32.0	16.0	13.25
34	0.204	34.0	17.0	14.08
36	0.204	36.0	18.0	14.90
42	0.286	42.0	21.0	17.39
48	0.286	48.0	24.0	19.87
54	0.286	54.0	27.0	22.35
60	0.286	60.0	30.0	24.84
66	0.286	66.0	33.0	27.32
72	0.375	72.0	36.0	29.81
78	0.375	78.0	39.0	32.29
84	0.375	84.0	42.0	34.77
90	0.375	90.0	45.0	37.26
96	0.375	96.0	48.0	39.74
102	0.375	102.0	51.0	42.23

Notes:

- 1) Check for tooling availability
- 2) Thicknesses shown are for $\pm 6"$ WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: **22.5° Standard Long Radius Sweep**

Fitting No: **118**

Product Class: **Dual Guard 2000**

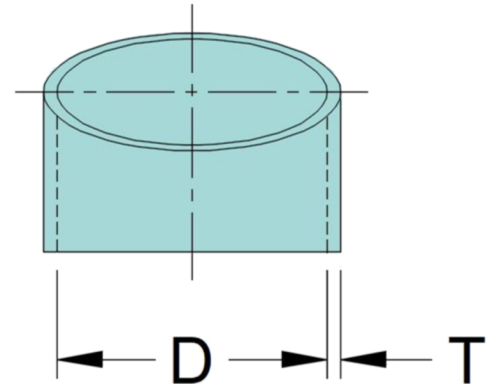
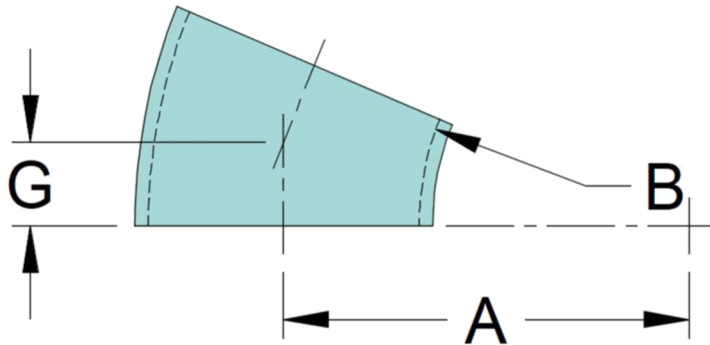
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#118: "D"**

#118 F x P: "D" for flange by plain end

#118 F x F: "D" for flange by flange end



D	T	A	B	G
inches	inches	inches	inches	inches
1	0.165	1.5	1.0	0.30
1-1/2	0.165	2.3	1.5	0.45
2	0.165	3.0	2.0	0.60
2-1/2	0.165	3.8	2.5	0.75
3	0.165	4.5	3.0	0.89
4	0.165	6.0	4.0	1.19
5	0.165	7.5	5.0	1.49
6	0.165	9.0	6.0	1.79
7	0.165	10.5	7.0	2.09
8	0.165	12.0	8.0	2.39
9	0.165	13.5	9.0	2.68
10	0.165	15.0	10.0	2.98
12	0.165	18.0	12.0	3.58
14	0.165	21.0	14.0	4.17
16	0.165	24.0	16.0	4.77
18	0.165	27.0	18.0	5.37
20	0.165	30.0	20.0	5.96
22	0.165	33.0	22.0	6.56

D	T	A	B	G
inches	inches	inches	inches	inches
24	0.204	36.0	24.0	7.16
26	0.204	39.0	26.0	7.75
28	0.204	42.0	28.0	8.35
30	0.204	45.0	30.0	8.95
32	0.204	48.0	32.0	9.54
34	0.204	51.0	34.0	10.14
36	0.204	54.0	36.0	10.74
42	0.286	63.0	42.0	12.52
48	0.286	72.0	48.0	14.31
54	0.286	81.0	54.0	16.10
60	0.286	90.0	60.0	17.89
66	0.286	99.0	66.0	19.68
72	0.375	108.0	72.0	21.47
78	0.375	117.0	78.0	23.26
84	0.375	126.0	84.0	25.05
90	0.375	135.0	90.0	26.84
96	0.375	144.0	96.0	28.63
102	0.375	153.0	102.0	30.42

Notes:

- 1) Check for tooling availability
- 2) Thicknesses shown are for $\pm 6"$ WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

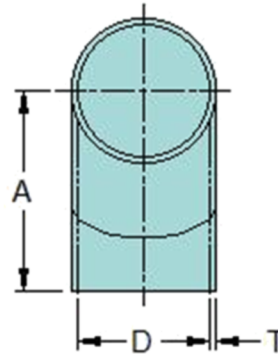
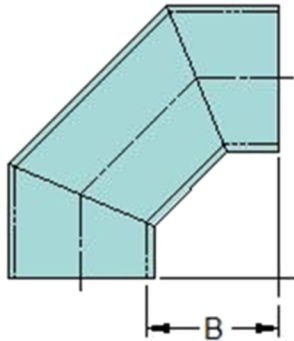
Fitting: 90° Long Radius 3-Gore Mitered Elbow

Fitting No: **120**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#120: "D"**
#120 F x P: "D" for flange by plain end
#120 F x F: "D" for flange by flange end


C	T	A	B
inches	inches	inches	inches
1	0.165	1.5	1.0
1-1/2	0.165	2.3	1.5
2	0.165	3.0	2.0
2-1/2	0.165	3.8	2.5
3	0.165	4.5	3.0
4	0.165	6.0	4.0
5	0.165	7.5	5.0
6	0.165	9.0	6.0
7	0.165	10.5	7.0
8	0.165	12.0	8.0
9	0.165	13.5	9.0
10	0.165	15.0	10.0
12	0.165	18.0	12.0
14	0.165	21.0	14.0
16	0.165	24.0	16.0
18	0.165	27.0	18.0
20	0.165	30.0	20.0
22	0.165	33.0	22.0

C	T	A	B
inches	inches	inches	inches
24	0.204	36.0	24.0
26	0.204	39.0	26.0
28	0.204	42.0	28.0
30	0.204	45.0	30.0
32	0.204	48.0	32.0
34	0.204	51.0	34.0
36	0.204	54.0	36.0
42	0.286	63.0	42.0
48	0.286	72.0	48.0
54	0.286	81.0	54.0
60	0.286	90.0	60.0
66	0.286	99.0	66.0
72	0.375	108.0	72.0
78	0.375	117.0	78.0
84	0.375	126.0	84.0
90	0.375	135.0	90.0
96	0.375	144.0	96.0
102	0.375	153.0	102.0

Notes:

- 1) Larger sizes available up to 180"
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

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Fitting: 90° Short Radius 3-Gore Mitered Elbow

Fitting No: **121**

Product Class: **Dual Guard 2000**

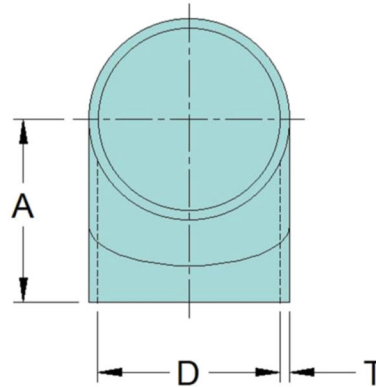
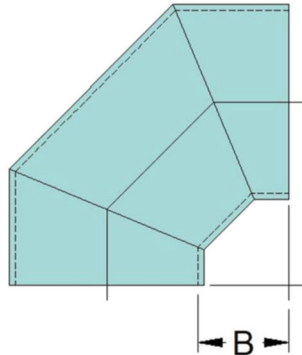
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#121: "D"**

#121 F x P: "D" for flange by plain end

#121 F x F: "D" for flange by flange end



D	T	A	B
inches	inches	inches	inches
1	0.165	1.0	0.5
1-1/2	0.165	1.5	0.8
2	0.165	2.0	1.0
2-1/2	0.165	2.5	1.3
3	0.165	3.0	1.5
4	0.165	4.0	2.0
5	0.165	5.0	2.5
6	0.165	6.0	3.0
7	0.165	7.0	3.5
8	0.165	8.0	4.0
9	0.165	9.0	4.5
10	0.165	10.0	5.0
12	0.165	12.0	6.0
14	0.165	14.0	7.0
16	0.165	16.0	8.0
18	0.165	18.0	9.0
20	0.165	20.0	10.0
22	0.165	22.0	11.0

D	T	A	B
inches	inches	inches	inches
24	0.204	24.0	12.0
26	0.204	26.0	13.0
28	0.204	28.0	14.0
30	0.204	30.0	15.0
32	0.204	32.0	16.0
34	0.204	34.0	17.0
36	0.204	36.0	18.0
42	0.286	42.0	21.0
48	0.286	48.0	24.0
54	0.286	54.0	27.0
60	0.286	60.0	30.0
66	0.286	66.0	33.0
72	0.375	72.0	36.0
78	0.375	78.0	39.0
84	0.375	84.0	42.0
90	0.375	90.0	45.0
96	0.375	96.0	48.0
102	0.375	102.0	51.0

Notes:

- 1) Larger sizes available up to 180"
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

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Fitting: 45° Long Radius 2-Gore Mitered Elbow

Fitting No: **125**

Product Class: **Dual Guard 2000**

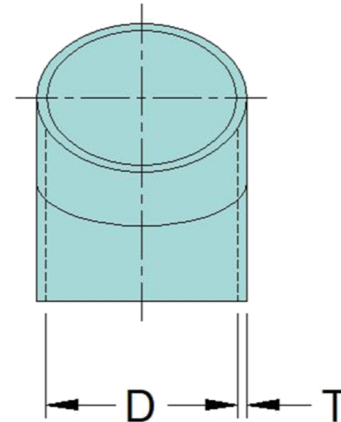
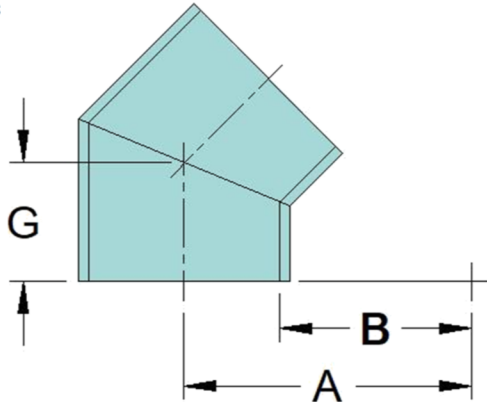
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#125: "D"**

#125 F x P: "D" for flange by plain end

#125 F x F: "D" for flange by flange end



D	T	A	B	G
inches	inches	inches	inches	inches
1	0.165	1.5	1.0	0.62
1-1/2	0.165	2.3	1.5	0.93
2	0.165	3.0	2.0	1.24
2-1/2	0.165	3.8	2.5	1.55
3	0.165	4.5	3.0	1.86
4	0.165	6.0	4.0	2.48
5	0.165	7.5	5.0	3.10
6	0.165	9.0	6.0	3.73
7	0.165	10.5	7.0	4.35
8	0.165	12.0	8.0	4.97
9	0.165	13.5	9.0	5.59
10	0.165	15.0	10.0	6.21
12	0.165	18.0	12.0	7.45
14	0.165	21.0	14.0	8.69
16	0.165	24.0	16.0	9.94
18	0.165	27.0	18.0	11.18
20	0.165	30.0	20.0	12.42
22	0.165	33.0	22.0	13.66

D	T	A	B	G
inches	inches	inches	inches	inches
24	0.204	36.0	24.0	14.90
26	0.204	39.0	26.0	16.15
28	0.204	42.0	28.0	17.39
30	0.204	45.0	30.0	18.63
32	0.204	48.0	32.0	19.87
34	0.204	51.0	34.0	21.11
36	0.204	54.0	36.0	22.35
42	0.286	63.0	42.0	26.08
48	0.286	72.0	48.0	29.81
54	0.286	81.0	54.0	33.53
60	0.286	90.0	60.0	37.26
66	0.286	99.0	66.0	40.98
72	0.375	108.0	72.0	44.71
78	0.375	117.0	78.0	48.44
84	0.375	126.0	84.0	52.16
90	0.375	135.0	90.0	55.89
96	0.375	144.0	96.0	59.61
102	0.375	153.0	102.0	63.34

Notes:

- 1) Larger sizes available up to 180"
- 2) Thicknesses shown are for $\pm 6"$ WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

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Fitting: 45° Short Radius 2-Gore Mitered Elbow

Fitting No: **126**

Product Class: **Dual Guard 2000**

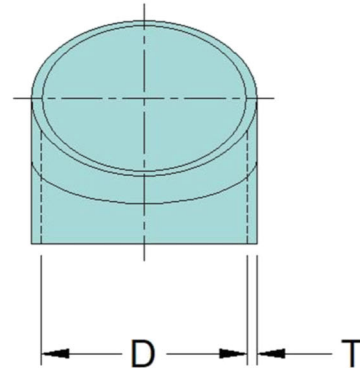
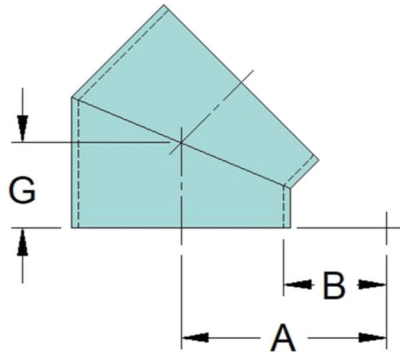
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#126: "D"**

#126 F x P: "D" for flange by plain end

#126 F x F: "D" for flange by flange end



D	T	A	B	G
inches	inches	inches	inches	inches
1	0.165	1.0	0.5	0.41
1-1/2	0.165	1.5	0.8	0.62
2	0.165	2.0	1.0	0.83
2-1/2	0.165	2.5	1.3	1.03
3	0.165	3.0	1.5	1.24
4	0.165	4.0	2.0	1.66
5	0.165	5.0	2.5	2.07
6	0.165	6.0	3.0	2.48
7	0.165	7.0	3.5	2.90
8	0.165	8.0	4.0	3.31
9	0.165	9.0	4.5	3.73
10	0.165	10.0	5.0	4.14
12	0.165	12.0	6.0	4.97
14	0.165	14.0	7.0	5.80
16	0.165	16.0	8.0	6.62
18	0.165	18.0	9.0	7.45
20	0.165	20.0	10.0	8.28
22	0.165	22.0	11.0	9.11

D	T	A	B	G
inches	inches	inches	inches	inches
24	0.204	24.0	12.0	9.94
26	0.204	26.0	13.0	10.76
28	0.204	28.0	14.0	11.59
30	0.204	30.0	15.0	12.42
32	0.204	32.0	16.0	13.25
34	0.204	34.0	17.0	14.08
36	0.204	36.0	18.0	14.90
42	0.286	42.0	21.0	17.39
48	0.286	48.0	24.0	19.87
54	0.286	54.0	27.0	22.35
60	0.286	60.0	30.0	24.84
66	0.286	66.0	33.0	27.32
72	0.375	72.0	36.0	29.81
78	0.375	78.0	39.0	32.29
84	0.375	84.0	42.0	34.77
90	0.375	90.0	45.0	37.26
96	0.375	96.0	48.0	39.74
102	0.375	102.0	51.0	42.23

Notes:

- 1) Larger sizes available up to 180"
- 2) Thicknesses shown are for $\pm 6"$ WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: 90° Long Radius 5-Gore Mitered Elbow

Fitting No: **130**

Product Class: **Dual Guard 2000**

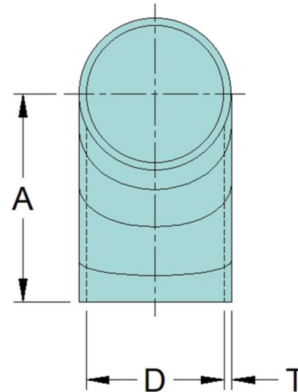
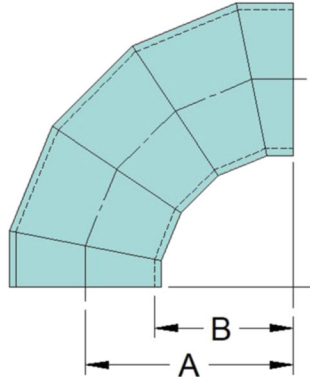
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#130: "D"**

#130 F x P: "D" for flange by plain end

#130 F x F: "D" for flange by flange end



D	T	A	B
inches	inches	inches	inches
1	0.165	1.5	1.0
1-1/2	0.165	2.3	1.5
2	0.165	3.0	2.0
2-1/2	0.165	3.8	2.5
3	0.165	4.5	3.0
4	0.165	6.0	4.0
5	0.165	7.5	5.0
6	0.165	9.0	6.0
7	0.165	10.5	7.0
8	0.165	12.0	8.0
9	0.165	13.5	9.0
10	0.165	15.0	10.0
12	0.165	18.0	12.0
14	0.165	21.0	14.0
16	0.165	24.0	16.0
18	0.165	27.0	18.0
20	0.165	30.0	20.0
22	0.165	33.0	22.0

D	T	A	B
inches	inches	inches	inches
24	0.204	36.0	24.0
26	0.204	39.0	26.0
28	0.204	42.0	28.0
30	0.204	45.0	30.0
32	0.204	48.0	32.0
34	0.204	51.0	34.0
36	0.204	54.0	36.0
42	0.286	63.0	42.0
48	0.286	72.0	48.0
54	0.286	81.0	54.0
60	0.286	90.0	60.0
66	0.286	99.0	66.0
72	0.375	108.0	72.0
78	0.375	117.0	78.0
84	0.375	126.0	84.0
90	0.375	135.0	90.0
96	0.375	144.0	96.0
102	0.375	153.0	102.0

Notes:

- 1) Larger sizes available up to 180"
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

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Fitting: 90° Short Radius 5-Gore Mitered Elbow

Fitting No: **131**

Product Class: **Dual Guard 2000**

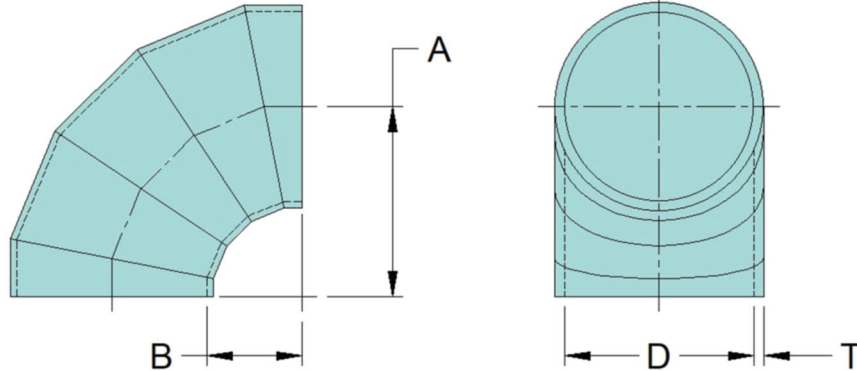
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#131: "D"**

#131 F x P: "D" for flange by plain end

#131 F x F: "D" for flange by flange end



D	T	A	B
inches	inches	inches	inches
1	0.165	1.0	0.5
1-1/2	0.165	1.5	0.8
2	0.165	2.0	1.0
2-1/2	0.165	2.5	1.3
3	0.165	3.0	1.5
4	0.165	4.0	2.0
5	0.165	5.0	2.5
6	0.165	6.0	3.0
7	0.165	7.0	3.5
8	0.165	8.0	4.0
9	0.165	9.0	4.5
10	0.165	10.0	5.0
12	0.165	12.0	6.0
14	0.165	14.0	7.0
16	0.165	16.0	8.0
18	0.165	18.0	9.0
20	0.165	20.0	10.0
22	0.165	22.0	11.0

D	T	A	B
inches	inches	inches	inches
24	0.204	24.0	12.0
26	0.204	26.0	13.0
28	0.204	28.0	14.0
30	0.204	30.0	15.0
32	0.204	32.0	16.0
34	0.204	34.0	17.0
36	0.204	36.0	18.0
42	0.286	42.0	21.0
48	0.286	48.0	24.0
54	0.286	54.0	27.0
60	0.286	60.0	30.0
66	0.286	66.0	33.0
72	0.375	72.0	36.0
78	0.375	78.0	39.0
84	0.375	84.0	42.0
90	0.375	90.0	45.0
96	0.375	96.0	48.0
102	0.375	102.0	51.0

Notes:

- 1) Larger sizes available up to 180"
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

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Fitting: 45° Long Radius 3-Gore Mitered Elbow

Fitting No: **135**

Product Class: **Dual Guard 2000**

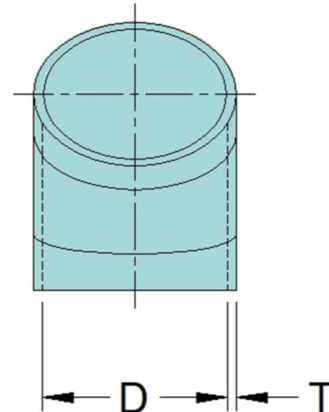
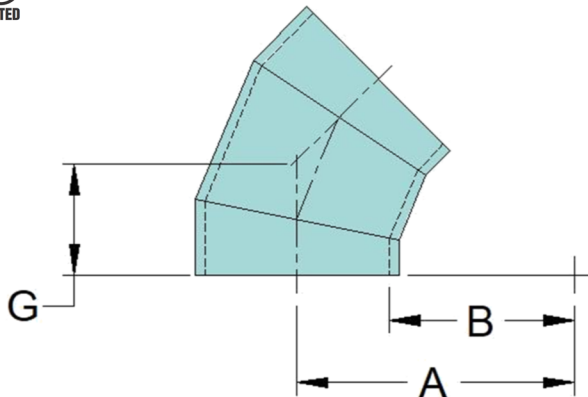
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#135: "D"**

#135 F x P: "D" for flange by plain end

#135 F x F: "D" for flange by flange end



D	T	A	B	G
inches	inches	inches	inches	inches
1	0.165	1.5	1.0	0.62
1-1/2	0.165	2.3	1.5	0.93
2	0.165	3.0	2.0	1.24
2-1/2	0.165	3.8	2.5	1.55
3	0.165	4.5	3.0	1.86
4	0.165	6.0	4.0	2.48
5	0.165	7.5	5.0	3.10
6	0.165	9.0	6.0	3.73
7	0.165	10.5	7.0	4.35
8	0.165	12.0	8.0	4.97
9	0.165	13.5	9.0	5.59
10	0.165	15.0	10.0	6.21
12	0.165	18.0	12.0	7.45
14	0.165	21.0	14.0	8.69
16	0.165	24.0	16.0	9.94
18	0.165	27.0	18.0	11.18
20	0.165	30.0	20.0	12.42
22	0.165	33.0	22.0	13.66

D	T	A	B	G
inches	inches	inches	inches	inches
24	0.204	36.0	24.0	14.90
26	0.204	39.0	26.0	16.15
28	0.204	42.0	28.0	17.39
30	0.204	45.0	30.0	18.63
32	0.204	48.0	32.0	19.87
34	0.204	51.0	34.0	21.11
36	0.204	54.0	36.0	22.35
42	0.286	63.0	42.0	26.08
48	0.286	72.0	48.0	29.81
54	0.286	81.0	54.0	33.53
60	0.286	90.0	60.0	37.26
66	0.286	99.0	66.0	40.98
72	0.375	108.0	72.0	44.71
78	0.375	117.0	78.0	48.44
84	0.375	126.0	84.0	52.16
90	0.375	135.0	90.0	55.89
96	0.375	144.0	96.0	59.61
102	0.375	153.0	102.0	63.34

Notes:

- 1) Larger sizes available up to 180"
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

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Fitting: 45° Short Radius 3-Gore Mitered Elbow

Fitting No: **136**

Product Class: **Dual Guard 2000**

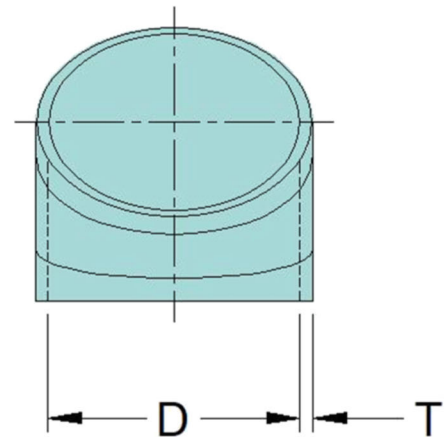
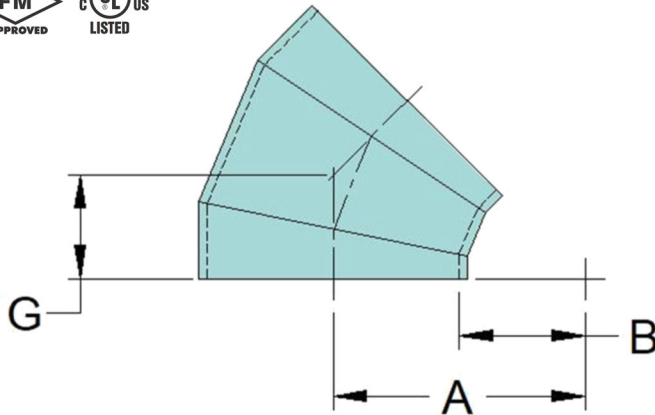
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#136: "D"**

#136 F x P: "D" for flange by plain end

#136 F x F: "D" for flange by flange end



D	T	A	B	G
inches	inches	inches	inches	inches
1	0.165	1.0	0.5	0.41
1-1/2	0.165	1.5	0.8	0.62
2	0.165	2.0	1.0	0.83
2-1/2	0.165	2.5	1.3	1.03
3	0.165	3.0	1.5	1.24
4	0.165	4.0	2.0	1.66
5	0.165	5.0	2.5	2.07
6	0.165	6.0	3.0	2.48
7	0.165	7.0	3.5	2.90
8	0.165	8.0	4.0	3.31
9	0.165	9.0	4.5	3.73
10	0.165	10.0	5.0	4.14
12	0.165	12.0	6.0	4.97
14	0.165	14.0	7.0	5.80
16	0.165	16.0	8.0	6.62
18	0.165	18.0	9.0	7.45
20	0.165	20.0	10.0	8.28
22	0.165	22.0	11.0	9.11

D	T	A	B	G
inches	inches	inches	inches	inches
24	0.204	24.0	12.0	9.94
26	0.204	26.0	13.0	10.76
28	0.204	28.0	14.0	11.59
30	0.204	30.0	15.0	12.42
32	0.204	32.0	16.0	13.25
34	0.204	34.0	17.0	14.08
36	0.204	36.0	18.0	14.90
42	0.286	42.0	21.0	17.39
48	0.286	48.0	24.0	19.87
54	0.286	54.0	27.0	22.35
60	0.286	60.0	30.0	24.84
66	0.286	66.0	33.0	27.32
72	0.375	72.0	36.0	29.81
78	0.375	78.0	39.0	32.29
84	0.375	84.0	42.0	34.77
90	0.375	90.0	45.0	37.26
96	0.375	96.0	48.0	39.74
102	0.375	102.0	51.0	42.23

Notes:

- 1) Larger sizes available up to 180"
- 2) Thicknesses shown are for $\pm 6"$ WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

Composites USA One Peninsula Drive, North East, MD 21901 T (410) 287-2700 F (410) 287-5222

Web: www.compositesusa.com Email: Info@compositesusa.com

Fitting: 90° Long Radius Sweep Rect Elbow

Fitting No: **138**

Product Class: **Dual Guard 2000**

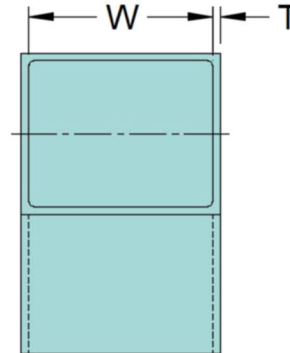
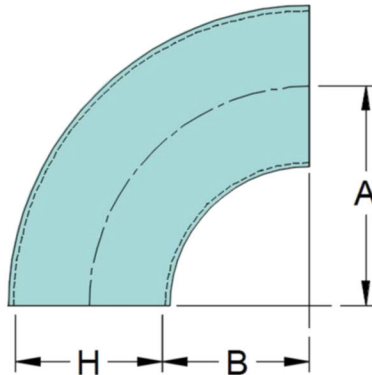
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#138: "H" / "W" / "B"**

#138 F x P: "H" / "W" / "B" for flange by plain end

#138 F x F: "H" / "W" / "B" for flange by flange end



W	H	T	A	B
inches	inches	inches	inches	inches
1	≤ W	0.165	1.5 x H	H
1-1/2	≤ W	0.165	1.5 x H	H
2	≤ W	0.165	1.5 x H	H
2-1/2	≤ W	0.165	1.5 x H	H
3	≤ W	0.165	1.5 x H	H
4	≤ W	0.165	1.5 x H	H
5	≤ W	0.165	1.5 x H	H
6	≤ W	0.165	1.5 x H	H
7	≤ W	0.165	1.5 x H	H
8	≤ W	0.165	1.5 x H	H
9	≤ W	0.165	1.5 x H	H
10	≤ W	0.165	1.5 x H	H
12	≤ W	0.165	1.5 x H	H
14	≤ W	0.165	1.5 x H	H
16	≤ W	0.165	1.5 x H	H
18	≤ W	0.165	1.5 x H	H
20	≤ W	0.165	1.5 x H	H
22	≤ W	0.165	1.5 x H	H

W	H	T	A	B
inches	inches	inches	inches	inches
24	≤ W	0.204	1.5 x H	H
26	≤ W	0.204	1.5 x H	H
28	≤ W	0.204	1.5 x H	H
30	≤ W	0.204	1.5 x H	H
32	≤ W	0.204	1.5 x H	H
34	≤ W	0.204	1.5 x H	H
36	≤ W	0.204	1.5 x H	H
42	≤ W	0.286	1.5 x H	H
48	≤ W	0.286	1.5 x H	H
54	≤ W	0.286	1.5 x H	H
60	≤ W	0.286	1.5 x H	H
66	≤ W	0.286	1.5 x H	H
72	≤ W	0.375	1.5 x H	H
78	≤ W	0.375	1.5 x H	H
84	≤ W	0.375	1.5 x H	H
90	≤ W	0.375	1.5 x H	H
96	≤ W	0.375	1.5 x H	H
102	≤ W	0.375	1.5 x H	H

Notes:

- 1) Larger sizes available up to 180"
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

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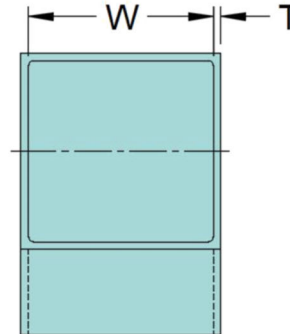
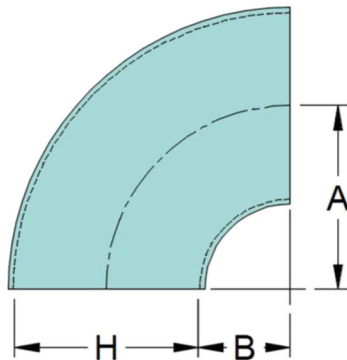
Fitting: 90° Short Radius Sweep Rect Elbow

Fitting No: **139**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.


Order as: **#139: "H" / "W" / "B"**
#139 F x P: "H" / "W" / "B" for flange by plain end
#139 F x F: "H" / "W" / "B" for flange by flange end


W	H	T	A	B
inches	inches	inches	inches	inches
1	≤ W	0.165	H	0.5 x H
1-1/2	≤ W	0.165	H	0.5 x H
2	≤ W	0.165	H	0.5 x H
2-1/2	≤ W	0.165	H	0.5 x H
3	≤ W	0.165	H	0.5 x H
4	≤ W	0.165	H	0.5 x H
5	≤ W	0.165	H	0.5 x H
6	≤ W	0.165	H	0.5 x H
7	≤ W	0.165	H	0.5 x H
8	≤ W	0.165	H	0.5 x H
9	≤ W	0.165	H	0.5 x H
10	≤ W	0.165	H	0.5 x H
12	≤ W	0.165	H	0.5 x H
14	≤ W	0.165	H	0.5 x H
16	≤ W	0.165	H	0.5 x H
18	≤ W	0.165	H	0.5 x H
20	≤ W	0.165	H	0.5 x H
22	≤ W	0.165	H	0.5 x H

W	H	T	A	B
inches	inches	inches	inches	inches
24	≤ W	0.204	H	0.5 x H
26	≤ W	0.204	H	0.5 x H
28	≤ W	0.204	H	0.5 x H
30	≤ W	0.204	H	0.5 x H
32	≤ W	0.204	H	0.5 x H
34	≤ W	0.204	H	0.5 x H
36	≤ W	0.204	H	0.5 x H
42	≤ W	0.286	H	0.5 x H
48	≤ W	0.286	H	0.5 x H
54	≤ W	0.286	H	0.5 x H
60	≤ W	0.286	H	0.5 x H
66	≤ W	0.286	H	0.5 x H
72	≤ W	0.375	H	0.5 x H
78	≤ W	0.375	H	0.5 x H
84	≤ W	0.375	H	0.5 x H
90	≤ W	0.375	H	0.5 x H
96	≤ W	0.375	H	0.5 x H
102	≤ W	0.375	H	0.5 x H

Notes:

- 1) Larger sizes available up to 180"
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

CompositesUSA One Peninsula Drive, North East, MD 21901 T (410) 287-2700 F (410) 287-5222

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Fitting: **90° Rectangular Easy Bend 3-Gore Elbow** Fitting No: **140**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

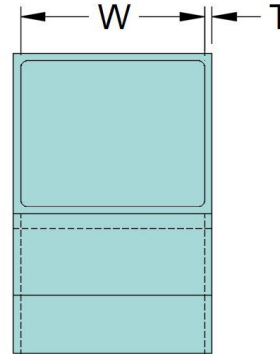
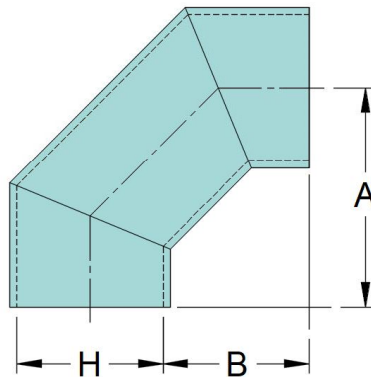
DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.



Order as: **#140: "H" / "W" / "B"**

#140 F x P: "H" / "W" / "B" for flange by plain end

#140 F x F: "H" / "W" / "B" for flange by flange end



W	H	T	A	B
inches	inches	inches	inches	inches
1	≤ W	0.165	1.5 x H	H
1-1/2	≤ W	0.165	1.5 x H	H
2	≤ W	0.165	1.5 x H	H
2-1/2	≤ W	0.165	1.5 x H	H
3	≤ W	0.165	1.5 x H	H
4	≤ W	0.165	1.5 x H	H
5	≤ W	0.165	1.5 x H	H
6	≤ W	0.165	1.5 x H	H
7	≤ W	0.165	1.5 x H	H
8	≤ W	0.165	1.5 x H	H
9	≤ W	0.165	1.5 x H	H
10	≤ W	0.165	1.5 x H	H
12	≤ W	0.165	1.5 x H	H
14	≤ W	0.165	1.5 x H	H
16	≤ W	0.165	1.5 x H	H
18	≤ W	0.165	1.5 x H	H
20	≤ W	0.165	1.5 x H	H
22	≤ W	0.165	1.5 x H	H

W	H	T	A	B
inches	inches	inches	inches	inches
24	≤ W	0.204	1.5 x H	H
26	≤ W	0.204	1.5 x H	H
28	≤ W	0.204	1.5 x H	H
30	≤ W	0.204	1.5 x H	H
32	≤ W	0.204	1.5 x H	H
34	≤ W	0.204	1.5 x H	H
36	≤ W	0.204	1.5 x H	H
42	≤ W	0.286	1.5 x H	H
48	≤ W	0.286	1.5 x H	H
54	≤ W	0.286	1.5 x H	H
60	≤ W	0.286	1.5 x H	H
66	≤ W	0.286	1.5 x H	H
72	≤ W	0.375	1.5 x H	H
78	≤ W	0.375	1.5 x H	H
84	≤ W	0.375	1.5 x H	H
90	≤ W	0.375	1.5 x H	H
96	≤ W	0.375	1.5 x H	H
102	≤ W	0.375	1.5 x H	H

Notes:

- 1) Larger sizes available
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

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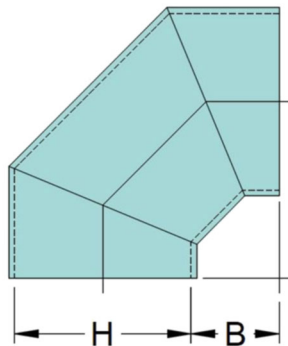
Web: www.compositesusa.com Email: Info@compositesusa.com

Fitting: **90° Short Radius Rect Easy Bend 3-Gore Elbow** Fitting No: **141**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

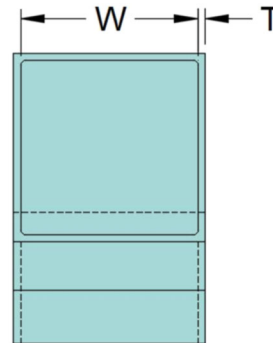
DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.



Order as: #141: "H" / "W" / "B"

#141 F x P: "H" / "W" / "B" for flange by plain end

#141 F x F: "H" / "W" / "B" for flange by flange end



W	H	T	A	B
inches	inches	inches	inches	inches
1	≤ W	0.165	H	0.5 x H
1-1/2	≤ W	0.165	H	0.5 x H
2	≤ W	0.165	H	0.5 x H
2-1/2	≤ W	0.165	H	0.5 x H
3	≤ W	0.165	H	0.5 x H
4	≤ W	0.165	H	0.5 x H
5	≤ W	0.165	H	0.5 x H
6	≤ W	0.165	H	0.5 x H
7	≤ W	0.165	H	0.5 x H
8	≤ W	0.165	H	0.5 x H
9	≤ W	0.165	H	0.5 x H
10	≤ W	0.165	H	0.5 x H
12	≤ W	0.165	H	0.5 x H
14	≤ W	0.165	H	0.5 x H
16	≤ W	0.165	H	0.5 x H
18	≤ W	0.165	H	0.5 x H
20	≤ W	0.165	H	0.5 x H
22	≤ W	0.165	H	0.5 x H

W	H	T	A	B
inches	inches	inches	inches	inches
24	≤ W	0.204	H	0.5 x H
26	≤ W	0.204	H	0.5 x H
28	≤ W	0.204	H	0.5 x H
30	≤ W	0.204	H	0.5 x H
32	≤ W	0.204	H	0.5 x H
34	≤ W	0.204	H	0.5 x H
36	≤ W	0.204	H	0.5 x H
42	≤ W	0.286	H	0.5 x H
48	≤ W	0.286	H	0.5 x H
54	≤ W	0.286	H	0.5 x H
60	≤ W	0.286	H	0.5 x H
66	≤ W	0.286	H	0.5 x H
72	≤ W	0.375	H	0.5 x H
78	≤ W	0.375	H	0.5 x H
84	≤ W	0.375	H	0.5 x H
90	≤ W	0.375	H	0.5 x H
96	≤ W	0.375	H	0.5 x H
102	≤ W	0.375	H	0.5 x H

Notes:

- 1) Larger sizes available
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

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Fitting: **90° Long Radius Rect Hard Bend 3-Gore Elbow** Fitting No: **145**

Product Class: **Dual Guard 2000**

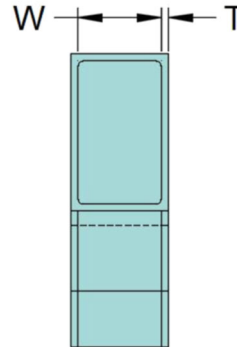
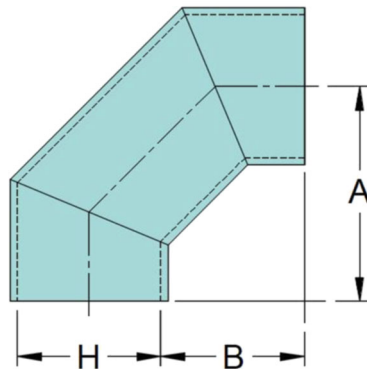
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: #145: "H" / "W" / "B"

#145 F x P: "H" / "W" / "B" for flange by plain end

#145 F x F: "H" / "W" / "B" for flange by flange end



H	W	T	A	B
inches	inches	inches	inches	inches
1	≤ H	0.165	1.5 x H	H
1-1/2	≤ H	0.165	1.5 x H	H
2	≤ H	0.165	1.5 x H	H
2-1/2	≤ H	0.165	1.5 x H	H
3	≤ H	0.165	1.5 x H	H
4	≤ H	0.165	1.5 x H	H
5	≤ H	0.165	1.5 x H	H
6	≤ H	0.165	1.5 x H	H
7	≤ H	0.165	1.5 x H	H
8	≤ H	0.165	1.5 x H	H
9	≤ H	0.165	1.5 x H	H
10	≤ H	0.165	1.5 x H	H
12	≤ H	0.165	1.5 x H	H
14	≤ H	0.165	1.5 x H	H
16	≤ H	0.165	1.5 x H	H
18	≤ H	0.165	1.5 x H	H
20	≤ H	0.165	1.5 x H	H
22	≤ H	0.165	1.5 x H	H

H	W	T	A	B
inches	inches	inches	inches	inches
24	≤ H	0.204	1.5 x H	H
26	≤ H	0.204	1.5 x H	H
28	≤ H	0.204	1.5 x H	H
30	≤ H	0.204	1.5 x H	H
32	≤ H	0.204	1.5 x H	H
34	≤ H	0.204	1.5 x H	H
36	≤ H	0.204	1.5 x H	H
42	≤ H	0.286	1.5 x H	H
48	≤ H	0.286	1.5 x H	H
54	≤ H	0.286	1.5 x H	H
60	≤ H	0.286	1.5 x H	H
66	≤ H	0.286	1.5 x H	H
72	≤ H	0.375	1.5 x H	H
78	≤ H	0.375	1.5 x H	H
84	≤ H	0.375	1.5 x H	H
90	≤ H	0.375	1.5 x H	H
96	≤ H	0.375	1.5 x H	H
102	≤ H	0.375	1.5 x H	H

Notes:

- 1) Larger sizes available
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

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Fitting: **90° Short Radius Rect Hard Bend 3-Gore Elbow** Fitting No: **146**

Product Class: **Dual Guard 2000**

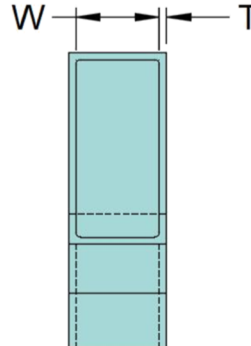
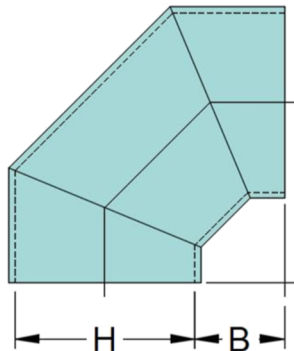
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#146: "H" / "W" / "B"**

#146 F x P: "H" / "W" / "B" for flange by plain end

#146 F x F: "H" / "W" / "B" for flange by flange end



H	W	T	A	B
inches	inches	inches	inches	inches
1	≤ H	0.165	H	0.5 x H
1-1/2	≤ H	0.165	H	0.5 x H
2	≤ H	0.165	H	0.5 x H
2-1/2	≤ H	0.165	H	0.5 x H
3	≤ H	0.165	H	0.5 x H
4	≤ H	0.165	H	0.5 x H
5	≤ H	0.165	H	0.5 x H
6	≤ H	0.165	H	0.5 x H
7	≤ H	0.165	H	0.5 x H
8	≤ H	0.165	H	0.5 x H
9	≤ H	0.165	H	0.5 x H
10	≤ H	0.165	H	0.5 x H
12	≤ H	0.165	H	0.5 x H
14	≤ H	0.165	H	0.5 x H
16	≤ H	0.165	H	0.5 x H
18	≤ H	0.165	H	0.5 x H
20	≤ H	0.165	H	0.5 x H
22	≤ H	0.165	H	0.5 x H

H	W	T	A	B
inches	inches	inches	inches	inches
24	≤ H	0.204	H	0.5 x H
26	≤ H	0.204	H	0.5 x H
28	≤ H	0.204	H	0.5 x H
30	≤ H	0.204	H	0.5 x H
32	≤ H	0.204	H	0.5 x H
34	≤ H	0.204	H	0.5 x H
36	≤ H	0.204	H	0.5 x H
42	≤ H	0.286	H	0.5 x H
48	≤ H	0.286	H	0.5 x H
54	≤ H	0.286	H	0.5 x H
60	≤ H	0.286	H	0.5 x H
66	≤ H	0.286	H	0.5 x H
72	≤ H	0.375	H	0.5 x H
78	≤ H	0.375	H	0.5 x H
84	≤ H	0.375	H	0.5 x H
90	≤ H	0.375	H	0.5 x H
96	≤ H	0.375	H	0.5 x H
102	≤ H	0.375	H	0.5 x H

Notes:

- 1) Larger sizes available
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

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Web: www.compositesusa.com Email: Info@compositesusa.com

Fitting: **90° Rectangular Easy Bend 2-Gore Elbow** Fitting No: **147**

Product Class: **Dual Guard 2000**

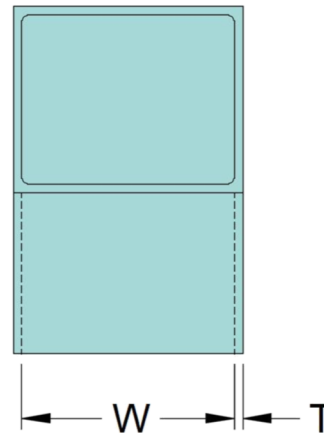
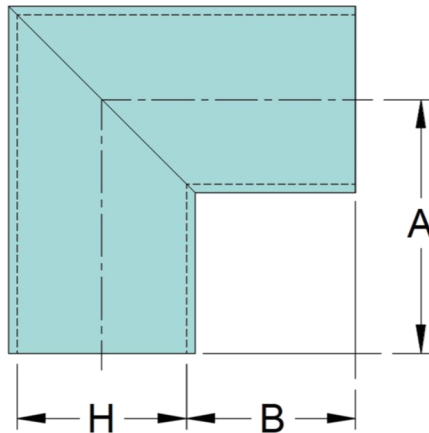
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: #147: "H" / "W" / "B"

#147 F x P: "H" / "W" / "B" for flange by plain end

#147 F x F: "H" / "W" / "B" for flange by flange end



W	H	T	A	B
inches	inches	inches	inches	inches
1	≤ W	0.165	0.5 x H + 6	6
1-1/2	≤ W	0.165	0.5 x H + 6	6
2	≤ W	0.165	0.5 x H + 6	6
2-1/2	≤ W	0.165	0.5 x H + 6	6
3	≤ W	0.165	0.5 x H + 6	6
4	≤ W	0.165	0.5 x H + 6	6
5	≤ W	0.165	0.5 x H + 6	6
6	≤ W	0.165	0.5 x H + 6	6
7	≤ W	0.165	0.5 x H + 6	6
8	≤ W	0.165	0.5 x H + 6	6
9	≤ W	0.165	0.5 x H + 6	6
10	≤ W	0.165	0.5 x H + 6	6
12	≤ W	0.165	0.5 x H + 6	6
14	≤ W	0.165	0.5 x H + 6	6
16	≤ W	0.165	0.5 x H + 6	6
18	≤ W	0.165	0.5 x H + 6	6
20	≤ W	0.165	0.5 x H + 6	6
22	≤ W	0.165	0.5 x H + 6	6

W	H	T	A	B
inches	inches	inches	inches	inches
24	≤ W	0.204	0.5 x H + 6	6
26	≤ W	0.204	0.5 x H + 6	6
28	≤ W	0.204	0.5 x H + 6	6
30	≤ W	0.204	0.5 x H + 6	6
32	≤ W	0.204	0.5 x H + 6	6
34	≤ W	0.204	0.5 x H + 6	6
36	≤ W	0.204	0.5 x H + 6	6
42	≤ W	0.286	0.5 x H + 6	6
48	≤ W	0.286	0.5 x H + 6	6
54	≤ W	0.286	0.5 x H + 6	6
60	≤ W	0.286	0.5 x H + 6	6
66	≤ W	0.286	0.5 x H + 6	6
72	≤ W	0.375	0.5 x H + 6	6
78	≤ W	0.375	0.5 x H + 6	6
84	≤ W	0.375	0.5 x H + 6	6
90	≤ W	0.375	0.5 x H + 6	6
96	≤ W	0.375	0.5 x H + 6	6
102	≤ W	0.375	0.5 x H + 6	6

Notes:

- 1) Larger sizes available
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

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Fitting: **90° Rectangular Hard Bend 2-Gore Elbow** Fitting No: **148**

Product Class: **Dual Guard 2000**

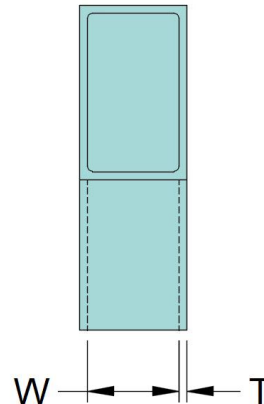
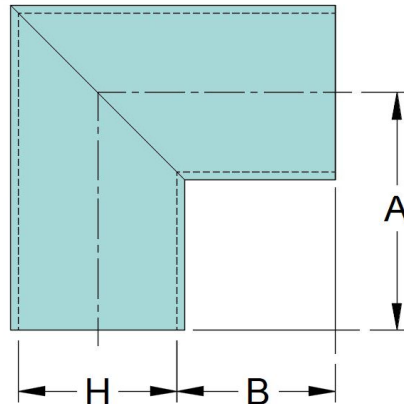
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: #148: "H" / "W" / "B"

#148 F x P: "H" / "W" / "B" for flange by plain end

#148 F x F: "H" / "W" / "B" for flange by flange end



H	W	T	A	B
inches	inches	inches	inches	inches
1	≤ H	0.165	0.5 x H + 6	6
1-1/2	≤ H	0.165	0.5 x H + 6	6
2	≤ H	0.165	0.5 x H + 6	6
2-1/2	≤ H	0.165	0.5 x H + 6	6
3	≤ H	0.165	0.5 x H + 6	6
4	≤ H	0.165	0.5 x H + 6	6
5	≤ H	0.165	0.5 x H + 6	6
6	≤ H	0.165	0.5 x H + 6	6
7	≤ H	0.165	0.5 x H + 6	6
8	≤ H	0.165	0.5 x H + 6	6
9	≤ H	0.165	0.5 x H + 6	6
10	≤ H	0.165	0.5 x H + 6	6
12	≤ H	0.165	0.5 x H + 6	6
14	≤ H	0.165	0.5 x H + 6	6
16	≤ H	0.165	0.5 x H + 6	6
18	≤ H	0.165	0.5 x H + 6	6
20	≤ H	0.165	0.5 x H + 6	6
22	≤ H	0.165	0.5 x H + 6	6

H	W	T	A	B
inches	inches	inches	inches	inches
24	≤ H	0.204	0.5 x H + 6	6
26	≤ H	0.204	0.5 x H + 6	6
28	≤ H	0.204	0.5 x H + 6	6
30	≤ H	0.204	0.5 x H + 6	6
32	≤ H	0.204	0.5 x H + 6	6
34	≤ H	0.204	0.5 x H + 6	6
36	≤ H	0.204	0.5 x H + 6	6
42	≤ H	0.286	0.5 x H + 6	6
48	≤ H	0.286	0.5 x H + 6	6
54	≤ H	0.286	0.5 x H + 6	6
60	≤ H	0.286	0.5 x H + 6	6
66	≤ H	0.286	0.5 x H + 6	6
72	≤ H	0.375	0.5 x H + 6	6
78	≤ H	0.375	0.5 x H + 6	6
84	≤ H	0.375	0.5 x H + 6	6
90	≤ H	0.375	0.5 x H + 6	6
96	≤ H	0.375	0.5 x H + 6	6
102	≤ H	0.375	0.5 x H + 6	6

Notes:

- 1) Larger sizes available
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

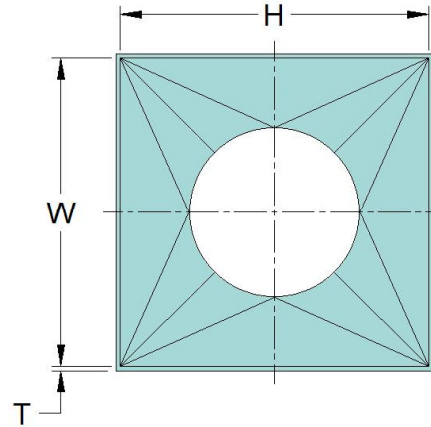
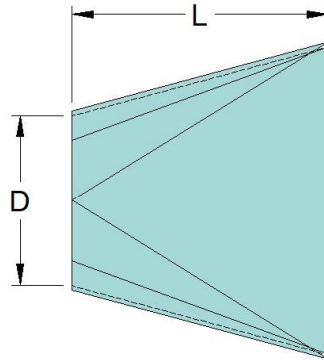
Fitting: Square To Round Transition

Fitting No: **150**

Product Class: **Dual Guard 2000**

Resin Types: Phenolic Based FRP with Halar Liner

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

[illegible][illegible]

Notes:

1) Default "T" = Thickness of round duct "D" = "W"

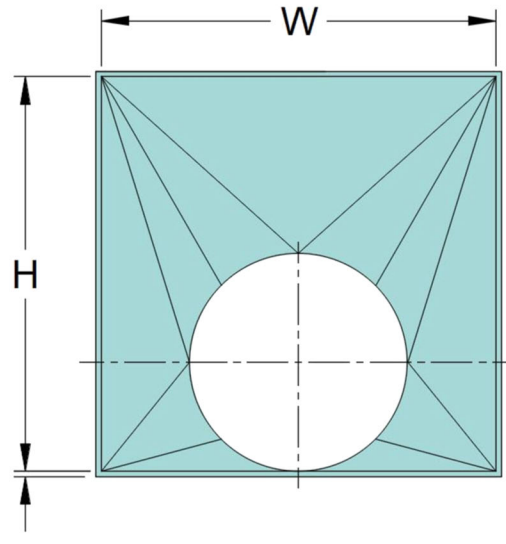
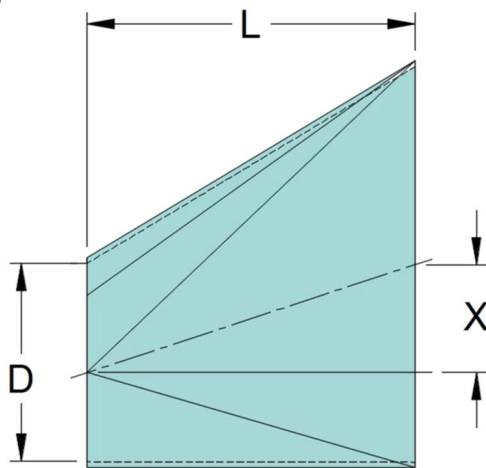
Fitting: **Square To Round Transition - Eccentric**

Fitting No: **159**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

[illegible][illegible]

Notes:

- 1) Default "T" = Thickness of round duct "D" = "W"
- 2) Offset style also available

Fitting: **11.4° (Inc Angle) 5:1 Concentric Reducer**

Fitting No: **160-11**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

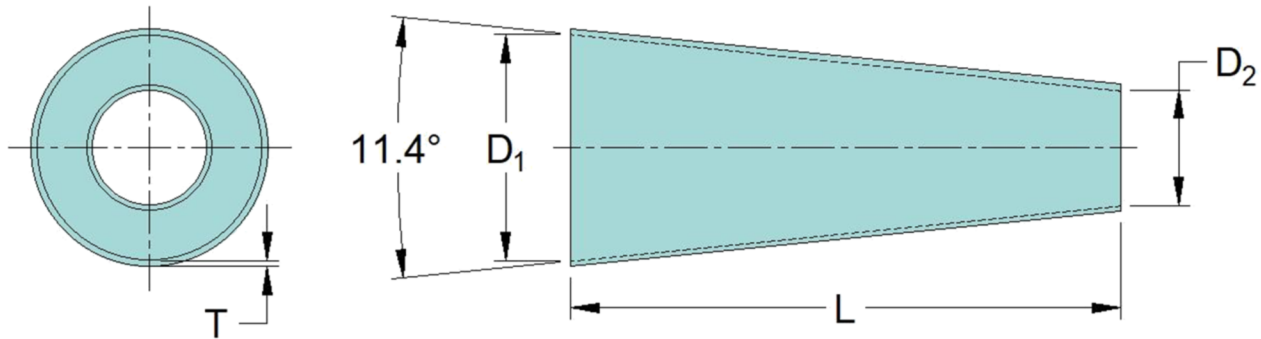
DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#160 - 11 - "D1" x "D2"**

#160 - 11 - "D1" x "D2" - F x P (Flanged on D1)

#160 - 11 - "D1" x "D2" - P x F (Flanged on D2)

#160 - 11 - "D1" x "D2" - F x F (Flanged both ends)



D ₁	D ₂	L	T
inches	inches	inches	inches
1	< D1	5 x (D1 - D2)	0.165
1-1/2	< D1	5 x (D1 - D2)	0.165
2	< D1	5 x (D1 - D2)	0.165
2-1/2	< D1	5 x (D1 - D2)	0.165
3	< D1	5 x (D1 - D2)	0.165
4	< D1	5 x (D1 - D2)	0.165
5	< D1	5 x (D1 - D2)	0.165
6	< D1	5 x (D1 - D2)	0.165
7	< D1	5 x (D1 - D2)	0.165
8	< D1	5 x (D1 - D2)	0.165
9	< D1	5 x (D1 - D2)	0.165
10	< D1	5 x (D1 - D2)	0.165
12	< D1	5 x (D1 - D2)	0.165
14	< D1	5 x (D1 - D2)	0.165
16	< D1	5 x (D1 - D2)	0.165
18	< D1	5 x (D1 - D2)	0.165
20	< D1	5 x (D1 - D2)	0.165
22	< D1	5 x (D1 - D2)	0.165

D ₁	D ₂	L	T
inches	inches	inches	inches
24	< D1	5 x (D1 - D2)	0.204
26	< D1	5 x (D1 - D2)	0.204
28	< D1	5 x (D1 - D2)	0.204
30	< D1	5 x (D1 - D2)	0.204
32	< D1	5 x (D1 - D2)	0.204
34	< D1	5 x (D1 - D2)	0.204
36	< D1	5 x (D1 - D2)	0.204
42	< D1	5 x (D1 - D2)	0.286
48	< D1	5 x (D1 - D2)	0.286
54	< D1	5 x (D1 - D2)	0.286
60	< D1	5 x (D1 - D2)	0.286
66	< D1	5 x (D1 - D2)	0.286
72	< D1	5 x (D1 - D2)	0.375
78	< D1	5 x (D1 - D2)	0.375
84	< D1	5 x (D1 - D2)	0.375
90	< D1	5 x (D1 - D2)	0.375
96	< D1	5 x (D1 - D2)	0.375
102	< D1	5 x (D1 - D2)	0.375

Notes:

- 1) Custom lengths available
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: **22° (Inc Angle) 2.5:1 Concentric Reducer**Fitting No: **160-22**Product Class: **Dual Guard 2000**Resin Types: **Phenolic Based FRP with Halar Liner**

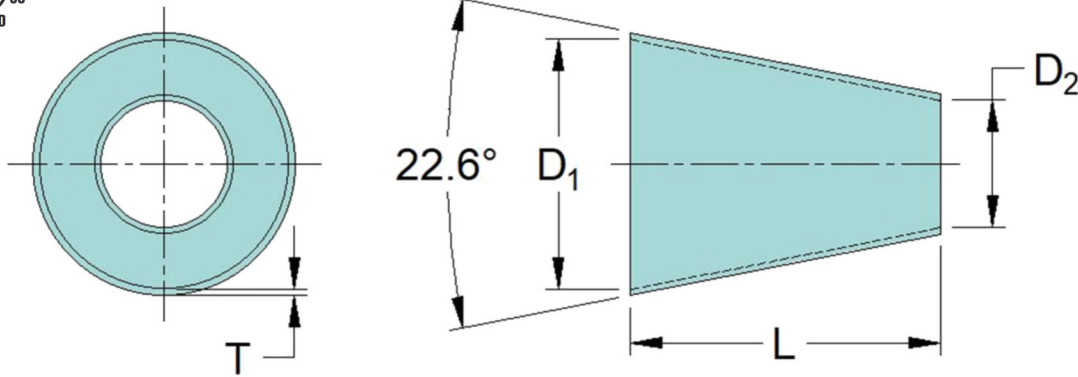
DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#160 - 22 - "D1" x "D2"**

#160 - 22 - "D1" x "D2" - F x P (Flanged on D1)

#160 - 22 - "D1" x "D2" - P x F (Flanged on D2)

#160 - 22 - "D1" x "D2" - F x F (Flanged both ends)



D ₁	D ₂	L	T
inches	inches	inches	inches
1	< D1	2.5 x (D1 - D2)	0.165
1-1/2	< D1	2.5 x (D1 - D2)	0.165
2	< D1	2.5 x (D1 - D2)	0.165
2-1/2	< D1	2.5 x (D1 - D2)	0.165
3	< D1	2.5 x (D1 - D2)	0.165
4	< D1	2.5 x (D1 - D2)	0.165
5	< D1	2.5 x (D1 - D2)	0.165
6	< D1	2.5 x (D1 - D2)	0.165
7	< D1	2.5 x (D1 - D2)	0.165
8	< D1	2.5 x (D1 - D2)	0.165
9	< D1	2.5 x (D1 - D2)	0.165
10	< D1	2.5 x (D1 - D2)	0.165
12	< D1	2.5 x (D1 - D2)	0.165
14	< D1	2.5 x (D1 - D2)	0.165
16	< D1	2.5 x (D1 - D2)	0.165
18	< D1	2.5 x (D1 - D2)	0.165
20	< D1	2.5 x (D1 - D2)	0.165
22	< D1	2.5 x (D1 - D2)	0.165

D ₁	D ₂	L	T
inches	inches	inches	inches
24	< D1	2.5 x (D1 - D2)	0.204
26	< D1	2.5 x (D1 - D2)	0.204
28	< D1	2.5 x (D1 - D2)	0.204
30	< D1	2.5 x (D1 - D2)	0.204
32	< D1	2.5 x (D1 - D2)	0.204
34	< D1	2.5 x (D1 - D2)	0.204
36	< D1	2.5 x (D1 - D2)	0.204
42	< D1	2.5 x (D1 - D2)	0.286
48	< D1	2.5 x (D1 - D2)	0.286
54	< D1	2.5 x (D1 - D2)	0.286
60	< D1	2.5 x (D1 - D2)	0.286
66	< D1	2.5 x (D1 - D2)	0.286
72	< D1	2.5 x (D1 - D2)	0.375
78	< D1	2.5 x (D1 - D2)	0.375
84	< D1	2.5 x (D1 - D2)	0.375
90	< D1	2.5 x (D1 - D2)	0.375
96	< D1	2.5 x (D1 - D2)	0.375
102	< D1	2.5 x (D1 - D2)	0.375

Notes:

- 1) Custom lengths available
- 2) Thicknesses shown are for $\pm 6''$ WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: **45° (Inc Angle) 1:1 Concentric Reducer**

Fitting No: **160-45**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

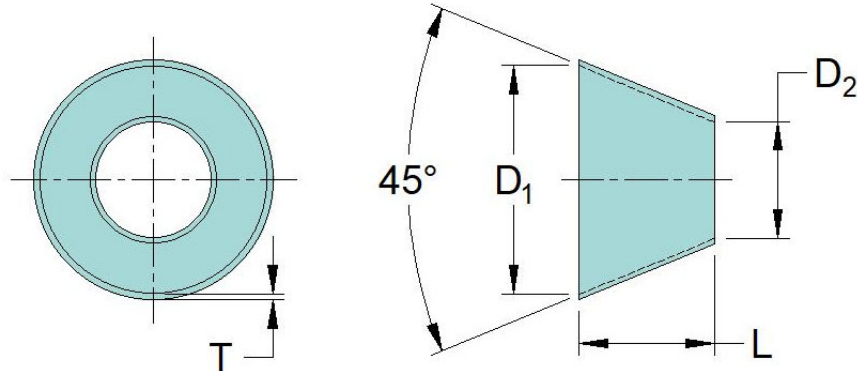
DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#160 - 45 - "D1" x "D2"**

#160 - 45 - "D1" x "D2" - F x P (Flanged on D1)

#160 - 45 - "D1" x "D2" - P x F (Flanged on D2)

#160 - 45 - "D1" x "D2" - F x F (Flanged both ends)



D ₁	D ₂	L	T
inches	inches	inches	inches
1	< D1	(D1 - D2)	0.165
1-1/2	< D1	(D1 - D2)	0.165
2	< D1	(D1 - D2)	0.165
2-1/2	< D1	(D1 - D2)	0.165
3	< D1	(D1 - D2)	0.165
4	< D1	(D1 - D2)	0.165
5	< D1	(D1 - D2)	0.165
6	< D1	(D1 - D2)	0.165
7	< D1	(D1 - D2)	0.165
8	< D1	(D1 - D2)	0.165
9	< D1	(D1 - D2)	0.165
10	< D1	(D1 - D2)	0.165
12	< D1	(D1 - D2)	0.165
14	< D1	(D1 - D2)	0.165
16	< D1	(D1 - D2)	0.165
18	< D1	(D1 - D2)	0.165
20	< D1	(D1 - D2)	0.165
22	< D1	(D1 - D2)	0.165

D ₁	D ₂	L	T
inches	inches	inches	inches
24	< D1	(D1 - D2)	0.204
26	< D1	(D1 - D2)	0.204
28	< D1	(D1 - D2)	0.204
30	< D1	(D1 - D2)	0.204
32	< D1	(D1 - D2)	0.204
34	< D1	(D1 - D2)	0.204
36	< D1	(D1 - D2)	0.204
42	< D1	(D1 - D2)	0.286
48	< D1	(D1 - D2)	0.286
54	< D1	(D1 - D2)	0.286
60	< D1	(D1 - D2)	0.286
66	< D1	(D1 - D2)	0.286
72	< D1	(D1 - D2)	0.375
78	< D1	(D1 - D2)	0.375
84	< D1	(D1 - D2)	0.375
90	< D1	(D1 - D2)	0.375
96	< D1	(D1 - D2)	0.375
102	< D1	(D1 - D2)	0.375

Notes:

- 1) Custom lengths available
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

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Fitting: **60° (Inc Angle) 0.86:1 Concentric Reducer** Fitting No: **160-60**Product Class: **Dual Guard 2000**Resin Types: **Phenolic Based FRP with Halar Liner**

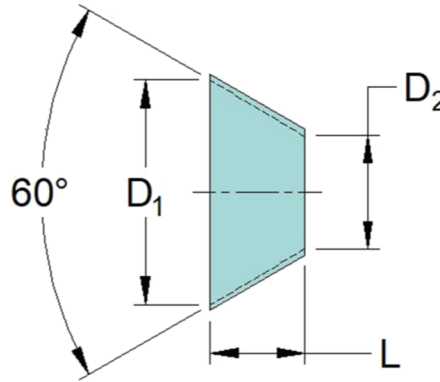
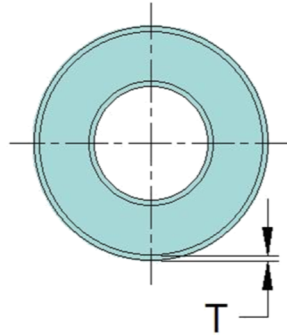
DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#160 - 60 - "D1" x "D2"**

#160 - 60 - "D1" x "D2" - F x P (Flanged on D1)

#160 - 60 - "D1" x "D2" - P x F (Flanged on D2)

#160 - 60 - "D1" x "D2" - F x F (Flanged both ends)



D ₁	D ₂	L	T
inches	inches	inches	inches
1	< D1	0.86 x (D1 - D2)	0.165
1-1/2	< D1	0.86 x (D1 - D2)	0.165
2	< D1	0.86 x (D1 - D2)	0.165
2-1/2	< D1	0.86 x (D1 - D2)	0.165
3	< D1	0.86 x (D1 - D2)	0.165
4	< D1	0.86 x (D1 - D2)	0.165
5	< D1	0.86 x (D1 - D2)	0.165
6	< D1	0.86 x (D1 - D2)	0.165
7	< D1	0.86 x (D1 - D2)	0.165
8	< D1	0.86 x (D1 - D2)	0.165
9	< D1	0.86 x (D1 - D2)	0.165
10	< D1	0.86 x (D1 - D2)	0.165
12	< D1	0.86 x (D1 - D2)	0.165
14	< D1	0.86 x (D1 - D2)	0.165
16	< D1	0.86 x (D1 - D2)	0.165
18	< D1	0.86 x (D1 - D2)	0.165
20	< D1	0.86 x (D1 - D2)	0.165
22	< D1	0.86 x (D1 - D2)	0.165

D ₁	D ₂	L	T
inches	inches	inches	inches
24	< D1	0.86 x (D1 - D2)	0.204
26	< D1	0.86 x (D1 - D2)	0.204
28	< D1	0.86 x (D1 - D2)	0.204
30	< D1	0.86 x (D1 - D2)	0.204
32	< D1	0.86 x (D1 - D2)	0.204
34	< D1	0.86 x (D1 - D2)	0.204
36	< D1	0.86 x (D1 - D2)	0.204
42	< D1	0.86 x (D1 - D2)	0.286
48	< D1	0.86 x (D1 - D2)	0.286
54	< D1	0.86 x (D1 - D2)	0.286
60	< D1	0.86 x (D1 - D2)	0.286
66	< D1	0.86 x (D1 - D2)	0.286
72	< D1	0.86 x (D1 - D2)	0.375
78	< D1	0.86 x (D1 - D2)	0.375
84	< D1	0.86 x (D1 - D2)	0.375
90	< D1	0.86 x (D1 - D2)	0.375
96	< D1	0.86 x (D1 - D2)	0.375
102	< D1	0.86 x (D1 - D2)	0.375

Notes:

- 1) Custom lengths available
- 2) Thicknesses shown are for $\pm 6''$ WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: **90° (Inc Angle) 0.5:1 Concentric Reducer**Fitting No: **160-90**Product Class: **Dual Guard 2000**Resin Types: **Phenolic Based FRP with Halar Liner**

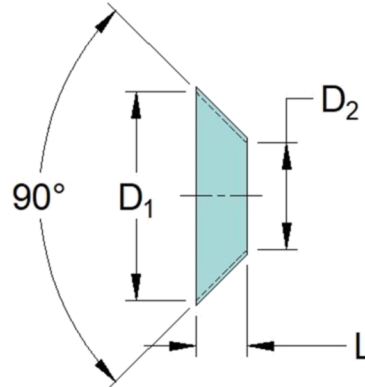
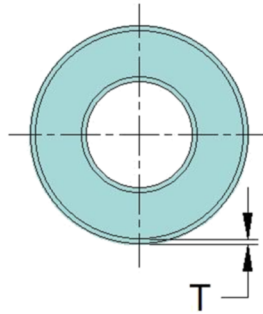
DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#160 - 90 - "D1" x "D2"**

#160 - 90 - "D1" x "D2" - F x P (Flanged on D1)

#160 - 90 - "D1" x "D2" - P x F (Flanged on D2)

#160 - 90 - "D1" x "D2" - F x F (Flanged both ends)



D ₁	D ₂	L	T
inches	inches	inches	inches
1	< D1	0.5 x (D1 - D2)	0.165
1-1/2	< D1	0.5 x (D1 - D2)	0.165
2	< D1	0.5 x (D1 - D2)	0.165
2-1/2	< D1	0.5 x (D1 - D2)	0.165
3	< D1	0.5 x (D1 - D2)	0.165
4	< D1	0.5 x (D1 - D2)	0.165
5	< D1	0.5 x (D1 - D2)	0.165
6	< D1	0.5 x (D1 - D2)	0.165
7	< D1	0.5 x (D1 - D2)	0.165
8	< D1	0.5 x (D1 - D2)	0.165
9	< D1	0.5 x (D1 - D2)	0.165
10	< D1	0.5 x (D1 - D2)	0.165
12	< D1	0.5 x (D1 - D2)	0.165
14	< D1	0.5 x (D1 - D2)	0.165
16	< D1	0.5 x (D1 - D2)	0.165
18	< D1	0.5 x (D1 - D2)	0.165
20	< D1	0.5 x (D1 - D2)	0.165
22	< D1	0.5 x (D1 - D2)	0.165

D ₁	D ₂	L	T
inches	inches	inches	inches
24	< D1	0.5 x (D1 - D2)	0.204
26	< D1	0.5 x (D1 - D2)	0.204
28	< D1	0.5 x (D1 - D2)	0.204
30	< D1	0.5 x (D1 - D2)	0.204
32	< D1	0.5 x (D1 - D2)	0.204
34	< D1	0.5 x (D1 - D2)	0.204
36	< D1	0.5 x (D1 - D2)	0.204
42	< D1	0.5 x (D1 - D2)	0.286
48	< D1	0.5 x (D1 - D2)	0.286
54	< D1	0.5 x (D1 - D2)	0.286
60	< D1	0.5 x (D1 - D2)	0.286
66	< D1	0.5 x (D1 - D2)	0.286
72	< D1	0.5 x (D1 - D2)	0.375
78	< D1	0.5 x (D1 - D2)	0.375
84	< D1	0.5 x (D1 - D2)	0.375
90	< D1	0.5 x (D1 - D2)	0.375
96	< D1	0.5 x (D1 - D2)	0.375
102	< D1	0.5 x (D1 - D2)	0.375

Notes:

- 1) Custom lengths available
- 2) Thicknesses shown are for $\pm 6''$ WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: **11.4° (Inc Angle) 5:1 Eccentric Reducer**

Fitting No: **165-11**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

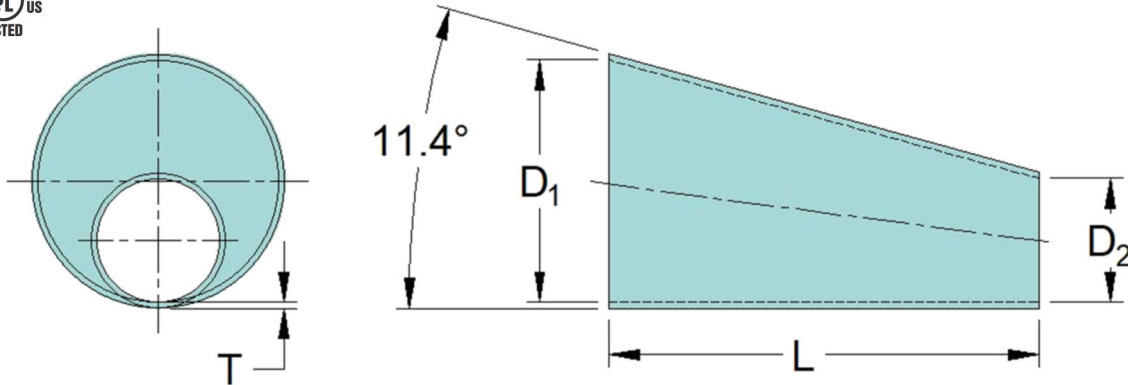
DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#165 - 11 - "D1" x "D2"**

#165 - 11 - "D1" x "D2" - F x P (Flanged on D1)

#165 - 11 - "D1" x "D2" - P x F (Flanged on D2)

#165 - 11 - "D1" x "D2" - F x F (Flanged both ends)



D ₁	D ₂	L	T
inches	inches	inches	inches
1	< D1	5 x (D1 - D2)	0.165
1-1/2	< D1	5 x (D1 - D2)	0.165
2	< D1	5 x (D1 - D2)	0.165
2-1/2	< D1	5 x (D1 - D2)	0.165
3	< D1	5 x (D1 - D2)	0.165
4	< D1	5 x (D1 - D2)	0.165
5	< D1	5 x (D1 - D2)	0.165
6	< D1	5 x (D1 - D2)	0.165
7	< D1	5 x (D1 - D2)	0.165
8	< D1	5 x (D1 - D2)	0.165
9	< D1	5 x (D1 - D2)	0.165
10	< D1	5 x (D1 - D2)	0.165
12	< D1	5 x (D1 - D2)	0.165
14	< D1	5 x (D1 - D2)	0.165
16	< D1	5 x (D1 - D2)	0.165
18	< D1	5 x (D1 - D2)	0.165
20	< D1	5 x (D1 - D2)	0.165
22	< D1	5 x (D1 - D2)	0.165

D ₁	D ₂	L	T
inches	inches	inches	inches
24	< D1	5 x (D1 - D2)	0.204
26	< D1	5 x (D1 - D2)	0.204
28	< D1	5 x (D1 - D2)	0.204
30	< D1	5 x (D1 - D2)	0.204
32	< D1	5 x (D1 - D2)	0.204
34	< D1	5 x (D1 - D2)	0.204
36	< D1	5 x (D1 - D2)	0.204
42	< D1	5 x (D1 - D2)	0.286
48	< D1	5 x (D1 - D2)	0.286
54	< D1	5 x (D1 - D2)	0.286
60	< D1	5 x (D1 - D2)	0.286
66	< D1	5 x (D1 - D2)	0.286
72	< D1	5 x (D1 - D2)	0.375
78	< D1	5 x (D1 - D2)	0.375
84	< D1	5 x (D1 - D2)	0.375
90	< D1	5 x (D1 - D2)	0.375
96	< D1	5 x (D1 - D2)	0.375
102	< D1	5 x (D1 - D2)	0.375

Notes:

- 1) Custom lengths available
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: 22.6° (Inc Angle) 2.5:1 Eccentric Reducer

Fitting No: **165-22**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

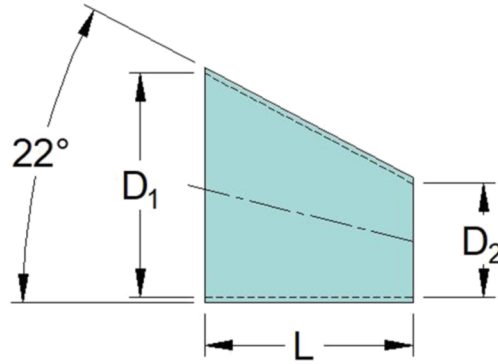
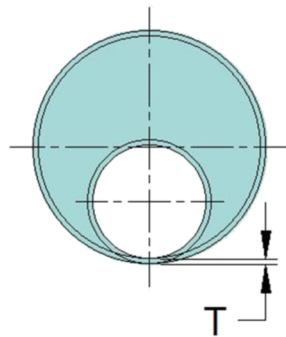
DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#165 - 22 - "D1" x "D2"**

#165 - 22 - "D1" x "D2" - F x P (Flanged on D1)

#165 - 22 - "D1" x "D2" - P x F (Flanged on D2)

#165 - 22 - "D1" x "D2" - F x F (Flanged both ends)



D ₁	D ₂	L	T
inches	inches	inches	inches
1	< D1	2.5 x (D1 - D2)	0.165
1-1/2	< D1	2.5 x (D1 - D2)	0.165
2	< D1	2.5 x (D1 - D2)	0.165
2-1/2	< D1	2.5 x (D1 - D2)	0.165
3	< D1	2.5 x (D1 - D2)	0.165
4	< D1	2.5 x (D1 - D2)	0.165
5	< D1	2.5 x (D1 - D2)	0.165
6	< D1	2.5 x (D1 - D2)	0.165
7	< D1	2.5 x (D1 - D2)	0.165
8	< D1	2.5 x (D1 - D2)	0.165
9	< D1	2.5 x (D1 - D2)	0.165
10	< D1	2.5 x (D1 - D2)	0.165
12	< D1	2.5 x (D1 - D2)	0.165
14	< D1	2.5 x (D1 - D2)	0.165
16	< D1	2.5 x (D1 - D2)	0.165
18	< D1	2.5 x (D1 - D2)	0.165
20	< D1	2.5 x (D1 - D2)	0.165
22	< D1	2.5 x (D1 - D2)	0.165

D ₁	D ₂	L	T
inches	inches	inches	inches
24	< D1	2.5 x (D1 - D2)	0.204
26	< D1	2.5 x (D1 - D2)	0.204
28	< D1	2.5 x (D1 - D2)	0.204
30	< D1	2.5 x (D1 - D2)	0.204
32	< D1	2.5 x (D1 - D2)	0.204
34	< D1	2.5 x (D1 - D2)	0.204
36	< D1	2.5 x (D1 - D2)	0.204
42	< D1	2.5 x (D1 - D2)	0.286
48	< D1	2.5 x (D1 - D2)	0.286
54	< D1	2.5 x (D1 - D2)	0.286
60	< D1	2.5 x (D1 - D2)	0.286
66	< D1	2.5 x (D1 - D2)	0.286
72	< D1	2.5 x (D1 - D2)	0.375
78	< D1	2.5 x (D1 - D2)	0.375
84	< D1	2.5 x (D1 - D2)	0.375
90	< D1	2.5 x (D1 - D2)	0.375
96	< D1	2.5 x (D1 - D2)	0.375
102	< D1	2.5 x (D1 - D2)	0.375

Notes:

- 1) Custom lengths available
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

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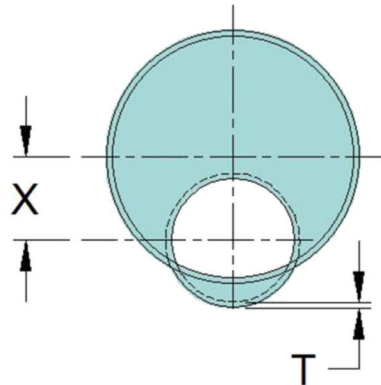
Fitting: Offset Reducer, Round to Round

Fitting No: **169**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

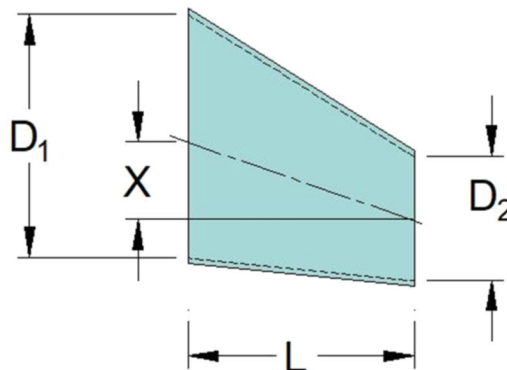


Order as: **#169 - "D1" x "D2" x "L" x "X"**

#169 - "D1" x "D2" x "L" x "X" - F x P (Flanged on D1)

#169 - "D1" x "D2" x "L" x "X" - P x F (Flanged on D2)

#169 - "D1" x "D2" x "L" x "X" - F x F (Flanged both ends)



D ₁	D ₂	X	L	T
inches	inches	inches	inches	inches
1	< D1	Specify	Specify	0.165
1-1/2	< D1	Specify	Specify	0.165
2	< D1	Specify	Specify	0.165
2-1/2	< D1	Specify	Specify	0.165
3	< D1	Specify	Specify	0.165
4	< D1	Specify	Specify	0.165
5	< D1	Specify	Specify	0.165
6	< D1	Specify	Specify	0.165
7	< D1	Specify	Specify	0.165
8	< D1	Specify	Specify	0.165
9	< D1	Specify	Specify	0.165
10	< D1	Specify	Specify	0.165
12	< D1	Specify	Specify	0.165
14	< D1	Specify	Specify	0.165
16	< D1	Specify	Specify	0.165
18	< D1	Specify	Specify	0.165
20	< D1	Specify	Specify	0.165
22	< D1	Specify	Specify	0.165

D ₁	D ₂	X	L	T
inches	inches	inches	inches	inches
24	< D1	Specify	Specify	0.204
26	< D1	Specify	Specify	0.204
28	< D1	Specify	Specify	0.204
30	< D1	Specify	Specify	0.204
32	< D1	Specify	Specify	0.204
34	< D1	Specify	Specify	0.204
36	< D1	Specify	Specify	0.204
42	< D1	Specify	Specify	0.286
48	< D1	Specify	Specify	0.286
54	< D1	Specify	Specify	0.286
60	< D1	Specify	Specify	0.286
66	< D1	Specify	Specify	0.286
72	< D1	Specify	Specify	0.375
78	< D1	Specify	Specify	0.375
84	< D1	Specify	Specify	0.375
90	< D1	Specify	Specify	0.375
96	< D1	Specify	Specify	0.375
102	< D1	Specify	Specify	0.375

Notes:

- 1) Custom lengths available
- 2) Thicknesses shown are for $\pm 6''$ WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: **Standard Tee**

Fitting No: **170**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.



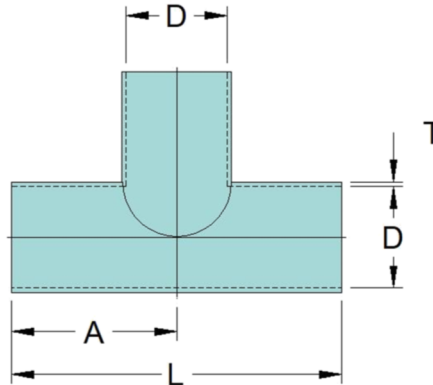
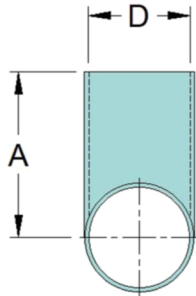
Order as: **#170 - "D"**

#170 - PPF - "D" for one end (Branch) flanged

#170 - FFP - "D" for two ends (Run, Run) flanged

#170 - FFF - "D" for all flanged ends

Show "F" in the desired flange location



D	A	L	T
inches	inches	inches	inches
1	6	12	0.165
1-1/2	6	12	0.165
2	6	12	0.165
2-1/2	7	14	0.165
3	7	14	0.165
4	8	16	0.165
5	8	16	0.165
6	10	20	0.165
7	10	20	0.165
8	12	24	0.165
9	12	24	0.165
10	14	28	0.165
12	16	32	0.165
14	18	36	0.165
16	20	40	0.165
18	21	42	0.165
20	22	44	0.165
22	22	44	0.165

D	A	L	T
inches	inches	inches	inches
24	24	48	0.204
26	26	52	0.204
28	28	56	0.204
30	30	60	0.204
32	31	62	0.204
34	32	64	0.204
36	33	66	0.204
42	36	72	0.286
48	42	84	0.286
54	45	90	0.286
60	48	96	0.286
66	51	102	0.286
72	54	108	0.375
78	57	114	0.375
84	60	120	0.375
90	63	126	0.375
96	66	132	0.375
102	69	138	0.375

Notes:

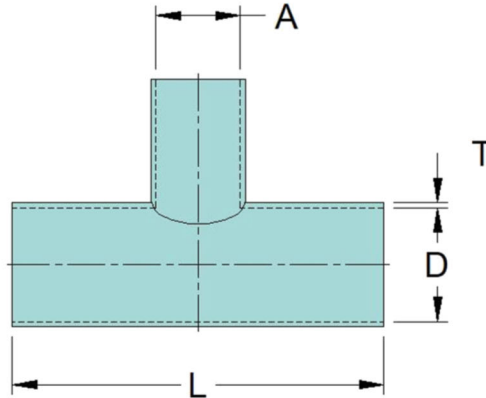
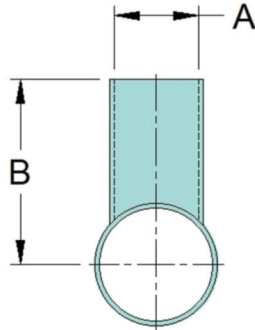
- 1) Custom lengths and larger sizes available up to 180"
- 2) Thicknesses shown are for $\pm 6"$ WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: **90° Bonded Reducing Tee**Fitting No: **172**Product Class: **Dual Guard 2000**Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#172 - "D" - "A"****#172 - PPF - "D" - "A" for one end (Branch) flanged****#172 - FFP - "D" - "A" for two ends (Run, Run) flanged****#172 - FFF - "D" - "A" for all flanged ends**

Show "F" in
the desired flange



D	A	B	L	T
inches	inches	inches	inches	inches
1	≤ D	6 + D/2	A + 12	0.165
1-1/2	≤ D	6 + D/2	A + 12	0.165
2	≤ D	6 + D/2	A + 12	0.165
2-1/2	≤ D	6 + D/2	A + 12	0.165
3	≤ D	6 + D/2	A + 12	0.165
4	≤ D	6 + D/2	A + 12	0.165
5	≤ D	6 + D/2	A + 12	0.165
6	≤ D	6 + D/2	A + 12	0.165
7	≤ D	6 + D/2	A + 12	0.165
8	≤ D	6 + D/2	A + 12	0.165
9	≤ D	6 + D/2	A + 12	0.165
10	≤ D	6 + D/2	A + 12	0.165
12	≤ D	6 + D/2	A + 12	0.165
14	≤ D	6 + D/2	A + 12	0.165
16	≤ D	6 + D/2	A + 12	0.165
18	≤ D	6 + D/2	A + 12	0.165
20	≤ D	6 + D/2	A + 12	0.165
22	≤ D	6 + D/2	A + 12	0.165

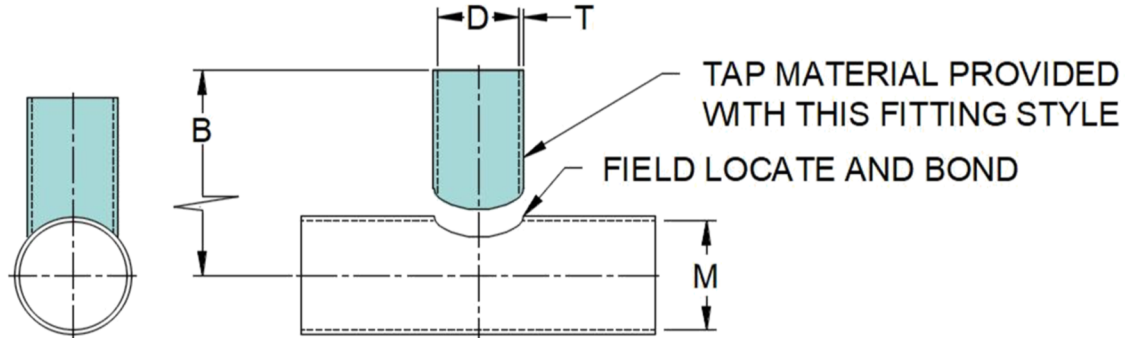
D	A	B	L	T
inches	inches	inches	inches	inches
24	≤ D	6 + D/2	A + 12	0.204
26	≤ D	6 + D/2	A + 12	0.204
28	≤ D	6 + D/2	A + 12	0.204
30	≤ D	6 + D/2	A + 12	0.204
32	≤ D	6 + D/2	A + 12	0.204
34	≤ D	6 + D/2	A + 12	0.204
36	≤ D	6 + D/2	A + 12	0.204
42	≤ D	6 + D/2	A + 12	0.286
48	≤ D	6 + D/2	A + 12	0.286
54	≤ D	6 + D/2	A + 12	0.286
60	≤ D	6 + D/2	A + 12	0.286
66	≤ D	6 + D/2	A + 12	0.286
72	≤ D	6 + D/2	A + 12	0.375
78	≤ D	6 + D/2	A + 12	0.375
84	≤ D	6 + D/2	A + 12	0.375
90	≤ D	6 + D/2	A + 12	0.375
96	≤ D	6 + D/2	A + 12	0.375
102	≤ D	6 + D/2	A + 12	0.375

Notes:

- 1) Custom lengths and larger sizes available up to 180"
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: **90° Pre-Configured Concentric Tap**Fitting No: **173**Product Class: **Dual Guard 2000**Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#173 - PT - "D" - "M"****#173 - PTF - "D" - "M" (Flange on tap)**

D	M	B	T
inches	inches	inches	inches
1	≥ D	6 + M/2	0.165
1-1/2	≥ D	6 + M/2	0.165
2	≥ D	6 + M/2	0.165
2-1/2	≥ D	6 + M/2	0.165
3	≥ D	6 + M/2	0.165
4	≥ D	6 + M/2	0.165
5	≥ D	6 + M/2	0.165
6	≥ D	6 + M/2	0.165
7	≥ D	6 + M/2	0.165
8	≥ D	6 + M/2	0.165
9	≥ D	6 + M/2	0.165
10	≥ D	6 + M/2	0.165
12	≥ D	6 + M/2	0.165
14	≥ D	6 + M/2	0.165
16	≥ D	6 + M/2	0.165
18	≥ D	6 + M/2	0.165
20	≥ D	6 + M/2	0.165
22	≥ D	6 + M/2	0.165

D	M	B	T
inches	inches	inches	inches
24	≥ D	6 + M/2	0.204
26	≥ D	6 + M/2	0.204
28	≥ D	6 + M/2	0.204
30	≥ D	6 + M/2	0.204
32	≥ D	6 + M/2	0.204
34	≥ D	6 + M/2	0.204
36	≥ D	6 + M/2	0.204
42	≥ D	6 + M/2	0.286
48	≥ D	6 + M/2	0.286
54	≥ D	6 + M/2	0.286
60	≥ D	6 + M/2	0.286
66	≥ D	6 + M/2	0.286
72	≥ D	6 + M/2	0.375
78	≥ D	6 + M/2	0.375
84	≥ D	6 + M/2	0.375
90	≥ D	6 + M/2	0.375
96	≥ D	6 + M/2	0.375
102	≥ D	6 + M/2	0.375

Notes:

- 1) "B" shown is standard, custom lengths available.
- 2) Larger sizes available up to 180"
- 3) Tap Material is pre-cut in the factory, or pre-configured, to the customer specified header diameter.
- 4) Thicknesses shown are for ± 6" WC
- 5) Thicknesses designed per project requirements. Contact Engineering for details

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Fitting: **90° Saddle Tap**

Fitting No: **174**

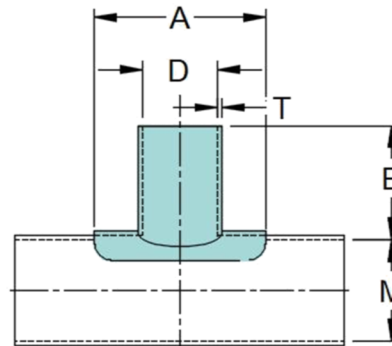
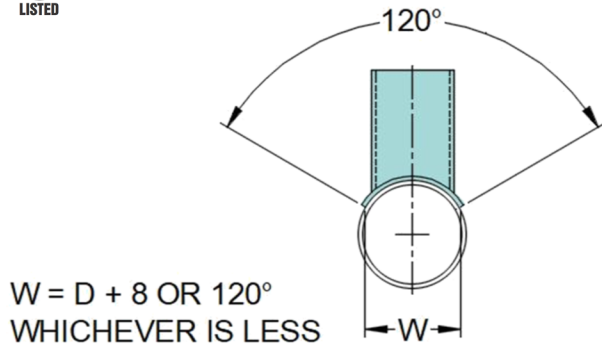
Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#174 - ST - "D" - "M"**

#174 - STF - "D" - "M" (Flange on tap)



D	A	W	B	T
inches	inches	inches	inches	inches
1	D + 8	D + 8	6 + M/2	0.165
1-1/2	D + 8	D + 8	6 + M/2	0.165
2	D + 8	D + 8	6 + M/2	0.165
2-1/2	D + 8	D + 8	6 + M/2	0.165
3	D + 8	D + 8	6 + M/2	0.165
4	D + 8	D + 8	6 + M/2	0.165
5	D + 8	D + 8	6 + M/2	0.165
6	D + 8	D + 8	6 + M/2	0.165
7	D + 8	D + 8	6 + M/2	0.165
8	D + 8	D + 8	6 + M/2	0.165
9	D + 8	D + 8	6 + M/2	0.165
10	D + 8	D + 8	6 + M/2	0.165
12	D + 8	D + 8	6 + M/2	0.165
14	D + 8	D + 8	6 + M/2	0.165
16	D + 8	D + 8	6 + M/2	0.165
18	D + 8	D + 8	6 + M/2	0.165
20	D + 8	D + 8	6 + M/2	0.165
22	D + 8	D + 8	6 + M/2	0.165

D	A	W	B	T
inches	inches	inches	inches	inches
24	D + 8	D + 8	6 + M/2	0.204
26	D + 8	D + 8	6 + M/2	0.204
28	D + 8	D + 8	6 + M/2	0.204
30	D + 8	D + 8	6 + M/2	0.204
32	D + 8	D + 8	6 + M/2	0.204
34	D + 8	D + 8	6 + M/2	0.204
36	D + 8	D + 8	6 + M/2	0.204
42	D + 8	D + 8	6 + M/2	0.286
48	D + 8	D + 8	6 + M/2	0.286
54	D + 8	D + 8	6 + M/2	0.286
60	D + 8	D + 8	6 + M/2	0.286
66	D + 8	D + 8	6 + M/2	0.286
72	D + 8	D + 8	6 + M/2	0.375
78	D + 8	D + 8	6 + M/2	0.375
84	D + 8	D + 8	6 + M/2	0.375
90	D + 8	D + 8	6 + M/2	0.375
96	D + 8	D + 8	6 + M/2	0.375
102	D + 8	D + 8	6 + M/2	0.375

Notes:

- 1) Custom lengths and larger sizes available up to 180"
- 2) Tap Material is pre-cut in the factory, or pre-configured, to the customer specified header diameter.
- 3) Thicknesses shown are for $\pm 6''$ WC
- 4) Thicknesses designed per project requirements. Contact Engineering for details

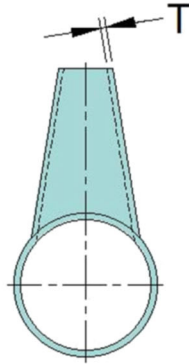
Fitting: 90° Bonded Concentric Conical Tee

Fitting No: **175**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.



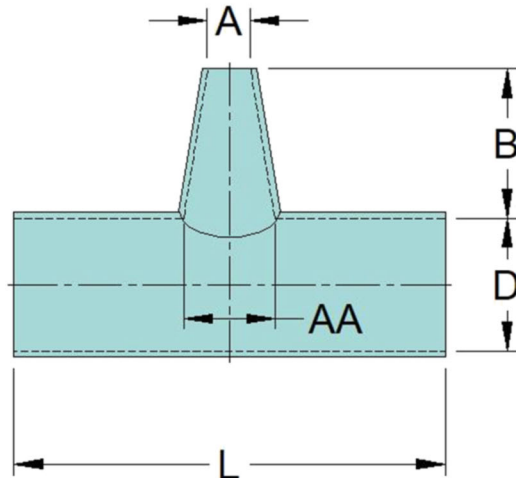
Order as: **#175 - "D" - "A"**

#175 - PPF - "D" - "A" one end (Branch) flanged

#175 - FFP- "D" - "A" two ends (Run, Run) flanged

#175 - FFF - "D" - "A" flanged

Show "F" in desired flange location



D	A	AA	L	B	T
inches	inches	inches	inches	inches	inches
1					
1-1/2					
2	≤ D	A + 4.85	AA + 12	6 + D/2	0.165
2-1/2	≤ D	A + 4.85	AA + 12	6 + D/2	0.165
3	≤ D	A + 4.85	AA + 12	6 + D/2	0.165
4	≤ D	A + 4.85	AA + 12	6 + D/2	0.165
5	≤ D	A + 4.85	AA + 12	6 + D/2	0.165
6	≤ D	A + 4.85	AA + 12	6 + D/2	0.165
7	≤ D	A + 4.85	AA + 12	6 + D/2	0.165
8	≤ D	A + 4.85	AA + 12	6 + D/2	0.165
9	≤ D	A + 4.85	AA + 12	6 + D/2	0.165
10	≤ D	A + 4.85	AA + 12	6 + D/2	0.165
12	≤ D	A + 4.85	AA + 12	6 + D/2	0.165
14	≤ D	A + 4.85	AA + 12	6 + D/2	0.165
16	≤ D	A + 4.85	AA + 12	6 + D/2	0.165
18	≤ D	A + 4.85	AA + 12	6 + D/2	0.165
20	≤ D	A + 4.85	AA + 12	6 + D/2	0.165
22	≤ D	A + 4.85	AA + 12	6 + D/2	0.165

D	A	AA	L	B	T
inches	inches	inches	inches	inches	inches
24	≤ D	A + 4.85	AA + 12	6 + D/2	0.204
26	≤ D	A + 4.85	AA + 12	6 + D/2	0.204
28	≤ D	A + 4.85	AA + 12	6 + D/2	0.204
30	≤ D	A + 4.85	AA + 12	6 + D/2	0.204
32	≤ D	A + 4.85	AA + 12	6 + D/2	0.204
34	≤ D	A + 4.85	AA + 12	6 + D/2	0.204
36	≤ D	A + 4.85	AA + 12	6 + D/2	0.204
42	≤ D	A + 4.85	AA + 12	6 + D/2	0.286
48	≤ D	A + 4.85	AA + 12	6 + D/2	0.286
54	≤ D	A + 4.85	AA + 12	6 + D/2	0.286
60	≤ D	A + 4.85	AA + 12	6 + D/2	0.286
66	≤ D	A + 4.85	AA + 12	6 + D/2	0.286
72	≤ D	A + 4.85	AA + 12	6 + D/2	0.375
78	≤ D	A + 4.85	AA + 12	6 + D/2	0.375
84	≤ D	A + 4.85	AA + 12	6 + D/2	0.375
90	≤ D	A + 4.85	AA + 12	6 + D/2	0.375
96	≤ D	A + 4.85	AA + 12	6 + D/2	0.375
102	≤ D	A + 4.85	AA + 12	6 + D/2	0.375

Notes:

- 1) Custom lengths and larger sizes available up to 180"
- 2) Tap Material is pre-cut in the factory, or pre-configured, to the customer specified header diameter.
- 3) Thicknesses shown are for ± 6" WC
- 4) Thicknesses designed per project requirements. Contact Engineering for details

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Web: www.compositesusa.com Email: Info@compositesusa.com

Fitting: **90° Pre-Configured Conical Reducing Tap** Fitting No: **176**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

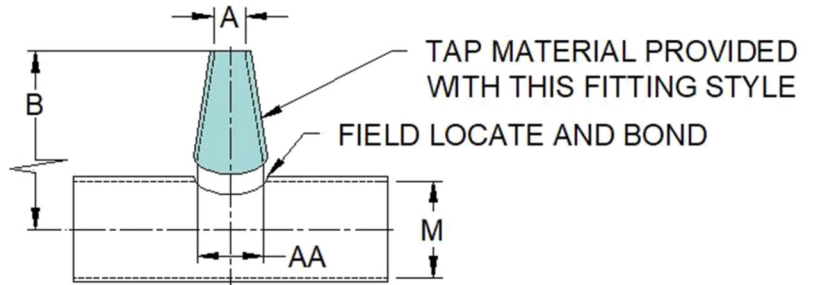
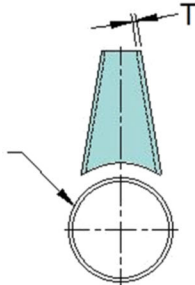
DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#176 - PT - "A" - "D"**

#176 - PTF - "A" - "D" flange on tap



HEADER MATERIAL
PROVIDED ELSEWHERE
(I.E., STYLE #100 DUCT,
EXISTING PLANT SYSTEM
ETC.)



A	M	AA	B	T
inches	inches	inches	inches	inches
1				
1-1/2				
2	> A	A + 4.85	6 + M/2	0.165
2-1/2	> A	A + 4.85	6 + M/2	0.165
3	> A	A + 4.85	6 + M/2	0.165
4	> A	A + 4.85	6 + M/2	0.165
5	> A	A + 4.85	6 + M/2	0.165
6	> A	A + 4.85	6 + M/2	0.165
7	> A	A + 4.85	6 + M/2	0.165
8	> A	A + 4.85	6 + M/2	0.165
9	> A	A + 4.85	6 + M/2	0.165
10	> A	A + 4.85	6 + M/2	0.165
12	> A	A + 4.85	6 + M/2	0.165
14	> A	A + 4.85	6 + M/2	0.165
16	> A	A + 4.85	6 + M/2	0.165
18	> A	A + 4.85	6 + M/2	0.165
20	> A	A + 4.85	6 + M/2	0.165
22	> A	A + 4.85	6 + M/2	0.165

A	M	AA	B	T
inches	inches	inches	inches	inches
24	> A	A + 4.85	6 + M/2	0.204
26	> A	A + 4.85	6 + M/2	0.204
28	> A	A + 4.85	6 + M/2	0.204
30	> A	A + 4.85	6 + M/2	0.204
32	> A	A + 4.85	6 + M/2	0.204
34	> A	A + 4.85	6 + M/2	0.204
36	> A	A + 4.85	6 + M/2	0.204
42	> A	A + 4.85	6 + M/2	0.286
48	> A	A + 4.85	6 + M/2	0.286
54	> A	A + 4.85	6 + M/2	0.286
60	> A	A + 4.85	6 + M/2	0.286
66	> A	A + 4.85	6 + M/2	0.286
72	> A	A + 4.85	6 + M/2	0.375
78	> A	A + 4.85	6 + M/2	0.375
84	> A	A + 4.85	6 + M/2	0.375
90	> A	A + 4.85	6 + M/2	0.375
96	> A	A + 4.85	6 + M/2	0.375
102	> A	A + 4.85	6 + M/2	0.375

Notes:

- 1) "B" shown is standard, custom lengths available
- 2) Larger sizes available up to 180"
- 3) Tap material is pre-cut in the factory, or pre-configured to the customer specified header diameter
- 4) Thicknesses shown are for $\pm 6"$ WC
- 5) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: 90° Conical Reducing Saddle Tap

Fitting No: **177**

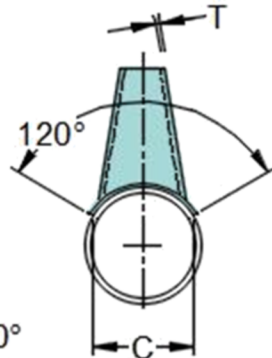
Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

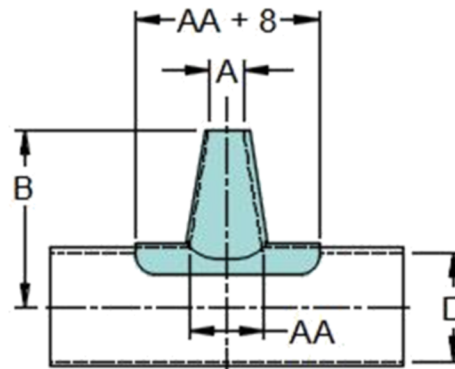
DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#177 - ST - "A" - "D"**

#177 - STF - "A" - "D" flange on tap



**C = AA + 8 OR 120°
WHICHEVER IS LESS**



A	D	AA	B	T
inches	inches	inches	inches	inches
1				
1-1/2				
2	> A	A + 4.85	6 + D/2	0.165
2-1/2	> A	A + 4.85	6 + D/2	0.165
3	> A	A + 4.85	6 + D/2	0.165
4	> A	A + 4.85	6 + D/2	0.165
5	> A	A + 4.85	6 + D/2	0.165
6	> A	A + 4.85	6 + D/2	0.165
7	> A	A + 4.85	6 + D/2	0.165
8	> A	A + 4.85	6 + D/2	0.165
9	> A	A + 4.85	6 + D/2	0.165
10	> A	A + 4.85	6 + D/2	0.165
12	> A	A + 4.85	6 + D/2	0.165
14	> A	A + 4.85	6 + D/2	0.165
16	> A	A + 4.85	6 + D/2	0.165
18	> A	A + 4.85	6 + D/2	0.165
20	> A	A + 4.85	6 + D/2	0.165
22	> A	A + 4.85	6 + D/2	0.165

A	D	AA	B	T
inches	inches	inches	inches	inches
24	> A	A + 4.85	6 + D/2	0.204
26	> A	A + 4.85	6 + D/2	0.204
28	> A	A + 4.85	6 + D/2	0.204
30	> A	A + 4.85	6 + D/2	0.204
32	> A	A + 4.85	6 + D/2	0.204
34	> A	A + 4.85	6 + D/2	0.204
36	> A	A + 4.85	6 + D/2	0.204
42	> A	A + 4.85	6 + D/2	0.286
48	> A	A + 4.85	6 + D/2	0.286
54	> A	A + 4.85	6 + D/2	0.286
60	> A	A + 4.85	6 + D/2	0.286
66	> A	A + 4.85	6 + D/2	0.286
72	> A	A + 4.85	6 + D/2	0.375
78	> A	A + 4.85	6 + D/2	0.375
84	> A	A + 4.85	6 + D/2	0.375
90	> A	A + 4.85	6 + D/2	0.375
96	> A	A + 4.85	6 + D/2	0.375
102	> A	A + 4.85	6 + D/2	0.375

Notes:

- 1) Custom lengths available, larger sizes available up to 180"
- 2) Thicknesses shown are for $\pm 6"$ WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: 90° Bonded Shoe Tap

Fitting No: **178**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.



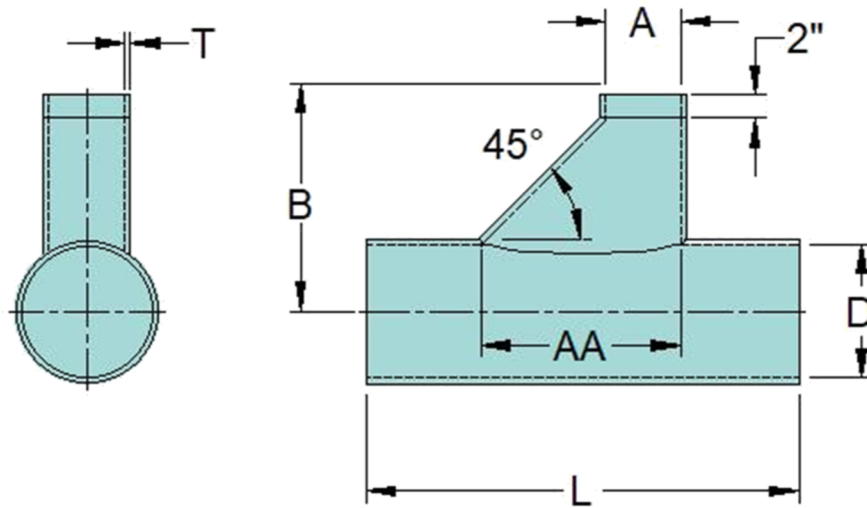
Order as: **#178 - "D" - "A"**

#178 - PPF - "D" - "A" one end (Branch) flanged

#178 - FFP- "D" - "A" two ends (Run, Run) flanged

#178 - FFF - "D" - "A" flanged

Show "F" in desired flange location



D	A	AA	L	B	T
inches	inches	inches	inches	inches	inches
1					
1-1/2					
2	< D	A + 6	AA + 12	8 + D/2	0.165
2-1/2	< D	A + 6	AA + 12	8 + D/2	0.165
3	< D	A + 6	AA + 12	8 + D/2	0.165
4	< D	A + 6	AA + 12	8 + D/2	0.165
5	< D	A + 6	AA + 12	8 + D/2	0.165
6	< D	A + 6	AA + 12	8 + D/2	0.165
7	< D	A + 6	AA + 12	8 + D/2	0.165
8	< D	A + 6	AA + 12	8 + D/2	0.165
9	< D	A + 6	AA + 12	8 + D/2	0.165
10	< D	A + 6	AA + 12	8 + D/2	0.165
12	< D	A + 6	AA + 12	8 + D/2	0.165
14	< D	Max 1.5 x A or A + 6	AA + 12	Greater of	0.165
16	< D		AA + 12	0.5 x A + 2	0.165
18	< D		AA + 12	+D/2	0.165
20	< D		AA + 12	or	0.165
22	< D		AA + 12	8 + D/2	0.165

D	A	AA	L	B	T
inches	inches	inches	inches	inches	inches
24	< D	Max 1.5 x A or A + 6	AA + 12	Greater of 0.5 x A + 2 +D/2 or 8 + D/2	0.204
26	< D		AA + 12		0.204
28	< D		AA + 12		0.204
30	< D		AA + 12		0.204
32	< D		AA + 12		0.204
34	< D		AA + 12		0.204
36	< D		AA + 12		0.204
42	< D		AA + 12		0.286
48	< D		AA + 12		0.286
54	< D		AA + 12		0.286
60	< D		AA + 12		0.286
66	< D		AA + 12		0.286
72	< D		AA + 12		0.375
78	< D		AA + 12		0.375
84	< D		AA + 12		0.375
90	< D		AA + 12		0.375
96	< D		AA + 12		0.375
102	< D		AA + 12		0.375

Notes:

- 1) Custom lengths and larger sizes available up to 180"
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

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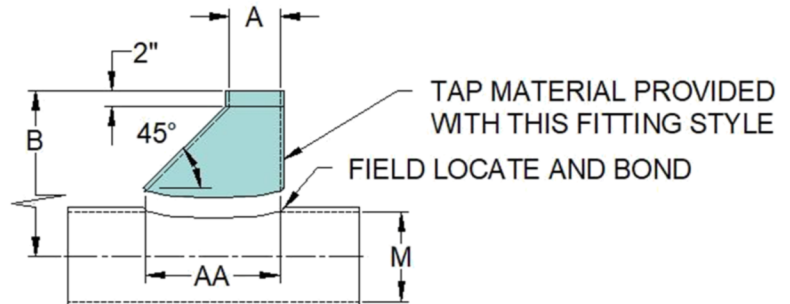
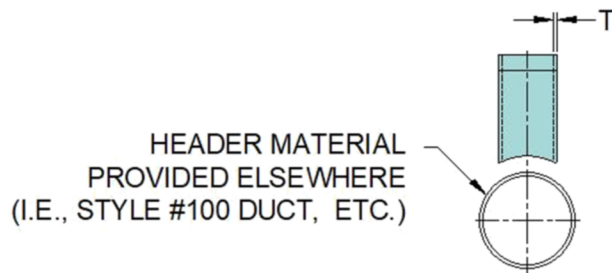
Fitting: 90° Pre-Configured Shoe Tap

Fitting No: **179**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.


Order as: **#179 - PT - "D" - "A"**
#179 - PTF - "D" - "A" flange on branch


A	D	AA	B	T
inches	inches	inches	inches	inches
1				
1-1/2				
2	≥ A	A + 6	8 + D/2	0.165
2-1/2	≥ A	A + 6	8 + D/2	0.165
3	≥ A	A + 6	8 + D/2	0.165
4	≥ A	A + 6	8 + D/2	0.165
5	≥ A	A + 6	8 + D/2	0.165
6	≥ A	A + 6	8 + D/2	0.165
7	≥ A	A + 6	8 + D/2	0.165
8	≥ A	A + 6	8 + D/2	0.165
9	≥ A	A + 6	8 + D/2	0.165
10	≥ A	A + 6	8 + D/2	0.165
12	≥ A	A + 6	8 + D/2	0.165
14	≥ A	Max 1.5 x A or A + 6	Greater of 0.5 x A + 2 +D/2 or 8 + D/2	0.165
16	≥ A			0.165
18	≥ A			0.165
20	≥ A			0.165
22	≥ A			0.165

A	D	AA	B	T
inches	inches	inches	inches	inches
24	≥ A	Max 1.5 x A or A + 6	Greater of 0.5 x A + 2 +D/2 or 8 + D/2	0.204
26	≥ A			0.204
28	≥ A			0.204
30	≥ A			0.204
32	≥ A			0.204
34	≥ A			0.204
36	≥ A			0.204
42	≥ A			0.286
48	≥ A			0.286
54	≥ A			0.286
60	≥ A			0.286
66	≥ A			0.286
72	≥ A			0.375
78	≥ A			0.375
84	≥ A			0.375
90	≥ A			0.375
96	≥ A			0.375
102	≥ A			0.375

Notes:

- "B" shown is standard, custom lengths available
- Larger sizes available up to 180"
- Tap material is pre-cut in the factory, or pre-configured to the customer specified header diameter
- Thicknesses shown are for ± 6" WC
- Thicknesses designed per project requirements. Contact Engineering for details

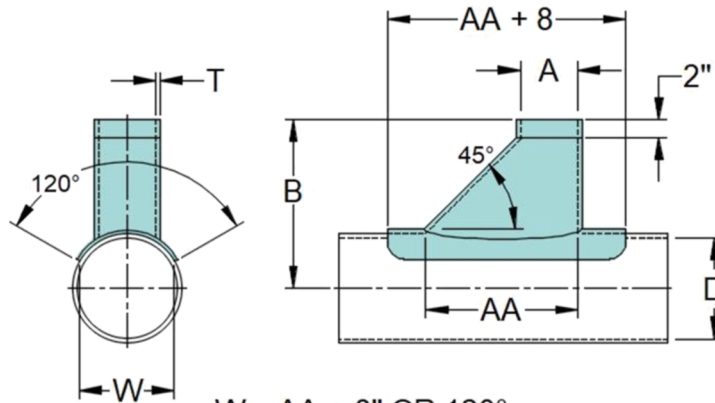
Fitting: Shoe Saddle Tap

Fitting No: **180**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.


Order as: **#180 - ST - "D" - "A"**
#180 - STF - "D" - "A" flange on branch


$W = AA + 8" \text{ OR } 120"$
WHICHEVER IS LESS

A	D	AA	B	T
inches	inches	inches	inches	inches
1				
1-1/2				
2	$\geq A$	$A + 6$	$8 + D/2$	0.165
2-1/2	$\geq A$	$A + 6$	$8 + D/2$	0.165
3	$\geq A$	$A + 6$	$8 + D/2$	0.165
4	$\geq A$	$A + 6$	$8 + D/2$	0.165
5	$\geq A$	$A + 6$	$8 + D/2$	0.165
6	$\geq A$	$A + 6$	$8 + D/2$	0.165
7	$\geq A$	$A + 6$	$8 + D/2$	0.165
8	$\geq A$	$A + 6$	$8 + D/2$	0.165
9	$\geq A$	$A + 6$	$8 + D/2$	0.165
10	$\geq A$	$A + 6$	$8 + D/2$	0.165
12	$\geq A$	$A + 6$	$8 + D/2$	0.165
14	$\geq A$	Max $1.5 \times A$ or $A + 6$	Greater of $0.5 \times A + 2$ $+ D/2$ or $8 + D/2$	0.165
16	$\geq A$			0.165
18	$\geq A$			0.165
20	$\geq A$			0.165
22	$\geq A$			0.165

A	D	AA	B	T
inches	inches	inches	inches	inches
24	$\geq A$	Max $1.5 \times A$ or $A + 6$	Greater of $0.5 \times A + 2$ $+ D/2$ or $8 + D/2$	0.204
26	$\geq A$			0.204
28	$\geq A$			0.204
30	$\geq A$			0.204
32	$\geq A$			0.204
34	$\geq A$			0.204
36	$\geq A$			0.204
42	$\geq A$			0.286
48	$\geq A$			0.286
54	$\geq A$			0.286
60	$\geq A$			0.286
66	$\geq A$			0.286
72	$\geq A$			0.375
78	$\geq A$			0.375
84	$\geq A$			0.375
90	$\geq A$			0.375
96	$\geq A$			0.375
102	$\geq A$			0.375

Notes:

- 1) Custom lengths and larger sizes available up to 180"
- 2) Thicknesses shown are for $\pm 6"$ WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

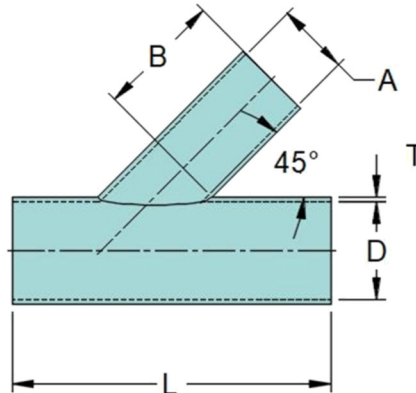
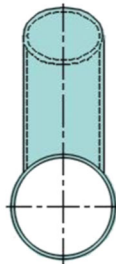
Fitting: 45° Lateral Bonded Tap

Fitting No: **182**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.


Order as: **#182 - "D" - "A"**
#182 - PPF - "D" - "A" one end (Branch) flanged
#182 - FFP - "D" - "A" two ends (Run, Run) flanged
#182 - FFF - "D" - "A" flanged
Show "F" on desired flange location


D	A	B	L	T
inches	inches	inches	inches	inches
1	≤ D	6	1.4 x A + 12	0.165
1-1/2	≤ D	6	1.4 x A + 12	0.165
2	≤ D	6	1.4 x A + 12	0.165
2-1/2	≤ D	6	1.4 x A + 12	0.165
3	≤ D	6	1.4 x A + 12	0.165
4	≤ D	6	1.4 x A + 12	0.165
5	≤ D	6	1.4 x A + 12	0.165
6	≤ D	6	1.4 x A + 12	0.165
7	≤ D	6	1.4 x A + 12	0.165
8	≤ D	6	1.4 x A + 12	0.165
9	≤ D	6	1.4 x A + 12	0.165
10	≤ D	6	1.4 x A + 12	0.165
12	≤ D	6	1.4 x A + 12	0.165
14	≤ D	6	1.4 x A + 12	0.165
16	≤ D	6	1.4 x A + 12	0.165
18	≤ D	6	1.4 x A + 12	0.165
20	≤ D	6	1.4 x A + 12	0.165
22	≤ D	6	1.4 x A + 12	0.165

D	A	B	L	T
inches	inches	inches	inches	inches
24	≤ D	6	1.4 x A + 12	0.204
26	≤ D	6	1.4 x A + 12	0.204
28	≤ D	6	1.4 x A + 12	0.204
30	≤ D	6	1.4 x A + 12	0.204
32	≤ D	6	1.4 x A + 12	0.204
34	≤ D	6	1.4 x A + 12	0.204
36	≤ D	6	1.4 x A + 12	0.204
42	≤ D	6	1.4 x A + 12	0.286
48	≤ D	6	1.4 x A + 12	0.286
54	≤ D	6	1.4 x A + 12	0.286
60	≤ D	6	1.4 x A + 12	0.286
66	≤ D	6	1.4 x A + 12	0.286
72	≤ D	6	1.4 x A + 12	0.375
78	≤ D	6	1.4 x A + 12	0.375
84	≤ D	6	1.4 x A + 12	0.375
90	≤ D	6	1.4 x A + 12	0.375
96	≤ D	6	1.4 x A + 12	0.375
102	≤ D	6	1.4 x A + 12	0.375

Notes:

- 1) Custom lengths and standoffs available
- 2) Larger sizes available up to 180"
- 3) Thicknesses shown are for ± 6" WC
- 4) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: 45° Lateral Pre-Configured Tap

Fitting No: **183**

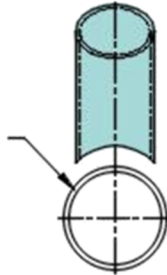
Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

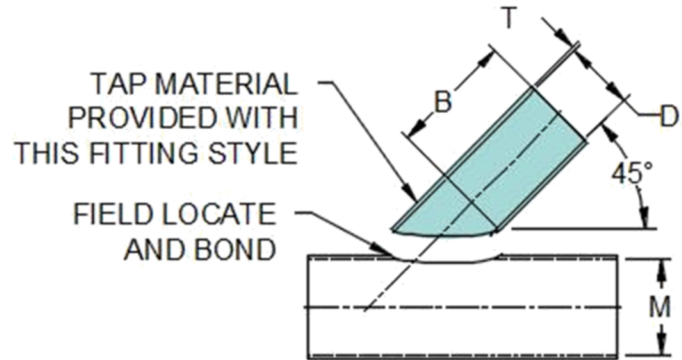


HEADER MATERIAL
PROVIDED ELSEWHERE
(I.E., STYLE #100 DUCT,
EXISTING PLANT SYSTEM
ETC.)



Order as: **#183 - PT - "D" - "M"**

#183 - PTF - "D" - "M" flanged on tap



D	M	B	T
inches	inches	inches	inches
1	≥ D	6	0.165
1-1/2	≥ D	6	0.165
2	≥ D	6	0.165
2-1/2	≥ D	6	0.165
3	≥ D	6	0.165
4	≥ D	6	0.165
5	≥ D	6	0.165
6	≥ D	6	0.165
7	≥ D	6	0.165
8	≥ D	6	0.165
9	≥ D	6	0.165
10	≥ D	6	0.165
12	≥ D	6	0.165
14	≥ D	6	0.165
16	≥ D	6	0.165
18	≥ D	6	0.165
20	≥ D	6	0.165
22	≥ D	6	0.165

D	M	B	T
inches	inches	inches	inches
24	≥ D	6	0.204
26	≥ D	6	0.204
28	≥ D	6	0.204
30	≥ D	6	0.204
32	≥ D	6	0.204
34	≥ D	6	0.204
36	≥ D	6	0.204
42	≥ D	6	0.286
48	≥ D	6	0.286
54	≥ D	6	0.286
60	≥ D	6	0.286
66	≥ D	6	0.286
72	≥ D	6	0.375
78	≥ D	6	0.375
84	≥ D	6	0.375
90	≥ D	6	0.375
96	≥ D	6	0.375
102	≥ D	6	0.375

Notes:

- 1) Custom lengths and standoffs available
- 2) Larger sizes available up to 180"
- 3) Tap material is pre-cut in the factory, or pre-configured to the customer specified header diameter
- 4) Thicknesses shown are for ± 6" WC
- 5) Thicknesses designed per project requirements. Contact Engineering for details

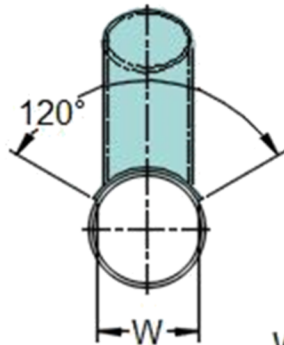
Fitting: **45° Lateral Saddle Tap**

Fitting No: **184**

Product Class: **Dual Guard 2000**

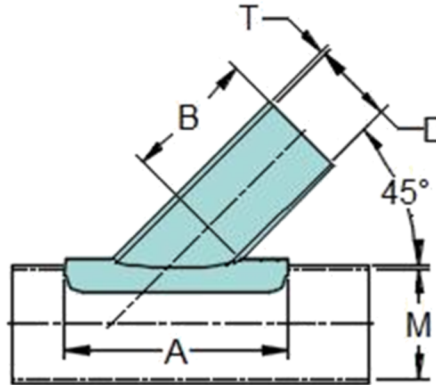
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.



Order as: **#184 - ST - "D" - "M"**

#184 - STF - "D" - "M" flanged on tap



**$W = D + 8" \text{ OR } 120^\circ$
WHICHEVER IS LESS**

D	A	W	B	T
inches	inches	inches	inches	inches
1	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.165
1-1/2	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.165
2	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.165
2-1/2	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.165
3	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.165
4	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.165
5	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.165
6	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.165
7	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.165
8	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.165
9	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.165
10	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.165
12	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.165
14	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.165
16	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.165
18	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.165
20	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.165
22	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.165

D	A	W	B	T
inches	inches	inches	inches	inches
24	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.204
26	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.204
28	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.204
30	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.204
32	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.204
34	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.204
36	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.204
42	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.286
48	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.286
54	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.286
60	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.286
66	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.286
72	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.375
78	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.375
84	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.375
90	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.375
96	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.375
102	$1.4 \times D + 8$	$D + 8 \text{ or } 120^\circ$	6	0.375

Notes:

- 1) Custom lengths and standoffs available
- 2) Larger sizes available up to 180"
- 3) Thicknesses shown are for $\pm 6"$ WC
- 4) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: **45° Double (Lateral) Wye**

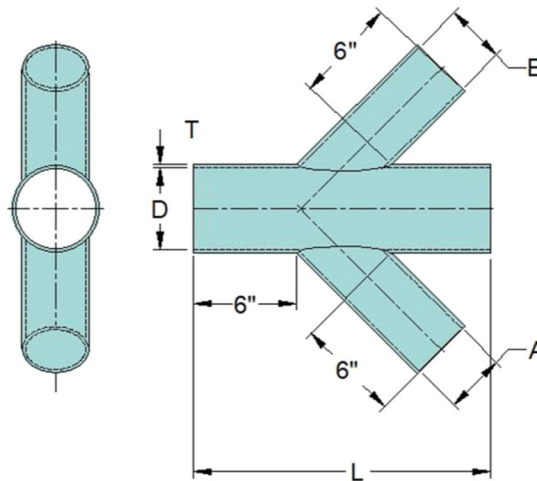
Fitting No: **185**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#185 - "D" - "A" - "B"**



D	A	B	L	T
inches	inches	inches	inches	inches
1				
1-1/2				
2	≤ D	≤ A	1.4 x A + 12	0.165
2-1/2	≤ D	≤ A	1.4 x A + 12	0.165
3	≤ D	≤ A	1.4 x A + 12	0.165
4	≤ D	≤ A	1.4 x A + 12	0.165
5	≤ D	≤ A	1.4 x A + 12	0.165
6	≤ D	≤ A	1.4 x A + 12	0.165
7	≤ D	≤ A	1.4 x A + 12	0.165
8	≤ D	≤ A	1.4 x A + 12	0.165
9	≤ D	≤ A	1.4 x A + 12	0.165
10	≤ D	≤ A	1.4 x A + 12	0.165
12	≤ D	≤ A	1.4 x A + 12	0.165
14	≤ D	≤ A	1.4 x A + 12	0.165
16	≤ D	≤ A	1.4 x A + 12	0.165
18	≤ D	≤ A	1.4 x A + 12	0.165
20	≤ D	≤ A	1.4 x A + 12	0.165
22	≤ D	≤ A	1.4 x A + 12	0.165

D	A	B	L	T
inches	inches	inches	inches	inches
24	≤ D	≤ A	1.4 x A + 12	0.204
26	≤ D	≤ A	1.4 x A + 12	0.204
28	≤ D	≤ A	1.4 x A + 12	0.204
30	≤ D	≤ A	1.4 x A + 12	0.204
32	≤ D	≤ A	1.4 x A + 12	0.204
34	≤ D	≤ A	1.4 x A + 12	0.204
36	≤ D	≤ A	1.4 x A + 12	0.204
42	≤ D	≤ A	1.4 x A + 12	0.286
48	≤ D	≤ A	1.4 x A + 12	0.286
54	≤ D	≤ A	1.4 x A + 12	0.286
60	≤ D	≤ A	1.4 x A + 12	0.286
66	≤ D	≤ A	1.4 x A + 12	0.286
72	≤ D	≤ A	1.4 x A + 12	0.375
78	≤ D	≤ A	1.4 x A + 12	0.375
84	≤ D	≤ A	1.4 x A + 12	0.375
90	≤ D	≤ A	1.4 x A + 12	0.375
96	≤ D	≤ A	1.4 x A + 12	0.375
102	≤ D	≤ A	1.4 x A + 12	0.375

Notes:

- 1) Custom lengths and larger sizes available up to 180"
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: 45° Reducing (Lateral) Wye

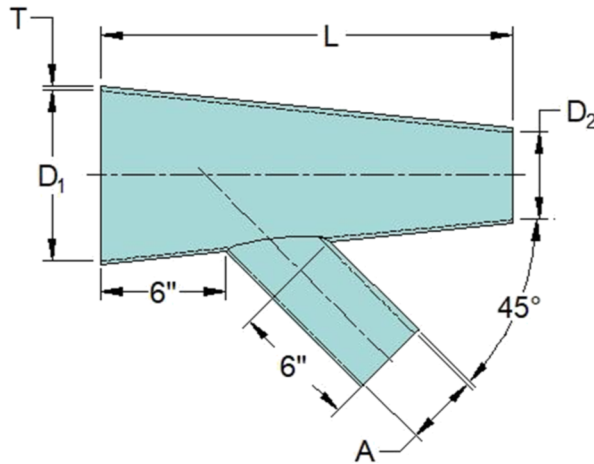
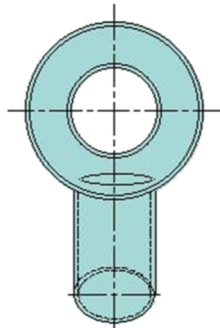
Fitting No: **186**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: #186 - "D" - "A" - "B"



D ₁	D ₂	A	L	T
inches	inches	inches	inches	inches
1				
1-1/2				
2	≤ D1	≤ D1	≥ 1.4 x A + 12	0.165
2-1/2	≤ D1	≤ D1	≥ 1.4 x A + 12	0.165
3	≤ D1	≤ D1	≥ 1.4 x A + 12	0.165
4	≤ D1	≤ D1	≥ 1.4 x A + 12	0.165
5	≤ D1	≤ D1	≥ 1.4 x A + 12	0.165
6	≤ D1	≤ D1	≥ 1.4 x A + 12	0.165
7	≤ D1	≤ D1	≥ 1.4 x A + 12	0.165
8	≤ D1	≤ D1	≥ 1.4 x A + 12	0.165
9	≤ D1	≤ D1	≥ 1.4 x A + 12	0.165
10	≤ D1	≤ D1	≥ 1.4 x A + 12	0.165
12	≤ D1	≤ D1	≥ 1.4 x A + 12	0.165
14	≤ D1	≤ D1	≥ 1.4 x A + 12	0.165
16	≤ D1	≤ D1	≥ 1.4 x A + 12	0.165
18	≤ D1	≤ D1	≥ 1.4 x A + 12	0.165
20	≤ D1	≤ D1	≥ 1.4 x A + 12	0.165
22	≤ D1	≤ D1	≥ 1.4 x A + 12	0.165

D ₁	D ₂	A	L	T
inches	inches	inches	inches	inches
24	≤ D1	≤ D1	≥ 1.4 x A + 12	0.204
26	≤ D1	≤ D1	≥ 1.4 x A + 12	0.204
28	≤ D1	≤ D1	≥ 1.4 x A + 12	0.204
30	≤ D1	≤ D1	≥ 1.4 x A + 12	0.204
32	≤ D1	≤ D1	≥ 1.4 x A + 12	0.204
34	≤ D1	≤ D1	≥ 1.4 x A + 12	0.204
36	≤ D1	≤ D1	≥ 1.4 x A + 12	0.204
42	≤ D1	≤ D1	≥ 1.4 x A + 12	0.286
48	≤ D1	≤ D1	≥ 1.4 x A + 12	0.286
54	≤ D1	≤ D1	≥ 1.4 x A + 12	0.286
60	≤ D1	≤ D1	≥ 1.4 x A + 12	0.286
66	≤ D1	≤ D1	≥ 1.4 x A + 12	0.286
72	≤ D1	≤ D1	≥ 1.4 x A + 12	0.375
78	≤ D1	≤ D1	≥ 1.4 x A + 12	0.375
84	≤ D1	≤ D1	≥ 1.4 x A + 12	0.375
90	≤ D1	≤ D1	≥ 1.4 x A + 12	0.375
96	≤ D1	≤ D1	≥ 1.4 x A + 12	0.375
102	≤ D1	≤ D1	≥ 1.4 x A + 12	0.375

Notes:

- 1) Custom lengths and larger sizes available up to 180"
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: 45° Double Reducing (Lateral) Wye

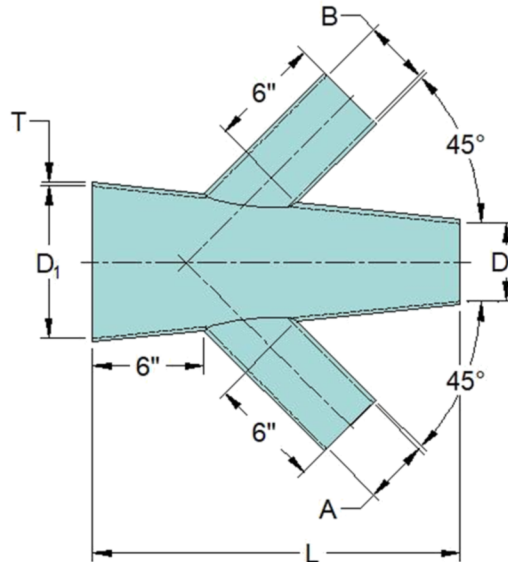
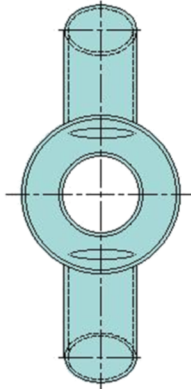
Fitting No: **187**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: #187 - "D₁" - "D₂" - "A" - "B"



D ₁ inches	D ₂ inches	A inches	B inches	L inches	T inches
1					
1-1/2					
2	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.165
2-1/2	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.165
3	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.165
4	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.165
5	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.165
6	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.165
7	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.165
8	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.165
9	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.165
10	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.165
12	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.165
14	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.165
16	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.165
18	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.165
20	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.165
22	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.165

D ₁ inches	D ₂ inches	A inches	B inches	L inches	T inches
24	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.204
26	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.204
28	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.204
30	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.204
32	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.204
34	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.204
36	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.204
42	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.286
48	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.286
54	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.286
60	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.286
66	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.286
72	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.375
78	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.375
84	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.375
90	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.375
96	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.375
102	≤ D ₁	≤ D ₁	≤ A	1.4 x A + 12	0.375

Notes:

- 1) Custom lengths and larger sizes available up to 180"
- 2) Standard fitting length to suit existing tooling
- 3) Thicknesses shown are for ± 6" WC
- 4) Thicknesses designed per project requirements. Contact Engineering for details.

CompositesUSA One Peninsula Drive, North East, MD 21551 T (410) 287-2700 F (410) 287-5222

Web: www.compositesusa.com Email: Info@compositesusa.com

Fitting: 90° Bonded Tangential Tee

Fitting No: **190**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.



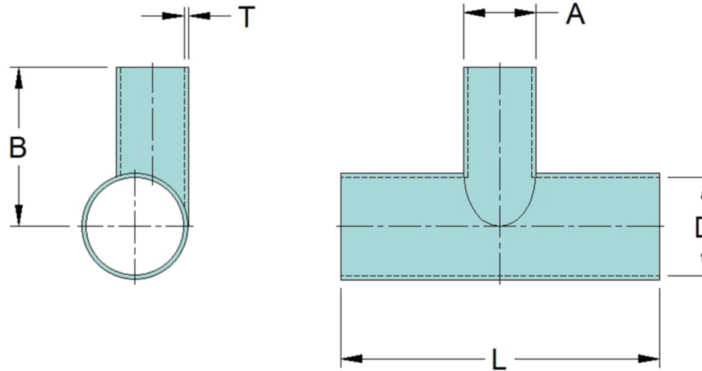
Order as: **#190 - "D" - "A"**

#190 - PPF - "D" - "A" one end (Branch) flanged

#190 - FFP - "D" - "A" two ends (Run, Run) flanged

#190 - FFF - "D" - "A" flanged

Show "F" in the desired flange location



D	A	B	L	T
inches	inches	inches	inches	inches
1				
1-1/2				
2	≤ D	6 + D/2	A + 12	0.165
2-1/2	≤ D	6 + D/2	A + 12	0.165
3	≤ D	6 + D/2	A + 12	0.165
4	≤ D	6 + D/2	A + 12	0.165
5	≤ D	6 + D/2	A + 12	0.165
6	≤ D	6 + D/2	A + 12	0.165
7	≤ D	6 + D/2	A + 12	0.165
8	≤ D	6 + D/2	A + 12	0.165
9	≤ D	6 + D/2	A + 12	0.165
10	≤ D	6 + D/2	A + 12	0.165
12	≤ D	6 + D/2	A + 12	0.165
14	≤ D	6 + D/2	A + 12	0.165
16	≤ D	6 + D/2	A + 12	0.165
18	≤ D	6 + D/2	A + 12	0.165
20	≤ D	6 + D/2	A + 12	0.165
22	≤ D	6 + D/2	A + 12	0.165

D	A	B	L	T
inches	inches	inches	inches	inches
24	≤ D	6 + D/2	A + 12	0.204
26	≤ D	6 + D/2	A + 12	0.204
28	≤ D	6 + D/2	A + 12	0.204
30	≤ D	6 + D/2	A + 12	0.204
32	≤ D	6 + D/2	A + 12	0.204
34	≤ D	6 + D/2	A + 12	0.204
36	≤ D	6 + D/2	A + 12	0.204
42	≤ D	6 + D/2	A + 12	0.286
48	≤ D	6 + D/2	A + 12	0.286
54	≤ D	6 + D/2	A + 12	0.286
60	≤ D	6 + D/2	A + 12	0.286
66	≤ D	6 + D/2	A + 12	0.286
72	≤ D	6 + D/2	A + 12	0.375
78	≤ D	6 + D/2	A + 12	0.375
84	≤ D	6 + D/2	A + 12	0.375
90	≤ D	6 + D/2	A + 12	0.375
96	≤ D	6 + D/2	A + 12	0.375
102	≤ D	6 + D/2	A + 12	0.375

Notes:

- 1) Custom lengths and standoffs available
- 2) Larger sizes available up to 180"
- 3) Thicknesses shown are for ± 6" WC
- 4) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: 45° Bonded Tangential Tee

Fitting No: **192**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.



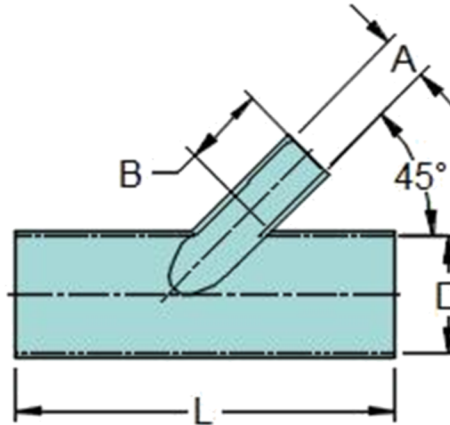
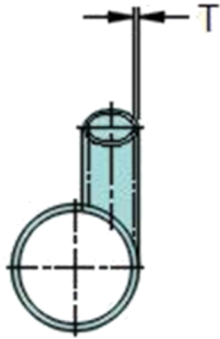
Order as: **#192 - "D" - "A"**

#192 - PPF - "D" - "A" one end (Branch) flanged

#192 - FFP - "D" - "A" two ends (Run, Run) flanged

#192 - FFF - "D" - "A" flanged

Show "F" in the desired flange location



D	A	B	L	T
inches	inches	inches	inches	inches
1				
1-1/2				
2	≤ D	6	1.4 x A + 12	0.165
2-1/2	≤ D	6	1.4 x A + 12	0.165
3	≤ D	6	1.4 x A + 12	0.165
4	≤ D	6	1.4 x A + 12	0.165
5	≤ D	6	1.4 x A + 12	0.165
6	≤ D	6	1.4 x A + 12	0.165
7	≤ D	6	1.4 x A + 12	0.165
8	≤ D	6	1.4 x A + 12	0.165
9	≤ D	6	1.4 x A + 12	0.165
10	≤ D	6	1.4 x A + 12	0.165
12	≤ D	6	1.4 x A + 12	0.165
14	≤ D	6	1.4 x A + 12	0.165
16	≤ D	6	1.4 x A + 12	0.165
18	≤ D	6	1.4 x A + 12	0.165
20	≤ D	6	1.4 x A + 12	0.165
22	≤ D	6	1.4 x A + 12	0.165

D	A	B	L	T
inches	inches	inches	inches	inches
24	≤ D	6	1.4 x A + 12	0.204
26	≤ D	6	1.4 x A + 12	0.204
28	≤ D	6	1.4 x A + 12	0.204
30	≤ D	6	1.4 x A + 12	0.204
32	≤ D	6	1.4 x A + 12	0.204
34	≤ D	6	1.4 x A + 12	0.204
36	≤ D	6	1.4 x A + 12	0.204
42	≤ D	6	1.4 x A + 12	0.286
48	≤ D	6	1.4 x A + 12	0.286
54	≤ D	6	1.4 x A + 12	0.286
60	≤ D	6	1.4 x A + 12	0.286
66	≤ D	6	1.4 x A + 12	0.286
72	≤ D	6	1.4 x A + 12	0.375
78	≤ D	6	1.4 x A + 12	0.375
84	≤ D	6	1.4 x A + 12	0.375
90	≤ D	6	1.4 x A + 12	0.375
96	≤ D	6	1.4 x A + 12	0.375
102	≤ D	6	1.4 x A + 12	0.375

Notes:

- 1) Custom lengths and standoffs available
- 2) Larger sizes available up to 180"
- 3) Thicknesses shown are for ± 6" WC
- 4) Thicknesses designed per project requirements. Contact Engineering for details

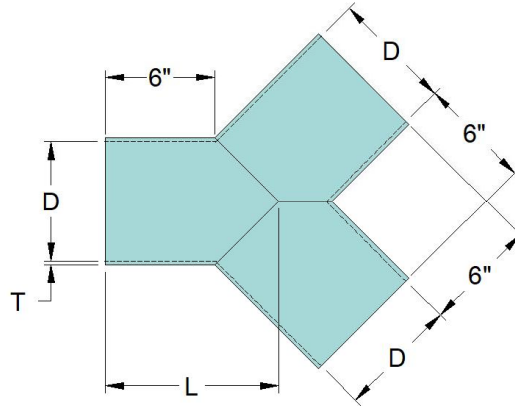
Fitting: **True Wye**

Fitting No: **195**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.


Order as: **#195 - "D"**
#195 - PPF - "D" one end (Branch) flanged
#195 - FFP - "D" two ends (Run, Run) flanged
#195 - FFF - "D" flanged
Show "F" in the desired flange location


D	L	T
inches	inches	inches
1	7	0.165
1-1/2	7	0.165
2	7	0.165
2-1/2	7	0.165
3	8	0.165
4	8	0.165
5	9	0.165
6	9	0.165
7	10	0.165
8	10	0.165
9	11	0.165
10	11	0.165
12	12	0.165
14	13	0.165
16	14	0.165
18	15	0.165
20	16	0.165
22	17	0.165

D	L	T
inches	inches	inches
24	18	0.204
26	19	0.204
28	20	0.204
30	21	0.204
32	22	0.204
34	23	0.204
36	24	0.204
42	27	0.286
48	30	0.286
54	33	0.286
60	36	0.286
66	39	0.286
72	42	0.375
78	45	0.375
84	48	0.375
90	51	0.375
96	54	0.375
102	57	0.375

Notes:

- 1) Custom lengths available
- 2) Thicknesses shown are for $\pm 6"$ WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

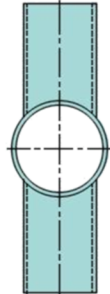
Fitting: **90° Cross**

Fitting No: **197**

Product Class: **Dual Guard 2000**

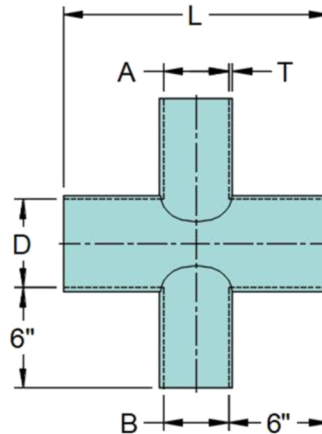
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.



Order as: **#197 - "D" - "A" - "B"**

#197 - FFF - "D" - "A" - "B" Flanged



D	A	B	L	T
inches	inches	inches	inches	inches
1	≤ D	≤ A	A + 12	0.165
1-1/2	≤ D	≤ A	A + 12	0.165
2	≤ D	≤ A	A + 12	0.165
2-1/2	≤ D	≤ A	A + 12	0.165
3	≤ D	≤ A	A + 12	0.165
4	≤ D	≤ A	A + 12	0.165
5	≤ D	≤ A	A + 12	0.165
6	≤ D	≤ A	A + 12	0.165
7	≤ D	≤ A	A + 12	0.165
8	≤ D	≤ A	A + 12	0.165
9	≤ D	≤ A	A + 12	0.165
10	≤ D	≤ A	A + 12	0.165
12	≤ D	≤ A	A + 12	0.165
14	≤ D	≤ A	A + 12	0.165
16	≤ D	≤ A	A + 12	0.165
18	≤ D	≤ A	A + 12	0.165
20	≤ D	≤ A	A + 12	0.165
22	≤ D	≤ A	A + 12	0.165

D	A	B	L	T
inches	inches	inches	inches	inches
24	≤ D	≤ A	A + 12	0.204
26	≤ D	≤ A	A + 12	0.204
28	≤ D	≤ A	A + 12	0.204
30	≤ D	≤ A	A + 12	0.204
32	≤ D	≤ A	A + 12	0.204
34	≤ D	≤ A	A + 12	0.204
36	≤ D	≤ A	A + 12	0.204
42	≤ D	≤ A	A + 12	0.286
48	≤ D	≤ A	A + 12	0.286
54	≤ D	≤ A	A + 12	0.286
60	≤ D	≤ A	A + 12	0.286
66	≤ D	≤ A	A + 12	0.286
72	≤ D	≤ A	A + 12	0.375
78	≤ D	≤ A	A + 12	0.375
84	≤ D	≤ A	A + 12	0.375
90	≤ D	≤ A	A + 12	0.375
96	≤ D	≤ A	A + 12	0.375
102	≤ D	≤ A	A + 12	0.375

Notes:

- 1) Custom lengths and larger sizes available up to 180"
- 2) Thicknesses shown are for ± 6" WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

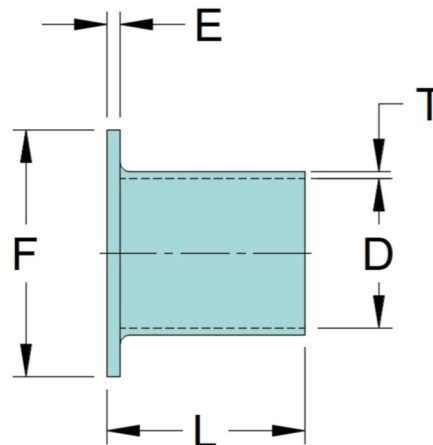
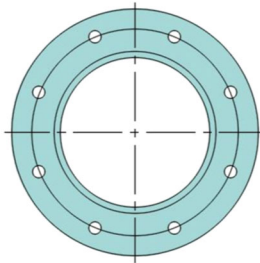
Fitting: **Stub Flange**

Fitting No: **200**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.



Order as: **#200 - "D"**

Flange OD: **PS-15-69**

Flange Drilling: **PS-15-69 or specify**

D	F	E	L	T
inches	inches	inches	inches	inches
1	5.375	0.250	A + 12	0.165
1-1/2	5.875	0.250	A + 12	0.165
2	6.375	0.250	A + 12	0.165
2-1/2	6.875	0.250	A + 12	0.165
3	7.375	0.250	A + 12	0.165
4	8.375	0.250	A + 12	0.165
5	9.375	0.250	A + 12	0.165
6	10.375	0.250	A + 12	0.165
7	11.375	0.250	A + 12	0.165
8	12.375	0.250	A + 12	0.165
9	13.375	0.375	A + 12	0.165
10	14.375	0.375	A + 12	0.165
12	16.375	0.375	A + 12	0.165
14	18.375	0.375	A + 12	0.165
16	20.375	0.500	A + 12	0.165
18	22.375	0.500	A + 12	0.165
20	24.375	0.500	A + 12	0.165
22	26.375	0.500	A + 12	0.165

D	F	E	L	T
inches	inches	inches	inches	inches
24	28.375	0.500	A + 12	0.204
26	30.375	0.500	A + 12	0.204
28	32.375	0.500	A + 12	0.204
30	34.375	0.500	A + 12	0.204
32	36.375	0.500	A + 12	0.204
34	38.375	0.500	A + 12	0.204
36	40.375	0.500	A + 12	0.204
42	46.4	0.625	A + 12	0.286
48	54.4	0.625	A + 12	0.286
54	60.4	0.625	A + 12	0.286
60	66.4	0.625	A + 12	0.286
66	72.4	0.625	A + 12	0.286
72	78.4	0.625	A + 12	0.375
78	84.4	0.750	A + 12	0.375
84	90.4	0.750	A + 12	0.375
90	98.4	0.750	A + 12	0.375
96	102.4	0.750	A + 12	0.375
102	109	0.750	A + 12	0.375

Notes:

- 1) Custom lengths and larger sizes available up to 180"
- 2) Thicknesses shown are for $\pm 6"$ WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: Van Stone Style Stub Flange with Ring

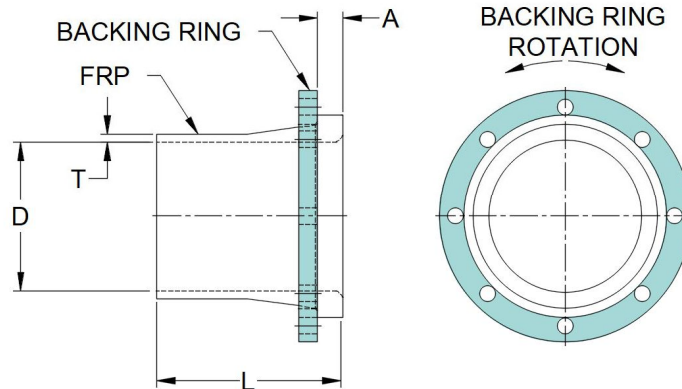
Fitting No: **202**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#202 - "D"**



D	L	T	A
inches	inches	inches	inches
1			
1-1/2			
2			
2-1/2			
3			
4			
5			
6			
7			
8			
9			
10			
12			
14			
16			
18			
20			
22			

D	L	T	A
inches	inches	inches	inches
24			
26			
28			
30			
32			
34			
36			
42			
48			
54			
60			
66			
72			
78			
84			
90			
96			
102			

Notes:

- 1) Custom lengths and larger sizes available up to 180"

Fitting: **Blind Flange**

Fitting No: **205**

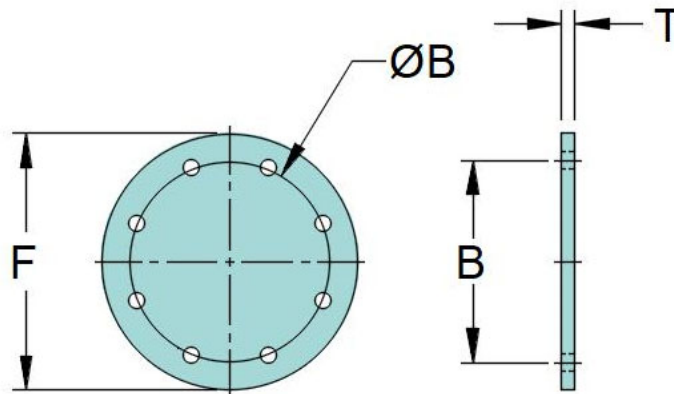
Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#205 - "D"**

Flange OD: **PS-15-69**

Flange Drilling: **Per PS-15-69 or specify**


D	F	B	# Bolts	T
inches	inches	inches	inches	inches
1	5.375	4.0	4	0.250
1-1/2	5.875	4.5	4	0.250
2	6.375	5.0	4	0.250
2-1/2	6.875	5.5	4	0.250
3	7.375	6.0	4	0.250
4	8.375	7.0	8	0.250
5	9.375	8.0	8	0.250
6	10.375	9.0	8	0.250
7	11.375	10.0	8	0.250
8	12.375	11.0	8	0.250
9	13.375	12.0	8	0.375
10	14.375	13.0	8	0.375
12	16.375	15.0	12	0.375
14	18.375	17.0	12	0.375
16	20.375	19.0	16	0.500
18	22.375	21.0	16	0.500
20	24.375	23.0	20	0.500
22	26.375	25.0	20	0.500

D	F	B	# Bolts	T
inches	inches	inches	inches	inches
24	28.375	27.0	20	0.500
26	30.375	29.0	24	0.500
28	32.375	31.0	24	0.500
30	34.375	33.0	28	0.500
32	36.375	35.0	28	0.500
34	38.375	37.0	30	0.500
36	40.375	39.0	32	0.500
42	46.4	45.0	36	0.625
48	54.4	52.0	44	0.625
54	60.4	58.0	44	0.625
60	66.4	64.0	52	0.625
66	72.4	70.0	56	0.625
72	78.4	76.0	60	0.625
78	84.4	82.0	Specify	0.750
84	90.4	88.0	Specify	0.750
90	96.4	94.0	Specify	0.750
96	102.4	100.0	Specify	0.750
102	109	106.0	Specify	0.750

Notes:

- 1) Alternative drilling and larger sizes available up to 180"

Fitting: **End Cap - Plate**

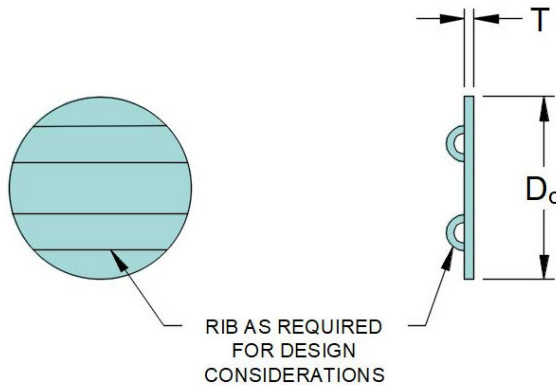
Fitting No: **210**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#210 - "D"**



D	T	D _o
inches	inches	inches
1	0.250	1.3
1-1/2	0.250	1.8
2	0.250	2.3
2-1/2	0.250	2.8
3	0.250	3.3
4	0.250	4.3
5	0.250	5.3
6	0.250	6.3
7	0.250	7.3
8	0.250	8.3
9	0.375	9.3
10	0.375	10.3
12	0.375	12.3
14	0.375	14.3
16	0.500	16.3
18	0.500	18.3
20	0.500	20.3
22	0.500	22.3

D	T	D _o
inches	inches	inches
24	0.500	24.4
26	0.500	26.4
28	0.500	28.4
30	0.500	30.4
32	0.500	32.4
34	0.500	34.4
36	0.500	36.4
42	0.625	42.5
48	0.625	48.5
54	0.625	54.5
60	0.625	60.5
66	0.625	66.5
72	0.625	72.5
78	0.750	78.7
84	0.750	84.7
90	0.750	90.8
96	0.750	96.8
102	0.750	102.8

Notes:

- 1) Larger sizes available up to 180"

Fitting: **End Cap - Dished**

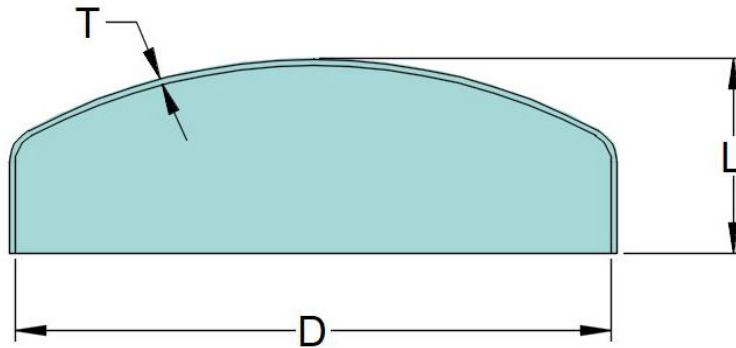
Fitting No: **212**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#212 - "D"**



D	T	L
inches	inches	inches
1	0.165	1.7
1-1/2	0.165	1.8
2	0.165	1.8
2-1/2	0.165	1.9
3	0.165	2.0
4	0.165	2.2
5	0.165	2.4
6	0.165	2.5
7	0.165	2.7
8	0.165	2.9
9	0.165	3.0
10	0.165	3.2
12	0.165	3.5
14	0.165	3.9
16	0.165	4.2
18	0.165	4.6
20	0.165	4.9
22	0.165	5.2

D	T	L
inches	inches	inches
24	0.204	5.6
26	0.204	5.9
28	0.204	6.3
30	0.204	6.6
32	0.204	6.9
34	0.204	7.3
36	0.204	7.6
42	0.286	8.6
48	0.286	9.7
54	0.286	10.7
60	0.286	11.7
66	0.286	12.7
72	0.375	13.7
78	0.375	14.8
84	0.375	15.8
90	0.375	16.8
96	0.375	17.8
102	0.375	18.8

Notes:

- 1) Larger sizes available up to 180"
- 2) Thicknesses shown are for $\pm 6"$ WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

Fitting: **2" Dia KF Flange Adapter**

Fitting No: **216**

Product Class: **Dual Guard 2000**

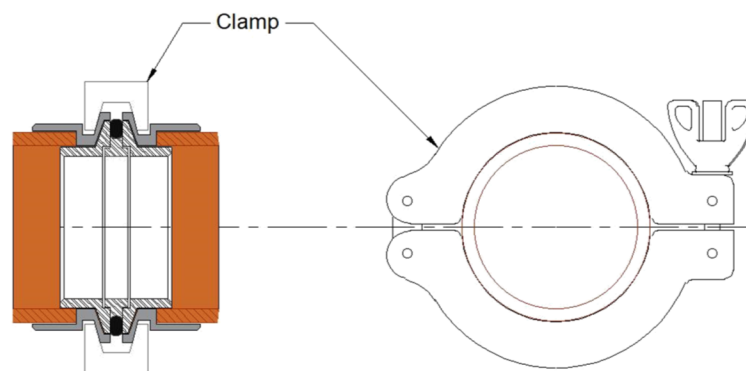
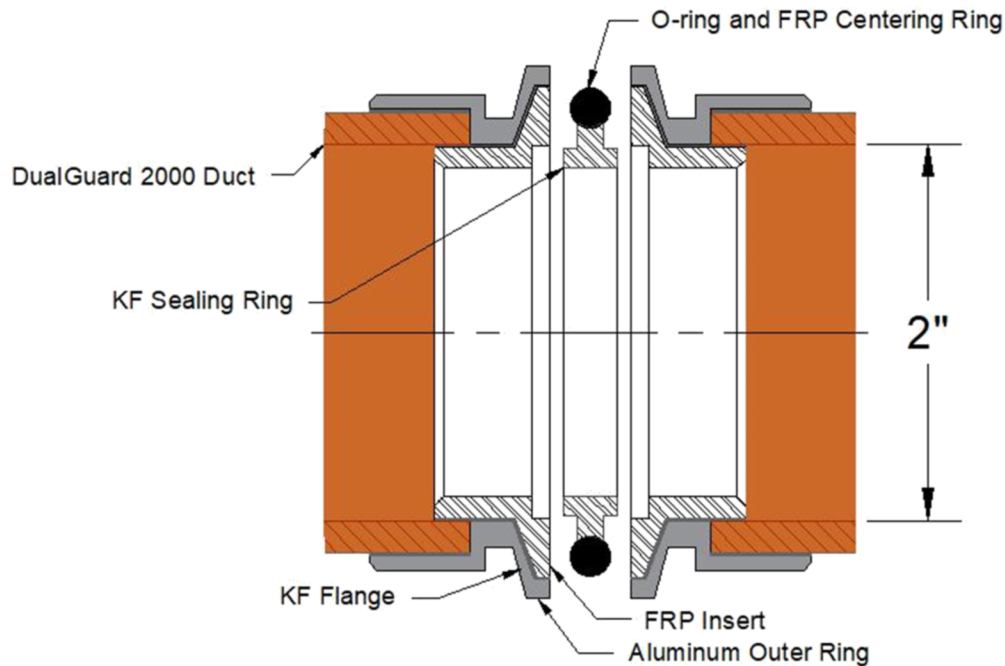
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order Fitting as: **KF-FL**

Order Seal Ring as: **KF-SR**

Order Clamp as: **KF-CL**



Assembled Ø2" KF Style Joint

Notes:

- 1) Installs with Clean Wrap Putty, ordered separately
- 2) KF Flange is sized to fit into Composites USA FRP duct products, including Dual Guard 2000 and Class 1 vinyl ester.
- 3) Requires straight duct or fitting end for proper installation (will not install on sweep elbows).

Fitting: 4" & 6" Dia MF Flange Adapter

Fitting No: **217**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

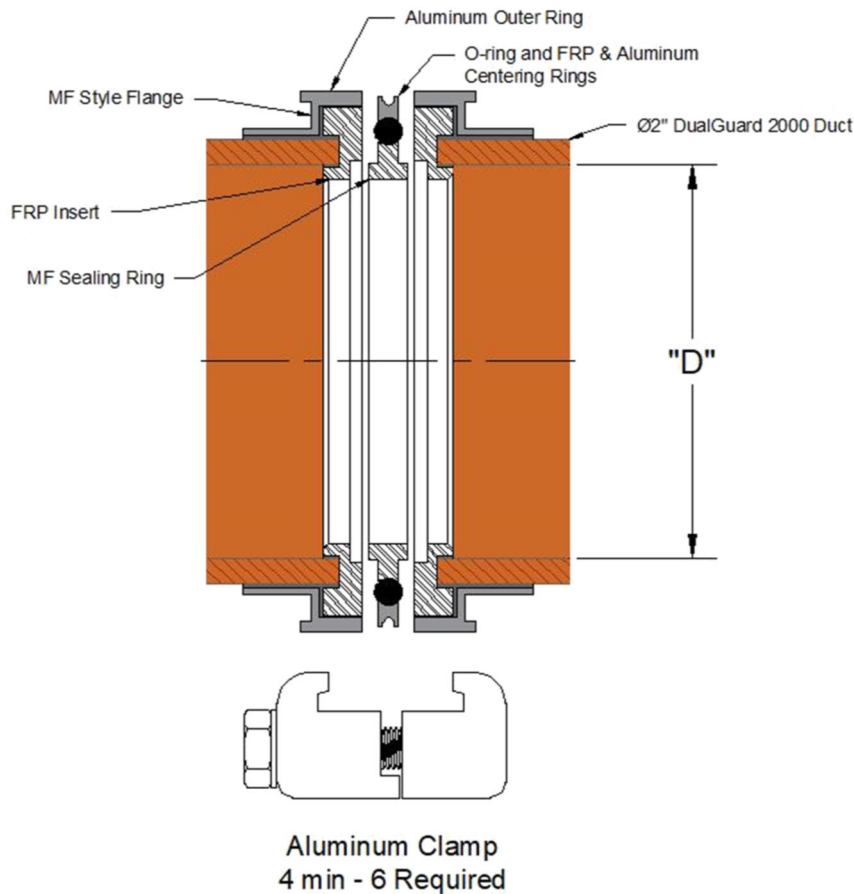
DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order Fitting Assembly as: **#217-A - "D"**

Order Seal Ring as: **#217-SR - "D"**

Order Fitting as: **#217-F - "D"**

Order Clamp as: **#217-C - "D"**



Notes:

- 1) Installs with Clean Wrap Putty, ordered separately
- 2) MF Flange is sized to fit into Composites USA FRP duct products, including Dual Guard 2000 and Class 1 vinyl ester.
- 3) Requires straight duct or fitting end for proper installation (will not install on sweep elbows).

Fitting: Slip Alignment Coupling—External

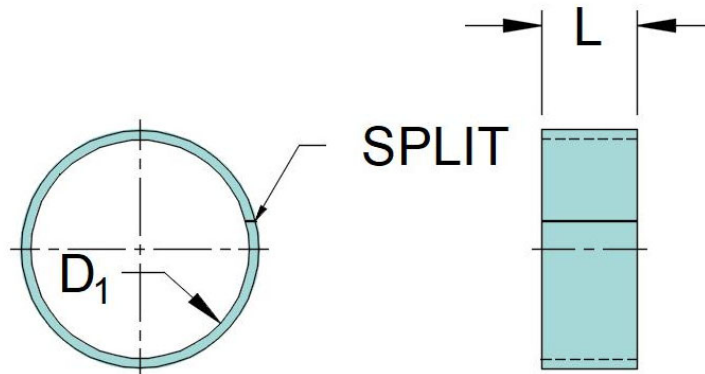
Fitting No: **220**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#220 - "D"**



D	D ₁	L
inches	inches	inches
1	1.425	4.0
1-1/2	1.926	4.0
2	2.425	4.0
2-1/2	2.925	4.0
3	3.425	4.0
4	4.425	4.0
5	5.425	4.0
6	6.425	4.0
7	7.425	4.0
8	8.425	4.0
9	9.425	4.0
10	10.425	6.0
12	12.425	6.0
14	14.425	6.0
16	16.425	6.0
18	18.425	6.0
20	20.425	6.0
22	22.425	6.0

D	D ₁	L
inches	inches	inches
24	24.505	9.0
26	26.505	9.0
28	28.505	9.0
30	30.505	9.0
32	32.505	9.0
34	34.505	9.0
36	36.630	9.0
42	42.770	9.0
48	48.770	9.0
54	54.770	9.0
60	60.770	9.0
66	66.770	9.0
72	72.876	9.0
78	78.950	9.0
84	84.950	9.0
90	91.000	9.0
96	97.000	12.0
102	103.000	12.0

Notes:

- 1) Larger sizes available up to 180"

Fitting: Slip Alignment Coupling—Internal

Fitting No: **225**

Product Class: **Dual Guard 2000**

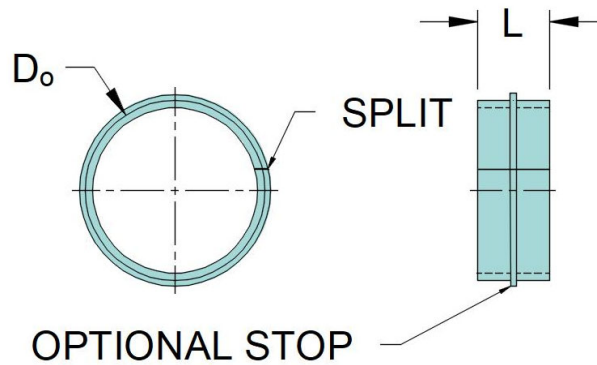
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#225 - Split (standard)**

#225 - Stop (with optional stop)

#225 - Non-Split (optional)



D	D _o	L
inches	inches	inches
1	0.875	4.0
1-1/2	1.375	4.0
2	1.875	4.0
2-1/2	2.375	4.0
3	2.875	4.0
4	3.875	4.0
5	4.875	4.0
6	5.875	4.0
7	6.875	4.0
8	7.875	4.0
9	8.875	4.0
10	9.875	6.0
12	11.875	6.0
14	13.875	6.0
16	15.875	6.0
18	17.875	6.0
20	19.875	6.0
22	21.875	6.0

D	D _o	L
inches	inches	inches
24	23.875	9.0
26	25.875	9.0
28	27.875	9.0
30	29.875	9.0
32	31.875	9.0
34	33.875	9.0
36	35.750	9.0
42	41.750	9.0
48	47.750	9.0
54	53.750	9.0
60	59.750	9.0
66	65.750	9.0
72	71.750	9.0
78	77.750	9.0
84	83.750	9.0
90	89.750	9.0
96	95.500	12.0
102	101.500	12.0

Notes:

- 1) Larger sizes available up to 180"

Fitting: **Access Door Flush**

Fitting No: **230**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.



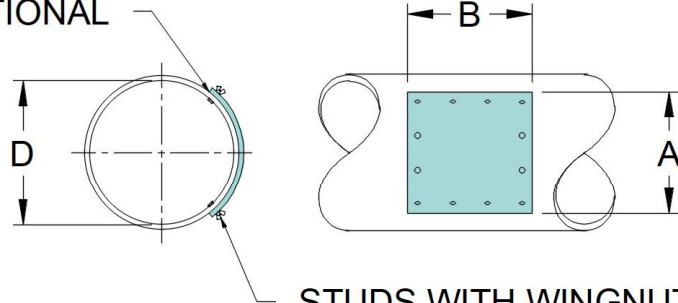
Order as: **#230 - "A" x "B"**

Options: **Gasket Material (Specify)**

Bolts / Nuts (Specify)

Hinged Top (Specify)

HINGE OPTIONAL



STUDS WITH WINGNUTS
AND RUBBER GASKETS

D	A	B
inches	inches	inches
> 8	6	6
> 10	8	8
> 12	10	10
> 14	12	12
Specify	Specify	Specify

D	A	B
inches	inches	inches

Notes:

- 1) Neoprene gasket and plated bolts are standard

Fitting: **Access Door Flanged Stand Off**

Fitting No: **235**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

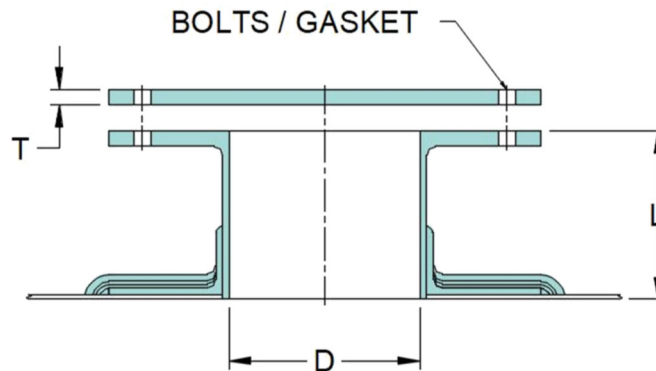
DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#235 - "D"**

Options: **Gasket Material (Specify)**

Bolts / Nuts (Specify)

Hinged Top (Specify)



D	T	L
inches	inches	inches
6	0.250	6
8	0.250	6
10	0.250	6
12	0.375	6
14	0.375	6
16	0.500	6
18	0.500	6
20	0.500	6
24	0.500	6
30	0.500	6
36	0.500	6
Specify	Specify	Specify

Notes:

- 1) Neoprene gasket and plated bolts are standard

Fitting: **Stack Cap No Loss**

Fitting No: **250**

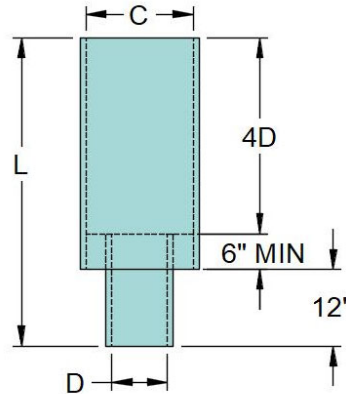
Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#250 - "D"**

#250—DF for flanged base



D	C	L
inches	inches	inches
4	6	34
5	7	38
6	8	42
7	9	46
8	10	50
9	11	54
10	12	58
12	14	66
14	16	74
16	18	82
18	20	90
20	22	98
22	24	106
24	26	114
26	28	122
28	30	130
30	32	138
32	34	146

D	C	L
inches	inches	inches
34	36	154
36	38	162
42	44	186
48	50	210
54	56	234
60	62	258
66	68	282
72	74	306
78	80	330
84	86	354
90	92	378
96	98	402
102	104	426
108	110	450
114	116	474
120	122	498
126	128	522
132	134	546

Notes:

- 1) Open top

Fitting: **Stack Rain Cap**

Fitting No: **255**

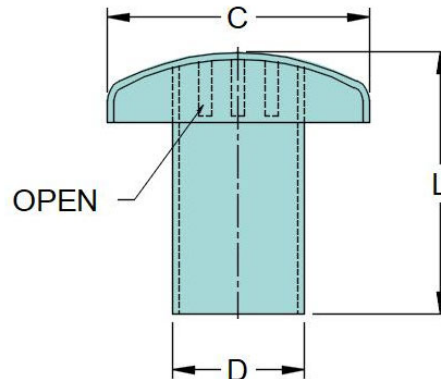
Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#255 - "D"**

#255—DF for flanged base



D	C	L
inches	inches	inches
4	8	8
5	10	10
6	12	12
7	14	14
8	16	16
9	18	18
10	20	20
12	24	24
14	28	28
16	32	32
18	36	36
20	40	40
22	44	44
24	48	48
26	52	52
28	56	56
30	60	60
32	64	64

D	C	L
inches	inches	inches
34	68	68
36	72	72
42	84	84
48	96	96
54	108	108
60	120	120
66	132	132
72	144	144
78	156	156
84	168	168
90	180	180
96	192	192
102	204	204
108	216	216
114	228	228
120	240	240
126	252	252
132	264	264

Notes:

- 1) Protected top

Fitting: **Roof Curb Cap**

Fitting No: **260**

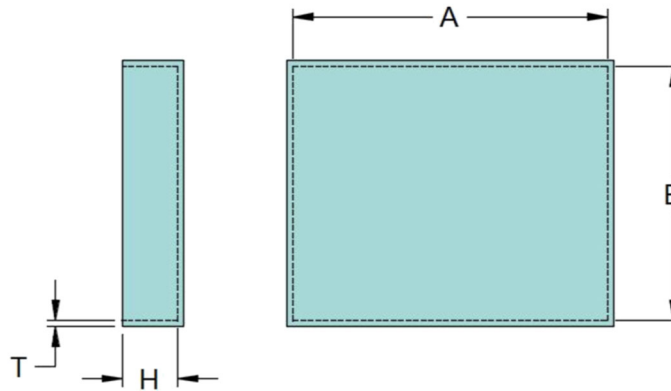
Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.



Order as: **#260 - "A" - "B" - "H"**



A	B	H	T
inches	inches	inches	inches
4	≤ A	4	0.23
5	≤ A	4	0.23
6	≤ A	4	0.23
7	≤ A	4	0.23
8	≤ A	4	0.23
9	≤ A	4	0.23
10	≤ A	4	0.23
12	≤ A	4	0.23
14	≤ A	4	0.23
16	≤ A	4	0.23
18	≤ A	4	0.23
20	≤ A	4	0.23
22	≤ A	4	0.23
24	≤ A	4	0.29
26	≤ A	4	0.29
28	≤ A	4	0.29
30	≤ A	4	0.29
32	≤ A	4	0.29

A	B	H	T
inches	inches	inches	inches
34	≤ A	4	0.29
36	≤ A	4	0.29
42	≤ A	4	0.29
48	≤ A	6	0.29
54	≤ A	6	0.38
60	≤ A	6	0.38
66	≤ A	6	0.38
72	≤ A	6	0.38
78	≤ A	6	0.47
84	≤ A	6	0.56
90	≤ A	6	0.56
96	≤ A	6	0.66
102	≤ A	6	0.75
108	≤ A	6	0.75
114	≤ A	6	0.75
120	≤ A	6	0.94
126	≤ A	6	0.94
132	≤ A	6	0.94

Notes:

1) Larger sizes available up to 168"

Fitting: **Flex Connector - Slip On**

Fitting No: **270**

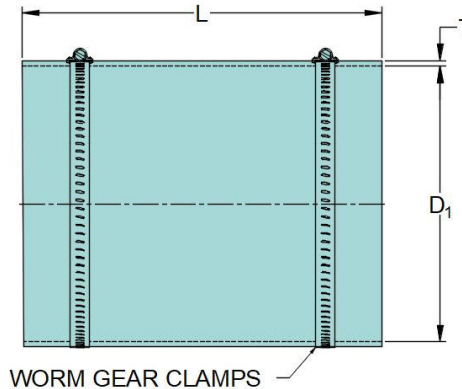
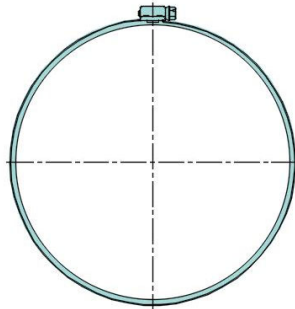
Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.



Order as: **#270 - "D"**



D	D ₁	L	T
inches	inches	inches	inches
1	1.43	8	0.13
1-1/2	1.93	8	0.13
2	2.43	8	0.13
2-1/2	2.93	8	0.13
3	3.43	8	0.13
4	4.43	8	0.13
5	5.43	8	0.13
6	6.43	8	0.13
7	7.43	8	0.13
8	8.43	8	0.13
9	9.43	8	0.13
10	10.43	8	0.13
12	12.43	12	0.25
14	14.43	12	0.25
16	16.43	12	0.25
18	18.43	12	0.25
20	20.43	12	0.25
22	22.43	12	0.25

D	D ₁	L	T
inches	inches	inches	inches
24	24.51	12	0.25
26			
28			
30			
32			
34			
36			
42			
48			
54			
60			
66			
72			
78			
84			
90			
96			
102			

Notes:

- 1) Call for sizes over 24"

Fitting: Flex Connector - Flanged

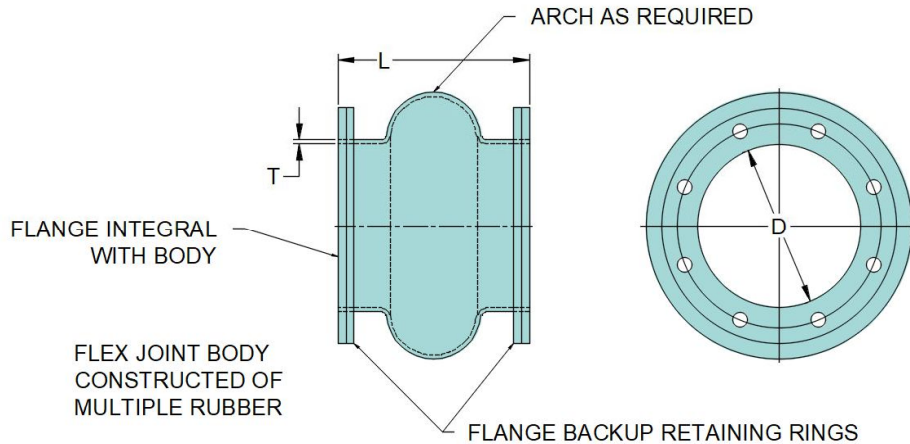
Fitting No: **275**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#275 - "D"**



D	Flange Drilling		L	T
inches	# Holes	BC - inches	inches	inches
1	4	4	6	0.13
1-1/2	4	4.5	6	0.13
2	4	5	6	0.13
2-1/2	4	5.5	6	0.13
3	4	6	6	0.13
4	8	7	6	0.13
5	8	8	6	0.13
6	8	9	6	0.13
7	8	10	6	0.13
8	8	11	6	0.13
9	8	12	6	0.13
10	8	13	6	0.13
12	12	15	6	0.25
14	12	17	6	0.25
16	16	19	6	0.25
18	16	21	6	0.25
20	20	23	6	0.25
22	20	25	6	0.25

D	Flange Drilling		L	T
inches	# Holes	BC - inches	inches	inches
24	20	27	6	0.25
26				
28				
30				
32				
34				
36				
42				
48				
54				
60				
66				
72				
78				
84				
90				
96				
102				

Notes:

- 1) Call for sizes over 24"

Fitting:
Sample Tap - Flanged

Fitting No:
280

Product Class: Dual Guard 2000

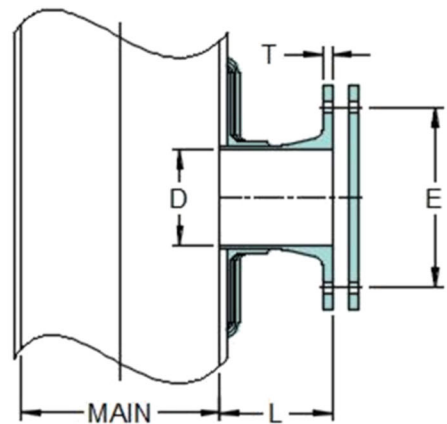
Resin Types: Phenolic Based FRP with Halar Liner

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: #280 - "D"

Options: FRP or CPVC Blind Flange

Drilling Patterns, Bolts, Gaskets



D	Flange Drilling		L	T
inches	# Holes	BC - inches	inches	inches
1	4	3.13	6	0.25
1-1/2	4	3.88	6	0.25
2	4	4.75	6	0.25
2-1/2	4	5.5	6	0.25
3	4	6	6	0.25
4	8	7.5	6	0.25
5	8	8.5	6	0.25
6	8	9.5	6	0.25
Specify alternative sizes as required				

- Notes:
- 1) ANSI 150lb drilling is standard on sample taps.
2) Sample tap to be flush with inside of main/stack.

Fitting:
Drain Tap - Threaded

Fitting No:
285

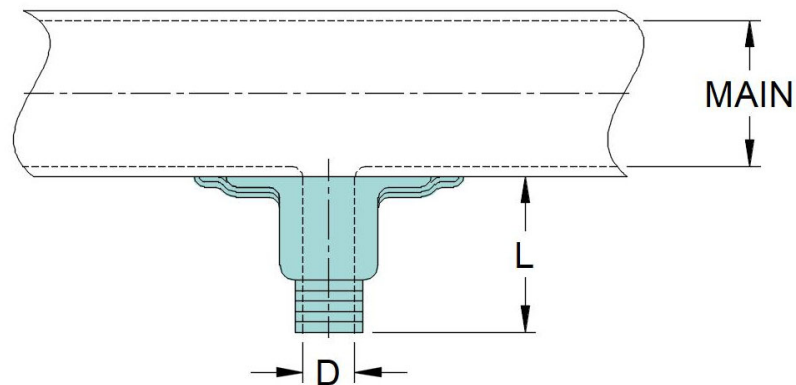
Product Class:
Dual Guard 2000

Resin Types:
Phenolic Based FRP with Halar Liner

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as:
#285 - "D"

Materials:
Coupling - FRP
Plug - CPVC



D	L
inches	inches
1	2
1-1/2	2
2	2
2-1/2	2
3	2
4	2
5	2
6	2
Specify alternative sizes as required	

- Notes:
- 1) Drain tap installed flush with pipe / duct ID.

Fitting: **Drain Tap Leg and Valve**

Fitting No: **286**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.



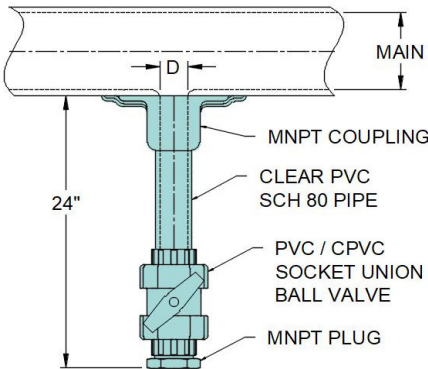
Order as: **#286 - "D"**

Materials: **Coupling - FRP**

Sight Tube - Clear PVC

Valve - PVC

Plug - CPVC



D	L
inches	inches
1	24
1-1/2	24
2	24
2-1/2	24
3	24
4	24
Specify alternative sizes as required	

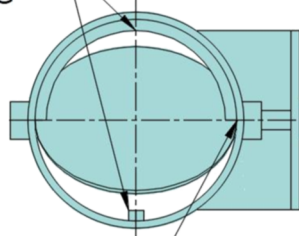
1) Notes:

Fitting: **Volume Damper - Butterfly**Fitting No: **300**Product Class: **Dual Guard 2000**Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.



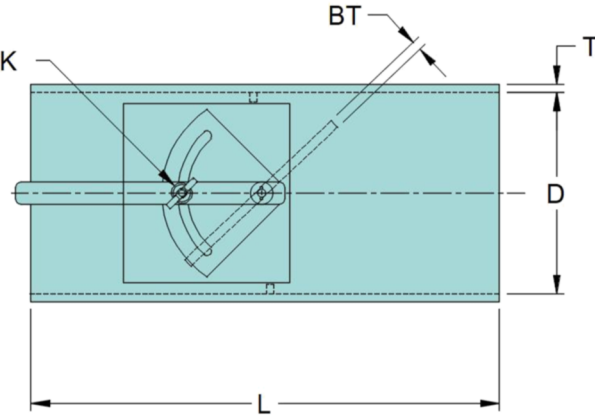
BLADE STOP
SEALING
OR
TAB



VITON
SHAFT SEALS
TYP

LOCK

S



D	T	BT	S	L
inches	inches	inches	inches	inches
2	0.165	0.125	0.375	12
2-1/2	0.165	0.125	0.375	12
3	0.165	0.125	0.375	12
4	0.165	0.125	0.500	12
5	0.165	0.125	0.500	12
6	0.165	0.125	0.500	12
7	0.165	0.125	0.500	12
8	0.165	0.125	0.750	12
9	0.165	0.188	0.750	12
10	0.165	0.188	0.750	12
12	0.165	0.188	0.750	12
14	0.165	0.260	0.750	12
16	0.165	0.260	0.750	12
18	0.165	0.313	0.750	12
20	0.165	0.313	0.750	12
22	0.165	0.350	0.750	12
24	0.204	0.390	0.750	12

D	T	BT	S	L
inches	inches	inches	inches	inches
26	0.204	0.390	1.000	12
28	0.204	0.440	1.000	12
30	0.204	0.480	1.000	12
32	0.204	0.480	1.000	12
34	0.204	0.520	1.000	12
36	0.204	0.560	1.000	12
42	0.286	0.650	1.250	12
48	0.286	0.740	1.500	12
54	0.286	0.820	1.880	12
60	0.286	0.910	1.880	12
66	0.286	0.990	2.000	12
72	0.375	1.080	2.000	12
78	0.375	1.250	2.000	24
84	0.375	1.250	2.000	24
90	0.375	1.500	2.000	24
96	0.375	1.500	2.000	24
102	0.375	1.750	2.000	24

Notes:

- Options: Blade Stop, Blade Seal
- Actuation: Electric, Pneumatic, Manual (Lever, Gear Wheel, Chain Operator)
- Thicknesses shown are for $\pm 6''$ WC
- Thicknesses designed per project requirements. Contact Engineering for details

CompositesUSA One Peninsula Drive, North East, MD 21901 T (410) 287-2700 F (410) 287-5222

Web: www.compositesusa.com Email: Info@compositesusa.com

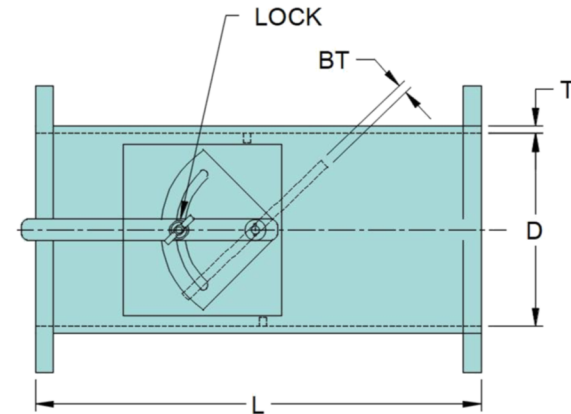
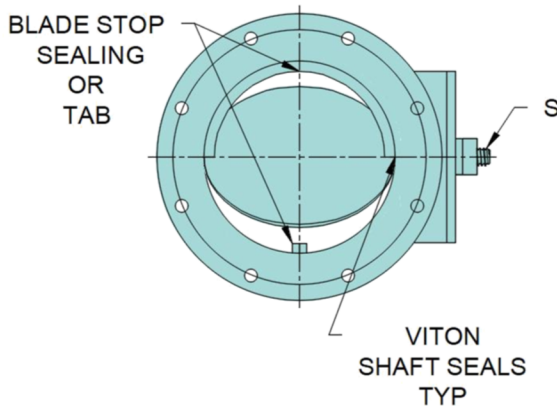
Fitting: Flanged Volume Damper - Butterfly

Fitting No: **300 - FF**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.



D	T	BT	S	L
inches	inches	inches	inches	inches
2	0.165	0.125	0.375	12
2-1/2	0.165	0.125	0.375	12
3	0.165	0.125	0.375	12
4	0.165	0.125	0.500	12
5	0.165	0.125	0.500	12
6	0.165	0.125	0.500	12
7	0.165	0.125	0.500	12
8	0.165	0.125	0.750	12
9	0.165	0.188	0.750	12
10	0.165	0.188	0.750	12
12	0.165	0.188	0.750	12
14	0.165	0.260	0.750	12
16	0.165	0.260	0.750	12
18	0.165	0.313	0.750	12
20	0.165	0.313	0.750	12

D	T	BT	S	L
inches	inches	inches	inches	inches
22	0.165	0.35	0.750	12
24	0.204	0.39	0.750	12
26	0.204	0.39	1.000	12
28	0.204	0.44	1.000	12
30	0.204	0.48	1.000	12
32	0.204	0.48	1.000	12
34	0.204	0.52	1.000	12
36	0.204	0.56	1.000	12
42	0.286	0.65	1.250	12
48	0.286	0.74	1.500	12
54	0.286	0.82	1.880	12
60	0.286	0.91	1.880	12
66	0.286	0.99	2.000	12
72	0.375	1.08	2.000	12
78	0.375	1.25	2.000	12

Notes:

- Options: Blade Stop, Blade Seal
- Actuation: Electric, Pneumatic, Manual (Lever, Gear Wheel, Chain Operator)
- Flange dimensions match those for Fitting No. 200 (Stub Flange) unless otherwise specified.
- Thicknesses shown are for $\pm 6''$ WC
- Thicknesses designed per project requirements. Contact Engineering for details

Fitting: Volume Damper with Shoe Tap

Fitting No: **310**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.



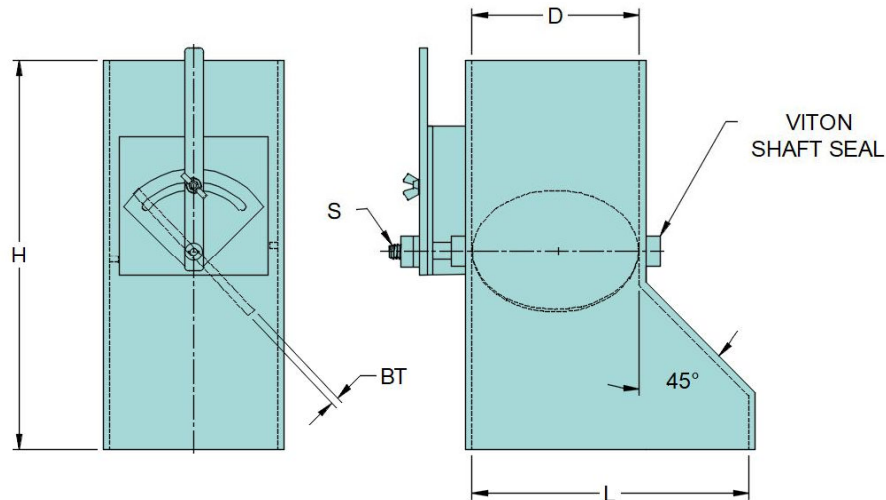
Order as: **#310 - "D" (#310 - F - "D" for flange only)**

Materials: **Body and Blade - DualGuard**

Shaft - FRP or Stainless Steel

Shaft Seal—Viton

Quadrant—Stainless Steel



D	L	BT	S	H
inches	inches	inches	inches	inches
2	8	0.125	0.375	19
2-1/2	8.5	0.125	0.375	19
3	9	0.125	0.375	20
4	10	0.125	0.500	20
5	11	0.125	0.500	21
6	12	0.125	0.500	21
7	13	0.125	0.500	22
8	14	0.125	0.750	22
9	15	0.188	0.750	23
10	16	0.188	0.750	23
12	18	0.188	0.750	24
14	20	0.260	0.750	25
16	24	0.260	0.750	26
18	27	0.313	0.750	27
20	30	0.313	0.750	28

D	L	BT	S	H
inches	inches	inches	inches	inches
22	33	0.35	0.750	29
24	36	0.39	0.750	30
26	39	0.39	1.000	31
28	42	0.44	1.000	32
30	45	0.48	1.000	33
32	48	0.48	1.000	34
34	51	0.52	1.000	35
36	54	0.56	1.000	36
42	63	0.65	1.250	39
48	72	0.74	1.500	42
54	81	0.82	1.880	45
60	90	0.91	1.880	48
66	99	0.99	2.000	51
72	108	1.08	2.000	54
78	117	1.25	2.000	69

Notes:

- Options: Blade Stop, Blade Seal
- Actuation: Electric, Pneumatic, Manual (Lever, Gear Wheel, Chain Operator)
- Optional #310 –F Flange dimensions match those for Fitting No. 200 (Stub Flange) unless otherwise specified.

Fitting: Slide Blast Gate Damper

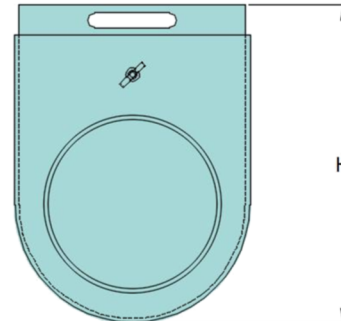
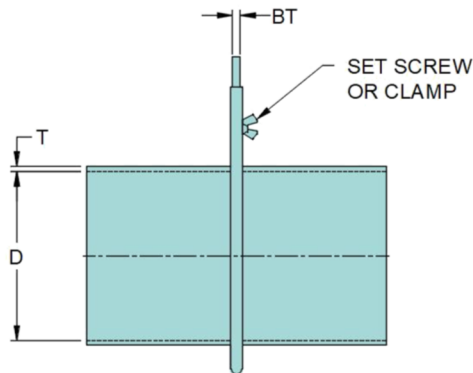
Fitting No: **325**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#325 - "D"**

Materials: **Body and Blade - DualGuard**
Set Screw - Stainless Steel


D	T	BT	H
inches	inches	inches	inches
2	0.165	0.13	12
2-1/2	0.165	0.13	12
3	0.165	0.13	12
4	0.165	0.13	12
5	0.165	0.13	12
6	0.165	0.13	12
7	0.165	0.13	12
8	0.165	0.13	12
9	0.165	0.19	12
10	0.165	0.19	12
12	0.165	0.19	12
14	0.165	0.19	12
16	0.165	0.22	12
18	0.165	0.22	12
20	0.165	0.26	12
22	0.165	0.26	12
24	0.204	0.31	12
26	0.204	0.35	12

D	T	BT	H
inches	inches	inches	inches
28	0.204	0.35	12
30	0.204	0.39	12
32	0.204	0.39	12
34	0.204	0.44	12
36	0.204	0.44	12
42	0.204	0.52	12
48	0.286	0.52	12
54	0.286	0.65	12
60	0.286	0.74	12
66	0.286	0.78	12
72	0.375	0.88	12
78	0.375	1.00	24
84	0.375	1.50	24
90	0.375	1.50	24
96	0.375	1.50	24
102	0.375	1.50	24
108	0.375	1.50	24
114	0.375	1.50	24

Notes:

- Options: Top Slip Plug, Extended Pocket, Top Flange Cap
- Actuation: Electric, Pneumatic, Manual
- Single hand hole through 20", double hand hole through 42", Triple hand hole on dampers over 42".
- Thicknesses shown are for $\pm 6''$ WC
- Thicknesses designed per project requirements. Contact Engineering for details

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Web: www.compositesusa.com Email: Info@compositesusa.com

Fitting: Easy Slide Gate Damper

Fitting No: **330 - ES**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

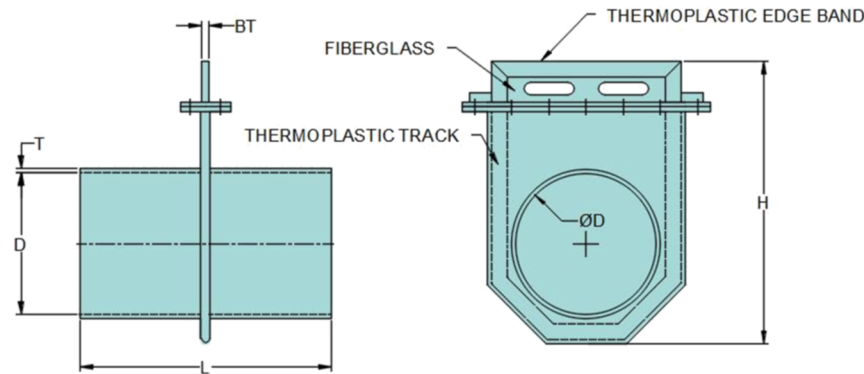
DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#330 - ES - "D"**

Materials: **Body and Blade: DualGuard**

Trim: Polypropylene (PP)

Gasket: EPDM



D	T	BT	L
inches	inches	inches	inches
2	0.165	0.38	12
2-1/2	0.165	0.38	12
3	0.165	0.38	12
4	0.165	0.38	12
5	0.165	0.38	12
6	0.165	0.38	12
7	0.165	0.38	12
8	0.165	0.50	12
9	0.165	0.50	12
10	0.165	0.50	12
12	0.165	0.50	12
14	0.165	0.50	12
16	0.165	0.75	12
18	0.165	0.75	12
20	0.165	1.25	12
22	0.165	1.25	12
24	0.204	1.25	12
26	0.204	1.25	12

D	T	BT	L
inches	inches	inches	inches
28	0.204	1.25	12
30	0.204	1.25	12
32	0.204	1.250	12
34	0.204	1.250	12
36	0.204	1.250	12
42	0.204	1.250	12
48	0.286	1.250	12
54	0.286	1.250	12
60	0.286	1.250	12
66	0.286	1.250	12
72	0.375	1.250	12
78	0.375	1.250	24
84	0.375	1.250	24
90	0.375	1.250	24
96	0.375	1.250	24
102	0.375	2.000	24
108	0.375	2.000	24
114	0.375	2.000	24

Notes:

- Options: PP Trim, PVDF Trim, ECTFE Trim
- Dampers smaller than 20" have solid thermoplastic blades made of the same material as the trim.
- Thicknesses shown are for $\pm 6"$ WC
- Thicknesses designed per project requirements. Contact Engineering for details

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Web: www.compositesusa.com Email: Info@compositesusa.com

Fitting: Shoe Tap with Slide Damper

Fitting No: **335**

Product Class: **Dual Guard 2000**

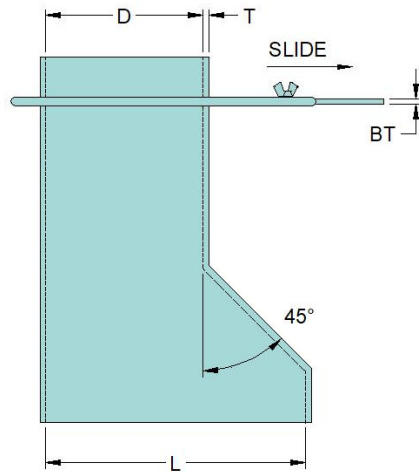
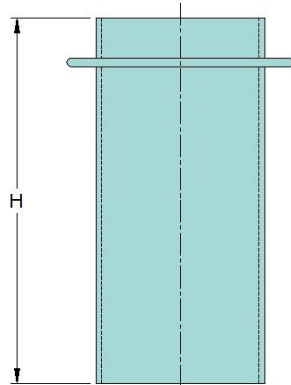
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report

Order as: **#335 - "D" (335 - F - "D" for flange end)**

Materials: **Body and Blade: DualGuard**

Set Screw: Stainless Steel



D	L	BT	H
inches	inches	inches	inches
2	8	0.125	19
2-1/2	8.5	0.125	19
3	9	0.125	20
4	10	0.125	20
5	11	0.125	21
6	12	0.125	21
7	13	0.125	22
8	14	0.125	22
9	15	0.188	23
10	16	0.188	23
12	18	0.188	24
14	20	0.188	25
16	24	0.22	26
18	27	0.22	27
20	30	0.26	28

D	L	BT	H
inches	inches	inches	inches
22	33	0.35	29
24	36	0.39	30
26	39	0.39	31
28	42	0.44	32
30	45	0.48	33
32	48	0.48	34
34	51	0.52	35
36	54	0.56	36
42	63	0.65	39
48	72	0.74	42
54	81	0.82	45
60	90	0.91	48
66	99	0.99	51
72	108	1.08	54
78	117	1.25	69

Notes:

- Options: Top Slip Plug, Extended Pocket, Top Flange Cap
- Actuation: Electric, Pneumatic, Manual
- Single hand hole through 20", double hand hole through 42", Triple hand hole on dampers over 42".
- Thicknesses shown are for $\pm 6"$ WC
- Thicknesses designed per project requirements. Contact Engineering for details

Fitting: **Backdraft Damper - Wafer**

Fitting No: **350**

Product Class: **Dual Guard 2000**

Resin Types: **Phenolic Based FRP with Halar Liner**

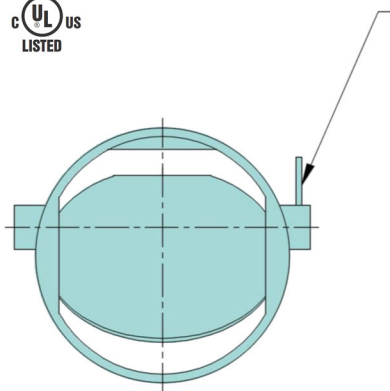
DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#350 - "D"**

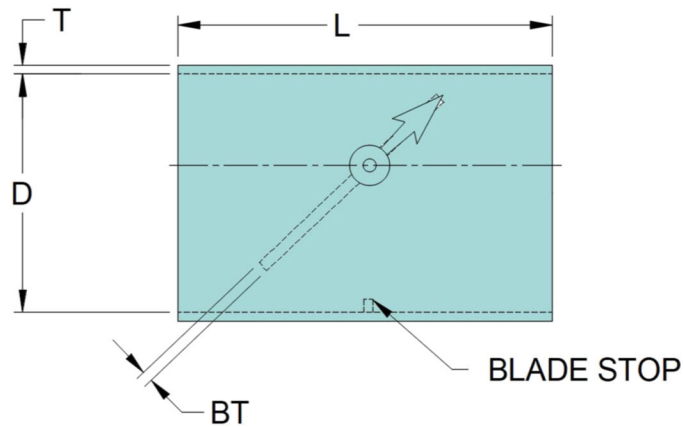
#350 - FF - "D"

Materials: **Body and Blade: DualGuard**

Shaft: FRP or Stainless Steel



SHAFT WITH POSITION INDICATOR



D	T	BT	S	L
inches	inches	inches	inches	inches
2	0.165	0.125	0.375	12
2-1/2	0.165	0.125	0.375	12
3	0.165	0.125	0.375	12
4	0.165	0.125	0.5	12
5	0.165	0.125	0.5	12
6	0.165	0.125	0.5	12
7	0.165	0.125	0.5	12
8	0.165	0.125	0.75	12
9	0.165	0.188	0.75	12
10	0.165	0.188	0.75	12
12	0.165	0.188	0.75	12
14	0.165	0.260	0.75	12
16	0.165	0.260	0.75	12
18	0.165	0.313	0.75	12
20	0.165	0.313	0.75	12
22	0.165	0.350	0.75	12
24	0.204	0.390	0.75	12

D	T	BT	S	L
inches	inches	inches	inches	inches
26	0.204	0.390	1.00	12
28	0.204	0.440	1.00	12
30	0.204	0.480	1.00	12
32	0.204	0.480	1.00	12
34	0.204	0.520	1.00	12
36	0.204	0.560	1.00	12
42	0.286	0.650	1.25	12
48	0.286	0.740	1.50	12
54	0.286	0.820	1.88	12
60	0.286	0.910	1.88	12
66	0.286	0.990	2.00	12
72	0.375	1.080	2.00	12
78	0.375	1.250	2.00	24
84	0.375	1.250	2.00	24
90	0.375	1.500	2.00	24
96	0.375	1.500	2.00	24
102	0.375	1.750	2.000	24

Notes:

- 1) Call for Options on Blade Seals and Shaft Seals
- 2) Thicknesses shown are for $\pm 6''$ WC
- 3) Thicknesses designed per project requirements. Contact Engineering for details

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Fitting: **15° Slide Blast Gate Damper**

Fitting No: **700**

Product Class: **Dual Guard 2000**

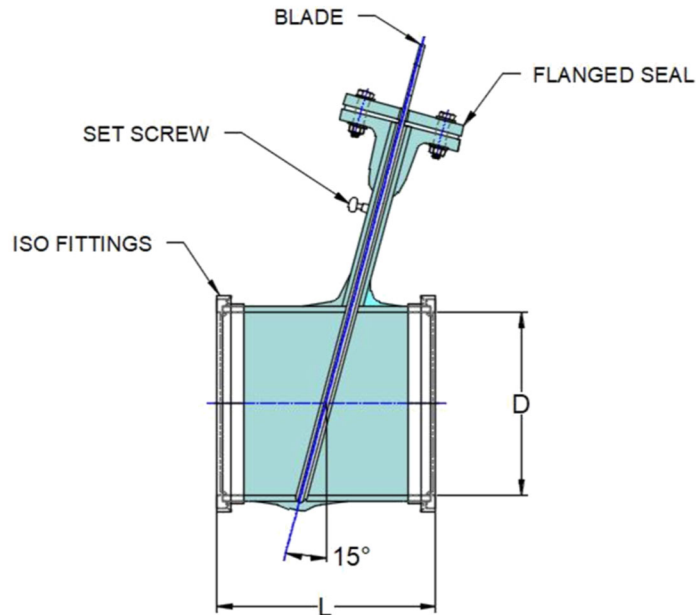
Resin Types: **Phenolic Based FRP with Halar Liner**

DualGuard 2000 is FM 4922 approved (12" - 60") and U.L. 181 Listed (2" - 120") for use as a fume and/or exhaust duct when installed in accordance with instructions shown in the current edition of the FM Approval Guide and/or U.L. Listing Report.

Order as: **#327 - "D"**

Materials: **Body and Blade - DualGuard**

Set Screw - Stainless Steel



D	L	Blade Angle
inches	inches	
2	6.00	15°
3	6.00	15°
4	6.00	15°
6	6.00	15°
8	8.00	15°

Notes:

- Options: Plain Ends, Longer Lengths available