Conductive Elastomer Waveguide Gaskets

Waveguide Gaskets

For effective EMI shielding and pressure sealing for choke, cover and contact flanges, Chomerics' waveguide gaskets ensure low insertion, low flange leakage, maximum heat transfer and minimum out-gassing. Made from CHO-SEAL 1239 and 1212 conductive elastomers, the gaskets are reusable and will not scar flanges.

Cover flange and flat contact flange gaskets are die-cut from CHO-SEAL 1239 sheet stock 0.027 in. (0.69 mm) thick, ±0.003 in. (0.08 mm). Containing an expanded metal reinforcement to eliminate cold flow, these gaskets can be supplied with a slightly raised lip around the iris opening for high-pressure, high-power applications.

RF/pressure seals for waveguide cover flanges are also available in Gask-O-Seal™ form. Gask-O-Seal waveguide gaskets consist of thin metal retainers which incorporate elastomer seals on each side, and raised knurls which bite into flange surfaces to provide good electrical contact. *For more information on Gask-O-Seal products, contact Parker Hannifin, Cleveland, OH, 1-800-272-7537 and ask for Gask-O-Seal catalog #OSD-6411.*

Choke flange and grooved contact flange gaskets are molded from CHO-SEAL 1212 material, and are available with O- or D-cross sections.

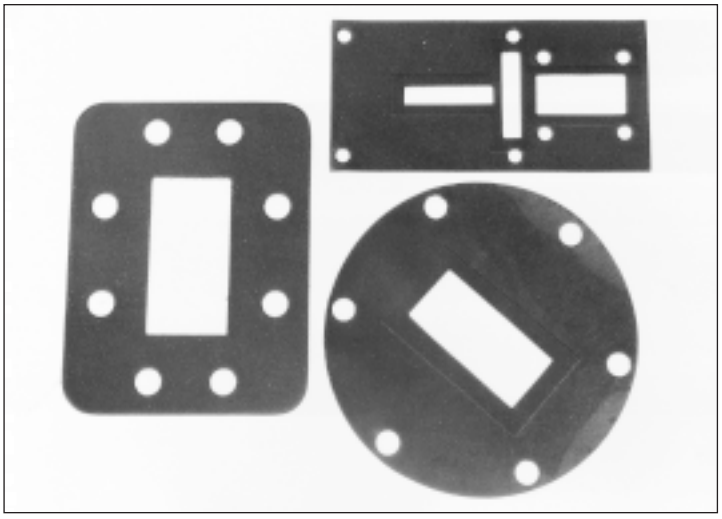
Properties of CHO-SEAL 1212 and 1239 materials are shown at right.

Standard Waveguide Gaskets

The gaskets listed in the following tables will fit the standard UG, CPR, and CMR flanges shown. The numbers 1 through 6 listed in the "gasket configuration" column of the tables indicate the style of gasket, as follows:

1 – Die-cut rectangular
2 – Die-cut circular
3 – Molded rectangular, with "O" cross section
4 – Molded circular, with "O" cross section (O-rings)
5 – Molded circular, with "D" cross section (D-rings)
6 – Molded rectangular, with "D" cross section

Gaskets can also be custom designed to meet special requirements or less frequently used waveguide sizes (from WR 10 to WR 2300). CHO-SEAL 1239 material is not available in sheet form.



SPECIFICATIONS			CHO-SEAL 1212	CHO-SEAL 1239
Type (Ref: MIL-G-83528)			K	G
Volume Resistivity (ohm-cm, max) as supplied (without pressure-sensitive adhesive)			0.005	0.007
Hardness (Shore A ±5)			80	80 ±7
Specific Gravity (±0.25)			3.5	4.75 ±0.75
Tensile Strength psi (MPa), min.			400 (2.76)	600 (4.14)
Elongation (percent, min/max)			100 / 300	20 / NA
Tear Strength (lb/in, min)			40	70
Compression Set, 70 hrs. @ 100°C (percent, max)			35	Not Applicable
Low Temperature Flex, TR10 (°C, minimum)			–45	Not Applicable
Continuous Use Temperature Range (°C)			–55 to 125	–55 to 125
Shielding Effectiveness	200 kHz (H Field) 100 MHz (E Field) 500 MHz (E Field) 2 GHz (Plane Wave) 10 GHz (Plane Wave)	(dB, min.)	70 120 120 120 120	70 110 110 110 110
Electrical Stability	Heat Aging	(ohm-cm, max.)	0.010	0.010
	Vibration Resistance During		0.010	0.010
	Vibration Resistance After		0.005	0.007
	Post Tensile Set Volume Resistivity		0.010	NA
	EMP Survivability (kA per in. perimeter)		>0.9	>0.9

NA = Not Applicable

Ordering Procedure

For standard gaskets, select the part number from Tables 14-20. *For custom configurations, gasket and waveguide flange drawings must be provided, and part numbers will be assigned by Chomerics.*

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Parker Seals

Table 14 Use Table 14 to select part numbers. Refer to Tables 15-20 on following pages for Waveguide Gasket dimensions.

WAVEGUIDE GASKETS										
Frequency Range (GHz)	Band	EIA Waveguide Size	JAN Designation	Flange Description			Flange Type	Gasket Configuration*	Chomerics Part Number	MIL P/N:† M83528/ 013 [ ]-( )
				UG	CPR	CMR				
26.5 → 40.0	K_a	WR28	RG-96/U (Silver)	UG-599/U			Cover	1	20-01-5000-1239**	[G]-(001)
				UG-600A/U			Choke	5	20-02-6510-1212	[K]-(002)
18.0 → 26.5	K	WR42	RG-53/U (Brass) RG-121/U (Aluminum)	UG-595/U UG-597/U			Cover	1	20-01-5005-1239**	[G]-(003)
				UG-596A/U UG-598A/U			Choke	5	20-02-6515-1212	[K]-(004)
12.4 → 18.0	K_u	WR62	RG-91/U (Brass) RG-107/U (Silver)	UG-419/U			Cover	1	20-01-5010-1239**	[G]-(005)
				UG-541A/U			Choke	5	20-02-6520-1212	[K]-(006)
10.0 → 15.0		WR75					Cover Choke	1 5	20-11-1683-1239 20-02-6525-1212	[G]-(007) [K]-(008)
8.2 → 12.4	X	WR90	RG-52/U (Brass) RG-67/U (Aluminum)	UG-39/U UG-135/U			Cover	1	20-11-5015-1239	[G]-(009)
				UG-1736/U UG-1737/U	CPR-90F		Flat Contact	1	20-01-5115-1239**	[G]-(010)
				UG-136A/U UG-40A/U			Choke	5	20-02-6531-1212	[K]-(011)
				UG-136B/U UG-40B/U			Choke	5	20-02-6530-1212	[K]-(012)
				UG-1360/U UG-1361/U	CPR-90G		Contact	3	20-03-6630-1212	[K]-(013)
7.0 → 11.0		WR102		UG-1494/U			Choke	5	20-02-6535-1212	[K]-(014)
7.05 → 10.0	X_1	WR112	RG-51/U (Brass) RG-68/U (Aluminum)	UG-51/U UG-138/U			Cover	1	20-11-5020-1239	[G]-(015)
				UG-1734/U UG-1735/U	CPR-112F		Flat Contact	1	20-01-5120-1239**	[G]-(016)
				UG-52B/U UG-137B/U			Choke	5	20-02-6540-1212	[K]-(017)
				UG-1358/U UG-1359/U	CPR-112G CPR-112G/F		Contact Choke/Flat	3 6	20-03-6635-1212 20-03-3686-1212	[K]-(018) —
5.85 → 8.2	X_b	WR137	RG-50/U (Brass) RG-106/U (Aluminum)	UG-344/U UG-441/U			Cover	2	20-11-5025-1239	[G]-(019)
				UG-1732/U UG-1733/U	CPR-137F		Flat Contact	1	20-01-5125-1239**	[G]-(020)
						CMR-137	Flat Contact	1	20-01-5225-1239**	[G]-(021)
				UG-343B/U UG-440B/U			Choke	4	20-02-6545-1212	[K]-(022)
				UG-1356/U UG-1357/U	CPR-137G CPR-137G/F		Contact Choke/Flat	3 6	20-03-6645-1212 20-03-3731-1212	[K]-(023) —
4.9 → 7.05		WR159		UG-1730/U UG-1731/U	CPR-159F		Flat Contact	1	20-01-5130-1239**	[G]-(024)
						CMR-159	Flat Contact	1	20-01-5230-1239**	[G]-(025)
					CPR-159G		Choke	3	20-03-L767-1212	—
					CPR-159G/F		Choke/Flat	6	20-03-3980-1212	—

* Number corresponds to configuration type, Tables 15-20.

** This gasket will seal a maximum pressure of 20 psig. For systems pressurized above this limit, a high-pressure (raised-lip) version is available. To specify, change 3rd digit in Part Number to 1.

† Letter in bracket is MIL-G-83528B material type (G or K). Number in parentheses is MIL-G-83528B dash number. Insert them (without brackets or parentheses) to complete MIL P/N.

continued next page

(mm dimensions in parentheses)

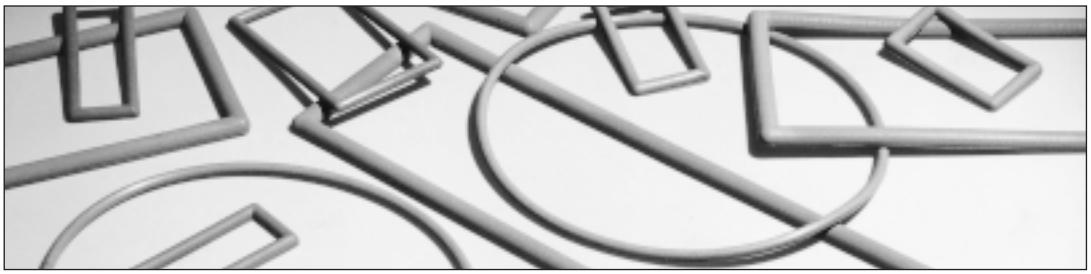

Table 14
continued Use Table 14 to select part numbers. Refer to Tables 15-20 on following pages for Waveguide Gasket dimensions.

WAVEGUIDE GASKETS										
Frequency Range (GHz)	Band	EIA Waveguide Size	JAN Designation	Flange Description			Flange Type	Gasket Configuration*	Chomerics Part Number	MIL P/N:† M83528/ 013 [ ]-( )
				UG	CPR	CMR				
3.95 → 5.85	C	WR187	RG-49/U (Brass) RG-95/U (Aluminum)	UG-149A/U UG-407/U			Cover	2	20-11-5035-1239	[G]-(026)
				UG-1728/U UG-1729/U	CPR-187F		Flat Contact	1	20-01-5135-1239**	[G]-(027)
						CMR-187	Flat Contact	1	20-01-5235-1239**	[G]-(028)
				UG-148C/U UG-406B/U			Choke	4	20-02-6555-1212	[K]-(029)
				UG-1352/U UG-1353/U	CPR-187G		Contact	3	20-03-6655-1212	[K]-(030)
3.30 → 4.90		WR229		UG-1726/U UG-1727/U	CPR-229F		Flat Contact	1	20-01-5140-1239**	[G]-(031)
						CMR-229	Flat Contact	1	20-01-5240-1239**	[G]-(032)
					CPR-229G		Choke	3	20-03-L768-1212	—
2.6 → 3.95	S	WR284	RG-48/U (Brass) RG-75/U (Aluminum)	UG-53/U UG-584/U			Cover	2	20-01-5045-1239**	[G]-(033)
				UG-1724/U UG-1725/U	CPR-284F		Flat Contact	1	20-01-5145-1239**	[G]-(034)
						CMR-284	Flat Contact	1	20-01-5245-1239**	[G]-(035)
				UG-54B/U UG-585A/U			Choke	5	20-02-6565-1212	[K]-(036)
				UG-1348/U UG-1349/U	CPR-284G		Contact	3	20-03-6665-1212	[K]-(037)
2.2 → 3.3		WR340	RG-112/U (Brass) RG-112/U (Aluminum)	UG-533/U UG-554/U			Flat Contact	1	20-01-5050-1239**	[G]-(038)
					CPR-340F		Flat Contact	1	20-01-5150-1239**	[G]-(039)
1.7 → 2.6	W	WR430	RG-104/U (Brass) RG-105/U (Aluminum)	UG-435A/U UG-437A/U			Flat Contact	1	20-01-5055-1239**	[G]-(040)
					CPR-430F		Flat Contact	1	20-01-5155-1239**	[G]-(041)
					CPR-430G		Choke	3§	20-03-1560-1212	—
					CPR-430G/F		Choke/ Flat	6§§	20-03-6685-1212	—
1.12 → 1.7	L	WR650	RG-69/U (Brass) RG-103/U (Aluminum)	UG-417A/U UG-418A/U			Flat Contact	1	20-01-5060-1239**	[G]-(042)

* Number corresponds to configuration type, Tables 15-20.

** This gasket will seal a maximum pressure of 20 psig. For systems pressurized above this limit, a high-pressure (raised-lip) version is available. To specify, change 3rd digit in Part Number to 1.

† Letter in bracket is MIL-G-83528B material type (G or K). Number in parentheses is MIL-G-83528B dash number. Insert them (without brackets or parentheses) to complete MIL P/N.

§ Modified "O" cross section. §§ Modified "D" cross section.

(mm dimensions in parentheses)

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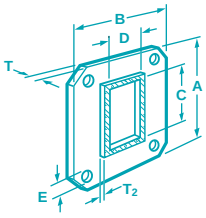
Typical Waveguide Gasket Configurations



Note: *Raised portion will have a nominal width of 0.187 in. (4.75 mm). Thickness (T_1) is 0.004 in. (0.10 mm) ±0.002 in. (0.05 mm). This raised area applies only to part numbers with a third digit of "1".*

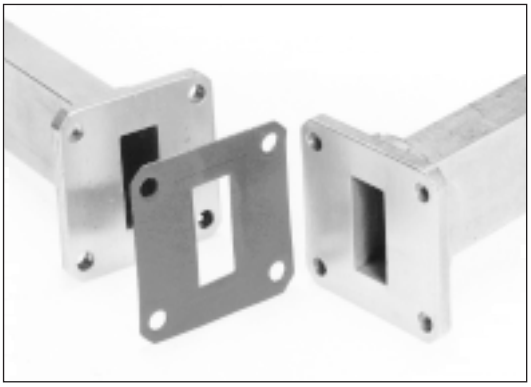


Table 15

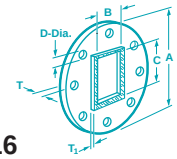
1. DIE-CUT RECTANGULAR CONFIGURATIONS

Dimensions						Chomerics P/N** MIL P/N: M83528/ 013G-( )
A	B	C	D	E*	T	
±0.015 (0.38)	±0.015 (0.38)	+0.015 (0.38) –0.000		±0.010 (0.25)	±.003 (0.08)	
1.496 (38.00)	1.496 (38.00)	0.760 (19.30)	0.385 (9.78)	0.155 (3.94)	0.027 (0.69)	20-11-1683-1239 (007)
0.750 (19.05)	0.750 (19.05)	0.145 (3.68)	0.285 (7.24)	0.116 (2.95)	0.027 (0.69)	20-01-5000-1239 (001)
0.875 (22.23)	0.875 (22.23)	0.175 (4.45)	0.425 (10.80)	0.116 (2.95)	0.027 (0.69)	20-01-5005-1239 (003)
1.313 (33.35)	1.313 (33.35)	0.630 (16.00)	0.320 (8.13)	0.140 (3.56)	0.027 (0.69)	20-01-5010-1239 (005)
1.625 (41.28)	1.625 (41.28)	0.905 (20.27)	0.405 (10.29)	0.169 (4.29)	0.027 (0.69)	20-01-5015-1239 (009)
1.875 (47.63)	1.875 (47.63)	1.130 (28.70)	0.505 (12.83)	0.180 (4.57)	0.027 (0.69)	20-11-5020-1239 (015)
3.750 (95.25)	5.440 (138.18)	1.710 (43.43)	3.410 (86.61)	0.264 (6.71) 0.250 (6.35)	0.027 (0.69)	20-01-5050-1239 (038)
4.188 (106.38)	6.344 (161.14)	2.160 (54.86)	4.310 (109.47)	0.266 (6.76) 0.281 (7.14)	0.027 (0.69)	20-01-5055-1239 (040)
5.438 (138.13)	8.688 (220.68)	3.260 (82.80)	6.510 (165.35)	0.250 (6.35) 0.328 (8.33)	0.027 (0.69)	20-01-5060-1239 (042)
1.594 (40.49)	2.094 (53.19)	0.405 (10.29)	0.905 (22.99)	0.169 (4.29)	0.027 (0.69)	20-01-5115-1239 (010)
1.750 (44.45)	2.500 (63.50)	0.505 (12.83)	1.130 (28.70)	0.171 (4.34)	0.027 (0.69)	20-01-5120-1239 (016)
1.937 (49.20)	2.687 (68.25)	0.633 (16.08)	1.380 (35.05)	0.206 (5.23)	0.027 (0.69)	20-01-5125-1239 (020)
2.438 (61.93)	3.188 (80.98)	0.805 (20.45)	1.600 (40.64)	0.257 (6.53)	0.027 (0.69)	20-01-5130-1239 (024)
3.500 (88.90)	2.500 (63.50)	1.880 (47.75)	0.880 (22.35)	0.266 (6.76)	0.027 (0.69)	20-01-5135-1239 (027)
2.750 (69.85)	3.875 (98.43)	1.155 (29.34)	2.300 (58.42)	0.270 (6.86)	0.027 (0.69)	20-01-5140-1239 (031)
4.500 (114.30)	3.000 (76.20)	2.850 (72.39)	1.350 (34.29)	0.266 (6.76)	0.027 (0.69)	20-01-5145-1239 (034)
3.750 (95.25)	5.438 (138.13)	1.710 (43.43)	3.410 (86.61)	0.266 (6.76)	0.027 (0.69)	20-01-5150-1239 (039)
6.344 (161.14)	4.188 (106.38)	4.310 (109.47)	2.160 (54.86)	0.266 (6.76)	0.027 (0.69)	20-01-5155-1239 (041)
1.531 (38.89	2.281 (57.94)	0.632 (16.05)	1.382 (35.10)	0.150 (3.81)	0.027 (0.69)	20-01-5225-1239 (021)
1.750 (44.45)	2.500 (63.50)	0.800 (20.32)	1.600 (40.64)	0.160 (4.06) 0.150 (3.81)	0.027 (0.69)	20-01-5230-1239 (025)
1.784 (45.31)	2.781 (70.64)	0.882 (22.40)	1.882 (47.80)	0.156 (3.96) 0.141 (3.58)	0.027 (0.69)	20-01-5235-1239 (028)
2.000 (50.80)	3.156 (80.16)	1.155 (29.34)	2.300 (58.42)	0.150 (3.81)	0.027 (0.69)	20-01-5240-1239 (032)
3.844 (37.64)	2.344 (59.54)	2.850 (72.39)	1.350 (34.29)	0.172 (4.37) 0.188 (4.78)	0.027 (0.69)	20-01-5245-1239 (035)

* Hole locations conform to holes in standard waveguide flanges identified in preceding 2 pages. Where two hole diameters are given, flange has holes of two different diameters.

** Number in parentheses is MIL-G-83528B dash number, which should be inserted (without parentheses) at end of MIL P/N.

(mm dimensions in parentheses)



Note: *Raised portion will be a nominal of 0.187 in. (4.75 mm) wide. Thickness (T_1) is 0.004 in. (0.10 mm) ±0.002 in. (0.05 mm). This raised area applies only to part numbers with a third digit of "1".*

Table 16

2. DIE-CUT CIRCULAR CONFIGURATIONS					
Dimensions					Chomerics P/N MIL P/N: M83528/ 013G-( )†
A	B	C	D*	T	
±0.015 (0.38)	+0.015 (0.38) −0.000		±.010 (0.38)	±.003 (0.08)	
3.125 (79.38)	0.632 (16.05)	1.382 (35.10)	0.234 (5.94)	0.027 (0.69)	20-11-5025-1239 (019)
3.625 (92.08)	0.882 (22.40)	1.882 (47.80)	0.234 (5.94)	0.027 (0.69)	20-11-5035-1239 (026)
5.312 (134.93)	1.350 (34.29)	2.850 (72.39)	0.290 (7.37)	0.027 (0.69)	20-01-5045-1239 (033)

* Hole locations conform to holes in standard waveguide flanges identified in Table 14 on pages 57-58.

† Number in parentheses is MIL-G-83528B dash number, which should be inserted (without parentheses) at end of MIL P/N.

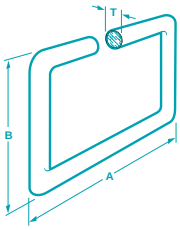


Table 17

3. MOLDED RECTANGULAR WITH "O" CROSS SECTION				
Dimensions				Chomerics P/N MIL P/N:M83528/ 013K-( )†
A	B	T(dia.)	H	
1.368 (34.75)	0.868 (22.05)	0.103 (2.62)	—	20-03-6630-1212 (013)
1.616 (41.05)	0.991 (25.17)	0.103 (2.62)	—	20-03-6635-1212 (018)
1.866 (47.40)	1.116 (28.35)	0.103 (2.62)	—	20-03-6645-1212 (023)
2.449 (62.20)	1.449 (36.80)	0.139 (3.53)	—	20-03-6655-1212 (030)
3.451 (87.66)	1.951 (49.56)	0.139 (3.53)	—	20-03-6665-1212 (037)
2.167 (55.04)	1.372 (34.85)	0.139 (3.53)	—	20-03-L767-1212
2.867 (72.82)	1.722 (43.74)	0.139 (3.53)	—	20-03-L768-1212
4.660 (118.36)	2.510 (63.75)	0.250 (6.35)	0.144 (36.58)	20-03-1560-1212*

* Modified "O" Cross Section

† Number in parentheses is MIL-G-83528B dash number, which should be inserted (without parentheses) at end of MIL P/N.

(mm dimensions in parentheses)

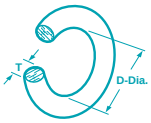


Table 18

4. MOLDED CIRCULAR WITH "O" CROSS SECTION		
Dimensions		Chomerics P/N MIL P/N: M83528/ 013K-( )†
D (I.D.)	T	
2.011 (51.08)	0.123-0.153 (3.12-3.89)	20-02-6545-1212 (022)
2.683 (68.15)	0.115 (2.92)	20-02-6555-1212 (029)

† Number in parentheses is MIL-G-83528B dash number, which should be inserted (without parentheses) at end of MIL P/N.

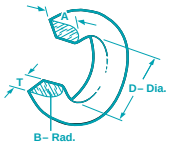


Table 19

5. MOLDED CIRCULAR WITH "D" CROSS SECTION				
Dimensions				Chomerics P/N MIL P/N: M83528/ 013K-( )†
A	B	D (I.D.)	T	
0.056 (1.42)	0.041 (1.04)	0.410 (10.41)	0.082 (2.08)	20-02-6510-1212 (002)
0.048 (1.22)	Full Rad. –	0.587 (14.91)	0.078 (1.98)	20-02-6515-1212 (004)
0.125 (3.18)	Full Rad. –	0.885 (22.48)	0.155 (3.94)	20-02-6520-1212 (006)
0.065 (1.65)	0.49 (1.24)	1.122 (28.50)	0.099 (2.51)	20-02-6525-1212 (008)
0.077 (1.96)	Full Rad. –	1.310 (33.27)	0.115 (2.92)	20-02-6530-1212 (012)
0.088 (2.24)	Full Rad. –	1.340 (34.04)	0.095 (2.41)	20-02-6531-1212 (011)
0.085 (2.16)	Full Rad. –	1.392 (35.36)	0.095 (2.41)	20-02-6535-1212 (014)
0.078 (1.78)	Full Rad. –	1.550 (39.37)	0.105 (2.68)	20-02-6540-1212 (017)
0.188 (4.76)	Full Rad. –	3.910 (99.31)	0.240 (6.10)	20-02-6565-1212 (036)

† Number in parentheses is MIL-G-83528B dash number, which should be inserted (without parentheses) at end of MIL P/N.

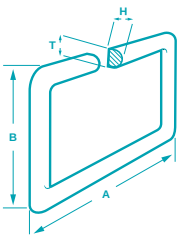


Table 20

6. MOLDED RECTANGULAR WITH "D" CROSS SECTION				
Dimensions				Chomerics P/N
A	B	T(dia.)	H	
1.616 (41.05)	0.991 (25.17)	0.103 (2.62)	0.053 (1.35)	20-03-3686-1212
1.866 (47.40)	1.116 (28.35)	0.103 (2.62)	0.053 (1.35)	20-03-3731-1212
2.167 (55.04)	1.372 (34.85)	0.120 (3.05)	0.060 (1.52)	20-03-3980-1212
4.660 (118.36)	2.510 (63.75)	0.250 (6.35)	0.074 (1.88)	20-03-6685-1212*

* Modified "D" Cross Section

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