EUPEN CABLE USA

Elliptical Waveguides

Connectors, Tools, and Accessories

From concept to completion, choose a reliable cable partner with over 100 years of experience. Trust Eupen to provide a headache free deployment.

Eupen Provides Solutions

Premium, High Performing, and Durable Waveguide Cable

Eupen Cable supplies premium waveguides and accessories for microwave transmission lines. The product range includes various waveguides for applications in the frequency ranges from 4.6 to 11.7 GHz. The combination with our high-quality flanges guarantees a reliable connection with first class transmission characteristics.

The elliptical waveguides from Eupen Cable are made of high-quality copper tape with the best conductivity. The copper tape is precision-formed into an ellipse, longitudinally welded and corrugated in the same work step. Our strong experience and knowledge in production have contributed to design and produce absolute premium products.

Eupen Has Low Loss Solutions for Every Project

Reliable waveguide solutions to keep your networks connected.

Railroads

Public Safety

Utilities

Government & Defense

Microwave Backhauls

Offshore Communications

EU52

Elliptical Waveguide EU52

Frequency range **4.6 - 6.425** GHz

CHARACTERISTICS

Construction

Conductor Material	Copper
Elliptical OD in (mm)	2.20 x 1.28 (56 x 32.4)
Jacket Material	UV Resistant Black Polyethylene
Thickness in (mm)	0.07 (1.8)
Volume ft³/100 ft (L/100 ft)	0.92 (26.1)

Mechanical

Minimum Bending Radius

- **Single bend**
  - **E plane in (mm)** 7.9 (200)
  - **H plane in (mm)** 19.7 (500)
- **Repeated bends**
  - **E plane in (mm)** 11.8 (300)
  - **H plane in (mm)** 31.5 (800)

Maximum Twist °/ft (°/m)	1 (3)
Maximum Pulling Length per Hoisting Grip ft (m)	197 (60)

Reccomended Temperature Range

• **Installation °F (°C)**	-4 to +140 (-20 to +60)
• **Operation °F (°C)**	-40 to +176 (-40 to +80)
Weight Approx. lb/ft (kg/m)	0.70 (1.05)
Minimum Drum Core Diameter in (mm)	47 (1200)
Maximum Operating Pressure psi (bar)	7.3 (0.5)
Reccomended Clamp Spacing ft (m)	3 (1)

Electrical

Frequency Range GHz	4.6 - 6.425
Principal mode cut-off frequency HE_{C11} GHz	3.7

Attenuation, propagation velocity, power

Frequency GHz	Attenuation [1] dB/100 ft (dB/100m)	Group Velocity %	AV. Power [2] kW
4.6	1.49 (4.88)	59.4	4.56
4.7	1.43 (4.70)	61.7	4.73
4.9	1.35 (4.42)	63.7	4.89
5.0	1.31 (4.31)	65.6	5.16
5.1	1.28 (4.21)	67.3	5.28
5.2	1.26 (4.13)	70.3	5.39
5.3	1.23 (4.05)	71.6	5.49
5.5	1.19 (3.92)	74.0	5.68
5.7	1.16 (3.81)	76.1	5.83
5.9	1.13 (3.72)	77.9	5.97
6.0	1.12 (3.68)	78.7	6.04
6.2	1.10 (3.61)	80.2	6.15
6.4	1.08 (3.55)	81.8	6.27

[1] Attenuation at 68°F (20°C)

[2] Average power ratings based on VSWR 1.0. 180°F (82°C) inner temperature. 104°F (40°C) ambient temperature.

[3] <1.06 VSWR typical from 4.600-6.425 GHz

VSWR Characteristics

VSWR [3] max	4.600 - 6.425 GHz	< 1.15

EU52

Elliptical Waveguide Connectors, Tools, and Accessories

Frequency range **4.6 - 6.425** GHz

Flaring Tool and Saw Guide

EU52 Flange Connector

Features

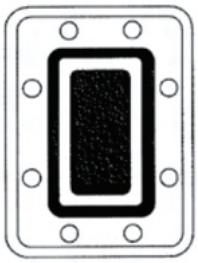
Low VSWR across entire frequency range

No tuning required

Tools

EU-SG52	Saw Guide
EU-FT52	Flaring Tool with Saw Guide

Flange Type : EU52PCPR137G



Accessories

HK-CPR137	Flange Hardware Kit
HGK137	Half-thickness Gasket
FGK137	Full-thickness Gasket
PW63FF137	Pressure Window
87000-06-02	Gas Port Fitting for 3/8" Tubing

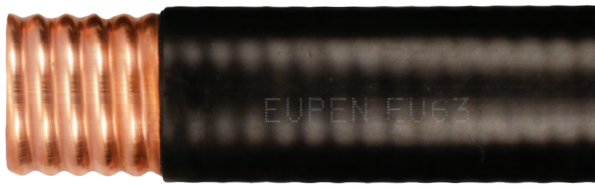
Technical Characteristics

Frequency Range	5.6 - 6.425
VSWR	< 1.03
Connector Material	Brass
Pressure psi (bar)	3.6 (0.25)
Gas Port / Degree of Protection	P1/8" / IP68

EU63

Elliptical Waveguide EU63

Frequency range **5.70 - 7.75** GHz



CHARACTERISTICS

Construction

Conductor Material	Copper
Elliptical OD in (mm)	2.00 x 1.23 (50.7 x 31.3)
Jacket Material	UV Resistant Black Polyethylene
Thickness in (mm)	0.07 (1.8)
Volume ft³/100 ft (L/100 ft)	0.92 (26.1)

Mechanical

Minimum Bending Radius

- **Single bend**
  - **E plane in (mm)** 7.9 (200)
  - **H plane in (mm)** 19.7 (500)
- **Repeated bends**
  - **E plane in (mm)** 11.8 (300)
  - **H plane in (mm)** 27.6 (700)

Maximum Twist °/ft (°/m)	1 (3)
Maximum Pulling Length per Hoisting Grip ft (m)	197 (60)

Reccomended Temperature Range

- **Installation °F (°C)** -4 to +140 (-20 to +60)
- **Operation °F (°C)** -40 to +176 (-40 to +80)

Weight Approx. lb/ft (kg/m)	0.56 (0.84)
Minimum Drum Core Diameter in (mm)	47 (1200)
Maximum Operating Pressure psi (bar)	7.3 (0.5)
Reccomended Clamp Spacing ft (m)	3 (1)

Electrical

Frequency Range GHz	5.70 - 7.75
Principal mode cut-off frequency HE_{C11} GHz	4.2

Attenuation, propagation velocity, power

Frequency GHz	Attenuation [1] dB/100 ft (dB/100m)	Group Velocity %	AV. Power [2] kW
5.9	1.40 (4.58)	70.2	4.61
6.0	1.37 (4.51)	71.4	4.69
6.1	1.35 (4.44)	72.5	4.76
6.2	1.33 (4.38)	73.6	4.83
6.3	1.32 (4.32)	74.5	4.90
6.4	1.30 (4.27)	75.5	4.96
6.5	1.29 (4.22)	76.3	5.01
6.6	1.27 (4.17)	77.1	5.07
6.7	1.26 (4.13)	77.9	5.12
6.8	1.25 (4.09)	78.6	5.17
6.9	1.24 (4.06)	79.3	5.21
7.0	1.23 (4.03)	80.0	5.25
7.1	1.22 (3.99)	80.6	5.30

[1] Attenuation at 68°F (20°C)

[2] Average power ratings based on VSWR 1.0. 180°F (82°C) inner temperature. 104°F (40°C) ambient temperature.

[3] <1.06 VSWR typical from 5.850-7.125 GHz

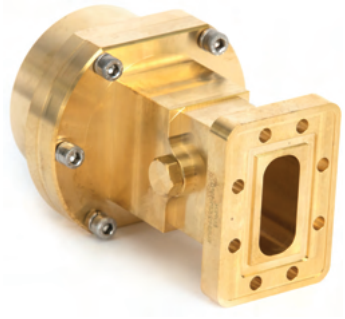
VSWR Characteristics

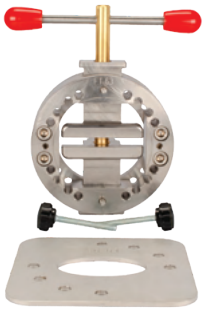
VSWR [3] max	5.850 - 7.125 GHz	< 1.15

EU63

Elliptical Waveguide Connectors, Tools, and Accessories

Frequency range **5.70 - 7.75** GHz





Flaring Tool and Saw Guide

EU63 Flange Connector

Features

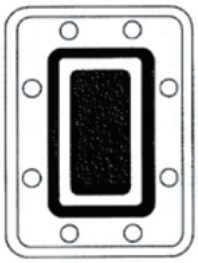
Low VSWR across entire frequency range

No tuning required

Tools

EU-SG63	Saw Guide
EU-FT63	Flaring Tool with Saw Guide

Flange Type : EU63CPR137G



Accessories

HK-CPR137	Flange Hardware Kit
HGK137	Half-thickness Gasket
FGK137	Full-thickness Gasket
PW63FF137	Pressure Window
87000-06-02	Gas Port Fitting for 3/8" Tubing

Technical Characteristics

Frequency Range	5.80 - 7.125
VSWR	< 1.03
Connector Material	Brass
Pressure psi (bar)	3.6 (0.25)
Gas Port / Degree of Protection	P1/8" / IP68

EU90

Elliptical Waveguide EU90

Frequency range **8.5 - 11.7** GHz

CHARACTERISTICS

Construction

Conductor Material	Copper
Elliptical OD in (mm)	1.29 x 0.78 (32.8 x 19.7)
Jacket Material	UV Resistant Black Polyethylene
Thickness in (mm)	0.05 (1.3)
Volume ft³/100 ft (L/100 ft)	0.36 (10.2)

Mechanical

Minimum Bending Radius	
• **Single bend**	
E plane in (mm)	5.9 (150)
H plane in (mm)	11.8 (300)
• **Repeated bends**	
E plane in (mm)	7.9 (200)
H plane in (mm)	19.7 (500)
Maximum Twist °/ft (°/m)	1 (3)
Maximum Pulling Length per Hoisting Grip ft (m)	197 (60)
Reccomended Temperature Range	
• **Installation °F (°C)**	-4 to +140 (-20 to +60)
• **Operation °F (°C)**	-40 to +176 (-40 to +80)
Weight Approx. lb/ft (kg/m)	0.34 (0.5)
Minimum Drum Core Diameter in (mm)	47 (1200)
Maximum Operating Pressure psi (bar)	7.3 (0.5)
Reccomended Clamp Spacing ft (m)	3 (1)

Electrical

Frequency Range GHz	8.5 - 11.7
Principal mode cut-off frequency HE_{c11} GHz	6.75

Attenuation, propagation velocity, power

Frequency GHz	Attenuation [1] dB/100 ft (dB/100m)	Group Velocity %	AV. Power [2] kW
8.5	3.66 (12.01)	60.8	1.33
8.7	3.53 (11.57)	63.1	1.38
8.9	3.41 (11.20)	65.2	1.42
9.1	3.32 (10.88)	67.1	1.46
9.3	3.23 (10.61)	68.8	1.50
9.5	3.16 (10.37)	70.4	1.53
10.0	3.02 (9.89)	73.8	1.61
10.1	2.99 (9.81)	74.4	1.62
10.3	2.95 (9.66)	75.5	1.65
10.5	2.90 (9.53)	76.6	1.67
10.7	2.87 (9.41)	77.6	1.69
10.9	2.83 (9.30)	78.5	1.71
11.1	2.80 (9.20)	79.4	1.73
11.3	2.77 (9.10)	80.2	1.75
11.5	2.75 (9.02)	81.0	1.77
11.7	2.72 (8.94)	81.7	1.78

[1] Attenuation at 68°F (20°C)

[2] Average power ratings based on VSWR 1.0. 180°F (82°C) inner temperature. 104°F (40°C) ambient temperature.

[3] <1.06 VSWR typical from 8.500-11.70 GHz

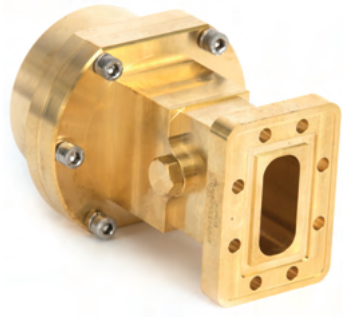
VSWR Characteristics

VSWR [3] max	8.500 - 11.70 GHz	< 1.15

EU90

Elliptical Waveguide Connectors, Tools, and Accessories

Frequency range **8.5 - 11.7** GHz



Flaring Tool and Saw Guide

EU90 Flange Connector

Features

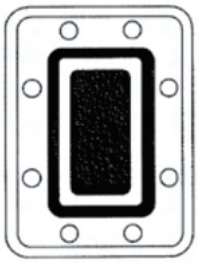
Low VSWR across entire frequency range

No tuning required

Tools

EU-SG90	Saw Guide
EU-FT90	Flaring Tool

Flange Type : EU90PCPR90G



Accessories

HK-CPR90	Flange Hardware Kit
HGK90	Half-thickness Gasket
FGK90	Full-thickness Gasket
PW90FF90	Pressure Window
87000-06-02	Gas Port Fitting for 3/8" Tubing

Technical Characteristics

Frequency Range	8.5 - 11.7
VSWR (8.5 - 10.2 GHz / 10.2 - 11.7 GHz)	< 1.07 / 1.03
Connector Material	Brass
Pressure psi (bar)	3.6 (0.25)
Gas Port / Degree of Protection	P1/8" / IP68

Waveguide to Coax Adapter

Elliptical Waveguide Components

Waveguide to coax adapters are available for multiple flange styles and male/female N-style connections. Please refer to the code below for part numbers.

Part Number Codes

ADP 63 (1.) NF (2.) G (3.)

Example: ADP63NFG – Waveguide to coax adapter, N female to CPR137G

1. Waveguide Size (frequency)

63*	5.60 GHz to 7.125 GHz
90	8.5 GHz to 11.7 GHz

*63 code used for high end of the EU52 frequency range.
For applications below 5.60 GHz, contact customer service.

2. Coax Interference

NF	N Female
NM	N Male
SMAF	SMA Female
SMAM	SMA Male

3. Flange 2

CO	UG Cover Style
CH	UG Choke Style
CG	UG Cover with O-ring
G	CPR Style with Groove
F	CPR Style without Groove

Twist Flex

Elliptical Waveguide Components

Twist Flex is available for **frequencies** ranging from **5.85 GHz to 11.7 GHz** with multiple flange variations. Please refer to the code below for part numbers.

Part Number Codes

TF	24	63	G	G
	1.	2.	3.	4.

Example: TF2463GG – 24" Twist Flex for EU63 (5.85 to 7.125) GHz with a CPR137G on first end and a CPR137G on the second end.

1. Length (in.)

Most common lengths: 24, 36. Other lengths available upon request.

2. WG Size (frequency)

63*	5.85 GHz to 7.125 GHz
90	8.5 GHz to 11.7 GHz

*63 code used for high end of the EU52 frequency range.
For applications below 5.85 GHz, contact customer service.

3. Flange 1

CO	UG Cover Style
CH	UG Choke Style
CG	UG Cover with O-ring
G	CPR Style with Groove
F	CPR Style without Groove

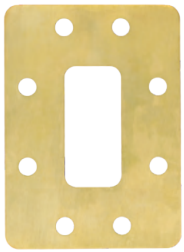
4. Flange 2

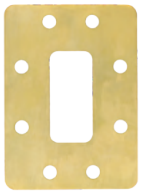
CO	UG Cover Style
CH	UG Choke Style
CG	UG Cover with O-ring
G	CPR Style with Groove
F	CPR Style without Groove

Pressure Window

Elliptical Waveguide Components

Pressure Window Options





PW63FF137

Pressure window for CPR137 Flange.

Technical Data

Flange Interface	CPR137
Pressure, Max	15 psig

Electrical Data

Frequency, Min	5.000 GHz
Frequency, Max	7.125 GHz
VSWR, Max	1.10

Mechanical Data

Material

• **Flange**	Brass
• **Window**	Mylar
• **Gasket**	Rubber
Product Weight	0.13 lbs
Package Quantity	1

PW90FF90

Pressure window for CPR90 Flange.

Technical Data

Flange Interface	CPR90
Pressure, Max	15 psig

Electrical Data

Frequency, Min	10.2 GHz
Frequency, Max	11.6 GHz
VSWR, Max	1.10

Mechanical Data

Material

• **Flange**	Brass
• **Window**	Mylar
• **Gasket**	Rubber
Product Weight	0.12 lbs
Package Quantity	1

Etsiline CommPact Dehydrator

Etsiline CommPact 028 1401

Standard Features

Internet Communications / Web Interface

No Maintenance

Compact Design

Standard 8 Outlet, Each with Shut-off Valve

Dry Air Capacity > 120 l/h

Low Noise, Low Vibration

Remote Sense Input

Low Energy Consumption

Optional Features

Humidity Alarm

Redundant Operation and Communication

AC Power Adapter

Dehydrators are an integral part in maintaining optimal performance in a waveguide system. Fluctuations in temperature and wind speed can cause a difference between the pressure inside the system and the environment. When pressure is lower in the waveguide, moist air can be pulled into the waveguide causing undesirable conditions such as corrosion and arcing. These conditions will result in increased VSWR or failure of the system to operate. A dehydrator will pump dry air into the waveguide system ensuring that the system will be held at a higher pressure than the environment.

The Etsiline Series dehydrator was designed specifically for use in terrestrial microwave systems. The Etsiline dehydrators operate using a system of involving two separate desiccant chambers resulting in a completely automatic, maintenance-free and high reliable unit. The design of the dehydrator also allows it to operate with a very low noise level, under 43dB, with no vibration. The Etsiline dehydrators consume little power when compared to other models on the market, drawing as little as 5 watts in the stand-by mode. These features make the Etsiline Series dehydrators the ideal choice for both remote sites and in-office use.

Etsiline CommPact Dehydrator

Etsiline CommPact 028 1401 Technical Data

Specifications

Operation	Fully Automatic and Continuous
Dry Air Capacity	>120
Outlet Dew Point at 23°C and 83% RH	< -40°C
Standard Working Pressure (mbar)	20 - 30
Power Supply (V)	48 VDC
Power Consumption	
• **Drying (W)**	13
• **Regeneration(W)**	55
• **Stand-by (W)**	6
• **Sound Level (A)**	<43
• **Weight (kg)**	8
Outlets, with Shut-off Valve	8, Tubing 3/8" OD
Remote Sense Input	Included, Manual Valve
Location	Indoors
Enclosure	IP20
Ambient Temperature	-10°C - +45°C
Relative Humidity	Max. 95%
Combined Alarms, Dry Contact	Low-, High Pressure, Run Time Humidity Alarm (optional)
Communication	TCP/IP Ethernet SNMP Dry Contact SPDT Modbus

Mounting	Width (mm)	Depth (mm)	Height (mm)
ETSI-Rack	535	200	88,9
19" - Rack	483	200	88,9
Wall Mounting (optional)	483	300	88,9
Floor/Table Mounting (optional)	483	300	93,0

Options and Spare Parts

Part Number	Description
0281544	Adaptor, Input: 90-264 VAC, Output: 48VDC for Etsiline CommPact
0281565	Bracket, Floor and wall mount for Etsiline CommPact
0268924	Connector, Alarm elbow (solder) for Etsiline CommPact
0281533	Connector, Power supply for Etsiline CommPact, female

Capacity Rating

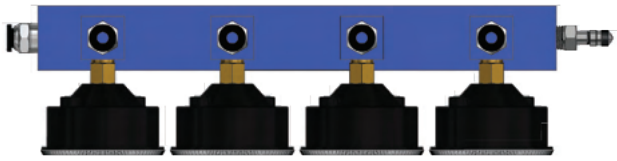
The Etsiline CommPact 028 1401 were designed for systems up to 625 liters respectively. This volume was based on two separate assumptions. The first is that the dehydrator would have to support the total system volume with the addition of an anticipated leak rate of 2% per hour. The unit would also have to maintain pressure during a temperature drop of 6 degrees in a 10 minute period. Taking these conditions into account and using an ambient pressure and temperature of 1000 mbars and 27 degrees Celsius respectively, the total length in feet the Etsiline CommPact 028 1401 is summarized to the right:

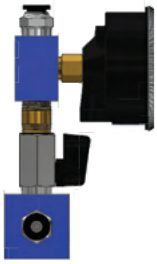
Waveguide	Length (ft)
EU52	1950
EU63	2404
EU90	6250

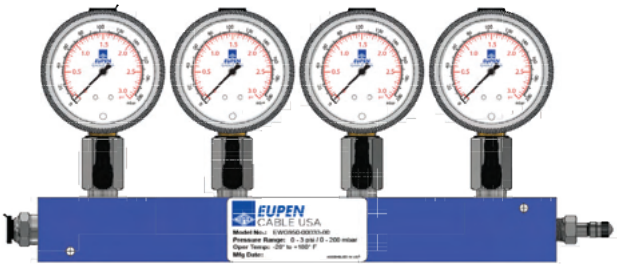
Dehydrator Accessories

4-Port Wall Mountable Manifold : EWG950-00033-00

EWG950-00033-00 4-port wall mountable Waveguide low pressure distribution manifold, dual scale psi/mbar pressure gauge, 3/8" Push-To-Connect input connector, (4) 3/8" Push-To-Connect output connectors, and schrader purge valve.







General Specifications

Distribution System	Manifold
Mounting	Wall
Port Quantity	4
Connection Size	3/8" PE Tube
Connector Type	Push-To-Connect-Fittings
Regulated Output Pressure	0-3 psi / 0-200 mbar

Dimensions and Weight

Product Height	5.87 in
Product Width	14.0 in
Product Depth	3.46 in
Mounting Holes Size	.200 Dia. (for #10 screws)
Assembly Weight	6.1 lbs

Environmental Data

Temperature Range	-20°F to 180°F

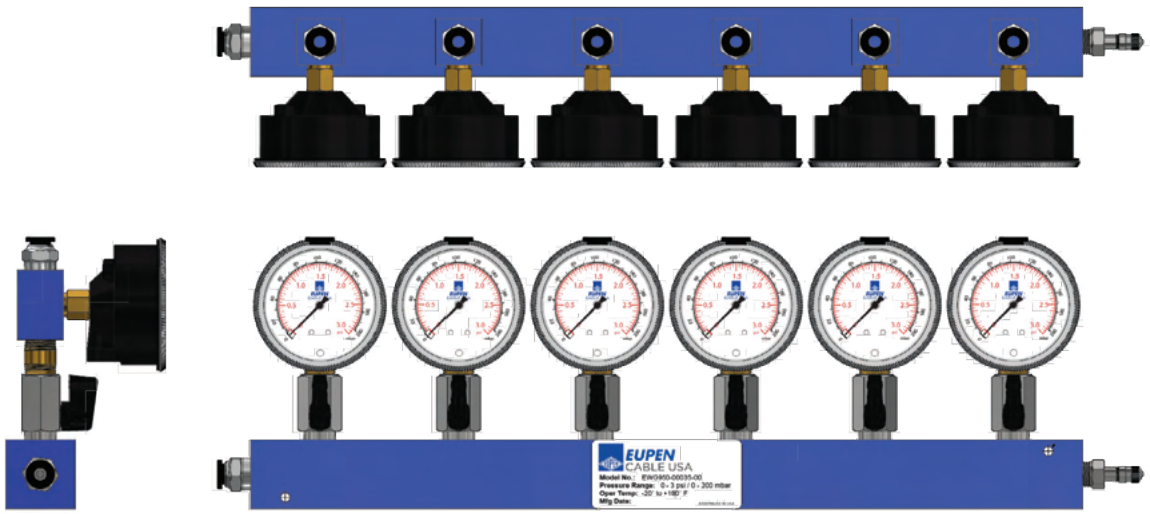
Additional Parts

3/8TUBING, 3/8TUBING-025F

Dehydrator Accessories

6-Port Wall Mountable Manifold : EWG950-00035-00

EWG950-00035-00 6-port wall mountable Waveguide low pressure distribution manifold, dual scale psi/mbar pressure gauge, 3/8" Push-To-Connect input connector, (6) 3/8" Push-To-Connect output connectors, and schrader purge valve.



General Specifications

Distribution System	Manifold
Mounting	Wall
Port Quantity	6
Connection Size	3/8" PE Tube
Connector Type	Push-To-Connect-Fittings
Regulated Output Pressure	0-3 psi / 0-200 mbar

Dimensions and Weight

Product Height	5.87 in
Product Width	20.0 in
Product Depth	3.46 in
Mounting Holes Size	.200 Dia. (for #10 screws)
Assembly Weight	7.0 lbs

Environmental Data

Temperature Range	-20°F to 180°F

Additional Parts

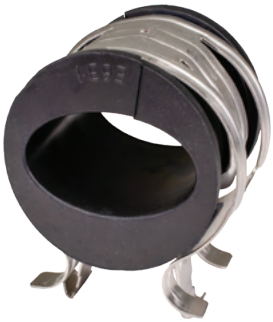
3/8TUBING, 3/8TUBING-025F

Elliptical Waveguide Accessories

Butterfly Hangers

Part #	Description	Kit Qty.
BH-52	Butterfly Hanger Kit for EU52	10
BH-63	Butterfly Hanger Kit for EU63	10
BH-85	Butterfly Hanger Kit for EU90	10

Snap In Hangers with Cushion



Part #	Description	Kit Qty.
SH-U52	Universal Snap In Hanger EU52	10
SH-U63	Universal Snap In Hanger EU63	10
SH-U90	Universal Snap In Hanger EU90	10

Cushion Hangers

Part #	Description	Kit Qty.
CH-A52-1	Cushion Hanger for EU52	5
CH-A63-1	Cushion Hanger for EU63	5
CH-A90-1	Cushion Hanger for EU90	5

Angle Adapters

Part #	Description	Kit Qty.
AA-U	Universal Angle Adapter	10
AA-SL	Angle Adapter with 3/8" Tapped Holes	10

Elliptical Waveguide Accessories

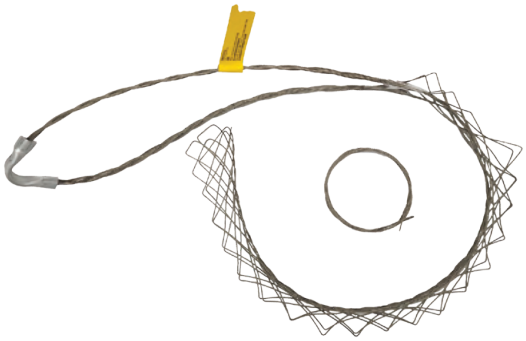
Standoff Adapters

Part #	Description	Kit Qty.
SA-38S	Stand-off Adapter with 3/8" Tapped Holes	10
SA-38S100	Stand-off Adapter for 1"-2" OD Round Members with 3/8" Tapped Holes	10
SA-38S200	Stand-off Adapter for 2"-3" OD Round Members with 3/8" Tapped Holes	10
SA-38S300	Stand-off Adapter for 3"-4" OD Round Members with 3/8" Tapped Holes	10
SA-38S400	Stand-off Adapter for 4"-5" OD Round Members with 3/8" Tapped Holes	10
SA-38S500	Stand-off Adapter for 5"-6" OD Round Members with 3/8" Tapped Holes	10

Standard Ground Kit

Part #	Description	Kit Qty.
GK-S52	Standard Ground Kit for EU52 Includes 5" Lead with Unattached 3/8" Two-Hole Lug	1
GK-NL	Ground Kit, Standard, for 1-5/8", EU52, and EU63 Corrugated Coax, Includes 5' Lead with Unattached 3/8" Two-Hole Lug	1
GK-S85	Standard Ground Kit for EU90 Includes 5" Lead with Unattached 3/8" Two-Hole Lug	1

Lace-up Hoisting Grip



Part #	Description	Kit Qty.
HG-158	Lace-up Hoisting Grip for EU52	1
HG-64	Lace-up Hoisting Grip for EU63	1
HG-85	Lace-up Hoisting Grip for EU90	1

4" Boot Assembly Kits

Part #	Description	Kit Qty.
BA-52-1A	Boot Assembly Kit for EU52, 4" with 1 Hole	1
BA-63-1A	Boot Assembly Kit for EU63, 4" with 1 Hole	1
BA-90-1A	Boot Assembly Kit for EU90, 4" with 1 Hole	1

Notes

Notes

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