



Dielectric[®]

Transmission Line & Components

Trusted for Decades. Ready for Tomorrow.



BROADCAST COMMUNICATIONS PRODUCTS & SYSTEMS SINCE 1942

Dielectric helped to pioneer the broadcast age in 1942, and continues to be the world's most trusted manufacturer and supplier of antennas and RF systems for TV and radio networks.

With more than 75 years in business, Dielectric reliably powers over-the-air operations worldwide. Dielectric is the undisputed leader for high-power North American systems, and continues to gain low-power market share in Asia, South America, and other international regions through its Powerlite series. Mostly anyone who has received TV and FM broadcasts over the air, whether at home or while traveling, has enjoyed that content courtesy of a Dielectric system.

Dielectric's manufacturing operation today focuses on five key areas of expertise:

- **HIGH-POWER TV SYSTEMS**
- **LOW-POWER TV SYSTEMS**
- **TRANSMISSION LINE AND COMPONENTS**
- **RADIO ANTENNAS AND COMPONENTS**
- **RF SYSTEMS (FILTERS AND COMBINERS)**
- **MONITORING & MAINTENANCE**

All five manufacturing areas share common traits, using only the highest quality materials and engineering to develop robust, long-lasting systems. Dielectric products are built for longevity and endurance in the most challenging outdoor conditions.

Dielectric also employs many of today's brightest RF engineering minds, blending years of expertise with a forward-looking philosophy that embraces software-defined planning and design. Dielectric's support services extend to consultation across pre-sales, installation and commissioning. Dielectric is also driving unforeseen innovation into the convergence of RF and IP technologies, beginning with its new RFHAWKEYE® monitoring system that will change the way that broadcasters monitor, manage and troubleshoot antenna and RF systems for generations to come.

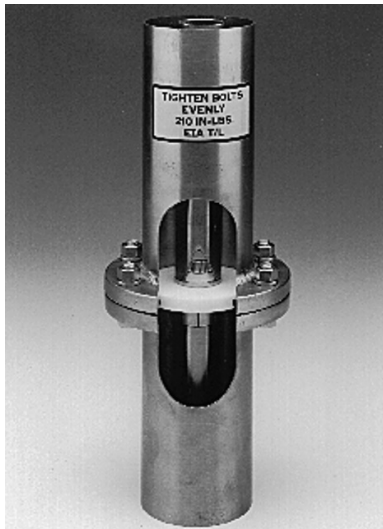
Products contained in this catalog may be covered by one or more of the following patents: 6,917,264; 6,903,624; 6,887,093; 6,882,224; 6,870,443; 6,867,743; 6,816,040; 6,703,984; 6,703,911; 6,677,916; 6,650,300; 6,650,209; 6,617,940; 6,538,529; 6,373,444; 6,320,555; 5,999,145; 5,861,858; 5,455,548; 5,418,545; 5,401,173; 5,167,510; 4,988,961; 4,951,013; 4,899,165; 4,723,307; 4,654,962; 4,602,227; 7,084,822; 7,081,860; 7,061,441; 7,034,545; 7,012,574; 6,972,731; 6,972,648; 6,961,027; 6,914,579; 6,441,796; 7,102,589

Additional patents are pending.

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Dielectric has received
two Emmy awards for
technical innovation.





Introduction

Dielectric is the world's largest manufacturer of Rigid Coaxial Transmission Line. Our record of reliable service and superior quality, as well as our ongoing research and development programs, have kept us the leader in our field. Dielectric manufactures rigid coaxial transmission lines in sizes ranging from $7/8$ " to 12". Outer conductor material is available in aluminum in certain sizes.

More TV and radio stations, utilizing rigid Coax Transmission Line, are on the air with Dielectric.

Features

HIGH CONDUCTIVITY COPPER

Dielectric's volume allows us to purchase entire mill runs (to our specifications) of high conductivity copper tubing, 95% ICAS/99.04% purity, providing Transmission Line of constant impedance and continuous high power capacity and low insertion loss.

WELDED CONSTRUCTION

All of Dielectric's factory installed flanges and joints are Tungsten Inert Gas Welded to ensure structural integrity and long life.

EXPANSION COMPENSATION

RF heating of the inner and outer conductors causes differential expansion between the inner and outer which must be compensated for. Dielectric's constant impedance expansion connector is used to provide this differential expansion. The unique design of this silver plated, watch band spring connector prevents arcing and maintains constant impedance.

INNER CONDUCTOR SUPPORT

Dielectric uses superior low loss PTFE disc type insulators (not pin or rod type supports) for long term reliability and service. Dielectric's line also utilizes a unique magneform process for insulator support undercuts. With magneforming, undercuts are magnetically formed rather than rolled or welded, allowing the use of a continuous inner conductor with excellent mechanical and electrical characteristics.

HEAVY WALL TUBING

Dielectric uses heavy wall tubing in most miter elbows. In critical locations requiring extraordinary support, such as the bottom elbow on vertical runs, additional reinforcing is added.

VSWR Maximum Limit Values

Channel Range	Length T/L Run	3 1/8" Diameter		4 1/16" Diameter		6 1/8" Diameter		7 3/16" Diameter		8 3/16" & 9 3/16" Dia.	
		Regular	Special*	Regular	Special*	Regular	Special*	Regular	Special*	Regular	Special*
2-6, FM & 7-13	0 to 1000'	1.05	1.04	1.05	1.04	1.05	1.035	1.05	1.035	1.05	1.03
	1000 to 1500'	1.06	1.05	1.06	1.05	1.06	1.05	1.06	1.05	1.06	1.05
14-30	0 to 800'	1.05	1.035	1.05	1.035	1.05	1.03	1.05	1.035	1.05	1.03
	800 to 1500'	1.07	1.05	1.07	1.05	1.07	1.05	1.07	1.05	1.07	1.05
31-62	0 to 800'	1.06	1.05	1.06	1.05	1.05	1.05	1.05	1.04	----	----
	800 to 1500'	1.08	1.05	1.08	1.05	1.08	1.05	1.08	1.05	----	----
31-52 (8-3/16")	0 to 800'	----	----	----	----	----	----	----	----	1.05	1.04
	800 to 1500'	----	----	----	----	----	----	----	----	1.08	1.05
31-38 (9-3/16")	0 to 800'	----	----	----	----	----	----	----	----	1.05	1.04
	800 to 1500'	----	----	----	----	----	----	----	----	1.08	1.05

*Special—with application of our factory installed tuners, Dielectric has the capability of producing improved VSWRs. Contact factory for tuner applications and optimization details.



Selection of Proper Line Section Length

Dielectric's patented digiTLine is designed to operate at any VHF, UHF or FM channel. Standard lines require selection of a proper length for a given channel to obtain a low VSWR system.

Combining Channels

When combining channels into coaxial lines the power handling capability of the line must be evaluated (see page 6). For standard lines such as EIA, the line section length must also be evaluated. The tables shown are provided for such an evaluation.

Prohibited Channels per Line Length (3 MHz & 1.5 MHz Guard Bands)

	=	Prohibited for 3 MHz Guard Band
	=	Prohibited for 1.5 MHz Guard Band

Notes:

1. For short transmission line runs, or those feeding a VHF, the flange stack-up may be insignificant. Check with manufacturer.
2. A 1.15 VSWR at a single discrete frequency may not be detrimental to a Solid State transmitter, consider that when evaluating field data.
3. For waveguide runs, check with manufacturers.

Recommended Line Lengths

Channel	20'	19 3/4'	19 1/2'
2	•		
3	•		
4			
5	•		
6	•		
FM*			
7	•		
8	•		
9	•		
10			•
11	•		
12	•		
13	•		
14	•		
15	•		
16			•
17			•
18	•		
19	•		
20			•
21			•
22	•		
23	•		
24		•	
25			•
26			•
27	•		
28	•		
29			•
30			•
31	•		
32	•		
33			•
34			•
35	•		

Channel	20'	19 3/4'	19 1/2'
36	•		
37			•
38			•
39	•		
40	•		
41			•
42			•
43	•		
44	•		
45		•	
46			•
47	•		
48	•		
49		•	
50			•
51	•		
52	•		
53		•	
54			•
55	•		
56	•		
57		•	
58			•
59	•		
60	•		
61		•	
62			•
63	•		
64	•		
65		•	
66		•	
67	•		
68	•		
69		•	

*For full FM band operation 17 1/2' line sections are recommended. For single channel applications standard line lengths can be used.

General Specifications

T/L Size	OUTER		INNER	
	OD	ID	OD	ID
1 5/8"	1.625"	1.527"	0.664"	0.588"
3 1/8"	3.125"	3.027"	1.315"	1.231"
4 1/16"	4.062"	3.935"	1.711"	1.661"
6 1/8"-50 Ohm	6.125"	5.981"	2.600"	2.520"
6 1/8"-75 Ohm	6.125"	5.981"	1.711"	1.661"
7 3/16"	7.144"	7.000"	2.000"	1.932"
8 3/16"	8.150"	8.000"	2.293"	2.226"
9 3/16"-50 Ohm	9.166"	9.000"	3.910"	3.812"
9 3/16"-75 Ohm	9.166"	9.000"	2.580"	2.516"

NOTES

1. GAS STOP

Normally one gas stop is needed at each end of a coax run. Its purpose is to supply a method to stop gas or dry air from entering into an area which does not require pressurization, or when different pressurizations are required.

2. DEHYDRATOR & GASSING KIT

Select the proper size dehydrator based on the size and length of coax run. The gassing kit supplies the connection of the tube and fittings from the dehydrator to the gas stop.

3. STRAIGHT SECTIONS OF RIGID COAXIAL TRANSMISSION LINE

This line is normally supplied in 19 1/2, 19 3/4 or 20 foot lengths. They are bolted end to end with the seal always on the end toward the antenna or tower top. This allows for observation of the condition of the coax contact prior to the installation of the next mating piece. Hardware is always supplied for one end of each component.

4. HORIZONTAL ANCHOR PLATE

These are normally used to anchor the coaxial transmission line to the building. They also permit the user to seal the building from the outside weather.

5. HORIZONTAL SPRING HANGERS (THREE POINT)

These hangers are used to suspend the horizontal run and provide flexibility when warranted by expansion and contraction due to heating and cooling of the line. These are to be spaced 10 ft. apart.

6. LATERAL BRACES

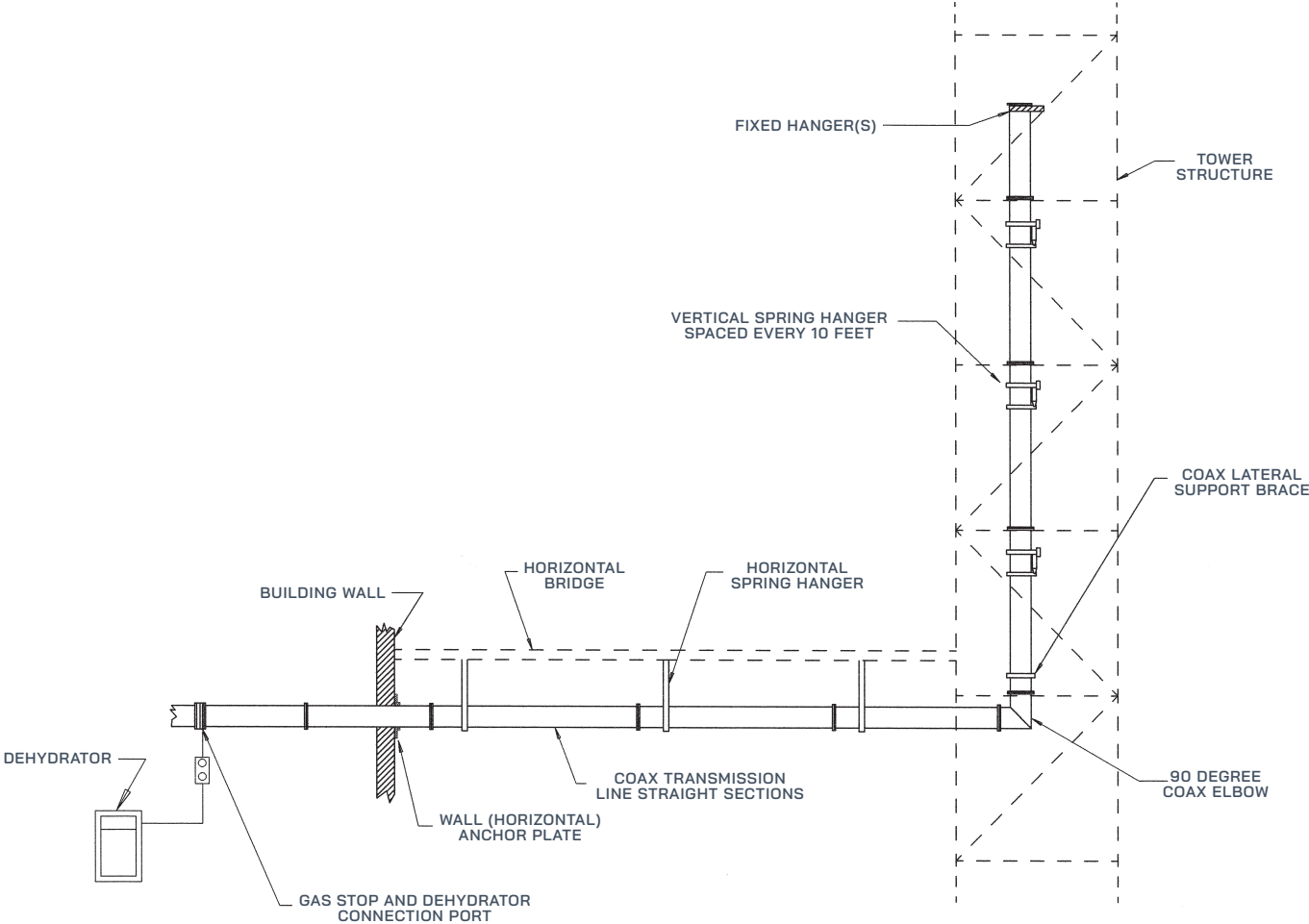
Used to restrict lateral motion of the coax while permitting vertical and horizontal movement. One is normally attached at the bottom of the vertical run.

7. UNEQUAL LEG REINFORCED ELBOWS

It is suggested that unequal leg elbows be used in most places because they provide the maximum amount of support on the inner conductor. Normally they are used at the bottom of the tower, in the elbow complex at the tower top and inside the building.

8. VERTICAL SPRING HANGERS

These hangers support the vertical run of coax and provide the flexibility required when vertical expansion and contractions occur due to thermal temperature changes.



Minimum Horizontal Run Length vs Height

Vertical	3 1/8"	4 1/16"	6 1/8"	7 3/16"	8 3/16"	9 3/16"
250'	17'	18.5'	22.5'	24'	26'	28'
500'	23'	26.5'	32'	34.5'	37'	40'
1000'	32'	37'	46'	49'	52'	58'
1500'	40'	46'	58'	61.5'	65'	70'
2000'	46'	53'	66'	70.5'	75'	80'

Peak Ratings

Tables of power handling and efficiency are shown on pages 29-32. Ratings are based on a temperature rise of 80°C. Where peak power is the limiting factor, it is possible to utilize a more economical size transmission line by increasing the dry air or gas pressure within the line, as long as the average power does not exceed the line rating². The table below illustrates the ratio of increased peak power in a transmission line with changes of pressures.

STANDARD CONDITIONS

VSWR: 1.0:1

Line Pressure: 0 PSIG

Inner Conductor Temp: 120°C

Ambient Temp: 40°C

Improved Rating with Line Pressure

Average Power

Line Pressure (PSIG)	Peak Power Rating Factor	Rating Factor 50 Ohm	Rating Factor 75 Ohm
0	1.00	1.00	1.00
5	1.40	1.09	1.08
10	1.90	1.16	1.15
15	2.45	1.21	1.22
20	2.96	1.26	1.28
25	3.50	1.31	1.33

	Peak Power (kW)	Peak Volts (kV)
1 5/8"	554	5
3 1/8"	2,180	10
4 1/16"	3,685	13
6"-50 ohm	8,513	20
6"-75 ohm	5,550	20
7 3/16"	7,458	23
8 3/16"	9,930	27
9"-75 ohm	12,568	30
9"-50 ohm	19,277	31

Two factors impose limits on transmission line use: temperature and voltage (or power). Average power causes maximum temperature of the line is exceeded, the inner conductor will failure to excessive oxidation.

AVERAGE POWER

A number of conditions affect line temperature and the maximum average power rating of line. Dielectric's transmission line ratings reflect a maximum inner conductor temperature of 120°C. Other factors such as 40°C ambient at sea level (assumes worst case summer condition for the continental US), zero wind velocity, and unity VSWR are utilized for calculation purposes.

A reduction in ambient temperature or increase in wind velocity causes the power rating to increase. Conversely, an increase in VSWR, sun load, or very high elevation can raise temperatures and lower average power handling.

PEAK RATINGS

Peak voltages and peak power are directly related and can be used interchangeably as a measure of the breakdown limits of the transmission line. Peak voltages must not exceed the ability of the air or the insulators in the line to resist arcing. Laboratory measurements are used to determine voltage breakdown limits. Theoretical calculations can also be used, factoring in allowances for humidity, pressure, surface roughness of conductors, the relationship of inner and outer conductors, the relationship between DC Highpot and RF breakdown at high frequencies. The peak voltage limit is the same value for all frequencies in a given size line.

NTSC

The **peak-of-sync (or peak-envelope)** power is defined by the RMS amplitude of the carrier during the horizontal and vertical sync periods.

The **peak instantaneous power** of NTSC, which occurs when the aural and visual peak voltages add in phase, is used to determine the voltage breakdown condition of all components, from the transmitter output to the antenna.

The average power of NTSC is not constant. It depends on the contents of the picture being transmitted. With total blanking, the average visual power is constant and is -2.2 dB below peak-of-sync. The average visual power of NTSC, combined with the aural power are used to calibrate the transmitter from calorimetric measurement of average power. Mathematically, **P ave = P sync (APL + A/P sync)**, where APL is the average picture level and is .6 during blanking, and A/P sync is the ratio of aural to visual peak power, typically .1 (10%) for UHF, and .2 (20%) for VHF.

DTV

For DTV the average power is independent of the content of the image being transmitted; unlike with NTSC, it is a constant value and there is no separate aural carrier to consider. For DTV, the average power will be the significant parameter in ERP, coverage, interference and CNR (Carrier-to-Noise Ratio) calculations.

The average power alone, however, cannot be used to define the size of either the transmitter or passive components (filters, transmission line, antennas), which will be evaluated on peak power or voltage breakdown conditions.

COMBINING CHANNELS (SEE CHART AT LEFT)

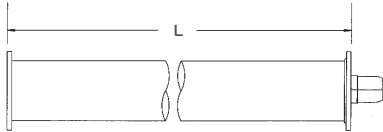
When combining channels into one transmission line, both average and peak ratings must be evaluated. In general, for carriers of equal power, the peak power rises as the square of the number of carriers.

¹Peak Voltage Ratings based on a 4:1 margin of safety to theoretical.

²Average power rating is also increased with greater line pressure.

Straight Sections Fixed Flange

Transmission line with flanges on both ends. Includes one anchor connector, one O-ring and one hardware kit.



Without Expansion Inner Conductor

T/L Size	Catalog Number	Impedance in Ohms	L	Approx Weight
3 1/8"	375-004	50	20'	56 lbs
	375-003	50	19.5'	51 lbs
4 1/16"	475-004	50	20'	110 lbs
	475-003	50	19.5'	100 lbs
6 1/8"	675-004	50	20'	145 lbs
	675-003	50	19.5'	135 lbs
6 1/8"	677-004	75	20'	145 lbs
	677-003	75	19.5'	135 lbs
7 3/16"	777-004	75	20'	180 lbs
	777-003	75	19.5'	168 lbs
8 3/16"	877-004	75	20'	216 lbs
	877-003	75	19.5'	202 lbs
9 3/16"	977-004	75	20'	260 lbs
	977-003	75	19.5'	248 lbs

Without Expansion Compensation

Flanged on both ends. Supplied with anchor connector, O-ring and hardware kit.

Random Lengths Fixed Flange

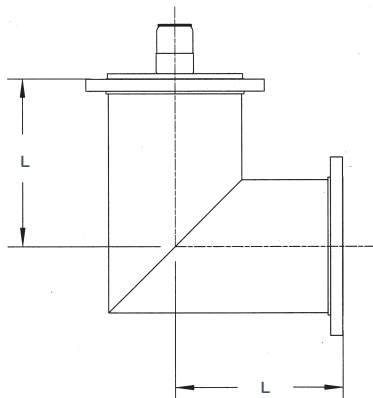
T/L Size	Catalog Number	Approx Weight
1 5/8"	275-006	50
3 1/8"	375-006	50
4 1/16"	475-006	50
6 1/8"	675-006	50
6 1/8"	677-006	75
7 3/16"	775-006	50
8 3/16"	877-006	75
9 3/16"	975-006	50
9 3/16"	977-006	75

Length: Specified by Customer

Approx Weight: Determined by Length
(see chart at right)

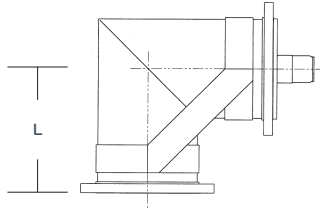
T/L Size	Catalog Number	Impedance in Ohms	L	Approx Weight
1 5/8"	275-002	50	20'	27 lbs
	275-001	50	19.5'	26 lbs
3 1/8"	375-002	50	20'	60 lbs
	375-001	50	19.5'	56 lbs
4 1/16"	475-002	50	20'	110 lbs
	475-001	50	19.5'	100 lbs
6 1/8"	675-002	50	20'	145 lbs
	675-001	50	19.5'	135 lbs
6 1/8"	677-002	75	20'	140 lbs
	677-001	75	19.5'	130 lbs
7 3/16"	775-002	75	20'	215 lbs
	775-001	75	19.5'	205 lbs
8 3/16"	877-002	75	20'	192 lbs
	877-001	75	19.5'	183 lbs
9 3/16"	975-002	50	20'	270 lbs
	975-001	50	19.5'	202 lbs
9 3/16"	977-002	75	20'	229 lbs
	977-001	75	19.5'	219 lbs

90° Mitre Elbow (Equal Leg)



T/L Size	Catalog Number	Impedance in Ohms	Impedance in	Approx. Weight
1 5/8"	275-017	50	3"	3 lbs
3 1/8"	375-017	50	6"	9 lbs
4 1/16"	475-017	50	6"	12 lbs
6 1/8"	675-017	50	9"	28 lbs
6 1/8"	677-017	75	9"	28 lbs
7 3/16"	777-017	75	9"	35 lbs
8 3/16"	877-017	75	12"	40 lbs
9 3/16"	975-017	50	12"	50 lbs
9 3/16"	977-017	75	12"	50 lbs

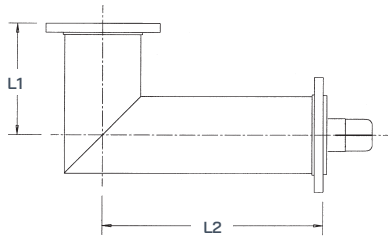
90° elbow, equal length legs.
Includes one anchor connector,
one O-ring and one hardware kit.
Swivel Flanges.



90° Mitre Elbow (Equal Leg)

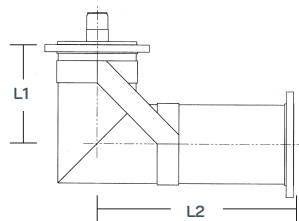
T/L Size	Catalog Number	Impedance in Ohms	L	Approx. Weight
3 1/8"	375-021	50	6"	10 lbs
4 1/16"	475-021	50	6"	14 lbs
6 1/8"	675-021	50	9"	29 lbs
6 1/8"	677-021	75	9"	29 lbs
7 3/16"	777-021	75	9"	37 lbs
8 3/16"	877-021	75	12"	45 lbs
9 3/16"	975-021	75	12"	55 lbs

90° Mitre Elbows (Unequal Leg)



T/L Size	Catalog Number	Impedance in Ohms	L1	L2	Approx. Weight
1 5/8"	275-018	50	3"	6"	4.25 lbs
3 1/8"	375-018	50	6"	9"	12 lbs
4 1/16"	475-018	50	6"	12"	18 lbs
6 1/8"	675-018	50	9"	18"	31 lbs
7 3/16"	777-018	75	9"	18"	40 lbs
6 1/8"	677-018	75	9"	18"	26 lbs
8 3/16"	877-018	75	12"	24"	50 lbs
9 3/16"	975-018	50	12"	24"	60 lbs
9 3/16"	977-018	75	12"	24"	60 lbs

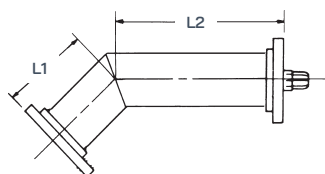
90° reinforced elbow, one long and
one short leg. Includes one anchor
connector, one O-ring and one
hardware kit. Swivel flanges.



90° Mitre Elbow (Unequal Leg) Reinforced

T/L Size	Catalog Number	Impedance in Ohms	L1	L2	Approx. Weight
3 1/8"	375-022	50	6"	9"	13 lbs
4 1/16"	475-022	50	6"	12"	20 lbs
6 1/8"	675-022	50	9"	18"	32 lbs
6 1/8"	677-022	75	9"	18"	27 lbs
7 3/16"	777-022	75	9"	18"	45 lbs
8 3/16"	877-022	75	12"	24"	55 lbs
9 3/16"	977-022	75	12"	24"	65 lbs

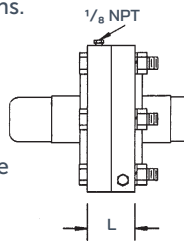
45° elbow, one long and one short
leg. Includes one anchor connector,
one O-ring and one hardware kit.
Swivel flanges.



45° Mitre Elbow (Unequal Leg)

T/L Size	Catalog Number	Impedance in Ohms	L1	L2	Approx. Weight
1 5/8"	275-020	50	2.5"	6"	4.25 lbs
3 1/8"	375-020	50	6"	12"	12 lbs
4 1/16"	475-020	50	6"	12"	18 lbs
6 1/8"	675-020	50	9"	12"	31 lbs
6 1/8"	677-020	75	9"	12"	31 lbs
7 3/16"	777-020	75	9"	12"	45 lbs

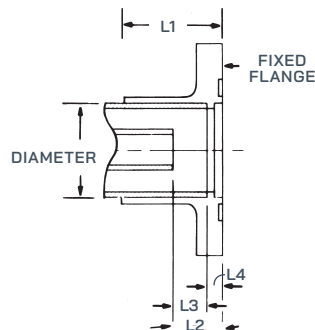
Gas stop for nominal pressure differential. Installs between two flanged line sections. Includes inner-conductor connector, one O-ring and complete hardware (long bolts).



Gas Stop

T/L Size	Catalog Number	Impedance in Ohms	L	Approx. Weight
1 5/8"	275-005	50	0.88"	4 lbs
3 1/8"	375-005	50	1.50"	7 lbs
4 1/16"	475-005	50	1.50"	12 lbs
6 1/8"	675-005	50	2.00"	16 lbs
6 1/8"	677-005	75	2.00"	18 lbs
7 3/16"	777-005	75	2.25"	22 lbs
8 3/16"	877-005	75	2.38"	35 lbs
9 3/16"	975-005	50	2.00"	40 lbs
9 3/16"	977-005	75	2.38"	40 lbs

Flange for field installation by soft soldering. Includes solder, liquid flux, brush, garnet paper and cleaner.



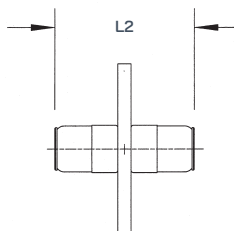
Soft Solder Flange

This table shows cut back for 20' sections.

T/L Size	Catalog Number	Ohms	L1	L2	L3	L4	Approx. Weight
1 5/8"	270-014	50	1.94"	0.59" ± 0.03"	0.40" ± 0.03"	.187"	2 lbs
3 1/8"	370-014	50	2.13"	0.91" ± 0.03"	0.47" ± 0.03"	.437"	3 lbs
4 1/16"	470-014	50	2.19"	1.22" ± 0.03"	0.85" ± 0.03"	.375"	6 lbs
6 1/8"	670-014	50	3.53"	1.28" ± 0.03"	0.90" ± 0.03"	.375"	7 lbs
6 1/8"	670-014	75	3.53"	1.22" ± 0.03"	0.84" ± 0.03"	.375"	7 lbs
7 3/16"	770-014	75	3.50"	1.41" ± 0.03"	0.85" ± 0.03"	.562"	10 lbs
8 3/16"	870-014	75	6.13"	1.59" ± 0.03"	1.22" ± 0.03"	.375"	12 lbs
9 3/16"	970-014	50	6.50"	1.78" ± 0.03"	1.15" ± 0.03"	.626"	14 lbs
9 3/16"	970-014	75	6.50"	1.59" ± 0.03"	0.97" ± 0.03"	.626"	14 lbs

Note the cut back difference between 50 & 75 ohms and 6 1/8 & 9 3/16. The given dimensions are for cutting back the inner and outer conductor of transmission line onto the end of which a flange is to be installed.

Anchor connector (inner-conductor connector and insulator).

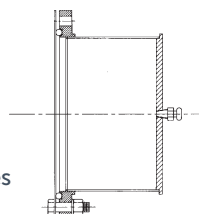


Connector Anchor Insulator

T/L Size	Catalog Number	Impedance in Ohms	L1	L2	Approx. Weight
1 5/8"	275-011	50	1 5/8"	3 1/8"	3.5 oz
3 1/8"	375-011	50	1 3/4"	4 1/8"	13 oz
4 1/16"	475-011	50	2 3/8"	5 3/8"	2 lbs
6 1/8"	675-011	50	2 1/2"	5 1/2"	2 lbs
6 1/8"	677-011	75	2 3/8"	5 3/8"	2 lbs
7 3/16"	777-011	75	2 3/4"	5 1/16"	2 lbs
8 3/16"	877-011	75	3 1/8"	6 1/16"	2 lbs
9 3/16"	975-011	50	3 1/2"	6 31/32"	5 lbs
9 3/16"	977-011	75	3 1/8"	6 1/8"	2 lbs

End cap with gas port. Includes O-ring and hardware kit.

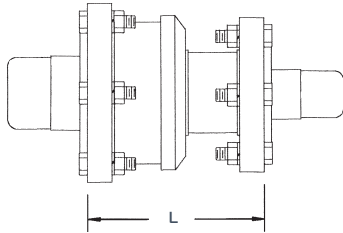
For temporary closure of transmission line to prevent entrance of moisture. Includes pipe plug.



End Cap

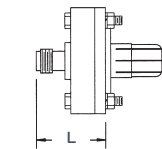
T/L Size	Catalog Number	Approx. Weight
1 5/8"	270-024	7 oz
3 1/8"	370-024	5 lbs
4 1/16"	470-024	7 lbs
6 1/8"	670-024	10 lbs
7 3/16"	770-024	12 lbs
8 3/16"	870-024	14 lbs
9 3/16"	970-024	15 lbs

Reducer to smaller line constant impedance. Includes inner conductor connector, O-rings and hardware.

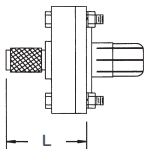


Reducer

T/L Size	Smaller Size	Catalog Number	Impedance in Ohms	L	Approx. Weight
1 5/8"	7/8"	275-060	50	1.75"	2 lbs
3 1/8"	7/8"	375-061	50	1.25"	5 lbs
3 1/8"	1 5/8"	375-060	50	0.875"	6 lbs
4 1/16"	3 1/8"	475-060	50	4.00"	10 lbs
6 1/8"	3 1/8"	675-061	50	6.75"	14 lbs
6 1/8"	4 1/16"	675-060	50	5.00"	16 lbs
8 3/16"	7 3/16"	877-061	75	9.00"	22 lbs
8 3/16"	6 1/8"	877-060	75	9.31"	21 lbs
9 3/16"	6 1/8"	975-061	50	9.00"	25 lbs
9 3/16"	6 1/8"	977-061	75	10.00"	25 lbs
9 3/16"	8 3/16"	977-060	75	9.00"	32 lbs



REDUCER TO TYPE "N" (FEMALE)



REDUCER TO TYPE "N" (MALE)

Quick Step Reducer to Type "N"

Female Type "N" Connector

T/L Size	Catalog Number	Impedance in Ohms	L	Approx. Weight
1 5/8"	275-063	50	2.19"	2 lbs
3 1/8"	375-063	50	1.75"	3 lbs
4 1/16"	475-063	50	1.87"	4 lbs

Male Type "N" Connector

1 5/8"	275-062	50	2.19"	2 lbs
3 1/8"	375-062	50	1.75"	3 lbs

Cutoff Guide for Outer Conductor

Includes Clamp

Outer Conductor O.D.	Catalog Number	Approx. Weight
1 5/8"	270-040	1 lb
3 1/8"	370-040	2 lbs
4 1/16"	470-040	3 lbs
6 1/8"	670-040	6 lbs
7 3/16"	770-040	8 lbs
8 3/16"	870-040	10 lbs
9 3/16"	970-040	11 lbs

O-Ring Buna-"N"

T/L Size	Catalog Number
1 5/8"	270-010
3 1/8"	370-010
4 1/16"	470-010
6 1/8"	670-010
7 3/16"	770-010
8 3/16"	870-010
9 3/16"	970-010

Cutoff Guide for Inner Conductor

Includes Clamp

Inner Conductor O.D.	Catalog Number	Impedance in Ohms	Approx. Weight
1 5/8"	270-041	50	3 oz
3 1/8"	375-041	50	6 oz
4 1/16"	475-041	50	8 oz
6 1/8"	675-041	50	6 oz
6 1/8"	677-041	50	6 oz
7 3/16"	777-041	75	1 lb
8 3/16"	877-041	50	1.5 lbs
9 3/16"	975-041	50	6 oz
9 3/16"	970-041	50	1.5 lbs

- › **Broadband**
- › **High Efficiency**
- › **High Power Handling**

The Leader in Rigid Transmission Line Technology

Before Dielectric's patented digiTLine® was introduced in 1997, rigid coaxial transmission line was manufactured in 20 ft, 19.75 ft. or 19.5 ft sections. Certain lengths could not be used at specific frequencies as a high VSWR would result. This meant a line used at Channel 22, for example, could not be used at Channel 53. Semiflex cable, while more broadband, is less efficient with lower power handling and a somewhat high overall VSWR.

BROADBAND DESIGN

digiTLine® combines the best features of rigid copper coaxial line and semi-flexible cable. By eliminating the limitations on channel use, digiTLine® can be used at ANY channel. The result is the only BROADBAND rigid line with HIGH POWER HANDLING and HIGH EFFICIENCY.

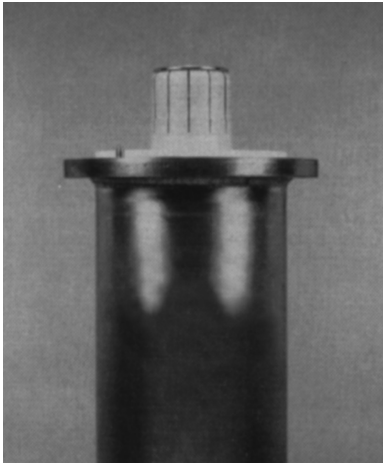
ADVANCED CONNECTOR

digiTLine®'s advanced patented connector combines Dielectric's time-proven watchband expansion technology, anchor insulator support, and improvements in materials and manufacturing tolerances to virtually eliminate discontinuities at the flange joint.

HIGH EFFICIENCY & POWER HANDLING

digiTLine® delivers the high efficiency and power handling required for NTSC and DTV transmissions.

Transmission line efficiency is extremely important in order to deliver maximum power to the antenna with minimum loss. Such high efficiencies are only achieved with rigid copper coaxial transmission lines like digiTLine®.

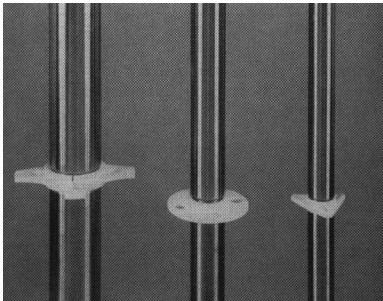


digiTLine® attenuation and power handling tables are listed on page 13. Examples to evaluate power handling (average and peak) for NTSC, HDTV or combined operation are given in the appendix.

INNER CONDUCTOR SUPPORT

digiTLine® uses Dielectric's superior low loss PTFE disc type insulators (not pin or rod type supports) for long term reliability and service. digiTLine® also uses Dielectric's unique magniform process for insulator support undercuts. With magniforming, undercuts are magnetically formed rather than rolled or welded, allowing the use of a continuous inner conductor with excellent mechanical and electrical results.

digiTLine® is also available as EHT (Enhanced Heat Transfer) line—refer to pages 14-15.



AVAILABLE SIZES

digiTLine® is available in 3 1/8", 4 1/16", and 6 1/8" (50 and 75 ohm); and 7 3/16" (75 ohm) sizes. digiTLine® is also available in 8 3/16" to channel 52, and 9 3/16" to channel 38.

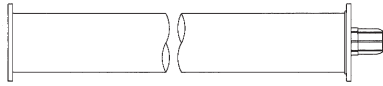
INSTALLATION & MAINTENANCE

digiTLine® is installed and maintained like standard rigid line.

OTHER STANDARD FEATURES

Many well known Dielectric features (such as high conductivity copper, heavy wall reinforced elbows and heliarc welded EIA flanges) are standard.

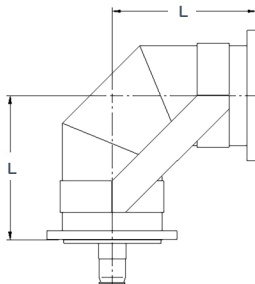
Transmission line with flanges on both ends. Includes expansion connector, O-ring, and hardware kit.



Straight Sections—Fixed Flange With DigitLine® Expansion Connector

T/L Size	Catalog Number	Impedance in Ohms	Approx. Weight
3 1/8"	DL 35-004	50	56 lbs
4 1/16"	DL 45-004	50	110 lbs
6 1/8"	DL 65-004	50	145 lbs
6 1/8"	DL 67-004	75	145 lbs
7 3/16"	DL 77-004	75	180 lbs
8 3/16"	DL 87-004	75	216 lbs
9 3/16"	DL 97-004	75	200 lbs

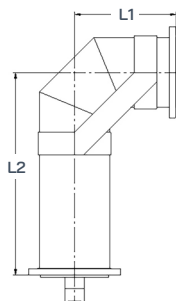
90° reinforced elbow, equal leg.
Includes one anchor connector,
one O-ring and one hardware kit.
Swivel flanges.



90° Elbow (Equal) Reinforced

T/L Size	Catalog Number	Impedance in Ohms	L	Approx. Weight
3 1/8"	DL 35-021	50	6"	13 lbs
4 1/16"	DL 45-021	50	7"	20 lbs
6 1/8"	DL 65-021	50	9"	32 lbs
6 1/8"	DL 67-021	75	9"	27 lbs
7 3/16"	DL 77-021	75	9"	35 lbs
8 3/16"	DL 87-021	75	12"	55 lbs
9 3/16"	DL 97-021	75	12"	75 lbs

90° reinforced elbow, unequal leg.
Includes one anchor connector,
one O-ring and one hardware kit.
Swivel flanges.



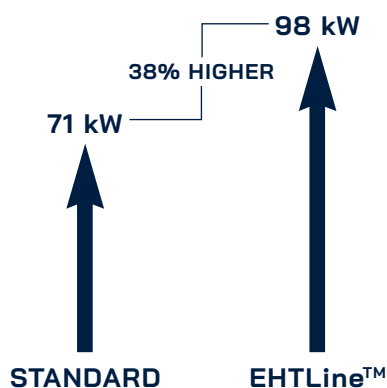
90° Elbow (Unequal) Reinforced

T/L Size	Catalog Number	Impedance in Ohms	L1	L2	Approx. Weight
3 1/8"	DL 37-022	50	6"	9"	10 lbs
4 1/16"	DL 45-022	50	7"	14"	35 lbs
6 1/8"	DL 65-022	50	9"	18"	40 lbs
6 1/8"	DL 67-022	75	9"	18"	40 lbs
7 3/16"	DL 77-022	75	9"	18"	45 lbs
8 3/16"	DL 87-022	75	12"	24"	55 lbs
9 3/16"	DL 97-022	75	12"	24"	75 lbs

State of the art in coaxial transmission lines!

A revolutionary design and unique manufacturing process allow the inner conductor of our new EHTLine® to run cooler than standard line at the same input power. The average power ratings of this new line are up to 45% higher than standard coaxial line. This allows the use of a smaller EHTLine®, lowering the windload on the tower. EHTLine® is available as EIA or Dielectric broadband digiTLine®. Refer to EIA and digiTLine® sections for specifications not listed here.

6 1/8" - 50 OHM POWER HANDLING @ CH38*



***Conditions:** Loss at 0 kw, power at 15 PSIG, 40° C ambient, 120° C inner.
For power ratings @ 0 PSIG multiply by 0.885 for 50 ohm and 0.875 for 75 ohm.

- › Enhanced Power Handling
- › Lower Tower Windloading
- › Proven Connector & Inner Support Designs
- › Available in All Line Sizes & Types

EHT Power Handling

4 1/16" - 50 OHM

Channel	Frequency (MHz)	*Loss (dB/100 ft)	*Avg. Power (kw)
2	57	0.050	166
3	63	0.052	157
4	69	0.055	150
5	79	0.059	140
6	85	0.061	135
FM	88	0.071	132
FM	108	0.079	119
7	177	0.089	92
8	183	0.090	90
9	189	0.092	89
10	195	0.093	87
11	201	0.094	86
12	207	0.096	84
13	213	0.097	83
14	473	0.146	54
16	485	0.148	54
18	497	0.150	53
20	509	0.152	52
22	521	0.154	52
24	533	0.155	51
26	545	0.157	50
28	557	0.159	50
30	569	0.161	49
32	581	0.162	49
34	593	0.164	48
36	605	0.166	48
38	617	0.167	47
40	629	0.169	47
42	641	0.169	47
44	653	0.172	46
46	665	0.174	45
48	677	0.176	45
50	689	0.177	44
52	701	0.179	44
54	713	0.180	44
56	725	0.182	43
58	737	0.183	43
60	749	0.185	42
62	761	0.186	42
64	773	0.188	42
66	785	0.189	41
68	797	0.191	41
69	803	0.191	41

6 1/8" - 50 OHM

Channel	Frequency (MHz)	*Loss (dB/100 ft)	*Avg. Power (kw)
2	57	0.039	343
3	63	0.041	327
4	69	0.043	313
5	79	0.046	293
6	85	0.048	282
FM	88	0.049	276
FM	108	0.052	249
7	177	0.069	194
8	183	0.070	190
9	189	0.071	187
10	195	0.073	184
11	201	0.074	181
12	207	0.075	178
13	213	0.076	175
14	473	0.113	113
16	485	0.115	112
18	497	0.116	110
20	509	0.117	109
22	521	0.119	108
24	533	0.120	106
26	545	0.121	105
28	557	0.123	104
30	569	0.124	102
32	581	0.125	101
34	593	0.127	100
36	605	0.128	99
38	617	0.129	98
40	629	0.130	97
42	641	0.132	96
44	653	0.133	95
46	665	0.134	94
48	677	0.135	93
50	689	0.136	92
52	701	0.138	91
54	713	0.139	90
56	725	0.140	89
58	737	0.141	89
60	749	0.142	88
62	761	0.143	87
64	773	0.145	86
66	785	0.146	85
68	797	0.147	85
69	803	0.147	84

EHT Power Handling

6 1/8" - 75 OHM

Channel	Frequency (MHz)	*Loss (dB/100 ft)	*Avg. Power (kw)
2	57	0.034	300
3	63	0.035	286
4	69	0.037	274
5	79	0.040	256
6	85	0.042	247
FM	88	0.043	242
FM	108	0.048	218
7	177	0.061	169
8	183	0.062	166
9	189	0.063	163
10	195	0.064	160
11	201	0.065	158
12	207	0.066	155
13	213	0.067	153
14	473	0.105	99
16	485	0.107	97
18	497	0.108	96
20	509	0.109	95
22	521	0.111	94
24	533	0.113	92
26	545	0.114	91
28	557	0.115	90
30	569	0.117	89
32	581	0.118	88
34	593	0.119	87
36	605	0.120	86
38	617	0.121	85
40	629	0.123	84
42	641	0.124	83
44	653	0.125	82
46	665	0.126	82
48	677	0.128	81
50	689	0.130	80
52	701	0.131	79
54	713	0.132	78
56	725	0.133	78
58	737	0.134	77
60	749	0.136	76
62	761	0.137	76
64	773	0.138	75
66	785	0.139	74
68	797	0.141	74
69	803	0.141	73

7 3/16" - 75 OHM

Channel	Frequency (MHz)	*Loss (dB/100 ft)	*Avg. Power (kw)
2	57	0.029	400
3	63	0.031	380
4	69	0.032	362
5	79	0.034	337
6	85	0.036	325
FM	88	0.037	319
FM	108	0.041	287
7	177	0.053	221
8	183	0.054	217
9	189	0.055	213
10	195	0.056	210
11	201	0.057	207
12	207	0.058	203
13	213	0.058	200
14	473	0.090	130
16	485	0.092	129
18	497	0.093	127
20	509	0.094	125
22	521	0.095	124
24	533	0.096	122
26	545	0.098	121
28	557	0.099	119
30	569	0.100	118
32	581	0.101	116
34	593	0.102	115
36	605	0.104	114
38	617	0.105	113
40	629	0.106	111
42	641	0.107	110
44	653	0.108	109
46	665	0.109	108
48	677	0.110	107
50	689	0.111	106
52	701	0.113	105
54	713	0.114	104
56	725	0.115	103
58	737	0.116	102
60	749	0.117	101
62	761	0.118	100
64	773	0.119	99
66	785	0.120	98
68	797	0.121	97
69	803	0.122	97

8 3/16" - 75 OHM

Channel	Frequency (MHz)	*Loss (dB/100 ft)	*Avg. Power (kw)
2	57	0.025	511
3	63	0.027	485
4	69	0.028	462
5	79	0.030	431
6	85	0.031	415
FM	88	0.032	407
FM	108	0.036	366
7	177	0.046	282
8	183	0.047	277
9	189	0.048	273
10	195	0.049	268
11	201	0.050	264
12	207	0.050	260
13	213	0.051	256
14	473	0.079	167
16	485	0.080	164
18	497	0.081	162
20	509	0.082	160
22	521	0.083	158
24	533	0.084	156
26	545	0.086	154
28	557	0.086	152
30	569	0.087	150
32	581	0.088	149
34	593	0.088	147
36	605	0.089	145
38	617	0.090	144
40	629	0.091	142
42	641	0.092	141
44	653	0.093	139
46	665	0.094	138
48	677	0.095	136
50	689	0.095	135
52	701	0.096	134

Specifications subject to change without notice.

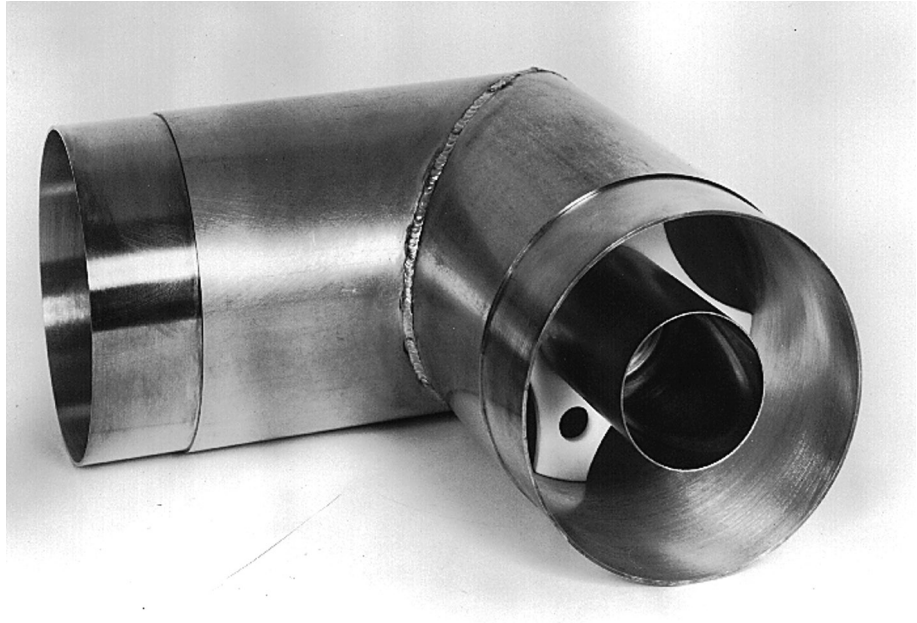
- › **High Conductivity Copper**
- › **Excellent VSWR Characteristics**
- › **Low-loss PTFE™ Dielectric Insulators**
- › **Gas Welded Miter Elbows**
- › **Easy Installation**

Dielectric's 50-ohm unflanged hard drawn copper transmission line is designed for unpressurized indoor applications in AM, FM and all VHF television installations. It has excellent VSWR characteristics. It also makes use of PTFE™ disk supports and high conductivity copper. Insulator undercuts are designed with a magneformed relief that maintains a continuous inner conductor for maximum strength and conductivity.* Components are ruggedly and precisely constructed. Miter elbows are made of heavy wall tubing and are welded for utmost strength and reliability. The inner conductor is supported with PTFE™ discs. A complete line of components in 1 5/8", 3 1/8", 4 1/16" and 6 1/8" inch line sizes provides installation versatility for a wide power range.

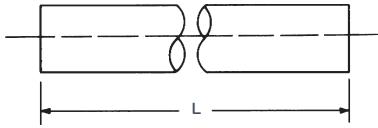
*1 5/8" uses soldered inner bushings.

General Specifications

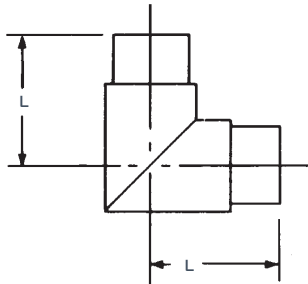
T/L Size	OUTER		INNER	
	OD	ID	OD	ID
1 5/8"	1.625"	1.527"	0.664"	0.588"
3 1/8"	3.125"	3.072"	1.315"	1.231"
4 1/16"	4.062"	3.935"	1.711"	1.661"
6 1/8"	6.125"	5.981"	2.600"	2.520"



Straight Sections

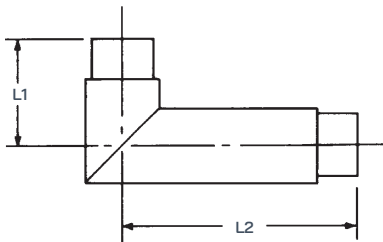


T/L Size	Catalog Number	Impedance in Ohms	L	Approx. Weight
1 5/8"	265-002	50	20'	25 lbs
3 1/8"	365-002	50	20'	52 lbs
4 1/16"	465-002	50	20'	62 lbs
6 1/8"	665-002	50	20'	67 lbs



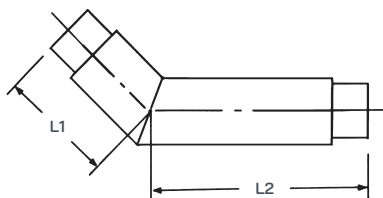
90° Elbow Equal Leg

T/L Size	Catalog Number	Impedance in Ohms	L	Approx. Weight
1 5/8"	265-017	50	3"	1.75 lbs
3 1/8"	365-017	50	6"	4 lbs
4 1/16"	465-017	50	6"	5 lbs
6 1/8"	665-017	50	9"	13 lbs



90° Elbow Unequal Leg

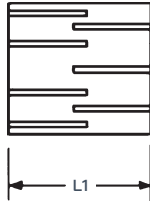
T/L Size	Catalog Number	Impedance in Ohms	L1	L2	Approx. Weight
1 5/8"	265-018	50	2.44"	5.94"	3 lbs
3 1/8"	365-018	50	3.75"	8"	6 lbs
4 1/16"	465-018	50	6"	12"	7 lbs
6 1/8"	665-018	50	6"	12"	22 lbs



45° Elbow Unequal Leg

T/L Size	Catalog Number	Impedance in Ohms	L1	L2	Approx. Weight
1 5/8"	265-020	50	2.43"	5.94"	3 lbs
3 1/8"	365-020	50	3.75"	8"	6 lbs
4 1/16"	465-020	50	6"	12"	7 lbs
6 1/8"	665-020	50	6"	12"	22 lbs

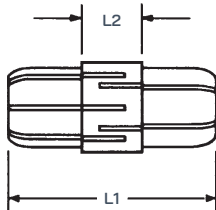
For joining line sections and components. Consists of outer sleeve, inner conductor and two clamps. Coupling, straight, unpressurized. Includes two hose clamps and inner conductor connector.



Unflanged Coupling

T/L Size	Catalog Number	Impedance in Ohms	L	Approx. Weight
1 5/8"	265-008	50	3"	.5 lb
3 1/8"	365-008	50	3 9/16"	1 lb
4 1/16"	465-008	50	4"	2 lbs
6 1/8"	665-008	50	4 1/2"	4 lbs

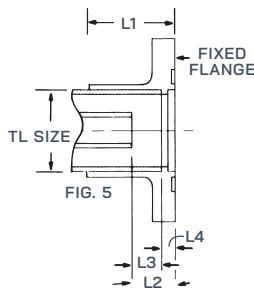
Connectors for joining inner conductors.



Unflanged Connectors, Inner Conductor

T/L Size	Catalog Number	Impedance in Ohms	L1	L2	Approx. Weight
1 5/8"	265-007	50	2"	0.06"	2 oz
3 1/8"	365-007	50	2 1/2"	0.06"	3 oz
4 1/16"	465-007	50	4 1/4"	1.00"	4 oz
6 1/8"	665-007	50	3 7/16"	1.06"	8 oz

To flange field cut line. Cannot be pressurized. Supplied with hose clamp only. The dimensions given are for cutting back the inner conductor of transmission line onto which a clamp type flange is to be used.



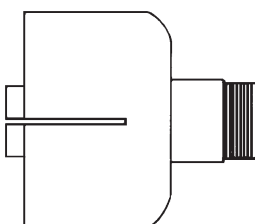
Mechanical Flange

T/L Size	Catalog Number	L1	L2	L3	L4	Approx. Weight
1 5/8"	260-015	1.94"	0.59" $\pm \frac{0.03}{0}$	.40" $\pm \frac{0.03}{0}$	.187"	2 lbs
3 1/8"	360-015	2.25"	0.91" $\pm \frac{0.03}{0}$	.47" $\pm \frac{0.03}{0}$	.437"	3 lbs
4 1/16"	460-015	2.31"	1.22" $\pm \frac{0.03}{0}$	.91" $\pm \frac{0.03}{0}$	.310"	6 lbs
6 1/8"	660-015	4.78"	1.28" $\pm \frac{0.03}{0}$	.90" $\pm \frac{0.03}{0}$	.375"	7 lbs

Reducer, Unflanged to Type "N"

To Type "N" Female

Supplied with hose clamp.

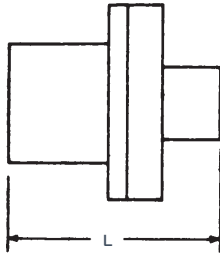


T/L Size	Catalog Number	Impedance in Ohms
1 5/8"	265-063	50
3 1/8"	365-063	50

To Type "N" Male

T/L Size	Catalog Number	Impedance in Ohms
1 5/8"	265-062	50
3 1/8"	365-062	50

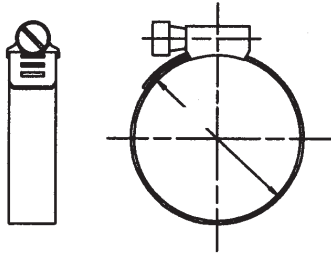
Requires two couplings (not supplied).



Reducer, 50-Ohm Unflanged

T/L Size	Catalog Number	Impedance in Ohms	L	Approx. Weight
3 5/8" to 1 5/8"	365-060	50	5"	3 lbs
4 1/16" to 3 1/8"	465-060	50	7"	6 lbs
6 1/8" to 4 1/16"	655-060	50	9"	10 lbs
6 1/8" to 3 1/8"	655-061	50	6 3/4"	9 lbs

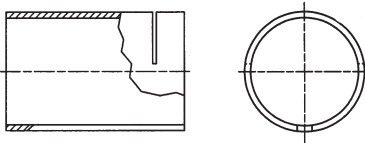
All stainless steel band and screw.



Coupling Clamps

Outer Diameter	Catalog Number
1 5/8"	250-009
3 1/8"	350-009
4 1/16"	450-009
6 1/8"	650-009
8 3/16"	850-009
9 3/16"	950-009

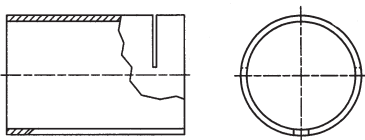
Guide for cutting outer conductors in the field.



Cutoff Guide (Outer Conductors)

Outer Conductor O.D.	Catalog Number	Approx. Weight
1 5/8"	260-040	1 lb
3 1/8"	360-040	2 lbs
4 1/16"	460-040	4 lbs
6 1/8"	660-040	6 lbs

Guide for cutting inner conductors in the field.

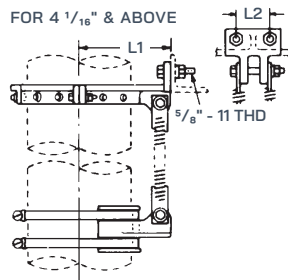


Cutoff Guide (Inner Conductors)

Outer Conductor O.D.	Catalog Number	Approx. Weight
1 5/8"	265-041	3 oz
3 1/8"	365-041	6 oz
4 1/16"	465-041	8 oz
6 1/8"	655-041	6 oz

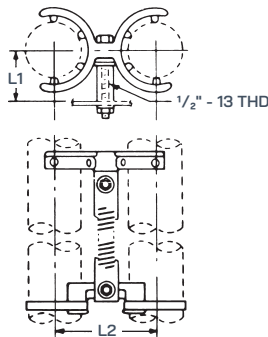
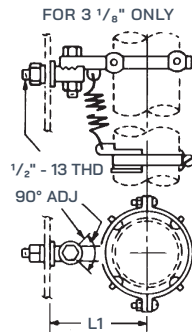
Quality Hangers & Accessories

The materials for all components of hangers and kits are carefully selected to resist deterioration from heat, cold, humidity, or other weather conditions as well as unusual corrosive atmospheric contaminants, such as exist in industrial or coastal areas. Such material as bronze and brass castings and stainless steel springs and hardware are typical.



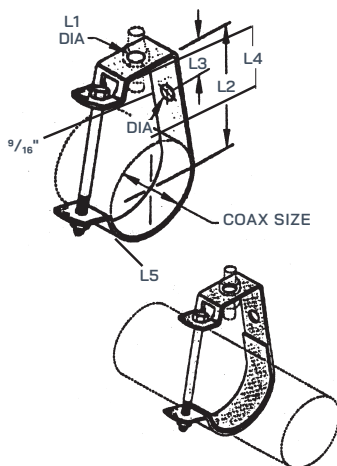
Single Vertical Expansion

T/L Size	Catalog Number	L1	L2	Approx. Weight
3 1/8"	370-036	5"		3 lbs
4 1/16"	470-036	5 3/4"	2 3/8"	7 lbs
6 1/8"	670-036	6 7/8"	2 3/8"	19 lbs
7 3/16"	770-036	7.5"	3"	22 lbs
8 3/16"	870-039	8"	3"	25 lbs
9 3/16"	970-039	8"	3"	26 lbs



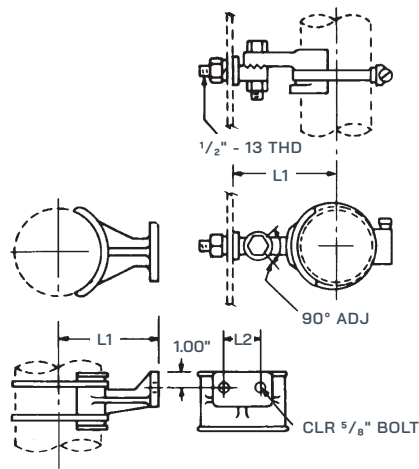
Dual Vertical Expansion

T/L Size	Catalog Number	L1	L2	Approx. Weight
3 1/8"	370-037	3 1/8"	5 1/2"	6 lbs



Ceiling Hanger Kit

T/L Size	Catalog Number	L1	L2	L3	L4	L5
3 1/8"	DC 370-050	9/16"	4 7/8"	1 1/8"	2 1/2"	3/8" - 16 x 5"
4 1/16"	DC 470-050	11/16"	6 1/8"	1 1/8"	3 1/8"	3/8" - 16 x 6 1/2"
6 1/8"	DC 670-050	13/16"	7 3/4"	1 1/4"	3 1/2"	3/8" - 16 x 8 1/2"
7 3/16"	DC 770-050	15/16"	9 1/4"	1 1/4"	3 7/8"	3/8" - 16 x 10 1/2"
8 3/16"	DC 870-050	15/16"	9 1/4"	1 1/4"	3 7/8"	3/8" - 16 x 10 1/2"

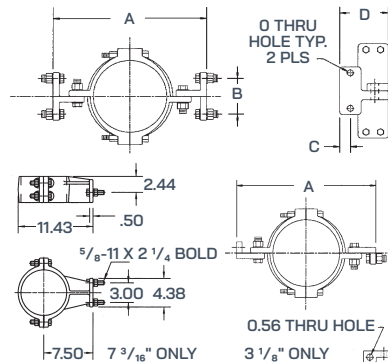


Single, Fixed

For use with vertical runs under 1000 ft.

T/L Size	Catalog Number	L1	Approx. Weight	
3 1/8"	370-034	5"	1 lb	

T/L Size	Catalog Number	L1	L2	Approx. Weight
4 1/16"	470-034	5 3/4"	2 3/8"	5 lbs
6 1/8"	670-034	6 7/8"	2 3/8"	6 lbs
7 3/16"	770-034	7 1/2"	3"	8 lbs
8 3/16"	870-034	8"	3"	11 lbs
9 3/16"	970-034	8"	3"	11 lbs



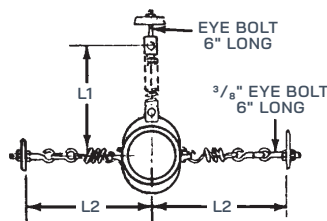
Single, Fixed, Heavy Duty Hangers

For use with vertical runs under 1000 ft.

T/L Size	Catalog Number	A	B	C	D	Thru Holes
3 1/8"	370-042	10"	—	—	—	—
4 1/16"	470-042	11 1/2"	2 3/8"	7/8"	3 7/8"	9/16"
6 1/8"	670-042	13 3/4"	2 3/8"	15/16"	2 15/16"	11/16"
7 3/16"	770-042	SEE DRAWING AT LEFT				
8 3/16"	870-042	16"	3"	31/32"	4 5/16"	11/16"
9 3/16"	970-042	17 1/2"	3"	1 3/32"	4 13/16"	11/16"

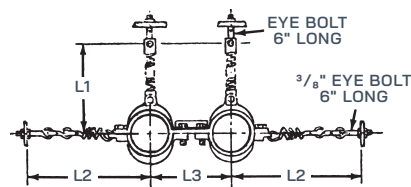
Single Horizontal Three-Point Suspension Hangers

For horizontal suspension of a single line.



T/L Size	Catalog Number	L1	L2	Approx. Weight
3 1/8"	370-032	15 1/8"	15"	5 lbs
4 1/16"	470-032	18 1/2"	17 1/4"	7 lbs
6 1/8"	670-032	23 3/4"	16 3/4"	12 lbs
7 3/16"	770-032	24 1/4"	17 3/8"	20 lbs
8 3/16"	870-032	24 3/4"	17 7/8"	30 lbs
9 3/16"	970-032	25 1/4"	18 3/8"	18 lbs

*Indicates free length (No Load)

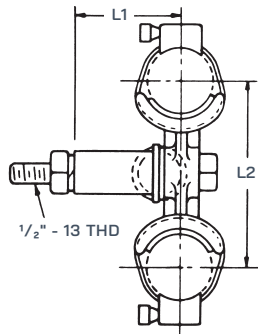


Dual Horizontal Three-Point Suspension Hangers

For horizontal suspension of dual lines.

T/L Size	Catalog Number	L1	L2	L3	Approx. Weight
3 1/8"	370-033	15 1/8"	15"	5 1/2"	9 lbs
4 1/16"	470-033	20 3/4"	17 1/4"	6 1/2"	11 lbs
6 1/8"	670-033	28"	16 3/4"	8 3/4"	19 lbs

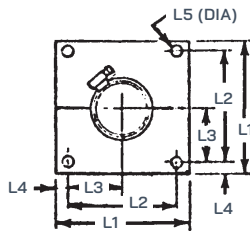
*Indicates free length (No Load)



Dual, Fixed

T/L Size	Catalog Number	L1	L2	Approx. Weight
3 1/8"	370-035	3 5/32"	5 1/2"	2 lbs

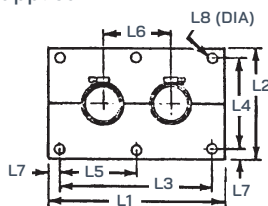
Supports single line at point of entry through wall. One anchor required on each side of wall. Mounting bolts not supplied.



Single Horizontal Anchor

T/L Size	Catalog Number	L1	L2	L3	L4	L5	Approx. Weight
1 5/8"	270-028	6"	4 7/8"	2 7/16"	9/16"	9/16"	2 lbs
3 1/8"	370-028	8"	6 7/8"	3 7/16"	9/16"	9/16"	4 lbs
4 1/16"	470-028	9"	7 3/4"	3 7/8"	5/8"	9/16"	5 lbs
6 1/8"	670-028	11 3/4"	10 1/4"	5 1/8"	3/4"	9/16"	15 lbs
7 3/16"	770-028	16"	13 1/2"	6 3/4"	1 1/4"	3/4"	34 lbs
8 3/16"	870-028	16"	13 1/2"	6 3/4"	1 1/4"	3/4"	32 lbs
9 3/16"	970-028	16"	13 1/2"	6 3/4"	1 1/4"	3/4"	29 lbs

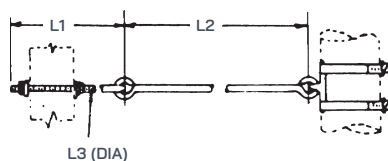
Supports two lines at point of entry through wall. One anchor required on each side of wall. Mounting bolts not supplied.



Dual Horizontal Anchor

T/L Size	Catalog Number	L1	L2	L3	L4	L5	L6	L7	L8	Approx. Weight
1 5/8"	270-029	9 3/4"	6"	8 5/8"	4 7/8"	4 5/16"	3 3/4"	9/16"	9/16"	4 lbs
3 1/8"	370-029	13 1/2"	8"	12 3/8"	6 7/8"	6 3/16"	5 1/2"	9/16"	9/16"	7 lbs
4 1/16"	470-029	14 1/2"	9"	13 1/4"	7 3/4"	6 5/8"	6 1/2"	5/8"	9/16"	8 lbs
6 1/8"	670-029	22"	11 3/4"	20 1/2"	10 1/4"	10 1/4"	10 1/4"	3/4"	9/16"	30 lbs

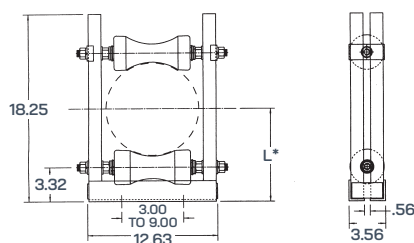
Mounts through single hole. Complete with two hose clamps. Used to restrict lateral motion of line while permitting vertical and horizontal movement.



Lateral Braces

T/L Size	Catalog Number	L1	L2	L3	Approx. Weight
3 1/8"	370-038	7 3/4"	38 3/4"	3/8"	2 lbs
4 1/16"	470-038	7 3/4"	38 3/4"	3/8"	3 lbs
6 1/8"	670-038	7 3/4"	38 3/4"	3/8"	2 lbs
7 3/16"	770-038	7 3/4"	38 3/4"	3/8"	4 lbs
8 3/16"	870-038	7 3/4"	38 3/4"	3/8"	4 lbs
9 3/16"	970-038	7 3/4"	38 3/4"	3/8"	4 lbs

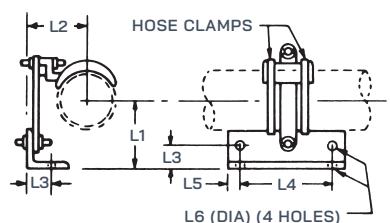
Supports single horizontal line.
Two required for dual lines.
Mounting bolts not supplied.
Rollers accommodate no vertical movement; use 3-point suspension hangers for horizontal runs when length of vertical run or stiffness of line will require vertical as well as horizontal movement of the horizontal run.



*L DIM IS ADJUSTABLE & INDICATES MIN.

Horizontal Roller Assembly

T/L Size	Catalog Number	L
1 5/8"	270-027	—
3 1/8"	370-027	—
4 1/16"	470-027	6 1/2"
6 1/8"	670-027	7 1/2"
7 3/16"	770-027	8"
8 3/16"	870-027	8 1/2"
9 3/16"	970-027	9



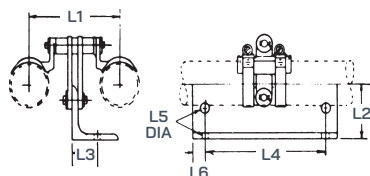
Single Swivel Hangers

T/L Size	Catalog Number	L1	L2	L3	L4	L5	L6 Dia.	Approx. Weight
1 5/8"	270-030	2 1/16"	1 1/2"	1 1/8"	5"	1/2"	9/32"	2 lbs
3 1/8"	370-030	2 17/32"	2 7/8"	1 1/8"	5"	1/2"	7/16"	2 lbs

For dual horizontal line runs.
Takes care of some horizontal line expansion but permits no vertical movement. Use 3-point suspension hangers for horizontal runs when length of vertical run or stiffness of line will require vertical as well as horizontal movement of the horizontal run.

Dual Swivel Hangers

T/L Size	Catalog Number	L1	L2	L3	L4	L5 Dia.	L6	Approx. Weight
1 5/8"	270-031	3 3/4"	2 1/16"	1 1/8"	5"	7/16"	1/2"	3 lbs
3 1/8"	370-031	5 1/2"	2 15/32"	1 1/8"	5"	7/16"	1/2"	4 lbs



Insulated Hangers

Available for FM installations onto AM towers. Contact factory for details,

For spring tension charts refer to installation guide.

3 1/8" 50-ohm Line (Channels 2-69)

Peak Power Rating (kW) 2,180

Peak Voltage Rating (kV) 10

Channel	Loss dB/ 100'	Avg.* Power kW	Efficiency (%) Total Length in Feet					
			200	600	1000	1200	1600	2000
2	0.072	71	96.7	90.5	84.7	81.9	76.6	71.7
3	0.076	68	96.6	90.0	83.9	81.0	75.5	70.3
4	0.080	64	96.4	89.5	83.2	80.2	74.5	69.2
5	0.086	60	96.1	88.9	82.1	78.9	72.8	67.4
6	0.089	58	96.0	88.4	81.5	78.2	72.0	66.4
201-FM	0.093	56	95.9	88.1	80.9	77.6	71.3	65.5
300-FM	0.103	50	95.4	86.9	79.1	75.4	68.7	62.5
7	0.130	40	94.2	83.6	74.1	69.9	62.0	54.9
8	0.132	39	94.1	83.4	73.8	69.5	61.5	54.4
9	0.134	38	94.0	83.1	73.4	69.2	61.0	53.8
10	0.136	38	94.0	82.9	73.1	68.8	60.6	53.4
11	0.138	37	93.8	82.6	72.8	68.3	60.2	52.9
12	0.141	37	93.7	82.3	72.3	67.7	59.5	52.2
13	0.143	36	93.6	82.1	71.9	67.4	59.1	51.6
14	0.223	24	90.2	73.5	59.8	54.0	44.0	35.7
16	0.227	24	90.1	73.1	59.3	53.4	43.3	35.1
18	0.231	24	89.9	72.7	58.8	52.8	42.7	34.5
20	0.234	23	89.8	72.4	58.3	52.4	42.2	33.9
22	0.237	23	89.7	72.1	57.9	52.0	41.8	33.5
24	0.240	23	89.5	71.8	57.5	51.5	41.3	33.0
26	0.243	23	89.4	71.5	57.2	51.1	40.9	32.7
28	0.247	22	89.3	71.1	56.6	50.5	40.3	32.0
30	0.250	22	89.1	70.8	56.2	50.1	39.8	31.5
32	0.254	22	89.0	70.4	55.7	49.6	39.2	31.1
34	0.256	22	88.9	70.2	55.5	49.3	38.9	30.8
36	0.258	21	88.8	70.0	55.2	49.0	38.7	30.4
38	0.262	21	88.6	69.6	54.7	48.5	38.1	29.9
40	0.265	21	88.5	69.3	54.3	48.1	37.7	29.4
42	0.267	21	88.4	69.2	54.1	47.8	37.4	29.2
44	0.270	21	88.3	68.9	53.7	47.4	37.0	28.8
46	0.274	20	88.1	68.5	53.2	46.9	36.4	28.3
48	0.276	20	88.1	68.3	53.0	46.6	36.2	28.0
50	0.279	20	87.9	68.0	52.6	46.3	35.8	27.6
52	0.282	20	87.8	67.7	52.2	45.9	35.4	27.2
54	0.284	20	87.7	67.5	52.0	45.6	35.1	27.0
56	0.286	20	87.7	67.4	51.8	45.4	34.9	26.8
58	0.290	19	87.5	67.0	51.3	44.9	34.4	26.3
60	0.294	19	87.3	66.6	50.8	44.4	33.9	25.8
62	0.297	19	87.2	66.3	50.5	44.0	33.5	25.5
64	0.299	19	87.1	66.2	50.2	43.8	33.2	25.2
66	0.301	19	87.1	66.0	50.0	43.5	33.0	25.0
68	0.303	19	87.0	65.8	49.8	43.4	32.8	24.8
69	0.303	19	87.0	65.8	49.8	43.4	32.7	24.8

4 1/16" 50-ohm Line (Channels 2-69)

Peak Power Rating (kW) 3,685

Peak Voltage Rating (kV) 13

Channel	Loss dB/ 100'	Avg.* Power kW	Efficiency (%) Total Length in Feet					
			200	600	1000	1200	1600	2000
2	0.050	114	97.7	93.4	89.2	87.2	83.3	79.5
3	0.052	108	97.6	93.0	88.7	86.5	82.5	78.6
4	0.055	103	97.5	92.7	88.2	86.0	81.7	77.7
5	0.059	96	97.3	92.2	87.4	85.0	80.6	76.3
6	0.061	92	97.2	91.9	86.9	84.5	79.9	75.5
201-FM	0.071	89	96.8	90.7	84.9	82.2	77.0	72.1
300-FM	0.079	80	96.4	89.7	83.4	80.4	74.7	69.5
7	0.089	63	96.0	88.5	81.6	78.3	72.2	66.5
8	0.090	62	95.9	88.3	81.3	78.0	71.8	66.0
9	0.092	61	95.9	88.1	81.0	77.6	71.4	65.6
10	0.093	60	95.8	87.9	80.7	77.3	71.0	65.2
11	0.094	59	95.7	87.8	80.4	77.0	70.6	64.7
12	0.096	59	95.7	87.6	80.2	76.7	70.2	64.3
13	0.097	58	95.6	87.4	79.9	76.4	69.9	63.9
14	0.146	39	93.5	81.7	71.4	66.8	58.4	51.0
16	0.148	38	93.4	81.5	71.1	66.4	58.0	50.6
18	0.150	38	93.3	81.3	70.8	66.1	57.6	50.1
20	0.152	37	93.3	81.1	70.5	65.7	57.2	49.7
22	0.154	37	93.2	80.9	70.2	65.4	56.8	49.3
24	0.155	36	93.1	80.7	69.9	65.1	56.4	48.9
26	0.157	36	93.0	80.5	69.6	64.8	56.1	48.5
28	0.159	36	92.9	80.3	69.4	64.5	55.7	48.1
30	0.161	35	92.9	80.1	69.1	64.2	55.3	47.7
32	0.162	35	92.8	79.9	68.8	63.9	55.0	47.3
34	0.164	34	92.7	79.7	68.5	63.6	54.6	47.0
36	0.166	34	92.7	79.5	68.3	63.3	54.3	46.6
38	0.167	34	92.6	79.4	68.0	63.0	54.0	46.3
40	0.169	33	92.5	79.2	67.8	62.7	53.6	45.9
42	0.171	33	92.4	79.0	67.5	62.4	53.3	45.6
44	0.172	33	92.4	78.8	67.2	62.1	53.0	45.2
46	0.174	33	92.3	78.6	67.0	61.8	52.7	44.9
48	0.176	32	92.2	78.5	66.8	61.6	52.4	44.6
50	0.177	32	92.2	78.3	66.5	61.3	52.1	44.2
52	0.179	32	92.1	78.1	66.3	61.0	51.8	43.9
54	0.180	31	92.0	78.0	66.0	60.8	51.5	43.6
56	0.182	31	92.0	77.8	65.8	60.5	51.2	43.3
58	0.183	31	91.9	77.6	65.6	60.3	50.9	43.0
60	0.185	31	91.8	77.5	65.3	60.0	50.6	42.7
62	0.186	30	91.8	77.3	65.1	59.8	50.3	42.4
64	0.188	30	91.7	77.1	64.9	59.5	50.1	42.1
66	0.189	30	91.7	77.0	64.7	59.3	49.8	41.8
68	0.191	30	91.6	76.8	64.5	59.0	49.5	41.5
69	0.191	30	91.6	76.8	64.3	58.9	49.4	41.4

*Power handling refers to EIA, digitLine and Ultimate line. Does not apply to EHTLine or EHT/digitLine. Refer to pages 14-15.

Peak Voltage Ratings are based on 4:1 margin of safety to theoretical.

Peak Power Ratings are calculated from peak voltage according to the formula, $P_{pk} = V_{pk}^2/Z_0$.

To determine the peak power based on the RMS of the peak voltage, divide the listed peak powers by 2.

6 1/8" 50-ohm Line (Channels 2-64)

Peak Power Rating (kW) 8,513

Peak Voltage Rating (kV) 20

Channel	Loss dB/ 100'	Avg.* Power kW	Efficiency (%) Total Length in Feet					
			200	600	1000	1200	1600	2000
2	0.039	240	98.2	94.7	91.4	89.7	86.5	83.5
3	0.041	227	98.1	94.5	90.9	89.2	85.9	82.7
4	0.043	217	98.0	94.2	90.5	88.7	85.3	82.0
5	0.046	202	97.9	93.8	89.9	88.0	84.3	80.8
6	0.048	195	97.8	93.6	89.5	87.6	83.8	80.2
201-FM	0.049	188	97.8	93.5	89.3	87.3	83.5	79.8
300-FM	0.052	169	97.6	93.1	88.7	86.6	82.6	78.7
7	0.069	133	96.9	90.9	85.3	82.6	77.5	72.7
8	0.070	131	96.8	90.7	85.0	82.3	77.2	72.3
9	0.071	129	96.8	90.6	84.8	82.1	76.8	71.9
10	0.073	127	96.7	90.5	84.6	81.8	76.5	71.6
11	0.074	125	96.7	90.3	84.4	81.6	76.2	71.2
12	0.075	123	96.6	90.2	84.2	81.2	75.9	70.9
13	0.076	122	96.6	90.0	84.0	81.1	75.6	70.5
14	0.113	81	94.9	85.5	77.1	73.2	65.9	59.4
16	0.115	80	94.9	85.4	76.8	72.9	65.6	59.0
18	0.116	79	94.8	85.2	76.6	72.6	65.2	58.6
20	0.117	78	94.7	85.0	76.3	72.3	64.9	58.3
22	0.119	77	94.7	84.9	76.1	72.0	64.6	57.9
24	0.120	76	94.6	84.7	75.8	71.8	64.3	57.5
26	0.121	76	94.6	84.6	75.6	71.5	63.9	57.2
28	0.123	75	94.5	84.4	75.4	71.2	63.6	56.8
30	0.124	74	94.4	84.3	75.2	71.0	63.3	56.5
32	0.125	73	94.4	84.1	74.9	70.7	63.0	56.1
34	0.127	73	94.3	84.0	74.7	70.5	62.7	55.8
36	0.128	72	94.3	83.8	74.5	70.2	62.4	55.5
38	0.129	71	94.2	83.7	74.3	70.0	62.1	55.2
40	0.130	70	94.2	83.5	74.1	69.7	61.8	54.8
42	0.132	70	94.1	83.4	73.8	69.5	61.6	54.5
44	0.133	69	94.1	83.2	73.6	69.3	61.3	54.2
46	0.134	68	94.0	83.1	73.4	69.0	61.0	53.9
48	0.135	68	94.0	83.0	73.2	68.8	60.7	53.6
50	0.136	67	93.9	82.8	73.0	68.6	60.5	53.3
52	0.138	67	93.9	82.7	72.8	68.4	60.2	53.0
54	0.139	66	93.8	82.5	72.6	68.1	60.0	52.8
56	0.140	66	93.8	82.4	72.4	67.9	59.7	52.5
58	0.141	65	93.7	82.3	72.2	67.7	59.4	52.2
60	0.142	64	93.7	82.2	72.1	67.5	59.2	51.9
62	0.143	64	93.6	82.0	71.9	67.3	58.9	51.7
64	0.145	63	93.6	81.9	71.7	67.1	58.7	51.4

6 1/8" 75-ohm Line (Channels 2-69)

Peak Power Rating (kW) 5,550

Peak Voltage Rating (kV) 20

Channel	Loss dB/ 100'	Avg.* Power kW	Efficiency (%) Total Length in Feet					
			200	600	1000	1200	1600	2000
2	0.034	206	98.5	95.4	92.5	91.1	88.3	85.5
3	0.035	195	98.4	95.2	92.1	90.7	87.7	84.8
4	0.037	186	98.3	95.0	91.8	90.2	87.2	84.2
5	0.040	173	98.2	94.6	91.2	89.5	86.3	83.1
6	0.042	167	98.1	94.4	90.8	89.1	85.8	82.4
7	0.061	115	97.1	91.8	86.7	84.4	79.7	75.1
8	0.062	113	97.1	91.7	86.6	84.1	79.4	74.9
9	0.063	111	97.0	91.6	86.4	83.9	79.1	74.6
10	0.064	109	97.1	91.5	86.2	83.7	78.9	74.3
11	0.065	107	97.0	91.4	86.0	83.5	78.6	73.9
12	0.066	106	97.0	91.2	85.8	83.2	78.3	73.8
13	0.067	104	96.9	91.1	85.6	83.0	78.0	73.2
14	0.105	70	95.3	86.5	78.5	74.8	67.9	61.6
16	0.107	69	95.2	86.3	78.2	74.4	67.4	61.1
18	0.108	68	95.2	86.1	78.0	74.2	67.2	60.8
20	0.109	67	95.1	86.0	77.7	73.9	66.8	60.3
22	0.111	66	95.0	85.8	77.5	73.6	66.4	60.0
24	0.113	66	94.9	85.5	77.1	73.2	65.9	59.4
26	0.114	65	94.9	85.4	76.9	73.0	65.7	59.1
28	0.115	64	94.8	85.3	76.7	72.8	65.5	58.8
30	0.117	64	94.8	85.1	76.4	72.4	65.0	58.3
32	0.118	63	94.7	85.0	76.2	72.2	64.7	58.0
34	0.119	62	94.7	84.8	76.0	72.0	64.5	57.8
36	0.120	62	94.6	84.7	75.8	71.7	64.2	57.4
38	0.121	61	94.6	84.5	75.6	71.5	63.9	57.1
40	0.123	60	94.5	84.4	75.3	71.2	63.6	56.8
42	0.124	60	94.5	84.3	75.2	71.0	63.3	56.5
44	0.125	59	94.4	84.1	75.0	70.8	63.1	56.2
46	0.126	59	94.3	84.0	74.7	70.0	62.7	55.8
48	0.128	58	94.3	83.8	74.0	70.2	62.4	55.3
50	0.130	58	94.2	83.6	74.1	69.8	61.9	54.9
52	0.131	57	94.1	83.4	74.0	69.6	61.7	54.7
54	0.132	57	94.1	83.3	73.7	69.3	61.4	54.3
56	0.133	56	94.0	83.2	73.5	69.1	61.2	54.0
58	0.134	56	94.0	83.0	73.4	69.0	60.9	53.8
60	0.136	55	93.9	82.9	73.1	68.7	60.6	53.4
62	0.137	55	93.9	82.8	72.9	68.5	60.4	53.1
64	0.138	54	93.8	82.6	72.8	68.3	60.2	52.9
66	0.139	54	93.8	82.5	72.6	68.1	60.0	52.7
68	0.141	54	93.7	82.3	72.3	67.7	59.5	52.3
69	0.141	53	93.7	82.2	72.2	67.6	59.4	52.1

*Power handling refers to EIA, digitLine and Ultimate line. Does not apply to EHTLine or EHT/digitLine. Refer to pages 14-15.

Peak Voltage Ratings are based on 4:1 margin of safety to theoretical.

Peak Power Ratings are calculated from peak voltage according to the formula, $P_{pk} = V_{pk}^2 / Z_0$.

To determine the peak power based on the RMS of the peak voltage, divide the listed peak powers by 2.

COAXIAL POWER & EFFICIENCY TABLES



7 3/16" 75-ohm Line (Channels 2-68)

Peak Power Rating (kW) 7,458

Peak Voltage Rating (kV) 23

Channel	Loss dB/ 100'	Avg.* Power kW	Efficiency (%) Total Length in Feet					
			200	600	1000	1200	1600	2000
2	0.029	282	98.6	95.8	93.21	91.8	89.2	86.6
3	0.031	267	98.5	95.6	92.7	91.4	88.6	86.0
4	0.032	255	98.4	95.4	92.4	91.0	88.1	85.4
5	0.034	238	98.3	95.1	91.9	90.4	87.4	84.5
6	0.036	229	98.3	94.9	91.6	90.0	86.9	83.9
FM	0.037	225	98.2	94.8	91.5	89.9	86.7	83.7
FM	0.041	202	98.0	94.2	90.6	88.8	85.4	82.1
7	0.053	156	97.5	92.7	88.1	85.9	81.7	77.7
8	0.054	153	97.5	92.6	87.9	85.7	81.5	77.3
9	0.055	150	97.4	92.5	87.8	85.5	81.1	77.0
10	0.056	148	97.4	92.4	87.6	85.3	80.9	76.7
11	0.057	145	97.3	92.2	87.4	85.1	80.6	76.4
12	0.058	143	97.3	92.1	87.2	84.9	80.4	76.1
13	0.058	141	97.3	92.0	87.1	84.7	80.1	75.8
14	0.090	92	96.0	88.3	81.3	78.0	71.9	66.1
16	0.092	91	95.9	88.2	81.1	77.8	71.6	65.8
18	0.093	90	95.9	88.1	80.9	77.6	71.3	65.5
20	0.094	88	95.8	87.9	80.7	77.3	71.0	65.1
22	0.095	87	95.8	87.8	80.5	77.1	70.7	64.8
24	0.096	86	95.7	87.7	80.3	76.9	70.4	64.5
26	0.098	85	95.7	87.5	80.1	76.6	70.1	64.2
28	0.099	84	95.6	87.4	79.9	76.4	69.9	63.8
30	0.100	83	95.6	87.3	79.7	76.2	69.6	63.6
32	0.101	82	95.5	87.2	79.5	76.0	69.3	63.3
34	0.102	81	95.5	87.0	79.4	75.8	69.1	63.0
36	0.104	81	95.4	86.9	79.2	75.6	68.8	62.7
38	0.105	80	95.4	86.8	79.0	75.3	68.6	62.4
40	0.106	79	95.3	86.7	78.8	75.1	68.3	62.1
42	0.107	78	95.3	86.6	78.6	74.9	68.1	61.8
44	0.108	77	95.3	86.4	78.4	74.7	67.8	61.5
46	0.109	77	95.2	86.3	78.3	74.5	67.6	61.3
48	0.110	76	95.2	86.2	78.1	74.3	67.3	61.0
50	0.111	75	95.1	86.1	77.9	74.1	67.1	60.7
52	0.113	74	95.1	86.0	77.8	74.0	66.9	60.5
54	0.114	74	95.1	85.9	77.6	73.8	66.6	60.2
56	0.115	73	95.0	85.8	77.4	73.6	66.4	60.0
58	0.116	72	95.0	85.7	77.3	73.4	66.2	59.7
60	0.117	72	94.9	85.6	77.1	73.2	66.0	59.5
62	0.118	71	94.9	85.5	76.9	73.0	65.7	59.2
64	0.119	71	94.9	85.3	76.8	72.8	65.5	58.9
66	0.120	70	94.8	85.2	76.6	72.6	65.3	58.7
68	0.121	69	94.8	85.1	76.5	72.5	65.1	58.5

*Power handling refers to EIA, digitLine and Ultimate line.
Does not apply to EHTLine or EHT/digitLine. Refer to pages 14-15.

Peak Voltage Ratings are based on 4:1 margin of safety to theoretical.

Peak Power Ratings are calculated from peak voltage according to the formula, $P_{pk} = V_{pk}^2 / Z_0$.

To determine the peak power based on the RMS of the peak voltage, divide the listed peak powers by 2.

8 3/16" 75-ohm Line (Channels 2-52)

Peak Power Rating (kW) 9,930

Peak Voltage Rating (kV) 27

Channel	Loss dB/100'	Avg.* Power kW	Efficiency (%) Total Length in Feet				
			800	1000	1400	1800	2000
2	0.028	336	95.0	93.8	91.4	89.0	88.0
3	0.029	320	94.8	93.5	91.0	88.6	97.4
4	0.031	306	94.5	93.2	90.6	88.1	86.9
5	0.033	286	94.2	92.7	90.0	87.3	86.0
6	0.034	275	93.9	92.5	89.6	86.9	85.5
201-FM	0.034	270	93.5	92.4	89.5	86.7	85.3
300-FM	0.038	244	93.2	91.6	88.4	85.4	83.9
7	0.049	191	91.4	89.4	85.5	81.7	79.9
8	0.049	188	91.3	89.2	85.3	81.5	79.6
9	0.050	185	91.2	89.1	85.0	81.2	79.3
10	0.051	182	91.0	88.9	84.8	80.9	79.0
11	0.052	179	90.9	88.7	84.6	80.7	78.8
12	0.053	176	90.8	88.6	84.4	80.4	78.5
13	0.053	174	90.6	88.4	84.2	80.2	78.2
14	0.079	117	86.5	83.4	77.5	72.1	69.5
15	0.079	116	86.4	83.3	77.4	72.0	69.4
16	0.080	116	86.3	83.2	77.3	71.8	69.2
17	0.080	115	86.2	83.1	77.2	71.7	69.0
18	0.081	114	86.2	83.0	77.0	71.5	68.9
19	0.081	114	86.1	82.9	76.9	71.4	68.7
20	0.082	113	86.0	82.8	76.8	71.2	68.6
21	0.082	112	85.9	82.7	76.7	71.1	68.4
22	0.083	112	85.8	82.6	76.6	70.9	68.3
23	0.083	111	85.8	82.5	76.4	70.8	68.1
24	0.084	110	85.7	82.4	76.3	70.7	68.0
25	0.084	110	85.6	82.4	76.2	70.5	67.8
26	0.085	109	85.5	82.3	76.1	70.4	67.7
27	0.085	108	85.5	82.2	76.0	70.2	67.5
28	0.086	108	85.4	82.1	75.9	70.1	67.4
29	0.086	107	85.3	82.0	75.8	70.0	67.3
30	0.087	107	85.3	81.9	75.6	69.8	67.1
31	0.087	106	85.2	81.8	75.5	69.7	67.0
32	0.088	106	85.1	81.7	75.4	69.6	66.8
33	0.088	105	85.0	81.7	75.3	69.4	66.7
34	0.088	105	85.0	81.6	75.2	69.3	66.5
35	0.089	104	84.9	81.5	75.1	69.2	66.4
36	0.089	104	84.8	81.4	75.0	69.1	66.3
37	0.090	103	84.8	81.3	74.9	68.9	66.1
38	0.090	102	84.7	81.2	74.8	68.8	66.0
39	0.091	102	84.6	81.2	74.7	68.7	65.9
40	0.091	102	84.6	81.1	74.6	68.6	65.7
41	0.092	101	84.5	81.0	74.5	68.4	65.6
42	0.092	101	84.4	80.9	74.3	68.3	65.5
43	0.092	100	84.4	80.8	74.2	68.2	65.3
44	0.093	100	84.3	80.8	74.1	68.1	65.2
45	0.093	99	84.2	80.7	74.0	67.9	65.1
46	0.094	99	84.2	80.6	73.9	67.8	65.0
47	0.094	98	84.1	80.5	73.8	67.7	64.8
48	0.095	98	84.0	80.4	73.7	67.6	64.7
49	0.095	97	84.0	80.4	73.6	67.5	64.6
50	0.095	97	83.9	80.3	73.5	67.4	64.5
51	0.096	97	83.8	80.2	73.4	67.2	64.3
52	0.096	96	83.8	80.1	73.3	67.1	64.2

9 3/16" 75-ohm Line (Channels 2-38)

Peak Power Rating (kW) 12,568

Peak Voltage Rating (kV) 30

Efficiency (%) Total Length in Feet

Channel	Loss dB/ 100'	Avg.* Pow- er kW	800	1000	1400	1800	2000
2	0.004	415	99.2	99.0	98.6	98.2	98.0
3	0.005	395	99.1	98.8	98.4	97.9	97.7
4	0.006	377	98.9	98.6	98.1	97.6	97.3
5	0.007	353	98.6	98.3	97.6	97.0	96.7
6	0.008	340	98.5	98.1	97.4	96.6	96.3
201-FM	0.009	334	98.4	98.0	97.2	96.4	96.0
300-FM	0.012	302	97.8	97.3	96.2	95.2	94.6
7	0.024	236	95.6	94.5	92.5	90.4	89.4
8	0.025	232	95.4	94.3	92.1	90.9	88.9
9	0.027	228	95.2	94.1	91.8	89.6	88.5
10	0.028	224	95.0	93.8	91.5	89.2	88.0
11	0.029	221	94.8	93.6	91.1	88.8	87.6
12	0.030	218	94.6	93.3	90.8	88.3	87.1
13	0.031	215	94.5	93.1	90.5	87.9	86.7
14	0.068	145	88.2	85.5	80.3	75.4	73.1
15	0.069	144	88.1	85.4	80.2	75.3	72.9
16	0.069	143	88.1	85.3	80.0	75.1	72.8
17	0.070	142	88.0	85.2	79.9	75.0	72.6
18	0.070	141	87.9	85.1	79.8	74.9	72.5
19	0.070	140	87.9	85.1	79.7	74.7	72.3
20	0.071	139	87.8	85.0	79.6	74.6	72.2
21	0.071	139	87.7	84.9	79.5	74.5	72.1
22	0.072	138	87.6	84.8	79.4	74.3	71.9
23	0.072	137	87.6	84.7	79.3	74.2	71.8
24	0.072	136	87.5	84.6	79.2	74.1	71.6
25	0.073	135	87.4	84.6	79.1	74.0	71.5
26	0.073	135	87.4	84.5	79.0	73.8	71.4
27	0.074	134	87.3	84.4	78.9	73.7	71.2
28	0.074	133	87.3	84.3	78.8	73.6	71.1
29	0.074	132	87.2	84.3	78.7	73.5	71.0
30	0.075	132	87.1	84.2	78.6	73.3	70.9
31	0.075	131	87.1	84.1	78.5	73.2	70.7
32	0.076	130	87.0	84.0	78.4	73.1	70.6
33	0.076	130	86.9	83.9	78.3	73.0	70.5
34	0.076	129	86.9	83.9	78.2	72.9	70.3
35	0.077	128	86.8	83.8	78.1	72.7	70.2
36	0.077	128	86.8	83.7	78.0	72.6	70.1
37	0.078	127	86.7	83.6	77.9	72.5	70.0
38	0.078	127	86.6	83.6	77.8	72.4	69.8

*Power handling refers to EIA, digitLine and Ultimate line.

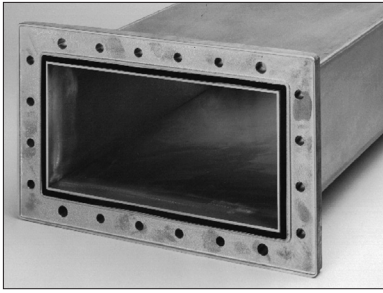
Does not apply to EHTLine or EHT/digitLine. Refer to pages 14-15.

Peak Voltage Ratings are based on 4:1 margin of safety to theoretical.

Peak Power Ratings are calculated from peak voltage according to the formula, $P_{pk} = V_{pk}^2 / Z_o$.

To determine the peak power based on the RMS of the peak voltage, divide the listed peak powers by 2.

NOTES



Rectangular Waveguide - pages 32-40 for High Power-High Efficiency UHF Applications

Dielectric has been a major supplier of large high-power waveguide to the microwave industry for the past two decades. This experience has resulted in design, manufacturing, and testing techniques that represent the current state of the art.

THE HIGH POWER ALTERNATIVE

Each form of transmission line has certain features which make its use more advantageous over other types of transmission systems. For UHF television applications, waveguide is particularly attractive because it out performs coaxial transmission line in virtually every area of importance.

Waveguide can handle power levels far in excess of coaxial line ratings.

Because there is no center conductor, waveguide is much less susceptible to shock and vibration during shipping and installation. No center conductor means no insulators and consequently lower loss.

COMPLETE SYSTEMS

Dielectric's product line includes not only individual waveguide components and accessories, but integrated waveguide feed systems as well. Typical feed systems include such items as straight waveguide, sweeps and elbows, mitre bends, twists, switches, couplers, and other components as required for a specific application. In order to provide system compatibility, each component must be manufactured with stringent electrical and mechanical controls.

QUALITY MANUFACTURING

Extreme care is taken to ensure a superior surface finish on the flanges. Flange flatness tolerances do not exceed a total deviation over 5 to 10 mils on a flange face. Deviations exceeding these dimensional tolerances can result in serious arcing at the flange junction in a high power system.

Another unique process welds the flanges in a manner that prevents localized distortion, thus minimizing the periodic VSWR spike that is often characteristic of transmission line systems. Facing the flanges, after welding, ensures accurate parallelism, thus minimizing interface discontinuities.

PRECISION WELDING

Dielectric's waveguide is spayarc argon® welded by unique techniques using precision tooling and fixtures. These techniques eliminate distortion and bow by maintaining uniform stress loading and uniform weld penetration. Consequently, mechanical stability is attained and performance degradation of the guide with aging is eliminated. This is extremely important in long waveguide runs where low VSWR is necessary.

Pressurization Systems

Rectangular waveguide, by the nature of its shape and relatively thin walls, is not conducive to high pressurization; but a slight positive pressure in any transmission line system is necessary to prevent condensation during temperature change.

The guide must not be over-pressurized because the walls will be deformed, causing excessive VSWR or a ruptured waveguide window.

The physical parameters of the rectangular waveguide determine the electrical operating characteristics. The dimension of the "broad wall" determines the frequency range of operation.

The dimension of the narrow wall sets the breakdown voltage of the waveguide and therefore the peak power handling capability. It should be noted that as this dimension decreases, transfer efficiency decreases.

The ratio between the broad and narrow wall recommended by the Electronics Industries Association is 2:1. This combination yields a favorable compromise between electrical and mechanical properties and has been utilized extensively by the broadcast industry.

For special applications, Dielectric offers a complete line of rectangular waveguide components including sidewall couplers, directional couplers, folded tees (magic tees), phase shifters, special sweeps and elbows, special waveguide lengths, and half height waveguide.

LPB-100 Standby System

The LPB-100 is a standby system designed to prevent negative pressure in large volume waveguide runs due to rapid temperature change.

As this rate of change is often much too great for the primary compressor/dehydrator to supply, a pressure switch starts the LPB-100 blower, rapidly supplying a very large volume of dry air through a cylinder containing molecular sieve type desiccant. When the pressure is stabilized, the LPB-100 returns to standby, with its desiccant tower regenerated by a small flow of dry air from the primary compressor/dehydrator.

Gas Dump

Because of the large volume of air and large surface of the guide, a rapid change of ambient temperature can cause a relatively fast change in the internal pressure. The extra pressure must be bled off rapidly and this is accomplished by the gas dump. The gas dump consists of a precisely weighted cap over an opening in the guide. The cap "pops" off at the maximum pressure for which the guide is designed. When the guide cools, the automatic dehydrator must have sufficient capacity to replace the air in a short time.

Rectangular Waveguide Parameters

Waveguide Designation	Inside Dimensions	Inside Dimension Tolerance	Outside Dimensions	Wall Thickness	Recommended Operating Range (Megahertz)	Max. Pressure
WR 1800	18.00" x 9.00"	± .020"	18.375" x 9.375"	.190"	470-602	0.25 PSIG
WR 1500	15.00" x 7.50"	± .015"	15.250" x 7.750"	.125"	506-728	0.25 PSIG
WR 1150	11.50" x 5.75"	± .015"	11.750" x 6.000"	.125"	662-806	0.50 PSIG

General Specifications

Operating Temperature Range:

-40 Deg. C to +52 Deg. C

Humidity:

Up to 100% R.H. Including condensate and rain.

Altitude:

0 to 10,000 feet A.M.S.L. S.T.P.

Nominal VSWR (without tuning):

1.1:1 for standard waveguide line run.

Recommended Line Lengths

Channel	WR 1800	WR 1500	WR 1150
14	143 5/8"		
15	143 5/8"		
16	143 5/8"		
17	138"		
18	138"	143 5/8"	
19	143 5/8"	143 5/8"	
20	143 5/8"	138"	
21	143 5/8"	138"	
22	138"	143 5/8"	
23	138"	143 5/8"	
24	143 5/8"	143 5/8"	
25	143 5/8"	138"	
26	143 5/8"	138"	
27	143 5/8"	143 5/8"	
28	138"	143 5/8"	
29	138"	143 5/8"	
30	143 5/8"	138"	
31	143 5/8"	138"	
32	143 5/8"	143 5/8"	
33	138"	143 5/8"	
34	138"	143 5/8"	
35	143 5/8"	138"	
36		138"	
37		143 5/8"	
38		143 5/8"	
39		143 5/8"	
40		138"	
41		138"	
42		143 5/8"	
43		143 5/8"	
44		143 5/8"	138"
45		138"	138"
46		138"	143 5/8"
47		143 5/8"	143 5/8"
48		143 5/8"	143 5/8"
49		143 5/8"	138"
50		143 5/8"	138"
51		138"	143 5/8"
52		138"	143 5/8"
53		143 5/8"	138"
54		143 5/8"	138"
55		143 5/8"	143 5/8"
56		143 5/8"	143 5/8"
57			143 5/8"
58			138"
59			138"
60			143 5/8"
61			143 5/8"
62			143 5/8"
63			138"
64			138"
65			138"
66			143 5/8"
67			143 5/8"
68			138"
69			138"

Section Length vs VSWR

Waveguide, similar to standard rigid coaxial line, requires selection of a proper length for a given channel to obtain a system with low VSWR. The table to the left is provided for proper length selection.

Combining Channels

When combining channels into waveguide both the size and length must be evaluated to obtain low VSWR. The tables at left and below list recommended and prohibited standard line lengths by waveguide size and channel. For specific applications special designs may be available. Contact Dielectric for more information.

Broadband Systems

In specific applications Dielectric has the ability to design broadband systems to combine two or more UHF channels into a single waveguide run. Contact Dielectric for more information.

Prohibited Line Lengths

(size vs. length vs. channel)

WR 1800	
11.5'	14, 15, 19, 20, 25, 26, 30, 31, 36, 37, 42, 43, 48, 49
11.75'	14, 18, 19, 23, 24, 29, 30, 35, 36, 41, 42, 47, 48
11.95'	17, 18, 22, 23, 28, 29, 33, 34, 39, 40, 45, 46, 51, 52
WR 1500	
11.5'	14, 17, 18, 22, 23, 26, 27, 32, 33, 37, 38, 43, 44, 48, 49, 54, 55, 60, 61, 66, 67
11.75'	14, 17, 18, 21, 22, 26, 27, 30, 31, 36, 37, 41, 42, 47, 48, 52, 53, 58, 59, 64, 65
11.95'	16, 17, 20, 21, 25, 26, 30, 31, 35, 36, 40, 41, 45, 46, 51, 52, 57, 58, 62, 63, 68, 69
WR 1150	
11.5'	38, 39, 42, 43, 46, 47, 51, 52, 56, 57, 61, 62, 66, 67
11.75'	37, 38, 41, 42, 45, 46, 50, 51, 54, 55, 59, 60, 65, 66
11.95'	40, 41, 44, 45, 49, 50, 53, 54, 58, 59, 63, 64, 68, 69

Minimum Horizontal Run Length vs. Height

Waveguide Size	Vertical Run in Feet	Minimum Required Horizontal Run Length
WR 1800	1800-2000	120 FT.
	1200-1800	106 FT.
	900-1200	96 FT.
	500-900	84 FT.
	400-500	72 FT.
WR 1500	1400-2000	84 FT.
	800-1400	72 FT.
	400-800	60 FT.
WR 1150	1800-2000	72 FT.
	900-1800	60 FT.
	400-900	48 FT.

Note: 11.75' (141") lengths can be used for multiple channel applications.

= Recommended
 = Acceptable
 = Not Recommended

System Worksheet

1. GAS BARRIER (500XX-13)

Located before the gas dump section inside the transmitter building. If the elbow complex at the top of the vertical run is coax, an additional Gas Barrier may be required.

2. GAS DUMP SECTION (500XX-18)

Located horizontally with the gas dump hanging downward. Valve is set to protect the guide from high pressure

3. WALL ANCHOR PLATE (500XX-2)

Used to anchor the horizontal run of waveguide to the transmitter building wall. A second one may be used on the interior building wall for aesthetic purposes.

4. RECTANGULAR WAVEGUIDE STRAIGHT SECTIONS (500XX-10)

Bolted together end to end with the seal always facing toward the antenna, allowing observation of the contact surface and seal during installation. Section length dependent upon channel.

5. SWEEP ELBOWS (500XX-8)

Used anywhere a 90° bend is required. One is normally used to connect the bottom of the vertical run to the horizontal run. Where space is limited a mitre elbow may be substituted.

6. TUNER SECTIONS (500XX-21)

As a rule of thumb, one tuner may be placed as close to the building as practical, one at the tower base elbow (vertically is preferred), one at the tower top, just below the cut length and the remainder equally spaced between the top and the bottom tuners in the vertical run.

7. LOWER VERTICAL HANGER LATERAL SUPPORT (500XX-40)

Allows the horizontal run to expand and contract under normal temperature changes. Normally only three of these are required and will be positioned in place of the bottom three (3) vertical spring hangers. The distance from the centerline of the guide to the mounting surface is 2.50" greater than the standard vertical spring hanger.

8. VERTICAL SPRING HANGERS (500XX-41)

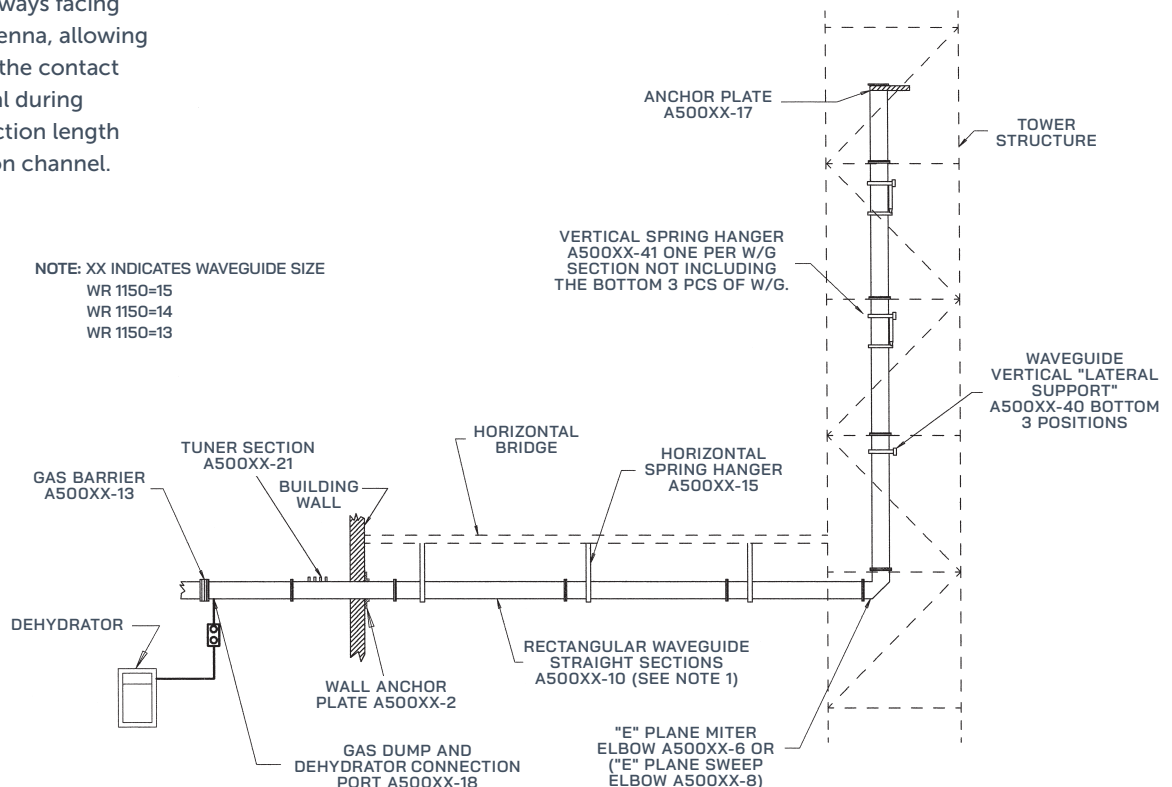
These hangers are to be spaced approximately 12 feet apart (one per waveguide section), other than the vertical lateral supports all hangers in the vertical run are the same.

9. TOWER TOP ANCHOR PLATE (500XX-17)

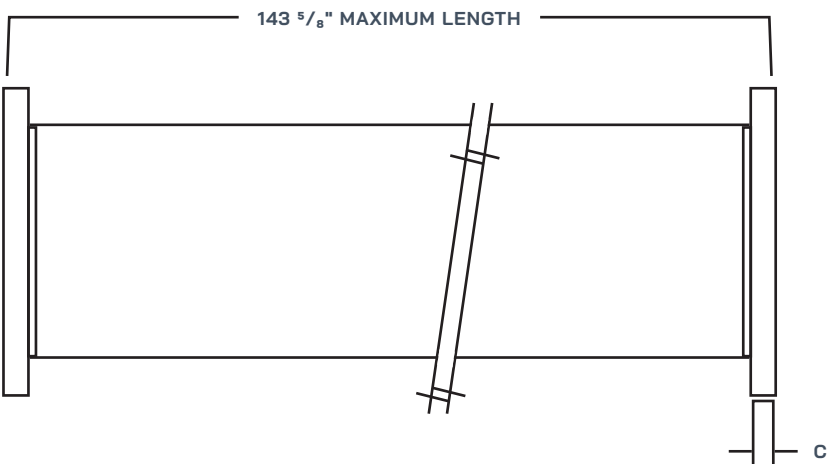
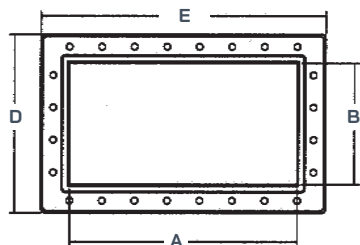
Designed to fix the vertical run to the tower top.

10. HORIZONTAL SPRING HANGERS (500XX-15)

Supports the horizontal run while allowing for vertical movement due to the expansion of the vertical run. One is required for each full length section of waveguide and should be placed near the center of each section.



Straight Flanged Waveguide



Waveguide Size	Catalog Number	Freq. Range MHz	A	B	C	D	E	Wall Thickness	Max Pressure PSIG	Net Weight/Ft Unflanged
WR 1800	50013-10	410-620	18.00"	9.00"	5/8"	12.50"	21.50"	.190"	0.25	12 lbs
WR 1500	50014-10	490-750	15.00"	7.50"	5/8"	11.00"	18.50"	.125"	0.25	7 lbs
WR 1150	50015-10	640-960	11.50"	5.75"	5/8"	9.25"	15.00"	.125"	0.50	5 lbs

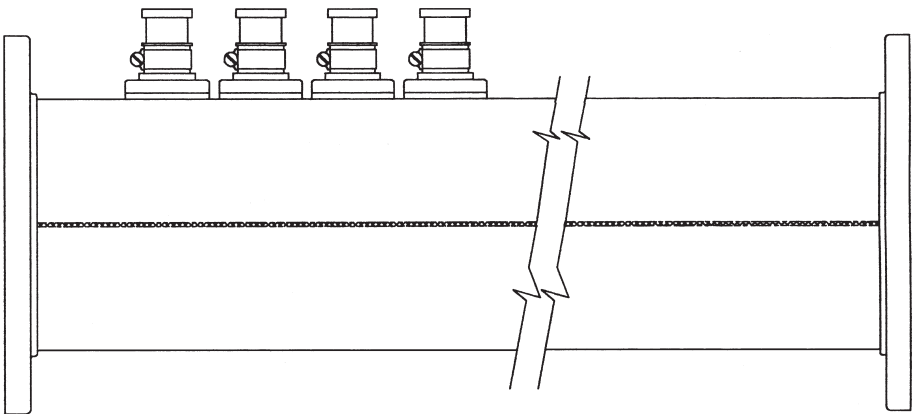
Note: Hardware kits are ordered separately.

VSWR Tuning Sections

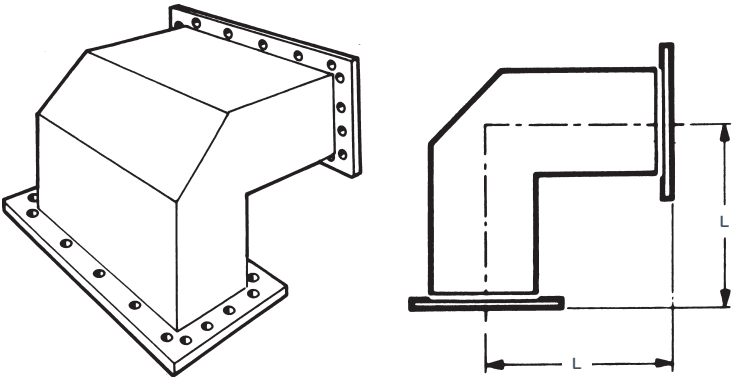
As manufactured, Dielectric Waveguide has a VSWR of 1.1. With on-site tuning, a VSWR of 1.05 is obtainable.

Tuner sections are the same length as standard sections.

The use and quantity of tuning sections required will be determined at time of order.

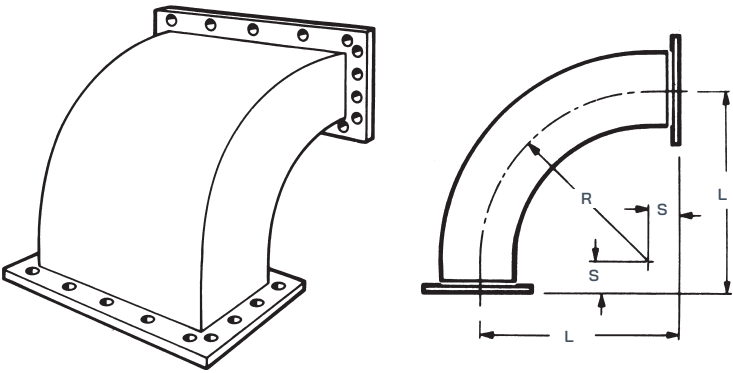


Waveguide Size	Catalog Number
WR 1800	50013-21
WR 1500	50014-21
WR 1150	50015-21



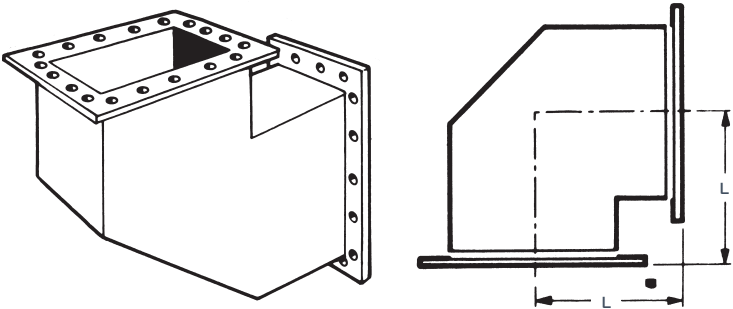
90° "E" Plane Mitre Bend

Waveguide Size	Catalog Number	L
WR 1800	50013-6	12"
WR 1500	50014-6	9"
WR 1150	50015-6	9"



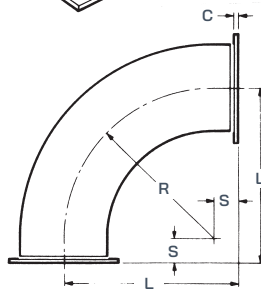
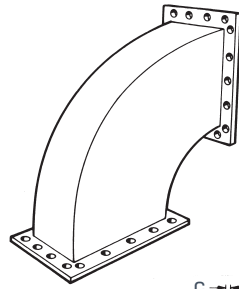
90° "E" Plane Sweep Bends

Waveguide Size	Catalog Number	L	R	S
WR 1800	50013-8	21"	18"	3"
WR 1500	50014-8	15"	12"	3"
WR 1150	50015-8	15"	12"	3"



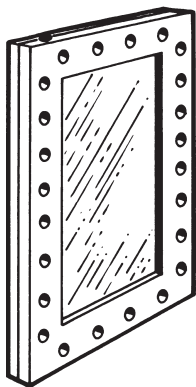
90° "H" Plane Mitre Bend

Waveguide Size	Catalog Number	L
WR 1800	50013-5	18"
WR 1500	50014-5	12"
WR 1150	50015-5	12"



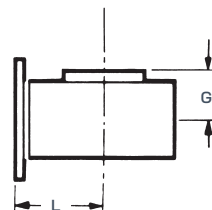
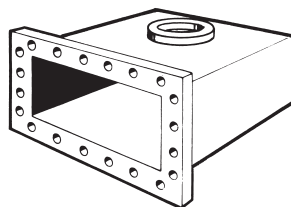
90° "H" Plane Sweep Bends

Waveguide Size	Catalog Number	Freq. Range GHz	L	R	S
WR 1800	50013-7	0.41-0.62	39"	36"	3"
WR 1500	50014-7	0.49-0.75	33"	30"	3"
WR 1150	50015-7	0.64-0.96	27"	24"	3"



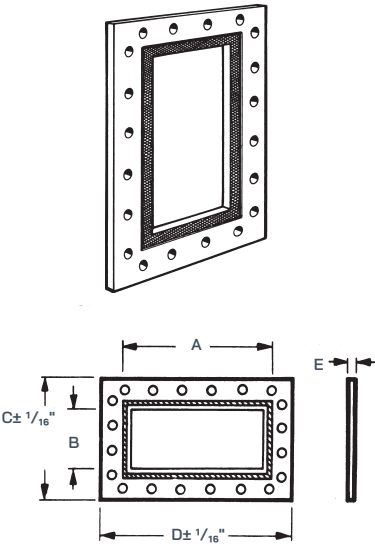
Waveguide Gas Barrier

Waveguide Size	Catalog Number	C	Gas Port Thread
WR 1800	50013-13	1.38"	1/4" NPT
WR 1500	50014-13	1.38"	1/4" NPT
WR 1150	50015-13	1.38"	1/4" NPT



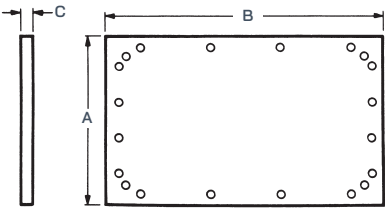
Waveguide to Coax Transitions

Waveguide Pressure Size	Catalog Number				G			L		Max
	3 1/8 EIA	6 1/8 EIA	8 3/16 EIA	3 1/8"	6 1/8"	8 3/16"	3 1/8"	6 1/8"	8 3/16"	PSIG
WR 1800	50013-23	50013-22	50013-24	5.56"	5.96"	5.62"	6"	6"	10"	0.25"
WR 1500	50014-23	50014-22	50014-24	4.81"	4.94"	4.88"	6"	6"	10"	0.25"
WR 1150	50015-23	50015-22	50015-24	3.94"	4.06"	4.00"	6"	6"	10"	0.50"



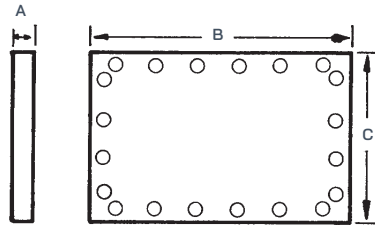
Waveguide Flange Seals

Waveguide Size	Catalog Number	Freq. Range GHz	A	B	C	D	E
WR 1800	50013-9	0.41-0.62	18.00"	9.00"	12.50"	2.50"	1/8"
WR 1500	50014-9	0.49-0.75	15.00"	7.50"	11.00"	18.50"	1/8"
WR 1150	50015-9	0.64-0.96	11.50"	5.75"	9.25"	15.00"	1/8"



Shorting Plate

Waveguide Size	Catalog Number	A	B	C
WR 1800	50013-1	12.50"	21.50"	.250"
WR 1500	50014-1	11.00"	18.50"	.250"
WR 1150	50015-1	9.25"	15.00"	.250"

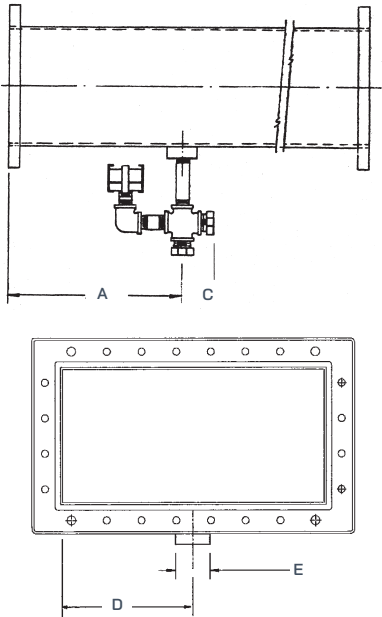


Cover Plate—Fiber

Waveguide Size	Catalog Number	A	B	C
WR 1800	50013-28	0.250"	12.50"	21.50"
WR 1500	50014-28	0.250"	11.50"	18.50"
WR 1150	50015-28	0.250"	9.25"	15.00"

Alignment Pins

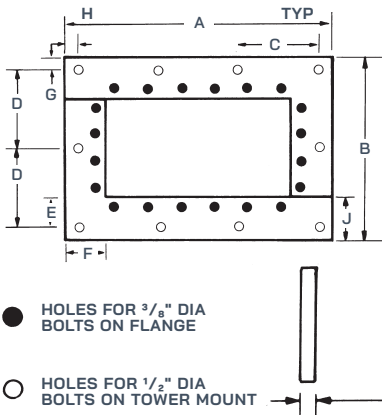
Waveguide Size	Catalog Number
WR 1800	50013-30
WR 1500	50014-30
WR 1150	50015-30



Gas Dump Section

Waveguide Size	Catalog Number	A	C	D	E
WR 1800	50013-18	12.00"	4.00"	9.19"	2.00"
WR 1500	50014-18	12.00"	4.00"	7.62"	2.00"
WR 1150	50015-18	12.00"	4.00"	5.88"	2.00"

Note: Overall length dictated by Channel. Contact factory.



Anchor Plate—Tower Top

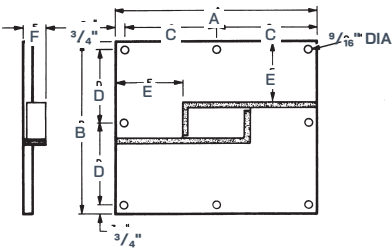
Waveguide Size	Catalog Number	A	B	C	D	E	F	J
WR 1800	50013-17	28.00"	18.00"	8.66"	8.00"	3.00"	4.50"	4.00"
WR 1500	50014-17	25.00"	16.50"	7.66"	7.25"	3.00"	4.50"	4.00"
WR 1150	50015-17	21.50"	14.75"	6.50"	6.38"	3.00"	4.50"	4.00"

G & H = 1.00" (all sizes)
I = .625 (all sizes)

Hardware Kits

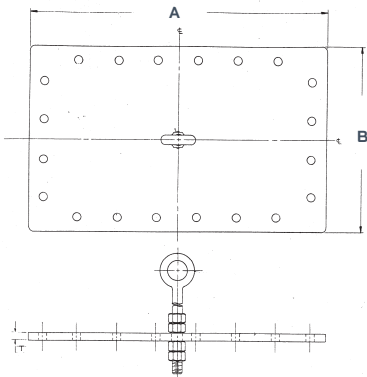
Waveguide Size	Catalog Number
WR 1800	50013-12
WR 1500	50014-12
WR 1150	50015-12

Contains enough hardware for one standard joint.



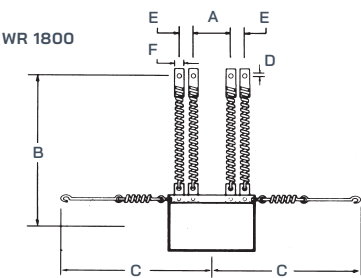
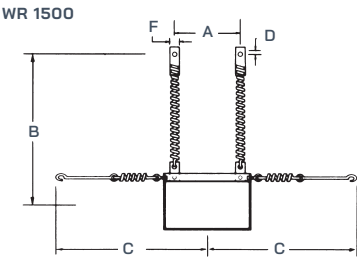
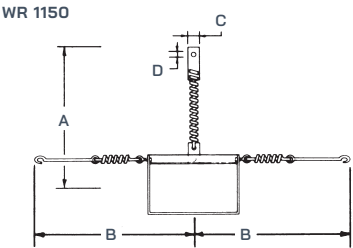
Wall Anchor Plate

Waveguide Size	Catalog Number	A	B	C	D	E	F
WR 1800	50013-2	30.25"	21.25"	14.38"	9.88"	5.44"	2"
WR 1500	50014-2	27.25"	19.75"	12.88"	9.13"	5.50"	2"
WR 1150	50015-2	23.75"	18.00"	11.13"	8.25"	5.56"	2"



Lifting Plate

Waveguide Size	Catalog Number	A	B	T
WR 1800	50013-16	21.50"	12.50"	.38"
WR 1500	50014-16	18.50"	11.00"	.38"
WR 1150	50015-16	15.00"	9.25"	.38"

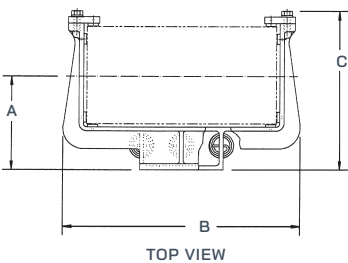


Horizontal Spring Hangers

Space one per Waveguide length

Waveguide Size	Catalog Number	A	B	C	D	E	F
WR 1800	50013-15	10.50"	27.44"	23.50"	.56"	1.50"	1.125"
WR 1500	50014-15	11.00"	30.63"	25.00"	.64"	—	2.50"
WR 1150	50015-15	41.00"	23.50"	2.50"	.64"	—	2.50"

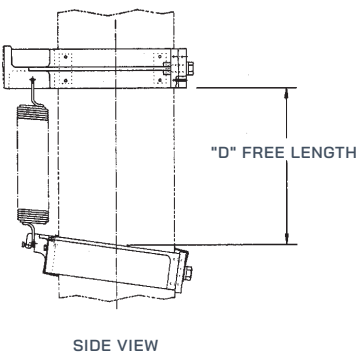
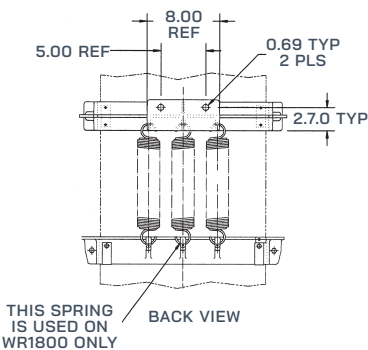
Dimensions are for installed Waveguide.



Vertical Spring Hangers

Waveguide Size	Catalog Number	A	B	C	D
WR 1800	50013-41	9.07"	23.00"	15.33"	13.00"
WR 1500	50014-41	7.38"	20.00"	12.83"	10.95"
WR 1150	50015-41	6.50"	16.38"	11.02"	9.60"

For spring tension charts, refer to installation guide.



Horizontal Fixed Hangers

Material: Strap-aluminum
Cushion-neoprene

Finish: Irridite

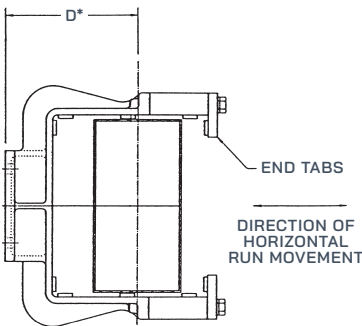
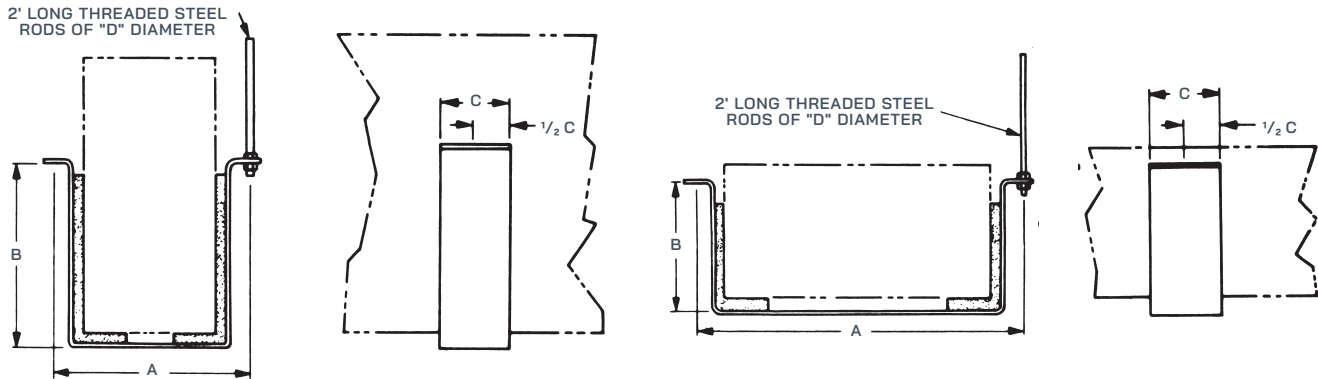
Fixed Hangers are used before Flex Section on horizontal runs.
See tower layout page for Hanger location.

"H" Plane Waveguide Hangers

Waveguide Size	Catalog Number	A	B	C	D
WR 1800	50013-4	12.50"	12.00"	3.00"	.50"
WR 1500	50014-4	11.00"	9.50"	3.00"	.50"
WR 1150	50015-4	9.25"	7.50"	3.00"	.50"

"E" Plane Waveguide Hangers

WR 1800	50013-3	21.38"	7.00"	3.00"	.50"
WR 1500	50014-3	18.38"	5.75"	3.00"	.50"
WR 1150	50015-3	14.25"	4.50"	3.00"	.50"



Vertical Lateral Support

Waveguide Size	Catalog Number	D
WR 1800	50013-40	11.63"
WR 1500	50014-40	9.88"
WR 1150	50015-40	9.00"

*VERTICAL MEDIAN CENTER LINE.
BOTTOM (3) HANGERS ONLY. ("D")
SEE INSTALLATION GUIDE.

FOR MOUNTING SURFACE DIMENSIONS
REFER TO VERTICAL SPRING HANGER.

WR1800 (Channels 14 through 34)

Channel	Visual Carrier	dB/100 1100 alloy WR 1800	Efficiency (%) Total Length in Feet					
			200	600	1000	1200	1600	2000
14	471.25	0.046	97.9	93.9	90.0	88.1	84.5	81.0
16	483.25	0.045	98.0	94.0	90.2	88.4	84.8	81.4
18	495.25	0.044	98.0	94.2	90.4	88.7	85.2	81.8
20	507.25	0.043	98.0	94.3	90.6	88.8	85.4	82.1
22	519.25	0.042	98.1	94.4	90.8	89.0	85.7	82.4
24	531.25	0.041	98.1	94.4	90.9	89.2	85.9	82.6
26	543.25	0.041	98.1	94.5	91.0	89.3	86.0	82.9
28	555.25	0.040	98.2	94.6	91.1	89.5	86.2	83.1
30	567.25	0.040	98.2	94.6	91.2	89.6	86.4	83.3
32	579.25	0.040	98.2	94.7	91.3	89.7	86.5	83.4
34	591.25	0.039	98.2	94.7	91.4	89.7	86.6	83.5

WR1500 (Channels 20 through 56)

Channel	Visual Carrier	dB/100 1100 alloy WR 1500	Efficiency (%) Total Length in Feet					
			200	600	1000	1200	1600	2000
20	507.25	0.070	96.8	90.8	85.2	82.5	77.3	72.5
22	519.25	0.067	97.0	91.1	85.7	83.1	78.1	73.4
24	531.25	0.065	97.1	91.4	86.1	83.6	78.7	74.1
26	543.25	0.063	97.1	91.7	86.5	84.0	79.3	74.8
28	555.25	0.062	97.2	91.9	86.8	84.4	79.7	75.3
30	567.25	0.060	97.3	92.0	87.1	84.7	80.2	75.9
32	579.25	0.059	97.3	92.2	87.3	85.0	80.5	76.3
34	591.25	0.058	97.4	92.4	87.6	85.3	80.9	76.7
36	603.25	0.057	97.4	92.5	87.8	85.5	81.1	77.0
38	615.25	0.056	97.5	92.6	87.9	85.7	81.4	77.3
40	627.27	0.055	97.5	92.7	88.1	85.9	81.7	77.6
42	639.25	0.054	97.5	92.8	88.2	86.1	81.9	77.9
44	651.25	0.054	97.6	92.8	88.4	86.2	82.1	78.1
46	663.25	0.053	97.6	92.9	88.5	86.4	82.2	78.3
48	675.25	0.053	97.6	93.0	88.6	86.5	82.4	78.5
50	687.25	0.052	97.6	93.1	88.7	86.6	82.5	78.7
52	699.25	0.052	97.6	93.1	88.8	86.7	82.6	78.8
54	711.25	0.051	97.7	93.1	88.8	86.8	82.7	78.9
56	723.25	0.051	97.7	93.2	88.9	86.8	82.8	79.0

WR1150 (Channels 46 through 69)

Channel	Visual Carrier	dB/100 1100 alloy WR 1150	Efficiency (%) Total Length in Feet					
			200	600	1000	1200	1600	2000
46	663.25	0.104	95.3	86.6	78.7	75.1	68.2	62.0
48	675.25	0.101	95.5	87.0	79.3	75.7	69.0	62.9
50	687.25	0.098	95.6	87.3	79.8	76.3	69.7	63.7
52	699.25	0.096	95.7	87.6	80.2	76.8	70.3	64.4
54	711.25	0.094	95.8	87.9	80.6	77.2	70.8	65.0
56	723.25	0.092	95.9	88.1	80.9	77.6	71.3	65.5
58	735.25	0.090	95.9	88.3	81.3	78.0	71.8	66.0
60	747.25	0.088	96.0	88.5	81.6	78.3	72.2	66.5
62	759.25	0.087	96.1	88.7	81.8	78.6	72.5	66.9
64	771.25	0.086	96.1	88.8	82.1	78.9	72.9	67.3
66	783.25	0.085	96.2	88.9	82.3	79.1	73.2	67.7
68	795.25	0.084	96.2	89.1	82.5	79.4	73.5	68.0
69	801.25	0.083	96.2	89.1	82.6	79.5	73.6	68.2



MODEL 600



MODEL 2400/3200

Dielectric’s dehydrator products have been in service in the broadcast, microwave and telephone industries for over 60 years.

Dielectric’s Models 600 and 850 provide a dry air source for a variety of small volume applications (see capacity chart below). These fully automatic, self-contained units are quiet and compact, making them the ideal choice for diverse applications. Adjustable system pressure allows for altitude compensation to assure peak efficiency at any elevation.

The Models 2400/3200 are fully enclosed systems providing quieter operation. All models incorporate five independent alarm circuits that can be monitored individually or as a single C.O. alarm. These units are designed to minimize maintenance time through modularized, field-replaceable subassemblies.

The waveguide dehydrator packages 50015-29, 50014-29 and 50013-29 come complete with everything necessary for a standard installation. The kits include a 2400 dehydrator, excess run alarm, special low-pressure regulator (high pressure output option also available), 20 feet of 3/4" hose and fittings necessary to pressurize your waveguide system.

Air Dryers for Transmission Line

Transmission Line

Waveguide

	1 5/8"	3 1/8"	4 1/16"	6 1/8"	7 3/16"	8 3/16"	9 3/16"	WR 1150	WR 1500	1WR 1800	DTW 1350	DTW 1500	DTW 1750
Model	Ft (Mtrs)	Ft (Mtrs)	Ft (Mtrs)	Ft (Mtrs)	Ft (Mtrs)	Ft (Mtrs)	Ft (Mtrs)	Ft (Mtrs)	Ft (Mtrs)	Ft (Mtrs)	Ft (Mtrs)	Ft (Mtrs)	Ft (Mtrs)
300 TLS	5000'	1650'	850'										
66788	(1525)	(500)	(260)										
200C	5000'	1650'	850'										
46345(115V)	(1525)	(500)	(260)										
600C		*3500'	2100'	900'	750'	510'		800'	550'	480'			
40627(115V)		(1070)	(640)	(275)	(230)	(155)		(250)	(170)	(150)			
850C	5000'	3000'	1500'	1100'	740'	600'	1200'	800'	700'	480'	530'	465'	
41016 (115V)	(1525)	(915)	(460)	(335)	(225)	(180)	(365)	(240)	(210)	(150)	(160)	(140)	
2400 Portable			3500'	2600'	1650'	1350'			2300'	1600'	1800'	1500'	1100'
49341			(1065)	(800)	(500)	(500)			(700)	(500)	(550)	(460)	(335)
2400IM			3500'	2600'	2500'	2050'			2300'	1600'	1800'	1500'	1100'
47141			(1065)	(800)	(760)	(625)			(700)	(500)	(550)	(460)	(335)
3200 Portable					3250'	2650'				2080'	2340'	1950'	1400'
49344					(990)	(810)				(635)	(710)	(595)	(425)
3200IM					3250'	2650'				2080'	2340'	1950'	1400'
47144					(990)	(810)				(635)	(710)	(595)	(425)

"Use Model "D" for waveguide applications to provide low-pressure output.

ISOLATION > 60 dB



Motorized Switches (60000 Series)

These switches are blade type SPDT or 4 port transfer switches. Sizes include 7/8" through 9 3/16". Switch position is indicated by a mechanical pointer and through auxiliary switches used for readout and interlocking circuits. In the closing mode, the interlock switches do not activate until the RF contacts are ready to accept full power. In the opening mode, the interlock switches open prior to the RF contacts to prevent the breaking of the RF contacts while under power. Manual operation is provided for by a knob. Terminations are standard EIA fixed flanges with non-removable male connectors. Control panels are available.

For more information refer to Dielectric's switch catalog.



Coaxial Patch Panels

- High Isolation
- Low VSWR
- Sizes 1 5/8" through 8 3/16"
- 3, 4 or 7 port Standard
- Custom Types Available

Dielectric patch panels are a low cost reliable solution to multi-connection routing situations. Patch panels are available with or without interlocks. Bolt type (EIA) flanges are standard. Transitions to "no flange" or other line sizes are available. Dielectric can supply panels in custom configurations for special requirements.

For more information, refer to Dielectric's switch catalog.



Lockout/Tagout Switch

The RF "Lockout/Tagout" Safety Switch prevents the accidental exposure of workers to RF energy. It acts as an isolation device preventing the flow of RF energy to the transmission line and antenna system. Complies with OSHA rule 1910.147.

Specifications

Isolation	> 50 dB
Insertion Loss (in Disengaged Mode)	< 0.03 dB @ 100 MHz
Characteristic Impedance	50 or 75 Ohms
Power Rating	Equal to Specific Line Size
RF Connections	7/8" to 6 1/8" EIA Flanged
Frequency Range	300 KHz to 1 GHz
VSWR (in Disengaged Mode)	< 1.05:1.0

1 5/8", 3 1/8", 4 1/6",
6 1/8", 7 3/16", 8 3/16",
9 3/16"

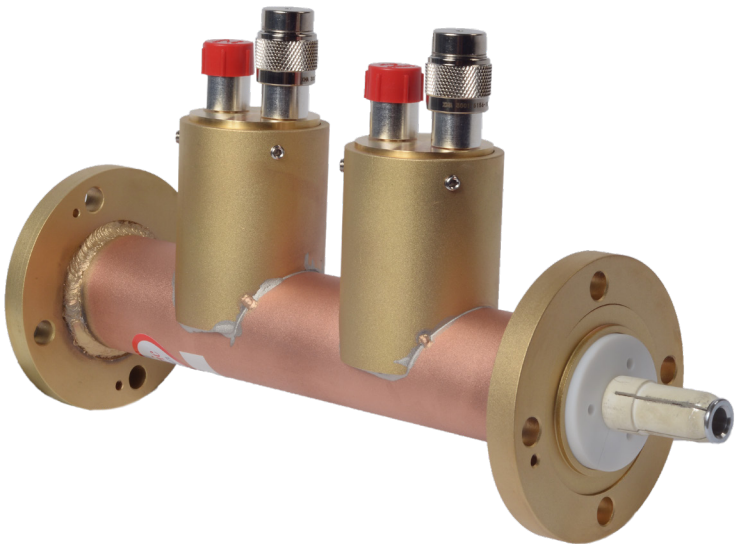
- Low VSWR
- 30 dB Directivity or Greater
- Type N Output
- Field Replaceable Resistor

Dielectric VHF/UHF Directional Couplers are designed to couple signals from a transmission line to external monitoring equipment for tuning, operating, and maintaining the station. By installing several couplers in the output transmission line, it is possible to monitor parameters including: VSWR, RF line power, system losses, sideband response, and filter performance.

The directional characteristic of the coupler permits sampling of the transmitter output line without any of the inherent variations in frequency response obtained with non-directional couplers. The voltages obtained with a directional coupler in the line are a sample of either the incident or reflected wave. The directional coupler provides a source impedance to the RF coaxial cable equal to the characteristic impedance of the cable.

These directional couplers are designed for mounting on any section of transmission line with an impedance of 50 or 75 ohms. Coupling is electromagnetic with directivity of 30 dB or better, and is accomplished with a coupling loop inserted into the fields of the main output line. Etched angle and penetration scales on the coupler assembly permit accurate adjustment for calibration of the output voltage at the particular frequency desired. The output is type "N" and at maximum, 2-3 watts. VSWR is 1.03:1 or less.

The coupling loop termination resistor is a high tolerance, fixed composition resistor, which is field replaceable.

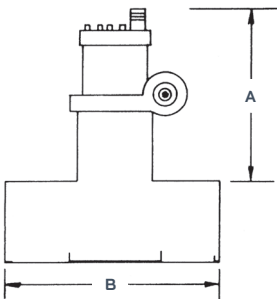


Single
Supplied with Hose Clamps.

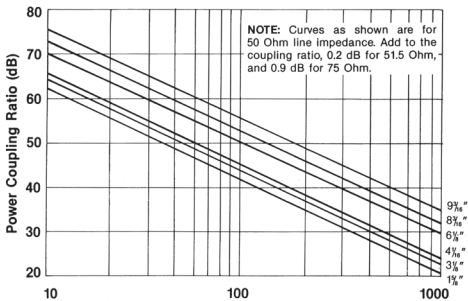
Outer Diameter	Part Number	Dimensions		Weight
		A Max	B	
1 5/8"	4270-503	3.63"	4"	3.5 lbs
3 1/8"	5500-501	5.13"	4.5"	4 lbs
4 1/6"	5500-518	5.13"	4.5"	4 lbs
6 1/8"	5500-502	5.13"	4.5"	4 lbs
7 3/16"	5500-502	5.13"	4.5"	4 lbs
8 3/16"	5500-517	5.13"	4.5"	4 lbs
9 3/16"	5500-504	5.13"	4.5"	4 lbs

Dual
Supplied with Hose Clamps.

3 1/8"	5500-525	5.13"	4.5"	4 lbs
4 1/6"	5500-526	5.13"	4.5"	4 lbs
6 1/8"	5500-523	5.13"	4.5"	4 lbs
7 3/16"	5500-523	5.13"	4.5"	4 lbs
8 3/16"	5500-524	5.13"	4.5"	4 lbs
9 3/16"	5500-527	5.13"	4.5"	4 lbs



MOUNTING NOTE: A HOLE IS MADE IN OUTER CONDUCTOR TO ACCOMMODATE THE COUPLER.



FREQUENCY (MHz)
NOTE: MAXIMUM COUPLING RATIO IS APPROXIMATELY 50 dB GREATER THAN THE MINIMUM VALUES SHOWN.



- › **Enhanced local user interface**
- › **Transmission system monitor for VSWR, pressure, overpowering, and temperature**
- › **Forward and reverse remote power sensors measure power at directional couplers**

Scout-out elevated VSWR before it causes problems

The Dielectric RF Scout Plus monitors RF transmission system VSWR and forward power to aid in detecting VSWR problems as they develop. In many cases, this will allow the transmitter operator to remedy transmission system contributors to elevated VSWR before they affect operations. The unit continuously monitors forward and reflected power, and displays the values. It can hold one month of half-hour data and up to 100 alarms. The system can also be configured to monitor transmission line pressure and temperature. User-settable options include warning and alarm levels, enable/disable interlock trip for each monitoring function, and a VSWR alarm strike-out number.

The RF Scout Plus offer a high degree of flexibility in monitoring and communications capabilities. The unit's status is available to local operators via a 4.3" touch panel, and to remote operators through an Ethernet interface with HTTP (web page).

The RF Scout monitoring system comprises a rack-mountable unit with two power sensors and their associated 25' cables, along with a dual directional coupler with factory pre-set coupling values consistent with the forward power level. The coupler sections are designed for the various line sizes available. The RF Scout Plus may also be supplied without the coupling section for systems that already have the appropriate couplers in place. Pressure transducers and thermocouples can be supplied separately.

The RF Scout Plus with PlusConnect provides a seamless link to Burk Technology ARC Plus remote monitoring and control systems, bringing RF Scout Plus-monitored and -controlled parameters aboard the ARC Plus. A single serial connection to the ARC Plus network reduces installation time and saves the expense of adding remote control capacity. If you already have an ARC Plus system controlling your transmitter, you don't have to rewire IP connectivity between the RF Scout Plus and the ARC Plus, eliminating the need to run new wires or cable from the RF Scout to the remote control. Just add the RF Scout with the PlusConnect to your ARC Plus network.

Communications are secure thanks to an encrypted digital signature sent with each packet.

Specifications

Processor	Embedded PLC Controller
Display	3", Back lit Touch Panel
Display Functions	VSWR Value Forward Power Reflective Power Line Pressure Temperature User Set-Up Menu for all options/parameters
Senor Inputs	(2) 0 to 5 VDC for RF Power (1) 0 to 5 VDC for Pressure (1) Thermocouple
RF Senors: Standard	Dielectric P/N 97730, 50 to 800 MHz, True Average Power, 50 Ohm, Type N, 1.0 W Max
RF Senors: Low Power	Dielectric P/N 11000005351, 50 to 800 MHz, True Average Power, 50 Ohm, Type N, 100 mW Max
Transmitter Interlock	SPDT, Dry contacts, Latching Relay (250VAC, 2.5amps)
Remote Interface Functions Output (24 VDC)	TX Interlock trip VSWR Alarm Forward Power Alarm Pressure Alarm
Input (24 VDC)	Interlock Reset
Lan Port	10/100 base T Ethernet, FTP Server, Web
Power	100-240 VAC, 60/50 Hz
Dimensions (cm)	2 Rack Unit, 19"(48.2)W x 10"(25.4)D x 3.5"(8.9)H



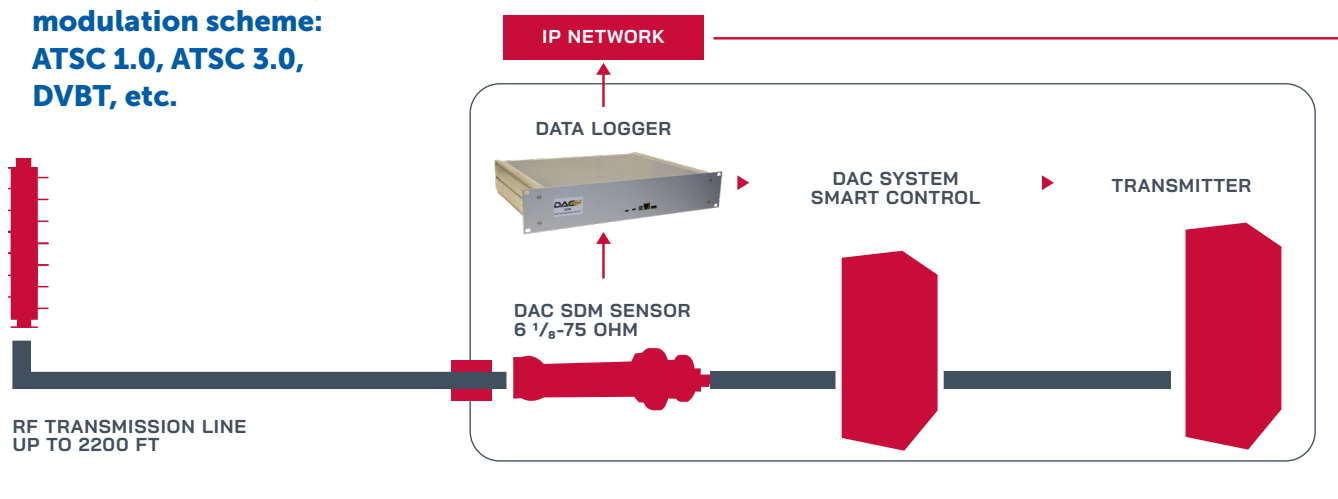
RFHAWKEYE® is the RF Monitoring & Control System of the future...available today.

RFHAWKEYE® is the first IP-connected system that delivers real-time data to effectively monitor your transmission line, the unsung workhorse of a broadcast system. Undetected degradation of this vital component can be devastating, leading to extensive damage and time off-air.

- › **Continuous remote real-time, time-domain system measurement and recording at full power**
- › **Detects, locates and warns of VSWR changes or arcing in the transmission line**
- › **Compatible with any modulation scheme: ATSC 1.0, ATSC 3.0, DVBT, etc.**

Line Size*	Max Length	Min Power	Max Avg. Power (Kw) UHF US-Band
3 5/8" - 50	725m/2200 ft	6 Kw	19-24
4 1/16" - 50			30-39
6 1/8" - 50			63-81
6 1/8" - 75			53-70
7 3/16" - 75			69-92
8 3/16" - 75			96-117

*also available in EHT version.



DACS ANALYTICS
SAAS



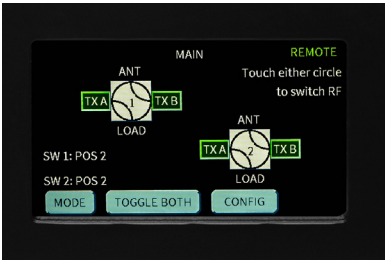
OPERATOR



OPERATORS CAN
USE THIS PROGRAM
TO TRACK
PERFORMANCE OF
RF SIGNALS ANY
TIME, ANYWHERE
IN THE WORLD.

Specifications

Parameter	Spec
RF Connector CU	2 x N - Female / 50 ohm
RF Connector CU	2 x N - Female / 50 ohm
RF Connector PU	Chanel 14, 470-700 MHz
Frequency Range	> 1 dB
Detection of Return Loss	< - 45 dB
Smallest Detectable Reflection	+/- 8 in
Accuracy of Location of Return Loss/VSWR Variation or Arching	Passive Component
Power Consumption CU	30 Watt
Power Consumption PU	100-240 VAC, 60/50 Hz
Material CU	Rigid Line: Copper; Flange: Brass
Dimension CU	Length 15 in
Dimension PU	19" sub-rack - 1HU / H: 43.8 mm x W: 483 x D: 220 mm
Weight CU	7.7 - 15.4 lbs (varies with line size)
Weight PU	6 lbs
Environmental Working Temperature	32° F - 113° F / 0° C to +45° C
Safety PU	EN60950-1
LAN Interface	RJ-45/Ethernet/IP Interface
Power Supply	2 x AC 90...264V, 47...63Hz-IEC
Out-of-Band Emission	Compliant with FCC § 73.622 (h), < -110 dBc
Arc Detection	100% of arc or arc bursts longer than 100 s
Return Loss/VSWR CU	> 35 dB / < 1.036:1.0
Distance CU to PU	21 ft

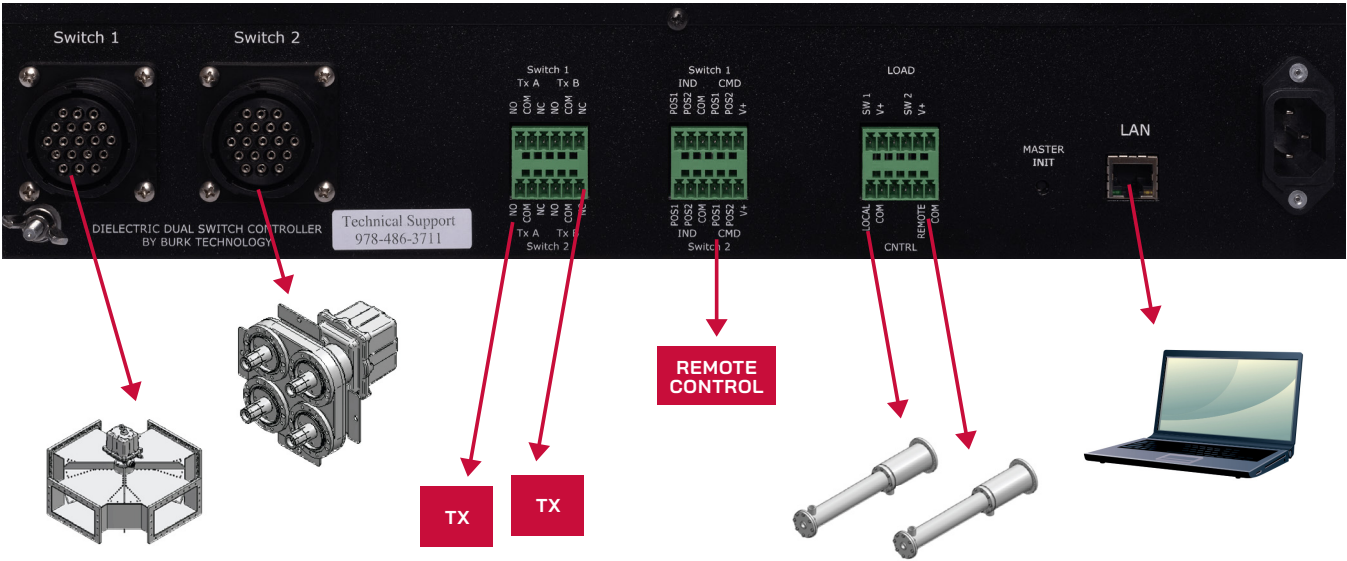


Remotely switch 1-2 RF transmitters via the web!

- Control of one or two RF transfer switches (3- or 4-port; coaxial or waveguide).
- Local touch screen, discrete remote-control connections, integral web page or SNMP, in addition to a lockout mode for control of the switch.
- Status monitoring from the front panel color touch screen or any of the remote interfaces.
- User-defined switch port labels that are easily configured via the built-in web page.
- Selectable 12 or 24 VDC switch command voltages.
- Transmitter interlocks with user-defined delay between disengaging the interlocks and initiating a switch command.
- Load interlock input with user-defined association of interlock with specific switch port.
- Burk Plus-X protocol included to allow easy integration of the switch controller with Burk remote-control systems.
- Amphenol 19 pin circular connectors for fast interconnection to switches using standard Dielectric switch cables.

Specifications

Parameter	Spec
Model	DSC2
Part Number	400013927
Dimensions	5.25" (3RU) X 19" x 11" (133mm x 482mm x 279mm)
AC Power Requirements	110-240 VAC/50-60 Hz
AC Power Consumption (Controller Only)	40W
Ambient Temperature, Operating	32°F (0°C) to 122°F (50°C)
Storage Temperature	-4°F (-20°C) to 158°F (70°C)
Storage/Operating Humidity	0-90% non-condensing
Weight	12 lbs (7 kg)

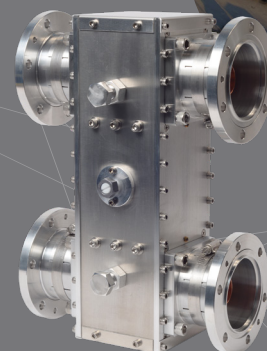
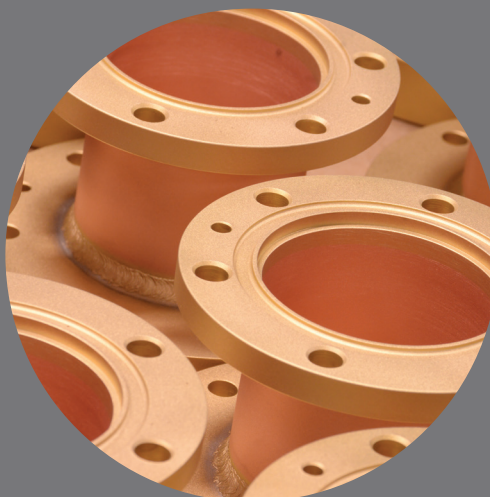


TRUSTED FOR DECADES. READY FOR TOMORROW.

Dielectric has been a leading innovator throughout the history of broadcasting, with more than 100 patents in RF transmission technology since our founding in 1942. Today we are the world leader in the engineering, design and manufacturing of complete broadcast systems.

Most recently, Dielectric has led the transition to digital TV in the Americas.

Our engineers bring hundreds of years of combined experience, working on more than 10,000 antennas, to meet your customized needs for the future. Whatever new technologies emerge, there's a good chance they'll start here at Dielectric world headquarters in Maine, USA.



Dielectric products are represented in 90 countries around the world. With the rapid expansion of communications, Dielectric is positioned to service the broadcast needs of small & large stations, DTV, FM & specialty RF systems, complete systems and components.

Specifications subject to change without notice.

Dielectric®

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