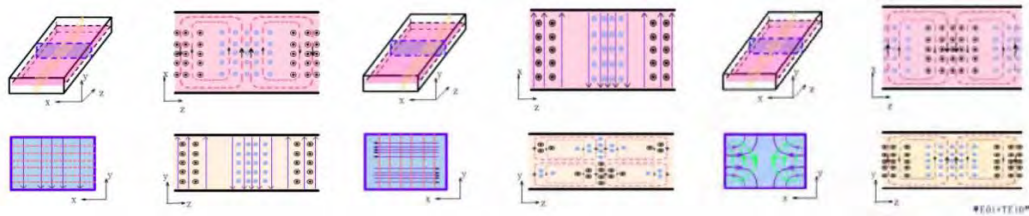


# Double Ridge Waveguide Components

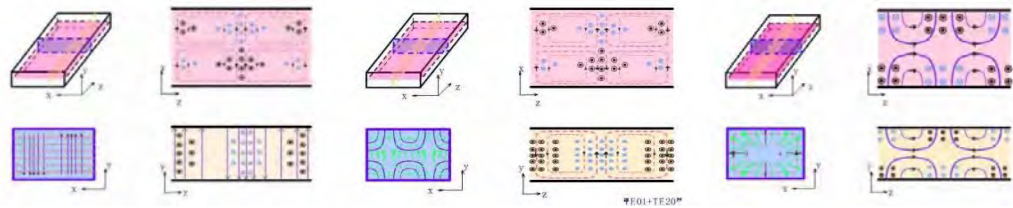
The regular metal waveguide belongs to a single-conductor microwave transmission line, and its transmission characteristic is an electromagnetic field guided mode inside a waveguide. Commonly used waveguides are rectangular, round, single-ridged, double-ridged, and oval. The waveguide transmission line has the advantages of small conductor loss and dielectric loss, large power capacity, no radiation loss, simple structure, and easy manufacturing. The guided mode field structures of rectangular waveguides are mainly TE and TM modes, of which TE<sub>10</sub> mode is the main mode and other modes are higher-order modes. The guided mode field structure of the circular waveguide is mainly TE and TM modes.



TE<sub>10</sub> mode field diagram

TE<sub>02</sub> mode field diagram

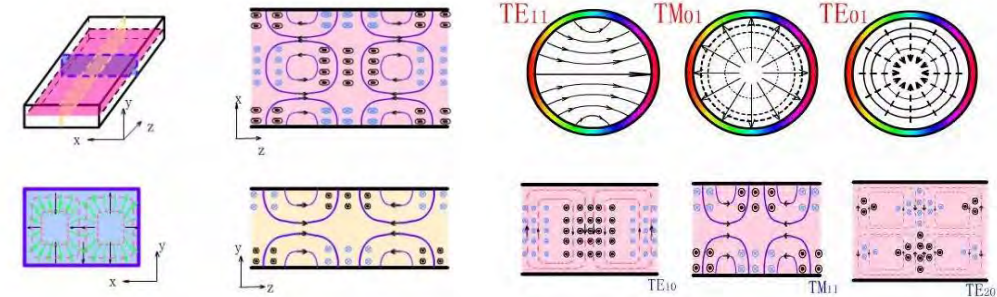
TE<sub>11</sub> mode field diagram



TE<sub>20</sub> mode field diagram

TE<sub>21</sub> mode field diagram

TM<sub>11</sub> mode field diagram



TM<sub>21</sub> mode field diagram

Circular Waveguide TE<sub>11</sub>TM<sub>01</sub>TE<sub>01</sub>

## Universal Waveguide



### ➤ Straight Waveguide

#### 【Product introduction】

Straight waveguide is the basic component of the waveguide feeder system. The materials are copper (C), aluminum (A) and stainless steel (S). The surface treatment includes silver plating, gold plating, passivation, conductive oxidation and other treatment methods. .

#### 【Model description】

Standard rectangular straight waveguide, waveguide model BJ100, flange is FBP / FBM (default when both ends are FBP), wave

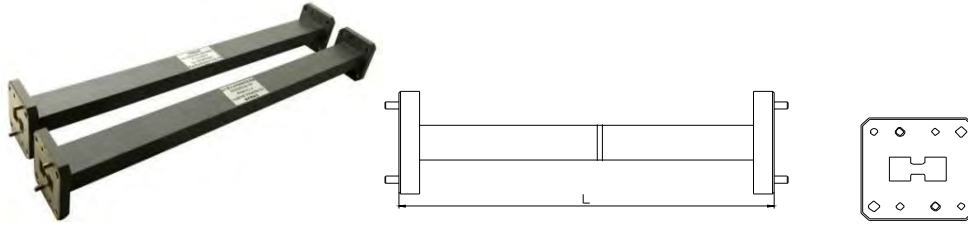
The guide length is 1500mm and the material is aluminum (default when the material is copper)



#### 【Product Type】

Code	Meaning	Code	Meaning
WAL	Rectangular straight waveguide	QWAL	Gas-filled straight waveguide
SWAL	Square straight waveguide	CWAL	Circular straight waveguide
MWAL	Medium flat rectangular straight	FWAL	Flat rectangular straight waveguide
DRWAL	Double-ridged straight waveguide	SRWA	Single-ridged straight waveguide

## ➤ Double-ridged straight waveguide



### 【Specifications】

Product model	Frequency (GHz)	VSWR	Length ... (mm)	Flange	Material	Coated
DH-84DRWAL...PM	0.84-2	≤1.15	0.1-500	FP/FM	AL	Oxidation
DH-150DRWAL...PM	1.5-3.6	≤1.15	0.1-500	FP/FM	AL	Oxidation
DH-200DRWAL...PM	2-4.8	≤1.15	0.1-500	FP/FM	AL	Oxidation
DH-250DRWAL...PM	2.6-7.8	≤1.15	0.1-500	FP/FM	AL	Oxidation
DH-350DRWAL...PM	3.5-8.2	≤1.15	0.1-500	FP/FM	AL	Oxidation
DH-475DRWAL...PM	4.75-11	≤1.15	0.1-500	FP/FM	CO	Silver plated
DH-500DRWAL...PM	5-18	≤1.15	0.1-500	FP/FM	CO	Silver plated
DH-580DRWAL...PM	5.8-16	≤1.15	0.1-500	FP/FM	CO	Silver plated
DH-650DRWAL...PM	6.5-18	≤1.15	0.1-500	FP/FM	CO	Silver plated
DH-750DRWAL...PM	7.5-18	≤1.15	0.1-500	FP/FM	CO	Silver plated
DH-700DRWAL...PM	7-18.5	≤1.15	0.1-500	FP/FM	CO	Silver plated
DH-1100DRWAL...P	11-26.5	≤1.2	0.1-200	FP/FM	CO	Silver plated
DH-1800DRWAL...P	18-40	≤1.2	0.1-200	FP/FM	CO	Silver plated

## ➤ Bend waveguide

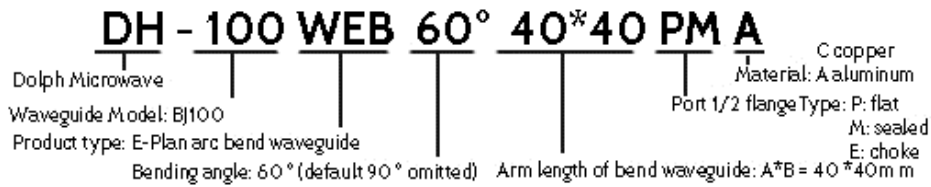
### 【Product introduction】

Bend waveguide is divided into two types: E-bend waveguide and H-bend waveguide. The bending type includes circular bend waveguide and tangent bend waveguide. The standard bending Angle is 90°, other bending angles can be customized.

### 【Model description】

Bend waveguide of plane E, waveguide model BJ100, bending Angle is 60° (default at 90°),

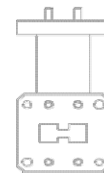
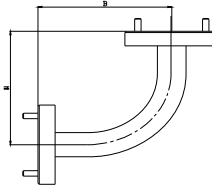
flange is FBP/FBM (default at both ends of FBP), arm length of bend waveguide is  $A \times B = 40 \times 40$ mm, material is aluminum (default at copper).



**【Product Type】**

Code	Meaning	Code	Meaning
WEB	E-plane bend waveguide	WHB	H-plane bend waveguide
WTEB	E-plane angle-cut waveguide	WTHB	H-plane angle-cut waveguide
DRWE	Double-ridged E-plane bend	DRWH	Double-ridged H-plane bend

➤ **Double ridge bend waveguide**



**【Specifications】**

Product model	Frequency (GHz)	VSWR	Standard size (A X B) mm	Flange	Material	Coated
DH-84DRWEBAXBPM	0.84-2	≤1.25	150X150	FP/FM	AL	Oxidation
DH-84DRWHBAXBPM	0.84-2	≤1.25	200X200	FP/FM	AL	Oxidation
DH-150DRWEBAXBPM	1.5-3.6	≤1.25	100X100	FP/FM	AL	Oxidation
DH-150DRWHBAXBPM	1.5-3.6	≤1.25	150X150	FP/FM	AL	Oxidation
DH-200DRWEBAXBPM	2-4.8	≤1.25	100X100	FP/FM	AL	Oxidation
DH-200DRWHBAXBPM	2-4.8	≤1.25	150X150	FP/FM	AL	Oxidation
DH-250DRWEBAXBPM	2.6-7.8	≤1.25	100X100	FP/FM	AL	Oxidation
DH-250DRWHBAXBPM	2.6-7.8	≤1.25	150X150	FP/FM	AL	Oxidation
DH-350DRWEBAXBPM	3.5-8.2	≤1.25	100X100	FP/FM	AL	Oxidation
DH-350DRWHBAXBPM	3.5-8.2	≤1.25	100X100	FP/FM	AL	Oxidation
DH-475DRWEBAXBPM	4.75-11	≤1.25	100X100	FP/FM	CO	Silver plated

DH-475DRWHBAXBP	4.75-11	≤1.25	100X100	FP/FM	CO	Silver plated
DH-500DRWEBAXBP	5-18	≤1.25	80X80	FP/FM	CO	Silver plated
DH-500DRWHBAXBP	5-18	≤1.25	80X80	FP/FM	CO	Silver plated
DH-580DRWEBAXBP	5.8-16	≤1.25	80X80	FP/FM	CO	Silver plated
DH-580DRWHBAXBP	5.8-16	≤1.25	80X80	FP/FM	CO	Silver plated
DH-650DRWEBAXBP	6.5-18	≤1.25	50X50	FP/FM	CO	Silver plated
DH-650DRWHBAXBP	6.5-18	≤1.25	50X50	FP/FM	CO	Silver plated
DH-750DRWEBAXBP	7.5-18	≤1.25	50X50	FP/FM	CO	Silver plated

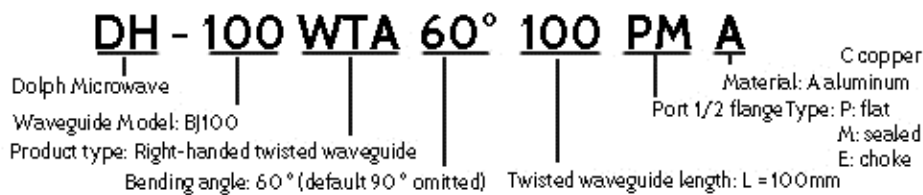
## ➤ Twisted waveguide

### 【Product introduction】


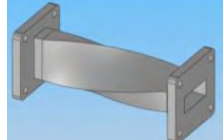
Twisted waveguide is divided into left-handed and right-handed according to the twisting direction. The standard twisting angle is 90°. Other twisting angles can be customized.

### 【Model description】

Standard rectangular right-handed twisted waveguide, waveguide model BJ100, torsion angle is 60° (default at 90°), flange is FBP / FBM (default when both ends are FBP), length L = 100mm, material is Aluminum (default when the material is copper).



### 【Product Type】

Code	Meaning	Structure diagram
WTA...	Rectangular right-handed twisted waveguide	
WLTA...	Rectangular left-handed twisted waveguide	

**【Specifications】**

Product model	Frequency (GHz)	VSWR	Standard size(mm)	Flange	Material	Coated
DH-84DRWTA...PM	0.84-2	≤1.25	500	FP/FM	AL	Oxidation
DH-150DRWTA...PM	1.5-3.6	≤1.25	400	FP/FM	AL	Oxidation
DH-200DRWTA...PM	2-4.8	≤1.25	400	FP/FM	AL	Oxidation
DH-250DRWTA...PM	2.6-7.8	≤1.25	300	FP/FM	AL	Oxidation
DH-350DRWTA...PM	3.5-8.2	≤1.25	300	FP/FM	AL	Oxidation
DH-475DRWTA...PM	4.75-11	≤1.25	300	FP/FM	CO	Silver plated
DH-500DRWTA...PM	5-18	≤1.25	200	FP/FM	CO	Silver plated
DH-580DRWTA...PM	5.8-16	≤1.25	200	FP/FM	CO	Silver plated
DH-650DRWTA...PM	6.5-18	≤1.25	200	FP/FM	CO	Silver plated
DH-750DRWTA...PM	7.5-18	≤1.25	200	FP/FM	CO	Silver plated
DH-700DRWTA...PM	7-18.5	≤1.25	200	FP/FM	CO	Silver plated
DH-1100DRWTA...PM	11-26.5	≤1.25	150	FP/FM	CO	Silver plated
DH-1800DRWTA...PM	18-40	≤1.3	80	FP/FM	CO	Silver plated

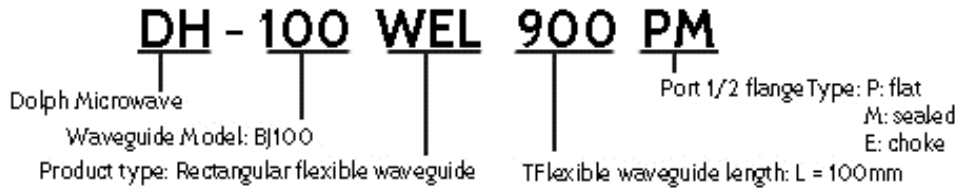
➤ **Flexible waveguide**

**【Product introduction】**

Flexible waveguide is commonly used as the connection of waveguide feeder, which can not only reduce the difficulty of connection of hard waveguide components, ensure the connection accuracy, but also keep the electrical performance unchanged in the state of bending and torsion. Flexible waveguide products can be divided into flexible waveguide (interlocked flexible waveguide) and non-twisting flexible waveguide (seamless flexible waveguide). Flexible flexible waveguide has the bending and twisting functions of e-plane and h-plane, while non-twisting flexible waveguide has the characteristics of low loss and good air tightness.

**【Model description】**

Standard rectangular flexible waveguide, waveguide model BJ100, flange FBP/FBM (both ends are the default FBP), waveguide length is 900mm.



**【Product Type】**

Code	Meaning	Code	Meaning
WEL	Flexible twist waveguide (interlocked flexible waveguide)	WWEL	Non-twisting flex waveguide (seamless soft waveguide)
DRWEL	Double-ridged flex waveguide		

➤ **Double-ridged flex waveguide**



**【Specifications】**

Product model	Frequency (GHz)	VSWR	Loss (dB/m)	Min. bending radius		Flange
				E - (mm)	H - (mm)	
DH-580DRWEL...PM	5.8-16	≤1.25	1.5	105	210	FP/FM
DH-650DRWEL...PM	6.5-18	≤1.30	1.65	90	180	FP/FM
DH-750DRWEL...PM	7.5-18	≤1.30	1.65	85	170	FP/FM
DH-1800DRWEL...PM	18-40	≤1.50	3.42	55	110	FP/FM

➤ **Waveguide coaxial adapter**



**【Product introduction】**

DH - WCA waveguide coaxial adapter series products with wide frequency band, specifications varieties complete, voltage standing wave ratio and low insertion loss, frequency range: 0.3 ~ 110 GHz, bandwidth in the waveguide is 1.25 and 10% or less bandwidth in the low voltage standing wave ratio of 1.15 or less performance, according to the structure form and divided into two types, termination and orthogonal.

The ex-factory standing-wave ratio is measured by measuring the S11 value or the VSWR value at the waveguide port at the coaxial end to the coaxial matching load. Although in theory, reflection parameters for lossless four-terminal networks (dual-port devices) should be measured at waveguide ports and measured at coaxial ports

It should be consistent. In fact, due to the difference of measurement system, measurement uncertainty and actual asymmetry of ports, there is more uncertainty than waveguide port measurement in coaxial port measurement. Therefore, the international practice is to measure at waveguide port.

**【Model description】**

Waveguide coaxial adapter, waveguide model BJ70, flange is FDM (the default when the flange is FDP), coaxial joint is N-K, material is aluminum (the default when the material is copper).





**【Coaxial connector type】**

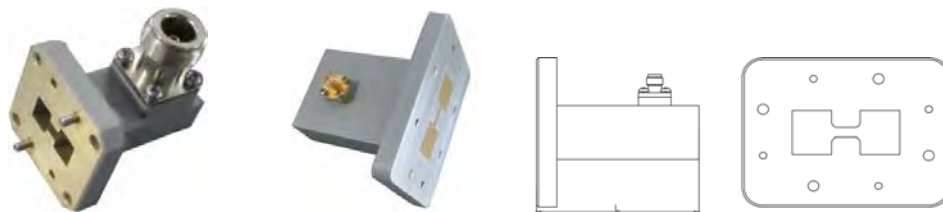
N=N-K    NJ=N-J    S=SMA-K    SJ=SMA-J    T=TNC-K    TJ=TNC-J    B=BNC-K  
 BJ=BNC-J    K=K2.92-K    KJ=K2.92-J    V=V2.4-K    VJ=V2.4-J    L16=L16-K    L16J=L16-J  
 L29=L29-K    L29J=L29-J    H63=H63-K    H63J=H63-J

**【Product Type】**

Code	Meaning	Code	Meaning
WCA	Waveguide coaxial adapter	WECA	End - to - waveguide coaxial adapter
SRWCA	Single ridged waveguide coaxial adapter	SRWECA	Single ridge ends are connected to the waveguide for coaxial adapter
DRWCA	Double ridged waveguide coaxial adapter	DRWECA	Double ridged end - to - waveguide coaxial adapter
CWCA	Circular waveguide coaxial adapter	CWECA	The circular ends are connected to the waveguide for coaxial adapter
WHPCA	High-power waveguide coaxial adapter		

➤ **Double ridged waveguide coaxial adapter**

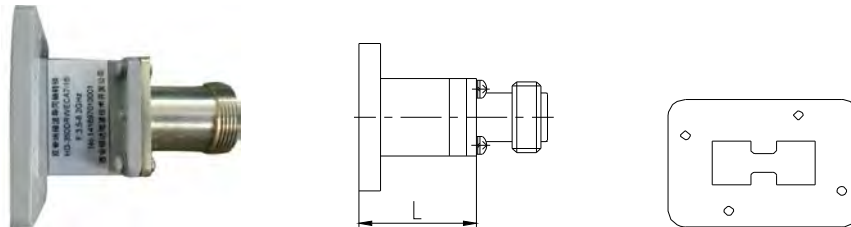
- **Coaxial conversion of double-ridged waveguides (orthogonal structure)**



**【Specifications】**

Product model	Frequency (GHz)	VSWR	IL (dB)	Connect or type	Average power (W)	L (mm)	Flange	Material	Coated
DH-84DRWCAN	0.84-2	≤1.50	≤0.5	N-K	800	175	FP	AL	Oxidati
DH-150DRWCAN	1.5-3.6	≤1.50	≤0.5	N-K	800	150	FP	AL	Oxidati
DH-200DRWCAN	2-4.8	≤1.50	≤0.5	N-K	500	101	FP	AL	Oxidati
DH-250DRWCAN	2.6-7.8	≤1.50	≤0.5	N-K	500	70	FP	AL	Oxidati
DH-350DRWCAN	3.5-8.2	≤1.50	≤0.5	N-K	500	60	FP	AL	Oxidati
DH-475DRWCAN	4.75-11	≤1.50	≤0.5	N-K	300	50	FP	AL	Oxidati
DH-500DRWCAS	5-18	≤1.50	≤0.5	SMA-K	300	45	FP	AL	Oxidati
DH-580DRWCAS	5.8-16	≤1.50	≤0.5	SMA-K	300	45	FP	AL	Oxidati
DH-650DRWCAS	6.5-18	≤1.50	≤0.5	SMA-K	100	45	FP	CO	Silver
DH-750DRWCAS	7.5-18	≤1.50	≤0.5	SMA-K	100	40	FP	CO	Silver
DH-700DRWCAS	7-18.5	≤1.50	≤0.5	SMA-K	100	40	FP	CO	Silver
DH-1100DRWCAK	11-26.5	≤1.50	≤0.5	2.92-K	50	35	FP	CO	Silver
DH-1800DRWCAK	18-40	≤2.00	≤0.5	2.92-K	50	27	FP	CO	Silver

- Coaxial adapter of end - connected double - ridged waveguides (end - connected structure)

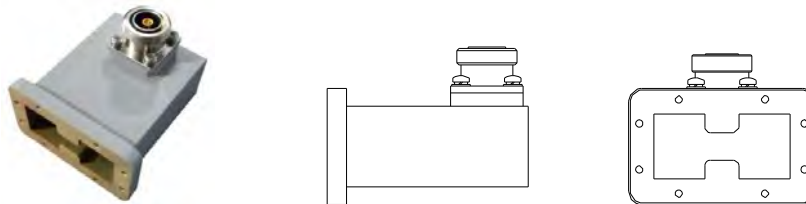


**【Specifications】**

Product model	Frequency (GHz)	VSWR	IL (dB)	Connect or type	Average power (W)	L (mm)	Flange	Material	Coated
DH-84DRWECAN	0.84-2	≤1.50	≤0.5	N-K	800	300	FP	AL	Oxidati
DH-150DRWECAN	1.5-3.6	≤1.50	≤0.5	N-K	800	160	FP	AL	Oxidati
DH-200DRWECAN	2-4.8	≤1.50	≤0.5	N-K	500	120	FP	AL	Oxidati
DH-250DRWECAN	2.6-7.8	≤1.50	≤0.5	N-K	500	85	FP	AL	Oxidati
DH-350DRWECAN	3.5-8.2	≤1.50	≤0.5	N-K	500	80	FP	AL	Oxidati

DH-475DRWECAN	4.75-11	≤1.50	≤0.5	N-K	300	50	FP	AL	Oxidati
DH-500DRWECAS	5-18	≤1.50	≤0.5	SMA-K	300	45	FP	AL	Oxidati
DH-580DRWECAS	5.8-16	≤1.50	≤0.5	SMA-K	300	40	FP	AL	Oxidati
DH-650DRWECAS	6.5-18	≤1.50	≤0.5	SMA-K	100	33.7	FP	CO	Silver
DH-750DRWECAS	7.5-18	≤1.50	≤0.5	SMA-K	100	33.7	FP	CO	Silver
DH-700DRWECAS	7-18.5	≤1.50	≤0.5	SMA-K	50	33	FP	CO	Silver
DH-1100DRWECA	11-26.5	≤1.50	≤0.5	2.92-K	30	30	FP	CO	Silver
DH-1800DRWECA	18-40	≤2.00	≤0.8	2.92-K	30	36.8	FP	CO	Silver

● High-power double-ridged waveguide coaxial adapter



【Specifications】

Product model	Frequen cy (GHz)	VSWR	IL (dB)	Connect or type	Average power (W)	Flange	Material	Coated
DH-84DRWHPCA5339	0.84-2	≤1.50	≤0.5	5339-K	1000	FP	AL	Oxidation
DH-84DRWHPCAL29	0.84-2	≤1.50	≤0.5	L29-K	500	FP	AL	Oxidation
DH-84DRWHPCAL27	0.84-2	≤1.50	≤0.5	L27-K	500	FP	AL	Oxidation
DH-84DRWHPCAN	0.84-2	≤1.50	≤0.5	N-K	300	FP	AL	Oxidation
DH-150DRWHPCAN	1.5-3.6	≤1.50	≤0.5	N-K	300	FP	AL	Oxidation
DH-200DRWHPCAN	2-4.8	≤1.50	≤0.5	N-K	300	FP	AL	Oxidation
DH-250DRWHPCAN	2.6-7.8	≤1.50	≤0.5	N-K	300	FP	AL	Oxidation
DH-350DRWHPCAN	3.5-8.2	≤1.50	≤0.5	N-K	200	FP	AL	Oxidation
DH-475DRWHPCAN	4.75-11	≤1.50	≤0.5	N-K	200	FP	AL	Oxidation
DH-500DRWHPCAN	5-18	≤1.50	≤0.5	N-K	200	FP	AL	Oxidation
DH-580DRWHPCAN	5.8-16	≤1.50	≤0.5	N-K	200	FP	AL	Oxidation
DH-650DRWHPCAN	6.5-18	≤1.50	≤0.5	N-K	200	FP	CO	Silver plated
DH-750DRWHPCAN	7.5-18	≤1.50	≤0.5	N-K	200	FP	CO	Silver plated

## ➤ Waveguide terminal components

### 【Product introduction】

DH series waveguide terminal devices, including various forms of waveguide matching load, mismatch load, high power load, short circuit, etc.

Since a waveguide is physically open for total reflection, it does not have an open circuit, but is represented by a one-quarter wavelength short-circuiter.

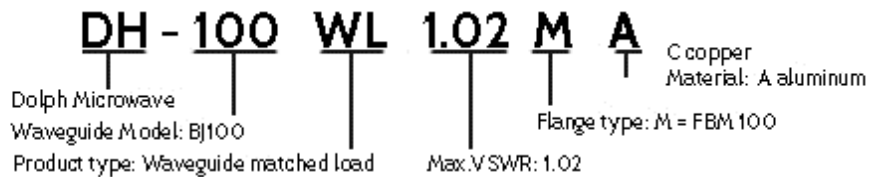
The waveguide matches the load product, and the absorber adopts the bulk absorbing material, which changes the vulnerability of the plate load to vibration and damage, and greatly improves the matching and absorption. Its stable electrical characteristics are very suitable for system debugging, testing and maintenance.

Dolph microwave invention of waveguide multimode radiation type super power water load can solve the false load of super power experiment and super power equipment. It has the advantages of small volume, good matching performance and large power capacity. All kinds of waveguides, such as rectangular waveguide, circular waveguide and double-ridged waveguide, can be realized. Any working waveguide mode such as base mode and high order mode can achieve super power matching load.

### ● Waveguide load

#### 【Model description】

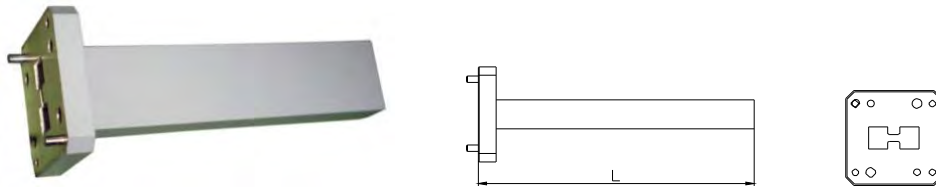
The standard rectangular waveguide matches the load, the waveguide model BJ100, the flange is FBM (the default when the flange is FBP), the maximum standing wave of the full waveguide bandwidth is 1.02, and the material is aluminum (the default when the material is copper).



#### 【Product Type】

Code	Meaning	Code	Meaning
WL	Waveguide matched load	WUL	Waveguide mismatch load
DRWL	Double-ridged waveguides match the load	WSL	The slide waveguide matches the load
WHPL	High power waveguide load	WWHPL	High power waveguide water load
WHPL...F	Air-cooled high power	WHPL...S	Water-cooled high power waveguide

● Double-ridged waveguides match the load



【Specifications】

Product model	Frequency (GHz)	VSWR	L (mm)	Average power (W)	Flange	Material	Coated
DH-84DRWL1.15	0.84-2	≤1.15	720	5	FP	AL	Oxidation
DH-150DRWL1.15	1.5-3.6	≤1.15	650	5	FP	AL	Oxidation
DH-200DRWL1.15	2-4.8	≤1.15	340	5	FP	AL	Oxidation
DH-250DRWL1.15	2.6-7.8	≤1.15	300	5	FP	AL	Oxidation
DH-350DRWL1.15	3.5-8.2	≤1.15	260	5	FP	AL	Oxidation
DH-475DRWL1.15	4.75-11	≤1.15	200	2	FP	AL	Oxidation
DH-500DRWL1.15	5-18	≤1.15	210	2	FP	AL	Oxidation
DH-580DRWL1.15	5.8-16	≤1.15	210	2	FP	AL	Oxidation
DH-650DRWL1.15	6.5-18	≤1.15	102	1	FP	CO	Silver plated
DH-750DRWL1.15	7.5-18	≤1.15	140	1	FP	CO	Silver plated
DH-700DRWL1.15	7-18.5	≤1.15	200	1	FP	CO	Silver plated
DH-1100DRWL1.15	11-26.5	≤1.15	150	0.5	FP	CO	Silver plated
DH-1800DRWL1.15	18-40	≤1.15	109	0.5	FP	CO	Silver plated

➤ High power waveguide dry load

【Product introduction】

High-power waveguide dry load consists of waveguide, high temperature absorbing material and radiator. There are natural cooling, forced air cooling and water cooling. The natural cooling type requires a wider cooling space around the load when it is used. Forced air cooling

allows less space to be used, but the air circulation around the load should be lower temperature; Water-cooled loads can normally withstand the maximum power range, but require a water-cooled cycle system to assist.

- **Naturally cooled high power double ridged waveguide dry load**



**【Specifications】**

Product model	Frequency (GHz)	VSWR	Average power (W)	Flange	Material	Coated
DH-84DRWHPL...	0.84-2	≤1.25	10-2000W	FP	AL	Oxidation
DH-150DRWHPL...	1.5-3.6	≤1.25	10-2000W	FP	AL	Oxidation
DH-200DRWHPL...	2-4.8	≤1.25	10-2000W	FP	AL	Oxidation
DH-250DRWHPL...	2.6-7.8	≤1.25	10-2000W	FP	AL	Oxidation
DH-350DRWHPL...	3.5-8.2	≤1.25	10-2000W	FP	AL	Oxidation
DH-475DRWHPL...	4.75-11	≤1.25	10-1000W	FP	AL	Oxidation
DH-500DRWHPL...	5-18	≤1.25	10-1000W	FP	AL	Oxidation
DH-580DRWHPL...	5.8-16	≤1.25	10-1000W	FP	AL	Oxidation
DH-650DRWHPL...	6.5-18	≤1.25	10-1000W	FP	CO	Silver plated
DH-750DRWHPL...	7.5-18	≤1.25	10-1000W	FP	CO	Silver plated
DH-700DRWHPL...	7-18.5	≤1.25	10-1000W	FP	CO	Silver plated
DH-1100DRWHPL...	11-26.5	≤1.25	10-600W	FP	CO	Silver plated
DH-1800DRWHPL	18-40	≤1.25	10-600W	FP	CO	Silver plated

➤ **Short circuiter**

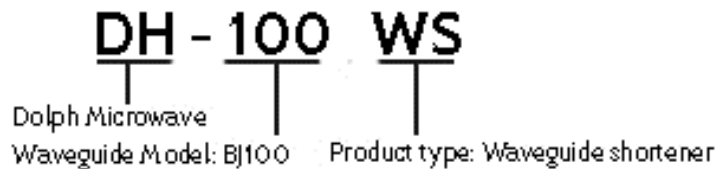
**【Product introduction】**

Waveguide shortener is the basic calibration device of microwave measurement system.



**【Model description】**

Waveguide short-circuiter, suitable for waveguide model BJ100.



**【Product Type】**

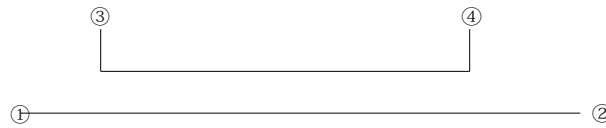
Code	Meaning	Code	Meaning
WS	Waveguide shortener	CWS	Circular waveguide shortener
DRWS	Double-ridged waveguide	WSS	Waveguide slide shortener

➤ **Waveguide coupler**






**【Product introduction】**

The coupler is one of the components commonly used in microwave transmission system of radar communication and other electronic equipment. Waveguide directional coupler is a four-terminal mouthpiece, as shown in the figure, -, - for a transmission line, between the lines have a certain coupling structure. When the signal is input from the port, some signals are directly output from the port, S<sub>21</sub>, and some signals are coupled to the S<sub>31</sub> or S<sub>41</sub> channel according to the coupling structure. Interestingly, in coaxial directional couplers, S<sub>31</sub> is the coupling coefficient and S<sub>41</sub> is the isolation coefficient. S<sub>41</sub> over S<sub>31</sub> is the directivity coefficient. After taking logarithm operation, their dB values are coupling degree, isolation degree and directivity respectively. In a parallel waveguide directional coupler, S<sub>41</sub> is the

coupling coefficient and S31 is the isolation coefficient.



Couplers are widely used in monitoring, measuring and power distribution/synthesis in microwave and radar feeder systems due to their directional coupling characteristics and coupling degree can be arbitrarily designed. The types and differences of DH series waveguide couplers are as follows:

Category	Features	Applicable	Product
Waveguide high directivity coupler	Covers full waveguide bandwidth with selectable coupling range 3-60dB, directivity 40-20dB,	High-precision measurement, system monitoring and	
Waveguide Cross Directional Coupler	Covers 20% of the waveguide bandwidth, with a selectable range of 20-60dB. The coupling flatness is better than	System monitoring and measurement	
Waveguide ring coupler	Covers 20% of the waveguide bandwidth, with a selectable range of 20-60dB, directivity	Mostly used for monitoring and measuring	
3dB directional coupler	Covers 20% of the waveguide bandwidth, 3dB coupling, and the two outputs are 90 ° out of phase	Power allocation or synthesis	
Probe coupler	Covering 20% waveguide bandwidth, coupling degree optional range 10-60db, no directionality, large standing	Simple system detection	

### ➤ Waveguide cross directional coupler



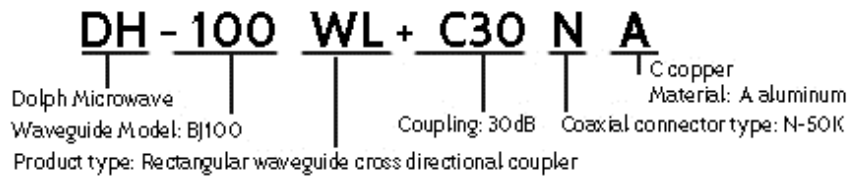


**【Product introduction】**

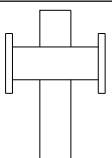
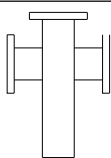
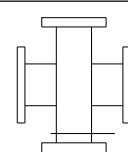
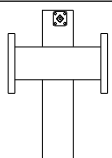
Wave guide ten words set to decoupling the combiner, wave conduction band width within 20% of the standard type main line pattern standing wave VSWR 1.10, or less line pattern standing wave VSWR 1.25, or less typical coupling 50/60 30/35 20/25 / / 40/45 / db, often used for monitoring and measuring system.

**【Model description】**

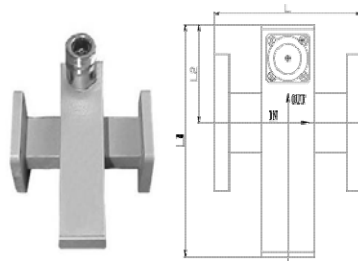
Waveguide cross coupler, waveguide type BJ100, coaxial connector is N-K, coupling is 30dB, material is aluminum.



**【Product Type】**

TYPE	WL+C...C	WL+C...	W+C...	WL+CB...c
Schematic				
Waveguide model	BJ9-BJ320	BJ9-BJ900	BJ9- BJ900	BJ9-BJ320

<b>Bandwidth</b>	FO±10%	FO±10%	FO±10%	FO±10%
<b>Selectable coupling (dB)</b>	20-60	20-60	20-60	20-60
<b>Coupling frequency response (dB)</b>	±0.5~±1.0	±0.5~±1.0	±0.5~±1.0	±0.5~±1.0
<b>Directivity (dB)</b>	15-20	15-20	15-20	15-20
<b>Main line VSWR</b>	1.10	1.10	1.10	1.10
<b>Coupling output</b>	N, SMA, 2.92	waveguide	waveguide	N, SMA, 2.92

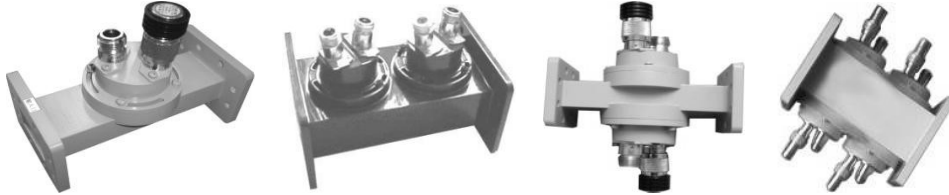


**【WL + C ... c series Specifications】**

Product model	Frequency (GHz)	Band width	Main line VS	Auxiliary line VSWR	Selectable coupling	Directivity (dB)	Flange	Coupling output	Size(mm) LXL1XL2	Material	Coated
DH-12WL+C...N	0.96-1.46	≤20	≤1.10	≤1.25	20-60	≥15	FDP	N-K	400x760x25	AL	Oxid
DH-14WL+C...N	1.13-1.73	≤20	≤1.10	≤1.25	20-60	≥15	FDP	N-K	320x460x160	AL	Oxid
DH-18WL+C...N	1.45-2.20	≤20	≤1.10	≤1.25	20-60	≥15	FDP	N-K	285x510x180	AL	Oxid
DH-22WL+C...N	1.72-2.61	≤20	≤1.10	≤1.25	20-60	≥15	FDP	N-K	240x390x140	AL	Oxid
DH-26WL+C...N	2.17-3.30	≤20	≤1.10	≤1.25	20-60	≥15	FDP	N-K	190x280x110	AL	Oxid
DH-32WL+C...N	2.60-3.95	≤20	≤1.10	≤1.25	20-60	≥15	FDP	N-K	180x275x88	AL	Oxid
DH-40WL+C...N	3.22-4.90	≤20	≤1.10	≤1.25	20-60	≥15	FDP	N-K	170x240x90	AL	Oxid
DH-48WL+C...N	3.94-5.99	≤20	≤1.10	≤1.25	20-60	≥15	FDP	N-K	137x200x83	AL	Oxid
DH-58WL+C...N	4.64-7.05	≤20	≤1.10	≤1.25	20-60	≥15	FDP	N-K	120x170x65	AL	Oxid
DH-70WL+C...N	5.38-8.17	≤20	≤1.10	≤1.25	20-60	≥15	FDP	N-K	90x150x60	AL	Oxid
DH-84WL+C...N	6.57-9.99	≤20	≤1.10	≤1.25	20-60	≥15	FBP	N-K	82x120x50	CO	Silve
DH-100WL+C...N	8.2-12.40	≤20	≤1.10	≤1.25	20-60	≥15	FBP	N-K	70x85x40	CO	Silve
DH-120WL+C...N	9.84-15.0	≤20	≤1.10	≤1.25	20-60	≥15	FBP	N-K	60x83x35	CO	Silve
DH-140WL+C...S	11.9-18.0	≤20	≤1.10	≤1.25	20-60	≥15	FBP	SMA-K	60x65x30	CO	Silve
DH-180WL+C...S	14.5-22.0	≤20	≤1.10	≤1.25	20-60	≥15	FBP	SMA-K	60x70x30	CO	Silve
DH-220WL+C...K	17.6-26.7	≤20	≤1.10	≤1.5	20-60	≥15	FBP	2.92-K	65x54x30	CO	Silve

DH-260WL+C...K	21.7-33.0	≤20	≤1.10	≤1.5	20-60	≥15	FBP	2.92-K	60x50x25	CO	Silve
DH-320WL+C...K	26.5-40.0	≤20	≤1.10	≤1.5	20-60	≥15	FBP	2.92-K	42x50x20	CO	Silve

### ➤ Waveguide ring coupler

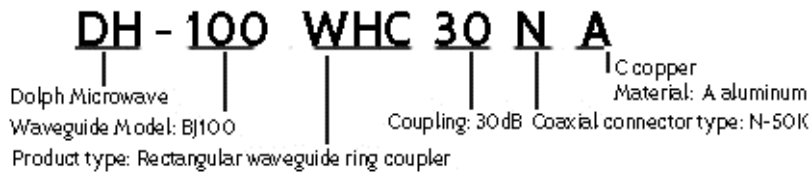


#### 【Product introduction】

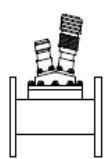
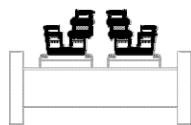
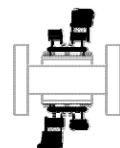
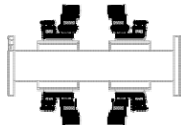
Waveguide ring coupler, typical main line standing wave VSWR1.10, auxiliary line standing wave VSWR1.25 within 20% of the waveguide bandwidth, typical coupling degree is 20/25/30/35/40/45/50 / 60dB, due to its compactness The structure and good sealing performance are widely used in microwave systems below 12G.

#### 【Model description】

Waveguide ring coupler, waveguide type BJ100, coaxial connector is N-K, coupling degree is 30dB, material is aluminum (default is copper material).

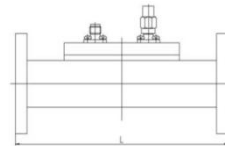


#### 【Product Type】

Name	Waveguide ring coupler	Double directional loop coupler		Four-way loop coupler
Type	WHC...c	WHHC...c	WDHC...c	WDHHC...c
Schematic				
Waveguide type	BJ9- BJ100	BJ9-BJ100	BJ9-BJ100	BJ9-BJ100
Bandwidth	FO±10%	FO±10%	FO±10%	FO±10%

Selectable coupling (dB)	20-60	20-60	20-60	20-60
Directivity (dB)	15	15	15	15
Main line VSWR	1.10	1.10	1.10	1.10
Auxiliary line VSWR	1.25	1.25	1.25	1.25
Coupling output	N or SMA	N or SMA	N or SMA	N or SMA

➤ **Double ridge waveguide ring coupler**

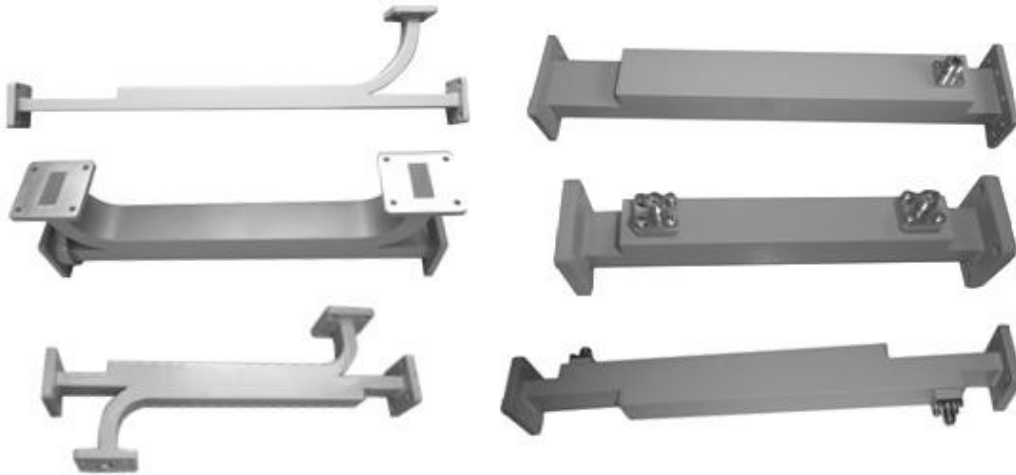


**【DRWHC series Specifications】**

Product model	Frequency (GHz)	Selectable coupling (dB)	Directivity (dB)	Main line VSWR	Auxiliary line VSWR	Flange	Coupling output	L (mm)	Material	Coated
DH-84DRWHC...N	0.84-2	20~60	≥15	≤1.15	≤1.60	FP	N-K	300	AL	Oxidat
DH-150DRWHC...N	1.5-3.6	20~60	≥15	≤1.15	≤1.60	FP	N-K	200	AL	Oxidat
DH-200DRWHC...N	2-4.8	20~60	≥15	≤1.15	≤1.60	FP	N-K	180	AL	Oxidat
DH-250DRWHC...N	2.6-7.8	20~60	≥15	≤1.15	≤1.60	FP	N-K	150	AL	Oxidat
DH-350DRWHC...N	3.5-8.2	20~60	≥15	≤1.15	≤1.60	FP	N-K	120	AL	Oxidat
DH-475DRWHC...N	4.75-11	20~60	≥10	≤1.15	≤1.80	FP	N-K	100	AL	Oxidat
DH-500DRWHC...N	5-18	20~60	≥10	≤1.15	≤1.80	FP	N-K	100	AL	Oxidat
DH-580DRWHC...N	5.8-16	20~60	≥10	≤1.15	≤1.80	FP	N-K	100	AL	Oxidat
DH-650DRWHC...N	6.5-18	20~60	≥10	≤1.15	≤1.80	FP	N-K	100	AL	Oxidat
DH-750DRWHC...N	7.5-18	20~60	≥10	≤1.15	≤1.80	FP	N-K	100	AL	Oxidat
DH-700DRWHC...N	7-18.5	20~60	≥10	≤1.15	≤1.80	FP	N-K	100	AL	Oxidat
DH-1100DRWHC...	11-26.5	20~60	≥10	≤1.20	≤2.0	FP	SMA-K	80	CO	Silver

DH-1800DRWHC...	18-40	20~60	$\geq 10$	$\leq 1.20$	$\leq 2.0$	FP	SMA-K	80	CO	Silver
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➤ **Waveguide high directivity coupler**



**【Product introduction】**

The DH series waveguide high directivity coupler adopts a wide-edge porous Chebyshev superimposed array design. It has a coupling smoothness of  $\pm 0.5\text{dB}$  and a directivity of up to 40dB in the full waveguide bandwidth. The main waveguide has a small standing wave and can withstand high power. . It is one of the best directional devices for incident / reflected wave sampling in radar and communication equipment antenna feeder systems. It is widely used in microwave measurement, sampling, high-power detection, microwave feed systems, radar, communications, navigation, satellite communications, etc. Device. In waveguide reflection measurement of scalar network analyzer and vector network analyzer, it is recommended to use this series of products as reflection sampling devices to avoid human and system errors during calibration and testing.

The coupling degree of DH series waveguide high directivity coupler can be from 3dB-60dB, corresponding to the directivity of 40-30dB. The disadvantage is that the length of the coupler is relatively long due to the length of the load and the installation length of the reserved load.




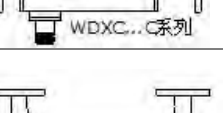


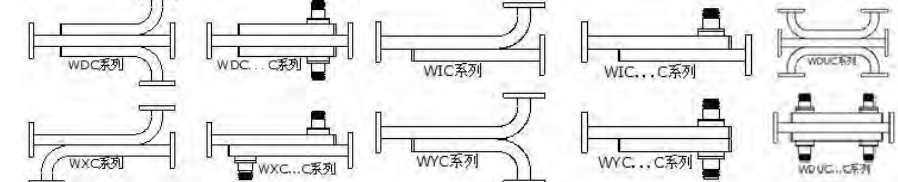
**【Model description】**

Waveguide high directional coupler, waveguide model BJ100, coaxial connector is N-K, coupling degree is 30dB, coupling output interface is N-K, material is aluminum (default is copper material)

**DH - 100 WC 30 N A**

Dolph Microwave Waveguide Model: BJ100 Coupling: 30dB Coaxial connector type: N-50K  
 Material: A aluminum  
 Product type: Rectangular Waveguide High Directional Coupler

**【DRWHC series Specifications】**

Product type	Product outline drawing	Waveguide model	Bandwidth	Selectable coupling	Average coupling accuracy (dB)	Coupling frequency response (dB)	Directivity (dB)
Single directional		BJ9-BJ900	Full bandwidth	3-60	±0.7~±1.5	±0.7~±1.5	30-40
Single directional		BJ9-BJ900	Full bandwidth	3-60	±0.7~±1.5	±0.7~±1.5	30-40
Double directional		BJ9-BJ900	Full bandwidth	3-60	±0.7~±1.5	±0.7~±1.5	30-40
		BJ9-BJ900	Full bandwidth	3-60	±0.7~±1.5	±0.7~±1.5	30-40
Two way		BJ9-BJ900	Full bandwidth	3-60	±0.7~±1.3	±0.5~±1.8	30-40
		BJ9-BJ900	Full bandwidth	3-60	±0.7~±1.3	±0.5~±1.8	30-40
Other							

➤ **Double ridge waveguide high directivity coupler**



**【Product introduction】**

Because the bandwidth of the double-ridged waveguide ranges from octave to triple octave, such wide bandwidth makes it difficult to design the high-directional coupler of the double-ridged waveguide. Dolph microwave products have reached and close to the level of imported products, can replace imported broadband high-power ridge waveguide system.

**【DRWC series Specifications】**

Product model	Select Frequency (GHz)	The available coupling Frequency (dB)	Coupling Frequency (dB)	Directivity (dB)	Main line VSWR	Auxiliary line VSWR	Flange	Coupling output	Material	Coated
DH-84DRWC...N	0.84-2	20~60	±1.5	≥25	≤1.10	≤1.5	FP	N-K	AL	Oxidation
DH-150DRWC...N	1.5-3.6	20~60	±1.5	≥25	≤1.10	≤1.5	FP	N-K	AL	Oxidation
DH-200DRWC...	2-4.8	20~60	±1.5	≥25	≤1.10	≤1.5	FP	N-K	AL	Oxidation
DH-250DRWC...N	2.6-7.8	20~60	±1.5	≥25	≤1.10	≤1.5	FP	N-K	AL	Oxidation
DH-350DRWC...N	3.5-8.2	20~60	±1.5	≥25	≤1.10	≤1.5	FP	N-K	AL	Oxidation
DH-475DRWC...N	4.75-11	20~60	±1.5	≥25	≤1.10	≤1.5	FP	N-K	AL	Oxidation
DH-500DRWC...	5-18	20~60	±1.5	≥25	≤1.10	≤1.5	FP	N-K	AL	Oxidation
DH-580DRWC...N	5.8-16	20~60	±1.5	≥25	≤1.10	≤1.5	FP	N-K	AL	Oxidation
DH-650DRWC...N	6.5-18	20~60	±1.5	≥25	≤1.10	≤1.5	FP	N-K	AL	Oxidation
DH-750DRWC...N	7.5-18	20~60	±1.5	≥25	≤1.10	≤1.25	FP	N-K	AL	Oxidation
DH-700DRWC...N	7-18.5	20~60	±1.5	≥25	≤1.10	≤1.25	FP	N-K	AL	Oxidation
DH-1100DRWC...	11-26.5	20~60	±1.5	≥25	≤1.10	≤1.25	FP	SMA-K	CO	Silver
DH-1800DRWC...	18-40	20~60	±1.5	≥25	≤1.10	≤1.25	FP	SMA-K	CO	Silver

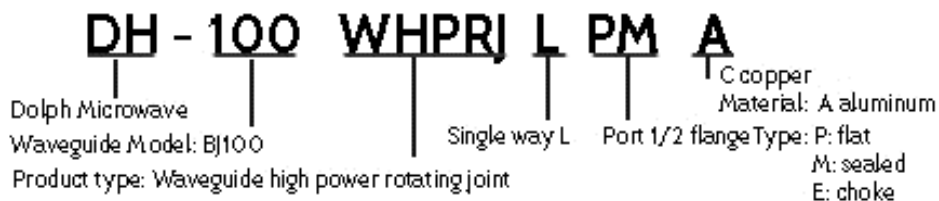
## ➤ Waveguide rotating joint

### 【Product introduction】

The rotating joint is mainly used for the connection of fixed part and rotating part in the radar feeder system. According to the structure, it can be divided into type I, L and U, etc. According to the component channel, it can be divided into single-way, double-way and multi-way rotating joint. The product frequency range covers 2.6-40GHz.

### 【Model description】

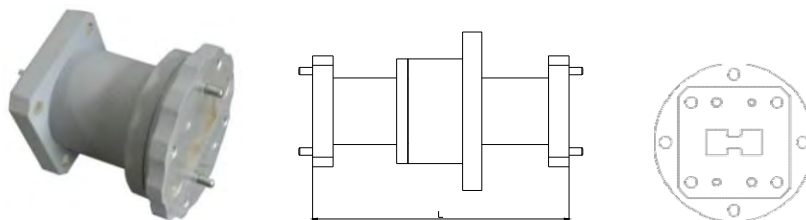
Waveguide high-power rotating joint, waveguide BJ100, l-shaped structure, flange type: FBP/FBM (both ends are the default FBP), material is aluminum (the default material is copper).



### 【Product Type】

Code	Meaning	Code	Meaning
WRJ	Waveguide rotating joint	DRWRJ	Double ridged waveguide rotating joint
WHPRJ	High power waveguide rotating joint	DRWHPRJ	High power double ridged waveguide rotating joint
WRJIT	Polarized rotating joint	CWRJ	Circular waveguide rotating joint

## ➤ Double ridged waveguide rotating joint





**【Standard Product Specifications】**

Product model	Frequency (GHz)	VSWR	IL(dB)	Average Power	Flange	Material	Coating
DH-84DRWRJI	0.84-2	≤1.5	≤0.5	200W	FP	CO	Silver
DH-150DRWRJI	1.5-3.6	≤1.5	≤0.5	200W	FP	CO	Silver
DH-200DRWRJI	2-4.8	≤1.5	≤0.5	200W	FP	CO	Silver
DH-250DRWRJI	2.6-7.8	≤1.5	≤0.5	200W	FP	CO	Silver
DH-350DRWRJI	3.5-8.2	≤1.5	≤0.5	200W	FP	CO	Silver
DH-475DRWRJI	4.75-11	≤1.5	≤0.5	100W	FP	CO	Silver
DH-500DRWRJI	5-18	≤1.5	≤0.5	100W	FP	CO	Silver
DH-580DRWRJI	5.8-16	≤1.5	≤0.5	100W	FP	CO	Silver
DH-650DRWRJI	6.5-18	≤1.5	≤0.5	100W	FP	CO	Silver
DH-700DRWRJI	7-18.5	≤1.5	≤0.5	100W	FP	CO	Silver
DH-750DRWRJI	7.5-18	≤1.5	≤0.5	100W	FP	CO	Silver
DH-1100DRWRJI	11-26.5	≤1.8	≤0.8	50W	FP	CO	Silver
DH-1800DRWRJI	18-40	≤2.0	≤0.8	30W	FP	CO	Silver

➤ **Power Divider / Combiner**

**【Product introduction】**

Dolph Microwave provides a series of high-performance waveguide magic T, power divider, and combiner products. By connecting a load to the H-arm or E-arm of the Magic T, it can be made into a Magic T power divider or synthesizer.

Waveguide Magic T has the following characteristics: the two ends of the balance arm are symmetrical; the signal input from the E arm will be output with equal amplitude and opposite phase at both ends of the balance arm, and the H arm is isolated; the signal input from the H arm will be at the same amplitude and in phase at both ends of the balance arm. The output is isolated from the E arm; the signal input from either end of the balanced arm is output equally on the E arm and the H port, and the other end of the corresponding balanced arm is isolated. Therefore, the magic T has the characteristics of opposite port isolation, adjacent 3 dB coupling and perfect matching, which makes it widely used in the microwave field, especially used in monopulse radar and difference comparator, radar transceiver switch, power distribution / combination, mixed Frequency converter and phase shifter.

**【Model description】**

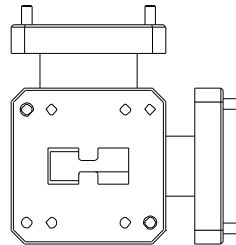
Waveguide magic T, waveguide model BJ100, the material is aluminum (default when the material is copper)

**DH - 100**    **WMT**    **A**  
 Dolph Microwave    Waveguide Model: BJ100    Product type: Wave guide magic T  
 Material: A aluminum    Copper

**【Product Type】**

Code	Meaning	Code	Meaning
WET	Waveguide ET connector	WHT	Waveguide ET connector
WMTPC	Waveguide in-phase power combiner	WMTPD	Waveguide in-phase power divider
WMT	Waveguide Magic T		
WSWC	Waveguide 90 ° power splitter / combiner (narrow-side coupling); I \ U \ XY \ YU type		
WTWC	Waveguide 90 ° power splitter / combiner (broad-side coupling); I \ U \ XY \ YU type		

➤ **Double Ridge Waveguide Magic T Power Divider / Combiner**



**【Standard Product Specifications】**

Product model	Frequency (GHz)	VSWR		Isolation (two balancing arms) (dB)	Distribution ratio (dB)	Flange	Material	Coating
		H-plane	E-plane					
DH-200DRWMTPC/D	2.0-4.8	≤1.50	≤1.50	≥12	3±0.6	FP	AL	Oxidation
DH-250DRWMTPC/D	2.6-7.8	≤1.50	≤1.50	≥12	3±0.6	FP	AL	Oxidation
DH-350DRWMTPC/D	3.5-8.2	≤1.50	≤1.50	≥12	3±0.6	FP	AL	Oxidation
DH-475DRWMTPC/D	4.75-11	≤1.50	≤1.50	≥12	3±0.6	FP	AL	Oxidation

DH-500DRWMTPC/D	5.0-18.	≤1.50	≤1.50	≥12	3±0.6	FP	CO	Silver
DH-650DRWMTPC/D	6.5-18.	≤1.50	≤1.50	≥12	3±0.6	FP	CO	Silver
DH-750DRWMTPC/D	7.5-18.	≤1.50	≤1.50	≥12	3±0.6	FP	CO	Silver
DH-700DRWMTPC/D	7.0-18.	≤1.50	≤1.50	≥12	3±0.6	FP	CO	Silver

## ➤ Waveguide attenuator

### 【Product introduction】

Waveguide attenuator is the basic component of waveguide system. The waveguide attenuator can absorb the energy in the waveguide transmission line and is mainly used for decoupling matching of microwave system, level control and setting the reference level when measuring by high frequency substitution method.

### 【Model description】

Standard rectangular waveguide fixed attenuator, waveguide model BJ100, flange FBP/FBM (both ends are the default FBP), attenuation is 30dB, material is aluminum (the default material is copper).

**DH - 100 WFA 30 P M A**  
 Dolph Microwave  
 Waveguide Model: BJ100  
 Product type: Rectangular waveguide fixed attenuator  
 Attenuation: At = 30dB  
 Port 1 flange type P= FBP100  
 Port 2 flange type M= FBM100  
 Material: A aluminum  
 C copper

### 【Product Type】

Code	Meaning	Code	Meaning
WFA	Waveguide fixed attenuator	WVA	Waveguide variable attenuator
WHPCFA	Waveguide high power fixed attenuator	WHPVA	Waveguide high power variable attenuator
WCFA	Waveguide coupled fixed attenuator	WVPA	Waveguide precision polarization attenuator

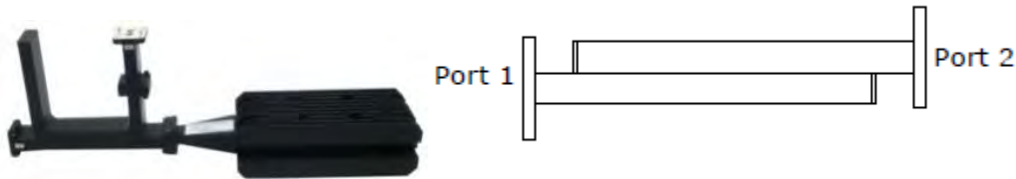
### 【Standard Product Specifications】

Product model	Frequency (GHz)	VSWR	Attenuation (dB)	Frequency response (dB)	Flange	Material	Coated
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DH-84DRWFA...	0.84-2	≤1.15	3-30	±3.5	FP	AL	Oxidation
DH-150DRWFA...	1.5-3.6	≤1.15	3-30	±3.5	FP	AL	Oxidation
DH-200DRWFA...	2-4.8	≤1.15	3-30	±3.5	FP	AL	Oxidation
DH-250DRWFA...	2.6-7.8	≤1.15	3-30	±3.5	FP	AL	Oxidation
DH-350DRWFA...	3.5-8.2	≤1.15	3-30	±3.5	FP	AL	Oxidation
DH-475DRWFA...	4.75-11	≤1.15	3-30	±3.5	FP	CO	Silver
DH-500DRWFA...	5-18	≤1.15	3-30	±3.5	FP	CO	Silver
DH-580DRWFA...	5.8-16	≤1.15	3-30	±3.5	FP	CO	Silver
DH-650DRWFA...	6.5-18	≤1.15	3-30	±3.5	FP	CO	Silver
DH-750DRWFA...	7.5-18	≤1.15	3-30	±3.5	FP	CO	Silver
DH-700DRWFA...	7-18.5	≤1.15	3-30	±3.5	FP	CO	Silver
DH-1100DRWFA...	11-26.5	≤1.2	3-30	±3.5	FP	CO	Silver
DH-1800DRWFA..	18-40	≤1.2	3-30	±3.5	FP	CO	Silver

### ➤ Coupled double ridged waveguide fixed attenuator

The coupling double-ridged waveguide fixed attenuator has the advantage of good frequency response of attenuator in full-ridged waveguide bandwidth.



#### 【Standard Product Specifications】

Product model	Frequency (GHz)	Optional attenuation (dB)	Frequency response (dB)	Main line VSWR	Flange	Material	Coated
DH-84DRWCFA...	0.84-2	10-60	±2	≤1.15	FP	AL	Oxidatio
DH-150DRWCFA...	1.5-3.6	10-60	±2	≤1.15	FP	AL	Oxidatio
DH-200DRWCFA...	2-4.8	10-60	±2	≤1.15	FP	AL	Oxidatio
DH-250DRWCFA...	2.6-7.8	10-60	±2	≤1.15	FP	AL	Oxidatio
DH-350DRWCFA...	3.5-8.2	10-60	±2	≤1.15	FP	AL	Oxidatio
DH-475DRWCFA...	4.75-11	10-60	±2	≤1.15	FP	CO	Silver
DH-500DRWCFA...	5-18	10-60	±2	≤1.15	FP	CO	Silver
DH-580DRWCFA...	5.8-16	10-60	±2	≤1.15	FP	CO	Silver
DH-650DRWCFA...	6.5-18	10-60	±2	≤1.15	FP	CO	Silver



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DH-750DRWCFA...	7.5-18	10-60	±2	≤1.15	FP	CO	Silver
DH-700DRWCFA...	7-18.5	10-60	±2	≤1.15	FP	CO	Silver
DH-1100DRWCFA...	11-26.5	10-60	±2	≤1.15	FP	CO	Silver
DH-1800DRWCFA...	18-40	10-60	±2	≤1.15	FP	CO	Silver



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