

Alroy Microwave & Electronics Limited



Waveguide flanges
and hardware, tubing,
straights, cast bends,
swept bends, twists,
tapers and accessories



WG-coax transitions
Rotating joints
Flexibles
Filters
Cross guide couplers
Attenuators
Double ridge assemblies

Design, manufacture,
installation, electrical
testing of all waveguide
assemblies

ISO9002 approved



Alroy Microwave & Electronics Limited

Established in 1966 by D Grist and D Hucker, Alroy Microwave and Electronics Ltd has a workforce of 20 personnel. It is a family run concern, designing, manufacturing and testing waveguide assemblies in a variety of materials for both the commercial and military business sectors.

Within our work/machine shop based in Stevenage, Hertfordshire, we manufacture waveguide assemblies, sub assemblies and waveguide components from waveguide R32 (WG10) up to waveguide R320 (WG22) in copper, brass and aluminium. We are also capable of manufacturing double ridge and lightweight seamless waveguide assemblies. The assemblies are either manufactured directly to customers' own specifications or designed by ourselves. We pride ourselves in being able to work to fine tolerances, to satisfy customers requirements, and to ensure that customers enquires are priced keenly and that delivery dates are met.

The assemblies we supply, are manufactured using the latest methods and techniques available, along with our own tried and tested methods. All machining, twisting, bending and testing are carried out in-house, giving flexibility in lead/completion times. All manufactured items are tested on one of our Marconi Instruments' spectrum analysers, and inspected in our climate controlled inspection and test area. We operate a quality management system, which comply with the requirements of BS.EN. ISO9002,

Alroy Microwave also holds approvals for the following: -
M.o.D. no. 17VA01, from G.E.C Marconi Avionics Ltd, Matra Marconi Space Ltd and British Aerospace.

Alroy Microwave and Electronics Ltd supply: -

Waveguide straights	Waveguide E plane bends (cast and formed)	
Waveguide H plane bends (cast and formed)		Pressure inlets
Waveguide twists	Rotating joints	Waveguide tapers
Waveguide to coax transitions	Feedarms	Flange adapters*
Cross guide coupler	Directional couplers	Termination loads
Seamless flexibles	Twistable flexibles	Horns
Pressure windows	Complex bend/twist assemblies	

*Alroy Microwave supply all types of American, British and European flanges, accessories and hardware.

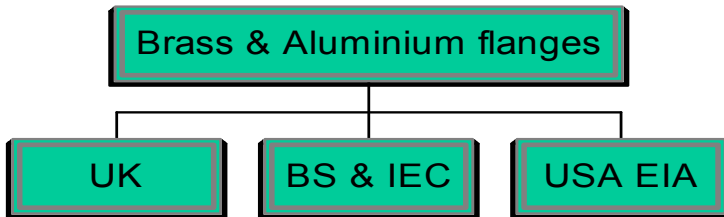
Alroy Microwave is frequently asked to design, manufacture, install and test waveguide runs for sat-comms, microwave links and SDH networks in the commercial and military fields. On completion of testing the installed assemblies, we supply the customer with AutoCAD generated drawings along with full test results comprising of: distance to fault, V.S.W.R./return loss and insertion loss measurements, supplied in hard copy and floppy disc format

Flanges and Hardware



Alroy Microwave & Electronics Limited can supply flanges in either brass or aluminium along with cast bends and all the hardware required to ensure correct installation of assemblies

Alroy Microwave & Electronics Limited can supply the follow range of flanges



Hardware supplied (optional)

Pressure Windows

Gaskets

O Rings

Quick release clamps

Nut rings

Waveguide supporting
brackets

Waveguide Bolts, Nuts &
Washers

Seals

Shims

Waveguide tubing

Waveguide sizes

UK WG10
IEC R32
EIA WR284
2.60-3.95GHz

WG11A
R40
WR229
3.22-4.90GHz

WG12
R48
WR187
3.94-5.99GHz

WG13
R58
WR159
4.64-7.05GHz

WG14
R70
WR137
5.38-8.18GHz

WG15
R84
WR112
6.58-10.0GHz

WG16
R100
WR90
8.20-12.5GHz

UK WG17
IEC R120
EIA WR75
9.84-15.0GHz

WG18
R140
WR62
11.90-18.0GHz

WG19
R180
WR51
14.50-22.0GHz

WG20
R220
WR42
17.60-26.70GHz

WG21
R260
WR34
21.70-33.0GHz

WG22
R320
WR28
26.40-40.1GHz

WG23
R400
WR22
33.0-50.1GHz

Waveguide tubing is available in brass, copper and aluminium, where applicable
Other waveguide sizes available on request

All assembly sizes are ordered using the **EIA WR** specification and:

A = Aluminium

B = Brass

C = Copper

Waveguide Specifications

UK WG	IEC R	EIA WR	MIL- W-85/1	Frequency Range GHz	Wavelength Cm	Cut Off		Internal Dimensions		External Dimensions	
						Frequency GHz	Wavelength Cm	Inches	Millimetres	Inches	Millimetres
10	32	284	039-043	2.60-3.95	11.53-7.59	2.078	14.4	2.840 x 1.340	72.14 x 34.04	3.000 x 1.500	76.20 x 38.10
11A	40	229	045-049	3.22-4.90	9.08-6.12	2.577	11.6	2.290 x 1.145	58.17 x 29.083	2.418 x 1.273	61.42 x 32.33
12	48	187	051-055	3.94-5.99	7.59-5.12	3.152	9.51	1.872 x 0.872	47.55 x 22.149	2.000 x 1.000	50.80 x 25.40
13	58	159	057-061	4.64-7.05	6.12-4.25	3.711	8.08	1.590 x 0.795	40.39 x 20.193	1.718 x 0.923	43.64 x 23.44
14	70	137	063-067	5.38-8.18	5.12-3.66	4.301	6.97	1.372 x 0.622	34.85 x 15.799	1.500 x 0.750	38.10 x 19.05
15	84	112	069-073	6.58-10.0	4.25-2.99	5.259	5.70	1.122 x 0.497	28.499 x 12.624	1.250 x 0.625	31.75 x 15.88
16	100	90	075-079	8.20-12.5	3.66-2.42	6.557	4.57	0.900 x 0.400	22.86 x 10.16	1.000 x 0.500	25.40 x 12.70
17	120	75	081-085	9.84-15.0	2.99-2.00	7.868	3.81	0.750 x 0.375	19.05 x 9.525	0.850 x 0.475	21.59 x 12.06
18	140	62	087-091	11.90-18.0	2.42-1.66	9.486	3.16	0.622 x 0.311	15.799 x 7.899	0.702 x 0.391	17.83 x 9.93
19	180	51	094-098	14.50-22.0	2.00-1.36	11.574	2.59	0.510 x 0.255	12.954 x 6.477	0.590 x 0.335	14.99 x 8.51
20	220	42	100-104	17.60-26.7	1.66-1.13	14.047	2.13	0.420 x 0.170	10.668 x 4.318	0.500 x 0.250	12.70 x 6.35
21	260	34	107-111	21.70-33.0	1.36-0.91	17.328	1.73	0.340 x 0.170	8.636 x 4.318	0.420 x 0.250	10.67 x 6.35
22	320	28	114-117	26.40-40.1	1.13-0.75	21.081	1.42	0.280 x 0.140	7.112 x 3.556	0.360 x 0.220	9.14 x 5.59

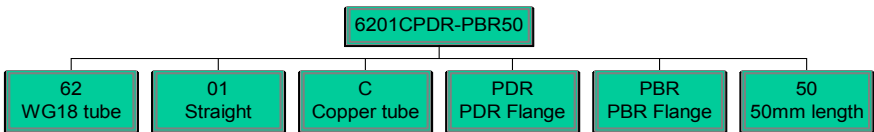
Note: Every effort has been taken to ensure the information in this table is correct, but the company cannot accept any liability for errors

Straight assemblies



Alroy Microwave & Electronics Limited manufacture straight assemblies in all waveguide sizes and can be assembled with different flanges at each end if required

Assembly code example



A = Aluminium

B = Brass

C = Copper

Low VSWR specification 1.03:1

Assembly to be painted as per customers requirements, if requested

Waveguide multi-bend assemblies



Alroy Microwave & Electronics Limited can manufacture straight, offset, swept or cast bend assemblies or any combination complete with integral flexible sections to suit customers own requirements from aluminium, brass or copper.



Waveguide swept bends

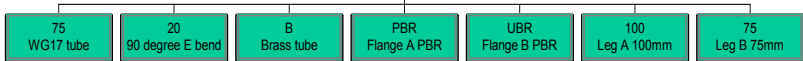


Alroy Microwave & Electronics Limited's swept bend assemblies, can be manufactured in either the E or H plane with a variety of leg lengths and inside radii, to suit individual requirements

Swept E bend assemblies

Assembly code example

7520BPBR-UBR100-75



Assembly codes for different degrees of bend

20 = 90 degree bend 21 = 45 degree bend 22 = 30 degree bend

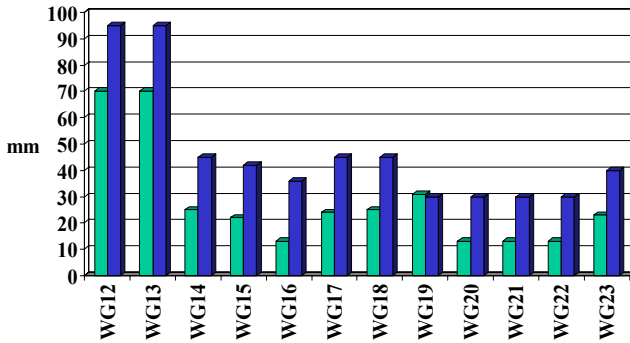
23 = 75 degree bend 24 = please specify other degree of bend

A = Aluminium

B = Brass

C = Copper

Assembly to be painted to customers requirements, if requested



■ Inside Rad mm (Min)

■ Leg Length mm (Min)

All standard bends have a VSWR of 1.05:1 or better

and are available in Aluminium, Brass or Copper

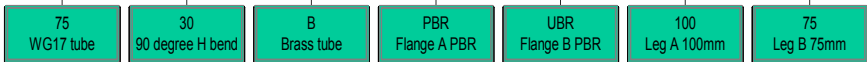
Leg lengths are from centreline to flange face

Other radii and leg lengths available to suit individual needs

Swept H bend assemblies

Assembly code example

7530BPBR-UBR100-75



Assembly codes for different degrees of bend

30 = 90 degree bend 31 = 45 degree bend 32 = 30 degree bend

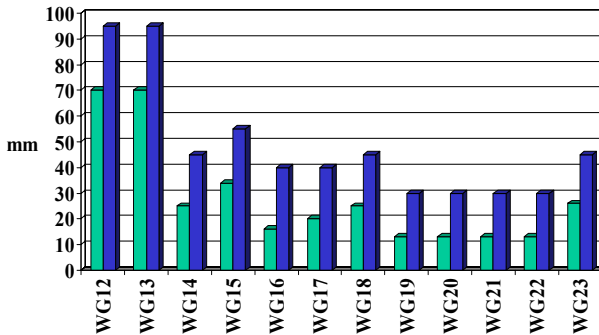
33 = 75 degree bend 34 = please specify other degree of bend

A = Aluminium

B = Brass

C = Copper

Assembly to be painted to customers requirements, if requested



■ Inside Rad mm (Min)
■ Leg Length mm (Min)

All standard bends have a VSWR of 1.05:1 or better and are available in Aluminium, Brass or Copper
Leg lengths are from centreline to flange face.
Other radii and leg lengths available to suit individual needs

Waveguide cast bends

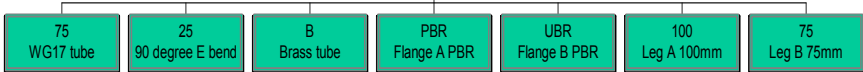


Alroy Microwave & Electronics Limited can supply cast bend assemblies, manufactured in either the E or H plane with a variety of leg lengths, to suit individual requirements, or just supply cast bends of all waveguide sizes

Cast E bend assemblies

Assembly code example

7525BPBR-UBR100-75



Assembly codes for different degrees of bend

25 = 90 degree bend

26 = 45 degree bend

27 = 30 degree bend

28 = 60 degree bend

A = Aluminium

B = Brass

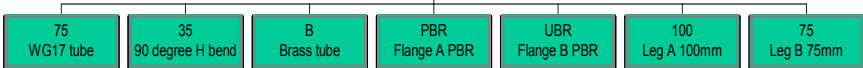
C = Copper

Assembly to be painted to customers requirements, if requested

Cast H bend assemblies

Assembly code example

7535BPBR-UBR100-75



Assembly codes for different degrees of bend

35 = 90 degree bend

36 = 45 degree bend

37 = 30 degree bend

38 = 60 degree bend

A = Aluminium

B = Brass

C = Copper

Assembly to be painted to customers requirements, if requested

Waveguide to coaxial transitions



Alroy Microwave & Electronics Limited offer full band or low VSWR narrow band waveguide to coaxial transitions in sizes from WG10 to WG22, using N-type, SMA or K-type connectors and manufactured to a standard length (see chart) or to customers specifications

Assembly code example

7503BUBR100SF

75

WG17 tube

03

Wg - coaxial transition

B

Brass tube

UBR

UBR Flange

100

100mm long

SF

SMA female connector

NM = N-type male connector

SM = SMA male connector

KM = K- type male connector

A = Aluminium

B = Brass

C = Copper

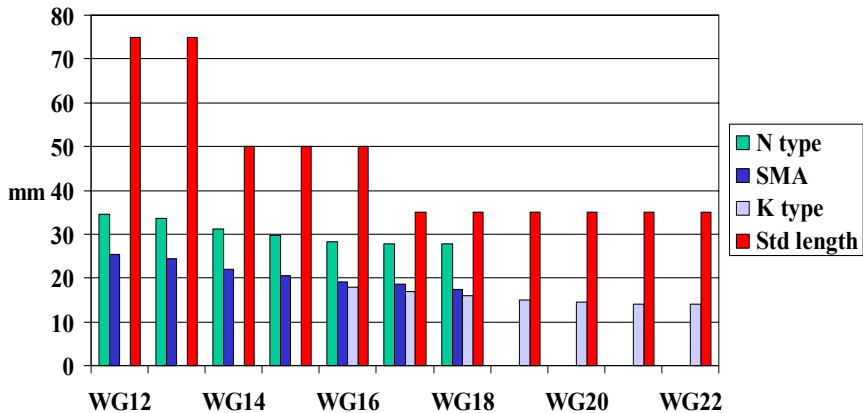
NF = N-type female connector

SF = SMA female connector

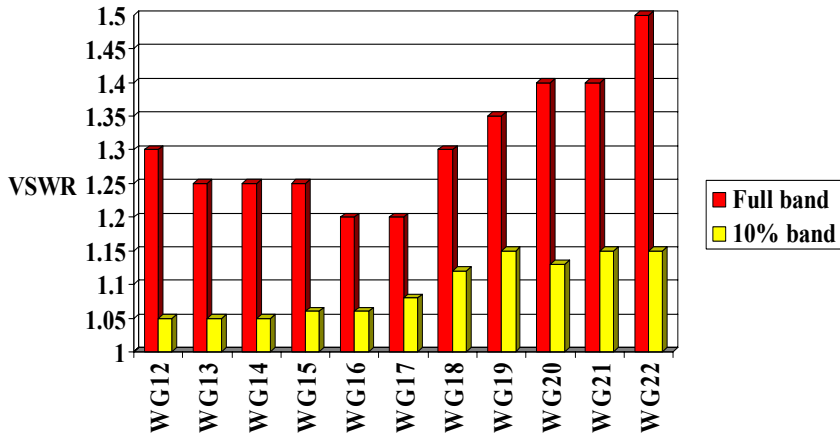
KF = K-type female connector

Assembly to be painted as per customers requirements, if requested

Standard length of assembly & height of connector chart (From centre of waveguide in mm)



WG - coaxial transition VSWR chart



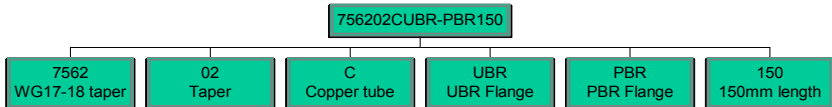
Waveguide tapers



Alroy Microwave & Electronics Limited offer waveguide tapers in a variety of waveguide sizes

Taper assemblies

Assembly code example



Only available in electroformed copper

C = Copper

Example shown:

WG17-18 copper taper, flanged UBR120-UBR140 150mm long

Assembly to be painted as per customers requirements, if requested

Flexible assemblies



Alroy Microwave & Electronics Limited supply flexible waveguide assemblies in various sizes and jacketed with either neoprene or silicon or can be painted to customers requirements

Twistable & non twistable flexible assemblies

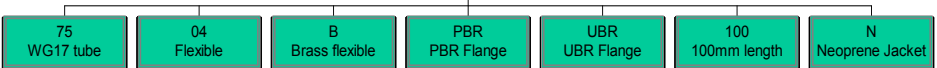


Alroy Microwave & Electronics Limited supply twistable flexible waveguide assemblies in various sizes and jacketed with either neoprene or silicon or can be painted to customers requirements

Twistable flexible assemblies

Assembly code example

7504BUBR-PBR100N



U = Unjacketed

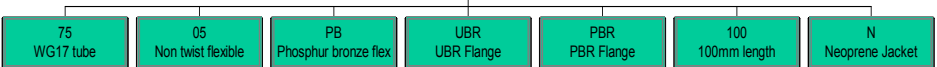
S = Silicon Jacket

N = Neoprene Jacket

Non twistable flexible assemblies

Assembly code example

7505PBUBR-PBR100N



PB = Phosphor Bronze BC = Beryllium Copper

U = Unjacketed

S = Silicon Jacket

N = Neoprene Jacket

Flanges can be plated or painted as per customers requirements, if requested

EIA WR Size	Non- Twistable		Twistable		CW power Watts		Peak power K/Watts
	VSWR	Atten	VSWR	Atten	Non- Twistable	Twistable	
284	1.09	0.036	1.09	0.036	10,000	4,000	2,000
229	1.07	0.044	1.07	0.046	8,000	4,000	1,550
187	1.08	0.060	1.09	0.100	6,500	3,000	1,250
159	1.08	0.080	1.09	0.120	6,000	2,500	1,100
137	1.09	0.090	1.09	0.140	5,000	2,000	500
112	1.09	0.120	1.10	0.160	4,000	1,500	315
90	1.10	0.180	1.10	0.200	3,000	1,000	180
75	1.12	0.260	1.12	0.300	1,500	750	140
62	1.15	0.300	1.12	0.400	1,000	400	100
42	1.20	0.640	1.20	0.700	300	100	39
28	1.30	1.000	1.30	1.200	150	75	20

*All figures given are per 2ft lengths

Twist assemblies



Alroy Microwave & Electronics Limited offer waveguide twist assemblies in a variety of sizes and degree of twist

Assembly code example

7540BUBR-PBR100



Assembly codes for different degrees of twist

40 = 90 degree R/H twist 41 = 45 degree R/H twist 42 = 30 degree R/H twist

43 = 60 degree R/H twist 44 = please specify other degree of R/H twist

45 = 90 degree L/H twist 46 = 45 degree L/H twist 47 = 30 degree L/H twist

48 = 60 degree L/H twist 49 = please specify other degree of L/H twist

A = Aluminium

B = Brass

C = Copper

Assembly to be painted as per customers requirements, if requested

Rotating joints



Alroy Microwave & Electronics Limited supply a wide range of rotating joints

Attenuators

Alroy Microwave & Electronics Limited can supply a variety of fixed/variable attenuators



Cross guide couplers



Alroy Microwave & Electronics Limited manufacture cross-guide couplers to customers requirements

Filters

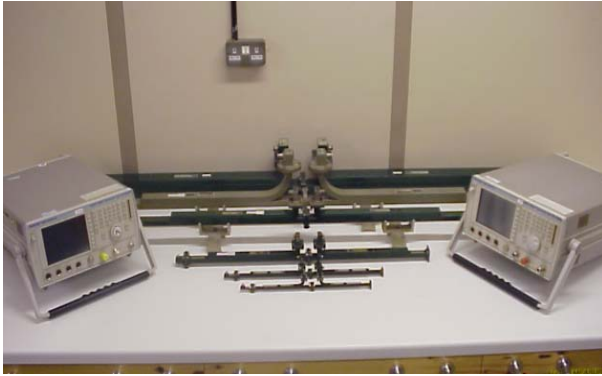
Alroy Microwave & Electronics Limited manufacture filters to customers own drawings and specifications

Double ridge assemblies



Alroy Microwave & Electronics Limited manufacture double ridge assemblies in WRD475, WRD580 and WRD750 to customers requirements

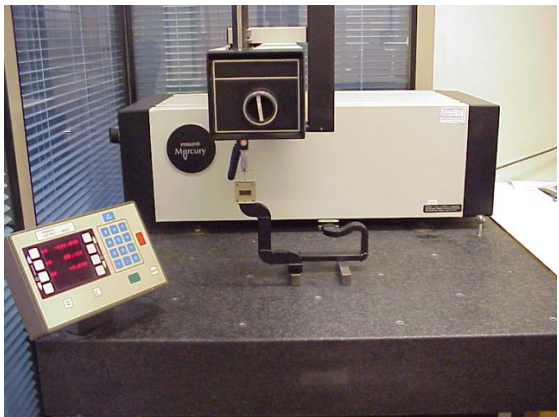
Test and Inspection



Alroy
Microwave &
Electronics
Limited
electrically test
all assemblies in
our purpose built
climate
controlled test

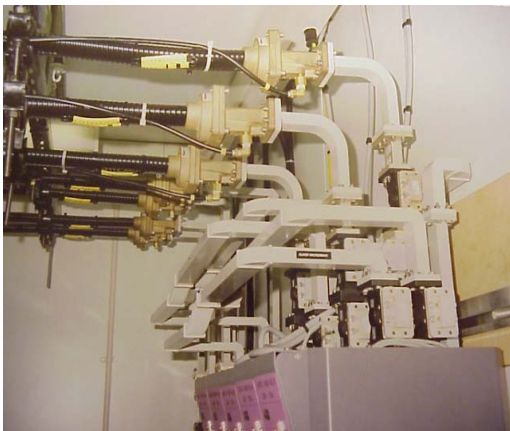
area, using one of our Marconi Instruments
spectrum analysers & WR284-WR28
directional couplers or autotester

All assemblies are
inspected
mechanically to
ensure all critical
physical tolerances
are within drawing
specifications. This is
achieved using our
co-ordinate
measuring machine.



Installation and sweep testing

Alroy Microwave & Electronics Limited offer to carry out site visits to measure,



design, manufacture,
install and test
waveguide runs

How to order

- Enter waveguide size**

WR284, WR229, WR187, WR159, WR137, WR112, WR90, WR75, WR62, WR51, WR42, WR34, WR28

- Enter Assembly code number**

01 = straight; 02 = Taper; 03 = WG-coaxial Transition;

04 = Twistable flexibles; 05 = Non-twistable flexibles;

20* = E bend assemblies; 30* = H bend assemblies; 40* = Twist

* Code varies as according to degree of bend/twist

- Enter material**

A = Aluminium , B = Brass, C = Copper

- Enter Flange type 1 and flange type 2**

- Enter Lengths (Leg 1 to attach to flange 1 & leg 2 to flange 2)**

- Enter other information**

- Example 112-20-C-PBR-UBR-75-75**

= Waveguide 15 90° Swept copper E bend, flanged

PBR84 & UBR84 with 75mm leg lengths

To make an Enquiry

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