

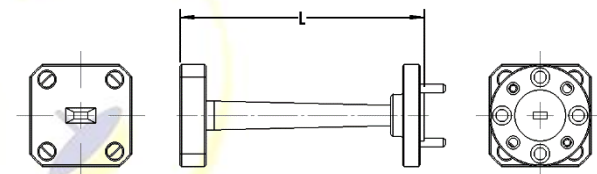
Rectangular to Rectangular Transitions

Summary:

Tapered Rectangular to Rectangular Transitions are used to transfer energy from one waveguide size to another with a minimum of reflections and loss. Our transitions are electro-formed on precision mandrels to obtain the best mode purity and minimize insertion loss. Rectangular to Rectangular Transitions are available in sizes WR3 to WR90.

Ordering Example:

ET28S-8R is a transition from WR28 waveguide with a Square flange to WR8 waveguide with a Round flange. ET15R-5R is a transition from WR15 waveguide to WR5 waveguide with round flanges on both ends.



| RF Specifications | | | | | | Mechanical Specifications | | | | | |
|-------------------|------|------|-------------------|-------------------|----------------|---------------------------|----------------|----------------|-----------------|----------|----------|
| Part Name | WR 1 | WR 2 | Frequency 1 (GHz) | Frequency 2 (GHz) | WG1 A DIM (in) | WG1 B DIM (in) | WG2 A DIM (in) | WG2 B DIM (in) | Length - L (in) | Flange 1 | Flange 2 |
| ET90S-75S | 90 | 75 | 8.2 - 12.4 | 10 - 15 | 0.9000 | 0.4000 | 0.7500 | 0.3750 | 2.000 | S 1.625 | S 1.500 |
| ET90S-62S | 90 | 62 | 8.2 - 12.4 | 12.4 - 18 | 0.9000 | 0.4000 | 0.6220 | 0.3110 | 3.000 | S 1.625 | S 1.312 |
| ET90S-51S | 90 | 51 | 8.2 - 12.4 | 15 - 22 | 0.9000 | 0.4000 | 0.5100 | 0.2550 | 3.700 | S 1.625 | S 1.312 |
| ET90S-42S | 90 | 42 | 8.2 - 12.4 | 18 - 26.5 | 0.9000 | 0.4000 | 0.4200 | 0.1700 | 4.500 | S 1.625 | S 0.875 |
| ET90S-28S | 90 | 28 | 8.2 - 12.4 | 26.5 - 40 | 0.9000 | 0.4000 | 0.2800 | 0.1400 | 5.750 | S 1.625 | S 0.750 |
| ET90S-22R | 90 | 22 | 8.2 - 12.4 | 33 - 50 | 0.9000 | 0.4000 | 0.2240 | 0.1120 | 6.250 | S 1.625 | R 1.125 |
| ET90S-19R | 90 | 19 | 8.2 - 12.4 | 40 - 60 | 0.9000 | 0.4000 | 0.1880 | 0.0940 | 7.000 | S 1.625 | R 1.125 |
| ET90S-15R | 90 | 15 | 8.2 - 12.4 | 50 - 75 | 0.9000 | 0.4000 | 0.1480 | 0.0740 | 6.750 | S 1.625 | R 0.750 |
| ET90S-12R | 90 | 12 | 8.2 - 12.4 | 60 - 90 | 0.9000 | 0.4000 | 0.1220 | 0.0610 | 6.000 | S 1.625 | R 0.750 |
| ET90S-10R | 90 | 10 | 8.2 - 12.4 | 75 - 110 | 0.9000 | 0.4000 | 0.1000 | 0.0500 | 6.400 | S 1.625 | R 0.750 |
| ET75S-62S | 75 | 62 | 10 - 15 | 12.4 - 18 | 0.7500 | 0.3750 | 0.6220 | 0.3110 | 2.000 | S 1.500 | S 1.312 |
| ET75S-51S | 75 | 51 | 10 - 15 | 15 - 22 | 0.7500 | 0.3750 | 0.5100 | 0.2550 | 2.600 | S 1.500 | S 1.312 |
| ET75S-42S | 75 | 42 | 10 - 15 | 18 - 26.5 | 0.7500 | 0.3750 | 0.4200 | 0.1700 | 3.500 | S 1.500 | S 0.875 |

| Part Name | WR 1 | WR 2 | Frequency 1 (GHz) | Frequency 2 (GHz) | WG1 A DIM (in) | WG1 B DIM (in) | WG2 A DIM (in) | WG2 B DIM (in) | Length - L (in) | Flange 1 | Flange 2 |
|-----------|------|------|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------------|----------|----------|
| ET75S-28S | 75 | 28 | 10 - 15 | 26.5 - 40 | 0.7500 | 0.3750 | 0.2800 | 0.1400 | 4.700 | S 1.500 | S 0.750 |
| ET75S-22R | 75 | 22 | 10 - 15 | 33 - 50 | 0.7500 | 0.3750 | 0.2240 | 0.1120 | 5.200 | S 1.500 | R 1.125 |
| ET75S-19R | 75 | 19 | 10 - 15 | 40 - 60 | 0.7500 | 0.3750 | 0.1880 | 0.0940 | 5.500 | S 1.500 | R 1.125 |
| ET75S-15R | 75 | 15 | 10 - 15 | 50 - 75 | 0.7500 | 0.3750 | 0.1480 | 0.0740 | 5.900 | S 1.500 | R 0.750 |
| ET75S-12R | 75 | 12 | 10 - 15 | 60 - 90 | 0.7500 | 0.3750 | 0.1220 | 0.0610 | 6.000 | S 1.500 | R 0.750 |
| ET75S-10R | 75 | 10 | 10 - 15 | 75 - 110 | 0.7500 | 0.3750 | 0.1000 | 0.0500 | 6.200 | S 1.500 | R 0.750 |
| ET62S-51S | 62 | 51 | 12.4 - 18 | 15 - 22 | 0.6220 | 0.3110 | 0.5100 | 0.2550 | 1.600 | S 1.312 | S 1.312 |
| ET62S-42S | 62 | 42 | 12.4 - 18 | 18 - 26.5 | 0.6220 | 0.3110 | 0.4200 | 0.1700 | 2.500 | S 1.312 | S 0.875 |
| ET62S-28S | 62 | 28 | 12.4 - 18 | 26.5 - 40 | 0.6220 | 0.3110 | 0.2800 | 0.1400 | 3.800 | S 1.312 | S 0.750 |
| ET62S-22R | 62 | 22 | 12.4 - 18 | 33 - 50 | 0.6220 | 0.3110 | 0.2240 | 0.1120 | 4.200 | S 1.312 | R 1.125 |
| ET62S-19R | 62 | 19 | 12.4 - 18 | 40 - 60 | 0.6220 | 0.3110 | 0.1880 | 0.0940 | 4.400 | S 1.312 | R 1.125 |
| ET62S-15R | 62 | 15 | 12.4 - 18 | 50 - 75 | 0.6220 | 0.3110 | 0.1480 | 0.0740 | 4.800 | S 1.312 | R 0.750 |
| ET62S-12R | 62 | 12 | 12.4 - 18 | 60 - 90 | 0.6220 | 0.3110 | 0.1220 | 0.0610 | 5.000 | S 1.312 | R 0.750 |
| ET62S-10R | 62 | 10 | 12.4 - 18 | 75 - 110 | 0.6220 | 0.3110 | 0.1000 | 0.0500 | 5.100 | S 1.312 | R 0.750 |
| ET51S-42S | 51 | 42 | 15 - 22 | 18 - 26.5 | 0.5100 | 0.2550 | 0.4200 | 0.1700 | 2.000 | S 1.312 | S 0.875 |
| ET51S-28S | 51 | 28 | 15 - 22 | 26.5 - 40 | 0.5100 | 0.2550 | 0.2800 | 0.1400 | 2.400 | S 1.312 | S 0.750 |
| ET51S-22R | 51 | 22 | 15 - 22 | 33 - 50 | 0.5100 | 0.2550 | 0.2240 | 0.1120 | 3.000 | S 1.312 | R 1.125 |
| ET51S-19R | 51 | 19 | 15 - 22 | 40 - 60 | 0.5100 | 0.2550 | 0.1880 | 0.0940 | 3.300 | S 1.312 | R 1.125 |
| ET51S-15R | 51 | 15 | 15 - 22 | 50 - 75 | 0.5100 | 0.2550 | 0.1480 | 0.0740 | 3.700 | S 1.312 | R 0.750 |
| ET51S-12R | 51 | 12 | 15 - 22 | 60 - 90 | 0.5100 | 0.2550 | 0.1220 | 0.0610 | 3.900 | S 1.312 | R 0.750 |
| ET51S-10R | 51 | 10 | 15 - 22 | 75 - 110 | 0.5100 | 0.2550 | 0.1000 | 0.0500 | 4.000 | S 1.312 | R 0.750 |
| ET42S-34S | 42 | 34 | 18 - 26.5 | 22 - 33 | 0.4200 | 0.1700 | 0.3400 | 0.1700 | 2.200 | S 0.875 | S 0.875 |
| ET42S-28S | 42 | 28 | 18 - 26.5 | 26.5 - 40 | 0.4200 | 0.1700 | 0.2800 | 0.1400 | 2.200 | S 0.875 | S 0.750 |
| ET42S-22R | 42 | 22 | 18 - 26.5 | 33 - 50 | 0.4200 | 0.1700 | 0.2240 | 0.1120 | 2.200 | S 0.875 | R 1.125 |
| ET42S-19R | 42 | 19 | 18 - 26.5 | 40 - 60 | 0.4200 | 0.1700 | 0.1880 | 0.0940 | 2.500 | S 0.875 | R 1.125 |
| ET42S-15R | 42 | 15 | 18 - 26.5 | 50 - 75 | 0.4200 | 0.1700 | 0.1480 | 0.0740 | 2.700 | S 0.875 | R 0.750 |
| ET42S-12R | 42 | 12 | 18 - 26.5 | 60 - 90 | 0.4200 | 0.1700 | 0.1220 | 0.0610 | 3.300 | S 0.875 | R 0.750 |

| Part Name | WR 1 | WR 2 | Frequency 1 (GHz) | Frequency 2 (GHz) | WG1 A DIM (in) | WG1 B DIM (in) | WG2 A DIM (in) | WG2 B DIM (in) | Length - L (in) | Flange 1 | Flange 2 |
|-----------|------|------|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------------|----------|----------|
| ET42S-10R | 42 | 10 | 18 - 26.5 | 75 - 110 | 0.4200 | 0.1700 | 0.1000 | 0.0500 | 3.200 | S 0.875 | R 0.750 |
| ET42S-8R | 42 | 8 | 18 - 26.5 | 90 - 140 | 0.4200 | 0.1700 | 0.0800 | 0.0400 | 3.400 | S 0.875 | R 0.750 |
| ET42S-6R | 42 | 6 | 18 - 26.5 | 110 - 175 | 0.4200 | 0.1700 | 0.0650 | 0.0325 | 3.500 | S 0.875 | R 0.750 |
| ET42S-5R | 42 | 5 | 18 - 26.5 | 140 - 220 | 0.4200 | 0.1700 | 0.0510 | 0.0255 | 3.600 | S 0.875 | R 0.750 |
| ET42S-4R | 42 | 4 | 18 - 26.5 | 170 - 260 | 0.4200 | 0.1700 | 0.0430 | 0.0215 | 3.700 | S 0.875 | R 0.750 |
| ET42S-3R | 42 | 3 | 18 - 26.5 | 220 - 325 | 0.4200 | 0.1700 | 0.0340 | 0.0170 | 3.800 | S 0.875 | R 0.750 |
| ET34S-28S | 34 | 28 | 22 - 33 | 26.5 - 40 | 0.3400 | 0.1700 | 0.2800 | 0.1400 | 2.000 | S 0.875 | S 0.750 |
| ET28S-22R | 28 | 22 | 26.5 - 40 | 33 - 50 | 0.2800 | 0.1400 | 0.2240 | 0.1120 | 2.000 | S 0.750 | R 1.125 |
| ET28S-19R | 28 | 19 | 26.5 - 40 | 40 - 60 | 0.2800 | 0.1400 | 0.1880 | 0.0940 | 2.000 | S 0.750 | R 1.125 |
| ET28S-15R | 28 | 15 | 26.5 - 40 | 50 - 75 | 0.2800 | 0.1400 | 0.1480 | 0.0740 | 2.000 | S 0.750 | R 0.750 |
| ET28S-12R | 28 | 12 | 26.5 - 40 | 60 - 90 | 0.2800 | 0.1400 | 0.1220 | 0.0610 | 2.400 | S 0.750 | R 0.750 |
| ET28S-10R | 28 | 10 | 26.5 - 40 | 75 - 110 | 0.2800 | 0.1400 | 0.1000 | 0.0500 | 1.800 | S 0.750 | R 0.750 |
| ET28S-8R | 28 | 8 | 26.5 - 40 | 90 - 140 | 0.2800 | 0.1400 | 0.0800 | 0.0400 | 2.200 | S 0.750 | R 0.750 |
| ET28S-6R | 28 | 6 | 26.5 - 40 | 110 - 175 | 0.2800 | 0.1400 | 0.0650 | 0.0325 | 2.300 | S 0.750 | R 0.750 |
| ET28S-5R | 28 | 5 | 26.5 - 40 | 140 - 220 | 0.2800 | 0.1400 | 0.0510 | 0.0255 | 2.400 | S 0.750 | R 0.750 |
| ET28S-4R | 28 | 4 | 26.5 - 40 | 170 - 260 | 0.2800 | 0.1400 | 0.0430 | 0.0215 | 2.600 | S 0.750 | R 0.750 |
| ET28S-3R | 28 | 3 | 26.5 - 40 | 220 - 325 | 0.2800 | 0.1400 | 0.0340 | 0.0170 | 2.800 | S 0.750 | R 0.750 |
| ET22R-19R | 22 | 19 | 33 - 50 | 40 - 60 | 0.2240 | 0.1120 | 0.1880 | 0.0940 | 1.800 | R 1.125 | R 1.125 |
| ET22R-15R | 22 | 15 | 33 - 50 | 50 - 75 | 0.2240 | 0.1120 | 0.1480 | 0.0740 | 1.800 | R 1.125 | R 0.750 |
| ET22R-12R | 22 | 12 | 33 - 50 | 60 - 90 | 0.2240 | 0.1120 | 0.1220 | 0.0610 | 1.800 | R 1.125 | R 0.750 |
| ET22R-10R | 22 | 10 | 33 - 50 | 75 - 110 | 0.2240 | 0.1120 | 0.1000 | 0.0500 | 1.800 | R 1.125 | R 0.750 |
| ET22R-8R | 22 | 8 | 33 - 50 | 90 - 140 | 0.2240 | 0.1120 | 0.0800 | 0.0400 | 1.800 | R 1.125 | R 0.750 |
| ET22R-6R | 22 | 6 | 33 - 50 | 110 - 175 | 0.2240 | 0.1120 | 0.0650 | 0.0325 | 1.800 | R 1.125 | R 0.750 |
| ET22R-5R | 22 | 5 | 33 - 50 | 140 - 220 | 0.2240 | 0.1120 | 0.0510 | 0.0255 | 1.900 | R 1.125 | R 0.750 |
| ET22R-4R | 22 | 4 | 33 - 50 | 170 - 260 | 0.2240 | 0.1120 | 0.0430 | 0.0215 | 2.000 | R 1.125 | R 0.750 |
| ET22R-3R | 22 | 3 | 33 - 50 | 220 - 325 | 0.2240 | 0.1120 | 0.0340 | 0.0170 | 2.100 | R 1.125 | R 0.750 |
| ET19R-15R | 19 | 15 | 40 - 60 | 50 - 75 | 0.1880 | 0.0940 | 0.1480 | 0.0740 | 1.600 | R 1.125 | R 0.750 |

| Part Name | WR 1 | WR 2 | Frequency 1 (GHz) | Frequency 2 (GHz) | WG1 A DIM (in) | WG1 B DIM (in) | WG2 A DIM (in) | WG2 B DIM (in) | Length - L (in) | Flange 1 | Flange 2 |
|-----------|------|------|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------------|----------|----------|
| ET19R-12R | 19 | 12 | 40 - 60 | 60 - 90 | 0.1880 | 0.0940 | 0.1220 | 0.0610 | 1.500 | R 1.125 | R 0.750 |
| ET19R-10R | 19 | 10 | 40 - 60 | 75 - 110 | 0.1880 | 0.0940 | 0.1000 | 0.0500 | 1.500 | R 1.125 | R 0.750 |
| ET19R-8R | 19 | 8 | 40 - 60 | 90 - 140 | 0.1880 | 0.0940 | 0.0800 | 0.0400 | 1.500 | R 1.125 | R 0.750 |
| ET19R-6R | 19 | 6 | 40 - 60 | 110 - 175 | 0.1880 | 0.0940 | 0.0650 | 0.0325 | 1.500 | R 1.125 | R 0.750 |
| ET19R-5R | 19 | 5 | 40 - 60 | 140 - 220 | 0.1880 | 0.0940 | 0.0510 | 0.0255 | 1.600 | R 1.125 | R 0.750 |
| ET19R-4R | 19 | 4 | 40 - 60 | 170 - 260 | 0.1880 | 0.0940 | 0.0430 | 0.0215 | 1.700 | R 1.125 | R 0.750 |
| ET19R-3R | 19 | 3 | 40 - 60 | 220 - 325 | 0.1880 | 0.0940 | 0.0340 | 0.0170 | 1.800 | R 1.125 | R 0.750 |
| ET15R-12R | 15 | 12 | 50 - 75 | 60 - 90 | 0.1480 | 0.0740 | 0.1220 | 0.0610 | 1.400 | R 0.750 | R 0.750 |
| ET15R-10R | 15 | 10 | 50 - 75 | 75 - 110 | 0.1480 | 0.0740 | 0.1000 | 0.0500 | 1.400 | R 0.750 | R 0.750 |
| ET15R-8R | 15 | 8 | 50 - 75 | 90 - 140 | 0.1480 | 0.0740 | 0.0800 | 0.0400 | 1.400 | R 0.750 | R 0.750 |
| ET15R-6R | 15 | 6 | 50 - 75 | 110 - 175 | 0.1480 | 0.0740 | 0.0650 | 0.0325 | 1.400 | R 0.750 | R 0.750 |
| ET15R-5R | 15 | 5 | 50 - 75 | 140 - 220 | 0.1480 | 0.0740 | 0.0510 | 0.0255 | 1.400 | R 0.750 | R 0.750 |
| ET15R-4R | 15 | 4 | 50 - 75 | 170 - 260 | 0.1480 | 0.0740 | 0.0430 | 0.0215 | 1.400 | R 0.750 | R 0.750 |
| ET15R-3R | 15 | 3 | 50 - 75 | 220 - 325 | 0.1480 | 0.0740 | 0.0340 | 0.0170 | 1.400 | R 0.750 | R 0.750 |
| ET12R-10R | 12 | 10 | 60 - 90 | 75 - 110 | 0.1220 | 0.0610 | 0.1000 | 0.0500 | 1.300 | R 0.750 | R 0.750 |
| ET12R-8R | 12 | 8 | 60 - 90 | 90 - 140 | 0.1220 | 0.0610 | 0.0800 | 0.0400 | 1.300 | R 0.750 | R 0.750 |
| ET12R-6R | 12 | 6 | 60 - 90 | 110 - 175 | 0.1220 | 0.0610 | 0.0650 | 0.0325 | 1.300 | R 0.750 | R 0.750 |
| ET12R-5R | 12 | 5 | 60 - 90 | 140 - 220 | 0.1220 | 0.0610 | 0.0510 | 0.0255 | 1.300 | R 0.750 | R 0.750 |
| ET12R-4R | 12 | 4 | 60 - 90 | 170 - 260 | 0.1220 | 0.0610 | 0.0430 | 0.0215 | 1.300 | R 0.750 | R 0.750 |
| ET12R-3R | 12 | 3 | 60 - 90 | 220 - 325 | 0.1220 | 0.0610 | 0.0340 | 0.0170 | 1.300 | R 0.750 | R 0.750 |
| ET10R-8R | 10 | 8 | 75 - 110 | 90 - 140 | 0.1000 | 0.0500 | 0.0800 | 0.0400 | 1.200 | R 0.750 | R 0.750 |
| ET10R-6R | 10 | 6 | 75 - 110 | 110 - 175 | 0.1000 | 0.0500 | 0.0650 | 0.0325 | 1.200 | R 0.750 | R 0.750 |
| ET10R-5R | 10 | 5 | 75 - 110 | 140 - 220 | 0.1000 | 0.0500 | 0.0510 | 0.0255 | 1.200 | R 0.750 | R 0.750 |
| ET10R-4R | 10 | 4 | 75 - 110 | 170 - 260 | 0.1000 | 0.0500 | 0.0430 | 0.0215 | 1.200 | R 0.750 | R 0.750 |
| ET10R-3R | 10 | 3 | 75 - 110 | 220 - 325 | 0.1000 | 0.0500 | 0.0340 | 0.0170 | 1.200 | R 0.750 | R 0.750 |
| ET8R-6R | 8 | 6 | 90 - 140 | 110 - 175 | 0.0800 | 0.0400 | 0.0650 | 0.0325 | 1.100 | R 0.750 | R 0.750 |
| ET8R-5R | 8 | 5 | 90 - 140 | 140 - 220 | 0.0800 | 0.0400 | 0.0510 | 0.0255 | 1.100 | R 0.750 | R 0.750 |

| Part Name | WR 1 | WR 2 | Frequency 1 (GHz) | Frequency 2 (GHz) | WG1 A DIM (in) | WG1 B DIM (in) | WG2 A DIM (in) | WG2 B DIM (in) | Length - L (in) | Flange 1 | Flange 2 |
|-----------|------|------|-------------------|-------------------|----------------|----------------|----------------|----------------|-----------------|----------|----------|
| ET8R-4R | 8 | 4 | 90 - 140 | 170 - 260 | 0.0800 | 0.0400 | 0.0430 | 0.0215 | 1.100 | R 0.750 | R 0.750 |
| ET8R-3R | 8 | 3 | 90 - 140 | 220 - 325 | 0.0800 | 0.0400 | 0.0340 | 0.0170 | 1.100 | R 0.750 | R 0.750 |
| ET6R-5R | 6 | 5 | 110 - 175 | 140 - 220 | 0.0650 | 0.0325 | 0.0510 | 0.0255 | 1.000 | R 0.750 | R 0.750 |
| ET6R-4R | 6 | 4 | 110 - 175 | 170 - 260 | 0.0650 | 0.0325 | 0.0430 | 0.0215 | 1.000 | R 0.750 | R 0.750 |
| ET6R-3R | 6 | 3 | 110 - 175 | 220 - 325 | 0.0650 | 0.0325 | 0.0340 | 0.0170 | 1.000 | R 0.750 | R 0.750 |
| ET5R-4R | 5 | 4 | 140 - 220 | 170 - 260 | 0.0510 | 0.0255 | 0.0430 | 0.0215 | 1.000 | R 0.750 | R 0.750 |
| ET5R-3R | 5 | 3 | 140 - 220 | 220 - 325 | 0.0510 | 0.0255 | 0.0340 | 0.0170 | 0.750 | R 0.750 | R 0.750 |
| ET4R-3R | 4 | 3 | 170 - 260 | 220 - 325 | 0.0430 | 0.0215 | 0.0340 | 0.0170 | 0.750 | R 0.750 | R 0.750 |



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