

PRECISION WR22 AND WR19 WAVEGUIDE FLANGES



MPF22 (left) and MPF22A (right) flanges and representative hardware.

Features

- Provides Precision Alignment
- Maintains Mating Compatibility
- Allows Servicing of Flange Face
- Prevents Cocking of Flanges
- Provides Good Contact Pressure
- Provides Excellent Repeatability

Description

The MPF22 and MPF19 precision flanges, designed for use with WR22 and WR19 waveguide respectively, provide a dramatic improvement in flange connection consistency, repeatability, and flange serviceability over current UG-383/U flanges while still maintaining mating compatibility with these older designs [1] [2]. These flanges incorporate two precision indexing holes and utilize slip fit indexing pins that provide the precise mating alignment required for consistent repeatable connections. Threaded pins may also be installed in the standard 4-pin pattern when the MPF precision flanges are required to mate with the UG-383/U flanges. Since both the threaded pins and the precision indexing pins are removable, the flange surface is available for maintenance in the event it is damaged.

The MPF22A and MPF19A provide all the features of the MPF22 and MPF19 flanges except that the 4-pin indexing pattern is omitted. These "A" flanges are recommended

whenever connections will be made only to other appropriate precision MPF series flanges since they are more economical to produce.

Figures 1 through 3 show the mechanical details of the flanges. The hole layouts and indexing pin configurations for the MPF22 and MPF19 are identical. The same holds true for the "A" versions. The differences in the flanges are the waveguide size. Figure 4 is a cross-section view of a mated pair of these flanges showing how the outer ridge prevents cocking of the mating surfaces due to uneven torquing of the bolts. Detailed interface information is available on request [3].

Figure 5 shows the repeatability of the current UG-383/U flange used in industry. Obtaining this data required very careful connection by skilled personnel. Figure 6 shows the improvement gained using the Maury indexing pin technique even though connections were made quickly and easily with no special precautions.

□ See page 4 for footnotes.

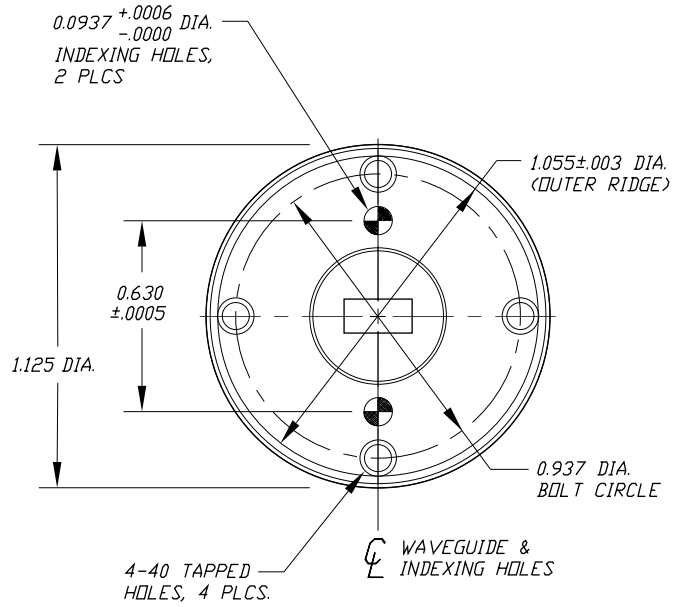
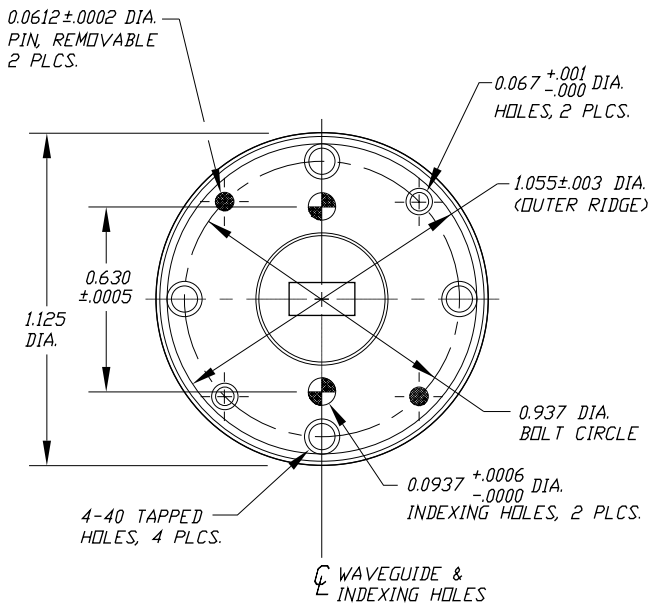


Figure 1. MPF22 and MPF19 flanges will mate with UG-383/U flanges. The 0.0612 pins are removable when mating with other precision MPF flanges when 0.0931 indexing pins are utilized.

Figure 2. MPF22A and MPF19A flanges are designed to mate with other precision MPF flanges and do not include the four-hole indexing pattern.

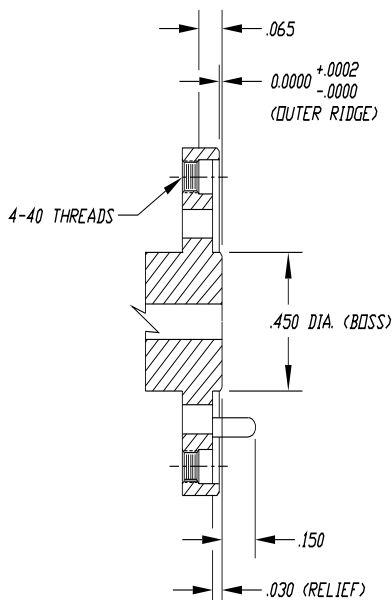


Figure 3. Side view (typical) of the MPF22A and MPF19A flanges.

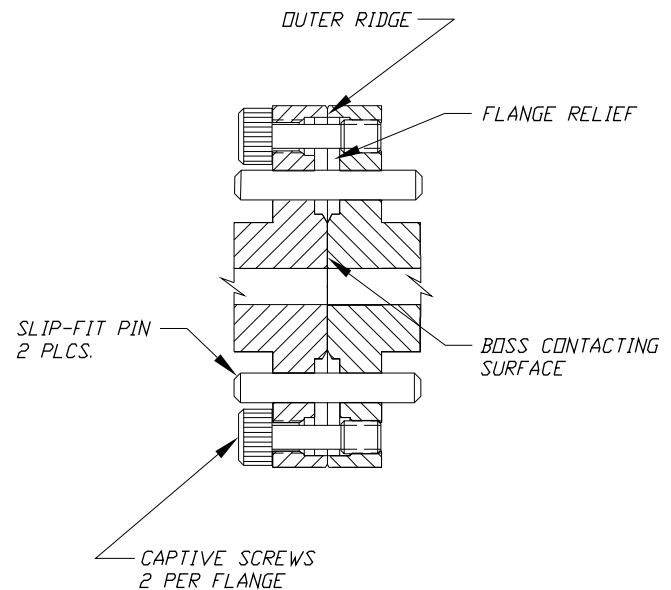


Figure 4. Cross section of a mated pair of MPF22 and MPF19 flanges. Note the outer ridge which prevents the mating surfaces from cocking during connection.

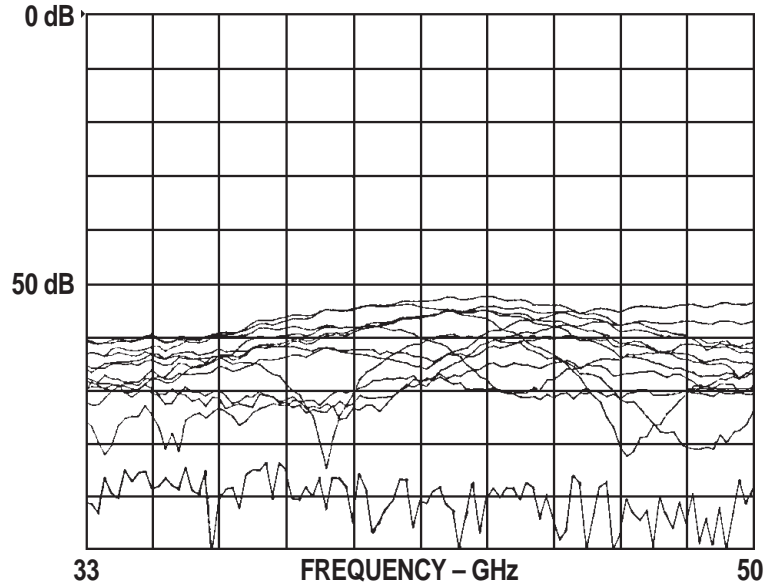


Figure 5. Repeatability of a pair of standard UG-383/U flanges using the 4-pin indexing pattern and very careful connection technique.

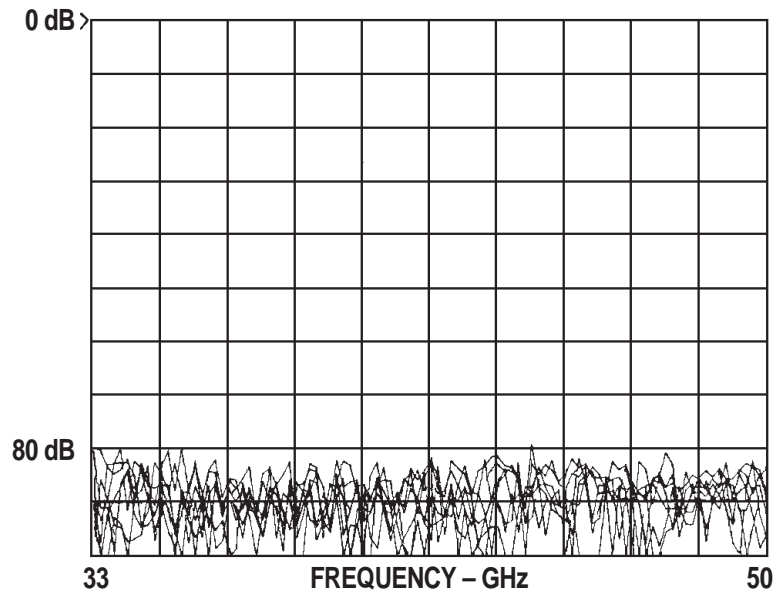


Figure 6. Repeatability of a pair of Maury MPF22A flanges using the Maury indexing pins and normal connection procedures.



MPF Hardware and Tools

Model	Description	Figure
J998S1	Short captive screw 4 5	A
J998S2	Long captive screw 4 5	B
J998S3	Threaded Pin 4	C
W996E1	Long indexing pin 4	D
W996E2	Short indexing pin 4	E
J998T1	Pin vise	F
J998T2	Ball driver (3/32 hex)	G
J998H	Hardware/tool kit 6	Not shown

Instructions for Use

1. Remove the 0.0612 diameter threaded pins (Figure C) using the pin vise (Figure F).
2. Install the indexing pins prior to bolting the flanges together. The long indexing pins (Figure D) are usually more convenient. The short indexing pins (Figure E) may be used in tight spaces or permanent installations.
3. Four captivated screws (Figure A or B) should be used to bolt a flange pair together using the ball driver (Figure G) [5](#).
4. If UG-383/U compatibility is required, use the pin vise (Figure F) to install two threaded pins (Figure C).
5. If the flange surface is marred and damaged in any way, remove the pins and lap the surface to a smooth flat finish.
6. **Note:** Recommended practice is not to use the 4-pin indexing pattern together with the Maury indexing pins since the Maury technique is more accurate and is preferred. Whenever practical, the fixed pins should be removed from existing flanges and the two precision holes added.

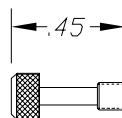


FIGURE A - SHORT CAPTIVE SCREW (4-40)
USED ON 0.160 THICK FLANGE

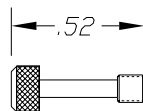


FIGURE B - LONG CAPTIVE SCREW (4-40)
USED ON 0.250 THICK FLANGE

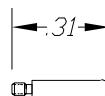


FIGURE C - THREADED PIN 0.0612 DIA.

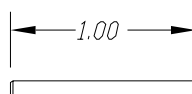


FIGURE D - LONG INDEXING PIN
0.0931 DIA. (P/N W996-5-1)

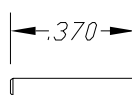


FIGURE E - SHORT INDEXING PIN
0.0931 DIA. (P/N W996-5-2)

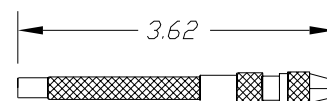


FIGURE F - PIN VISE FOR USE WITH
0.0612 PIN

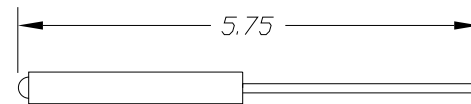


FIGURE G - BALL DRIVER (3/32 HEX)

- [1](#) M. A. Maury, Jr., R. J. Maury, and G. R. Simpson, "Slip-fit Pins Improve WR22 Flange Mating", *Microwaves & RF*, May 1985.
- [2](#) M. A. Maury, Jr., and G. R. Simpson, "Improved Millimeter Waveguide Flanges Improve Components and Measurements", *Microwave Journal*, Vol. 29, No. 5, May 1986.
- [3](#) Drawing J998-30, available on request, provides complete information on MPF22 and MPF19 flanges.

- [4](#) Model number consists of ten (10) each of the part noted.
- [5](#) Short captive screws are used on most devices. Long captive screws are used on models J314A and J115A.
- [6](#) Kit consists of a) 1 ea. pin vise and ball driver; b) 30 ea. short captive screws, threaded pins and long indexing pins.