

PRECISION WR15, WR12 AND WR10 WAVEGUIDE FLANGES

Typical components bearing the Maury MPF10 Precision Flanges (WR10, UG387/U)



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 MPF15, MPF12 and MPF10 precision flanges, designed for use with WR15, WR12 and WR10 waveguide respectively, provide a dramatic improvement in flange connection consistency, repeatability, and flange serviceability compared to UG385/U and UG387/U flanges while still maintaining mating compatibility with this older design.¹ 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 mated with the UG385/U and UG387/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. An outer ridge prevents the flanges from cocking while the flange bolts are being tightened.

MPF15A, MPF12A and MPF10A are variations to the basic design that have all the features of the MPF15, MPF12 and MPF10 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 and are offered at a lower price.

Figures 1 through 3 show the mechanical details of the flanges. The hole layouts and indexing pin configurations for the MPF15, MPF12 and MPF10 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.²

Figure 5 shows the repeatability of a UG-385/U flange in a typical industrial application. 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.

¹ M. A. Maury, Jr., and G. R. Simpson, "Improved Millimeter Waveguide Flanges Improve Components and Measurements", Microwave Journal, Vol. 29, No. 5, May 1986.

² Drawing V998-30, available on request, provides complete information on MPF15, MPF12 and MPF10 flanges.

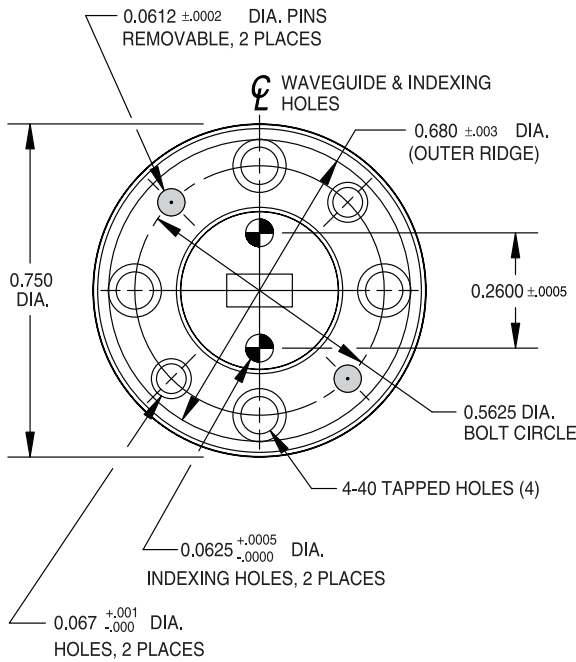


Figure 1. MPF15, MPF12 and MPF10 flanges will mate with UG-385/U and UG-387/U flanges. The 0.0612 pins are removable when mating with other precision MPF flanges when 0.0620 indexing pins are utilized.

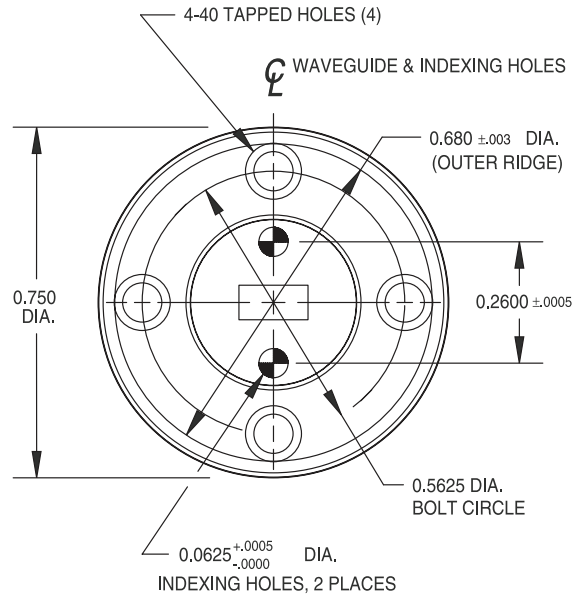


Figure 2. MPF15A, MPF12A and MPF10A flanges are designed to mate with other precision MPF flanges and do not include the four-hole indexing pattern.

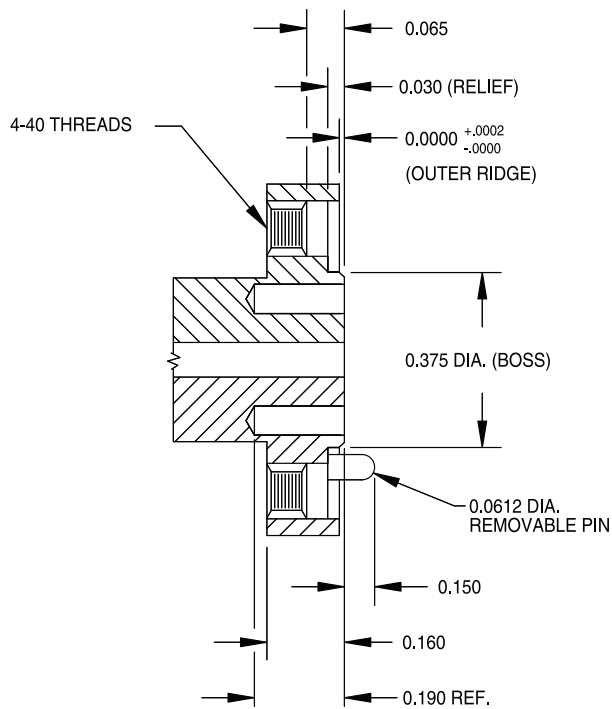


Figure 3. Side view (typical) of the MPF15A, MPF12A and MPF10A flanges.

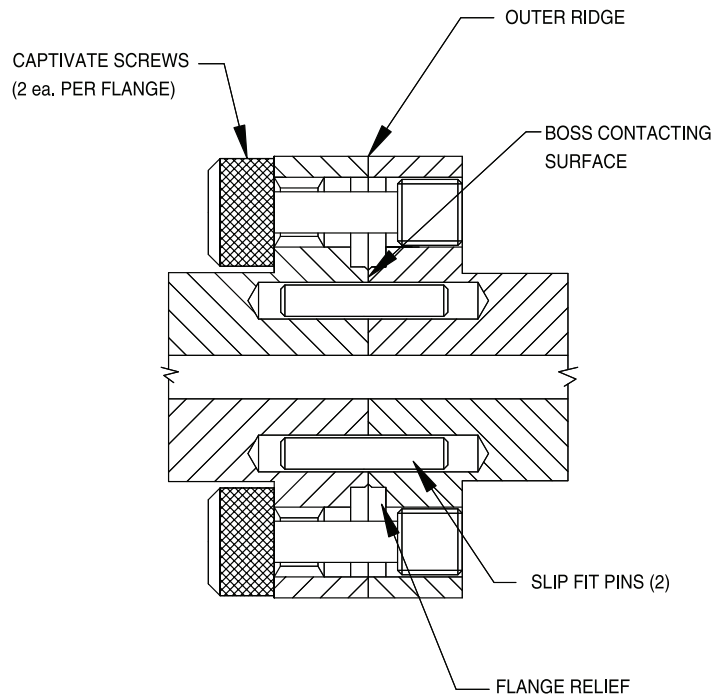


Figure 4. Cross section of a mated pair of MPF15, MPF12 and MPF10 flanges. Note the outer ridge which prevents the mating surfaces from cocking during connection.

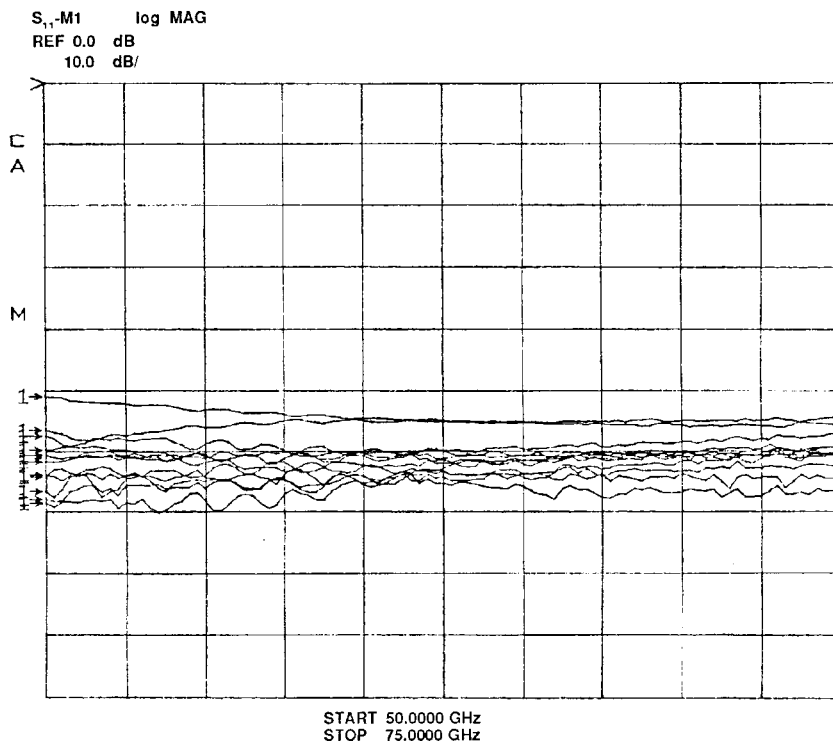


Figure 5. Repeatability of a pair of standard UG-385/U flanges using the 4-pin indexing pattern and very careful connection technique.

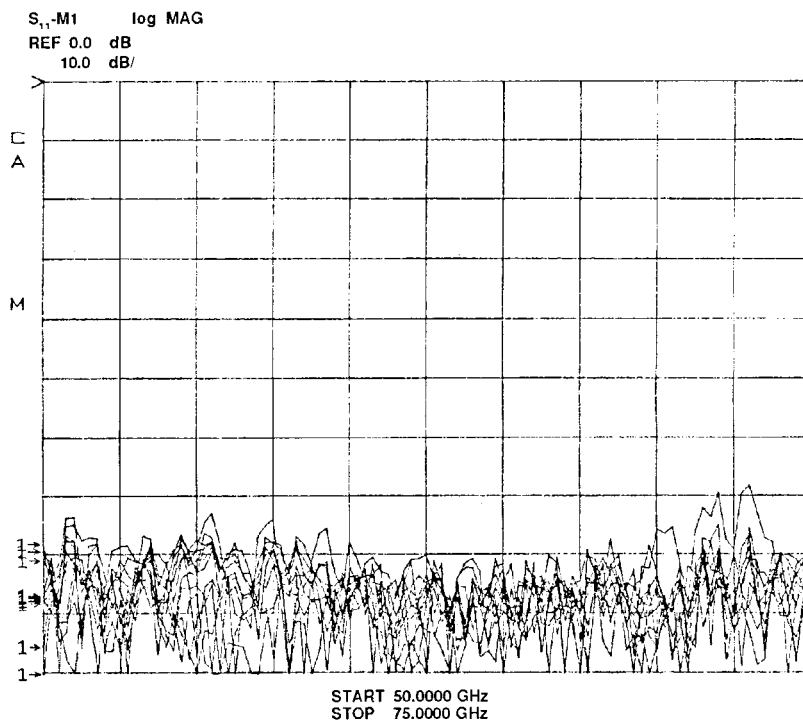


Figure 6. Repeatability of a pair of Maury MPF15A flanges using the Maury indexing pins and normal connection procedures.



MPF Hardware and Tools

Instructions for Use

| Model | Description | Figure |
|--------|------------------------------------|-----------|
| J998S1 | Short captive screw ³ | A |
| J998S3 | Threaded pin ³ | B |
| W996F3 | Standard indexing pin ³ | C |
| J998T1 | Pin vise | D |
| J998T2 | Ball driver (3/32 hex) | E |
| J998H | Hardware/tool kit ⁴ | Not shown |

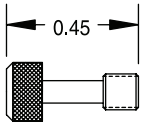


Figure A – Short Captive Screw (4-40)

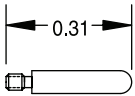


Figure B – Threaded Pin 0.0612 Dia.

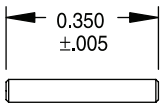


Figure C – Standard Indexing Pin 0.0620 Dia. (Pin W998-6-3)

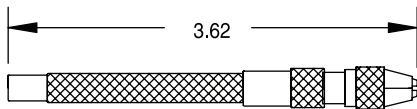


Figure D – Pin Vise For Use With 0.0612 dia. Pin



Figure E – Ball Driver (3/32 Hex).

1. Remove the 0.0612 diameter threaded pins (Figure B) using the pin vise (Figure D).
2. Install the indexing pins (Figure C) prior to bolting the flanges together.
3. Four captivated screws (Figure A) should be used to bolt a flange pair together using the ball driver (Figure E).
4. If UG-385/U or UG-387/U compatibility is required, use the pin vise (Figure D) to install two threaded pins (Figure B).
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.

³ Model number consists of ten (10) each of the part noted.

⁴ Kit consists of a) 1. ea. pin vise and ball driver, b) 3 ea. short captive screws, threaded pin and indexing pins.