

# DB4075W, DB4076W, DB4075Z, DB4076Z

## 404-512 MHz Band Pass - Band Reject Duplexers

### Tuning and Installation Instructions

#### GENERAL

The DB4075 and DB4076 Bandpass-Band Reject Duplexers come in two different versions: the W and Z. The W applies to copper cavities and the Z applies to aluminum cavities. This is the only difference between the two versions. All information below applies to the W and Z.

**DB4075** - The DB4075 is a three (3) cavity version of the DB4076. Designed for use in the 406-512 MHz frequency band (5-8 MHz separation), the two (2) cavities in the transmitter section provide 75 dB transmitter noise protection to the receiver; the single cavity in the receiver section provides 35 dB protection for receiver desensitization which normally is sufficient with highly selective receivers.

**DB4076** - The DB4076 is designed for use in the 406-512 MHz band when transmitter and receiver frequencies are separated by at least 3 MHz. It utilizes four (4) identical 1/4 wave cavities and employs a separate notching adjustment. Each two (2) cavity section provides 75 dB (nominal) isolation to transmitter noise or receiver desensitization.

#### FIELD TUNING

The duplexers are factory-tuned to the exact operating frequencies and shipped ready for immediate installation. No further field tuning or adjustment is required. If it becomes necessary to change the operating frequencies of a duplexer, it may be returned to the factory for retuning or it can be field-tuned if the following equipment is available:

1. A signal generator (50 ohm) capable of producing a signal at the transmitter and receiver frequencies.
2. A receiver tuned to the desired receiver frequency.
3. A receiver tuned to the desired transmitter frequency.
4. One 50 ohm pad.
5. One 50 ohm termination.

#### FIELD TUNING PROCEDURE

1. Connect equipment as shown in Figure 3a.
2. Loosen the hex nut that locks the threaded tuning rod on each cavity.
3. Pretune notching adjustment as follows (notching adjustment tool must be non-metallic):

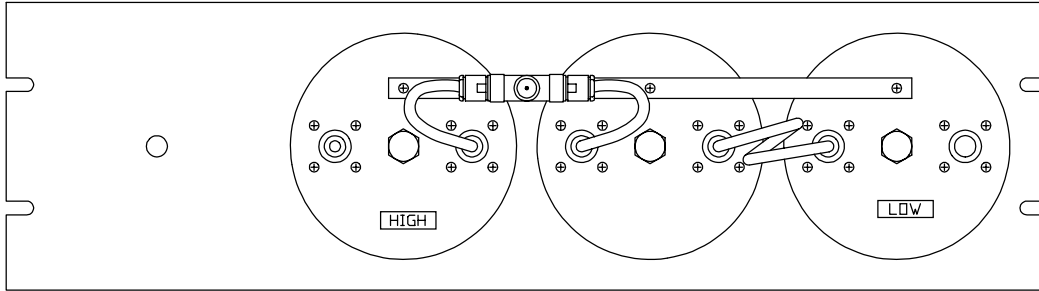
#### High Frequency Pass-Low Frequency Reject:

- Turn notching adjustment(s) clockwise until the screw bottoms out.
- Turn notching adjustment(s) counterclockwise nine (9) turns.

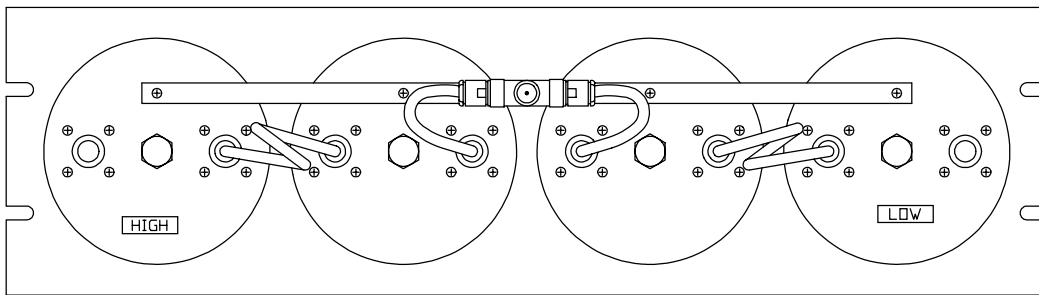
#### Low Frequency Pass-High Frequency Reject:

- Turn notching adjustment(s) clockwise until the screw bottoms out.
4. Tune the signal generator to the desired higher frequency.
  5. Tune each band pass adjustment of the high frequency cavity of the duplexer while observing the limiter reading. Adjust first cavity, then the other, while reducing the signal generator output to prevent receiver limiter saturation. (Turning the tuning screw clockwise decreases the cavity's resonant frequency.)
  6. Lock tuning screw shaft nut after tuning each cavity.
  7. Disconnect receiver #1 and connect receiver #2.
  8. Tune signal generator to the desired lower frequency.
  9. Tune each notching adjustment(s) of the high pass cavities for minimum signal into receiver #2.
  10. Connect equipment as shown in Figure 3b.
  11. Tune signal generator to the desired lower frequency.
  12. Tune each band pass adjustment(s) of the low frequency cavities of the duplexer while observing the limiter reading of receiver #2. Tune for a maximum limiter reading. Adjust first one cavity, then the other, while reducing the signal generator output to prevent receiver limiter saturation.
  13. Lock tuning screw shaft nut after tuning each cavity.
  14. Disconnect receiver #2 and connect receiver #1.
  15. Tune signal generator to desired higher frequency.
  16. Tune each low pass cavity notching adjustment(s) for minimum signal into receiver #1.
  17. Duplexer is tuned.
  18. To summarize: Tune band pass adjustment of high pass cavities to pass higher frequency and notching adjustment of high pass cavities to reject lower frequency; tune band pass adjustment of low pass cavities to pass lower frequency and notching adjustment of low pass cavities to reject higher frequency.

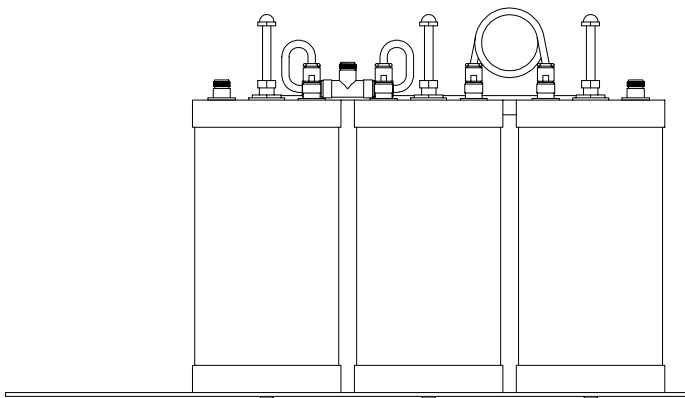




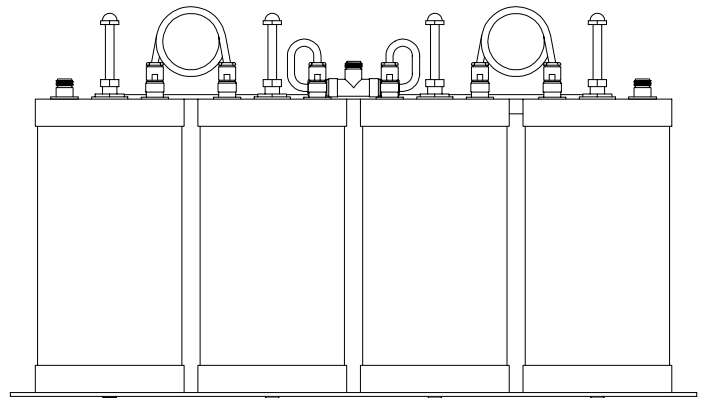
DB4075W - Top View



DB4076W - Top View



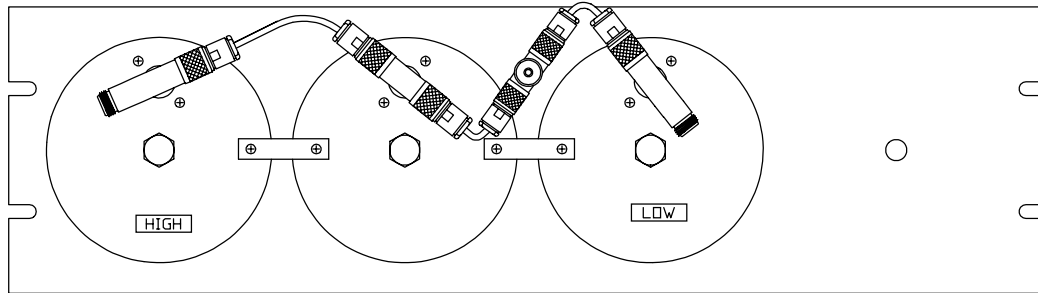
DB4075W - Front View



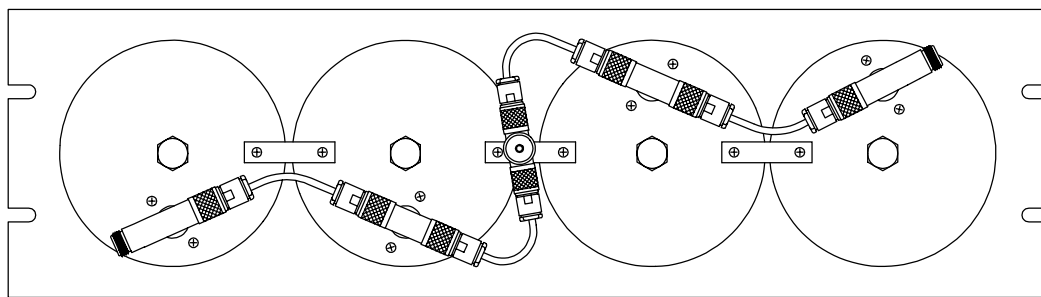
DB4076W - Front View

Figure 1 - Duplexer Layout - W (copper) Cavities

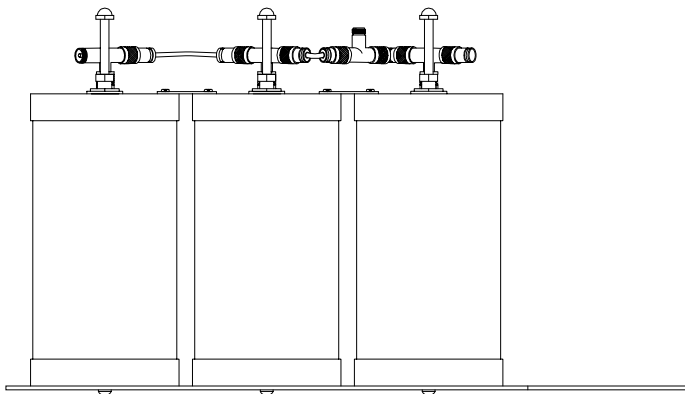




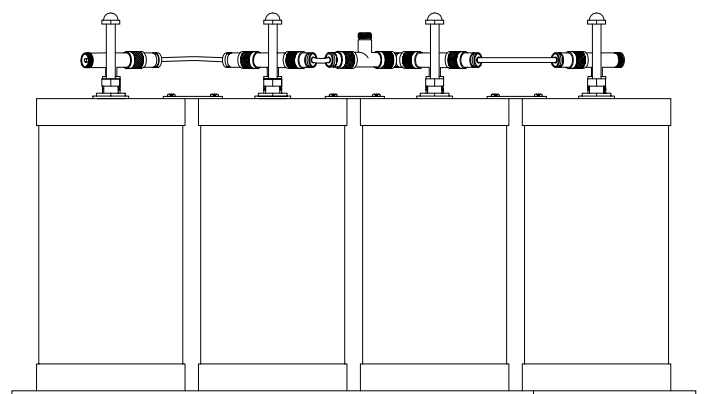
DB4075Z - Top View



DB4076Z - Top View



DB4075Z - Front View



DB4076Z - Front View

Figure 2 - Duplexer Layout - Z (aluminum) Cavities



Figure 3a - Field Tuning

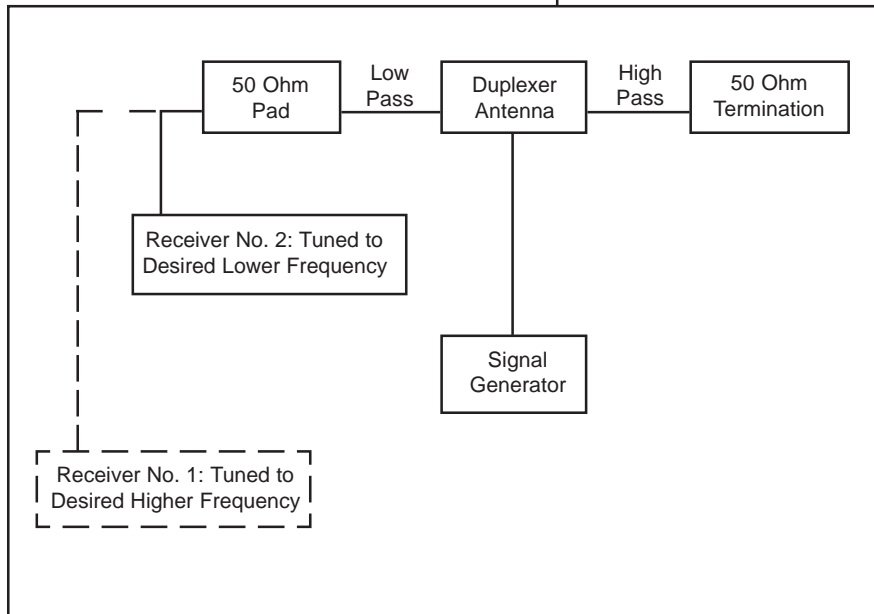
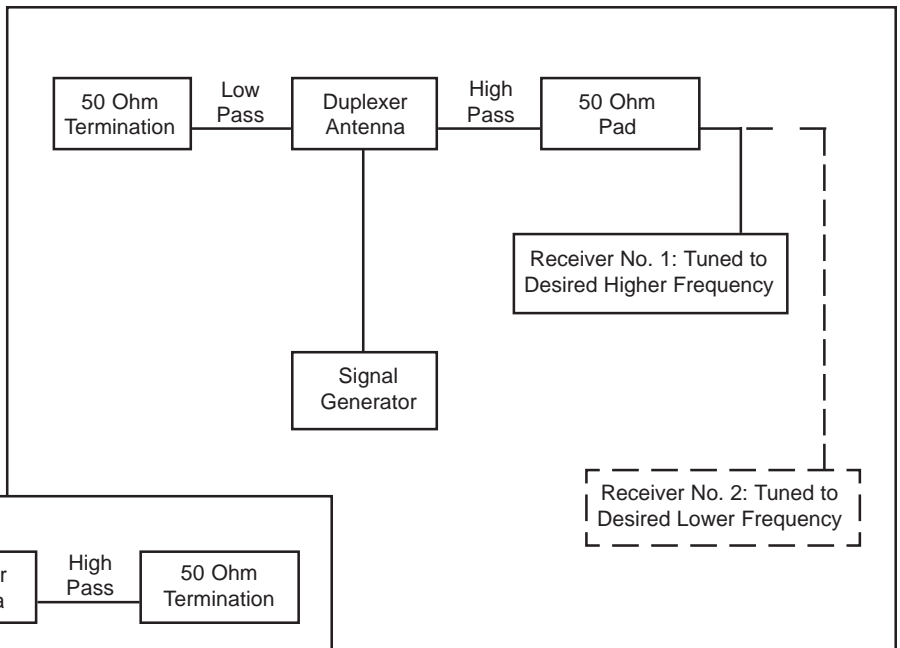


Figure 3b - Field Tuning

