BTT*-*P
Installation Sheet 485856-001

Motorola's® Broadband Telecommunications Taps (BTT*-*P) are a one-GHz series of ac power extracting taps capable of delivering voice, video, and data over the broadband hybrid fiber/coax system. The BTT*-*P taps distribute RF signals through tap ports and ac power through twisted-pair terminals.

The BTT*-*P series of taps offers backward compatibility/upgradability with Motorola's FFT-F, G, H, J, K, and standard N series tap housings as drop-in replacements.

The BTT*-*P is available as a complete tap with RF/AC bypass capability or as an upgrade. The BTT*-*P/U power-extracting tap upgrade contains the baseplate and electronics without the RF/AC bypass housing. You can use the BTT*-*P/U upgrade to convert existing Motorola FFT taps to power extracting, thus increasing services provided to the user.

BTT*-*P Models

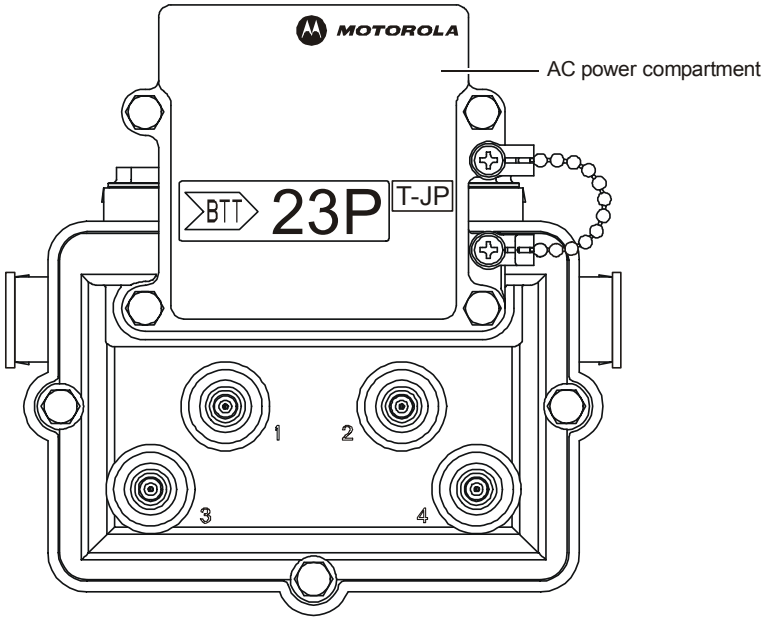
The following table identifies and describes each of the BTT*-*P models:

Model	Description	Part Number
BTT2-*P	2-port tap faceplate with FFT-BP/HSG. Nominal tap loss values (10) 4 dB to 29 dB.	479179-*XXX-XX*
BTT4-*P	4-port tap faceplate with FFT-BP/HSG. Nominal tap loss values (9) 7 dB to 29 dB.	479180-*XXX-XX*
BTT8-*P	8-port tap faceplate with FFT-BP/HSG. Nominal tap loss values (7) 10 dB to 29 dB.	479181-*XXX-XX*
BTT2-*P/XT	2-port tap faceplate with FFT-HSG/XT 9" extended tap housing. Nominal tap loss values (10) 4 dB to 29 dB.	485452-*XXX-XX*
BTT4-*P/XT	4-port tap faceplate with FFT-HSG/XT 9" extended tap housing. Nominal tap loss values (9) 7 dB to 29 dB.	485453-*XXX-XX*
BTT8-*P/XT	8-port tap faceplate with FFT-HSG/XT 9" extended tap housing. Nominal tap loss values (7) 10 dB to 29 dB.	485454-*XXX-XX*
BTT2-*P/U	2-port tap faceplate with electronics only. Nominal tap loss values (10) 4 dB to 29 dB.	479182-*XXX-XX*
BTT4-*P/U	4-port tap faceplate with electronics only. Nominal tap loss values (9) 7 dB to 29 dB.	479183-*XXX-XX*
BTT8-*P/U	8-port tap faceplate with electronics only. Nominal tap loss values (7) 10 dB to 29 dB.	479185-*XXX-XX*

The asterisk (*) *denotes that the information is applicable to all models. If the information applies to one model only, the specific model number is provided.*

Figure 1 illustrates a front view of the BTT4-*P:

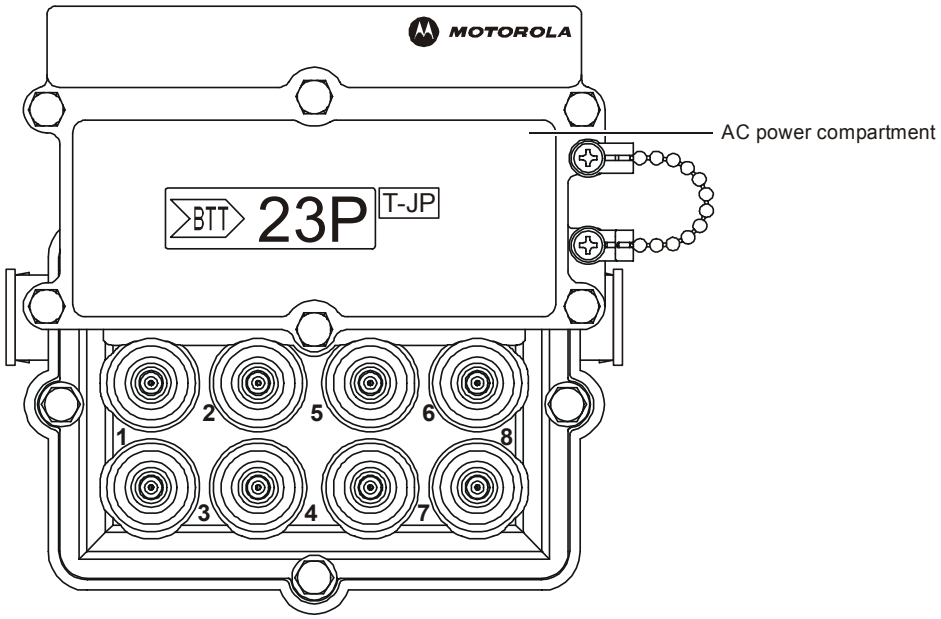
Figure 1
BTT4-*P



*The BTT2-*P does not have ports 3 and 4.*

Figure 2 illustrates a front view of the BTT8-*:

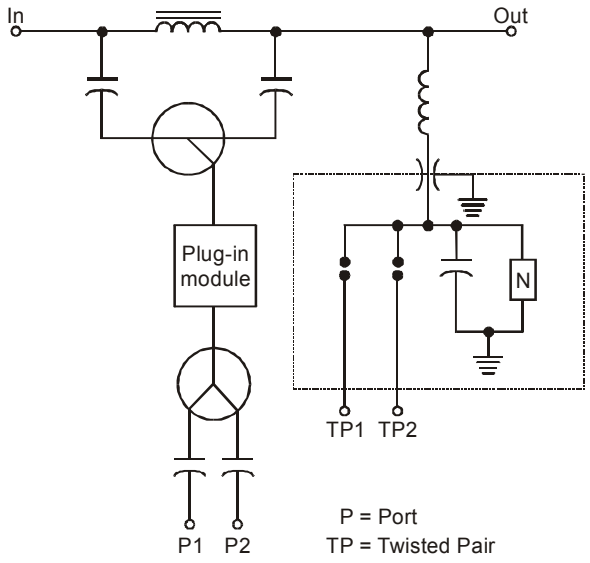
Figure 2
BTT8-*P



The ac power compartment, located above the tap ports on the faceplate, contains the twisted-pair terminals and sockets for the current limiting devices. This compartment is sealed using rubber gasketing and gel insulation and is accessible when the baseplate is installed. Wire entry plugs protect the compartment when ac terminals are not used. Strain relief for the twisted pairs that distribute ac power is also provided in this compartment.

Figure 3 provides a functional block diagram of a BTT2-*P:

Figure 3
Block diagram



Installation

This subsection provides information regarding the three methods of installing the BTT*-*P.

Direct Strand Mounting

When attaching the BTT*-*P for direct strand mounting, ensure that the strand clamp and bolt assembly remain loose as the unit will be adjusted on the strand after cable connections are made. Install the BTT*-*P following the instructions provided in the subsection Installing the Cable.

Extended Suspension Mounting

To extend suspension below the strand:

1. Remove the bolt and strand clamp from the top of the BTT*-*P housing. Save the bolt for the next step.
2. Mount the bracket supplied with the auxiliary hanger bracket to the housing using the bolt removed in Step 1. Retain the original clamp for future use.
3. Install the BTT*-*P as described in the subsection Installing the Cable.

Pedestal Mounting

Pedestal mounting of a BTT*-*P in an FFT-HSG/XT housing is not recommended.

To use the BTT*-*P in a pedestal housing:

1 Remove the applicable threaded feeder port plugs from the tap housing.

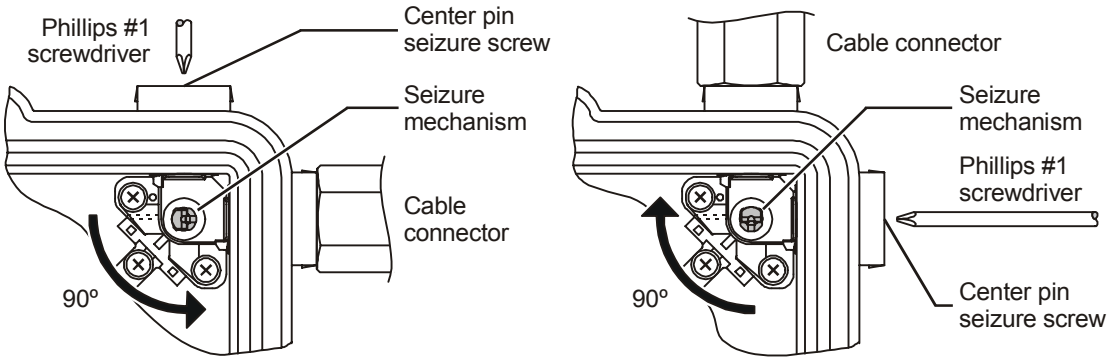
2 Reposition both seizure mechanisms 90° so the seizure mechanism screws are accessible through each in-line port.

The FFT-HSG/XT does not have rotatable seizure mechanisms.

3 Re-insert the port plugs and torque to 45-50 in-lbs (5.1 to 5.7 N·m).

You can perform this operation without removing the tap faceplate from its housing by inserting a screwdriver blade through the housing base aperture and pivoting the seizure mechanism to the new position as illustrated in Figure 4:

Figure 4
Seizure mechanism



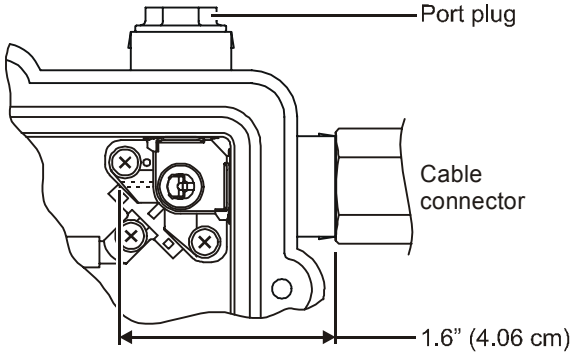
4 Install the BTT*-*P as described in the subsection Installing the Cable.

Installing the Cable

To install the feeder cable in the BTT*-*P:

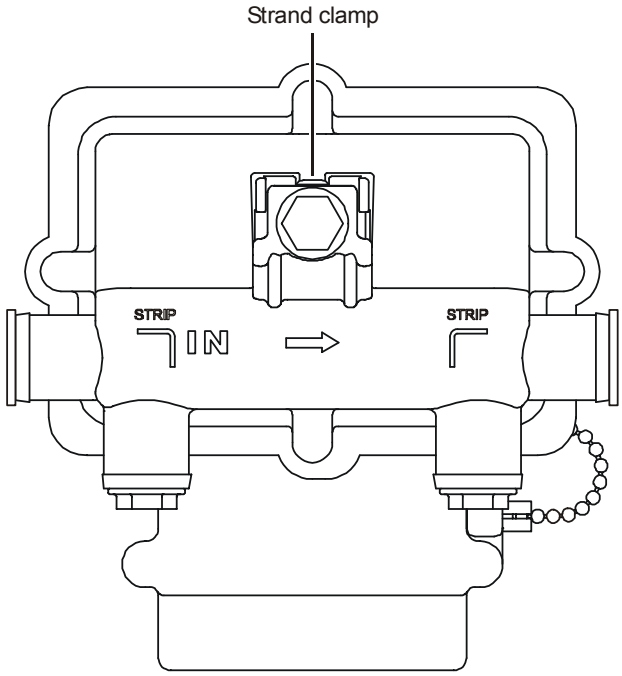
1. Remove the red plastic port covers and discard.
2. Install all cable connectors in the appropriate 5/8 × 24 ports of the BTT*-*P as prescribed by the manufacturer of the cable connector. Pin-type connectors are recommended.
3. If necessary, cut and trim the cable and center conductor to the proper length as illustrated in Figure 5. The BTT*-*P accepts a standard feeder line center conductor diameter of 0.67 inches.

Figure 5
Cable connector



For your convenience, a strip gauge is embossed on the base of the BTT*-*P as illustrated in Figure 6:

Figure 6
BTT*-*P housing base



4 Ensure that the clamp nuts on the installed fittings are sufficiently loose to permit the cable end to easily pass through the fitting into the housing.

5 When the cable is properly positioned, tighten the clamp nut on the fitting to 27 N·m.

6 Remove the port plug from the 5/8 × 24 port and secure the center conductor seizure screw with a Phillips or hex-head nut driver to a maximum torque of 15-20 in-lbs (1.7-2.3 N·m). (*Not applicable with the FFT-HSG/XT extended tap housing*).

7 Reseal the 5/8 × 24 port with the port plug and tighten to 45-50 in-lbs (5.1-5.7 N·m). Repeat the procedure with the other 5/8 × 24 port. (*Not applicable with the FFT-HSG/XT*).

8 Position the BTT*-*P on the strand so the feeder cable expansion loops are approximately equal in length and shape.

9 Secure the BTT*-*P with the strand clamp bolt (Figure 6) and torque to 240 in-lbs (27.1 N·m).

10 Secure any loose lashing wire ends to the strand.

11 Prepare the ends of the drop cables as required for the type of fittings to be installed.

The BTT*-*P accepts an RG-59, RG-6 and RG-7 drop cable with F-type connector and center conductor diameter of 0.022 to 0.0513 inches.

12 Slip a weather boot over each cable end and then install the fittings.

13 Remove the factory-installed rubber protective caps from the recommended tap port F-type connectors and connect the drop cables. Torque each fitting to 28-33 in-lbs (3.1-3.7 N·m).

Do not exceed a torque of 40 in-lbs (4.5 N· m).

14 Dress the drop cables and secure them as required.

Removing the BTT*-*P Faceplate

Due to high frequencies of the signals received by the BTT*-*P, you must exercise all precautions to reduce the risk of signal anomalies. To minimize the effect that removing the cover might have on transmission signals, it is important that you observe the instructions below.

CAUTION!

Voltages up to 90 Vac are accessible. To avoid shock hazard, confirm that no power is applied to the tap before removing cover or replacing fuses or current limiters.

To remove the BTT*-*P faceplate from the housing base:

1 Using a 5/16 nut driver to loosen the four bolts (six for BTT8-*P) that secure the cover to the ac power compartment and remove the cover. Do not remove the bolts from the compartment cover.

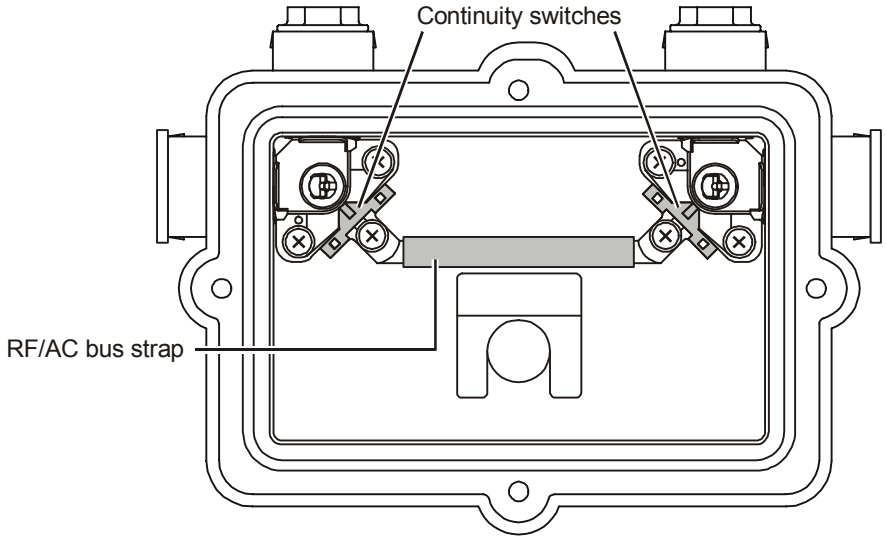
2 Using a 5/16 nut driver to loosen the four bolts that secure the faceplate to the housing base. One of the bolts is located inside the ac power compartment as illustrated in Figure 10. Do not remove the bolts from the tap faceplate.

3 Grasp the ac power compartment and remove the faceplate parallel to the housing base with an even pulling motion.

The BTT*-*P offers the added feature of feeder-line continuity when the faceplate is removed and the BTT*-*P is functioning. A pair of parallel make-before-break switches located in each corner of the housing base enables you to upgrade or remove the BTT*-*P without interrupting service on the feeder.

Figure 7 illustrates an open BTT*-*P housing base and the location of the continuity switches and RF/ac bus strap:

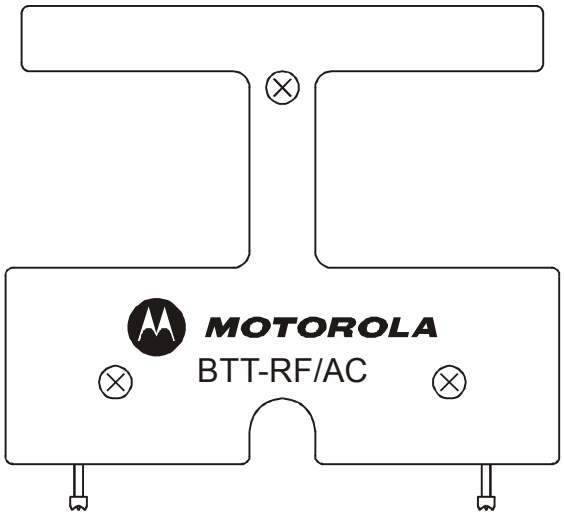
Figure 7
Internal view of BTT*-*P housing base



For customers who own existing FFT taps without this feature, an external RF/AC bypass jumper, BTT-RF/AC, is available to perform this function. The jumper is installed only when the baseplate is being changed. The jumper is then removed and can be used again.

Figure 8 illustrates the BTT-RF/AC jumper:

Figure 8
BTT-RF/AC jumper

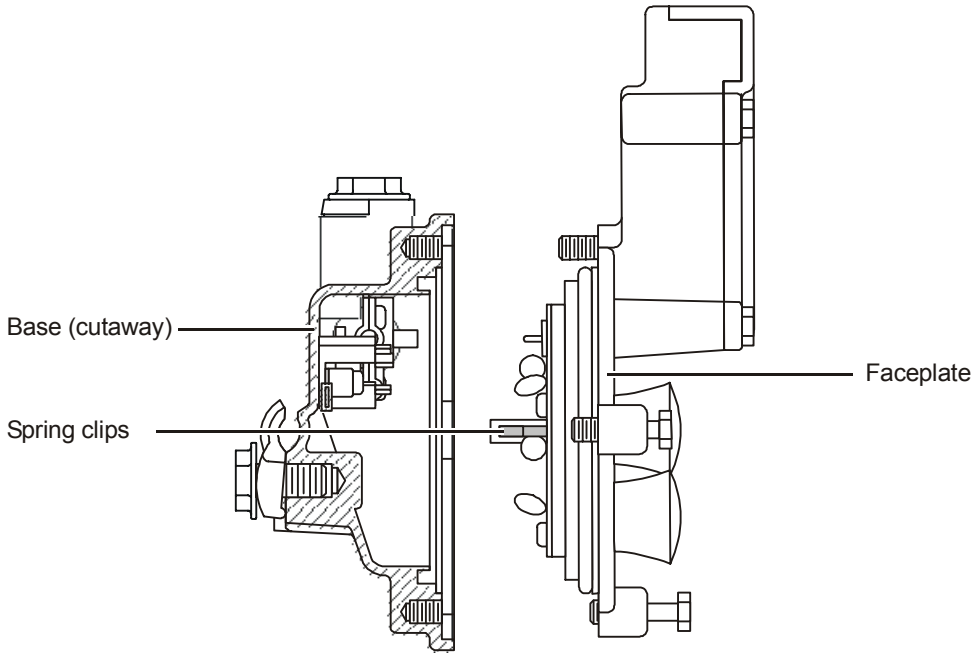


Installing the BTT*-*P Faceplate

To install or re-install a faceplate:

1 Position the faceplate and the housing base parallel to one another as illustrated in Figure 9:

Figure 9
Positioning the faceplate



2 Align the rounded bosses in the faceplate with the rounded depressions in the bottom of the housing base.

3 Squeeze the faceplate and base together until the faceplate is firmly seated in the base.

4 Tighten the four faceplate bolts to 30 to 35 in-lbs (1.8 to 2.2 N•m). The upper faceplate bolt is accessed through the ac power compartment.

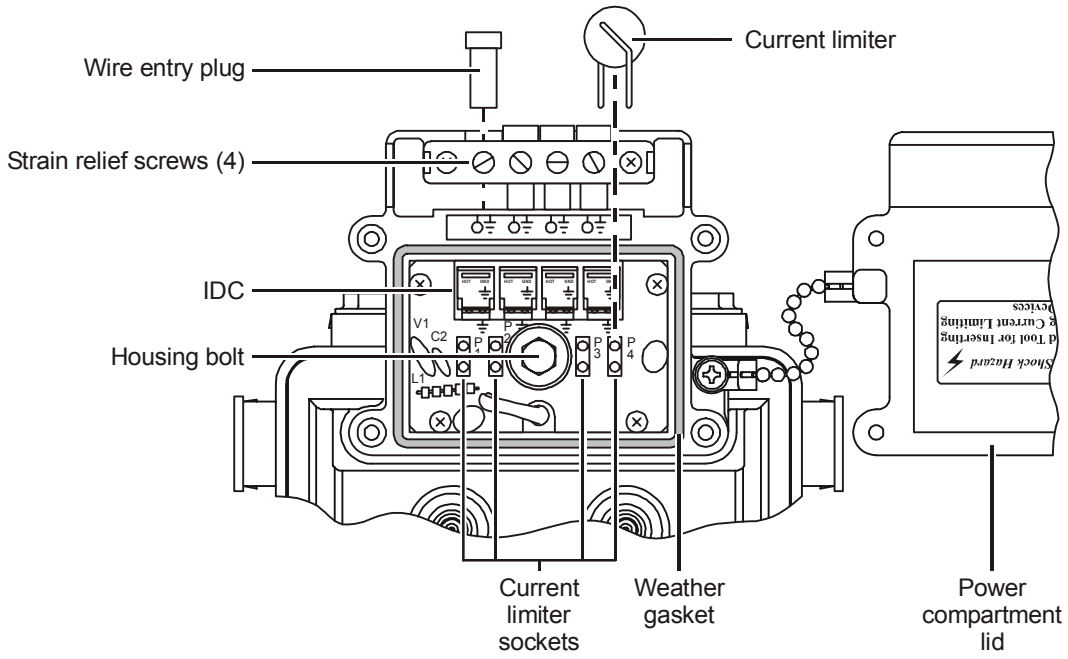
5 Tighten the four (6 for BTT8-*P) ac power compartment bolts to 30 to 35 in-lbs (1.8 to 2.2 N·m).

Extracting AC Power

You can use the BTT*-*P to provide twisted-pair ac power to the Network Interface Device (NID) located on the building. The ac power compartment contains the: twisted pair terminals (Insulation Displacement Connectors (IDC)), current limiter sockets, twisted pair entry plugs, and strain relief screws as illustrated in Figure 10.

Figure 10 illustrates a BTT4-*P with the ac power compartment cover removed:

Figure 10
AC power compartment – top view



To extract ac power from the BTT*-*P:

1 Loosen the 4 bolts on the ac power compartment cover and remove the cover.

CAUTION!

Voltages up to 90 Vac are accessible. To avoid shock hazard, confirm that no power is applied to the tap before removing cover or replacing fuses or current limiters.

2 Remove the twisted pair entry plugs from the ports that you intend to use.

3 Loosen the strain relief screws to permit unobstructed entry of the wire.

4 Verify that the IDC's are in the open (up) position and insert the wire through them until it is just visible at the end of the opening.

5 Obey the polarity indicated on the strip adjacent to the strain relief screws and insert 22-24 AWG wire into the appropriate holes in the bulkhead.

6 Using your fingers or blunt tool, carefully push down on each IDC until it is flush with the connector body. The wire will be stripped and held in place by the IDC.

7 Tighten the strain relief screws directly on the wire. You can re-insert the rubber plugs removed in Step 2 before tightening the strain relief screws.

To extract power from the cable feeder to the subscriber's network interface device (NID) you must install a current limiter at each tap port.

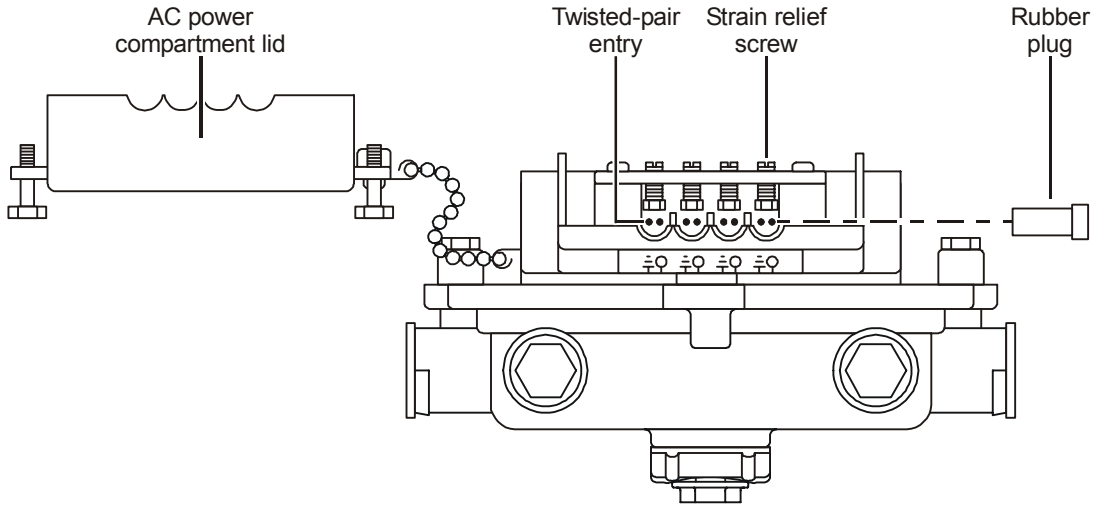
Use only Motorola approved current limiters (model numbers CL-350, CL-350I, CL-480I, part number series 470292-*xxx*-00). These current limiters are for use with NID devices with less than 350 mA of steady-state current draw under normal operating temperatures of –40°F to +140°F (–40°C to +60°C).

8 Install current limiters into their appropriate sockets within the ac power compartment. Uncoated current limiters represent a potential shock hazard and should be handled safely. *Use an insulated tool for inserting or extracting current limiters when voltage is active on the feederline*.

9 Replace the ac power compartment cover and tighten the bolts to 30 to 35 in-lbs (1.8 to 2.2 N·m).

Figure 11 illustrates a side view of the ac power compartment with the rubber plugs removed indicating the location of the twisted-pair wire entry ports:

Figure 11
AC power compartment – side view



Options

You can purchase the following options to suit specific system needs: cable equalizer module, return-path attenuator module, cable simulator module and extended tap housing.

Cable Equalizer Module

The plug-in cable equalizer, T-EQ-*, attenuates the return-path signal originating from the customer premise to reduce the effects of system ingress. The cable equalizer also tightens the return-path signal variation to enable more efficient operation of return transmitters in optical nodes. The module maximizes return-path performance and is field-configurable by removing the tap faceplate.

Return-Path Attenuator Module

The plug-in return-path attenuator, T-RPA/S-* provides the same benefits as the cable equalizer module but uses a diplex filter to perform the tasks. As a result, the T-RPA/S-* is system split dependent and provides less impact to the forward drop signal than the cable equalizer. The high-pass filter, T-HP/S-52, operates in the same manner as the T-RPA/S-* but attenuates the return path to a greater degree. This is useful in ingress problem areas where customers are presently not using return-path services.

Cable Simulator Module

The plug-in cable simulator, T-CS-*, provides additional benefits for use in systems containing Motorola's high-output GaAs RF amplifiers and optical nodes. The T-CS-* maintains low loss in the return drop path while attenuating the forward drop signals to the proper system design levels.

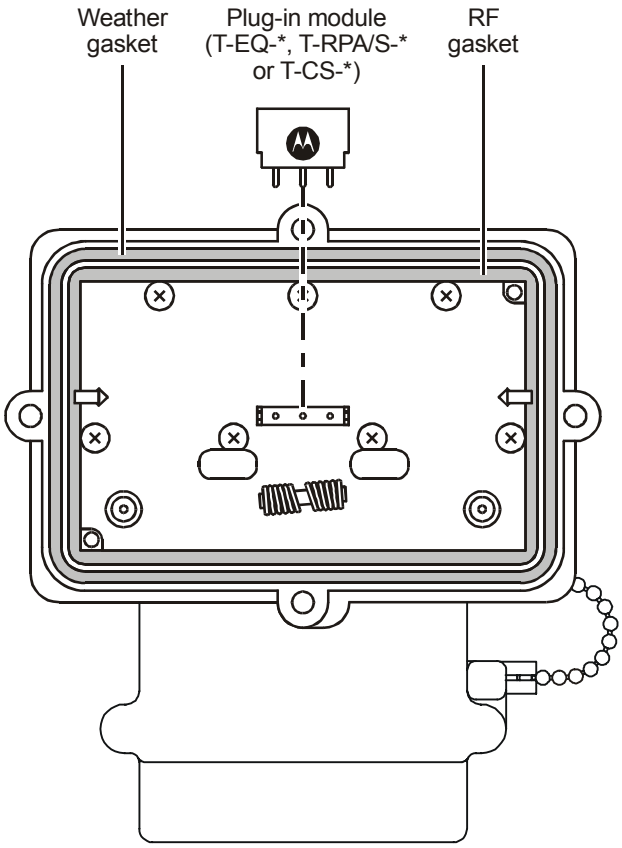
Installing the Plug-in Options

To install the plug-in options:

1. Determine which option best meets your system needs.
2. Plug in the selected module in the location illustrated in Figure 13 being careful not to damage the pins.
3. Affix the label provided with the module (example T-EQ-2 dB) on the faceplate of the BTT*-*P over the existing T-JP label illustrated in Figure 1.

Figure 12 illustrates the location for the various plug-in modules in the BTT*-*P faceplate:

Figure 12
Plug-in modules

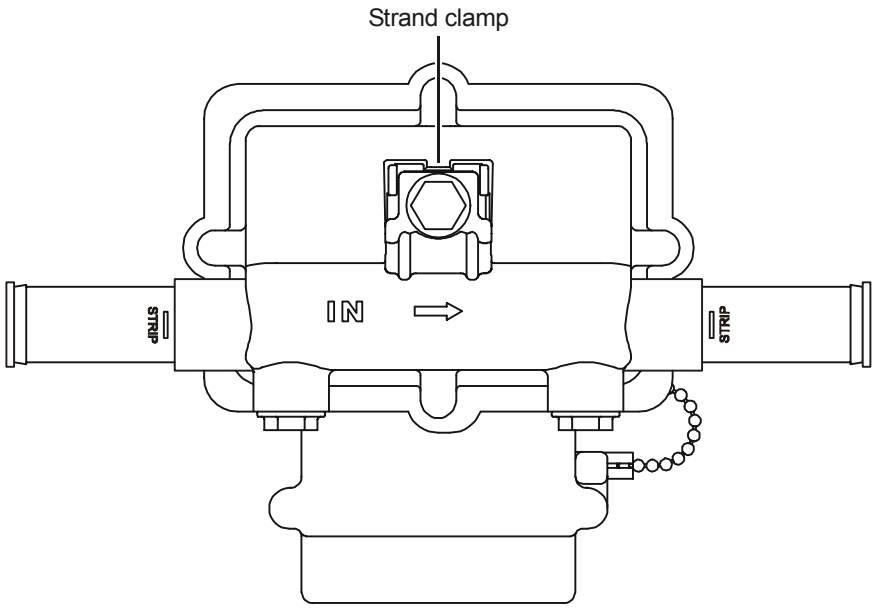


Extended Tap Housing

The FFT-HSG/XT extended tap housing eliminates the need to purchase costly connectors when making upgrades for aerial applications. The FFT-HSG/XT also reduces installation times and lessens craft errors. The extended housing supports all Motorola tap faceplates.

Figure 13 illustrates the FFT-HSG/XT:

Figure 13
FFT-HSG/XT extended tap housing



If You Need Help

If you need assistance while working with the BTT*-*P, contact the Motorola Technical Response Center (TRC):

- Inside the U.S.: **1-888-944-HELP** (**1-888-944-4357**)
- Outside the U.S.: **215-323-0044**
- Online: http://broadband.motorola.com/noflash/websupport.html.

The TRC is open from 8:00 AM to 2:00 AM Eastern Time, Monday through Friday and 10:00 AM to 5:00 PM Eastern Time, Saturday. When the TRC is closed, emergency service *only* is available on a call-back basis. Web Support offers a searchable solutions database, technical documentation, and low priority issue creation/tracking 24 hours per day, 7 days per week.

Calling for Repairs

If repair is necessary, call the Motorola Repair Facility at **1-800-642-0442** for a Return for Service Authorization (RSA) number before sending the unit. The RSA number must be prominently displayed on all equipment cartons. The Repair Facility is open from 7:00 AM to 4:00 PM Pacific Time, Monday through Friday.

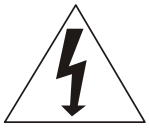
When calling from outside the United States, use the appropriate international access code and then call **52-631-311-1100** to contact the Repair Facility.

When shipping equipment for repair, follow these steps:

1. Pack the unit securely.
2. Enclose a note describing the exact problem.
3. Enclose a copy of the invoice that verifies the warranty status.
4. Ship the unit **PREPAID** to the following address:

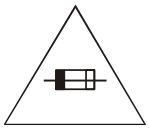
Motorola, Inc.
Broadband Communications Sector
c/o Excel
Attn: RSA #_____
6908 East Century Park Drive
Suite 100
Tucson, AZ 85706

Special Symbols That Might Appear on the Equipment



This symbol indicates that dangerous voltage levels are present within the equipment. These voltages are not insulated and may be of sufficient strength to cause serious bodily injury when touched. The symbol may also appear on schematics.

The exclamation point, within an equilateral triangle, is intended to alert the user to the presence of important installation, servicing, and operating instructions in the documents accompanying the equipment.



For continued protection against fire, replace all fuses only with fuses having the same electrical ratings marked at the location of the fuse.

NOTE TO CATV SYSTEM INSTALLER: This reminder is provided to call CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close as possible to the point of cable entry as practical.

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