

# TWO TUNEABLE PRE-AMPLIFIERS BY AMECO

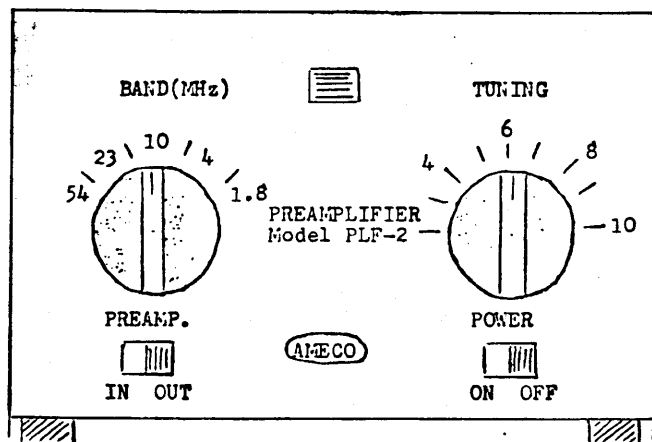
THE PLF-2 AND THE TPA-1

JERRY STRAWMAN WITH JOHN H. BRYANT

## THE PLF-2

The Ameco Equipment Company, a division of Ameco Publishing, Williston Park, New York, has been in existence for many years. At one time, the firm produced and sold amateur transmitters and receivers. Today, the company offers a varied line of products, including code instruction materials, test and theory manuals, code cassettes, preamplifiers, test equipment, and transmitting high pass filters.

The Ameco PLF-2 preamplifier is one of the company's products that has been widely sold and accepted. The unit is housed in a metal cabinet measuring 6 5/8" wide, 4 3/8" deep, and 3 1/2" high. The top half of the case is covered by a textured vinyl that resists scratches. Internal components are mounted on a glass epoxy circuit board. The preamp has its own internal power supply that will accept a 117 volt input. The PLF-2 circuitry has a tuned input, designed to resonate from 1.8 to 54 MHz. In practice, my unit will provide a small amount of signal amplification as low as 1.3 MHz. The tuned input consists of an all-metal air variable capacitor and four inductors. One coil, for the lowest range, has an air core, while the remaining inductors are wound in a single layer on ferrite material. The heart of the amplifier is an RCA 40673 dual-gate MOSFET transistor. Assembly and component quality appears high.



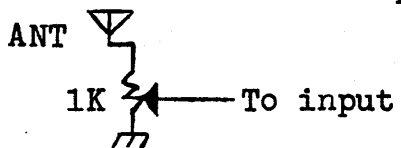
Ameco PLF-2  
Front panel controls

Front panel controls include separate slide switches for on/off, and for bypassing the unit. A band switch divides the range of coverage into four sections. The variable capacitor peaks the input within the selected range. Sharpness of tuning varies according to the tuned frequency. At 17.5 MHz, the receiver may be retuned up to 250 KHz before re-peaking the preamp capacitor will yield a worthwhile improvement. This decreases to about 175 KHz at 9.5 MHz, 125 KHz at 5 MHz, and 50 KHz at 1.8 MHz. I have used this unit with the Icom R70, Drake R7, and Hammarlund HQ-150 receivers. I was not able to overload any of these fine receivers at any frequency. The correct band range must be employed. The

use of an incorrect band range will introduce spurious signals. There is no gain control. In practice at my QTH, the PLF-2 provides a gain of 3-4 S units. The highest gain is at lowest frequencies, although the difference in gain between 5 MHz and 21 MHz is not great. I use a dipole cut for 5 MHz and fed with 450 ohm open wire and a dipole cut for 7.3MHz, fed with 52 ohm coax. Both antennas are in an inverted V configuration with the apex of both at 40 feet. The PLF-2 provides similar gain with both antennas, but does resonate at slightly different dial markings. Signal strength from the preamp output is most dependant on the amount of wire used. Similar results are obtained using half of the 5 MHz antenna as a random wire antenna.

Amplifiers in completing their assigned task do not discriminate between the desired signal and noise, coming from atmospheric and man-made sources. In this regard, the PLF-2 is no different. When properly tuned, the PLF-2 circuitry does not appear to add any noticeable amount of noise to the received signal. Like John Bryant has found with his Ameco preamp, the current model TPA-1, I use the unit to fill out the audio on weak signals.

My main complaint with the design of this accessory, lies in the use of RCA jacks for input and output. RCA jacks will not withstand years of continued use. I have replaced these jacks with my own personal preference, BNC jacks. A gain control would be nice. This omission was addressed by adding such a control on the Ameco TPA-1. Mark Connelly has suggested that a 1K ohm pot might be used ahead of the preamp input in the following manner:



This arrangement might appeal to those living close to radio transmitters.

Extra gain, for those with full-sized outdoor antennas and newer sensitive receivers, may not be needed or advisable. The PLF-2 does provide worthwhile gain to my 32 year old Hammarlund receiver, particularly in weak-signal situations. The Ameco PLF-2 was also available in a version allowing it to be used near and in connection with an amateur transmitter. It is available in used condition at hamfests and through equipment trader publications such as the Ham Trader Yellow Sheets. I found mine at a hamfest for \$30 and have not regretted my purchase.

## THE TPA-1

In early 1987, AMECO introduced the TPA-1 to replace the popular but somewhat limited PLF 2 model. In the early days of my experiments with impedance matching a Beverage to a receiver, I contacted several radio amateurs specializing in 160 meter low band work. When on DX expeditions, most of these people use Beverages for reception. They strongly recommended the TPA-1 as a tuneable pre-amplifier which was useful with Beverage Antennas. Eventually, I purchased two TPA-1's and have had at least one in use for the past year.

The TPA-1 is a tuned RF pre-amplifier with frequency coverage from .22 to 30 MHz. A dual insulated gate field effect transistor is used in the amplifier circuit. The unit provides between 10 and 20 db of useable gain and seems to have a very good signal to noise ratio. The unit accepts a single antenna input (an RCA jack) and has a similar single output to a receiver. The TPA one requires 9vdc power from either an "AC adapter" or a 9v. battery. If battery power is selected, AMECO has provided an internal battery mounting clip and button snap terminal connectors. The AMECO designers have now added a gain control for the pre-amp to complement the two tuning controls found on the previous model.

Note the hinged telescoping antenna provided on top of the case. This antenna is activated when no antenna is connected to the rear chassis RCA jack. Thus, the TPA-1 does double duty as an active antenna.

The retail price in 1980 for the unit was about \$75.00, with the adapter being available for another \$7.50. It is available from a number of SW hardware outlets including Universal Shortwave in Reynoldsburg, Ohio.

### IN USE:

I did not find the TPA-1 to be a satisfactory answer to my impedance matching problems with the Beverage - not when the unit was separated from the antenna by 70' of 50 ohm coax, anyway. However, I have found the TPA-1 nice to have around. It is excellent on DXpeditions, particularly when hooked to very directional low gain antennas such as the "Snake" (QST April 1988). I also find that the TPA-1 does help "strengthen the audio" on some marginal signals when listening to programming with one of my major DX receivers. This is especially true when I tune the higher International Bands. I have only rarely found the TPA-1 to be of assistance when DXing weak signals with my NRD-525.

When I next travel to the Far East, I'll be taking my Sony 2010 and the TPA-1 to do both program listening and some very serious DX. I have found that the TPA-1 really helps the Sony, especially when using less than optimal antennas on the Tropical or Medium Wave Bands.

I might also note that the tuning of the TPA-1 amp is very sharp. I do not have instruments to measure it, but I believe that the amplified portion of the spectrum is little more than 10 KHz wide. However, even with that quality of circuit design, the unit does tend to overload the front-end of the 525 under some circumstances on the lower frequency bands. This is most often noticed during the day when my one local MW station is on the air.

### ONE SERIOUS CAUTION:

The FET in the TPA-1 is EXTREMELY sensitive to static electricity brought to the unit via an antenna. In 13 months of operation, I have managed to blow three of these! They are not difficult to replace, if you know a little about soldering on circuit boards. Nevertheless, this tendency is a real pain in the posterior.

### CONCLUSION

If your only mode of DXing is from your shack using a highly sensitive 'main line' DX machine with very high gain antennas, the TPA-1 will not help you much. However, if you do DXpeditions, or if you need something to give a less than 'mainline' receiver or a low gain antenna an RF boost, the TPA-1 is a very good choice.

