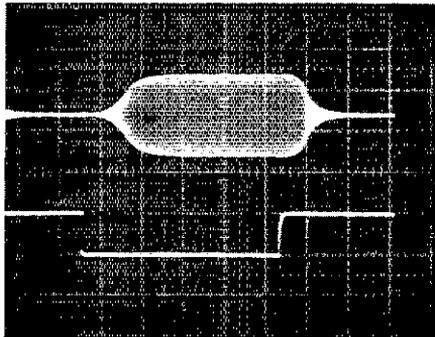


(A)



(B)

Fig. 3 — KWM-380 cw keying waveforms. First dot sent after VOX switching has a sharper rising edge because of aic setup time. It is also delayed approximately 20 ms, to allow external-amplifier changeover relays to switch and settle (A). The second, and all following dots, show normal rise and fall times of approximately 4 ms, and a delay of approximately 2 ms. This keying waveform should not cause key clicks (B). Horizontal divisions in A are each 20 ms; in B they are 5 ms.

sensitivity. The sensitivity reduction is a result of the broadcast-band roll-off filter used in the receiver front end. This filter is included to protect the receiver from overload by the strong broadcast-band signals found at some locations. It is possible to defeat this filter if a-m broadcast-band reception is desired. The high audio quality of the '380 was evident especially while listening to a-m broadcast stations.

I found the sensitivity of the '380 well suited to amateur-band operation, although some amateurs may prefer a slightly lower noise figure on the higher frequencies.

The weak point in the '380 receiver is the synthesized local oscillator. While it provides excellent frequency stability and tuning versatility, it also provides a relatively high level of LO sideband noise. This made it impossible to measure the IMD and blocking dynamic ranges using the current ARRL lab test methods. This is not a problem unique to the '380; LO noise problems of some degree are found in most synthesized transceivers. The '380 compares well with other synthesized receivers I have listened to. During routine operating, the LO noise is not readily apparent; only when a strong signal was within 10 or 20 kHz of the operating frequency did the effects of the LO noise become noticeable. The '380 LO also appears quite free of the spurs (removed from the LO frequency) found in some receivers.

Transmit performance was smooth and reliable. Reports on the cw and ssb signal quality were good, and the speech processor was effective. The only transmitter "glitch" was observed during cw operation. When the VOX circuit switched from receive to transmit, at the first key closure, an output transient could be seen on the station monitor scope. The tran-

sient lasted approximately 1 ms, and the peak amplitude was nearly equal to the normal full output power. It occurred just before the beginning of the normal output envelope. The people at Collins were advised of the problem, and we soon received a diode and instructions for installing it. Apparently, the diode had been omitted when a Service Bulletin modification was installed in the review unit. The keying waveforms shown in the photos were obtained after installation of the missing diode.

The owner's manual supplied with the '380 contains all the information necessary for transceiver operation. It also contains limited service information. The Collins service manual, a nearly 2-inch-thick volume, contains detailed information on how each transceiver section functions, complete parts specifications and numerous fold-out schematic diagrams. The modular construction used in many parts of the '380 should be a benefit if service is required. I was not surprised to find the overall component and construction quality to be high. In terms of reliability and good performance, the KWM-380 should continue the tradition established by the Collins equipment that preceded it. Price class: \$4500. — *George Collins, KC1V*

TEN-TEC ARGOSY HF TRANSCEIVER

□ There is a trend in North America these days toward conservation and simplicity. Many Amateur Radio operators have discovered the joy and satisfaction of low-power (QRP) operation with simple equipment. Some grew tired or bored by the ease of establishing DX QSOs while running their super stations. Others never succumbed to the siren song of the "super snorter, signal-sender" syndrome. If you are one of that number, or if you are looking for a second or standby radio, consider the Ten-Tec Argosy.

Ten-Tec literally started a new era in the history of QRP when they introduced the Argonaut many years ago. This popular rig has ssb, as well as cw capability. Patience is a way of life for the QRPer (required to maintain one's sanity), but sometimes it is desirable to run a bit more power so that a contact can be made quickly and easily. While the Argonaut has only a 5-W input level, the 405 (a companion amplifier to the Argonaut) input level is 100 watts. The pair make a nice combination, but the FCC amplifier rules brought an end to production of the 405 in 1978. Grieve not: The Argosy has come, bringing the choice of low or medium power with it.

Features

A switch on the back panel selects either

10- or 100-W input. By adjusting the DRIVE control on the front panel, lower-power operation is possible. I found the power-select switch easy to operate; with my hand on the right rear of the top cover, my finger found and operated the switch easily.

The Argosy covers the current U.S. and Canadian amateur bands from 3.5 to 30 MHz. In addition, the 10-MHz WARC band is included, making a total of six hf bands in nine 500-kHz segments (four segments for 10 meters). Approximately 40 kHz of overrun is provided by the VFO on each band edge.

The analog frequency readout works quite well. The band-switch position tells the MHz increments. A linear scale with a lighted, red bar pointer (LED) indicates the hundreds of kHz. The kHz figures are read from the tuning-knob skirt; calibration is 1 kHz per division. Band changes are a dream with this all solid-state radio. There are no receiver front-end or final amplifier adjustments to make; just switch bands, change antennas, dial the desired frequency, and then transmit (after listening first, of course). Even the sideband selection is automatic.

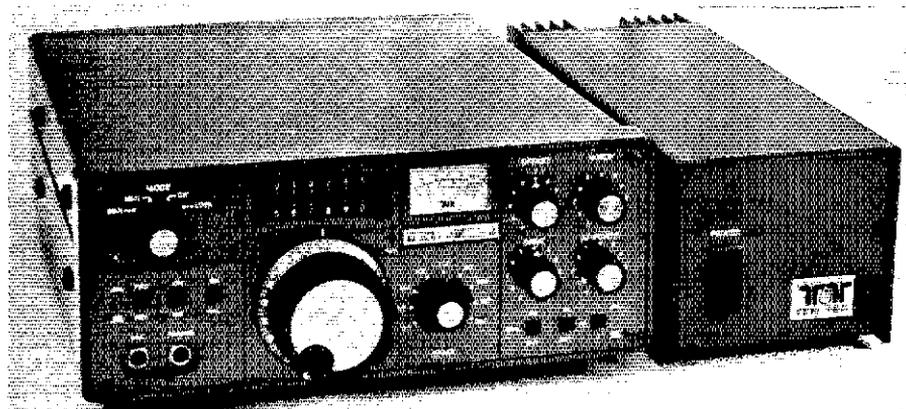
The front panel is clean and well laid out. The mode switch is located in the upper left corner; it has positions for sideband-normal (SB-N), reverse (SB-R), CW and LOCK. On the right side are the receiver OFFSET (RIT), the i-f NOTCH filter, the receiver AF-POWER and the transmitter DRIVE controls. Three push buttons are on the left panel switch: the wattmeter/SWR meter from FWD to REV, the optional noise blander ON/OFF and the optional calibrator ON/OFF. Another set of three push buttons, these located in the lower right portion, control selectivity. One switches an optional i-f filter IN/OUT. (There are four optional crystal ladder filters available — 2.4- and 1.8-kHz 8-pole filters for SSB, and 500-Hz (8-pole) and 250-Hz (6-pole) for cw.) Two other switches are used for the optional audio cw filter — one for IN/OUT, the other for bandwidth. Position ONE is 450-Hz bandwidth; position TWO is 150 Hz. Center frequency is 750 Hz. A pair of 1/4-in. phone jacks are used for connecting a microphone and a pair of headphones.

On the rear panel, located below the HIGH/LOW power switch, is the SO-239 antenna connector. On the other side of the rear panel is the four-pin power connector and ground post. Above these there are six phono jacks; they are for: KEY, +12-V dc, AUX and three SPARES.

Operation

Full break-in (QSK) cw and push-to-talk

1mm = in. × 25.4; kg = lb × 0.454.



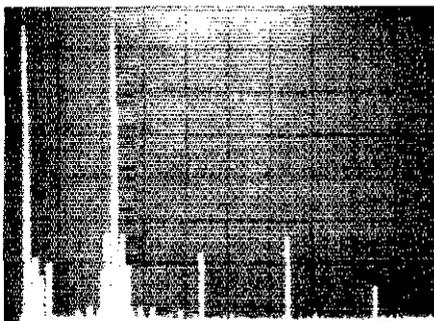


Fig. 4 — Spectral display of the Ten-Tec Argosy. Vertical divisions are each 10 dB; horizontal divisions are each 10 MHz. Output power is approximately 5 watts at 15 meters. The worst-case spurious emission is approximately 53 dB down from the fundamental.

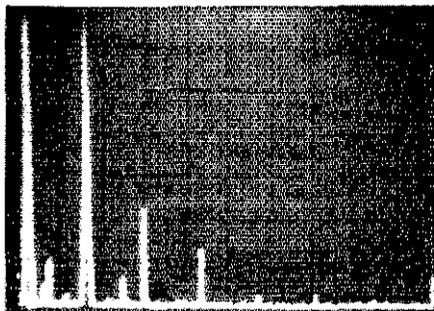


Fig. 5 — Spectral display of the Argosy. Vertical divisions are each 10 dB; horizontal divisions are each 10 MHz. Output power is approximately 40 watts at 20 meters. The worst-case spurious emission is approximately 48 dB down from the fundamental. The Argosy complies with current FCC specifications for spectral purity.

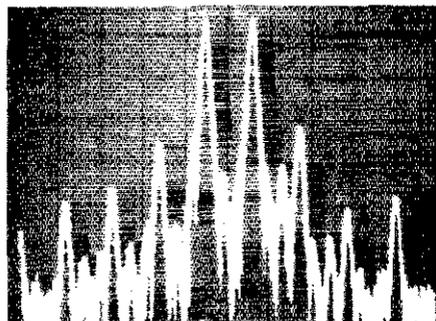


Fig. 6 — Spectral display of the Argosy during transmitter two-tone third-order IMD test. The third-order products are approximately 31 dB below PEP, and fifth-order products are about 46 dB down. Vertical divisions are each 10 dB; horizontal divisions are each 1 kHz. The transmitter was being operated at 100 watts of input power on the 20-meter band.

Ten-Tec Argosy HF Transceiver, Serial No. 00026

Manufacturer's Claimed Specifications

Frequency coverage: 3.5 to 30 MHz, including 10 MHz.

Modes of operation: Ssb, cw.

Frequency display: Analog dial.

Resolution: 1 kHz.

kHz/turn of tuning knob: 18.

Backlash: Not specified.

RIT range: ± 3 kHz.

Audio power output: 1 watt (8 ohms).

Power consumption; Transmit, 122 watts; receive, 6.75 watts.

Transmitter rf-power output: 40-50 watts in high-power position; 4-5 watts in low-power position.

Spurious suppression: Better than 45 dB.

Harmonic suppression: Better than 45 dB.

Carrier suppression: Better than 40 dB.

Transmitter third-order IMD: Not specified.

Frequency stability: Less than 20-Hz change per $^{\circ}$ F, averaged over a 40 $^{\circ}$ change from 70 $^{\circ}$ to 110 $^{\circ}$ after a 30-minute warmup. Less than 15-Hz change from 105- to 125-V ac when using a Ten-Tec power supply.

S-meter sensitivity (μ V/S): Not specified.

Receiver sensitivity: 0.3 μ V for 10 dB S + N/N typical.

Measured in ARRL Lab

As specified, plus a minimum of 40 kHz additional at each band edge.

As specified.

As specified.

As specified.

18.

Nil.

± 3 kHz.

As specified.

Not measured.

As specified.

54 dB worst case (5 W out);

60 dB worst case

(40 W out).

48 dB.

68 dB.

31 dB below PEP (see photo).

620 Hz from cold start to one hour later.

Ranging from 21 to 27 μ V.

Receiver dynamics measured with model 217

500-Hz i-f filter:

	80 m	20 m
MDS (dBm)	-133	-133
Blocking DR (dB)	99	98
Two-tone third-order IMD DR (dB)	64	64

Size (HWD): 4 x 9.5 x 12 in.

Weight: 8 lb.

Color: Gray.

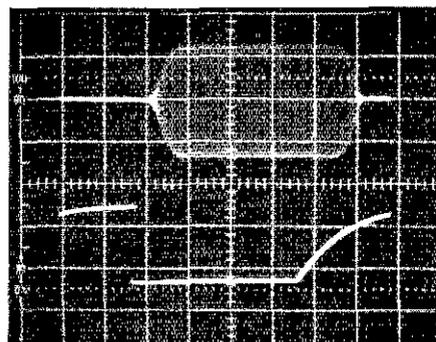


Fig. 7 — Cw keying waveform of the Argosy. Upper trace is the rf envelope; lower trace is the dc level at the key jack. Each horizontal division is 5 ms. The carrier level was adjusted until the alc indicator LED just showed full brilliance. Higher amounts of drive tend to sharpen the waveform.

(PTT) operation on ssb are standard features of the Argosy. The built-in cw sidetone can be adjusted in pitch and volume to suit individual preference. To operate high power (100-W input), set the HI/LO switch to HI, and the mode switch to LOCK. Increase drive until the red ALC LED lights fully. Return the mode switch to the desired position and you are ready to transmit.

One of my first QSOs using the Argosy was with HZ1AB on 7-MHz cw. Later, while running QRP on the higher bands, many countries were contacted, including 3B8 and 9K2. I have used it in several contests with satisfactory results. Only the age disappointed me. When the background noise level is low and signal levels are high, the first code element or voice syllable comes through with a loud "pop." This is caused by a too-slow age attack time — a result of audio-derived age. Most of the time

this is no problem, but it can be particularly bothersome if one is wearing headphones. An rf gain control would help.

The second time the Argosy was turned on, the protective circuitry immediately shut it off. I turned the rig off and back on, and everything was fine. It still does that occasionally, but I find it no particular problem.

Output from the optional calibrator is pulsed. That makes it a lot easier to identify. I found that particularly useful amid the cacophony of the 40-meter band.

Clean audio characterizes the receive and transmit modes. Cw reception is enhanced by the addition of the 500-Hz i-f and audio cw filters. Yes, the Argosy has the stability to go with that kind of selectivity.

W1FB put the Argosy through its paces during a two-week "hamcation" on Barbados

in April of 1982, operating 8P6EU. The transceiver performed admirably with sloping dipoles over the seashore. Worldwide DX contacts yielded reports ranging from RST 559 to 599.

Owing to the 85 to 95 $^{\circ}$ F temperatures that prevailed during the daylight hours, and because of the 50-Hz line current on the island, the power transformer overheated. Operating with the top cover of the power-supply case removed solved the problem.

W1CCK, operating as 8P6FJ, had good results while using the unit on ssb. Reports indicated that the phone and cw signals from the Argosy were very clean — excellent audio quality and nice cw-note shaping. Certainly the transceiver is sized ideally for travel by airplane, and the weight is light with respect to comparable rigs.

You can buy the basic transceiver today and add the options later, if you desire. The optional features all mount easily inside the compact, metal cabinet. The Argosy is available from Ten-Tec, Inc., Sevierville, TN 37862. Price class: Argosy, \$549; 225 power supply, \$129; 226 calibrator, \$39; 217 500-Hz filter, \$55; 220 2.4-kHz filter, \$55; 223 noise blanker, \$34; 224 audio cw filter, \$34. — *Chuck Hutchinson, K8CH*