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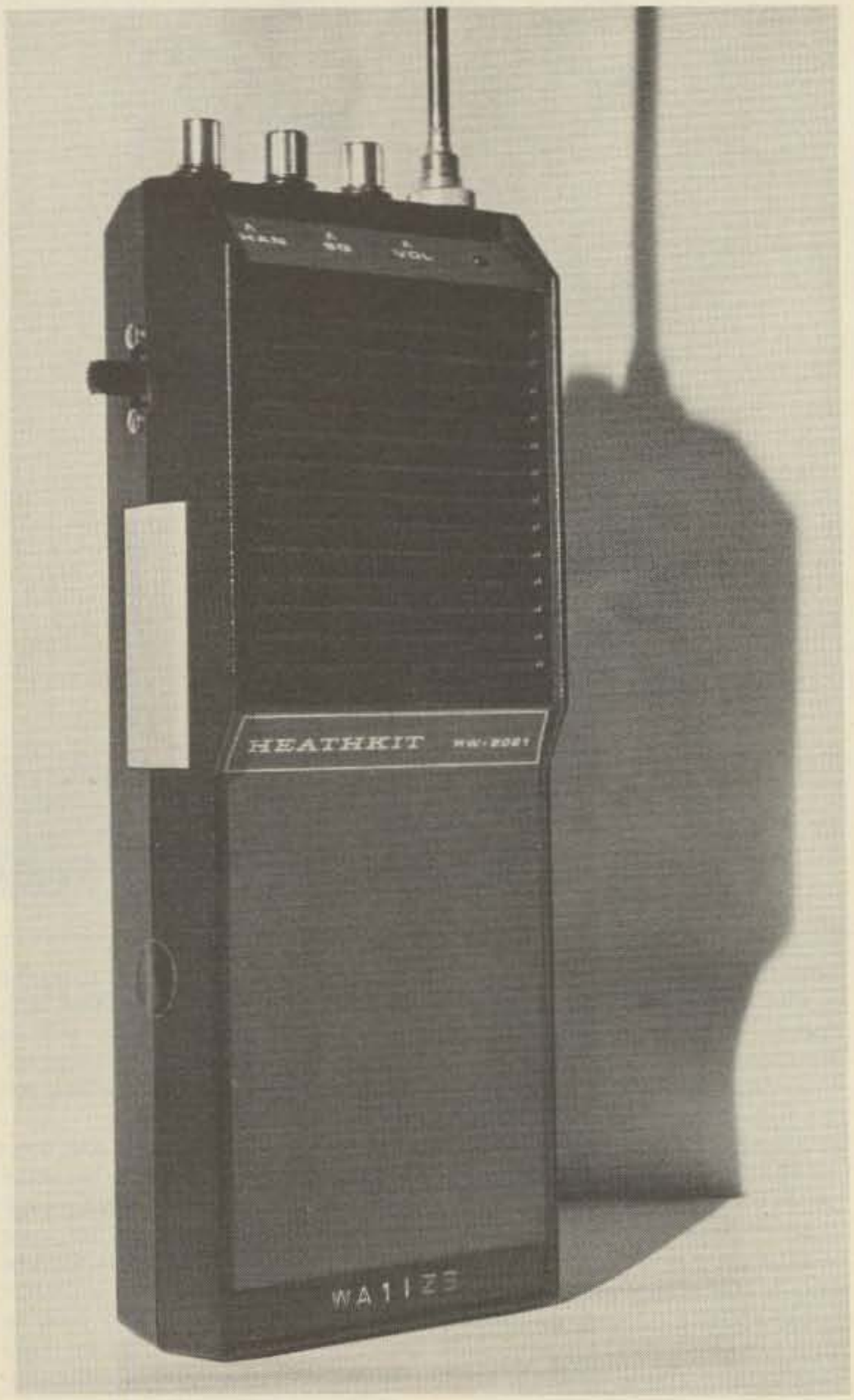
Heath HT Goodies

-- add a whip and offsets



How would you like to make a good 2 meter rig even better and more versatile at low cost? Sounds good? I thought so too!

This article will cover the modifications made to my Heath HW-2021 to allow *two* selectable transmit offsets as well as simplex operation at the flip of a switch. In addition, I've included a description of a simple yet effective ¼ wave telescoping whip you can make in minutes.

I'm sure it must have occurred to many owners or prospective owners of the HW-2021 that it would sure be nice if the rig allowed operation on 146 MHz repeaters as well as the 147 MHz splits without sacrificing simplex capability. If assembled according to Heath instructions, the rig allows either two separate transmitter offsets or one offset and simplex.

Theory of Operation

The transmitter employs a rather unique mixing chain operating at the same frequency as the receiver i-f (10.7 MHz). As supplied by Heath, the offset switch is a DPDT wired as an SPDT. This allows selection of either a 10.7 MHz crystal (for simplex operation) or a 10.1 MHz crystal (for -600 kHz offset).

All that is necessary for dual offset and simplex capability is a new switch, the appropriate frequency offset crystal, and a few wiring changes.

Construction

Although it should certainly be possible to add all these changes to an already assembled transceiver, it will definitely be easier to make them during initial construction as I did.

Rather than try and squeeze in an additional crystal socket for the extra offset, I chose to hijack one of the *channel* crystal sockets and rewire it. Referring to the Heathkit schematic, eliminate the gray wire to hole E, as well as C48, C54, R61, R62, and D7. Now, using a scalpel or similar instrument, cut the PC track between sockets Y6 and Y5 *after* C54 (keep that scalpel handy, you'll need it later). Install jumper wires in the place of R61 and C48. Replace C43 with an axial lead version of the same value and solder it *beneath* the main circuit board or it will be in the way of the new offset switch, which is slightly larger. That completes the wiring changes to the PC board, which may be set aside for now.

It's now time to wire and install the new offset switch. A double pole, three position

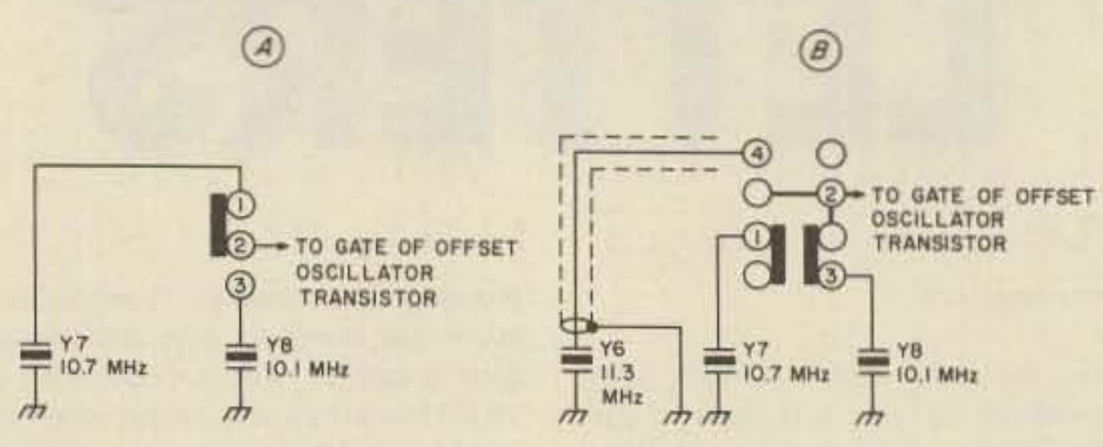


Fig. 1. Transmit offset switching. (a) As originally wired. (b) Modified with new switch and additional capability. Heavy lines indicate hookup wire at switch.

switch is called for here. In case you have trouble locating one, I purchased mine at four for one dollar ($1.00) from "Poly Paks" in South Lynnfield, Massachusetts (catalog #92CU2666). Once you determine what leads are necessary to wire it in accordance with Fig. 1(b), clip all the extra leads and protrusions flush. As is obvious from the photo of the two switches, the new replacement will require a slightly different mounting procedure. Take the scalpel you set aside previously and carefully trim away the mounting tabs from the inside of the lower case half. A flat file should now be used to enlarge the switch cut out, allowing for the extra travel of the three position switch. If you use the same switch I did, about 1/32" on each side should be right. Make sure you file slowly and at a slight inward angle so as to not remove too much plastic or have any raw edges showing. If you've gotten this far, you're almost home!

Draw a template of the switch front on a piece of paper indicating the location of the mounting holes. Tape this to the outside of the case exactly in the position you will be mounting the switch and drill out the two mounting holes. A drill press is advisable; however, a hand drill operated by a steady hand will do. Remove the template.

All that remains now is to mount the switch with two short screws and wire it up. A short length of RG/62 is recommended for the switch to board wiring. The outer braid is left floating at the switch end. The inner lead may be conveniently wired to the board at the lower hole formerly occupied by C54. I found it convenient to mount the switch so it simulated mechanically what was going on electrically, i.e., in the up position, the transmitter frequency is shifted up, etc. Plug the crystal for your desired offset frequency into Y6. Follow the crystal ordering information on page 61 of the Heath manual.

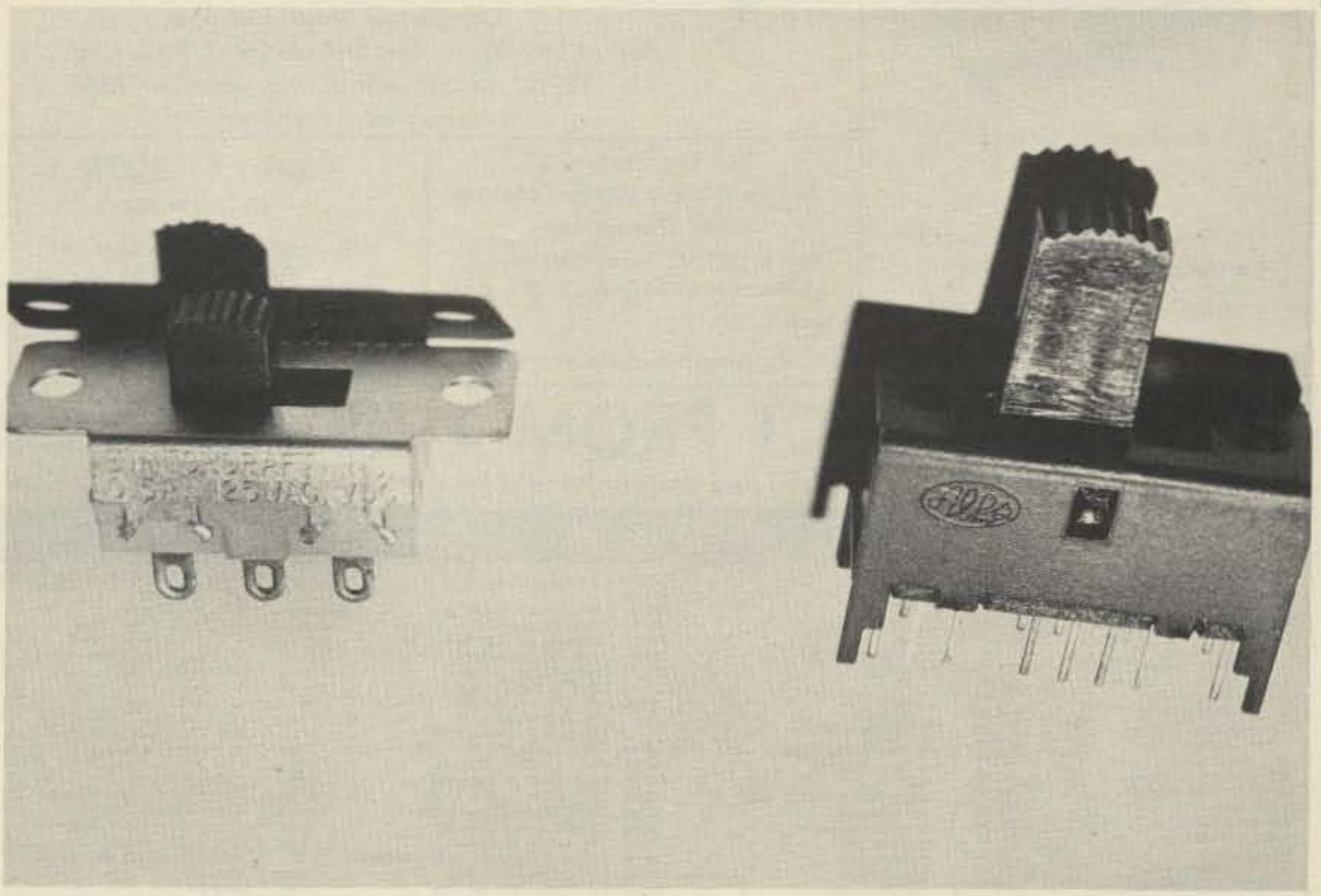
The Telescoping Whip

A telescoping whip can be easily added to the HW-2021 to increase its range in the field. Simply take a ¼" single-hole-mount phono jack and snip off the inner conductor solder lug since it won't be needed. To this you will mate a Philmore "TRA" whip. This whip comes with a removable thread adaptor and retails for about $1.50.

Temporarily secure or clamp the phono jack securely in an upright position. Place the adaptor slotted end up in the opening of the jack and solder. It is a close fit, so you won't need much solder. Screw the upper whip section into the adaptor and reinforce with a single drop of epoxy on each side of the slot.

Once the epoxy is thoroughly dry, your assembly is complete. Have fun!

My special thanks to WA1ZDE without whom I probably would never have finished this project (much less gotten it typed) and to WA1ION for his photographs. ■



View of the original switch and larger replacement. The longer extension of the slide on the new switch has the advantage of being more readily accessible when using the Heath accessory case.

LETTERS

from page 179

rigs which might be converted easily, such as CB sets, Yaesus, etc., to consider writing up an article for publication.

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LEAGUE REPORTS

Did you know that the ARRL has yearly reports (their annual reports) printed and that they do not make this fact known to their own members? They just sent me their 1976 annual report, and I think that all hams interested in the ARRL should request the same from them.

I also think that all ARRL members should question why *QST* never mentions these reports or even publishes excerpts from them once a year.

Could it be that the ARRL does not want people to find out about all the stocks and bonds they own and how they could have sold some of these to finance their building addition (rather than raising dues to $12 yearly)?

Lawrence I. Cotariu
Skokie IL

Yes, I knew. As the editor of another ham magazine said after reading the report, "Who says QST *doesn't publish fiction?" – Wayne.*

A WORD FROM HUGHES

Your September, 1977, issue included an article by Michael I. Cohen on building "A Practical 2m Synthesizer." One of the components called out was the Hughes HCTR 0320 synthesizer. Your readers should be aware that they can get this part from one of our two distributors, namely Semiconductor Technology, Inc., 124-14 22nd Avenue, College Point NY 11356, or Calmarc Sales, 1651 E. Edinger, Suite 207, Santa Ana CA 92705.

N. E. Moyer
Hughes Aircraft Company
Newport Beach CA