

Dear Customer:

Your DD7-2 or DD8-2 is being shipped to you before we have the technical data and schematic diagram ready to include. A booklet containing this information, warranty notice, and other pertinent details will be mailed to you within 10 to 15 days. In the meantime, we are enclosing a drawing that illustrates how to connect the frequency display unit to the radio listed with your order. Thank you for your kind patience during the trials and tribulations of getting this 2nd production run through the mill. We hope and trust that the next run will go more smoothly. We hope that you will enjoy the use of your display unit with your rig.

73 Herb W6QKI

#### TUNE CONTROL

The Mark 2 model of the DD7 and DD8 Digital Readout units have a small tuning control on the left side of the front panel. For the amateur bands that are marked on the bandswitch, this control can usually be left in the straight up 12 o'clock position. If the display does not lock up firmly, the TUNE control can be fined tuned until it does. The control primary function is for operating on frequencies other the bands marked on the bandswitch. For example, to use the unit on 18 MHz band, set the bandswitch to 14, and turn the TUNE control in the + direction until the frequency is locked. To use the unit on 24 MHz, set the bandswitch to 21, and turn the TUNE control in the + direction until the frequency locks in. To tune for the 12 MHz broadcast band, (If your rig is general coverage) set the bandswitch to 14, and TUNE - until it locks in on 12 MHz. In other words, the DD7-2 and DD8-2 can provide digital frequency readout wherever you receiver or transceiver will tune in the HF range from 1.5 to 40 MHz.

#### POWER SUPPLY

The DD7-2 and DD8-2 require a 12 to 14 volt well filtered DC supply. When being connected to a solid state rig, such as the Atlas 210 and 215 line, the units may be powered by the same supply that is used for the transceiver. The phone jack on back of the display unit requires a standard 2.5 mm (3/32 in.) phone jack, such as the Radio Shack No. 274-289 or 290. Polarity MUST be carefully observed. The plus lead goes to the tip contact of the plug, while the minus lead must goes to the barrel contact. Double check this before applying voltage.

With tube type radios, including hybrid designs that are mostly solid state but still using tubes in the driver and P.A. stages, a separate source for 12 volts DC works best, and avoids potential hum problems. DC power pack cubes which plug directly into an AC outlet work very well. It should be rated for a nominal DC voltage of 12, and a current rating of 200 milliamps, or more. The 2 conductor cord coming from the cube should be fitted with the 2.5 mm (3/32 in.) phone plug as described above. These cubes are available from Atlas Radio, or from Radio Shack and other electronic distributors.

PRELIMINARY INFORMATION:

The Atlas Digital Frequency Displays are designed to operate with HF receivers, transceivers, and transmitters. The DD7-2 is for radios that employ 2 oscillators in their heterodyning scheme, usually referred to as the "Local Osc.", and the "carrier Osc." or BFO. These oscillators are coupled very lightly to an IC mixer whose output is tuned to the actual operating frequency. This provides an exact frequency reading, and in the case of a transceiver, works in both transmit and receive modes. The first 2 digits read megaHertz, the next 3 digits read kiloHertz, and the last digit reads in 100 Hz steps. The digits are 0.4 in. high.

The DD8-2 is designed for radios that convert the signal frequency two times, first to a relatively high I.F., and then in the 2nd stage of conversion to a lower frequency I.F. The DD8 design samples the 3 oscillators employed in this scheme, and thus use 3 miniature coaxial cables coming from the radio, and plugging into the back of the DD8-2. There are 2 I.C. mixers in the DD8-2, with the 2nd one being tuned to the 2nd I.F.

Many of the other digital frequency displays that are built into the newer radio operate on the assumption that the I.F. system is precisely on the design center, and the counter is offset by that amount. However, crystal filters and carrier oscillators are seldom on that exact design frequency. There are always plus and minus tolerances in the manufacture of crystal filters, and as a result the actual carrier frequency may be offset by quite a few Hertz, often as many as 100 Hz, and sometimes as much as 200 to 300, or more. As a result, the accuracy of the display can be off by that same amount. This is one of the reasons why you often hear 2 stations disagreeing about who has the correct reading when they are different by a considerable amount. They can't both be right. On the other hand, they may both be wrong. The Atlas design concept avoids this error, and thus is considerably more accurate.

The chart below lists a number of the more popular radios produced in the 1960's and 70's, and indicates which model of the Atlas display units is required. If you have a receiver, transmitter, or transceiver that is not listed, give us a call and we will find out for you which model you will need. It may be helpful if you can supply us with a schematic diagram (copy), and other technical information. If you have a complete tech. manual, a copy of that would be most helpful. Or if you wish, you can send us your original copy, and we will get a copy made, and mail yours back to you. Having this information will let us generate complete instructions for installing the digital display in your old classic.

This column of radios require the DD7-2 Frequency Display Unit (Single Conversion).

Atlas 180,210/215,210X/215X  
Swan, All tube type transceivers  
Drake TR-3/4, R5 and T4  
Heath-Kit HW-9  
Ten-Tec OMNI

This column of radios require the DD8-2 Frequency Display Unit (Dual Conversion).

Collins KWM-2/2A, 75 & 32 S-Line  
Heath-Kit HW-101  
Kenwood TS-520/520S  
Yaesu FT-101E/EE/EX  
Alda 103. Requires DD78, See Price List.

NOTE: As we gather more information on other brands, this list will grow consirably.

Described below are the special features of the new Mark 2 version of the Atlas digital frequency display units:

- a) Both the DD7-2 and DD8-2 now provide for full coverage of the HF range from 1.5 to 30 MHz. A tuning knob has been added to the front panel. The design allows this knob to be left in the 12 o'clock, straight up position for normal use on the 1.8, 3.5, 7, 10, 14, 21, and 28 MHz bands. The display will automatically lock in by simply turning the bandswitch control. For other bands such as the 18 and 24 MHz WARC bands, short wave broadcast, WWV frequencies, etc., it is only necessary to tweak the tuning knob, either plus or minus, until the display locks in.
- b) The circuit board is common to both the DD7-2 and DD8-2 models. The single mixer circuitry is all that is required for the DD7-2 version, and thus it sells for somewhat less than the DD8-2. But all the holes are in the PC board for adding the 2nd mixer components, another phono jack, etc. to change from the DD7-2 model to the DD8-2. These are available in kit form, or the DD7-2 can be returned to the factory to have it changed to a DD8-2 for a nominal cost. This feature is of importance if the owner's plans change and you wish to use it on a dual conversion radio instead. The price list covers these options.
- c) A second option is to have the DD7-2 or the DD8-2 converted to the switchable design for using the same display on either a single conversion radio, or on a dual conversion. Some owners may have 2 or more radios, and may wish to have the frequency display available on all of them, regardless of whether they are single or dual conversion designs. A rotary switch on the rear panel makes this selection possible. The price list covers these options. The switchable model is designated as the DD-78.
- d) Finally, one other option is the relay circuit and additional phono jack, (labeled "INJ.B") which permits automatic reading of the transmit frequency whenever you key the Mic. or switch into transmit mode. This will be a very desirable option when operating split TX/RX frequencies, as is often done when working foreign stations who are transmitting outside the American phone band. The circuit holes are in place on the PC board for installation of the DIP-14 Reed Relay, additional phono jack, and other necessary wiring. The price list covers this option.

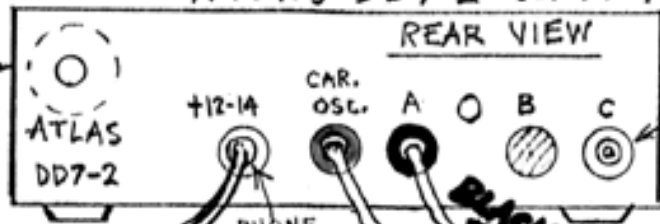
NOMINAL COAX. CABLE LENGTHS, FROM DD7-2/DD8-2 TO RECEIVER OR TRANSCEIVER.

BRAND	CARRIER OSC. (BFO)		INTERMEDIATE OSC. (DUAL CONV.)		INJECTION OSC.	
	INCH LENGTH	COUPLING CAP. pF	INCH LENGTH	COUPLING CAP. pF	INCH LENGTH	COUPLING CAP. pF
ATLAS (DD7-2)	21	20 **	---	---	16	20 **
SWAN (DD7-2)	24	12 **	---	---	21	12 **
DRAKE (DD7-2)	16	20 *	---	---	19	10 *
COLLINS (DD8-2)	16	33 *	16	20 *	16	10 *

\* Note that these coupling capacitors should be at the radio end of the cable, as marked. The Phono Plug will unscrew, and the capacitor is soldered inside, making it easy to adjust, should that be necessary.

\*\* Note that these coupling capacitors are supplied already attached to the cables, and that this end goes inside the radio where the capacitor will be soldered in place as per instructions, and the shield braid is connected to chassis ground.

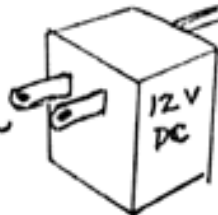
ATLAS DD7-2 OR DD-7B



OPTIONAL SWITCH FOR DD-7B, THE SINGLE/DUAL CONVERSION SWITCHABLE MODEL.

This jack is used only with the DD8-2 configuration for dual conversion ratios.

117V 50-60~

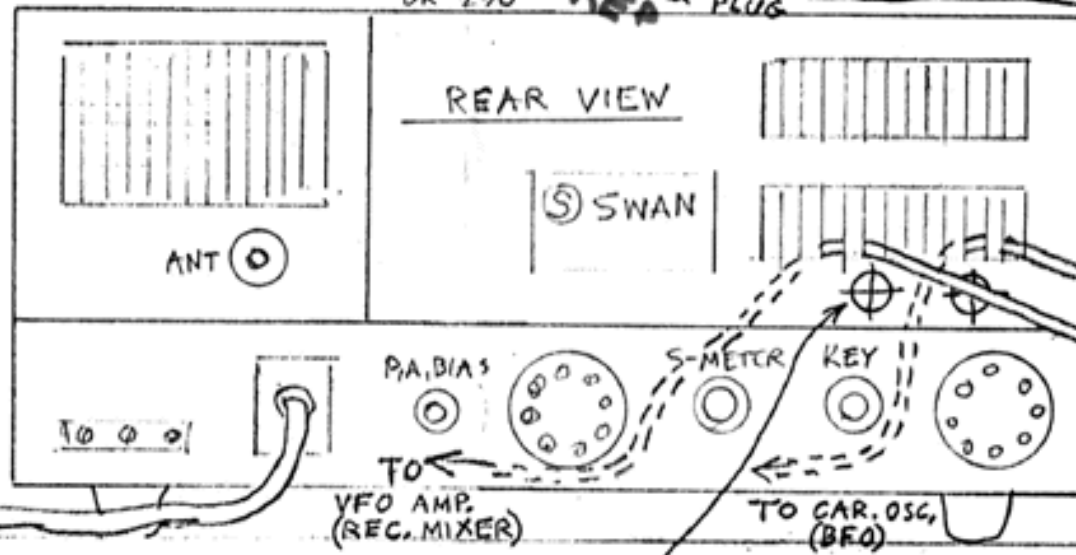


POWER PACK

PHONE PLUG, RADIO SHACK NO. 274-289 OR 290

PLUG

COAX. CABLES (SUPPLIED) CAN BE FED THROUGH VENT HOLES,



POWER SUPPLY

OPTIONAL ARRANGEMENT: PHONO JACKS ← RADIO SHACK NO. 274-346 CAN BE INSTALLED, AS SHOWN, AND CABLES ← NO. 274-319 FITTED WITH PHONO PLUGS, COAX. CAN THEN BE RUN INSIDE FROM THE PHONO JACKS TO THE CONNECTIONS UNDERNEATH, SAME AS ILLUSTRATED ON PAGES 6B AND 6C THE PHONO JACKS REQUIRE 1/4 IN. HOLES.

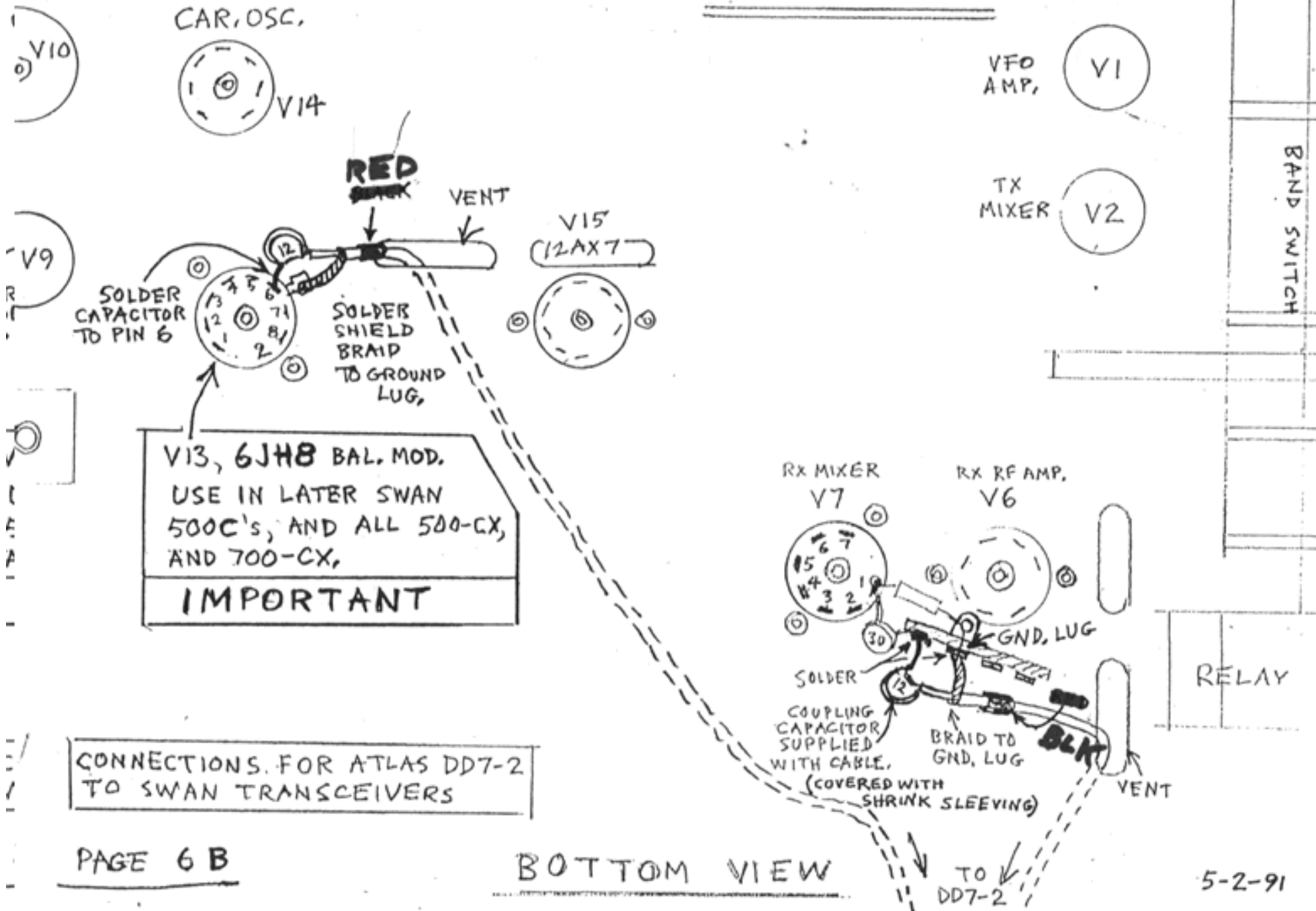
CONNECTIONS FOR SWAN 350-500, 500C-500cx, 700cx, and higher



# (S) SWAN: 500C (LATER)

FRONT PANEL

BOTTOM VIEW



CONNECTIONS FOR ATLAS DD7-2 TO SWAN TRANSCEIVERS



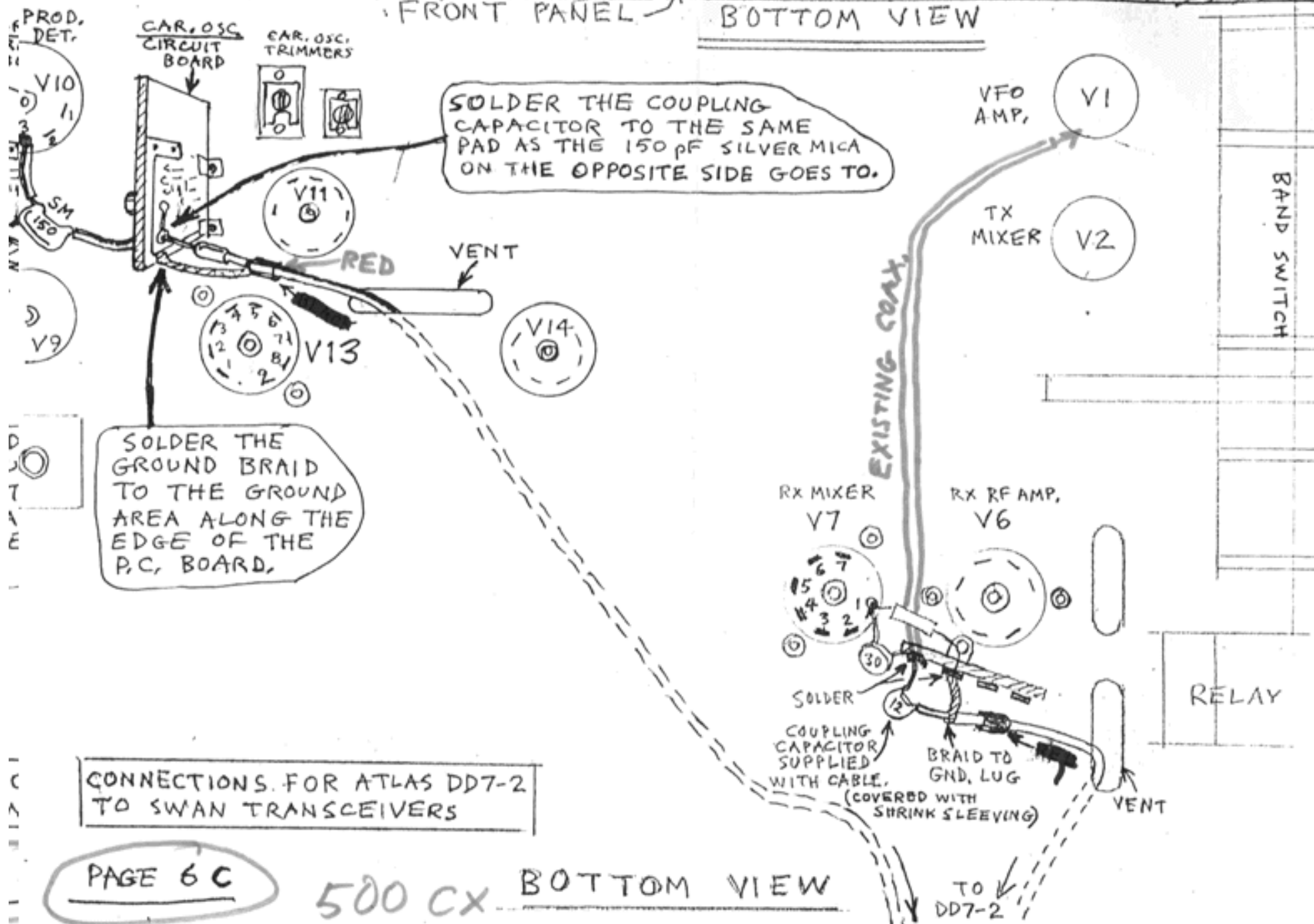
SWAN

500 CX / 700 CX AND HIGHER.

TRANSISTORIZED CARRIER OSCILLATOR

FRONT PANEL

BOTTOM VIEW



SOLDER THE COUPLING CAPACITOR TO THE SAME PAD AS THE 150 pF SILVER MICA ON THE OPPOSITE SIDE GOES TO.

SOLDER THE GROUND BRAID TO THE GROUND AREA ALONG THE EDGE OF THE P.C. BOARD.

CONNECTIONS FOR ATLAS DD7-2 TO SWAN TRANSCEIVERS

PAGE 6 C

500 CX BOTTOM VIEW

TO DD7-2