

Central Electronics Event 2017
Jeff Covelli WA8SAJ



Herb Johnson
W6QKI in Oceanside, CA
W7GRA in Benson, AZ



1960

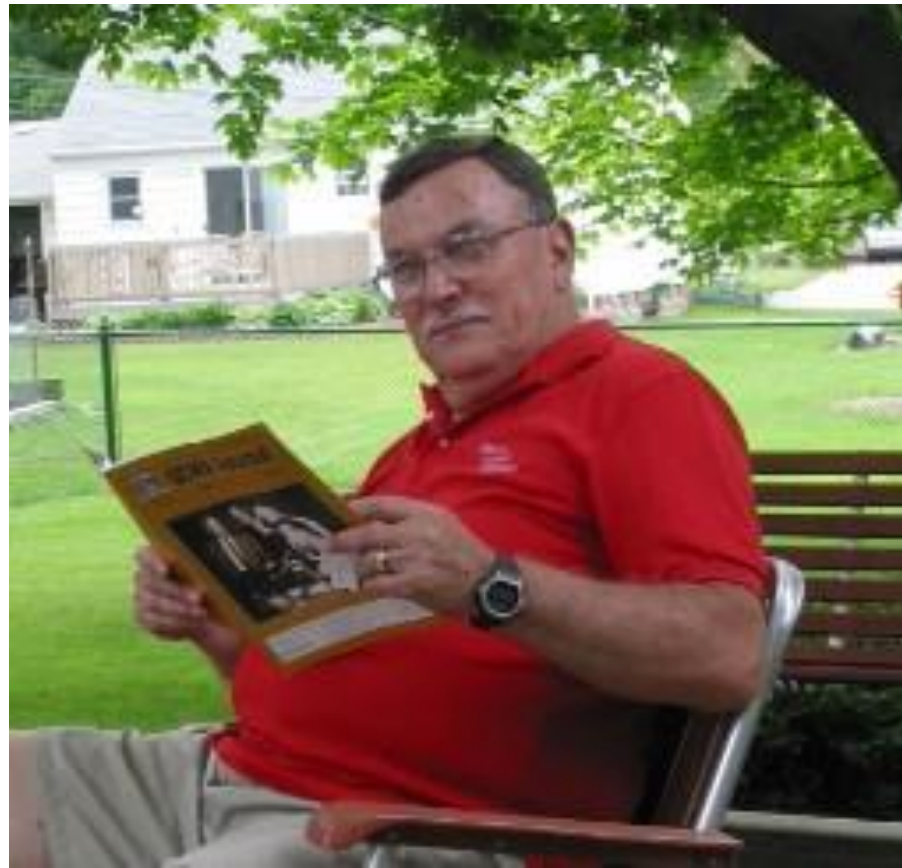
Tucson (Benson) Arizona

1) Herb Johnson was ask to give a talk about the Gonset G-76 which he designed for Gonset at the local radio club meeting.

2) The club members were working on a transceiver idea for themselves, when Herb gave them some ideas on what he would do if he would build one.

3) Herb went and built a SW-140 and needed cash to produce more radios.

John Linton
W8DKI in Cleveland, OH
W7IXX in Benson, AZ



1961

- 4) John Linton, then manager of Elliot Electronics ask the owner if she could provide money to help Herb Johnson***
- 5) 250 radios later, Swan was born !***
- 6) Swan moved to Oceanside, CA & John Linton moved to Cleveland, OH and became a manager of Pioneer Electronics.***
- 7) Swan would then start on manufacturing the SW-175 and SW-120, then the SW-240 tri-bander, which really sent the company moving fast.***
- 8) John received a SW-240 chassis, a front panel along with most parts to make a SW-140 40-meter SSB transceiver, plus the first manuals printed.***

**Swan
Engineering**

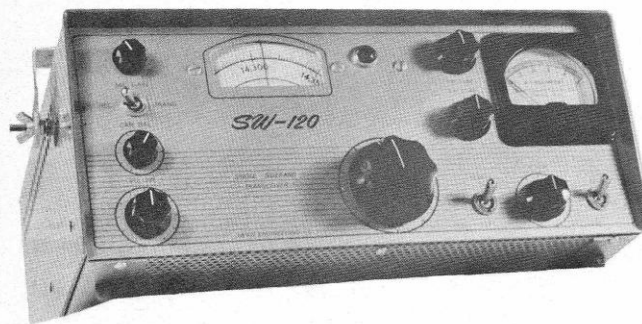
First Ad

Before

Publishing

Single Sideband Mobile Transceiver

MANUFACTURED BY *Swan Engineering Co.* BENSON, ARIZONA



A revolutionary new design by Swan Engineering provides single sideband communication for radio amateurs at a surprisingly low cost. The one-band design gives exceptional, high quality performance in all respects on the chosen band. The following models are available —

Model No.	Frequency Range	Sideband
SW-175	3.8 — 4.00 mc.	Lower
SW-140	7.2 — 7.3 mc.	Lower
SW-120	14.2 — 14.35 mc.	Upper
SW-115	21.25 — 21.45 mc.	Upper
SW-110*	28.5 — 28.7 mc.	Upper
SW-106*	50.0 — 50.3 mc.	Upper

(* tentative)

- ** 130 watts PEP input to 6DQ5 Power Amplifier.
- ** High frequency crystal lattice filter. 3 Kc. nominal bandwidth.
- ** Unwanted sideband down approximately 40 db. Carrier suppression approximately 50 db.
- ** Transmits automatically on receiving frequency.
- ** Exceptional mechanical, electrical, and thermal stability. Supply voltages may be varied over a 2:1 range with negligible frequency shift. Oscillators fully temperature compensated.
- ** Receiver sensitivity less than 1 microvolt at 50 ohm input.
- ** Smooth audio response from 200 to 3200 cycles results in exceptional voice quality for single sideband.

- ** Simple control system for greatest ease of mobile operation. Front panel controls include: Main Tuning, Volume, Carrier Balance, Microphone Gain, Exciter Tune, P. A. Tune, P. A. Load, T-R Switch, Supply On-Off Switch, and Meter Switch.
- ** Main Tuning control is firm and smooth, with 16:1 tuning ratio.
- ** Transceiver produces approximately 25 watts carrier output on AM by simply adjusting the Carrier Balance control. Receives AM signals very satisfactorily by zero beating the desired carrier.
- ** 3-Circuit microphone jack provides Push-to-Talk operation. Automatic voice control is not included. High impedance microphone, only.
- ** Meter reads P. A. cathode current, or output voltage to coaxial transmission line.

** POWER SUPPLY REQUIREMENTS:

275 volts DC, nominal, at 90 ma., receive and transmit.
650 volts DC, nominal, at 25-200 ma., transmit only.
80 volts DC, negative bias, at 6 ma., receive and transmit.
12.6 volts AC or DC at 3.45 amperes, for filaments.

NET
PRICE
from
authorized dealers only

** Heath Model HP-10 Transistorized Power Supply Kit is recommended for mobile operation with 12 volt cars. The 600 volts from this supply is sufficient to produce a PEP input of 130 watts to the Transceiver power amplifier. Minor modifications are required. Data is supplied with each Transceiver.

** Heath HP-20 Power Supply Kit is recommended for fixed station operation. Minor modifications are required. Data is supplied with each Transceiver.

** **SIZE:** 13¼ in. wide, 5 in. high, plus ¾ in. for rubber feet, 11 in. deep. Weight: 11 pounds.

** **PRICE:** Includes mobile mounting bracket, and power connecting plug, less power supply and microphone . . .

** Heath HP-10 DC power supply kit is available from the Heath Company for \$44.95, plus shipping cost, or from Heath dealers for slightly higher.

** Heath HP-20 AC power supply kit is available from the Heath Company for \$29.95, plus shipping, or from Heath dealers for slightly higher.

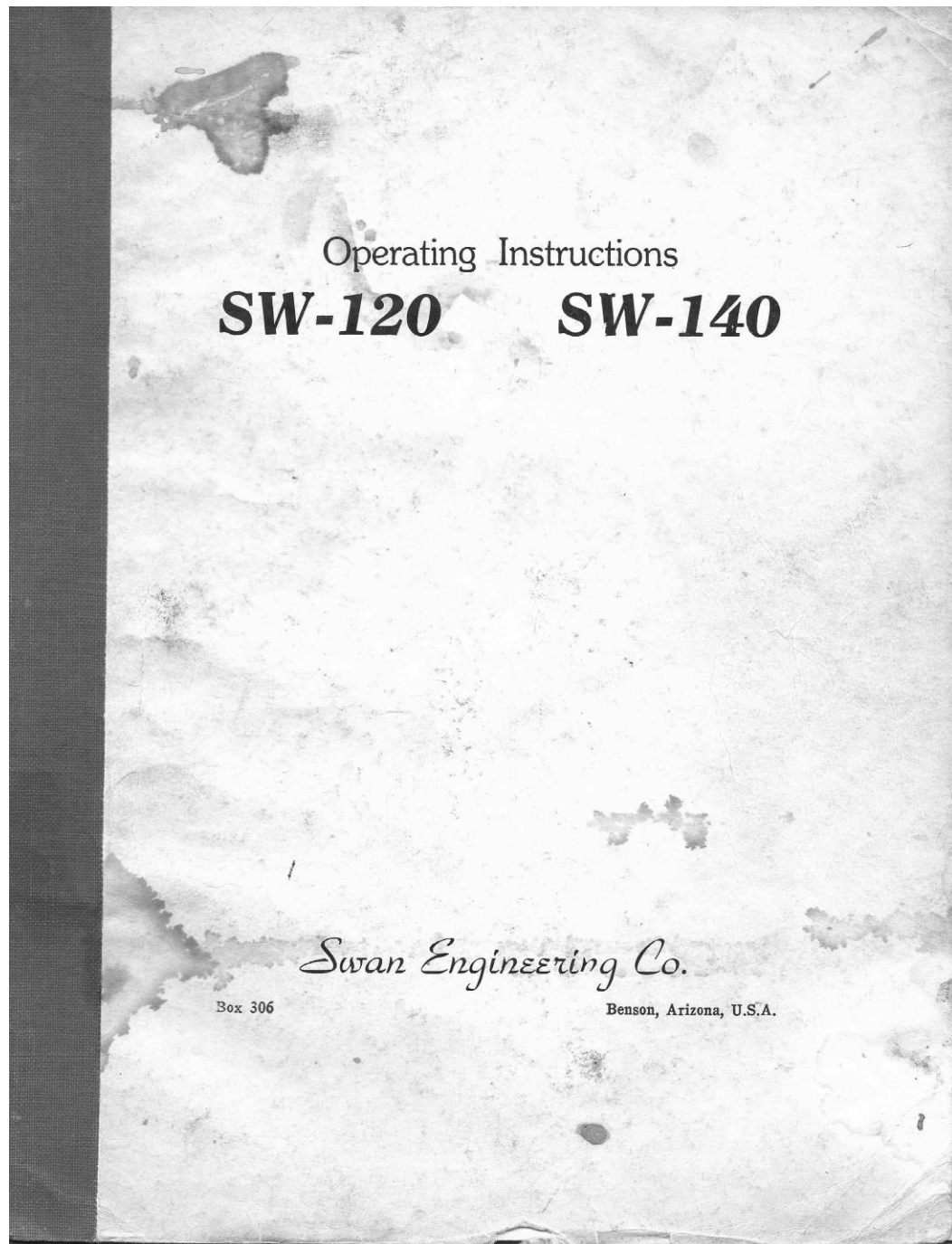
SW-140 Built in 1963 by John



Updated a Little



Swan's First Operating Manual



Inside Cover Specifications For SW-140 & SW-120

SWAN ENGINEERING COMPANY
BOX 306
EENSON, ARIZONA

SW-120 and SW-140 OPERATING INSTRUCTIONS-----

Frequency Range: SW-120: 14.2 - 14.35 mc., Upper Sideband.

SW-140: 7.2 - 7.3 mc., Lower Sideband.

Technical Specifications:

- 130 watts PEP input to 6DQ5 Power Amplifier.
- Tube Complement: V1 - 6DQ5 P.A., V2 - 12BY7 driver, V3 - 12BE6 Trans. Mixer, V4 - 12AU6 VFO, V5 - 6BA6 Rec. RF, V6 - 12BE6 Rec. Mixer, V7 - 6BA6 1st IF, V8 - 6BA6 2nd IF, V9 - 7360 Bal. Mod., V10 - 6AQ5A AF output, VII - 12AU7 mic. amp., V12 - 12AX7 Prod. Det., V13 - Car. Osc., V14 - OA2 volt. reg.
- High freq. crystal lattice filter. 3 kc. nominal bandwidth. Unwanted sideband down approximately 40 db. Carrier suppression approximately 50 db. Receivers selectivity also determined by crystal filter.
- Receiver sensitivity less than 1 microvolt at 50 ohms input impedance for signal-plus-noise/noise ratio of 6 db.
- Transmits automatically on receiving frequency.
- Mechanical, electrical, and thermal stability exceptionally high. Oscillators are voltage regulated and temperature compensated.
- Controls include: Main tuning, Volume, Carrier Balance, Mic. Gain, Exciter tuning, P.A. Tune, P.A. Load, T-R Switch, Supply On-Off Switch, and Tune Switch.
- Microphone Jack provides for push-to-talk operation. Automatic voice control is not included.
- Transmits on AM, (single sideband with carrier), with carrier power of approximately 25 watt output.
- Audio response essentially flat from 300 to 3000 cycles on both receive and transmit.
- Meter reads P.A. cathode current, 250 ma. full scale.
- Size: 13 1/4 in. wide, 5 5/8 in. high, 11 in. deep. Weight: 11 pounds.

SW-140
CW Option Moving
VFO
Down in Frequency
with a Switch
Mounted on bottom
of Radio

P.A. Neutralizing: Connect a wattmeter or dummy load with relative output indicator to the transceiver, and tune-up for maximum power output. When properly neutralized, maximum output will be reached very close to the same point where the P.A. tune adjusts to minimum P.A. cathode current. Adjust Neutralizing capacitor C18 (bottom) (adjustment) for this condition. Caution: Do not hold the P.A. at full power for more than 20 to 30 seconds at a time.

L3 and L4 Adjustment: With Exciter Tuning At Midscale, Adjust L3, Bottom Adjustment, and L4 (Top Adjustment), For Maximum transmitter output. Main Tuning ~~skunk~~ Dial should also be at midscale during this adjustment.

L5 Adjustment: Connect a VTVM to Pin 1 of V6, (12BE6 rec. Mixer). Set Main Tuning Dial to midscale. Adjust L5, (Bottom Adjustment) for Maximum reading. (Approximately -3 to -6 Volts).

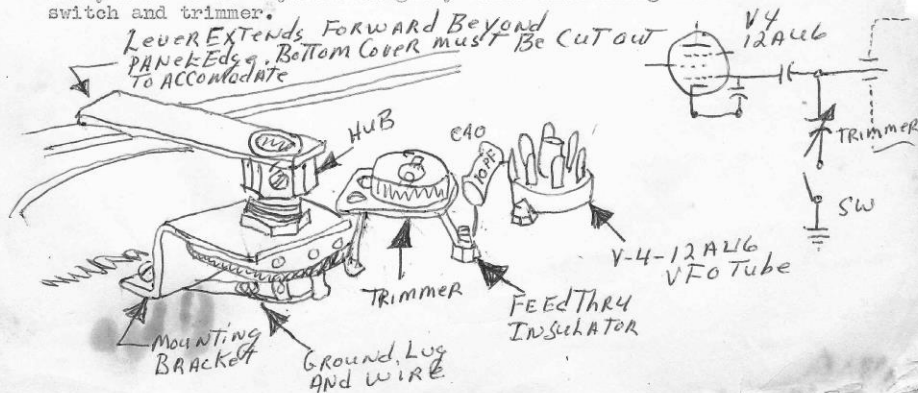
T1: Factory Adjustment. Do not Adjust.

T2: Adjust for Maximum transmitter output. This is a single core adjustment, and may be made from the top or bottom of T2, with a Hexagon Nylon tool.

T3: Adjust for Maximum Receiver output. This is a single core adjustment and may be made from the top or bottom of T3.

Frequency Range: The Swan SSB Transceiver can be modified to operate in the CW portion of the band by adding a small Rotary switch under the chassis and a small trimmer type capacitor which will adjust to about 5mmf. This may be done as shown in the sketch below. The switch may be a SPDT "Tone Switch", or similar type with Phenolic or ceramic insulation. A common trimmer range is 1.5 to 7mmf. A compression type Mica Trimmer will also work, but is not as stable as the ceramic type. The mounting bracket, lever, and shaft hub are not standard items, and must be fabricated by the installer.

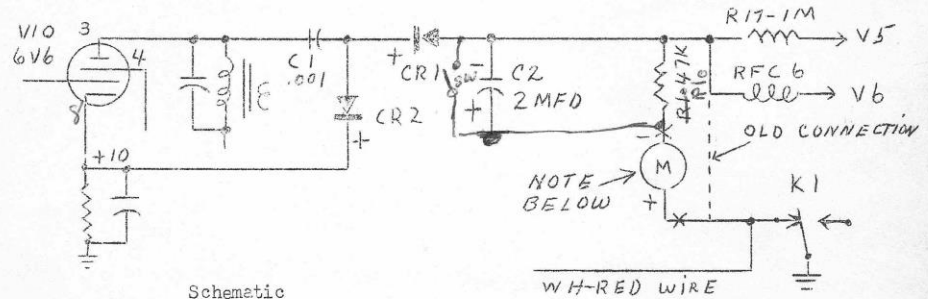
With the switch in closed position, the trimmer is adjusted to cover ~~in~~ the desired segment of the CW band. On 20 meters the trimmer can be reset to cover 125kc of the CW band, on 40 meters about 90kc, and on 75 meters about 175kc. The Dial set trimmer on the upper left side of the VFO compartment will probably have to be adjusted slightly after installing the CW switch and trimmer.



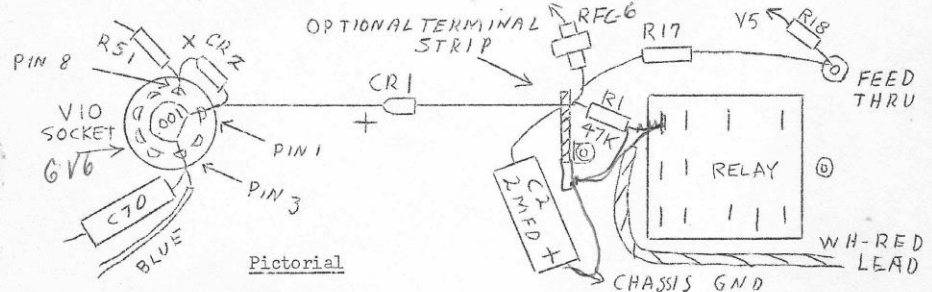
The following information is for owners of the Swan SSB Transceiver who wish to add Automatic Volume Control. The circuit will have no effect on weak signals, but will automatically limit strong signals, and prevent them from "blasting". As can be seen from the schematic, control voltage is taken from the output audio stage, rectified, and applied to the first two stages of the receiver. A fast attack, slow release circuit is employed, with delay bias so that the system does not begin working until signals reach a medium level. Release time is controlled by the capacity of C2, and can be increased or decreased as desired by changing this capacitor.

For the present at least, Swan Engineering does not contemplate including AVC in production models. The components required are readily available at any parts store, and may be installed by removing only the bottom cover.

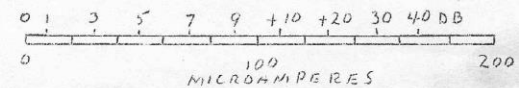
Modification For Audio Derived "AGC"



- Components: C1 - .001 mfd., 1000 wv, paper or ceramic type capacitor
C2 - 2 mfd., 50wv or more, electrolytic (or paper)
R1 - 47K ohm 1/2 watt resistor.
CR1, CR2 - Silicon Rectifiers, 200 PIV or more, 100 ma. or more.



Note: A 0-200 microammeter may be inserted in series with 47K resistor to serve as an "S" meter. Pin jacks or some sort of a connector may be installed on the back of the chassis for connection to the meter, which can be mounted in a standard meter case, and set on top or alongside the Transceiver. It will indicate relative signal strength, and may be calibrated approximately as shown. The reading will vary directly with the volume control setting, and will be most nearly accurate at full volume.

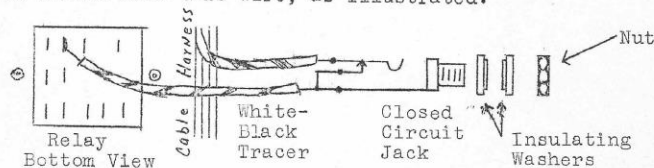


Contrary to increasing rumors being passed around (from would-be competitors, perhaps?), Swan Engineering has NO immediate plans for a new model, 2 bands, or otherwise. We are running 60 to 90 days behind on orders, in spite of the fact that production has been increasing steadily. The only changes being made include a new style meter, a few panel modifications, and the normally expected improvements in detail and quality control. We repeat: THERE IS NO 2-BAND TRANSCEIVER COMING FROM SWAN ENGINEERING IN THE FORESEEABLE FUTURE.

AVC MODIFICATION New sheets are being distributed with a circuit change which corrects a possible "talk-back" condition. The change moves the positive side of the electrolytic, C2, from chassis ground to the bottom end of the 47K resistor, R1. Thus, C2 is in parallel with R1.

CW OPERATION

A separate key jack may be installed for those interested in more satisfactory grid block keying. Referring to the bottom terminals on the T-R relay, a white wire with black tracer will be found going from one of the relay terminals to the cable harness. Install a closed circuit key jack in series with this wire, as illustrated.



Note that jack must be insulated from the chassis. Potential from Jack to chassis is 45 volts DC.

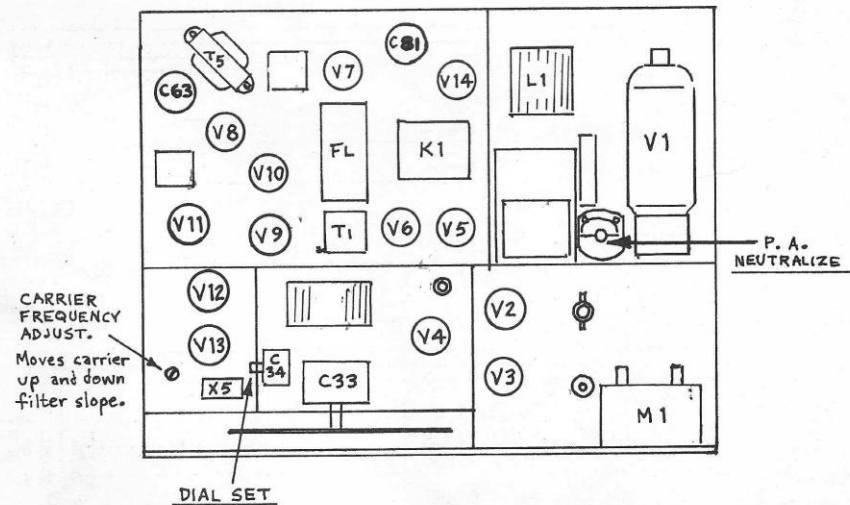
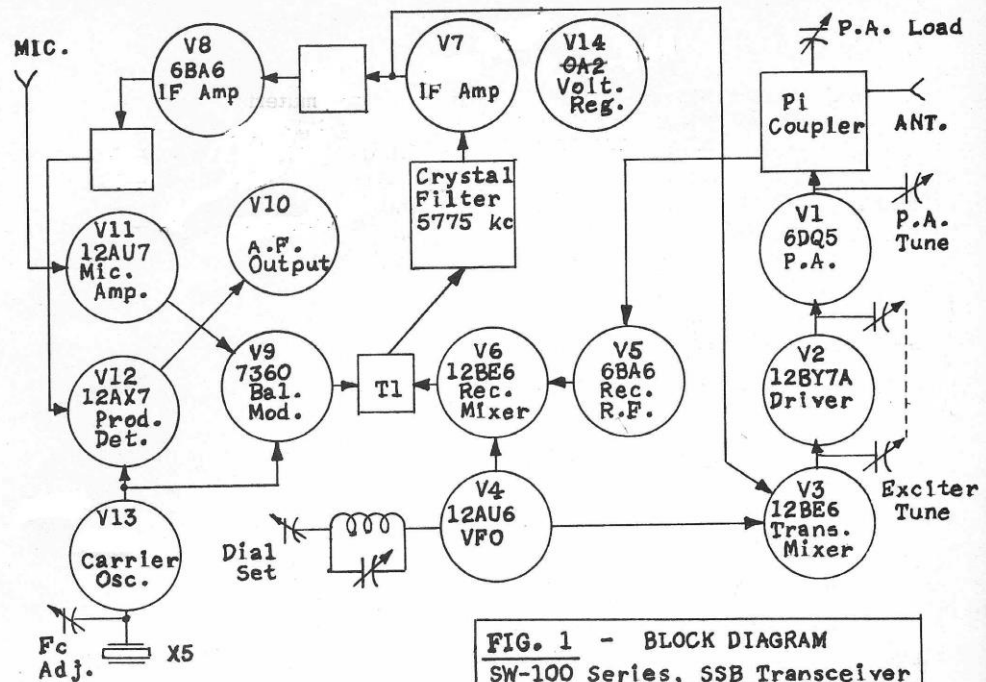
FREQUENCY RANGE For those who may wish to operate in the CW portion of the band, a small air trimmer, APC type or similar, may be switched in parallel with the VFO. This may be done on the under side of the chassis, at the feed thru insulator next to the 12AU6 VFO tube. Exact capacity required will depend on what portion of the CW band operation is desired, and on the model, but will be about 10 mmf. A small ceramic wafer switch can be installed to switch the extra capacity in and out. Exact placement and arrangement depends on the owner.

Please note: We do not contemplate the addition of AVC, or a CW jack to production models, at least for the time being, nor do we furnish the parts required for these modifications. They are standard components, available at your dealer. Other modification sheets will be forthcoming on how to add the other sideband, a VOX unit, and possibly a noise limiter. These will be mailed to all who returned the warranty cards.

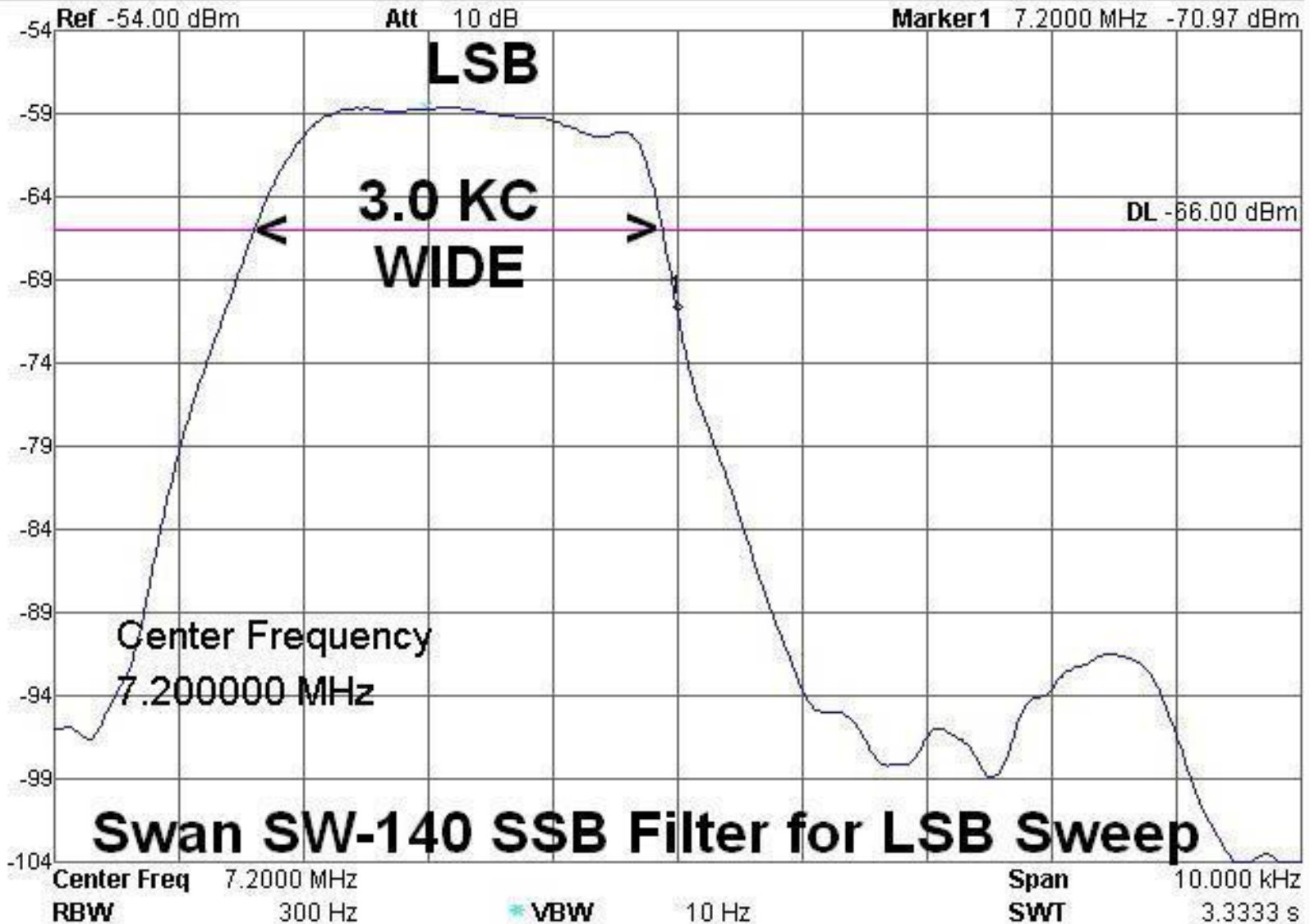
**More
modifications
signed by the
Swan Employees
working at the
time
on the
bottom of page**



Block Diagram of Early SW-100 Series Radios



Swan's 4-Pole SSB Filter



Swan Plant in 1965



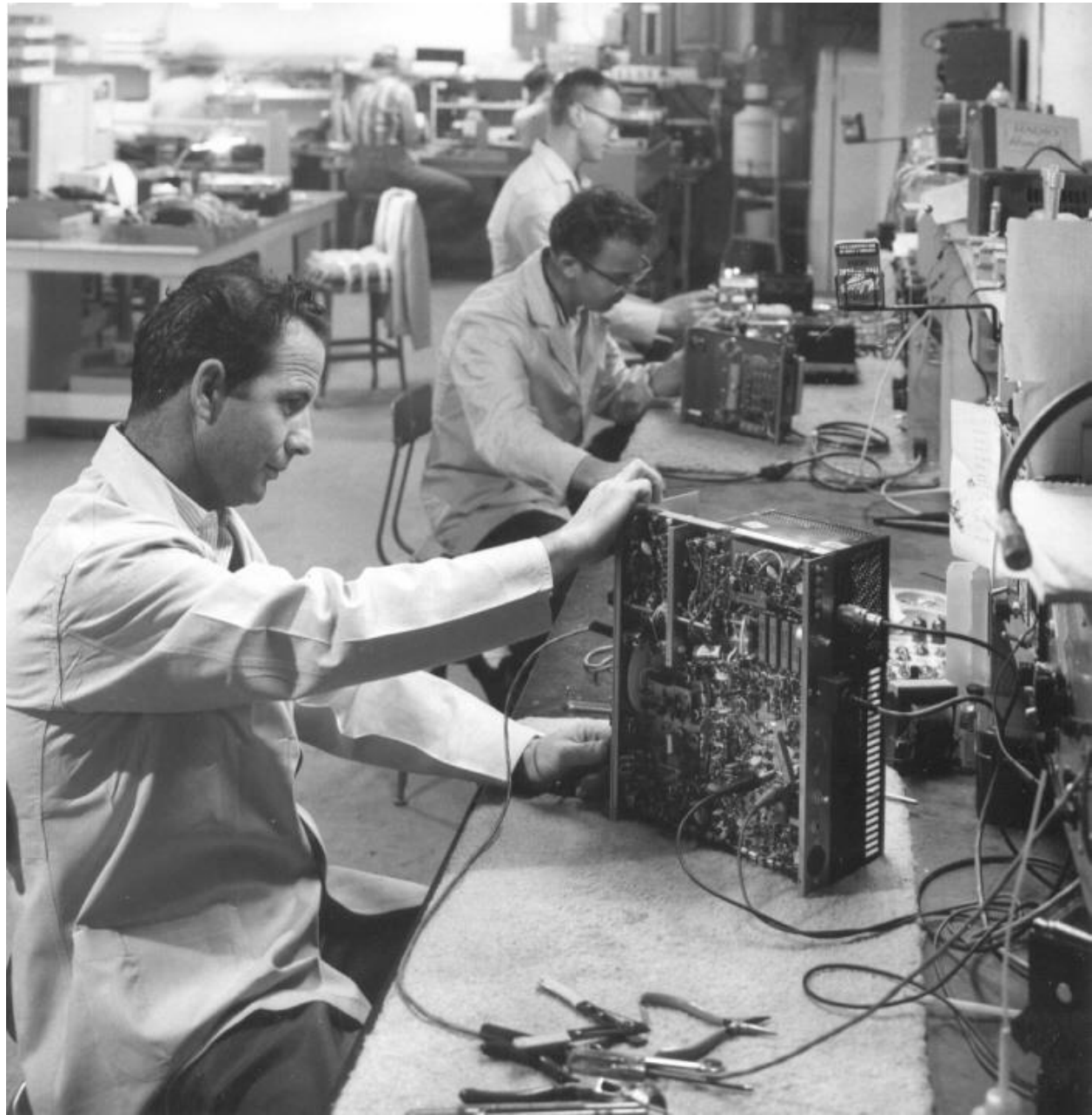
Swan Assembly Line



Final Assembly



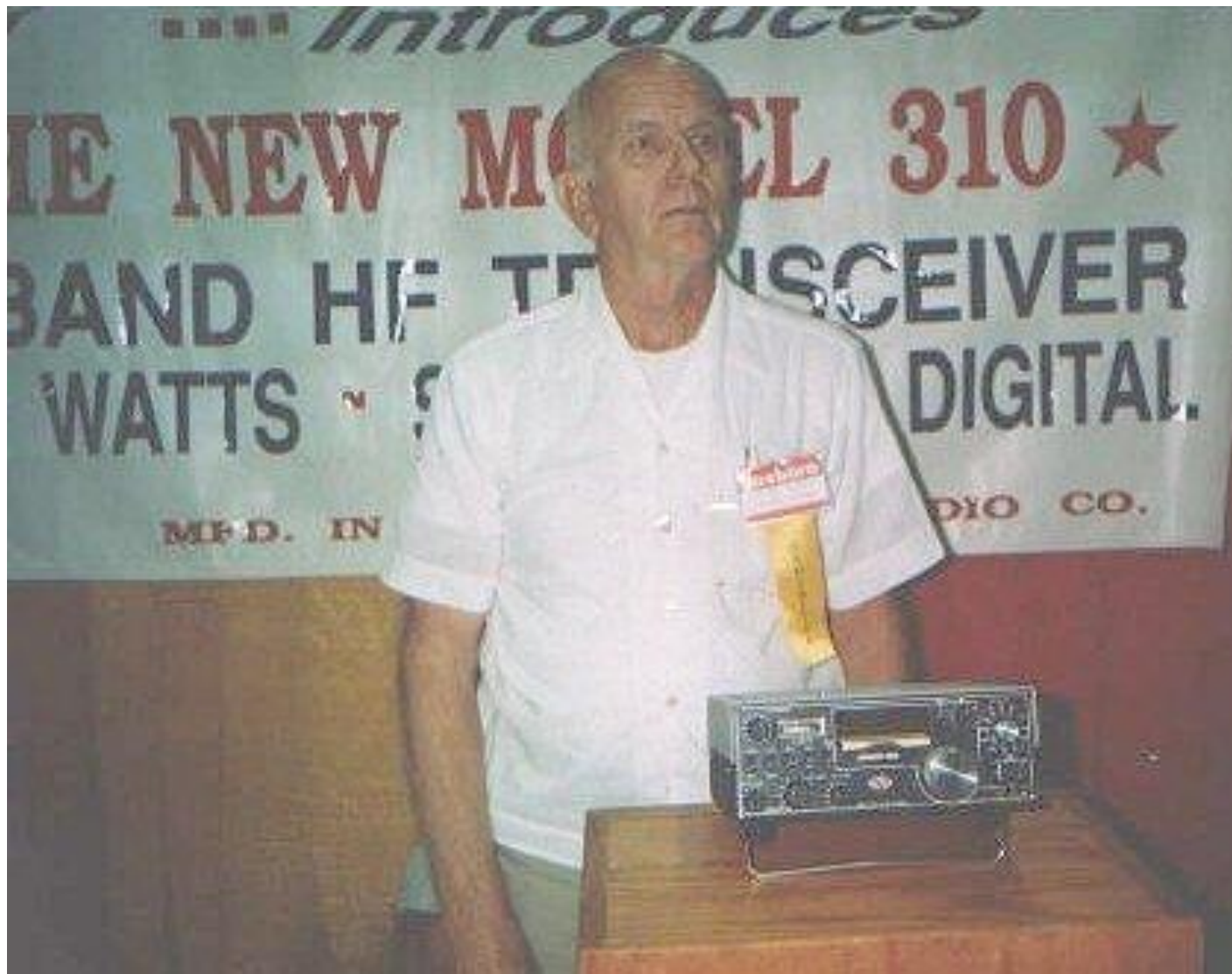
Final Testing



Shipping Out Swan Radios



Herb Johnson in 1990's



Thank You

For Watching