

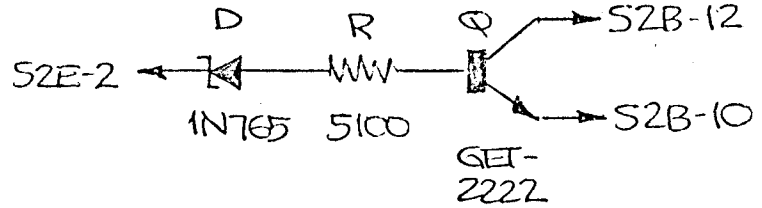
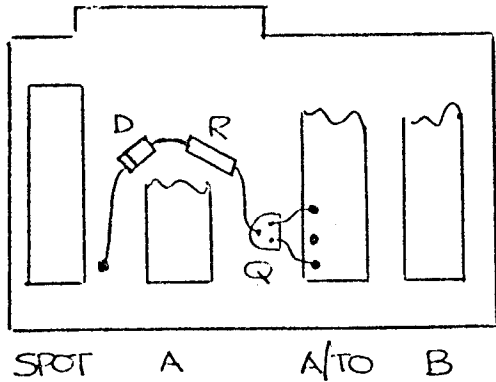
S/1 NEWS has made it through 12 issues! I hope you are finding this newsletter useful. Please continue to write with any information you have so I can keep these issues coming. Spread the word about S/1 NEWS when you talk with other owners since the more people we have on board the more information we can gather. Thank you all for your help during 1975 and my best for the holidays and 1976!

According to my records the following are due for a subscription renewal. Cost is now \$4.50 per year and I hope I will not have to ask for more because of the postage increase expected. I'll see how expenses go...

- W8SWN, W3RHO, W7IV, W0NVE, K4CIW, K3AU, W1NXY,
- W4SXX, W8QCX, W6UIB, W2QJP, WB4RSK, W8JMO,
- WB0LGY, W2LL, WB8CTA, W8JUY, W6AXX, W3HII,
- K4HTY, K4YYL, W2OQO, W6JHN, W5RR.

Joe, W4SXX, has additional information concerning W8IPA's suggestion (November 1975, S/1 NEWS) of replacing C30 on the RF driver board: Joe indicates that .01 uf capacitors at 3000 volts are not easy to come by and are quite large for the location on the board. He accomplished the same by installing a .001/5kv unit (I guess these are easier to get!) at the tube socket for the 8072...used a little standoff screwed to one of the tube socket bolts. A good idea since there is plenty of room and no work need be done on the PC board. Joe noted just a perceptible decrease in output on 80 and 160 due to very small coupling of the .001 uf unit.

John, W2GRU, notes that when operating in the A/T.O. mode, an image appeared (about 40db down) at a frequency that was as far removed from the actual signal as the transmitter was offset from the desired frequency. The cause was due to leak-through of the offset 34.2 Mhz oscillator. John's solution to this problem is to gate the offset oscillator to off in receive and key it on in transmit or spot modes. All modification work is done to the Transmit VFO/Spot switch board. (See schematic and drawing on next page). To get at this switch board remove the cover from the counter board, remove the counter board hold-down screws and rotate the board towards the back of the set. This will expose two screws under the board. Remove these screws and fold the entire "tray" toward the rear. The switch board is held in place by two screws. Remove the screws and unplug the edge connector and it is easy to put in the modification from this point. John reports no evidence of keying transients (chirp) as the oscillator is keyed and the modification worked well during the last CW SS contest.



I received a note from Dick, W7DNN who has the following to say about Larry Pace (who repairs S/1's): "... He just went through my rig and made it work beautifully--his concern and service are great. He also installed his audio filter which works very well. He uses the FSK pot hole--a very worthwhile addition and long needed." (How about some additional information on your audio filter and modifications, Larry? ...editor)

Ted, W6HX, writes that if the sidetone is still too loud with sidetone volume full CCW, install a 10K resistor in series with center arm of pot. Ted also recommends (for unmodified boards) heat sinks from small aluminum tubing cut approximately 3/4" long slipped and crimped over Q3, Q4, Q7, Q8, Q9, and Q12 on power supply board.

CX7 parts. No filters or transformers but almost anything else. Write to Ted, W6HX, 14840 Broadmoor Street, Van Nuys, California, 91402

DK3NG points out that an excellent device for protecting the semi-conductors in the CX7 from overvoltage is a "transtector". These are devices that will clamp to a predetermined voltage level very fast. See the attached specification sheets (sent to me by DK3NG) for additional information. If you use these devices, make sure you pick a voltage value safely above the zener voltage value being used on that bus. (Do not forget to take into consideration the tolerance of the zener and the transtector).

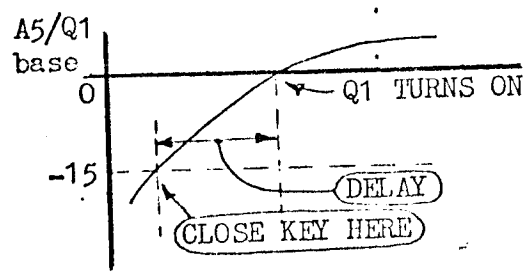
I received a letter from K2SIL, Bill Myers, that is so interesting and full of information, I want everyone to have the benefit of every word. Here is the letter word-for-word:

"I bought my CX7 because I'm a CW contest freak, and, along with its other shortcomings, my Collins gear kept breaking in the middle of contests. Imagine buying Signal/One for reliability! But since I got it in Spring 71, it has never put me out of a contest, and only twice cost me more than a few minutes.

Of course, I've had my share of difficulties (amazing how many CA3028's get wiped out by a screen-grid short), and being isolated from other owners hasn't helped. For CW freaks, here's some things I've learned which I haven't seen published yet.

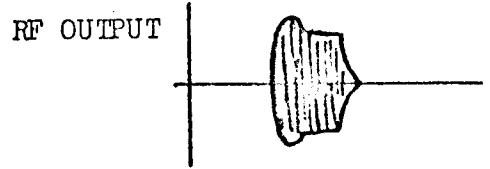
1. I can spot a CX7 on CW by its characteristic chirp, and soft keying. Chirp really bugs me (at least, on my radio). It's caused by insufficiently stiff reference voltage for the varactors in the PTO's and offset oscillator. Easiest fix is to take the varactors out of the PTO's - then you only chirp in A/T0 mode. The new power supply board cleans up most of what's left.

2. Soft keying looks easy to cure at first blush, until you find out the CBs (clever bastards) are using the same time constant to delay turn-on, giving relays a chance to close:



One obtains some steeping by overdriving the 8072; but the resulting output also overdrives my A77. ALC also helps, but does other nasty things to the wave shape. I modified my A77 to operate in class C on CW, which also helps. But the real fix was invented for me by K2KIR -- a nifty little circuit which separates the delay and waveshape functions. Only freaks like me would install it though, since it requires some surgery.

For some time I puzzled over the picture below, from my monitor scope:



Who's causing the bump on the leading edge I asked? Turns out, the gain of Q1/A5 was sensitive to bias, going through a very high-gain region near zero volts. Replacing this transistor did away with the bump, and, incidently, also cured the "RF blip" problem in SSB modes.

3. I got very annoyed when I discovered that my \$2600 radio didn't SPOT correctly -- the SPOT beat note may be several hundred cycles different than the true transmit-receive frequency displacement. The PTO's run at the wrong frequency in SPOT mode, due to either or both:

(a) the on/off switching may be either hard ground or R/T line; (b) the counter pulls the oscillator. Over the years, I've found a combination of isolation techniques which eliminate both of these effects. Right now, there's a bunch of stuff hanging on the back of the PTO's -- someday I'm going to build new PTO boards. Anyone interested in details can write me (I got one of the circuits from WA7VEN, who asked me not to publish it) (Write to Bill at 105 Spit Brook Road, Villa 15B, Nashua, N. H., 03060. ed.)

4. In A/TO mode, both of the 35 Mhz oscillators are running in receive mode, resulting in intermod products on strong signals. This simple change will shut the offset oscillator off except in SPOT or Transmit modes:

Connect diode (1N914, etc) on S2 board as follows: (cathode) to A/TO switch (S2B) pin 12 and (anode) to SPOT switch (S2E) pin 17.

WRONG!
REVERSE THE
DIODE

(See page 1...the above looks like an less complicated fix for the same problem...ed)

5. I got several reports that I was radiating out of band when operating split; listening A and transmitting on B. Turned out that the A PTO was still running in TX mode -- another "hyper" 40468A wouldn't shut off, resulting in several millivolts out of the PTO!

6. Backlash is properly cleared up by disassembling the lead screw assembly, cleaning off ALL the lubricant (use an ultrasonic cleaner if you can), and relubricating with good quality gear grease. I found that garden variety "white grease" doesn't hack it -- backlash reappears within a month. Also, check the coil form to be sure it hasn't cracked near the base -- this causes very bad backlash!

7. Change the local oscillator crystal for 3Mhz so that the coverage is 3.5 to 4.5 Mhz. Cranking both PTO's 500 Khz is ridiculous. Use spare position A for a 1.8 to 2.8 Mhz band.

My thanks to Bill for taking time to write this lengthy letter for all our benefit! ...editor.

FOR SALE ETC.

WANTED: Defective Signal/One transformer. Phil Howlett, WA9UHV, 4012 Carmelita Blvd., Kokomo, Ind., 46901

WANTED: Signal/One Speaker. Will pay cash or trade 1200hz filter. Please write. Include condition and price. K4FJC, 520 Hemlock Dr., Inman, S.C., 29349.

WANTED: CW filter for CX7. Jerry King, W6GBY, 4174 NW 79 Av., Apt 1D, Miami, Florida, 33166.

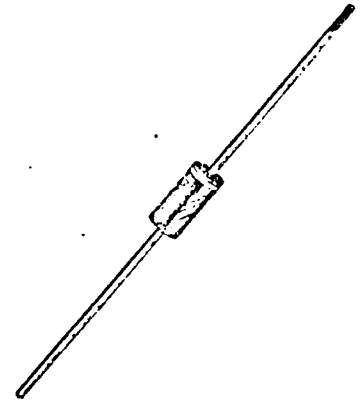
TRANSTECTOR.

5-DC-75
ABSOLUTE
TRANSIENT
PROTECTION

DC VOLTAGE
TRANSIENT
SUPPRESSOR
Model VZ

CIRCUIT PROTECTORS

- Protection for TTL, ECL, DTL, MOS and MSI integrated circuits that operate on either 5 or 15 volts.
- Rated for 1500 watts peak pulse power.
- Responds to rising transients in less than 5 nsec.
- Recovers automatically.
- Reverse polarity protection.



Here is positive low cost protection for I.C.'s and equipment which must continue operating safely when voltage transients occur. These high quality silicon semiconductors provide the high speed, high power protection required for suppressing random transients. They have also proven effective in suppress-

ing transients developed by lightning. In operation, they clamp the line to a specified voltage, while absorbing the energy of the transient. When the voltage returns to nominal line, the Suppressor automatically recovers to a ready state. They will also clamp the line to 1 VDC, should the voltage be accidentally reversed.

PART NUMBER

VZ6DC1

VZ16DC1

INSTANTANEOUS VOLTAGE CLAMPING POINT (typ.)

6.5 VDC @ 1000 ma

16.5 VDC @ 400 ma

7 VDC @ 20 amps

17.6 VDC @ 1 amp

MINIMUM BREAKDOWN VOLTAGE (@ 1 ma)

6 VDC

16 VDC

STAND OFF VOLTAGE

5 VDC

15.5 VDC

Leakage Current Max. @ Stand off Voltage

300 μ amps

100 μ amps

VOLTAGE CLAMPING TOLERANCE

$\pm 5\%$

$\pm 5\%$

PEAK PULSE CURRENT for a 1 msec pulse

120 amps

67 amps

PEAK POWER DISSIPATION (max.)

1500 watts

1500 watts

RESPONSE TIME

≤ 5 nsec

≤ 5 nsec

DUTY CYCLE

1%

1%

CAPACITANCE (typ. @ 0 Volts)

15,000 pF

15,000 pF

OPERATING TEMPERATURE

-55°C to +100°C

-55°C to +100°C

STORAGE TEMPERATURE

-65°C to +150°C

-65°C to +150°C

REVERSE POLARITY CHARACTERISTICS:

MAXIMUM SURGE CURRENT for 10 msec. @ 25°C

175 amps

175 amps

for 1 sec. @ 25°C

10 amps

10 amps

MAXIMUM CONTINUOUS CURRENT @ 25°C

3 amps

3 amps

MAXIMUM VOLTAGE DROP @ 3 amps continuous

1.25 volts

1.25 volts

RESPONSE TIME

< 5 nsec

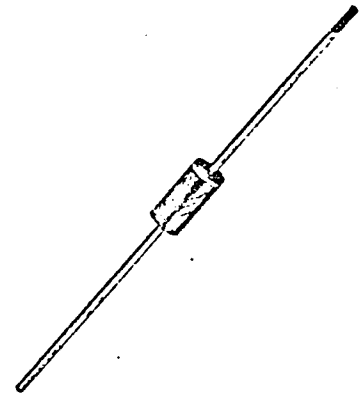
< 5 nsec

-6- DEC-75

MODEL VZ 1500 WATT, DC VOLTAGE TRANSIENT SUPPRESSOR

FEATURES:

- 5 Nano-Second Response
- Automatic Recovery
- High Energy Suppression
- Temperature Range of -55°C to $+100^{\circ}\text{C}$
- One Piece Molded Construction



Provided in models for a wide variety of voltages, the Model VZ is a High Speed, high power suppressor designed to protect:

- DIGITAL IC's (mos, cmos)
- LINEAR IC's (op-amp, regulator, amplifiers)
- POWER LINE (scr, output transistor)

These suppressors are suitable for protecting against transients generated by load switching, coupling, voltage reversals, and electrostatic discharge.

The Model VZ is a true suppressor that dissipates the power of the transient only. It does not handle the fault current of the power supply, as do crowbar type protectors.

The MODEL VZ's are commonly used in:

- CONTROLLERS
- TRANSDUCERS
- MOBILE POWER SYSTEMS
- CATV/TELEPHONE
- MAGNETIC-ELECTRONIC

These suppressors should be placed on the power line as close to the protected load as possible.

For in between or higher clamping points, the Model VZ may be used in series. When placed in series, the peak power dissipation is the number of units times 1500 watts.

SPECIFICATIONS:

VOLTAGE CLAMPING TOLERANCE	$\pm 5\%$
PEAK POWER DISSIPATION (Max.)	1500 Watts
RESPONSE TIME	≤ 5 nsec
DUTY CYCLE	1%
CAPACITANCE (typ. @ 0 Volts)	15,000 pF
OPERATING TEMPERATURE	-55°C to $+100^{\circ}\text{C}$
STORAGE TEMPERATURE	-65°C to $+150^{\circ}\text{C}$

REVERSE POLARITY CHARACTERISTICS:

MAXIMUM SURGE CURRENT for 10 msec @ 25°C	175 amps
for 1 sec. @ 25°C	10 amps
MAXIMUM CONTINUOUS CURRENT @ 25°C	3 amps
MAXIMUM VOLTAGE DROP @ 3 amps continuous	1.25 volts
RESPONSE TIME	< 5 nsec

TRANSTECTOR PART NUMBER	VZ24DC1	VZ30DC1	VZ33DC1	VZ40DC1	VZ50DC1	VZ60DC1	VZ100DC1
INSTANTANEOUS VOLTAGE CLAMPING POINT (typ.)	29 VDC @ 32 amps	36 VDC @ 22 amps	39 VDC @ 9 amps	51 VDC @ 15 amps	61 VDC @ 13 amps	75 VDC @ 11 amps	132 VDC @ 7 amps
MINIMUM BREAKDOWN VOLTAGE (@ 1 ma)	26 VDC @ 16 amps	33 VDC @ 11 amps	43 VDC @ 1R amps	47 VDC @ 6 amps	56 VDC @ 7 amps	68 VDC @ 5 amps	121 VDC @ 3 amps
STAND OFF VOLTAGE	24 VDC	30 VDC	35 VDC	43 VDC	51 VDC	62 VDC	110 VDC
Leakage Current Max. @ Stand off Voltage	20 VDC	25.6 VDC	31 VDC	37 VDC	44 VDC	53 VDC	94 VDC
PEAK PULSE CURRENT for a 1 msec pulse	5 μ amps	5 μ amps	5 μ amps	5 μ amps	5 μ amps	5 μ amps	5 μ amps
	45 amps	36 amps	30 amps	25 amps	21.5 amps	18 amps	10 amps

SIGNAL/ONE INFORMATION AVAILABLE

"S/1 NEWS". A MONTHLY NEWSLETTER DEVOTED TO SIGNAL/ONE INFORMATION CONCERNING REPAIR, PARTS PROCUREMENT, MODIFICATIONS, ETC. \$4.50/YR. FOREIGN BY AIR IS \$10.00/YR.

SIGNAL/ONE TROUBLE GUIDE. DESCRIBES NUMEROUS COMMON CX7 PROBLEMS AND THEIR SOLUTIONS. ALSO INCLUDES A NUMBER OF MODIFICATIONS THAT HAVE PROVEN USEFUL. 26 PAGES. \$2.50 POSTPAID.

THOMAS ADVERTISING CX7/7A TECHNICAL MANUAL. A "MUST" FOR ALL OWNERS! \$21.00 INCLUDES A COPY OF THE "TROUBLE GUIDE" AND POSTPAID.

CX7 FINAL TEST PROCEDURE: 01-S0001-001. 35 PAGES OF STEP BY STEP PROCEDURES FOR COMPLETE ALIGNMENT AND TESTING. \$5.50 POSTPAID.

CX7 VOLTAGE CHART: 01-S0001-001. 47 PAGES OF TABLES OF VOLTAGES FOR MOST PC BOARD PINS, IC'S, AND TRANSISTORS. A VERY USEFUL DOCUMENT FOR TROUBLE SHOOTING. \$6.50 POSTPAID.

BOTH ABOVE PROCEDURES FOR \$10.75 POSTPAID.

BACKISSUES FOR VOL I, NUMBERS 1 - 6 ARE NO LONGER AVAILABLE AT THIS TIME. BACKISSUES FOR VOL I, NUMBERS 7 - 12 WILL BE AVAILABLE EARLY NEXT YEAR (\$2.75 POSTPAID). IF INTEREST WARRANTS, I WILL MAKE AVAILABLE VOLUME I COMPLETE AT A LATER DATE.

BOB SULLIVAN WØYVA/4

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