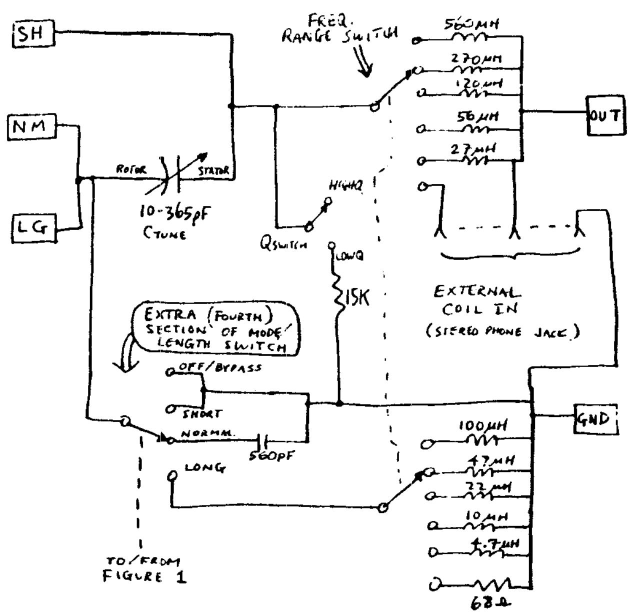
A71-2-1

FIGURE 3 TANK: "IMPLEMENTATION 2"



Book Reviews
25 Simple Tropical and MW Band Aerials
25 Simple Shortwave Broadcast Band Aerials
by E.M. Noll

These two pocket sized books contain quite a bit of antenna theory. Indoor and outdoor antennas are covered in detail. A general purpose introduction gives Time Zone information, tips for antenna tuner use, reception patterns, band frequencies, wavelength calculations, grounding schemes and impedance values. The first book is intended for BCB and the 49/60/75/90/ and 120 meter bands and contains the following: quarter wave dipole, quarter wave vertical, inverted dipole, cross-inverted dipole, unlike-segment dipole, longwire vertical helix, longwires, three-quarter wavelength, vee-beam, MW vertical ladder, closed horizontal loop, open horizontal loops, double open-loop, little squared Rhombic, space saving dipole, indoor tropical longwire, indoor tropical open loops, MW quarter wave aerials, MW and LW longwires, basic Beverage, MW attic ladder and active aerials. The second book describes: dipole, quarter wave verticals, sloping dipole, uneven-leg sloper, inverted dipole, uneven-leg inverted dipole, inverted vee three halves wavelength, helical vertical, random wire and tuner, end-fed wavelength aerial, cheap quarter wave vertical, umbrella vertical, 11 and 13 meter quarter wave special, triangles, tilted three halves wavelength, vee-beam areials, two in-phase verticals, end-fire 180 degree verticals, end-fire 90 degree vertical, dipole and parasitic reflector, parasitic director, and Ed Noll's Australia/Spain Special antenna.
These handy references can be obtained from the author at the address below for just $5.00 for each book (which includes first class postage, PA residents must add state tax). Edward Noll, Box 75, Chalfont, PA 18914.

HOTRODDING THE MINI MWDX3 PHASING UNIT

Mark Connelly - WA1ION DX Labs - 06 MAY 1985

The "Mini-MWDX-3 Phasing Unit" article, dated 05 DEC 1984, outlines the construction of a compact, yet useful, phasing unit particularly well-suited to the needs of the DXer who travels frequently.

As the article mentions, the unit's compactness and its simplicity of design / construction were accomplished by using loose coupling and grounded-rotor tuning capacitors. These practices do have a somewhat adverse impact on system sensitivity; the inclusion of the broadband amplifier card USUALLY compensates for circuit losses. A situation which degrades the amplifier's ability to recover lost sensitivity is that which occurs when the unit is operated near strong transmitters: typically, at an urban site. Even though Bill Bailey's Beverage farm in Holden, MA could not be considered urban, Bill Bailey & Tom Farmerie reported that useful gain could not be obtained with a Mini-MWDX-3's broadband amplifier because of overloading by WTAG - 580, located within two miles of the test site. My experiences here in Billerica (with big signals from WRKO - 680, WHDH - 850, and WMRE - 1510) also indicate that overloading can sometimes be a problem, especially when a local pest is within 100 kHz of the operating frequency.

Because of these revelations, experimentation was done to improve the coupling efficiency without defeating the original Mini-MWDX-3 design concepts of compactness & simplicity. The reasoning is that, if coupling is made more efficient, the amplifier will not be depended-upon as often.

In "worst-case scenarios" where overloading of the built-in broadband amplifier is a severe problem, the use of a TUNABLE output amplifier, such as APT-3, between the phasing unit's output and the receiver's input is highly recommended. If the tunable amp. is used, make sure that the phasing unit's internal broadband amplifier is switched off.

The following option will be referred to as Option 6: Options 1 through 5 are part of the original (05 DEC 1984) Mini-MWDX-3 article. The purpose of Option 6 is to reduce the dependence on the broadband amplifier and on any external amplifiers: an improvement in passive-mode Mini-MWDX-3 sensitivity is the result of this option.

Option 2 (longwave) or Option 3 (tropical bands) can be combined with Option 6 on a particular unit. Option 4 (extended freq. range) is, however, not compatible.

Option 6 is implemented as follows:
(Refer to main schematics in 05 DEC 1984 article.)

(a) Replace R6 & R8 with direct connections (shorts).

(b) Install R6 (330 ohms) between J4 (Loop In) and C7 (.1 uF).

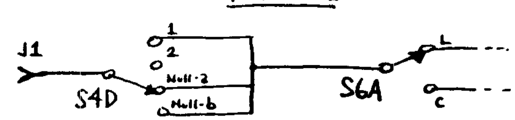
(c) Replace S4 with a 4-position, 6-pole rotary switch (Mouser # 10WR064). Rewire sections S4A, S4B, and S4C the way they had been previously.

(Refer to Option 1 schematic, near end of 05 DEC 1984 article.)

(d) Install Option 1, but use 56 pF instead of 47 pF for C5 & C6.

(e) Install new D section of S4 between J1 and S6A arm as shown in Figure 1:

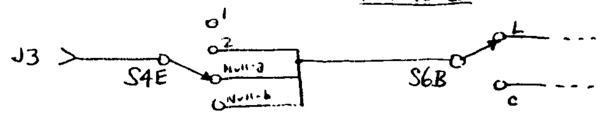
FIGURE 1



A 71-2-2

(f) Install new E section of S4 between J3 and S6B arm as shown in Figure 2:

Figure 2



>>> This completes Option 6 <<<

Option 6 is an enhanced-coupling version of Option 1. Like Option 1, Option 6 can be combined with Option 5 (alternative pot. configuration). If Option 5 is combined with Option 6, change Option 5 as follows:

(a) delete
(b) retain as is
(c) delete
(d) delete
(e) retain as is
(f) replace with "Connect S3 arm to P1 of T1."
(g) (h) (i) (j) retain as is
(k) retain: add comment "R3 is optional. It may be omitted."
(l) replace with "Connect arm & CCW pin of new R1 to C1 stator."
(m) retain as is
(n) replace with "Connect arm & CCW pin of new R2 to C2 stator."
(o) retain as is
(p) replace with "Connect arm & CCW pin of new R3 to S1B arm. If you choose not to install R3, connect S1B arm to S4A arm and skip step (q)."
(q) (r) retain as is

****
* If this seems too confusing, just refer to the *
* "hotrodded" Mini-MWDX-3 schematic below. *
****

The following schematic illustrates a Mini-MWDX-3 phasing unit incorporating Option 6 and modified Option 5:

ENTIRE UNIT CONSISTS OF FIGURES 3, 4, AND 5.
FOR BBA-B SCHEMATIC, SEE ORIGINAL MINI-MWDX-3 ARTICLE.

Figure 3 = Line 1 Tuner

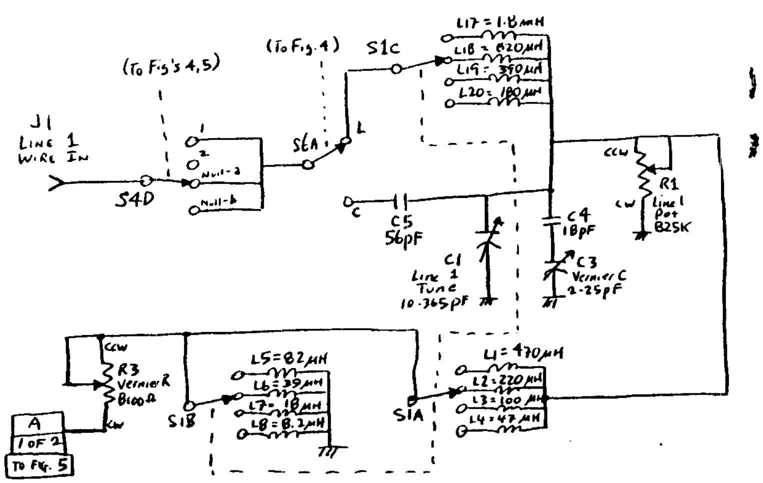


Figure 4 = Line 2 Tuner

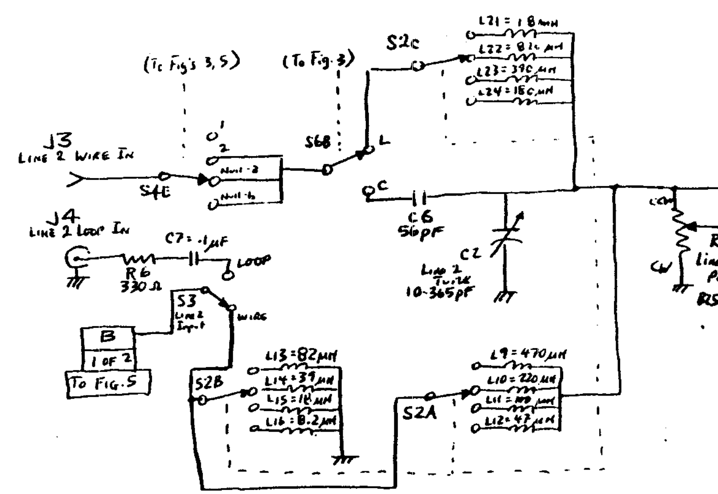
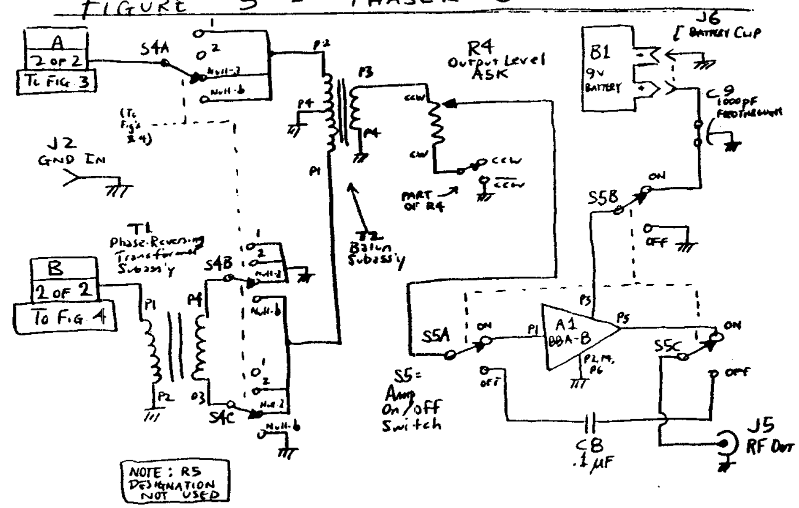


Figure 5 = Phaser Output Section



The schematic shown can be considered a nearly-optimum design for a compact (7"X5"X3") traveller's phasing unit. It should be noted that the "floating" C1 / C2 design (MWDX-2 family), requiring a larger (typically 10"X6"X3.5") chassis box, will still give greater coupling efficiency than the grounded-rotor C1 / C2 (MWDX-3 family) phasing unit designs. It is up to the DXer to decide which is more desirable: somewhat higher coupling efficiency or compactness / ease of construction.