



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

Date: November 1, 1971

Reply to  
Attn of : W514

Subject: Transmittal Memorandum for Engineering Handbook No. 8, Issuance 71- 10

To: All Regional Headquarters, Area Electronic Supervisors, and Electronics Technicians

1 . Material Transmitted:

Engineering Handbook No. 8 - Surface Equipment, Section 2.2; Wind Equipment Maintenance Note No. 11, Consolidation of Supplementary Instructions for Wind Equipment.

2 Summary:

Maintenance Note No. 11 consolidates the information that was contained in Supplementary instructions.

3. Effect on Other Instructions:

This Maintenance Note supersedes all the Supplementary Instructions contained in EHB-8, Section 2.2.1. The Index Sheet, Page 14, Section 2.2.1 should be marked "superseded" and the Supplementary Instructions are to be discarded.

J. A. Cunningham  
Chief, Engineering Division

WIND EQUIPMENT MAINTENANCE NOTE  
(For Electronics Technicians)

11, Consolidation of Supplementary Instructions for Wind Equipment.

Some of the supplementary instructions for wind equipment are out of print and can no longer be obtained from Publications. As much of the information contained in those instructions is obsolete, the pertinent instructions are being combined and issued as a Maintenance Note.

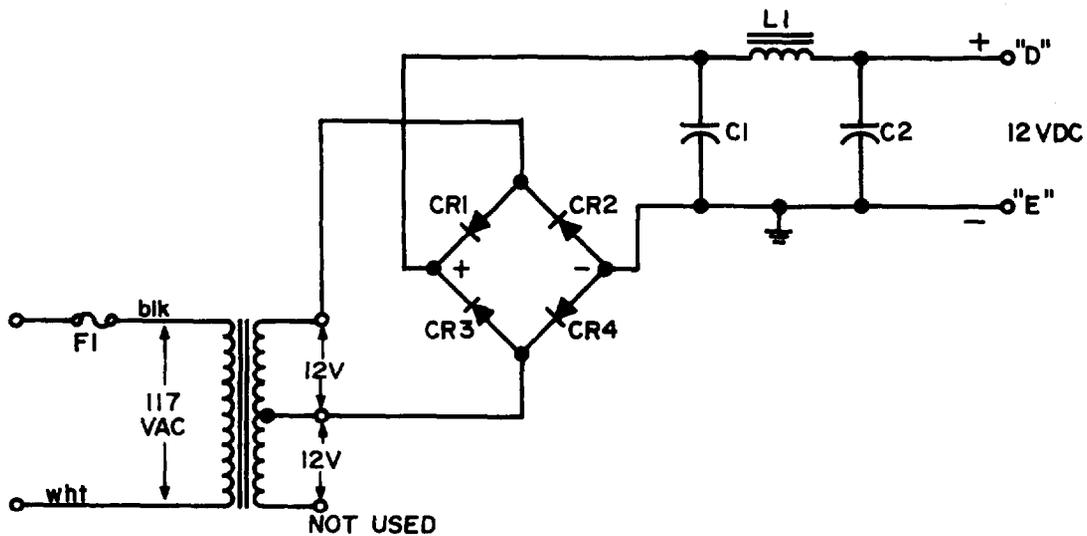
Ninety-five F420D wind systems were distributed in the field in 1959. The units were directly interchangeable with the F420C units and only the physical appearance was different. Manuals were distributed with the systems when they were installed and additional manuals were issued to ELTEC's in 1960. The calibration of the F420D transmitter is the same as outlined in the Instruction Manual for Wind Equipment, Paragraph 4.1.2 at the top of Page 15, Calibration Procedure.

The Memorandums covering the Magnetic Amplifier, Weather Service Stock Numbers F607 and F607A, are no longer applicable to the retransmitters being issued to the field. The Airpax Amplifier has been out of service for many years. Only a few Bogue and Magnetic Research Amplifiers are in service due to constant exchange of types in repairing of the units. Many have been repaired by placing a Bogue Amplifier and a Magnetic Research, or a Milro Amplifier, in the same retransmitter. Some of the units have been repaired by putting in a solid state wind speed amplifier. (See Wind Equipment Maintenance Note No. 9.) As Magnetic amplifiers are not to be repaired in the field, but defective units are to be returned to Headquarters for repair, the schematics are no longer applicable.

The schematic for the Wind System Remote Power Supply, Weather Service S/N F603, is still applicable and will be reissued as an attachment to this Maintenance Note.

This Maintenance Note cancels the instructions contained in Section 2.2.1 of EHB-8 which may be discarded. The Index Sheet, Page 14, Section 2.2.1 should be marked "superseded. "

Attachment



PARTS LIST

- T1 \_\_\_\_\_ THORDARSON 21F27, 26.5CT, 0.6 AMP.
- F1 \_\_\_\_\_ AGC1
- CR1, CR2, CR3, CR4 — IN1084, SARKES-TARZIAN RECTIFIER IN DUAL MOUNT M500
- C1, C2 \_\_\_\_\_ 500 MFD., 25V
- L1 \_\_\_\_\_ STANCOR C-2328, .8h.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: ANGLES $\pm .5^\circ$ 3 PLACE DEC. $\pm .005$ 2 PLACE DEC. $\pm .02$	ENGINEERING DIVISION SILVER SPRING, MD. 20910		U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE		
	MATERIAL PREPARED <i>E.A.C.</i> <i>2-20-62</i> CHECKED _____ DESIGN _____ APPROVED BY _____		REMOTE POWER SUPPLY F420 WIND SYSTEM		
	APPROVED BY _____		SIZE <b>2-20-62</b>	DRAWING NO. 450-6159/C	
	APPROVED BY _____		SCALE NONE	SHEET 1 OF 1	FILE



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Weather Service  
Silver Spring, Md. 20910

DATE: April 27, 1972

Reply to:  
Attn of: W514

Subject: Transmittal Memorandum For Engineering Handbook No. 8, Issuance 72- 5

To: All Regional Headquarters, Area Electronic Supervisors, and Electronics Technicians

1. Material Transmitted:

Engineering Handbook No. 8 - Surface Equipment, Section 2.2; Wind Equipment Maintenance Note No, 14, Modified F420C-2-1, Wind Direction Transmitter, and F420C-2-2, Wind Vane.

2. Summary:

Maintenance Note No. 14 informs the technician about the modified wind direction transmitter and vane that will be issued by the CLSC, Kansas City, MO.

3. Effect on Other Instructions:

This issuance adds Figure 17A to EHB-8-200, Instruction Manual for Wind Equipment (1958) as stated in this maintenance note.

  
J.A. Cunningham  
Chief, Engineering Division

EHB-8  
Issuance 72-5

WIND EQUIPMENT MAINTENANCE NOTE  
(For Electronics Technicians)

14. Modified F420C-2-1, Wind Direction Transmitter, and F420C-2-2, Wind Vane.

Modified wind direction transmitters and wind vanes are being procured by the CLSC, Kansas City, MO.

The direction transmitter incorporates a new method of ground return. The ground is no longer through the bearing, but by a brush assembly at the base of the commutator. The new direction transmitter will also have four white lines, each one inch long, inscribed at ninety-degree intervals near the top of the neck. The lines are provided for a quick check of the direction transmitter after a thunderstorm or for a routine check. The direction can be checked at north, east, south, and west by aligning the head of the wind vane with each of the white lines. The modified wind vane has a white line inscribed on the apron of the rain shield which can be aligned with the lines on the transmitter. The lines will give a greater degree of accuracy when checking the direction.

All defective wind direction transmitters returned to the NRC for repair will be modified to have the ground through the brush assembly. The readings in the wind equipment maintenance schedule remain unchanged.

The modified wind direction transmitter is shown in Figure 17A. One copy should be removed from this maintenance note and placed in the Wind Manual between Figures 17 and 18. The other copy should remain with this maintenance note.

The Weather Service stock numbers for the direction transmitter and wind vane remain the same.

Attachment: 2 Copies Each of Figure 17A

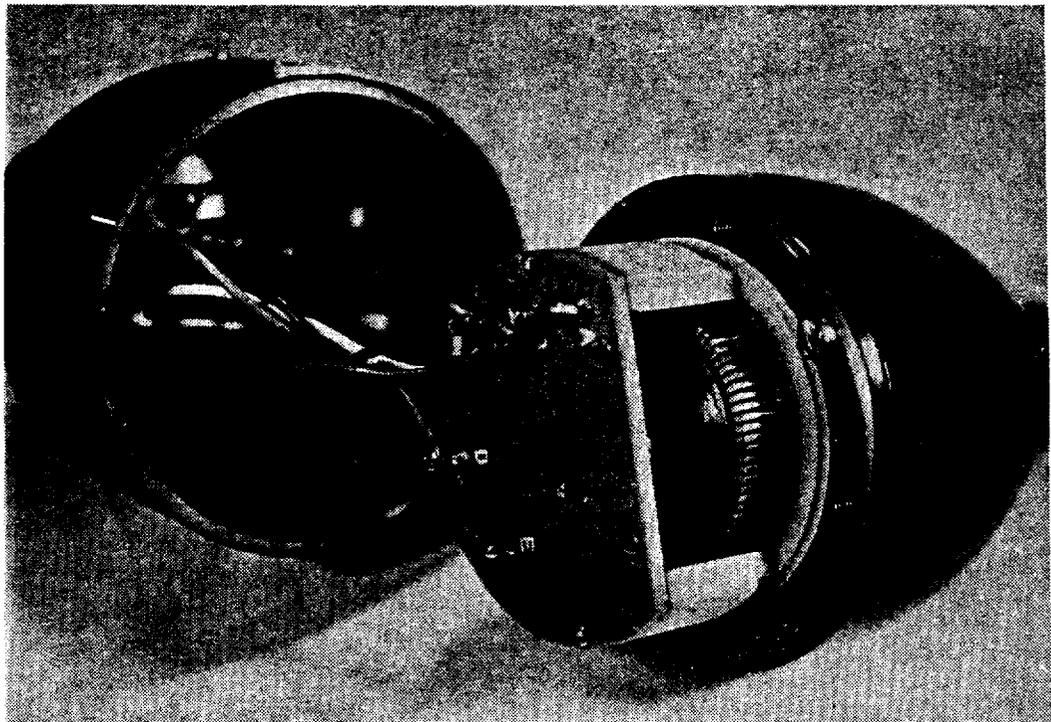
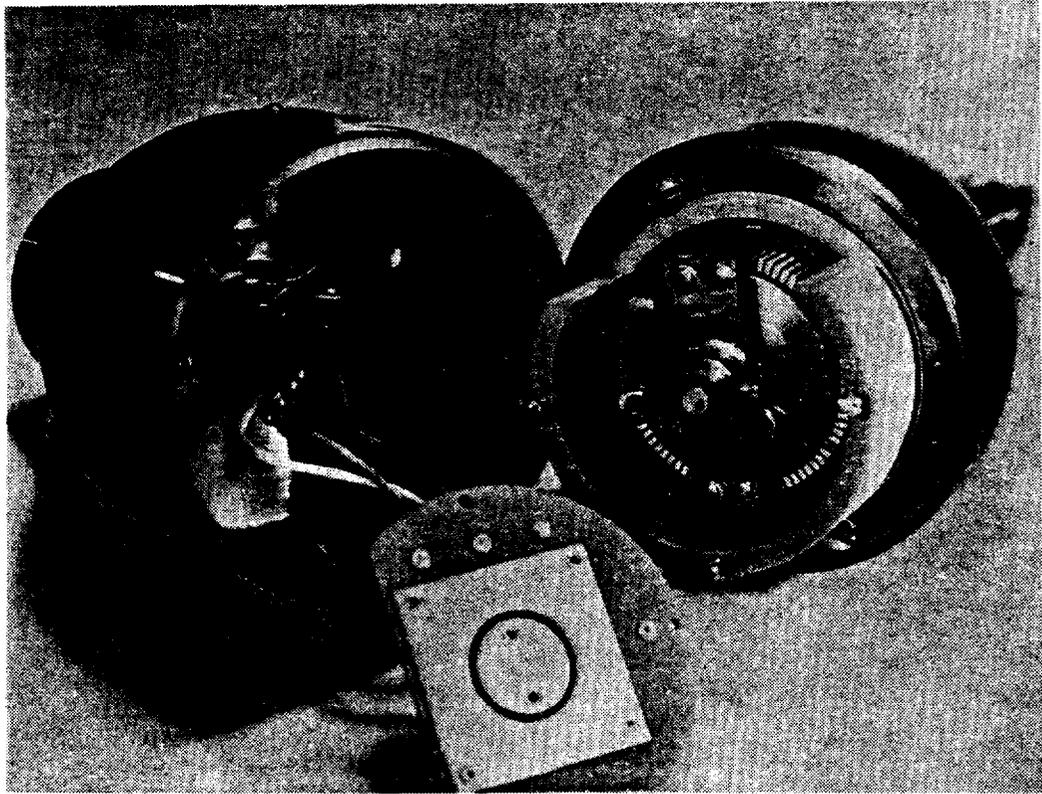


FIGURE 17A  
F420C WIND DIRECTION TRANSMITTER MODIFIED



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

DATE: June 19, 1972

Reply to  
Attn of: W514

Subject: Transmittal Memorandum for Engineering Handbook No. 8, Issuance 72-6

To: All Regional Headquarters, Area Electronic Supervisors, and Electronics Technicians

1. Material Transmitted:

Engineering Handbook No. 8 - Surface Equipment, Section 2.2;  
Wind Equipment Maintenance Note No. 15, DC Power Supply for  
Battery Replacement.

2. Summary:

Maintenance Note No.15 informs the technician about the power supply that is being installed in the wind retransmitter (WS Stock No, F607), to replace the batteries used in the wind speed test circuit.

3. Effect on Other Instructions:

None.

  
J.A. Cunningham  
Chief, Engineering Division

WIND EQUIPMENT MAINTENANCE NOTE  
(For Electronics Technicians)

15. DC Power Supply for Battery Replacement.

A dc power supply is being installed in the F607 wind retransmitter to replace the mercury batteries that are used in the wind speed test circuit. The power supply will be installed in retransmitters using the magnetic amplifier only. (See Maintenance Note No. 9 for Solid State Amplifier.)

The power supply will be installed at this office when defective retransmitters are returned from the field. The power supply will maintain a constant voltage for test purposes and should indicate  $62 \pm 1$  knot on the wind speed meter.

The procedure for testing the wind speed remains the same as outlined in the F420 Maintenance Schedule.



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

Date: November 28, 1972

Reply to  
Attn of: W514

Subject: Transmittal Memorandum for Engineering Handbook No. 8, Issuance 72-10

To: All Regional Headquarters, Area Electronic Supervisors, and Electronics Technicians

1. Material Transmitted:

EHB-8, Surface Equipment, Section 2.2; Wind Equipment Maintenance Note No. 16, F611 Solid State Wind Retransmitter.

2. Summary:

Maintenance Note No. 16 informs the technicians about Wind Equipment Manual No. 8-213 titled Solid State Wind Retransmitter.

3. Effect on Other Instructions:

None.

  
J. A. Cunningham  
Chief, Engineering Division

## WIND EQUIPMENT MAINTENANCE NOTES

(For Electronics Technicians)

16. F611 Solid State Wind Retransmitters

The solid state wind retransmitter F611 has been placed in stock at the CLSC, Kansas City, Mo.

The F611 Solid State Wind Retransmitter Manual has been assigned Engineering Manual No. 8-213.

The retransmitter is the same physical size as the F607 so that equipment cabinets will not have a spacing problem. All input and output connections are the same as those of the F607, making changeability convenient. The unit has three plug-in circuit boards that are interchangeable, power supplies, and test switches for checking wind speed and direction. The direction test switch eliminates the necessity of using a direction test box F856, for checking the retransmitter. The F856 test box cannot be used with the F611 retransmitter.

Requests for F611 wind retransmitters must be forwarded to the Procurement and Supply Branch of the Regional Headquarters, through the Regional Engineering Division, for approval since the cost of approximately \$250 will be charged to the station.

When the F607 wind retransmitter is replaced by F611, the F607 retransmitter should be discarded locally.

Attachment: 1 Manual for F611 Solid State  
Wind Retransmitter



**U.S. DEPARTMENT OF COMMERCE**

Peter G. Peterson Secretary

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Robert M. White, Administrator

NATIONAL WEATHER SERVICE

George P. Cressman, Director

**F611**  
**SOLID STATE WIND**  
**RETRANSMITTER**

**ENGINEERING DIVISION**  
**INSTRUCTION MANUAL NO. 8-213**  
**SILVER SPRING, MD.**



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

## INSTALLATION AND OPERATION OF

### F611, SOLID STATE TYPE WIND SPEED AND DIRECTION RETRANSMITTER

General- The F611 solid state retransmitter (Figure 1) is an electronic device designed to be used with the F420 series wind equipment. It permits operation of F420 equipment over lines of greater length than is possible in a standard direct-line, or with the magnetic amplifier type insulation. Up to nine wind speed and direction indicators can be driven by one F611 retransmitter. The unit is designed to operate from a 105-125 volt, 60 hertz power source. If more than one retransmitter is used with the, same system, they should be connected in series.

#### DESCRIPTION:

The retransmitter is mounted on a 19" x 8-3/4" panel designed for mounting in a standard equipment cabinet. The wind speed section consists of one plug-in printed circuit board, a modular  $\pm 15$  VDC power supply, and a switch that permits applying a +3 VDC to the wind speed input signal for checking the performance of the amplifier.

The wind direction section consists of two plug-in printed circuit boards, Weather Service Stock Number F611-A, a modular  $\pm 15$  VDC power supply, a  $\pm 25$  VDC supply, and a switch that provides a  $\pm 3$  VDC to the input of the wind direction amplifier for the purpose of testing and calibration. Figure 2 is the component board layout of F611-A.

#### INSTALLATION:

The retransmitter should be located so that the master panel can be observed when calibration checks are being performed on the retransmitter. Five signal lines are needed to connect the retransmitter to the field wind installation- two lines for the speed and three for the direction. Figure 4 is the interconnecting wiring diagram for an F420-C wind system using a F611 retransmitter.

#### Speed Circuit

The two lines from the wind speed transmitter should be terminated at the field site into a 428.6 ohm, 0.1% resistor in parallel with the transmitter output. The "A" and "B" leads from the transmitter site

should be connected to the "F" and "G" leads, respectively, of the transmitter. The output of the wind speed section of the retransmitter will work into a wind panel load from 428.6 to 1,500 ohms. Any combination of F420 type wind speed indicators connected in series, parallel, or series parallel, which have a load value within this range may be used. Load connections should be to terminals "L" (positive) and "M" (common) of the retransmitter.

#### Direction Circuit:

A 12 VDC power supply should be used at the field site to feed the "D" and "E" leads of the transmitter ("D" positive and "E" negative). Power supplies, Weather Service Stock Number F603 are available from the CLSC, Kansas City, Mo. The "A", "B", and "C" lines from the transmitter connect to correspondingly labeled terminals on the retransmitter. The output of the wind direction section of the retransmitter will drive up to nine indicators. The "A", "B", and "C" leads from the indicators connect to output terminals "H", "J", and "K", respectively, on the retransmitter. It should be noted that "E" lead of the transmitter and the negative side of the 12 VDC power supply are not grounded.

#### Theory of Operation:

Modules A, B, and C are identical amplifiers that can be used for either wind direction, or wind speed retransmitting.

The amplifier is divided into two sections - a preamplifier, and a complementary power amplifier. The input section (preamplifier) is an operational-amplifier used in the follower-amplifier configuration. The follower circuit has essentially unity gain because the output is fed directly back to the negative input as degenerative feedback. The follower has an input impedance that is very high (greater than one megohm) therefore, ideal for isolating from other circuits. When the module is used for wind speed, only the preamplifier section is used. This is accomplished by not applying power to the power amplifier section ( $\pm 25$  VDC) of the connectors for module C.

When the module is used for wind direction retransmitting (positions A or B), both the preamplifier section and power amplifier section are utilized. The power amplifier section is needed in the wind direction modules because of the greater current requirement caused by the output loading of the wind direction meters, (up to nine meters).

### Calibration:

The retransmitter does not have a calibration adjustment for wind speed or direction like the F607 due to the very high input resistance of the circuitry. The speed test voltage is obtained from a constant voltage source which maintains a constant reading for wind speed checks. The indication obtained for wind speed tests when the unit is installed, should not change unless the meter, power supply, or the wind speed circuitry becomes defective. The wind direction test voltage is obtained by the same method and the indications obtained for the initial test should not vary unless some circuitry is defective.

Printed circuit board positions A and B are for wind direction. Printed circuit board position C is for wind speed. Module C should also be tested in position A or B to verify that the power amplifier section is working satisfactorily so that it can be utilized in position A or B also.

Switch S3, in the 0, 120, and 240 degree position supplies approximately a +3 VDC to the inputs of printed circuit boards A and B. The position of S3 determines the polarity of the inputs to the boards. This allows checking the direction amplifier with both a +3VDC and -3VDC applied to the input. Any indication within plus or minus 5 degrees from the setting of S3 is acceptable. Values outside the tolerance should be investigated, if it is known that the direction meter is accurate.

The wind speed test switch S2, in TEST position, supplies a +3 VDC to the input of printed circuit board C. S2 is connected as an OFF/ON switch with no provision for reversing the polarity. This is the reason for changing board C with boards A or B for complete testing. The wind speed meter should indicate about 66.5 knots in the test position. However, due to line voltage variations, manufacturing processes of component parts and junction resistivity, this indication may vary. Therefore, the indication noted upon installation should be regarded as valid for all future comparisons if it falls within the area of 66.5 knots. Indications of values obtained at later dates, varying from the initial indication, should be investigated if it is known that the speed meter is accurate.

### Maintenance:

The retransmitter is considered to be an on-station repairable item and should be treated as such. Spare boards and power supplies are available from the CLSC and most of the other components are commercial grade which should be obtained locally. Figure 3 is the schematic diagram and parts list of the F611 retransmitter.

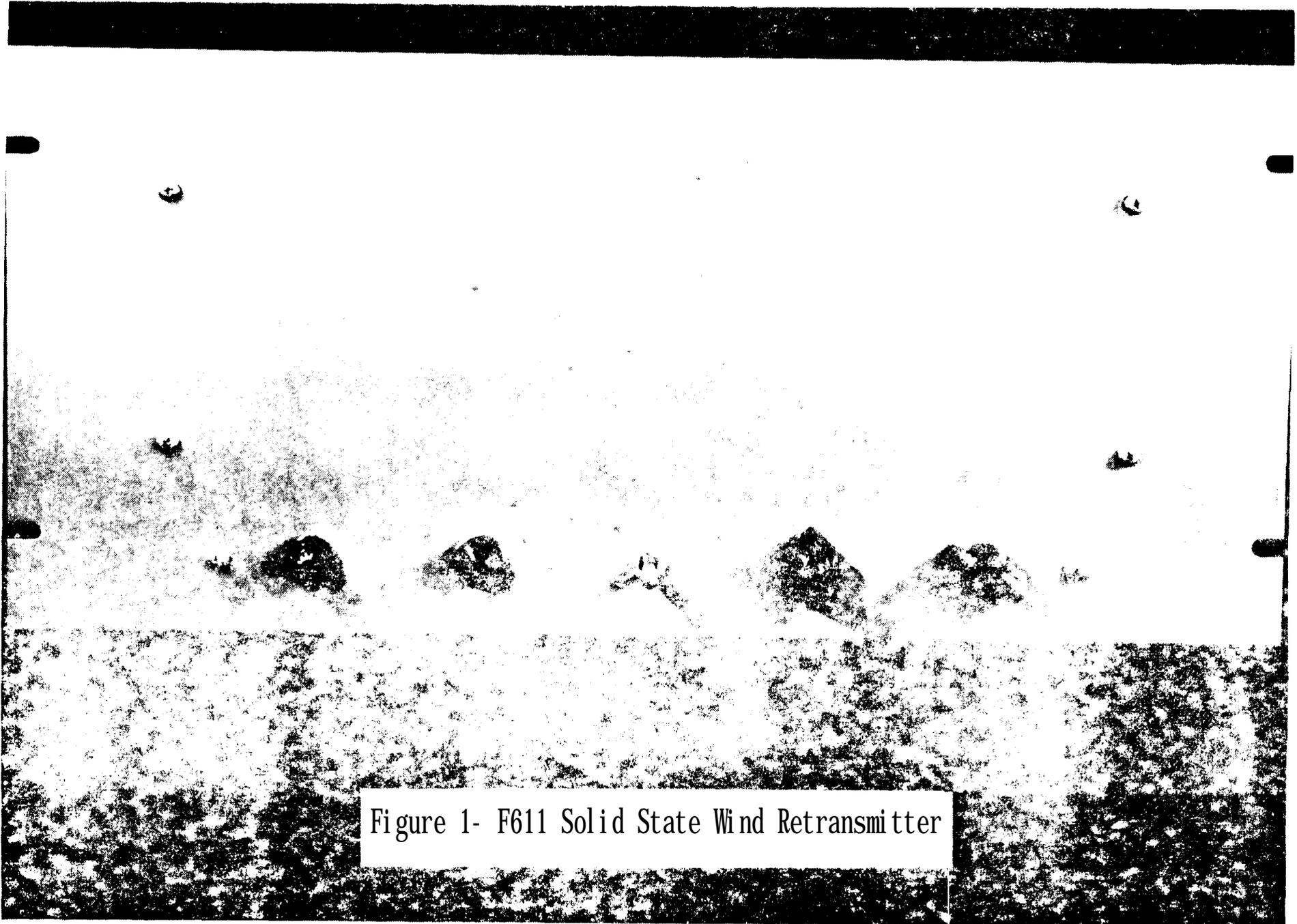


Figure 1- F611 Solid State Wind Retrasmmitter

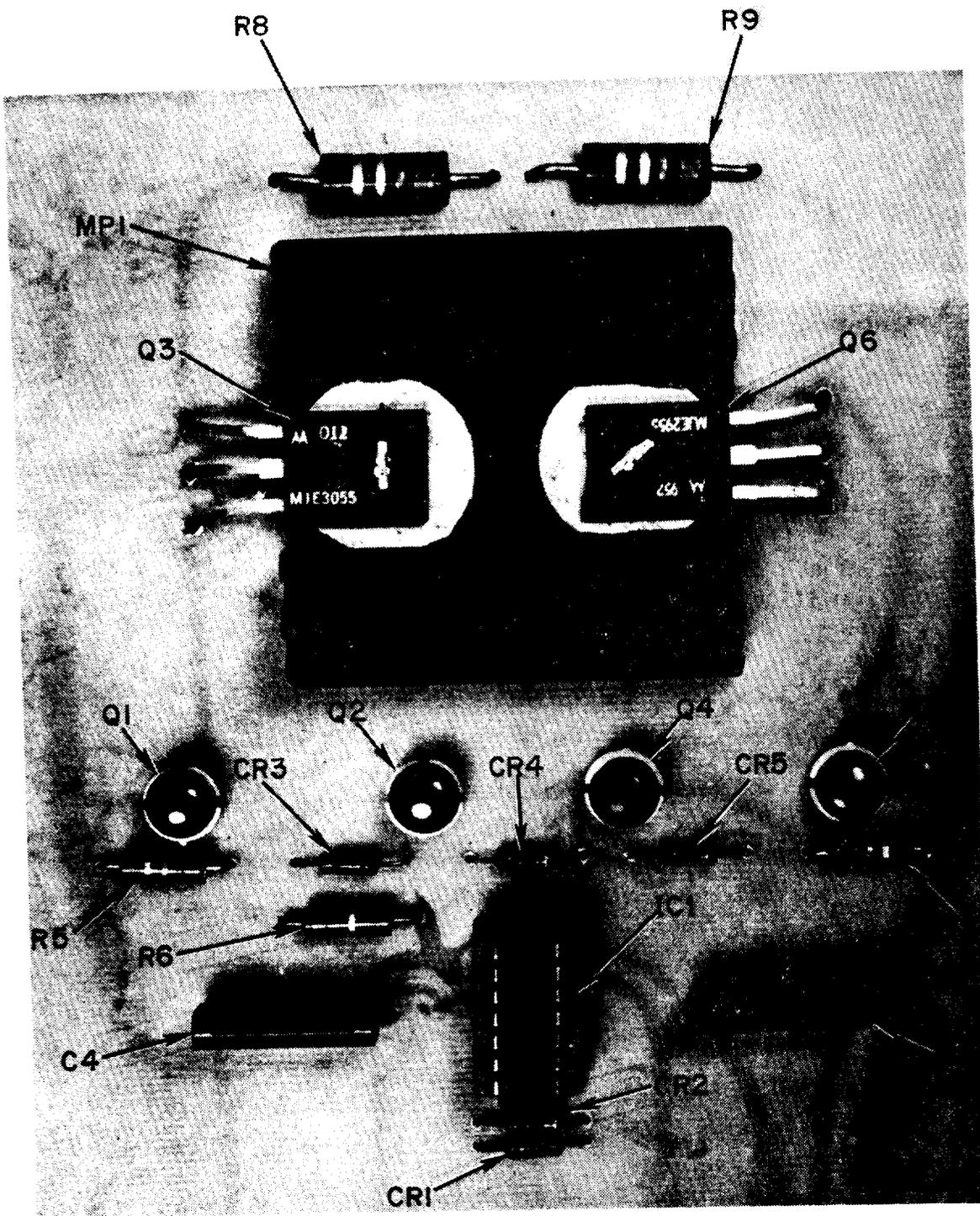
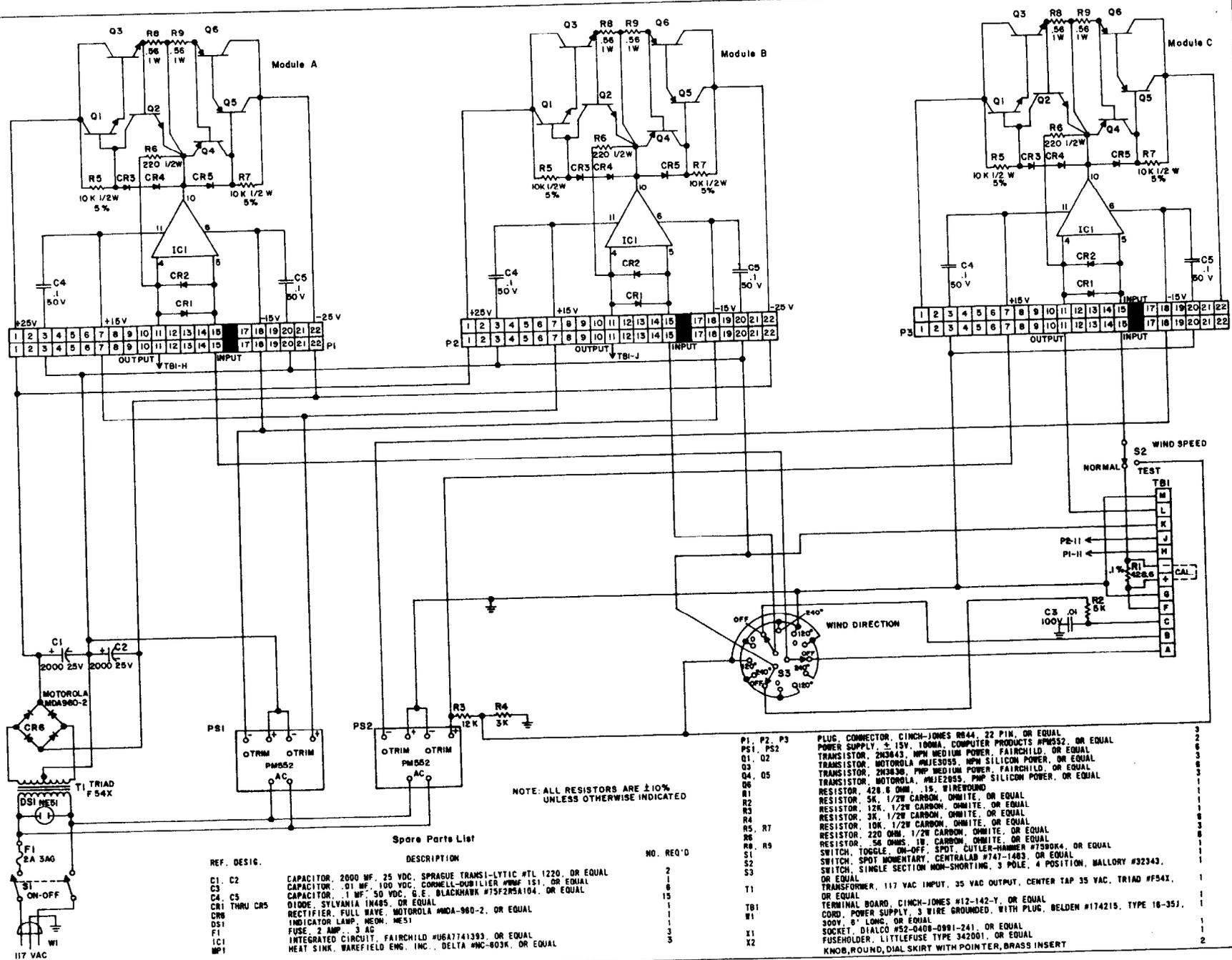


Figure 2-F611A P.C. Board Component Layout

Figure 3. Full Wind Returnamitter Schematic



Spare Parts List

REF. DESIG.	DESCRIPTION	NO. REQ'D
C1, C2	CAPACITOR, 2000 MF, 25 VDC, SPRAGUE TRANS-LYTIC #TL 1220, OR EQUAL	2
C3	CAPACITOR, .01 MF, 100 VDC, CORNELL-DUBILIER #MMF 151, OR EQUAL	6
C4, C5	CAPACITOR, .1 MF, 50 VDC, G. E. BLACKHAWK #75F2R5A104, OR EQUAL	15
CR1 THRU CR5	DIODE, SYLVANIA 1N495, OR EQUAL	1
CR6	RECTIFIER, FULL WAVE, MOTOROLA #MDA-960-2, OR EQUAL	1
CR8	INDICATOR LAMP, NEON, NES1	1
F1	FUSE, 2 AMP., 3 AG	1
IC1	INTEGRATED CIRCUIT, FAIRCHILD #U6A7741393, OR EQUAL	3
MP1	HEAT SINK, WAREFIELD ENG. INC., DELTA #MC-603K, OR EQUAL	3
P1, P2, P3	PLUG CONNECTOR, CINCH-JONES #844, 22 PIN, OR EQUAL	3
PS1, PS2	POWER SUPPLY, ± 15V, 100MA, COMPUTER PRODUCTS #PMS52, OR EQUAL	2
Q1, Q2	TRANSISTOR, 2N3843, NPN MEDIUM POWER, FAIRCHILD, OR EQUAL	1
Q3	TRANSISTOR, MOTOROLA #MJ2505, NPN SILICON POWER, OR EQUAL	3
Q4, Q5	TRANSISTOR, MOTOROLA #MJ2505, NPN SILICON POWER, OR EQUAL	6
Q6	TRANSISTOR, MOTOROLA #MJ2505, NPN SILICON POWER, OR EQUAL	1
R1	RESISTOR, 428.6 OHM, .15, WIREWOUND	1
R2	RESISTOR, 5K, 1/2W CARBON, OHMITE, OR EQUAL	1
R3	RESISTOR, 12K, 1/2W CARBON, OHMITE, OR EQUAL	1
R4	RESISTOR, 3K, 1/2W CARBON, OHMITE, OR EQUAL	6
R5, R7	RESISTOR, 10K, 1/2W CARBON, OHMITE, OR EQUAL	3
R6	RESISTOR, 220 OHM, 1/2W CARBON, OHMITE, OR EQUAL	6
R8, R9	RESISTOR, 56 OHMS, 1/2W CARBON, OHMITE, OR EQUAL	1
S1	SWITCH, TOGGLE, ON-OFF, SPDT, CUTLER-HAMMER #7500R4, OR EQUAL	1
S2	SWITCH, SPOT MOMENTARY, CENTRALAB #747-1483, OR EQUAL	1
S3	SWITCH, SINGLE SECTION NON-SHORTING, 3 POLE, 4 POSITION, MALLORY #32343, OR EQUAL	1
T1	TRANSFORMER, 117 VAC INPUT, 35 VAC OUTPUT, CENTER TAP 35 VAC, TRIAD #F54X, OR EQUAL	1
TB1	TERMINAL BOARD, CINCH-JONES #12-142-Y, OR EQUAL	1
W1	CORD, POWER SUPPLY, 3 WIRE GROUNDED, WITH PLUG, BELDEN #174215, TYPE 16-35J, 300V, 6' LONG, OR EQUAL	1
X1	SOCKET, DIALCO #S2-0408-0981-241, OR EQUAL	1
X2	FUSEHOLDER, LITTLEFUSE TYPE 342001, OR EQUAL	1
	KNOB, ROUND, DIAL SKIRT WITH POINTER, BRASS INSERT	2

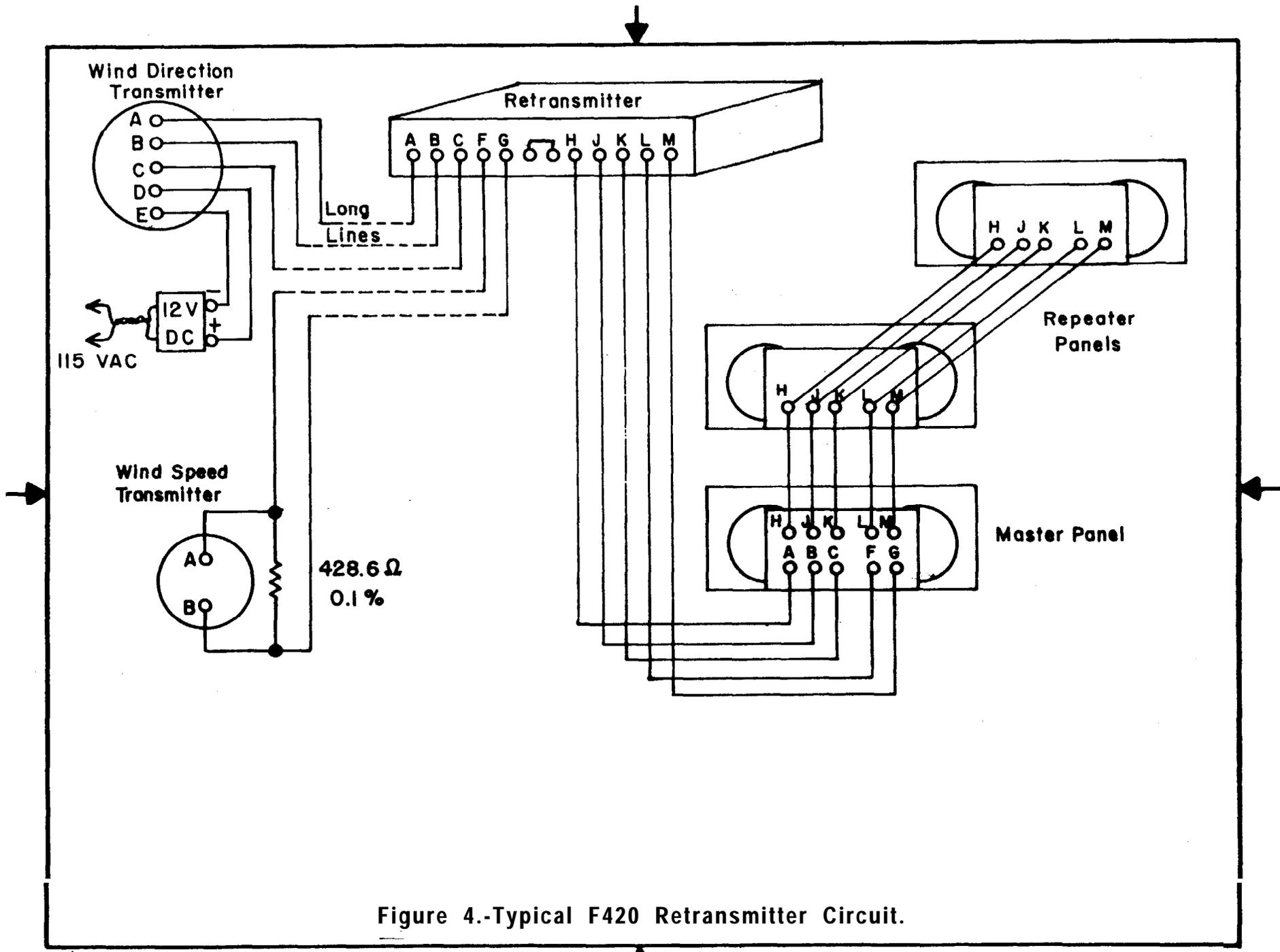


Figure 4.-Typical F420 Retransmitter Circuit.



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

Date: March 8, 1973

Reply to  
Attn of: W514

Subject: Transmittal Memorandum for Engineering Handbook No. 8, Issuance 73- 3

To: All Regional Headquarters, Area Electronic Supervisors, and Electronics Technicians

1. Material Transmitted:

Engineering Handbook No. 8 - Surface Equipment, Section 2.2, Wind Equipment Maintenance Note No., 17, Fuse Replacement in the F611 Retransmitter; and Wind Equipment Maintenance Note No. 18, Avoid Use of F611 with T-607 Retransmitters.

2. Summary:

Maintenance Note No. 17 informs the technician to replace the fuse in the F611 Wind Retransmitter. Maintenance Note No. 18 informs the technician to prevent the use of the F611 with the F607 retransmitter.

3. Effect on Other Instructions:

Maintenance Note No. 17 revises Figure 3 of the F611 Solid State Wind Retransmitter Manual which should be removed and discarded.

  
J. A. Cunningham  
Chief, Engineering Division

WIND EQUIPMENT MAINTENANCE NOTES  
(For Electronics Technicians)

17. Fuse Replacement in the F611 Retransmitter

A few failures of the wind direction retransmitter modules have been reported. A component on the board would fail and cause the board to be burned beyond repair if not noticed in time. Investigation of the failures has shown that IC1 would start oscillating and cause Q3 and Q6 to draw excessive current. This would destroy R8 and R9 and sometimes other components on the board.

Under normal operation, the retransmitter draws about 300 milliamps. This unit was fused with a 2 amp fuse to protect the power transformer. However, in order to protect the modules should they become defective, this maintenance note directs ELTEC's to replace the 2 amp fuse with a 3/8 amp slo-blo. The fuses are available from the CLSC as FSN 5920-220-1317; WS Stock No. 17-F-5-10.

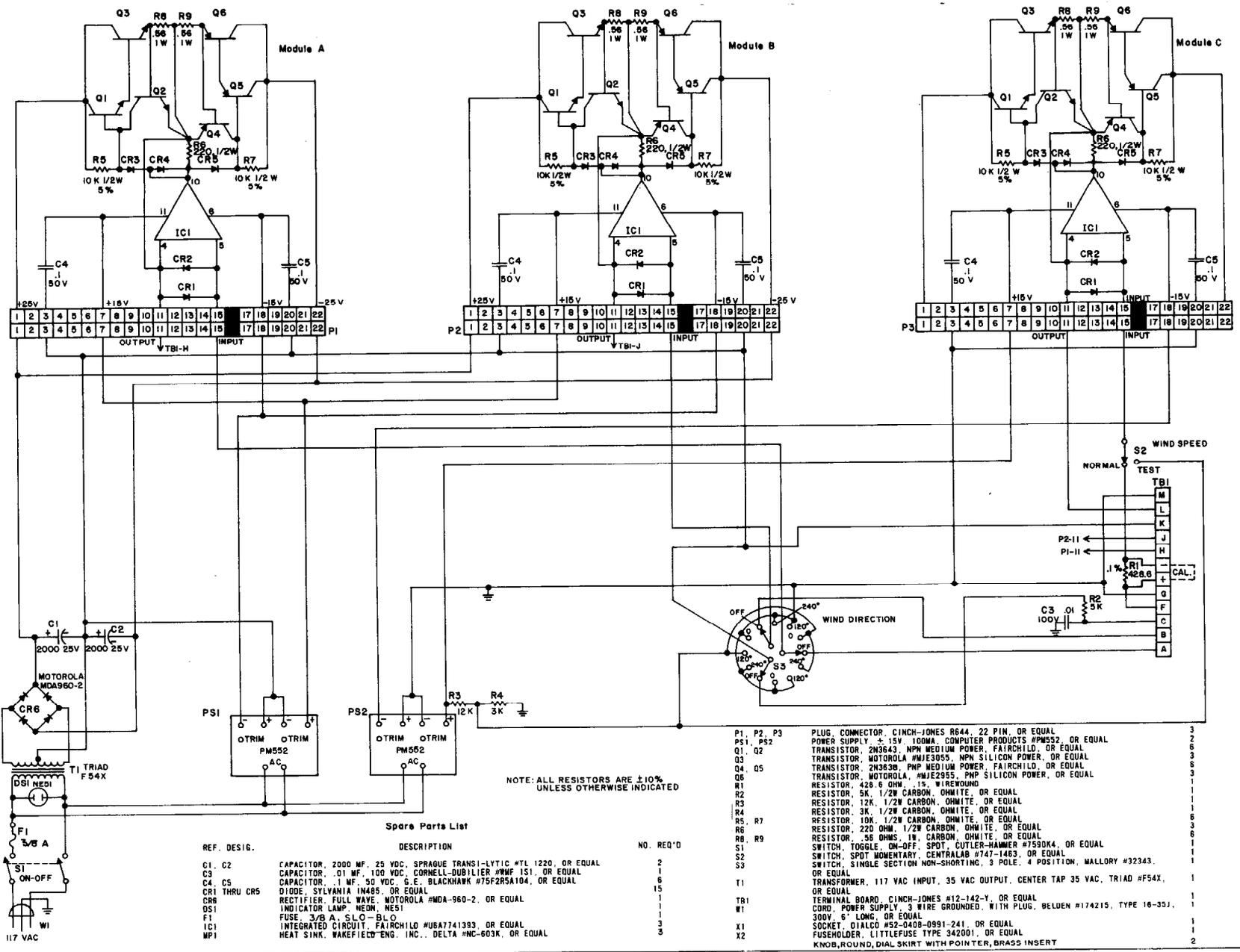
Two copies of revised schematic Figure 3 are attached. One copy should replace Figure 3 in the manual and the second copy is to remain with this maintenance note.

Attachments: (2)

18. Avoid Use of F611 with F607 Retransmitters

In some instances, the F611 retransmitter has been connected in series or parallel with the F607 retransmitter. The wind direction ground of the F607 is through the retransmitter, whereas, the F611 does not have a ground leg. The "C" terminal of the F611 is isolated from ground and connected to the center tap of T1. Therefore, using the two types of amplifiers in series or parallel results in a difference of potential between the two units. This requires the F611 AC input to be floated and the use of different isolated equipment cabinets. Since this could present a shock hazard, the F611 should not be used in conjunction with the F607 retransmitter.

Figure 3-1611 Wind Reversermitter Schematic



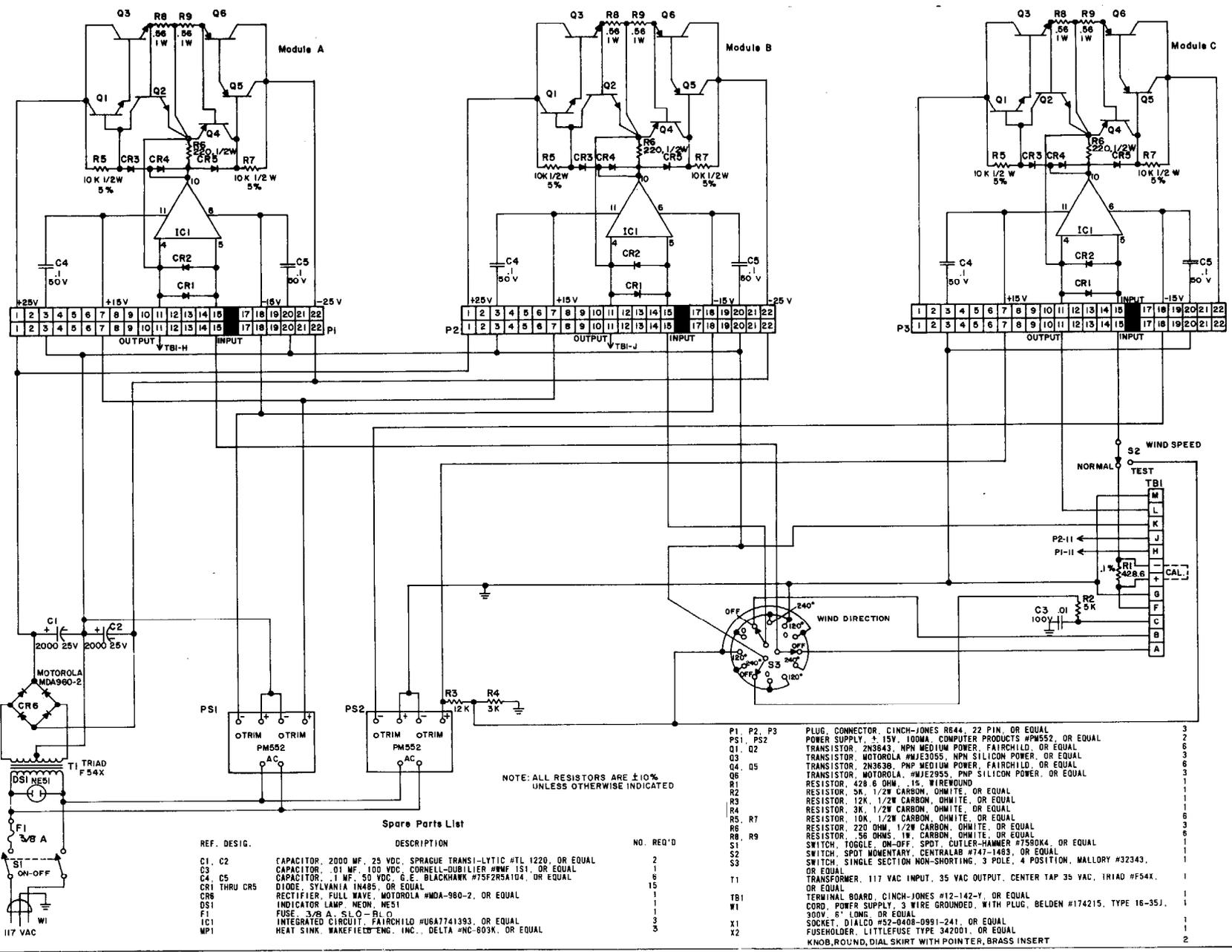
NOTE: ALL RESISTORS ARE ±10% UNLESS OTHERWISE INDICATED

Spare Parts List

REF. DESIG.	DESCRIPTION	NO.	REQ'D
C1, C2	CAPACITOR, 2000 MF, 25 VDC, SPRAGUE TRANS-LYTIC #TL 1220, OR EQUAL	2	
C3	CAPACITOR, .01 MF, 100 VDC, CORNELL-DUBILIER #MF 151, OR EQUAL	1	
C4, C5	CAPACITOR, .1 MF, 50 VDC, G.E. BLACKHAWK #75F2R5A104, OR EQUAL	6	
CR1 THRU CR5	DIODE, SYLVANIA 1N485, OR EQUAL	15	
CR6	RECTIFIER, FULL WAVE, MOTOROLA #MDA-960-2, OR EQUAL	1	
DS1	INDICATOR LAMP, NEON, NES1	1	
F1	FUSE, 3/8 A, SLO-BLO	1	
IC1	INTEGRATED CIRCUIT, FAIRCHILD #µA741393, OR EQUAL	3	
MP1	HEAT SINK, WAKEFIELD ENG. INC., DELTA #NC-603K, OR EQUAL	3	

P1, P2, P3	PLUG CONNECTOR, CINCH-JONES R644, 22 PIN, OR EQUAL	3
PS1, PS2	POWER SUPPLY, ±15V, 100MA, COMPUTER PRODUCTS #PM552, OR EQUAL	2
Q1, Q2	TRANSISTOR, 2N3643, NPN MEDIUM POWER, FAIRCHILD, OR EQUAL	6
Q3	TRANSISTOR, MOTOROLA #MJE3055, NPN SILICON POWER, OR EQUAL	3
Q4, Q5	TRANSISTOR, 2N3638, PNP MEDIUM POWER, FAIRCHILD, OR EQUAL	6
Q6	TRANSISTOR, MOTOROLA #MJE2955, PNP SILICON POWER, OR EQUAL	3
R1	RESISTOR, 428.6 OHM, 1/2 W, WIREWOUND	1
R2	RESISTOR, 5K, 1/2W CARBON, OHMITE, OR EQUAL	1
R3	RESISTOR, 12K, 1/2W CARBON, OHMITE, OR EQUAL	1
R4	RESISTOR, 3K, 1/2W CARBON, OHMITE, OR EQUAL	1
R5, R7	RESISTOR, 10K, 1/2W CARBON, OHMITE, OR EQUAL	6
R6	RESISTOR, 220 OHM, 1/2W CARBON, OHMITE, OR EQUAL	3
R8, R9	RESISTOR, .56 OHMS, 1/2 W, CARBON, OHMITE, OR EQUAL	6
S1	SWITCH, TOGGLE, ON-OFF, SPOT, CUTLER-HAMMER #7530K4, OR EQUAL	1
S2	SWITCH, SPOT MOMENTARY, CENTRALAB #747-1463, OR EQUAL	1
S3	SWITCH, SINGLE SECTION NON-SHORTING, 3 POLE, 4 POSITION, MALLORY #32343, OR EQUAL	1
T1	TRANSFORMER, 117 VAC INPUT, 35 VAC OUTPUT, CENTER TAP 35 VAC, TRIAD #F54X, OR EQUAL	1
TR1	TERMINAL BOARD, CINCH-JONES #12-142-Y, OR EQUAL	1
WT1	CORD, POWER SUPPLY, 3 WIRE GROUNDED, WITH PLUG, BELDEN #174215, TYPE 16-35J, 300V, 6' LONG, OR EQUAL	1
X1	SOCKET, DIALCO #52-0408-0991-241, OR EQUAL	1
X2	FUSEHOLDER, LITTLEFUSE TYPE 342001, OR EQUAL	1
	KNOB, ROUND, DIAL SKIRT WITH POINTER, BRASS INSERT	2

Figure 3-F611 Wind Retransmitter Schematic



NOTE: ALL RESISTORS ARE ±10% UNLESS OTHERWISE INDICATED

Spare Parts List

REF. DESIG.	DESCRIPTION	NO.	REQ'D
C1, C2	CAPACITOR, 2000 MF, 25 VDC, SPRAGUE TRANS-LYTIC #TL 1220, OR EQUAL	2	2
C3	CAPACITOR, .01 MF, 100 VDC, CORNELL-DUBILIER #MF 1S1, OR EQUAL	1	1
C4, C5	CAPACITOR, .1 MF, 50 VDC, G.E. BLACKHAWK #75FZRS104, OR EQUAL	6	6
CR1 THRU CR5	DIODE, PENNAC 1N485, OR EQUAL	15	15
CR6	RECTIFIER, FULL WAVE, MOTOROLA #MDA-980-2, OR EQUAL	1	1
DS1	INDICATOR LAMP, NEON, MESA1	1	1
F1	FUSE, 3/8 A, SLO-BLO	1	1
IC1	INTEGRATED CIRCUIT, FAIRCHILD #U6A7741393, OR EQUAL	3	3
MP1	HEAT SINK, WAKEFIELD ENG. INC., DELTA #NC-803K, OR EQUAL	3	3

P1, P2, P3	PLUG CONNECTOR, CINCH-JONES R644, 22 PIN, OR EQUAL	3
PS1, PS2	POWER SUPPLY, +15V, 100MA, COMPUTER PRODUCTS #PM552, OR EQUAL	2
Q1, Q2	TRANSISTOR, 2N3643, NPN MEDIUM POWER, FAIRCHILD, OR EQUAL	6
Q3	TRANSISTOR, MOTOROLA #MJE3055, NPN SILICON POWER, OR EQUAL	3
Q4, Q5	TRANSISTOR, 2N3638, PNP MEDIUM POWER, FAIRCHILD, OR EQUAL	6
Q6	TRANSISTOR, MOTOROLA #MJE2955, PNP SILICON POWER, OR EQUAL	3
R1	RESISTOR, 428 Ω, 1/2W CARBON, OHMITE, OR EQUAL	1
R2	RESISTOR, 3K, 1/2W CARBON, OHMITE, OR EQUAL	1
R3	RESISTOR, 12K, 1/2W CARBON, OHMITE, OR EQUAL	1
R4	RESISTOR, 3K, 1/2W CARBON, OHMITE, OR EQUAL	1
R5, R7	RESISTOR, 10K, 1/2W CARBON, OHMITE, OR EQUAL	6
R6	RESISTOR, 220 Ω, 1/2W CARBON, OHMITE, OR EQUAL	3
R8, R9	RESISTOR, .56 OHMS, 1W CARBON, OHMITE, OR EQUAL	6
S1	SWITCH, TOGGLE, ON-OFF, SPDT, CUTLER-HAMMER #7580K4, OR EQUAL	1
S2	SWITCH, SPDT MOMENTARY, CENTRALAB #747-1483, OR EQUAL	1
S3	SWITCH, SINGLE SECTION NON-SHORTING, 3 POLE, 4 POSITION, MALLORY #32343, OR EQUAL	1
T1	TRANSFORMER, 117 VAC INPUT, 35 VAC OUTPUT, CENTER TAP 35 VAC, TRIAD #F54X, OR EQUAL	1
TB1	TERMINAL BOARD, CINCH-JONES #12-142-Y, OR EQUAL	1
WI	CORD, POWER SUPPLY, 3 WIRE GROUNDED, WITH PLUG, BELDEN #174215, TYPE 16-35J, 300V, 5' LONG, OR EQUAL	1
X1	SOCKET, DIALCO #S2-0408-0991-241, OR EQUAL	1
X2	HEAT SINK, WAKEFIELD ENG. INC., DELTA #NC-803K, OR EQUAL	1
	KNOB, ROUND, DIAL SKIRT WITH POINTER, BRASS INSERT	2

WIND EQUIPMENT MAINTENANCE NOTE  
(For Electronics Technicians)

19. F611A Printed Circuit Board.

The F611A printed circuit board has been modified for lightning protection. The modified board is directly interchangeable with the board presently in use. The board should be placed in the equipment only when required by the failure of the old board. The old board should be repaired for a spare, if economically feasible. Most of the components for the board have been placed in stock at the CLSC under the following stock numbers:

<u>FSN</u>	<u>DESCRIPTION</u>	<u>WS S/N</u>
5962-199-9658	Integrated Circuit, Motorola type MC1741CL, order as 017S-1C/MC1741CL.	F611-1C1
5961-497-4280	Transistor, Motorola type MJE3055, order as 017S-MJE3055.	F611-Q3
5961-237-2382	Transistor, Motorola type MJE2955, order as 017S-MJE2955.	F611-Q6
5961-901-4862	Transistor, 2N3638, order as 017S-2N3638.	F611-Q4/Q5
5961-978-9667	Transistor, 2N3643, order as 017S-2N3643.	F611-Q1/Q2
5905-336-3447	Resistor, 0.56 ohm, 1/2 watt, carbon 5%.	F611-R8

In some cases it has been found that "AC" pickup and "spikes!" are being fed into the retransmitter causing the IC to start oscillating. The oscillating will cause Q3 and Q6 to become defective. Experience has shown that a .01 to a .05 ufd capacitor placed from each input to the common terminal will sometimes correct the situation.

Two copies each of the printed circuit board schematic, spare parts list, and component layout are attached. One copy each should be removed from the maintenance note and placed in the F611 Solid State Wind Retransmitter Manual, EHB8-213. The other copy should remain with this maintenance note.

Attachment: Two Copies Printed Circuit Schematic  
Two Copies Spare Parts List  
Two Copies Component Layout

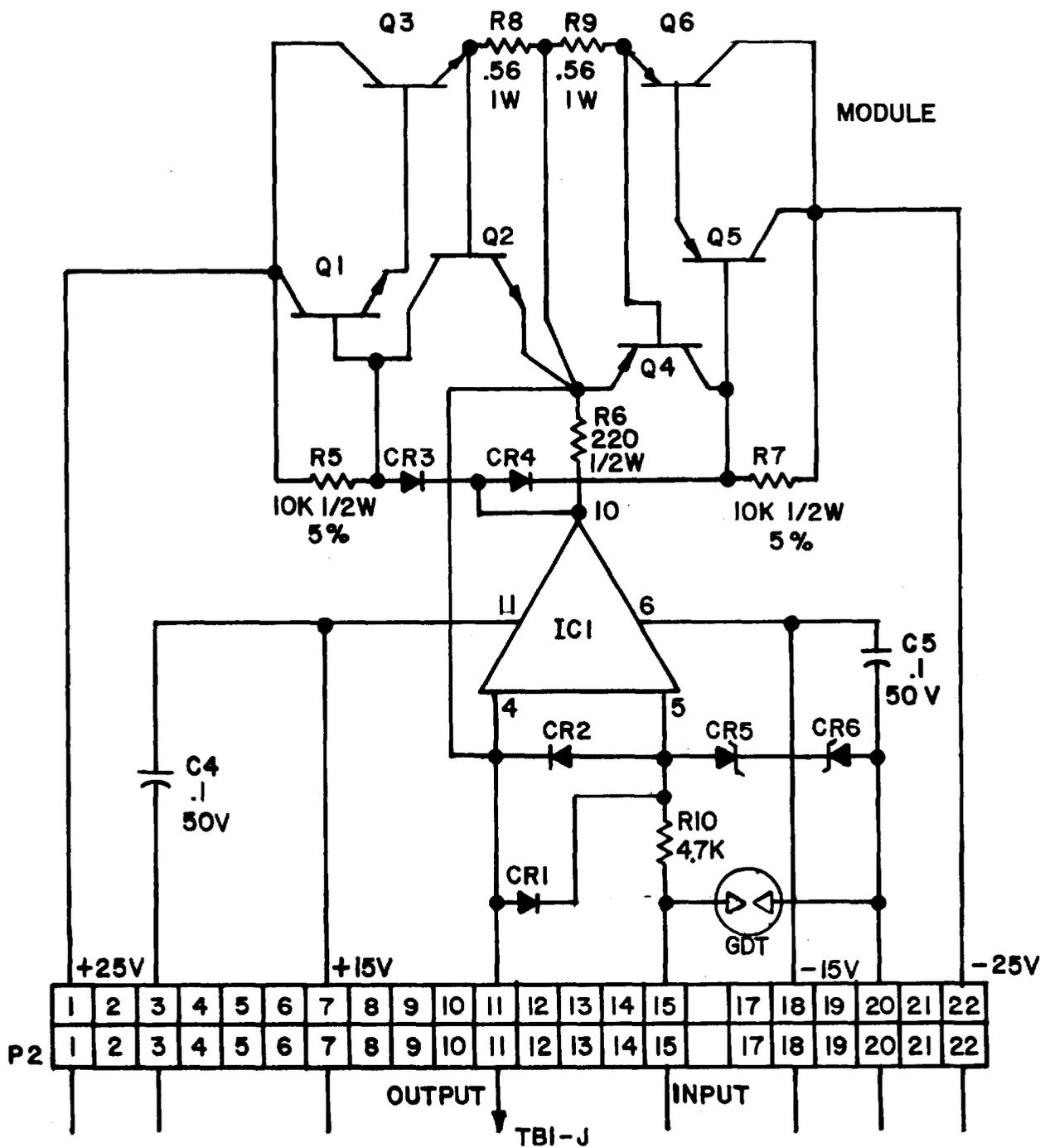


FIGURE 1- F611A WIND RETRASMITTER SCHEMATIC

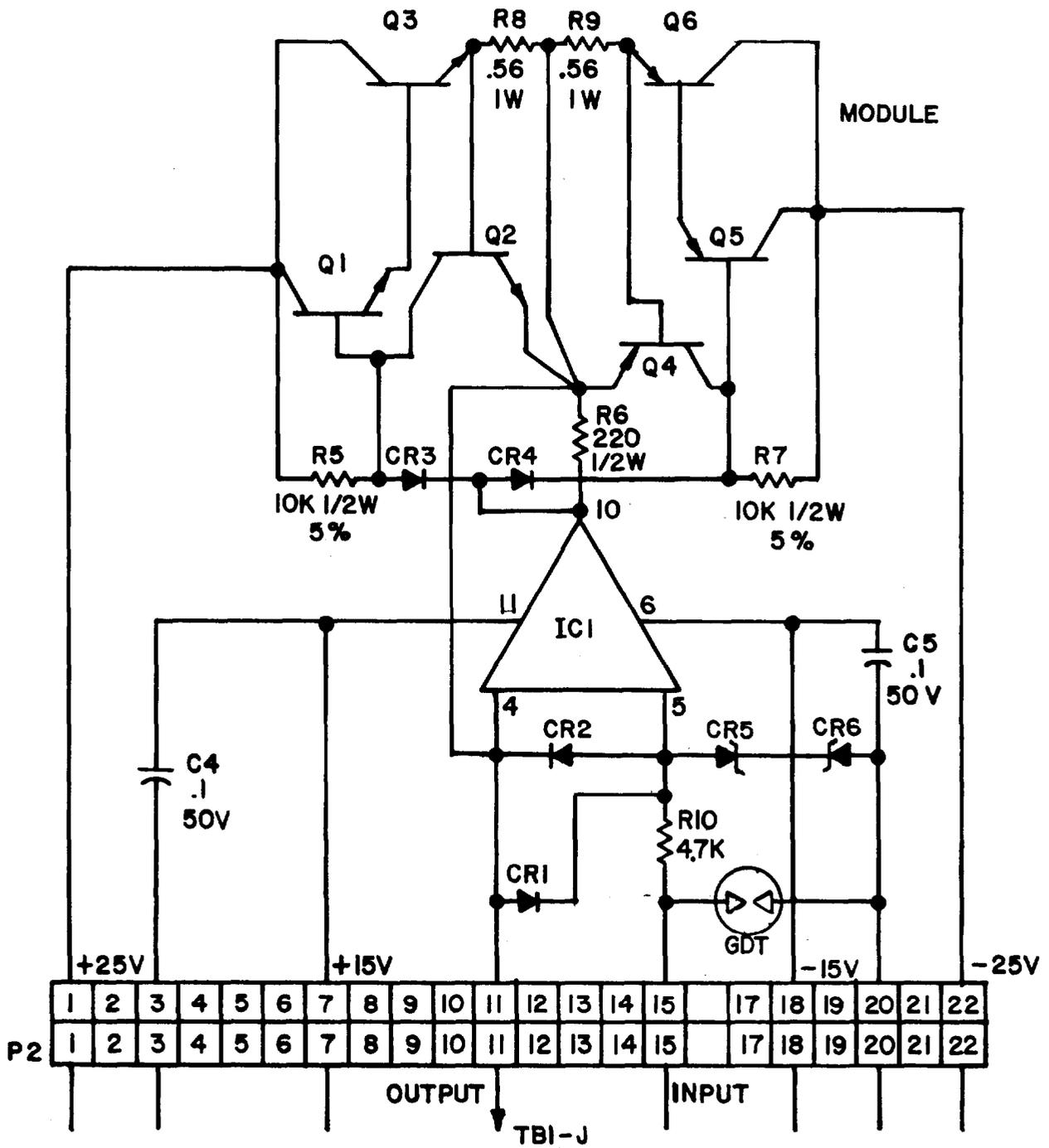


FIGURE 1- F611A WIND RETRASMITTER SCHEMATIC

PARTS LIST for F611 WIND RETRANSMITTER

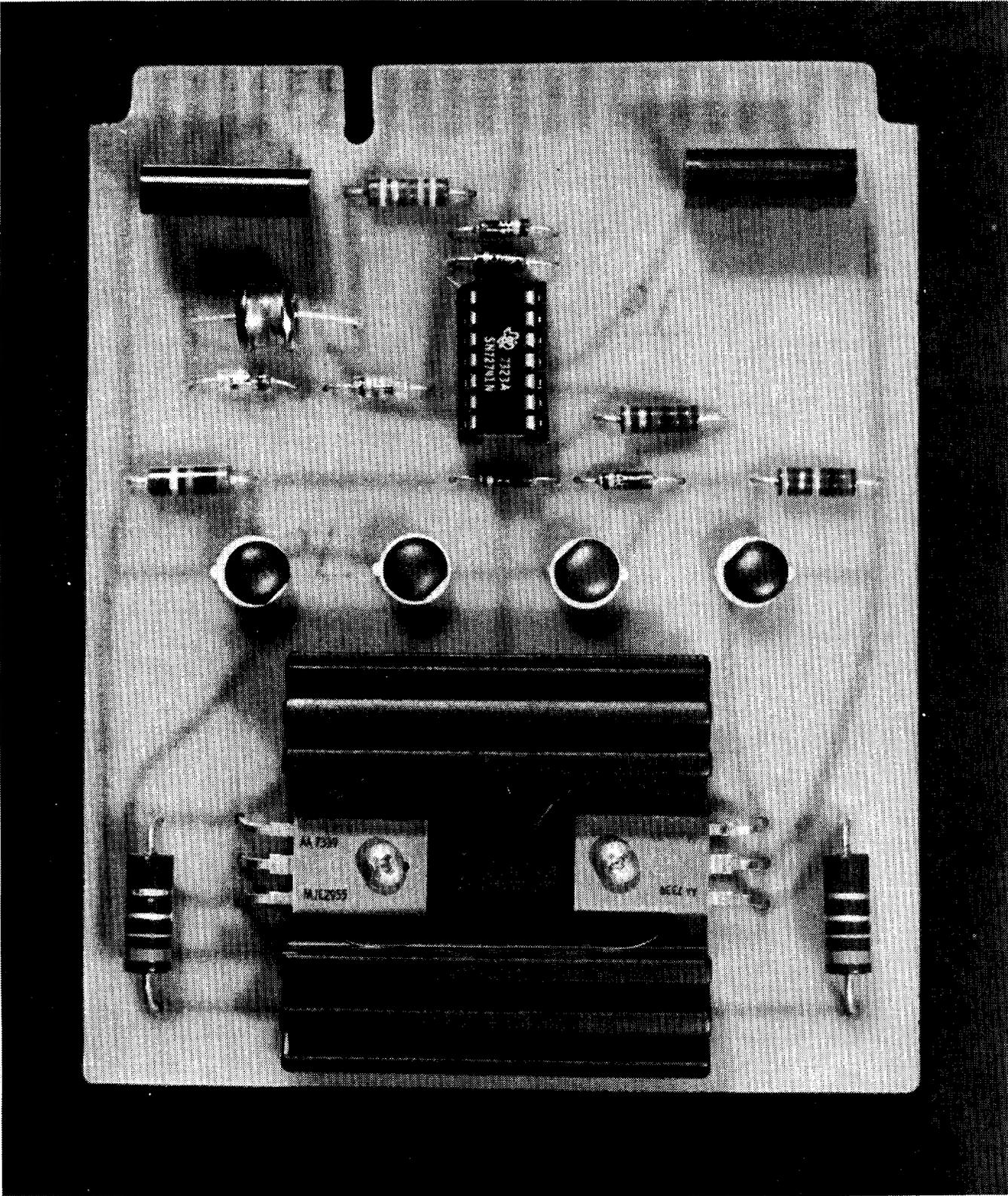
<u>REF. DESIG.</u>	<u>DESCRIPTION</u>	<u>NO REQ'D.</u>
C1, C2	Capacitor, 2000 mf. 25V dc, Sprague Transi-lytic #TL 1220, or equal	2
C3	Capacitor, .01 mf. 100V dc, Cornell-Dubilier #WMF 1S1, or equal	1
C4, C5	Capacitor, .1 mf. 50V dc, G. E. Blackhawk #75F2R5A104, or equal	6
CR1 thru CR4	Diode, Sylvania 1N485, or equal	12
CR5, CR6	Diode, Zener 1N965B, or equal	6
CR7	Rectifier, full wave, Motorola #MDA-960-2, or equal	1
DS1	Indicator Lamp, Neon, NE51	1
F1	Fuse, 3/8 amp., 3 AG.	1
IC1	Integrated circuit, Fairchild #uA741DM, or equal	3
MP1	Heat Sink, Wakefield Eng., Inc., Delta #NC-603K, or equal	3
P1, P2, P3	Plug connector, Cinch-Jones R644, 22 Pin, or equal	3
PS1, PS2	Power Supply, ±15V, 100 ma. Computer Products #PM552, or equal	2
Q1, Q2	Transistor, 2N3643, NPN Med. power, Fairchild, or equal	6
Q3	Transistor, Motorola #MJE3055, NPN Silicon Power, or equal	3
Q4, Q5	Transistor, 2N3638, PNP Medium Power, Fairchild, or equal	6
Q6	Transistor, Motorola, #MJE2955, PNP Silicon Power, or equal	3
R1	Resistor, 428.6 ohm, .1%, wirewound, 1/8w, or greater	1
R2	Resistor, 5K, 1/2w, Carbon, Ohmite, or equal	1
R3	Resistor, 12K, 1/2w, Carbon, Ohmite, or equal	1
R4	Resistor, 3K, 1/2w, Carbon, Ohmite, or equal	1
R5, R7	Resistor, 10K, 1/2w, Carbon, Ohmite, or equal	6
R6	Resistor, 220 ohm, 1/2w, Carbon, Ohmite or equal	3
R8, R9	Resistor, .56 ohms, 1w, Carbon, Ohmite, or equal	6
R10	Resistor, 4.7K, 1/2w, Carbon, Ohmite, or equal	3
S1	Switch, toggle, ON-OFF, SPDT, Cutler-Hammer #7590K4, or equal	1
S2	Switch, SPDT Momentary, Centralab #747-1463, or equal	1
S3	Switch, Single Sec. Non-shorting, 3-pole, 4-position, Mallory #32343, or equal	1
T1	Transformer, 117V ac Input, 35V ac Output, Center Tap 35V ac, Triad #F54X, or equal	1
TB1	Terminal Board, Cinch-Jones #12-142-Y, or equal	1
W1	Cord, Power Supply, 3 wire grounded, with plug, Belden #174215, Type 16-35J, 300V, 6' long, or equal	1
X1	Socket, Dialco# 52-9408-0991-241, or equal	1
X2	Fuseholder, Littlefuse Type 342001, or equal	1
	Knob, round, Dial Skirt with Pointer, Brass Insert	2
	Pads, Transistor	12
GDT	Surge Voltage Protector, Siemens #B1-C90/20	3

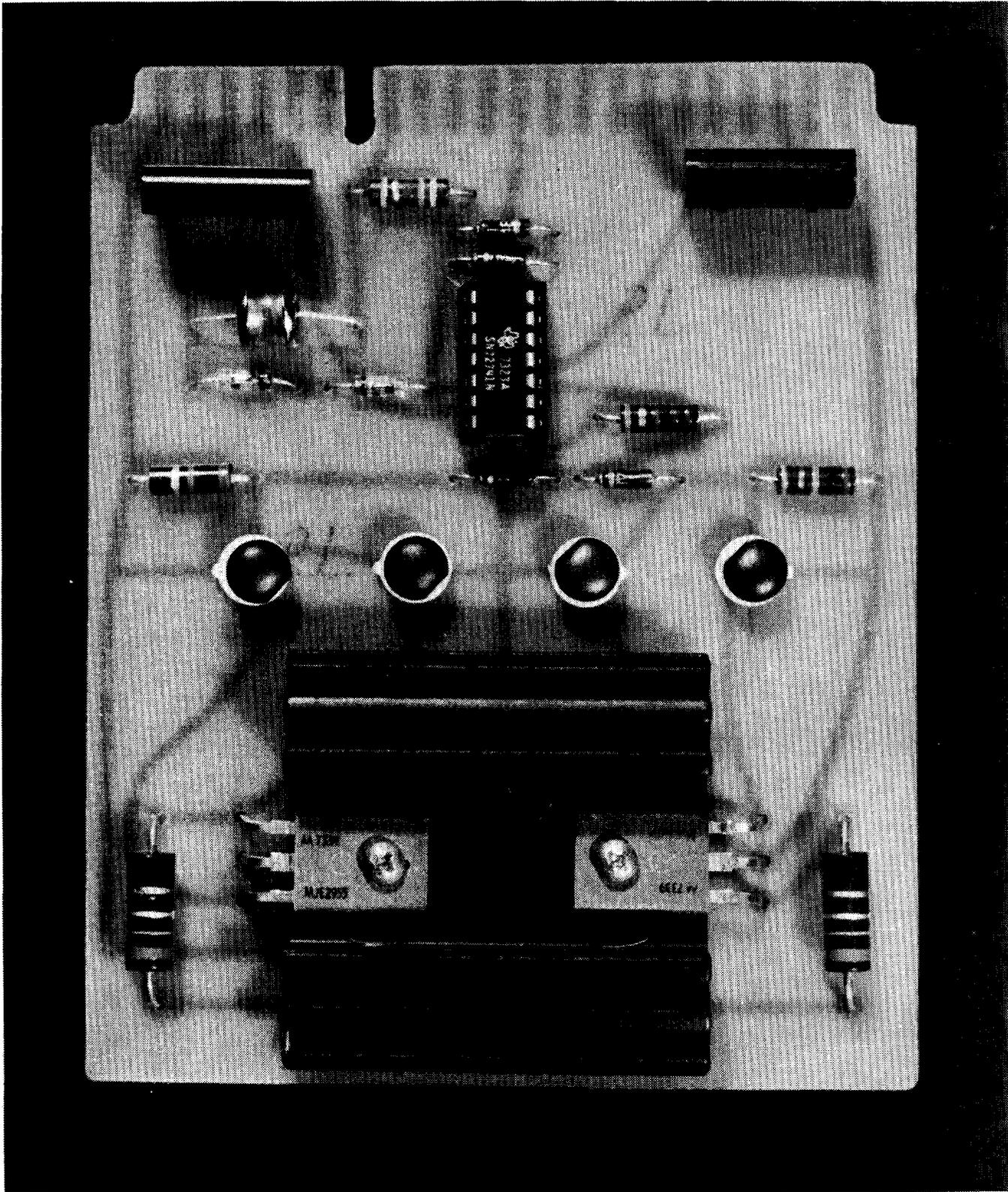
NOTE: All Resistors, unless otherwise specified, shall be 5%.

PARTS LIST for F611 WIND RETRANSMITTER

<u>REF. DESIG.</u>	<u>DESCRIPTION</u>	<u>NO. REQ'D.</u>
C1, C2	Capacitor, 2000 mf. 25V dc, Sprague Transi-lytic #TL 1220, or equal	2
C3	Capacitor, .01 mf. 100V dc, Cornell-Dubilier #WMF 1S1, or equal	1
C4, C5	Capacitor, .1 mf. 50V dc, G. E. Blackhawk #75F2R5A104, or equal	6
CR1 thru CR4	Diode, Sylvania 1N485, or equal	12
CR5, CR6	Diode, Zener 1N965B, or equal	6
CR7	Rectifier, full wave, Motorola #MDA-960-2, or equal	1
DS1	Indicator Lamp, Neon, NE51	1
F1	Fuse, 3/8 amp., 3 AG.	1
IC1	Integrated circuit, Fairchild #uA741DM, or equal	3
MP1	Heat Sink, Wakefield Eng., Inc., Delta #NC-603K, or equal	3
P1, P2, P3	Plug connector, Cinch-Jones R644, 22 Pin, or equal	3
PS1, PS2	Power Supply, ±15V, 100 ma. Computer Products #PM552, or equal	2
Q1, Q2	Transistor, 2N3643, NPN Med. power, Fairchild, or equal	6
Q3	Transistor, Motorola #MJE3055, NPN Silicon Power, or equal	3
Q4, Q5	Transistor, 2N3638, PNP Medium Power, Fairchild, or equal	6
Q6	Transistor, Motorola, #MJE2955, PNP Silicon Power, or equal	3
R1	Resistor 428.6ohm, .1%, wirewound, 1/8w, or greater	1
R2	Resistor 5K, 1/2w, Carbon, Ohmite, or equal	1
R3	Resistor 12K, 1/2w, Carbon, Ohmite, or equal	1
R4	Resistor, 3K, 1/2w, Carbon, Ohmite, or equal	1
R5, R7	Resistor, 10K, 1/2w, Carbon, Ohmite, or equal	6
R6	Resistor, 220ohm, 1/2w, Carbon, Ohmite, or equal	3
R8, R9	Resistor, .56 ohms, 1w, Carbon, Ohmite, or equal	6
R10	Resistor, 4.7K, 1/2w, Carbon, Ohmite, or equal	3
S1	Switch, toggle, ON-OFF, SPDT, Cutler-Hammer #759OK4, or equal	1
S2	Switch, SPDT Momentary, Centralab #747-1463, or equal	1
S3	Switch, Single Sec. Non-shorting 3-pole, 4-position, Mallory #32343, or equal	1
T1	Transformer, 117V ac Input, 35V ac Output, Center Tap 35V ac, Triad #F54X, or equal	1
TB1	Terminal Board, Cinch-Jones #12-142-Y, or equal	1
W1	Cord, Power Supply, 3 wire grounded, with plug, Belden #174215, Type 16-35J, 300V, 6' long, or equal	1
X1	Socket, Dialco #52-9408-0991-241, or equal	1
X2	Fuseholder, Littlefuse Type 342001, or equal	1
	Knob, round, Dial Skirt with Pointer, Brass Insert	2
	Pads, Transistor	12
GDT	Surge Voltage Protector, Siemens #B1-C90/20	3

NOTE: All Resistor+ unless otherwise specified, shall be 5%.





WIND EQUIPMENT MAINTENANCE NOTES  
(For Electronics Technicians)20. Magnetic/Topographic Orientation of Wind Direction Transmitters.

A device for orienting the wind direction transmitter to magnetic bearings and topographic/landmarks or reference points has been devised. The device will be issued to AES(s) Headquarters and are to supplement the existing F860 orientation device, It will provide a means of checking the orientation of the wind direction transmitter other than by the Solar Noon method, but is not intended to be a replacement for this method. The procedure established by this maintenance note will be used where applicable, and when cloud cover exists during the solar noon period at times when the wind calibration is performed.

The equipment utilized in this orientation procedure consists of two parts. For the magnetic bearing, a high accuracy Suunto KB14 Compass, or equal, is provided. This compass is graduated from 0° to 360° in one-half degree increments. Readings can be estimated easily to within one-quarter of a degree. The scale is visible both from a one and five-eighths-inch port in the top of the case and a seven-sixteenths inch port with magnifying lens, slit aperture and hairline at the rear edge of the case. A neck strap is provided and should be used, to prevent loss or damage to the compass while being used. For the topographical landmarks or reference points, a National Weather Service Topographical Orientation Device, Model 425 has been designed to mount on the F860-1 orientation mount. When properly affixed, the scribed line on the F860-1 orientation mount will correspond to the etched 180° mark on the Model 425 device. When in this position, and the plastic window in the rotating arm is placed with the hairline on the 0° mark, a sighting through the slotted upright to the thread in the other upright will correspond to the scribed North Line on both the F860-1 orientation mount and the wind direction transmitter.

Because of the tolerances of the pins on the F860-1, it may be necessary to slightly enlarge the keyed holes in the Model 425. The holding thumbscrew on the F860-1 orientation mount should be replaced with the thinner nut provided.

To properly perform magnetic orientation of the wind direction transmitters, it is necessary to obtain the magnetic variation at that station from True North. The most available source of the current magnetic variations is the Sectional Aeronautical Chart for your area. These charts may be obtained from any FAA Flight Service Station.

Magnetic bearings from the wind direction transmitter to selected topographical points or landmarks are to be made as follows:

Select topographical landmarks which are visible when you stand with your back to the wind tower and look out along the axis of the wind direction transmitter support crossbar. Should a satisfactory landmark not be readily available, an artificial topographical point is to be utilized, using a four-foot pipe or stake placed at least 100 yards from the wind tower. Drive these artificial topographical points two feet into the ground. Paint the remaining portion a bright orange and label: "National Weather Service Topographical Orientation Point. XXX.X Degrees. DO NOT REMOVE." The XXX.X degrees will be the true bearing to that point when established.

When three landmarks or points have been selected or created, stand about 100 feet from the wind tower and align your position so that the wind direction transmitter is in a line between you and one of the selected landmarks or points. Holding the compass in your hand look into the rear viewport and adjust the attitude of the compass so that the hairline is parallel to the graduations on the disk. Center the disk vertically in the viewport. Keeping both eyes open and the compass level, it is possible to visually superimpose the hairline on the selected landmark or point. Make a final adjustment by moving to one side or the other, so the hairline is aligned with both the wind direction transmitter and the topographical landmark or point selected. Hold the compass level and allow it to stabilize. When the disk is steady and the hairline is superimposed on the selected point, read the bearing as accurately as possible and record the reading. Repeat this procedure for the remaining selected landmarks or points.

The bearings taken by the procedure described are magnet bearings. To convert these bearings to True bearings proceed as follows:

if the magnetic variation, obtained from the Section Aeronautical Chart is Easterly, add the magnetic variation to the magnetic bearings taken in determining the landmarks or points. If your magnetic variation is Westerly, subtract the magnetic variation from the magnetic bearings.

More detailed information on magnetic to true bearing conversion is available in the instructions furnished with the KB14 Suunto Compass or the Federal Meteorological Handbook No. 1, Section A10-10, Paragraph 3.7.

Having calculated and recorded the true bearings from the wind direction transmitter to the selected topographical landmarks or points, you are now ready to orientate the transmitter adapter to True North,

Take the topographical orientation device, Model 425, necessary tools, and ascend the wind tower. Remove the wind direction transmitter and attach the Model 425 device in its place. Be sure the scribed lines on both the F860-1 orientation mount and the transmitter adapter are aligned and the holding screws are tight. Raise the uprights of the Model 425 device to full vertical position and set the hairline on the rotating arm's plastic window to the true bearing calculated for one of the selected

landmarks or points. The knurled knob in the center of the rotating arm controls the drag on the arm and can be used to lock the arm in position. Sight through the slotted upright. If the thread in the other upright bisects the selected landmark or point for the true bearing no other adjustment is necessary. Check the other landmarks or points. If two of the three true bearings match exactly and the other within a degree, replace the Model 425 device with the wind direction transmitter. Check the alignment of the scribe marks and tighten the holding screws. The wind direction transmitter is properly orientated,

Should the thread of the slotted upright on the Model 425 device not bisect the landmark or point, loosen the holding screws of the transmitter adapter. Rotate the transmitter adapter on the support arm until the thread bisects the landmark or point. Tighten the holding screws on the transmitter adapter. Check the true bearings to the other landmarks or points, readjusting the transmitter adapter position if necessary until the criteria in the procedure is met..

If it is not possible to get all the landmarks or points to agree within one degree, select one or more different landmarks or points and recalculate the true bearings. Repeat the orientation procedure until the criteria is satisfied. Wind towers with wobbly support arms and wind masts with loose guy-wires will cause the bearing readings to be in error. Taking bearings too close to structures or buildings which have interfering magnetic fields is another source of error.

The true bearings are to be recorded on the Wind System Calibration Sheet and the Station Visibility Chart. The selected landmarks or points are to be recorded on the Station Visibility Chart. For stations without documentation, a current copy of the calibration with recorded landmarks and true bearings is to be attached to the back of the Master Wind Panel.



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

Date: March 4, 1975

Reply to  
Attn of: W514

Subject: Transmittal Memorandum for Engineering Handbook No. 8, Issuance 75-1

To: All Regional Headquarters, Area Electronic Supervisors, and Electronics Technicians

1. Material Transmitted:

Engineering Handbook No. 8 -Surface Equipment, Section 2.2; Wind Equipment Maintenance Note No. 21, Constant Voltage Transformer Used in Conjunction with the F611 Wind Retransmitter.

2. Summary:

Maintenance Note No. 21 advises technicians about using a constant voltage transformer to power the F611 Wind Retransmitter.

3. Effect on Other Instructions:

None.

  
J.M. St. Clair  
Chief, Engineering Division



EHB-8  
Issuance 75- 1

WIND EQUIPMENT MAINTENANCE NOTES  
(For Electronics Technicians)

21. Constant Voltage Transformer Used in Conjunction with the F611 Wind Retransmitter.

Several stations have reported that large voltage spikes appear on the power line of the F611 wind retransmitters. These voltage spikes are originating from external sources and will sometimes cause a malfunction in the retransmitters. It has been found that powering the retransmitters through a constant voltage transformer will eliminate most of the spikes and reduce the malfunctions. The constant voltage transformers that were or are used with the tube-type RBC amplifier are available from Central Logistics Supply Center, under the following Weather Service S/N K210-T203 (NSN 5950-00-996-I 796).

The solid state RBC amplifiers do not require the use of the constant voltage transformer on their power input as do the tube-type amplifiers. Stations that now have the solid state RBC amplifiers can remove the constant voltage transformers from the RBC detectors and utilize them in conjunction with the F611 wind retransmitter.



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

Date : March 6, 1975

Reply to Attn. of: W514

To : All Regional Headquarters, Area Electronic Supervisors, and Electronics Technicians

*J. M. St. Clair*  
for J. M. St. Clair  
Chief, Engineering Division

Subject: Transmittal Memorandum for Engineering Handbook No. 8, Issuance 75-3

1. Material Transmitted:

Engineering Handbook No. 8 - Surface Equipment, Section 2.2; Wind Equipment Maintenance Note No. 22, Corrections to the F611 Wind Retransmitter Instruction Manual.

2. Summary:

Maintenance Note No. 22 advises technicians about corrections to the F611 Wind Retransmitter Instruction Manual No. 8-213 and Maintenance Notes Nos. 18 and 19.

3. Effect on Other Instructions:

This maintenance note reflects changes to be made in the F611 Solid State Wind Retransmitter Manual, EHB8-213, and Maintenance Notes Nos. 18 and 19.



WIND EQUIPMENT MAINTENANCE NOTES  
(For Electronics Technicians)

22. Corrections to the F611 Wind Retransmitter Instruction Manual.

It has been brought to our attention that a few discrepancies exist in the F611 Wind Retransmitter Instruction Manual, No. 8-213, and associated Maintenance Notes.

Schematics pertaining to the F611 wind retransmitter are in error on terminal strip TB-1. The terminal strip is marked A, B, C, F, G, +, -, H, J, K, L, M. This should be revised on all schematics in the Manual and Maintenance Note No. 18, to be A, B, C, F, G, -, +, H, J, K, L, M.

The Parts List attached to Maintenance Note No, 19 states that IC1 replacement is a Fairchild #UA741DM, or equal. This should be corrected to read the same as listed on Page 1, of the Maintenance Note, namely MC1741CL.

Maintenance Note No. 19 states that a . . . ".01 to a .05 ufd. capacitor placed from each input to the common terminal will sometimes correct the situation". To clarify this statement, TB1-C is identified as the common terminal.

Page 2 of the F611 Wind Retransmitter Instruction Manual EHB8-213, contains a paragraph entitled "Direction Circuit." The last sentence of this paragraph should be revised to read: "It should be noted that E lead of the transmitter and the negative side of the 12V dc power supply are not grounded until connected into the system".

obsolete



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

Date: March 17, 1975

Reply to  
Attn of: W514

Subject: Transmittal Memorandum for Engineering Handbook No. 8, Issuance 75- 4

To: All Regional Headquarters, Area Electronic Supervisors, and Electronics Technicians

1. Material Transmitted:

Engineering Handbook No. 8 - Surface Equipment, Section 2.2; Wind Equipment Maintenance Note No. 23, F611 Retransmitter Chassis Ground.

2. Summary:

Maintenance Note No. 23 advises technicians about the removal of the chassis ground terminal connection on the retransmitter chassis.

3. Effect on Other Instructions:

None.

  
J. M. St. Clair  
Chief, Engineering Division



WIND EQUIPMENT MAINTENANCE NOTE  
(For Electronics Technicians)

23. F611 Retransmitter Chassis Ground.

Several stations have had ground loop problems in the F611 Solid State Wind Retransmitters. These problems have resulted in erratic and erroneous wind indications. They have especially been predominate where two or more retransmitters are being utilized in a system.

Electronics technicians experiencing these grounding problems should float the chassis ground. The physical location of the ground terminal is on the underside of the chassis between the OFF-ON Switch, S1, and the Power ON Indicator, XDSI. Unsolder the two black wires from the ground terminal lug but be sure these two wires stay soldered together. Insulate the two black wires by taping or using a piece of sleeving and let them float. The green wire is to remain soldered to the ground lug.



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Weather Service

March 16, 1977

W5141

TO : All Regional Headquarters, Electronic Program Officers, and  
Electronics Technicians

FROM : J.M. St. Clair *J.M. St. Clair*  
Chief, Engineering Division

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8,  
Issuance 77-3

1. Material Transmitted:

Engineering Handbook No, 8 - Surface Equipment, Maintenance Note  
No, 24, Toroid Resistance Check of the F420C Wind Direction Trans-  
mitter. *Section 2.2*

2. Summary:

Maintenance Note No. 24 advises electronics technicians of the change  
in resistance values of the Wind Transmitter Toroid resistance coil.

3. Effect on Other Instructions:

Wind Maintenance Schedule dated April 8, 1976, Page 6 Section 11  
should be changed to reflect this new resistance requirement.

EHB-8  
Issuance 77- 3



WIND EQUIPMENT MAINTENANCE NOTES  
(For Electronics Technicians)

24. Toroid Resistance Check of the F420C Wind Direction Transmitter.

We have been advised that a number of the F420C wind direction transmitters have been returned to the Reconditioning Center at Kansas City, MO., from field stations, due to resistance values between A, B and C leads being out of tolerance as much as 9 ohms from the specified value of 50 ohms  $\pm 5$  ohms.

The present manufacturer has been forced to use a different type wire in constructing the toroid resistance coil. This, in effect, has resulted in a change of the resistance specification requirement, between AB, AC and BC leads, from the original 50  $\pm 5$  ohms to the present 52.5  $\pm 7.5$  ohms. In the future all reference will be made to 52.5  $\pm 7.5$  ohms, when making this resistance check.



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE

April 7, 1977

**W514**

TO: All Regional Headquarters, Electronic Program Officers, and  
Electronics Technicians

FROM: J. M. St. Clair *J. M. St. Clair*  
Chief, Engineering Division

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8,  
Issuance 77-4

1. Material Transmitted:

Engineering Handbook No. 8 - Surface Equipment, Section 2.2;  
Wind Equipment Maintenance Note No. 25, F455 Wind Direction  
PC Board.

2. Summary:

Maintenance Note No. 25 advises electronics technicians of the  
circuit change on the DARDC Wind Direction Card.

3. Effect on Other Instructions:

None.

EHB-8  
Issuance 77-4



WIND EQUIPMENT MAINTENANCE NOTES  
(For Electronics Technicians)

25. F455 Wind Direction Card Modification.

There have been several instances of readout errors directly related to the DARDC wind direction card. Readings have deviated as much as 60° from the actual orientation value.

In analyzing this problem it has been noted that the summing network of U11, U12, and the overflow circuit of U13 have indicated an occasional instability in the threshold levels. This, in effect, resulted in counting errors.

A modification has been devised to correct for this instability problem (refer to attached schematic), and should be noted as follows:

- 1) Capacitor C6 (.01 mf) has been removed.
- 2) Resistor R11(1.5M, 1/4W, 5%) has been added and connected from U12-12 to U13-3.
- 3) Diode CR4 (1N4148) has been added and connected from U13-3 to U13-4.
- 4) Cut land area at U13-14.

We request that those electronics technicians directly responsible for the maintenance of DARDC Wind Systems, requisition a modified wind direction card (F455-6) from CLSC stock and return their unmodified card to QC&IRB for credit.

Attachments: 1 ea. Figure 1  
1 ea. Figure 2



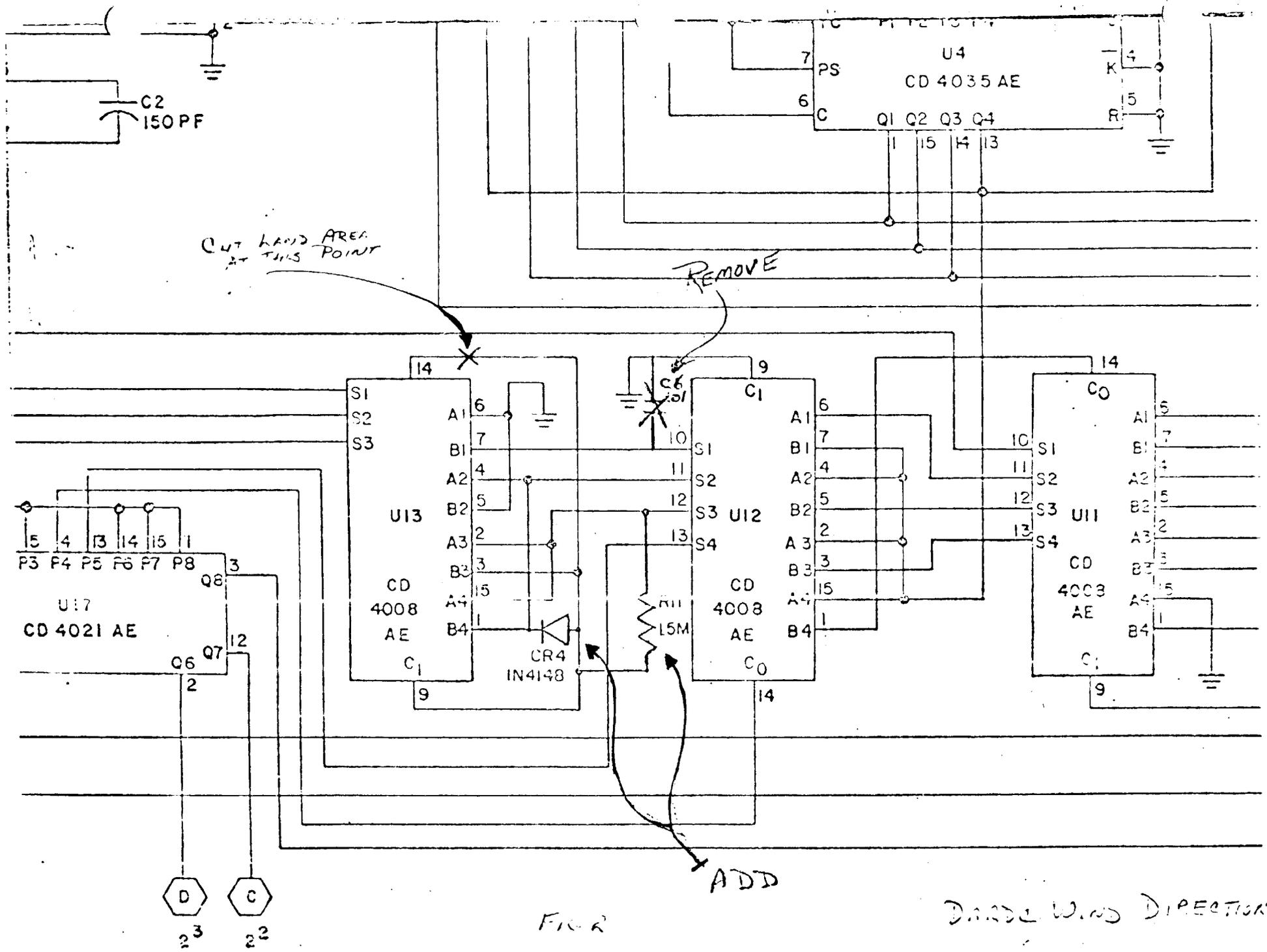


FIG 2

DANGER WIND DIRECTION



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
**NATIONAL WEATHER SERVICE**  
Silver Spring, Md. 20910

4 OCT 1978

OAW5141/JM

TO: All NWS Regional Headquarters, Area Electronics Supervisors,  
and Electronics Technicians,  
FROM: OAW51 - J. M. St. Clair. *J. M. St. Clair*  
SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8,  
Issuance 78-12

1. Material Transmitted:

Engineering Handbook No. 8 Surface Equipment, Section 2.2; Wind  
Equipment Maintenance Note No. 28, Revisions for F611 Solid State  
Wind Retransmitter Manual No. 8-213.

2. Summary:

Maintenance Note No. 28, informs the EI Techs of the revised pages for the  
Wind Retransmitter Manual No. 8-213.

3. Effect on Other Instructions:

Replacement of pages for Manual No. 8-213.

EHB-8  
Issuance 78-12



Engineering Division  
W514

September 20, 1978

WIND EQUIPMENT MAINTENANCE NOTES  
(For Electronics Technicians)

28. Revisions for F611 Solid State Wind Retransmitter Manual No. 8 - 213

Modification No. 1A for the F611 Wind Retransmitter necessitates revision of Manual No. 8-213 for this equipment. Revised pages should be placed within the Manual and the old pages discarded.



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

## INSTALLATION AND OPERATION

OF

### F611, SOLID STATE TYPE WIND SPEED AND DIRECTION RETRANSMITTER

General - The F611 solid state retransmitter (Figure 1) is an electronic device designed to be used with the F420 series wind equipment. It permits operation of F420 equipment over lines of greater length than is possible in a standard direct-line, or with the magnetic amplifier type installation. Up to nine wind speed and direction indicators can be driven by one F611 retransmitter. The unit is designed to operate from a 105-125 volt, 60 hertz power source. If more than one retransmitter is used with the same system, they should be connected in parallel.

#### DESCRIPTION:

The F611 Solid State Wind Retransmitter is mounted on a 19" X 8-3/4" panel designed for installation in a standard equipment cabinet. It has three sections consisting of a power supply, wind speed amplifier and wind direction amplifier.

The power supply section consists of two dual regulated  $\pm 15V$  dc, 100 ma modular supplies and a  $\pm 25V$  dc discrete component supply.

There are three plug-in printed circuit boards (Weather Service Stock Number F611-A). One board is used in the wind speed section and two boards are used in the wind direction section. All three of the printed circuit boards are identical and interchangeable.

#### INSTALLATION :

The retransmitter should be located so that the master panel can be observed when wind speed and direction checks are being performed on the retransmitter. Five signal lines are needed to connect the retransmitter to the field wind installation - two lines for the speed and three for the direction. Figure 3 is the interconnecting wiring diagram for an F420-C wind system using an F611 retransmitter.

#### Speed Circuit:

The two lines from the wind speed transmitter should be terminated at the field site into a 428.6 ohm, 0.1% resistor in parallel with the transmitter output. The "A" and "B" leads from the transmitter site should be connected to the "F" and "G" leads, respectively, of the transmitter. The output of the wind speed section of the retransmitter will work into a wind panel load from 428.6 to 1500 ohms. Any combination of F420 type wind speed indicators connected in series, parallel, or series parallel, which have a load value



within this range may be used. Load connections should be to terminals "L" (positive) and "M" (common) of the retransmitter.

#### Direction Circuit:

A 12V dc power supply should be used at the field site to feed the "D" and "E" leads of the transmitter ("D" positive and "E" negative). Power supplies, Weather Service Stock Number F603, are available from the CLSC, Kansas City, Mo. The "A", "B", and "C" lines from the transmitter connect to correspondingly labeled terminals on the retransmitter. The output of the wind direction section of the retransmitter will drive up to nine indicators. The "A", "B", and "C" leads from the indicators connect to output terminals "H", "J", and "K", respectively, on the retransmitter. It should be noted that "E" load of the transmitter and the negative side of the 12V dc power supply are not grounded until connected into the system.

#### Theory of Operation:

Modules A, B, and C are identical amplifiers that can be used for either wind direction, or wind speed retransmitting.

The amplifier module is divided into two sections - a preamplifier, and a complementary power amplifier. The input section (preamplifier) is an operational-amplifier used in the follower-amplifier configuration. The follower circuit has essentially unity gain because the output is fed directly back to the negative input as degenerative feedback. The follower has an input impedance that is very high (greater than one megohm) therefore, ideal for isolating from other circuits. When the module is used for wind speed, only the preamplifier section is used. This is accomplished by not applying power to the power amplifier section ( $\pm 25V$  dc) of the connectors for module C.

When the module is used for wind direction retransmitting (positions A or B), both the preamplifier section and power amplifier section are utilized. The power amplifier section is needed in the wind direction modules because of the greater current requirement caused by the output loading of the wind direction meter(s).

#### System Check

##### Wind Speed:

The wind speed test switch S2 is connected as an OFF/ON switch. In the TEST (ON) position it supplies +2.156V dc to the input of printed circuit board C. In this position the wind speed meter should indicate 46.8 knots. The formula for deriving speed in knots using S2 is as follows:

$$\text{Speed (knots)} = \frac{15 (R4)}{.04605 (R3+R4+R11)} - 46.8 \text{ knots}$$

where 100 knots is equal to 4.605 volts

EHB-8

Issuance 78-12

However, due to line voltage variations, manufacturing processes of component parts and junction resistivity, this indication may vary. The acceptable outer limits can be determined by computing the tolerance of the components in the F611. To do this, we need to know the worst cases in both directions of the 46.8 knot norm. The F611 being manufactured at present uses 5% tolerance resistors, Older models may have used 10% tolerance resistors. All ± 15-volt regulated power supplies have a 2% tolerance. For our example, we use current production model tolerances.

We then increase or decrease the regulated 15-volt supply by .3 volts and increase or decrease the resistors by 5%.

$$\frac{14.7 (.95) (R4)}{.95 (R4) + (R3 + R11) (1.05)} = 1.938V \text{ or } 42.097 \text{ knots}$$

$$\frac{15.3 (1.05) (R4)}{1.05 (R4 + (R3 + R11) (.95))} = 2.395 \text{ or } 52.005 \text{ knots}$$

Therefore, a wind speed indication on the master meter of 42.1 knots to 52.0 knots is within the acceptable limits of the TEST position of the F611. Upon Installation the reading should be noted and values obtained at a later date varying from the initial indication should be investigated.

The wind speed circuit board uses only the preamplifier section. To check the amplifier section, the board can be inserted into either one of the Wind Direction slots and checked as a winddirection board.

Wind Direction:

The positioning of S3 determines the inputs to be printed circuit boards A and B. There are two fixed reference voltages (+2.16V and +2.63V) available from the resistive voltage divider network. The voltages are applied to the boards and provide check points of 70, 190, and 310 degrees. An indication within plus or minus 5 degrees from the setting of switch S3 is acceptable. Values outside this tolerance should be investigated. The following chart gives the theoretical voltages expected when checking the wind direction circuit with switch S3. Refer to Figure 1. Voltages are referenced to ground.

<u>Switch</u>	<u>A</u>	<u>B</u>	<u>C</u>
70°	2.156v	2.632V	0
90°	0	2.156V	2.632V
310°	2.632V	0	2.156V

MAINTENANCE:

The retransmitter is considered to be an on-station repairable item and should be treated as such. Spare boards and power supplies are available from the CLSC and most of the other components are commercial grade which should be obtained locally. Refer to Parts List in Appendix and NWS Engineering Handbook No, 1.

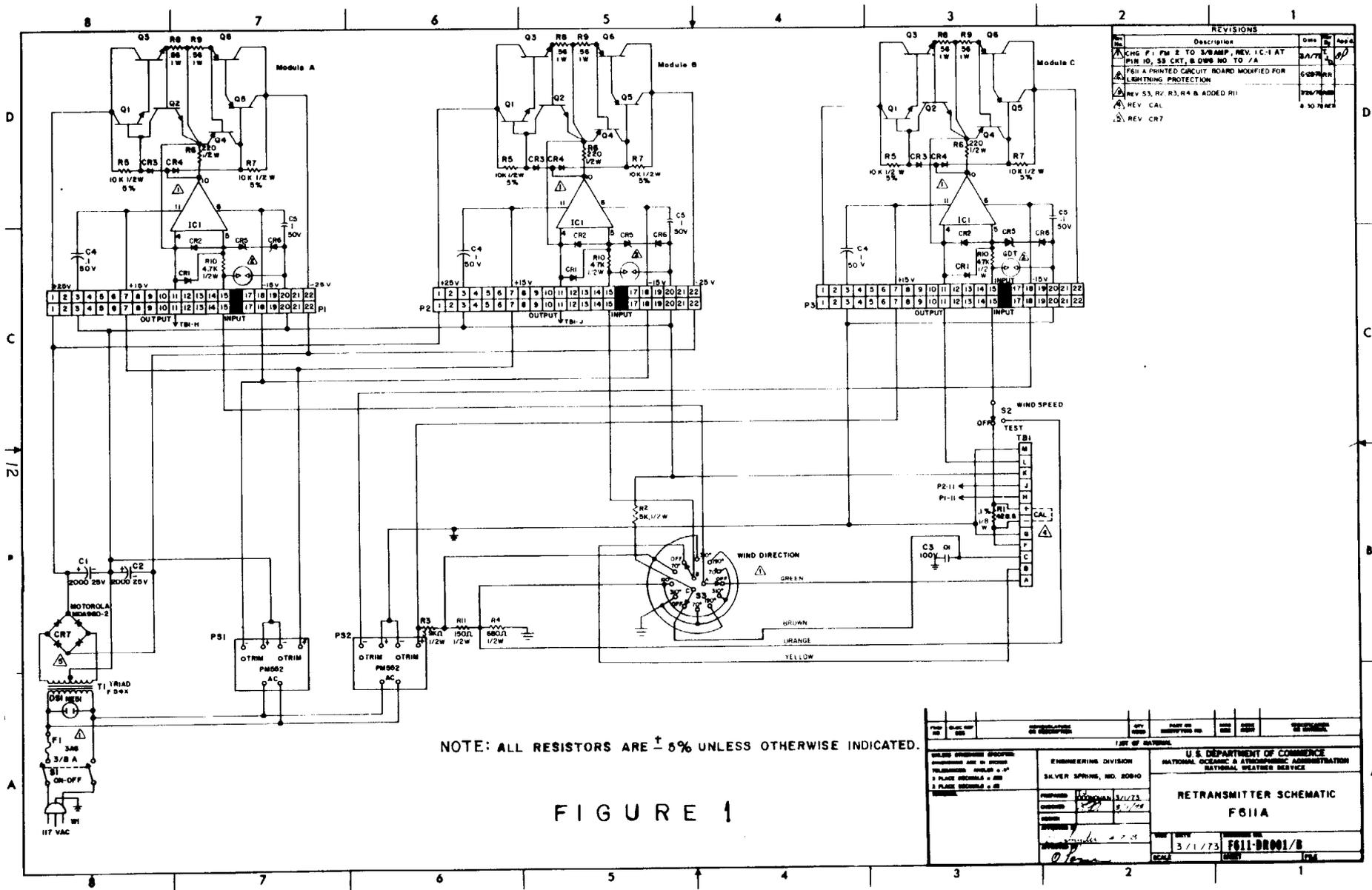
EHB-8

Issuance 78- 12

PARTS LIST for F611 WIND RETRANSMITTER

<u>REF. DESIG.</u>	<u>DESCRIPTION</u>	<u>NO REQ'D</u>
C1, C2	Capacitor, 2000 mf. 25V dc, Sprague Transi-lytic #TL 1220, or equal	2
C3	Capacitor, .01 mf. 100V dc, Cornell-Dubilier WMF 1S1, or equal	1
C4, C5	Capacitor, .1 mf. 50V dc, G .E. Blackhawk #75F2R5A104, or equal	6
CR1 thru CR4	Diode, Sylvania 1N485, or equal	12
CR5, CR6	Diode, Zener 1N965B, or equal	6
CR7	Rectifier, full wave, Motorola #MDA-960-2, or equal	1
DS1	Indicator Lamp, Neon, NE51	1
F1	Fuse, 3/8 amp., 3 AG	1
1CI	Integrated circuit, MC1741CL or equal	3
MP1	Heat Sink, Wakefield Eng., Inc., Delta #NC-603K, or equal	3
P1, P2, P3	Plug, connector, Cinch-Jones R644, 22 Pin, or equal	3
PSI, PS2	Power Supply, $\pm$ 15V, 100 ma. Computer Products #PM552, or equal	2
Q1, Q2	Transistor, 2N3643, NPN Med. power, Fairchild, or equal	6
Q3	Transistor, Motorola #MJE3055, NPN Silicon Power, or equal	3
Q4, Q5	Transistor, 2N3638, PNP Medium Power, Fairchild, or equal	6
Q6	Transistor, Motorola, #MJE2955, PNP Silicon Power, or equal	3
R1	Resistor, 428.6 ohm, .1%, wirewound, 1/8w, or greater	1
R2	Resistor, 5K, 1/2w, Carbon, Ohmite, or equal	1
R3	Resistor, 3.9K, 1/2w, Carbon, Ohmite, or equal	1
R4	Resistor, 680 Ohm, 1/2w, Carbon, Ohmite, or equal	1
R5, R7	Resistor, 10K, 1/2w, Carbon, Ohmite, or equal	6
R6	Resistor, 220 ohm, 1/2w, Carbon, Ohmite, or equal	3
R8, R9	Resistor, .56 ohms, 1w, Carbon, Ohmite, or equal	6
R10	Resistor, 4.7K, 1/2w, Carbon, Ohmite, or equal	3
R11	Resistor, 150 ohms, 1/2w, Carbon, Ohmite or equal	1
S1	Switch, toggle, ON-OFF, SPDT, Cutler-Hammer #7590K4, or equal	1
S2	Switch, SPDT, Momentary, Centralab #747-1463, or equal	1
S3	Switch, Single Sec. Nonshorting, 3-pole, 4-position, Mallory #32343, or equal	1
T1	Transformer, 117V ac Input, 35V ac Output, Center Tap 35V ac, Triad #F54X, or equal	1
TB1	Terminal Board, Cinch-Jones #12-142-Y, or equal	1
W1	Cord, Power Supply, 3 wire grounded, with plug, Belden #174 215, Type 16-35J, 300V, 6' long or equal	1
X1	Socket, Dialco #52-9408-0991-241, or equal	1
X2	Fuseholder, Littlefuse Type 342001, or equal	1
	Knob, round, Dial Skirt with Pointer Brass Insert	2
GDT	Surge Voltage Protector, Siemens #B1-C90/20	3
	Pads, Transistor	12

NOTE: All Resistors, unless otherwise specified, shall be 5% tolemce.



REVISIONS			
No.	Description	Date	App'd.
1	CHG P1 FM 2 TO 3/8AMP, REV. 1C-1 AT PIN 10, 53 CRT, & DWS NO TO /A	3/2/73	[Signature]
2	FSII A PRINTED CIRCUIT BOARD MODIFIED FOR LIGHTNING PROTECTION	5/28/73	[Signature]
3	REV S3, R3, R4 & ADDED R11	6/30/73	[Signature]
4	REV CAL		
5	REV CR7		

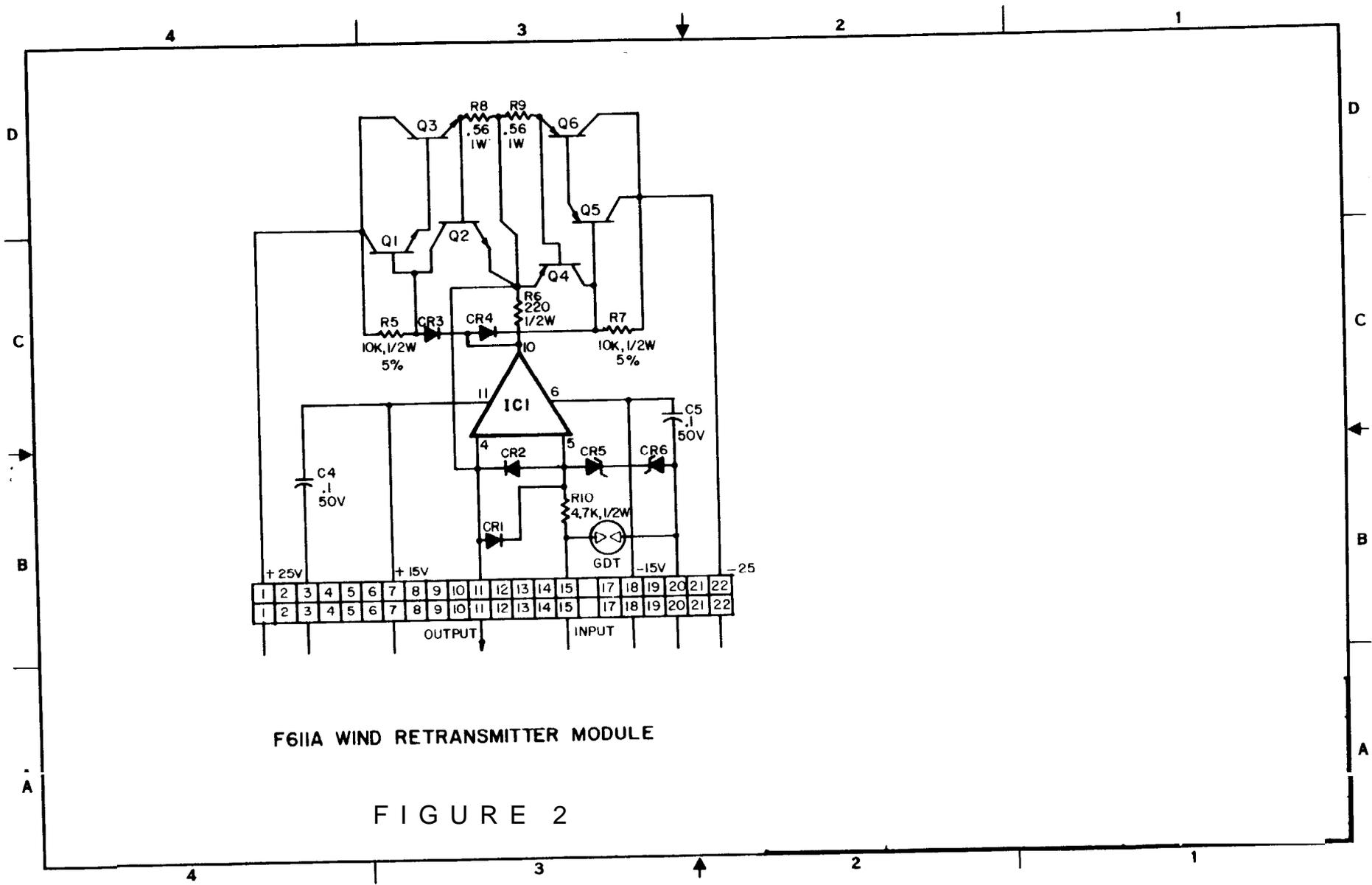
NOTE: ALL RESISTORS ARE  $\pm 5\%$  UNLESS OTHERWISE INDICATED.

FIGURE 1

FORM NO.	REV.	DATE	BY	CHKD.	APP'D.	DESCRIPTION
100-100000-01	1	3/1/73	[Signature]	[Signature]	[Signature]	RETRANSMITTER SCHEMATIC FSIIA

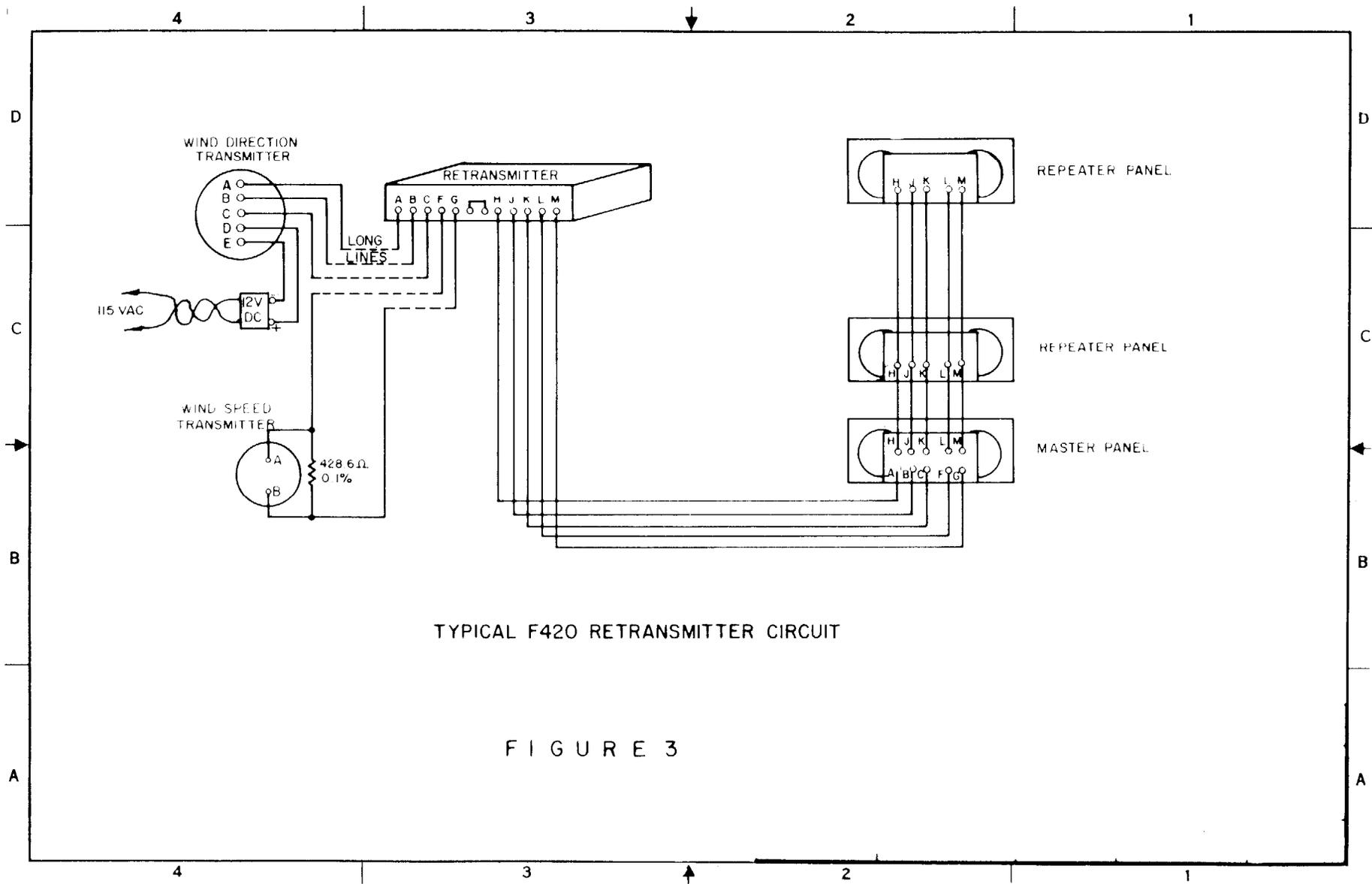
  

LIST OF MATERIALS		U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE	
ENGINEERING DIVISION SILVER SPRING, MD. 20910	DESIGNED BY: [Signature]	DATE: 3/1/73	REVISED BY: [Signature]
APPROVED BY: [Signature]	DATE: 3/1/73	TESTED BY: [Signature]	DATE: 3/1/73
RETRANSMITTER SCHEMATIC FSIIA		DATE: 3/1/73	BY: [Signature]



F611A WIND RETRANSMITTER MODULE

FIGURE 2





U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

March 23, 1979

OA/W514

TO: All NWS Regional Headquarters, Area Electronic Supervisors,  
and Electronics Technicians (Mail Distribution EHB-8)

FROM: OA/W51- J.M. St. Clair  
*J.M. St. Clair*

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8,  
Issuance 79- 3

1. Material Transmitted:

Engineering Handbook No. 8 - Surface Equipment, Section 2.2; Wind  
Equipment Maintenance Note No. 30, Optional Method of Calibrating  
Wind Space Meter, Diagram of Optional Method.

2. Summary:

Maintenance Note No. 29 provides incorrect information on the Optional  
Method of Calibrating the Wind Speed Meter using a Data Precision 245  
Meter and Wind Speed Meter Calibrator F855.

3. Effects on Other Instructions:

1. Remove and discard Attachment No. 5 in Wind Maintenance Schedule  
dated December 5, 1978. Replace with Attachment A of this Trans-  
mittal.
2. Remove and discard Attachment in Maintenance Note No. 29.

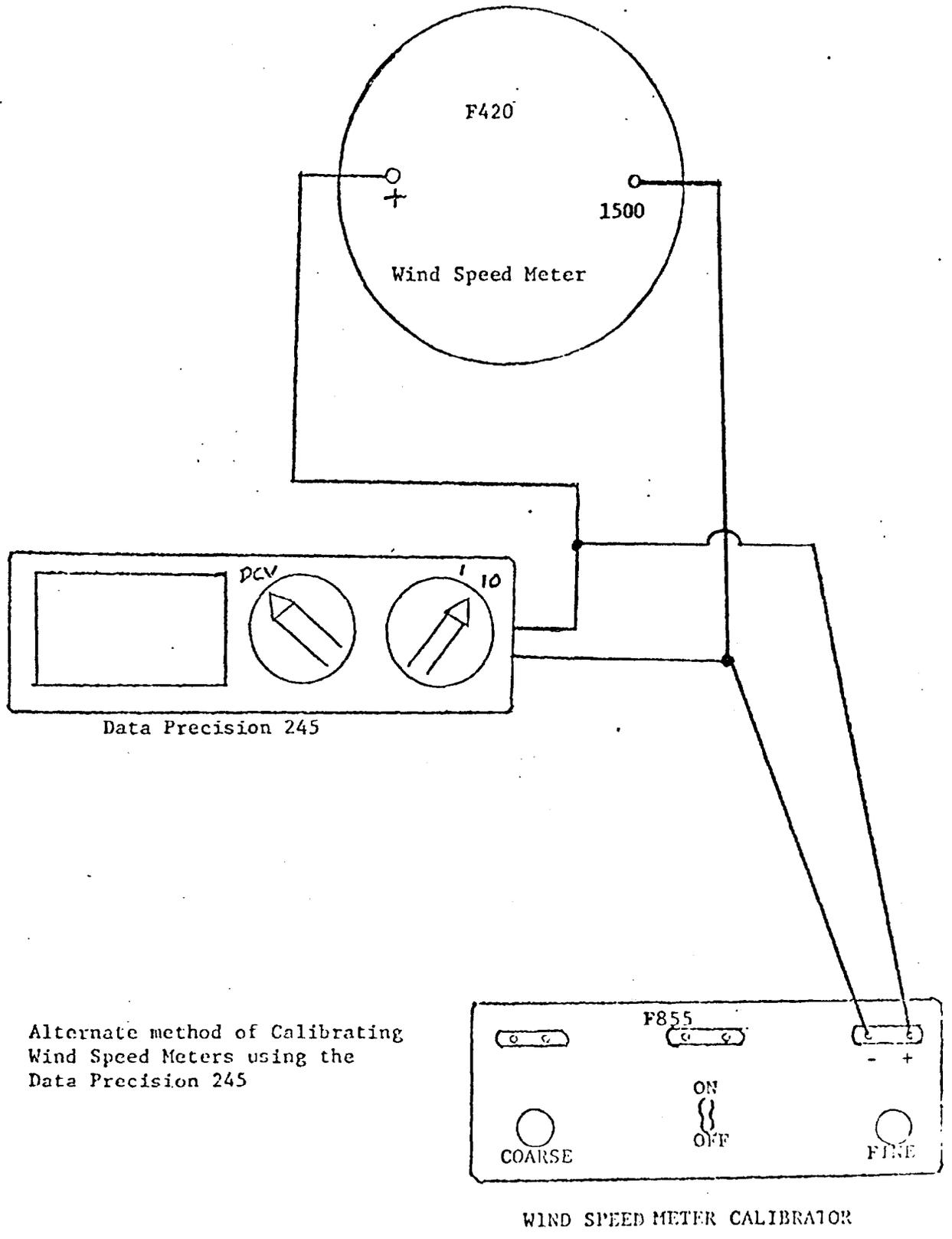
EHB-8  
Issuance 79-3



WIND EQUIPMENT MAINTENANCE NOTE No. 30  
(For Electronics Technicians)30. Optional Method of Calibrating Wind Speed Meter.

An extremely precise method is available with present test equipment for calibrating the Wind Speed Meter. Using the F855 Wind Speed Meter Calibrator, or equivalent, we can receive output voltage of 0 to +5.6V. We can measure the precise voltage by monitoring this variable voltage source with a digital voltmeter displaying three decimal places or better. The variable voltage source is connected in parallel with the Wind Speed Meter and the Digital Voltmeter.

1. Remove either positive or negative lead to Wind Speed Meter.
2. Connect Wind Speed Meter Calibrator to Digital Voltmeter. Turn power ON, observe and note polarity. Turn power OFF.
3. Connect both the Wind Speed Meter Calibrator and the Digital Voltmeter to the Wind Speed Meter. Insure that polarity is correct. Turn power ON.
4. Adjust variable potentiometer to voltage readings as observed on the Digital Voltmeter to agree with voltage settings in Table III in Attachment 3 of the Wind Maintenance Schedule.
5. Check Wind Speed Meter readings and enter in Column 9 on Form H-17.
6. Be sure to reconnect disconnected lead to Wind Speed Meter after tests are completed and Test Equipment has been removed.



Alternate method of Calibrating  
Wind Speed Meters using the  
Data Precision 245



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

July 30, 1980

0A/W5141 - JM

TO: All NWS Regional Headquarters, Area Electronics Supervisors,  
and Electronics Technicians (EHB-8 Distribution)

FROM: *J.M. St. Clair*  
0A/W51 - J.M. St. Clair

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8,  
Issuance 80-9

1. Material Transmitted:

Engineering Handbook No. 8 - Surface Equipment, Section 2.2; Wind  
Equipment Maintenance Note No. 31: F425 Speed/Gust Card 1A13W.

2. Summary:

Polarity check of capacitors C1 and C3 in the F425 System Wind Speed/Gust  
Card 1A13W.

3. Effect on Other Instructions:

None.

EHB-8  
Issuance 80-9



Engineering Division  
OA/W514

WIND EQUIPMENT MAINTENANCE NOTE NO. 31  
(For Electronics Technicians)

31. Capacitor Checks on the 1A13W PCB.

During the manufacture of the 1A13W Wind Speed/Gust Module, polarity of tantalum capacitors was not always observed. If those capacitors (C1 and C3) are installed backwards they will fail. Failure of C1 will result in calibration and wind speed time constant instability. Failure of C3 lowers the reference voltage causing the module to read high. Some capacitors have failed quickly, resulting in a failed module. Others have failed gradually, resulting in continued calibration errors.

Both spare and operational 1A13W Wind Speed/Gust Modules should be checked at the earliest opportunity. Check both C1 and C3 for correct polarity. If either capacitor is incorrectly installed, it has partially or totally failed. Therefore, replace the capacitor. Do not reverse and reinstall the existing capacitor.

CLSC does not stock these capacitors and local purchase is suggested.

C1: Kemet T368C226M035AS (or equivalent 22 uf, 35V, 20%)

C3: Kemet T368B475M035AS (or equivalent 4.7 uf, 35V, 20%)



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

July 30, 1980

OA/W5141 - JM

TO: All NWS Regional Headquarters, Area Electronics Supervisors,  
and Electronics Technicians (EHB-8 Distribution)

FROM: OA/W51 - J.M. St. Clair  
*J.M. St. Clair*

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8,  
Issuance 80-9

1. Material Transmitted:

Engineering Handbook No. 8 - Surface Equipment, Section 2.2; Wind  
Equipment Maintenance Note No. 31: F425 Speed/Gust Card 1A13W.

2. Summary:

Polarity check of capacitors C1 and C3 in the F425 System Wind Speed/Gust  
Card 1A13W.

3. Effect on Other Instructions:

None.

EHB-8  
Issuance 80-9



Engineering Division  
OA/W514

WIND EQUIPMENT MAINTENANCE NOTE NO. 31  
(For Electronics Technicians)

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CLSC does not stock these capacitors and local purchase is suggested.

C1: Kemet T368C226M035AS (or equivalent 22 uf, 35V, 20%)

C3: Kemet T368B475M035AS (or equivalent 4.7 uf, 35V, 20%)



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

**OA/W5141 - BLM**

September 23, 1980

**TO:** All NWS Regional Headquarters, Area Electronics Supervisors,  
and Electronics Technicians (EHB-8 Distribution)

*J. M. St. Clair*  
**FROM:** OA/W51 - J. M. St. Clair

**SUBJECT:** Transmittal Memorandum for Engineering Handbook No. 8,  
Issuance 80- 14

1. Material Transmitted:

Engineering Handbook No. 8 - Surface Equipment, Section 2.2: Wind  
Equipment Maintenance Note No. 32, Weather Service Form H-17, Wind  
Calibration Data Sheet.

2. Summary:

Maintenance Note No. 32 provides information regarding the revised  
Weather Service Wind Calibration Form H-17.

3. Effects on Other Instructions:

This maintenance note supersedes Maintenance Note No. 29, dated  
December 20, 1978.

EHB-8  
Issuance 80-14



WIND EQUIPMENT MAINTENANCE NOTES  
(For Electronics Technicians)32. Weather Service Form H-17 Wind Calibration Data Sheet.

- A. Purpose. The revised Wind Calibration Data Sheet, WS Form H-17, has been changed to comply with Revised Wind Equipment Maintenance Schedule dated August 1980.

The form provides for entries on a monthly, quarterly, semiannual, and annual basis. Weekly checks should be performed by station personnel. All remaining checks will be made by the Electronics Technician.

- B. Entries. The WS Form H-17 is to be prepared in triplicate. Entries should be made neatly in pencil or ballpoint pen with emphasis on legibility. Entries in specific blocks will be as follows:
1. Station: Enter station name, as "WS0, Baltimore, Md., or FAA TMB, Miami, Fl.", for complete site identification.
  2. Date: Enter date and submit quarterly.
  3. Calibrated By: Sign name and title of person submitting form.
  4. Equipment and System Type: Place an "x" in the appropriate blocks indicating the type of equipment and system being calibrated. If no system block is marked, it will be assumed that a standard system is in use. The MAG. AMP. block is to be used only when a complete magnetic amplifier is being used. The SOLID STATE block will be used if a solid state unit is in use or if a solid state wind speed is being used with the wind direction magnetic amplifier.
  5. Date of Last Calibration: Enter the date the last calibration was performed.
  6. Retransmitter Serial No.: Enter the serial number of the retransmitter that is in use during the time the readings are obtained.
  7. Monthly Speed Comparison Data (Retransmitter only): Blocks under Item No. 7 are to be used if a retransmitter is in service. A place for the wind speed that is obtained during a system calibration is provided for each indicator. The date of the test and the location of the indicators should be entered. The "Remarks" Section should be used for any unusual item such as -- changed retransmitter, new batteries installed, etc.

8. Wind Speed Meter Calibration: The wind speed indicators are to be checked with the F850A Wind Speed Calibrator before any maintenance is performed. The values obtained should be entered under the column marked "Check," and their location identified. A place for 1800-rpm has been provided for those stations having range doubling and the 3-to-1 speed reduction calibrator. The block under "NWS" for "0" RPM was left blank in order that the present threshold setting on the indicator can be entered.

The block identified as "Final" should be used to make entries after any maintenance has been performed. The values entered in the "NWS" column should reflect the same values as those in Item No. 10. If an error is noted, it is an indication of improper brush tension, dirty brushes, improper loading, or some faulty component.

9. Wind Speed Meter Calibration (Obtained with a Standard Potentiometer):

This block is for checking the accuracy of the master panel wind speed meter. The value obtained for each indicated speed and the amount of error should be entered at the time of calibration. The values of calibration should be entered on the form every time it is submitted, even though the calibration is performed only on an annual basis. This provides a reference for performing the wind speed transmitter calibration.

10. Master Panel Wind Speed Calibration: The master panel wind speed meter should be checked for accuracy with a standard potentiometer. The rpm values are for an indication to reflect the values in Item No. 8 (Final). Again, 1800 rpm is given for checking the meter indication when using range doubling.
11. System Meets Wind Calibration Standards: If the system checks satisfactory in all respects after making wind speed and wind direction checks, the block should so indicate. If the system does not meet wind calibration standards, the "No" block should be checked and the reason why should be entered in the remarks section.
12. Wind Speed Transmitter Serial No.: Enter the serial number of the wind speed transmitter in use and the one that is spare. If the spare transmitter is used to replace the one in use, indicate it by placing an asterisk by the serial number.
13. Wind Direction Transmitter: Refer to semiannual maintenance schedule Item 4b and 4c. Enter values obtained.
14. Direction Transmitter Serial No.: The same procedure for entries in this block should be followed as those outlined under Item No. 12.

15. Wind Direction Comparison Data: This sheet contains all the information for checking wind direction. The orientation check should be made in accordance with current instructions and so indicated if performed. Space has been provided for checking eight direction meters for a period of three months. The location of the meters should be identified and the date the checks are performed should be entered. Place a check mark in the proper space to indicate if the checks were made through a retransmitter or if the meters only were checked. The direction identified by an asterisk is for checking the units with the built-in wind direction check switch.
- C. Disposition: The form will be submitted quarterly through the AES, with the original marked for the Regional Headquarters, a copy for the AES, and a copy for the station. The Regional Headquarters and station copy should be retained for one year. The AES copy should be retained for six months.
- d. General: The Calibration Data Sheet forms will continue to be supplied through the CLSC. Electronics Technicians should request the forms as in the past. The new calibration data sheet, WS Form H-17, (8-80) replaces WS Form H-17 (11-78).

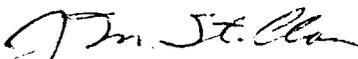


UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

OA/W5141 - BLM

November 10, 1980

TO: All NWS Regional Headquarters, Area Electronics Supervisors,  
and Electronics Technicians (EHB-8 Distribution)

FROM:   
OA/W51 - J.M. St. Clair

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8,  
Issuance 80-17

1. Material Transmitted:

Engineering Handbook No. 8 - Surface Equipment, Section 4.2, Errata  
Sheet to WS Form H-17.

2. Summary:

Errata Sheet No. 1 to Wind Calibration Data Sheet (WS Form H-17).

3. Effect on Other Instructions:

None.

EHB-8  
Issuance 80-17



Engineering Division  
OA/W514

## ERRATA SHEET No. 1 to NWS FORM H-17

Two errors exist on NWS Form H-17 dated August 1980:

1. Refer to Block 13 - "Wind Direction Transmitter":

Change "Tolerance - 50 Ohms  $\pm$  5.0" to read "Tolerance = 52.5 Ohms  $\pm$ 7.5"

2. Refer to Block 15 - The bottom numeral in the slashed boxes should be

Asterisked (\*).

See attached sample of corrected NWS Form H-17.

The errors noted by this Errata Sheet will be corrected on the next printing of NWS Form H-17.

1. STATION

2. DATE

### WIND CALIBRATION DATA SHEET

(Prescribed by Wind Equipment Maintenance Note No. 32)

3. CALIBRATED BY (Name and title)

**INSTRUCTIONS:** Prepare quarterly. Submit white copy to Regional Headquarters, yellow copy to AES, and retain salmon copy for station records.

4. EQUIPMENT AND SYSTEM TYPE

F 420C  F 420D  MAG AMP  SOLID STATE  NON-STANDARD

5. DATE LAST CAL.

6. RETRAN. S/N

7. MONTHLY SPEED COMPARISON DATA (Retransmitters)

METER TOLERANCE

Master  $\pm 1.0$  knot Repeater  $\pm 1.5$  knot

CALIBRATED TEST SPEED

LOCATION

REMARKS

DATE

NWS

8. WIND SPEED METER CALIBRATION (Obtained with calibrator) Tolerance  $\pm 1.5$

RPM

LOCATION (Check)

RPM

LOCATION (Final)

NWS

NWS

0

0

300

300

600

600

900

900

1800

1800

9. WIND SPEED METER CALIBRATION (Obtained with standard potentiometer)

KNOT

2.0

10.0

20.0

30.0

40.0

50.0

60.0

70.0

80.0

90.0

100.0

MV ACROSS  
10 OHMS

0.0

2.46

5.53

8.60

11.67

14.74

17.81

20.88

23.95

27.02

30.09

METER  
INDICATION

ERROR

10. MASTER PANEL METER CALIBRATION  
(Obtained with standard potentiometer)  
(Master or primary) Tolerance  $\pm 1.5$

12. WIND SPEED TRANS. S/N:

IN USE

SPARE

RPM

INPUT MA

MV ACROSS  
10 OHMS

METER  
INDICATION

STARTING TORQUE:

IN USE

SPARE

IN OZ.

IN OZ.

0

0.000

0.000

300

0.801

8.01

600

1.603

16.03

900

2.404

24.04

1800

4.809

48.09

13. WIND DIRECTION TRANSMITTER

A-B = \_\_\_\_\_ Ohms

Tolerance = ~~5.0~~ ohms ~~5.0~~

A-C = \_\_\_\_\_ Ohms

52.5  $\pm 2.5$

B-C = \_\_\_\_\_ Ohms

NORTH ELECTRICAL ALIGNMENT

A-D = \_\_\_\_\_ Ohms (<2 ohms)

11. SYSTEM MEETS STANDARDS

YES

NO

REVIEWED  
BY:

SIGNATURE

TITLE

DATE



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

December 1, 1981

OA/W5141 - BLM

TO: All NWS Regional Headquarters, Area Electronics Supervisors,  
and Electronics Technicians. (EHB-8 Distribution)

FROM: *J. M. St. Clair*  
OA/W51 - J. M. St. Clair

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8

1. Material Transmitted:

Engineering Handbook No. 8 - Surface Equipment, Section 2.2:  
Wind Equipment Maintenance Note No. 33: Installation of Acopian  
Power Supply in the F611 Wind Retransmitter.

2. Summary:

Maintenance Note No. 33 provides information regarding installation  
of the Acopian Power Supply 15E10D-15E10D which replaces the no  
longer available Computer Products Model PM552 in the F611 Wind  
Retransmitter.

3. Effects on Other Instructions:

Insert one copy of this Maintenance Note No. 33 in the F611 Manual  
for reference.

EHB- 8  
Issuance 81- 7



10TH ANNIVERSARY 1970-1980

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WIND EQUIPMENT MAINTENANCE NOTES  
(For Electronics Technicians)33. Installation of Replacement F611 Power Supply.

The Computer Products Model PM 552 Power Supply used in the F611 Wind Retransmitter is no longer available. This Maintenance Note provides information to assist the Electronics Technician in the installation of the replacement power supply Acopian Model No. 15E10D-15E10D.

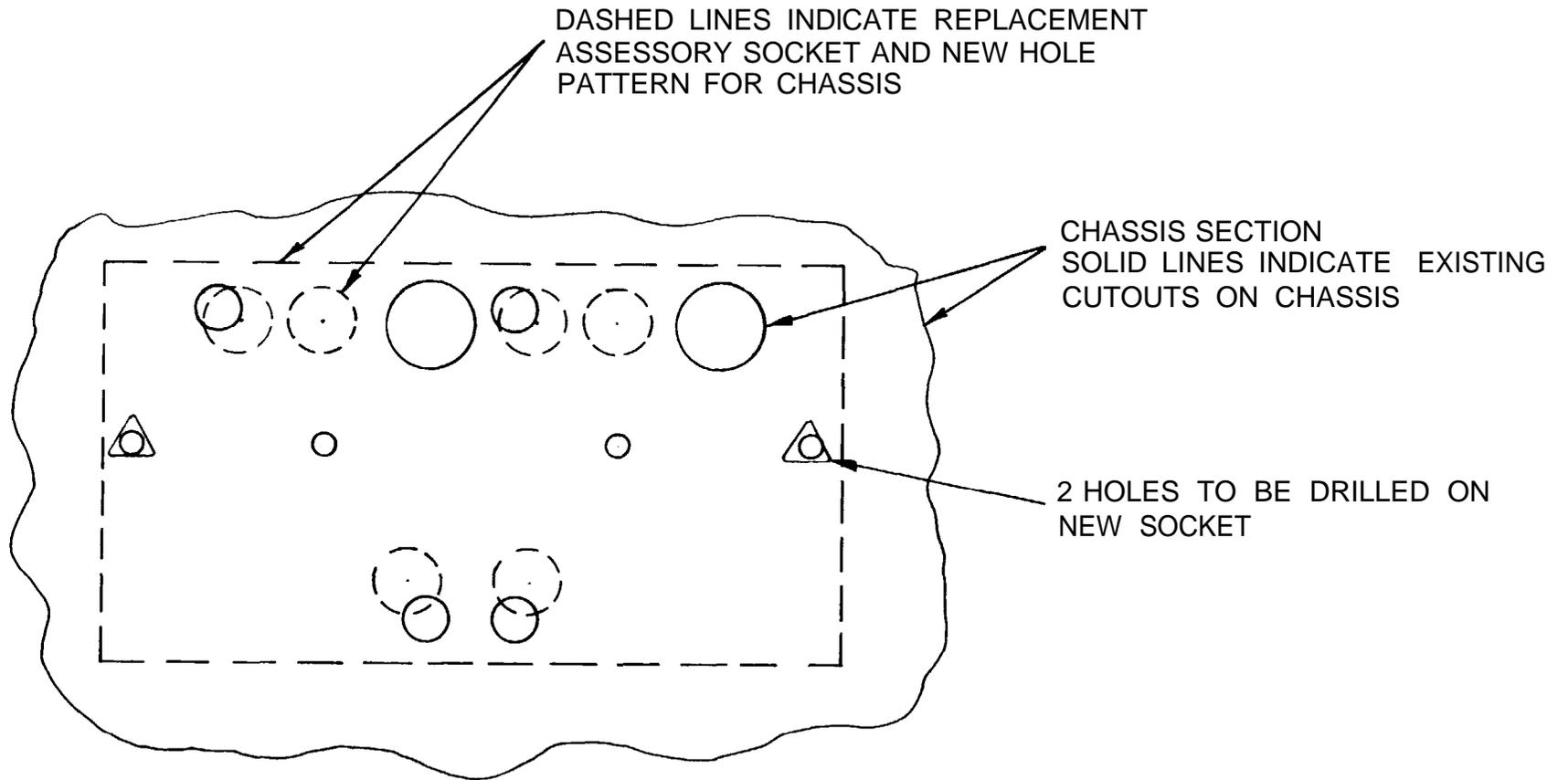
Procurement of F611 Power Supply:

The Acopian 15E10D-15E10D Power Supply can be ordered under WS Number F611-PS1.

PROCEDURE:

1. Remove the two 4-40 screws securing both existing power supplies to the F611. Unplug both power supplies and discard the defective one. Save the 4-40 screws for reinstallation.
2. Note the position of each wire connected to the power supply connector board. Carefully remove the solder from these connections and disconnect each wire.
3. Remove the four 4-40 screws and nuts securing the double power supply connector to the F611 chassis. Lift the connector board from the chassis. Save the hardware removed in this step.
4. Find the center of the existing double power supply connector board (2-3/4" from each edge) and draw a line. Cut the board in half along the center line. (Figure 2.)
5. Using Figure 1 (attached) as a template, mark new hole pattern on the top side of the F611 chassis,
6. Drill out new hole pattern using 3/8" drill bit. It may be necessary to file or ream the new holes to achieve proper alignment.
7. Mark and drill the new mounting socket so it can be mounted to the chassis at existing holes.
8. Using hardware removed in Step 3, install Acopian END-1 connector board over new hole pattern. Install one half of the connector board cut in Step 4. Resolder connections to both boards. (Carefully note how pin pattern of Acopian module relates to the Computer Products Module.)
9. Install both power supplies by plugging each one into its corresponding connector board.

Attachments: Figs. 1 and 2.



**FIGURE 1**

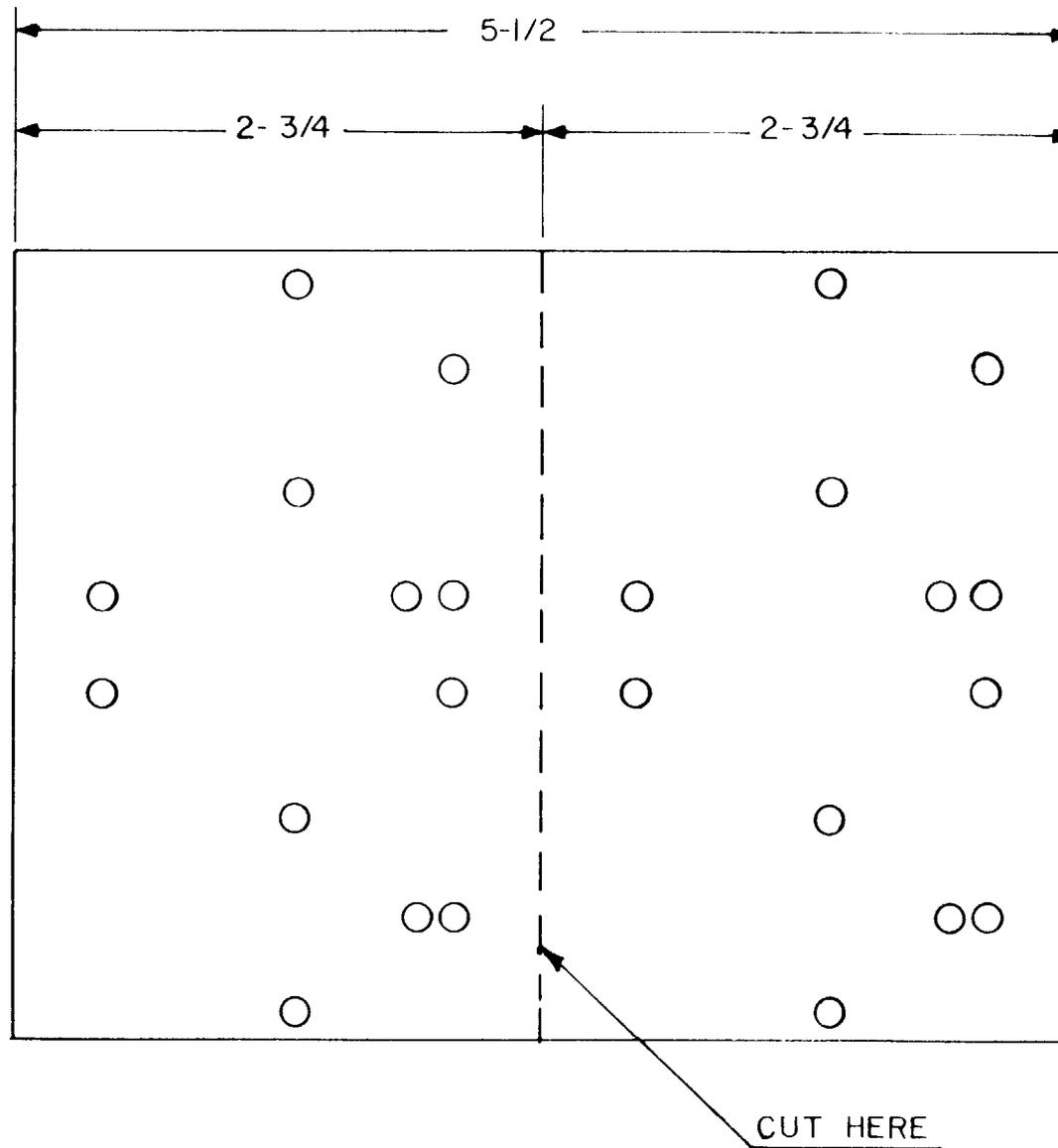


FIGURE 2

<i>Issue Date</i>	<i>Org. Code</i>
3-3-92	W/OS032

**NATIONAL WEATHER SERVICE**  
**Engineering Handbook**

<i>Program</i>	<i>Part</i>	<i>Section</i>
EHB-8	02	2.3

MAINTENANCE NOTE INDEX - RADIATION EQUIPMENT

<b>Number</b>	<b><u>Date of Issue</u></b>	<b><u>Title</u></b>
8	November 9, 1971	Test Box for A232
9	November 9, 1971	Solid State Amplifier for A232
17	April 20, 1987	Solar Radiation Personal Computer System Technical Information Package

Items 1-7 and 10-16 have been deleted.