


REV B	APPLICATION			REVISIONS		
	PRODUCT LINE	REV	DESCRIPTION	DATE	APPROVED	APPROVED
SH 1	VN-411B	A	Initial Release per DCN W4489	07/28/05	V. Wallace	NN CE
		B	Revised per DCN W4877	12/12/05	V. Wallace	NN CE
DWG. NO. 150-07536-0000						

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APPROVALS	DATE		
DRAWN L. Evans	07/28/05	SERVICE INSTRUCTION, WSI VN-411B-11 IMPROVES DRIFTING OF VOR BEARING AND GLIDESLOPE	
CHECKED C. Estes	07/28/05		
PRODUCT MANAGER			
ENGINEER N. Nguyen	07/28/05	SIZE A	CAGE CODE 1B7G3
ISSUED V. Wallace	07/28/05	DWG NO. 150-07536-0000	REV B
Typed signatures indicate approval. Handwritten signature approval of this document is on file at Wulfsberg Electronics, Prescott, Arizona.		SCALE: NONE	DO NOT SCALE DRAWING



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SERVICE INSTRUCTION

EQUIPMENT: VN-411B

DATE: 12/12/05

INSTRUCTION NUMBER: WSI VN-411B-11 Revision B

EFFECTIVITY

All VN-411B p/n 066-1101-00 without Mod 23, P/N 066-1101-31, -50 without Mod 22, P/N 066-1101-60 without Mod 1.

REASON

This service instruction is to improve the Drifting of VOR bearing and Glideslope on units that contain Nav Converter Module (p/n 200-07536-0001).

DESCRIPTION

This service instruction will change one trimmer potentiometer (if the unit has Hardware Mod 9) to a fixed resistor (R3148), change R3152 to 10.5 K, add two test selectable resistors, change one trimmer potentiometer (R3007) from 100 K to 10K trimmer potentiometer, and add one resistor (R3202) 41.2 K Ohm in series with R3007 on the NAV Converter board to improve the tuning of VOR bearing and Glideslope.

COMPLIANCE

On next scheduled maintenance.

WARRANTY INFORMATION

This modification is an enhancement and is covered under warranty.

APPROVAL

This modification does not affect the original approval.

MANPOWER

N/A

REFERENCES

VN-411B Maintenance Manual, P/N 150-040974, P/N 150-040973 and P/N 006-05908-0006

MATERIAL INFORMATION

The parts required to modify this unit in accordance with this Service Instruction are available from Wulfsberg Electronics at (928) 708-1518.

PARTS REQUIRED

ITEM	QTY	U/M	PART NUMBER	DESCRIPTION	REF
1	1	EA	136-02801-0072 or 136-02671-0072 or 136-02491-0072	RESISTOR 2.8 K ohm 1% 100PPM 1/4W MF AXIAL RESISTOR 2.67 K ohm 1% 100PPM 1/4W MF AXIAL RESISTOR 2.49 K ohm 1% 100PPM 1/4W MF AXIAL	R3148 (Plus resistor R3200 chosen from Table 1)
2	1	EA	136-04122-0072	RESISTOR 41.2 K ohm 1% 100PPM 1/4W MF AXIAL	R3202
3	2	EA	133-00100-0069	RESISTOR VA 10 K ohm 10% 1/2W	R3007 R3196
4	AR	AR	16012-3	LOCTITE ACCELERATOR (712) & BONDER (444)	
5	1	EA	136-01052-0072	RESISTOR 10.5 K ohm 1% 100PPM 1/4W MF AXIAL	R3152
6	AR	AR	16017-22	22 AWG Bus Wire	
7	AR	AR	16016-22	TEFLON TUBING	

MODIFICATION PROCEDURE

CAUTION

ANY DISASSEMBLY/ASSEMBLY OF THIS UNIT MUST BE DONE AT A STATIC SAFE WORKSTATION. REMOVED MODULES SHOULD BE PLACED IN ANTISTATIC BAGS WHEN NOT INSTALLED IN THE UNIT.

Open the (LRU) and gain access to the NAV Converter Board per the Maintenance Manual. Perform the following modification:

Unless otherwise noted, the sequence of rework can be adjusted to facilitate manufacturability.

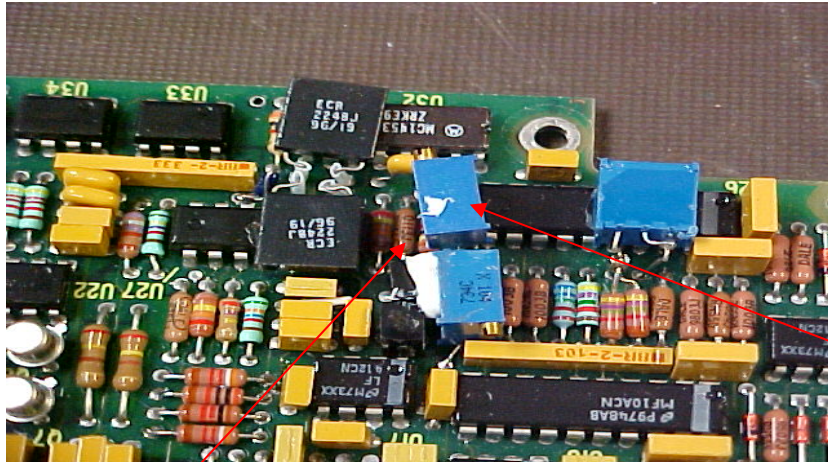
1. To start, refer to figures 1 and 2 on page 4. Replace R3152 using Item 5.
2. Perform NAV Converter Test Procedure (650-07536-000) on page 7. This will result in the replacement of potentiometer R3148 with either one fixed resistor (R3148) or two fixed resistors in series (R3148 and R3200).
3. Refer to Figure 3 to locate R3007. Now refer to Figure 4 to replace R3007 using Item 3. Connect the center lead of Item 3 to one of its end leads. Install Item 2 (R3202) in hole leading to C3003/R3003 junction, adjacent to U3016 (Ref Figure 4). Connect other end of R3202 to R3007, using Item 7 (Teflon tubing).
4. Refer to Figure 4. Connect the other end of R3007 to hole leading to U3016 pin 17 using Item 6 as required.
5. Refer to Figure 4. Replace R3196 using Item 3. Connect the center lead of Item 3 to one of its end leads. Connect end lead of R3196 to bifurcated terminal. Connect other end lead to hole leading to C3013 using Item 6 as required. **NOTE: Use care to orient R3196 so that ability to adjust pot screw is retained.**
6. Refer to Figure 4. Attach R3007 and R3196 to the tope of U3332 using Item 4.
7. Refer to VNS-41A Navigation system maintenance manual (P/N 150-040974, P/N 150-040973 and P/N 006-05908-0006) for alignment.

TESTING PROCEDURE

Perform a complete functional test of the unit in accordance with the Maintenance Manual, P/N 150-040974, P/N 150-040973 and P/N 006-05908-0006.

IDENTIFICATION PROCEDURE

Upon completion of this Service Instruction, mark "WSI 11" on the board.



Locate
R3148

Figure 1

Locate R3152

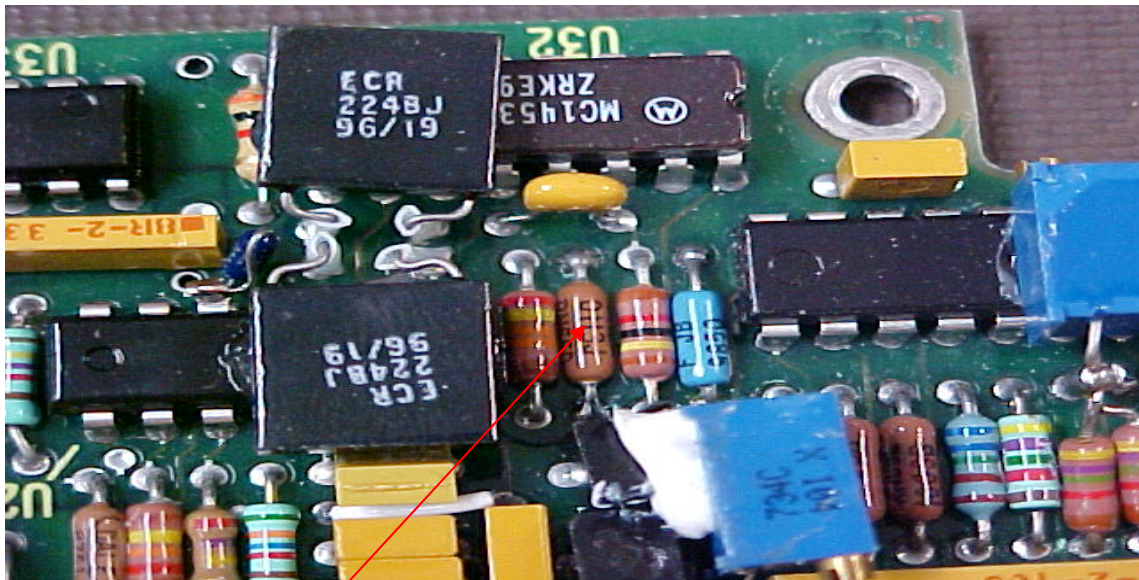
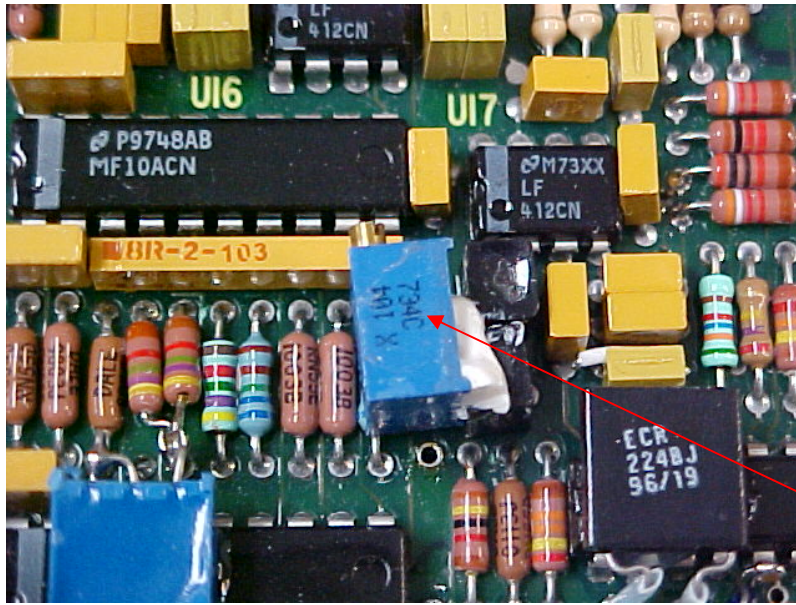


Figure 2

Replace R3152
with Item 5



Locate
R3007

Figure 3

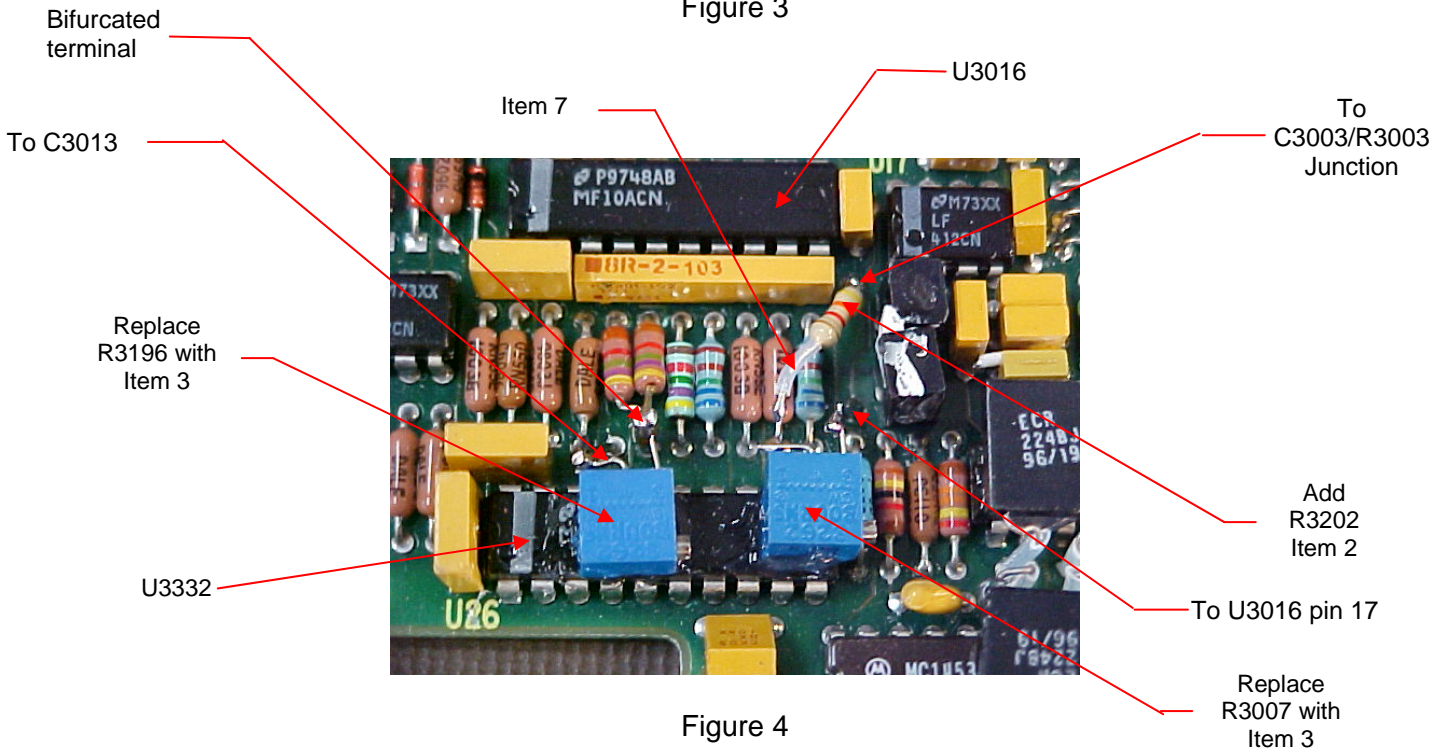
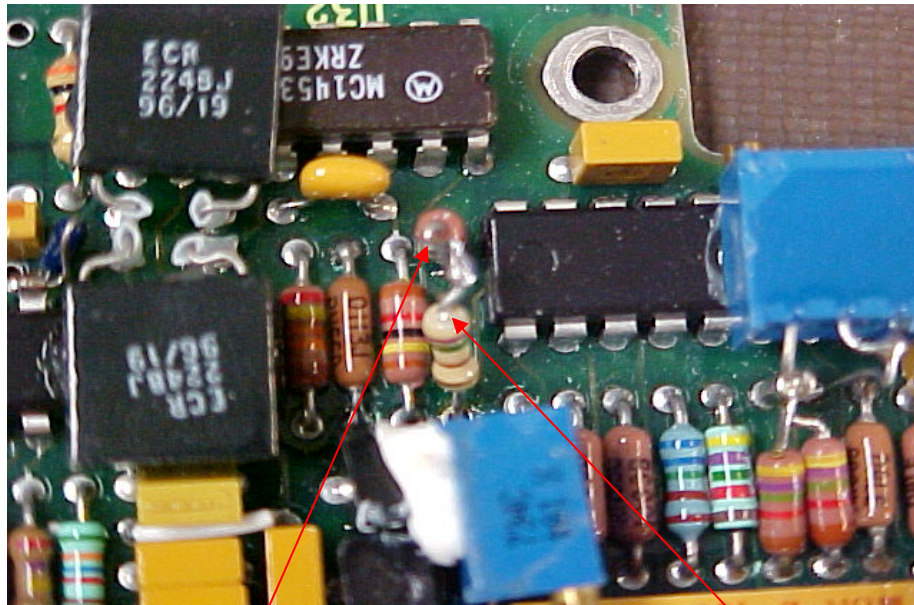


Figure 4



R3148

R3200*

Figure 5: Installation R3148 and R3200* in series
(* If required)

NOTE: ORIENT RESISTORS SO THAT VALUE IS READABLE WHEN INSTALLED.

NAV CONVERTER TEST PROCEDURE (650-07536-0000)

CAUTION – BEFORE PERFORMING THIS PROCEDURE, ENSURE THAT R3152 IS 10.5K Ω (ITEM 5).

- 1) Set the RF input frequency to 108.80 MHz and tune the NAV Control Display Unit to an active frequency of 108.80 MHz. Set the function selector on the NAV Control Display Unit to BRG.
- 2) Short TP2001 on the Processor Module to ground. The Cal Bearing will appear in the lower portion of NAV Control Display Unit window.
- 3) Locate potentiometer R3148 in Figure 1 on page 4. Adjust R3148 until the bearing reads $20 \pm 0.5^\circ$.
- 4) Turn off power to the unit and remove the cable between the unit and the tester. Measure the resistance of potentiometer R3148. (The resistance of R3148 can be measured in circuit or out of circuit after it is removed.)
- 5) Refer to Table 1 on page 8 and the column labeled **Equivalent Resistance**. Find the equivalent resistance closest to the resistance measured on potentiometer R3148 in step 4. This equivalent resistance is made from either R3148 alone or two resistors in series, R3148 in series with R3200.

(Note: A change in equivalent resistance of approximately 15 ohms will change the Cal Bearing one degree. An increase in the equivalent resistance will cause the bearing to decrease. A decrease in the equivalent resistance will cause the bearing to increase.)

- 6) Locate and remove potentiometer R3148 (See figure 1) and replace with the resistors determined in step 5. (See figure 5).
- 7) Repeat the test procedure of step 1 and step 2 above.
- 8) If the Cal Bearing reads $20 \pm 2^\circ$ this test procedure is complete. Proceed to step 3 of the Modification Procedure on page 3.
- 9) If the bearing is greater than 22° then use the equivalent resistance one row above the values chosen in step 5 and replace resistors R3148 and R3200 with the new equivalent resistance.
- 10) If the bearing is less than 18° then use the equivalent resistance one row below the values chosen in step 5 and replace resistors R3148 and R3200 with the new equivalent resistance.
- 11) Repeat steps 7 and 8, and if necessary steps 9 and 10.

TABLE 1.

R3148 (Part Number)	R3200 (In Series) (Part Number)	Equivalent Resistance
3010 ohm (136-03011-0072)	187 ohm (136-01870-0072)	3197 ohm
3010 ohm (136-03011-0072)	165 ohm (136-01650-0072)	3175 ohm
3010 ohm (136-03011-0072)	150 ohm (136-01500-0072)	3160 ohm
3010 ohm (136-03011-0072)	137 ohm (136-01370-0072)	3147 ohm
3010 ohm (136-03011-0072)	121 ohm (136-01210-0072)	3131 ohm
3010 ohm (136-03011-0072)	118 ohm (136-01180-0072)	3128 ohm
3010 ohm (136-03011-0072)	100 ohm (136-01000-0072)	3110 ohm
3010 ohm (136-03011-0072)	90.9 ohm (136-00909-0072)	3100.9 ohm
3010 ohm (136-03011-0072)	75.0 ohm (136-00750-0072)	3085 ohm
3010 ohm (136-03011-0072)	61.9 ohm (136-00619-0072)	3071.9 ohm
3010 ohm (136-03011-0072)	47.0 ohm (136-00470-0072)	3057 ohm
3010 ohm (136-03011-0072)	30.9 ohm (136-00309-0072)	3040.9 ohm
3010 ohm (136-03011-0072)	20.0 ohm (136-00200-0072)	3030 ohm
3010 ohm (136-03011-0072)	15.0 ohm (136-00150-0072)	3025 ohm
N/A (No resistor in series)	3010 ohm (136-03011-0072)	3010 ohm
2800 ohm (136-02801-0072)	187 ohm (136-01870-0072)	2987 ohm
2800 ohm (136-02801-0072)	165 ohm (136-01650-0072)	2965 ohm
2800 ohm (136-02801-0072)	150 ohm (136-01500-0072)	2950 ohm
2800 ohm (136-02801-0072)	137 ohm (136-01370-0072)	2937 ohm
2800 ohm (136-02801-0072)	121 ohm (136-01210-0072)	2921 ohm
2800 ohm (136-02801-0072)	118 ohm (136-01180-0072)	2918 ohm
2800 ohm (136-02801-0072)	100 ohm (136-01000-0072)	2900 ohm
2800 ohm (136-02801-0072)	90.9 ohm (136-00909-0072)	2890 ohm
2800 ohm (136-02801-0072)	75.0 ohm (136-00750-0072)	2875 ohm
2800 ohm (136-02801-0072)	61.9 ohm (136-00619-0072)	2862 ohm
2800 ohm (136-02801-0072)	47.0 ohm (136-00470-0072)	2847 ohm

2800 ohm (136-02801-0072)	30.9 ohm (136-00309-0072)	2831 ohm
2800 ohm (136-02801-0072)	20.0 ohm (136-00200-0072)	2820 ohm
2800 ohm (136-02801-0072)	15.0 ohm (136-00150-0072)	2815 ohm
2670 ohm (136-02671-0072)	137 ohm (136-01370-0072)	2807 ohm
2800 ohm (136-02801-0072)	N/A (No resistor in series)	2800 ohm
2670 ohm (136-02671-0072)	121 ohm (136-01210-0072)	2791 ohm
2670 ohm (136-02671-0072))	100 ohm (136-01000-0072)	2770 ohm
2670 ohm (136-02671-0072)	90.9 ohm (136-00909-0072)	2761 ohm
2670 ohm (136-02671-0072)	75.0 ohm (136-00750-0072)	2745 ohm
2670 ohm (136-02671-0072)	61.9 ohm (136-00619-0072)	2732 ohm
2670 ohm (136-02671-0072)	47.0 ohm (136-00470-0072)	2717 ohm
2670 ohm (136-02671-0072)	30.9 ohm (136-00309-0072)	2700 ohm
2670 ohm (136-02671-0072)	15.0 ohm (136-00150-0072)	2685 ohm
2670 ohm (136-02671-0072)	N/A (No resistor in series)	2670 ohm
2490 ohm (136-02491-0072)	165 ohm (136-01650-0072)	2655 ohm
2490 ohm (136-02491-0072)	150 ohm (136-01500-0072)	2640 ohm
2490 ohm (136-02491-0072)	137 ohm (136-01370-0072)	2627 ohm
2490 ohm (136-02491-0072)	121 ohm (136-01210-0072)	2611 ohm
2490 ohm (136-02491-0072)	118 ohm (136-01180-0072)	2608 ohm
2490 ohm (136-02491-0072)	100 ohm (136-01000-0072)	2590 ohm
2490 ohm (136-02491-0072)	90.9 ohm (136-00909-0072)	2580.9 ohm
2490 ohm (136-02491-0072)	75.0 ohm (136-00750-0072)	2565 ohm
2490 ohm (136-02491-0072)	61.9 ohm (136-00619-0072)	2551.9 ohm
2490 ohm (136-02491-0072)	47.0 ohm (136-00470-0072)	2537 ohm
2490 ohm (136-02491-0072)	30.9 ohm (136-00309-0072)	2520.9 ohm
2490 ohm (136-02491-0072)	15.0 ohm (136-00150-0072)	2505 ohm