

# TEST FIXTURES

F460 Linearity Test Fixture

P/N M101984 Rev -

The 101984 Test Fixture was designed primarily as a linearity test fixture. When an F460 Wind Direction Sensor is plugged into the fixture, its absolute alignment is good to  $\pm 0.75^\circ$ . Any misalignment will show up as an offset or bias in the data. The degree wheel supplied with the fixture has a maximum error of  $\pm .5^\circ$ . When evaluating the data, the offset can be determined by determining the average error. The actual non-linearity of the sensor is equal to the arithmetic sum of the maximum positive error and negative error divided by two. If the fixture is used to align the sensor (for example, if the wind direction potentiometer is replaced) great care must be exercised in installing the sensor onto the fixture. Be sure that no undue force is required to install the sensor onto the fixture and that both set screws (that are used to secure the sensor to the crossarm) are snug.

The linearity test fixture consists of a stand, a notched calibrated dial, and one Allen key, and a four foot length of cable. The stand has a connector and roll pin at the base, and a spring index pointer at the top. A length of cable with a connector at the end is wired into the base connector. To align the transmitter and check linearity at the site, proceed as follows: (NOTE: This procedure assumes a NORTH-SOUTH orientation of the crossarm, with the wind direction sensor at the SOUTH end).

- 1) Visually align the vane shaft along the crossarm with the vane tail pointing toward the wind speed sensor. A reading corresponding to approximately "SOUTH" should be obtained. If not, check out the electronics and orientation of the crossarm before proceeding to Step 2.
- 2) Remove the wind direction sensor. Using the Allen key supplied, loosen the two set screws in the vane hub, and remove the vane from the shaft.
- 3) Take the connector at the end of the cable, and plug it into the crossarm where the sensor was. Plug the sensor into the fixture base making sure the slot in the sensor is aligned with the pin in the fixture base.
- 4) Place the notched dial over the shaft so that the index end of the pointer is in  $180^\circ$  notch. Rotate the sensor cap until the dial hub fits on the stepped portion. The output reading should correspond to SOUTH.
- 5) If the reading obtained in Step 4 is correct, go on to Step 6. If not, proceed as follows:
  - a) Using the Allen key, loosen the two set screws in the sensor cap.
  - b) With the index pointer still in the  $180^\circ$  notch, rotate the shaft until an output reading corresponding to SOUTH is obtained. Retighten the screws.

- 6) Move the pointer out of the 180° notch and rotate dial to the next notch, allowing the pointer to detent into the notch. Check the corresponding output reading. Continue as above for the full 360° rotation, thus checking linearity.

NOTE: Dial is calibrated so that 90=EAST, 0=NORTH, and 270=WEST.

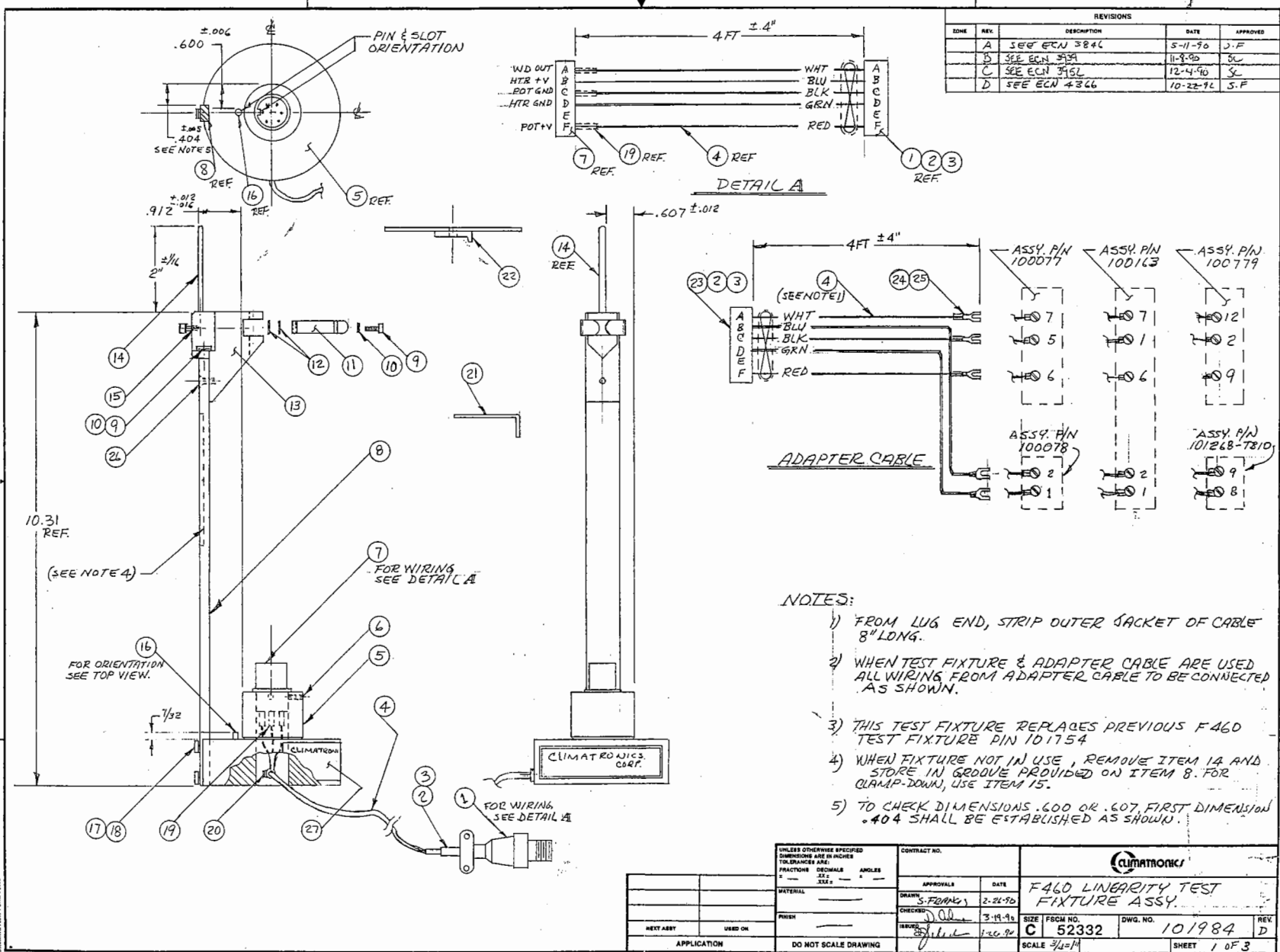
#### Off-site Calibration

To align and check linearity off-site, i.e., at the Mainframe location, proceed as follows: (Same NOTE applies as for site location.)

- 1) Mate the connector at the end of the 4-foot length of cable with the connector at the end of the cable coming from the base of the fixture. Connect the lugs at the other end of the cable to the back of the mainframe as shown in the upper view of drawing 101984.
- 2) Remove vane from the sensor if it is still on.
- 3) Proceed as per Steps 4 – 6 above.

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<b>Revision</b>	<b>Description</b>	<b>Date</b>	<b>Approved</b>
-	<b>Released to Production</b>	<b>10/21/05</b>	<b>D.A.</b>



REVISIONS				
EDM	REV	DESCRIPTION	DATE	APPROVED
	A	SEE ECN 3846	5-11-90	J.F.
	B	SEE ECN 3931	11-8-90	SL
	C	SEE ECN 3962	12-4-90	SL
	D	SEE ECN 4326	10-22-92	S.F.

- NOTES:
- 1) FROM LUG END, STRIP OUTER SACKET OF CABLE 8" LONG.
  - 2) WHEN TEST FIXTURE & ADAPTER CABLE ARE USED ALL WIRING FROM ADAPTER CABLE TO BE CONNECTED AS SHOWN.
  - 3) THIS TEST FIXTURE REPLACES PREVIOUS F460 TEST FIXTURE PIN 101754
  - 4) WHEN FIXTURE NOT IN USE, REMOVE ITEM 14 AND STORE IN GROOVE PROVIDED ON ITEM 8. FOR CLAMP-DOWN, USE ITEM 15.
  - 5) TO CHECK DIMENSIONS .600 OR .607, FIRST DIMENSION .404 SHALL BE ESTABLISHED AS SHOWN.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TO 3 DECIMALS FRACTIONS DECIMALS ANGLES		CONTRACT NO.			
MATERIAL		APPROVALS			
NEXT ASSY		DATE		F460 LINEARITY TEST FIXTURE ASSY.	
USED ON		CHECKED		SIZE FSCM NO. DWG. NO. REV	
APPLICATION		ISSUED		C 52332 101984 D	
DO NOT SCALE DRAWING		SCALE 3/4"=1"		SHEET 1 OF 3	

101984

A

F460 LINEARITY TEST FIXTURE  
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PARTS LIST  
Sheet 2 of 3

ITEM	SYM. NO	QTY	PART NO.	DESCRIPTION
Notes: ITEM 19 TO BE USED AS REQUIRED				
1		1.0	MS3101F14S-6P	CONNECTOR, RECEPTACLE
2		2.0	MS3420-6	#6 BOOT
3		2.0	MS3420-4	#4 BOOT
4		8.0	M13306	CABLE, 6 COND 22 AWG
5		1.0	501042	BASE, F460 TEST FIXTURE
6		2.0	MS51023-48	SET SCREW 10-32 x 3/16
7		1.0	MS3106A14S-6S	CONNECTOR, STRAIGHT PLUG
8		1.0	501212	POINTER COLUMN/F460 TEST FIXT.
9		2.0	MS51957-14	SCREW 4-40 x 5/16 PH
10		2.0	MS35338-135	WASHER, LOCK SPLIT #4
11		1.0	HC-104	EXTENSION SPRING, 5/8
12		2.0	MS15795-803	WASHER FLAT #4
13		1.0	501213	POINTER HOLDER/F460 TEST FIXT.
14		1.0	501185	POINTER BAR, WM-III TEST FIXT.
15		1.0	294-04SS4-40E	SCREW THUMB 4-40 x 1/2 SS
16		1.0	EPS-A5-9	DOWEL PIN, 1/8 DIA. x 7/16 LG.
17		2.0	MS35338-137	WASHER LOCK SPLIT #8
18		2.0	MS51957-45	SCREW 8-32 x 1/2
19		0.0	B105-10	TUBING, CLEAR AWG #10
20		1.0	PLT1M	TIE WRAP, SMALL
21		1.0	.050KEY	KEY, ALLEN .050
22		1.0	101137	DIAL ASSEMBLY, F460
23		1.0	MS3106F14S-6S	CONNECTOR, STRAIGHT PLUG

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PARTS LIST  
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ITEM	SYM. NO	QTY	PART NO.	DESCRIPTION
24		0.1	RNF100-1/4	TUBING, SHRINK
25		3.0	PV18-2F	TERMINAL LUG FORK
26		1.0	MS51959-16	SCREW, FLAT HD. 4-40 x 7/16
27		1.0	501215	TEST FIXTURE LOGO