05103 AND 05305
R.M. YOUNG WIND MONITOR
INSTRUCTION MANUAL

REVISION: 9/96

WARRANTY AND ASSISTANCE

The **05103 AND 05305 R.M. YOUNG WIND MONITOR** is warranted by CAMPBELL SCIENTIFIC, INC. to be free from defects in materials and workmanship under normal use and service for twelve (12) months from date of shipment unless specified otherwise. Batteries have no warranty. CAMPBELL SCIENTIFIC, INC.'s obligation under this warranty is limited to repairing or replacing (at CAMPBELL SCIENTIFIC, INC.'s option) defective products. The customer shall assume all costs of removing, reinstalling, and shipping defective products to CAMPBELL SCIENTIFIC, INC. CAMPBELL SCIENTIFIC, INC. will return such products by surface carrier prepaid. This warranty shall not apply to any CAMPBELL SCIENTIFIC, INC. products which have been subjected to modification, misuse, neglect, accidents of nature, or shipping damage. This warranty is in lieu of all other warranties, expressed or implied, including warranties of merchantability or fitness for a particular purpose. CAMPBELL SCIENTIFIC, INC. is not liable for special, indirect, incidental, or consequential damages.

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CAMPBELL SCIENTIFIC, INC.
RMA#_____
815 West 1800 North
Logan, Utah 84321-1784

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Non-warranty products returned for repair should be accompanied by a purchase order to cover the repair.

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05103 AND 05305 R.M. YOUNG WIND MONITOR

1. INTRODUCTION

These notes provide information for interfacing Campbell Scientific, Inc.'s CR10, 21X, and CR7 dataloggers to the R.M. Young 05103 Wind Monitor and 05305 Wind Monitor AQ. The 05305 Wind Monitor AQ is a high performance version of the 05103 Wind Monitor that is designed specifically for air quality measurements. Wiring is identical for both models. R.M. Young's instruction manual is also included, which contains sensor specifications, operating principles, installation and alignment guide, and calibration information. Multiplier and offset values in the Campbell Scientific notes are based on calibration data obtained from the R.M. Young Wind Monitor manual.

2. MOUNTING REQUIREMENTS

The Wind Monitor mounts to a vertical piece of 1" IPS schedule 40 (1.32" O.D.) pipe. (See Figure 2-1.) A band clamp at the base of the sensor is tightened to secure the sensor to the pipe.

Campbell Scientific supplies a 12" length of unthreaded pipe for mounting the wind monitor to Campbell Scientific's 019ALU Crossarm Sensor Mount (Figure 2-2).

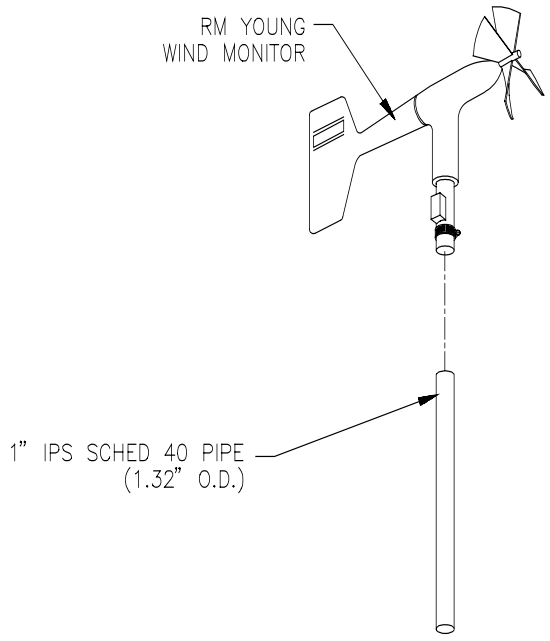


FIGURE 2-1. Wind Monitor Mounted to a Vertical Pipe

3. SENSOR TO DATALOGGER WIRING

Wire the Wind Monitor leads to the datalogger (see Figure 3-1). Figure 3-2 depicts the wind monitor's circuit diagram.

NOTE: The black outer jacket of the cable is Santoprene® rubber. This compound was chosen for its resistance to temperature extremes, moisture, and UV degradation. However, this jacket will support combustion in air. It is rated as slow burning when tested according to U.L. 94 H.B. and will pass FMVSS302. Local fire codes may preclude its use inside buildings.

4. PROGRAMMING

4.1 WIND SPEED

Measure the wind speed with Instruction 3 (Pulse Count). Wind vector instruction 69 is used to calculate average wind speed and direction. With the pulse count instruction, specify a configuration code of 21 (low level AC, discarding counts from excessive intervals, result in Hz). With this configuration code, Instruction 3 divides the number of counts during the execution interval by the interval in seconds before applying the multiplier and offset.

The expression for wind speed (U) is:

$$U = MX + B$$

where

M = multiplier
X = number of pulses per second
B = offset

Table 4-1 lists the multipliers to obtain miles/hour or meters/second when configuration code 21 is used. The helicoid propeller has a calibration that passes through zero; use an offset of zero (Gill, 1973; Baynton, 1976).

TABLE 4-1. Wind Speed Multiplier (With Configuration Code 21*)

Model	Miles/hour output	Meters/second output
05103	0.2192	0.0980
05305	0.2290	0.1024

*When configuration code 11 is used, the multiplier above is divided by the execution interval in seconds.

NOTE: 21Xs without OSX PROMS and CR7s without OS7 PROMS (dataloggers purchased prior to March 1989 and August 1991 respectively, and not updated) do not have the option of outputting frequency in hertz. Program Instruction 3 with configuration code 11 (pulses per execution interval). The multiplier from Table 4-1 is divided by the execution interval in seconds to obtain the multiplier used with code 11. For example, with a 10 second execution interval, the multiplier for meters/second with the 05103 would be 0.0980/10 = 0.0098. The offset remains zero.

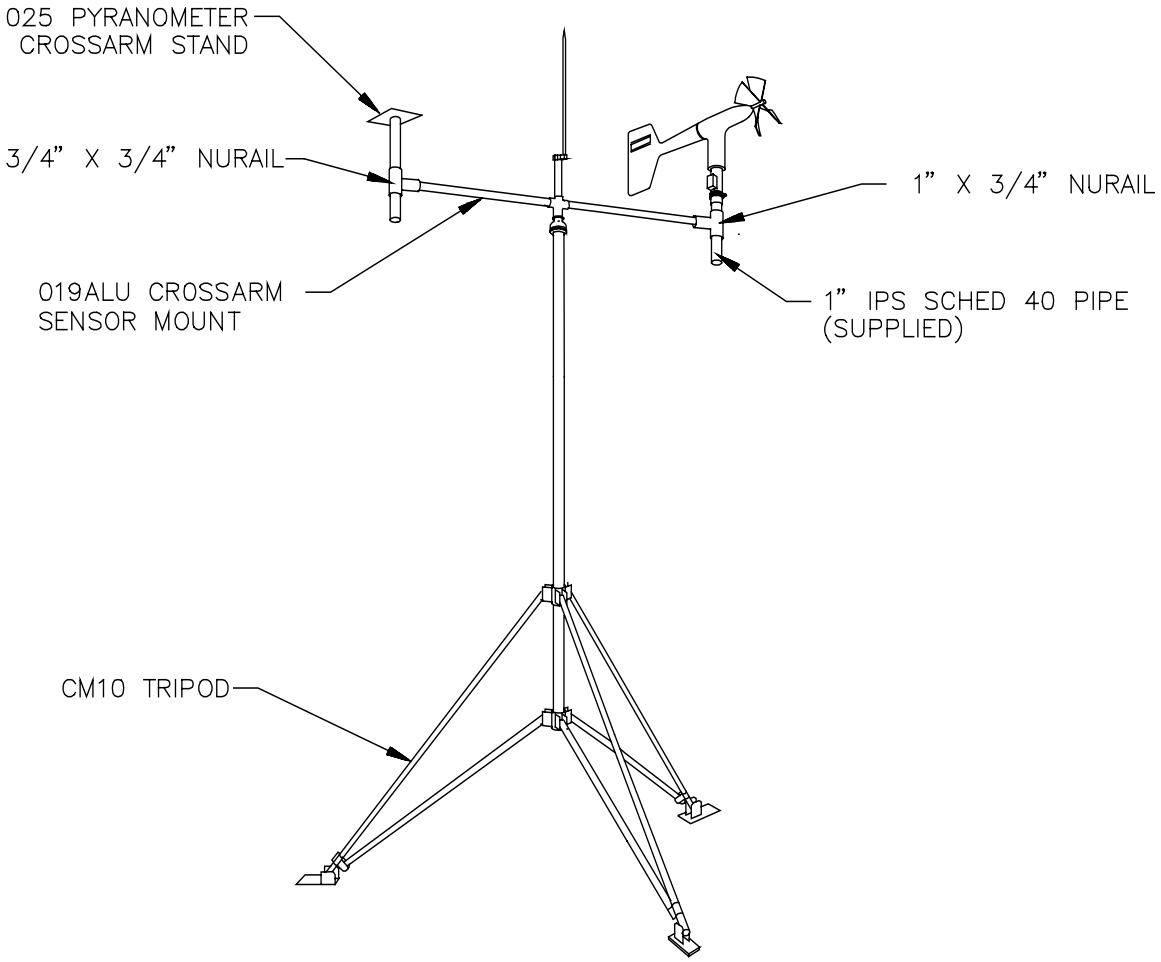


FIGURE 2-2. Wind Monitor Mounted to Campbell Scientific's 019 Crossarm Mount

Signal	CR7/21X	CR10	Grey Cable (P/N 6549)	Black Cable (P/N 9721)
WSPD (REF)	G	G	Black of Red & Black	Black
WDIR (REF)	G	AG	Black of Green & Black	White
WDIR (SIG+)	H or L (Analog Channel)	H or L (Analog Channel)	Green	Green
WDIR (EX+)	Excitation	Excitation	Black of White & Black	Blue
WSPD (SIG+)	Pulse	Pulse	Red	Red
Drain	G	G	Clear	Clear

FIGURE 3-1. Wind Monitor Connections to Campbell Scientific Dataloggers

4.2 WIND DIRECTION INSTRUCTION CODE

Measure the wind direction with Instruction 4 (Excite, Delay, and Measure). In general, a delay of 2 (0.02 seconds) is sufficient when lead lengths are less than 100 feet. If the cable is 100 to 1000 feet, use a delay of 20 (0.20 seconds). If you need further assistance with the delay, contact Campbell Scientific's Marketing Department. The wind direction potentiometer has a five degree deadband between 355 and 360 degrees; therefore, the multiplier is 355/Excitation Voltage. The offset is zero. The parameters to be used with each datalogger are listed in Table 4-2.

TABLE 4-2. Instruction 4 Parameters for Wind Direction

	CR10	21X	CR7
Measurement Range	2500 mV, slow	5000 mV, slow	5000 mV, fast
Excitation Voltage	2500 mV	5000 mV	5000 mV
Multiplier	0.142 deg/mV	0.071 deg/mV	0.071 deg/mV
Offset	0	0	0

5. MAINTENANCE AND REPAIRS

R.M. Young suggests the anemometer bearings be inspected at least every 24 months. Please refer to the R.M. Young manual for maintenance information.

Contact R.M. Young's customer service department directly to obtain repair cost estimates and authorization for return of the unit. Their phone number is (616) 946-3980.

6. REFERENCES

Gill, G.C., 1973: The Helicoid Anemometer Atmosphere, II, 145-155.

Baynton, H.W., 1976: Errors in Wind Run Estimates from Rotational Anemometers Bul. Am. Met. Soc., vol. 57, No. 9, 1127-1130.

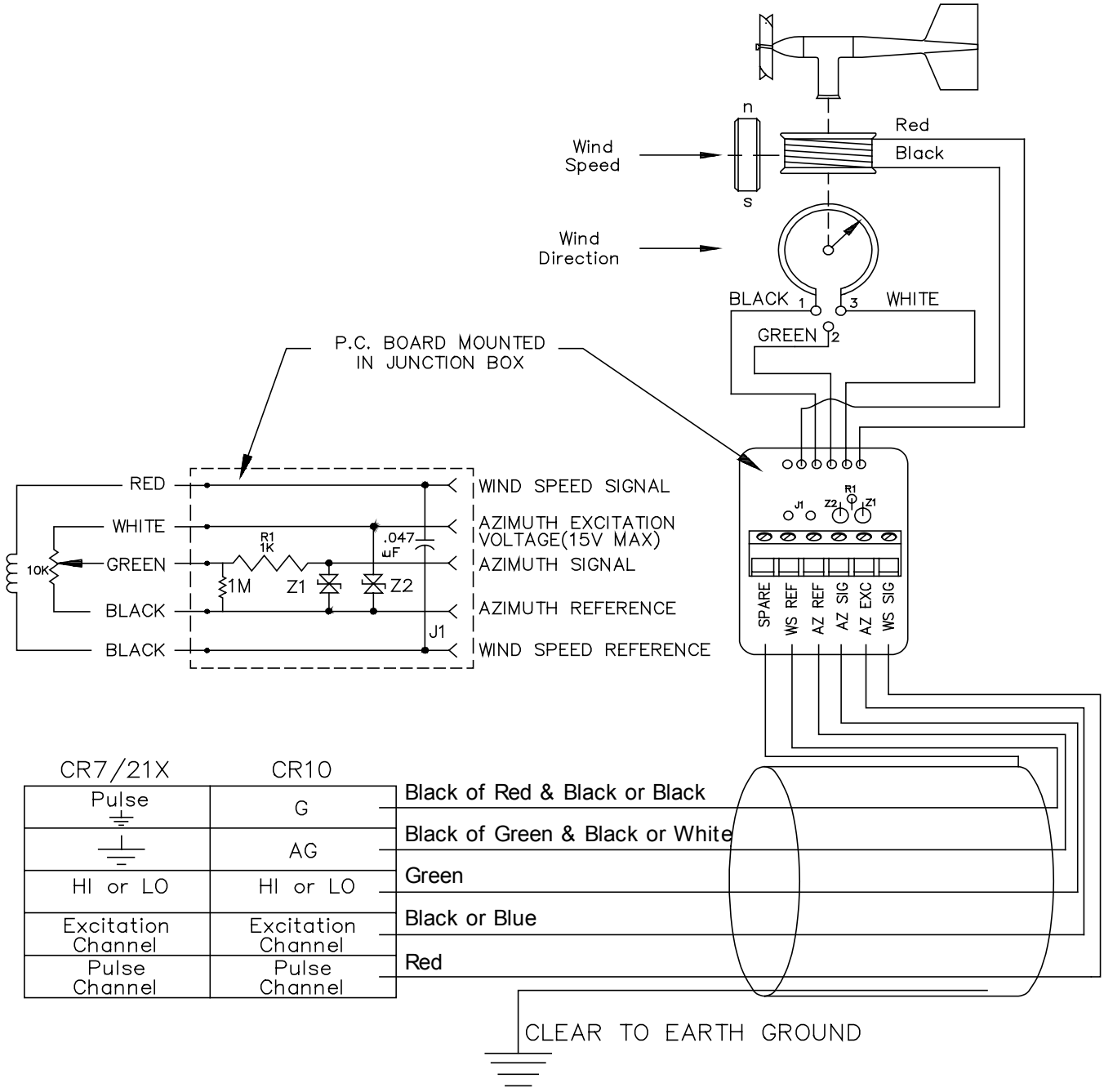


FIGURE 3-2. Wind Monitor's Circuit Diagram

INSTRUCTIONS
WIND MONITOR - MODEL 05103

☑ **WIND MONITOR**

SPECIFICATION SUMMARY
INTRODUCTION
INITIAL CHECK OUT
INSTALLATION
CALIBRATION
MAINTENANCE
SECTION VIEW
PROPELLER CALIBRATION CURVES
CABLE AND WIRING DIAGRAM
GENERAL ASSEMBLY AND
REPLACEMENT PARTS

☐ **SENSOR INTERFACE CARD**

☐ **LINE DRIVER**

☐ **WS/WD INDICATOR**

☐ **RECORDER - TRANSLATOR**

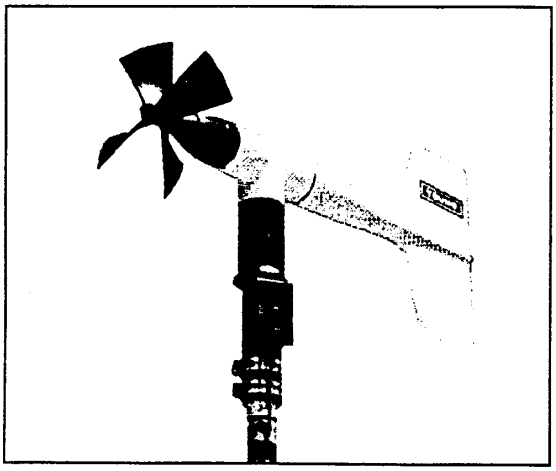
☐ _____

☐ _____

R. M. YOUNG COMPANY
2801 Aero-Park Drive, Traverse City, MI 49684, U. S. A.
Phone 616-946-3980 FAX NO.616-941-4772 TWX 810-291-3366

AUG. 88

MODEL 05103
WIND MONITOR



WIND SPEED SPECIFICATION SUMMARY:

Range	0 to 60 m/s (130 mph), gust survival 100 m/s (220 mph)
Sensor	18 cm diameter 4-blade helicoid propeller molded of polypropylene
Pitch	29.4 cm
Distance Constant	2.7 m (8.9 ft.) for 63% recovery
Threshold Sensitivity	0.9 m/s (2.0 mph)
Transducer	Centrally mounted stationary coil, 4K ohm nominal DC resistance
Transducer Output	AC sine wave signal induced by rotating magnet on propeller shaft. 100 mV p-p at 60 rpm. 20 V p-p at 12000 rpm.
Output Frequency	3 cycles per propeller revolution (0.098 m/s per Hz)

WIND DIRECTION (AZIMUTH) SPECIFICATION SUMMARY:

Range	360° mechanical, 355° electrical (5° open)
Sensor	Balanced vane, 38 cm (15 in) turning radius.
Damping Ratio	0.25
Delay Distance	1.3 m (4.3 ft) for 50% recovery
Threshold Sensitivity	1.0 m/s (2.2 mph) at 10° displacement 1.5 m/s (3.4 mph) at 5° displacement
Damped Natural Wavelength	7.4 m (24.3 ft)
Undamped Natural Wavelength	7.2 m (23.6 ft)
Transducer	Precision conductive plastic potentiometer, 10K ohm resistance (±20%), 0.25% linearity, life expectancy 50 million revolutions, rated 1 watt at 40° C, 0 watts at 125° C
Transducer Excitation Requirement	Regulated DC voltage, 15 VDC max
Transducer Output	Analog DC voltage proportional to azimuth angle with regulated excitation voltage applied across potentiometer.

INTRODUCTION

The Wind Monitor measures horizontal wind speed and direction. Originally developed for ocean data buoy use, it is rugged and corrosion resistant yet accurate and light weight. The main housing, nose cone, propeller, and other internal parts are injection molded U.V. stabilized plastic. The nose cone assembly threads directly into the main housing contacting an o-ring seal. Both the propeller and vertical shafts use stainless steel precision grade ball bearings. Bearings have light contacting teflon seals and are filled with a low torque wide temperature range grease to help exclude contamination and moisture.

Propeller rotation produces an AC sine wave signal with frequency proportional to wind speed. This AC signal is induced in a stationary coil by a six pole magnet mounted on the propeller shaft. Three complete sine wave cycles are produced for each propeller revolution.

Vane position is transmitted by a 10K ohm precision conductive plastic potentiometer which requires a regulated excitation voltage. With a constant voltage applied to the potentiometer, the output signal is an analog voltage directly proportional to azimuth angle.

The instrument mounts on standard one inch pipe, outside diameter 34 mm (1.34"). An orientation ring is provided so the instrument can be removed for maintenance and reinstalled without loss of wind direction reference. Both the mounting post assembly and the orientation ring are secured to the mounting pipe by stainless steel band clamps. Electrical connections are made at the terminals in a junction box at the base. A variety of devices are available for signal conditioning, display, and recording of wind speed and direction.

INITIAL CHECK-OUT

When the Wind Monitor is unpacked it should be checked carefully for any signs of shipping damage. Remove the plastic nut on the propeller shaft. Install the propeller on the shaft so the letter markings on the propeller face forward (into the wind). Although the instrument is aligned, balanced and fully calibrated before shipment, it should be checked both mechanically and electrically before installation. The vane and propeller should easily rotate 360° without friction. Check vane balance by holding the instrument base so the vane surface is horizontal. It should have near neutral torque without any particular tendency to rotate. A slight imbalance will not degrade performance.

The potentiometer requires a stable DC excitation voltage. Do not exceed 15 volts. When the potentiometer wiper is in the 5° deadband region, the output signal is "floating" and may show varying or unpredictable values. To prevent false readings, signal conditioning electronics should clamp the signal to excitation or reference level when this occurs. Avoid a short circuit between the azimuth signal line and either the excitation or reference lines. Although there is a 1K ohm current limiting resistor in series with the wiper for protection, damage to the potentiometer may occur if a short circuit condition exists.

Before installation, connect the instrument to an indicator as shown in the wiring diagram and check for proper wind speed and azimuth values. Position the vane over a sheet of paper with 30° or 45° crossmarkings to check vane alignment. To check wind speed, temporarily remove the propeller and connect the shaft to a synchronous motor. Details appear in the CALIBRATION section of this manual.

INSTALLATION

Proper placement of the instrument is very important. Eddies from trees, buildings, or other structures can greatly influence wind speed and wind direction observations. To get meaningful data for most applications locate the instrument well above or upwind from obstructions. As a general rule, the air flow around a structure is disturbed to twice the height of the structure upwind, six times the height downwind, and up to twice the height of the structure above ground. For some applications it may not be practical or necessary to meet these requirements.

Initial installation is most easily done with two people during the vane alignment step; one to adjust the instrument position and the other to observe the indicating device. After initial installation, the instrument can be removed and returned to its mounting without realigning the vane since the orientation ring preserves the wind direction reference. Install the Wind Monitor following these steps:

1. MOUNT WIND MONITOR
   a) Place orientation ring on mounting post. Do Not tighten band clamp yet.
   b) Place Wind Monitor on mounting post. Do Not tighten band clamp yet.

2. CONNECT SENSOR CABLE
   a) Slide junction box cover up.
   b) Connect sensor cable to terminals. See wiring diagram.
   c) Route cable thru strain relief opening at bottom of junction box. Secure cable by tightening packing nut.
   d) Slide junction box cover down.

3. ALIGN VANE
   a) Connect instrument to an indicator.
   b) Choose a known wind direction reference point on the horizon.
   c) Sighting down instrument centerline, point nose cone at reference point on horizon.
   d) While holding vane in position, slowly turn base until indicator shows proper value.
   e) Tighten mounting post band clamp.
   f) Engage orientation ring indexing pin in notch at instrument base.
   g) Tighten orientation ring band clamp.

CALIBRATION

The Wind Monitor is fully calibrated before shipment and should require no adjustments. Recalibration may be necessary after some maintenance operations. Periodic calibration checks are desireable and may be necessary where the instrument is used in programs which require auditing of sensor performance.

A very accurate wind direction calibration requires either a Model 17221 Vane Angle Fixture or a Model 18101 Bench Test Stand with Protractor. Without these devices the following method can yield vane calibration accuracies of ±5° or better if carefully done. Begin by connecting the instrument to a signal conditioning circuit which has some method of indicating azimuth value. This may be a display which shows azimuth values in angular degrees or simply a voltmeter monitoring the output. Hold or mount the instrument so its center of rotation is over the center of a paper which has 30° or 45° crossmarkings. Orient the base so the junction box faces due south. Visually align the vane with the crossmarkings and observe the indicator output. If the vane position and indicator do not agree within 5°, it may be necessary to adjust the potentiometer coupling inside the main housing. Details for making this adjustment appear in the MAINTENANCE potentiometer replacement outline, step 7.

It is important to note that while full scale azimuth on signal conditioning electronics may be 360°, full scale azimuth signal from the instrument is 355°. The signal conditioning electronics must be adjusted accordingly. For example, in a circuit where 0 to 1.000 VDC represents 0° to 360°, the output must be adjusted for 0.986 VDC when the instrument is at 355°. (355°/360° X 1.000 volts = 0.986 volts)

Wind speed calibration is determined by propeller pitch and the output characteristics of the transducer. Calibration formulas showing propeller rpm and frequency output vs. wind speed are included in this manual. These formulas are accurate to within 2 percent. For greater accuracy, the propeller must be individually calibrated in comparison with a wind speed standard. Contact the factory or your supplier to schedule a wind tunnel calibration in our facility.

To calibrate wind system electronics using a signal from the instrument, temporarily remove the propeller and connect a synchronous motor to the propeller shaft. Apply the appropriate calibration formula to the calibrating motor rpm and adjust the electronics for the proper value. For example, with the propeller shaft turning at 3600 rpm adjust an indicator to display 39.5 miles per hour. (3600 rpm X 0.01096 mph/rpm = 39.5 mph)

Details on checking bearing torque, which affects wind speed and direction threshold, appear in the following section.

MAINTENANCE

Given proper care, the Wind Monitor should provide years of service. Constructed entirely of non-corrosive materials and using components which are conservatively rated, the instrument requires little maintenance. The only components likely to need replacement due to normal wear are the precision ball bearings and the wind direction potentiometer. Only a qualified instrument technician should perform the replacement. If service facilities are not available, return the instrument to the company. Refer to the drawings to become familiar with part names and locations. The asterisk * which appears in the following outlines is a reminder that maximum torque on all set screws is 40 oz-in (2800 gm-cm).

POTENTIOMETER REPLACEMENT:

The potentiometer has a life expectancy of fifty million revolutions. As it becomes worn, the element may begin to produce noisy signals or become non-linear. When signal noise or non-linearity becomes unacceptable replace the potentiometer as follows: Refer to exploded view drawing.

1. REMOVE MAIN HOUSING
   a) Unscrew nose cone from main housing. Do not lose o-ring seal.
   b) Gently push main housing latch.
   c) While pushing latch, lift main housing up and remove it from vertical shaft bearing rotor.

2. UNSOLDER TRANSDUCER WIRE
   a) Slide junction box cover up, exposing circuit board.
   b) Remove screws holding circuit board.
   c) Unsolder three potentiometer wires (white, green, black) and two wind speed coil wires (red, black) from top of board.

3. REMOVE POTENTIOMETER
   a) Loosen set screw on potentiometer coupling and remove it from potentiometer adjust thumbwheel.
   b) Loosen set screw on potentiometer adjust thumbwheel and remove it from potentiometer shaft extension.

c) Loosen two set screws at base of transducer assembly and remove it from vertical shaft.
d) Unscrew potentiometer housing from potentiometer mounting & coil assembly.
e) Push potentiometer out of potentiometer mounting & coil assembly by applying firm but gentle pressure on potentiometer extension shaft.
f) Loosen set screw on potentiometer extension shaft and remove it from potentiometer shaft.

4. INSTALL NEW POTENTIOMETER
a) Place potentiometer extension shaft on new potentiometer (Gap 0.040") and tighten set screw*.
b) Push new potentiometer into potentiometer mounting & coil assembly until it "snaps" into position.
c) Feed potentiometer and coil wires through hole in bottom of potentiometer housing.
d) Screw potentiometer housing onto potentiometer mounting & coil assembly.
e) Gently pull transducer wires through bottom of potentiome ter housing to take up any slack. Apply a small amount of silicone sealant around hole.
f) Install transducer assembly on vertical shaft allowing 0.5 mm (0.020") clearance from vertical bearing. Tighten set screws* at bottom of transducer assembly.
g) Place potentiometer adjust thumbwheel on potentiometer extension shaft and tighten set screw*.
h) Place potentiometer coupling on potentiometer adjust thumbwheel. Do Not tighten set screw yet.

5. RECONNECT TRANSDUCER WIRES
a) Using needle-nose pliers or a paper clip bent to form a small hook, gently pull transducer wires through hole in junction box.
b) Solder wires to circuit board according to wiring diagram. Observe color code.
c) Secure circuit board in junction box using two screws removed in step 2b.

6. REPLACE MAIN HOUSING
a) Place main housing over vertical shaft bearing rotor. Be careful to align indexing key and channel in these two assemblies.
b) Place main housing over vertical shaft bearing rotor until potentiometer coupling is near top of main housing.
c) Turn potentiometer adjust thumbwheel until potentiometer coupling is oriented to engage ridge in top of main housing. Set screw on potentiometer coupling should be facing the front opening.
d) With potentiometer coupling properly oriented, continue pushing main housing onto vertical shaft bearing rotor until main housing latch locks into position with a "click".

7. ALIGN VANE
a) Connect excitation voltage and signal conditioning electronics to terminal strip according to wiring diagram.
b) With mounting post held in position so junction box is facing due south, orient vane to a known angular reference. Details appear in CALIBRATION section.
c) Reach in through front of main housing and turn potentiometer adjust thumbwheel until signal conditioning system indicates proper value.
d) Tighten set screw* on potentiometer coupling.

8. REPLACE NOSE CONE
a) Screw nose cone into main housing until o-ring seal is seated. Be certain threads are properly engaged to avoid cross-threading.

*Max set screw torque 40 oz-in

FLANGE BEARING REPLACEMENT:

If anemometer bearings become noisy or wind speed threshold increases above an acceptable level, bearings may need replacement. Check anemometer bearing condition using a Model 18310 Anemometer Bearing Torque Disk. Without it, a rough check can be performed by adding an ordinary paper clip (0.5 gm) to the tip of a propeller blade. Turn the blade with the paper clip to the "three o'clock" or "nine o'clock" position and gently release it. Failure to rotate due to the weight of the paper clip indicated anemometer bearings need replacement. Repeat this test at different positions to check full bearing rotation. If needed bearings are replaced as follows.

1. REMOVE OLD BEARINGS
a) Unscrew nose cone. Do not lose o-ring seal.
b) Loosen set screw on magnet shaft collar and remove magnet.
c) Slide propeller shaft out of nose cone assembly.
d) Remove front bearing cap which covers front bearing.
e) Remove both front and rear bearings from nose cone assembly. Insert edge of a pocket knife under bearing flange and lift it out.

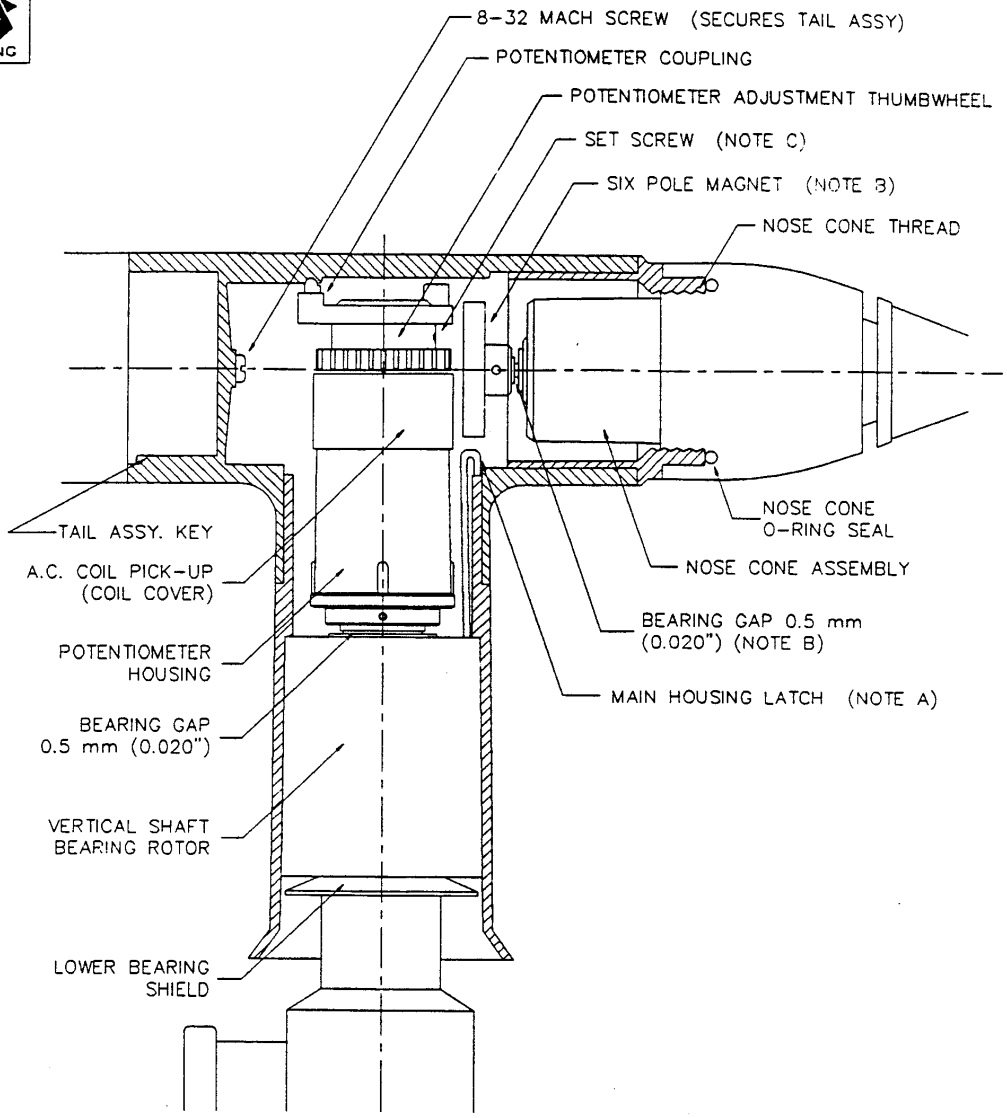
2. INSTALL NEW BEARINGS
a) Insert new front and rear bearings into nose cone.
b) Replace front bearing cap.
c) Carefully slide propeller shaft thru bearings.
d) Place magnet on propeller shaft allowing 0.5 mm (0.020") clearance from rear bearing.
e) Tighten set screw* on magnet shaft collar.
f) Screw nose cone into main housing until o-ring seal is seated. Be certain threads are properly engaged to avoid cross-threading.

VERTICAL SHAFT BEARING REPLACEMENT:

Vertical shaft bearings are much larger than the anemometer bearings and are not as critical for proper instrument performance. Ordinarily, these bearings will not require replacement at the same interval as anemometer bearings. Check bearing condition using a Model 18330 Vane Bearing Torque Gauge. Without it, a rough check can be performed by holding the instrument with the vane horizontal and placing a 3 gm weight near the aft edge of the fin. A U.S. penny weights about 3 gm and is convenient for this check. Failure to rotate downward indicates the vertical bearings need replacement. Repeat this test at different positions to check full bearing rotation.

Since this procedure is similar to POTENTIOMETER REPLACEMENT, only the major steps are listed here.

1. REMOVE MAIN HOUSING
2. UNSOLDER TRANSDUCER WIRES AND REMOVE TRANSDUCER ASSEMBLY
   Loosen set screws at base of transducer assembly and remove entire assembly from vertical shaft. Remove vertical shaft bearing rotor by sliding it upward off vertical shaft.
3. REMOVE OLD VERTICAL BEARINGS AND INSTALL NEW BEARINGS
   Be careful not to apply pressure to bearing shields.
4. REPLACE TRANSDUCER & RECONNECT WIRES
5. REPLACE MAIN HOUSING
6. ALIGN VANE
7. REPLACE NOSE CONE



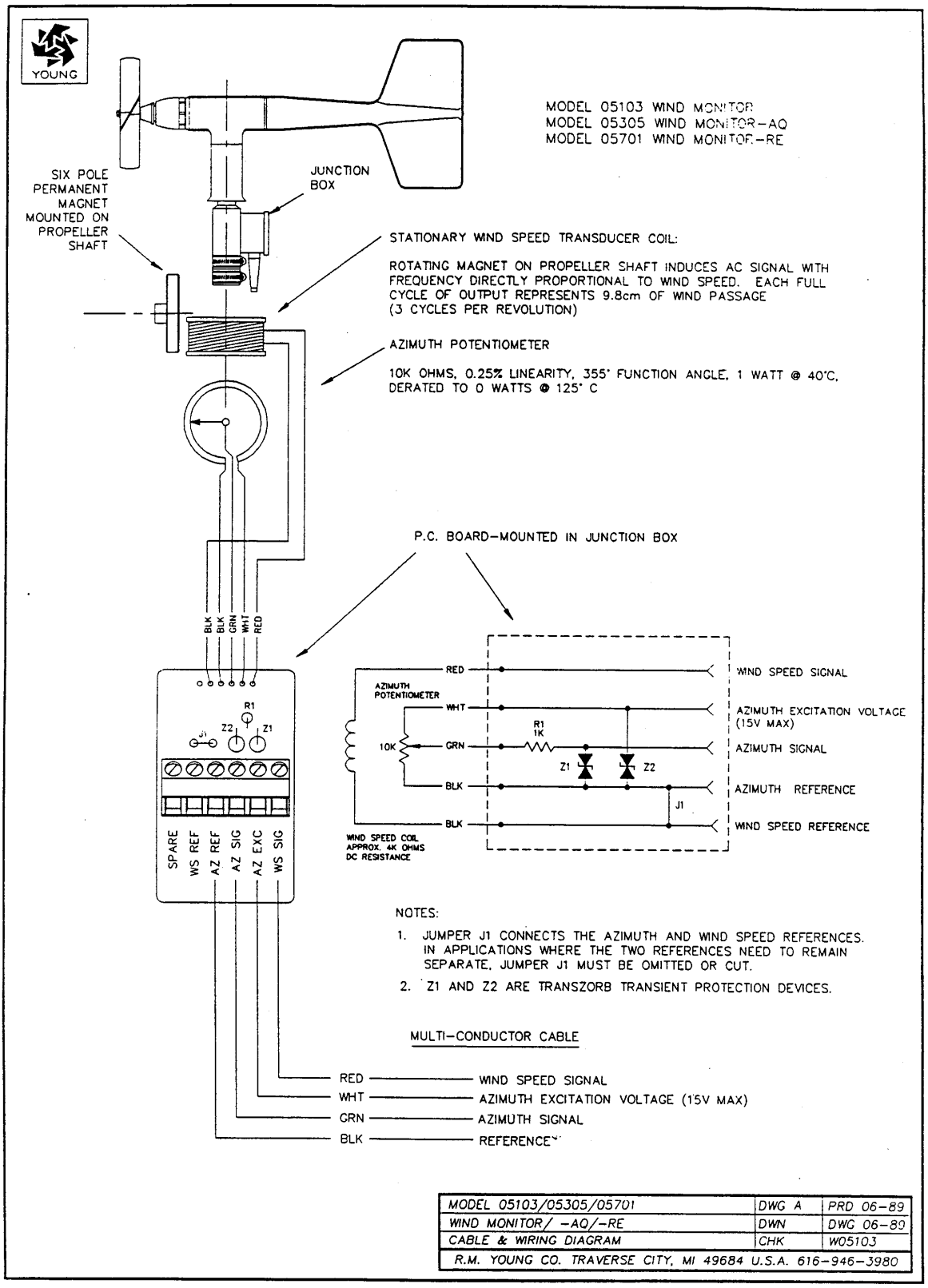
NOTE:

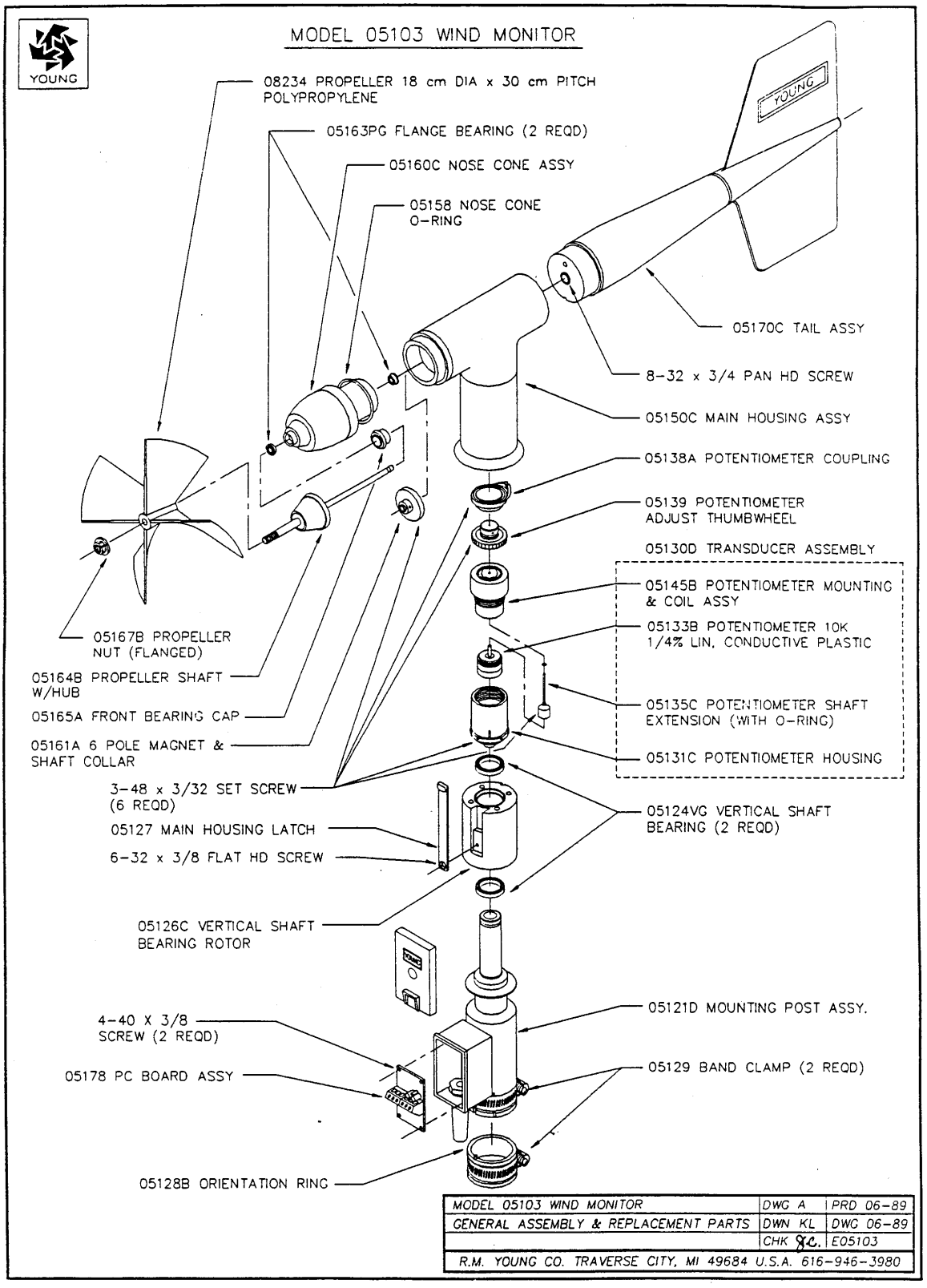
A. TO REMOVE MAIN HOUSING – UNTHREAD NOSE CONE ASSEMBLY, PUSH MAIN HOUSING LATCH, LIFT UPWARD.

B. TO REPLACE ANEMOMETER BEARINGS – UNTHREAD NOSE CONE, REMOVE SIX POLE MAGNET, SLIDE PROPELLER SHAFT AND HUB ASSEMBLY FORWARD. AFTER BEARING REPLACEMENT, SET BEARING GAP TO 0.5mm (0.020")

C. TO ADJUST POTENTIOMETER OUTPUT SIGNAL – REMOVE NOSE CONE, LOOSEN SET SCREW IN POTENTIOMETER COUPLING, ADJUST OUTPUT SIGNAL BY MEANS OF POTENTIOMETER ADJUSTMENT THUMBWHEEL, RE-TIGHTEN SET SCREW.

MODEL 05103/05305/05701	PROD: OCT 85
WIND MONITOR – SECTION VIEW	M05103M
MAIN HOUSING TRANSDUCER ASSY	DWG: MAR 88
R.M. YOUNG CO. TRAVERSE CITY, MI 49684 U.S.A. 616-946-3980	


YOUNG
MODEL 05103 WIND MONITOR
MODEL 05305 WIND MONITOR-AQ
MODEL 05701 WIND MONITOR-RE
SIX POLE PERMANENT MAGNET MOUNTED ON PROPELLER SHAFT
JUNCTION BOX
STATIONARY WIND SPEED TRANSDUCER COIL:
ROTATING MAGNET ON PROPELLER SHAFT INDUCES AC SIGNAL WITH FREQUENCY DIRECTLY PROPORTIONAL TO WIND SPEED. EACH FULL CYCLE OF OUTPUT REPRESENTS 9.8cm OF WIND PASSAGE (3 CYCLES PER REVOLUTION)
AZIMUTH POTENTIOMETER
10K OHMS, 0.25% LINEARITY, 355° FUNCTION ANGLE, 1 WATT @ 40°C, DERATED TO 0 WATTS @ 125° C
P.C. BOARD-MOUNTED IN JUNCTION BOX
BLK BLK GRN WHT RED
R1
Z2
Z1
J1
SPARE WS REF AZ REF AZ SIG AZ EXC WS SIG
AZIMUTH POTENTIOMETER
10K
R1 1K
RED
WHT
GRN
BLK
BLK
Z1
Z2
J1
WIND SPEED SIGNAL
AZIMUTH EXCITATION VOLTAGE (15V MAX)
AZIMUTH SIGNAL
AZIMUTH REFERENCE
WIND SPEED REFERENCE
WIND SPEED COIL APPROX. 4K OHMS DC RESISTANCE
NOTES:
1. JUMPER J1 CONNECTS THE AZIMUTH AND WIND SPEED REFERENCES. IN APPLICATIONS WHERE THE TWO REFERENCES NEED TO REMAIN SEPARATE, JUMPER J1 MUST BE OMITTED OR CUT.
2. Z1 AND Z2 ARE TRANSZORB TRANSIENT PROTECTION DEVICES.
MULTI-CONDUCTOR CABLE
RED — WIND SPEED SIGNAL
WHT — AZIMUTH EXCITATION VOLTAGE (15V MAX)
GRN — AZIMUTH SIGNAL
BLK — REFERENCE
MODEL 05103/05305/05701 | DWG A | PRD 06-89
WIND MONITOR/ -AQ/-RE | DWN | DWG 06-89
CABLE & WIRING DIAGRAM | CHK | W05103
R.M. YOUNG CO. TRAVERSE CITY, MI 49684 U.S.A. 616-946-3980


MODEL 05103 WIND MONITOR
YOUNG
08234 PROPELLER 18 cm DIA x 30 cm PITCH POLYPROPYLENE
05163PG FLANGE BEARING (2 REQD)
05160C NOSE CONE ASSY
05158 NOSE CONE O-RING
05170C TAIL ASSY
8-32 x 3/4 PAN HD SCREW
05150C MAIN HOUSING ASSY
05138A POTENTIOMETER COUPLING
05139 POTENTIOMETER ADJUST THUMBWHEEL
05130D TRANSDUCER ASSEMBLY
05145B POTENTIOMETER MOUNTING & COIL ASSY
05133B POTENTIOMETER 10K 1/4% LIN. CONDUCTIVE PLASTIC
05135C POTENTIOMETER SHAFT EXTENSION (WITH O-RING)
05131C POTENTIOMETER HOUSING
05167B PROPELLER NUT (FLANGED)
05164B PROPELLER SHAFT W/HUB
05165A FRONT BEARING CAP
05161A 6 POLE MAGNET & SHAFT COLLAR
3-48 x 3/32 SET SCREW (6 REQD)
05127 MAIN HOUSING LATCH
6-32 x 3/8 FLAT HD SCREW
05124VG VERTICAL SHAFT BEARING (2 REQD)
05126C VERTICAL SHAFT BEARING ROTOR
4-40 X 3/8 SCREW (2 REQD)
05178 PC BOARD ASSY
05121D MOUNTING POST ASSY.
05129 BAND CLAMP (2 REQD)
05128B ORIENTATION RING
MODEL 05103 WIND MONITOR | DWG A | PRD 06-89
GENERAL ASSEMBLY & REPLACEMENT PARTS | DWN KL | DWG 06-89
CHK RC. | E05103
R.M. YOUNG CO. TRAVERSE CITY, MI 49684 U.S.A. 616-946-3980

WIND MONITOR
MODEL 05103
REPLACEMENT PARTS

PART NO.	PART NAME	PRICE (US)
05121D	MOUNTING POST ASSY	$ 74.00
05124VG	VERTICAL SHAFT BEARING - 2 REQD	17.00
05126C	VERTICAL SHAFT BEARING ROTOR	19.00
05127	MAIN HOUSING LATCH	3.80
05128B	ORIENTATION RING	9.00
05129	BAND CLAMP - 2 REQD	1.20
05130D	TRANSDUCER ASSY	176.00
05131C	POTENTIOMETER HOUSING	14.00
05133B	POTENTIOMETER - 10K 1/4% LIN COND PLASTIC	88.00
05135C	POTENTIOMETER SHAFT EXTENSION (WITH O-RING)	13.00
05138A	POTENTIOMETER COUPLING	8.60
05139	POTENTIOMETER ADJUST THUMBWHEEL	7.80
05145B	POTENTIOMETER MOUNTING AND COIL ASSY	42.00
05150C	MAIN HOUSING ASSY	54.00
05158	NOSE CONE O-RING	2.40
05160C	NOSE CONE ASSY	48.00
05161A	6 POLE MAGNET & SHAFT COLLAR	13.00
05163PG	FLANGE BEARINGS - 2 REQD	6.20
05164B	PROPELLER SHAFT W / HUB	19.00
05165A	FRONT BEARING CAP	1.60
05167B	PROPELLER NUT (FLANGED)	1.60
05170C	TAIL ASSY	72.00
05178	PC BOARD ASSY	25.00
08234	PROP - 18 cm DIA x 30 cm PITCH-POLYPROPYLENE	30.00
05103-90	INSTRUCTION MANUAL	8.00

CALIBRATION ACCESSORIES

17221	VANE ANGLE FIXTURE - AZ	664.00
18101	BENCH STAND W / PROTRACTOR (1" I.P.S)	40.00
18310	ANEMOMETER BEARING TORQUE DISC - PROPELLER SHAFT	36.00
18330	VANE BEARING TORQUE GAUGE	54.00
27232	CALIBRATING UNIT - 3600 RPM - 115 V / 60Hz	274.00

BECAUSE OF CONTINUALLY CHANGING COSTS PRICES ON THIS PARTS LIST ARE SUBJECT TO CHANGE. IF EXACT PRICING IS REQUIRED PLEASE CONTACT US.

R. M. YOUNG COMPANY
2801 AERO-PARK DRIVE, TRAVERSE CITY, MI 49864, U.S.A.
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Jun 1989