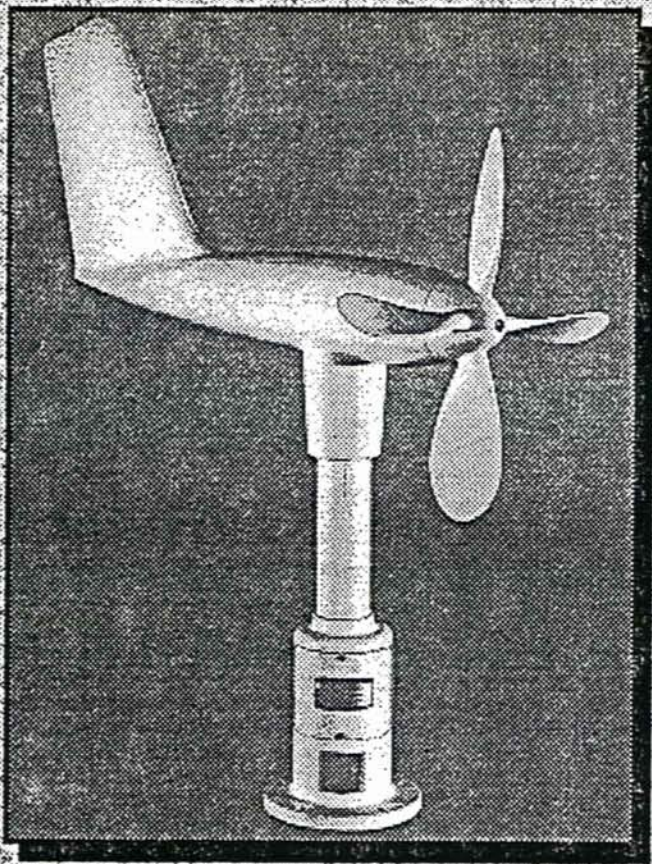


**Model 2106
Skyvane
Wind Sensor**



**User's
Manual**


*Distributed by
NovaLynx Corporation
3235 Sunrise Blvd. # 1
Rancho Cordova, CA 95742
916-852-9174 / fax 852-6436*



QUALIMETRICS, Inc.

REVISIONS				
REV	ECN#	DESCRIPTION	DATE	APPROVED
A	2239	INITIAL RELEASE	1/86	
J	3828	REVISE TRANSFER FUNCTIONS	10/90	
C	4052	UPDATE DRAWINGS	4/92	
D	4336	UPDATE BOM AND DRAWINGS	11/94	<i>[Signature]</i>

MODEL 2106
SKYVANE WIND SENSOR
USER'S MANUAL

CHECK		DT	TITLE MODEL 2106 SKYVANE WIND SENSOR USER'S MANUAL	 QUALIMETRICS
ENGR		DT		
MFG		DT		
/SQA		DT		
APPROVED			DOCUMENT NUMBER 2106-001	
BY	J. EWING			
DATE	11/4/94			

**Model 2106
Skyvane
Wind Sensor
User's Manual**

 **QUALIMETRICS, Inc.**

©1992 Qualimetrics, Inc.

All rights reserved. No part of this publication may be reproduced, transcribed, stored in a retrieval system, or translated into any language in any form by any means without the written permission of Qualimetrics, Inc.



Qualimetrics, Inc.
1165 National Drive
Sacramento, CA 95834
Telephone: (916) 928-1000
Telefax: (916) 928-1165



Table of Contents

General Information	1
Introduction	1
Installation	2
General	2
Siting	2
Precautions	2
Assembly	2
Mounting and Alignment	3
Connection	3
Theory of Operation	4
Construction	4
Wind Speed	4
Wind Direction	4
Calibration	5
General	5
Wind Speed Calibration	5
Wind Direction Calibration	5
Maintenance	9
Periodic Maintenance	9
Disassembly	9
Items Requiring Factory Disassembly	10
Re-assembly	10
Warranty	11
Specifications	12
Schematics and Parts List	13
Contents	13



I General Information

I.1 Introduction



The Model 2106 Skyvane is a unique wind sensor that combines the durability of a heavy duty instrument with the response characteristics of a lightweight cup and vane. The aerodynamic shape of the sensor aligns the body with wind direction, while a four-bladed, low threshold propeller senses wind velocity.

The Skyvane propeller is connected to an AC generator whose output feeds into the wind speed port of a translator. Wind direction is sensed by a selsyn motor located in the base of the Sky-

vane, providing a voltage output corresponding to sensor orientation.

The Skyvane is a heavy-duty combination wind sensor suited for installation in severe environments, including aboard ocean vessels. A flanged base provides a mounting surface for platforms and decks. A separate adapter, Model 21101, can be purchased to mount the sensor onto a 1/4" I.D. pipe (1/2" O.D.). The sensor provides outputs compatible with electronic signal conditioning modules and data logging equipment. ☒

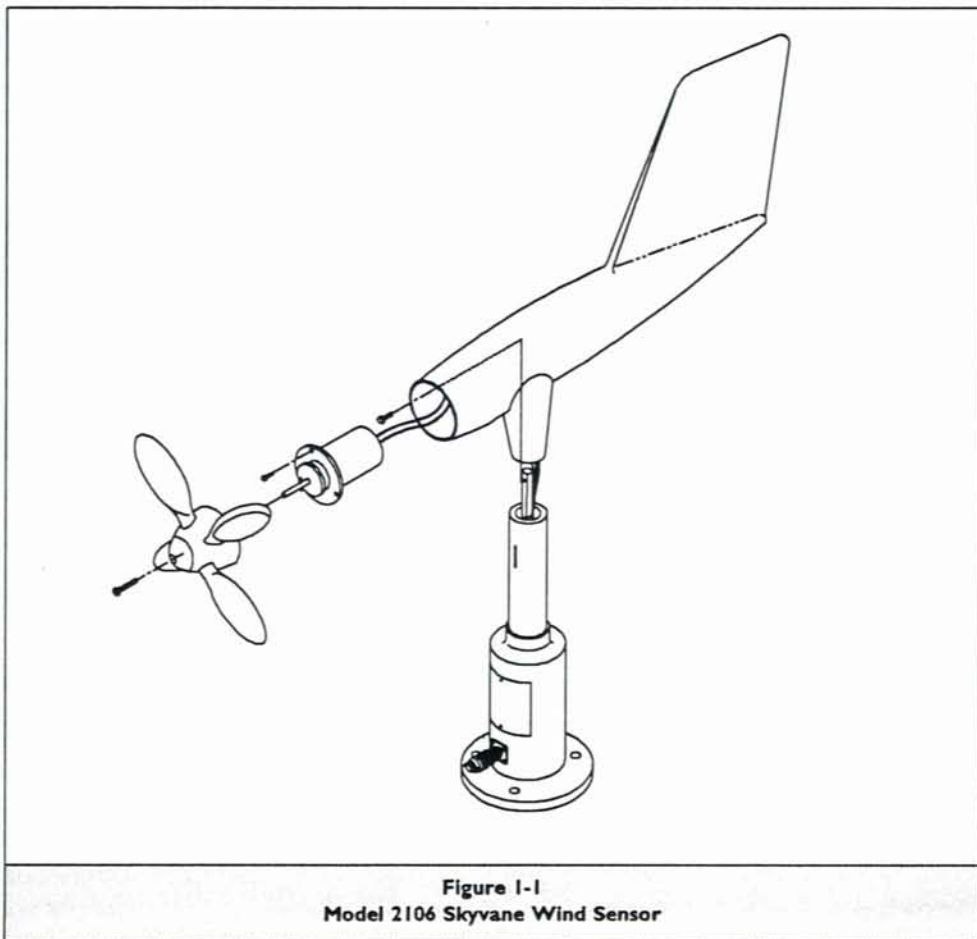


Figure I-1
Model 2106 Skyvane Wind Sensor



2 Installation

2.1 General

This instrument is thoroughly tested and fully calibrated at the factory and is ready for installation. Please refer to the return authorization card included in the packing box if damage has occurred. Also, notify Qualimetrics, Inc.

2.2 Siting

Site selection for wind sensors must be carefully planned to avoid errors introduced by their surroundings. Standard exposure for wind sensors is 33 feet (10 meters) above the ground over open, level terrain. Open terrain is defined as an area where the distance from the sensor to any obstruction is at least 10 times the height to which the obstruction protrudes above ground level at the sensor.

Major changes in wind direction are normally caused by the movement of large scale general circulation pressure patterns. When these large scale features are weak, local circulations such as sea breezes and night time cold air drainage predominate. Fluctuations in the mean wind direction over short periods are usually the result of mechanical or convective turbulence. Mechanical turbulence (eddies produced by the friction of air moving over rough surfaces) is

seldom of interest in measuring wind. The siting of the sensor should normally attempt to minimize the effects of mechanical turbulence. Large obstacles such as trees, buildings, and hills create large mixing eddies that cause side fluctuations in wind direction and speed. It is generally advisable to avoid installing a wind sensor where it will be influenced by the wakes produced from large obstructions.

The tops of buildings are poor sites due to extreme mechanical turbulence. Wind sensors should never be located near exhaust vents, smokestacks, or ventilation systems. Sensors that must be roof-mounted should be at a height above the roof that is at least 1½ times the height of the building for buildings less than 30 feet high. Avoid mounting sensors on the edge of a roof.

2.3 Precautions

When transporting, packing, and unpacking the sensor, always grasp the main support shaft with one hand and the tail assembly with the other. This

prevents the sensor's swinging freely and possibly being damaged. The propeller is very fragile; do not drop or jar it.

2.4 Assembly

The sensor is shipped with the propeller detached. To attach the propeller:

- ① Remove the retaining screw from the sensor shaft.
- ② Slide the propeller onto the shaft and align the slot in the propeller hub to the key on the shaft.
- ③ Re-install the retaining screw securely, but be careful not to overtighten it.

Attach the sensor cable to the sensor and to the indicating/recording electronics. Verify correct sensor operation prior to final installation. Refer to the appropriate instruction manuals for operating and calibration instructions. **Section 4** of this manual contains calibration information for this sensor. When cable is purchased from Qualimetrics, a 5-conductor, shielded, PVC jacketed, size 20 AWG cable is provided. The cable

2.5
Mounting and
Alignment

will be attached to the sensor cable connector. The cable part number is

T600507 and the length must be specified in feet or meters.

The sensor can be attached to the tip of a wooden pole or to a pipe support with a drilled top plate. Take care to mount the sensor exactly vertical, or a biased indication of direction will result.

South orientation. Select a distant object that is directly North or South of the site and align the sensor to that point.

The mounting hole on the opposite side of the base from the cable connector is used to orient the skyvane for wind direction measurement. When this hole faces South and the connector faces North, the direction measured by the sensor is true relative to this North-

A transit located directly North of the instrument can be used to sight either the connector on the base or the scribe line on the sensor body. A second scribe line is located on the support shaft where it meets the sensor body. When the two scribe lines are aligned, the sensor points to North.

2.6
Connection

After sensor alignment is complete, secure the base of the sensor to the mounting surface. Connect the cable to the sensor connector and route the cable from the sensor to the indicator/recording equipment. The cable must be securely fastened to the mast or tower to prevent damage from wind whipping; use plastic cable ties where appropriate. Do not put staples through the cable jacket. Avoid routing the cable near

heavy-duty electrical equipment where unwanted inducted noise might occur.

Shielded cable is used whenever possible and may be ordered with the sensor. Connect the shield wire to chassis or earth ground only at the indicator/recorder end of the cable. When cable is purchased with the sensor, Qualimetrics will ship the cable with the connector attached. ☒



3 Theory of Operation

3.1 Construction

The Skyvane Wind Sensor makes two independent measurements: wind speed and wind direction. The components used are selected for durability and will withstand winds in excess of 200 mph.

The sensor is constructed of fiberglass and aluminum and uses stainless steel or brass components for all moving parts.

3.2 Wind Speed

The wind speed transducer is an AC generator that produces an output voltage or frequency proportional to wind speed. This transducer is used in applications where power is not available for sensor excitation and cable runs are long or in noisy locations. The AC generator is a six-pole permanent magnet type. The output voltage is 18.00 VAC at 89.4 mph, and the output frequency is 90 Hz at 89.4 mph. Refer to Figure 4-1 for a list of output voltages and frequencies for various wind speeds.

The signal from the wind speed transducer is carried by wires through the main shaft to a slip ring assembly. The brushes of the slip ring assembly in turn are connected to a 10-pin weatherproof connector. (Refer to the schematic at the end of this manual for wiring details.) Both the propeller shaft and main body shaft are supported on lubricated stainless steel ball bearings. Labyrinths are provided to prevent the entry of moisture.

3.3 Wind Direction

The wind direction transducer is a synchro motor with power supplied by a second synchro motor inside the recorder or indicator to which the sensor is connected. As the wind rotates the body of the sensor, a shaft leading from the body rotates the synchro motor shaft. The motion of the shaft causes an unbalanced condition between the synchro motor in the sensor and that in the recorder or

indicator. As a result, the indicator synchro magnetically rotates its shaft to the same position as that of the sensor synchro so that the two are again balanced. 115 VAC is applied to the rotor coils of each synchro; the stator coils have from 0-90 VAC applied to them, depending on the angular position of the rotor. ⓧ



4 Calibration

4.1 General

Each sensor has been factory calibrated before shipment and is ready for installation. The following steps describe how to calibrate the Skyvane.

4.2 Wind Speed Calibration

Wind speed calibration is accomplished by removing the propeller assembly and driving the shaft counterclockwise at a known RPM by means of a synchronous motor calibration unit. This calibration is accomplished in the laboratory prior to field installation.

The voltage from the sensor can be measured directly using a voltmeter, or it can be measured at the monitoring or data logging equipment.

Refer to Figure 4-1 for calibration data.

4.3 Wind Direction Calibration

The wind direction transducer can be aligned using the following procedure.

- ① Remove the side cover from the sensor.
- ② Loosen the set screw that holds the coupling to the main shaft (not the transducer shaft).
- ③ Align the tail assembly to north by lining up the two scribed lines on the sensor.
- ④ Rotate the coupling and transducer shaft assembly until the indicator aligns with north.
- ⑤ Tighten the set screw at the top of the coupling.
- ⑥ Replace the side cover.

The potentiometer will read 4995 ohms or more before shorting to 0 ohms. Try to hold the sensor as close to the shorting point as possible. ☒

MODEL 2106 SKYVANE WIND SENSOR

CALIBRATION CERTIFICATE

Instrument Skyvane Wind Sensor

Model Number 2106

Serial Number 0628

Range	Calibration Points	Sensor Output	Propeller Shaft Speed
Wind Speed			
0-200 MPH	0 MPH	0.00 VAC	0 rpm
	89.4 MPH	18.01 VAC	1800 rpm
Wind Direction			
0-360° Azimuth	(115 VAC Input)	0-90 VAC	

Cable T600507 Length _____ Shield Yes No

Refer to enclosed Calibration Sheet. Figure _____

Must be used in conjunction with:

Instrument _____

Model Number _____ Serial Number _____

Technician manif Date 1.26.96

SKYVANE MODEL 2106			
MPH	OUTPUT, VAC	OUTPUT, Hz	SHAFT,RPM
10	1.87		
18.9	3.66	18	360
20	3.90		
30	5.93		
30.8	6.10	30	600
40	7.96		
46.0	9.18	45	900
50	9.99		
60	12.02		
70	14.06		
80	16.09		
89.4	18.00	90	1800
90	18.12		
100	20.15		
110	22.18		
120	24.21		
130	26.24		
140	28.27		
150	30.30		
160	32.33		
170	34.36		
180	36.39		
190	38.42		
200	40.45		

$$Y \text{ (MPH)} = 4.925 \times X \text{ (VAC)} + 0.779$$

AC GENERATOR
OUTPUT SIGNAL vs. MPH
Figure 4-1

MODEL 2106 SKYVANE WIND SENSOR

MPH	x	1.60934	0.44704	0.86898	1.46660
MPH		Km/Hr	m/s	Knots	Ft./s
0		0	0	0	0
5		8.05	2.24	4.34	7.33
10		16.09	4.47	8.69	14.67
15		24.14	6.71	13.03	22.00
20		32.19	8.94	17.38	29.33
25		40.23	11.18	21.72	36.67
30		48.28	13.41	26.07	44.00
35		56.33	15.65	30.41	51.33
40		64.37	17.88	34.76	58.67
45		72.42	20.12	39.00	66.00
50		80.47	22.35	43.45	73.33
55		88.51	24.59	47.79	80.67
60		96.56	26.82	52.14	88.00
65		104.61	29.06	56.48	95.33
70		112.65	31.29	60.83	102.67
75		120.70	33.53	65.17	110.00
80		128.75	35.76	69.52	117.33
85		136.79	38.00	73.86	124.67
90		144.84	40.23	78.21	132.00
95		152.89	42.47	82.55	139.33
100		160.93	44.70	86.90	146.67

Units of Measure Conversion
Figure 4-2

5 Maintenance

5.1 Periodic Maintenance

This instrument should operate for an extended period of time with a minimum of care and maintenance. The only periodic maintenance that may be required is the application of oil to the felt washer behind the propeller. How often this needs to be done depends on the environmental conditions to which the

instrument is subjected, but it should not be required more than once a year. If trouble should occur, refer to the drawings supplied with the instrument to isolate the problem. If parts or maintenance are required, contact the factory.

5.2 Disassembly

Inspection or repair of the skyvane may require some disassembly and re-assembly of the unit. This can be accomplished quickly and easily using the instructions in the following paragraphs.

Removal of propeller:

- ① Remove the propeller retainer screw (M010028).
- ② Slide the propeller forward off the wind speed transducer shaft (M100117, M100120, or M100122).

Removal of Wind Speed Transducer:

- ① With the propeller removed as described above, the transducer mounting screws will be exposed. Remove the transducer mounting screws and pull the transducer slowly from the upper housing (M100113).
- ② When the transducer is free of the housing, it is necessary to unsolder the wiring connections behind the transducer before it can be completely removed.

Removal of Wind Direction Transducer:

- ① Remove the 3 screws (M004027) from the bottom cover (101888), and remove the bottom cover from the lower housing (M101884).
- ② Remove the two front cover retaining screws (M006047) and remove the front cover.

- ③ Loosen the upper set screws from the coupling (M025537). Remove the 3 transducer mounting screws (M004025), and slowly remove the transducer from the lower housing.

- ④ Remove the 4 electrical connector mounting screws from around the bulkhead receptacle, and remove this receptacle from the lower housing.

- ⑤ Unsolder the wind direction transducer wires from this connector.

- ⑥ The wind direction transducer may now be completely removed as the wires are withdrawn through the lower housing.

Removal of Slip Ring Brushes:

- ① After the above procedure has been performed, remove the two brush assembly mounting screws (M004002).

- ② The wires from the assembly must be unsoldered before it can be completely removed. This can be done at the electrical connector or at the terminals on the brush assembly.

- ③ Withdraw the brush assembly (M409012).

5.3
Items Requiring
Factory Disassembly

Removal and replacement of the slip rings (M100126) must be done at the factory, since this requires removing the upper housing to reroute the wires from the slip rings to the wind speed trans-

ducer. The special bearing seating procedures required when replacing the upper housing dictate that it be done at the factory.

5.4
Re-assembly

Re-assembly can be accomplished by following the above procedures in reverse order. ❌

6 Warranty



Unless specified otherwise, Qualimetrics (the Company) warrants its products to be free from defects in material and workmanship under normal use and service for one year from date of shipment, subject to the following conditions:

- a. The obligation of the Company under this warranty is limited to repairing or replacing items or parts which have been returned to the Company and which upon examination are disclosed, to the Company's satisfaction, to have been defective in material or workmanship at time of manufacture.
- b. The claimant shall pay the cost of shipping any part or instrument to the Company. If the Company determines the part to be defective in material or workmanship, the Company shall prepay the cost of shipping the repaired instrument to the claimant. Under no circumstances will the Company reimburse claimant for cost incurred in removing and/or reinstalling replacement parts.
- c. This warranty shall not apply to any Company products which have been subjected to misuse, negligence, or accident.
- d. This warranty and the Company's obligation thereunder is in lieu of all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, consequential damages, and all other obligations or liabilities.

No other person or organization is authorized to give any other warranty or to assume any additional obligation on the Company's behalf, unless made in writing and signed by an authorized officer of the Company. ✕

7 Specifications




Wind Speed	
Range	0-200 mph (0-90 m/s)
Starting threshold	2 mph (0.9 m/s)
Complete tracking	3 MPH (1.3 m/s)
Distance constant	6.2 ft. (1.9 m)
Accuracy	±1 mph <30 mph; ±3% >30 mph
Sensor output, 100 MPH-AC	20.15 VAC Avg.
Propeller	4-blade; 13.77" dia. (350 mm)
Wind Direction	
Range	0-360 degrees
Accuracy	±1% of full scale
Sensor output-SY	115 VAC, Delta configuration
General	
Size	29.75"L x 30"H (760 x 762 mm)
Weight/Shipping	12 lbs/25 lbs (5.4 kg/11.3 kg)



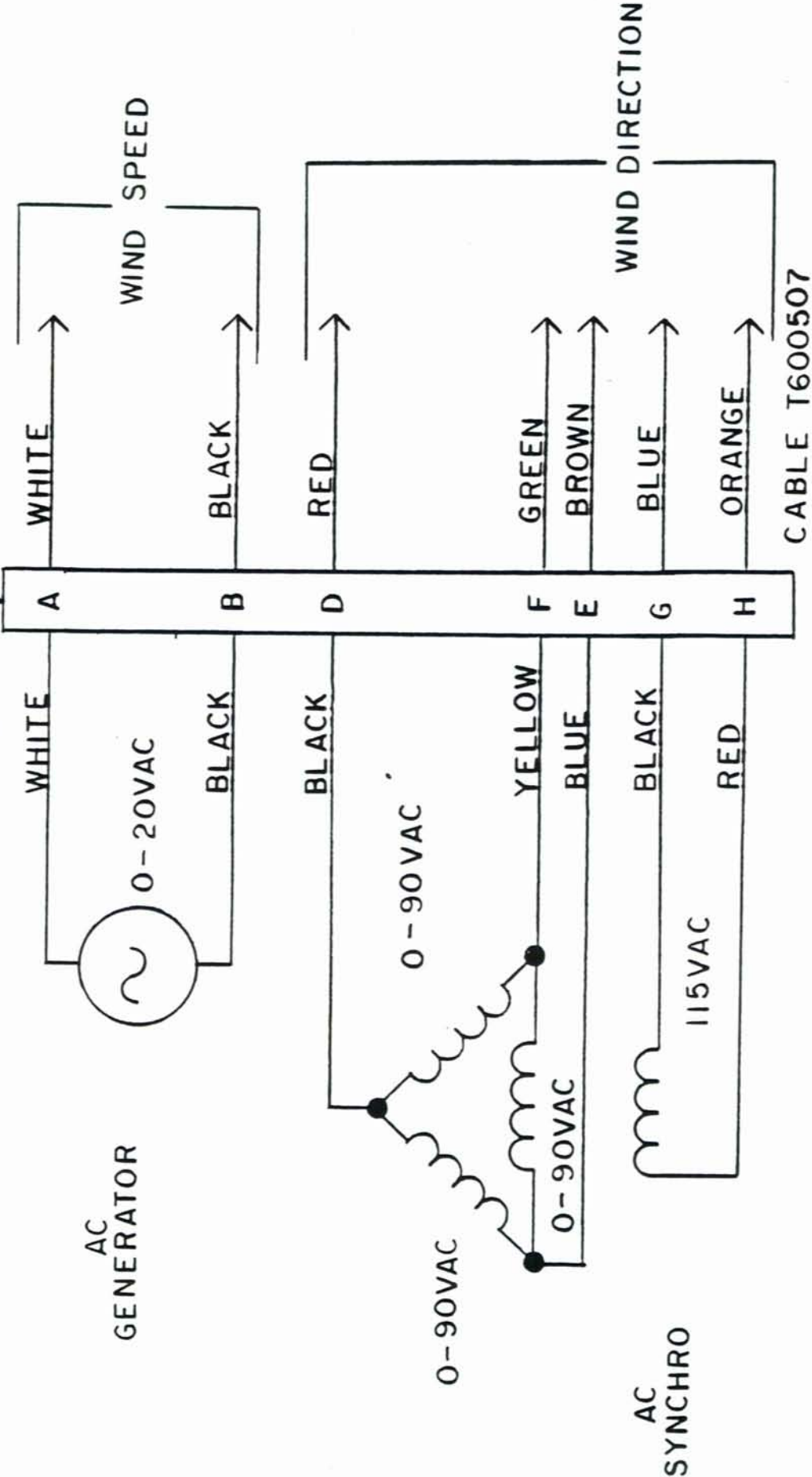
8 Schematics and Parts List

8.1

Contents

The following pages include schematics, assembly drawings, and parts lists for this instrument. Please note that the parts lists are arranged in assembly/subassembly form. Each subassembly is on its own page. Subassemblies and parts are listed in the smallest economical size available from Qualimetrix. 

CONNECTOR
10 PIN



TOLERANCES UNLESS OTHERWISE NOTED:
 XXX = ± .005 XX = ± .010 FRACTIONS = ± .02
 ANGLES ± ½° CONCENTRICITY = .003 TIR

MATL

FINISH

ENGR

APPRO

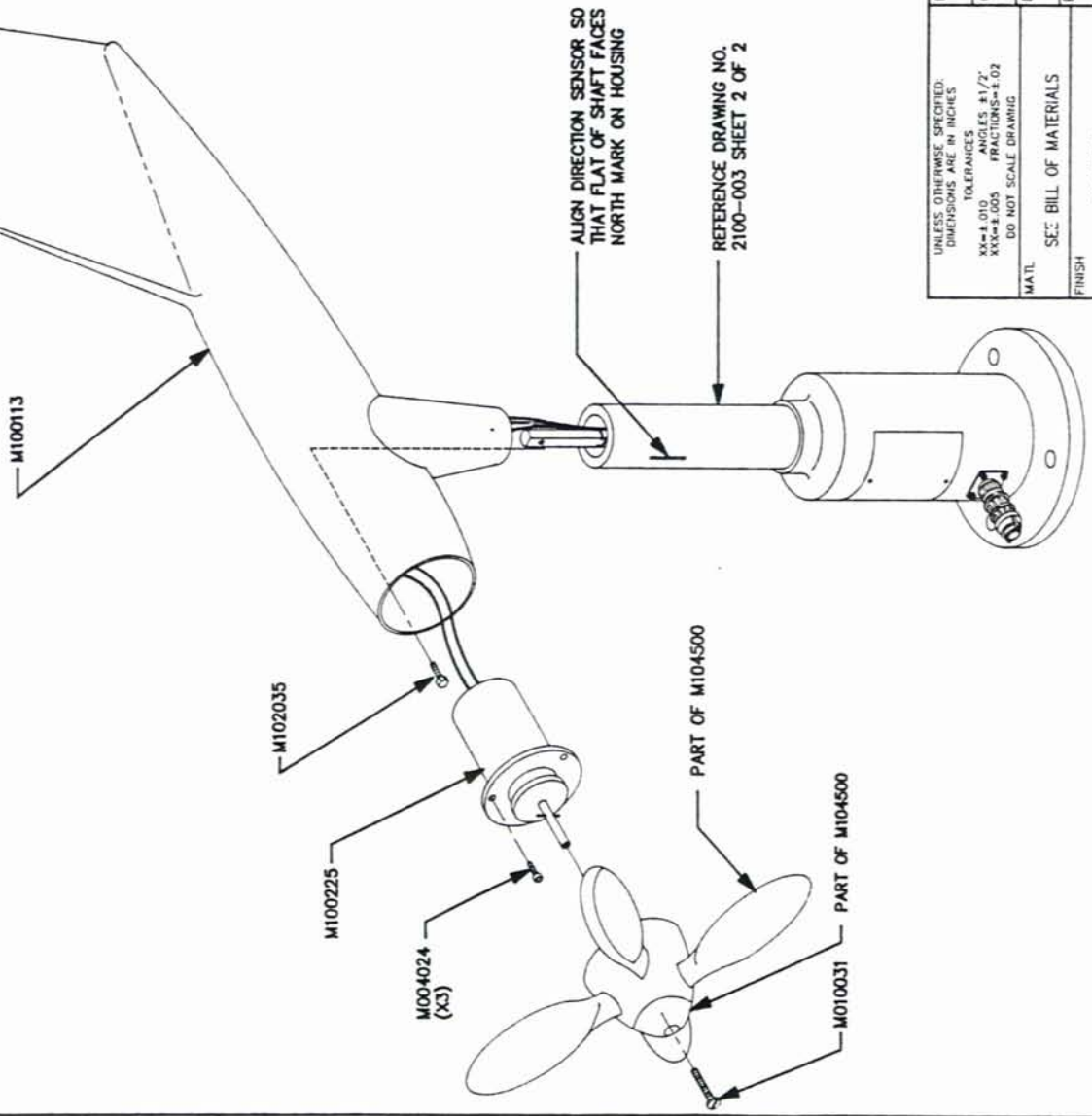
DT

DT 11-15-90

REV	ECN	DATED	QTY	NEXT	ASM	WeatherMeasure WEATHERtronics Division of QUALIMETRICS, Inc.		A	
	2239	11-84				NOMENCLATURE SCHEMATIC		MOD. USAGE 2106, 2118	
B	3827	11-15-90				SKYVANE WIND SENSOR		SCALE	DWG. NO.
						MODEL 2106		Ø	2106-004
						BY RN		SHEET 1 OF 1	
						DT 11-84			

REV	ECN	DESCRIPTION	DATE	APPROVED
A	2798	INITIAL RELEASE	5/88	
B	3727	CHG PROP P/N; UPDATE DWG FORMAT	11-15-90	
C	4052	CHG P/N & VIEW OF AC GEN/ & SYNCRO (SHT 2)	4-92	<i>gma</i>

REV	ECN	DESCRIPTION	DATE	APPROVED
A	2798	INITIAL RELEASE	5/88	
B	3727	CHG PROP P/N; UPDATE DWG FORMAT	11-15-90	
C	4052	CHG P/N & VIEW OF AC GEN/ & SYNCRO (SHT 2)	4-92	<i>gma</i>



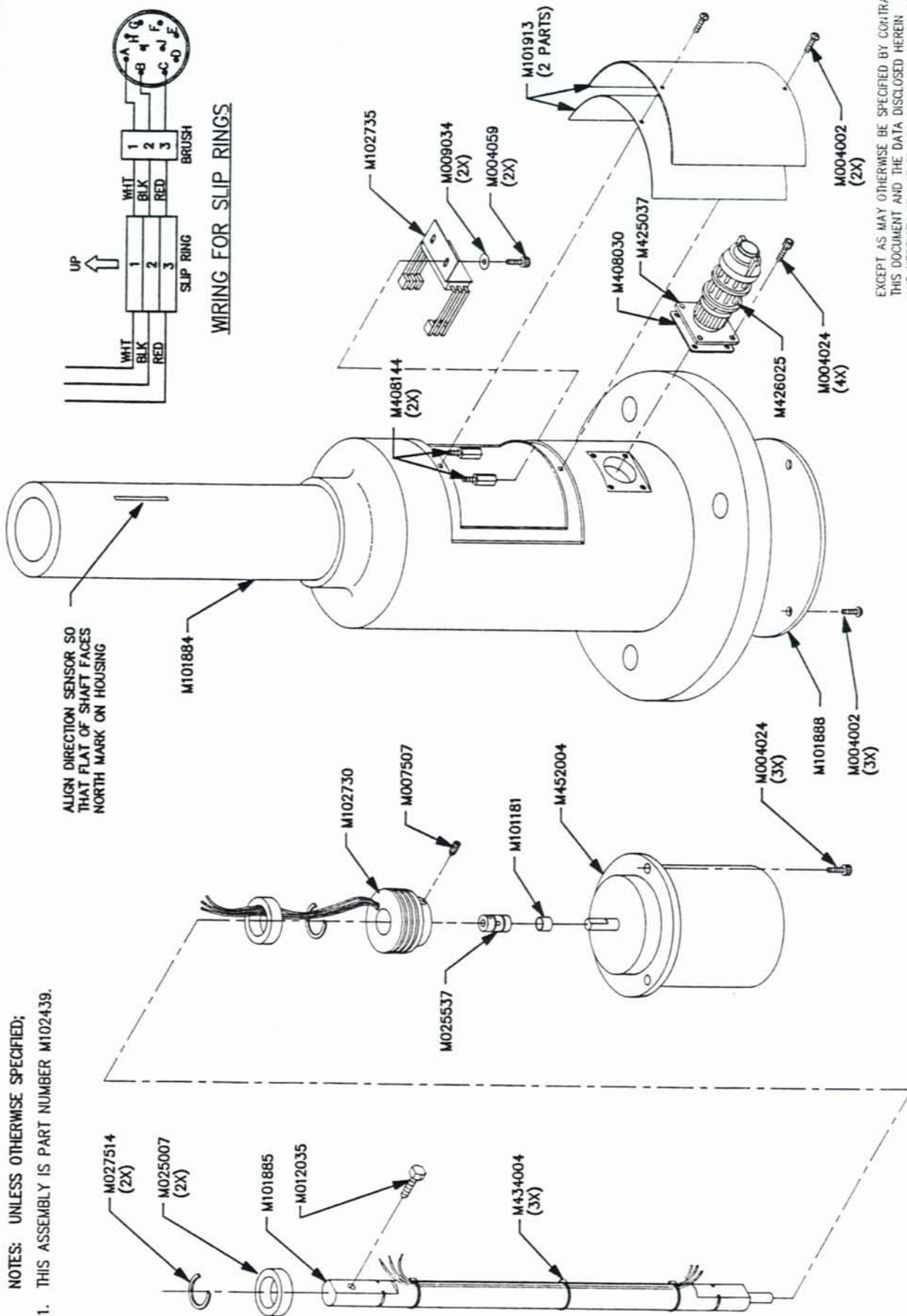
EXCEPT AS MAY OTHERWISE BE SPECIFIED BY CONTRACT, THIS DOCUMENT AND THE DATA DISCLOSED HEREIN AND HEREWITH, IS NOT TO BE USED, REPRODUCED OR DISCLOSED, IN WHOLE OR IN PART, TO ANYONE WITHOUT THE WRITTEN PERMISSION OF QUALIMETRICS, INC..

C	C	REV	REV STATUS
2	1		OF SHEETS

DRAWN BY: K. WEBER		5-3-88	QUALIMETRICS, Inc.
CHECKED BY: <i>gma</i>		1-92	
DESIGN ENGINEER:			ASSEMBLY DRAWING,
PROJECT MANAGER: JM ANDERSON		18MAR92	WIND SPD AND WND DIR XMTR
PROGRAM MANAGER:			SIZE: C DWG NO. 2106-003
APPROVALS:		DATE:	SCALE: NONE
MATERIAL:		RELEASE DATE:	SHEET 1 OF 2
FINISH:			
TREATMENT:			
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES XX=±.010 ANGLES #1/2° XXX=±.005 FRACTIONS=±.02 DO NOT SCALE DRAWING			
MATERIAL:			
SEE BILL OF MATERIALS			
FINISH:			
AS ISSUED			
TREATMENT:			

NOTES: UNLESS OTHERWISE SPECIFIED;

1. THIS ASSEMBLY IS PART NUMBER M102439.



EXCEPT AS MAY OTHERWISE BE SPECIFIED BY CONTRACT, THIS DOCUMENT AND THE DATA DISCLOSED HEREIN AND HEREWITH, IS NOT TO BE USED, REPRODUCED OR DISCLOSED, IN WHOLE OR IN PART, TO ANYONE WITHOUT THE WRITTEN PERMISSION OF QUALIMETRICS, INC.

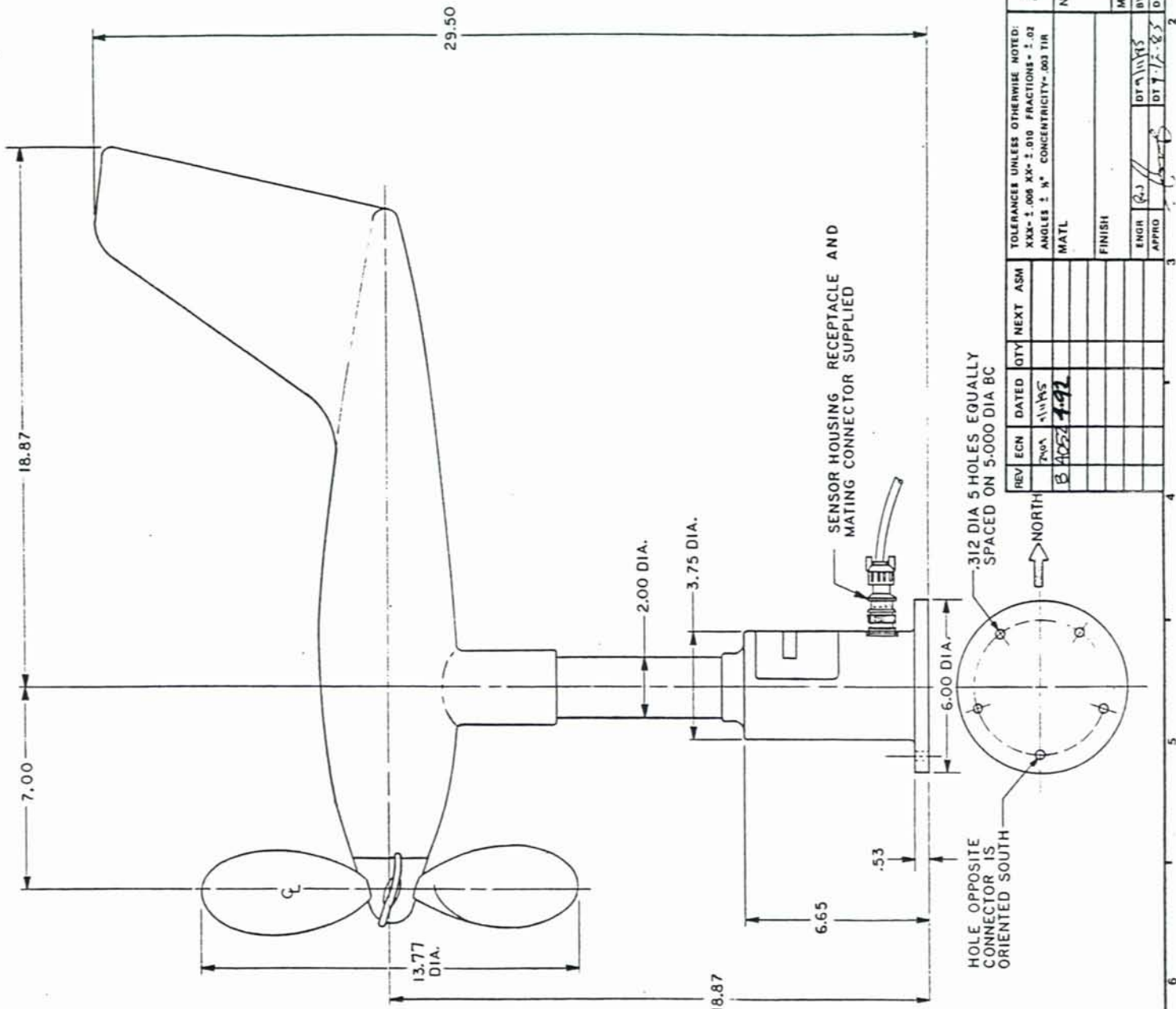
SIZE: C

REV. NO. NONE

REV. LTR C

SHEET 2 OF 2

2106-003



TO MOUNT INSTRUMENT ON 1 1/4" PIPE (1.660 OD), MAST ADAPTER, 21101 IS REQUIRED.

MOUNTING HARDWARE INCLUDED (3X)

SENSOR HOUSING RECEPTACLE AND MATING CONNECTOR SUPPLIED

HOLE OPPOSITE CONNECTOR IS ORIENTED SOUTH

3/12 DIA 5 HOLES EQUALLY SPACED ON 5.000 DIA BC

NORTH

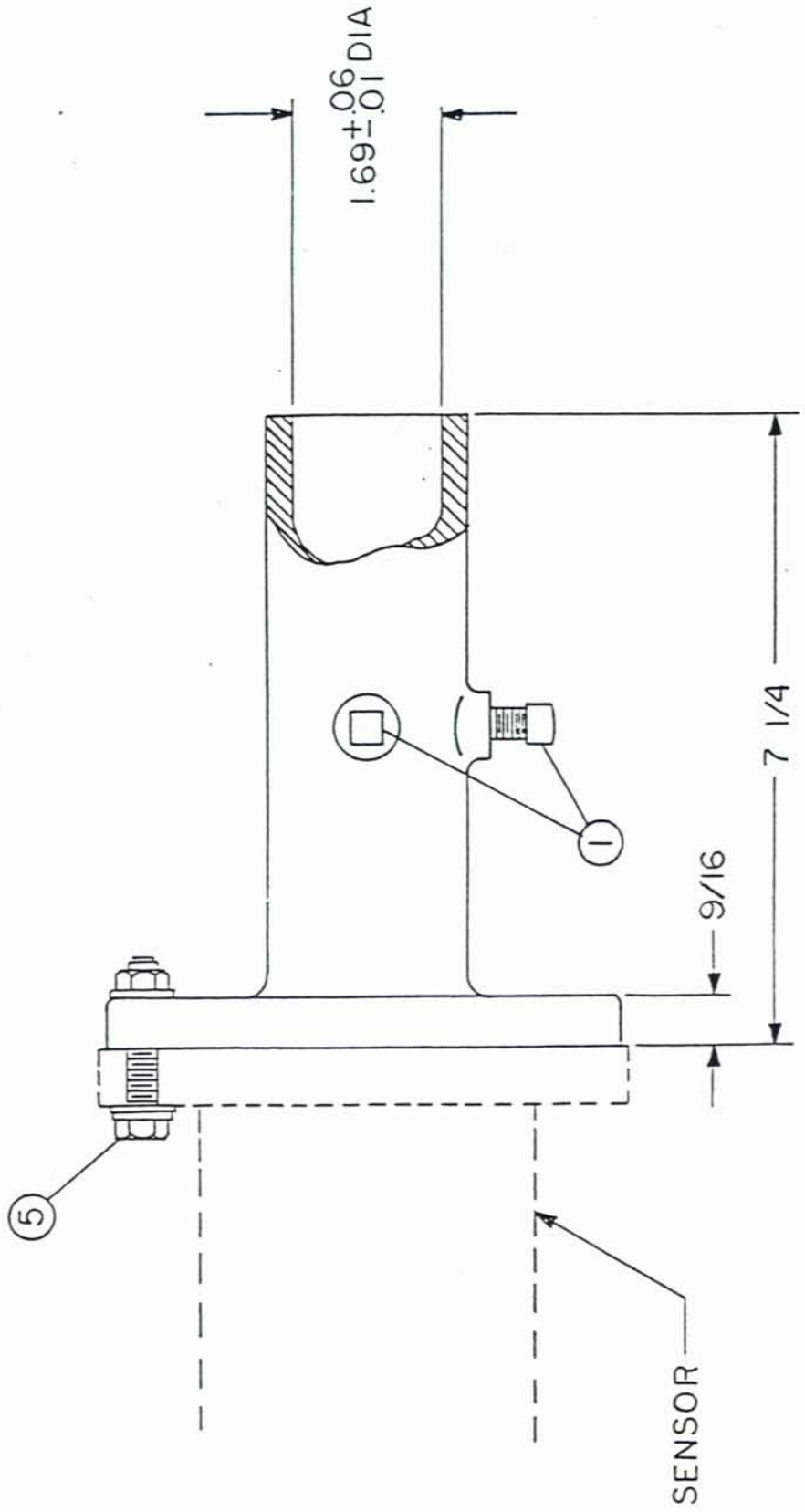
REV	ECN	DATED	QTY	NEXT ASM	TOLERANCES UNLESS OTHERWISE NOTED: XXX- ± .000, XX- ± .010 FRACTIONS- ± .02 ANGLES ± N° CONCENTRICITY- .003 TIR
B	1052	4/91			MATL
					FINISH
					ENGR
					APPRO

QUALIMETRICS, INC.
 3713 Orange Grove Avenue
 San Jose, California 95134 U.S.A.

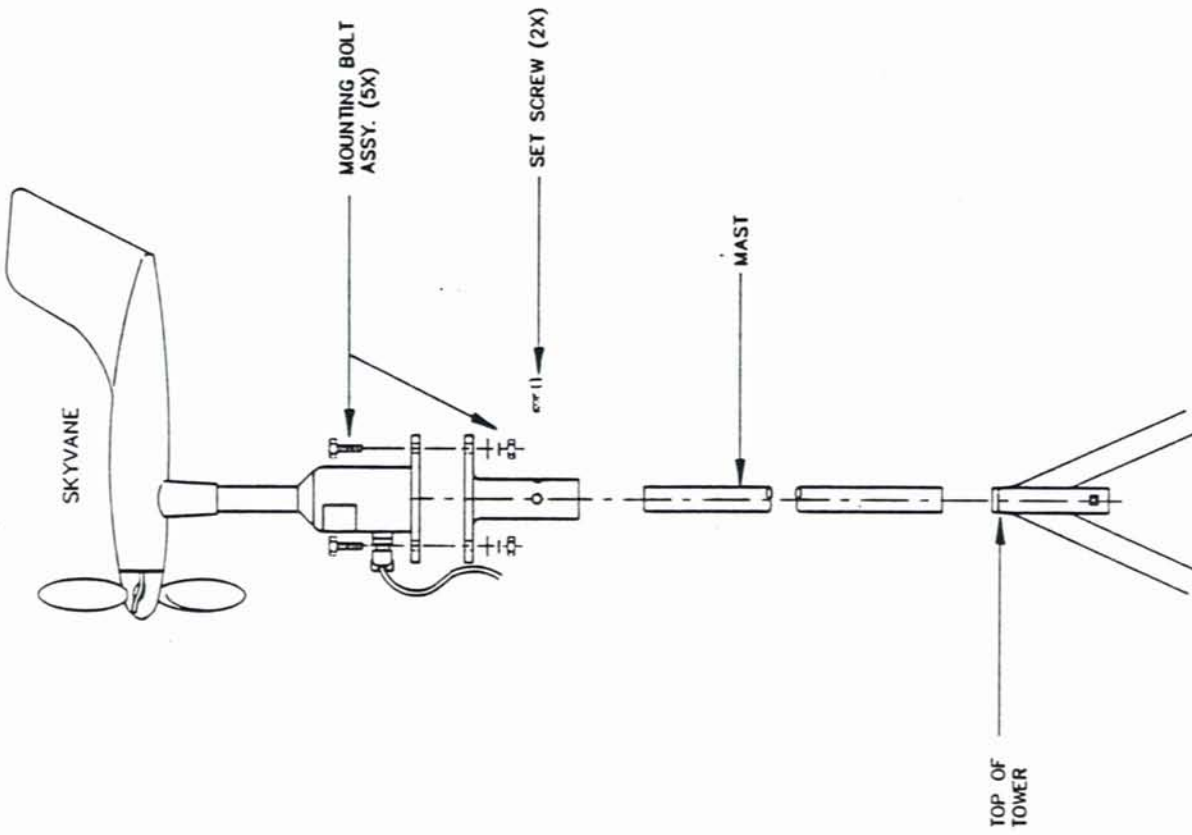
Nomenclature OUTLINE DRAWING
 SKYVANE WIND SENSOR

MOD. USAGE 2100-2107
 BY K. WEBER
 DTG 11/85
 DTG 7-85

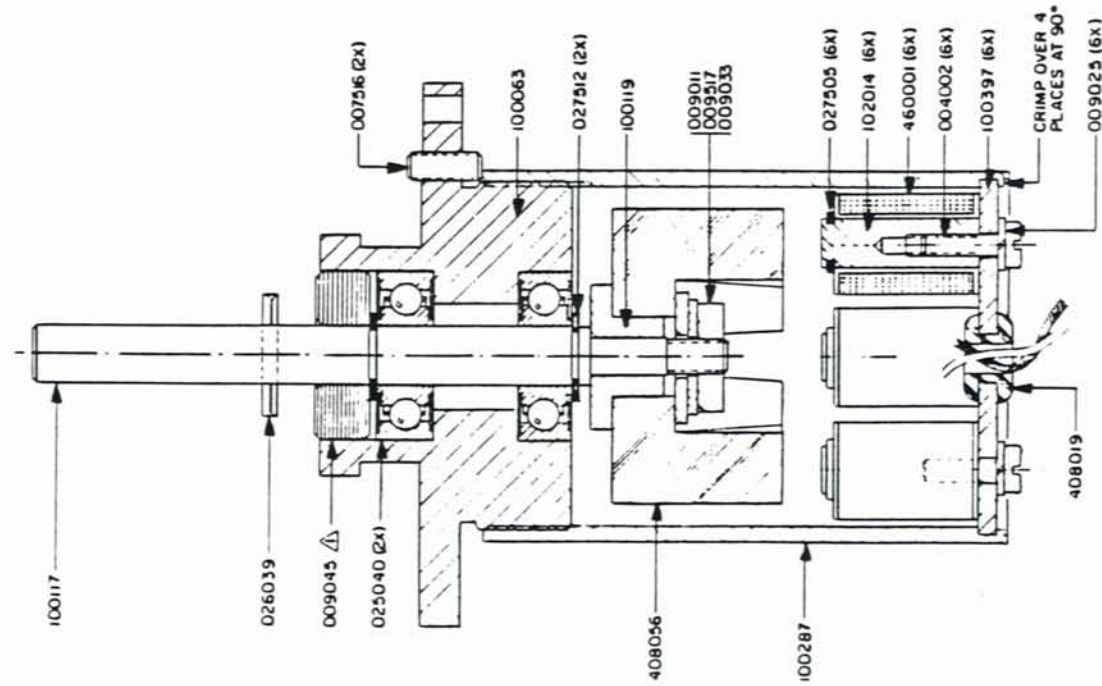
SHEET 1 OF 1
 SCALE NONE
 DWG NO. 2100-005
 C



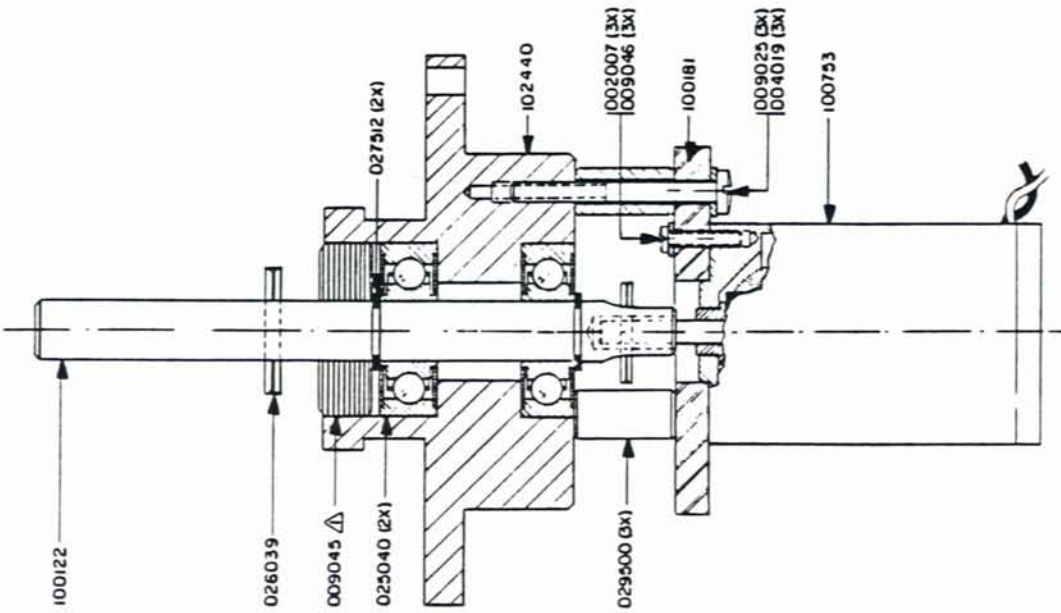
<p>QUALIMETRICS, Inc. WEATHERMEASURE / WEATHERTRONICS Instruments and Systems Division 3213 Orange Grove Avenue Sacramento, California 95860 U.S.A.</p>		<p>TOLERANCES UNLESS OTHERWISE NOTED: XXX = ± .005 XX = ± .010 FRACTIONS = ± .02 ANGLES ± 1/2° CONCENTRICITY = .003 TIR</p>		<p>MOD. USAGE 2111-A, 2100</p>		<p>SHEET 1 OF 1</p>	
<p>NOMENCLATURE MAST ADAPTER</p>		<p>BY GT</p>		<p>SCALE Ø</p>		<p>DWG NO. 21101-05</p>	
<p>MATL</p>		<p>ENGR</p>		<p>DT</p>		<p>DT 2-24-83</p>	
<p>FINISH</p>		<p>APPRO</p>		<p>DT 4.93</p>		<p>DT 2-24-83</p>	
REV	ECN	DATED	QTY	NEXT	ASM		
A		2-83					



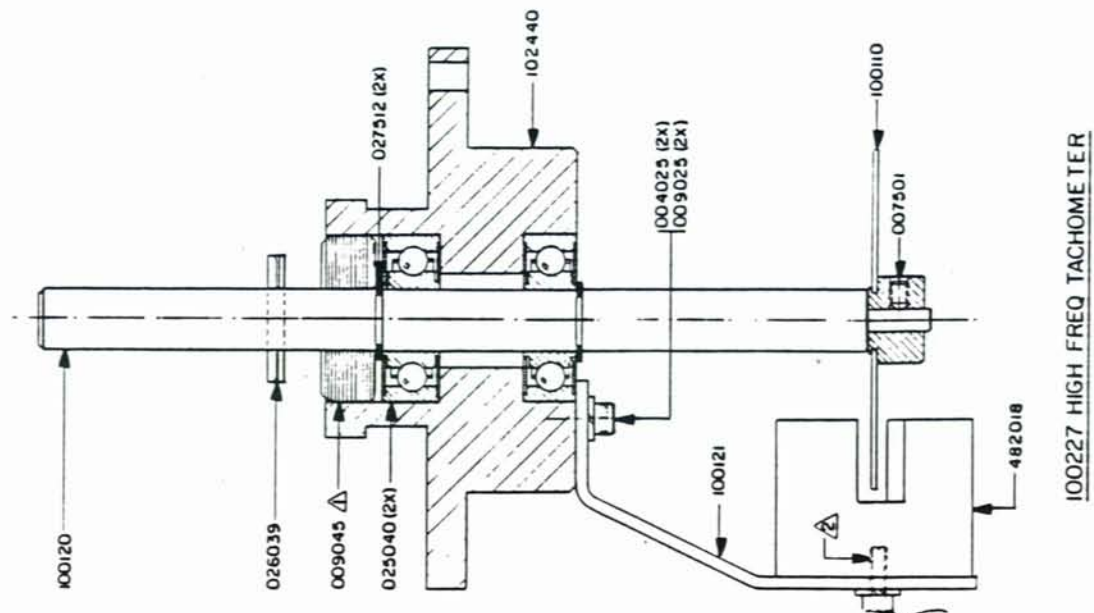
REV	EON	DATED	QTY	NEXT ASSY	TOLERANCES UNLESS OTHERWISE NOTED XXX=1/1000 XX=1/100 FRACTIONS=1/32 ANGLES 1/2° CONCENTRICITY=0.03 TH	QUALIMETRICS, Inc.
A	3043	4/5/89			MATERIAL	C
					FINISH	
					ENGR	
					APPROVED	
					DT	
					DT	
					SCALE	
					DWG. NO.	
					DATE	
					MOD. USAGE	
					BY	
					DATE	
					TITLE	
					INSTALLATION DRAWING, MAST ADAPTER	
					SHEET	
					OF	
					1	
					21101-007	



100225 A.C. GENERATOR



100226 D.C. GENERATOR



100227 HIGH FREQ TACHOMETER

DEVIATION NUMBER		REV		ENGINEERING ORDER NO		QTY		ITEM		PART NO		DESCRIPTION	
225	600153	225	600154	225	600154	225	600154	225	600154	225	600154	225	600154
226	600155	226	600155	226	600155	226	600155	226	600155	226	600155	226	600155
227	600156	227	600156	227	600156	227	600156	227	600156	227	600156	227	600156
227	600157	227	600157	227	600157	227	600157	227	600157	227	600157	227	600157
9-17-80						1581		NOTED		WEATHERMEASURE CORPORATION A Subsidiary of Avco-Boeing Corp 55-111119, 541120111			
8-17-80						1581		NOTED		GENERATOR ASSEM			
9-17-80						1581		NOTED		D10 10-1-79			
9-17-80						1581		NOTED		SCALE			
9-17-80						1581		NOTED		Dwg NO			
9-17-80						1581		NOTED		100225			
9-17-80						1581		NOTED		TAB			

△ IMPREGNATE FELT WASHER WITH SAE 20 WT OIL (029041)
 ⊕ METRIC SCREWS AND WASHERS SUPPLIED WITH 482018

QUALIMETRICS, INC.
BILL OF MATERIAL SINGLE LEVEL REPORT

RUN TIME	COMPONENT	DESCRIPTION	QTY EACH	UCM
2106				
SKYVANE AC, SYN		NORMAL ORDER QTY: 5		
	ASM	ASSEMBLY DRAWING	1.0000	EA
		RD 01 M600153		
	2106-001	MANUAL	1.0000	EA
		RD 01		
	M004027	MS 4-40 X 1/4 PAN HD S.S.	3.0000	EA
	M010031	MS 10-32 X 3/4 BND HD S.S. L	1.0000	EA
	M100113	BODY ASSY UPPER HOUSING W102	1.0000	EA
	M100225	W102P AC GEN INSTL ASSY.	1.0000	EA
	M102439	BASIC HOUSING W102	1.0000	EA
	M104500	PROPELLER ASSY. SKYVANE	1.0000	EA
	M908001	PACK BOX w/INSERT W102P	1.0000	EA
	T430043	SERIAL TAG 0.5X1.7 QUALIMETRI	1.0000	EA
	ECN	ENGR CHANGE NUMBER	.0000	EA
		RD 1 ECN @ 4052		
2.3000	MECHANICAL ASSEMBLY	ASSEMBLE		
.5000	TECHNICIAN / TESTING	ELECTRONICS		

MASTER PART # M100225-
DESCRIPTION W102P AC GEN INSTL ASSY.

COMPONENT PART # \ DESCRIPTION	QTY	REFERENCE
M004002- FASTNER 4-40 X 3/8 PHMS SS	6	
M007521- SET SCREW 6-32 X 1/2	2	
M009011- WASHER LOCK #10 SS	1	
M009025- WASHER LOCK #4 SS	6	
M009033- WASHER FLAT #10 SS	1	
M009045- WASHER FELT OIL IMPR	1	
M009071- WASHER .208 X .500 X .04 SS	1	
M009517- NUT HEX 10-3I SS	1	
M025040- BALL BRG .8861 X .315 X .2756 N	2	
M026039- SPRING PIN 1/16 X 3/4 SS	1	
M027505- SNAP RING 1/4SS 2000-25-SS2	6	

MASTER PART # M100225-
DESCRIPTION W102P AC GEN INSTL ASSY.

COMPONENT PART # \ DESCRIPTION	QTY	REFERENCE
M027512- RING RETAINING 5/16 2000-	2	
M029041- OIL 20W NON DETERGENT-QT	0	
M100063- W102P MOUNTING PLATE	1	
M100117- W102P SHAFT-AC GEN	1	
M100119- W101P ADJUSTING PLATE	1	
M100287- W101P HOUSING-AC GEN MACHINED	1	
M100397- W101P MOUNTING PLATE COIL	1	
M102014- COIL SUPPORT W102 AC GEN.	6	
M408019- GROMET 1/8 HOLE 7030-C HHS9	1	
M408056- MAGNET 6 POLE 5H178 W101-P	1	
M460001- COIL W101P 2-470	6	

QUALIMETRICS, INC.
BILL OF MATERIALS LISTING

09/27/85
PAGE 1

MASTER PART # M101914-
DESCRIPTION LOWER HOUSING ASSEMBLY W102

COMPONENT PART # \ DESCRIPTION	QTY	REFERENCE
ASM- ASSEMBLY DRAWING	0	M102437-003, M103215-003
ECN- ENGR. CHANGE NOTICE	0	2409
M004027- FASTNER 4-40 X 1/4 PHMS SS	2	3
M004059- HEX WASHER HD SCREW 4-40 X 1/4	2	4
M007507- SET SCREW 10-32 X 1/4 SELF LOCK	1	12
M009034- WASHER FLAT #4 SS	2	13
M025007- BEARING NDP77R10AV2	2	14
M027514- RING RETAINING 5/8 BCOOPE	2	15
M101884- W102 LOWER HOUSING ASSEMBLY	1	10
M101885- W102 MAIN SHAFT	1	16
M101914-072 MECH. ASSY, LOWER HSG	0	
M102730- SLIP RING ASSY, COMPLETE	1	17
M102735- BRUSH ASSY. COMPLETE	1	18
M408144- STANDOFF 1/2 LG 4-40 THD MALE-FEMALE	2	19
M434004- CABLE TIE 4.8"X.19" (1.00 DIA)	3	20

QUALIMETRICS, INC.
BILL OF MATERIALS LISTING

03/09/87
PAGE 1

MASTER PART # M102439-
DESCRIPTION BASIC HOUSING W102

COMPONENT PART # \ DESCRIPTION	QTY	REFERENCE
ASM- ASSEMBLY DRAWING	0	M102439-003
ECN- ENGR. CHANGE NOTICE	0	2092, 2409 2682
M004002- MS 4-40 X 3/8 PAN HD S. S.	3	1
M004024- MS 4-40 X 3/8 SOC HD S. S. CAP	7	2
M012035- SCREW 1/4 X 28 X 1 1/2 CAP	1	5
M025537- COUPLING FLEXIBLE REMBRANDT A	1	6
M101181- W102-P COUPLING INSERT-SYNC	1	7
M101888- BOTTOM PLATE W102	1	8
M101913- ACCESS COVER ASM	1	9
M101914- LOWER HOUSING ASSEMBLY W102	1	10
M102439-072 MECH. ASSY, BASIC HSG	0	
M102439-073 MECH. TEST, ELECT ZERO	0	ELECT. ZERO
M408030- GASKET JACK MOUNTING SIZE 1	1	11
M425037- JACK 10 PIN MS310EA-181 PRE	1	27
M426025- PLUG 10 PIN 10-72618-15	1	22
M452004- SYNCHRO GEN ST-2F 115 VAC	1	24

