MODEL 076B
RADIATION SHIELD

OPERATION MANUAL

Met One Instruments, Inc

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Technical Support

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1.0 DESCRIPTION

1.1 The Met One Instruments Power-Aspirated Radiation shield has a large primary tube for mounting up to four sensors. This tube is surrounded by two lightweight aluminum cylinder shields designed to thermally isolate the temperature sensors from the heating effects of the sun. For maximum reflection of solar radiation, all external surfaces are powder coated with a gloss white finish. To aid in the circulation of colling air around the outer shields, an AC powered fan is installed in the top of the aspirator shield. This fan requires little or no maintenance.

1.2 The 076B has an internal junction box that allows easy field connection and replacement of sensors without requiring soldering or potting. The internal junction box minimizes the problems that are associated with the dirt/moisture/resistance paths between the connections on exposed connectors.

1.3 A single sensor cable (2144) is used for all connections whether relative humidity, Delta temperature, ambient temperature or combinations of above.

Table 1-1
076B Radiation Shield Specifications

Radiation Error	Less than 0.05 under maximum solar radiation of 1.6 gm-cal/cm^2/min		
Power Requirement			
076B-1	115 V, 50/60 Hz, 18W		
076B-11	230 V, 50/60 Hz, 18W		
Temperature	-50°C to +85°C		
Weight	5.5 pounds		
Sensor Capacity	Sensors Mounted		
Shield Model	061	T-200	083/085
076B-1	1 to 3	1 to 2*	1
076B-2	1 to 3	1 to 2*	1

*With two T-200 sensors, an 083 RH cannot be used

2.0 INSTALLATION

CAUTION:
To prevent damage to the sensor do not apply pressure or load to the aspirator tube during removal from the shipping tube or carton.

2.1 The Radiation Shield is designed to slide onto a horizontal instrument mounting boom or support. The mounting arm may be a 191 or 193 crossarm, or any 3/4" IPS pipe suitably mounted.

2.2 Slide the top hat onto the tower-mounting and tighten the two Allen screws on the top of the mount to lock the shield into place.

2.3 Refer to figure 2.1 for sensor installation, and figure 2.2 for standard sensor wiring. Appendix B details the wiring in the 2144 signal output cable. Verify the sensor model numbers before installation.

Note: If the Radiation Shield was ordered as part of a system, temperature and/or relative humidity sensors may have been installed at the factory. If this is part of a complete system, please refer to the custom wiring diagrams that were provided with your system as these may differ from the standard wiring shown in this manual.

2.4 Attach the Radiation Shield to the top hat in quick disconnect box with the radiation shield inlet facing down and tighten side clamps to fasten.

2.5 Connect AC and sensor cables and route to AC power source and translator or data logger respectively. Refer to figure 4.1 and Appendix A for power wiring connections.

2.6 Apply power and verify that aspirator motor is operating.

2.7 Check to see that sensor output is being recorded.

SENSOR INSTALLATION

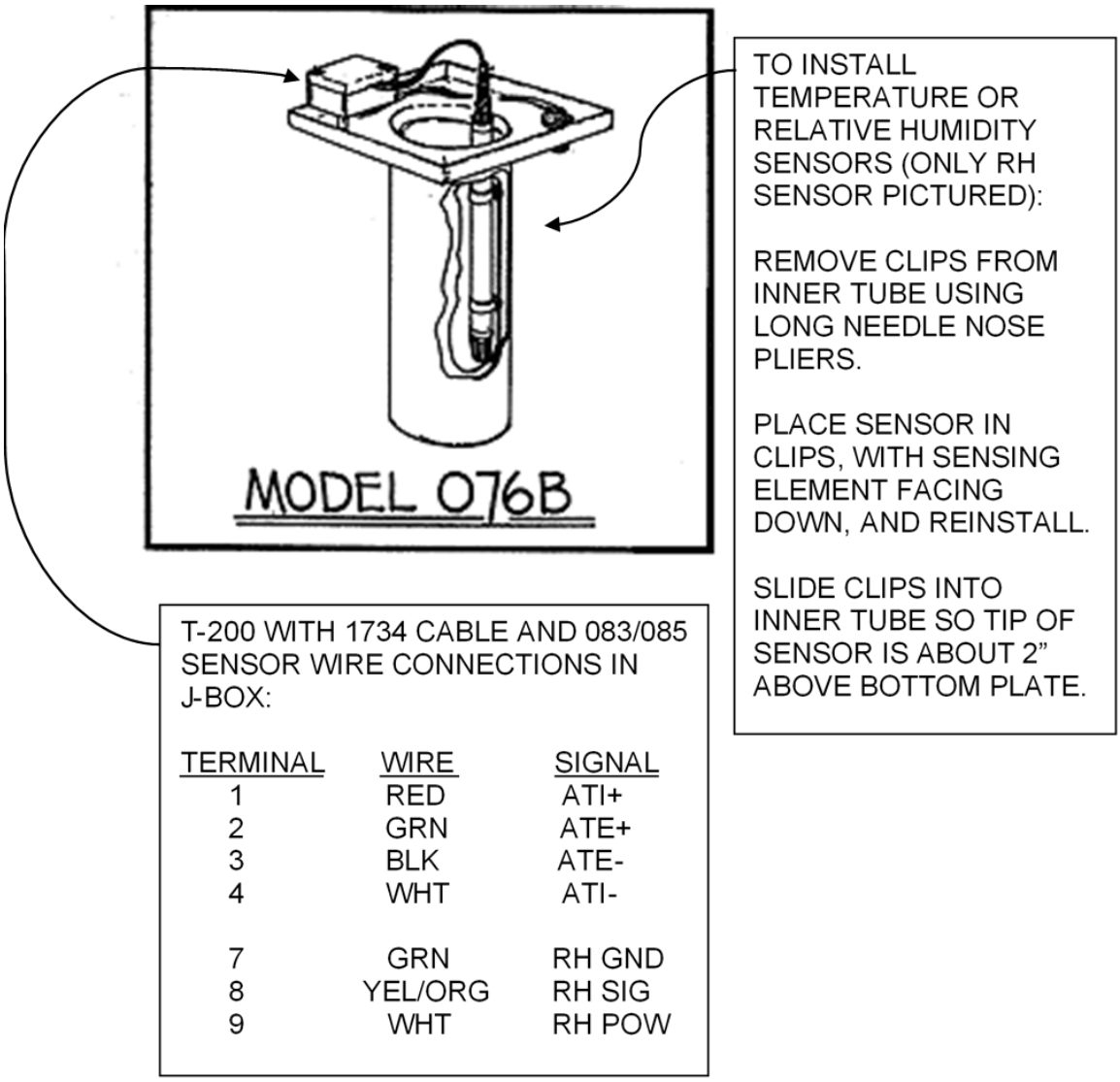
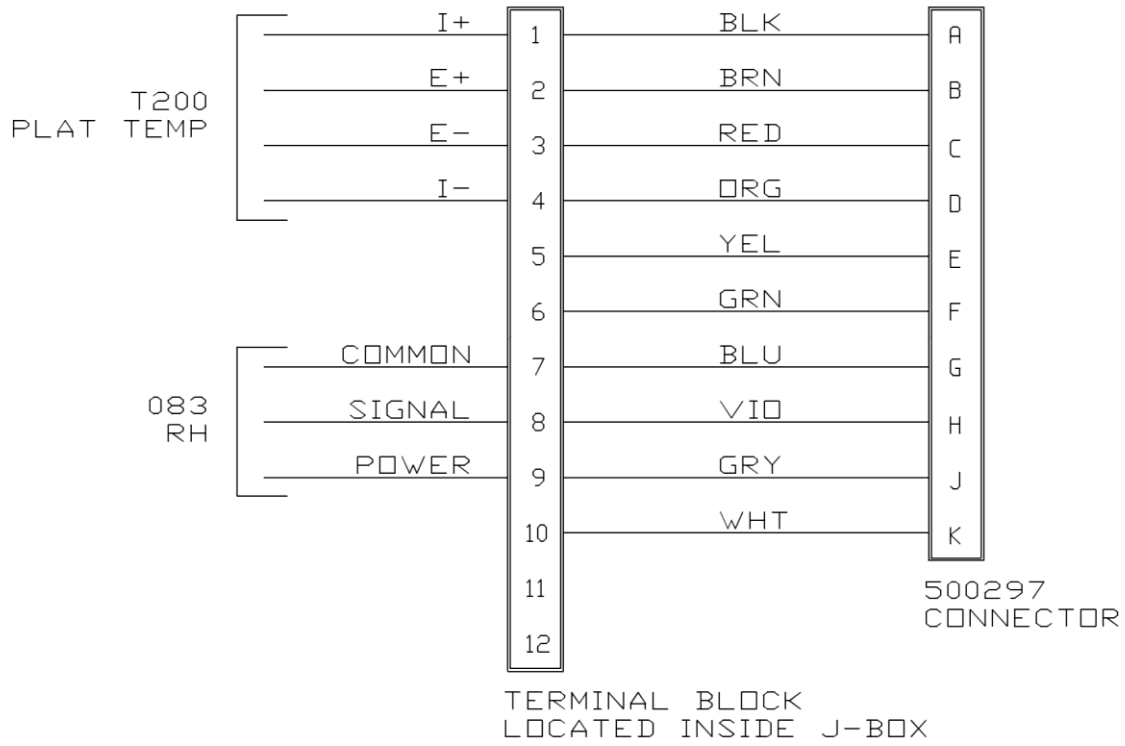


Figure 2-1 Sensor Installation

STANDARD INTERNAL WIRING



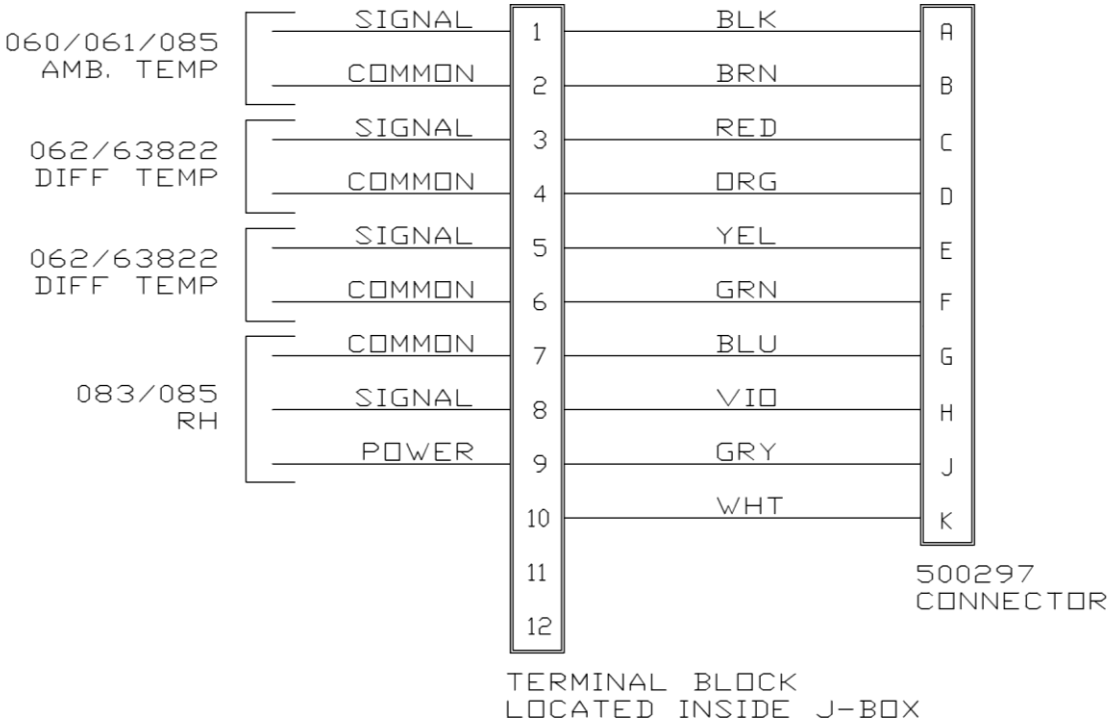


Figure 2-2 Internal Sensor Wiring

3.0 TROUBLESHOOTING AND REPAIR

TABLE 3-1 Troubleshooting

Symptom	Probable Cause	Solution
Fan does not operate	Loss of AC power	Check AC source Check all cables
	Motor Failure	Replace Fan

4.0 REPAIR INFORMATION

A. Electronic repair of the Motor Aspirated Radiation Shield is limited to replacement of the aspirator motor. If mechanical spare parts are worn or damaged, please refer to Figure 4-2 and Table 4-1 for a list of replacement parts.

B. Aspirator Motor Replacement

a. Remove all cables to the shield and remove the entire shield assembly from tower.
b. Separate shield from quick disconnect box.
c. Unsolder motor wires from receptacle. Note color and pin coding.
d. Remove top hat from shield.
e. Remove fan assembly.
f. Install new fan assembly and secure.
g. Solder motor wires to the proper pins as noted under “c”.
h. Temporarily connect power and verify fan operation.
i. Re-install fan housing assembly to the Radiation Shield.
j. Install assembly on tower and verify correct operation.

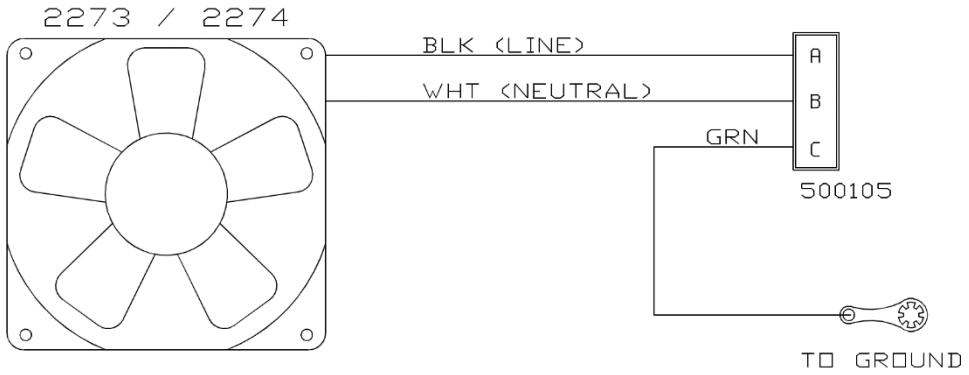


Figure 4-1 Internal Fan Wiring Diagram

REPLACEMENT PARTS LIST

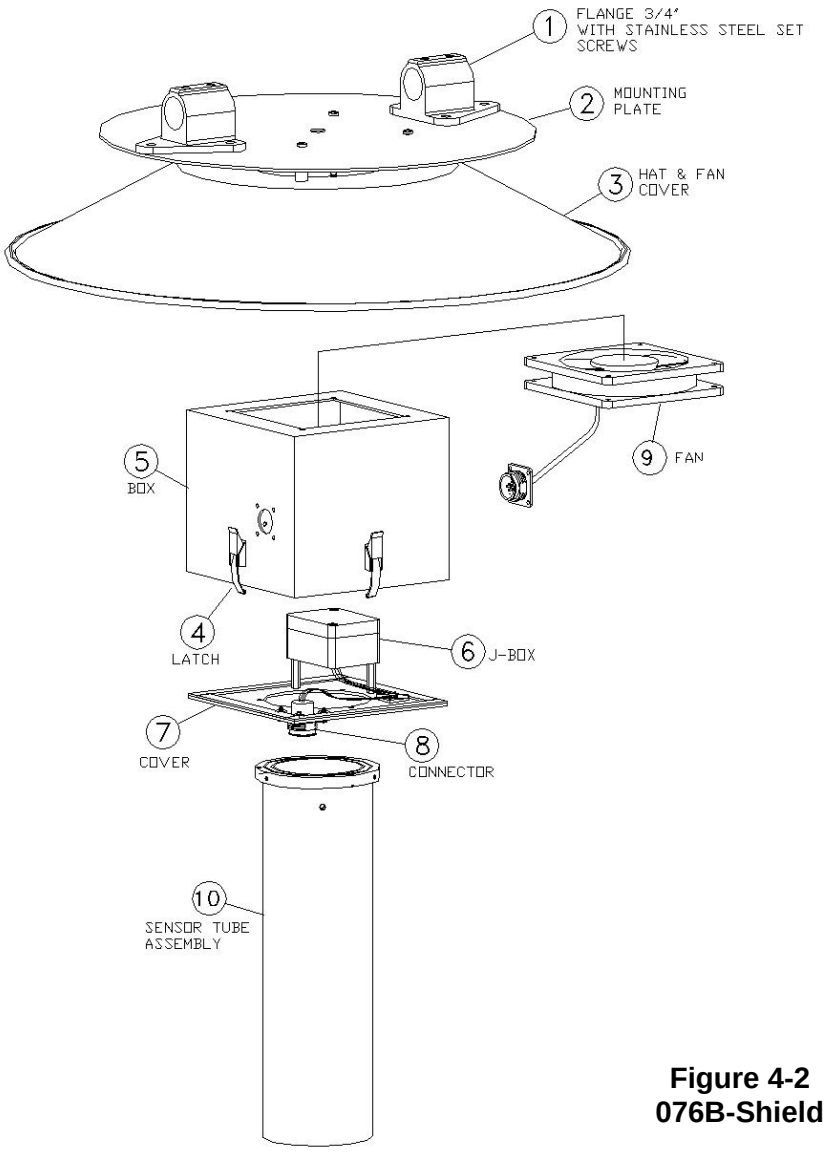


Figure 4-2
076B-Shield

Table 4-1 Replacement Parts List

Item	Part #	Description
1	590300	3/4" Flange Mount
2	2647	Mounting Plate
3	2646	Hat and Fan Cover
4	670202	Spring Latch
5	2364	Fan Box
6	2098	J-Box
7	2365-1	Cover (Special)
8	500297	10 pin connector (sensor)
9	2273 or 2274	Fan Assembly (115V or 230V)
10	2555-1	Sensor Shield Assembly

5.0 QUALITY ASSURANCE PROCEDURE

5.1 Purpose

To verify correct operation of Model 076B Motor Aspirated Radiation Shield

5.2 Activity

Confirm adequate flow through the radiation shield, and to check the general condition of the motor aspirated shield. Clean shield for maximum reflectance.

5.3 Frequency

Every 6 months

5.4 Procedure

Place flow monitor, directly below radiation shield and confirm adequate flow.

5.4.1 Hold flow sensor at base of air inlet, position as shown.

5.4.2 With flow sensor in MPH range, the reading should indicate 5.0 or greater, record value. If flow is below that reading the flow system may be plugged or the motor is not operating properly.

5.4.3 Clean the top shields, and down tube with a damp rag, to remove any accumulation of dust and dirt. The white surfaces of the shield should be kept clean for maximum reflectance of solar radiation.

5.5 Skill level Required

A maintenance technician instructed in the operation of the flow monitor and disassembly of the 076B Shield.

5.6 Required Information

Record Flow

Record any damage to surface of shield, or down tube.

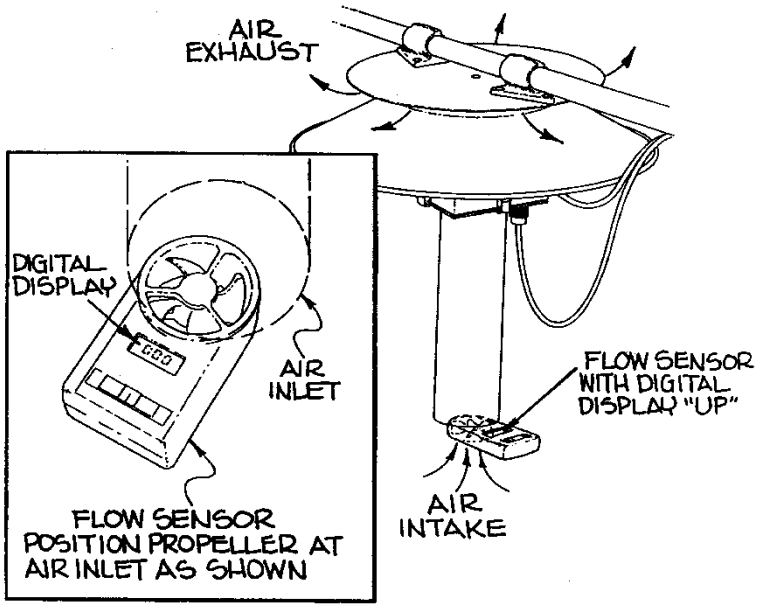


Figure 5-1 Flow Test of Shield

APPENDIX A

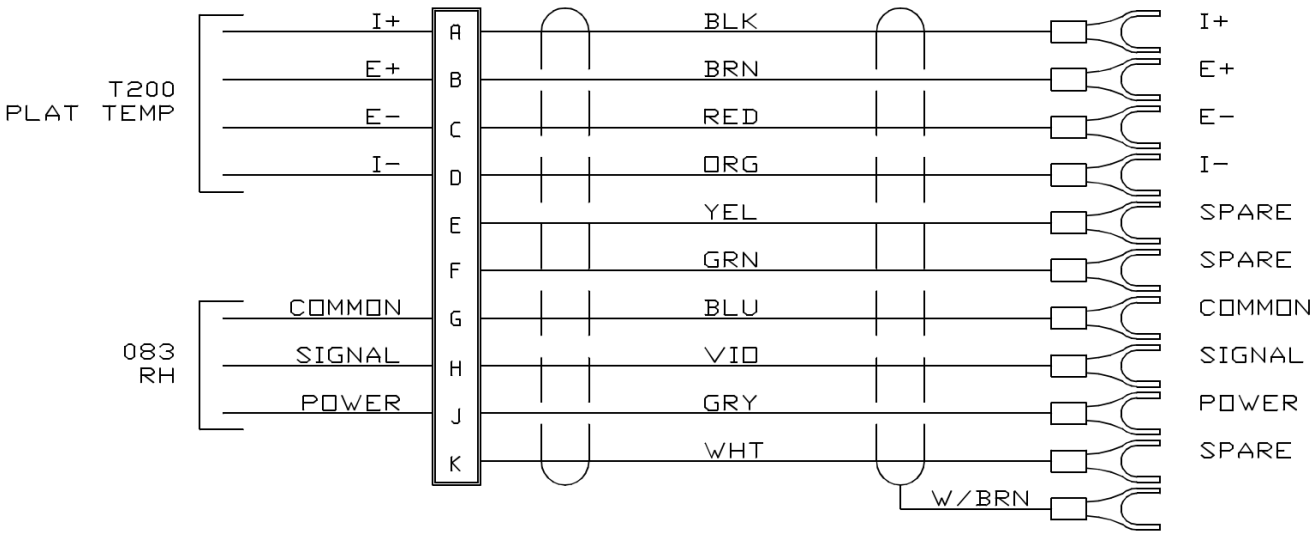
Power Cable (1954) Wiring Diagram

A =	**BLACK**	115 VAC
B =	**WHITE**	NEUTRAL
C =	**GREEN**	GROUND

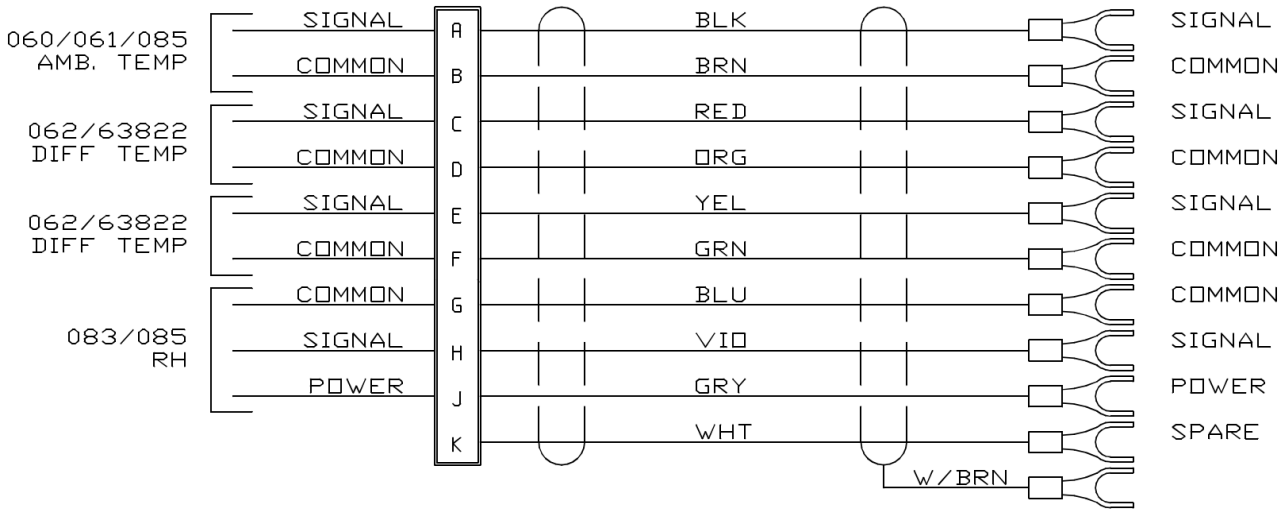
APPENDIX B

Signal Cable (2144) Wiring Diagram

PLATINUM	A =	**BLACK**	I+
TEMPERATURE	B =	**BROWN**	E+
T200	C =	**RED**	E-
	D =	**ORANGE**	I-
SPARE	E =	**YELLOW**	SPARE
SPARE	F =	**GREEN**	SPARE
RELATIVE	G =	**BLUE**	COMMON
HUMIDITY	H =	**VIOLET**	SIGNAL
	J =	**GRAY**	POWER
SPARE	K =	**WHITE**	SPARE
		WHT/BRN	SHIELD

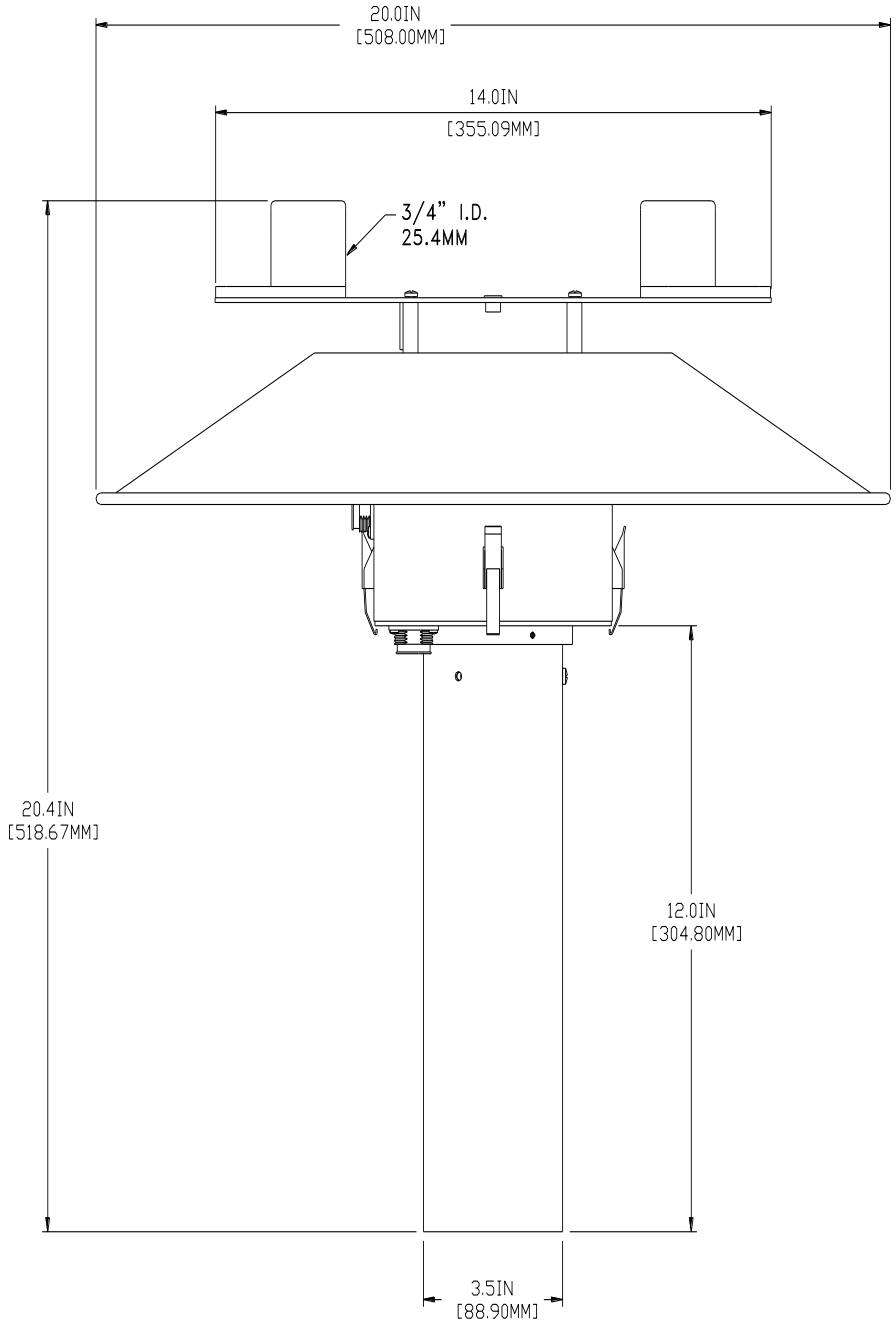


AMB. TEMP.	A =	**BLACK**	SIGNAL
060/061/085	B =	**BROWN**	COMMON
DIFF. TEMP.	C =	**RED**	SIGNAL
062/63822	D =	**ORANGE**	COMMON
DIFF. TEMP.	E =	**YELLOW**	SIGNAL
062/63822	F =	**GREEN**	COMMON
RELATIVE	G =	**BLUE**	COMMON
HUMIDITY	H =	**VIOLET**	SIGNAL
	J =	**GRAY**	POWER
SPARE	K =	**WHITE**	SPARE
		WHT/BRN	SHIELD



APPENDIX C

Motor Aspirated Radiation Shield
Outline Dimensions



All Dimensions in Inches