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# Chapter 15

## **Equipment and Accessory Setup and Troubleshooting**

**(Revision 2, February 2005)**

The information in this chapter is provided to assist you in avoiding some of the common pitfalls associated with setting up and using the various accessories required for performing routine balance or vibration survey jobs with the Model 2020 ProBalancer Analyzer.

### **15.1 - Battery Charger**

#### **CAUTION**

**The charger is built for indoor use only. Don't expose the charger to the elements.**

Always replace the cap on the "BATT CHG" port of the analyzer. The unprotected pins may short out on surrounding material and cause damage to the analyzer or battery.

Charging a fully dead battery requires at least two hours. Do not leave the 220V charger connected for more than 24 hours.

### **15.2 - Cables**

Cables can be damaged if pinched in doors and windows. Always check for pinches, cuts, and abrasions prior to using the cable. Bent or damaged pins may cause problems with normal operation. Route cables away from all hot areas and electrical equipment. Duct tape or wire ties are excellent for securing the cables. Check all connectors for evidence of damage. An optional automatic cable check device is available from ACES Systems.

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## 15.3 - LASETACH®

### WARNING

**Never look directly into the laser aperture. Damage to the eye can occur.**

Don't use the LASETACH® when the weather conditions include precipitation. A single drop of water on the aperture lens can dissipate or block the laser beam.

Never use any reflective target tape other than that recommended in the manual (3M Tape, Model 7610 or ACES Systems' P/N 10-400-0176). The incorrect type of reflective tape can render the LASETACH ineffective in high-speed applications. An angle of 5 to 10 degrees from the perpendicular of the LASETACH/reflective tape is best.

## 15.4 - Phototach

The Phototach is very rugged. It is water resistant, but water on the lens may render it ineffective. Always check the lens for cleanliness and to be sure it is free of damage such as cracks and scratches.

The optimum range of the Phototach is 12 to 18 inches. It may work at closer or more distant ranges, although it may not be as reliable.

## 15.5 – Propeller Protractor

The protractor is made of hard plastic. If folded or crimped it will bend and remain bent. To straighten it, lay it on a flat surface and heat it with a hair dryer on a high setting. Discontinue the heat and leave the protractor in its flat position on the level surface to cool.

## 15.6 - Reflective Tape (3M Tape, Model 7610)

Always thoroughly clean the area where the tape is to be applied. Using scissors or some other cutting tool, round off corners of the tape and be sure all edges are pressed down. Rounded corners help to prevent tape from peeling up during use. Remove any bubbles in the tape by pressing them toward the edge of the tape. If used on a very high speed application, you may use super glue or clear nail polish on the edges of the tape to prevent "lifting" due to the airfoil effect during high speed runs.

## 15.6.1 - Reflective Tape Width Requirements

If problems are experienced using the Phototach while balancing high-speed props with the reflective tape further out on the blade, refer to the following chart for tape placement adjustments.

1. First, measure the distance from the center of the propeller shaft to the location you intend to place the reflective tape.
2. In the chart below, select from the RPM column the first speed greater than the speed at which you intend to balance.
3. From this RPM number, proceed across the chart to the right until you come to the first number larger than the distance measured in Step 1. above.
4. From this point, follow the column up to the top to the minimum tape width required for your application.

As an example, use the following parameters: the distance from the propeller shaft to the intended tape location measures 25 inches and the balance speed is 2300 RPM. Select 2400 from the RPM column since this is the first speed greater than your intended balance speed of 2300. From this number, follow the row across to 26.5, which is the first number higher than your intended tape location of 25 inches. From 26.5 follow the column straight up to the top--2 inches. This is the width of tape required for accurate readings at the intended distance and RPM level. (If your reflective tape is only 1-inch wide, place two 1-inch strips of tape side by side to create 2 inches.)

RPMs	Minimum Tape Required			
	1"	2"	3"	4"
<b>1000</b>	31.8	63.7	95.5	127.3
<b>1200</b>	26.5	53.1	79.6	106.1
<b>1400</b>	22.7	45.5	68.2	90.9
<b>1600</b>	19.9	39.8	59.7	79.6
<b>1800</b>	17.7	35.4	53.1	70.7
<b>2000</b>	15.9	31.8	47.7	63.7
<b>2200</b>	14.5	28.9	43.4	57.9
<b>2400</b>	13.3	26.5	39.8	53.1
<b>2600</b>	12.2	24.5	36.7	49
<b>2800</b>	11.4	22.7	34.1	42.4

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## **15.7 - Vibration Sensor**

Do not drop the sensor. Although built for rugged use, most accelerometers and velocity sensors are susceptible to internal damage when dropped, especially on hard surfaces.

When connecting cables to the sensor, make sure the cable is not forced against the cowling at the point where it is connected to the sensor.

Be sure to include your sensor with the unit when sending it in for calibration. The sensor will also be checked as part of the calibration procedure.

## **15.8 – Optical Tachometer**

See section 15.4 Phototach, or Section 15.3 LASETACH® for tips that also apply to optical tachometers.

## **15.9 – Reinitializing the Analyzer**

With the analyzer turned [OFF], push and hold the [5] key. While holding the [5] key down, turn the analyzer on by momentarily pushing the [ON/OFF] key. After the analyzer screen appears, release the [5] key. Your analyzer is now reinitiated.