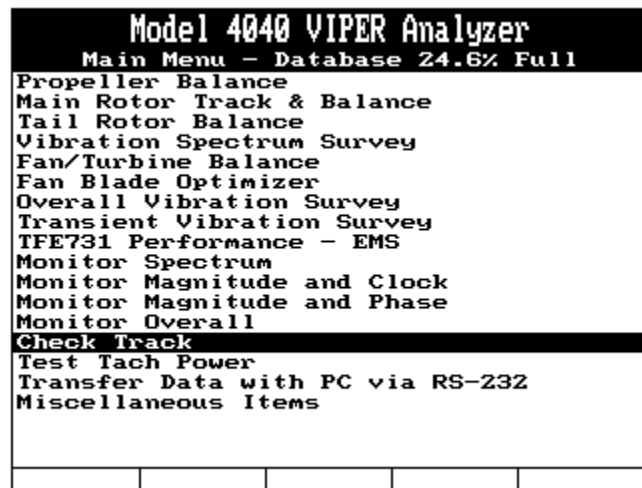

Chapter 16

Check Track

(Revision 2, Aug 2007)

“Check Track” is an analyzer function that is accessed from the analyzer’s Main Menu banner screen. A description of this function follows, along with the information required to complete the menu screens within the function, and the steps necessary to perform the function.



The “Check Track” option is provided for quick track observations. This function allows for no data storage for later recall and review of data as do the other rotor-related functions of the analyzer.

The “Check Track” function can be performed using either an industry-standard strobe for visual blade tracking or the ACES Systems’ Model 540-2 Optical Tracker.

Before using the “Check Track” function on the analyzer, you must first install physical equipment such as cables and sensors. To setup equipment, do the following:

1. Place the analyzer in the location it will be used. Install and connect the one-per-rev source to the TACH channel of choice. (You must use a single pickup or optical tach for the once-per-rev signal.)

2. If using the Model 540-2, connect the tracker to the analyzer's "AUX/COM" input port located on the top end of the analyzer.

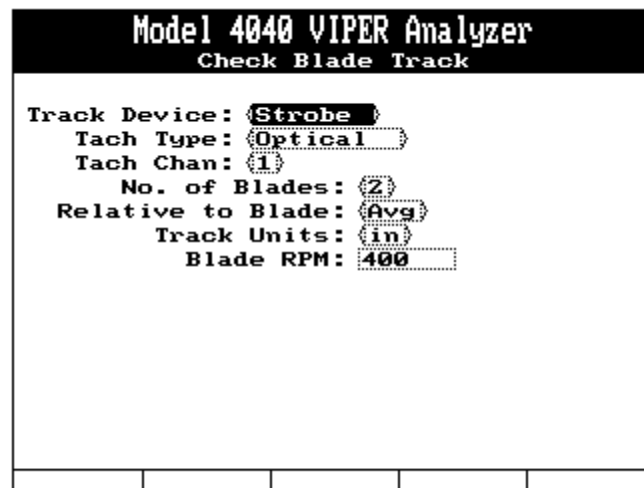
If using a strobe light, connect the strobe interface cable to the analyzer's "STROBE" input port. Connect the strobe to the interface. Set the strobe to the slave mode or turn the internal oscillator off. Connect the interface to the ship's 28-volt power source. **If aircraft power is 12V you must transform it to 28V to use the strobe with the analyzer.** Install tip targets or place reflective tape on the blade tips per manufacturer's directions.

NOTE

Using the strobe may cause the "ON/OFF" function of the analyzer to be disabled. If you cannot turn the analyzer off using the [ON/OFF] key, disconnect the strobe, then turn the analyzer off.

After all equipment is installed, return to the analyzer. Then, to use the "Check Track function" on the analyzer, do the following:

1. Select "Check Track" from the Main Menu banner screen. The "Check Blade Track" banner screen appears as shown in the figure below.



Model 4040 VIPER Analyzer	
Check Blade Track	
Track Device:	Tracker
Tach Type:	Optical
Tach Chan:	1
No. of Blades:	4
Relative to Blade:	Avg
Track Units:	in
No. of Rotations:	50
Inches To Blade Tip:	120
Rotor Diameter:	37.00 ft
Lead/Lag Units:	in

2. Use the [⇒] key to toggle between the two selections in the “Track Device” field, strobe or tracker. As shown in the figures above, the lower portion of the “Check Blade Track” banner screen then changes depending on the type of track device you selected.
3. Use the [↓] key to move down to the “Tach Type” field. Using the [⇒] key, toggle between the available selections to select the tach type you are using to generate the once-per-rev signal.
4. Use the [↓] key to move to the “Tach Channel” field. Using the [⇒] key, toggle between the available selections to select the tach channel you connected your tachometer to.
5. Use the [↓] key to move down to the “No. of Blades” field. Using the [⇒] key, select the number of blades on the rotor you are checking.
6. Use the [↓] key to move down to the “Relative to Blade” field. This selection will determine the reference blade for tracking displays. Selecting “AVG” will present rotor blade positions relative to the average of all blades. Selecting a specific blade number will present all other blade positions relative to the blade number selected. Use the [⇒] key to select the reference blade.
7. Move to the “Track Units” field using the [↓] key. Select the track units from either inches or mm by using the [⇒] key to toggle between the available selections. This will set the scale for the track-recording screen.
8. The next fields may or may not be required depending on the type of tracking device you selected to use.

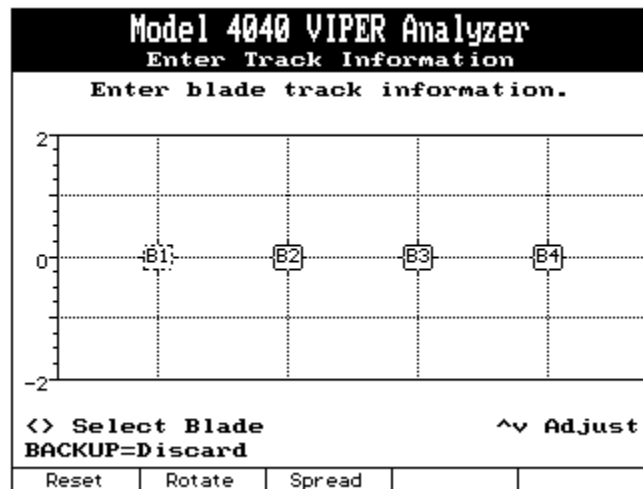
If using the strobe, complete the “Blade RPM” field as follows:

From the “Track Units field, use the [↓] key to move down to the “Blade RPM” field. Enter the blade RPM using the keypad. (Refer to Chapter 3, “Using the VIPER” if you are unfamiliar with using the keypad.)

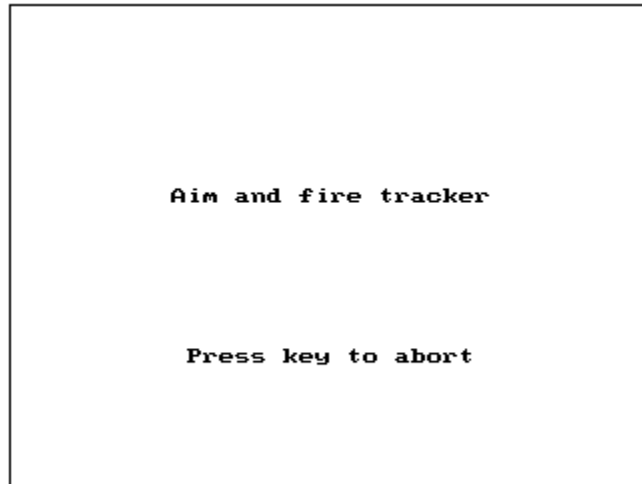
If using the Model 540-2 Optical Tracker, complete the “No. of Rotations”, “Inches to Blade Tips”, “Rotor Diameter”, and “Lead/Lag Units” fields as follows:

From the “Track Units” field, use the [↓] key to move down to the “No. of Rotations” field. The field will accept numbers between 20 and 99. It is strongly recommended to use 50 rotations under normal conditions. The number of rotations may need to be increased as light conditions decrease. This will give the analyzer enough data to provide accurate track results. Using the keypad, enter the number of rotations you wish to use when acquiring blade data. (Refer to Chapter 3, “Using the VIPER” if you are unfamiliar with using the keypad.) Use the [↓] key to move down to the “Inches to Blade Tips” field. Using the keypad, enter the distance, in inches, between the point where the tracker will be used, to the blade tip at the 12:00 position with the interrupter over the magnetic pickup. (Or the reflective tape in front of the Phototach when used as the one-per-revolution source.) Use the [↓] to move to the first “Rotor Diameter” field. This field will accept decimal entries between 1 and 999999. Enter the diameter of the rotor being tracked. The next field will define the measurement units used in measuring the diameter. Available choices are: “in”, “ft”, “m”, or “mm”. The field “Lead/Lag” units will define the units of measure for the lead/lag readings obtained during measurement. Available choices include either “in” or “mm”.

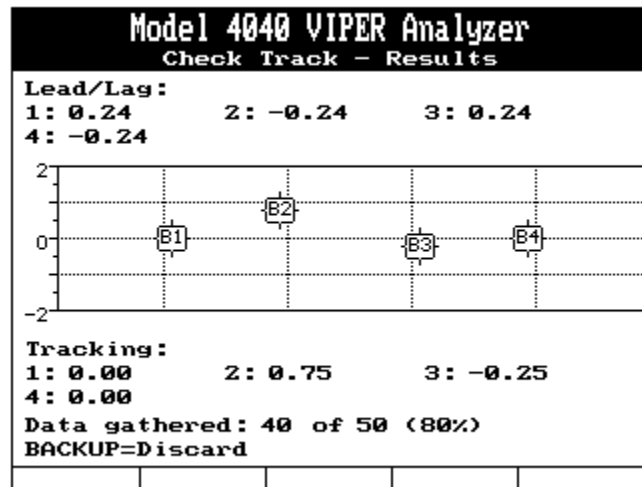
9. When all fields are completed to your satisfaction, press [ENTER].
10. The process, after setting up the tracking parameters, changes depending on the type of tracking device you are using.



If using a strobe - When the screen shown above appears, aim the strobe and press the trigger to fire. The targets will appear as a stacked image. By using the [F3] key you can spread the targets out from each other. Each time you press the [F3] key the targets separate further. To return the targets to the stacked position, press the [F1] “Reset” key. To rotate the group of targets to another position for ease of viewing, press the [F2] “Rotate” key. When finished, press the [ENTER] key to exit back to the Main Menu banner screen.



If using the Model 540-2 Optical Tracker - After arming the tracker by pressing [ENTER], a message to “Aim and Fire Tracker” appears on the screen (shown above). Aim the tracker and press the trigger to begin acquiring data. When acquisition is finished, the “Check Track Results” banner screen (shown in the following figure) appears.



The “Check Track -Results” screen presents the blade-tip-path information in both a graphical and a numeric format. Leading results will be displayed numerically as positive numbers and the blade icons will be to the left of the reference line. Track results will display high blades as positive numbers and the blade icon will be above the “0” reference line. The “Data Gathered” line at the bottom of the screen is an indicator of the quality of data. The higher the number of gathered data packets, the better the data quality. If the number is below 75% of the number defined in the “No. of Rotations” line above, you may retake the track data by pressing [BACKUP], selecting the “Check Track” function again from the Main Menu banner screen and performing steps 1- 10 again.