Application Note

SAAB 340

Propeller Balance

Part Number: 11-200-0284

AppNote Number: A-SA340-2020-PB (Rev. 5.00, Apr 2010)

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Application Note

Application Note Number	A-SA340-2020-PB
Revision	5.00 (From other data dated 12/08)
Function	Propeller Balance
Airframe	SAAB 340
Engine	GE CT-7
E-Setup Number	a-sa340-2020-pb.asf
ACES Systems Analyzer	Model 2020 Series with EPS
Boot/App Version	5.xx/5.xx or later
Procedure	N/A

Introduction

This Application Note covers the required equipment, equipment installation, analyzer setup, data acquisition and solution process for using the ACES Systems Model 2020 with the Propeller Enhanced Performance Software (EPS) option to perform a Propeller balance on the SAAB 340. General instructions for the use of the Model 2020 can be found in the Model 2020 User Manual #2020-OM-01 (P/N 75-900-2020). All procedures for Propeller Balance and all adjustments should be made in accordance with the Aircraft Maintenance Manual.

A. Required Equipment

The following equipment is required to perform a Propeller Balance*:

Item	Quantity	Description	Part Number
1.	1	Analyzer, Model 2020HR	10-100-2020HR
2.	1	Mount, Assy, PhotoTach Cowling	10-100-0196
3.	1	Tachometer, Optical, PhotoTach (New)	10-100-1773
4.	1	Cable, Tach, Generic, 25’	10-320-0153
5.	1	Cable, Sensor 991D-1, 25’	10-320-0162
6.	1	Tape, Reflective, Roll, 10’	10-400-0176
7.	1	Mount, ¼X28 Sensor, Vibe ¼” Hole	22-430-0056
8.	1	Sensor, Vibe, Accel, 991D-1	69-100-0075
9.	1	Option, 2020 Enhanced Propeller	11-900-0001**

*This listing shows the latest design parts. It is acceptable to perform this task using previous designs with the appropriate accessories. For compatibility issues, contact ACES Systems.

**Using the Enhanced Tail Rotor Option will require entries on screens not found in the standard 2020 software. If your 2020 does not display all of the following screens, contact ACES Systems to learn about the benefits and availability of EPS.

Optional Equipment

The following equipment may be used if both engines are balanced concurrently:

Item	Quantity	Description	Part Number
10.	1	Mount, Assy, PhotoTach Cowling	10-100-0196
11.	1	Tachometer, Optical, PhotoTach (New)	10-100-1773
12.	1	Cable, Tach, Generic, 25’	10-320-0153
13.	1	Cable, Sensor 991D-1, 25’	10-320-0162
14.	1	Mount, ¼X28 Sensor, Vibe ¼” Hole	22-430-0056
15.	1	Sensor, Vibe, Accel, 991D-1	69-100-0075

Miscellaneous Equipment

Tape or tie wraps to secure cables to airframe.

If adjustments are to be made to the Propeller Balance, use only hardware or balance weights that are specified in the applicable airframe maintenance manual.

B. Equipment Installation

1. Park the aircraft on a flat level surface with the nose into the wind. Indicated wind speed should be below 10 knots with no gusts. Dynamic balancing should not be performed hen it is actively raining. The propeller(s) should be clean and properly serviced, check oil level in the hub(s). Place the analyzer (Item 1) in the flight compartment.
2. Obtain access to the engine compartment.

NOTE

Secure and route cables as not to interfere with hot or rotating components and aircraft controls. Insure the sensor cables are clear of the PCU Power and Condition levers throughout the full range of travel.

3. Left engine installation:
   - 3.1 Install the 991D-1 Vibe Sensor (Item 8) into the Vibe Sensor Mount with ¼” Hole (Item 7). Remove the nut and washer from the left upper stud of the unused pump drive pad above the PCU. Install the Sensor Mount on the stud. Reinstall washer and nut and torque. The vibration sensor should be installed with the electrical connector pointing up toward the 6 o’clock position. (Figure 1)
   - 3.2 Connect the 25’ 991D-1 Sensor Cable (Item 5) to the sensor and route to the inboard nacelle strut to a point level with the NACA duct opening in the inboard forward cowl door. Route through the opening and aft along the nacelle and forward of the wing trailing edge to the over wing emergency exit. Secure with high-speed tape. Remove the over wing emergency exit door and install the door plug. Route the cables into the

cabin to the location of the analyzer. Connect Cable to “CHANNEL A” of the analyzer. (Figure 1)

3.3 Reinstall any previously removed engine cowlings.

NOTE

See Paragraph D.4 below for additional installation instructions of PhotoTach and Tape.

3.4 Secure PhotoTach (Item 3) and Mount (Item 2) to top of engine cowling. Insure that PhotoTach will withstand propeller slipstream.

3.5 Connect the 25’ Generic Tach Cable (Item 4) to the PhotoTach and route alongside the corresponding vibration sensor cable and secure both with high-speed tape. Connect Cable to “TACH 1 of the analyzer.

4. Right engine installation:

4.1 Install the 991D-1 Vibe Sensor (Item 15) into the Vibe Sensor Mount with ¼” Hole (Item 14). Remove the nut and washer from the left upper stud of the unused pump drive pad above the PCU. Install the Sensor Mount on the stud. Reinstall washer and nut and torque. The vibration sensor should be installed with the electrical connector pointing up toward the 6 o’clock position. (Figure 1)

4.2 Connect the 25’ 991D-1 Sensor Cable (Item 13) to the sensor and route to the inboard nacelle strut to a point level with the NACA duct opening in the inboard forward cowl door. Route through the opening and aft along the nacelle and forward of the wing trailing edge to the over wing emergency exit. Secure with high-speed tape. Remove the over wing emergency exit door and install the door plug. Route the cables into the cabin to the location of the analyzer. Connect Cable to “CHANNEL B” of the analyzer. (Figure 1)

4.3 Reinstall any previously removed engine cowlings.

NOTE

See Paragraph D.4 below for additional installation instructions of PhotoTach and Tape.

4.4 Secure PhotoTach (Item 11) and Mount (Item 10) to top of engine cowling. Insure that PhotoTach will withstand propeller slipstream.

4.5 Connect the 25’ Generic Tach Cable (Item 12) to the PhotoTach and route alongside the corresponding vibration sensor cable and secure both with high-speed tape. Connect Cable to “TACH 2” of the analyzer.

Equipment Installation Diagram

Figure 1

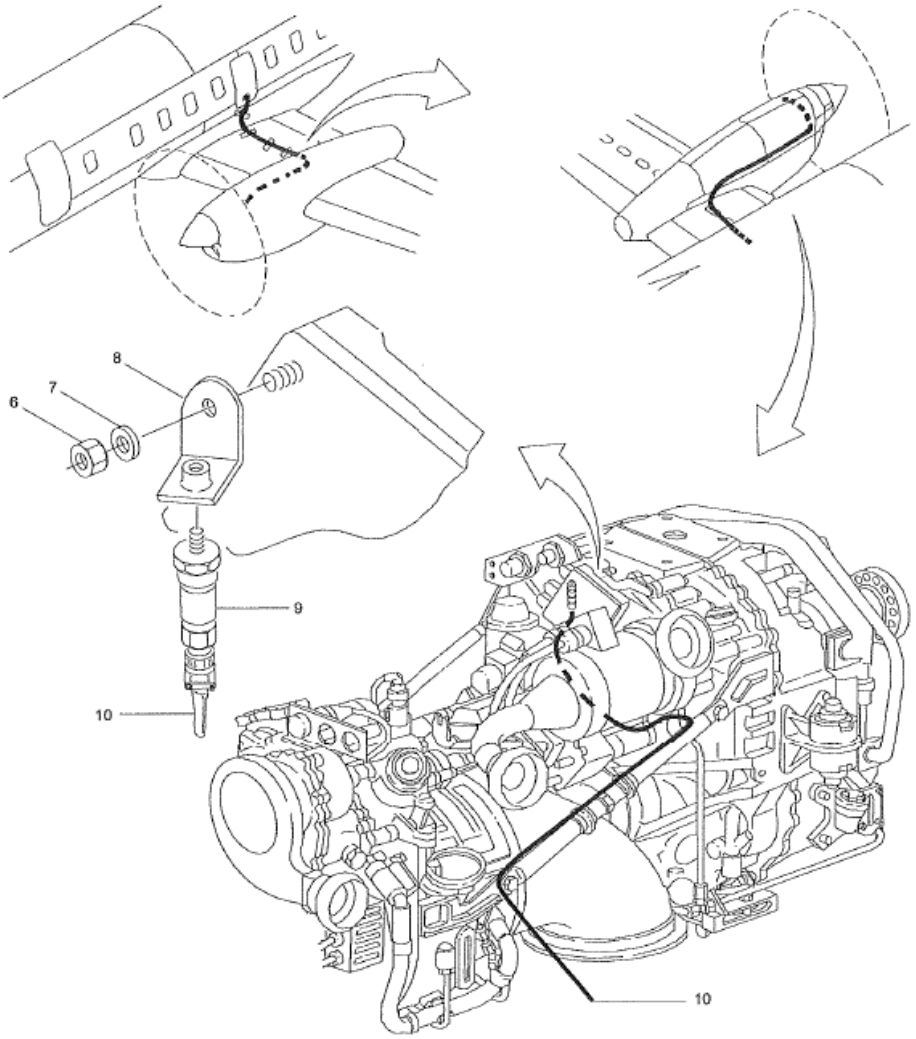
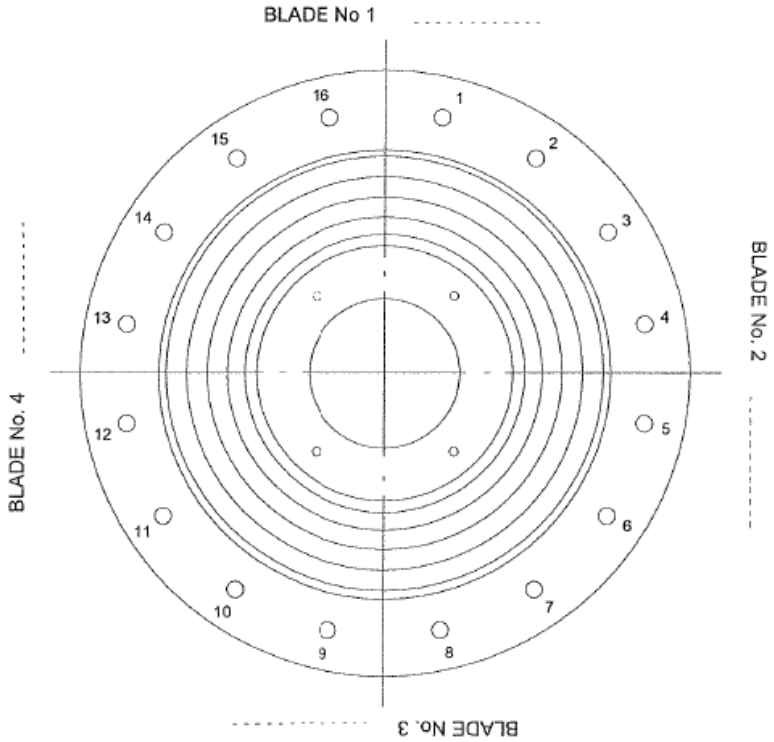


Figure 2



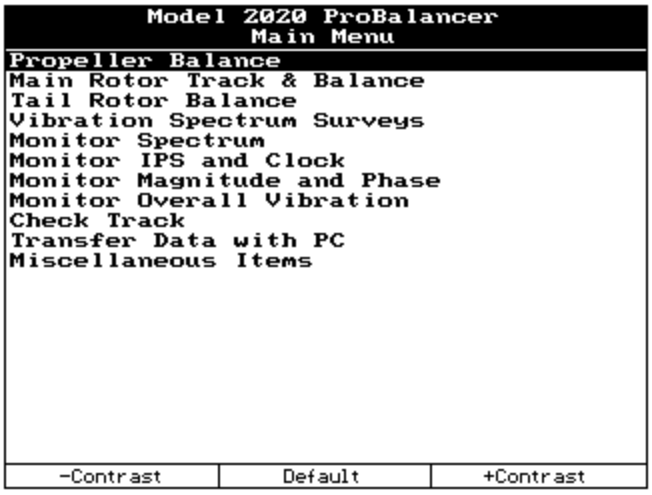
Spinner backing plate as viewed from Aft looking Forward

NOTE

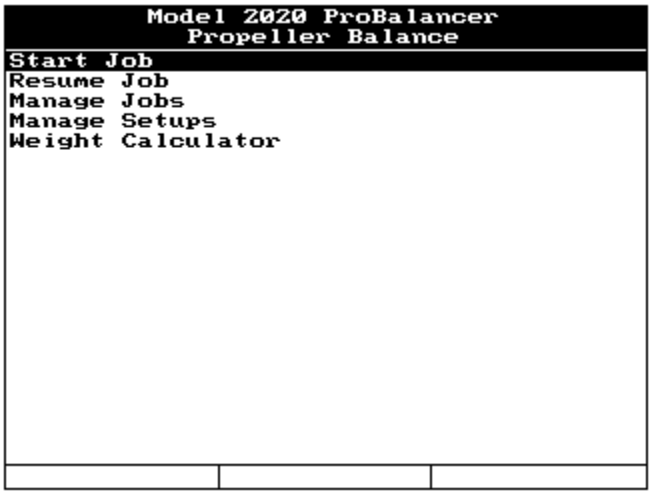
If the layout of the holes on the spinner bulkhead does not look exactly like the figure above, please contact ACES Systems for additional support.

C. Analyzer Set Up

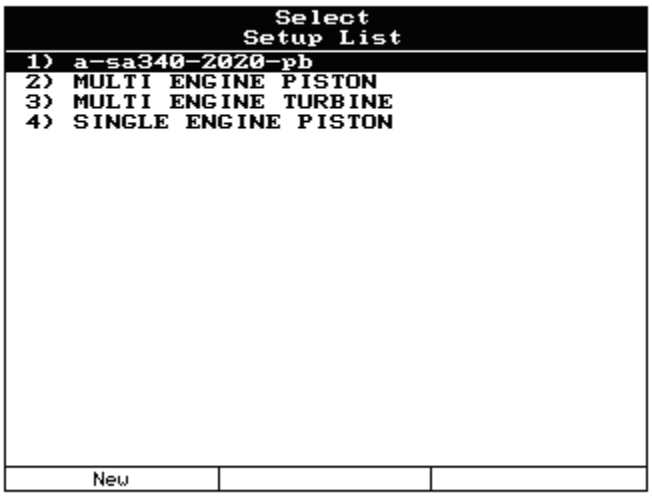
1. Insure the analyzer battery is charged prior to starting the job. See the Model 2020 User Manual #2020-OM-01 (P/N 75-900-2020) Chapter 2 for detailed instructions on battery charging.
2. Turn the analyzer ON by pressing the **[ON/OFF]** key.
3. From the Main Menu, select “Propeller Balance” and press the **[ENTER]** key.



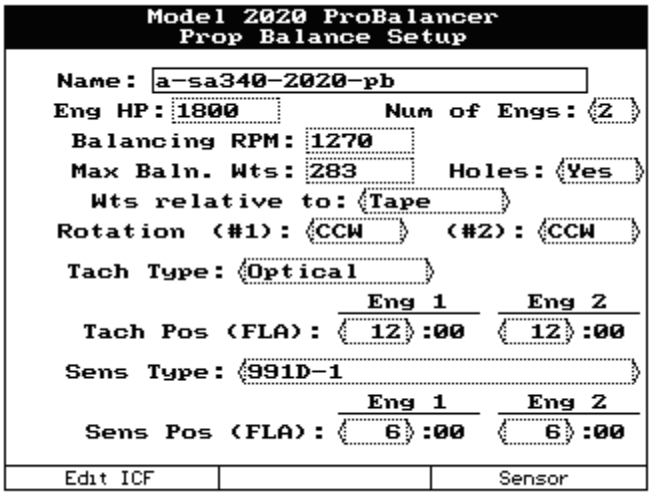
4. From the Propeller Balance Menu, select “Start Job” and press the **[ENTER]** key.



5. If the SAAB 340 is listed in the Setup List, select it using the **[⇓]** key, press **[ENTER]** and go to Section D below. If the SAAB 340 is not in the Setup List, press the **[F1]**, “New” key and go to Step 6 below.



6. Complete the Prop Balance Setup screen per the illustration screen below.



6.1 In the “Name:” field, use the analyzer keypad to enter “SAAB 340”. Press the **[⇓]** key to move to the next field.

6.2 In the “Eng HP:” (Engine Horsepower) field, use the analyzer keypad to enter “1800”. Press the **[⇓]** key to move to the next field.

6.3 In the “Num of Engs:” field, press the **[⇒]** key until the field reads “2”. Press the **[⇓]** key to move to the next field. The remainder of the form will automatically change to reflect a twin engine setup.

6.4 In the “Balancing RPM:” use the analyzer keypad to enter “1270”. Press the **[⇓]** key to move to the next field.

6.5 In the “Max Baln. Wts:” field; use the analyzer keypad to enter “283”. (Calculated using 9 AN970-3 washers, an NAS603-20P Screw, and an MS21083-N3 Nut in each of 6 balance holes for a maximum weight of 282.6g.) This is the maximum total amount of balance weights that may be added to the propeller assembly to accomplish

the job. You will enter a maximum amount per hole in another screen. Press the **[⇓]** key to move to the next field.

6.6 In the "Holes:" field, press the **[⇒]** key until the field reads "Yes" to indicate there are pre existing holes where balance weights are added that must be defined. Press the **[⇓]** key to move to the next field.

6.7 In the "Wts relative to:" field, press the **[⇒]** key until the field reads "Tape". This indicates the angle to each of the holes is measured relative to the position of the reflective tape on the propeller, which is used as an index point. Press the **[⇓]** key to move to the next field.

6.8 In the "Rotation (#1):" field, press the **[⇒]** key until the field reads "CCW" for counterclockwise. Press the **[⇓]** key to move to the next field.

6.9 In the "Rotation (#2):" field, press the **[⇒]** key until the field reads "CCW" for counterclockwise. Press the **[⇓]** key to move to the next field.

6.10 In the "Tach Type:" field, press the **[⇒]** key until the field reads "Optical" indicating you will use the optical PhotoTach. Press the **[⇓]** key to move to the next field.

6.11 In the "Tach Pos (FLA):" field under the "Eng 1" heading, press the **[⇒]** key until the field reads "12:00". This indicates the clock position where the PhotoTach is triggered by the passage of the reflective tape, as viewed from forward of the engine looking aft toward the tail of the aircraft. Press the **[⇓]** key to move to the next field.

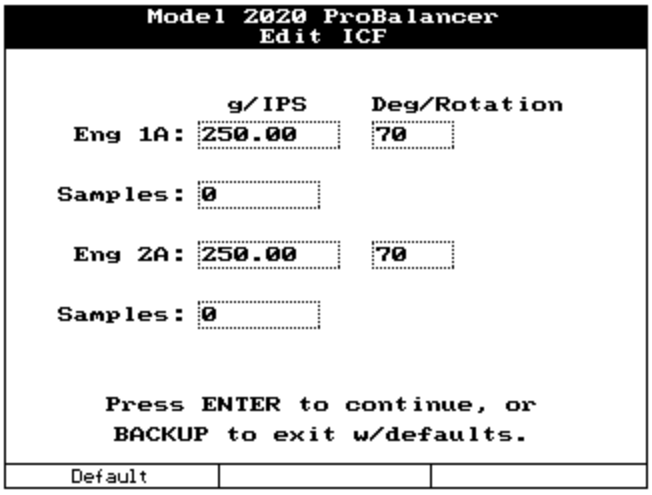
6.12 In the "Tach Pos (FLA):" field under the "Eng 2" heading, press the **[⇒]** key until the field reads "12:00". This indicates the clock position where the PhotoTach is triggered by the passage of the reflective tape, as viewed from forward of the engine looking aft toward the tail of the aircraft. Press the **[⇓]** key to move to the next field.

6.13 In the "Sens Type:" field, press the **[⇒]** key until the field reads "991D-1". Press the **[⇓]** key to move to the next field.

6.14 In the "Sens Posn (FLA):" field under the "Eng 1" heading, press the **[⇒]** key until the field reads "6:00". This will define the sensing axis of the vibration sensor. You can find the sensing axis by determining the direction the electrical connector points as viewed from forward of the engine looking aft toward the tail of the aircraft. For example, if the sensor is off of the centerline of the engine, but the electrical connector is pointing toward the sky, the correct "Sens Posn" entry will be "12:00".

6.15 In the "Sens Posn (FLA):" field under the "Eng 2" heading, press the **[⇒]** key until the field reads "6:00". This will define the sensing axis of the vibration sensor. You can find the sensing axis by determining the direction the electrical connector points as viewed from forward of the engine looking aft toward the tail of the aircraft. For example, if the sensor is off of the centerline of the engine, but the electrical connector is pointing toward the sky, the correct "Sens Posn" entry will be "12:00".

7. You can potentially reduce the number of runs required to balance the engine if you already know the ICF for the engine type being balanced. To define the ICF press the **[F1]** "Edit ICF" key from the "Prop Balance Setup" screen.



7.1 The “Edit ICF” screen will be displayed. Use the keypad to enter the correct “g/IPS” value in the field adjacent to the “Eng 1A” text. This is the amount of weight, in grams required to offset a 1.0 IPS vibration on this application. Press the **[⇓]** key to move to the next field.

7.2 In the “Deg/Rotation” field use the keypad to enter the “Phase Lag” value for the ICF. This value will be displayed in prior ICF samples as stored in completed jobs. Press the **[⇓]** key to move to the next field.

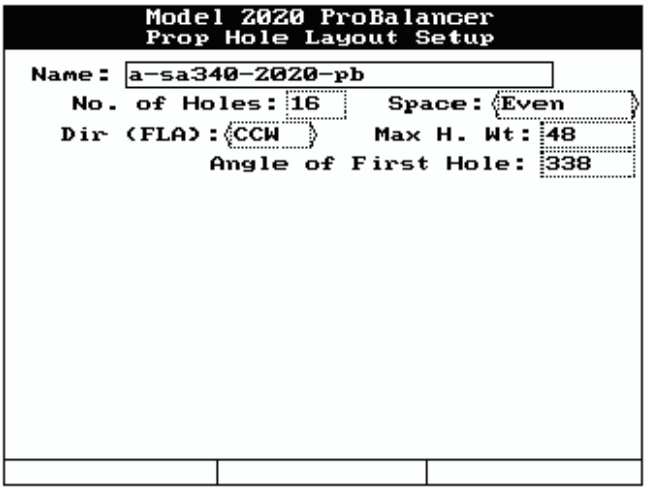
7.3 The “Samples” value will automatically update as the setup is used in future jobs. Leave the value set to zero and press the **[ENTER]** key to exit the screen and return to the “Prop Balance Setup” screen.

7.4 Use the keypad to enter the correct “g/IPS” value in the field adjacent to the “Eng 2A” text. This is the amount of weight, in grams required to offset a 1.0 IPS vibration on this application. Press the **[⇓]** key to move to the next field.

7.5 In the “Deg/Rotation” field use the keypad to enter the “Phase Lag” value for the ICF. This value will be displayed in prior ICF samples as stored in completed jobs. Press the **[⇓]** key to move to the next field.

7.6 The “Samples” value will automatically update as the setup is used in future jobs. Leave the value set to zero and press the **[ENTER]** key to exit the screen and return to the “Prop Balance Setup” screen.

8. The “Prop Hole Layout Setup” screen will be displayed as illustrated in the screen below.



8.1 The “Name:” field will automatically be filled in from the previous screen above. Press the **[⇓]** key to move to the “No. of Holes:” field.

8.2 Use the analyzer keypad to enter “16” in the field. Press the **[⇓]** key to move to the next field.

8.3 In the “Space:” field, press the **[⇒]** key until the field reads “Even”. The screen will immediately change to display the hole layout grid. Press the **[⇓]** key to move to the next field

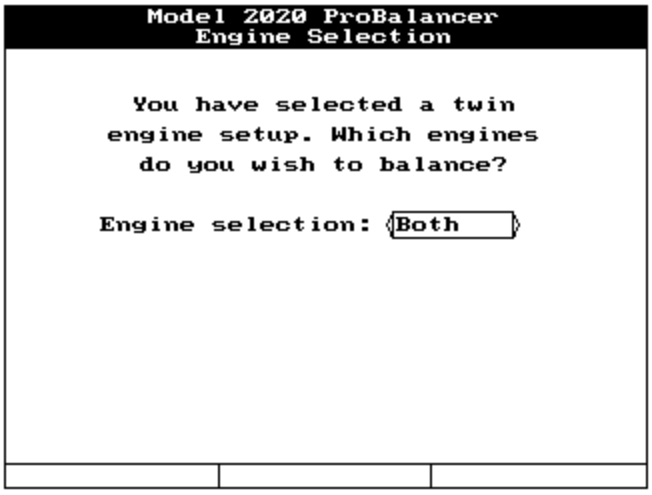
8.4 In the “Dir (FLA):” field, press the right arrow key until the field reads “CCW” for counterclockwise. This is the direction of the hole numbering sequence for the installation. This direction will be determined by viewing the spinner backing plate from forward looking aft. The technician will still install the weights counting holes as viewed from back side of the spinner. The analyzer compensates for this difference in perspective. This direction is independent of the method used to determine the location of hole #1 in Step 8.6 below. Press the **[⇓]** key to move to the next field.

8.5 In the “Max H. Wt:” (Maximum Hole Weight) field, use the analyzer keypad to enter “48”. Press the **[⇓]** key to move to the next field. (9 AN970-3 washers, an NAS603-20P Screw, and an MS21083-N3 Nut in a hole equals 47.1 GMS.)

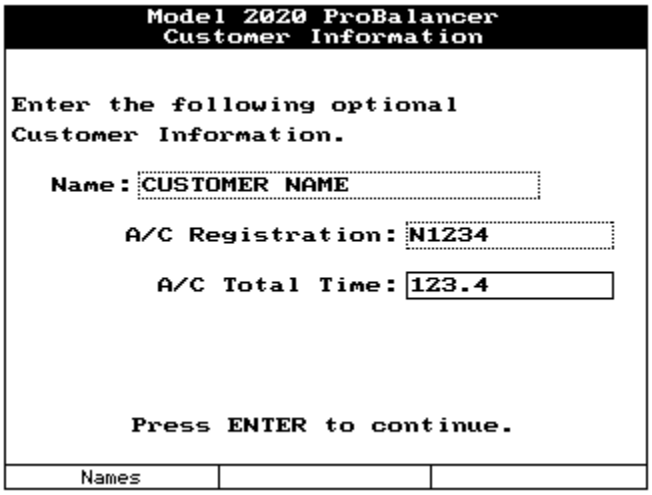
8.6 In the “Ang of First Hole” field, use the keypad to enter “338”. This indicates that hole #1 is located at 338 degrees, measured in a clockwise direction as viewed from the front, relative to the reflective tape at the center of the #1 blade. This measurement is independent of the direction of increasing hole numbers set in Step 8.4 above. When complete, press the **[ENTER]** key to accept and continue.

D. Data Acquisition

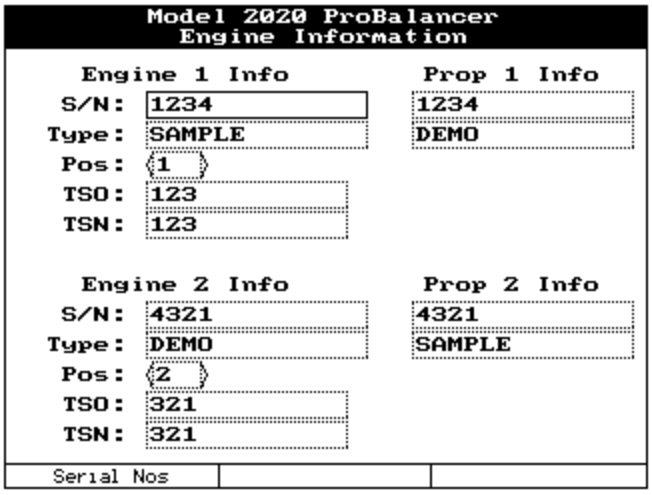
1. The “Engine Selection” screen will be displayed next. You have the opportunity to select one engine or both for balancing. Use the **[⇐]** or **[⇒]** arrow key to toggle through the choices, left, right, or both, select the appropriate one and press **[ENTER]** to continue.



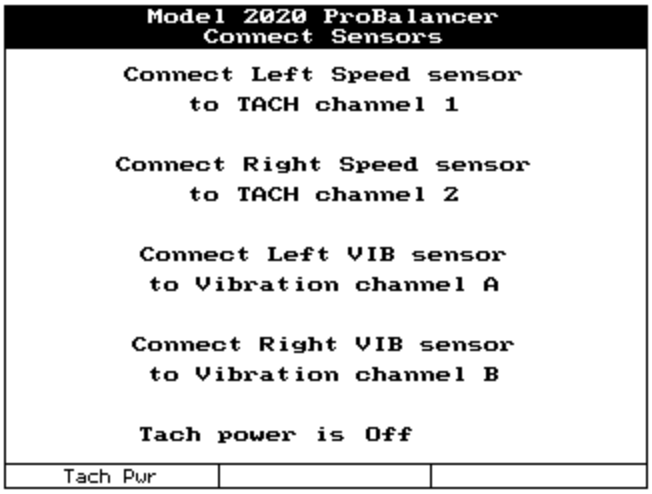
2. The “Customer Information” screen will be displayed, as shown below. Use the analyzer keypad to enter a customer name in the “Name:” field. The analyzer will maintain a list of customer names as new names are entered. If names have been previously entered into this analyzer, you may press the **[F1]** “Names” key and select a customers name from the provided list. Press the **[⇓]** key to move to the next field and use the analyzer keypad to enter the optional aircraft registration and aircraft total time as required. When all fields are complete, press the **[ENTER]** key to accept and continue.



3. The next screen to be displayed is the Engine Information screen, as shown below. While all these fields are optional, we highly recommend you fill in as much information as possible to provide better record keeping and search functions in AvTrend. Use the key pad and the arrow keys to complete the fields for the engine. S/N = Serial Number. In the serial number field, you may press the **[F1]** “Serial Nos” key to select the serial number from a list if this number has previously been entered in this analyzer. Type = Type engine or prop. Pos = position (1 or 2). TSO = Time since overhaul and TSN = Time since new. All fields are filled in using the analyzer keypad except the Pos: field which is selected using the **[⇒]** key. When all fields are complete, press the **[ENTER]** key to continue.



4. The next screen to be displayed will be the Connect Sensors screen as illustrated below. This screen gives instructions on installing sensors and cables. You may also check the PhotoTach alignment by pressing the **[F1]** "Tach Pwr" key which supplies power to the optical tachometer for checking alignment with the reflective tape.



4.1 Install and align reflective tape (Item 6) with PhotoTach as follows:

4.2 Press **[F1]** "Tach Pwr". Position one blade at the 12:00 o'clock position as viewed from the front.

4.3 Hold a 2-inch piece of reflective tape, reflective surface facing the PhotoTach, against the back side of the propeller. Do not remove backing at this point.

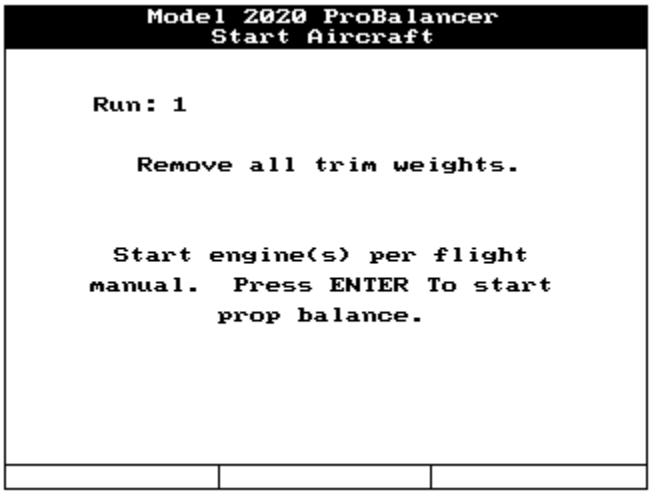
4.4 The red "Gate" light on the back of the PhotoTach should illuminate as the reflective tape is properly aligned in front of the LED. Clean an area of the propeller in preparation for mounting the reflective tape.

4.5 Remove the backing and install the reflective tape on the clean propeller surface.

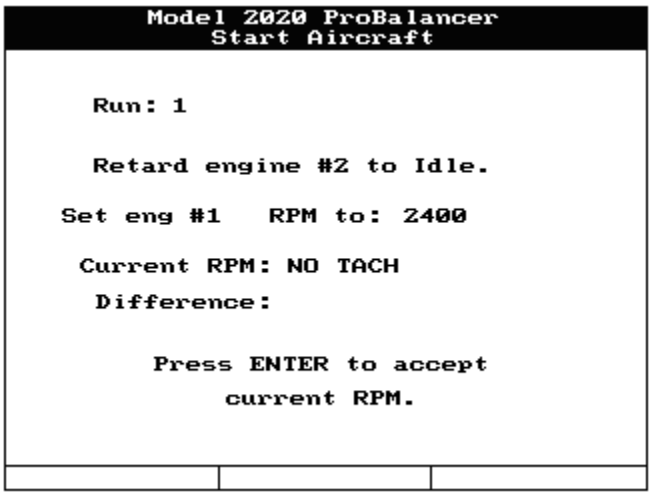
4.6 Adjust the PhotoTach to obtain an angle of approximately 5 degrees from perpendicular to the reflective tape. This will produce the best results when reading RPM.

4.7 Press **[ENTER]** when finished with tape installation.

5. The “Start Aircraft” screen will be displayed with instruction to “Remove all trim weights”. Remove all previously installed trim balance weights from all hole locations to begin the balance with a clean slate. When you have verified that all weights are removed, press the **[ENTER]** key to continue.

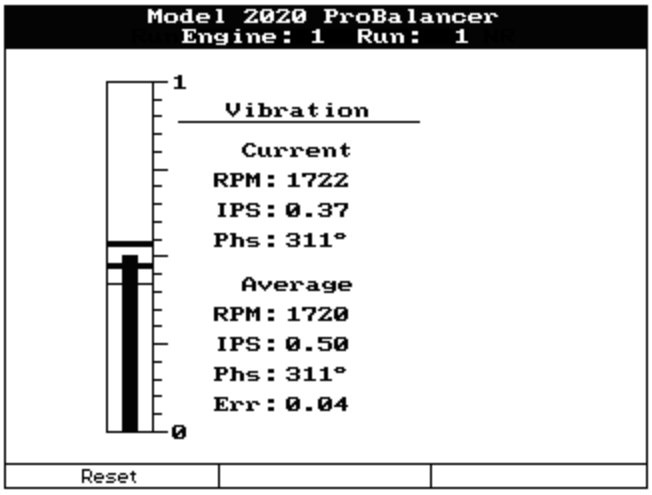


6. The “Start Aircraft” screen will change to provide instructions on how to set the condition levers to take vibration readings on engine #1. Retard the #2 engine to Ground Idle and advance the #1 condition lever to the desired balance RPM. When the #1 engine RPM is stable and within range of the balance RPM, press the **[ENTER]** key to continue.



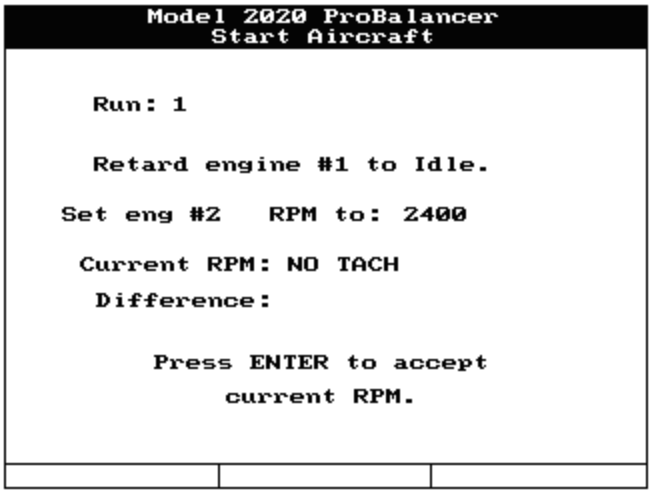
7. The analyzer will display the Engine 1, Run 1 screen similar to the one below. Chapter 16 of the Model 2020 User’s Manual gives detailed instructions on how to read the converging scale if you are not familiar with it. Increase RPM on the engine to a low cruise setting and

allow the analyzer to collect data for approximately 10 to 15 seconds. The "Err:" (Error) indication at the bottom of the text portion of the screen should be as steady as possible with very little change before you press **[ENTER]** to stop acquisition. If the Err is not "0", this is not an indication of failure or fault, only that the vibration averaging errors cannot be resolved below the displayed level. This Err value will typically be higher as the balancing process reduces the vibration amplitude.



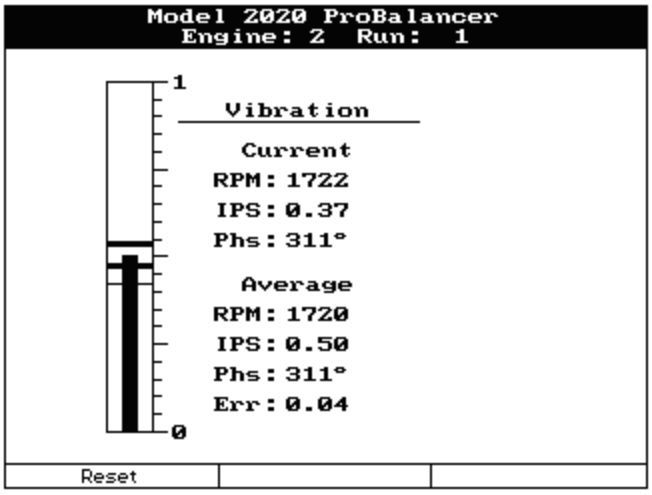
See the Model 2020 User Manual #2020-OM-01 (P/N 75-900-2020) Chapter 16 for detailed instructions on how to read the "Converging Vibration Indicator and Scale."

8. The analyzer will display the "Start Aircraft" screen again. This time you will be provided instructions on how to set the condition levers to take vibration readings on engine #2. Retard the #1 engine to Idle and advance the #2 condition lever to the desired balance RPM. When the #2 engine RPM is stable and within range of the balance RPM, press the **[ENTER]** key to continue.

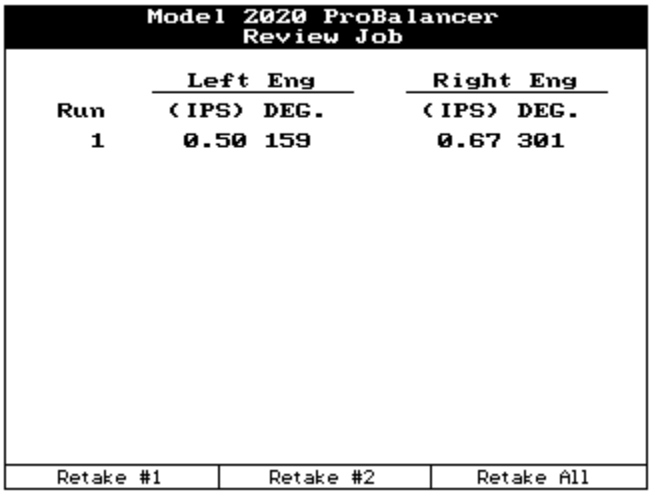


9. The analyzer will display the Engine 2, Run 1 screen similar to the one below. Chapter 16 of the Model 2020 User's Manual gives detailed instructions on how to read the converging scale if you are not familiar with it. Increase RPM on the engine to a low cruise setting and

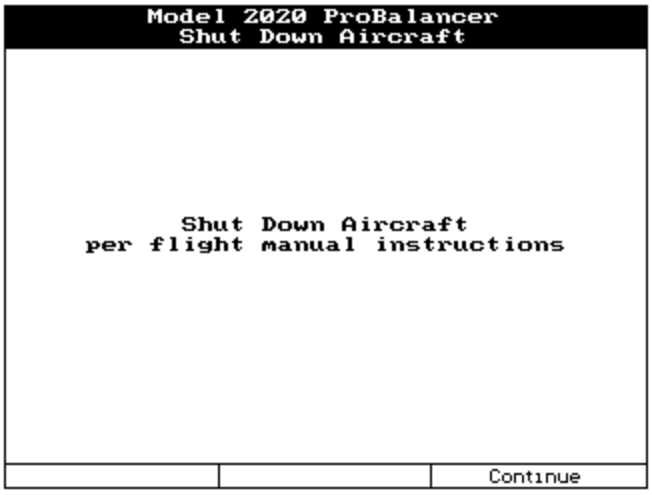
allow the analyzer to collect data for approximately 10 to 15 seconds. The “Err:” (Error) indication at the bottom of the text portion of the screen should be as steady as possible with very little change before you press **[ENTER]** to stop acquisition. If the Err is not “0”, this is not an indication of failure or fault, only that the vibration averaging errors cannot be resolved below the displayed level. This Err value will typically be higher as the balancing process reduces the vibration amplitude.



10. After pressing **[ENTER]** the review screen will be displayed as shown in the example below. This is the amplitude and phase angle reading for each engine. You may retake engine #1 data by pressing the **[F1]** “Retake #1” function key. You may retake engine #2 data by pressing the **[F2]** “Retake #2” function key. You may retake data for both engines by pressing the **[F3]** “Retake All” function key. When satisfied with the acquired data, press the **[ENTER]** key to accept and continue.



11. The “Shutdown Aircraft” instruction screen will be displayed as shown in the example below. Shut down the engine(s) using normal shutdown procedures. When all shutdown tasks are complete, press the **[F3]** “Continue” key.

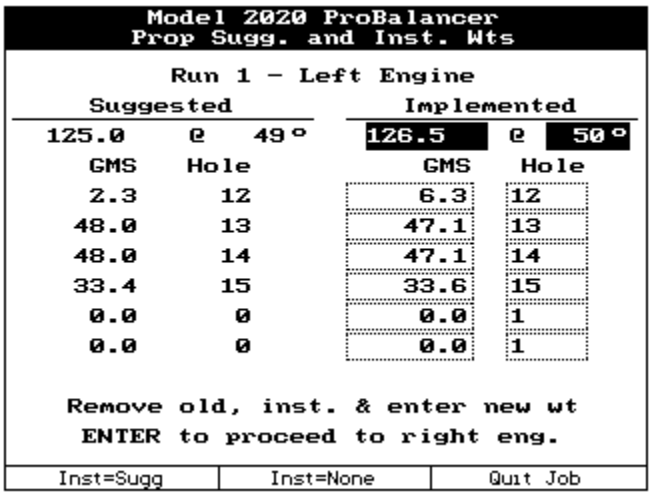


NOTE

The weight installations shown below are installed by looking at the spinner backing plate from the aft side. The holes will be counted starting from the first hole to the right of the #1 Propeller Blade and continuing to count the holes increasing in a clockwise direction. (See Figure 2 above)

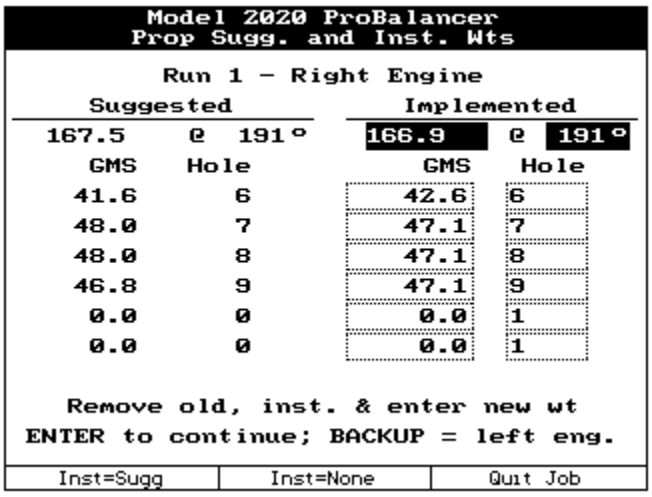
12. The Prop Sugg. and Inst. Wts screen for "Run 1 – Left Engine" as shown below will be displayed. At the top of the screen you will see the Run number. The left side of the screen shows the Suggested weight installation by actual weight and phase angle. Directly below the raw solution you will see a specific weight (in grams) in the left column and a corresponding hole number(s) in the right column where that weight should be installed. The Implemented column at the right side of the screen is where you must enter the actual weight and hole number(s) where that weight was installed. Be as accurate as possible with the installed weight as the analyzer will use this information to calculate the follow on influence for the next solution (if required). Notice at the bottom of the screen the instructions: "Remove old, install & enter new weight." This means that ALL previously installed weights must be removed with each new weight installation. At the bottom of the screen, the three function keys are defined as: **[F1]**, "Inst=Sugg", press this key to default the Installed columns to the values displayed in the Suggested column. **[F2]**, "Inst=None", press this key to zero out all weight in the Installed column. **[F3]**, Quit Job, press this key if you are satisfied with the current vibration levels and wish to terminate the balance job, leaving the previously installed weights in place. After the screen is complete per your actions, press the **[ENTER]** key to continue.

    In the example below, the closest matching weight installation using the nut, bolt and washer combinations listed in the Maintenance Manual is shown below. In Hole # 12 one NAS603-18P Bolt and one MS21083–N3 nut are the lightest combination that can be installed for a weight of 6.3 GMS. In Holes # 13 and # 14, the maximum of nine AN970-3 washers, one NAS603-20P bolt and one MS21083-N3 nut are installed for a weight of 47.1 GMS. In Hole # 15 six AN970-3 washers, one NAS603-20P bolt and one MS21083–N3 nut are installed for a weight of 33.6 GMS. The new effective weight of the "Implemented" solution is now displayed directly below the separation bar above the right column. The weight combinations installed weigh 126.5 GMS @ 50°. This closely matches the suggestion of 125.0 GMS @ 49°. The weight change is made on the aircraft and entered into the analyzer in preparation for the next run.



13. The Prop Sugg. and Inst. Wts screen for "Run 1 – Right Engine" as shown below will be displayed. At the top of the screen you will see the Run number. The left side of the screen shows the Suggested weight installation by actual weight and phase angle. Directly below the raw solution you will see a specific weight (in grams) in the left column and a corresponding hole number(s) in the right column where that weight should be installed. The Implemented column at the right side of the screen is where you must enter the actual weight and hole number(s) where that weight was installed. Be as accurate as possible with the installed weight as the analyzer will use this information to calculate the follow on influence for the next solution (if required). Notice at the bottom of the screen the instructions: "Remove old, install & enter new weight." This means that ALL previously installed weights must be removed with each new weight installation. At the bottom of the screen, the three function keys are defined as: **[F1]**, "Inst=Sugg", press this key to default the Installed columns to the values displayed in the Suggested column. **[F2]**, "Inst=None", press this key to zero out all weight in the Installed column. **[F3]**, Quit Job, press this key if you are satisfied with the current vibration levels and wish to terminate the balance job, leaving the previously installed weights in place. After the screen is complete per your actions, press the **[ENTER]** key to continue.

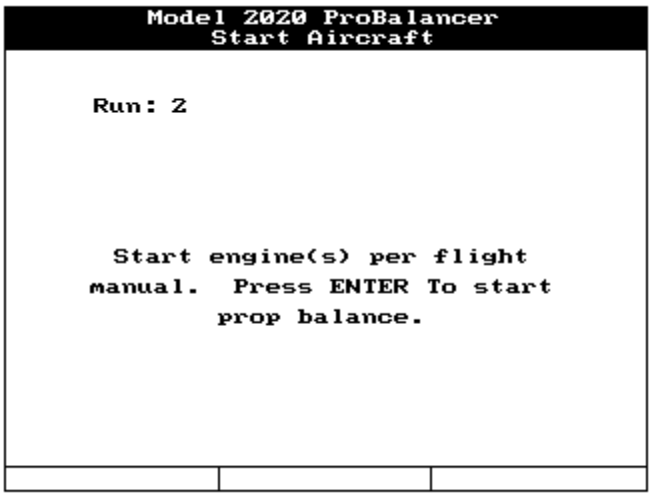
    In the example below, the closest matching weight installation using the nut, bolt and washer combinations listed in the Maintenance Manual is shown below. In Hole # 6 eight AN970-3 washers, one NAS603-20P bolt and one MS21083–N3 nut are installed for a weight of 42.6 GMS. In Holes # 7, #8, and # 9, the maximum of nine AN970-3 washers, one NAS603-20P bolt and one MS21083-N3 nut are installed for a weight of 47.1 GMS. The new effective weight of the "Implemented" solution is now displayed directly below the separation bar above the right column. The weight combinations installed weigh 166.9 GMS @ 191°. This closely matches the suggestion of 167.5 GMS @ 191°. The weight change is made on the aircraft and entered into the analyzer in preparation for the next run.



CAUTION

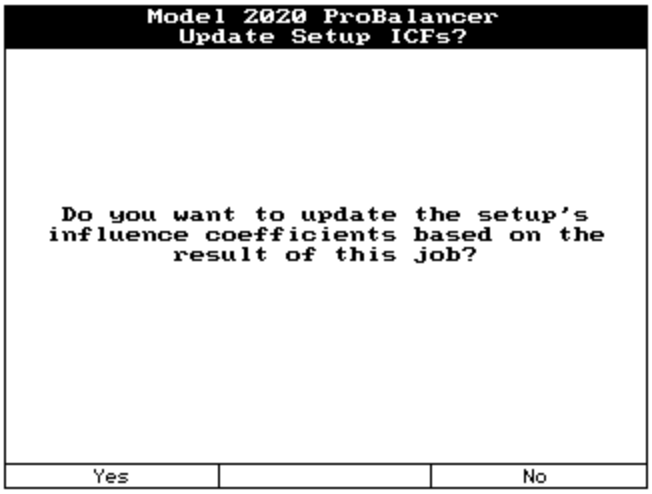
At no point should a correction be made that contradicts information in the maintenance manual. The analyzer will attempt to resolve the vibration and/or track level to 0.00. This may require adjustments that are not practical to duplicate. The technician must determine the closest possible match to the suggestion.

14. If you chose to continue the job, the screen below will be displayed indicating you are ready to start the engine for the next run. Steps 5 through 13 above will be repeated until the vibration amplitude has been reduced to a satisfactory level, usually three runs total.



E. Quit Job

1. If you selected **[F3]** “Quit Job” in Paragraph D.12 above or Paragraph D.13 above you will be presented with the following confirmation screen. If you are certain you want to end the job press **[F1]** “Yes” and the job will be marked as completed. This choice will generate the message in Step 2 below. Choosing **[F2]** “No” will take you back to the job in progress.



2. Selecting **[F1]** "Yes" from the screen shown in Step 1 above will cause the following screen to be displayed. Press **[F1]** "Yes" if the job went as expected. It is possible to update and store the calculated ICF in the setup. This allows you to refine the ICF and potentially reduce the number of runs required in future jobs using this same setup. Select **[F2]** "No" if the balance job did not go as expected. This will keep mistakes or poor mechanical condition from influencing the setup causing unnecessary runs when using the same setup in the future.
3. Remove all test equipment and return aircraft to airworthy condition. Insure only permanent weights are mounted on the propeller and that they are mounted in accordance with the manufacturer's instructions or the *ACES Guide to Propeller Balance* as applicable.