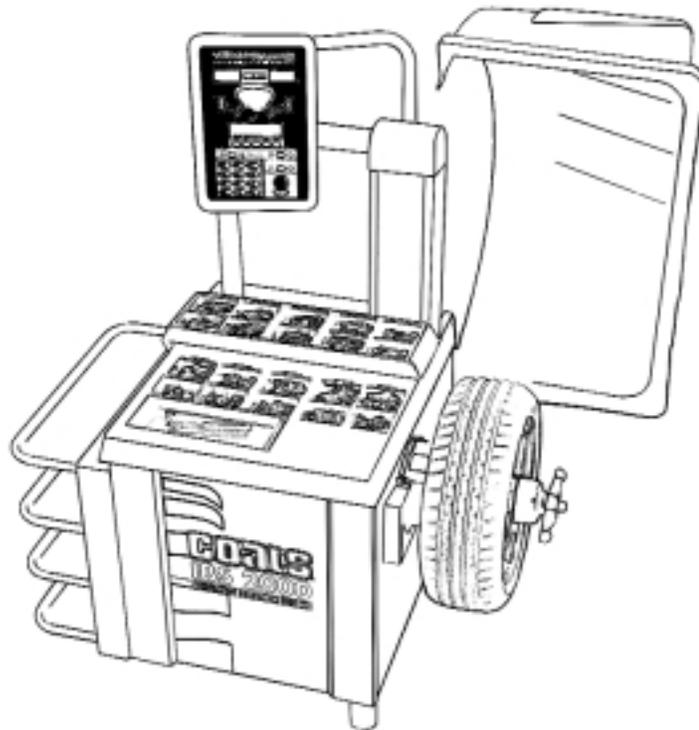


# COATS®

## IBS 2000

### Interactive Balancing System



**Installation Instructions**  
**Operating Instructions**  
**Safety Instructions**  
**Maintenance Instructions**

READ these instructions before placing unit in service KEEP these and other materials delivered with the unit in a binder near the machine for ease of reference by supervisors and operators.

**HENNESSY INDUSTRIES, INC.**

P.O. Box 3002, 1601 J. P. Hennessy Drive, LaVergne, TN USA 37086 615/641-7533 800/688-6359

HENNESSY INDUSTRIES INC. Manufacturer of AMMCO®, COATS® and BADA® Automotive Service Equipment and Tools.

Manual Part No.: 112095

Revision: 4/00 rev. 3

# Direct Drive

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# Safety

## Operator Protective Equipment

Personal protective equipment helps make tire servicing safer. However, equipment does not take the place of safe operating practices. Always wear durable work clothing during tire service activity. Loose fitting clothing should be avoided. Tight fitting leather gloves are recommended to protect operator's hands when handling worn tires and wheels. Sturdy leather work shoes with steel toes and oil resistant soles should be used by tire service personnel to help prevent injury in typical shop activities. Eye protection is essential during tire service activity. Safety glasses with side shields, goggles, or face shields are acceptable. Back belts provide support during lifting activities and are also helpful in providing operator protection. Consideration should also be given to the use of hearing protection if tire service activity is performed in an enclosed area, or if noise levels are high.



**Failure to follow danger, warning, and caution instructions may lead to serious personal injury or death to operator or bystander or damage to property. Do not operate this machine until you read and understand all the dangers, warnings and cautions in this manual. For additional copies of either, or further information, contact:**

### **Hennessy Industries, Inc.**

P.O. Box 3002, 1601 J.P. Hennessy Drive  
LaVergne, TN 37086-1982  
(615) 641-7533 or (800) 688-6359



### **Do it Now**

Make sure the instruction and warning decal is clean and clearly visible to operator.



	<b>NOTICE</b>
	<b>Read entire manual before assembling, installing, operating, or servicing this equipment.</b>

# Safety

## Owner's Responsibility

To maintain machine and user safety, the responsibility of the owner is to read and follow these instructions:

- Follow all installation instructions.
- Make sure installation conforms to all applicable Local, State, and Federal Codes, Rules, and Regulations; such as State and Federal OSHA Regulations and Electrical Codes.
- Carefully check the unit for correct initial function.
- Read and follow the safety instructions. Keep them readily available for machine operators.
- Make certain all operators are properly trained, know how to safely and correctly operate the unit, and are properly supervised.
- Allow unit operation only with all parts in place and operating safely.
- Carefully inspect the unit on a regular basis and perform all maintenance as required.
- Service and maintain the unit only with authorized or approved replacement parts.
- Keep all instructions permanently with the unit and all decals/labels/notices on the unit clean and visible.
- Do not override safety features.

## Definitions of Hazard Levels

Identify the hazard levels used in this manual with the following definitions and signal words:

### DANGER

Watch for this symbol:



It Means: Immediate hazards, which will result in severe personal injury or death.

### WARNING

Watch for this symbol:



It Means: Hazards or unsafe practices, which could result in severe personal injury or death.

### CAUTION

Watch for this symbol:



It Means: Hazards or unsafe practices, which may result in minor personal injury or product or property damage.



Watch for this symbol! It means BE ALERT! Your safety, or the safety of others, is involved!

# Safety

## IMPORTANT SAFETY INSTRUCTIONS

### READ ALL INSTRUCTIONS

1. Eye and face protection recommendations:  
“Protective eye and face equipment is required to be used where there is a reasonable probability of injury that can be prevented by the use of such equipment.” O.S.H.A. 1910.133(a) Protective goggles, safety glasses, or a face shield must be provided by the owner and worn by the operator of the equipment. Care should be taken to see that all eye and face safety precautions are followed by the operator. **ALWAYS WEAR SAFETY GLASSES.** Everyday glasses only have impact resistant lenses, they are not safety glasses.
2. Do not disable hood safety interlock system, or in any way shortcut safety controls and operations.
3. Be sure that wheels are mounted properly, the hub nut engages the arbor for not less than four (4) turns, and the hub nut is firmly tightened before spinning the wheel.
4. Read and understand this manual before operating. Abuse and misuse will shorten the functional life.
5. Be sure the balancer is properly connected to the power supply and electrically grounded.
6. Do not operate equipment with a damaged cord or if the equipment has been dropped or damaged – until it has been examined by a qualified serviceman.
7. Do not let cord hang over edge of table, bench, or counter or come in contact with hot manifolds or moving fan blades.
8. If an extension cord is necessary, a cord with a current rating equal to or more than that of the equipment should be used. Cords rated for less current than the equipment may overheat. Care should be taken to arrange the cord so that it will not be tripped over or pulled.
9. Keep guards and safety features in place and in working order.
10. Wear proper clothing. Safety toe, non-slip footwear and protective hair covering to contain hair is recommended. Do not wear jewelry, loose clothing, neckties, or gloves when operating the balancer.
11. Keep work area clean and well lighted. Cluttered and/or dark areas invite accidents.
12. Avoid dangerous environments. Do not use power tools or electrical equipment in damp or wet locations, or expose them to rain.
13. Avoid unintentional starting. Be sure the balancer is turned off before servicing.
14. Disconnect the balancer before servicing.
15. Use only manufacturer’s recommended accessories. Improper accessories may result in personal injury or property damage.
16. Repair or replace any part that is damaged or worn and that may cause unsafe balancer operation. Do not operate damaged equipment until it has been examined by a qualified service technician.
17. Never overload or stand on the balancer.
18. Do not allow untrained persons to operate machinery.
19. To reduce the risk of fire, do not operate equipment in the vicinity of open containers or flammable liquids (gasoline).
20. Adequate ventilation should be provided when working on operating internal combustion engines.
21. Keep hair, loose clothing, fingers, and all parts of body away from moving parts.
22. Use equipment only as described in this manual.
23. Use only manufacturer’s recommended attachments.

## SAVE THESE INSTRUCTIONS

# Direct Drive

## Before You Begin

### Receiving

The shipment should be thoroughly inspected as soon as it is received. The signed bill of lading is acknowledgement, by the carrier, of receipt in good condition of the shipment covered by our invoice.

If any of the goods called for on this bill of lading are shorted or damaged, do not accept them until the carrier makes a notation of the shorted or damaged goods on the freight bill. Do this for your own protection.

NOTIFY THE CARRIER AT ONCE if any hidden loss or damage is discovered after receipt and request him to make an inspection. If the carrier will not do so, prepare an affidavit to the effect that you have so notified the carrier (on a certain date) and that he has failed to comply with your request.

IT IS DIFFICULT TO COLLECT FOR LOSS OR DAMAGE AFTER YOU HAVE GIVEN THE CARRIER A CLEAR RECEIPT.

File your claim with the carrier promptly. Support your claim with copies of the bill of lading, freight bill, invoice, and photographs, if possible.

Although COATS responsibility ceases upon delivery of the shipment to the carrier, we will gladly assist in tracing lost shipments. Our willingness to assist in every possible manner does not make COATS responsible for collection of claims, or replacement of lost or damaged materials.

### Electrical Requirements

The IBS 2000 requires a 220 VAC, 60Hz, three-phase power supply with 20 amp fuse or circuit breaker, or a 220 VAC, 60HZ, single-phase power supply with 20 amp fuse or circuit breaker.

The three-phase balancer is equipped with an approved cord and a 4-prong grounding plug to fit a Hubbell 2420 or Bryant 71520 grounding receptacle (not included). See figure 1.

The single-phase balancer is equipped with an approved cord and a 3-prong grounding plug to fit a Hubble 2323 or Bryant grounding receptacle (not included). See figure 2.

A qualified electrician should install the receptacles in accordance with state and local codes.

### Specifications

- Cycle time . . . . .4 to 5 seconds (avg.)
- Outside Tire Diameter . . . . .44 inches max.
- Wheel Diameter Range . . . . .8 to 29.9 inches
- Wheel Width Range . . . . .2 to 19 inches
- Balancing Increments . . . . .0.25 or 0.01 ounce
- Resolution (Round Off Mode) . . . . .0.01 ounce, 1.4°
- Motor - Modified torque with 900 RPM/1.5 HP rating, forced air cooling, large housing for heat dissipation, and heavy duty insulation for high temperature applications.
- Shipping Weight . . . . .625 pounds

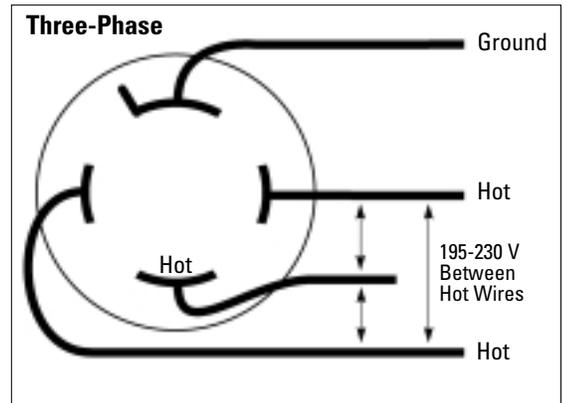


Figure 1 - Three-Phase Wiring Diagram

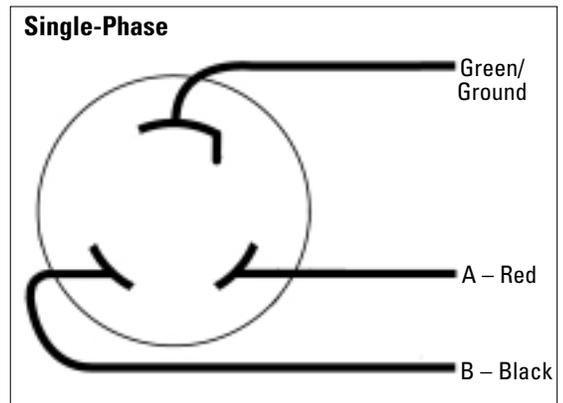


Figure 2 - Single-Phase Wiring Diagram

# Direct Drive

## Features

- Exclusive Direct Drive System (no belts or pulleys)
- Single-Spin Balancing
- Hood Safety Interlock System
- Extended Mounting Flange for Deeper Wheels
- Dynamic, Static, RV, Match Mount, and Alloy Balancing Modes
- Interactive Control Panel
- Large, Bright Digital Displays
- Easy-to-Read Weight Position Indicators
- Large Keypad for Data Entry
- Control Pod Adjusts for Optimum Visibility
- Electronics Isolated from Motor Heat
- Automatic Memory and Program Check
- Interactive Display Menu
- Dual Operator Modes (Operator A/B)
- Stop-On-Top for Easier Weight Location
- Automatic Offset and Diameter Data Entry
- Self-Calibrating
- Weight Storage Bins and Accessory Pegs
- No-Bolt-Down Installation

## Standard Accessories

- Graduated Cone Assortment (hardened, 3 piece)
- Light Truck Cone
- Hub Nut
- No-Mar Ring
- Rim Width Caliber
- Wheel Weight Pliers

## Optional Accessories

- Combi-Adapter for Bolt Hole Mounting
- Extra Large Truck Cone Kit
- 3, 4, and 5 Lug Flange Plate Adapters
- Escort/Lynx Adapter
- Speed Lock Kit
- Side and Rear Storage Trays
- Viper Wheel Kit
- Large Truck Cone and Cup Adapter Kit
- Tacoma Cone

## Installation and Setup

A factory trained COATS® Service Technician must perform the install, setup, and initial test procedures on your IBS 2000 balancer. Do not attempt to install and setup the unit yourself. Accurate and reliable operation of your unit depends on proper installation. Please contact COATS® directly at 1-800-688-9240 for the Certified Service Partner nearest you.



**Do not use the control pod, control pod arm, faceplate, hood or shaft to lift the balancer.**

## Floor and Space Requirements

The balancer must be located on a flat floor of solid construction, preferably concrete. The balancer must sit solidly on its three feet. If the balancer is not level, does not sit solidly on its three feet, or is placed on an unstable floor, the balancer will not function properly and will produce inaccurate balance readings.

Do not operate the balancer when it is still bolted down or while it is on the pallet.

Select a location for the balancer that provides a level, solid floor, and adequate clearance around and above the balancer. Make sure the location selected has enough room above and behind the unit so the hood can be raised completely. The location must also provide working room for mounting and removing wheels.

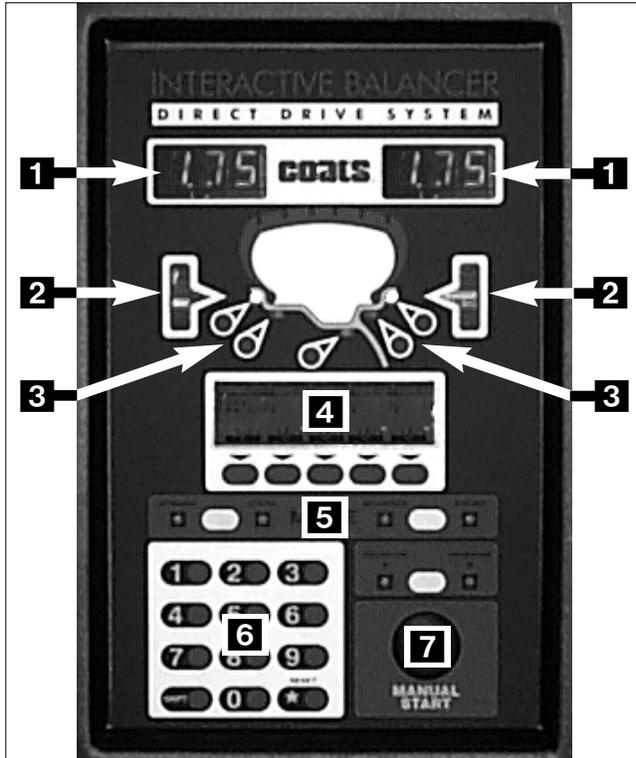
## Connect to Power

Your factory trained COATS® Service Technician should do the final check to verify the power installation before connecting the balancer to a power supply. Failure due to improper power connection will void the warranty.

# Direct Drive

## Operating Instructions

### Interactive Control Panel



- 1** Weight Displays
- 2** Wheel Position Indicators
- 3** Location Indicator LEDs/Selection Buttons
- 4** Interactive Display Screen
- 5** Mode Display
- 6** Keypad
- 7** Manual Start Button

### The Planes

The IBS 2000 is a 2-plane, microprocessor-based computer balancer. Any imbalance in a wheel, either static or dynamic, is resolved into correction planes where corrective weights can be applied. Refer to Figure 3 for the preset plane locations. The five weight location indicators on the control panel correspond to the 5 planes.

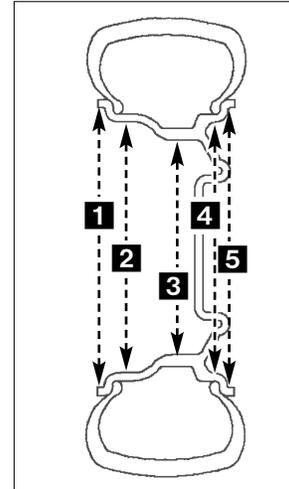


Figure 3 - The Five Planes

# Direct Drive

## DWLS - Direct Weight Location System

The IBS 2000 allows the operator to use preset weight location positions or measured location positions. The measured location positions increase accuracy on alloy wheels and when using hidden weights. Select between these by using the MODE button.

When using the PRESET measurements, the operator enters the standard A, W, and D measurements. After these measurements are entered, the computer based upon wheel profile data stored in the computer makes corrective weight locations. These calculations allow the computer to display weight information for the weight locations selected by the operator. Once the A, W, and D measurements are entered, the operator may select any of the five weight locations and the computer will display the calculated weight amount to be attached at that location.

When using the MEASURED MODE in conjunction with standard clip-on weights, for BOTH planes, the operator measures and enters the A, W, and D in the traditional method by touching the inner rim flange with the A&D arm and reading the width with the wheel calipers.

When using the MEASURED MODE in conjunction with a single clip-on weight and a hidden tape-a-weight™ or two hidden tape-a-weights™, the operator measures the specific weight location in which he wishes to place a weight. The operator selects locations for the weight from plane 1, 2, or 3 by pressing the button on the display panel adjacent to the plane of choice. (See figure 3) The operator then uses the A&D arm to measure the selected location at the flange or inside the rim.

**Note:** Always measure from the inner most plane first, then move outward, away from the balancer. For example, if the operator selects plane 3 and plane 1 the operator must measure the plane 1 location first, wait for a confirmation BEEP, and then measure plane 3 again waiting for a confirmation BEEP. These measurements are displayed on the LCD screen as AIN, DIN, and AOUT, DOUT.

When using tape-a-weights™ and measuring inside the rim, we recommend rotating the A&D arm down so that the tip of the A&D arm is pointing towards the ground and measuring the lower part of the rim. In this position, you can see where you are touching for the measurement. By seeing the position it will be easier when placing the tape-a-weight after the spin cycle. Also, traditionally when placing the weight you would rotate the wheel until the center light flashes, you are at what we call "Top Dead Center", or at the location you would attach the weight. There is an alternative, if you marked the Top Dead Center on the rim

and rotate the wheel 180 degrees until you see the two outermost lights flash the mark is at we call "Bottom Dead Center". When placing a tape-a-weight at the bottom of the rim you have a better visual sighting and more accurate placement.

Remember to return the A&D Arm back to it's home position after use.

**Tip!** Keep the arm moving until you are ready to take a reading, the arm will automatically take a reading if it is not moved. Place the tip or disk at the weight location and hold it firmly in place for two seconds and listen for a confirmation BEEP, move the arm immediately to the next location and wait again for two seconds and listen for another confirmation BEEP.

**Note:** It is good practice when dynamic balancing for the distance (the W dimension) between the two weight locations to be as wide apart as physically possible. This will improve the balance of the wheel and productivity.

**Recommendation:** Using the PRESET MODE will provide easy balancing and yield accurate results when used for the standard clip-on weights. However, when using the PRESET MODE for tape-a-weights™ you will probably have to make repeated spins to balance the wheel. We encourage you to learn and become proficient with the use of the MEASURED MODE. This mode works equally well when measuring for the standard clip-on weights and works particularly well when using a combination of only one-clip on weight and one tape-a-weight™ or when using tape-a-weights for both planes. Using the "MEASURED" A and D weight locations, you will balance wheels with more ease and with increased accuracy. This will provide your best solution for single spin balancing in all modes and greater customer satisfaction.

## Balancing Modes

Select between DYNAMIC and STATIC balancing modes by pressing the button between their respective LEDs on the control panel.

The DYNAMIC balancing mode calculates separate corrective weight requirements for the inner and outer planes of the wheel. The default locations are planes 1 and 5. The specific weight amount and location for each plane is calculated in a single spin.

The default STATIC balancing mode calculates a single corrective weight requirement for placement at a point as close to the center of the wheel as possible (plane 3). The IBS 2000 allows the operator to select any of the other locations for this weight placement simply by pressing the corresponding location button on the display screen. The operator may also opt to split this single weight between two planes (1 and 5)

# Direct Drive

by pressing location button 5 followed by location button 1. Both location LEDs will light, and the static correction weight amount will be split between the two weight displays. The weights will attach to the same position on both the inner and outer rim flanges (directly opposite each other).

RV MODE is used to balance larger wheels that do not require balancing of increments less than 0.5-ounces. This mode is selected by pressing MENU on the display screen, then selecting SETUP, and choosing RV MODE from the available options in the SETUP menu.

## Entering Wheel Data

Before any wheel can be balanced, the computer must know its size and position on the arbor. These measurements are:

**A (Wheel Offset)** - The distance between the side of the balancer and the inner edge of the wheel.

**D (Wheel Diameter)** - This is the diameter of the wheel at the weight location.

**W (Wheel Width)** - This is the width of the wheel at the rim flanges. This is measured with the calipers.

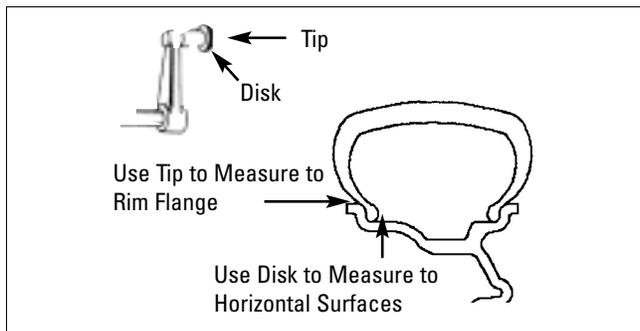


Figure 4 - A/D Arm Measurement Points

The A and D measurements can be entered into the balancer automatically using the A/D arm. Simply pull the A/D arm out from the side of the machine and rotate it until it contacts the desired location on the wheel. Hold the arm in place until the BEEP is heard and the measurement data is displayed on the screen. When measuring to the rim flange, touch the tip of the A/D arm pointer to the rim flange. When entering measurements for plane 2 or 3 (MEASURED MODE), touch the disk around the A/D arm pointer to the location.

**Note:** The computer reads the automatic diameter entry as three decimal places (0.000) and rounds the measurement to two decimal places (0.00). It is not necessary to convert metric measurements to inches. Also remember that wheel diameter may vary depending on rim flange configuration (i.e.: a 14-inch wheel may display a measurement of 13.6 to 14.3).

For manual entry, enter the inch unit to a single decimal place (0.0). The diameter is included on the tire sidewall (i.e.; 14, 16, 16.5, etc.).

The A and D measurements may also be entered manually simply by pressing the corresponding button on the display screen and entering the number using the keypad.

To enter the W measurement, touch the button on the display screen that corresponds to the W measurement and enter the number using the keypad. Take the width measurement with the calipers. Place the calipers over the wheel and touch the tips of the caliper arms to the rim flanges. Read the width on the scale, see figure 5.

**Tip!** Watch the display screen. It will show all the measurements entered or being taken, and any others that are required. If you attempt to balance a wheel with a measurement missing, the screen will notify you and prompt you to enter the missing data.

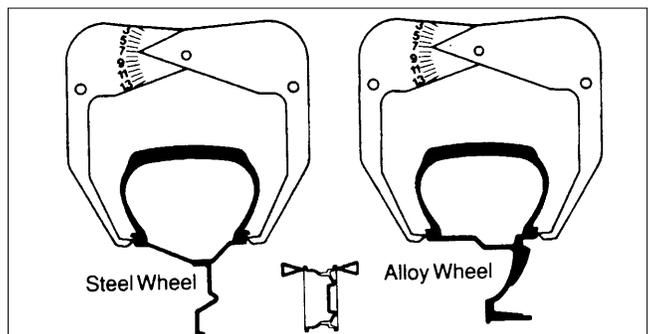


Figure 5 - Measuring Wheel Width with the Calipers

# Direct Drive

## Mounting Wheels

Select the most appropriate mounting method for the wheel you are balancing. Using the proper method ensures secure mounting and safe balancer operation, and prevents damage to the wheel.

On most wheels, the inner side of the wheel hub usually has the most uniform surface for wheel balancing. Always center the wheel by the most uniformly shaped side of the hub to achieve the most accurate balance.

Regardless of mounting type, always make sure that the wheel is forced firmly against the arbor faceplate and that the hub nut engages the threaded arbor for at least four complete turns. To assist in centering the wheel properly, rotate the wheel on the arbor while tightening the hub nut.

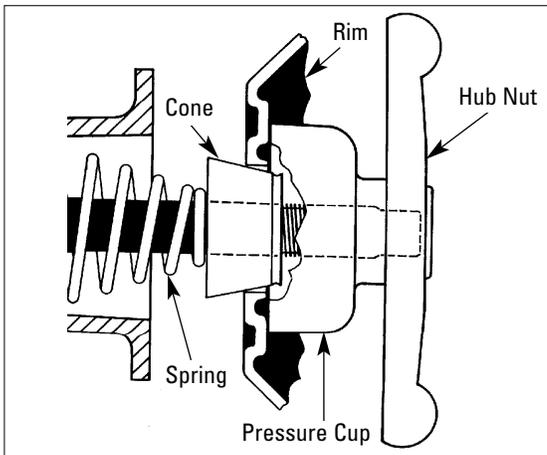


Figure 6 - Back Cone Mounting

### Back Cone Mounting

Most original equipment and steel wheels can be mounted properly using this method. The wheel is centered on a cone from the inner side of the hub.

1. Place the cone spring on the arbor with the large end towards the balancer.
2. Select the cone that best fits the center hole in the wheel. Slide the cone onto the arbor with the large end towards the spring.
3. Lift the wheel onto the arbor and center it on the cone.
4. Attach the pressure cup to the hub nut and spin the assembly onto the arbor. Tighten securely.

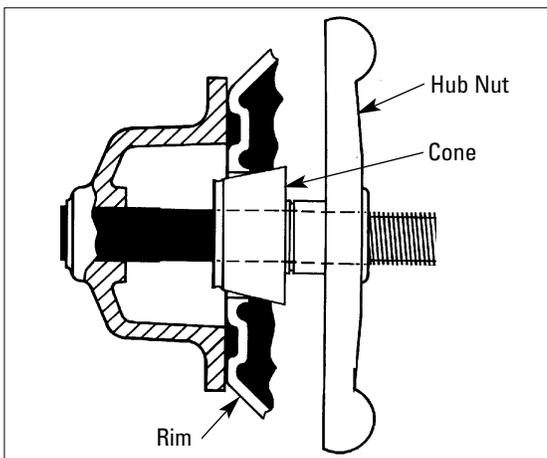


Figure 7 - Front Cone Mounting

### Front Cone Mounting

A wheel should be centered by the outer side of the hub only when the inner surface will not provide an accurate surface to center on.

1. Select the cone that best fits the center hole in the wheel.
2. Lift the wheel onto the arbor and slide it back against the arbor faceplate.
3. Slide the cone onto the arbor and into the center of the wheel. You will need to lift the tire to seat the cone in the center hole.
4. Spin the hub nut (without pressure cup) onto the arbor. Tighten it securely against the cone.

# Direct Drive

## Alternate Mounting

If the wheel has a protruding outer hub which will not permit the use of the pressure cup, or the cup will not permit the hub nut to engage at least four turns of the arbor, this alternate method should be used.

- 1.** Place the cone spring on the arbor with the large end towards the balancer.
- 2.** Select the cone that best fits the center hole in the wheel. Slide the cone onto the arbor with the large end towards the spring.
- 3.** Lift the wheel onto the arbor and center it on the cone.
- 4.** Use the small nylon spacer (no-mar ring) or a centering cone to press against the outer wheel hub.
- 5.** Spin the hub nut (without the pressure cup) onto the arbor. Tighten securely.

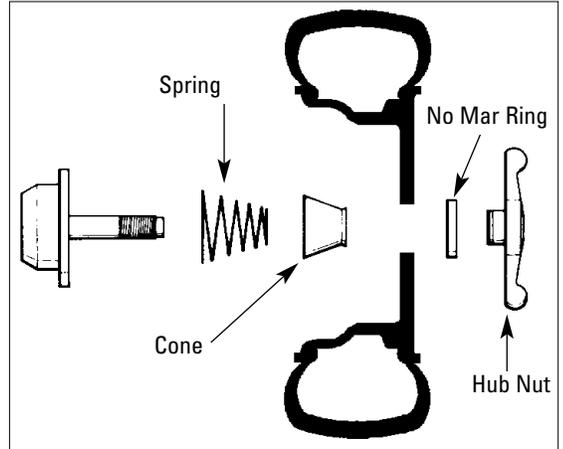


Figure 8 - Alternate Mounting

## Optional Combi-Adapter Mounting

Use this method for wheels with a center hole that is out of round, or center holes that do not fit the mounting cones. This adapter allows the mounting of 3, 4, 5, 6, 8, or 10 lug wheels by installing 3, 4, or 5 swivel plates on the adapter plate.

- 1.** Assemble the adapter according to the instructions provided.
- 2.** Attach the adapter to the wheel. The lug nuts must properly seat in the lug holes and engage at least four full threads for a secure mounting. Use the wrench provided with the adapter, and never use air tools or impact wrenches.
- 3.** Lift the wheel onto the balancer and align the adapter base plate studs with the holes in the arbor faceplate. Secure the adapter/wheel to the faceplate using the thumb nuts. To properly center the wheel, tighten the thumb nuts in an alternating pattern while rotating the wheel.

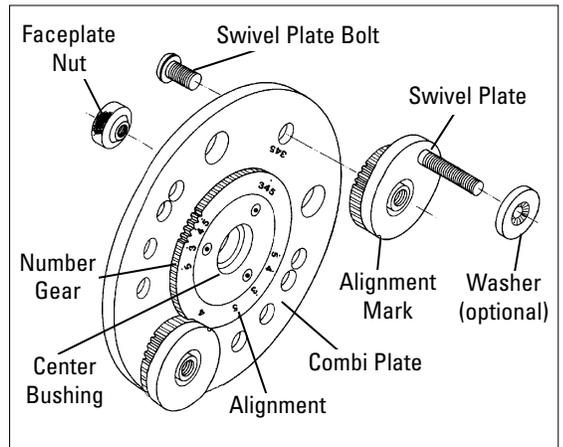


Figure 9 - Optional Combi-Adapter Mounting

## Selecting Balancing Options

### Using the Menu

Use the menu on the interactive display to access setup screens, match mount procedures, calibration, and diagnostics. Open the menu by pressing the MENU button on the display. The five buttons below the display will be labeled with their function for each screen you access.

These buttons typically are (from left to right): ENTER, PREVIOUS, EXIT, up arrow, and down arrow. Pressing ENTER toggles your current selection on or off (or selects the option), PREVIOUS returns you to the previous screen, and EXIT returns you to the top of the menu. Use the scroll up and scroll down arrows to scroll through options and selections. Up and/or down arrows will be displayed at the top or bottom of the screen if there is more information above or below what's shown.

**Match Mount** - (see pg.11)

#### Calibration

- Calibrate Balancer - (see pg.14)
- Calibrate Arm - (see pg.15)

### Set Up

**Round Off** - The default weight measurement on the IBS 2000 is 0.25-ounce. The balancer can be set to a non-Round Off mode that displays weights in 0.01-ounce increments. Select SETUP from the menu, select ROUND OFF from the list, and press ENTER to turn this option on or off. Status of this option is shown in the top of the display as well.

**Ounces or Grams** - Set the balancer to measure and display weight amounts in grams. Select SETUP from the menu, select OUNCE or GRAM from the list, and use ENTER to select the weight type. Status of this option is shown in the top of the display as well.

**Hood Start** - Sets the balancer to start spinning as soon as the hood is fully lowered. Select SETUP from the menu, select HOOD START from the list, and use ENTER to turn this option on or off. Status of this option is shown in the top of the display as well.

**RV Mode** - For wheels that do not require balancing in increments of less than 0.5-ounce. Calculates balancing weights in 0.5 increments only. Select SETUP from the menu, select RV MODE from the list, and use ENTER to turn this option on or off.

**Stop-on-Top** - The IBS 2000 will automatically brake the wheel to a stop at the end of a spin cycle. The balancer will brake once to slow the wheel and a second time to stop the wheel with the outer weight position at or near the top. If no weight is required on the outer plane, it will brake the wheel to stop based on the inner weight position. Select SETUP from the menu, select STOP ON TOP from the list, and use ENTER to turn this option on or off.

**Total Accuracy Verification (TAV)** - (see pg.14)

**LED Intensity** - The LED brightness may be adjusted to make them easier to read in all lighting environments, bright as well as dark, and those in between.

The last item on the MENU list is LED INTENSITY. Select this item from the menu and follow the instructions on the display to brighten or dim the LEDs.

**Diagnostics** - (see pg.17)

**Operator A/B** - Two operators utilize the balancer without clearing or changing each others data. This is handy when one operator is running the Match Mount procedure and another operator needs the balancer. For example, if operator A is at a point in the Match Mount procedure where the wheel is removed from the balancer, operator B can access the machine by switching to the other operator memory. When B's balance is complete, he can toggle the machine back to A's memory. All of operators A's data is still present, and the Match Mount procedure can be continued without having to start over. Press the OPERATOR key to toggle between the two operator memories.

## Reading the Displays

**Weight Displays** - The two weight displays (one for the inner plane, and one for the outer plane) are positioned with a wheel cross section diagram. After spinning the wheel, the balancer will calculate the weight needed and display it in these displays. The display to the left of the diagram will show the weight to be applied to the inner plane of the wheel and the display to the right will show the weight for the outer plane.

**Weight Position LEDs** - Each weight display includes weight position LEDs. Located between the weight display and the diagram, these LEDs indicate the proper location for weight application. After a spin, rotate the wheel until the center position indicator LEDs flash. This indicates that the position specified by the balancer for weight application is at top-dead-center.

## Balancing a Wheel

### Procedure

The following steps walk through the balancing procedure. Do not proceed with these instructions until you have read and understand the previous sections of this guide (mounting, balance modes, and reading the displays).

**1.** Turn the balancer on. The power switch is on the right side of the tower at the side of the unit.

**Note:** When turned on, the balancer will activate the same options that were selected when it was last turned off (hood start, ounce/gram, etc.).

**2.** Mount the wheel to be balanced. Use the proper mounting method as described on pages 6 and 7. Always remove any weights attached to the wheel.

**3.** Enter the wheel measurements and select balancing mode (page 4 and 5).

**4.** Set options (hood start, ounce/gram, operator A/B).

**5.** Lower the hood and press START. The wheel will spin and then brake to a stop.

**Note:** Spin will start automatically when the hood is lowered if the hood start option is turned on.

**6.** Raise the hood.

**7.** Rotate the wheel until the outer position LEDs flash.

**8.** Attach the weight specified in the proper location at top-dead-center. Refer to the diagrams on the control panel for weight locations.

**9.** Rotate the wheel until the inner position LEDs flash.

**10.** Attach the weight specified in the proper location at top-dead-center. Refer to the diagrams on the control panel for weight locations.

**11.** Lower the hood and press START to respin the wheel. The wheel will brake to a stop. The weight displays should now read 0.00. If not, refer to page 10, Checking the Balance for assistance.

**Remember:** The more accurate you are in selecting and positioning the weight, the more often you will balance wheels with a single spin.

## Changing Wheel Information During Balancing

The information entered into the balancer for A, W, and D can be changed at anytime during the balancing procedure. Follow the instructions provided earlier for entering the measurements manually. The balancer will recalculate weights and positions based on the new measurements.

## Changing Balancing Modes and Weight Locations During Balancing

The balancing mode can be changed at anytime and the balancer will recalculate weight and position based on the new selection. In PRESET MODE, the computer will calculate the new weight amount and location when the operator selects a different weight location. In the MEASURED MODE, selecting a new weight location will require new A and D data. Once entered, the computer will calculate weight amount and location.

**Note:** This does not apply when switching to and from Match Mount. The Match Mount procedure requires additional steps. Refer to the Match Mount section of this manual.

## Checking the Balance

After applying the weights indicated by the balancer, respin the wheel. The displays should read 0.00.

If the balancer indicates an additional weight should be applied in the same location as the first weight, the first weight is too small. Correct the first weight and respin.

If the balancer indicates an additional weight should be applied directly opposite the first weight, the first weight is too big. Correct the first weight and respin.

If the balancer indicates an additional weight should be applied at an angle to the first weight, the first weight was not applied in the correct position. Move the first weight towards the position indicated for the second weight or add the second weight as indicated.

## After Balance Vibration Problems

If vibration is still present after balancing the wheels and driving the vehicle on smooth pavement, remove the wheels and recheck the balance. If a wheel is out of balance the cause may be:

- 1.** A weight has come off the wheel. Remove the other weights from the wheel and rebalance.
- 2.** Tire slippage on the wheel. Remove and remount the tire using proper tire lubricant and inflate to 40 PSI. Do not overinflate. Rebalance the wheel and reduce air pressure to recommended PSI.
- 3.** Stones or other foreign objects caught in the tire tread. Remove the objects and repair tire as necessary. Check and rebalance if needed.

If the balancer still indicates the wheels are balanced to within 0.25-ounces on both inner and outer displays, the problem is not in the balance of the wheels. Check the following possible sources of vibration:

- 1.** Tire pressure. Bring all tires up to the recommended PSI.
- 2.** Radial or lateral runout in the tire or wheel. Replace the damaged part.
- 3.** Foreign material inside the tire. Remove the tire from the wheel, remove the material, and remount. Remove wheel weights and rebalance the wheel.
- 4.** Imbalanced wheel covers or trim rings. Remove the wheel covers or trim rings and test drive. If the vibration is gone, remove the arbor and use the optional Combi Adapter to mount the wheel to the balancer. Balance the wheel with the wheel cover or trim ring attached to the wheel.
- 5.** Incorrectly mounted wheel. Remount correctly.
- 6.** Damaged wheel bolt holes. Replace wheel.
- 7.** Worn universal joints. Replace as required.
- 8.** Drive shaft imbalanced or damaged. Balance, repair, or replace.
- 9.** Imbalanced brake rotor(s) or drum(s).
- 10.** Suspension out of alignment. Align the vehicle and replace any damaged or worn parts.

## Match Mount

### Description

The Match Mount program assists the user in determining the best possible mating of the tire and wheel, thereby reducing the amount of additional weight required for balancing. This mating of tire and wheel normally allows the least amount of total runout of the assembly, resulting in better balancing, better ride conditions, and more satisfied customers. Use Match Mount when:

- Excessive radial runout is noticed in the tire and wheel assembly during balancing.
- The customer complains of ride problems.
- The balancer calls for weights in excess of 2-ounces on either plane on passenger car tires in the DYNAMIC MODE.



**The Match Mount procedure involves loosening tire beads and the inflation of a tire. Training is necessary in tire changer operation and the dangers involved during bead seating and tire inflation before attempting this stage of the Match Mount procedure. Read the operators manual supplied with the tire changer and consult a supervisor.**

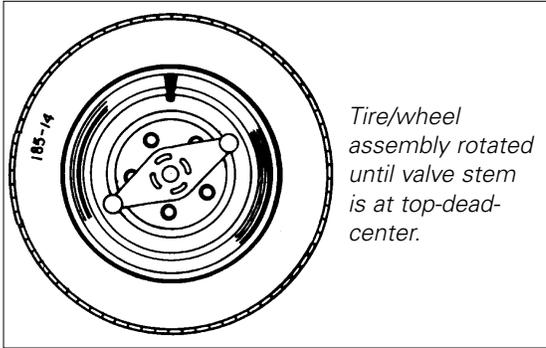
The 2000 balancer will be idle while the tire is being rotated on the wheel. During these times, the balancer can be used by another operator without terminating the Match Mount procedure. The second operator selects the other operator memory, performs a balance, and then returns the balancer to the previous memory. The original operator can now continue the Match Mount procedure.

As with any balancing procedure, remove any weights attached to the wheel and inspect the tire and wheel before beginning.

### Is Match Mount needed?

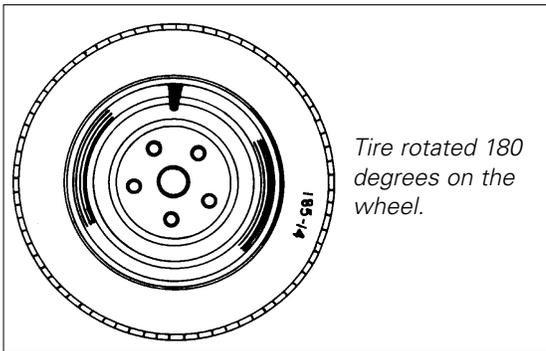
- 1.** Mount the wheel to the balancer.
- 2.** Select the appropriate operator memory as required (A or B). Make a note of the memory being used in the event the memory is changed during the Match Mount procedure.
- 3.** Enter the A, W, and D measurements and select the mode that will be used in the final balancing.
- 4.** Lower the hood and press START.
- 5.** Wait for the wheel to stop spinning and for the displays to show weight readings.
  - If the balancer indicates that 2-ounces or more will be required on either plane (in DYNAMIC MODE), advise the customer/ supervisor to continue with the Match Mount procedure listed under Match Mount Instructions. DO NOT attach weights at this point. Leave the wheel mounted to the balancer.
  - If the balancer indicates less than 2-ounces of imbalance, the Match Mount procedure will not improve the balance. Continue to balance the wheel according to the mode selected.

# Direct Drive



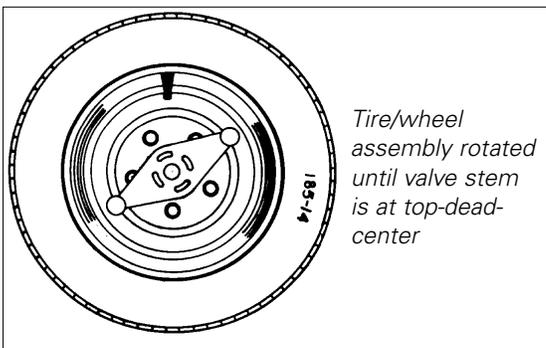
*Tire/wheel assembly rotated until valve stem is at top-dead-center.*

Figure 10 - Rotate the wheel



*Tire rotated 180 degrees on the wheel.*

Figure 11 - Rotate Tire on Wheel



*Tire/wheel assembly rotated until valve stem is at top-dead-center*

Figure 12 - Rotate the Wheel

## Match Mount Instructions

**1.** Select Match Mount from the LCD menu.

- Hood start is turned off automatically
- Non-round off is turned on automatically
- MM will now be displayed in the upper left corner of the LCD screen.

• Enter wheel parameters

**2.** Lower the hood and press START.

• MATCH MOUNT 1 will now be displayed in the upper left corner of the LCD screen.

**3.** Raise the hood and rotate the wheel until the valve stem is at top-dead-center.

**4.** Press 1 on the touch panel.

• MATCH MOUNT 2 will now be displayed in the upper left corner of the LCD screen.

**5.** Press the MORE softkey to read the second page of instructions on the LCD screen.

**6.** Remove the wheel from the balancer. Completely deflate the tire by removing the valve core. After all the air pressure is exhausted, follow the tire changer manufacturer's instruction for loosening the tire beads.

A second operator can use the 2000 balancer while the Match Mount operator performs steps 6, 7, and 8. All data for the Match Mount procedure will be kept in the Match Mount operator's memory (A or B).

**7.** Lubricate both tire beads and wheel to aid in rotating the tire and bead sealing and seating. Always use the tire manufacturers approved rubber lubricant.

**8.** Rotate the tire 180° on the wheel.

**9.** Replace the valve core and inflate the tire. Follow the tire changer manufacturers instructions for inflation.

**10.** Remount the wheel on the balancer.

**Remember:** If another operator memory (A or B) has been selected, reselect the memory being used for the Match Mount procedure. The balancer will return to the point in the procedure where the other memory was selected.

**11.** Press the 2 on the touch panel

• MATCH MOUNT 3 will be displayed in the upper left corner of the LCD screen.

**12.** Lower the hood and press START.

**13.** Wait for the wheel to stop. Raise the hood and rotate the wheel until the valve stem is at top dead center.

# Direct Drive

**14.** Press 4 on the touch panel.

- MATCH MOUNT 4 will be displayed in the upper left corner of the LCD screen.

**15.** Rotate the wheel until the weight position LEDs flash. While the LEDs are flashing, mark the tire at top dead center and press CONTINUE.

**16.** Press the MORE softkey to read the second page of instructions on the LCD screen.

The weight breakdown will now be displayed on the LCD screen. The weight imbalance due to the wheel (rim) will be displayed above the weight imbalance for the tire. The percent of the total weight is also given to aid in determining, which has the greater effect on the imbalance, the tire and/or wheel.

Use these weights to determine the suitability of the rim or tire. High imbalance may indicate a rim that is out of round or misformed, or a tire with a bubble or other problem. If the imbalance is excessive, it may be prudent to replace the rim, the tire, or both. If either is replaced, do not continue with this procedure. Balance the new tire and rim and evaluate the readings for Match Mount suitability.

**17.** Remove the wheel from the balancer. Completely deflate the tire by removing the valve core. After all the air pressure is exhausted, follow the tire changer manufacturer instructions for loosening the tire beads.

A second operator can use the 2000 balancer while the Match Mount operator performs steps 18, 19, and 20. All data for the Match Mount procedure will be kept in the Match Mount operator's memory (A or B).

**18.** Lubricate both tire beads and wheel to aid in rotating the tire and bead sealing and seating. Always use the tire manufacturer's approved rubber lubricant.

**19.** Rotate the tire until the mark is aligned with the valve stem.

**20.** Replace the valve core and inflate the tire. Follow the tire changer manufacturer instructions for inflation.

**Remember:** If another operator memory (A or B) has been selected, reselect the memory being used for the Match Mount procedure. The balancer will return to the point in the procedure where the other memory was selected.

**21.** Remount the wheel on the balancer.

**22.** Press CONTINUE.

**23.** The balancer will return to standard balancing mode.

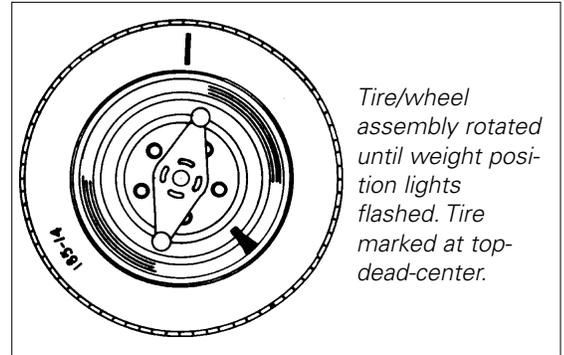


Figure 13 - Rotate the wheel

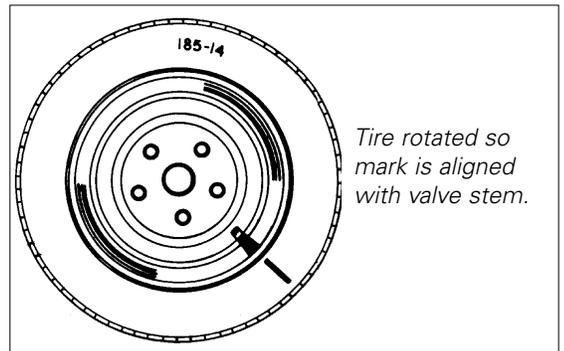


Figure 14 - Rotate Tire on Wheel

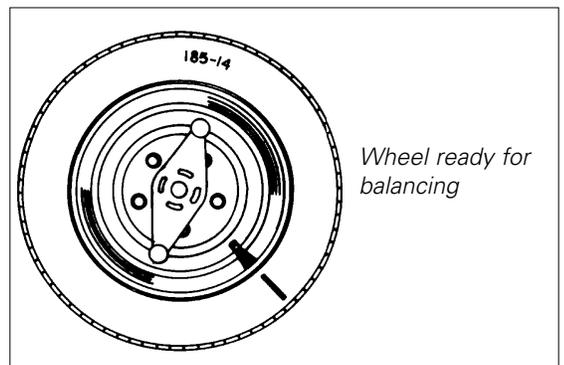


Figure 15 - Match Mount Completed

## Maintenance

The balancer requires only minor maintenance to keep the unit operating properly.

- 1.** Keep the display clean and clear. Use a vaporizing cleaner only. Do not use cleaners or solvents which leave oily or filmy residues behind.
- 2.** Keep the adapters, cones, faceplate, threaded arbor, pressure cup, and hub nut clean. Grease and dirt buildup will cause premature wear and inaccurate balancing. Clean these items at least once a day with a vaporizing solvent.
- 3.** Clean the weight tray, accessory posts, pegs, and storage shelves with a vaporizing solvent. Weights stored in a dirty tray will pick up grease and dirt which may alter their weight or keep them from securely attaching to the wheel.



**Do not hose down or bucket wash the balancer. Extensive damage to the balancer will result. Sensitive electronic components, wiring harnesses, and other devices housed in the balancer are not intended to be exposed to water.**



**Exposing the balancer to water, either by hose pipe or bucket, or by exposure to rain or snow, may cause risk of shock or electrocution to operator or bystanders. Place, store, and operate the balancer only in a dry, sheltered location.**

- 4.** Keep the area around the balancer clear. Remove any tools or other items that are leaning against the balancer. Keep the area under the balancer clear as well. Remove any items that may cause the balance to not sit level.
- 5.** Use only COATS accessories. Accessories from other manufacturers may not fit or function properly, and may damage the balancer.

## Total Accuracy Verification

The IBS 2000 includes software that will prompt the user to check the accuracy of his machine periodically. The procedure is accomplished as follows:

- 1.** Go to the main menu and select Setup. Press enter.
- 2.** Arrow through the selections to TAV. Press enter.
- 3.** The menu will now display several "preset" selections to choose from, or the customer may wish to SPECIFY (choosing your own). The default is 5000 cycles. Press enter.
- 4.** If SPECIFY (choose your own) is selected, the menu will prompt to enter the number of cycles desired. Enter the number and press enter.
- 5.** After the balancer reaches the selected number of cycles the customer will receive THE MESSAGE. Do you wish to perform T.A.V.? YES or NO.
- 6.** If NO is selected, the balancer will return to normal balancing mode.
- 7.** If YES is selected, the balancer will switch to calibration.
- 8.** Follow the instructions on the display and perform normal calibration.

# Direct Drive

## Calibration and Diagnostics

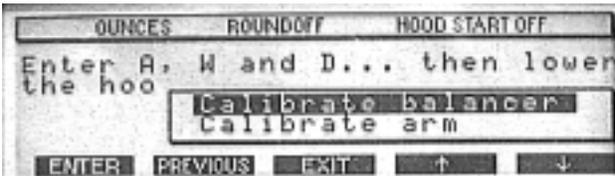
This balancer is a precision measuring instrument. As such, it will require periodic calibration. The need for calibration is generally identified when the balancer begins to "chase" weights - multiple spins and multiple weights are required to achieve a "zero" balance. It is important to note, however, that even though multiple spins and several weights may be required, the wheel is properly balanced when the balancer indicates as such.

Before performing the calibration procedure, clean and check the shaft, faceplate, and balancing cones for damage. Even the slightest amount of dirt or damage can cause inaccurate calibration and balancing.

### Balancer Calibration

Balancer calibration is a quick, simple process that the operator can perform. A 4-ounce calibration weight and an automotive steel wheel are all that are required.

1. Select CALIBRATE from the menu, then select CALIBRATE BALANCER.

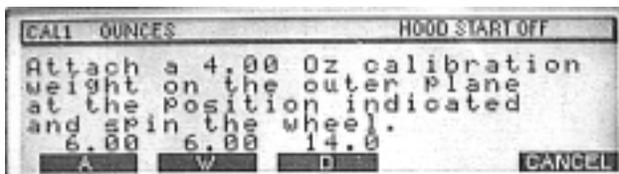


2. Mount a 185 x 14 or 195 x 14 wheel, and enter the standard A, W, and D measurements.



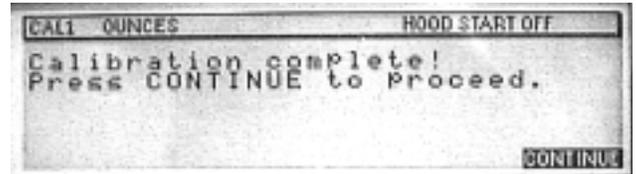
3. Lower the hood to spin the wheel (or press START if HOOD START is turned off).

4. After the spin, attach a 4-ounce weight to the wheel at the position indicated by the flashing weight positioning LEDs.



If the weight cannot be placed in this location (weights already on the wheel, etc.), place the weight anywhere on the rim flange, rotate the wheel until the weight is at top-dead-center, and press \* on the keypad.

5. Lower the hood and spin the wheel again.



The display will show CALIBRATION COMPLETE.

# Direct Drive

## Plane Separation

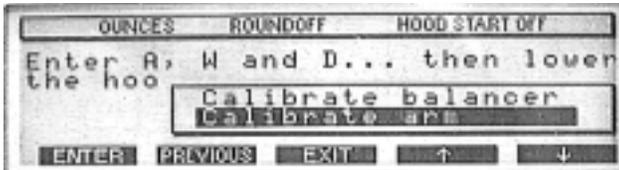
Normally, balancer calibration is all that is necessary to resolve weight chasing. If, after calibration, the balancer still chases weights, follow these steps:

1. Perform the balancer calibration procedure as outlined in the previous section.
2. Remove the 4-ounce weight from the calibration wheel and place the balancer in the non-roundoff mode.
3. Using clip-on weights and modeling clay (as necessary), fine balance the wheel so that the weight displays show less than 0.02-ounce on both planes.
4. Attach the 4 ounce calibration weight to the inner plane and spin the wheel.
5. The weight readings should be 3.88 to 4.12 ounce on the inner plane, and 0.00 to 0.12 ounce on the outer. If these readings are not obtained, adjust the A dimension using the touch pad to adjust the readings. Also, insure that the D reading is correct (i.e.: a 14-inch tire should read between 13.6 and 14.3). After adjusting the A measurement, note the A and D figures and follow the A/D arm calibration procedure.

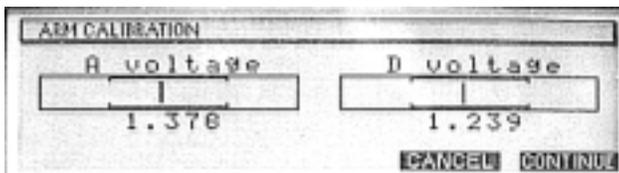
## A/D Arm Calibration

As with the balancer calibration procedure, watch the display screen carefully. It will provide all of the steps and directions required to perform the procedure. Not all screens may be shown here.

1. Select CALIBRATE ARM from the menu.

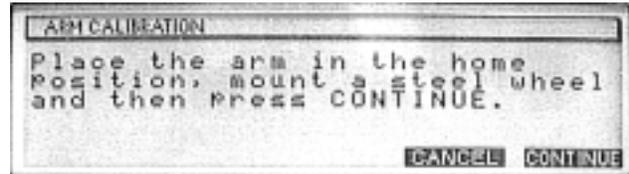


2. Press CONTINUE.
3. Review the voltage scales on the display screen. If the indicator line is not within the area indicated by the brackets, contact a Service Partner for potentiometer adjustment and press cancel. Otherwise press continue.



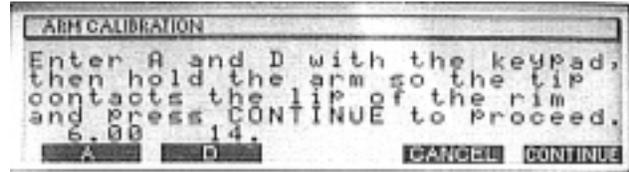
4. Press Continue.

5. Move the arm to the home position, if it is not already there, then press continue.



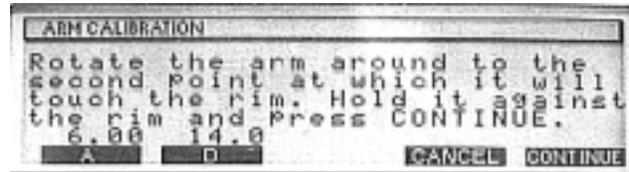
6. Mount a 185 x 14 or 195 x 14 wheel and press continue.

7. Enter the A and D values that were found in step five of the plane separation procedures.

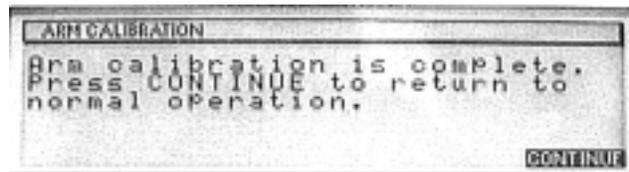


8. Once the A and D measurements are entered, pull the A/D arm out and touch the tip to the wheel rim flange and hold it there while pressing CONTINUE.

9. Rotate the A/D arm around to the lower point at which it will touch the rim. Hold it in position and press CONTINUE.



10. The calibration is complete, and the screen will return to it's main display.



11. Return to Calibrate balancer.

## Diagnosics

There are many parts of the user interface on the balancer that the operator can check for proper operation. Select DIAGNOSTICS from the menu, and then chose from the following items:

**Piezo Output** - While this is not a user reparable item, your Service Partner may ask you for these readings when placing a service call.

**Keypad Test** - Should the operator suspect that the keypad is not functioning or entering data properly, run the keypad test. The operator will be instructed to press the individual keys on the keypad, and will display the associated number or function on the screen. If the displayed item does not match the button pressed, a service call should be placed. Press any button 3 times in succession to exit the keypad test.

**LCD Test** - This test checks the LCD operating RAM and system to verify that it is operating properly. There is nothing else required to run this test. Should the test fail, contact your Service Partner.

**LED Test** - This test will step through all of the LEDs on the touch panel. The operator can verify that each LED is operational simply by watching the LEDs being tested (as described on the display). When a test is complete, press CONTINUE to move to the next. If any LEDs are non-operational, contact your Service Partner.

**Counters** - While not a diagnostic function, these counters are accessed and reset via the DIAGNOSTIC screen.

The user counter is resettable, and may be helpful to those who require spin counts.

The calibration counter counts the cycles since the last calibration. It is not resettable by the user.

The total cycle counter counts all cycles since the balance was put into operation. This counter is not resettable.

**Software Version** - Verify the software version present in the balancer by selecting VERSION.

