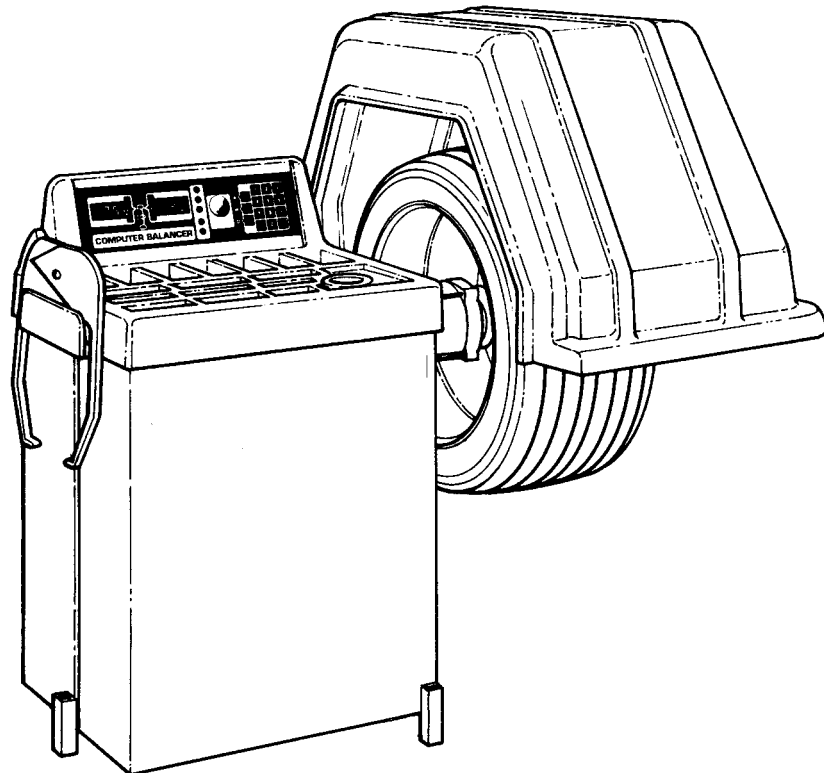


COATS®

850 Solid State WHEEL BALANCER



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.

1601 J. P. Hennessy Drive, LaVergne, TN USA 37086-3565 615/641-7533 800/688-6359

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

Manual Part No.: 8111812 05

Revision: 9/00

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.

1601 J.P. Hennessy Drive
LaVergne, TN 37086-3565
(615) 641-7533 or (800) 688-6359



Do it Now

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



		NOTICE
	Read entire manual before assembling, installing, operating, or servicing this equipment.	

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.

Features

- Exclusive Direct Drive System (No Belts or Pulleys)
- Single-Spin Balancing
- Vertical Wheel Mounting
- Hood Safety Interlock Switch
- Graduated Cone Assortment for Back Cone Mounting
- Self Calibrating
- Removable Stub Shaft for Closed Center Wheel Mounting on Optional Combi-Adapter
- Extended Face Plate Flange for Deeper Wheels
- "No Bolt-Down" Installation
- Adjustable Control Panel
 - Scratch and Solvent Resistant
 - Large, Bright Digital Displays
 - Easy-to-Read Indicators
 - Large Keypad for Data Entry
 - Easily Repositioned for Best Visibility
 - Memory and Program Checks
 - Distance and Diameter Entry
 - Dynamic, Static, Alloy, & RV Balancing Modes

Specifications

- Cycle time 10 seconds (avg.)
- Outside Tire Diameter 40" max.
- Wheel Diameter Range 10 to 24"/1016mm
- Tire Weight 90 pounds max.
- Wheel Diameter Range 10 - 19.5"/254 - 505mm
- Wheel Width Range 2.7 to 18.6"/68 - 472mm
- Balancing Increments 1/4 ounce or 5 grams
- Resolution
 - +/- 0.01 ounce (weight)
 - +/- 2.8 degrees (position)
- Modified High Torque Motor
 - 1 HP, 180 RPM, Forced Air Cooling
- Large Housing for Heat Dissipation (Motor)
- Shipping Weight 437 pounds

Standard Accessories

- Graduated Cone Assortment
- Cone Spring
- Hub Nut
- No-Mar Ring
- Rim Width Calipers
- Wheel Weight Pliers

Optional Accessories

- Combi-Adapter for bolt hole mounting
- Extra Large Truck Cone Kit
- 3, 4, and, 5 Lug Universal Adapters
- Escort/Lynx Adapter

Electrical Requirements

The balancer requires a 110 VAC, 60Hz, single-phase power supply with 20 amp fuse or circuit breaker.

This single-phase balancer is equipped with an approved cord and a 3-prong grounding plug to fit a Hubbell 2320 or Bryant grounding receptacle (not included). See figure 1.

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

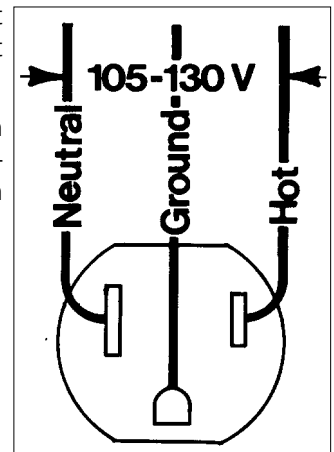


Figure 1 - Outlet Wiring Diagram

Direct Drive

Installation and Setup

A factory trained COATS® Service Technician must perform the install, setup, and initial test procedures on your 850 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.

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 (Figure 2). 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.

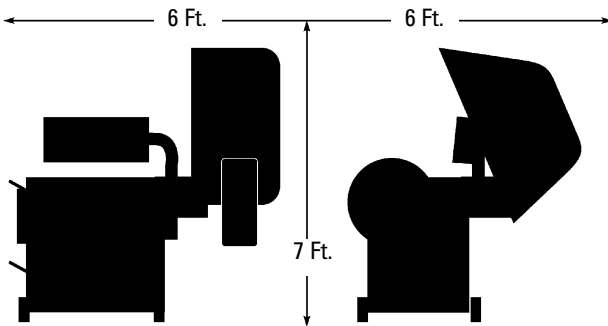


Figure 2 - Space Requirements

Unpack and Setup the Unit

1. Remove the carton from the pallet.
2. Remove the shipping bolts in the three support feet.
3. Cut the strap holding the hood in shipping position.



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



Use help to remove the balancer from the pallet. The unit is heavy and the weight is not evenly distributed. Dropping the unit may cause personal injury or equipment damage.

4. Lift the balancer off the pallet.
5. Open the accessory box and remove the hood assembly hardware and hood spring.
6. Install the hood stop if not already pre-assembled.



Improper hood assembly installation may result in mechanical switch damage causing the balancer not to operate. Use help and carefully follow the hood assembly installation instructions as described below.

Direct Drive

- 7.** Locate the hood assembly.
- 8.** Slide one flanged bearing onto the stationary hood bar; flange to cam (figure 3).
- 9.** Locate the slot on the hood bracket labeled "Install Pin Here". The slot is covered by Styrofoam to separate and protect the mechanical switches, shown in figure 4, that are located inside the hood bracket. During installation the switch actuator rod (figure 5) located on the hood assembly can damage these switches if you are not careful.
- 10.** Next, install the hood assembly to the hood bracket. Carefully line up the switch actuator rod so that it contacts the Styrofoam in the middle of the slot and remains centered as the stationary hood bar is pushed in. As the stationary hood bar is pushed in, the actuator rod must push the Styrofoam in. Refer to figure 6. Be sure the Styrofoam is pushed clear. If not, use a small screwdriver to push it in and out of the way.
- 11.** Slide the other flanged bearing into position followed by the washer, retainer and cap plug (figure 3).
- 12.** Raise the hood all the way and verify that the hood stop bracket on the side of the hood contacts the rubber hood stop solidly. Lower the hood and verify that the other end of the hood stop bracket contacts the rubber hood stop solidly.
- 13.** Raise the hood and hold it up.

CAUTION

Use help to hold the hood while attaching the hood spring. Attaching the spring without holding the hood in place may cause it to snap open suddenly, resulting in personal injury.

- 14.** Connect the hook end of the hood spring to the hood cam stud.
- 15.** Hook the other hook end of the hood spring under the balancer.
- 16.** Raise and lower the hood to verify proper operation.
- 17.** Install any accessory items at this time. Contact your Hennessy Representative to order additional accessory items.

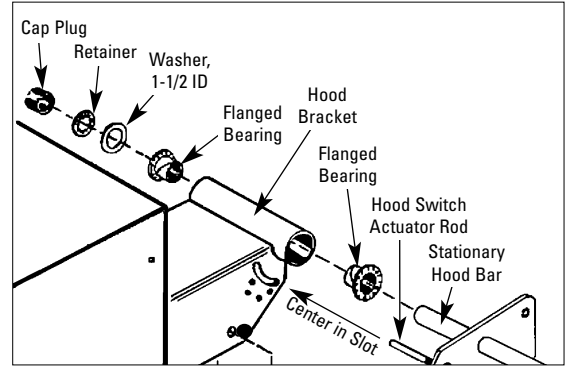


Figure 3 - Hood Assembly Installation

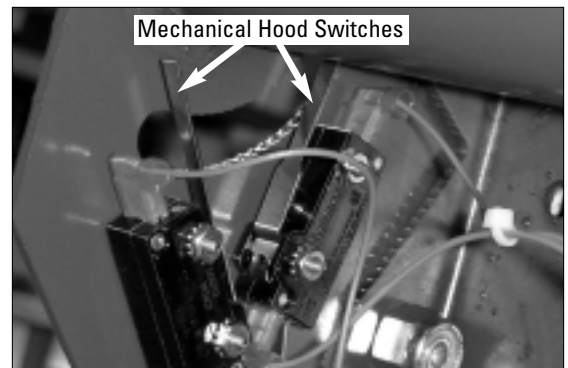


Figure 4 - Mechanical Hood Switches inside the Hood Bracket

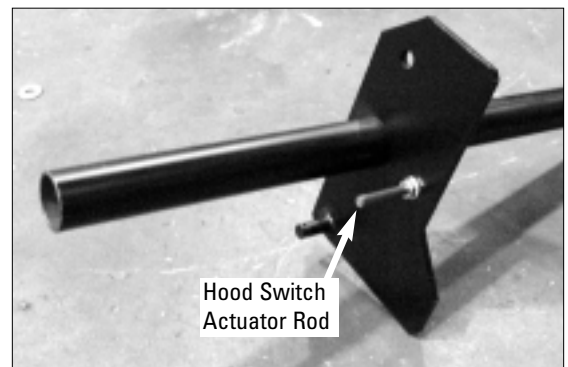


Figure 5 - Actuator Rod on the Hood Bar Assembly

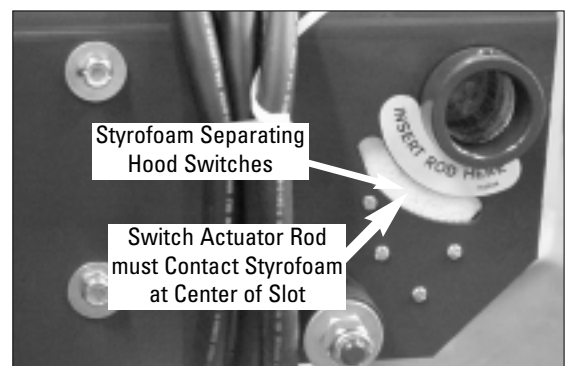


Figure 6 - Slot on the Hood Bracket

Direct Drive

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.

Connect the balancer to an appropriate electrical receptacle. Refer to Electrical Requirements on page 1.

Note: If pedestrian or equipment traffic might damage the standard power cord, power outlets must be enclosed in a race-way on the floor or in an overhead drop.

Note: Electric outlets must be solidly connected. There should be less than 1 Ω electrical resistance between the ground pin and earth ground. The installer or electrical inspector must verify the outlet installation before connecting the balancer. Failure due to improper power connection will void the warranty.

Note: The green wire in the cord is the grounding wire. Never connect the green wire to a live terminal.

Initial Testing

This should be performed by your factory trained COATS® Service Technician.

1. POWER - Turn on the power to the outlet circuit breaker. Plug the balancer into the outlet. Turn the balancer ON/OFF switch to the on position.

An electronic BEEP will be heard when the balancer is turned on.

Note: The balancer should be left on all day to maintain the proper operating temperature.

2. DISPLAYS - The inner and outer weight displays will read the current revision level for the computer software when the balancer is first turned on.

Two LEDs will flash alternately inside the inner and outer weight displays.

The Dynamic LED and Ounce LED will illuminate.

3. OPERATION - Mount a wheel on the shaft, lower the hood, and push the START button. The arbor faceplate should rotate clockwise (figure 7).

Important: If an ERROR 4 message appears, the wheel is rotating counter-clockwise. Turn the machine off and refer to service instructions. Disregard a short spin cycle with an inner display reading of HUB during this initial testing.

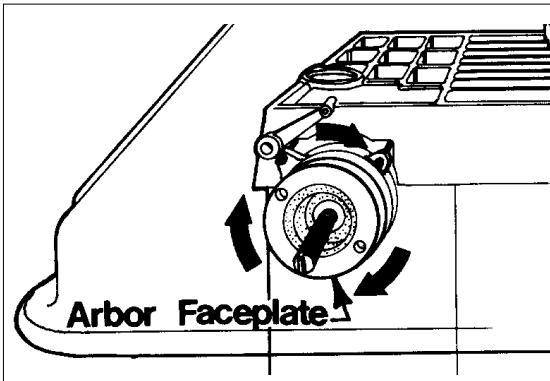


Figure 7 - Slot on the Hood Bracket

Direct Drive

Wheel Mounting

The inner side of the wheel hub usually has the most uniform surface for wheel centering. For an accurate balance, always center the wheel by using the most uniform surface of the wheel hub. There are three ways to mount the tire onto the balancer. Review them before mounting the wheel to determine the appropriate mounting method.

Important: To be sure the wheel centers properly, rotate the wheel on the arbor while tightening the hub nut.

Back Cone Mounting

This mounting method places the spring and cone between the arbor faceplate and the wheel. The cone centers the wheel from the back side (figure 8).

1. Place the spring on the arbor with the large end towards the arbor faceplate.
2. Select the cone that best fits the center hole.
3. Slide the cone onto the arbor large end first.
4. Place the wheel onto the arbor and center it on the cone.
5. Screw the pressure cup/hub nut assembly onto the arbor and against the wheel. Securely tighten the assembly.

Front Cone Mounting

This method should be used only when the inner surface of the wheel center hole does not provide an accurate surface for centering (figure 9)

1. Remove the pressure cup from the hub nut (if attached).
2. Select the cone that best fits the wheel center hole.
3. Position the wheel onto the arbor and push it back against the arbor faceplate.
4. Slide the selected cone onto the arbor, small end first, and push it into the center hole on the wheel. Center the wheel on the cone.
5. Screw the hub nut onto the arbor. Tighten it securely so that it pushes the wheel squarely against the faceplate.

Protruding Outer Hub

For wheels with 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 the arbor threads at least four full turns (fig. 10).

1. Remove the pressure cup from the hub nut (if attached).
2. Place the spring on the arbor, large end first.
3. Select the appropriate cone for the wheel and slide it onto the arbor, large end first.
4. Position the wheel on the arbor and center it on the cone.
5. Place the no-mar ring onto the hub nut and screw the assembly onto the arbor. Tighten it securely against the wheel.



Be sure the wheel is forced firmly against the arbor faceplate and the hub nut engages the arbor threads for at least four full turns.

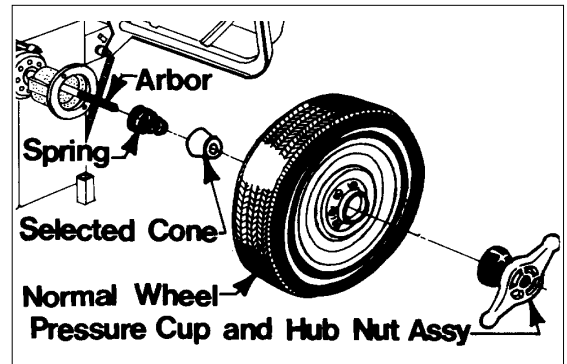


Figure 8 - Back Cone Mounting

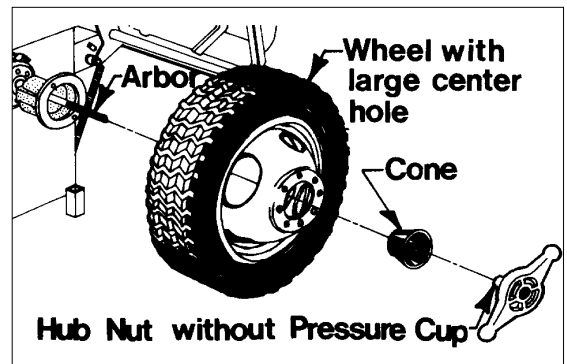


Figure 9 - Front Cone Mounting

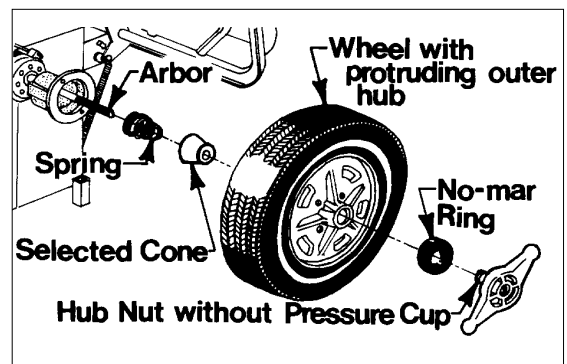


Figure 10 - Protruding Center Hub/No-Mar Ring

Determining Wheel Measurements

Before a wheel can be balanced, the computer balancer must know where the wheel weights will be placed in relation to the arbor shaft. The operator must enter into the computer three different wheel measurements (figure 11).

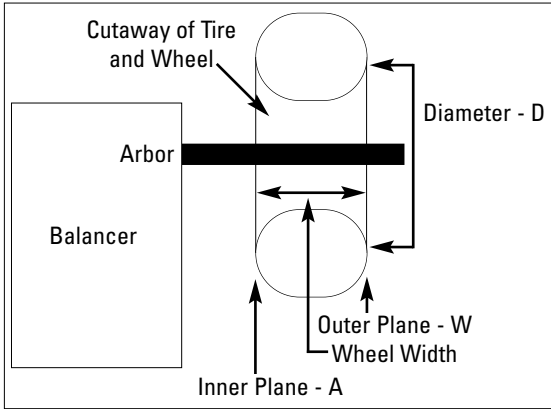


Figure 11 - Wheel Measurements

Distance - A

The first measurement is the distance of the inside of the wheel rim from the balancer. This location is called the inner plane. The inner plane tells the computer where the inside weight will be placed along the shaft.

Wheel Width - W

The second measurement is the wheel width. When entered by the operator, the computer adds the measurement to the inner plane distance to establish the outer plane. The outer plane tells the computer where the outside weight will be placed in relation to the shaft.

Wheel Diameter - D

The third measurement is the wheel diameter. This measure tells the computer how far the wheel weight will be placed from the center of the shaft.

Measuring and Entering A, W, & D

1. Measure the inner plane (A) distance by pulling the distance arm out of the balancer until it touches the rim (figure 12). Place the small end of the handle against the recessed portion of the inside flange of the wheel. Read the last number visible where the distance arm exits the balancer cabinet.

2. Press A on the control panel, then enter the number read on the distance scale.

Example: If the number read on the scale was 7.2, you would press A, then press 7 and then 2 on the numeric key pad. The display should read 7.2

3. Place the calipers over the wheel; measure the width of the wheel. Refer to Figure 13.

4. Press W on the control panel, then enter the width measurement from the calipers.

Example: If the number read on the calipers was 7.5, you would press W, then press 7 and then 5 on the numeric key pad. The display should read 7.5.

5. Locate the tire size specifications on the tire sidewall. Find the diameter in that specification.

6. Press D on the control panel, then enter the diameter as read on the tire.

Example: If the diameter measurement is 15, you would press D, then press 1 and 5 on the numeric key pad. The display should read 15.0.

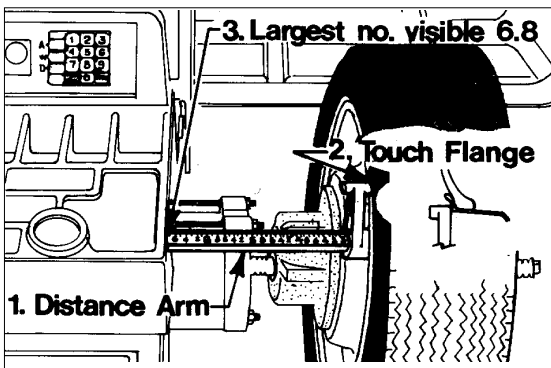


Figure 12 - Inner Plane Measurement

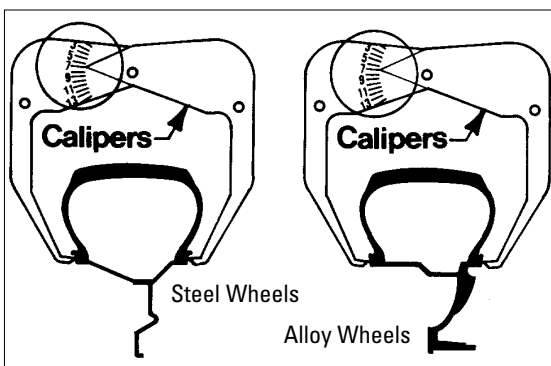


Figure 13 - Using the Calipers to Measure Wheel Width

Determining Balancing Mode

Dynamic Balancing

This is the default mode for the balancer.

This mode places weights on both the inner and outer plane of the wheel.

Static Balancing

This mode determines the position for a single adhesive weight along the centerline of the wheel. Wheels balanced in this mode may wobble if the imbalance mass is large enough and off the centerline of the wheel width. Wobble caused by an off center imbalance can only be corrected by dynamic balancing of the wheel.

When this mode is selected, the computer automatically calculates the middle of the wheel and the proper weight position. When attaching the weight, it is important that it be positioned as accurately as possible at the centerline (figure 14).

Attach the adhesive weight according to the top-dead-center positioning LEDs as described in the Balancing a Wheel section on page 8.

Important: After balancing the wheel, it is necessary to verify that the weight will clear the brake caliper when the wheel is mounted on the vehicle. The weight must not contact the brake caliper, or any other brake components when the wheel is mounted.

Note: It is advisable to cover the adhesive weight with a strip of duct tape to help prevent deterioration of the weight adhesive. Adhesive backed aluminum foil may also be used. Smooth out the covering to eliminate air pockets and bubbles, and smooth down all edges and corners.

Alloy Balancing

Balance specialty wheels with adhesive weights in this mode. The computer automatically calculates the outer weight position as the centerline of the wheel, and the inner weight position under the rim flange (figure 15).

Position the weights at top-dead-center as described in the Balancing A Wheel section. Make sure the outer weight is placed as accurately as possible to the centerline on a horizontal surface. Cover the weights with duct tape or adhesive backed aluminum foil as describe in Static Balancing (figure 16).

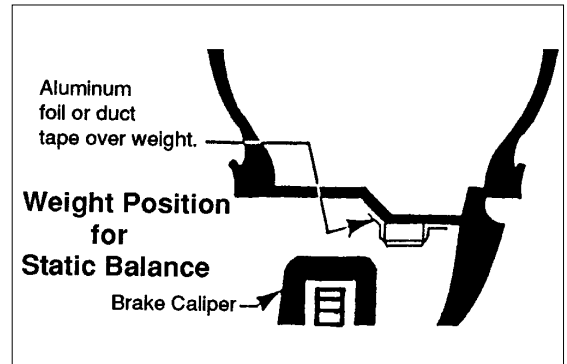


Figure 14 - Static Weight Positioning

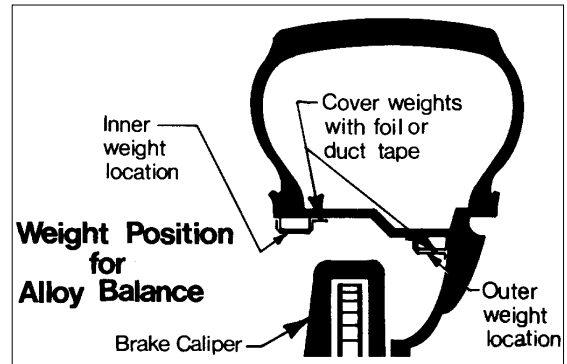


Figure 15 - Alloy Weight Positioning

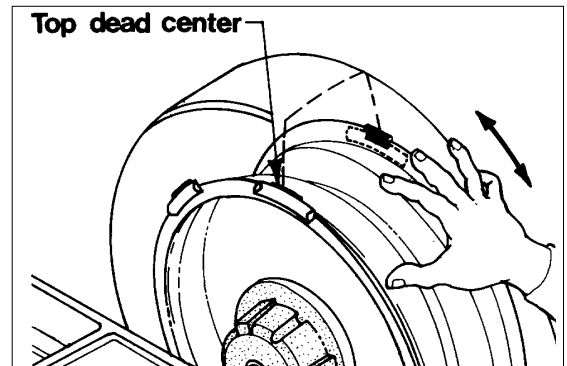


Figure 16 - Top-Dead-Center Weight Positioning

Balancing a Wheel

1. Mount the wheel using the appropriate mounting method.
 2. Enter the A, W, and D measurements as described in Determining Wheel Measurements section.
- Note:** These measurements must be entered into the balancer before attempting to balance a wheel. If any of the measurements remain at zero, the balancer will display the appropriate letter (A, W, or D) for the missing measurement in the left display. The right display will read ERR.
3. Select a balancing mode. Press the MODE button until the LED next to the desired balancing mode is illuminated.
 4. Lower the hood. The hood interlock will not allow the wheel to spin with the hood raised.
 5. Press START. The wheel will spin and brake to a stop. The necessary weight amounts will be displayed.
 6. Lift the hood.
 7. Rotate the wheel until the outer weight positioning LEDs flash. This indicates that the weight should be attached at top-dead-center on the outer plane with the wheel in this position.

FLASHING LEDs

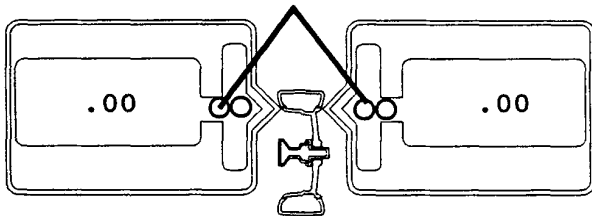


Figure 17 - Flashing Positioning LEDs

8. Attach the appropriate weight to the outer plane.
9. Repeat steps 6 and 7 for the inner plane, if weights are to be attached to that plane. Your selected balancing mode will determine where the weights are attached.
10. After weights are attached, lower the hood and press START.
11. The wheel will brake to a stop after a full spin cycle, and the displays should read 0.00.

If the displays indicate additional weights are needed, consult the Balance Checking section for possible causes and corrective action.

Balance Checking

After balancing the wheel, the wheel should be re-spun to check for accuracy. These steps, when followed carefully, will produce a highly accurate wheel balance.

1. Lower the hood and press START.
2. If the displays indicate additional weight is required in the same location as the first weight, the first weight was too small. Replace the weight with the correct weight and re-spin.
3. If the additional weight position on the re-check is directly opposite the first, the first weight was too large. Replace the weight with the correct weight and re-spin.
4. If the balancer indicates an additional weight should be applied at an angle to the first weight, the first weight was not applied at the correct position. To correct, move the first weight toward the indicated second position, or add the second weight where indicated.
5. Be sure all the weights are securely attached to the wheel.

Direct Drive

After Balance Vibration Checklist

Drive the vehicle on a smooth road after balancing the wheels. If vibration is still present, remove the wheels and re-balance. If a wheel is out of balance, the cause may be:

- 1.** A weight has come off the wheel. Remove the weights from the wheel and rebalance. If the balancer still indicates the wheels are balanced with 0.5 ounce on both inner and out displays, the problem is not in the balance of the wheel.
- 2.** Tire pressure may be wrong. Bring all tires up to the manufacturer's recommended pressure.
- 3.** Radial or lateral runout in the tire or wheel. Replace the damaged part.
- 4.** Foreign material inside the tire. Demount the tire and remove the material. Remove the wheel weights and rebalance the tire and wheel.
- 5.** Imbalanced wheel covers or trim rings. Remove the covers or rings and test drive. If vibration is gone, remove the threaded arbor from the balancer face-plate and use the optional Combi-Adapter to mount and balance each wheel with the cover or ring attached.
- 6.** Incorrectly mounted wheel. Remount correctly.
- 7.** Damaged wheel bolt holes. Replace wheel.
- 8.** Worn universal joints. Replace joints.
- 9.** Drive shaft imbalance or damage. Balance, repair, or replace the shaft.
- 10.** Imbalanced brake rotor(s) or drum(s).
- 11.** Suspension out of alignment. Align the vehicle, replace damaged or worn parts.
- 12.** Tire slippage on the wheel. Demount the tire and remount using tire lubricant and inflate to the proper PSI. Rebalance the tire.

Extended Functional Capability

The balancer will re-evaluate the data it derives from the spin cycle when one or all of the A, W, or D values are changed, or when a new balancing mode is selected. The new weights and positions will be displayed without re-spinning the wheel.

If, after the spin cycle has been completed, you discover that the A, W, or D measurements were entered incorrectly, simply press the appropriate key (A, W, or D) and enter the correct number. The weight displays and positioning will change as required.

If, after the spin cycle has been complete, you decide to change balancing modes, simply press the MODE key until the desired mode is selected. The weight displays and positioning will change as required.

Gram/Ounce Selection - To change from ounce to gram, or gram to ounce, press the CODE key, then 0 on the numeric key pad, then 5, and then A. The appropriate LED will illuminate (OUNCE or GRAM). The displays continue to function in the same manner whether ounce or gram is selected.

Maintenance and Calibration

Preventative Maintenance

- 1.** Keep adapters, faceplate, threaded arbor, and hub nut clean. Grease and dirt build-up will result in premature wear and inaccurate balancing. Clean at least once a day with a vaporizing solvent.
- 2.** Keep the balancer clean, remove all trash, old weights, and other items from the balancer and the operating area.
- 3.** Only use approved standard and optional accessories with the balancer.

Calibration

After positioning the balancer in the shop and connecting it to the power supply, it should be calibrated before attempting to balance a wheel. Once calibrated, the balancer will automatically measure the imbalance and positions sensed from the spinning wheel with extreme accuracy. The balancer does not require daily calibration, and no further adjustments should be needed.

Calibration requires a tire/wheel assembly that meets the following criteria:

- 1.** The inner flange of the wheel, A measurement, must be between 5 and 8 inches from the balancer cabinet when mounted on the arbor.
- 2.** The width, W measurement, must be between 5.5 and 7 inches.
- 3.** The tire must be a 185- or 195-14

Perform the calibration procedure this way:

- 1.** Securely mount an appropriate calibration wheel on the balancer arbor.
- 2.** Enter the A, W, and D measurements for the wheel.
- 3.** Remove all weights from the wheel.
- 4.** Press CODE on the key pad, and then press 9, then 1, then A. This places the balancer in the calibration mode.
- 5.** Lower the hood.
- 6.** Press START to cycle the balancer.
- 7.** After the wheel has stopped, rotate it until the 2 LEDs next to the outer weight display flash alternately.
- 8.** Attach a 4 ounce weight to the outer plane of the wheel at top-dead-center. Accurate placement is essential to achieving an accurate calibration.
- 9.** Lower the hood.
- 10.** Press START to cycle the balancer.
- 11.** When the wheel comes to a stop, the balancer is calibrated. Remove the wheel from the balancer, and remove the calibration weight from the wheel.

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Error Messages and Function Codes

Error Messages

The following codes may appear in the weight displays to indicate a problem with the balancer.

- A ERR** - The distance from the balancer to the inner rim of the wheel was not entered.
- W ERR** - The width of the wheel was not entered.
- D ERR** - The diameter of the wheel was not entered.
- ERR 1** - Wheel moved, but stopped for some reason.
- ERR 2** - Wheel did not come up to speed in 26 seconds.
- ERR 3** - Wheel did not turn when the START button was pushed. Alternatively, no optical signals.
- ERR 4** - Wheel rotates counter-clockwise.
- ERR 5** - Cycle did not complete within 26 seconds.
- ERR 6** - No power to optical encoder.
- ERR 7** - Overspeed.
- ERR 8** - Time to set gain is too long.
- ERR 9** - Measurement time is too long.
- ERR 10** - Measurement speed is too slow.
- HOOD** - Hood up during wheel motion.
- HUB** - Wheel reached speed too quickly.

Function Codes

- CODE 9 1 A** - Perform Calibration
- CODE 0 3 A** - Clear
- CODE 0 4 A** - Toggle High Resolution Mode on/off
- CODE 0 5 A** - Toggle Gram/Ounce Mode on/off
- CODE 3 7 A** - Adjust top-dead-center position error

Direct Drive

Notes

Direct Drive

Notes

