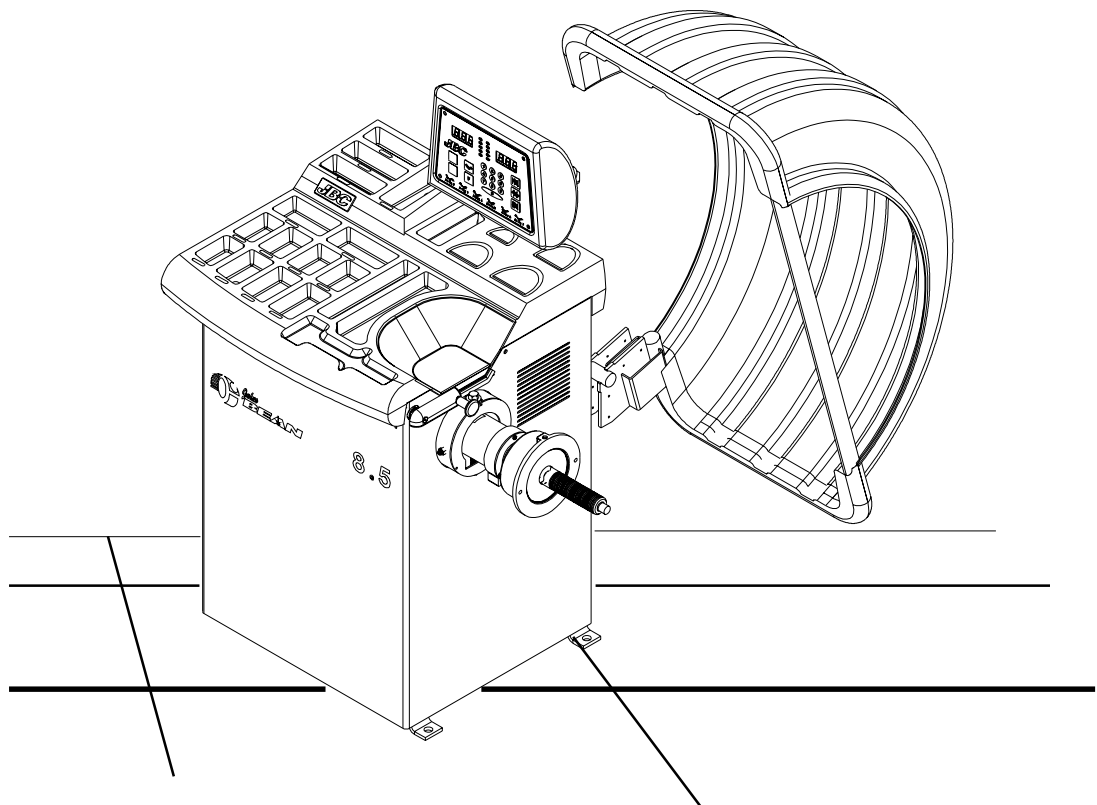


Model 8.5 Digital Wheel Balancer



OPERATION GUIDE

FORM 5660-1



Notice

The information contained in this guide is subject to change without notice.

This document contains proprietary information which is protected by copyright. All rights are reserved. No part of this document may be photocopied, reproduced or translated without the prior written consent of the John Bean Company.

Print History

First Print - Pilot	Form5660P	March 1999
First Print - Limited Production	Form5660	June 1999
Second Print	Form5660-1	July 1999

IMPORTANT SAFETY INSTRUCTIONS

When using this equipment, basic safety precautions should always be followed, including the following:

1. Read all instructions.
2. Do not operate equipment with a damaged power cord or if the equipment has been damaged - until it has been examined by a qualified authorized service technician.
3. If an extension cord is used, a cord with a current rating equal to or more than that of the machine 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.
4. Always unplug equipment from electrical outlet when not in use. Never use the cord to pull the plug from the outlet. Grasp plug and pull to disconnect.
5. To reduce the risk of fire, do not operate equipment in the vicinity of open containers of flammable liquids (gasoline).
6. Keep hair, loose fitting clothing, fingers and all parts of the body away from moving parts.
7. Adequate ventilation should be provided when working on operating internal combustion engines.
8. To reduce the risk of electric shock, do not use on wet surfaces or expose to rain.
9. Do not hammer on or hit any part of the control panel with weight pliers.
10. Do not disable the hood safety interlock system or bypass the intended operation.
11. Do not allow unauthorized personnel to operate the equipment.
12. Use only as described in this manual. Use only manufacturer's recommended attachments.
13. Always securely tighten the wing nut before spinning the shaft.
14. ALWAYS WEAR SAFETY GLASSES. Everyday eyeglasses only have impact resistant lenses, they are NOT safety glasses.
15. Balancer is for indoor use only.

SAVE THESE INSTRUCTIONS



309 Exchange Avenue
Conway, AR 72032
U.S.A.

Phone: 501-450-1500
Toll Free: 800-362-8326
Fax: 501-450-1585

Table of Contents

Safety Instructions	2
General Specifications and Features	5
Installation Instructions	6
Receiving	6
Unpacking	6
Assembly	6
Space Requirements	6
Power Requirements	6
Control Panel Description	7
Standard Operation Procedures	8
Balancing Checklist	8
Mounting a Tire and Wheel	8
Parameter Entry - Semi-Auto	9
Placing Weights	10
Balancing Alloy Wheels	11
Stored Parameters	11
ALU-S Mode	12
Spoke Mode	13
Match Balance	14-15
Specialty Wheel Mounting	16
Front Cone Mounting	16
Optional Lug Adapters	17
Calibration	18-19
Shaft Calibration	18
Parameter Entry System	19
Function Codes	20
Troubleshooting	21

(Blank Page)

8.5 General Specifications and Features

Specifications

Imbalance Accuracy: $\pm 1/10$ oz. / 2.8 grams
Weight Placement Resolution: $.9^\circ$
Shaft Size: 1 9/16" diameter (40mm)
Shaft Rotation Speed: 200 RPM @60hz
Average Cycle Time (14" tire): 9-12 seconds
Motor Rating: 1/2 HP
Power Requirements: 115V 60hz
230 V 60hz
15 Amp

Rim Width: 3" - 19" (76.2-482.6mm)
Rim Diameter: 8" - 24.5" (203.2 - 622.3mm)
Max Tire Diameter: 44" (1117.6mm)
Max Tire Width: 19" (482.6mm)
Max Tire Weight: 120 lbs. (54.5kg)

Footprint: 50" x 62" / 1270 x 1575mm
Shipping Weight: 400 lbs. (181.4 kg)
Shipping Volume: 59.2 cu. ft. (1.7 m³)
Wheel Weight Pockets: 17

Standard Equipment

- (1) Rim Width Caliper (p/n 61123)
- (1) Calibration Weight (p/n 110563)
- Adapter Kit (p/n 112414) consisting of:
 - (1) Wing Nut (p/n 112298)
 - (1) Clamping Hood (p/n 112301)
 - (1) Protector Ring (p/n 112296)
 - (1) Cone p/n 61252, 2.80" - 3.60"
 - (1) Cone p/n 61253, 2.18" - 2.98"
 - (1) Cone p/n 60781, 3.365" - 8.53"
 - (1) Cone p/n 61476, 1.66" - 2.54"

Options

- Universal Lug Adapter (110614)
- Truck Cone Kit (110612)
 - includes: (1) 4.8 - 6.69" diameter cone
 - (1) Spacer Adapter
- Motorcycle Wheel Adapter (110609)
- Weight Pliers

Major Features

Microprocessor Controlled
Digital Readout: Ounces or Grams
Digital display round-off to .25 oz. (7gr) or non
round-off to .05 oz. (1gr)
Wheel Parameter Data Entry

- Semi-Automatic
- Manual
- Inch or MM Rim Diameter Modes

Spin: Hood-activated Autospin or Manual
Alu-S Mode
Spoke Mode
Match Balancing
2 Plane Top Dead-Center Braking
Easy Operator Calibration
Wheel Parameter Recall (4)
Self-Diagnostic Capabilities
Touch Pad Keyboard
Fully Enclosed Wheel Guard with Safety Interlock
Arm's Length Accessory Storage
Adjustable Data Display
Captured Backspring
On-board Information System

John Bean Company reserves the right to incorporate changes in designs or materials, affecting product improvements, without obligation of incorporating same on equipment of prior manufacture.

8.5 Balancer Installation Procedures

Location of Balancer

The balancer should be located indoors where convenient to mount and dismount a tire-wheel assembly. Place balancer skid close to the desired position. Allow ample space for wheel mounting and to raise and lower the hood guard. See footprint requirement drawing to the right.

Unpacking the Balancer

Cut banding straps. Use caution to avoid sharp edges of banding. Lift cardboard box upward over balancer top. Cut banding from the hood guard and the accessory package. Set these aside for now. Report any shipping damages or shortages to the carrier at once. Remove the skid mounting bolts from the balancer base. Lift the balancer from the skid and place gently onto the floor.

CAUTION! DO NOT LIFT BALANCER BY THE SHAFT!

Site Preparation

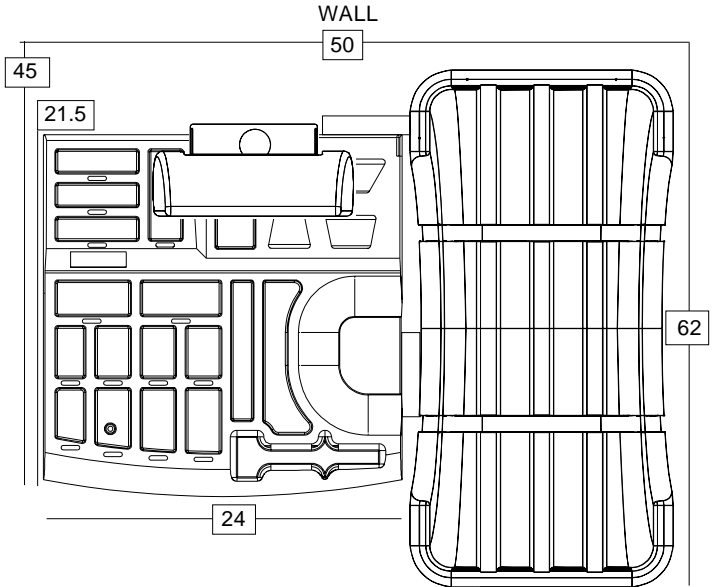
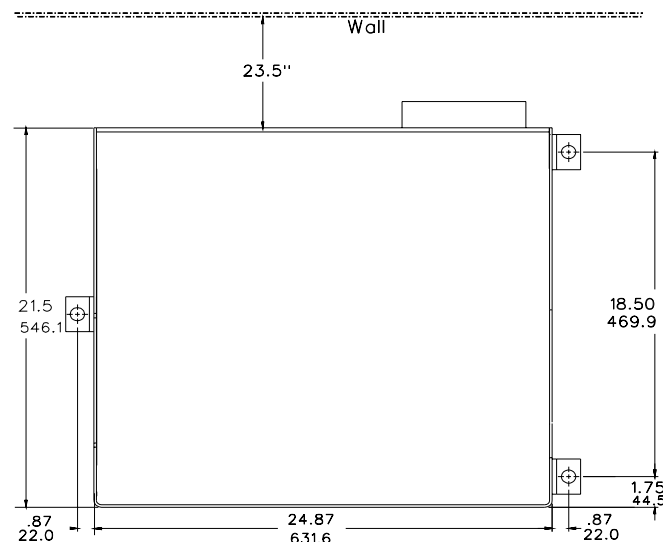
Make certain the floor area to be used is flat to within one quarter inch beneath the balancer. Make certain this area is free from vibrations created by other heavy equipment, compressors, generators, etc. A concrete floor is required. Make certain the three base pads under the balancer are the only places to contact the concrete floor.

Anchoring the Balancer to the Floor

The balancer must be anchored to the floor to provide necessary stability. Failure to secure to floor will invalidate the UL/CUL approval of this balancer.

Mark position of anchor holes by placing balancer in the desired location.

Drill three 1/2" (12.4mm) holes at least three inches deep and place anchor bolts in holes.



Note: Anchors are supplied with balancer, if additional anchors are needed, order part number **61750** each.

Move balancer into position taking care not to lift by shaft. Place over the anchors and tighten shaft side first. Tighten remaining bolts to 60 ft.-lbs. *Do not allow hold down tabs to bend!*

Install Wheel Guard:

Assemble wheel guard to balancer by inserting the guard support frame pivot into support tube in the rear of machine. Insert the roll pin into the pivot shaft bore. Check guard for proper pivot action.

Adjustment of the Display to desired position

The angle of the display console can be adjusted to best suit the operator. To adjust, use a 9/16 wrench to simply loosen the two 3/8" hex bolts located on each side of the rear display mount. Tilt to the desired angle and tighten.

Power Requirements

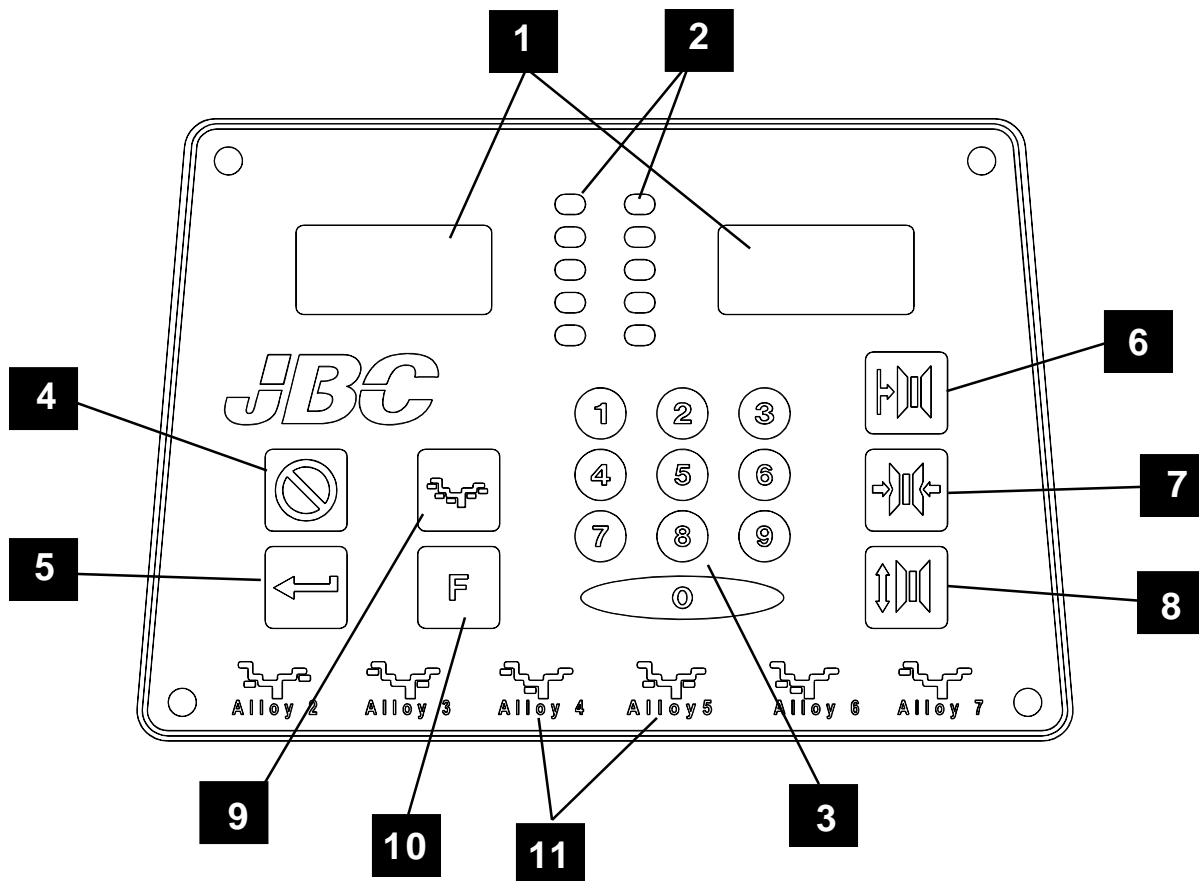
The balancer operates on 115 volts AC, 50/60 cycle. The current draw is 15 amps, a 20 amp service is recommended.

The power plug used to attach to wall current is supplied for U.S. Domestic applications.

Replacement motors can be purchased only through an authorized **John Bean** distributor.

Note: The receptacle and balancer **MUST** be properly grounded.

Control Panel Functions



1 Weight Amount and Function Display Window - Shows weight amounts and operation messages.

2 Position Indicator LEDs - Displays the location for wheel weight placement.

3 Numeric Entry and Function Keypad - The keypad used for numeric entry of functions and actual number values for parameters. Including several operator control keys.

4 Cancel - Pressing this key interrupts any process.

5 Enter - This key activates whatever selection has been requested, it also spins the wheel if hood guard is down.

6 Rim Offset - This key is used to enter the rim offset position using the numbers from the distance gauge.

7 Rim Width - Press this key to enter the rim width. Use the rim width calipers for measurement.

8 Rim Diameter - Enter the rim diameter after pressing this key. Read the size directly from the tire sidewall.

9 Alloy Mode Selection - A series of 5 placement locations for custom weight location. Very useful for the wide variety of custom wheels on today's market.

10. Function Key - Allows the entry of function codes. Function codes are used for customizing, calibrating, and diagnosing the balancer. Example: entering "F1" activates calibration. See page 20 for a list of "F" codes.

11. Alloy Placement Illustrations - Weight illustrations for specialty wheels and hidden weight balancing. See 9 above.

Operation of the Balancer

NOTE: Read all instructions before proceeding with operation of the balancer.

WARNING: For operator safety please read and follow the precautions outlined on page 2 of this manual.

All balancer functions are input into the main computer through the large easy to read touch panel. Although each wheel tire assembly differ in some ways all balancing jobs require basically the same procedure. The order of events to take place are:

1. Inspection of the wheel/tire assembly
2. Mounting wheel onto shaft or adapter
3. Entry of wheel parameters
4. Selection of Balancing Mode or placement
5. Spinning the wheel
6. Applying the recommended weight
7. Check spin if desired
8. Dismounting the wheel

The following operation instructions will follow the basic outline above.

Step 1: Check List

Observe Before Balancing Wheel

1. Check for proper air pressure. If not correct, inflate to correct pressure.
2. Check for any foreign material inside tire. If present, remove before balancing tire.

WATER IS FOREIGN MATERIAL!
3. Be sure tire and wheel are free of excessive dirt, rust and large stones. Use wire brush on back side of wheel if necessary.
4. Remove old weights — old weights may be improper value or in wrong location.
5. Be sure that the right size tire has been mounted on the wheel.

Step 2: Wheel Mounting

Standard Wheels (back cone mount)

Nearly all standard wheels and many alloy wheels have accurately machined center holes, and they should be mounted with center cones. Accurate balancing depends on accurate mounting of the wheel and correct seating of the cone in the pilot hole. Insure that the wheel is centered on the shaft exactly as it will be mounted to the vehicle.

Mount the wheel as detailed below in *Figure 1*:

1. Mount proper cone against spring plate.
2. Mount wheel on shaft in the same manner as you would on the car.
3. Mount pressure cup on shaft and place against outside of wheel, follow with the wing nut.
4. Tighten wing nut securely with both hands.

NOTE: Some wheels not hub centric may require the use of an optional lug adapter plate.* An adapter plate allows a wheel to be mounted using the lug holes as a center reference. Refer to pages 18 - 19 for special wheel mounting techniques.

* Cone, retainer cup, and wing nut may not be needed if adapter plate is used to mount wheel to balancer shaft.

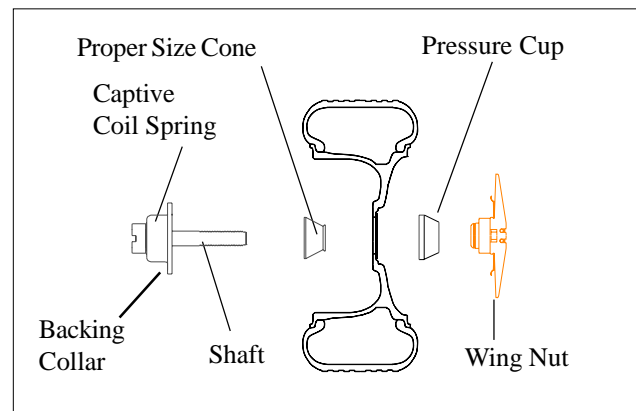


Figure 1 - Standard back cone mounting

Warning

Failure to tighten wing nut securely may result in serious personal injury.



Step 3: Parameter Setup for Standard Wheels (Semi-automatic)

Mode Selection

1. The majority of balancing takes place in the default 2-plane dynamic mode which is displayed as "2 PL" (location 1). Hammer-on clip weights will be placed on both inside and outside of the rim edge. If required, select an optional weight placement mode by pressing the *Alloy* button followed by the appropriate mode button, 2 thru 7.

NOTE: When operating in special modes such as Alloy, Spoke or ALU-s, operation can be returned to Dynamic 2-plane by selecting Alu 1 or by cycling power. See pages 11 - 13 for special placement mode instructions

Rim Distance and Diameter

2. Move the Semi-Automatic Parameter Entry (SAPE) arm to the edge of the rim, touch the pointer to the rim edge as illustrated in *Figure 3* and hold steady for about a second. The beeper will sound and the selected distance and diameter values will be entered automatically. Release the arm, making sure it returns to its home position on the balancer. Do not allow the measurement arm to "dangle" down in front of the balancer.

NOTE: If clip weights cannot be applied, refer to section "Balancing Alloy Wheels" on *Page 11*.

Rim Width Entry

3. **Measure rim width** using rim width calipers. Measure wheel where corrective weight will be applied, *Figure 4*. Enter the measured diameter directly using the **Quick Set** method by rotating the wheel assembly until the desired number appears in the width parameter window.

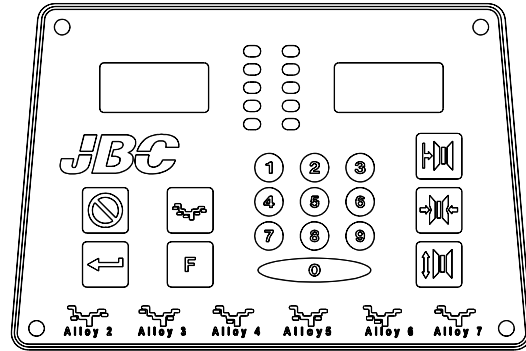


Figure 2 - LEDs indicate weight locations

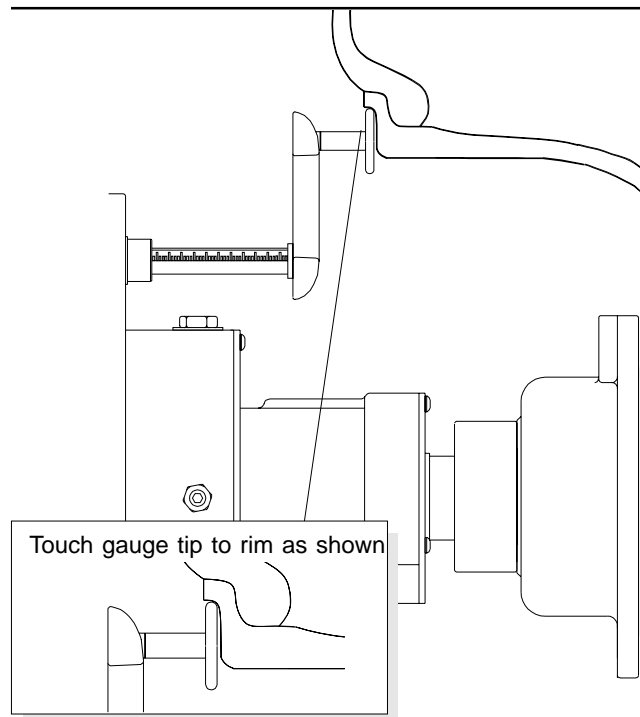


Figure 3

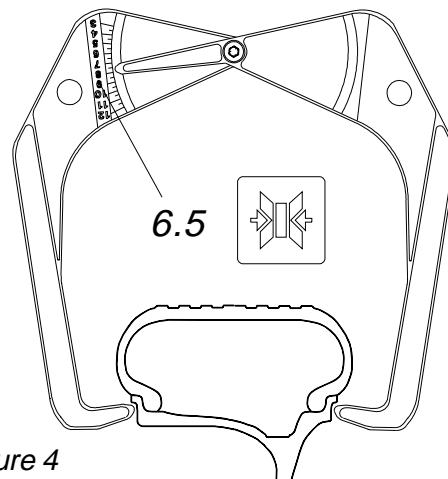


Figure 4

Step 4: Spinning the Wheel

Press "ENTER" or lower the hood to spin. The machine will spin the wheel assembly for several seconds.

NOTE: The model 8.5 Balancer features selectable automatic spin. The shaft spins when the hood guard is lowered or *ENTER* is pressed. Auto-spin can be disabled by pressing the keys "F6" and *ENTER*. Each time *F6* is entered the autospin feature toggles on/off.

Warning!! Do not attempt to bypass or disable the built in hood guard safety features. These guards are for your safety.

The computer calculates for imbalance and location using the current parameters and mode.

The balancer will go into a brake cycle to stop the shaft from turning. When the shaft has come to a stop, the display will read the required weight amount and position to place them.

After spinning, to recalculate the readings for a different placement, balancing mode, or displayed units, simply press the desired button. See *Figure 5*.

Note: If at any time the wheel/tire assembly measures over a total of three (3) ounces imbalance on either plane, a "Match Balance" is recommended. See page 14 for details.

Step 5: Placing Weight

View the weight amount and location windows. See *Figure 6*. Weight values are displayed for the chosen mode location. Lift the hood guard. Rotate the wheel assembly until the left or right position indicator LED turns green. Select the correct type weight and place at the 12 o'clock position (TDC). Continue to rotate the wheel assembly to the adjacent placement position. Attach the indicated weight amount at TDC. Lower the hood guard for a check spin if desired.

WARNING!: Use the proper type clip weights - using the wrong type clip weight may cause serious personal injury or damage to property.

Never reapply used weights. Spring clips on used weights may become damaged during application or removal, thus preventing proper re-attachment.

Step 6: Dismounting the Wheel

When the balance is complete, remove the wheel assembly from the balancer. Mount onto vehicle using the manufacturers suggested torque specifications.

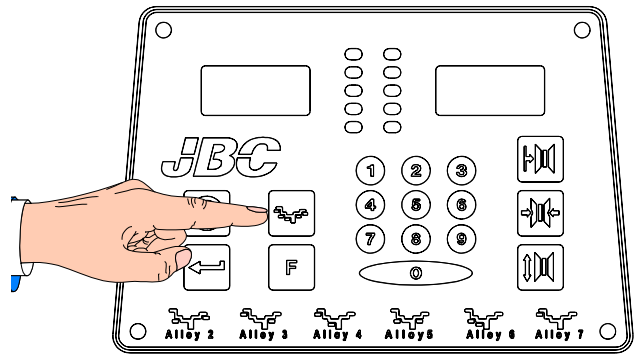


Figure 5 -- To recalculate the weight amounts and locations using a different balancing mode or change to ounces/grams, enter the desired "Alu" location. The balancer will display the proper weight amount for that position or mode without respinning.

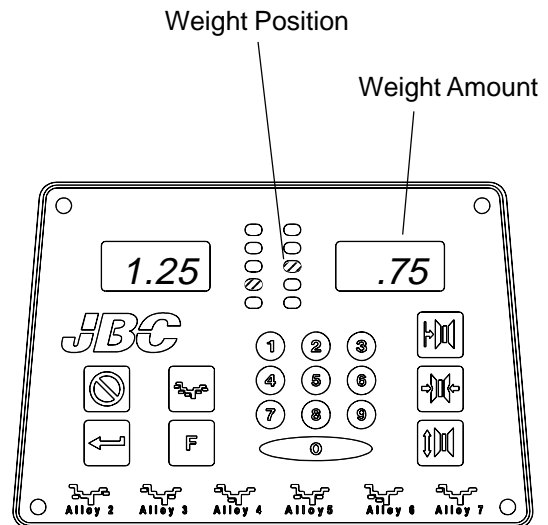
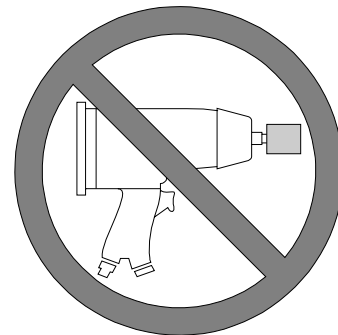


Figure 6 -- LED Display indicates weight amount and position.



Use manufacturers suggested lug torque when remounting wheel onto hub.

Balancing Alloy Wheels

Custom aluminum and alloy wheels mounted on today's high performance autos require a service technician to take several precautions. He must mount the rim in a manner in which no damage will occur, and he must select the proper weight placement location for the particular wheel. Due to the vast diversity of rim designs, it is not feasible to list all possible combinations of rim edges and wheel weight clips. Inspect the rim and available weights and use good judgement in your selection. Weights should not interfere with any suspension parts or make contact during rotation. If a weight does make contact, use tape weights in an alternate location and select an appropriate alloy mode.

WARNING!! Use of improper weight clip attachment could result in personal injury or damage to property. Rim surfaces should be clean and weights should be attached securely.

Never reapply used weights. The spring clips on used weights may have been damaged during application or removal, thus preventing proper reattachment.

The John Bean Model 8.5 Balancers have an Alloy mode button for selection of the proper location. See *Figure 7*. Note that the lower edge of the display contains a placement representation of the rim and the associated weight location. Press the "Alloy" button and then the number which closely resembles the placement desired and the computer calculates the weight amounts and positions.

The Alloy Modes allowed are:

- 5 - Alloy 2 plane positions
- 1 - Static/tape weight positions
- 1 - Standard 2 plane dynamic (default)

Other modes offered:

- 1 - ALU-S Mode (see page 12)
- 1 - Spoke Mode (see page 13)
- 1 - Match Balance Mode (See page 14)

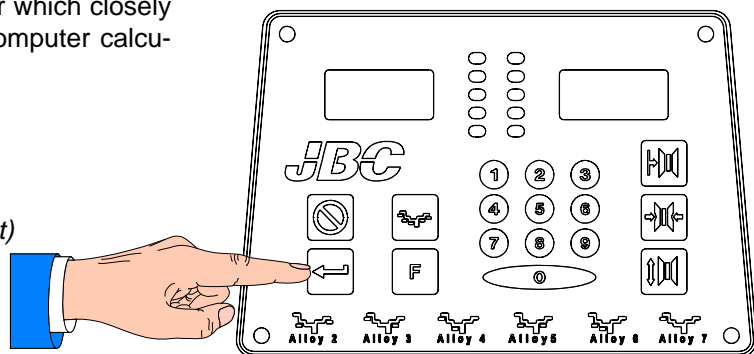


Figure 7 - Alloy Mode

2. Enter the wheel parameters (Distance, Width, and Diameter) in the normal manner.

3. Press the assigned "F" Code, followed by pressing the SPIN button. For example, press F 80 and SPIN.

4. The display will change to the following:

r = 0 S = 1
(recall = 0 Store=1)

5. This instructs the operator to press (1) one on the keypad to "store" the parameters. The parameters are saved until changed by entering and storing new parameters.

6. To recall previous stored parameters, press "0". You will now be in the "recall" mode. Pressing "F" scrolls selection down to the next stored location. Press ENTER to select desired parameters. Press (0) zero on the keypad to RECALL.

Stored Parameters (F80-83)

This balancer is programmed to allow storage and retrieval of four sets of wheel parameters (Distance, Width and Diameter). This feature is especially useful for a shop that balances a large quantity of one type wheel. It may also be simultaneously used by four individual technicians by storing the parameters for four vehicles. Program the balancer as followings:

1. Assign each of the following "F" codes to a particular wheel/ Tire or to an individual technician.

- F 80 -- Technician #1 or wheel #1
- F 81 -- Technician #2 or wheel #2
- F 82 -- Technician #3 or wheel #3
- F 83 -- Technician #4 or wheel #4

ALU-S Mode

1. Press "F18" then "Enter" to activate the ALU-S mode, the display will read "Alu - S" for 1 second.

2. Extend the SAPE arm and touch the position of the left weight position. See *Figure 8*. The display will read "d - l" on its left window and the distance reading on its right window. Return the SAPE to the rest position.

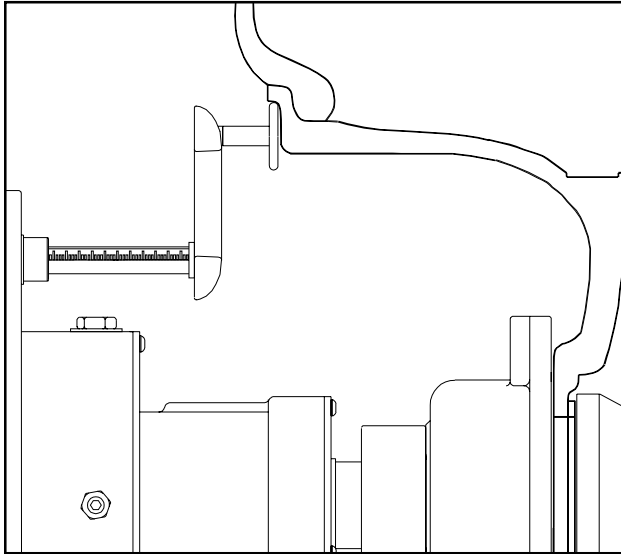


Figure 8

3. Select the appropriate SAPE extension and install as illustrated in *Figure 9*. The display will read: "S-4" in the left window and "L6" in the right. S-4 meaning **Short** 4 inch and L-6 meaning **Long** 6 inch extension. Enter 4 or 6 to indicate which extension was selected.

4. The machine displays "d - 2". Move the parameter arm to the right weight position. See *Figure 10*. The computer will display the distance reading and respond with two beeps. The display will then read "rtn SAP" meaning to return the sape arm to rest position.

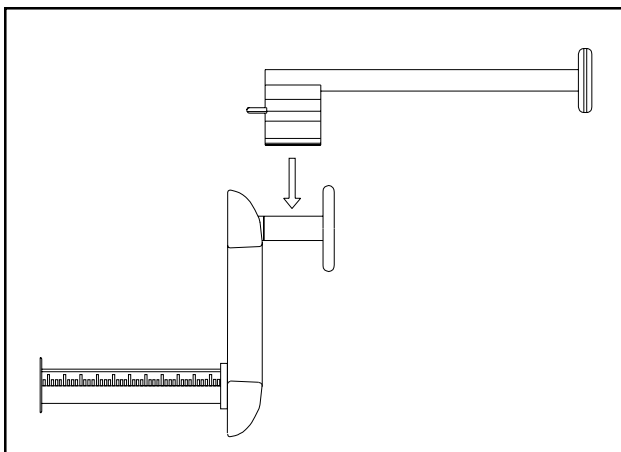


Figure 9

5. Press "Enter" or lower the hood guard to spin the wheel. The display will read "SPN SPN" then "LOC 0" during the spin cycle.

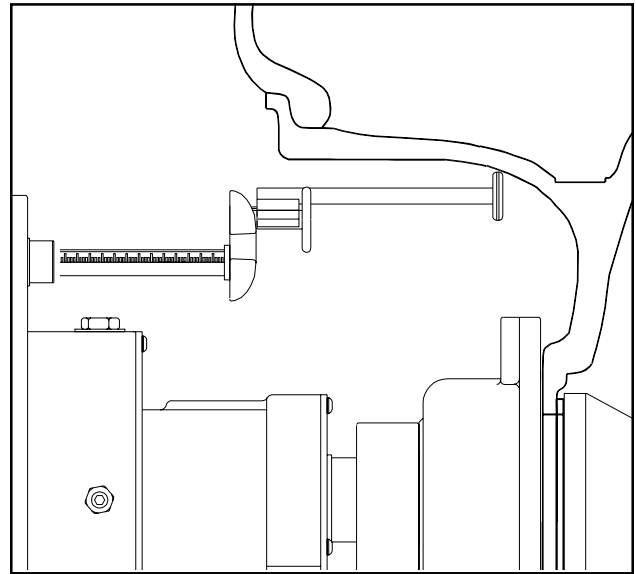


Figure 10

6. After spinning, the machine displays both the left and right plane imbalance weight and position with its color LEDs.

7. Add the same extension selected earlier in step 4 of the process and pull out the sape arm to find the position of the right plane. The right window shows the weight amount all the time. Once the reading on the left window reaches "0" with a series beeps, the right balance plane is found. Operator should place the displayed weight at this position.

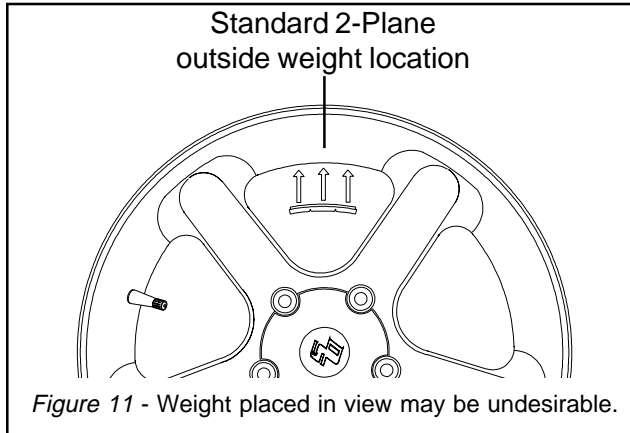
8. Return the sape arm back to rest position and pull out again to locate the left balance plane as mentioned above. With each subsequent extension of the SAPE, the display toggles between left and right plane position and weight indication.

Note: Inspect the rim and available weights and use good judgement in your selection. Weights should not interfere with any suspension parts or make contact during rotation. If a weight does make contact, use an alternate location and select an appropriate mode.

Note: Both Spoke and ALU-S modes are disabled by cycling power or when any other balance mode is activated.

Spoke Mode Operation

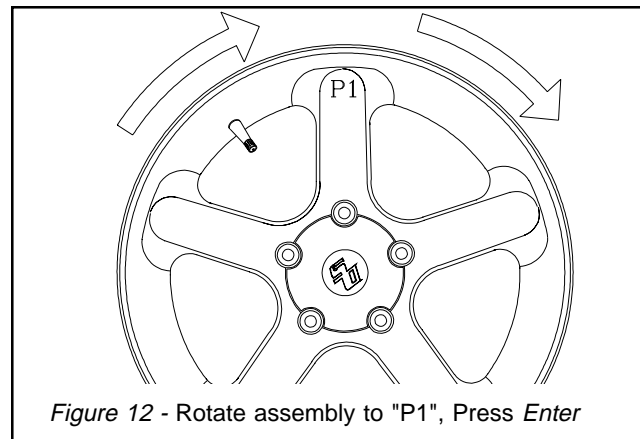
A standard dynamic balance requires weight at the exact spot of calculated imbalance with one weight on the inner plane and one on the outer plane. See Figure 11. Sometimes this weight placement is seen as unsightly by a customer. Many discriminating customers may request "hidden" weights to be applied to the wheel during the balance process for esthetic purposes.



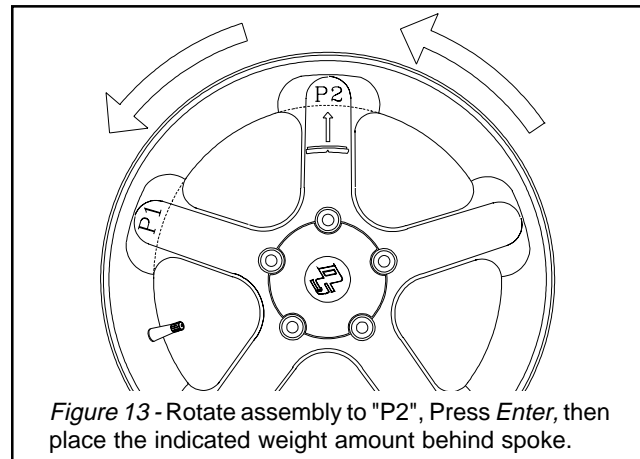
The 8.5 balancer can easily accomplish the task of hiding weights by using the unique "Spoke Mode" program. The "Spoke Mode" feature locates the position of the outer stick-on weight, then asks the operator to assist in locating where the two closest spokes are. Once this information is input into the computer, calculations are made quickly to split the weight for hiding behind the selected spokes.

Follow these simple instructions for "Spoke Mode" operation detail:

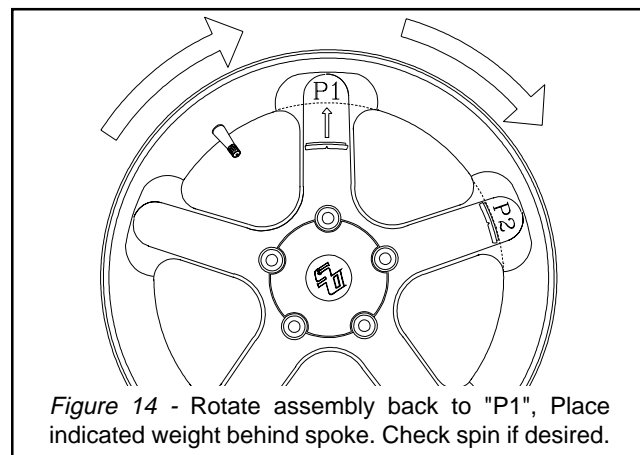
1. Press "F19" then *Enter* to activate Spoke Mode. (Pressing "F19" again disables the Spoke program)
2. Enter left plane distance and diameter using the SAPE as you would a dynamic 2-plane balance. Fig.3
3. The display will read: "S-4" "L-6". Enter 4 or 6 to indicate which extension was selected. The machine displays "d - 2" move the SAPE arm to the right position. See Figure 10. The display will read the distance followed by two beeps. The display will read "rtn SAP" meaning to return the sape arm to rest position.
4. Press *Enter*, or, lower hood guard. The display will read "LOC 0" while spinning. After Braking to a stop the machine will display "Grn". Rotate the shaft to the outer plane top dead center position indicated by the center green LED. Press *Enter*. Display reads "SPT BAL".
5. The display will read "SET P1". Rotate the wheel, in either direction to the position of the first spoke. Press *Enter* to store first position. See Figure 12.
6. The display will read "SET P2". Rotate the wheel to the second spoke position and press *Enter* key again. See Figure 13.



7. The display will read "P -2" on its left window and the balance weight amount in right window. Place the weight amount displayed at "position 2" and then rotate the wheel to locate position 1. See Figure 14.



8. When position 1 is located, the balancer will beep. The display will read "P -1" in the left window and the weight amount on right window. Place the weight amount displayed at "position 1". Press *Enter*.
 9. Balance the left plane as directed.
 10. Perform a check spin if desired.
- Note: The SAPE arm can be used to locate weight position similar to the "ALU-S" mode



Computerized Match Balance

1. Remove all old balance weights and remove dirt and stones from tire and wheel. Mount the tire wheel assembly on the balancer using the proper mounting method. Enter the proper wheel parameters for DISTANCE, WIDTH & DIAMETER.

2. Press **F 90** & **ENTER** to activate step 1 of the Match Balance procedure. "**STP 1**" is displayed for approximately 2 seconds.

3. The display then reads "**VAL TOP**". Rotate the wheel/balancer shaft so the valve stem is at the **top (12:00)**. Mark *the tire* at top with a chalk line and Press "**F**".

4. Press **ENTER** or lower the hood for auto-spin to measure the imbalance of Position #1.

5. After the wheel stops, the display shows "**ROT 180**". Dismount the wheel assembly from the balancer, bring it to a tire changer, break down the beads, and **rotate the tire 180 degrees on the wheel**. Use the valve stem as a reference when rotating the tire. Inflate the tire to the recommended pressure.

NOTE: If anytime during the procedure, the normal dynamic weight amounts are displayed, install the indicated weight and complete the balance. Calculations are made based on the last selected mode. This is an indication of an insignificant amount of benefit to be gained from the Match Balance procedure. The balancer will cease the match process when these low values are detected. If desired, press F at this time to force completion of the Match Balance.

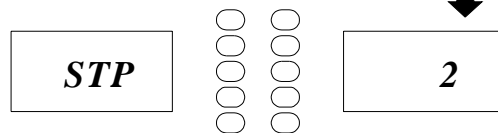
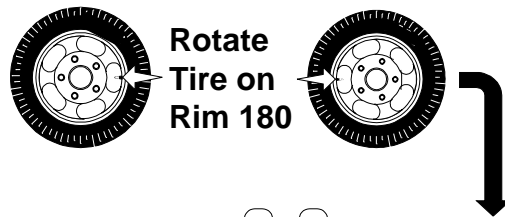
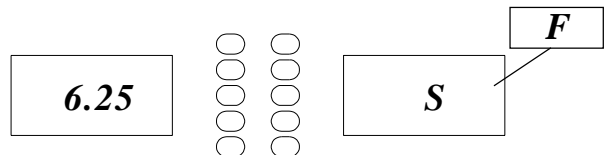
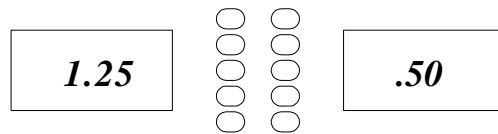
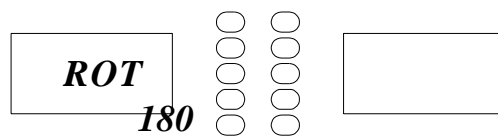
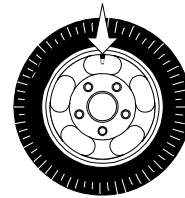
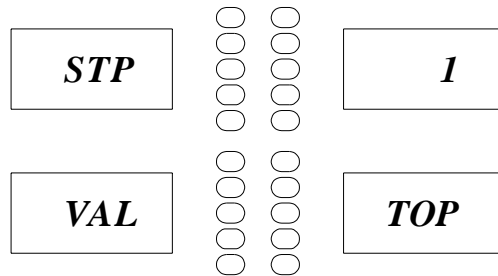
If a STATIC amount of weight is displayed, this indicates a severe imbalance problem. Examine the mounting method or wheel centering condition for excessive runout. Check the wheel and tire for damage or irregularities. You may force continuation by pressing the "F" key.

6. Install the tire/wheel assembly on the balancer as before.

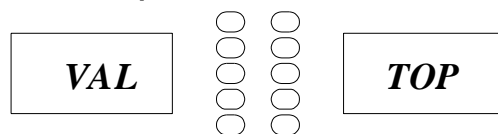
7. "**STP 2**" is displayed briefly indicating the balancer is ready to take a second measurement.

8. The display then reads "**VAL TOP**". Rotate the wheel assembly to position the valve stem at the top center and Press "**F**".

NOTE: Press STOP to end the Match Balance Procedure at any time.



Place Tire back on balancer. Place Valve Stem at top and Press "F".



9. Press ENTER or lower the hood for auto-spin to measure the imbalance of Position #2.

10. If **"SPOT"** is displayed, rotate the wheel balancer shaft until green LED shows on the left position window. Mark the tire at the top center with an **"X"**. This is the tire **Match SPOT**. The wheel's valve stem will be matched to this spot.

If normal dynamic weight amounts are displayed, the Match Balance procedure did not yield any benefit. Install the indicated weight to complete the wheel balance.

If a STATIC amount of weight is displayed, this indicates a severe problem. You may force continuation by pressing "F".

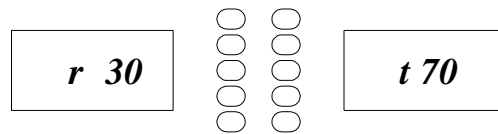
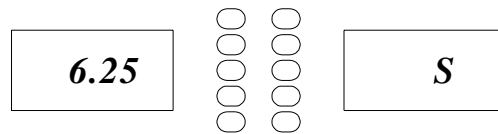
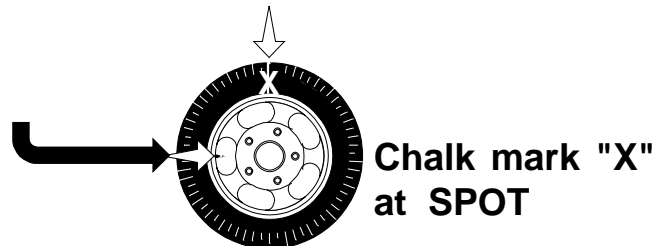
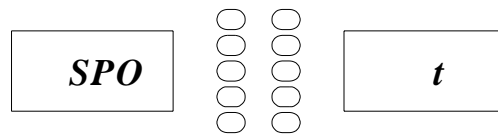
11. **OPTIONAL:** To display the percent of rim (**r**) or tire (**t**) problem press "F". This function is useful to diagnose whether the rim or tire has excessive imbalance that may require further analysis. To return to the previous step, press "F" again.

12. In the case where an optimum "SPOT" has been determined, remove the tire/wheel assembly from the balancer and deflate. Break the beads and rotate the **Match SPOT "X"** to align with the valve stem. Inflate the tire to specifications and reinstall the assembly onto the balancer.

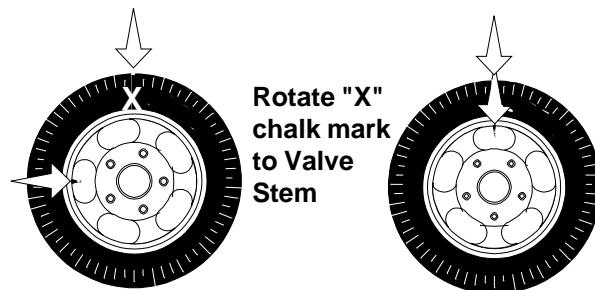
13. Press SPIN or lower the hood for auto spin.

14. Place balance weights as indicated to complete the normal balance. This completes the Match Balance procedure.

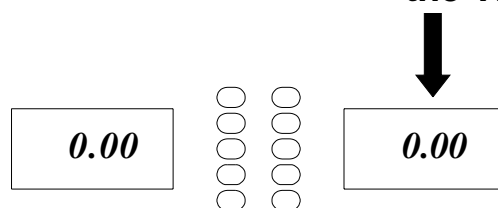
NOTE: If an error (ER) is displayed, it would indicate an error was made in rotating the tire or an error was made in the procedure. In the case of an error, press STOP and begin the procedure from the start.



Isolate Tire Wheel Problem & display in percent



Balance the Tire



WHEEL MOUNTING -- Specialty Wheels

Most special wheels can be accurately mounted and balanced using a centering cone. When using centering cones, be certain cone is properly seated in the wheel's pilot hole.

To balance a wheel with a deep neck, the front cone mounting method may be necessary. Mount the wheel as shown below in *Figure 15*:

1. Mount wheel onto the balancer shaft.
2. Place the proper cone inside the protruding neck of the wheel.
3. Remove the clamping cup from the wing nut. Place the small spacer ring on the nut if needed. Tighten wing nut securely.

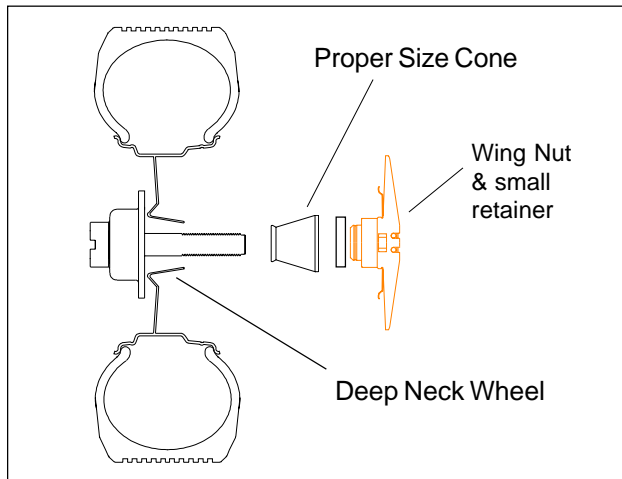


Figure 15 -- Front coning for deep-neck wheels

WARNING!! Failure to tighten wing nut securely may result in serious personal injury.

Truck Wheels

Offset and Ford/Dodge Pinned Dual Wheels Using Optional Offset Spacer

Some light truck wheels are "standard", except that they have offset centers which may extend around the backing plate. Under normal conditions no spacer is required because of the unique design of the balancing shaft and bearing housing. For unusual applications, an optional offset spacer may be used. See the "Optional Accessories for Computer Wheel Balancers" catalog for the part number.

Mount the wheel as shown in *Figure 16* and balance as a "Standard" wheel.

1. Mount offset spacer against the balancer backing plate.
2. Mount wheel onto balancer shaft.
3. Select proper cone and mount onto shaft and into wheel center hole.
4. Tighten wing nut securely.

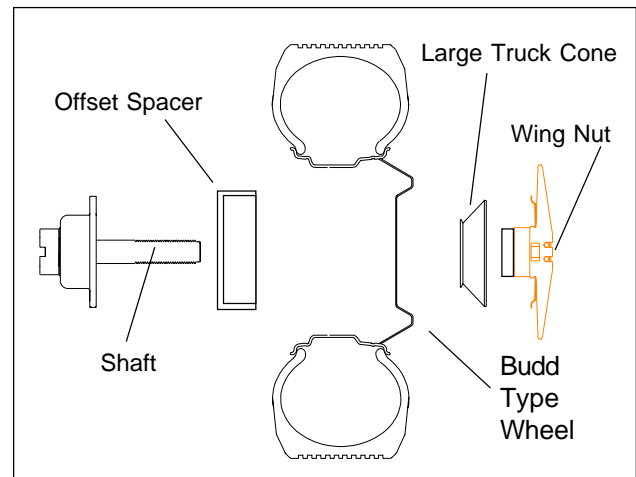


Figure 16 -- Mounting offset wheels

Pinned Wheels

Ford E/F 350 Series and Dodge 350 Series 1-Ton trucks (also some Specialty vehicles, such as motor homes, ambulances, emergency rescue, tow trucks, etc.) may have the safety pinned dual wheels installed on the rear axles.

The Offset Spacer was designed to provide clearance for the pin on these wheels, with a tapered inner lip to allow the clearance needed for the outside mounted cone to fit inside of it without binding. Mount these wheels as in *Figure 8*.

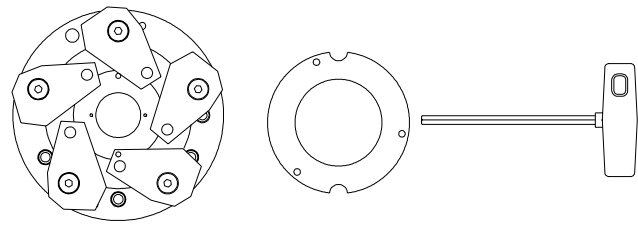
Patch Balance

Some larger light truck tires may require an excessive amount of weight to balance. For this reason a patch balance may be recommended. Patch balancing is simply affixing a stick-on weight designed for the purpose inside the tire body. Wheel/tire weight should be optimized first using a Match Balance procedure. Second perform the actual patch balance procedure. Finally, perform a standard two plane balance. By performing the above procedure the amount of exterior weight placed will be minimum and maximize the tire performance.

Lug Mounting - Options

Some wheels may not always locate off the center hole. These wheels use the lugs to center the wheel on the hub. While this is a very accurate method of mounting to a vehicle, it means that if the wheel's center hole is not centered about the lug pattern, then standard cone mounting on a balancer may not give satisfactory balancing results. To accurately balance a lug-centric wheel, an optional lug adapter is necessary. Follow these instructions for proper setup and use of the optional John Bean Unilug Adapter.

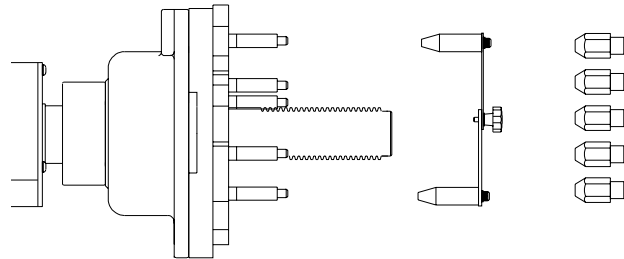
1. Count the number of lugs to be used to mount wheel to the vehicle. This number could be 3, 4, 5, 6, 8, or 10 lugs. For 6, 8, 10 lug wheels, the adapter will use every other hole.
2. Select proper hole set ring.
3. Install the set ring and the proper number of arm swivels using supplied shoulder bolts. Do not tighten at this point.
4. Using the hole setting gauge, measure bolt hole circle of the rim.
5. Place the gauge tip onto the swivel arm studs and adjust to the proper bolt circle. Tighten shoulder bolts using the T-handle hex wrench.
6. Mount the adapter plate onto the balancer shaft. Then bolt to the face of the backplate using supplied studs.
7. Mount wheel onto adapter studs and secure with the supplies cone nuts.
8. Enter proper parameters and balance as using appropriate modes.



*Unilug Adapter
Front view*

Hole Set Ring

T-Handle



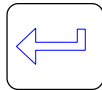
Adapter plate shown mounted to backing collar with stub shaft intact.

Shaft Calibration of the Balancer

The balancer should be calibrated with scheduled frequency. It is recommended that the balancer be calibrated weekly, if not more often. The balancer should also be calibrated whenever service work is performed or whenever the unit has been relocated.

Shaft Calibration Procedure

1. Press **F1** and “Enter”



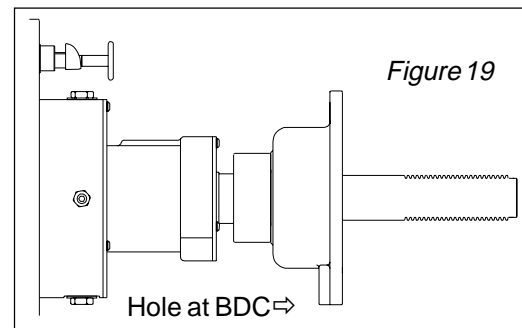
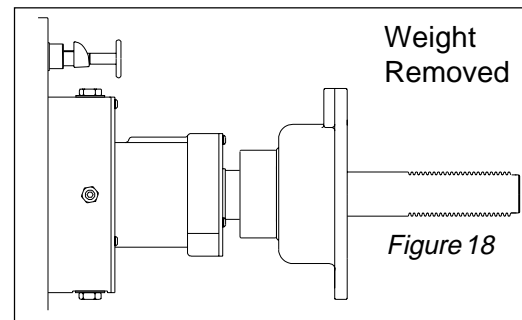
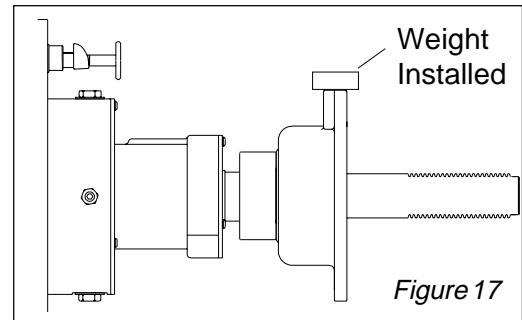
2. The display will read "**CAL Slu**", “ON”. Attach the round calibration weight into the threaded hole from the **outer** edge. See *Figure 17*

3. Press “Enter” *again* or lower the Wheel Guard to initiate the balancer spin cycle. The shaft will turn for about 15 seconds while reading "**CAL SPN**".

4. The display will then change to "**CAL Slu**", “OFF” and brake to a stop. Remove calibration weight and Press “Enter” or lower the wheel guard to perform second step of calibration. See *Figure 18*

5. The shaft will turn for about 15 seconds while reading "**CAL SPN**", then brake to a stop. The display will read "**CAL PAS**" to indicate a good calibration

NOTE: If this is the very first time the balancer has been calibrated, or, if the main computer has just been replaced, the display will read “**Slu BDC**”. Rotate the shaft 360 degrees, then continue to rotate until the slug (or slug mounting hole) is at bottom dead center. See *Figure 19*. Press “Enter”.



Calibration of the Wheel Parameter Entry Gauge (F70)

1. Press "**F70**" - and *Enter*, the display will read: "**CAL SAP**", Press *Enter*; "**CAL DIS**" Press *Enter*; "**DIS 0**" Press *Enter*.

2. The display will then indicate the distance measurement values in the right window. Example: "**0.23**", Press *Enter*.

3. The display will read "**DIS I**", Press *Enter* and then display live distance values in the right window.

4. Attach the round calibration weight into the threaded hole from the **outer** edge. Extend the SAPE arm until the tip touches the calibration weight. See *Figure 20*. Press the *Enter* key. Display will read "**DIS Gd**" Press *Enter*.

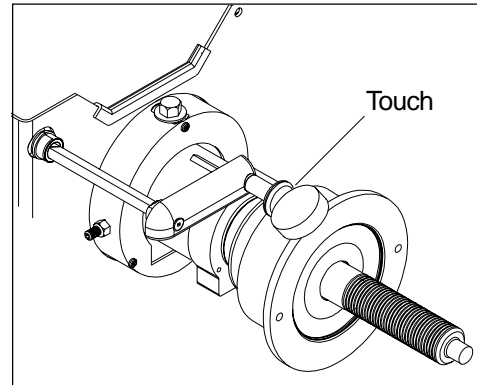


Figure 20

5. The display will read: "**CAL DIA**", Press *Enter*, the display changes to "**Ang 0**" Press *Enter*.

6. Extend the SAPE arm several inches and position the SAPE arm to point toward the center of the shaft by using a tight rubber band. See *Figure 21*.

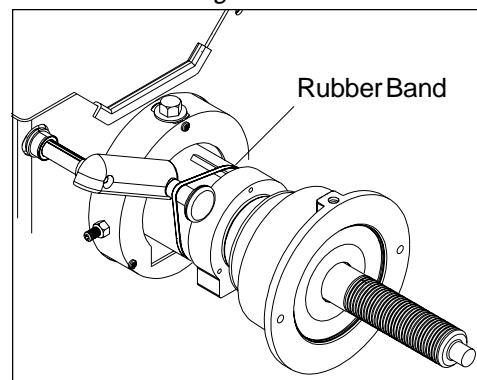


Figure 21

7. The display will read the current diameter measurement values in right window. Example: "**2.52**". Press *Enter*.

8. The display will read "**Ang I**", Press *Enter*. The display will read the current values in right window.

9. Remove the Rubber Bands and the Calibration Weight.

10. Mount a known diameter steel wheel (i.e.14" or 15") onto the shaft.

11. Touch the tip of SAPE arm to the upper inside edge of the rim and then press *Enter*. See *Figure 22*. The display will read live values, Press *Enter*. The display will then read "**Ang 2**", Press *Enter*.

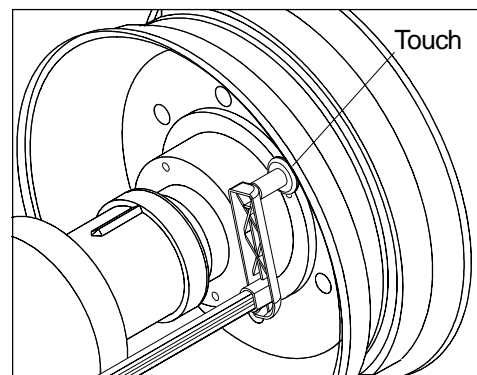


Figure 22

12. Rotate touch and hold the tip of SAPE arm to the lower inside edge of the rim and then press *Enter*. See *Figure 23*. The display will read live values, Press *Enter*.

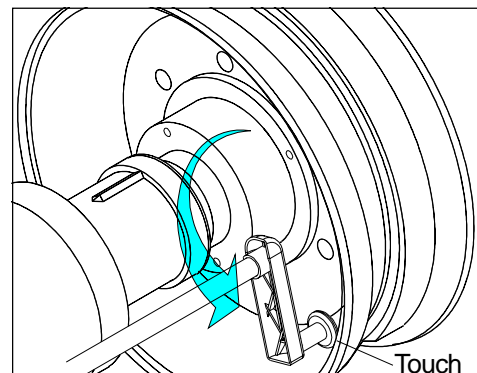



Figure 23

13. The display will read: "**Ent DIA**", press *Enter*

14. Enter the wheel diameter, 14 or 15, then press *Enter*.

15. If the display reads "**GOOD**" and sounds a long beep, the SAPE calibration is good. If the display reads "**ERR OR**" the calibration software has detected an error and should be calibrated again (return to Step 1). Power must be cycled to repeat F70 if the calibration was detected as acceptable.

Function or "F"-Codes

The Model 8.5 balancer features programmable "F" codes for balancer control, function customizing and troubleshooting. Below is a listing of these codes. To select a code function press "F" followed by the desired number. Complete by pressing **ENTER**. 

Display Selection

- F2** - Select round-off mode
(.25 ounces/.5 grams)
- F3** - Select non-roundoff mode
(.05 ounces/1 gram)
- F4** - Select English display (ounces)
- F5** - Select Metric display (grams)

Operating Mode Switching

- F6** - Autospin toggle on and off
- F7** - Metric/English diameter toggle
- F9** - Switches Electronic Weight Location - on/off
- F18** - Switches the ALU-S modes on and off
- F19** - Activates the Spoke Mode Program
- F90** - Involves the Match Balance Process

Calibration

- F0** - Recalculation without re-spin. Use this function to compare weights used in various alloy modes.
- F1** - Weight measurement calibration, dual plane. This is the standard calibration process used to compensate for mechanical and electric variables. See page 18 for shaft calibration instructions.
- F12** - Manual Distance gauge calibration.
- F54** - Set shaft encoder position offset
- F70** - SAPE calibration process.
See page 19 for SAPE calibration detail.

Configuration

- F15** - Set zero and five gram threshold for rounded ounces and grams
- F16** - Resets default threshold for rounded ozs/grams

Panel testing

- F30** - Display test - Used for troubleshooting
- F31** - Keyboard test - Used for troubleshooting

Analog testing

- F42** - Left transducer voltage - Troubleshooting only
- F43** - Right transducer voltage - Troubleshooting only
- F40** - Parameter gauge voltage reference - Used for initial setup and service only.

Digital testing - Machine diagnostic codes

- F50** - Displays the shaft encoder position
- F51** - Encoder count test - should read 399
- F53** - Displays the shaft speed in rpm - about 200

Mechanical testing

- F10** - Noise test (continuous run)
- F20** - Display zero shaft unbalance.

Special Functions

- F60** - Displays software program revision number
- F80-83** - Auxiliary stored parameters

Maintenance and Care

The Model 8.5 Balancers require a minimum amount of care. However, minor upkeep will prolong the life of any piece of equipment.

Always maintain the work area in a clean and clear manner. Clutter has the tendency to attract undue dirt and dust. A clean and clear work area is safer.

Periodically clean the display surfaces by wiping with a soft rag. Rag should be sprayed with an evaporating cleaner. Never use a petroleum based cleaner or one which leaves an oily residue. Do not use brake cleaner!

Maintain the weight tray and cone storage area in a clean clear manner. Occasionally clear out old and discarded weights and accumulated dirt/debris. Dispose of lead weights in a proper manner. Do not spray water at and avoid splashing at this machine.

Never allow unauthorized personnel to operate the balancer.

Do not use Non-John Bean recommended accessories and adapters. Tolerances and specifications may not be to designed standards.

Wipe the shaft threads and faceplate occasionally with a bristle brush followed by an oily rag.

Calibrate the balancer in a consistent periodic manner. See page 18-19 for calibration instructions.

Troubleshooting

Should you experience some difficulty, follow these procedures.

Operation Problems:

1. Assure proper voltage is supplied to the machine. Do not use extension cords rated for less current than unit demands. See label on unit back panel for draw. Normally cord should be rated for at least 30 amps continuous.
2. Inspect on/off switch - does it have the normal tactile feel?
3. Perform a complete calibration. A calibration will often cure the problem or give a specific error message.

Customer Complaint Problems:

1. Inspect all surfaces of the shaft and shaft adapters. Note any undue wear, deformations, rust or fit.
2. Wheels which have not been mounted according to the rim design may not balance correctly. Try another mounting method, or a different cone and rebalance. Make sure the wing nut is tight. Check for rim slippage on the shaft by marking wheel and shaft.
3. Check for Wheel warpage or runout. Excessive rim or tire runout may require replacement.
4. Inspect the vehicle for worn or loose suspension components which may lend to a rough or undesirable ride.
5. A bad vehicle alignment may create poor ride performance.
6. Make sure your weight placement is correct.
7. Wheel weights should be clean and free of nicks.
8. Use the proper type wheel weight clips. Use of improper weights with a rim design may be hazardous to personal health as well as property.
9. The balancer may need to be mounted to a secure concrete floor surface. There should be no adjacent vibrations which could be transmitted back to the machine. Look for large compressors, hammers, etc.

If difficulty still exists - Before calling for service

Have your balancer model number, serial number, name of business and your telephone number handy.

Many times a problem can be corrected or identified over the telephone. If service is required, an Equi-Serve Technician will be computer dispatched to your business at your request.

For USA Nationwide Equi-Serve Service call:

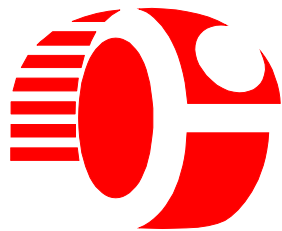
1-800-362-8326
(1-800-362-8326)
or (501) 450-1500

See the back of this manual for Worldwide John Bean Service and Support locations.

(Blank Page)

Index

	A		P
Accuracy	6	Panel Functions	8
Adjustment of the Display	7	Patch Balance	17
Alloy Wheels	12	Pinned Wheels	17
Anchoring	7	Placing Weight	11
		Pockets	6
	C	Power Requirements	6
		Print History	2
Calibration	20		R
Caliper	6	Rim Diameter	6
Calling for Service	22	Rim Distance & Diameter	10
Care	22	Rim Width	6
Check List	9	Rim Width Entry	10
Complaint Problems	22		S
Configuration	21	Safety Instructions	4
Cycle Time	6	Shaft Calibration	19
		Shaft Rotation Speed	6
	D	Shaft Size	6
		Site Preparation	7
Dismounting the Wheel	11	Specifications	6
		Spinning the Wheel	11
Features	6	Standard Equipment	6
Footprint	6	Stored Parameters	12
Function or "F"-Codes	21		T
		Table of Content	5
	I	Troubleshooting	22
		Truck Wheels	17
Installation	7		U
		Unpacking	7
Maintenance	22		V
Match Balance	15	Volume	6
Max Tire Diameter	6		W
Max Tire Weight	6	Weight	6
Max Tire Width	6	Wheel Guard	7
Mode Selection	10	Wheel Mounting	9
Motor Rating	6		
	O		
Operation	9		
Options	6		



John
BEAN™
Company

USA

John Bean Company
309 Exchange Avenue
Conway, Arkansas 72032
Tel.: (800) 362-8326 or (501) 450-1500
Fax: (501) 450-1585

IRELAND

Formguide Services Ltd.
T/a John Bean Company
Sitecast Industrial Estate
Little Island, Cork
Tel: (353) 21-354477
Fax: (353) 21-354488

GERMANY

John Bean Auto Service Gerate
Division to Sun Electric Deutschland GmbH
Gewerbepark Sinn
D-35764 Sinn Herborner Str. 7-9
Tel: (49) 2772-9404-0
Fax: (49) 2772-94042-23

FRANCE

John Bean Company
Z.I. Du Haut Galy - Galy 8
93623 Aulnay S/S Bois
Tel: (33) 1-4865-3828
Fax: (33) 1-4865-7331

CANADA

John Bean Company
6500 Millcreek Drive
Mississauga, Ontario
Canada L5N 2W6
Tel: (905) 814-0114
Fax: (905) 814-0110

LATIN AMERICA

Rua Apinages
1268 cj. 605B
Perdizes-Sao Paulo-S.P.
Cep: 05017-0000
Brazil
Tel: (55) 11-871-0713
Fax: (55) 11-871-0713

Notice: The information contained in this document is subject to change without notice. **John Bean Company** makes no warranty with regard to this material. **John Bean Company** shall not be liable for errors contained herein or for incidental consequential damages in connection with furnishings, performance, or use of this material.

This document contains proprietary information which is protected by copyright and patents. All rights are reserved. No part of this document may be photocopied, reproduced, or translated without prior written consent of **John Bean Company**.



is a registered trademark of the John Bean Company and Snap-on Incorporated