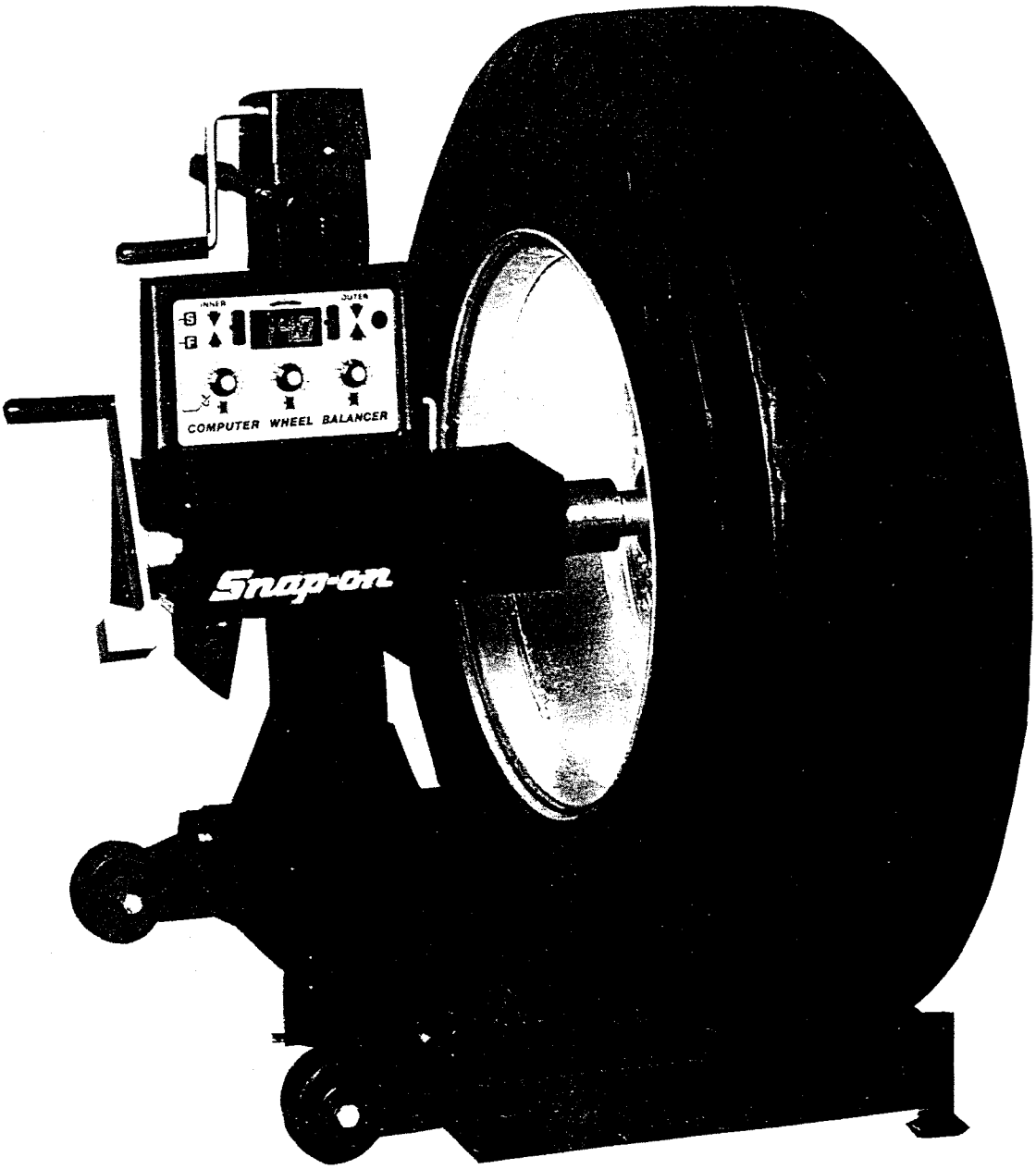
INSTRUCTIONS



Snap-on® WB400
Computerized Truck and Auto Wheel Balancer

Table of Contents

Introduction

The wheel balancer you have just purchased is rugged and extremely simple to operate. It is built with high quality materials and workmanship standards. Taking a few moments to review this manual will help you insure many years of profitable and dependable service.

Specifications

- Dynamic (twin plane) and static balance.
- Fast single spin cycle—10 seconds to 20 seconds maximum depending upon tire size and amount of imbalance.
- Light weight—only 140 lbs (64kg).
- Portable—may be easily moved to vehicle if desired.
- Operation from 100/120/220/240, 50/60 Hz volt current or by built-in rechargeable battery for field and portable operation. Optional cable to connect to any 12 volt battery.
- Built-in jack to raise and lower wheel allowing one man operation when mounting heavy truck wheels.
- Ounce-gram conversion by activating switch.
- Fine balance mode—allows balancer to be used for passenger car or truck wheels. Accuracy to ¼ oz. (5 grams), indicating weight in ¼ oz. steps to 10.5 ounces or in 5 gram steps to 300 grams.
- Normal dynamic balance mode and static balance mode—Accuracy for truck wheels to 2 oz. (50 grams), indicating weight in 2 oz. steps to 42 oz., or in 50 gram steps to 999 grams.
- Automatic Calibration.
- Automatic power-down circuit to preserve battery when balancer is not in use for 5 minutes. Automatic power-on activated by rotation of spindle. Battery charging accomplished while unit is connected to electrical power. Voltage converter supplied will convert line voltage to 8.5 volts AC. (UL and CSA approval for 120 volt converter).
- Rim width range, 4½ to 15 inches (114–381mm).
- Rim Diameter range, 13 to 26 inches (330–660mm).
- Maximum Tire diameter, 50½ inches (1283mm).
- Maximum Total Tire and Rim Weight, 500 lbs (227kg).
- Offset gauge range, 2 to 11 inches (76–280mm).

Installation

The balancer may be delivered on a single pallet.

A. Unpack base, measuring head, and all accessories.

B. Check list of contents.

Qty	Item
1	Measuring head, including four hex screws (5/16–18 UNC × 5/8") and washers
1	*Base
1	Stub shaft
1	Bolt 3/8"–24 UNF × 6"
1	Power converter
1	Light truck cone (3.25—5.50 in./82.5—140mm)
1	Medium truck cone (4.88–5.88 in./124–149mm)
1	Large truck cone (5.63–6.63 in./143–168.4mm)
1	Pair of calipers
1	Spacer ring with mounting studs and two knurled
1	Hub nut assembly
1	Spindle nut
1	Owner's manual

C. **Remove screws and washers from measuring head and align measuring head with base as shown. Note that two dowel pins on bottom of measuring head will pre-align head to base.

D. **Re-install washers and screws to firmly attach measuring head to base. Recommended torque: 100–120 in-lbs (11–13 Newton-Meters).

E. Place balancer on firm and solid floor.

Note: Since the mounting of large truck wheels may require that the balancer be moved to the wheel to be balanced, it is not intended that the unit be bolted to the floor

A light coating of grease must be maintained on the four sides of the upright portion of the lower base weldment.

F. Battery is disconnected at the factory at the time of shipment. To reconnect, remove battery cover, connect battery, and reinstall cover. (See Power Source section, page 4, for battery connection.)

G. Plug in voltage converter to line voltage power outlet.

Note: Verify correct line voltage as shown on converter housing.

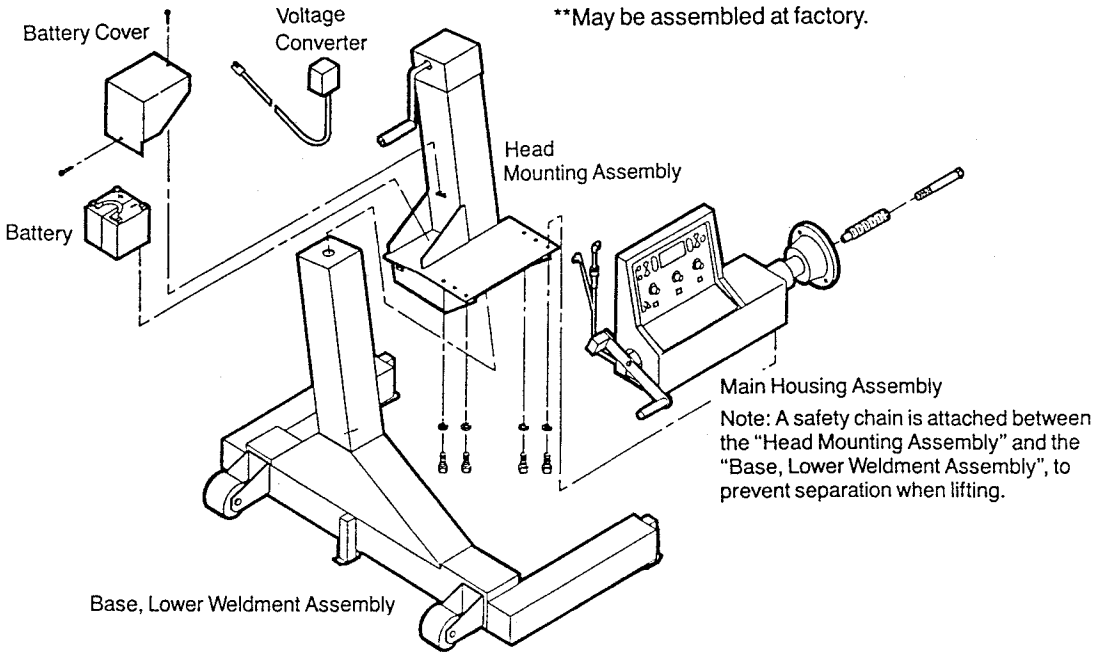
H. Connect cord from voltage converter to connector on back of measuring head; position lights will illuminate.

I. **Install stub shaft as shown with 3/8"—24 UNF x 6" bolt and tighten securely.

The balancer is now ready for use!

*Base may be delivered disassembled in two sections. Assembly is accomplished by sliding upper weldment section over lower weldment section, as shown in drawing below. For transportation, both base sections may be easily separated and reassembled.

**May be assembled at factory.



Power Sources

The balancer may be powered in three different ways.

1. Power Converter/Charger

The normal power method is to use the power converter supplied with the equipment. This converter furnishes 8.5 VAC, with sufficient power to operate the equipment and charge the battery. There is no switch in the AC power circuit.

2. Battery

The balancer is equipped with an 8 volt, 8.5 Ampere-Hour lead-acid, maintenance free, gel-cell battery (2 each Technacell 4 volt, 8.5 amp-hour, Model EP485 or equivalent) to allow operation where normal power is not available. The normal power converter should be used to keep the battery charged whenever the balancer is not in operation. There is no need to unplug the converter since the battery cannot be overcharged.

In the case where the battery is allowed to become fully discharged, the balancer will still operate normally from the power converter or external 12-volt battery.

If the balancer is not used for 5 minutes, the computer puts the equipment into a standby mode. This reduces the power consumption to less than one watt except for the power required to charge the battery. If the balancer is operating from the battery while in the standby mode, the battery will continue to discharge, but at a very reduced rate.

Battery life can be expected to be approximately 5 years. Life can be extended by maintaining a full charge and avoiding excessive vibration and temperature variations.

If the battery is replaced, care must be taken to reconnect with the correct polarity. If the polarity is reversed, the 3 Amp fuse (type 3AG/AGC or equivalent) located in the battery compartment will blow. Should it be necessary to replace the fuse, do *not* use slow-blow type. (Black lead to (−) terminal; red lead with fuse to (+) terminal.)

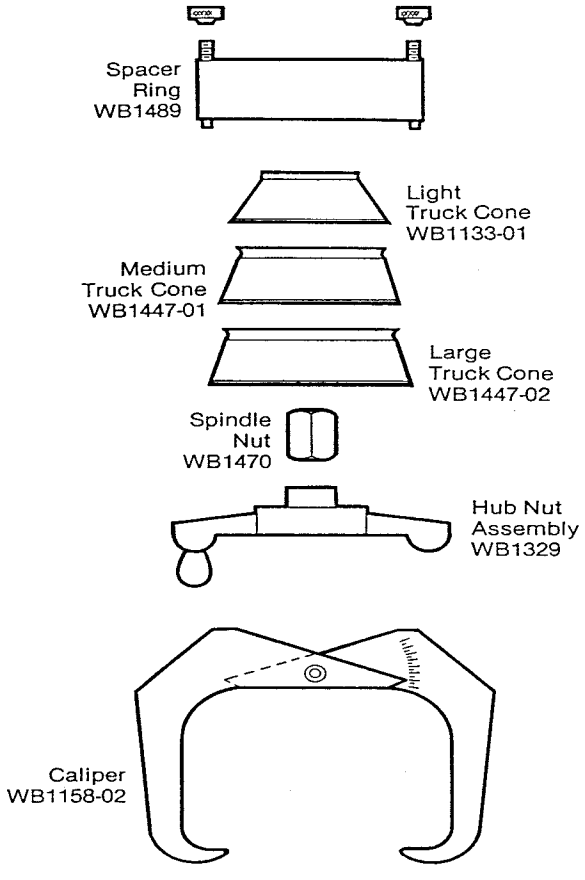
3. 12V Battery Operation

The balancer may be powered by any 12V battery. Connection is made to the same input connector as the normal power converter. In this case, either polarity may be used since the computer also may be powered by a + 12 volt or − 12 volt DC source.

Equipment Accessories

Standard

Verify that all standard equipment is included (see figure). Shortages must be reported immediately to your sales representative.



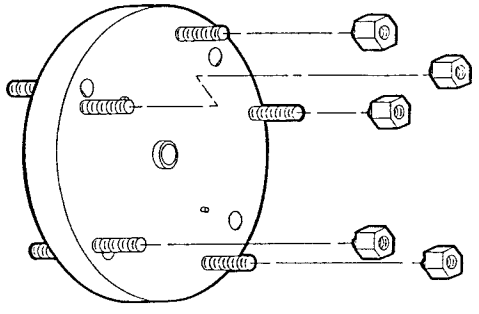
Optional

Truck Wheel Mounting Accessories

Bolt Plate Adapters*

1. Bolt plate for 10-bolt, 11¼ inch (285mm) bolt circle and 8-bolt, 275mm bolt circle. (P/N WB1465-01)
2. Bolt plate for 10-bolt, 8¾ inch (222.25mm) bolt circle and 6-bolt, 8¾ inch (222.25mm) bolt circle. (P/N WB1465-03)
3. Bolt plate for 10-bolt, 335mm (13³⁄₁₆ inch) bolt circle. (P/N WB1465-02)
4. Bolt plate for 8-bolt 285mm (11¼ inch) bolt circle. (P/N WB1465-04)

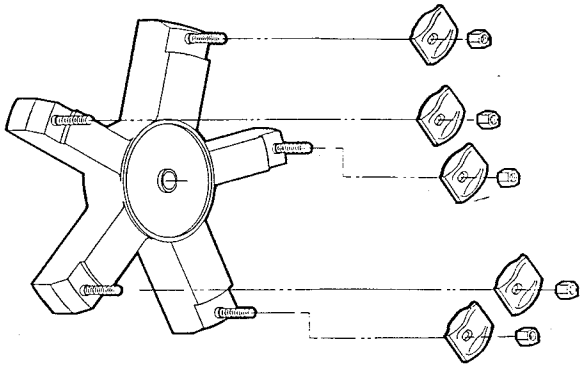
*Set of 5 wheel nuts included (WB1417).



Typical Bolt Plate Adapter

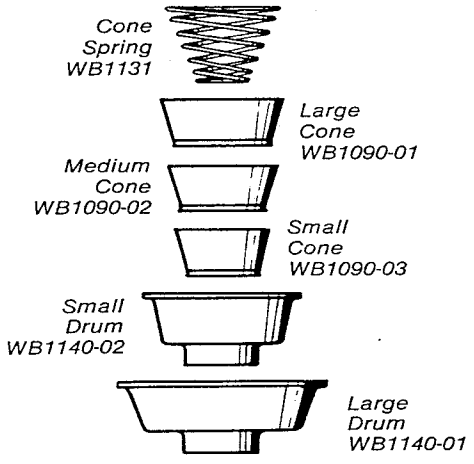
Demountable Rim Wheel Adapters (Dayton, Spider, Artillery, etc.)

1. 20/22½ inch rim diameter. (P/N WB1496-02)
2. 22/24½ inch rim diameter. (P/N WB1496-01)



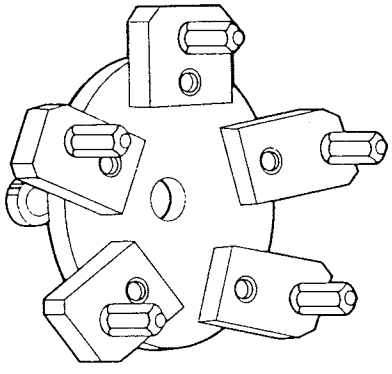
Automobile Wheel Mounting Accessories

Cone set for automobiles.
(P/N WB1497)



Automobile Universal Wheel Adapter

(P/N WBA2)

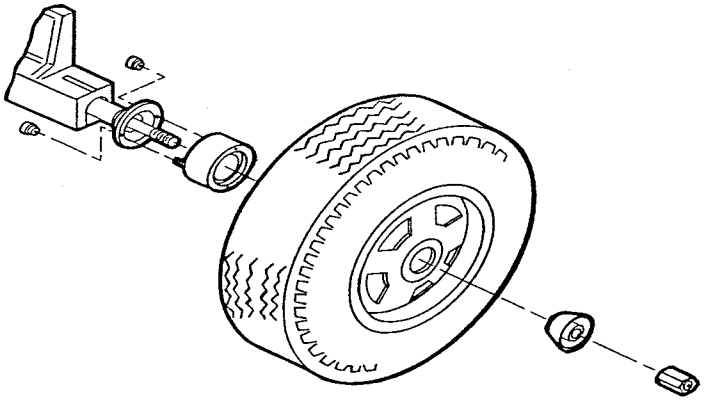


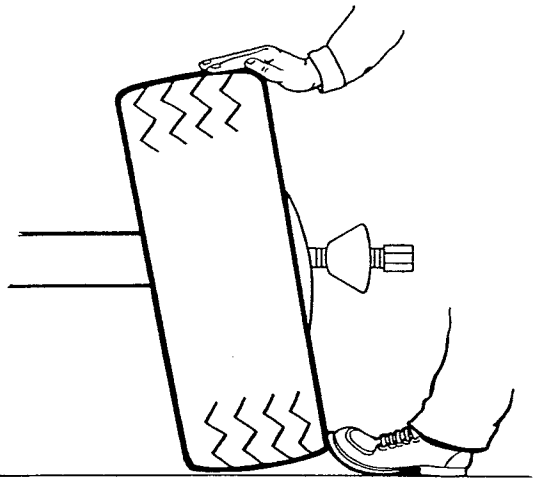
Universal wheel (lug) adapter fits 3, 4, 5, 6, 8, and 10 hole patterns. This adapter is used on wheels with untrue center holes and wheels with closed centers. Also useful for any application where automotive mounting cones cannot be used. Extends usefulness of Computer Wheel Balancer.

Italics refer to automobile wheel applications only.

Wheel Mounting *

1. Cone Mounting (Truck)





Hub piloted wheels must be cone mounted. Hub piloted wheels may be identified by the lack of stud hole countersinks.

Install spacer ring as shown on the back flange of the balancer using the knurled thumb nuts provided. Spacer ring is required for large and medium truck cones and is optional for use with light truck cone.

Note: The accuracy of balance achieved is directly related to the accuracy with which the wheel is centered on the cone.

Choose cone that fits best when placed into wheel center hole. With the tire on the ground, slide balancer so that spindle extends through wheel center hole. Mount cone on protruding spindle and slide into wheel center hole as shown. Thread spindle nut or hub nut, whichever is appropriate, onto spindle and hand tighten to center wheel on cone.

Apply pressure with foot against wheel to keep wheel upright while tightening. Raise or lower spindle with lift crank as needed for optimum alignment. Raise the wheel slightly so that it clears the ground. Push the bottom of tire toward the balancer and tighten the spindle nut with a 1½ in. (38mm) socket wrench to approximately 40 ft-lbs (50 Newton-Meters).

*CAUTION:

1. **Verify safety chain has adequate slack to permit raising spindle to required height.**
2. **Do not mount or demount any of the adaptors with wheel bolted to the adaptor.**
3. **Do not use air impact wrench on balancer or adaptors.**

2. Bolt Plate Adapters (Truck) *

Stud piloted wheels must be bolt plate mounted. Stud piloted wheels can be identified as those with stud hole countersinks.

Refer to drawing of bolt plate on page 5, and spacer ring on pages 4 and 6. Select proper lug pattern to face outward to engage wheel.

With spacer ring installed, slide adapter onto spindle shaft and place flush against spacer ring making certain that locating dowel pins on plate engage their respective holes. Secure adapter in place by tightening spindle nut to approximately 40 ft-lbs (50 Newton-Meters).

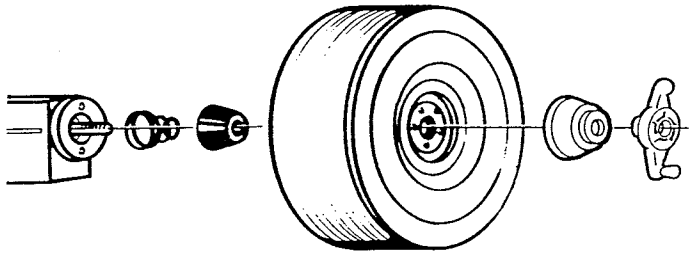
Note: With spacer ring installed, adapter will be located over threaded portion of axle stub shaft.

With tire on the ground, slide balancer so that spindle extends through wheel center hole, align bolt plate so that studs are centered in wheel holes. This may require a slight height adjustment with the lift crank. Hand tighten wheel nuts until snug. Wrench tighten nuts evenly by crisscrossing tightening sequence. Tighten nuts to approximately 40 ft-lbs (50 Newton-Meters).

3. Demountable Rim Wheel Adapters *

Instructions for use will be supplied separately with each adapter.

4. Automobile Wheel Cones



Choose cone that fits best when placed through wheel center hole from rear and slide cone on shaft against spring as shown. ***Do not use spacer ring when mounting automobile wheels.***

Choose the pressure drum that contacts wheel on a flat surface to avoid centering wheel with the pressure drum. Tighten by holding hub nut and rotating wheel. Tighten wheel firmly against face plate. Threads must engage three turns or more. With extended center wheels, the pressure drum is not used.

With few exceptions, all known original equipment wheels and most after market wheels can be mounted using some combination of the standard adapters.

*5. Automobile Universal Wheel Adapter **

Attach directly to balancer flange using the knurled thumb nuts provided. (See Equipment Accessories section.) Instructions for use are supplied with adapter.

Italics refer to automobile wheel applications only.

Operation

1. Select Balance Mode

Change function by rotating Rim Diameter Knob counterclockwise past ⅝ and back to Rim Diameter Setting.

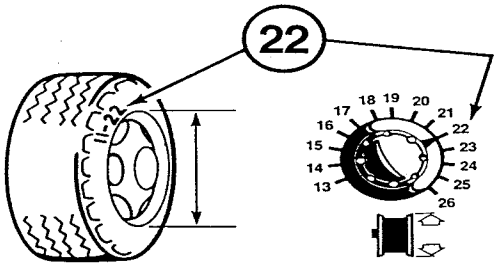
S F	DYNAMIC	Normal for most truck wheels.
S F	STATIC	For demountable and fixed axle truck wheels.
S F	FINE	For most passenger car and light truck wheels.

Use Normal (dynamic) balance mode for truck wheels, except demountable rim wheels, and Fine (dynamic) balance mode for automobile wheels. Static balance mode is to be used for demountable rim wheels and wheels mounted on fixed axles. Use Static balance also in cases where balance requires an excessive amount of weight to achieve a dynamic balance, then, if possible, mount wheel on vehicle on a fixed axle.

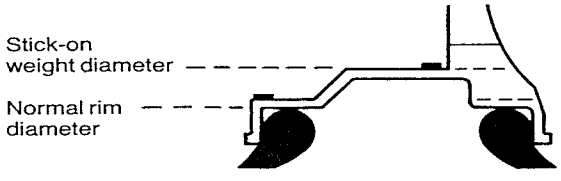
NOTE: Do not use fine mode for out of balance greater than 10.5 ounces (300 grams).

See also Special Modes, page 11.

2. Set Rim Diameter



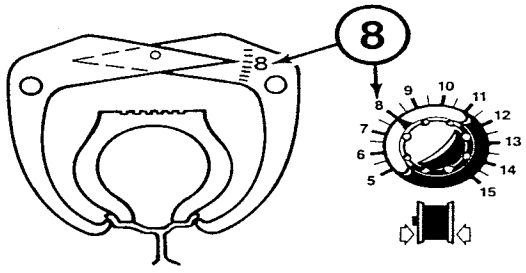
Note rim diameter on tire sidewall. Set diameter knob to diameter noted.



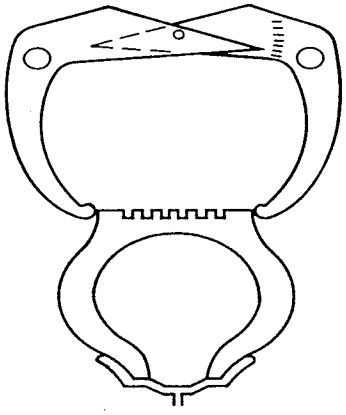
When using stick-on weights, set knob 1½ less than diameter noted on tire sidewall. The "thicker" the rim, the lower the rim diameter setting must be.

Note: Always make certain that the stick-on weights will clear the vehicle's disc brake calipers.

3. Set Rim Width

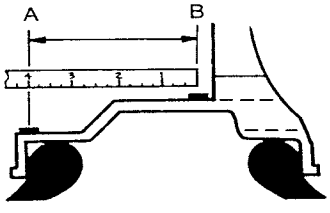


Measure wheel with caliper. Set width knob to width measured. On tires too wide to accept calipers, measure over tread width as shown.



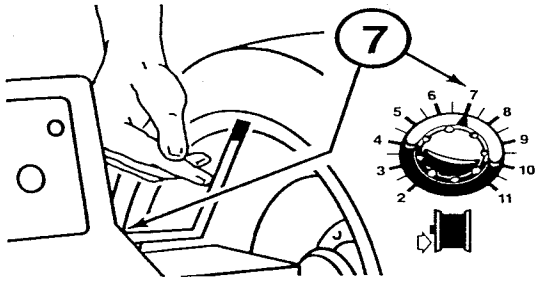
Dynamic Mag Wheel Mode:

For hidden weights, measure between A and B in inches and set this width. Attach weight at points A & B.



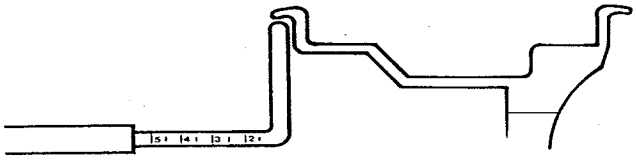
This method is used when a dynamic 2-plane balance is required.

4. Set Rim Distance

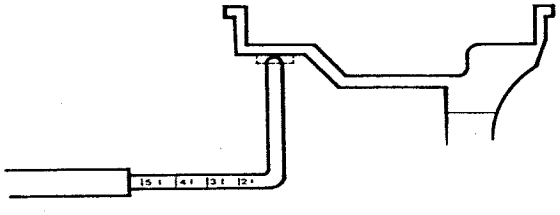


Pull rim distance offset gauge out until tip of gauge arm touches rim at exact area where the inner weight is to be placed. Read value accurately where scale just disappears into the tubular housing. Set knob on control panel to value measured.

For "Clip-On" Weights:

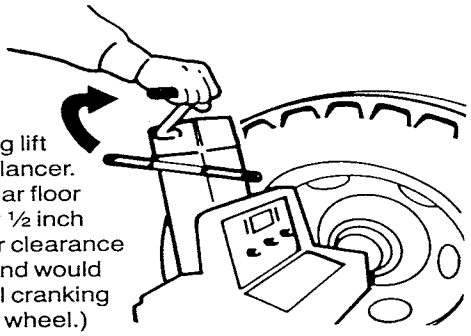


For "Stick-On" Weights:



Pull gauge arm out to center area where the "stick-on" weight is to be placed.

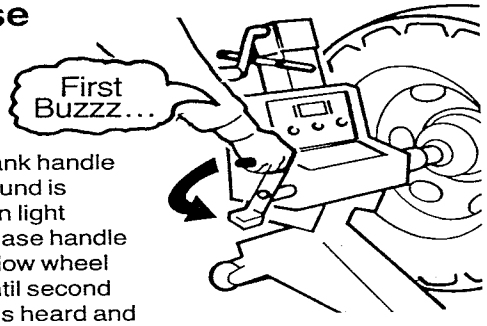
5. Raise Wheel



Raise wheel using lift crank at top of balancer. Wheel should clear floor by approximately ½ inch (15mm). (Greater clearance is unnecessary and would require additional cranking to lower and stop wheel.)

NOTE: Verify safety chain has adequate slack.

6. Turn Spindle Crank Handle... Release



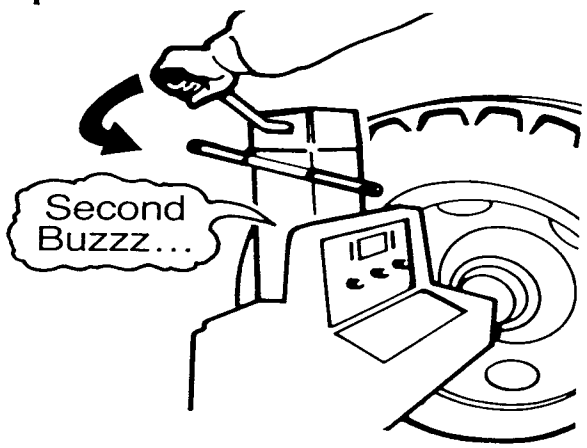
Turn spindle crank handle until buzzing sound is heard and green light comes on. Release handle immediately. Allow wheel to spin freely until second buzzing sound is heard and green light goes off. Balancer has now measured and stored the required balancing values. Normal balance speed is 70 rpm; if spun faster than 84 rpm, buzzer will sound continuously until wheel slows to 84 rpm. Balancer will function normally even though wheel is spun too fast, but balance cycle time will increase. Actual spin speed is not critical and any speed from 70 to 84 rpm will allow normal operation.

If wheel is turned in the wrong direction using hub nut (counter clock-wise), see note below, buzzer will sound and "EEE" will appear in display window. Turning wheel in proper direction will remove "EEE"s and allow balancer to function normally. Whenever balancer displays "EEE", spinning the wheel again will correct the problem.

Note: Do not lean on machine during measuring cycle; wrong readings may result.

Crank has a one-way clutch and is free-wheeling for safety. It is, therefore, impossible to turn wheel in the wrong direction with the crank.

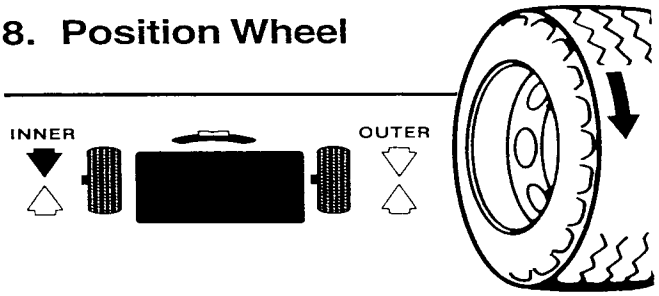
7. Stop Wheel



To brake wheel to a stop after balance cycle is completed, turn crank used to raise wheel under step 5 in opposite direction until wheel touches floor. Contact with floor stops wheel.

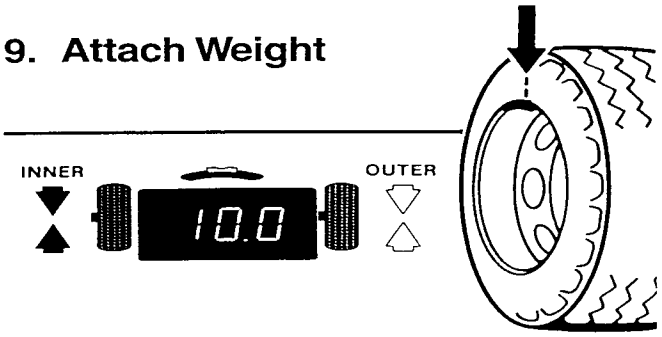
Note: If the wheel is stopped before the balance cycle is complete, "EEE" will appear in the display window. Simply respinning the wheel will remove the "EEE"s and the balancer will function normally. In some cases, when a very light wheel is being balanced (i.e., a 13 inch automobile wheel), "EEE" will also appear. Respinning the wheel at a higher speed will prevent this occurrence and allow such wheels to be balanced.

8. Position Wheel



After stopping wheel, raise again slightly so wheel may be easily rotated by hand. Starting with either inner or outer side of wheel (inner shown), rotate wheel in direction of lit arrow until both arrows are lit.

9. Attach Weight



When both arrows are lit indicating correct position, the weight will be displayed. Securely apply indicated weight at top dead center (inner shown). Repeat for other side.

10. Check Spin

Repeat spin cycle. Zero weight readings should be displayed. Occasionally it will be necessary to add small additional weights.

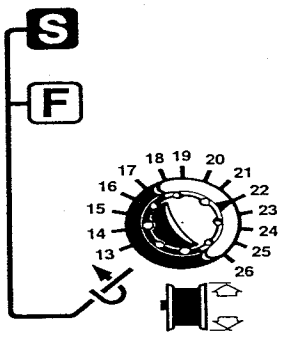
Note: If desired, truck wheels may also be balanced in the "Fine" balance mode to ¼ ounce (5 gram) accuracy.

If a repeatable balance cannot be achieved, there is a possibility of foreign material moving around inside the tire causing a different imbalance indication each time a balance cycle is attempted; this material must first be removed before wheel can be balanced.

Special Modes

Static Balancing Mode

(2 oz. steps to 42 oz. or 50 gram steps to 999 grams)



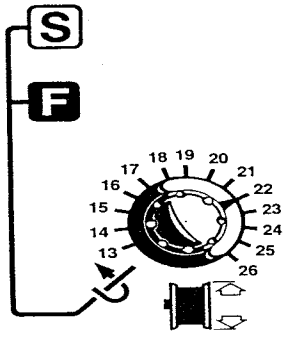
For static (single-plane) balance, rotate rim diameter knob counter-clockwise past No. 13 to line as shown and return to original diameter setting. "S-window" will light up to indicate that machine will now operate in static mode.

Rim width (Step 3) and Rim distance (Step 4) need not be set when in static mode.

Only the inner display of position and weight will show. The static weight may be placed on the inner, outer, both, or center of rim.

Fine Balancing Mode

(¼ oz. steps to 10.5 oz. in .2—.5—.7—1.0 sequence or 5 gram steps to 300 grams)



Rotate rim diameter knob past 13 again to switch from Static to Fine balance mode. Always return rim diameter knob to original position. "F-window" will light up to indicate that machine will now operate in the fine balance mode. Rotate knob once more to convert back to Normal mode.

This mode allows balancing of automobile wheels to the degree of accuracy required for almost all vehicles, and for fine balancing of truck wheels. In this mode, out of balance greater than 10.5 ounces (300 grams) will cause erroneous readings.

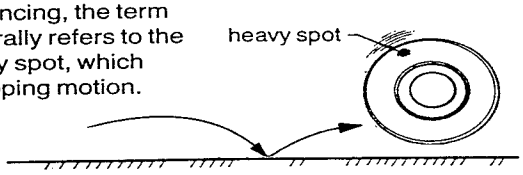
Italics refer to automobile wheel applications only.

Theory of Operation

The Computer Wheel Balancer is a two-plane balancer. It uses computer electronics to determine and display dynamic and static out-of-balance in a single spin.

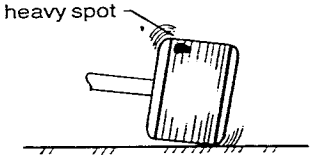
"static"

In wheel balancing, the term "static" generally refers to the off-axis heavy spot, which causes a hopping motion.



"dynamic"

The term "dynamic" generally refers to the off-center heavy spot, which causes a wobbling motion.



A tire and wheel may have only a static imbalance, or only a dynamic imbalance, but usually will have some combination of both.

The weights to correct the imbalance are attached to the wheel in two "planes". These two "planes" are generally the lip at the bead seat at the inner and outer sides of the wheel rim. The corrective weights can be attached at different planes; for example, when "hiding" the weights on automobile mag wheels. It is important to note that when "hiding" weights on the back side of a wheel, that there must still be two separated "planes" to achieve a dynamic balance. For most mag wheels, these "planes" should be at least three and a half inches (9cm) apart. The closer together the balance planes are, the more weight that will be required. To correct static balance, only one plane of weight is required.

On the Computer Wheel Balancer, setting the rim distance tells the computer the location of the inner balancing plane. Setting the rim width tells the location of the outer plane. Setting the rim diameter tells the computer the distance from the center of the wheel to where the weight will be attached. When the wheel is spun the computer calculates and displays the amount and position of the correction weights according to the settings the operator has made for the wheel.

Causes of Vibration

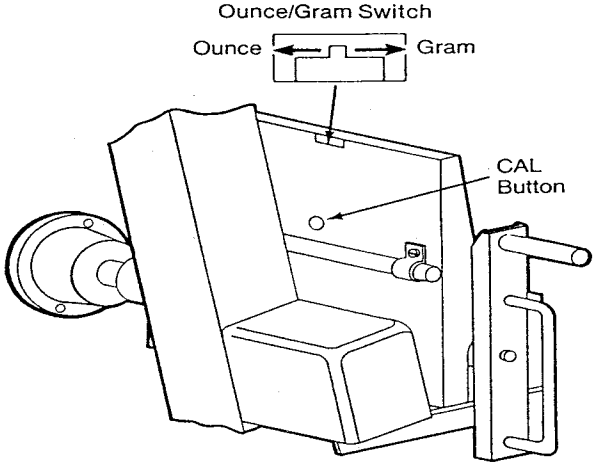
Wheel balancing is the quickest, most cost-effective method of solving vehicle vibration complaints. The greatest majority of vibration complaints will be solved by wheel balancing; however, there are other causes of vibration.

The most common are listed below:

- Tires not properly inflated to seat bead, changing balance soon after vehicle is driven.
- Excessively heavy, stiff section in tire.
- Excessive wheel run-out.
- Heavy out-of-balance trim rings or wheel covers.
- Poorly centered after market wheels.
- Loose wheel bearings.
- Drive train out of balance.
- Loose or broken motor mounts.
- Inaccurately mounted demountable wheel rims.

Ounce/Gram Switch

Use small screwdriver or similar object to reach conversion switch through access hole on back of measuring head. Move switch to desired position as shown in figure.



Operation Check Procedures

1. Make certain the balancer is resting evenly on all three feet and is located on flat concrete floor.
2. Operation check
   a. Plug the balancer in and rotate shaft ½ revolution; the position indicators should light. If not, check the building circuit breaker, the power plug and cable. If defective, correct the problem.
   b. Mount wheel on balancer. (Automotive or truck wheel, 14 inch rim or greater). Rotate wheel with crank to normal operation speed (70 rpm) with balancer in "normal" mode. Check operation, i.e., green measure indicator light comes on and buzzer sounds indicating beginning of balance cycle, sounding again when cycle ends with measure indicator light going out. After cycle completion, position lights should illuminate showing weight location and a weight indication should appear in display window. If this sequence does not occur, make second attempt and continue turning wheel until it has been verified that a rotational speed of 70 rpm or greater has been reached.
   c. Battery operation check
      1) Verify that battery is charged by disconnecting power line plug. Rotate wheel at 70 rpm. Balancer should repeat balance cycle as described in 2.b. above. If operational from power line and not from battery, allow battery to charge overnight and check again.

      2) Determine that battery power-down dircuit is functioning by waiting until all lights on panel go out. This should take approximately 5 minutes, exact time is not critical. Reactivate balancer by rotating spindle; automatic power-on circuit will detect motion on spindle and position lights will illuminate.

Maintenance

1. Clean mounting adapters, mounting surface, and spindle of balancer regularly. Grease and oil accumulate dirt (causing out-of-balance) and act as a grinding compound (resulting in premature wear.)
2. A light coating of grease must be maintained on the four sides of the upright portion of the lower base weldment.
3. Remove wheel weights and trash from under balancer and remove tires, tools or parts that may be leaning against balancer. Make sure the balancer rests only on the 2 foot pads and rear center load wheel.
4. Clean control panel with window cleaner.

Automatic Field Calibration Procedure

The balancer is calibrated at the factory before shipment and should not normally require recalibration before first use. Since factory calibration is performed under special test conditions and is extremely accurate, it is not recommended that field calibration be performed as herein described until it becomes clearly necessary.

Calibration is automatic in that the balancer computer is self-adjusting. If calibration becomes necessary, perform the following steps:

1. **FINE BALANCE WHEEL**
   Display shows zeros

- Mount any wheel on balancer, auto or truck, which meets the following specifications:
  Rim diameter: 14 inches or greater
  Rim width: 6 to 10 inches (152 to 254mm)
  Offset: 5 inches or greater
  Note: It is advisable to use a wheel similiar to those most commonly balanced.

  With balancer in "Fine" mode, fine balance the wheel to zero with control panel knobs set to the appropriate values for the wheel being used for calibration.
  Note: Accurate setting of knobs is required, or miscalibration will result.

2. **PRESS "CAL" BUTTON**
   Display shows flashing "ccc"

- With 3 zeros showing in the display window, depress CAL button at back of panel (see drawing on page 12). If properly done, display will show a flashing "ccc". If not, display will show "EEE" and reset to "Normal" mode; verify that wheel is within the correct size range and that above fine balance procedure has been done correctly.

3. **SELECT MODE**
   Fine mode for Auto wheels
   Normal mode for Truck wheels

- Set balancer to "Normal" or "Fine" mode (do not use "Static"), and carefully set wheel diameter control knob to true wheel diameter.

4. **ATTACH REQUIRED WEIGHT**

	Ounces	Grams
Fine mode	3	100
Normal mode	12	400

- Rotate wheel until both *outer* position arrows illuminate. Attach the required weight (see table at left) to wheel on outer rim at top dead center.
  Note: Since calibration will only be as good as the accuracy of this weight, it should be accurate.

5. **SPIN WHEEL**
   Each time flashing "ccc" appears (minimum of 4 spin cycles)

- While "ccc" display is flashing, spin wheel. The buzzer will then sound and the measure indication light will illuminate. Release crank and wait until buzzer sounds a second time. The flashing "ccc" will continue to reappear. Brake wheel and re-spin the wheel. Repeat this process each time "ccc" is displayed (a minimum of 4 spin cycles). In the event that the wrong wheel weight is attached, control knobs are set incorrectly or accidently changed, calibration process is aborted and "EEE" is displayed. In such case, verify all values and procedure and repeat. A malfunction exists if "EEE" continues to appear, however, balancer will still operate with original calibration values.

6. **CALIBRATION COMPLETE**
   Calibration weight displayed for *outer* and zeros displayed for *inner.*

- When attached weight value appears (for *outer* and zeros for *inner*, balancer is fully calibrated and ready for use.
  Note: if calibration procedure is abandoned before completion, original values are retained.

Repair and Replacement Procedure

The WB400 is completely field serviceable. Do not return the balancer for repairs. Replacement parts and service assistance are available from your sales representative. Internal repairs should be performed by your sales representative.

If erroneous digital readouts occur, always perform the Operation Check Procedures and, if necessary the Field Calibration Procedure. If the balancer continues to malfunction, contact your sales representative.

Cover

Remove knobs on control panel. Remove all screws around periphery of cover to back panel. Move cover forward slightly to clear potentiometer shafts and lift upward.

Install in reverse procedure. Make sure set screws on knobs line up with flat on shaft.

Printed Circuit Board

Unplug power to measuring head (line voltage and battery). Remove measuring head from base. Remove cover. Remove back panel assembly by removing four hex nuts on back (½" or 13mm hex tool). Pull back panel assembly horizontally out. Unplug cables to P.C. Board. Remove four slotted screws on P.C. Board side connecting P.C. Board via stand-offs to back panel. Remove four slotted screws on back of back panel assembly nearest to largest holes. Remove P.C. Board.

Installation: Loosely fit all screws then tighten. Plug power cables back into P.C. Board. Reinstall cover and knobs. Reinstall on base, connect to battery and AC power. Perform functional check.

Offset Gauge Assembly

Remove two clamps holding assembly to back panel.

Installation: Install clamps holding assembly loosely. Adjust position of tube end nearest to scale so that it extends past edge of back panel by 1⅛ inches (28.6mm).

Battery

Remove cover over battery, disconnect leads, and remove. When replacing, observe correct polarity. Refer to Power Sources Section, page 4, for further details.

Parts List

Item	Part No.	Description	Qty
1	WB1326-02	Back Panel Assembly, incl (22) and (23)	1
2	WB1327-05	Cover Assembly	1
3	ME3L19	Self Tapping Screw, 8-18 x ½"	7
4	WB5012	P.C. Board Assembly	1
5	ME3J27	Binder Head Screw, 8-32 UNC x 5/16"	10
6	WB1190	Knob	3
7	ME3A72	Hex Bolt, ⅜-24 UNC x 6"	1
8	WB1179-04	Stub Shaft	1
9	WB1459	Main Housing Assembly, incl (10) thru (21)	1
10	WB1272-02	Spacer	1
11	WB1370-01	Back Plate	2
12	WB1264	Timing Disc	1
13	WB1104	Key	1
14	WB1438	Clutch Hub	1
15	WB1485	Wrap Spring	1
16	WB1458	Crank Assembly, incl (17) thru (20)	1
17	WB0104-3716-08	Button Head Socket Screw, ⅜-16 UNC x ½"	1
18	WB3200-0005	Wave Washer	1
19	WB1439	Grip	1
20	WB4500-0007	"O" Ring	1
21	WB0603-1125	Retaining Ring	1
22	WB7203-0011	Battery Cable Assembly	1
23	WB7203-0010	Line Cord Assembly	1
24	ME5A8	Flat Washer, 5/16"	4
25	ME4A10	Hex Nut, 5/16"-18 UNC	4
26	WB1338	Clamp	2
27	WB1325-02	Offset Scale	1
28	WB1462	Head Mounting Assembly, incl (37) thru (56)	1
29	WB1461-02	Base, Lower Weldment Assembly, incl (30)	1
30	WB1101-0001	Wheel and Mounting Hardware	2
31	WB1463	8-Volt Battery Assembly	1
32	WB1449	Battery Cover	1
33	WB6605-xx	Voltage Converter (specify voltage)	1
34	ME3A73	Hex Screw, 5/16"-18 UNC-⅝	4
35	ME5B5	Lock Washer, 5/16"	4
36	ME3L19	Self Tapping Screws, 8-18 x ½"	2
37	WB1434	Miter Gear	1
38	WB0500-0156-16	Roll Pin	1
39	WB3002-0001	Flange Bearing	2
40	WB0206-0001 and WB0206-0002	Shim	A/R
41	WB3002-0002	Bushing	1
42	WB3003-0001	Thrust Bearing	1
43	WB1395	Nut Plate Weldment	1
44	WB1483	Spacer	1
45	WB3301-0003	Miter Gear and Set Screw	1
46	WB1487	Key	1
47	WB1450	Gear Cover	1
48	WB0907-0832-08	Screw	4
49	WB1414	Lift Crank Handle	1
50	WB1439	Grip	1
51	WB3600-0007	Grip Cover	1
52	WB0602-0500	Retaining Ring	1
53	WB1397	Threaded Shaft	1
54	WB1454	Washer	1
55	WB0302-0513	Lock Nut	1
56	WB1396	Head Mounting Weldment	1
57	KN300R	Logo Package	1
NOT SHOWN 58	WB1510	Load Wheel and Mounting Hardware	1
NOT SHOWN 59	WB3302-0002	Safety Chain	1
NOT SHOWN 60	WB3304-0002	Chain Connector	1

Illustrated Parts