

Team Bear USA

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# BEAR®

## 80-200

## Wheel Balancer

# BEAR.

## 80-200 MICROPROCESSOR WHEEL BALANCER

### FEATURE

Automatic Self-Calibration

Zero Shaft Calibration

Automatic Diagnostics

Quick Checking System

Fail-Safe Motor

Automatic Hood Start Option

Break Away Shaft

Fine Balance Routine

Interlock On Tire Shield

Three Plug In Service Modules

Self-Centering Universal Adapter

Three Different Balance Routines - Auto, Mag 1, Mag 2

### ADVANTAGE

Eliminates Manual Calibration

Eliminates Need To Zero Balance Shaft By Service Technician

No Troubleshooting Required

Faster Mounting and Demounting

If Motor Fails, Simply Spin By Hand

Allows Operator To Start Machine By Either Pressing Start Button or Lowering Hood

Allows Centerless Wheels To Be Balanced

Allow For Balance Below 1/4 oz. Cut Off

Prevent Operation Without Tire Shield In Place

Easy To Service

Allow Balancing of Mag And Centerless Wheels

Allows Operator To Choose The Proper Type Of Balance

### BENEFIT

No Expensive Service Calls for Calibration

Low Service Cost

Saves Time

Down Time Avoided

Saves Time

More Opportunities For Profit

Please Particular Customers

Safe Operation

Low Service Costs

No Need To Turn Any Customers Away

Ability To Balance Special Wheel/Tire Combinations



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## SPECIFICATIONS

\* **VOLTAGE AVAILABILITY:**

115 VOLTS

\* **AMPERAGE REQUIREMENTS:**

10 AMPS

\* **RANGE OF WHEEL CAPACITIES:**

RIM DIAMETER - 10 INCHES THROUGH 18 INCHES  
TIRE WIDTH - 2 INCHES THROUGH 18 INCHES  
MAXIMUM TIRE DIAMETER - 42 INCHES

\* **REQUIRED WORK SPACE AROUND BALANCER (WITH HOOD):**

LENGTH - 46 INCHES  
DEPTH - 46 INCHES  
HEIGHT - 49 INCHES

\* **1/6 H.P. MOTOR, MODIFIED TORQUE, FORCED AIR COOLING**

\* **BALANCING CAPABILITY:**

DYNAMIC/STATIC - TWO PLANE

\* **CYCLE TIME:**

5.9 SECONDS (APPROX.) FOR AVERAGE WHEEL

\* **BALANCING SPEED:**

APPROXIMATELY 220 RPM (for average size tire)

\* **ACCURACY:**

START (NORMAL) MODE  $\pm 1/4$  OZ. (OR  $\pm 3$  GRAMS) LINEAR TO 19.9 OZ.

**STANDARD PACKAGE:**

Includes balancer with built-in 18 bin weight tray, interlocked guard hood, passenger back-cone mounting system, 4 accessory pegs, instruction manual, and calipers.



## CAUTION INFORMATION



Wherever this symbol appears, there will be important instructions for your safe operation of the balancer.

## SAFETY

- \* Be sure the balancer power cord is connected to a properly grounded outlet of the correct voltage and ampere rating.
- \* Do not touch any of the internal electrical circuits of the balancer while the power cord is connected to the building outlet.
- \* Do not expose the balancer to rain or moisture, or operate it on a wet floor.
- \* Keep hands, hair, and loose clothing away from the spinning parts of the balancer.

## NOTE:

- \* Use HANDS ONLY on keyboards, wheel nut, and adapter. The use of tools, hammers, or air tools will void warranty.

## BALANCING PROCEDURE

### SELECTING THE WHEEL MOUNTING SYSTEM

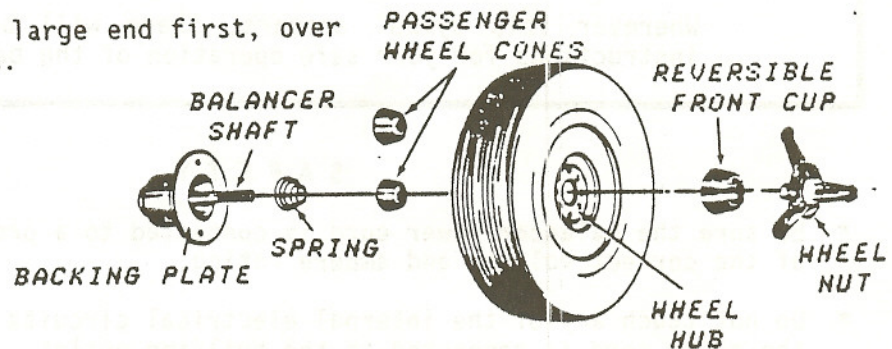
#### BACK-CONE SYSTEM

To balance wheels which use the large center hole to locate the wheel on the vehicle hub, use back-cone mounting whenever possible.

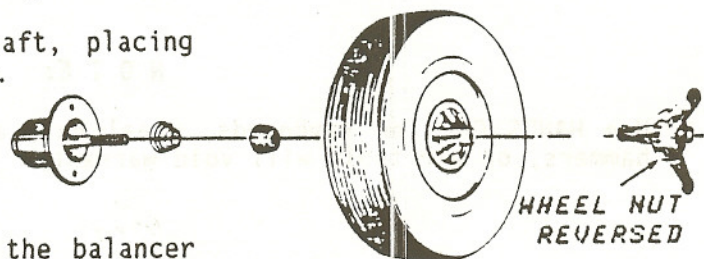
Parts used in the back-cone mounting system are two cones, one spring, a reversible front cup, and a wheel nut.

#### BACK-CONE MOUNTING PROCEDURE

1. Place the spring, large end first, over the balancer shaft.



2. Select a cone to fit the back side of the wheel. Slide the cone, large end first, onto the shaft.
3. Snap the black front cup onto the wheel nut, with large or small end toward the wheel depending on wheel design.
4. Mount the wheel on the shaft, placing wheel center hole over cone.



5. Thread the wheel nut onto the balancer shaft. Tighten the wheel nut to be sure of secure mounting, at least four turns.

NOTE: If wheels with extended centers cover balance shaft threads, use the SMALL end of the wheel nut, and do not use the front cup. Again, tighten the nut at least four turns.



Wheel nut must engage threads for at least four full turns. Failure to tighten wheel nut securely or to force wheel firmly against the faceplate may result in serious personal injury.



## BALANCING PROCEDURE

### SELECTING THE WHEEL MOUNTING SYSTEM Continued

#### FRONT CONE SYSTEM

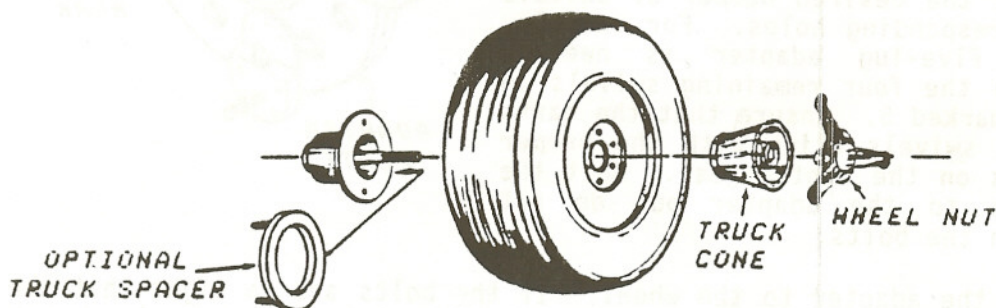
Mount light-truck wheels using the light truck front cone. After-market light-truck wheels with large center holes can be mounted using either the light-truck cone adapter or the optional combination adapter.

The back cones can be used as front cones if the tire is mounted true and shows no apparent runout.

- \* USE TRUCK CONE FROM FRONT ONLY.
- \* USE OPTIONAL TRUCK SPACER WITH WHEELS HAVING A CENTER HOLE 5" OR LARGER.



Wheel nut must engage threads for at least four full turns. Failure to tighten wheel nut securely or to force wheel firmly against the faceplate may result in serious personal injury.



#### COMBINATION ADAPTER (OPTIONAL)

Wheels that are true to lug patterns must be mounted using optional combination adapter. Examples include wheels from 1968 and earlier Volkswagen, Peugeot, and similar automobiles. Wheels with no center holes are mounted after the threaded balancer shaft stud is removed.

NOTE: To mount specialty wheels with "Uni-Lug," "K-Lug," or slotted-hole mountings, an adapter from the wheel kit, the large side of the lug nuts, or a combination of fittings must be used. Check wheel runout to ensure correct mounting.



## BALANCING PROCEDURE

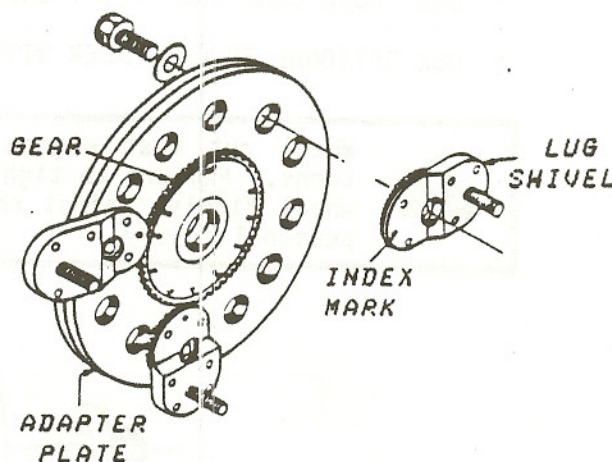
### SELECTING THE WHEEL MOUNTING SYSTEM Continued

#### COMBINATION ADAPTER (OPTIONAL)

Combination adapters can be set up to mount wheels with patterns of three, four, or five lugs. The three- and four-lug adapters are also used to mount wheels with six and eight lugs, respectively.

#### SETTING COMBINATION ADAPTERS

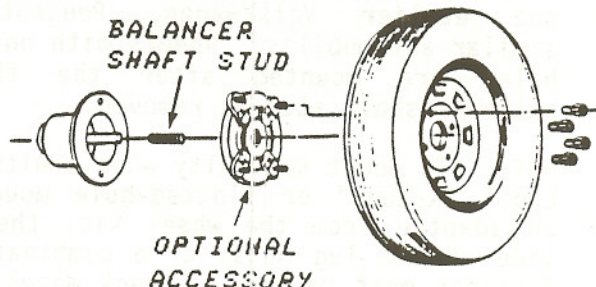
1. With the swivels removed, align Marks 3, 4, and 5 on the center gear with like markings on the adapter plate.
2. Install a swivel with the index mark aligned with Marks 3, 4, and 5 on the gear. Install but do not tighten bolts to retain the swivel.
3. Install the desired number of swivels in corresponding holes. For example, if a five-lug adapter is needed, install the four remaining swivels in holes marked 5. Ensure that the marks on the swivels align with the proper numbers on the center gear. Bolt the swivels to the adapter but do not tighten the bolts.
4. Attach the adapter to the wheel. If the bolts are so tight that the swivels will not rotate, loosen the bolts. Thread lug nuts by hand and tighten evenly using an adapter wrench. For best results, use a crisscross tightening method.



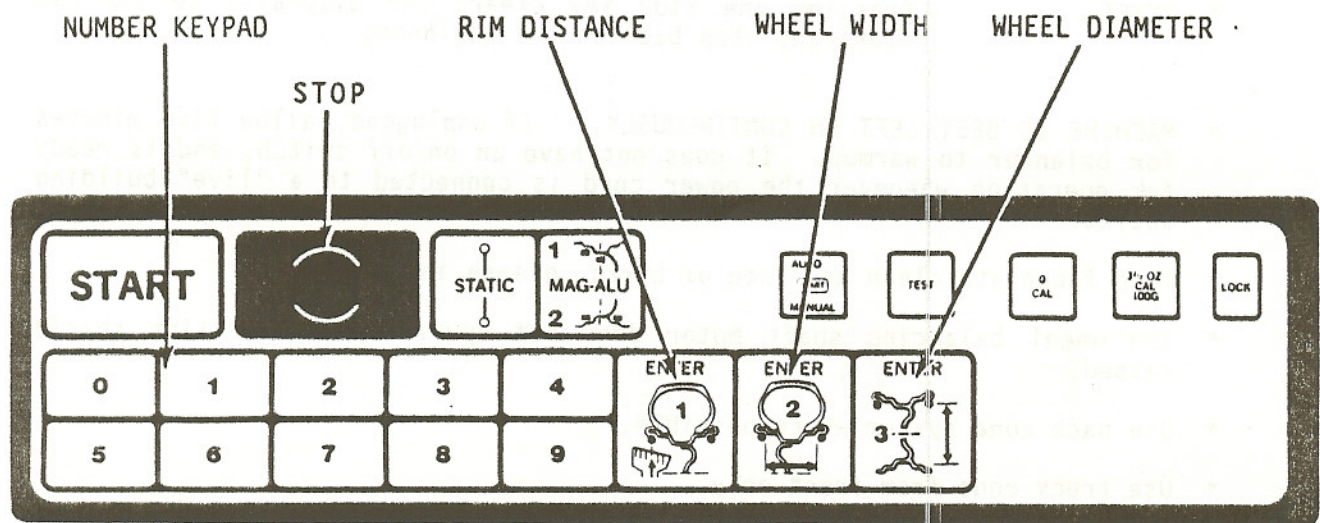
Lug nuts must be centered and threaded at least four full turns. Use only adapter wrench furnished with adapter. Do not use air tools or impact wrenches.

5. Securely tighten the swivel bolts in the rear of the adapter.
6. Mount the wheel and adapter on the faceplate and fasten securely with wingnuts.

Once the adapter has been set for a particular type of wheel, the swivels need be changed only when a wheel with a different bolt pattern is mounted.



# BALANCING PROCEDURE CONTROL PANEL LAYOUT





## BALANCING PROCEDURE

### GENERAL

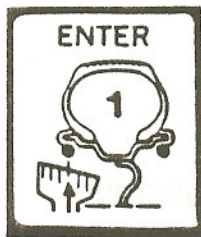
- \* **STOP KEY** Press STOP key to stop wheel rotation at any time while balancing.
- \* **AUTO/MANUAL** Press AUTO/MANUAL key to change between automatic start when tire shield is lowered and manual start by pressing START key.
- \* **RESET** Pressing the STOP key clears the displays, so you can start any step back at the beginning.
- \* **MACHINE IS BEST LEFT ON CONTINUOUSLY.** If unplugged, allow five minutes for balancer to warmup. It does not have an on/off switch, and is ready for operation whenever the power cord is connected to a "live" building outlet.
- \* Keep faceplate clean and free of burrs, grease and oil.
- \* The wheel balancing shaft motor does not operate with the tire shield raised.
- \* Use back cone system where possible.
- \* Use truck cone from front only.
- \* Most accurate 3-1/2 oz. or 100 gram calibration is achieved using an average wheel for your shop and less than 2 oz. (60 grams) imbalance.
- \* Calibration should be performed only as needed; but always after the balancer has been repaired.

## BALANCING PROCEDURE

### MEASURING THE WHEEL AND PROGRAMING

#### 1. RIM DISTANCE

Press (ENTER 1), then press number keys to enter numbers from Rim Distance Gauge.

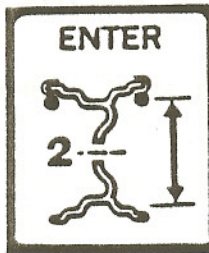


RIM DISTANCE



#### 2. WHEEL DIAMETER

Press (ENTER 2), then press number keys to enter wheel diameter in inches.

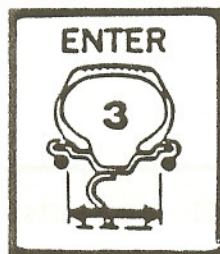


WHEEL DIAMETER

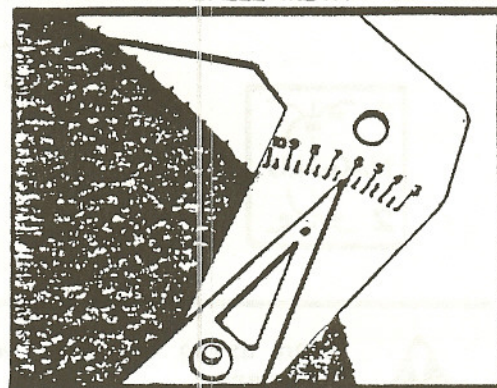


#### 3. WHEEL WIDTH

Press (ENTER 3), then press number keys to enter wheel width shown on caliper scale.



WHEEL WIDTH





## BALANCING PROCEDURE

### SELECTING TYPE OF BALANCE

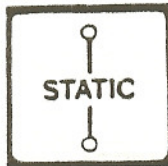
#### DYNAMIC BALANCING OF STANDARD STEEL WHEELS USING STANDARD CLIP-ON WEIGHTS:

Start spin cycle, as shown on next page.



#### STATIC BALANCING USING A SINGLE HIDDEN ADHESIVE WEIGHT INSIDE RIM:

Press STATIC key once, then start spin cycle, as shown on next page.



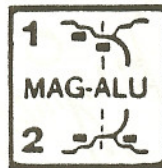
#### DYNAMIC BALANCING USING ONE ADHESIVE WEIGHT INSIDE, AND ONE ADHESIVE WEIGHT AT RIM CENTERLINE:

Press MAG-ALU key once, then start spin cycle, as shown on next page.



#### DYNAMIC BALANCING USING ONE ADHESIVE WEIGHT ON EITHER SIDE OF RIM CENTERLINE:

Press MAG-ALU key twice, then start spin cycle, as shown on next page.



When using adhesive weights, be sure they will clear disc brake calipers.

## BALANCING PROCEDURE

### BALANCING THE WHEEL

#### TO START WHEEL SPIN CYCLE

LOWER SHIELD

PRESS START KEY



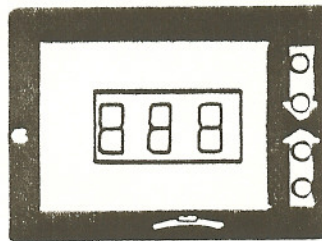
#### AFTER WHEEL STOPS SPINNING

1. Raise tire shield.

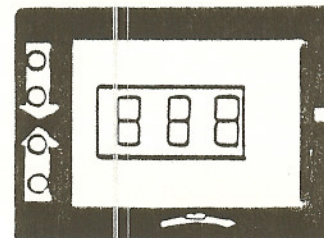


Wait until wheel stops spinning before raising tire shield.  
Failure to do so could result in serious injury.

2. Turn tire by hand until all four arrow lights are lit on either one of the displays.



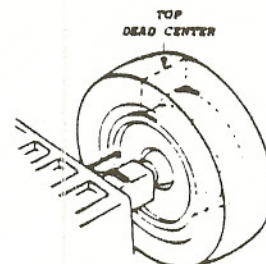
INSIDE WEIGHT DISPLAY



OUTSIDE WEIGHT DISPLAY

3. Select weight amount shown on that display. Attach at the top dead center point of display side of the rim. Secure clip-on weight to rim edge; secure adhesive weight to position desired when selecting weight style.

NOTE: If static balancing was selected, place adhesive weight as close to center of rim as possible.





## BALANCING PROCEDURE

### BALANCING THE WHEEL Continued

4. Turn tire by hand until all four arrow lights are lit on other display (except when STATIC balance is done.)
5. Select weight shown on the display. Attach at the top dead center point of display side of the rim. Secure clip-on weight to rim edge; adhesive weight to position desired when selecting weight style.

#### CHECK SPIN

To check for correct weight placement, press START (shield down) for another spin cycle.

#### FINE BALANCE

Hold START key in while spin cycle takes place.

## CALIBRATION PROCEDURE

After a wheel is balanced, you must run a Check Spin (see previous page) to see that the wheel is balanced accurately. Calibration should be performed when this check spin reveals that most wheels are not accurately balanced by the first spin. Calibration also MUST be done after the balancer has been repaired. To discontinue the calibration procedure at any time, press the stop key. New calibration data will not be entered into the machine until the LOCK key is pressed after "CAL LOCK" flashes, at the end of the calibration procedure.

The balancer must be plugged in for at least 5 minutes before calibration. Calibration must be done carefully, as described below. The displays prompt the next step in the procedure.

(NOTE: Zero cal is no longer required; cycling the balancer without the weight of a tire and wheel will result in meaningless readings.)

1. Mount an average size tire/wheel (195-14) on the balancer. It is best that the wheel be balanced, but not necessary. A new straight rim and tire is best. Press the "3-1/2 oz. cal 100G" key. "ENT 1 2 3" will be displayed.
2. Enter the three wheel measurements as directed in the operating section. Lower hood. Press the start key. After one spin cycle, "ROT 180" will be displayed.



## CALIBRATION PROCEDURE

3. Loosen hub nut and rotate the wheel 180 degrees in relation to the face plate. Do this by holding face plate and noting position of valve stem and then move tire until valve stem is opposite the starting point. Press the start key; "3.5 OUT" will be displayed after spin cycle.
4. Attach a single 3.5 oz. (or 100 gram) weight where indicated by the position arrow lights on the outer rim. Press the start key; "3.5 IN" will be displayed after spin cycle.
5. Remove the 3.5 weight from outer rim and attach to position indicated by the arrow lights on the inner rim. Press the start key; "CAL LOC" will be displayed after the spin cycle.
6. Press the Lock key. (If beeping occurs prior to CAL LOC: Make sure that correct weight and correct wheel were used, and that proper calibration procedure was used. Press the Lock key, and go on to step 7.)
- (7.) If the calibration wheel was out of balance, or if the PCB or Sensor arm was replaced, perform the following:
  - Remove all weight from the wheel and balance it.
  - Repeat calibration procedure with the balanced wheel.

## SPECIAL PROBLEMS

### RETURNS (COMEBACKS)

Possible causes of complaints of vibration after balancing are:

Tire out of round; wheel out of round, bent, or not true. Balancing cannot make a tire round. Replace the tire or wheel as necessary.

Stiffness variations in radial belts. The tire should be replaced.

Tire bead improperly seated. Check the bead seating and inflate the tire to the proper pressure if necessary. Re-balance the wheel.

Suspension wear, misalignment, or worn or loose components.

Wheel not centered because of damaged hub, damaged or worn center hole, worn bolt-circle holes, or poor original manufacture. Check the wheel runout before balancing and on the car after mounting. Replace as necessary.

Sensitive suspensions. Use the fine-balance feature (hold the START switch depressed during the entire spin cycle).

Sometimes excessive tire lubrication can cause the tire to rotate on the wheel when the customer drives away. Re-balance the wheel.



## SPECIAL FUNCTIONS

### TEST KEY

Balancer self-tests and displays "End tSt." If electrical problem is found, display will flash service or error code.

Automatic Diagnostic Error Codes:

<u>Display</u>	<u>Cause</u>
"ERR 3"	Requires calibration; check or replace batteries.
"ROT ERR"	Possible optical timer problem.
"SPD ERR"	Possible PCB or optical timer problem.
"ERR A"	Incorrect rim data entered.
Beeping prior to CAL LOC or CAL ERR	Possible sensor problem.

If any of the above codes appear, call Service.

## SPECIAL FUNCTIONS

### SPECIAL FUNCTION CODES

Special function codes allow you to change the normal operation of the balancer.

To select a special function code:

1. Press the ENTER 1 key one time,
2. Press the number nine key three times,
3. Then select one of the three-number codes from this list.

After you select the code the balancer will operate according to the new instructions.

CODE	WHAT DOES IT CHANGE?
000	Places balancer in standard operation (overrides special functions).
001	Displays weights as .01 oz.
010	Displays weight as .1 oz.
025	Displays weight as .25 oz. (standard operation).
100	Displays weight in 1 gram values.
200	Displays weight at 2 gram steps.
500	Displays weight at 5 gram steps.
550	Places balancer in motor drive operation (standard operation).
555	Places balancer in hand spin operation.
604	Disconnects hood interlock. (To reconnect, use Code 000.)
777	Optical timer counter check.
843	Arm data check.
880	Program check number.



# TROUBLE SHOOTING GUIDE

POSSIBLE CAUSE/CHECK	PROBLEM									
	displays don't light	wheel doesn't rotate	no position displays	no weight readings	wheel spins in reverse	readings non repeatable	unable to balance to zero	unable to calibrate	excessive interference	rotational too high
power source/ground	*	*				*	*			
wiring/connecter.	*	*	*	*	*		*	*		
dirt or extraneous objects						*	*	*	*	*
balancer must sit only on 3 legs						*	*	*	*	
"0" cal							*		*	*
3½/100 calibration							*	*	*	*
test wheel				*		*	*	*	*	*
hub nut, cones, adapters, etc.						*				*
PCB/control panel	*	*	*	*		*	*	*	*	
optical timer assy			*			*	*	*		
sensor arm assy		*		*		*	*	*	*	*
drive motor/cap		*				*	*	*		
belts		*				*	*			
rim distance guage									*	

## PARTS LIST

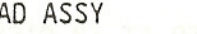
<u>Item No.</u>	<u>Part No.</u>	<u>Description</u>
1	410010	Hood, Plastic
2	410095	Hood, Stop
3	410050	Hood, Bearing
4	410035	Hood, Tube
5	410120	Hose Clamp
6	410110	Tie Wrap Hood
7	410080	Switch
8	430000	Printed Circuit Board
9	430065	Optical Timer
10	444700	Drive Belt
11	440090	Motor Clamp
12	440030	Motor Assembly
13	440015	Fan Motor
14	440070	Drive Pulley
15	440100	Fan Housing
16	450000	Sensor Assembly
17	460010	Cone Spring
18	460020	Truck Cone
19	460035	Small Cone
20	(not used)	
21	460045	Large Cone
22	460060	Drum
23	460070	Hub Nut
24	460100	Plastic Gear
25	460110	Swivel Plate
26	460120	Adapter Nut
27	460160	Adapter Bolt
28	460170	Adapter Wrench
29	460185	Calipers
30	460190	Adapter Plate
31	460210	Distance Gauge
32	460230	Washer
33	460280	Adapter Washer
34	460360	Truck Spacer
(not shown)	470030	Instruction Manual
36	484010	Top Cover
37	480050	Weight Decal
38	(not used)	
39	480015	Frame
40	420030	Main Wire Harness
41	450040	Threaded Stud
42	480040	Top Cover Rod
43	480300	Wood Plate Base
44	480290	Container
	460250	Accessory Peg



10

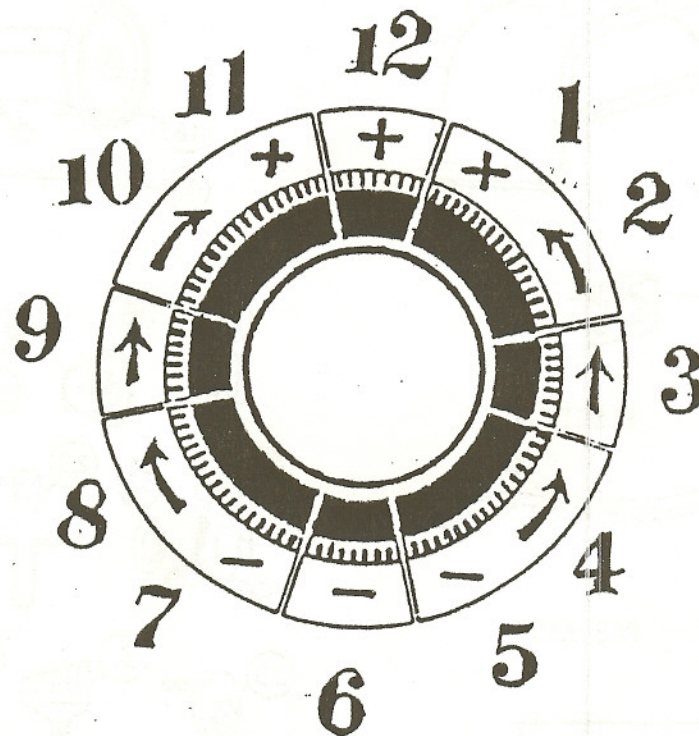


## AD ASSY



# THE TWO WEIGHT METHOD OF WHEEL BALANCING

## SECOND SPIN



The above "Clock Face" is used as a reference when there is still some imbalance remaining after the wheel balancing check spin.

EIGHT LOCATED AT 12 O'CLOCK :	<u>                    </u> this means	Position correct, add weight.
EIGHT LOCATED AT 6 O'CLOCK :	<u>                    </u> this means	Position correct, subtract weight.
EIGHT LOCATED AT 9 or 3 O'CLOCK :	<u>                    </u> this means	Position incorrect, move weight slightly toward 12 O'Clock. Weight is correct.
EIGHT LOCATED AT ANY POSTION : ETWEEN 10-11 or 1-2 O'CLOCK	<u>                    </u> this means	Position incorrect, move weight slightly toward 12 O'Clock. Add small amount of weight.
EIGHT LOCATED AT ANY POSITION : ETWEEN 7-8 or 4-5 O'CLOCK	<u>                    </u> this means	Position incorrect, move weight slightly toward 12 O'Clock. Subtract small amount of weight.