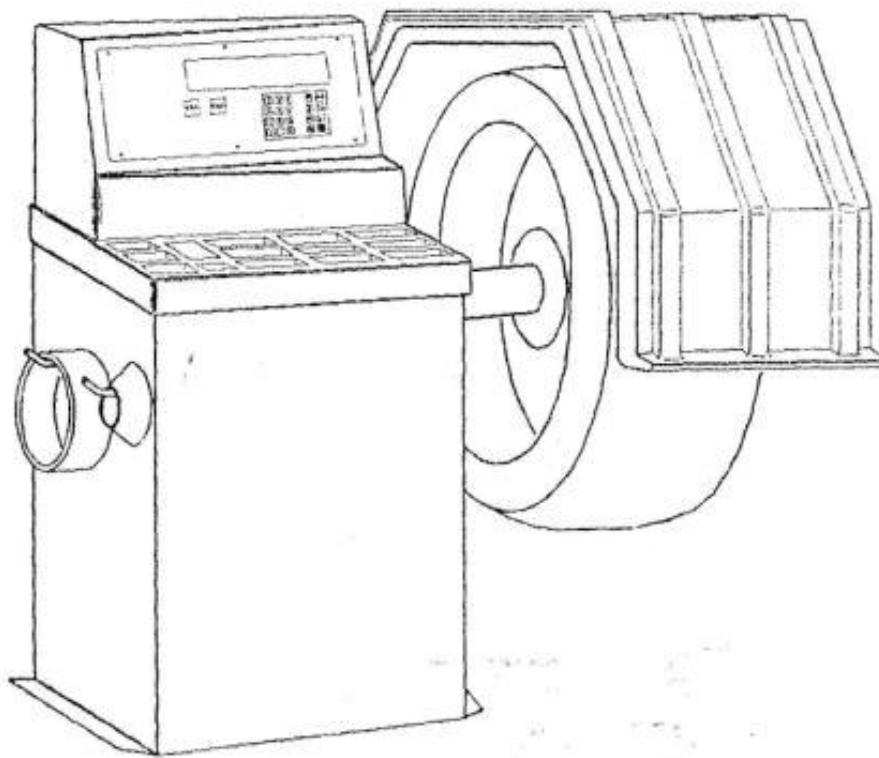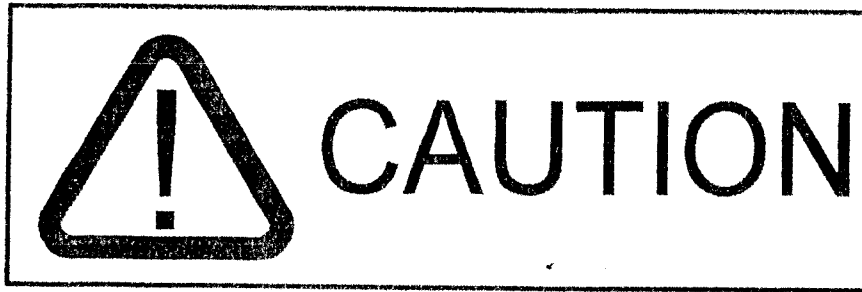# BEAR

Operation manual and spare parts list

Wheel balancer model   80-303
(Made in Canada)

Important Safety Instructions

⚠ CAUTION Failure to follow safety instructions may lead to personal injury or death. Do not operate this machine until: You read and understand the safety instructions printed in the owners manual. You have removed all stones, dirt and debris from the tire tread. You and all bystanders are wearing safety glasses. **OPERATOR MUST KEEP ARMS, HANDS, AND ENTIRE BODY AWAY FROM TIRE WHILE MACHINE IS SPINNING. DO NOT WEAR LOOSE CLOTHING!**

1. Do not operate this machine with a damaged power cord.

2. Always tighten the Ring nut securely before spinning the wheel.

3. After pressing the "Start" button, stay clear of machine, until wheel comes to a complete stop.

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Quick Start Wheel Balancer

⚠ CAUTION
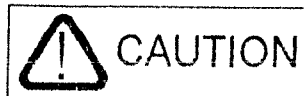
Keep bystanders away from the spinning wheel. Be carefull when using the balancer. Wear eye protection. Do not attempt to stop the wheel manually. Wait for the balancer to brake the wheel to a complete stop before opening the wheel guard.
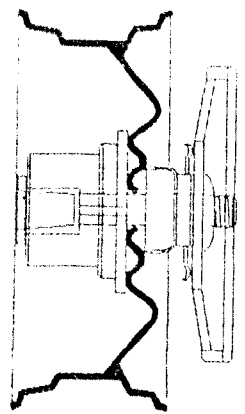
Mount conventional wheel assembly on machine not exceeding 150 Lbs. Assure that wheel is tightened correctly.

Slide out distance gauge as shown, read scale value, press distance key once on key pad and enter read value.
Example: For 6.6 press the number 6, decimal point and a 6 again.
(one increment = 2mm)

ENTER: 6.6
ENTRER: 6.6
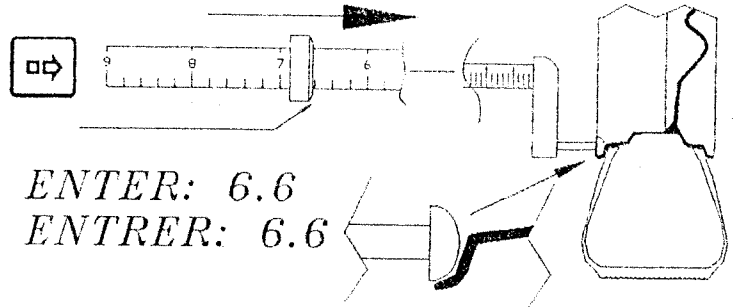
Read tire diameter from the side wall on tire, press diameter key once and enter value.
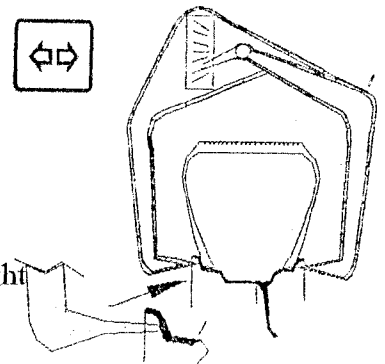
Measure rim width with the supplied gauge, press rim width key once and enter value.
Example: For 6.5" press the number 6, decimal point and now the number 5

Close wheel guard, press "START" button, wheel assembly will spin. The computer will measure the imbalance and then brings the wheel automatically to a stop.

The display now will show the imbalance and location for both sides. By turning the wheel, match the arrows of one side and apply the indicated weight to the "TDC" (Top dead center). Repeat same procedure for the other side.

For more information, see the following pages.

FRONT PANEL
PANNEAU AVANT

Aug/19/98

CONTENTS

GENERAL

The off-the-vehicle wheel balancer is designed for static and dynamic balancing of car and light truck wheels up to a wheel assembly weight of 150 lbs.
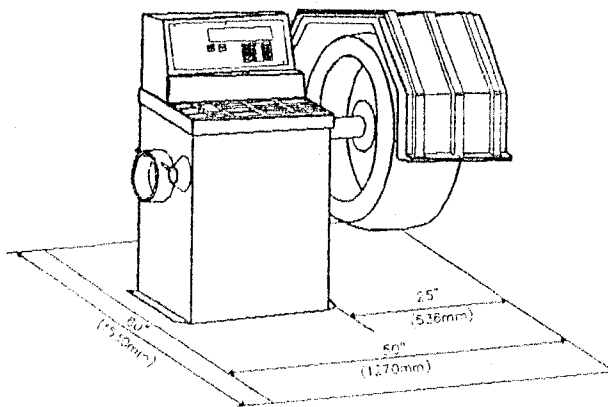

The controls and displays are arranged together on an easy to read and accessible front panel.

Using the wheel balancer, rim dimensions and the distance between the machine and the left correction plane are set by the operator using the key pad.

Various balancing modes (Alu 1 to Alu 5) can be selected on the machine depending on the kind of wheel to be balanced (steel or alloy wheel) and the attachment method of the balance weight to the wheel.

The microprocessor-based electronic unit is designed so that all measurements are taken in one run. On completion of a measurement run the cycle ends automatically and the wheel is slowed to a standstill using the braking force of the drive motor.

Amounts and location of imbalance are read out separately for each correction plane on an LED display.

The amount of imbalance is displayed digitally and is operator selectable to read in grams or ounces via the key pad.

If after a measuring run it is discovered that the dimensions were incorrect, the correct balance readings may be obtained by correcting the dimensions via the key pad.
Another measuring run is not necessary. Enter new value, press stop key, press decimal key and the computer will recalculate the balance readings.

Errors in operation or failures, if any, are signalled by error messages.

To ensure accurate measurement, recalibration of the machine can be carried out by the operator.

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A wheel guard with an electrical interlock is mandatory in the U.S.A. and Canada. This guard is part of the standard equipment of the wheel balancing machine.

The drive of the machine can only be started with the guard closed. If open, the guard interrupts the circuit to the drive motor and prevents starting.

2. INSTALLATION OF THE MACHINE

In choosing a location for the balancer, OSHA regulations and recommendations concerning the work environment should be considered.

The wheel balancer can be installed on any firm and level ground.
Before installing on an upper floor, observe the permissible load capacity of the floor. The minimum operating space requirements are given in Fig. 1.

The machine may be secured to the floor.
For this purpose holes are provided in the base of the machine. Mount the machine to the floor using 1/2 inch anchor bolts. Figure 2 shows the center to-center distance of the mounting holes. Make sure that the machine is in a stable position, i.e. that it is supported on the collars around the three holes. If not, ensure three-point contact with the ground by inserting appropriate spacers between floor and machine base.

For ease of transportation the wheel guard has been detached from the machine and must be mounted to the balancer during the installation of the machine Fig.3

Fig. 2
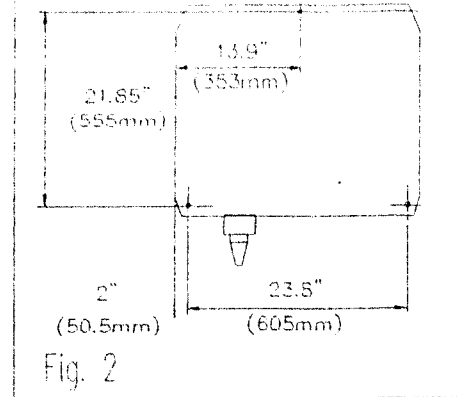
Also a adjustment screw is provided for same, just above the calibration weight. Fig. 4

Fig. 3
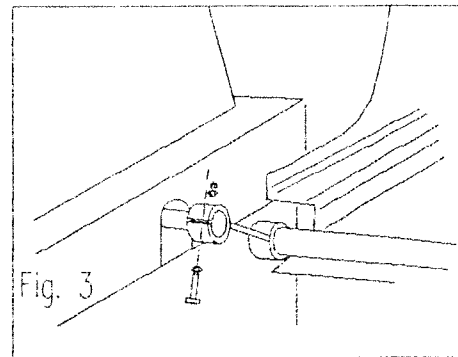
The attached calibration weight is secured (screwed) in the rear panel of the machine housing Fig. 4

Fig. 4
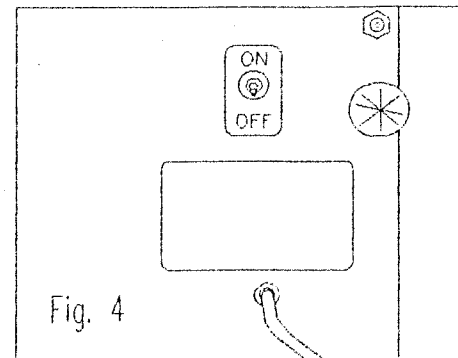
The electrical equipment and the drive motor of the machine operate on 115 VAC, or 230 VAC, 60 Hz. (Balancers that operate on 50 Hz. and special voltages are available on request.). When setup for operation at 115 volt, a plug connector is supplied for easy connection to a standard three prong, grounded outlet.
Circuit protection shall be the responsibility of the customer. The vender recommends connection to a circuit, protected with a 15 A. fuse or circuit breaker.

FRONT PANEL
PANNEAU AVANT
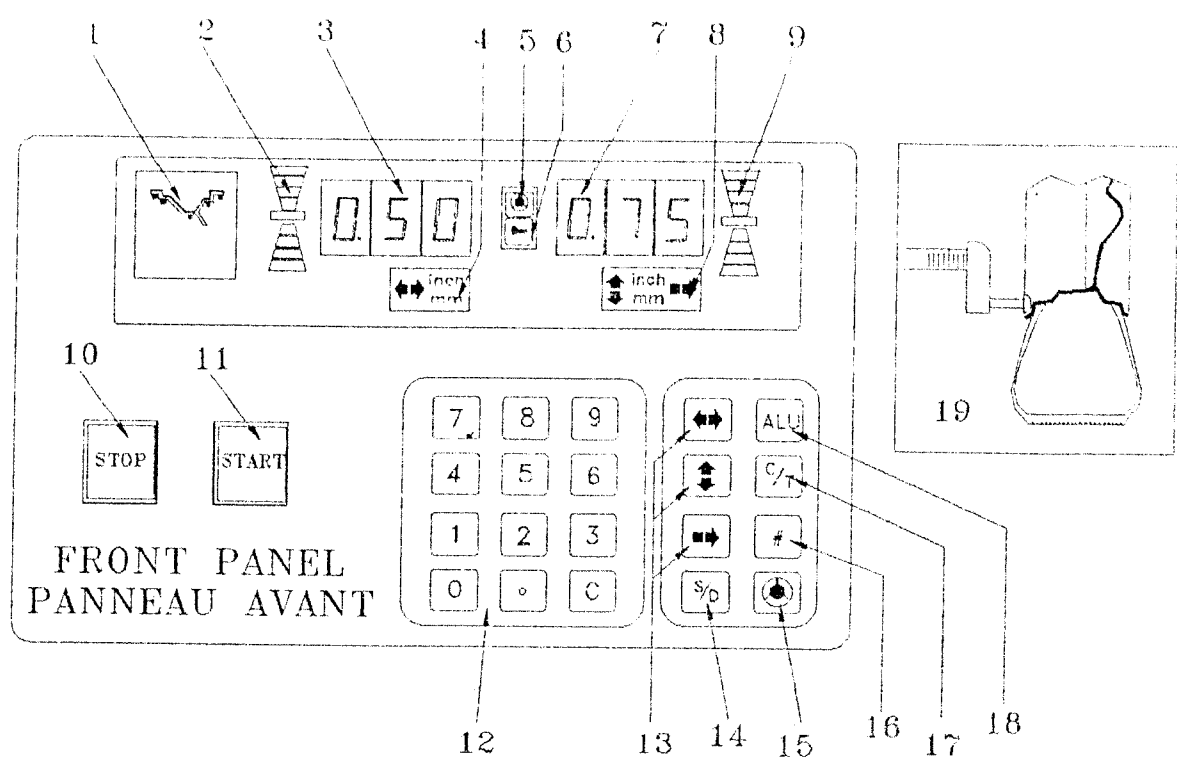
CONTROLS AND DISPLAY

1. Displayed selection of balancing mode.
2. Imbalance location indicator for LH correction plane.
3. Display for LH correction plane.
4. Rim width selection indicator.
5. PRO - MATCH indicator.
6. Display for adapter compensation.
7. Display field for RH correction plane.
8. Rim diameter / distance to rim machine indicators.
9. Imbalance location indicator for RH correction plane.
10. STOP key.
11. START key.
12. Key pad.
13. Function keys for manual entry of wheel data.
14. Selector key for static / dynamic balancing.
15. PRO - MATCH key.
16. Operator select key
17. No function
18. Balancing mode selector.
19. Distance gauge lever (manual input)

DESCRIPTION OF CONTROLS AND DISPLAYS

1. Display of mode selected after using the ALU key. (#18)
2. Indicator for direction of orientation and correction position for LH correction plane. Geodyna 40.
3. Display field for LH correction plane. This display shows: rim width, amount of imbalance of LH correction plane, code inputs, error messages, amount of static imbalance.
4. Reading of selected unit of measure and illuminated symbol for rim width.
5. Indicator for PRO - MATCH.
6. Display for adapter compensation. This symbol lights up when adapter compensation has been carried out.
7. Display field for RH correction plane. This display shows: rim diameter, rim distance, amount of imbalance of right correction plane.

8. Rim diameter selection indicator.

9. Imbalance location indicator for RH correction plane.

10. **STOP key** (SEVERAL FUNCTIONS)
Pressing the stop key stops a measuring run already initiated and brakes the wheel.
With the machine at standstill, pressing the stop key deletes error messages on the display and resets the computer. .
If pushed and held the display shows the suppressed residual imbalance read out in high resolution. (1-gr increments or 0.05 ounces.)

11. **START key**
Measurement is started by pressing the start key.
By re-programming the mode of operation it is possible to start the measuring run by simply closing the wheel guard. (See special C-codes).

12. **Key pad**
0 ...... 9 digit keys for entry of wheel data or codes.
C key for C-codes.

13. **Function keys** for manual input of wheel data.
Function key is pressed before entry of respective rim dimensions via key pad.
If depressed twice in succession, the unit of measure (inch or mm) is changed over (to mm or inch respectively).
Function key for rim width.
Press, then enter rim width.
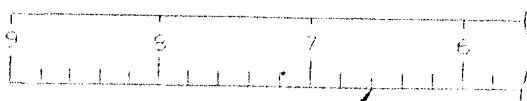
Function key for rim diameter.
Press, then enter rim diameter.

Function key for rim distance.
Press, then enter rim distance.
Note: The distance is entered as per distance scale, in centimetres and not in millimetres.

```
 9        8        7        6
|,,,,|,,,,|,,,,|,,,,|,,,,|,,,,|
```

PLEASE ENTER: 6.6
S.V.P. ENTRER: 6.6

14. **S/D key**
For reading out the static or dynamic imbalance.

15. **OP key to start PRO - MATCH** and to store valve position during PRO -MATCH.

16. **Operator select key**
This key will toggle between the two latest wheel dimensions entered in the machine. This allows two operators to alternately balance different sets of wheels without erasing each others dimensions.
Note: Only two sets of wheel dimensions can be temporarily stored at a time, with the oldest dimension being discarded when a new dimension is entered.
Example:
Operator #1 enters dimensions "A" and presses Start to measure wheel. Then operator #2 enters dimensions "B" and presses Start to measure his wheel. When operator #1 returns with another wheel, he simply presses the # key, to recall his dimensions, then Start to measure wheel.

17. **No function.**

18. **ALU key**
Standard mode is always selected when the machine is switched on. By pressing the Alu key briefly in succession you proceed from one mode to the next, i.e. from Alu 1 to Alu 5 and back to standard mode.
Status display #1 lights up when the associated mode of operation (Alu 1 to Alu 5) is selected.
It remains lit for as long as the mode is selected.

5. START UP OF MACHINE

When the machine is switched on, the electronic unit performs a number of self-tests. Upon successful completion of these tests, the software program version is briefly seen on the right display field, a three-tone signal is given and then the machine is ready for entering wheel dimensions.

The electronic unit is factory-adjusted to the following modes of operation when switched on.

Display of amount of imbalance in 0.25 oz increments.
Standard balancing mode.

Suppression of minor imbalance readings. Automatic braking of the wheel when the "Stop" key is pressed during a measuring run.

6. WHEEL MOUNTING

To mount a wheel on the machine the wheel adapter must be attached to the main shaft. Prior to mounting the adapter, the cone of the main shaft and the inner cone of the adapter should be thoroughly cleaned. Only correctly mounted mechanically perfect and clean adapter components are able to ensure maximum balancing accuracy.

Figures 5 and 6 illustrate two different ways of mounting automobile wheels.

Before mounting the wheel make sure that contact surfaces of the basic adapter and rim are free from dirt and grease.
Make sure the wheel is exactly centered and sufficiently tightened.

Fig. 5
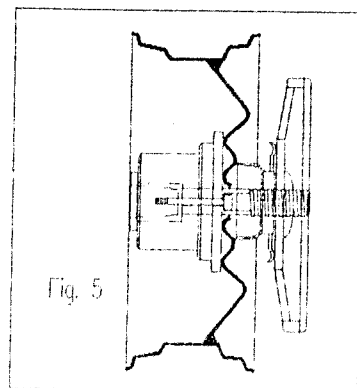
7. WHEEL DIMENSIONS

For determination of imbalance the dimensions of the wheel to be balanced (width, diameter, rim to machine offset) must be preset on the front panel. With vehicle wheels these dimensions are the nominal size of the rim and the distance between the left rim flange and the machine. With these settings six different balancing modes are possible (see page 09). The rim size is usually seen on the rim indicated in inches or millimeters. The rim diameter is also indicated on the tire.

If the rim width is not given, it can be measured using the rim width calipers (Fig. 7) supplied with the balancer.

Fig. 7
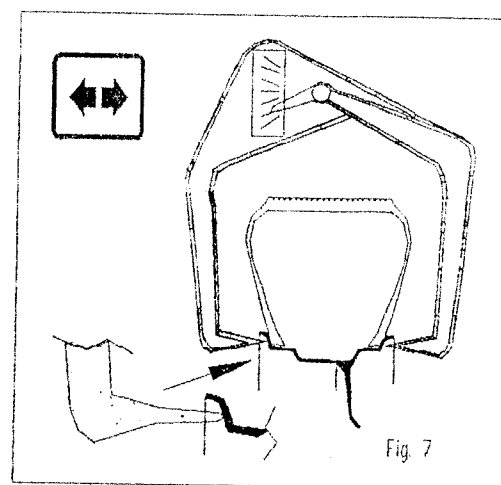
Measuring rim width manually.

Fig. 6
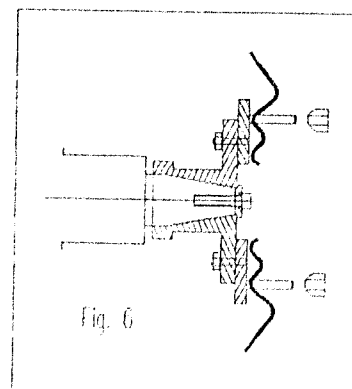
7. SETTINGS WHEEL DIMENSIONS

Setting of nominal dimensions.

□➪ Distance to be measured and set

STANDARD MODE Fig. 1
Conventional balancing of steel and alloy wheels where balance weights are attached to the rim flanges.

ALU 1 MODE Fig. 2
Balancing of wheels where balance weights are attached to the bead seats.

ALU 2 MODE Fig. 3
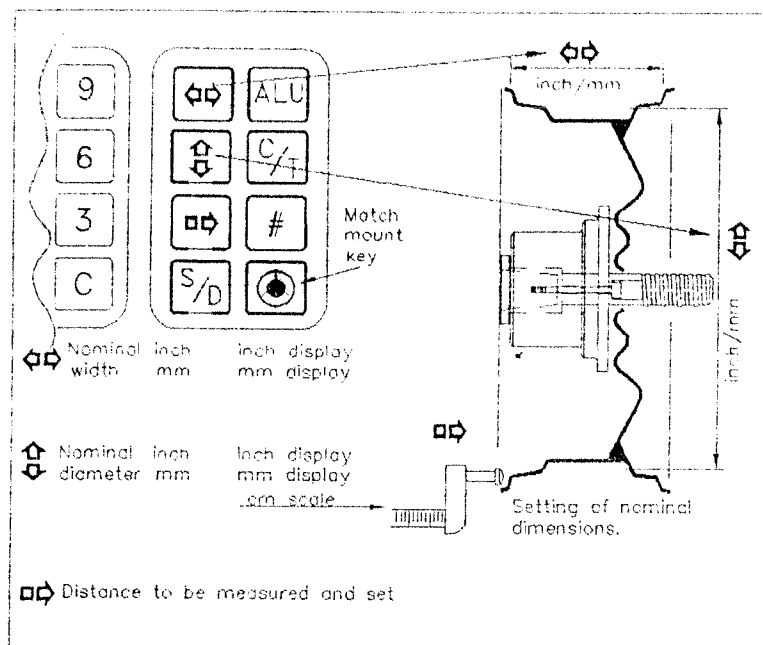Balancing of wheels using adhesive weights.

ALU 3-ALU 5 MODES Fig. 4-5
Balancing using a combination of hammer on and adhesive weights.

Display when selecting this mode and during measuring run.

Attach wheel weight according to this diagram.

Fig. 1 Standard mode

Display when selecting this mode and during measuring run.

Attach wheel weight according to this diagram.

Fig. 2 ALU 1 mode

Display when selecting this mode and during measuring run.

Attach wheel weight according to this diagram.

Fig. 3 ALU 2 mode

Display when selecting this mode and during measuring run.

Attach wheel weight according to this diagram.

Fig. 4 ALU 3 mode

Display when selecting this mode and during measuring run.

Attach wheel weight according to this diagram.

Fig. 5 ALU 4 mode

Display when selecting this mode and during measuring run.

Attach wheel weight according to this diagram.

Fig. 6 ALU 5 mode

8. BALANCING MODES

The use of different types of balance weights (hammer on, adhesive weights) and the different positions of those weights on the rim involve differences between the preset nominal rim data and actual correction dimensions Fig. 1 - 6.
These differences are automatically taken into account by the computer when set to the respective balancing mode.

Settings for special balancing operations:
If none of the programmed balancing modes can be used (e.g. with special wheels or other rotors), the actual correction dimensions should be measured on the assembly and preset on the mm or inch display.
Reference point correction dimensions are the center of gravity of the balance weights in the desired correction positions.
For this type of balancing operation always set the machine to the standard mode.
Settings for display of static imbalance (e.g. motorcycle wheels).
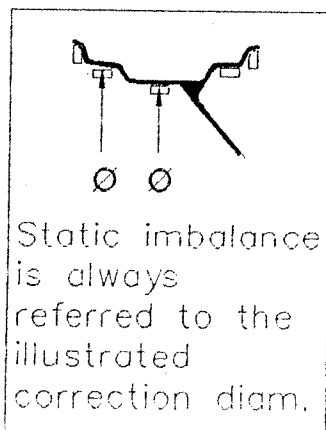**For measurement of static imbalance only:**
Wheel diameter has to be entered.
S/D key should be pressed.
(Press again to return to dynamic mode.)
The width and distance settings have no effect while measuring static imbalance.

Static imbalance
is always
referred to the
illustrated
correction diam.

NOTE: The static imbalance is read in the left display field only. Its location is indicated simultaneously by both direction indicators.

9. BALANCING

Preparations:
Mount the wheel.
Set the balancing mode.
Set the wheel dimensions.
Start the measuring run by pressing the start button. If the machine does not start and an error message is displayed, see page 12 "Error Messages".

After measurement the machine stops automatically and the wheel is braked to a standstill. The amounts of imbalance and the location of imbalance are viewed on the display.

Turn the wheel to the correction position for the left or right plane following the arrow-shaped LED display. When the position is reached only the middle rectangular LED remains lit.
The balance weight is attached to the rim at top dead center on that side.

Perform a check run.

If wheel is balanced correctly, the amount readings of both correction planes will be zero.

CORRECTION OF SETTINGS
If it appears after a measuring run that incorrect wheel data or the wrong balancing mode has been set, set the correct data or mode, then press the stop button, then the decimal key and the correct readings will be displayed automatically. It is not necessary for the operator to perform another measuring run.

10. RECALIBRATION

If the imbalance readings seem incorrect, recalibration of the machine by the user may be necessary.
For recalibration, the machine uses the standard wheel adapter.
See drawing.

CALIBRATION

Remove the cones & spacers the ring nut from the threaded sleeve.
Select C14C via the key pad. Cal 1 is displayed.

Press "START" (without the calibration weight).On completion of the run the machine stops automatically and Cal 2 is displayed. This calibration weight it's location is one the back of the machine. It's threaded into a hole provided for this purpose.

Turn the calibration weight into the threaded hole on the outside surface of the base flange.
See drawing.

FIRST RUN WITHOUT
CALIBRATION WEIGHT
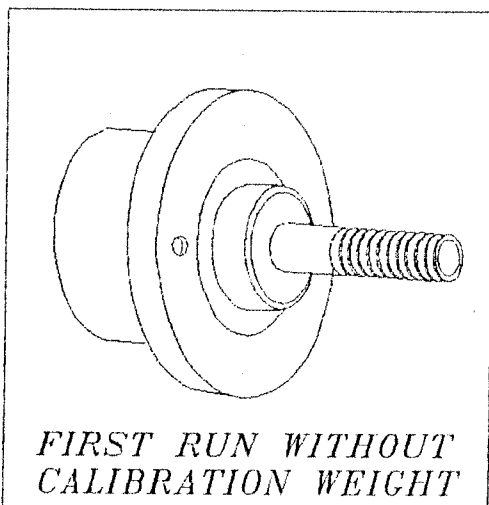
CAL 1

Press "START" (with the calibration weight).
On completion of the second run the machine will sound three beeps. Remove the calibration weight and return it to it's storage location into the hole at the back of the machine.
NOTE: For error messages displayed during recalibration, see page 12

SECOND RUN WITH
CALIBRATION WEIGHT

CAL 2

11. MAINTENANCE OF THE MACHINE
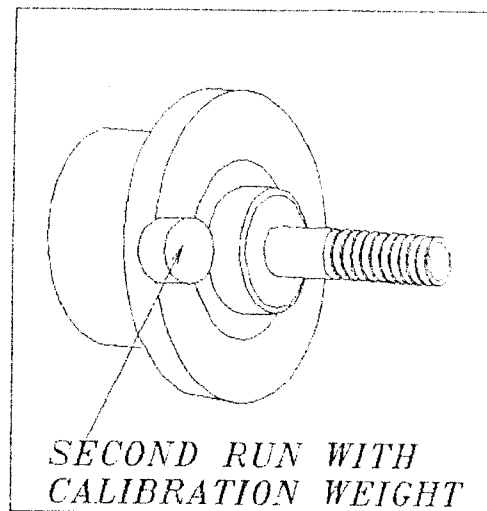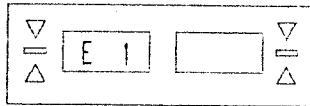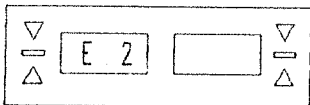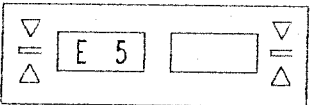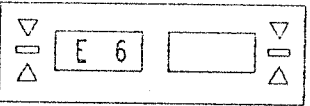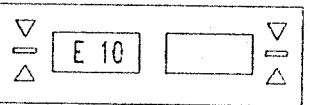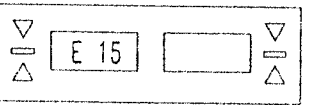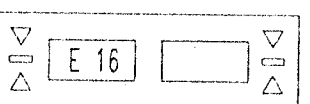
The wheel balancer requires almost no maintenance. The bearings are greased for life and sealed. The drive belt is provided with a tensioning device and does not require regular maintenance.

Particular attention must be paid to the cone adapter and the clamping tooling. Balance quality depends on their condition. Therefore they must be kept clean, and if not in use, they should be lightly lubricated (oiled).

Do not grease the threaded wheel adapter sleeve or ring nut during normal use.

12. ERROR MESSAGES

During operation of the machine, errors and defects might occur which are recognized by the electronic unit and displayed in the form of error messages.

Error messages	Cause/Remedy
E 1	Unrealistic distance, diameter or rim width for the balancing mode selected. E 1 with appropriate symbol lights up. Determine and set correct dimensions.
E 2	Wheel guard not closed. Error message disappears after closing the guard or after pressing the stop button.
E 5	By mistake, calibration weight had been inserted during first adjustment run. Remove the calibration weight, press the stop button (E5 will disappear and Cal 1 reappears). Start over.
E 6	Calibration weight was not inserted for the second adjustment run. Insert calibration weight, press the stop button (E6 will disappear and Cal 2 reappears). Start second adjustment run.
E 10	Main shaft does not reach measuring speed. Check belt tension & voltage to machine or call for service.
E 15	The correction factors used for calibration are incorrect. Is correct adapter used for calibration? Is weight jammed between vibratory member and housing? Assure solid machine support (3 point) or call for service.
E 16	See above.
E ..	Other error messages signal defects of the machine which can be remedied only by the venders service.

13. PRO MATCH TIRE MATCHING SYSTEM.

PRO MATCH was developed as a system to reduce lateral and radial run-out and force variations. The balancer operator follows a step by step procedure and the computer determines the best position for the tire on the rim. Following the **PRO MATCH** procedure will reduce the size of the balance weights needed as well.

PRO MATCH is recommended if:
The indicator for **PRO MATCH** page # 06 item 5 lights up after a measuring run.
The wheel requires large balance weights.
Radial or lateral run-out is excessive as the wheel is rotating on the wheel balancer.
The vehicle is known to be sensitive to run-out or force variations.
A customer complaint is received after the wheels have been properly and accurately balanced.

PRO MATCH will not bring improvements in the ride if:
There is no run-out in the rim.
There is no imbalance in the tire.
The rim is severely bent.

To insure successful **PRO MATCH** results:
Lubricate tire and rim beads. Inflate tire properly to insure beads are seated.
Set the rim dimensions to the exact wheel size.
Take care each time the wheel is mounted onto the wheel adapter that it centers properly.
Keep the wheel adapter components clean.
Whenever practical, start **PRO MATCH** using the rim only.

Instructions for using **PRO MATCH**. (Please read before following the Operation Sequence and Codes.)
PRO MATCH can be used in two ways:

1. With the rim only.
2. Starting with tire already assembled on the rim. (Press decimal point so display shows "OP3")

Using the **PRO MATCH** procedure works most accurately when it is started using the rim only.
This way the rim imbalance is taken into consideration during the **PRO MATCH** calculations.

Basic operation:
If starting with a rim only:
The first run measures the rim imbalance.
The tire is mounted on the rim.

If starting with the tire mounted:
The second run measures the tire imbalance
The tire bead is broken and the tire is turned on the rim 180 degrees.
The third run measures the tire imbalance.

The balancer computer indicates the matching recommendation for the operator:
The tire bead is broken and the tire is positioned on the rim according to the recommendation.
The fourth run acknowledges compliance with the recommendation and imbalance correction weights needed.
The wheel is balanced and removed from the machine.

PRO MATCH OPERATING SEQUENCE AND CODES

DISPLAY CODES	ACTION (PRESS OP. KEY)	REMARKS (CHECK FOR CORRECT RIM SETTINGS)
OP.1	To initiate program for tire/rim assembly press decimal point on keypad. OP.3 displ.	◄———— TIRE RIM ASSEMBLY
	If starting with rim only follow procedure from OP.1.	◄———— RIM ONLY
OP.2	Place valve @ TDC and depress OP. key. Press START.	
OP.3	Mount tire on rim. Mount on balancer. Place valve @ TDC and press OP. key.	Carefully check that tire is evenly seated around rim bead.
OP.4	Press START.	
OP.5	Using position display index wheel to TDC and place chalk mark to right side on tire.	OP. 5 H1 = further matching not needed but can be continued or press STOP and balance the wheel.
OP.5 H 1		
	Break tire bead and rotate to line up chalk mark with valve.	Carefully check to make sure tire is evenly seated around rim bead.
OP.6	Mount wheel on balancer. Place valve @ TDC and press OP. key. Press START.	Make sure wheel is precisely centered on the balancer shaft.
H 0	Press STOP. Balance wheel.	Optimum matching done.
▼ ⬡ OP.7	Using left position display index wheel to TDC and place a double chalk mark on left side of tire. Break bead and reverse tire on rim, line up double chalk marks with valve stem.	If the tire cannot be reversed on rim, press decimal point key. Computer gives next best recommendation. When remounting tire carefully check that tire is evenly seated around the rim bead.
OP.7 ⬡ ▲	Using right position display index wheel to TDC and place a double chalk mark on right side of tire. Break tire bead and line up chalk mark with valve stem. DO NOT REVERSE TIRE	When remounting tire carefully check that the tire is evenly seated around the rim bead.
OP.8	Mount wheel on balancer, set valve @ TDC and press OP. key. Press START	Make sure the wheel is precisely centered on balancer shaft.
1.25 0.50	Balance the wheel.	PRO MATCH completed.
E 9	An error during the procedure has been detected by the computer. If the program was not followed exactly or if a wheel centering error caused illogical inputs to the computer, E9 will display.	

Common causes for E9:

1. The wheel was not precisely centered on the wheel adapter during each measuring run.
2. The tire beads did not center properly on the rim.
3. The valve position was not correctly indexed when the OP. key was pressed.
4. The wheel was not positioned correctly according to the computer recommendation.
5. The wheel slipped against the adapter changing position during starting or stopping.
6. The wrong rim dimensions were set.

E8: Valve position has not been set.

Wiring Diagram 230 Volt
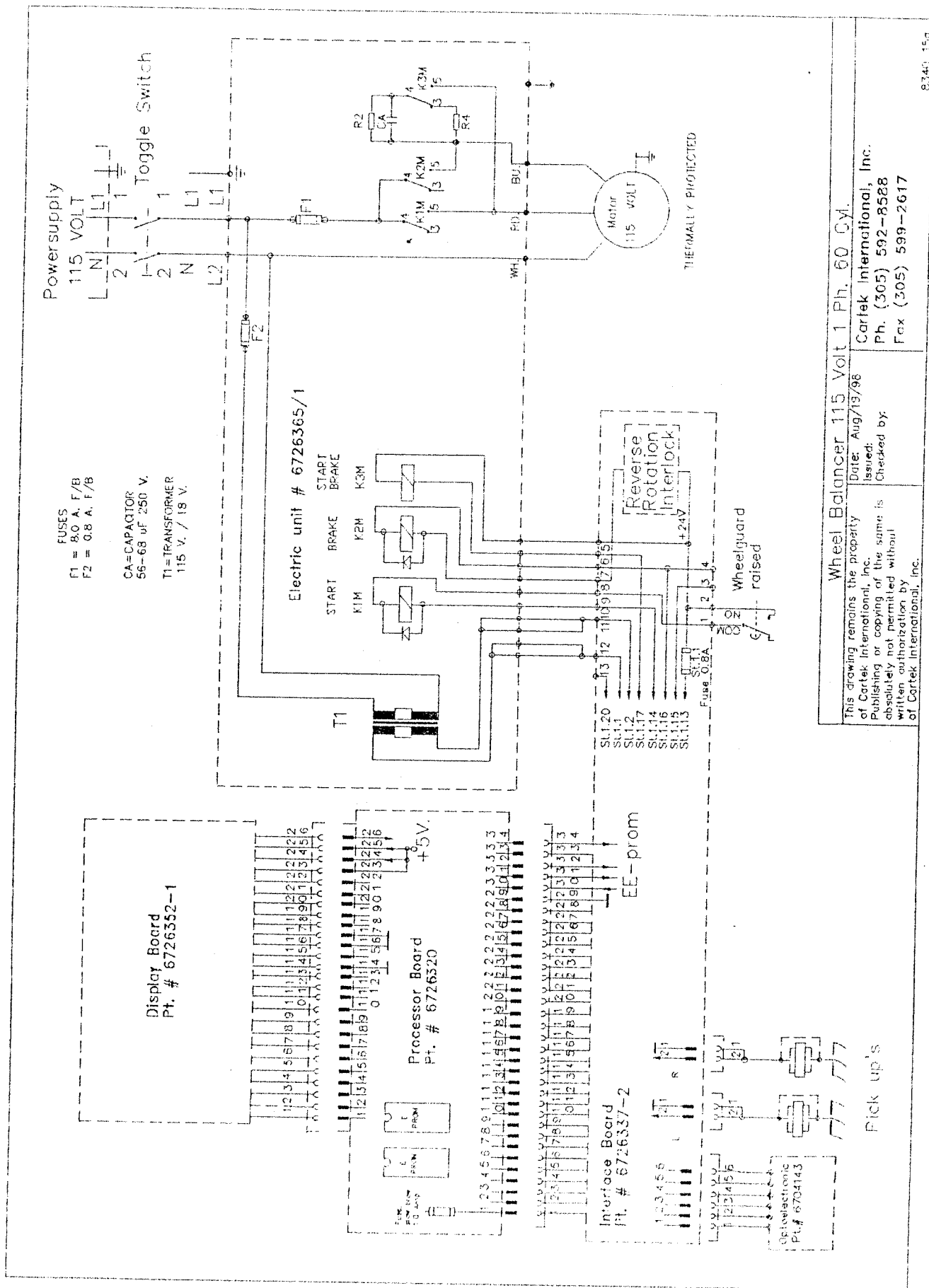
15. SETTING "C" FUNCTION CODES:

Function codes are verified, selected, and changed as follows:
Enter a code by pressing C - the code number - then C again. The right display will show one of the numbers that follows the codes below. After verifying, or changing the code press the RED (stop) button.

Unless stored in the computer memory (located on the Interface circuit board) a function code that has been changed returns to the original state when the power is turned off.

To store code settings in the computer memory:
Enter C 10 C. Then press keys 1 & 3 at the same time.
The Processor circuit board issues three tones signaling the code setting has been stored in the memory.

C1C: Readout resolution (round-off) - Press the . (decimal) button to change.
   1 = 0.05 Ounce / 1 Gram
   0 = 0.25 Ounce / 5 Gram   Factory set to "0" increments reading of 0.25oz or 5gr.

C2C: Readout suppression of small imbalances as selected using C9 or C8.
   Press the (.) decimal button to turn on or off.
   1 = On   Factory set to "1"
   0 = Off

C3C: Readout in ounces or grams - Press the (.) decimal button to change.
   1 = Ounces
   0 = Grams

C4C: Electronic compensation of the residual imbalance. This procedure may be used in case the adapter has a minor imbalance. Enter C 4C then operate the balancer through a cycle.
   Press the stop button to continue. Compensation cannot be stored in the computer memory and retained when power is off.
   It resets to 0 whenever power is turned off.
   1 = On
   0 = Off

C5C: Machine brakes or coasts when the wheel guard is lifted.
   Press the (.) decimal button to change.
   1 = Brakes   Factory set to 1
   0 = Coasts

C8C: Selection and entry in grams of the suppression of small imbalance display. Factory set to 5.0 grams.
   All imbalance of the selected weight or less will display 0 grams. To enter a new value, enter C 8C, key in the new value, press the C button.

C9C: Selection and entry in ounces of the readout suppression of small imbalances. Factory set to 0.25 ounce.
   All imbalance of the selected weight or less will display 0.00 ounces. To enter a new value, enter C 9 C, key in the new value, press the C button.

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C10C: Stores selected codes, data and adjustments into the computer memory located on the Interface circuit board. Enter C 10 C then press buttons 1 & 3 at the same time. Listen for a 3 tone audible acknowledgment.

C12C: Total balancing cycles. Entry of this code display the total number of measuring runs the balancer has operated. The maximum count is 999,999.

C13C: Starting a measuring run by closing the wheel guard. Press the (.) decimal button to change from 0 to 1 or 1 to 0.
0 = off (factory setting), 1 = on

C14C: See Recalibration page 11.

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SPARE PARTS

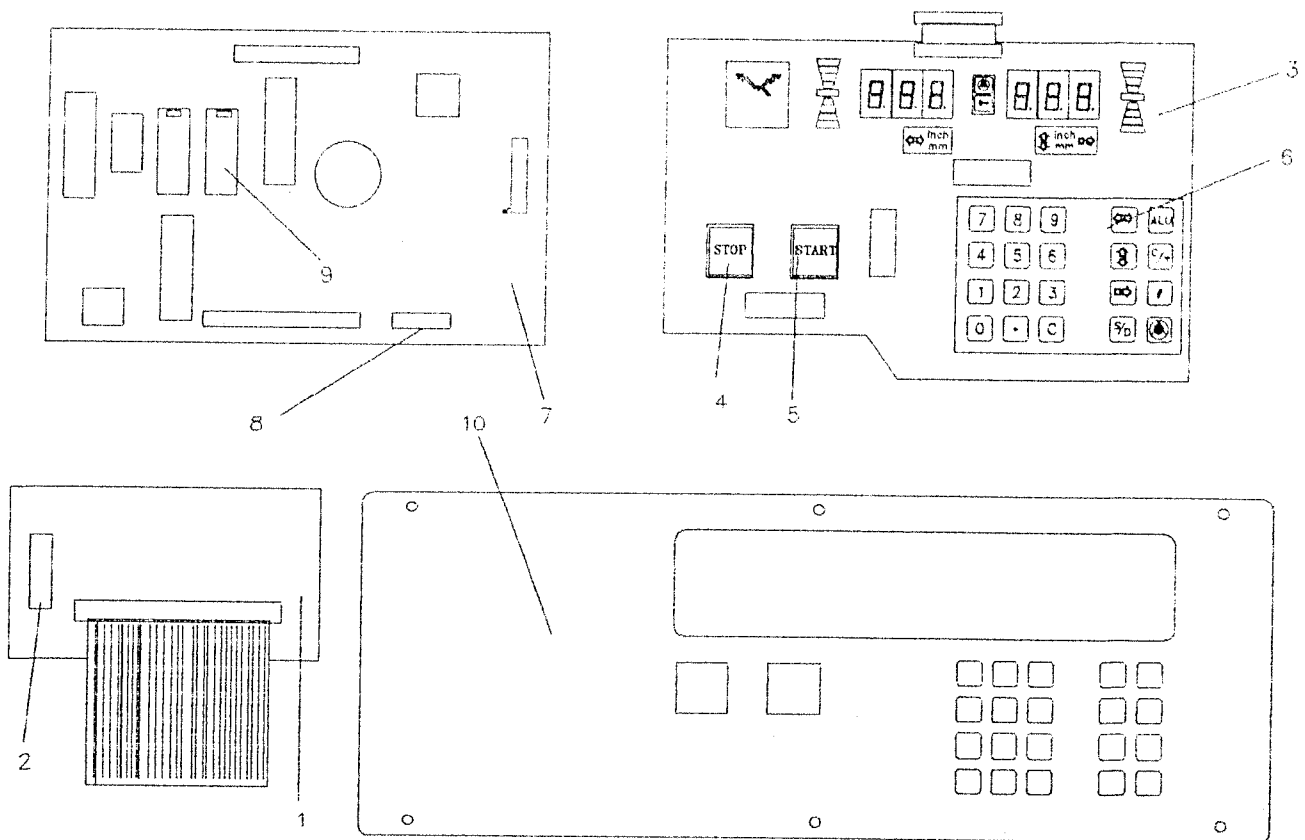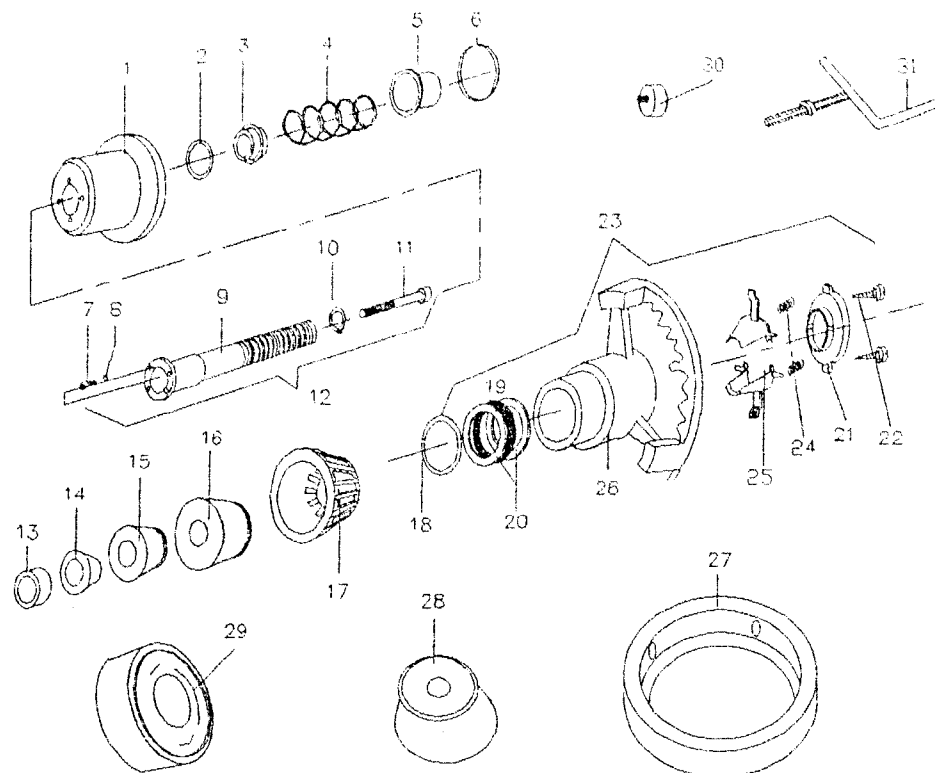| REF.	PART #	DESCRIPTION
1	6415529	VIBRATORY SYSTEM
2	1317060	BALL 6mm DIAM.
3	6410509	PICK-UP
4	1317150	BALL 15mm DIAM.
5	1530121/A	PICK UP SCREW
6	1556100	HEX NUT M10 DIN 936
7	1647100	LOCKRING M10
8	3300017	POLY-V DRIVE BELT
9	1614009	CIRCULAR SPRING
10	1648953	SLOTTED DISC
11	1659025	CIRCLIP, A25x1.2
12	4104280/1	MOTOR, 115 VOLT, 1PH.
13	6415551	MOTOR PULLEY, 60HZ.
13a	6415551-1	MOTOR PULLEY, 50HZ.
14	1645130	WASHER, 25x35x2mm
15	6704143	OPTO ELECTRONIC
16	2001099	HEX HEAD BOLT
17	2001041	WASHER
18	3300010	WARNING LABEL

REF.	PART #	DESCRIPTION
19	2001098	WASHER
20	1524077	ALLEN SCREW, M10
21	1643610	WASHER, 10.5mm
22	2001023	SETSCREW 5/16-18x0.5"
23	3300025	MOTOR MOUNT
24	2001107	SETSCREW 3/8-16x1.5"
25	6411559	DRIVE PULLEY
26	2001050	WASHER 3/8"
27	3300059	SPACER BLOCK
28	2001040	LOCK NUT
29	1555100	NUT M10, DIN 934
30	3300008	WARNING LABEL

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REF.	PART #	DESCRIPTION
1	80336/84C	WHEEL GUARD W/TUBE
2	1631040	COLLAR, TRIP CAM
3	1324032	COLLAR AND BUSHING
4	1509021	CHEESE HEAD SCREW M4x10
5	4402102	WHEEL GUARD SWITCH
6	1509047	SCREW, M6x20, DIN 7985
7	1640060	WASHER, 6.4mm DIN 9021
8	1559261	CLIP NUT
9	1621176	SPRING
10	1641100	WASHER 10.5 DIN 125
11	1613224	SPRING
12	6411319	DISTANCE GAUGE SHAFT
13	1745207	WHEEL GUARD STOP
14	1701353	DISTANCE GAUGE LEVER
15	6413153	WHEEL GUARD SHAFT
16	3300001	WHEEL GUARD BRACKET
17	3300022	TOGGLE SWITCH
18	1530128	HEX HEAD BOLT, M10x60mm
19	1557101	SELF LOCK NUT, M10
20	2001016	SELF TAPPING SCREW

REF.	PART #	DESCRIPTION
21	1555060	NUT M6
22	6413155	CALIBRATION WEIGHT
23	1701355	BUSHING
24	1555100	NUT M10
25	6415073	GAUGE PROBE
26	6726365/1	ELECTRICAL CONTROL
27	1001036/1	FUSE FAST BLOW 8.0 A.
28	1001035/1	FUSE FAST BLOW 0.8 A.
29	3440068	RELAY
30a	801701472	PANEL HOUSING
30b	801701471	WEIGHT TRAY BASE
31	3762010/1	START CAP. 56-68uF 250 V.
32	3501435/1	TRANSFORMER FOR 115 / 18 V.
33	1701356	BUSHING
34	1645124	SPACER
35	1657027	CIRCLIP
36	1657020	CIRCLIP
37	8000002/A	FRONTPANEL COMPLETE.
38	3200023	TRANSFORMER FOR 230 VOLT MACHINES ONLY.
39	3300056	ADJ. WG-STOP SCREW
40	1552080	HALF NUT M8

REF.	PART #	DESCRIPTION
1	6726337-2	INTERFACE BOARD
2	3350113	FUSE INTERFACE BOARD 0.8 A. F\B
3	6726352-1	DISPLAY BOARD
4	3402247	STOP KEY
5	3402246	START KEY
6	3402245	KEY PAD
7	6726320	PROCESSOR BOARD
8	3350312	PROCESSOR BOARD FUSE 1.0 AMP S/B
9	6740095-4	E-PROMS (SET OF TWO)
10	8000002	FRONT PANEL ONLY

PROTECTIVE COVER

LIGHT TRUCK CONE
(OPTIONAL)

LIGHT TRUCK DISTANCE
SPACER   (OPTIONAL)

REF.	PART #	DESCRIPTION
1	6416171	FLANGE
2	1645155	WASHER
3	1701548	SPRING CENTERING RING
4	1611341	COMPRESSION SPRING
5	1098002	SPRING CUP
6	1655092	SNAP RING
7	1535060	HEX SOCKET HEAD SCREW
8	1654080	LOCK WASHER
9	6416572	ADAPTER SLEEVE
10	1659901	CIRCLIP
11	1524149	TIGHTENING BOLT M16x120mm
12	6416637	ADAPTER SLEEVE COMPLETE WITH CLAMPING BOLT
13	6407345	SPACER
14	6416570	CENTERING CONE NO.1, 41 - 76 mm
15	6416571	CENTERING CONE NO.2, 71 - 94.5 mm

| REF.	PART #	DESCRIPTION
16	6411237	CENTERING CONE NO.3 93 - 116 mm
17	6411409	PRESSURE CUP
18	1656052	SNAP RING
19	1323600	SLIDING DISC
20	1645154	SPACER RING
21	1701025	CUP
22	1538950	SCREW
23	6415899	"ZIPLOCK RING NUT ASSEMBLY"
24	1611128	COMPRESSION SPRING
25	7409019/20	SET OF JAWS
26	1701046	PLASTIC QUICK CLAMPING NUT
27	6410196	LIGHT TRUCK DISTANCE SPACER (OPTIONAL)
28	6410649	LIGHT TRUCK CONE (OPTIONAL) 105 - 177 mm
29	1701365	PROTECTIVE COVER
30	6413155	CALIBRATION WEIGHT
31	5524414	HEX WRENCH 14mm

17.

Mounting Instruction of "Light Truck Wheels"

Do **NOT** exceed wheel assembly weight of appropriate machine.

For center hole larger than 4.25", use optional "light truck cone" #6410649 from front and **reverse the pressure cup** of the quick nut as shown below.
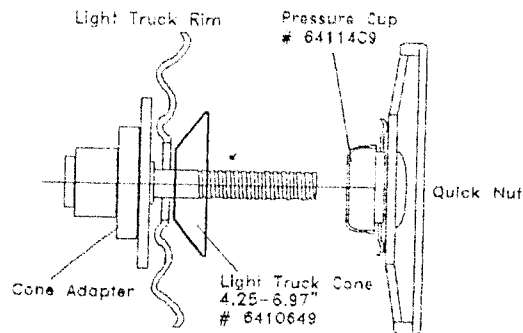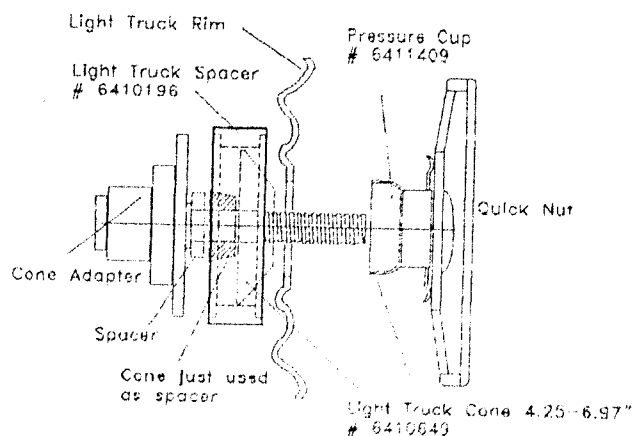

For "Light Truck Duals" with extra large hole.

Snap optional "**light truck spacer**" #6410196, over cone adapter flange, use optional "**light truck cone**" #6410649 from the front and **reverse the pressure cup** of the quick nut as shown below.
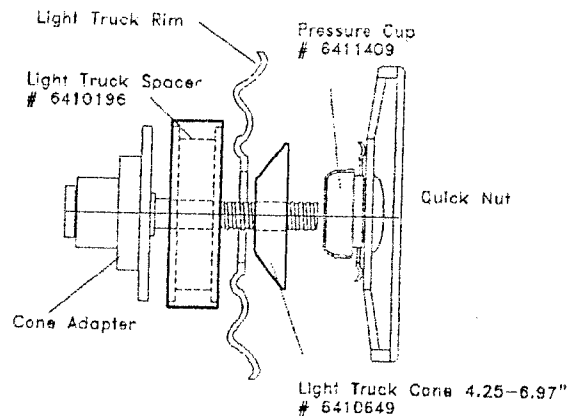
Alternative centering for "Light Truck Wheels"

Snap optional "**light truck spacer**" #6410196, over cone adapter flange, use optional a spacer and/or cone to assure for proper distance when using "**light truck cone**" #6410649 as shown below, use **pressure cup** of the quick nut from front.

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Notes: