

DIGITAL WHEEL BALANCER

WB-DL-65 DSP C+



OPERATING MANUAL
(Ver.1.0)

Dear Customer,

Congratulations, for selecting **Digital Wheel balancer** as your Wheel balancing equipment. It is an user friendly system which can be used effectively for balancing Car / LCV wheels.

We take special care to ensure that every **Digital Wheel balancer** leaving our Factory is in the best operating condition. This **OPERATING MANUAL** has been prepared to help you in getting the best performance out of the equipment. Still, if you have any doubt, please do not hesitate to contact us.



Read the Operating manual carefully before starting to use the equipment

Every attempt is made in this manual to guide the User on the effective use of the Equipment. Any suggestion may please be sent to us for improvement.

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1. WARRANTY – STATUTORY CLAUSE

The equipment is provided with Warranty for one year from the date of installation or thirteen months from the date of despatch whichever is earlier, against any manufacturing defect. The Warranty is subjected to the following conditions:




1. Ensure that proper power supply with protective Earthing is provided for the equipment. Any high voltage may damage the components, leading to system failure or electrical hazards.
Power supply
For 230V 50/60Hz operation: Single Phase, 230VAC $\pm 10\%$, 50/60Hz +N +PE
For 110V 60/50Hz operation: Single Phase, 110VAC $\pm 10\%$, 60/50Hz +N +PE
Warranty ceases if this condition is not satisfied
2. Power supply to the equipment should be connected only through a CVT of 1KVA capacity to avoid any failure of electronic parts due to instantaneous high voltage. PLEASE AVOID CONNECTING WHEEL BALANCER DIRECTLY TO MAINS.
3. Ensure that any heavy electrical equipments like Compressor / Welding machines / Medical equipments etc., are not connected to same power line.
4. All regulations in force concerning the safety at work must be complied when choosing the installation location. In particular, the equipment must be installed and operated in protected environments where there is no risk of dripping (or) direct sunlight.
5. Ensure that any equipment which produces Ultra Violet rays are not available in the same premises.
6. The operating location must be free from heavy magnetic field.
7. Do not attempt to open or service the equipment under any circumstances.
Warranty ceases if the equipment is opened or serviced by un-authorized personnel
8. While handling the PCBs, make sure to wear ESD wrist band.
9. Ensure the PCBs are packed in ESD safe cover during transportation for service or any other purpose.
10. ***Warranty ceases if this equipment is used for any purpose other than the intended use.***
11. The equipment must be installed Indoor away from Sunlight, rain / moist areas
Warranty ceases if the equipment is exposed to direct Sunlight, Rain / Water
12. Make the warranty registration by duly signing the counterfoil of the warranty card sent along with the equipment.
13. If transportation, lifting, unpacking, assembly, installation, start up, testing, repair and maintenance have been performed by un-authorized personnel, the manufacturer shall not be responsible for injury to personnel or damage to objects.
14. DO NOT remove or modify any parts of the equipment as this could compromise the equipment's intended use. For any modifications / repairs consult the Manufacturer.

2. SAFETY

Thoroughly read all Safety labels and Manual instructions before installing, operating and maintaining the Wheel balancer. They are provided to prevent personal injury and property damage. Replace any label unreadable or missing on the Wheel balancer. Refer Part No. given for each labels for ordering. Always keep the Manual in a prominent place for quick reference.

Injury to personnel and damage to property incurred due to non-compliance with these safety instructions are not covered by the product liability regulations.

SYMBOLS

	Failure to comply with instructions could result in personal injury
	Failure to comply with instructions could result in property damage
	Important information

2.1. INTENDED USE

- Always observe the rated load capacity of the Wheel balancer.
- Use the Balancer as described in this Operating manual only.
- Wheel guard must be kept closed during spinning of wheel in the Balancer.
- Use only the accessories recommended by the manufacturer.
- Always use appropriate accessories for mounting various types of wheels.

⚠ ATTENTION	
MAXIMUM WHEEL WEIGHT	: 65 kg
MAXIMUM WHEEL DIAMETER	: 39" (990 mm)
MAXIMUM WHEEL WIDTH	: 21" (533 mm)

2.2. SAFETY INSTRUCTIONS FOR COMMISSIONING

1. Only authorized service personnel are allowed to install and commission the Wheel balancer.
2. **DO NOT HOLD** the shaft or its base for lifting / moving the Balancer. Even the slightest bend of the shaft will affect the accuracy of the equipment. Use Lifting handles for lifting the Balancer.
3. The Balancer should not be installed outdoors or in moist rooms.
4. To reduce the risk of fire, the equipment should not be installed at hazardous locations or in the vicinity of explosives or flammable liquids.
5. The floor should be properly leveled beneath the Balancer and should be free of heavy equipment vibration.
6. The Balancer must be anchored to the floor, since large unbalance in wheels can cause heavy vibration which leads to repeated runs for balancing.
7. Proper Earthing must be provided.
8. If an Extension power cord is required, a cord with correct rating equal to or more than that of the equipment should be used.
9. Care should be taken to route the Power mains cord properly so that it is not tipped over or pulled.

2.3. SAFETY INSTRUCTIONS FOR OPERATION

1. Read the Operating manual thoroughly.
2. Only permit qualified personnel to operate, maintain or service the Balancer.
3. Always keep the Balancer and the surrounding work area clean and free of Tools, Parts, Debris, Grease etc.
4. Do not operate, if the equipment has been dropped or damaged until it has been examined by qualified service personnel.
5. Do not operate the equipment with damaged Power cord.
6. Always unplug the equipment from electrical outlet when not in use. Do not pull on the cable, always pull the plug directly out of the socket.
7. Avoid dropping of wheels heavily on the shaft while mounting and removing, which may affect the accuracy of the equipment and also damage the shaft threaded area.
8. The wheels must be mounted properly on the shaft, as the quality of balancing is directly depended on the mounting of the wheels. The Quick Change Lock Nut (QCLN) must be firmly tightened before spinning the wheel.
9. Do not hammer or hit any part of the equipment with Weight plier, Tools etc.
10. Do not lift the Wheel guard until the wheel rotation is completely stopped.
11. Never overload the Balancer.
12. Do not keep heavy objects over the system, except limited quantity of Wheel balancing weights.
13. Keep hair, loose clothing, fingers, and all parts of body away from rotating / moving parts.
14. Always wear Safety glasses and Gloves while operating the equipment.
15. In case of emergency switch OFF the equipment.
16. Always comply with the applicable accident prevention regulations.

2.4. SAFETY INSTRUCTIONS FOR SERVICING


1. Inspect the Wheel balancer on daily basis.
2. Only authorized personnel are allowed to service the Balancer.
3. Turn OFF the Rocker switch and unplug the Balancer before doing any maintenance or repair work.
4. Only certified electricians are allowed to service the electrical & electronic parts of the equipment.
5. Do not remove / disable / override any safety device / interlocks.
6. The use of cleaning agents which attack coating or sealing materials could result in equipment damage.
7. Ensure the disposal of ecologically harmful substances in accordance with the appropriate regulations.
8. Use recommended spare parts only to guarantee the reliable function and to ensure safety of the equipment.

2.5. SAFETY FEATURES

2.5.1. WHEEL GUARD AND ITS SAFETY INTERLOCK SWITCH

The Wheel guard prevents flying out of the weights added on the Wheel rim or stone / foreign particles sticking to the tyre in any direction except towards the floor. A safety Interlock switch is provided to ensure that the Wheel guard is closed during spinning of wheel. If the Wheel guard is not closed during spinning, an error code "Err 01" will be displayed. By closing the guard, error code will disappear and the wheel starts spinning. This feature is to ensure the safety to the operator.


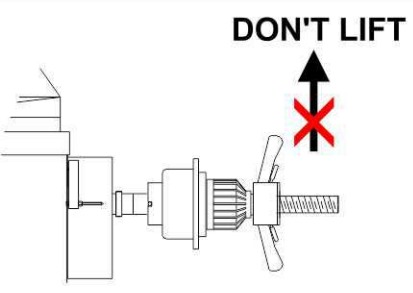

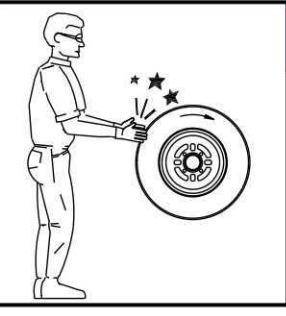



2.5.2. DOUBLE CLICK OF KEYS FOR SPINNING OF WHEEL



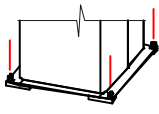
During Balancing run, for spinning the wheel the  key must be pressed twice within a second. This is to avoid accidental spinning of wheel.

2.5.3. CONTROL FUSE

Control fuses are incorporated to protect the electronic assemblies against short circuit & high current. AC (Inlet) socket with Fuse holders is mounted on the rear side of Main cabinet which can be easily accessed from outside for replacing the blown fuse. Always replace the Control fuse with same type and rating of CE marked Fuse.

2.6. SAFETY LABEL INFORMATION

		
<p>MAXIMUM WHEEL WEIGHT : 65 kg MAXIMUM WHEEL DIAMETER : 39" (990 mm) MAXIMUM WHEEL WIDTH : 21" (533 mm)</p>		
	 <p>DO NOT HOLD the shaft or its base for lifting / moving the Balancer</p>	<p>← Sticker, Operation, Safety & Rating (LCV) (Part No. H3711)</p>
	 <p>KEEP AWAY FROM ROTATING PARTS. LIFT WHEEL GUARD ONLY AFTER COMPLETE STOPPAGE OF WHEEL ROTATION.</p>	
 <p>230V AC, 50/60Hz, 1ϕ DISCONNECT POWER BEFORE MAINTENANCE</p>	 <p>110V AC, 50/60Hz, 1ϕ DISCONNECT POWER BEFORE MAINTENANCE</p>	<p>← Sticker, Electrical safety (Part No. B2945/B2946)</p>

	<p>⚠ CAUTION</p> <p>DO NOT HAMMER or HIT</p>	←	<p>Safety instruction for operation-II (Part No. H3635)</p>
<p>ROTATION</p> 		←	<p>Indicator for direction of rotation of wheel (Part No. H3636)</p>
	<p>⚠ CAUTION</p> <p>Equipment must be anchored to the floor for safe & reliable operation</p>	←	<p>Foundation Warning (Part No. B2941)</p>

3. FEATURES & SPECIFICATIONS

Sl. No.	Description	WB-DL-65 DSP C+
I	Features	
1	Suitable for balancing of Cars & LCV wheels	✓
2	Optical Encoder for acquiring wheel parameters input by wheel rotation	✓
3	High precision Piezo Sensor for unbalance measurement	✓
4	Low RPM & Centrifugal Switchless Motor for high reliability & vibration less balancing	✓
5	DSP (Digital Signal Processor) technology for processing wheel data	✓
6	Automatic Electrical braking system	✓
7	Additional Mechanical braking system (Foot pedal operated) to facilitate weight addition	✓
8	1" Seven segment LED display	✓
9	Fully automatic start, measurement and braking	✓
10	Static (Single plane) & Dynamic (Two plane) Balancing (Static NA in HCV Truck mode)	✓
11	Two modes of measurement - Normal and Fine	✓
12	Seven modes of Alloy wheel functions (Alu-2P & Alu-3P NA for HCV model)	✓
13	Input parameter entry confirmation through Beep sound	✓
14	Auto unbalance recalculation without wheel Run on input parameters change	✓
15	Automatic Distance input mechanism	✓
16	Adjustable Unbalance threshold (Weight cutoff)	✓
17	Simultaneous display of Inner and Outer plane results	✓
18	Dimension setting in "Inch" or "mm"	✓
19	Unit conversion in "grams" / "ounces"	✓
20	Self diagnostic and On-line error display facility	✓
21	Self Calibration	✓
22	Mid Centering Device for positioning of wheels accurately	✓
23	Quick Change Lock Nut to ensure fast mounting & removal of wheels	✓
24	Automatic start with wheel guard closure	✓
25	Universal AC power input socket	✓
II	Technical specifications	
1	MCD shaft diameter	40mm
2	Maximum wheel weight	65kg
3	Maximum Wheel diameter	39" (990mm)
4	Maximum Wheel width	21" (533mm)
5	Rim distance By Distance measuring rod By Keypad entry	0 to 245mm 0 to 550 mm
6	Rim diameter *	10" to 24" (254 to 610 mm)
7	Rim width *	1.5" to 20" (38 to 508 mm)
8	Maximum unbalance measurement	300gm
9	Unbalance Resolution For Car / LCV	Fine Normal 1 gm 5 gm
10	Unbalance Accuracy - For Cars / LCV	1gm
11	Position accuracy	± 1°
12	Balancing speed - For Cars / LCV	175rpm
13	Spin time - For Cars / LCV	10 sec. (min.)

Sl. No.	Description	WB-DL-65 DSP C+
III	Electrical specifications	
1	Motor 230V 50/60Hz operation 110V 60/50Hz operation	0.35HP, 1 , 50/60Hz 0.35HP, 1φ, 60/50Hz
2	Motor speed 230V 50/60Hz operation 110V 60/50Hz operation	960rpm 1200rpm
3	Power supply 230V 50/60Hz operation 110V 60/50Hz operation	230VAC ±10%, 1φ, 50/60Hz +N +PE 110VAC ±10%, 1φ, 60/50Hz +N +PE
4	Current rating 230V 50/60Hz operation 110V 60/50Hz operation	2 Amps 6 Amps
5	Power 230V 50/60Hz operation 110V 60/50Hz operation	600W 800W
IV	General specifications	
1	Machine dimensions - Unpacked (LxBxH) (approx.) Without Wheel guard With Wheel guard (in Open condition) With Wheel guard (in Closed condition)	775x577x925mm 1004x848x1309mm 1004x885x1193mm
2	Machine dimensions - Packed (LxBxH) (approx.) Cabinet with Accessories	750x660x1110mm
3	Machine weight - Unpacked (approx.) (without Wheel guard)	120kg
4	Wheel guard weight - Unpacked (approx.)	15kg
5	Machine weight - Packed (approx.)	165kg
6	Operating temperature	0°C – 50°C
7	Storage temperature	-20°C to 70°C
8	Humidity	RH below 90% Non condensing
9	Ingress Protection rating	IP-40

NOTE :

- * - Rim diameter & Rim width is the dimension entered with reference to the place of addition of balancing weight on the Rim

4. INSTALLATION

Wheel balancer installation should be done only by qualified Service personnel.

4.1. REQUIREMENTS

4.1.1. LOCATION

The Wheel balancer should not be installed outdoors, in moist rooms, at hazardous locations, or in the vicinity of explosives or flammable liquids.



Choice of a suitable location is the owner's responsibility

4.1.2. SPACE REQUIREMENTS

- The floor should be properly leveled beneath the Balancer and should be free of heavy equipment vibrations.
- The clearances from side walls and roof should be adequate so that the Wheel guard can be opened completely and the mounting / removal of wheels can be done easily as shown in Fig.1.

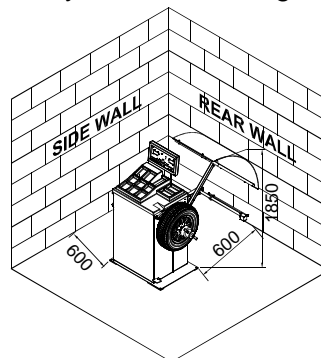


Fig. 1

4.1.3. POWER REQUIREMENTS

For 230V 50/60Hz operation: Single Phase, 230VAC $\pm 10\%$, 50/60Hz +N +PE

For 110V 60/50Hz operation: Single Phase, 110VAC $\pm 10\%$, 60/50Hz +N +PE

Proper Earthing must be provided. Also ensure that live phase is on the right side point of the socket. It is strongly recommended to use a CVT of 1KVA capacity.



Neutral to Line Voltage should be 230VAC $\pm 10\%$ (for 230V operation)

Neutral to Line Voltage should be 110VAC $\pm 10\%$ (for 110V operation)

Neutral to Earth should be less than 3V AC

4.1.4. TOOLS REQUIREMENTS



Provision of handling means such as Forklifts etc. is the owner's responsibility

The following accessories and tools are required for the proper installation of the equipment:

- Screw drivers, Spanner set and Allen key set
- Measurement Tape, 5mtr
- Chalk liner/Marker pen – For marking
- Strip cutter – to Open Carton banding
- Knife – For opening Cartons
- Plastic cable ties – for proper routing of cables
- Multimeter – For verifying supply voltage
- Nylon Hammer
- Hammer Drill and 12mm Drill bit
- 'U' type Shims (required quantities) – 0.5mmT & 1.0mmT

4.2. UNPACKING

1. Unpack the Main cabinet corrugated box
2. Un-wrap the VCI sheet from Main cabinet.
3. Remove all the four bolts from Main cabinet base to take it out from pallet.
4. Ensure the contents as per the packing list:

Package No.	Package description	Package contents	Qty
1	Main cabinet corrugated box	1. Main cabinet assembly	1 No.
		2. Wheel guard	1 No.
		3. Wheel guard pipe	1 No.
		4. Width caliper	1 No.
		5. Accessories box (Over top cover) containing: a) MCD parts	1 Set
		b) Cone holding stem	3 No.
		c) DMR spacer, ALU-2P/3P	1 No.
		6. Accessories box (Cabinet right side) containing: a) QCLN parts	1 Set
		b) Wheel seating cones	3 No.
		c) Weight caliper	1 No.
d) Rubber hub cover	1 No.		
e) Wheel balancing weight	1 Set		
f) Foundation fasteners	1 Set		
g) Glass fuses	1 Set		

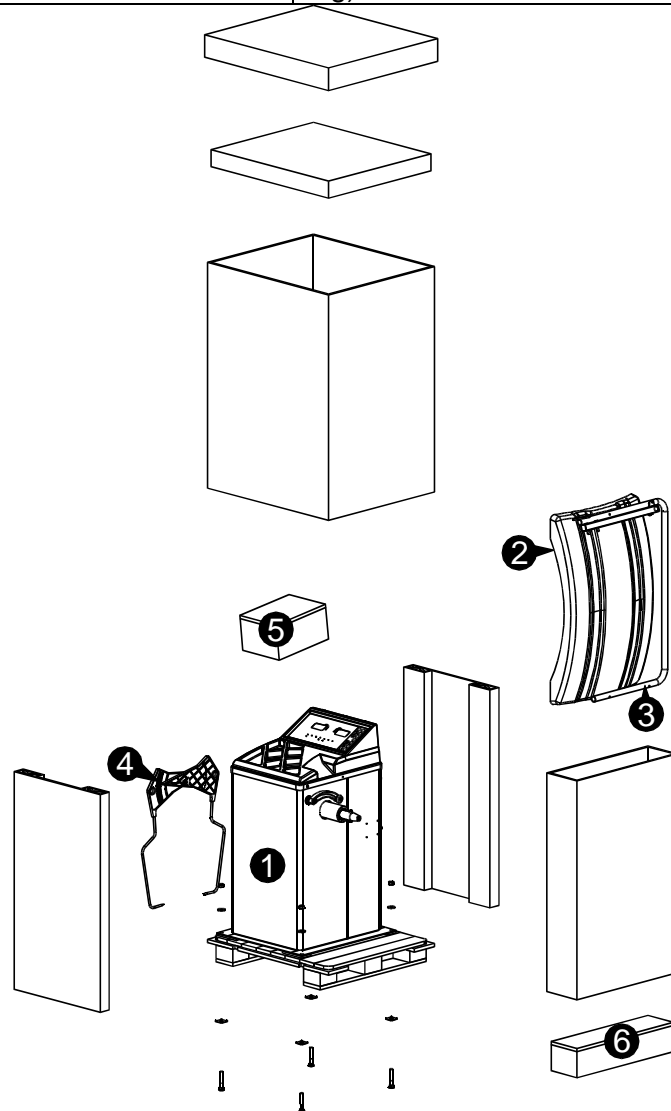




Fig. 2

4.3. FOUNDATION

	Proof of safe floor load capacity is the owner's responsibility
	It is strongly recommended to install Wheel balancer using Foundation bolts. Failing to comply may lead to toppling of cabinet & damage to equipment. Manufacturer will not be responsible for non-compliance

1. Place the Cabinet at the designated location and mark the Cabinet foundation fixing holes.
2. Move the Cabinet. Bore the marked holes using a Hammer drilling machine equipped with a 12mm concrete drill bit to required depth in the floor considering the foundation bolt length with sufficient length above the floor level for fixing cabinet. Clean the dust in the foundation area and holes.
3. Insert the M12x125mm Lg. Anchor bolt into the holes. Insert the foundation pin into the Anchor bolt and hammer to lock it.
4. Place the cabinet over the Foundation bolts by providing M16 Spring washer (Flat type) between the Cabinet and Floor.
5. Fix the Cabinet with foundation bolts using Nut & Washer that comes along with Anchor bolt.
6. Check of any tilt. Use required quantities & thickness of 'U' type shims (0.5mmT & 1.0mmT) in between the Spring washer & Floor for compensation, if required.

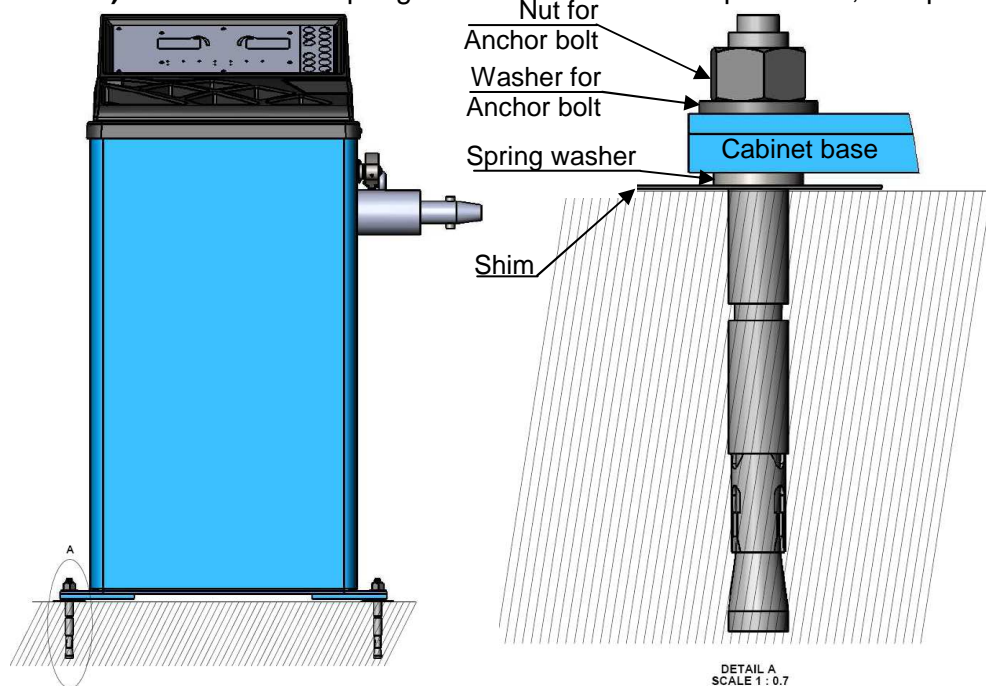


Fig. 3

4.4. INTEGRATION

4.4.1. WHEEL GUARD

1. Fix the Square pipe with the bracket using Allen screw & Spring washer (2 Nos.) each.
2. Fix the Wheel guard with pipe using Allen button head screw, Nut, Spring & Plain washer (4 Nos.) each.
3. Fix the Wheel guard & pipe assy with Square pipe using Nut, Spring & Plain washer (2 Nos.) each. Ensure Wheel guard assy is without any tilt.
4. Verify & ensure the limit switch functions of Wheel guard by opening & closing the guard.
5. Hook one end of the Wheel guard spring with Square pipe and the other end with the Cabinet.

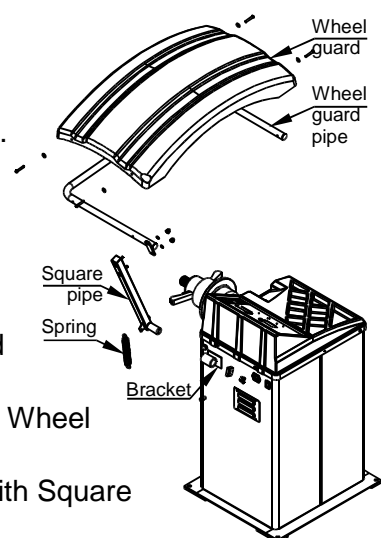


Fig. 4

4.4.2. MCD

1. Insert the Threaded shaft into Tyre seating cone and fix the assembly with Rotor Main shaft firmly using Allen screw & Spring washer (1 No.) each by matching the Arrow stickers pasted in both the Tyre seating cone & Main shaft.
2. Ensure the Rotor shaft is free from Runout. Else correct it.

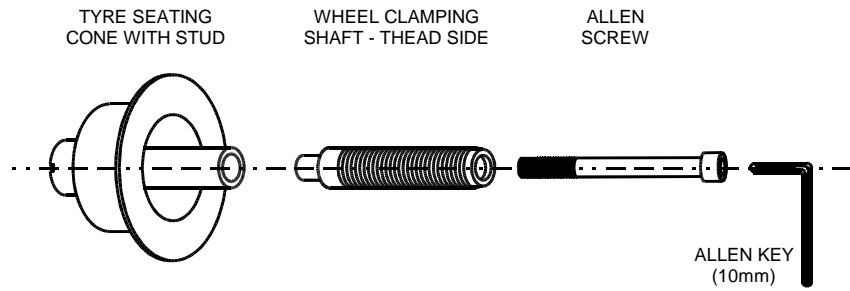


Fig. 5

Fix the Cone holding stems with left side of cabinet and locate the Wheel seating cones with the respective Stem as shown below:

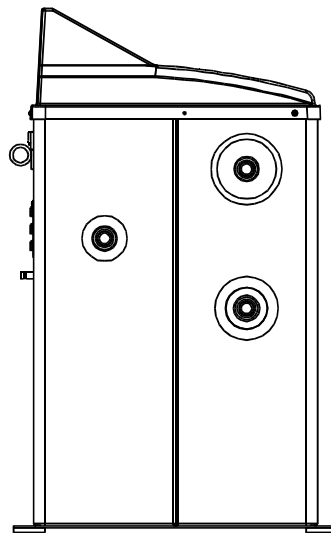



Fig. 6

Finally verify & ensure the cabinet is free from tilt again.

4.5. INITIAL OPERATION

1. Provide power supply and switch ON the equipment.
2. Press  key twice to run the Empty shaft and ensure the '0' value is displayed in both windows.
3. Mount a wheel (Refer Chapter 7.3) & balance the same (refer Chapter 7.4). Add a known weight on both sides (Inner and Outer). Check for its value and position are displayed correctly. If not, perform calibration (refer Chapter 8.1) and again conduct balancing operation.

5. OPERATING PRINCIPLE

5.1. UNBALANCE OF WHEEL

In normal condition unevenly worn out tyre causes uneven mass (weight) distribution with respect to wheel centre. Even Brand new tyres may have small amount of uneven mass distribution i.e., Unbalance.

When the wheel is in motion, the unbalanced mass causes a centrifugal force. This force when meeting the road squeezes the tyre momentarily.

This force is directly proportional to speed square ($F \propto N^2$) i.e., as the speed increases, the force increases in square proportion causing patch wear of the tyre. An unbalance in Front wheels, will give a vibration that can be felt through the steering wheel. At high speeds, the effect can be felt more. Unbalance in the rear wheels will result in a vibration that can be felt through the vehicle body. This unbalance can have a detrimental effect on the various joints and suspension of the vehicle.

To eliminate the unbalance, balancing of the wheel has to be carried out. Balancing is the process of finding out the 'Mass' which causes unbalance and the location (phase) of the mass, and adding equal weight in the directly opposite location (180° away).

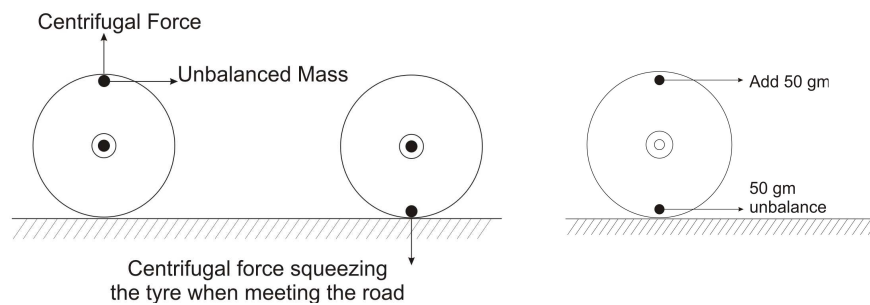


Fig. 7

5.2. STATIC BALANCING (Single plane balancing)

Static balancing is the process of adding equal amount of balancing weight at 180° position opposite to the position of the Unbalance. Static balancing is applicable only for thin wheels of less than 3" width (Motorcycle Wheels). Normally the unbalanced weight will be added on the rim of the wheels though the unbalance may be anywhere in the width as shown in Fig.8. To get perfect balancing the weight must be added in the same plane at 180° opposite position (Inner position).

In Static balancing Method, though the weight is not added in the same plane, the Dynamic forces caused will be very minimal when the wheel width is small. But in the case of wider wheels, the distance between the plane of unbalance and the plane of the weight addition will be more and for this reason a Force couple will be formed and it will create a rocking effect on the bearings of the wheels. This kind of situation requires a Dynamic balancing technique.

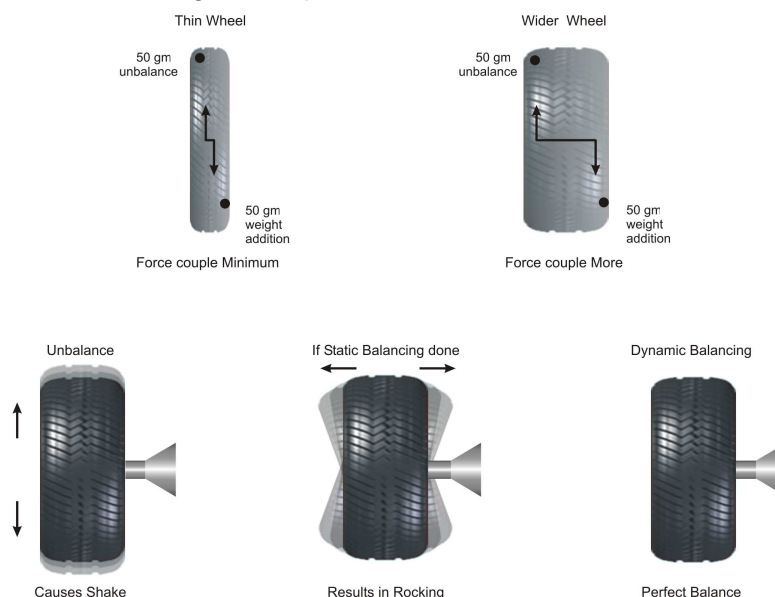


Fig. 8

5.3. DYNAMIC BALANCING (Two plane balancing)

In Dynamic balancing, the weight will be added in two planes as indicated in Fig.9. This kind of adding weights in two planes will eliminate the possibility of Force couple. With the result, there will not be any undesirable dynamic forces left out in the wheels. Since the weights are added in two planes, this is also called as Two Plane Balancing. Normally for Four Wheelers, Two plane balancing is recommended and today's computerized Wheel balancing equipment are following this technique only.

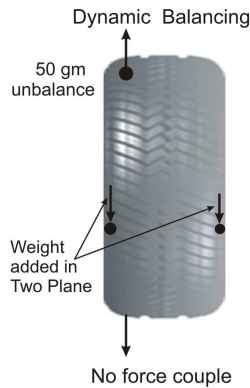


Fig. 9

5.4. PRINCIPLE OF OPERATION

Wheel balancer is a DSP based Wheel balancing equipment. The Balancer calculates the unbalanced mass and the position of unbalance over the width of the wheel.

The two planes of the wheel are the Inner and Outer faces of the wheel (in the case of normal rims) where the balancing weights can be fixed. In Alloy rims the location of weights will be different based on the configuration of the Alloy rim (refer Chapter 7.4.2).

The Diameter, Width of the Rim and the Rim distance are the inputs to the equipment for calculating the unbalance. When the distance from the equipment and the inner face of rim is entered the system takes it as the Inner plane location of the Balancer. When the Rim width is entered the system adds the width with the inner plane distance and takes it as the outer plane location. When the Diameter is entered the system takes it as radial distance from the centre of wheel to where the weights to be added. When the wheel is rotated the system detects any unbalance on the shaft. The Inner / Outer unbalance window displays the unbalanced mass in the respective planes. The measurement will be taken if only the set RPM is reached.

5.5. WHEEL BALANCING WEIGHTS



The weights must be fixed firmly on to the rim for proper balancing and to avoid repeated runs

TYPES OF WHEEL BALANCING WEIGHTS	
Clip-on type weight	Sticker type weight
<p>Clip-on type Wheel balancing weights can be used for Steel rims with less thickness</p>	<p>Sticker type Wheel balancing weights can be used for Alloy rims with more thickness</p>

6. DESCRIPTION OF MAIN PARTS

The System consists of Main Cabinet, Rotor, Electronic assemblies, Display, Control panel, Distance measuring rod, Wheel guard, Standard accessories and Optional accessories.

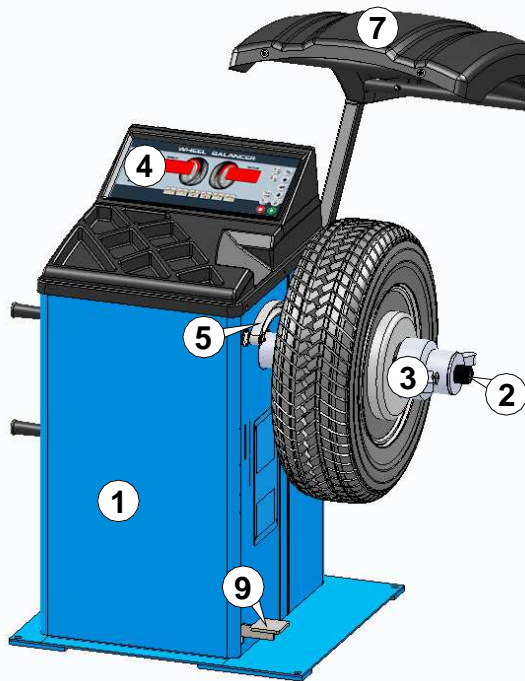


Fig. 10

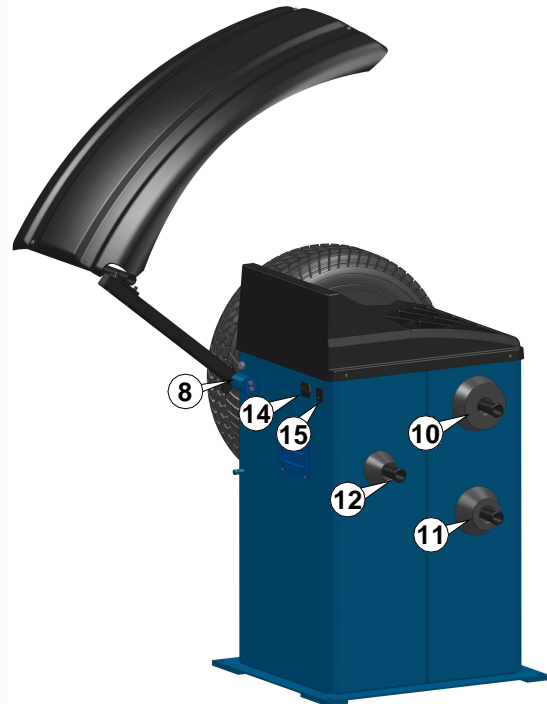


Fig. 11

Sl. No.	Description
1	Main cabinet
2	Wheel clamping threaded shaft
3	Quick Change Lock Nut
4	Display & Control panel
5	Distance measuring rod
7	Wheel guard
8	Wheel guard bracket

Sl. No.	Description
9	Mechanical brake
10	Wheel seating cone-Type-I
11	Wheel seating cone-Type-II
12	Wheel seating cone-Type-III
14	AC Input socket
15	Rocker switch

6.1. MAIN CABINET

Main cabinet is the housing for Electronic unit, Rotor, Motor & Display panel.

Mains power cable is situated at the rear side of Cabinet and Rocker switch is provided at rear side of cabinet.

Control fuses are incorporated to protect the electronic assemblies against short circuit & high current. AC (Inlet) socket with Fuse holders is mounted on the rear side of Main cabinet which can be easily accessed from outside for replacing the blown fuse. Always replace the Control fuse with same type and rating of CE marked Fuse.

Control fuse - 1 No..is provided in Line & 1 No. is provided in Neutral

for LCV – 230V Specifications – 3A, Dia 5mm x 20mm, Slow blow type Glass fuse

The Fuse will blow in 5 seconds (max.) for maximum current of 3A

for LCV – 110V Specifications – 10A, Dia 5mm x 20mm, Slow blow type Glass fuse

The Fuse will blow in 5 seconds (max.) for maximum current of 10A



Turn OFF the Rocker switch and unplug the balancer before doing any maintenance or repair work

6.2. ROTOR

The Rotor assembly consists of the Driven pulley mounted on the shaft located in the Bearing housing, Mid Centering Device and the RPM encoder assembly.

6.3. DISPLAY & CONTROL PANEL

Unbalance values are shown on the Display panel for both Inner & Outer planes using Seven segment LED displays. Unbalance position is indicated by rows of LEDs.

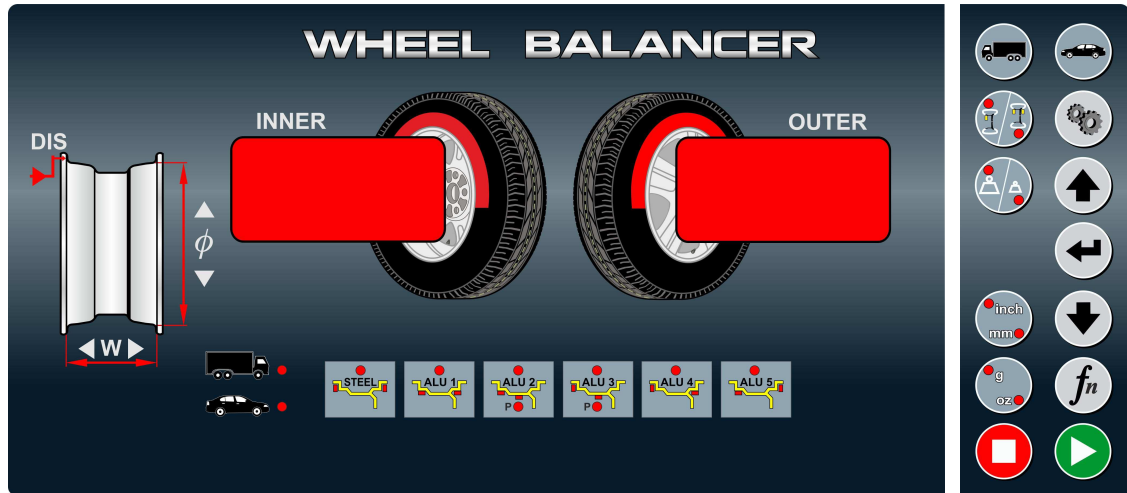


Fig. 12

This panel is a soft touch keypad and following are the functions of various keys:

	: To set the balancing operation for LCVs (this will be set as default for LCV model)
	: To set the balancing operation for HCVs
	: To toggle between <i>Dynamic</i> and <i>Static</i> modes of balancing
	: To toggle the parameters between <i>Normal</i> and <i>Fine</i> modes of unbalance display
	: To toggle the units between ' <i>inch</i> ' and ' <i>millimeters</i> ' during the setting of Wheel dimension
	: To toggle the unit of unbalance between " <i>gram</i> " & " <i>ounces</i> " during Unbalance display
	: To decrease the parameters while setting dimensions : To select options available in the functions
	: To proceed with next step in balancing operations & to choose/set/save an option
	: To increase the parameters while setting dimensions : To select options available in the functions
	: To set/execute the PROGRAM SETTINGS
	: To execute applicable SPECIAL FUNCTIONS
	: Pressing key twice within a second (double click) will start the balancing operation : To save the calibration
	: To stop the Motor when balancing run is in progress. : To exit from balancing programs



Every time when a key is pressed, a beep sound will be generated from the Buzzer

6.4. WHEEL GUARD

Wheel guard is provided to prevent the balancing weights flying out from its rim or stone / foreign particles sticking to the tyre in any direction except towards the floor. A safety Interlock switch is provided to ensure that the Wheel guard is closed during spinning of wheel. If the Wheel guard is not closed during spinning, an Error code "Err 0" will be displayed. By closing the guard, the error code will disappear and the wheel starts spinning. This feature is to ensure the safety to the operator.






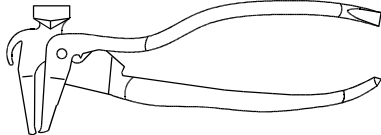
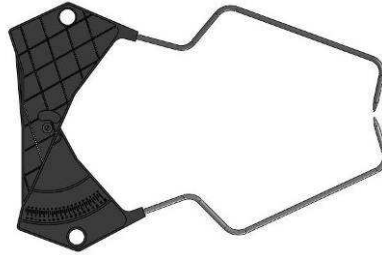

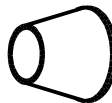



Always keep the Wheel guard closed during spinning of wheel



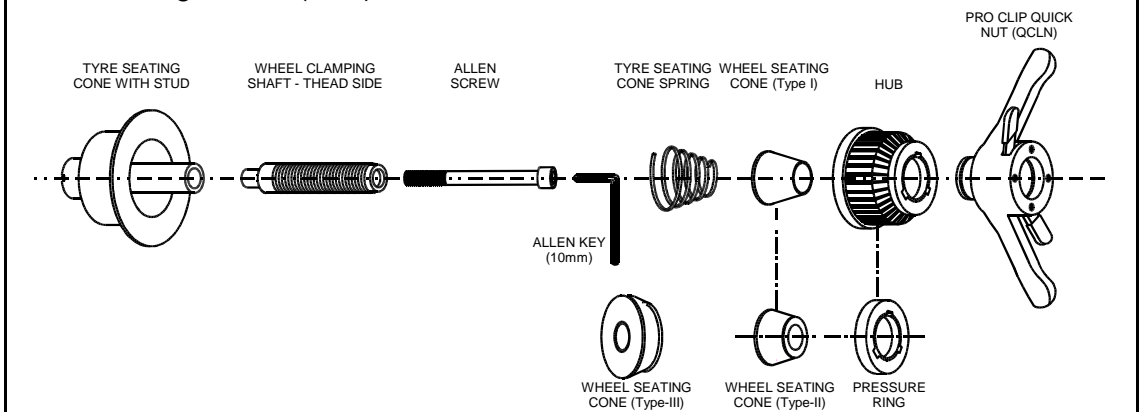
Do not lift the Wheel guard until the wheel is completely stopped

6.5. STANDARD ACCESSORIES



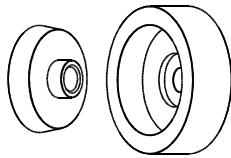
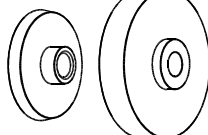
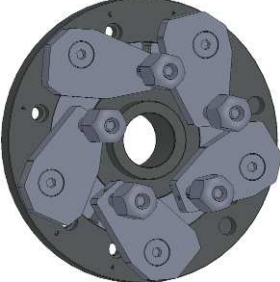

	Uses only the Accessories recommended by the manufacturer and handle it carefully. Failure to comply may cause injury to Operator
	Handle the Weight removing plier properly and avoid placing fingers between the teeth
	Frequently inspect the accessories and clean and lubricate

Weight plier (Code : B0539)	
Caliper (Code : B2850)	
Rubber hub cover (Code : B2851)	
LCV Wheel seating cone, Type-I - For Wheel bore Ø48mm to Ø77mm (Code : P0547)	
LCV Wheel seating cone, Type-II - For Wheel bore Ø76mm to Ø107mm (Code : P0499)	
LCV Wheel seating cone, Scorpio - For Wheel bore Ø104mm to Ø122mm (Code : P0463)	
DMR spacer, ALU-2P/3P (Code : B2813)	










Mid Centering Device (LCV)



6.6. OPTIONAL ACCESSORIES

Wheel seating cone, Toyota - For Wheel bore \varnothing 133mm (Code : A2824)	
Wheel seating cone, Swaraj Mazda - For Wheel bore \varnothing 147mm (Code : A2825)	
Wheel seating cone with spacer, Canter - For Wheel bore \varnothing 157mm (Code : A2826)	
Wheel seating cone with spacer, Tata 407 - For Wheel bore \varnothing 162mm (Code : A2827)	
Universal flange kit (Code : A2816) - <i>Applicable only for LCV model</i>	
 	
UNIVERSAL FLANGE PCD MEASURING TOOL	


7. OPERATION

	Only permit qualified personnel to operate, maintain or repair the Balancer
	Do not lift the Wheel guard until the wheel is completely stopped
	Always ensure that the wheels are mounted properly. The QCLN must be tightened firmly before spinning the wheel
	Always comply with the applicable accident prevention regulations
	Never overload the Wheel balancer
	Do not hammer or hit any part of the equipment with Weight plier, Tools etc.
	Avoid dropping of wheels heavily on the shaft while mounting & removing, which may affect the accuracy of the equipment
	If any error message is displayed, resolve the error as guided in the Trouble shooting chapter (10) and then press  key to return after clearing the indicated error

7.1. DEFECTS / MALFUNCTIONS


	In case of defects or malfunctions such as abnormal noise / improper display / Keypad not responding etc., turn OFF the mains and contact qualified Service personnel
---	---


7.2. PREPARATION OF WHEEL FOR BALANCING

	Manufacturer is not liable for in-accurate balancing of re-treaded tyre or wheel with more runout
---	---

1. Check for the right size tyre and weight are mounted on the Balancer.
2. Check for proper air pressure of the tyre, if required inflate the tyre to the recommended pressure.
3. Remove if any foreign materials are present in the tyre treads.
4. Clean the rim and tyre free of excessive dirt and stones. The central bore and face of the rim must be thoroughly cleaned to ensure proper fitment with the Wheel mounting accessories.
5. Dismount all the existing wheel balancing weights from the rim.

7.3. MOUNTING OF WHEEL ON MCD

	Avoid dropping of wheels heavily on the shaft while mounting & removing, which may affect the accuracy of the equipment
---	---

	Accurate balancing depends on the proper mounting of wheel on to the shaft
---	--

Almost all standard wheels and many types of Alloy wheels have accurately machined centre hole. The inner side of the wheel usually has the most uniform surface which is used for mounting the wheel on to the vehicle. Always use the centre hole and the inner surface as datum for mounting the wheel on the MCD.

In all types of mounting make sure that the inner surface of the wheel is forced firmly against the MCD face and then the QCLN is firmly tightened.

For proper centering of wheel, rotate the wheel and the shaft while tightening QCLN.

To ensure proper fitment of wheel, rotate the wheel manually and check for the wheel rotation free of wobble or runout.

7.3.1. BACK CONE MOUNTING (LCV Cones)

Most of the steel wheels can be mounted properly by using this method. The wheel is centered on the Wheel seating cone from inner side of the wheel hub.

- Choose the appropriate Wheel seating cone according to the rim centre hole diameter.
- Insert the Conical spring into the MCD shaft with bigger dia end butting against the MCD.
- Slide the Wheel seating cone on to the MCD shaft with its larger diameter butting against the MCD face as shown in Fig.13.
- Lift the wheel on to the shaft and center it on the cone.
- Tighten the QCLN with Hub securely on to the shaft against the wheel.
- After balancing is completed loosen the QCLN at least by 90° in Anti-clockwise direction, then hold the wheel and press the Release lever to remove the wheel and QCLN.

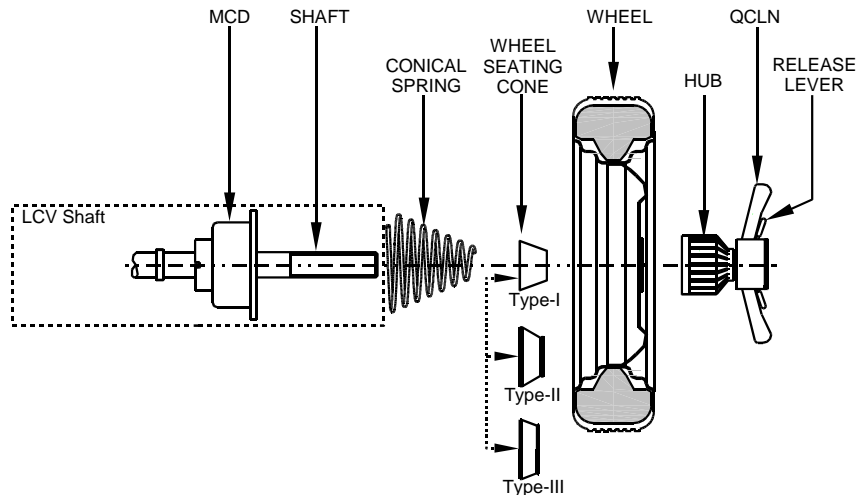


Fig. 13

7.3.2. FRONT CONE MOUNTING (LCV cones)

In some types of wheels, the inner surface will not provide an accurate surface to centre. In such cases, the wheel should be centered from the outer side of the Wheel hub.

- Choose the appropriate Wheel seating cone according to the rim centre hole diameter.
- Lift the wheel on to the shaft and slide it to butt against the MCD face as shown in Fig.14.
- Slide the Wheel seating cone on to the shaft into the centre hole of the wheel. Lift the wheel and seat the cone in the centre hole.
- Insert the QCLN with the Pressure ring after removing the Hub on to the shaft and tighten it securely against the cone.

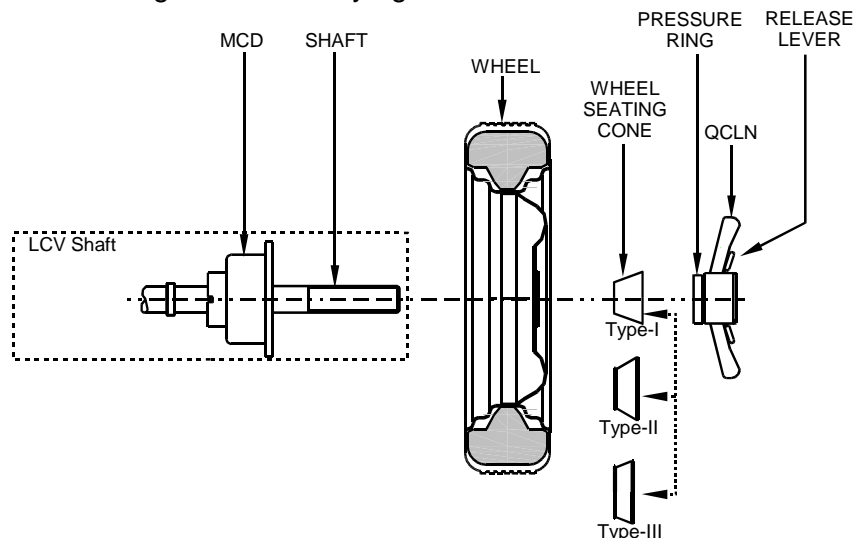


Fig. 14

7.3.3. LCV WHEEL MOUNTING

LCV wheel mounting is same as Front cone mounting type except that the rim has offset centres extended around the backing plate.

- Mount the Plastic spacer onto the shaft butting its solid face against the MCD face as shown in Fig.15.
- Select the appropriate Wheel seating cone depending upon the centre hole diameter of rim.
- Lift the wheel on to the shaft and slide it to butt against the Spacer.
- Position the cone onto the centre hole diameter of the rim and insert it to the shaft along with the wheel.
- Insert the QCLN with the Pressure ring after removing the Hub on to the shaft and tighten it securely against the cone.

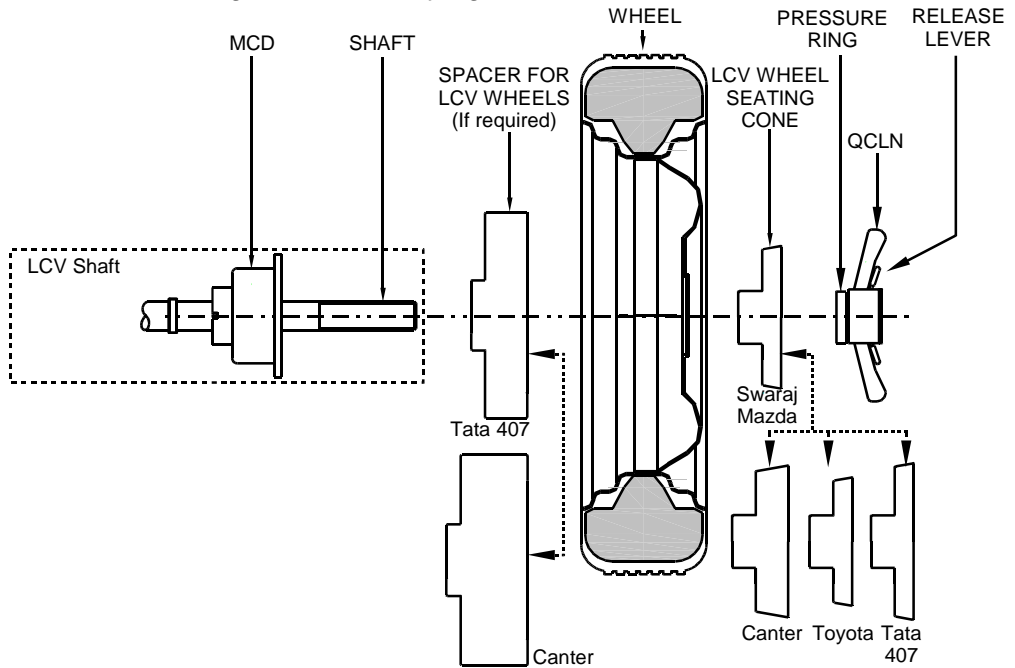


Fig. 15

7.3.4. LCV UNIVERSAL FLANGE MOUNTING

Universal flange is used for balancing LCV wheels with Blind rims (ie., without rim centre hole). The Flange kit will support wide range of wheels with 3, 4 & 5 mounting holes and Pitch Circle Diameter of 81 to 203mm.

- For mounting Universal flange, remove threaded Wheel clamping shaft and Allen screw from Main shaft and keep the Clamping shaft safely.
- Fix the Tyre seating cone with Main shaft using Allen screw (M12x70) & Spring washer.
- Count the No. of mounting holes available in the Wheel and fix the required Stud plate with fixing bolts in the Universal flange with respect to the numbers punched in the Flange.

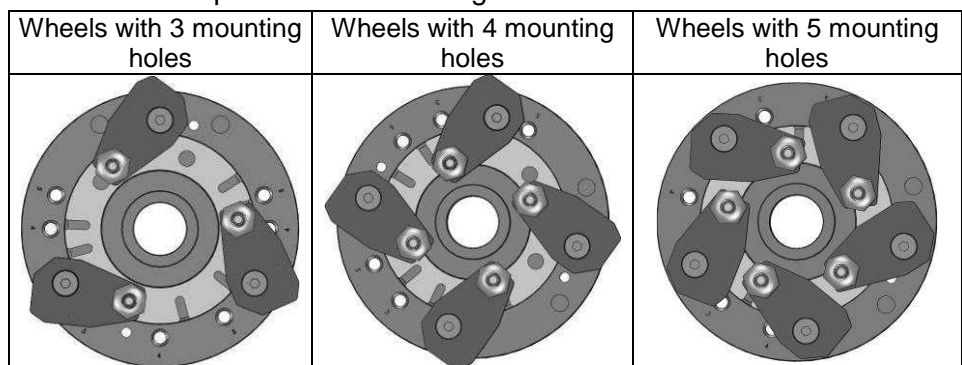


Fig. 16

- Measure the pitch distance of the mounting hole in the wheel using PCD measuring tool provided and tighten the measuring tool in the same position without disturbing the pitch distance.
- Now insert the PCD measuring tool into the Rim fixing bolts in Universal flange and adjust its position according to the pitch dimensions and tighten the respective Stud plate fixing bolts. Do the same for remaining Stud plates.
- Fix the Universal flange assembly with Tyre seating cone using Allen screw & Spring washer.
- Run the balancing program with empty shaft and ensure the zero value is displayed in both Inner & Outer planes.
- Mount the Wheel with the Rim fixing bolts in the Universal flange by matching the wheel mounting holes and then lock the wheel with the Flange using Rim fixing nut.

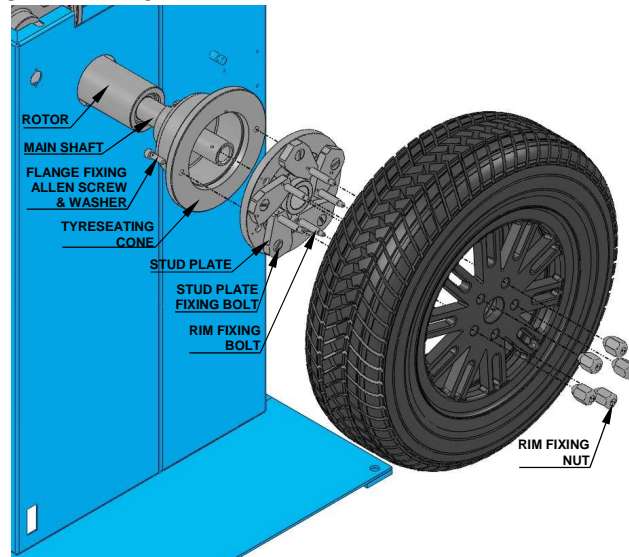




Fig. 17

7.4. BALANCING

	Daily, when the Balancer is switched ON for the first time, allow 15 minutes of warm-up time for the stabilisation of the equipment
	In case of power failure in the midst of Balancing program/functions, the program should be executed again from the start


There are two types of balancing as explained below:

DYNAMIC BALANCING (Two plane balancing)

This refers to the balancing carried out on the Inner and Outer planes of wheel. In this type, unbalance readings measured by the system on both planes will be displayed. Dynamic balancing can be carried out for normal LCV wheels including Alloy rims.

STATIC BALANCING (Single plane balancing)










Static balancing is generally done for wheels having smaller Rim width (≤ 3 ") & Alloy wheels. Balancing weights is applied on the Inner plane only.


	Static balancing is not applicable for Alu-2P/3P functions
---	--

Switch ON the equipment. The system will perform initial checks. The software version no. will be displayed for 2 seconds and then the "0" value will be displayed in both the windows.

After mounting the wheel with appropriate accessories as explained in Chapter 7.3, rotate the wheel manually and confirm proper fitment without any wobbling and then enter the Rim parameters.

7.4.1. RIM PARAMETERS

	When entering into RIM PARAMETERS, first <i>Outer</i> window will blink
	In case of <i>Static balancing</i> mode is selected using  key, only <i>Diameter</i> window will be accessible for setting the dimensions
	Rim parameters can also be set by rotating the wheel itself instead of using keys, if Auto Distance/Width/Diameter feature is not enabled
	Use  key to exit from the middle of any program or to clear any error message before proceeding
	If Rim distance is ≥ 4.8 " in Alu-2 & Alu-3 or Rim width is ≤ 2.0 " in Alu-2P & Alu-3P, "Err 35" will be displayed during Wheel run. Measure & enter the Rim distance correctly
	By default, Rim parameters can be displayed in inches. Use  keys to toggle the parameters in mm. Appropriate LED will glow

Press  key once. User can also move the Distance/Dia measuring rod to enter into **Rim parameters**.

Rim distance measurement (Applicable only for Dynamic balancing)

Distance display (Outer window) will start blinking. Then enter the rim distance by following any one of the methods given below:




- Move the Distance measuring rod outwards till it touches the Inner rim (Refer Fig.18). Keep the Distance measuring rod in the same position for atleast 3 seconds. The Rim distance will be updated on the Display followed by an Audio indication.
- Use the  /  keys to set the Rim distance value manually. Rotate the wheel to set the Rim distance value manually and hold the wheel when the desired distance value is displayed.



Fig. 18



Once a Rim parameter is acquired, the system will go to next parameter window automatically after few seconds. User can also press  key to go to next window.




Ensure the Distance/Dia measuring rod contact pin touches the Inner rim profile to acquire the correct Rim distance & Diameter

Rim width measurement (Applicable only for Dynamic balancing)



Width display (Outer window) will start blinking. Then enter the Rim width by following any one of the methods given below:

- Use Width caliper provided with the equipment to measure the Width of Rim & set the width value using  /  keys.
- Rotate the wheel to set the Rim width value manually and hold the wheel when the desired distance value is displayed.

After setting Rim width press  key. The system will enter into Diameter measurement

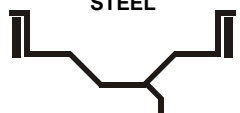
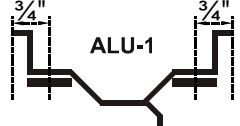
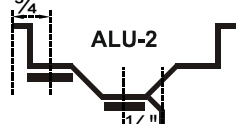
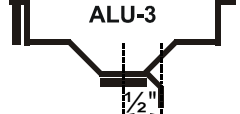
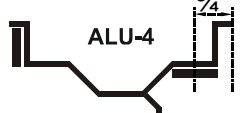
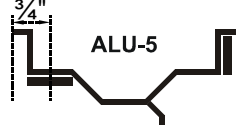
Rim diameter measurement




Diameter display (Outer window) will start blinking. Then enter the Rim dia by following any one of the methods given below:

- Measure the Diameter of the Rim and set the value using  /  keys.
- Rotate the wheel to set the Rim dia value manually and hold the wheel when the desired distance value is displayed

After setting the Diameter, system will enter into **RIM SELECTION** mode.





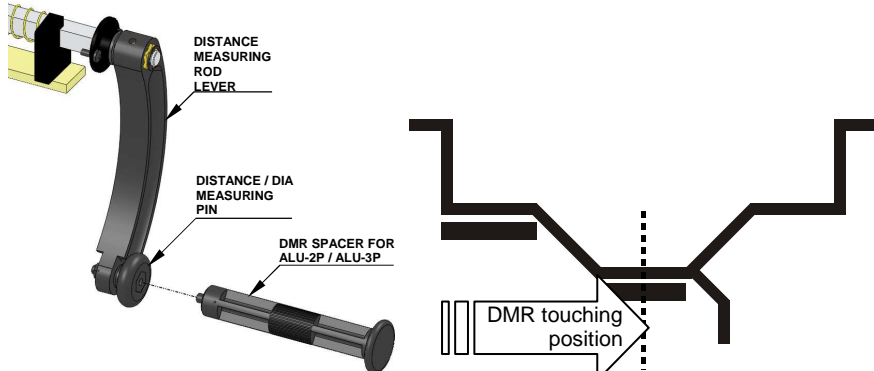
7.4.2. RIM SELECTION

 <p>STEEL</p>	Steel rims – Clip-on weights for both Inner and Outer planes
 <p>ALU-1</p>	Sticker weights on both Inner and Outer planes for rims with central rib in between the planes
 <p>ALU-2</p>	Sticker weights (both) on Inner plane
 <p>ALU-3</p>	Clip-on weight on Inner plane and one Sticker weight on Inner plane (towards outer side)
 <p>ALU-4</p>	Clip-on weight on Inner plane and Sticker weight on Outer plane
 <p>ALU-5</p>	Sticker weight on Inner plane and clip-on weight on Outer plane




The Steel LED will glow, Use  /  keys to select the appropriate rim type and then press  key to confirm the type. The selected Rim type will be indicated by the LED.




ALU-2P / ALU-3P Spacer to be used only for LCV Alloy rims with diameter <15"

	<p>To perform ALU-2P / ALU-3P function, <i>Auto distance</i> should be enabled</p>
	<p>If ALU-2P / ALU-3P is selected, “Add SP” message will be displayed if the Rim dia is <15”. The system will go to Distance measurement mode. By default, the measurement unit will be automatically changed to ‘mm’. This unit setting will be active even after coming out of ALU-2P/ALU-3P mode. User can change the unit again by pressing  key. Fix the DMR Spacer with Distance/Dia measuring pin as shown below & then press  key:</p>  <p>“tch r ” message will be displayed for few seconds and then “d ,5 xxx” will be displayed.</p> <p>Move the DMR with Spacer & touch the Wheel rim at the indicated weight adding position (outer plane) & hold it for atleast 3 seconds to measure the Rim distance followed by an audio indication. Now move the DMR to home position and wait for few seconds to return to balancing mode</p>




7.4.3. WHEEL RUN









	<p>If Alu-2P/Alu-3P is used, remove the DMR spacer before Wheel run</p>
	<p>Use  key twice to perform Wheel run, if Auto Run is disabled</p>

Start balancing run by lowering the Wheel guard.
 Check & ensure that the Distance/Dia/Width rod is in Home position.
 Close the Wheel guard.
 Now the wheel will start spinning for few seconds. When the measurement is completed, the system will stop the Motor via E-Brake. The Inner and Outer unbalance weights will be displayed in respective window. The Unbalance position will be indicated by the respective rows of LEDs.

	<p>After unbalance is displayed and while moving DMR gradually to identify the weight adding position in outer plane, an Audio indication will provided to indicate the weight adding position recorded during Rim parameters. Mark the location and return the DMR to its home position and then add required weight in the marked location</p>
---	--

Open the Wheel guard and rotate the wheel manually to make all LEDs of Inner plane to glow. Now add the indicated weight at the indicated position (12 o' clock position) on to the rim by clipping/pasting the weight & hammer it using Weight plier. The LEDs will not glow if the unbalance is zero. Repeat the same procedure to add Balancing weight in the Outer plane also.

	<p>For Alloy wheel rims, in which sticker weight to be used(Inner and Inner most), the weight adding position will be indicated in 6 o' clock position. Add the sticker weight in this position.</p>
	<p>Do not lift the Wheel guard until the wheel is completely stopped</p>
	<p>The weights must be fixed firmly on to the rim for proper balancing and to avoid repeated runs</p>

	In case of <i>Static balancing</i> , only Inner plane will be displayed & balanced
	By default, unbalance measurement will be displayed in <i>Normal</i> mode. If <i>Fine</i> mode is required, set <i>Fine</i> mode by pressing  key. Appropriate LED will glow
<p>Close the Wheel guard and spin the wheel again to check whether the wheel is now balanced. Normally in one wheel run, the wheel should get balanced. However if the unbalance is more, it may require more than one balancing run. Once the wheel is balanced in both the planes, '0' value will be displayed in both the Inner & Outer windows.</p>	
	In case of any abnormality during spinning of wheel, press  key to stop the Motor
	If Distance / Width measuring rod are not in home position, Error code will be displayed (refer Error code list in Chapter 10). Balancing will not be performed unless Distance / Width measuring rod is withdrawn to its home position. Push the rods to home position
	Bring the Distance measuring rod to home position carefully, the wheel will start spinning immediately once the Distance measuring rod reaches the home position
	If Wheel guard is not closed during wheel run "Err 01" error code will be displayed. Close the Wheel guard to start the wheel run

8. PROGRAM SETTINGS



If any error message is displayed, resolve the error as guided in the Trouble shooting chapter (10) and then press key to return after clearing the indicated error

The system related activities such as Calibration, enabling/disabling of Automatic wheel run, Automatic width measurement & Automatic diameter measurement will be available in this program. Following options are provided:

1	 Inner Outer	Calibration options Refer Chapter 8.1
2	 Inner Outer	Self test <i>This feature should be used only by authorised Service personnel. Hence User should not enter into this module</i>
3	 Inner Outer	Key test <i>This feature should be used only by authorised Service personnel. Hence User should not enter into this module</i>
4	 Inner Outer	Encoder test <i>This feature should be used only by authorised Service personnel. Hence User should not enter into this module</i>
5	 Inner Outer	Track test <i>This feature should be used only by authorised Service personnel. Hence User should not enter into this module</i>
6	 Inner Outer	Sensor test <i>This feature should be used only by authorised Service personnel. Hence User should not enter into this module</i>
7	 Inner Outer	Auto run setting Refer Chapter 8.2
8	 Inner Outer	Weight cutoff setting <i>This feature should be used only by authorised Service personnel. Hence User should not enter into this module</i>
9	 Inner Outer	Restore Factory setting <i>This feature should be used only by authorised Service personnel. Hence User should not enter into this module</i>
10	 Inner Outer	Buzzer setting Refer Chapter 8.3
11	 Inner Outer	Backup Factory setting <i>This feature should be used only by authorised Service personnel. Hence User should not enter into this module</i>
12	 Inner Outer	RPM test <i>This feature should be used only by authorised Service personnel. Hence User should not enter into this module</i>

8.1. CALIBRATION OPTIONS



This feature should be used only by authorised Service personnel

When calibration has to be done?

- If balancing requires more than one balancing run or repeated weights for smaller wheels.
- If the Balancer is shifted from one place to other.
- If foundation is affected.
- If MCD shaft is disturbed.
- If abnormal weights are displayed.
- If Inner & Outer unbalance weights for empty shaft Wheel run are not zero.

Pre-calibration check

1. Ensure the foundation is proper.
2. Ensure the Cabinet is free from shake.
3. Check the Belt tension and RPM. The RPM should be 175 (+20/-5).

PROCEDURE

- Switch ON the machine. Version No. will be displayed for 2 seconds and then the default dimension of Distance, Width and Diameter will be displayed.
- Press key to get into **PROGRAM SETTINGS** and select the **CAL OPT** using / keys and then press key. Following message will be displayed:

CAL	OPT
Inner	Outer

- Press key. Following message will be displayed:

Ent	PR5
Inner	Outer

- Use keys as the password.
- Provide the following keys as password: for Single point calibration. For 2 Point calibration, provide password as . If LCV model, do the 2 point calibration. In 2 point calibration, first do "LD! PE" and then do "HI 9H PE" (Applicable for only LCV models, not applicable for HCV models).



If wrong password is entered, the system will go back to **CAL OPT**

- Following Calibration options will be provided:

1	<table border="1" style="margin: 0 auto;"> <tr> <td style="text-align: center;">!t</td> <td style="text-align: center;">CAL</td> </tr> <tr> <td style="text-align: center;">Inner</td> <td style="text-align: center;">Outer</td> </tr> </table>	!t	CAL	Inner	Outer	Weight Calibration <i>This feature should be used only by authorised Service personnel</i>
!t	CAL					
Inner	Outer					

- Use / keys to select the required options and then press key.



Two point calibration (Low Point & High point) is recommended for better accuracy of Unbalance weight for all range of wheels. In case of non-availability of two sizes of wheels, proceed with Single point calibration.


8.1.1. WEIGHT / SPAN CALIBRATION




The distance values will be displayed in mm only



Default Weight calibration will be in LCV mode

1. After selecting **WEIGHT CALIBRATION**, press  key to enter into **Spindle zero** calibration which is first step of **Weight/Span** calibration. Following message will be displayed:


SPn	CAL
Inner	Outer

2. Remove Wheel, Wheel seating cone & QCLN from shaft if already mounted. Press  key twice to run the Empty shaft. Sensor values in millivolt (SA & SB) will be displayed the Inner & Outer windows (limit: 30mV) & following message will be displayed:

tyr	CAL
Inner	Outer



if "Err 15" (more unbalance in Empty shaft) is displayed while running empty shaft, contact Service personnel

3. Mount the wheel with Wheel clamping shaft and press  key.




Use a fairly balanced wheel with Steel rim of 11-16" diameter with minimum unbalance of 30gm for calibration purpose. If Wheel unbalance is more, "Err 15" will be displayed. Wheels with Alloy rims cannot be used for calibration



DO NOT use Re-treaded tyre or Tyre with more runout for calibration

4. Following message will be displayed prompting the user to enter the Rim parameters of wheel being considered:

d15	30
Inner	Outer

5. Enter the Rim Distance, Width & Diameter sequentially followed by pressing  key during each entry. Following message will be displayed:



StL	r11
Inner	Outer



If Auto Distance is enabled, system will measure the Rim parameters automatically once DMR is moved & held in the location for few seconds until Audio indication








If Auto Dist is disabled, Wheel parameters can be updated by rotating the wheel itself instead of depending on keys

6. Select the appropriate wheel being used & then press  key. Following message will be displayed indicating the commencement of Tyre calibration. Press  key twice to perform **Tyre calibration**. Wheel unbalance in millivolt (SA & SB) will be displayed in both the Inner & Outer Windows and following message will be displayed:




OUT	75
Inner	Outer



Press  key to go to Raw calibration. Add 75gm Calibration weight at outer plane & press  twice. Ensure the Sensor values in millivolt (SA & SB) displayed in both the Inner & Outer windows are correct and then press  key. Press  key again to return to **Tyre calibration**

7. Add 75m Calibration weight on the outer plane of Rim and bring the weight added location to TDC (Top Dead Centre / 12 'o' clock). Press  key twice to run the wheel. The added weight will be displayed in the Outer window as shown below:

 Inner Outer

- | | |
|---|--|
|  | DO NOT DISTURB the TDC before running the wheel. Otherwise unbalance position will be affected while balancing wheels |
|  | "Err 14" will be displayed if Calibration is done without adding Weight or not added in the respective planes |
|  | "Err 40" will be displayed if Calibration signal is Low and "Err 41" will be displayed if Calibration signal is high. If "Err 41" , press ENTER key to proceed with calibration. |

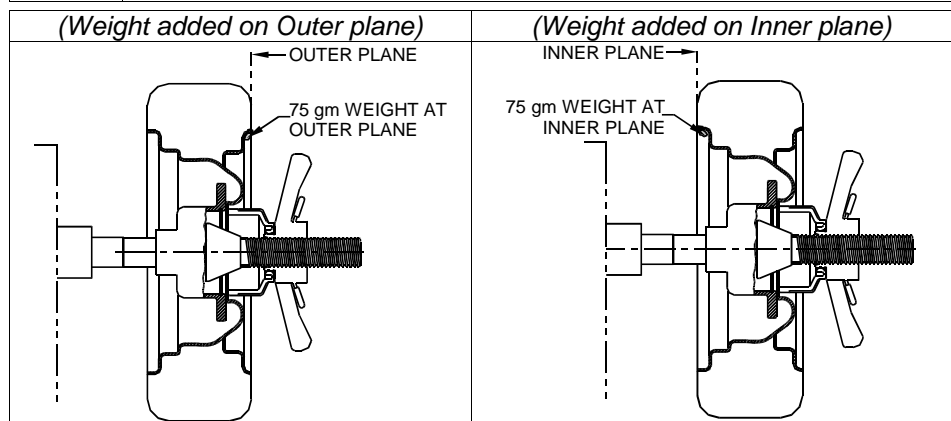



Fig. 19

8. The system will display the Outer calibration weight for few seconds and then following message will be displayed:


 Inner Outer

9. Remove the Calibration weight from the Outer plane & fix it on the Inner plane at same position. Press  key twice to perform **Inner calibration**. The added weight will be displayed in the Inner window:

 Inner Outer


10. The system will display the Inner calibration weight for few seconds and then following message will be displayed:

 Inner Outer

11. Press  key twice to save the data. The saving process will be indicated with following message:

 Inner Outer




12. After saving the calibration data, system will return to Balancing mode.



- | | |
|---|---|
|  | If any error is indicated after adding weight in any of the Plane, redo the Weight calibration |
|---|---|




13. Balance a known wheel & ensure the weights added (at both planes) & the positions are displayed in the respective window correctly.

8.2. AUTO RUN SETTING

If **Auto run** feature is enabled, Automatic Wheel run will be performed when the Wheel guard is closed. This option is available only for **Balancing** mode, but not for **Calibration** mode. To enable the **Auto run** feature, perform the following:

1. After selecting "AUt rUn" from **PROGRAM SETTINGS** using  /  keys, press  key. Following message will be displayed:

	
Inner	Outer




2. Press  /  keys to select Enable (En) / Disable (d,5) options and then press  key to save the settings.



	Press  key to exit from this option without saving the settings
---	--




3. Check the setting is enabled / disabled in **BALANCING** mode.

8.3. BUZZER SETTING

This option is provided to enable or disable the audio indication (Buzzer sound) during the balancing program while pressing Membrane keys and also during automatic braking.

1. After selecting "BUZ zEr" from **PROGRAM SETTINGS** using  /  keys, press  key. Following message will be displayed:

	
Inner	Outer

2. Press  /  keys to select Enable (En) / Disable (d,5) options and then press  key to save the settings.

	Press  key to exit from this option without saving the settings
---	--

3. Check the setting is enabled / disabled in **BALANCING** mode.

9. MAINTENANCE



Turn OFF the ON / OFF switch and unplug the Balancer before doing any maintenance or repair work

Wheel balancer requires only minor maintenance to keep the equipment operating properly. We recommend attention to the following points for getting maximum benefit out of the equipment.

1. Keep the area around the Balancer clean. Remove any tools or other items that are leaning against the Balancer.
2. Use only recommended Accessories / Spares. Accessories from other manufacturer may not fit or function properly and may damage the equipment.
3. Check the foundation bolt for tightness once in 6 months.
4. Check and adjust the belt tension once in 6 months.

9.1. DISPLAY & CONTROL PANEL

Clean the Display panel with Non-solvent, Non-abrasive cleaner. DO NOT use cleaning agent which attacks the keypad and could result in equipment damage.

9.2. MCD

Avoid dropping of wheel heavily on the shaft while mounting and removing, which may affect the accuracy of the equipment. Apply a thin layer of machine oil on the MCD flange and shaft for rust prevention. Wipe off the excessive oil and keep them clean. DO NOT use excessive grease on the shaft which may allow accumulation of dirt on it. Grease & dirt build-up will cause inaccurate balancing & premature wear.

9.3. WHEEL MOUNTING ACCESSORIES

Keep the Wheel seating cones, QCLN, Flanges & Adapters clean. Apply a thin layer of machine oil on the Wheel seating cone and QCLN nut. Wipe off the excessive oil and keep them clean.

DO NOT use Adaptors for purposes other than mounting the wheels. Cut in the Adaptors can cause improper mounting.

9.4. WHEEL GUARD

Apply a thin coat of grease to the Wheel guard support rod to prevent squeaking noise.

9.5. TOP COVER

Clean the Wheel balancing weight tray free of dirt / dust. Weights in a dirty tray may pickup grease & dirt which may keep them from securely attaching to wheel.



9.6. DISTANCE MEASURING ROD

Clean the Distance/Diameter measuring rod surface with a soft & dry cloth. Apply thin coat of Molykote grease.

10. TROUBLE SHOOTING


The common troubles and error codes which can be attended by the users are listed in the table given below.

For Troubles and Error codes other than that are listed in the table contact the Service Engineer for Trouble shooting.

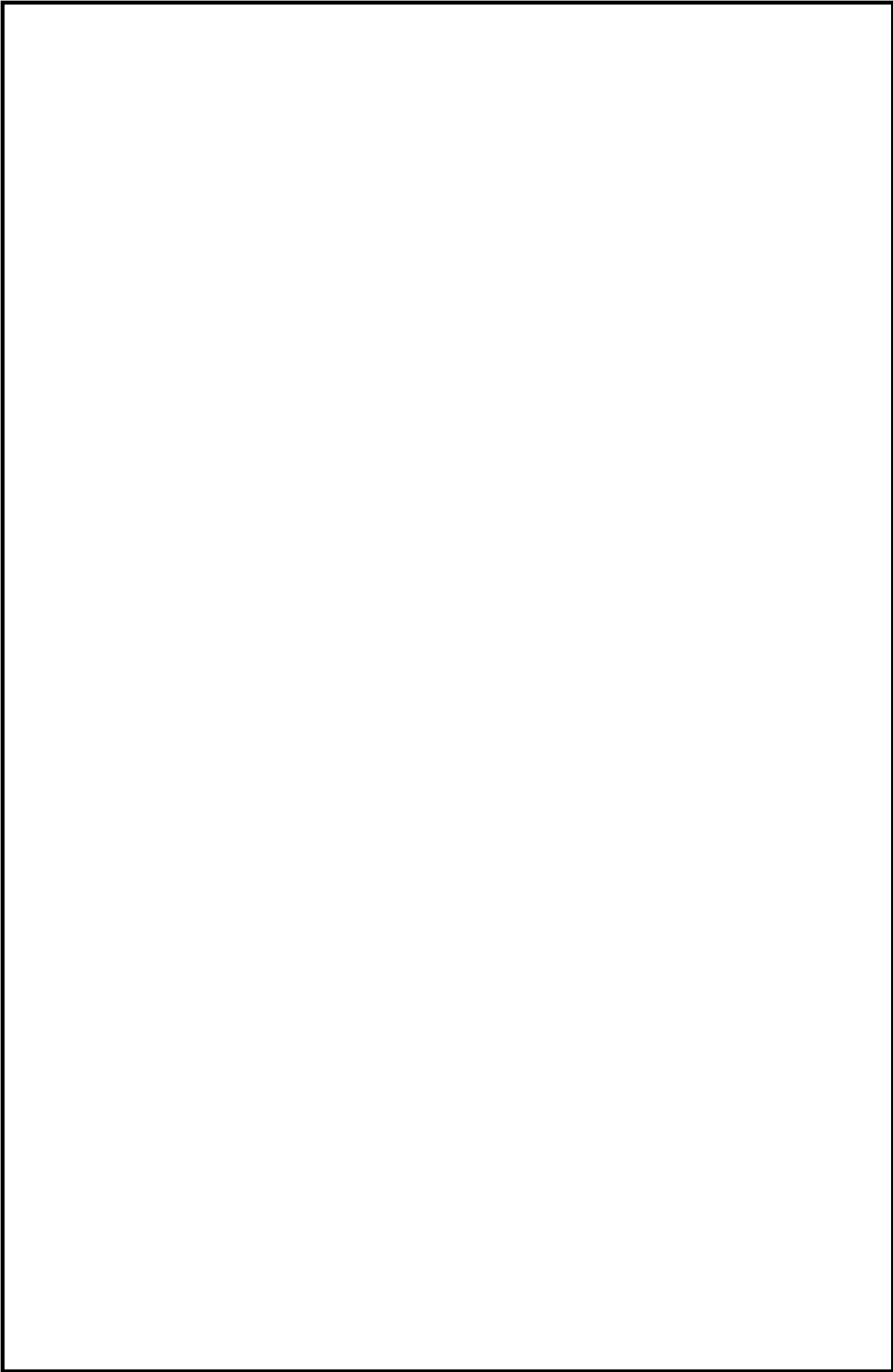
	The Service Engineer may ask for information to help in diagnosing the service concern. Conveying this information to the Service Engineer prior to servicing can help to expedite service to your equipment
	Press any key to clear the Error codes and repeat the same function to see if the error is eliminated

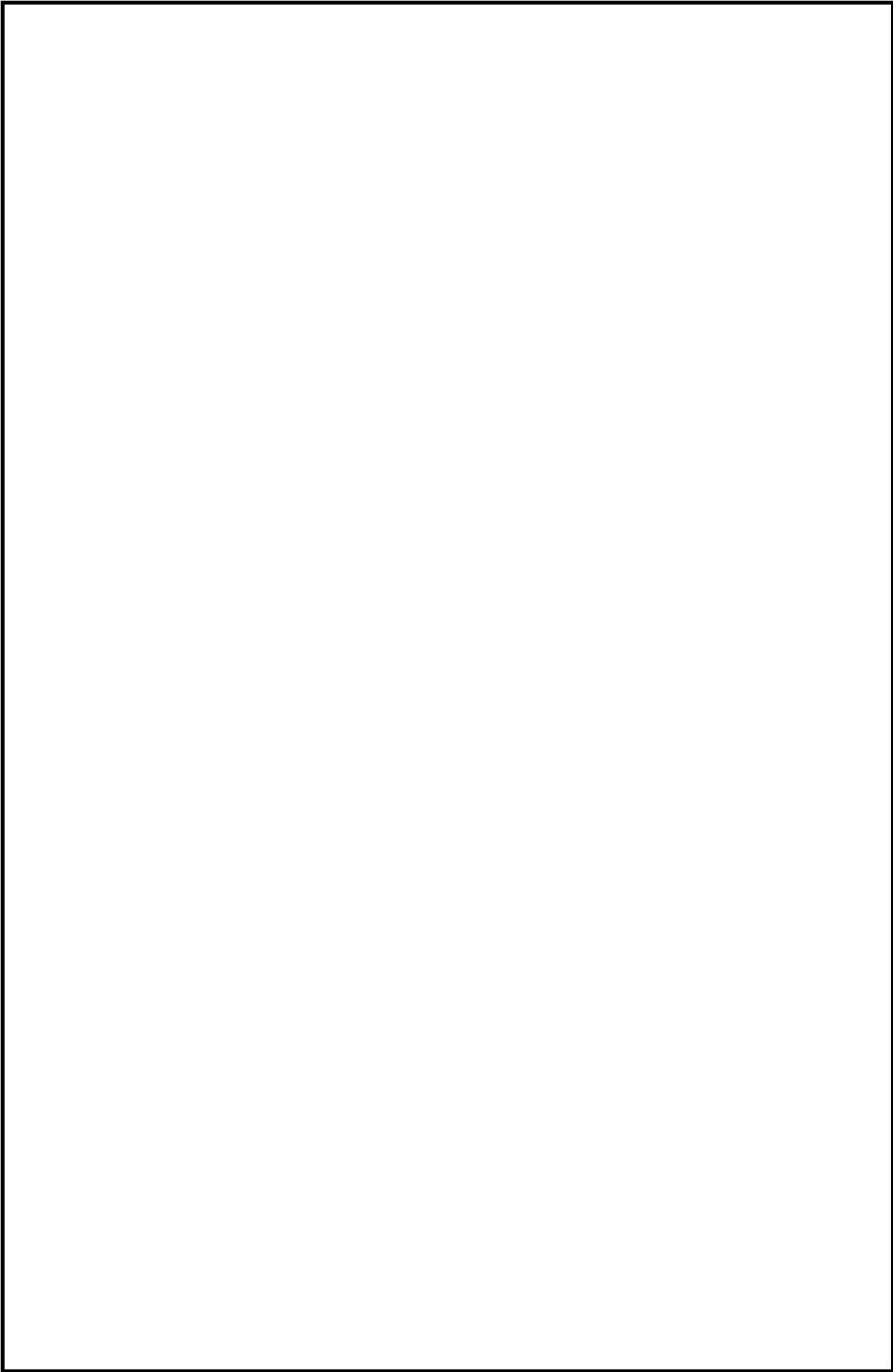
Error code	Causes
Err 01	Wheel guard is Open
Err 02	Emergency switch activation (Not applicable)
Err 08	Signal from Encoder missing
Err 09	RPM not reached
Err 10	Low point / Single point Calibration data not available
Err 11	Timeout occurred during Run
Err 12	No Index pulse detected
Err 13	Index pulse detected always
Err 14	Check the Calibration weight (whether 75 gm is added)
Err 15	Spindle unbalance is more
Err 16	Direction of rotation is wrong
Err 17	Shaft movement is detected
Err 19	Unbalance in tyre (used for calibration) is more
Err 30	High point Calibration data not available
Err 36	Rim Distance/Width is not within limit in ALU-2/P & ALU-3/P functions
Err 37	Balancing program is in Static mode & ALU-2/P & ALU-3/P functions while entering into calibration
Err 39	RPM exceeds the maximum limit
Err 40	Calibration weight signal is low
Err 41	Calibration weight signal is high
Err 42	Calibration weight Cross over is more

Sl. No.	Trouble	Causes	Remedies
1	No digital display	Power supply faulty	Check for proper power supply connection
		Display cable faulty	Change the cable or fix the cable properly
		Control fuse blown	Check and replace the Fuse
2	Motor not running	Power supply faulty	Check for proper power supply connection
3	Spark in the Mains cord socket	Loose connection in the AC supply socket	Connect the power mains with proper plug / socket combination
4	Wheel is not balanced and repeatedly asking weights	Improper foundation	Check for proper foundation. Tighten the Foundation bolts
		Incorrect parameter entry	Enter the wheel parameters correctly
		Calibration disturbed	Redo calibration(Single point calibration)
5	Reverse direction run is detected.	Shaft is rotating anti-clockwise	Motor fault. Contact Service personnel

Sl. No.	Trouble	Causes	Remedies
Error codes			
1	Err 10	Calibration data not available	Perform calibration with small size wheel (Maruti 800 or equivalent steel wheel)
2	Err 01	Wheel guard not lowered during spinning of wheel	Lower the Wheel guard and press  key to proceed

Sl. No.	Trouble	Causes	Remedies
4	Err 08	No signal sensed by Encoder	Check the power to Motor & Revolution encoder cable connections
5	Err 14	Improper weight added and plane selected	Add correct calibration weight on the appropriate plane
6	Err 19	Unbalance in wheel is more	Use a better balanced wheel. If wheel is changed redo calibration from Spindle zero
7	Err 30	High point Calibration data not available	Perform calibration with big size wheel (Tata 407 or equivalent steel wheel)





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