WHEEL BALANCER

WB-VL-65 DSP LX
WB-VL-65 DSP LX Premium
WB-VL-65 DSP LX Premium+
WB-VH-200 R

SERVICE MANUAL
(Ver.1.3)

INDEX

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 to the equipment through uninterruptible Power Supply (UPS). Any high voltage may damage the components, leading to system failure or electrical hazards.
   Power supply:
   For 230V 50/60Hz operation (LCV) : Single Phase, 230VAC ±10%, 50/60Hz +N +PE
   For 110V 60/50Hz operation (LCV) : Single Phase, 110VAC ±10%, 60/50Hz +N +PE
   For 415V 50/60Hz operation (HCV) : Three Phase, 400VAC ±5%, 50/60Hz +N +PE
   For 220V 60/50Hz operation (HCV) : Three Phase, 220VAC ±5%, 60/50Hz +N +PE
   For 415V 50/60Hz operation (HCV) : Three Phase, 400VAC ±5%, 50/60Hz +PE
   For 220V 60/50Hz operation (HCV) : Three Phase, 220VAC ±5%, 60/50Hz +PE
   For 220V 60/50Hz operation (HCV) : Single Phase, 220VAC ±5%, 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 (1KVA capacity for LCV models, 3KVA for HCV models) 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 / Car washers / 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-authorised 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-authorised 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. INSTALLATION

Installation is intended to be performed by properly trained Service personnel. Thoroughly read all Safety labels & Manual instructions before installing. Review all requirements of installation to avoid oversights resulting in revenue loss, and lost customer confidence.

2.1. SAFETY INFORMATION

The safety messages presented here are reminders to the installation Engineer to exercise extreme caution during installation and training:

- Only authorized service personnel are allowed to install and commission the Wheel balancer.
- **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.
- The Balancer should not be installed outdoors or in moist rooms.
- To reduce the risk of fire, the equipment should not be installed at hazardous locations or in the vicinity of explosives or flammable liquids.
- The floor should be properly leveled beneath the Balancer and should be free of heavy equipment vibration.
- The Balancer must be anchored to the floor, since large unbalance in wheels can cause heavy vibration which leads to repeated runs for balancing.
- The electrical main supply to the Balancer must be connected through a CE certified MCB with ratings as given below:

  For 230V 50/60Hz operation (LCV) : Two pole, Type C, 6A MCB
  For 110V 60/50Hz operation (LCV) : Two pole, Type C, 10A MCB
  For 415V 50/60Hz operation (HCV) : Four pole, Type C, 10A MCB
  For 220V 60/50Hz operation (HCV) : Four pole, Type C, 10A MCB
  For 415V 50/60Hz operation (HCV) : Three pole, Type C, 10A MCB (Without Neutral model)
  For 220V 60/50Hz operation (HCV) : Three pole, Type C, 10A MCB (Without Neutral model)
  For 220V 60/50Hz operation (HCV) : Two pole, Type C, 10A MCB (Single phase)
- Proper Earthing must be provided.
- If an Extension power cord is required, a cord with correct rating equal to or more than that of the equipment should be used.
- Care should be taken to route the Power mains cord properly so that it is not tipped over or pulled.
- Ensure the availability of Air Compressor with 6-8 bar capacity for operating Pneumatic wheel lift in case of HCV model. PU8 hose (outer dia size) required to input the compressed air in the Pneumatic lift.

2.2. INSTALLATION REQUIREMENTS

2.2.1. 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**

2.2.2. POWER REQUIREMENT

For 230V 50/60Hz operation (LCV) : 1ph, 230VAC ±10%, 50/60Hz +N +PE
For 110V 60/50Hz operation (LCV) : 1ph, 110VAC ±10%, 60/50Hz +N +PE
For 415V 50/60Hz operation (HCV) : 3ph, 400VAC ±5%, 50/60Hz +N +PE
For 220V 60/50Hz operation (HCV) : 3ph, 400VAC ±5%, 60/50Hz +N +PE
For 415V 50/60Hz operation (HCV) : 3ph, 400VAC ±5%, 50/60Hz +PE
For 220V 60/50Hz operation (HCV) : 3ph, 400VAC ±5%, 60/50Hz +PE
For 220V 60 Hz operation (HCV) : 2ph, 220VAC ±10%, 60Hz +PE
For 220V 50 Hz operation (HCV) : 1ph, 220VAC ±10%, 50Hz +N+PE

Proper Earthing must be provided. Also ensure that live phase is on the correct side of the socket as per the country requirement. It is strongly recommended to use a CVT (1KVA capacity for LCV models and 3KVA capacity for HCV models).

Neutral to Line Volt should be 230VAC ±10% (for LCV with 230V operation)

Neutral to Line Volt should be 110VAC ±10% (for LCV with 110V operation)

Line to Line Volt should be 415VAC ±5% (for HCV with 400V operation)

Line to Line Volt should be 220VAC ±5% (for HCV with 220V operation)

Neutral to Earth should be less than 3V AC (NA for without Neutral in HCV)

Line to Line Volt should be 220VAC ±5% (for HCV single phase model with 220V / 60HZ operation)

Neutral to Line Volt should be 230VAC ±10% (for HCV Single phase model with 230V/ 50Hz operation)

2.2.3. SPACE REQUIREMENTS

1. The floor should be properly leveled beneath the Balancer and should be free of heavy equipment vibrations.
2. 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 below.

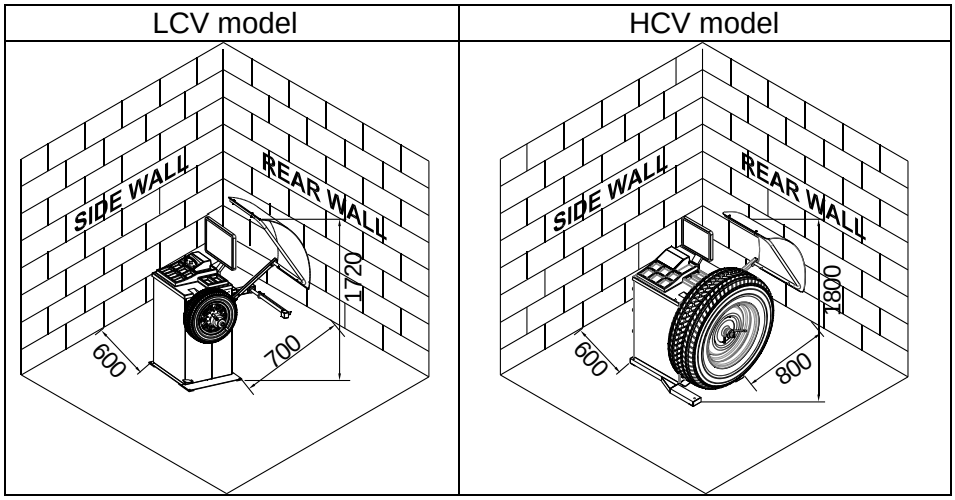


Fig. 1

3. The equipment should be anchored to the floor by using the Anchor bolts supplied along with the equipment.

☞	**Proof of safe floor load capacity is the owner's responsibility**

2.2.4. ACCESSORIES & 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:

1. Screw drivers, Spanner set and Allen key set
2. Measurement Tape – 5 metre
3. Chalk liner/ Marker pen - for marking
4. Strip cutter - to Open Carton Banding
5. knife – for opening Cartons
6. Plastic cable Ties – for proper routing of cables
7. Multi-meter – for verifying supply voltage
8. Nylon Hammer
9. Hammer Drill and 12mm Drill bit
10. 'U' type Shims (required QTY) - 0.5mmT, 1.0mmT, 1.5mmT & 2.0mmT

2.3. 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

2.3.1. LCV MODELS

Package No.	Package description	Package contents	Qty
1	Main cabinet corrugated box	1. Main cabinet assembly	1 No.
		2. Monitor	1 No.
		3. Monitor column	1 No.
		4. Wheel guard with pipe & DMR	1 No.
		5. Width caliper	1 No.
		6. Width measuring rod (For Prem/+ model)	1 No.
		7. Accessories box (Cabinet right side) containing:	
		a) MCD & QCLN parts	1 Set
		b) Cone holding stem	3 No.
		c) Wheel seating cones	3 No.
		d) Wheel guard bracket	1 No.
		e) DMR spacer, ALU-2P/3P	1 No.
		f) Rubber hub cover	1 No.
		g) Wheel balancing weight	1 Set
		h) Foundation fasteners	1 Set
		i) Glass fuses	1 Set

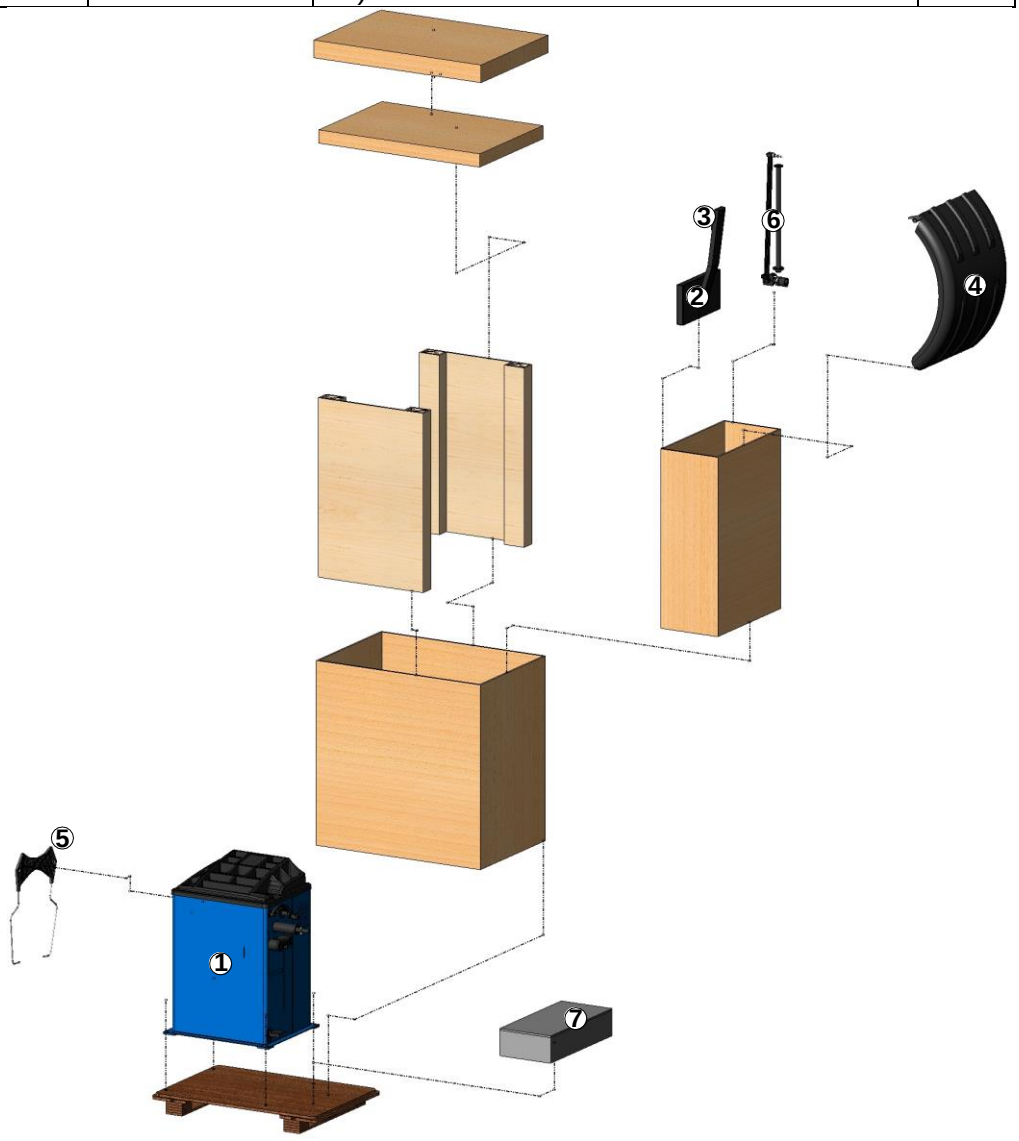


Fig. 2

2.3.2. HCV MODELS

Package No.	Package description	Package contents	Qty
1	Main cabinet corrugated box	1. Main cabinet assembly	1 No.
		2. Monitor	1 No.
		3. Monitor column	1 No.
		4. Wheel guard	1 No.
		5. Wheel guard pipe	1 No.
		6. Width caliper	1 No.
		7. Top cover	1 No.
		8. Pneumatic lift with Ramp	1 Set
		9. Accessories box (Cabinet right side) containing:	
		a) MCD parts	1 Set
		b) Cone holding stem	6 No.
		c) Weight plier	1 No.
		d) Wheel balancing weight	1 Set
		e) Foundation fasteners	1 Set
		f) Glass fuses	1 Set

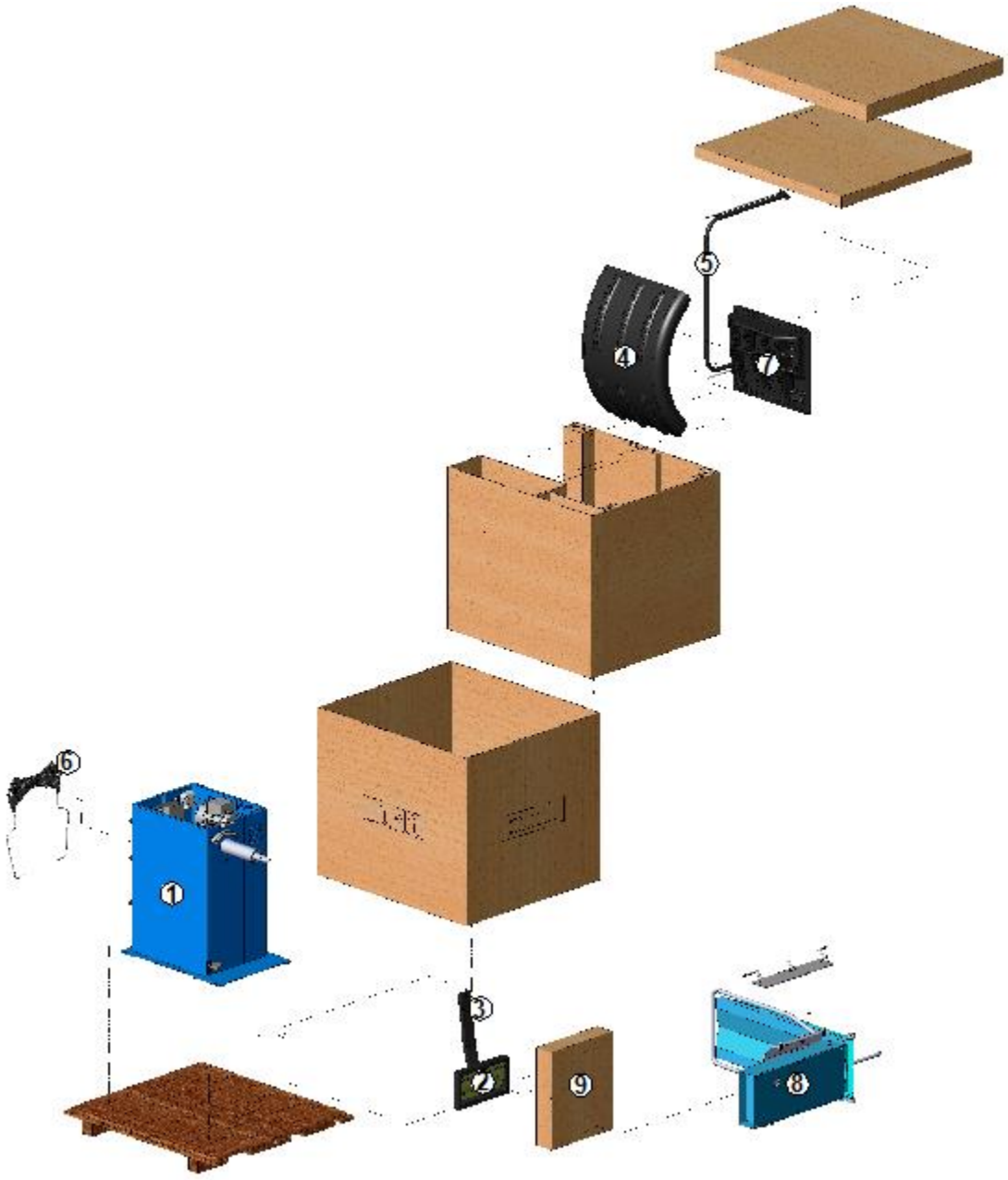


Fig. 3

2.4. 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.

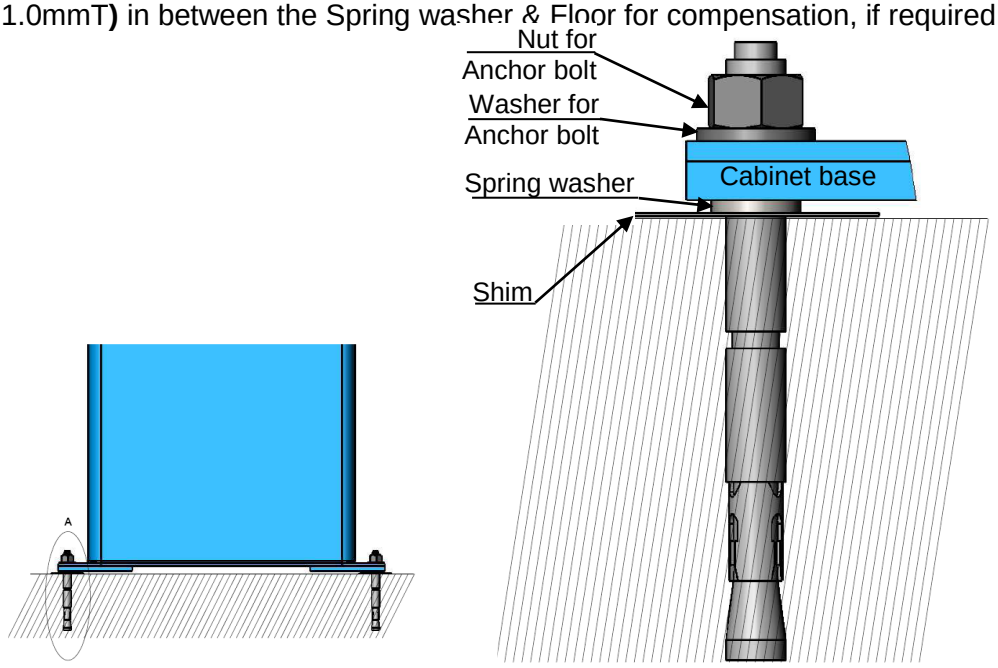


Fig. 4

2.5. INTEGRATION

2.5.1. DISPLAY UNIT (Monitor column & Monitor)

1. Fix the Monitor column with Main cabinet at the rear side (Centre) using respective Allen screw & Spring washer (2 Nos.) each. Ensure the column is perpendicular to the Cabinet.

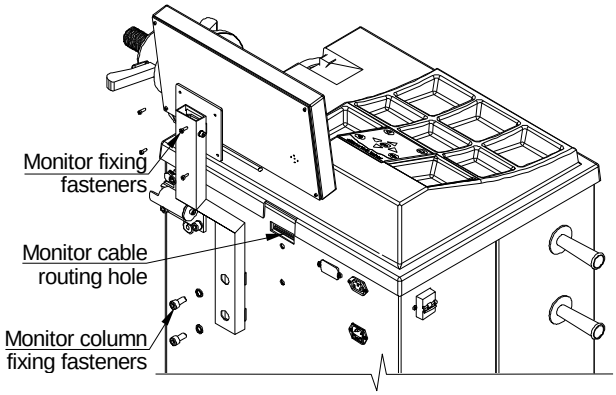


Fig. 5

2. Fix the Monitor with Monitor plate using WH-PH screw (4 Nos.) firmly and ensure the straightness.
3. Connect one end of the Monitor power cord with Monitor and other end to the socket provided at rear (Right) side of cabinet. The location will be indicated by a sticker.
4. Connect the HDMI/DVI cable from SBC board to Monitor.
5. Connect the Power cord between Monitor & AC socket in rear side of cabinet.
6. Verify all the connectors are proper and without any loose contact.

2.5.2. WHEEL GUARD

1. Fix the Wheel guard bracket at the rear side of cabinet using Allen screw & Spring washer (4 Nos.) each.
2. Fix the Square pipe with the bracket using Allen screw & Stopper washer (1 No.) each.
3. Fix the Wheel guard with pipe using Allen button head screw, Spring washer, Plain washer & Domed cap nut (4 Nos.) each.
4. Fix tWheel guard & pipe assy with Square pipe using Domed cap nut & Spring washer (2 Nos.) each. Ensure Wheel guard is without any tilt.
5. Verify & ensure the limit switch functions of Wheel guard by opening & closing the guard.
6. Hook one end of the Wheel guard spring with Square pipe and the other end with the Cabinet. Ensure the Wheel guard assembly is perpendicular to cabinet.

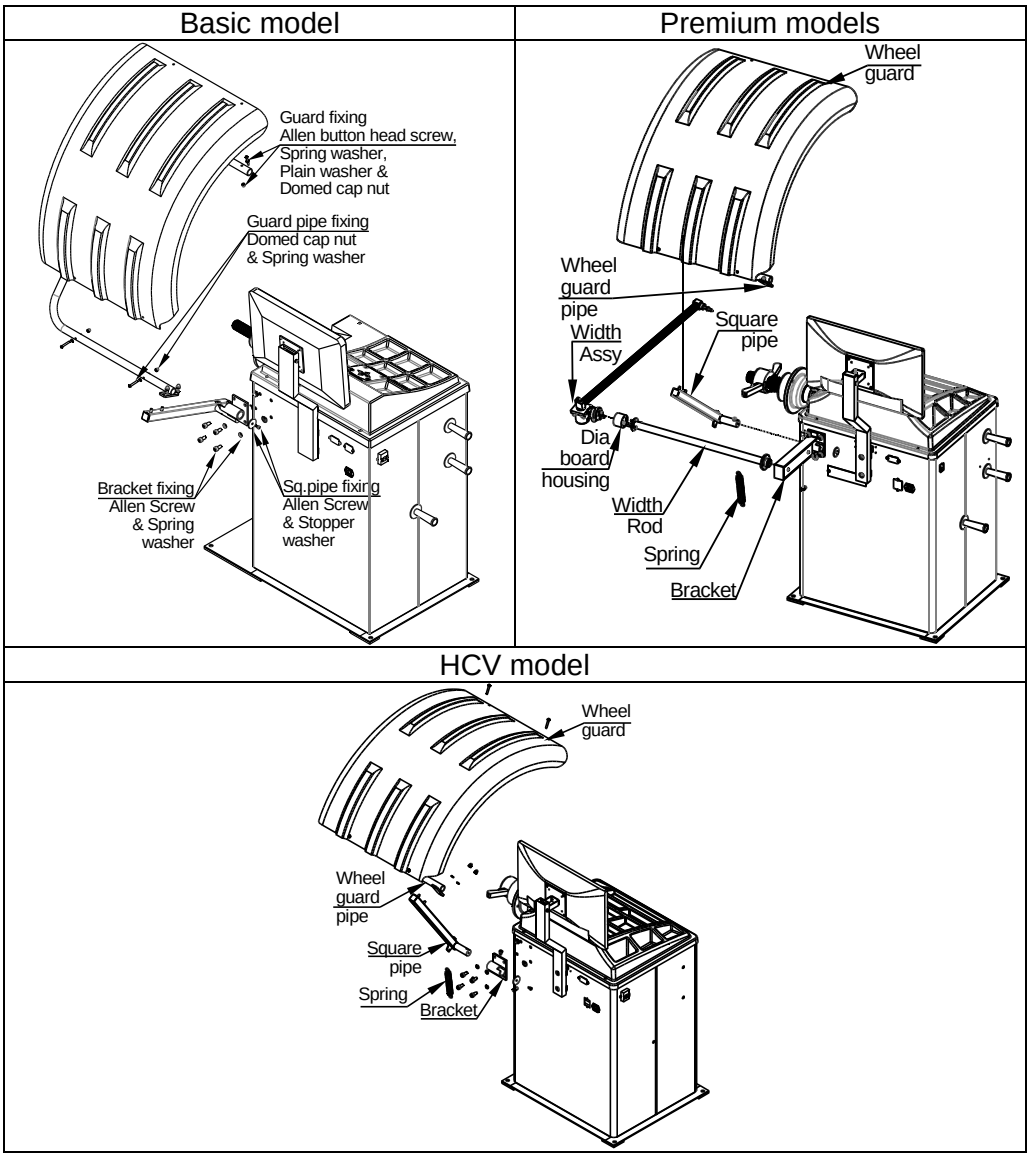


Fig. 6

2.5.3. WIDTH MEASURING ROD (Applicable only for Premium model)

1. Remove the Bracket back sheet from Bracket.
2. Fix the Width rod assy with bracket using Allen screw & Spring washer (2 Nos.) each. Ensure the Width assy is perpendicular to cabinet.

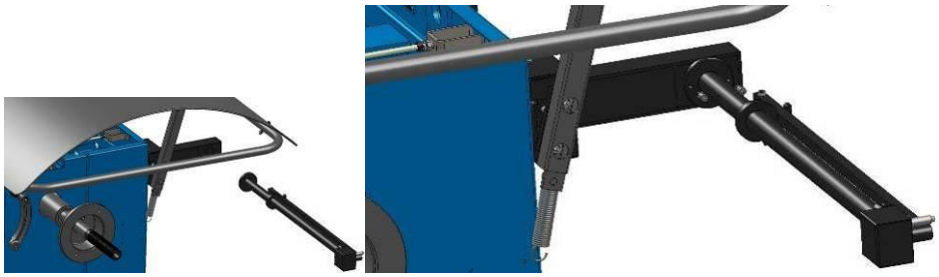


Fig. 7

3. Route the Width assembly cable through the bracket and connect with the Width cable from DSP board by ensuring the orientation.
4. Fix the Bracket back sheet with Bracket using WH-PH screw (2 Nos.) without damaging the routine cables.

2.5.4. 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. In case of HCV model, fix the Threaded shaft with Rotor assembly firmly using correct size Spanner.
3. Ensure the Rotor shaft is free from Runout. Else correct it.

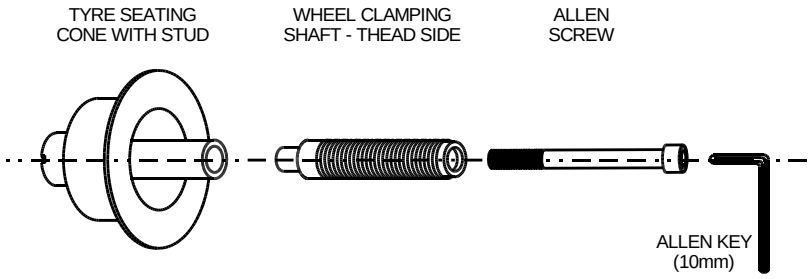


Fig. 8

4. Fix the Cone holding stems with left side of cabinet.
5. Locate the Wheel seating cones with the respective Stem in case of LCV models
6. Finally verify & ensure the cabinet is free from tilt again.

3. DESCRIPTION OF MAIN PARTS

3.1. DSP BOARD WITH MINI UPS

Digital Signal Processing board receives the raw unbalance signals from Piezo sensor, Wheel diameter & Wheel width from RLS Sensor and amplifies it through analog signal conditioners. Then the signals are processed digitally to ensure stable & accurate unbalance readings & Wheel data.

A set of Schmitt-Triggers are deployed to fine tune the Revolution & Index waveform in order to achieve the accurate RPM of wheel.

Serial RS232 converter for TX & RX helps in transferring data effectively to Display unit

An Optical Encoder is deployed for acquiring wheel parameters by just rotating the wheel instead of obtaining manual input via keyboard interface.

A Mini UPS function is deployed for sourcing the power to the SBC (Raspberry Pi board) and it gives a standby power upto 10 Minutes, during the sudden power failures. This prevents the failure of Memory card / OS corruption due to abrupt power OFF.

Fig. 9

3.2. POWER PANEL

Power panel hold the Electronic assemblies of Balancer meant for data processing, display interface, power control & distribution. This power panel is fixed inside the Cabinet. Major assemblies of the Power panel are described below:

3.2.1. MOTOR CONTROL BOARD

This board is used to switch ON/OFF AC supply to the motor using Digital level signal applied from DSP board. This board also acts as a power distributor.

Two different types of Motor control board are being used to control 1Phase 220V/110V (For LCV model) and 3Phase 440V/220V (For HCV model) Motor.

Motor control board has Electro-Mechanical relays to switch the AC supply by energising the relay coils with DC voltage.

It has two different set of relay switching function. One function is to run the Motor and another is to stop the wheel rotation by applying reverse voltage once the unbalance is calculated.

3.2.2. MOTOR CONTROL BOARD CUM EMI FILTER BOARD (Applicable only for Rev.50 and above)

This board is used to switch ON/OFF AC supply to the motor using Digital level signal applied from DSP board. This board also acts as a power distributor.

The EMI Filter section filters the Electro magnetic interference noise. Then clean AC power is delivered to SMPS and Monitor. Also, it ensures that system not generate any EMI noise to the outside world.

Two different types of Motor control board are being used to control 1Phase 220V/110V (For LCV model) and 3Phase 440V/220V (For HCV model) Motor.

Motor control board has Electro-Mechanical relays to switch the AC supply by energising the relay coils with DC voltage.

It has two different set of relay switching function. One function is to run the Motor and another is to stop the wheel rotation by applying reverse voltage once the unbalance is calculated

Fig. 10

3.2.3. SBC BOARD

It is a Linux OS compatible Single Board Computer that runs the front end balancing program loaded in an External memory card. This board delivers High definition Audio & Video output.

Board configurations:

All the signals are connected with this board using a single FRC cable. Power (5VDC) is given to this board through a Micro USB cable.

Processor	Broadcom BCM2837 64bit Quad Core Processor powered Single Board Computer running at 1.2GHz
Graphic processor	Broadcom VideoCore IV dual-core GPU (or) higher configuration
RAM	SDRAM, LPDDR2, 1GB (MiB) On-board (or) above
Network	10/100 Ethernet RJ45 On-board
Video output	HDMI, Composite RCA
Audio output	HDMI, 3.5 mm Jack
USB	2.0, 4 ports (or) above
External memory	Micro SDHC, 16GB, Class10
Operating system (Factory loaded)	Linux (Rasbian)

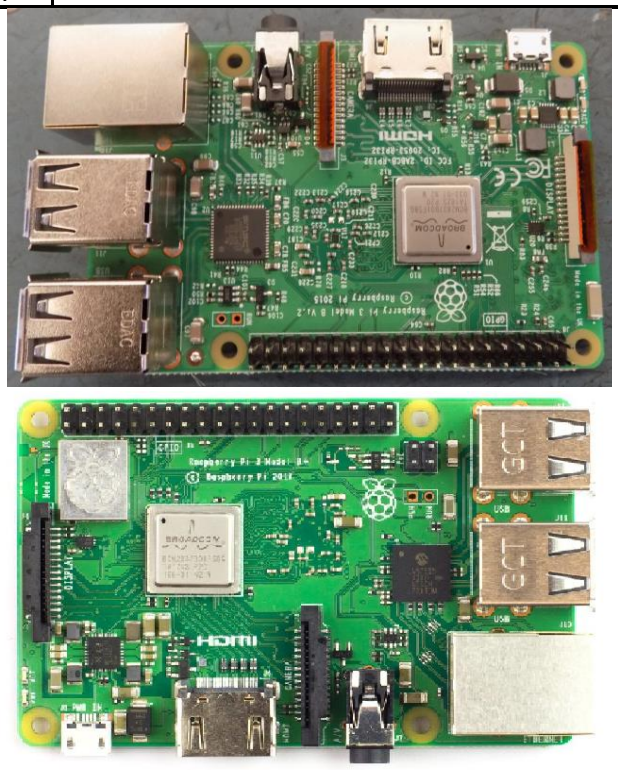


Fig. 11

3.2.4. SMPS

The 15W SMPS generates Single output 5V/3A, output. It is a wide operating voltage SMPS ranging from 85V to 264VAC / 50Hz - 60Hz input. The DC 5V output is then converted to +12V, -5V by DC to DC Converter section in E-DSP board. Then the +12V is distributed to Motor control board & Buzzer.

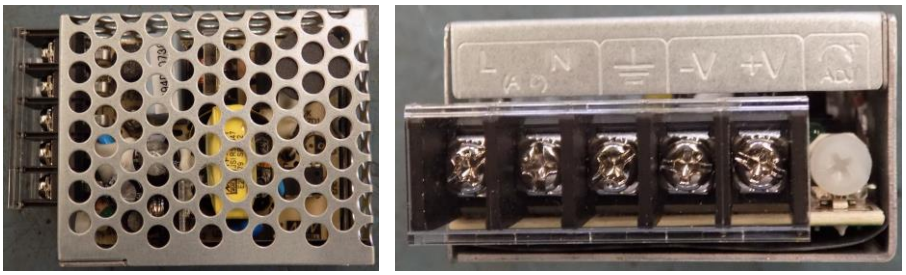


Fig. 12

3.2.5. EMI FILTER MODULE (for HCV model only)

The EMI Filter module receives 230V AC / 110V AC and filters the Electro-magnetic interference noise. Then clean AC power is delivered to SMPS. Also, it ensures that system not generate any EMI noise to the outside world.

The EMI Filter section is merged in the Motor control Board for all LCV Models and used a separate module for all HCV Models(except single phase HCV models in which it is merged with MC Board)

Fig. 13

3.3. ROTOR

Rotor consists of Motor, Piezo sensor, Revolution Index encoder board & MCD.

3.3.1. MOTOR

Low RPM AC induction Motor is used for high reliability & vibration less balancing. This Motor drives the Rotor assembly through belt at a known RPM for identifying the unbalance of the wheel & its position.

Motor specifications:

In LCV (230V) models, 1φ, 230V, 0.35HP, 960rpm

In LCV (110V) models, 1φ, 110V, 0.35HP, 1200rpm

In HCV (415V) models, 3φ, 415V, 0.75HP, 960rpm

In HCV (220V) models, 3φ, 220V, 0.75HP, 1200rpm

In HCV (220V) models, 1φ, 230V, 0.75HP, 1200rpm (60Hz)

In HCV (220V) models, 1φ, 230V, 0.75HP, 960rpm (50Hz)

3.3.2. PIEZO SENSOR

Two Piezo electric sensors (SA & SB) are transducers fixed with the Rotor assembly to sense the vibration or force and converted into equivalent electrical signals for further processing by DSP board.

Fig. 14

3.3.3. REVOLUTION INDEX ENCODER BOARD

This board is fixed with Rotor plate to detect the revolution pulse and Index for each rotation using IR LEDs and Photo detector positioned exactly opposite to each other at a fixed distance.

The detected pulse & index signals are transmitted to DSP board via E-Distance encoder board.

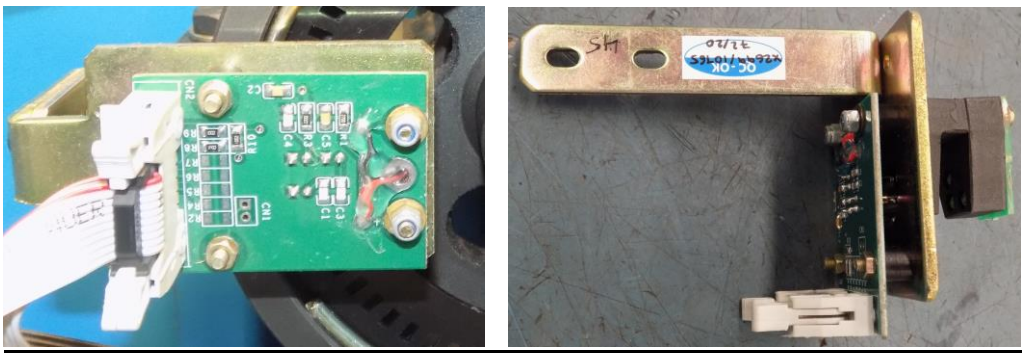


Fig. 15

3.3.4. MID CENTERING DEVICE (MCD)

Mid Centering Device (MCD) is attached to the Rotor for centering the wheel automatically while fixing it using Wheel seating cones.

Fig. 16

3.4. MECHANICAL BRAKE

This mechanism is provided to stop wheel manually at the indicated position for adding Balancing weight.

This brake can also be used to cutoff the supply to Motor by holding the pedal for few seconds in case of emergency. Subsequently E-Brake will arrest the rotation of wheel completely.

3.5. DISPLAY UNIT

Wheel balancing program is displayed graphically on a High definition LED Monitor. The Monitor has digital input either DVI or HDMI.

Fig. 17

3.6. KEYBOARD

This soft touch Membrane pad is an user friendly input device with Icon based keys for universal understanding.

The Keypad is available in the Top cover.

Fig. 18

3.7. DISTANCE / DIAMETER / WIDTH MEASUREMENT MECHANISM

The mechanism is equipped with an E-Distance encoder & RLS sensors for measurement of Wheel Distance & Diameter/Width respectively as explained below:

3.7.1. E-DISTANCE ENCODER BOARD (For Wheel rim Distance measurement)

The Optical encoder in this E-Distance encoder board detects the distance & home position of the Distance rod for arriving at the Rim distance. The detected signals will be sent to the DSP board via FRC cable for further processing & Display.

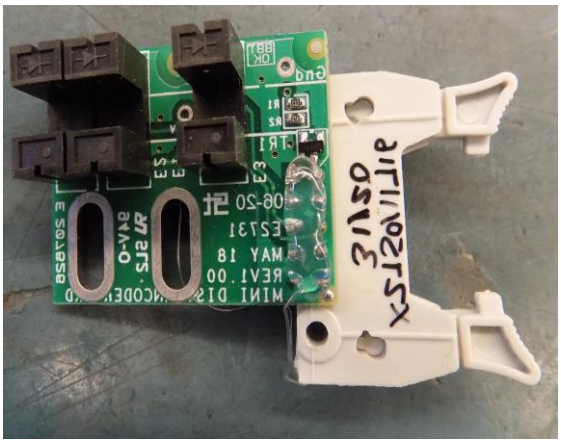


Fig. 19

3.7.2. RLS SENSOR BOARD (For Wheel rim Inner and Outer Diameter & Width measurement)

The Encoder IC with Hall Effect sensor in this board detects the position of the Magnet located on top of the IC & fixed to measurement mechanism to calculate the Rim Inner, Outer diameter and Width. The detected signals will be converted to respective analog voltage & fed to the DSP board for further processing & Display.

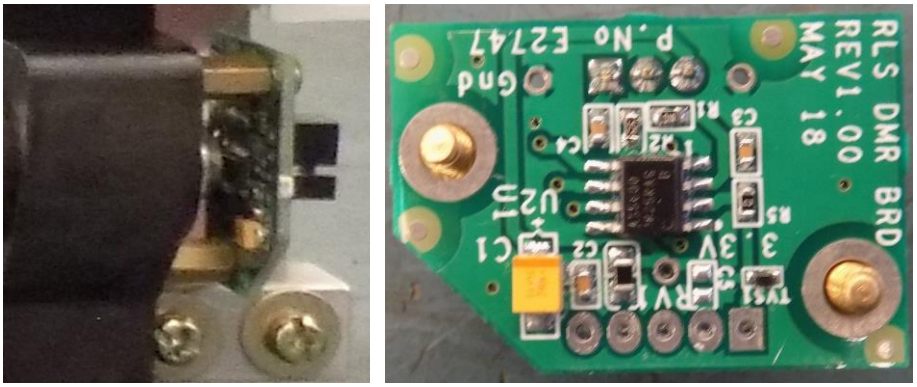


Fig. 20

3.8. 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.

Also 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, Error will be displayed. By closing the guard, error will disappear and the wheel starts spinning automatically.

3.9. LASER / TORCH (Applicable for Premium + model only)

Red Laser line is provided to guide the user to correctly add the weight at the BDC position along the line. Also, two white LEDs (Torch) is provided to illuminate the Inner side of wheel to help User to clean and add weight.

Fig. 21

3.10. STICKER WEIGHT HOLDER (Applicable for Premium/+ model only)

For Alloy wheels, option given to use Sticker weight holder for manual pasting of weight.

Fig. 22

.

4. OPTIONS

☞	**This feature is protected with service password and should be used only by authorised Service personnel**

Program related options can be accessed by using the Navigation keys to select button in the **WELCOME** screen followed by pressing key. System will prompt to enter the Password. Use ▲▲▲▲▲↵▲↵▲▲↵ keys as password. Following **OPTIONS** screen will be displayed:

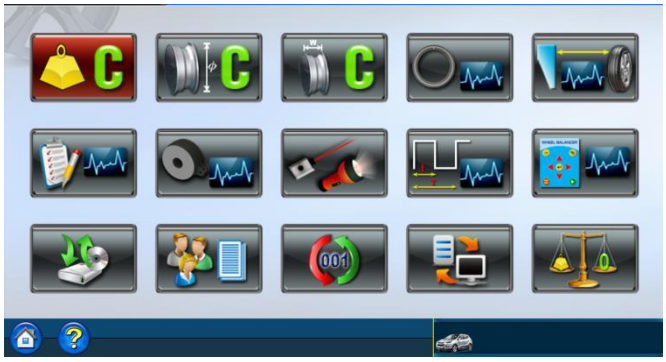


Fig. 23

Now press TAB key to toggle the keypad control from Task bar to the options available in **OPTIONS** screen.

Use navigation keys to select the required options & press key to perform the program related options.

Press ESC key to go back to previous screen or select button and press key to exit from **OPTIONS** screen.

4.1. WEIGHT CALIBRATION

☞	**This feature should be used only by authorised Service personnel**
☞	**Balancing operation should be carried out only after performing 2 Point calibration**

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).

4.1.1. LCV MODELS

Pre calibration (Applicable for Factory & Authorized Engineer)

Following options will be provided in **WEIGHT CALIBRATION** screen:

Once selected, following sub options will be provided in **WEIGHT CALIBRATION** screen as shown below:

Fig. 24

☞	**Low Point & High point calibration is password protected** **Password:** ▼▼▼▼▼↵▼↵▼▼↵

SPINDLE ZERO

By default, **LOW POINT** will be highlighted. Press key to proceed with ***Low point*** calibration.

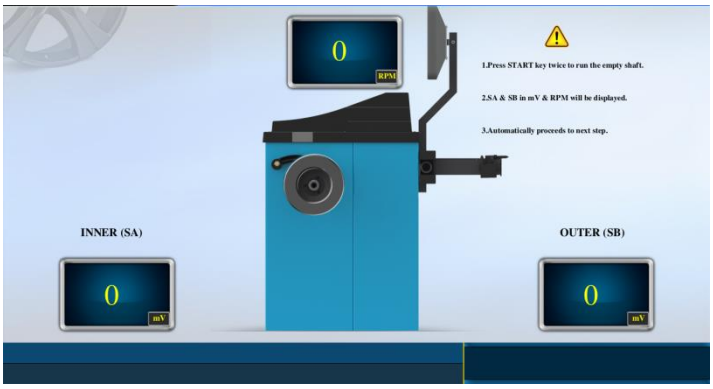


Fig. 25

Remove Wheel, Wheel seating cone & QCLN from shaft if already mounted. Press key twice to run the Empty shaft. SA & SB Sensor values will be displayed (in millivolts) in the respective window (limit: 30mV) including RPM and the system will go to **RIM PARAMETERS** screen.

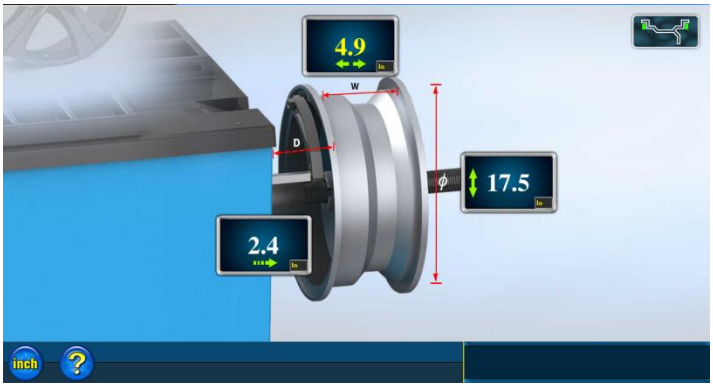


Fig. 26

Mount the wheel.

☞	**For Low point – use a fairly balanced wheel with Rim dia of 12”-16”. Unbalance should be 30gm min.** **For High point – use a fairly balanced wheel with Rim dia >16”. Unbalance should be 50gm min.** **For Single point – use a fairly balanced wheel with Rim dia 12”-16”. Unbalance should be 30gm min.**

Use keys to move to next parameters.

☞	**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**
☞	**If Auto Dia / Width are enabled & calibrated already, ensure the acquired values are displayed correctly. Else, set Dia & Width values manually as explained above**
☞	**If empty shaft unbalance is more, “*Spindle unbalance is beyond limits for calibration*” error message will be displayed. Stop Calibration and call Authorised Service personnel**
☞	**DO NOT use Wheel with Re-treaded tyre or Wheel with more runout for calibration**

TYRE ZERO

Enter the Wheel parameters as explained in Chapter 7.4.1 of Operating manual and then press ↵ key to go the **TYRE ZERO** screen.

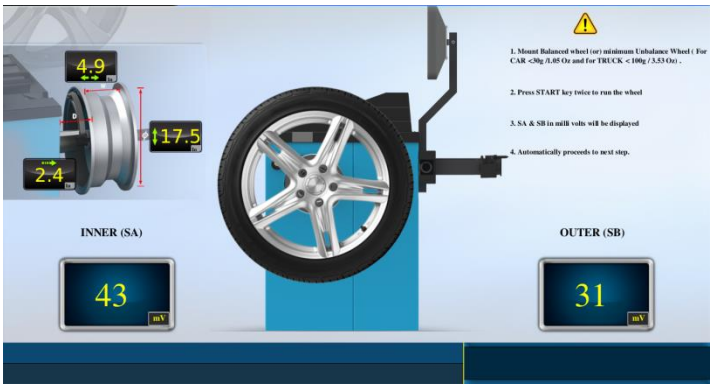


Fig. 27

Press ▶ key twice to run the wheel. SA & SB Sensor values will be displayed (in millivolts) in respective window and goes to **OUTER CALIBRATION** screen.

☞	**To know the millivolts of Tyre unbalance if error is displayed, press ▼ key to go to RAW CALBRATION, run the wheel to view millivolts of SA & SB displayed**
☞	**If "*Tyre unbalance is beyond limits for calibration*" error message is displayed, press ↵ key to clear the message and ensure wheel mounted is with minimum unbalance**
☞	**To know the millivolts of Raw calibration after completing Tyre zero, press ▼ key to go to RAW CALIBRATION, run the wheel to view millivolts of SA & SB displayed for the Calibration weight added**

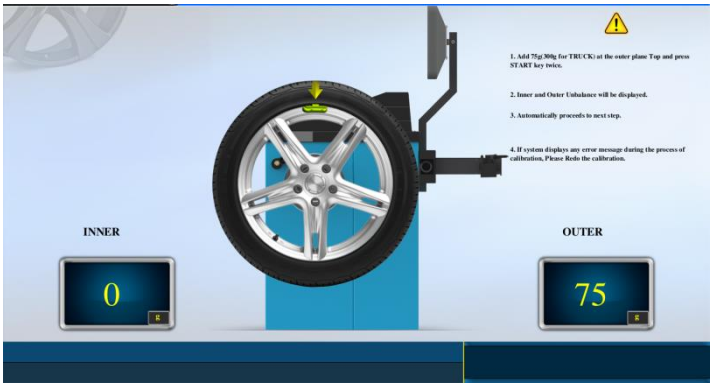


Fig. 28

Add Calibration weight (75gm) in the indicated position (12 'o' clock) & rotate the wheel manually to bring the added weight to TDC (Top Dead Centre).

☞	**Ensure that the Calibration weight is exactly at 12 'o' clock position. Otherwise wheel balancing will be severely affected**
☞	**DO NOT disturb the Wheel position until Outer calibration is performed**

Press ▶ key twice to perform Outer calibration. The added weight will be displayed in the Outer plane window and the Inner plane window will be zero. The system will proceed to perform Inner calibration.

Remove the Calibration weight from the Outer plane & fix it on the Inner plane of the wheel directly opposite as shown below:

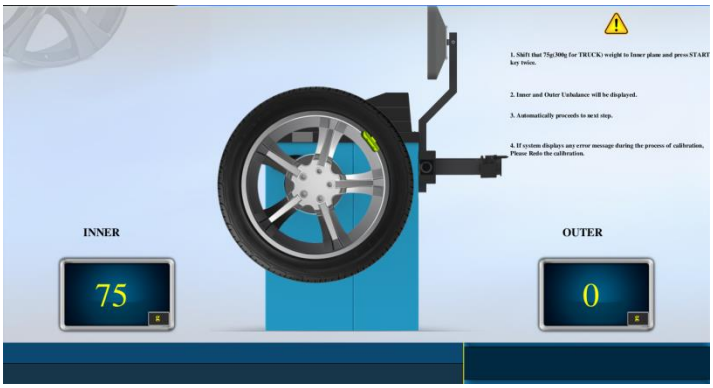


Fig. 29

Press key twice to perform Inner calibration. The added weight will be displayed in the Inner plane window and the Outer plan window will be zero.

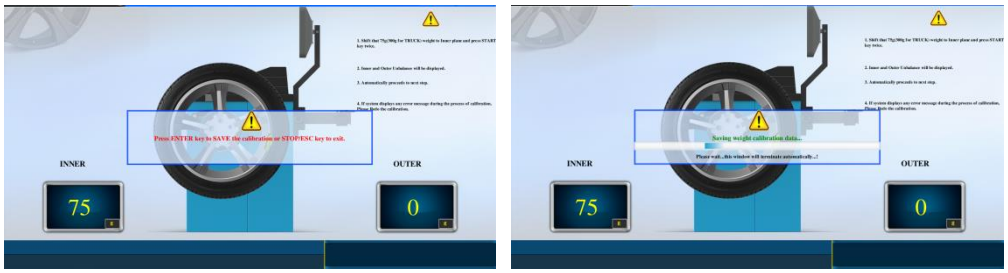


Fig. 30

Once Inner calibration is performed, press key to save the Weight calibration values. Saving process will happen with message prompts for few seconds and system will go back to **WEIGHT CALIBRATION** screen.

☞	**During Outer or Inner calibration, if "Calibration weight signal is too high. Press Key to proceed, or any other key to exit" error message appears, check whether the correct calibration weight is added on the appropriate plane or weight is not added in the Outer plane or not shifted to Inner plane. If the weight is correct, and still you got this error, press ENTER key and proceed with the calibration**
☞	**If any error is indicated after adding weight in any of the Plane, redo the Weight calibration**

Remove the Calibration wheel and go the **POSITION TRACKING** screen. Run the Empty shaft and zero is displayed in both the planes.

Now Balance a Wheel as explained in Chapter 7.4 of Operating manual and then add a known weight and ensure the weight added & its positions are displayed in the respective windows correctly.

4.1.2. HCV MODELS

☞	**Both LCV calibration & HCV calibration should be performed separately. "*Car cal. data not available*" / "*Truck cal. data not available*" message will be displayed in WHEEL RUN screen if Calibration data is not available**

Pre calibration (Applicable for Factory & Authorized Engineer)

Following sub options will be provided in **WEIGHT CALIBRATION** screen as shown below. Once selected, following sub options will be provided in **WEIGHT CALIBRATION** screen as shown below:

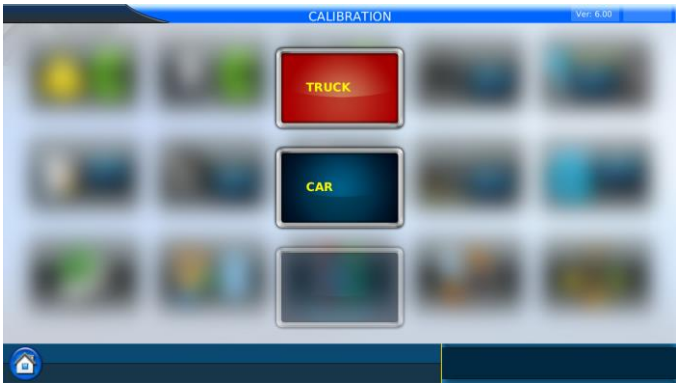


Fig. 31

Select the Car or Truck mode to proceed with the Weight calibration.

SPINDLE ZERO

By default, **SPINDLE ZERO** will be highlighted. Press ↵ key to proceed with Spindle zero calibration.

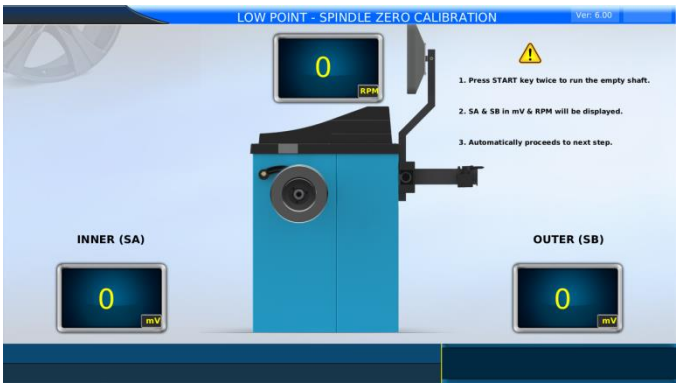


Fig. 32

Remove Wheel, Wheel seating cone & Lock nut from shaft if already mounted.

Press ▶ key twice to run the Empty shaft. SA & SB Sensor values will be displayed (in millivolts) in the respective window (limit: 30mV) including RPM and the system will go to **RIM PARAMETERS** screen.

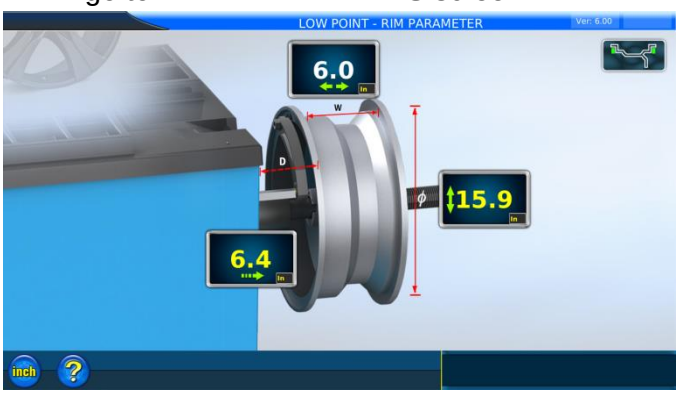


Fig. 33

Mount the wheel.

	For Truck - **use a fairly balanced wheel with Rim dia of 20”-24”. Unbalance should be 50gm min.** For Car - **use a fairly balanced wheel with Rim dia of 12”-16”. Unbalance should be 30gm min.**

Use ◀/▶ keys to move to next parameters.

	If empty shaft unbalance is more, “*Spindle unbalance is beyond limits for calibration*” error message will be displayed. Stop Calibration and call Authorised Service personnel

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

TYRE ZERO

Enter the Wheel parameters as explained in Chapter 7.4.1 of Operating manual and then press ↵ key to go the **TYRE ZERO** screen.

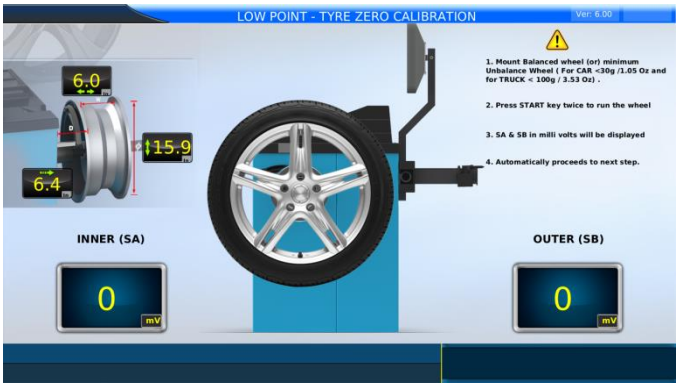


Fig. 34

Press ▶ key twice to run the wheel. SA & SB Sensor values will be displayed (in millivolts) in respective window & goes to **OUTER CALIBRATION** screen.

	To know the millivolts of Raw calibration after completing Tyre zero, press ▼ key to go to RAW CALIBRATION, run the wheel to view millivolts of SA & SB displayed for the Calibration weight added

	If “*Tyre unbalance is beyond limits for calibration*” error message is displayed, press ↵ key to clear the message and ensure wheel mounted is with minimum unbalance

	To know the millivolts of Tyre unbalance if error is displayed, press ▼ key to go to RAW CALBRATION, run the wheel to view millivolts of SA & SB displayed

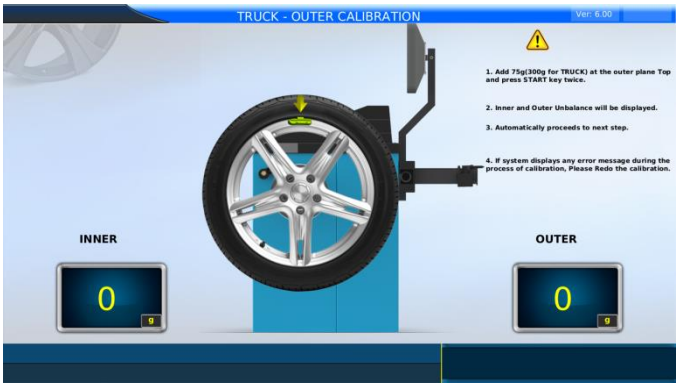


Fig. 35

Add Calibration weight (75gm for Car & 300gm for Truck) in the indicated position (12 ‘o’ clock) & rotate the wheel manually to bring the added weight to TDC (Top Dead Centre).

	Ensure that the Calibration weight is exactly at 12 'o' clock position. Otherwise wheel balancing will be severely affected

☞	**DO NOT disturb the Wheel position until Outer calibration is performed**

Press ▶ key twice to perform Outer calibration. The added weight will be displayed in the Outer plane window and the Inner plane window will be zero. The system will proceed to perform Inner calibration.

Remove the Calibration weight from the Outer plane & fix it on the Inner plane of the wheel directly opposite as shown below:

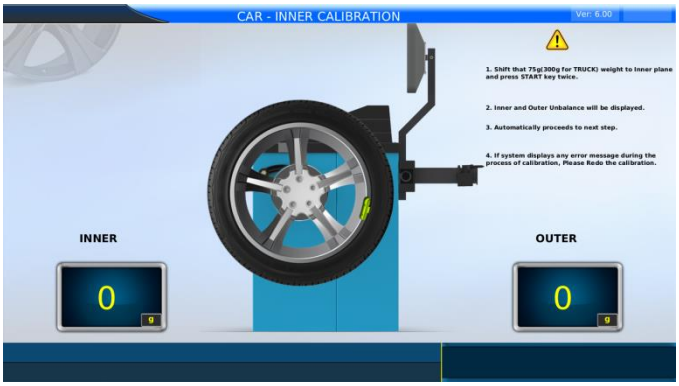


Fig. 36

Press ▶ key twice to perform Inner calibration. The added weight will be displayed in the Inner plane window and the Outer plan window will be zero.

Fig. 37

Once Inner calibration is performed, press ↵ key to save the Weight calibration values. Saving process will happen with message prompts for few seconds and system will go back to **WEIGHT CALIBRATION** screen.

☞	**During Outer or Inner calibration, if "Calibration weight signal is too high. Press ↵ Key to proceed, or any other key to exit" error message appears, check whether the correct calibration weight is added on the appropriate plane or weight is not added in the Outer plane or not shifted to Inner plane. If the weight is correct, and still you got this error, press ENTER key and proceed with the calibration**
☞	**If any error is indicated after adding weight in any of the Plane, redo the Weight calibration**

Remove the Calibration wheel and go the **POSITION TRACKING** screen. Run the Empty shaft and zero is displayed in both the planes.

Now Balance a Wheel as explained in Chapter 7.4 of Operating manual and then add a known weight and ensure the weight added & its positions are displayed in the respective windows correctly.

4.2. DIAMETER CALIBRATION (Applicable only for Premium/+ model)

☞	**Width & Diameter calibration could not be done if "*Auto width*" & "*Auto dia*" option is disabled in SETTINGS as explained in Chapter 8 of Operating manual**

Use navigation keys to select **DIA CALIBRATION** & press ↵ key. Following screen will be displayed:

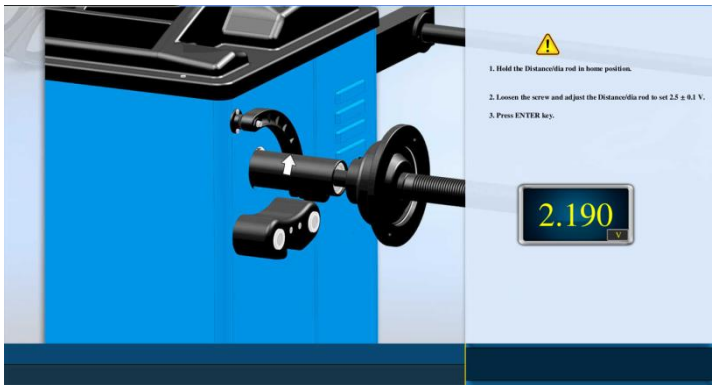


Fig. 38

Keep the Distance/Diameter measuring rod in zero position (ie. Home Position) and ensure the displayed voltage is 2.5V ±0.1V.

☞	**If the displayed voltage is not within specification, loosen the lever fixing Allen screw and Grub screw to move the DMR slightly and then rotate the Lever fixing rod till required voltage is set. Touch the Bearing housing with the Lever pin and then tighten the grub screw & Allen screw without disturbing the set Voltage as shown in Fig.39**

Press ↵ key to save the home position. Following screen will be displayed:

Fig. 39

Mount a Wheel with the shaft and enter its Rim diameter (Rim diameter to be taken with respect to Clip weight adding location) using Navigation keys as per the On-screen instructions and then press ↵ key to go to next screen.

Fig. 40

Move the Distance/Diameter measuring rod & touch the inner plane profile of the Rim properly and hold it for 3 seconds until Audio indication and then move the Distance/Diameter measuring rod to its home position.

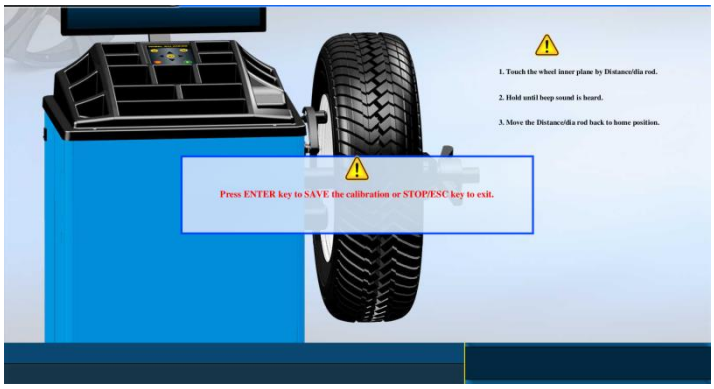


Fig. 41

Press ↵ key to save the Diameter calibration values. "***Dia calibration saved and completed***" message will be displayed briefly.

Mount a Wheel & ensure the Rim diameter measured in **RIM PARAMETERS** screen is as per the Wheel Diameter specifications within tolerance limit of ±0.3".

4.3. WIDTH CALIBRATION (Applicable only for Premium model)

☞	**For recording the Zero position accurately, Width rod should be rested on the Stopper position and also 90° in X axis at the same time**

Use navigation keys to select **WIDTH CALIBRATION** & press ↵ key. Following screen will be displayed:

Fig. 42

Keep the Width measuring rod in zero position (ie. Stopper Position) and ensure the displayed Width voltage & Outer Dia voltage is 1.00V±0.1V & 2.50V±0.1V respectively.

☞	**If the displayed Outer dia voltage is not within specification, move the Width assembly to make it perpendicular with the cabinet and touch it with the stoppers. Now loosen the Grub screws to rotate the outer dia shaft for achieving the required voltage and tighten the screws in that position**
☞	**If the displayed Width voltage is not within specification, move the Width assembly to make it perpendicular with the cabinet and touch it with the stoppers. Now loosen the Allen screws available at the rear side of Width board housing and take out the Width measurement pipe. Now adjust the shaft in the Width board for achieving the required voltage. Fix the Width measurement pipe by ensuring perpendicularity**
☞	**If Width rod is either not in its zero position properly or the Width/Outer Dia voltage is not within specifications and ↵ key is pressed, "Width rod in Zero position" message will be displayed**

Press key to save the Zero position. Return the Width rod to Home position. System will go back to **WIDH CALIBRATION** screen. Select **MCD CALIBRATION** menu and press key. Following screen will be displayed:

Fig. 43

Touch the Width rod at the top edge of MCD and hold it for few seconds till Audio indication and then move the Width rod to Home position. The system will go to **WIDTH CALIBRATION** screen. Select WHEEL CALIBRATION menu and press key. Following screen will be displayed:

Fig. 44

Mount a Wheel with the shaft and enter its Rim Dia using ▲ / ▼ keys & then use ◀/▶ keys to move to Rim Width window and set the Rim Width using ▲ / ▼ keys. Then press key to go to next screen.

Fig. 45

Move the Distance/Diameter measuring rod & touch the inner plane profile of the Rim properly and hold it for few seconds until Audio indication and then move the Distance/Diameter measuring rod to its home position. System will go to next screen.

Fig. 46

Move the Width measuring rod and touch the outer plane (profile) of the Rim properly and hold it for few seconds until Audio indication. User will be prompted to save the values as shown below:

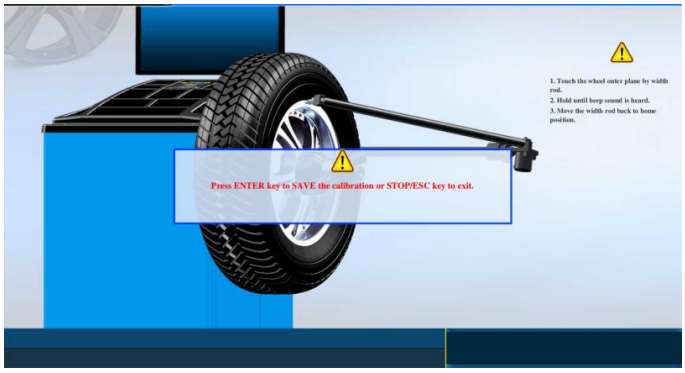


Fig. 47

Press ↵ key to save the Width calibration values. Then move the Width measuring rod to its home position. Mount a Wheel & ensure the Rim Distance & Width measured in **RIM PARAMETERS** screen are as per the Wheel Width specifications within tolerance limit of ±0.3".

4.4. WHEEL TRACKING TEST

1. Once Wheel tracking test is selected, rotate the Wheel mounting shaft clockwise manually and ensure that the count increments from 0 to 399 (0 to 255 for SR Models) in steps of 1 and number of revolutions (Index count) also increments accordingly:

Fig. 48

2. Ensure any of the count/revolutions is not missing or jumping.
3. Press ESC key to return to **OPTIONS**.

4.5. DISTANCE ROD TEST

1. Once Distance measuring test is selected, move the Distance measuring rod from Home position to maximum length and ensure the count increments from 0 to 90 (±1 count) in steps of 1 in the window. Now return the rod to home position & ensure the count is displayed as 0:

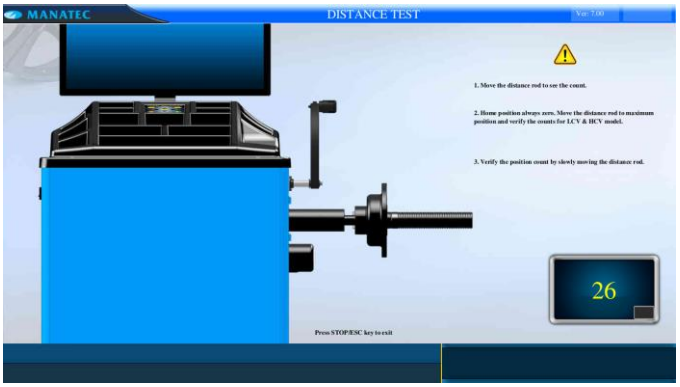


Fig. 49

2. Press ESC key to return to **OPTIONS**.

4.6. SELF TEST

1. Once Self test is selected, press ▶ twice to execute the Self test. Status of respective functions will be displayed as shown below:

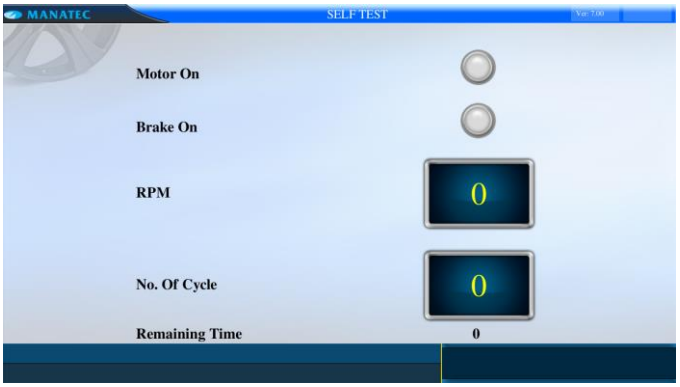


Fig. 50

2. Once all functions are found to OK, press ESC key to return to **OPTIONS**.

4.7. SENSOR TEST

1. Once Sensor test is selected, apply a mild load by pressing the empty Rotor. The variation in the Millivolt of SA & SB will be displayed as shown below:

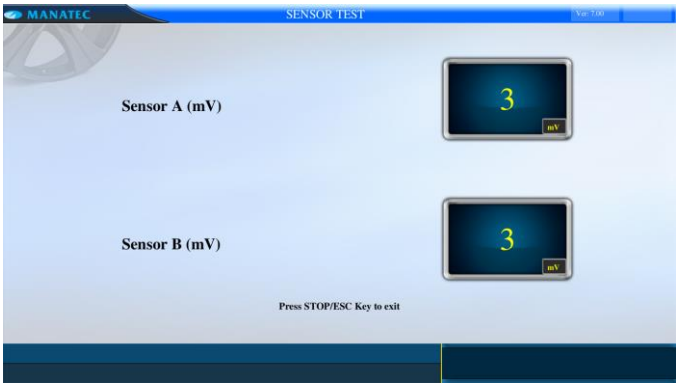


Fig. 51

2. Press ESC key to return to **OPTIONS**.

4.8. LASER & TORCH SETTING (Applicable for Premuim+ model)

After entering into the **OPTIONS**, select the Laser Torch button. Following screen will be displayed:

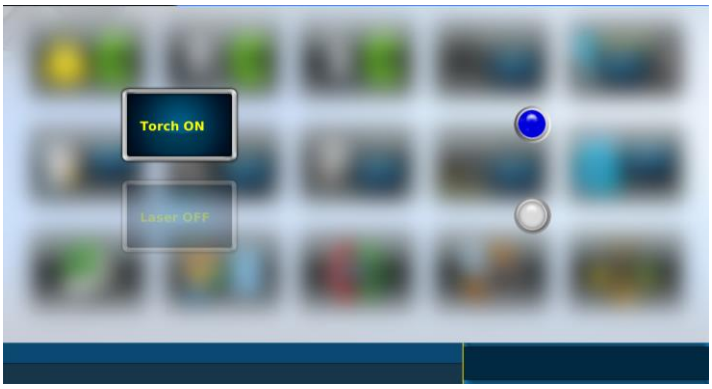


Fig. 52

Use ▲ / ▼ keys to select the required option and then press ↵ key to turn on of turn off the feature.

4.9. DUTY CYCLE TEST

1. Once Duty cycle test is selected, press ▶ twice to run Wheel. Ensure the Duty cycle of 40-60% RPM of Rotor (LCV: 175 -5/+15RPM, HCV: 200 -5/+15RPM) are displayed in the window:

Fig. 53

2. Duty cycle should not be 00 at any condition & reading should not jump also.
3. Press ESC key twice to return to **OPTIONS**.

4.10. KEYPAD TEST

1. Once Key test is selected, following screen will be displayed:

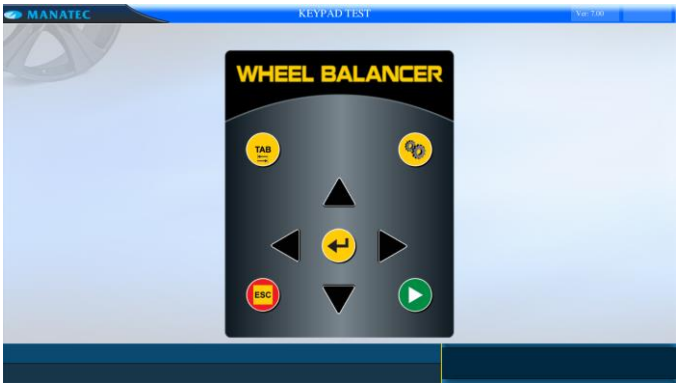


Fig. 54

2. Press a key in the Keypad and ensure the respective key in the screen blinks followed by Audio indication.
3. Press ESC twice key to return to **OPTIONS**.

4.11. BACKUP FACTORY DATA

1. Once Backup Factory Data is selected, the system will backup the Factory calibration data automatically:

Fig. 55

2. DO NOT press any key during the backup process. Once the process is completed, system will go back to **OPTIONS** screen.

   Important Note: Ensure calibration is correct before doing Backup

4.12. CUSTOMER INFORMATION

1. Once Customer data is selected, follow the On-screen instructions to feed the Customer information file as per the requested format via USB Pend drive with FAT32 file system:

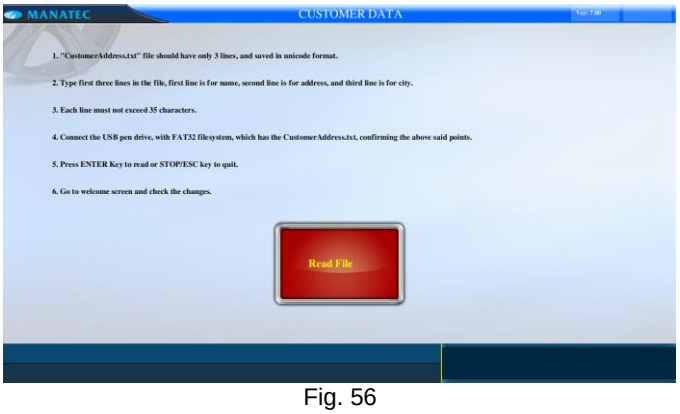


Fig. 56

2. Press **READ FILE** button to acquire the customer information and ensure the details are reflected in the ***Welcome*** screen.

4.13. RESET JOB NUMBER

1. Once this option is selected, user can reset the Job number count to 1 or to any other desired number as shown below:

Fig. 57

2. Press **SAVE** button to save the changes & to return to **OPTIONS**.

4.14. RESTORE FACTORY CALIBRATION

1. Once Restore Factory Calibration is selected, the system will restore the Calibration data automatically:

Fig. 58

2. DO NOT press any key during the backup process. Once the process is completed, system will go back to **OPTIONS** screen.

4.15. WEIGHT CUTOFF

This option is provided for the user to set the desired minimum unbalance value according to the Rim diameter as given below:

Rim diameter	***Weight cutoff range***
For LCV	5 to 25gm
For HCV	20 to 40gm

1. Once Weight cutoff is selected, default cutoff value will be displayed:

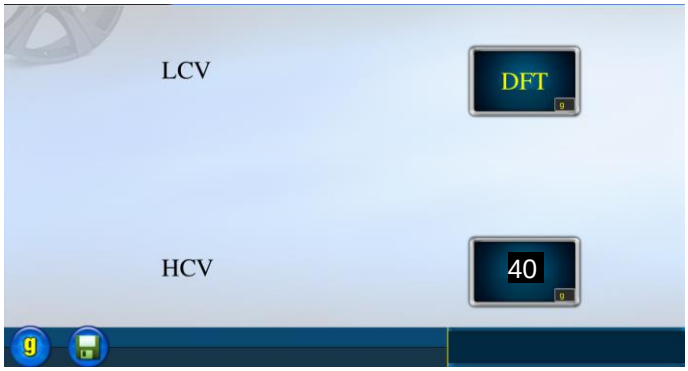


Fig. 59

NOTE: Use ↵ key to switch between windows

The DFT is Default value. It is 8 grams for Car, 18 gram for LCV and 40 grams for HCV. The 8 grams / 18 grams for Car/LCV will vary according to the Spin time

2. Set the desired minimum unbalance value using Navigation keys & then select **SAVE** button and press ↵ key.
3. System will confirm that the value is saved.

5. PARTS REPLACEMENT PROCEDURE

Switch off Balancer and disconnect the Mains power cord. Remove the top cover from main cabinet

5.1. POWER PANEL

1. Remove the all connections from Power panel assembly and detach it from Main cabinet by removing the fasteners.

LCV models	HCV model
	 (image to be changed)

Fig. 60

2. Fix the new Power panel assembly with Main cabinet.
3. Restore all the connections as per Wiring Diagram (Chapter 7.2).
4. Switch on Balancer & calibrate it as explained in Operating manual.
5. Run the Balancing program and ensure the functions are working properly without any errors.
6. Backup the calibrated data into the system memory as explained in Chapter 4.11.

5.1.1. DSP BOARD

1. Disconnect the SMPS DC supply (4Pin Phoenix), Sensor (4Pin Phoenix), Motor signal (4Pin SR), Dia (3Pin SR), Width (3Pin SR), Encoder (10Pin FRC), Wheel guard (2Pin SR), SBC board (26Pin FRC), Buzzer (2Pin SR), Fan (2Pin SR) & Membrane (6Pin SR) connectors from DSP board.

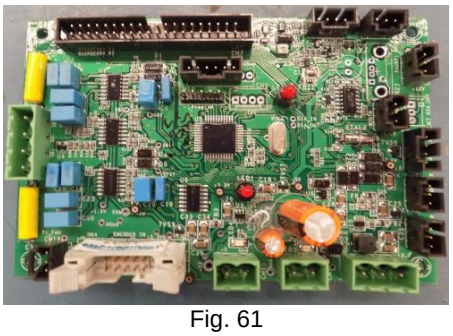


Fig. 61

2. Remove the fasteners and replace the defective board with New one and restore the connectors (refer Wiring diagram - Chapter 7.2).
3. Switch on Balancer & calibrate it as explained in Operating manual.
4. Run the Balancing program and ensure the functions are working properly without any errors.
5. Then backup the calibrated data into the system memory as explained in Chapter 4.11.

5.1.2. MOTOR CONTROL BOARD

1. For LCV, Disconnect the SMPS AC supply (2Pin Molex / 3 Pin Molex), Motor signal (4Pin SR) & Brake limit switch (2Pin SR) connectors from Motor control board.
   For HCV, Disconnect the EMI module AC supply (2Pin Phoenix), 3Phase I/P (4Pin Phoenix), Motor signal (4Pin SR) & Motor I/P (4Pin Phoenix) connectors from Motor control board.
2. Remove the fasteners and replace the defective board with New one and restore the connectors (refer Wiring diagram – Chapter 7.2).

3. Switch ON the Balancer and conduct Self Test program as explained in Chapter 4.6 without any errors.

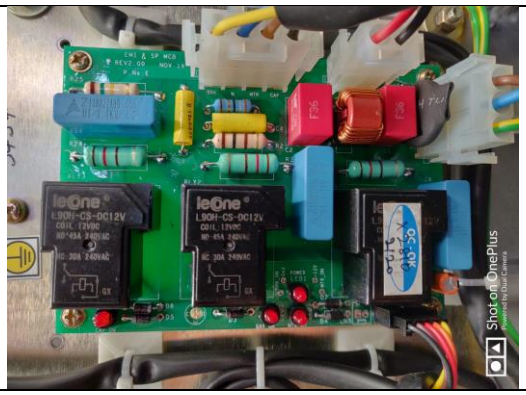
LCV model	HCV 3Phase model
	
	HCV 1Phase model
	

Fig. 62

5.1.3. SBC BOARD

1. Remove the Cooling fan assembly mounted over the SBC board.
2. Disconnect the Power I/P (Micro USB), Video O/P (HDMI), DSP board (40Pin FRC) connectors & Micro SDHC card.

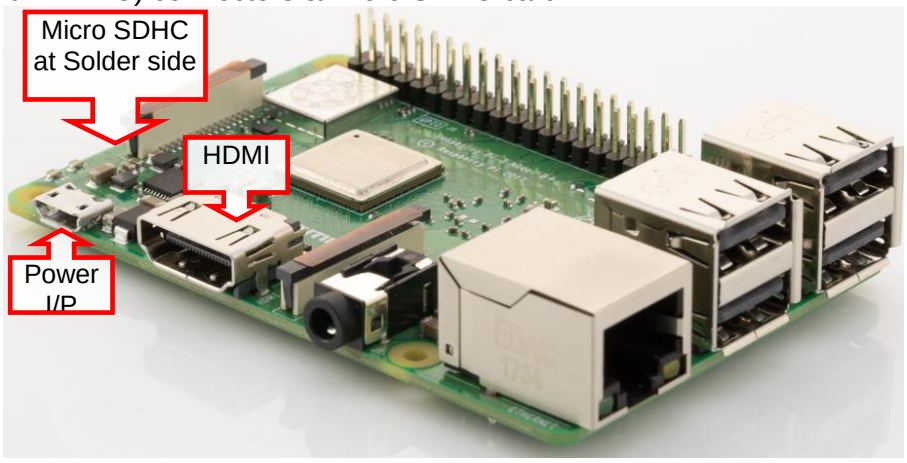


Fig. 63

3. Remove the fasteners and replace the defective board with New one and restore the connectors (refer Wiring diagram - Chapter 7.2). Ensure the 40Pin FRC is connected correctly with reference to Pin1.
4. Load the Micro SDHC card.
5. Re-fix the Cooling fan assy over the SBC board.
6. Switch on the Balancer and run the Balancing program to ensure the functions are working properly without any errors.

5.1.4. MEMORY CARD (with Balancing program)

1. Remove the defective Micro SHDC card from SBC board and insert the new card (Programmed) in to the slot.
2. Switch on the Balancer and run the Balancing program to ensure the functions are working properly without any errors.

5.1.5. SMPS

1. Disconnect the AC I/P & DC O/P wires.
2. Remove the fasteners and replace the defective SMPS with New one and restore the wiring by observing the correct I/P & O/P indications in SMPS, except the O/P power to DSP Interface board (refer Wiring diagram - Chapter 7.2).

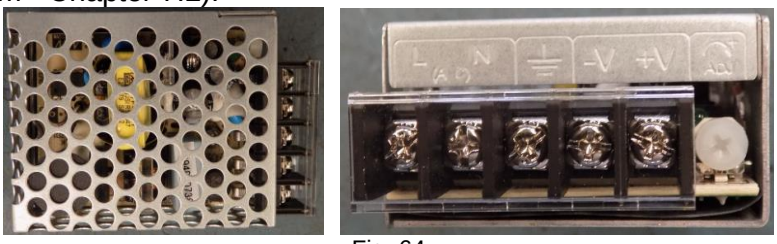


Fig. 64

3. Switch ON the Balancer and check the following SMPS voltages at Gnd: +5V (Tol.: ±0.1V).
4. Connect the DSP Interface board DC O/P (2Pin Phoenix).
5. Switch on the Balancer and run the Balancing program to ensure the functions are working properly without any errors.

5.1.6.

5.1.6. MCB (HCV)

HCV models (3Phase)

HCV models (1Phase)

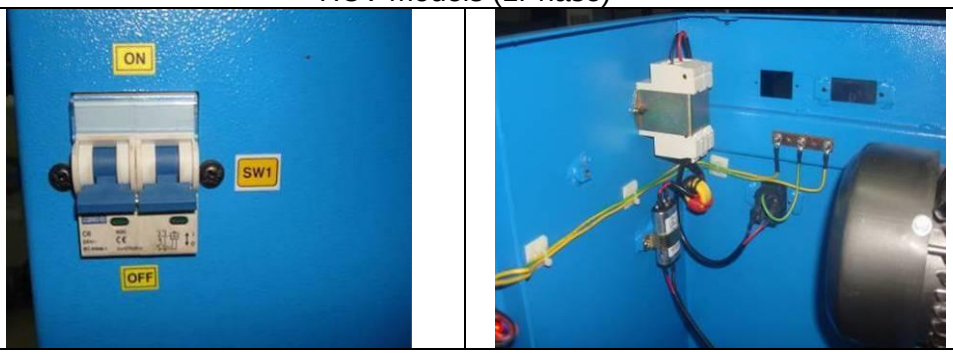


Fig. 65

1. Switch off MCB and disconnect the main power cord (for LCV model). In case of HCV model, switch off the Mains MCB also.
2. Remove the top cover from main cabinet and change any one of parts (EMI module, AC socket & Monitor socket).
3. For replacement of MCB/Rocker switch, disconnect the I/P & O/P wires (Line & Neutral).
4. Ensure the correct I/P & O/P direction in both MCB & Wires while restoring the connections (Refer Wiring diagram - Chapter 7.2).
5. Power up the machine and ensure that the equipment functions.

5.1.7. BUZZER

1. Remove Buzzer connector from DSP board and replace with new Buzzer and restore the connector.
2. Switch on the Balancer and run the Key test program as explained in Chapter 4.10.

5.1.8. COOLING FAN

1. Remove Fan connector (2Pin SR) from DSP board. Remove the Fan assembly mounted over the SBC board.

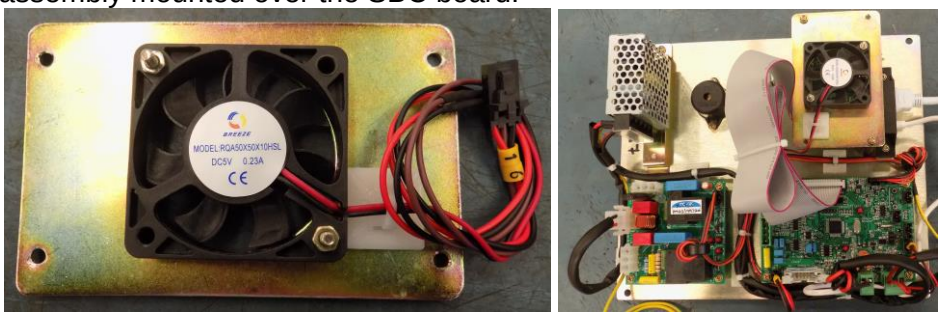


Fig. 66

2. Remove the defective Fan from the Fan plate and replace it with new one. Then mount the new fan assembly over the SBC board by observing the air flow direction and restore the connector.
3. Switch on the Balancer and ensure fan is running and exhaust function.

5.2. ROTOR

LCV MODELS

1. Remove the Allen screw from the Threaded shaft and detach MCD from main shaft.

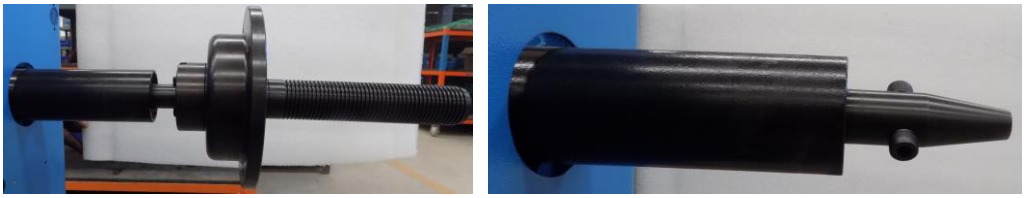


Fig. 67

2. Remove the Revolution Index encoder board. Detach the Belt from Driven pulley & then remove the Driven pulley.

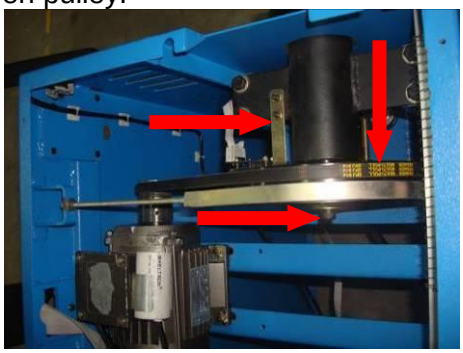


Fig. 68

3. Loosen the Sensor (SA & SB) fixing nut from both sides of cabinet. Sensor Screw rod from Rotor.

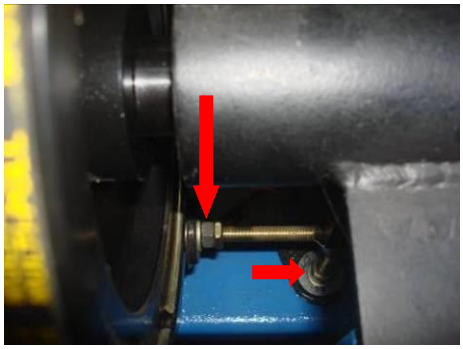


Fig. 69

4. Remove the Rotor fixing bolt and detach the Rotor assembly from cabinet.

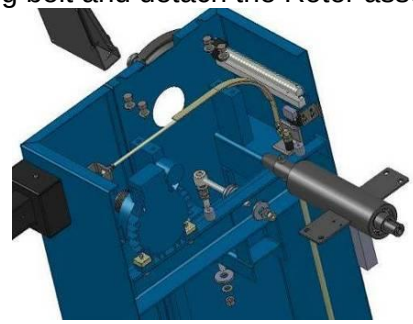


Fig. 70

5. Fixing the new Rotor assembly with Cabinet & fasten it firmly.

Fig. 71

6. Fixing the SB Screw rod with the Rotor & tighten it firmly with nut. Before fastening the Sensor nut, ensure the SA & SB screw rods are centered in the slotted hole in Cabinet:

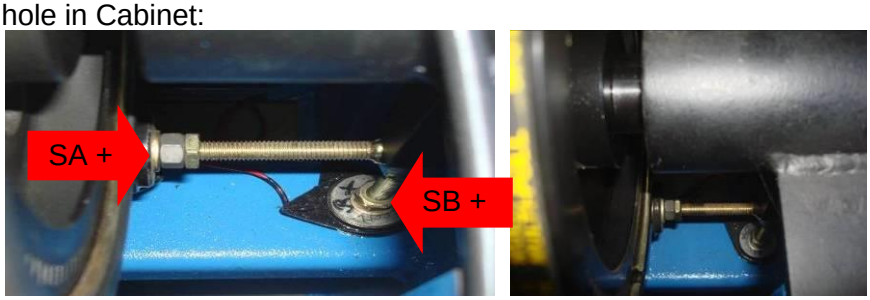


Fig. 72

7. Fix the Driven pulley with Main shaft and then put the Belt between Driven & Motor pulleys.

Fig. 73

8. Fix the Revolution Index encoder board with Rotor firmly.
9. Fix the MCD with Main shaft.

Fig. 74

10. Switch on Balancer and calibrate it as explained in Operating manual.
11. Run the Balancing program and ensure the functions are working properly without any errors.

HCV MODELS

1. Remove the Closing guards at the Rotor side as shown below:

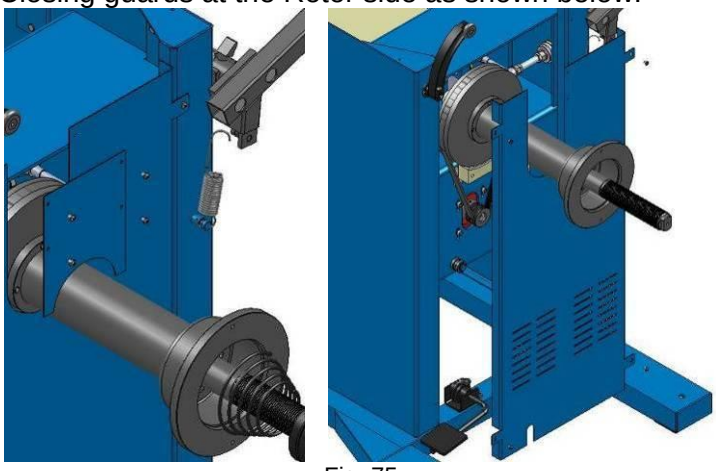


Fig. 75

2. Remove the Threaded shaft, Motor belt and remove the Revolution index encoder board connections (10Pin FRC).

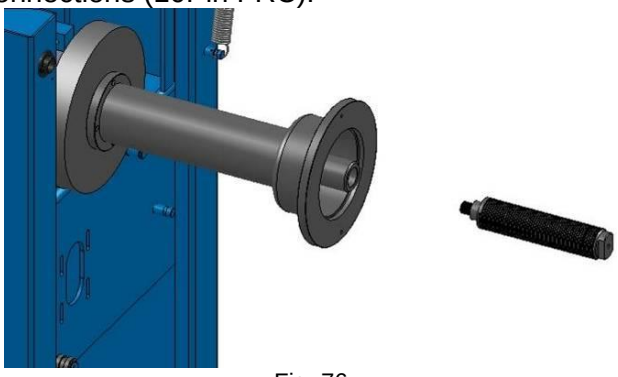


Fig. 76

3. Loosen the Sensor SA & SB fixing nuts & detach SB screw rod from Rotor stem:

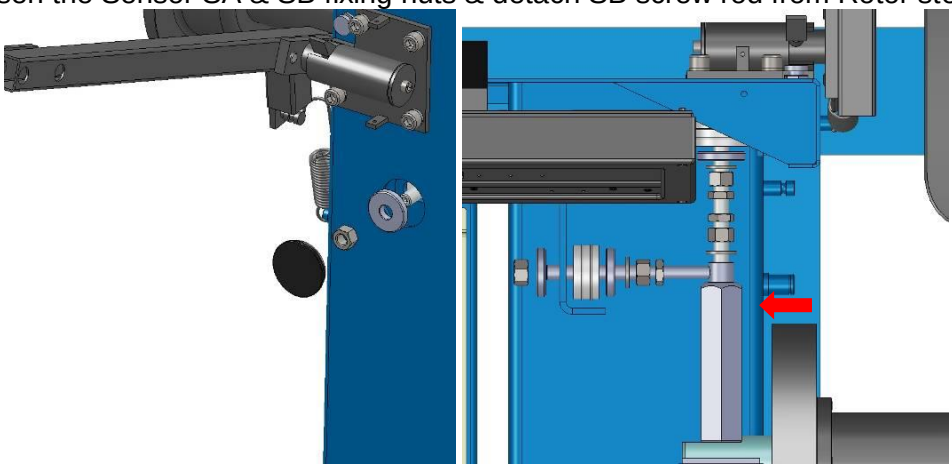


Fig. 77

4. Remove the Rotor fixing Allen screw and detach Rotor assembly from cabinet.

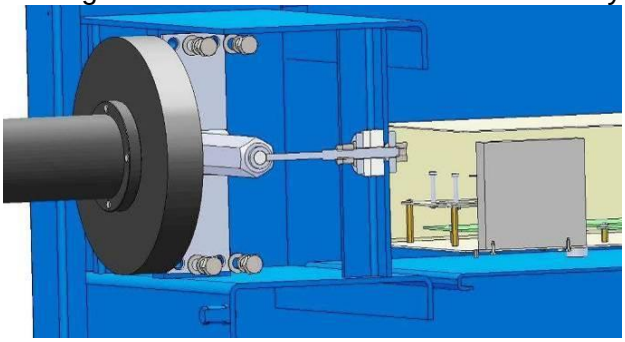


Fig. 78

5. Remove the Revolution index encoder board from Rotor.
6. Fix the Revolution index encoder board with new Rotor assembly. Ensure the Board is aligned with Round encoder without fouling with segments.

7. Fix the new Rotor assembly with Cabinet & fasten it firmly. Also ensure the 0° of Rotor assembly while tightening the fasteners.
8. Fix the SB screw rod with Rotor stem by maintaining its same length. Tighten the SB screw rod nut. Ensure the SA & SB screw rods are centered in the slotted hole in Cabinet:

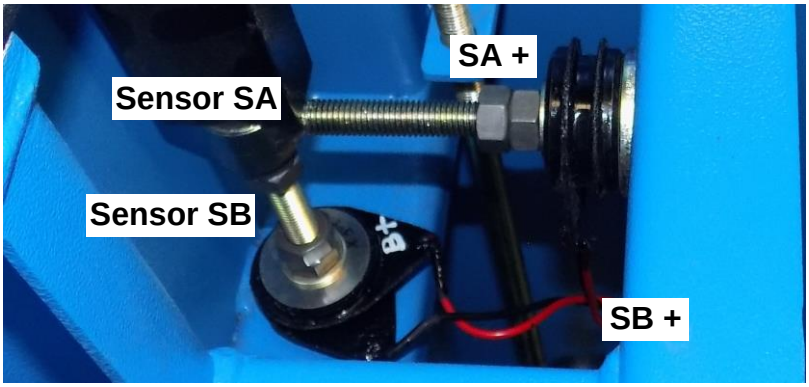


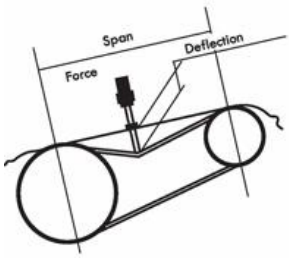
Fig. 79

9. Fix the Sensor fixing nuts at both sides.
10. Fix the Screw rod, Motor belt & Revolution index encoder board connector (10Pin FRC).
11. Switch ON Balancer and calibrate it as explained in Operating manual.
12. Run the Balancing program and ensure the functions are working properly without any errors.

BELT TENSION ADJUSTMENT (for LCV models)

1. Position the Large 'O' Ring at 2nd division (from bottom) in the Deflection scale and make sure the Small 'O' Ring is at bottom most position in the Force scale.
2. Place a 5mmT reference flat tangentially to the Drive belt between Motor pulley & Driven pulley and ensure the top surface of both the Flat & belt are even.

3. Keep the Belt tension tester at the middle of the span of Belt and apply force at the top end of the Tester till the bottom surface of the Large 'O' ring makes contact with the reference flat. Ensure the position of Large 'O' ring is not disturbed.



4. Now the take out the Tension tester, observe the position of Small 'O' ring in the Force scale and ensure the reading is within 20newton (Tol: +5newton). Otherwise, adjust the span of Belt accordingly to achieve the required tension.

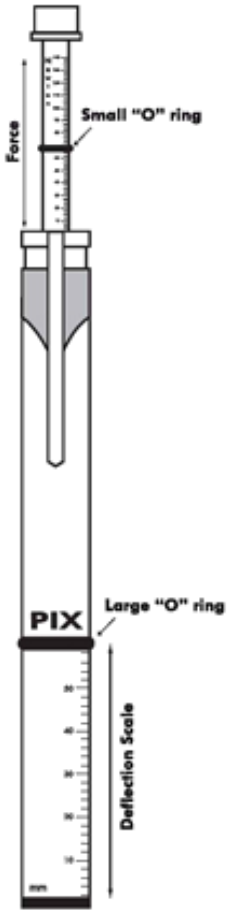


Fig. 80

NOTE:
In Deflection scale,
1 division = 2mm

In Force scale,
1 division = 10newton

5.2.1. MOTOR

1. Disconnect the Motor cable from Motor control board and remove the Belt from motor pulley.

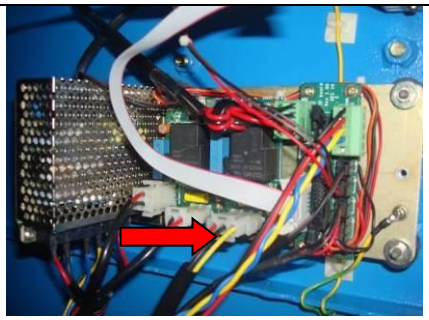
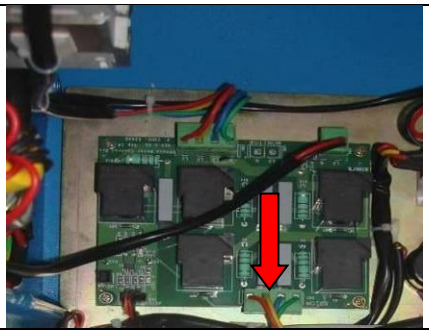
LCV model	HCV model
	

Fig. 81

2. Remove the Belt from Motor pulley.
3. Detach Motor from main cabinet by removing the Allen screws.

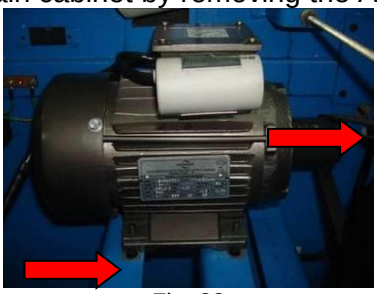


Fig. 82

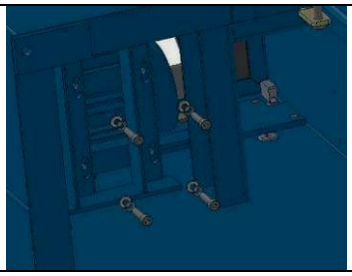
LCV model	HCV model
	

Fig. 83

4. Fixing the new Motor assembly to the cabinet and fasten the Allen screws firmly. Before tightening the Motor screws, ensure the alignment of Motor with Driven pulley. Fix the belt with Motor pulley and adjust the Belt tension correctly.
5. Connect the Motor cable with Motor control board.
6. Switch on the Balancer and ensure that the Motor is running without any noise in both Empty shaft & loaded condition.
7. Calibrate the Balancer as explained in Operating manual.
8. Run the Balancing program and ensure the functions are working properly without any errors.

5.2.2. REVOLUTION INDEX ENCODER BOARD

1. Disconnect the 10Pin FRC cable from Revolution Index encoder board.

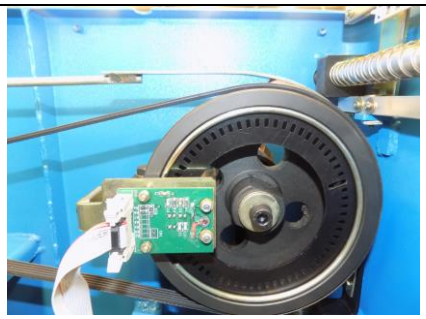
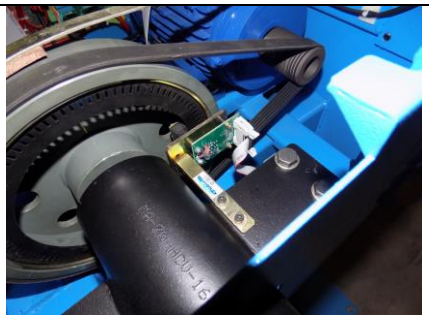
LCV model	HCV model
	

Fig. 84

2. Take out the Revolution Index encoder board from Rotor.
3. Fix the new board with Rotor by matching the slot in the Round segment encoder. Do not touch the Encoder.
4. Connect 10Pin FRC cable with Revolution index encoder board.
5. Switch ON the Balancer. Run Wheel Tracking test (Ref. Chapter 4.4) & Duty cycle test (Ref. Chapter 4.9) to ensure the functions are OK.
6. Calibrate the Balancer as explained in Operating manual.
7. Run the Balancing program and ensure the functions are working properly without any errors.

5.2.3. PIEZO ELECTRIC SENSOR

1. Remove the Top cover
2. Remove the Brake shoe lever
3. Disconnect the connection to Revolution encoder
4. Remove the belt. Remove the Driven pulley
5. Disconnect the Sensor connector from Board
6. Loosen the lock nuts of SA and SB sensors.
7. Loosen out the sensor stud nuts and take out the studs.
8. Take out the sensors
9. Replace new sensor. (-) side of sensor should be facing the cabinet.
10. Vertical is B sensor and horizontal side is A sensor.
11. The washers should be used as shown in picture.
12. Fix the stud to the rotor. The other side of stud nut to be fitted to cabinet. Ensure the stud is in centre of slot.
13. Before tightening, use a dial with stand at the location as given in picture . Refer first picture for SA and second one for SB.
14. Tighten the top side nut so as the dial reading moves upto 0.2 mm. After that, tighten the opposite side so as the dial comes back to 0 again.
15. Tighten both sensor nuts similar way.
16. Refix the driven pulley and also the Rev. Encoder
17. Connect the FRC connector (10 pin) to Rev.encoder and connect sensor connector in Board.
18. Refix the brake.
19. Refix the belt. Do the weight calibration and check the balancing.

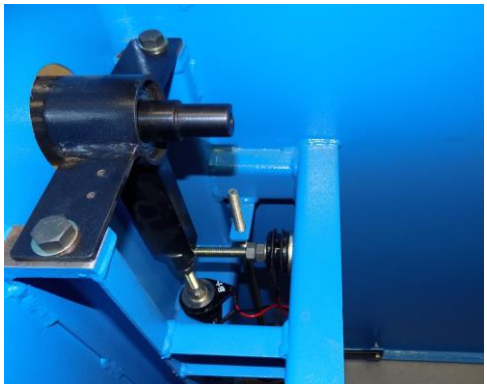



Fig. 85

5.3. MECHANICAL BRAKE (NA for SR Rev.R50/above & HCV models)

5.3.1. LIMIT SWITCH

1. Remove the Limit switch clamp and disconnect the cables from Motor control board.

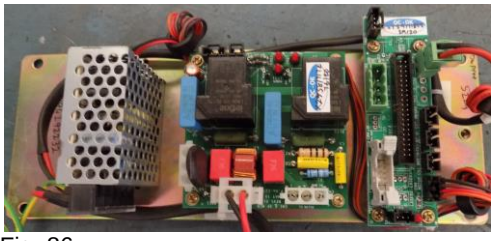



Fig. 86

2. Remove the Limit switch from clamp and fix new Limit switch with correct direction.
3. Fix the Limit switch clamp to cabinet & connect 2Pin SR cable with Motor control board at appropriate place by ensuring the Limit switch is in activated position.
4. Apply the Brake pedal manually & release it to check the functions.
5. Switch ON the Balancer & ensure that the motor is running without any problem.

5.3.2. MANUAL BRAKE

1. Remove the Brake shoe rod (bent rod with brake shoes).
2. Remove the Brake vertical rod.
3. Remove Brake pedal.
4. Remove Brake lever from bottom side of cabinet.

a. And take out the lever.

5. Replace the new brake lever and fix the nut.
6. Fix the pedal.
7. Fix the Brake shoe rod.
8. Maintain a gap of 1mm between shoe and driven pulley and then tighten the bolts in the U clamp at back of cabinet.



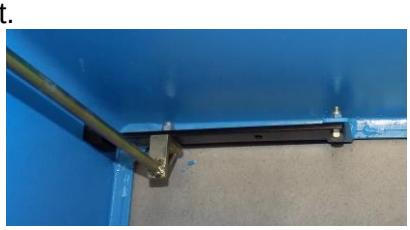


Fig. 87

5.4. DISPLAY UNIT

1. Remove the Monitor power cord and HDMI cable from the Monitor.

Fig. 88

2. Detach the Monitor from Monitor column plate.
3. Replace the Monitor with new one and fix it.
4. Restore the Monitor power cord & HDMI cable connections
5. Power up the Balancer and ensure the Monitor functions.

5.5. DISTANCE / DIAMETER / WIDTH MEASUREMENT MECHANISM

5.5.1. DISTANCE MEASURING ROD

1. Remove the DMR Lever after removing the circlip with circlip plier.
2. Remove the DMR assembly from cabinet after removing the two allen screws.
3. Replace the new DMR assembly.
4. Do not tighte the screws fully. First ensure free movement of rod. Align the assembly properly to have a free movement and then tighten the two screws.
5. Re-fIx the DMR lever.
6. Go to Distance test option and check the function.

Fig. 89

5.5.2. E-DISTANCE ENCODER BOARD (For Wheel rim Distance measurement)

1. Disconnect the 10Pin FRC cable from E-Distance encoder board and then remove the board from DMR fixing plate.

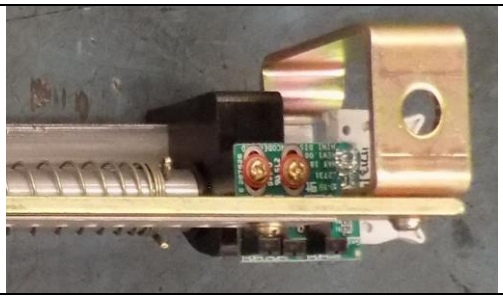
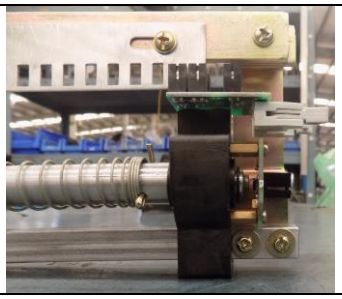
Basic model	Premium model
	

Fig. 90

2. Fixing the new E-Distance encoder board with DMR plate & move the rod to Home position. Now align the Rectangular segment properly with Encoder sensors by ensuring the Home encoder & other two Encoders (Dist-A and Dist-B) are closing the first three segment teeth. If not, adjust the plate using slotted hole. Then, ensure free movement of the Rod. Also ensure that the Rectangular segment is aligned with the center of Encoder and a minimum gap is maintained at the bottom.

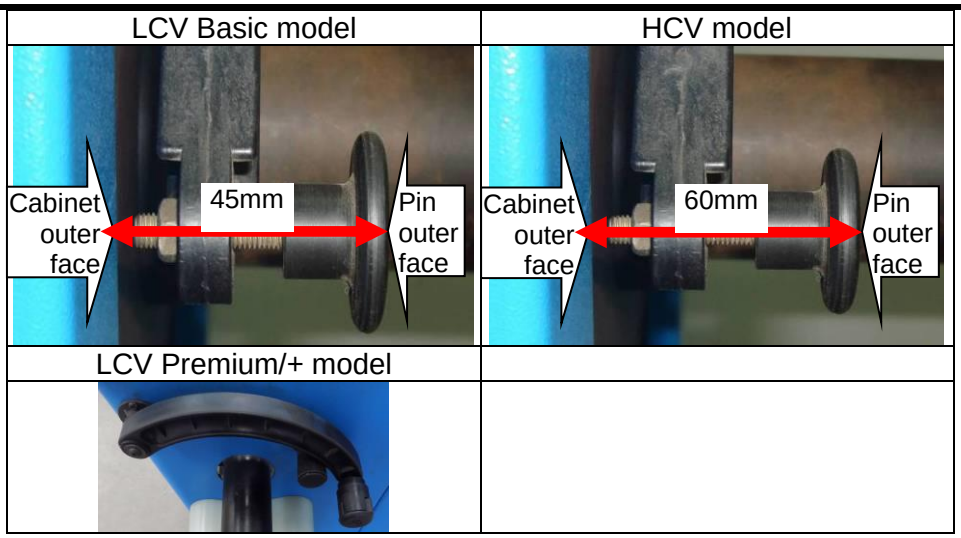


Fig. 91

3. Connect 10pin FRC cable with E-Distance encoder board.
4. Switch ON the Balancer & run Distance measuring test as explained in Chapter 4.5 to ensure the Distance measuring rod counts.
5. Run the Balancing program & go to the Rim parameters window to check the displayed value matches with distance measured manually.
6. If struck up problem observed in DMR movement, clean the surface of the rod with soft cloth and apply a thin layer of Molykote grease.

5.5.3. RLS SENSOR BOARD (For Wheel rim Dia & Width/ Outer dia measurement)

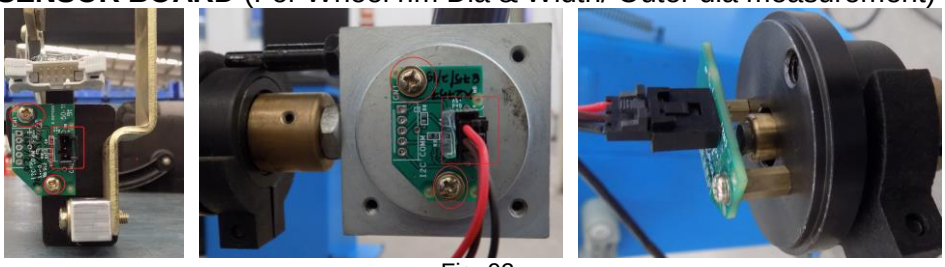


Fig. 92

1. In Diameter assy. Disconnect 3Pin SR cable.
2. Remove the two screws
3. Replace the new RLS board, refix it with screws in loosen condition ,watching the magnet is facing to centre of IC. After adjusting to centre, tighten the two screws.
4. Same three steps applicable for replacing the board in Width & Outer dia assembly. The closing covers to be opened prior to replacing.
5. After, replacement of RLS board, re-calibration is mandatory. Refer procedure.

IN DISTANCE / DIA MEASURING ROD

1. Disconnect the 3Pin SR cable from RLS Sensor board and then remove the board from Distance/Dia measuring rod:

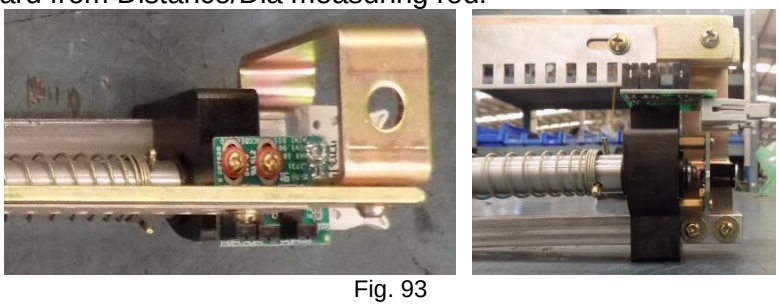


Fig. 93

2. Replace the board with new RLS Sensor board in the Rod and restore the connections.
3. Switch ON the Balancer & perform Diameter calibration as explained in the Operating manual.
4. Run the Balancing program & go to Rim parameters window to check the displayed Rim diameter matches with Diameter measured manually.

IN WIDTH MEASURING ROD

1. Remove the Safety cover from Width block and disconnect the Width cable from RLS Sensor board and also remove the connector from Outer Dia RLS Board:

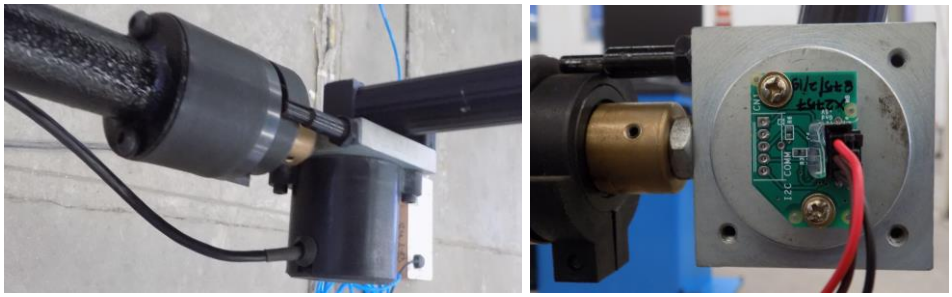


Fig. 94

2. Remove & replace the defective board, (either Width or the Outer dia) with new RLS Sensor board . Please note that the Board in X Axis movement is for Width measurement and Y axis movement is for Outer Diameter measurement.
3. Connect Width cables with RLS Sensor board and fix the Cover.
4. Switch ON the Balancer & perform Width calibration as explained in the Operating manual.
5. Run the Balancing program & go to Rim parameters window to check the displayed Rim width matches with the Width measured manually.

5.6.

5.6. WHEEL GUARD

5.6.1. LIMIT SWITCH

1. Disconnect the Limit switch cable from DSP / interface board.

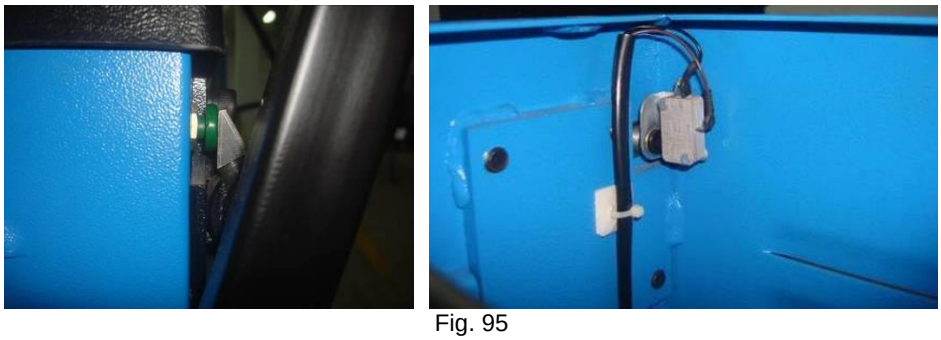


Fig. 95

2. Remove the Limit switch from cabinet and replace it with new one.
3. Open & close the Wheel guard manually and check for actuation.
4. Switch ON the Balancer and ensure the Auto Run function without any problem.

5.7. TORCH LIGHT

1. Open the Laser/ Torch cover by removing the screws.

Fig. 96

2. Take out the Two LED lights by rotating it to the notch and take out
3. Remove the LED cable by disconnecting the Torch connector CN3 (3Pin SR) from I/F Board. Take out the cable through the hole in cabinet.
4. Replace the Two LEDs.
5. Reconnect the connector.
6. Check the Torch function
7. Closer the Laser/ Torch housing cover

5.8. LASER BEAM

1. Open the Laser/ Torch cover by removing the screws.
2. Take out the Laser from housing and then by removing the grub screws.
3. Remove the Laser cable by disconnecting the Torch connector CN8 (3Pin SR) from I/F Board. Take out the cable through the hole in cabinet.
4. Replace the Laser.
5. Reconnect the connector.
6. Check the Laser function
7. Align the Laser line parallel to main shaft by marking a line on floor with reference to main shaft centre line. Use the pendulum with rope(refer image) to Mark three dot points at 150mm interval along the parallel of shaft and draw a straight line joining the three dot points.


Fig. 97

5.9. STICKER WEIGHT HOLDER

1. Remove the Nylock from the DMR lever and take out the Sticker weight holder
2. Re-fix the new Sticker weight holder with the DMR Lever and lock it using Nylock nut so that the Holder movement is not arrested completely.

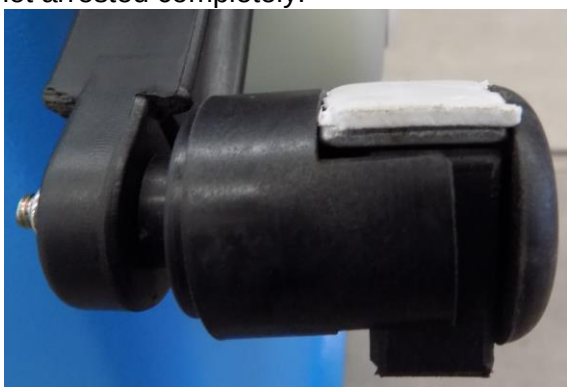



Fig. 98

6. RECOMMENDED SPARE PARTS (For 2 years operation)

Code	Spare description	Qty/Sys					
		WB-VL-65 DSP LX 230V 50Hz	WB-VL-65 DSP LX Premium / + 230V 50Hz	WB-VH-200 R 440V 50Hz	WB-VL-65 DSP LX 110V 60Hz	WB-VL-65 DSP LX Premium / + 110V 60Hz	WB-VH-200 R 220V 60Hz
		Z2191	Z2193 Z9003	Z2199	Z2192	Z2194 Z9004	Z2200
	Assemblies						
MX0137	DSP Mother board with FW, WB-VL/VH DSP LX	1		1	1		1
MX0138	DSP Mother board with FW, WB-VL-65 DSP Premium LX		1			1	
	Sub Assemblies						
X2755	EMI & 1P Motor control board, DSP C	1	1		1	1	
X2692	3Phase Motor control board			1			1
X2778	Motor, 0.35hp, 230V 50Hz, SR	1	1				
X2780	Motor, 0.35hp, 110V 60Hz, SR				1	1	
X2762	Motor, 415V, Foot mount			1			
X2763	Motor, 220V, Foot mount						1
X2750	Mini Distance encoder board	1	1	1	1	1	1
X2775	Encoder sensor	1	1		1	1	
X2760	Revolution/Index board, HCV			1			1
X2541	Sensor, with 1200mm Lg. wire	1	1		1	1	
X2664	Sensor, DH / VH DSP			1			1
X2757	RLS DMR board		1			1	
	Parts						
E2638	EMI Filter with Surge Supressor			1			1
E2710	SBC board, Linux compatible	1	1	1	1	1	1
E2640	Memory card, Micro SDHC	1	1	1	1	1	1
B4312	On/Off Rocker switch, 6A / 230V	1	1		1	1	
E2606	MCB, 4Pole, 230/415VAC, 10A			1			1
E2733	SMPS	1	1	1	1	1	1
E3506	Fuse, 3A, 5x20mm, Slow blow	10	10				
E0871	Fuse, 10A, 5x20mm. Slow blow				10	10	
B9065	Conical spring, HCV	1	1		1	1	
B2820	Conical spring, HCV			1			1
X2797	Sticker weight holder	1	1		1	1	
B2887	Distance measuring pin, HCV			1			1
B2817	Wheel guard spring	1	1	1	1	1	1
B2851	Hub cover	2	2		2	2	
B0539	Weight removing plier	1	1	1	1	1	1
B9067	Belt, LCV	1	1		1	1	
B2993	Belt, HCV			1			1
B9055	Encoder	1	1		1	1	
B0627	Encoder, Round Segment			1			1
B2979	Membrane keypad, Video WB DSP	1	1	1	1	1	1
B1017	Buzzer, Panel mount	1	1	1	1	1	1
B0486	Push button limit switch	1	1	1	1	1	1
B2813	DMR spacer, ALU-2P / 3P	1	1		1	1	
P2680	QCLN Split nut-I, LCV	2	2		2	2	
P2681	QCLN Split nut-II, LCV	2	2		2	2	
P9248	Encoder locking ring	1	1		1	1	
P0510	Encoder locking ring			1			1
B9106	Pointer pin, WMR LCV SR		1			1	

7. DIAGRAMS

7.1. BLOCK DIAGRAM

7.1.1. LCV MODELS

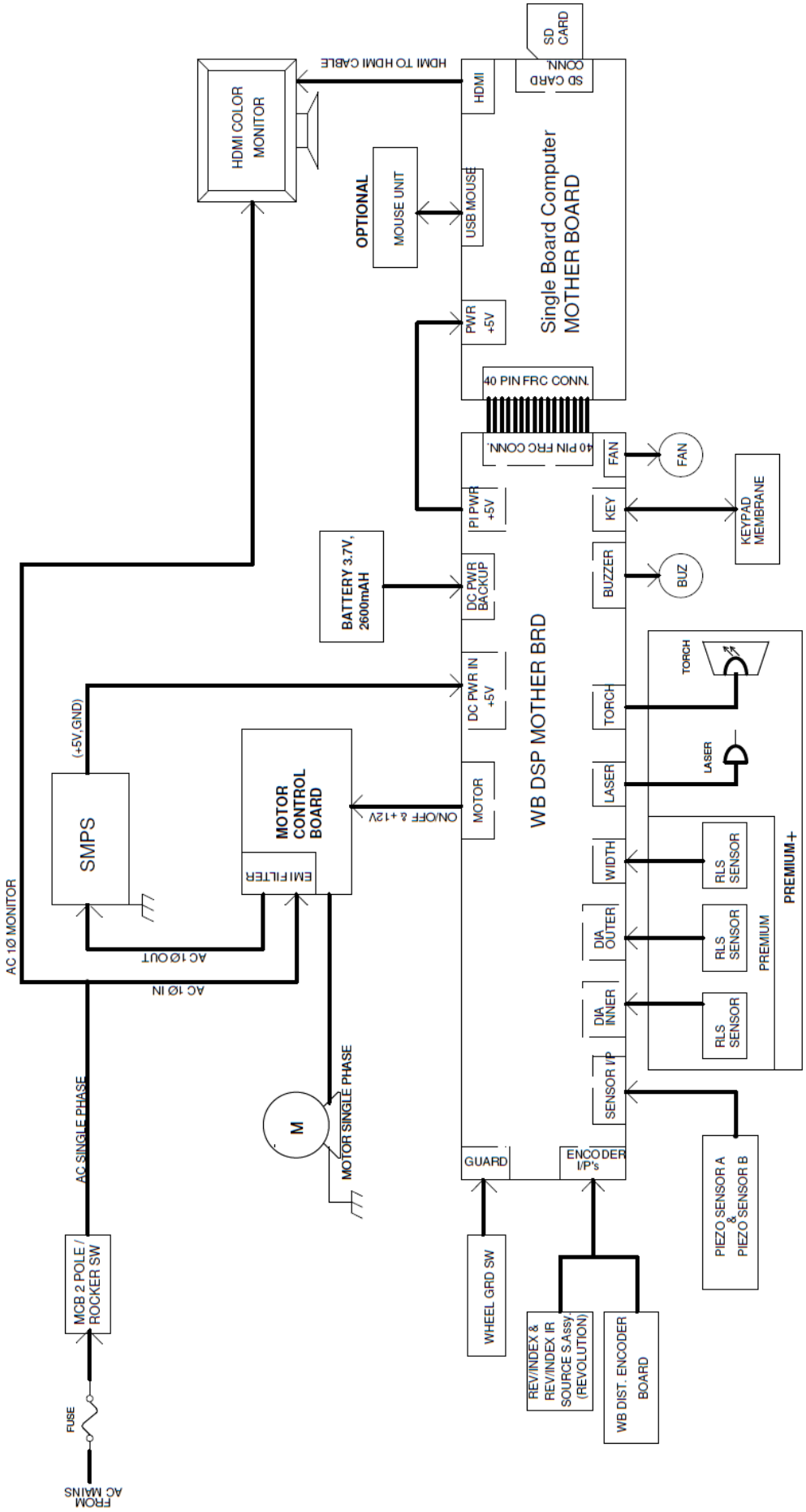


Fig. 99

7.1.2. HCV MODEL
THREE PHASE OPERATION

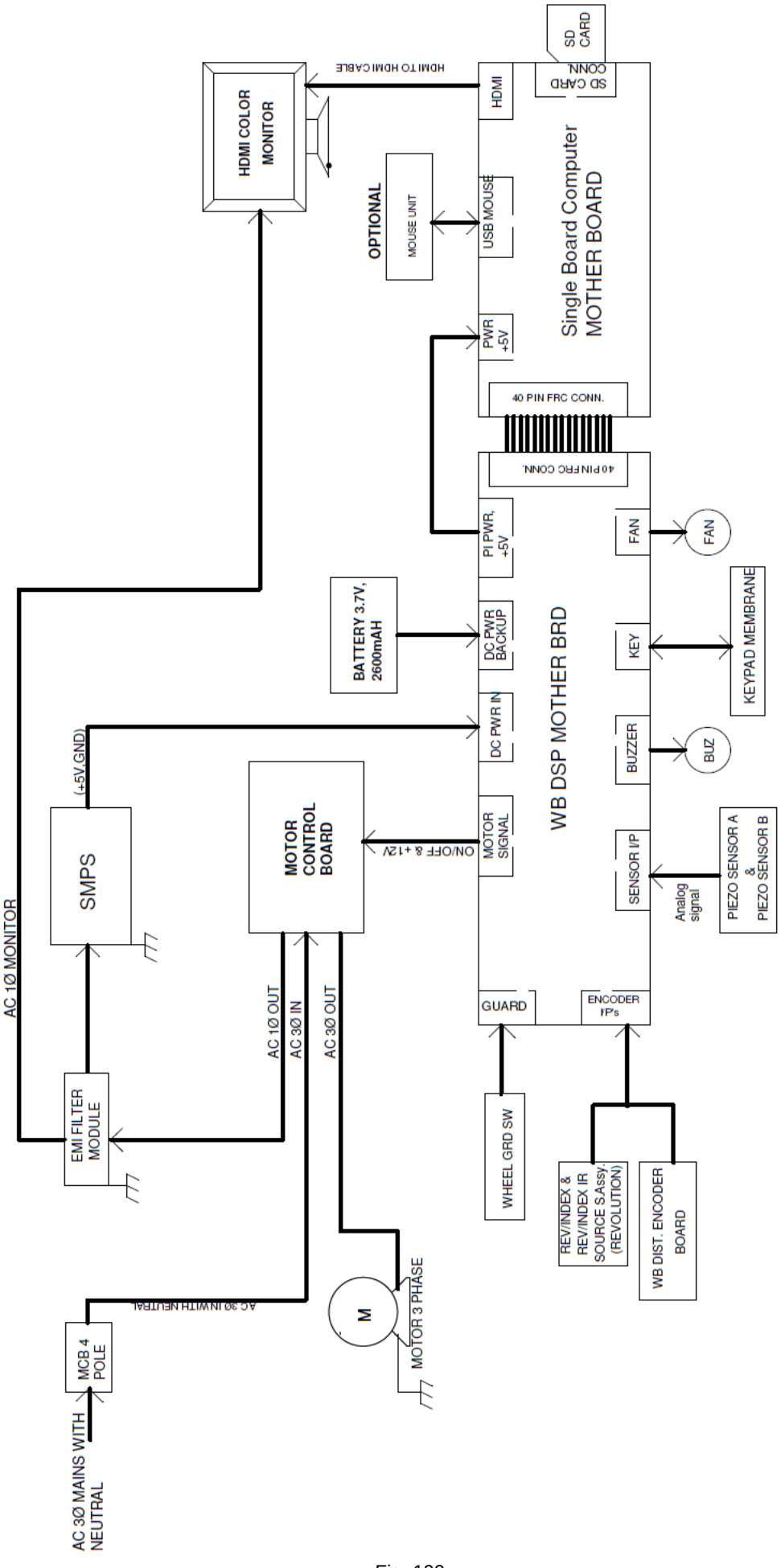


Fig. 100

SINGLE PHASE OPERATION

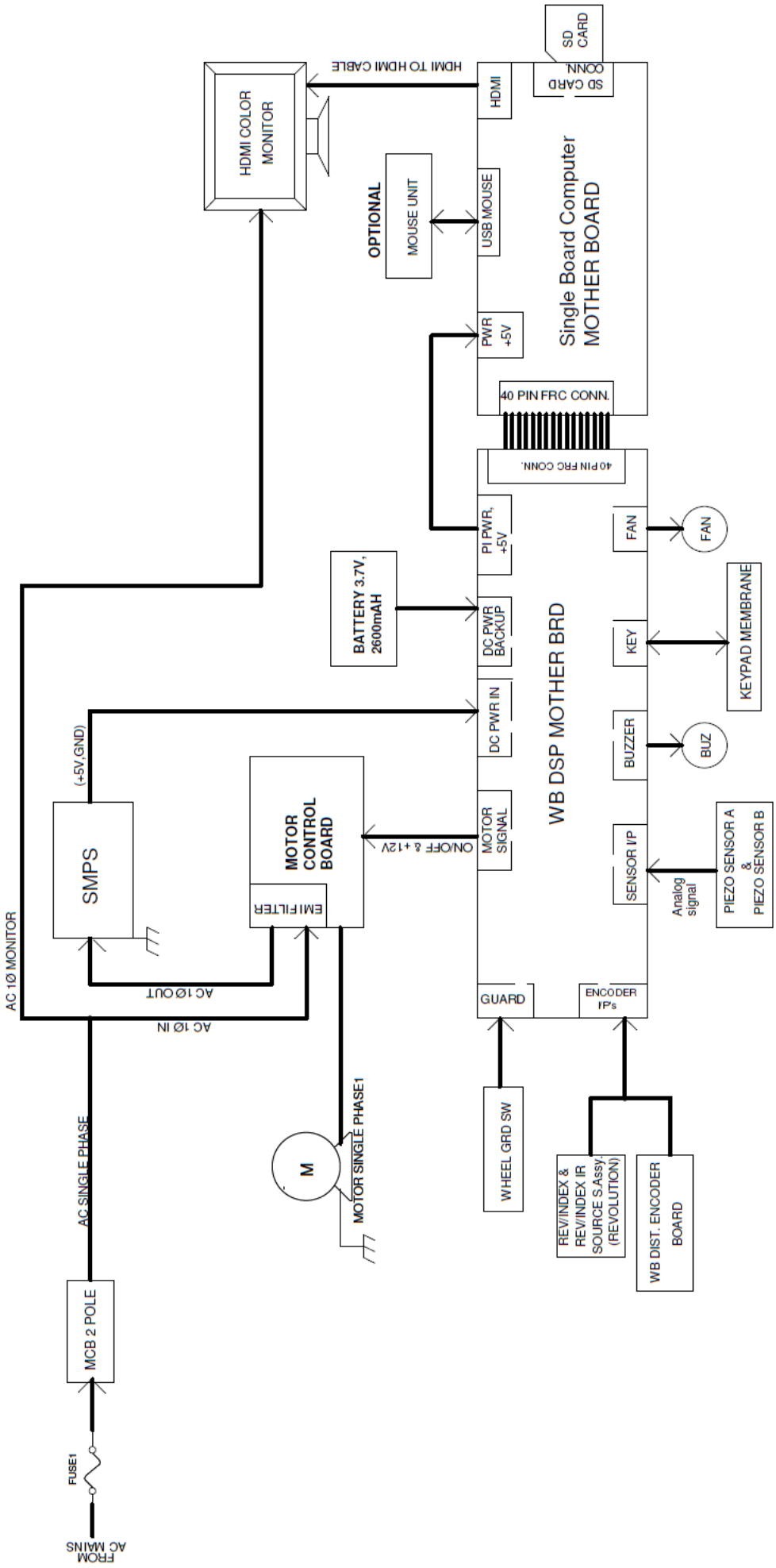


Fig. 101

7.2. WIRING DIAGRAM

7.2.1. LCV MODELS

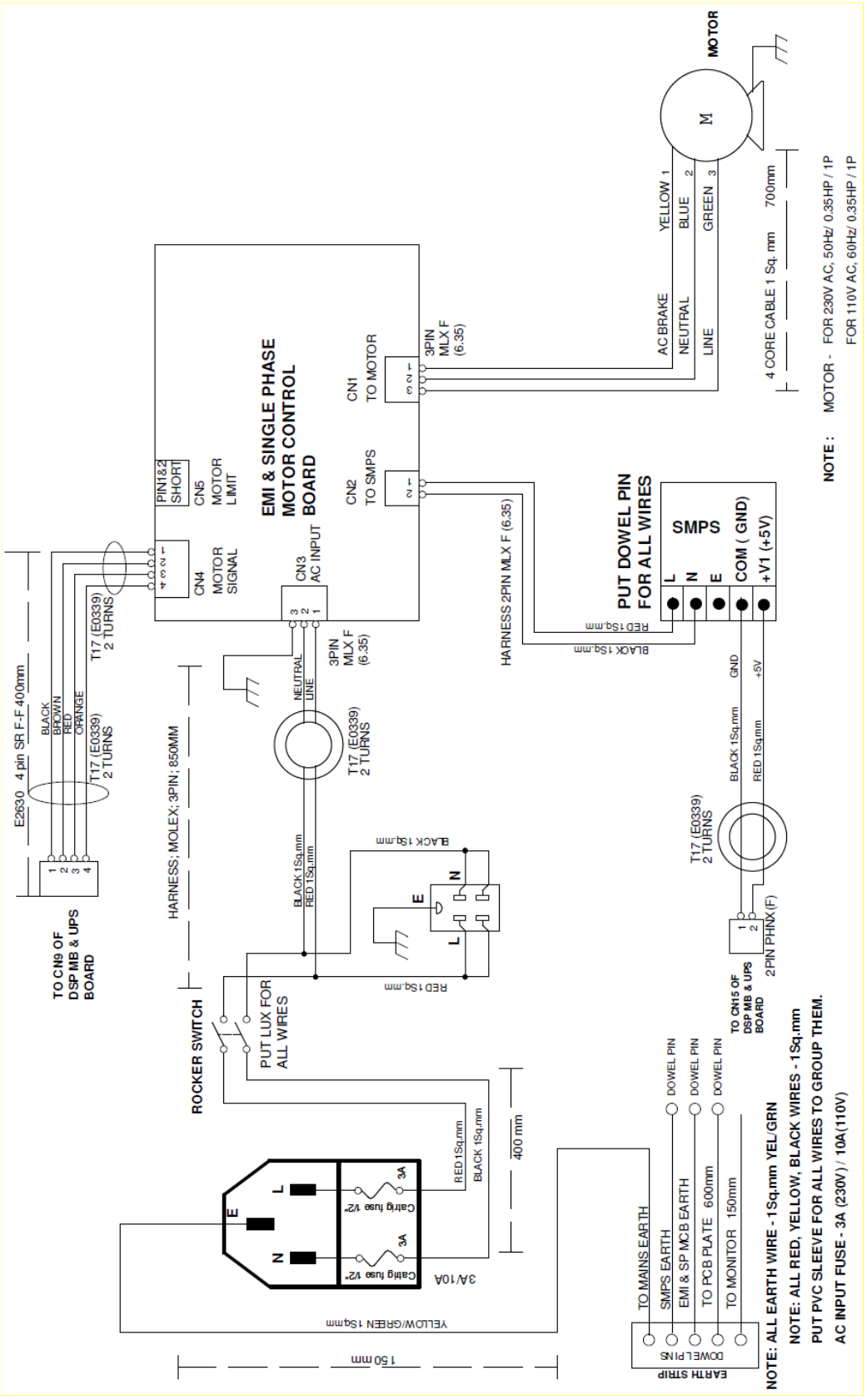


Fig. 102 (1 of 3)

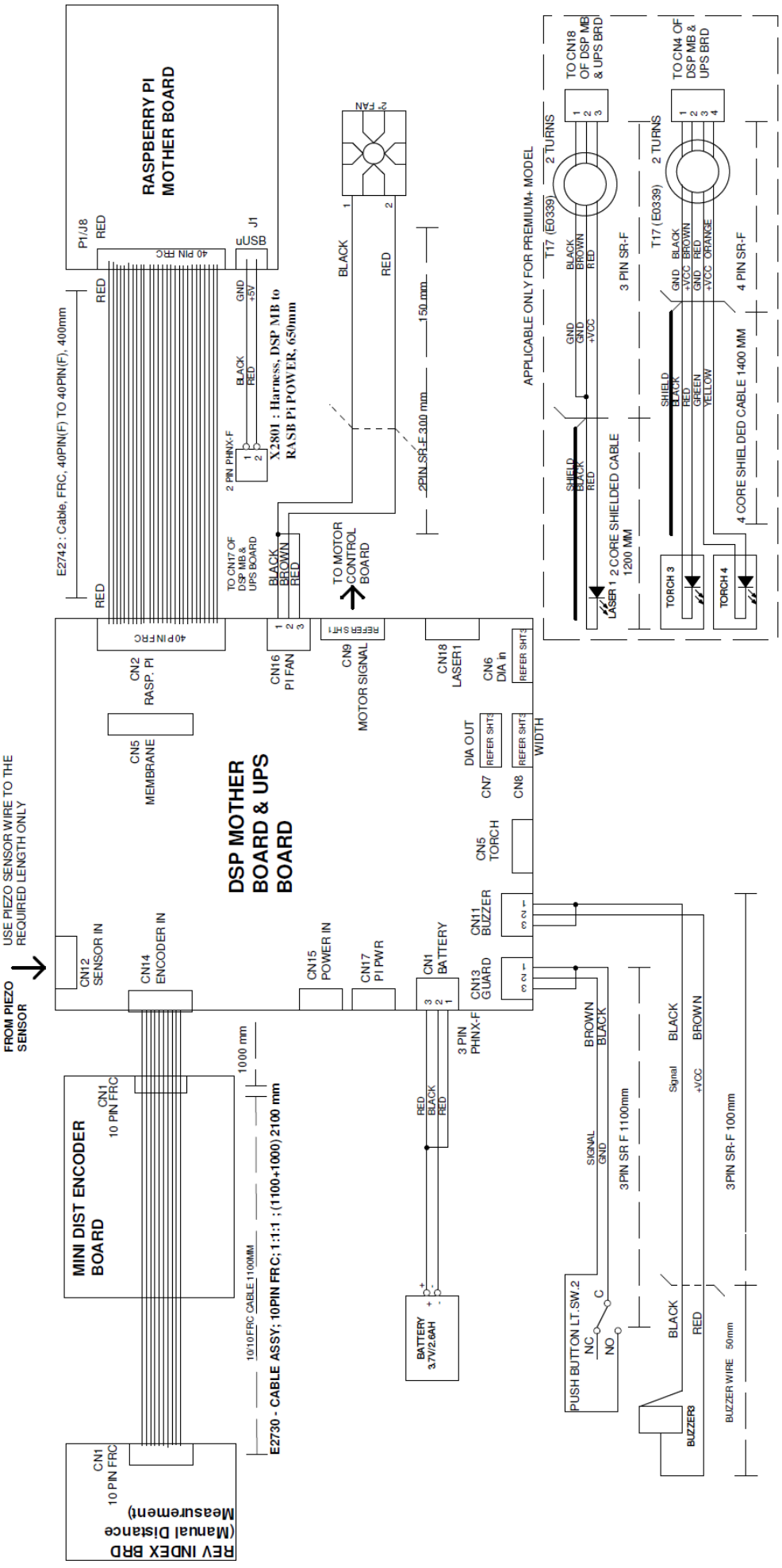
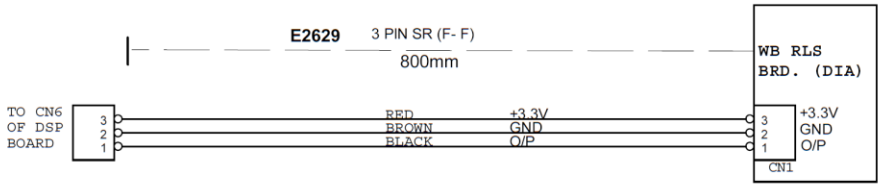

RASPBERRY PI
MOTHER BOARD
P1/J8
RED
40 PIN FRC
J1
uUSB
E2742 : Cable, FRC, 40PIN(F) TO 40PIN(F), 400mm
RED
RED
40 PIN FRC
2 PIN PHNX-F
BLACK
RED
GND
+5V
X2801 : Harness, DSP MB to
RASB Pi POWER, 650mm
TO CN17 OF
DSP MB &
UPS BOARD
BLACK
BROWN
RED
BLACK
RED
FAN
150 mm
2PIN SR-F 300 mm
TO MOTOR
CONTROL
BOARD
APPLICABLE ONLY FOR PREMIUM+ MODEL
T17 (E0339)
2 TURNS
TO CN18
OF DSP MB
& UPS BRD
GND
GND
+VCC
BLACK
BROWN
RED
3 PIN SR-F
SHIELD
BLACK
RED
LASER 1 2 CORE SHIELDED CABLE
1200 MM
T17 (E0339)
2 TURNS
TO CN4 OF
DSP MB &
UPS BRD
GND BLACK
+VCC BROWN
GND RED
+VCC ORANGE
4 PIN SR-F
SHIELD
BLACK
RED
GREEN
YELLOW
4 CORE SHIELDED CABLE 1400 MM
TORCH 3
TORCH 4
USE PIEZO SENSOR WIRE TO THE
REQUIRED LENGTH ONLY
FROM PIEZO
SENSOR
CN12
SENSOR IN
CN14
ENCODER IN
CN15
POWER IN
CN17
PI PWR
CN1
BATTERY
CN13
GUARD
CN11
BUZZER
CN5
TORCH
CN7
DIA OUT
REFER SHT
CN8
REFER SHT
WIDTH
CN6
DIA in
REFER SHT
CN18
LASER1
CN9
MOTOR SIGNAL
CN16
PI FAN
CN2
RASP. PI
CN5
MEMBRANE
DSP MOTHER
BOARD & UPS
BOARD
3 PIN
PHNX-F
RED
BLACK
RED
BATTERY
3.7V/2.6AH
BROWN
BLACK
SIGNAL
GND
3PIN SR F 1100mm
Signal
+VCC
BLACK
BROWN
3PIN SR-F 100mm
PUSH BUTTON LT.SW.2
NC
C
NO
BLACK
RED
BUZZER
BUZZER WIRE 50mm
1000 mm
10*10 FRC CABLE 1100MM
E2730 - CABLE ASSY; 10PIN FRC; 1:1:1 ; (1100+1000) 2100 mm
CN1
10 PIN FRC
MINI DIST ENCODER
BOARD
CN1
10 PIN FRC
REV INDEX BRD
(Manual Distance
Measurement)

Fig. 102 (2 of 3)

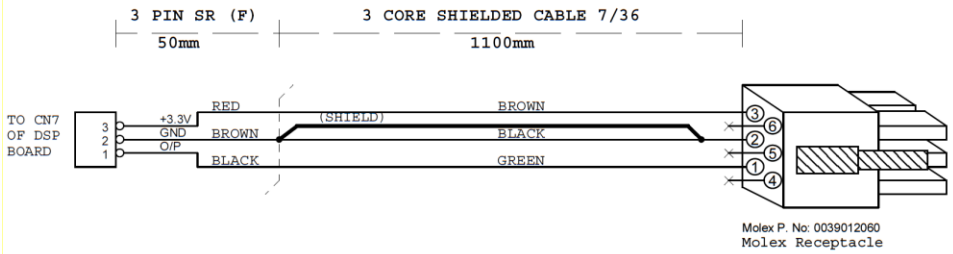
DIA , WIDTH ASSEMBLY WIRING

DIA ASSEMBLY WIRING

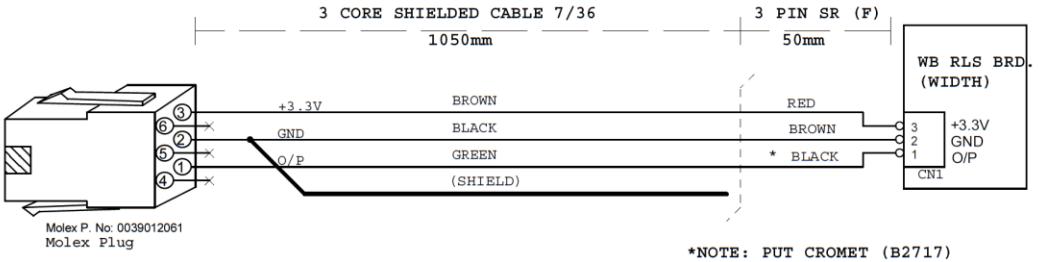


WIDTH ASSEMBLY WIRING

E2530: WIRING HARNESS; MOLEX (RECEPTACLE) ; 3CORE SHLD; 7/36; 1100mm



E2529: WIRING HARNESS; MOLEX (PLUG) ; 3CORE SHLD; 7/36; 1050mm



*NOTE: PUT CROMET (B2717)

Fig. 102 (3 of 3)

7.2.2. HCV MODEL

THREE PHASE OPERATION

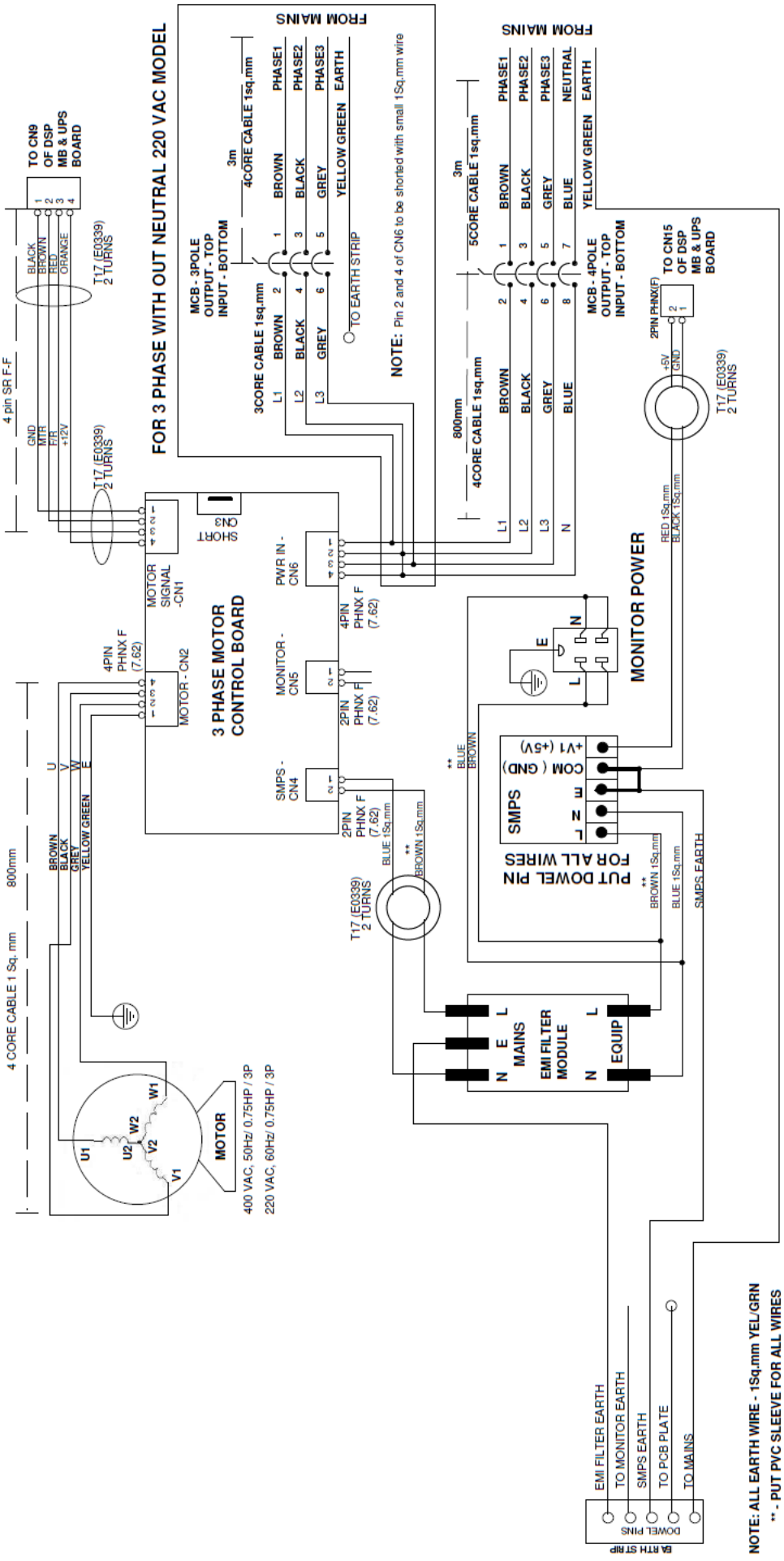


Fig. 103 (1 of 3)

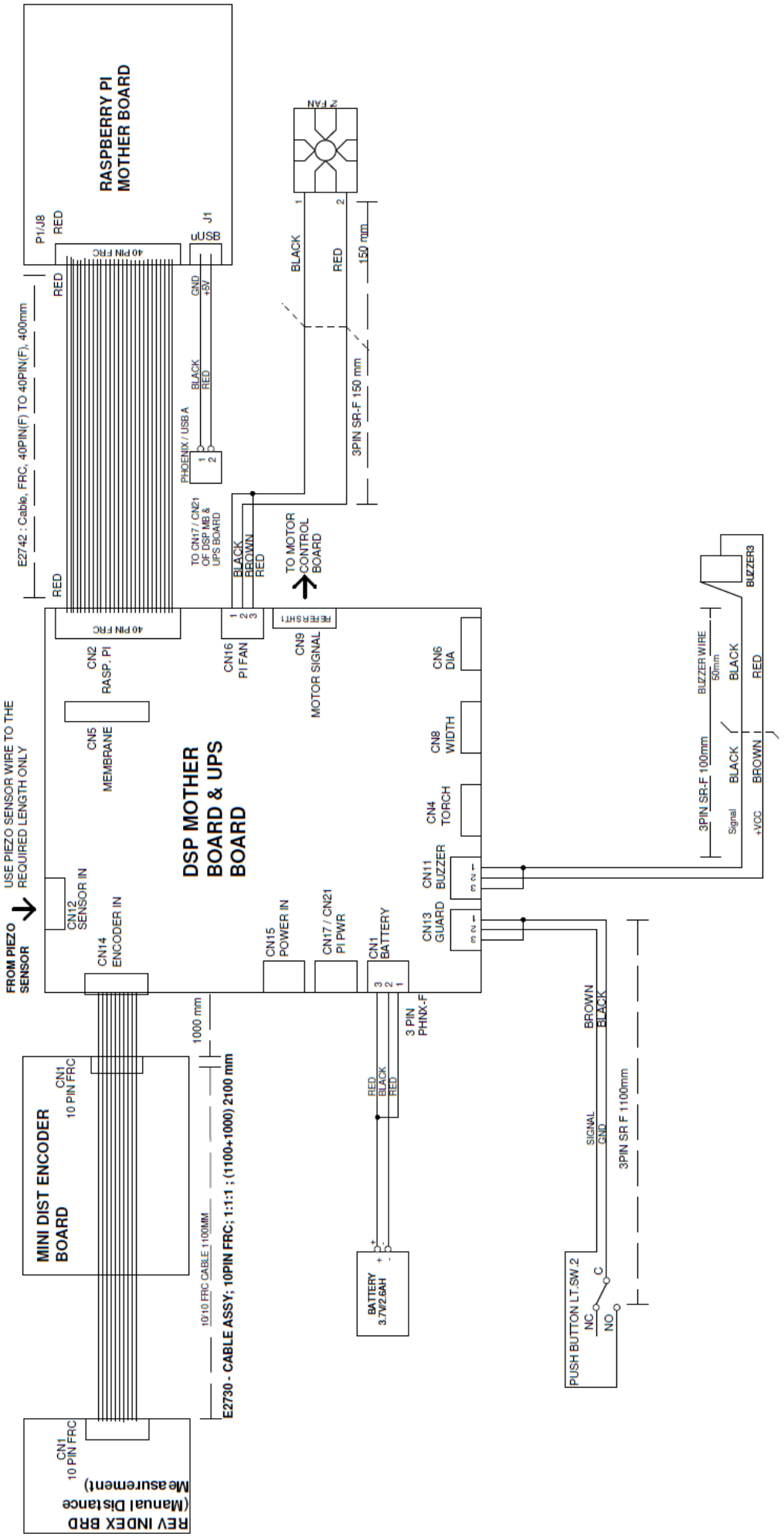

RASPBERRY PI
MOTHER BOARD
P1/J8
RED
40 PIN FRC
J1
uUSB
GND
+5V
RED
BLACK
RED
PHOENIX / USB A
E2742 : Cable, FRC, 40PIN(F) TO 40PIN(F), 400mm
TO CN17 / CN21
OF DSP MB &
UPS BOARD
BLACK
BROWN
RED
TO MOTOR
CONTROL
BOARD
FAN
BLACK
RED
150 mm
3PIN SR-F 150 mm
CN2
RASP. PI
CN16
PI FAN
CN9
MOTOR SIGNAL
CN6
DIA
CN5
MEMBRANE
DSP MOTHER
BOARD & UPS
BOARD
CN8
WIDTH
CN4
TORCH
CN11
BUZZER
CN13
GUARD
USE PIEZO SENSOR WIRE TO THE
REQUIRED LENGTH ONLY
FROM PIEZO
SENSOR
CN12
SENSOR IN
CN14
ENCODER IN
CN15
POWER IN
CN17 / CN21
PI PWR
CN1
BATTERY
3 PIN
PHNX-F
BUZZER WIRE
50mm
3PIN SR-F 100mm
Signal
+VCC
BLACK
BROWN
BUZZER3
BLACK
RED
MINI DIST ENCODER
BOARD
CN1
10 PIN FRC
1000 mm
10*10 FRC CABLE 1100MM
E2730 - CABLE ASSY; 10PIN FRC; 1:1:1 ; (1100+1000) 2100 mm
REV INDEX BRD
(Manual Distance
Measurement)
CN1
10 PIN FRC
RED
BLACK
RED
BATTERY
3.7V/2.6AH
BROWN
BLACK
SIGNAL
GND
3PIN SR F 1100mm
PUSH BUTTON LT.SW.2
NC
C
NO

Fig. 103 (2 of 3)

SINGLE PHASE OPERATION

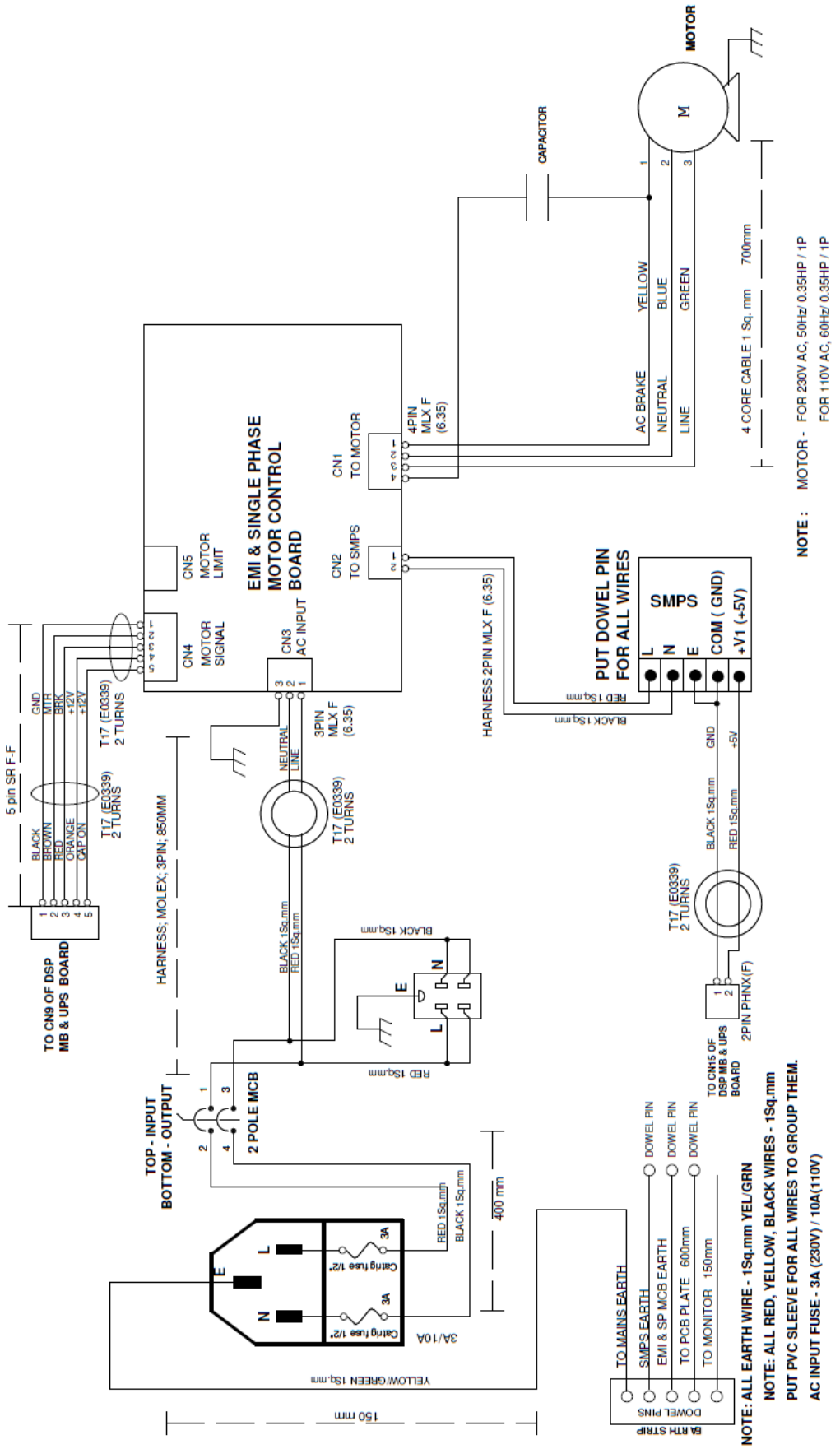


Fig. 103 (3 of 3)

8. TROUBLE SHOOTING

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

For Troubles and Error messages 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**

Sl. No.	*Error*	*Causes*	*Remedies*
1	Wheel Guard Not closed	Guard may not be closed properly	➢ Close the Wheel guard properly and run. ➢ Check the Wheel guard connector is inserted properly. ➢ Check the Limit switch for proper contact.
2	Distance rod is not in Home position	Distance rod may not be at home position	➢ Ensure the Distance rod is in home position. ➢ Check all the Encoder sensors are present in the E-Distance encoder. Check the Distance encoder board is blocked properly by the Distance segment plate. ➢ Run the Distance measuring test (Ref. Chapt.4.5) and check the distance count is displayed correctly. ➢ If the problem still exists, replace the E-Distance encoder board.
3	Revolution Encoder pulse is missing	Revolution pulse from the Revolution encoder board may not be received by the DSP IC	➢ Clean the slots in Round segment encoder and remove blockage, if any. ➢ Clean the IRLED & Photo transistor slots in board holder. ➢ Run the Tracking test (Ref. Chapt.4.4) & check Revolution pulse from the encoder & match the Round segment encoder slot with Rev. encoder board to get the correct count. ➢ If the problem still exists, replace the board.
4	Minimum RPM is not reached	Required minimum RPM to calculate the unbalance may not be reached	➢ Check for the incoming power is correct. ➢ Check for the belt tension.
5	Weight Calibration data is not available. Redo weight calibration	Weight calibration data is not available in the DSP board	Perform Weight calibration and save. Also, do Backup the calibration data
6	Time out occurred during acquisition.	➢ Required RPM to calculate the unbalance is not reached. ➢ If empty shaft is run in Truck mode.	➢ Check for the incoming power is correct. ➢ Check for the belt tension. ➢ DO NOT run Empty shaft in Truck mode.
7	Index pulse missing.	Index pulse from the Revolution encoder board may not be received by the DSP IC	Run the Tracking test and check the index pulse from the encoder is received correctly. If not, replace the Revolution encoder board.
8	Index pulse detected always	Index pulse from the Revolution encoder board may not be received by the DSP IC	Run the Tracking test & check the index pulse from the encoder is received correctly. If not, replace the Revolution encoder board
9	Calibration weight signal is bad.	75 gm calibration Weight is not added during Inner and Outer calibration	Ensure that the 75 gm calibration Weight is added at appropriate position during Inner and Outer calibration sequence.

Sl. No.	Error	Causes	Remedies
10	Spindle unbalance is beyond limits for calibration	➢ Empty shaft millivolts may not be in specified range. ➢ Empty shaft may have been run with QCLN/ Cone/Wheel.	➢ Check for any shake in cabinet foundation. ➢ Check the Rotor assembly for it proper fitness. ➢ Remove the QCLN/Cone/Wheel while running empty shaft. ➢ If the problem still exists, check for DSP board analog section.
11	Reverse direction run is detected	➢ Shaft is rotating in Anti-clockwise direction. ➢ Phase may be interchanged (for HCV).	➢ Stop the shaft rotation and run the Wheel. ➢ Ensure the correct phase is provided (for HCV).
12	Shaft movement detected during START. Stop shaft movement and try again	Shaft is rotating in clockwise direction	Stop the shaft rotation and run the Wheel
13	Tyre unbalance is beyond limits for calibration	Tyre millivolts may not be in specified range.	Use fairly balanced wheel (or with min. unbalance) and do the calibration
14	Error in communication. Check cables and power	Improper connectivity / loose contact	➢ Connect the FRC Cable (SBC to DSP) properly. ➢ If the problem still exists, replace the FRC cable or board.
15	" Hold the width rod in Home position" error	Width rod has to be rested on stopper position in width direction and 90 degree in Outer dia measuring direction.	➢ Ensure the correct position ➢ Check the voltage of both the Width and Outer Dia RLS sensor as per requirement.

EQUIPMENT

Sl. No.	*Error*	*Causes*	*Remedies*
1	➢ Keypad getting struck or not working ➢ Some of the keys are not working	➢ Loose contact in Keypad connection. ➢ Keypad failure.	➢ Run the Key test (Ref. Chapt.4.10) and trouble shoot. ➢ Check & ensure the Keypad connection is established. ➢ Replace the Keypad.
2	No sound	➢ Buzzer may be disabled. ➢ Buzzer connectors are loose. ➢ Buzzer problem / Bad IC.	➢ Enable Buzzer in Program settings. ➢ Check the buzzer connector is inserted properly. ➢ If the problem still exists, replace the Buzzer
3	No display	➢ Fuses may have got blown. ➢ Fault in the SMPS. ➢ Fault in Mini UPS ➢ Fault in USB power cable	➢ Replace the Fuses. ➢ Replace the SMPS. ➢ Replace DSP Mother board ➢ Replace USB cable
4	Any one of the Voltages +12V and -12V is not properly generated	➢ Fault in DC to DC convertion. ➢ Faulty SMPS	➢ Replace DSP Mother board ➢ Replace the SMPS.
5	Spark in the Mains cord	➢ Loose connection in the AC socket	➢ Reconnect the power cord. ➢ Trace out for the proper defect and solve the problem.
6	System does not turn ON	➢ System Fuse blown. ➢ AC input power to the system may be low or no power input. ➢ Problem with SMPS. ➢ Problem with SBC board.	➢ Replace the Fuse. ➢ Check the AC power input in the system using a Multimeter in ➢ AC Voltage mode. If Voltage is is correct, check the AC Fuse. ➢ Replace the SMPS. ➢ Replace the SBC board.
7	Electric shock in the system	System Earth may not be proper	Make arrangements for proper Earthing
8	Brake pedal goes too much down	The inner rod adjuster screw may be loose	Tighten the screw properly
9	➢ No signal ➢ Not booting	➢ Loose contact in HDMI cable. ➢ Improper fitment of SDHC card.	➢ HDMI cable firmly. ➢ Insert & lock the SDHC card with slot in SBC board properly. ➢ If the problem still exists, replace the SDHC card with Balancing program.
9	➢ System booting, but, hangs at Welcome screen when " Loading"	➢ Loose contact in communication cable((SBC to DSP Mother board – flat ribbon cable) ➢ Faulty cable . (SBC to DSP Mother board – flat ribbon cable) ➢ Improper fitment of SDHC card.	➢ Fix cable firmly. ➢ Replace the cable ➢ Insert & lock the SDHC card with slot in SBC board properly. ➢ If the problem still exists, replace the SDHC card with Balancing program.
10	Weight asking repeatedly (Wheel not getting balanced)	➢ Weight not added in the indicated position. ➢ Wheel with more runout being balanced. ➢ Re-treaded or patched tyre being balanced. ➢ Balancer rotor disturbed. ➢ Improper Earthing for Motor, equipment. ➢ External noise. ➢ While operating in Generator	➢ Add the weight at exact position as indicated. ➢ Replace the Tyre/Rim. ➢ Balancing specifications cannot be met while using re-treaded tyres, which is not recommended by Manufacturer. ➢ Provide proper Earthing. ➢ Provide isolated/dedicated power supply source and route it through CVT. ➢ Operate Balancer in Mains

Sl. No.	Error	Causes	Remedies
		➢ Improper foundation or disturbed.	supply line. ➢ Ensure proper foundation.
11	Laser line not working	➢ Loose connection in Laser connector ➢ Fault in Laser line generator ➢ Fault in DSP Mother board	➢ Check and correct Loose connection from DSP board to Laser generator connection. ➢ Replace the Laser line generator ➢ Replace DSP Mother board
12	Torch light not working	➢ Loose connection in LED light connector ➢ Fault in LED light ➢ Fault in DSP Mother board	➢ Check and correct Loose connection from DSP board to LED light connection. ➢ Replace the LED Light ➢ Replace DSP Mother board
11	Abnormal noise in Cabinet/Motor during balancing	➢ Improper foundation or disturbed. ➢ Cabinet placed in uneven surface. ➢ Motor belt tension may be more. ➢ Loose contact in DMR/ Brake/Width/Wheel guard fitment.	➢ Ensure proper foundation. ➢ Ensure the floor surface is even. ➢ Adjust the Belt for correction tension. ➢ Identify & address the fitment problem of any part.

Manufactured by