



Forward this manual to all operators.
Failure to operate this equipment as
directed may cause injury or death.

Revised 1/05/07

INSTALLATION AND OPERATION MANUAL

MODEL DST-1000 WHEEL BALANCER

FOR BALANCING
AUTOMOBILE
AND LIGHT TRUCK
TIRES / WHEELS



Keep this operation manual near the machine at all times. Make sure that ALL USERS read this manual .

SHIPPING DAMAGE CLAIMS

When this equipment is shipped, title passes to the purchaser upon receipt from the carrier. Consequently, claims for the material damaged in shipment must be made by the purchaser against the transportation company at the time shipment is received.

BE SAFE

Your new Ranger balancer was designed and built with safety in mind. However, your overall safety can be increased by proper training and thoughtful operation on the part of the operator. DO NOT operate or repair this equipment without reading this manual and the important safety instructions shown inside.



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Failure to follow danger, warning, and caution instructions may lead to serious personal injury or death to operator or bystander or damage to property.

Do not operate this machine until you read and understand all the dangers, warnings and cautions in this manual.

For additional copies
or further information, contact:
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OPERATOR PROTECTIVE EQUIPMENT

Personal protective equipment helps make tire and wheel service safer. However, equipment does not take the place of safe operating practices. Always wear durable work clothing during tire service activity. Shop aprons or shop coats may also be worn, however loose fitting clothing should be avoided. Tight fitting leather gloves are recommended to protect operator’s hands when handling worn tires and wheels. Sturdy leather work shoes with steel toes and oil resistant soles should be used by tire service personnel to help prevent injury in typical shop activities. Eye protection is essential during tire service activity. Safety glasses with side shields, goggles, or face shields are acceptable. Back belts provide support during lifting activities and are also helpful in providing operator protection. Consideration should also be given to the use of hearing protection if tire and wheel service activity is performed in an enclosed area, or if noise levels are high.



THIS SYMBOL POINTS OUT IMPORTANT SAFETY INSTRUCTIONS WHICH IF NOT FOLLOWED COULD ENDANGER THE PERSONAL SAFETY AND/OR PROPERTY OF YOURSELF AND OTHERS AND CAN CAUSE PERSONAL INJURY OR DEATH. READ AND FOLLOW ALL INSTRUCTIONS IN THIS MANUAL BEFORE ATTEMPTING TO OPERATE THIS MACHINE.

DEFINITIONS OF HAZARD LEVELS

Identify the hazard levels used in this manual with the following definitions and signal words:



DANGER

Watch for this symbol. It means: Immediate hazards which will result in severe personal injury or death.



WARNING

Watch for this symbol. It means: Hazards or unsafe practices which could result in severe personal injury or death.



CAUTION

Watch for this symbol. It means: Hazards or unsafe practices which may result in minor personal injury or product or property damage.

Failure to follow danger, warning, and caution instructions may lead to serious personal injury or death to operator or bystander or damage to property.

Do not operate this machine until you read and understand all the dangers, warnings and cautions in this manual.

WARRANTY

Ranger® Wheel Service Equipment is warranted for one year on all operating components to be free of defects in material and workmanship. Ranger Products® shall repair or replace at their option for the warranty period those parts returned to the factory freight prepaid which prove upon inspection to be defective. Ranger Products® will pay labor costs for the first 12 months only on parts returned as previously described. These warranties do not extend to defects caused by ordinary wear, abuse, misuse, shipping damage, improper installation or lack of required maintenance. This warranty is exclusive and in lieu of all other warranties expressed or implied. In no event shall Bend-Pak Inc. / Ranger Products be liable for special, consequential or incidental damages for the breach or delay in performance of the warranty. Bend-Pak Inc. / Ranger Products reserves the right to make design changes or add improvements to its product line without incurring any obligation to make such changes on product sold previously. Warranty adjustments within the above stated policies are based on the model and serial number of the equipment. This data must be furnished with all warranty claims.

OWNER'S RESPONSIBILITY

To maintain machine and user safety, the responsibility of the owner is to read and follow these instructions:

- Follow all installation instructions.
- Make sure installation conforms to all applicable Local, State, and Federal Codes, Rules, and Regulations; such as State and Federal OSHA Regulations and Electrical Codes.
- Carefully check the unit for correct initial function.
- Read and follow the safety instructions. Keep them readily available for machine operators.
- Make certain all operators are properly trained, know how to safely and correctly operate the unit, and are properly supervised.
- Allow unit operation only with all parts in place and operating safely.
- Carefully inspect the unit on a regular basis and perform all maintenance as required.
- Service and maintain the unit only with authorized or approved replacement parts.
- Keep all instructions permanently with the unit and all decals on the unit clean and visible.



IMPORTANT SAFETY INSTRUCTIONS

READ BEFORE OPERATING UNIT

- Protective goggles, safety glasses, or a face shield must be worn by the operator. Care should be taken to see that all eye and face safety precautions are followed by the operator. ALWAYS WEAR SAFETY GLASSES.
- Keep guards and safety features in place and in working order.
- Wear proper protective clothing. Safety toe, non-slip footwear and protective hair covering to contain hair is recommended. Do not wear loose clothing, or jewelry when operating the balancer.
- If an extension cord is necessary, a cord with a current rating equal to or more than that of the equipment should be used. Cords rated for less current than the equipment may overheat. Care should be taken to arrange the cord so that it will not be tripped over or pulled.
- Do not disable hood cover operation, or in any way shortcut safety controls and operations.
- Be sure that all wheels are mounted properly, the hub nut engages the arbor for not less than four turns, and the hub nut is firmly tightened before spinning the wheel.
- Read and understand this manual before operating.
- Be sure the balancer is properly connected to the power supply and electrically grounded.
- Do not operate damaged equipment or if the power cord is cut or worn.
- Keep work area clean and well lighted. Cluttered and/or dark areas invite accidents.
- Avoid dangerous environments. Do not use power tools or electrical equipment in damp or wet locations, or expose them to rain and moisture.
- Avoid unintentional starting. Be sure the balancer is turned off before servicing.
- Disconnect the balancer before servicing.
- Use only manufacturer's recommended accessories. Improper accessories may result in personal injury or property damage.
- Repair or replace any part that is damaged or worn and that may cause unsafe balancer operation. Do not operate damaged equipment until it has been examined by a qualified service technician.
- Never overload or stand on the balancer.
- Do not allow untrained persons to operate machinery.
- To reduce the risk of fire, do not operate equipment in the vicinity of open containers or flammable liquids.
- Adequate ventilation should be provided when working on operating internal combustion engines.
- Keep hair, loose clothing, fingers, and all parts of body away from moving parts.
- Use equipment only as described in this manual.
- Use only manufacturer's recommended attachments.

**KEEP ALL INSTRUCTIONS PERMANENTLY WITH UNIT
AND ALL SAFETY DECALS CLEAN AND VISIBLE.**

BEFORE YOU BEGIN

Receiving

The shipment should be thoroughly inspected as soon as it is received. The signed bill of lading is acknowledgement, by the carrier, of receipt in good condition of the shipment. If any of the goods called for on the bill of lading are shorted or damaged, **do not accept them** until the carrier makes a notation of the shorted or damaged goods on the freight bill. Do this for your own protection.

NOTIFY THE CARRIER AT ONCE if any hidden loss or damage is discovered after receipt. **IT IS DIFFICULT TO COLLECT FOR LOSS OR DAMAGE** AFTER YOU HAVE GIVEN THE CARRIER A CLEAR RECEIPT. File your claim with the carrier promptly. Support your claim with copies of the bill of lading, freight bill, invoice, and photographs, if possible.

Unpacking and Setup

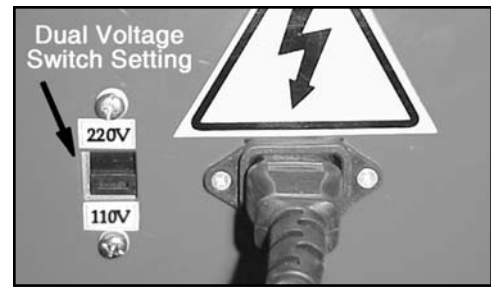
1. Remove the carton from the pallet.
2. Remove the shipping bolts making sure to keep hands clear of all pinch points.
3. Remove straps and plastic wrap holding the hood and tower in shipping position.



- Do not use the control tower, face-plate, hood or threaded shaft to lift the balancer.
- Use help to remove the balancer from the pallet. The unit is heavy and the weight is not evenly distributed.
- Dropping the unit from the pallet may cause personal injury or equipment damage.

Electrical Requirements

YOUR MACHINE HAS A DUAL VOLTAGE MOTOR and can be run on either 110 or 220 volts. **STANDARD WIRING IS 110 VOLTS.** Your balancer features a dual voltage, (110/220volt) dual phase (50 or 60 HZ.) power system. Simply position the switch located at the back of the machine to the desired voltage setting then install a required plug if necessary.

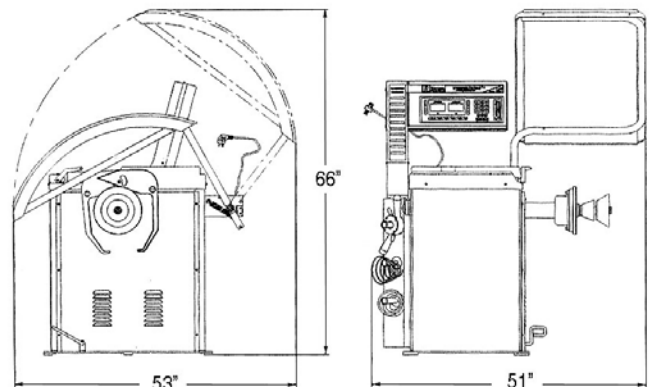


Consult a licensed electrician for electrical hook-up according to local electrical codes. Operation with no ground can damage electronics and will create a shock hazard for the operator or bystanders. Damage caused by improper electrical installation may void warranty. Most electrical codes require "hard-wiring" when machine is bolted to the floor. Consult a licensed electrician regarding specific codes.

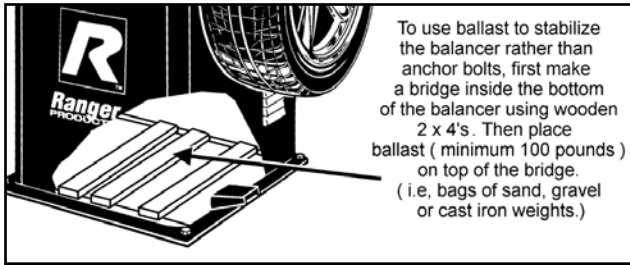
Floor and Space Requirements

The balancer must be located on a flat floor of solid construction, preferably concrete. The balancer must sit solidly on its three foot pads. If the balancer is not level, does not sit solidly on its three foot pads, or is placed on an unstable floor, the balancer will not function properly and will produce inaccurate balance readings. The balancer is not required to be bolted down, however it will not function properly if left on the pallet.

- Select a location for the balancer that provides a level, solid floor, and adequate clearance around and above the balancer.
- Make sure the location selected has enough room above and behind the unit so the hood can be raised completely.
- The location must also provide working room for mounting and removing wheels.



Although it is not required, it helps to anchor the balancer to the floor using concrete anchors through the holes provided. If you do not wish to bolt the balancer to the floor it will be necessary to weight the balancer down with ballast.



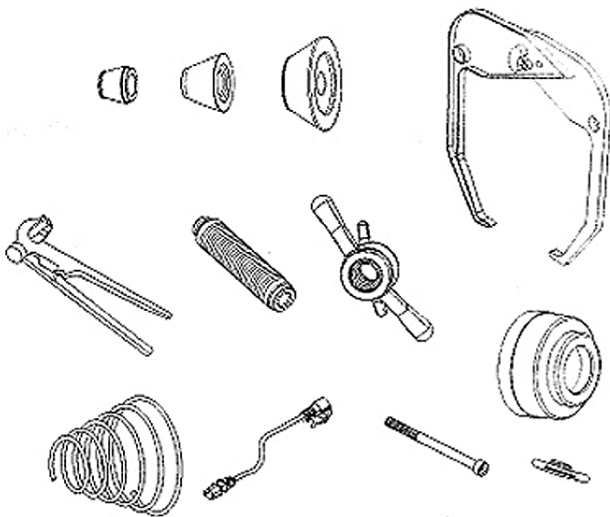
Standard Accessories

- Graduated Cone Assortment (hardened, 3-piece)
- Wheel Weight Pliers
- Rim Width Caliper
- Threaded Main Shaft
- Quick-Release Hub-Nut With No-Mar Ring
- Quick-Release Hub-Nut Spacer Cup
- Rear Mount Cone Spring
- Power Cord
- Main Shaft Bolt
- 100-gram Calibration Weight

Optional Accessories

- Large Truck Cone and Cup Adapter Kit Assembly

STANDARD ACCESSORIES



OPTIONAL ACCESSORIES

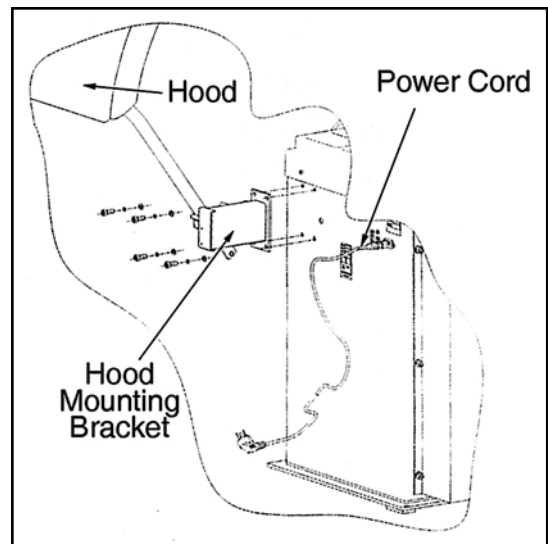


Technical Data / Features / Specifications

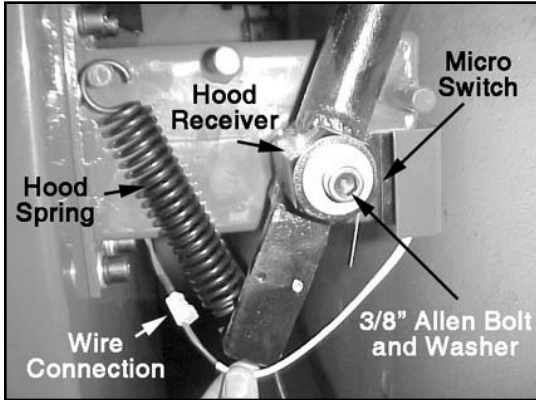
- Voltage 110/220V 50/60HZ
- Noise 70 decibels
- Working Temperature -5C / 27F to 50C / 82F
- Power Consumption 180 Watts
- Drive System Belt Drive
- Cycle time 6-9 seconds (avg.)
- Balancing Modes Dynamic / Static / Four Alloy
- Top Positioning Weight Locator Standard
- Inside & Outside Measuring Standard
- Millimeter / Inches Selection Standard
- Self Calibration Function Standard
- Wheel Distance Setting. Manual
- Ounce / Gram Selection. Standard
- Auto Start When Hood is Lowered. Standard
- Brake Type Automatic. Electronic
- Manual Brake Capability. Standard
- Max. Tire Diameter. 40" / 1016 mm
- Max. Tire Weight 145 pounds (65 Kg)
- Max. Rim Diameter. 10" - 24" / 254 mm - 610 mm
- Wheel Width Capacity. 2" - 20" / 51 mm - 508 mm
- Balancing Increments0.25 or 0.01 ounce
- Average Balancing Speed. 280 RPM
- Accuracy. Within .01 Oz.
- Resolution (Round Off Mode) 0.01 ounce, 1.4°
- Shipping Weight 540 pounds (245 Kg)

MOUNTING THE HOOD ASSEMBLY

1. Locate the hood assembly and open the accessory box and remove the hood assembly hardware and hood spring.
2. Use help and carefully assemble the hood as described below.
3. Attach the hood mounting bracket to the rear of the balancer cabinet using the 3/8" allen bolts and washers.



4. Slide the hood assembly over the bracket axle then secure in place using the 3/8" allen bolt and washer.



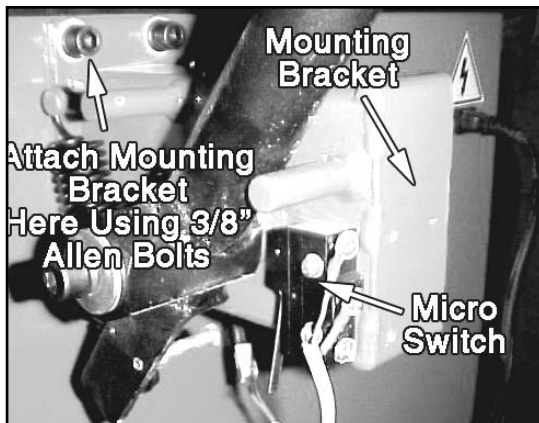
5. Raise the hood and hold it up. Use help to hold the hood while attaching the hood spring.



Attaching the spring without holding the hood in place may cause it to snap open suddenly, resulting in personal injury.

6. Hook the other end of the spring over the pin to the rear of the mounting bracket. Make sure the spring fits into the groove in the pin.

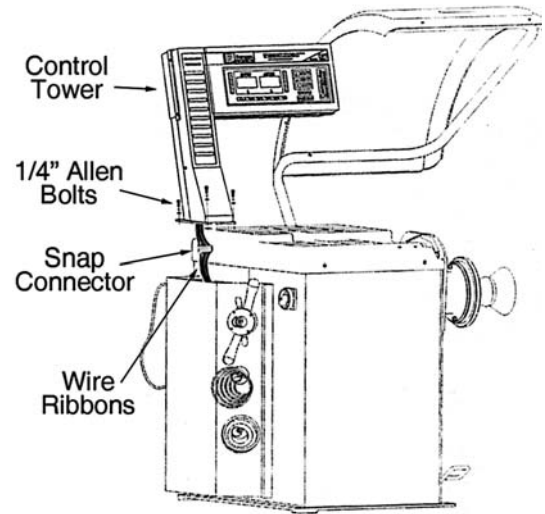
7. Connect the hood switch wires together as shown.



MOUNTING THE CONTROL TOWER

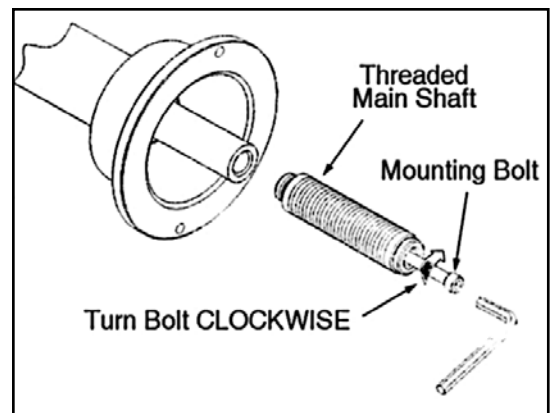
1. Locate the control tower assembly and remove the assembly hardware from the parts box.
2. Using help, carefully hold the control tower above the mounting area on the left side of the cabinet assembly.
3. Locate the wire ribbon coming out of the bottom of the control tower as well as the wire ribbon near the opening of the cabinet.

4. Carefully connect the wire ribbons together making sure the snap connector is tightly fastened. (Note: The snap connector may be installed one way only. Do not force together. If the snap connector does not connect easily, flip a connector over and try again.)



INSTALLING THE THREADED MAIN SHAFT

1. Locate the Threaded Main Shaft and mounting bolt in the accessory box and install as shown. Be sure to tighten the bolt firmly.



INITIAL START-UP

1. Turn the balancer ON/OFF switch to ON.
2. A "beep" will be heard three times then the display will light up.
3. Press **START** button. The threaded main shaft should spin **CLOCKWISE** when viewed straight on. If the faceplate spins counterclockwise, turn the balancer off and consult the factory.

NOTE: Disregard a short spin cycle with **Err - 2** - displayed on the control panel during this initial testing.

4. Now lower the hood to check the activation of the **AUTO-HOOD START**.

BALANCER OVERVIEW

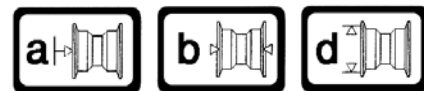
This machine is a two-plane, microprocessor-based computer balancer. Any imbalance in a wheel, either static or dynamic, is detected into two correction planes (the inner and outer flanges of the wheel) where corrective weights can be applied. Pressing the **FUN** button selects either **DYNAMIC**, **STATIC**, or **ALLOY** modes which changes the location of these planes.

Determining the Planes

When the distance gauge is pulled out and held against the wheel flange, the distance measurement shown on the pull out slide refers to the “**A**” **OFFSET MEASUREMENT**. This measurement tells the computer the location of the **INNER** plane of the wheel for Dynamic and/or Alloy balancing.

By using the **WHEEL CALIPERS**, the wheel width or the “**b**” **MEASUREMENT** tells the computer the location of the **OUTER** plane of the wheel for Dynamic and/or Alloy balancing.

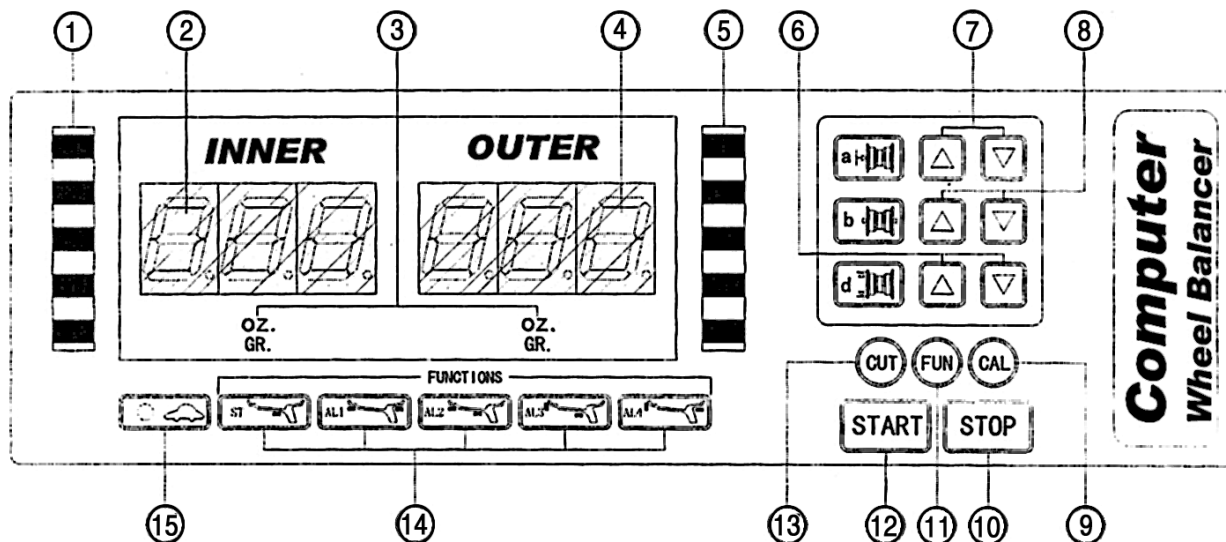
The wheel diameter will be referred as the “**d**” **DIAMETER MEASUREMENT**. This is the diameter of the wheel at the weight location. You can determine the diameter of the wheel / tire on the tire sidewall to determine the wheel diameter. This tells the computer how far from the center of the hub the weights will be applied.



Balancing a Wheel

When a wheel is spun, the balancer detects any imbalance present. The computer calculates the weight needed to correct the imbalance and the location for weight application. The weight required to correct the imbalance is displayed on the control panel, and the weight positioning lights assist the operator in positioning the weight application location at top-dead-center. Weight displays and positioning lights are provided for both inner and outer planes of the wheel.

CONTROL PANEL AND DISPLAY

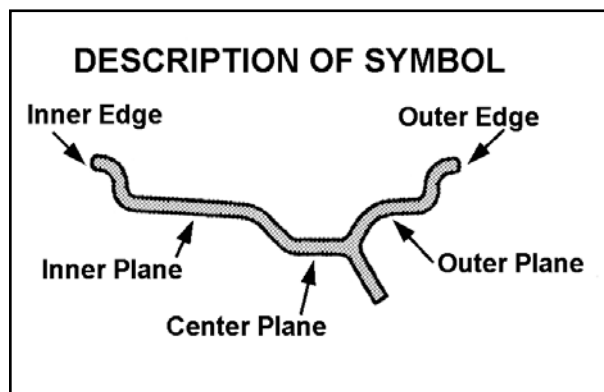


Control Panel Legend

- 1 - INNER weight position indicator lights.
- 2 - Weight reading or information display window. INNER
- 3 - GR. / OUNCE display.
- 4 - Weight reading or information display window. OUTER
- 5 - OUTER weight position indicator lights.
- 6 - Wheel DIAMETER setting keys.
- 7 - Wheel OFFSET setting keys.
- 8 - Rim WIDTH setting keys.
- 9 - Places the balancer in the CALIBRATION Mode.
- 10 - Spin cycle END. Special functions key.
- 11 - Selector key for DYNAMIC, STATIC and ALLOY settings.
- 12 - START key for activating spin cycle.
- 13 - CUT button for identifying remaining weight.
- 14 - Indicator lights for STATIC and ALLOY settings.
- 15 - Indicator lights for DYNAMIC settings.

SELECTING WEIGHT POSITIONS FOR DIFFERENT WHEEL TYPES

Prior to balancing, a specific **FUNCTION** must be chosen for each particular wheel. The function settings automatically compensate weight location requirements for a particular wheel type. These settings can be selected by depressing the **FUN** button.



Dynamic

For balancing standard steel or alloy wheels using clip-on weights attached to inner and outer wheel edges.



Static

This function is used if stick-on weights are to be mounted to the center plane (hidden) and not to either inner or outer edges of the wheel.



AL1

This function is used if stick-on weights are to be mounted to both inner and outer planes of the wheel.



AL2

This function is used if stick-on weights are to be mounted to the inner and center planes of the wheel.



AL3

This function is used if stick-on weights are to be mounted to the outer edge and inner plane of the wheel.



AL4

This function is used if stick-on weights are to be mounted to the inner edge and outer plane of the wheel.



SELF-CALIBRATION PROCEDURE

The **CAL** button is used for self-calibration. Since this balancer is a precision machine it is required that you perform periodic calibrations to assure its accuracy.




NOTE:

Before performing the self-calibration procedure, make sure the balancer is bolted down and/or rigid to the floor and that the shaft and centering cones are clean and undamaged. Even the slightest dirt or damage can cause inaccurate readings. **PAY CLOSE ATTENTION** to the following procedure. If not followed correctly, the balancer will not perform accurately. **This balancer should be self-calibrated every 30 days.**

1. Turn on the power.
2. Select a centering / mounting cone that best fits the center hole of the wheel. (**NOTE:** A standard 14" steel wheel and tire is recommended for this procedure.)
3. Lift the wheel onto the arbor and slide it back against the arbor hub.
4. Slide the cone over the arbor and into the center hole of the wheel. It will be necessary to lift the wheel slightly.
5. While holding the wheel and cone in position, thread the hub nut over the arbor and secure tightly.
6. Enter the correct wheel data. (Refer to page 12.)
7. Press the **FUN** to read **DY (DYNAMIC)** setting.
8. First press the **CAL** button (and hold) then the **START** button. Hold both simultaneously for six seconds. The display screen will flash momentarily then display **CAL -- CAL** .
9. Press the **START** button. The wheel will spin for approximately six seconds then stop. **ADD - 100** will be displayed.
10. Place one 100 gram weight (included with balancer) on the outside edge of the wheel directly opposite the valve stem.
11. Press the **START** button once again. The wheel will spin for approximately six seconds then stop.
12. **END -- CAL** will be displayed.
13. The self-calibration is now complete.



GRAM / OUNCE SELECTION

This machine is capable of registering **GRAM** or **OUNCE** readings. The setting for either **GRAM** or **OUNCE** will be displayed on the panel screen just below the **INNER** and **OUTER** windows. When the balancer is set to register **OUNCE** readings, **OZ.** will be lighted on the display. When the balancer is set to register **GRAM** readings, **OZ.** will be no longer be lighted. (**NOTE: GR.** will not be lighted with the **GRAM** reading selected.) To select either **GRAM** or **OUNCE** settings, follow the procedures below.

1. First press the **STOP** button then both the ▲▼ buttons adjacent to . **HOLD ALL THREE** simultaneously for three seconds.
2. Remove your finger **FIRST FROM THE STOP BUTTON** then the ▲▼ buttons.
3. Your selection will then appear on the display and the weight readings will change in the **INNER** and **OUTER** windows to register the applicable setting.



MM / INCH SELECTION “b” SETTING / WHEEL WIDTH

To select either **MM** or **INCH** measurement reading for the **“b” WHEEL WIDTH** setting, follow the procedures below.

1. Press the ▲ or ▼ button adjacent to  to display **-b-** in the **INNER** window.
2. Press the **STOP** then ▲ button adjacent to  simultaneously. Your selection readings will now appear in the **“b” SETTING** display.

MM / INCH SELECTION “d” SETTING / WHEEL DIAMETER

To select either **MM** or **INCH** measurement reading for the **“d” WHEEL DIAMETER** setting, follow the procedures below.

1. Press the ▲ or ▼ button adjacent to  to display **-d-** in the **INNER** window.
2. Press the **STOP** then ▲ button adjacent to  simultaneously. Your selection readings will now appear in the **“d” SETTING** display.

MOUNTING WHEELS

Select the most appropriate mounting method for the wheel you are balancing. Using the proper method ensures secure mounting, accurate displays and safe balancer operation. It also prevents damage to the wheel. On most wheels, the inner side of the wheel hub usually has the most uniform surface for wheel balancing. Always center the wheel by the most uniformly shaped side of the hub to achieve the most accurate balance.

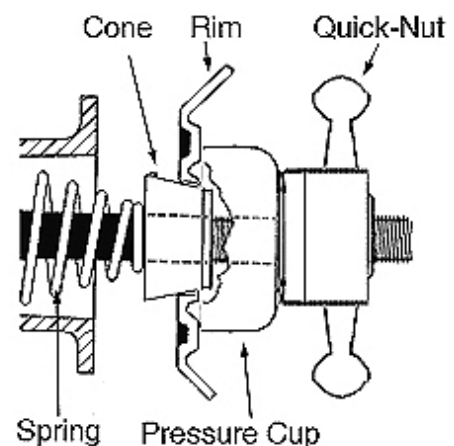
Regardless of mounting type, always make sure that the wheel is forced firmly against the arbor faceplate and that the hub nut engages the threaded arbor for at least four complete turns. To assist in centering the wheel properly, rotate the wheel on the arbor while tightening the hub nut.

Rear Cone Mounting

Most original equipment and steel wheels can be mounted properly using this method. The wheel is centered on a cone from the inner side of the hub.

1. Place the cone spring on the arbor with the large end towards the balancer.
2. Select the cone that best fits the center hole in the wheel. Slide the cone onto the arbor with the large end towards the spring.
3. Lift the wheel onto the arbor and center it on the cone.
4. Attach the pressure cup to the hub nut and spin the assembly onto the arbor. Tighten securely.

REAR CONE MOUNTING

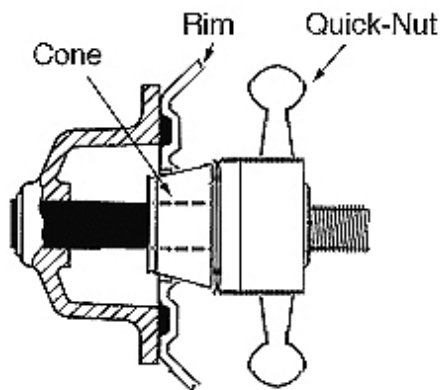


Front Cone Mounting

A wheel should be centered by the outer side of the hub only when the inner surface will not provide an accurate surface to center on.

1. Select the cone that best fits the center hole in the wheel.
2. Lift the wheel onto the arbor and slide it back against the arbor faceplate.
3. Slide the cone onto the arbor and into the center of the wheel. Then lift the tire to seat the cone in the center hole.
4. Spin the hub nut (without the pressure cup) onto the arbor. Tighten it securely against the cone.

FRONT CONE MOUNTING

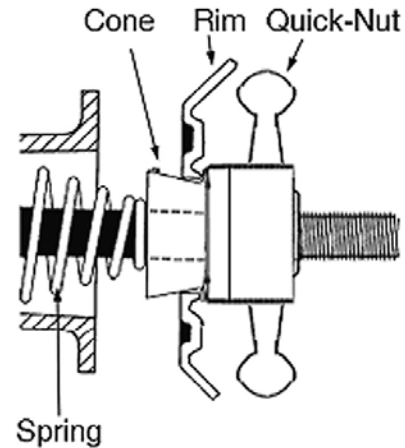


Alternate Mounting

If the wheel has a protruding outer hub which will not permit the use of the pressure cup, or the cup will not permit the hub nut to engage at least four turns of the arbor, this alternate method should be used.

1. Place the cone spring on the arbor with the large end towards the balancer.
2. Select the cone that best fits the center hole in the wheel. Slide the cone onto the arbor with the large end towards the spring.
3. Lift the wheel onto the arbor and center it on the cone.
4. Use the small nylon spacer (no-mar ring) or a centering cone to press against the outer wheel hub.
5. Spin the hub nut (without the pressure cup) onto the arbor. Tighten securely

ALTERNATE MOUNTING



BALANCING INSTRUCTIONS

1. First determine which mounting method you will use for the wheel.
2. Select a centering / mounting cone that best fits the center hole of the wheel.
3. After installing the necessary mounting hardware hard, lift the wheel onto the threaded shaft and slide it back against the arbor hub. It will be necessary to lift the wheel slightly when positioning the cone in the center of the wheel hole.
4. While holding the wheel and hardware in position, thread the hub nut over the arbor and secure tightly.

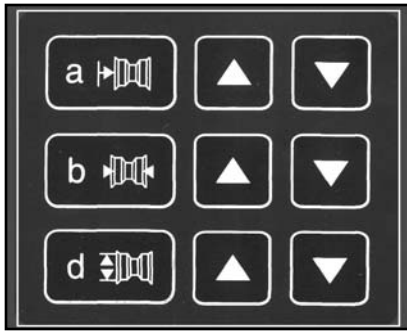


Always make sure that the hub nut engages the arbor threads by at least four (4) full turns. It helps to spin the wheel while at the same time tightening the hub nut. Never exceed weight capacity of balancer. Do not attempt to balance wheels that are larger than the machine was designed for.

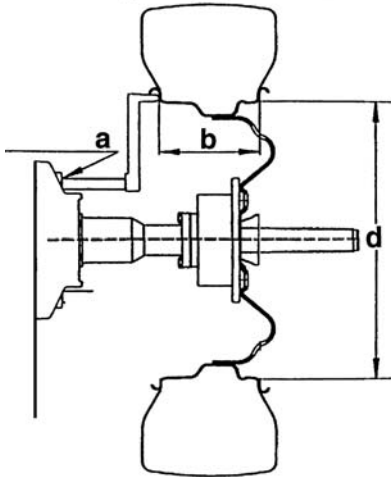
Inputting Wheel Data

Prior to balancing any wheel, specific data relating to that particular wheel must be entered into the computer. If the data displayed on the screen does not match that of the wheel you are attempting to balance then the wheel will not be accurately balanced. The three data requirements are; **A-Offset**, **B-Width** and **D-Diameter**. (See diagrams on the following page.)

WHEEL DATA KEY BOARD




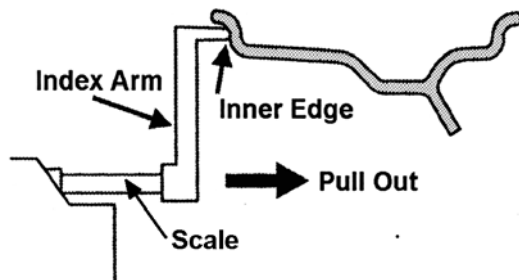
Required Wheel Data




a - Wheel Offset

This is the distance between the side of the balancer and the inner edge of the wheel. To enter Wheel Offset data refer to the instructions below.

1. Turn the machine on.
2. Press the ▲ button adjacent to .
3. **-a-** will be displayed in the **INNER** window.
4. Pull the index arm out from the side of the machine until the tip touches the inner edge of the wheel.

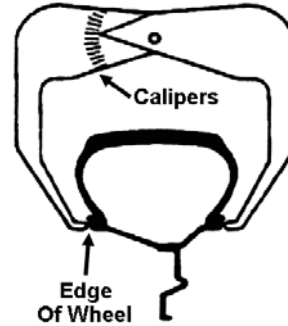


5. Read the offset measurement as displayed on the scale directly on top of the index arm. Press the corresponding ▲▼ buttons adjacent to  to enter the correct data.


b - Wheel Width

This is the width of the wheel at the inner edges. This distance is measured with the calipers. To enter Wheel Width data refer to the instructions below.

1. Position the calipers over the wheel and touch the tips against the wheel edges.



2. Read the measurement shown on the calipers.

3. Press the ▲ button adjacent to .

4. **-b-** will be displayed in the **INNER** window.

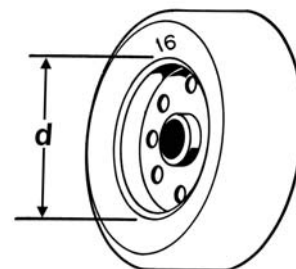
5. Press the corresponding ▲▼ buttons to enter the correct data. **IMPORTANT NOTE:** The standard setting for this operation is shown in **INCHES**. If metric is desired, new calipers with metric readings will have to replace the calipers that accompanied the unit. (See page 10 for changing "b" reading to **MM** or **INCH** setting.)


d - Wheel Diameter

This is the diameter of the wheel at the rim flanges. This measurement can be read on the tire sidewall. To enter Wheel Diameter data, refer to the instructions below.

1. Read the diameter of the wheel as shown on the tire sidewall.

Measuring Wheel Diameter



2. Press the ▲ button adjacent to .

3. **-d-** will be displayed in the **INNER** window.

4. Press the corresponding ▲▼ buttons to enter the correct data. (See page 10 for changing "d" reading to **MM** or **INCH** setting.)

Spin Mode / DYNAMIC, AL1, AL3, AL4

1. Once the correct wheel data and **FUNCTION** have been programmed, lower the hood to begin the spin mode.

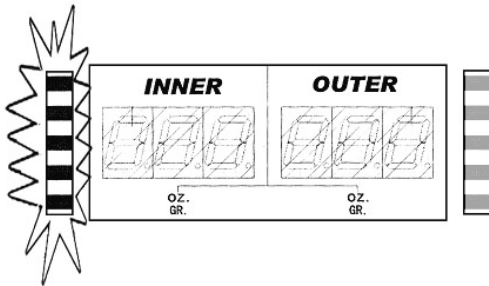


Before initiating the spin sequence, make sure that the hub nut is secure and engaged on the arbor threads by at least four (4) full turns.

2. After the hood is lowered, or the **START** button is depressed, the wheel will spin for approximately six seconds then stop automatically.

3. After the wheel stops, weight readings for each side of the wheel (**INNER** and **OUTER**) will appear in the center display screen.

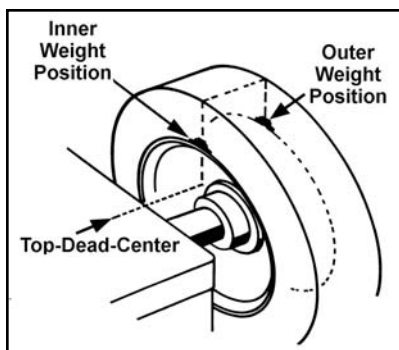
4. Turn the wheel by hand until the weight position indicator lights on the side marked **INNER** are **FULLY ILLUMINATED**. This indicates the position specified by the balancer for the inner weight position.



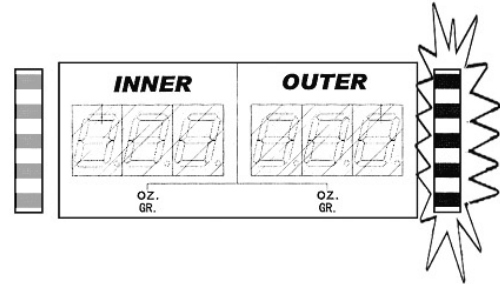
5. Attach the specified weight for the **INNER** position at top-dead-center. **NOTE:** To hold the wheel in position when installing weights, press down on the **SHAFT RESTRAINT PEDAL** located on the right side of the machine.

NOTE:

All weight positions are located at **TOP-DEAD-CENTER**. The more accurate you are in selecting the exact weight and position, the more accurate the wheel will be balanced.



6. After the **INNER** weight is properly installed, turn the wheel by hand until the weight position indicator lights on the side marked **OUTER** are fully illuminated. This indicates the position specified by the balancer for the **OUTER** weight position.



7. Attach the specified weight for the **CENTER PLANE** position at top-dead-center.

Spin Mode / AL2

1. Once the correct wheel data has been programmed, lower the hood to begin the spin mode.

2. After the hood is lowered, or the **START** button is depressed, the wheel will spin for approximately six seconds then stop automatically.

3. After the wheel stops, weight readings will appear in the center display screen.

4. Turn the wheel by hand until the weight position indicator lights on the side marked **INNER** are fully illuminated. This indicates the position specified by the balancer for the inner weight position.

5. Attach the specified weight for the **INNER PLANE** at top-dead-center.

6. After the **INNER** weight is properly installed, turn the wheel by hand until the weight position indicator lights on the side marked **OUTER** are **FULLY ILLUMINATED**. This indicates the position specified by the balancer for the **CENTER PLANE** weight position.

7. Attach the specified weight for the **CENTER PLANE** position at top-dead-center.

Spin Mode / STATIC

STATIC balancing is not an accurate method of balancing and should be used only when the customer request no visible weights on the outer edges or plane of the wheel.

1. Once the correct wheel data has been programmed, lower the hood to begin the spin mode.

2. After the hood is lowered, or the **START** button is depressed, the wheel will spin for approximately six seconds then stop automatically.

3. After the wheel stops, a weight reading will appear in both center display screens. **The weight reading will appear the same in both screens.**

4. Turn the wheel by hand until the weight position indicator lights on the side marked **INNER** are fully illuminated. The **OUTER** indicator lights will not illuminate.

5. This indicates the position specified by the balancer for the **CENTER PLANE** weight position.

6. Attach the specified weight near the **CENTER PLANE** of the wheel at top-dead-center.

Rechecking the Balance

After installing the weights in the proper positions, lower the hood or press **START** to begin the spin mode. The weight display windows should display **0 -- 0** to indicate a perfect balance.

If the balancer indicates that an additional weight is required in the same position as the first weight, then the first weight installed was not heavy enough. Install a new weight or add additional weight to the same area. Re-spin the wheel and check again.

If the balancer indicates that an additional weight is required opposite the position as the first weight, then the first weight installed was too heavy. Correct the first weight and re-spin the wheel.

If the balancer indicates that an additional weight is required in a different position as the first weight, then the first weight was installed in the wrong position. Correct the first weight and re-spin the wheel and check again.

IDENTIFYING REMAINING WEIGHT

Your balancer is set to read **0 -- 0** if the wheel is balanced within 5 grams on either side. If you wish to see what remainder is left on each side (less than 5 grams) press the **CUT** button. After pressing the **CUT** button, residual weight readings will appear in the display windows.



STOP BUTTON

The **STOP** button **IS NOT** an emergency-stop button. It will not immediately shut down shaft and wheel rotation. For emergency situations that require immediate shutdown of rotation, it is recommended that you use the **SHAFT RESTRAINT PEDAL** located on the right-front side of the unit.



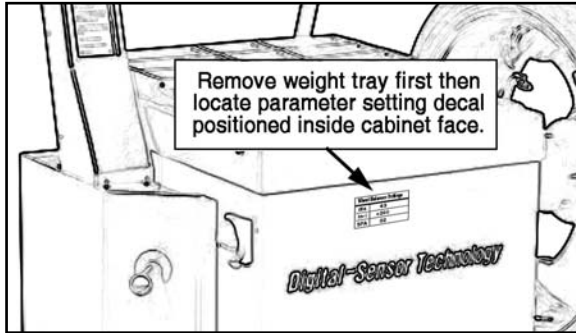
After Balance Vibration Problems

If vibration is still present after balancing the wheels and driving the vehicle on smooth pavement remove the wheels and recheck the balance. If a wheel is out of balance the cause may be:

1. A weight has come off the wheel. Remove the other weights from the wheel and rebalance.
2. Tire slippage on the wheel. Remove and remount the tire using proper tire lubricant and inflate to 40 PSI. Do not over-inflate. Rebalance the wheel and reduce air pressure to recommended PSI.
3. Stones or other foreign objects caught in the tire tread. Remove the objects and repair tire as necessary. Check and rebalance if needed. If the balancer still indicates the wheels are balanced to within 0.05 ounces on both inner and outer displays, the problem is not in the balance of the wheels. Check the following possible sources of vibration:
 1. Tire pressure. Bring all tires up to the recommended PSI.
 2. Radial or lateral runout in the tire or wheel. Replace the damaged part.
 3. Foreign material inside the tire. Remove the tire from the wheel, remove the material, and remount. Remove wheel weights and rebalance the wheel.
 4. Imbalanced wheel covers or trim rings. Remove the wheel covers or trim rings and test drive, balance the wheel with the wheel cover or trim ring attached to the wheel.
 5. Incorrectly mounted wheel. Remount correctly.
 6. Damaged wheel bolt holes. Replace wheel.
 7. Worn universal joints. Replace as required.
 8. Drive shaft imbalanced or damaged. Balance, repair, or replace.
 9. Imbalanced brake rotor(s) or drum(s).
 10. Suspension out of alignment. Align the vehicle and replace any damaged or worn parts.

PARAMETER SETTINGS

BE CAREFUL: The following instructions are to view and/or reset the factory parameter settings only. If not followed correctly the balancer will malfunction and/or instruct you to put weights at locations that may cause improper balance. These parameter settings are pre-set at the factory and should only be adjusted for special circumstances.



IMPORTANT NOTE:

Before performing the following procedures make sure the shaft and centering cones are clean and undamaged. Even the slightest dirt or damage can cause inaccurate readings. **PAY CLOSE ATTENTION** to the following procedures. If not followed correctly, the balancer will not perform accurately.

1. Turn on the power then select a standard 16" steel wheel and mount correctly. (Refer to pages 10-11.)

2. Enter the correct wheel data. (Refer to page 12.)

3. Press the **FUN** button to **DY** setting.



dis SETTING

1. Press the **CAL** button (and hold) then the **START** button. Hold both simultaneously for six seconds. The display screen will flash momentarily then display **CAL -- CAL** .

2. Next, press these buttons one at a time in the following order. It is not necessary to hold each button.



3. At this time **d.s. - xxx** will be shown on the display panel. (xxx represents data already entered. Actual numbers may vary.) **NOTE: If d.s. - xxx is not displayed, try again pressing the buttons more rapidly.**

4.To adjust the **dis** setting, use the “**B**” Up or Down buttons.



5. Proceed directly to the **in-l** setting by following the procedures below.

in-l SETTING

1. After first checking or properly adjusting the **dis** setting, press the “**A**” **Up** button.



2. At this time **in. - xxx** will be shown on the display panel. (xxx represents data already entered. Actual numbers may vary.)

3.To adjust the **in-l** setting use the “**B**” Up or Down buttons.



IMPORTANT NOTE:

The **in-l** setting uses **+** or **-** readings. The numbers continually rotate “around the clock” using the “**B**” Up or Down buttons.

EXAMPLE

in. - xxx / Negative Number Setting
in. + xxx / Positive Number Setting

SFA SETTING

1. After first checking or properly adjusting the **in-l** setting, press the “**A**” **Up** button.



2. At this time **SFA. - xxx** will be shown on the display panel. (xxx represents data already entered. Actual numbers may vary.)

3.To adjust the **SFA** setting use the “**B**” Up or Down buttons.



STORING THE DATA

1. Press the “**A**” Up button **TWICE** to return to Wheel Data settings. Double check wheel data entries then proceed directly to the CALIBRATION procedure and complete. (Refer to page 9)

MAINTENANCE

- **DO NOT** use harsh solvents to clean display or control board.

- **NEVER** use compressed air or water to clean any component of balancer.

- **NEVER** use a hammer to tighten or loosen the hub-nut.

DAILY

Clean and inspect shaft, cones and hub-nut. Be sure to keep the shaft threads and hub-nut lubricated with a light machine oil.

MONTHLY

Clean machine entirely. Inspect membrane switches for damage. Perform self-calibration procedure. Make adjustments if required and replace any part that is damaged.

YEARLY

Remove cover and clean entire machine thoroughly with light-duty utility vacuum cleaner. Clean fan / motor and sensors. Remove dust build-up.

BELT ADJUSTMENT

If the belt starts to slip, adjust the tension as follows.

1. Remove side cover.

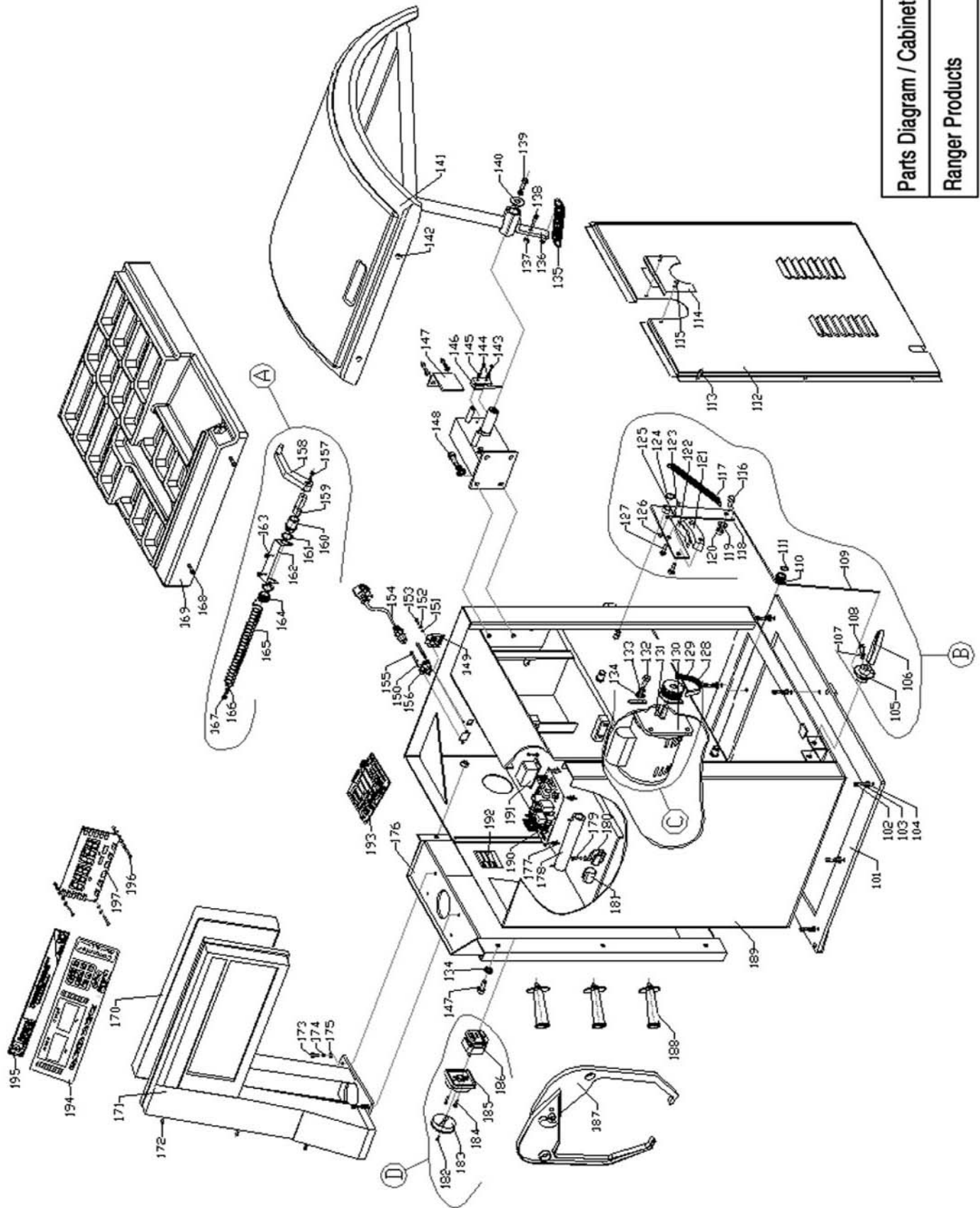
2. Loosen the four motor mounting bolts.

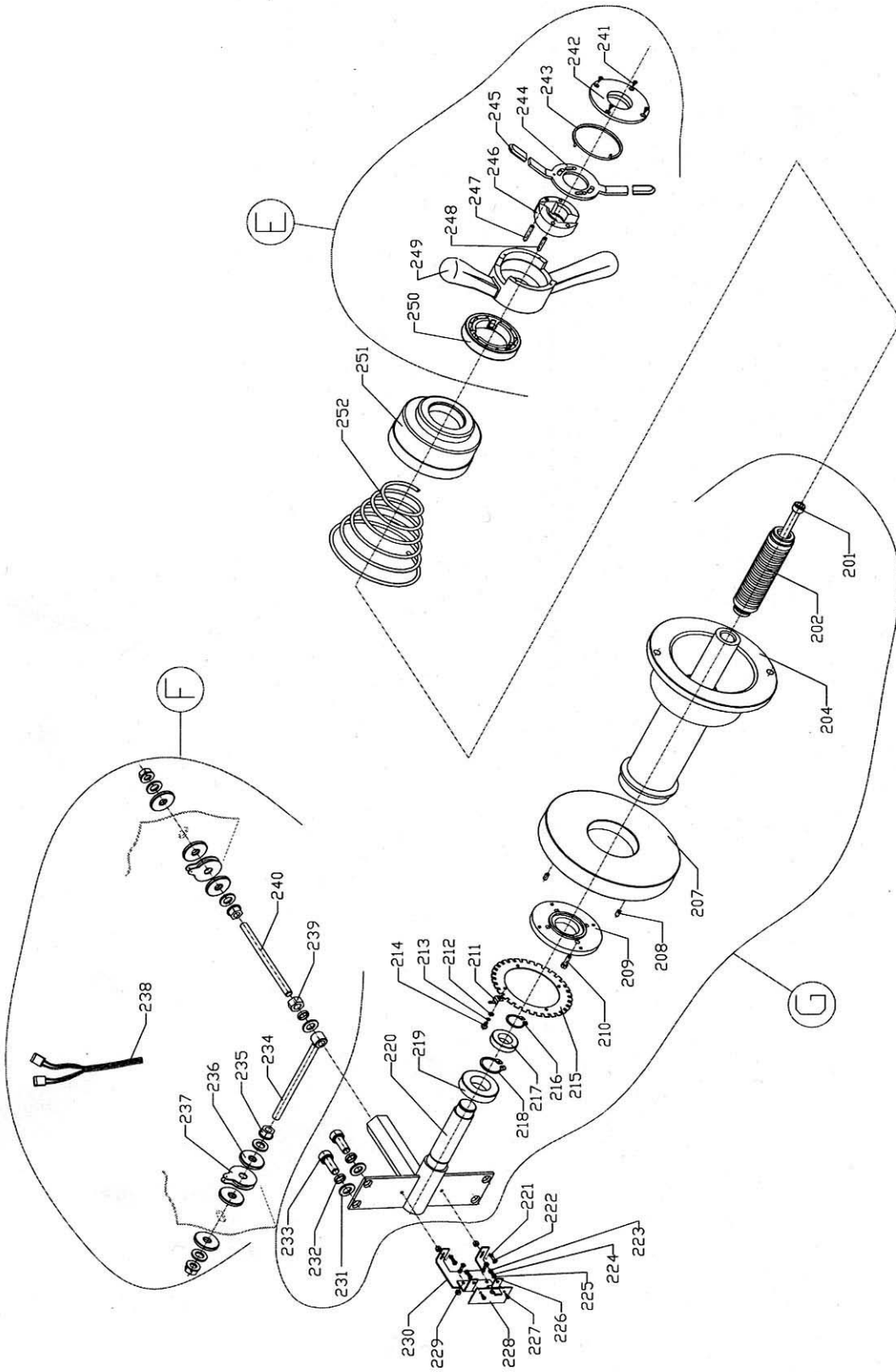
3. Increase tension by adjusting location of motor.

4. Retighten the motor mounting bolts.

MAINTENANCE NOTES

Parts Diagram / Cabinet / DST-1000
Ranger Products





Parts Diagram / Shaft / DST-1000
Ranger Products

BREAKDOWN DIAGRAM

NO	NAME	Specification	QTY	NOTE	NO	NAME	Specification	QTY	NOTE
MAIN BOX BREAKDOWN DIAGRAM									
101	PALLET	R000.02.00	1		139	SCREW	M0X20	1	
102	SCREW	M0X20	8		140	WASHER	16	1	GB5-85
103	ELASTIC WASHER	8	8	GB93-87	141	COVER		1	
104	FLAT WASHER	8	8	GB93-85	142	BOLT		4	
105	WHEEL FOR ROTATING ROPE	CB448.00.07	1	GB70-85	143	SCREW	M0X30	2	GB41-86
106	PANEL	CB448.00.06	1		144	ELASTIC WASHER	4	3	GB93-87
107	BOLT	M0X40	1	GB5781-86	145	WASHER	4	3	GB5-85
108	NUT	M8	1	GB41-86	146	STROKE SWITCH	Z-15GWB	1	
109	STEEL ROPE	1X7	4	GB102-74	147	SUPPORT		1	
110	WHEEL FOR ROTATING ROPE	CB448.00.08	1		148	SCREW	M0X20	2	GB70-85
111	SEEGER RINGS	16#	1	GB94.1-86	149	VOLTAGE TRANSFER SWITCH		1	
112	SEAL PLANK	CB448.00.02	1		150	NUT	M4	16	GB41-86
113	SCREW	M0X16	6	GB70-85	151	WASHER	4	10	GB5-85
114	PLANK	CB448.00.04	1		152	ELASTIC WASHER	4	10	GB93-87
115	SCREW	M0X10	2	GB67-76	153	SCREW	M0X16	2	
116	BOLT	CB448.00.09	1		154	WIRE		1	
117	SPRING	φ 2.0X14X150	1		155	SCREW	M0X25	2	
118	BEND PLANK	CB448.00.03	1		156	SCREW		1	
119	WASHER	10	1	GB5-85	157	SCREW	M0X16	1	GB70-85
120	NUT	M10	1	GB41-86	158	HANDLE		1	
121	WEATH PROOF FIBRE	CB448.00.05	1		159	RIM D STANCE GAUGE	B-L.02.01	1	
122	ASBESTOS TILE	4X25X90	1		160	FRONT PLASTIC COVER OF GAUGE	B-L.01.05	1	
123	SCREW	M0X25	1	GB70-85	161	SEEGER RINGS	25#	2	GB94.1-86
124	SEEGER RINGS	16#	1	GB94.1-86	162	GAUGE SUPPORT	B-L.01.06	1	
125	WASHER	5	1	GB5-85	163	SCREW	M0X12	2	GB73-86
126	NUT	M6	1	GB41-86	164	REAR PLASTIC COVER OF GAUGE		1	
127	BOLT	M0X20	2	GB5781-86	165	SPRING	B-L.01.01	1	
128	STRAP	J 370	1		166	WASHER	6	1	GB5-85
129	STRAP WHEEL	CB448.00.10	1		167	SCREW	M0X16	1	GB70-85
130	MOTOR	110W/220V/50/60HZ	1		168	SCREW	M0X16	4	GB70-85
131	EVEN KEY	055X20	1	GB1567-79	169	WEIGHT COVER		1	
132	BOLT	M10X20	4	GB5781-86	170	COVER SUPPORT	R000.05.00	1	
133	ELASTIC WASHER	10	4	GB93-87	171	PANEL COVER		1	
134	WASHER	10	4	GB5-85	172	SCREW	M0X12	8	GB73-86
135	SPRING	B-F.01.06	1		173	SCREW	M0X16	4	GB70-85
136	COVER SUPPORT	R000.06.00	1		174	ELASTIC WASHER	6	6	GB93-87
137	NUT	M6	1	GB41-86	175	WASHER	6	4	GB5-85
138	SCREW	M0X5	1	GB70-85	176	TOOL SUPPORT	R000.03.00	2	GB41-86
					177	FIXING PLUG		4	
					178	FEET STAND		1	

NO	NAME	Specification	QTY	NOTE	NO	NAME	Specification	QTY	NOTE
179	SCREW	M0X10	1		220	SPINDLE	B-P.01.01.00	1	
180	FEET STAND CLIP	CB900.00.05	1		221	ELASTIC WASHER	5	4	GB93-87
181	MOISTUREPROOF PAPER		1		222	SCREW	M0X12	4	
182	SCREW	M0X10	1		223	NUT	M8	2	GB41-86
183	ROTATE HANDLE		1		224	ELASTIC WASHER	3	2	GB93-87
184	SCREW	M0X20	2		225	WASHER	3	2	
185	COVER		1		226	ADJUSTING PLANK	B-P.01.13	1	
186	SWITCH		1		227	SCREW	M0X8	2	
187	GAUGE		1		228	PHOTO CELL		1	
188	HANDLE		3		229	NUT	M6	2	GB41-86
189	MAIN BOX		1		230	SUPPORT PLANK	B-P.01.12	1	
190	DISPLAY		1		231	WASHER	10	9	GB5-85
191	VOLTAGE TRANSFER		1		232	ELASTIC WASHER	10	5	GB93-87
192	DATA LABEL		1		233	SCREW	M0X20	4	GB70-85
193	COMPUTER BOARD		1		234	EYE ROD	B-P.01.09.00	1	
194	PANEL		1		235	NUT	M10	4	
195	LABEL		1		236	WASHER	B-P.01.07	4	
196	SCREW		4		237	PISTON ASSEMBLY		2	
197	DISPLAY		1		238	CONNECTING WIRE		1	
BALANCING SPINDLE BREAKDOWN DIAGRAM									
201	SCREW	M0X160	1	GB70-85	239	THREADED ROD	B-P.01.08	1	
202	THREAD ROD	B-P.01.06	1		240	NUT	M10	1	GB41-86
203					241	BOLT	ST2.2X15	4	GB846-86
204	MAIN SPINDLE	B-P.01.02.00	1		242	COVER	B-K.01.10	1	
205					243	SPRING	B-K.01.04	1	
206					244	QUICK NUT PLANK	B-K.01.02	1	
207	FULLEY	B-P.01.02.01	1		245	PLASTIC COVER	B-K.01.01	2	
208	SCREW	M0X10	2	GB71-85	246	NUT	B-K.01.03	1	
209	BEARING COVER	B-P.01.11	1		247	FIN	φ5X35	1	
210	SCREW	M0X16	4	GB70-85	248	FIN	φ5X20	1	
211	BEND PLANK	B-P.01.14	1		249	QUICK NUT BODY	B-K.01.05	1	
212	ELASTIC WASHER	4	4	GB93-87	250	WASHER	B-K.02.02	1	
213	WASHER	4	4		251	COUNT POSITION RUBBER BOX	B-K.02.01	1	
214	SCREW	M0X8	4		252	SPRINGS	B-K.01.06	1	
215	FRAGILE DISC	1	1		A	GAUGE ASSEMBLY	B-K.01.00	1	
216	SEEGER RINGS	25#	1	GB94.1-86	B	BRAKE ASSEMBLY		1	
217	BEARING	6006Z	1		C	MOTOR ASSEMBLY		1	
218	SEEGER RINGS	30#	1	GB94.1-86	D	SWITCH ASSEMBLY		1	
219	BEARING	6006Z	1		E	QUICK NUT ASSEMBLY		1	
					F	SENSOR ASSEMBLY		1	
					G	BALANCING SPINDLE ASSEMBLY		1	



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