

# !WARNING

PLEASE READ THE ENTIRE CONTENTS OF THIS MANUAL PRIOR TO INSTALLATION AND OPERATION. BY PROCEEDING YOU AGREE THAT YOU FULLY UNDERSTAND AND COMPREHEND THE FULL CONTENTS OF THIS MANUAL. FORWARD THIS MANUAL TO ALL OPERATORS. FAILURE TO OPERATE THIS EQUIPMENT AS DIRECTED MAY CAUSE INJURY OR DEATH.

**Rev. G — 11-14-17**

**P/N 5900189**

## INSTALLATION AND OPERATION MANUAL

### MODEL: RB-24T SUPER-DUTY WHEEL BALANCER

FOR BALANCING  
AUTOMOBILE, LIGHT  
& SUPER DUTY  
TRUCK TIRES /  
WHEELS



#### READ FIRST



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

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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**Table of Contents**

**Operator Protective Equipment** . . . . . 2  
**Definition of Hazard Levels** . . . . . 3  
**Owner's Responsibility** . . . . . 3  
**Safety Instructions/Cautions** . . . . . 4

**Before You Begin**  
 Receiving /Unpacking and Set Up . . . . . 5  
 Electrical Requirements . . . . . 5  
 Floor and Space Requirements . . . . . 5  
 Anchoring the Balancer . . . . . 5  
 Standard Accessories . . . . . 6  
 Specifications / Features . . . . . 6

**Installation and Setup**  
 Mounting the Hood . . . . . 6  
 Installing the Threaded Shaft. . . . . 7  
 Initial Start-Up . . . . . 7  
 AUTO HOOD START: Enable / Disable . . . . . 7

**Balancer Overview**  
 Determining the Planes . . . . . 8  
 Control Panel and Display . . . . . 8

**Selecting Weight Positions**  
 FUNCTION Button Operation . . . . . 9  
 GRAM / OUNCE Selection . . . . . 9  
 MM / INCH Selection . . . . . 9

**Mounting Wheels**  
 Front Cone Mounting . . . . . 10  
 Quick Chuck Mounting. . . . . 10

**Balancing Instructions**  
 Inputting Wheel Data . . . . . 11  
 Inputting Wheel Offset . . . . . 11  
 Inputting Wheel Width . . . . . 11  
 Inputting Wheel Diameter . . . . . 12  
 Spin Mode / DYNAMIC, AL1, AL2, AL3, AL4 . . . . . 12  
 Spin Mode / STATIC . . . . . 13  
 Rechecking The Balance . . . . . 13  
 CUT/ STOP BUTTON / Identifying Remaining Weight . . 13  
 After Balance Vibration Problems . . . . . 13

**Maintenance, Calibration and Wheel Lift**  
 Trouble Shooting. . . . . 14  
 Weight Location Verification Test. . . . . 15  
 SELF CALIBRATION Procedure . . . . . 15  
 Resetting PARAMETER SETTINGS . . . . . 16-17  
 Wheel Lift Operating Instructions . . . . . 17  
 Wheel Lift Maintenance . . . . . 17  
 Air Drier / Oiler Maintenance . . . . . 17  
 Error Codes . . . . . 18  
 Parts Breakdown . . . . . 19-25  
 Tire & Wheel Data. . . . . 26-27



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  
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 www.rangerproducts.com



**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.

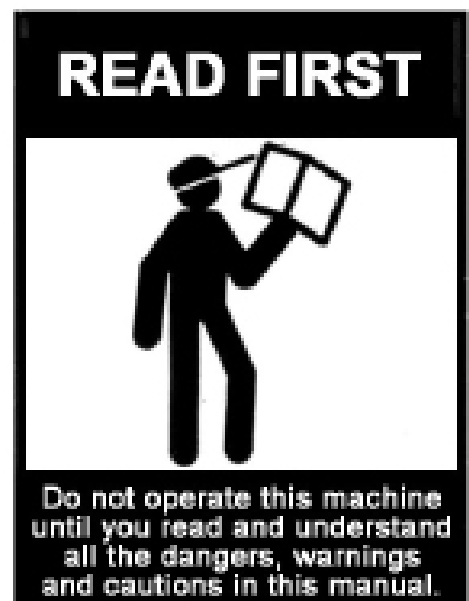
### WARRANTY!

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 BendPak Inc. / Ranger Products be liable for special, consequential or incidental damages for the breach or delay in performance of the warranty. BendPak 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 returns 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

Handling of the machine must be performed only with an appropriate lifting device such as a forklift or pallet jack. Only personnel who are experienced and qualified on material handling procedures should handle any transportation or moving of machine.

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 hoods, accessory boxes and any other components in shipping position.



- Do not use the, 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



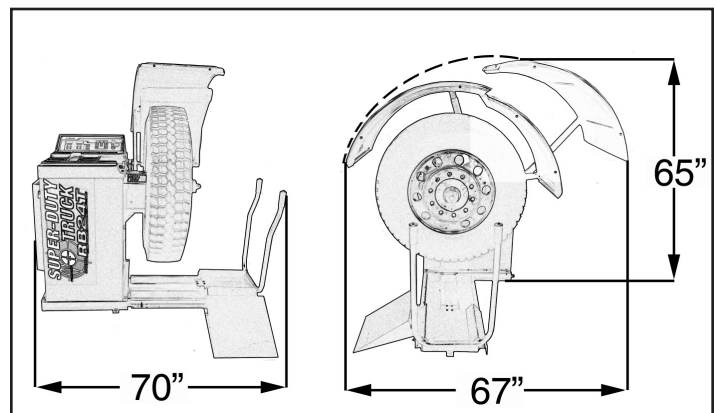
**STANDARD WIRING IS 220 VOLTS 50/60Hz.**

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

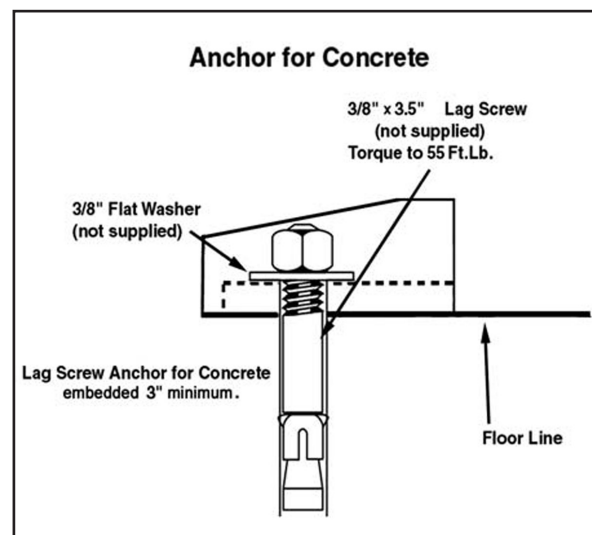
The balancer **MUST** be located on a flat floor of solid construction, preferably concrete. The balancer **MUST** sit solidly on the floor. If the balancer is not level, or is placed on an unstable floor, the balancer will not function properly and will produce inaccurate balance readings. It will **NOT** function properly if operated 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.



### Anchoring the Balancer

The balancer can be bolted to the floor using concrete anchors through the holes in the base.



## Standard Accessories

- Graduated Cone Assortment (hardened, 6-piece)
- Quick Chuck Kit
- Adjustable Flange Plate and Stud Kit
- Wheel Weight Pliers
- Rim Width Caliper
- Wheel Lock Nut
- Calibration Weight
- Hex Head Wrench

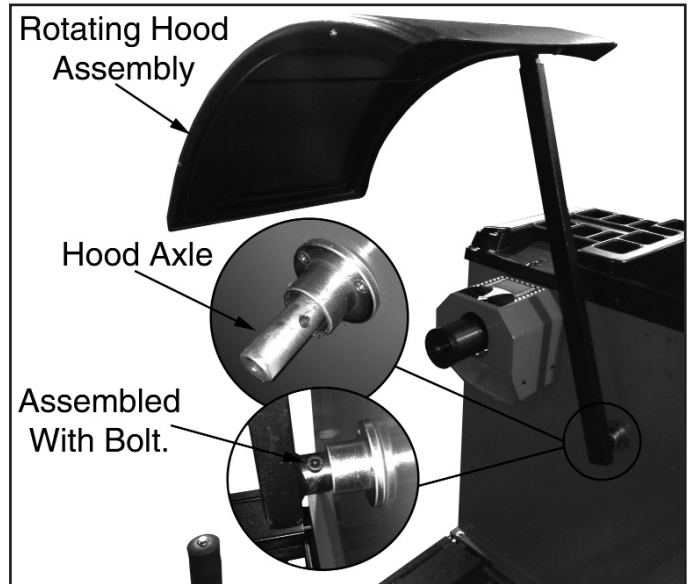


### Technical Data / Features / Specifications

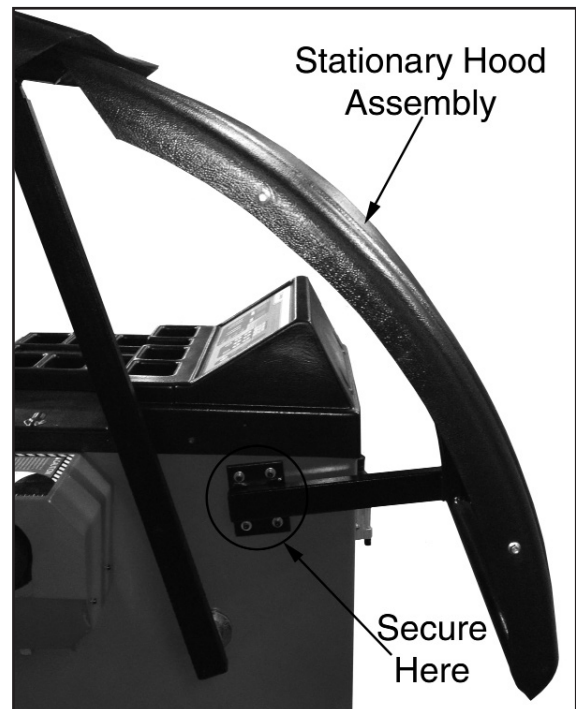
- Power supply voltage: 208-240V 50/60HZ 1Ph.
- Drive motor: 380V 50/60HZ 3Ph.
- Integrated power phase converter: Standard
- Working temperature: -5C / 27F - 50C / 82F
- Drive system: Ribbed nylon fiber-reinforced drive belt
- Cycle time: 7 - 10 seconds (avg.) depending on wheel
- Balancing modes: 1 dynamic / 1 static / 3 alloy
- Top positioning weight locator: standard
- Inside & outside measuring: standard
- Millimeter / inches selection: standard
- Ounce / gram selection: standard
- Self-calibration function: standard
- Auto start when hood is lowered: standard
- Wheel spin braking: electronic pulse / pneumatic brake
- Wheel holding device: standard / pneumatic brake
- Quick chuck kit: standard
- Adjustable flange plate and stud kit: standard
- Multi-piece mounting cone kit: standard
- Shaft size: 40 mm
- Centering cones included: 5 standard / 1 dual tapered cone
- Wheel calipers: standard
- Maximum tire diameter: 50" / 1,270 mm
- Max tire weight: 400 pounds (181 kg)
- Max. wheel diameter: 30" / 762 mm
- Wheel width capacity: 2" - 20" / 51 mm - 508 mm
- Balancing increments: 0.25 or 0.01 oz.
- Balancing speed: 220 rpm
- Accuracy / standard (cars & light truck): +/- 1 gram / .03 oz.
- Accuracy / truck (truck, bus & OTR): +/- 10 gram / .35 oz
- Resolution (round off mode): +/- 7 gram / .25 oz
- Shipping weight: 825 lbs. / 374 kg

## INSTALLATION OF THE HOOD ASSEMBLIES

1. Locate the rotating hood assembly then locate the hood axle sticking out of the right side of the balancer. Place the round tube on the rotating hood assembly over the hood axle making sure to line up the bolt holes on both. Secure in place using the provided M8 x 50 SHCS and hex bolt.

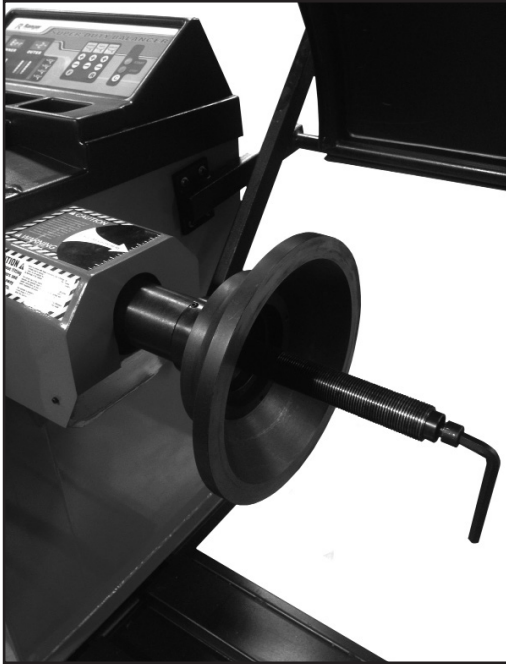


2. After securing the rotating hood assembly place it in the forward / closed position.
3. Locate the stationary hood assembly and bolt it in place behind the rotating hood assembly using the 4 M6 x 20 SHCS, lock washers and flat washers.

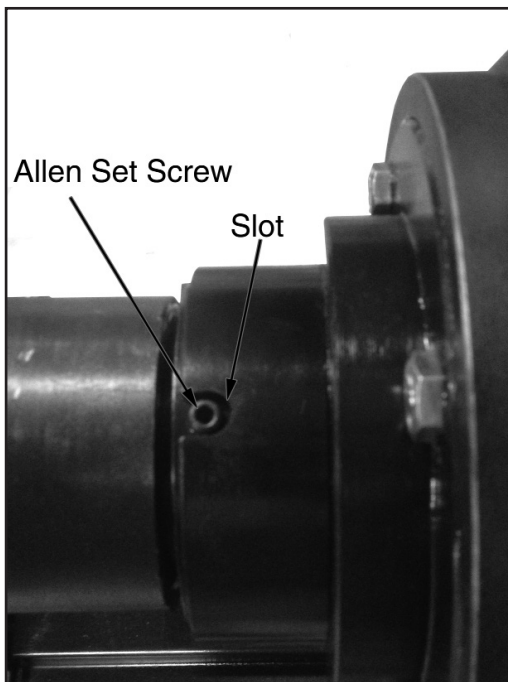


## INSTALLING THE THREADED MAIN SHAFT ( FOR USE WITH THE STANDARD CONE KIT )

1. Locate the Face Plate / Threaded Main Shaft and mounting bolt in the accessory box and install as shown.



2. Locate and align the Allen set screw with the slots on the main face plate.



3. Be sure to tighten the bolt firmly. Push the stop button to engage the pneumatic brake to hold the shaft while tightening the bolt.

## INSTALLING THE QUICK-CHUCK KIT ( IF MAIN SHAFT IS NOT USED )

1. Locate the quick-chuck assembly and mounting bolt in the accessory box and install as shown.



2. Locate and align the Allen set screw with the slots on the quick-chuck assembly as pictured in the previous process.
3. Be sure to tighten the bolt firmly. Push the stop button to engage the pneumatic brake to hold the shaft while tightening the bolt.

## INITIAL START-UP

1. Turn the balancer ON/OFF switch to ON.
2. The LED Display will show USA 611.
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.
4. Now lower the Hood to check the activation of the **AUTO-HOOD START**. The Main shaft should spin when the hood is lowered.
5. To enable/ disable **AUTO HOOD START** feature press and hold the **STOP** Button



## BALANCER OVERVIEW

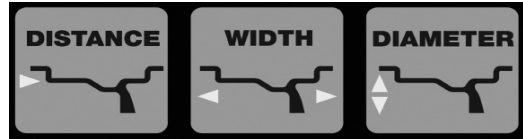
This machine is a two-plane, microprocessor-based computer balancer. Any imbalance in a wheel, either static or dynamic, is detected into two correction planes (the inner and outer) where corrective weights can be applied. Pressing the **F** button selects either **DYNAMIC**, **STATIC**, or **ALLOY** 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 **DISTANCE 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 **WIDTH MEASUREMENT** tells the computer the location of the **OUTER** plane of the wheel for Dynamic and/or Alloy balancing.

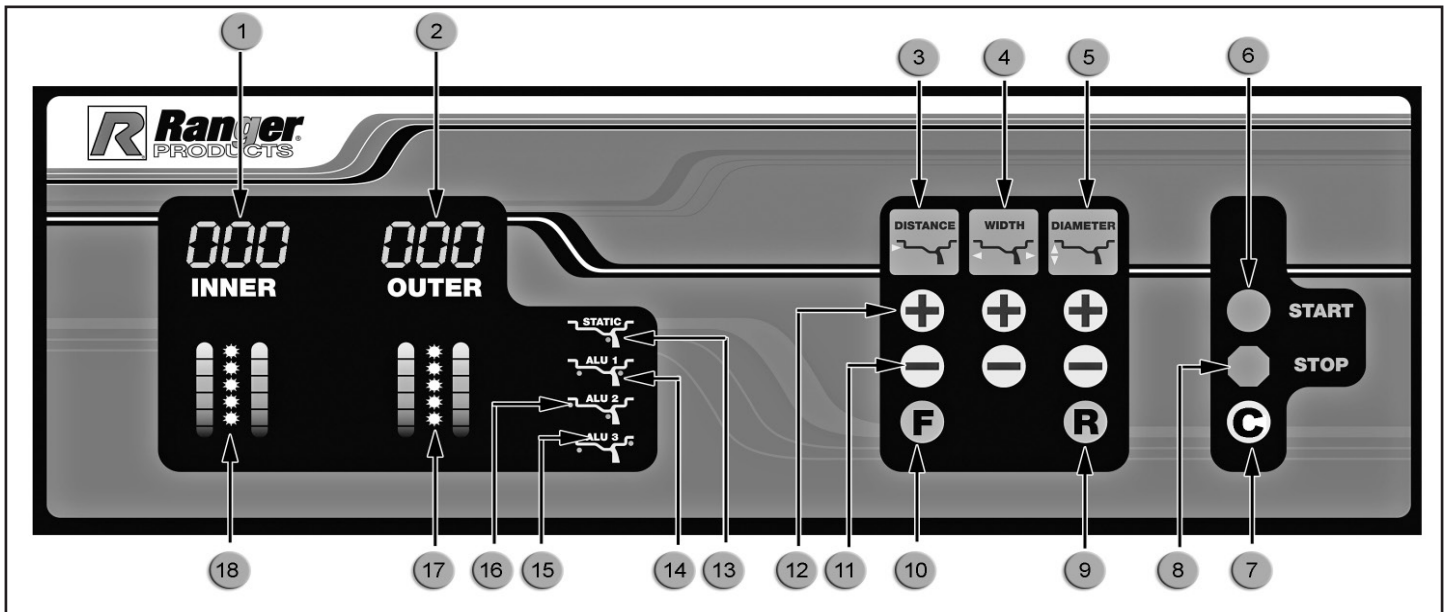
The wheel diameter will be referred as the **DIAMETER MEASUREMENT**. This is the diameter of the wheel at the weight location. You can determine the diameter of the wheel / tire on the tire sidewall to determine the wheel diameter. This tells the computer how far from the center of the hub the weights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

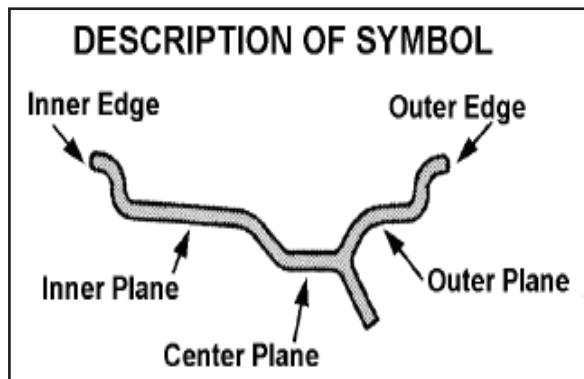
- 1 - Weight reading or information display window. INNER
- 2 - Weight reading or information display window. OUTER
- 3 - Wheel OFFSET setting keys.
- 4 - Rim WIDTH setting keys.
- 5 - Rim DIAMETER setting keys.
- 6 - START button for activating spin cycle.
- 7 - CUT button (C) for identifying remaining weight.
- 8 - STOP Button for stopping spin cycle. / Brake
- 9 - Toggle display. Required Weights / Wheel Data

- 10 - Selector key for DYNAMIC, STATIC and ALLOY settings.
- 11 - Adjustment key for Offset, Width, Diameter. Decrease.
- 12 - Adjustment key for Offset, Width, Diameter. Increase.
- 13 - STATIC mode indicator
- 14 - ALU 1 mode indicator.
- 15 - ALU 3 mode indicator.
- 16 - ALU 2 mode indicator.
- 17 - OUTER weight position indicator LEDs.
- 18 - INNER weight position indicator LEDs.



## 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 **F** button.



### **DYNAMIC** (No Symbol Illuminated)

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

### **Static**

This function is used if weights can only be mounted on a single plane of the wheel.



### **ALU1**

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



### **ALU2**

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



### **ALU3**

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



## GRAM / OUNCE SELECTION

This machine is capable of registering **GRAM** or **OUNCE** readings. To select either **GRAM** or **OUNCE** settings, follow the procedures below.



1. First press and hold the “**STOP**” button.

Then press the Distance  “+” and “-” Button at the same time.

The weight readings will change in the **INNER** and **OUTER** windows to register the applicable setting.

### **NOTE:**


When set to Ounces or Inches the displayed values contains a decimal point.

## MM / INCH SELECTION “L” SETTING / WHEEL WIDTH

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

1. First press and hold the “**STOP**” button.



Then press the **WIDTH**  “+” and “-” Button at the same time. The weight readings will change in the **INNER** and **OUTER** windows to register the applicable setting.

### **NOTE:**


When set to Ounces or Inches the displayed values contains a decimal point.

## MM / INCH SELECTION “dia” SETTING / WHEEL DIAMETER

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

1. First press and hold the “**STOP**” button.



Then press the **DIAMETER**  “+” and “-” Button at the same time. The weight readings will change in the **INNER** and **OUTER** windows to register the applicable setting.

### **NOTE:**

When set to Ounces or Inches the displayed values contains a decimal point.

## MOUNTING WHEELS

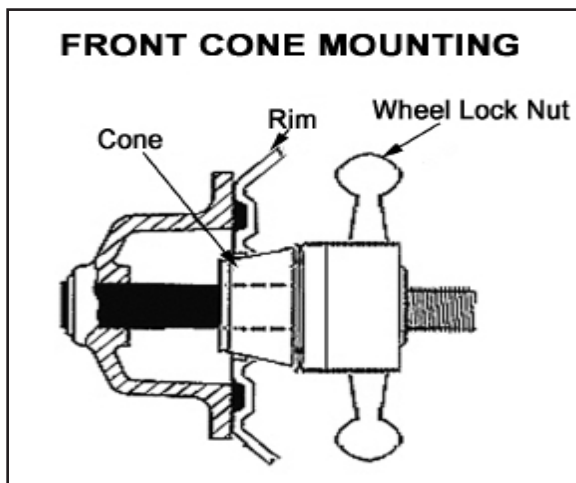
Select the most appropriate mounting method for the wheel you are balancing. Using the proper method ensures secure mounting, accurate displays and safe balancer operation. It also prevents damage to the wheel. On most wheels, the inner side of the wheel hub usually has the most uniform surface for wheel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

### Front Cone Mounting

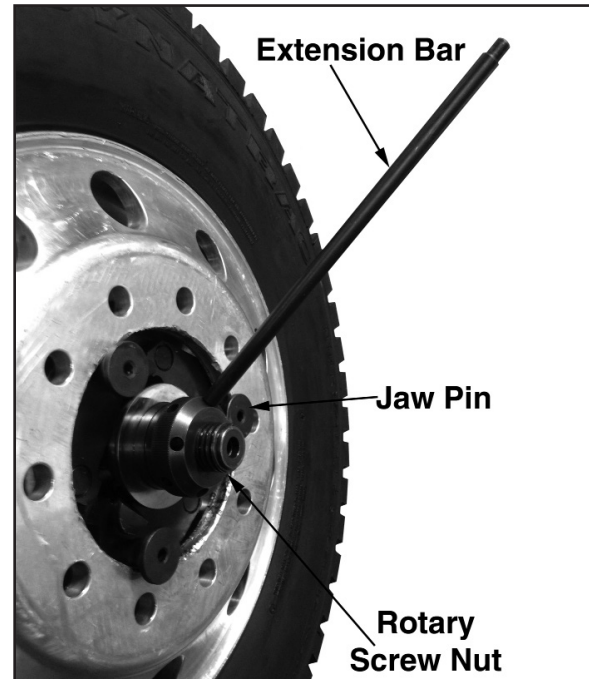
Front Cone Mounting is the most accurate method

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 wheel lock nut onto the arbor. Tighten it securely against the cone.



### Quick Chuck Mounting

1. Mount the wheel over the chuck, making sure that the centering hole of the wheel is resting on the inside of the jaw pin(s).
2. Secure the wheel in place by tightening the rotary screw nut using the extension bar.
3. Verify that you have full contact on the wheel surface of all 3 jaw pins.



## 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, 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 Wheel Lock Nut over the arbor and secure tightly. Never hammer or hit the Wheel Lock Nut to tighten.

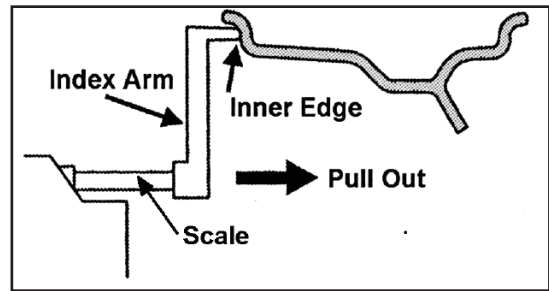


### WARNING!

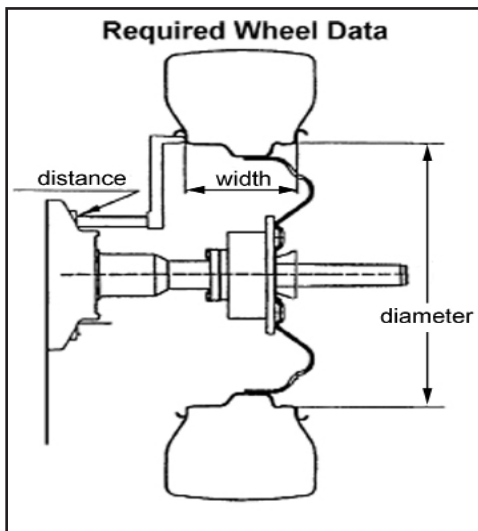
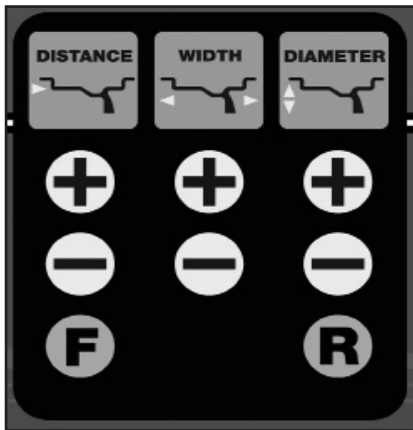
Do not attempt to balance wheels that are larger than the machine was designed for.

## 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**, **"-L-" Width** and **"-d-" Diameter**.





## WHEEL DATA KEY BOARD



### dis - 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.

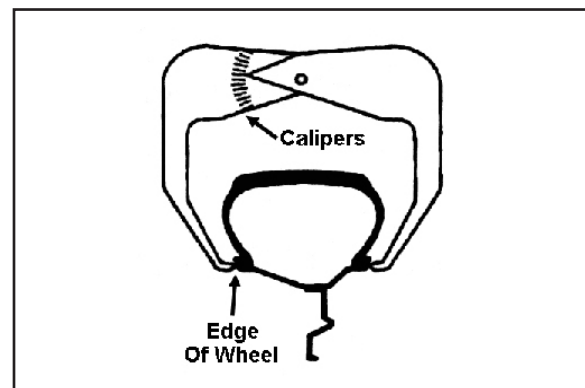
1. Turn the machine on.
2. Press the + or - button below Distance .
3. **-A-** will be displayed in the **INNER** window.
4. Pull the index arm out from the side of the machine until the tip touches the inner edge of the wheel.


5. Read the offset measurement as displayed on the scale directly on top of the index arm. Press the corresponding + - buttons below  to enter the correct data.

### L - 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.

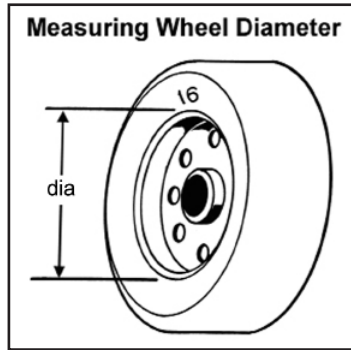



2. Read the measurement for Wheel Width shown on the calipers. (Use the proper scale for Width)
3. Press the + or - button below .
4. **-L-** will be displayed in the **INNER** window.
5. Press the corresponding + - buttons to enter the correct data. **IMPORTANT NOTE:** The standard setting for this 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 9 for changing "L" reading to **MM** or **INCH** setting.)

## “dia” - Wheel Diameter

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

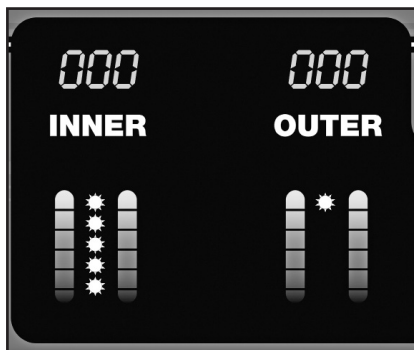
1. Read the diameter of the wheel as shown on the tire sidewall.



2. Press the + or - button adjacent to .
3. **-d-** will be displayed in the **INNER** window.
4. Press the corresponding + - buttons to enter the correct data. (See page 9 for changing “d” reading to **MM** or **INCH** setting.)

## Spin Mode / DYNAMIC, AL1, AL2, AL3, AL4

1. Once the correct wheel data and **FUNCTION** have 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 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** and the pneumatic brake locks. This indicates the position specified by the balancer for the inner weight position.



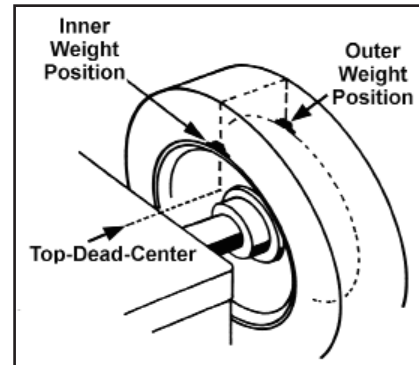
5. Attach the specified weight for the appropriate **PLANE** position at top-dead-center.

### NOTE:

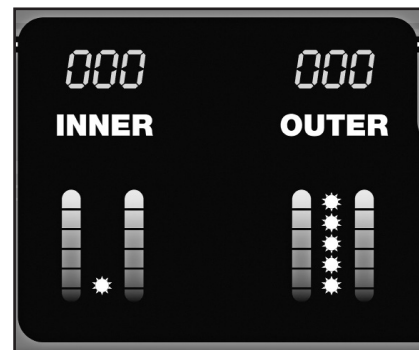
When all lights are fully illuminated the pneumatic brake will automatically engage, press the **STOP** button to disengage the lock.

### 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, press the **STOP** button to disengage the lock then turn the wheel by hand until the weight position indicator lights on the side marked **OUTER** are fully illuminated and the pneumatic brake locks. This indicates the position specified by the balancer for the **OUTER** weight position.



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

### NOTE:

If you are experiencing balancing problems perform the Weight Location Verification Test found on page 17 of this manual. If the balancer fails this test perform the calibration procedures located on the same page.

### NOTE:

It is recommended that the Weight Location Verification Test be performed on a monthly basis.

## Spin Mode / STATIC

This function is used if weights can only be mounted on a single 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 and the pneumatic brake locks. The **OUTER** indicator lights will not illuminate.
5. This indicates the position specified by the balancer for the desired weight location on the chosen **PLANE**.
6. Attach the specified weight on the **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

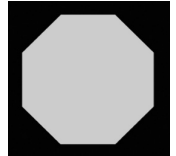
Your balancer is set to read **0 -- 0** if the wheel is balanced within 50 grams on either side. If you wish to see what remainder is left on each side ( less than 50 grams ) press the **CUT** button.



After pressing the **CUT** button, residual weight readings will appear in the display windows.

## STOP BUTTON

The **STOP** button **IS** an emergency stop button. It will immediately shut down the shaft and wheel rotation. For emergency situations that require immediate shutdown of rotation, it is recommended that you use the **STOP** button.



### 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 the manufactures recommended pressure. 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 5 grams 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.

## TROUBLE SHOOTING GUIDE.

Perform the following checks if you are experiencing balancing problems.

### **PROPER INSTALLATION / ASSEMBLY**

Confirm that the balancer is placed on a sturdy level surface. Confirm the location and alignment of the set screw and set screw slot on the Face Plate and Shaft Assembly. (See Page 7.)

### **CALIBRATION**

It is recommended that the Weight Location Verification Test be performed on a monthly basis following the procedure found on the following page.

The calibration should be performed with a standard steel wheel (of a size most often balanced) with minimal wear or damage.

**NOTE: It is good practice to keep a known good tire and rim combination (of a size most often balanced) to use as a calibration / reference tire to assist in any trouble shooting.**

Ensure that the calibration weight used is a 200 gram or 7 oz weight and that is mounted correctly during the calibration procedure.

## WEIGHT LOCATION VERIFICATION TEST

### NOTE:

Before performing the Weight Location Verification Test, make sure the balancer is 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 checked every 30 days.**

### NOTE:

A standard steel wheel (of a size most often balanced) and tire balanced to within 5 grams on either inner or outer with minimal wear or damage to the tire or wheel is required for this procedure.

1. Balance an average size tire and wheel to “00”—“00”
2. With the correct parameters DIST, DIA, and WIDTH programmed into the balancer add a 200 gram wheel weight to the outer edge of the wheel.
3. Press the Start button (close Hood). Wheel will spin and stop.
4. The balancer should call for 200 grams on the outer indicator and “00” on the inner indicator.
5. Rotate the wheel until all the LEDs on the outer indicator are lit.
6. The 200 gram wheel weight should be at 6(o clock) Bottom Dead Center.
7. Remove the 200 gram wheel weight from the outer edge of the wheel.
8. Install the 200 gram wheel weight on the inner edge of the wheel.
9. Press the Start button. Wheel will spin and stop.
10. The balancer should call for 200 grams on the inner indicator and “00” on the outer indicator.
11. Rotate the wheel until all the LEDs are lit on the inner indicator are lit.

The 200 gram wheel weight should be at (6 o'clock) Bottom Dead Center.

If the location is not at Bottom Dead Center (6 o'clock), please contact the Ranger Products Customer Service Department.

BendPak Inc. / Ranger Products  
1645 Lemonwood Dr.,  
Santa Paula, CA. 93060  
1-805-933-9970  
1-800-253-2363  
www.rangerproducts.com

## SELF-CALIBRATION PROCEDURE

1. Turn on the power. The display will show USA 613.
2. A standard steel wheel (of a size most often balanced) with minimal wear or damage is required for this procedure.
3. Following all standard operator warnings, select the type of adapter most often used that will accurately fit the center hole or lug pattern of the wheel.
4. Roll wheel onto lifting platform then raise platform until adequate height is reached for safe positioning of the wheel.
5. Place wheel onto arbor then position firmly against hub plate. Tighten hub adapter nut to secure wheel.
6. Press “F” button to set balancer to dynamic mode (Static, ALU 1, ALU 2 and ALU 3 will not be lit)
7. Enter correct wheel data (distance, width, diameter).
8. Press and hold “R” and “START” buttons until LED displays “CAL-CAL” and indicator lights stop flashing.
9. Lower hood then press “START” to begin calibration procedure.
10. The wheel will spin briefly, then stop – “ADD 200” will be displayed if Grams is selected. NOTE: If Ounces is selected, “ADD 7.00” will be displayed.
11. Rotate the wheel until all LEDs under INNER are lit, then place one 200 Gram weight (included with balancer) on the **inner** edge of the wheel at Top Dead Center (12 o'clock).
12. Close the hood, then press START. The wheel will spin and stop.
13. Rotate the wheel until all LEDs under OUTER are lit, then move the 200 Gram weight from the inner edge to the **outer** edge of the wheel at Top Dead Center (12 o'clock).
14. Close the hood, then press START. The wheel will spin and stop.
15. “END-CAL” displays. The calibration procedure is complete.

### NOTE:

It is a good idea to keep the known good “calibration tire” set up for the monthly calibration procedure.

## **WHEEL LIFT OPERATING INSTRUCTIONS**

### **CAUTION!**

Keep hands or feet away from the hinge mechanism of the tire lift.

1. With the lift lowered to the lowest position. Move the slide assembly towards the control arms.
2. Roll the tire onto the lift.
3. Raise the tire to the desired height using the raising valve located on top of the right control arm.
4. Slide the slide assembly towards the balancer and mount the tire as needed.
5. Lower the lift using the lowering valve located on top of the left control arm, out of the way of any moving parts on the balancer before operating.

## **WHEEL LIFT MAINTENANCE**

### **WARNING:**

Before carrying out any maintenance operations, make sure there are no wheels loaded on the lift and that air supply to the machine has been disconnected.

### **CLEANING**

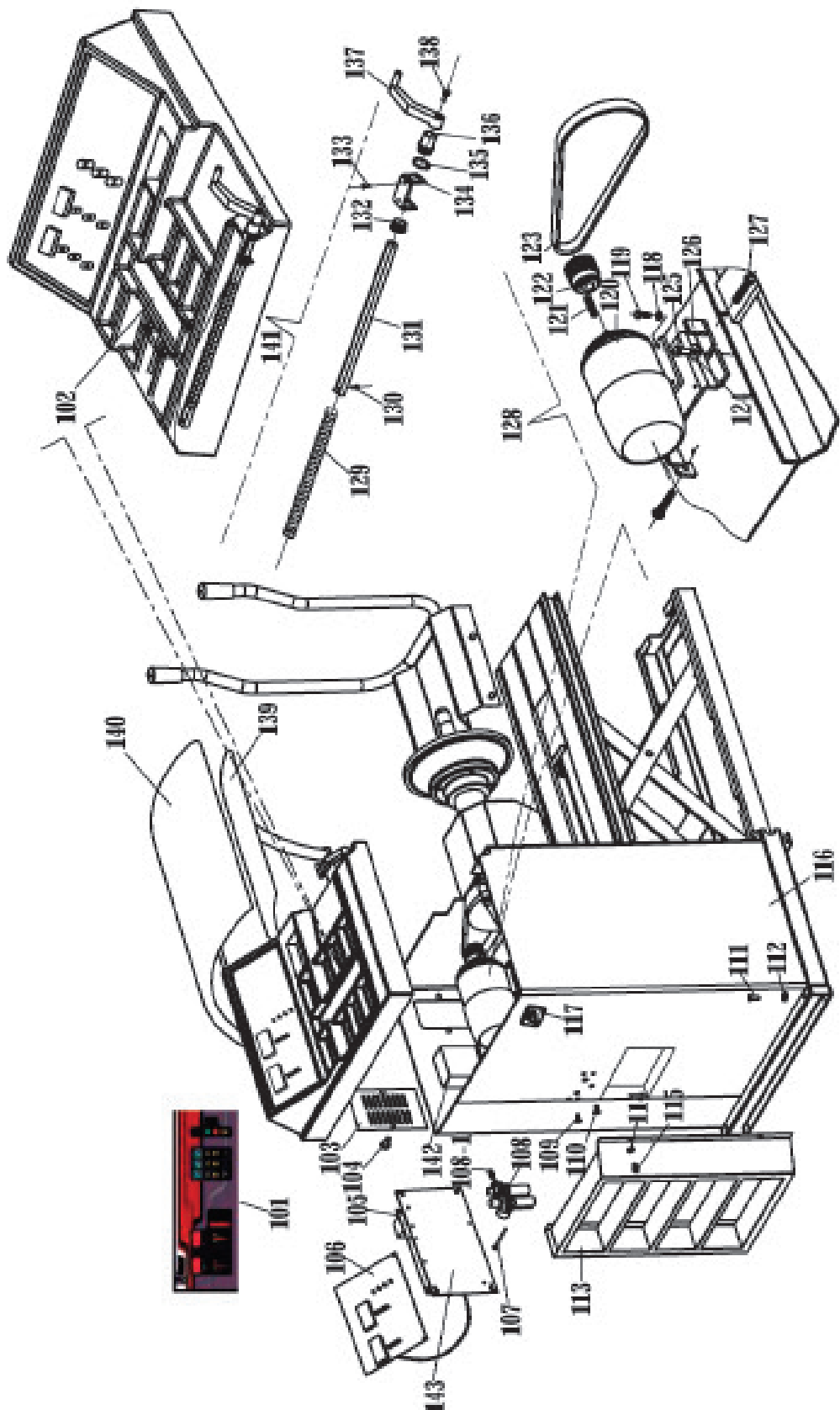
1. Keep the tire lift clean and free of debris and dirt.
2. All exposed machine surfaces of the tire lift should be brushed clean and wiped with wd-40 or equivalent.
3. The tire lift should always be stored with the wheel lift assembly in the fully lowered position.

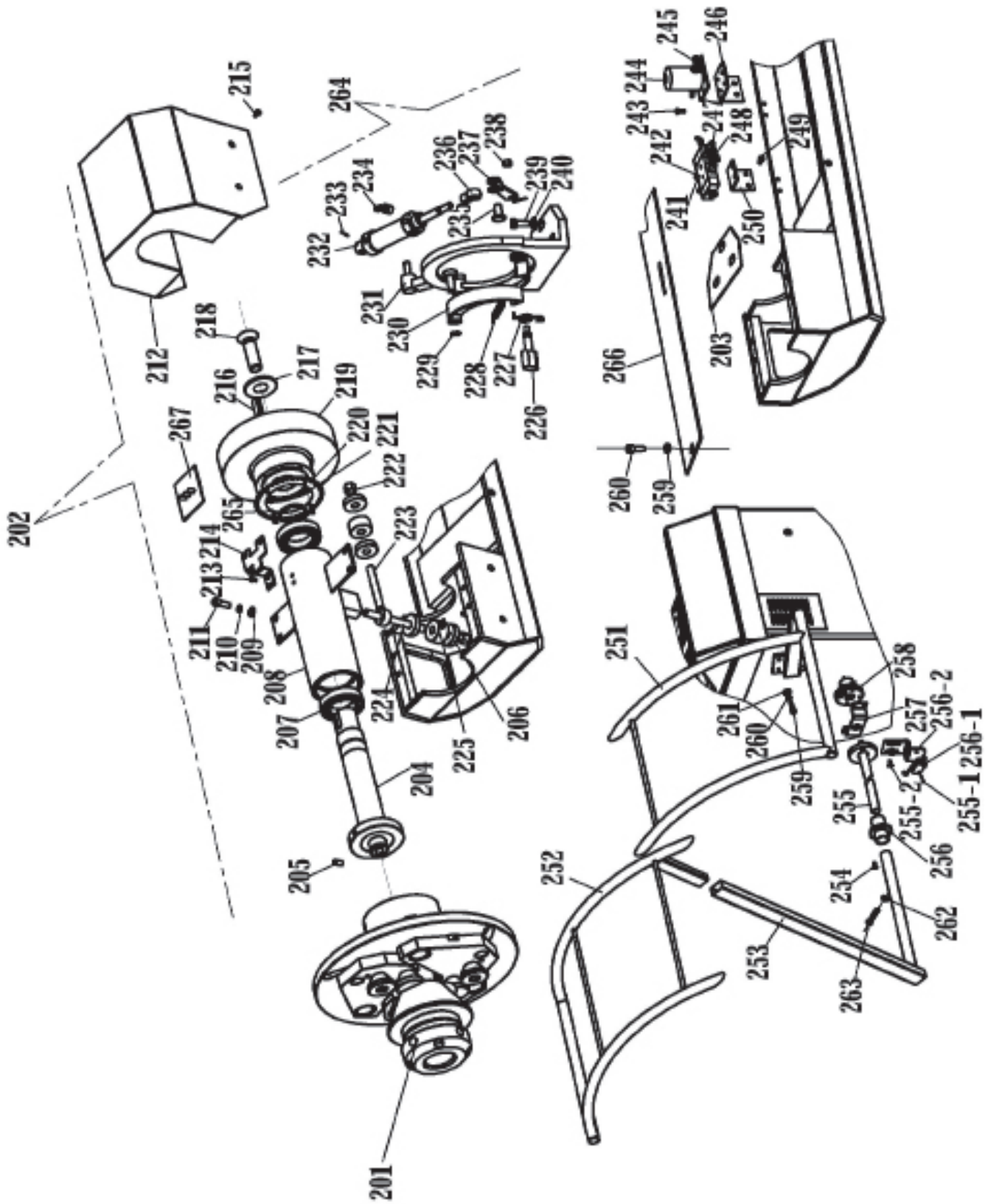
## **AIR DRIER / OILER MAINTENANCE**

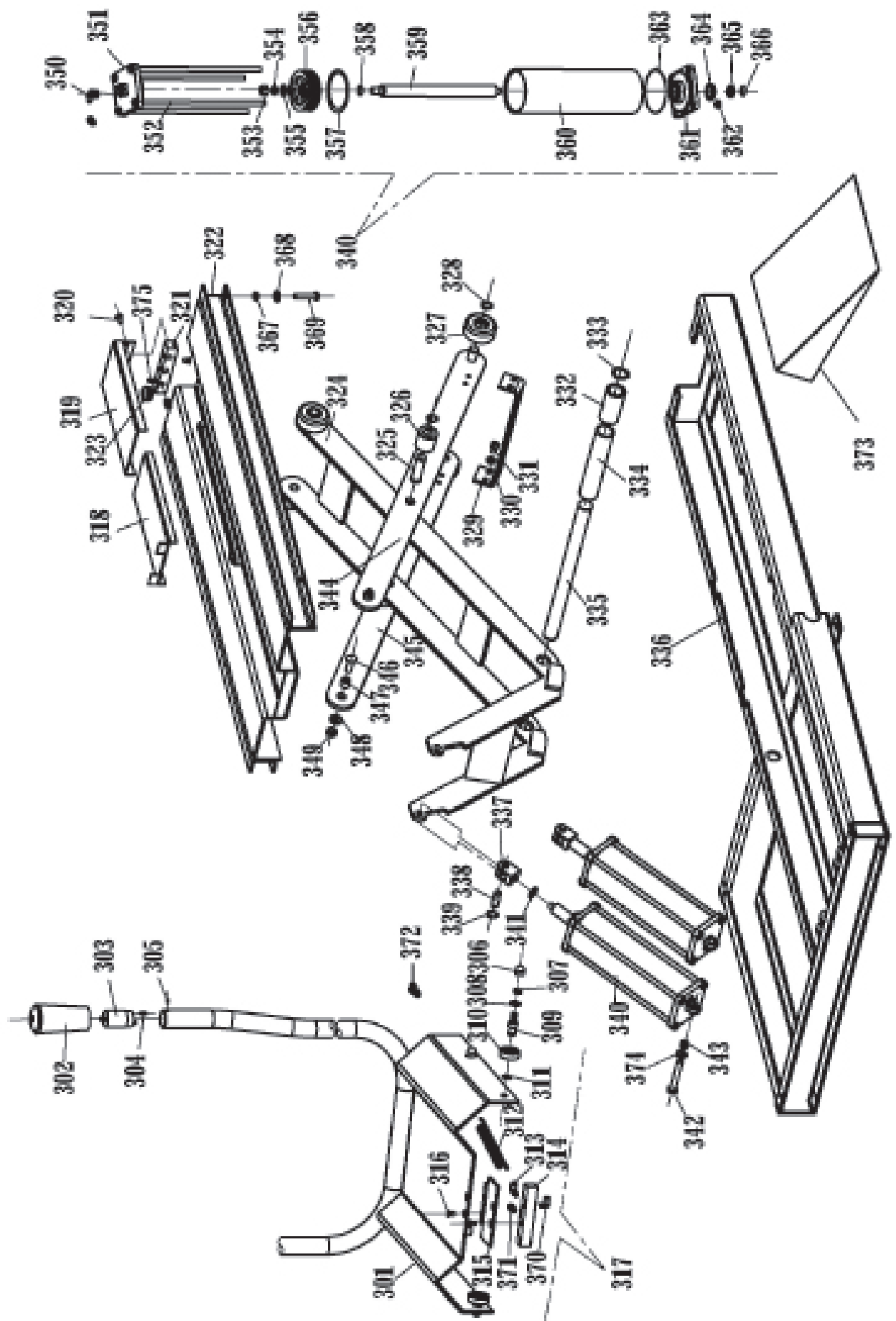
1. Observe the sight bowl on the water separator / filter unit.
2. If water is observed, drain by pulling down on the drain plug located on the bottom of the reservoir.
3. Disconnect the air supply to the machine.
4. Add oil to the lubricator if the fluid level is below the half way point of the oiler bowl.
5. Reconnect the air supply when service is complete.
6. With the air source connected, operate the lift up.
7. Observe the sight glass and adjust the oil flow by turning the adjustment screw so that 2-3 drops of oil drip through the sight glass for each complete up operation of the lift.

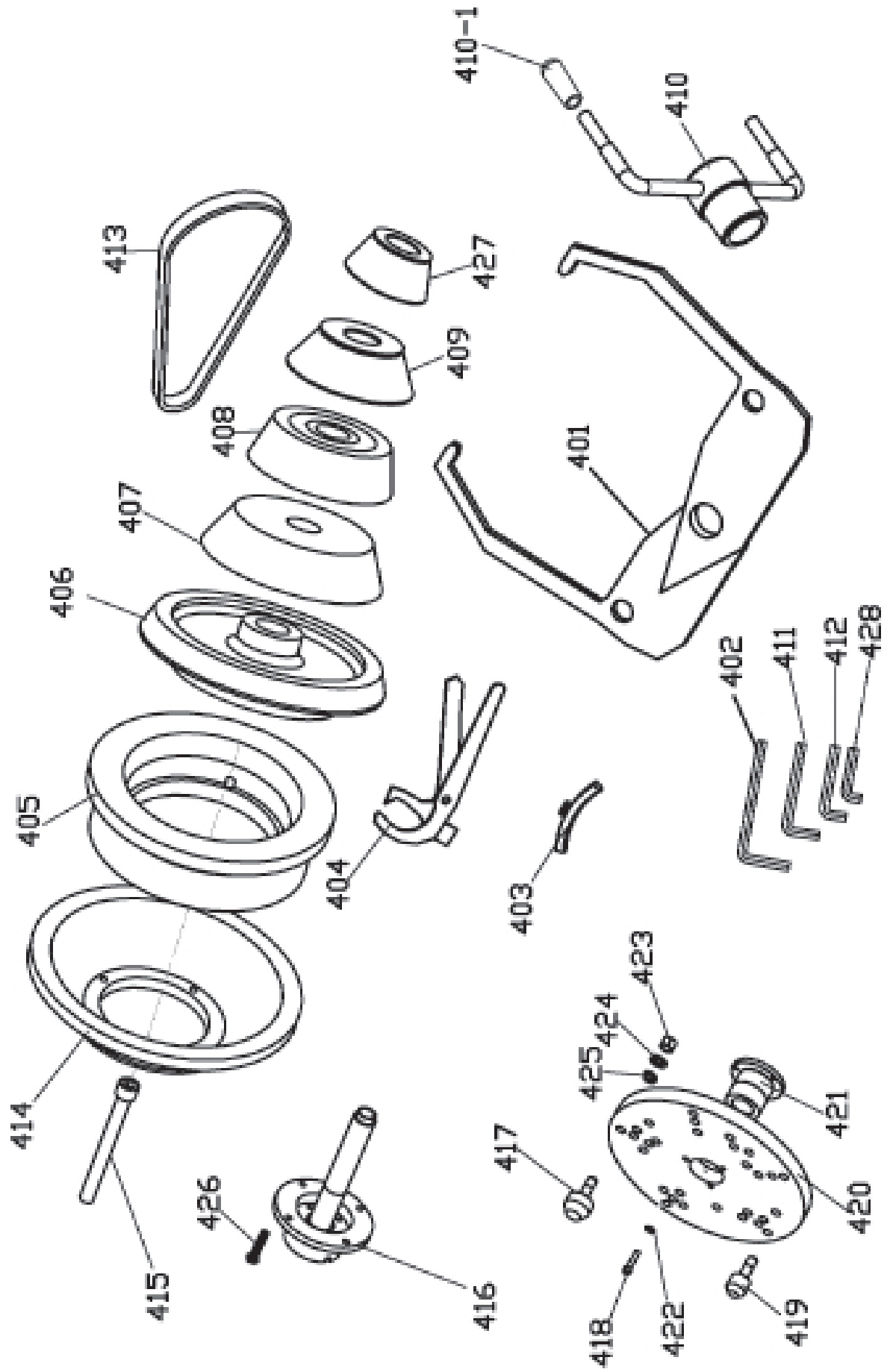


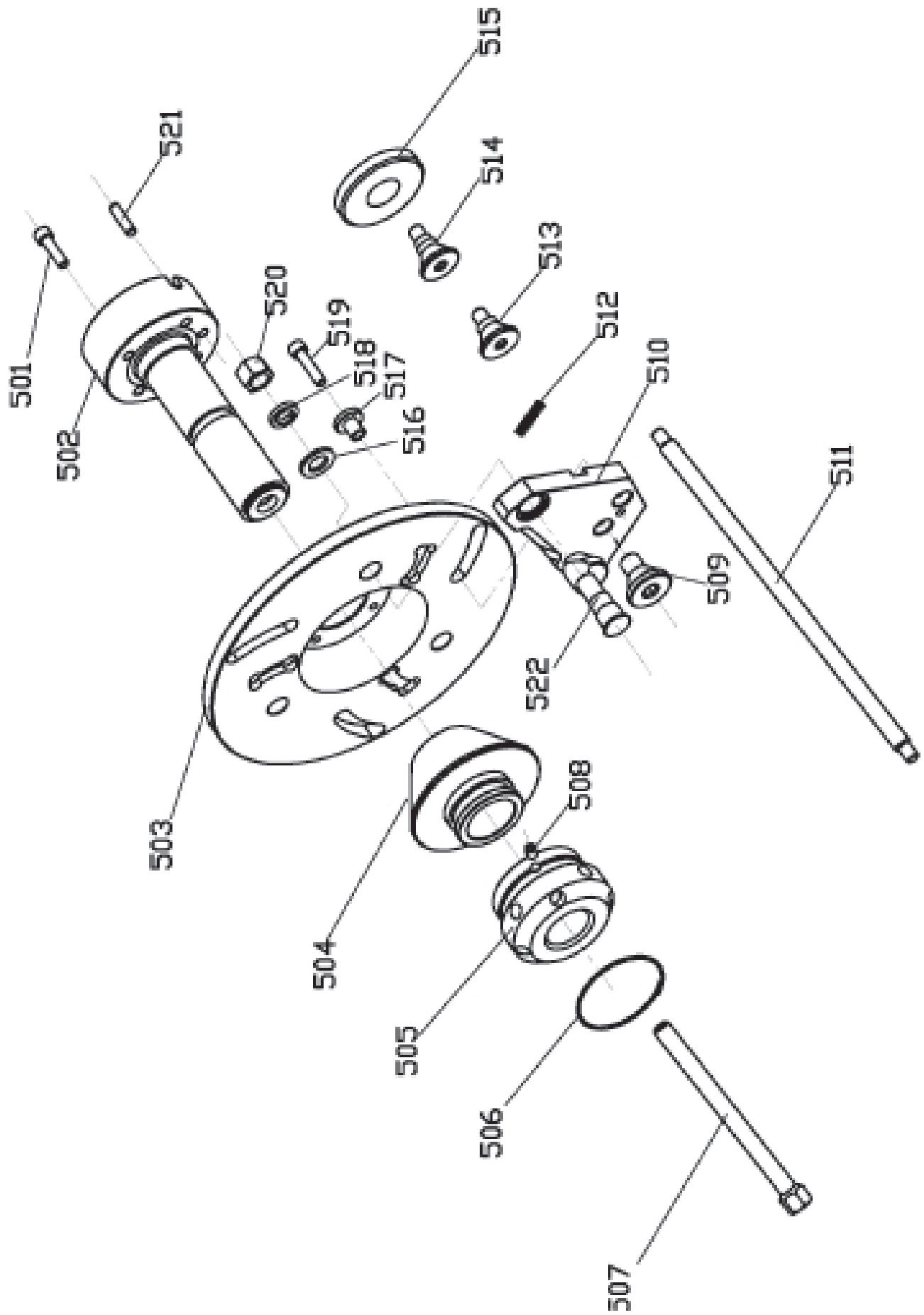
Err. -1-	1. Balancer Shaft Does Not Rotate.	<ol style="list-style-type: none"> <li>1. Check the electrical connection.</li> <li>2. Replace the Power board.</li> <li>3. Replace the Electrical Motor.</li> <li>4. Replace the power supply.</li> </ol>
Err. -2-	<ol style="list-style-type: none"> <li>1. A wheel is not installed on the balancer.</li> <li>2. A wheel is installed on the balancer but there is no tire.</li> <li>3. The wheel lock nut is not tight and/or the wheel is not correctly installed on the balancer.</li> <li>4. The Electrical Motor belt tension is not correct.</li> </ol>	<ol style="list-style-type: none"> <li>1. Install a wheel on the balancer.</li> <li>2. Install a tire on the wheel.</li> <li>3. Remove the tire from the balancer and re-mount it correctly.</li> <li>4. Adjust the belt tension for the Electrical Motor.</li> </ol>
Err. -3-	1. The wheel/tire combination has to large of an unbalance.	<ol style="list-style-type: none"> <li>1. Reposition the Tire on the Wheel to reduce the unbalance.</li> <li>2. Use a different Tire and/or Wheel.</li> <li>3. Redo the calibration procedure.</li> </ol>
Err. -4-	<ol style="list-style-type: none"> <li>1. The wheel is rotating counter clockwise.</li> <li>2. The wheel is rotating clockwise and the Encoder Board is malfunctioning.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the electrical connections for the Electrical Motor.</li> <li>2. Adjust and/or Replace the Encoder Board.</li> </ol>
Err. -5-	1. The protective Hood is Open.	<ol style="list-style-type: none"> <li>1. Close the protective Hood.</li> </ol>
Err. -6-	NA	NA
Err. -7-	1. The Computer/Display board memory was cleared.	<ol style="list-style-type: none"> <li>1. Check that the parameter setting match the sticker located inside the balancer and redo the factory calibration.</li> </ol>
Err. -8-	<ol style="list-style-type: none"> <li>1. 200g weight was not attached during the calibration procedure.</li> <li>2. The piezo sensor(s) wires are disconnected or it is malfunctioning.</li> <li>3. Computer/Display board malfunction.</li> </ol>	<ol style="list-style-type: none"> <li>1. Do the calibration procedure and attach the 200g weight during the correct step.</li> <li>2. Check the electrical connections for the piezo sensor(s).</li> <li>3. Replace the Computer/Display board.</li> <li>4. Contact Ranger Products.</li> </ol>
Failed Calibration Check	<ol style="list-style-type: none"> <li>1. The wheel used for calibration was too large.</li> <li>2. The wheel used for calibration had too large of an unbalance.</li> <li>3. The wheel data was not entered correctly.</li> <li>4. The SFA (Location) parameter setting is not correct.</li> </ol>	<ol style="list-style-type: none"> <li>1. Use a balanced standard steel wheel (of a size most often balanced) and redo the calibration procedure.</li> <li>2. Check the wheel information is entered correctly for the tire you are using for calibration.</li> <li>3. Contact Ranger Products for instruction to modify the SFA (Location) parameter.</li> </ol>
No Display	<ol style="list-style-type: none"> <li>1. The balancer is turned off.</li> <li>2. The balancer has no power going to it.</li> <li>3. The Computer/Display board is defective</li> </ol>	<ol style="list-style-type: none"> <li>1. Check that the balancer is turned on.</li> <li>2. Check that the your balancer is connected to a live electrical source.</li> <li>3. Replace the Computer/Display board.</li> </ol>
No Weight Information Displayed	<ol style="list-style-type: none"> <li>1. The piezo sensor(s) wires are disconnected or it is malfunctioning.</li> <li>2. The Computer/Display board has lost the parameter settings.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the electrical connections for the piezo sensor(s).</li> <li>2. Check that the parameter setting match the sticker located inside the balancer edit them if necessary.</li> </ol>











DRW. #	DESCRIPTION	QTY.	DRW. #	DESCRIPTION	QTY.
101	Membrane Switch; RB24T	1	206	Pizo Sensor Pad	6
102	Weight Tray; RB24T	1	207	Bearing; 6009	2
103	Radiating Cover; RB24T	1	208	Spindle Bushing Weldment; RB24T	1
104	Self drilling screw ST5.5X25	2	209	Washer; 8mm; Flat	4
105	Power Board(220V); RB24T	1	210	Washer; 8mm splick lock	4
106	Computer Board: RB24T	1	211	SHCS M8x20	4
107	Cross recessed pan head screw M4X50	2	212	Threaded Shaft Plastic Cover; RB24T	1
108	Air/Oil Regulator Assy; RB24T	1	213	SHCS M5X10	4
108-1	Quick Union;NPT G1/8"	1	214	Encoder Bracket; RB24T	1
109	Cross recessed countersunk head screw M6X12	3	215	SHCS M5X10	2
110	Cross recessed countersunk head screw M5X12	4	216	Spindle Key; 12X8X35; RB24T	1
111	HHB M8x25 (All thread)	4	217	Big Motor Pulley Gland; RB24T	1
112	Washer; 8mm; Flat	4	218	Hex countersunk head screw M16X25	1
113	Side Chassis; RB24T	1	219	Big Motor Pulley; RB24T	1
114	HHB M8X16	4	220	Tooth 32T; DST2420/RB24T	1
115	Washer; 8mm; Flat	4	221	SHCS M4X12	4
116	Chassis Body; RB24T	1	222	Nut M12	2
117	Directional Switch 220V/40A	1	223	Pizo Horizontal Shaft; RB24T	1
118	Washer; 8mm; Flat	4	224	Pizo Vertical Shaft: RB24T	1
119	HHB M8x20 (All thread)	4	225	Pizo Sensor; RB24T	2
120	Motor; RB24T	1	226	Brake Cam; RB24T	1
121	Motor Pully Key;8X7X32; RB24T	1	227	Brake Torsion Spring; RB24T	1
122	Moter Pully; RB24T	1	228	Brake Return Spring; RB24T	1
123	Motor Belt	1	229	Snap Ring 12mm	2
124	Washer; 10mm Flat	3	230	Brake Hub	2
125	HHB M10X20 (All thread)	3	231	Brake Connect Plate Weldment; RB24T	1
126	Motor Basement; RB24T	1	232	Brake Cylinder	1
127	HHB M12x45 (All thread)	2	233	Cotter pin; 2x25	2
128	Motor Assy; RB24T	1	234	Fitting; $\phi 4$ -G1/8" 90° CTF	4
129	Distance Arm Spring; RB24T	1	235	Brake Pivot Pin; RB24T	1
130	Cross recessed socket head screw M4X30	1	236	Brake Connect Pivot; RB24T	1
131	Distance Arm Rod; DST2420/RB24T	1	237	Brake Connect Lever; RB24T	1
132	Distance Arm Small Sleeve	1	238	Nut M8	1
133	Cross recessed countersunk head screw M5X10	2	239	HHB M10X35 (All thread)	3
134	Internal Gauge Bracket Weldment; RB24T	1	240	Washer; 10mm Flat	3
135	Snap Ring 25mm	2	241	Slide Plate Air Control Valve	1
136	Distance Arm Large Sleeve; DST2420/RB24T	1	242	Fitting; $\phi 4$ -G1/4" Straight CTF	2
137	Distance Arm Head; DST2420/RB24T	1	243	SHCS M5X10	4
138	SHCS M6X8	1	244	Lifter Solenoid; RB24T	1
139	Lower Wheel Hood	1	245	Fitting; $\phi 4$ -G1/8" TEE CTF	2
140	Upper Wheel Hood	1	246	Relay Basement; RB24T	1
141	Internal Gauge Assy; RB24T	1	247	Brass Silencer G1/8"	2
142	220 1ph to 380 3ph power supply; RB24T	1	248	Fitting M4X1/8 Tee	1
143	Power Board Bracket	1	249	Cross recessed pan head screw M4X16	4
201	Three Jaw Clamp; RB24T	1	250	Lifter Air Valve Bracket; RB24T	1
202	Spindle Bushing Assy; RB24T	1	251	Lower Hood Bracket; RB24T	1
203	Brake Connect Plate Pad; RB24T	1	252	Upper Hood Bracket; RB24T	1
204	Threaded Shaft; RB24T	1	253	Hood Bracket; RB24T	1
205	Hexagon socket flat set screw M6X12	2	254	Cross recessed countersunk head screw M6X12	3

DRW. #	DESCRIPTION	QTY.	DRW. #	DESCRIPTION	QTY.
255	Hood Connect Shaft;RB24T	1	333	Snap Ring 25mm	2
255-1	SHCS M6X25	2	334	Lifter Shaft Sleeve; RB24T	1
255-2	Cross recessed countersunk head screw M6X10	2	335	Lifter Shaft; RB24T	1
256	Hood Connect Bushing; RB24T	1	336	Slide Plate Weldment; RB24T	1
256-1	Hood Switch;RB24T	1	337	Lifter Cylinder Connecting Head; RB24T	2
256-2	Swith Bracket; RB24T	1	338	Lifter Cylinder Connecting Head Shaft; RB24T	2
257	Hood Connect Bent Plate; RB24T	1	339	Lifter Cylinder Adjusting Pad1; RB24T	2
258	Hood Position Limit Plate; RB24T	1	340	Lifter Cylinder Assy; RB24T	2
259	SHCS M6X8	4	341	Washer; 10mm Flat	2
260	Washer; 6mm Splick lock	4	342	SHCS M10X50	2
261	Washer; Ø6 Flat	4	343	Nut M10	2
262	Nut M8	1	344	Lifter Sub-bracket (Left); RB24T	1
263	SHCS M8X50	1	345	Lifter Sub-bracket (Right); RB24T	1
264	Brake Assy; RB24T	1	346	Lifter Bracket Connecting Bolt; RB24T	2
265	Snap Ring 45mm	6	347	Lifter Bracket Bushing; RB24T	2
266	Slide Plate (long) ; RB24T	1	348	Washer; 10mm Flat	2
267	Encoder Board; RB24T	1	349	Nut M10	2
301	Lifter Plate Weldment; RB24T	1	350	Banjo bolt M4X1/8 Single	4
302	Lifter Handle Bushing	2	351	Lifter Cylinder Lower Flange Cover;RB24T	2
303	Lifter Control Valve; RB24T	2	352	Lifter Cylinder Connecting Bolt; RB24T	4
304	FITTING;M4XM5 THREADED;RB24T	4	353	Nut M10	2
305	Hexagon socket taper set screw M4X4	4	354	Washer; 10mm splick lock	2
306	Cap Nut M10	4	355	Washer; 10mm Flat	2
307	Washer; 10mm splick lock	4	356	Lifter Cyinder Piston;RB24T	2
308	Washer; 10mm Flat	4	357	O Ring; Φ15X5.7	2
309	Lifter Pivot Pin; RB24T	4	358	O Ring; Φ16X2.4	2
310	Bearing; 6301	4	359	Lifter Cylinder Piston Lever; RB24T	2
311	Snap Ring 12mm	8	360	Lifter Cylinder Body; RB24T	2
312	Coiled Hose; 4mm AIR	3	361	Lifter Cylinder Upper Flange Cover;RB24T	1
313	Quick Union; M5-φ4 90° CTF	2	362	Nut M8	8
314	Lifter Gas Distributer 2; RB24T	1	363	O Ring; Φ75X2.65	2
315	Lifter Front Cover; RB24T	1	364	Y Ring; 30X20X6	2
316	Cross recessed countersunk head screw M6X10	6	365	Lifter Cylinder Wear Strip; 35X4X2	2
317	Lifter Slide Control Assy; RB24T	1	366	O Ring; Φ25X3.1	2
318	Lifter Upper Plate Active Cover; RB24T	1	367	Nut M8	4
319	Lifter Upper Plate Fixed Cover; RB24T	1	368	Washer; 8mm; Flat	4
320	Cross recessed pan head screw M6X14	2	369	HHB M8×25 (All thread)	4
321	Lifter Gas Distributer 1; RB24T	1	370	FITTING; G1/8" φ4 CTF	3
322	Lifter Upper Plate; RB24T	1	371	FITTING;M5-φ4 Staight;S10	7
323	Cable Holder φ16	1	372	FITTING; M4 T	3
324	Lifter Bracket; RB24T	1	373	Lifter Footboard; RB24T	1
325	Lifter Brackets Cross Connecting Shaft; RB24T	2	374	Washer; 10mm Flat	1
326	Lifter Brackets Cross Connecting Bushing; RB24T	2	375	Block G1/8	3
327	Slide Roller; RB24T	4	401	Wheel Width Caliper;	1
328	Snap Ring 16mm	6	402	Allen Wrench; 6mm	1
329	Lifter Sub-bracket Connecting Bracket; RB24T	1	403	Calibration Weight (200g)	1
330	Washer; Ø6 Flat	4	404	Weight Pliers	1
331	SHCS M6X16	4	405	Spacer Ring #2 ; RB24T	1
332	Lifter Bottom Bracket Location Bushing; RB24T	2	406	Truck Spacer Cone (40mm); RB24T	1



DRW. #	DESCRIPTION	QTY.
407	165-215mm CONE; RB24T(40mm)	1
408	140-171mm CONE; RB24T(40mm)	1
409	98-150mm CONE; RB24T(40mm)	1
410	Wheel Lock Kit Weldment;RB24T	1
410-1	Lock Kit Bushing	2
411	Allen Wrench;10mm	1
412	Allen Wrench;6mm	1
413	Motor Belt	1
414	Spacer Ring #1 ; RB24T	1
415	SHCS M16X280	1
416	Thread Shaft/Spindle	1
417	Position shaft	4
418	SHCS M8X40	3
419	Position shaft 2	5
420	Position plate 3	1
421	Plate core	1
422	Washer; $\phi$ 8 flat	3
423	Nut M16	9
424	Washer; $\phi$ 16 flat	9
425	Washer; $\phi$ 16 Spring	9
426	HHB M10X30	4
427	72-102mm CONE; RB24T(40mm)	1
428	Allen Wrench;5mm	1
501	SHCS M8X30	4
502	Jaw Chuck Shaft; RB24T	1
503	Jaw Chuck Plate; RB24T	1
504	Jaw Chuck Cone; RB24T	1
505	Jaw Chuck Rotary Screw Nut; RB24T	1
506	Jaw Chuck Steel Ring; RB24T	1
507	Jaw Chuck Locking Bolt; RB24T	1
508	Jaw Chruck Shaft Pin Plug; RB24T	2
509	Three Jaw Chuck Active Pin 1; RB24T	3
510	Three Jaw Chuck; RB24T	3
511	Jaw Chuck Extension Bar; RB24T	1
512	Three Jaw Chuck Spring; RB24T	3
513	Three Jaw Chuck Active Pin 2; RB24T	3
514	Three Jaw Chuck Active Pin 3; RB24T	3
515	Three Jaw Chuck Pad; RB24T	3
516	Washer; 16mm Flat	3
517	Three Jaw Chuck Slide Bushing;RB24T	3
518	Washer; 16mm splick lock	3
519	SHCS M8X35	3
520	Nut M16	3
521	Jaw Chruck Shaft Pin; RB24T	1
522	Three Jaw Chuck Rotary Shaft; RB24T	3







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