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Wheel Balancers

Installation and Operation Manual

Manual P/N 5900192 — Manual Revision F — March 2021

Models:

- DST-64T
- DST642D

DST-64T shown.

Designed and engineered in Southern California, USA. Made in China.

DANGER

Read the *entire* contents of this manual ***before*** using this product. Failure to follow the instructions and safety precautions can result in serious injury or death. Make sure all operators read this manual. Keep the manual near the product for future reference. ***By proceeding with installation and operation, you agree that you fully understand the contents of this manual and assume full responsibility for product use.***

Manual. DST-64T and DST642D Wheel Balancers, *Installation and Operation Manual*, Manual P/N 5900192, Manual Revision F, released March 2021.

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Limitations. Every effort has been made to have complete and accurate instructions in this manual. However, product updates, revisions, and/or changes may have occurred since this manual was published. BendPak Ranger reserves the right to change any information in this manual without incurring any obligation for equipment previously or subsequently sold. BendPak Ranger is not responsible for typographical errors in this manual. Feel free to contact us at any time to get the latest information about any product: **rangerproducts.com**.

Warranty. The BendPak Ranger warranty is more than a commitment to you: it is also a commitment to the value of your new product. For full warranty details, contact your nearest BendPak Ranger dealer or visit **bendpak.com/support/warranty**. Go to **bendpak.com/support/register-your-product/** and fill out the online form to register your product (be sure to click **Submit**).

Safety. Your new product was designed and manufactured with safety in mind. Your safety also depends on proper training and thoughtful operation. Do not set up, operate, maintain, or repair the unit without reading and understanding this manual and the labels on it; ***do not use this product unless you can do so safely!***

Owner Responsibility. In order to maintain your product properly and to ensure operator safety, it is the responsibility of the product owner ***to read and follow these instructions***.

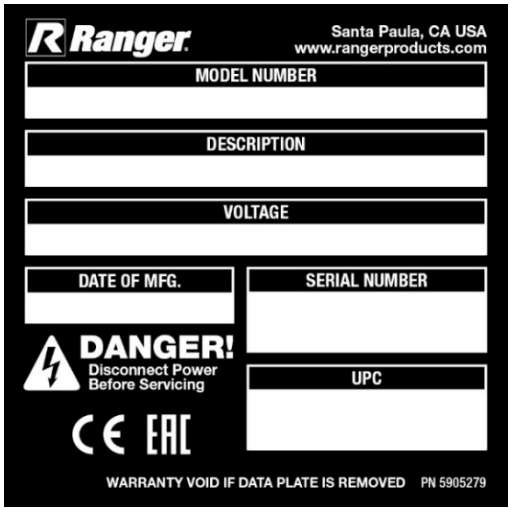
- Follow all setup, operation, and maintenance instructions.
- Make sure product setup conforms to all applicable local, state, and federal codes, rules, and regulations, such as state and federal OSHA regulations and electrical codes.
- Read and follow all safety instructions. Keep them readily available for operators.
- Make sure all operators are properly trained, know how to safely operate the unit, and are properly supervised.
- Do not operate the product until you are certain that all parts are in place and operating correctly.
- Carefully inspect the product on a regular basis and perform all maintenance as required.
- Service and maintain the unit only with approved replacement parts.
- Keep the manual with the product and make sure all labels are clean and visible.
- **Only use this product if it can be used safely!**

Unit Information. Enter the Model Number, Serial Number, and the Date of Manufacture from the label on your unit. This information is required for part or warranty issues.

Model: _____

Serial: _____

Date of Manufacture: _____



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Introduction

This manual describes the following Wheel Balancer models:

- **DST-64T**. A computer-controlled Wheel Balancer that uses Drive-Check™ technology to simulate driving speed conditions and measure imbalances. Includes an Outer Arm for automatically determining Wheel Width.
- **DST642D**. A computer-controlled Wheel Balancer that uses Drive-Check™ technology to simulate driving speed conditions and measure imbalances.

More information about BendPak Ranger products is available at **rangerproducts.com**.

This manual is mandatory reading for all users of the DST-64T or DST642D, including anyone who installs, operates, maintains, or repairs them.

⚠ **DANGER** Be very careful when setting up, operating, maintaining, or repairing the equipment; failure to do so could result in property damage, product damage, injury, or (in very rare cases) death. Make sure only authorized personnel operate this equipment. All repairs must be performed by an authorized technician. Do not make modifications to the unit; this voids the warranty and increases the chances of injury or property damage. Make sure to read and follow the instructions on the labels on the unit.

Keep this manual on or near the equipment so that anyone who uses or services it can read it.

Technical support for your Balancer is available from your distributor or directly from BendPak Ranger: using a web browser, visit the **BendPak Support website**, click on **+ New support ticket**, and then fill in and submit a Support Ticket (make sure to click the **Submit** button at the bottom).

Shipping Information

Your equipment was carefully checked before shipping. Nevertheless, you should thoroughly inspect the shipment ***before*** you sign to acknowledge that you received it.

When you sign the bill of lading, it tells the carrier that the items on the invoice were received in good condition. *Do not sign the bill of lading until **after** you have inspected the shipment.* If any of the items listed on the bill of lading are missing or damaged, do not accept the shipment until the carrier makes a notation on the bill of lading that lists the missing or damaged goods.

If you discover missing or damaged goods ***after*** you receive the shipment and have signed the bill of lading, notify the carrier at once and request the carrier to make an inspection. If the carrier will not make an inspection, prepare a signed statement to the effect that you have notified the carrier (on a specific date) and that the carrier has failed to comply with your request for an inspection.

It is difficult to collect for loss or damage after you have given the carrier a signed bill of lading. If this happens to you, file a claim with the carrier promptly. Support your claim with copies of the bill of lading, freight bill, invoice, and photographs, if available. Our willingness to assist in helping you process your claim does not make us responsible for collection of claims or replacement of lost or damaged materials.

Safety Considerations

Read this entire manual carefully before using your new product. Do not set up or operate the product until you are familiar with all operating instructions and warnings. Do not allow anyone else to operate the product until they are also familiar with all instructions and warnings.

Safety Information

Please note the following:

- The product is a Wheel Balancer. ***Use it only for its intended purpose.***
- The product should only be operated by authorized, supervised personnel. Keep children and untrained personnel at least 30 feet away from the unit while it is in use.
- You ***must*** wear OSHA-approved (Publication 3151) Personal Protective Equipment at all times when installing, using, maintaining, or repairing the Balancer. Leather gloves, steel-toed work boots, ANSI-approved eye protection, back belts, and hearing protection ***are mandatory***.
- Keep hair, jewelry, and clothing away from the Balancer.
- Do not use the product while tired or under the influence of drugs, alcohol, or medication.
- Do not use the product in the presence of cigarette smoke, dust, or flammable liquids or gases. Use the product indoors in a well-ventilated area.
- Do not make any modifications to the product; this voids the warranty and increases the chances of injury or property damage.
- Make sure all operators read and understand the *Installation and Operation Manual*.
- Make a visual inspection of the product before using it each time. Do not use the product if you find any missing or damaged parts. Instead, take the unit out of service, then contact an authorized repair facility, your distributor, or **Ranger Products at (805) 933-9970**.
- BendPak Ranger recommends making a ***thorough*** inspection of the product once a month. Replace any damaged or severely worn parts, decals, or warning labels.

Symbols

Following are the symbols that may be used in this manual:

⚠ DANGER Calls attention to a hazard that **will** result in death or injury.

⚠ WARNING Calls attention to a hazard or unsafe practice that **could** result in death or injury.

⚠ CAUTION Calls attention to a hazard or unsafe practice that could result in personal injury, product damage, or property damage.

NOTICE Calls attention to a situation that, if not avoided, could result in product or property damage.

Tip Calls attention to information that can help you use your unit better.

Liability Information

BendPak Ranger assumes **no** liability for damages resulting from:

- Use of the equipment for purposes other than those described in this manual.
- Modifications to the equipment without prior, written permission from BendPak Ranger.
- Injury or death caused by modifying, disabling, overriding, or removing safety features.
- Damage to the equipment from external influences.
- Incorrect operation of the equipment.

Components

Balancer components include:

- **Display Panel**. Shows information about, and lets you control, the Balancer.
- **Hood**. Covers the Wheel while it spins.
- **Inner Arm / Distance Ruler**. Used to find the distance between the Balancer and the inner edge of the Wheel being balanced. Not visible in the graphic below.
- **Outer Arm**. Used to determine the outer edge of the Wheel being balanced. DST-64T only.
- **Brake Pedal**. Used to hold the Wheel where it is.
- **Power Switch**. Turns the Balancer on and off.
- **Storage Tray**. Storage for Clip-On Weights and other items you want to have handy.
- **Adhesive Weight Dispensers**. Hold your Adhesive Weights.
- **Side Storage Rack**. Holds items you want to have handy.
- **Cone Hangers.** Hold the Mounting Cones when not in use.
- **Anchor Bolt holes**. Provided to anchor the Balancer to the ground.

DST-64T shown. DST642D does not have an Outer Arm.

Balancer accessories include:

- **Quick-Release Hub Nut**. Holds the Wheel on the Balancer, once the Wheel is mounted.
- **Hex Key Wrench Set**. Used during installation. Sometimes called Allen® wrenches.
- **Anchor Bolts**. Anchor the Balancer to the floor.
- **Wheel Weight Tool**. Used to put on and take off Clip-On Weights.
- **Weight Removal Tool**. Used to remove Adhesive Weights.
- **Mounting Spring**. Secures the Wheel when using Rear- and Dual-Cone Mounting.
- **Inner and Outer Gauge Calibration Tool**. Used for calibrating the unit, when necessary. The Outer Gauge Calibration Tool is only for the DST-64T.
- **Calibration Weight**. A 100-gram Clip-On Weight used for the Dual-Plane Self-Calibration Procedure.
- **Mounting Cone assortment**. Supports a wide range of Wheel sizes.
- **Calipers**. Used to measure the Width of a Wheel. Separately boxed.
- **Spacer Ring**. Attaches to the Shaft Flange for larger Wheels only.

All of the Balancer accessories are shown in **Parts**.

Other terms you need to understand include:

- **Wheel**. A circular metal piece that attaches to an axle and rotates.
- **Tire**. A circular rubber piece that surrounds and attaches to a Wheel; more specifically, to the Rim, which is the part of the Wheel that touches the Tire. Most Tires are pneumatically inflated (filled with a gas, such as air, hydrogen, helium, or nitrogen) and made out of rubber (synthetic or natural).
- **Rim**. The part of a Wheel that directly attaches to a Tire; almost always the outer portion of the Wheel. Because modern Wheels are frequently created from a single piece of metal, “Wheel” and “Rim” are sometimes used interchangeably.
- **Hub**. The part of a Wheel that is not the Rim; the central portion of the Wheel.
- **Clip-On Weights**. Metal weights that are held in place on the Wheel by clipping them to the Inner or Outer Edge.
- **Adhesive Weights**. Weights that are flat and held in place on the Wheel with adhesive.
- **Placement Indicators**. Light up when the best weight location is reached.
- **Balancing Modes**. The Balancer supports one Dynamic Balancing mode, two Static Balancing modes, one Aluminum Alloy Balancing mode, and one Hidden Balancing mode.
- **Static Balancing**. Balancing a Wheel as a whole; that is, on a single plane only. This is an older method of balancing and is generally not as effective as Dynamic Balancing. Static Balancing is required for motorcycle Wheels and older Wheels that are 4 inches wide or less.
- **Dynamic Balancing**. Balancing a steel Wheel where each of the two planes are analyzed separately. If there is an imbalance, the two planes are brought back into balance separately.
- **Aluminum Alloy Balancing**. Balancing Wheels made of aluminum alloy. With ALU Mode, Adhesive Weights (which are less visible than Clip-On Weights) are placed on the Inner Plane and the Center Plane of the Wheel.
- **HID (Hidden) Balancing**. Balancing a Wheel where the Adhesive Weights are placed on the Inner Plane and the Center Plane of the Wheel, but behind selected spokes so they are hidden, as much as possible.
- **Optimize Function**. When a Wheel has significant imbalance (30 grams / 1 ounce or more), you can use the optional Optimize Function to lessen the imbalance.

Frequently Asked Questions

Question: What does a Wheel Balancer do?

Answer: They correct any imbalance in a Wheel. If you drive a Vehicle with imbalanced Wheels, the Vehicle could experience noise, vibration, wobbling, reduced or uneven Tire tread wear, and some components could wear out sooner rather than later. Getting a Vehicle's Wheels balanced may even increase its mileage.

Q: Is Wheel Balancing the same as Wheel Alignment?

A: No. When you ***balance*** a Wheel, you fix a weight distribution problem that can cause Wheel wobble, uneven Tire wear, and Vehicle vibration. This is done by putting Weights on the Wheel in appropriate locations.

When you ***align*** a Wheel, you are adjusting the angles of the Wheels back to the manufacturer's recommendation, which reduces Tire wear and ensures the Vehicle drives straight and true (that is, the Vehicle does not pull to one side).

Q: Where can I put my Wheel Balancer?

A: What you want is a flat Concrete floor with room around it that is also near where you work on Wheels. Ideally, you want it somewhere off the beaten path, as you want to keep everyone away from the Balancer while it is in use.

Q: Why are there two types of Weights?

A: Clip-On Weights are more visible. Adhesive Weights are lower profile and come in two colors so you can try to color match with the Rim, so they are less visible. Some Vehicle owners with expensive Tires prefer Adhesive Weights because they are less visible.

Q: Why isn't there a plug on the end of the Power Cord?

A: 220 VAC plugs vary by region, so you need to use one that is appropriate for the power outlet where you will be using your Wheel Balancer. You ***must use*** a licensed Electrician to wire the cord to a plug in accordance with applicable electrical codes.

Q: What Balancing Modes does the Balancer have?

A: The Balancer has five Balancing Modes: Dynamic, STA, STA2, ALU, and HID. Dynamic Mode is used with steel Wheels, the two Static Modes are for older, narrower Wheels or motorcycle Wheels, Aluminum Mode is for Aluminum Alloy (non-steel) Wheels, and HID is for Aluminum Alloy Wheels and it also hides weight behind spokes on the Wheel. There is also an OPT indicator where the other Balancing Mode indicators are, but it is for the Optimize Function; it is *not* a Balancing Mode.

Q: How accurate are the weight values the Balancer displays?

A: By default, the Balancer rounds off to .25 ounces (~7 grams); this is because most weights sold in the U.S. come in .25 ounce increments. (Countries that use the metric system measure weight in grams; their weights come in 5-gram increments.) If you do not want rounded-off weight values, press ***and hold*** the FINE button on the Display Panel to see more specific values.

Q: What do I do if I have a problem with the Balancer that I cannot solve?

A: Contact BendPak Ranger; we are here to help. Using a web browser, visit the **BendPak Support website**, click on **+ New support ticket**, and then fill in and submit a Support Ticket (make sure to click the **Submit** button at the bottom).

Specifications

Model	DST-64T / DST642D
Motor	220 VAC, 50/60 Hz, 1 Ph.
Balancing Modes	Dynamic / 2 Static / Aluminum Alloy / Hidden
Maximum Tire Diameter	50 in / 1,270 mm
Maximum Tire Weight	150 lbs. / 68 kg
Max. Wheel Diameter	10 in to 30 in / 254 mm to 762 mm
Wheel Width Capacity	1.5 in to 20 in / 38 to 508 mm
Max. Wheel/Tire Weight	150 lbs. / 68 kg
Cycle Time	6 – 12 Sec. depending on the size of the Wheel/Tire
Balancing Increments (default)	.25 ounces / 7 grams
Balancing Increments, FINE button	.035 ounces / 1 gram
Accuracy	±.5g (.025 oz.)
Resolution	5g (.25 oz.) Round-off mode
Balancing Speed	180 RPM
Height, Hood Up	67 in / 1,702 mm
Height, Hood Down	56 in / 1,422 mm
Width	56 in / 1,422 mm
Depth, Hood Up	39 in / 990 mm
Depth, Hood Down	42 in / 1,067 mm
Power Cord Length	63 in / 1,600 mm
Working Temperature Range	-5°C to +50°C / +23°F to +122°F

Installation Checklist

Following are the steps needed to install the Balancer. Perform them in the order shown.

☐ 1. Review the installation Safety Rules.

☐ 2. Plan for Electrical Work.

☐ 3. Make sure you have the necessary Tools.

☐ 4. Select the Installation Site.

☐ 5. Make sure there is adequate Clearance on all Sides and Above.

☐ 6. Unpack the Balancer.

☐ 7. Identify the Components on the Back of the Unit.

☐ 8. Install the Display Panel.

☐ 9. Install the Mount Box.

☐ 10. Install the Hood.

☐ 11. Install the Outer Arm (DST-64T only).

☐ 12. Install the Shaft.

☐ 13. Anchor the Unit.

☐ 14. Connect to a Power Source. ***Requires a licensed Electrician***.

☐ 15. Test the Balancer.

☐ 16. Review the Final Checklist.

Installation

This section describes how to install your Balancer.

Installation Safety Rules

Pay attention at all times during installation. Use appropriate tools and equipment. Stay clear of moving parts. Keep hands and fingers away from pinch points.

Use caution when unpacking the Balancer from its shipping container and setting it up. The Balancer is heavy and the weight is not evenly distributed; dropping or knocking over the unit may cause equipment damage or personal injury.

⚠ **WARNING** You must wear OSHA-approved (publication 3151) Personal Protective Equipment at all times when installing, using, maintaining, or repairing the Balancer. Leather gloves, steel-toed work boots, ANSI-approved eye protection, back belts, and hearing protection are mandatory.

Only allow experienced, trained technicians to install the Balancer. In particular, all electrical work ***must*** be done by a licensed, certified Electrician.

⚠ **CAUTION** Certain parts of installing the Balancer are difficult for just one person. BendPak Ranger strongly recommends having two or more persons work together to install the Balancer.

If you have to use an extension cord, make sure its current rating is equal to or greater than that of the equipment being used. Make sure the extension cord cannot be stepped on, run over, or pulled out. Extension cords are also a tripping hazard, so they must be secured.

Plan for Electrical Work

The Balancer does not come with a Plug on the end of the Power Cord; it is your responsibility to have an Electrician attach a Plug ***or*** wire the Balancer directly into the facility's electrical system.

Refer to **Wiring Information** for additional information.

⚠ **WARNING** All electrical work, such as attaching the Plug to the Power Cord or wiring the Balancer into a facility's electrical system, ***must be done by a licensed, certified Electrician*** in accordance with local and National Electrical Code.

Tools

You may need some or all of the following tools:

- Hex wrench set (multiple hex wrenches come with the Balancer)
- SAE and Metric wrench sets; adjustable wrench
- Scissors, utility knife, or other cutting tool; hammer
- Forklift, Pallet Jack, or Shop Crane

Finding a Location

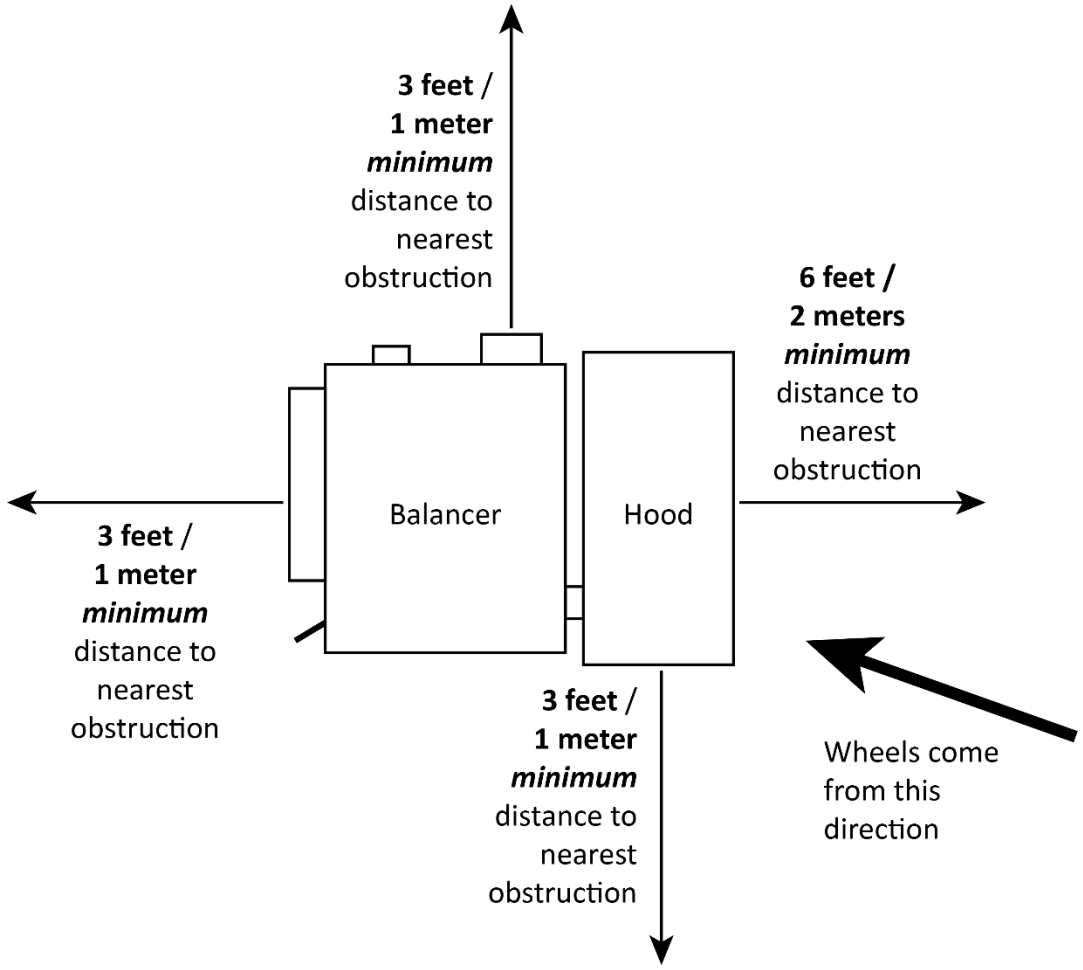
Keep in mind the following when deciding on a location:

- **Power source**. The Balancer needs to be near an appropriate 220 VAC power source.
- **Floor**. The Balancer is best used on a flat, concrete floor. If the floor is unstable or not flat, the Balancer will not work correctly; the readings will be inaccurate.
- **Accessibility**. You need some space to move the Wheels you are going to balance to and from the Balancer.
- **Danger**. When a Wheel is spinning on the Balancer, you need to keep people away from it. ***Do not set up the Balancer in a well-travelled area***.
- **No water**. The Balancer has electronic components. If the Balancer gets wet while turned on, those electronic components will most likely short circuit and have to be replaced.

⚠ **WARNING** Do not use the Balancer if it is sitting in water. You will almost certainly short circuit the electronic components in the Balancer and you could electrocute yourself.

Clearances

For safety purposes and to allow space to work with Wheels, a certain amount of space around the Balancer is needed.



*You also need enough room **above** the Balancer for the Hood to move up and down freely.*

Unpacking

Use caution when unpacking the Balancer from its shipping container. You do not want to damage the unit, misplace any of the components that come with it, or hurt anyone.

⚠ **CAUTION** Make sure to use an appropriate lifting device, such as a Forklift or Pallet Jack, to move the Balancer while it is on its pallet. Make sure only personnel who are experienced with material handling procedures are allowed to move the Balancer. The Balancer is heavy and the weight is not evenly distributed; dropping or knocking over the unit may cause equipment damage or personal injury. Do not lift the Balancer by the Shaft Housing; it is not strong enough for that.

We recommend you unpack the Balancer in the area where you are going to set it up; you want to move it around as little as possible.

To unpack the Balancer:

1. Make sure you are wearing OSHA-approved (publication 3151) Personal Protective Equipment: leather gloves, steel-toed work boots, ANSI-approved eye protection, back belts, and hearing protection.
2. Remove the carton by flipping down the metal tabs at the bottom and pulling off the top.

⚠ **CAUTION** Use caution when pulling off the carton top.

3. Remove the straps and plastic wrap that held the Balancer components during shipping.
4. Remove the shipping bolts that are holding the Balancer to the Pallet.
5. *Lean the Balancer over and reach underneath it* to ***pull out the Accessory Box***.

⚠ **CAUTION** Use caution when pulling out the Accessory Box. The Balancer and the Accessory Box are heavy.

6. Move the Balancer off the Pallet, then move it to the desired location.

   Important: Do not lift the Balancer by the Shaft Housing; it is not strong enough to bear the weight of the Balancer.

⚠ **CAUTION** Ranger recommends having at least two people move the Balancer; it is heavy. If it is dropped or falls, it could cause injuries and the Balancer could be damaged.

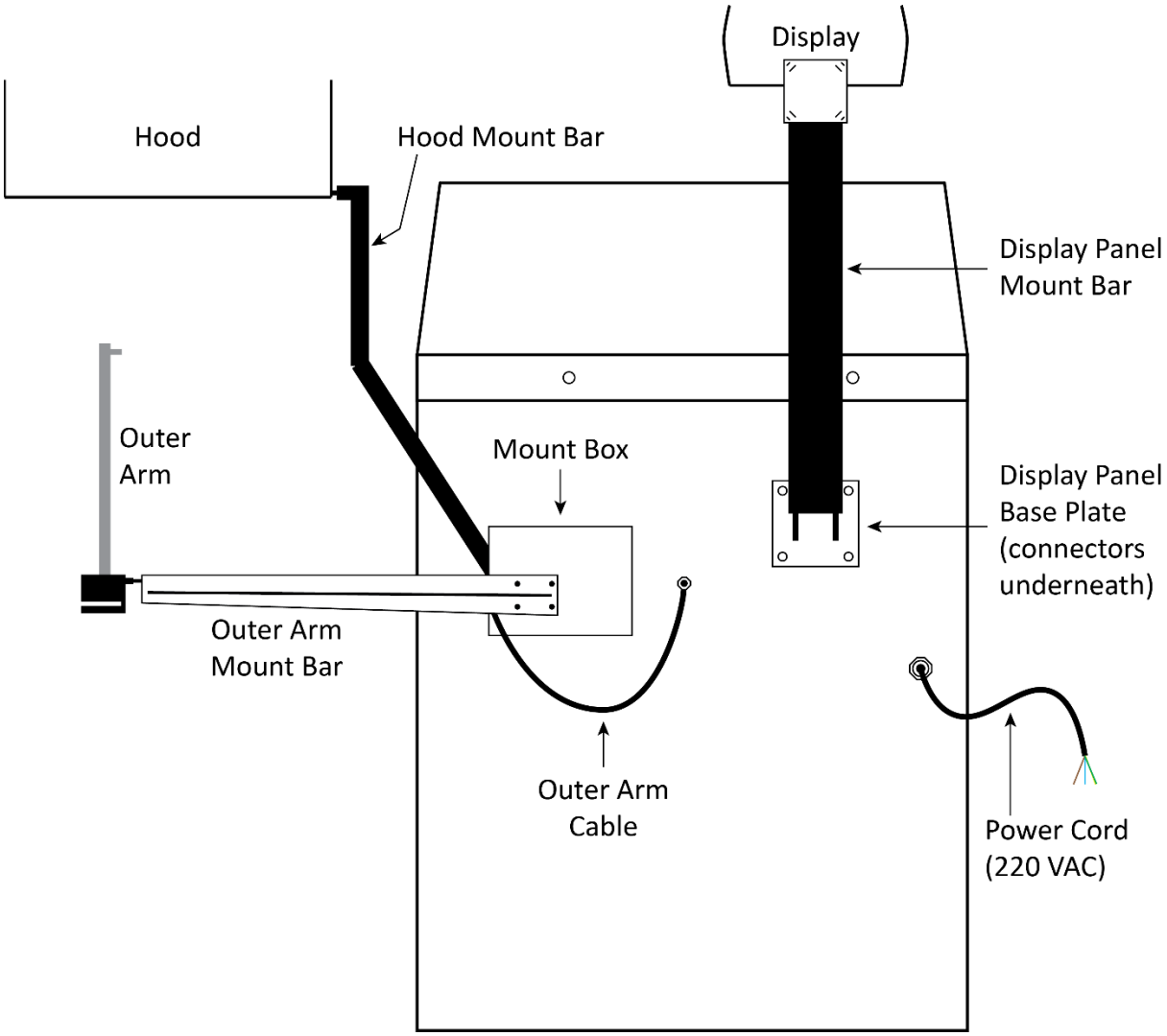
Components on the Back of the Balancer

The Balancer has multiple components on the back that need to be installed.

Balancer components on the back include:

- **Display Panel Mount Bar**. Holds the Display on one end and connects to the back of the Balancer via the Display Panel Base Plate on the other end.
- **Display Plugs and Connectors**. Connect the Display Panel to the computer inside the Balancer. The Plugs are on ends of wires that go up to the Display Panel. The Connectors are accessible through a hole in the back of the Balancer. The Plugs and Connectors must be connected correctly or the Balancer will not work correctly. See **About Display Plugs and Connectors** for more information.
- **Mount Box**. Connection point for the Hood Mount Bar and Outer Arm Mount Bar (DST-64T only).
- **Hood Mount Bar**. Connects the Hood to the Mount Box.
- **Outer Arm Mount Bar**. Connects the Outer Arm to the Mount Box (DST-64T only).

The following drawing shows the components on the back of the Balancer.



*Not necessarily to scale. Not all components shown. The DST642D does **not** have an Outer Arm, Outer Arm Mount Bar, or an Outer Arm Cable.*

About the Display Plugs and Connectors

There are seven Plugs that must be connected to seven Connectors on the back of the Balancer. The Connectors are accessible through a hole on the back of the Balancer. The Plugs are on the ends of wires that come down from the Display Panel. All seven connectors have a **locking tab** that snaps into the mating plug to prevent it from working loose over time. Plugs are to be connected in one direction **only**. If the plug can be easily removed from the connector, it is not installed correctly.

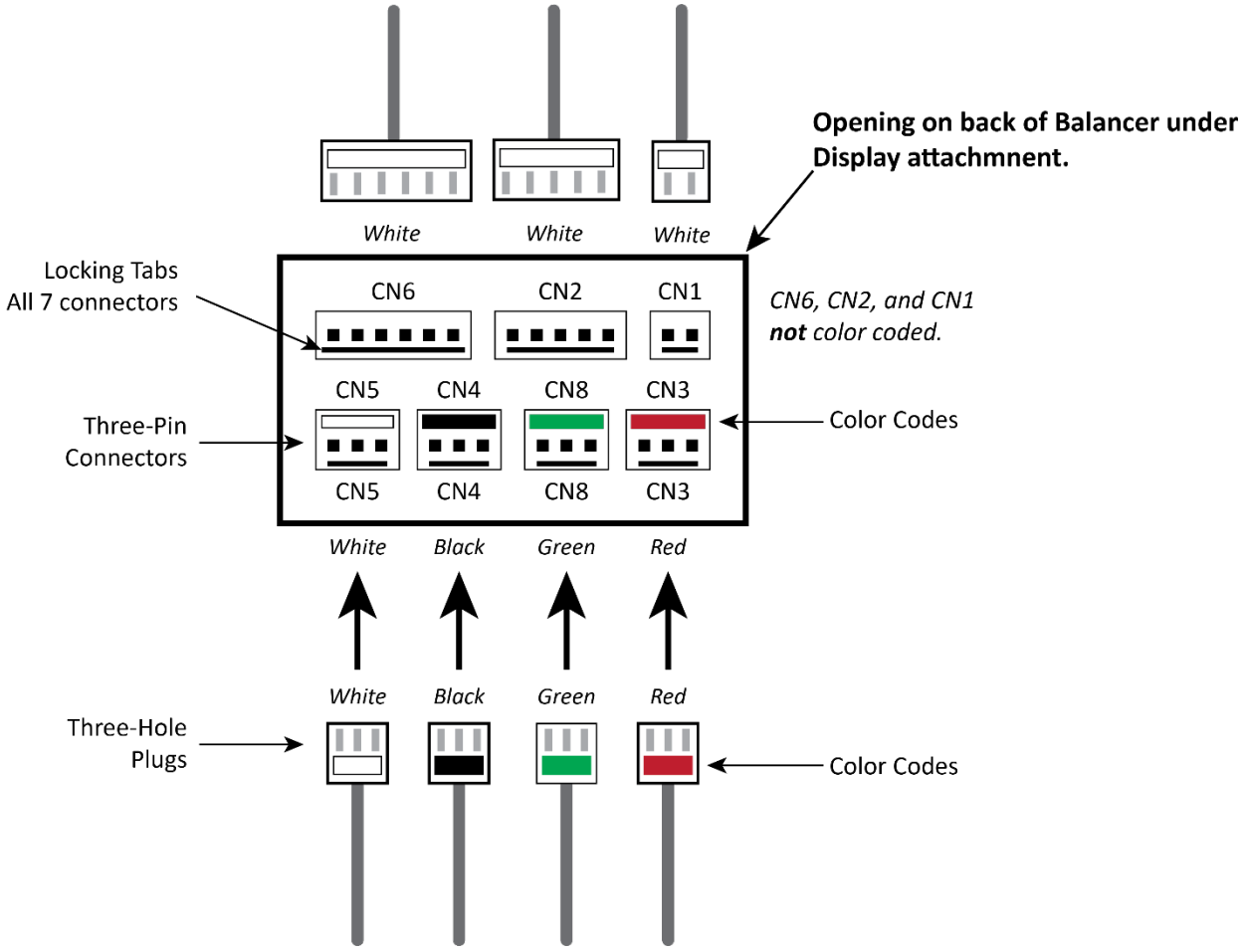
The seven Connectors are arranged in two rows, three Connectors on the top row, four Connectors on the bottom row (see the diagram below).

The three Connectors on the *top row* all have a different number of pins, so to connect them you match the number of opening in the Plugs to the number of pins on the Connectors and attach them appropriately. The Connectors are, from left to right, CN6, CN2, and CN1. The Connectors on the top row are *not* color coded, nor are the Plugs that attach to them.

The four Connectors on the *bottom row* all have three pins. They are labeled, from left to right, **CN5**, **CN4**, **CN8**, and **CN3**. Note that they are labeled above and below.

⚠ **WARNING** The Balancer will not work correctly until all of the Plugs and Connectors are attached correctly.

The following diagram details the Plugs and Connectors.



To attach the three Plugs to the three Connectors on the ***top row***, match the number of holes in the Plug to the same number of pins in the Connector and attach them.

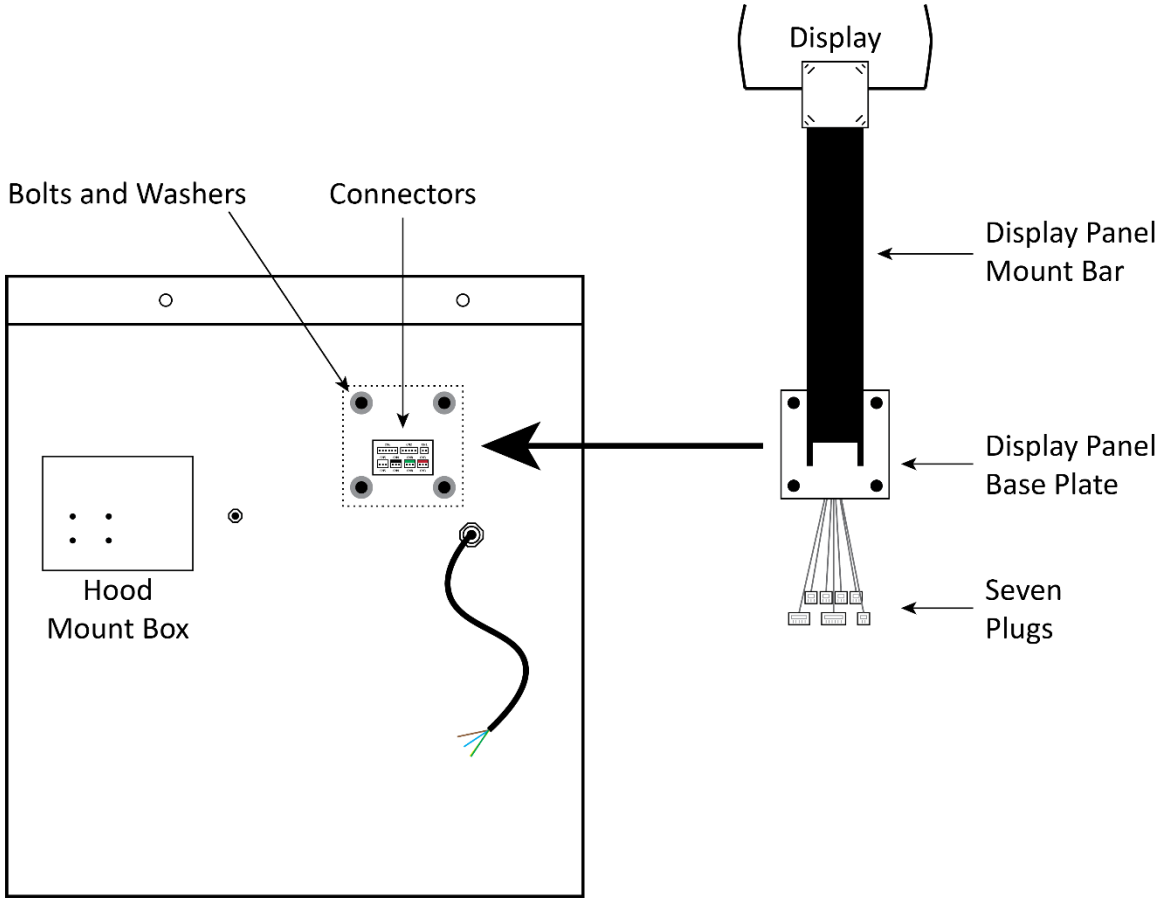
To attach the four Plugs with to the four three pin Connectors on the ***bottom row***, match the color code of the Plug to the same color code of the Connector and attach them.

Installing the Display Panel

The Display Panel shows information about, and lets you control, the balancing of a Wheel.

To install the Display Panel:

1. Locate the Display Panel and the Display Panel Mount Bar.
2. Remove the four Hex Bolt, Split Lock Washers, and standard Washers on the back of the Balancer.
3. Find the seven Plugs on the end of the wires coming down from the Display Panel.
4. Put the Display Panel Base Plate next to the hole in the back of the Balancer and hold it there.



Not to scale. Not all components shown.

5. Match the seven Plugs with the correct Connectors and plug them in.

NOTE: All seven connectors have a locking tab that snaps into the mating plug. This prevents the connector from working loose over time. Plugs are to be connected in one direction only. If the plug can be easily removed from the connector, it is not installed correctly. Rotate the Plug 180 degrees and try to connect again.

See **About Display Plugs and Connectors** for additional information.

Verify all seven Plugs and Connectors are correctly engaged. If they are easily removed then they are not installed correctly.

6. Install the four Hex Bolt, Split-Ring Lock Washers, and standard Washers to secure the Display Panel Base Plate to the Balancer. Tighten bolts securely, but do not overtighten.

⚠ **CAUTION** Do not pinch the wiring between the Display Column and the Balancer Housing. This will cause a short circuit and potentially destroy the electronics of the Balancer.

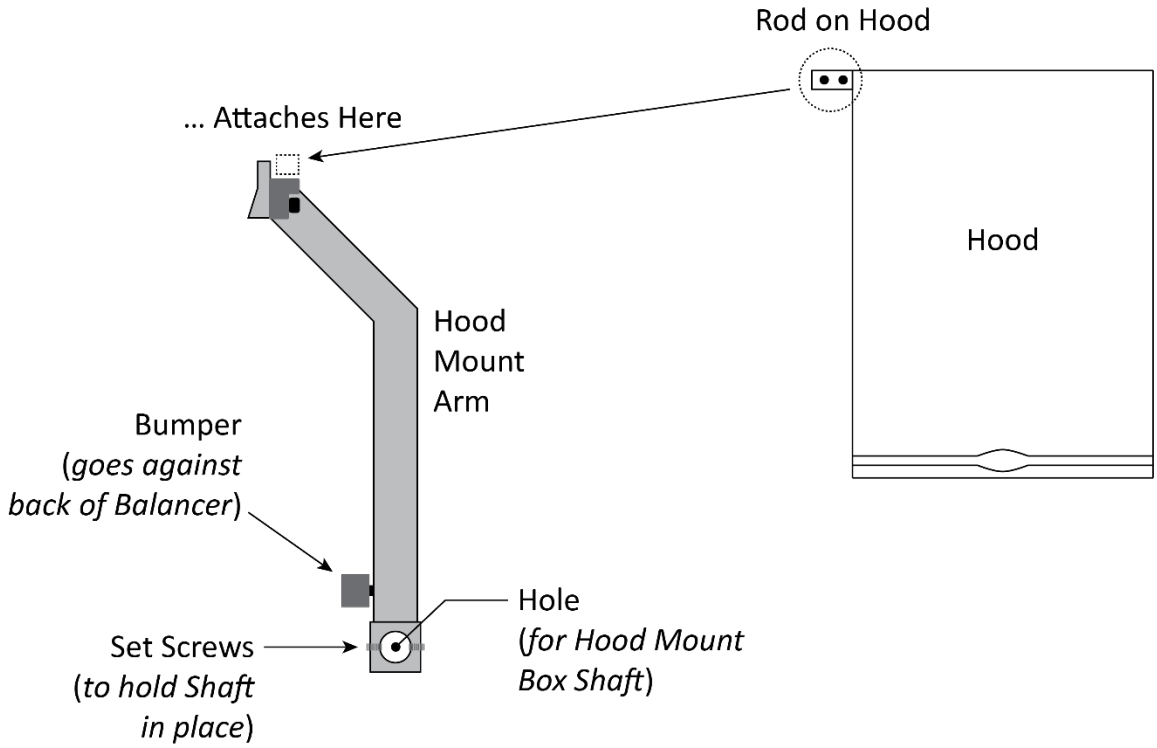
Installing the Hood

The Hood covers the Wheel while it spins during a Balancing.

⚠ **CAUTION** Keep away from the Hood and the Wheel while the Wheel is spinning. Touching the Wheel while it is spinning can result in injury.

To install the Hood:

1. Locate the Hood, the Hood Mount Arm, and the Hex Bolt and Washers required to connect them.
   - The Hood connects to the Hood Mount Arm using two Hex Bolt and Washers.
   - The Hood Mount Arm connects to the Mount Box via a Hole in one end of the Arm.



Not necessarily to scale. Not all components shown.

2. ***Starting with the* bottom *of the Hood Mount Arm***, slip the hole at the bottom over the Shaft on the left side of the Hood Mount Box (shown in the drawing on the previous page).

   Orient the Hood Mount Bar so that the Bumper goes up against the back of the Balancer.

3. Align the Set Screws on the bottom of the Hood Mount Arm with the Grooves in the Shaft, then tighten the Set Screws down into the Grooves in the Shaft.
4. When the Set Screws are correctly installed, put the large Washer and hex head bolt into place on the end of the Shaft (the Hex Head Bolt Hole) and tighten the hex head bolt.
5. ***Switching to the* top *of the Hood Mount Arm***, remove the two Hex Bolt and the Washers.

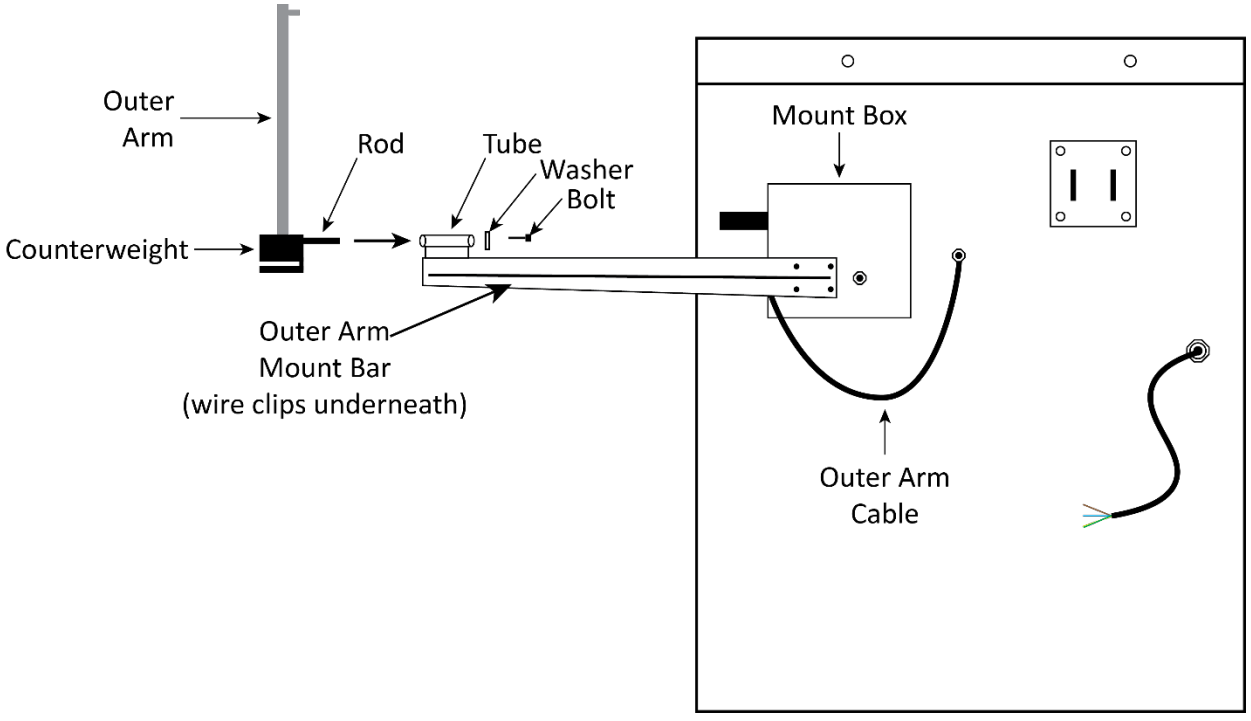
6. ***Switching to the Hood***, put the Rod on one corner of the Hood into position next to the top of the Hood Mount Arm. The Handle in the Hood should be at the front of the Balancer.
7. Replace the two Hex Bolt and Split Lock Washer you just removed; tighten them securely.
8. Test the Hood to verify it moves back and forth smoothly.

Installing the Outer Arm (3D Quick-Touch™ Data Wand™) (DST-64T only)

The Outer Arm is used to automatically establish the Diameter of the Wheel being balanced.

To install the Outer Arm:

1. Locate the Outer Arm Mount Bar, the Outer Arm, and the Hex Bolt required to connect them.
   - The Outer Arm Mount Bar connects to the Mount Box using four Hex Bolt, four Split Lock Washers, and four standard Washers.
   - The Outer Arm connects to the Outer Arm Mount Bar using one Hex Bolt, one Split Lock Washer, and one large black plastic Washer. These are shipped installed on the long piece connected to the Outer Arm counterweight.
2. Remove the four Hex Bolt, four Split Lock Washers, and four standard Washers from their location on the Mount Box.
3. Connect the Outer Arm Mount Bar to the Mount Box using the four Hex Bolts, Split Lock Washers, and standard Washers you just removed. Tighten securely, but do not overtighten.
4. Remove the Hex Bolt, Split Lock Washers, and large black plastic Washer from the end of the Rod connected to the Outer Arm counterweight.



5. Slide the Rod through the Tube on the Outer Arm Mount Bar, then reattach the 4 mm Hex Bolt, Split Lock Washer, and large black plastic Washer you just removed.

Tighten securely, but do no overtighten.

6. Run the Cable coming off the Outer Arm through the clips on the underside of the Outer Arm Mount Bar, then connect the fitting on the end of the cable to the Connector on the right side of the Mount Box.

Installing the Shaft

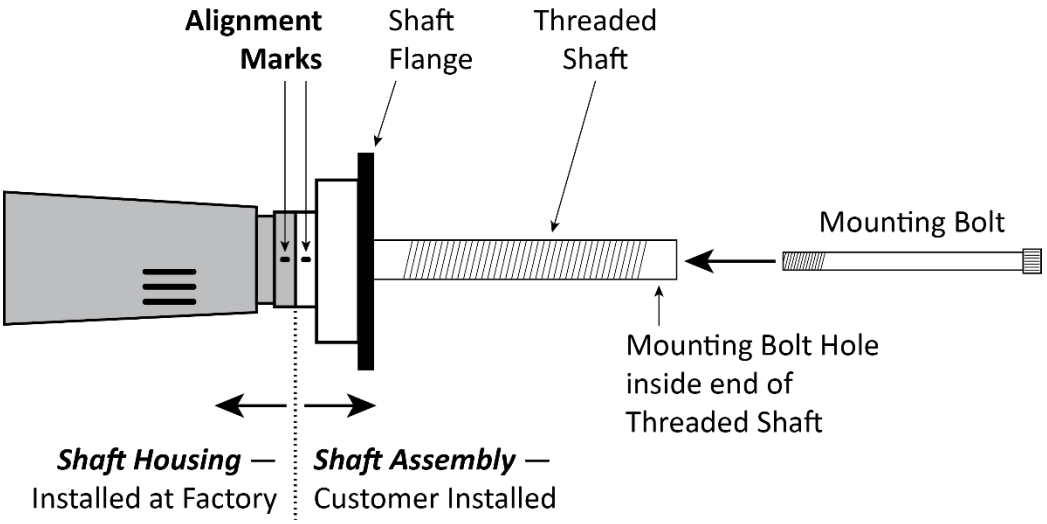
The Shaft holds the Wheels you are balancing.

Tip Consider having two people on hand to install the Shaft: one person to hold the Shaft Assembly in place while the second person screws in the Mounting Bolt. Have some rags nearby; the Shaft comes greased to protect it during transport.

To install the Shaft:

1. Locate the Shaft Assembly and the Mounting Bolt from the parts supplied with the Balancer.
2. Clean the Shaft Assembly by removing the shipping grease and any debris that has accumulated.
3. Put the Shaft Assembly into place next to the Shaft Housing and hold it there.

   Note: It is easier to install the Shaft with two people.
4. Put the Mounting Bolt into the end of the Threaded Shaft and *begin* tightening it.
5. *Before fully tightening* the Mounting Bolt, make sure the Alignment Marks (witness marks) are aligned (see drawing below).



Not necessarily to scale. Not all components shown.

6. Tighten the Mounting Bolt into place.

Anchoring the Balancer

The Balancer has four holes in the Base for Anchor Bolts, which hold the Balancer in place while in use.

Important: You are ***required*** to bolt your Balancer into place, as movement during a Wheel Balance can result in inaccurate readings.

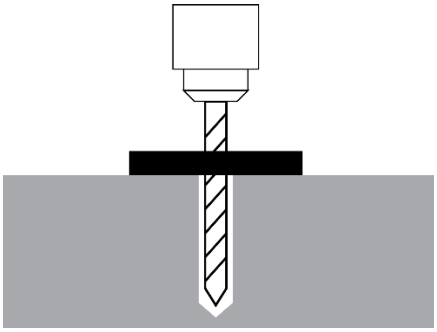
To anchor the Balancer:

1. Move the Balancer to the desired location.

   Remember that you need to allow some space around the Balancer. Refer to **Finding a Location** for additional information.

2. Using the holes in the base as guides, drill the holes for the Anchor Bolts.

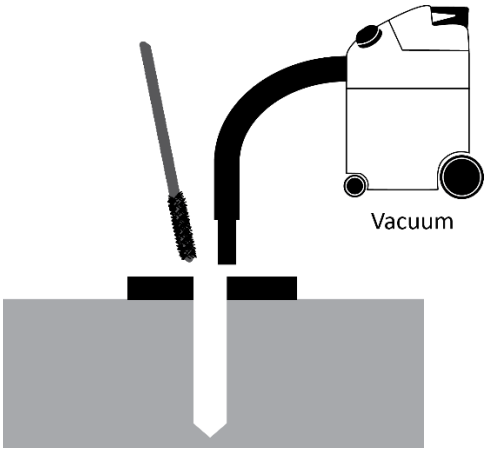
   Go in straight; do not let the drill wobble. Use a carbide bit (conforming to ANSI B212.15).



   The diameter of the drill bit must be the same as the diameter of the Anchor Bolt. So if you are using an M10 diameter Anchor Bolt, for example, use an M10 diameter drill bit.

3. Vacuum each hole clean.

   BendPak recommends using a vacuum to get the hole very clean.

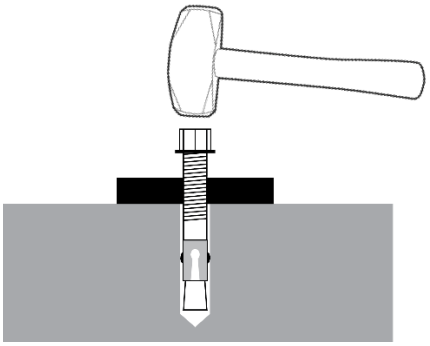


   Do ***not*** ream the hole. Do ***not*** make the hole any wider than the drill bit made it.

4. Make sure the Washer and Nut are in place, then insert the Anchor Bolt into the hole.

   The Expansion Sleeve of the Anchor Bolt may prevent the Anchor Bolt from passing through the hole in the Base Plate; this is normal.

5. Use a hammer or mallet to get the Expansion Sleeve through the Base Plate and into the hole.



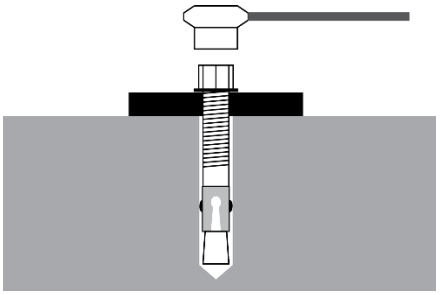
Even using a hammer or mallet, the Anchor Bolt should only go into the hole part of the way; this is normal. If the Anchor Bolt goes all the way in with little or no resistance, the hole is too wide.

Once past the hole in the Base Plate, the Anchor Bolt eventually stops going down into the hole as the Expansion Sleeve contacts the sides of the hole; this is normal.

6. Hammer or mallet the Anchor Bolt the rest of the way down into the hole.

   Stop when the Washer is snug against the Base Plate.

7. Wrench each Nut ***clockwise*** to tighten.



Important: Do *not* use an impact wrench to torque the Anchor Bolts.

Wrenching the Nut forces the Wedge up, forcing out the Expansion Sleeve and pressing it tightly against the Concrete.

Connect to a Power Source

The Balancer must be connected to a 208-240 VAC power source.

⚠ **DANGER** ***All*** electrical work ***must*** be done by a licensed, certified Electrician (including wiring a Plug to the end of the Power Cord). If you do not use a licensed, certified Electrician, you void your warranty and put everyone who uses the Balancer in danger of injury or, in rare cases, death.

A Power Cord with ***no Plug*** on the end is provided with the unit. You need to have a licensed, certified Electrician either:

- Wire the open end of the Power Cord to an appropriate 208-240 VAC, 2-Pole, 3-Wire, NEMA rated Plug, which is then plugged in to an appropriate 208-240 VAC outlet and a 20 Amp breaker.

  or

- Wire the open end of the Power Cord directly into a 20 Amp breaker that is part of the facility's electrical system.

Important: The Balancer uses electrical energy; if your organization has Lockout/Tagout policies, make sure to implement them once the unit is connected to a power source.

Refer to **Wiring Information** for a wiring diagram.

Make sure wiring is done in accordance with National Electric Code (NEC) and local codes and standards covering electrical apparatus and wiring.

⚠ **WARNING** ***Disconnect power before performing troubleshooting or maintenance***. Make sure the unit cannot be re-energized until you are done. This equipment has internal arcing or sparking parts that should not be exposed to flammable vapors. The unit must ***not*** be located in a recessed area or below floor level.

Test the Balancer

To test the Balancer to see if it is ready for normal operation:

1. Turn the Balancer On/Off switch to On.

   The Display Panel shows **Bal** on the Inner Window and **xx** on the Outer Window, followed by Wheel dimensions.

   (The **xx** is a numeric identifier for the software version.)

2. Mount a standard steel Wheel of a size you most often balance.

   Refer to **Mounting a Wheel** for specific mounting instructions.

3. Move the Inner Arm to the Inner Edge of the Wheel; let go when you hear the Balancer beep.
4. Move the Outer Arm to the outer Edge of the Wheel; let go when you hear the Balancer beep.
5. Lower the Hood.

   The Wheel starts to spin clockwise when the Hood is lowered (when viewed from the Hood side of the Balancer).

   If the Wheel does not spin, it may have been configured to a manual start. The Auto-Hood function may be enabled/disabled by pressing **Stop + C** simultaneously.

If the Wheel does not spin or spins counterclockwise instead of clockwise, turn the Balancer off and contact your dealer, visit **www.bendpak.com/support/**, or call **(805) 933-9970**.

6. Put the Outer Arm against the Outer Edge and wait for the beep.

   If there is no beep, refer to **Troubleshooting** for more information.

Final Checklist Before Operation

Make sure the following has been accomplished ***before*** using your Balancer:

- Review the Installation Checklist to make sure all steps have been performed.
- Check to see that all Anchor Bolts are in position and tightened.
- Leave the Manual with the owner/operator.

Operation

This section describes how to use your Wheel Balancer.

⚠ **DANGER** Being in close proximity to a Balancer is a serious endeavor with potentially life-threatening risks. Only trained, authorized, supervised personnel may be within 30 feet of the Balancer while it is in use. ***Do not assume you are going to be safe using the Balancer this time just because nothing happened last time.***

Safety Precautions

Keep the following in mind while you use your Balancer:

- Make sure all Operators receive specific training in Wheel balancing ***before*** they are allowed to use the Balancer, that their training is verified through a testing program, and that all training is documented. All others, including children and untrained personnel, **must** be kept at least 30 feet away from the Balancer while it is in use.
- Make sure ***new*** Operators are trained and supervised in the use of the Balancer.
- Do not use the Balancer while tired or under the influence of drugs, alcohol, or medication.
- Make a visual inspection of the unit ***before each use***. Do not operate your Balancer if you find any issues. Instead, take the unit out of service, then contact your dealer, visit **www.bendpak.com/support/**, or call **(805) 933-9970**.
- Keep the work area clean and well lit. Dirty, cluttered, and dark work areas increase the chances of an accident happening.
- Do not remove the Tray unless instructed to do so by Ranger Support. There are no user serviceable parts underneath.
- You ***must*** wear OSHA-approved (Publication 3151) Personal Protective Equipment at all times when installing, using, maintaining, or repairing the Balancer. Leather gloves, steel-toed work boots, ANSI-approved eye protection, back belts, and hearing protection ***are mandatory***.

⚠ **WARNING** Always wear ANSI-approved eye protection. Although rare, an accident could cause significant injuries to your eyes.

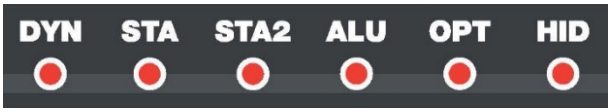
- Do not use the unit in a wet environment or expose it to rain or excess moisture.
- If an extension cord is necessary, you must use a cord with a current rating equal to or more than that of the equipment. Cords rated for less current than the equipment may overheat. Arrange the cord so that it will ***not*** be tripped over or pulled out.
- Do not use the Balancer in the vicinity of open containers of flammable liquids.
- Clean the Balancer according to the instructions in **Maintenance**.
- ***Study*** the entire *Installation and Operation Manual* **before** using the unit.

Using the Display Panel

The Display Panel both displays information about the Wheel being balancing and controls the Balancer.

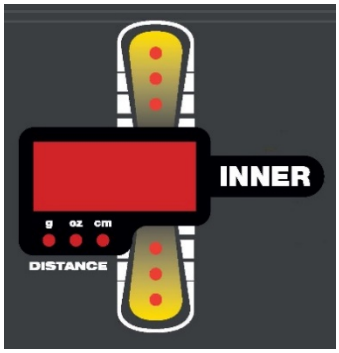
The parts of the Display Panel include:

- **Balancing Mode indicators**. DYN, STA, STA2, ALU, OPT, and HID. When a Balancing Mode is selected, the appropriate indicator goes on.

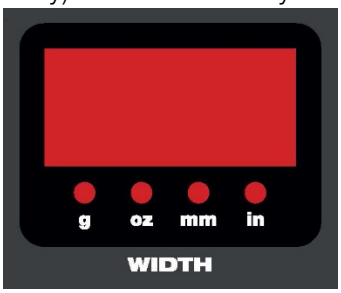


Note: OPT is the Optimize Function, which is not a Balancing Mode; it is an optional procedure to lessen the imbalance in a Wheel that is more than 30 grams / 1 ounce out of balance.

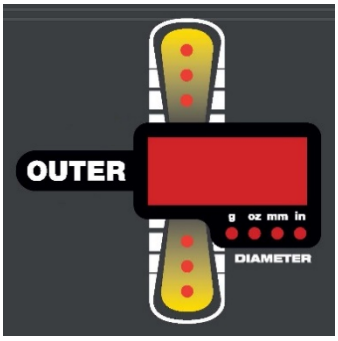
- **Inner / Distance Window**. During the Measurements phase—prior to spinning the Wheel—this Window shows the distance from the edge of the Balancer to the inner edge of the Wheel (measured by the Inner Arm). During the Balancing phase—after spinning the Wheel—it shows the weight to be added to the inner edge/plane of the Wheel.



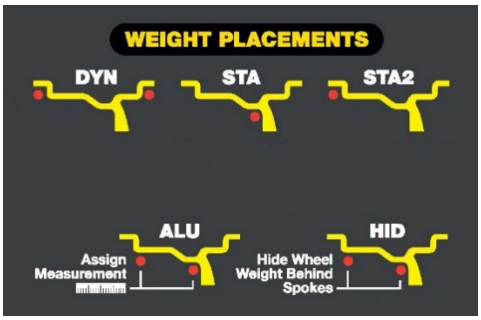
Width Window. During the Measurements phase, this Window shows the Width of the Wheel. Determined automatically from the measurements taken by the Inner and Outer Arms (DST-64T Only). Data is manually entered using the Distance, Width and Diameter buttons on the DST-642D.



- **Outer / Diameter Window**. During the Measurements phase, this Window shows the Diameter of the Wheel (measured by the Outer Arm). During the Balancing phase, it displays the weight to be added to the outer edge/plane of the Wheel.

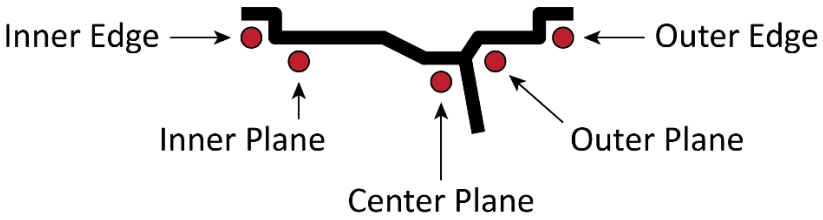


- **Weight Placement indicators**. Based on the Balancing Mode selected, the weight placement indicate where the correction weight is to be placed on the Wheel.



⚠ **CAUTION** If the wrong Balance Mode indicators turn on, stop the Balancer and start again. If you put the weights on the Wheel in a location other than what the Balancer expects, the Wheel will not balance correctly.

The following drawing shows available weight locations.



- **Distance, Width, Diameter Plus and Minus buttons**. Used to change the Distance, Width, and Diameter settings during the Measurements phase of the balancing session (before you spin the Wheel).

  Only needed if you want to enter these values manually on the DST64T and the DST-642D; otherwise, use the Inner Arm and Outer Arm to have the Balancer determine these values automatically (DST-64T only).

- **Control buttons**. Control the Balancer.

  The Control buttons are:

  – **OPT**. Used with the Optimize Function.

  – **ALU**. Press to switch between Dynamic Mode and ALU Mode.

  – **FINE**. Press and hold to see *exact* Balance values without rounding to the nearest 5g (.17 oz.).

  – **mm / inch**. Toggles between millimeters (mm) and inches for those windows that show these measurements.

    To switch between grams (g) and ounces (oz) when a window shows appropriate values, press and hold **Stop** and then press the **Distance +** button.

  – **C**. Used to initiate calibration procedures.

  Important: *The Balancer comes from the factory calibrated*. There is no reason to calibrate it when you first receive it. You only need to calibrate it if you see multiple incorrect balances.

  Also used with the **Stop button** to toggle the Auto-Hood function on-off. When toggled on, the Wheel will automatically begin to spin when the Hood is lowered. Press **Stop+C** to toggle off, press **Stop+C** again to toggle back on.

  – **STA button**. Switches between Dynamic and Static Modes.

  – **D button**. Performs a test of the Balancer display and software. POS will display after successful test.

  – **Start button**. Starts the Wheel spinning, which can also be done by lowering the Hood, if the Auto-Hood function is toggled on.

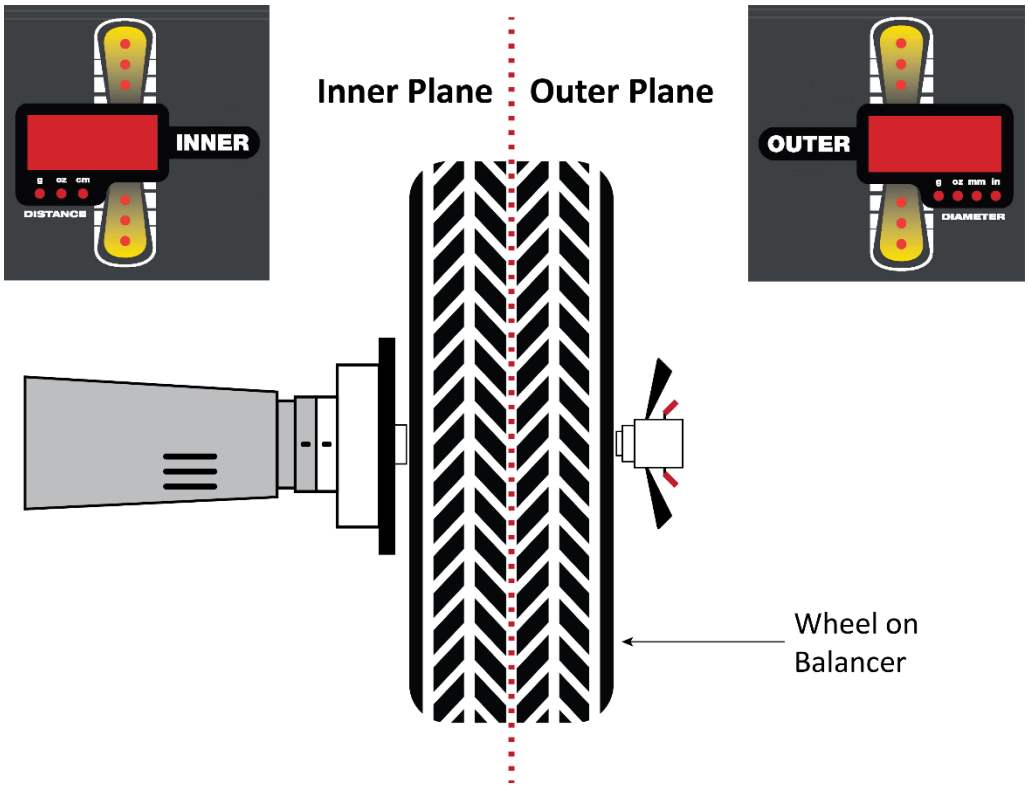
  – **Stop button**. Stops the Wheel from spinning. When displaying weights, holding the **stop** button then pressing the **Distance +** will display units from g to oz. and oz. to g.

    Also used with the **C button** to toggle the Auto-hood function on-off. Press **Stop+C** to toggle off, press **Stop+C** again to toggle back on.

About Planes

If you were to split a Wheel down the center (as shown below), it would be split into two “Planes”, an Inner plane and an Outer plane.

Balancing a Wheel on ***both*** planes at the same time is the most effective method. Of the Balancing Modes supported by the Wheel Balancer, four of them balance on two planes at the same time.



The two Static Modes are included for thin, automobile Wheels and motorcycle Wheels, which are not big enough to be balanced on both planes at the same time.

The Display Panel shows a two-plane view of the Wheel being balanced.

The Inner “Plane” is on the left and the Outer “Plane” is on the right.

The **INNER** Window shows how much weight to place on either the Inner Edge or the Inner Plane weight locations.

The **OUTER** Window shows how much weight to place on either the Outer Edge or the Outer Plane weight locations.

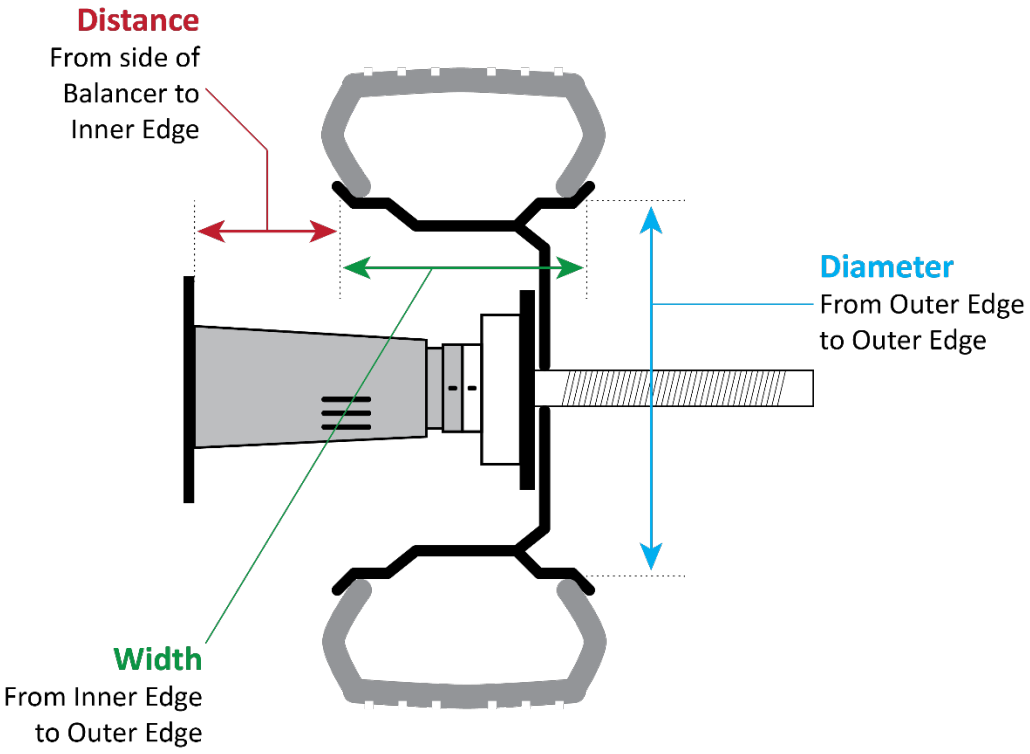
The Placement Indicators, six vertical LEDs per Plane, all light up when the best weight location is reached.

About Measurements

There are three measurements of a Wheel that are required for the Balancer to determine the correct weight and placement corrections.

The three measurements are:

- **Distance**. The distance from the side of the Balancer to the Inner Edge/Plane of the Wheel. Measured by the Inner Arm.
- **Width**. The distance from the Inner Edge of the Wheel to the Outer Edge. Width is either determined automatically from the Distance and Diameter values on the DST-64T or measured using the Caliper and entered manually on the DST642D.
- **Diameter**. The distance from Outer Edge to Outer Edge. Automatically measured by the Outer Arm on the DST-64T. Read from the sidewall of the Tire or measured using the Caliper and entered manually on the DST642D.



Inputting Measurement Data Manually

The Balancer determines measurement data automatically when you use the Inner Arm and the Outer Arm (DST-64T only), but you can enter all measurement data manually on both models:

- **Distance**. Pull out the Inner Arm to the Inner Edge of the Wheel, note the value that you see on the Ruler, then enter that value using the **Distance +** and **—** buttons on the Display Panel. Use the buttons to change the displayed value (a default) to the value you measured.
- **Width**. Measure with the Calipers, then enter that value using the **Width +** and **—** buttons on the Display Panel.
- **Diameter**. Read the value from the tire sidewall or measure with the Calipers, then enter that value using the **Diameter +** and **—** buttons on the Display Panel.

Mounting a Wheel

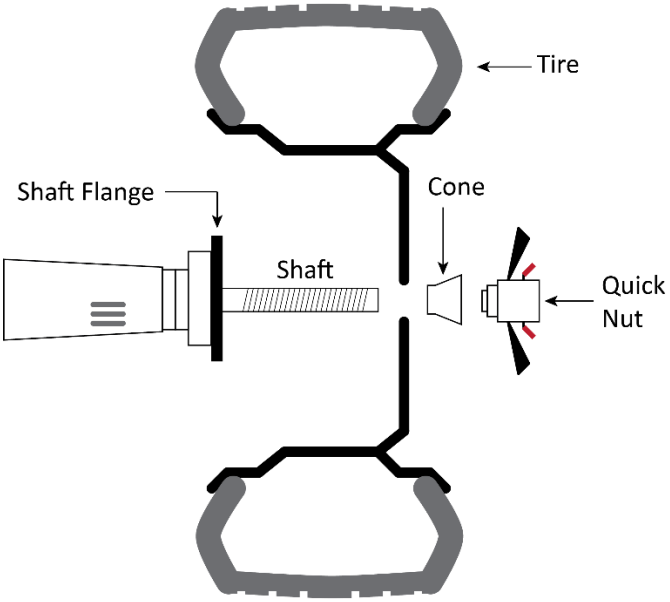
When you want to balance a Wheel, the first step is to mount it on the Shaft.

Important: All Wheels should be mounted so that the inside (the side of the Wheel that goes closest to the Vehicle) goes on the Shaft first.

There are three ways to mount a Wheel onto the Shaft:

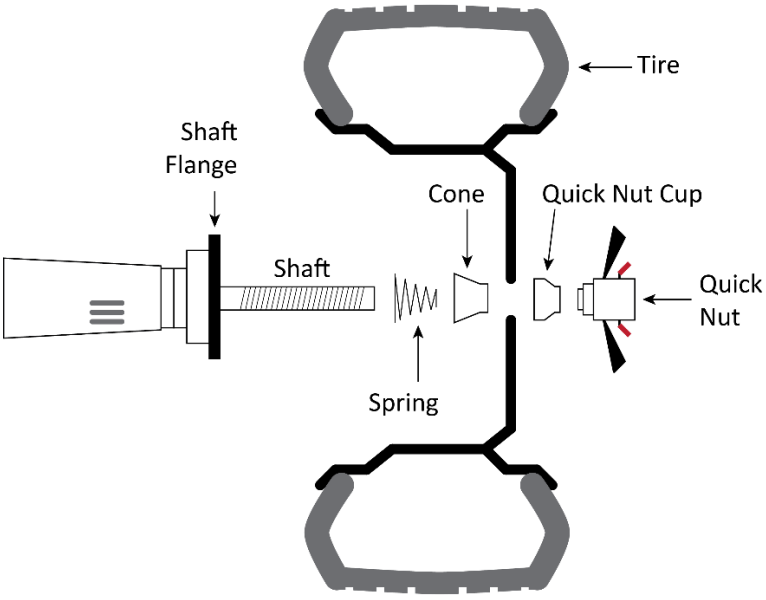
- **Front-Cone Mounting**. The preferred method, as it generally produces the most accurate balancing results.

  An appropriately sized Mounting Cone goes on after the Wheel, then the Quick Nut.



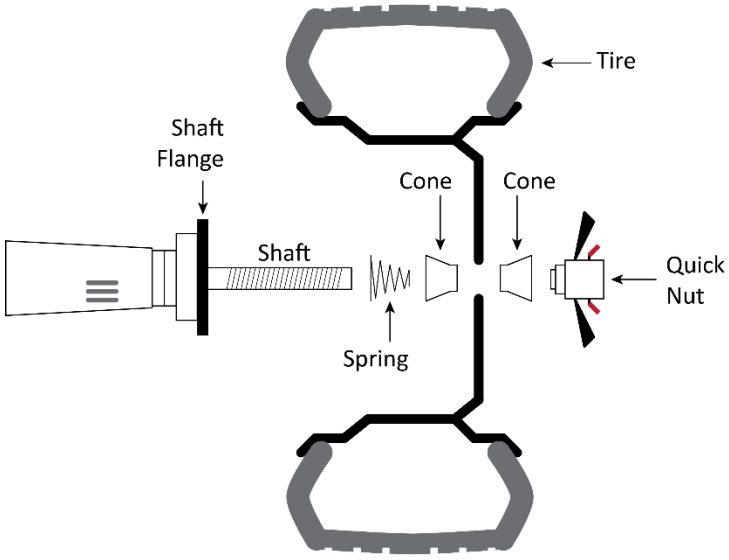
- **Rear-Cone Mounting**. Use this method if the Wheel you are balancing cannot be mounted with Front-Cone Mounting.

  The Spring goes on first, then an appropriately sized Cone, the Wheel, the Quick Nut Cap, and finally the Quick Nut.



- **Dual-Cone Mounting**. Generally used only for some aftermarket or OEM performance Wheels that have a center hole that is deep enough to allow the use of **two** cones on the Shaft.

  The Spring goes on first, then an appropriately sized Cone, the Wheel, a second appropriately sized Cone, and finally the Quick Nut.



To mount a Wheel:

1. Make sure you are wearing ANSI-approved eye protection: safety glasses, face shield, or goggles.
2. Determine which mounting method you want to use.
3. Move the Wheel you are going to mount next to the Shaft.
4. Select the Mounting Cone that best fits the center hole of the Wheel.
5. If Rear-Cone or Dual-Cone Mounting, put the Spring and the desired Cone onto the Shaft.
6. Lift the Wheel and put it onto the Shaft, then slide it back towards the Shaft Flange.

   You may need to lift the Wheel slightly when positioning a Cone in the center hole of the Wheel.

Note: Avoid dragging the Wheel over the Shaft Threads.

7. While holding the Wheel and other hardware in place, slide the Quick Nut over the Shaft while holding the Quick-Release Levers next to the Wings.

   Holding the Quick-Release Levers next to the Wings lets you quickly slide the Quick Nut into position near the Wheel.

8. Release the Quick-Release Levers.
9. Turn the Wings to fully tighten the Quick Nut, and thus the Wheel, in place.

   You may want to spin the Wheel some as you tighten the Quick Nut; this can help you get a strong, secure fit.

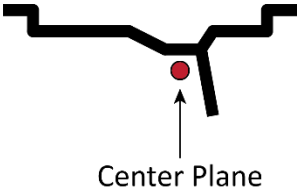
Important: Do not hammer or hit the Quick Nut to tighten it. You will damage the Quick Nut, which is not covered under the Warranty.

Balancing Modes

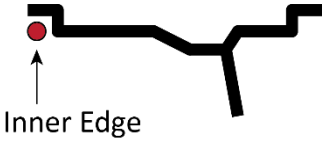
Balancing Modes are based on the locations where the weight gets put on if the Wheel is out of balance:

- **Dynamic (DYN)**. The most common Balancing Mode; used with steel rims. If the Wheel is out of balance, weight(s) are clamped on the Inner Edge and the Outer Edge.

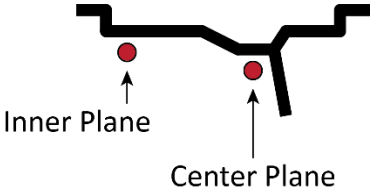
- **Static (STA)**. Used for Wheels under 4 inches wide and motorcycle Wheels. If the Wheel is out of balance, adhesive weight(s) are applied to the Center Plane only.



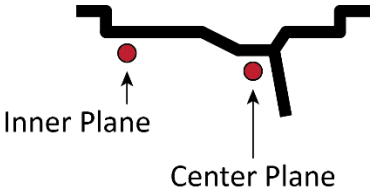
- **Static 2 (STA2)**. Also used for Wheels under 4 inches wide and motorcycle Wheels. If the Wheel is out of balance, weight(s) are clamped to the Inner Edge only.



- **Aluminum (ALU)**. Used on Aluminum Alloy Wheels when you want adhesive weights to be applied on the Inner Plane and the Center Plane.



- **Hidden (HID)**. Also used on Aluminum Alloy Wheels. HID Mode is very similar to ALU Mode; the difference is that the weight that goes on the Center Plane can be split up and hidden behind spokes in the Wheel.



Refer to **Hidden Weight Balancing** for specific instructions for using this Balancing Mode.

OPT (Optimize) Function

Not a Balancing Mode. The Optimize Function is an optional procedure to lessen the imbalance in a Wheel that is more than 30 grams / 1 ounce out of balance.

For more information, refer to **Using the Optimize Function**.

Before You Balance a Wheel

Before you balance a Wheel, you should:

- **Remove all existing Weights from the Wheel**. If the Wheel already has Weights on it, either Clip-On or Adhesive, take them off. They will throw off the new balancing process.
- **Thoroughly clean the Wheel**. Mud or dirt on the Wheel will impact the new balancing process. Also, if you end up putting on Adhesive Weights, they must be placed onto a clean area.
- **Put on appropriate eye protection**. Do not use the unit unless you are wearing ANSI-approved eye protection: safety glasses, a face shield, or protective goggles.
- **Make sure the area is clear**. Only the operator should be near (within 30 feet) of the Wheel Balancer while the Wheel is turning.

When to Put Weight at Top Dead Center

Top Dead Center (TDC) is the highest point of the Wheel, also called 12 o'clock high. Depending on what Balancing Mode you are using, you may be directed to place the weight at Top Dead Center in Dynamic and Static Modes, but ***not*** to ALU or HID Modes. ALU and HID Modes use the Weight Applicator on the end of the Inner Arm to apply weight.

If you are using ALU or HID Balancing Modes, place weights on the Wheel using the Weight Applicator on the end of the Index Arm, *do* ***not*** *put it at Top Dead Center*.

Depending on the diameter of the Wheel to which the weight is being added, when you add weight with the Weight Applicator, it is ***not*** usually going to be at Top Dead Center. In most cases, it will be somewhere between 10 o'clock and 12 o'clock.

Dynamic Balancing

Dynamic Balancing balances a steel Wheel on both the Inner and Outer Edges.

If the Wheel is out of balance, Clip-On Weights can go on the Inner Edge, the Outer Edge, or both.

To Balance a Wheel using Dynamic Mode:

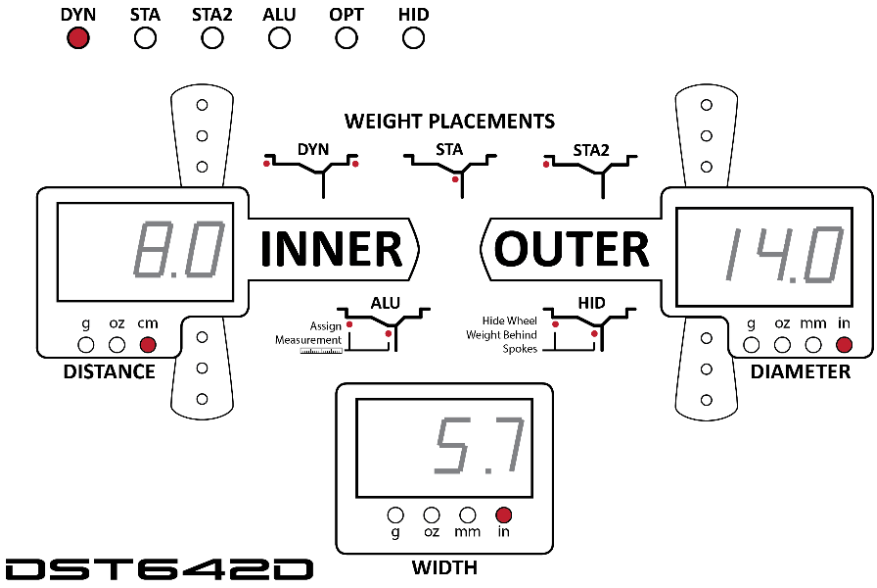
1. Make sure you are dressed appropriately: leather gloves, steel-toed work boots, back belts, hearing protection, and ANSI-approved eye protection: safety glasses, face shield, or goggles.
2. Visually inspect the Balancer to make sure everything is in place. The Hood should be ***up***.
3. Make sure the Wheel you want to balance is both ***clean*** and ***free of any weights*** that may have been put on previously.

   If there are old weights on the Wheel, remove them. If the Wheel is dirty, clean it.
4. Mount the Wheel on the Balancer.

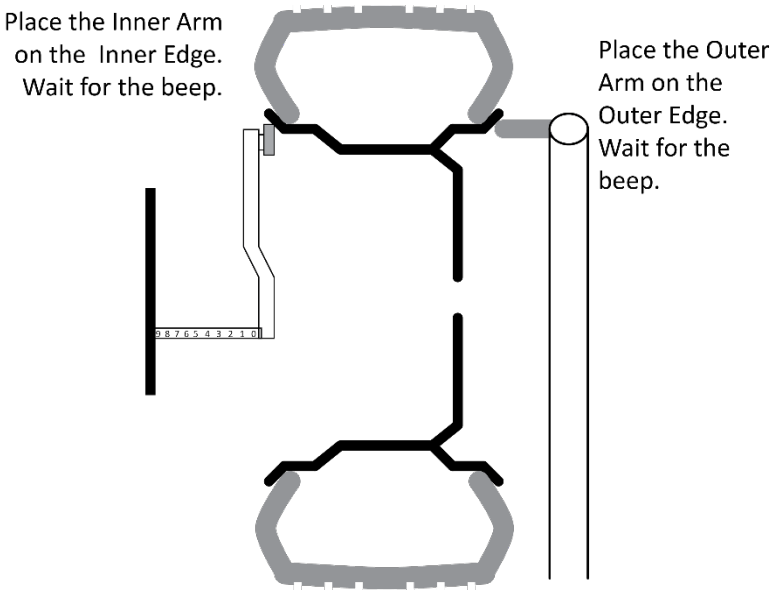
   Refer to **Mounting a Wheel** for mounting instructions, if needed.
5. Turn the Balancer Off and then back On, to reset it.

   On power up, **baL xx** appears in the Inner and Outer Windows. The **xx** is a numeric value that indicates the software version being used.

   After a few seconds, default values appear in the Distance, Width, and Diameter Windows.



7. Pull out the Inner Arm and place it against the Inner Edge of the Wheel and hold it there; ***wait for the Balancer to beep***.



8. When the Balancer beeps, return the Inner Arm to its rest position.

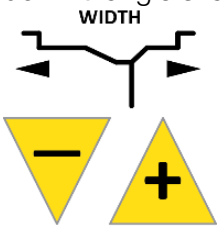
   The Inner Window value changes to show the Distance from the edge of the Balancer to the Inner Edge. The Width Window changes to show no value. The Outer Window changes to show the Diameter of the Wheel.

   Note: The Inner Window always shows distance in centimeters (cm). The Distance Ruler on the Inner Arm is graduated in centimeters and cannot be modified.

9. If using the DST-64T, place the tip of the Outer Arm on the Outer Edge of the Wheel and hold it there; ***wait for the Balancer to beep***. When the Balancer beeps, return the Outer Arm to its rest position.

   A width value appears in the Width Window; determined by the Outer Arm.

10. If using the DST642D, measure the width of the Wheel using the Calipers, then use the up and down triangle shaped buttons under Width to change the value in the Width Window.



   When there are values in all three windows, the Balancer has enough information to perform a Dynamic Balance of the Wheel.

11. Lower the Hood or push **Start**; the Wheel spins briefly.

12. When the Wheel stops, look at the values that appear in the Inner and Outer Windows on the Display Panel; these values are the correction weight values required for each plane.

    The measurement system, in grams or ounces, is indicated by an LED under each window. To switch between grams and ounces, press the **Stop** button, then press **Distance +** at the same time.

If both the Inner and Outer Windows show **00**, then the Wheel is balanced and no further action is required.

The value that appears in the Inner Window is the weight that needs to be added to the Inner Edge of the Wheel. The value that appears in the Outer Window is the weight that needs to be added to the Outer Edge of the Wheel.

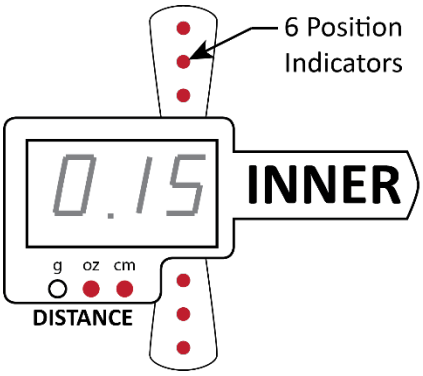
If either value is over 1 oz / 30 grams out of balance, **Opt** appears in the Width Window, meaning that the Optimize Function can be used. Refer to **Using the Optimize Function** for more information.

13. Lift the Hood.
14. Turn the Wheel slowly to find the best location to put the weight on the Inner Edge (if the Inner Window shows **00**, no correction weight is required on the Inner Edge).

    The Inner position indicators light up or go out as you move the Wheel.

    Note: You can turn the Wheel in either direction. If you go past the position where all the indicators are on, just turn the Wheel back the other way.

15. When all six of the Inner indicators are on, step on the Brake Pedal to hold the Wheel in place.



16. Add the amount of weight called for at 12 o'clock, Top Dead Center.

17. When the weight is in place, release the Brake Pedal.
18. Turn the Wheel slowly again to find the best location for weight on the Outer Edge. If the Outer Window shows **00**, no correction weight is required on the Outer Edge.
19. When all of the Outer indicators are on, step on the Brake Pedal and add the appropriate amount of weight at 12 o'clock on the Outer Edge.
20. Lower the Hood to spin the Wheel again.

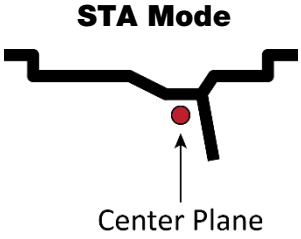
    The Wheel is balanced when both the Inner and Outer Windows show **00**.

Static Balancing (STA Mode)

Static Balancing is for Wheels under 4 inches wide and motorcycle Wheels.

Note: The Optimize Function is not available for Static Mode.

If the Wheel is out of balance, weight must be applied to the Center Plane when using Static Mode.



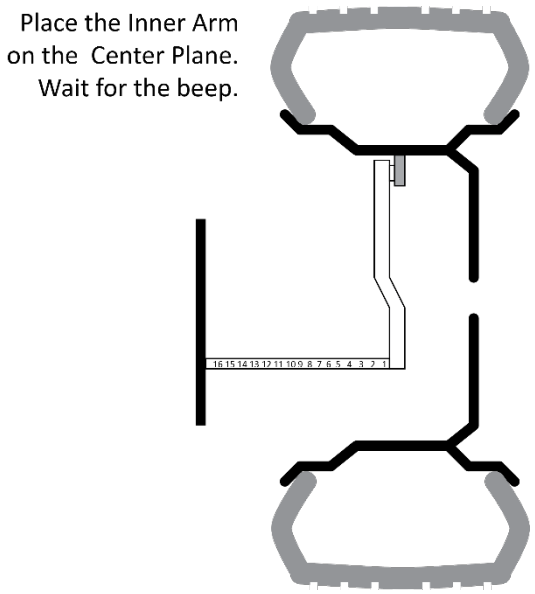
To Balance a Wheel using Static Mode:

1. Make sure you are dressed appropriately: leather gloves, steel-toed work boots, back belts, hearing protection, and ANSI-approved eye protection: safety glasses, face shield, or goggles.
2. Visually inspect the Balancer to make sure everything is in place. The Hood should be ***up***.
3. Make sure the Wheel you want to balance is both ***clean*** and ***free of any weights*** that may have been put on previously.
4. Mount the Wheel on the Balancer.

   Refer to **Mounting a Wheel** for mounting instructions, if needed.
5. Turn the Balancer Off and then back On, to reset it.

   On power up, **baL xx** appears in the Inner and Outer Windows. The **xx** is a numeric value that indicates the software version being used.

   After a few seconds, default values appear in the Distance, Width, and Diameter Windows.
6. On the Control Panel, press the **STA** button until the **STA** (Static Mode) indicator is lit.
7. Pull out the Inner Arm and place it on the *Center Plane of the Wheel* and hold it there; ***wait for the Balancer to beep***.



8. When the Balancer beeps, return the Inner Arm to its rest position.
9. Lower the Hood; the Wheel spins briefly.
10. Raise the Hood when the Wheel stops.

    The Inner Window shows **St** and the **STA** mode indicator is lit.

    The Center Width Window shows the correction weight you need to add to the Center Plane.
11. Turn the Wheel slowly to find the best location to apply the weight, both Inner and Outer position indicators are all lit.
12. When the Wheel is in the right location, all the Inner and Outer Plane Wheel Positions light.
13. Hold the wheel in place at this position with the Brake. Add the correct amount of weight at 12 o'clock Top Dead Center.

14. Lower the Hood to spin the Wheel again.

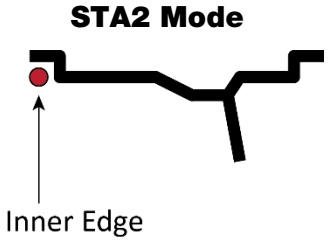
    The Inner and Outer Window shows **00** When the Wheel is balanced.

Static Balancing (STA2 Mode)

Static Balancing is for Wheels under 4 inches wide and motorcycle Wheels, where the correction Weight cannot be placed on the Center Plane. Wheels using the **STA2** mode will clip the Balance Correction Weights to the Inside Edge of the Wheel.

Note: The Optimize Function is not available for either Static Mode.

If the Wheel is out of balance, weight goes on the Inside Edge of the Wheel when using Static Mode 2.



To Balance a Wheel using Static Mode:

1. Make sure you are dressed appropriately: leather gloves, steel-toed work boots, back belts, hearing protection, and ANSI-approved eye protection: safety glasses, face shield, or goggles.
2. Visually inspect the Balancer to make sure everything is in place. The Hood should be ***up***.
3. Make sure the Wheel you want to balance is both ***clean*** and ***free of any weights*** that may have been put on previously.
4. Mount the Wheel on the Balancer.

   Refer to **Mounting a Wheel** for mounting instructions, if needed.
5. Turn the Balancer Off and then back On, to reset it.

   On power up, **baL xx** appears in the Display Windows. The **xx** is a numeric value that indicates the software version being used.

   After a few seconds, default values appear in the Distance, Width, and Diameter Windows.
6. On the Control Panel, press the **STA** button until the **STA2** (Static Mode 2) indicator is lit.
7. Pull out the Inner Arm and place it on the *Inner Edge* and hold it there; ***wait for the Balancer to beep***.
8. When the Balancer beeps, return the Inner Arm to its rest position.
9. Lower the Hood; the Wheel spins briefly.
10. Raise the Hood when the Wheel stops.

    The Inner Window shows **St** and the **STA2** indicator is lit.

    The Outer Window shows the weight you need to add to the Inner Edge, if weight is required.
11. Turn the Wheel slowly to find the best location to put the weight.
12. When the Wheel is in the right location, all the Inner and Outer Plane indicator LEDs light.
13. Hold the Wheel in position using the Brake.

14. Clip on the correct amount of weight at 12 o'clock Top Dead Center.
15. Lower the Hood to spin the Wheel again.

    The Inner and Outer Window shows **00** When the Wheel is balanced.

About the Weight Applicator on the Inner Arm

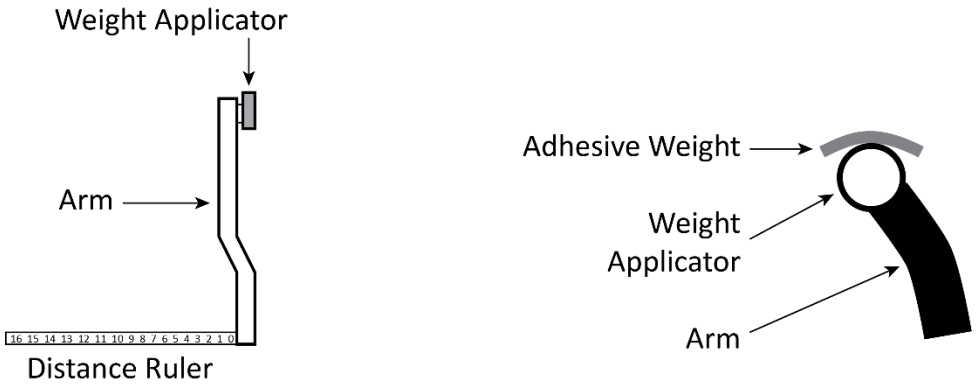
The most common use of the Inner Arm is to find the Distance measurement from the side of the Balancer to the Inner Edge, the Inner Plane, or the Center Plane of a wheel.

It is also used, in ALU and HID Balancing Modes, to apply Adhesive Weights to the Wheel being balanced.

Important: When you use the Weight Applicator to apply Adhesive Weight, do ***not*** apply the Adhesive Weight at Top Dead Center. Instead, put it where the Weight Applicator wants you to put it. This location will not be the same for all Wheels. The position will vary based on the diameter of the Wheel being balanced.

- **For Dynamic and Static Modes**: Place Weight at Top Dead Center.
- **For ALU and HID Modes**: Use the Weight Applicator to apply Adhesive Weight where the Applicator wants you to put it, ***not*** Top Dead Center.

The Weight Applicator is the round piece with a flat inner surface at the end of the Inner Arm, shown in the following drawing.



To use the Weight Applicator:

1. When correction weight is required, turn the Wheel by hand until all of the weight indicator lights are illuminated.
2. Step on the Brake to hold the Wheel in place.
3. Check the Display to determine the amount of weight needed.
4. Tear off the appropriate amount of Adhesive Weights and remove the backing.
5. Turn over the Adhesive Weights so the ***backing is facing up***.

   If you put the backing side down, the Adhesive Weight will stick to the Weight Applicator.
6. Center the Adhesive Weight on the top of the Weight Applicator.
7. Move the Inner Arm towards the edge or plane that needs the weight.

   The Width Window on the Display counts down as you approach the correct location. When you are at the exact right location, the Width Window shows -0.

8. Push the Weight Applicator into the Wheel location to apply the Adhesive Weight.
9. Return the Inner Arm to its rest location on the side of the Balancer.

Aluminum Alloy Balancing

The following procedure describes the two Aluminum Alloy (ALU) Modes.

Important: ALU Modes are for balancing Wheels made of aluminum alloy. The weights can be placed in various locations on these Wheels, so *you need to know where you want to put the weights and then select the appropriate ALU Mode*.

Adhesive Weights are generally used when you are using ALU Modes, as they are less visible than Clip-On Weights.

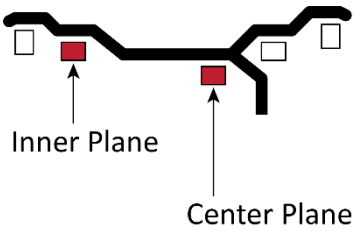
To balance a Wheel using an ALU Mode:

1. Make sure you are wearing ANSI-approved eye protection: safety glasses, face shield, or goggles.
2. Visually inspect the Balancer to make sure everything is in place. The Hood should be ***up***.
3. Mount the Wheel you want to balance.

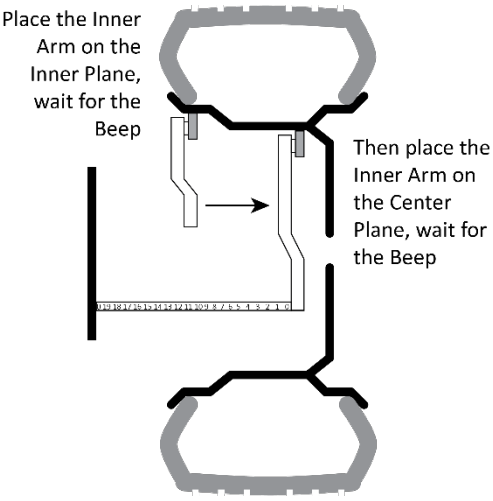
   Refer to **Mounting a Wheel** for mounting instructions, if needed.
4. Turn the Balancer Off and then back On, to reset it.
5. The instructions for the two ALU Modes are different:

   ALU

   ALU Mode is used on Aluminum Alloy Wheels where the correction weight(s) are to be applied on the Inner Plane and the Center Plane.



a. Pull out the Inner Arm, put it on the Inner Plane, and hold it there.
b. Listen for the beep.
c. After the beep, move the Inner Arm to the Center Plane and hold it there.



⚠ **CAUTION** Do ***not*** return the Inner Arm to its rest position between the two locations.

d. Listen for the beep.
e. After the beep, return the Inner Arm to its rest position.
f. Make sure that ALU is selected (this should be done automatically).

   If ALU mode is ***not*** automatically selected, restart the procedure.

In ALU mode, both Adhesive Weight locations are placed at the location determined by the Inner Arm. Do **not** place the Weights at 12 o'clock Top Dead Center.

g. Lower the Hood; the Wheel spins briefly.

h. Raise the Hood when the Wheel stops.

The Inner and Outer Windows show the weight that needs to be added to the locations for the selected ALU Mode.

i. Turn the Wheel slowly to find the best location to put the Inner Weight.

When the Wheel is in the right location, all the Inner Plane LED indicators are lit.

j. Hold the Wheel in place using the Brake pedal.

k. Attach the correction weight(s) (adhesive side up) specified in the Inner Window to the weight applicator on the end of the Inner Arm.

l. Pull out the Inner Arm and apply the Weight to the Center Plane.

Note: As the Inner Arm is moved, the Center Window will provide a countdown to **--0** indicating the position on the center plane for the correction Weight(s). Push up firmly making sure the weight(s) adhere to the Wheel.

m. Return the Inner Arm to its rest position.

n. Turn the Wheel slowly to find the best location to place the Center Plane correction weight; all the Outer Plane LEDs will be lit.

o. Pull out the Inner Arm and apply the Weight(s) to the Center Plane. Press firmly to ensure the weights adhere to the Wheel.

Note: As the Inner Arm is moved, the Center Window will provide a countdown to **--0** indicating the position on the center plane for the Weight. Push up firmly making sure the weight(s) adhere to the Wheel.

p. Return the Inner Arm to its rest position.

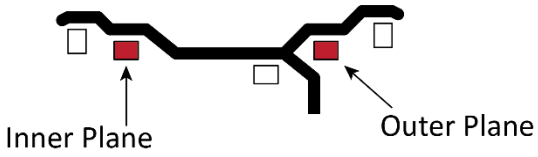
q. Lower the Hood to spin the Wheel again.

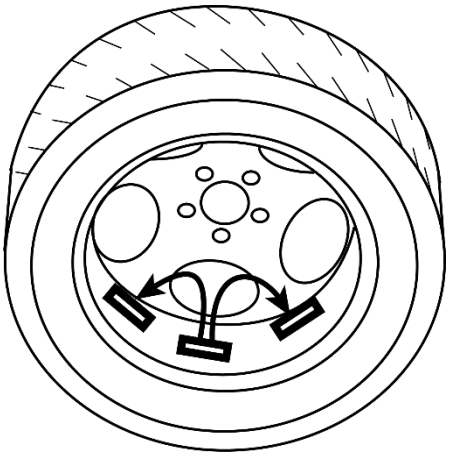
The Wheel is balanced when both the Inner and Outer Windows show **00**.

Hidden Weight Balancing

Hidden Weight (**HID**) Mode hides Central Plane correction Weight(s) behind selected spokes on the Wheel so that they are difficult to see.

Use **ALU** Mode for Hidden Weight Mode.





With Hidden Weight Mode, Adhesive Weight(s) on the Inner Plane are used normally, while Adhesive Weights on the Outer Plane are split and mounted behind spokes. Follow this step-by-step procedure exactly. Leaving steps out will result in wheels badly out of Balance.

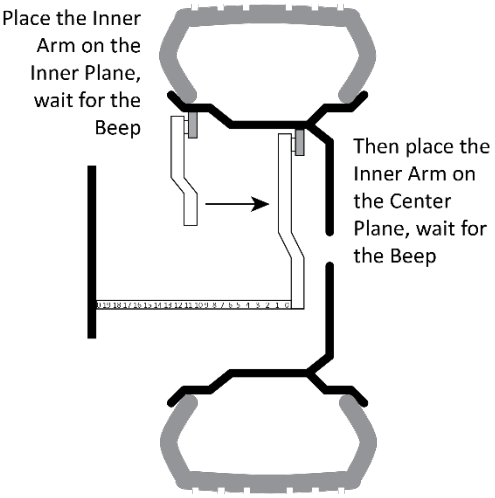
To balance a Wheel using Hidden Weight Mode:

1. Make sure you are wearing ANSI-approved eye protection: safety glasses, face shield, or goggles.
2. Visually inspect the Balancer to make sure everything is in place. The Hood should be ***up***.
3. Mount the Wheel you want to balance.

   Refer to **Mounting a Wheel** for mounting instructions, if needed.
4. Turn the Balancer Off and then back On, to reset it.
5. The Balancer automatically begins in Dynamic Mode.
6. Define the Inner Plane and the Center Plane. Move the Inner Arm to the Inner Plane, wait for the Balancer to beep, then move the Inner Arm to the Center Plane behind the Wheel Spokes, and wait for the balancer to beep.

   There are two sequential actions in the Step above. Do **not** return the Inner Arm to its rest position between defining the Inner and Center Planes. When done correctly, the Balancer will:

   - Automatically shift to **ALU** mode. Front Panel **ALU** LED indicator on.
   - The Inner Window displays distance from the side of the balancer to the Inner Plane.
   - The Center Window displays the measured width between the Inner and Center Planes.
   - The Outer Window displays distance from the side of the balancer to the Center Plane.



7. After defining the center plane in the Step above, return the Inner Arm to its rest position on the side of the Balancer.
8. Close the Hood and/or push **Start**. The Wheel will spin and then stop automatically. Correction weight values will appear in the Inner and Outer Display Windows.
9. Rotate the Wheel by hand until all the Inner Plane Position Indicators are lit.
10. Apply the Brake to hold the Wheel in place.

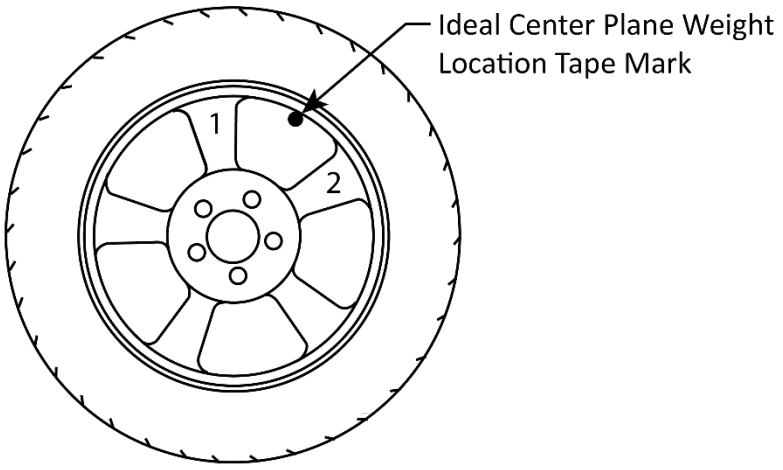
11. Retrieve the Adhesive Correction Weight(s) specified by the Balancer in the Inner Plane Display Window.
12. Place the Weight(s) (adhesive side up) in the Weight Applicator on the end of the Inner Arm.
13. Pull out the Inner Arm and apply the Weight(s) firmly to the Inner Plane to ensure the weight(s) adhere to the Wheel.

Note: The Center Display Window will provide a countdown to **0--** indicating the position on the Inner Plane for the Weight(s). When the counter reaches **0--** push up firmly on the weight(s) ensuring the Weight(s) adhere to the Wheel.

14. Return the Inner Arm to its rest position.
15. Rotate the Wheel by hand until all Outside (Center) Plane LEDs are all lit and hold the Wheel in place with the Brake.

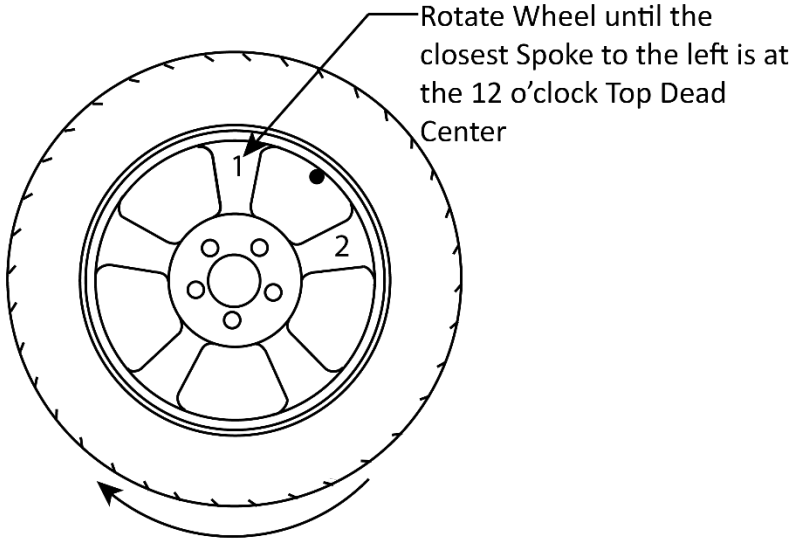
Press **D+Opt** simultaneously.

16. The Display will now show **ALU** and **HID** Mode LEDs on.
17. The Inner Plane Window displays **SPO**, the Middle Width Window displays, XXX (software revision level).
18. Apply a piece of masking tape or similar (adhesive side up) to the weight Applicator on the end of the Inner Arm. Pull the Inner Arm out to the Center Plane and apply the tape to the Wheel marking the ideal weight location. No Beep will sound. Do **not** skip this step!

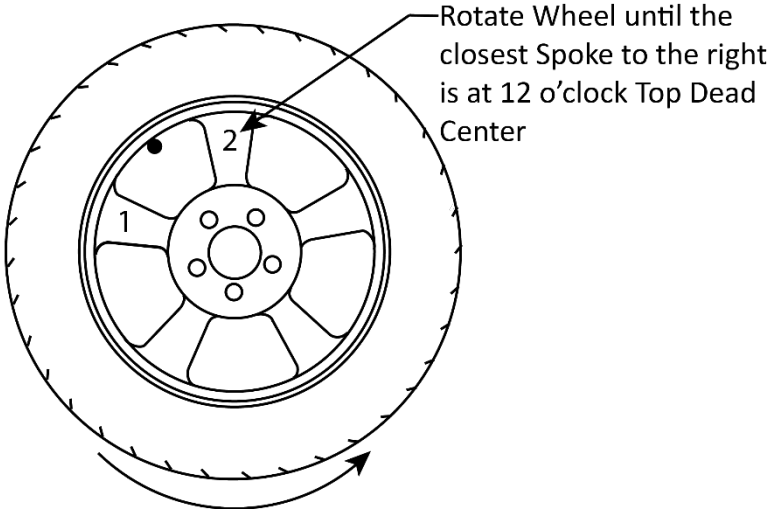


Note: You **must** use the Inner Arm. This action triggers the Balancer Software to calculate the split weight and re-defines the Central Plane Location.

19. Return the Inner Arm to its rest position on the side of the Balancer
20. Press **ALU**.
21. **-1-** will appear in the middle Width Display Window.
22. Stand on the Hood side of the Balancer facing the Wheel. Rotate the Wheel until the spoke that is to the Left of the tape mark is at 12 o'clock Top Dead Center.
23. Hold in position with the brake and push **ALU** (this defines the angular distance of the first split weight measured from the ideal weight location.



24. The Middle Width Display now changes to **-2-**.
25. Return to the Hood side of the Balancer. Rotate the Wheel moving the spoke that is to the Right of the tape mark until it is at 12 o'clock top dead center.
26. Step on the Brake to hold the Wheel in position, push **ALU** (this defines the angular location of the second split weight.)
27. The Middle Width Display Window now changes to **SPL**.
28. Release the Brake.
29. Turn the Wheel back to the **-1-** position by hand until the Outer Position LEDs are all lit.



Note: The Balancer corrects the angular position of the **-1-** weight correction to allow the use of the Inner Arm for weight application. (The Spoke will **not** be at 12 o'clock position that you set earlier.)

30. Hold the Wheel in place using the Brake.
31. Place the correction weight(s), centered, adhesive side up, on the weight applicator on the end of the Inner Arm.
32. Pull out the Inner Arm and apply the Weight(s) to the Center Plane.

Note: The Center Window will provide a countdown to **--0** indicating the position on the center plane for the Weight. Push up firmly making sure the weight(s) adhere to the Wheel.

33. Return the Inner Arm to its rest position.
34. Release the Brake.
35. Rotate the Wheel by hand until all the LEDs are fully lit again for the **-2-** position.
36. Apply and hold the Brake.
37. Attach the Weight(s) (Adhesive side up) specified in the Outer Window to the weight applicator at the end of the Inner Arm. Pull out the Inner Arm and apply the Weight(s) to the Center Plane.

Note: The Center Window will provide a countdown to **--0** indicating the position on the center plane for the Weight. Push up firmly, making sure the weights adhere to the Wheel when the counter reaches **--0**.

38. Return the Inner Arm to its rest position.
39. Release the Brake.
40. Lower the Hood and press **Start** to spin the Wheel.
41. The Balancer will automatically stop and switch back to **ALU** mode.
42. After the Wheel stops, the weight corrections for the Inner and Outer Planes should be 0.

Using the Optimize Function

The Optimize Function lets you help lessen the imbalance of a Wheel that is more than 1 ounce / 30 grams out of balance. You are not ***required*** to use the Optimize Function.

Important: The Optimize Function does not bring a Wheel to fully balanced; instead, it lessens the imbalance of a Wheel that is significantly out of balance. Depending on the state of the Wheel, even if you correctly Optimize a Wheel, it may still be more than 1 ounce / 30 grams out of balance when you are done with the Optimize.

When you see **Opt** in the Width Window during a balance, it means the Wheel you are balancing is more than 1 ounce / 30 grams out of balance on one or both planes.

To Optimize a Wheel:

1. When you see **Opt** in the Width Window during a balance, raise the Hood, then rotate the Wheel until the indicators next to the Inner Window are all lit.
2. Press the **OPT** button on the Control Panel.

   180 appears on the Outer Window and the **OPT** icon on the Display Panel goes on.

   The Balancer is now in Optimize Mode.

   Important: If you use the Balancer to balance a different Wheel or you turn the Balancer on and off, the Balancer will be taken out of Optimize Mode.
3. Mark the Cone, the Rim at the Cone, the Rim at the Tire, and the Tire itself.

   Tip: You want a Mark that will come off when you are done with the process but not come off during the process. Using tape generally works, using a pen or pencil usually does not. A pen or pencil Mark on tape works the best.
4. Remove the Wheel from the Balancer, then use a Tire Changer to take the Tire off the Wheel, rotate the Tire 180°, then put the Tire back on the Wheel.

   Make sure not to cover or remove the Marks on the Wheel and Tire.
5. Put the Wheel back on the Balancer, making sure to align the marks on the Cone, the Rim at the Cone, and the Rim at the Tire.

   The Mark on the Tire itself will be 180° from the other Marks.
6. Lower the Hood or press the **Start** button.
7. When the Wheel stops, turn the Wheel until the Inner Placement Indicators are all lit and the Wheel locks in position.
8. Put a Mark at Top Dead Center on the Wheel Rim.
9. Press **Stop** to release the Wheel, then turn the Wheel until the Outer Placement Indicators are all lit and the Wheel locks in position.
10. Put a Mark at Top Dead Center on the part of the Tire next to the Wheel Rim.
11. Remove the Wheel from the Balancer, then use a Tire Changer to take the Tire off the Wheel, rotate the Tire so the two Marks you just put on are aligned, then put the Tire back on the Wheel.
12. Put the Wheel back on the Balancer and restart the Balancing process that was interrupted by using the Optimize Function.

Maintenance

Make sure your Wheel Balancer is maintained on a regular basis.

Regular Maintenance

⚠ **WARNING** Disconnect the Power Cord from power ***before performing any maintenance*** and take whatever steps are necessary to make sure the unit cannot be re-energized until Maintenance is over. Because the unit uses electricity, you could be electrocuted or even killed if the unit is powered back on during Maintenance.

To maintain your Wheel Balancer:

- **Daily**: Make sure the unit is clean and dry before using it.
- **Weekly**: Make sure the Shaft Assembly is correctly oriented with the Shaft Housing (witness marks aligned) and is securely tightened.
- **Monthly**: Make sure all Anchor Bolts are tightened and secure.
- **Monthly**: Check all components to make sure they are in good operating condition. If you find a component that is ***not*** working correctly, take the unit out of service and refer to **Troubleshooting** for more information.
- **Every three months**: Check the bolts on the components attached to the rear of the unit to make sure they are tight and secure.
- **Yearly**: Have an Electrician come out and check the electronic components.
- **Yearly**: Take the unit out of service, disconnect the Power Cord from the power source, and then thoroughly check and clean all components.

⚠ **WARNING** Do not operate your Wheel Balancer if you find issues; instead, take the unit out of service, then contact your dealer, visit **rangerproducts.com/support/**, or call **(805) 933-9970**.

Troubleshooting

Perform the following checks if you are experiencing balancing problems:

- Confirm the location and alignment of the alignment marks on the Shaft Assembly and Shaft Housing (see **Installing the Shaft** for more information).
- Make sure the Balancer is anchored in place (see **Anchoring the Balancer** for more information).
- Perform a Weight Location Verification Test (see **Weight Location Verification Test** for more information).

  Perform the calibration with a steel Wheel of the most commonly used size.

  Note: It is good practice to keep a known good Wheel of the most commonly used size to use as a calibration / reference tire to assist in troubleshooting.

  Make sure the calibration weight used is a 100 gram or 3.5 ounce weight and that is mounted correctly during the calibration procedure.

Issues

Issue	Action to Take
Nothing on the Display Panel.	Make sure the unit is turned on and getting power.
No beep when using the Inner Arm or the Outer Arm.	Make sure the unit is turned on and getting power. Make sure the Outer Arm was correctly installed.
The Outer Arm is not producing correct values on a consistent basis.	Calibrate the Outer Arm. Refer to **Calibrating the Outer Arm** for more information. DST-64T only.
The Inner Arm is not producing correct values on a consistent basis.	Calibrate the Inner Arm. Refer to **Calibrating the Inner Arm** for more information.
The Balancer is not producing good balances on a consistent basis.	Perform a Weight Location Verification Test. Refer to **Weight Location Verification Test** for more information.
Wheel/Tire still causes vibration.	Check for missing weights and rebalance. 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 pressure. Check for stones or other foreign objects caught in Tread. Remove objects, check, repair and rebalance as necessary. Radial or lateral runout in Tire or Wheel. Replace the damaged part. Incorrectly mounted Wheel. Remount Wheel and rebalance.

If you continue to have problems with your Wheel Balancer, visit **www.bendpak.com/support/** or call **BendPak Ranger at (805) 933-9970**.

Calibrating the Outer Arm (DST-64T only)

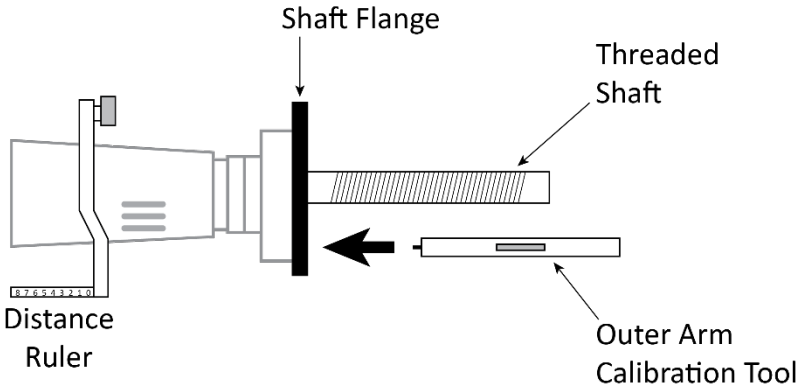
The Outer Arm Calibration makes sure the Outer Arm on the DST-64T is returning correct values.

Note: The Balancer comes from the factory correctly calibrated. You do not need to perform this calibration when you receive the Balancer. You only need to perform this calibration if you are seeing multiple incorrect Wheel balances.

Perform this procedure ***without*** a Wheel mounted.

To calibrate the Outer Arm:

1. Put the 200 mm Outer Arm Calibration Tool into one of the two holes on the Shaft Flange.

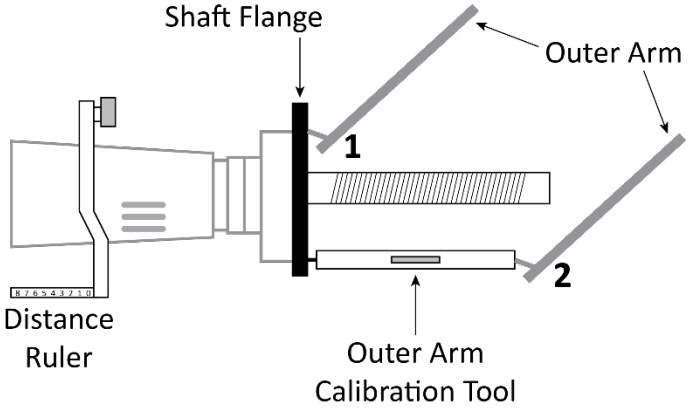


2. Press *and hold* **Stop**, then press **OPT**.

   CAL-0F appears.

3. Place and hold the tip of the Outer Arm on the side of the Shaft Flange (**1** below), then press **ALU**.

   CAL-200 appears.



4. Place and hold the tip of the Outer Arm on the end of the 200 mm Outer Arm Calibration Tool (**2** above), then press **ALU**.

   CAL-END appears.

   The calibration is complete.

Calibrating the Inner Arm

The Inner Arm Calibration makes sure the Inner Arm is returning correct values.

Note: The Balancer comes from the factory correctly calibrated. You do not need to perform this calibration when you receive the Balancer. You only need to perform this calibration if you are seeing multiple incorrect Wheel balances.

Perform this procedure ***without*** a mounted Wheel.

To calibrate the Inner Arm / Distance Ruler:

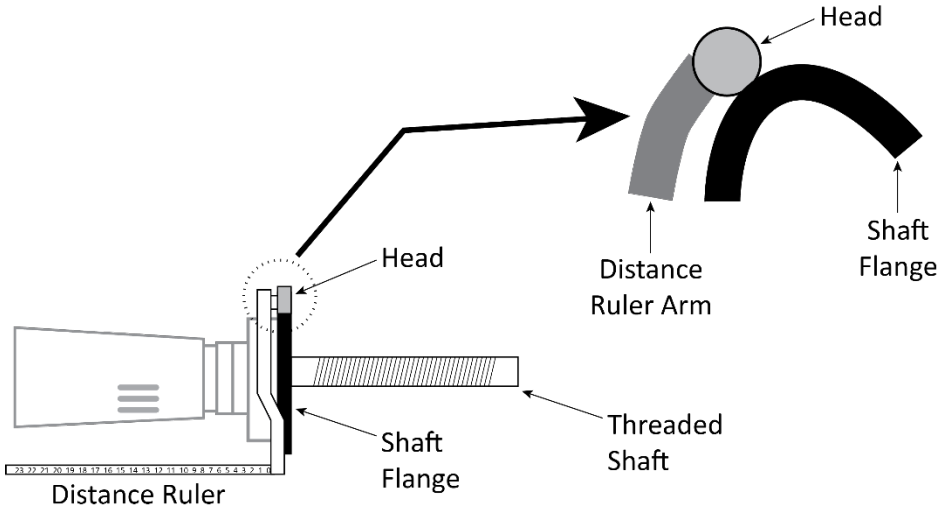
1. Press *and hold* **Stop**, then press **<5g**.

   CAL-100-dIS appears.

2. Pull out the Distance Ruler to **10** cm and hold it there, then press **ALU**.

   CAL-235-dIS appears.

3. Pull out the Distance Ruler to **23.5** and hold it there, rest the Head against the Shaft Flange, then press **ALU**.



   CAL 15.0 appears.

4. Mount a 15" to 17" diameter Wheel onto the Threaded Shaft.
5. Set the **15.0** to the actual diameter of the Wheel you just mounted, then press **ALU**.

   If you mounted a 15" diameter Wheel, you don't have to change anything.

6. Put the Head of the Distance Ruler on the Inner Edge of the Wheel, then press **ALU**.

   Calibration is complete.

Dual-Plane Self-Calibration Procedure

The Dual-Plane Self-Calibration Procedure ensures the Balancer is producing accurate readings by aligning the software with the existing spindle positions and hardware on the Balancer.

Note: The Balancer comes from the factory calibrated. You do not need to perform this calibration when you receive the Balancer. You only need to perform this calibration if you are seeing multiple incorrect Wheel balances.

Before performing the Dual-Plane Self-Calibration Procedure, make sure the Balancer is anchored down and/or rigid to the floor and that the shaft and centering cones are clean and undamaged. Dirt or damaged components can cause inaccurate readings.

Important: A clean, undamaged 15 to18-inch **Steel Wheel** is **required** for this procedure.

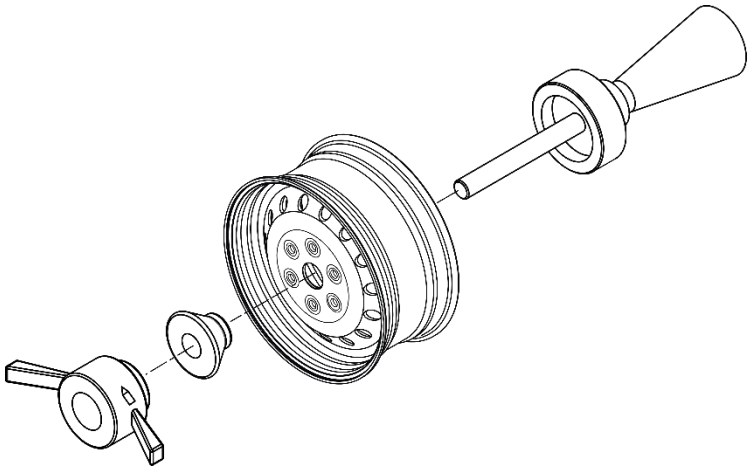
Important: Do **not** use an Aluminum Wheel to calibrate the Balancer, unless that Wheel has a lip on the inner and outer Edges that will allow the 100 g clip-on calibration weight to be hammered onto the Wheel.

Important: Remove any accessories such as the Truck Spacer Ring, Inner Cone, Mounting Spring and Quick Nut Cup from the Balancer Shaft.

Important: Do **not** use a Trailer Wheel to perform this calibration. Trailer Wheels are too narrow, and will provide poor results.

Important: If a Tire is mounted on the Wheel, verify that the wheel is inflated to the correct pressure, is clean and in good condition.

Important: Pay close attention to this procedure. If not done correctly, the Balancer will not produce accurate readings, leading to out of balance Wheels.



To perform the Dual-Plane Self-Calibration Procedure:

1. Front Cone Mount the Wheel securely on the Balancer Shaft using the Quick Nut. As shown above.
2. Program the correct Distance, Width, and Diameter values into the Balancer using the Inner Arm and the Outer Arm or enter them manually.
3. Balance the Wheel until **00** displays in the Inner and Outer Display Windows.
4. Press and hold the **C** and **D** buttons on the Control Panel until the Inner and Outer Placement Indicators stop flashing and **CAL CAL** appears in the Display Windows.
5. Lower the Hood, then press Start to begin the Calibration procedure. If the Auto-Hood function is enabled the Wheel will automatically spin when the Hood is lowered.

   The Wheel spins briefly, then stops.
6. **Add 100** appears in the Display (**Add 3.5** if ounces is selected).

7. Turn the Wheel by hand until all six of the Inner Placement Indicators are lit. Hold the Wheel in position with the Brake.
8. Add a 100-gram Calibration Weight (Clip-On) to the ***Inner Edge*** of the Wheel. (Top Dead Center or 12 o'clock).
9. Close the Hood, or press Start.

   The Wheel spins briefly, then stops.
10. **Add 100** appears on the Display again.
11. Turn the Wheel by hand until the Outer Placement Indicators are all lit.
12. Hold the Wheel in Place using the Brake.
13. Remove the 100-gram Calibration Weight from the Inner Edge of the Wheel and *add it to the* ***Outer Edge***. (Top Dead Center or 12 o'clock).
14. Close the Hood, or press Start.

    The Wheel spins briefly, then stops.

    End CAL appears.
15. Remove and store the 100-gram Calibration Weight from the Wheel.

    The Dual-Plane Self-Calibration Procedure is complete.

Weight Location Verification Test

The Weight Location Verification Test verifies that the Balancer is calibrated correctly.

Before performing the Weight Location Verification Test, make sure the Balancer is bolted down to the floor and that the Shaft and Centering Cones are clean and undamaged. Even the slightest amount of dirt or damage can cause inaccurate readings.

Important: Pay close attention to this procedure. If not done correctly, the Balancer will not produce accurate readings, leading to Wheels not being balanced correctly.

You will need a steel Wheel with a Tire of the most commonly used size, balanced to within 5 grams on either inner or outer with minimal wear or damage to the tire or Wheel, for this procedure.

To perform the Weight Location Verification Test:

1. Balance an average-sized Tire and Wheel to **00 – 00**.
2. Program the correct Distance, Width, and Diameter values into the Balancer using the Inner Arm and the Outer Arm or entering them manually.
3. Add a 100-gram Wheel weight to the Outer edge of the Wheel.
4. Lower the Hood or press the Start button.

   The Wheel spins briefly, then stops.

   Add 100 appears on the Outer Indicator (**Add 3.5** if oz. is selected) and **00** on the Inner indicator.
5. Turn the Wheel by hand until the Outer Placement Indicators are all lit.

   The 100-gram Wheel weight should be at 6 o'clock Bottom Dead Center.
6. Remove the 100-gram Wheel weight from the Outer edge of the Wheel.
7. Install the 100-gram Wheel weight on the Inner edge of the Wheel.

8. Close the Hood or press the Start button.

   The Wheel spins briefly, then stops.

9. **Add 100** appears on the Inner Indicator (**Add 3.5** if oz. is selected) and **00** on the Outer indicator.

10. Turn the Wheel by hand until the Inner Placement Indicators are all lit.

    The 100-gram Wheel weight should be at 6 o'clock Bottom Dead Center.

    The Weight Location Verification Test is complete.

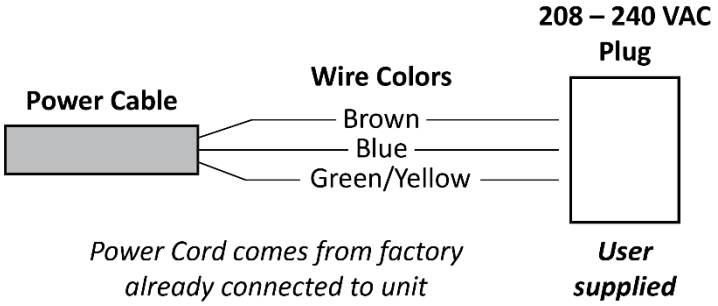
Wiring Information

The Balancer comes with a Power Cord with three exposed wires on the end. The three exposed wires need to be hard-wired to the facility's power system or connected to a 208-240 VAC 2-Pole, 3-Wire, NEMA rated Plug (which is then connected to an appropriate power outlet).

⚠ **WARNING** All electrical work, such as hard-wiring the Balancer to the facility's power system or attaching an appropraite Plug to the end of a Power Cord, must be done by a licensed, certified Electrician in accordance with all applicable local electrical codes. ***Damage to the unit caused by improper electrical installation voids your warranty***.

The Balancer does ***not*** come with a 208-240 VAC NEMA rated Plug; you or your Electrician must supply one.

The colors of the three exposed wires are Brown, Blue, and Green/Yellow, the European color code. The Green/Yellow wire can sometimes appear almost all Green, with very little yellow.



Important: To connect the three exposed wires to an appropriate Plug or to hard wire them, have your Electrician follow the National Electrical Code or the electrical code for the country in which you are using the Balancer and any local electrical codes.

If you are using the Balancer in the United States, for example, the color codes on the wiring that comes with the unit correspond to:

- **Brown**: Live
- **Blue**: Live
- **Green/Yellow**: Ground

If you were using the Balancer in a European country, for example, the color codes on the wiring that comes with the Balancer correspond to:

- **Brown**: Live
- **Blue**: Neutral
- **Green/Yellow**: Ground

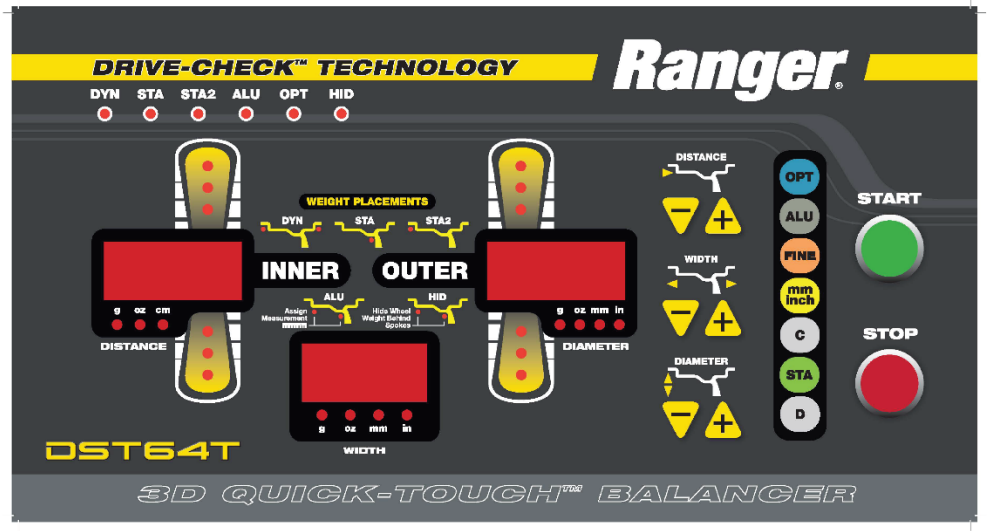
Information about color code conventions in other regions and countries is available online. Make sure your Electrician installs the Plug or hard wires the Balancer in accordance with all national and local electrical codes. Additional electrical information:

- You ***must*** ground the unit.
- Damage caused by improper electrical installation voids the warranty.
- Use a dedicated breaker for the Balancer.
- Most electrical codes require "hard-wiring" when the machine is bolted to the floor. Consult a licensed Electrician regarding the applicable codes for your location.

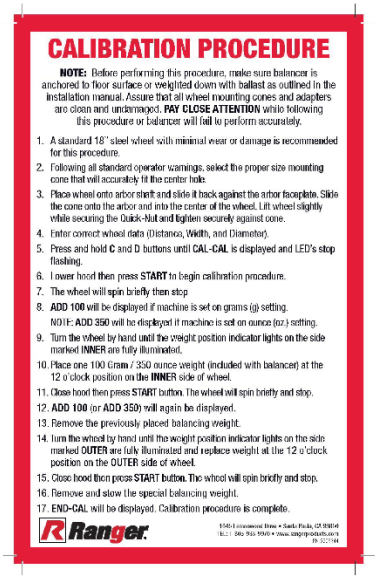
Labels

A

B



C



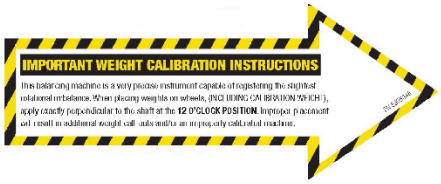
CALIBRATION PROCEDURE

NOTE: Before performing this procedure, make sure balancer is anchored to floor surface or weighted down with ballast as outlined in the installation manual. Assure that all wheel mounting cones and adapters are clean and undamaged. **PAY CLOSE ATTENTION** while following this procedure or balancer will fail to perform accurately.

1. A standard 16" steel wheel with minimal wear or damage is recommended for this procedure.
2. Following all standard operator warnings, select the proper size mounting cone that will accurately fit the center hole.
3. Place wheel onto arbor shaft and slide it back against the arbor faceplate. Slide the cone onto the arbor and into the center of the wheel. Lift wheel slightly while securing the Quick-Nut and tighten securely against cone.
4. Enter correct wheel data (Distance, **W**idth, and Diameter).
5. Press and hold **C** and **D** buttons until **CAL-CAL** is displayed and LED's stop flashing.
6. Lower hood then press **START** to begin calibration procedure.
7. The wheel will spin briefly then stop
8. **ADD 100** will be displayed if machine is set on grams (g) setting.
   NOTE: **ADD 350** will be displayed if machine is set on ounce (oz.) setting.
9. Turn the wheel by hand until the weight position indicator lights on the side marked **INNER** are fully illuminated.
10. Place one 100 Gram / 350 ounce weight (included with balancer) at the 12 o'clock position on the **INNER** side of wheel.
11. Close hood then press **START** button. The wheel will spin briefly and stop.
12. **ADD 100** (or **ADD 350**) will again be displayed.
13. Remove the previously placed balancing weight.
14. Turn the wheel by hand until the weight position indicator lights on the side marked **OUTER** are fully illuminated and replace weight at the 12 o'clock position on the **OUTER** side of wheel.
15. Close hood then press **START** button. The wheel will spin briefly and stop.
16. Remove and store the special balancing weight.
17. **END-CAL** will be displayed. Calibration procedure is complete.

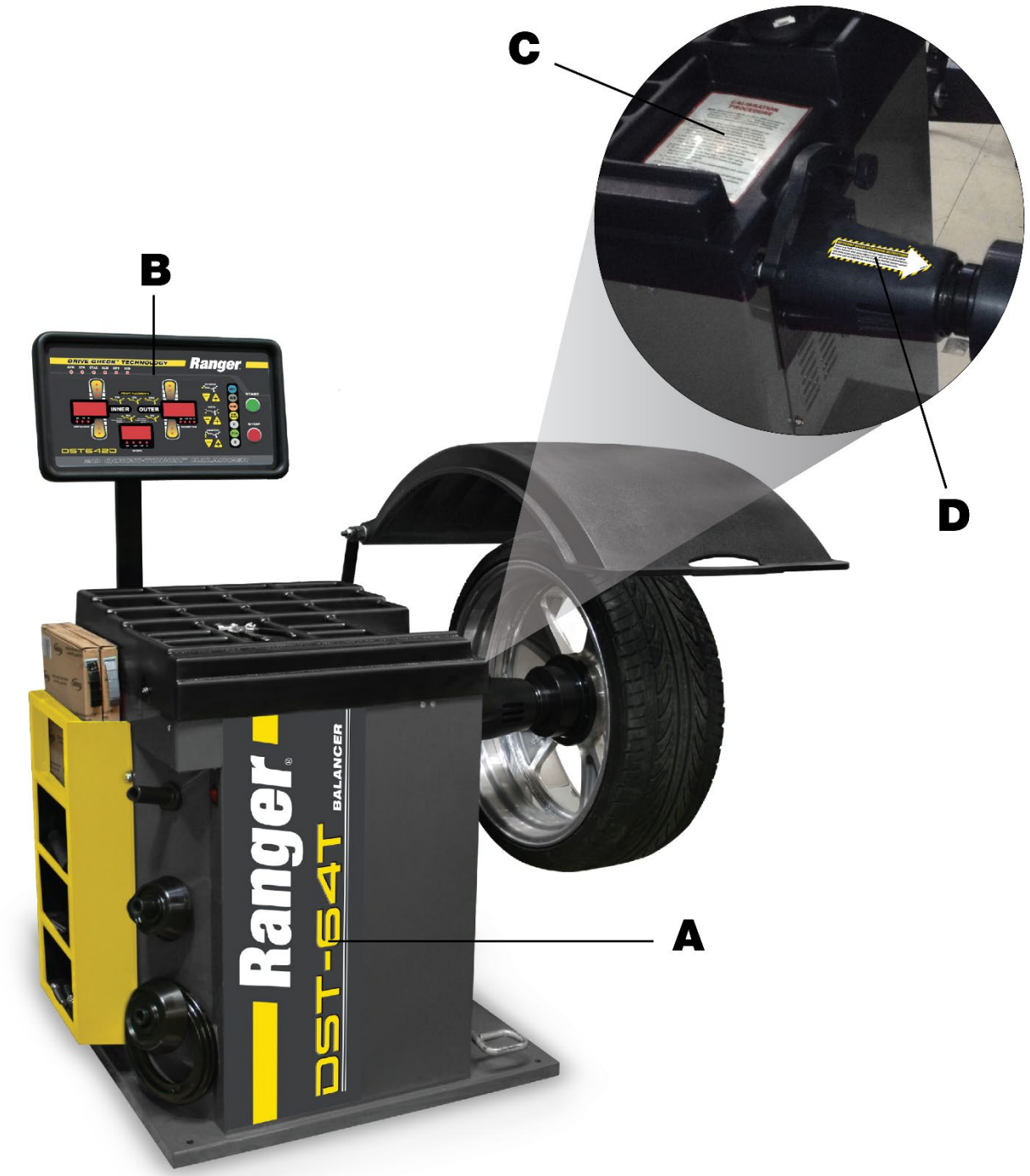
Ranger

D



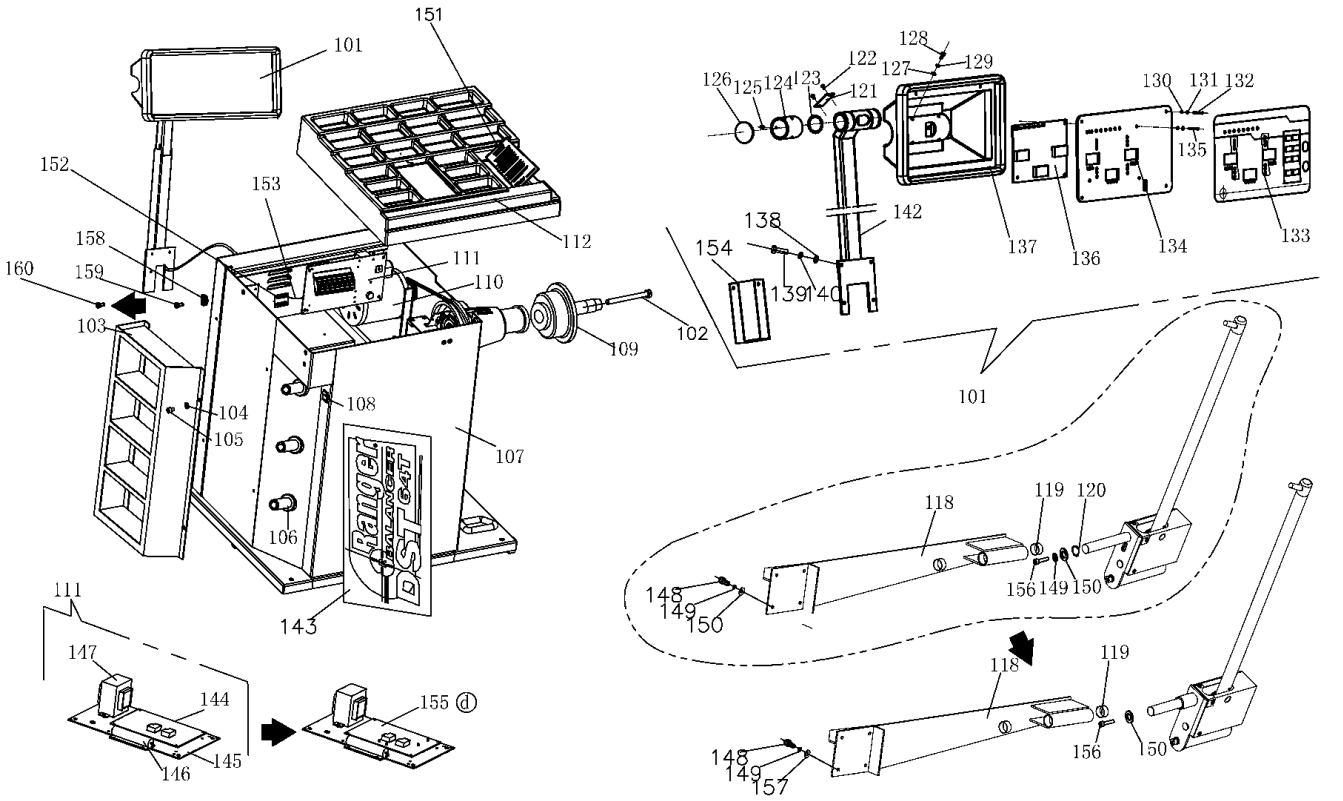
E

DST-64T labels shown. Label E not present on DST642D; A through D are the same for both models.


C
B
D
A
Ranger
DRIVE CHECK™ TECHNOLOGY
INNER
OUTER
DST642D
Ranger
DST-64T
BALANCER

Parts

DST-64T Cabinet

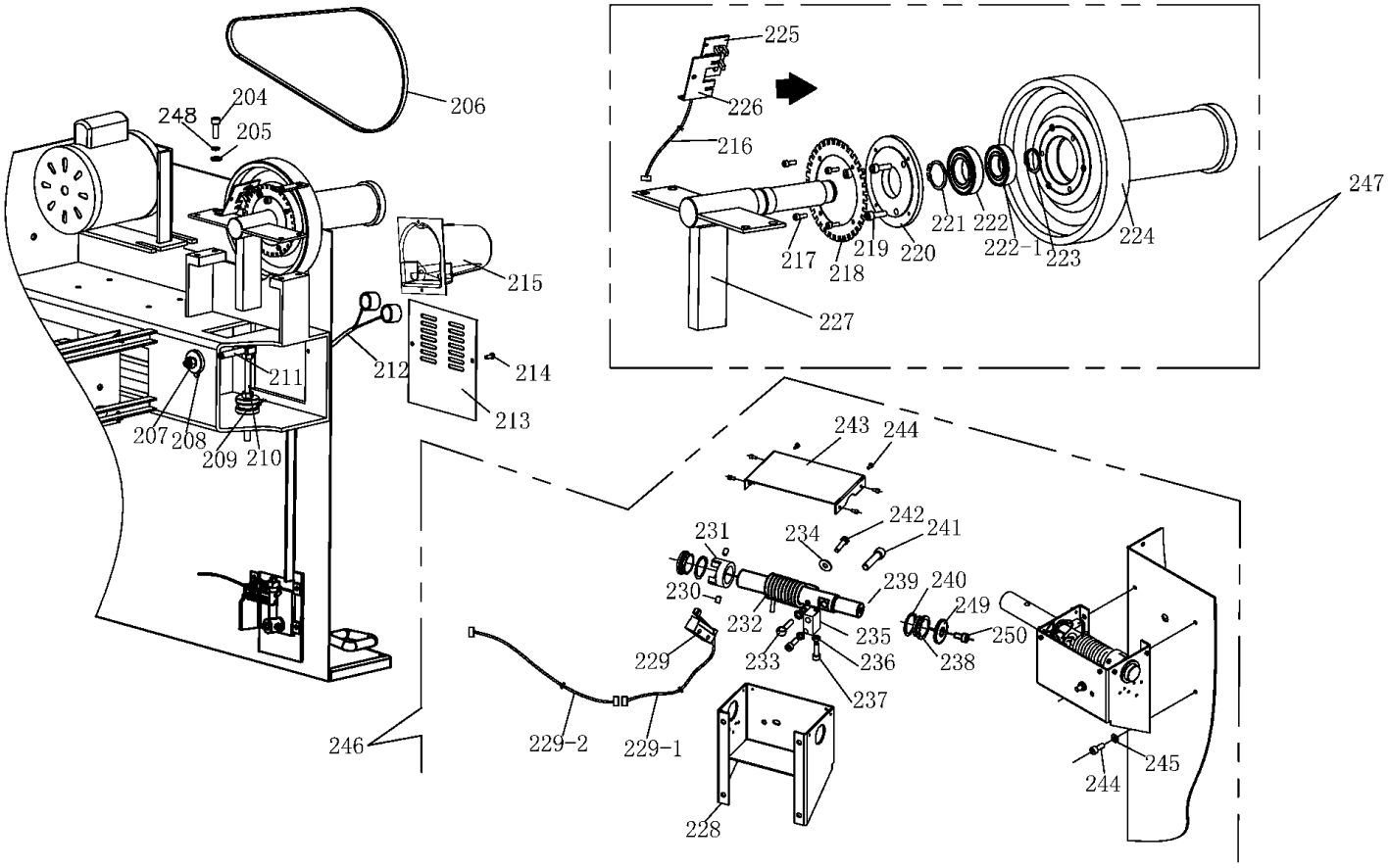


Part #	Number	Description
5327992	101	Display
	102	SHCS, M14 by 240
5327993	103	Side Chassis
	104	Washer, 8 mm flat
	105	SHCS, M8 by 16
5327132	106	Cone Hanger
5327993	107	Side Storage Rack
5327994	108	On/Off Switch
	109	Matcher
5327995	110	Motor
	111	Power Board
5327996	112	Weight Tray
5327997	118	Touch Wand Arm Bracket
5327998	119	Bearing 2010

	120	Snap Ring 20 by 1
	121	Mounting Hood Cover
	122	Cross Recessed Pan Head Screw, M4 by 12
5327999	123	O Ring, 4.2 by 3.5
5328001	124	Display Assembly Sleeve
	125	Hexagon Socket Set Screw with Flat Point, M6 by 8
5328002	126	Display Assembly Plug
	127	Washer, 6 mm Flat
	128	Washer, 6 mm Split Lock
	129	SHCS, M6 by 16
	130	Washer, 3 mm Flat
	131	Washer, 3 mm Split Lock
	132	Cross Recessed Pan Head Screw, M3 by 30
5328003	133	Membrane Switch
5328004	134	Display Board Cover
	135	Cross Recessed Pan Head Screw, M3 by 40
5328005	136	Computer Board
5328006	137	Display Board Box
	138	Washer, 6 mm Flat
	139	HHB, M8 by 10
	140	Washer, 8 mm Split Lock
	141	Stator
5328008	142	Display Assembly Bracket
	143	Label 1
5328071	144	Power Board
5328071	155	Power Board
5327148	145	Electrical Mounting Plate
5327147	146	Resistor
5328127	147	Transformer
	148	HHB, M6 by 25
	149	Washer, 6 mm Split Lock
	150	Washer
	151	Label 2
	152	Pinboard
	153	Inner Gauge Wire
	154	Display Column Cover
5328304	156	SHCS, M5 by 10
	157	Big Washer

	158	Type B Reed Nut, M6
	159	Cross Recess Brazier Head Screw, M6 by 20
	160	Socket Hexagon Socket Head Screw with Flange Face

DST-64T Hood Mount

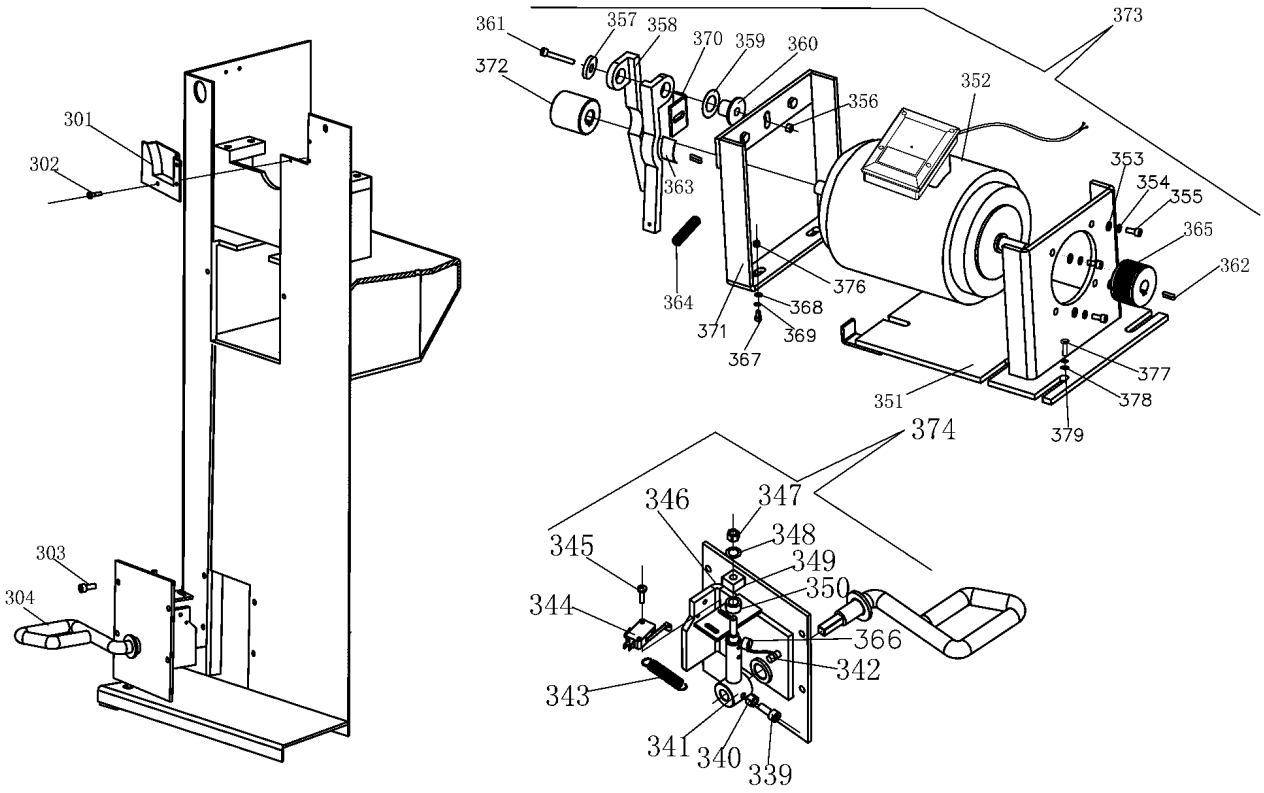


Part #	Number	Description
	204	HHB, M8 by 20
	205	Washer, 8 mm Flat
5327091	206	Motor Belt
	207	Nut, M10
	208	Pizo Sensor Pad
5327141	209	Vertical Pizo Sensor
5327139	210	Pizo Vertical Shaft
5327140	211	Pizo Horizontal Shaft
5328009	212	Weight Indicator Light
	213	Chuck Guard
	214	SSS ST 4.8 by 16

5328010	215	Thread Shaft Plastic Cover
5328011	216	Pizo Wires
	225	Encoder Board
	217	SHCS, M4 by 12
	218	Tooth
	219	SHCS, M6 by 20
	220	Bearing Cover
	221	Snap ring, 30 mm
	222	Bearing 6006
	222-1	Bearing 6005
	223	Snap Ring, 25 mm
5327143	224	Spindle with Position Board
5327686	226	Encoder Bracket
	227	Deformation of Beams
5328012	228	Hood Mounting Assy Bracket
5327169	229	Hood Switch
5327572	229-1	Short Hood Switch Wires
5328013	229-2	Hood Switch Wire 1
	230	Hexagon Socket Set Screw with Flat Point, M8 by 12
5327171	231	Hood Cam
5327168	232	Hood Spring
5327180	233	Adjustable Eye Bolt, M8 by 1.25
	234	Washer, 8 mm
5327170	235	Hood Cam Stop
	236	Nut, M8
	237	SHCS, M8 by 25
5327167	238	Hood Shaft Bushing
5327166	239	Hood Rotating Shaft
	240	Snap Ring, 38 mm
	241	SHCS, M12 by 40
	242	HHB, M8 by 30
5327164	243	Hood Mounting Assembly Upper Cover
	244	SHCS, M8 by 20
	245	Washer, 8 mm Flat
5328014	246	Hood Mounting Assembly
	247	Threaded Shaft/Spindle with Position Board
	248	Washer, 8 mm Split Lock
	249	Sensor Flat Mat

	250	SHCS, M10 by 16

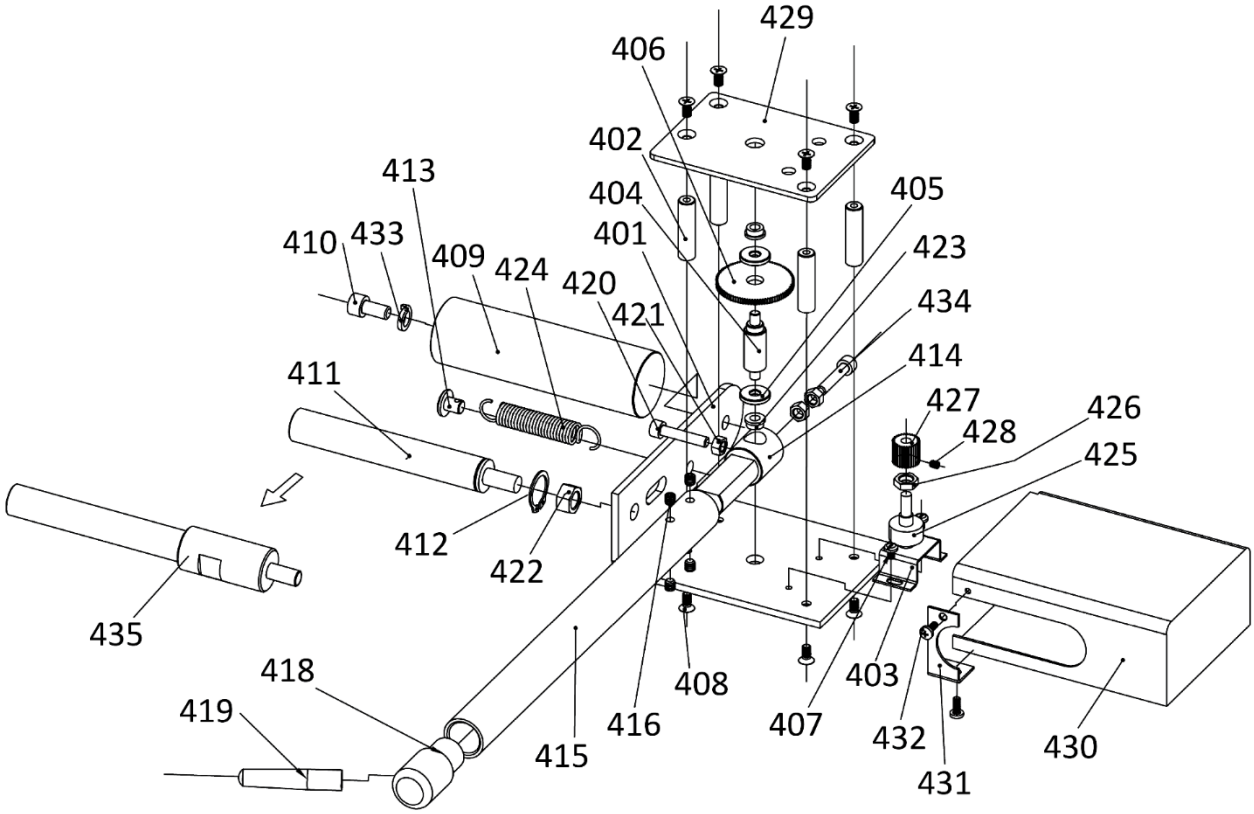
DST-64T Brake



Part #	Number	Description
	301	Cabinet Plate
	302	Cross Recessed Pan Head Screw, M4 by 16
	303	SHCS, M6 by 16
5328015	304	Brake Pedal Weldment
	339	SHCS, M6 by 25
	340	Nut, M10
	341	Brake Pedal Link Weldment
5328039	342	Brake Pin
5328031	343	Brake Pedal Return Spring
5327169	344	Hood Switch
	345	Cross Recessed Pan Head Screw, M3 by 20
	346	Brake Bracket Kit
	347	Nut, M10
	348	Washer, 6 mm Flat
	349	Presser
	350	Rubber Bushing

5328137	351	Motor Bracket
5327995	352	Motor (110/220V 0.55KW)
	353	Washer, 6 mm Flat
	354	Washer, 6 mm Split Lock
	355	SHCS, M6 by 25
	356	Nut, M8
5328032	357	Brake Bracket Spacer
5328033	358	Brake Support
5328034	359	Brake Shim
5328035	360	Brake Spacer Sleeve
	361	HHB, M8 by 60
5327145	362	Motor Pulley Key
5328036	363	Brake Pad
5328037	364	Brake Spring
5328038	365	Motor Pulley
5328039	366	Brake Cable Nut
	367	HHB, M6 by 25
	368	Washer, 6 mm Split Lock
	369	Washer, 6 mm Flat
5328040	370	Left Brake Stop
5328042	371	Brake Bracket
5328135	372	Break Friction Wheel
	373	Motor Assy (110/220V 0.55KW)
	374	Brake Assembly
	376	Nut, M6
	377	HHB, M8 by 25
	378	Washer
	379	Washer, 8 mm Split Lock

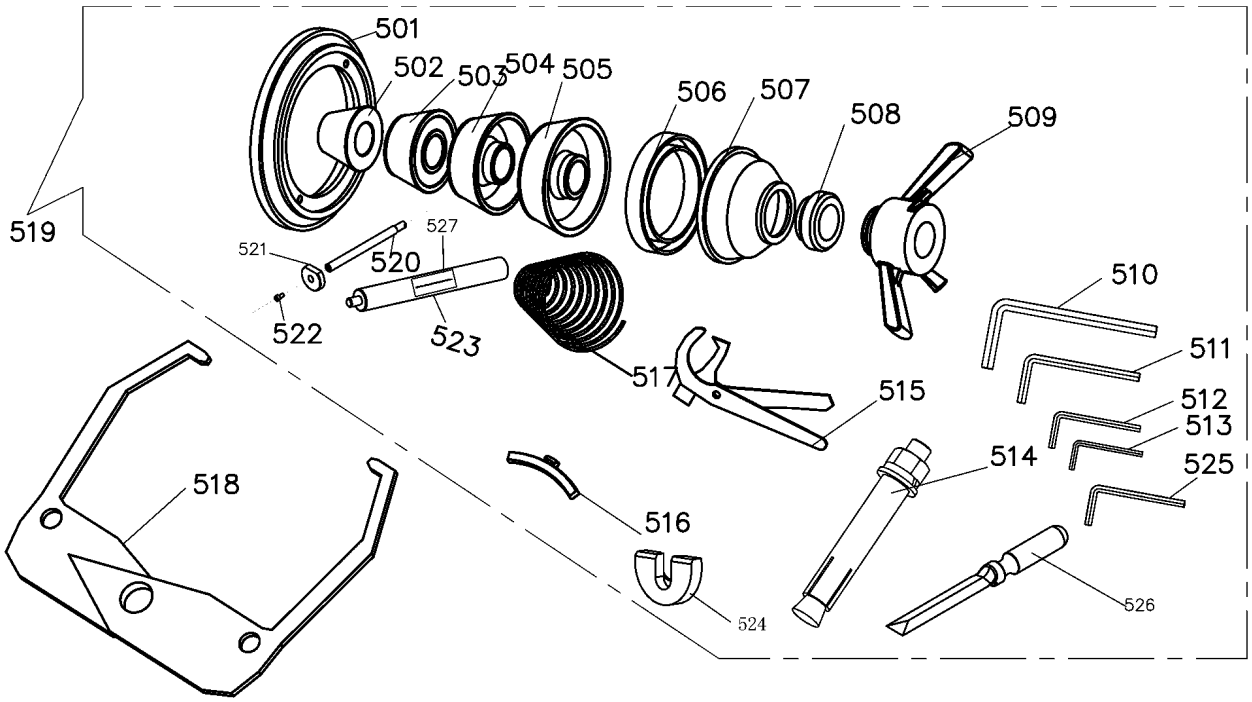
DST-64T Outer Arm



Part #	Number	Description
5328044	401	Touch Wand Assembly
	402	External Support Column
	403	Potentiometer Bracket
	404	Main Shaft
	405	Rotary Shaft Spacer
5328045	406	Touch Wand Gear
	407	Cross Recessed Pan Head Screw, M4 by 6
	408	Cross Recessed Pan Head Screw, M5 by 10
	409	Balancing Weight
	410	SHCS, M8 by 16
5328376	411	External Bracket Shaft A
5328375	435	External Bracket Shaft B
	412	Snap Ring, 20 by 1
	413	External Gauge Spring Hook
	414	External Gauge Connector
5328046	415	Touch Wand Rod
	416	Hood Assembly Set Screw, M6 by 6
5328047	418	Touch Wand Pointer Coupling

5328048	419	Touch Wand Pointer
	420	SHCS, M6 by 30
	421	Nut, M6
	422	Nut, M10
5328049	423	Touch Wand Bearing
5328050	424	Touch Wand Return Spring
5328051	425	Touch Wand Potentiometer
	426	Nut, M8
5328052	427	Touch Wand Potentiometer Gear
	428	Hexagon Socket Set Screw with Flat Point, M4 by 5
	429	Hood Mounting Assy Upper Plate
5328053	430	Touch Wand Bracket Cover
5328054	431	Touch Wand Bracket Side
	432	Cross Recessed Pan Head Screw, M4 by 10
	433	Washer, 10 mm Split Lock
	434	SHCS, M6 by 30

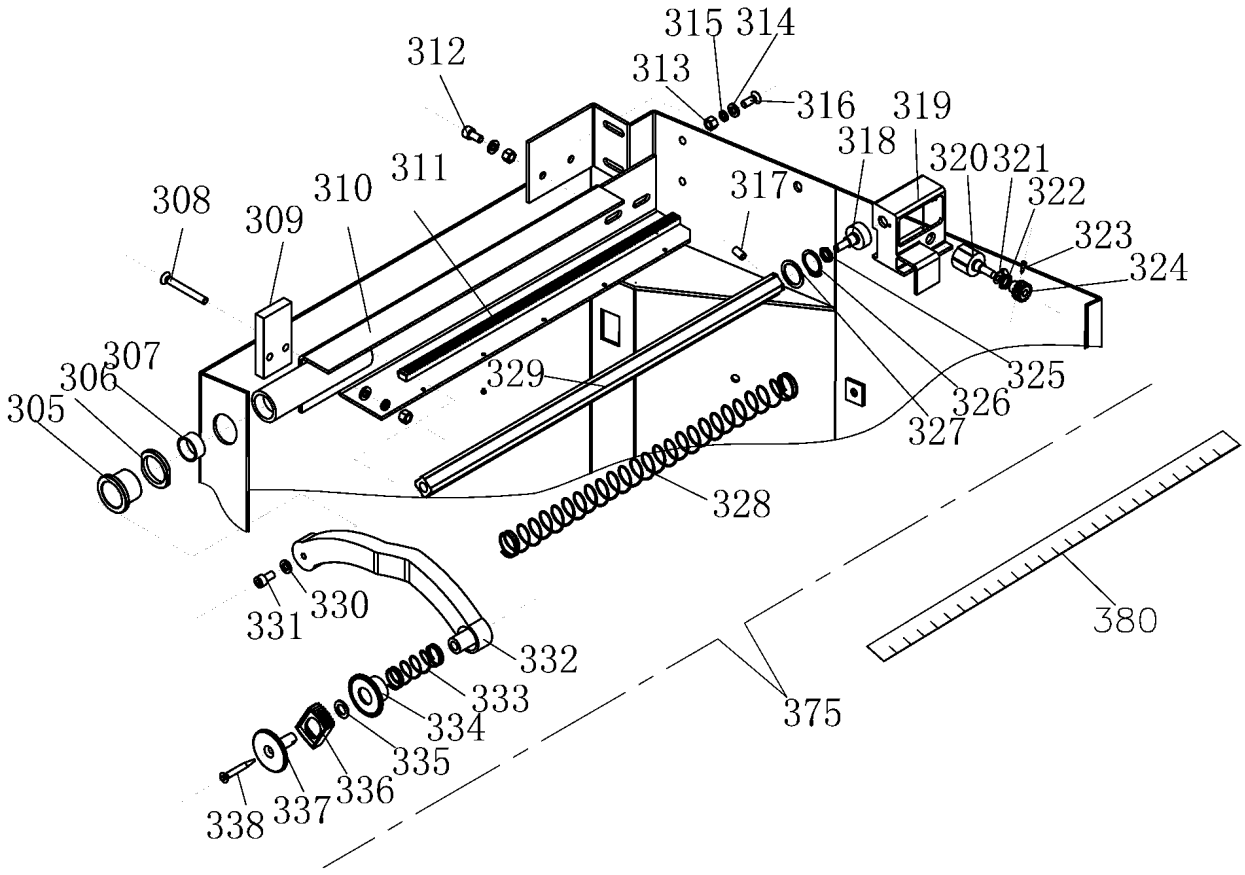
DST-64T Accessories



Part #	Number	Description
5327063	501	Spacer Ring
5327069	502	44.5–74.5 mm Cone, 36 mm
5327071	503	69–94 mm Cone, 36 mm
5327067	504	90–115 mm Cone, 36 mm
5327065	505	110–134 mm Cone, 36 mm
5327074	506	Quick Nut Cup Cover
5327061	507	Quick Nut Cup
5327172	508	Quick Nut Cover
5327073	509	Quick Nut, 36 mm
5327720	510	Allen Wrench, 12 mm
5328055	511	Allen Wrench, 6 mm
5328056	512	Allen Wrench, 4 mm
5328057	513	Allen Wrench, 3 mm
5327100	514	Anchor Bolt, 3/8 in by 3 ½ in
5346425	515	Weight Hammer Pliers
5346879	516	Calibration Weight (100 grams)
5402252	517	Mounting Spring, 36 mm
5402187	518	Wheel Width Caliper
5328062	519	Accessory Box, 36 mm
5328058	520	Extension Leve

5328059	521	Distance Arm Head
5400002	522	FHSS, M6 by 1.0 by 12
5328060	523	Outer Distance Arm Calibration Bar
5328128	524	Diameter Calibration Tool
5328068	525	Allen Wrench, 5 mm
5328286	526	Weight Removal Tool
	527	Label 3

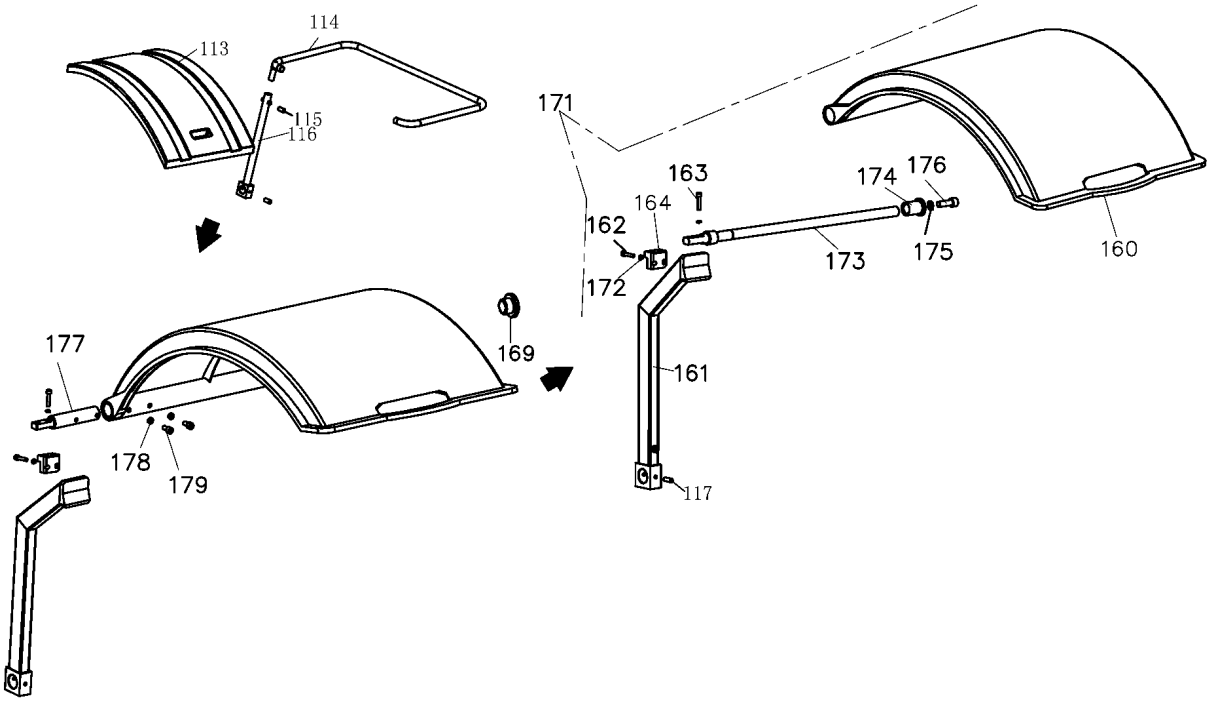
DST-64T Inner Arm



Part #	Number	Description
5328016	305	Distance Arm Nut Sleeve
5328017	306	Distance Arm Nut
5327998	307	Bearing 2010
	308	Cross Recessed Pan Head Screw, M6 by 40
	309	Internal Pad 3
	310	Distance Arm Basement
5328018	311	Distance Arm Sticker
	312	SHCS, M6 by 16

	313	Nut, M10
	314	Washer, 6 mm Flat
	315	Washer, 6 mm Split Lock
	316	Cross Recessed Pan Head Screw, M6 by 20
	317	Hexagon Socket Set Screw with Flat Point, M4 by 4
5328019	318	Wheel Diameter Potentiometer
5328020	319	Distance Arm Slide Block
5328021	320	Wheel Distance Potentiometer
	321	Distance Arm Locking Spacer
	322	Nut, M8
	323	Cross Recessed Tapping Screw, ST 2.9 by 9.5
5328022	324	Distance Arm Gear
	325	Lock Washer
	326	Snap Ring, 20 by 1
	327	Distance Arm Rod Washer
5328023	328	Distance Arm Spring
5328024	329	Distance Arm Rod
	330	Washer, 6 mm Flat
	331	SHCS, M6 by 16
5328025	332	Distance Arm Head Connect Rod
5328026	333	Distance Arm Head Spring
5328027	334	Distance Arm Head Bushing
	335	Washer, 12 mm Flat
5328028	336	Distance Arm Head Weight
5328029	337	Distance Arm Head Pivot
5328030	338	FHPS, M5 by 30 SMS
5328043	375	Distance Arm Head Assy
5328018	380	Distance Arm Sticker

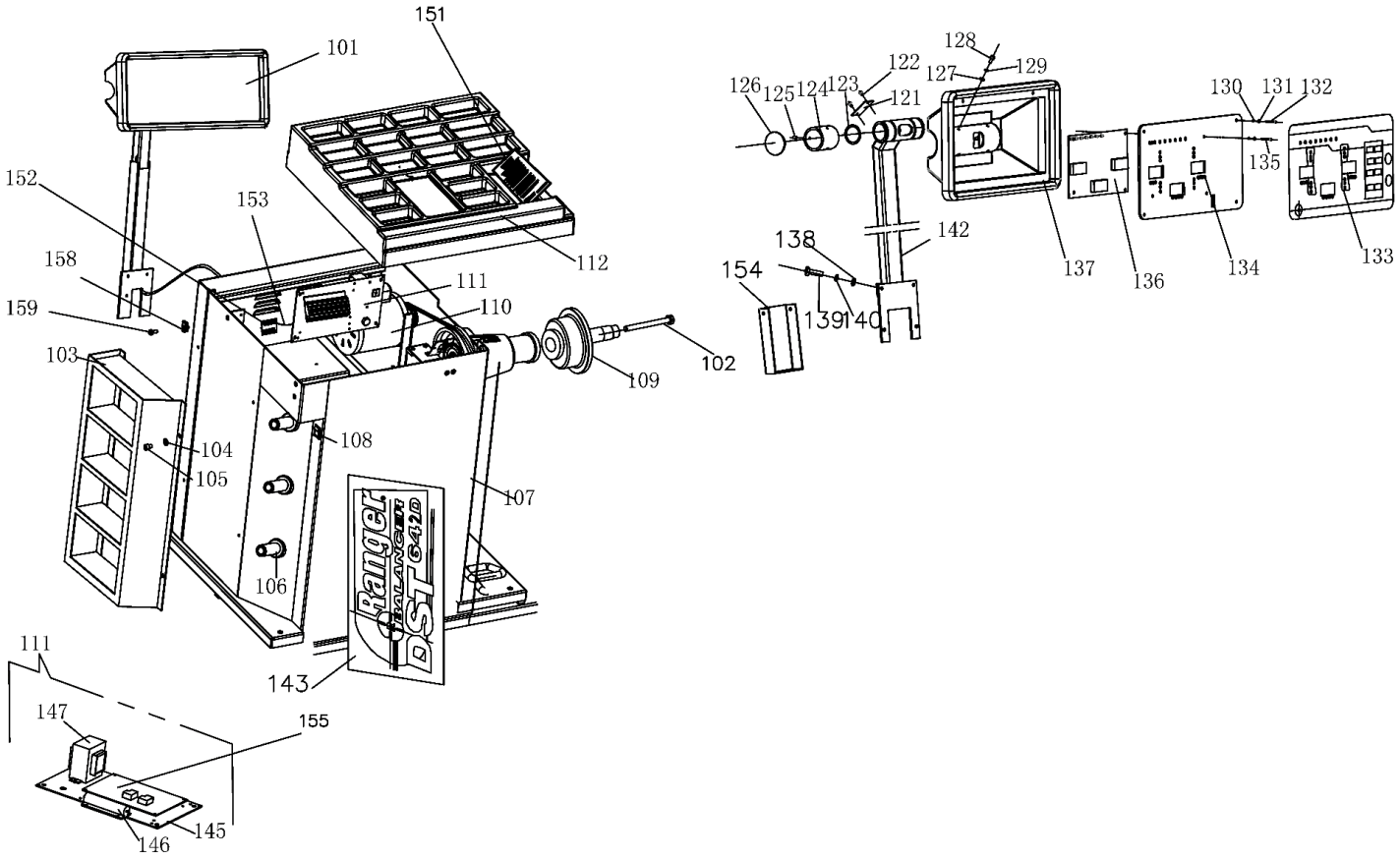
DST-64T Hood



Part #	Number	Description
5324167	113	Hood
5328245	160	Injection Molded Hood
5324166	114	Upper Hood Mount Support
5327505	115	SSS, M8 by 1.25 by 12
5327595	116	Lower Hood Mounting Support
	161	Lower Hood Mounting Support
5328246	161	Injection Molded Hood Bracket
5327505	117	SSS, M8 by 1.25 by 12
	162	SHCS, M6 by 25
	163	SHCS, M6 by 25
	164	Adjusting Plate
	169	Close Over
	171	Tire Guard Department
	172	Spring Pad, 6 mm
	173	Long Axis
	174	Front Axle Sleeve
	175	Spring Pad
	176	SHCS, M12 by 35
	177	Long Axis

	178	Spring Pad
	179	SHCS, M8 by 20

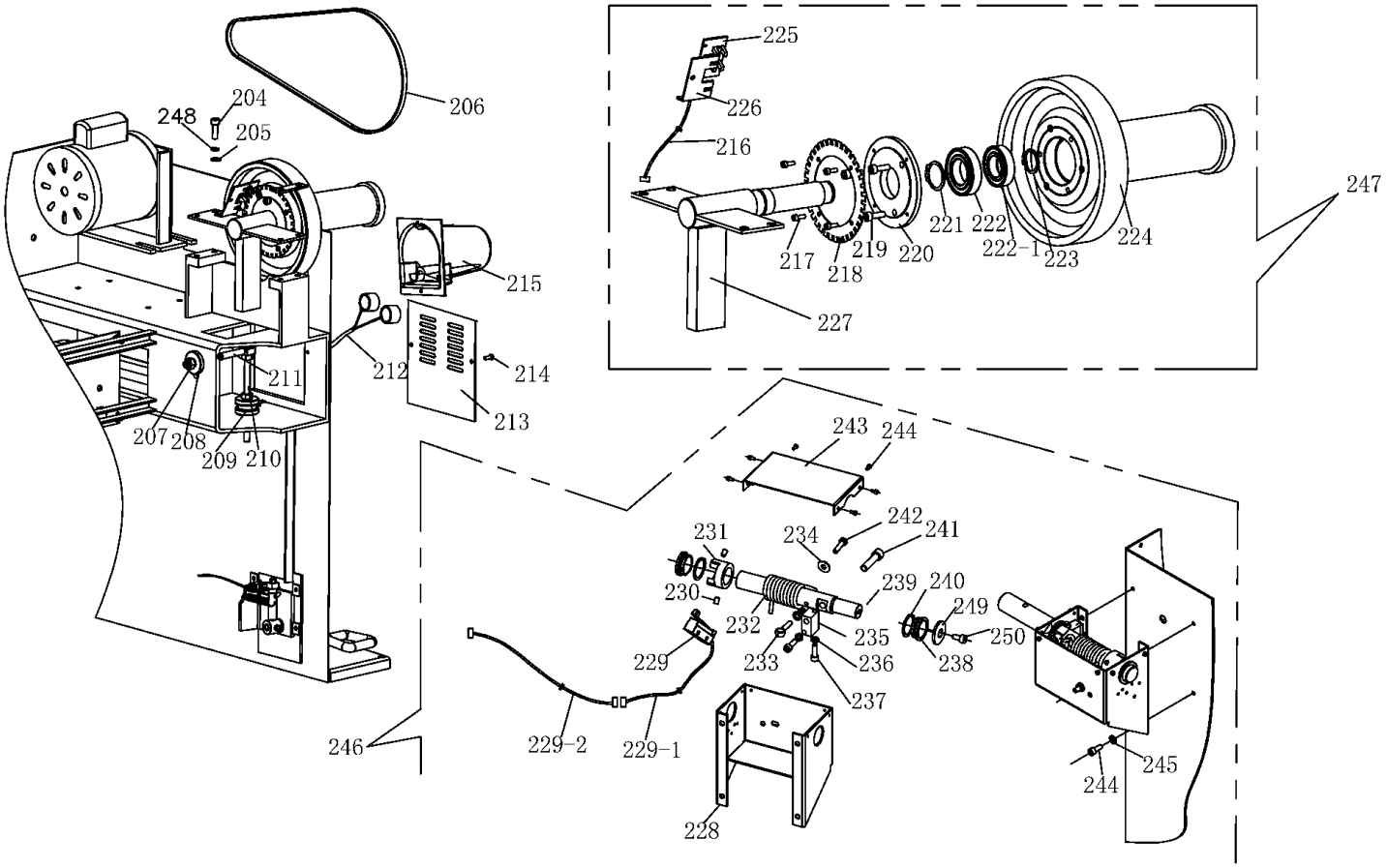
DST642D Cabinet



Part #	Number	Description
5327992	101	Display Assembly
	102	SHCS, M14 by 260
5327993	103	Side Storage Rack
	104	Washer, 8 mm Flat
	105	SHCS, M8 by 16
5327132	106	Cone Hanger
	107	Chassis Body
5327994	108	On/Off Switch
	109	Matcher
5327995	110	Motor, 220V 0.55 KW
5328071	111	Power Board Assembly

5327996	112	Weight Tray
	121	Mounting Hood Cover
	122	Cross Recessed Pan Head Screw, M4 by 12
5327999	123	O Ring, 4.2 by 3.5
5328001	124	Display Assembly Sleeve
	125	Hexagon Socket Set Screw with Flat Point, M6 by 8
5328002	126	Display Board Bracket Plug
	127	Washer, 6 mm Flat
	128	Washer, 6 mm Split Lock
	129	SHCS, M6 by 16
	130	Washer, 3 mm Flat
	131	Washer, 3 mm Split Lock
	132	Cross Recessed Pan Head Screw, M3 by 30
5328003	133	Membrane Switch
5328373	133	Membrane Switch
5328004	134	Display Board Cover
5328374	134	Display Board Cover
	135	Cross Recessed Pan Head Screw, M3 by 40
5328372	136	Computer Board
5328006	137	Display Board Box
	138	Washer, 6 mm Flat
	139	HHB, M8 by 10
	140	Washer, 8 mm Split Lock
5328008	142	Display Assembly Bracket
	143	Label 1
5327148	145	Electrical Mounting Plate
5327147	146	Resistor
5328127	147	Transformer
	151	Label 2
	152	Pinboard
	153	Gauge Line
	154	Display Column Cover
5328071	155	Power Board, 220 V
	158	Type B Reed Nut, M6
	159	Cross Recess Brazier Head Screw, M6 by 20
	159	Socket Hexagon Socket Head Screw with Flange Face

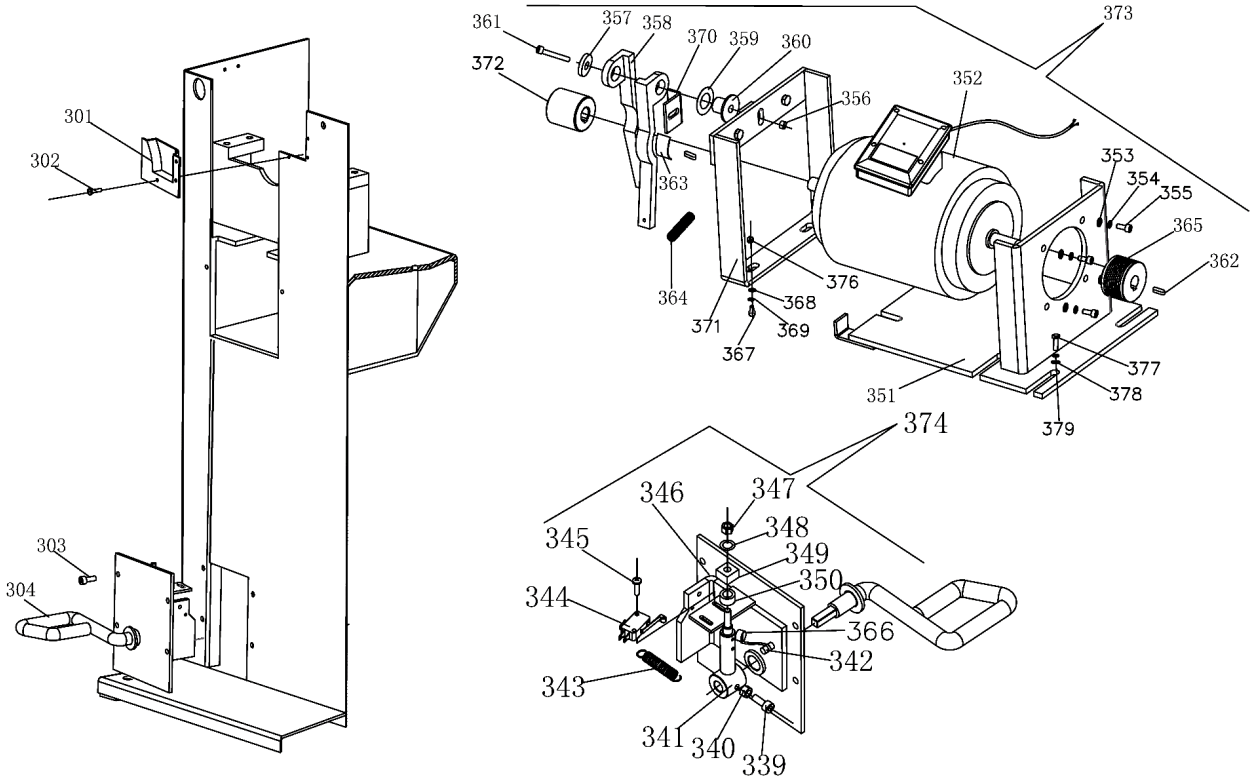
DST642D Hood Mount



Part #	Number	Description
	204	HHB, M8 by 20
	205	Washer, 8 mm Flat
5327091	206	Motor Belt
	207	Nut M10
	208	Pizo Sensor Pad
5327141	209	Vertical Pizo Sensor
5327139	210	Pizo Vertical Shaft
5327140	211	Pizo Horizontal Shaft
5328009	212	Weight Indicator Light
	213	Chuck Guard
	214	SSS, ST 4.8 by 16
5328010	215	Thread Shaft Plastic Cover
5327141	216	Pizo Wires
	217	SHCS, M4 by 12

	218	Tooth 64
	219	SHCS, M6 by 20
	220	Bearing Cover
	221	Snap Ring, 3 mm
	222	Bearing 6006
	222-1	Bearing 6005
	223	Snap Ring, 25 mm
	224	Spindle Bushing Weldment
5328011	225	Encoder Board
5327686	226	Encoder Bracket
	227	Deformation of Beams
5328012	228	Hood Mounting Assembly Bracket
5327169	229	Hood Switch
5327572	229-1	Short Hood Switch Wire 2
5328013	229-2	Long Hood Switch Wire 1
	230	Hexagon Socket Set Screw with Flat Point, M8 by 12
5327171	231	Hood Cam
5327168	232	Hood Spring
5327180	233	Adjustable Eye Bolt, M8 by 1.25
	234	Washer, 8 mm
5327170	235	Hood Cam Stop
	236	Nut, M8
	237	SHCS, M8 by 25
5327167	238	Hood Shaft Bushing
5327166	239	Hood Rotating Shaft
	240	Snap Ring, 38 mm
	241	SHCS, M12 by 40
	242	HHB, M8 by 30
5327164	243	Hood Mounting Assembly Upper Cover
	244	SHCS, M8 by 20
	245	Washer, 8 mm Flat
5328014	246	Hood Mounting Assembly
5327143	247	Spindle with Position Board
	248	Washer, 8 mm Split Lock
	249	Sensor Flat Mat
	250	SHCS, M10 by 16

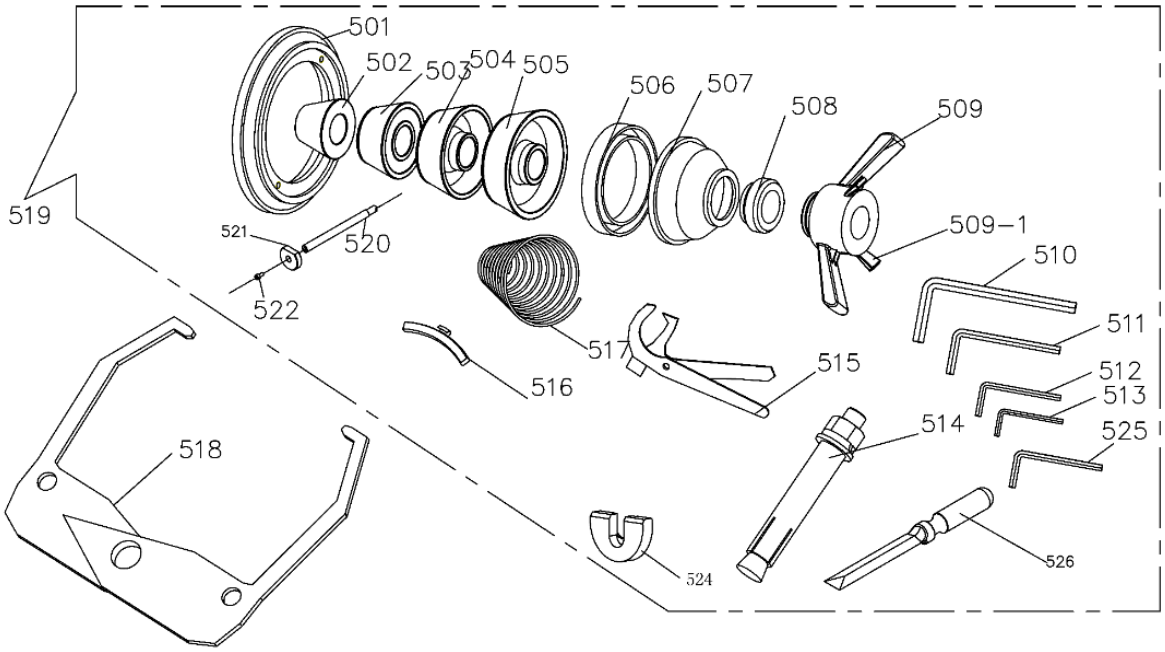
DST642D Brake



Part #	Number	Description
	301	Cabinet Plate
	302	Cross Recessed Pan Head Screw, M4 by 16
	303	SHCS, M6 by 16
5328015	304	Brake Pedal Weldment
	339	SHCS, M6 by 25
	340	Nut, M10
	341	Brake Pedal Link Weldment
	342	Brake Metal Thread
5328031	343	Brake Return Spring
5327169	344	Hood Switch
	345	Cross Recessed Pan Head Screw, M3 by 20
	346	Brake Bracket Kit
	347	Nut, M10
	348	Washer, 6 mm Flat
	349	Presser
	350	Rubber Bushing
5328137	351	Motor Bracket
5327995	352	Motor, 110/220V 0.55 KW

	353	Washer, 6 mm Flat
	354	Washer, 6 mm Split Lock
	355	SHCS, M6 by 25
	356	Nut, M8
5328032	357	Brake Bracket Spacer
5328033	358	Brake Support
5328034	359	Brake Shim
5328035	360	Brake Spacer Sleeve
	361	HHB, M8 by 60
5327145	362	Motor Pulley Key
5328036	363	Brake Pad
5328037	364	Brake Spring
5328038	365	Motor Pulley
5328039	366	Brake Pin
	367	HHB, M6 by 25
	368	Washer, 6 mm Split Lock
	369	Washer, 6 mm Flat
5328040	370	Left Brake Stop
5328042	371	Brake Bracket
5328135	372	Brake Friction Wheel
	373	Motor Assembly, 110/220V 0.55 KW
	374	Brake Assembly
	376	Nut, M6
	377	HHB, M8 by 25
	378	Washer
	379	Washer, 8 mm Split Lock

DST642D Accessories



Part #	Number	Description
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5327069	502	44.5–74.5 mm CONE, 36 mm
5327071	503	69–94 mm CONE, 36 mm
5327067	504	90–115 mm CONE, 36 mm
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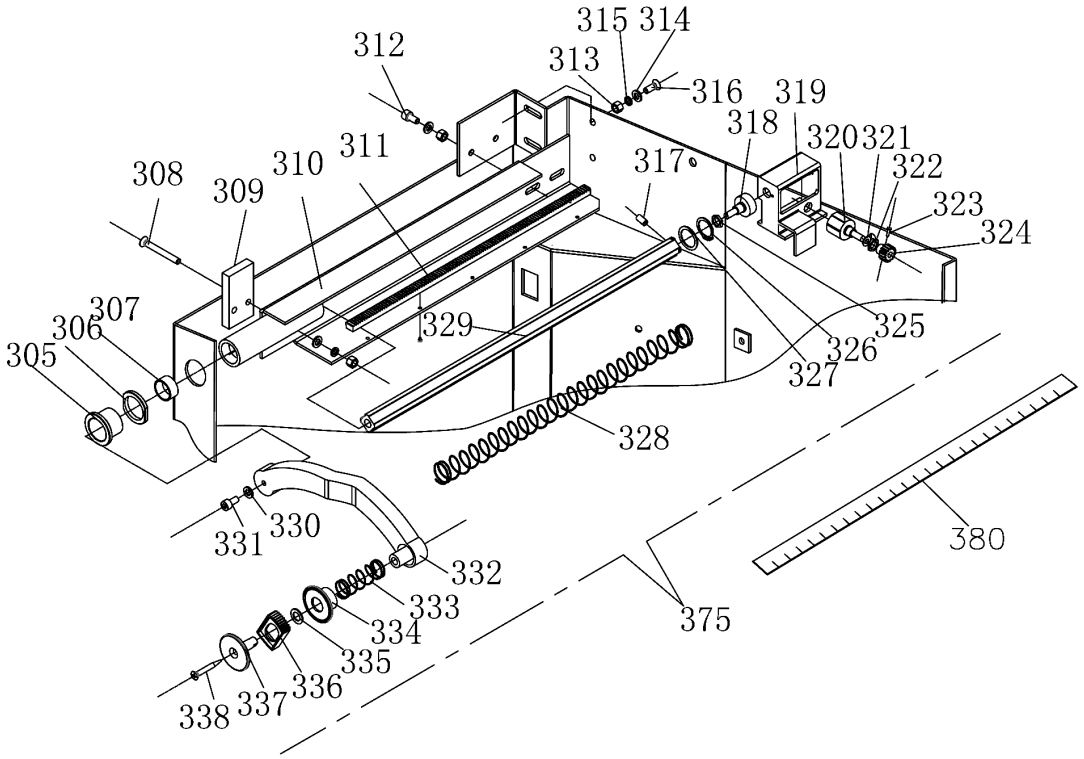
5327074	506	Quick Nut Cup Cover
5327061	507	Quick Nut Cup
5327172	508	Quick Nut Cover
5327073	509	Quick Nut, 36 mm
	509-1	Quick Nut Button Cover, 36 mm
5327720	510	Hex Wrench, 12 mm
5328055	511	Hex Wrench, 6 mm
5328056	512	Hex Wrench, 4 mm
5328057	513	Hex Wrench, 3 mm
5327100	514	Anchor Bolt, 3/8 in by 3 ½ in
5346425	515	Weight Pliers
5346879	516	Calibration Weight, 100 grams
5402252	517	Mounting Spring, 36 mm
5402187	518	Wheel Width Caliper
5328062	519	Accessory Box, 36 mm
5328058	520	Extension Lever

5328059	521	Distance Arm Head
5400002	522	FHSS, M6 by 12
5328128	524	Diameter Calibration Tool
5328068	525	Hex Wrench, 5 mm
5328286	526	Weight Removal Tool

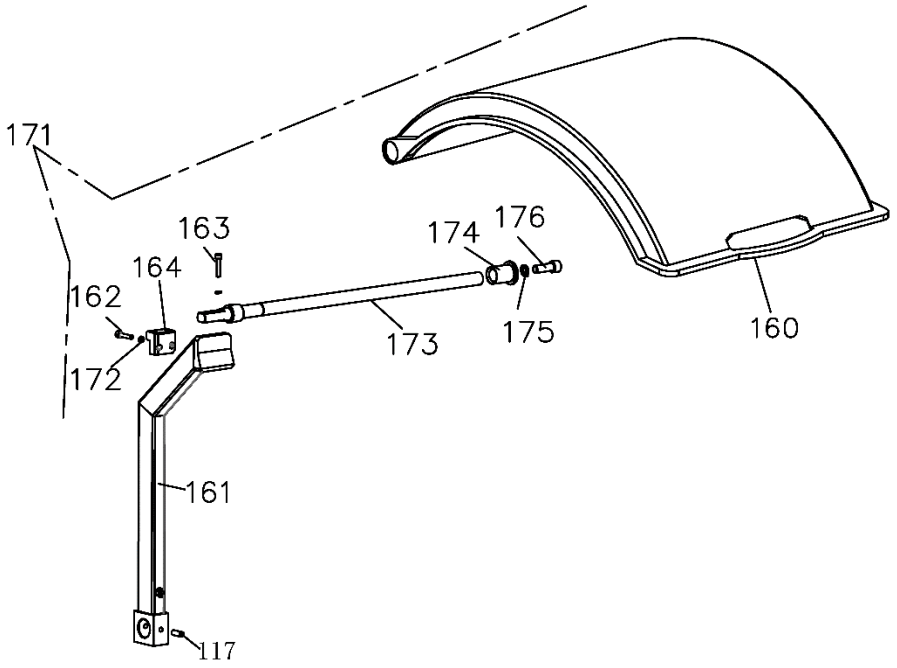
DST642D Inner Arm



Part #	Number	Description
5328016	305	Distance Arm Sleeve
5328017	306	Distance Arm Sleeve Nut
5327998	307	Bearing 2010
	308	Cross Recessed Pan Head Screw, M6 by 40
	309	Internal Pad 3
	310	Distance Arm Basement
5328018	311	Distance Arm Sticker
	312	SHCS, M6 by 16
	313	Nut, M10
	314	Washer, 6 mm Flat
	315	Washer, 6 mm Split Lock
	316	Cross Recessed Pan Head Screw, M6 by 20
	317	Hexagon Socket Set Screw with Flat Point, M4 by 4

5328019	318	Wheel Diameter Potentiometer
5328020	319	Distance Arm Slide Block
5328021	320	Wheel Distance Potentiometer
	321	Distance Arm Locking Spacer
	322	Nut, M8
	323	Cross Recessed Tapping Screw, ST 2.9 by 9.5
5328022	324	Distance Arm Gear
	325	Lock Washer
	326	Snap Ring, 20 by 1
	327	Distance Arm Rod Washer
5328023	328	Distance Arm Spring
5328024	329	Distance Arm Rod
	330	Washer, 6 mm Flat
	331	SHCS, M6 by 16
5328025	332	Distance Arm Head Connect Rod
5328026	333	Distance Arm Head Spring
5328027	334	Distance Arm Head Bushing
	335	Washer, 12 mm Flat
5328028	336	Distance Arm Head Weight
5328029	337	Distance Arm Head Pivot Bushing
5328030	338	FHPS, M5 by 30 SMS
5328043	375	Distance Arm Head Assembly
5328018	380	Distance Arm Sticker

DST642D Hood



Part #	Number	Description
	117	Hood Assembly Set Screw, M8 by 25
5328245	160	Injection Molded Hood
5328246	161	Injection Molded Hood Bracket
	162	SHCS, M6 by 25
	163	SHCS, M6 by 25
	164	Adjusting Plate
	171	Tire Guard Department
	172	Spring Pad, 6 mm
	173	Long Axis
	174	Front Axle Sleeve
	175	Spring Pad
	176	SHCS, M12 by 35

Maintenance Log

Maintenance Log

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Santa Paula, CA 93060 USA

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