

Elston Manufacturing Truck Sander Owners Manual

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Introduction to Sander

Overview

Your sander is an on demand gravity fed grit delivery system designed to provide you with improved traction at the push of a button for years to come. When the button on the dash is pressed, a solenoid in the base of each sander energizes and opens a valve to allow grit to fall out of the bottom of the tank. Some grit travels down each of the rubber tubes and is deposited directly in front of the tires.

Your sander is one of following three styles listed in the tables below. The only difference between the styles is the size and shape of the hopper used to store the grit. Mounting kits are available for all 3 styles.

Specifications

Specifications – Series 661

| | |
|----------------------------------|---------------------------------------|
| Dimensions ¹ | 6 in wide x 20 in long x 36.5 in tall |
| Shipping Weight..... | 50 lbs/side (100 lbs/set) |
| Grit Capacity ² | 70-90 lbs/side (140-180 lbs/set) |
| Voltage Requirement..... | 12 VDC (nominal) |
| Current Draw..... | 12 A (6A per side) when dropping grit |

Specifications – Series 861

| | |
|----------------------------------|---------------------------------------|
| Dimensions ¹ | 8 in wide x 20 in long x 36.5 in tall |
| Shipping Weight..... | 55 lbs/side (110 lbs/set) |
| Grit Capacity ² | 90-115 lbs/side (180-230 lbs/set) |
| Voltage Requirement..... | 12 VDC (nominal) |
| Current Draw..... | 12 A (6A per side) when dropping grit |

Specifications – Quarterfender Series

| | |
|----------------------------------|---------------------------------------------------------------------------|
| Dimensions ¹ | 13 in wide x 24 in long x 39.5 in tall |
| Shipping Weight..... | Steel - 70 lbs/side (140 lbs/set) Aluminum - 60 lbs/side (120 lbs/set) |
| Grit Capacity ² | 140-180 lbs/side (280-360 lbs/set) |
| Voltage Requirement..... | 12 VDC (nominal) |
| Current Draw..... | 12 A (6A per side) when dropping grit |

1 Height can be varied 1 to 2" taller or shorter by modification of the discharge hose.

2 The exact weight depends on the density of grit used and the filling procedures followed. Actual values may differ from that listed.

Grit Recommendations

One of the most common questions on the traction sanders is the type of grit that should be used. We recommend that the grit used in the sanders meet the requirements below for the most reliable performance of the unit.

- **Material**
The grit used in the sander should first of all be dry and free flowing. It should be low in silt, dust, or other materials that cause the material to clump as it dries. Quartz or other siliceous materials are ideal but other materials are acceptable as long as they are dense enough to make it to the pavement with out blowing away and hard enough to provide traction between the wheel (and not turn into powder or completely flatten).
- **Grain Shape**
The grit should be largely irregular shaped grains of an approximately rounded shape. The shape of most crushed materials is acceptable.
- **Grain Size**
Material with grains longer than 1/2" or more than 3/8" in diameter should be avoided to prevent clogging the sander. The material should not have more than a small percentage of fines or vibration will cause the material to compact and not flow out of the tank. For this reason, most sand will not work.
A material sized #7 #20 or #16 #20 is ideal and a material sized #4 #20 is usually acceptable.

A number of materials can meet the requirements above. The materials below are those most commonly asked about by our current users.

Fullers Earth based Floor Dry

This material is a specific type of clay that is mined and is one of the three most common materials sold as floor dry. It works well as long as the grain size meets the above recommendations. An example of a product that works is Safe T Sorb by Multon Industries. It is available at Tractor Supply stores for around \$4 per 40lb bag. It is the easiest material to find and keep dry but does not provide quite as much traction as the other materials.

Coal Slag

This product works well as long as it isn't too fine or have too much fine material. It can be economical as long as it is produced locally. Avoid mixes with material finer than #20.

Sand

Most sand will not work if it is wet or has too much fine material. Sand with excessive fines will quickly become too firmly packed to flow out of the sander although it may appear to work fine when first added to the sander. If the sand is dry, clumps are removed, and it is not prone to compaction (see grain size recommendations), it will work in your sander. Something like a dry sifted "playground" sand may do the trick. The tube sand sold for ballast may not since it often has pieces that is too large and get stuck or too fine and cause compaction.

Crushed Rock

Crushed rock is an inexpensive product that works well as long as it is the correct size and dry. It can be difficult to find dry so often it will require an extra drying step.

Salt

Salt requires more maintenance of the sander to prevent corrosion and may decrease the operating life of the unit. Most blends of salt have a tendency to clump or harden with exposure to humid air and need to be closely monitored to ensure the material is flowing well through the sander.

Service Instructions

At The Start of Each Trip

- Check the exterior of the sander for damage
- Check the grit level in the sander and refill if low

Annually Before the Start of the Winter Season

- Check that all bolts and fittings are tight
- Inspect the electrical conduit, mounting brackets, sight glasses, and rubber hoses for damage and replace if necessary
- Touch up any areas where the finish is damaged to limit corrosion
- Check that the sander functions correctly, both in dropping grit and the level sensor (if present)

Annually At the End of the Winter Season

- Drain the grit from the sander (if desired to save weight)
- Check that all bolts and fittings are tight
- Touch up any areas where the finish is damaged to limit corrosion

Troubleshooting

If this guide doesn't fix your problem please contact the company where you purchased the sander. If you are unable to contact them or you need additional help, please contact Elston Manufacturing at 1-800-845-1385.

What is wrong with the sander?

- A. Unit fails to drop grit when switch is pushed
- B. Fuse supplying power to the unit is repeatedly blown

A Problem A: Unit fails to drop grit when switch is pushed

Cause: Grit is Low

If the hole in the bottom of the grit tank is visible than the grit level is too low and the sander needs to be refilled. If the grit level is not low, check that the sander is receiving power.

Cause: No Power to Unit

Make sure that the ignition is in the correct position(s) for the sander to receive power.

When the switch in the dash is pressed, the solenoid in the sander will open with a distinct click that should be audible when the vehicle is not running. If neither side clicks, check that the fuse or circuit breaker supplying power to the sander is not blown. If the fuse blows again the next time you press the switch see problem B below. If the fuse is not blown check the wiring supplying power to the sander for bad connections and the solenoid for continuity.

Cause: Operating Unit Not Working Correctly

If a click is not heard and the unit is receiving power (typically only one side will not click), remove the boots on the sanders and check if the the bellows and valve are moving when the dash switch is pressed. If they do not move freely, remove the cap on the operating unit and inspect the parts inside to ensure they move freely.

Cause: Grit Not Flowing Correctly

If the sander is opening with a click, check that the grit in the tanks moves freely when disturbed with a rod. If it does not, the grit will need to be removed from the sander. Grit can be removed most easily by removing the six bolts attaching the operating unit to the bottom of the sander and prodding the remaining grit. Note that frozen grit will need to be thawed before removal. As you remove the grit, inspection of the grit will show why it failed to flow correctly. If the grit flows out fine once the operating unit is removed this usually indicates that the grit contains some material that is too large to flow easily through the sanders. Moisture limited to around the outlet to the grit tank typically indicates a poor seal of the gasket between the tank and the guard on the bottom on the tank. More widespread moisture in the grit indicates the grit was too moist when placed

in the sander or an extended loss of the sander cap let moisture in. Grit that is compacted will be dry and flow fine when removed from the sander but be resistant to disturbance while inside the tank.

Once the grit has been removed from the sander, take care when reinstalling the operating unit to make sure the gasket between the guard and the tank seals well. Replace any damaged gaskets. It appears there was a poor seal of the gasket, install a bead of silicon between the guard and the tank once the operating unit is installed to provide an additional barrier to moisture. Refill the sander with a grit recommended in chapter 1.

B Problem B: Fuse supplying power to the unit is repeatedly blown

Cause: Incorrect size of fuse

The fuse should be a 20A AGC or comparable automotive style standard delay fuse. If a circuit breaker is used it should be a 15A model.

Cause: Short in solenoid

If the correct size of fusing is being used and the fuse continues to blow, check the solenoid for a short. Both solenoids almost never develop shorts at the same time so first you'll want to isolate the fault. We recommend open up the junction block on the back on one the sander and disconnect the wiring to the solenoid (the black 12 ga leads). You can replace the fuse and recheck but it usually just as easy to check the resistances on the solenoid. Check the resistance between each lead and vehicle ground. This value should be at least 1000 ohms. If the resistance for both sides is low replace the solenoid. If the value is only low for one side, the shorted side can be hooked to ground and solenoid will work fine (usually for years). If both values are ok, check the resistance between the two leads. A bad solenoid will have a resistance below 1 ohms. (Some cheap multimeters have trouble with large inductive loads like our solenoids and will give incorrect readings.). If no short is found in the solenoid, inspect the rest of the wiring for faults.

If a short is found, inspect the solenoid for moisture or corrosion that indicate water contacted the solenoid. Check the gaskets and bellows for damage and replace if needed to reduce future water problems. In addition, retighten any loose conduit fittings and check the conduit for damage.

Installation

Warning: Improper installation of this sander creates a substantial safety hazard including the risk of accident or property damage.

Overview

The traction sanders you are about to install is designed to provide many years of service. As you install this sander, pay special attention to preventing corrosion and keeping moisture out of electrical connections and components as these are the two primary issues that limit the life of the sander.

The purpose of these instructions is to aid you in installing a fully functional sander that operates reliably and is safe and secure under both normal condition and, as much as possible, during an accident. However these instructions are not a substitute for personal knowledge and experience with working on trucks and/or electrical systems. Please do not install those areas of the sander where you lack personal knowledge and experience.

Throughout this guide, the word “must” is used for any instruction that if not followed would create a safety hazard and/or yield an installation that would not comply with current standards. An instruction with the word “should” is necessary either for the proper functioning of the product or improves the long-term safe operation of the product. If you are unable to follow any instructions with the words “must” or “should”, please contact us to discuss how your installation can still be completed in a way that is functional, safe, and compliant. Finally, an instruction that recommends indicates an instruction designed to maximize the working life of the product, simplify installation, or improve the appearance of the installed product.

Unpacking the Sander and Gathering Supplies

Parts Needed for Installation shipped with Sanders:

- Set of traction sanders – one each of right hand and left hand sanders
- Dash mounted switch
- 4 S124-6 boots (bend rubber hose)
- 4 clamps for boots
- 30 feet 12 ga stranded automotive-type wire
- (optional) S10-02 Quarterfender Mounting Kit or S5-100 x61 Mounting Kit

Additional parts required:

- 0 to 12 3/8” diameter grade 5 bolts 1 inch long with flat washers and nylon lock nuts to match for securing sanders to mounting bracket (depending on mounting)

- 0 to 12 3/8" diameter grade 5 bolts 2 3/4 inches long with flat washers and nylon lock nuts to match for securing sanders to mounting bracket (depending on mounting)
- 8 to 16 1/2" diameter grade 5 bolts 1 1/2 inches long with flat washers and nylon lock nuts to match for securing mounting brackets to frame (depending on mounting)
- Corrosion preventive spray for coating threads and mating surfaces (recommended)
- Premium connectors, clips, heat shrink tube, and grommets for wire

Installation of the Sanders Tanks

Warning: Only drill and modify the frame of the vehicle as allowed by the manufacturer. Unauthorized modifications may cause cracking or failure of frame. Generally they prohibit drilling the flange of the frame rails or within 2" of the flange and limit or prohibit the application of heat by tools such as welders and cutting torches.

The first step is to determine the approximate mounting locations of the sander on the frame in front of the drive wheels. The sander should be 4 to 6 inches in front of the tires for adequate clearance between the sander and the tire. The bottom of the grit tank should be installed 17 3/4" to 22" above the ground when the vehicle is fully loaded to allow the discharge boots to be trimmed to the correct height. The distance of the sanders from the frame is set by the grit outlets on the bottom of the unit. The center between those outlets should be between the tires with the outside edge of the sander no further from the frame than the outside edge of the tire tread of the outside tire. The tank should be installed with the sight glass or level sensor on the side of the sander opposite the tire if these optional accessories are present. However, tanks with a sight glass may be installed with the sight glass facing the tire if it provides better visual access to check the grit level on a S-N661 or S-N861. (Tanks with a level sensor should always be installed so that the level sensor is on the side of the sander opposite the tire to prevent damage to the wiring.)

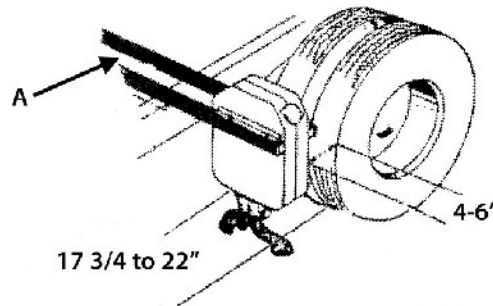


Illustration 1: Sander Mounted on Long Tubing or Angle

Once you've determined the approximate mounting location you will need to decide what type of brackets will be used to mount the sander. Usually either a S10-02 mounting kit, square tubing, or angle brackets are used to mount the sander. Illustration 1 shows a sander installed with the S10-02 mounting where one side of the sander is hung from square tubing (A) and the other side of the sander is hung from a S10-02-03 angle bracket (C). Illustration 2 shows a sander mounted with customer fabricated angle brackets (A). When clearances are tight, the sander is the quarterfender style (100 series), and/or existing suspension parts attached to the frame interfere with mounting, the side of the sander closest to the tire will almost certainly need to be hung from square tubing and the other side may need to be hung from square tubing as well.

Any mounting setup must be strong enough to support at least 5 times the weight of a fully loaded sander without permanently bending if constructed of steel. This level of strength is recommended as the brackets bear considerable more than the actual weight of the sander on bumps and the constant stress and corrosive winter chemicals increase the risks of the brackets cracking. Setups using aluminum must be 8 times stronger for adequate stiffness and operating life.

Once you have installed the sander tanks, you should trim the top of the grit discharge boots to provide 4" ground clearance when the vehicle is loaded. Mount the boots on the outlets on the aluminum operating unit with the included clamps. If necessary, we recommend rotating the boots on the outlets to center one in front of each tire.

Wiring

Please refer to the appendix for the wiring diagram for the sander. Unless otherwise indicated on the sander, all sanders contain 12 volt coils. It is not necessary to wire the unit to receive power when the vehicle is off. Do not wire any other components, such as



Illustration 2: Example of Sander Mounted with Angle

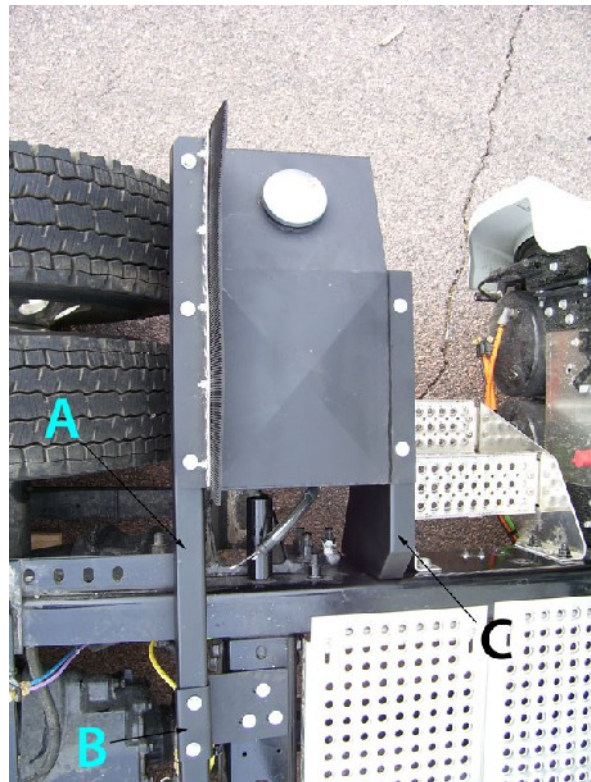


Illustration 3: Example of Sander Mounted from Square Tubing

the level indicator, so that they turn on and off when the sander switch is operated as the voltage spike produced when turning off the solenoids will damage most components especially those that are electronic.

All wiring from components on the sander terminate in the junction box on the back of each the sander and allow space for easy protected connections to the vehicle wiring. Wire is included in the installation kit suitable for most installations. Before routing any wire, check that the 12 ga wire that comes with the unit will result in 10% or less voltage drop in your setup. If not, use 10 ga wire to power the sander operating units. The level sensor is very low current and 18ga will work for all installations.

Mounting Switch and Indicators

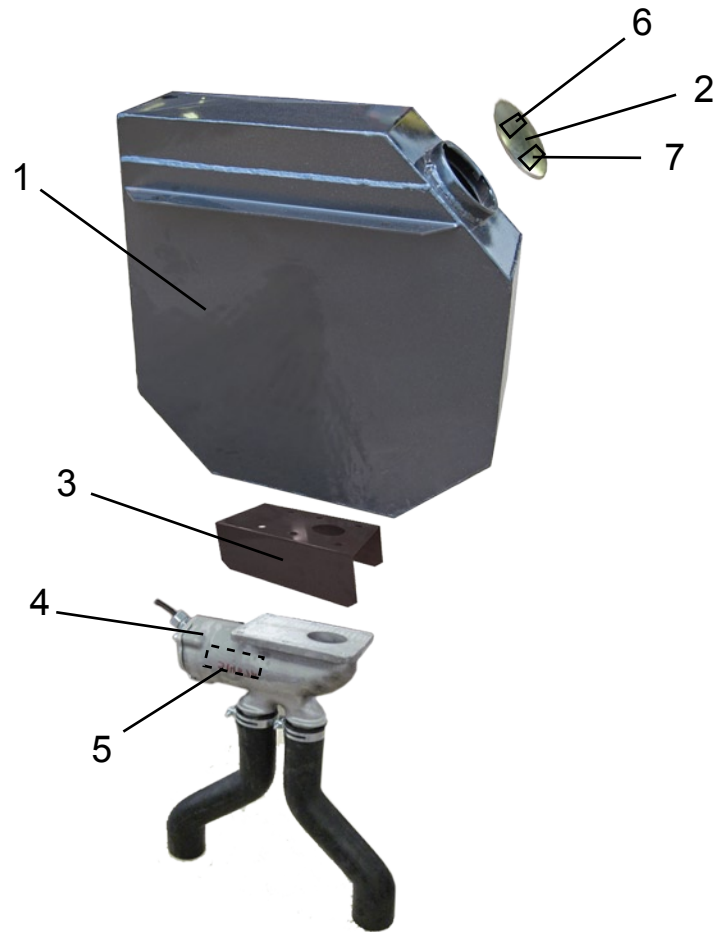
The sanders are controlled by a single momentary on switch. This switch can have a pilot lamp and is mounted on the instrument panel. It is strongly recommended that the switch is a momentary on switch since normal grit applications are a few seconds long and non-momentary switches are prone to being accidentally left on and emptying the tank.

The switch provided in the standard installation kit meets these requirements. If you are installing the sander where the Elston switch does not fit an existing hole, the switch requires an 0.92" x 1.5" opening. If another switch is used, it should have high quality contacts and a high enough rating (20A or better at 12 VDC) to ensure adequate life with the 12A inductive load of the sander.

If the sander has a level indicator, a indicator is required in the instrument panel. This indicator should be amber, labeled "Grit Tank Low", and have a current draw of 100 ma or less at 13.8VDC.

Final Details

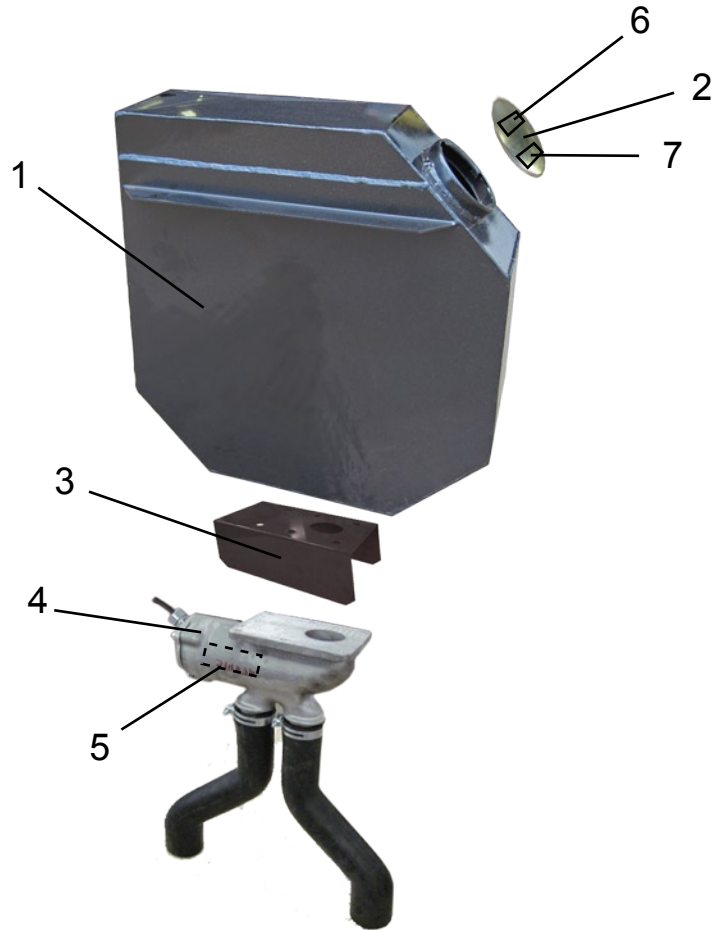
Test the sander to ensure both solenoids click open when the dash switch is pressed and, if the sander has the level sensor, that the indicator lights when the grit level is low.



| Ref # | Name | Part # | Ref # | Name | Part # |
|-------|----------------------------------------|-------------|-----------|--------------------------------------|--------|
| 1 | Powder Coated Steel Sander Tank | SN661T | 5 | Serial Number Decal (Inside Casting) | |
| 2 | Tank Cap w/ Retaining Lanyard | S4-53-04 | 6 | Elston Logo Decal | SD-03 |
| 3 | Powder Coated Steel Valve Guard | SP-02B | 7 | Grit Decal | SD-04 |
| 4 | Operating Unit Area (includes gaskets) | see page A6 | 1-15 (x2) | Set of Series 661 Sanders | S-N661 |

Add a C to the SN661T and S-N661 for custom colors.

see page A3 for additional parts



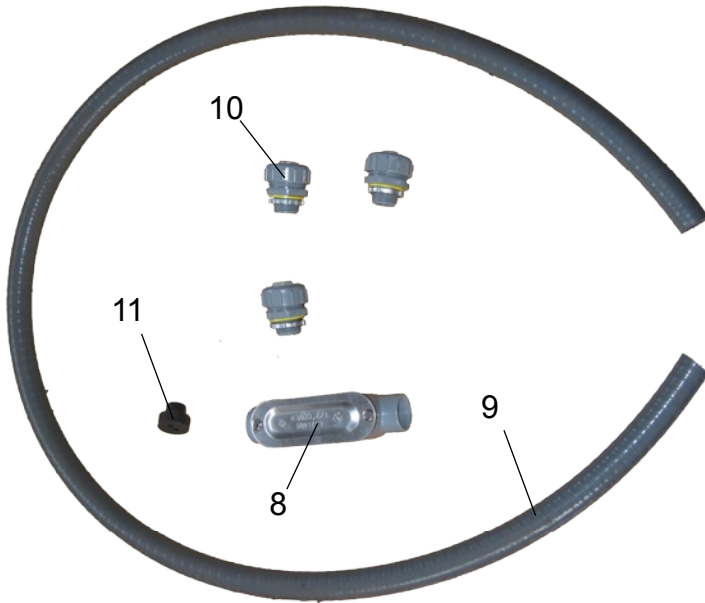
| Ref # | Name | Part # | Ref # | Name | Part # |
|-------|----------------------------------------|-------------|-----------|--------------------------------------|--------|
| 1 | Powder Coated Steel Sander Tank | SN861T | 5 | Serial Number Decal (Inside Casting) | |
| 2 | Tank Cap w/ Retaining Lanyard | S4-53-04 | 6 | Elston Logo Decal | SD-03 |
| 3 | Powder Coated Steel Valve Guard | SP-02B | 7 | Grit Decal | SD-04 |
| 4 | Operating Unit Area (includes gaskets) | see page A6 | 1-15 (x2) | Set of Series 861 Sanders | S-N861 |

Add a C to the SN861T and S-N861 for custom colors.

see page A3 for additional parts

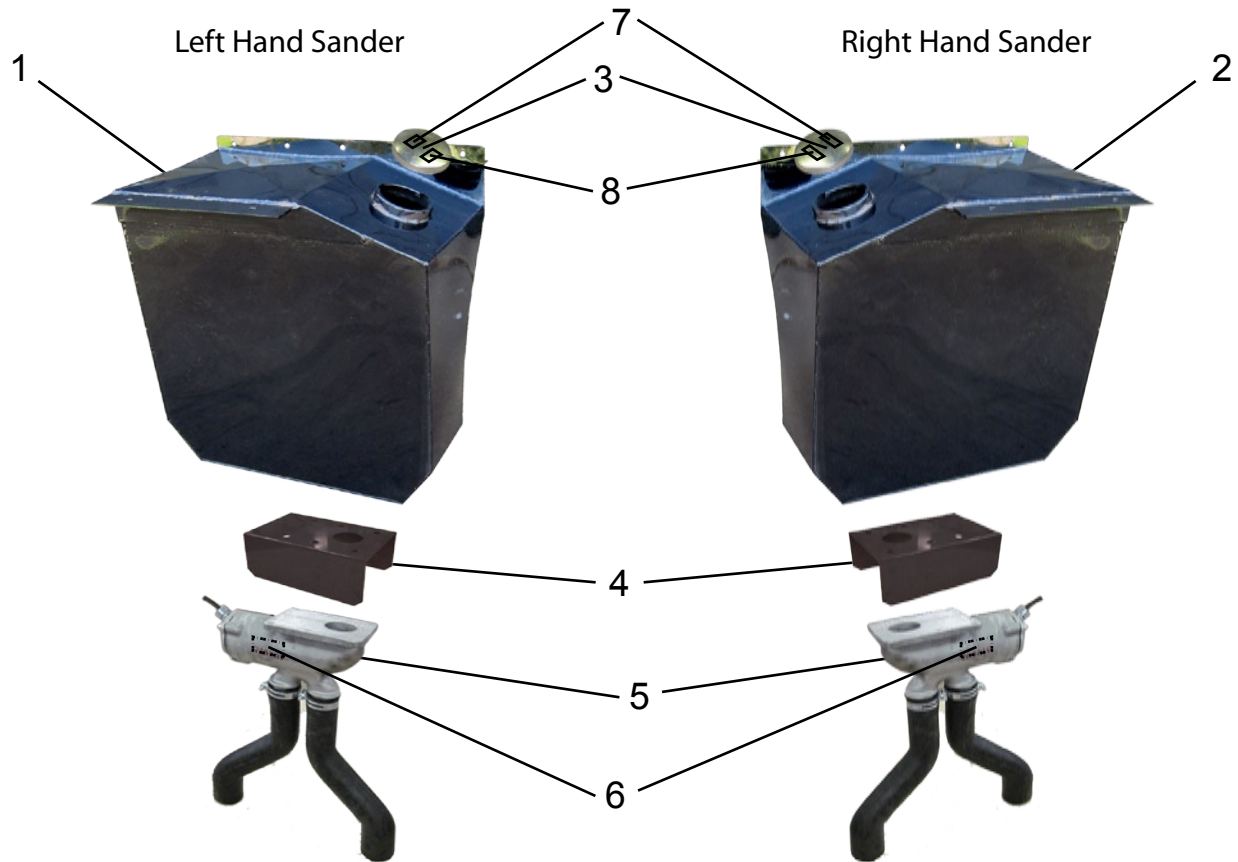
Parts List for Traction Sanders

Additional Parts for Sander Assembly



| Ref # | Name | Part # |
|-------|-------------------------------------------|--------------|
| 8 | Straight Conduit Junction | S150-11 |
| 9 | 6 ft flexible nonmetallic conduit | S150-10 |
| 10 | Straight thru watertight conduit fittings | S150-14 (x3) |
| 11 | Conduit Grommet | S150-8 |

| Ref # | Name | Part # |
|-------|--------------------------|--------|
| 12 | Fuse Holder w/20A Fuse | SE-11 |
| 13 | 30ft 12 ga. Wire - Black | SE-12 |
| 14 | Switch - Truck Style | S40135 |



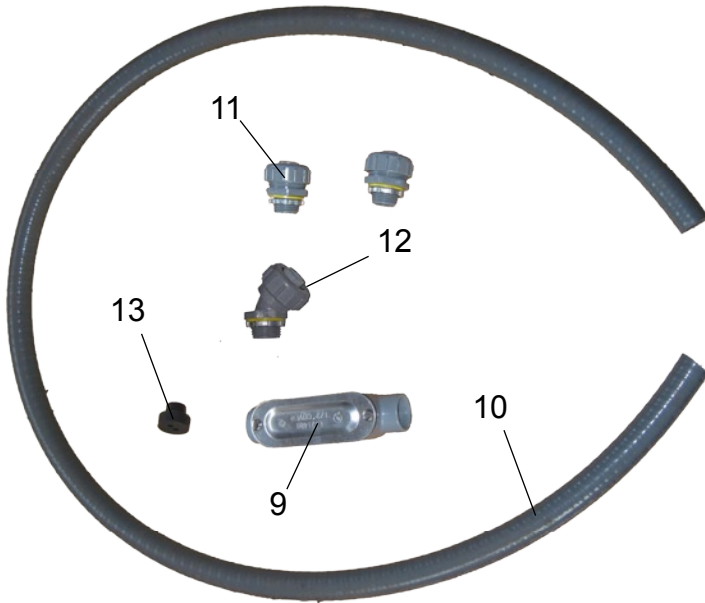
| Ref # | Name | Part # | Ref # | Name | Part # |
|-------|-----------------------------------------------------------|----------------------|-------------------|--------------------------------------------------|------------------|
| 1 | Left Hand Sander Tank Powder Coated Steel Aluminum | S-N100TL S-A100TL | 6 | Serial Number (inside casting) | |
| 2 | Right Hand Sander Tank Powder Coated Steel Aluminum | S-N100TR S-A100TR | 7 | Elston Logo Decal | SD-03 |
| 3 | Tank Cap w/ Retaining Lanyard | S4-53-04 | 8 | Grit Decal | SD-04 |
| 4 | Valve Guard Powder Coated Steel Aluminum | SP-02B SP-02A | 1,2- 3-16 (x2) | Sander w/ Black Steel Tanks Aluminum Tanks | S-N100 S-A100 |
| 5 | Operating Unit Area (includes gaskets) | see page A6 | | | |

Add a C to the tank and sander part numbers for custom colors.

see page A5 for additional parts

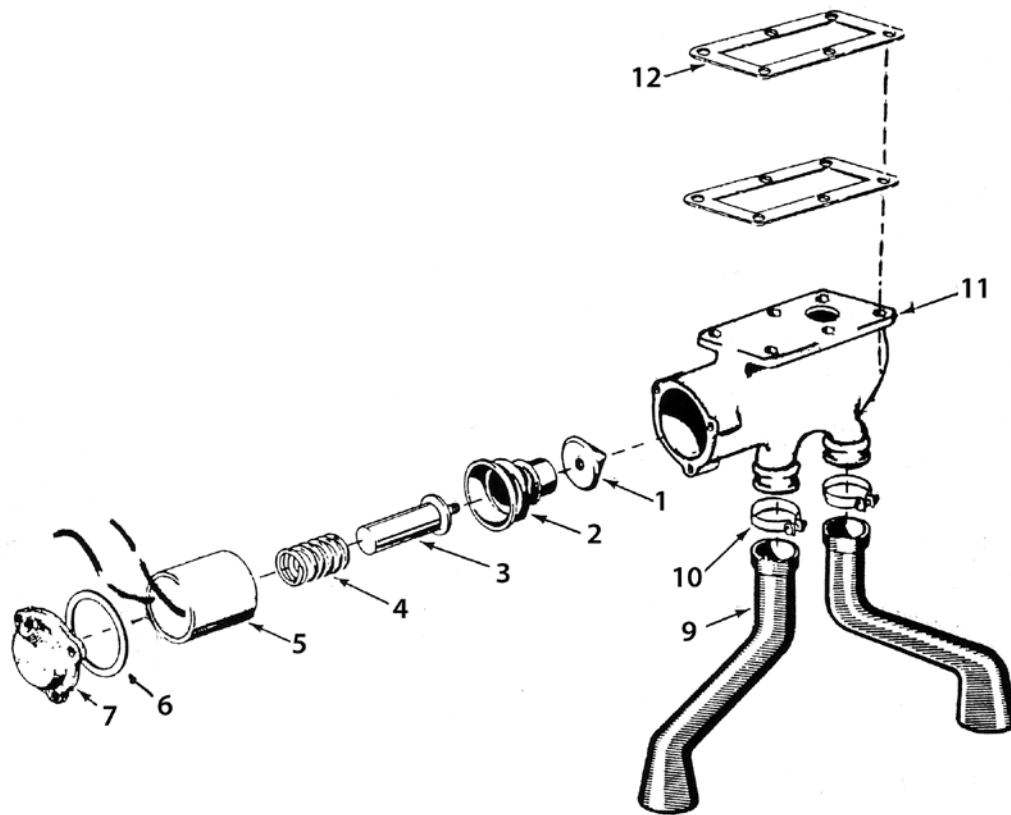
Parts List for Traction Sanders

Additional Parts for Sander Assembly



| Ref # | Name | Part # |
|-------|-------------------------------------------|--------------|
| 9 | Straight Conduit Junction | S150-11 |
| 10 | 6 ft flexible nonmetallic conduit | S150-10 |
| 11 | Straight thru watertight conduit fittings | S150-14 (x2) |
| 12 | 45 deg watertight conduit fitting | S150-20 |
| 13 | Conduit Grommet | S150-8 |

| Ref # | Name | Part # |
|-------|--------------------------|--------|
| 14 | Fuse Holder w/20A Fuse | SE-11 |
| 15 | 30ft 12 ga. Wire - Black | SE-12 |
| 16 | Switch - Truck Style | S40135 |

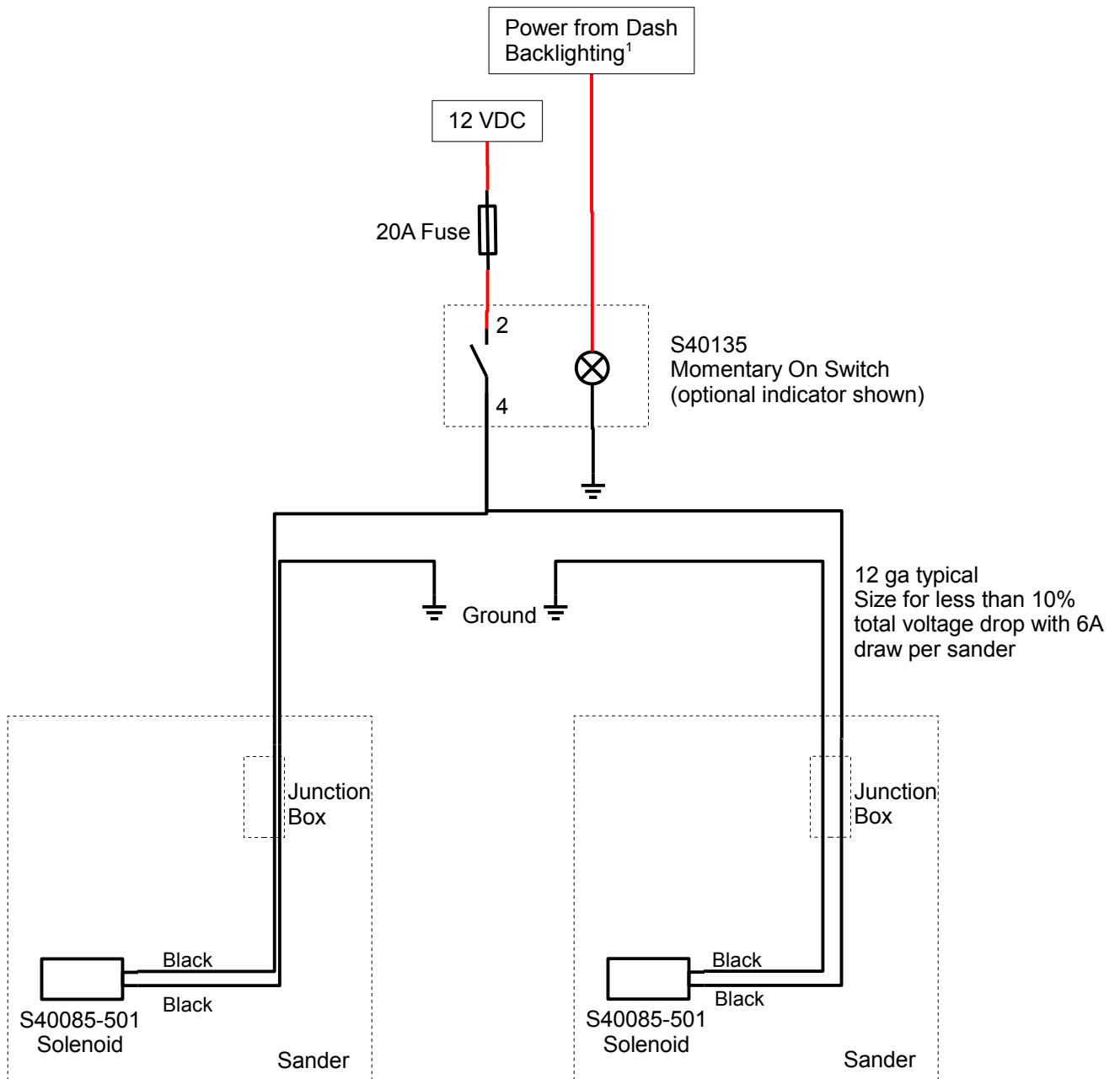


| Ref # | Name | Part # | Ref # | Name | Part # |
|-------|-------------------------------|------------|--------|-------------------------------------------------------------------------------------|------------|
| 1 | Cone Assembly | S15-85 | 11 | Valve Body | S40059 |
| 2 | Bellows | S161-2 | 12 | Gasket - Valve Body (one installed above SP-02 guard and one installed below) | S16-88 |
| 3 | Armature | S197-6 | 1-5 | Solenoid & Valve Assy. | S40141 |
| 4 | Compression Spring | S24-62 | 1-8,11 | Operating Unit | S40084-501 |
| 5 | Solenoid - 12 V | S40085-501 | | | |
| 6 | Solenoid Gasket | S4-41G | | | |
| 7 | Cap - Solenoid Opening* | S4-41B | | | |
| 8 | Gasket for Cap (Not Shown) | S16-87 | | | |
| 9 | Boot | S124-6 | | | |
| 10 | Clamp for Boot | S83-97 | | | |

* Use S4-41C for units on quarterfender sanders with metal conduit

All hardware listed is coarse thread (UNC) and Grade 5 or better unless otherwise noted.

Truck Sander Wiring Diagram



¹If possible, indicators should be wired so that they are dimmable by the dash light brightness control (or rheostat).

LIMITED WARRANTY TERMS

Elston Manufacturing, Inc. offers a one (1) year, non-transferable, Limited Warranty against specified defects as set forth below for Elston Manufacturing, Inc. product lines from the date of purchase through proof of purchase by providing original receipt.

This Limited Warranty specifically excludes normal wear and tear of products and is provided solely under the conditions that the product has been properly installed, operated and maintained in accordance with all applicable instructions. Proper installation instructions, or operating manuals, are provided with each product and operating condition. Travel, diagnostic cost, labor, transportation and any and all such costs related to repairing a defective product will be the responsibility of the owner. This warranty is extended only to the original owner of any equipment, the end user.


Elston Manufacturing, Inc.'s sole obligation under this Limited Warranty is to, in its sole and absolute discretion, either repair, modify, or replace (i.e. correct), Elston Manufacturing, Inc.'s products subject to this Limited Warranty. The allegedly defective products must be returned to Elston Manufacturing Inc. or an authorized service center freight paid by buyer. After confirmation by Elston Manufacturing, Inc. that a defect does exist in the product that is covered under this Limited Warranty then Elston Manufacturing, Inc. shall, in its sole and absolute discretion, either repair, modify or replace the product(s) and return the product(s) to the owner freight paid by Elston Manufacturing, Inc.

Elston Manufacturing, Inc. products received by Elston Manufacturing, Inc. within one (1) year from the original sale date to customer and found to be defective as referenced above will be corrected as referenced in the previous paragraph at no charge for parts (provided by original factory) or labor but will include freight paid by buyer. Failure to use original factory parts voids this warranty. Elston Manufacturing, Inc. products received by Elston Manufacturing, Inc. after one (1) year from original shipment date to customer will be corrected as foresaid for a charge of the then-current sale price of parts and labor with freight paid by buyer. Exception: Any parts to be found defective at any time that come under a recall status from providing manufacturer, will be covered under the terms and conditions of the recall status provided by manufacturer.

THIS LIMITED WARRANTY BY ELSTON MANUFACTURING, INC. IS IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION TOTHE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. NO ONE IS AUTHORIZED BY ELSTON MANUFACTURING, INC. TO EXTEND OR ALTER THE TERMS OF THIS LIMITED WARRANTY. ELSTON MANUFACTURING, INC. ASSUMES NO LIABILITY FOR LOSS OF USE OR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL OR OTHER DAMAGES OF ANY KIND IN RESPECT TO THE USE OF THE ELSTON MANUFACTURING, INC EQUIPMENT.

Accessory items furnished by Elston Manufacturing, Inc. are covered by a Limited Warranty for a period of one (1) year from date of original sale, subject to the conditions, limitations, and disclaimers stated above, for replacement of defective materials, provided such items are returned freight paid by buyer to Elston Manufacturing, Inc. and are determined by Elston Manufacturing, Inc. to be defective in its sole and absolute discretion.

This Limited Warranty shall not apply to any piece of equipment, parts or accessories repaired by anyone other than Elston Manufacturing, Inc. personnel, or its authorized service organizations.

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