

Elston Manufacturing Bus Sander Owners Manual

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Revision B

Valid for models produced after 3/2010 beginning with serial number S1439A

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 will travel down each of the rubber tubes and is deposited in directly front of the tires.

One side of each tank will either have a impact resistant plastic window or an electronic level sensor to help you determine when the grit level in the sander is low. If your set up has a level sensor there will be an indicator in the dash that will illuminate when the grit level is low.

Your sander is one of following five 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. All models meet the current standards developed by the fourteenth National Congress on School Transportation when installed correctly.

Specifications

Specifications – B-200 - S-B200

Dimensions ¹	12 in wide x 20 in long x 30 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
.....	<30mA standby current

Specifications – Blue Bird Standard - S-1315

Dimensions ¹	16 in wide x 16 in long x 27 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
.....	<30mA standby current

Specifications – Blue Bird Special - S-1315A

Dimensions ¹	12 in wide x 16 in long x 32 in tall
Shipping Weight.....	50 lbs/side (100 lbs/set)

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 Capacity ²	50-65 lbs/side (100-130 lbs/set)
Voltage Requirement.....	12 VDC (nominal)
Current Draw.....	12 A (6A per side) when dropping grit
.....	<30mA standby current

Specifications – Thomas - S-2540

Dimensions ¹	12 in wide x 20 in long x 30 in tall
Shipping Weight.....	50 lbs/side (100 lbs/set)
Grit Capacity ²	80-110 lbs/side (160-220 lbs/set)
Voltage Requirement.....	12 VDC (nominal)
Current Draw.....	12 A (6A per side) when dropping grit
.....	<30mA standby current

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.

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. However, this type of sand can be hard to find.

Crushed Rock

Crushed rock is an inexpensive product that works well as long as it is the correct size. 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
- Clean the inside of the sight glass and sensor window on the level sensor with a clean rag if they are present on the sander. Replace if the part is heavily scratched.
- 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 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.

These 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 buses and/or electrical systems. Please do not install those areas of the sander where you lack personal knowledge and experience.

These instructions were written with the latest version of the National School Transportation Specifications and Procedures in mind and are intended to guide you in an installation that meets these standards. At the time of writing, the latest standards were the 2005 edition. However, if the standards that apply to buses in your area conflict with these installation instructions the standards should always be followed instead.

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 and/or the authority responsible for regulating or approving your installation to discuss how your installation can be 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 (bent rubber hose)
- 4 clamps for boots
- 30 feet 12 ga stranded automotive-type wire
- 30 feet 18 ga green,yellow, brown bonded wire

- 6 feet 1/2" flexible nonmetallic conduit

Additional parts required:

- 3/8" diameter grade 5 bolts with flat washers and nylon lock nuts to match for securing sanders to mounting bracket (depending on mounting)
- 1/2" diameter grade 5 bolts 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 electrical connectors, clips, heat shrink tube, and grommets for wire

Installation of the Sanders Tanks

Warning: Only drill and modify the frame of the vehicle where 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. Normally the tank will be installed with the sight glass or level sensor on the side of the sander opposite the tire. 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 and the sander tank is symmetrical. (Tanks with a level sensor should be installed so that the level sensor is on the side of the sander opposite the tire to prevent damage to the wiring.)

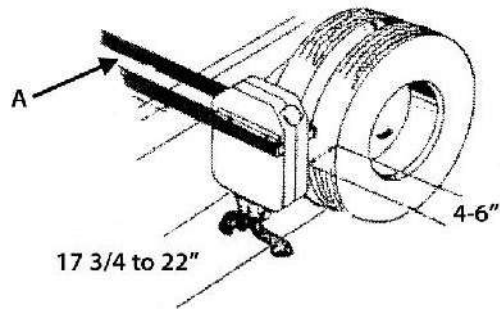


Illustration 1: Sander Mounted on Long Tubing or Angle

Once you've determined the approximate mounting location you will need to decide what type of brackets will be used to mount the sander. Typically they are mounted on long tubing/angle, mounted on angle brackets, or top mounted. Illustration 1 shows a sander hung from square tubing (A). You must use 11 or 12ga steel 2"x2" square tubing or 2 x 2 x 3/8" angle or other stock with equivalent strength and stiffness to hang the sanders. The tubing should be secured to the frame with material at least 7ga or 3/16" thick. Illustration 2 shows a sander mounted with customer fabricated angle brackets (A).

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 chemical 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 bus 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 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.

Once you have figured out approximately where the wires will run, the 6' length of conduit included with the sander can be trimmed and mounted. This conduit should be used to bridge between the sander and the frame of the vehicle in a way that will minimize water entering the sander through the wiring. To that end, drill out the plug grommet to fit the wires leaving the conduit and mount with clamps so that end of conduit slopes downward to prevent water from traveling back to the junction box. When mounting the conduit make sure to secure it to resist vibration in a way that allows for the slight expansion and contraction that occurs with temperature changes.

Mounting Switch and Indicators

The sanders are controlled by a single momentary on switch. This switch must have a pilot lamp and be mounted on the instrument panel where it would be exclusively controlled by the driver. 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. On some buses, including those manufactured by IC, an hole is available that fits the standard Elston switch. For those manufactured by Blue Bird, a switch is available from the manufacturer labeled for sanders that fits their standard opening. 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. Alternatively, the included bezel can be used for more flexibility on the mounting hole. If an another switch is used, it must have a pilot light and 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 such as S40135 indicator included with the installation kit. 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.

Ordering a Elston Traction Sander

Select the tank size that will fit best:

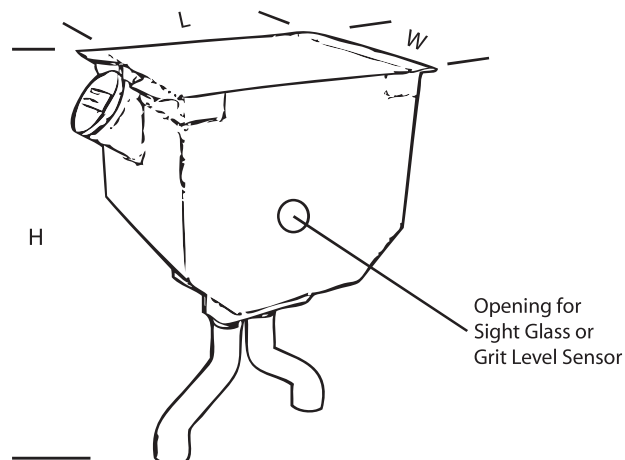
S— (a) example: S-B200

(a) Style of Tank - Available styles are

CODE	DESCRIPTION	SIZE	GRIT CAPACITY
B200	B200	12"W x 20"L x 30"H	70 - 90 lbs
1315	Blue Bird Standard	16"W x 16"L x 27"H	70 - 90 lbs
1315A	Blue Bird Special	12"W x 16"L x 32"H	50 - 65 lbs
2540	Thomas	16"W x 20"L x 30"H	80 - 110 lbs

Dimensions are approximate. Tank style will be slightly different than pictured.
Height can be varied 1 to 2" longer or shorter by modification of discharge hose.

Each set of sanders includes a right hand and left hand tank that is painted red and undercoated. The left hand sander has a impact resistant plastic window to show when the grit is low and the right hand sander has a low power active sensor that is used to power an indicator in the dash to alert the driver when grit is low.



Sample Right Hand Tank

Each set of sanders also includes a wiring kit with 30 feet of wire, dash switch, fuse, and indicator for a typical installation.

If a slightly different configuration is required, such as the sensor on a different side or no dash switch in the installation kit, see page A2 for instructions.

Ordering a Variation on the Standard Elston Traction Sander

1) Select the basic sander

Generally one left hand and one right hand sander is needed.

S— (a) (b) (c) (d) example: S-B200LR15 Left Handed B200 sander with a red tank and a sight guage

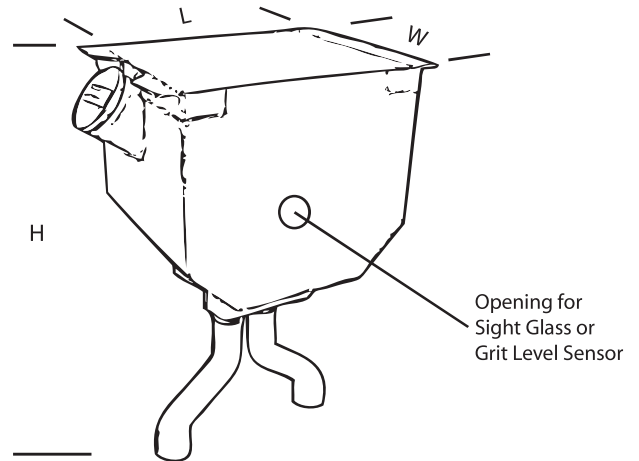
(a) Style of Tank - Available styles are

CODE	DESCRIPTION	SIZE	GRIT CAPACITY	SYMETRICAL
B200	B200	12"W x 20"L x 30"H	70 - 90 lbs	Yes
1315	Blue Bird Standard	16"W x 16"L x 27"H	70 - 90 lbs	Yes
1315A	Blue Bird Special	12"W x 16"L x 32"H	50 - 65 lbs	No
2540	Thomas	16"W x 20"L x 30"H	80 - 110 lbs	Yes

Dimensions are approximate. Tank style will be slightly different than pictured.
Height can be varied 1 to 2" longer or shorter by modification of discharge hose.

(b) Available in (L)eft Hand or (R)ight Hand

Left Hand tank has opening on the opposite side.
Any curve or allowance for the wheels will be on the opposite side as the opening.
Generally right hand sanders are installed on the curb side of the bus and left hand sanders are installed on the road side.
Symmetrical styles such as the one pictured may be installed on either side if desired.



Sample Right Hand Tank

(c) Color of sander tank

(R)ed is standard,
(B)lack or (C)ustom are also available
Custom colors require minimum order sizes and additional lead time

(d) Select the low grit gauge for each sander

Each sander must have one. Options are SE-(15) sight gauge or a SE-(09) level sensor
SE-15 sight gauge is an impact resistant plastic window that shows when grit level is low and sander needs to be refilled
SE-09 level sensor is a low power active sensor used to power a indicator in the dash to alert the driver when grit is low.

2) Select an wiring kit

SE-05 contains wire, dash switch, fuse, and indicator for standard installation with one sight gauge and one level sensor
SE-05A contains all the same parts as SE-05 except the switch and indicator
SE-06 contains similar components for an installation with only sight gauges
SE-06A contains everything in SE-06 except the switch.

S-B200

Standard Pair of Sanders with B200 tanks

Name	Part #	Ref.
Left Handed B200 sander with red tank and sight gauge	S-B200LR15	page A4
Right Handed B200 sander with red tank and electronic level sensor	S-B200RR09	page A4
Installation Kit for a pair of sanders with one sight gauge and one level sensor	SE-05	page A8

S-1315

Standard Pair of Sanders with Blue Bird Standard tanks

Name	Part #	Ref.
Left Handed Blue Bird standard sander with red tank and sight gauge	S-1315LR15	page A4
Right Handed Blue Bird standard sander with red tank and electronic level sensor	S-1315RR09	page A4
Installation Kit for a pair of sanders with one sight gauge and one level sensor	SE-05	page A8

S-1315A

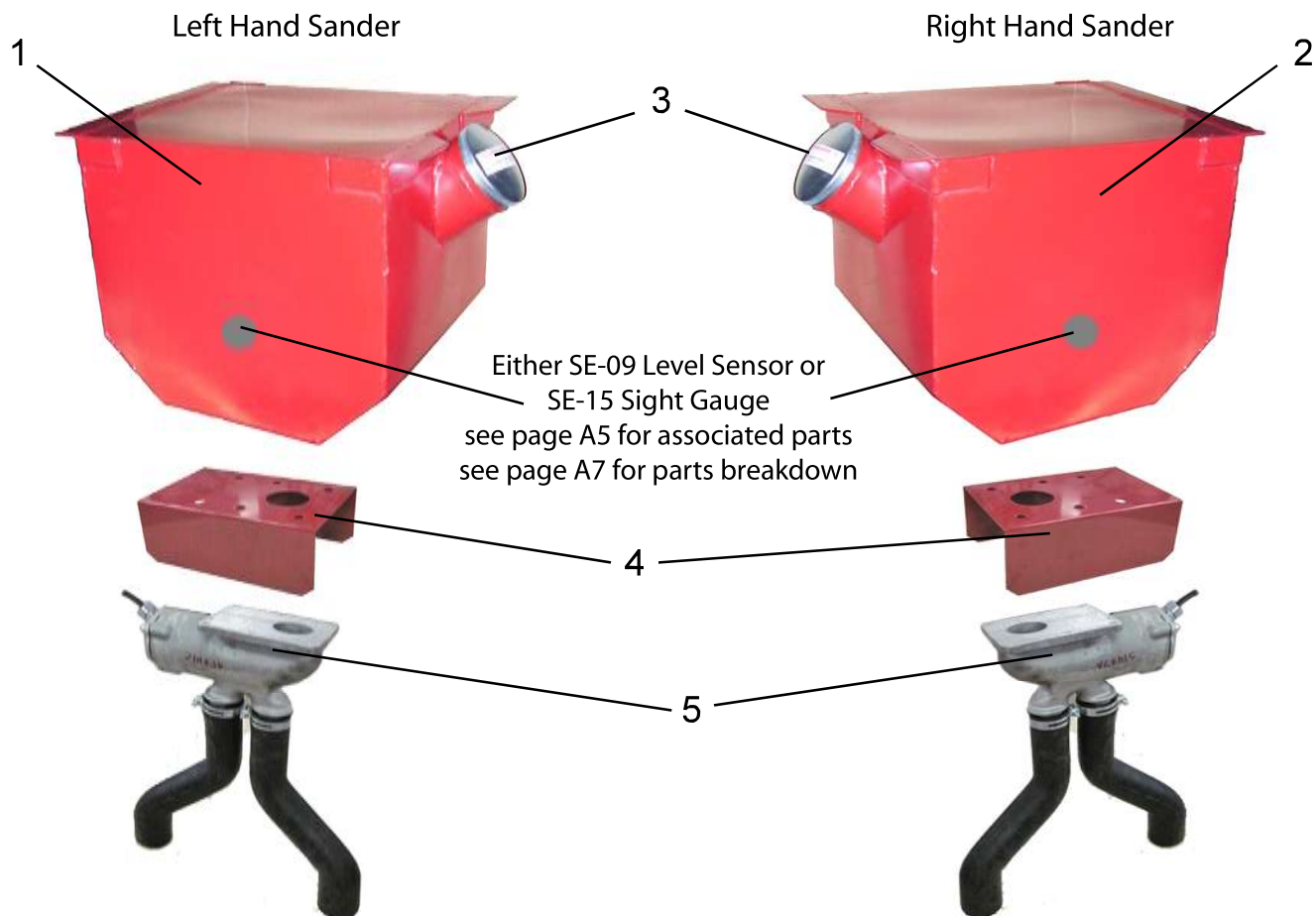
Standard Pair of Sanders with Blue Bird Special tanks

Name	Part #	Ref.
Left Handed Blue Bird special sander with red tank and sight gauge	S-1315ALR15	page A4
Right Handed Blue Bird special sander with red tank and electronic level sensor	S-1315ARR09	page A4
Installation Kit for a pair of sanders with one sight gauge and one level sensor	SE-05	page A8

S-2540

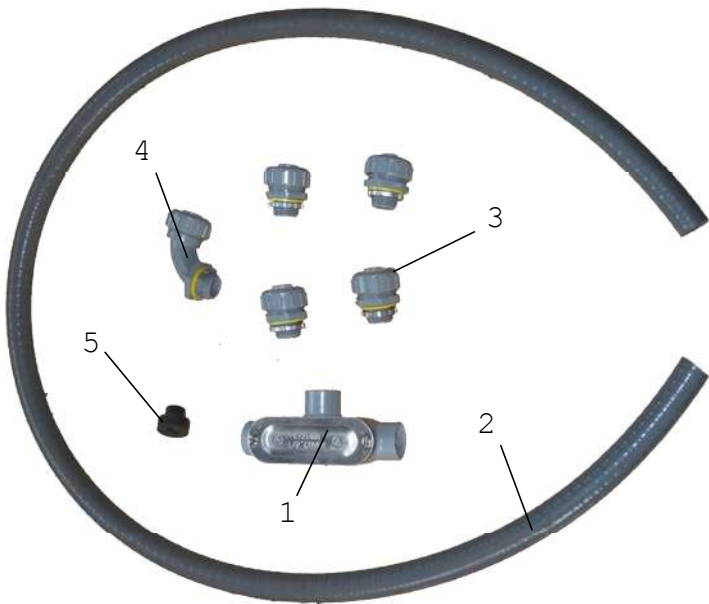
Standard Pair of Sanders with Thomas tanks

Name	Part #	Ref.
Left Handed Thomas sander with red tank and sight gauge	S-2540LR15	page A4
Right Handed Thomas sander with red tank and electronic level sensor	S-2540RR09	page A4
Installation Kit for a pair of sanders with one sight gauge and one level sensor	SE-05	page A8



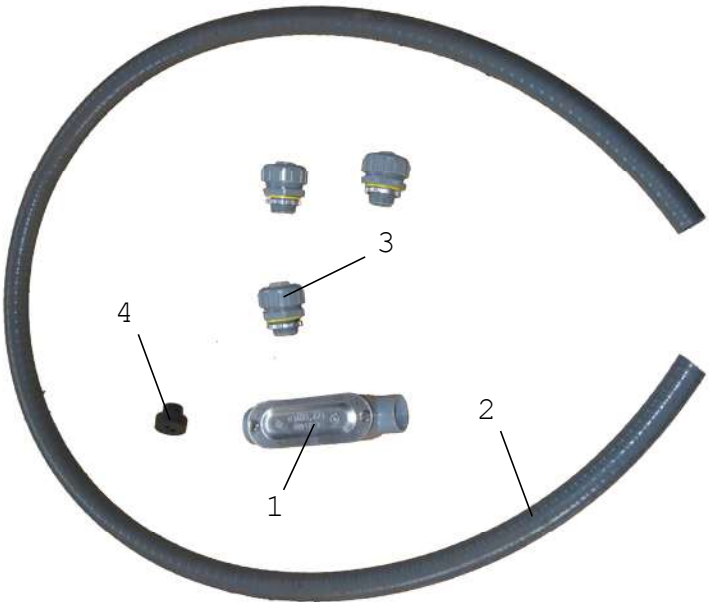
Ref #	Name	Part #	Ref #	Name	Part #
1	Left Hand Sander Tank for B-200 for Blue Bird Standard for Blue Bitd Special for Thomas	SB-____LTR SB-200LTR SB-1315LTR SB-1315ALTR SB-2540LTR	1,3-5	Left Hand Sander* for B-200 for Blue Bird Standard for Blue Bitd Special for Thomas	S-____LR____ S-B200LR S-1315LR S-1315ALR S-2540LR
2	Right Hand Sander Tank for B-200 for Blue Bird Standard for Blue Bitd Special for Thomas	SB-____RTR SB-200RTR SB-1315RTR SB-1315ARTR SB-2540RTR	2-5	Right Hand Sander* for B-200 for Blue Bird Standard for Blue Bitd Special for Thomas	S-____RR____ S-B200RR S-1315RR S-1315ARR S-2540RR
3	Tank Cap Use S2-42 for previous aluminum cap with ears	S4-53-02	Representative tank shown. Tank will differ depending on style chosen. Replace last letter of tank, valve guard, and sander part numbers with B to order a black tank. *Add 09 to sander part number to order sander with SE-09 level sensor *Add 15 to sander part number to order sander with SE-15 sight gauge		
4	Valve Guard	SP-02R			
5	Operating Unit Area (include gaskets)	see page A6			

Additional Parts for sanders with SE-09 Level Sensor

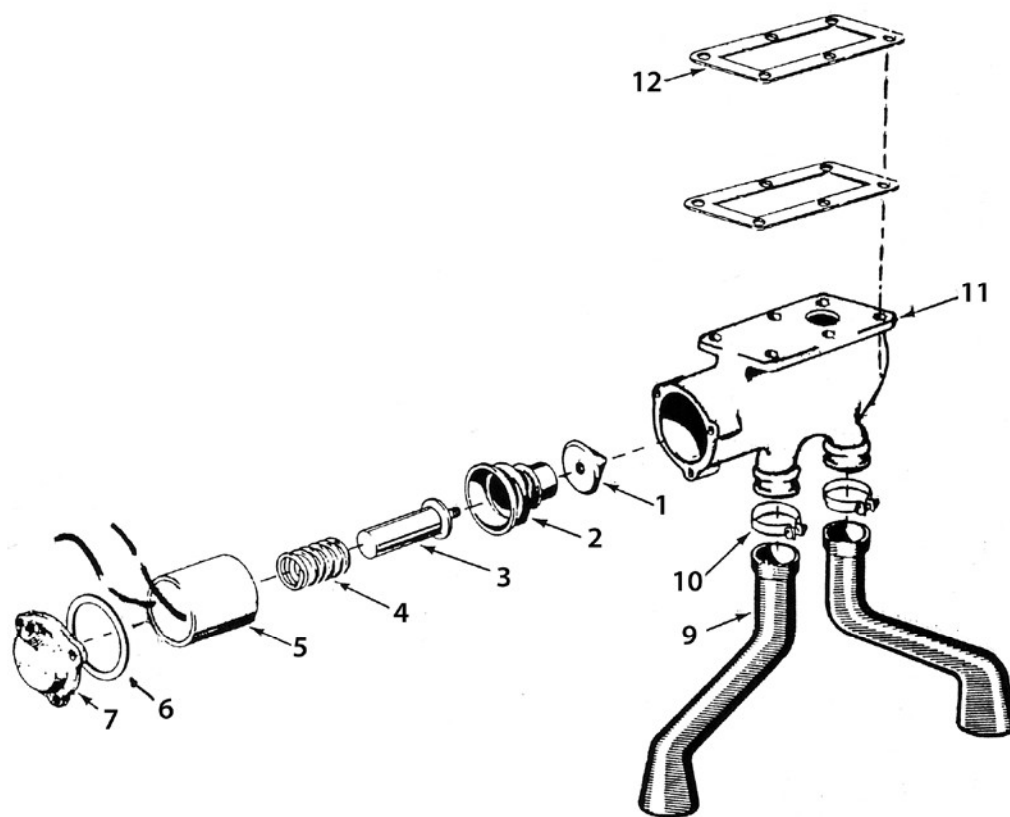


Ref #	Name	Part #
1	T Style Conduit Junction	S150-12
2	7 ft flexible nonmetallic conduit	S150-10
3	Straight thru watertight conduit fittings	S150-14 (x4)
4	90 deg watertight conduit fitting	S150-13
5	Conduit Grommet	S150-8

Additional Parts for sanders with SE-15 Sight Gauge



Ref #	Name	Part #
1	Straight Conduit Junction	S150-11
2	6 ft flexible nonmetallic conduit	S150-10
3	Straight thru watertight conduit fittings	S150-14 (x3)
4	Conduit Grommet	S150-8

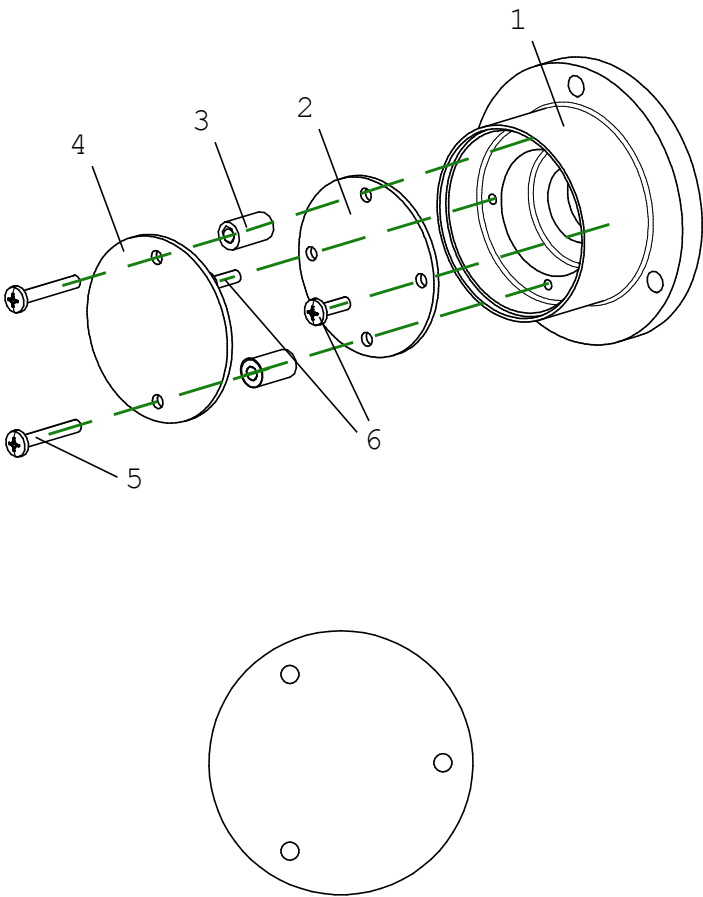


Ref #	Name	Part #
1	Cone Assembly	S15-85
2	Bellows	S161-2
3	Armature	S197-6
4	Compression Spring	S24-62
5	Solenoid - 12 V	S40085-501
6	Solenoid Gasket	S4-41G
7	Cap - Solenoid Opening	S4-41B
8	Gasket for Cap (Not Shown)	S16-87
9	Boot	S124-6
10	Clamp for Boot	S83-97

Ref #	Name	Part #
11	Valve Body	S40059
12	Gasket - Valve Body (one installed above SP-02 guard and one installed below)	S16-88
1-5	Solenoid & Valve Assy.	S40141
1-8,11	Operating Unit	S40084-501

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

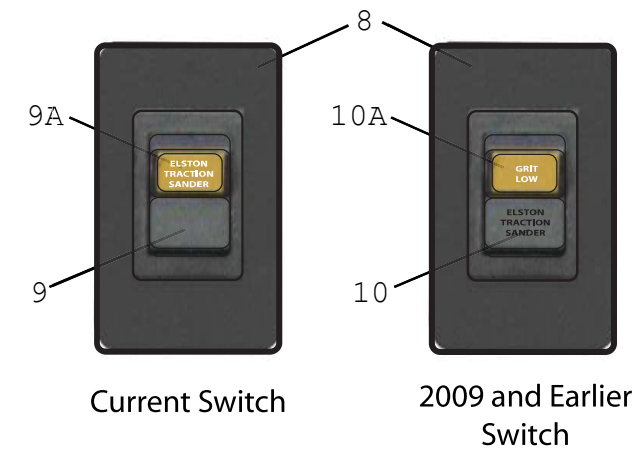
Parts List for Traction Sanders



Switch, Level Sensor, and Sight Gauge

Ref #	Name	Part #
1	Sensor Body	SE-09-02
2	Sensor Circuit Board	SE-09-03
3	Plastic Spacer	SE-09-05
4	Sensor Window	SE-09-04
5	3/4" #4-40 Machine Screw	
6	3/8" #4-40 Machine Screw	
1-6	Level Sensor	SE-09

Ref #	Name	Part #
7	Sight Gauge	SE-15



Ref #	Name	Part #
8	Bezel	SK-18
9	Switch - Bus Style	S40131-01
9A	Replacement Lens - "Elston Traction Sander"	S40131-04
10	Switch - Bus Style	S40130-01
10A	Replacement Lens - "Grit Low"	S40130-04
8,9	Switch Assembly - Bus Style Updated	S40131-03
8,10	Switch Assembly	S40130-03

SE-05 Installation Kit

Standard Installation Kit for Set of Sanders with One Sight Gauge and One Level Sensor

Name	Part #
Switch Assembly - Bus Style Updated	S40131-03
Fuse Holder w/20A Fuse	SE-11
30ft 12ga strandard wire -black	SE-12
30ft 18ga stranded 3 conductor parallel wire	SE-13

SE-05A Installation Kit

SE-05 without Switch - Bus Style and Low Grit Indicator Light

SE-06 Installation Kit

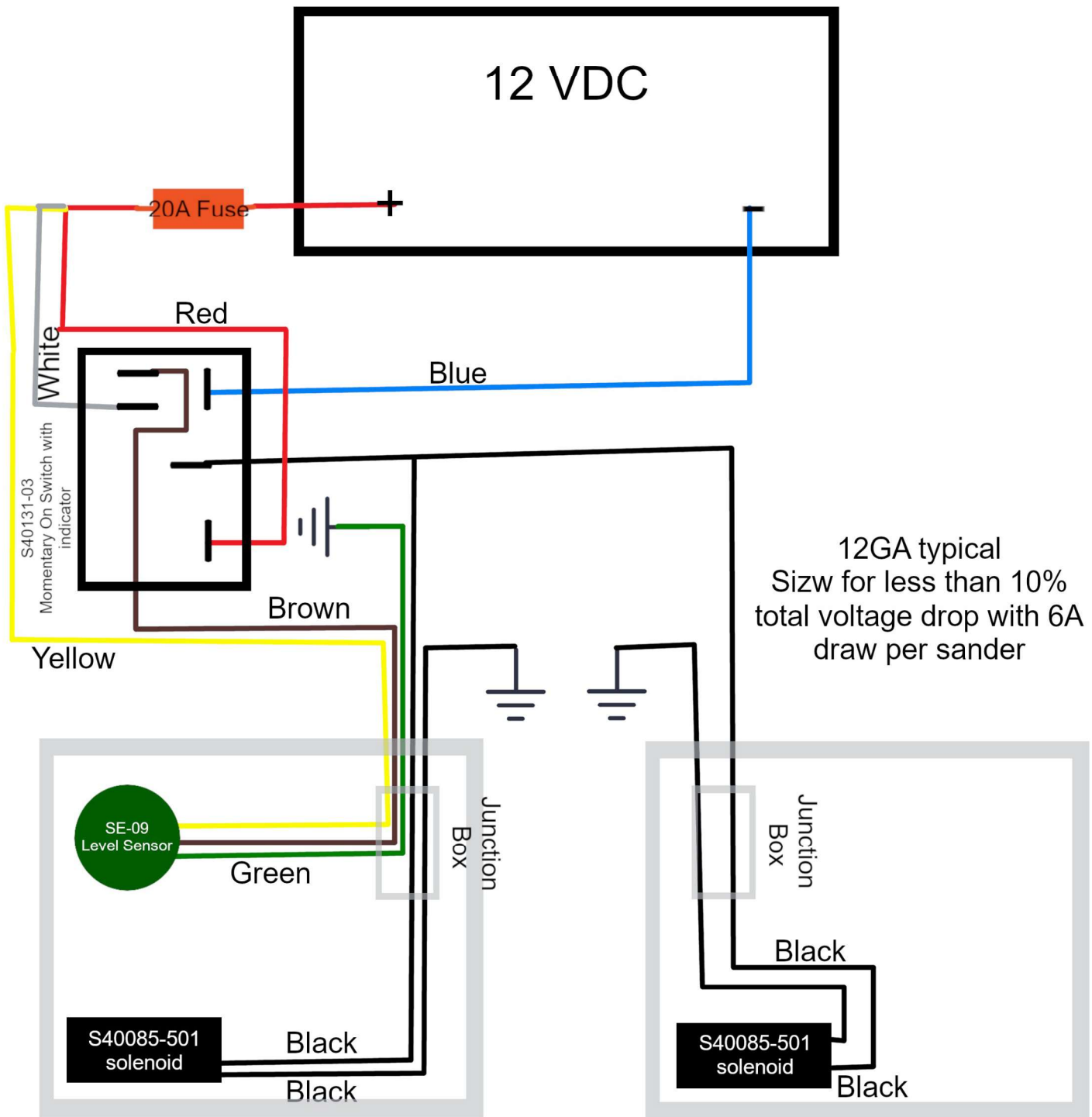
Installation Kit for Set of Sanders with Two Sight Gauges

Name	Part #
Switch - Bus Style	S40131-03
Fuse Holder w/ 20A Fuse	SE-11
30ft 12ga strandard wire -black	SE-12

SE-06A Installation Kit

SE-06 without Switch - Bus Style

Bus Sander Wiring Diagram



- ¹ If possible, indicators should be wired so that they are dimmable by the dash light brightness control (or rheostat).
- ² Other indicators may be used if the current draw does not exceed the 100 mA limit of the level sensor when Indicator is powered at 13.8 VDC.

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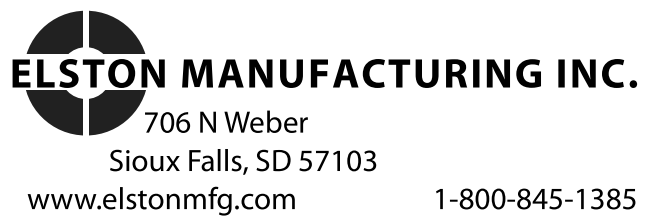
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ELSTON MANUFACTURING INC.

706 N Weber

Sioux Falls, SD 57103

www.elstonmfg.com

1-800-845-1385