

## Installation Instructions

### Introduction

The FORTA Ranger is a mobile fiber dispenser that efficiently and easily adds Surface-EXT™ fibers to a micro surfacing or slurry seal process.

The Ranger must be installed on the micro surfacing or slurry seal truck before use. The enclosed instructions provide good overall guidance on how to install the Ranger dispenser on your truck. Most truck manufacturers can provide more specific instructions or guidelines on how to install the Ranger dispenser on their truck bodies. Contact your truck manufacturer.

These instructions outline the necessary steps to install the Ranger. If technical assistance is necessary, some assistance is available by telephone consultation with FORTA Corporation Operations Department. For more in-depth assistance, on-site technical services are available through FORTA Corporation at a cost of the technician's travel, lodging, and time on site. Contact FORTA Corporation for details.

The Ranger is available with two different lengths of discharge feed tube: 26 in long tube or 35 in long tube.

#### For Use With



**FORTA**  
Surface-EXT™



#### **Important**

*Failure to follow the within instructions, and any other supplied instructions, may void any applicable warranty.*

### Operation and controls

For operation, the Ranger requires both an electric and a hydraulic power supply. Typically the truck's power supplies are used. In a similar fashion, the truck's control system can be used to control operation of the Ranger. When set up this way, the Ranger will run when the truck's belt is running. This works very well for normal operation, but can be inconvenient when it is necessary to calibrate the Ranger. To facilitate calibration, a two-way bypass or diverter valve should be installed between the Ranger and the hydraulic pump so that hydraulic flow can be isolated to the Ranger only. This valve must be purchased and installed by the customer.

If it is not desired to operate the Ranger via the truck's controls, an optional control kit can be purchased. The kit includes a control panel and all the necessary cables to connect to the Ranger and to a power source. The control panel has an on/off switch, potentiometer, and LED display.

## Before you start

### 1. Identify supplied and optional items

Figure 1 shows items that are either included with the Ranger dispenser or are optional. Locate and identify them before you start. Also, refer to Table 1 below for component weights.

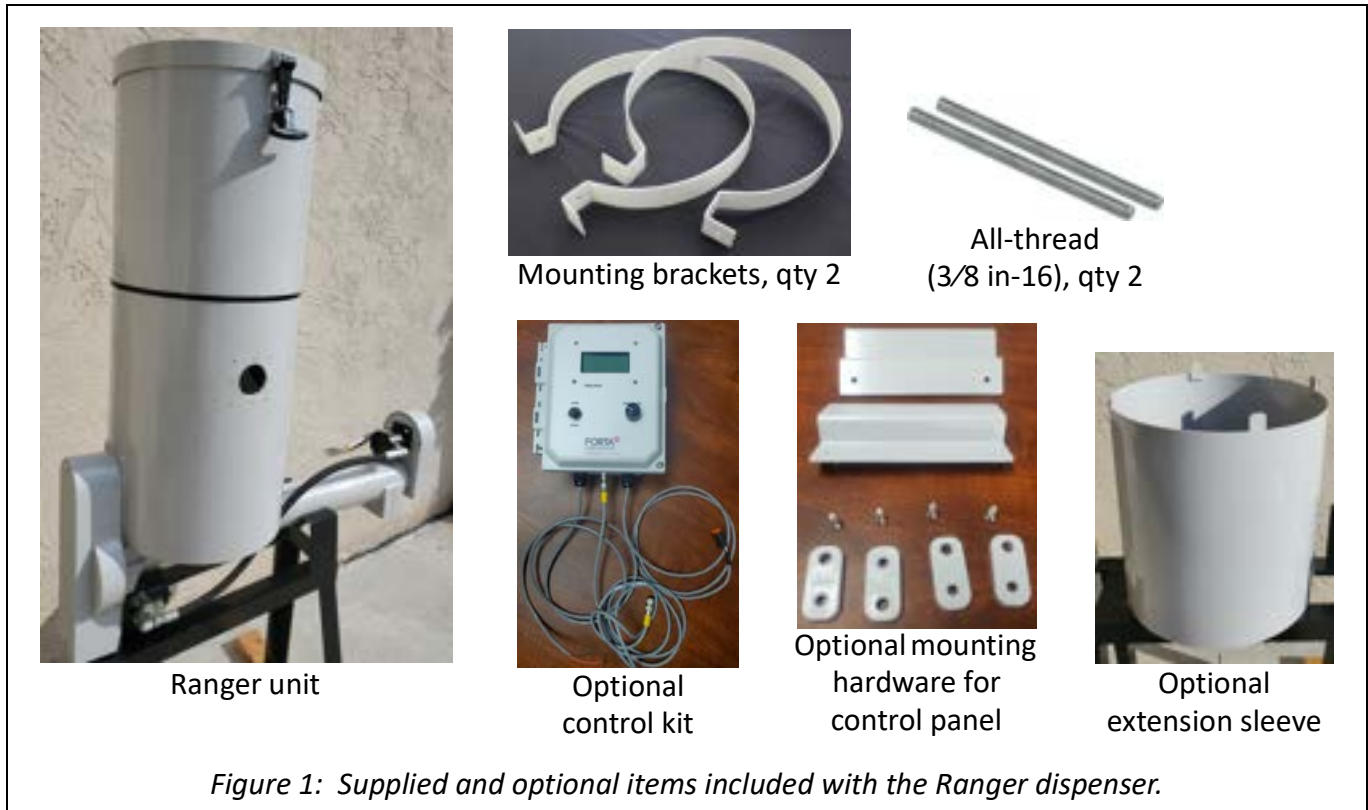


Table 1: Component weights (refer to Figure 1 above).

|                           | Standard<br>(26 in discharge tube) | Extended<br>(35 in discharge tube) |
|---------------------------|------------------------------------|------------------------------------|
| Ranger unit <sup>1</sup>  | 78.5 lb                            | 83.5 lb                            |
| Lid                       | 3.5 lb                             |                                    |
| Mounting brackets (2)     | 3.5 lb                             |                                    |
| Optional control kit      | 5 lb                               |                                    |
| Optional extension sleeve | 9 lb                               |                                    |

1. Includes lid and all covers.

## 2. Utilities needed for operation

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The following utilities are needed to operate the Ranger:

- A 12 VDC fused power source (2 Amp fuse)
- truck's hydraulic power supply - Ranger requires an approximate oil flow of 1 gal/min

## 3. Tools and supplies required to install

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You will need the following tools and supplies to install the Ranger:

- Drill
- Drill bits (for metal):
  - 9/32 in (for 1/4 in-20 fasteners)
  - 13/32 in (for 3/8 in-16 fasteners)
- Fasteners to install mounting brackets to Ranger (will use the supplied all-thread):
  - Four (4) 3/8 in **stainless steel** flat washers
  - Four (4) 3/8 in-16 **stainless steel** nylon-insert lock nuts
- Fasteners to install mounting brackets to truck:
  - Four (4) 3/8 in **stainless steel** fasteners, length sufficient for thickness of mounting surface, plus thickness of Ranger bracket (0.125 in), plus use of a flat washer on both sides, and **full engagement** of the threads of the nylon-insert lock nut
  - Eight (8) 3/8 in **stainless steel** flat washers
  - Four (4) 3/8 in **stainless steel** nylon-insert lock nuts
- Various wrenches and/or sockets (for the above listed fasteners)
- Two (2) hydraulic hoses, 3/8 in diameter or larger, #6 fittings, length sufficient to connect components as shown in ["Make connections"](#) on page 8
- If the optional control kit was purchased - fasteners, and potentially mounting hardware, to install the control panel to the truck (see ["Mount control panel of optional control kit \(if purchased\)"](#) on page 6)

#### 4. Ranger dimensions and parts identification

It is important to be able to identify the correct parts of the Ranger as you read through these instructions. Refer to Figure 2 below. Figure 2 also provides dimensions of the Ranger.

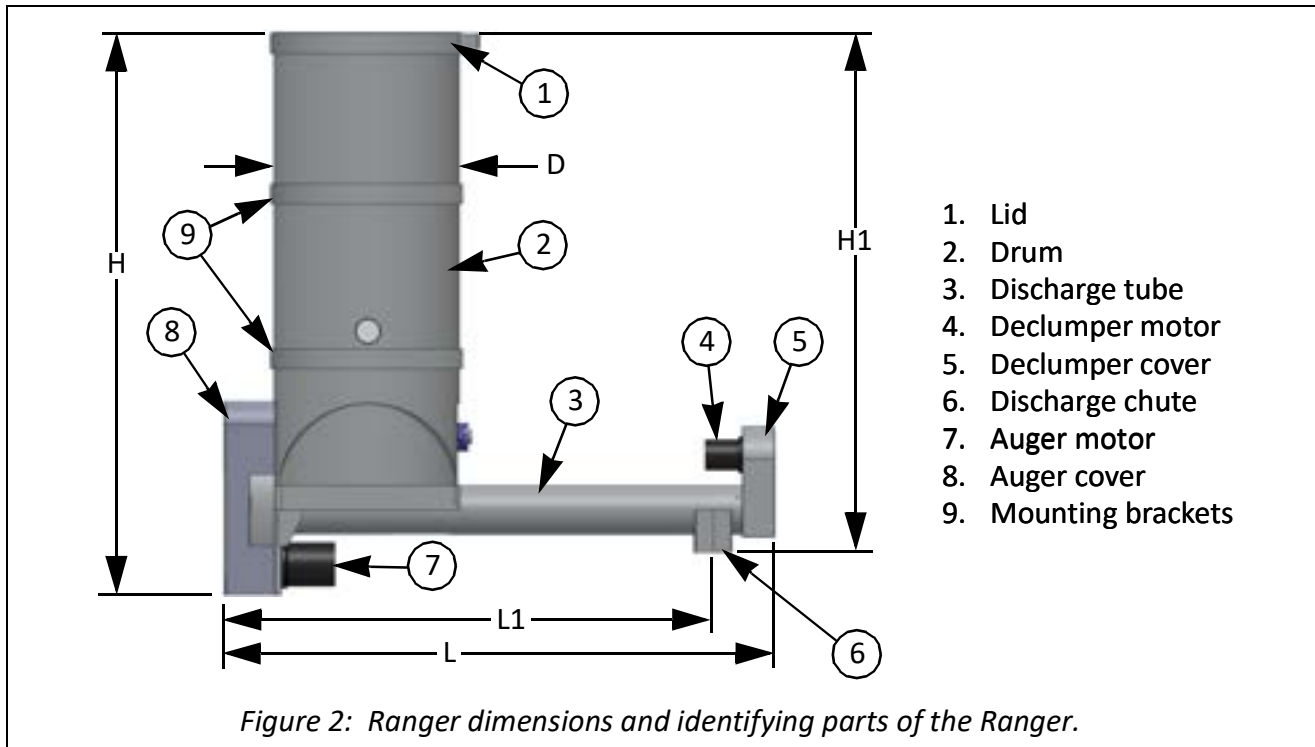


Figure 2: Ranger dimensions and identifying parts of the Ranger.

Table 2: Ranger Dimensions (refer to Figure 2 above).

|                                     | Standard<br>(26 in discharge tube) | Extended<br>(35 in discharge tube) |
|-------------------------------------|------------------------------------|------------------------------------|
| Length (L), total                   | 31.563 in                          | 40.563 in                          |
| Length (L1), to center of discharge | 26 in                              | 35 in                              |
| Height (H), total                   | 45.625 in                          |                                    |
| Height (H1), to bottom of discharge | 41.125 in                          |                                    |
| Diameter (D)                        | 15.5 in                            |                                    |

# Mount the Ranger on the truck



**Note**

*Two or more people are needed to perform this part of installation.*

## 1. Locate the preferred mounting area

The Ranger must be mounted so that it is above, and as close as possible to, the pug mill of the truck. Make sure the discharge chute of the Ranger is over the pug mill. See examples below. Your truck's manufacturer should be able to provide specific guidance on the best placement of the Ranger.



Mounting brackets



Mounting brackets

## 2. Prepare Ranger for mounting

Put mounting brackets on the drum of the Ranger. Position the brackets approximately 1/3 of the way down from the top of the drum and 1/3 of the way up from the bottom of the drum (as seen in pictures of [step 1](#)). Make sure that the brackets do not interfere with the window in the drum and that they are in a good position to align with the mounting location on the truck. Secure the brackets to the Ranger with the all-thread and 3/8 in-16 washers and nylon-insert lock nuts.

## 3. Prepare truck for mounting

Hold the Ranger up to the truck at the desired mounting location and use it as a template to mark the positions of the holes needed to match the mounting brackets. Use the 13/32 in drill bit to drill holes at the marked locations.



**Note**

*In some cases it may be necessary to use additional brackets or spacers to the truck to accommodate mounting the Ranger.*

#### 4. Lift and mount the Ranger

While one person lifts the Ranger into place and aligns it with the mounting holes, the other person secures the unit with the 3/8 in fasteners, washers and nylon-insert lock nuts. If it is necessary to rotate the Ranger so that the discharge chute aligns correctly with the pug mill, loosen the nuts of the all-thread just enough to rotate the unit, and then re-tighten the nuts when done. Also, a short piece of static-resistant tubing can be added to the end of the discharge chute if needed.

### Mount control panel of optional control kit (if purchased)

 Note

*If you will use the truck's existing controls to operate the Ranger, skip this step and continue with "Make connections" on page 8.*

#### 1. Locate the preferred mounting area

The control panel must be mounted so that an operator can easily see the display and reach the controls. Typically this would be near the truck's existing controls.



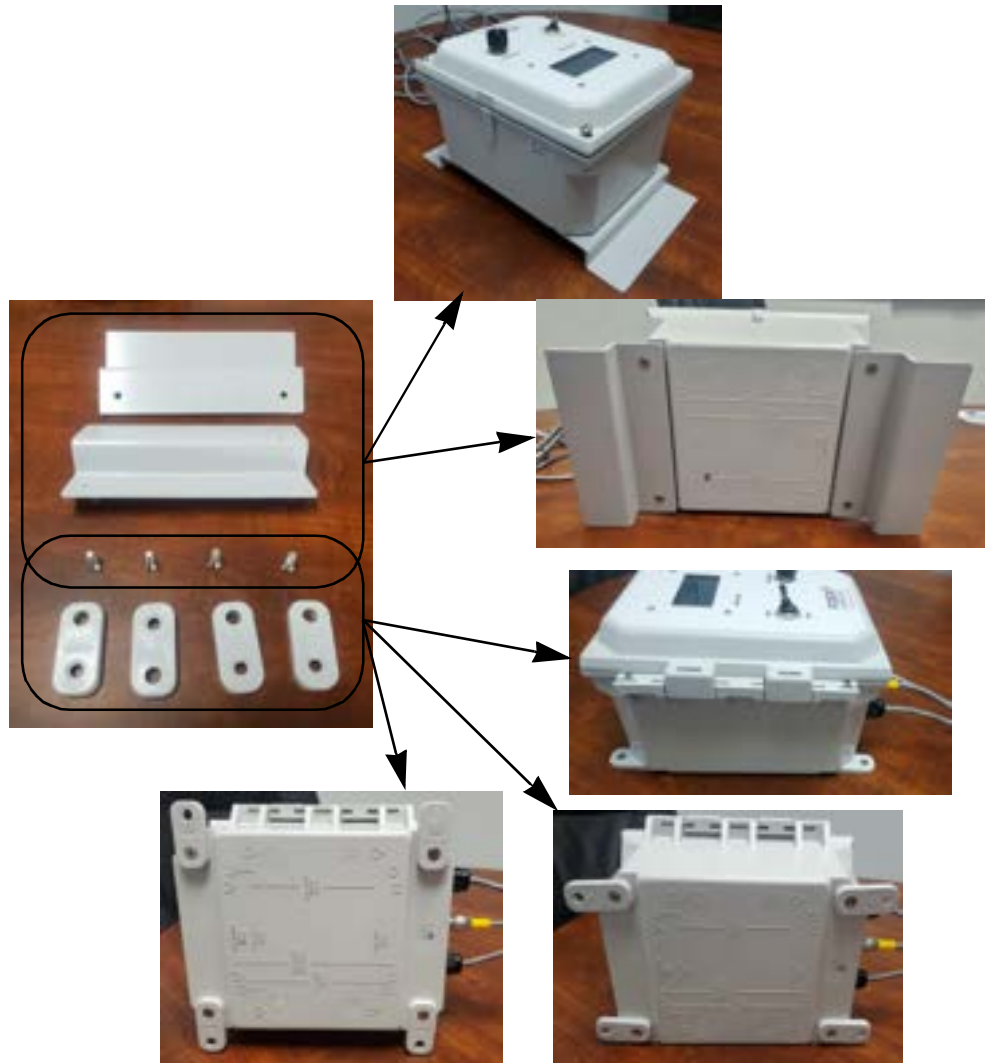
## 2. Install optional mounting hardware

 Note

If the optional mounting hardware was not supplied with your Ranger, the customer is responsible for supplying all mounting hardware to mount the control panel to the truck. The bottom of the box is equipped with a tapped hole in each corner that will accept #10-32 screws.

If the optional mounting hardware for the control panel was supplied, select which set of brackets work best for your needs - the full-size brackets or the smaller mounting feet (see images at right). Both sets of mounting hardware use the same screws (provided) to mount them to the bottom of the box.

Both options offer some flexibility in how the box can be mounted to the truck. Holes can be drilled as necessary in the outer flanges of the full-size mounting brackets, while the mounting feet can be positioned at multiple angles on the box (as shown in bottom two images at right) to accommodate mounting needs.



## 3. Mount control panel to truck

As necessary drill any holes in the truck and/or mounting brackets to that the control panel can be securely mounted to the truck. Any additional mounting hardware must be provided by the customer.

# Make connections



**CAUTION!**

\* Follow these instructions closely. The declumper motor can be damaged by back pressure at its return/outlet port. To prevent damage, a check valve has been installed on the return port of the declumper motor. Do not remove this check valve; removal of this check valve will void the warranty. Do not connect the return port of the declumper motor to any component that will create back pressure. Any damage caused by back pressure is not covered under warranty.

## 1. Make hydraulic connections

Connect hydraulic hoses between the components as shown in the schematic at right (blue lines). The hoses between the proportional control valve and auger motor, and between the auger motor and declumper motor are supplied and already connected (red lines).



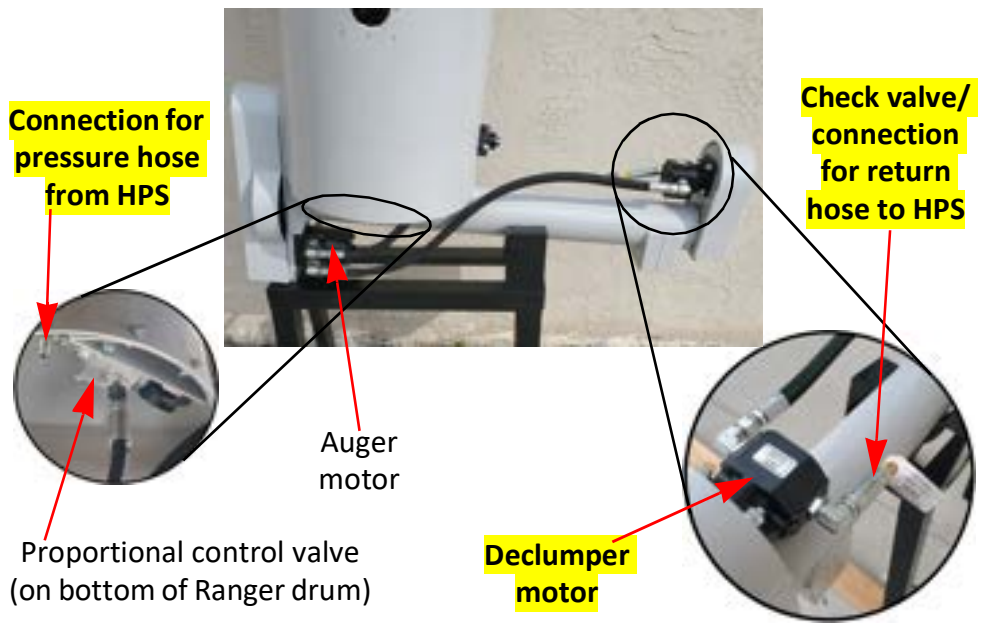
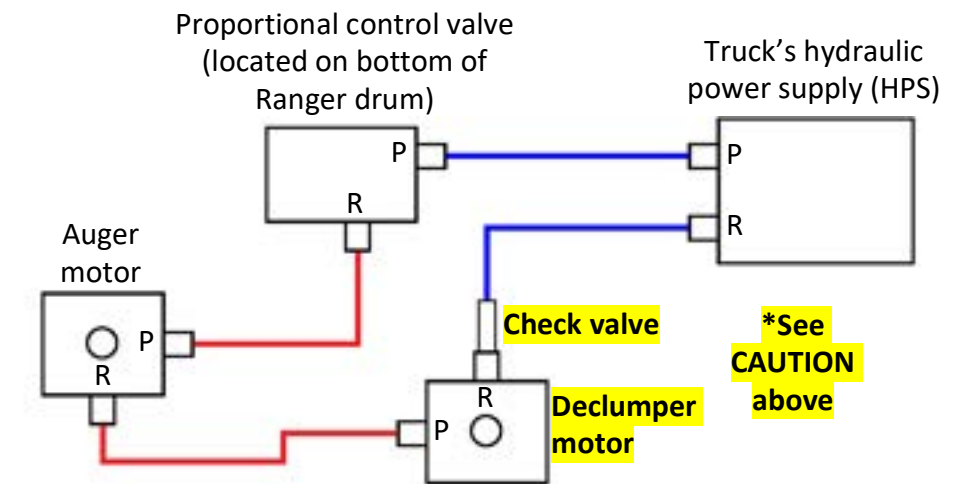
**Important**

Always make sure that hoses are connected to the correct port as tagged on the component. Hoses should always connect Return port of one component to Pressure port of the next component.

**Schematic Legend**

- Supplied with Ranger
- Supplied by customer

- P = Pressure/inlet port
- R = Return/outlet port





## 2. Make electrical connections - using control kit

 Note

If you will use the truck's existing controls to operate the Ranger, skip this step and continue with [step 3](#), "Make electrical connections - using truck's controls" on page 10.

Connect the **POWER** wire to the 12 VDC fused power source. If you want to connect the control panel into the truck's controls, contact FORTA Corporation, see "[Contact FORTA Corporation](#)" on page 11.

Remove the cap from the end of the speed sensor in the auger motor. Connect the **PROX SENSOR** cable from the control panel to the speed sensor. Match the connectors, plug in and then tighten the outer ring of the connector onto the speed sensor to make the connection secure.



**CAUTION!**

Do NOT loosen or try to adjust the speed sensor; damage can occur. If the sensor has come loose, contact FORTA Corporation, see "[Contact FORTA Corporation](#)" on page 11.

Connect the **MOTOR OUTPUT** cable from the control panel to the connection on the proportional control valve.



POWER wire

PROX SENSOR cable



MOTOR OUTPUT cable

Auger motor

Speed sensor



Sensor cable connected

MOTOR OUTPUT cable connection on proportional control valve



### 3. Make electrical connections - using truck's controls

 Note

If you will use the optional control kit to operate the Ranger, skip this step and make sure you have completed [step 2](#), "Make electrical connections - using control kit" on page 9.

When using the truck's control system to operate the Ranger, it is only necessary to connect the supplied speed sensor cable between the auger motor and the truck's controls. For integration into the truck's controls, the wires in the cable are as follows:

- Brown - hot
- Blue - ground
- Black - signal

The speed sensor is set to deliver 36 counts/revolution. Relief valve for the auger motor should be set to 2500 psi.

Connect the sensor cable to the speed sensor. Remove the cap from the end of the speed sensor in the auger motor, match the connectors, plug in and then tighten the outer ring of the connector onto the speed sensor to make the connection secure.

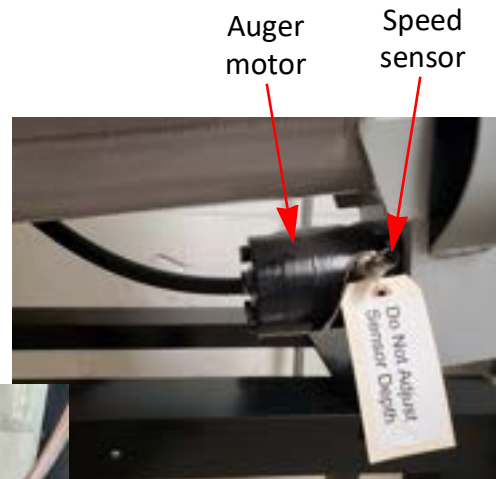


**CAUTION!**

Do NOT loosen or try to adjust the speed sensor; damage can occur. If the sensor has come loose, contact FORTA Corporation, see "[Contact FORTA Corporation](#)" on page 11.



Sensor cable

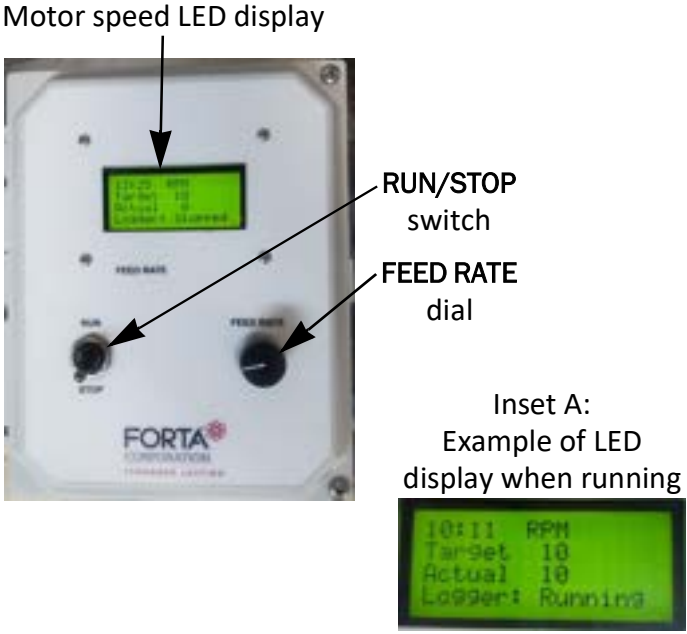


Sensor cable connected

## Check operation

Turn ON the 12 Vdc power supply and the truck’s hydraulic power supply. Operate the controls for the Ranger to turn it on (for operation of the optional control panel, see [Figure 3](#)).

If the auger motor and declumper motor do not start, check that the hydraulic lines are plumbed correctly.



Motor speed LED display


RUN/STOP switch

FEED RATE dial

Inset A:  
Example of LED display when running

**Control panel operation:**

1. Turn on the truck’s electrical and hydraulic power supplies.
2. Turn the **FEED RATE** dial so that the *Target* RPM reads something greater than zero.
3. On the control panel turn the **RUN/STOP** switch to **RUN**.
4. The Ranger’s auger motor and declumper motor should start. The *Actual* RPM should increase and match the *Target* RPM. Also, the *Logger* should indicate that it is logging data (*Running*) (see Inset A).

 **Note**  
For more in-depth operation of the control panel, refer to the separately supplied “[Use and Maintenance Instructions](#)”.

*Figure 3: Basic operation of the optional control panel.*

## Optional extension sleeve(s)

If an optional extension sleeve was purchased, it should only be installed onto the top of the drum during operation of the Ranger. Refer to the separately supplied “[Use and Maintenance Instructions](#)” for instructions on installing and removing the optional extension sleeve.

 **Note**

Additional sleeves can be purchased and installed to extend the height and capacity of the Ranger. Contact FORTA Corporation for more information.

## Contact FORTA Corporation

If it is necessary to contact FORTA Corporation, you can do so by the following:

- Mail: FORTA Corporation  
100 Forta Drive  
Grove City, PA 16127-5221
- Phone: 1-800-245-0306 or 1-724-458-5221
- Fax: 1-724-458-833
- Web: [www.fortacorp.com](http://www.fortacorp.com)