

SeederForce™

SeederForce Operator's Guide

Precision Planting®

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SeederForce Setup and Operation

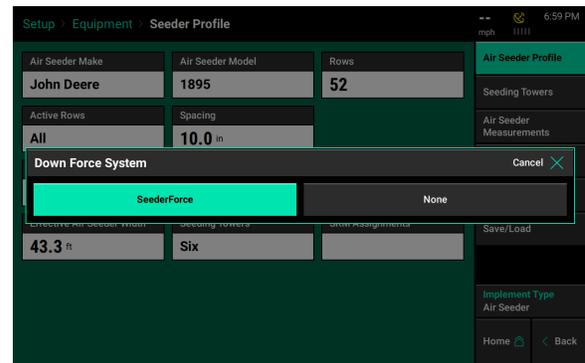
There are four requirements for the SeederForce system to function:

1. SeederForce must be configured on the 20|20 monitor.
2. There must be a Speed source.
3. The Master Plant Switch on the Cab Control Module must be in the up position
4. The air seeder must be lowered.
5. SeederForce must be enabled

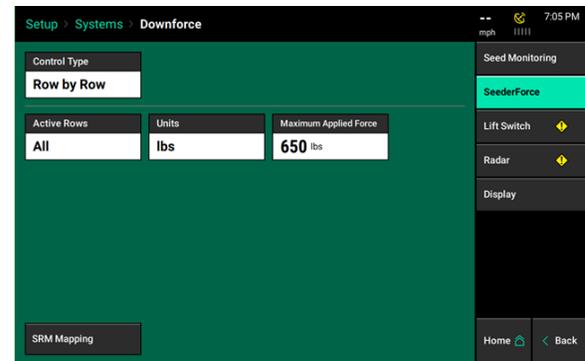
SeederForce Setup

Under Seeder Profile, press the “Down Force System” button to select the down force system installed on the Air Seeder.

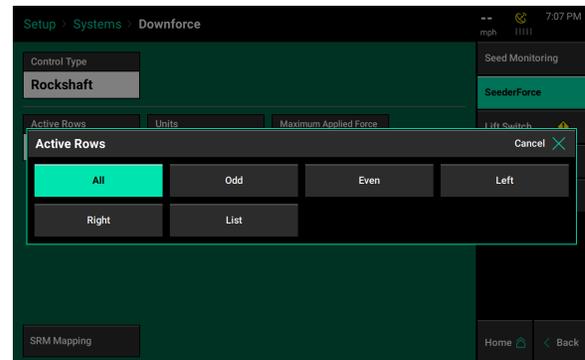
Note: The “Down Force Sensor Type” will auto populate and will not need changed.



Go to Setup — Systems — SeederForce. Select the correct Control Type (Rockshaft or Row by Row).



Next set the Active Rows (should be All), as well as the maximum Applied Force.

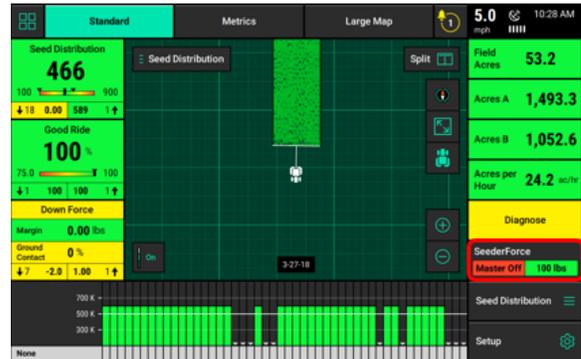


For the remainder of the Equipment and general setup, refer to the 20|20 Operator’s Manual for Air Seeders.

SeederForce Control

On the home screen the SeederForce control button will appear on the right side of the screen in the default Standard and Metrics tabs.

Note: To see further details on how to configure the home screen, refer to the 20|20 Operator’s Guide for Air Seeders.



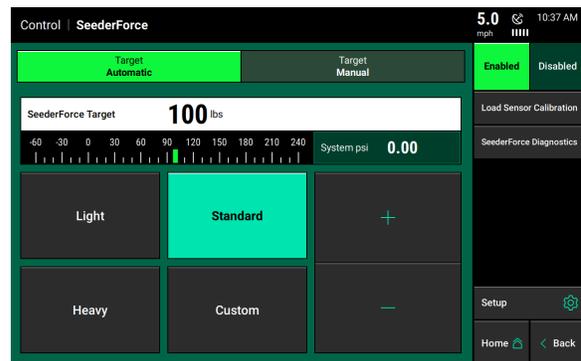
If the SeederForce system is disabled, the SeederForce control button will be red and display Disabled.



When the SeederForce system is enabled, the control button will display the Down Force Setting (Manual or Auto) and the SeederForce target value.

Press the SeederForce Control button to access the control pages. Use the control page to adjust the automatic target or manual control for the SeederForce system. Use the buttons in the top right corner to enable or disable the SeederForce control.

Note: SeederForce will be defaulted as disabled until switched to enabled.



Automatic Target Control

Set the desired down force target for the system to maintain on the gauge wheels. The system will adjust the applied down force as needed on each row or section independently to maintain the target value set. All automatic SeederForce adjustments will be based on the load sensor readings measuring the weight on the gauge wheel. Select between Light, Standard, Heavy, or Custom down force targets.

Note: The automatic target settings will be different for row by row control and rockshaft control due to different control types.

Row by Row Control Downforce Targets

All targets are referencing a target weight transferred through the gauge wheel to the ground.

Light — The Light target is 50 pounds.

Standard — The Standard target is 100 pounds. This is the default setting.

Heavy — The Heavy target is 150 pounds.

Custom — This control mode allows the operator to set a custom target value up to 195 pounds while still maintaining automatic control. Use the plus and minus arrows to adjust the target value. This setting can be helpful to adjust to specific conditions or air seeder setups.

Note: Using the custom mode will likely help find the ideal setting for the specific field conditions and air seeder.

Rockshaft Control Downforce Targets

All targets are referencing a target weight transferred through the gauge wheel to the ground.

Light — The Light target is 25 pounds.

Standard — The Standard target is 50 pounds. This is the default setting.

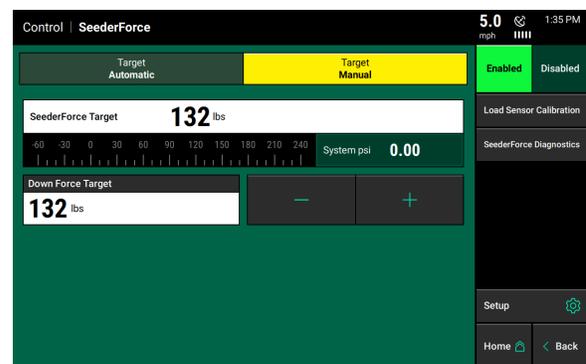
Heavy — The Heavy target is 75 pounds.

Custom — This control mode allows the operator to set a custom target value up to 195 pounds while still maintaining automatic control. Use the plus and minus arrows to adjust the target value. This setting can be helpful to adjust to specific conditions or air seeder setups.

Note: Using the custom mode will likely help find the ideal setting for the specific field conditions and air seeder.

The SeederForce system can also be operated in “Manual Mode”. This control mode will allow for a static applied force to be entered by the user. All cylinders will apply the static force entered as the target.

Note: In manual mode, load sensors are used for monitoring only. The system will not change the applied force to the cylinders unless the target is changed.



Use the plus and minus arrows to adjust the Down Force targets or press the target value to change it. Net applied force will be displayed at the top of the screen.

The Load Sensor Calibration and SeederForce Diagnostic screens can be accessed from the right side of the screen.

System PSI displays the current pressure reading from the pressure sensor located on the SeederForce Lift Manifold and is used for troubleshooting purposes only.

How to Set SeederForce

Ground Contact Percentage (20|20) — On the home page of the 20|20 there is a box that displays a percentage of ground contact. This is the percentage of time that the gauge wheels are pushing against the depth stop. This number is updated every second based on a three second rolling average per row and then averaged across the planter. The goal is to maintain as close to 100% ground contact as possible without causing excess compaction. For section control SeederForce the operator may find they need to run at less than 100% ground contact to avoid compaction.

If the ground contact is not near 100%, the SeederForce target should be increased until near 100% is achieved. Depending on the conditions of the field, 100% ground contact may not be obtainable. On the other hand, just because 100% ground contact is achieved does not mean this is the proper setting. A lighter setting may be needed if excessive force is being used and the furrow reveals compaction. A heavier setting may be needed if additional soil firming is needed.

Using The Down Force Map — The Down Force high definition map displays down force sensor readings through the field. This can be used to look for any row units that are consistently showing a loss of ground contact, as represented by a blue dot. If these dots are showing up frequently through the field, consider increasing the SeederForce target.

Home Screen

The Down Force Metrics box will display Average Margin, Average Ground Contact, and the lowest/highest down force sensor readings.

Margin

This is the lowest measured load cell reading in a given period of time on each row (varies with the down force system installed). The Margin value displayed on the home screen Down Force button is an average of this value across all load sensor equipped rows on the planter.

Down Force			
Margin	64.0 lbs		
Ground Contact	100 %		
↓ 9	51.0	238	6 ↑

Ground Contact

This is the percentage of time the system can confirm that the gauge wheels have reached the depth stop, which generally indicates that the row unit is planting at the depth to which it has been set. This is calculated by the percentage of time that the load cell is measuring 20 pounds or more.

Note: A loss of ground contact can indicate that seed is most likely not placed at the desired depth.

Low and High Row

This shows the average weigh pin readings for the lowest and highest rows.

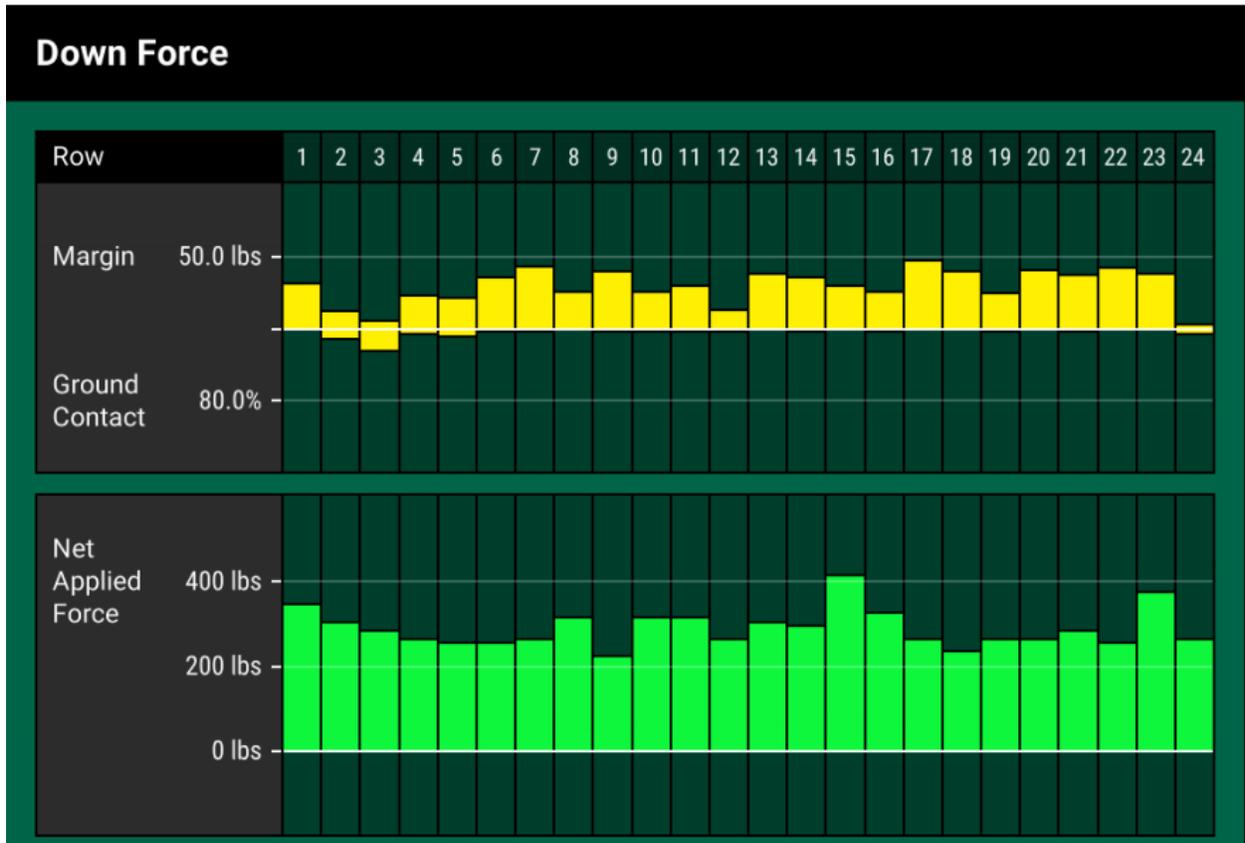
Net Applied Force

This is the commanded amount of force being applied to the row unit or rockshaft section.

Down Force Level 2 View

Select the Down Force metric to view row by row load cell information.

This page displays the Margin, Ground Contact and Net Applied Force for each row that has a load cell. The Air Seeder average Net Applied Force, Margin, and Ground Contact are displayed at the bottom of the page.



Down Force Summary

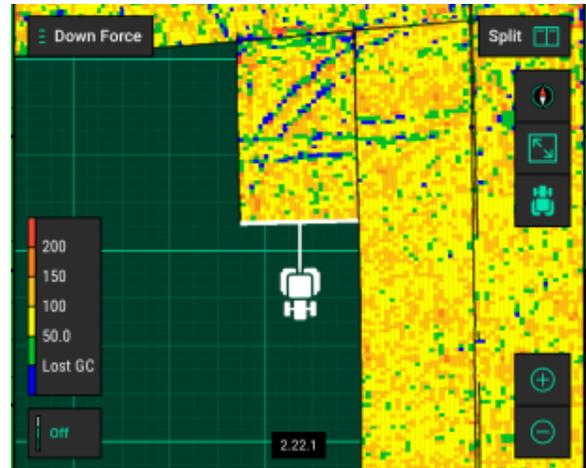
The Down Force Summary displays row by row information for average Down Force values, Margin, Ground Contact, and Ride Quality. These values are averages for the entire field or the last pass through the field for each individual row. Planter wide averages are available at the bottom of the screen. To access the Down Force Summary select one of the acre counters from the home screen. Then press “Down Force Summary” on the navigation pane.

Row	Down Force	Margin	Ground Contact	Ride Quality
1	168	34	99.3%	94.6%
2	122	35	99.2%	94.6%
3	145	35	99.2%	94.6%
4	18.6	43	99.4%	94.6%
5	152	41	99.5%	94.6%
6	137	39	99.4%	94.6%
7	64.0	36	99.3%	94.6%
8	45	34	99.3%	94.6%
9	81.0	40	99.5%	94.6%
10	126	34	99.3%	94.6%
11	119	43	99.6%	94.6%
12	97.1	37	99.4%	94.6%
AVG	93.4	37	99.3%	94.6%

SeederForce Maps

The Down Force map plots load cell readings on a row by row basis. Each box on the map represents one fifth of a second and will display the lowest load cell reading in that time period. A blue dot on the Down Force map signifies a loss of ground contact. Refer to the section of this manual on how to set SeederForce on how to use this map.

Touch the legend to edit the range and number of steps used to map downforce.



Applied Force Map

The Applied Force Map is mapping what the cylinder is being commanded to do on a row by row basis. As more or less force is needed to achieve the desired target, SeederForce will automatically adjust the force applied to meet the target. This map will show the applied force in pounds.

Much like the Down Force map, the Applied Force map legend can be adjusted by touching it and making the desired adjustments.

