SUPER Averaging Beam
Installation Manual
SUPER Averaging Beam installation manual

Content and structure
This installation manual has been developed for operators to provide the necessary information to install the Mini-Line® SUPER Averaging Beam, so that it can be used together with the Mini-Line® Grade and Slope Control System.

Safe use
Before starting to use the SUPER Averaging Beam, the operator should ensure that it is installed as described in this manual. The manual for the selected Mini-Line® controller should also be read through completely to ensure correct and safe operation of the Mini-Line® Grade and Slope Control System together with the SUPER Averaging Beam. Dangerous situations that can arise when using the SUPER Averaging Beam are summarised in the Important Safety Information section on p. 7.

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Symbol overview
This installation manual uses a range of symbols and warning notifications to make the operator aware of important safety measures and information regarding operation.

The following symbols are used in this manual:

- **Warning!** Indicates important information the operator must be aware of to avoid dangerous situations that can result in death or serious personal injury.

- **Caution!** Indicates important information the operator must be aware of to avoid dangerous situations that can result in material damages.

- **Tip** Indicates information regarding efficient and failure-free operation of the Mini-Line® SUPER Averaging Beam.

- **Step-by-step instructions** Indicates a step-by-step instruction, where a particular order of actions is required or recommended.
Content

Important Safety Information ................................................................. 7
Introduction .............................................................................................. 8
Overview of the SUPER Averaging Beam - 9m / 25ft (4 sections) ............ 9
Overview of the SUPER Averaging Beam - 13m / 40ft (6 sections) .......... 10
Main Parts and Part Numbers SUPER Averaging Beam 9m / 25 ft .......... 11
Main Parts and Part Numbers, SUPER Averaging Beam 13m / 40 ft ......... 12
Components ........................................................................................... 13
Tools Required ....................................................................................... 17
Getting Ready for Installation of the SUPER Averaging Beam ............... 18
Installation of Tow Arm Brackets with bolts (standard) ......................... 19
Installation of Tow Arm Brackets with Clamping Plates (sold separately) .. 20
Installation of Swing Arms ................................................................. 22
Installation of Main Section ................................................................. 23
Installation of Extension Sections ....................................................... 25
Recommended Setup - 9m / 25ft (4 sections) ....................................... 26
Recommended Setup - 13m / 40ft (6 sections) ..................................... 27
Recommended Setup - 13m / 40ft (6 sections - 6 sensors) .................... 28
Alternative Setup - 9m / 25ft (4 sections) ........................................... 29
Alternative Setup - 13m / 40ft (6 sections) ........................................... 30
Installation of Hinge ............................................................................. 31
Installation of Sensor Rods with Snap Connector .................................. 32
Wiring and system setup ....................................................................... 33
Spare Parts ......................................................................................... 34
Important Safety Information

The installation of the SUPER Averaging Beam must never prevent the free movement of the tow arm and screed.

If welding on the paver or SUPER Averaging Beam or Mountings, remove all electrical equipment and disconnect the negative terminal of battery of the paver. Place the negative electrode close to the welding point.

Make sure the screed rests solidly on the ground before performing work on the system.

Read and understand the manual for the controller used.

Position grade sensors within their working range and so that there is at least:
- 50 cm / 20” between two sensors
- 50cm / 20” between a sensor and a heat source, e.g. exhaust or joint heater
- 25cm / 10” between a sensor and reflecting surfaces

Remove all Extension Sections for transport, as the SUPER Averaging Beam may otherwise bend out of shape.

The greater the distance between the sensors, the greater the effect of the SUPER Averaging Beam.

Remove all equipment, including the Sensor Beams before cleaning the asphalt paver.
The SUPER Averaging Beam in the Mini-Line® series is designed to ensure ultimate smoothness. The SUPER Averaging Beam must be used with a Mini-Line® Grade and Slope Control System with up to six Mini-Line® grade sensors, each supplying measurement results to a Mini-Line® controller. The Mini-Line® controller produces an average of the four to six measurements, so that a smoothening effect is achieved.

The SUPER Averaging Beam features a specialized aluminium profile for a very stable construction with low vibrations, and extends up to 13 m / 40 ft. The long sensing span ensures a large averaging effect, making it ideal for high profile paving jobs with extensive requirements for beam length and superior smoothness.

The SUPER Averaging Beam includes top-of-the-line features such as integrated lights and cabling, and a flexible hinge for placing the rear sensor over the paved mat.

All sensors are mounted with Snap Connectors, reducing the time and hassle required for setting up the sensors.

The beam structure is composed of sections and easy to mount, and it can be either bolted or clamped onto the tow arm.
Overview of the Mini-Line® SUPER Averaging Beam

Overview of the SUPER Averaging Beam - 9m / 25ft (4 sections)

Use with HS301 or PL2005 Controller

Use with G221 or G224 Grade Sensors
Overview of the Mini-Line® SUPER Averaging Beam

Overview of the SUPER Averaging Beam - 13m / 40ft (6 sections)

Use with HS301 or PL2005 Controller

Use with G221 or G224 Grade Sensors
# Main Parts and Part Numbers SUPER Averaging Beam 9m / 25 ft

## Main Parts and Part Numbers

<table>
<thead>
<tr>
<th>Ref.</th>
<th>p/n</th>
<th>Pcs.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>SP-51609</td>
<td>1</td>
<td>Main Section w/Clamp Brackets</td>
</tr>
<tr>
<td>B</td>
<td>SP-51610</td>
<td>3</td>
<td>Extension Section w/Bolt</td>
</tr>
<tr>
<td>C</td>
<td>S-51600/1,5</td>
<td>3</td>
<td>Connection Cable for Beam</td>
</tr>
<tr>
<td>D</td>
<td>SP-51607</td>
<td>1</td>
<td>Bolt Mountings for Tow Arm (2 pcs)</td>
</tr>
<tr>
<td>E</td>
<td>SP-51630</td>
<td>4</td>
<td>Sensor Mounting Rod w/Snap Connector</td>
</tr>
<tr>
<td>F</td>
<td>S-51601/1,5</td>
<td>4</td>
<td>Cable, Beam to Sensor</td>
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<tr>
<td>G</td>
<td>S-51604</td>
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<td>V-Cable for SUPER Beam</td>
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### Accessories

<table>
<thead>
<tr>
<th>Ref.</th>
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<td>Clamping Plates Kit, Long (4 pcs w/nuts)</td>
</tr>
<tr>
<td>I</td>
<td>SP-51608</td>
<td>1</td>
<td>Hinge (not in picture)</td>
</tr>
<tr>
<td>J</td>
<td>SP-51612</td>
<td>1</td>
<td>Light Set - 4 pcs (not in picture)</td>
</tr>
</tbody>
</table>
## Main Parts and Part Numbers, SUPER Averaging Beam 13m / 40 ft

### Ref. | p/n | Pcs. | Description
--- | --- | --- | ---
A | SP-51609 | 1 | Main Section w/Clamp Brackets
B | SP-51610 | 5 | Extension Section w/Bolt
C | S-51600/1,5 | 5 | Connection Cable for Beam
D | SP-51607 | 1 | Bolt Mountings for Tow Arm (2 pcs)
E | SP-51630 | 4 | Sensor Mounting Rod w/Snap Connector
F | S-51601/1,5 | 4 | Cable, Beam to Sensor
G | S-51604 | 1 | V-Cable for SUPER Beam

### S-51651 SAB, 13m / 40ft (4 sections)

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### Accessories

**S-51651 SAB, 13m / 40ft (4 sections)**

### Main Parts and Part Numbers, SUPER Averaging Beam 13m / 40 ft

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### S-51651 SAB, 13m / 40ft (4 sections)

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<td>J</td>
<td>SP-51612</td>
<td>1</td>
<td>Light Set - 4 pcs (not in picture)</td>
</tr>
</tbody>
</table>
Components

A SP-51609 Main Section w/Clamp Brackets

B SP-51610 Extension Section w/Bolt
   3 x for 9m / 25ft beam
   5 x for 13m / 40 ft beam

C S-51600/1,5 Connection Cable for Beam
   3 x for 9m / 25ft beam
   5 x for 13m / 40 ft beam

- Main Section
- Extension Section
- Bolt w/nut

Box 1

Box 2A

(only for 13m/40ft Beam)
**Components**

**D** SP-51607 Bolt Mountings for Tow Arm

- **Short Swing Arm**
- **Long Swing Arm**
- **2 x Support Ring for Swing Arms**
- **2 x Tow Arm Bracket incl. Support Ring**
- **6 x Bolt with Shim**

**Box 3**

**E** SP-51630 Sensor Mounting Rod w/Snap Connector x 4

- **4 x Snap Connector**
- **12 x Thumb Screw w/nuts**
  - 8 pcs. for securing Sensor Rod to beam sections
  - 4 pcs. for support ring to sensor rod
- **4 x Support Ring for Sensor Rod**
- **4 x Metal Rod**

**Box 4**

**Box 1**
 Components
F S-51601/1,5 Cable, Beam to Sensor x 4
G S-51604 V-Cable for SUPER Beam
**Components**

**Components - Accessories**

- **H** SP-51628 Clamping Plate Kit, Long
- **I** SP-51608 Hinge
- **J** SP-51612 Light Set

- 4 x Clamping Plate
- Hinge
- 4 x Lights
- 8 x Bolts with shim and nuts

**Box 5**
Tools Required (not included)

**EU**
- 19 mm
- 24 mm
- Drilling Machine with 14 mm drill
- Diestock tool, 16 mm
- 4 mm

**US**
- 0.7 - 1.5”
- Drilling Machine with 7/32” drill
- Diestock tool, 5/8”
- 3/8 - 16 UNC
Getting Ready for Installation of the SUPER Averaging Beam

Position the tow point as when paving, lifting the screed to a typical paving height.
Installation of Tow Arm Brackets with bolts (standard)

1. Mount the Tow Arm Brackets D3 on the tow arm with the accompanying bolts D5.
   - Position the rear Tow Arm Bracket as far back on the tow arm as possible.
   - Place the front Tow Arm Bracket a distance of 1.2-1.8 m / 4 - 6 ft from the rear Tow Arm Bracket.
   - Position Tow Arm Brackets as vertical as possible.

Adjust the Tow Arm Bracket rightward or leftward to achieve a position as perpendicular as possible.

1.2-1.8 m / 4-6 ft distance

19 mm or 7/32”

14 mm or 7/32”

0.7 - 1.5”
Installation of Tow Arm Brackets with Clamping Plates (sold separately)

To prevent drilling holes in the tow arm, the Tow Arm Brackets can be mounted with a Clamping Plates Kit H (sold separately).

- Position the rear Clamping Plates H1 as far back on the tow arm as possible.
- Place the front Clamping Plates a distance of 1.2-1.18 m / 4 - 6 ft from the rear Clamping Plates.
- Mount the Clamping Plates on the tow arm with the accompanying bolts H2.

Position the bolts as close to the tow arm as possible, and ensure that the plates do not touch the ground when the screed is lowered. You can flip the plates any way required to achieve this 1.2-1.8 m / 4-6ft distance.

Clamping Plates are available in two different sizes. Measure the height of the Tow Arm, where the Clamping Plates will be mounted:

- Tow Arm height < 22.6 cm/8.9” Use SP-40125 Clamping Plates, Short (2 plates incl. nuts)
- Tow Arm height > 22.6 cm/8.9” Use SP-40126 Clamping Plates Long (2 plates incl. nuts)

You need a total of four Clamping Plates to mount your beam.
2 Mount the Tow Arm Brackets D3 on the Clamping Plates with the accompanying bolts D5
   • Position the Tow Arm Brackets as vertical as possible

Adjust the Tow Arm Bracket rightward or leftward to achieve a position as perpendicular as possible

19 mm or 0.7 - 1.5”
Installation of Swing Arms

1. Place the Short Swing Arm D1 on the rear Tow Arm Bracket, so that it rests on the Tow Arm Support Ring and secure the bolts.

In case the tow arm is very low/ screed very high preventing the correct mounting of the support rings (see next page), the Short Swing Arm can be mounted upside down.

2. Place the Long Swing Arm D2 on the front Tow Arm Bracket, so that it rests on the Tow Arm Support Ring and secure the bolts.
Installation of Main Section

1. Mount the Support Rings for Swing Arms D₄ on the Swing Arms, and adjust their position, so that they have identical height from ground.

2. Mount the Clamp Brackets A₂ on the Main Section A₁. To do this, unscrew the umbraco screw and loosen the two u-sections with handles to slide the Clamp Brackets on to the Main Section. Mount the U-sections on the Clamp Brackets again to secure the Clamp Brackets to the Main Section.

Identical height from ground and min. 25 cm / 10” above screed
Mount the Main Section w/Clamp Brackets A on the Swing Arms D1 and D2 by sliding the Clamp Brackets over the Swing Arms. Tighten the handles on the Clamp Brackets to secure the section in position.
Installation of Extension Sections

1. Simply click on each of the Extension Sections B1. Secure the Extension Section with the Bolt w/nut B2 in the bottom.
Recommended Setup - 9m / 25ft (4 sections)

To ensure a perfect paving result, we recommend the following setup of Extension Sections and Sensor Rod positions. This setup is usually possible, when mounting the Super Averaging Beam on the outside of the side plate. If it is not possible to place the Sensor Rods in the specific options for positions shown due to the design of the paver, or the nature of your paving job, e.g. when the job requires the Super Averaging Beam to be mounted over the screed, you MUST use the Alternative Setup.

VERY IMPORTANT!

Re-arranging the position of Sensor Rods or Extension Sections can severely affect your paving result.

If it is not possible to place the Sensor Rods in the specific positions, you MUST use the Alternative Setup.

Pushing the Super Averaging Beam forward may severely affect your paving result.

If it is not possible to place the Sensor Rods in the specific positions, without pushing the Super Averaging Beam forward, you MUST use the Alternative Setup.
Recommended Setup - 13m / 40ft (6 sections)

To ensure a perfect paving result, we recommend the following setup of Extension Sections and Sensor Rod positions. This setup is usually possible, when mounting the Super Averaging Beam on the outside of the side plate. If it is not possible to place the Sensor Rods in the specific positions shown due to the design of the paver, or the nature of your paving job, e.g. when the job requires the Super Averaging Beam to be mounted over the screed, you MUST use the Alternative Setup.

**VERY IMPORTANT!**
Re-arranging the position of Sensor Rods or Extension Sections can severely affect your paving result.

If it is not possible to place the Sensor Rods in the specific positions, you MUST use the Alternative Setup.

Make sure the total Super Averaging Beam is either pushed backwards on its mountings or protrude directly out from its mountings.

Pushing the Super Averaging Beam forward may severely affect your paving result.

If it is not possible to place the Sensor Rods in the specific positions, without pushing the Super Averaging Beam forward, you MUST use the Alternative Setup.
Recommended Setup - 13m / 40ft (6 sections - 6 sensors)

For an absolute superior paving result, it is possible to use the SUPER Averaging Beam with 6 sensors. The setup required is shown below. If it is not possible to place the Sensor Rods in the specific positions shown due to the design of the paver, or the nature of your paving job, you should use a setup with 4 sensors as described in this manual instead.

**VERY IMPORTANT!**
Re-arranging the position of Sensor Rods or Extension Sections can severely affect your paving result.

If it is not possible to place the Sensor Rods in the specific positions, you MUST use a 4 sensor setup instead.

Make sure the total Super Averaging Beam is either pushed backwards on its mountings or protrude directly out from its mountings.

Pushing the Super Averaging Beam forward may affect your paving result negatively.
Alternative Setup - 9m / 25ft (4 sections)

The design of some pavers or the nature of some paving jobs makes it difficult to use the Recommended Setup. Particularly when the Super Averaging Beam must be mounted over the screed, it can be difficult to place Sensor Rod 3 in the recommended position. In these cases, the Alternative Setup can be used.

For the best paving result possible, choose the position as far back as possible for Sensor Rod 3.

**VERY IMPORTANT!**

Re-arranging the position of Sensor Rods or Extension Sections differently than the specific options shown, can severely affect your paving result.
Alternative Setup - 13m / 40ft (6 sections)

The design of some pavers or the nature of some paving jobs makes it difficult to use the Recommended Setup. Particularly when the Super Averaging Beam must be mounted over the screed, it can be difficult to place Sensor Rod 3 in the recommended position. In these cases, the Alternative Setup can be used.

For the best paving result possible, choose the position as far back as possible for Sensor Rod 3.

VERY IMPORTANT!

Re-arranging the position of Sensor Rods or Extension Sections differently than the specific options shown, can severely affect your paving result.
Installation of Hinge

1. Before the furthest back Extension Section, a Hinge I can be installed to enable the placement of the back sensor over the paved mat. Insert the Hinge I1 between two Extension Sections, and fasten with the accompanying Bolts B2 in the bottom on each side.
Installation of Sensor Rods with Snap Connector

1. Fixate the Support Ring for Sensor Rod E3 on the Metal Rod E4 with the Thumb Screw w/nut E2

2. Slide the Metal Rod E4 through the sensor rod hole in the Extension Section B.

3. Fixate the Metal Rod E4 to the Extension Section B with two Thumb Screws w/ nut E2

4. Secure the Snap Connector E1 to the Metal Rod E4 with one of the screws in the Snap Connector (M8 or 3/8 UNC)
Mount the Grade Sensors (not included) in the Snap Connectors E1. Adjust the Sensor Rods, so that the distance from the bottom of the Grade Sensor to the ground is approximately 400mm / 16". Attach Cables from Beam to Sensors F.
Connect Main Section A and Extension Sections B with Connection Cables for Beam C.
Connect the V-Cable G to the HS301 and machine, and plug it into any available plug in the SUPER Averaging Beam.

Approx. 400mm / 16"
## Spare Parts

A range of spare parts is available for the SUPER Averaging Beam.

<table>
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<th>P/N</th>
<th>Item</th>
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<td>SP-40128</td>
<td>Main section w/o Clamp Bracket</td>
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<td>SP-51619</td>
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<td>SP-51625</td>
<td>Thumb Screw w/handle for Clamp Bracket</td>
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<td>B1</td>
<td>SP-51610</td>
<td>Extension section w/Bolt</td>
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<td>B2</td>
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<tr>
<td>D1</td>
<td>SP-51617</td>
<td>Short Swing Arm</td>
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<td>D2</td>
<td>SP-51616</td>
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<td>SP-40109</td>
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<td>V-Cable for SUPER Beam</td>
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<tr>
<td>H1</td>
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<td>Clamping Plate (Long - 1 pcs)</td>
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