

# USER MANUAL

Please review before installation and/or operation.

# Advant-Edger

...a safety edge product that makes our roads and highways less hazardous for drivers.



## ATTENTION

Read this entire Manual carefully before attempting to install and/or operate. Retain for future reference.



## CAUTION

To avoid injury, use care when lifting, installing or adjusting.



The Advant-Edger is an attachment for asphalt paving machines. When employed, it is designed to create a 30° tapered edge along the side of the road, commonly referred to as a safety edge. Our product has been specifically designed and constructed to meet government guidelines that are being enacted to improve road safety. The Advant-Edger is easily adjustable so that the bottom edge of the unit maintains direct contact with the road shoulder surface thereby preventing asphalt leakage and waste. The result is a well-defined and extremely durable edge. The Advant-Edger's patent pending reversible design allows the paving contractor to mount the unit on either side of the paver and thus pave in the direction of traffic or against traffic.

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Patents Pending

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## 1. IMPORTANT SAFETY PRECAUTIONS

- Please read the entire operating manual before installation or operation of this unit.
- Use only according to directions in this user manual or other officially published documents of Advant-Edge Paving Equipment, LLC. This unit is designed to be mounted on the screed or screed extension of paving machines and is intended for asphalt only.
- The Advant-Edger is **HEAVY!** To avoid injury, use care when lifting, installing or removing.
- Do not attempt to take apart, repair, modify or otherwise disassemble the Advant-Edger as it will void the warranty and can cause harm to the operator and others if not done correctly. If you are experiencing a problem, call Technical Support at 814-422-3343.
- In the event that a cutting torch and welding is desired and/or necessary to mount the Advant-Edger, only an experienced welder shall prepare the paver for mounting the unit.
- During periods when the Advant-Edger is not in use, it is recommended that the holes in the screed (which were created for mounting) be filled so as to keep them clean.
- **WARNING! DO NOT DRAW THE SCREED EXTENSION TOO CLOSE TO THE MAIN SCREED.** During paving, the Advant-Edger could be exposed to contact with the cross feed auger and auger shaft if the screed extension is drawn in too close to the main screed. Severe damage could occur to both the cross feed auger and the Advant-Edger if they come in contact.
- **WARNING! RAISE THE FORMING BOX TO ITS UPPER MOST POSITION BEFORE MOVING THE PAVER.** When paving is completed in a given direction and the paver is to be moved to a new position, the Advant-Edger should be raised to its mounting height or uppermost position.

### IMPORTANT!

#### Achieving Desired Results of 30° Tapered Safety Edge

The Advant-Edger has been professionally designed and constructed to create a 30° tapered edge relative to the pavement surface (+/-1°) at the road shoulder during the creation of an edge to cover a 4" thick asphalt drop off.

Our angles are measured as they are produced by the paving machine (and not after rolling or other operations). Our company recognizes that field conditions are not always ideal and may create results that differ from the 30° target especially when measured after rolling and settling have taken place. We believe that when operating in the field, an angle of 35° or less is always possible to achieve and in no circumstance should the operator ever experience an angle greater than 40° when equipment and operations are conducted properly. The Federal Highway Administration has stated that with regard to safety, any edge angle less than 45° is considered good.

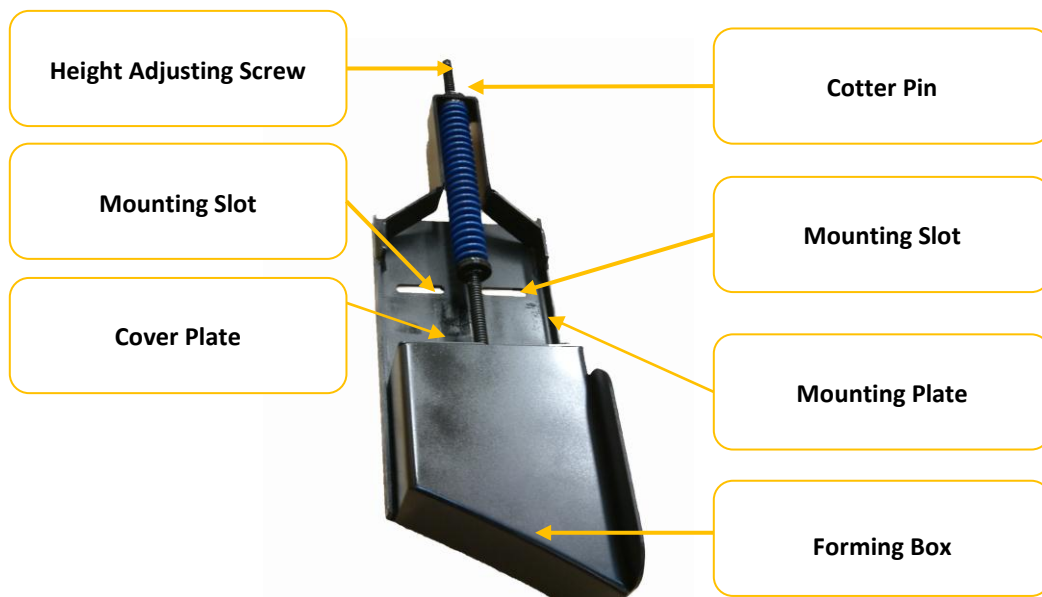
**ACHIEVING THE TARGETED 30° ANGLE MAY BE DEPENDENT UPON A NUMBER OF FACTORS. THE FOLLOWING IMPORTANT OPERATING RULES WILL HELP TO ENSURE THE OPTIMAL ANGLE IS ACHIEVED:**

- Unit is properly mounted and adjusted to the appropriate height (See Sections 3. “Installation” and 4. “Operation”)
- End Gate is in proper position (See Section 5, “Keeping the End Gate in the Proper Position”)
- The shoulder bed is structured of well compacted material. Soft shoulders will prevent the Advant-Edger from constructing a good initial edge and over time the edge is likely to move and disintegrate.
- Temperature of the mix (e.g., too cool or too hot). The average temperature of the materials is between 240° and 295° Fahrenheit and optimal paving temperature when using HMA is as close to 300° Fahrenheit as possible. As asphalt cools it becomes more solidified and can't be moved or compacted. If the mix is too hot it may be so soft that the act of rolling will crush any feature flat.
- Composition of the mix (e.g., too dry). As the mix design changes and the aggregate size changes it will affect the behavior of the pavement as it is applied.
- The depth of drop off being covered can affect the angle of the tapered edge. Our unit is designed to create a 30° tapered slope angle for a drop off of 4". It will be common for the paving crew to experience slightly different angles (+/- 2 degrees) from this target due to our curved forming surface for very small drop offs of only an inch or two. We use this curved surface because we believe it adds structural integrity to the safety edge being formed.
- 30° is measured correctly. Please remember that the 30° edge angle is relative to the slope of the pavement and not true horizontal.
- Pavement is rolled correctly (See Section 5.2, “Rolling Patterns”)

**IF YOU HAVE ANY QUESTIONS, PLEASE REFER TO SECTION 6. “TROUBLE SHOOTING” AND/OR CALL TECHNICAL SUPPORT AT (814) 422-3343 (EDGE).**

## 2. DESCRIPTION OF KEY PARTS

The Advant-Edger consists of four major components: the Mounting Plate, the Forming Box, the Shoulder Guide Rail and the Spring Assembly. While the Mounting Plate remains fixed and bolted to the screed, the Forming Box and Shoulder Guide Rail are able to move up and down to follow the contour of the road's shoulder. The Spring Assembly is designed to create a constant downward pressure so as to assure a quality constructed tapered edge on the side of the road. All key surfaces are made of  $\frac{1}{4}$ " abrasive resistant steel thereby extending the life of the equipment.



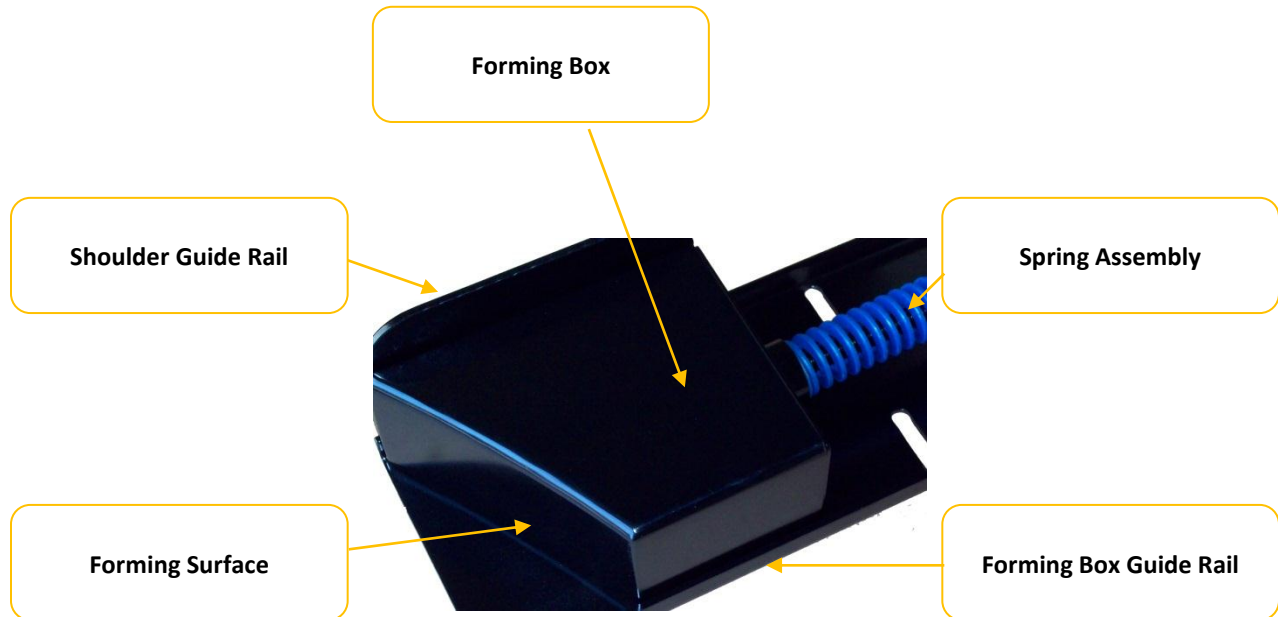
Mounting Slots are used for attaching the Mounting Plate to the screed extension of the paver.  $\frac{1}{2}$ " bolts, washers, lock washers and nuts are provided to mount the unit.

The Forming Box slides up and down vertically in relation to the Mounting Plate. It is designed to move up and down with the topography of the road shoulder.

The Cover Plate protects the inner adjustment elements of the Forming Box from dirt and asphalt. Removal of this Cover Plate without prior authorization will void the warranty.

Removal of the Cotter Pin is necessary to detach the Forming Box from the Mounting Plate. This action is not usually required.

The Height Adjusting Screw is used to set the height of the Forming Box relative to the bottom edge of the screed. Section 3. explains how to initially set the correct height and how to adjust if necessary. For shipping, the height is set at the highest level also referred to as the Mounting Height.



The Forming Box Guide Rail prevents the Forming Box from moving (or swinging) out of position. It is intended to make sure the Forming Box maintains a vertical orientation.

The Forming Surface produces the 30° tapered edge along the side of the road. Note that this surface is slightly concave (to produce a convex tapered or beveled edge on the road surface). This is part of our patent pending design that creates a stronger and longer lasting tapered edge. Also note that the 30° edge is measured relative to the road surface, not relative to “true horizontal.”

The Spring Assembly produces downward pressure on the Forming Box in such a manner that the Forming Surface maintains contact with the shoulder surface and applies sufficient pressure to form a quality edge.

The Shoulder Guide Rail allows the Forming Box to adjust to the topography of the shoulder of the road. As an example, when the paver encounters an obstacle such as a driveway cut or road intersection, the Shoulder Guide Rail is able to go up and down following the uneven contour of these obstacles.

### 3. PREPARATION AND INSTALLATION

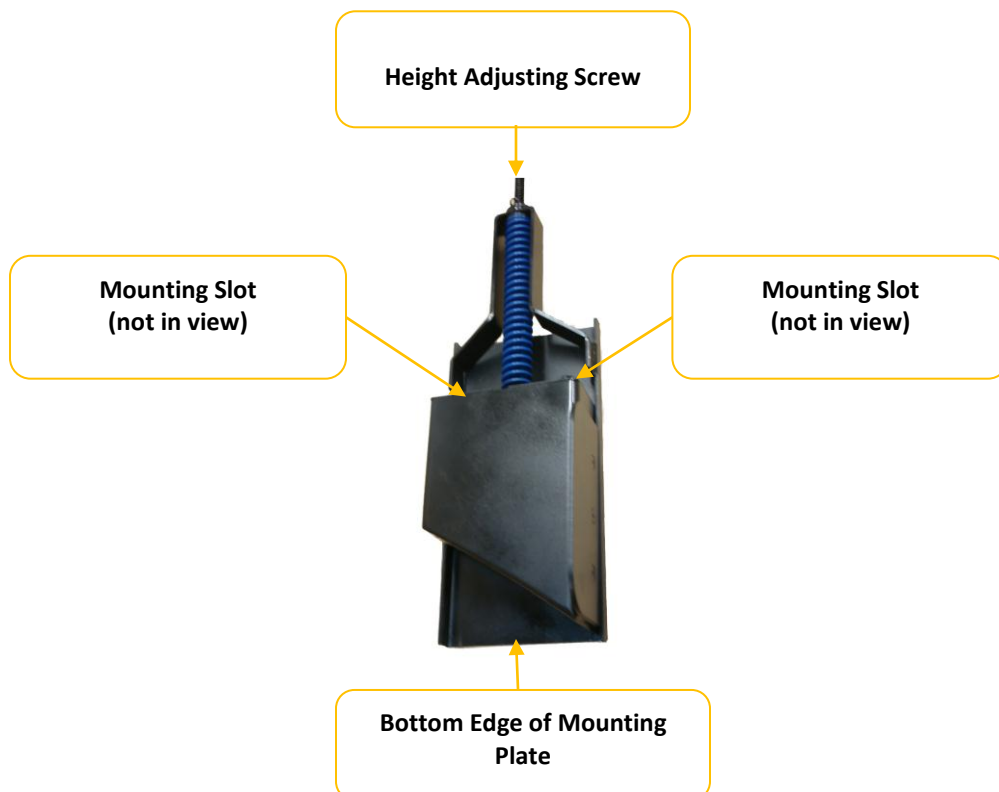
#### Unpacking the Advant-Edger

Carefully unpack the shipping container and inspect the contents. You should find an assembled Advant-Edger Unit configured in an orientation to be attached to the right hand side of the paver (i.e. creating a tapered shoulder edge when traveling in the direction of traffic). See section 4. to configure the unit for paving the left hand side of the road. Also note, that for shipping, the Height Adjustment Screw is fully rotated clockwise so that the Forming Box is in its upper most position (the Mounting Position).

Also in the container is a full set of mounting hardware consisting of: two (2) 1/2-13 bolts, two (2) lock washers, four (4) regular washers and two (2) 1/2 -13 nuts.

The Advant-Edger can be installed on the screed extension and/or on a one foot or two foot wide bolt-on screed extension on either side of the paving machine.

Two holes must be made in the screed to mount the Advant-Edger. In most cases, the tools required are: a drill, 1/2" drill bit, and two (2) 3/4" wrenches, one of which should preferably be a socket wrench. In some cases, where it is difficult to access the rear side of the screed, users may find it advantageous to drill holes in the screed and then weld two nuts onto the back side of the screed behind the holes. This method will be explained as well.



There are two Mounting Slots on the Advant-Edger Mounting Plate. They are symmetrical in size and location. The unit pictured above is in the Mounting Position. Note that the Forming Box has been raised to its highest level and it is flush with or slightly above the bottom edge of the Mounting Plate.

To initially mount the unit, first make sure the Forming Box is in the Mounting Position described above. If not, turn the Height Adjusting Screw clockwise until it stops. This is the Mounting Position which is also the position in which the unit is shipped. Next follow these steps:

- **Step 1:** With the paving machine on level ground, lower the screed so that it is resting on the ground.
- **Step 2:** Position the Mounting Plate vertically against the screed and lower it onto a 1" shim. The important factor is that the bottom edge of the Mounting Plate remain parallel to the edge of the screed and slightly above it. Next position the Mounting Plate horizontally by sliding the Mounting Plate along the shim until the outside edge of the Forming Box Guide Rail is flush against the end gate.

**Important Note:** The Advant-Edger has been designed to easily attach to most paving machines. But, if you find that the entire Mounting Plate surface is not flush against the screed face or if you find that the Mounting Plate is not plumb level or if you find that there is a lower prestrike-off plate that will interfere with the operation of the Advant-Edger when mounted, please STOP the installation process and contact us. Chances are you will need a Universal Mounting Plate in order to attach the Advant-Edger to your paver.

- **Step 3:** Mark the center location of the Mounting Slots on the screed face.
- **Step 4:** Drill two 1/2" holes – one for each of the two slots. In cases where access to the rear of the screed is difficult users may wish to tap two holes in the screed that will accept the 1/2-13 UNC bolt. If this alternate approach is taken please make sure that the screed is sufficiently thick to accept a tap. If it is not, we recommend that a nut be welded to the back of the screed in order to achieve a secure attachment. In the event that a cutting torch and welding is desired, only an experienced welder shall prepare the paver for mounting the unit.
- **Step 5:** Position the Mounting Plate over the Mounting Holes.
- **Step 6:** Insert a 1/2-13 bolt and washer into each of the Mounting Slots and through the recently drilled 1/2" holes. Next slide on a washer and lock washer over the protruding bolt, screw on nut and tighten using appropriate wrenches. The Mounting Plate should be square to the screed and plumb level.



## 4. OPERATION

Prior to starting the paving operation attach the Advant-Edger as described above.

**Step 1:** Set the screed at its desired elevation for paving.

**Step 2:** Rotate the Height Adjusting Screw counterclockwise thereby extending the Forming Box downward. Continue this action until the Shoulder Guide Rail reaches the shoulder of the road and then continue to turning the Height Adjusting Screw counterclockwise until the spring is compressed  $\frac{1}{2}$ " to 1". This additional compression helps to form a more compacted edge. The ideal amount of compression will depend on the paving material being used and will require some trial and error testing. The amount of compression is easily identified by examining the distance that the cotter pin is above the yoke on the Mounting Plate.

**Step 3:** Begin paving. A safety edge will automatically be created. If the quality of the edge is not quite what you expect, try adding or releasing tension on the compression spring by turning the Height Adjustment Screw. The paver will now create a tapered edge along the shoulder as paving continues.

We recommend following rolling patterns described in section 5 to ensure edge integrity. If you continue to experience other issues please review the trouble shooting section 6.

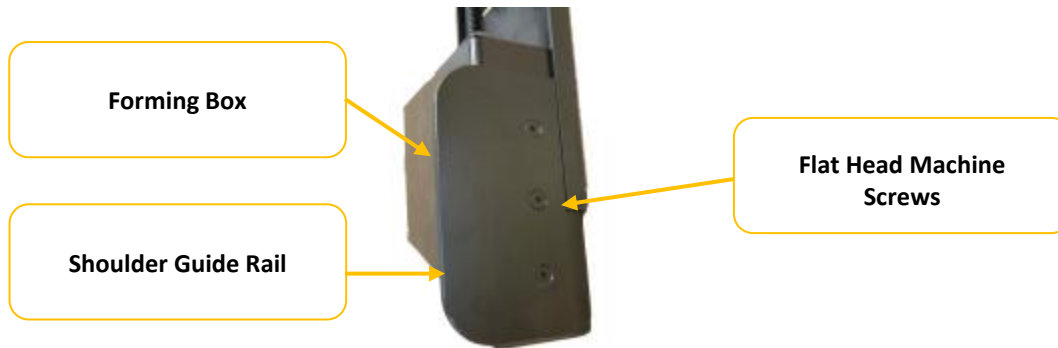
### **Creating a tapered edge on the opposite side of the Paver**

Our unit is shipped in an orientation to be attached to the right hand side of the Paver so that a tapered edge can be made on the right side while paving in the direction of traffic. Should it ever become necessary to create a tapered edge on the left hand side while say paving against traffic, our unit can be quickly reconfigured to meet this task by undertaking the following steps.

- First, if the unit is currently attached to the right hand portion of the screed, unbolt it and carefully move it to a safe place.
- Next, turn the Height Adjusting Screw counterclockwise (lowering the Forming Box) until the Forming Surface is below the edge of the Mounting Plate.
- Remove the three (3) flat head machine screws which attach the Shoulder Guide Rail to the Forming Box. This will require the use of a  $\frac{7}{32}$  inch hexagonal wrench.
- Rotate the Forming Box  $180^\circ$  (i.e. flip it over) by swinging it out away from the Mounting Plate. [If for some reason it is difficult to rotate it in this manner you may wish to remove the Cotter Pin, slide the Forming Box and Spring Assembly away from the Mounting Plate and then flip it over. After doing so, slide the unit back together and reattach the Cotter Pin].
- Reinstall the Shoulder Guide Rail on the opposite side using the same three flat head machine screws making sure that the screws sit flush in their beveled

countersunk holes. Note that the 2” radius corners of the Shoulder Guide Rail will be pointing away from the Mounting Plate as they were before.

- Turn the Height Adjusting Screw clockwise (raising the Forming Box) until it is in its highest position (i.e. the Mounting Position). Got to Section 3 and follow the instructions for attaching the Advant-Edger to the Paver.



## 5. IMPORTANT USER INFORMATION

### Lane Width

The width of the tapered safety edge is not to be included in the total measurement of the desired lane width. The end gate needs to be extended beyond the desired lane width by an amount equal to the width of the tapered edge. Fully extended the Advant-Edger creates a 30° tapered edge that is approximately 8” wide.

### Rolling Patterns

It is recommended that the first rolling pass on the freshly laid road be made with the roller drum 8” to 12” away from the tapered edge of the lane. This will ensure that the tapered edge will not “roll up” due to outward pressure from the first pass. The roller should be driven straight up to the back of the paver and reversed without turning the roller so as to keep constant distance from the edge. If possible, this should be done in vibratory mode.

**WARNING! DO NOT ROLL THE TAPERED EDGE.** Attempting to roll the tapered edge will result in damage or destruction to the edge. It is not necessary to roll the edge as the Advant-Edger consolidates the asphalt during discharge from the paver.

**WARNING! DO NOT DRAW THE SCREED EXTENSION TOO CLOSE TO THE MAIN SCREED.** During paving, the Advant-Edger could be exposed to contact with the cross feed auger and auger shaft if the screed extension is drawn in too close to the main screed. Severe

damage could occur to both the cross feed auger and the Advant-Edger if they come in contact.

**WARNING! RAISE THE FORMING BOX TO ITS UPPER MOST POSITION BEFORE MOVING THE PAVER.** When paving is completed in a given direction and the paver is to be moved to a new position, the Advant-Edger should be raised to its mounting height or uppermost position.

### **Keeping the End Gate in Proper Position**

In order for the Advant-Edger to work properly, the end gate should be riding directly on the surface of the shoulder being paved at all times. Most end gates have a tension rod or compression spring mechanism which can be adjusted to keep enough downward pressure on the end gate so that it does not lift up during paving. If the end gate lifts off the shoulder for any reason, asphalt may flow out the side of the paver and not provide enough asphalt to the Advant-Edger to achieve proper consolidation.

## 6. TROUBLE SHOOTING

### **No visible angle has been produced or the angle doesn't reach the road shoulder**

Check if the Forming Box has been lowered to the appropriate position (See Section 4, "Position the Paving Screed BEFORE Using the Advant-Edger"). If not, rotate the Height Adjusting Screw counterclockwise until the Shoulder Guide Rail reaches the shoulder of the road while the screed is resting on the new pavement.

### **The angle of the paved surface is tearing**

This may be due to the temperature of the mix; mixes that are too cool may cause the material to tear. The composition of the mix may be at fault as well; mixes that are too dry may cause tears in the surface.

### **The angle appears to be too steep**

First make sure the angle is being measured relative to the roads surface, not true horizontal. Be sure that the correct rolling patterns have been used (See Section 5, "Rolling Patterns"). Check the unit and make sure it is flush against the end gate. Check the Forming Box and be sure it is nestled between the Forming Box Guide Rails. Check to see if any asphalt has been wedged between the Shoulder Guide Rail and the end gate which may cause the unit to be forced away from the end gate.

Note: Thinner lifts are expected to result in slightly greater edge angles. Because of our patented curved forming surface (which adds structural integrity to the finished edge), a lift, for example, of only 1 ½ " to 2" (instead of 4 ½ " to 5") may result in an edge angle that is 1° to 2° greater than the 30° target.

Please recognize that road paving conditions are not always ideal and may create results that differ from the 30° target. We believe that when operating in the field, an angle of 35° or less is always possible to achieve and in no circumstance should the operator ever experience an angle greater than 40°.

### **The tapered safety edge seems to lack structural integrity and is breaking up**

The underlying shoulder and ground beneath the safety edge being formed must be firm and compacted prior to paving. Failing to do this may result in an inability to form a quality edge either during the paving process, and/or after the road is completed and the surrounding shoulder "settles."

### **The devise is cutting through the shoulder instead of moving with the terrain**

Check the Shoulder Guide Rail and review installation instructions (See Section 3, “Locating and Installing Mounting Holes” and 3, “Installation”) to ensure that the unit has been properly installed. Also, try reducing the compression on the spring.

### **The Height Adjusting Screw will no longer turn clockwise**

Our unit is designed with upper limit stops. In its highest position, the Forming Box will be even with or just above the lower edge of the Mounting Plate.

### **The Height Adjusting Screw is stuck or seems too difficult to turn**

In this event, the Height Adjusting Screw may have been damaged or bent and may need to be replaced. We believe this is not likely to happen although, should it occur we will be able to supply you with replacement parts.

For assistance during preparation, installation and use of the Advant-Edger,

- call Technical Support at 1-814-422-3343 (EDGE) or
- e-mail us at [sales@advantedgepaving.com](mailto:sales@advantedgepaving.com)

## **7. MAINTENANCE**

In the past, diesel fuel has been used to clean paving equipment and tools of residue and materials left over. This method of maintenance and cleaning can be dangerous and harsh on the environment. Recently, soy based cleaning agents are being widely accepted to be just as effective on cleaning paving equipment but without the harmful effects on the environment. Similar cleaning techniques used on your other paving equipment may be applied to cleaning the Advant-Edger. We suggest that the Advant-Edger be cleaned after use on a daily basis.

## 8. WARRANTY

**EXPRESS LIMITED WARRANTY.** Advant-Edge warrants to the original purchaser only (Buyer) and subject to the limitations, terms and conditions and exclusions set forth herein: the Advant-Edger unit(s) are warranted only against failure due to defective material or workmanship for the period of one (1) year from the date of delivery.

**THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED OR STATUTORY, AND ALL OTHER LIABILITIES (CONTRACT, TORT OR OTHERWISE, INCLUDING NEGLIGENCE) AND ADVANT-EDGE MAKES NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR ANY PARTICULAR PURPOSE. THIS WARRANTY WILL AUTOMATICALLY TERMINATE AND BECOME VOID UPON THE SALE, TRANSFER OR CONVEYANCE OF THE ADVANT-EDGER UNIT(S) OR MACHINE, MACHINE ATTACHMENT OR PROPERTY ON WHICH THE ADVANT-EDGER UNIT(S) ARE INSTALLED AND OPERATED.**

**ADVANT-EDGE DOES NOT MAKE ANY WARRANTY OR ASSUME ANY OBLIGATION WITH RESPECT TO THE VALIDITY OF ANY PATENTS, DESIGNS, COPYRIGHTS OR TRADEMARKS WHICH MAY COVER SUCH ADVANT-EDGER UNIT. THE CONDITIONING OF LIABILITY, RIGHTS, OBLIGATIONS AND REMEDIES OF THE BUYER RELATING TO CLAIMS ARISING FROM A DEFECTIVE ADVANT-EDGER UNIT(S) SHALL BE GOVERNED EXCLUSIVELY BY THE TERMS OF THIS SECTION 8 HEREOF.**

**This EXPRESSED LIMITED WARRANTY does NOT apply where there has failure of the Advant-Edger unit(s) due to improper use; breakage not due to defect, including, but not limited to, natural forces and/or acts of God; failure on account of faulty or improper installation or handling; where repairs or modifications have been made or attempted by others; or failure on account of installation in or on a product of faulty design or construction. As an example, this EXPRESS LIMITED WARRANTY will NOT apply if an object of any kind is attached to Advant-Edger unit without the prior written consent of Advant-Edge. Sales representatives of Advant-Edge are not authorized to make warranties about the Advant-Edger unit. Advant-Edge sales representatives' ORAL STATEMENTS DO NOT CONSTITUTE WARRANTIES, shall not be relied upon by Buyer, and are not part of the contract for sale.**

**If Buyer believes it has purchased a defective Advant-Edger unit(s) as described above, Buyer must notify Advant-Edge immediately in writing why Buyer believes the Advant-Edger unit(s) are defective. Advant-Edge may then request the Buyer to return the allegedly defective Advant-Edger unit(s) to Advant-Edge; have an Advant-Edge representative inspect the unit(s) at the job site, as installed, or at Advant-Edge's address; and/or rely upon the information Buyer has provided to determine whether the unit(s) are defective as described above. If any unit(s) are proven to be defective as described above, then Advant-Edge will, at Advant-Edge's sole discretion, either repair or replace the defective unit(s) or issue to Buyer a credit equal to the price of the defective unit(s) charged by Advant-Edge to Buyer. Said repair or replacement of defective unit(s) or issuance of credit shall constitute fulfillment of all liabilities of Advant-Edge to Buyer with respect to, or arising out of, the**

unit(s), whether based on contract, negligence, strict tort or otherwise. Advant-Edge reserves the right to change design, color, models and to discontinue the manufacture of any unit(s).

**LIMITATION OF LIABILITY.** Advant-Edge shall not under any circumstances be liable for incidental damages or for special or consequential damages. The remedies of Buyer set forth herein are exclusive, and the liability of Advant-Edge with respect to any contract or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale, delivery, resale, installation or use of any Advant-Edger unit(s) covered by or furnished to Buyer, whether arising out of contract, negligence, strict tort, or under any warranty or otherwise, shall not, except as expressly provided herein, exceed the price of the unit(s) upon which such liability is based. This limitation of liability applies to original and replacement unit(s).

**CONTROLLING LAW.** The sale, delivery and use of Advant-Edger unit(s) shall be governed by, and this warranty shall be construed and enforced in accordance with, the laws of State of New York.

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