

Troubleshooting

Control Box Symptoms

1. Control Box LCD does not Display
2. Control Box LCD displays “Error”
3. Cannot adjust to On-Grade when Elevation Control is selected.
4. Tow point cylinder does not move Up or Down
5. Tow point cylinder moves in the wrong direction
6. Tow point cylinder moves too fast or too slow.
7. System intermittently drives the cylinder all the way up or down when tracking a mechanical ski.
8. Control Box displays Error and a number from 1 to 4
9. Grade lights flash high and low and will not stay On-Grade.
10. The valve is driving the hydraulic cylinder too far overshooting grade.
11. The valve will not drive hydraulic cylinder far enough to get sensor On-Grade.
12. The Control Box displays “No Signal” when indicate is selected in elevation mode.
13. The Auto light on the Control Box intermittently flashes on and off.

Control Box Symptom 1

“The Control Box LCD does not display.”

Probable Cause

No power to the Control Box.

1. Check that the machine power is on and all switches for automatic control on the paver are in the proper position.
2. Check that all cables are properly and securely connected to the System Five™ Box and the paver. Make sure cables are not still connected to Control Box bracket.
3. Disconnect cables and inspect them for damage or contamination. Clean all connections with an electrical contact cleaner.



NOTICE

Do not use electrical contact cleaner to clean the Tracker's transducer.

4. Swap Control Boxes from left to right side.
5. For System Four™ bypass Junction Box by plugging coil cord from paver to J-Box directly into Control Box.

Control Box Symptom 2

“Control Box LCD shows Error” (Figure 9-1).

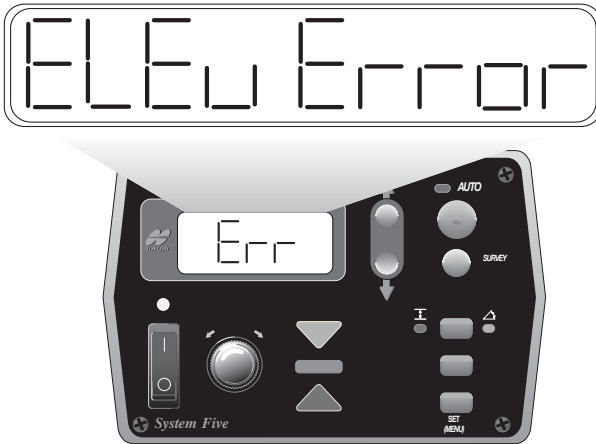


Figure 9-1. Error Display

Probable Cause

No communication with the sensor selected.

1. Check that all cables are properly connected to System Five™ Control Box and sensors.
2. Disconnect cables and inspect them for damage or contamination. Clean all connections with an electrical contact cleaner.



NOTICE

Do not use electrical contact cleaner to clean the Tracker's Transducer.

3. If elevation has been selected, one at a time, swap the Sonic Tracker II™ and cables from the opposite side to locate the error.
4. Refer to Tracker Symptom #1.

5. If slope has been selected, check that slope has not been selected on the other Control Box. Only one box at a time can have slope turned on.
6. Swap slope cable from opposite side.
7. Disconnect cable at slope sensor and connect to other side of sensor to check slope sensor pins.

Control Box Symptom 3

“Cannot adjust to On-Grade when elevation control is selected.”

Probable Cause

Tracker is too close to control reference.

1. Check that the Sonic Tracker II™ is at least 14 inches away from the control reference.
2. Check for unwanted objects within the sonic footprint.
3. Make sure tracker is not positioned in front of a gusty heat source, such as the engine fan exhaust.
4. Stop the paver, make sure the screed is on the ground and turn the vibrators off. Press Survey and hold for 2 seconds. “IND” will display on the faceplate and a number will be displayed on the LCD. The number should stay constant, or change up and down by a few numbers. If the numbers fluctuate significantly then the Transducer is probably weak or damaged.
5. Check for contamination on the Sonic Tracker II™ Transducer or foam filter. Refer to Transducer and Filter Cleaning and replacement information in the Maintenance and Parts section of this manual.
6. Swap the Tracker with the unit on the opposite side.
7. Averaging may be set too low if tracking an uneven reference. Factory setting is 50.

Control Box Symptom 4

“The tow point cylinder doesn't move up or down.”

Probable Cause

Machine electrical switches are not in the proper position, or hydraulics to the cylinder are not active.

1. Check that all locking pins have been removed and that all hydraulic blocking valves are in the open and correct position for automatic control. Refer to the paver manufacturer's manual.
2. Check that all machine electrical switches - and in motion circuits are in the correct position for automatic control. Refer to the paver manufacturers manual. Press the jog switch up and down on the Control Box to make sure there is a current going to the valve. Cylinder should move in the same direction the jog switch is pressed.
3. Check that the Auto Switch is in “Auto” and that the Auto Symbol is illuminated on the front panel.
4. Disconnect cables and inspect them for damage or contamination. Clean all connections with an electrical contact cleaner.
5. Swap the Control Box with the unit on the opposite side.
6. If a Control Box is replaced make sure the configuration and performance settings are correct.
7. If a cable is replaced make sure it is the right part number. A cable with the incorrect resistor could set the Control Box to have the wrong configuration.

Control Box Symptom 5

“The tow point cylinder is moving in the wrong direction.”

Probable Cause

Machine is incorrectly wired or hydraulically connected.

1. Check that the machine is properly wired and hydraulically connected to the valve. A raised jog switch should make the cylinder go up, lowering the jog switch should make the cylinder go down.
2. Check that the proper cables have been supplied for your machine.
3. For System Four, if “OIN” setting is in the performance menu, make sure it is in the off position.
4. Make sure the screed lift cylinders are in the float position and not supporting the screed.

Control Box Symptom 6

“The tow point cylinder is moving ‘too fast’ or ‘too slow’.”

Probable Cause

The paving machine's hydraulic flow adjustment is incorrect, or the control box Valve Offsets or Gain Adjustments are not correct.

1. Refer to paver manufacturers recommended flow adjustment setting for the time it takes the hydraulic cylinder to complete a full stroke of travel. Typically between 12 to 15 seconds.
2. Adjust Gain Performance Settings. Factory setting is 25.
3. Adjust Valve Offsets. Refer to Valve Offset section in the Performance Section within this Manual.

Control Box Symptom 7

“System intermittently drives the cylinder all the way up or down when tracking a mechanical ski.”

Probable Cause

Tracker is intermittently picking up signals from the ski.

1. Verify string is at least 4 inches above the surface of the ski. Ski will pull away from the paver and can get in Tracker's Working Window if string is too close. Ski will also tilt to one side when traveling through a super elevation or slope transition.
2. For a multi-foot ski, make sure “foot spring pin” is not within the sonic footprint as the ski surges back and forth.

Control Box Symptom 8

“Control Box displays Error and a number from 1-4.”

Probable Cause

Defective Sonic Tracker or SAS cable.

1. Check SAS cable connections at each tracker.
2. Turn Control Box off and swap tracker showing the error number (1-4) with another tracker on the SAS. (Tracker number is on the cable at the tracker connector). Turn Control Box on to reset SAS. If the error number (1-4) has changed, the problem is the tracker. If the error number remains the same, the problem is the SAS cable.
3. If more than one error number is shown, check trackers individually by plugging sonic trackers directly into the single tracker coil cord to determine if trackers or SAS cable is source of error.
4. The defective tracker or SAS cable should be repaired, but SAS can still be operated without all four.

Remember balance point will change if a tracker is removed.

Control Box Symptom 9

“Grade lights flash high and low and will not stay On-Grade.”

Probable Cause

If problem is only in automatic mode, then hydraulic Performance Settings are incorrect.

1. Verify paving machines hydraulic flow adjustments (time for hydraulic cylinder to travel full stroke) are set to manufactures recommendations.
2. Check that the Valve Offsets are set correctly.
3. Check that the Gain setting is too high. Factory setting is 25.

If problem is in manual mode, then

1. Verify that temperature bails are clean and securely attached.
2. Verify temperature bail symbol “T” is displayed on face of Tracker. If not clean or replace transducer.
3. Check that Trackers are between 14 and 24 inches from reference.
4. If there are gusty winds, lower Tracker closer to reference. Approximately 14 to 16 inches.
5. Move Tracker away from gusty heat source, such as engine fan exhaust.
6. Verify Tracker is not picking up erroneous signals from undesired reference.
Example: Head of material, end gate, shoulder grade or material spillage from hopper.
7. If using Stringline, verify line is not bouncing.

8. Check to see if Averaging in Performance Menu is set too low. Factory setting is 50.
9. Check Deadband in Performance Menu is not less than 3mm.

Control Box Symptom 10

“The valve is driving the hydraulic cylinder too far, overshooting grade.”

Probable Cause

Valve Offset in Control Box are set too high.

1. Lower the Valve Offset value till the sensor no longer overshoots grade. Refer to
2. “Setting Valve Offsets” section in this manual.
3. For Servo and solenoid valves lower the value by 2 to 5 numbers, then check the hydraulic performance.
4. For Proportional valves, lower the value by 10 to 15 numbers, then check hydraulic performances.

Control Box Symptom 11

“The valve will not drive hydraulic cylinder far enough to get sensor On-Grade.”

Probable Cause

Valve offsets in Control Box are set too low.

1. Raise the Valve Offset Value till the sensor is driven to grade. Refer to “Setting Valve Offsets” section in this Manual.
2. For Servo and Solenoid valves raise the value by 2 to 5 numbers, then check hydraulic performance.
3. For Proportional valves raise the value by 10 to 15 numbers, then check hydraulic performance.

Control Box Symptom 12

“The Control Box displays ‘No Signal’ when indicate is selected in elevation mode.”

Probable Cause

Sonic Tracker is reporting no echo.

1. Verify that the Sonic Tracker is ticking.
2. Make sure tracker is pointing at a target with the working range, recommended 14 to 24 inches.
3. Transducer may be dirty or damaged. Refer to the Transducer and Filter section within this manual.
4. Power or ground connection at transducer may be loose. Remove transducer and check wires.

Control Box Symptom 13

“The Auto light on the Control Box intermittently flashes on and off.”

Probable Cause

Sonic Tracker is too far from reference for current atmospheric conditions, or Temperature Cutout is too low.

1. Verify that the Sonic Tracker is positioned 14 to 24 inches from the reference. If there are gusty winds lower the Tracker to 14 to 16 inches from the reference.
2. Move Tracker away from gusty heat source, such as engine fan exhaust.
3. Temperature Cutout is set too low. Factory setting is 7. Refer to Technicians manual.

Tracker Symptoms

1. Sonic Tracker will not power on.
2. Sonic Tracker is ticking, but will not adjust to Grade
3. Tracker grade lights flash high and low and will not stay On-Grade.
4. Sonic Tracker is not matching joint or curb.
5. The Sonic Tracker will pick up the ground, but will not pick up a stringline.

Tracker Symptom 1

“Sonic Tracker will not power on.”

Probable Cause

Defective cable or tracker.

1. Check coil cord is plugged in correctly and securely.
2. Inspect Coil cord for any physical damage.
3. Turn Control Box on and watch the tracker lights to make sure they go through the power up sequence. All the lights on the tracker should flash at once followed by a flash of an arrow pointing to the left. The “T” symbol should also be displayed in the upper right hand corner of the tracker faceplate when a Temperature Bail is attached. If the tracker does not go through this sequence then the tracker is not getting power or is defective.
4. One at a time, swap tracker and then coil cord from opposite side to determine the problem.

Tracker Symptom 2

“Sonic Tracker is ticking, but will not adjust to grade.”

Probable Cause

Tracker is too close to reference, minimum working distance is 14 inches.

1. Tracker is too close to reference point. Position tracker 14 to 24 inches from grade reference.
2. Connect tracker to other side of paver to determine if problem stays with tracker.
3. If problem stays with tracker, clean or replace transducer or foam filter. Refer to the Transducer and filter cleaning and replacement information in the “Maintenance” section of this manual.
4. If problem does not move with tracker, inspect coil cord for damage and swap with cord from other side.

Tracker Symptom 3

“Tracker grade lights flash high and low and will not stay On-Grade.”

Probable Cause

If problem is only in Automatic Mode, then Hydraulic Performance Settings are incorrect.

1. Verify paving machines hydraulic flow adjustments, time for hydraulic cylinder to travel full stroke, are set to manufacturers recommendations. Typically 12 to 15 seconds.
2. Check Valve Offsets are set correctly. Refer to setting valve offsets.
3. Make sure Gain Setting is not too high. Factory setting is 25.

If problem exists in manual mode, then Tracker is setup incorrectly or Performance Settings are incorrect.

1. Verify that temperature bails are clean and securely attached.
2. Verify temperature bail symbol “T” is displayed on face of Tracker. If not, clean or replace transducer.
3. Check that Trackers are between 14 and 24 inches from reference.
4. If there are gusty winds, lower Tracker closer to reference. Approximately 14 to 16 inches.
5. Move Tracker away from gusty heat source, such as engine fan exhaust.
6. Verify Tracker is not picking up erroneous signals from undesired reference.
Example: Head of material, end gate, shoulder grade or material spillage from hopper.
7. If using Stringline, verify line is not bouncing.
8. Check to see if Averaging in Performance Menu is set too low.
Factory setting is 50.
9. Check that Deadband, in Performance Menu, is not less than 3mm.

Tracker Symptom 4

“The Sonic Tracker is not matching joint or curb.”

Probable Cause

Tracker is too far forward on the tow arm.

1. Position the Tracker at 1/3rd the tow arm length (just in front of auger).
2. Gain for tracker may be set too low. Adjust Gain to a minimum of 25.

3. Brackets and L-bars have not been securely tightened. Also, check for excessive play or slop where tracker is attached to the paver. (Tow arm or end gate.)

Tracker Symptom 5

“The Sonic Tracker will pick up the ground, but will not pick up a stringline.”

Probable Cause

1. Tracker is too close to a reference or transducer is weak.
2. Verify that tracker is at least 14" from the stringline.
3. Smooth, steel wire is not recommended. Use minimum 1/16" diameter string for elevated stringline or averaging ski. Use 1/8" string for Surface Stringline.

Slope Sensor Symptoms

Cross Slope reads “Error”
Cross slope drives cylinder in the wrong direction
Slope lights flash between raise and lower and will not stay On-Grade.
Cross slope will not lock On-Grade.
Cross slope being laid is not correct.

Slope Sensor Symptom 1

“Cross Slope reads ‘Error’.”

Probable Cause

Both Control Boxes are selected for slope or have a defective cable.

1. Cross slope operates one side at a time. Verify only one Control Box has been selected for slope.

2. Verify that the slope cable is connected securely and properly.
3. Swap slope cable from other side to check cable.

Slope Sensor Symptom 2

“Cross Slope drives cylinder in the wrong direction.”

Probable Cause

Slope sensor installed incorrectly.

1. Verify the slope sensor is positioned correctly on the transverse beam. “Slope Forward” Decal must be in direction of travel.
2. Check that the machine is properly wired and hydraulically connected to the valve. Raised jog switch should make the cylinder go up, lower jog switch should make the cylinder go down. Refer to the paver manufacturers manual.

Slope Sensor Symptom 3

“Slope lights flash between raise and lower and will not stay On-Grade.”

Probable Cause

Incorrect Performance Setting adjustments or a loose transverse beam.

1. Check Valve Offset for proper operation. Refer to “Setting Valve Offsets” section in this manual.
2. Check gain setting. Factory setting is 25.
3. Slope deadband set too low. Increase Slope Deadband. Factory Setting is .075%.
4. Check for excess vibration in the Transverse Beam due to poor connection at Tow Arm.

5. Make sure slope sensor is mounted directly to the Transverse Beam and is not elevated or supported by additional brackets.

Slope Sensor Symptom 4

“Cross Slope will not lock On-Grade.”

Probable Cause

Loose Transverse Beam or incorrect Performance Setting adjustments.

1. Verify that the Slope Sensor is not moving or vibrating when trying to survey slope on grade.
2. Slope deadband setting is too low, factory setting is .075%.
3. Stop the paver, make sure the screed is on the ground and turn the vibrators off. Press Survey and hold for 2 seconds. IND will display on the faceplate and a slope value will appear in the LCD. The number should stay constant or change up or down by a few counts. If the numbers fluctuate significantly then the slope sensor is probably the problem.

Slope Sensor Symptom 5

“The Cross Slope being laid is not correct.”

Probable Cause

Calibration in Slope Sensor is incorrect.

1. Calibrate the Slope Sensor as described in “Daily Cross Slope Calibration” in the Function and Operations section.
2. Check that the Transverse Beam is mounted according to the manufacturer’s instructions and that it is not loose or damaged.

3. Recheck slope using a good reference such as a laser or level. Wait at least 3 tow arm lengths before checking the slope after a change has been made.
4. If the paver's mat thickness controls have been used then the slope calibration may have to be changed. This can occur after “buying back” cylinder.

SAS Symptoms

When the SAS is connected, control box displays “Error” and a number.
1 Tracker stops working
SAS will not lock On-Grade
SAS is not producing smooth surface
Tracker picking up head of material

SAS Symptom 1

“When the SAS is connected, the Control Box displays ‘Error’ and a number.”

Probable Cause

Defective tracker or cable, tracker with incorrect code.

1. Verify that all trackers are correctly and securely plugged into the SAS cable.
2. Turn Control Box off and move the Tracker to a different position on the SAS cable. Turn the Control Box on to reconfigure SAS. If error number moved positions with the swapped tracker, the tracker is the problem. See Chapter 8 to replace the transducer.
3. Check to see if a Tracker without SAS code is attached to the cable. Verify that the tracker has a SAS compatible decal near the S/N label (Figure 9-2 on page 9-18).

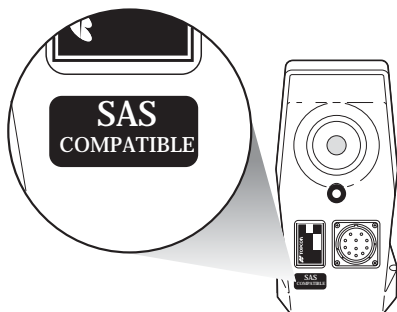


Figure 9-2. SAS Compatible Decal Location on Sonic Tracker

4. Tracker can also be checked by verifying code revision. Turn box off and back on. Watch the temperature bail symbol in the top right portion of the tracker (Figure 9-3). The “T” symbol will flash a certain number of times, pause and flash again to indicate the revision of its code.

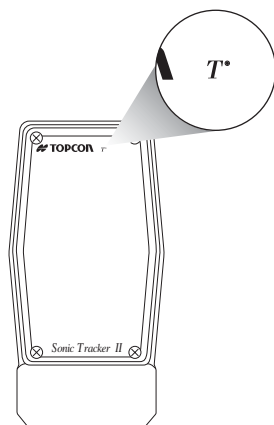


Figure 9-3. Temperature Bail Symbol Indicating Code Revision

Example: Flash twice, pause flash twice means the code in the Tracker is 2.2. SAS requires trackers with code of 2.2 or higher.

SAS Symptom 2

“A Tracker stops working.”

Probable Cause

Defective Tracker.

1. Check SAS cable connections at each tracker.
2. Turn off Control Box and swap tracker showing error with another tracker on the SAS. (Tracker number is on the cable at the tracker connector.) Turn the Control Box back on to reset SAS. If error number moved positions with the swapped tracker, then the tracker is the problem. See Chapter 8 to replace the transducer if necessary.
3. If error continues to display for the same position even after trackers have been swapped, the tracker connector or SAS cable is the problem.
4. The defective tracker or SAS cable should be repaired, but SAS can still be operated without all four trackers operating. Remember balance point will change if a tracker is removed.

SAS Symptom 3

“SAS will not lock on grade.”

Probable Cause

Tracker too close to reference or defective transducer in Tracker.

1. Verify that all cable connections are properly and securely connected.
2. Check that all trackers are sending out sound waves (transducer is making ticking sound) and grade lights are flashing.

3. If tracker is not working, check that transducer and foam filter are clean and free from damage. See Chapter 8 to replace the transducer if necessary.
4. SAS beam and trackers may be too close to reference. Bottom of tracker must be minimum of 14 inches from reference.
5. Non-SAS compatible tracker attached to cable. Verify tracker has SAS compatible decal near S/N label (Figure 9-4).

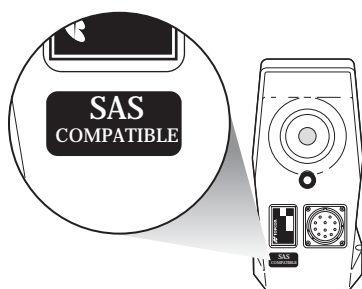


Figure 9-4. SAS Compatibility Label

SAS Symptom 4

“SAS is not producing smooth surface.”

Probable Cause

Improper setup or Performance Menu Settings.

1. Verify that temperature bails are clean and securely attached.
2. Verify temperature bail symbol “T” is displayed on face of Tracker. If not clean or replace transducer. See Chapter 8 to replace the transducer if necessary.
3. Check that Trackers are between 14 and 24 inches from reference.
4. If there are gusty winds, lower SAS to get Trackers closer to reference.

5. Move the Tracker away from gusty heat source, such as engine fan exhaust.
6. Verify that the Trackers are not picking up erroneous signals from undesired reference.
Example: Head of material, end gate shoulder grade or material spillage from hopper.
7. Verify that the center of the SAS beam is between the midpoint and the forward 2/3 point of the tow arm.
8. Check to see if Averaging in Performance Menu is set too low. Factory setting is 50.
9. Check that Deadband in Performance Menu is not less than 3mm.
10. Check that Valve Offsets are set properly.
11. Check that the Gain setting in the Performance Menu is not set too high.
Factory setting is 25.

SAS Symptom 5

“Tracker picking up head of material.”

Probable Cause

Improper placement of Tracker.

1. Move tracker forward of the material. Rotate Tracker to front of bracket or drill a hole in the beam far enough forward to move tracker away from material.
2. Check balance point. Balance point will shift when moving a tracker.

Safety Precautions

It is your responsibility to be completely familiar with the cautions described in this manual. These messages advise against the use of specific methods or procedures which can result in personal injury, damage to the equipment, or unsafe operating conditions. Remember, most accidents are caused by failure to observe basic safety precautions.

1. Read and become familiar with the machine manufacturer's operation manual, including safety information before installing, using, or servicing the Topcon System Five.



WARNING

Improper operation, lubrication, maintenance, or repair of this product can be dangerous and could result in injury or death.

2. Use extreme caution on the jobsite. Working around heavy equipment can be dangerous.
3. System Five is externally mounted on the machine. Do not attach Topcon components while the machine is running.
4. Do Not allow any System Five component to limit the visibility of the operator or protrude into traffic.
5. Use Ty-Wraps supplied with the System Five to keep hoses and wires secured and away from possible wear or pinch points.
6. Always wear eye protection when welding, cutting, or grinding on the machine.

7. Protect yourself at all times and wear protective clothing when working on or near hydraulic lines. Hydraulic lines can be under extreme pressure even when the machine is off.



WARNING

Relieve all pressure in the hydraulic lines before disconnecting or removing any lines, fittings or related components. If injury does occur, seek medical assistance immediately.

8. Avoid direct eye exposure when using laser control methods.



CAUTION

DO NOT stare into the laser beam or view the beam directly with optical equipment.

9. Use appropriate welding precautions and practices when welding. After welding, paint all affected areas with a rust inhibitor.



NOTICE

Disconnect all TOPCON system electrical cables prior to welding on the machine.



WARNING

Do not weld near hydraulic lines or on any equipment when in operation.

 **NOTICE**

All mounting bracket welds must be secure and strong to prevent sensor equipment from excessive vibration or from detaching at the weld point during operation.

 **NOTICE**

*When operating in rainy weather or in wet conditions, the Control Box and cables must be thoroughly dried **BEFORE** placing them in the Carrying Case at the end of the day.*

 **NOTICE**

*Keep the Carrying Case dry at all times. **DO NOT** allow moisture to get inside the case. Moisture trapped in the case can adversely affect components.*

Topcon cannot anticipate all possible circumstances that could result in a hazard. The warnings contained herein, therefore, are not all inclusive. If you use a tool, procedure, work or operating method other than those Topcon recommends, ensure the safety of yourself and those around you before continuing.

Limited Warranty

Electronic and Mechanical Components

TOPCON warrants that the electronic components manufactured by TOPCON shall be free of defects in materials and workmanship for a period of one year from the original date of shipment to the dealer. TOPCON warrants that all valves, hoses, cables and mechanical parts manufactured by TOPCON shall be free of defects in materials and workmanship for a period of 90 days from the date of installation.

Return and Repair

During the respective warranty periods, any of the above items found defective may be shipped to TOPCON for repair. TOPCON will promptly repair the defective item at no charge, and ship it back to you. Calibration of components, labor and travel expenses incurred for in-field removal and replacement of components are not covered under this warranty policy. Damage to components due to negligence, abuse or improper use is NOT covered under this warranty.

Warranty Disclaimer

The above warranties are in lieu of all other warranties, whether expressed or implied, including all warranties or merchantability, or fitness for a particular purpose. In no event will Topcon Laser Systems, Inc. or its Representative be liable for lost profits or other

consequential damages arising from the purchase or use of TOPCON's components or any performance hereunder or any claims of negligence, even if TOPCON has been advised of the possibility of such damages.

Service Information

Service assistance can be provided by contacting your local TOPCON dealer or by calling the Corporate Service Center.

Phone: (800) 443-4567
8 a.m. to 5 p.m. Pacific Time
Monday through Friday

FAX: (925) 460-1329

Travel charges will be applied for any on-site service whether warranty or non-warranty in nature.

Glossary

A

Aggregate

Various hard, inert materials such as sand, gravel, pebbles, etc. used as the bulk material in asphaltic mixes.

Angle of Attack

The angle that exists between the bottom of the screed and the grade over which the screed is traveling.

Auger

The broad, spiral flange on a screed which rotates and spreads paving material evenly in front of the screed.

Auger Shadows

The dark and light areas along the length of a mat surface caused by the compaction of materials having different densities and textures.

Automatic Feed Controls

The dual feed system on a paving machine used to maintain a constant head of material in front of the screed.

Automatic Grade and Slope Controls

Sensing equipment used on paving machines to set and maintain proper elevations and percent slope. Paver Control System Five™ provides paver operators with automatic grade and slope control.

B

Bitumen

A thick, viscous, petroleum-based substance used as a bonding agent in asphaltic mixes.

Bail

A wire frame added to the Tracker that acts as a fixed target to compensate for rapid air temperature changes.

C

Calibration

Setting the elevation reading or Slope Sensor reading to match the actual position of the screed.

Compaction

To press tightly, thereby increasing the density of paving material.

Cone

Pattern of distribution of the Sonic Tracker II™ sound waves. The sound waves leave the Tracker in a circular pattern that gets wider as it gets further from the Tracker.

Conveyor

The assembly used to move paving material from the hopper to the auger.

Cross Slope

The angle of slope required to produce a desired surface slope. Cross slope is measured in percent.

Crown

The transverse contour of a finished mat.

The contour of the screed plate.

The transition line between 2 different slopes (i.e. between lanes or between lanes and shoulders).

Lead Crown

The contour or profile from side to side of the leading edge of the screed.

Negative Crown

Contour which is higher at the edges than at the center of a mat.

Positive Crown

Contour which is higher at the center than at the edges of a mat.

Tail (Road) Crown

The contour of the trailing edge of the screed.

Cut-off Shoe

A detachable plate used to reduce the paving width of a screed.

D**Density**

Compactness of paving material.

E**Edger Plate**

A vertical plate at each end of the screed used to confine the head of material.

Elevation

The vertical height or depth of the surface being laid. Elevation is measured in centimeters, inches, or feet.

F

Feeders

The auger-conveyors on the right and left hand sides of a paving machine.

G

Grade

The base surface (road bed) over which paving is being laid.

The elevation of a fresh mat in relation to the base.

The incline of a paving surface in the direction of travel, expressed by stating the rise or fall as a percent age of horizontal distance.

(i.e., 6% grade = 6' of elevation change in 100' of horizontal longitudinal run).

Grade Control

A means of controlling the elevation of a mat as it is being laid.

Grade Sensor

An electric device which detects positive and negative changes in elevation from a grade reference (i.e., surface string, floating beam, mat reference, adjacent mat or curb surface).

H

Head of Material

The volume of paving material directly in front of and across the entire length of the screed.

Hopper

The area at the front of the paving machine which receives the paving material.

Hydraulic

Liquid in motion under pressure, the flow of which causes work to be accomplished.

Hydrostatic Transmission

Power transmitted by a positive displacement pump through a liquid under pressure to a positive displacement motor.

I**Inclinometer**

See Slope Sensor

J**Joint Matcher**

See Automatic Level Control

L**LCD**

Liquid crystal display. LCD is used in the display window on the Control Box and Sonic Tracker II™ to show numbers and symbols for Paver Control System Five™ functions.

LED

Light Emitting Diode. These are the red lights seen on the faces of the Control Box, Sonic Tracker II™ and Laser Tracker.

Line of Shear

The lateral line of contact in the paving material at the leading edge of the screed pre-strike-off where material divides to pass beneath the screed plate or moves upward along the face of the screed into the augured material for later placement.

M**Mat**

The material being placed by a paver/finisher.

N

Null

A condition which exists when components are at rest.

“Null” Screed

A screed resting flat on the mat and having no angle of attack.

O

On Grade

When a surface is at the desired elevation or slope, it is referred to as being on grade.

Overlay

Paving over an existing mat.

P

Paddle Box

The sensing device used with automatic feed control to measure and control the head of material.

Percent (%) Slope

The unit of measure used for cross slope.

Pull Points

See Tow Points

Push Roller

Rollers mounted at the front of the paver to control the contact area between the paver and the asphalt truck tires.

Q

Quarter Points

Points on the screed midway between the center and the ends.

R

Ripples

Short frequent changes in the elevation of a mat surface.

S

Screed

The assembly behind the tractor. The screed strikes off, smooths and compacts the paving material into a semi-finished mat.

Screed Extensions

Attachments for increasing screed width.

Screed Heaters (Burners)

Devices which preheat the screed plate to a temperature approximately that of the material to be laid.

Screed Plate

The bottom plate of the screed.

Slope

The incline of a paving surface perpendicular to the direction of travel expressed by stating the rise or fall of a percentage of horizontal distance (i.e. 2% slope = 2" of elevation change in 100" of lateral run).

Slope Control

A means for controlling the transverse elevation of the fresh laid mat in relation to the grade.

Slope Sensor

An electrical device which detects positive and negative change in lateral elevation using the grade controlled side of the machine as a reference.

Survey

Function used to show the current elevation when in CAL mode. Also used in Laser Tracker operations in conjunction with the Enter Button to move the Tracker receiver up and down.

T

Thickness Control Screws

The adjusting crank located at the rear of each side arm, used to control the angle of attack of the screed.

Tow Points (Pull Points)

The points where the side arms of the screed are attached to the Tractor unit.

Transverse Beam

A steel bar connected to the side arms of a screed for mounting the Slope Sensor.

Temperature Bail™

A wire frame added to the Tracker that acts as a fixed target to compensate for rapid air temperature changes.

V

Vibrators

A rotating shaft and eccentric weight assembly mounted on the screed that produces vibration.

W

Wave

Long repeating changes in the elevation of the mat surface.

Working Window

Adjustable region of measurement used by the Sonic Tracker II™ to determine if elevation correction is required.

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