



# PAVER OPERATION MANUAL

## MODEL 1750-C

Paver Serial Number \_\_\_\_\_

Paver Specification Number \_\_\_\_\_

Engine Serial Number \_\_\_\_\_

**SOLD & SERVICED BY:**

This is a large, empty rectangular area with rounded corners. A vertical line runs down the left side of the box, and there are small circular details at the top and bottom of this line, giving it the appearance of a scroll or a designated space for a signature or stamp.



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## **IMPORTANT SAFETY INFORMATION**

Most accidents involving paver maintenance are caused by failure to observe basic safety rules or precautions. An accident can often be avoided by recognizing potentially hazardous situations before an accident occurs.

Read and understand all safety precautions and warnings, before operating or performing lubrication and maintenance on this paver.

**WARNING:** IMPROPER OPERATION, LUBRICATION OR MAINTENANCE OF THIS PAVER CAN BE DANGEROUS AND COULD RESULT IN INJURY OR DEATH.

**WARNING:** DO NOT OPERATE THIS PAVER UNTIL YOU READ AND UNDERSTAND THE INSTRUCTIONS IN THE **OPERATION SECTION** OF THIS MANUAL.

**WARNING:** DO NOT PERFORM ANY LUBRICATION AND MAINTENANCE ON THIS PAVER UNTIL YOU READ AND UNDERSTAND THE INSTRUCTIONS IN THE **MAINTENANCE SECTION** OF THIS MANUAL.

## **SERVICE WARNING**

### **General**

Operating personnel must perform service checks regularly to be sure systems are in good operating condition. If abnormal conditions are detected, inform maintenance personnel immediately.

Check all systems for proper operation. Check chassis and all components for physical damage and security of all fasteners and connectors.

## PAVER OPERATION SECTION

Prior to starting the following procedures must be completed.

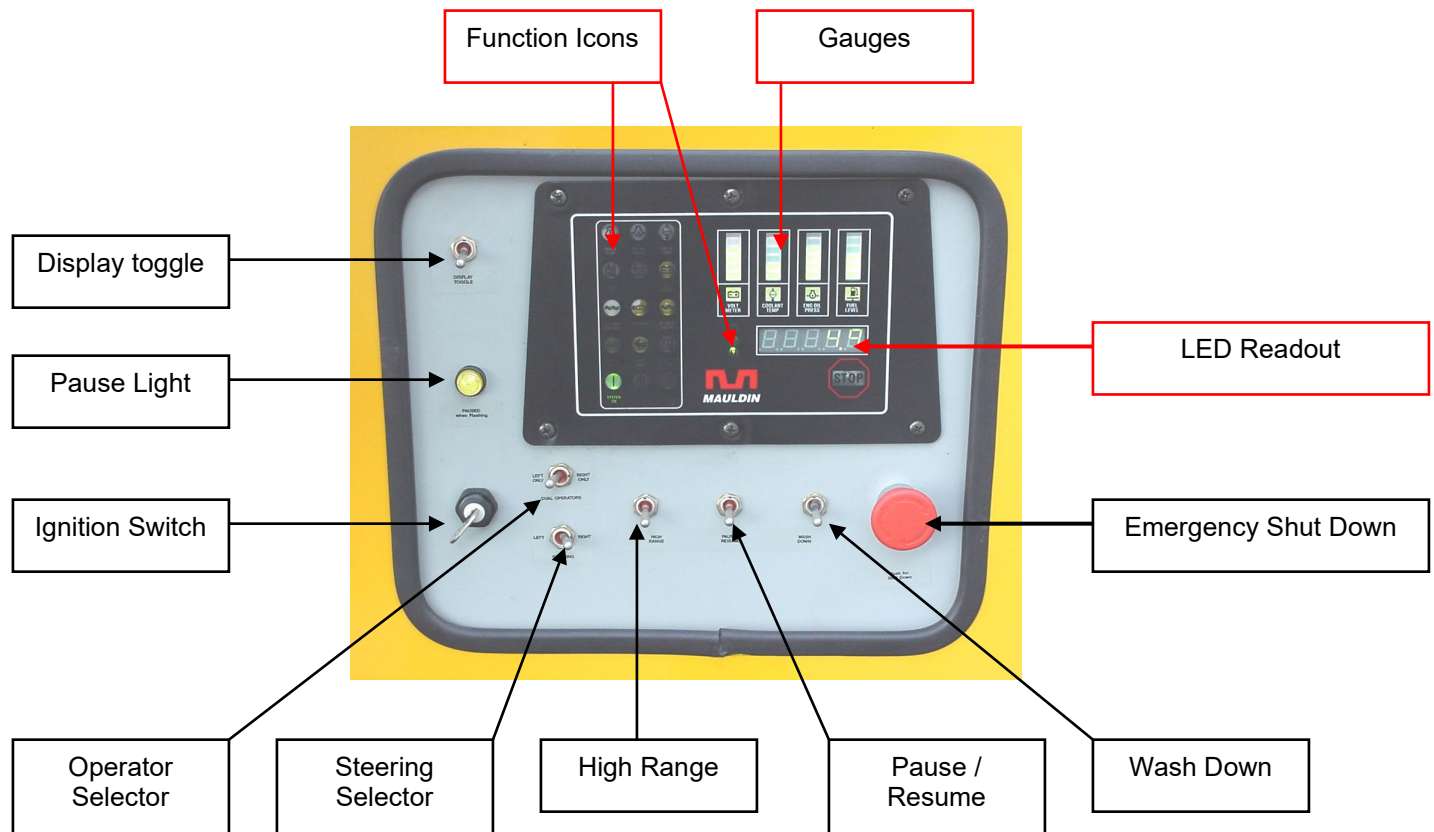
1. Check engine oil level

2. Check engine coolant level

3. Check hydraulic oil level

The paver controls for the 1750-C consists of one main control panel and two operators station panels. The photographs below will introduce these switch and display panels as well as familiarize you with the terminology associated with them. You will want to refer back to this page as you read through the manual.

### MAIN CONTROL PANEL



## **NAVIGATING THE MAIN CONTROL PANEL**

### **1.0 FUNCTION ICONS**

These are small lights that illuminate at various times to provide operational information. An icon may illuminate to indicate a feature is selected or operating, what feature the LED READOUT is displaying information about, to alert you to a problem, or to indicate where the problem is that activated the safety shut down system.

### **2.0 GAUGES**

The gauge package includes electronic bar style display for the voltmeter, engine coolant temperature, engine oil pressure, and the fuel level. Actual degrees Fahrenheit of the engine coolant is available on the LED READOUT, see DISPLAY TOGGLE section for more information.

### **3.0 LED READOUT**

Below the gauges is the LED readout. The LED readout will display; engine RPM, engine hour meter, engine coolant temperature, and sonic sensor diagnostic information for the automatic material feed system, (see MATERIAL FEED SECTION, Item 8.4, Sonic Augers, page 13).

### **4.0 DISPLAY TOGGLE**

This switch scrolls through the different display readings on the LED readout. The system always starts out displaying engine RPM, activate this switch to move between the different readouts.

### **5.0 PAUSE LIGHT**

Whenever the paver is started this light will be flashing. This lets you know that the paver is in pause mode and will not accidentally begin to travel. See PAUSE / PAVE RESUME switch for information on turning the light off.

### **6.0 IGNITION SWITCH**

The ignition switch has three positions: off, on, and engine crank. Always remove the key from the ignition when the paver is not in use. Your paver was shipped with two ignition switch keys, be sure to keep the backup in a safe but easily accessible location.

### **7.0 OPERATOR SELECTOR**

This switch allows you to set the paver up for one main operator and an assistant or two main operators. For a detailed explanation of the differences, see MATERIAL FEED SECTION, page 10.

### **8.0 STEERING SELECTOR**

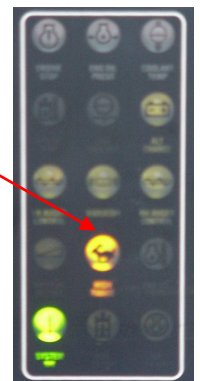
The 1750-C can be driven from the left or right side, to switch from one side to the other simply select left or right with this switch. Whichever side is NOT selected is inactive and will not affect the steering if accidentally bumped.

### **9.0 HIGH RANGE**

This switch should be positioned down for low range paving.  
**ALWAYS USE LOW RANGE WHEN PAVING.**

**CAUTION:** INJURY/OR DAMAGE TO EQUIPMENT MAY OCCUR: When switching to high bring paver to a stop before switching. To engage from low to high flip the High range switch up. The High range icon will illuminate to confirm HIGH RANGE is engaged.

**HIGH RANGE  
IS ENGAGED**



## **10.0 PAUSE / PAVE RESUME**

When activated, after the ignition switch has been turned to the "ON" position, this switch will engage the Pave Resume feature, (see section 15.0 explaining Pave Resume operation), and the light will stop flashing. When activated again the paver will return to pause mode and the pause light will start flashing. When in pause mode the yellow pause light will flash, confirming that the steering controls are disabled.

If when attempting to come out of "PAUSE" the yellow indicator light illuminates solid, (ie. not flashing), then one or more of your steering joysticks are not in the centered neutral position. Upon centering the joystick(s) to neutral the yellow light will turn off, indicating the paver is now out of "PAUSE".

Any time that the STEERING SELECTOR is changed between the left position and the right position, the paver will automatically return to the "PAUSE" condition.

For your convenience, this switch is also located at both operators consoles.

## **11.0 WASH DOWN**

Position this switch in the up position and the wash down system will become pressurized. Position the switch down to de-pressurize the wash down system.

## **12.0 EMERGENCY SHUT DOWN**

This large red button may be pushed to shut down all paver functions instantaneously. To reset, twist the knob and allow it to spring outward. If the ignition switch appears to have no power, be sure to check that the emergency shut down switch is not engaged.

**CAUTION:** BE SURE YOU KNOW WHY THE EMERGENCY STOP BUTTON WAS ACTIVATED BEFORE RESETTING. OPERATING THE PAVER AFTER THE EMERGENCY SHUT DOWN HAS BEEN ENGAGED CAN BE DANGEROUS AND COULD RESULT IN INJURY OR DEATH

## **STARTING THE PAVER**

### **13.0 STARTING**

To start the paver first check to make sure **ALL** forward and reverse levers are in the neutral position. The paver will not start if all levers are not in the neutral position. Verify the pause light is flashing (yellow light left of instrument panel), then turn key to start. To increase engine RPM the throttle control is to the left of the instrument panel.

### **14.0 DRIVING**

Select the operator's station to be used by setting the Steering Switch to the left or right. Toggle the Pause/Resume Switch up and the pause light will go out. The paver will move forward by pushing both levers forward and will move backwards by pulling the levers back. ***HINT - to make driving easy, push both handles forward to desired speed, then use only one handle to fine-tune your direction.***

### **15.0 PAVING RESUME**

The best analogy for this feature would be "*cruise control for a paver*". Start driving the paver as described above. To stop the paver, rather than return your handles to neutral, simply toggle the PAUSE/RESUME switch. The paver will come to a stop and you will notice the pause light is flashing. Toggle the PAUSE/RESUME switch again and the paver will take back off at the same direction and Speed you were at before stopping. *Imagine how convenient this is on longer pulls, OR curves!!!*

### **16.0 TWO SPEED**

**CAUTION:** INJURY/OR DAMAGE MAY OCCUR: When switching to high range, bring paver to a stop before switching. To engage from low to high flip the High range switch up.



## **ADDITIONAL OPERATORS CONTROLS**

Each operator's console contains these additional controls:

### **17.0 PAUSE / PAVE RESUME**



When activated, after the ignition switch has been turned to the "ON" position, this switch will engage the Pave Resume feature, (see section 15.0 explaining Pave Resume operation), and the light will stop flashing. When activated again the paver will return to pause mode and the pause light will start flashing. When in pause mode the yellow pause light will flash, confirming that the steering controls are disabled.

If when attempting to come out of "PAUSE" the yellow indicator light illuminates solid, (ie. not flashing), then one or both of the *SELECTED* steering joysticks are not in the centered neutral position. Upon centering the joystick(s) to neutral the yellow light will turn off, the paver is now out of "PAUSE".

Any time that the STEERING SELECTOR is changed between the left position and the right position, the paver will automatically return to the "PAUSE" condition.

### **18.0 TOW POINT**

There are two of these switches at each station. The one to your left will adjust the LH tow point cylinder and the one to your right adjusts the RH tow point cylinder. The tow point cylinders adjust the angle of attack for the screed. Before starting to pave make sure these cylinders are at their midpoints, (only half of the cylinder piston exposed), this should be 5 inches. When operating the screed automation systems, (see section **SYMPHONY® SCREED AUTOMATION SYSTEM**), these cylinders will be utilized by the automation. When operating with out the automation, these switches may be used in lieu of the manual screed depth cranks.

### **19.0 REVERSING CONVEYORS**

This switch, when activated will reverse the direction of both conveyors for as long as the switch is held. Use this feature to minimize material spillage out the paver feed tunnels whenever the paver is to travel around the work site.

## **ON-BOARD SHUT DOWN SYSTEM**

THE 1750 C IS EQUIPPED WITH THE FOLLOWING SHUTDOWN SYSTEMS.

1. **Low Oil Pressure** Engine RPM and oil pressure are continuously monitored by your on-board processing system. If the relationship between engine RPM and oil pressure moves outside of the safe operating range, the engine will shut down. You will see the oil pressure icon illuminated and the STOP light will be flashing. If this should occur, return the throttle control to the idle position and restart. The paver will only operate at idle which will allow you to move the paver to a safe parking location for engine servicing.
2. **Temperature** The engine coolant temperature warning icon will flash at 221 degrees, at 232 degrees the STOP light will illuminate, and at 239 degrees the paver will shut down. The paver is unable to be restarted until the engine temperature has cooled down to a safe operating range.
3. **Low Fuel** When the last bar of the fuel gage goes off the square green light behind the FUEL LEVEL icon will begin to flash, if the paver continues to operate after the FUEL LEVEL icon began to flash the STOP light will illuminate. After the STOP light has illuminated, the engine will only operate for another 10 minutes and then shut down. You will see the FUEL LEVEL icon flashing and the STOP light will be illuminated. If needed turn the ignition switch to the OFF position and restart. The paver will run another 10 minutes and then shut down. This feature prevents the need to prime injectors in the event the fuel tank is run until empty.

**CAUTION:** ONLY RESTART THE PAVER WITHOUT RE-FUELING TO MOVE THE PAVER OUT OF A DANGEROUS POSITION.

**WARNING:** THE PAVER WILL ONLY RESTART AFTER FUEL SHUT DOWN OCCURS A LIMITED NUMBER OF TIMES. **CONTINUOUS RESETTING OF THE TEN MINUTE TIMER WILL RESULT IN A MAJOR TIME LOSS.** INJECTOR ACCESS REQUIRES REMOVAL OF THE ENGINE ACCESS DOOR AS WELL AS THE ENGINE COMPARTMENT COVER.

## OPERATIONAL CONTROLS

Each operator's station on the 1750-C contains one of these switch panels. They are identical from side to side. To simplify what you are looking at, we break these down into three main sections. There is a Left Hand Material Feed section, a Right Hand Material Feed section, and a Central Function section.



## NAVIGATING THE OPERATORS STATION

The operator's stations are divided into 3 main sections, (see photo below).

### Left Hand Material Feed



### Central Functions



### Right Hand Material Feed



The Switches perform the following functions:

### 1.0 Left Hand Material Feed section

#### LH AUGER SYSTEM:

AUTO / MAN	Runs LH auger in auto or manual mode.
IN / OUT	Augers material to extensions or center of paver, <i>(for retracting extensions)</i>
HEAD of MATERIAL	controls the amount of material in front of the screed, <i>(left hand side only)</i>
LH EXTENSION	controls in and out of extension
LH CONVEYOR	run conveyor manually or with the auto augers

## 2.0 Central Function section

HOPPER	Controls the opening and closing of the hopper sides
SCREED	Raises and lowers screed
VIBRATOR - on/off	Vibrator only runs when paver is moving forward, <i>(vibrator icon will illuminate on the main control panel signaling that power is enabled to the vibrator).</i>

## 3.0 Right Hand Material Feed section

### RH AUGER SYSTEM:

AUTO / MAN	Runs RH auger in auto or manual mode.
IN / OUT	Augers material to extensions or center of paver, <i>(for retracting extensions)</i>
HEAD of MATERIAL	Controls the amount of material in front of the screed, <i>(right hand side only)</i>
RH EXTENSION	Controls in and out of extension
RH CONVEYOR	Runs RH conveyor manually or with the auto augers

## **MATERIAL FEED OPERATION**

The 1750-C allows you to configure the operation of the paver to best match the abilities of your paving crew. The OPERATOR SELECTOR switch at the Main Control panel enables you to set up for either one operator controlling all material feed functions **OR** two operators each controlling the material feed functions for their side of the paver. The paver may be operated in Automatic mode Manual mode or Semi Automatic mode.

### **AUTOMATIC MATERIAL FEED OPERATION**

**SETUP A** One operator at the **Left Hand Station controls ALL feed systems** for both sides of the paver, the Right Hand Station has control of the Central Functions and LH & RH Extensions.

- 1.0 Go to the MAIN CONTROL PANEL
- 2.0 At the Operator Selector Switch select: LEFT ONLY
- 3.0 Go to the LH OPERATORS STATION
- 4.0 At the LH AUGER SYSTEM set switches to AUTO & OUT
- 5.0 Set the LH CONVEYOR to AUTO
- 6.0 At the Main Control Panel look for the LH Auger Icon to be illuminated
- 7.0 At the RH AUGER SYSTEM set switches to AUTO & OUT
- 8.0 Set the RH CONVEYOR to AUTO
- 9.0 At the Main Control Panel look for the RH Auger Icon to be illuminated

Congratulations, the paver is now set to automatically maintain a consistent Head of Material across the entire width of the screed. If you do not have a satisfactory Head of Material as you start to pave simply adjust the HEAD of MATERIAL setting for more or less asphalt.

**IMPORTANT:** Adjustments made to the HEAD of MATERIAL switch reset to the default every time the paver is shut down. (See section on Sonic Augers for more information about the default setting)

**SETUP B** One operator at the **Right Hand Station controls ALL feed systems** for both sides of the paver, the Left Hand Station has control of the Central Functions and LH & RH Extensions.

- 1.0 Go to the MAIN CONTROL PANEL
- 2.0 At the Operator Selector Switch select: RIGHT ONLY
- 3.0 Go to the RH OPERATORS STATION
- 4.0 Follow same procedure from **SETUP A** starting at Item #4

**SETUP C** One operator at the **Left Hand Station controls LEFT HAND feed systems** and a second operator at

the **Right Hand Station controls Right HAND feed systems**. In this set up both stations can control the Central Functions.

- 1.0 Go to the MAIN CONTROL PANEL
- 2.0 At the Operator Selector Switch select: DUAL OPERATORS
- 3.0 Go to the LH OPERATORS STATION
- 4.0 At the LH AUGER SYSTEM set switches to AUTO & OUT
- 5.0 Set the LH CONVEYOR to AUTO
- 6.0 At the Main Control Panel look for the LH Auger Icon to be illuminated
- 5.0 Go to the RH OPERATORS STATION
- 7.0 At the RH AUGER SYSTEM set switches to AUTO & OUT
- 8.0 Set the RH CONVEYOR to AUTO
- 9.0 At the Main Control Panel look for the RH Auger Icon to be illuminated

## MANUAL MATERIAL FEED OPERATION

The 1750-C material feed system may also be run in manual mode instead of automatic. It is recommended that operators less familiar with automatic feeding controls may want to use the manual mode for the first several hours of operation to become familiar with the other controls and operation.

The setup procedure is nearly identical to the setup for the automatic mode. There are the same three setup choices; LEFT ONLY control, RIGHT ONLY control, or DUAL OPERATORS control.

**SETUP A** One operator at the **Left Hand Station controls ALL feed systems** for both sides of the paver, the Right Hand Station has control of the Central Functions and LH & RH Extensions..

- 1.0 Go to the MAIN CONTROL PANEL
- 2.0 At the Operator Selector Switch select: Left Only
- 3.0 Go to the LH OPERATORS STATION
- 4.0 At the LH AUGER SYSTEM set switches to MAN & OUT
- 5.0 Set the LH CONVEYOR to MAN  
**[NOTE]** At the Main Control Panel LH Auger Icon will **NOT** be illuminated]
- 6.0 At the RH AUGER SYSTEM set switches to MAN & OUT
- 7.0 Set the RH CONVEYOR to MAN  
**[NOTE]** At the Main Control Panel LH Auger Icon will **NOT** be illuminated]

Congratulations, the paver is now set for manual control of the Head of Material across the entire width of the screed. If you do not have a satisfactory Head of Material as you start to pave simply adjust the CONVEYORS and AUGERS between MAN and OFF, (the center position), for more or less asphalt.

**SETUP B** One operator at the **Right Hand Station controls ALL feed systems** for both sides of the paver, the Left Hand Station has control of the Central Functions and LH & RH Extensions..

- 1.0 Go to the MAIN CONTROL PANEL
- 2.0 At the Operator Selector Switch select: Right Only
- 3.0 Go to the RH OPERATORS STATION
- 4.0 Follow same procedure from **SETUP A** starting at Item #4

**SETUP C** One operator at the **Left Hand Station controls LEFT HAND feed systems** and a second operator at the **Right Hand Station controls Right HAND feed systems**. In this set up both stations can control the Central Functions.

- 1.0 Go to the MAIN CONTROL PANEL
- 2.0 At the Operator Selector Switch select: DUAL OPERATORS
- 3.0 Go to the LH OPERATORS STATION
- 4.0 At the LH AUGER SYSTEM set switches to MAN & OUT
- 5.0 Set the LH CONVEYOR to MAN  
[**NOTE** At the Main Control Panel LH Auger Icon will **NOT** be illuminated]
- 6.0 Go to the RH OPERATORS STATION
- 7.0 At the RH AUGER SYSTEM set switches to AUTO & OUT
- 8.0 Set the RH CONVEYOR to AUTO  
[**NOTE** At the Main Control Panel LH Auger Icon will **NOT** be illuminated]

## **SEMI AUTOMATIC MATERIAL FEED OPERATION**

The 1750-C material feed system also offers a very convenient hybrid between the fully automatic and the fully manual modes, known as the semi automatic mode. In semi automatic mode the operator only needs to adjust the CONVEYOR switch between MAN and OFF, the auger will copy whatever the conveyor is doing. Operators will find this convenient, only one switch to control both conveyor and auger on/off.

To set up the semi automatic mode, follow one of the setups for manual mode, (A, B, or C), as outlined above. The only difference is the LH & RH AUGER SYSTEMS should be set to AUTO & OUT.



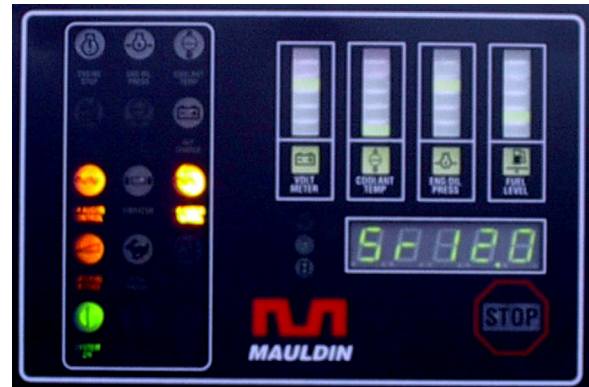
## SONIC AUGERS

The automatic material feed system makes use of sonic sensors. The sonic sensor is a **"non-contacting"** sensing switch that works by sending sound waves to the ground then sensing the rebound time of the sound wave. The sensor measures distance by the time it takes to receive the rebound. Using sonic sensors you will have great material flow control to the front of the screed. Unlike switches that are either in the mix or physically connected to the mix, sonic sensing will allow you to maintain the amount of material that you prefer on the end of the screed, regardless of adverse paving conditions.

The sonic sensors are black cylinders and are installed in holders on the screed end gate, they will have a twist on coil cord which runs towards the operators console and hooks into a receptacle labeled "sonic sensor". The 1750-C sonic auger system has a built in diagnostic tool located in the main control panel LED readout. Before going any further make sure you have followed one of the Automatic Material Feed Operation setups.

Go to the Main Control Panel and scroll through the LED readout by activating the DISPLAY TOGGLE switch. Stop when the LED on the control panel reads "SL 12.0". This stands for sonic **S**etting **L**eft. When this is displayed go to an operator's station and locate the "HEAD OF MATERIAL" switch push down and the "SL" number will increase and push up and the "SL" number will decrease.

**IMPORTANT:** Whenever the paver is started the **SL** will always return to the **"12.0"** default setting.



Activate the DISPLAY TOGGLE one more time and the LED on the control panel reads "SR 12.0". This stands for sonic **S**etting **R**ight. All functions are identical to the above information regarding **"SL"**.

Activate the DISPLAY TOGGLE one more time and the LED on the control panel reads **"DL---**" in 3 seconds the readout will change to **"Dr---**". The readout will continue to alternate between these two, this is normal. These readouts stand for **D**istance **L**eft and **D**istance **r**ight.



**IMPORTANT:** If the engine is running at this point, **SHUT IT DOWN** before proceeding. The ignition switch should be in the on position, but the engine must be off!



At the Main Control Panel activate the PAUSE / RESUME switch, verify that the yellow Pause Light stops flashing. Now your LED should be reading something between "DL 20.0" and "DL 15.0" and in 3 seconds "Dr 20.0" to "Dr 15.0".



- **INITIAL SETUP** If the paver has not been paving, then this reading should be closer to 18.0 - 20.0
- **AFTER OPERATING** If the paver has been paving, asphalt may be built up on the augers. (This build up may be enough for the sonic sensor to pick up a reading at this height rather than the ground). If you are getting a reading outside of this range, verify the following:

**1.0** Is the screed fully down and resting on a flat surface?

**2.0** Is the sonic sensor fully seated in the mounting bracket?

**3.0** By using a tape measure, does the distance from the bottom face of the sensor to the flat surface that the screed is resting on match what is displayed on your readout?

**3.1** If these distances do not match, set your tape to the measurement that the readout is showing. Align your tape measure with the bottom face of the sonic sensor. The item that the sensor is "picking up" is located somewhere at the end of the tape measure.

Your LED readout is showing you the distance from the bottom face of the sonic sensor to the ground, with no asphalt this should be approximately 18.5 inches. As you add asphalt to the front side of the screed this reading will decrease. Once the pile of asphalt measures 6.5 inches the "DL" will read "12.0", this would then equal the default "SL" setting and the feed system would automatically shut off.

**IMPORTANT:** If the sonic sensor bracket has been inadvertently repositioned, the sensor may pick up a reading from the auger flighting, or from the back of the tractor. This will cause the "DL" to read more like 7.0 - 12.0. If this is occurring, remove sensor from bracket, try to identify what is the obstruction, and with a pry bar "tweak" the direction of the bracket away from the obstruction.

**NOTE:** The operator can change material flow at any time. The LED readout does not need to be displaying sonic diagnostic information.

Should the display become disabled, ALL PAVING FUNCTIONS continue to operate as normal, minus any readout information.

As an operator the "SL" & "Sr" readouts are beneficial in setting the paver up for the specific screed width and the corresponding head of material settings, before paving commences.

**CAUTION:** BE SURE TO REMOVE SONIC SENSORS FROM THE PAVER EACH NIGHT. STORE WITH THE IGNITION KEY. THESE ARE VALUABLE PARTS TO LEAVE UNATTENDED OVERNIGHT.

## **SYMPHONY SCREED ®**

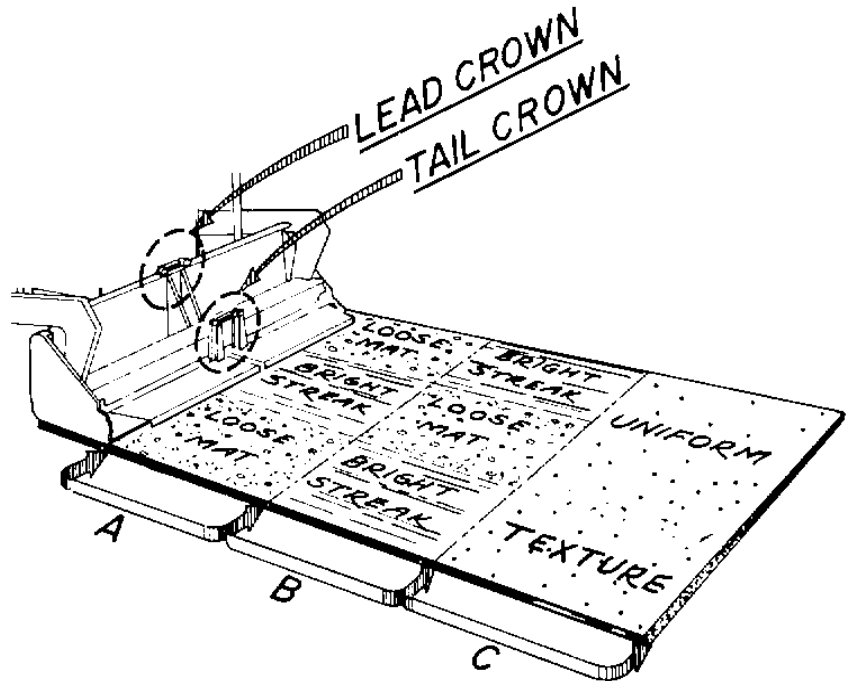
### **SCREED CROWN CONTROL SYSTEM**

Screed crown setting is a crucial adjustment on any screed. The following troubleshooting diagram displays the effects of crown adjustments on the finished mat. Make sure that you have followed the Pre-paving Crown setting procedure as outlined on the following page.

**Area "A"**  
**Lead Crown is too High**

**Area "B"**  
**Lead Crown is too Low**

**Area "C"**  
**Correct Adjustment**



### **SCREED HEATING SYSTEM**

The new Symphony Screed ® has one burner in each extension and four main screed burners. The proper way to light the burner system is the following procedure.

1. Make sure all shutoff valves are in the off position and lighting wand is off.
2. Turn on gas at tank, and set gauge pressure between 8 – 10 pounds.
3. Light the lighting wand
4. Turn on the gas to the extensions. One at a time.
5. Quickly point the lighting wand at the circular hole pattern drilled into the screed extensions to ignite.
6. The extension burners will have changed from a hissing noise to a roaring noise confirming ignition.
7. After extension burners are lit, turn on gas to the main screed.
8. Quickly light each of the outer burners on the main screed. The inner burner will light off the outside burner.

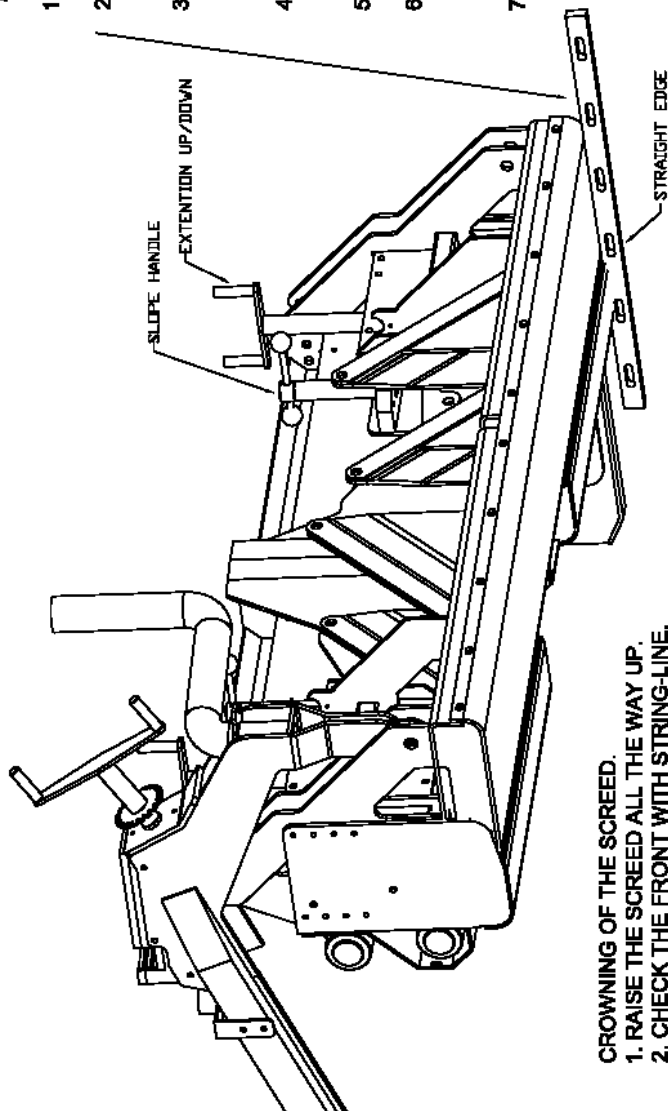
**Only use burners for ten minutes at any given time. Damage to screed plate will occur.**

## TO SET CROWN AND SLOPE FOR SCREED OPERATION.

SETTING THE SLOPE OF THE EXTENSIONS.

\*ALWAYS SET CROWN BEFORE SETTING SLOPE.

1. RUN THE EXTENSIONS ALL THE WAY IN.
2. USE SLOPE HANDLE TO VISUALLY ALIGN THE EXTENSIONS WITH THE SCREED PLATE.
3. LINE UP A STRAIGHT EDGE ON THE SCREED PLATE, FRONT TO BACK OF THE MACHINE AT THE OUTER EDGE OF THE SCREED PLATE.
4. USE THE UP/DOWN HANDLE TO SET THE EXTENSION TRAILING EDGE TO TOUCH THE STRAIGHT EDGE.
5. REPEAT STEPS 3&4 ON THE OTHER SIDE.
6. RUN A STRING LINE FROM THE OUTER EDGES OF THE EXTENSIONS AND LINE UP THE EXTENSIONS USING THE SLOPE HANDLES.
7. USE UP/DOWN HANDLES TO SET EXTENSION HEIGHT FOR OPERATION. (DO THIS WHILE PAVING, EXTENSIONS WILL NEED TO GO DOWN).



CROWNING OF THE SCREED.

1. RAISE THE SCREED ALL THE WAY UP.
2. CHECK THE FRONT WITH STRING-LINE.
3. SET FRONT CROWN TO 1/4" - 3/8" CROWN.
4. SET REAR TO STRAIGHT LINE.
5. RECHECK FRONT AND REAR CROWN.



**MAULDIN®**  
**PAVING PRODUCTS**

## **SETTING THE SYMPHONY® TO PAVE**

The procedure on the previous page was set on your Symphony® Screed before leaving the factory. At that time markings were installed on to the screed so that you can quickly return all the settings of the Symphony® to this position. It is strongly recommended that before initial start up you follow this procedure and check the setting markings.

### **BEFORE YOU PAVE WITH THE SYMPHONY®**

Screed must be elevated a distance equal to the desired mat depth plus enough extra height to allow for compaction. To achieve this, the most popular methods are; an asphalt pad and starting blocks.

- Starting Blocks – a 2.5" thick starting block is a good starting block for a finished mat of 2 inches
- Compacted Asphalt Pad – a starting block equal to the amount of compaction will be required.
- Non-Compacted Asphalt Pad – just lower the screed fully onto pad, no starting block required.

Starting blocks should be at least as long as the front to rear dimension of the screed plate. They should be placed lengthwise in the direction of travel, directly below the screed depth cranks.

### **Nulling The Screed & Setting Angle of Attack**

This is the adjustment of the screed to the perfectly flat position on either the starting blocks or the asphalt pad. To null the screed follow this procedure:

1. Lower screed **completely** onto starting surface, (blocks or pad).
2. Rotate the cranks until you locate the position of free movement. This is a limited area where the depth cranks will both rotate freely in either direction. This is the nulled position.
3. Rotate thickness screw two full rotations, (in the thicker direction). Start paving and make adjustments as required.

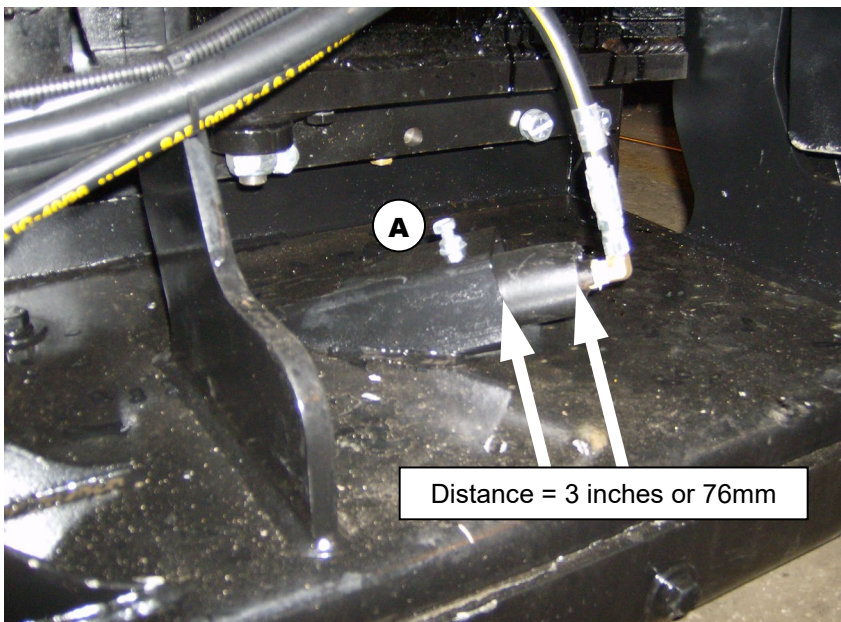


## SILVER-16 SCREED HEATING SYSTEM

### POSITION SETTING FOR THE MAIN SCREED BURNERS

Before attempting to light the propane heating system, first verify that the burners are correctly installed in the screed housings. The body of the burner is secured into the housing via a bolt and jam nut, **A**.

If repositioning is required these will have to be loosened, the burner repositioned and then locked down to prevent movement of the burner within the housing. Proper positioning is illustrated to the right.



### LIGHTING PROCEDURE

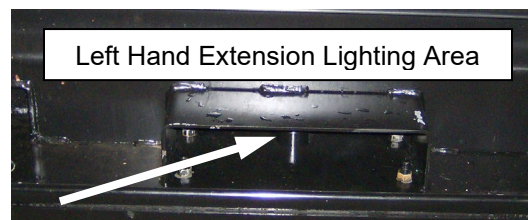
Set Pressure regulator to **4 pounds**, (you may need to open a valve to see the pressure drop).

Remove hand lighting torch, **B**, turn on gas, & light with a safety striker.



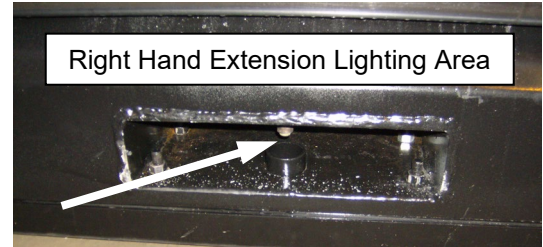
Turn on gas to LH extension and point hand torch at lighting area as shown.

Verify ignition and a clean burn before moving on to next step.



Turn on gas to RH extension and point hand torch at lighting area as shown.

Verify ignition and a clean burn before moving on to next step.



With extension burners operating, turn on gas to main screed burners and point hand lighting torch at the lighting area.

**VERY IMPORTANT** – First light the inboard burners, then light the outboard burners.



Preheat Screed at the 4 pound setting until screed has established a clean burning flow of air, (this is between 3 – 5 minutes depending on outside air temperature).

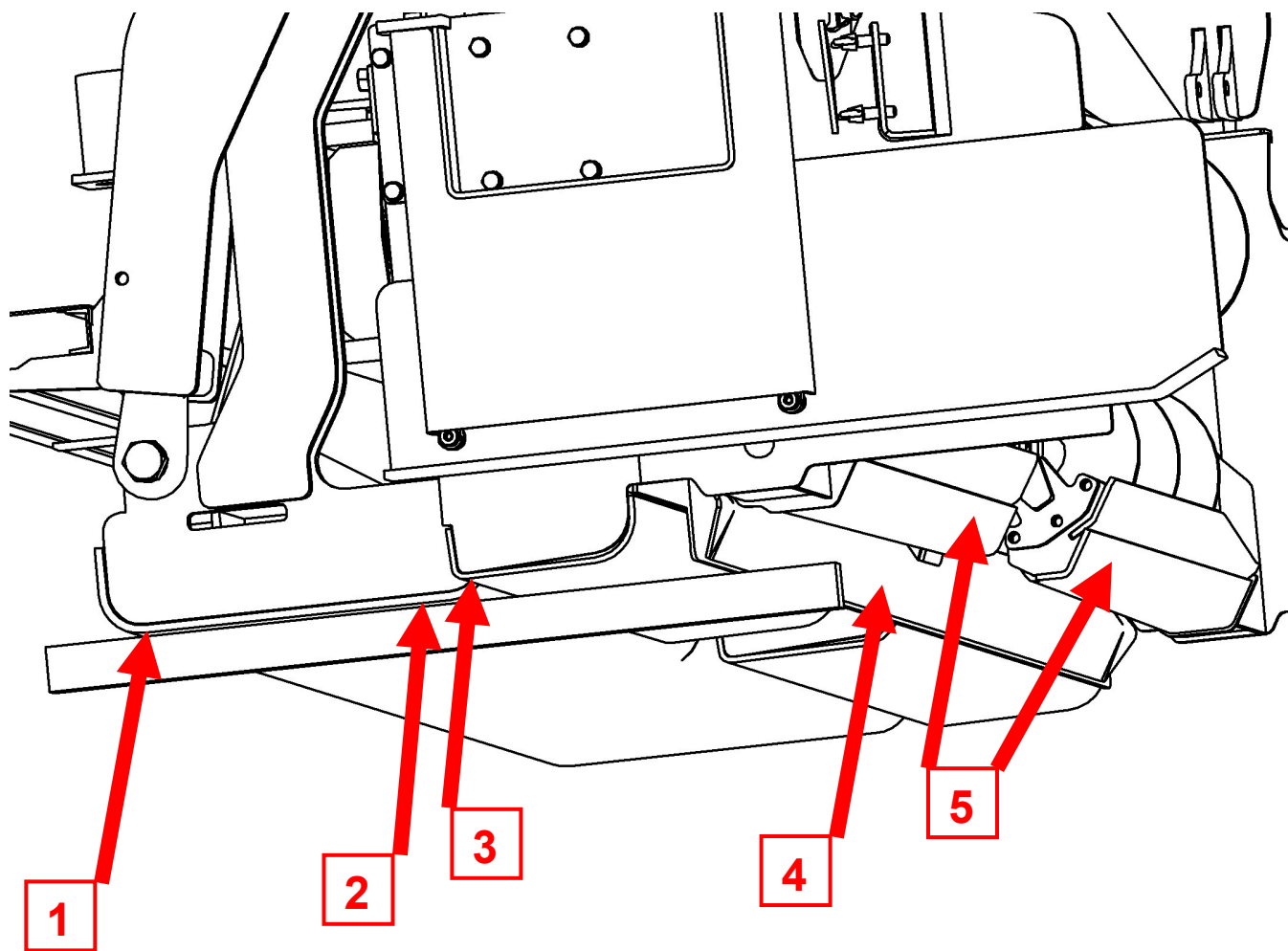
After preheat, turn the regulated pressure up to 7 – 9 pounds for approximately ten minutes.

If extended burner operation is required, reset the regulated pressure to 4 pounds.





## **SILVER-16 SCREED COMPONENTS**



- 1. Main Screed Trailing Edge**
- 2. Main Screed Leading Edge**
- 3. Extension Trailing Edge**
- 4. Pre-Strike Off**
- 5. Auger Feed Tunnels**



## **SILVER-16 SCREED CROWN SETTING**

1. Adjust tow point cylinders to a setting that exposes an equal amount of the cylinder rod on each cylinder. Lower screed onto a flat surface, find the null position of the screed depth handles by adjusting them until they are free and not in tension.
2. Raise screed and run a string across the leading edge of the main screed bottom, as close as possible to the bullnose of the screed plate, and adjust the forward ratchet jack until there is a slight gap (approximately 1/16") between the screed plate and the string.

**\*String MUST be on the flat portion of the screed, not on the radius portion\***

3. Place the string across the trailing edge of the main screed bottom, near the rear curvature of the screed plate, and adjust the rear ratchet jack until the screed plate just touches the whole length of the string. Pull the string away, at one end, and bring it back to verify that it contacts the entire length at the same time.

**\*String MUST be on the flat portion of the screed, not on the radius portion\***

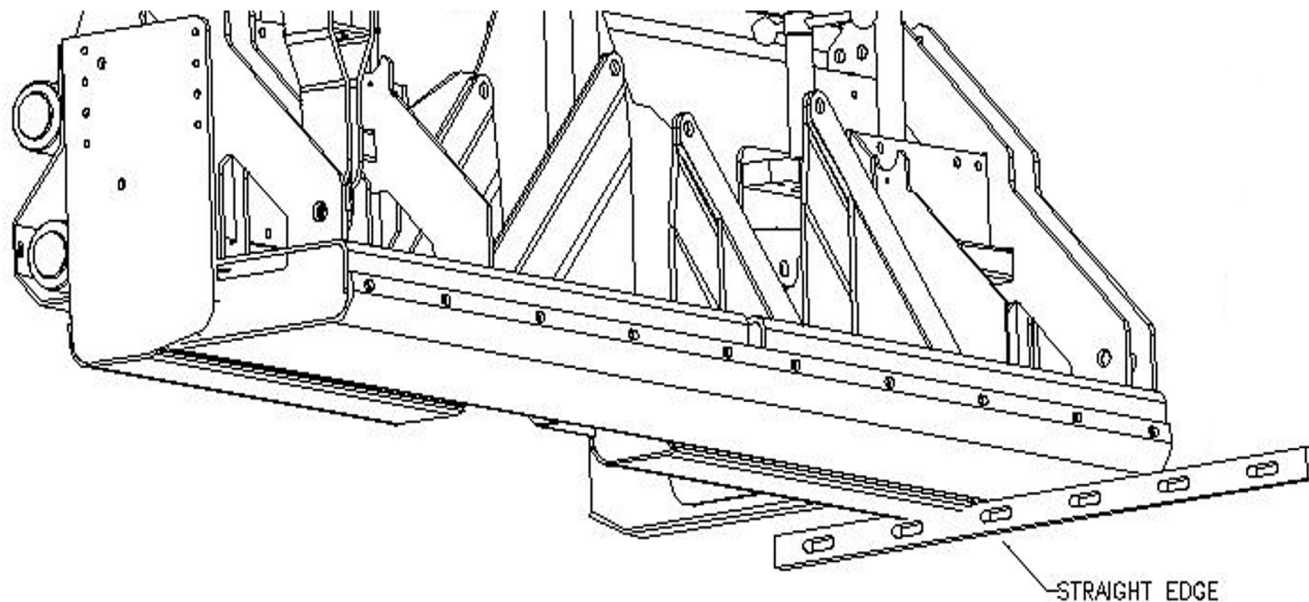
4. Place the string across the leading edge and double check the gap between the screed bottom and the string. Re-adjust the forward ratchet jack as necessary to obtain the 1/16" gap between the string and screed plate.
5. Place the string across the trailing edge and double check the gap between the screed bottom and the string. Re-adjust the rear ratchet jack as necessary to verify the screed plate just touches the whole length of the string.
6. Repeat steps 4 and 5 until no adjustments are required.



## ***Crown Definition:***

Manipulation of the ratchet jacks to deflect the screed bottom, in order to produce the desired mat texture and profile.

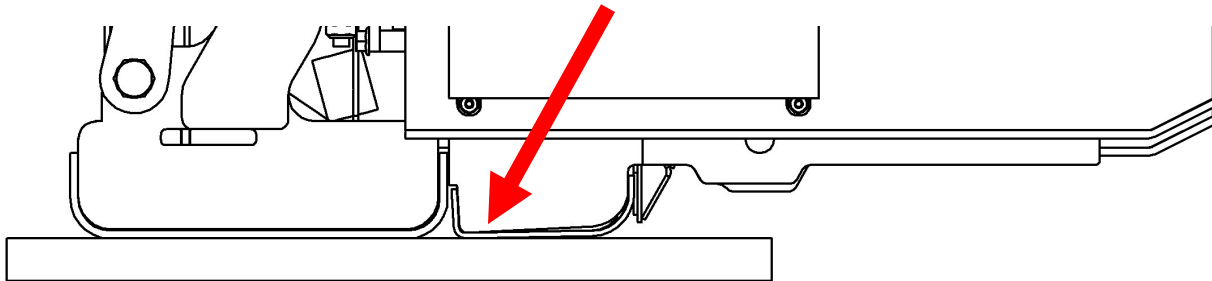
Optimum performance achieved when screed has very minor positive crown.



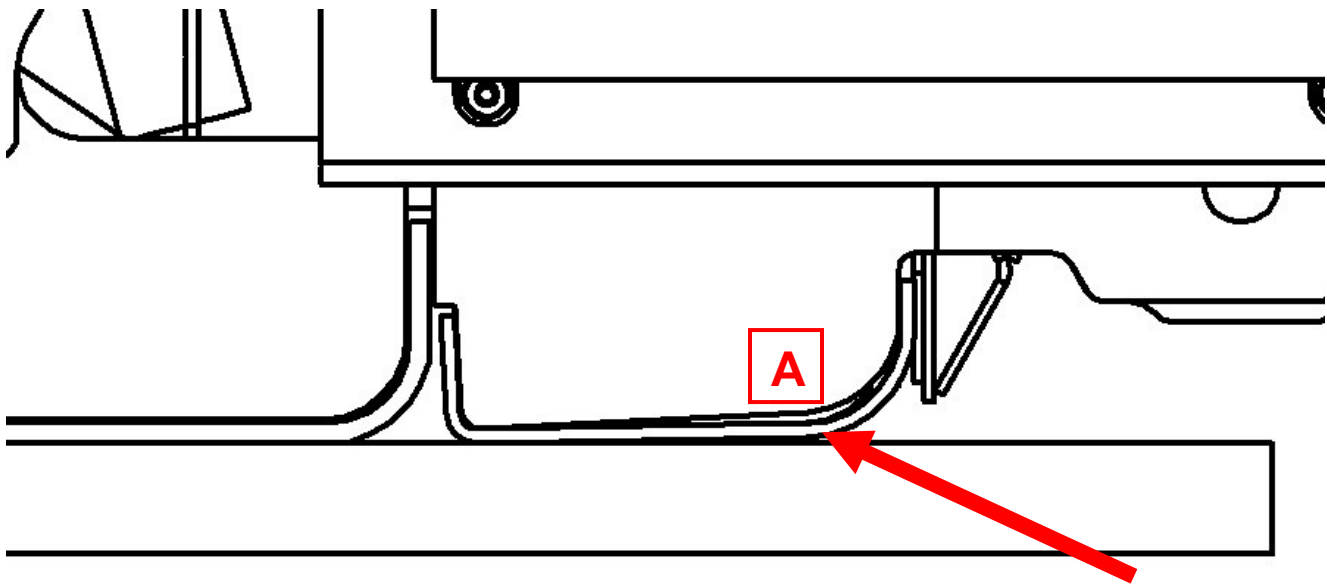


## **SILVER-16 SCREED EXTENSION SETTING**

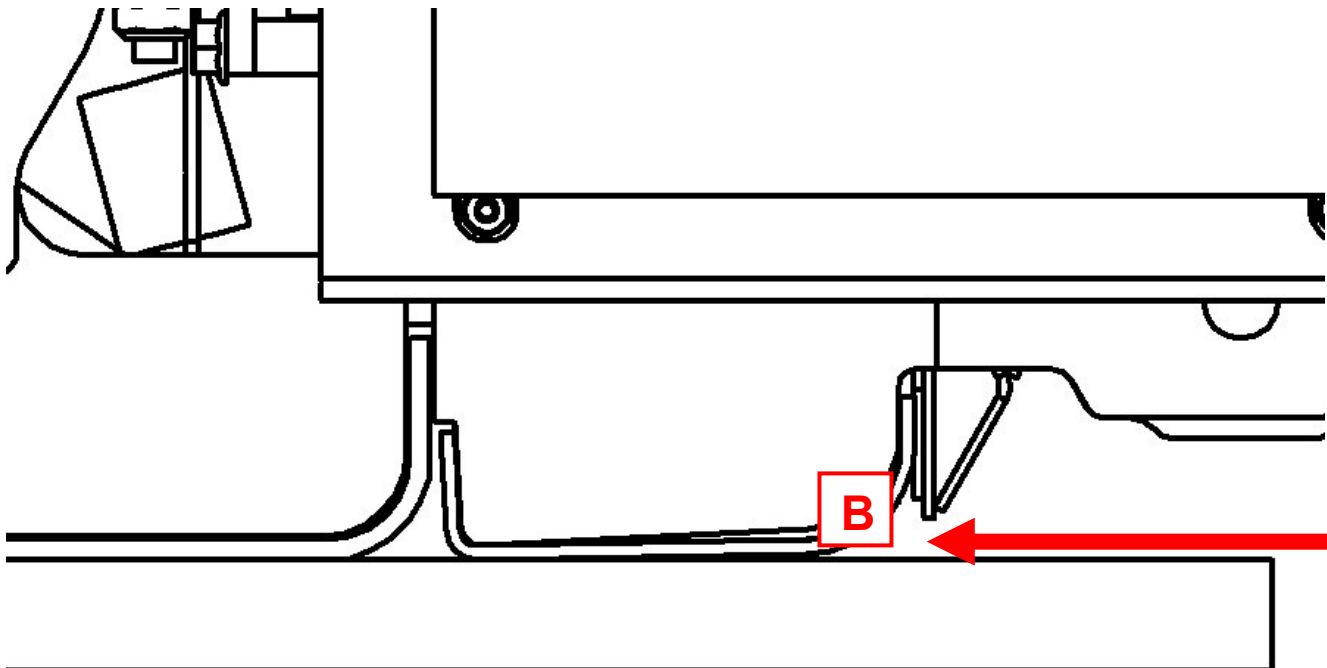
7. **SET MATCH HEIGHT** - With the extensions completely closed, adjust the screed extension match height setting, until the extension screed plate trailing edge just touches a straight edge held against the main screed bottom at the outside edge, oriented in forward to rearward direction as shown.



8. **SET EXTENSION SLOPE** - With the extensions completely closed, run a string across the entire trailing edge of the screed extension bottoms. Adjust the slope ratchet style handles until the screed extension bottoms are above the string, both sides, looking at the inboard edge of the extension bottoms. Then, reverse direction on the slope ratchet handle and lower the inboard edges until they are just contacting the string.
9. **SET EXTENSION ANGLE OF ATTACK** - Measure the distance marked "A". This is the extension angle of attack measurement and should be originally set at  $\frac{1}{4}$ " above the straight edge. Make the first measurement with extension fully retracted, then second measurement with extension fully extended. To adjust angle, fully extend the extension. Two adjusters are located on the top side of extension bottoms, one inboard and one outboard. Release the jam nuts and turn adjusters to desired  $\frac{1}{4}$ " setting. Clockwise for increased angle. To decrease angle, adjust counter-clockwise PLUS collapse jam nut to pull bottom upward into new position.



- 10. MEASURE PRE-STRIKE OFF** – You **MUST** have completed steps 7 – 9 before attempting to set the Pre-Strike Off! Position Straight edge as shown, 12" from the outer edge of the main screed plate. Measure the distance marked "**B**". Both sides of the Pre-Strike Off are vertically adjustable, so you will need one measurement 12" in from the right hand edge and another measurement 12" in from the left hand edge. The gap between the straight edge and the bottom of the Pre-Strike Off should be  $\frac{3}{4}$ " minimum to 1" maximum. For lifts of 5" – 6" this setting may need to be increased.



- 11. UNLOAD PRE-STRIKE OFF** – Fully extend both extensions. SLOWLY, lower the screed onto a block that has been placed directly underneath the Pre-Strike Off. From the top side you will be able to see the Pre-Strike Off mount ride up in its slotted mounting on either side of the top walk board. As soon as you see this slotted mount come into view stop the hydraulic lowering of the screed.
- 12. ADJUST PRE-STRIKE OFF** – To adjust the Pre-Strike Off raise the center walk board of the screed exposing the cam style adjustment for each side. First loosen the jam nut on the “locator” bolt, then fully remove the “locator” bolt. Second, rotate the “cam” bolt, clockwise to raise the Pre-Strike Off. Reinstall “locator” bolt, tighten jam nut.

**From this Initial Factory Setting of the screed you will need to make a match height adjustment in the down direction when you start paving.**



## **SETTING THE SILVER-16 TO PAVE**

The procedure on the previous pages was set on your Silver-16 Screed before leaving the factory. It is strongly recommended that before initial start up you follow this procedure and check the settings.

### **BEFORE YOU PAVE WITH THE SILVER-16**

Screed must be elevated a distance equal to the desired mat depth plus enough extra height to allow for compaction. To achieve this, the most popular methods are; an asphalt pad and starting blocks.

- Starting Blocks – a 2.5” thick starting block is a good starting block for a finished mat of 2 inches
- Compacted Asphalt Pad – a starting block equal to the amount of compaction will be required.
- Non-Compacted Asphalt Pad – just lower the screed fully onto pad, no starting block required.

Starting blocks should be at least as long as the front to rear dimension of the screed plate. They should be placed lengthwise in the direction of travel, directly below the screed depth cranks.

### **Nulling The Screed & Setting Angle of Attack**

This is the adjustment of the screed to the perfectly flat position on either the starting blocks or the asphalt pad. To null the screed follow this procedure:

1. Lower screed **completely** onto starting surface, (blocks or pad).
2. Rotate the cranks until you locate the position of free movement. This is a limited area where the depth cranks will both rotate freely in either direction. This is the nulled position.
3. Rotate thickness screw two full rotations, (in the thicker direction). Start paving and make adjustments as required.

## **SYMPHONY® SCREED AUTOMATION SYSTEM – OPTIONAL EQUIPMENT**

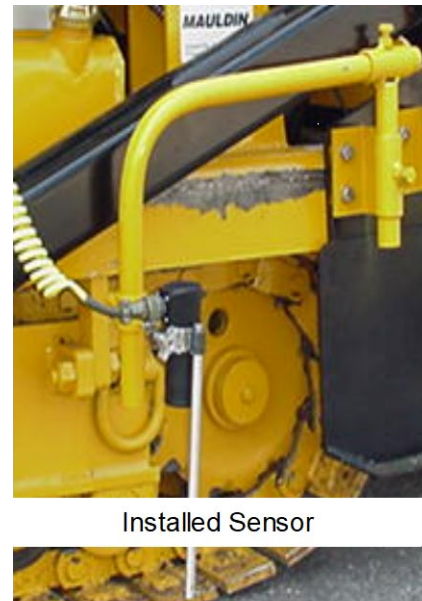
Screed Automation is available for your symphony screed, the base system comprises of one grade sensor, one connecting cable, one hand set, all the required brackets for installation, and a carry case. A second grade system, or a slope control system can be added. However, only two of these can control the screed at any given time. If you have purchased a grade, grade & slope system, the third sensor may be hooked up in a monitor only mode.



Grade Sensor with connecting cable



Handset



Installed Sensor

A single grade system eliminates manual adjustment of the thickness handle on whichever side it is installed.

### **GRADE ONLY - System set up as follows:**



**IMPORTANT:** **Key switch must be off!** Fuse failure is likely if you connect cables to the grade system with the key switch in the "on" position.





1. Place the handset into the cradle at the operator's station. Route cable over the resting bolt.
2. Plug into the paver receptacle labeled hand held on side of operator station.
3. Mount brackets to screed end gate as shown in picture above. Attach Grade Sensor to mounting bracket. Make sure the sensor has the wire "reference bale" attached. Plug one end of cable into ultra-sonic Grade Sensor, the other end into the paver receptacle labeled Grade Sensor.

At this point the system should be powered up and ready to go. If you have made any mistakes the handset will display the word "S.O.S."

### **How to operate – GRADE ONLY OPERATION:**

1. Pulling off an asphalt pad or wood boards. Screed must be at desired thickness level.
  - i. Lower screed to paving position on pad or boards.
  - ii. Adjust the Tow Point cylinders to their mid points. The tow point cylinders are controlled by toggle switches at the operator's station, extend or retract cylinders until 5 inches of cylinder rod is exposed, do this on both sides of paver.
  - iii. Adjust mounting brackets so that the sensor is properly positioned. The bottom of the "reference bale" should be 10" – 18" from the measurement surface. Sensor mounted 24" back from the tow point will produce the best smoothness results; use this setting whenever you are not matching a joint. As you position the sensor closer to the screed, reaction time will increase; just in front of the augers is a better position for joint matching.
  - iv. Ensure that the path the sensor will travel over is free of large debris; ideally it should be following some form of finished grade, curb, or adjacent asphalt mat.
  - v. Null the thickness screw. (*See screed settings if unsure of this procedure*).
  - vi. Rotate thickness screw one full rotation, (in the thicker direction).
  - vii. Lock thickness screw into position with travel locks.
  - viii. Press "CAL" button on the Handset.
  - ix. Press "AUTO" button on the Handset.
  - x. Check thickness of asphalt mat with probe. Adjust the up  or the down  on the handset as required until screed is paving required depth.

### **How to cancel & resume:**

2. Cancel Automatic operation – Be sure to do this before you lift the screed at the end of a pass.
  - i. Press "MAN" at any time to stop the automation.
3. Resume Automatic Operation – with out changing any settings, **[typical for truck change]**
  - i. Press "AUTO" button on handset
4. Resume Automatic Operation – with a change in settings, **[typical for a new pass]**
  - i. Lower screed to paving position on pad or boards.
  - \* ii. Null the thickness screw. (*See screed settings if unsure of this procedure*).
  - \* iii. Rotate thickness screw one full rotation, (in the thicker direction).
  - \* iv. Lock thickness screw into position with travel locks.
  - \* v. Press "CAL" button on the Handset.
  - vi. Press "AUTO" button on the Handset.
  - vii. Check thickness of asphalt mat with probe. Adjust the up  or the down  as required until screed is paving required depth.

\* **NOT REQUIRED WHEN CONDITIONS OF EACH PASS HAVE THE SAME STARTING POINT AND THE SAME REFERENCE POINT**

**NOTE:** Many factors can effect changes in mat thickness. For best results:

- **ALWAYS** use the full Automatic material feed system.
- **ALWAYS** keep the paver moving at the same speed, (use Pave/Resume to maintain perfect speed).
- **NEVER** let the screed run out of asphalt.
- **ALWAYS** keep the path of the sensor clear. Any asphalt spills that the sensor travels over will cause an erroneous reaction. Crew working with shovels around the sensor can also cause erroneous reactions.

**GRADE & GRADE OPERATION – Same as above for the other side of screed.**

**SLOPE ONLY - System set up as follows:**



1. Install Slope mounting beam with brackets provided to the two operator control stand bases.
2. Place the handset into the cradle at the operator's station. Route cable over the resting bolt. Plug into the into the paver receptacle labeled hand held on side of operator's consoles.
3. Mount slope sensor to mounting beam with the two bolts provided.
4. Plug connecting cable into the paver receptacle labeled slope sensor on side of operator's consoles. Plug other end into the slope sensor. Use RH plug to match RH operators station, vice versa for LH control.

At this point the system should be powered up and ready to go. If you have made any mistakes the handset will display the word "S.O.S."

**How to operate – SLOPE ONLY OPERATION:**

1. Pulling off an asphalt pad or wood boards. Screed must be at desired thickness **& slope** levels.
  - i. Adjust the Tow Point cylinders to their mid points. The tow point cylinders are controlled by toggle switches at the operator's station, extend or retract cylinders until 5 inches of cylinder rod is exposed, do this on both sides of paver.
  - ii. Ensure that the slope sensor is positioned level on the slope beam.
  - iii. Lower screed onto a level surface with **ZERO %** slope.
  - iv. At the same time press and hold for 3 seconds "MAN" & "AUTO". This will reset the slope sensor to the default/zero position.
  - v. Lower screed to paving position on pad or boards. This screed should be resting in a position that has the screed at both the desired thickness as well as the desired slope.
  - vi. Null the thickness screw. *(See screed settings if unsure of this procedure).*
  - vii. Rotate thickness screw two full rotations, (in the thicker direction).
  - viii. Lock thickness screw into position with travel locks.
  - ix. Press "CAL" button on the Handset. At this point the slope sensor will be reading out the actual slope percentage the screed is resting at. If at the desired slope % you may continue. Otherwise, return to step "v." and correct your asphalt pad.
  - x. Press "AUTO" button on the Handset. The word AUTO will become illuminated.
  - xi. Check the slope of asphalt mat with a measuring device. Adjust the up ↑ or the down ↓ on the handset as required until screed is paving required slope.



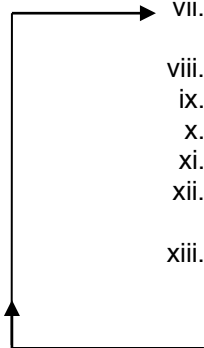
### How to cancel & resume:





2. Cancel Automatic operation – Be sure to do this before you lift the screed at the end of a pass.
  - viii. Press “MAN” at any time to stop the automation.
3. Resume Automatic Operation – with out changing any settings, **[typical for truck change]**
  - ix. Press “AUTO” button on handset
4. Resume Automatic Operation – with a change in settings, **[typical for a new pass]**
  - x. Lower screed to paving position on pad or boards.
  - xi. Null the thickness screw. *(See screed settings if unsure of this procedure).*
  - xii. Rotate thickness screw one full rotation, (in the thicker direction).
  - xiii. Lock thickness screw into position with travel locks.
  - xiv. Press “CAL” button on the Handset.
  - xv. Press “AUTO” button on the Handset.
  - xvi. Check the slope of asphalt mat with a measuring device. Adjust the up ↑ or the down ↓ on the handset as required until screed is paving required slope.

### How to operate – GRADE & SLOPE OPERATION:



When running grade & slope, you must first decide which side of the screed is to control grade, (or thickness), and which side of screed is to maintain a certain slope, given the grade maintained on the opposite side. The following procedure assumes that grade is maintained on the RH side of the screed and slope is maintained on the LH side of the screed.

1. Pulling off an asphalt pad or wood boards. Screed must be resting at desired mat thickness on the RH side, from there the mat should taper, (up or down), to the desired slope percentage on the LH side.
  - i. Adjust the Tow Point cylinders to their mid points. The tow point cylinders are controlled by toggle switches at the operator’s station, extend or retract cylinders until 5 inches of cylinder rod is exposed, do this on both sides of paver.
  - ii. Ensure that the slope sensor is positioned level on the slope beam, and equally spaced into the centerline of paving.
  - iii. Lower screed onto a level surface with **ZERO %** slope.
  - iv. At the LH station use the hand held remote and at the same time press and hold for 3 seconds “MAN” & “AUTO”. This will reset the slope sensor to the default/zero position.
  - v. With the grade sensor installed on the RH side, adjust mounting brackets so that the sensor is properly positioned. Grade Sensor mounted 24” back from the tow point will produce the best smoothness results; use this setting whenever you are not matching a joint. As you position the sensor closer to the screed, reaction time will increase; just in front of the augers is a better position for joint matching.
  - vi. Ensure that the path the sensor will travel over is free of large debris; ideally it should be following some form of finished grade, curb, or adjacent asphalt mat.
  - vii. Lower screed to paving position on pad or boards. This screed should be resting in a position that has the screed at both the desired thickness as well as the desired slope.
  - viii. Null the thickness screw. *(See screed settings if unsure of this procedure).*
  - ix. Rotate thickness screw one full rotation, (in the thicker direction).
  - x. Lock thickness screw into position with travel locks.
  - xi. At the RH station use the hand held remote and press “CAL” button on the Handset.
  - xii. At the RH station use the hand held remote and press “AUTO” button on the Handset. The word AUTO will become illuminated. The RH station is now in Auto mode to maintain grade.
  - xiii. At the LH station use the hand held remote and press “CAL” button on the Handset. At this point the slope sensor will be reading out the actual slope percentage the screed is resting at. If at the desired slope % you may continue. Otherwise, return to step “vii.” and correct your asphalt pad.
  - xiv. Press “AUTO” button on the Handset. The word AUTO will become illuminated. The LH station is now in Auto mode to maintain slope.



- xv. Check thickness of asphalt mat with probe. Adjust the up  or the down  as required until screed is paving required depth.
- xvi. Check the slope of asphalt mat with a measuring device. Adjust the up  or the down  on the handset as required until screed is paving required slope.

**How to cancel & resume:**

- 2. Cancel Automatic operation – Be sure to do this before you lift the screed at the end of a pass.
  - xvii. Press “MAN” at any time to stop the automation.
- 3. Resume Automatic Operation – with out changing any settings, ***[typical for truck change]***
  - xviii. Press “AUTO” button on handset
- 4. Resume Automatic Operation – with a change in settings, ***[typical for a new pass]***
  - xix. Lower screed to paving position on pad or boards.
  - xx. Null the thickness screw. (*See screed settings if unsure of this procedure*).
  - xxi. Rotate thickness screw one full rotation, (in the thicker direction).
  - xxii. Lock thickness screw into position with travel locks.
  - xxiii. Press “CAL” button on the Handset.
  - xxiv. Press “AUTO” button on the Handset.
  - xxv. Check the slope of asphalt mat with a measuring device. Adjust the up  or the down  on the handset as required until screed is paving required grade or slope, depending on which remote you are using.

**GRADE, GRADE & SLOPE OPERATION – Same as above for the other side of screed.**

## **FLUID CAPACITIES AND RECOMMENDATIONS**

<b>FLUID</b>	<b>CAPACITY</b>	<b>RECOMMENDATION</b>
Engine oil	9 U.S. quarts	High quality CC/CD multi-grade lubricating oil. Above 14 deg. F use 15W40 or 20W40.
Hydraulic	17 U.S. gal.	High quality anti-wear hydraulic oil (Original equipment, Gulf C-3 torque fluid).
Grease	As required	N.G.L.I. consistency #2, high temperature, anti-friction, bearing lubricating grease.
Engine coolant	9 U.S. quarts	High quality Above 14 deg. F
Diesel	20 U.S. gal.	Above 40°, (5° C), use No. 2-D. Below 40°, (5° C), use No. 1-D. Power loss up to 4% can be expected due to lower viscosity

## **RECOMMENDED FUEL SPECIFICATIONS**

John Deere engines are designed to operate on #2 Diesel Fuels, which meet U.S. Military Specification VV-F-800E, ASTM D975 or EN 590 Standard Specifications for Diesel Fuel Oils. Fuel specifications recommended for use in John Deere Diesel Engines follow:

- Fuel Specific Gravity @ API 35 ..... 0.850
- Kinematic Viscosity @ 40 °C ..... 2.50 cSt
- Fuel Lower Heating Value ..... 42,765kJ/kg  
..... (18,385 Btu/lb)
- Fuel Temperature at Pump Inlet .... 40 °C (104 °F)
- Cetane Number ..... 40 minimum  
Cetane number greater than 50 is preferred for temperatures below -4°F (-20°C) or elevations above 5000 feet (1500 m).
- Cold Filter Plugging Point (CFFP) below the expected low temperature or Cloud Point at least 9°F (5°C) below the expected low temperature.
- Sulfur Content ..... < 0.5%
  - Sulfur content less than 0.05% is preferred.
  - If diesel fuel with sulfur content greater than 0.5% is used, reduce service interval for engine oil and filter changes by 50%.
  - **DO NOT** use diesel fuel with sulfur content greater than 1.0%

**IMPORTANT:** Low sulfur fuels (less than 0.05% sulfur) may not provide adequate lubricity. Fuel lubricity should pass the ASTM D5001 BOCLE (Ball On Cylinder Lubricity Evaluation) method. If fuel of low or unknown lubricity is used, add John Deere ALL-SEASON FUEL CONDITIONER or equivalent at the specified concentration.

Biodiesel fuels meeting DIN 51606 or equivalent specification may be used. Use of biodiesel fuels may result in a 1%-9% reduction in engine power dependent on fuel mixture concentration. 100% biodiesel concentration may result in a 7%-9% power loss. A 20% biodiesel/80% petroleum diesel mixture may result in a 1%-1.5% reduction in engine power.

John Deere engines will also operate on lower viscosity fuels. However, with rotary pumps, as fuel viscosity decreases, fuel flow to the engine decreases resulting in lower power. Engine response, load recovery, and starting time are adversely affected. The reduced lubricating properties of lower viscosity fuels may also reduce pump life unless special internal parts are used.

Engines, which use in-line pumps, are also sensitive to lower viscosity fuels, resulting in reduced power. In-line pump components are not as sensitive to wear as rotary pump components since in-line parts are lubricated by engine oil.

Engine operation using extremely low viscosity fuels such as JP-4 and Jet B is **not** recommended. Significant fuel injection equipment wear results from use of fuels with viscosities below 2.0 centistokes. If JP-4 is used, viscosity must be raised by adding 10%-20% new lube oil by volume and 0.2%-1% cetane improver such as hexyl nitrate. Even with these additives to raise viscosity and cetane number, a performance loss should be expected.

The use of high specific gravity fuels (lower API) could result in power levels exceeding the engines approved power rating. Operation above the approved engine power level will result in reduced engine life and increased operating costs.

In general, 'light' fuels may give poor low-load / high-speed performance, poor injection system lubrication, lower power, and poorer startability. 'Heavy' fuels may cause fuel filter plugging at low temperature, poor starting, additional combustion zone deposits and higher wear due to higher sulfur levels. Pretreatment of 'heavy' fuels may be required, such as prefiltering, water separation, and heating. Contact Sales Engineering if use of other than recommended fuels is anticipated.

The following tables summarize various fuels, comments concerning modifications required to maintain pump and engine life, and performance effects that may be encountered.

## ALTERNATIVE FUEL CAPABILITY FOR ROTARY FUEL INJECTION PUMPS

<u>DESCRIPTION</u>	<u>TYPE</u>	<u>COMMENTS</u>
<b>Diesel Fuels</b>	No. 2-D	Recommended fuel. Recommended for ambients above 40 °F (5 °C).
	No. 1-D	Recommended for ambients below 40 °F (5 °C). Power loss up to 5% can be expected due to lower viscosity.
	DF-2	U.S. Federal Specification, regular grade. See No. 2-D comments.
	DF-1	U.S. Federal Specification, winter grade. See No. 1-D comments. Power loss up to 5% can be expected.
	DF-A	U.S. Federal Specification, arctic grade. Power loss up to 6% can be expected. Injection pumps may exhibit increased component wear with extended use of this fuel due to high dewaxing and low viscosity. Special transfer pump and drive component parts are required for Stanadyne injection pumps. Stanadyne Gen-set pumps also require special governor components. Stanadyne fuel injection pump options identified as "Jet A, JP5/JP8 Fuel Capable" are equipped with the required parts. Standard Stanadyne pumps can be converted by in-installing a Stanadyne Arctic conversion kit. Special components are not required for Lucas-CAV injection pumps.
<b>Burner Fuels</b>	No. 2	Higher density and specific gravity than base fuel No. 2-D. A power increase up to 3% can be expected.
	No. 1	Lower viscosity than base fuel No. 2-D. A power loss up to 2% can be expected.
<b>Aviation Fuels</b>	Jet A	Lower viscosity and density than base fuel No. 2-D. Power loss up to 10% can be expected. Injection pumps may exhibit increased component wear with extended use of this fuel. Special transfer pump and drive component parts are required for Stanadyne injection pumps. Special components are not required for Lucas-CAV injection pumps. See DF-A comments for details.
	Jet A-1	See Jet A and DF-A comments. Power loss up to 10% can be expected.
	Jet B	<b>Not Recommended.</b> Lower density and extremely low viscosity compared to base fuel No. 2-D will result in greatly accelerated injection pump wear, poor starting, and a power loss of up to 14%.
	Jet B	may be used on pumps with Stanadyne injection pumps with special hardened parts for up to 300 hours as an emergency fuel only. Hot starting could be extremely difficult or impossible without priming. Lucas-CAV injection pumps should not be used with Jet-B fuel, even for emergency operation.
	JP-4	<b>Not Recommended.</b> Military equivalent of Jet B. See Jet B comments. Power loss up to 14% can be expected. JP-4 may be used on Stanadyne pumps with special hardened parts up to 300 hours as an emergency fuel only. Lucas-CAV injection pumps should not be used with JP-4 fuel, even for emergency operation.
	JP-5	See Jet A and DF-A comments. Power loss up to 9% can be expected.
	JP-7	See Jet A and DF-A comments. Power loss up to 10% can be expected.
	JP-8	See Jet A and DF-A comments. Power loss up to 10% can be expected.

## ALTERNATIVE FUEL CAPABILITY FOR IN-LINE FUEL INJECTION PUMPS

<u>DESCRIPTION</u>	<u>TYPE</u>	<u>COMMENTS</u>
<b>Diesel Fuels</b>	No. 2-D	Recommended fuel. Recommended for ambients above 40 °F (5 °C).
	No. 1-D	Recommended for ambients below 40 °F (5 °C). Power loss up to 4% can be expected due to lower viscosity.
	DF-2	U.S. Federal Specification, regular grade. See No. 2-D comments.
	DF-1	U.S. Federal Specification, winter grade. See No. 1-D comments. Power loss up to 4% can be expected.
	DF-A	U.S. Federal Specification, arctic grade. Highly dewaxed and low viscosity. Power loss up to 5.5% can be expected.
<b>Burner Fuels</b>	No. 2	Higher density and specific gravity than base fuel No. 2-D. A power increase up to 2.5% can be expected.
	No. 1	Lower viscosity than base fuel No. 2-D. A power loss up to 1.5% can be expected.
<b>Aviation Fuels</b>	Jet A	Lower viscosity and density than base fuel No. 2-D. Power loss up to 9% can be expected.
	Jet A-1	See Jet A comments. Power loss up to 9% can be expected.
	Jet B	<b>Not Recommended.</b> Lower density and extremely low viscosity compared to base fuel No. 2-D. Power loss up to 12% can be expected.
	Jet B	may be used as an <b><u>emergency</u></b> fuel with the addition of 10 to 20% clean lube oil by volume and 0.2 to 1% cetane improver such as hexyl nitrate.
	JP-4	<b>Not Recommended.</b> See Jet B comments. Power loss up to 12% can be expected.
	JP-4	may be used as an <b><u>emergency</u></b> fuel with the addition of 10 to 20% clean lube oil by volume and 0.2 to 1% cetane improver such as hexyl nitrate.
	JP-5	See Jet A comments. Power loss up to 8% can be expected.
	JP-7	See Jet A comments. Power loss up to 9% can be expected.
	JP-8	See Jet A comments. Power loss up to 9% can be expected.

## ALTERNATIVE FUEL CAPABILITY FOR LUCAS UNIT INJECTORS

<u>DESCRIPTION</u>	<u>TYPE</u>	<u>COMMENTS</u>
<b>Diesel Fuels</b>	No. 2-D	Recommended fuel. Recommended for ambients above 40 °F (5 °C).
	No. 1-D	Recommended for ambients below 40 °F (5 °C). Power loss up to 4% can be expected due to lower viscosity.
	DF-2	U.S. Federal Specification, regular grade. See No. 2-D comments.
	DF-1	U.S. Federal Specification, winter grade. See No. 1-D comments. Power loss up to 4% can be expected.

**Tests are in process to establish capability to operate with other common low-viscosity fuels. Results will be communicated when tests are complete and data received.**

## **ENGINE COOLANT**

All John Deere engines are shipped from the factory without engine coolant. Therefore customers are responsible for filling and maintaining the engine's cooling systems. The use of improper coolant mixtures in John Deere diesel engines can result in serious engine damage due to liner erosion and pitting. Refer to the Operator's Manual for information regarding engine coolant (antifreeze), and supplemental coolant additive (SCA) replenishment, and change interval recommendations.

### **COOLANT SOLUTION**

Three components make up a coolant solution:

- Quality Water
- Concentrate  
(Ethylene Glycol or Propylene Glycol)
- Supplemental Coolant Additive (SCA)

#### **Quality Water**

Distilled, deionized, or soft water with no more than 170 PPM (parts per million) total hardness and 340 PPM total dissolved solids must be used. Mineral (hard) water should never be used unless tested. Water quality specifications can be found in the Operator's Manual. Do not use untested tap water.

#### **Concentrate**

##### Ethylene Glycol (EG)

Ethylene Glycol Concentrate is also called anti-freeze or EG. Low silicate (less than 0.1% anhydrous metasilicate) ethylene glycol concentrate, which meets ASTM D4985, must be used. The recommended mixture amount is 50% ethylene glycol to 50% quality water providing freeze protection down to -34 °F (-37 °C). At least 40% ethylene glycol should be used to protect against pitting and no more than 60% to avoid silicate dropout. Ethylene Glycol Concentrate (high-silicate content intended for use in aluminum automotive engines) is **unacceptable** in John Deere diesel engines.

John Deere EG Concentrate is available in 1-gallon (TY16034) and 55-gallon (TY16035) containers. These products replace TY15886, 1-gallon; and TY6377, 55-gallon low silicate antifreeze. These products require the user to mix quality water before installing into the cooling system. Addition of Supplemental Coolant Additive is not required.

John Deere Pre-Diluted Coolant is available in 2.5 gallon (TY16036) and 55-gallon (TY16037) containers. No mixing is required, and it is ready to use. These products are premixed with fully formulated John Deere EG concentrate, quality water and SCA, and provide freeze protection down to -34°F (-37°C).

The real advantages to customers are:

- No mixing required
- Quality water assured
- Quick and convenient radiator top off.

##### Propylene Glycol (PG)

If propylene glycol is used, it must be low-silicate (less than 0.1% anhydrous metasilicate) propylene glycol concentrate. PG concentrate when diluted 50/50 with quality water, provides freeze protection to -26 °F (-32°C) versus EG 50/50 dilution @-34°F (-37°C). PG diluted 55/45 provides -40°F (-40°C). The capabilities of PG should be well understood before using PG in cooling systems.

Chemical properties of PG and EG are different. **Propylene glycol and ethylene glycol should not be mixed.** The entire cooling system must be drained and flushed if changing from one mixture to the other. Due to propylene glycol's higher specific gravity than ethylene glycol, a special hydrometer is required to measure propylene glycol's system freeze protection. Cooling systems with propylene glycol should be tagged to avoid confusion during future system service or coolant analysis.

## Supplemental Coolant Additive (SCA)

SCA is a nitrite or phosphate based chemical additive used to protect against cylinder liner erosion and pitting. The recommended John Deere SCA is TY16004 (16 oz./473 ml) or TY16005 (1 gal/3.78 L). RE23182 (16 oz./473 ml) or RE35992 (1 gal/3.78 ml) are available in

Europe for countries requiring phosphate-free coolant. Other acceptable OEM factory fill SCA's are Pencoool 3000, Fleetguard DCA2, and Fleetguard DCA4.

Other SCA's that meet the chemical and physical properties listed below can be used.

### SUPPLEMENTAL COOLANT ADDITIVE (SCA)

Property	Units	Specification Limits		Test Method
		TY16004 / TY16005	RE23182 / RE35992	
Physical Form	—	Liquid	Liquid	—
Boron as Na 2 B 4 O 7	%mass	—	1.5 2.1	ICP or AA
Phosphorus as H 3 PO 4	%mass	5.0 7.0	—	ICP or AA
Sodium Nitrite, NaNO 2 OR Potassium Nitrite, KNO 2	%mass	—	3.5 5.5	IC
	%mass	2.0 3.0	—	
Sodium Nitrate, NaNO 3 OR Potassium Nitrate, KNO 3	%mass	1.8 3.2	3.5 5.5	IC
Mercaptobenzothiazole	% mass	—	1.5 2.5	JDQ51
Sodium Molybdate, Na 2 MoO 4	%mass	1.0 1.5	—	IC
Tolyltriazol	% mass	0.8 1.2	—	HPLC
pH - @ 3% volume concentration in demineralized water – ³10.0	—	10.0 10.8	10.0 10.8	ASTM D1287
Reserve Alkalinity - @ 3% volume concentration in demineralized water	mL	>4.0	4.0	ASTM D1121
Specific Gravity	—	1.135 1.155	1.165 1.185	ASTN D1122
Silicate/Phosphate Stabilizer	—	Certified As Present - Quality Not Specified		—
Scale Inhibitor	—	Certified As Present - Quality Not Specified		—

**Figure 72-1, Chemical and Physical Properties of TY16004, TY16005, RE23182 and RE35992**

**Test Methods:**

- **AA** = Atomic Absorption Spectroscopy
- **HPLC** = High Performance Liquid Chromatography
- **IC** = Ion Chromatography
- **ICP** = Inductively Coupled Plasma Spectroscopy



## COOLANT ANALYSIS

**COOLSCAN™** is a John Deere sampling program designed to monitor the engine coolant solution makeup and performance. **COOLSCAN™** kits are available through the John Deere Parts System.

## COOLANT MIXTURE

After determining the cooling system capacity, mix 50% quality water with 50% ethylene glycol concentrate. The ethylene glycol concentrate can vary from 40%-60% depending on the desired freeze/boiling point. SCA must be added at a rate of 3% by volume of the total system capacity, one ounce of SCA for each quart (30 ml/L) of ethylene glycol concentrate/water mixture.

The following is an example of an SCA volume calculation. How much SCA should be added with a cooling system capacity of 15 gal (57 L)?

$$\begin{aligned} SCA &= (15 \text{ gal} \times 3\%) = 0.45 \text{ gal} \\ SCA &= 0.45 \text{ gal} = 57.6 \text{ oz.} \end{aligned}$$

or

$$SCA = (57 \text{ L} \times 3\%) = 1.7 \text{ L}$$

Series 500 OEM engines are equipped with a coolant filter (RE11992) from the factory, which does **not** include SCA. Therefore, Series 500 OEM engines require the same coolant mixture as described above.

## AIR INTAKE SYSTEM

The air-intake system consists of the air cleaner, pipings, and connections to the intake manifold or turbo-charger. An effective air-intake system provides the engine with clean air at a reasonable temperature and restriction. It removes fine materials such as dust, blown sand, and chaff from the air. It also allows operation for a reasonable period of time before requiring service.

An ineffective air intake system will adversely affect engine performance, gaseous emissions, and engine life.

**Figure 80-1, Air intake system**  
**AIR RESTRICTION**

Initial or clean-element restriction of an air system with a single element air filter should be no more than 12 in. H<sub>2</sub>O (3 kPa). Initial restriction values up to 17 in. H<sub>2</sub>O (3.7 kPa) are acceptable **only** for filters with precleaners. Diesel air cleaners should be serviced when the system intake restriction reaches 25 in. H<sub>2</sub>O (6.2kPa). Natural gas engines may have lower restriction limits, see the Engine Performance Curve

## AIR CLEANERS

Dry type air cleaners are recommended for John Deere engines because of their compactness, efficiency, and long service life. They filter the air through a replaceable element constructed of a high quality filter paper. Air cleaners are sized according to air flow requirements and desired service life. Engine air flow at full power and rated speed is found on the engine performance sheet.

For satisfactory engine life, the air cleaner must be 99.9% effective in removing air-borne dirt particles from the intake air when tested according to SAE J726 Oil bath air cleaners have only a 95 %efficiency and are not recommended by John Deere.

We recommend heavy duty two stage air cleaners with precleaners and safety elements for outdoor and/or dusty environments. Single element air cleaners without safety elements or precleaners can sometimes be used for indoor or relatively dust free environments, such as marine engines and some gensets.

All air cleaners used outdoors **must** be equipped with inlet screens to prevent the entry of rodents or insects that could damage the filter paper.

## PRECLEANERS

A precleaner increases the dust carrying capacity of a system by removing a high percentage of the dust before it enters the filter element. A common precleaner design uses air flow directional fins or other means of centrifugally separating dirt from the intake air prior to reaching the primary filter element. Other precleaners fit on the vertical inlet pipe in place of the air stack cap. The dust and contaminant collected by these precleaners is usually expelled manually. More expensive precleaner designs automatically expel the contaminant through an aspirator tube connected to the exhaust system.

PIPING  
CLAMPS  
AIR STACK CAP AIR CLEANER

## **LUBRICATION AND SERVICE PROCEDURES**

### **Air Filters**

**IMPORTANT:** Service the engine air filters only when the need is indicated by the air cleaner service indicator, (if equipped), or in accordance with the preventative maintenance decal. Excessive service will cause premature wear.

#### 1. Engine Main Element

- a. Unbuckle clips to remove element container end cap.
- b. Pull gently to remove main element.
- c. Use compressed air with an element-cleaning nozzle

**IMPORTANT:** Main element should be replaced after six cleanings or 500 hours use.

**IMPORTANT:** Do not attempt to clean element using a standard air nozzle. Do not strike element on a hard surface. Either action will damage the element.

#### 2. Engine Safety Element

**IMPORTANT:** Do not remove safety element under heavy dust or blowing conditions (in the field). Even slight amounts of dust entering the engine can lead to premature wear.

Inspect safety element for contamination and physical damage.

**IMPORTANT:** When safety element is dirty, it should be replaced. Do not attempt to clean.

### **Battery**

**CAUTION:** BATTERY ELECTROLYTE IS A CAUSTIC ACID. KEEP IT AWAY FROM SKIN AND EYES. IF CONTACT OCCURS, FLUSH THE AFFECTED AREA WITH LOTS OF WATER.

**CAUTION:** DISCONNECT GROUND CABLE FROM THE NEGATIVE BATTERY POST BEFORE ATTEMPTING TO SERVICE OR REMOVE BATTERY.

#### 1. Removal

- a. Remove battery cover, (located below propane tank)
- b. Disconnect ground (negative) cable from battery (-) terminal.
- c. Disconnect positive cable from battery (+) terminal.

#### 2. Cleaning

- a. Remove battery, following correct procedures.
- b. Thoroughly clean terminals with a battery-cleaning tool.
- c. Mix a paste solution of baking soda and water and apply to battery and terminals.
- d. Rinse battery and paver area near battery liberally with water.

### 3. Installation

- a. Clean battery, following correct procedures.
- b. Be certain battery area is clean and clear of debris.
- c. Install battery and connect positive (+) cable to terminal.
- d. Install battery cover.

**CAUTION:** DO NOT CONNECT NEGATIVE (GROUND) TERMINAL FIRST. ARCING CAN OCCUR, POSSIBLY CAUSING SEVERE BURNS AND/OR BATTERY EXPLOSION.

- e. Connect negative (-) terminal.

### 4. Charging

- a. Connect charger leads to proper battery terminals then proceed according to charger manufacturer's instructions.

### 5. Storage

- a. Remove and clean battery, following correct procedures.
- b. Bring battery to full charge, following charger manufacturer's instructions.
- c. Store in a cool dry place where there is no possibility of freezing.

**NOTE:** Check battery every 30 days during storage and return to full charge if necessary.

## **Engine and Engine Filters**

### 1. Initial Break-In

Proper break-in procedures are a must to realize maximum engine power output and longest engine life. Engine should show noticeable power gain through the first 30 hours service. Power gain will continue until approximately 200 hours if properly broken-in.

**IMPORTANT:** Do not operate engine above 3/4 throttle, (approximately 2100 RPM), for the first 25 hours.

**IMPORTANT:** Use full throttle only for short intervals during the first 25 hours.

**IMPORTANT:** Do not "lug" engine during the break-in period.

**IMPORTANT:** Replace the original oil and oil filters after the first 20 hours of operation.

**IMPORTANT:** The engine compartment on the 1750-C is designed to capture fluids and drain them to the hopper. Before removing either the oil or fuel filter elements, or draining the oil pan remove the plug on the front side of the hopper, and place a capturing bucket below the opening.

### 2. Fuel Filter / Water Separator

- i. The fuel filter and water separator is a combined unit, **PLEASE NOTE** it is **NOT** disposable.
- ii. There is also a separate in-line fuel pre-filter which is disposable.

**CAUTION:** BOTH DIESEL FUEL AND GASOLINE ARE HIGHLY FLAMMABLE AND EXPLOSIVE UNDER CERTAIN CONDITIONS. DO NOT SMOKE OR ALLOW SPARKS OR OPEN FLAME WHEN HANDLING.

a. To Change:

1. Stop engine. Wait 15 minutes for engine and surrounding parts to cool before proceeding.
2. Unscrew and discard fuel and sediment.
3. Clean bowl thoroughly and fill cleaned bowl with clean fuel.
4. Lightly coat the seal ring with oil, then screw on filter/separator until seal meets flange.
5. Tighten an additional 1/2 to 3/4 turns by hand.

**IMPORTANT:** Do not over tighten.

b. Oil and Filter Changing:

1. Stop engine. Wait 15 minutes or engine oil to cool before proceeding.
2. On the hopper side, remove drain plug and position capturing bucket.
3. Drain crankcase.
4. Unscrew and discard existing filters.
5. Fill new elements with fresh oil.
6. Lightly coat the seal rings with oil, and then screw on filters until seals meet flanges.
7. Tighten an additional 1/2 to 3/4 turns by hand.

**IMPORTANT:** Do not over tighten.

8. Fill crankcase to correct level.
9. Start engine and run at low idle. Have an assistant visually check seal areas for leaks.
10. Stop engine. Wait a few minutes, and then check engine oil level once again.

## **Hydraulic System**

1. Hydraulic Fluid Change

- a. Stop engine. Allow system pressure to drop and remove filler cap.
- b. Remove suction hose and drain into appropriate container for disposal.
- c. Remove hydraulic filter. Replace filter element and reinstall.
- d. Replace fluid to approximately 1" from top of reservoir.  
Operate paver and recheck level.
- e. Check visually for oil leaks.

**NOTE:** Each paver should be thoroughly inspected after each use and during maintenance cycle for:

1. Tightness of mounting bolts and attaching hardware on bearings, couplings, frame, etc.
2. Leaks, cracks and loose electrical and fluid fittings.
3. Malfunctioning indicators or controls.
4. Worn or damaged tires.
5. Cleanliness.

## **TROUBLESHOOTING**

### 1. General

Proper troubleshooting begins with an organized approach to the problem at hand. Begin with investigation of the most probable cause, following the guidelines below.

Study the problem thoroughly before taking action:

Did warning signs precede the problem? If so, what were they? What would they indicate?

Is scheduled maintenance current on all parts and systems involved?

Has similar trouble occurred before? What action was taken at that time?

Can engine be operated without further damage?

**CAUTION:** IF RUNNING INSPECTION MUST BE MADE, GET ASSISTANCE. OPERATOR SHOULD REMAIN SEATED ON PAVER THROUGHOUT INSPECTION. SET PAVER TO PAUSE. MAKE SURE TRANSMISSION IS IN NEUTRAL POSITION.

Check the most convenient things first.

Don't begin major work before checking all other possibilities.

Reconsider all known facts and clues before proceeding to more in-depth work.

Correct the basic cause.

Remember, failure of a certain part may be caused by malfunction of another part or system.

### 2. Use of Schematics

This manual incorporates electrical and hydraulic diagrams formatted for ease of use by maintenance and for the training of personnel.

### 3. Troubleshooting chart

The troubleshooting chart lists problems that might be encountered in the operation of the vehicle. The remedies listed may direct the repairman to a possible faulty component.

**WARNING:** THE TROUBLESHOOTING CHART AND PROCEDURES OUTLINED IN THIS SECTION SHOULD NOT BE ATTEMPTED BY OTHER THAN EXPERIENCED MECHANICS OR PERSONNEL UNDER THE DIRECT SUPERVISION OF AN EXPERIENCED MECHANIC. FAILURE TO COMPLY MAY RESULT IN DAMAGE TO EQUIPMENT AND/OR INJURY OR DEATH TO PERSONNEL.

#### A. Engine

For engine troubleshooting see charts indicating faults and recommended repair procedures, refer to Manufacturer's Operation and Maintenance Manual.

If your particular problem is not covered or you are unsure of what steps to take, contact your dealer for assistance.

## B. Transmission

### 1. Vehicle fails to move under power.

Inadequate oil level in hydraulic reservoir.  
Damaged wiring loom to steering station  
Driveline mechanical failure

### 2. Vehicle moves in neutral.

Steering levers are actually engaged  
Steering calibration adjustment required, (must be performed by authorized MAULDIN service technician)

For detailed troubleshooting information on hydrostatic transmission, refer to Trouble Shooting Manual, Rexroth Hydrostatic Transmissions, available from a Rexroth representative or dealer.

## C. Electrical System

Engine Status	Voltmeter Reading	Indicates	To Correct
Running	13.5 - 14 Volts	Normal Condition	
Running	Less than 13.5 or more than 14 Volts	Alternator or Regulator Malfunction	Contact Dealer
Won't Start	12-12.5 Volts	Weak battery	Charge
Won't Start	Less than 12 Volts	Weak battery or Defective Cell	Charge or Replace
Stopped	Excessive current Draw	Short Circuit System	Inspect

#### D. Hydraulic System

Thoroughly review description of hydraulic system.

Use logical steps to determine cause of malfunction.

Identify the function or functions that require troubleshooting.

If possible, trace malfunction to source; pump, control, motor or cylinder.

Determine pressure operating the function as specified:

#### Hydraulic System Pressures

Priority circuit, Eaton triple pump	200 -300 p.s.i.	<b>Neutral Position Relief Pressure</b>
Main circuit, Rexroth tandem pump	300 - 400 p.s.i.	
Main circuit, Rexroth tandem pump	up to 4500 p.s.i.	
Charge circuit, Rexroth tandem pump	300 - 400 p.s.i.	

Problem	Possible Cause	To Correct
No Power or Inadequate Power	Worn or Malfunctioning pump or motor	Repair or replace pump or motor
	Stuck relief valve cartridge.	Repair or replace
	Low system pressure caused by worn pump.	Repair or replace pump.
Surging of hydraulic items	Air in system due to low level of oil, cavitating pump, leaky fittings, pinched hose, etc.	Add oil, tighten fittings, reroute hose

#### Removal and Installation of Equipment

##### 1. Preparation

**WARNING:** BEFORE PERFORMING INSTALLATION OR REMOVAL PROCEDURES, THE FOLLOWING PRECAUTIONS MUST BE ADHERED TO IN ORDER TO PREVENT POSSIBLE DAMAGE TO EQUIPMENT OR INJURY OR DEATH TO PERSONNEL.

**WARNING:** TURN THE ENGINE OFF BY TURNING THE IGNITION SWITCH TO OFF. DISCONNECT THE BATTERY CABLES BEFORE SERVICING THE ENGINE START OR STOP CIRCUITS. DISCONNECTING BATTERY NEGATIVE GROUND BEFORE REMOVING OR CONNECTING THE POSITIVE BATTERY CABLE CAN PREVENT SHORT CIRCUITING OF THE BATTERY BY TOOLS.

## 2. Electrical (General)

**IMPORTANT:** The 1750-C is equipped with a 100% sealed electronics package for maximum reliability. Should any device require service, consult your dealer. **DO NOT OPEN ELECTRICAL BOXES - THIS WILL VOID YOUR WARRANTY -**

### A. MAIN CONTROL PANEL, Sealed Electrical Box Removal.

1. This device is mounted and secured into place by rubber isolating retainer mounts.
2. Disconnect battery supplying primary power to the device.
3. Disconnect all wiring looms on the back of the MAIN CONTROL PANEL, (they are either shape or color coordinated to their mates).
4. Remove the retainer from the device.
5. Remove the device.

### B. MAIN CONTROL PANEL, Sealed Electrical Box Installation

1. Insert the device into the space provided.
2. Check that the circuit providing primary power to the device is de-energized.
3. Mount the device with the original retainers.
4. Re-connect wiring to device in the same order as it was removed.

## **Controller Reset Procedure**

To restore defaults, the following conditions have to be satisfied:

1. The machine must be in the pause mode,
2. Joysticks must be centered,
3. Left head-of-material switch must be **HELD** in the UP position,
4. Right head-of-material switch must be **HELD** in the DOWN position,
5. Vibrator switch must be **HELD** in the ON position,
6. Items 1 through 5 must be satisfied continuously for 45 seconds, and starting no longer than 2.5 seconds after the power-up.

If the defaults are restored successfully, after the 45-second delay, the pause light will go ON for solid 2 seconds. If there was an error when restoring the defaults, the pause light will go OFF for 2 seconds. If any of the conditions listed in items 1 to 5 is not met, no defaults will be set.

## **Setting the Electronic Dash Configuration Code**

1. While holding the display toggle switch, turn the key switch to the on position (not ignition).
2. Continue holding the display toggle switch. The current configuration code will appear.
3. When the display begins to flash the left digit of the code, release the switch.
4. If the switch is released before this occurs the dash will initialize normally to its current configuration code.
5. Each actuation of the display toggle switch will increment the flashing digit.



6. When the proper value is displayed, release the switch and wait 5 seconds. The next digit will begin to flash.
7. Each value can be set using the same procedure.
8. After the last digit the cycle will repeat back to the first. If the switch is actuated within 5 seconds, the procedure will repeat itself.
9. If 5 seconds passes, the code will be stored and the monitor will proceed to initialize.

## Configuration Codes

The configuration code is made up as follows:

Every option has a given weight; to enable all the options you need, add up their individual weights. The result is the configuration number.

The weights are as follows:

Hydraulic oil temp.	1	
Low coolant	2	
<b>Material setting</b>	<b>4</b>	(note: this also disables the sonic sensor readout display)
Engine oil temp	8	
Hydraulic filter	16	

## Electronic Dash/Monitor Error Codes

Err2 - Internal memory problem (EEPROM) indicates a replacement monitor is required.

Err3 - Internal analog to digital converter problem, indicates a replacement monitor is required.

Err4o - Fuel level sender open circuit problem; monitor detects a circuit resistance that is greater than the normal sender range. Usually indicates a broken wire, an open connection or damaged sender.

Err4S - Fuel level sender short circuit problem; monitor detects a circuit resistance that is less than the normal sender range. Usually indicates a shorted wire or damaged sender.

Err5o - Engine coolant temperature sender open circuit problem; monitor detects a circuit resistance that is greater than the normal sender range. Usually indicates a broken wire, an open connection or damaged sender.

Err5S - Engine coolant temperature sender short circuit problem; monitor detects a circuit resistance that is less than the normal sender range. Usually indicates a shorted wire or damaged sender.

Err6o - Hydraulic oil temperature sender open circuit problem; monitor detects a circuit resistance that is greater than the normal sender range. Usually indicates a broken wire, an open connection or damaged sender.

Err6S - Hydraulic oil temperature sender short circuit problem; monitor detects a circuit resistance that is less than the normal sender range. Usually indicates a shorted wire or damaged sender.

Err7o - Engine oil temperature sender open circuit problem; monitor detects a circuit resistance that is greater than the normal sender range. Usually indicates a broken wire, an open connection or damaged sender.

Err7S - Engine oil temperature sender short circuit problem; monitor detects a circuit resistance that is less than the normal sender range. Usually indicates a shorted wire or damaged sender.

\* Note: When the monitor displays an "S" it appears identically to a 5. i.e.. Err4S may be called Err45.

## **TROUBLESHOOTING CHART**

<b>PROBLEM</b>	<b>CAUSE</b>	<b>ACTION</b>
Screed Overfeeds with material	<ol style="list-style-type: none"> <li>1. Head of Material set too high</li> <li>2. RH sonic sensor is installed on LH side and vice versa.</li> <li>3. Asphalt is too close to sensor</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset Head of Material to 12" and adjust as needed</li> <li>2. Move sensors from side to side</li> <li>3. Remove asphalt away from sensor bottom, clean w/ dry rag if necessary. (This can occur during extension retraction.</li> </ol>
Auto Augers Will Not Stop	Sensor is out of range – asphalt is too close to sensor	<p>Turn switch from AUTO to OFF and back to AUTO.</p> <p><i>Auger will stop until asphalt level drops back into range</i></p>
Vibrator is on but not working	Vibrator only runs during forward travel	Come out of pause and begin forward motion
Extensions are diving	<ol style="list-style-type: none"> <li>1. Improper screed slope setting</li> <li>2. Material build-up inside extension</li> </ol>	<ol style="list-style-type: none"> <li>1. Follow screed setting procedure – SEE section <b>Setting the Symphony to Pave.</b></li> <li>2. Clean out material above the extension heating chamber.</li> </ol>
Loose or Streaking Mat	<ol style="list-style-type: none"> <li>1. Screed plate is worn</li> <li>2. Crown setting is incorrect</li> </ol>	<ol style="list-style-type: none"> <li>1. Change the screed plate</li> <li>2. Make corrective adjustments in accordance with the section <b>Screed Crown Control System.</b></li> </ol>
Engine Stops	<ol style="list-style-type: none"> <li>1. Smart shut down activated</li> <li>2. Manual shut down button activated</li> </ol>	<ol style="list-style-type: none"> <li>1. SEE section <b>On-board Shut-down System.</b></li> <li>2. Twist button to reset</li> </ol>
No steering control	<ol style="list-style-type: none"> <li>1. Pause light is flashing</li> <li>2. Pause light is solid</li> <li>3. RH steer is selected and you are trying to operate from LH, and vice versa.</li> </ol>	<ol style="list-style-type: none"> <li>1. Toggle pause switch</li> <li>2. Position steer sticks in neutral</li> <li>3. Match selector switch to your needs</li> </ol>
Screed Automation will not power up	Cables were connected with key switch on, or paver running - 10 AMP Fuse blown.	Open Main Electrical panel, replace blown fuse.

## Recommended Preventive Maintenance Intervals

INTERVAL	ITEM	PROCEDURE
Initial Break-In (After 1 <sup>st</sup> 50 hours)	Hydraulic Filter Engine Oil & Filter Hydraulic Leaks Loose Nuts & Bolts	Change Change Inspect & Tighten as required Inspect & Tighten as required
Daily or 10 hours	Hydraulic oil level Engine oil level Engine air cleaner system Engine coolant level and system Radiator Fuel system Conveyor, Augers, Screed	Inspect & add as necessary Inspect & add as necessary Check service indicator and/or inspect Inspect & add as necessary Clean and inspect Drain water from separator Clean Asphalt from moving parts
50 hours	All Daily Items Front idler sprocket	As above Grease
250 hours	All 100 hour items Engine air cleaner Engine crankcase Engine oil filter Fuel tank Hydraulic filter All crank handle bearings	As above Replace element Drain and refill* Replace* Drain water and sediment Replace* Grease
500 hours	All 250 hour items Fuel filters Engine Aux Hydraulic Pump	As above Replace Have serviced by authorized Dealer Inspect Splined Shaft, Clean & Regrease
1000 hours	All 500 hour items Hydraulic system	As above Drain and refill

\*Change after first 20 hours service, every 250 thereafter.

A copy of this schedule is attached to the paver in the form of a decal. It can be seen to the right.

Be sure to follow the Hour interval recommendations whenever the paver is equipped with an engine hour meter. Time intervals are considered not to exceed recommendations.

### **NOTE:**

**FAILURE TO PERFORM PROPER SCHEDULED MAINTENANCE WILL ADVERSLY EFFECT THE PERFORMANCE OF THE PAVER, AND MAY VOID YOUR WARRANTY IN PART OR IN ENTIRETY.**



### PREVENTATIVE MAINTENANCE GUIDE

ITEM	ACTION	INTERVAL
AIR CLEANER	INSPECT	DAILY
	CHANGE	12 MONTHS OR 200 HOURS
IN DUSTY AREA	CHANGE	2 MONTHS OR 75 HOURS
ENGINE OIL LEVEL	INSPECT	DAILY
	CHANGE	12 MONTHS OR 200 HOURS
RADIATOR COOLANT LEVEL	INSPECT	DAILY
	CHANGE	12 MONTHS OR 200 HOURS
HYDRAULIC OIL LEVEL	INSPECT	DAILY
	CHANGE	12 MONTHS OR 200 HOURS
FUEL FILTER	CHANGE	12 MONTHS OR 200 HOURS
ENGINE OIL FILTER	CHANGE	12 MONTHS OR 200 HOURS
HYDRAULIC OIL FILTER	CHANGE	12 MONTHS OR 200 HOURS
GREASE POINTS	APPLY GREASE	3 MONTHS OR 100 HOURS



**CALDER BROTHERS CORPORATION  
(LIMITED) PRODUCT WARRANTY**

Mauldin Brothers Equipment, Inc. warrants that the Paver or Roller under this program will be free from defects in material and workmanship for a period of (12) twelve months from date of installation. Written notice of any claimed defect must be given to Mauldin within the warranty period and within (30) thirty days after such defect is discovered. Liability under this warranty is limited to replacing or repairing, at Mauldin's election, any part or parts deemed defective after examination by Mauldin or an Authorized Service Representative. Any paver or any of its parts returned by customer to Mauldin or an Authorized Service Representative via prepaid transportation and which is found to be defective will be repaired or replaced and returned to the customer via prepaid surface transportation within the continental United States. Should any part be found not defective, Mauldin or an Authorized Service Representative may charge inspection and handling to the customer.

**EXCLUSIONS:**

This warranty does not apply to routine wearable parts of the Mauldin paver such as seals, points, plugs, hoses or similar items. This warranty does not extend to any paver or part replaced or repaired under this warranty. This warranty does not cover any repair or replacement labor of any part or parts found defective after examination by Mauldin or an Authorized Service Representative. This warranty does not apply to defects caused by casualty or unreasonable use, including faulty repairs by others and failure to provide reasonable and necessary maintenance.

THIS WARRANTY SET FORTH HEREIN IS IN LIEU OF AND EXCLUDES ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, ARISING BY OPERATION OF LAW OR OTHERWISE, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND CUSTOMER WAIVES ANY OBLIGATION OF LIABILITY OF MAULDIN ARISING IN TORT OR STRICT LIABILITY IN TORT, OR FOR LOSS OR USE, REVENUE OR PROFIT WITH RESPECT TO MAULDIN PAVER AND/OR PARTS FOR ANY LIABILITY OF CUSTOMER TO ANY THIRD PARTY, OR FOR OTHER DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES.





# PAVER OPERATION MANUAL

**MODEL 1750-C**