

StreetHeat SR-60 - Operations Manual



Operations Manual Contents

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1. Introduction



The SR-60 is a pavement heater designed specifically for imprinting of asphalt pavements.

When asphalt pavement is heated, it becomes soft, enabling it to be imprinted using StreetPrint templates.



Once printed and coated, the final result is a beautiful, long lasting StreetPrint textured asphalt surface.

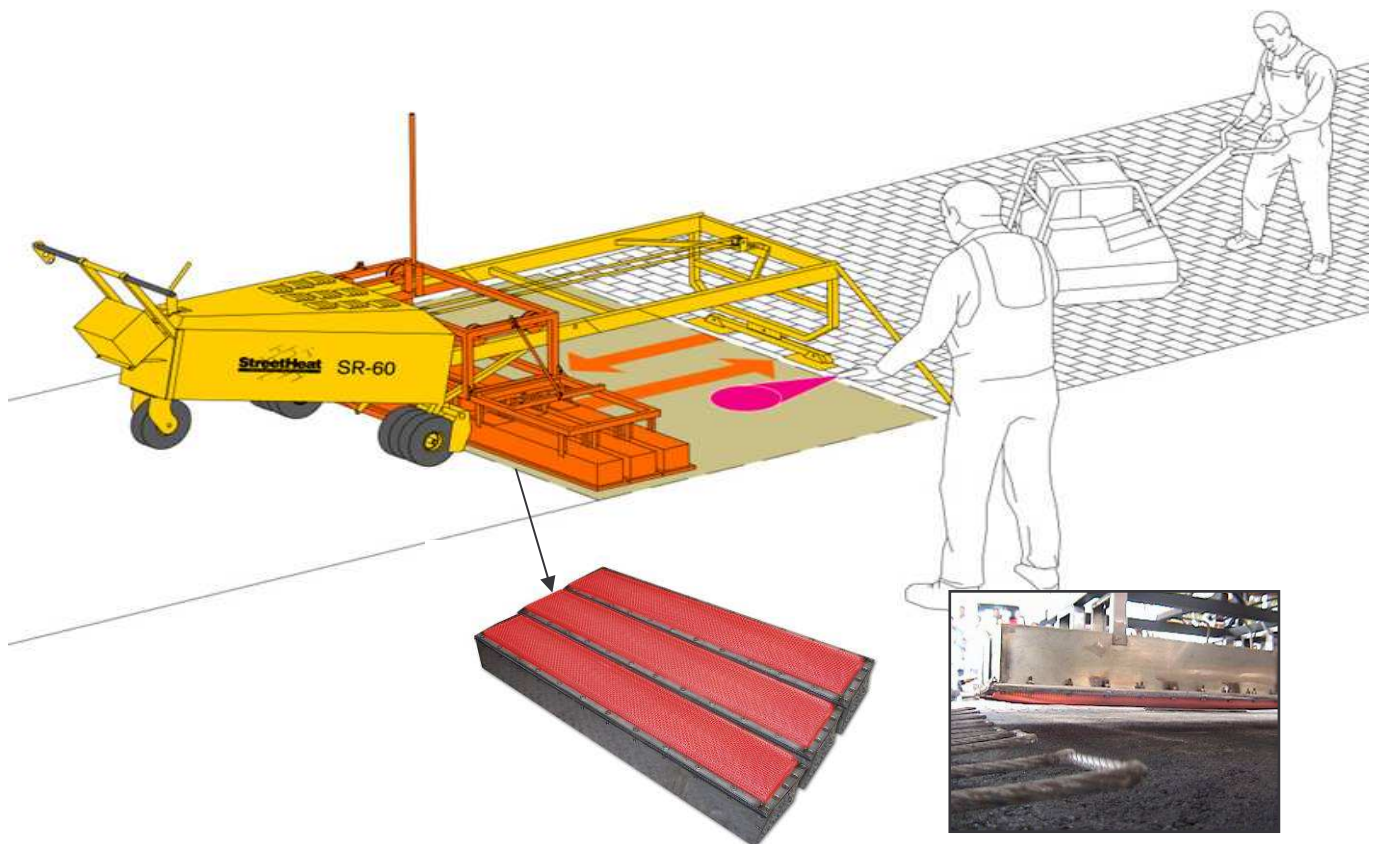
2. Operating Principle

A bank of high intensity infrared heaters reciprocates (moves back and forth automatically) above the asphalt surface on a rail system, heating and softening an area of asphalt of up to 9 feet by 6.5 feet (2.75m x 2.0m).

IMPORTANT: Never heat the asphalt surface to temperatures above 320°F (160°C), as this will dramatically shorten the life of the decorative product.

Ensure that the asphalt is softened to a depth of at least ½” (12.5mm). In typical summer conditions this requires heating the asphalt surface to between 225°F (110°C) and 300°F (150°C) for a period of 2 to 5 minutes.

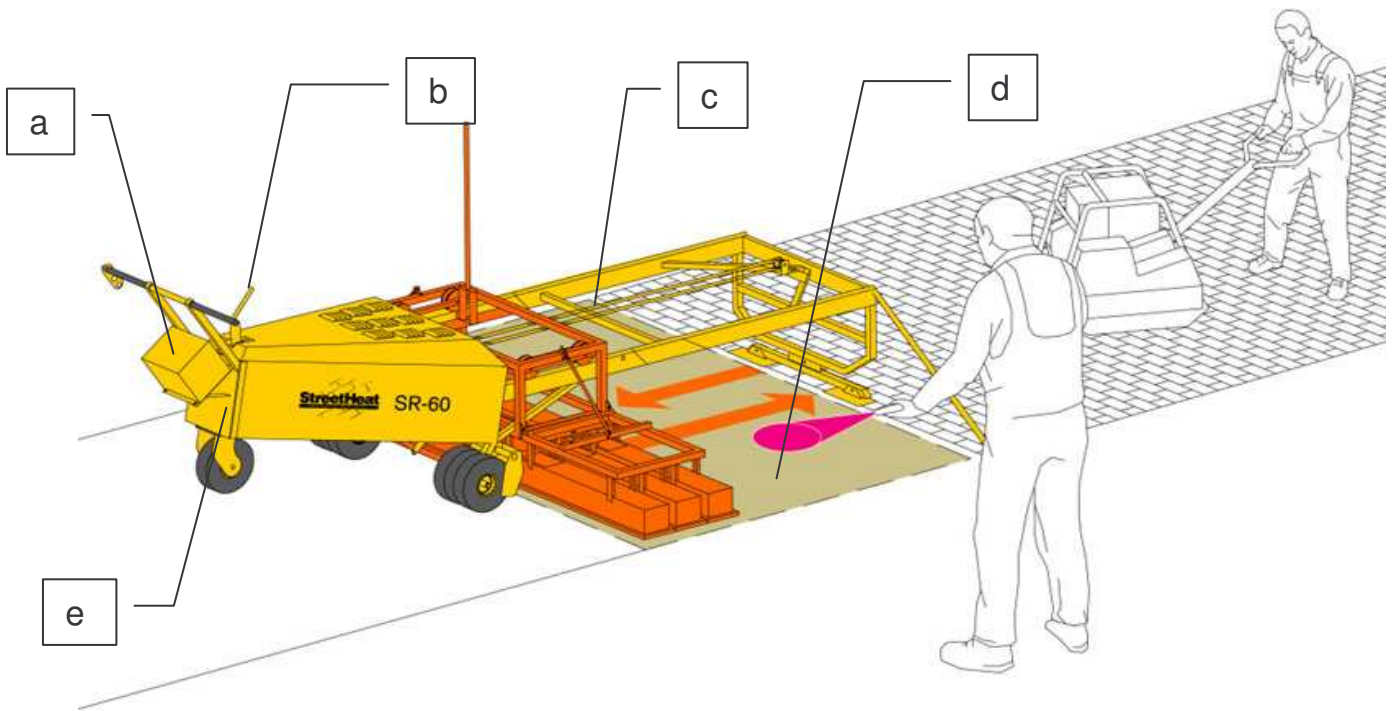
To ensure that proper heating takes place, monitor the temperature regularly during the heating process using an infra-red temperature gauge.



3. Safety

Key Safety Points

- a) **Emergency Shutoff** - In case of emergency, push the red “Off” button on the top center of the control panel. This shuts off all electrical systems and propane flow to the heater bed. The pilot lights are not shut off using this button.
- b) **Hand Brake** - Always set the hand brake before heating.
- c) **Heater Drive Belt** - Keep hands and loose clothing clear of drive belt and drive chain.
- d) **Heating Zone** - The operator must always keep clear and ensure that others are kept clear of the heating zone, as there is a danger of being hit or burnt by the reciprocating heaters.
- e) **Main Propane Shutoff Valve** - After pushing the Emergency Shutoff valve, the operator should also close the main propane valve and the valves on the propane bottles.



3. Safety – Cont'd

Safety - The SR60 is a propane-fired heating apparatus. Operating it carelessly or without reading the operating instructions could lead to serious injury. Keep everyone clear of the heaters while they ignite on the first cycle.

Smoking - Never smoke when operating this equipment or while handling the propane bottles and hoses.

Qualified Personnel

- a) Operators of the SR60 should be experienced in operating some form of construction equipment.
- b) Operators must have read and fully understood this manual.
- c) No one under the influence of drugs or alcohol should operate this equipment.

Safety Equipment Required

- a) Safety glasses
- b) Gloves
- c) Hard toe boots
- d) Long pants
- e) Ear protection
- f) Fire extinguisher

Propane Bottles

- a) **Always** ensure that the propane bottles are safely secured to the transport trailer when mobilizing.
- b) Frequently check for leaky fittings using a small spray bottle containing a soapy water solution.
- c) Always transport propane bottles in the upright position and with the regulator and hoses removed.

4. Preparing for Work

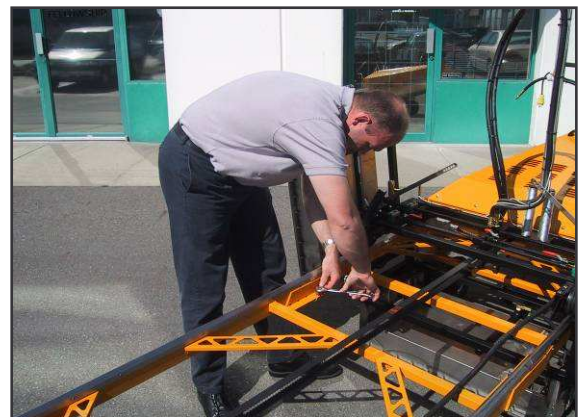
1. **Front Leg**- Extend the front leg section, ensuring the retaining pins snap into place



2. **Rails** - Unfold the front rail section. **CAUTION: Make sure the drive belt is aligned.**



3. **Rail Retainer Bolts** - Using a $\frac{3}{4}$ " wrench, tighten the retainer bolts at the rail hinge.

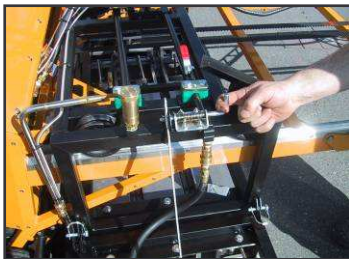


4. Preparing for Work – Cont'd

4. **Alignment Pole** - Screw in the spring mounted alignment poles found stored under the hood.



5. **Heater Wings** - Fold down the heater wings by releasing the spring pin, ensuring that it snaps into place at the desired height setting.



6. **Heat Wing Camber** - The heater wings have additional settings which allow adjustment of angle of heater to the existing grade.



4. Preparing for Work – Cont'd

7. **Propane Supply** – Use at least two, or for larger jobs three, 100 lb (45 kg) propane bottles. Connect all the bottles together so they all feed to the SR60 machine. Connect the 100ft (30m) long propane line, which has the power cable attached, to the quick coupler on the right side handlebar. Ensure that all propane fittings are properly fastened to the propane bottles and there are no leaks.
8. **Electrical Supply** – Attach the power cable to the SR-60 power inlet on the right handlebar of the SR-60. The SR-60 requires a minimum 1000 watt, 120 volt AC power supply. The Honda EU1000 generator shown below is ideal.



4. Preparing for Work – Cont'd

9. **Bottle Valves** - Open the propane bottle valves slowly and check the bottle pressure (gauge closest to tank). *If pressure is low the bottles require refilling.* Make sure that regulator pressure (right hand gauge) is set to a *maximum of 50 psi*



Power On Sequence

1. Start the generator.
2. Push the reset button on the yellow ground fault protector on the right hand side of the handlebar.
3. Pull the red power button on the main control panel. If the counter numbers do not light up, push the reset button on the **yellow plastic control housing** on the right-hand side of the handle bar.



Cycle Counter - Set the cycle counter, using the button below each digit, to the desired number of cycles. One cycle means that the heater goes forward and back one time. Each cycle takes 20 seconds, three cycles take 1 minute. Push reset only if you have stopped mid-cycle.



4. Preparing for Work – Cont'd

12. **Pilot Light Location** - The two pilot lights (left and right) are located between the center heater and each of the heater wings.



13. **Lighting the Pilots** – open fully the **brass pilot valve** and ignite the pilot flame using a common barbecue lighter. If the main line from the propane tanks is full of air, it may take a few seconds to bleed the air off before the pilots will light.



14. **Pilots Verification** - Once you can see or hear that the pilot flames are lit, the SR60 is ready to begin heating the asphalt. If the pilots do not ignite, the machine will sense this and the propane gas to the heaters will not turn on.

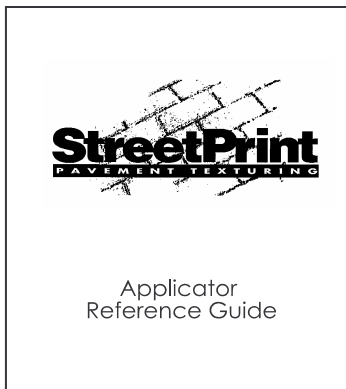


5. Operating Procedure

1. Layout and Imprinting - Refer to the Applicator Reference Guide for layout and imprinting recommendations.

Maneuvering - To move the SR-60, push down on the handle bars so the back wheel touches the ground, then push or pull the machine into position. ***Do not move the machine unless the heaters have stopped cycling and are parked at the end nearest to the operator.*** Use the spring-mounted guide poles on the front of the machine to help align the machine. Overlap the front of the heating area on the adjacent existing printed area by about 6" (15cm). Set brake. ***Do not allow the heater to pass over the propane hose.***

CAUTION: The flames from the PILOT LIGHTS will continue to burn even when the heaters have been shut down. This could overheat a small area of asphalt if the machine is left to idle for too long in one spot.

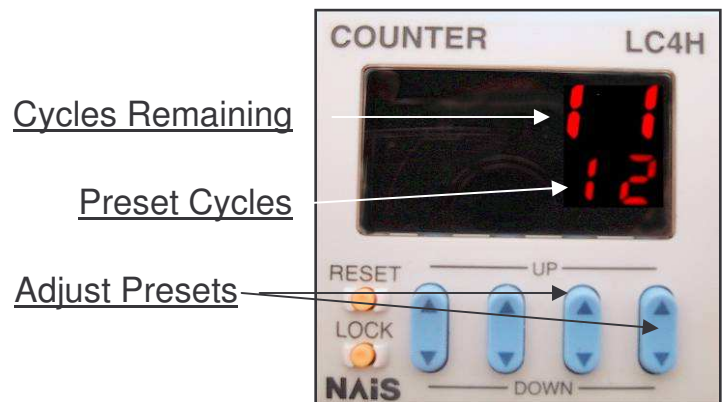


5. Operating Procedure – Cont'd

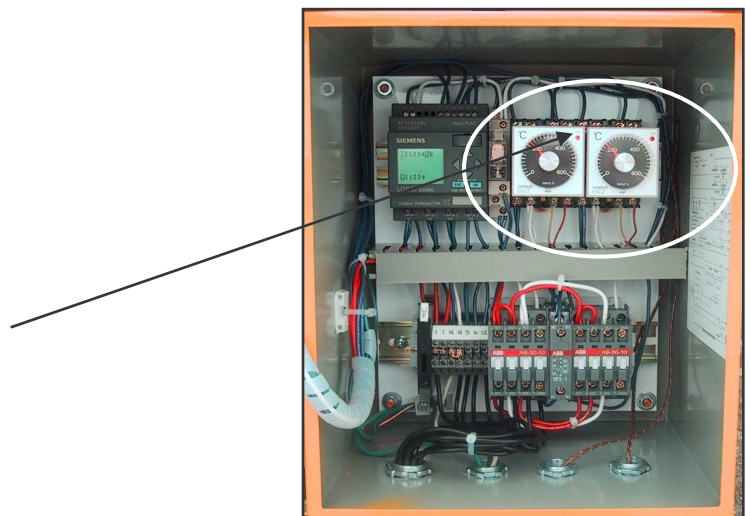
3. **Starting the Heater** – Once the pilot flames have been ignited, the timer has been set to the desired number of cycles and the machine is positioned correctly, simply push the **green button** to start the heating process. This will light the heaters and cause them to move back and forth automatically.



4. **Cycles** – One heating cycle is defined as the heater moving all the way forward and back again once. Each cycle takes 20 seconds and three cycles takes one minute. The counter shows the preset number of cycles (lower numbers) and the remaining cycles (upper numbers). Once all the cycles have been completed, the heaters will automatically stop cycling and the propane will be cut off. The pilot flames will continue to burn.



Flame Safety System – The heaters will only move if the pilot lights are burning. Safety regulations require that the pilot light sensors are set at 200°C . Note: If the red light is on, it indicates that the Pilot light is not lit.



5. Operating Procedure – Cont'd

Automated Heating – The heating, cycling of the heaters and shut-off is completely automated, once the green start button is pressed. If the red stop button is pressed, the cycling immediately stops and the propane gas to the heaters is shut off. To restart the machine pull the red power button out and press the green start button. The cycles will have been reset to the preset number.



7. **Surface Temperature** – The asphalt surface temperature should be constantly monitored using an infrared thermometer to ensure correct heating is taking place. Avoid over heating the asphalt surface. Blue smoke indicates that overheating is taking place, which could affect coating bond. Do not heat the surface above 300°F (150°C).



8. **Depth Probing** – Check depth of softening of the asphalt by pushing a small screwdriver into into the asphalt surface. Once the asphalt is soft to a depth of 1/2" to 3/4" imprinting can take place.

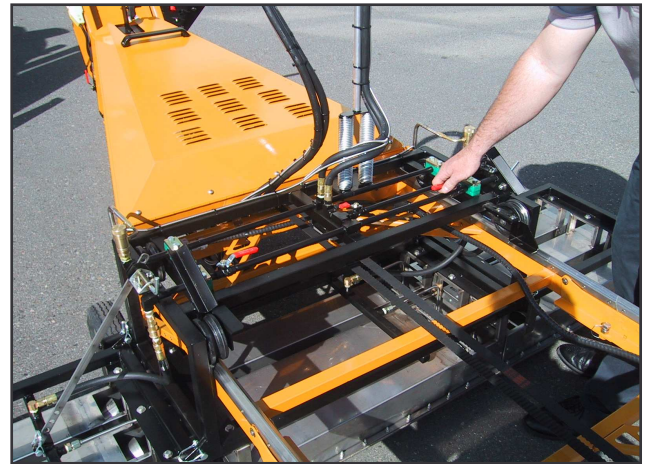


5. Operating Procedure – Cont'd

One Side is Too Hot - If the surface becomes significantly hotter on one side than the other (for example 300°F (150°C) left side & 220°F (105°C) right side) correct this by raising one of the heater wings to even out the temperature across the heated area.



10. One Side is Done Before the Other - Turn off the heater bank over the completed area using the hand valve and continue to cycle the other banks. ***Remember to turn the valve on again later.***



Heat Adjustment – The optimum pressure for the propane to the heaters is between 4 and 6 psi (0.3 and 0.4 atmosphere), on the gauge located under the hood. Too low a pressure will result in long heating times, too high a pressure will result in flames escaping from the heaters, with the risk of burning the asphalt
If the heaters make a loud whistling sound reduce the propane pressure.



5. Operating Procedure – Cont'd

12. **Short Cycle** - manually override the automatic heating process in order to control the length the heaters move on the carriage.

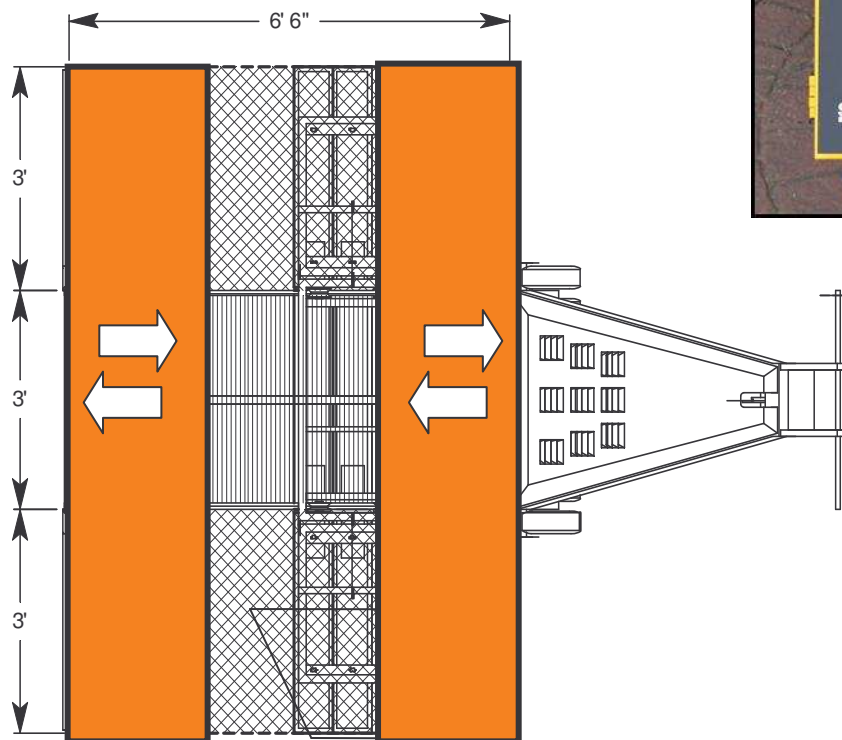
Front Short Cycle (the front is the end farthest from the operator), push the Front Short Cycle button on the control panel to force the heaters to return to the front.

Rear Short Cycle has the same effect, but from the end of the heater stroke.

CAUTION: DO NOT USE THE SHORT CYCLE BUTTON TO HOLD THE HEATER AT THE REAR FOR MORE THAN A FEW SECONDS, OR TIRE OVERHEATING MAY OCCUR.

Front short cycle

Rear short cycle



5. Operating Procedure – Cont'd

Heat Soak – This feature allows the operator to bring the surface temperature of the asphalt up to the maximum allowable and hold it there, allowing the heat to penetrate more deeply without burning. When asphalt reaches desired temperature, push the Blue Heat Soak button to initiate one of the sequences below when carriage reaches “home” position. (**One “cycle” = carriage travel from “home” position to the front and back to “home”)

There are two Heat Soak settings:

- A. Single Cycle Heat Soak** → use this setting on very hot days.



1 cycle burners OFF
1 cycle burners ON
1 cycle burners OFF
1 cycle burners ON
1 cycle burners OFF
1 cycle burners ON
Shut Off

- B. Two-Cycle Heat Soak** → use this setting on cooler days



1 cycle burners OFF
2 cycle burners ON
1 cycle burners OFF
2 cycle burners ON
1 cycle burners OFF
2 cycle burners ON
Shut Off

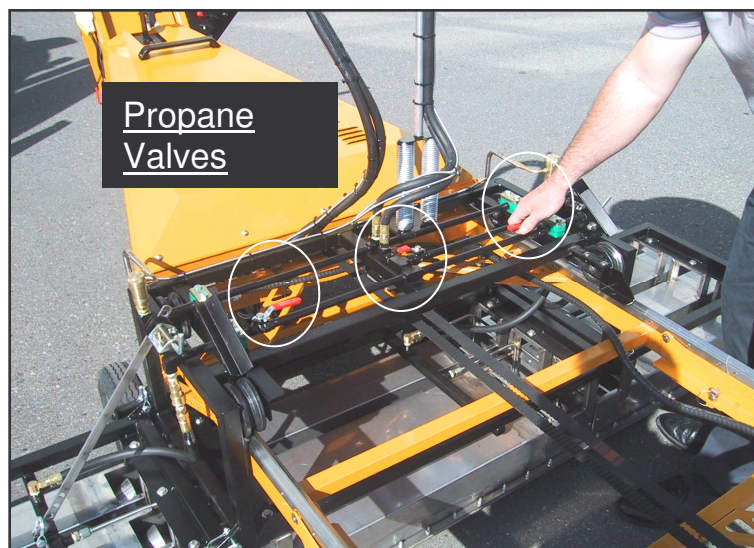
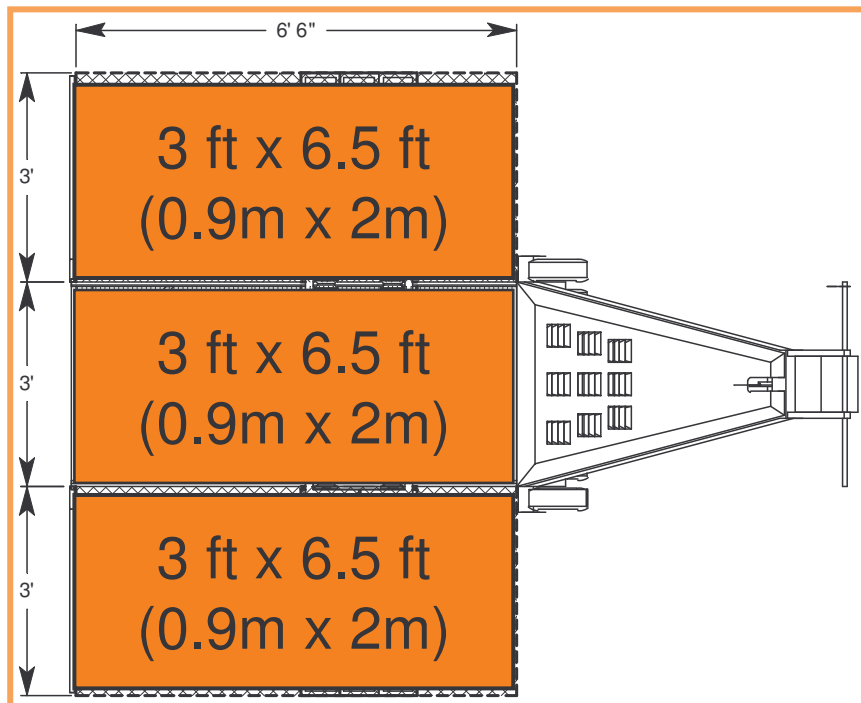
At any time the Heat Soak sequence can be re-initiated by pushing the blue button

At any time during the Heat Soak sequence it is possible to switch from Single to two cycle Heat Soak sequences

IMPORTANT: Make sure you set enough cycles on the cycle counter to complete Heat Soak sequence, or it will shut off prematurely

5. Operating Procedure – Cont'd

14. Heating Zones - There are three separate heating zones which can be controlled by using the manual valves as shown below.



5. Operating Procedure – Cont'd

15. Hills - Always remember to set the hand brake whether on a flat surface or on hills. It may require two people to move the SR-60 on steeper grades.

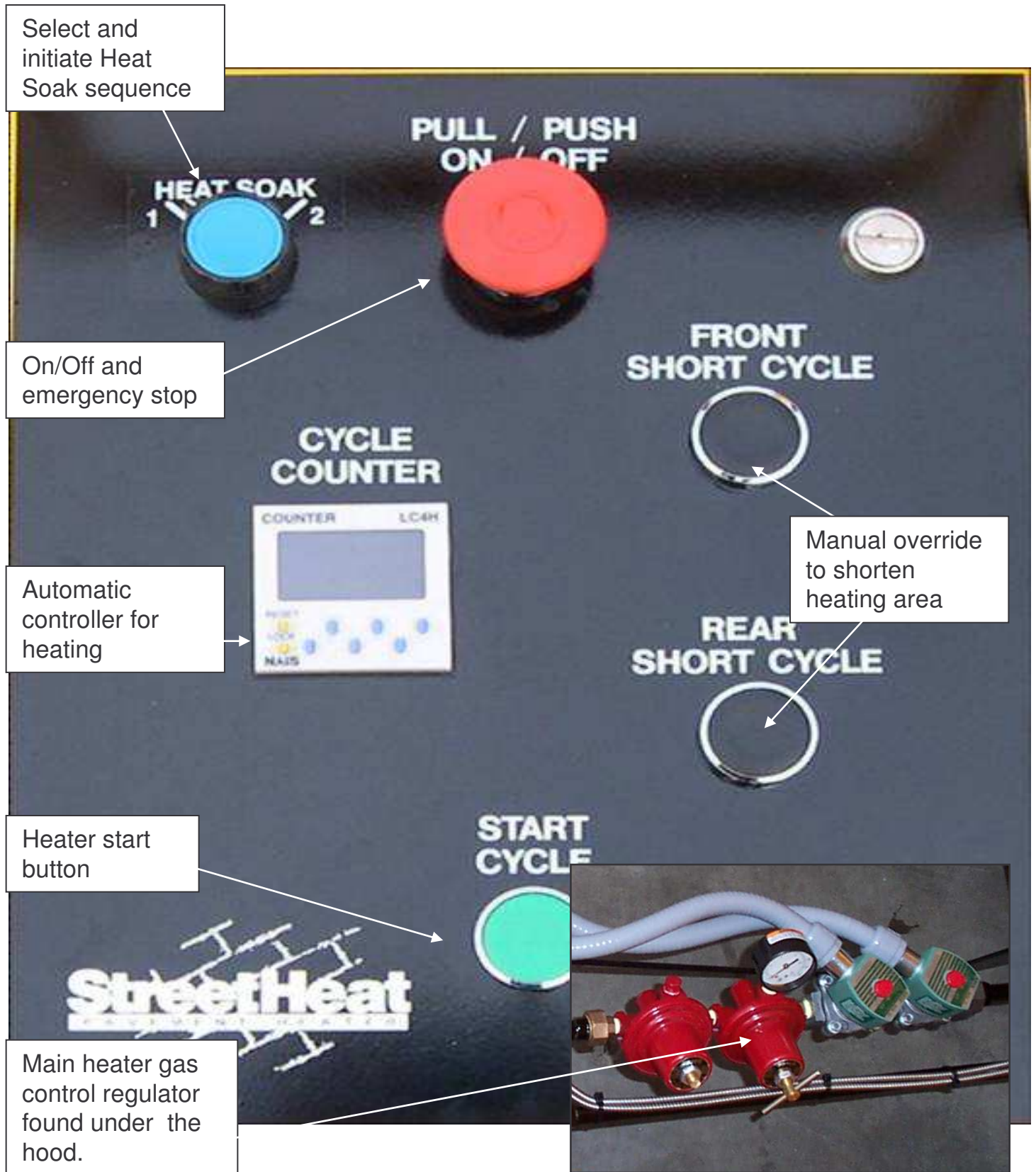
It may be necessary to adjust the weight balance on steeper grades. To do this, remove one or both of the counter weights in the tray below the control box.



16. Umbilical Cord - Always keep the propane and electrical cord organized and in good repair. ***Do not under any circumstances allow the heater elements to pass over them.*** Do not allow any other equipment or vehicles to drive over them.



6. Main Controls

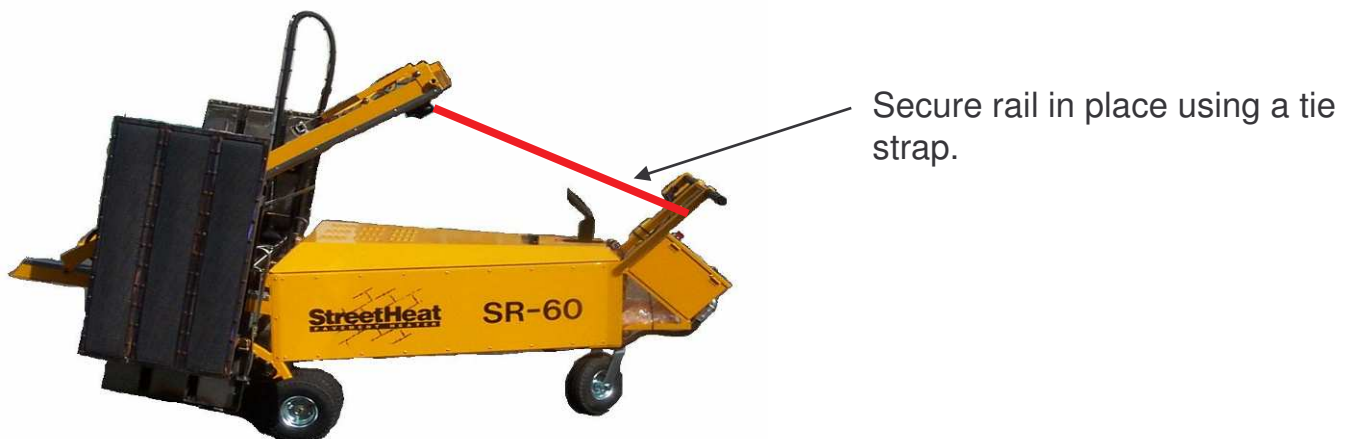


7. Preparing for Transport

- 1. Guide Poles** - Remove guide poles and place under the hood in the designated clips.
- 2. Umbilical Cord** - Ensure the main gas valves on the SR-60 and propane bottles are shut off. Unhook the electrical cord and propane hose and wrap them between the handles of the propane carts mounted on the trailer. **CAUTION: always undo regulator and hose from the bottle before transporting.**
- 3. Front Rails** - Fold up the front rails, ensuring that the spring pole fits neatly up between the rails. Use a tie strap to secure the rail to the handle bars or it may be blown over and damaged during transport.
- 4. Front Legs** - Fold down the front legs.

Heater Wings - Fold up the right and left heater wings, securing them with the latch system provided.

Hood – Ensure the hood latch is fastened to prevent hood from blowing open during transport



7. Preparing for Transport – Cont'd

Recommended trailer for transporting the SR60: a landscape trailer or an enclosed auto type trailer, at least 16 feet in length, and with a rear ramp door.

Loading the SR60: Always load the SR-60 onto the trailer backwards to prevent damaging the pilot lights.

Securing the SR-60: Always strap the machine down securely to prevent movement that may cause damage or injury. Strap as shown below to prevent movement from side-to-side, front-to-back, up and down. The brake should be set once all slack has been removed from tie downs.



Secure to Front: Caution, feed strap between break shaft and body.



Secure Down: Strap over top to prevent Machine from bouncing.



Secure to Back: Use anchor point, found below control box, with a winch or ratchet tie down



Secure Side to Side: After removing slack from tie downs, set hand brake.

8. Parts List

(See the following pages for Illustrations)

<u>Part No.</u>	<u>Part Description</u>	<u>Qty Per Unit</u>
	<i>MECHANICAL</i>	
1	Baldor 1/6 HP AC Gear Motor	1
2	Drive Sprocket	1
3	#35 Chain	1
5	Driven Sprocket	1
6	1" Belt Pulley, 5/8" Bore	1
7	5/8"Cast 4 Bolt Flange Bearing Block	2
10	1" Belt (15 feet)	1
11	1" Belt Pulley, 1/2" Bore	1
12	1/2" Bearing / Flange Assembly	2
13	Aluminum Belt Attachment Clamp	1
14	10" Pneumatic Swivel Castor	1
15	10" Pneumatic Wheels	4
16	V-Groove Wheel Assembly	4
17	5/8" Keyed Shaft	1
18	Belt Attachment Clamp Stiffener	1
20	Brake Box and Lever Assembly	1
21	Brake / Heat Shield Assembly	1
22	Brake Shaft	1
23	Spare 1" Belt (15 feet)	1
	<i>ELECTRICAL</i>	
30	Main Electrical Control Box Assembly	1
30A	Temperature Controllers	2
30B	Counter Relay	1
30C		
31	Ground Fault Protector	1
32	Electrical Junction Box	1
33/34	Front and Rear Proximity Sensors	2
35	Pilot Thermocouple Assembly	2
36	100' Extension Cord ("Umbilical Cord)	1

8. Parts List – Cont'd

(See the following pages for Illustrations)

<u>Part No.</u>	<u>Part Description</u>	<u>Qty Per Unit</u>
	<i>PROPANE</i>	
40	3/8" x 3' Propane Hose	1
41	Main Manual Propane Shut off Valve	4
42	Under Hood Plumbing Assembly (not including valves and regulator)	1
43A	Second Stage Fixed 10 psi Regulator	1
43B	Third Stage 3-15 psi Regulator	1
44	0-15 PSI Pressure Guage	1
45	3/8" Solenoid Valve	2
46	1/4" x 12'-4" Propane Hose (To Pilot)	1
47	3/8 x 8'-9" Propane Hose (To Burners)	1
48	Heater Bank Propane Plumbing Assembly (on Center Carriage)	1
49	Heater Bank Manual Propane Shut off Valve	3
50	Center Carriage Heater Bank Propane Hose (not shown)	1
51	Wing Heater Bank Propane Hoses (not shown)	2
52	3/8" Stainless Steel Flared Propane Tube	9
55	Pilot Plumbing Assembly	1
56	Pilot Assembly	2
57	36" Infrared Heaters (Center Carriage)	3
58	36" Infrared Heaters (Wings)	6
59	100' Propane Hose ("Umbilical Cord")	1
60	1 st Stage Regulator Assembly	1
61	3 rd Propane Bottle POL Tee	1
62	15' POL x POL Propane Bottle Connector Hose	1
63	4' POL x POL Propane Bottle Connector Hose	1

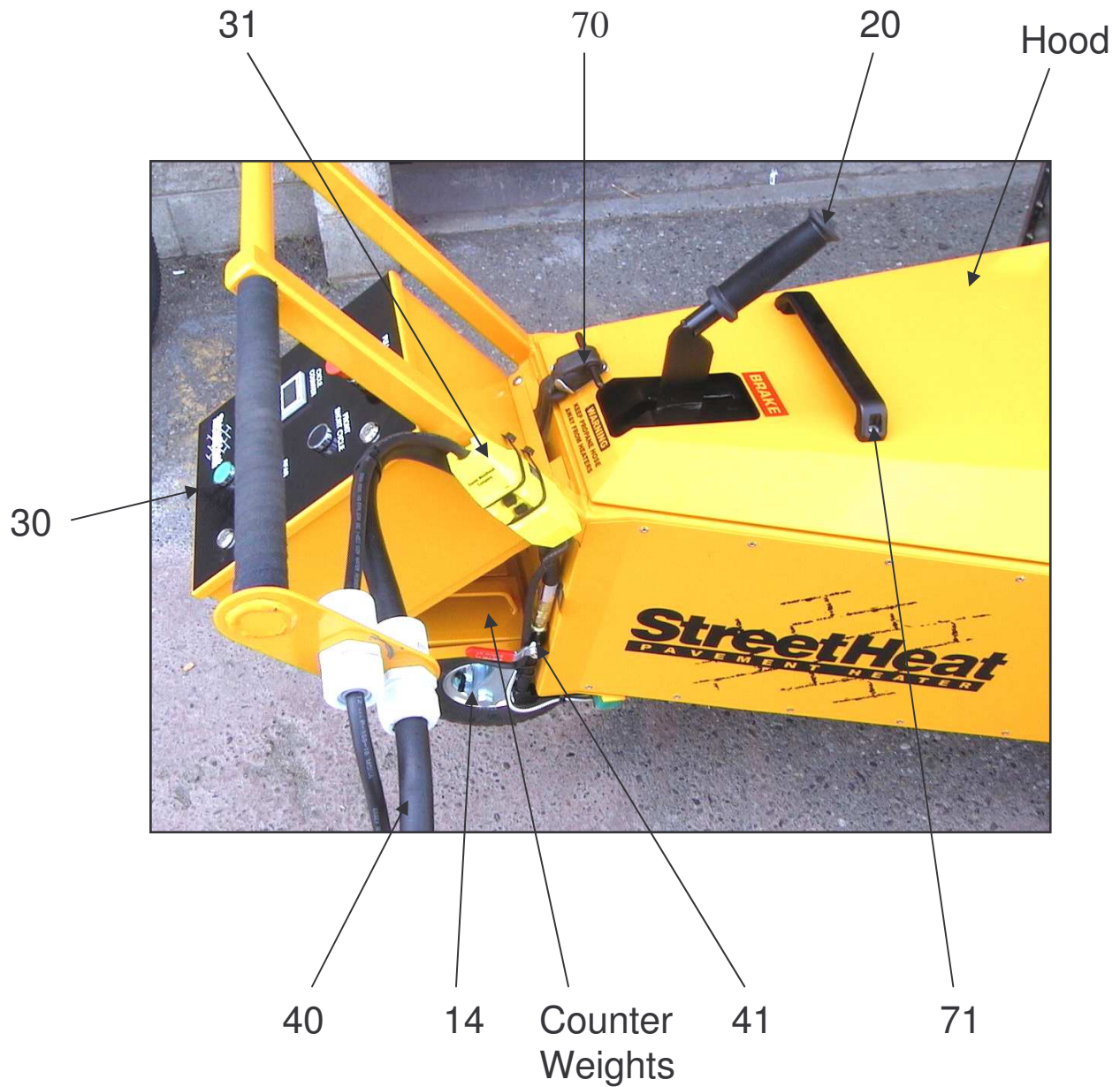
8. Parts List – Cont'd

(See the following pages for Illustrations)

<u>Part No.</u>	<u>Part Description</u>	<u>Qty Per Unit</u>
	<i>MISCELANEOUS</i>	
70	Rubber Latch	1
71	Hood Handle	1
72	Hose Whip Assembly	2
73	Wing Heater Stays	2
74	3/8" Spring Bolt	4
75	Rail Fold-up Cradle	2
76	Rear Proximity Sensing Bracket	1
77	Front Proximity Sensing Bracket	1
78	Alignment Pole Assembly	2
79	Hood Support Stay	1
80	Barbeque Lighter	1
81	Can of Touch-Up Paint	1
82	Infrared Thermometer & Carry Case	1
90	100 lb Propane Bottle Cart	2
91	SR-60 Operations Manual	1
92	SR-60 Trouble Shooting and Repair Guide	1
93	SR-60 Video Operations Manual	1

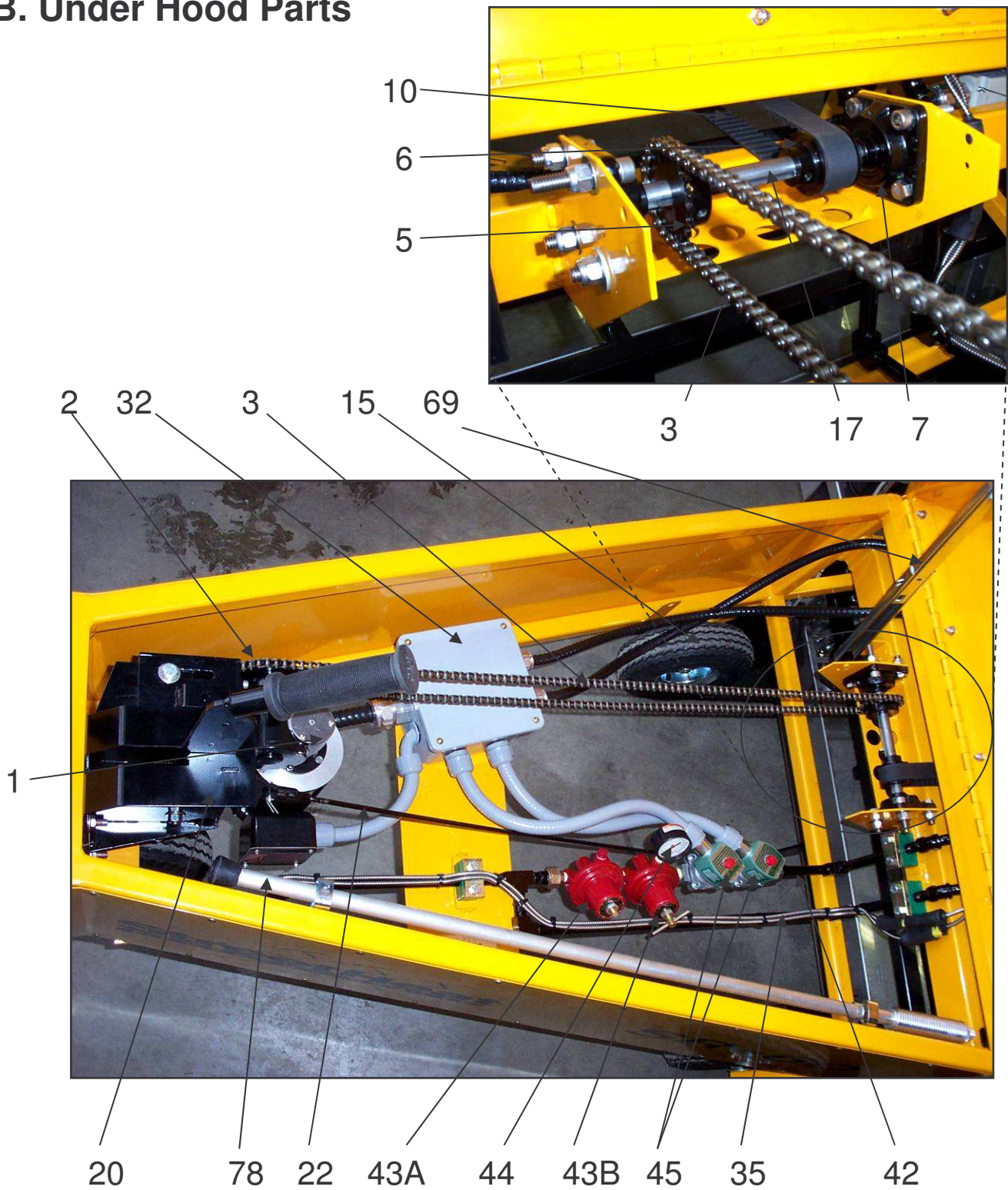
8. Parts List – Illustrations

A. Back End Parts



8. Parts List – Illustrations – Cont'd

B. Under Hood Parts



8. Parts List – Illustrations – Cont'd

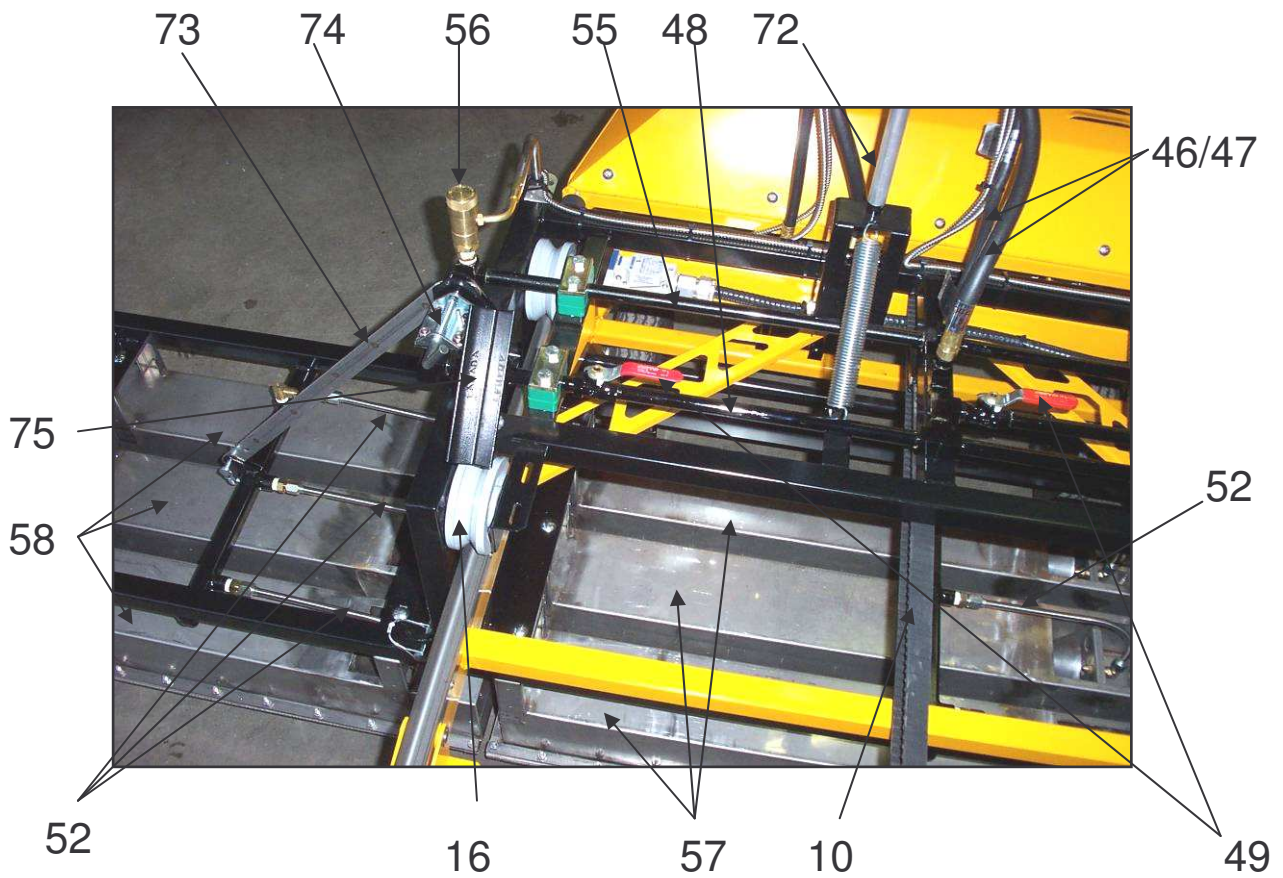
C. Heater Carriage Parts

Belt Attachment Clamp Detail



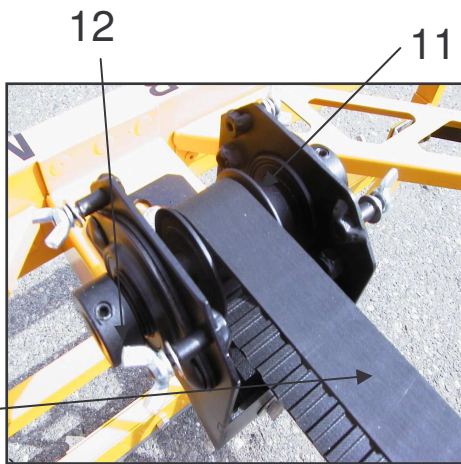
End of Heater (57)

Pilot Light Detail

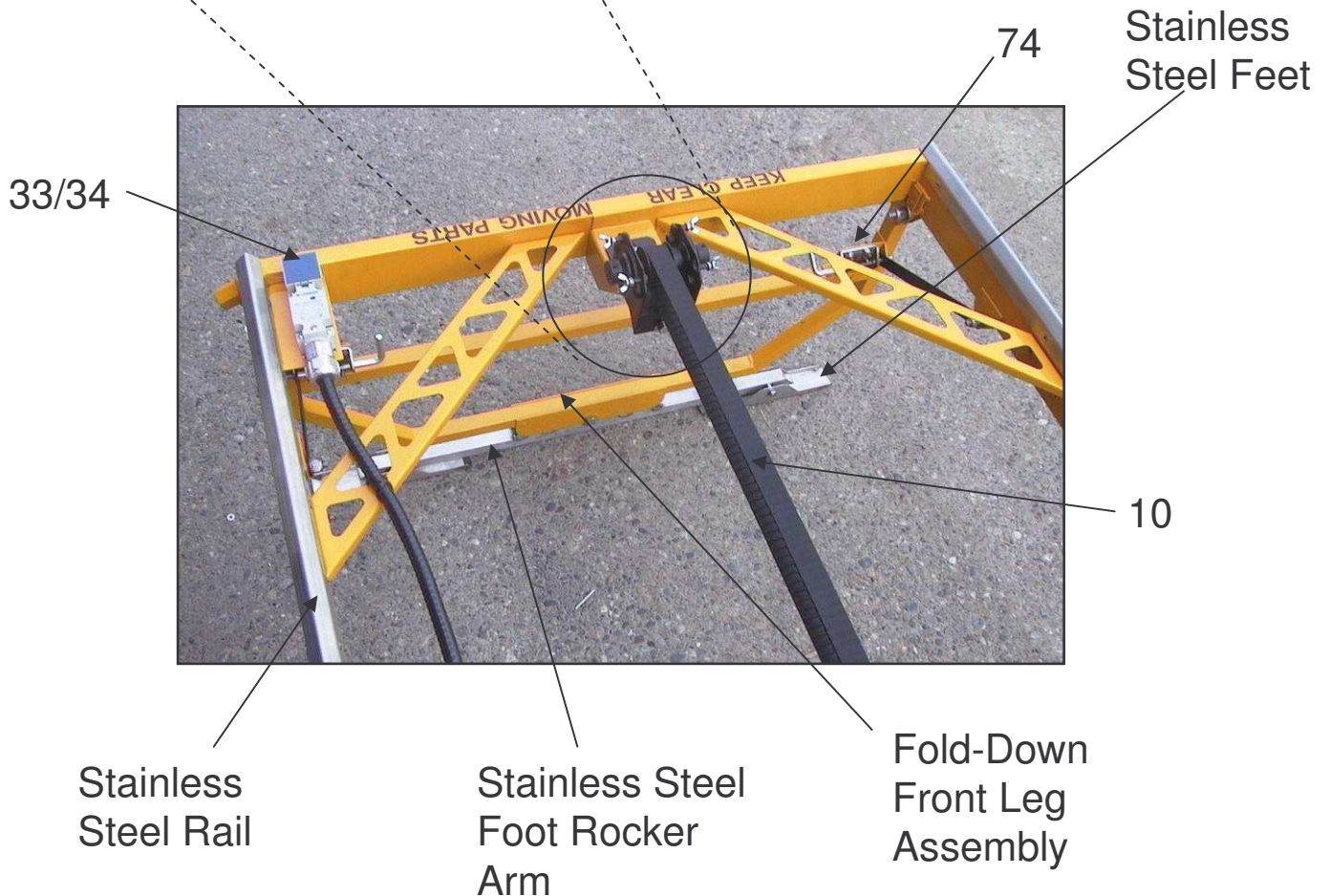


8. Parts List – Illustrations – Cont'd

D. Front End Parts

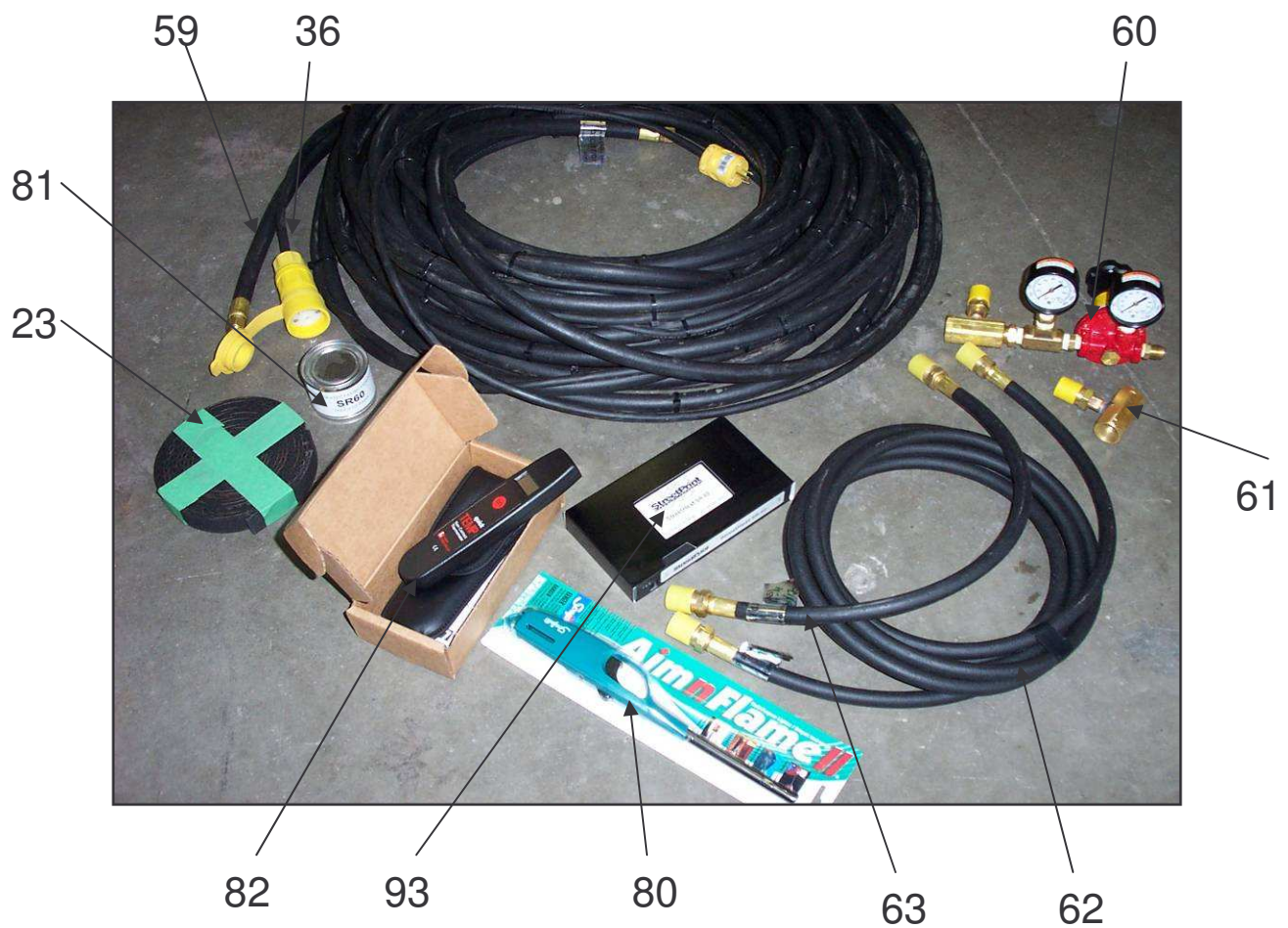


Belt Pulley Bracket Assembly Detail

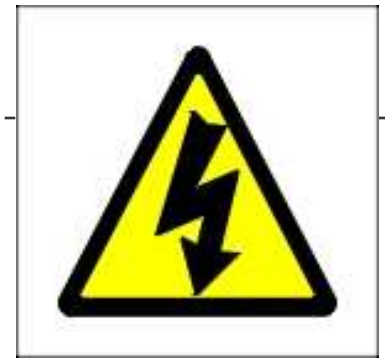


8. Parts List – Illustrations – Cont'd

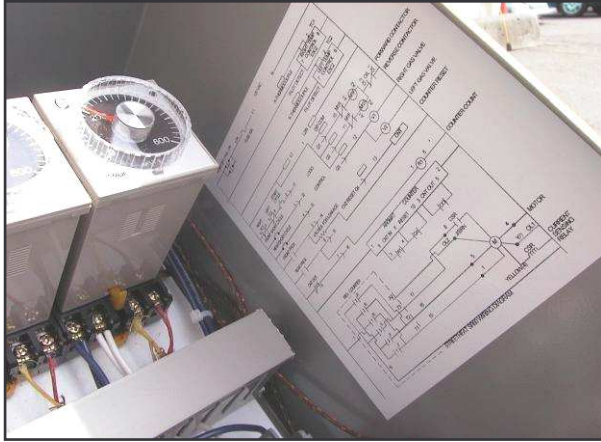
E. Miscellaneous Parts



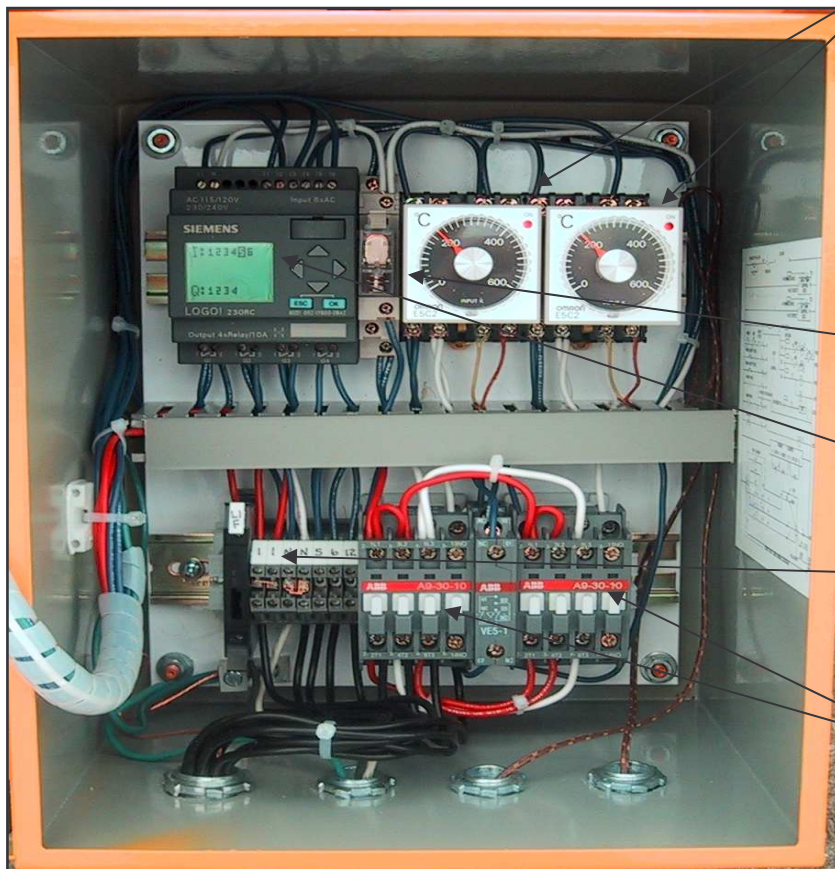
8. Parts List – Illustrations – Cont'd



Electrical System



The Electrical Wiring Diagram is located on the inside of the main control box as well as in this guide.



Temperature settings for the pilot sensors. Always ensure that these are set to at least 200 °C

Counter Relay

Sequence Controller

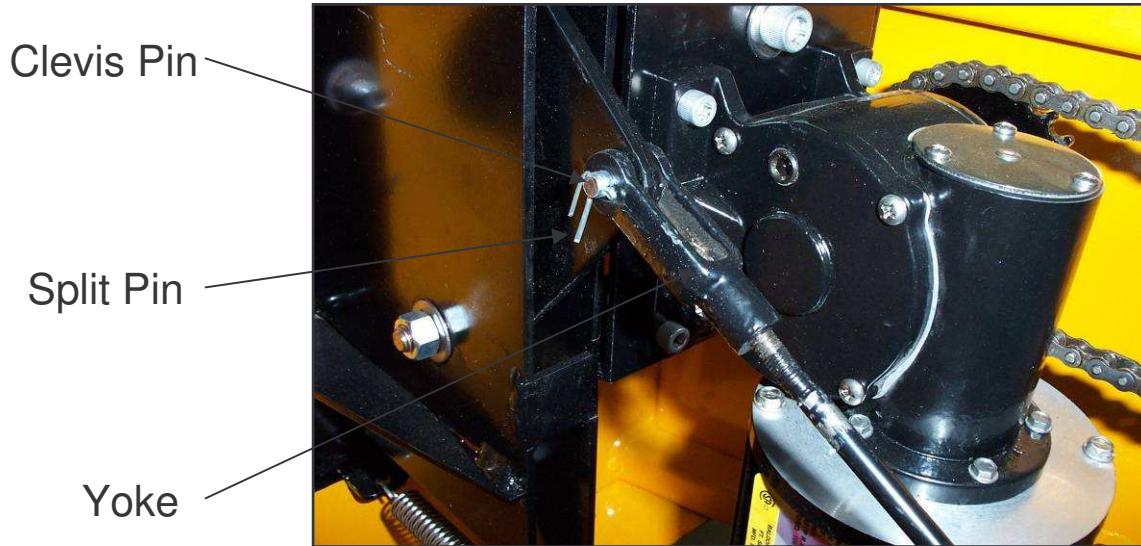
Fuse

Forward /Reverse Motor Contactors

View of Inside of Main Control Box

9. Maintenance

Adjusting Brake



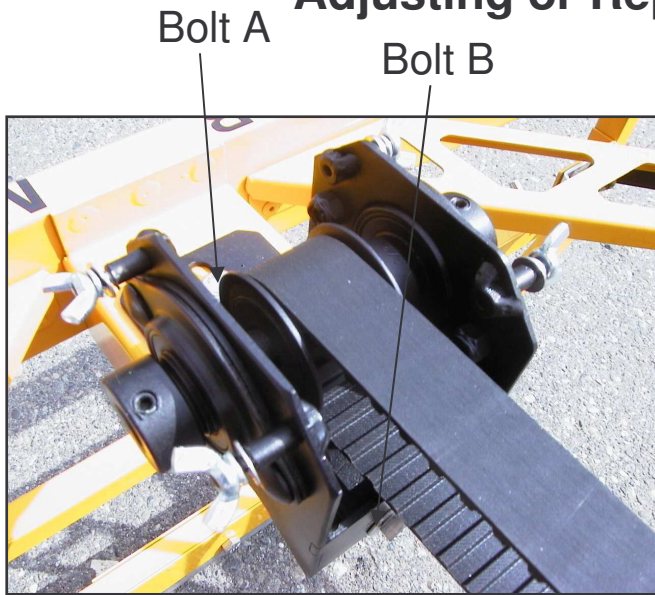
To adjust the brake:

Remove the split pin and clevis pin on the Brake Rod (#22)

Screw Yoke on to tighten brake or off to loosen. Reassemble.

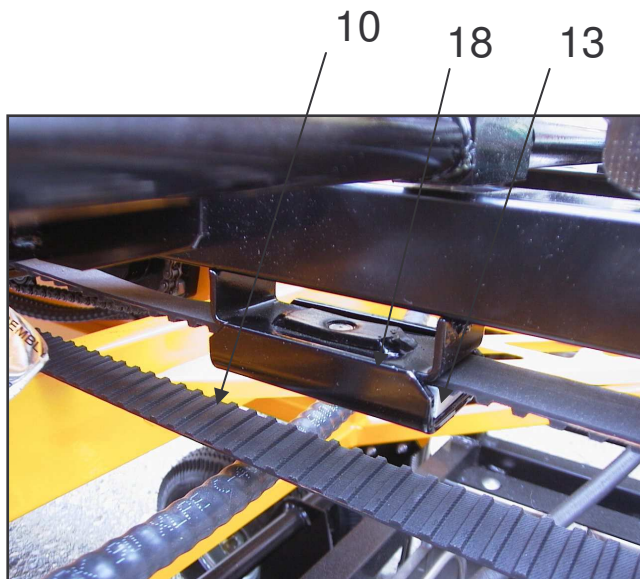
9. Maintenance – Cont'd

Adjusting or Replacing Drive Belt



Detail View of the Belt Pulley Bracket.

To adjust belt, use a 9/16" wrench to loosen Bolt A, tighten the belt with bolt B, then retighten Bolt A.



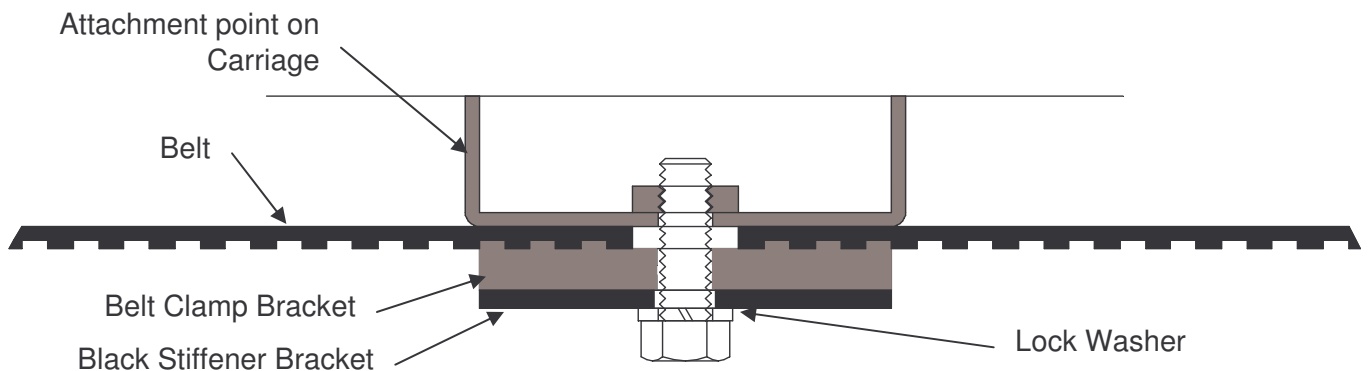
To replace belt (10), loosen belt as shown above, then undo the bolt holding the bracket (13) and belt bracket stiffener (18). Remove belt. Install new belt with at least two teeth under belt bracket on each side.

View of underside of Center Heater Carriage at the center, showing the belt attachment

9. Maintenance – Cont'd

Preventing Belt Breakage

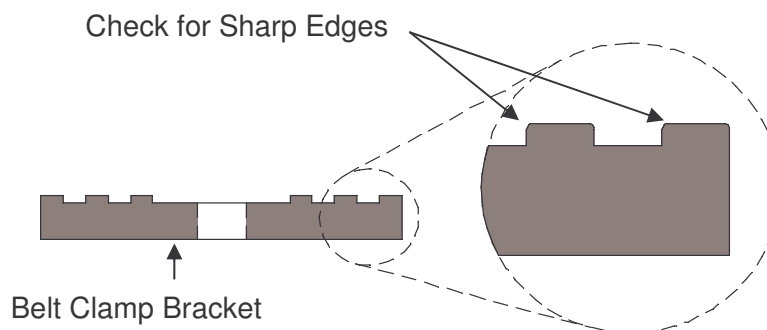
Almost all belt breakage occurs at the attachment point on the carriage. The correct installation configuration is shown below. If you are experiencing frequent belt breakage do these simple checks and make the recommended corrections.



Correct Installation

1. Sharp teeth on the aluminum clamp bracket

Check that the “teeth” on the clamp bracket do not have any sharp edges. Use a file or sand paper to take off the edge.

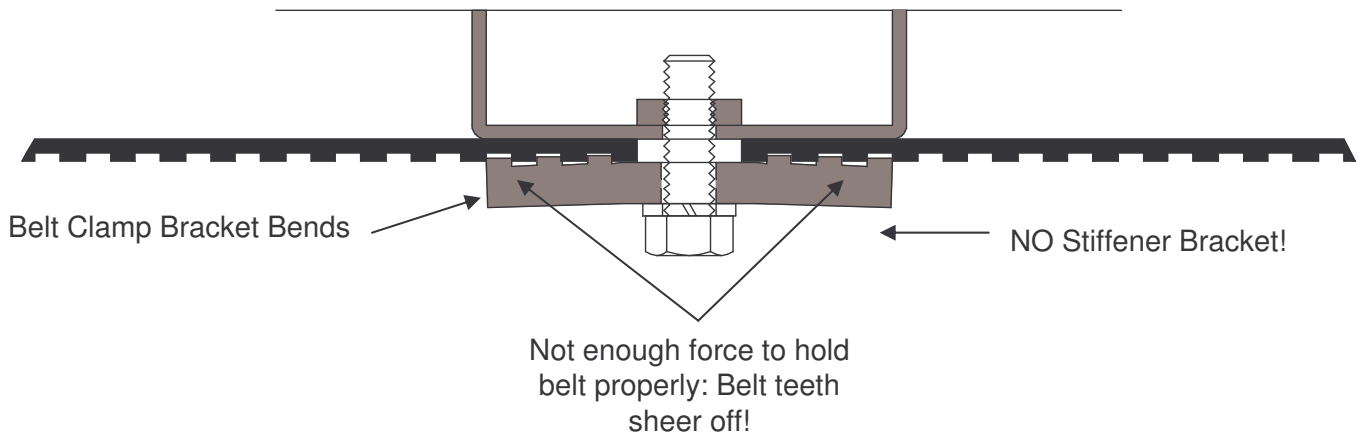


9. Maintenance – Cont'd

Preventing Belt Breakage – Cont'd

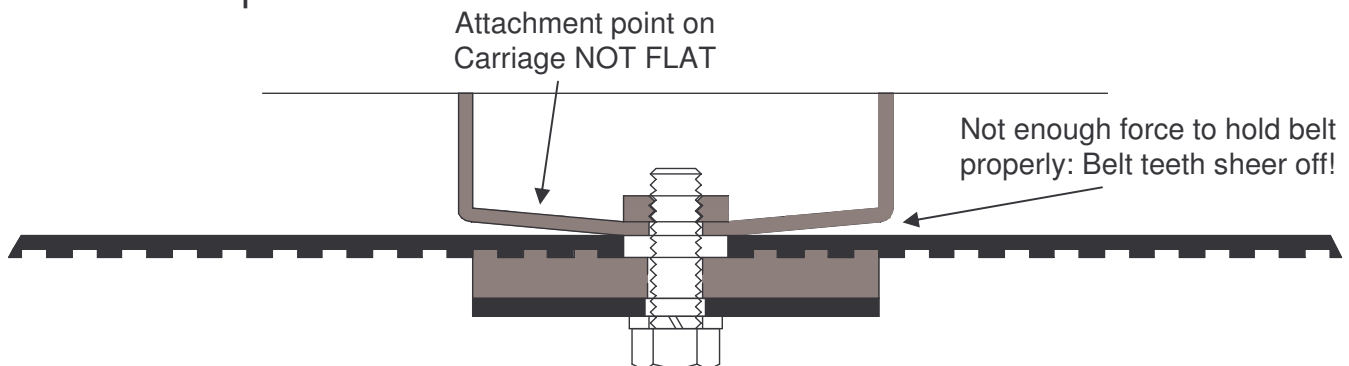
2. The Stiffener Bracket has not been installed

The Stiffener Bracket is a heavy gauge steel bracket that is necessary to apply even force along the length of the aluminum clamp bracket. Without the stiffener bracket the aluminum clamp bracket is likely to become bent. As a result the teeth on the belt are likely to be sheered off after a short time. Always make sure the stiffener bracket is installed.



3. The Attachment Point on the carriage is not flat

It is very unlikely, but possible that the metal belt attachment point on the carriage is bent down under some extreme force and is no longer flat. Again, the belt is held only on the very ends and is likely to have teeth sheered off. Use a hammer to carefully flatten out the attachment point.



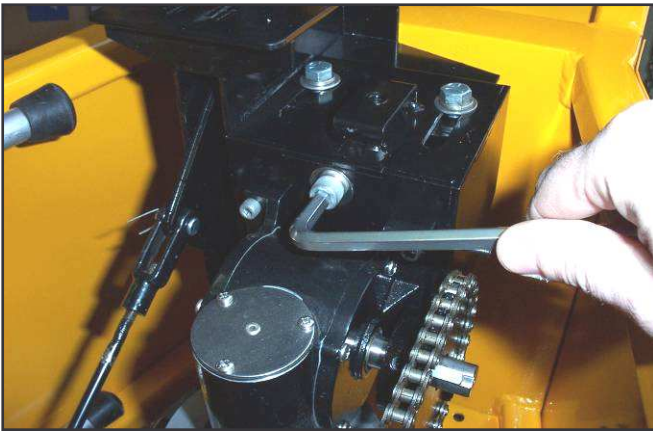
9. Maintenance – Cont'd

Replacing or Adjusting Chain



View of Motor mount / Brake handle box with the safety cover removed.

1. Remove the safety cover from on top of the motor
2. Loosen the two bolts on the top, as shown, using a 9/16" wrench.



3. Chain can be loosened or tightened using a 5/16" Allen wrench.
4. To replace the chain, undo the master link, and replace with chain that is cut to the same length.

CAUTION: Do not over-tighten the chain

5. Replace safety cover on motor.

9. Maintenance – Cont'd

Adjusting Proximity Sensors

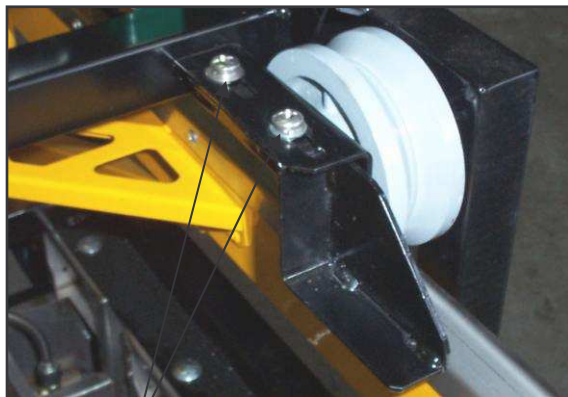


Proximity Sensor

Mounting Nuts and Bolts

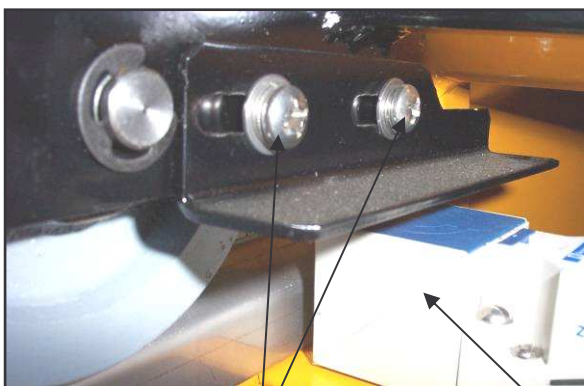
There are two ways to adjust how close the Center Carriage comes to the end of each stroke:

1. Adjust the position of the proximity sensors (#33 & #34) on either end.



Adjustment Bolts

2. Adjust the proximity sensing bracket at the front-left (#77) of the center carriage;



Adjustment Bolts

Proximity Sensor

- or the proximity sensor bracket at the rear-right (#76) of the center carriage

10. Service

Integrated Paving Concepts Inc. is committed to providing the best possible after-market service. If you require parts or service, or have any other questions please call our Technical Assistance line at 1-800-688-5652 or +001 604 574-7510.

