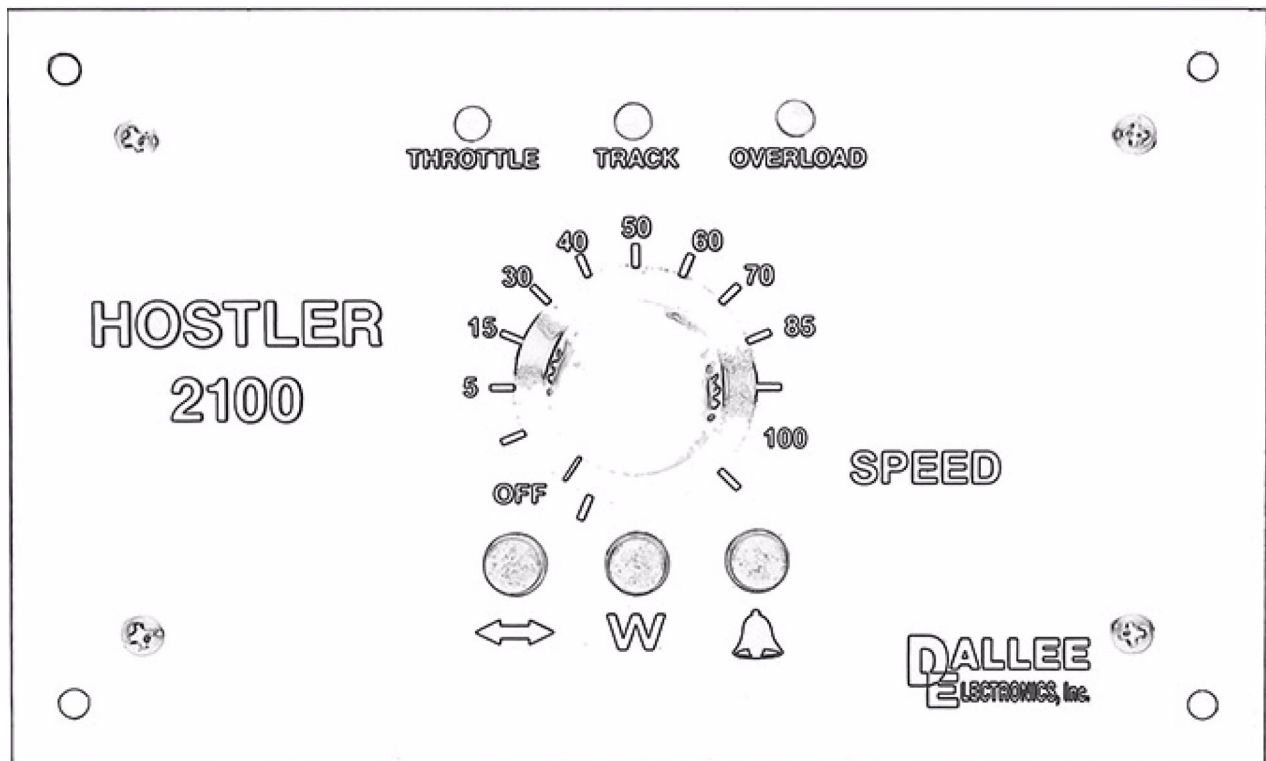


HOSTLER 2100

Operating Instructions



DALLEE
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Caution - Electrically operated product. Please read and follow instructions to insure safe operation and handling.

Refer all service to Dallee Electronics, Inc.

OVERVIEW

The HOSTLER 2100, an AC THROTTLE, is a solid state, full feature design, momentum throttle with conventional Whistle/Horn, Bell, and Direction controls. The standard HOSTLER 2100 produces a variable AC output proportional to it's input voltage. It is available with a maximum currents of 3, 6, and 12 amperes. The HOSTLER 2100 is meant for a more deluxe operation of your trains. It's designed to be panel mounted utilizing either the fixed voltage from an existing power transformer or from any other appropriate power transformer. Dallee offers power transformers to suit this need as well but they need to be mounted and wired appropriately.

DESCRIPTION & LOCATION OF COMPONENTS AND CONTROLS

On the face of the HOSTLER 2100 you will find the main SPEED control in the center. Just above that are 3 LED's. The left one is Green and labeled "THROTTLE" to indicate power to the HOSTLER 2100 unit. The top center LED is Yellow and is labeled "TRACK". This LED will illuminate from dim to brighter based upon the amount of track voltage that is present set by the "SPEED" control. To the right is the Red LED labeled "OVERLOAD". This LED will only illuminate when the unit has sensed an excess current condition.

To the lower left is the "Direction" push button followed by the "W", Whistle/Horn, push button and last the Bell push button.

Moving to the rear of the HOSTLER 2100 PC board you will find the power input/output barrier strip (lower left hand corner) with four terminals. The left two terminals are for the output to the track. The right two are for the transformer input power. These are labeled appropriately on the PC board. The "HOT" input connects to the high of the power transformer and the "C" connects to the common. The output "HOT" is the main power output and the "C" is the common output. The output common is connected to the input common on the board to ease wiring!

PANEL MOUNTING

The HOSTLER 2100 face also contains 4 mounting locations. One in each corner. These are set for clearance of a #6 screw. The control panel needs to be cut out to allow for the main PC board to clear while allowing a lip for the rest of the face plate to catch on the edge. There is a template provided on the last sheet to provide for simple mounting. The black objects are heat sinks and will get warm during normal operation. Care must be taken to allow for adequate ventilation and electrically so that nothing comes into contact with them or the main PC board or it's

components. When mounting, no power should be present on the board or nearby to prevent shorts from accidentally happening!

THROTTLE OPERATION

Operating the HOSTLER 2100 is quite unique in that it's meant to give you a more realistic control of your conventional AC train. To get started with a wired and powered up unit, you can experiment with how things work but first, read the full explanation of things. The "SPEED" control is quite obvious. If it is set full CCW, the output will go to "0". When advanced, the output will increase but at a delayed rate. This allows you to set the throttle to a speed that you want your train to achieve without gradually turning up the output manually. It also prevents jack rabbit starts and stops when using the "SPEED" control to do that! Now here comes the more interesting part. When you set the "SPEED" control to say 55 or so and you want to sequence your engine (change the direction to Neutral or Reverse), you can just depress the Direction button for a moment. Upon depressing it two things happen, first the output voltage is immediately turned off for the duration of the button press but secondly, the output voltage is also reduced. This way you do not get an instant jolt to your engine. The longer you hold down the direction button, the further the output voltage will be when the button is no longer depressed. This makes for a very realistic reversing of your train for not only series motors but can motors as well! The key is you have to be patient since the voltage can become too low to start the engine up instantly but it will increase steadily to your set voltage / "SPEED". It may take a slight bit to get use to this but when you do, you'll see how nice and easy it is to reverse without moving the "SPEED" setting. Of course, you don't want to be at a very high speed when doing this since the output voltage is instantaneously turned off upon depressing the direction button (if your engine coasts, then it doesn't matter).

Overload operation with the HOSTLER 2100 is handled quite differently. When excessive current flows either from a short circuit or too much current being drawn by the train, the overload sequence will start. First thing that happens is the Red OVERLOAD indicator turns on. At the same time, the output voltage to the track is set to zero and Yellow LED is turned off since the output is zero. The speed setting is also set to zero (even though the actual SPEED control is set to what you were running at). Next, there is a second or so delay and then the Red LED is turned off and the output is allowed to come back on but from zero volts! The HOSTLER 2100 will continue to cycle through the overload sequence until the overload is cleared. If you know that you didn't

remove the problem, set the SPEED control to zero until you do have the problem corrected. This yields less stress on the throttle as well as the wiring, track, and whatever is causing the overload.

Next we'll cover the sound buttons. The Whistle/Horn and Bell buttons, when pressed, are set to create a detected DC shift of the AC track power for most all sound systems. There is no apparent change in track power when they are depressed or both are depressed together! Pressing both creates no change in output and does not generate a signal for the sound system to play a sound. We cannot guarantee that all will respond but they all should. When the throttle is set at a high speed setting, such as a setting of 70 or higher, the sound control signal is not as strong as it is at slower speeds and some sound systems may not react to it. You may have to reduce your speed setting to something less to have your sound system respond. The actual train speed isn't very different from 70 to full speed, so this should not be a problem. Plus, the train is typically running way too fast at that setting. We could have simply prevented the output from getting so high, but since some sound systems work at those speeds we elected to leave it to the operator.

THROTTLE INPUT POWER

The HOSTLER 2100 operates with input voltages from the standard 15 to 20 volts AC. The power rating of the input transformer has to be at least high enough to allow for proper overload operation. It also needs to have a proper circuit breaker in the event of catastrophic failure. Below is a table showing minimum wattage requirements. You can always use a higher wattage transformer.

Output Input:	15 V	18 V	20 V
Amps	Watts	Watts	Watts
3.....	45.....	54.....	60
6.....	90.....	108.....	120
12.....	180.....	216.....	240

Multiple HOSTLER 2100 throttles can be connected to one power transformer but the power transformer must be capable of handling the total amount of current required. For example, two 6 amp HOSTLER 2100's can be connected to one power transformer as shown in the table for one 12 amp throttle. Thus four 3 amp throttles can be connected to one 12 amp power transformer or two 3 amp and one 6 amp HOSTLER 2100 can also be connected to one 12 amp power transformer. It is however much better to operate one HOSTLER 2100 on it's own power

source. Also remember that the "C" (common) connection is the same throughout. When operating with multiple transformers and you want a common type rail with all of the outputs connected to the same common rail, connect the common wire from the output terminal and not before. Also, make sure that all of the power transformers are properly phased before connecting them together. This means that all of them have to be connected the same way. When using older power transformers from Lionel or American Flyer, they should be plugged into a power strip so that the power cords can be marked once their proper phasing is achieved. To check for proper phasing, connect two transformers common / base post together. Then connect them to the power source (120vAC). You can either use a voltmeter or two light bulbs (18 volt) connected in series. Connect the meter leads from one fixed 15/18 volt post of the one transformer to the other transformer. If you read any voltage (both transformers rated voltage added together) or see the lamp light, they are out of phase (see Fig 1 "V" for meter/lamp placement). To phase them correctly, just unplug the power cord of one transformer and replug it back in. The light bulb will go out or the meter will read next to or zero. If the transformers have a slight difference in winding voltage you will read that on the meter, or show dim lamps, but your still in phase. Take a marker and mark the power cord plugs to indicate the proper plugging of them in case it has gets unplugged and then replugged without checking.

The power transformer power to the Hostler-2100 cannot be from a modern electronically controlled "fixed" output!

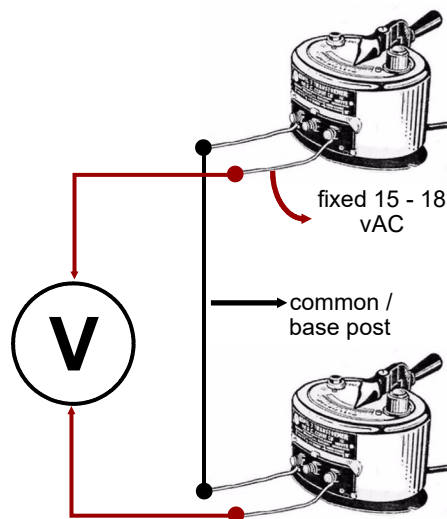


Fig 1 - phasing of transformers

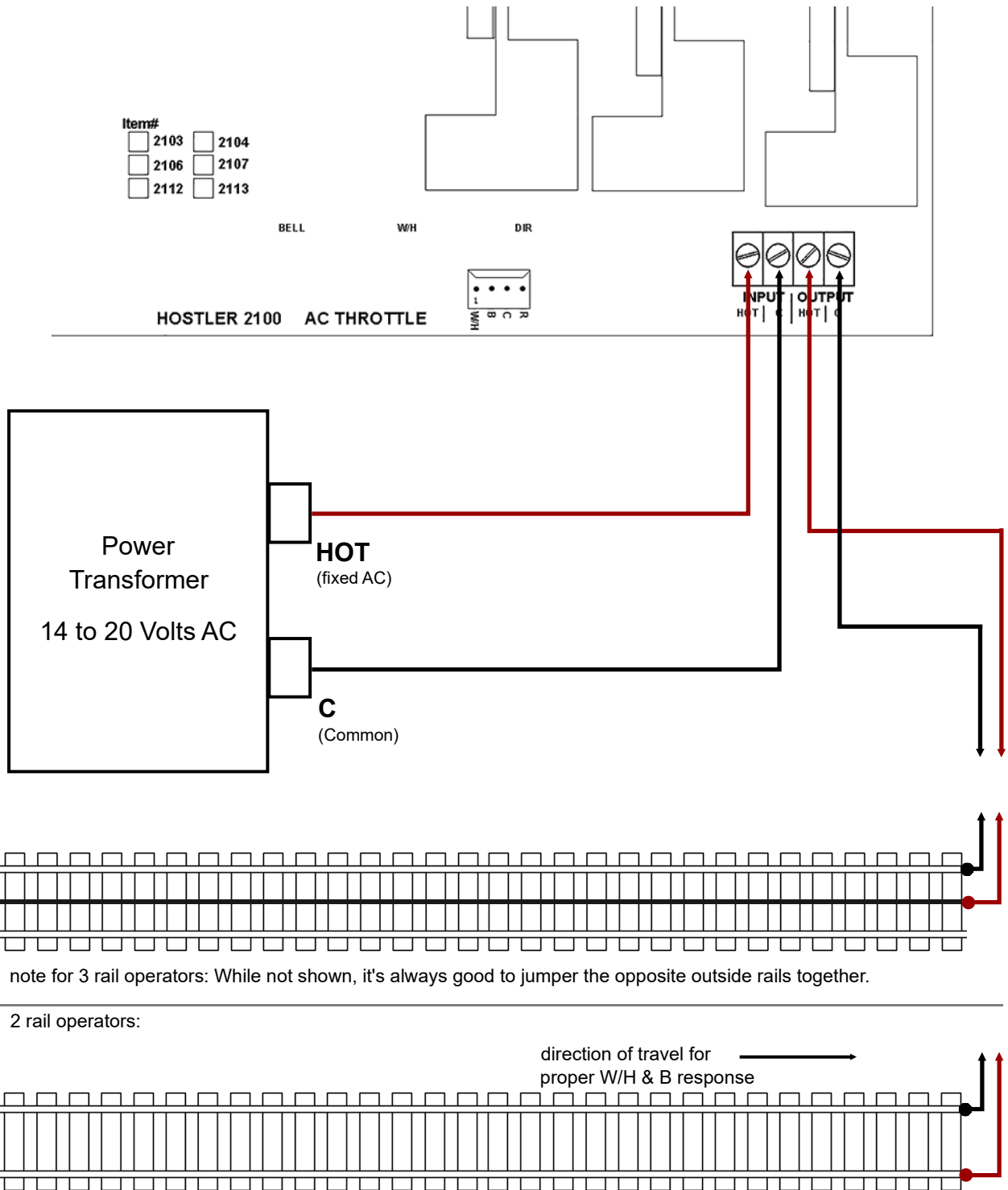
Item #2118, an 18v, 12.5amp, 225 VA power transformer for all AC operators, is also available.

Wiring:

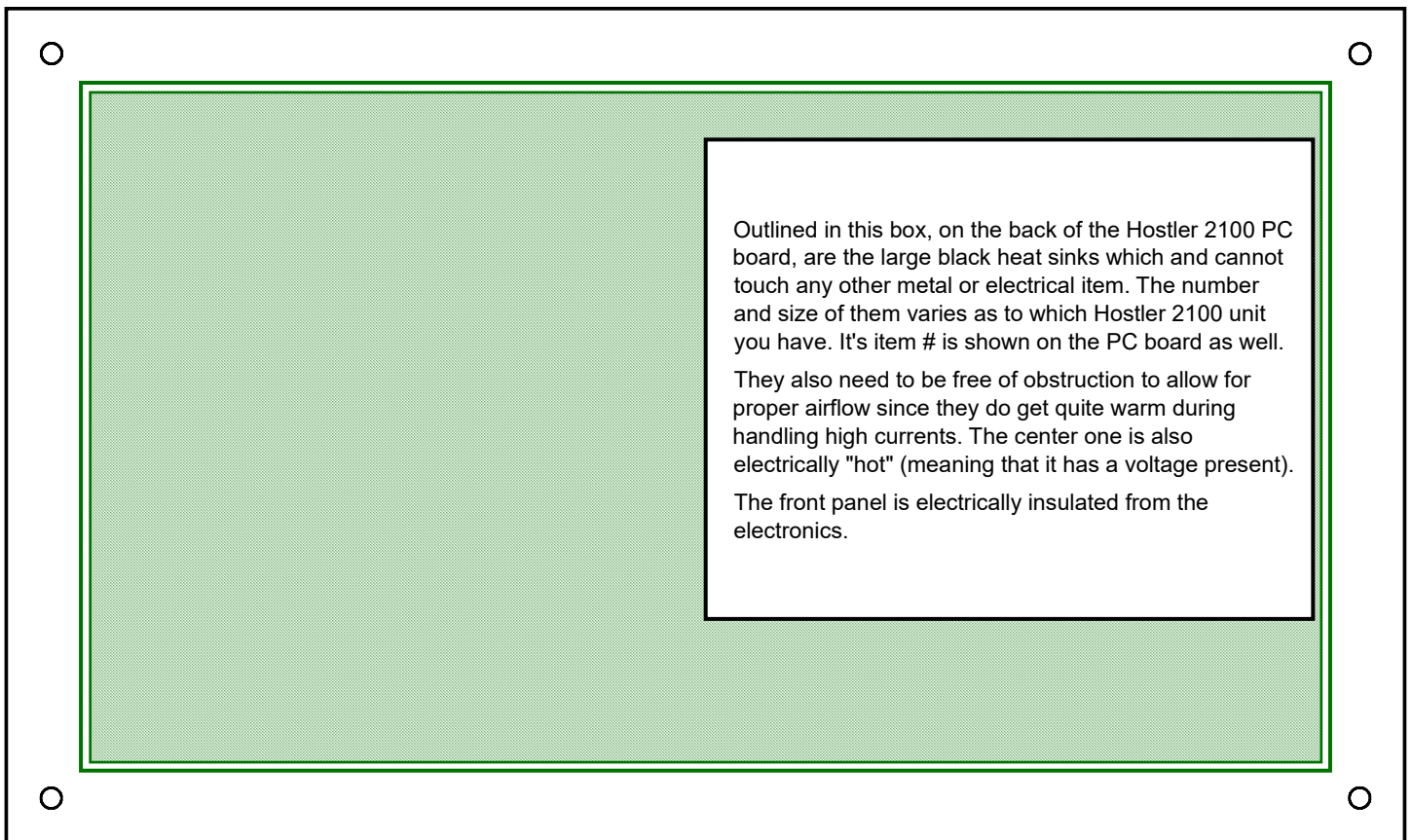
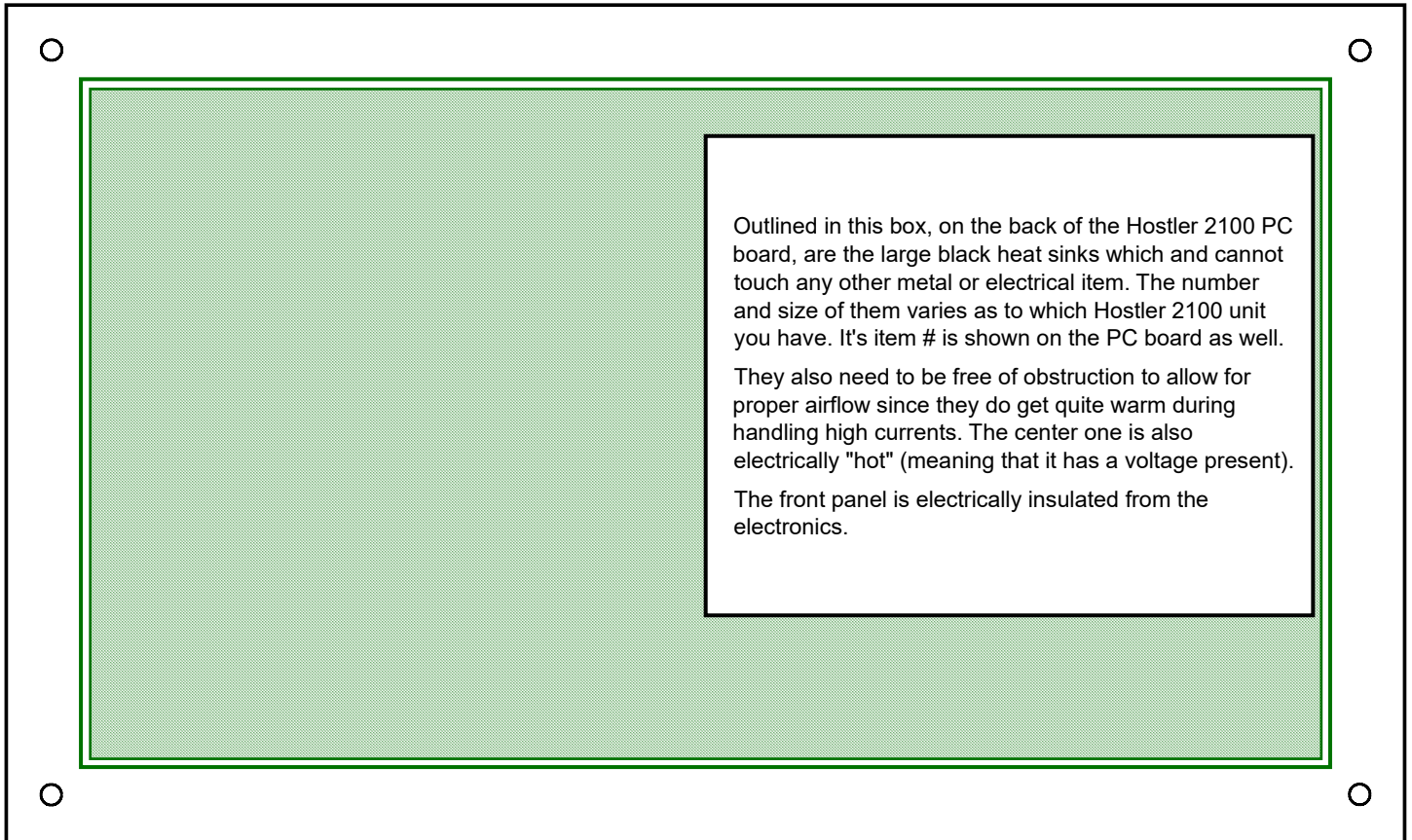
When viewing from the back of the Hostler 2100, locate the wiring barrier strip on the lower right hand side. Using appropriate wire gauge, connect the AC input power to the terminals to the left. The AC output power, which goes to the track, to the two terminals on the right. The fixed AC, "HOT", input is labeled as a voltage on American Flyer transformers and is similarly done so on Lionel type transformers. The "C" terminals are the "Common" input power which on American Flyer transformers is labeled as the "Base Post". Lionel transformers label this as the "U" terminal, but that varies so check your transformer to make sure your using the correct post. The "HOT" wire is normally connected to the right rail on 2 rail type track and to the center rail for 3 rail track. This way the Whistle/Horn and Bell operation will match the buttons. If they don't, reverse the wiring or train direction (for 2 rail operators).

Recommended minimum wire size for the Hostler 2100 is: 18AWG - 3 Amp, 16AWG - 6 Amp, 12AWG - 12 Amp.

To connect the wires to the barrier strip properly, strip the wire insulation back 1/4", insert the bare wire into the opening and run the clamping screw CW to secure. **DO NOT USE SOLID WIRE** to connect to the barrier strip!



Mounting Template : To clear the PC board when panel mounting, cut out the outer green opening as shown. The PC board is shown in the hatch pattern. This is a 1:1 drawing, so it can be cut out of the instructions and taped to your panel. The panel mounting holes are for clearance of a #6 screw. You can choose between using a wood screw or machine screw. The mounting holes are located 1/4" in from the edges. A center punch used on the corners of the outer green area and mounting screw center locations is an easy way to transfer the information from the page to your panel.



Common practices / precautions:

- 1 - Never run an engine wired for DC track power on AC! You will damage the motor.
- 2 - Never connect a DC power to the input, it can only accept AC power!
- 3 - Never use a small gauge wire to connect to the Hostler 2100. A small gauge wire will get extremely hot and possibly start a fire! Remember the recommended minimum wire size for the Hostler 2100 is: 18AWG - 3 Amp, 16AWG - 6 Amp, 12AWG - 12 Amp. Always use stranded wire to connect to the barrier strip on the Hostler 2100 and connect the wires to the barrier strip properly, strip the wire insulation back 1/4", insert the bare stranded wire into the opening and run the clamping screw CW to secure. DO NOT USE SOLID WIRE to connect to the barrier strip since it will not properly connect!
- 4 - Never use common track power from multiple transformers unless they are phased correctly! Otherwise excessive voltages will occur and may damage not only the Hostler 2100 but also your trains.
- 5 - Never use a "modern electronically controlled power transformer" output to power the Hostler-2100 since they do not provide a pure AC sine wave for an output! A standard AC power transformer with a circuit breaker should be used.
- 6 - Always use a proper power transformer with a proper circuit breaker rated for higher than the output of the Hostler 2100 unit you purchased!
- 7 - When a short circuit / overload occurs, turn the "SPEED" control down (CCW) to "OFF". This helps to eliminate excessive over currents from being presented to the track / load and from stressing the components on the unit. The Hostler 2100 does automatically turn off the track power and reduces the output to zero when a second or so has lapsed until it restarts trying to power the load but if the derailment / short has not been taken care of, it's always better to just turn it's output off and restart your train after the problem has been rectified.
- 8 - When mounting to your panel, make sure that at least 2 or more inches of clearance is available from the black heat sinks to the area around them.
- 9 - DO NOT allow any other metal object or wire come into contact with the items on the main PC board! The front panel is of course electrically conductive since it is made of metal but it does not electrically connect to anything on the PC board.
- 10 - DO NOT store or use the Hostler 2100 in damp or wet locations!
- 11 - remember, if your Whistle/Horn and Bell buttons operate opposite of what you want, reverse the wires to the track or inside the engine (3 rail type engines should be wired to match the output of the Hostler 2100, if not, you should rewire it to do so. Otherwise it will not match the rest of your engines. 2 rail operators are use to this since when they place the engine on the track opposite of it's original direction, the sound control buttons will also reverse.)
- 12 - for best performance, keep your engine lubricated properly and it's wheels and pickup rollers (where applicable) clean from dirt. While the Hostler 2100 operates mechanical as well as electronic "E" units, the smooth operation is better with electronic "E" units since they engage into their direction earlier.
- 13 - If it becomes necessary to return your Hostler 2100 for repairs, please remember to package it properly and in a box! But before doing so, check the connections to it and make sure you do have adequate voltage and power connected to it. Inadequate power will prevent the Hostler 2100 from operating properly.

MTH proto users, please remember that the initial voltage needs to be low for the engine to start. Set the "SPEED" to approximately "40" and wait for your sounds to start. Then you can proceed to using the "DIRECTION" button to start the engine's movement and adjust the "SPEED" setting to that desired for running the train.

To program, you need to raise the output voltage higher and then back it off. Remember that the output's voltage has a delay in it's movement vs the "SPEED" setting.

The Hostler-2100 has been fully tested to properly operate all MTH versions.