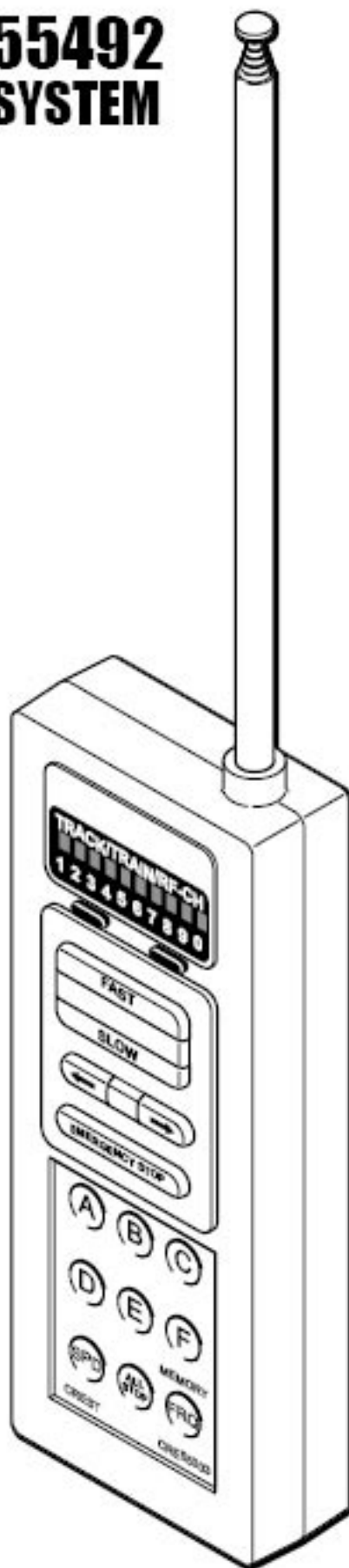
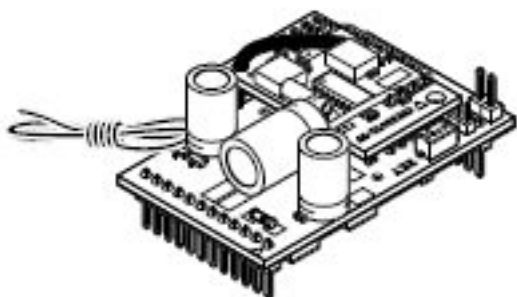


CREST CRE55491/CRE55492 ON BOARD RADIO CONTROL SYSTEM

INSTALLATION AND OPERATION MANUAL



INTRODUCTION

Congratulations on your purchase of the CREST On Board Train Engineer Wireless Control System. This product has been manufactured to the highest standards using only quality components and, with proper care, will provide you with reliable service.

The CREST On board Train Engineer is just part of a wide range of CREST Wireless Radio Control devices. The CREST Train Engineer product line has been developed to provide the model train enthusiast with complete integrated control of their dream layout, without the need for complicated layout wiring or complex control panels.

The CREST Train Engineer System is available in two unique frequency bands to provide the widest range of expansion possibilities. Using CREST Train Engineer System components, you can walk around your model railroad layout and remotely control your loco, switch track, lights, sounds, and operating cars up to 100 feet away.

CREST Train Engineer products operate on ten different radio frequencies within their assigned band. Within each frequency, there are ten different control channels available so that up to 100 different receivers can be controlled independently from each of the two types of transmitters. The transmitters and receivers use frequency synthesizers to create the ten RF frequencies so that no crystal changing is required.

For more complex railroads the model train enthusiast can use both frequency bands together by separating functionality. For example, train control can be assigned to one frequency band while switch, lighting and accessories are controlled by the other frequency band. Or your railroad can be divided into 'districts' by assigning one frequency band to yard switching, for example, and the other frequency band assigned to mainline operations. Of course for less complicated layouts, the entire railroad can be controlled using a single frequency band for all of you control needs.

TABLE 1, CREST TRAIN ENGINEER SYSTEM COMPONENTS

27Mhz	CRE55470	The Train Engineer Walk Around Transmitter & Receiver
	CRE55471	The Train Engineer Receiver
	CRE55473	The Train Engineer Transmitter
	CRE55474	Remote Accessory Receiver
	CRE55475	Switch Accessory Unit (Control 5 Switches)
	CRE55490	On Board Train Engineer Receiver
75Mhz	CRE55491	On Board Train Engineer Receiver
	CRE55492	On Board Receiver & Transmitter
	CRE55003	Train Engineer Transmitter
Accessories	CRE55480	Basic Train Engineer 100' Range 2 Amp, Transmitter & Receiver
	CRE55495	On-Board Accessory Receiver For On-Board Receiver
	CRE55498	On Board Cooling Fan
	CRE55499	Cooling Fan For CRE55470
	CRE90001	Book "How To Guide To Train Engineer"

The CREST On Board Train Engineer Receiver is designed for “plug and play” installation in any Aristo-Craft Locomotive with a DCC board. The receiver can also be installed in any large scale locomotive with the use of a supplied wiring adaptor. Locomotives without the Aristo-Craft DCC board will require wiring modifications to adapt to the receiver. General instructions for custom installations are included in this manual.

The On Board Train Engineer is available in your choice of two frequency bands. The transmitter supplied with the CRE-55492 operates on the 75MHz band and is distinguished by its grey case. The transmitter supplied with the CRE-55490 operates on the 27MHz band and it is distinguished by its black case. Each is capable of controlling all CREST Train Engineer products that use the same frequency band assigned to the transmitter. However the black transmitter can not be used to control 75MHz receivers and the grey transmitter can not control 27MHz receivers.

The On Board Train Engineer is designed to operate from constant DC power applied to the track or from on board batteries. To prevent unnecessary battery drain, the standby current of the On Board Train Engineer is very low. The operating voltage drop is also low to allow efficient use of the energy stored in the batteries.

While DC track power is preferred, the On Board Train Engineer will also operate on a DCC powered layout and it will also run from most regular power packs if they are turned all the way up. The preferred power supply for the On Board Train Engineer system is any Crest power supply.

As is the case for any high current track power supply, the track power must be properly fused to prevent damage to your equipment in the case of a derailment. A Crest CRE-55401 10 Amp Control Pack Adaptor can serve as an electronic fuse to protect your equipment.

FEATURES

In addition to the ability to wirelessly control your trains, the On Board Train Engineer can control accessories such as sound and smoke with the addition of the CRE-55495 accessory adaptor.

The On Board Train Engineer is designed with several features to help protect your trains from damage.

- 1) **ADJUSTABLE MOMENTUM CONTROL** In real life, trains don't "jack rabbit" up to speed or "stop on a dime" so why should yours? The user programmable momentum control, incorporated in the On Board Train Engineer, allows you to increase and decrease the speed of your trains in a smooth and realistic manner. These gradual speed changes are also easier on your train's motors and gears.
- 2) **ADJUSTABLE REVERSE DELAY** The On Board Train Engineer incorporates an adjustable delay feature when changing directions. When the direction buttons are pressed and the train is moving, the train gradually slows to a stop, changes direction, and then returns to its prior speed. As with momentum, the delay period is user adjustable. One of the most damaging things that can happen to any train is a quick change in direction. This not only applies unnecessary stress and wear on moving parts, but also can also strip the gears in a locomotive or cause a serious derailment. Eliminating these problems is the purpose of the reverse delay.
- 3) **DIRECTION CONTROLLED HEADLIGHTS** The forward and rear headlights will respond to the current locomotive operating direction and will run at constant intensity as soon as the locomotive starts to move. The "F" button will turn the headlights on and off. Even if you install the On Board Receiver in an engine that does not come with an Aristo-Craft DCC "plug and play" socket, the custom installation instructions will guide you so that any engine can use this feature.
- 4) **POLARITY PROTECTION** The On Board Train Engineer has a bridge rectifier for input polarity protection so that it does not care which rail is positive and which is negative, even from one operating session to the next.
- 5) **THERMAL CIRCUIT BREAKER** The On Board Train Engineer uses a thermal circuit breaker for overload protection. When overloaded, the circuit breaker shuts off input power to the receiver to protect it from damage. This not only protects the receiver but it protects the motors and engine circuitry as well.
- 6) **ELECTRONIC REVERSING** The motor driver circuit is a Field Effect Transistor H-Bridge with electronic reversing so that a reversing relay is not required eliminating mechanical contacts that can wear or pit, ensuring a long life for the receiver.

SYSTEM COMPONENTS

The CREST On Board Wireless Control System consists of five components, a transmitter, a receiver, a custom wiring harness, an accessory harness and a remote code set switch.

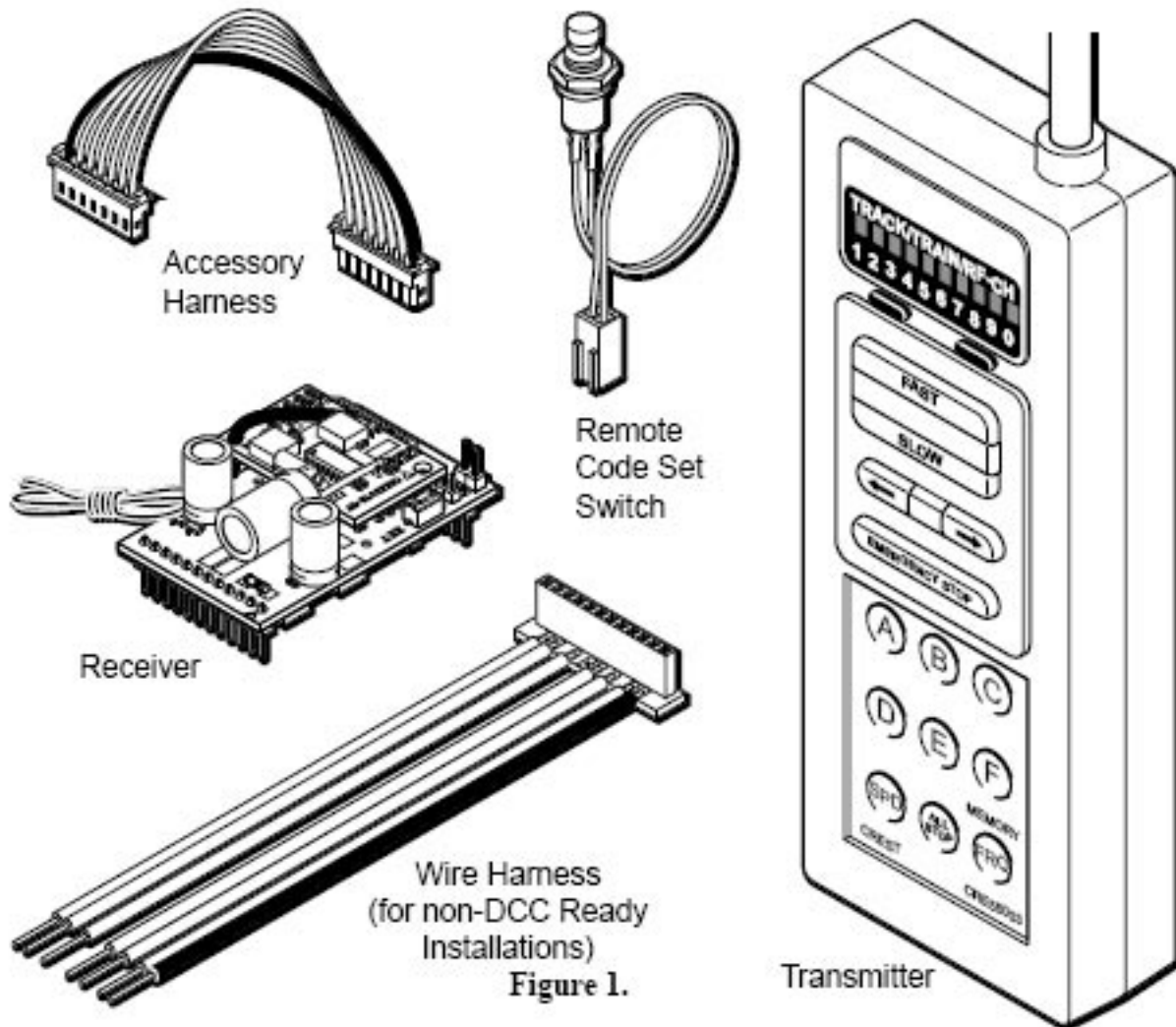


Table 2. Specifications

Receiver Ratings	CRE-55491 CRE-55492
Recommended Input Voltage Range	12 to 24 volts
Absolute Maximum Input Voltage	28 volts
Average Output Current	2.5 amps
Peak Output Current	3 amps
Standby Current	25 mA
Average Lighting Current	200 mA
Surge Lighting Current	500 mA
Starting RF Frequency	75.41 MHz
Frequency Step	40 Khz
Maximum Range (Theoretical)	100 feet +
Typical Range (Practical)	50 feet

RECEIVER INSTALLATION

Plug and Play DCC Equipped Engines

You will need the following items for installation (not supplied):

- Phillips head screwdriver
- Four 1.5 volt "AA" alkaline batteries to power the transmitter
- 12 to 24 volt DC power source connected to the track
- A drill and drill bits to install the remote Code Set Switch (if desired)
- Tape to secure the antenna wire inside the engine shell

RECEIVER

The On Board Train Engineer is intended to be mounted within a locomotive, tender, or in a trailing battery car. If the locomotive is equipped with an Aristo-Craft DCC compatible main circuit board, the installation is plug and play. If the locomotive does not have an Aristo-Craft DCC compatible main circuit board, see the custom installation instructions at the end of this manual.

1) REMOVE THE LOCOMOTIVE SHELL.

Turning the Engine over, remove all screws that hold the shell to the frame. Depending on the model of the locomotive, the number of screws will vary. Also, the screws that need to be removed may or may not be marked with an arrow under the locomotive frame.

- ### 2) REMOVE THE JUMPER PLUG
- on the DCC socket and set it aside. You can restore the locomotive to its pre-installation state by reinstalling the jumper plug.

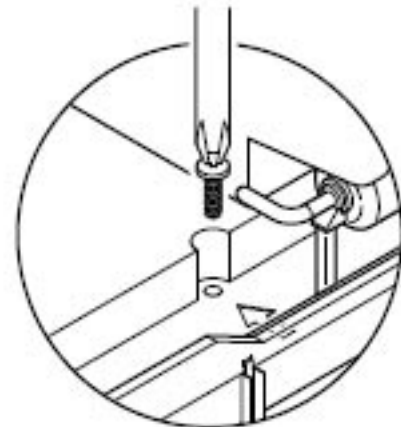


Figure 2.

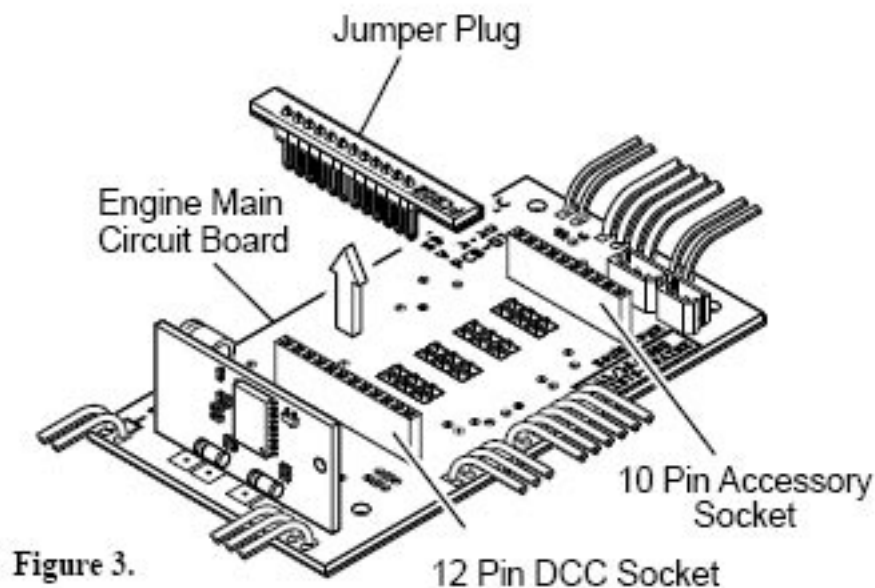


Figure 3.

- 3) **SNAP OFF THE WIRE HARNESS.** The On Board receiver is shipped with the Wire Harness attached. For plug and play installations, this wire harness is not used. The Wire Harness must be removed before installing the Receiver.

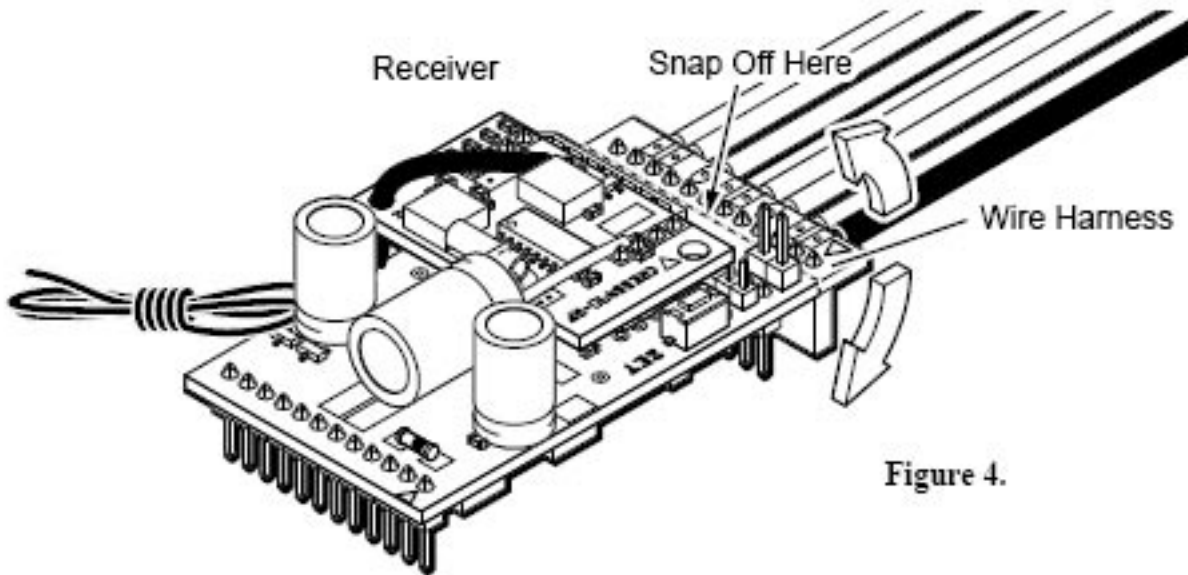


Figure 4.

- 4) **INSTALL THE ON BOARD TRAIN ENGINEER RECEIVER** in the 12 pin DCC socket and the 10 pin accessory socket as shown in figure 5.

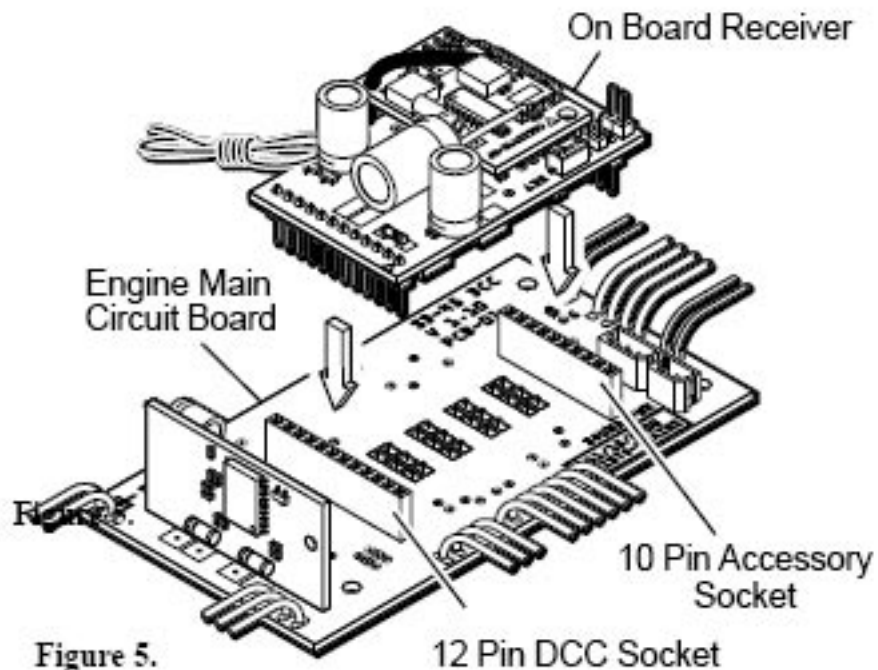


Figure 5.

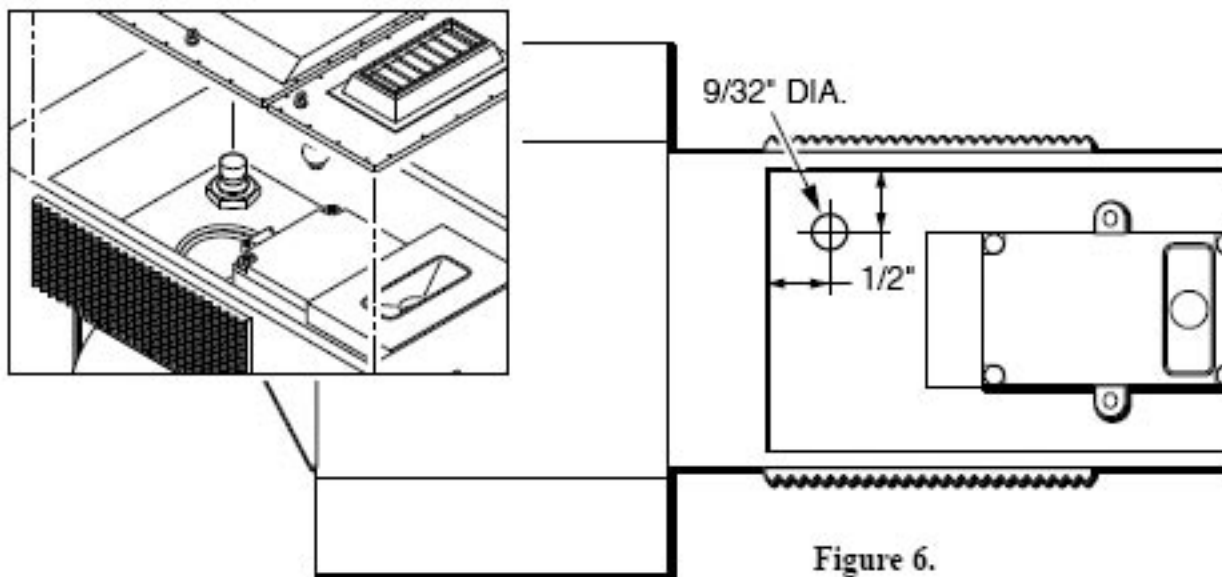
- 5) **INSTALL THE REMOTE CODE SET SWITCH**

There are several ways that you can install the Remote Code Set Switch. We will cover three methods here one of which should fit your unique situation.

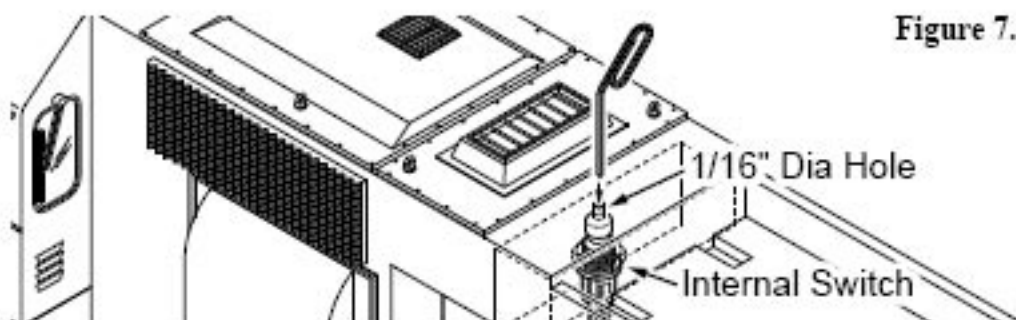
METHOD 1: Locate a place to install the supplied Remote Code Set Switch where it will be accessible from the outside, yet obscured from view. Under a removable hatch or through the bottom of the engine frame are convenient locations, in most cases. A typical installation in the Aristo-Craft SD45 is shown in figure 6.

Drill a 9/32"(7MM) diameter hole in the selected location. Install the threaded section of the Code Set Switch through the hole and install the lock washer and 10MM hex nut to secure the switch.

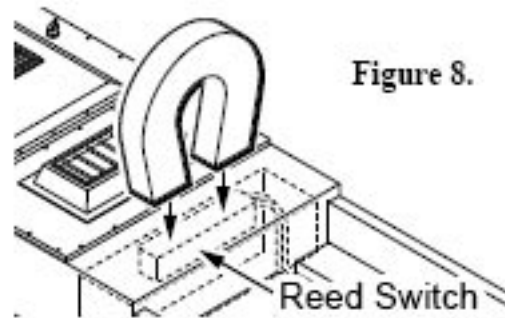
NOTE: In some installations, the thickness of the material may be too thick to use the lock washer. If this is the case, you may wish to add a small amount of glue to the hex nut to prevent it from becoming loose. If the material is too thick to use the hex nut, you can secure it from the inside with hot melt glue or epoxy.



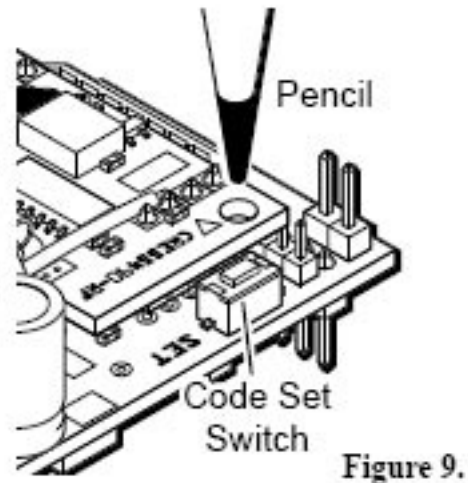
METHOD 2: Choose a location to drill a 1/16" hole in the shell and attach the switch with hot glue or epoxy so that the switch button aligns with the hole. A short piece of music wire or straightened paper clip can then be used to activate the Code Set Switch from outside the engine.



METHOD 3: The code set switch can be replaced with a magnetic reed switch for activating the code set function externally with a magnet. This allows installation without drilling any holes. There is a magnet located in the bottom left hand side of the transmitter for this style of installation.



NOTE: There is also a code set switch on the receiver. It is accessible with a pencil point through a hole in the corner of the smaller RF board. If the receiver is to be used in a trailing car, you may wish to mount the receiver so that this code set switch is easy to access and forego installing the Remote Code Set Switch.



- 6) **ATTACH THE REMOTE CODE CONNECTOR** on the Remote Code Switch to the two pin header on the receiver as shown in Figure 10.

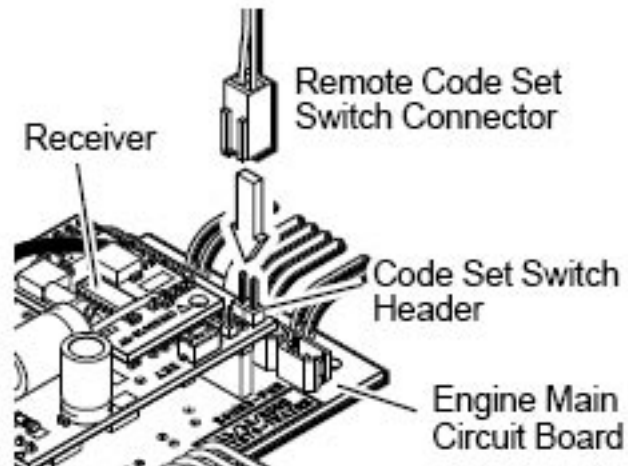


Figure 10.

- 7) **ROUTE THE ANTENNA** wire around the inside of the shell as high up as you can get it. **DO NOT** overlap the antenna wire and don't trim the wire.
- 8) **REINSTALL THE SHELL** Use care when reassembling the engine shell. Be careful that you do not pinch any wires between the shell and internal parts of the engine. Also be sure that no wires interfere with any of the shell mounting holes in the frame.

When securing the shell, use care to make sure that the screws are snug but not overly tight. Over tightening these screws can strip the holes they go into.

TRANSMITTER SETUP

- 1) **REMOVE TWO SCREWS** in the back of the transmitter case and remove the back cover.
- 2) **PREASSEMBLE THE ANTENNA** to the mounting bracket with the screw provided, as shown in Figure 11..
- 3) **REMOVE THE SCREW** next to the word "Antenna" etched into the top of the circuit board. Insert this screw through the loop at the bottom of the provided antenna and place this assembly on the circuit board so that the antenna fits in the circular cradle in the case. Retighten the screw until it is snug .
- 4) **INSERT FOUR 1.5 VOLT "AA" BATTERIES** making sure that they face in the directions indicated on the battery holders.
- 5) **PRESS A BUTTON ON THE TRANSMITTER**; if any LED comes on, the transmitter is working. If not, inspect for proper installation of the batteries.
- 6) **REPLACE THE BACK COVER** and tighten the two screws until they are snug.

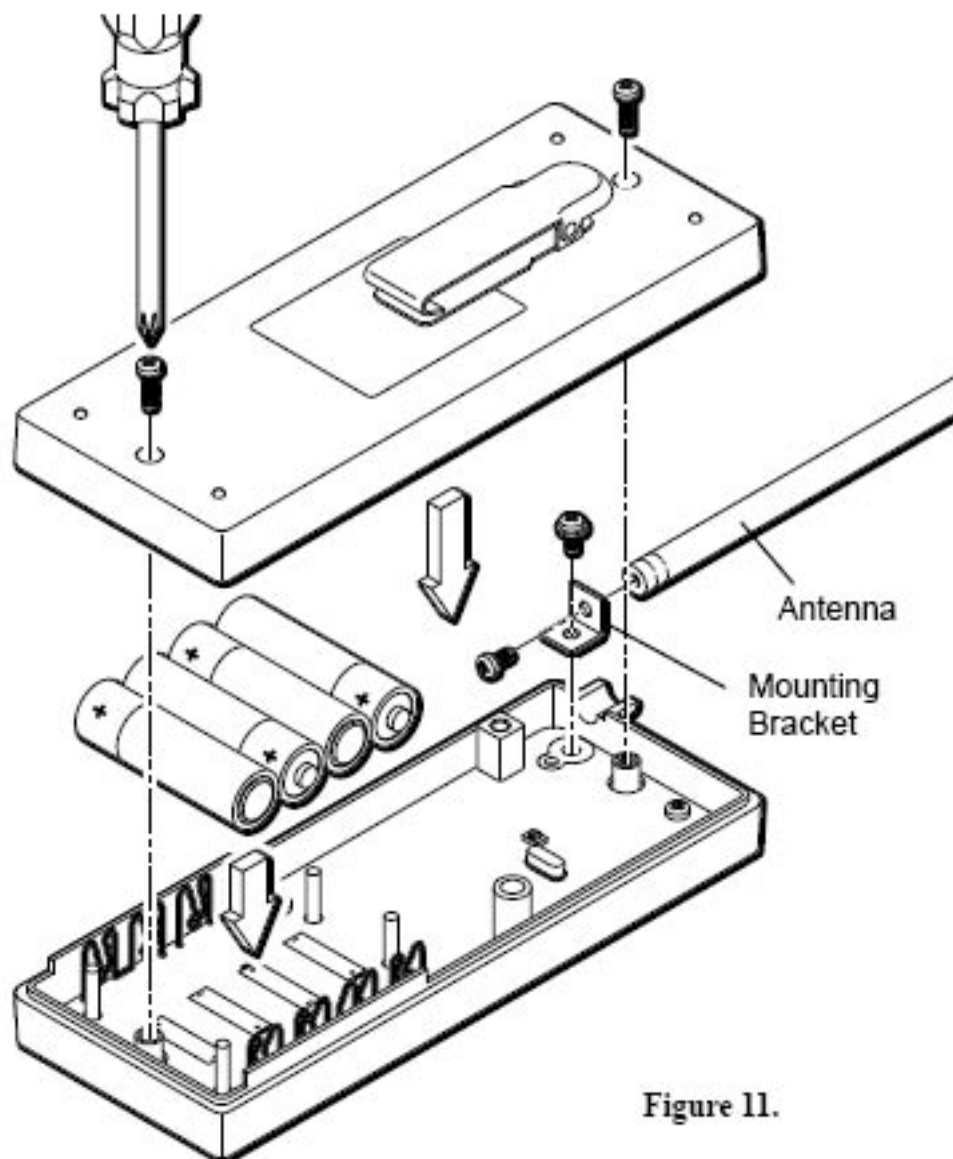


Figure 11.

SELECTING THE RADIO FREQUENCY

Press the “FRQ” button and hold it for 2 seconds. The LED that represents the current radio frequency will begin to blink. Press the “FRQ” button again to move the indicator to the right to the desired frequency. Press any other button or simply wait for the LED indicator to go out to accept the changed frequency.

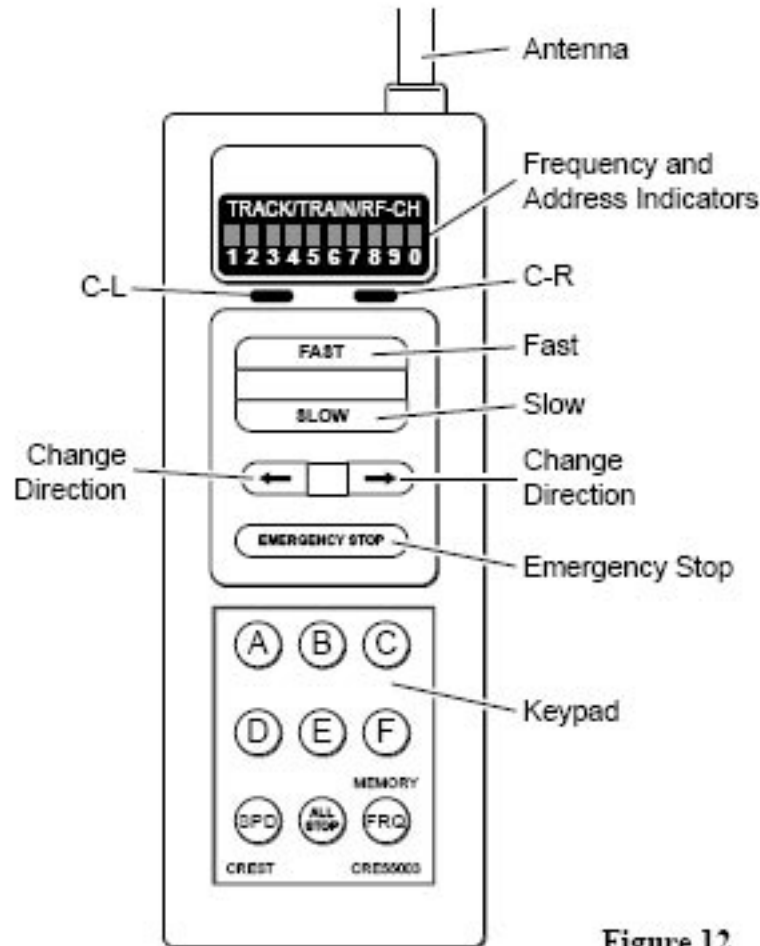


Figure 12.

Use of different frequencies will prevent two or more transmitters from interfering with each other. For the most reliable operation, each transmitter operated within a few hundred feet of another should be set to a different frequency.

SELECTING THE CHANNEL NUMBER

Press either of the Channel Select buttons, “C-L” or “C-R” (located right under the LED indicator panel on the transmitter). The LED that represents the current channel number will begin to blink. Press either channel select button to move the indicator left or right to the desired channel. Press any other button or wait until the blinking indicator goes out to accept the new channel setting.

NOTE: We suggest that you use the Channel setting rather than Frequency to control multiple trains from a single transmitter, as it is quicker to change a Channel setting than a Frequency setting.

LINKING THE TRANSMITTER AND RECEIVER

- 1) **PLACE THE LOCOMOTIVE ON THE TRACK.** Note: the direction the locomotive faces has no relation to the relative direction buttons on the transmitter.
- 2) **APPLY POWER TO THE TRACK.** Apply 12 to 24 volts DC to the track.
- 3) **PRESS THE CODE SET BUTTON ON THE RECEIVER.** The headlights will begin to blink rapidly. If the lights fail to blink, your power source may not be acceptable.
- 4) **SET THE RECEIVER ADDRESS AND MOMENTUM.** See Table #3 for **momentum** settings. Press and hold one of the alpha buttons (A-F) on the transmitter until the headlight blinking slows, then release the button. This step sets the receiver address and the momentum. If you use the A key in this step, no momentum will be used. The F key produces the most momentum.
- 5) **SET THE REVERSING DELAY.** See Table #3 for the **reverse delay** settings. Press and hold one of the alpha buttons (A-F) on the transmitter again until the lights stop blinking. Release the button.
- 6) **SET THE MEMORY.** Complete the linking operation by pressing either the A or F button. Using the A button will cause the receiver to remember its previous speed and direction upon power up. Pressing the F button turns this memory off. The receiver will revert to zero speed when power is restored. Enabling the memory will provide smoother operation when the track gets dirty.

MULTIPLE LOCOMOTIVES (MUing)

Multiple locomotives can be linked to the same frequency and channel to create a locomotive consist, known as MUing (Multiple Unit lash up)

- 1) First, using a different address for each locomotive, follow steps 3 through 6 to ensure all locomotives are running in the same direction.
- 2) Then, using one address, follow steps 3 through 6 again to link each locomotive into the consist. You should use the same momentum, reverse delay, and memory for each locomotive in the consist.

NOTE: It is best to switch off each engine after completing step 6 before linking the next engine in the consist. When all engines have been linked to the same address, switch on all engines.

OPERATION NOTE:

If the LEDs on the Transmitter blink quickly and then go out, when a button is pressed, the batteries are low and need to be replaced.

When the batteries are removed, replace them within 30 minutes. The memory of the transmitter will be erased after 30 minutes and it will be necessary to reestablish links to the receivers.

CHECKING THE SPEED OF YOUR TRAIN

To check the relative speed of a locomotive while underway, press the “SPD” button. The number of lights that come on gives a relative indication of the speed of the train. Note that a speed change button has to be held for about a second before the speed of a train will actually change.

TABLE 3, Keypad use when linking the receiver and transmitter

Keypad Button	Step #4 Momentum Setting	Step #5 Reverse Time Delay	Step #6 Memory Setting
A	No Momentum	0.1 second	Memory On
B	#1	0.2 second	—
C	#2	0.5 second	—
D	#3	1 second	—
E	#4	1.5 seconds	—
F*	Maximum Momentum	2 seconds	Memory Off

*After linking process is complete Keypad Button “F” can be used to turn the headlights on and off

TABLE 4, Transmitter keypad buttons & functions

Button	Function
C-L	Channel Select Change to Left
C-R	Channel Select Change to Right
Fast	Increase Speed
Slow	Decrease Speed
Arrow Buttons	Change Direction
Emergency Stop	Stops Locomotive(s) on the current frequency and channel
Alpha Keys (A-F)	See Table 3
SPD	Speed Relative to Voltage
All Stop	Stops All Locomotives on the current frequency (all channels)
FRQ	Frequency Set/Check

CUSTOM RECEIVER INSTALLATION

For custom installations, you will need the following items:

- Phillips head screwdriver
- Four 1.5 volt "AA" alkaline batteries to power the transmitter
- 12 to 24 volt DC power source connected to the track
- A drill and drill bits to install the remote Code Set Switch (if desired)
- Tape to secure the antenna wire inside the engine shell
- A soldering iron and solder
- Wire cutter and wire stripper
- Heat shrink tubing or electrical tape
- Ohmmeter
- Electronic components for headlights (see Custom Installation section)

Many locomotives do not come equipped to accept the On Board Train Engineer in a plug and play installation. In this case, the wiring of the locomotive will require modification to accept the receiver. To facilitate custom installations, a wiring adapter is provided. To prepare the receiver for installation, the wire harness must be snapped off of the receiver as shown in Figure 13.

The wires on the adapter follow standards used by DCC manufacturers. The adapter has a 12 position socket. Pin one is marked with a small arrowhead (triangle). With the arrowhead on your right, wire the adapter to your locomotive as indicated in Figure 14 below and in Table 5, on the following page.

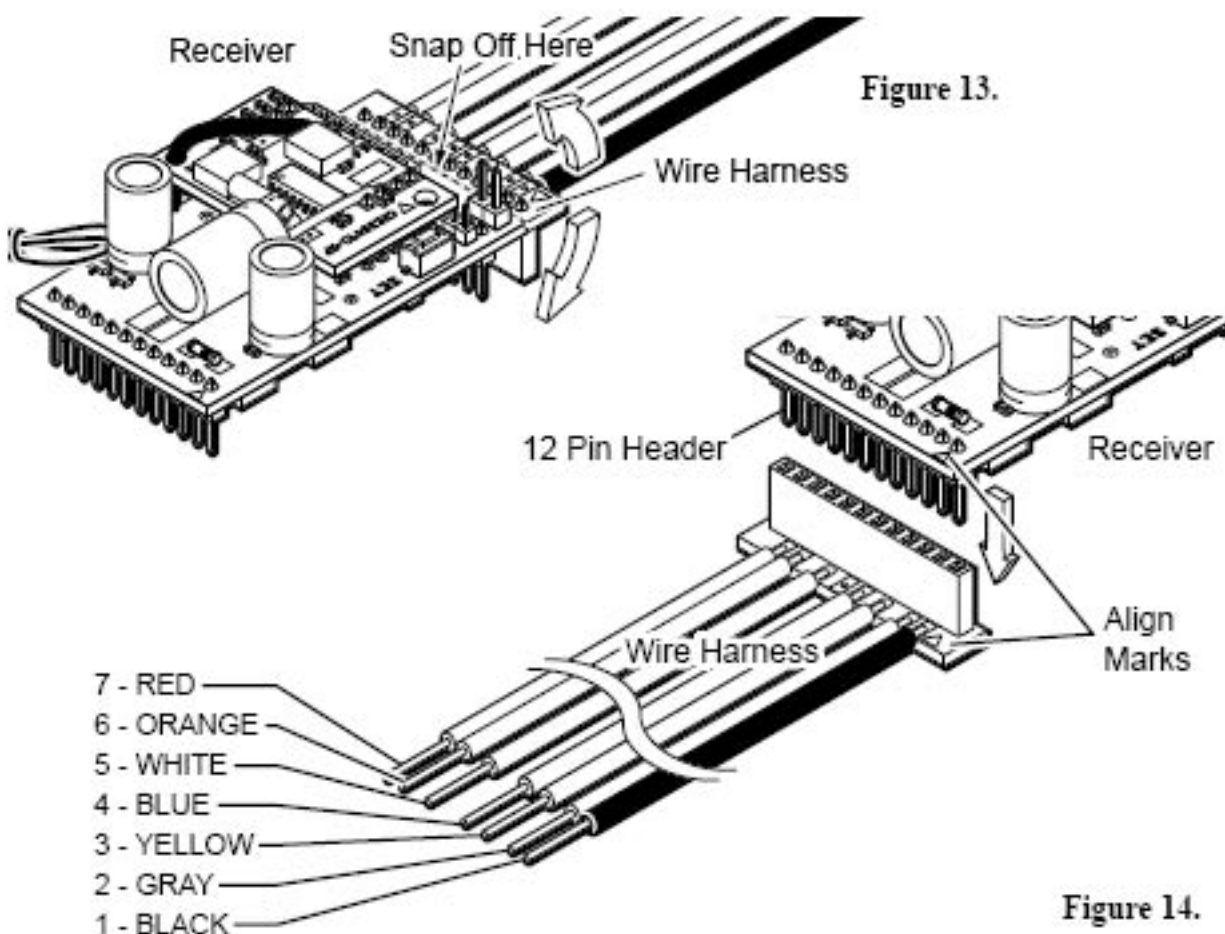


Figure 14.

- 1) **POWERING THE ON BOARD TRAIN ENGINEER.** The On Board Train Engineer is designed to work from either track power or on board battery power of at least 12 volts DC to a maximum of 24 volts DC. The unit is self-protected for polarity and input current. However, if you use a battery, you should install a 3-amp fuse directly from the battery before any other wiring is connected. The fuse will protect your wiring and the battery from damage in case of an accidental short circuit.
- 2) **ISOLATE THE MOTOR(S).** The motor(s) **MUST** be isolated from ALL other wiring before the On Board Train Engineer can be installed in a locomotive. This is critically important. Failure to isolate the motors will cause the receiver to malfunction or possibly fail. After you have located and disconnected the motor wires from the locomotive, use an ohmmeter to check the resistance between the motor wires and any other wires that you can find in the locomotive. If any connection is indicated at all, locate the connection and isolate the motor wires.
- 3) **WIRE HARNESS CONNECTIONS.** All wiring connections should be soldered and insulated with heat shrink tubing.

TABLE 5, Wire Harness Color Code and Wire assignments

Wire Number	Wire Color	Wire Use
Wire #1	Black (BLK)	Right Side Track Power Pick-up
Wire #2	Gray (GRY)	Right Side Motor Terminal
Wire #3	Yellow (YEL)	Front Headlight
Wire #4	Blue (BLU)	Headlight Common
Wire #5	White (WHT)	Rear Headlight
Wire #6	Orange (ORG)	Left Side Motor Terminal
Wire #7	Red (RED)	Left Side Track Power Pick-up

Connect the motor wires: Solder the Gray wire (wire #2) to the motor's Right Side terminal. Solder the Orange wire (wire #6) to the motor's Left side terminal.

Connect the power wires: For track power installations, solder the Black wire (wire #1) to the Right side power pick-ups. Solder the Red wire (wire #7) to the Left side power pick-ups. For Battery Power installations, Battery installations should include a 3-amp fuse in line with the positive power connection to prevent damage to both the On Board Train Engineer and the battery pack. Solder the Black wire (wire #1) to the Negative side of the battery pack. Solder the Red wire (wire #7) to the fuse attached to the Positive side of the battery pack.

NOTE: the internal engine Circuitry that controls smoke units and interior lighting can be reconnected to the power pick-ups or battery pack at this point.

Connecting the Headlights: The headlights will most likely require rewiring. All of the wiring to the headlights **MUST** be isolated from all other wiring. See Figures 16 and 17 for proper wiring diagrams for the headlights in your engine.

The Yellow wire is soldered to the Front headlight and is the negative power lead for the front headlight. The White wire is soldered to the rear headlight and is the negative power lead for the rear headlight. The Blue wire is soldered to both the Front and Rear Headlights and is the positive power lead for both front and rear headlights.

- 4) **SECURING THE ON BOARD TRAIN ENGINEER.** The On Board Train Engineer should be located so that it is secure and insulated from any metal inside the engine. The On Board Train Engineer can be attached to the shell or interior floor of the engine with double stick foam. Or the small circuit board on the wire harness can be glued to the shell or interior floor, using epoxy.

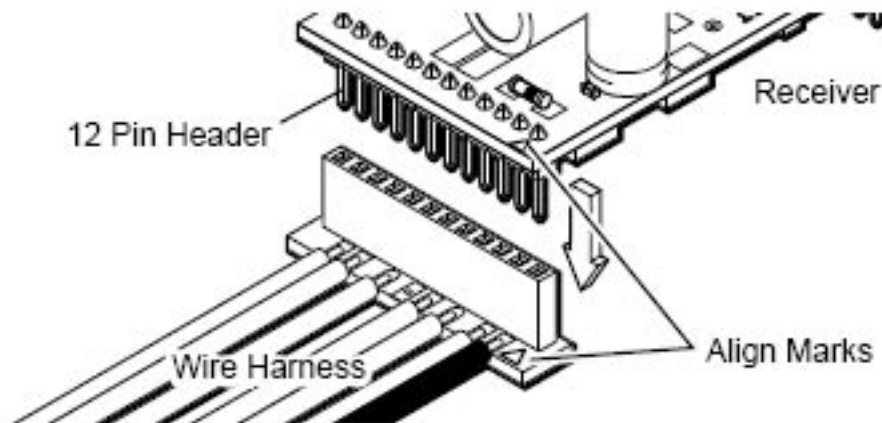
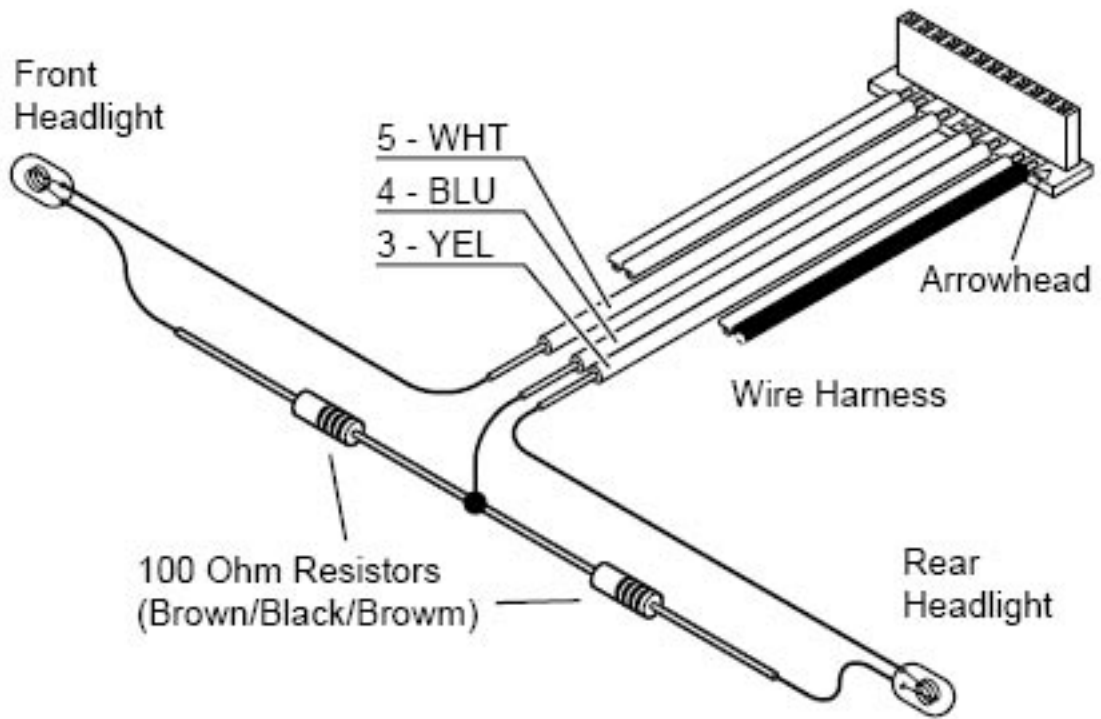


Figure 15.

- 5) **FINISHING THE INSTALLATION.** Refer to Steps 5 through 8 in the Receiver Installation instructions (beginning on page 8) of this Manual to complete the installation.

WIRING DIAGRAM FOR INCANDESCENT HEADLIGHTS



Wiring For Dual Headlights

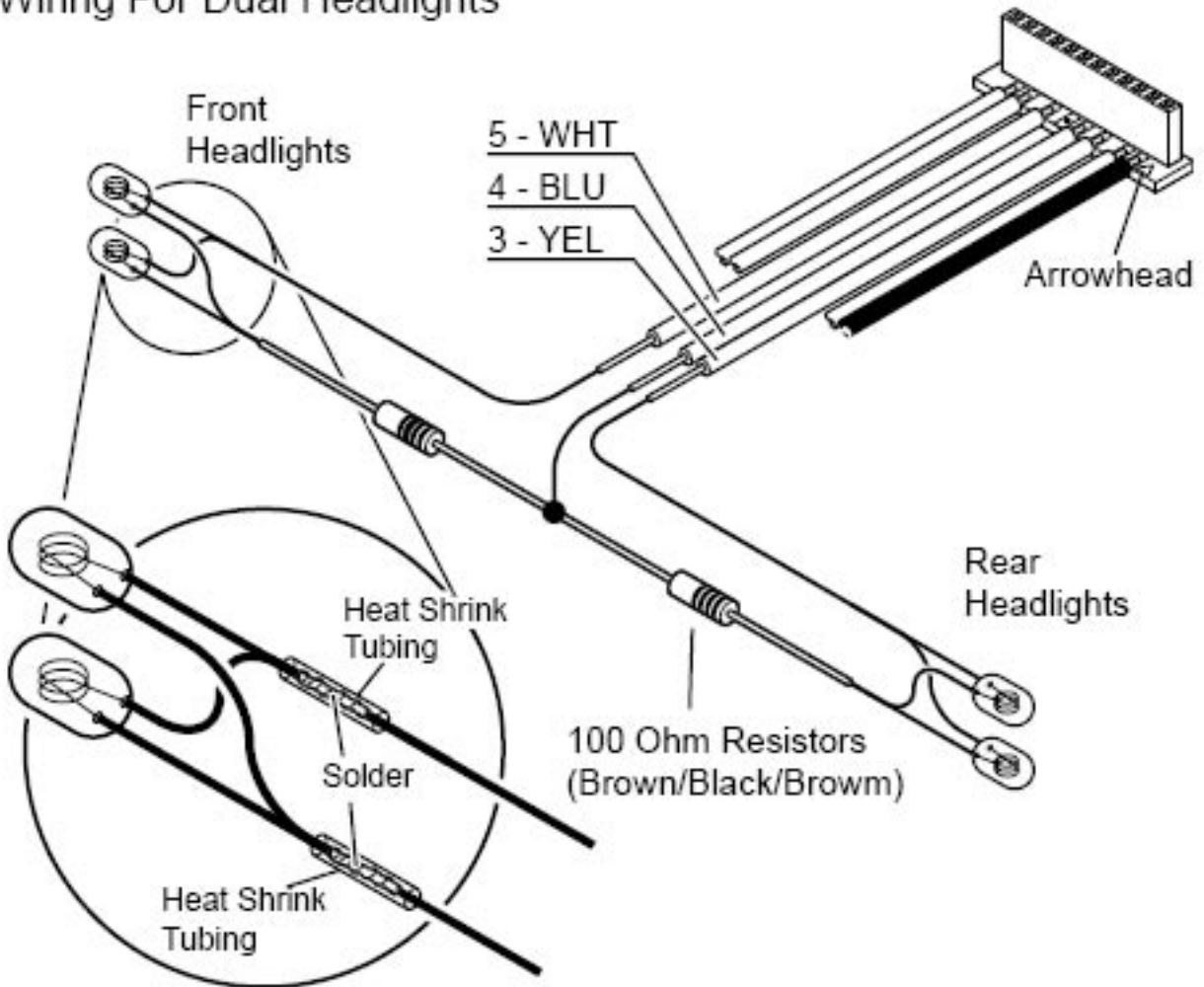
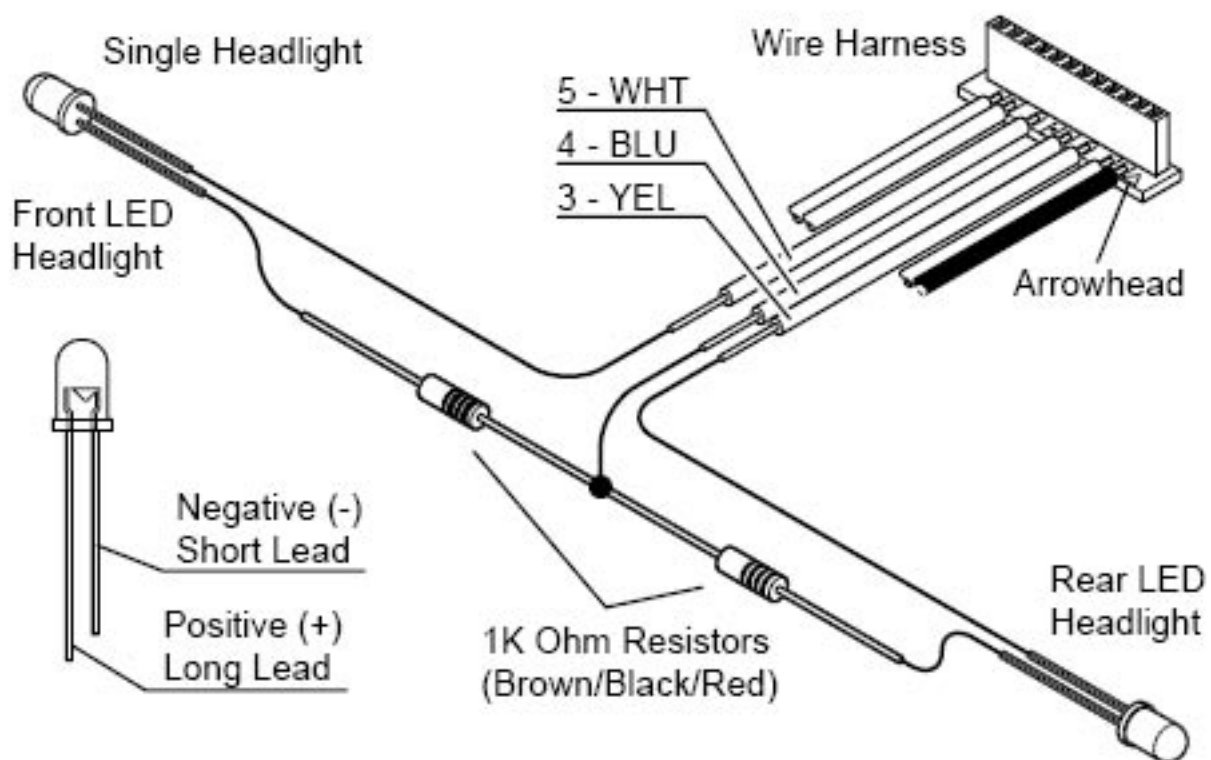


Figure 16.

WIRING DIAGRAM FOR LED HEADLIGHTS



Typical Wiring For Dual Front and Rear LED Headlights

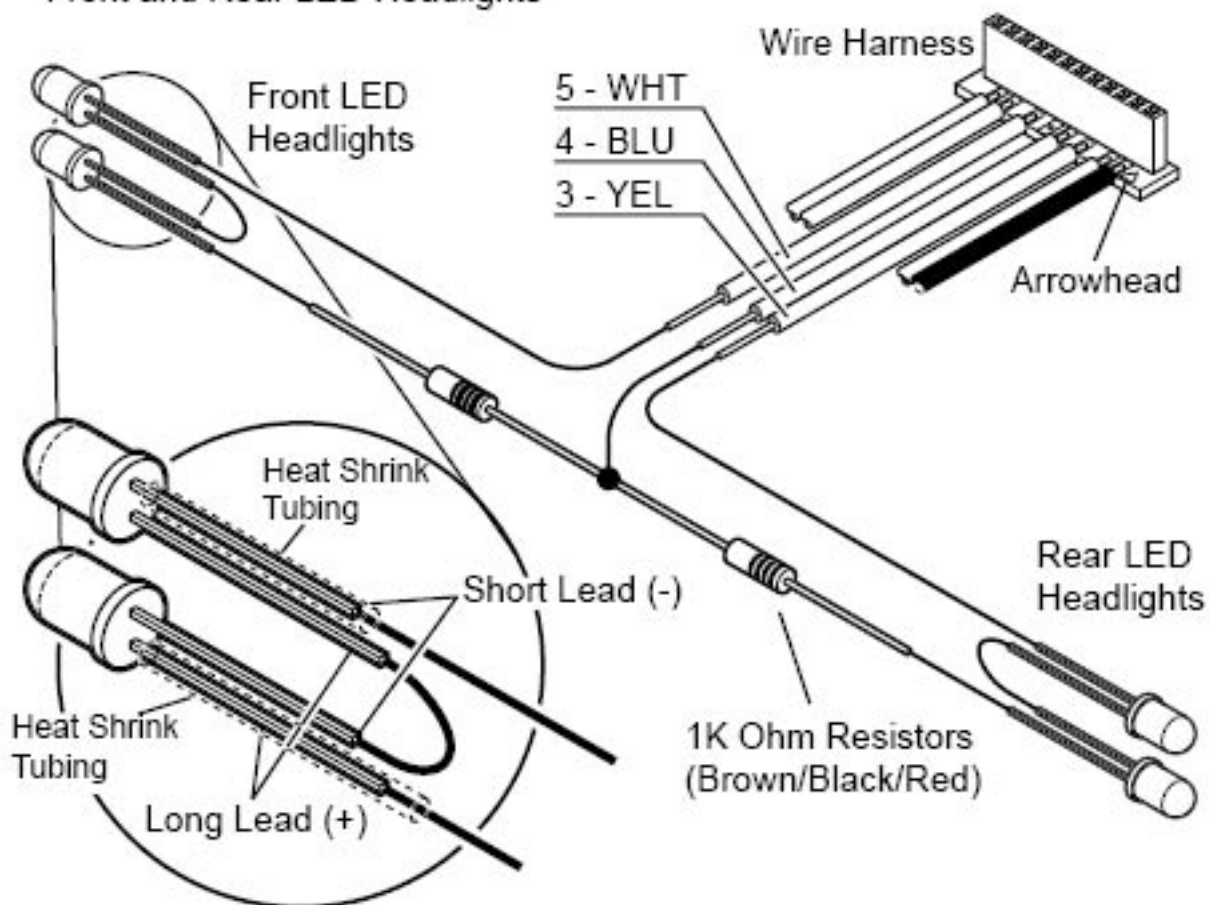


Figure 17.

OPTIONAL INSTRUCTIONS

SIMPLIFIED INSTALLATION OPTION

In the simplest installation, the wires that go to the motor can be connected to wire #2 and wire #6 of the wire harness. The wires that used to connect to the motor(s) are then connected to wire #1 and wire #7 of the wire Harness. The power wires (wires #1 and #7) are not polarity sensitive however the motor wires (wires #2 and #6) are polarity sensitive. If you find that the headlights and the direction of the locomotive do not agree, reverse wire #2 and wire #6 motor wires. The rest of the engines functions (smoke and lights) will work normally from the power source, at full power.

NOTE: Even though the On Board Train Engineer can be used with this simple installation as is, we recommend that you install an indicator LED as shown in Figure 17 so that there will be visual feedback available to help you link and program the receiver.

If you chose not to install an indicator light, you will have to program the unit blind.

BLIND PROGRAMMING: Press the code set button on the receiver and then press and hold the A button on the transmitter for 3 seconds and release repeat 2 more times.

ACCESSORY BOARD INSTALLATION

An On Board Accessory Receiver, Crest Part Number CRE55495, is available as an add on option. The On-Board Accessory Receiver has five accessory controls that are activated by the CREST Train Engineer Transmitter using the keypad buttons marked "A" through "E".

The five positions are designed to work as follows:

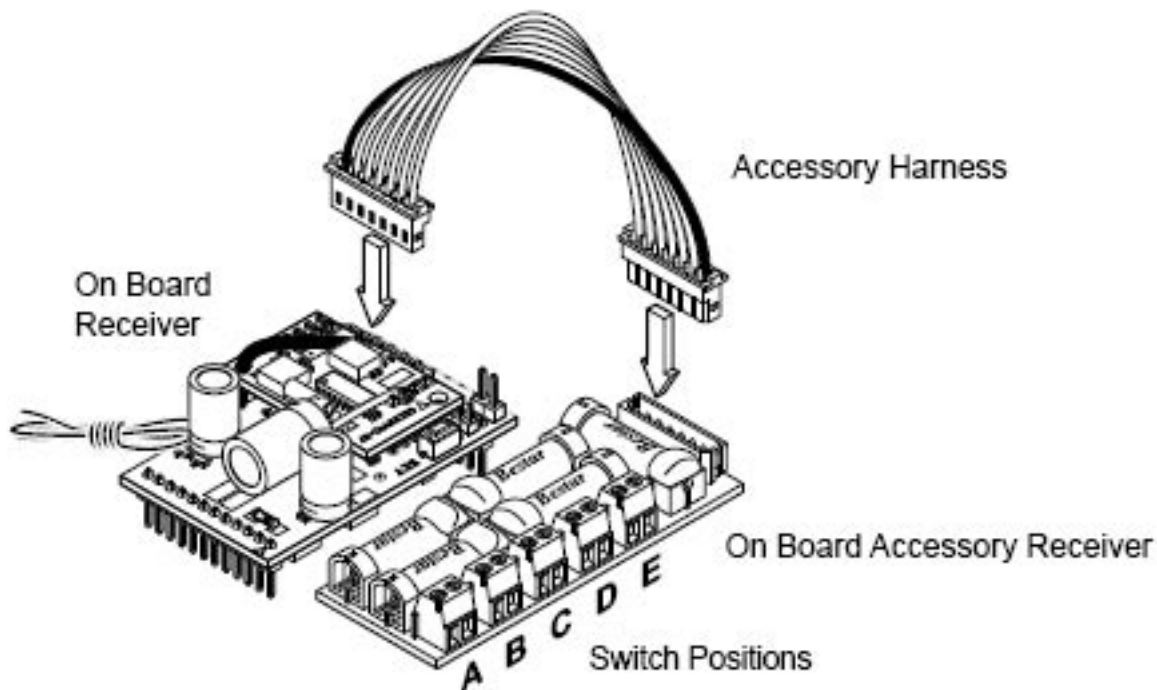
Position	Type	ON	OFF	Typical Use
A	Momentary	Press 'A'	Release 'A'	Horn or Whistle sound
B	Momentary	Press 'B'	Release 'B'	Bell sound
C	Latching	Press 'C'	Press 'C'	Lights
D	Latching	Press 'D'	Press 'D'	Smoke
E	Latching	Press 'E'	Press 'E'	Other Accessory

INSTALLATION

An Accessory Harness is supplied with the Crest On Board Train Engineer Receiver. The Accessory Harness is plugged into the Crest On Board Train Engineer Receiver and then into the On Board Accessory Receiver.

The five switch positions on the On Board Accessory Receiver are then connected to the accessory you wish to control with the Train Engineer Transmitter. Please refer to the manufacturer's instructions for connecting sound triggers when using third party sound systems. Accessories such as smoke units only need to have one wire cut and wired to the desired position using the screw terminals on the On Board Accessory Receiver.

Use double sided foam tape to securely mount the On Board Accessory Receiver to the interior of the engine using care that the On Board Accessory Receiver does not come in contact with any metal inside the engine.



LIMITED WARRANTY

ALL CREST/ARISTO-CRAFT TRAINS products are under warranty for five (5) years from the date of purchase against defects in workmanship and/or materials. Proof of purchase may be required by CREST/ARISTO-CRAFT TRAINS.

Warranty covers manufacturer defects, not normal wear and tear.

This warranty is void and does not apply to any products and/or parts and components which have been improperly installed by the purchaser/owner, abused or damaged in any way through improper operation such as, but not limited to, derailment, repairs or modifications performed by non-authorized service centers or technicians.

Should your CREST/ARISTO-CRAFT TRAINS product require warranty service, please return it in the original box, if possible, protected by a proper shipping carton. Send the product fully insured and prepaid. CREST/ARISTO-CRAFT TRAINS will not be responsible for any loss or damage incurred during shipping. Be sure to include a brief but thorough explanation of the problem, together with your name, street address (no Post Office Box please), city, state and zip code, or province and country, if outside the United States. Also include a daytime phone number so that we may contact you if necessary. Your return address should also be clearly marked on the outside of the shipping carton.

If your item is not covered by warranty service, you will be contacted and a repair estimate given before any work commences. Warranty covers manufacturer defects, not normal wear and tear.

The shipping address to be used for repairs is:

CREST/ARISTO-CRAFT TRAINS
Repairs Department
698 South 21st Street
Irvington, NJ 07111 USA

Phone: 973-351-9800
FAX: 973-351-9800
www.aristocraft.com
aristo@mindspring.com

Written confirmation of receipt of items will be sent with estimated repair time by the CREST/ARISTO-CRAFT TRAINS repairs department.

Thank you for choosing the CREST On Board Train Engineer and we hope this innovative product enhances your enjoyment of the hobby. Enjoy!

CREST ELECTRONICS

POLK'S MODEL CRAFT HOBBIES INC.