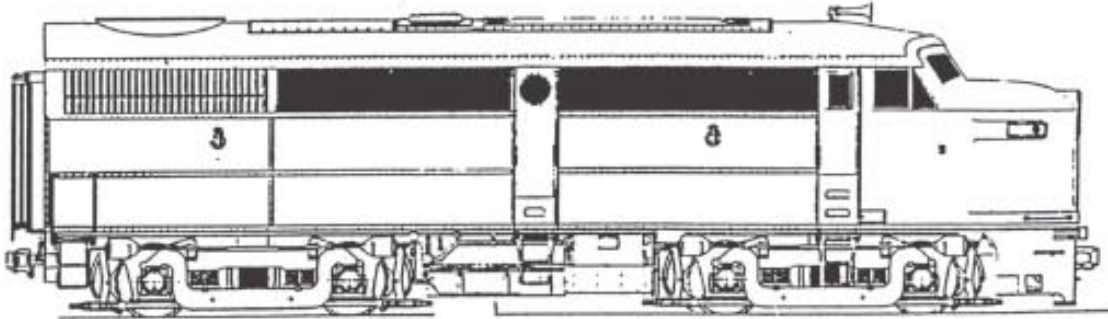


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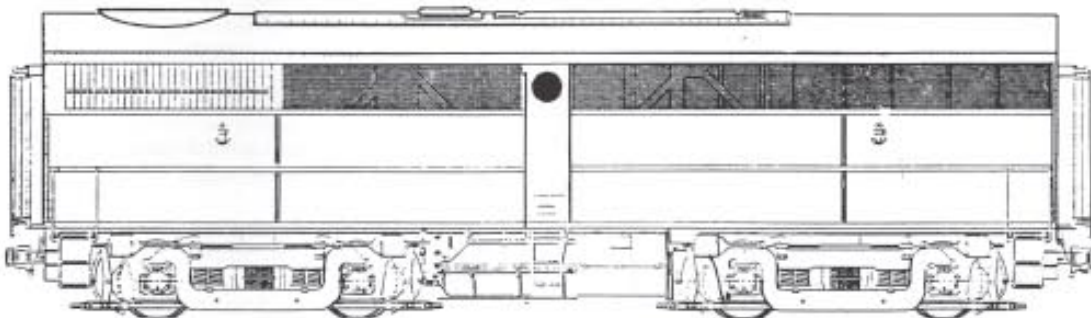
# ALCO FA-1 DIESEL LOCOMOTIVE

INSTRUCTION MANUAL      ART 22000-01



# ALCO FB-1 DIESEL LOCOMOTIVE

INSTRUCTION MANUAL      ART 22050-01



ARISTO-CRAFT TRAINS

092493 REV

APPLICABLE TO ALL ART-22000 SERIES FA-1 & ART-22050 SERIES  
FB-1 LOCOMOTIVES, ART-22300 SERIES FA-1/FB-1 SETS AND  
ART-22300-3 SERIES FA-1/FB-1/FA-1 SETS

# INTRODUCTION

Dear Model Railroader:

This locomotive is, without a doubt, another highly detailed #1 Gauge 1/29th Scale Diesel Locomotive from ARISTO-CRAFT TRAINS. Suitable for both INDOOR and OUTDOOR operation, it accurately portrays a North American prototype freight and passenger Diesel Locomotive, based upon our research and on documented Official Blueprints referenced to standard Association of American Railroads (AAR) recommended practice.

Should you have any questions about operation, proper usage, or maintenance required on this diesel locomotive or any other ARISTO-CRAFT-TRAINS' Model Railroad product, please contact us at the following address:

Aristo-Craft Trains      Phone: 973-351-9800  
698 South 21st St      Fax: 973-351-9700  
Irvington, NJ 07111      email: aristo@mindspring.com

Our phone lines are open from 10:00 AM to 5:00 PM (EASTERN STANDARD TIME) Monday through Friday

The following instructions are intended to help you understand and operate all the features built into this diesel locomotive.

Good Railroading!!!!

## HISTORY

This ARISTO-CRAFT-TRAINS' model railroad locomotive is an accurate reproduction of the ALCO FA-1 Diesel-Electric Locomotive designed and built by the American Locomotive Company (ALCO) of Schenectady, New York, USA.

Starting immediately after the end of World War II, ALCO built hundreds of these 1500 horsepower diesel locomotives for use by railroads in the USA, Mexico, South America, Cuba, and Canada.

The 1500 hp FA-1 was upgraded to 1600 hp and with other design changes became the FA-2 produced by ALCO. In Canada, the model designation was FA-1 and FA-2 along with the FPA version produced by MONTREAL LOCOMOTIVE WORKS (MLW) of Montreal, Quebec, Canada for passenger service.

Primarily intended as a replacement for steam locomotives in freight train service, the FA-1 was also used in passenger service. The ALCO FA-1 Diesel Locomotives have been replaced by more modern diesels on today's railroads.

However, an ALCO FA-1 Diesel Locomotive has been restored to operating condition in Connecticut (USA) and examples of recently retired MLW FPA-4 Diesel Locomotives have been returned to operating condition to haul passenger excursion trains in California (USA).

## FEATURES:

Modular Electrical Connections.  
Modular Carbody and Power Truck Assembly.  
Operating Diesel Smoke Unit.  
Fully sprung power trucks.  
Operating Classification, Marker Lights, and Headlight.  
Interior Cab Lighting.  
Full Interior Cab details.  
Operating AAR Knuckle Couplers.  
Solid Metal Railings.  
Clear Plastic Windows with ~~Bright Work Trim~~.  
Realistic Painting, Lettering, and Numbering.

## PLEASE NOTE:

Since the ARISTO-CRAFT-TRAINS' #1 Gauge 1/29 Scale ART 22050 Series FB-1 ALCO Diesel Locomotive is similar in design to the FA-1 ART 22000 Series ALCO Diesel Locomotive, most features and operating/maintenance instructions are the same for both FA-1/FB-1 Diesel Locomotives.

NOTE: The FB-1 ALCO Diesel Locomotive is designed as a fully operational model railroad locomotive and, unlike prototype railroad "B" (Booster) Units, can operate without being coupled to an "A" (Cab) Unit. However, prototype railroad practice was to couple "B" Unit(s) to other unit(s) with locomotive cab ("A" Unit) for engineer and fireman such as A-B-A or A-B locomotive sets when used for Freight Train or Passenger Train service.

The FB-1 ALCO Diesel locomotive ART 22050 Series is NOT equipped with:

Classification/Numberboard Lighting  
Headlight or Directional Headlight Control  
Interior CAB Lighting  
Front Pilot Assembly with Air Hoses  
Horn, Windshield Wipers, Cab Windows  
Certain BRASS Grab Railings

All other FA-1 features including Operating Smoke Unit and the optional Diesel Sound Unit are applicable to the FB-1.

SEE NOTES & UPDATES AT THE END OF THIS MANUAL FOR UPDATED INFORMATION

## COUPLERS

Loop style couplers are enclosed as a spare accessory. The operating knuckle couplers on all the ARISTO-CRAFT TRAINS locomotives and passenger/freight railcars are designed based upon the AAR style used on all major North American Railroads.

**NOTE:** However, these knuckle couplers may not operate automatically when attempting to couple ARISTO-CRAFT TRAINS products to knuckle couplers used by other model railroad manufacturers. Couplers may have to be joined by manually coupling the knuckle on each car/locomotive end in a closed position then lifting one end coupler and inserting the closed knuckle onto the ARISTO-CRAFT TRAINS knuckle coupler.

This AAR-type knuckle coupler works equally well from either end of the FA-1 diesel locomotive and can be uncoupled automatically by using an LGB\* designed uncoupling device. The knuckle couplers may also be operated manually by pressing upward on the small tab below each coupler assembly. The knuckle coupler can be pushed away to either side if you wish the locomotive not to couple automatically when the opposing knuckle couplers come together. However, DO NOT attempt to operate in train without the knuckle couplers properly aligned and fully coupled to opposite railcar/locomotive. Otherwise, derailment on curves or switch tracks is possible.

Should you prefer to use the Loop-style coupler, this conversion can be made easily and quickly by unscrewing the single screw that holds the AAR knuckle coupler to the truck arm and attaching the Loop-style coupler using the same screw.

**NOTE #1:** The FA-1 Diesel Locomotive was NOT designed to operate easily with a Loop-style coupler mounted through front pilot. Attaching Loop-style coupler may require modification to coupler mounting bracket and/or extension of couple arm and/or enlarging hole through front pilot assembly.

Both style couplers are attached to truck arm at a swivel base. When operating, this enables coupler(s) to articulate when encountering sharp radius curves or switches. Couplers will center automatically while in motion. Manual centering is accomplished by exerting light pressure on knuckle/Loop at articulated joint and returning knuckle/Loop to center.

\*LGB is a trademark of the E.P. Lehman Company, Germany.

**NOTE #2:** Single unit FA-1 diesel can properly operate on the ART 11100/30100 curved track when coupled to any ARISTO-CRAFT TRAINS freight railcars or ART-31000 series Wood-style Passenger Cars (check Instruction Manual on other ARISTO-CRAFT TRAINS Diesel/Steam Locomotives and Standard Heavy-weight Passenger Cars for minimum operating radius). When operating the FA-1 diesel in multiple unit formation or with an FB-1 diesel as FA-1/FB-1 or a FA-1/FB-1/FA-1 "lashup", the minimum recommended curved trackage to use is ART-11500/30110 or ART-11800/30120 due to clearance between locomotives when coupled together.

Modification to AAR-style knuckle coupler bracket may be required when coupling to above listed passenger railcars with front end of FA-1 diesel. Due to curvature of small radius ART-11100/30100 curved track, AAR-style knuckle coupler cannot swivel enough to allow following knuckle coupler to remain in track center. Derailment of railcar is possible. To correct, it is suggested that the uncoupling tab arm on knuckle coupler be trimmed about 1/8 inch to allow knuckle coupler to swivel against FA-1 carbody opening. Also make sure that molded airhose(s) on FA-1 carbody pilot do not interfere with knuckle coupler. See NOTE #1 and #2 above.

## WHEELS: - Pre 1995 production versions only

The wheels are designed for electrical power pickup through a wire connection at each axle end in truck sideframe. Specially plated to insure good electrical conductivity, corrosion resistance, and extended wear, the wheels will give normal service during usage of the FA-1 locomotive.

However, over a period of time these wheels may require cleaning. Dirty wheels will cause sporadic electrical pickup and possibly electrical flashover which may cause discoloring on affected surfaces of wheel and/or truck.

However, over a period of time these wheels may require cleaning. Dirty wheels will cause sporadic electrical pickup and possibly electrical flashover which may cause discoloring on affected surfaces of wheel and/or truck.

A good indication of dirty wheels is flickering lights or non-functioning fan or smoke unit. To clean properly, remove FA-1 diesel from any electrical contact and turn upside down exposing wheels. Using ART-29601 SMOKE FLUID/TRACK CLEANER is recommended for application to wheel surface with clean/soft fabric (rag). DO NOT USE ABRASIVE because resulting metallic particles may enter electric motor/gearing and cause operational problems.

## ELECTRICAL PICK-UP: - Pre 1995 production versions only

This FA-1 diesel locomotive is equipped with eight (8) electrical pickup points, four (4) per power truck/wheel set, located at each truck/wheel set sideframe journal and contacting against the axle end. Each brass bushing provides firm contact on each axle end and transfers electrical current to each truck motor. Connections are continued to other electrical features, headlights, etc. through additional wiring using modular plugs.

These brass bushings should not need replacement during operational lifetime of the FA-1 diesel. Replacement can be accomplished by owner or factory-authorized ARISTO-CRAFT TRAINS Repair technician.

Each power truck is connected to the main wiring by means of 2 (two) modular disconnect plugs. One plug for Gearbox connection and the second for Electrical Pickup Sideframe connection. Wires are "color-coded" for each plug.

To replace Brass Pick-Up Bushing:

1. Remove the truck/wheelset sideframe by unscrewing the three (3) mounting screws. Two (2) screws are located above the coiled springs and the other screw is located below the leaf spring.

2. Loosen the two (2) screws on the inside bearing cover and then remove cover.

3. The old brass bushing is now exposed and can be removed from inside bearing cover plate by prying out bushing (use small screwdriver). At this point disconnect the soldered wire lead from brass terminal strip located inside of truck/wheel set sideframe.

4. Insert new brass bushing, then solder wire connection and re-assemble as per above reversing the sequence.

## IMPORTANT - Caution:

5. The bearing cover has a small notch in the top center. This notch must be in the upward position.

6. There is an electrical contact connection under one of the sideframe screws. This connector must be positioned properly and in contact with the terminal strip during re-assembly.

7. Solder point(s) ... Be careful not to damage opposite electrical contact leads when soldering during replacement.

## DRIVE TRAIN: - Pre 1995 production versions only

This FA-1 diesel locomotive is equipped with a unique drive mechanism that allows greater tractive effort (pulling power) and smoother operation during usage. Each axle/pair of wheels is articulated and independent from the other axle in each two (2) axle power truck on the locomotive. Each axle can move vertically/horizontally without affecting operation of other paired axle. This allows for better electrical contact on switches and especially on uneven track.

Each truck has a motor, wired independently of the other power truck, and can be replaced as a complete power truck unit, ART-29351.

Each truck gearbox has been lubricated at the factory with a new high-tech lubricant which, under normal operating conditions, should last indefinitely, thus eliminating the need for periodic gearbox maintenance. However, you MAY lubricate, if desired, using a high-temperature/non-water soluble paste (ART-29602) or liquid lubricant, but ONLY in proper amounts. It is necessary to dis-assemble truck/wheel

set to allow access to gearing and shafts for lubrication. Follow instructions for proper procedure to dis-assemble power truck.

Although each gearbox is a complete unit, it may be disassembled and all parts contained therein are repairable or available as replacement. **NOTE #3:** Allow only factory-authorized ARISTO-CRAFT TRAINS Repair Technician to perform ANY REPAIRS otherwise, WARRANTY MAY BE VOIDED.

To inspect the gearbox, disconnect locomotive from electrical power and:

8. Remove truck/wheel set sideframes as instructed in the ELECTRICAL PICKUP section above.

9. With locomotive upside down, remove eight (8) screws from each side of gearbox casing cover. Lift off cover.

10. To disconnect gearbox and wheel assembly unit, remove the two (2) screws and lift upward on the wheel assembly unit. Pull gently away from the motor at a slight upward angle.

11. To remove the motor, utilize the disconnect plug as mentioned above at the rear of motor, and lift up.

**NOTE #4:** Be sure to recognize each wire lead with regards to terminal on motor. You must re-solder to SAME TERMINAL during re-assembly.

12. After repairs/inspection is completed, reverse sequence to assemble power truck.

#### LIGHTING:

The FA-1 diesel is equipped with operating front headlight and numberboard, and interior light. A total of six (6) light features using four (4) lightbulbs.

To replace a lightbulb, part ART-29502, use the following directions:

13. Turn off electrical power supply to FA-1 diesel. Remove the locomotive carbody from underframe to allow access to lightbulb(s). Remove screws found alongside the frame.

14. Remove brass grab railings from cab of locomotive, the protruding ends may interfere with inside clearance of the underframe when removing carbody.

15. Gently pull carbody away from the underframe. Be careful at three (3) rear door switches when lifting. The carbody assembly is connected electrically via modular disconnect plugs. Unplug, and carbody with smoke unit assembly then lifts off as a unit.

16. Headlight, Numberboard Lights, Interior Cab Lights are accessible after removing carbody. See Items 14-15 above.

#### DIRECTIONAL LIGHTING:

The headlight of this FA-1 diesel will ONLY LIGHT in the direction of movement. With multiple units FA-1/FA-1 etc. only headlight in direction of movement (on both diesels) will light as per direction of units. Headlight is NOT controlled by rear switch(es) on diesel.

**NOTE #5:** All interior lighting will remain "ON" regardless of direction of locomotive travel and operation of headlight, unless rear switch marked light is in "OFF" position.

#### INTERIOR LIGHTING:

The interior cab lighting is controlled by one (1) position switch at rear of locomotive marked "LIGHT". Center switch of three switches top to bottom.

**EXHAUST FAN:** - For Pre 2002 versions of FA-1 and all FB-1  
The roof exhaust fan is independently controlled by the three (3) position switch at rear of locomotive. Top switch of three switches to bottom.

**NOTE #6:** DO NOT OPERATE EXHAUST FAN WITHOUT ART-29601 Smoke Fluid in smoke generator unit. Failure to have supply of smoke fluid WILL BURN OUT smoke unit. See SMOKE GENERATOR instructions.

This switch also activates Smoke Generator Unit. Center position is "OFF".

#### SMOKE GENERATOR UNIT: - For Pre 2002 versions of FA-1 and all FB-1

The FA-1 diesel is equipped with an operating smoke generator unit, ART-29305, which produces smoke through the use of ART-29601 smoke fluid. To operate properly, fill the stack with ART-29601 SMOKE FLUID, about twenty-five (25) drops are sufficient. Fill smoke fluid tank through smokestack hole, top center of stack. **NOTE #7:** To avoid spilling fluid on locomotive carbody, smoke generator unit can be removed before filling. Make sure switch marked SMOKE on rear compartment is in "OFF" position when refilling fluid or removing generator unit. By exercising proper care during operation, the smoke generator until will provide long service and enhance operation of your FA-1 diesel.

19. NEVER OVERFILL stack/unit with Smoke Fluid. The unit holds twenty-five (25) drops of fluid. If spilled, wipe up excess promptly.

20. To prevent smoke unit burnout, NEVER RUN UNIT DRY. As soon as smoke unit stops smoking, turn off and refill.

21. All fluid in stack/unit must be heated by element to begin smoking. If smoke unit completely full, longer time must be allowed before smoke begins.

22. For safety and proper operation, WE ADVISE USING ONLY ART-29601 SMOKE FLUID to operate Smoke Generator Unit. Using improper Smoke Fluid and damaging unit can void warranty.

Should it become necessary to repair the Smoke Generator Unit of the FA-1 diesel return to ARISTO-CRAFT TRAINS Customer Service or replace complete smoke generator unit. Order replacement part ART-29308 SMOKE UNIT FOR FA-1 DIESEL.

The remainder of smoke unit associated components and exhaust fan are accessible by removing the carbody from locomotive underframe. See previous instructions for details.

#### CAUTION - CAUTION - CAUTION -

The smokestack of this smoke generating unit and surrounding carbody roof MAY BECOME HOT during operation and for a reasonable time after unit turned off. DO NOT TOUCH this unit until it has sufficiently cooled. DO NOT TURN LOCOMOTIVE upside down or side-ways because remaining smoke fluid may flow out. Smoke Fluid MAY ALSO BE HOT.

#### DIESEL SOUND UNIT: - Pre 2002 versions only

This locomotive is NOT equipped with a factory installed DIESEL SOUND UNIT. Provisions have been made during manufacture to allow installation of ARISTO-CRAFT TRAINS Diesel Sound Unit ART-29350 by customer or factory-authorized technician when DIESEL SOUND UNIT becomes available (1993 Product Year). Full installation instructions will be included with purchase of ARISTO-CRAFT TRAINS DIESEL SOUND UNIT ART-29350. It will be a simple "plug-in" type of installation. No special modifications or wiring will be required.

#### SERVICE NOTES:

All parts contained in this FA-1 locomotive are available for replacement or repair by contacting ARISTO-CRAFT TRAINS Customer Service Department.

Major components are available as a unit to allow the customer to have the option of replacement or repair by qualified factory technicians. If you have any questions, please refer to INTRODUCTION for method of contacting our office.

#### PULSE WIDTH CONTROL: (Revised 01-91)

All ARISTO-CRAFT TRAINS locomotive, tenders, railcars, and accessories with operating features are designed to operate at proper capacity ONLY with ARISTO-CRAFT TRAINS Power Packs featuring "Pulse Width Control" (P.W.C.).

P.W.C. allows a continuous voltage to flow to the motor and accessories such as headlight, interior lighting, and smoke unit during operation REGARDLESS of the speed OR direction of locomotive, tender, and/or railcars. In addition, the motor is supplied with continuous voltage to allow smooth starting and stopping.

DO NOT CONFUSE PULSE WIDTH CONTROL with Pulse Power, a feature provided by some other (non-ARISTO-CRAFT TRAINS) power packs. It may seem that when operating with Pulse Power, the

feature on ARISTO-CRAFT TRAINS products are operating properly but in fact they ARE NOT. Sufficient voltage may not be available to activate the unit(s) and, overload/underload damage to components may result.

Also, the TRAIN POWER PACK 7000 - 3.5 AMP FOR G AND HO previously manufactured by Polk's Modelcraft Hobbies under the Aristocraft Tradename DOES NOT HAVE P.W.C. To properly operate your #1 Gauge ARISTO-CRAFT TRAINS with P.W.C., use ARISTO-CRAFT TRAINS ART-5400 (1.8 AMP) or ART-5450 (4 AMP) Power Supply Units.

If it is not possible to operate your #1 Gauge 1/29 Scale ARISTO-CRAFT TRAINS products with our P.W.C. equipped Power Supply, do not worry. Our Electrical Engineers have developed the ART-5401 CONTROL PACK ADAPTOR which can be easily attached to your present power supply, UP TO 5 AMPS ONLY, of another manufacturer and allow PULSE WIDTH CONTROL to be applied to your Indoor/Outdoor model railroad.

#### ASSEMBLY INSTRUCTIONS:

ALCO FA-1 Diesel comes Read-to-Run. ART-22000 UNDECORATED requires some assembly in placement of exterior detail components - horns, windshields, wipers, railings. All other FA-1 Diesels are assembled at factory. (Horns are packaged separately to prevent damage during shipping, insert into holes on Carbody ROOF). (Metal railings packaged separately.)

#### LIMITED WARRANTY

Your new ARISTO-CRAFT TRAINS product is warranted for 180 days from DATE OF PURCHASE against defects in workmanship and/or materials. Proof of purchase may be required by ARISTO-CRAFT TRAINS.

This warranty is VOID and does not apply to any product and/or parts and components that may have been improperly installed by purchaser/owner, abused or damaged in any way through improper operation such as train derailment, modified, or repaired by unauthorized service centers and/or non-factory authorized technicians.

#### SERVICING

Should your ARISTO-CRAFT TRAINS product require warranty service, be sure to take the following steps to assure proper servicing:

1. Return product in ORIGINAL BOX with foam inserts, then pack this ORIGINAL BOX in proper shipping carton. If not possible to use original box, only pack product carefully in strong cardboard box, FULLY INSURED and PREPAID. ARISTO-CRAFT TRAINS will not be responsible for any damage or loss incurred during shipping.

2. Include a brief but thorough explanation of the problem(s) and the servicing that may be required.

3. Be sure to include your NAME, STREET ADDRESS (no Post Office Box, please), CITY, STATE (or PROVINCE), COUNTRY (if outside USA), and postal zip code along with a daytime phone number, including Area Code, so that you may be contacted if it becomes necessary. All identification MUST be both - INSIDE package, contained in letter and - OUTSIDE package, on shipping container.

4. Include proper payment for shipping/handling -

Locomotive or Complete Train Set \$20.00 US  
Accessories, switches, etc. \$10.00 US  
Individual freight/passenger railcars, or tender \$10.00 US  
- with check (written on YOUR USA Bank Account)/Money Order payable in US Dollars (\$) to: Polk's Hobbies. Please DO NOT SEND CASH. If your returned item is out of warranty, you will be contacted with amount of repair costs before repairs are started.  
\*\*\*C.O.D. shipping NOT included, additional cost.\*\*\*

5. Ship your item(s) to:

Aristo-Craft Trains Phone: 973-351-9800  
698 South 21st St Fax: 973-351-9700  
Irvington, NJ 07111 email: aristo@mindspring.com

6. Immediate written confirmation of receipt of returned item(s) will be sent along with estimated repair time by ARISTO-CRAFT TRAINS Service/Repair Department.

## NOTES & UPDATES:

### DRIVE TRAIN ALL POST 1995 PRODUCTION

The FA-1 & FB-1 as well as other ARISTO-CRAFT diesel locomotives, is equipped with a unique drive mechanism that allows greater pulling power and smoother operation than other, similar locomotives. Each axle (pair of wheels) is articulated and independent from the other axle in the power unit. Each axle can move vertically and horizontally without affecting operation of the other paired axle. This allows for better adhesion and electrical contact on switches and especially on rough or uneven track.

The power unit gearbox has been lubricated at the factory with a new, high-tech lubricant, which, under normal operating conditions should last indefinitely, eliminating the need for periodic gearbox maintenance. However, if the unit is subject to heavy and continued usage, you may lubricate using ARISTO-CRAFT No. CRE-29602, a high temperature, oil based paste. Use only a very small amount of lubricant. It will be necessary to disassemble the power unit to access the gears and shafts for lubrication. **Note:** Allow only a factory authorized ARISTO-CRAFT TRAINS repair technician to perform any repair, otherwise, the warranty may be voided.

To gain access to the power unit and gearboxes for inspection, maintenance or repair, follow the below steps:

- 1- Turn the locomotive upside down and remove the outer side skirts and side frames.
- 2- Remove the six (6) screws which hold the power unit together. There are four screws in the bottom half and two (2) in the top. The cover may now be removed, exposing one fixed axle with its gear and worm, and one floating axle with its enclosed gear box. The exposed worm and gear may be lubricated without any further disassembly. The floating axle, however, has an enclosed gear box which must be opened for inspection or lubrication. Gently pull the wheel and gear box assembly up and away from the motor. Once detached, the four (4) screws in the gear box are to be removed and the cover opened for maintenance or repair.
- 3- To remove the motor, first unsolder the wire leads, but be sure to note which color is attached to either terminal of the motor. Lift the motor up to remove. When re-installing the motor, the wires must be soldered to the same terminal from which they were detached.
- 4- After maintenance or repairs have been completed, reverse the above sequence to reassemble the gear box and power unit.

### WHEELS ALL POST 1995 PRODUCTION

The metal wheels have been designed for good electrical power pick up. Specially plated to insure good electrical conductivity, corrosion resistance and extended wear, the wheels will give normal service during the life of the Lil' Critter locomotive.

Over a period of time, however, these wheels may require cleaning. Dirty metal wheels will cause sporadic

electrical pick up and possibly electrical flashover which may cause discoloring of the affected surfaces of the wheels and/or track.

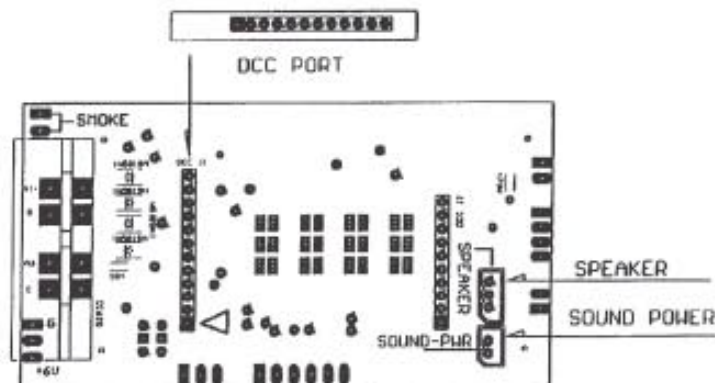
A good indication that the wheels require cleaning is the flickering of the lights. To clean the wheels properly, remove the locomotive from the tracks and turn it upside down to expose the metal wheels. Use ARISTO-CRAFT Smoke Fluid/Track Cleaner (CRE-29601) applied with a clean, soft rag to clean the accumulated dirt and grease from the metal wheels. DO NOT use abrasives as the resulting grit may enter the motor and gearing and cause operational problems.

### BATTERY OPERATION ALL POST 2002 PRODUCTION

This locomotive has been equipped to operate either from track power or from battery power. The selection switch is located inside the door on the rear of the locomotive. With the Motor Power Switch set to the ON position the locomotive will use track Power. With the Motor Power Switch set to the Off position the locomotive will use battery power. There are modular connectors alongside of each coupler. These connectors will link the locomotive to a trailing car containing the batteries and a controller.

### DCC INSTALLATION FOR ALL POST 2002 PRODUCTION

This locomotive is equipped with a DCC port and dummy plug. After purchasing the DCC system of your choice, be sure to read the instructions carefully. In order to install your DCC system, the dummy plug must be removed and the DCC plug inserted in its place. The DCC port is located on the main PC board of the unit. See the diagram of the main PC board (below) for the location of the DCC port. In order to reach this PC board, the long hood and the cab must be removed. Refer to Exploded Parts Diagram for disassembly of locomotive



Main PC Board

### SMOKE GENERATOR ALL POST 2002 PRODUCTION FA-1

The smoke generator unit is situated beneath the exhaust stack, which is located on the top of the long hood

Before filling the smoke fluid reservoir, turn the smoke switch to the off position. Fill the smoke unit by dripping the smoke fluid through the exhaust stack.

Using Crest smoke fluid, CRE-29601 (CRE -29601), fill the reservoir with at least 50 but no more than 75 drops of the smoke fluid.

This new smoke generator contains an automatic cut-off circuit that will prevent the unit from burning out if it becomes too hot or if it runs out of smoke fluid. Should the unit shut itself off, move the smoke unit switch to the off (right) position, allow the unit to cool for a few minutes and refill with smoke fluid (if necessary). Move the smoke switch to the on position and restart.

### CAUTION

Do not turn the locomotive upside down or on its side when the smoke fluid reservoir contains smoke fluid. The remaining liquid may leak out, and if the locomotive has just been run, the fluid may be hot enough to cause injury.