
LIFETIME LIMITED WARRANTY

S HELPER SERVICE, Inc will replace or repair (at it's discretion) any part which it finds fault in workmanship or material provided these instructions are followed:

1. Include a note indicating nature of problem with your name and address.
2. Returned items must be shipped to S HELPER SERVICE shipping fully pre-paid along with \$10.00 for return shipping and handling. If part is returned within 90 DAYS of purchase, return postage and handling fee need not be included. NOTE: Proof of purchase with date must accompany returns.
3. Send SW-1 in original box plus shipping and handling to:
S HELPER SERVICE Inc., 77 Cliffwood Ave., Unit 7C, Cliffwood, NJ 07721
4. Pack properly to protect SW-1 against added damage. Use original tray and gift box if at all possible. Carefully pack and insure.
5. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

This Showcase Line SW-1 is warranted against defects in workmanship and materials for as long as it is in the possession of the original purchaser or owner.

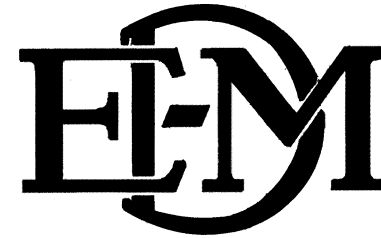
This warranty does not include the cost of any inconvenience nor does it cover the cost of transportation damage, misuse, abuse, accident, normal wear or any item which has been tampered with. The warranty does not cover LEDs.

ACKNOWLEDGEMENT

We would like to thank all of our friends that helped us bring this project to fruition: Col. Norm Wedekind, Mike Anderson, Walt Jopke, Karl Dentino, Jeff Freeman, Ken Zieska, Lee Johnson, Dallas Gutacker, Will Holt, Ron Sebastian, Guy Gola, Don Richards, Vic Roseman, Dick Arsenault, Wayne Hills, Howie Waelder, Charles Leonard, Michael Greene, Hiram Graves, John Prior, Jon Marinello, Bob Werre. If we have forgotten anyone, please forgive us.

We appreciate Clement Nip, who's gentle patience as our project manager guided this loco to completion, Karen Kwok for her superb artwork, Mr. Wai Shing Ting and Mr. Paul Chiu who were good enough to let our products be made in their facility and especially our customers. Without this support, there would never have been an S Helper Service SW-1.

Thank you all.



Enginemen's Operating Manual

MODEL SW-1
SWITCHER

THE SHOWCASE LINE®

***Quality S-scale model trains
from S-Helper Service, Inc.***

S HELPER SERVICE INC. ©2003

77 Cliffwood Ave, Unit 7C, Cliffwood, NJ 07721

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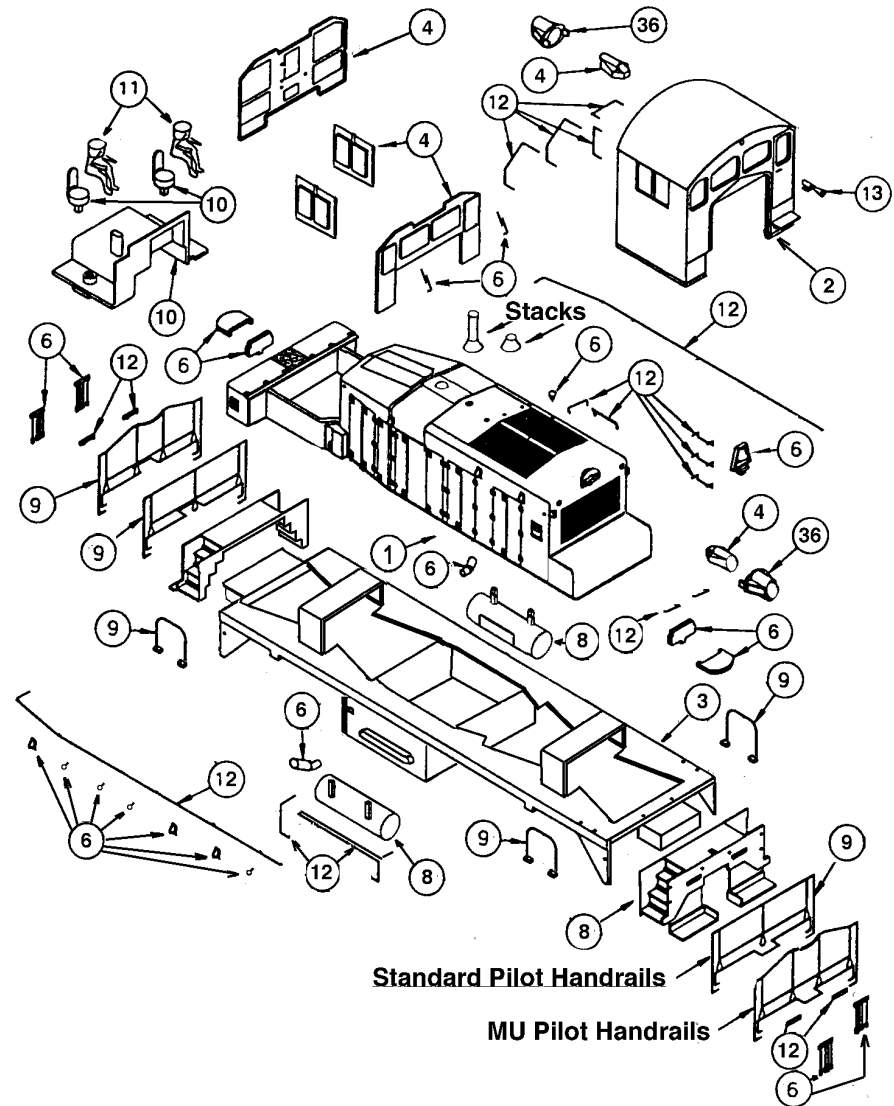
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Body & detail parts

27	Motor mounts (2), rubber	1.00
29	Sideframe(2), AAR type A	5.00
30	Screw, pilot (4)	1.00
31	Screw. body (4)	1.00
34	Screw, pick-up wiper bracket (4)	1.00
35	Pick-up wiper bracket (4)	2.00
36	Single lens headlight (2)	5.00
-	KD 802 coupler (pair)	2.90
-	Exhaust stacks (1 each of 2 types)	2.00
-	DCC decoder 1.2/2.0 amp(Digitrax DH-123P)	24.95
-	Aero-loco lubrication set(Train Pak)	15.00

Ordering Information

All Showcase Line products are available from Hobby Shops. If your local Hobby Shop is unwilling to stock our products, you can order directly from S Helper Service, Inc. US orders under \$100 include \$6.50 s/h, plus \$1 for each extra \$100. Master Card/Visa/AMEX/Discover cards are accepted. Fax orders can be received 24 hours a day at 732-441-0751, phone orders can be placed at 1-800-465-0303. Catalogs and our newsletter, *The SHS Update* are available upon request. Items can be ordered online at:

www.showcaseline.com

We have PS-2 covered hoppers (both 2 and 3 bay), USRA single & double sheathed boxcars, 40' stock cars, 40' steel rebuilt boxcar, 48' bulkhead flat car, 53'6" TOFC (trailer on flatcar), a 53' 6" GSC standard flatcar, 40' wooden reefer, a ICC extended vision caboose. For motive power we have SW-9 & SW-1 diesel switchers, phase II F-3 A & B, and F-7 A & B units.

We are now working on a 2-8-0 steam engine, E-7 passenger diesel and a 70 ton ore car.

Our S gauge track system includes 3 radii of curved track (20", 25" and 30"), 5", 10" and 15" straights, insulated rail joiners (both yellow and weathered), American Flyer track adaptors, bumpers, Right & Left #3 switches and flex track.

We expect our R&L #5 switches (turnouts) next this year. We are in the design phase for a 90° & 30° crossing as well as a signal system

THANK YOU

Thank you for purchasing our SW-1 diesel switcher. Your new switcher comes ready-to-run on American Flyer compatible S gauge track with either AC or DC power. Just be sure to break in your SW-1 before placing it in normal operation. Simply operate it for 20 minutes in both directions at mid voltage (about 9 volts), lubricate per the instructions in Section 4-1, and then it's ready. We have included additional parts for easy adaptation to different operating conditions. With proper care and maintenance, your SW-1 should give you a lifetime of operating pleasure.

SECTION 1 - Prototype Data

The Electro-Motive Corporation began to produce 600 hp diesel switchers similar to our SW-1 in the late '30s. In 1940 General Motors bought EMC and changed its name to Electro-Motive Division (EMD). Since then, evolving design improvements were incorporated as newer models were produced. Modifications included increased horsepower, multiple-unit (MU) options, welded construction, and changes in body styling. EMD sold over 300 SW-1's, manufactured between 1939 and 1953. More than 100 railroads and industries have owned SW-1s with many still in use today. This phase of SW-1 was produced from 1942 to 1946.

General Specifications:

Wheel Diameter	40"
Truck Wheelbase	8'-0"
Locomotive Wheelbase	22'-0"
Length	44'-9"
Height	14'-6"
Weight	198,000 lbs
Horsepower	600 hp

SECTION 2 - Features

Right out of the box, your SW-1 will run on any layout with American Flyer compatible track and standard transformer, rectifier, and/or rheostat speed control.

Warning - Use of AC voltages higher than 21 volts may damage your SW-1's electronics and will void the warranty.

Your SW-1 comes with several optional features listed below: (Those with an asterisk (*) are factory-installed.)

- Two sets of pilots.
 - a. Standard handrails*.
 - b. A second set with split handrails and walk-over steps for MU operation.
- Accepts two types of couplers.
 - a. American Flyer compatible automatic couplers*
 - b. Kadee No. 802 couplers (not included) with self-tapping mounting screws.
- Two sets of wheels.
 - a. American Flyer compatible wheelsets*.
 - b. Code 110 NMRA RP-25 contour wheelsets.
- Electronic options.
 - a. AC/DC sequence-reversing*.
 - b. Reversing headlights*.
 - c. DC shorting plug (for DC polarity-reversing).
 - d. Digital Command Control (DCC) NMRA socket*.
 - e. "Smart" reversing (cab at rear or cab at front)*.
- Complete set of spare electrical pick-up wipers.
- Two types of exhaust stacks

The following paragraphs tell you how to set up your SW-1 to use any combination of these features.

SECTION 3 - Getting Started

You can perform any or all of the following modifications before or after you begin to operate your SW-1. If you haven't yet broken it in (see Section 4-1), be sure to do so before placing your SW-1 into normal operation.

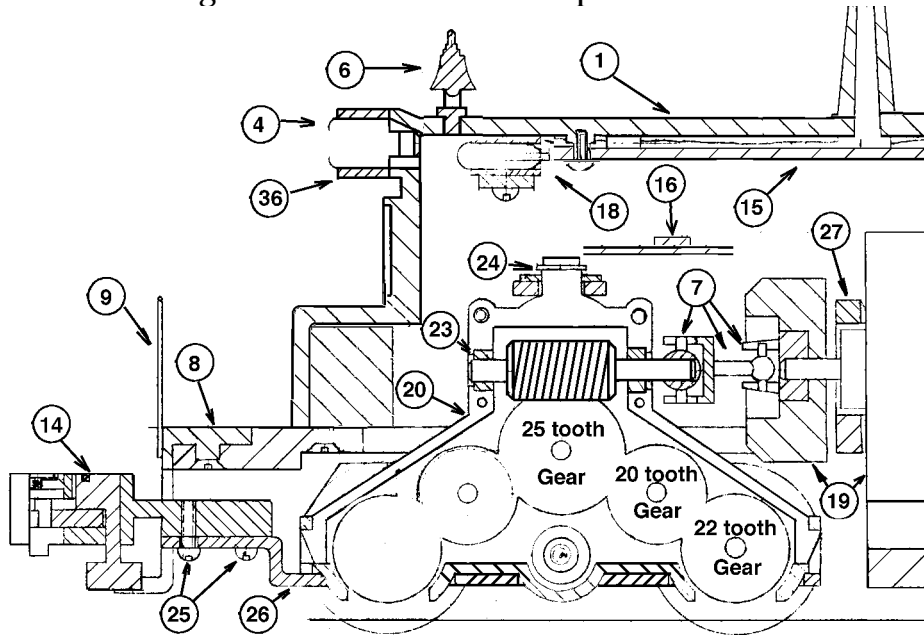
assembly. Carefully re-connect the universal drive shaft to the gear tower and push the e-clip back onto the gearbox stem.

Step 8. Re-insert the AC/DC circuit board plug into its socket (if you are not using DC polarity reversing or DCC) before re-attaching the body assembly to the frame (Do not overtighten screws).

SECTION 5 - PARTS LIST

Part#	description	price
1	Body (damage exchange only)	\$0.00
2	Cab (damage exchange only)	NA
3	Chassis (damage exchange only))	NA
4	Windows & lens set (6)	NA
5	Gear set (5), Celcon®	5.00
6	Detail Parts set (20)	12.50
7	Universal set (6)	5.00
8	Pilot & air res.	10.00
9	Handrail set (4), Celcon®	5.00
10	Interior fixtures set	9.00
11	Crew (2 man engine), painted	5.95
12	Metal detail parts set (21)	12.00
13	Horn (1) brass, turned	2.95
14	Coupler, AF comp. assy.	3.95
15	AC/DC board	39.95
16	NMRA socket assy.	7.95
17	DC ONLY shorting plug	2.00
18	LED pcb, frt & rear assy.	11.95
19	Motor w/ flywheel assy.	15.00
20	Gearbox assy., code 110	20.00
20A	Gearbox assy., AF compatible	20.00
21	Drivers assy(4), code 110	16.00
21A	Drivers assy(4), AF compatible	16.00
22	Pick-up wipers (8), contacts	4.00
23	Bearings (8),Bronze	4.00
24	E-clip(2)	1.00
25	Screw, coupler (14)	1.00
26	Coupler bracket(2)	2.50

Step 3. Remove the American Flyer compatible coupler bracket and the four wheelsets. (See Code 110 NMRA RP 25 Contour Wheelsets, Section 4.4.)
 Step 4. Remove the e-clips that hold the gearbox to the gear tower and lower the gear box from the chassis.
 Step 5. Remove the plastic pick-up wiper assembly, taking care not to break the wipers. Note on which



6-5 Cross section parts drawing - gear box and details

side of the gearbox each belongs.
 Step 6. Remove the two screws holding the two halves of the gearbox together. Once the gearbox is apart, clean the old grease from the gears and worm. Lubricate the worm with ACT gear Lube and the idler gears with ACT motor bearing lube.
 Step 7. Re-assemble the gearbox (Do not overtighten screws) and plastic pick-up wire

3-1 AC/DC American Flyer Compatible Layouts

Your SW-1 has American Flyer compatible wheels and automatic couplers. It also has factory-installed forward-neutral-reverse-neutral sequencing (1.0 sec stop) just like most American Flyer locomotives. In order to enhance your operating enjoyment, we have included the following standard ready-to-run features:

- A circuit delay so that the locomotive does not cycle into neutral in case power is momentarily interrupted, as with dirty track.
- Directional lighting, only the headlight pointing in the direction that your SW-1 is moving lights up.
- Smart reversing. When stopped for 30 seconds or more, your SW-1 will always resume running in the forward direction.

These features are all factory-installed.

3-2 Alternate Pilots

Your SW-1 comes ready to operate as a single unit. If you want to run two units in tandem, you may want to install the alternate set of MU pilots on one or both ends of each unit. These have split handrails and fold-up walk-over steps that allow crew members to walk between the units. Both pilot styles are compatible with either the American Flyer compatible couplers or Kadee No. 802 couplers.

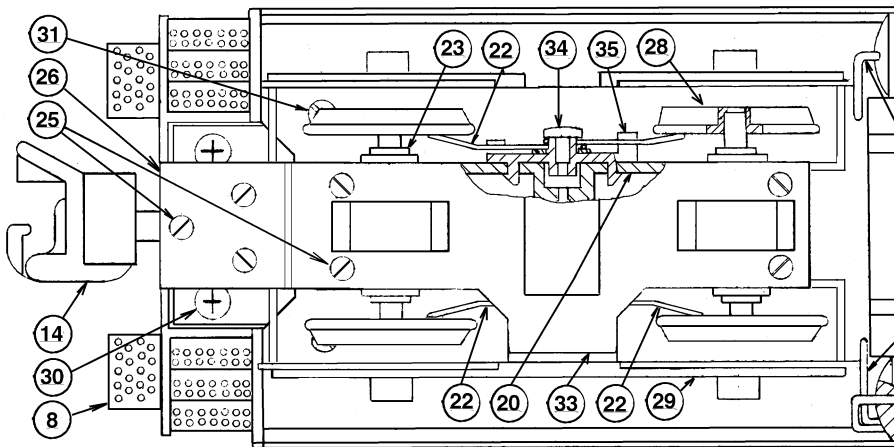
To replace each pilot, lift the side handrails out of their sockets on the pilot. Place the locomotive upside down on a soft protected surface. Unscrew the two screws that hold the pilot in place. The pilot should lift straight up. Slide the alternate pilot onto the chassis, (if the pilot does not seat properly, trim any flash from the bottom of the pilot) replace the two screws (Do not overtighten), and re-insert the handrails.

3-3 Couplers

If you wish to replace the American Flyer compatible couplers with the body mounted Kadee couplers, place your SW-1

upside down on a soft protected surface. Carefully remove the four screws that hold the American Flyer compatible coupler bracket assemblies in place and lift off. Each coupler pad on the chassis has three holes cored for mounting the Kadee S coupler. The AF coupler box lid is used as a spacer above the KD S coupler box by first removing the front flange. Please use the six self-tapping metric machine screws included with your SW-1 or the screws that held the AF coupler bracket assy.

- Do not overtighten the screws or they will break.
- Do not use the screws that come with the Kadee couplers; these are designed for use with plastic or wood rather than metal. Their use will void the warranty 'pertaining to the chassis.



6-1 Bottom view parts drawing - gear box and details

3-4 Code 110 NMRA RP-25 Wheelsets

Code 110 wheels must be used if you have a rail height that is smaller than code 125 (0.125"), or with open-frog turnouts built to the NASG scale standards (American Flyer switches are closed-frog). Install these as follows:

- Step 1. If you have not already done so, remove the American Flyer compatible coupler bracket assy.
- Step 2. With a small screwdriver, gently pry off the end of the plastic sideframe/gearbox cover to release

the flywheel. Once the wheels' treads are clean, check the electrical pick-up wipers for cleanliness and for contact against the inside surfaces of the wheels.

Storage - Whenever your SW-1 is withdrawn from service for an extended period, we suggest you store it in its original box for maximum protection.

4-4 Pick-up wipers replacement

Step 1. Using a small screwdriver, gently pry loose the end of the plastic sideframe/gearbox cover to release the tab that holds it to the gearbox.

Step 2. Remove the two wheelsets.

Step 3. Remove the pick-up wipers' bracket screw. Then remove the worn pick-up wipers.

Step 4. Replace the worn pick-up wipers with new ones and reinstall the pick-up wipers' bracket screw.

Step 5. Re-insert the wheelsets. Note that the bearings must align perfectly for the wheelsets to slide into the gearbox.

Step 6. Once both wheelsets are in place, check that the pick-up wipers are all contacting the inside surface of the drivers.

Step 7. Replace the plastic sideframe/gearbox cover by snapping the tabs over the gearbox.

Step 8. Check to be sure the trucks move freely.

4-5 Heavy Duty Lubrication

If your SW-1 operates on a club layout, in shows, or receives unusually heavy usage, the worm and idler gears will need periodic lubrication to prevent excessive wear. To lubricate these areas most effectively, complete disassembly of the gearbox is necessary.

Step 1. Remove the four screws that hold the body assembly to the frame and lift off the body.

Step 2. Unplug the AC/DC circuit board (if you are not using DC polarity reversing or DCC) and the two forward and reverse light plugs.

toward the bottom of the cab so that the cab assembly can be removed.

Step 5. With a small flat-blade screwdriver, release the tab below the cab side windows and remove the cab floor.

Step 6. Remove the LED pcb bracket by unscrewing the two phillips-head screws. Gently pull the contact wires from the tabs on the cab roof and unsolder the two rear bulb leads.

Step 7. Solder a new LED pcb into place and attach the rear LED bracket. Push the contact wires back into the tabs and position and replace the cab floor.

Re-install cab onto the body, bend the contact wires up, and replace rear bulb wires into the six body tabs.
 Step 8. Remove the front LED bracket by unscrewing the two phillips-head screws. Replace with a new LED pcb assembly. Then re-attach the front LED bracket.

Step 9. Re-insert the AC/DC circuit-board plug (if used) into its socket. Then re-attach the body assembly to the frame (Do not overtighten screws).

4-3 Cleaning

Body - Remove dust with a small soft brush (make-up brush or similar). If your SW-1 requires more extensive cleaning, we recommend removing the body from the chassis and cleaning the body with dishwashing detergent and a small sponge. Rinse with clean water (making sure not to get water into the interior of the cab) and blot or blow dry with low heat. Pilots can be removed from the chassis and cleaned in the same way.

Wheels - Dirt will build up on the wheel treads over time. To remove this and improve traction and electrical pick-up, we recommend using 91% isopropal alcohol and a Q-tip. Again, remove the body from the chassis, as the alcohol can damage the body finish. Rub each wheel tread with the alcohol-moistened Q-tip, applying slight pressure to remove the dirt build-up. The wheels can be rotated by hand-turning

the tab that holds it to one of the gearboxes. Set the sideframe/gear box cover aside.

Step 3. Remove the two American Flyer compatible wheelsets.

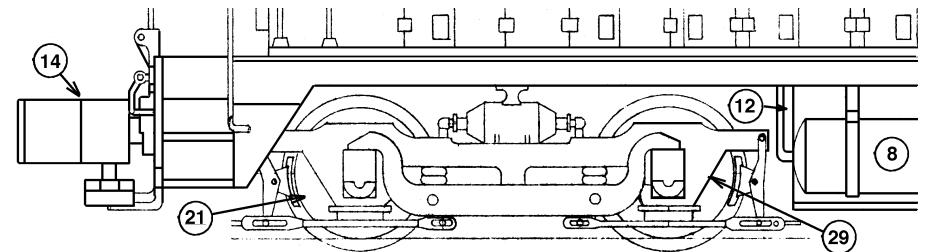
Step 4. Replace these wheelsets with two code 110 wheelsets. Cant each wheelset so as to position one axle bearing at a time into the gearbox. Each bearing must align perfectly in order to slide the wheelsets into position.

Step 5. Once both wheelsets are in place, bend the pick-up wires so that they are touching the back surface of each wheel.

Step 6. Replace the plastic sideframe/gearbox cover by snapping the tabs over the gearbox.

Step 7. Repeat with the other truck. Then check to be sure the trucks move freely.

If you intend to retain the American Flyer compatible couplers, be sure to replace the coupler bracket assemblies.

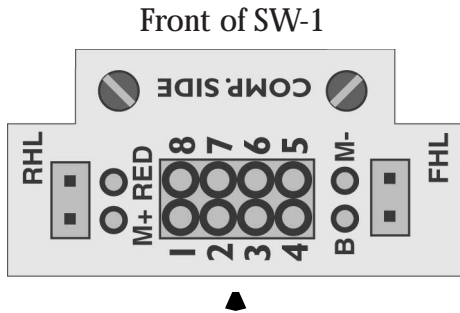


6-2 Lateral view parts drawing - Truck and details

3-5 Alternate AC Starting Direction

Right out of the box, your SW-1 will always start in the forward (long hood in front) direction if it has been standing for more than 30 seconds. However, if you wish to designate the cab end as "front" (as you would for one of two back-to-back units), the default starting direction can be reversed. To change the default direction, remove the four screws that hold the body assembly to the chassis and lift off the body. You will find a small socket just behind the front radiator grille. (This socket is Part No. 16 in the "cross-section parts

drawing - gearbox and details" on page 11.) In this socket there is a plug whose position determines the default locomotive direction. To change the default direction, simply remove the plug, rotate it 180 degrees, and replace it in the socket. Replace the body on the chassis and secure it with the four screws (Do not overtighten).



8 pin NMRA socket (2:1)
6-3 Socket diagrams

pin	function	color	pin	function	color
1	motor(+/R)	orange	5	motor(-/L)	gray
2	light - rear	yellow	6	light - front	white
3	shorted to pin 7	-	7	light (common)	blue
4	pick-up(L-fireman)	black	8	pick-up(R-engineer)	red

Note: Our AC/DC boards wires are not the same color as socket.

6-4 Eight Pin NMRA socket Key

3-6 DC Polarity Reversing Options

WARNING: Do not use this feature with AC current.

You can convert your SW-1 to DC polarity reversing. Access the reversing plug by following the instructions in the previous paragraph (Section 3.5). Remove the factory-installed plug from the socket and replace it with the DC

shorting plug, furnished as a separate part in your SW-1 packaging. Set the body on the chassis and test the locomotive. Replace the body on the chassis and secure it with the four screws (Do not overtighten).

3-7 DCC (Digital Command Control)

A Digital Command Control (DCC) decoder is not included with your SW-1. However, your locomotive comes factory-ready to receive a DCC decoder without modification. Purchase a DCC decoder from a vendor of your choice. We recommend purchasing a 1.0 to 2.0 amp decoder.

To install your DCC decoder, expose the reversing-plug socket by following the instructions in Section 3.5. Remove the factory-installed printed circuit board (or the DC shorting plug) and plug your DCC decoder into the socket. Many DCC manufactures offer the NMRA standard plug.

SECTION 4 - Maintenance

4-1 Lubrication

Your new SW-1 diesel switcher comes factory lubricated and ready for the break-in period. After break-in, we recommend inspection and careful lubrication of the wheel bearings. With the model upside down, place a small drop of Aero Lube "Conducta Lube" on each axle next to each of its two bronze bearings and the back of the wheels. Over lubrication can damage the body as well as void the warranty.

4-2 Golden White LEDs

The LEDs in your SW-1 are rated at 3.5 volts and 30 milliamps for maximum life and should not need to be replaced. But, just in case:

- Step 1. Remove the four screws that hold the body assembly to the frame and lift off the body.
- Step 2. Unplug the AC/DC circuit board.
- Step 3. Before removing LED printed circuit bulb, note the position of the wires and copper contacts.
- Rear LEDs (Steps 4-7):
- Step 4. Push the rear bulb contact wires (brass)