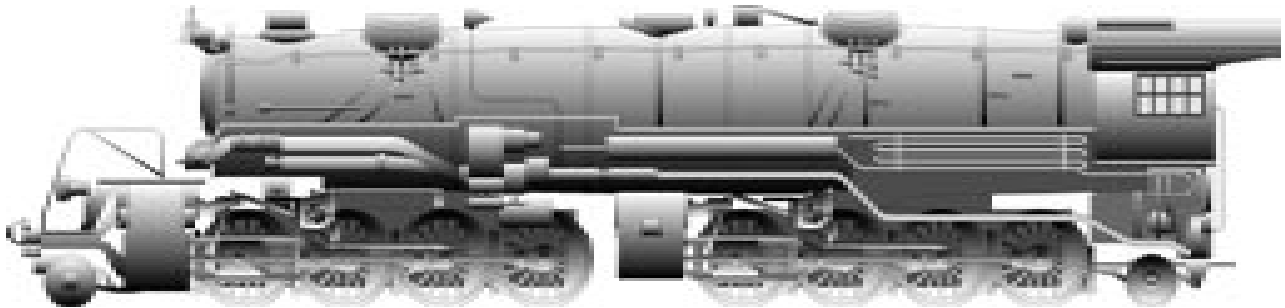


#1	1:29
Gauge	SCALE

MALLET 2-8-8-2

STEAM LOCOMOTIVE

INSTRUCTION MANUAL ART-21600 - 01



ARISTO-CRAFT TRAINS

122404 NEW

ARISTO-CRAFT TRAINS

Dear Model Railroader,

The 2-8-8-2 Mallet Steam Locomotive is a highly detailed #1 Gauge 1/29th scale unit and is suitable for both indoor and outdoor operation. It has been designed and manufactured to our usual high specifications.

Should you have any questions regarding operation, proper usage or maintenance required on this or any other Aristo-Craft product, please do not hesitate to contact us at the following address:

ARISTO-CRAFT TRAINS / Polk's Modelcraft Hobbies, Inc.

698 South 21st Street, Irvington, NJ 07111 USA

Tel: (973) 351-9800 Fax: (973) 351-9700

e-mail: aristo@mindspring.com

Our customer service department phones are open from 10:00 AM to 5:00 PM Eastern time, Monday through Friday.

HISTORY

This locomotive is a USRA 2-8-8-2 Compound Mallet type.

During the late 1800's, a Belgian engineer, Anatole Mallet, developed a system to use the steam generated by a locomotive more efficiently. The steam was used twice, utilizing four cylinders, two high pressure and two low pressure. The high pressure cylinders received the steam directly from the boiler, and instead of venting the exhaust steam to the atmosphere, it was directed to a second set of cylinders to be used a second time. Only then was the exhaust steam vented. This system is known as compounding. The low pressure cylinders are always larger than the high pressure cylinders.

An articulated locomotive has two independent sets of cylinders and drive wheels. In real life, the rear set of drivers and high pressure cylinders was rigidly fixed to the locomotive. The front set of drive wheels with the low

pressure cylinders attached, had a hinge in the rear to allow the lateral and a very little vertical movement. This arrangement allowed the locomotive to negotiate curves and hills. If a photograph shows the locomotive traversing a curve, the overhang of the boiler front is quite noticeable.

The wheel arrangement of our locomotive is 2-8-8-2. There are two pilot wheels, helping to guide the locomotive around curved track, two groups of drivers of eight wheels each, followed by two trailing wheels, which assist in guiding the locomotive while backing up.

During the First World War, the government brought all of the American railroads under one authority in order to minimize waste and to improve efficiency. This authority was known as the United States Railway Administration (USRA). It standardized all of the locomotive designs. Ordinarily, a committee is not the best method of designing such specialized items as railroad locomotives, but incredibly enough,

they were wildly successful. Not only did this original group of locomotives fulfill all of the expectations of the committee, but the railroads themselves became so enamored of the various designs that untold copies were erected over the years. These locomotives lasted until the end of the steam era.

The original recipients of the USRA 2-8-8-2 locomotives were as follows:

Baltimore & Ohio
Clinchfield Railroad
Norfolk & Western
Virginian

The Norfolk & Western sold a group of the originals to the Santa Fe, Union Pacific and Pennsylvania. The Rio Grande and Northern Pacific had copies of the USRA design. Many other railroads purchased 2-8-8-2's where there was a need for tremendous pulling power. These Mallets were usually found wherever there was a large coal or ore traffic or where mountain grades needed to be overcome.

FEATURES

These locomotives have the following features, which make them look and operate in a superior manner:

Two Can Motors with Built In Cooling Fans

Independent Front and Rear Mechanisms, Pivoted to the Boiler

All Drive Wheels Gear Driven

Patented Ball Bearing Equipped *Prime Mover* Gearboxes

Operating Classification Lights and Front Number Boards

Cast Metal Drive Wheels

Cast Metal, Jointed Side Rods

Prototypical Baker Valve Gear

MU Plugs for Multiple Locomotives & Battery Hookup

Thermal Switch to Protect Against Excessively High Temperatures

Prime Mover Smoke System

Operating Front Headlight

Flywheels for Better Locomotive Performance

Moveable Cab Side Windows

Boiler and Cab Detail

Heavy Weight for Superior Pulling Power

Gear Cases Allow Lateral and Vertical Movement of the Wheels So That They Follow Rough and Uneven Track

POWER SWITCHES

The four power switches are located underneath the locomotive firebox, two on the left side and two on the right.

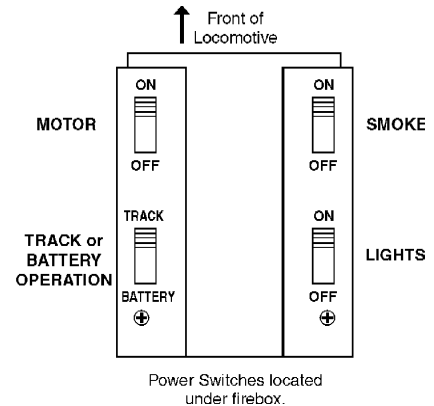
With the locomotive on its back, the two switches on the right are for the smoke and lights. The forward slide switch turns the smoke unit on or off.

The forward position turns the smoke on, the rearward position turns the smoke off. The slide switch to the rear turns the lights on or off. Forward is lights on, rear is lights off.

The two slide switches on the left control the motor and track-battery operation. The forward switch turns the motor on or off. The forward position is on, the rearward position turns the motor off. The slide switch to the rear controls track or battery operation. When this switch is in the forward position, the unit will operate with track power. When this switch is in the rearward position, the locomotive will operate with battery power.

Note: It is recommended that when the locomotive is turned over on its back, a piece of soft, thick foam is used as a cradle in order to prevent the breakage of any delicate parts.

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.



MODULAR PLUGS

There are two modular plugs at the rear of the locomotive. The larger of the two is used for battery operation, if desired (see the section on battery power below). The smaller of the two plugs is a power pick up plug. The rear truck of the tender has electrical pick up and this plug transmits power to the locomotive. This tender truck is in addition to the electrical pickup on the locomotive and helps to keep constant power to the motors over short sections of dead or

BATTERY OPERATION

This locomotive has been equipped to operate either from track or battery power. If battery operation is desired, keep the motor switch in the “ON” (forward) position, move the rear “Track-Battery” switch to the “Battery” position and connect the modular plug at the rear of the tender to the battery car. Be sure that the modular plugs between engine and tender are connected. **During battery operation, it is best if there is no track power. Disconnect the power pickups from the tender truck(s) to ensure that no track power can possibly effect the operation of the locomotive if battery power is to be used. Any power to the track during battery operation may result in damage to the equipment.**

If battery power is utilized, we recommend the use of Crest Electronics batteries and battery charging systems. If other batteries are used, the total voltage must be between 18 and 24 and the total amperage should be at least three.

SMOKE GENERATOR

The *Prime Mover* smoke generator unit is located beneath the smoke stack, which is situated on the top of the boiler in the front of the locomotive. Before filling the smoke fluid reservoir, turn the smoke switch to the “off” (forward) position. (Refer to the diagram on page 10 for the exact location of the switch.) The filling hole is in the center of the smoke stack. Using Crest smoke fluid, CRE-29601, fill the reservoir with at least 25, but no more than 50 drops of the smoke fluid.

This *Prime Mover* 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” (forward) position, allow the unit to cool for a few minutes and refill with smoke fluid (if necessary). Move the smoke unit switch to the “on” (rear) position and restart.

CAUTION

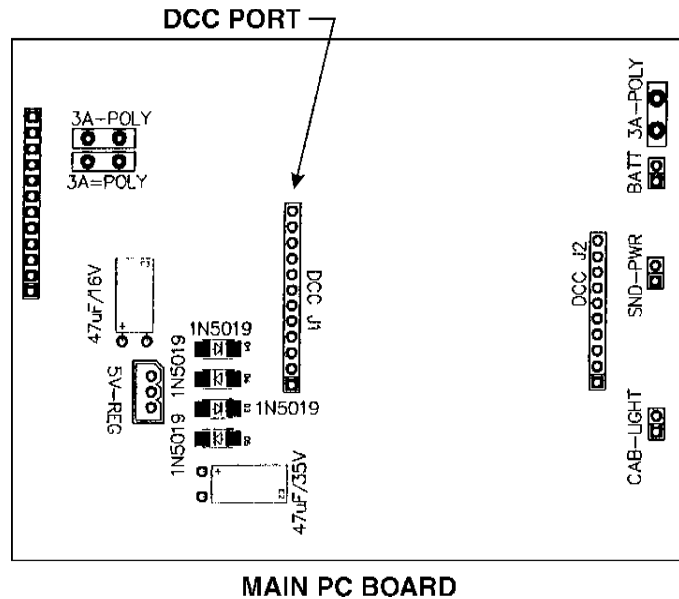
Do not turn the locomotive upside down or on its side when the smoke fluid reservoir contains smoke fluid. The remaining liquid may leak out, and if the locomotive has just been run, the fluid may be hot enough to cause injury.

DCC OR RADIO CONTROL INSTALLATION

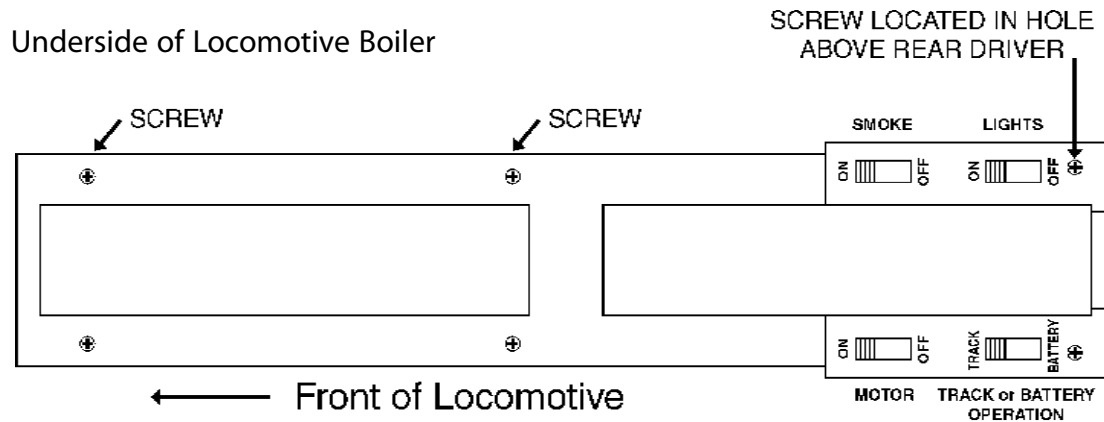
This locomotive is equipped with a DCC port and dummy plug. After purchasing the DCC or radio control system of your choice, be sure to read the instructions carefully. For radio control, we recommend the CREST "On Board" Train Engineer system. In order to install your DCC or RCC system, the dummy plug must be removed and the DCC or RCC 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 for the location of the DCC port. In order to reach this PC board, the top of the boiler must be removed. This is done by removing the six screws holding the boiler in place. Turn the locomotive on its back, cradling it in soft, thick foam, and remove the screws from the bottom. Refer to the diagram on page 10 for the exact location of these screws.

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.



REMOVING BOILER TOP TO ACCESS PC BOARD



To access the PC board, 6 screws on the underside of the boiler must be removed, as shown in the drawing.

Note: It is recommended that when the locomotive is turned over on its back, a piece of soft, thick foam is used as a cradle in order to prevent the breakage of any delicate parts.

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.

SOUND INSTALLATION

This locomotive does not have provisions for the installation of a sound system. The tender contains a factory installed speaker and PC board. Purchase the sound system of your choice and install it according to the manufacturers instructions.

WHEELS

The locomotive's drive wheels are metal and are used for the electrical pick up. Over a period of time these wheels may require cleaning. Dirty wheels will cause sporadic electrical pick up which is indicated by flickering lights. In order to properly clean the wheels, remove the locomotive from the track and turn it upside down to expose the wheels. The Crest CRE-29601, Smoke Fluid is also a very good track and wheel cleaner. Apply with a clean, soft rag and wipe the dirt away. **Never use abrasives to clean wheels**, as the resulting metal particles may enter the motor or gearing, causing operational problems.

COUPLERS

An optional knuckle coupler is included in the foam packaging for installation on the front of the locomotive if you wish to double head the units. In order to install the coupler, the pilot must be removed in order to provide clearance for the coupler to work. This coupler is prototypically correct and may be operated manually pressing upward on the small tab below the coupler assembly. Automatic uncoupling may be accomplished by using an LGB* designed uncoupling device. (**LGB is a trademark of the E.P. Lehmann Company, Germany*).

OPERATION

When running by itself or coupled to another locomotive or cars, this locomotive requires a minimum track diameter of 8'. This is a large locomotive and smaller diameter curves may cause derailments and clearance problems. Smaller curves will also cause cars coupled to the locomotive be pulled completely off of the rails.

LIMITED WARRANTY

All 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 ARISTO-CRAFT TRAINS.

This warranty is void and does not apply to any product 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.

SERVICING

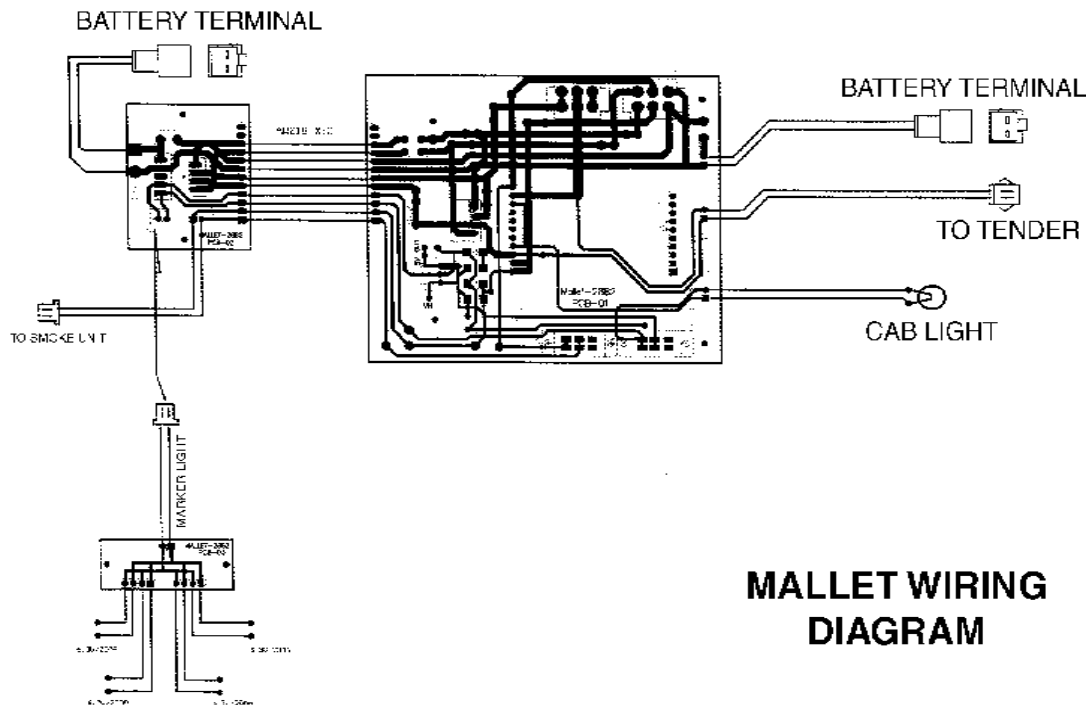
Should your ARISTO-CRAFT TRAINS product require warranty service, please return it in the original box, if possible, protected by a proper shipping carton. Send the product fully insured and prepaid. ARISTO-CRAFT TRAINS will not be responsible for any loss or damage incurred during shipping. Be sure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

Payment for shipping and handling, in U.S. funds, is \$20.00 and should be included. Your check or money order should be made payable to: Polk's Modelcraft Hobbies, Inc. Do not send cash. 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 returns is as follows:

ARISTO-CRAFT TRAINS / Polk's Modelcraft Hobbies, Inc.
Customer Service Department
698 South 21st Street
Irvington, NJ 07111 USA
Tel: (973) 351-9800

Written confirmation of receipt of returned items will be sent with estimated repair time by the ARISTO-CRAFT TRAINS Customer Service Department.



**MALLET WIRING
DIAGRAM**