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Instruction Manual - D&RGW C-21 Electric



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### ***General information About Accucraft C-21 Model:***

This accurately detailed model is constructed of brass and stainless steel. A large Pittman gearhead motor powers all eight drivers through a metal gear box and the side rods. The museum quality finish and lettering represents this locomotive as it would have looked in the early 1940's.

Your Accucraft model is ready for installation of a DCC decoder. Lift up and remove the tender "coal boards", then lift off the coal-load tray. On the front area of the tender floor you will find Accucraft's power distribution board, which has several features. Track power is routed through this board to the motor, and it is a simple matter to disconnect the power and motor wires and then insert your DCC decoder at this point.

In addition, this distribution board has switches to control the outputs to the motor and sound systems, and also has power "tap-off" points for two 1.5v supplies, one reverse 1.5v supply, and an 24v supply for sound system power.

You will also find two wires inside the locomotive stack for powering your choice of an after-market smoke unit. Please understand that these wires supply direct track power and are not regulated to conform to any particular smoke unit.

The light bulbs in your locomotive are all rated at 1.5v DC.

Your locomotive and tender are electrically connected via a six-prong plug found at the left rear of the locomotive, under the cab. Red dots will be found on both male and female parts of the connector, please be sure to always connect the plugs "dot to dot".

This plug takes the place of the usual "wireless drawbar" that has traditionally been found on metal locomotive models. The drawbar on this model is just what its name implies, a drawbar only. Power is routed from front to back and vice-versa via the six prong plug. Both locomotive and tender units have carbon brush pickups on both rails, to insure reliable operation when using track power.

Although it is not recommended, it is possible to remove the smoke box front to access the interior of the boiler. You will have to carefully remove some of the connecting pipes to the



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cross-compound pump that is mounted on the left front of the boiler, then you will be able to remove the smoke box cover.

Your model comes with Accucraft's new scale couplers. These operate much the same as the prototype, and they are scaled from D&RGW photos and drawings. They can be activated, as on the prototype, from both the top and bottom of the coupler. These couplers are made of a plastic material, and they will allow you to double head your locomotive with another metal locomotive without incurring any short-circuit problems.

Disassembly of this large and complex model is not recommended. However, if absolutely necessary, the 2mm hex bolts and nuts can be turned with a nut driver sized for US 00-90.

Unlike the prototype, the center two sets of drivers are blind to enable this large model to negotiate a radius of 46 1/4". However, Accucraft has made available flanged replacement driver sets for the enthusiast who wishes to have a locomotive with prototypically correct flanged center drivers. Please bear in mind, that with all drivers flanged, it will take a very large radius to turn this model. Please contact your Accucraft dealer for these driver sets.

Please take care in lifting this large and heavy model. It is recommended that the locomotive be picked up by grasping it under the frame on both ends.

Total production volume is limited to 350 units, and each unit is serially labeled on the bottom of each locomotive.

### ***Technical Specifications***

Scale	1:20.3
Gauge	45mm Gauge
Total Weight	10 Kg, 22 lb.
Length	864 mm, 34 in.
Width	159 mm, 6 in.
Height	203 mm, 8 in.
Minimum Radius	1.2 M, 48 in.
Power	0-24V, Pittman Gearhead Motor
Features	Constant Lighting, Sound Ready

\* Be sure to leave at least 3" clearance (measured from the inner rail) on the 46 1/4 ins radius curve to allow for overhang.



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### *The following parts are packaged separately*

- M3 hex head screws
- 3mm hex head screw driver
- Whistle rope
- Rear truck with assembly parts

### **Caution!**

This model is an accurate replica of the original locomotive. It has sharp and moving parts. The locomotive drive rods are stainless steel with sharp edges. AT ANY TIME, OPERATORS MUST NOT BECOME IN CONTACT WITH THE MODEL WHILE IT IS POWERED. UNDER NO CIRCUMSTANCES SHALL ACCUCRAFT TRAINS BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING IN REGARD TO ANY ACCUCRAFT PRODUCT.

### **Model Features**

This limited production model has been handcrafted for Accucraft Trains by AMMC, one of the most respected makers of large scale brass models. This museum quality model features:

- Full cab interior details, with operating cab windows
- Operating smokebox door
- Detailed boiler with fittings, domes, pipes, and handrails
- Operating steel drive rods, valve gear and cross heads
- Real coal load
- Prototypical livery and lettering
- Scale couplers (compatible with Kadee #835)
- Steel helical gears in a die-cast transfer box

### **Pittman DC Gearhead Motor Specifications(GM9234)**

- Peak voltage 24V
- Gear ratio 38.3:1
- Peak rated output torque 187 oz-in
- Output shaft stall torque 911 oz-in





### Maintenance

#### *Tools you will need for maintenance*

- 1.5 mm allen wrench
- 2 mm and 3 mm hex wrenches
- Flat head crew driver

#### *Lubrication*

Please lubricate your Accucraft C-21 before attempting to operate.

With a bit of care, your Accucraft C-21 should give you many years of pleasure and reliable service. Lubrication is of prime importance on a model of this type with so many moving parts. Always use quality lubricants. This should not be a problem, for there are many modern lubricants available in hobby and sport shops. Light oil such as Labelle #108 or Hoppe's Gun Oil will do a good job on lubricating most of the moving parts. For pistons and slides, a heavier lubricant such as Labelle #102 would suffice. For gears use a gear grease such as Permatex Super Lube or another hobby gear lubricant.

To access the many moving parts of this model it is best to carefully place it on its side on a soft towel or foam sheet. A drop of light oil on every moving part is necessary, and there are many on this locomotive. Be sure to lubricate all the crank pins, crosshead slides, piston rods, etc. that you can see. Be sure to lubricate the tender axles journals as well. Do not over lubricate, for excess oil only picks up unwanted dirt. Be careful to keep lubrication off the painted surfaces as this causes shiny areas.

Use an oil that is a bit heavier to lubricate the axle bushings and pivot points of the lead and trailing trucks.

The main gear box is lubricated in the factory, and will not need any attention when you first run your model. However, in time, you should make sure that the gears are will lubricated with a technical gear grease. The gear box cover is held on with screws, and removing it will allow you to access all the gears and bushings that need lubrication. Take note of how the cover came off and replace it exactly the way it was when you started.

Lubrication should be done every 25 hours of operation.



### Operation

After following the recommended lubrication procedures your locomotive is ready to provide many years of reliable operation. We recommend that you use a D.C power supply with a capacity of 2.5 amps or larger. Always pick your model up by grasping it under the frame on both ends. It is a very heavy model so make sure that you grasp it firmly.

#### - ***Electrical Pickup***

Your Accucraft model is powered by the DC voltage off the track through the engine and the tender. All drivers are insulated on the both side of the locomotive, and the electricity is picked up with 12 pickup wheels. Be sure to clean electrical pickup units before each operation. Replacement electrical pickup units can be ordered from Accucraft Trains. Track power is connected to the Accucraft Trains' power distribution board which is located in the tender.

#### - ***Power Distribution Board***

All input and output terminals on the power distribution board are labeled for easy access. Two "On/Off" switches are added to the circuit. "M" switch can disconnect the locomotive motor from its powered wheels, and "S&L" switch controls the sound unit and lights.

#### - ***Lighting***

This model features directional lighting. The constant voltage is set at 1.5V.

#### - ***Smoke Unit***

A smoke unit may be installed in the barrel of the smokestack. Depending on the type of smoke unit, different voltage supplies can be found on the power distribution board.

#### - ***Sound Installation (if not factory installed)***

Several manufacturers have sound systems that are acceptable for your new D&RGW C-21 locomotive. Sound system power connectors are available on the power distribution board in the tender, and a generous speaker hole will be found in the



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tender floor. Please contact sound system manufacturers for installation directions.

If your system uses a synchronizing pulse for the control of the chuff, we suggest placing two magnets 180 degrees apart on one of the tender axles. This will give you a synchronized chuff that is very close to the prototypes four chuffs per locomotive driver revolution.

#### - ***General maintenance***

Clean the exterior surfaces of your locomotive with a clean, soft and lint free cloth. To remove stubborn soil or greasy spots from the painted surfaces use alcohol on a soft, lint free cloth.





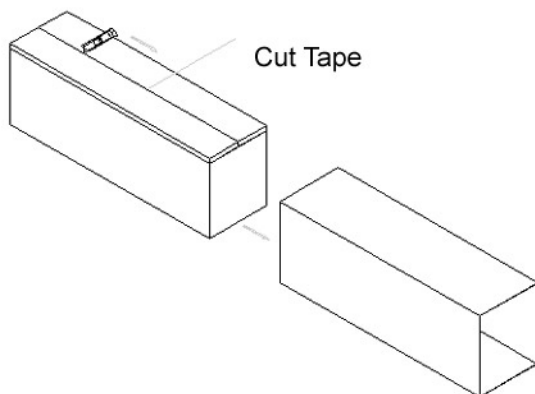
## Unpacking Accucraft Locomotive

Accucraft Trains locomotives are fine scale brass models with small parts. To provide maximum protection from shipping damage, we carefully pack the models in metal cases. We ship via UPS with insurance coverage to its full value. Please contact UPS if package is damaged.

Each locomotive is packed under UPS guideline for shipping. We do not warrant any damage resulted from re-packaging by any party other than Accucraft Trains.

Please read the following directions before unpacking your locomotive.

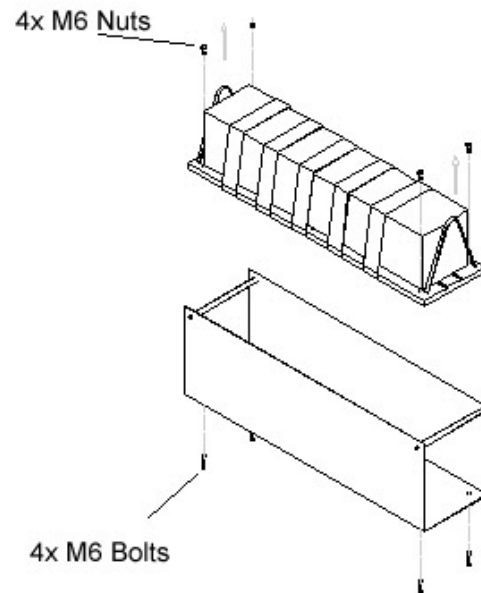
1. Remove foam around the locomotive. Slide the inner box cover to the side, and open the inside cardboard box with a cutting knife.



2. Lift the metal case from the cardboard box.

3. The locomotive is firmly taped to a 1/2" wood board which is then fastened to the metal case with 4 M6 bolts. Bolts must be

removed before lifting the locomotive with wood board from the metal case.



4. Place taped locomotive on a flat surface. Carefully cut the tape along the wood board side surface. Be sure to cut both sides of the wood board. Slowly lift the tape from the locomotive. Be very careful with small parts. Tape cannot be re-used to re-pack the model. Use new packing tape if necessary.

