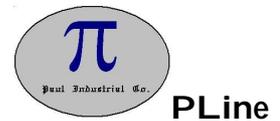


Owner's Manual: R/C ZDM-1 # 704 with Synchronised Sound Unit



Handcrafted Brass 16mm scale R/C ZDM-1 Locomotive Model with Synchronized Multi Cylinder Diesel Sound.

Manufactured by: Paul Industrial Company

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Prototype Information:

The ZDM-1 Diesel Narrow gauge Locomotives hauled mixed traffic on the Himalayan 2' 6" gauge Line from Kalka to the Hill Town of Shimla, in Northern India. Originally manufactured by Jung (Arn Jung Lokomotivfabrik GmbH), Germany in 1955 for "Kalka Simla Railway" these 2'6" B+B diesel hydraulic locomotives were delivered as 700-704 and retained these numbers. 700 was rebuilt to 2'0" gauge in 1976 and became CR(Matheran) 500. 701/3/2 were similarly rebuilt and became CR (M) 504-6. No. 704 remained as 2'6" gauge locomotive and went to Pragati Maidan, New Delhi to haul joy ride trains.

General Description of PLine ZDM-1 Loco:

This model is accurately crafted in 16mm to the foot scale, and is of all metal construction (Brass, Steel, Copper and Phosphor bronze). It is powered by 2 Powered Bogies each having an all metal gear drive delivering a gear ratio of 1:36 per bogie. The Bogies are driven by two high speed & torque 12v PM DC motors.

The Model comes painted (unpainted version also available on request) and ready to run with a 2 Ch AM R/C set (one Channel left free) to control the direction and speed of the Model with factory installed synchronized Multi Cylinder Diesel Sound. The main power switch is a 3-way, "Centre off" type toggle switch located inside the cab. The Switch is accessible through any of the cab's side larger windows. The switch operates in 3 positions, centre 'off', above to 'Charge' the battery, and bottom to power the model 'on'. To Charge the battery of the Locomotive, turn the 3-way switch to the 'Charge' position (above), and insert the charger jack in to the charging socket located on the cab's dashboard.

The Directional lights of the Model can be switched on by flipping the smaller toggle switch on the cab's dashboard downwards, now if the model is driven forward or in reverse the respective headlamp, ditch lights & tail lamps will light up. The P-Line Model's ZDM-1 uses miniature LED's (connected in parallel) for all illuminations.

The Main fuse is located inside the cab. To replace a fuse, remove the cabin roof, by unscrewing the 4 small screws that hold the roof in place. The Model uses a 12v 8Amps, cartridge type, commercial fuse.

Limited Edition Products:

These Models are Limited Edition Products, and are Individually Numbered. Each model comes fitted with a Photo-etched Brass Builders Plate on its body. Only a limited quantity of these products would be ever produced by us.

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Coupler Selection:

Your PLine ZDM-1 comes with a pair of factory installed (with our standard) doubly sprung "Chopper" couplers ; you may use any other body mounted "Chopper" or "Drawbar" type couplers, available from other manufacturers. These couplers can be mounted by screwing the couplers with Brass M2 screws to the front and rear buffer beams.

Care should be taken while opening the cab doors, or the engine room access hatches. They all have small brass latches that can be turned to lock & unlock these Doors & Access hatches.

We do not recommend you to try and disassemble this large and complex model. Also please take care while lifting this heavy model up. It should always be picked by grasping it by under the frames on both ends.

Battery Pack Selection:

Your PLine ZDM-1 does not come with the Battery Pack due as per International Shipping & Security norms. We recommend any deep-cycle Battery pack with an output of 12v rated at 4.0AH (or higher rating). You can use Gel-Cells, Dry lead-Acid, NiCad or Metal Hydride rechargeable battery packs.

Connect your preferred battery pack to the black Connector strip inside the Engine bonnet by unscrewing the small 8 screws on the sides of the Bonnet Lid that hold it in place. BE CAREFUL TO CONNECT THE CORRECT POLARITY OF THE BATTERY TERMINALS TO THE CONNECTOR STRIP. THE WIRE AT THE OTHER END OF THE CONNECTOR STRIP GIVE YOU THE POLARITY (RED WIRE IS POSITIVE & THE BLACK IS NEGATIVE). INCORRECT POLARITY CONNECTION CAN DAMAGE THE CONTROL SYSTEM OF YOUR MODEL. REFER TO THE WIRING DIAGRAM ON PAGE 5 OF THIS MANUAL.

Painting your Model (for unpainted version):

Rub down all major surfaces with wet and dry abrasive paper (first with coarse, then with fine). When desired results have been achieved, use some luke warm water mixed with some dish-washing detergent and you can use an old tooth brush to wash the surfaces off grease and dirt. Once clean, dry the parts and then apply a thin coat of metal primer. Generally we would suggest using commercially available automobile primers, after considerably thinning them down; alternatively, you could use other metal primers. Once the initial coat has dried you can apply additional thin coats. The final paint job can be done in a clean, dust free, yet well ventilated environment, using a hobby Air brush or commercial Aerosol spray cans. You can mask out surfaces while painting, that you do not want to be painted, using masking tape. Always apply a few thin coats in succession after the previous coat dries off, rather than one thick coat. Acrylic paints or enamel paints can be used to paint the model.

After the paint job is complete re-assemble the model back for the final time and now you can permanently fix the brass and other fixtures that do not require a paint job.

Everyone has their own method for polishing metal. For brass, we use 'Brasso' brass polish. It is available in many supermarkets and hardware stores for polishing domestic brass items. For

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aluminum I use products sold for polishing aluminum automobile wheels. Flat surfaces are best polished on a strip of cloth stretched tight on a flat surface. For cylindrical areas, cloth tape, such as twill tape, is available in various widths from sewing supply stores. Cotton works best if you can find it, but polyester is more common and also works well. Of course a regular cloth strip will also work, but the tapes don't fray on the edges as you pull them back and forth.

A nice semi-matte finish can be produced using one of the non-woven abrasive pads sold for cleaning pans in the kitchen. Use it wet or dry. These are generally about 1/4 inch thick and about 4 X 6 inches in size.

The Original Kalka-Shimla Railway ZDM-1 # 704 was in deep maroon with a Golden yellow line that ran right in the middle along the handrails. The front and rear Buffer beams were also Golden Yellow while the Handrails and the Door/Access Hatch Latches were polished brass. Everything below the foot-board, Wheel Bogies, Radiator Grill, Couplers etc was matt Black.

Technical Specifications of PLine ZDM-1 Loco:

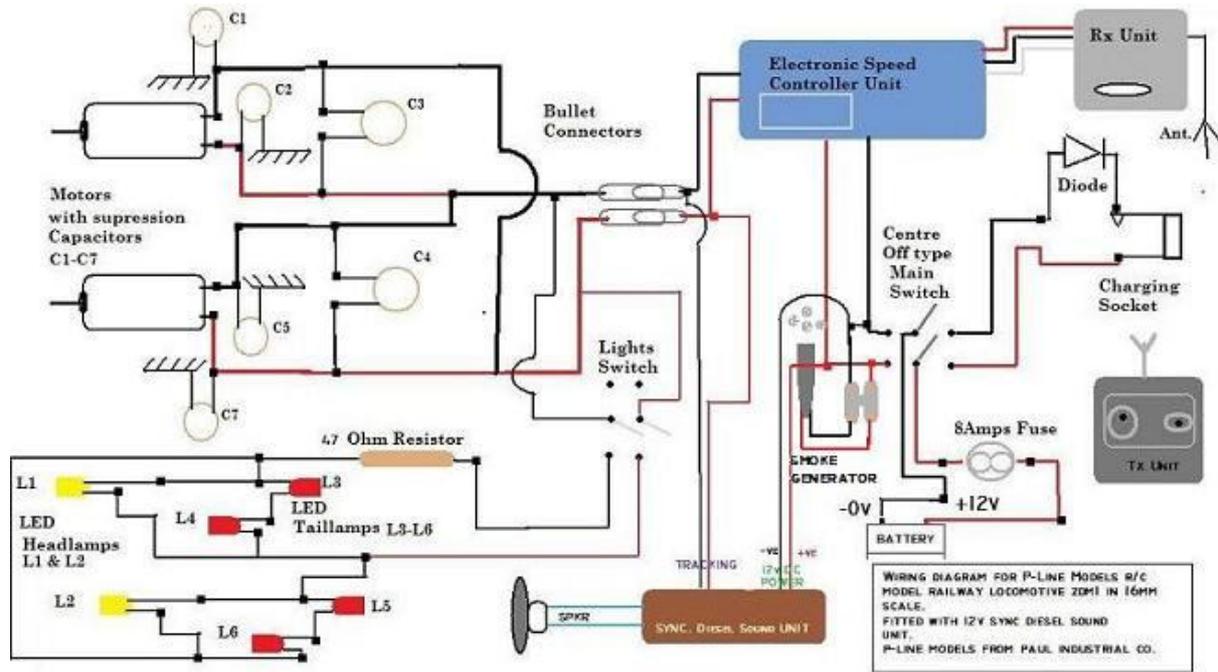
- Scale: 1:19 scale
- Gauge: 45mm or 32mm (factory set)
- Length: 446mm (over buffer beams)
- Width: 110mm
- Height: 148mm
- Weight: 6.8 Kilograms (w/o batteries)
- Wheel Dia: 32mm (tread dia)
- Motors: 2 X 12v DC PM type(torque 250 gm-cm)
- Gear Ratio: 1:36 on each bogie
- Minimum turning Radius: 600mm
- Minimum Side Clearance: 50mm on both sides (measured from inner-rails)
- R/C: 2 Ch FM with one channel free
- Factory Installed 12v synchronized Multi Cylinder Diesel Sound Unit with 8w output
- In-Cab controls: Main switch (3-way with "Centre Off"), Light switch, Cartridge Fuse holder & Charging Socket

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Caution!!

This model is an accurate replica of the original locomotive. It has sharp and moving parts. The locomotive drive gears are brass & stainless steel with sharp edges.

AT ANY TIME, OPERATORS MUST NOT COME IN CONTACT WITH THE MODEL WHILE IT IS POWERED. UNDER NO CIRCUMSTANCES SHALL Paul Industrial Co. OR ANY OF ITS ASSOCIATES BE HELD RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING IN REGARD TO ANY PLINE PRODUCT.

Model Features:

The Model ZDM-1 is a Limited Edition Run to commemorate the 150 years of the Indian Railways. This is a handcrafted brass model and is available painted in 2 different liveries, or as an unpainted model.

- The Model is handcrafted in Brass, with bronze and Stainless Steel parts
- Directional headlamps, ditch lights and tail lamps on motors
- Working Cabin doors, & engine hatches
- Synchronized Multi Cylinder Diesel Sound
- Limited Edition Model with Unique Serial Number

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- All scale fittings like Handrails, Air horn, vent, ditch lights, footboards, door handles, door latches are turned brass & copper.
- Front and rear radiators are Brass
- Cab front & rear Windows, are glazed
- Supplied with 2 Photo-etched Brass Nameplates & fitted with Photo-etched Brass Builders Plate.

Operating & Maintenance:

Like any other Engineering masterpiece, there are a few precautions to be taken before you can actually run it on a layout.

Before you start running your model outdoors, you need to lubricate all the moving parts and break it in. This is because the gearboxes and the bushes must be worn in sufficiently to allow smooth running.

Lubricating:

With a bit of care, your PLine ZDM-1 should give you many years of pleasure and reliable service. Lubrication is of prime importance for a model of this type with 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 would be good enough for lubricating most of the moving parts. For gears use a suitable gear grease such as Permatex Super Lube or another hobby gear lubricant.

The gear boxes in the Power Bogies have 'lift-up' lids to cover the worm & wheel arrangements, which can be lifted using a fine flat blade screw driver and the worm-wheel should be greased. Do replace the 'lift-up' lids back in position once the worm-wheels are greased. The bigger gears can be lubricated by applying grease on the gear teeth using a small screw driver.

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 aren't many on this locomotive. Use oil that is a bit heavier to lubricate the axle bushings and pivot points of the Power Bogies. Each Model is provided with Oiler holes on the Axle boxes of each wheel. There are 8 Oiler holes on each Locomotive with their openings facing upwards towards the underside of the Chassis frames. Use a drop of Lubricating Oil to lubricate each Axle box. Also apply a drop of Lubricating Oil at the base of the pivot bolts (space between the Delrin washers and the underside of the floorboards) that attach the wheel bogies to the Chassis of the Model. Be sure to lubricate all the wheel bearings, gear bearings etc. that you can see.

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.

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 suitable gear grease.

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Thorough Lubrication of the locomotive should be done every 5 hours of operation.

Operating:

Start by inserting the batteries in the R/C Transmitter (Tx) by removing the cover of the Battery compartment at the back of the Tx. Be careful to place the batteries in the correct polarity order.

Place your model on a small stretch of flat test track.

Now connect the Battery Pack terminals in the model to the Battery connector inside the Model, again make sure that the polarity is correct and your model's battery pack is adequately charged for a short run.

Next, check that you have a 8Amp cartridge fuse inside the Fuse Holder in the cab. Make sure the Light switch is turned off.

Always SWITCH ON the Tx first before POWERING ON the model. You can power on the model by flipping the 3-way switch to the 'above' position.

You should hear the Engine idling sound from your loco while the loco is stationary.

Now slowly increase the throttle on the Tx joystick in any direction. CAUTION: DO NOT RUN THE MOTORS YET ON FULL THROTTLE. Run the model at half throttle in any one direction for a few minutes, then stop, and then run it again at half throttle for a few minutes more. As the loco speeds up the sound emitted through the internal speaker should also change. Repeat this procedure for about half an hour until the model runs smoothly in both directions.

Once you have run your Model on half throttle in both directions on a test track for atleast about an hour, your model should be ready to run at Full throttle on the Outdoor layout.

Maintenance:

Clean the body of the Model with a clean soft lint free cotton cloth. To remove stubborn grease stains from the painted surface use a detergent solution with a lint free cloth. With a little care your PLine Locomotive will give you years of trouble free running.

IMPORTANT!

Some parts may have loosened during shipment. Inspect your model prior to any operation. Please contact PLine at assist.pline@gmail.com for more assistance.

THANK YOU!

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