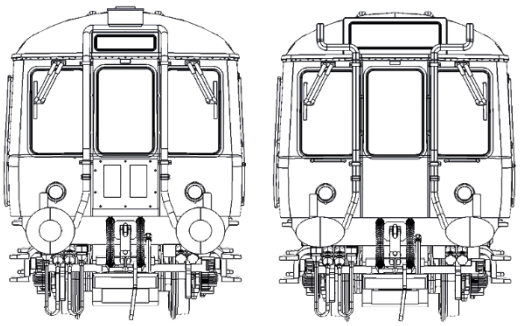
Dapol OO gauge class 121 & 122 Diesel -Mechanical multiple units.

Owners guide

Thank you for purchasing this Dapol product. This information is applicable to all versions of our Class 121/122 models.



- The model can be controlled with a DCC decoder or by DC operation and is factory set for DC operation.
- The model is shipped with directional head and tail lamps and leading cab light 'ON'. **It is ready to run in DC mode or with a DCC decoder.** Selection of lighting functions in DC mode is described in the *DCC & Electrical information* sheet.
- DCC decoder fitting instructions and description of DCC lighting operation can be found in the *DCC & Electrical information* sheet.
- Please check that you have the following items within the packaging (in addition to this sheet):
  - Dapol 'No Quibble' warranty sheet
  - DCC & Electrical information sheet
  - Detail part pack

History: Nicknamed "Bubble cars" sixteen **Class 121** single-car, double-ended driving diesel mechanical vehicles were built from 1960 by the Pressed Steel Company of Oxford. Mainly used within the Western Region of BR; the Class 121 is still in service at the time of writing (2017) totalling 57 years in service. Currently operated by Chiltern railways on its Aylesbury to Princes Risborough route, this service is due to end during May 2017 marking the end of operation of the longest continuously revenue earning vehicle on British Railways.
Also nicknamed "Bubble cars" the **Class 122** single car, double-ended driving motor vehicles diesel mechanical were built by Gloucester RC&W during 1958. An additional nine single-ended driving trailers were also produced. Mainly used on the London Midland Region, some were also used in Scotland. Routes served included many branch lines, as well as local services between Dundee and Arbroath.

Running in / First use: No special running in or initial lubrication is required, as our 'new generation' locomotives have been designed with care to offer many years of service with minimal maintenance. However, we suggest that before you operate your model for an extended time, you first run it in both directions at a low speed whilst checking for correct operation. This operation can be performed in either DC or DCC (after fitting a decoder – refer to the *DCC & Electrical information* sheet)

Detail Parts: The following accessory items are included.

All Models	
Qty	**Description**
1	Speedometer drive
2	Dummy coupling
4	Electrical cables
4	Vacuum pipes
2	Air Pipes

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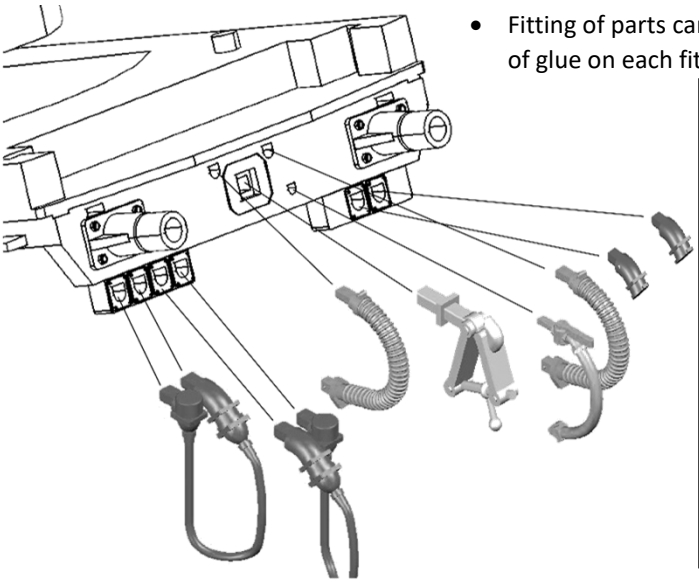
Fitting detail parts:

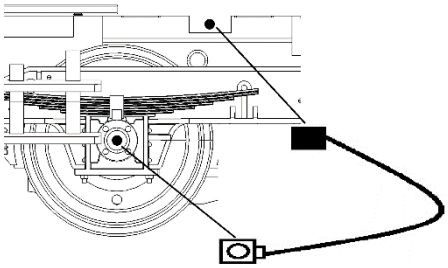
NEM coupling: can be pulled out from its pocket and the pocket can be removed entirely. This maybe required if fitting bufferbeam pipes.

Bufferbeam detail: *Please note, fitting of detail parts may restrict coupling operation and/or minimum radius the model may negotiate.* (Buffers, body & bogies not shown for clarity)



- Fitting of parts can be made permanent using a small amount of glue on each fitting spigot.

Fitting Speedometer drive



The speedometer drive is fitted to the front left side wheel and chassis using the fixing holes shown.

Removing the body: Please refer to the DCC & Electrical information sheet.

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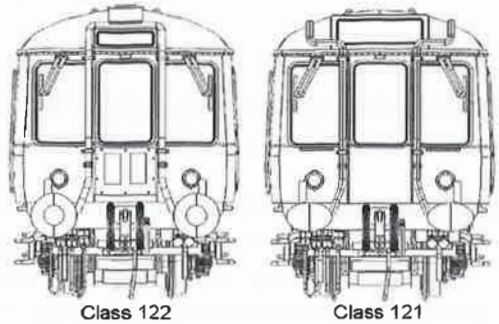
DCC & Electrical information sheet

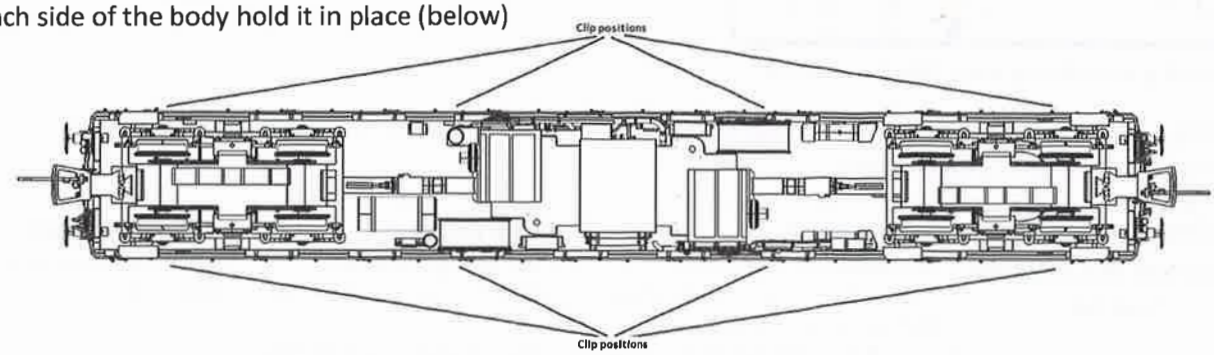


- The model can be controlled with a DCC decoder or by DC operation and is **factory set for DC operation**.

- The model is shipped with directional head and tail lamps and leading cab light 'ON'. **It is ready to run in DC mode or with a DCC decoder.** A five function MTC decoder is required for full functionality. (*Models with Factory fitted DCC are pre-configured for all lighting functions). Please refer to the operating instructions provided with your factory fitted DCC model*)

- To adjust the lighting operation using DC or to install and operate a DCC decoder please refer to the appropriate section below. Details are provided for 2 and 5 function DCC decoders.

Removing the body: The body is removed from the chassis and lifts off in one piece. Four clips on each side of the body hold it in place (below)



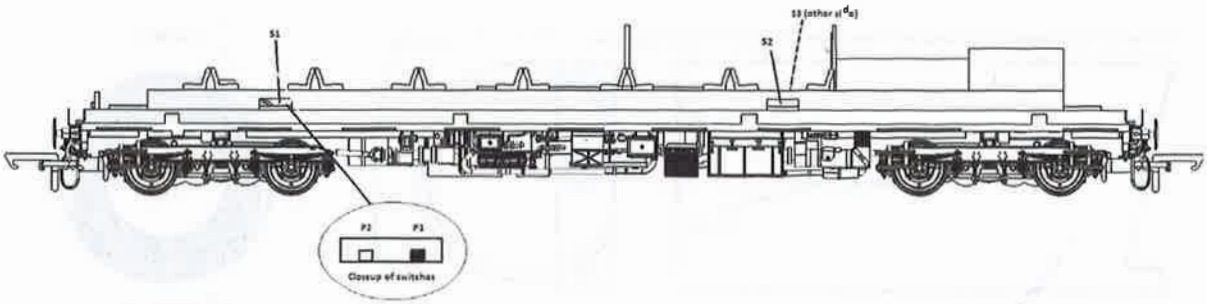
Two methods of body release can be used:

a. Carefully avoiding underframe detail and whilst holding the model over a flat surface, gently ease the body outwards at the centre, allowing the chassis to drop. The body can then be lifted off.
b. Using eight strips of thin plastic sheet, slide a strip between the body and chassis near the clip, slide towards the clip until you feel resistance then work the strip between the clip and body. Repeat with the remaining clips until all eight strips are in place, the body can then be lifted off.

There is no need to be concerned about wires, as a 'plugless' connector has been used which will separate when the body is removed.

DC Lighting operation: By altering the internal switches (shown below) the lighting can be setup for your desired operation.

Interior and external lamp control			
	S1	**S2**	**S3**
Position 1 (Right)	Driving end lamps ON	Van end lamps ON	Carriage lighting ON
Position 2 (Left)	Driving end lamps OFF	Van end Lamps OFF	Carriage lighting OFF



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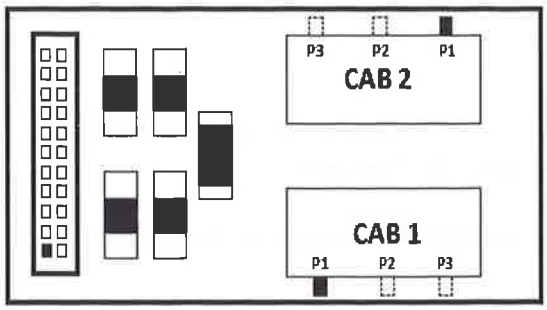
DCC & Electrical information sheet

Destination blind lamp isolation: Two switches located on the interior light bar turn off the destination blind lamps. This may be used to eliminate light bleed if destination blinds are not required.

Cab lighting operation with DC: The control switches for cab lighting are located on the DC blanking plate located at the van end, (under the cover engraved 'DCC', held in place with two clips, pull upwards to remove). They operate per the table below. Cab 1 controls



Position	CAB 1	CAB 2
P1	ON Front (direction of travel)	ON Front (direction of travel)
P2	OFF	OFF
P3	ON Rear (direction of travel)	ON Rear (direction of travel)

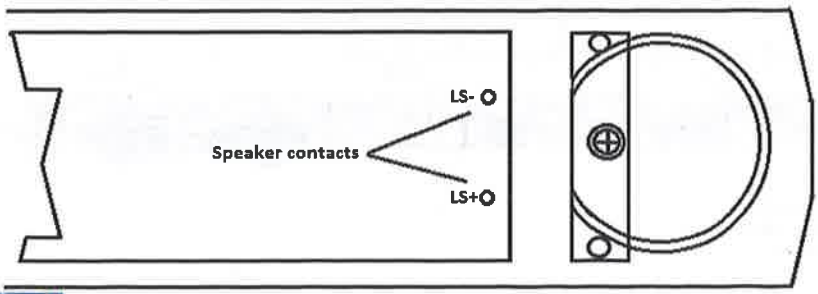
the driving end lighting and CAB2 the van end.

Fitting a DCC Decoder: This model is designed to use a 5 function (or above) 21 pin MTC decoder, this will offer full control of the carriage lighting.

Decoder functions	Main lamps	Cab lights	Carriage lights
2 function DCC decoder (and DC)	**DC:** Directional, Optionally independent off via switch setting. **DCC:** Directional F0 controls. Optionally independent off via switch	**DC:** Switch controlled **DCC:** F1 Van end, F2 Driving end. (Switch selects front/off/rear)	**DC:** Switch controlled **DCC:** N/A
4 function decoder	F0 Directional. Optionally independent off via switch	F1 Van end, F2 Driving end (Switch selects front/off/rear)	N/A
5 or 6 function decoder *(21-MTC)*	F0 Directional. Optionally independent off via switch	F1 Van end, F2 Driving end (Switch selects front/off/rear)	F3 controls ON/OFF
5 or 6 function decoder *(NON MTC)*	F0 Directional. Optionally independent off via switch	F1 Van end, F2 Driving end (Switch selects front/off/rear)	Lights will operate (at reduced brightness). No control possible.

Fitting a speaker: The model is designed to fit a round Speaker 8 Ohm 20mm (Available from DCC supplies, product Code: 110100) or similar and is fitted by removing the bodyshell (as above).

1. To gain access to the speaker the interior seating must be removed (this includes a sound chamber). Remove the four screws (using an 00 or 000 Phillips screwdriver). The speaker bracket will be seen over the bogie.
2. Two fine wires should be soldered to the speaker pads labelled LS- & LS+ (the + terminal of the recommended speaker is indicated by a red dot)
3. Remove both speaker retaining flange headed screws and fit the speaker, positioned as shown below. If using the recommended speaker, it will form an acoustic seal with the mounting chamber and the two flange head retaining screws will then fit into the speakers mounting flange with in the slots on the side of the speaker.



Fit speaker in this orientation

The detail's in the sound!

Thank you for purchasing the Class 121/122 'Bubblecar' with sound.

The sound project has been meticulously crafted from specially commissioned recordings of unit no. 121020 on the Bodmin & Wenford Railway.

The sound project contains some unique features designed to enhance the driving experience and increase the authenticity.

There are a number of sounds that occur when a function button is pressed, and a number of sounds that are played automatically. These are detailed on the following pages.

We hope you enjoy the added realism and enhanced driving experience that this will bring to your layout operations. To get the best realism and satisfaction out of your sound decoder, you will need to practice a little bit of driving!

The 'RealDrive' Experience

The driving experience can be enhanced by activating **'RealDrive'.** This changes the set up of the driving characteristics, such that you will need to apply the brake in order to bring the Railcar to a controlled stop – simply closing the throttle will not suffice!

Explanation of 'RealDrive': In this mode, you feel you really are driving the engine; assuming the Railcar is travelling at a medium speed as the regulator is closed (speed step 0) the Railcar will continue to coast for some considerable distance, slowing gradually. Applying the brake using F7 will bring the model to a stop. The braking speed can be adjusted by changing CVs as below.

- When F7 is ON the brake is ON. When F7 is OFF, the brake is OFF.
- The braking intensity can be altered via CV349. Some users prefer sharper brakes, which allows several short applications to bring the Railcar to a controlled stop (if possible set F7 on your DCC system to 'momentary' operation). Other users may prefer a gentle brake (use a higher value in CV349) so that only a single application of the brake is needed to bring the Railcar to a halt. The CV349 factory setting is 30.
- **Note:** If the brake is left ON, the Railcar will not accelerate. This means that if it is stationary and the brake is ON when the regulator is opened, the Railcar will not move.
- **Note:** The brake will not 'win' over the regulator. This means that if the brake is applied whilst the regulator is open it will continue to run at the current speed.

To activate 'RealDrive' set CV4 to 254, and CV309 to 7.

To de-activate 'RealDrive' set CV4 to 30, and CV309 to 0. These are the factory settings

	Class 121/122 'Bubblecar' manual functions	
F0	White/red marker lights	When F0 is turned ON, the white marker lights at the leading end will be lit together with the red tail lights at the trailing end. This will change according to the seleected direction of travel.
F1	Startup/shutdown	On pressing F1 (F1 ON), with the speed set at 0 the sound of the engines starting will be heard. On pressing F1 again (F1 OFF) with the speed set at 0, the sound of the engines shutting down will be heard.
F2	Two-tone horns*	On pressing F2, short high/low horns will be heard.
F3	Single horn 1*	On pressing F3, a medium high horn will be heard.
F4	Passenger doors slamming*	On pressing F4, the sound of the the passenger doors closing will be heard. If F4 is left ON, more door slams will be heard. To reduce the number of door slams, turn F4 OFF when the required number of door slams has been heard.
F5	Guard's whistle	On pressing F5, the sound of the Guard's whistle will be heard.
F6	Communication 'beep'/buzzer **	On pressing F6 (F6 ON), the sound of the Guard-to-driver communication buzzer will be heard. When F6 is pressed again (F6 OFF), the sound of the driver's response buzzer will be heard.
F7	Brake application/release	When F7 is pressed, the sound of the brakes being applied will be heard. When F7 is pressed again (F7 turned off), the sound of the brakes being released will be heard. If 'RealDrive' is enabled, the working brake will be applied (F7 ON) and released (F7 OFF).
F8	Flange squeal	On pressing F8, the sound of the wheel flanges squealing will be heard.
F9	Guard's door open/close	When F9 is pressed (F9 ON), the sound of the Guard's door being opened will be heard. On pressing F9 again (F9 OFF), the sound of the Guard's door being closed will be heard.
F10	Interior saloon lights	When F10 is ON, the interior saloon lights will be illuminated.
F11	Cab lights (directional)	When F11 is ON, the leading driver's cab light will be illuminated.
F12	Fade out/in	When F12 is pressed (F12 ON), all sounds will slowly fade to silence. This can be used when the Railcar is going 'off-scene' or into a tunnel. When F12 is pressed again (F12 OFF), all sounds will slowly fade back in to their previous volumes. This can be used when the Railcar is entering the scenic section or exiting a tunnel.
F13	Cab sliding door open/close*	When F13 is turned ON, the sound of the sliding cab door being opened will be heard. When F13 is turned OFF, the sound of the sliding cab door being closed will be heard.

F14	AWS siren	On pressing F14, the sound of the AWS siren will be heard.
F15	Single horn 2*	On pressing F15, the sound of a high horn will be heard.
F16	Single horn 3*	On pressing F16, the sound of a low horn will be heard.
F17	Single horn 4*	On pressing F17, the sound of a high horn will be heard.
F18	Single horn 5*	On pressing F18, the sound of a low horn will be heard.
F19	Handbrake application	On pressing F19, the sound of the handbrake wheel being turned will be heard.

Notes:

Those functions that are marked with an asterisk (*) play different sound samples according to the currently selected direction. For best results, please turn off these functions once the sound has played, otherwise when you change the direction of the Railcar, the sound will play!

The function marked with 2 asterisks (**) can be changed to replace the modern 'beep' sound (as recorded on 121020) with a 'heritage' buzzer.

To activate 'heritage' buzzer set CV428 to 6, and CV406 to 28.

To activate the modern 'beep' set CV428 to 0, and CV406 to 0. These are the factory settings

Brake squeal	The brake squeal will be played when the speed of the Railcar drops below the threshold AND the Railcar is decelerating. The threshold can be set via CV287 in order to reduce or increase the amount of brake squeal. As supplied, the value of CVB287 is 19.
Different horn and door slam sounds	The horn sounds on this project change automatically according to the direction the Railcar is travelling. This is to emulate the prototype which has a set of horns at each end of the vehicle. This feature has also been extended to the door slam sounds too. For best results, turn these functions off when the sound has been played, otherwise when changing direction of the Railcar, the sounds will be heard!

Other useful CVs		
CV	Purpose	Comment
3	Acceleration rate	As supplied, this is set to a value of 85. A higher value gives a slower acceleration. A lower value gives more rapid acceleration.
4	Deceleration rate	As supplied, this is set to a value of 30. A higher value gives a slower deceleration. A lower value gives more rapid deceleration. Note for 'RealDrive' this should be set to a value of 254.
266	Overall volume	As supplied, this is aet to a value of 64. A higher value will increase the volume whilst a lower value will decrease the volume. The recommended maximum is around 100.
349	Working brake; braking rate	As supplied, this is set to a value of 30. A lower value will shorten the braking distance, whilst a higher value increases the braking distance. Note that this is only effective if 'RealDrive' has been enabled.