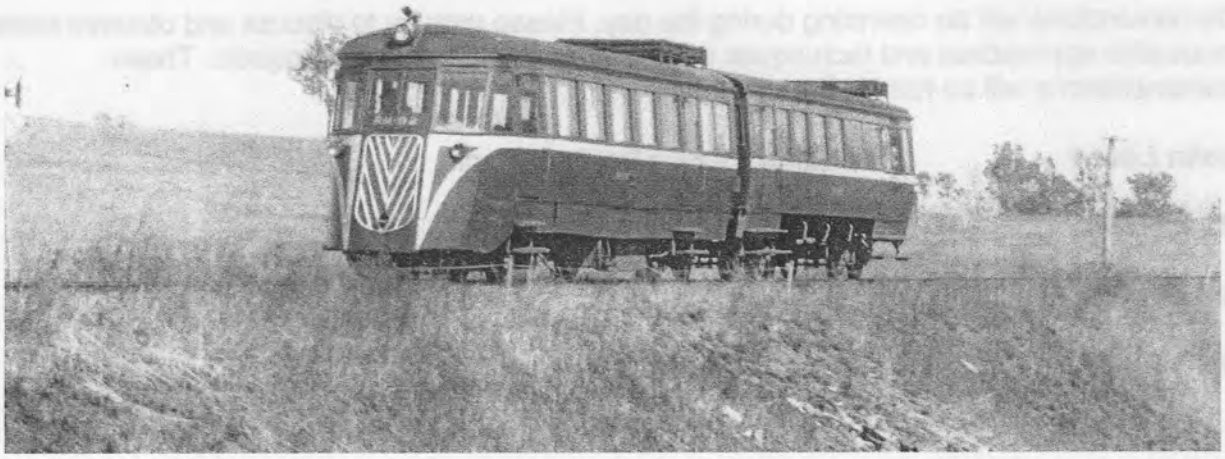
RAILMOTORS ON THE QR: OPERATION & MODELLING

Dennis Campbell & Gary Pysden



WHY RAIL MOTORS?

Rail motors were introduced essentially as a cost saving measure and as a replacement for a locomotive and carriages when the expense of such could not be justified, particularly where patronage was light. This was able to be achieved when petrol/diesel engines had been developed as being reasonably efficient and fuel was relatively cheap and more readily available. Prior to this, fuel was imported at high cost and the technology of internal combustion engines was still not well developed.

Rail motors also had the advantage of being able to replace mixed trains on branch lines, allowing better services for passengers and parcels/light goods, and allowing for less frequent goods trains to handle the heavier work. Rail motors could also provide suburban passenger services in both metropolitan and provincial centres where patronage was too light to justify the cost of locomotives and passenger cars, particularly on weekends and "off-peak" services. Rail motors were also able to be operated more cost-effectively by using only a Driver and in some cases with the addition of a Guard or Lad Porter to assist when trailers were attached.

They were capable of faster schedules than a mixed train which was required to shunt at most stations, much to the annoyance of passengers. There was also more flexibility where a rail motor could set down or pick-up, with the addition of RM Stops between regular stations for the convenience of rural communities.

Better services were able to be provided such as regular connections for school children and shoppers living on rural branch lines, as well as connecting services with mainline trains. In fact, most aspects of daily living were improved in such communities by the use of rail motors.

What's in a Name?

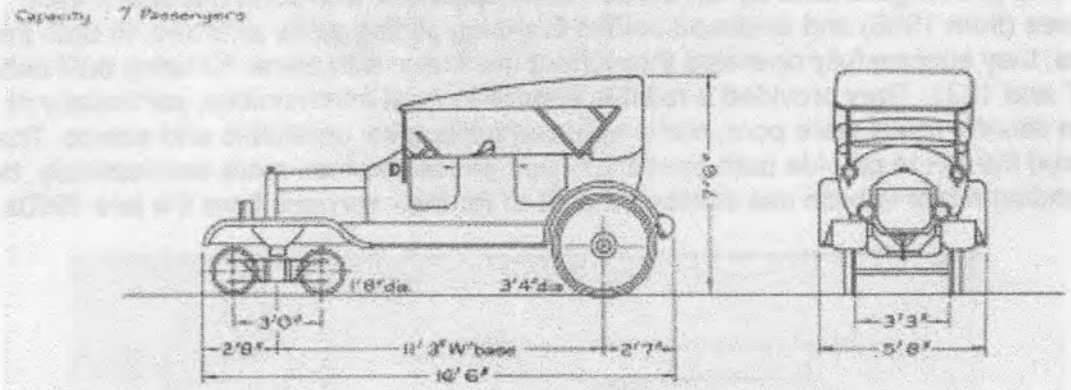
The variety of terms used to classify this type of rail vehicle varied considerably and certainly the QGR used quite a number. An example of this can be seen in the "General Appendix to the Book of Rules and to the Working Timetables for all Divisions 1962" in which there were no less than six ways of referring to them - Rail Motor; Rail Car; Rail Motor Train; Motor Pass.; Rail Motor Cars; Motor Train; and Gardner Diesel Cars.

RAIL MOTOR DEVELOPMENT

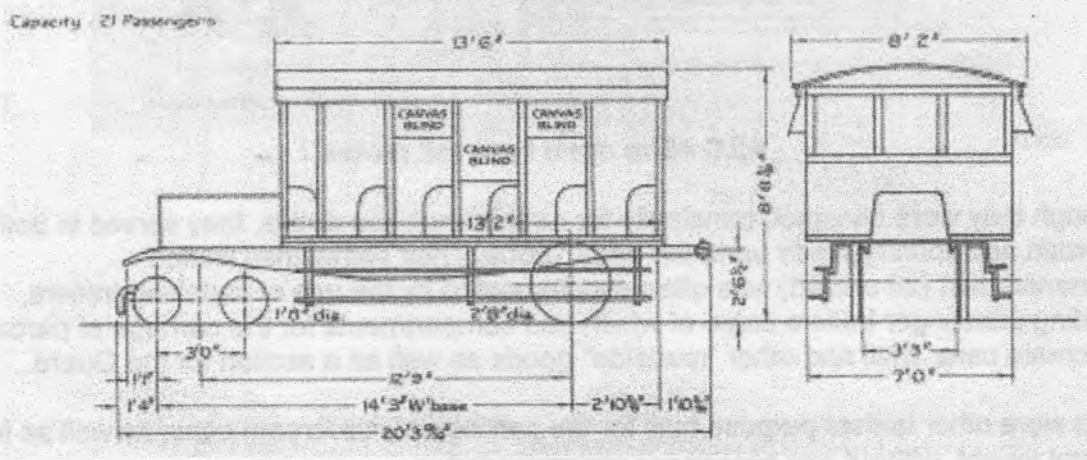
On the QR, rail motors went through a number of interesting developmental phases.

The first use of internal combustion vehicles on the QR was for motorised ganger's trolleys or "quads". These were in use at major centres by 1903.

The next "rail motors" were conversions of road motor vehicles (Napier, Panhard), from about 1916. Most of these were for internal services and retained their original bodies, the main purpose was to allow general and engineering inspections to be carried out. Others that were intended for fare paying passengers had modified or new bodies, and along with small purpose built trailers, provided an adequate service in some of more remote areas of the state such as Cooktown, Normanton, Charleville and Cunnamulla. They had the distinction of establishing the term "rail motor" for this type of rollingstock on the QR, one which persisted, both officially and unofficially, until the present day.



RM 9 35hp Napier of 1917

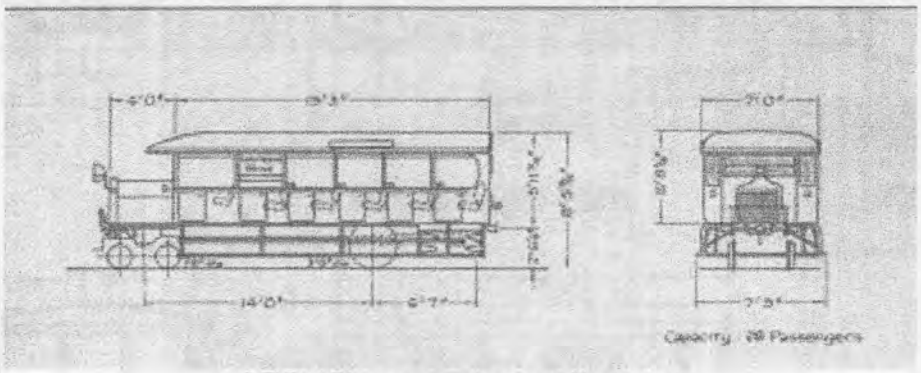


RM7 45hp Napier of 1916

Although the experience gained by using these small vehicles led to the realisation that great savings could be made by using small light rail motors on branch lines, the next major phase of rail motors on the QR was, strangely enough, the importation of the large McKeen Cars from the USA in 1913, following a visit there in 1909 by the Chief Engineer of the time. The view was then held that they could be useful on the Enoggera Branch.

Even though they were confined to limited suburban services (Sunnybank, Cleveland and Corinda), these machines proved to be failures. Weighing 27 tonnes, they were too heavy for branch line use, had large and unreliable engines, lacked the space for parcels, were without a Guard's compartment and, important at this time, had a huge appetite for the expensive benzine fuel. They were also the longest passenger vehicles to operate on the QR until the EMUs of 1979.They saw little use after World War 1 in spite of attempts to use them for excursion traffic during the 1920s and early 1930s.

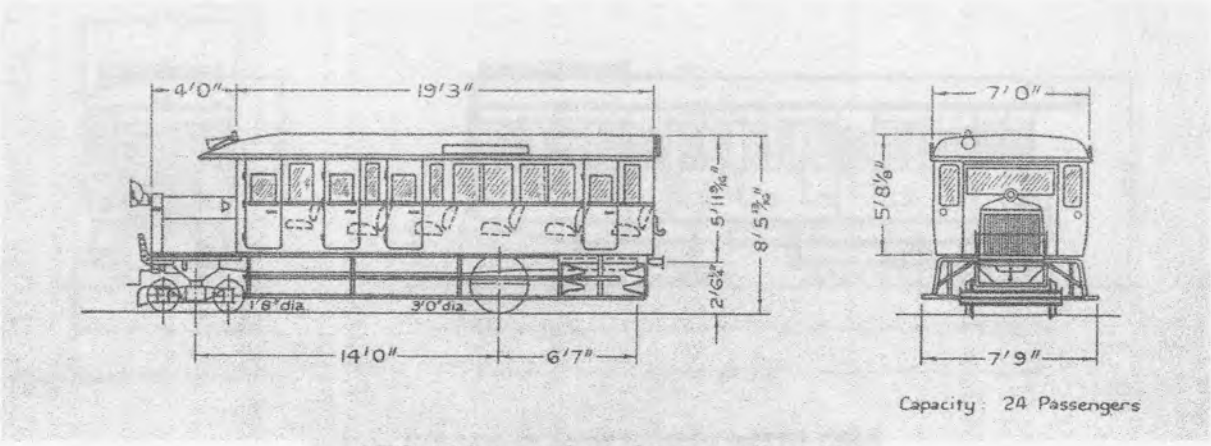
Commencing in 1927, the next major event in rail motor development centred around the purchase and successful conversion of new AEC (Associated Equipment Company of the UK) bus chassis (model 506) using their 45hp petrol engine. This chassis type was the development of the London General Omnibus Company's type B bus of 1910 and the War Office's standard truck chassis of World War 1. These new chassis was adapted by the QR to use a front bogie with very small wheels (1'9" dia. usually) under the bonnet and engine and a single chain (later differential) driven axle at the rear. These imported chassis were modified to use locally designed and built light-weight bodies of metal sides that were semi-open, eg. without side windows, and fitted with timber/canvas roofs and cross bench seats. In later years, these older type rail motors, often referred to by railway men and passengers alike as "tin hares", were upgraded with 50hp Gardner diesel engines (from 1935) and enclosed bodies featuring sliding glass windows. In both these forms, they successfully operated throughout the State, with some 40 being built between 1927 and 1931. They provided a reliable service to rural communities, particularly at a time when country roads were poor, motor vehicles expensive, unreliable and scarce. They allowed the QR to provide both passenger and goods services more economically, before expanding motor vehicle use eclipsed the need for their services from the late 1950s.



AEC 45hp open type rail motor

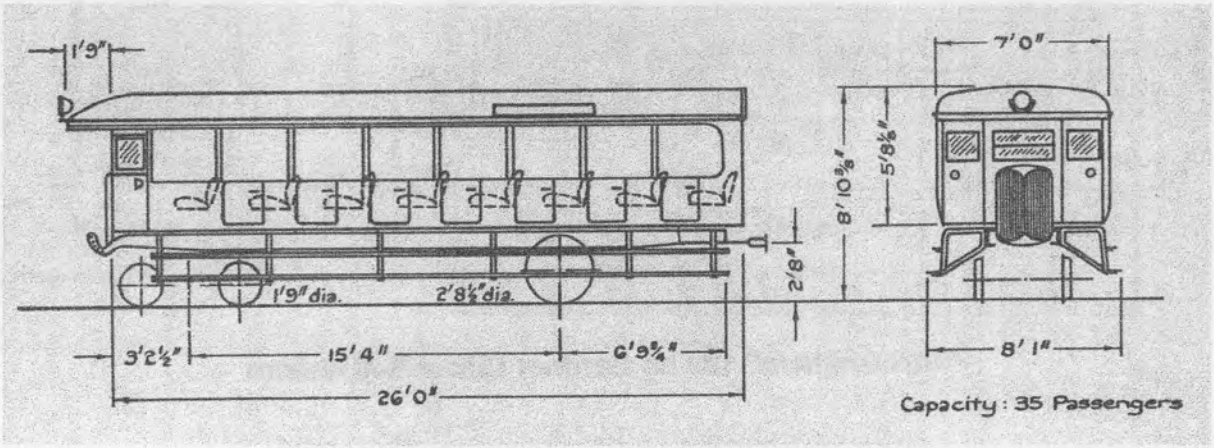
Although they were designed principally for rural branch line duties, they served in both suburban and country areas up to the early 1960s. Their sometimes limited accommodation (28 seated) was often supplemented by the use of matching trailers, including passenger trailers some of which had compartments for the carriage of parcels, milk/cream cans, mail and other "roadside" goods as well as a section for the Guard.

There were other trailers purpose built for the carriage of milk/cream cans, as well as for general freight, without any passenger accommodation.



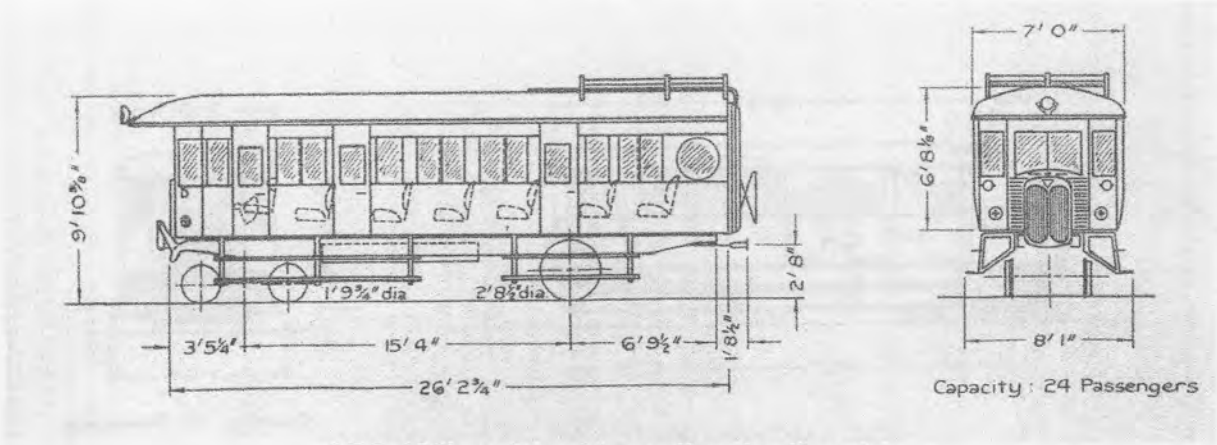
AEC 45 hp enclosed type rail motor

Further developments of the basic idea occurred with the introduction, in 1932, of the more powerful forward control 100hp AEC rail motors (RM 65-80) which featured larger, fully enclosed bodies on AEC chassis, roller bearings on the front bogie, a lavatory, and two matching trailers with luggage and guard's accommodation, with either a blunt or semi-hexagonal front. From 1936, new machines were provided with fluid torque converter drives as distinct from the normal mechanical gearbox. A couple of this type (Rms67, 74 & 79) had strengthened and extended frames to accommodate dummy buffers, standard brake hoses and drawgear to permit the hauling of ordinary goods rollingstock on the Etheridge and Normanton lines. In many cases, these larger units replaced the older 45hp cars.



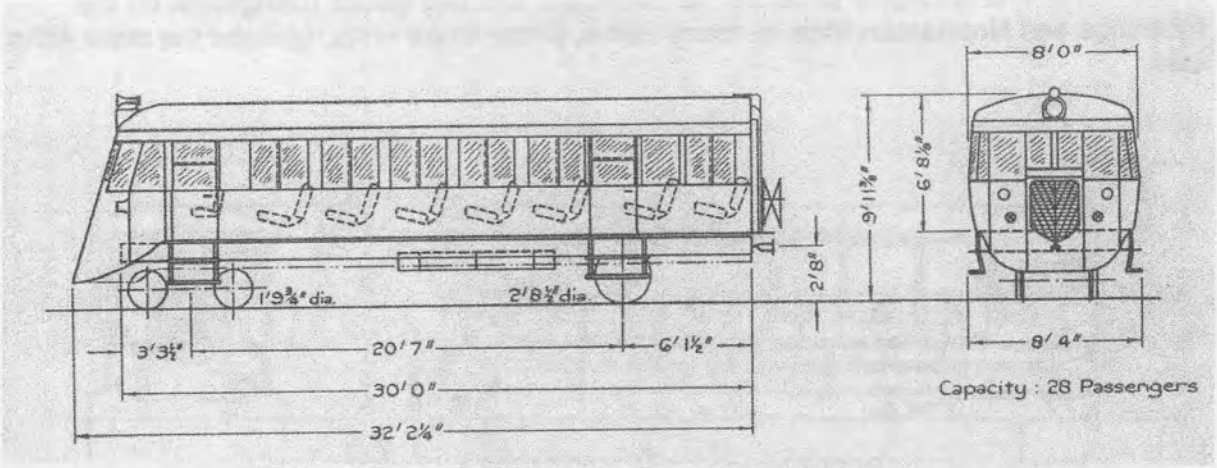
AEC 100 hp open type petrol engine rail motor

This successful type was advanced further, with the development of the 102hp units (RM 81-84) from 1936. These had the distinction of being built as diesel powered rail motors and, as a major difference from all previous cars, were constructed on chassis built by the QR. The body design differed by having the bottom half of the semi-hexagonal front vertical, while the top half was sloped back under an overhanging roof.



AEC 102hp closed type diesel rail motor

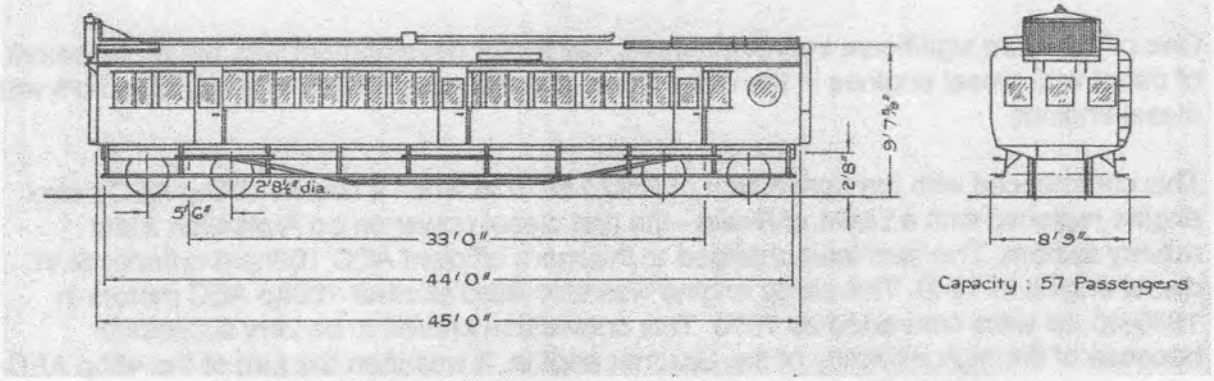
The final group of this series of rail motors (RM85 - 94) were the "Streamliners" built between 1937 and, after a wartime delay, 1951. These had longer bodies on a QR chassis, with a smooth sloped and curved front with metal fairing along the sides presenting a streamlined appearance. Both of these had a larger capacity than the earlier types and were also provided with matching streamlined trailers. These motors could also haul up to two trailers.



"Streamliners" 102 hp Gardner Diesel Rail Motors

BOGIE RMs

With the success of the AEC "tin hares", consideration was given to a larger more modern bogie type rail motor. Consequently, an extended version of the AEC design was trialled in 1930 (RM40) using a carriage style body and initially a 100hp AEC petrol engine. While not entirely successful, it set the scene for four more bogie vehicles constructed in 1930-31 numbered RM46-49, which were equipped initially with either 100hp Leyland or 150hp Winton petrol engines, that were later (c1942) replaced with 153hp Gardner diesel. In keeping with other RMs of the time, they were semi open in design but with a wider body, and were able to have a central corridor. As built, these motors and their matching two trailers (the 2nd trailer had a guards compartment) were equipped with roller bearings. Glazing was added in 1932. They proved to be very successful with their trailers on services to Grandchester, Gatton, Cleveland as well as on the Boonah, Brisbane Valley and Kilcoy Branches. One (RM49) survived to the late 1960s on mainline services between Ipswich and Grandchester, before being displaced by the 2000 class Railcars.



Leyland (100 hp) and Winton (150 hp) petrol rail motors

Up to this point in rail motor history, when the last of the "red" rail motors was constructed in 1951 (RM 94), a review reveals that the rail motors used by the QR so far:-

McKeen Cars	5
Early small cars	9
Ex-Chillagoe Rly	3
Tractor (RM26)	1
Steam cars RM30-33	2 (Purrey Cars - same as used by Rockhampton City Council), trailers numbered in same sequence.
45hp AEC	38
45hp AEC (62, 63)	2
First bogie (RM40)	1
100hp & 150hp (RM46-49)	4
RM53	1
100hp AEC	16
102hp (RM81-84)	4
102hp Streamliners	10
Inspection cars No. as RMs	9
Total	**105**

(Source: J W Knowles 1967)

Rail motors generally were fitted with through airbrakes, with the compressor located under the chassis of the powered car. This allowed a number of trailers to be used, usually two, but the use of three trailers was not unknown. Rail motors could not be connected to either steam or diesel hauled trains because the straight air system would not operate with the Westinghouse automatic air brakes of the train, and when a rail motor was towed by a train or locomotive, only the handbrake could be used. The only exception to this was the 102hp Gardner powered AEC motors RM67, 74 and 79 which were fitted with the Westinghouse automatic air brakes, as well as buffer beams and draw hooks to haul standard goods wagons on the Etheridge Line as for a time, even the lightest locomotive could no longer be used on this line.

While the very earliest of rail motors (the motor car conversions in particular) had a chain drive to the rear single axle, the advent of the AEC chassis included a drive by plate clutch and gearbox onto the single back axle. Interestingly enough, because the bus type gearboxes had only low-speed reverse, the QR developed single-ended rail motors which

needed to be turned. Fortunately many a branch line terminus and some intermediate stations were already supplied with a turning wye or even a turntable for the end of the run. With further developments, there were quite a wide range of gearbox types in use.

One of the more significant improvements to rail motor development was the replacement of petrol with diesel engines in the older types, and the construction of later rail motors with diesel engines.

This commenced with the conversion of RM70 in 1935 when it had its 100hp AEC petrol engine replaced with a Leyland diesel - the first diesel power on an Australian State railway system. This was later changed to the more efficient AEC 102hp 6 cylinder 6LW diesel engine in 1940. This same engine was also fitted to other 100hp AEC motors in 1938-43, all were converted by 1950. This conversion proved to be very successful because of the high reliability of the Gardner engine. It was then the turn of the 45hp AEC petrol motors which had their engines replaced by AEC 4 cylinder 4LW diesels in the period 1937-42.

Even the large bogie cars had their 100hp Leyland or Winton 150hp petrol replaced by the 6 cylinder 153hp 6L3 Gardner diesels.

RMs 81-92 were actually built new with 102hp 6LW Gardiner engines in 1935-40, followed by the last of the type, RMs 93-4 in 1950.

After the conversions, the numbers on the sides of the body had a small "D" added between the "RM" and the actual number, eg RM^{D}70, to identify the conversions.

MODERN DEVELOPMENTS

The modern era for rail motors in Queensland commenced in November 1952 with the introduction of the first of the 4 car 1800 class sets, or "Diesel Rail Motor Trains" as they were initially described by the QR. Constructed by Commonwealth Engineering in Sydney, these dark blue and silver units were much larger than previous rail motors but were very much underpowered with only two Gardner 153 hp engines for the four units. The first set was put into service on the Southport line, while the second went to the Cairns area. With the frequent stopping in suburban service, it was found that they worked better as 3 car sets, ie. with only 1 trailer. They were, however, capable of a good turn of speed on longer "interurban" type runs, and as such provided a good service to such places as Southport, Yandina, etc.

On rural services, branch lines in particular, it was common practice for only a motor and a trailer which had a luggage compartment, to handle the available traffic, provided turning facilities were available. Although they had a good capacity, they were known more for their rough ride, uncomfortable seats and poor air circulation. They did however facilitate the withdrawal of the remaining "tin hare" rail motors from both suburban and country services.

Although many started their working life in suburban areas, most went out country as two car sets until the 1960s, when most returned to be either 3 or 4 car sets on Brisbane's south side suburban lines. These were used for some regular weekday services as well as those on weekends and off-peak. All were out of service by early 1979, having been displaced by the newer 2000 class rail motors and the withdrawal of many country passenger services. One motor unit survived in QR service (RM 1811) following conversion to the Commissioner's inspection car in 1982.

These were the last rail motors to include "RM" as part of their numbering on the vehicle body.

To give some direction to future rail motor development, the QR conducted two further experiments in 1956, using both a local design and an imported one under licence.

The 1900 class or "Budd" cars were a two unit set (1900 & 1901) build under licence from the Budd Car Co. in the USA and featured a modern design and multiple unit operation. Intended originally for the Brisbane-Helidon co-ordinated service to Toowoomba, they were fast and comfortable, but suffered from mechanical problems, particularly when worked in multiple. The layout of the doors was less than efficient as passenger access was through the driver's or guard's compartments. As single units however, they still provided a useful service on either suburban or short country runs. They only returned to multiple unit operation after the original torque converters were replaced by self-changing gearboxes in 1967. For a while the 1900s were used for a short-lived suburban parcels service.

The other 1956 experiment led to the first of the 2000 class "railcars". This prototype proved to be very successful in all respects to the extent that 10 pair were ordered from Commonwealth Engineering in 1959. They varied from the original 2000-2001 with stainless steel instead of aluminium sheeting and were fitted with 150hp instead of 125hp engines. They were restricted to the twin units for multiple unit operation, not having any connections on the curved front ends. This was remedied to some extent when a further batch of 10 units were constructed in 1971 by Comeng, with four units being redesigned as centre units to allow 3 or 4 car sets to operate as multiple units, although these cars are equipped with cabs and capable of operating independently. This increased the capacity for both suburban as well as Helidon and Gympie services. The 2000 class were also very successful on the Daylight Railcar Tours to Cairns, providing a smooth and comfortable ride. Prior to the electrification of the suburban and North Coast line, the 2000 class provided a considerable number of off-peak and weekend suburban services particularly on the south side of Brisbane.

Although usually operated in their pairs, it was not unusual to actually see the single car that had the baggage section (odd numbered cars) and double doors, working on western lines and branch lines where turning facilities existed to cater for the light patronage in the 1960s.

In later years some of the surviving units were re-engined (Rolls-Royce diesel), prolonging their life for emergency and excursion work, while other units were sold, their services having been progressively taken over by EMUs. There are no longer any regular 2000 class workings, outside of tourist runs and a number have been preserved by enthusiast groups.

COLOUR SCHEMES

With the first rail motors, ie. converted road vehicles, contemporary photos seem to indicate that where the original body was retained, the most likely colour was a glossy black. Where a modified or "home-built" body was constructed, it appeared as being the standard carriage red, but this is subject to further research. The standard carriage red is best described as an oxide or "Venetian" red.

The 45hp AEC rail motors seemed to have always been in the standard carriage red with a later addition of a narrow cream/off-white stripe immediately below the windows, tapering

down towards the front. The trailers had a similar scheme which matched that of the "motors".

However, with the advent of the Streamliners, a few different schemes were tried. Before 1938, a royal blue with silver stripe was tried on a few sets, but all reverted to the standard carriage red with cream stripe. A couple of exceptions were the last two sets of "streamliners" - one painted silver with a narrow blue band under the windows, while another was painted a two tone blue lower with yellow upper. There was at least one of the 102hp AECs which was noted in north Qld (RM 94?) as being painted a deep brown (chocolate?) below the windows with cream above.

Interior colours in later days consisted of white ceilings, with upper walls a light stone or beige, below a dark stone colour separated by a thin dark brown stripe. Another variation was pastel green walls with an off-white ceiling. The seats were generally black, but other dark colours have been noted.

The 1800 class broke with this tradition by entering service with royal blue below the windows and silver above, including the roof. The blue tapered down on the front to allow for a winged QR emblem.

The 1900 class and 2000 class were in natural stainless steel finish (except, of course, for 2000-2001 which was in natural finish aluminium). The only change to this was the later addition of a narrow blue waist band to both 1900 class units.

RAIL MOTOR OPERATIONS

It is probably easier to describe where rail motors did not run in Queensland.

The lines known not to have had any regular local rail motor service include:-

West of Roma on the Western Line
West of Westwood on the Central Line
West of Charters Towers on the Northern Line
Kingaroy to Tarong and Nanango,
Bororen to Gladstone on the North Coast Line,

and the Canungra, Goomburra, Marburg, Mulgowie, Boyne Valley, Broadmount, Owens Creek, Mount Mulligan and Mount Garnet branches. (source: J D Kerr, 1998)

In addition, can be added all the Central Qld coal lines, Phosphate Hill line, Greenvale, Collinsville to Newlands, Ebeneezer and no doubt a few other lines run for mineral traffic only.

Rail motors were used throughout the state on a variety of services that included rural and city, local and interurban, connecting, branch and mainline.

Rural Branch Lines

While carrying passengers was their main task, rail motors carried mail, parcels and light goods, and milk cans as regular items, especially on branch lines which were the lifelines of rural communities before the days of road transport.

The rural branch line motors enabled connections with mainline trains. The provided the opportunity to attend schools, shopper services and entertainment trips to the nearest regional centre in a relatively comfortable and fast way.

Local & Suburban Services.

The predominate use for rail motors in suburban Brisbane was to handle off-peak and weekend services, especially during the 1960s and 70s when suburban travel was generally dominated by the car. This was particularly the case for the south side before the Merivale Bridge linked the north and south side systems. Initially the old type motors were used hauling one or two trailers as required, but these were soon superseded by the 1800 class set operating as either 3 or 4 cars sets until even these were replaced by the 2000 class rail cars.

Outside of metropolitan Brisbane, there were many regional centres in Queensland where a local or suburban service was provided by rail motors. For the purposes of this article, I have used the definition of such services as provided by J W Knowles (1972) "those (services) which permit commuting to and from work, or which run generally within the urban area of the city concerned or a close satellite".

These centres included Cairns, Townsville, Maryborough, Rockhampton, Toowoomba, and Ipswich. In each case, regular timetabled services were run when patronage was either within the capacity of motor and trailers or too light for locomotive and carriages, particularly on weekends and off-peak times. Rail motors were particularly useful and economical for excursions by various social groups. Many of these regional centres serviced local branch lines as well as excursions to local costal resorts such as Yeppoon outside of Rockhampton.

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RAIL MOTORS ON THE QR **APPENDIX 1: Diesel Rail Motor Units**

QUEENSLAND GOVERNMENT RAILWAYS
1800 CLASS DIESEL RAIL MOTOR UNITS

The train of four cars is made up of two power cars and two composite trailer cars.

Each train can be divided and operated as two trains.

The power cars are equipped with 6L3 Gardner engines of 153 h.p. fitted with fluid couplings and four speed Wilson Drewry gear boxes.

When working as a combined unit of four cars with a power car at each end, both power cars are capable of being fully operated from either end by single control, thus obviating the necessity for turning.

With the exception of fixed seats at the ends of each car, all seats are reversible to enable passengers to face the direction of travel.

Toilet facilities are available in each power car. The wash-basin is of stainless steel.

Iced drinking water with hygienic paper cups is provided in each power car.

Gangway intercommunication gives access between the cars.

The power car has seating capacity for 55 passengers.

The trailer car accommodates 39 sitting passengers and has 100 square feet of space allotted for luggage.

The train of four cars will seat 188 passengers and carry $4^1/_2$ tons of luggage.

The exterior of the train is smartly painted in aluminium with royal blue colouring below the windows.

To illustrate the progress made in rail motor design, the following are the main features of the153 h.p. diesel motor train compared with the old 50 h.p. diesel motor train, viz.-

	Old		New	
	Power Car	Trailer	Power Car	Trailer
Horsepower	50	-	153	-
Weight	6T.13cwt	6T.11 cwt	21T.	13T.
Seating capacity	24	47	55	39 (x)
Length over body	23'3"	29'	48'0 ¾"	42'10 ¾"
Width	7'	7'	9'3 $^3/_8$"	9'3 $^3/_8$"

(x) – Plus 100 square feet for luggage.

The first of these 153 h.p. diesel motor trains was placed in service on 23rd November 1952.

QUEENSLAND GOVERNMENT RAILWAYS
1900 CLASS RAIL CAR UNIT.

This unit consists of two power cars with a driver's cabin at each end of each car.

Each car is equipped with two 125 h.p. A.E.C. Diesel Engines of the horizontal underfloor type, each with an Allison torque convertor and constant mesh gear box operated by air actuated multi-plate clutch.

All controls are electro-pneumatic and incorporate safety devices and are so arranged to provide multiple operation up to 12 cars.

The cars are manufactured in stainless steel, and weigh 34 tons 14 cwt. each, giving a power ratio of 7.4 h.p. per ton at tare weight.

Lighting is provided by fluorescent tubes and ventilation by vent-axia fans in the roof.

All seats with the exception of those adjacent to partitions are of the walk-over type.

Cool drinking water is provided by an electric refrigerator unit, together with hygienic paper cups.

Seating capacity is 108 per two-car unit.

Luggage space is approximately 50 square feet.

Toilet facilities are provided in each car.

The cars are fitted with Bradford Kendall's cast steel passenger bogies.

QUEENSLAND GOVERNMENT RAILWAYS
DIESEL RAIL MOTOR UNITS
(2000 CLASS)

The unit consists of two power cars with a driver's cabin at each end of unit. Each car is equipped with a horizontal under-floor A.E.C. diesel engine of 125 H.P. and fitted with fluid flywheel and self-changing gear box.

All controls are electro-pneumatic and both cars are controlled from either driver's position. All controls incorporate safety devices.

All seats, other than those adjacent to partitions, are of the walk-over type and fitted with head rests.

The bodies are insulated with limpet asbestos sprayed onto the inside surface of the outer lining, and beneath the reswood floor.

Fluorescent lighting is provided in passenger compartments, together with four-vent-axia exhaust fans in the roof.

The cars are of aluminium exterior finish, the sides below window sills being of fluted extruded sections. The interiors are lined with laminated plastics materials with polished maple cover-strips.

Toilet facilities are provided in each car.

Cool drinking water is provided by an electric refrigerated unit, together with hygienic paper cups.

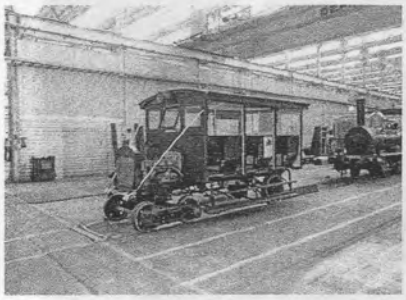
Seating capacity of the 2-car unit is 96, together with 100 square feet of luggage space.

The weight of the two-car unit is 41 tons 18 cwt., giving a power weight ratio at tare of 6 H.P. per ton.

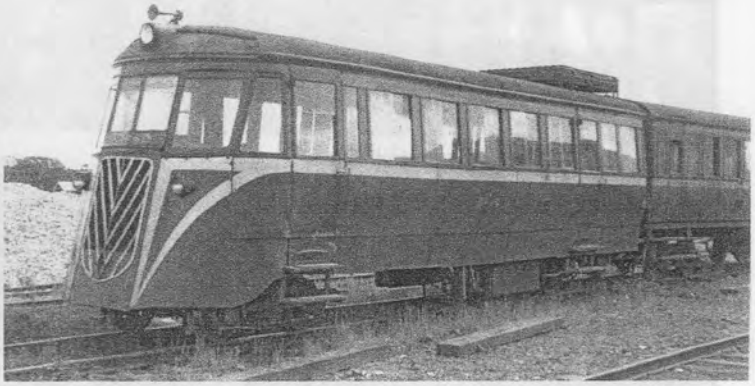
The cars are fitted with fabricated bogies having swinging bolsters, the movements of which are controlled by shock absorbers.

RAIL MOTORS ON THE QR

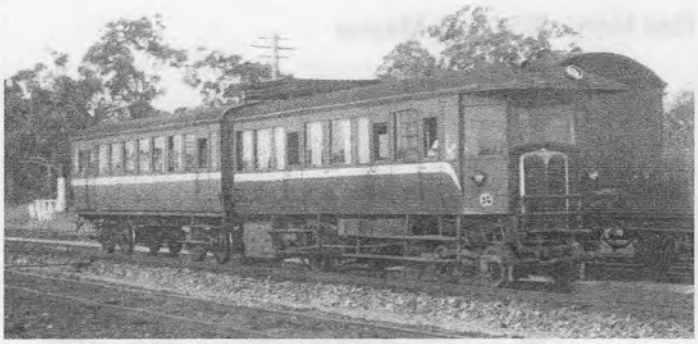
APPENDIX 2: Examples of QR Rail Motors



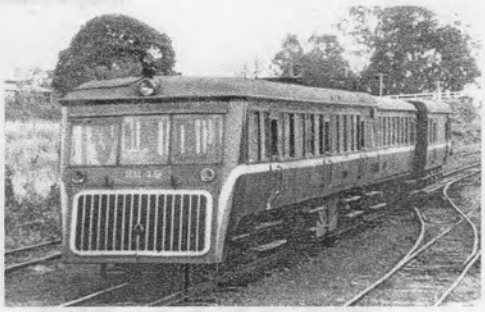
Panhard-Levasseur RM14



RM90 (Streamliner)

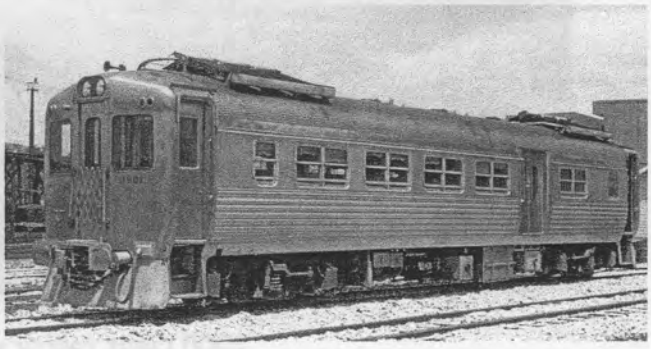


AEC 102hp RM & Trailer



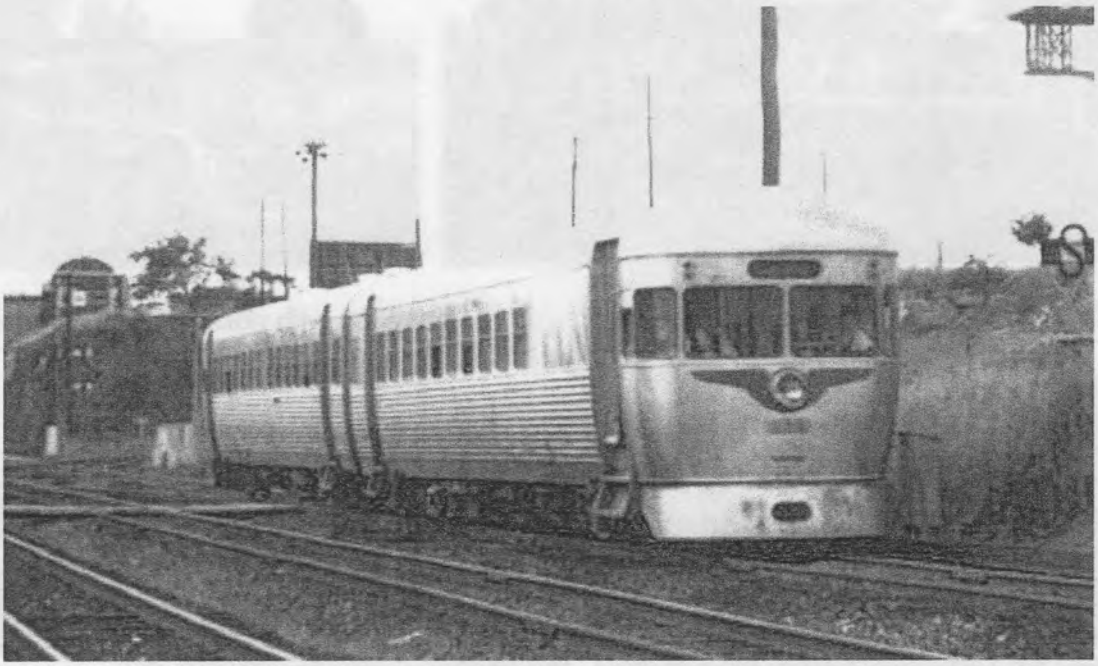
AEC 153hp with non-matching Trailers

3 Car set 1800 class at Normanby 1968



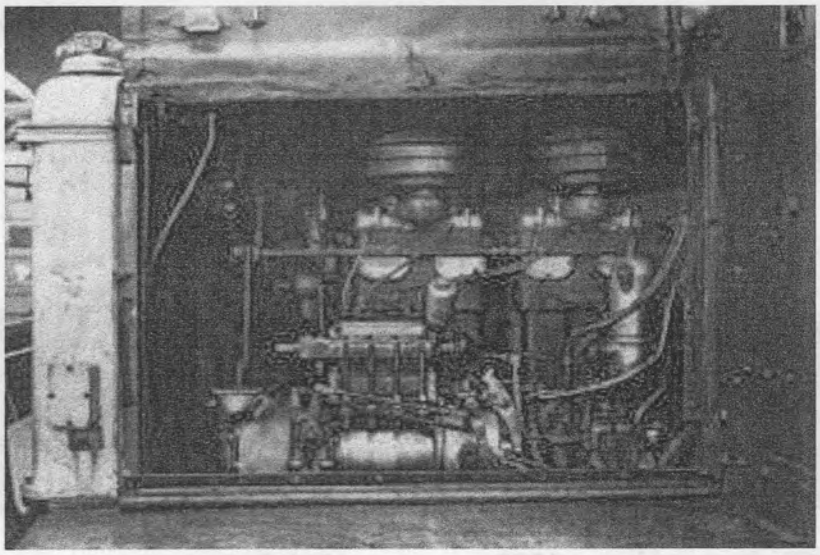
1900 class

Inspection Rail Motor No 64 at Mayne

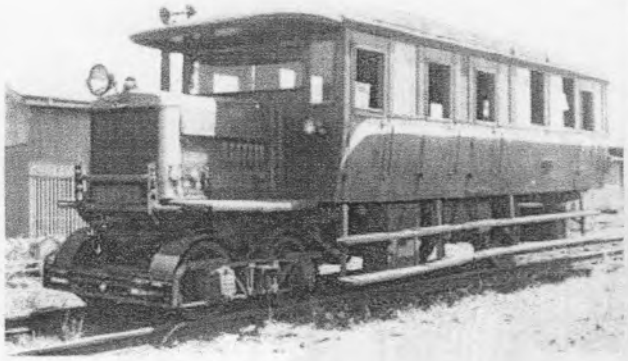


2000 class railcar at Mayne 1967

102 HP AEC diesel with trailers at Rockhampton



Gardner 50 hp 4 cylinder diesel engine

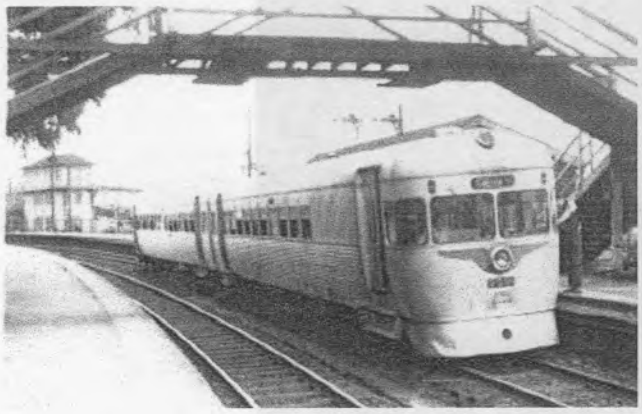


RM^{d}37

AEC 100 hp motor & trailer at Toowoomba 1966

RM85 (Streamliner) at Mayne 1966

2024 (L) and 1901(R) at Mayne 1967



Prototype 2000 class at Mayne 1966

1800 Rail Motor train at South Brisbane

Modeling the Railmotor in HO scale

The humble Railmotor, probably hated by those whom had the opportunity to have ridden in them including yours truly. I will excuse the 2000 class as QGR had worked it out by then. On the modeling side, the Railmotor finds the perfect place on a small branch line as well as the suburban scene. There is two parts to these notes. First; what is available and where to get it and general information on detailing. Second; How to power it and this can be a challenge. Since the information and measurements are given in HO please adjust for other scales.

What is available and where to get it.

AEC 45 HP. (Eg Red Fred)

Kit manufactured by Ian Lindsay Models. They also do the matching PL trailer. The powering kit may not be available but can be obtained elsewhere. Far North Hobbies makes a delightful brass front bogie for the motor but wheels need to be sourced. 6 mm solid nickel silver wheels on TT axles are available from Markits in England. The Roundhouse Hon3 archbar bogie widened and fitted with 7.5 mm K&M wheels suit the trailer.

AEC 100 HP. (102HP Gardner Diesel)

Body kit is manufactured by Far North Hobbies. Two versions are available, the short and the long roof. No correct front bogie is available yet but others can be substituted.

153 HP Gardner Diesel. (Eg RM 46-49)

Body kit manufactured by Far North Hobbies.

1800 Railmotor and trailer.

I believe this is to be released and is being held up by the availability of the mechanism. The is the ex Three foot Six Models Kit.

1900 Budd Railmotor.

At the time of writing these notes, Peter Ford of Far North Hobbies is investigating the release of this model.

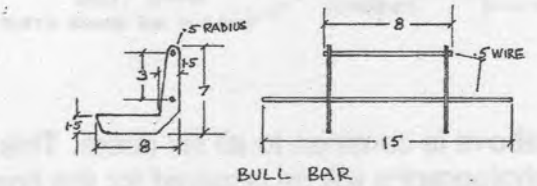
2000 Railmotor.

A two car kit complete with K&M mechanism is available from Far North Hobbies.

General Information on Detailing.

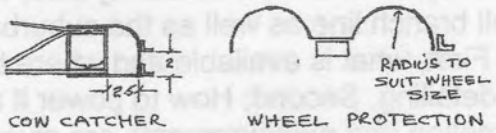
AEC 45 HP and Trailer.

The features that make this model unique are the bulbar, cowcatcher, wheel protection (mudguards) and the crank handle. The bull bar can be made from two pieces of .25 mm brass filed to shape drilled and fitted with two pieces of .5 mm wire to represent the cross bars.



BULL BAR

The cow catcher can be made by extending the bogie side frames with a piece of flat brass then gluing some plastruct 1.2 mm angle across them. The wheel protection is .25 mm x 2 mm wide brass ministrip glued to the cow catcher and the centre bolster.



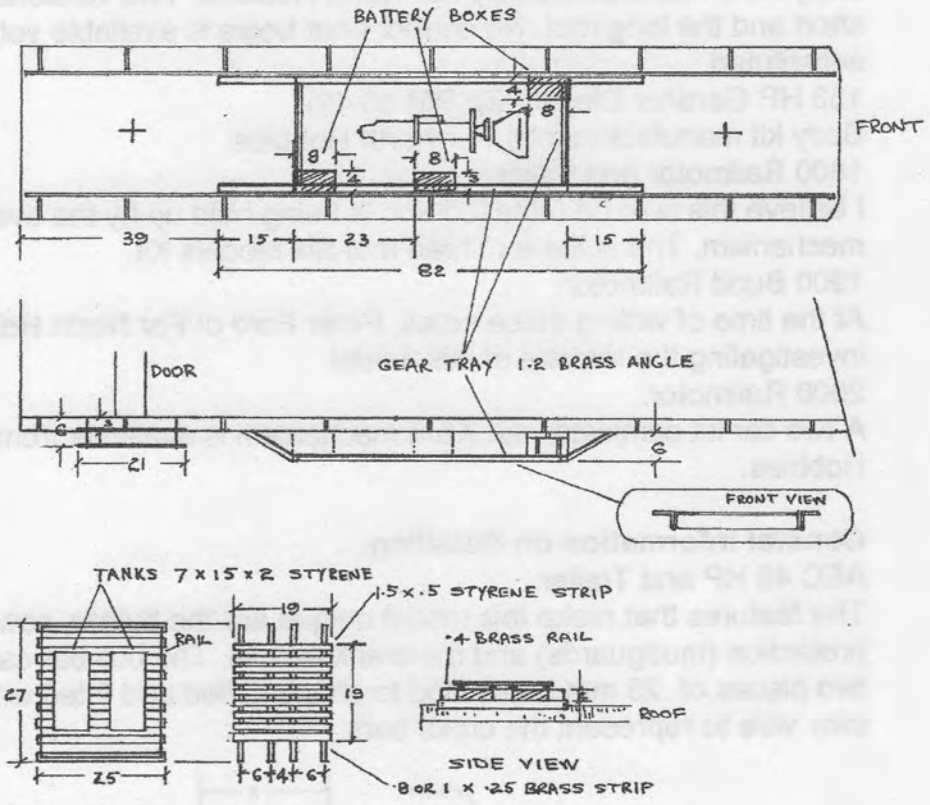
Don't forget the horn and the triangular end of train marker. The steps are best made from 1.5 mm x .25 mm brass ministrip soldered to brass wire step irons. This saves the frustration of regular replacement.

AEC 100 HP.

No information is available at this time but the author is developing a front bogie with electrical pick up and a mechanism.

153 HP Gardner Diesel.

The two most asked questions about this railmotor are what's under it and the roof rack come water tank.



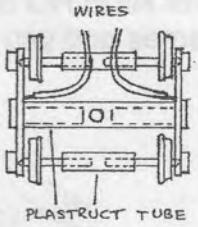
The step drawing above is common to all six doors. This under floor detail is only a guide and photographs will be required for the fine detail. The roof rack is positioned 4 mm in from the rear and is made from 2 mm x 1 mm styrene

slats then sanded flat. The rail and tanks are then made as in the drawing and stacked on top. The tanks and the top rack were added when a toilet was fitted at a later date.

How to power it.

AEC 45 HP.

All the railmotors with the single axle drive irrespective of scale need to pick up power from the front bogie if they are to be reliable runners. In the case of the Far North Hobbies brass bogie, I recommend it be cut and rejoined with a piece of plastic tube to isolate the two sides. At the time of writing I am waiting on an order for 6 mm wheels to arrive and they will be available through the Caintode Flats range of products. These will consist of half axles joined by a piece of plastic tube.



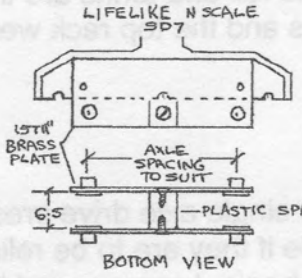
If the mechanism is unavailable from Ian Lindsay Models the gearbox and motor is available from Branchlines in England. It is their slim line 38-1 single stage gearbox with a Mashima 1220 motor. A suitable 1/8 in axle with 10.5 mm wheels will be required. This is when a lathe or access to one can be of great help.

AEC 100 HP.

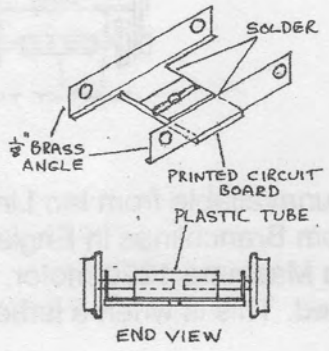
I have located a suitable gearbox which will accommodate a 9.5 mm wheel and hope to have a prototype shortly. The same applies to the front bogie.

153 HP Gardner Diesel.

This model can be powered by modifying a Lifelike N scale SD7 mechanism. These are easily obtained and are cheap. You will need to chop off one bogie leaving the rest complete to mount on the floor. By removing the side frame assembly and the wheels you will be left with what looks like the drawing. Now by soldering a brass plate to the side of the existing one the axle positions can be moved to the axle spacing required. (Remove the existing plate from the plastic frame first before soldering) Provided the new axle position remains in an arc from the existing axle centre the gear mesh should be ok. Romford 2 mm axle bearings can be used in the new plate. Now the tricky bit. You will need four 9.6 mm disc Steam Era axles as you will only need the live wheels. Cut the axles to protrude 2.5 mm inside and remove the pin point. Now you will need that lathe or a mate you can bribe with a beer. These will need a 1 mm hole drilled in the axle to fit the existing axle that you will remove from the old wheels.



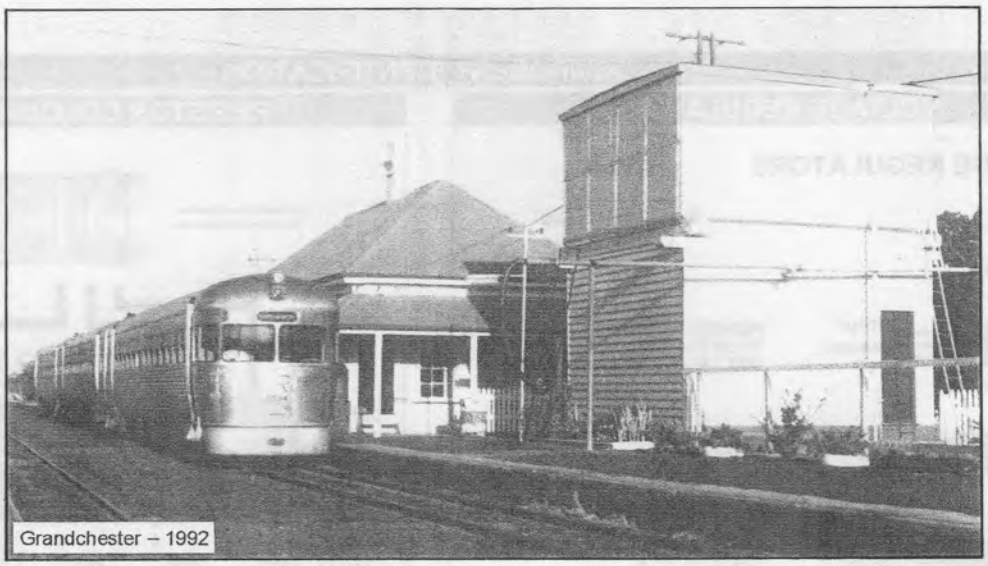
A dummy bogie with power pick up can be constructed as in the drawing by soldering two pieces of 1/8 brass angle to a piece of PCB. Space them a little less than the back to back of the wheels. If you like you could fit 2 mm bearings but this is probably an over kill in HO scale but necessary in the heavier scales. Add the cosmetic side frames and you will be motoring along.



You will need to cut the PC Board copper in the centre and add a couple of wires. This completes the notes for this years Convention and hope you will be back in two years with your creations, working I hope.

Parts Suppliers.
Branchlines P.O. Box 31 Exeter. EX4 6NY

Markits. P.O. Box 40 Watford, Herts. WD2 5TN



Grandchester – 1992

ARHS, Cabanda – 1994

Murphy's Creek 1998