









Refurbishment and Modernisation



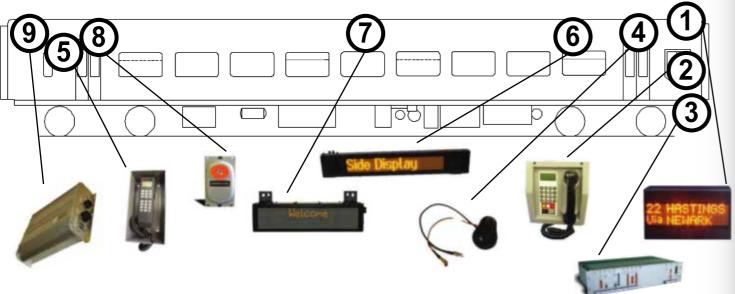
As might be expected for a vehicle introduced in 1989 many vehicle interiors have been revised and updated to meet the needs of modern-day operators. No major engineering improvements have been necessary, the drive train and bogies remaining as built.

The original vehicle interior uses many GRP fittings with square-key locked lighting diffusers. Replacing the luggage rack trim strip is a simple way of branding the interior without a full refurbishment, but replacing the lighting system is the preferred way to give the vehicle a new appearance. LED lighting would offer an opportunity for a new look and further improving the green credentials of the vehicles.

Although performance is excellent there is a possibility of either further enhancing acceleration or improving fuel economy by fitting a mechanical ZF gearbox in place of the Hydraulic Voith transmission. Where station stops are close together this could save up to 10% on fuel consumption or give improved acceleration



Passenger Information System



1 | External Destination Display

Installed in each driving vehicle. PRM TSI compliant Yellow LED Ultra Bright sunlight legible with automatic brightness control in single or multi-line.

LED Matrix size can be manufactured to any particular requirements, although many proven existing designs are available from our portfolio. Displayed messages may be static or scrolling.

2 | Drivers Interface Unit (DIU)

Installed in each driving vehicle. Provides the driver interface for PA, Cab to Cab, Passenger Alarms, Radio Systems and controls for the Passenger Information System. Layout and size manufactured to any particular requirements, although many proven existing designs are available from our portfolio.

3 | Passenger Information System Controller

Installed in each driving vehicle. Communicates via standard train wires or Ethernet network to all PIS equipment throughout the train. Route Database files are uploaded to this unit via a GPRS communications link for automatic broadcast of journey related announcements. Can be supplied 19 inch rack based (half Euro height) or as a sealed bulk head mounting unit.

4 | Dual Antenna

Installed on the roof of each driving vehicle. A low profile dual antenna (GPS and GPRS) enables geographic tracking and data upload/download.

5 | Stewards Handset

Provides PA, Cab to Cab and triggering of recorded messages. Installed at the Stewards Point in each car.

6 | External Side of Train Display

Installed adjacent to each door. Outward facing, side of train display. PRM TSI compliant Yellow LED Ultra Bright sunlight legible with automatic brightness control in single or multiline.

LED Matrix size can be manufactured to any particular requirements, although many proven existing designs are available from our portfolio. Displayed messages may be static or scrolling.

7 | Internal Saloon Display

PRM TSI compliant, supplied as single or double sided, these displays are suspended centrally or mounted on the bulk head walls in the saloon vehicles. Standard brightness in single colour or multi-colour LED formats. Single or multi-line, high or low resolution.

LED Matrix size can be manufactured to any particular requirements, although many proven existing designs are available from our portfolio. Displayed messages may be static or scrolling.

8 | Passenger Emergency Alarm Communications Unit (PEACU)

Provides emergency speech and emergency brake functions. Includes a loudspeaker/microphone and large red button (latching or non latching) and indicates to the passenger when to speak to the driver. Suitable for installation adjacent to doors, disabled seating locations and within toilet modules.

9 | Saloon Audio Control Unit (SACU)

Installed in each vehicle, this is the PA amplifier and interface to all saloon equipment including loudspeakers, Displays, Passenger Alarms and Stewards Handsets.

Passenger information systems are a requirement for PRM TSI compliance but are also invaluable for any occasional traveller. The system proposed will be compatible with other units allowing the Class 158's interworking capability to be retained. Enhancements are possible to the system to meet further information requirements and exact display configuration is flexible to customer preference.

Passengers of Reduced Mobility (PRM) Provision

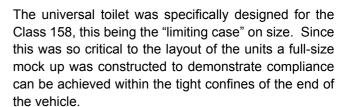
The vehicles require modifications to the layout for operation in 2020 and beyond : -

- Priority seats (if not already fitted)
- Second wheelchair space required (both spaces to be near toilet)
- Call for aid buttons to be fitted in toilet and wheelchair spaces
- Door sounders required in all external door control panels
- Universal Toilet to be fitted
- Passenger Information System (if not already fitted)

The first of the "Sprinter "series units have now been converted for PRM compliance, using the same equipment as originally proposed for Class 158 providing reassurance that the Class 158 modifications will be undertaken efficiently and economically. Porterbrook intends to make the above modifications at the next classified repair and has already completed initial design work for these changes.







Since then a new proposal has been made to modify the existing arrangement to make it compliant. Design work is progressing on this basis.

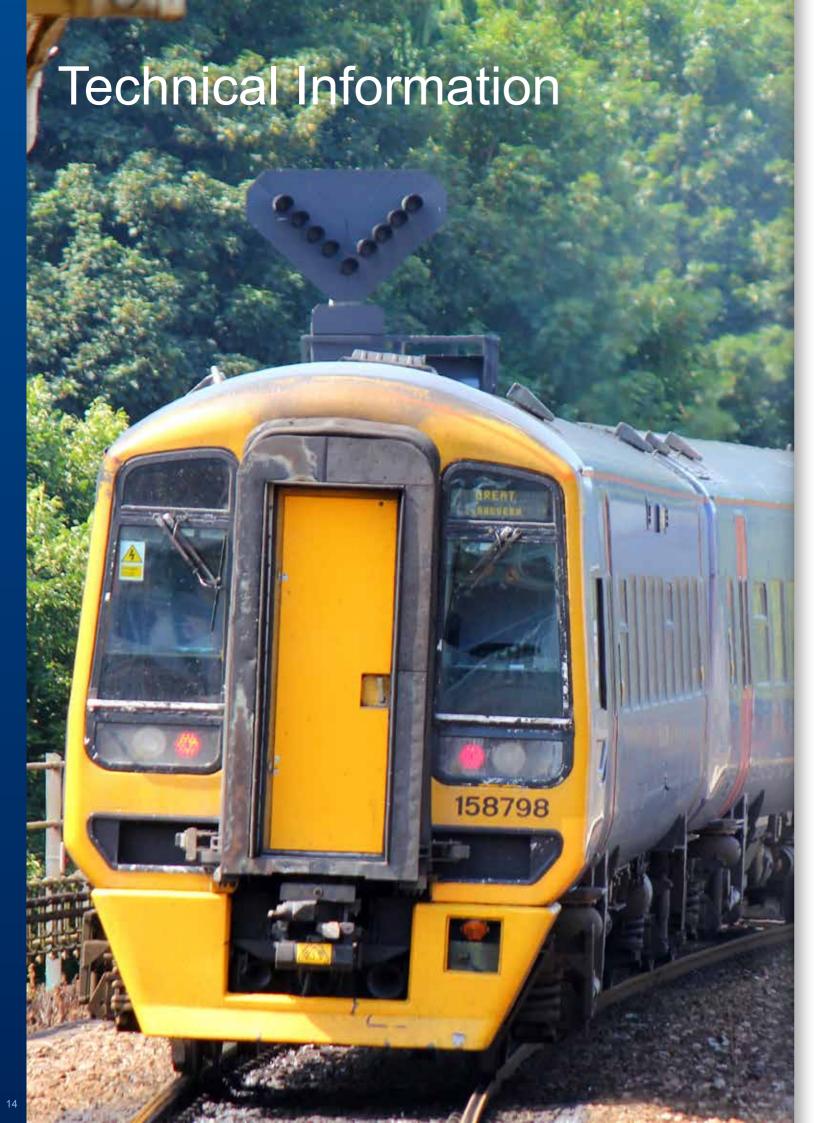












158 Data Sheets



Basic information

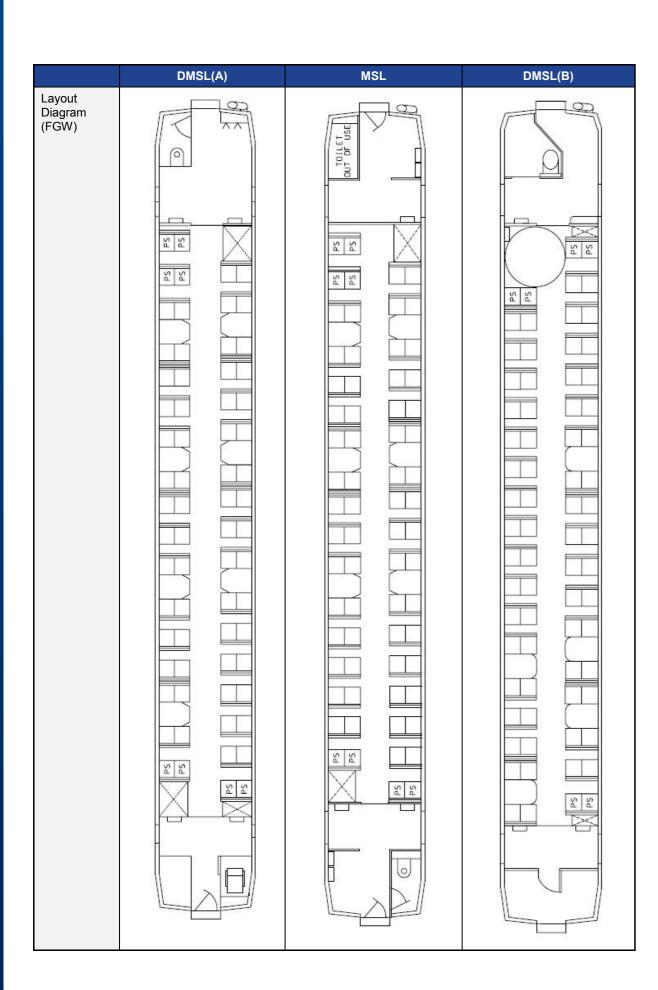
	DMCL	MSL	DMSL		
Class	158 Super Sprinter				
Sub class	0				
Manufacturer	BREL				
Number of vehicles	84	21	84		
Route availability		RA1			
Power		DMU- Diesel Engine on each ve	ehicle		
	E	Engine: Cummins NTA855R1, 350 hp	at 1900 rpm		
	Voith T211rz	z hydraulic and Gmeinder GM190 fina	al drive transmission		
		Hardware			
Length	23.2m	23.2m	23.2m		
Width	2.82m				
Height	3.81m				
Gauge		Standard UK rail gauge (1435m	m)		
Axle load	8.6 – 10.2t tare	8.6 – 10.2t tare	8.6 – 10.2t tare		
Coupling compatibility	BSI auto or	bar Couplers. Compatible with 14x, 1	5x and 170 vehicles		
		Performance			
Maximum Speed		90 mph			
Acceleration		Performance data available on req	uest.		
Braking Capability	Compliant with minimum brake performance curve as specified in Group Standard GM/TT 0172, Appendix 4				
Braking System		Disc Brakes			
Average Fuel Consumption	Litre per mile per vehicle Varies by duty cycle and driving technique.				
		Other features			
e.g. In-cab radio system, CCTV, other passenger- enhancing facilities.	GSMR Radio, CCTV System with Remote Viewing Access (SWT only). CCTV fitted on FSR and Northern Arrowvale OTMR with remote access and download capability to Nexala (SWT Only). 12 at Seat 240V computer/mobile phone charging points in 1 st Class (SWT Only)				

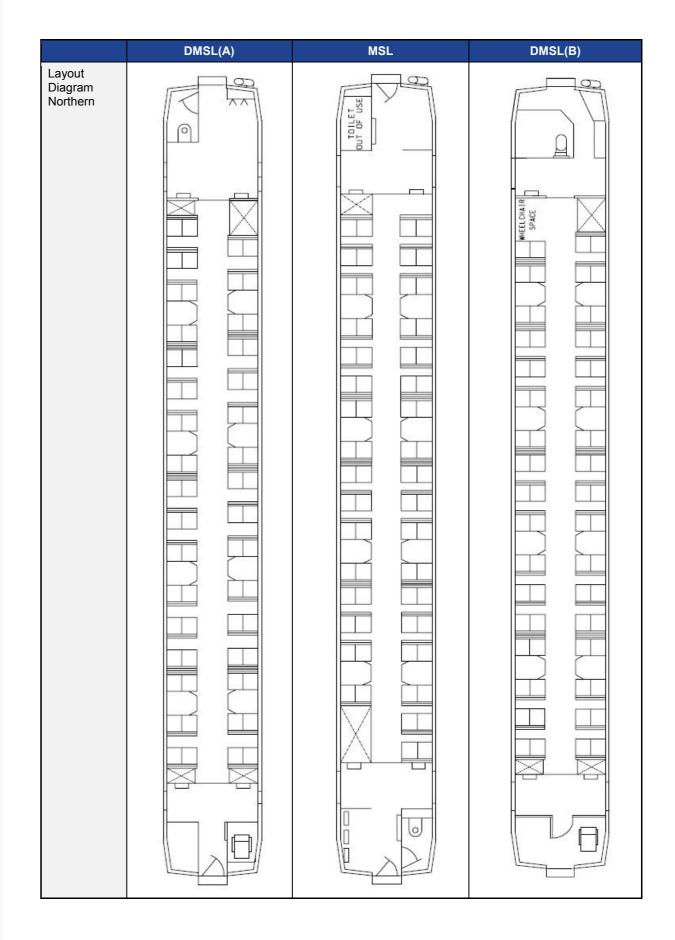


	DMSL(A)	MSL	DMSL(B)			
Day to day operation						
Door configuration	4 doors per vehicle.					
		Twin–leaf swing-plug				
Seating Configuration		2+2 standard, 2 + 1 First Class				
No. of seats East Midland Trains	74 Standard	No vehicle	East Midland Trains 72 Standard			
No. of seats First Great Western	66 Standard 6 tip-up	66 Standard 7 tip-up	66 Standard 3 tip-up			
No. of seats Northern Rail	70 Standard 4 tip up	68 Standard 7 tip up	68 Standard 7 tip up			
No. of seats First Scotrail 701 – 725 Inverness Units	64 Standard 6 tip-up	No vehicle	(DMCL) 14 First 46 Standard 9 tip up			
No. of seats First Scotrail 726 – 741 Haymarket Units	70 Standard 6 tip up	No vehicle	70 Standard 3 tip up			
Floor space for standing	18.18m ² FSR Inverness units 19.41m ²	19.84m²	18.12m ² Northern units 17.62m ²			
Toilets	1	1	1			

i	DMSL(A)	MSL	DMSL(B)
Layout Diagram (EMT)		None	

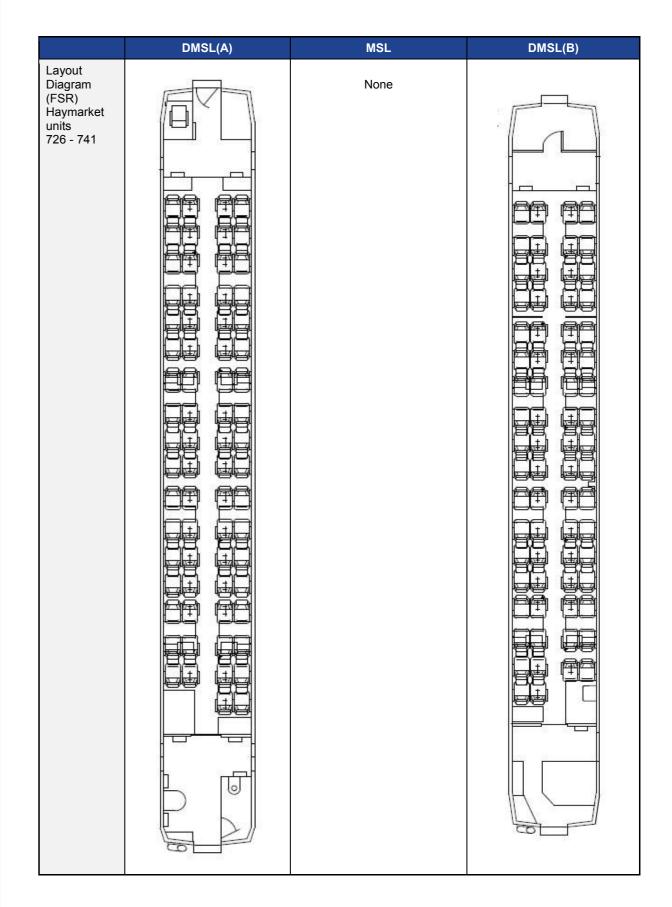




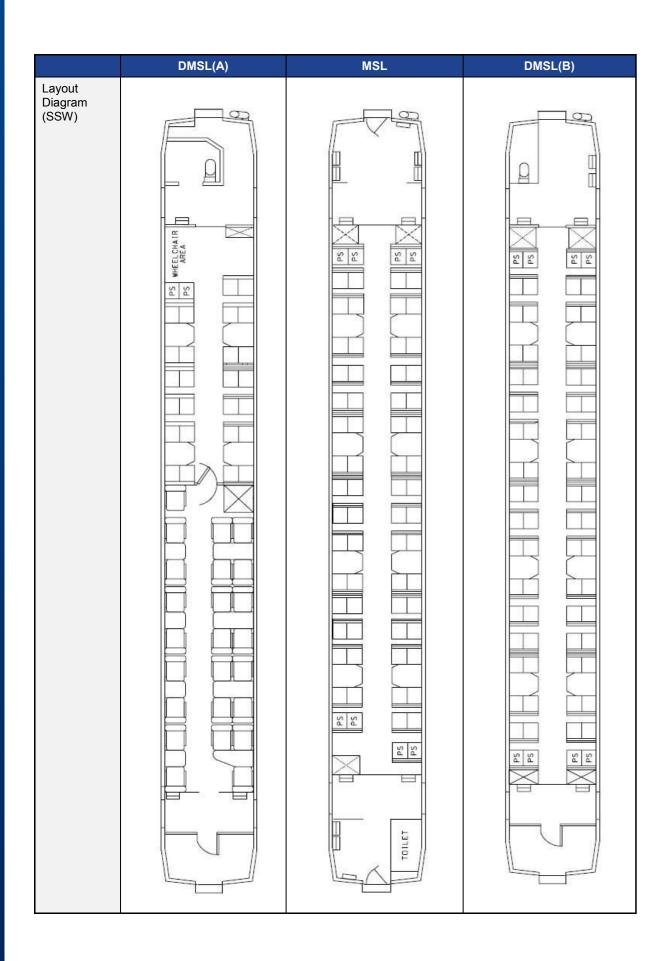




	I		
	DMCL	MSL	DMSL(A)
Layout Diagram (FSR) Inverness units 701 - 725	FIRST CLASS STANDARD CLASS STANDARD CLASS PS P	None	







Build dates

Unit	DMCL	MSL	DMSL(A)	Year of Manufacture	Previous numbers (if changed)
158701	52701		57701	04/10/1989	
158702	52702		57702	04/10/1989	
158703	52703		57703	01/11/1990	
158704	52704		57704	01/11/1990	
158705	52705		57705	27/10/1990	
158706	52706		57706	27/10/1990	
158707	52707		57707	07/11/1990	
158708	52708		57708	07/11/1990	
158709	52709		57709	03/11/1990	
158710	52710		57710	03/11/1990	
158711	52711		57711	09/11/1990	
158712	52712		57712	09/11/1990	
158713	52713		57713	17/11/1990	
158714	52714		57714	17/11/1990	
158715	52715		57715	04/10/1990	
158716	52716		57716	04/10/1990	
158717	52717		57717	03/10/1990	
158718	52718		57718	03/10/1990	
158719	52719		57719	03/10/1990	
158720	52720		57720	03/10/1990	
158721	52721		57721	04/10/1990	
158722	52722		57722	04/10/1990	
158723	52723		57723	03/10/1990	
158724	52724		57724	03/10/1990	
158725	52725		57725	06/10/1990	
	DMSL(B)		DMSL(A)		
158726	52726		57726	06/10/1990	
158727	52727		57727	08/11/1990	
158728	52728		57728	08/11/1990	



Unit	DMCL	MSL	DMSL(A)	Year of Manufacture	Previous numbers (if changed)
158729	52729		57729	03/10/1990	(* * 3**/
158730	52730		57730	03/10/1990	
158731	52731		57731	08/10/1990	
158732	52732		57732	08/10/1990	
158733	52733		57733	05/10/1990	
158734	52734		57734	05/10/1990	
158735	52735		57735	08/10/1990	
158736	52736		57736	08/10/1990	
158738	52738		57738	12/10/1990	
158739	52739		57739	12/10/1990	
158740	52740		57740	04/10/1990	
158741	52741		57741	04/10/1990	
158752	52752	58716	57752	05/10/1990	
158753	52753	58710	57753	05/10/1990	
158754	52754	58708	57754	08/10/1990	
158755	52755	58702	57755	08/10/1990	
158756	52756	58712	57756	11/10/1990	
158757	52757	58706	57757	11/10/1990	
158758	52758	58714	57758	10/10/1990	
158759	52759	58713	57759	10/10/1990	
158763	52763		57763	10/10/1990	
158766	52766		57766	10/10/1990	
158770	52770		57770	07/10/1990	
158773	52773		57773	07/10/1990	
158774	52774		57774	13/10/1990	
158777	52777		57777	13/10/1990	
158798	52798	58715	57798	18/10/1990	
158799	52799		57799	18/10/1990	
158806	52806		57806	11/10/1990	

Unit	DMCL	MSL	DMSL(A)	Year of Manufacture	Previous numbers (if changed)
158810	52810		57810	11/10/1990	
158812	52812		57812	13/10/1990	
158813	52813		57813	13/10/1990	
158880	52737		57737	10/10/1990	158737
158881	52742		57742	10/10/1990	158742
158882	52743		57743	29/10/1990	158743
158883	52744		57744	29/10/1990	158744
158884	52772		57772	28/10/1990	158772
158885	52775		57775	28/10/1990	158775
158886	52779		57779	03/10/1990	158779
158887	52781		57781	03/10/1990	158781
158888	52802		57802	19/10/1990	158802
158889	52808		57808	19/10/1990	158808
158890	52814		57814	04/10/1990	158814
158950	57751	52761	57761	04/10/1990	
158951	52751	52764	57764	05/10/1990	
158952	57745	52762	57762	05/10/1990	
158953	52745	52750	57750	05/10/1990	
158954	57747	52760	57760	05/10/1990	
158955	52747	52765	57765	05/10/1990	
158956	52748	52768	57768	05/10/1990	
158957	57748	52771	57771	05/10/1990	
158958	57746	52776	57776	05/10/1990	
158959	52746	52778	57778	10/12/1990	
158960	57749	52769	57769	10/12/1990	
158961	52749	52767	57767	04/09/1991	



Heavy Maintenance

Activity	Commencement	Duration	Nature of activity	Responsible party
C4	EMT – 475,000 +/- 25,000 miles	5 Days		EMT – Lessee
	FGW - 475,000 +/- 25,000 miles			FGW – Lessee
	Northern – 450,000 +/- 45,000 miles			Northern – Lessee
	FSR - 650,000+ 50,000/- 25,000 Miles			FSR – Lessee
	SSW - 475,000 +/- 25,000 miles			SSW - Porterbrook
C6	7-8 years over lease duration	20 Days		
Paint	7-8 years over lease duration			
Engine overhaul	490,000 +/- 10,000 miles			Lessee
Gearbox overhaul	490,000 +/- 10,000 miles			Lessee
Wheelset				Lessee

Modifications

Modification	Duration	Nature of activity	Responsible party		
Base Offer					
		Enhanced Offer			

Information not supplied

None.