

WOSS 680/4

British Railways Board

Director of Mechanical and Electrical Engineering

**SPEEDOMETER EQUIPMENT
In Situ Testing
(Tacho Generator Driven
System)**

WORKSHOP OVERHAUL STANDARD SPECIFICATION

REVISION RECORD

This Specification will be updated when necessary by the issue of amended pages accompanied by revision letters. The amended or additional part of re-issued pages will be marked with a vertical black line.

If you consider that an amendment is necessary, complete BR Form 14298 and pass it to the local BRB Resident Engineer or Area Quality Engineer. Submission of a form does not authorise the proposed amendments.

Revision No.	Re-issued Page Nos.	Date	Inserted by
1	4,5,6	Jul 83	
2	2,3,10	Jul 84	
3	Contents	Feb 85	
4	Contents	Dec 89	

Revision No.	Re-issued Page Nos.	Date	Inserted by

(C) Director of Mechanical & Electrical Engineering
 British Railways Board
 The Railway Technical Centre
 London Road
 Derby DE2 8UP

First published - June 1982

I authorise the work content of the publication shown above and its distribution to user departments.

Signed:

.....⁴ *[Signature]* Freight Engr.
⁴ *[Signature]* InterCity Engr.
⁴ *[Signature]* Network SE Engr.
⁴ *[Signature]* Parcels Engr.
⁴ *[Signature]* Provincial Engr.

This is a proprietary specification of the Director of Mechanical & Electrical Engineering, British Railways Board. The specification (including the data and information relating thereto) is not to be used, disseminated, reproduced, copied or adapted, either in whole or in part, without the express written approval of the Electrical Equipment Engineer at the above address.

Should any query arise regarding the contents of this document telephone 0332 42442 Ext. 3516, BR Code is 056 3516, or write to the above address.

WOSS 680/ 4

This Specification applies to equipment fitted to the vehicles indicated 'X' below, but it is only to be implemented when authorised by an appropriate maintenance/overhaul document.

Locomotives

03		73	X
08	X	81	X
09	X	85	X
20	X	86	X
26	X	87	
31	X	88	
33	X	89	
37	X	90	
43		91	
47	X	92	
50			
56			
58			
60			

DMU's

101	X
104	X
107	X
108	X
110	X
111	X
114	X
115	X
116	X
117	X
118	X
119	X
120	X
121	X
122	X
128	X

EMU's

302	X	411	X
303	X	412	X
304	X	413	X
305	X	414	X
307	X	415	
308	X	416	
309	X	419	X
310	X	421	X
311	X	422	X
312	X	423	X
313		431	X
314		432	X
315		438	
317		483	X
318		442	
319		455	
320		456	
321		485	
322		486	
504	X	487	
507		488	
508		489	

Coaching Stock

Mk 1	
Mk 1 Catering	
Mk 2z, 2a-c	
Mk 2d-e	
Mk 2f	
Mk 2 DBSO	X
Mk 3a	
Mk 3b	
Mk 3 Catering	
Mk 3(HST)	
Mk 3(HST)Catering	
Mk 3 SLE and SLEP	
Mk 4	
DVT IC225	
DVT IC125	
Non Passenger	

DEMU's

204	X
205	X
207	X

Wagons

WORKSHOP OVERHAUL STANDARD SPECIFICATION 680/4

SPEEDOMETER EQUIPMENT : IN SITU TESTING

CONTENTS

- Introduction.
- Reference Documents.
- Tools & Materials.
- Section 1 N/A.
- Section 2 Test Specification.
 - Part A : BRB Type Test Equipment.
 - 1. Main Line Vehicles.
 - 2. Shunting Locomotives.
 - Part B : MD 6722 and D2 Test Equipment.
 - 1. Main Line Vehicles.
 - 2. Shunting Locomotives.
- Section 3 Technical Data.
 - Table 1. Equipment and Test Rig Adaptors.
 - Table 2. Generator Output Details.
- Section 4 Additional Procedures.
 - AP1 Ampy Automation Generators: Test procedure.
 - Table 3 Ampy Automation Generators Data.
 - Figure 1 Load Test Connections.
 - Figure 2 Vehicle Load Test Connections.
 - Figure 3 Resistor Details.
 - AP2 Basic Fault Finding Guide for MD 6722 and D2 Test Equipment.

INTRODUCTION

Speedometer equipment is to be tested:-

1. After any of the speedometer equipment has been disturbed, eg. bogie change.
2. When reported for malfunction or inaccuracy.
3. After tyre turning.
4. Following derailment, collision or signal passed at danger.

This specification details the procedure for calibrating and testing speedometer equipments driven by axle-mounted generators. Reference should be made to the relevant MT documents for test instructions for vehicles fitted with electronic speed detection equipment.

REFERENCE DOCUMENTS

Engineering Instruction LG 52 'Tyre Profiles and their Limits of Wear for Locomotives'

Engineering Instruction LD/981 'Speedometer Generator Type LSG

MT.11 'Tyre Profile and Wheel Gauges for Rolling Stock'

BR Drg L-A0-10432 'Arrangement and Details of Adaptor Plates, Speedo Test Equipment'

BR Drg L-A0-11088 'Conversion Adaptor for Portable Speedometer Test Rig'

BR Drg L-A0-11089 'Drive Adaptors for Portable Speedometer Test Equipment'

TOOLS & MATERIALS

BR Cat. No.

Speedometer in situ test equipment:-

Either	BRB type drive unit	71/	4092
	control unit	71/	4093
	harness	71/	4094

Or type MD 6722-JH-MK

Or type D2

Adaptors as specified in Section 3, Table 1.

SECTION 2 TEST SPECIFICATION

If any of the following tests do not give the indicated result, investigate and rectify the defect and repeat the test.

Part A : BRB Type Test Equipment

NOTE: If the stated events do not occur, the test equipment is to be tested in accordance with TEE83/M/22.

When setting equipment, allow 2 seconds for the digital display to settle.

1. Main Line Vehicles

- 1.1 Change any speedometer which does not indicate zero.
- 1.2 Connect the control unit to the drive unit with the speed control lead and the signal lead.
- 1.3 Set 'speed control' to minimum (anticlockwise) position.
- 1.4 Connect a mains supply to the drive unit.
- 1.5 Remove the speedometer generator from the axle, but leave it electrically connected to the vehicle. Fit the generator on the drive unit using the appropriate mounting and driving adaptors for the vehicle under test (see Section 3, Table 1 for details of adaptor/vehicle combination.) A conversion adaptor to BR Drg L-A0-11088 may also be required. No adaptors are required for testing Class 43 speedometers.
- 1.6 Switch the drive unit on and take the control unit into the adjacent cab.
- 1.7 Press the 'Display Test' button. The display should read 8888 (or 888.8 if 'MPH' button is in (lit)). Release the 'Display Test' button and ensure that the 'MPH' button is out (not lit).
- 1.8 Press the 'Cal Check' button and check the display reads 1000 ± 2 mile/h.
- 1.9 Establish the wheel diameter of the axle driving the speedometer head. The wheel size to be used is that obtained from the wheel turning shop, or, where the wheels have not been turned, the wheel is to be measured according to the procedure detailed in MT 11, LG 52 or G627. The dimension is to be in millimetres.
- 1.10 Set the thumb wheel switches to read the wheel diameter (in mm).
- 1.11 Press 'MPH'. Lamp should light.

WOSS 680/4

- 1.12 Increase the generator speed slowly until the digital display indicates the FSD of the speedometer. It may be necessary to adjust the wheel wear compensator to prevent the speedometer being driven past its FSD.
- 1.13 Adjust the wheel wear compensator until the speedometer conforms with the digital display readout. Any markings on the dial plate are to be ignored at this stage.
- 1.14 Where two speedometers are driven from the same generator, leave the test unit at the same setting and check the speedometer reading in the second cab (or driving position Class 20).
- 1.14.1 If the two cab speedometer readings coincide, proceed to paragraph 1.16.
- 1.14.2 If the other cab speedometer reading is within the following speed indications.

Display/Indication	Mile/h tolerance
70 mile/h	2.0
100 "	3.0
120 "	3.5
150 "	4.0

reset the wheel wear compensator until the two readings have equal and opposite errors either side of the test unit indication. Proceed to paragraph 1.20.

- 1.15 If the two readings are not within the speed indication tolerance shown in paragraph 1.14.2 of each other, change both meters and repeat paragraphs from 1.14.
- 1.16 Lock the setting of the wheel wear compensator. Do not overtighten the hexagonal type of locking collar.
- 1.17 Decrease the speed in 10 mile/h steps down to 10 mile/h checking that each cab speedometer reading conforms with the digital readout to within the following tolerances:-

Speed Range	Maximum Error
10 - 70 mile/h	\pm 1.0 mile/h
71 - 100 "	\pm 1.5 "
101 - 150 "	\pm 2.0 "

- 1.18 Read the setting of the wheel wear compensator (where a scale is fitted). This must indicate the programmed wheel diameter \pm 0.5 inch (\pm 12 mm).

WOSS 680/4

- 1.19 If the above tolerances cannot be attained the cause must be investigated and suspect equipment removed for examination and testing. The generator may be given an output check as follows. See Section 4 AP1 for additional information required for testing Ampy Automation generators.
 - 1.19.1 Disconnect the generator and connect the generator to the 'Generator Test' sockets on the drive unit.
 - 1.19.2 Set the rotary switch to the appropriate generator type (GEC, AEI or Smith Stone). For Ampy Automation use AEI position.
 - 1.19.3 Release the 'MPH' button. Lamp goes out.
 - 1.19.4 Connect a digital voltmeter to 'DVM' sockets.
 - 1.19.5 Set the speed control so that the display gives the r/min reading shown in Section 3, Table 2 for the appropriate generator. If the voltage shown on the voltmeter is not within the tolerance given in Section 3, Table 2 the generator is to be changed.
- 1.20 On vehicles fitted with a DSD speed switch, test the system as follows.
 - 1.20.1 Ensure that wheel scotches are fitted to prevent vehicle movement in either direction.
 - 1.20.2 Fully charge the main air reservoirs.
 - 1.20.3 Class 81 and 85: put the AWS Change End Switch to ON.
 - 1.20.4 AC Locos : release the parking brake.
 - 1.20.5 Charge the air brake pipe to 71.5-73.5 psi (4.9-5.1 bar) and/or evacuate the vacuum pipe to 20-21" Hg. Press DSD pedal and select FORWARD. Increase generator speed to give a 10 mile/h indication.
 - 1.20.6 Select OFF or EO and check that DSD operates and reduces Air Brake Pipe Pressure to 50 psi (3.5 bar) maximum, and/or reduces the vacuum pipe to 0.2" Hg.
 - 1.20.7 Select FORWARD and check that the brakes can be released fully.
 - 1.20.8 Reduce the generator speed to zero. After 3 secs select OFF or EO. Check that the brake pipe pressure does not drop.
 - 1.20.9 Repeat tests 1.20.5 to 1.20.8 from the opposite cab (or driving position Class 20).

WOSS 680/4

- 1.21 On completion of the test, return the speed control to minimum position and switch off the control unit. Lock the setting of the wheel wear compensator.
- 1.22 Switch off and disconnect test equipment.
- 1.23 Fit generator to vehicle.

2. Shunting Locomotives

- 2.1 Change the speedometer if it does not indicate zero.
- 2.2 Connect the control unit to the drive unit with the speed control lead and the signal lead.
- 2.3 Set 'Speed Control' to minimum (anticlockwise) position.
- 2.4 Connect a mains supply to the drive unit.
- 2.5 A conversion adaptor to BR Drg L-A0-11088 may be required in addition to the adaptors listed in the Section 3, Table 1.
- 2.6 The locomotive speedometer generator is tested in position, but the locomotive must be positioned so that the coupling rod is clear of the speedometer generator.
- 2.7 Remove the generator driving link and connect the flexible drive (adaptor No 4) between the speedometer generator and the test set.
- 2.8 Switch the drive unit on and take the control unit into the cab.
- 2.9 Press the 'Display Test' button. The display should read 8888 (or 888.8 if 'MPH' button is in (lit)). Release the "Display Test" button and ensure that 'MPH' button is out (not lit).
- 2.10 Press the 'Cal Check' button and check that the display reads $1000 \pm$ mile/h.
- 2.11 Set the thumb wheel switches to read 1286.
- 2.12 Press 'MPH'. Lamp should light.
- 2.13 Increase the generator speed slowly until the speedometer reads its full scale value. Note the display speed.
- 2.14 Decrease the speed in 2 mile/h steps. At each step regulate the speed of the generator by the speed control to give the required indication on the speedometer and note the speed indicated on the display.
- 2.15 Check that the cab speedometer readings and the display readouts conform to within ± 1 mile/h for speeds above 5 mile/h and ± 0.5 mile/h for speeds below 5 mile/h. Investigate and correct any discrepancy.

WOSS 680/4

- 2.16 On locomotives fitted with Smith Stone overspeed protection, remove the cover of the overspeed equipment case.
- 2.17 On locomotives fitted with electronic overspeed protection, remove the cover of the magnet valve box, close the two battery isolating switches and switch the master switch on.
- 2.18 Slowly adjust the generator speed and check that the following events occur at the stated speeds.

2.18.1 Class 08 locomotives fitted with Electronic Overspeed Protection Equipment.

Bell rings	19 + 0 mile/h increasing		
	- 1		
Magnet valve drops	20 + 0 " "		
	- 1		
Bell stops ringing	18.5 ± 1 " decreasing		
Magnet valve picks up	8.5 ± 1 " "		

2.18.2 Class 08 locomotives fitted with conventional Smith Stone Overspeed Protection Equipment.

Relay CR1 picks up	20 + 0 mile/h increasing		
	- 1		
Relay CR1 drops out	11 + 0 mile/h decreasing		
	- 1		

2.18.3 Class 09 locomotives fitted with Conventional Smith Stone Overspeed Protection Equipment.

Relay CR1 picks up	27.5 + 0 mile/h increasing		
	- 1		
Relay CR1 drops out	11.0 + 0 mile/h decreasing		
	- 1		

- 2.19 If the above tolerances cannot be attained the cause must be investigated and suspect equipment removed for examination and testing.
- 2.20 Switch off and disconnect test equipment. Return the speed control to minimum.
- 2.21 On locomotives fitted with electronic overspeed equipment place the master switch to 'OFF' and open the two battery isolating switches.
- 2.22 Refit equipment covers.
- 2.23 Disconnect the flexible drive and reconnect the generator driving link.

WOSS 680/4

Part B : MD 6722 and D2 Test Equipment.

1. Main Line Vehicles

- 1.1 Change any speedometer which does not indicate zero.
- 1.2 Connect the control unit to the drive unit with the speed control lead and the signal lead.
- 1.3 Connect a mains supply to the drive unit. Set speed control to minimum.
- 1.4 On MD 6722 rigs select 'Normal' (4:1) gear position.
- 1.5 Remove the speedometer generator from the axle, but leave it electrically connected to the vehicle. Fit the generator on the speedometer head driving unit using the appropriate mounting and driving adaptors for the vehicle under test (see Data Section for details of adaptor/vehicle combination.) On D2 rigs a conversion adaptor to BR Drg L-A0-11088 is also required.
- 1.6 Switch the drive unit on and take the control unit into the adjacent cab.
- 1.7 Press the lamp test button (LT) on the control unit and check that the display reads 888.8 on the speed range and 88.8 on the wheel diameter range. Release the lamp test button and the display will revert to zero.
- 1.8 Program 44.0 into the unit using a grey, blue and red key in that order. Check that 44.0 is shown on the wheel diameter display.
- 1.9 Press the internal test (IT) button and check that the display reads 196.0 ± 0.1 mile/h.
- 1.10 Press the 'Clear' button.
- 1.11 Program the wheel diameter of the axle driving the speedometer head into the control unit. The wheel size to be used is that obtained from the wheel turning shop, or, where the wheels have not been turned, the wheel is to be measured according to the procedure detailed in MT 11, LG 52 or G627.

The control unit will only cater for wheel sizes in half inch steps i.e. 36.0, 36.5 etc. For wheel sizes between these steps program in the nearer size, e.g. 36.1 and 36.2, program 36.0: 36.3 and 36.4, program 36.5.

- 1.12 Check that the wheel size programed is displayed on the right hand side display. If the wrong wheel size is programed, erase the entry by pressing the 'CLEAR' button, and program the correct size.

WOSS 680/4

- 1.13 Press the 'LOAD' button.
- 1.14 Rotate the speed control on the control unit to its minimum position i.e fully anti-clockwise.
- 1.15 On MD 6722 Rigs press the reset button.
- 1.16 Increase the generator speed slowly until the digital display indicates the FSD of the speedometer. It may be necessary to adjust the wheel wear compensator to prevent the speedometer being driven past its FSD.
- 1.17 Adjust the wheel wear compensator until the speedometer conforms with the digital display readout. Any markings on the dial plate are to be ignored at this stage.
- 1.18 Where two speedometers are driven from the same generator, leave the test unit at the same setting and check the speedometer reading in the second cab (or driving position Class 20).
 - 1.18.1 If the two cab speedometer readings coincide, proceed to paragraph 1.20.
 - 1.18.2 If the other cab speedometer reading is within the following speed indications

Test Unit/Indication	Mile/h tolerance
70 mile/h	2.0
100 "	3.0
120 "	3.5
150 "	4.0

reset the wheel wear compensator until the two readings have equal and opposite errors either side of the test unit indication. Proceed to paragraph 1.20.

- 1.19 If the two readings are not within the speed indication tolerance shown in paragraph 1.18.2 of each other, change both meters and repeat paragraphs from 1.16.
- 1.20 Lock the setting of the wheel wear compensator. Do not overtighten the hexagonal type of locking collar.
- 1.21 Decrease the speed in 10 mile/h steps down to 10 mile/h (below 10 mile/h difficulty may be experienced with reading stability) checking that each cab speedometer reading conforms with the digital readout to within the following tolerances:-

<u>Speed Range</u>	<u>Maximum Error</u>
10 - 70 mile/h	+ 1.0 mile/h
71 - 100 "	+ 1.5 "
101 - 150 "	+ 2.0 "

WOSS 680/4

- 1.22 Read the setting of the wheel wear compensator (where a scale is fitted). This must indicate the programmed wheel diameter \pm 0.5 inch.
- 1.23 If the above tolerances cannot be attained the cause must be investigated and suspect equipment removed for examination and testing.

On D2 type rigs the generator may be given an output check as follows. See Section 4 AP1 for additional information required for testing Ampy Automation generators.

- 1.23.1 Disconnect the generator cable and connect the generator to the appropriate test socket on the mechanical drive unit.
 - 1.23.2 Press blue 'RPM' button on control unit. This should illuminate.
 - 1.23.3 Press red button (where fitted) on mechanical drive unit.
 - 1.23.4 Check generator output voltage on digital voltmeter. Change the generator if the output is outside the tolerances shown in Data Section.
- 1.24 On vehicles fitted with a DSD speed switch, test the system as follows:
 - 1.24.1 Ensure that scotches are fitted to prevent vehicle movement in either direction.
 - 1.24.2 Fully charge the main air reservoirs.
 - 1.24.3 Class 81 and 85 : place the AWS change end switch to ON.
 - 1.24.4 AC Locos : release the parking brake.
 - 1.24.5 Charge the air brake pipe to 71.5-73.5 psi (4.9-5.1 bar) and/or evacuate the vacuum brake pipe to 20-21" Hg. Press DSD pedal and select FORWARD. Increase generator speed to give a 10 mile/h indication.
 - 1.24.6 Select OFF or EO and check that DSD operates and reduces Air Brake Pipe Pressure to 50 psi (3.5 bar) maximum, and/or reduces the brake pipe vacuum to 0.2" Hg.
 - 1.24.7 Select FORWARD and check that the brakes can be released fully.
 - 1.24.8 Reduce the speed signal to zero. After 3 s select OFF or EO. Check that the Brake Pipe pressure does not drop.
 - 1.24.9 Repeat tests 1.24.5 to 1.24.8 from the opposite cab (or driving position Class 20).

WOSS 680/4

- 1.25 On completion of the test, return the speed control to minimum position and press the 'CLEAR' button on the control unit to clear the digital display. Switch off the control unit.
 - 1.26 Switch off and disconnect test equipment.
 - 1.27 Refit generator to vehicle.
2. Shunting Locomotives
- 2.1 Change the speedometer if it does not indicate zero.
 - 2.2 Connect the control unit to the drive unit with the speed control lead and the signal lead.
 - 2.3 Connect a mains supply to the drive unit.
 - 2.4 On MD 6722 rigs select 'Shunter' (16:1) gear position.
 - 2.5 On D2 rigs a conversion adaptor to BR Drg L-A0-11088 is required in addition to the adaptors listed in the Data Section.
 - 2.6 The locomotive speedometer generator is tested in position, but the locomotive must be positioned so that the coupling rod is clear of the speedometer generator.
 - 2.7 Remove the generator driving link and connect the flexible drive adaptor No. 4 between the speedometer generator and the driving chuck of the test set. (On D2 type rigs, the chuck is on the conversion adaptor).
 - 2.8 Switch the drive unit on and take the control unit into the cab.
 - 2.9 Press the lamp test button (LT) on the control unit and check that the display reads 888.8 on the speed range and 88.8 on the wheel diameter range. Release the lamp test button and the display will read zero.
 - 2.10 Program 44.0 into the unit using a grey, blue and red key in that order. Check that 44.0 is shown on the wheel diameter display.
 - 2.11 Press the internal test (IT) button and check that the display reads 196.0 ± 0.1 mile/h.
 - 2.12 Press the 'Clear' button.
 - 2.13 Program 52.5 into the control unit. Check that 52.5 is shown on the right hand side digital display.
 - 2.14 On MD 6722 type rigs, press the shunter (STR) button.
 - 2.15 Press the 'Load' button.

WOSS 680/4

- 2.16 Rotate the speed control on the control unit to its minimum position.
- 2.17 On MD 6722 rigs press the reset button.
- 2.18 Increase the generator speed slowly until the speedometer reads its full scale value. Note the display speed.
- 2.19 Decrease the speed in 2 mile/h steps. At each step regulate the speed of the generator by the speed control (on MD 6722 type rigs use both course and fine speed controls for more accurate adjustment) to give the correct indication on the speedometer and note the speed indicated on the readout of the test set.

Check that the cab speedometer readings and the readouts conform to within ± 1 mile/h for speeds above 5 mile/h and ± 0.5 mile/h for speeds below 5 mile/h. Investigate and correct any discrepancy.

- 2.20 On locomotives fitted with Smith Stone overspeed protection, remove the cover of the overspeed equipment case.
- 2.21 On locomotives fitted with electronic overspeed protection, remove the cover of the magnet valve box, close the two battery isolating switches and switch the master switch on.
- 2.22 Slowly adjust the generator speed and check that the following events occur at the stated speeds.

2.22.1 Class 08 locomotives fitted with Electronic Overspeed Protection Equipment.

Bell rings	19 + 0 mile/h increasing - 1
Magnet valve drops	20 + 0 mile/h increasing - 1
Bell stops ringing	18.5 \pm 1 mile/h decreasing
Magnet valve picks up	8.5 \pm mile/h decreasing

2.22.2 Class 08 locomotives fitted with Conventional Smith Stone Overspeed Protection Equipment.

Relay CR1 picks up	20 + 0 mile/h increasing - 1
Relay CR drops out	11 + 0 mile/h decreasing - 1

WOSS 680/4

2.22.3 Class 09 locomotives fitted with Conventional Smith Stone
Overspeed Protection Equipment.

Relay CR1 picks up 27.5 + 0 mile/h increasing
- 1

Relay CR1 drops out 11.0 + 0 mile/h increasing
- 1

- 2.23 If the above tolerances cannot be attained the cause must be investigated and suspect equipment removed for examination and testing.
- 2.24 Switch off and disconnect test equipment.
- 2.25 On locomotives fitted with electronic overspeed equipment place the master switch to 'OFF' and open the two battery isolating switches.
- 2.26 Refit equipment covers.
- 2.27 Disconnect the flexible drive and reconnect the generator driving link.

WOSS 680/4

SECTION 3 TECHNICAL DATA

1. Table of Equipment and Test Rig Adaptors

Drawing numbers for the various adaptors are given under Reference Documents

Class	Generator Type	Mounting Adaptor	Drive Adaptor	Balance Wt Position
08 09	Smith Stone LSG 128 54 Mod 1	A side 1	4 (flexible)	-
20	Smith Stone LSG 58 Mod 4 LSG 58 CD MOD 4	A side 1	1 (pin A position 1)	3
26	Smith Stone LSG 58 Mod 4	A side 1	1 (pin A position 1)	3
31	AEI JB Form E10 K 52	B	2 (slot A)	-
	Ampy Automation DL 108 A	B	1 (pin A position 3)	-
33	Smith Stone LSG 58 Mod 4	A side 1	1 (pin A position 1)	3
37	Smith Stone LSG 54 Mod 4	A side 1	1 (pin A position 1)	3
	Smith Stone * LSG 58 Mod 4	A side 1	1 (pin A position 1)	3
47	AEI JB Form E10 B 56	B	2 (slot B)	-
	AEI JB Form E7 F	B	2 (slot B)	-
	AEI JB Form E10 F	B	2 (slot B)	-
	AEI JB Form E10 F 56	B	2 (slot B)	-
	Ampy Automation DL 109 A	B	1 (pin A position 3)	-

* See Engineering Instruction LD 981

WOSS 680/4

Class	Generator Type	Mounting Adaptor	Drive Adaptor	Balance Wt Position
73/0 73/1	Smith Stone LSG 114 Mod 4 LSG 158	A side 1	1 (pin A)	-
81	AEI RE 701 A1 B2 A2 B2	C side 1	2 (slot B)	-
85	AEI RE 701 A1 B2 A2 B2	C side 1	2 (slot B)	-
86	AEI RE 748 A2 B2 A2 B4	C side 1	2 (slot B)	-
101- 128	Smith Stone LSG 54 Mod 4 LSG 58 Mod 4 LSG 118 LSG 158	A side 1	1 (pin A position 1)	3
203	Smith Stone LSG 158	A side 1	1 (pin A)	-
205 207	Smith Stone Motor Coach LSG 158	A side 1	1 (pin A)	-
	Driving trailer LSG 108	A side 2	3	-
302	Smith Stone LSG 58/V Mod 4	A side 1	1 (pin A position 1)	3
	LSG 108/V	A side 2	3	-
303	Smith Stone LSG 118	A side 1	1 (pin A position 1)	3
304	AEI JB E7J E10J 46	B	2 (slot A)	-

WOSS 680/4

Class	Generator Type	Mounting Adaptor	Drive Adaptor	Balance Wt Position
305	Smith Stone LSG 58 / V MOD 4	A side 1	1 (pin A position 1)	3
	LSG 108/V	A side 2	3	-
307	Smith Stone LSG 108 / V	A side 2	3	-
308	Smith Stone LSG 58 / V MOD 4	A side 1	1 (pin A position 1)	3
	Smith Stone LSG 108 / V	A side 2	3	-
309	Smith Stone LSG 58 / V MOD 4	A side 1	1 (pin A position 1)	3
310	AEI JB Form E10 K 38	B	1 (pin C position 4)	2
	Ampy Automation DL113	B	1 (pin A position 3)	-
311	Smith Stone LSG 118	A side 1	1 (pin A position 1)	3
312	AEI JB Form E10 M 38	B	1 (pin C position 4)	2
	Ampy Automation DL113	B	1 (pin A position 3)	-
411 412 414/2 414/3 419 421 422 423 432 437	Smith Stone LSG 158	A side 1	1 (pin A position 1)	-
483	Ampy Automation DL113			
504	AEI JB Form E10 J 46	B	2 (slot B)	-
DBSO	AEI JB Form E10 M 38	B	1 (pin C position 4)	2

WOSS 680/4

Table 2. Generator Output Details

Generator Type	Generator Speed (r/min)	Output (V ac)
Smith Stone LSG 54 Mod 4 LSG 44 AB Mod 4 LSG 114 Mod 4	1000	40.3 ± 0.5
Smith Stone LSG 58 Mod 4 LSG 58 CD Mod 4 LSG 58 V Mod 4 LSG 108 LSG 108 V LSG 118 LSG 128 / 54 Mod 1 LSG 158	500	40.3 ± 0.5
GEC RE 835 A2 J4	835	78.5 ± 0.05
AEI JB E7 F JB E10 F JB E10 F 56	747	78.5 ± 0.05
AEI JB E7 J JB E10 J 46	800	78.5 ± 0.05
AEI JB E10 K 38 JB E10 M 38	934	78.5 ± 0.05
AEI JB E10 F 52	852	78.5 ± 0.05
AEI RE 701 Form A1 B2 RE 701 Form A2 B2	700	78.5 ± 0.05
RE 748 Form A2 B2 RE 748 Form A2 B4	744	78.5 ± 0.05
AEI RE 835 Form A2 J4	835	78.5 ± 0.05

SECTION 4 ADDITIONAL PROCEDURES

AP1 Ampy Automation Generators: Test Procedure

Equipment

Voltmeter 0 - 50V.
Ammeter 0 - 50A.
Variable resistor 5 - 20k Ω .

- 1 Disconnect the generator from the vehicle and connect to variable resistor as shown in Figure 1.
- 2 Slowly increase the generator speed to that shown in Table 2 to give the FSD reading of the meter and ensure the correct output is obtained.
- 3 If the output voltage is not as shown in Table 1 the generator is to be changed.
- 4 If the voltage is as shown in Table 1 the fault is within the vehicle.
- 5 Reconnect the output of the generator to the vehicle inserting the voltmeter and ammeter into circuit as shown in Figure 2.

Turn the wheel wear compensator to the "all resistance out" position ie new wheel diameter.

Slowly increase the generator speed to that shown in Table 1 and note the voltmeter reading.

- 6 If the voltage is high and cannot be reduced sufficiently using the wheelwear compensator check that the DSD Speed Switch, if fitted, is connected.
- 7 If the voltage is still high ensure a voltage is obtained at the speedometer ie are both meters reading? If yes replace each meter in turn.

Class 47: check the serial number of the speedometer. If in ranges given below an 18 k Ω resistor is to be connected to the meter terminals. See Figure 3.

Serial No 7330/03/01 to 7330/03/20
Serial No 16719/01/01 to 16719/01/40
Serial No 20199/01/01 to 20199/01/35

- 8 If the voltage is low disconnect the speedometers and measure the insulation resistance between cables and between each cable and frame using a 500V megger. Minimum acceptable reading 1 M Ω .

Table 3: Details of Ampy Automation Digilog Generators

Class	Ampy Pt No	BR Cat. No.	Output Data (1)
31	DLI08A	51/ 41542	78 V ac -0 V + 10 V at 852 r/min (100 mile/h) with 12 mA load
47	DL109A	61/ 42370	78 V ac -0 V + 10 V at 747 r/min (100 mile/h) with 12 mA load
310	DL113 (2)	93/ 445	62.4 V ac -0 V + 10 V at 747 r/min (80 mile/h) with 9.2 mA load
312 483	DL113 (2)	18/ 29600	78 V ac -0 V + 10 V at 934 r/min (100 mile/h) with 11.4 mA load

NOTES

- (1) Output data is given for maximum vehicle speed with new wheels.
- (2) Not interchangeable as drive not compatible.

WOSS 680/4

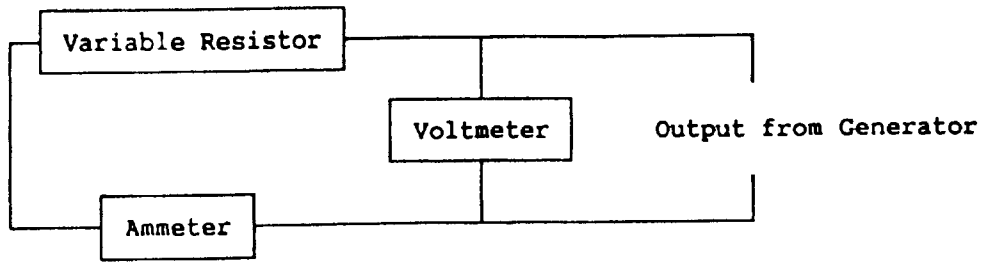


Figure 1 Load Test Connections

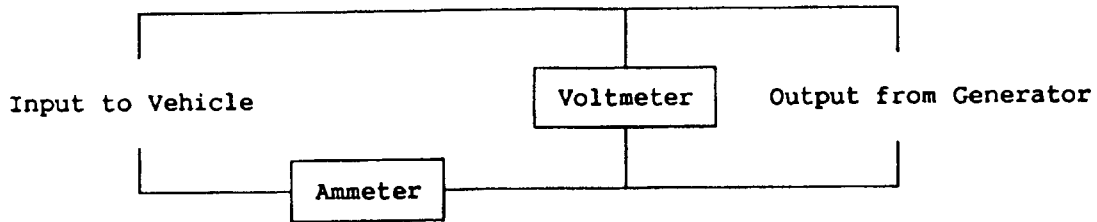
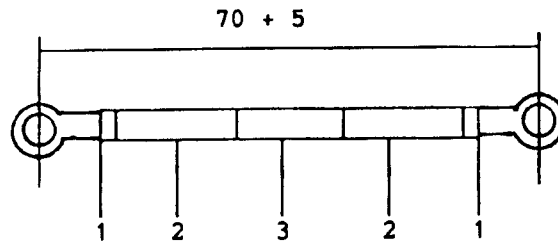


Figure 2 Vehicle Load Test Connections



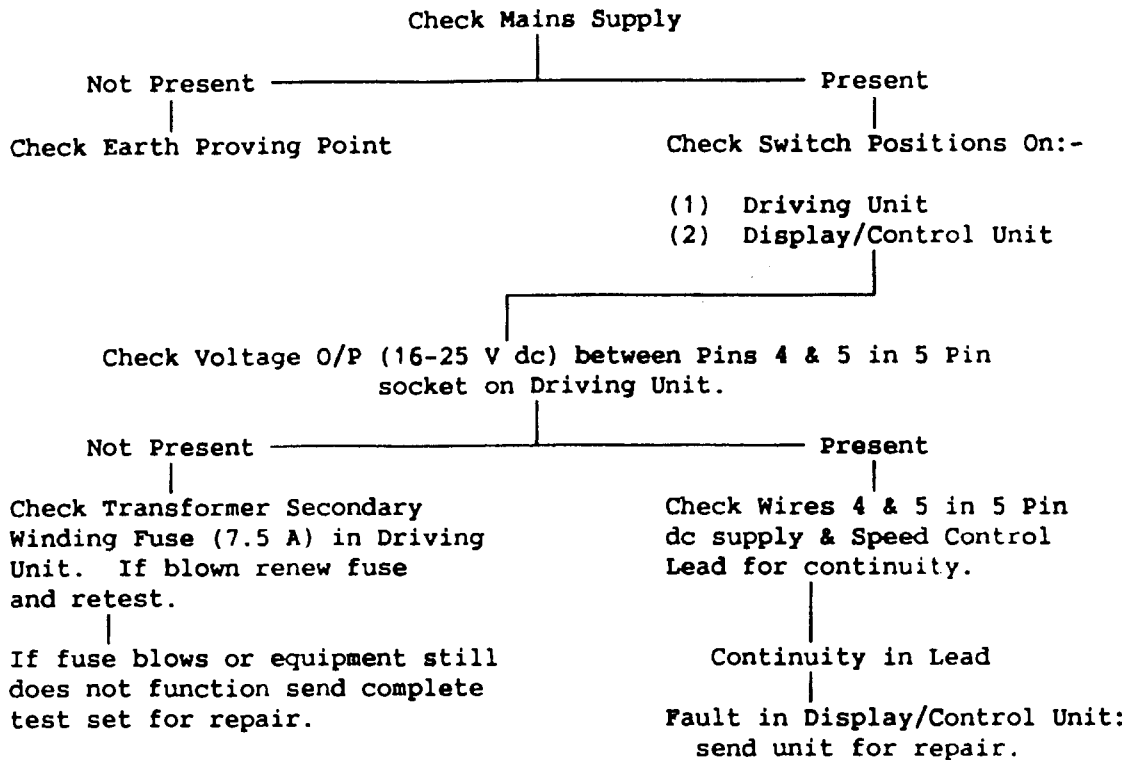
Item	Material	BR Cat. No.
1	Resistor 18 k ohms 0.5W	26/151899
2	Crimp M6 Amp Pt No 34113	54/119354
3	Neoprene Sleeve 1.5 i/d	

NOTE Crimps to be soldered to resistor

Figure 3 Resistor Details

AP2 Basic Fault Finding Guide for MD6722 and D2 Test Equipment

Symptom 1: Test Equipment Not Functioning



Symptom 2: No Speed Control - Other Systems Functioning Normally.

- 1 Press the reset button on the Display/Control Unit. (Not type D2 rigs).
- 2 Check Wires 1, 2 & 3 in 5 pin dc supply and speed Control Lead for continuity.
- 3 Check 7.5 amp and 1 amp fuses on Speed Control Unit inside the Driving Unit - Renew if blown and retest. (Not type D2 rigs)
- 4 If fuses blow or there is still no speed control send complete test set for repair.

Symptom 3 : No Digital Readout During Speedometer Calibration Test -
Other Systems Functioning Normally.

Carry out digital readout & internal circuit tests as detailed in paragraphs 1.6 to 1.10 of Section 2.

