



Harwin Test Report Summary

HT00101

Mechanical Endurance of Datamate
(M80 Series) Connectors

Datamate

A decorative graphic consisting of numerous thin, red, wavy lines that flow across the bottom of the page, creating a sense of motion and depth.

1. **Introduction.**

1.1. **Description and Purpose.**

The Harwin Datamate (M80 Series) connector is manufactured to the requirements of BS9525-F0033 and has been designed to withstand 500 successive engagements and separations without impairing its mechanical or electrical performance. The following tests were carried out to establish whether the connector's performance would be impaired following multiple engagements and separations up to 5,000 and 10,000 times.

1.2. **Conclusion.**

The following data has been collated from Harwin test reports T27/94, T2/90 and 413. The connectors tested met the BS9525-F0033 specification for insertion, withdrawal and contact resistance initially and after multiple engagements and separations up to 500 operations.

Up to 1,000 operations, polishing marks are visible along the mating path. After 5,000 operations, the plating had been removed exposing the base metal but excessive wear could not be detected. However, even after 5,000 operations, contact resistance still remained within specification.

The tests indicate that the Datamate connector exceeds the requirements of the BS specification, and can be used with confidence up to a maximum of 5,000 successive engagements and separations, as long as the environmental atmosphere is non-aggressive.

2. **Test Method, Requirements and Results.**

2.1. **List of Test Samples.**

- a) B5743-214-M-T-0 (M80-8691422 equivalent) – male assembly with through-board termination (5,000 cycles)
- b) B5740-214-F-C-2 (M80-8881405 equivalent) – female assembly with crimp termination (5,000 cycles)
- c) M80-8691622 – male assembly with through-board termination (10,000 cycles)
- d) M80-8881605 – female assembly with crimp termination (10,000 cycles)
- e) M80-5010642 – male assembly with through-board termination
- f) M80-4100642 – female assembly with through-board termination
- g) M80-5011442 – male assembly with through-board termination
- h) M80-4101442 – female assembly with through-board termination
- i) M80-5012042 – male assembly with through-board termination
- j) M80-4102042 – female assembly with through-board termination

2.2. Specification Parameters.

Insertion/withdrawal requirement of BS9525-F0033 is as follows:

	For 14-way connectors	For 16-way connectors
Insertion force	40.0N maximum	45.0N maximum
	7.0N minimum	8.0N minimum
Withdrawal force	26.0N maximum	26.0N maximum
	2.8N minimum	2.8N minimum

Contact resistance requirement of BS9525-F0033 is as follows:

Initial contact resistance	20mΩ maximum
Contact resistance after conditioning	25mΩ maximum

2.3. Test Method and Results – T27/94.

Insertion/withdrawal forces and contact resistance tests were performed. Checks were performed initially and after multiple engagement of; 100, 500, 1,000, 2,000, 3,000, 4,000 and 5,000 cycles.

Insertion/withdrawal results for 14-way mated pair of connectors cycled 5,000 times:

No. Of Cycles	Insertion Force		Withdrawal Force	
	40.0N max	7.0N min	26.0N max	2.8N min
Initial	28.3N		14.1N	
100	15.0N		11.3N	
500	13.9N		9.1N	
1,000	13.0N		10.3N	
2,000	13.8N		11.3N	
3,000	10.2N		9.5N	
4,000	8.9N		8.8N	
5,000	9.5N		9.4N	

Contact resistance results for 14-way mated pair of connectors cycled 5,000 times:

No. Of Cycles	Maximum (25mΩ)	Minimum	Average
Initial (20mΩ Max)	6.4mΩ	5.1mΩ	5.8mΩ
100	5.9mΩ	5.1mΩ	5.6mΩ
500	6.6mΩ	4.9mΩ	5.9mΩ
1,000	6.4mΩ	4.5mΩ	5.3mΩ
2,000	6.4mΩ	4.8mΩ	5.7mΩ
3,000	6.4mΩ	4.7mΩ	5.7mΩ
4,000	6.6mΩ	5.4mΩ	6.0mΩ
5,000	6.7mΩ	5.1mΩ	5.8mΩ

2.4. Test Method and Results – T2/90.

Insertion/withdrawal forces and contact resistance tests were performed. Checks were performed initially and after multiple engagement of; 500, 1,000, 2,500, 5,000, 7,500 and 10,000 cycles.

Insertion/withdrawal results for 16-way mated pair of connectors cycled 10,000 times:

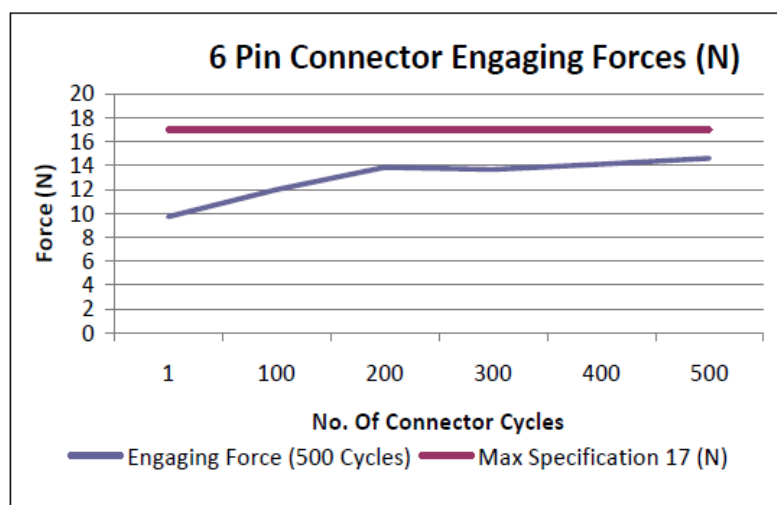
No. Of Cycles	Insertion Force		Withdrawal Force	
	45.0N Max	8.0N Min	29.0N Max	3.2N Min
Initial	32.8N		22.9N	
500	33.2N		22.3N	
1,000	30.1N		21.3N	
2,500	19.3N		18.0N	
5,000	13.3N		12.3N	
7,500	6.9N		6.0N	
10,000	5.4N		3.7N	

Contact resistance results for 16-way mated pair of connectors cycled 10,000 times:

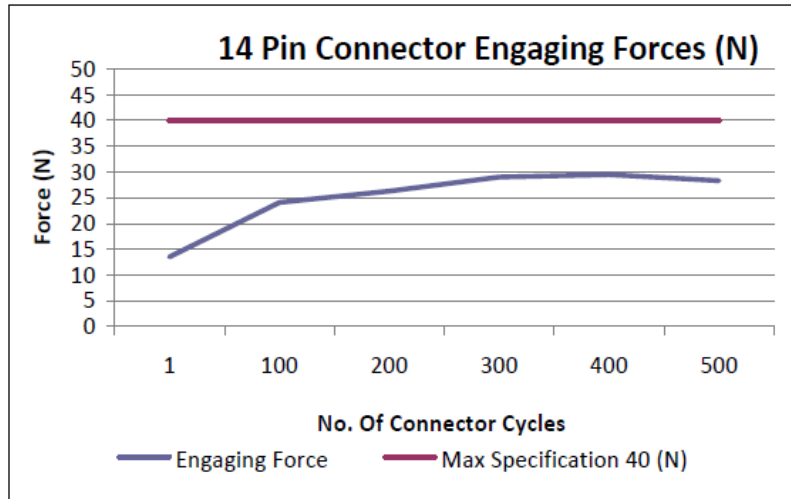
No. Of Cycles	Maximum (25mΩ)	Minimum	Average
Initial (20mΩ Max)	5.7mΩ	2.6mΩ	3.7mΩ
500	8.3mΩ	3.8mΩ	6.2mΩ
1,000	8.4mΩ	6.7mΩ	7.8mΩ
2,500	11.1mΩ	9.1mΩ	10.5mΩ
5,000	13.0mΩ	7.1mΩ	10.0mΩ
7,500	16.8mΩ	9.2mΩ	12.7mΩ
10,000	19.4mΩ	7.1mΩ	12.2mΩ

Test Method and Results – 413.

- a) Insertion force tests were performed with results being recorded throughout the multiple engagements of 500 cycles. Samples tested were:
- M80-5010642 – Male assembly with through-board termination
 - M80-4100642 – Female assembly with through-board termination



- b) Insertion force tests were performed with results being recorded throughout the multiple engagements of 500 cycles. Samples tested were:
 - i) M80-5011442 – Male assembly with through-board termination
 - ii) M80-4101442 – Female assembly with through-board termination



- c) Insertion force tests were performed with results being recorded throughout the multiple engagements of 500 cycles. Samples tested were:
 - i) M80-5012042 – Male assembly with through-board termination
 - ii) M80-4102042 – Female assembly with through-board termination

