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REPORT NO. G2521/6920

CYCLIC EXTENSION TESTING OF WINDOW SASH BALANCES

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1.0 SUMMARY

1.1 Two types of window sash balance have been subject to a 20,000 cyclic extension test programme.

1.2 Both samples completed the programme without signs of failure. At the end of the test period both samples appeared to operate as required.

2.0 Introduction

2.1 Brief: To carry out 20,000 cyclic extension testing of window sash balances. The test to extend each balance by a set length. Test to completion of required cycles or till failure. Failure mode/reasons to be recorded.

2.2 Order: Mighton Order 3209 and BTL Confirmation Form both dated 25/6/13 refer.

3.0 Materials received

3.1 Sash balance construction

Two types namely;

- D type single spring and spiral
- AL type double spring and spiral

Both types comprised a spring system encased in a white plastic sleeve with connection points at opposite ends.

3.2 These samples were referenced MT and received on 21/5/13. We understand these are Mightons current product. Dimensional details shown below.

D616	No markings Rated length 40cm Plastic sleeve 405mm long x 14mm diameter Through metal rivet for end connection Spiral strip 1.6mm x 5.88mm wide 2 holes at opposite end with 1 roll pin supplied
AL4027	Marking; Unique LL40 40@49lbs 3-28-13 Rated length 68cm Plastic sleeve 693mm long x 16.5mm diameter Through metal rivet for end connection and internal spring attachment Metal strip 1.5mm x 4.94mm wide with 2 x roll pins for end connection

3.3 Appendix 1 shows photographic details of samples received.

4.0 Test programme

4.1 The test programme was as instructed by Peter Copsey of Copsey Consultancy Ltd as follows;

- To carry out cyclic extension testing of window sash balances.
- Each sash balance to be extended by a set length.
- Each balance to undergo 20,000 cycles. (1 cycle = extension and return).
- Test to completion of required cycle number or till failure. Any failure mode/reasons to be recorded.

4.2 Extension lengths of each type.

Sash Balance type	Length (cm)	Max Extension length (cm)
D616	40	37
AL4027	68	62

4.3 To carry out this work each sample was installed into an automated test apparatus that extended and returned the samples over the extension distance required. This testing was carried out during working hours so visual inspections could be carried out as the testing progressed. On completion of the cycle period each sample tested was inspected for signs of failure.

4.4 This work was carried out during July 2013.

5.0 Results

Sash Balance type	Length (cm)	MT
D616	40	Cycles complete. No failure. Observation: After testing it was noted that when the product was tipped upside down a plastic inner sleeve was free to move at the opposite end to the spiral movement end
AL4027	68	Cycles complete. No failure. Observation: After 300 cycles a roll pin supplied and used to connect to the test rig came loose. This was replaced with a bolt to complete testing

5.1 Both types tested completed the 20,000 cycle programme without signs of failure.

Reported by

Ian Collins
Technical Manager

Appendix 1

Photographic details of samples received

MT Samples

Showing D616 (bottom) and AL4027 (top)

Typical end connections