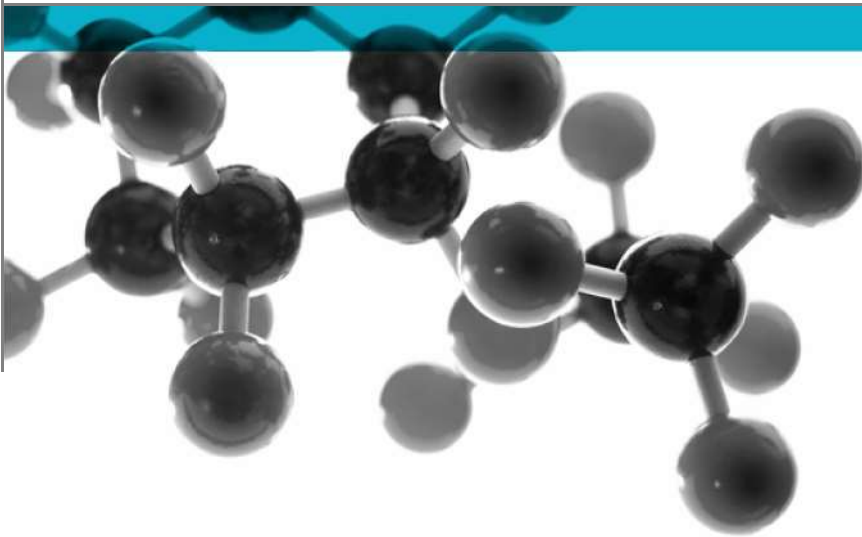




BS 6375-2:2009



Test of: Heavy Single doorset

Performance of windows & doors - Part 2: Operation & strength

A Report To:
Latham's Security Doorsets
35-37 Hainge Road, Tividale, Birmingham B69 2NY

Document Reference:
WIL 388518

Date: 23/01/2018

Copy: 1

Issue No.: 2

Page 1

Testing
Advising
Assuring



TEST CONCLUSIONS

Samples of:
 Manufacturer Latham's Security Doorsets
 Product Single doorset
 Model Heavy Single doorset

have been tested in accordance with: BS6375-2:2009 & BS6375-3:2009 Annex C.
 By Exova Wednesbury, a UKAS accredited Testing Laboratory (No. 0621)

At Unit 3 Wednesbury One, Black Country New Road, Wednesbury, WS10 7NZ.
 Results and comments as detailed below:

BS6375-2 Clause	Description	Compliance
6.1	UK Category of Duty - Medium	Yes
6.2	Operating forces – Class 2	Yes
6.3	Mechanical strength – Class 2	Yes
6.3.1	Vertical load – Class 2	Yes
6.3.2	Static torsion – Class 2	Yes
6.3.3	Soft and heavy body impact – Class 2	Yes
6.3.4	Hard body impact – Class 2	Yes
6.4	Load bearing capacity of safety devices – 350N	N/A
6.5	Resistance to repeated opening and closing – Class 4	Yes
BS6375-3 Clause	Description	Compliance
Annex C	Closure against obstruction	Yes



No inferences can be made regarding performance against other requirements of this standard

Tests marked "N/A" are not applicable to the sample under test.
 Tests marked "N/T" were not applied to the sample under test

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AUTHORISATION

<p>Tests performed by: Chris Bryan, Senior Test Engineer Simon Lewis, Trainee Test Engineer Josh Ratcliffe Trainee Test Engineer</p>
<p>Report issued by: Mark West, Doors & Window Laboratory Manager</p> <p>Signed </p> <p>Date 22nd January 2018</p> <p>For and on behalf of Exova (UK) Ltd</p>
<p>Report authorised by: Chris Bryan, Senior Test Engineer</p> <p></p> <p>Signed</p> <p>Date 22nd January 2018</p> <p>For and on behalf of Exova (UK) Ltd</p>
<p>Report issued: 23 January 2018</p>



NOTE.
Tests marked "Not UKAS Accredited" are not covered by the Laboratory UKAS accreditation schedule.

Tests marked NT were not tested
Tests marked NA are not applicable to the product on test.

The laboratory has tested the product supplied by the client as sampled in accordance with their own requirements

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TEST DETAILS

CLIENT DETAILS

Company name Latham's Security Doorsets
 Address 35-37 Hainge Road
 Tividale,
 Birmingham
 B69 2NY

Contact Chris Hardy

ORDER DETAILS

Order number CHRIS
 Dated 30/08/2017

SAMPLE DETAILS

Outer frame 1145 x 2030mm
 Opening leaves 1020 x 1940mm
 Configuration Single doorset open-out
 Material Steel Doorset
 Details of Hardware
 Hinges 4no. Yongkang Bosslong Industrial & Trading Co Ltd Z-304 lift off Z-shape hinges
 Hinge protection 4no. Zhejiang Shenjiang Doors Industry Co., Ltd DB14/15 Solid screw in dog bolt
 Lock Zhejiang Hongli Locks Co. HL#ST11 sash lock and #16-15 side locks
 Cylinder Eurospec MPX6+ 3* cylinder
 Handles Hongli Lock HL#6198 Lever Handles

TEST DETAILS

Test specification BS 6375-2:2009 & BS 6375-3 :2009
 Full test Yes
 Test to clauses All
 Test methods BS EN 12046-2:2000 operating forces
 BS EN 947:1999 vertical load
 BS EN 948:1999 static torsion
 BS EN 949:1999 soft body impact
 BS EN 950:1999 hard body impact
 BS EN 948:1999 strength of safety devices
 BS EN 1191:2012 Annex H repeated opening & closing
 BS 6375-3:2009 Annex A basic security
 BS 6375-3:2009 Annex C closure against obstruction

Sample received 19/09/2017
 Test started 29/09/2017
 Test completed 10/11/2017

Special Test requirements
 Other reports to be used in conjunction with this report

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TEST PROCEDURE

Introduction	<p>This test report should be read in conjunction with the Standard BS 6375-2:2009 Performance of windows and doors – Part 2: Classification for operation and strength characteristics and guidance on selection & specification and Part 3: Classification for additional performance characteristics and guidance on selection and specification.</p> <p>The specimens were judged on their ability to comply with the performance criteria as required in BS 6375-2:2009 and BS6375-3:2009, with test methods BS EN 12046-2:2000, BS EN 947:1999, BS EN 948:1999, BS EN 949:1999, BS EN 950:1999, BS EN 1191:2012 Annex H and BS6375-3:2009 Annex C. classified in accordance with BS 6375-2:2009, BS EN 12217:2015, BS EN 1192:2000 & BS EN 12400:2002.</p>
Instruction To Test	<p>Initial requirement was for a UK category of use of medium duty as defined in BS6375-2, requiring a performance of Class 1 for operating forces, Class 2 for mechanical strength, a threshold value of 350N for load-bearing capacity of safety devices, and Class 5 for repeated opening and closing.</p>
Test Specimen Construction	<p>A description of the test construction is given in the Schedule of Components. The description is based on a detailed survey of the specimens and information supplied by the sponsor of the test.</p>
Installation	<p>The doorset was supplied mounted within a timber sub-frame of nominal section 75 x 100mm fitted flush with the exterior face, in accordance with the clients fitting instructions.</p>
Sampling	<p>The samples were not independently witnessed or selected and were provided direct from the test sponsor.</p>
Test Climate	<p>The sample was conditioned in the laboratory in the range 15-30 °C and 25-75% humidity.</p> <p>The temperature and humidity in the lab was maintained in the range 15.7-23.6°C and 30.0-70.8% humidity for the duration of the test.</p>

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INITIAL OBSERVATIONS

The external face of the sample



Sample hinge



Sample central locking point



Sample handle/cylinder

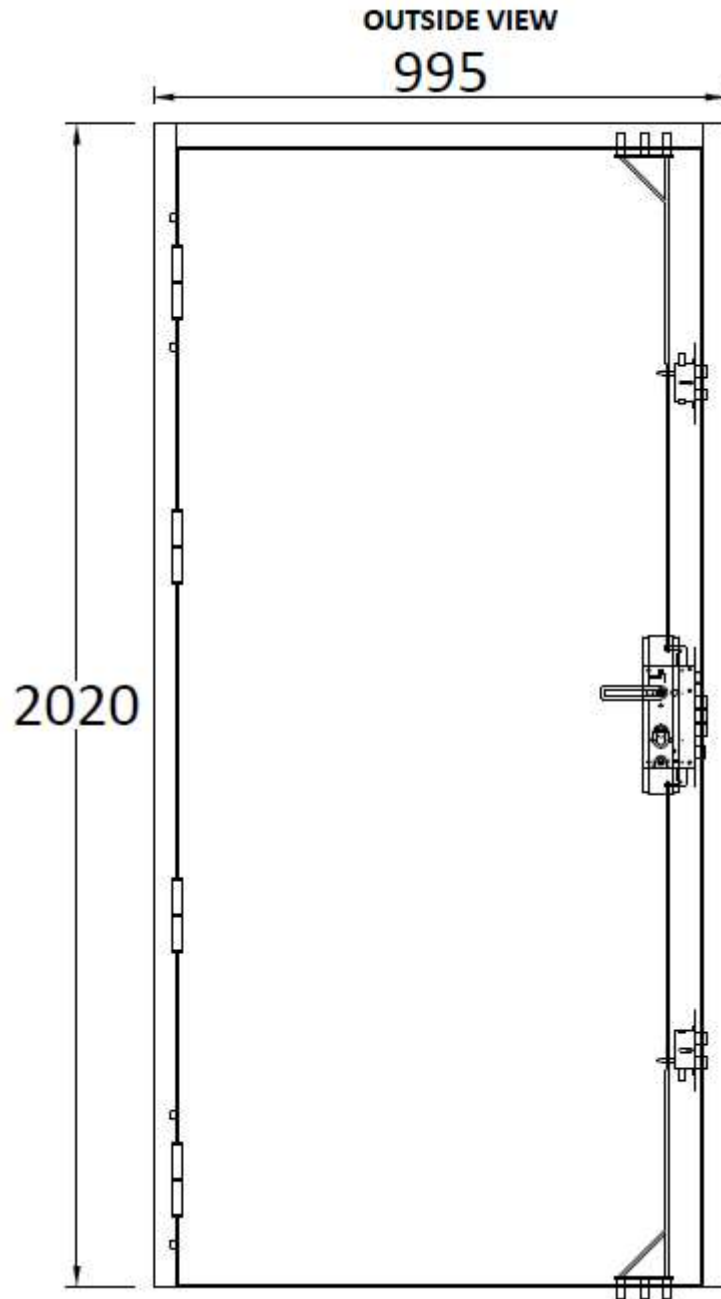


Sample locking point



TEST SPECIMEN

Figure 1- General Elevation of Test Specimen (External Face)



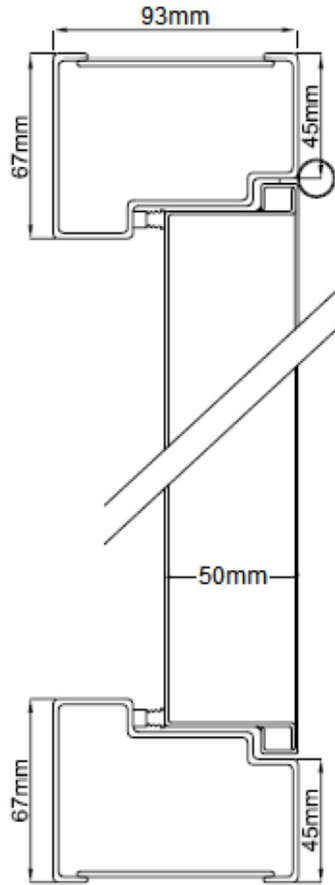
Do not scale. All dimensions are in mm

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Figure 2 – Horizontal section



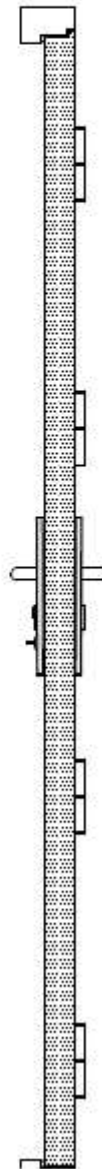
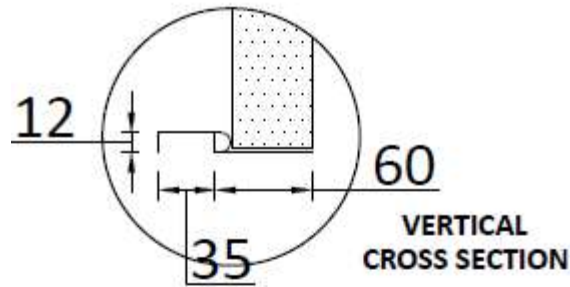
Do not scale. All dimensions are in mm

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Figure 3 – Vertical section



Do not scale. All dimensions are in mm

SCHEDULE OF COMPONENTS

(Refer to Figures 1 to 3)
 (All values are nominal unless stated otherwise)
 (All other details are as stated by the sponsor)

Variants

None

<u>Item</u>	<u>Description</u>
1. Door frame head	
Supplier	: Zhejiang Shenjiang Doors Industry Co., Ltd
Profile code	: B332/50mm
Material	: Steel
Grade	: Galvanised cold rolled steel
Gauge	: 2.0mm
Overall section size	: 67 x 93mm
Rebate	: 60mm
Fixing jamb to head joints	: Continuous weld 45mm internal, 35mm top, 25mm external
2. Door frame jamb	
Supplier	: Zhejiang Shenjiang Doors Industry Co., Ltd
Profile code	: B332/50mm
Material	: Steel
Grade	: Galvanised cold rolled steel
Gauge	: 2.0mm
Overall section size	: 67 x 93mm
Rebate	: 60mm
3. Door frame threshold	
Supplier	: Zhejiang Shenjiang Doors Industry Co., Ltd
Profile code	: B332/50mm
Material	: Steel
Grade	: Galvanised cold rolled steel
Gauge	: 2mm
Overall size	: 12 x 93mm frame depth
Fixing method	: Continuous weld 3 on either side
4. Door frame weather seal	
Supplier	: Yongkang Bosslong Industrial & Trading Co. Ltd
Reference	: #306-11 x 2 & #305-15 x 2
Material	: Flame Retardent PU + Expanded graphite
Fixing method	: Self-Adhesive
Position	: All four edges
Continuity	: Uninterrupted by hardware

<u>Item</u>	<u>Description</u>
5. Door leaf Facings	
Leaf supplied by	: Zhejiang Shenjiang Doors Industry Co., Ltd
Overall leaf size	: 50mm thick
Material	: Galvanised Steel
Thickness	: 1mm, formed in to trays and welded together.
Density	: 7850kg/m ³ (stated)
Core section size	: 48mm
Corner fixing method	: Weld
i. type	: Spot Weld
ii. size	: 3mm on average
iii. quantity	: 12 hinge side, 12 latching side, 6 top, 5 bottom.
6. Door leaf core	
Material	: Wuyi NiuNiu Fireproof Board Material Co., Ltd
Density	: 260kg/m ³ (stated)
Thickness	: 48mm
Fixing into rebate	: Bonded to door leaf facings with adhesive
7. Door edge lippings	
Position	: Folded into door leaf interlocking trays
Material	: As 1
Density	: kg/m ³ (stated)
Thickness	: As 1
Overall size	: 10mm x 15mm jemmy bar lip.
8. Door leaf weather seals	
Description	: Intumescent seal
Manufacturer	: Yongkang Bosslong Industrial & Trading Co. Ltd
Reference	: #306-11x2 & #305-15x2
Fixing method	: Self-Adhesive
Position	: All four edges
Continuity	: Uninterrupted by hardware
9. Hinges	
Supplier	: Yongkang Bosslong Industrial & Trading Co Ltd
Description	: Lift off Z Shape
Reference	: Z-304
Primary material	: Grade #304 Stainless Steel
Quantity	: 4
Size of knuckle	: 18 x 130mm
Size of blades	: 60 x 55mm
Fixing hinge to doorleaf	
i. type	: Machine Screw
ii. size	: M6 x 12mm
iii. quantity	: 4
Fixing hinge to frame	
i. type	: Machine Screw
ii. size	: M6 x 12mm
iii. quantity	: 5

<u>Item</u>	<u>Description</u>
Position of hinge	
i. top hinge	: 207mm from top of door to top of hinge
ii. 2nd hinges	: 667mm from top of door to top of hinge
iii. 3 rd hinge	: 1307mm from top of door to top of hinge
iv. bottom hinge	: 1767mm from top of door to top of hinge
10. Dog bolts	
Supplier	: Zhejiang Shenjiang Doors Industry Co., Ltd
Description	: Solid screw in dog bolt
Reference	: DB14/15
Material	: Steel
Quantity & position	: 1 above and below top hinge and 1 above and below bottom hinge equalling 4 total.
Overall size	
i. dog bolt	: 14mm * 15mm
ii. retaining ring / keeper	: 24mm
11. Sash Lock	
	Multipoint locking system
Supplier	: Zhejiang Hongli Locks Co.
Description	: Sash lock, solid large bolt
Reference	: HL#ST11
Position	: 1045mm from bottom of door to centre of spindle/lock
Fixings	
i. type	: Machine Screw
ii. size	: M4 x 10mm
iii. quantity	: 4
12. Side Locks and Shoot Bolts	
Supplier	: Zhejiang Shenjiang Doors Industry Co., Ltd
Description	: Internal rods and spring side locks
Reference	: #16-15mm
Position	: 400mm from top of the door 1562mm from top of the door
Fixings	
i. Type	: Machine Screw
ii. Size	: M4 x 10mm
iii. Quantity	: 2
13. Cylinder	
Supplier	: Carlisle Brass
Description	: Eurospec 3* Cylinder
Kitemark	: 597142
Reference	: MPX6+
Fixings	
i. type	: Machine Screw
ii. size	: M5x65mm
iii. quantity	: 1

Item

Description

14. Lever handles

Supplier	:	Hongli Lock
Description	:	Lever Handles
Reference	:	HL#6198
Material	:	Stainless Steel
Fixings		
i. type	:	Machine Screw + Thread Extension
ii. size	:	M5 x 50mm + 50mm double female extension
iii. quantity	:	2



PERFORMANCE CRITERIA & TEST RESULTS

Clause	Result	Pass/Fail
BS6375-2 6.2 Operating forces	<p>The average force required to enable the sample to latch must not exceed those defined in table 1 of BS EN 12217, Class 1 (75N) for external doorsets & class 2 (50N) for internal doorsets. The average force or torque required to operate the hardware must not exceed those defined for the relevant class in table 1 on BS EN 12217, Class 1 (100N or 10Nm) for external doorsets & class 2 (50N or 5Nm) for internal doorsets). The average force required to commence and maintain motion must not exceed those defined for the relevant class in table 1 on BS EN 12217, Class 1 (75N) for external doorsets & Class 2 (50N) for internal doorsets</p> <p>The sample met the requirements of Class 2. An average force of 27.23N was required to latch the sample. An average force of 49.47N was required to disengage the hardware. An average torque of 1.16Nm was required to lock and 0.53Nm was required to unlock the doorset. An average force of 17.47N was required to commence and maintain motion.</p>	PASS CLASS 2
BS6375-2 6.3.1 Vertical load	<p>The doorset was tested in accordance with EN 947, under a load of 600N as required by Class 2 of EN 13115, with a preload of 200N. To achieve the requirements of the class the resultant residual deformation should not exceed 1mm, and the specimen should continue to operate normally.</p> <p>A load of 600N was applied, and the doorset continued to operate normally.</p> <p>The sample met the requirements of Class 2. The deflection under full load was 1.9mm, and the residual deflection was 0.15mm.</p>	PASS CLASS 2
BS6375-2 6.3.2 Static torsion	<p>The doorset was tested in accordance with EN 948, under a load of 250N as required by Class 2 of EN 13115, with a preload of 200N. To achieve the requirements of the class the resultant residual deformation should not exceed 2mm, and the specimen should continue to operate normally.</p> <p>A load of 250N was applied, and the doorset continued to operate normally.</p> <p>The sample met the requirements of Class 2. The deflection under full load was 10.6mm, and the residual deflection was 0.5mm.</p>	PASS CLASS 2
BS6375-2	The doorset was tested in accordance with EN 949, a soft & heavy	PASS

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Clause	Result	Pass/Fail
6.3.3 Soft & heavy body impact	body impact of 60J was applied as required for class 2. To achieve the requirements of the class the resultant residual deformation in flatness should not exceed 2mm, and the specimen shall continue to operate normally. The sample met the requirements of class 2, with a residual deformation of 0.44mm on the internal face, and a residual deformation of 0mm on the external face.	CLASS 2
BS6375-2 6.3.4 Hard body impact	The doorleaf was tested in accordance with EN 950, hard body impacts of 3J were applied as required for class 2. To achieve the requirements of the class the mean value of the diameters of indentation should not exceed 20mm, and the mean values of the depths of indentation should not exceed 1.0mm, with the maximum depth not exceeding 1.5mm. The sample met the requirements of class 2. The mean value of the depth of indentation was 0.51mm. The maximum value of the depth of indentation was 1.43mm. The mean value of the diameter of indentation was 5mm. No damage was observed during the test.	PASS CLASS 2
BS6375-2 6.4 Load-bearing capacity of safety devices	The doorset was tested in accordance with the requirements of EN 14351-1, a load of 350N was applied with the safety device engaged. This test was not carried out as no such device was fitted to the doorset.	N/A
BS6375-2 6.5 Resistance to repeated opening and closing	Prior to the cyclic operation test, when tested in accordance with EN 12046-2, the sample met the requirements for Class 3. An average force of 3N was required to latch the sample. An average force of 18.97N was required to disengage the hardware. An average torque of 0.25Nm was required to lock and 0.25Nm was required to unlock the doorset. An average force of 9.23N was required to commence and maintain motion. The number of cycles completed by the doorset was 50,000, as required by Class 4 of the standard, for medium duty. The stroke of the doorleaf was 90 degrees. Observations and measurement were carried out at intervals of 25% of the total cycles. No lubrication or adjustment was specified by the client. The weight of the tested doorleaf was 74.75 kg, and the dead load applied on the leaf by the operating equipment was 2 kg.	PASS PASS CLASS 4
Following the cyclic operation test, when tested in accordance with EN		PASS

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Clause	Result	Pass/Fail
	<p>12046-2, the sample continued to meet the requirements of Class 3.</p> <p>An average force of 9.8N (V=227%) was required to latch the sample.</p> <p>An average force of 23.2N (V=22%) was required to disengage the hardware. An average torque of 0.36Nm (V=44)% was required to lock and 0.32Nm (V=29%) was required to unlock the doorset. An average force of 16.43N (V=78%) was required to commence and maintain motion.</p>	
<p>BS6375-3 Annex C Closure against obstruction</p>	<p>Under the application of a 200N load with the bottom hinge corner obstructed from closing.</p> <p>The doorset continued to latch and the operating forces met the requirements of Class 2. An average force of 29.97N was required to latch the sample. An average force of 19.4N was required to disengage the hardware. An average torque of 0.32Nm was required to lock and 0.25Nm was required to unlock the doorset. An average force of 13.53N was required to commence and maintain motion.</p>	<p>PASS</p>



CONCLUSIONS

Evaluation against objective The sample as provided by the client was subjected to operational & strength testing in accordance with BS 6375-2:2009 and achieved the requirements for a UK category of use of medium duty. The sample was also subjected to closure against obstruction testing in accordance with BS 6375-3:2009 Annex C and achieved the requirements

Observations & comments

LIMITATIONS

Limitations The results relate only to the behaviour of the specimens of the element of construction under the particular conditions of test. They are not intended to be the sole criteria for assessing the potential performance of the element in use, nor do they reflect the actual behaviour in use.

Range of door assemblies covered by this report It is our opinion that the range of door assemblies covered by this report are limited to the following

- Assemblies with identical hardware fitted no further apart than in the tested assembly
- Assemblies of the same or smaller overall dimensions to the tested assembly

Uncertainty of Measurement The uncertainties of measurements calculated for a confidence level of 95% throughout these tests are within the limits of these tolerances.

The standard specifies the following tolerances

- Forces: $\pm 2\%$
 - Distances: $\pm 1\text{mm}$ for tape measures $\pm 0.01\text{mm}$ for dial gauges
 - Times: $\pm 5\text{s}$
-

REVISION HISTORY

This issue of the report replaces all previous issues that are now withdrawn.

Issue No : 2	Re - Issue Date : 22/01/2018
Revised By: MW	Approved By: CB
Reason for Revision: Corrected an error on page 5, inconsistent sample size	

Issue No :	Re - Issue Date :
Revised By:	Approved By:
Reason for Revision:	

END OF REPORT