REPORT OF THE TESTING IN ACCORDANCE WITH EN1154:1997/A1:2002/AC:2006 SAMPLE B.

AST4001

COMMERCIAL IN CONFIDENCE
TEST REPORT NWL-895

Northwest Laboratories Ltd
Unit 3 Astra Business Centre
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Registered in England: 12616379

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INTRODUCTION

The test was conducted by Northwest Laboratories Ltd at their premises at Unit 3 Astra Business Centre, Roman Way, Preston PR2 5AP, United Kingdom.

Test Specimen received : 28/10/2024

Test start date: 28/10/2024

Test end date: 02/01/2025

Tests performed by: James Gibbs

Test observed by: Mark Gallagher

Test report: NWL-895

Report issued by: Mark Gallagher Date: 02/01/2025

CLIENT DETAILS

Report prepared for: Astra Door Controls Limited

Address: Astra business Centre, Roman Way, Preston, PR2 5AP

Customer Product Ref: AST4001

Product Type: Concealed Jamb mounted

Power Size: 1

Item(s) were received in good condition? Yes

If no describe the issues found:

Contents

Page 4 – Cycle test report

Page 7 – Efficiency report

Page 8 – Overload test report

Page 9 – Decision Rule

Reason for Test				Power Size	
EN1154:1997/A1:2002/AC:2006 Sample B				1	
Planned Start	**Description of Test Unit**			**Start Counter**	**Test Rig No.**
28/10/2024	AST4001 – Concealed Jamb Mounted			0	5
Part No	**Description**	**Revision**	**Comments**		
AST4001	Astra 4000 series – Fixed power 1	-	Supplied by the manufacturer		
Customer Notes Test to EN1154:1997/A1:2002/AC:2006 sample B					

Specification	Requirement	Result
Closer strength – Size 20	Test Door Mass 20Kg	20Kg
Max Opening angle	105° Grade 3 or 180° Grade 4	105°
Door Closes from	105° Grade 3 or 180° Grade 4	105°
Door under control from	70° minimum	Yes
Set closing time 90° to 0°	3-7 Secs	4.78s
Set Opening time 0° to 90°	2-3 Secs	2.65s
Latch effect adjustable	If incorporated must be effective over a maximum range of 15° and shall be adjustable.	N/A
Measured latch angle		N/A

Date Finish	Results			End Counter
02.01.25	Pass ☒	Fail ☐	Stopped ☐	500,000

Conclusions
Cycle test completed

Further Actions
No further action

Counter	Date	Temp (°C)	Comments
0	28.10.24	20.3	Start - Cycle to 5,000
5,000	29.10.24	22.5	Cycle test paused for power trace & overload tests

Tests after 5000 cycles

Specification	Test requirement	Test Result
Cycles completed	5,000 Cycles	5,000 Cycles
Ambient Temp	15-30°C	21.94°C
Closer Temp	Within 2° of ambient	22°C

Closing time	Min: less than/equal to 3 Secs	1.6secs
	Max: greater than/equal to 20 Secs	25.63secs
Closing Overload Test (5000)	SEE QP 9.6/FORM 960	
Delayed Action Tests	Torque to push door from delay zone max 150 Nm min 2*90° torque for size of closer Position of end of delay zone. Delay time adjustable to >20 secs	n/a

Continued cycling 5000 to 500,000 cycles

Delayed action closers only	Delay time set to 20 secs Dwell time set to 270 secs Perform 500 cycles Delay time for last 5 cycles 10-30 s	n/a
Closing time	Closing time 90-0° set to 3-7 secs	n/a
Back Check Type	Fixed or Adjustable	n/a
Ambient Temp	Taken at the start of the BC cycles	n/a
Angle of Arrest at start	What is the angle that the unit is arrested by the back check at the start of the test	n/a
Backcheck closers cycle up to 100,000 cycles with backcheck as set.		
Total BC Cycles Complete	Minimum of 95,000 required	n/a
Unit Temp	Following cycling the unit must be within 2°C of ambient temp at start	n/a
Angle of Arrest at the end	What is the angle that the BC arrests the door once at a surface temp within 2°C of the original ambient temp is this less than 90°	n/a
Backcheck closers cycle from 100,000-500,000 without backcheck		n/a
None backcheck closers cycle from 5,000-500,000 Cycles		Yes

Cycle Test Log

Counter	Date	Temp (°C)	Comments
5,000	29.10.24	21.94	Cycle test resumed
67,325	05.11.24	23.5	
147,172	14.11.24	23	
269,493	28.11.24	19.78	
488,2020	23.12.24	25	
499,998	27.12.24	20	
500,000	02.01.24	21	Cycle test completed

Tests after 500,000 cycles

Specification	Test requirement	Test Result
Cycles completed	500,000 Cycles	500,000
Ambient Temp	15-30°C	21°C
Closer Temp	Within 2° of ambient	22°C

Specification	Test requirement	Test Result
Closing time	Min: less than/equal to 3 Secs	1.6secs
	Max: greater than/equal to 20 Secs	25.63secs
Closing Overload Test (500,000)	SEE QP 9.6/FORM 960	
Delayed Action Tests	Torque to push door from delay zone max 150 Nm min 2*90° torque for size of closer. Position of end of delay. Delay time adjustable to >20 secs.	n/a

This report applies only to the following part(s) of EN1154:1997/A1:2002/AC:2006 clause 7.3 Sample B

NORTH WEST LABS

Power Size:	1 <-- Set power size	**Job Ref:**	**895**
Door Mass:	20 Kg	**Product Code:**	AST4001
Test option:			**5000 Cycle Test**
		Test 1	29/10/2024 09:04
Closer Temperature:	22 °C	**Test 2**	29/10/2024 09:16
Ambient Temperature:	21.94 °C	**Test 3**	29/10/2024 09:25

Specification	Test 1	Test 2	Test 3	Average	Test requirement		
Opening 0-4°	*11.89*	*11.92*	*11.91*	11.91	*26*	Nm Max	Pass
Opening 0-60°	*13.58*	*13.56*	*13.56*	13.57	*26*	Nm Max	Pass
Closing 0-4°	*10.43*	*10.45*	*10.43*	10.44	*9*	Nm Min	Pass
Closing 0-4°	*10.43*	*10.45*	*10.43*	10.44	*13*	Nm Max	Pass
Closing 88-92°	*9.82*	*9.86*	*9.86*	9.85	3	Nm Min	Pass
Closing any other angle	*9.58*	*9.64*	*9.64*	9.62	*2*	Nm Min	Pass
Efficiency	*87.74*	*87.71*	*87.58*	87.68	*50*	% Min	Pass

			500,000 Cycle Test
		Test 4	02/01/2025 11:14
Closer Temperature:	22 °C	**Test 5**	02/01/2025 11:20
Ambient Temperature:	21 °C	**Test 6**	02/01/2025 11:25

Specification	Test 1	Test 2	Test 3	Average	Test requirement		
Opening 0-4°	*11.35*	*11.31*	*11.34*	11.33	*26*	Nm Max	Pass
Opening 0-60°	*13.05*	*13.00*	*12.98*	13.01	*26*	Nm Max	Pass
Closing 0-4°	*9.71*	*9.69*	*9.61*	9.67	*9*	Nm Min	Pass
Closing 0-4°	*9.71*	*9.69*	*9.61*	9.67	*13*	Nm Max	Pass
Closing 88-92°	*9.84*	*9.86*	*9.84*	9.84	3	Nm Min	Pass
Closing any other angle	*9.30*	*9.32*	*9.22*	9.28	*2*	Nm Min	Pass
Efficiency	*85.54*	*85.65*	*84.78*	85.32	*50*	% Min	Pass

			Closing				Opening	Efficiency
Power Size	Leaf mm Max	Door Mass Kg	0-4 Min Nm Min	0-4 Max Nm Max	88-92 Nm Min	Any other angle Nm Min	0-60 Nm Max	0-4 % Min
1	750	20	9	13	3	2	26	50
2	850	40	13	18	4	3	36	50
3	950	60	18	26	6	4	47	55
4	1100	80	26	37	9	6	62	60
5	1250	100	37	54	12	8	83	65
6	1400	120	54	87	18	11	134	65
7	1600	160	87	140	29	18	215	65

Taken from EN1154:1997/A1:2002 : Table 1

This report applies only to the following part(s) of EN1154:1997/A1:2002 clause 7.3 Sample B

NORTH WEST LABS

Power Size:	1	<-- Set power size	**Job Ref:** 895
Door Mass:	20kg		**Product Code:** AST4001
Overload Weight	15kg		

5000 Cycles

Specification	Test requirement	Test Result	Pass/Fail
Closing time	Min: less than/equal to 3 Secs	1.6s	Pass
	Max: greater than/equal to 20 Secs	25.63s	Pass
Closing Overload	Overload weight	15Kg	Pass
Test	Closing time 90-0° set to 10 secs	9.84s	Pass
	Overload weight arrest at 15°	14°	Pass
	10x Overload tests performed	Yes	Pass
Delayed Action Tests	Torque to push door from delay zone max 150 Nm min 2*90° torque for size of closer Position of end of delay zone. Delay time adjustable to >20 secs	N/A	N/A

500,000 Cycles

Specification	Test requirement	Test Result	Pass/Fail
Closing time	Min: less than/equal to 3 Secs	1.72s	Pass
	Max: greater than/equal to 20 Secs	41.12s	Pass
Closing Overload	Overload weight	15Kg	Pass
Test	Closing time 90-0° set to 10 secs	10.34	Pass
	Overload weight arrest at 15°	13.5°	Pass
	10x Overload tests performed	Yes	Pass
Delayed Action Tests	Torque to push door from delay zone max 150 Nm min 2*90° torque for size of closer Position of end of delay zone. Delay time adjustable to >20 secs	N/A	N/A

Power Size:	1	2	3	4	5	6	7
Test Door mass:	*20kg*	*40kg*	*60kg*	*80kg*	*100kg*	*120kg*	*160kg*
Overload Test weight:	15kg	18kg	21kg	24kg	27kg	30kg	33kg
Nm Min:	3	4	6	9	12	18	29

Taken from EN1154:1997/A1:2002 Table 2

This report applies only to the following part(s) of EN1154:1997/A1:2002 clause 7.3.4.4

The AST4001, concealed jamb mounted closer was fully tested to EN1154:1997/A1:2002 Sample B at power size 1, and met with all the durability, efficiency and overload requirements with no visual or mechanical signs of any issues.

Decision Rule

To comply with the requirements of ISO 17025:2017 the decision rules used by Northwest labs are as follows:-

If a result falls within the acceptance interval it will be a PASS for that section of the test and the risk of false accept will be 2.5%.

If the result falls within the specified guard band, it will be a CONDITIONAL PASS for that section and the risk of false accept will be 50%.

If the result falls outside the tolerance limits it will be a FAIL.

Based on our measured uncertainty multiplied by a factor of k=2.0 to give a confidence level of 95%.

The decision rule applies to the following forms within this document:

Forms 940, 950 and 960

Signed by: Mark Gallagher..... Date: 02.01.25

Reviewed by ..... Date 02.01.2025

End of test report.