

ASSA ABLOY

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TEST CERTIFICATE

No. TC 046-08

Test of: High Security Cylinders

Issue Date: 3rd April 2008



Test to: BS EN 1303: 2005 Key Related Security Grade 6 & Attack Resistance Grade 2

Client Details: Medeco Security Locks Inc 3625 Allergheny Drive, Salem, Virginia 24153, USA.

Contact: T Arbogast - Export Manager

Sample Details: Medeco M3 high security cylinders in the following formats; Euro profile cylinders - 13 samples supplied plus differ keys & 2 security escutcheon - 3C14E & 3CES. Oval profile body - 8 samples plus differ keys & 53046 security escutcheon and Rim bodies - 8 samples supplied plus differ keys.

All of these body forms share the same internal key mechanism.

Samples Received: 18/02/08

Date Test Completed: 25/03/08

Job Number: 2008-049

Test Conclusions

Clause No	Description	Compliance		
		Euro	Rim	Oval
5.2	Key strength	✓	✓	✓
5.3	Durability	✓	✓	✓
5.4	Door mass	N/A	N/A	N/A
5.5	Fire resistance	X	X	X
5.6	Safety	N/A	N/A	N/A
5.7	Corrosion and operation at Extreme Temperatures	✓	✓	✓
5.8	Key related security	✓	✓	✓
5.8.5	Operation of security mechanism	✓	✓	✓
5.8.6	Torque resistance of plug/cylinder	✓	✓	✓
5.9	Attack resistance	✓	X	✓

Classifications Achieved

Euro profile cylinder

Category of use	Durability	Door mass	Fire resistance	Safety	Corrosion resistance & temperature	Key related security	Attack resistance
1	6	0	0	0	C	6	2

Rim cylinder

Category of use	Durability	Door mass	Fire resistance	Safety	Corrosion resistance & temperature	Key related security	Attack resistance
1	6	0	0	0	C	6	0

Oval cylinder

Category of use	Durability	Door mass	Fire resistance	Safety	Corrosion resistance & temperature	Key related security	Attack resistance
1	6	0	0	0	C	6	2

Disposal

Samples will be retained for a minimum of one month prior to disposal.

Test Engineer:

Richard Darrell

Authorised by:

Ian Bridge (Laboratory Manager)

Results

Euro cylinder

5.2 Key strength

Clause / Description	Requirement	Actual	Assessment
5.2 – Key strength	Apply torque of 2.5 Nm Key subsequently operates cylinder @ <1.5 Nm	Sample 1 - > 2.5 Nm applied subsequently operates @ <1.5 Nm	Pass
		Sample 2 - > 2.5 Nm applied subsequently operates @ <1.5 Nm	Pass

5.3 Durability

Clause / Description	Requirement	Actual	Assessment
5.3 – Durability	Grade 6 – 100,000 cycles New original key operates after test @ <1.5 Nm	Sample 1 -100,000 cycles new original key operates after test @ <1.5 Nm	Pass
		Sample 2 - 100,000 cycles new original key operates after test @ <1.5 Nm	Pass

5.4 Door mass

Not applicable to cylinders, no tests required.

5.5 Fire resistance

No evidence submitted by the customer.

5.6 Safety

Not applicable to cylinders, no test required.

5.7 Corrosion and Extremes of Temperature

Clause / Description	Requirement	Actual	Assessment
5.7 – Corrosion resistance	Grade C – 96 Hours exposure subsequently operates with max torque of 1.5 Nm	Sample 12 – After 96 hours exposure the cylinder operates @ 0.08 Nm	Pass
		Sample 13 – After 96 hours exposure the cylinder operates @ 0.08 Nm	Pass
5.7 – Operation at extreme temperatures	Grade C – + 80°c -20°c At each temperature the key will operate and not exceed a torque of 1.5 Nm	Sample 1 – 0.08 Nm @ +80°c 0.11 Nm @ -20°c	Pass
		Sample 2 – 0.10 Nm @ +80°c 0.13 Nm @ -20°c	Pass

5.8 Key related Security

Clause / Description	Requirement	Actual	Assessment
5.8.1 – Min number of effective differs	Grade 6 - 100,000 differs	Sample 1 – >100,000 differs	Pass
		Sample 1 – >100,000 differs	Pass
5.8.2 – Min number of moveable retainers	Grade 6 – 6 moveable retainers	Sample 1 – 6 moveable retainers	Pass
		Sample 2 – 6 moveable retainers	Pass
5.8.3 – Max number of identical steps	Grade 6 – 50 %	Sample 1 – 50 % (max of 2)	Pass
		Sample 2 – 50 % (max of 2)	Pass
5.8.4 – Direct coding of key	Grade 6 – No coding on key	Sample 1 – No coding on key	Pass
		Sample 2 – No coding on key	Pass
5.8.5 – Operation of security mechanism	Grade 6 – Following durability next closest key up and down shall not operate @ max torque of 1.5 Nm	Sample 1 – Up key does not operate Down Key does not operate	Pass Pass
		Sample 2 – Up key does not operate Down Key does not operate	Pass Pass
5.8.6 - Torque resistance of the plug/cylinder	Grade 6 – Cylinder shall not operate with torque of 15 Nm applied via suitable tool	Sample 9 - >15 Nm does not operate	Pass
		Sample 10 - >15 Nm does not operate	Pass

5.9 Attack resistance

Clause / Description	Requirement	Actual	Assessment
5.9.1 – Resistance to drilling	Grade 2 – 5 minutes drilling time 10 minutes total attack time. Rotation of cylinder should not occur using a max torque of 5 Nm	Sample 3 – 5 minutes drilling, 10 minutes total attack time. Cylinder did not rotate with a max torque of 5 Nm.	Pass
		Sample 4 – 5 minutes drilling, 10 minutes total attack time. Cylinder did not rotate with a max torque of 5 Nm	Pass
5.9.2 – Resistance to chisel	Grade 2 – 40 Blows. Cylinder shall subsequently not rotate using max torque of 5 Nm	Sample 1 with 3C14 – 40 Blows, cylinder secure	Pass
		Sample 2 with 3C14 – 40 Blows, cylinder secure	Pass
5.9.3 – Resistance to twisting	Grade 2 – 30 twists, cylinder shall subsequently not rotate using a max torque of 5 Nm	Sample 5 with 3CES – Unable to grip escutcheon	Pass
		Sample 6 with 3CES – Unable to grip escutcheon	Pass
5.9.4 – Resistance to plug extraction	Grade 2 – 15 kN, total working time of 3 minutes	Sample 7 – After 1 minute 48 seconds the screw lost traction at a pull load of 7.05 kN.	Pass
		Sample 8 – After 1 minute 53 seconds the screw lost traction at a pull load of 7.32 kN.	Pass
5.8.6 – Torque resistance of plug/cylinder	Grade 2 – Cylinder shall not operate with torque of 30 Nm applied via suitable tool	Sample 9 – 16 Nm tool 'cammed' out of keyway, cylinder secure	Pass
		Sample 10 – 17 Nm tool 'cammed' out of keyway, cylinder secure	Pass

Rim cylinder

5.2 Key strength

Clause / Description	Requirement	Actual	Assessment
5.2 – Key strength	Apply torque of 2.5 Nm Key subsequently operates cylinder @ <1.5 Nm	Sample 1 - > 2.5 Nm applied subsequently operates @ <1.5 Nm	Pass
		Sample 2 - > 2.5 Nm applied subsequently operates @ <1.5 Nm	Pass

5.3 Durability

Clause / Description	Requirement	Actual	Assessment
5.3 – Durability	Grade 6 – 100,000 cycles New original key operates after test @ <1.5 Nm	Sample 1 - 100,000 cycles new original key operates after test @ <1.5 Nm	Pass
		Sample 2 - 100,000 cycles new original key operates after test @ <1.5 Nm	Pass

5.4 Door mass

Not applicable to cylinders, no tests required.

5.5 Fire resistance

No evidence submitted by the customer.

5.6 Safety

Not applicable to cylinders, no test required.

5.7 Corrosion and Extremes of Temperature

Clause / Description	Requirement	Actual	Assessment
5.7 – Corrosion resistance	Grade C – 96 Hours exposure subsequently operates with max torque of 1.5 Nm	Sample 12 – After 96 hours exposure the cylinder operates @ 0.08 Nm	Pass
		Sample 13 – After 96 hours exposure the cylinder operates @ 0.08 Nm	Pass
5.7 – Operation at extreme temperatures	Grade C – + 80°C -20°C At each temperature the key will operate and not exceed a torque of 1.5 Nm	Sample 1 – 0.08 Nm @ +80°C 0.11 Nm @ -20°C	Pass
		Sample 2 – 0.10 Nm @ +80°C 0.13 Nm @ -20°C	Pass

5.8 Key related Security

Clause / Description	Requirement	Actual	Assessment
5.8.1 – Min number of effective differs	Grade 6 - 100,000 differs	Sample 1 – >100,000 differs	Pass
		Sample 1 – >100,000 differs	Pass
5.8.2 – Min number of moveable detainers	Grade 6 – 6 moveable detainers	Sample 1 – 6 moveable detainers	Pass
		Sample 2 – 6 moveable detainers	Pass
5.8.3 – Max number of identical steps	Grade 6 – 50 %	Sample 1 – 50 % (max of 2)	Pass
		Sample 2 – 50 % (max of 2)	Pass
5.8.4 – Direct coding of key	Grade 6 – No coding on key	Sample 1 – No coding on key	Pass
		Sample 2 – No coding on key	Pass
5.8.5 – Operation of security mechanism	Grade 6 – Following durability next closest key up and down shall not operate @ max torque of 1.5 Nm	Sample 1 – Up key does not operate Down Key does not operate	Pass Pass
		Sample 2 – Up key does not operate Down Key does not operate	Pass Pass
5.8.6 – Torque resistance of the plug/cylinder	Grade 6 – Cylinder shall not operate with torque of 15 Nm applied via suitable tool	Sample 9 - >15 Nm does not operate	Pass
		Sample 10 - >15 Nm does not operate	Pass

5.9 Attack resistance

Clause / Description	Requirement	Actual	Assessment
5.9.1 – Resistance to drilling	Grade 2 – 5 minutes drilling time 10 minutes total attack time. Rotation of cylinder should not occur using a max torque of 5 Nm	Sample 3 – 5 minutes drilling, 10 minutes total attack time. Cylinder did not rotate with a max torque of 5 Nm.	Pass
		Sample 4 – 5 minutes drilling, 10 minutes total attack time. Cylinder did not rotate with a max torque of 5 Nm	Pass
5.9.2 – Resistance to chisel	Grade 2 – 40 Blows. Cylinder shall subsequently not rotate using max torque of 5 Nm	Sample 1 – 40 Blows, cylinder secure	Pass
		Sample 2 – 40 Blows, cylinder secure	Pass
5.9.3 – Resistance to twisting	Grade 2 – 30 twists, cylinder shall subsequently not rotate using a max torque of 5 Nm	Sample 5 – Unable to grip escutcheon	Pass
		Sample 6 – Unable to grip escutcheon	Pass
5.9.4 – Resistance to plug extraction	Grade 2 – 15 kN, total working time of 3 minutes	Sample 7 – After 1 minute 28 seconds the fixing screws pulled through the back plate at a load of 4.80 kN.	Fail
		Sample 8 – After 1 minute 45 seconds the fixing screws pulled through the back plate at a load of 3.68 kN.	Fail
5.8.6 – Torque resistance of plug/cylinder	Grade 2 – Cylinder shall not operate with torque of 30 Nm applied via suitable tool	Sample 9 – 16 Nm tool 'cammed' out of keyway, cylinder secure	Pass*
		Sample 10 – 17 Nm tool 'cammed' out of keyway, cylinder secure	Pass*

Oval cylinder

5.2 Key strength

Clause / Description	Requirement	Actual	Assessment
5.2 – Key strength	Apply torque of 2.5 Nm Key subsequently operates cylinder @ <1.5 Nm	Sample 1 - > 2.5 Nm applied subsequently operates @ <1.5 Nm	Pass*
		Sample 2 - > 2.5 Nm applied subsequently operates @ <1.5 Nm	Pass*

5.3 Durability

Clause / Description	Requirement	Actual	Assessment
5.3 – Durability	Grade 6 – 100,000 cycles New original key operates after test @ <1.5 Nm	Sample 1 -100,000 cycles new original key operates after test @ <1.5 Nm	Pass*
		Sample 2 - 100,000 cycles new original key operates after test @ <1.5 Nm	Pass*

5.4 Door mass

Not applicable to cylinders, no tests required.

5.5 Fire resistance

No evidence submitted by the customer.

5.6 Safety

Not applicable to cylinders, no test required.

5.7 Corrosion and Extremes of Temperature

Clause / Description	Requirement	Actual	Assessment
5.7 – Corrosion resistance	Grade C – 96 Hours exposure subsequently operates with max torque of 1.5 Nm	Sample 12 – After 96 hours exposure the cylinder operates @ 0.08 Nm	Pass*
		Sample 13 – After 96 hours exposure the cylinder operates @ 0.08 Nm	Pass*
5.7 – Operation at extreme temperatures	Grade C – + 80°c -20°c At each temperature the key will operate and not exceed a torque of 1.5 Nm	Sample 1 – 0.08 Nm @ +80°c 0.11 Nm @ -20°c	Pass*
		Sample 2 – 0.10 Nm @ +80°c 0.13 Nm @ -20°c	Pass*

5.8 Key related Security

Clause / Description	Requirement	Actual	Assessment
5.8.1 – Min number of effective differs	Grade 6 - 100,000 differs	Sample 1 – >100,000 differs	Pass
		Sample 1 – >100,000 differs	Pass
5.8.2 – Min number of moveable retainers	Grade 6 – 6 moveable retainers	Sample 1 – 6 moveable retainers	Pass
		Sample 2 – 6 moveable retainers	Pass
5.8.3 – Max number of identical steps	Grade 6 – 50 %	Sample 1 – 50 % (max of 2)	Pass
		Sample 2 – 50 % (max of 2)	Pass
5.8.4 – Direct coding of key	Grade 6 – No coding on key	Sample 1 – No coding on key	Pass
		Sample 2 – No coding on key	Pass
5.8.5 – Operation of security mechanism	Grade 6 – Following durability next closest key up and down shall not operate @ max torque of 1.5 Nm	Sample 1 – Up key does not operate Down Key does not operate	Pass* Pass*
		Sample 2 – Up key does not operate Down Key does not operate	Pass* Pass*
5.8.6 - Torque resistance of the plug/cylinder	Grade 6 – Cylinder shall not operate with torque of 15 Nm applied via suitable tool	Sample 9 - >15 Nm does not operate	Pass*
		Sample 10 - >15 Nm does not operate	Pass*

5.9 Attack resistance

Clause / Description	Requirement	Actual	Assessment
5.9.1 – Resistance to drilling	Grade 2 – 5 minutes drilling time 10 minutes total attack time. Rotation of cylinder should not occur using a max torque of 5 Nm	Sample 3 – 5 minutes drilling, 10 minutes total attack time. Cylinder did not rotate with a max torque of 5 Nm.	Pass
		Sample 4 – 5 minutes drilling, 10 minutes total attack time. Cylinder did not rotate with a max torque of 5 Nm	Pass
5.9.2 – Resistance to chisel	Grade 2 – 40 Blows. Cylinder shall subsequently not rotate using max torque of 5 Nm	Sample 1 with J-53046 – 40 Blows, cylinder secure	Pass*
		Sample 2 with J-53046 – 40 Blows, cylinder secure	Pass*
5.9.3 – Resistance to twisting	Grade 2 – 30 twists, cylinder shall subsequently not rotate using a max torque of 5 Nm	Sample 5 with J-53046 – Unable to grip escutcheon	Pass*
		Sample 6 with J-53046 – Unable to grip escutcheon	Pass*
5.9.4 – Resistance to plug extraction	Grade 2 – 15 kN, total working time of 3 minutes	Sample 7 – After 1 minute 53 seconds the screw lost traction at a pull load of 6.51 kN.	Pass
		Sample 8 – After 1 minute 48 seconds the screw lost traction at a pull load of 5.93 kN.	Pass
5.8.6 – Torque resistance of plug/cylinder	Grade 2 – Cylinder shall not operate with torque of 30 Nm applied via suitable tool	Sample 9 – 16 Nm tool 'cammed' out of keyway, cylinder secure	Pass*
		Sample 10 – 17 Nm tool 'cammed' out of keyway, cylinder secure	Pass*

Notes

Clause 5.8.1 – Key differ details were confirmed by the customer.

Clause 5.7 – No lubrication was required for the operation of the cylinders following this test.

Clause 5.9.1 – Drill sizes used were 4mm and 5mm HSS on sample 3, and 3mm & 4mm on sample 4.

Clause 5.9.4 – Traction screw size used 4.8 mm self tapping.

Comments

* Results from the euro profile cylinders which are mechanically identical.

Marking

Customer supplied installation instructions stating security furniture required to meet attack grade.

Customer supplied information that classification codes will be present on product or packaging.

Picture of Samples

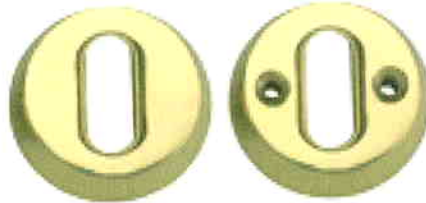
Euro profile samples received in a good condition



Rim cylinder samples received in a good condition



Oval cylinder samples received in a good condition



Oval cylinder escutcheon J-53046



Euro profile cylinder escutcheon 3C14



Euro profile cylinder escutcheon 3CES