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TESTS UNDERTAKEN AND REPORT PREPARED BY SIRA TEST & CERTIFICATION LIMITED

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Date: **6th December 2013**

Ingress Protection testing on a
CVL 500 Actuator and a CVQ 1200 Actuator
for Rotork Controls Ltd
Report No: R15000-070A/00A
Commercially in confidence

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TEST REPORT

ISSUED BY SIRA TEST & CERTIFICATION LIMITED

Carried out by ST&C on behalf of:

Rotork Controls Ltd
Brassmill Lane
Bath
BA1 3JQ

Project No: 15000-070

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1 INTRODUCTION

This report refers to the performance of the test samples when tested against the agreed programme. Whilst this report maybe freely reproduced as a complete document it may not be abstracted.

Manufacturer:	Rotork Controls Ltd
Type Identifications (Serial Nos.):	CVL 500 Actuator 15000-070 #1 CVQ 1200 Actuator 15000-070 #2
Standard:	BS EN 60529:1992
Deviations from Standard:	None
Aim:	IP66 IPX8, Depth 7 m, 72 h with the terminal lid fitted IPX8, Depth 7 m, 72 h without the terminal lid fitted
ST&C Test Procedure:	LOP 220.08 IP6X LOP 220.16 IPX6 LOP 220.18 IPX8
ST&C Internal Test Report:	13/0750
Samples Delivery Date:	7th November 2013
Tests Conducted Between:	14th November and 6th December 2013

2 DESCRIPTION OF TEST SAMPLES

The CVL and CVQ range comprises two enclosures, the electrical enclosure and the terminal enclosure. The electrical enclosure is separated from the terminal enclosure by the terminal bung.

The terminal bung is secured in position by means of a circlip. A nitrile ‘o’ ring is provided between the terminal bung and the terminal enclosure lid and the enclosure. The joint between the terminal bung and the metallic casing forms a cylindrical flamepath.

The terminal enclosure provides all electrical field-wiring terminations at the terminal bung. Cable entry facilities are provided in the form of four threaded entry points. The terminal enclosure is closed by means of a lid, the joint between the lid and the enclosure forming a tapered spigot joint. The terminal enclosure lid is secured by four retained M10 socket cap head screws. A nitrile ‘o’ ring is provided between the terminal enclosure lid and the enclosure.

The electrical enclosure is formed from an enclosure base and lid. The lid is secured by six, M10 socket cap head screws. The electrical enclosure lid includes a viewing window. The window screws into the enclosure lid from the inside and is prevented from becoming loose by an internal locking arrangement. The actuator output can either be rotary ¼ turn (CVQ), or linear (CVL) depending upon the internal equipment specified. The output shaft in each case exits the electrical enclosure via a brass bushing, secured into the enclosure by means of an interference fit.

Both samples were subjected to each of the following tests.

3 TESTS FOR FIRST CHARACTERISTIC NUMERAL 6

3.1 Test for protection against access to hazardous parts

Reference BS EN 60529:1992 clause 12.

A rigid test wire Ø 1 mm and length to a stop face of 100 mm was pushed against all openings of the test samples with a force of 1 N ± 10%.

3.1.1 Result

The test wire did not come into contact with any hazardous parts.

3.2 Test for protection against solid foreign objects

Reference BS EN 60529:1992 clause 13.

The test samples were supported in their normal operating orientation inside a chamber containing approximately 2 kg of test dust per cubic metre, with maximum particle size 75 µm maintained in suspension. As the normal working cycle of the test samples may cause a reduction in their internal air pressure below that of the surrounding atmosphere (which was not verified by Sira Test & Certification Ltd) connection was made to a vacuum pump to maintain an under-pressure inside the test samples which did not exceed 20 mbar.

The extraction rate measured was such that the test duration was 8 hours, the maximum required by the standard.

3.2.1 Result

On internal inspection of the test samples no dust was found.

4 TEST FOR SECOND CHARACTERISTIC NUMERAL: 6

4.1 Test for protection against water

Reference BS EN 60529:1992 clause 14.

The test samples were supported in their normal operating orientation. Water from a standard water jet hose test nozzle with internal ∅ 12.5 mm was directed at the test samples from all practicable directions at a rate of 100 L/min from a distance between 2.5 to 3 metres. The test duration was 3 minutes.

4.1.1 Result

On internal inspection of the test samples no water was found.

5 TESTS FOR SECOND CHARACTERISTIC NUMERAL: 8

5.1 Test for protection against water

Reference BS EN 60529:1992 clause 14.

5.1.1 With the terminal lid fitted

The test samples were completely immersed in water. A pressure was applied to the water surface so that the lowest point of the samples were subjected to a water level equivalent to at least 7 m. The test duration was 72 hours.

5.1.1.1 Result

On internal inspection of the test samples no water was found.

5.2.1 Without the terminal lid fitted

The test samples were completely immersed in water. A pressure was applied to the water surface so that the lowest point of the samples were subjected to a water level equivalent to at least 7 m. The test duration was 72 hours.

5.2.1.1 Result

On internal inspection of the test samples no water was found.

6 CONCLUSION

The test samples described in sections 1 and 2, when tested in the manner described in sections 3, 4 and 5, satisfied the requirements of BS EN 60529:1992 Amendments Nos. 1 and 2 as detailed below:

IP66, complete device

IPX8 at a water depth of 7 metres for 72 hours, complete device.

IPX8 at a water depth of 7 metres for 72 hours, with the terminal lid removed.

The other sizes in the CVL and CVQ Range employ similar environmental sealing arrangements and materials of construction. Although not tested as part of the above programme the CVL and CVQ range can be considered as maintaining the above levels of ingress protection.