Type Examination Certificate CML 21ATEX6990X Issue 0

1 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

2 Equipment **Range of pneumatic actuators and mechanical ball valves**

3 Manufacturer **Habonim Industrial Valves & Actuators Ltd**

4 Address **Kibbutz Kfar Hanassi**
1230500
Israel

5 The equipment is specified in the description of this certificate and the documents to which it refers.

6 CML B.V., Chamber of Commerce No 6738671, Koopvaardijweg 32, 4906CV Oosterhout, The Netherlands, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II of Directive 2014/34/EU.

The examination and test results are recorded in the confidential reports listed in Section 12.

7 If an 'X' suffix appears after the certificate number, it indicates that the equipment is subject to conditions of safe use (affecting correct installation or safe use). These are specified in Section 14.

8 This Type Examination certificate relates only to the design and construction of the specified equipment or component. Further requirements of Directive 2014/34/EU Annex VIII apply to the manufacture of the equipment or component and are separately certified.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the confidential report, has been demonstrated through compliance with the following documents:

EN ISO 80079-36:2016 EN ISO 80079-37:2016

10 The equipment shall be marked with the following:

Actuators

II 2 G D

Ex h IIC T6-T4 Gb

Ex h IIIC T85°C-T135°C Db

Ta=-40°C to +60°C for open environments

Ta =-40°C to +100°C for closed rooms

Valves

II 2 G D

Ex h IIC T6-T3 Gb

Ex h IIIC T85°C – T150°C Db

Ta=-40°C to +60°C for open environments

Ta =-40°C to +100°C for closed rooms

11 Description

C15-C100 actuator series

The Habonim Industrial Valves and Actuators Ltd Quarter Turn COMPACT Pneumatic Actuators - series C15-C90 are pneumatic quarter-turn rack & pinion actuators. Air pressure (maximum 8 bar) applied to the piston surface area generates thrust which transforms linear motion to rotary motion of the pinion. Both actuator types consist of a main aluminium body (complete with four aluminium covers fitted with O-rings), four pistons (each complete with a rack and O-ring) and one pinion/shaft (complete with O-ring). At the top of the actuator, there is a plastic indicator beacon complete with indicator arrows; this is secured to the pinion for easy indication of the valve position. There are two sizes of the beacon; a small 56mm x 19mm and a large 56mm x 41 mm. The external aluminium components are anodized then coated with two layers of paint.

The actuator air connections are marked A and B. Port B connects via a series of holes to all the four pistons. The air passes into the Namur cover (or insert) and through holes which are connected to the two neighbouring pistons.

The spring return models are fitted with a Namur breather block, which is connected to both port A and B. The breather block prevents any external atmosphere from entering the internal parts of the actuator and prevents any explosive atmosphere from being pressurised.

The Quarter Turn COMPACT Pneumatic Actuators - series C15-C100 comprise uniform mechanical structure throughout all the series. The difference in the method of transferring the linear force from the pistons to the rotational torque of the operating shaft, can be found in C100 model. The C100 model comprises a scotch yoke mechanism, while the rest of the series from C15 to C90 are based on a rack and pinion mechanism.

The C100 actuator is a pneumatic quarter-turn (90°) scotch yoke actuator. Air pressure applied to the piston surface area generates thrust which transforms linear motion to rotary motion of the yoke. The Compact SY has four pistons centrally located around one yoke. When the pistons move away from the yoke, the yoke rotates counter-clockwise (CCW) – CCW stroke. When the pistons move towards the yoke, the yoke rotates clockwise (CW) – CW stroke.

Ball Valves – H29 and H99 series

The H29 and H99 series high pressure ball valves can come in a range of sizes and have a metallic construction with a PVC sleeve that is located on the handle of the valve. The Ball Valves are connected in series with the pipes that supply the actuators with compressed air. The valves are comprised of the following critical parts: valve body, rotary ball, stem seats and slide bearing. The valve body contains the integral components that allow on/off control. The rotatory ball valve is designed with a centre bore that the compressed medial flows through and permits or blocks its passage. The stem of the valve connects the ball to the external control mechanism which allows the valve/ball to be moved into the on/off position. The seats allow the ball to stay in position, ensuring that the on/off position is maintained. They also permit free movement of ball between the 2 positions, reducing wear of the parts.

The ball valves can be separately used with other suitably certified equipment or as an integral part of the actuator range listed in this evaluation certificate.

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	21 Sep 2022	R14538A/00	Issue of prime certificate.

Note: Drawings that describe the equipment or component are listed in the Annex.

13 Conditions of Manufacture

***Only Applicable to Range of pneumatic actuators (C15 – C100)**

The following conditions are required of the manufacturing process for compliance with the certification.

i. It is the manufacturer's responsibility to ensure that all electrical equipment/devices fitted to the equipment are suitably certified and meet the ATEX/UKEX marking requirements of the equipment. In addition, the separately certified equipment, devices/ parts incorporated into the equipment shall be installed on the equipment and commissioned in accordance with the OEM instructions and recommendations.

ii. The manufacturer shall provide the end-user and/or installer with an appropriate copy of the certificate for each separately certified product that is fitted to the equipment.

iii. The manufacturer shall provide the end-user with the necessary operating instructions, settings, and operating parameters as appropriate for all non-electrical and electrical parts fitted to the equipment.

14 Specific Conditions of Use (Special Conditions)

The following conditions relate to safe installation and/or use of the equipment.

C15-C100 Actuator Series

i. The manufacturer marks the Temperature Classification/Maximum Surface Temperature as T6…T4 (T85°C to T135°C). This is because the maximum surface temperature of the equipment depends on the temperature of the process in which it is employed; refer to table below. It is therefore the responsibility of the user/installer to determine which values are applicable to their particular application:

Process temperature (Tp)	Temperature classification (maximum surface temperature)
Tp ≤ 80°C	T6 and T85°C
80°C ≤ Tp ≤ 95°C	T5 and T100°C
95°C ≤ Tp ≤ 130°C	T4 and T135°C

ii. For any electrical equipment (e.g., solenoid valves, limit switches) that may be incorporated with the equipment, the user shall ensure that they are suitably certified and meet the ATEX/UKEX marking requirements of the equipment. In addition, any separately certified equipment, devices/ parts incorporated into the equipment shall be installed on the equipment, commissioned and operated in accordance with the OEM instructions.

iii. The air compressor must incorporate a filter on the intake system and contain only lubricants that are resistant to ignition or carbonisation at anticipated temperatures.

iv. The air delivery must not be provided by hoses that are manufactured from elastomeric materials that can carbonise and/or form glow particles in anticipated temperatures.

v. It is the user's responsibility to ensure that the supplied air is from a non-hazardous area, and that it is clean, dry, oil free and dust free.

vi. At regular intervals, cleaning cycles shall be carried out to avoid deposit of a dust layer.

vii. The actuators must have a cycle rate of ≤1 cycle per minute.

viii. Prior to putting the equipment into operation, the internal chambers of the actuator shall be purged with clean, dry air from a non-hazardous area or an inert gas; refer to equipment IOM manual.

ix. All spring return actuator models shall have the Namur breather block fitted to both port A and B as shown in the manufacturer's drawings at all times.

x. Any lubricant(s) used with the equipment shall have an auto-ignition temperature 50K above the marked maximum surface temperature and shall be resistant to carbonisation.

xi. It is the user's responsibility to ensure that any conditions and/or limitations specified by the manufacturer regarding the use and operation of the equipment, are observed prior to installing and commissioning the products and during service as appropriately.

xii. It is the user's responsibility to ensure that the equipment is connected to earth appropriately. Electrical continuity shall be checked at regular intervals.

xiii. The equipment shall be protected from mechanical impact in service by location or suitable guarding.

xiv. The bearings and springs used with the equipment shall be maintained in accordance with the manufacturer's instructions, and shall not be exposed to liquids, solvents or vapours that are likely to cause damage. Checks must be carried out at appropriate intervals as specified in the IOM manual of the equipment; if excessive noise, vibration, heat is experienced the equipment must be stopped and examined until the fault is found and rectified.

Ball Valves – H29 and H99 Series

i. The manufacturer marks the Temperature Classification/Maximum Surface Temperature as T6…T3. This is because the maximum surface temperature of the equipment depends on the temperature of the process in which the valves are employed; refer to table below. It is therefore the responsibility of the user/installer to determine which values are applicable to their particular application:

Process temperature (Tp)	Temperature classification (maximum surface temperature)
Tp ≤ 80°C	T6 and T85°C
80°C ≤ Tp ≤ 95°C	T5 and T100°C
95°C ≤ Tp ≤ 130°C	T4 and T135°C
130°C ≤ Tp ≤ 145°C	T3 and 150°C

ii. It is the user's responsibility to ensure that any conditions and/or limitations specified by the manufacturer regarding the use and operation of the equipment, are observed prior to installing and commissioning the products and during service as appropriately.

iii. It is the user's responsibility to ensure that the equipment is connected to earth appropriately. Electrical continuity shall be checked at regular intervals.

iv. The equipment comprises a non-metallic sleeve; care shall be taken to avoid potential electrostatic charging hazards – wipe only with a damp cloth.

v. At regular intervals, cleaning cycles shall be carried out to avoid deposit of a dust layer.

vi. The equipment shall be protected from mechanical impact in service by location or suitable guarding.