

FLAP OPERATING DEVICE

code 10.0689.xx

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Description of the modifications:

07	21/08/19	Change code specification 82068900 (it was 820689xx)Update § 5.2 and 5.3§ for version 12/24 V
06	06/07/18	Revised: values of torque - general revision
05	12/12/05	Inserted 12 V version; general review
04	19/04/01	General lay-out review

► : The arrow indicates section of the text with latest modification level.

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1 GENERAL

1.1 Purpose of the specification

To define the characteristics and performance of the Flap operating device code 10.0689.xx.
In case of discrepancies among the technical data contained in this specification and Eltek's drawings, the last ones have to be considered valid.

1.2 Subject

Electromechanical device, named Flap operating device code 10.0689.xx, suitable to commute the linear stroke of the thermoactuator in rotation through a device made of a rack – gear on which side a seat is prepared for the blocking system with a pivot.

1.3 Description

The Flap operating device substantially consists of (see fig. 1):

- 1) A main support (1)
- 2) An operating device consisting of a thermoactuator NTA8 (2)
- 3) A rack (3) which slides along the support
- 4) A gear (4) hinged in appropriate guides on the support

1.4 Principle of operation

When the actuator is energized (2) it moves the rack (3) and consequently it makes the gear rotate through approx. 90°

The thermoactuator (2) must be kept energized to keep the device active.

When the power stops being supplied, the control device (2) moves the rack back (3), and consequently it gives a contrary rotation of about 90° to the gear which returns to its initial position.

1.5 General characteristics

- Can operate at different voltages (12 – 24 V_{AC-CC}) or (110 – 240 V_{AC})
- Silent
- No E.M.I. (Electromagnetic Interference)

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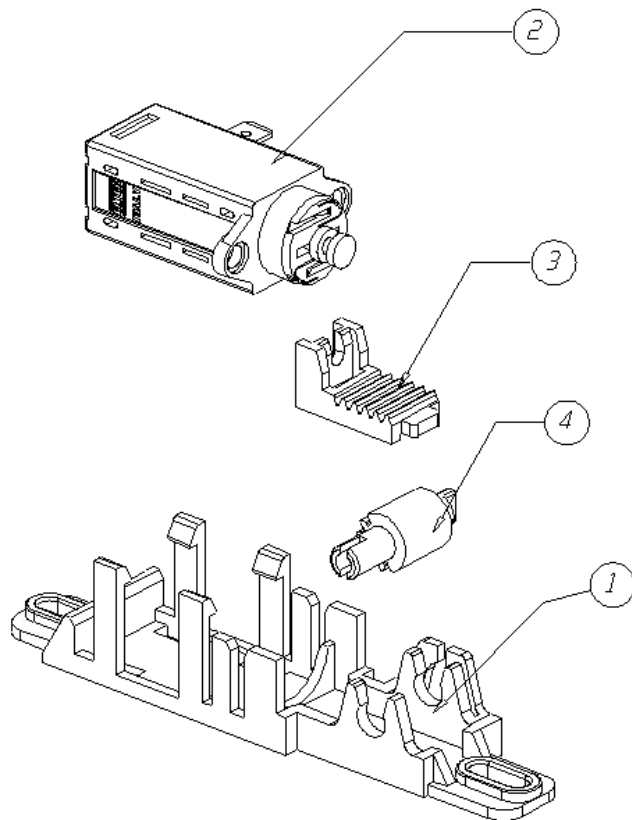


Fig. 1 – Exploded view of the Flap operating device

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2 CONSTRUCTION FEATURES

2.1 Norm and reference documents

EN 60335-1; EN 60730-1 and EN 60730-2-14.

Technical Specification of the actuator code 82.0331.00 and code 820800.00

2.2 Operating limit conditions of the thermoactuator

- Relative humidity : 30% ÷ 95% for standard versions
- Room temperature : -10°C ÷ 90°C

Test mode to check the operating limit conditions just of the thermoactuator :
test in climatic chamber – 21 cycles (16h @ 40°C and 95%U.R. / 8h @ 13°C and 95%U.R. /16h @ 60°C <9% U.R.). During the climatic test the thermoactuator is supplied with cycle 3 ON / 12 'OFF at 220 Vac.

Test in oven with supply 2h ON/30min OFF at 70°C and 70% U.R.continuously for 350 cycles (700 hours of power supply).

Furthermore, the thermoactuator is regulatory certified as EN 60730-1 and EN 60730-2-14 for a limit temperature of a safe use equal to 105°C.

At a temperature of >95°C the thermoactuator can start its stroke without power supply and it is not guaranteed the retraction of the plunger to its initial position.

2.3 Characteristics of connection

Connection through faston 6.30x0.8mm : in compliance with the norm EN 61210.

2.4 Limit conditions of storage/absence of functioning

- Room temperature : -30°C + 80°C
- Relative humidity : 30% ÷ 98%

N.B.: before the usage it is necessary the stabilization of the piece at temperatures higher then -10°C

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2.5 Markings

The following details are marked on the thermoactuator:

- ELTEK logo
- ELTEK code (example:10.0331.64; 10080064, see the reference drawing)
- Nominal tension and frequency
- Safe limit operating temperature (T105)
- Date of manufacture (ww ddd y z, where ww = week, ddd = day, y = last digit of the year, z = reserved for in-house use)
- Conformity markings of the actuator
- The markings of the thermoactuators could be not visible depending on the direction the actuator is assembled.

3 MECHANICAL FEATURES

3.1 Torque

The flap operating device is not tested, but, before the assembly, it is tested the conformity of its components in the drawing. The thermoactuator is checked in conformity to its diagram time-stroke.

On the basis of this and of the conformity of the components in the drawing, we can guarantee a useful torque on the gear shaft as the table below:

Guaranteed torque during the ON phase [Ncm]	Guaranteed torque during the OFF phase [Ncm]
9	1

The indicated value of the torque is referring to a 7mm stroke of the actuator with a corresponding rotation of 90° of the gear.

Higher torques are possible, but the user has to take charge of the proficiency testing and of the duration of the application.

The thermoactuator, before reaching the 7 mm stroke, has high reaction forces able to create a torque on the shaft greater than 15 N cm : in order not to damage the device , avoid possible malfunctions and

Do not block the rotation at an angle of less than 90°

3.2 Mounting the device

The device can be secured through two screws located in the slots of the support.

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4 PHYSICAL-CHEMICAL CHARACTERISTICS OF THE FLAP OPERATING DEVICE

4.1 Resistance to the corrosion of the metallic parts

In according to EN 60335 – §31.

4.2 Resistance to moisture

Level of protection against the entrance of water: IP00 (not protected, ref IEC 60529)
Resistance to humidity conditions: according to EN 60730-2-14 §12.2

4.3 Resistance to heat and fire

According to EN 60730-2-14

The plastic materials of the thermoactuator in contact with the live parts are classified as self extinguishing V0(0.8 mm), according to UL94. Moreover, the thermoactuator passes the sphere test at 140°C ref EN 60335-1 § 30.1

4.4 Resistance to superficial currents

According to EN60730-2-14 § 21.

Concerning the plastic materials of the thermoactuator in contact with the live parts, it is guaranteed a resistance value to CTI – PTI 250 (according to IEC 60112).

5 ELECTRICAL CHARACTERISTICS

5.1 Supply Voltage

Available supply voltage ranges:

- 110÷240 V_{AC} a 50 ÷ 60 Hz.
- 12÷24 V_{AC} a 50 ÷ 60 Hz.
- 12÷24 V_{DC}

5.2 Power absorbed in full operation

Power absorbed in full operation after an ON time (in the table below). The power is lower or equal to the values shown below:

Code	110V [W]	220V [W]	Testing time [s]
10068900 – 10068902 - 10068910 - 10068912 (Long ON time)	6,5	7,6	300

Code	12V [W]	24V [W]	Testing time [s]
10068901 -10068911 (Long ON time)	3,6	3,8	300
Long ON time “Low absorption peak”	4,4	4,4	300

Values taken at a room temperature of 25°C

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5.3 Current curve power supply/time

Representative diagram of the variation of current absorption, as a function of time. Curves are differentiated according to the typology of the thermoactuator and to the supply voltage.

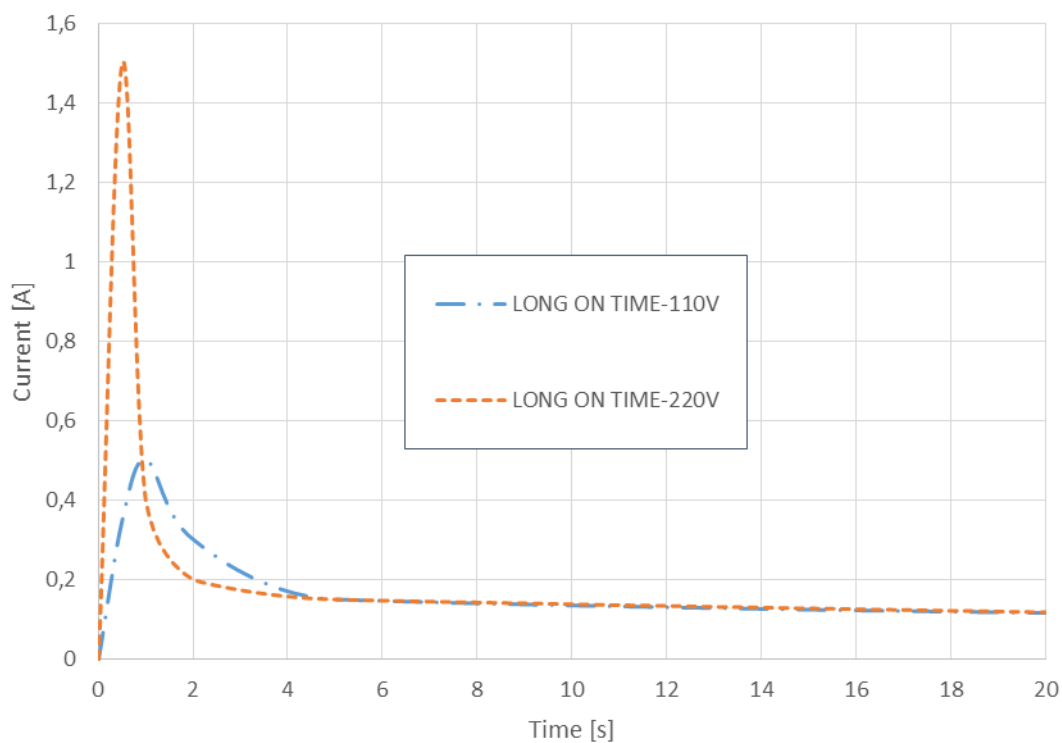
The diagram has been prepared with:

Actuators with a nominal stroke of 6 mm

Time of supply higher than 5 minutes

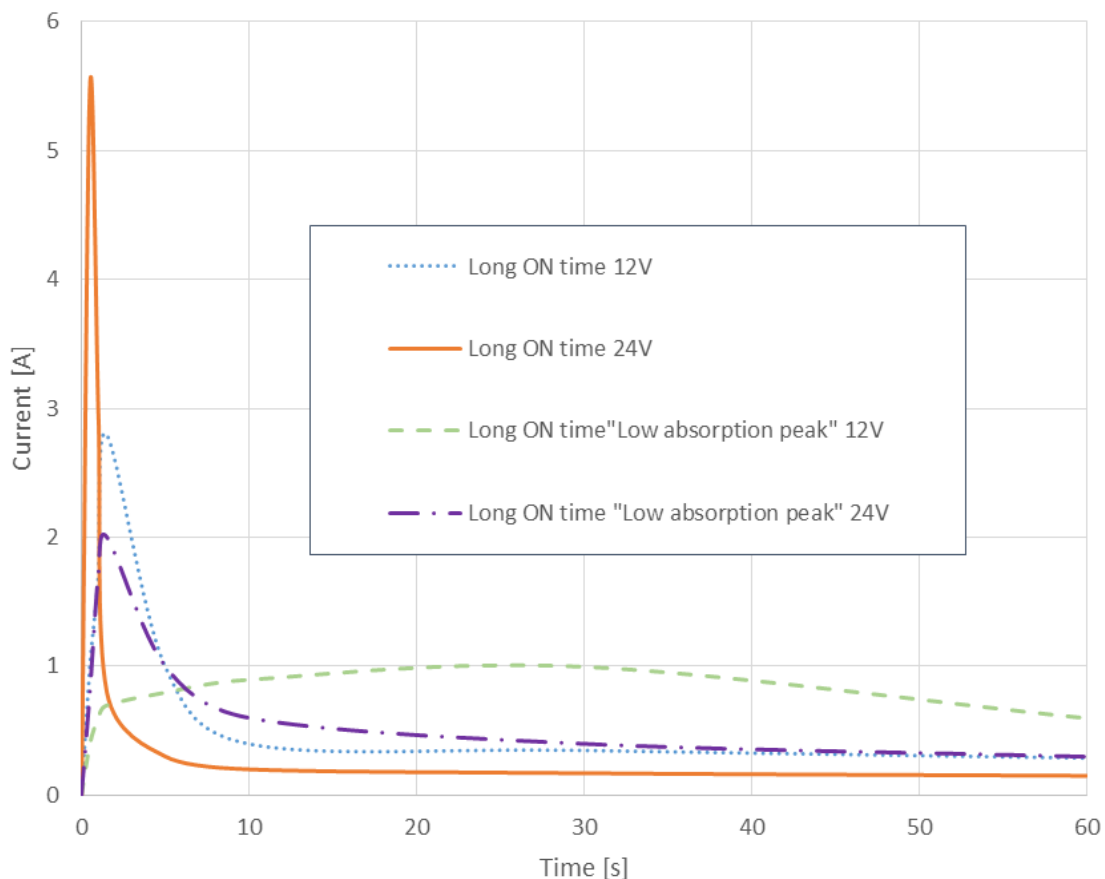
No load contrasted

Room temperature of 25°C



Description	Current peak at 110 V [A]	Constant current at 110V [A _{RMS}]	Current peak at 220 V [A]	Constant current at 220V [A _{RMS}]	Current stabilization time [s]
10068900 - 10068902 - 10068910 -10068912 (Long ON time)	0,5	0,05	1,5	0,03	300

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Description	Current peak at 12 V _{DC} [A]	Constant current at 12 V _{DC} (300s) [A]	Current peak at at 24 V _{DC} [A]	Constant current at at 24 V _{DC} (300s) [A]
10068901 -10068911 (Long ON time)	2,8	0,29	5,5	0,15
Long ON time "Low absorption peak"	1	0,35	2	0,18

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5.4 Distance through insulation

Compliant to EN 60730 – 1 § 20

Insulation class II

5.5 Insulation resistance and dielectric strength

According to EN 60730-2-14 § 13

6 PERFORMANCE

The lifetime of the flap operating device is quantified in number of cycles, intended as strokes within the defined tolerance.

This lifetime is influenced by some parameters, and principally by:

- Torque applied
- Length of ON times

Other important parameters are:

- Temperature of the working environment
- Relative humidity of the working environment
- Length of OFF time (time during which the actuator is not supplied)

For every flap operating device, 12/24V, 110/220V supplied with a cycle 2 min ON – 5 min OFF, at room temperature of 20°C and with restoring torque 9N cm, the guaranteed minimum lifetime is:

Actuators of family 100331.xx → 12.000 cycles

Actuators of family 100800.xx → 25.000 cycles

The end of life of a thermoactuator is considered the moment during which the stroke is not in the limit of the designated tolerance; from this moment, a progressive decay of the stroke starts: depending on the application, it could be more or less rapid.

6.1 Rotation time (NTA ON)

Necessary time to make a complete rotation of the gear with antagonist torque as specified in § 3.1

Ambient temperature [°C]	Closing time [s] power supply 220 V	Closing time [s] power supply 12 V
25	35 ÷ 65	50 ÷ 140
60	25 ÷ 55	30 ÷ 130

6.2 Return time (NTA OFF)

Necessary time to return to the initial position of the gear after a continuous ON time of 30 minutes with antagonist torque as specified in § 3.1

Ambient temperature [°C]	reopening time [s] power supply 220 V	reopening time [s] power supply 12 V
25	4 ÷ 5,5	4 ÷ 5,5
60	5,5 ÷ 7,5	5,5 ÷ 7,5

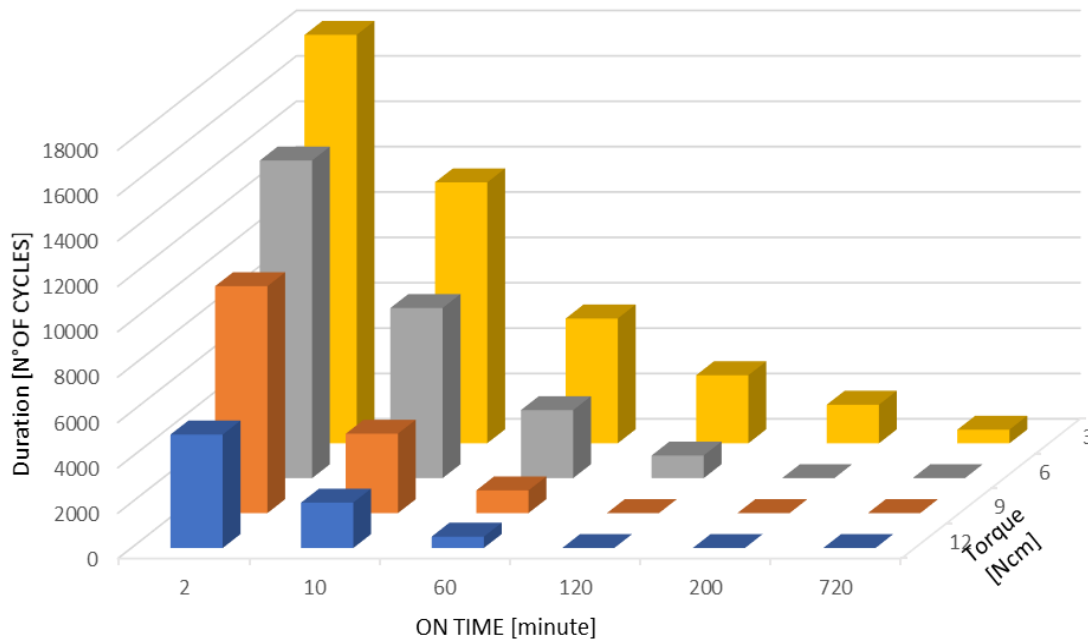
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6.3 Diagram of time to the change of the antagonist load and time during the ON phase version 100331xx

Representative diagram of the trend of duration, in function of the antagonist load and of the ON time.

The diagram has been obtained elaborating the data of the diagrams present in the specification 82033100, and considering the load applied of 30N to the thermoactuator.

The diagram below is approximate. In order to have more precise indications on the lifetime in the specific conditions of use, the test to make on a significant number of pieces is at the user's charge.



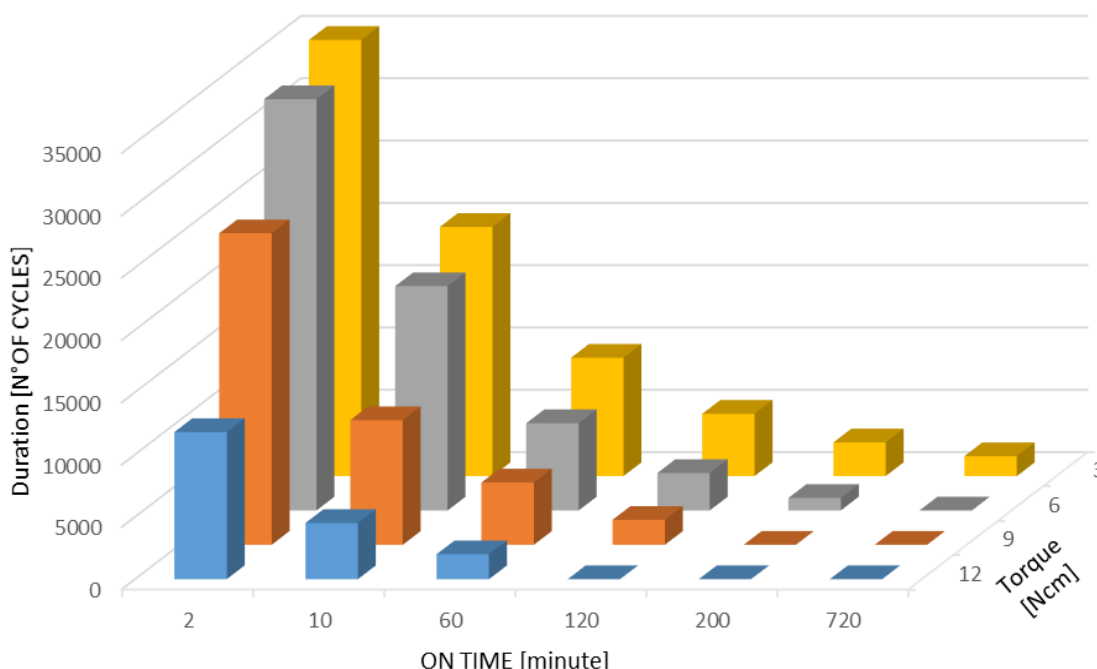
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6.4 Diagram of time to the change of the antagonist load and time during the ON phase version 100800xx

Representative diagram of the trend of duration, in function of the antagonist load and of the ON time.

The diagram has been obtained elaborating the data of the diagrams present in the specification 82080000, and considering the load applied of 30N to the thermoactuator.

The diagram below is approximate. In order to have more precise indications on the lifetime in the specific conditions of use, the test to make on a significant number of pieces is at the user's charge.



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