

715 XS VALVE WITH TCR ELECTRICAL ACTUATOR

FEATURES

The 715XS+TCR 2-way stainless steel ball valve is designed for the automatic shut-off of pipes with non-loaded industrial fluids. It is a full-bore valve with an antistatic device. It is EC-approved. The ISO 5211 mounting pad enables the TCR actuator to be directly assembled. The latter is suitable for indoor or outdoor (under shelter) industrial use.



AVAILABLE MODELS

1.4408 stainless steel body.

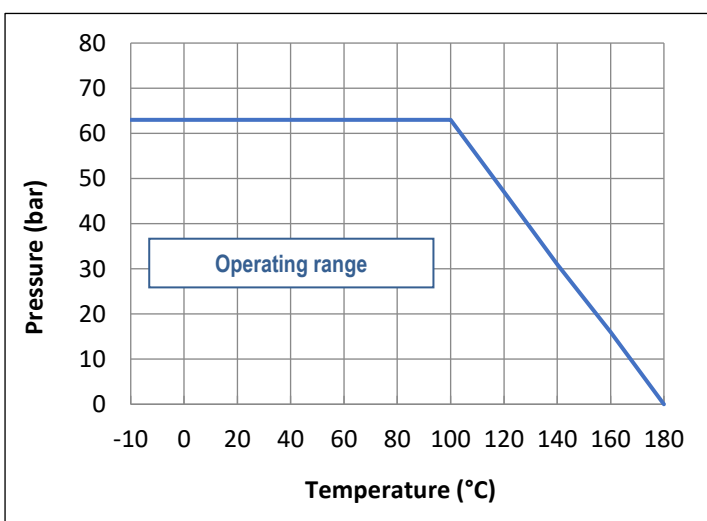
1/2" to 3" diameters.

G thread connections

Supply voltages: 24 V DC, 24 V AC and 230 V AC.

LIMITS OF USE

Fluid pressure: PS	63 bar (20°C)
Fluid temperature: WT	- 10°C / +180°C
Ambient temperature	- 20°C / + 60°C
Service factor	S4 – 50%



DIRECTIVES AND MANUFACTURING STANDARDS

OBJECT	Standard	ON	OBJECT	Standard
Pressure Equipment Directive 2014/68/EC	1/2" to 1" : not subject		Final test	NKS 12266
	1"1/4 to 3" : category III	TÜV 0035	Material certificate	NKS 10204
Size	EN 12516-1		Motorisation connection	ISO 5211:
Steel grades	EN 1503-1			

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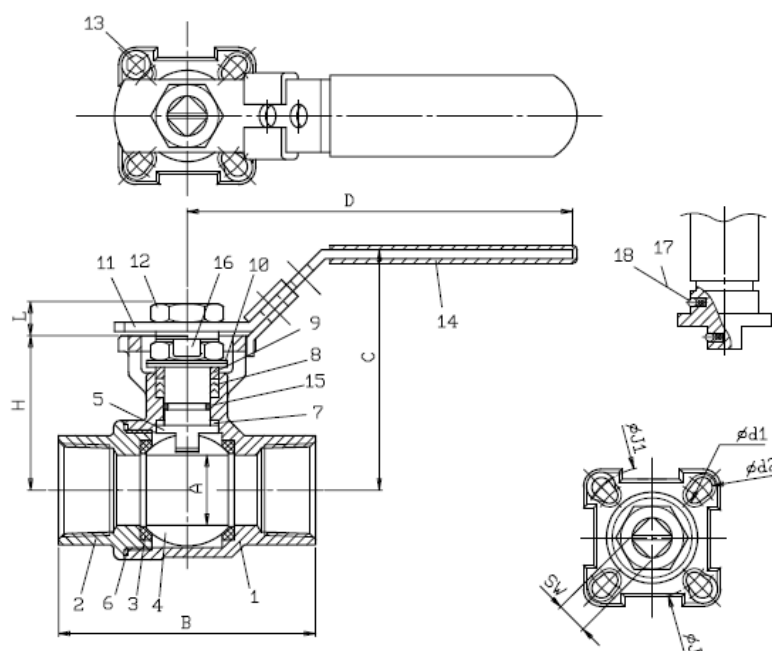
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715 XS VALVE WITH TCR ELECTRICAL ACTUATOR

CONSTRUCTION

No.	Name	Material	No.	Name	Material
1	Body	1.4408 SS	11	Lever	304 SS
2	Lateral end	1.4408 SS	12	Nut	304 SS
4	Seats	PTFE + +15% GF	13	Stop	304 SS
5	Stem	316 SS	14	Liner	PVC
6	Body gasket	PTFE	15	O-ring	FKM
7	Washer	PTFE	16	Slide	304 SS
8	Cable gland gasket	PTFE	17	Antistatic device	316 SS
9	Washer	304 SS	18	Spring	316 SS
10	Belleville washer	301 SS			



DIMENSIONS (mm)

DN	A	B	C	D	H	L	J	J1	d1	d2	SW
1/2"	15	55	70.9	110	42.3	8	42	50	6	7	9
3/4"	20	76	73.4	110	44.9	8	42	50	6	7	9
1"	24.5	83	84.1	135	54	10	42	50	6	7	11
1" 1/4	32	91	89.3	165	59.2	10	50	70	7	9	11
1" 1/2	38	103	109.5	165	71.3	10	50	70	7	9	11
2"	50	120	118.9	165	82.9	14.8	50	70	7	9	14
2" 1/2	65	155	155	300	107	17.1	70	102	9	11	17
3"	80	182	165	335	117	17.1	70	102	9	11	17

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TCR ELECTRICAL MOTORISATION

The TCR motorisation proposed as standard comprises:

- IP67 plastic housing for actuator and steel gear box,
- a safety coefficient of 1.3 minimum compared to the nominal torque of the valve,
- an upstream / downstream pressure difference $\Delta P=10$ bar max.

The actuator's assembly is direct.

DN	Actuator	Power 230V AC / 24V AC-DC	Time 230V AC	Time 24 V AC-DC	Standard equipment of the actuator
1/4"	TCR-02N	15	10s	10s	2 adjustable limit switches 2 dry auxiliary contacts Thermal protection of the motor 2-3W anti-condensation resistance Stand-by manual control with key 3D Position visual indicator Electrical connection: TRC02: 1 x PE M10 + 1.5m cable TCR05: 1 x PE M20 + 1.5m cable TCR11: 2 x PE M14 + 1.5 m cable
3/8"	TCR-02N	15	10s	10s	
1/2"	TCR-02N	15	10s	10s	
3/4"	TCR-02N	15	10s	10s	
1"	TCR-02N	15	10s	10s	
1" 1/4	TCR-02N	15	10s	10s	
1" 1/2	TCR-05N	25	12s	12s	
2"	TCR-05N	25	12s	12s	
2" 1/2	TCR-05N	25	12s	12s	
3"	TCR-11N	100	10s	10s	

For any other operating conditions, please contact us.

* indicative time for actuator running empty

MOTORISATION OPTIONS

There are many options, so please contact our sales service for more information on these:

1	100mm high height adjustment for installing thermal insulation
2	Actuator dimensioned for an upstream / downstream pressure difference ΔP greater than 10 bar
3	NF actuator – return via condenser – TCR-KT32
4	High-speed actuator - TRC-NH
5	Smart actuator with manoeuvring time adjustment - TCR-C
6	Control actuator – TCR-T
7	NF control actuator – return via condenser – TCR-T-KT32
8	Field bus actuator - TCR-B
9	Actuator with in-built timer – TCR-D
10	Wireless actuator – TCR-R

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ASSEMBLY AND MAINTAINANCE INSTRUCTIONS

1 - Installation

1.1 - Checks

- Check that the material of the valve body is chemically compatible with the fluid.
- Check that the pressure and service conditions are compatible with the (P, T) diagram of the valve. See § "Service limits"
- Check that the fluid is clean and free of particles. The latter could scratch the ball and damage the seats, hence causing the valve to leak. If need be, install an upstream filter.
- Check that there is no risk of thermal expansion of the fluid, which could damage the seats. In the open position, a hole at the top of the ball balances the pressures between the body cavity and the flow of the fluid. As an option, we recommend a relief hole upstream of the valve for balancing the pressures for fluids such as ammonia, LPG, chlorine, etc.
- Check that the valve is not used for flow or pressure control since it is not intended for this use and there is a risk of premature wear of the seats, in particular in the event of high pressure and/or temperature. For this special application, preferably use our "V-port" 746XS version with a V-shaped hole in the ball. Please contact us.
- Check that the valve is not used on a gas which might condense at certain times during the process. In such a case, the pressure within the body cavity could become negative, which could lead to a significant deformation of the seats. Please contact us.
- Static electricity: the valve will be supplied with a ball-stem-body internal electrical continuity tester. If the service conditions require the electrical continuity of the installation, check its earthing.
- If the valve is installed in an explosive zone, you must follow the additional "IMEVMATEX" instructions.

1.2 - Storage before installation

- Follow our general "IMESTOCK" instructions for storage.

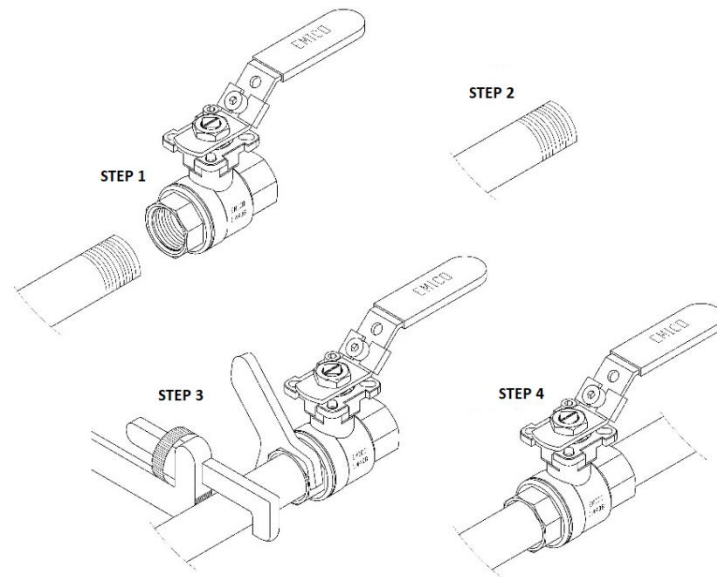
1.3 - Installation

- Before any installation, isolate the piping upstream and downstream, depressurize the piping and bring the installation to ambient temperature. Carefully clean the piping of any particle (foreign body, dust, rust, etc.) or shavings by water rinsing or air blowing.
- For valves with a size above DN50, plan to use a hoist.
- Remove the protective tips from the valve ends.
- Check the cleanliness of the internal surfaces of the valve and if need be, clean them.
- Direction of mounting: the valves do not have a preferred direction of mounting, unless a relief hole was drilled into the ball.
- Check the perfect alignment and the proper support of the pipe installation upstream and downstream of the valve. Alignment defects cause mechanical deformations which can block the valve or lead to leaks at the body gaskets.
- Check that the standards for the valve internal thread and pipe thread are the same.
- Cover the pipe threads using a sealing material (tow, PTFE tape, sealing glue, etc.) which is suitable for the fluid.
- Screw the tube into the valve end clockwise, as shown in the diagram below.
- Check the sealing of the connection using a suitable test (hydrostatic test or leak detection spray).
- Hydraulic test of the installation:
 - Valves were tested at the factory at 1.5 x WP.
 - If a hydrostatic test is carried out on the installation, do not exceed the authorised pressure.

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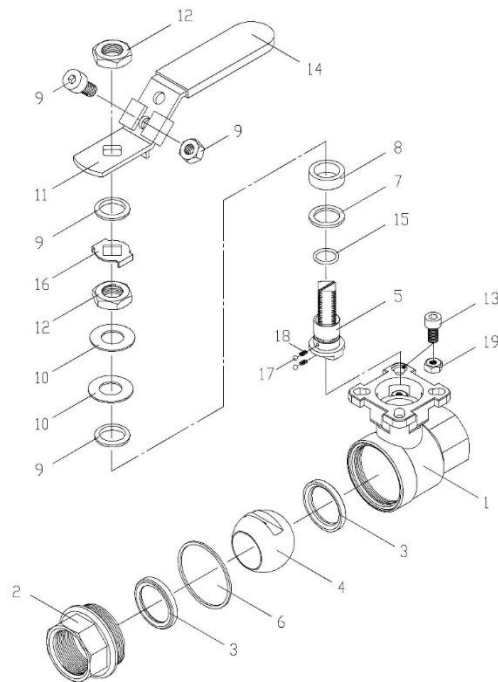
2 - Service

- If a hot fluid flows across the valve, do not touch the valve surface.
- Always operate the valve slowly and smoothly.
- Opening clockwise, closing anti-clockwise.

3 - Servicing

3.1 - Frequency of servicing

- The servicing frequency depends upon the use of the valve, of the type of fluid, of its velocity, of its frequency of operation, of the cycles of rise and fall in pressure and temperature.
- Before any intervention, isolate the upstream and downstream pipe installation using the valves provided for this purpose. Depressurize the pipe installation and bring it to ambient temperature.
- If the lever has to be removed, do that before disassembling the body.
- To remove the central body, unscrew the lateral end (item 2).
- To remove the ball from the body, turn the stem by a quarter turn.



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3.2 – Inspecting the state of the valve and possible repair

- Check the state of the ball (Item 4): it has to be clean and unscratched. If the cleaning or polishing is not possible, replace it (see the § on spare parts).
- Check the state of the seats (3.1 and 3.2): they must not be deformed, nor scratched, nor worn, or dirty. Otherwise, replace them with parts from the gasket kit.
- Check the state of the packing gland (7.8 and 9): no leak should be found at the stem and the rings should not be excessively worn. If need be, replace the gaskets.
- Check the state of the body gasket (6.1 and 6.2). Replace it, if need be.
- Reassemble the different parts of the valve, following the tightening torques shown in the table below.
- Check that the stem manoeuvring is smooth. Perform about ten manoeuvres.

TABLE OF THE TIGHTENING TORQUES OF THE TIE-BOLTS AND OF THE LEVER NUT

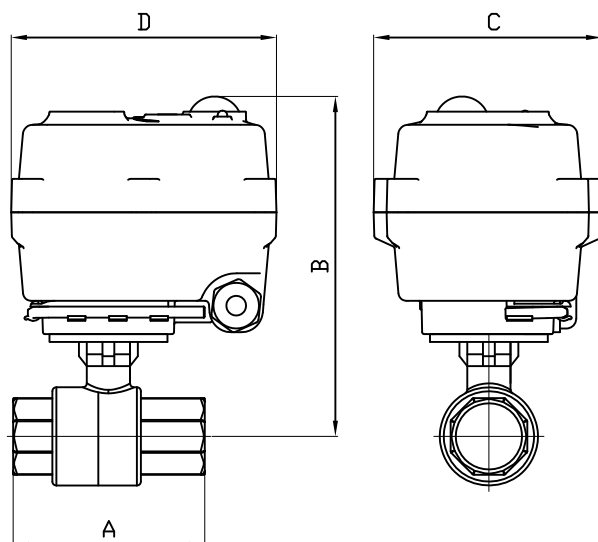
DN	Lever nut (Nm)
1/4" – 6	4
3/8" – 10	4
1/2" - 15	4
3/4" - 20	4
1" - 25	4.5
1"1/4 - 32	4.5
1"1/2 - 40	5.5
2" - 50	5.5
2"1/2 - 65	7
3" - 80	7
4 " - 100	7

SPARE PARTS

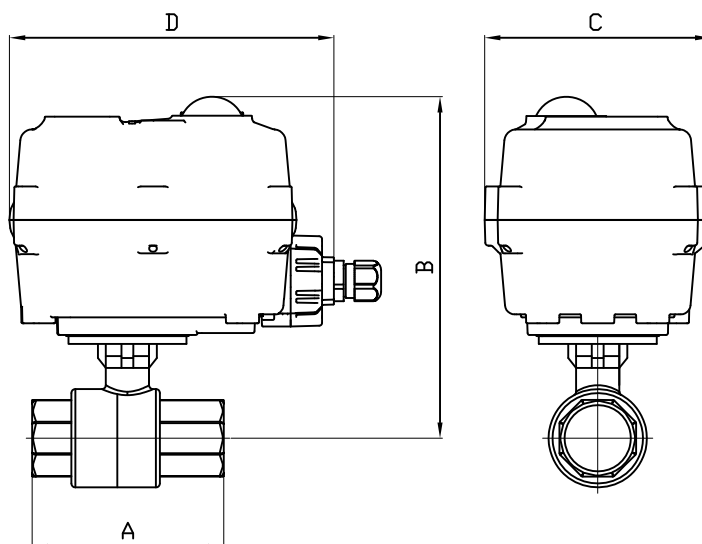
DN	Gasket kit	Ball	Lever
Reference mark	6-7-8-15	4	11
1/2" - 15	Please contact us.	980032	982802
3/4" - 20	Please contact us.	980033	982802
1" - 25	Please contact us.	980034	982804
1"1/4 - 32	Please contact us.	980035	982804
1"1/2 - 40	Please contact us.	980036	982806
2" - 50	Please contact us.	980037	982806
2"1/2 - 65	Please contact us.	Please contact us.	982808
3" - 80	Please contact us.	Please contact us.	982808
4 " - 100	Please contact us.	Please contact us.	982808

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TCR-02-05



TCR-11

DN	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"
SERVO	TCR02	TCR02	TCR02	TCR02	TCR05	TCR05	TCR11	TCR11
A	57	71	83	91	104	123	155	182
B	132.3	134.8	144	149.2	192.2	203.8	229	239.3
C	70	70	70	70	111	111	115	115
D	104	104	104	104	132	132	165	165
KG	1.1	1.2	1.55	2.1	3.5	5.3	9.9	13

Informations données à titre indicatif et sous réserve de modifications éventuelles
data subject to alteration

Ech: /	Date :04/09/2019	Dessiné par : E.D.	Tolérances générales : +/- 0.2	Modifications	Date	REV.
ROBINET A TOURNANT SPHERIQUE 715 XS/BALL VALVE 715XS + SERVOMOTEUR TCR/ELECTRIC ACTUATOR TCR				Matière :		
				Poids <Kg> :		
				Traitement : SANS		
 45, Rue du Ruisseau 38297 SAINT QUENTIN FALLAVIER				Plan n° Ens 1377		

TCR-N ELECTRICAL ACTUATOR

FEATURES

The TCR-N electric actuators are intended for motorising $\frac{1}{4}$ turn valves with a torque of 15, 20, 50, 110, 200 or 400 Nm. With a compact construction and plastic housing, they are especially well suited for motorising ball valves and butterfly valves. Several variants offer advanced functions. IP67 leak-tightness: to be used indoors and, possibly, outdoors under a shelter. Possible installation in parallel. Manual control with a key.

AVAILABLE MODELS

Supply voltages: 230V AC, 24V AC/DC, 12V DC.

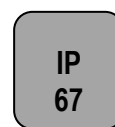
LIMITS OF USE

IP Code	IP 67
Ambient temperature	- 20°C / +60°C
Service factor	S4 - 50% (TCR 02-05-11)
	S3 - 85% (TCR 20-40)



MECHANICAL FEATURES

Gear box	treated steel pinions
Torques	15 - 20 - 50 - 110 - 200 - 400 Nm
Angle of rotation	90° +/- 2°
Declutching	Without (TCR 02-05-11)
	With (TCR 20-40)
Override control	By key



Actuator	TCR 02N			TCR 05N		
Torques (Nm)	15	20	20	50		
Voltage	12V DC	24V AC-DC	95-265V AC-DC	12VDC	24V AC-DC	95-265V AC-DC
Manoeuvring time (s)	15	10	10	12	12	12
ISO 5211:	F03/F05 - star 11			F05/F07 - star 14		

Actuator	TCR 11N			TCR 20N			TCR 40N		
Torques (Nm)	110			200			400		
Voltage	12V DC	24V AC-DC	95-265V AC-DC	12VDC	24V AC-DC	95-265V AC-DC	12V DC	24V AC-DC	95-265V AC-DC
Manoeuvring time (s)	10	10	10	25	25	25	25	25	25
ISO 5211:	F05/F07 - star 17			F07/F10 - star 22			F07/F10 - star 22		

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TCR-N ELECTRICAL ACTUATOR

ELECTRICAL FEATURES

Actuator	TCR 02N	TCR 05N
Motor protection	Thermal switch	
Limit switches	2 adjustable switches	
Auxiliary switches	2 adjustable dry switches	
Anti-condensation	integrated	
Electrical connection	PE M10 + 1.5m cable	PE M20 + 1.5m cable

Actuator	TCR 02N			TCR 05N		
Voltage	12V DC	24V AC-DC	95-265V AC-DC	12V DC	24V AC-DC	95-265V AC-DC
Power (W)	15	15	15	25	25	25
Current (A)	1,5	1,5	0,09	1,67	0,18 - 0,37	
Fuse Protection (A)	5	5	1	8	1 - 2	

Actuator	TCR 11N	TCR 20N	TCR 40N
Motor protection	Thermal switch		
Limit switches	2 adjustable switches		
Auxiliary switches	2 adjustable dry switches		
Anti-condensation	Integrated		
Electrical connection	2 x PE M14 + 1,5m cable	2 x PE M20 + 1.5m cable	2 x PE M20 + 1,5m cable

Actuator	TCR 11N			TCR 20N			TCR 40N		
Voltage	12V DC	24V AC-DC	95-265V AC-DC	12V DC	24V AC-DC	95-265V AC-DC	12V DC	24V AC-DC	95-265V AC-DC
Power (W)	100	100	100	50	50	50	80	80	80
Current (A)	2,5		0,3 – 0,6	2		0,22	3,3		0,36
Fuse Protection (A)	5		2 - 3	3		5	8		2

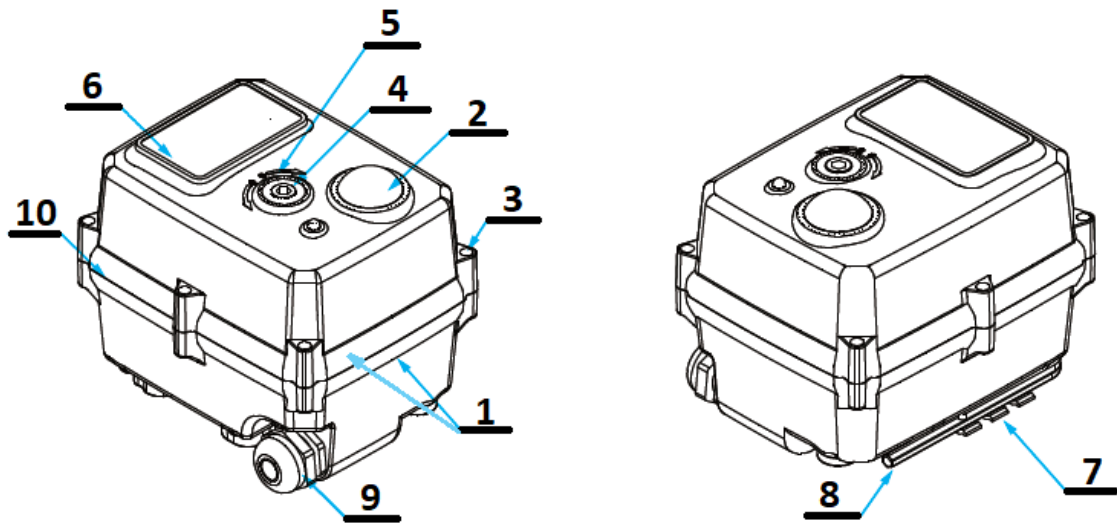
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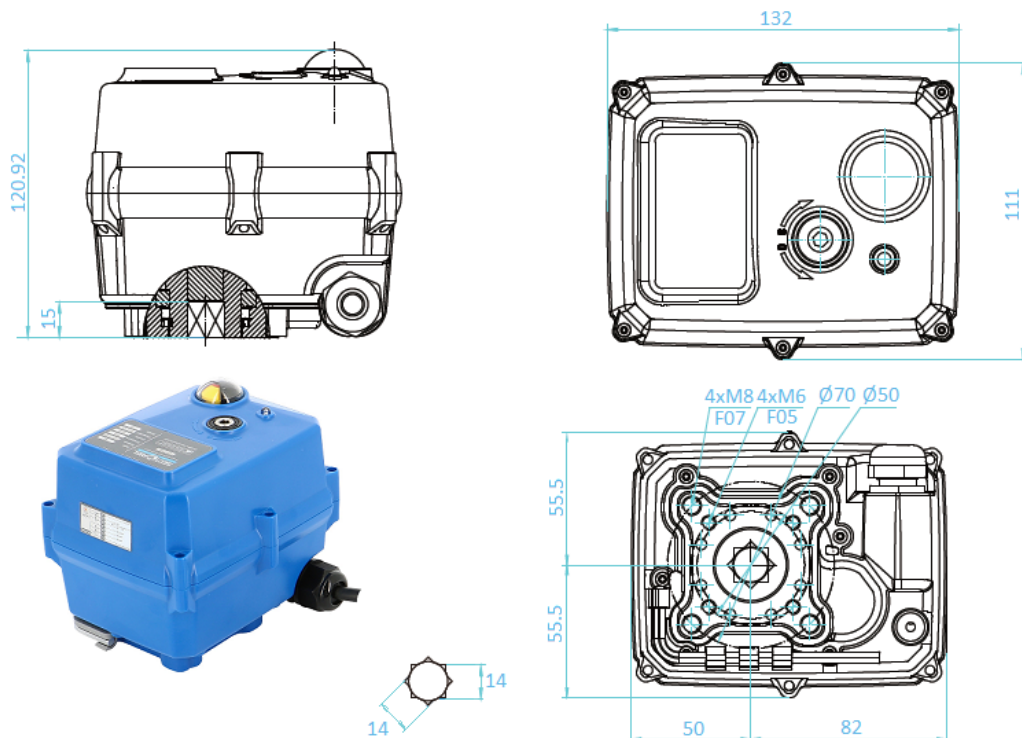
TCR-N ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-05N)

TCR-05N					
No.	Name	Material	No.	Name	Material
1	Casing + lid	Plastic (ABS)	6	Rating plate	PVC
2	Position indicator	Polycarbonate plastic	7	Key support	Plastic (ABS)
3	Screw x 6	Aisi 304	8	Hex key	Steel
4	Backup control stem	Aisi 304	9	Packing gland	Nylon
5	Gasket	NBR	10	Cover gasket	NBR
Weight (kg): 1.800					



DIMENSIONS (mm)



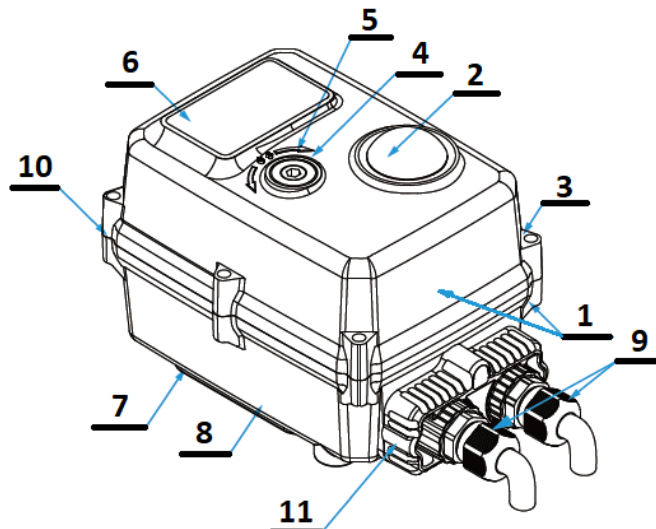
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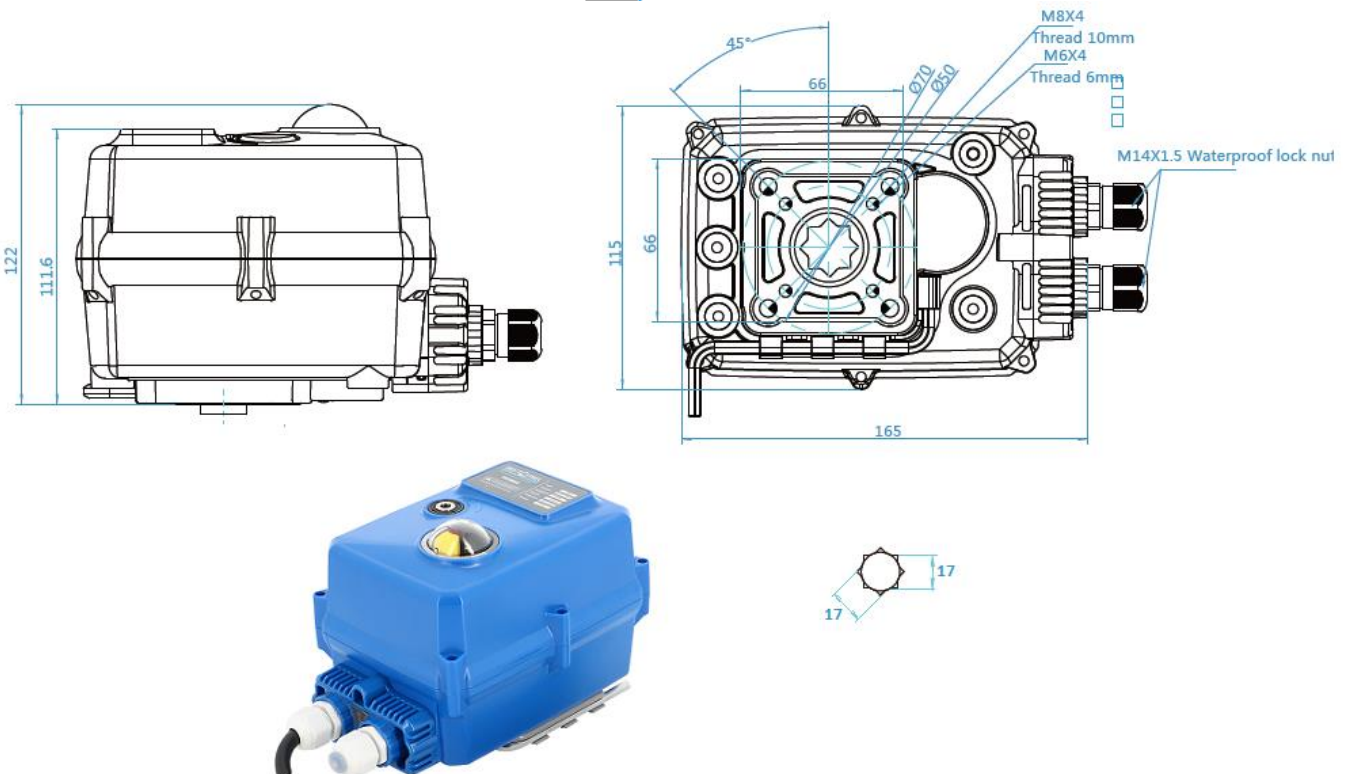
TCR-N ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-11N)

TCR-11N					
No.	Name	Material	No.	Name	Material
1	Casing + lid	Plastic (ABS)	6	Rating plate	PVC
2	Position indicator	Polycarbonate plastic	7	Key support	Plastic (ABS)
3	Screw x 6	Aisi 304	8	Hex key	Steel
4	Backup control stem	Aisi 304	9	X 2Packing gland	Nylon
5	Gasket	NBR	10	Cover gasket	NBR
Weight (kg): 2.200			11	Cable gland unit	Plastic (ABS)



DIMENSIONS (mm)



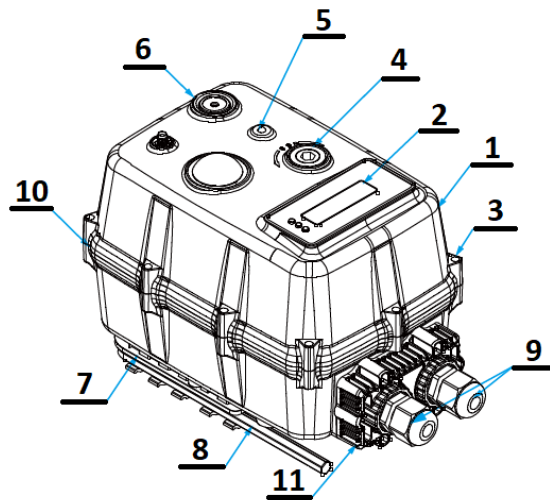
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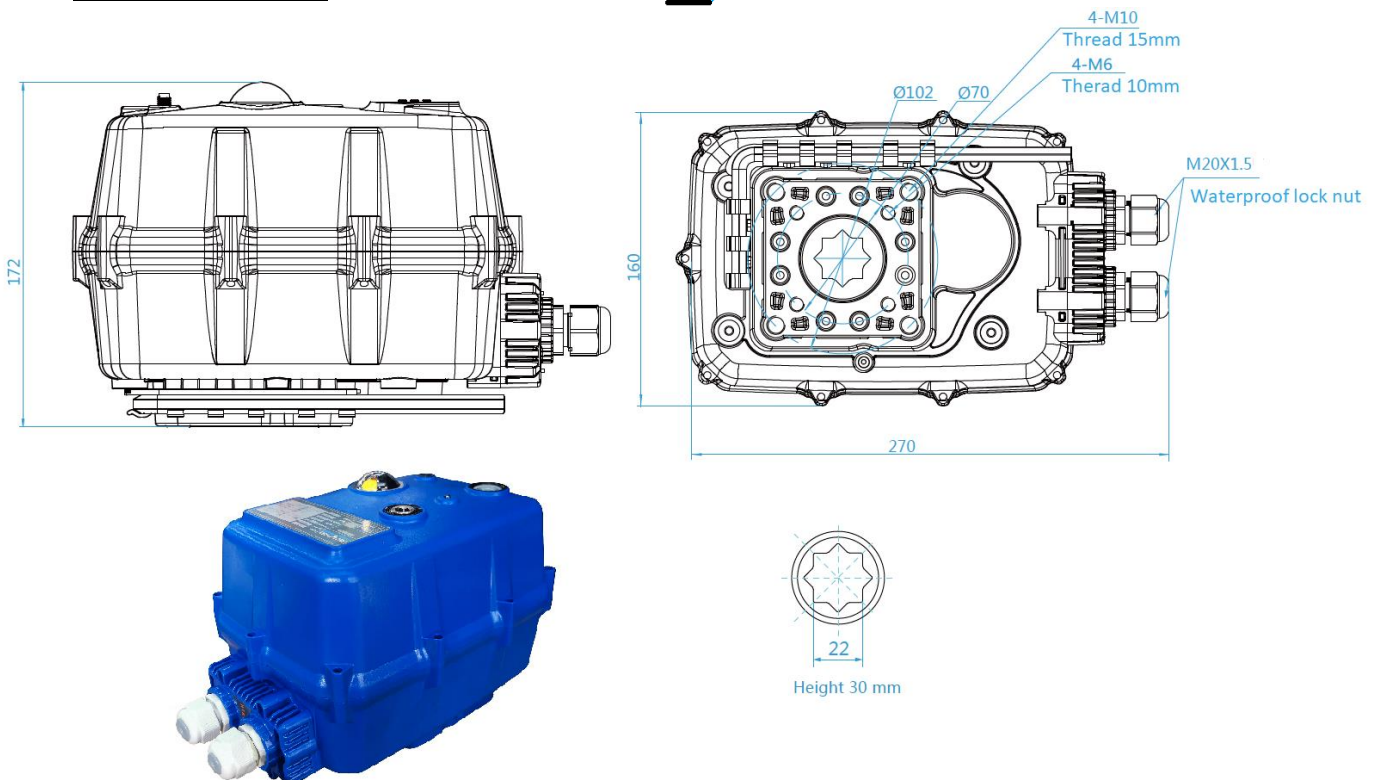
TCR-N ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-20N / TCR-40N)

TCR-20N / TCR-40N					
No.	Name	Material	No.	Name	Material
1	Casing + lid	PC + PET	6	Clutch	Polyoxymethylene POM
2	Position indicator	Polycarbonate plastic	7	Key support	Plastic ABS
3	Screw x 6	Aisi 304	8	Hex key	Steel
4	Backup control stem	Aisi 304	9	X 2Packing gland	Nylon
5	LED	Transparent PC	10	Cover gasket	NBR
Weight (Kg) : 6,000			11	Cable gland unit	Plastic ABS



DIMENSIONS (mm)

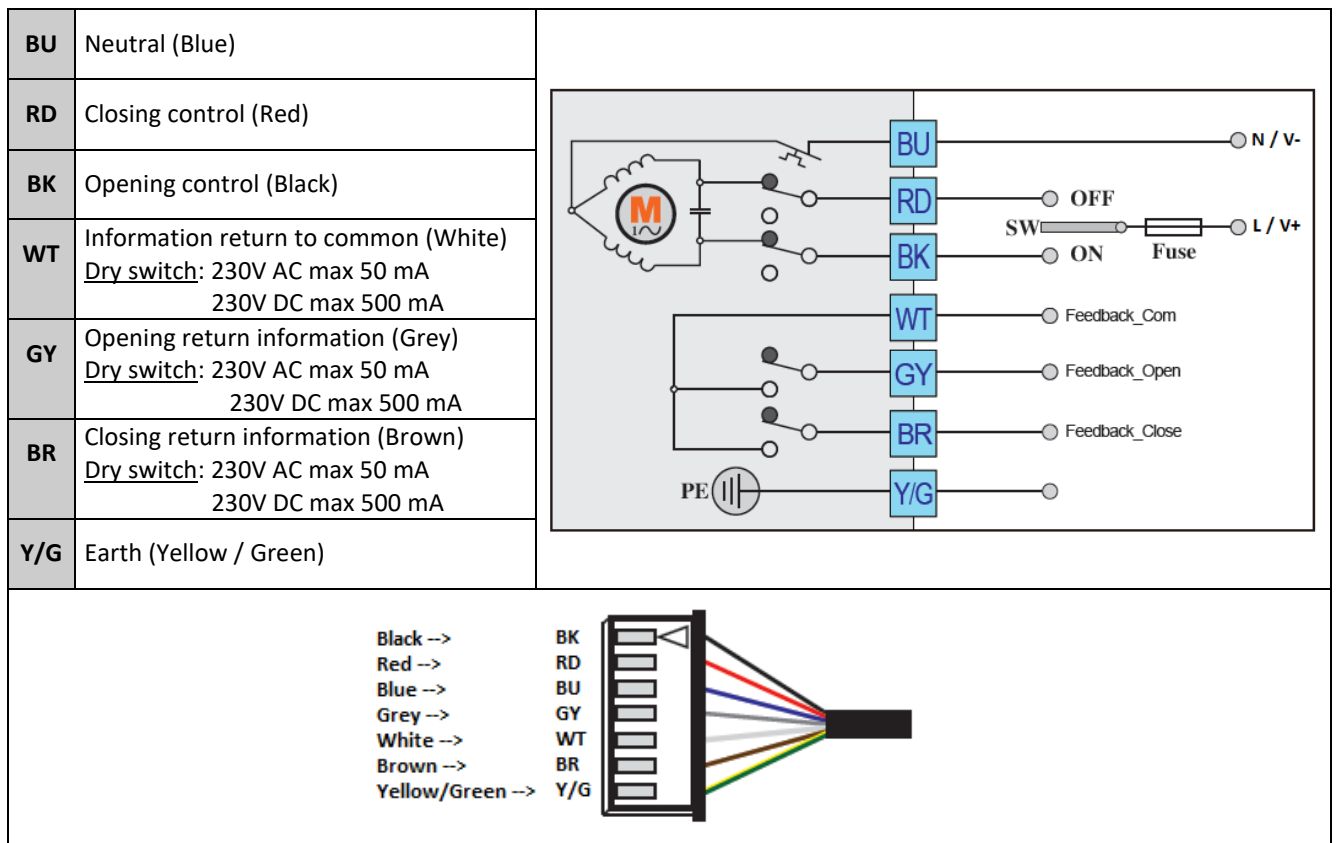


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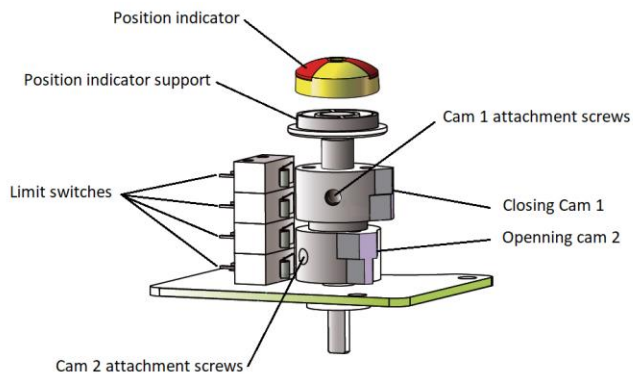
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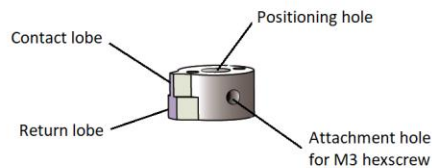
WIRING DIAGRAM



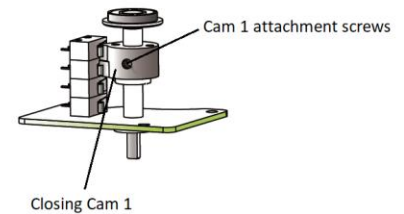
SWITCH SETTING



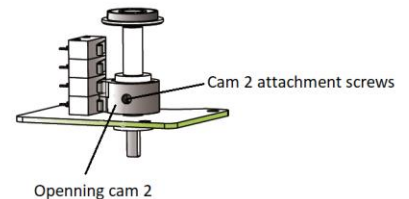
GENERAL VIEW



CAM DETAIL



CLOSING CAM ADJUSTMENT



OPENING CAM ADJUSTMENT

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TCR-N ELECTRICAL ACTUATOR

TROUBLESHOOTING

Defect met	Cause of defect	Method of solving
Inactive actuator	Non-connected electrical grid.	Connect to the electrical grid.
	Wrong voltage.	Check the actuator's voltage.
	Motor overheating.	Check the torque on the valve.
	Faulty connection.	Check the connection to the terminal box.
	Damaged start capacitor.	Contact the supplier for repair.
No switch signal	Faulty connection.	Check the connections.
	Damaged microswitch	Change the microswitch
Valve that is not fully closed	Use the return signal from the actuator check.	Receiving a return signal does not mean that the actuator is fully closed, hence do not cut the power supply.
	The hysteresis increases due to wear or between the actuator and the valve's stem.	Readjust the limit cams. Contact the supplier for repair.
Presence of humidity or water in the actuator	Unsuitable cable cross-section being used.	Contact the supplier for repair.
	The cable connection is not leak-tight.	
	Worn sealing gaskets.	
	Loose cover screws.	Dry the internal parts and tighten the cover screws.

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TCR-N-KT CAPACITOR RETURN ELECTRICAL ACTUATOR

FEATURES

The TCR-N-KT electric actuators are intended for motorising ¼ turn valves with a torque of 15, 50, 90 or 200 Nm. **Capacitor return function:** the closing manoeuvre is provided by a capacitor. With a compact construction and plastic housing, they are especially well suited for motorising small size ball valves. IP67 leak-tightness: to be used indoors and, possibly, outdoors under a shelter. Possible installation in parallel. Manual control with a key.

AVAILABLE MODELS

Supply voltages: 230V AC, 24V AC/DC.

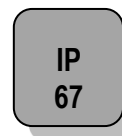
LIMITS OF USE

IP Code	IP 67
Ambient temperature	- 20°C / +60°C
Service factor	S4 - 50% (TCR 02N-05N-11N)
	S3 - 85% (TCR 20N)



MECHANICAL FEATURES

Gear box	treated steel pinions
Torques	15 - 45 - 95 - 110 Nm
Angle of rotation	90° +/- 2°
Declutching	Without (TCR 02N-05N-11N)
	With (TCR 20N)
Override control	By key



Actuator	TCR 02N-KT32		TCR 05N-KT32		TCR 11N-KT32	
Torques (Nm)	15		50		90	
Voltage	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC
Manoeuvring time (s)	10	10	12	12	10	10
ISO 5211:	F03/F05 - star 11		F05/F07 - star 14		F05/F07 - star 17	

Actuator	TCR 20N-KT32	
Torques (Nm)	200	
Voltage	24V AC - DC	95-265V AC-DC
Manoeuvring time (s)	25	25
ISO 5211:	F07/F10 - étoile de 22	

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TCR-N-KT CAPACITOR RETURN ELECTRICAL ACTUATOR

ELECTRICAL FEATURES

Actuator	TCR 02N-KT32	TCR 05N-KT32	TCR 11N-KT32
Motor protection	Thermal switch		
Limit switches	2 adjustable switches		
Auxiliary switches	2 adjustable dry switches		
Anti-condensation	integrated		
Electrical connection	PE M10 + 1.5m cable	PE M20 + 1.5m cable	2 x PE M14 + 1.5m cable

Actuator	TCR 02N-KT32		TCR 05N-KT32		TCR 11N-KT32	
Voltage	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC
Power (W)	36	36	40	40	100	100
Current (A)	1,5	0,09	1,8	1,6	2,5	0,26 - 0,52
Fuse protection (A)	5	1	10	2	5	2
Charging time (s)*	45	45	60	60	60	60

Actuator	TCR 20N-KT32
Motor protection	Thermal switch
Limit switches	2 adjustable switches
Auxiliary switches	2 adjustable dry switches
Anti-condensation	integrated
Electrical connection	PE M20 + 1.5 m cable

Actuator	TCR 20N-KT32	
Voltage	24V AC - DC	95-265V AC - DC
Power (W)	50	50
Current (A)	2	0.22
Fuse protection (A)	2	5
Charging time (s)*	90	90

*** Charging time :**

- After complete opening (excluding manoeuvring time).
- After prolonged non-use (>1 week) : add 1 minute to the recommended charging time.

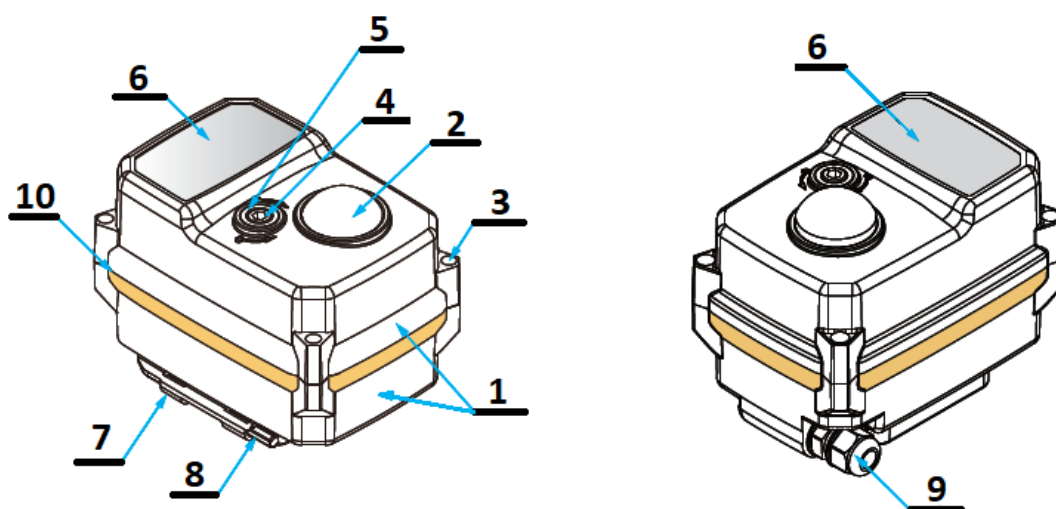
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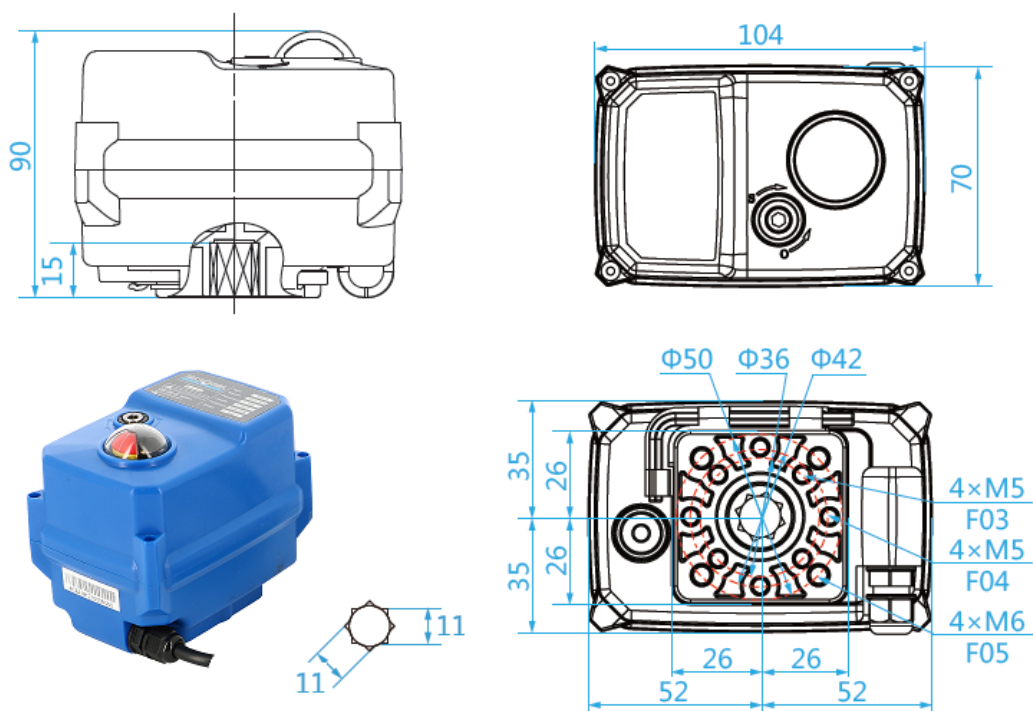
TCR-N-KT CAPACITOR RETURN ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-02N-KT32)

TCR-02N-KT32					
No.	Name	Material	No.	Name	Material
1	Casing + lid	Plastic (ABS)	6	Rating plate	PVC
2	Position indicator	Polycarbonate plastic	7	Key support	Plastic (ABS)
3	Screw x 4	Aisi 304	8	Hex key	Steel
4	Backup control stem	Aisi 304	9	Packing gland	Nylon
5	Gasket	NBR	10	Cover gasket	NBR
Weight (kg): 0.620					



DIMENSIONS (mm)



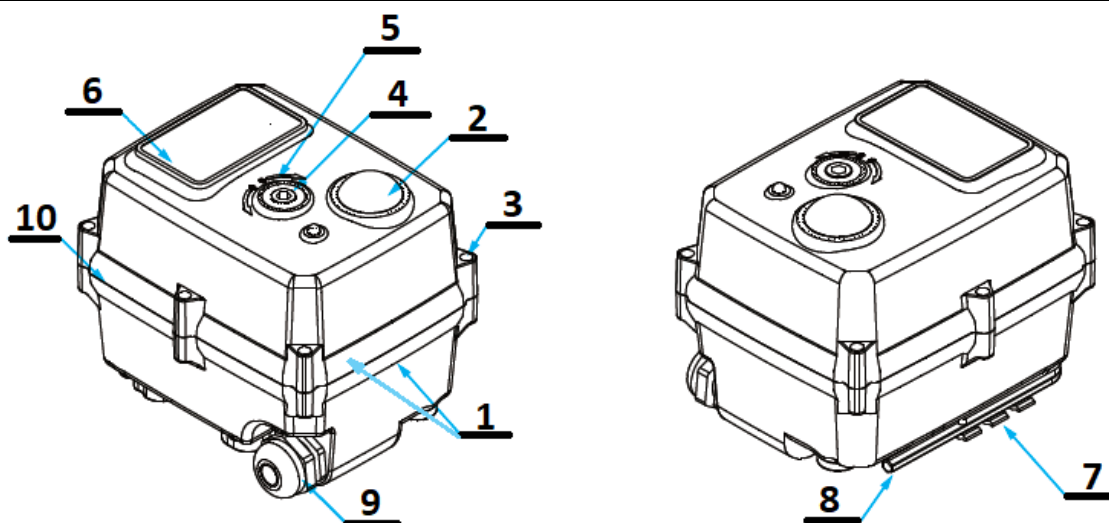
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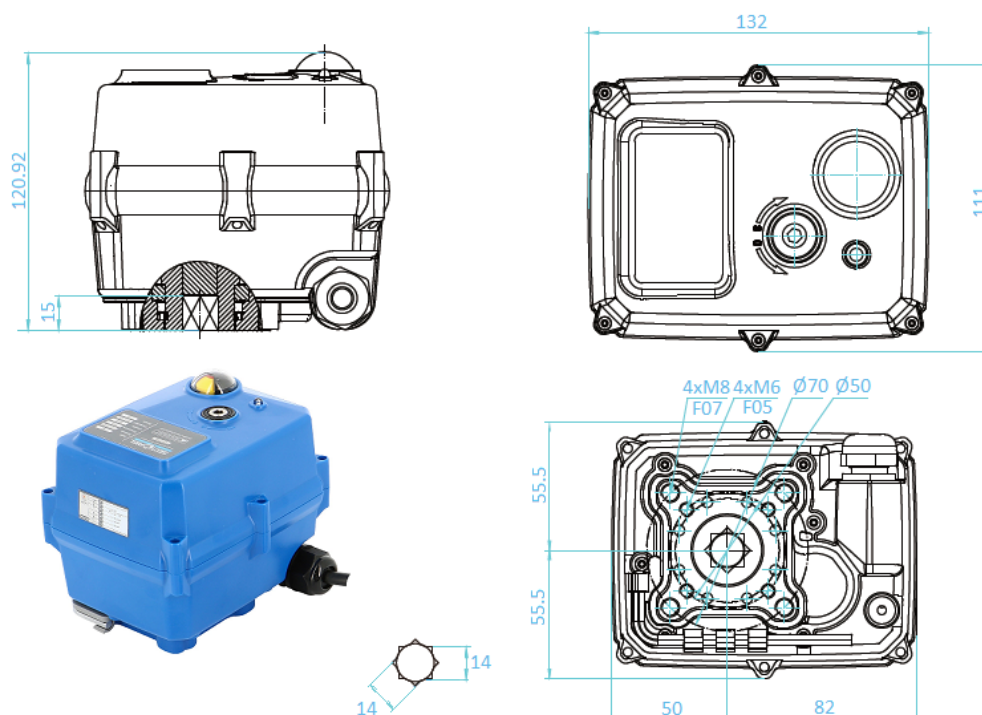
TCR-N-KT CAPACITOR RETURN ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-05N-KT32)

TCR-05N-KT32					
No.	Name	Material	No.	Name	Material
1	Casing + lid	Plastic (ABS)	6	Rating plate	PVC
2	Position indicator	Polycarbonate plastic	7	Key support	Plastic (ABS)
3	Screw x 6	Aisi 304	8	Hex key	Steel
4	Backup control stem	Aisi 304	9	Packing gland	Nylon
5	Gasket	NBR	10	Cover gasket	NBR
Weight (kg): 1.800					



DIMENSIONS (mm)



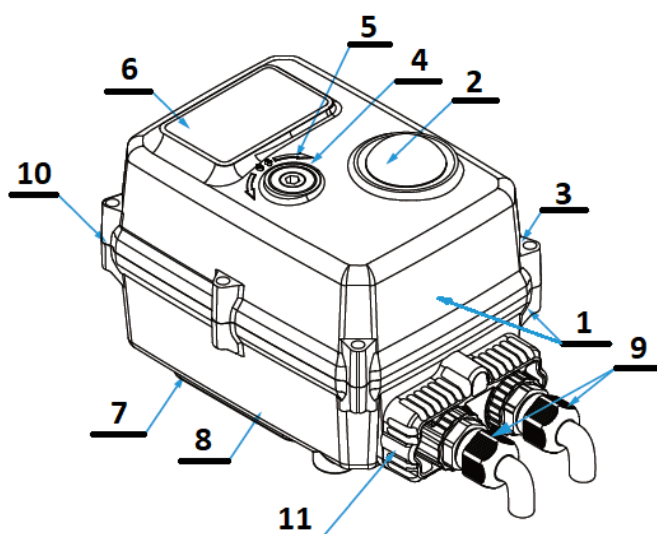
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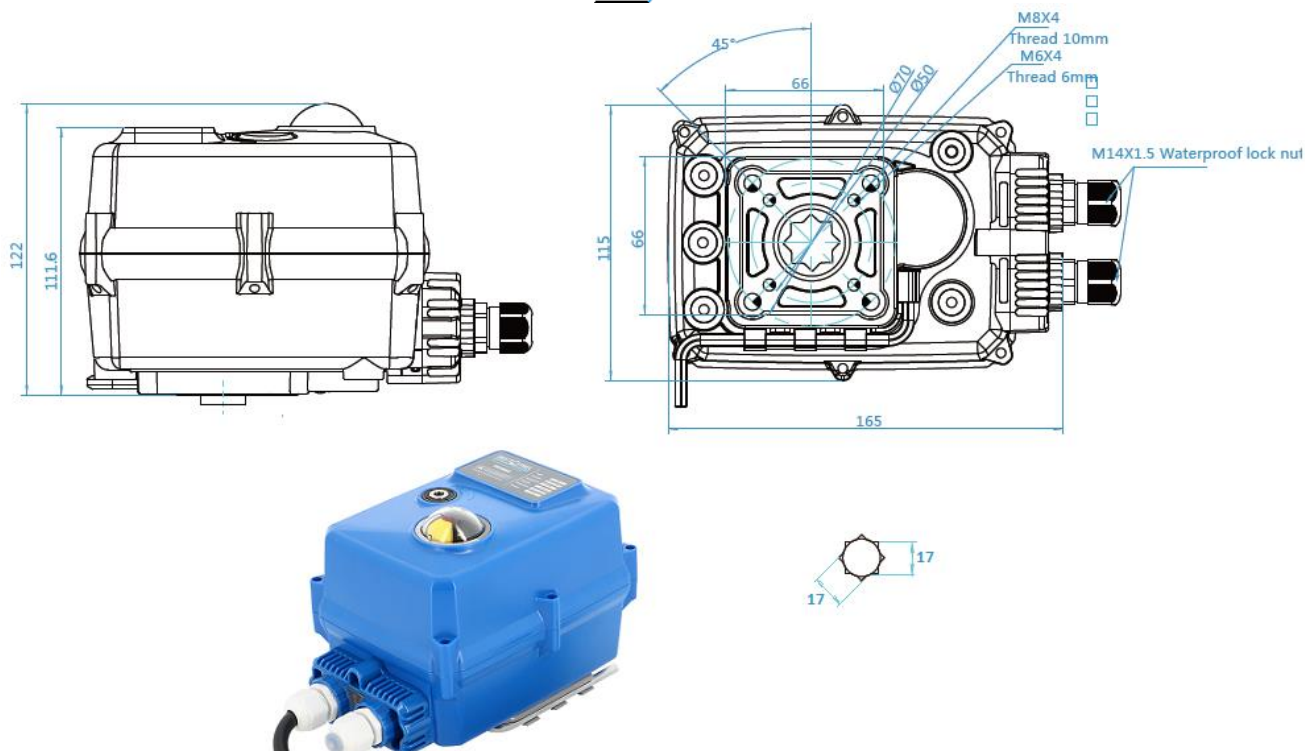
TCR-N-KT CAPACITOR RETURN ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-11N-KT32)

TCR-11N-KT32					
No.	Name	Material	No.	Name	Material
1	Casing + lid	Plastic (ABS)	6	Rating plate	PVC
2	Position indicator	Polycarbonate plastic	7	Key support	Plastic (ABS)
3	Screw x 6	Aisi 304	8	Hex key	Steel
4	Backup control stem	Aisi 304	9	X 2Packing gland	Nylon
5	Gasket	NBR	10	Cover gasket	NBR
Weight (kg): 2.200			11	Cable gland unit	Plastic (ABS)



DIMENSIONS (mm)



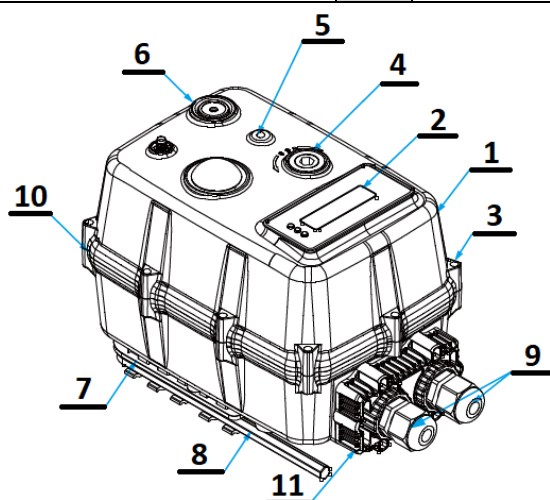
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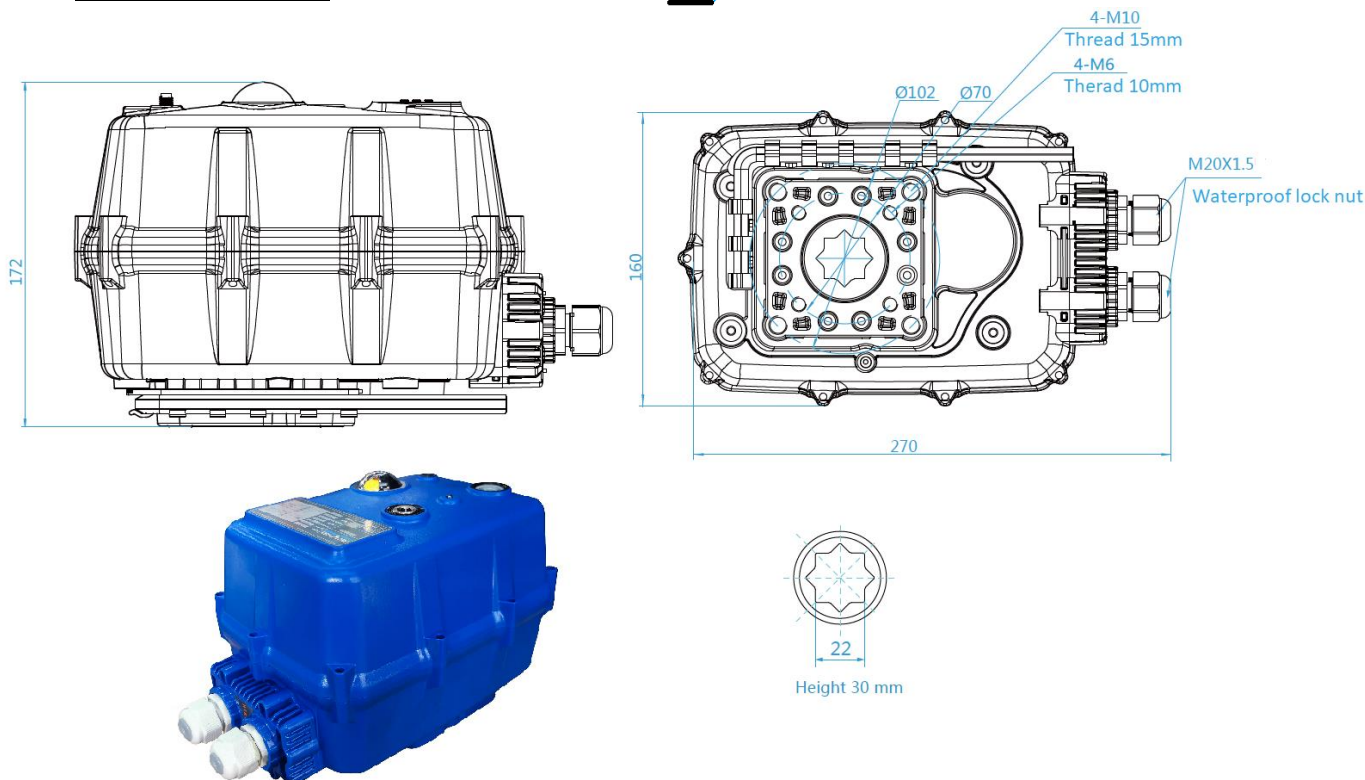
TCR-N-KT CAPACITOR RETURN ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-20N-KT32)

TCR-20N-KT32					
N°	Désignation	Matière	N°	Désignation	Matière
1	Casing + lid	PC + PET	6	Clutch	Polyoxymethylene POM
2	Position indicator	Polycarbonate plastic	7	Key support	Plastic (ABS)
3	Screw x 6	Aisi 304	8	Hex key	Steel
4	Backup control stem	Aisi 304	9	X 2Packing gland	Nylon
5	LED	Plastic PC	10	Cover gasket	NBR
Poids (Kg) : 6,000			11	Cable gland unit	Plastic (ABS)



DIMENSIONS (mm)



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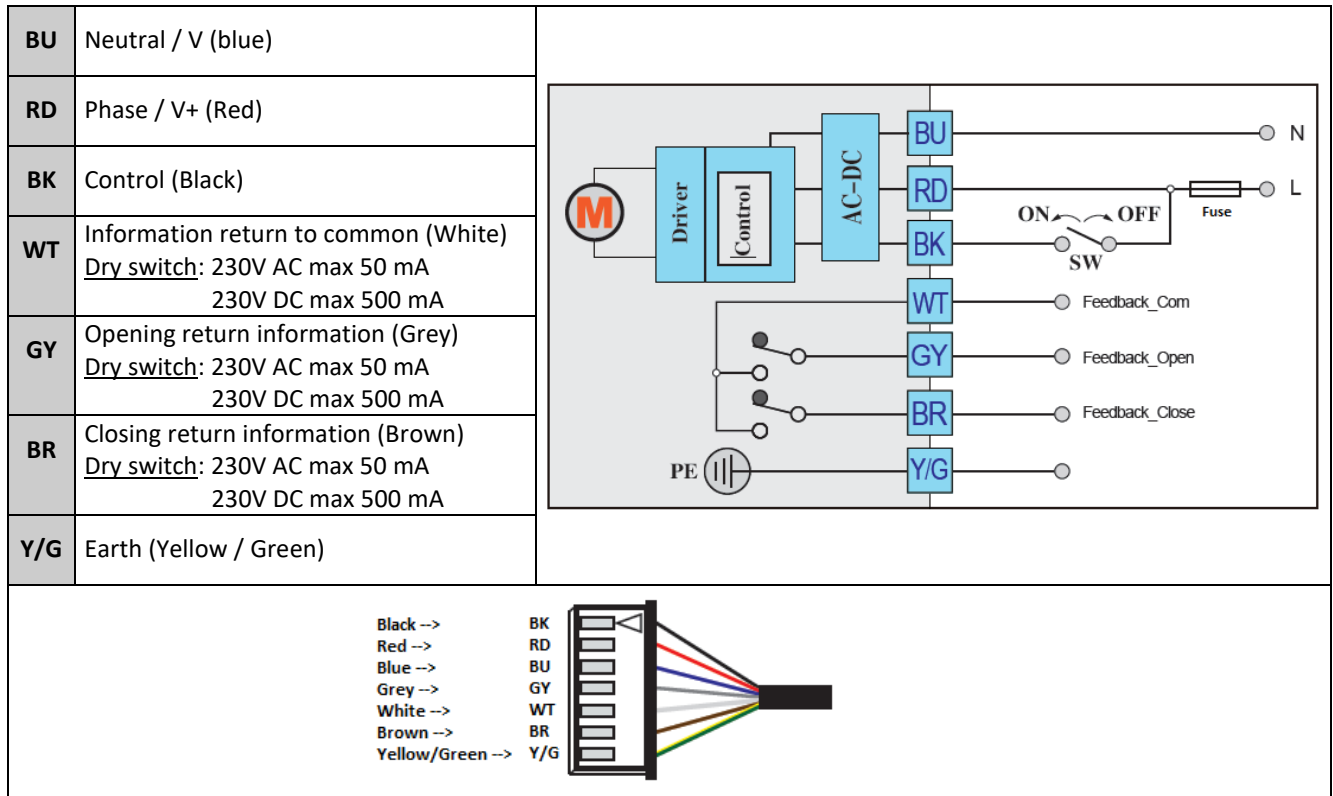
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TCR-N-KT CAPACITOR RETURN ELECTRICAL ACTUATOR

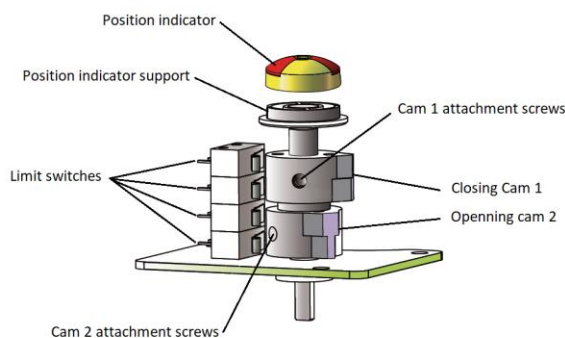
WIRING DIAGRAM

Note :

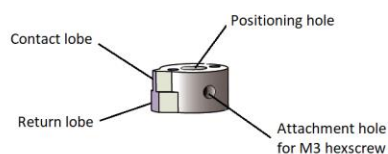
- Follow the wiring diagram carefully. In standard operation, do not systematically use the capacitor for closing.
- For high opening/closing frequencies, it is essential to follow the wiring diagram shown (see page 2 § electrical characteristics - charging time).



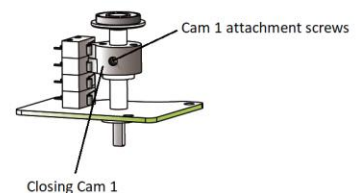
SWITCH SETTING



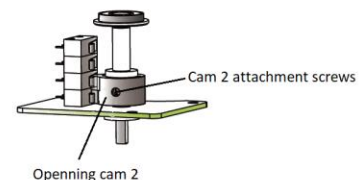
GENERAL VIEW



CAM DETAIL



CLOSING CAM ADJUSTMENT



OPENING CAM ADJUSTMENT

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TCR-N-KT CAPACITOR RETURN ELECTRICAL ACTUATOR

TROUBLESHOOTING

Defect met	Cause of defect	Method of solving
Inactive actuator	Non-connected electrical grid.	Connect to the electrical grid.
	Wrong voltage.	Check the actuator's voltage.
	Motor overheating.	Check the torque on the valve.
	Faulty connection.	Check the connection to the terminal box.
	Damaged start capacitor.	Contact the supplier for repair.
No switch signal	Faulty connection.	Check the connections.
	Damaged microswitch	Change the microswitch
Valve that is not fully closed	Use the return signal from the actuator check.	Receiving a return signal does not mean that the actuator is fully closed, hence do not cut the power supply.
	The hysteresis increases due to wear or between the actuator and the valve's stem.	Readjust the limit cams. Contact the supplier for repair.
Presence of humidity or water in the actuator	Unsuitable cable cross-section being used.	Contact the supplier for repair.
	The cable connection is not leak-tight.	
	Worn sealing gaskets.	
	Loose cover screws.	Dry the internal parts and tighten the cover screws.

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TCR-NH HIGH-SPEED ELECTRICAL ACTUATOR

FEATURES

The TCR-NH electric actuators are intended for motorising ¼ turn valves with a torque of 15, 50 or 110 Nm. **High-speed function:** 6-second manoeuvre time. With a compact construction and plastic housing, they are especially well suited for motorising small size ball valves. IP67 leak-tightness: to be used indoors and, possibly, outdoors under a shelter. Possible installation in parallel. Manual control with a key.

AVAILABLE MODELS

Supply voltages: 230V AC, 24V AC/DC.

LIMITS OF USE

IP Code	IP 67
Ambient temperature	- 20°C / +60°C
Service factor	S4-50%

MECHANICAL FEATURES

Gear box	treated steel pinions
Torques	15 - 50 - 110 Nm
Angle of rotation	90° +/- 2°
Declutching	without
Override control	By key



Actuator	TCR 02NH		TCR 05NH		TCR 11NH	
Torques (Nm)	15		50		110	
Voltage	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC
Manoeuvring time (s)	6	6	5	5	5	5
ISO 5211:	F03/F05 - star 11		F05/F07 - star 14		F05/F07 - star 17	

ELECTRICAL FEATURES

Actuator	TCR 02NH	TCR 05NH	TCR 11NH
Motor protection	Thermal switch		
Limit switches	2 adjustable switches		
Auxiliary switches	2 adjustable dry switches		
Anti-condensation	integrated		
Electrical connection	PE M10 + 1.5m cable	PE M20 + 1.5m cable	2 x PE M14 + 1.5m cable

Actuator	TCR 02NH		TCR 05NH		TCR 11NH	
Voltage	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC
Power (W)	25	25	40	40	100	100
Current (A)	1,5	0,12	1,8	1,8	5	0,52
Fuse protection (A)	5	1	10	10	10	2

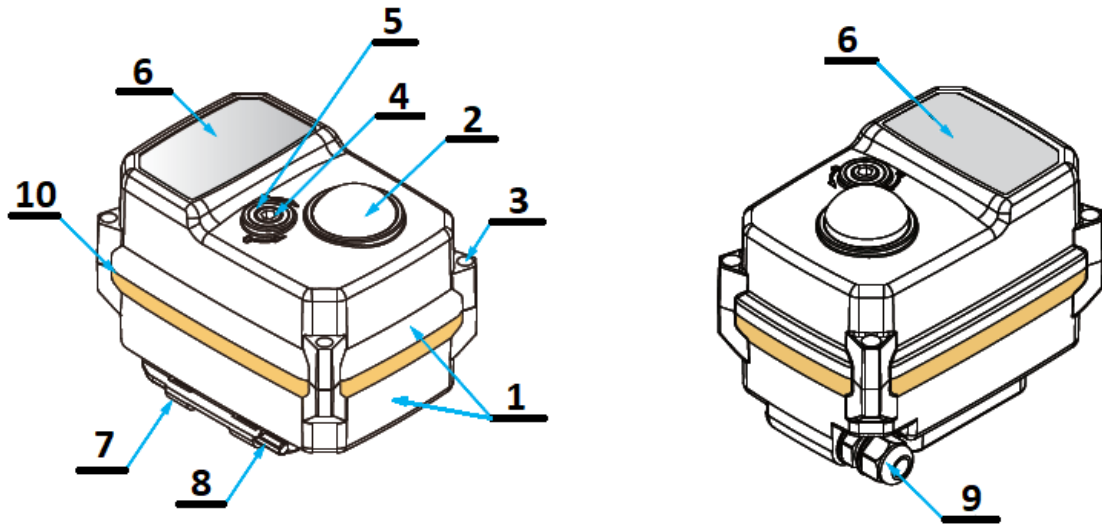
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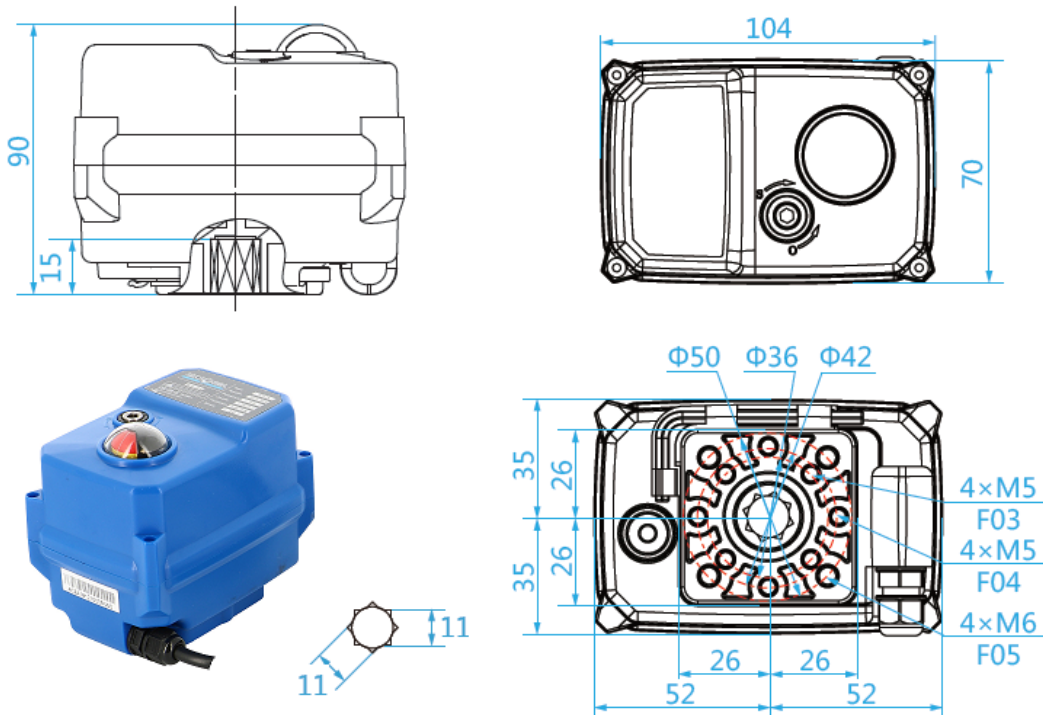
TCR-NH HIGH-SPEED ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-02NH)

TCR-02NH					
No.	Name	Material	No.	Name	Material
1	Casing + lid	Plastic (ABS)	6	Rating plate	PVC
2	Position indicator	Polycarbonate plastic	7	Key support	Plastic (ABS)
3	Screw x 4	Aisi 304	8	Hex key	Steel
4	Backup control stem	Aisi 304	9	Packing gland	Nylon
5	Gasket	NBR	10	Cover gasket	NBR
Weight (kg): 0.620					



DIMENSIONS (mm)



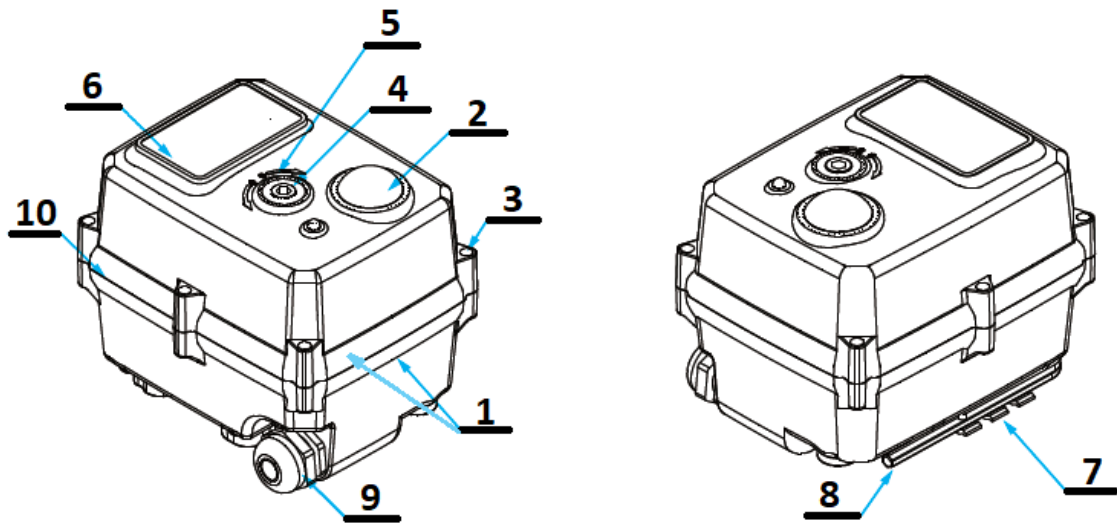
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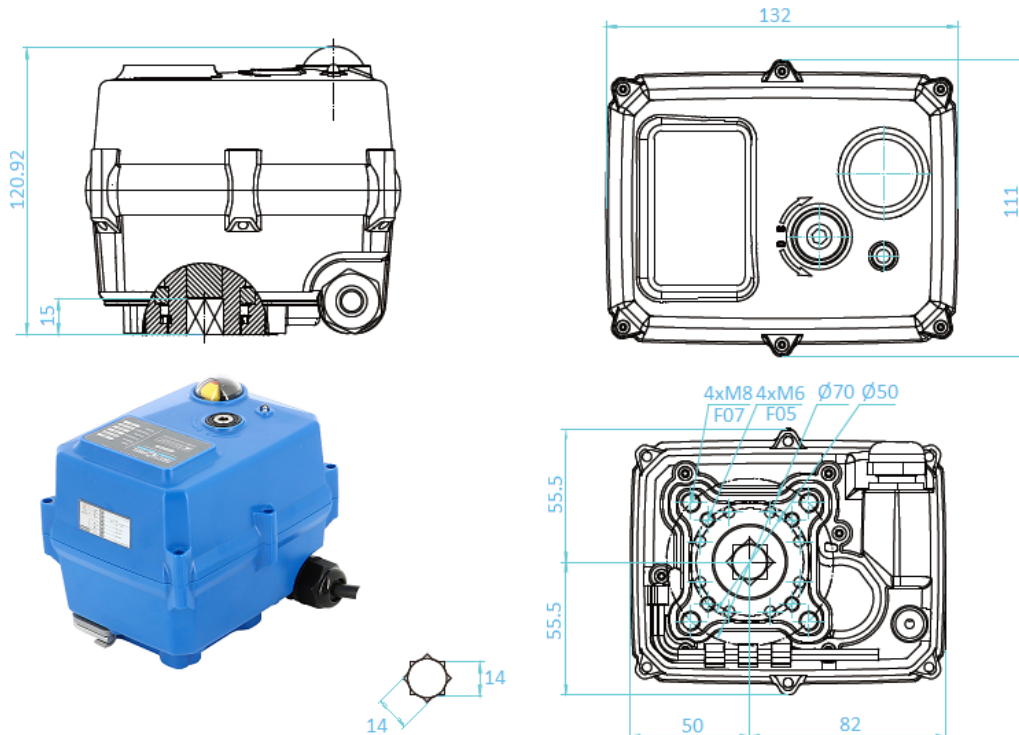
TCR-NH HIGH-SPEED ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-05NH)

TCR-05NH					
No.	Name	Material	No.	Name	Material
1	Casing + lid	Plastic (ABS)	6	Rating plate	PVC
2	Position indicator	Polycarbonate plastic	7	Key support	Plastic (ABS)
3	Screw x 6	Aisi 304	8	Hex key	Steel
4	Backup control stem	Aisi 304	9	Packing gland	Nylon
5	Gasket	NBR	10	Cover gasket	NBR
Weight (kg): 1.800					



DIMENSIONS (mm)

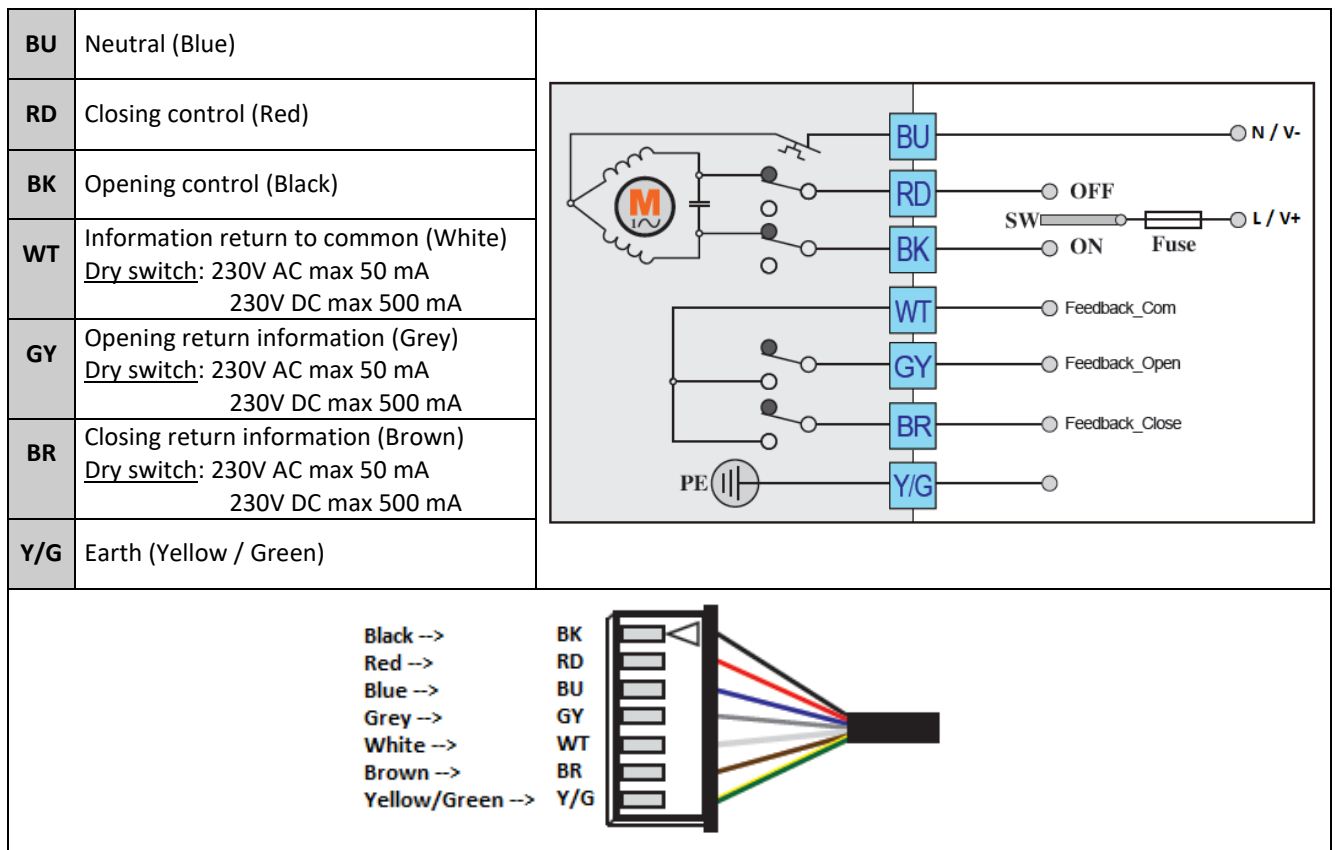


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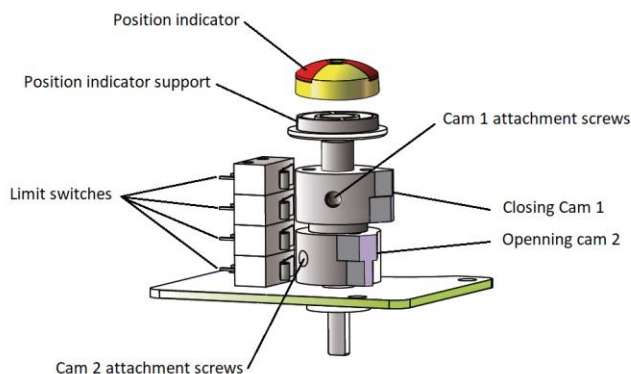
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TCR-NH HIGH-SPEED ELECTRICAL ACTUATOR

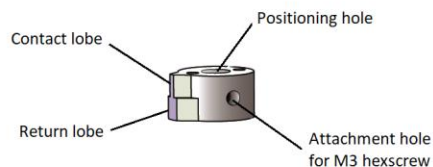
WIRING DIAGRAM



SWITCH SETTING

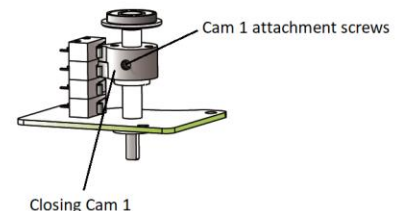


GENERAL VIEW

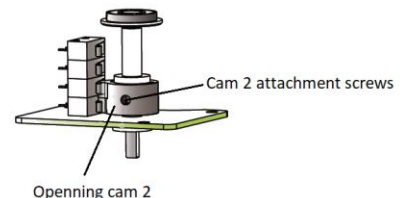


CAM DETAIL

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TCR-NH HIGH-SPEED ELECTRICAL ACTUATOR

TROUBLESHOOTING

Defect met	Cause of defect	Method of solving
Inactive actuator	Non-connected electrical grid.	Connect to the electrical grid.
	Wrong voltage.	Check the actuator's voltage.
	Motor overheating.	Check the torque on the valve.
	Faulty connection.	Check the connection to the terminal box.
	Damaged start capacitor.	Contact the supplier for repair.
No switch signal	Faulty connection.	Check the connections.
	Damaged microswitch	Change the microswitch
Valve that is not fully closed	Use the return signal from the actuator check.	Receiving a return signal does not mean that the actuator is fully closed, hence do not cut the power supply.
	The hysteresis increases due to wear or between the actuator and the valve's stem.	Readjust the limit cams. Contact the supplier for repair.
Presence of humidity or water in the actuator	Unsuitable cable cross-section being used.	Contact the supplier for repair.
	The cable connection is not leak-tight.	
	Worn sealing gaskets.	
	Loose cover screws.	Dry the internal parts and tighten the cover screws.

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TCR-02-05D TIMER ELECTRICAL ACTUATOR

FEATURES

The TCR-D electric actuator is intended for motorising $\frac{1}{4}$ turn valves with a torque of 20 or 50 Nm., including the "TIMER" function. With a compact construction and plastic housing, it is especially well suited for motorising small dimensions ball valves. The parameters of the TIMER function can be set via a menu. This function is used for programming periodic, automatic openings/closings of a valve (frequency and length of time) under two modes: ON and OFF cycle of lengths of time or clock. IP67 leak-tightness: to be used indoors and, possibly, outdoors under a shelter. Manual control with a key.

AVAILABLE MODELS

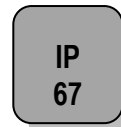
Supply voltages: 230V AC, 24V AC/DC.

LIMITS OF USE

IP Code	IP 67
Ambient temperature	- 20°C / +60°C
Service factor	S4 - 50%

MECHANICAL FEATURES

Gear box	treated steel pinions
Torques	20 - 50 Nm
Angle of rotation	90° +/- 2°
Declutching	Without
Override control	By key



Actuator	TCR 02D		TCR 05D
Torques (Nm)	20	20	50
Voltage	24V AC - DC	95-265V AC-DC	95-265V AC-DC
Manoeuvring time (s)	10	10	12
ISO 5211:	F03/F04/F05 - star 11		F05/F07 - star 14

ELECTRICAL FEATURES

Actuator	TCR 02D	TCR 05D
Motor protection	Thermal switch	
Limit switches	Without	
Auxiliary switches	Without	
Anti-condensation	integrated	
Electrical connection	PE M10 + 1.5m cable	PE M20 + 1.5m cable

Actuator	TCR 02D		TCR 05D
Voltage	24V AC - DC	95-265V AC-DC	95-265V AC-DC
Power (W)	15	15	25
Current (A)	0,35	0,035 - 0,075	-
Fuse protection (A)	2	1	2

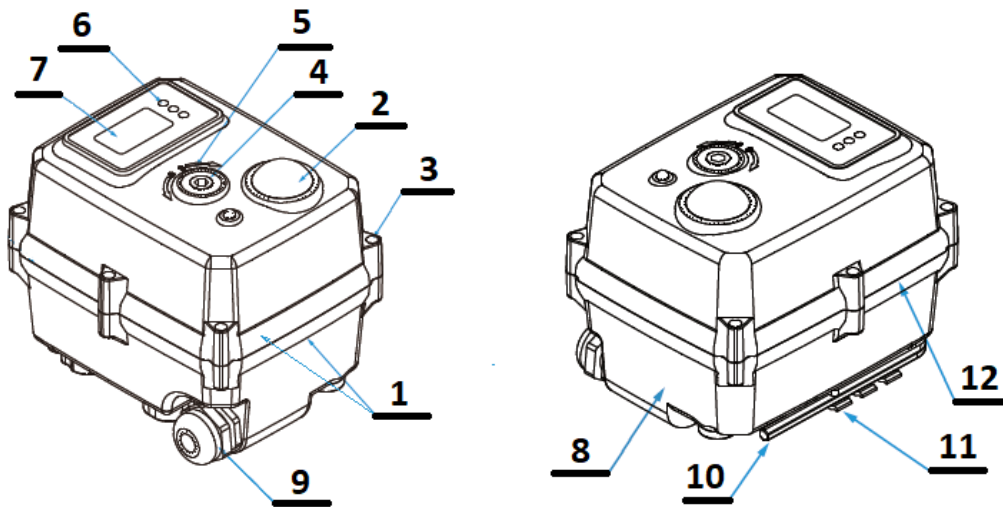
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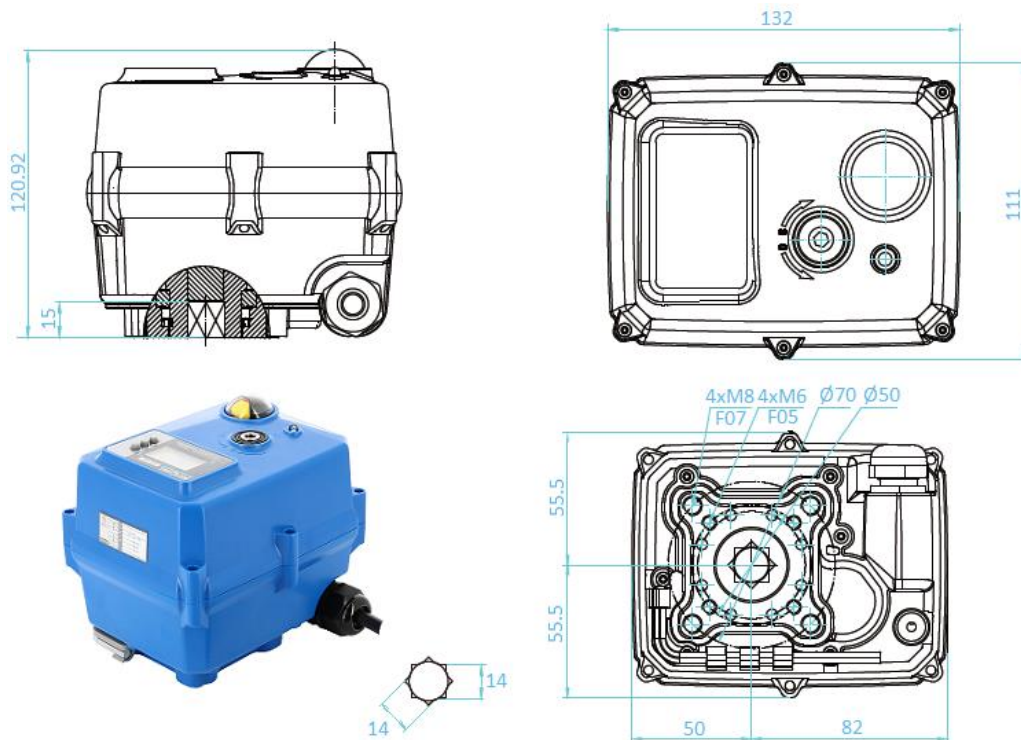
TCR-02-05D TIMER ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-05D)

TCR-05D					
No.	Name	Material	No.	Name	Material
1	Casing + lid	Plastic (ABS)	7	1.3" LCD display	OLED
2	Position indicator	Polycarbonate plastic	8	Rating plate	PVC
3	Screw x 6	Aisi 304	9	Packing gland	Nylon
4	Backup control stem	Aisi 304	10	Hex key	Steel
5	Gasket	NBR	11	Key support	Plastic (ABS)
6	Adjustment button	Rubber	12	Cover gasket	NBR
Weight (kg): 1.800					



DIMENSIONS (mm)

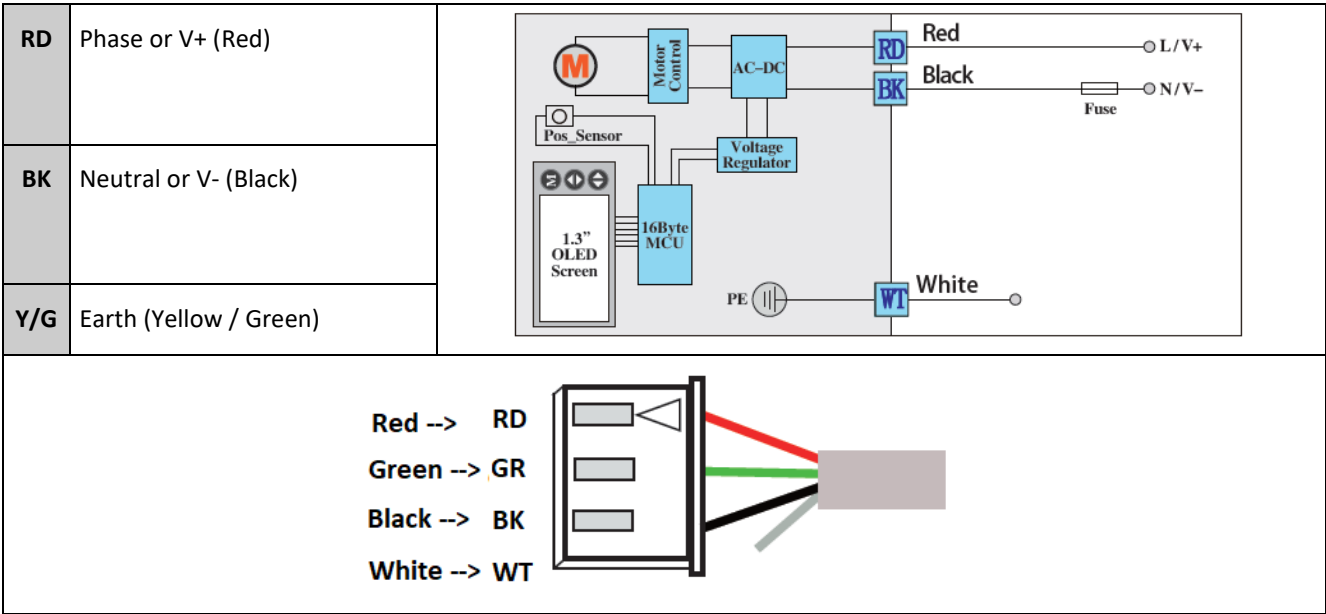


Information given as an indication only, and subject to possible modifications

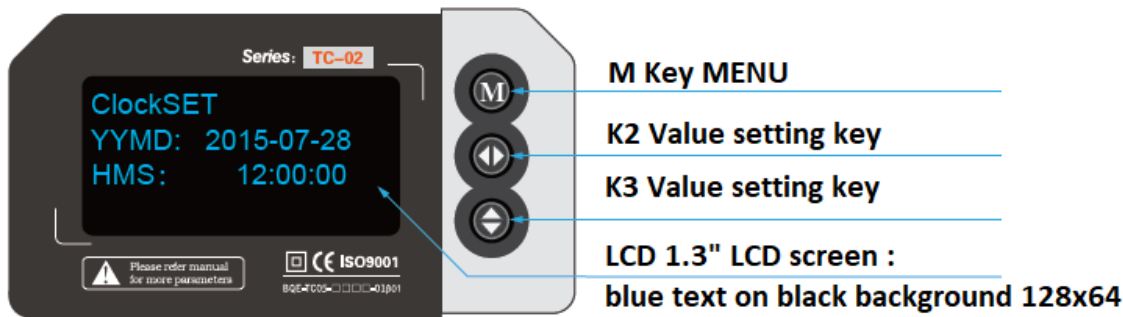
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WIRING DIAGRAM



DESCRIPTION OF THE 1.3" LCD SCREEN



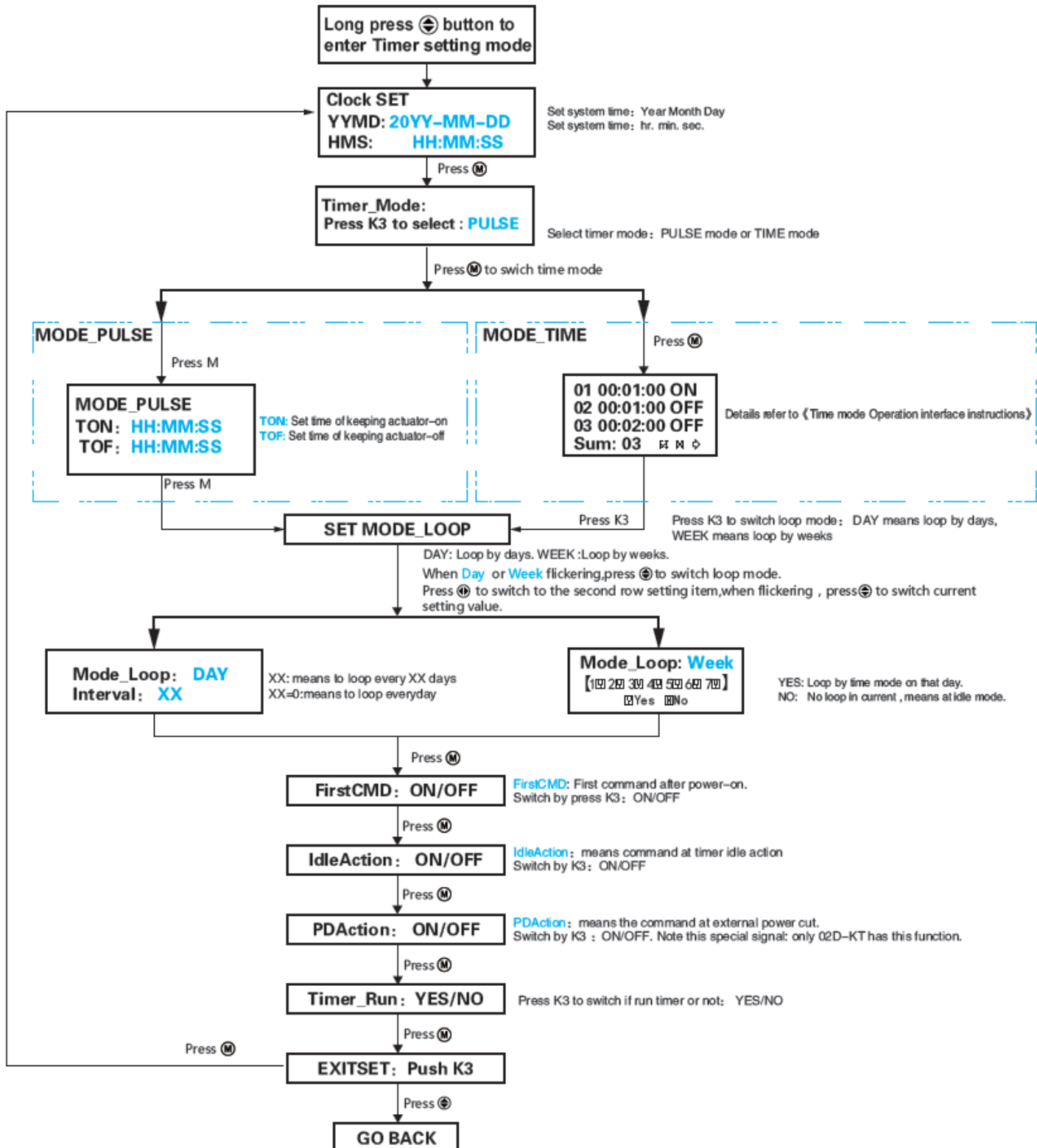
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PARAMETER SETTING MENU OF THE TIMER

- Ⓜ M Key: to switch menus
- Ⓚ K2 Key: to switch Flash Item or adjust values
- Ⓚ K3 Key: to modulate numerical value



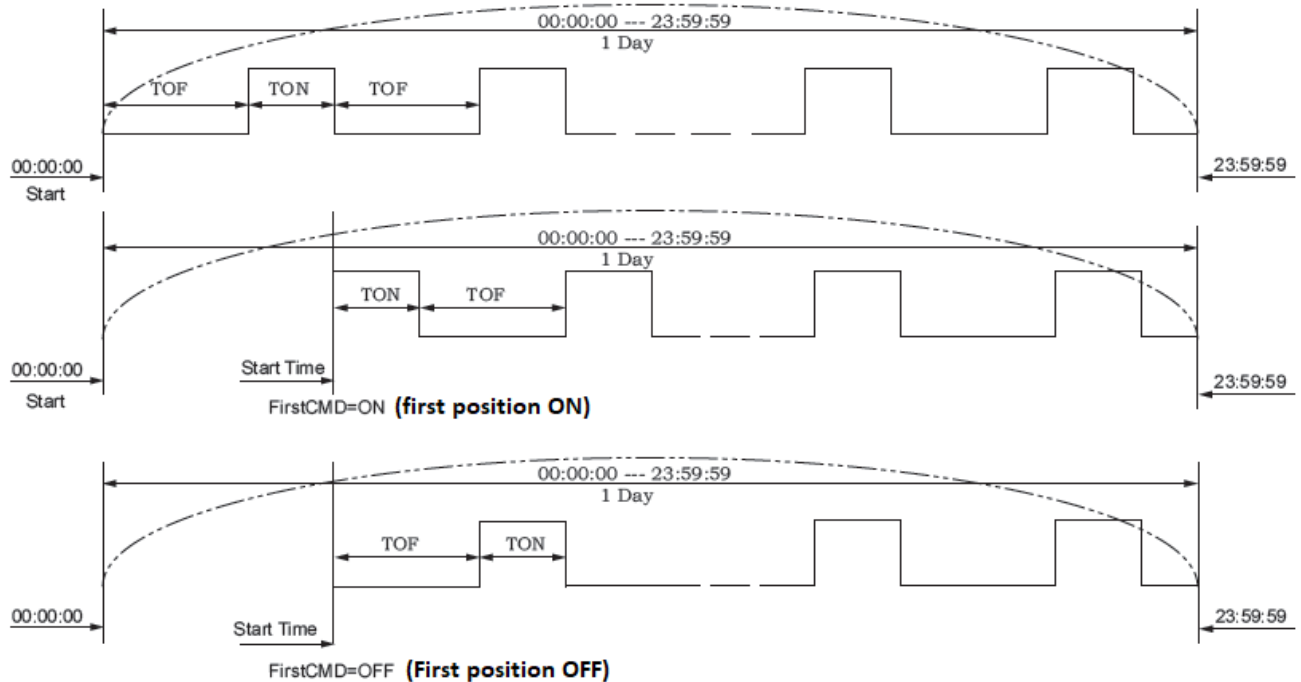
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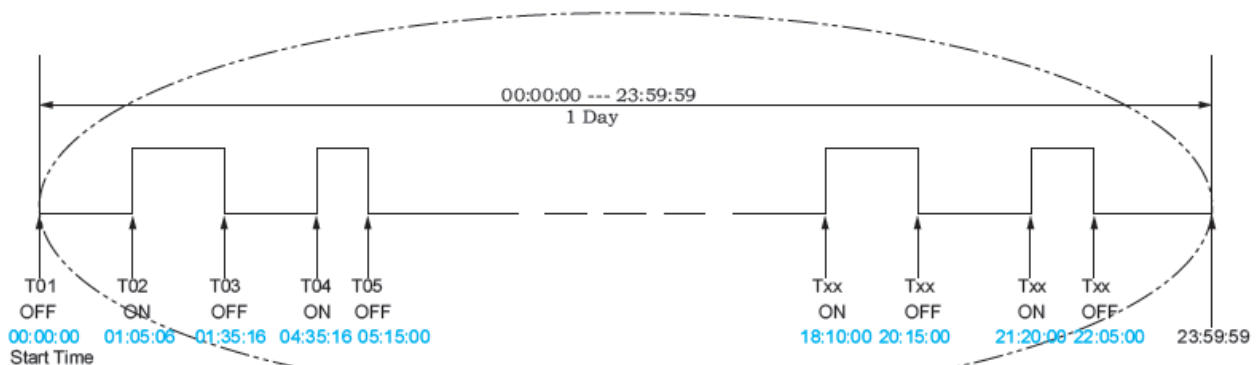
TCR-02-05D TIMER ELECTRICAL ACTUATOR

CHRONOGRAMS

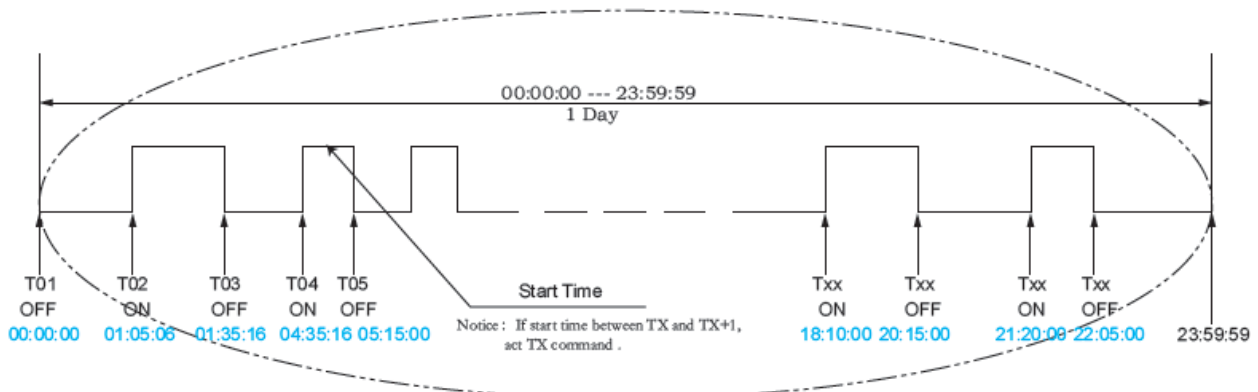
Mode_Pulse



Mode_Time



Notice : Start at 00:00:00 , If T01=00: 00: 00 exists, actuators act T01 command, or it will act FirstCMD command.



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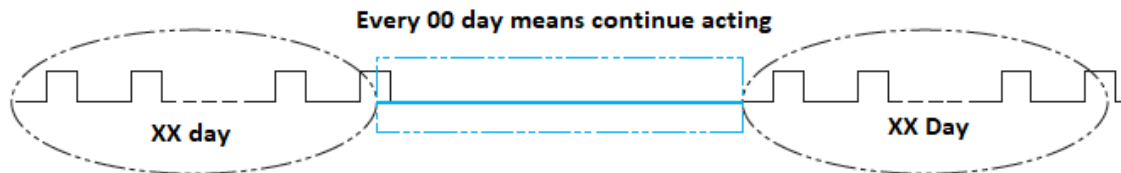
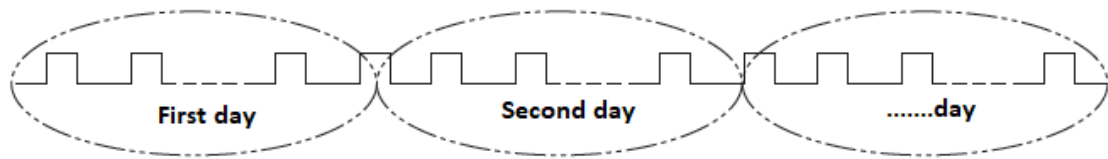
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Loop_Day

Ver: 20161015

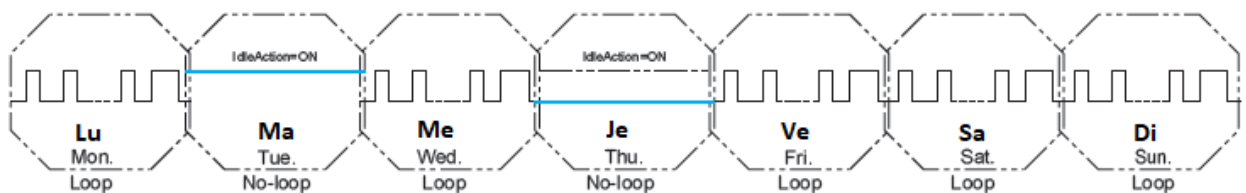
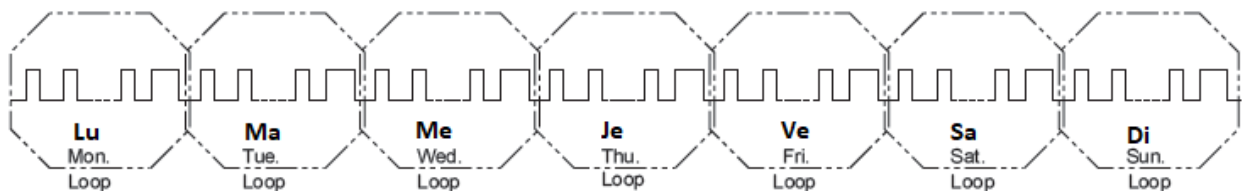


Every 00 day means continue acting
Every XX days : means timer do not loop in blue wireframe
IdleAction = ON



Every XX days : means timer do not loop in blue wireframe
IdleAction = OFF

Loop_Week :



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ADVANCED PARAMETER SETTING MENU

The following functions can have their parameters set from the menu accessible on the screen:

STEP	TITLE	FUNCTION AND VALUES
1	Enter the password	Press the “M” button for more than 5 s. Enter the code “333” (use the keys K2 and K3) Press again the button “M”
		UserSET: PassWord: XXX
2	Dead band	This function is used to set the accuracy and the sensitivity of the control: the larger the band, the lower the accuracy; the narrower the band, the more oscillating the system can be. Setting range: 0.1 to 9.9% - Setting by default: 0.8%. Press key M to move to the next parameter.
		UserSET: DeadZone: X.X% UserSET: DeadZone: 9.9% This is maximum UserSET: DeadZone: 0.1% This is minimum
3	Hysteresis value	It is possible to set the hysteresis value between 0.1 and 9.9%. The value by default is 0.2%. Do not use the function if there is a play between the valve’s stem and the actuator’s square. Press key M to move to the next parameter.
		UserSET: Hysteres: X.X% UserSET: Hysteres: 0.0% Minimum UserSET: Hysteres: 12.0% Maximum
4	Slight adjustment of the closed position	It is possible to change the closed position of the automatic valve, by a few degrees. This function is interesting if a leak is found along the line. Press key K3 to decrease the opening angle 0.1° (down to -8.5° max) and K2 to (up to -8,5° max). Press key M to move to the next parameter.
		UserSET: CIPos_Adj: X.X° UserSET: CIPos_Adj: X.X° Offset-Open UserSET: CIPos_Adj: X.X° Offset-Close UserSET: CIPos_Adj: -X.X° This is minimum UserSET: CIPos_Adj: X.X° This is maximum

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5	Opening/closing time setting	It is possible to set the opening/closing time of the actuator to 5 to 100% of the rated speed. The value by default, is 100%. Press key K3 to increase the manoeuvre time or K2 to decrease it. Press key M to move to the next parameter.
		UserSET: CIPos_Adj: X.X° UserSET: CIPos_Adj: X.X° Offset-Open UserSET: CIPos_Adj: X.X° Offset-Close UserSET: CIPos_Adj: -X.X° This is minimum UserSET: CIPos_Adj: X.X° This is maximum
6	Setting the operating speed	It is possible to set the operating speed of the actuator to 5 to 100% of the rated speed. The value by default, is 100%. Press key K3 to increase the speed (max 100%) or K2 to decrease it (min 5%). Press key M to move to the next parameter. N : it is not recommended to combine functions 5 and 6, the actuator could become overcharged.
		UserSET: Speed_PUL: XX% UserSET: Speed_PUL: 100% This is maximum UserSET: Speed_PUL: 5% This is minimum
7	Setting the angle of rotation	Parameter which is not used on the TCR-02D standard version
		UserSET: Speed_PWM: 100%
8	Response time	Used to set the response speed of the valve. The smaller the value, the less sensitive the rotation. The bigger the value, the more sensitive it is. Increase the value when the response speed of the valve is too low. Setting range: 1 x20x – Value by default 3x
		UserSET: StallTime: xx X UserSET: StallTime: 1 X UserSET: StallTime: 20X
9	Parameter setting for the 3 rd position	This function is accessible only on an actuator with a “B33” option For the TRC-D standard model, the parameter setting is not available.
		UserSET: B33Posi: 50%

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10	The charge of the battery	Parameter which is not used on the TCR-02D standard version
		UserSET: BatCharge: XX% UserSET: BatCharge: 60% Minimum UserSET: BatCharge: 99% Maximum
11	Choice of language	English or Mandarin
		UserSET: DisMode: English UserSET: DisMode: Chinese
12	Exiting the menu	Press K3 to exit the menu The system will switch back in the automatic checking mode.
		UserSET: ExitSET: Push K3

IN-BUILT BATTERY

The TCR-D has an in-built rechargeable Ni-MH (CR) battery which keeps the date and the time when the actuator is not powered. This battery is not used when the actuator is powered. The autonomy of the battery is about 3 months. Past this time, the date and the time have to be updates when switching on the actuator.

TROUBLESHOOTING

Defect met	Cause of defect	Method of solving
Inactive actuator	Non-connected electrical grid.	Connect to the electrical grid.
	Wrong voltage.	Check the actuator's voltage.
	Motor overheating.	Check the torque on the valve.
	Faulty connection.	Check the connection to the terminal box.
	Damaged start capacitor.	Contact the supplier for repair.
No switch signal	Faulty connection.	Check the connections.
	Damaged microswitch	Change the microswitch
Valve that is not fully closed	Use the return signal from the actuator check.	Receiving a return signal does not mean that the actuator is fully closed, hence do not cut the power supply.
	The hysteresis increases due to wear or between the actuator and the valve's stem.	Readjust the limit cams. Contact the supplier for repair.
Presence of humidity or water in the actuator	Unsuitable cable cross-section being used.	Contact the supplier for repair.
	The cable connection is not leak-tight.	
	Worn sealing gaskets.	
	Loose cover screws.	Dry the internal parts and tighten the cover screws.

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