

771 XS VALVE WITH TCR ELECTRICAL ACTUATOR

FEATURES

The 771XS+TCR ball valve is designed for the automatic opening / closing of pipes with non-loaded industrial fluids, up to a pressure of 16 bar. The narrow “wafer” construction of the valve makes installation easier compared with traditional “flange” models. It is a full-bore, EC certified valve. The ISO 5211 mounting pad enables the TCR actuator to be directly assembled. The latter is suitable for S3-S4 type service factor, installed indoors or outdoors under shelter.

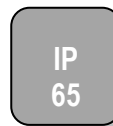
AVAILABLE MODELS

1.4408 stainless steel body.

DN15 to DN100 diameters.

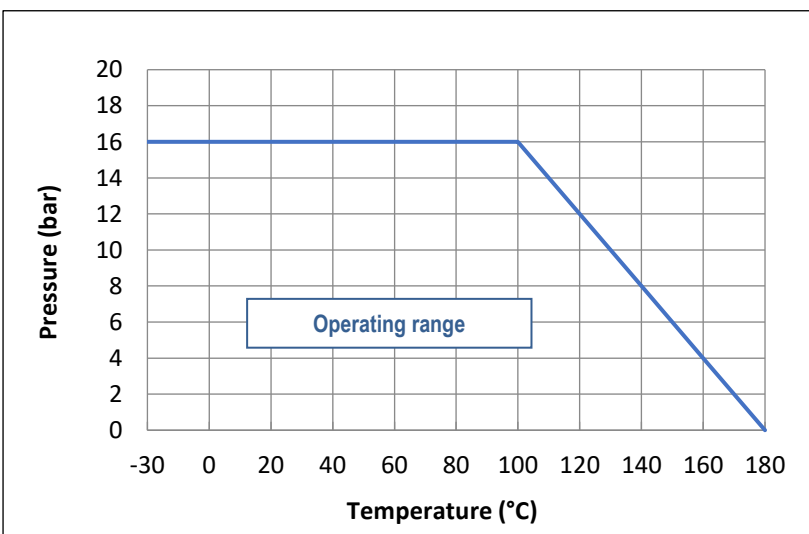
PN16 RF wafer mounting.

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



LIMITS OF USE

Fluid pressure: PS	16 bar (20°C)
Fluid temperature: WT	- 30°C / + 180°C
Ambient temperature	-20°C / +60°C
Service factor	S4 - 50% (TCR 02N-05N-11N)
	S3 - 85% (TCR 20N-40N)



DIRECTIVES AND MANUFACTURING STANDARDS

OBJECT	Standard	ON	OBJECT	Standard
Pressure Equipment Directive 2014/68/EC	DN15 and 20: not subject		Final test	NKS 12266
	DN25 to DN100: category III	TÜV 0035	Material certificate	NKS 10204
Size	EN 12516-1		Connection Motorisation	ISO 5211:
Steel grades	EN 1503-1			

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



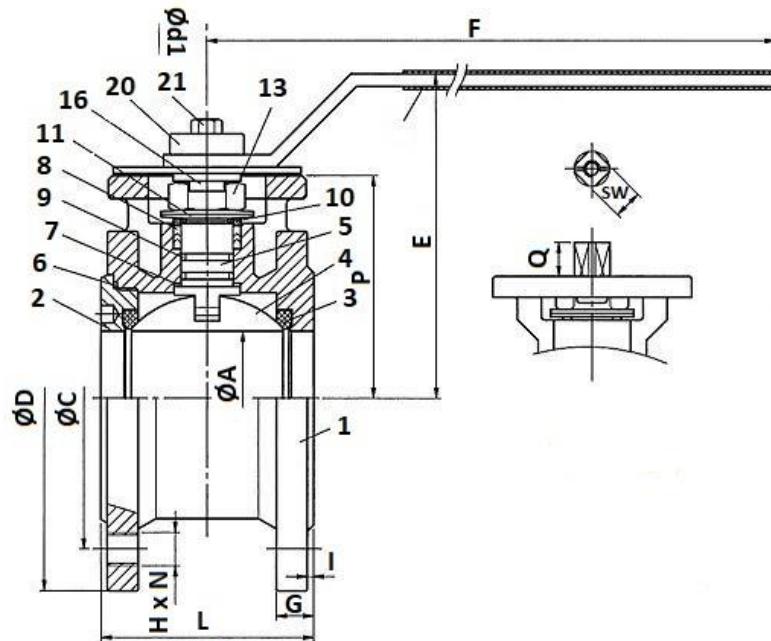
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Rev.	08
Date	12/2025

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CONSTRUCTION

No.	Name	Material	No.	Name	Material
1	Body	1.4408 SS	12	Lever	304 SS
2	F	1.4408 SS	13	Lever nut	304 SS
3	Seats	PTFE + +15% GF	14	Pointer	304 SS
4	Ball	316 SS	15	Plastic coupling	PVC
5	Stem	316 SS	16	Locking device	304 SS
6	Body gasket	PTFE	17	Spring	316 SS
7	Stem gasket	PTFE + +15% GF	18	Antistatic device	316 SS
8	Cable gland gasket	PTFE	19	Stop plate	304 SS
9	O-ring	FKM	20	Spacer	304 SS
10	Spacer	304 SS	21	Screw	304 SS
11	Belleville washer	301 SS			



DIMENSIONS (mm)

DN	15	20	25	32	40	50	65	80	100
A	16	20	25	32	40	50	65	80	96
C	65	75	85	100	110	125	145	160	180
D	95	105	115	140	150	165	185	200	220
E	89	89	101	112	116	125	154	165	180
F	114	114	187	187	222	222	350	350	350
G	14	16	16	16	16	18	18	20	20
H x N	M12x4	M12x4	M12x4	M16x4	M16x4	M16x4	M16x4	M16x8	M16x8
L	42	44	50	54	68	82	103	122	152
I	2	2	2	2	3	3	3	3	3
P	54	56	62.5	72	78	87.2	107	117.3	132.3
Weight (kg)	01:45	1.92	2.60	3.70	4.65	06:45	10:25	13:55	19.85

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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
15	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: <u>TRC02</u> : 1 x PE M10 + 1.5m cable <u>TCR05</u> : 1 x PE M20 + 1.5m cable <u>TCR11</u> : 2 x PE M14 + 1.5m cable <u>TCR20</u> : 2 x PE M20 + 1.5m cable
20	TCR-02N	15	10s	10s	
25	TCR-05N	25	12s	12s	
32	TCR-05N	25	12s	12s	
40	TCR-05N	25	12s	12s	
50	TCR-11N	100	10s	10s	
65	TCR-11N	100	10s	10s	
80	TCR-20N	50	25s	25s	
100	TCR-20N	50	25s	25s	

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:

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 the upstream and downstream pipes are correctly aligned and that the supports are suitable for the weight of the valve. Do not rely on the valve to compensate for pipe misalignment. For heat transfer fluids, provide for expansion compensation. All these piping defects may lead to leaks, blockages and even mechanical failure.
- 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 equalising the pressures for fluids such as ammonia, LPG, chlorine, etc.
- On a cold service, check that there is no risk of ice forming and blocking the tap spindle. If necessary, provide a spindle extension with suitable insulation or permanent spindle heating. Please consult us for a special model.
- 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.
- Check the perfect alignment of the upstream and downstream pipe installation. Wafer-type valves such as 771XS are sensitive to this parameter. An alignment fault would lead to a ball blockage.
- Also check the pipe installation support. In the event of a fault of the latter, the valve would undergo too high mechanical stress which could lead to a ball blockage or to leaks.
- On pipe installation for hot fluids, check for the presence of an expansion compensator. Their absence would lead to a high mechanical stress which could lead to blocking the ball.
- 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 masks from the valve flanges.
- 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 that the standards for the valve flanges (PN16 as per 1092-1) and the pipe installation, are the same.
- Select flange gaskets suitable for the fluid and the flange standard for the valve (PN16).

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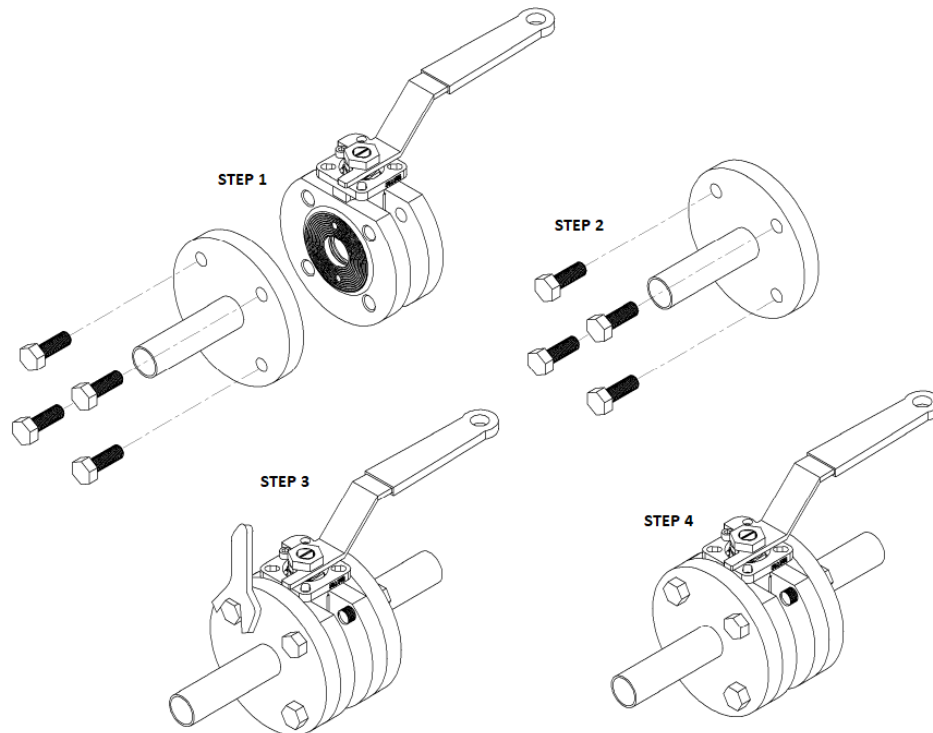
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- Stock up on hex-head nuts and bolts as shown in the table below:

DN	Screw	Number	Tightening torque (Nm)	DN	Screw	Number	Tightening torque (Nm)
15	M12 x 30	4	35	50	M16 x 40	4	86
20	M12 x 35	4	35	65	M16 x 40	4	86
25	M12 x 35	4	35	80	M16 x 45	8	86
32	M16 x 35	4	86	100	M16 x 45	8	86
40	M16 x 35	4	86				

- Screw-in the screws through the flanges as shown in the diagram below and apply the torques shown in the table below. Follow a symmetrical tightening cross pattern in order to apply a uniform tightening torque on the gasket seats.



- 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.

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.

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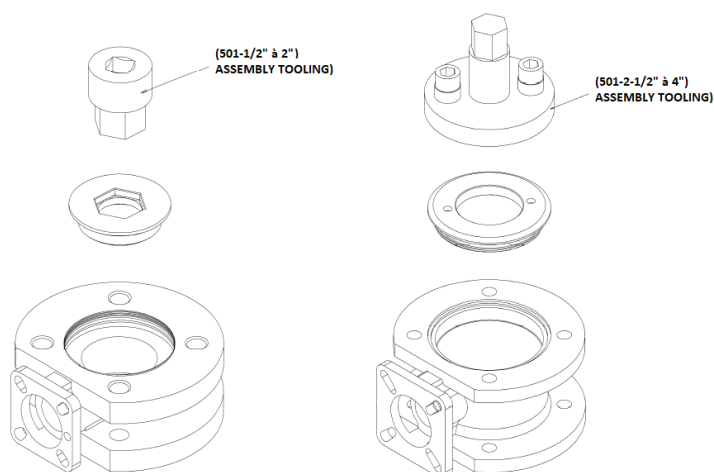
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3 - Servicing

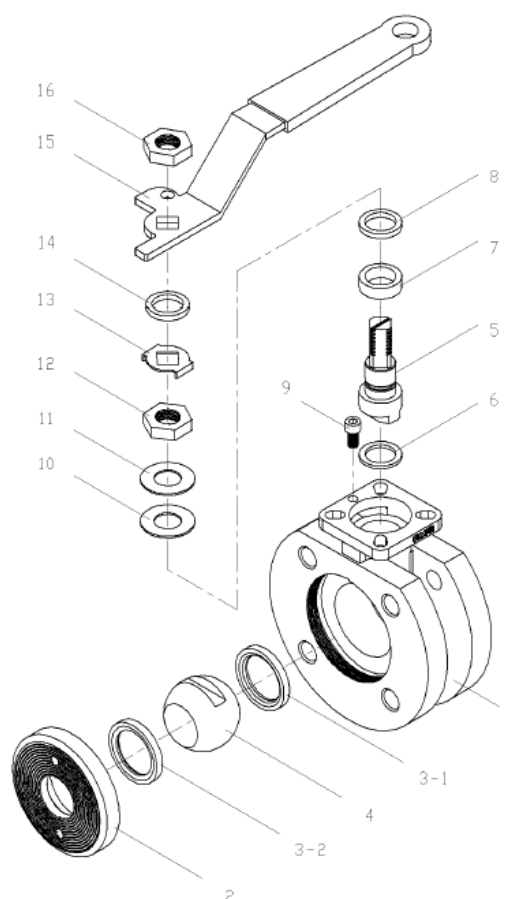
3.1 - Frequency of servicing

- 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 body, unscrew the lateral tip with special tools as shown in the diagram below. If you do not have such tools, contact our after-sales department.
- To remove the ball from the body, turn the stem by a quarter turn.



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 and 8): 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. 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.



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

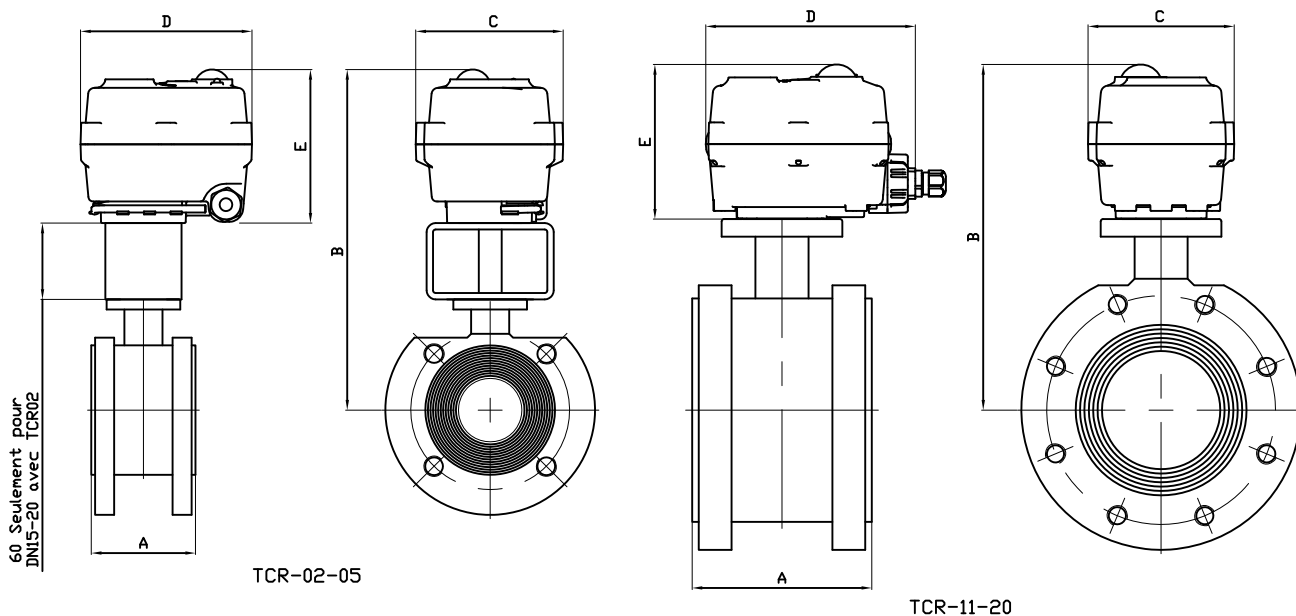
DN	Tightening torque for the insert (Nm, item 2)	Lever nut (Nm)
15	29.4	3.4
20	58.8	3.4
25	88.2	4
32	196.1	4
40	294.1	5
50	490.2	5
65	588.2	6
80	686.3	6
100	686.3	6

SPARE PARTS

DN	Gasket kit	Ball	Handle
Reference mark	3-6-7-8	4	11
15	982702	Please contact us.	982802
20	982703	Please contact us.	982802
25	982704	980034	982804
32	982705	980035	982804
40	982706	Please contact us.	982806
50	982707	980037	982806
65	982708	980038	982808
80	982709	980039	982808
100	982710	Please contact us.	982808

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DN	15	20	25	32	40	50	65	80	100
SERVO	TCR02	TCR02	TCR05	TCR05	TCR05	TCR11	TCR11	TCR20	TCR20
A	42	44	50	54	68	82	103	122	152
B	204*	206*	183.5	193	199	209.2	229	289.3	304.3
C	70	70	111	111	111	115	115	160	160
D	104	104	132	132	132	165	165	270	270
E	90	90	121	121	121	122	122	172	172
POIDS KG	2.61	3.01	4.3	5.4	6.55	9.61	13.32	16.8	26.1

*Montage avec platine H=60

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

				DN80-TCR20 ald TCR11 Ajout DN100	23/03/2021	A
Ech: /	Date :17/09/2019	Dessiné par :E.D.	Tolérances générales : +/- 0.2	Modifications	Date	REV.
ROBINET A TOURNANT SPHERIQUE 771XS/BALL VALVE 771XS + SERVOMOTEUR TCR/ELECTRIC ACTUATOR TCR				Matière :		
				Poids (Kg) :		
				Traitement : SANS		
 45, Rue du Ruisseau 38297 SAINT QUENTIN FALLAVIER				Plan n° Ens 1394A		

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.

Dual frequency : 50Hz, 60Hz.

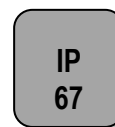
LIMITS OF USE

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	0,18 - 0,37
Fuse Protection (A)	5	5	1	8	1 - 2	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

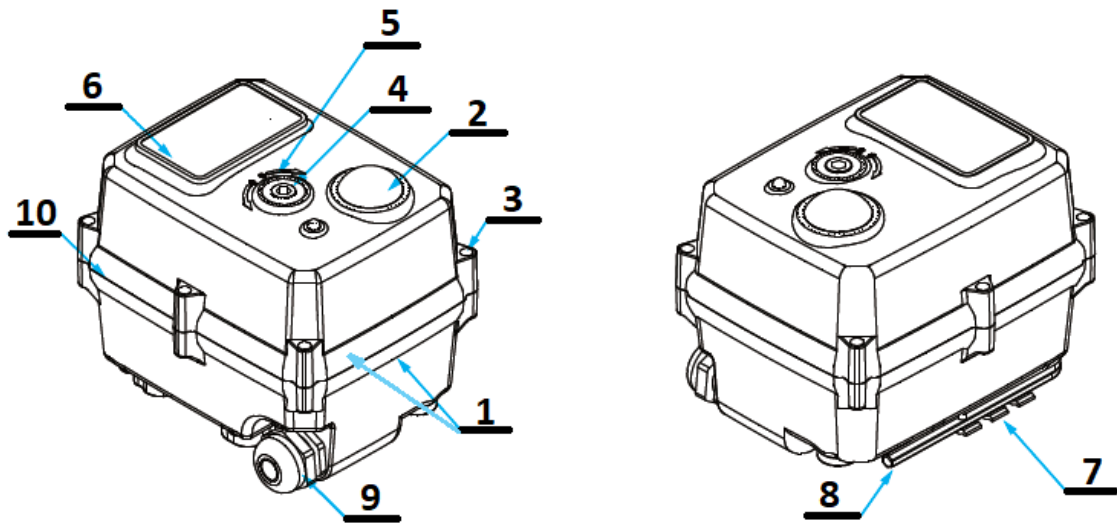
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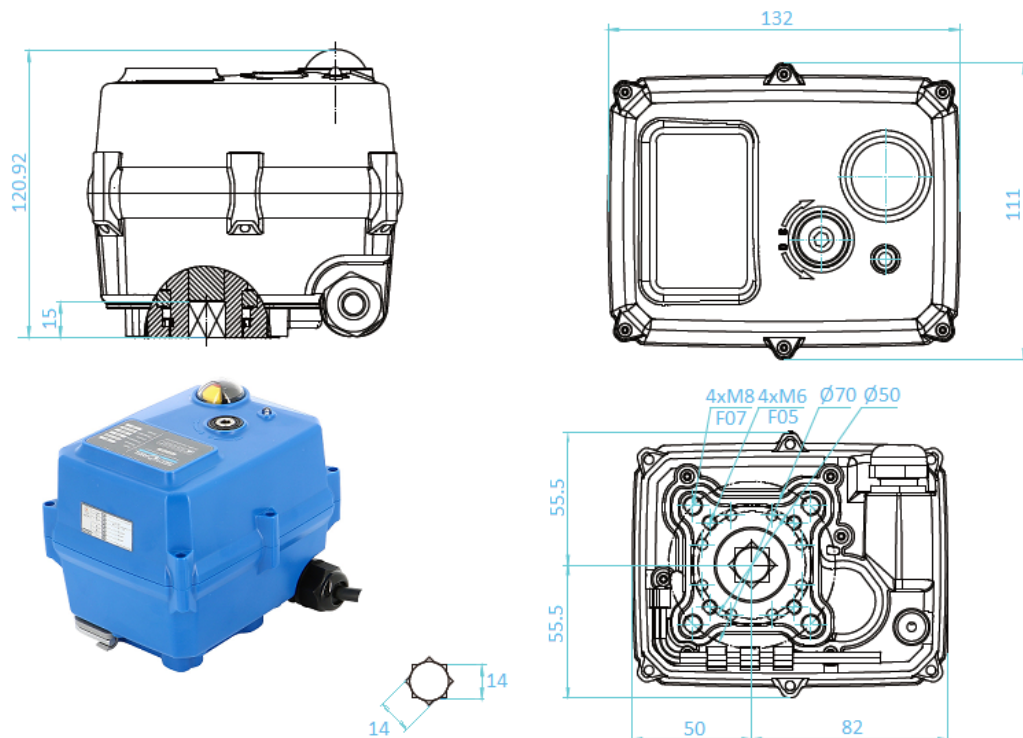
TCR-N ELECTRICAL ACTUATOR

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)



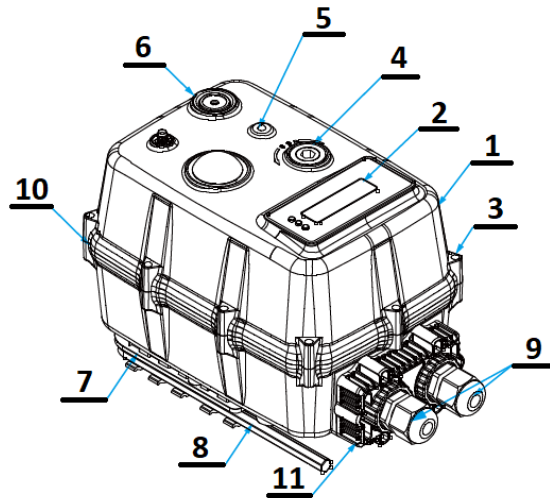
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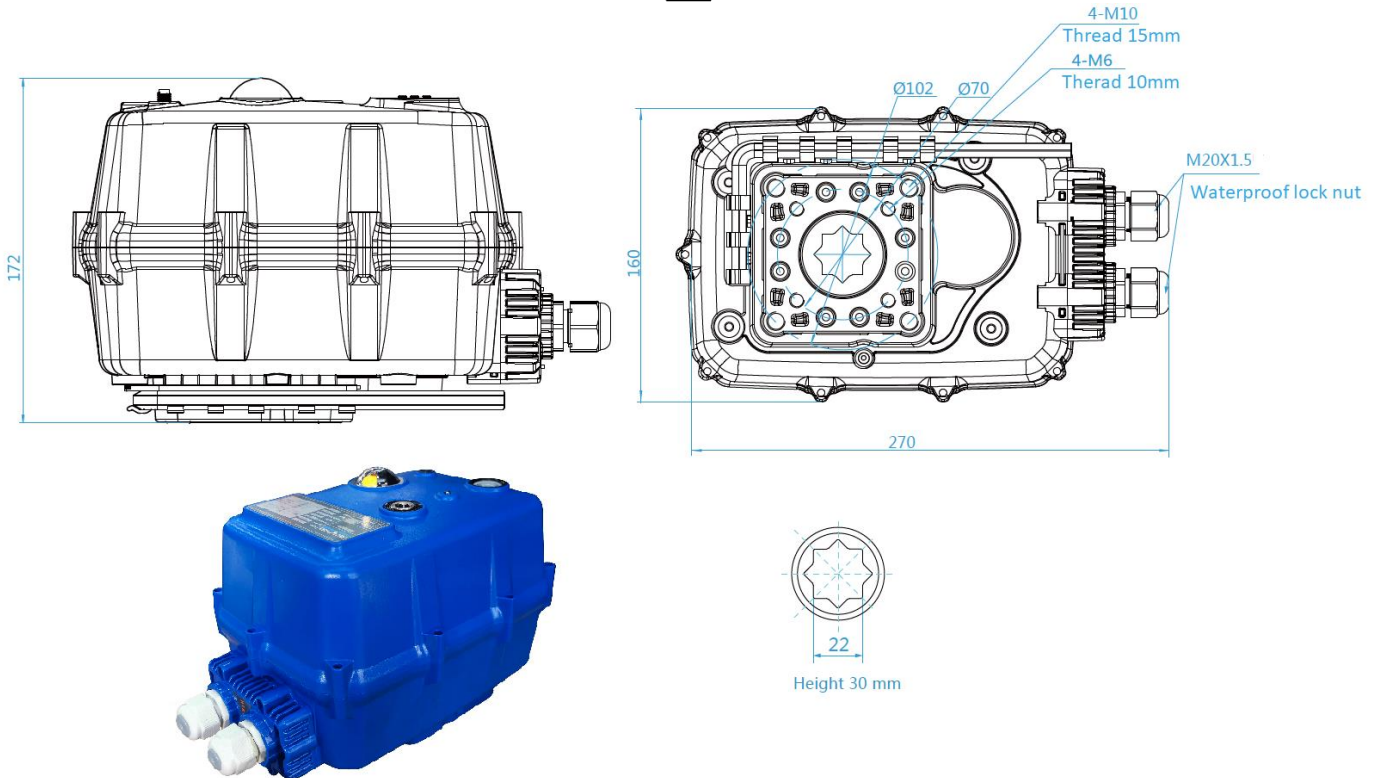
TCR-N ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-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)

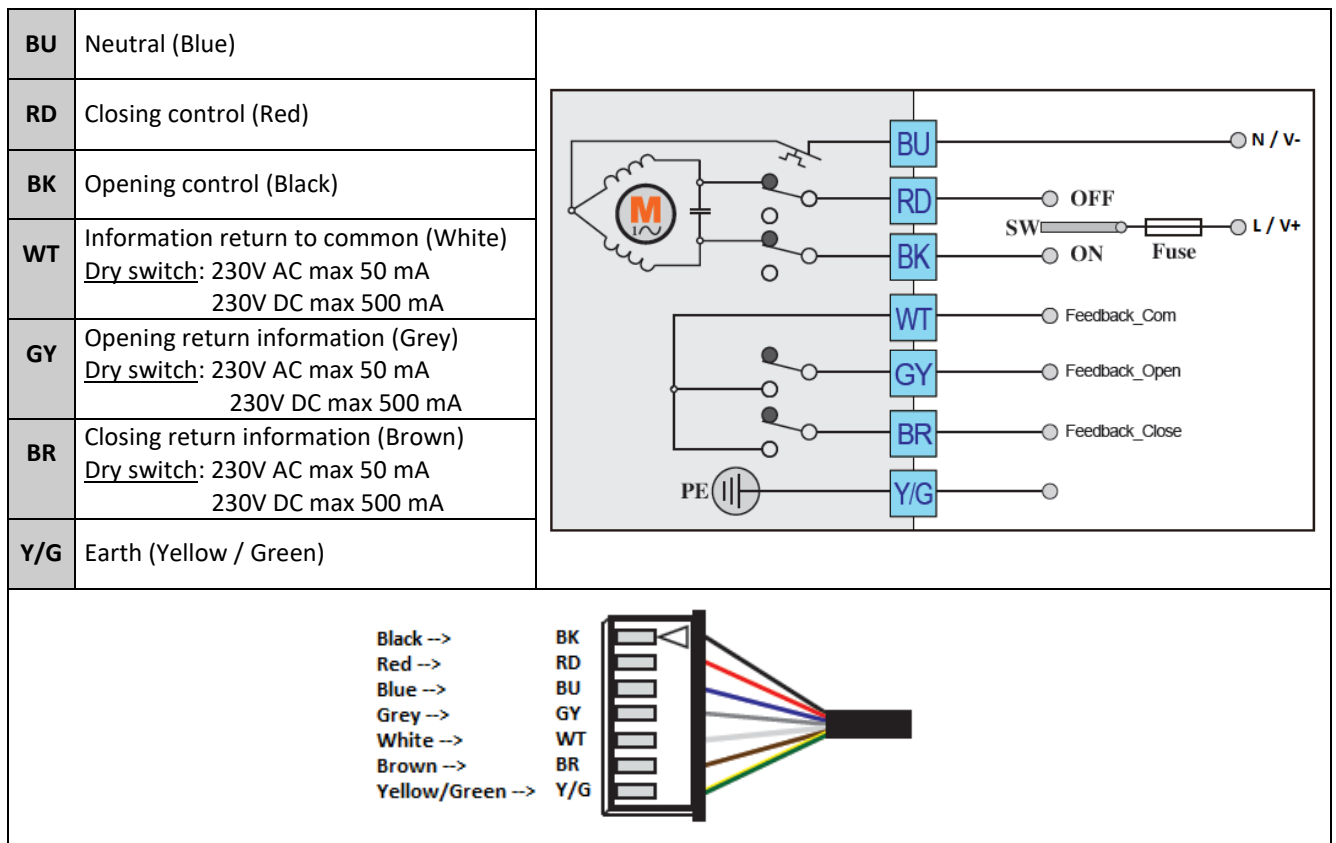


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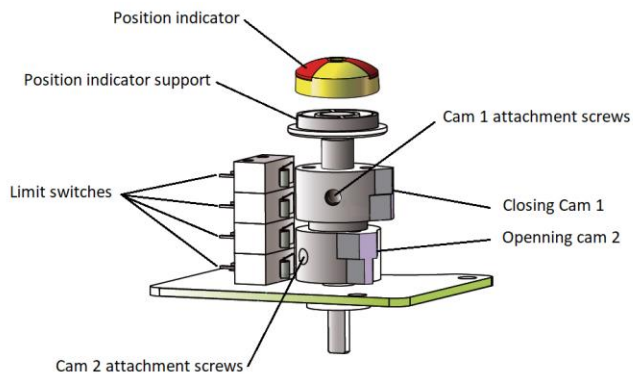
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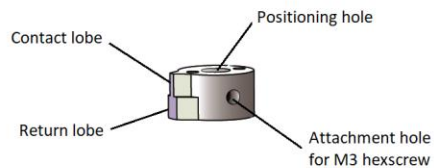
WIRING DIAGRAM



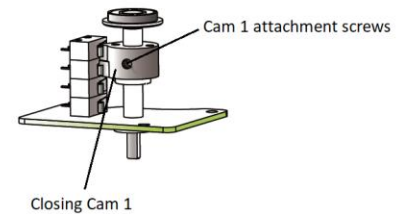
SWITCH SETTING



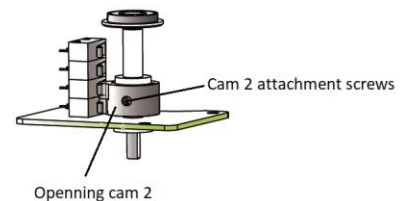
GENERAL VIEW



CAM DETAIL



CLOSING CAM ADJUSTMENT



OPENING CAM ADJUSTMENT

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

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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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