

1160-1164 BUTTERFLY VALVES + TCR ELECTRIC ACTUATOR

FEATURES

The 1160-1164 butterfly valves are designed to automatically open and close pipes carrying a wide range of fluids. The valve body is made from GS cast iron. Different configurations of butterfly and liner materials enable it to be used in a wide range of applications. Lug" type with threaded lugs, mounted between PN16 flanges. This type of connection allows pipes or equipment to be dismantled without draining the installation. The ISO 5211 plate allows direct mounting of the TCR actuator. It is perfectly suited to industrial use, both indoors and outdoors under cover.



AVAILABLE MODELS

DN 32 to DN 250.

Connections between flanges PN10/16.

Supply voltages : 24 Vdc, 24 Vac and 230 Vac.

LIMITS OF USE

Fluid pressure: PS	16 bar
End-of-line assembly	6 bar
Fluid temperature: TS	See table below
Ambient temperature	-20°C / +60°C
Service factor	S4 - 50 % (TCR02N-05N-11N)
	S3 - 85% (TCR20N-40N)



Ref.	Butterfly	Liner	Example of applications	WT° min	WT° max
1160	GS cast iron	EPDM	Cold water – warm water (110°C at peak) - ACS	-20°C	+110°C
1161	316 SS	NBR	Hydrocarbon, natural gas, compressed air	-10°C	+90°C
1162	GS cast iron	NBR	Hydrocarbon, natural gas, compressed air	-10°C	+90°C
1163	316 SS	EPDM	Demineralised water – alkalis (110°C at peak) - ACS	-20°C	+110°C
1164	316 SS	FPM	Compatible aggressive fluids, petrol	-5°C	+180°C
1168	316 SS	White NBR		-10°C	+80°C
1181	GS cast iron	NBR	Natural gas – NF-ROB GAZ authorisation 5 bar	-20°C	+60°C

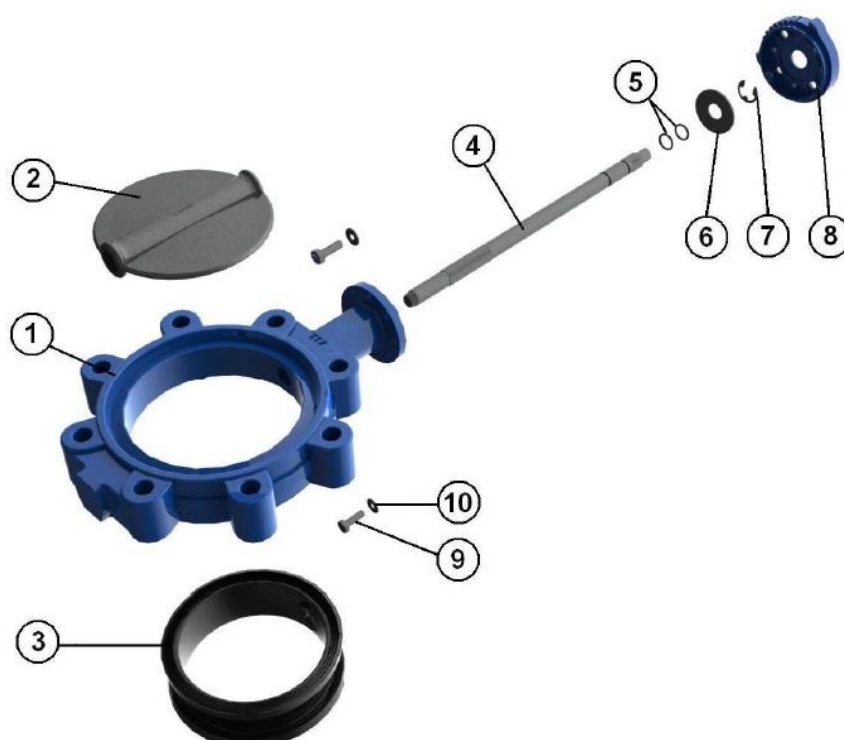
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DIRECTIVES AND MANUFACTURING STANDARDS

OBJET	Standard	ON	OBJET	Standard
Pressure Equipment Directive 2014/68/EC	DN40 to DN50 : Cat I		Final test	EN 12266-1
	DN65 to DN200 : Cat II	0409		
	DN250 to DN300 : CAT III	0409		
Construction	ISO 10631, EN 593		Face-to-face dimension	ISO 5752 série 20
Body material	EN 1503-2		Limit switch box connection	VDI/VDE 3845
Material certificate	EN 10204		Connection Motorization	ISO 5211
Flange dimensions	EN 1092-1		Sanitary conformity	ACS



CONSTRUCTION

No.	Name	1160	1161	1162	1163	1164	1168	1181
1	Body	GS EN GJS-500-7 cast iron						
2	Butterfly DN32-100	1.4408 SS						
2	Butterfly DN125-400	GS EN GJS-500-7 cast iron			1.4408 SS			GS cast iron
3	Liner	EPDM	NBR	NBR	EPDM	FPM	White NBR	NBR
4	Stem	420 SS	304 SS	420 SS	304 SS	304 SS	304 SS	420 SS
5	O-ring	NBR	NBR	NBR	NBR	FPM	NBR	NBR
6	Ring	steel						
7	Circlips	steel						
8	ISO mounting pad	aluminium						
9	Screw	5.6 steel						

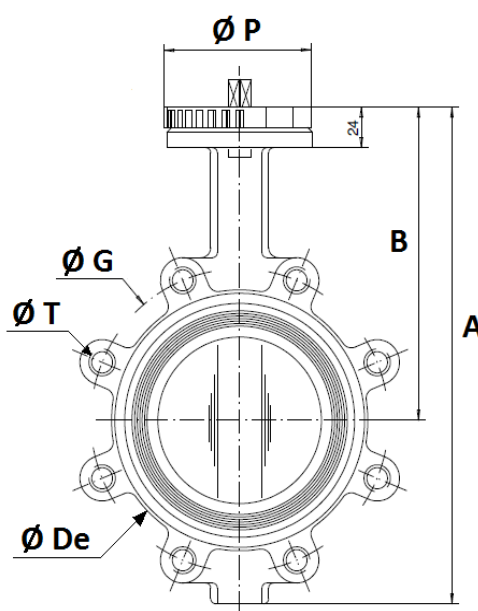
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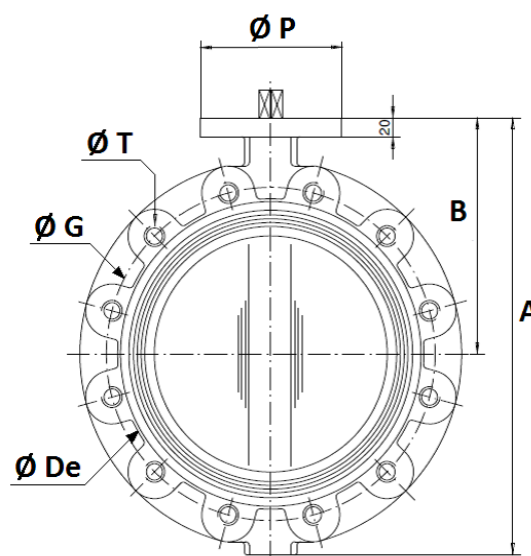
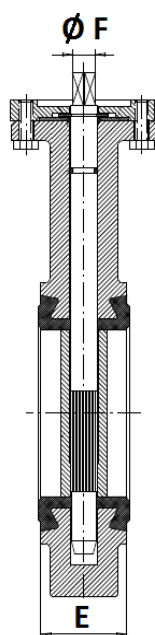
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10	Washer	steel
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DIMENSIONS (mm)



DN 32 - 150



DN 200 - 400

DN	32-40	50	65	80	100	125	150	200	250	300	350	400
A	205	226	246	259	295	325	352	422	460	523	570	644
B	140	156	161	169	187	206	215	255	248	280	300	340
Ø De	83	102	115	136	157	192	220	275	329	378	436	487
E	33	43	46	46	52	56	56	60	68	78	78	102
Ø F	9.5	9.5	12	14	14	17	17	21	23	26.5	26.5	33
Ø G (PN10)	100/110	125	145	160	180	210	240	295	350	400	460	515
Ø G (PN16)									355	410	470	525
Ø P	88	88	88	88	88	105	105	105	150	150	170	170
Ø T (PN10)	4xM16	4xM16	4xM16	8xM16	8xM16	8xM16	8xM20	8xM20	12xM20	12xM20	16xM20	16xM24
Ø T (PN16)								12xM20	12xM24	12xM24	16xM24	16xM27
Weight (kg)	2.7	4.1	4.7	6.1	7.9	10.9	11.9	18.5	31.8	47.8	53	77

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FLOW-RATE COEFFICIENT Kv (m³/h)

DN	Opening Angle								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
40	3	4	8	17	25	35	45	56	70
50	3	6	14	22	37	60	95	147	164
65	4	7	10	22	48	78	140	160	201
80	5	12	29	52	88	156	216	281	359
100	9	21	48	87	147	234	346	519	627
125	19	35	78	148	232	372	562	761	995
150	28	48	108	203	324	536	865	1211	1471
200	35	91	206	320	554	952	1427	2163	2509
250	43	143	329	562	865	1471	2336	3460	3936
300	69	216	476	770	1341	2206	3460	4758	5865
350	87	282	606	1101	1817	2768	4325	6661	8179
400	112	363	779	1453	2318	3547	6055	7785	10660

Head loss calculations :

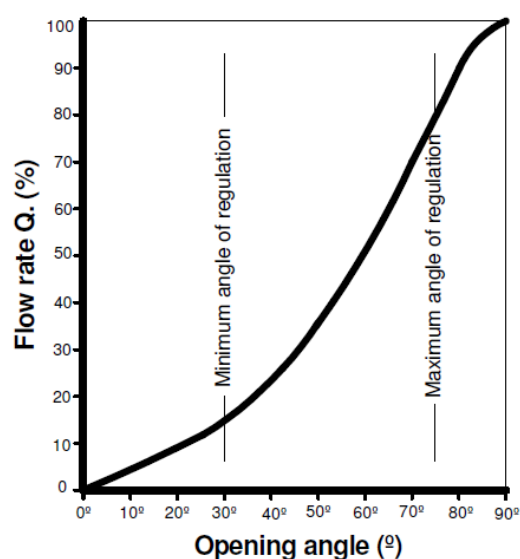
$$\Delta p = (Q / K_v)^2 \times SG$$

Q : flow in m³/h

Δp : Head loss in bar

SG : Specific gravity (= 1 for water)

Kv : Volume of water in m³/h, that will flow through a given restriction or valve opening with a pressure drop of 1 bar at 20°C.



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1160-1164 BUTTERFLY VALVES + TCR ELECTRIC ACTUATOR

TCR ELECTRIC ACTUATOR MOTORIZATION

The TCR motorization proposed as standard comprises:

- IP67 servomotor, aluminium housing, PA66 plastic cover and steel gearbox.
- safety coefficient of at least 1.3 in relation to the nominal torque of the valve.
- upstream/downstream pressure difference $\Delta P=10$ bar max.

The servomotor is mounted directly.

DN	Servomotor	Power (W) 230V ac / 24V ac-dc	Time (s)* 230V ac-dc	Time (s)* 24V ac-dc	Standard servomotor equipment
32/40	TCR-05N	25	12s	12s	2 adjustable limit switches 2 dry auxiliary contacts Thermal motor protection 2-3W regulated anti-condensation heater Emergency manual override with key 3D visual position indicator Electrical connection: TCR05 : 1 x PE M20 + 1.5 m cable TCR11 : 2 x PE M14 + 1.5 m cable TCR20 : 2 x PE M20 + 1.5 m cable TCR40 : 2 x PE M20 + 1.5 m cable
50	TCR-05N	25	12s	12s	
65	TCR-05N	25	12s	12s	
80	TCR-05N	25	12s	12s	
100	TCR-05N	25	12s	12s	
125	TCR-11N	100	10s	10s	
150	TCR-20N	50	25s	25s	
200	TCR-40N	80	25s	25s	
250	TCR-40N	80	25s	25s	

For all other service conditions, please contact us.

* Indicative no-load actuator time

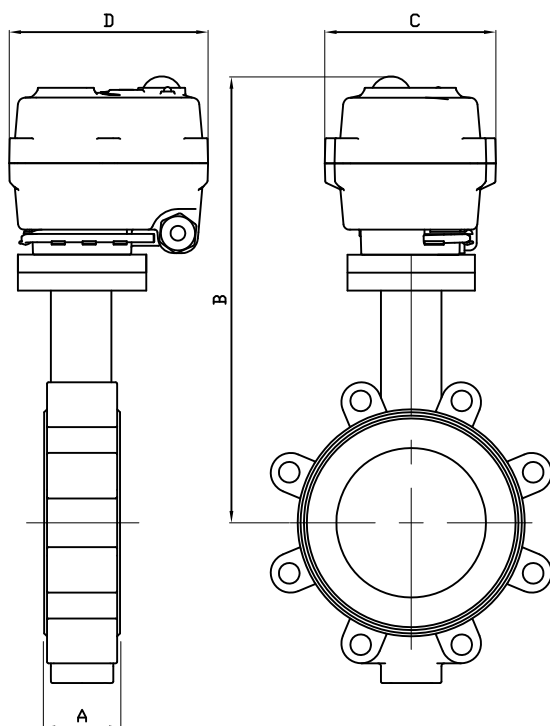
MOTORIZATION OPTIONS

There are a number of options available, and we would ask you to consult our sales department :

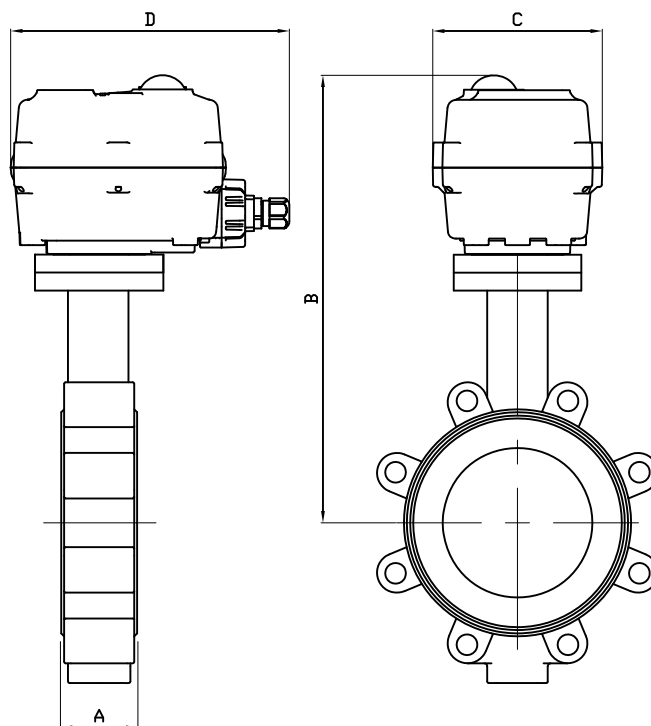
1	Actuator dimensioned for upstream/downstream pressure difference ΔP greater than 10 bar
2	NC actuator - capacitor feedback - TCR-KT32
3	High-speed actuator - TRC-NH
4	Intelligent actuator with adjustable operating time - TCR-C
5	Regulating actuator - TCR-T
6	NC control actuator - capacitor return - TCR-T-KT32
7	Servomotor with fieldbus - TCR-B
8	Servomotor with integrated timer - TCR-D
9	Servomotor with wireless control - TCR-R

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TCR-05



TCR-11-20-40

* : montage avec platine H=5mm

DN	32-40	50	65	80	100	125
SERVO	TCR05	TCR05	TCR05	TCR05	TCR05	TCR11
A	33	43	46	46	52	56
B	261	277	282	290	313*	328
C	111	111	111	111	111	111
D	132	132	132	132	132	132
KG	5.1	6.2	6.7	8.5	11	13.2

DN	150	200	250
SERVO	TCR20	TCR40	TCR40
A	56	60	68
B	387	427	420
C	160	160	160
D	270	270	270
KG	16.6	19.5	32.1

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

				Ajout DN150-200-250	24/03/2021	A
Ech: /	Date : 29/01/2020	Dessiné par : E.D.	Tolérances générales : +/- 0.2	Modifications	Date	REV.
ROBINET A PAPILLON 116X/BUTTERFLY VALVE 116X+ SERVO-MOTEUR TCR/ELECTRIC ACTUATOR TCR				Matière :		
				Poids (Kg) :		
				Traitement : SANS		
				Plan n° Ens 1421A		

45, Rue du Ruisseau
38297 SAINT QUENTIN FALLAVIER

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.

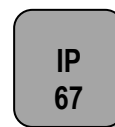
LIMITS OF USE

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	
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

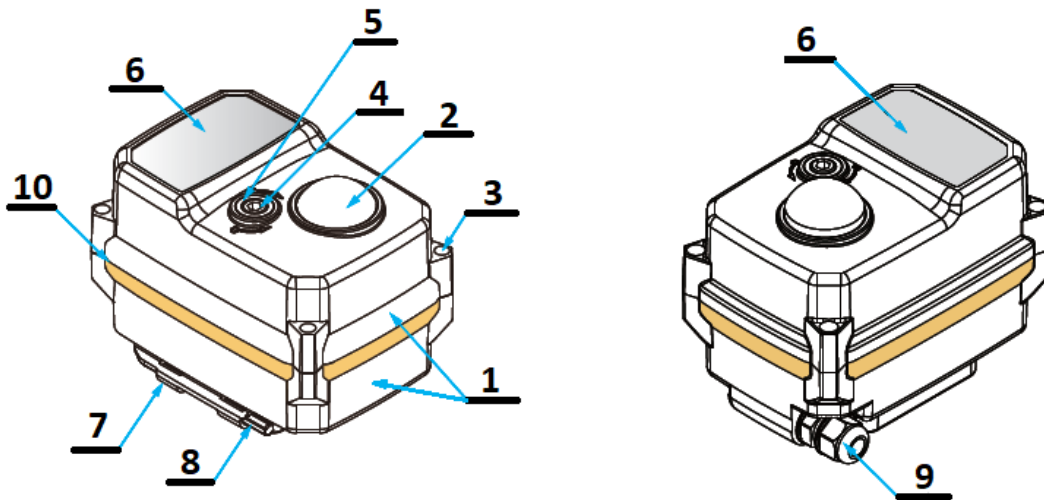
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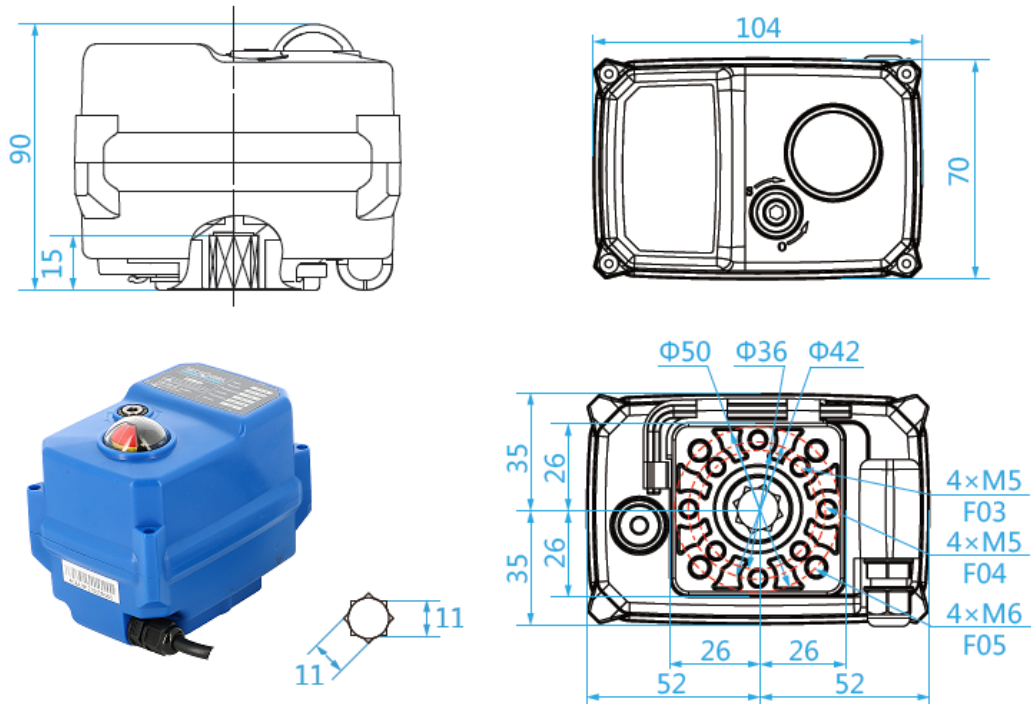
TCR-N ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-02N)

TCR-02N					
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)



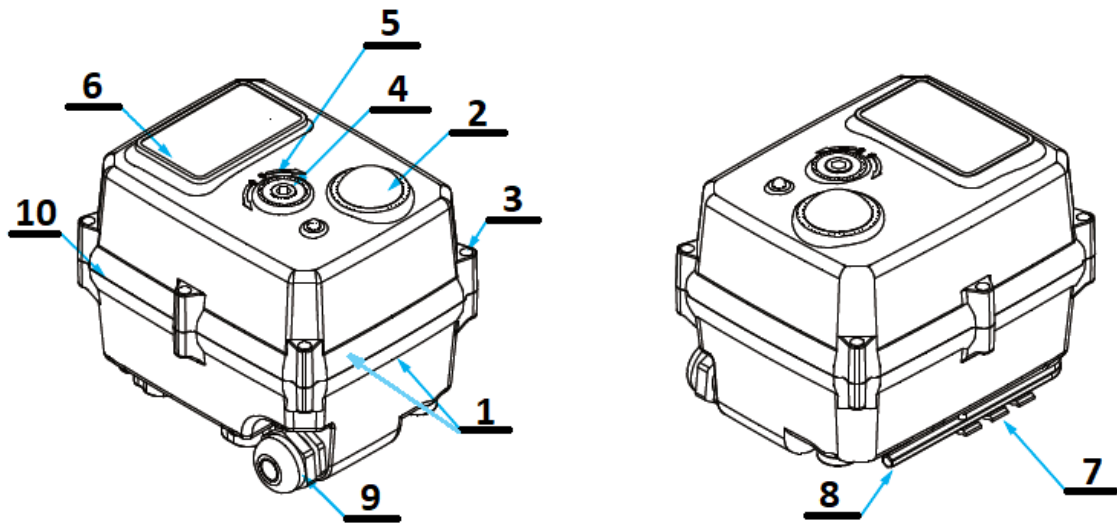
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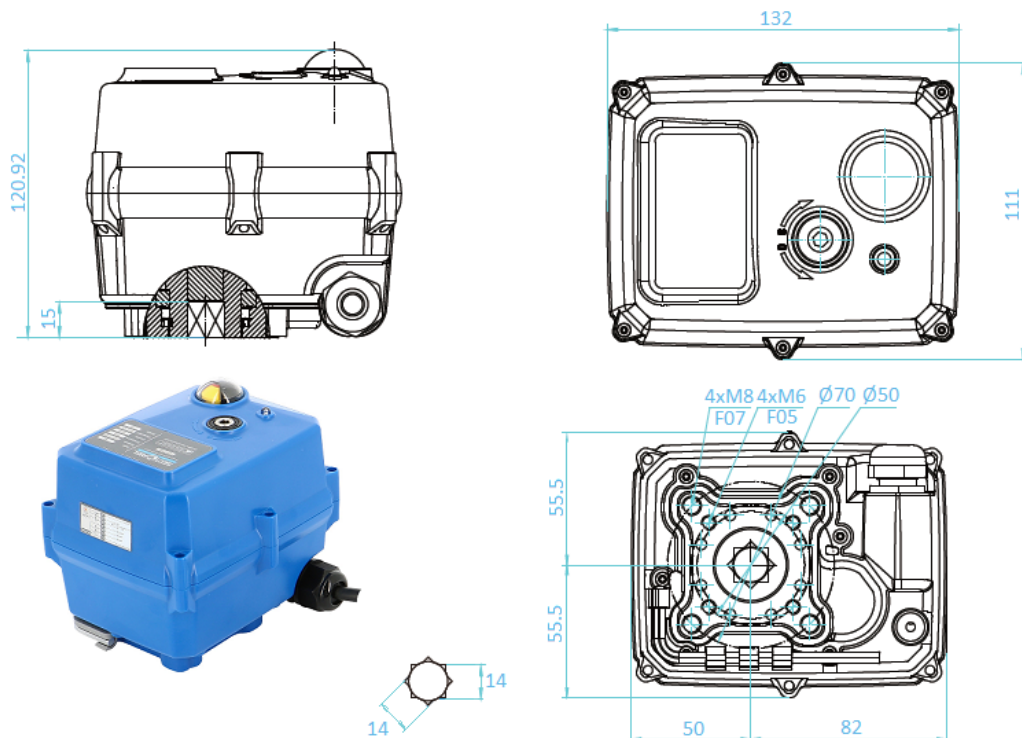
TCR-N ELECTRICAL ACTUATOR

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)



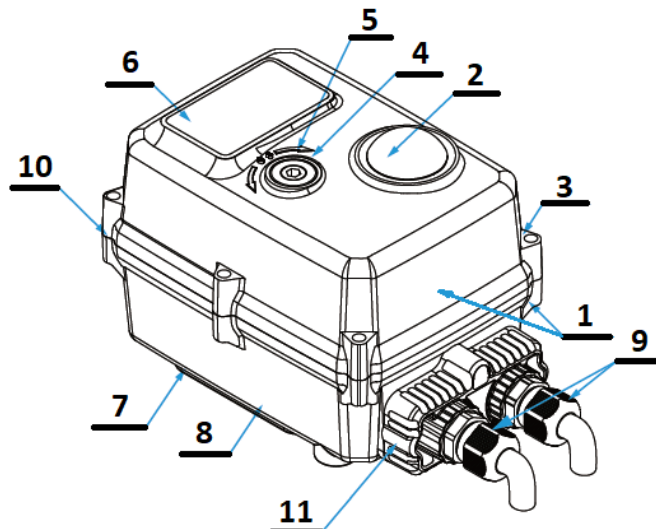
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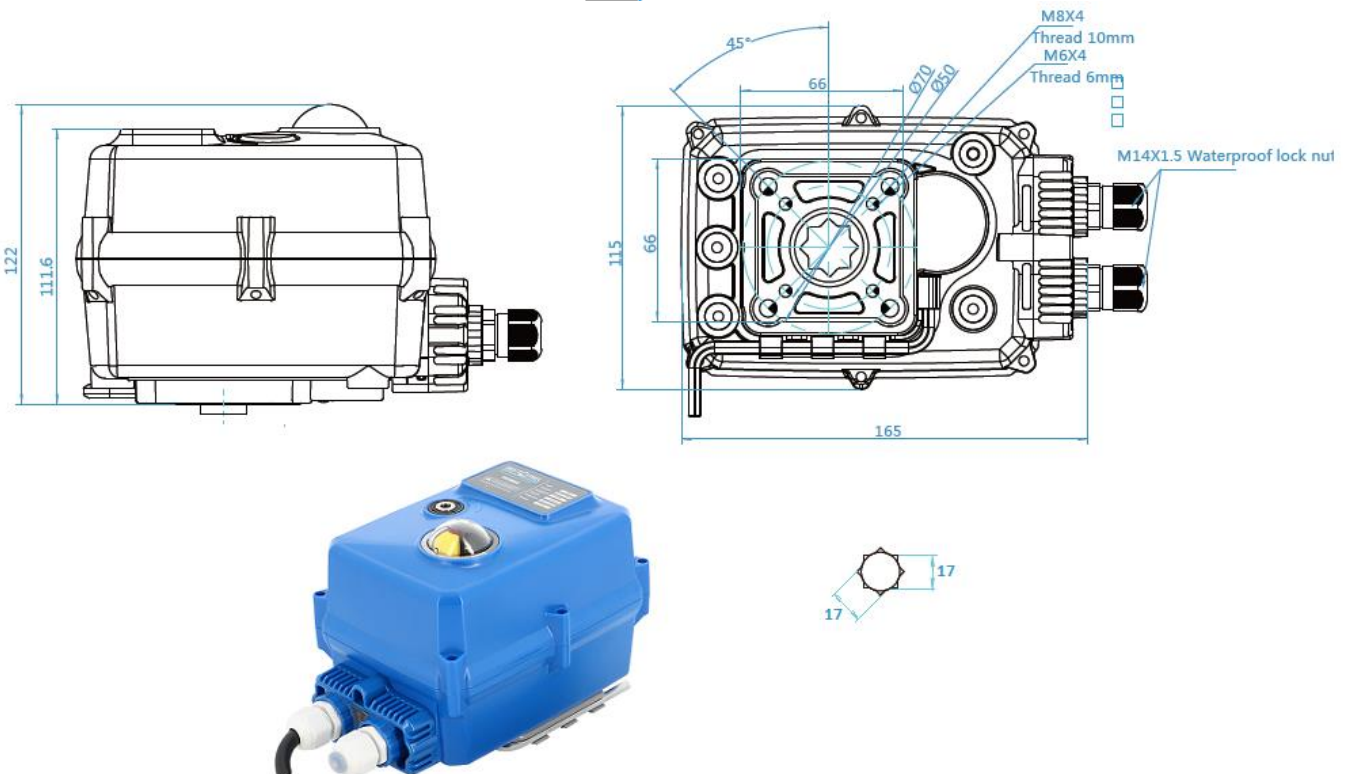
TCR-N ELECTRICAL ACTUATOR

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)



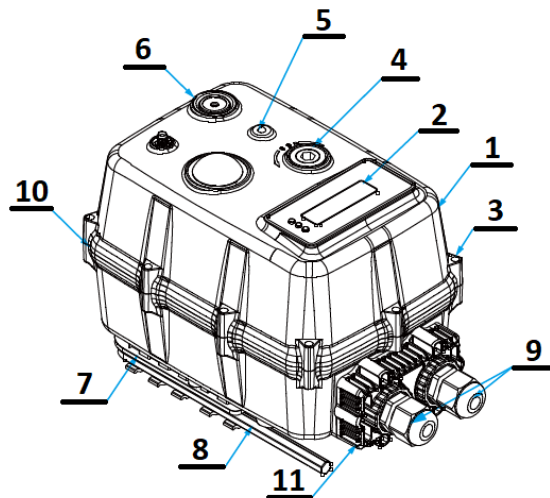
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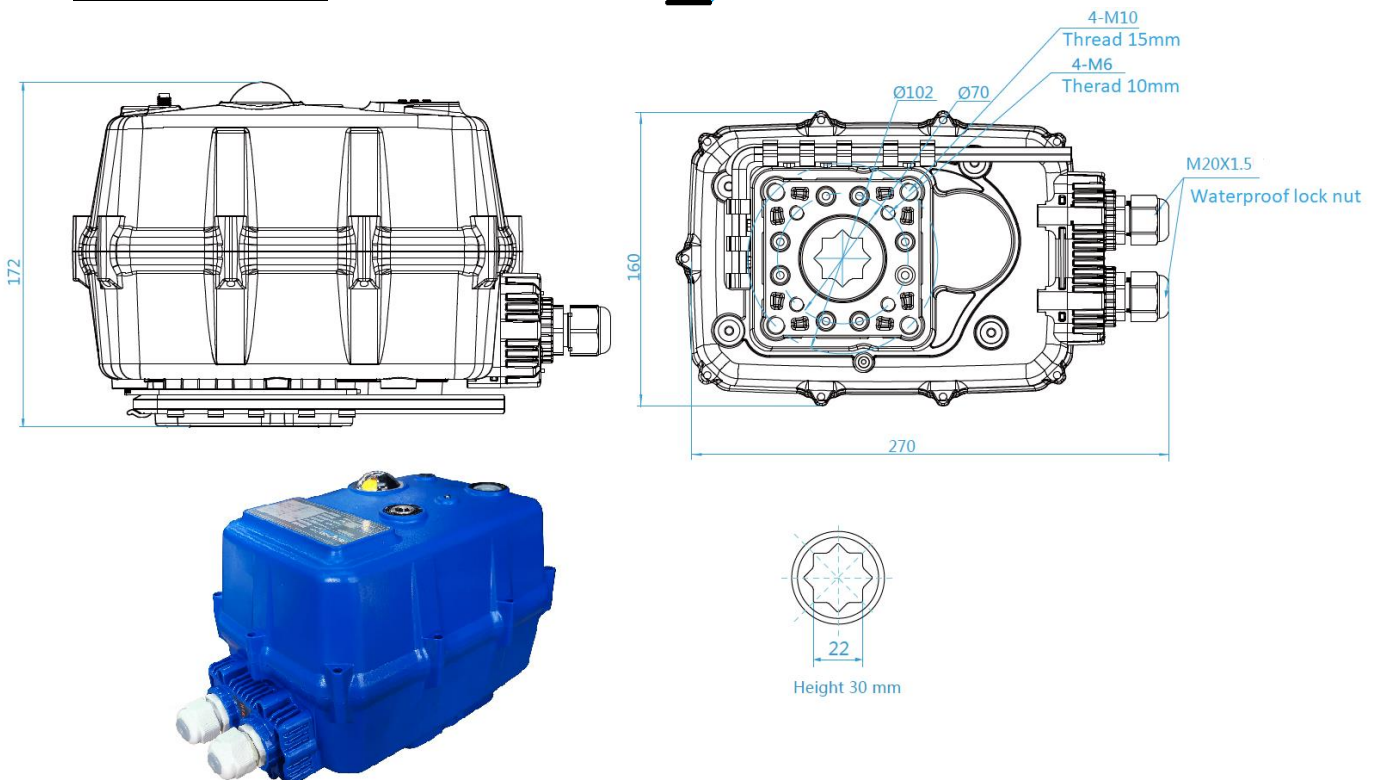
TCR-N ELECTRICAL ACTUATOR

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)

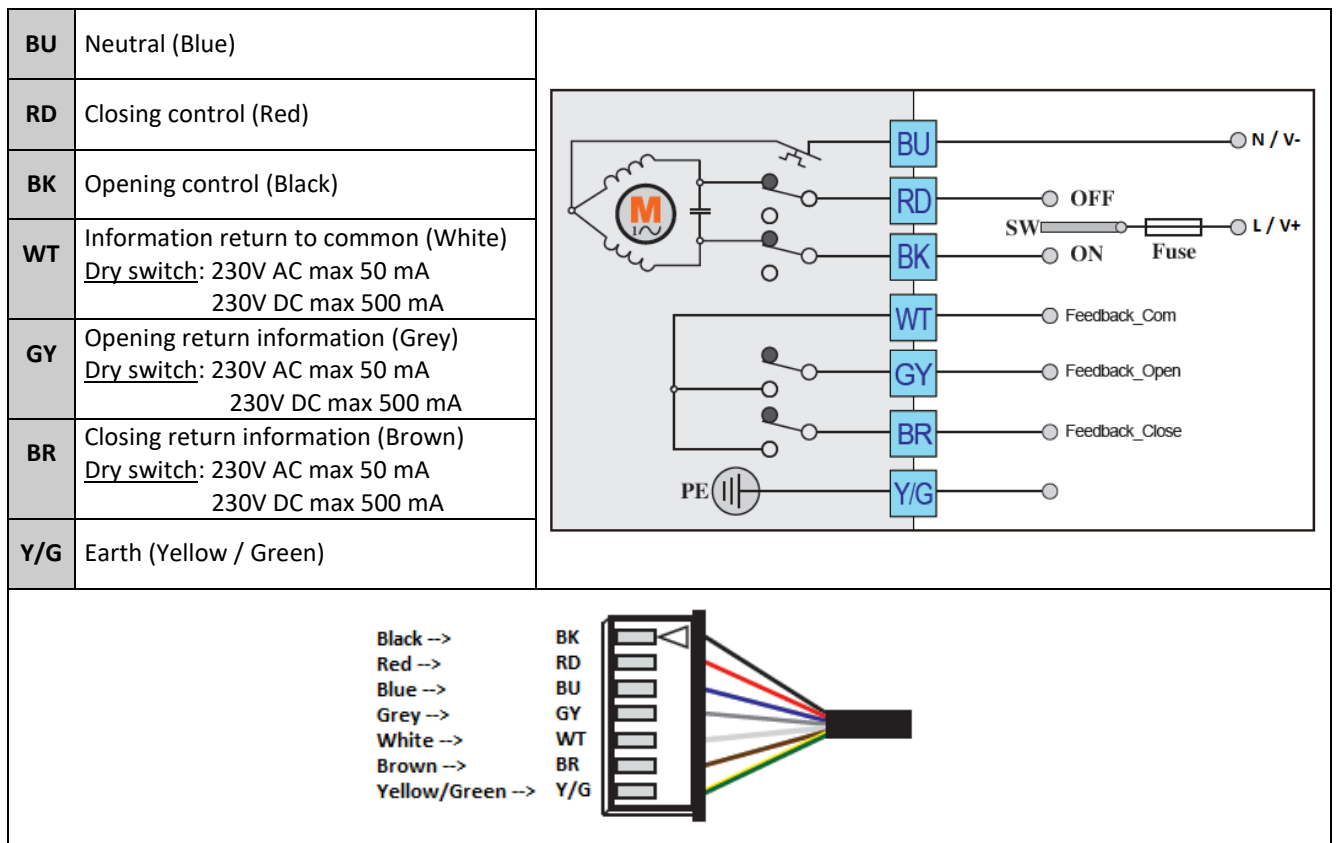


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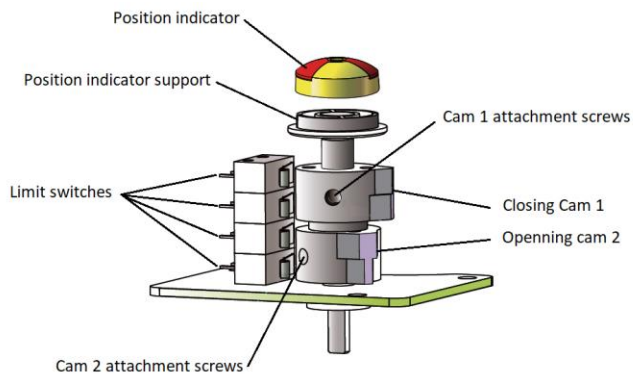
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TCR-N ELECTRICAL ACTUATOR

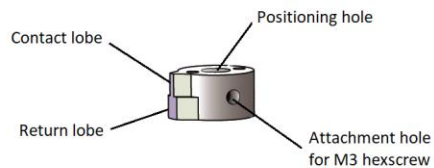
WIRING DIAGRAM



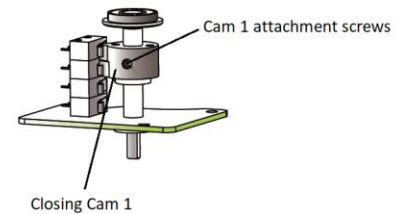
SWITCH SETTING



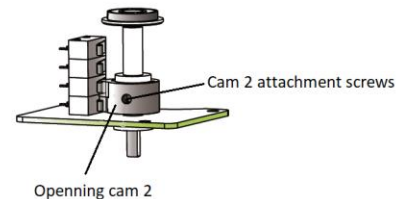
GENERAL VIEW



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.

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

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		Ref.	TDS2411 ENG
		Rev.	08
		Date	05/2025