

ELECTRIC VALVE ACTUATOR TYPE CAR

FOR 2 & 3-WAY VALVES TYPE G/L/M/S 2FM-T & G/L/M/S 3FM-T

O-4.11.08-K

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APPLICATIONS

Electric valve actuator type CAR is specially designed to meet the demands of the powerful low frequency vibration environments in marine installations.

The main applications are cooling of fresh water, sea water and lubricating oil systems for main and auxiliary engines. The actuator is used for Clorius 2 or 3-way valves type L3FM-T, M3FM-T, G3FM-T and S3FM-T.

MOUNTING

For mounting and starting up, the instructions delivered with the actuator must be followed carefully.

SERVICE

No special service is needed. It is recommended to check and grease the actuator at every docking or every three years.

TECHNICAL DATA

Casing:	Watertight IP67, Nema 4 and 6
Ambient temp.:	-30°C to +70°C, 150°C/1 hr.
Power Supply:	110/230 VAC, 1-Phase (50Hz/60Hz), 380/400/440 VAC, 3-Phase (50Hz/60Hz) 24 VDC (CAR 015-028)
Torque switches:	Open/Close
Limit switches:	Open/Close, additional limit switches on request
Stall protection:	Built-in Thermal Protection Cut-off at 150°C ± 5°C / Reset at 97°C ± 15°C
Travel angle:	90° ± 5°
Indicator:	Continuous Position Indicator
Manual override:	AUTO Declutching Mechanism
Worm gear:	Permanently lubricated and Self-locking
Mechanical stops:	External Adjustable Limit Stops
Space heater:	20 W (115/230 VAC, 24 VDC) Anti-Condensation
Cabeling:	2 x M20 x 1,5
Lubrication:	Grease GADUS S2 V220 2
Materials:	Steel, Aluminium Alloy, Al Bronze
External coating:	Anodizing and Dry Powder Epoxy
Duty Cycle:	Please see specification Overvoltage category III acc. to IEC60664-1

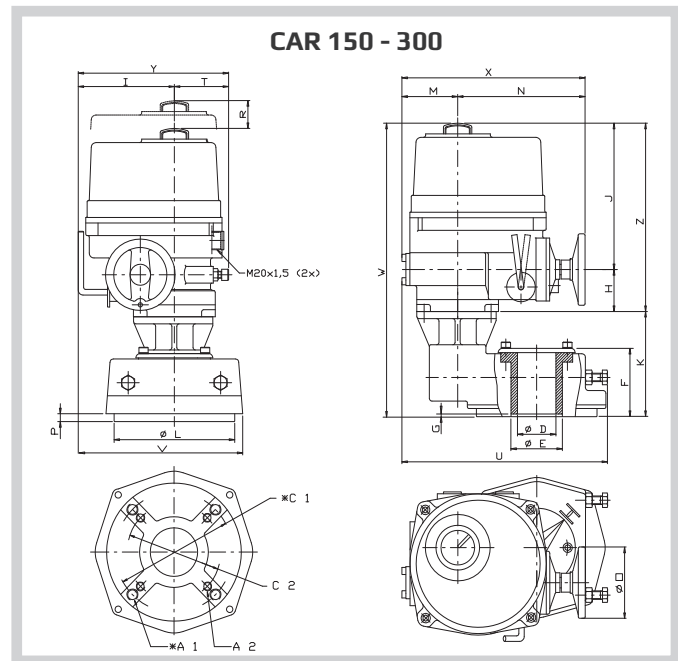
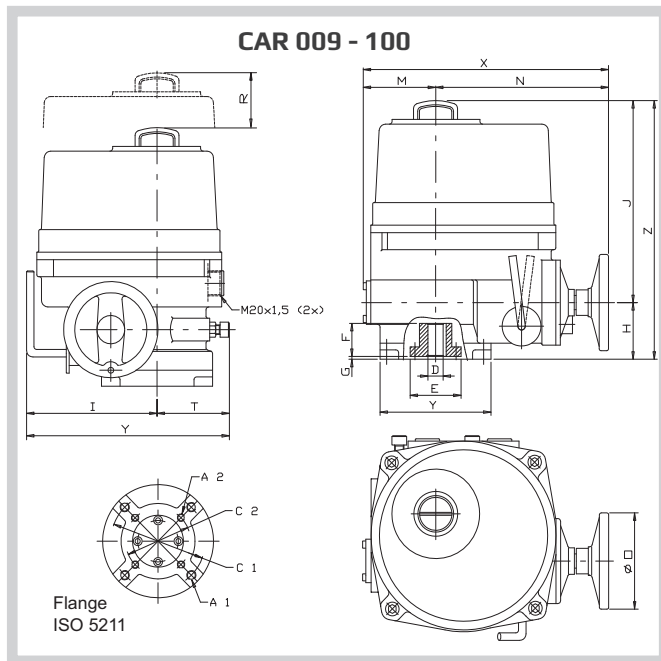
FEATURES

- Robust design
- Maintenance free
- Reliable even in rough environments
- Easy installation
- User friendly

SPECIFICATIONS

Type	Max. torque Nm	Operating time sek/90° (50/60 Hz)	Weight kg	No. of handle turns	Current draw max. A (1-phase 110VAC)	Current draw max. A (1-phase 230VAC)	Current draw max. A (3-ph 400VAC)	Current draw max. A (24 VDC)	Duty cycle S4(%)
CAR 009	90	17/14	9	8.5	1.1	0.56	0.18	2.5	50
CAR 019	190	20/17	11.5	10	1.6	0.75	0.3	4.5	50
CAR 028	280	24/20	14	12.5	1.6	0.75	0.32	6.5	50
CAR 060	600	29/24	24	14.5	3.5	1.2	0.47	-	25
CAR 100	1000	29/24	24	14.5	4.0	2	0.85	-	25
CAR 150	1500	87/72	60	43.5	3.5	1.2	0.47	-	25
CAR 200	2000	87/72	60	43.5	3.8	1.8	0.75	-	25
CAR 300	3000	116/96	60	43,5	-	2.0	0.85	-	25

DIMENSION SKETCH



Type	CAR 009	CAR 019	CAR 028	CAR 060	CAR 100	CAR 150	CAR 200	CAR 300
Flange	F07	F07, F10	F12, F10	F14, F12		F16, F14*		F16
C1		102	125	140		165		165
C2	82	70	102	125		140*		140*
A1		M10	M12	M16		M14*/M16*		M20
A2	M8	M8	M10	M12		M20		M20
B	12	15	18	22		30		30
D(Max**)	22	22	32	42		75		75
E	55	57	75	85		100		100
F	43	43	52	59		126		126
G	2	2	2	2		7		7
H	60	60	70	78		78		78
I	120	139	149	192		192		192
J	213	213	250	283		283		283
K						195		195
L	102	120	145	170		266		266
M	56	77	83	99		99		99
N	175	184	202	226		315		315
O	102	102	125	170		170		170
P						16		16
R	108	108	130	178		178		178
T	68	85	95	105		152		152
U						388		388
V						318		318
W						556		556
X	231	261	285	325		414		414
Y	188	224	244	297		344		344
Z	273	273	320	361		361		361
øD	102	102	125	155		170		170

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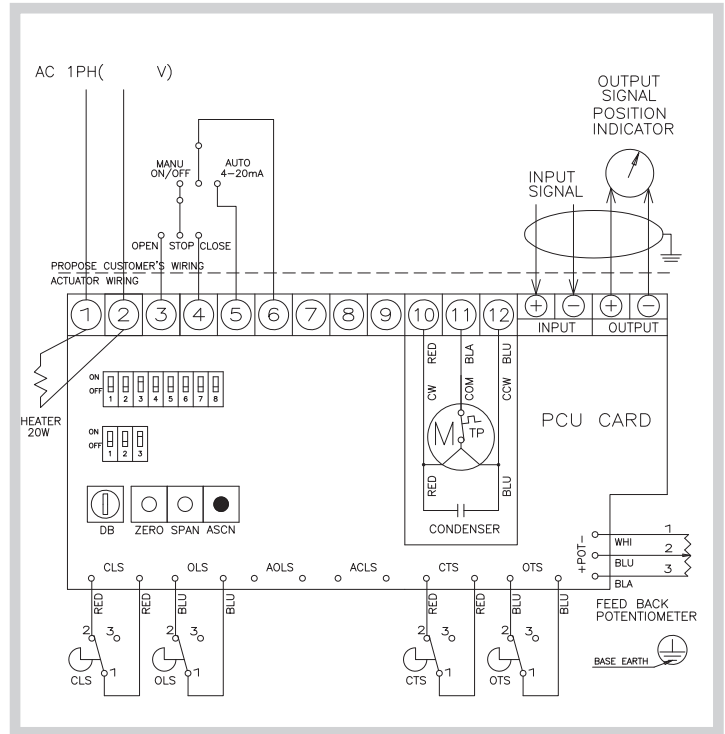
ACCESSORIES

CAR PROPORTIONAL CONTROL UNIT PCU PB90

Command signal input	4-20 mA, nominal input impedance 150 Ohm, jumpers I1 and I2 0-10 V, nominal input impedance 260k Ohm, jumper V1
Analogue feedback signal	4-20 mA, self powered, can drive up to 300 Ohm
Fuse	3,15 AT 5x20 mm, mounted on the PB90 card
Resolution	Approx. 0,3%
Conversion	12 bit maximum. Normal range (4-20 mA) = 1/3200
Position board. Characteristic of feedback element and actuator system response affect the true performance.	

- CLS: Close Limit Switch (250VAC 15A)
- OLS: Open Limit Switch (250VAC 15A)
- CTS: Close Torque Switch (250VAC 15A)
- OTS: Open Torque Switch (250VAC 15A)
- TP: Thermal Protector (250VAC 15A)

CAR 009-300

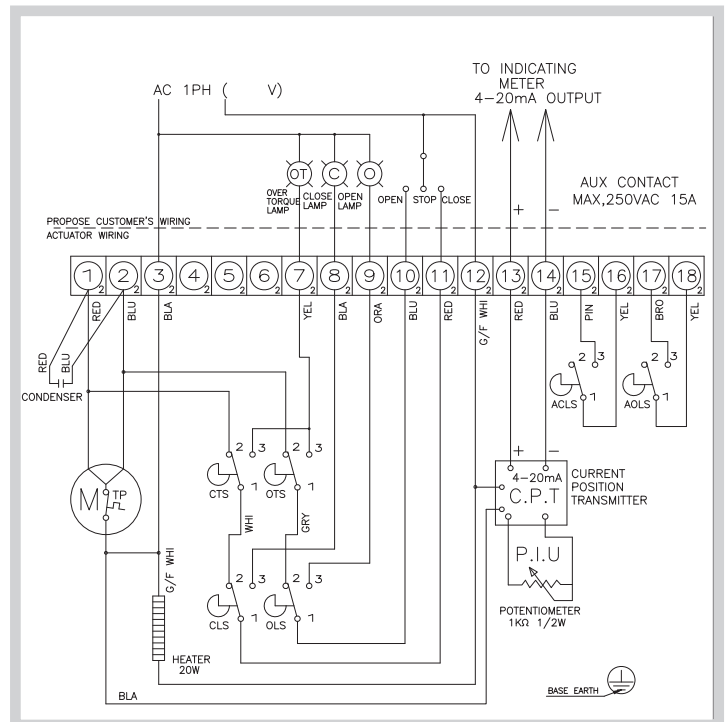


CAR 009-300

CAR CURRENT POSITION TRANSMITTER CPT

- For continuous, analogue feed back signal 4-20 mA
- R/I Transmitter
- The electronic components are protected against dirt and similar

- CLS: Close Limit Switch (250VAC 6A)
- OLS: Open Limit Switch (250VAC 6A)
- CTS: Close Torque Switch (250VAC 6A)
- OTS: Open Torque Switch (250VAC 6A)
- TP: Thermal Protector (250VAC 15A)



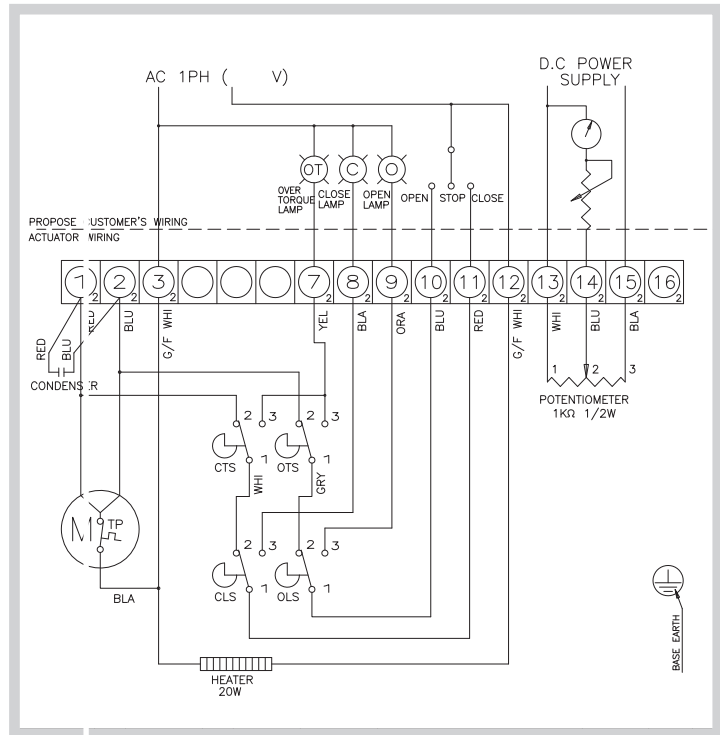
ACCESSORIES

CAR POTENTIOMETER PIU

- For CAR 009 - CAR 250
- For continuous position feedback from 0° to 90°
- The whole unit is built into the actuator
- Potentiometer 1k Ohm, senses the actuator position during the whole turning movement
- Mounting details included
- Resistance 1k Ohm
- Resistance tolerance ±20%
- Linearity ±1%
- Max load 1W at +70 °C

- CLS: Close Limit Switch (250VAC 15A)
 OLS: Open Limit Switch (250VAC 15A)
 CTS: Close Torque Switch (250VAC 15A)
 OTS: Open Torque Switch (250VAC 15A)
 ACLS: Aux. Close Limit Switch (250VAC 15A)
 AOLS: Aux. Open Limit Switch (250VAC 15A)
 TP: Thermal Protector (250VAC 15A)

CAR 009-300



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RECOMMENDED ACTUATOR TYPES FOR G2/G3FM-TR and G2/G3FM-TL VALVES

Valve size	Actuator type CAR			
	P1≤5bar	P1≤10bar	P1≤16bar	P1≤25bar
DN 65	009	009	009	009
DN 80	009	009	009	009
DN 100	009	009	009	019
DN 125	009	019	019	019
DN 150	019	019	028	-
DN 200	019	028	060	-
DN 250	028	060	060	-
DN 300	060	060	100	-
DN 350	060	100	-	-
DN 400	100	200	-	-
DN 450	200	200	-	-
DN 500 DN 550	200	200	-	-
DN 600	200	300	-	-
DN 800	-	-	-	-

RECOMMENDED ACTUATOR TYPES FOR G3FM-TM VALVES

Valve size	Actuator type CAR			
	P1≤5bar	P1≤10bar	P1≤16bar	P1≤25bar
DN 65	009	009	009	009
DN 80	009	009	009	009
DN 100	009	009	019	019
DN 125	019	019	019	028
DN 150	019	028	028	-
DN 200	028	060	060	-
DN 250	060	060	100	-
DN 300	100	100	100	-
DN 350	100	200	-	-
DN 450	200	200	-	-