

Technical Data Electrical Actuator TPS20 - 20 Nm



Fig. 1 Without position indicator



Fig. 2 With position indicator

Dimensions actuator with cable entry via cable glands

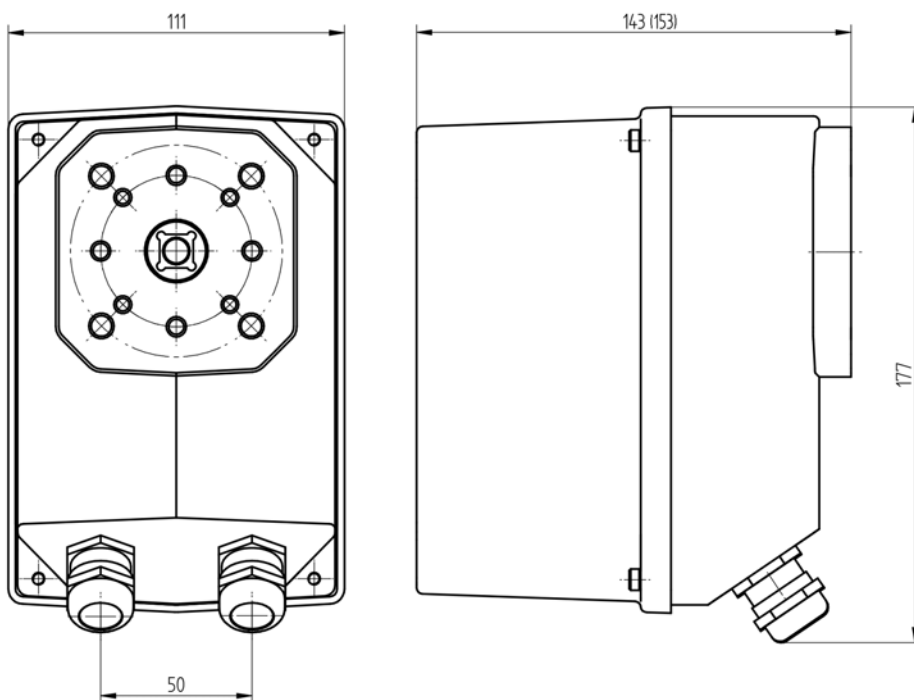


Fig. 3 Dimensioned drawing actuator with cable entry via cable glands

Dimension with standard adaption
F05F07 (H x W x D)

143 x 111 x 177 mm / 5.63 x 4.37 x 4.97" in

Dimension with
Adaption 65 x 50 or
Hole circuit 52 or 68 (H x W x D)

153 x 111 x 177 mm / 6.02 x 4.37 x 4.97" in

Additional space required to open the cover (H)

85 mm / 3.35" in

NOTICE

Depending on the cable entry, the length may vary.

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Dimensions actuator with cable entry via conduit adapter

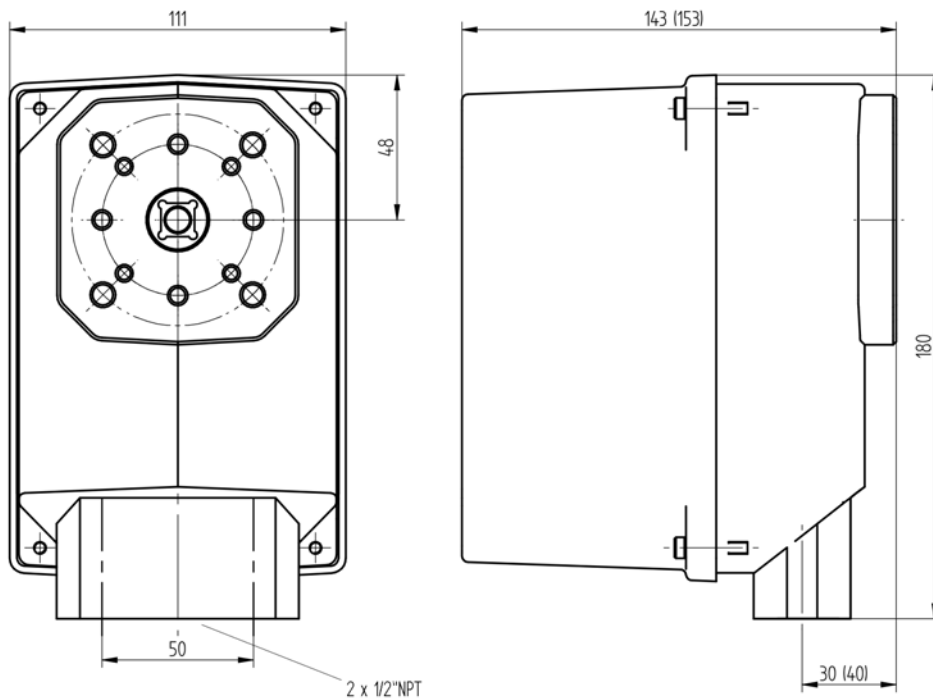


Fig. 4 Dimensions actuator with cable entry via conduit adapter

Dimension with standard adaption
F05F07 (H x W x D)

143 x 111 x 180 mm / 5.63 x 4.37 x 7.09" in

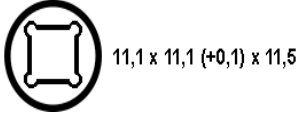
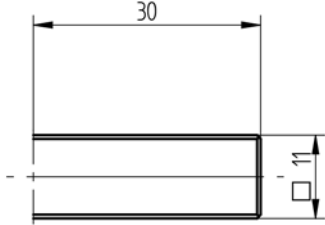
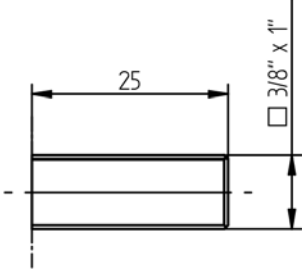
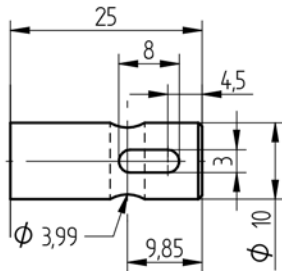
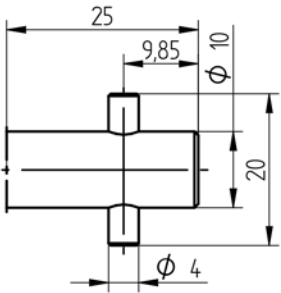
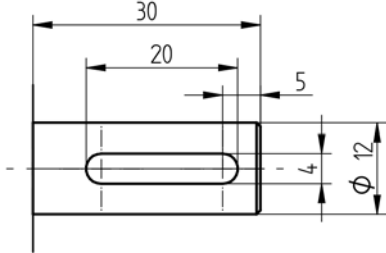

Dimension with
Adaption 65 x 50 or
Hole circuit 52 or 68 (H x W x D)

153 x 111 x 180 mm / 6.02 x 4.37 x 7.09" in

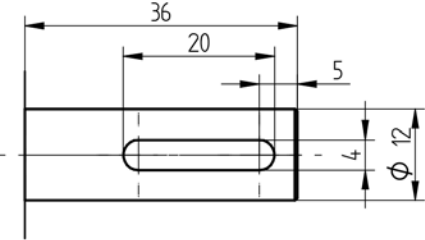
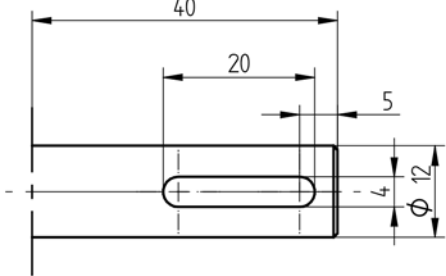
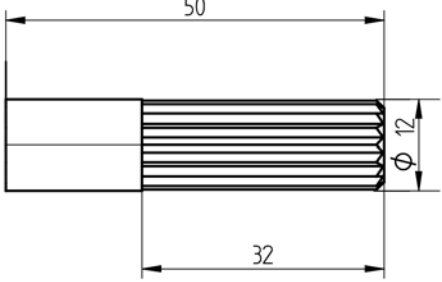
Additional space required to open the cover (H)

85 mm / 3.35" in

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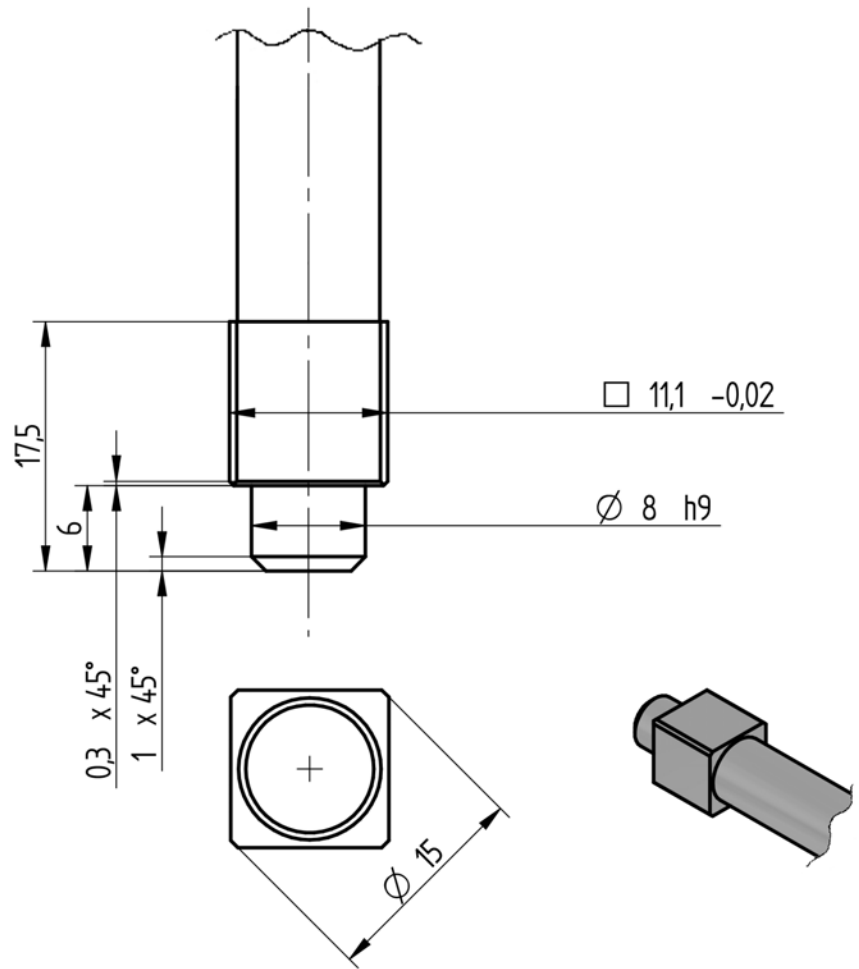
<p>Form of output shaft (IVK11)</p> <p>Internal square 11.1 x 11.1 x 11.5 mm / 0.44 x 0.44 x 0.45" in</p>		
<p>Form of output shaft (VK11 x 11)</p> <p>Square 11 x 11 x 30 mm / 0.43 x 0.43 x 1.18" in</p>		
<p>Form of output shaft (VK38 x 1)</p> <p>Square 3/8" x 1"</p>		
<p>Form of output shaft (10 x 25)</p> <p>Round 10 x 25 mm / 0.39 x 0.98" in with parallel key 3 x 3 x 8 mm / 0.12 x 0.12 x 0.31" in and cross drilling</p> <p>Only available for 6 Nm and 20 Nm</p>		
<p>Form of output shaft (10 x 25V)</p> <p>Round 10 x 25 mm / 0.39 x 0.98" in with cross bolt 4 x 20 mm / 0.16 x 0.79" in in vertical position</p> <p>Only available for 6 Nm and 20 Nm</p>		
<p>Form of output shaft (12 x 30)</p> <p>Round 12 x 30 mm / 0.47 x 1.18" in with parallel key 4 x 4 x 20 mm / 0.16 x 0.16 x 0.79" in</p>		

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<p>Form of output shaft (12 x 36)</p> <p>Round 12 x 36 mm / 0.47 x 1.41" in with parallel key 4 x 4 x 20 mm / 0.16 x 0.16 x 0.79" in</p>	
<p>Form of output shaft (12 x 40)</p> <p>Round 12 x 40 mm / 0.47 x 1.57" in with parallel key 4 x 4 x 20 mm / 0.16 x 0.16 x 0.79" in</p>	
<p>Form of output shaft (KVZD2)</p> <p>Round 12 x 50 mm / 0.47 x 1.97" in with spline 10/12 in according to DIN5481</p>	

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Shape of the pluggable square of the output shafts (actuator side)



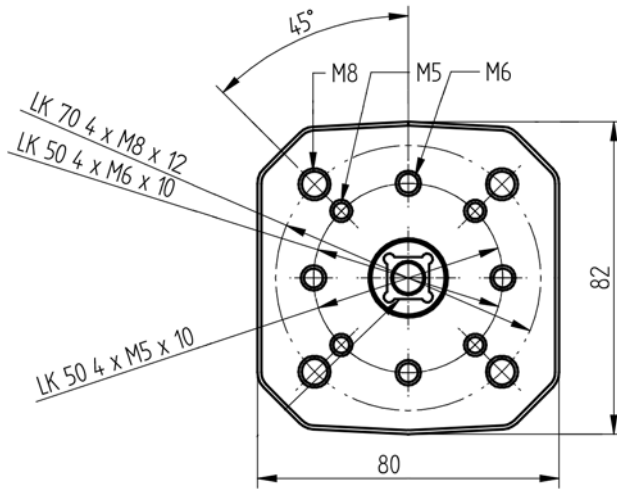
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Adaption (Standard)
(F05F07)

Flange fixing in according to
ISO5211

F05: $\varnothing 50$ 4 x 45° M5 / 4 x M6

F07: $\varnothing 70$ 4 x 45° M8

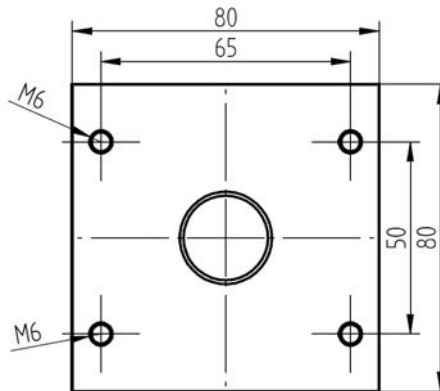


Adaption via adapter plate (65 x 50)

Flange fixing

4 x M6, 65 x 50 mm /
2.56 x 1.97" in

This increases the height of the
actuator by 10 mm / 0.39" in.



Adaption via adapter plate (LK52)

Flange fixing

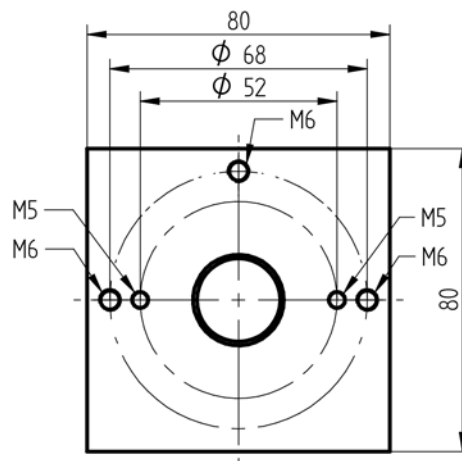
$\varnothing 52$ mm / 2.05" in 2 x M5

(LK68)

Flange fixing

$\varnothing 68$ mm / 2.68" in 3 x M6

This increases the height of the
actuator by 10 mm / 0.39" in.



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Dimensions Actuator 668M2020

Dimensions (H x W x D)	143 x 111 x 177 mm / 5.63 x 4.37 x 6.97" in
Weight	2,3 kg / 5.07 lb (The weight may vary slightly depending on the configuration)
Material Cover	Die-cast aluminium, powder-coated RAL 3020 traffic red (other colours on request)

Input Data 668M2020 - Nm

Standard	Mains voltage	230 VAC
	Power consumption (A15)	28 mA
	Capacitor	0.18 μ F / 500 V
	Input power synchronous motor	6.45 W
	Output power	1.85 W
Optional	Mains voltage	120 VAC
	Power consumption (A15)	55 mA
	Capacitor	0.82 μ F / 250 V
	Input power synchronous motor	6.45 W
	Output power	1.85 W

668M2020 – 20NM Torque max. (A03)

20 Nm

Holding torque 10 Nm

Technical specifications

Overload protection	none
Running time / angel of rotation (A20-6090)	60 seconds/90° at 50 Hz (48 seconds/90° at 60 Hz)
Running time / angel of rotation (A20-90135)	optional 90 seconds/135° at 50 Hz (72 seconds/135° at 60 Hz)
Running time / angel of rotation (A20-120180)	optional 120 seconds/180° at 50 Hz (96 seconds/180° at 60 Hz)
Position feedback (A25-1PO)	Potentiometer 5 kOhm CONTELEC, conductive plastic according to EN12067-2: 2004 annex C. Connection to output shaft positive and free of backlash according to EN12067-2: 2004 paragraph 6.2.2). Max. angle of rotation angle 180°.
Position feedback (A25-2PO)	optional Additional position feedback Potentiometer 5 kOhm CONTELEC, conductive plastic according to EN12067-2: 2004 annex C. Connection to output shaft positive and free of backlash according to EN12067-2: 2004 paragraph 6.2.2). Max. angle of rotation angle 180°

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Technical specifications

Position feedback (A25-1NOVO)	optional Potentiometer 5 kOhm NOVOTEC, conductive plastic according to EN12067-2: 2004 annex C. Connection to output shaft positive and free of backlash according to EN12067-2: 2004 paragraph 6.2.2). Max. angle of rotation angle 90°. With NOVOTEC potentiometers, a position indicator or a 2nd potentiometer is not possible.
Direction of rotation (A30-R)	rotation to the right (clockwise 12.00 to 3.00 o'clock with view onto the shaft).
Direction of rotation (A30-L)	optional rotation to the left (anti-clockwise 12.00 to 9.00 o'clock with view onto the shaft)
Option Position indicator (A55-POS1)	optional Position indicator in housing cover (Only possible with CONTELEC potentiometer)
Repeatability	0,2°
Radial bearing force	400 N
Damage pattern by mech. overload	Gear unit defect
Board gear	
Gear wheels/backlash	Spur toothed /max. 1°
Bearing	plain bearing / ball bearing, free of maintenance

Housing Heating

Option housing heating (A60- HEAT1)	optional housing heating 230 VAC/12 W, down to -30 °C / -22 °F ambient temperature
Option housing heating (A60- HEAT2)	optional housing heating 120 VAC/12 W, down to -30 °C / -22 °F ambient temperature

Cable Entry

Cable entry (A70-00)	without cable gland, 2 x inner thread M20
Cable entry (A70-M20)	2 x cable gland M20 x 1,5, metal, cable Ø min. 8,0 mm, / / 0.31" in, max. 13,0 mm / 0.51" in
Cable entry (A70-M20KS)	optional 2 x cable gland M20 x 1,5, plastic cable Ø min. 6,0 mm / 0.24", max. 12, mm / 0.47" in
Cable entry (A70-M25)	optional 2 x cable gland M25 x 1,5, metal, cable Ø min. 14,0 mm / 0.55" in, max. 20,0 mm / 0.79" in
Cable entry (A70-M16)	optional 2 x cable gland M16 x1,5, metal, cable Ø min. 5,0 mm / 0.20" in, max. 9,0 mm / 0.35" in
Cable entry (A70-NPT12)	optional Conduit-Adapter 2 x ½" NPT, metal, cable Ø max. 9,5 mm / 0.37" in
Connecting cable for position feedback	3-pins, shielded 0.52 ... 1.52 (AWG20 ... 14) stripping length 7.5 ... 8.5 mm, 0.5 mm ² ... 1.5 mm ² / 0.30 ... 0.14" in, 21 ... 16 AWG

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Cable Entry

Connecting cable for line voltage Controlling without manual adjusting	4-pins (3+PE) 0.52 ... 2.52 (PE / N / AUF / ZU) stripping length 10 mm, 0.5 mm ² ... 2.5 mm ² / 0.39" in, 21 ... 14 AWG
Connecting cable for line voltage Controlling with manual adjusting	5-pins (4+PE) 0.52 ... 2.52 (PE / N / L / AUF / ZU) stripping length 10 mm, 0.5 mm ² ... 2.5 mm ² / 0.39" in, 21 ... 14 AWG
Connecting cable for line voltage, controlling, case heating, with / without manual adjusting	5-pins (4+PE) 0.52 ... 2.52 (PE / N / L / AUF / ZU) stripping length 10 mm, 0.5 mm ² ... 2.5 mm ² / 0.39" in, 21 ... 14 AWG

Operating Condition

Life time	The actuators exceed the service life requirements of EN 15714-2 Class C 'Modulation' 250'000 starts in OPEN/CLOSED direction. Detailed information is available on request.
Mounting position	any, but not hanging downwards
Positioning accuracy	< 1 %
Installation height	≤ 2,000 m / 6,561.68 ft above sea level > 2,000 m / 6,561.68 ft above sea level on request

Environmental conditions

Storage		In according to DIN EN 60721-3-1, class IE12
	relative temperature range	-25 °C ... +55 °C / -13 °F ... 131 °F
	relative air humidity	< 95 %
Transport		In according to DIN EN 60721-3-2, class IE23
	relative temperature range	-25 °C ... +60 °C / -13 °F ... 140 °F
	relative air humidity	< 95 %
Operation		Class IE36 in according to DIN EN 60721-3-2
	relative temperature range	-10 °C ... +60 °C / 14 °F ... 140 °F with additional case heating -30 °C ... +60 °C / - 22 °F ... 140 °F
	relative air humidity	< 95 %
Degree of protection	according to DIN EN 60529	IP65

NOTICE

The limits of the technical data must be strictly adhered to.

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Order Information

Electrical Actuator 20 Nm – configuration

Description/Type	Order no.
Electrical actuator 20 Nm, TPS, position feedback potentiometer 5 kohm, conductive plastic, 2 end position switches to limit the actuator, electric hand feed, IP65	668M2020
A05 "TORQUE"	
Selection	
TORQUE 20 Nm	20NM*
A10 "FORM OF OUTPUT SHAFT"	
Selection	
SQUARE HOLLOW SHAFT 11 x 11 mm / 0.44 x 0.44" in	IVK11*
SQUARE SHAFT 11 x 11 mm / 0.44 x 0.44" in	VK11
SQUARE SHAFT 3/8" x 1"	VK38x1
ROUND SHAFT 10 x 25 mm / 0.39 x 0.98" in WITH PARALLEL KEY 3 x 3 x 8 mm / 0.12 x 0.12 x 0.31" in	10x25
ROUND SHAFT 12 x 30 mm / 0.47 x 1.18" in WITH PARALLEL KEY 4 x 4 x 20 mm / 0.16 x 0.16 x 0.79" in	12x30
ROUND SHAFT 12 x 36 mm / 0.47 x 1.41" in WITH PARALLEL KEY 4 x 4 x 20 mm / 0.16 x 0.16 x 0.79" in	12x36
ROUND SHAFT 12 x 40 mm / 0.47 x 1.57" in WITH PARALLEL KEY 4 x 4 x 20 mm / 0.16 x 0.16 x 0.79" in	12x40
ROUND SHAFT 12 x 40 mm / 0.47 x 1.97" in, SPLINE 10/12, IN ACC. TO DIN5481 DIN5481	KVZD2
D-SHAFT d1=10 / 0.39 x d2=8.5 / 0.33 x L=25 mm / 0.98" in, INCL. ADAPTER PLATE for VKP-VALVE SIEMENS	D10x25
A15 POWER SUPPLY VOLTAGE	
Selection	
120 VAC/50 Hz	120VAC
230 VAC/50 Hz	230VAC*
A20 "RUNNING TIME / ANGLE OF ROTATION"	
Selection	
60 SECONDS / 90° (60 SEC./50 HZ / 48 SEC./ 60 HZ)	6090*
90 SECONDS / 135° (90 SEC./50 HZ / 72 SEC./60 HZ)	90135
120 SECONDS / 180° (120 SEC./50 HZ / 96 SEC./60 HZ)	120180
A25 "POSITION FEEDBACK"	
Selection	
1 x POTENTIOMETER 5 KOHM CONTELEC, CONDUCTIVE PLASTIC, APPROVED IN ACCORDANCE TO EN12067-2, FORM CLOSURE CONSTRUCTION, FREE OF BACKLASH, Position feedback only for CMS	1PO*
2 x POTENTIOMETER 5 KOHM CONTELEC, CONDUCTIVE PLASTIC, APPROVED IN ACCORDANCE TO EN12067-2, FORM CLOSURE CONSTRUCTION, FREE OF BACKLASH, Position feedback only for CMS	2PO
1 x POTENTIOMETER 5 KOHM NOVOTEC, CONDUCTIVE PLASTIC, APPROVED IN ACCORDANCE TO EN12067-2, FORM CLOSURE CONSTRUCTION, FREE OF BACKLASH, Position feedback for ETAMATIC, FMS, VMS, CMS With NOVOTEC potentiometers, a position indicator or a 2nd potentiometer is not possible.	1NOVO
A30 "DIRECTION OF ROTATION" (view onto the shaft, parallel key at 12.00 o'clock)	
Selection	
CLOCKWISE (12.00 TO 3.00 O'CLOCK)	R*
ANTI CLOCKWISE (12.00 TO 9.00 O'CLOCK)	L

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A40 "ADAPTION"	Selection
FLANGE FIXINIG IN ACCORDANCE TO ISO5211 - F05 Ø50 mm / 1.97" in, 4 x 45° M5 / 4 x 45° M6 - F07 Ø70 mm / 2.76" in, 4 x 90° M8	F05F07*
FLANGE FIXINIG Ø52 mm / 2.05" in, 2 x M5 ¹	LK52
FLANGE FIXINIG Ø68 mm / 2.68" in, 3 x M6 ¹	LK68
FLANGE FIXINIG 4 x M6, 65 x 50 mm / 2.56 x 1.97" in ¹	65x50
ADAPTION IN ACCORDANCE TO CUSTOMER SPECIFICATION	

¹ Adaptation via adapter plate. This increases the height of the actuator by 10 mm / 0.39" in.

A45 "COLOUR"	Selection
COVER RED RAL3020	RT*
COVER BLACK RAL9005	SW
COVER ANTHRACITE RAL7016	AZ
CORROSION PROTECTION CATEGORY C4 COVER and CORPUS RAL7035 LIGHT GREY	C4
Further colours on request	

A50 "CUSTOMER"	Selection
LAMTEC TYPE	S*

A55 "POSITION INDICATOR"	Selection
WITHOUT	POS0*
POSITION INDICATOR IN THE COVER	POS1

A60 "HOUSING HEATING"	Selection
WITHOUT	HEAT0*
HOUSING HEATING 230V/12W, DOWN TO -30 °C	HEAT1
HOUSING HEATING 120V/12W, DOWN TO -30 °C	HEAT2

A70 "CABLE ENTRY"	Selection
2 x CABLE GLAND M16 METAL	M16
2 x CABLE GLAND M20 METAL	M20*
2 x CABLE GLAND M20 PLASTIC BLACK	M20KS
2 x CABLE GLAND M25 METAL	M25
CONDUIT ADAPTER 2 x ½" NPT	NPT12
CABLE GLAND IN ACCORDANCE TO CUSTOMER SPECIFICATION	

A99 "SPECIAL CONFIGURATION"	Selection
WITHOUT	SO0*

* Default selection



only 120 V

The information in this publication is subject to technical changes.



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