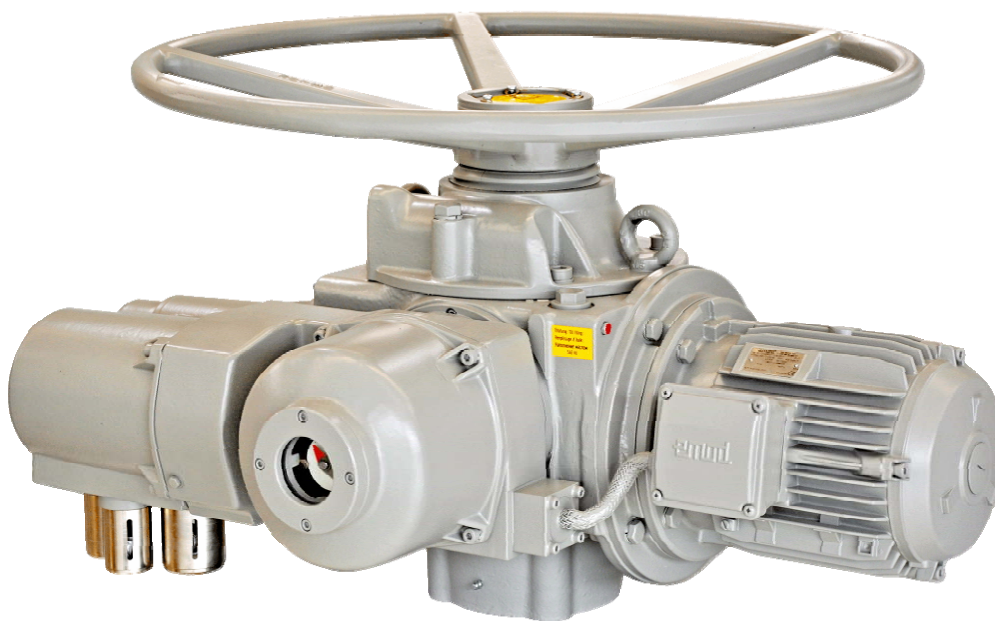


Electric Rotary Actuators For Nuclear Plants

R-SIWI and R-SIWI-AS

for Closed-Loop Control Equipment



Catalog MP 35.2 • 2011 / EM

Electric Rotary Actuators for Nuclear Plants

R-SIWI and R-SIWI-AS Series for Closed-Loop Control Equipment

Catalog MP 35.2 • 2011 / EM

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The production and testing of these electric actuators are inspected and approved regularly by the following authorities :

- > TÜV CERT, NIS ZERT
- > NPP Philippsburg (EnBW) as partner of VGB
- > AREVA NP GmbH

Electric rotary actuators for nuclear plants

R – SIWI and R – SIWI – AS series for close – loop control equipment



Fig. 1 Electric rotary actuator for nuclear plants, R - SIWI - AS series

Delivery program

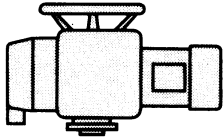
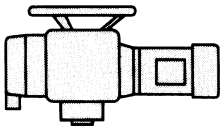
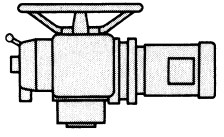
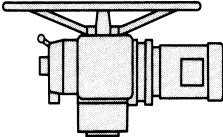
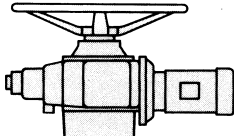
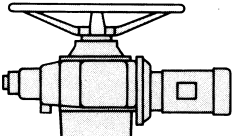
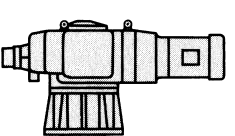
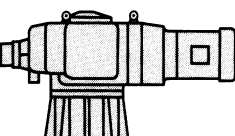
Electric rotary actuator for close-loop control equipment for use in nuclear plants

R - SIWI series ' Important for safety reasons '
 R-SIWI-AS series ' Important for safety reasons and designed-fault resistant '

With three-phase motor 3/PEN AC 50 Hz 380 V

Connection flange and output shaft Design B, C, D or E to DIN 3210 or Design B1 or B3 to DIN ISO 5210

Summary

Electric rotary actuators					
R - SIWI series R – SIWI – AS series	Type Type	M76362 - C M76372 - C	M76362 - E M76372 - E	M76362 - F M76372 - F	M76362 - G M76372 - G
	Tripping torque, not adjustable	20 and 30Nm	60 Nm	120 Nm	200 Nm
	Output speed in steps from .. to .. Size to DIN 3210 / DIN ISO 5210	5 to 40 rpm 0 / F10	5 to 40 rpm 0 / F10	5 to 40 rpm ½ / F14	5 to 40 rpm 3 / F16
	Ordering data	page 11	page 12	page 12	page 13
					
R - SIWI series R – SIWI – AS series	Type Type	M76362 - M M76372 - M	M76362 - N M76372 - N	M76362 - S M76372 - S	M76362 - U M76372 - U
	Tripping torque, not adjustable	400 Nm	600 Nm	1000 Nm	2000 Nm
	Output speed in steps from .. to .. Size to DIN 3210 / DIN ISO 5210	5 to 40 rpm 3 / F16	5 to 40 rpm 4 / F25	5 to 15 rpm 4 / F25	5 to 10 rpm 5 / F30
	Ordering data	page 13	page 14	page 14	page 14

Meaning of abbreviations

used to identify the series

R	Closed-loop control equipment
SIWI	Important for safety reasons
AS	Designed - fault resistant

Application

The electric rotary actuator of the R-SIWI and R-SIWI-AS series are actuators for closed-loop control equipment in nuclear plants.

The rotary actuators of R-SIWI series, type range M76362, are used to actuate final control elements which are particularly important for plants safety, e.g. for the safe operation of a nuclear reactor and for maintaining the emergency cooling and after-cooling.

The rotary actuators of R-SIWI-AS series, type range M76372, are 'important for safety reasons' and 'designed-fault resistant', i. e. they must operate correctly under fault conditions agreed upon during the design of a nuclear plant (designed fault). They are designed such that they continue to function for at least one day following the occurrence of a designed fault.

Versions

The rotary actuators of the SIWI and SIWI - AS series are further developments of the proven rotary actuators of the standard R series.

Higher safety factors were taken into account for the strength calculation of all parts in the flux of force than with the standard R series. The tripping torques have therefore been reduced compared to those of the rotary actuators of the standard R series.

Design and mode of operation

Motor

A three - phase asynchronous motor without fan is used as the drive. The motors are suitable for electrical braking via thyristor-reversing switches or equipped with electro-mechanical brakes (not suitable for operation via thyristor-reversing switches).

Gear Unit

The flux of force in all rotary actuators is from the motor to the output shaft via a spur-type transmission gear and a worm gear (Fig. 2). The rotary actuators M763..-S and M763..-U also have a planetary gear following this combination of units. A stepped range of drive speeds from 5 up to 40 rpm is achieved using different numbers of poles for the motor and different gear ratios. The worm shaft is kept in a central position in relation to the worm wheel by means of tension plate springs and can move in both axial directions (traveling worm). If a load torque occurs on the output shaft which is greater than the torque set by the tension of the plate springs, the worm shaft is pressed out of its central position by the peripheral force on the worm wheel. A torque switch is then activated via a lever system and switches off the motor via the associated control equipment (e. g. reversing starter switch).

The gear unit is filled with a high -pressure lubricant and sealed by gaskets in all directions.

All gearing shafts move in anti-friction bearings.

Manual operation

If necessary, the actuators can be operated by means of a handwheel which is inoperative in the case of motorized operation.

By pressing a switching lever, the actuator motor is switched off and the handwheel is connected to the output shaft. This position is engaged by a special mechanism. The handwheel is automatically disconnected without danger for the operator when the motor starts up and the motor is connected again. Motorized operation always has priority over manual operation.

The rotary actuators M763..-F, -G, -M, and -N can also be supplied with a gear reducer for the handwheel where the handwheel shaft is offset by 90° with respect to the output shaft. A qualification according to the German standard KTA 3504, edition 11/2006, is not present for this version, especially with respect to the resistance to vibration.

The rotary actuators M763..-S and -U are always fitted with a handwheel gear reducer.

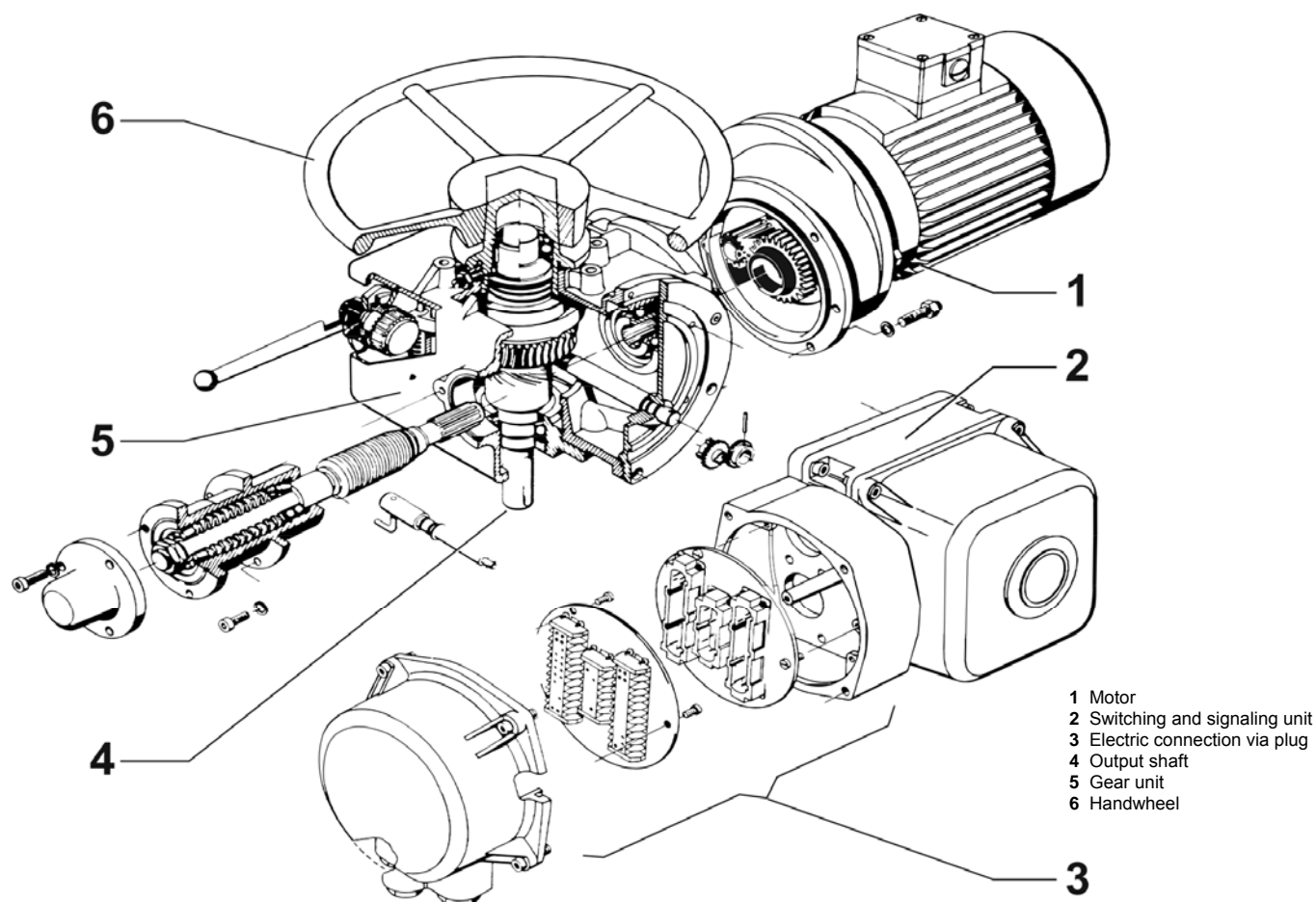


Fig. 2: Parts of an electric rotary actuators, R-SIWI series

Flange connection dimensions and output shaft designs

The forms of the rotary actuators at the connection point to the final control element are according to DIN 3210 or DIN ISO 5210. This standard defines the shape and dimensions of the connection flange and the various designs of the output shaft.

DIN 3210 has the following meanings :

Design B :	hollow shaft with insert bush
Design C :	hollow shaft with claw coupling
Design D :	free shaft end (with featherkey) / not qualified
Design E :	Bore with featherkey slot / not qualified

Rotary actuators with flange connection dimensions and output shafts designs according to DIN 3338 are available on request.

Switching and signaling unit

The switching signaling unit is fitted in a housing which is the same for all actuators of a series. This housing is pressure-tight (angular with round cover) in the actuators of the R-SIWI-AS series and thus differs from the housing of the R-SIWI-series. The switching and signaling unit consists of assemblies for activating the torque and travel switches, a mechanical position indicator, a remote transmitter (electronic position transmitter or potentiometer for position indication) and the associated gear reducer. See the Ordering data for the possible combinations of the switching and signaling unit. A space heater can also be fitted.

Mounting position

The rotary actuators can be mounted in any position.

Electric connection

The motor and the switching and signaling unit are connected via plugs.

Either one or two 24-way plug assemblies for the switching and signaling unit and one 10-way plug assembly for the motor are used depending on the required number of conductors. Crimp sockets for the top parts of the plugs are supplied loose.

All plug assemblies are accommodated in a common housing (compact plug, see Fig. 3).

The top part of the plug housing can be removed and rotated in steps of 90°. The cables are inserted into the housing via metal screwed glands with a conduit thread or metric thread.

Qualified cable inlets must be used for the rotary actuators of the R-SIWI-AS series depending on the plant.

The following accessories are available: parking socket and protective cover (page 17, dimensions on page 33).

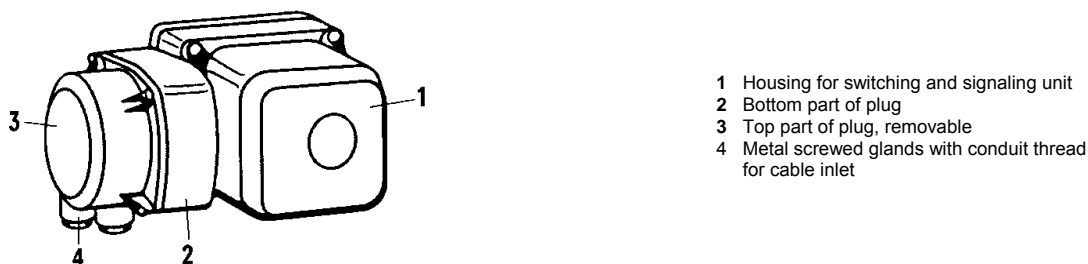


Fig. 3 : Housing for switching and signaling unit and plug housing (design for R - SIWI series)

Technical data

Series, Design, Sizes

Series :

Series	Type	Explanation
R-SIWI	M76362	Important for safety reasons (closed-loop control)
R-SIWI-AS	M76372	Important for safety reason and designed-fault resistant (closed-loop control)

Design : Rotary Actuators

Sizes :

Rotary actuator, Series SIWI / SIWI-AS	Type M76362 / 72							
	- C	- E	- F	- G	- M	- N	- S	- U
Size to DIN 3210	0	0	1 / 2	3	3	4	4	5
Size to DIN ISO 5210	F10	F10	F14	F16	F16	F25	F25	F30
Max. tripping torque in Nm	30	60	120	200	400	600	1000	2000
Internal diameter of hollow shaft (gear unit opening) and tolerance in mm	27,8 +0,2	36 +0,2	53 +0,2	53 +0,2	71,5 +0,5	71,5 +0,5	63 + 1	74 + 1
Handwheel reduction, Design I Design II	1 : 1	1 : 1	1 : 1	1 : 1	1 : 1	1 : 1	332 : 1	401 : 1
			13 : 1		18,5 : 1			

1) : self - locking worm gear

Handwheel reduction :

Design I (basic design) : Handwheel acts directly on the output shaft in rotary actuators M763.. - C .. N
Handwheel gear reducer fitted as standard in rotary actuators M763.. - S, - U

Design II (further design) : Worm gear attachment with handwheel at side as handwheel gear reducer in rotary actuators M763.. - F to N

Efficiencies of handwheel gear reducers

Reduction ratio, handwheel / output shaft	13 : 1	18,5 : 1	83 : 1	100 : 1	332 : 1	401 : 1
Efficiency η	0,45	0,6	0,6	0,6	0,32	0,32

Motor

Motor for three-phase 4-wire system 3/PEN AC 50 Hz 380 V to EN 60034

Operating mode, insulation class and motor protection

Rotary actuators, series	Operating mode to EN 60034	Insulation class	Motor protection
R – SIWI (without brake)	> S5 : Intermittent duty with starting influence and electric braking	H	PTC thermistor 1)
R – SIWI (with mech. brake)	> S4 : Intermittent duty with starting influence	H	PTC thermistor 1)
R - SIWI - AS	> S5 : Intermittent duty with starting influence and electric braking	H	PTC thermistor 1)

1): Nominal threshold temperature of PTC : 170° C
A suitable PTC thermistor tripping unit is to be provided in the switchgear unit.

See pages 18 to 19 for detailed motor data

Output shaft speeds of the rotary actuators :

The rated speeds of the output shaft as specified in the ordering data and on the rating plates of the rotary actuators are achieved with a deviation of up to +/- 15% at the maximum permissible positioning torque, which is the same half the maximum tripping torque. The actual loading of a rotary actuator during positioning is always smaller than the maximum permissible positioning torque, or at the greatest equal to it. The output shaft speed which then results is therefore in the range between the no - load speed of the actuator and the speed at the maximum permissible positioning torque.

Electric connection (see Fig. 4):Plugs for switching and signaling unit :

1 or 2 24 - way plug assemblies with crimp connections, gold-plated sockets and pins
conductor cross-section : 0,5 mm²

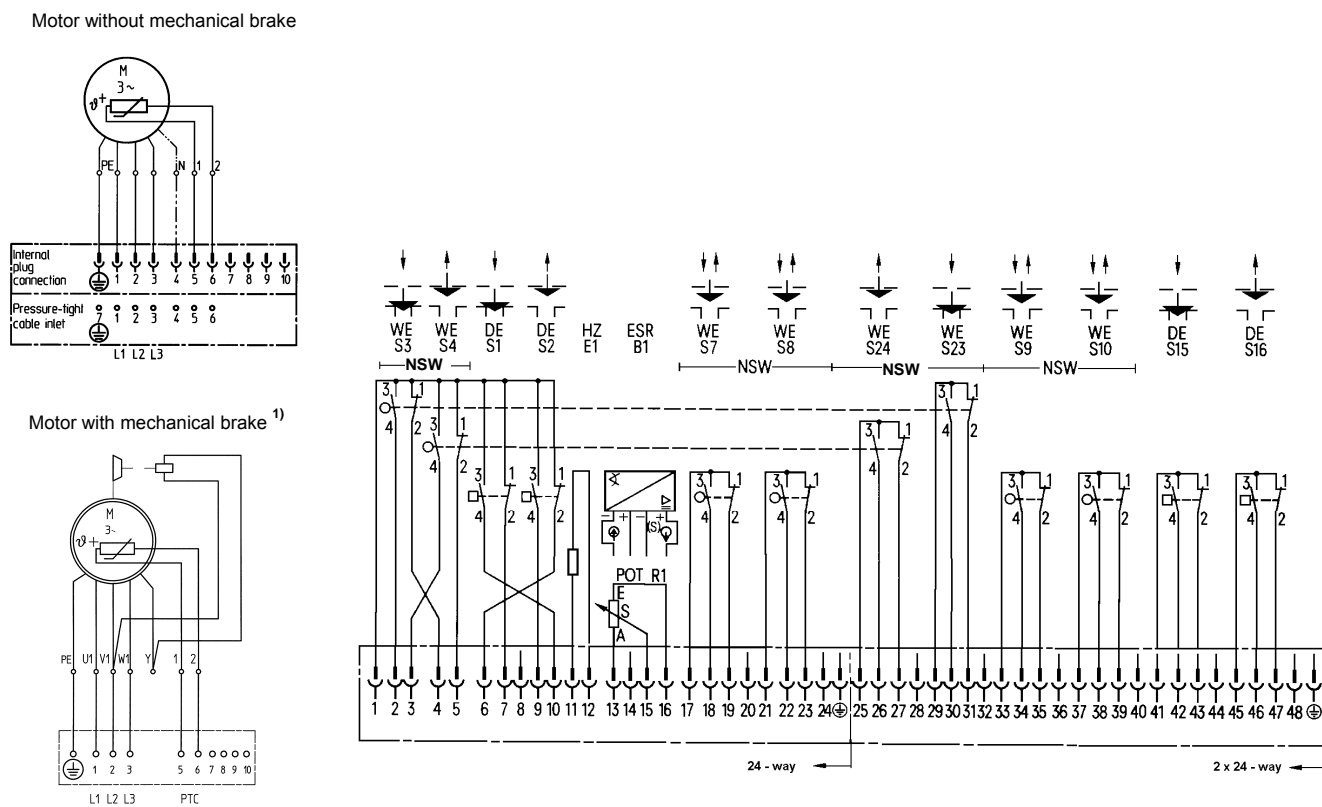
Motor plug :

1 10 - way plug assembly with crimp connections, silver-plated sockets and pins
max. conductor cross-section : 2,5 mm²

Cable inlets :

In the basic design of the rotary actuators, the cables are introduced to the actuator via metal screwed glands with conduit thread to DIN 46 320 or alternatively with metric thread to EN 50262.
The screwed glands are inserted leak-tight into the housing on delivery and closed by screw plugs.

Qualified cable inlets must be used for the rotary actuators of the SIWI - AS series depending on the plant.



The switches are shown in the non-operated state.

The connection diagram adheres inside the actuator is binding.

- | | | | | | |
|----|---------------|-----|---------------------------------|-----|---|
| WE | Travel switch | ESR | Electronic position transmitter | NSW | Cam-type counting and switching mechanism |
| DE | Torque switch | POT | Potentiometer | | |
| HZ | Space heater | | | | |

Fig. 4 : Connection diagrams

Degree of protection to EN 60529

Gear unit IP 65

Housing for switching and signaling unit and plug housing with rotary actuators

- > R-SIWI and R-SIWI-AS series with cable inlet via metal screwed glands to DIN 46320 / EN 50262 IP 65
- > R-SIWI-AS series with qualified cable inlets IP 68

Motor

- with rotary actuators
 - > R-SIWI series (without brake) IP 67
 - > R-SIWI series (with brake) IP 55
 - > R-SIWI-AS series IP 67

Operating Mode

See section ' Motor '

For intermittent duty S4 and S5 is admissible :

- | | | |
|---|--|--------------------------------|
| > 1200 c/h – 5% (cycle duration factor) | for rated motor power : | $P_N < 2,2 \text{ kW}$ |
| > 1000 c/h – 5% (cycle duration factor) | for rated motor power : | $P_N = 2,2 \dots 3 \text{ kW}$ |
| > 600 c/h – 5% (cycle duration factor) | for rated motor power : | $P_N > 3 \text{ kW}$ |
| > 200 c/h – 30% (cycle duration factor) | for all motors | |
| > 30 c/h – 50% (cycle duration factor) | for commissioning activities (switching by hand) | |

¹⁾ : Wiring of brake motors is only valid for power supply 380V .. 415V

Permissible switch loading

The torque and travel switches used are microswitches with gold-plated contacts.

Direct current (at NO and NC only use same potentials !)

Voltage V	Resistive load, NC / NO contact A	Service life, number of operations
20 to 60	0,003 to 0,8	10^6

Electronic position transmitter

(Correct functioning under fault conditions as in Fig. 5 not proven)

Supply voltage (U)

DC 18 to 30 V

This limits must not be violated by superimposed ripple.

Power supply, e.g. with

Power supply unit, type STEP-PS/1AC/24DC/0.75 (order no. 2868635),
Com. Phoenix Contact GmbH & Co. for rail mounting

Max. load (R_L)

Output signal

Current consumption

Two-wire connection	Four / Three-wire connection
$R_L = 50 * (U - 12) \Omega$	$R_L = 50 * (U - 2,5) \Omega$
Load-independent direct current	
4 to 20 mA max. 30 mA	0 or 4 to 20 mA max. 30 mA

Version

without restoring spring, can be turned

Measuring range

0 to 340 °

Minimal span

80 °

Maximal span

340 °

Torque on drive

appr. 0,1 Ncm

Linearity error (tolerance band setting)
for am measuring span of 270°

$\leq 1 \%$

Influence for a measuring span of 270°

- of supply voltage

$\leq 0,1 \%$ over the whole range

- of load

$\leq 0,1 \%$ over the whole range

- of ambient temperature

$\leq 0,3 \%$ / 10K

Permissible ambient temperature

- 25° to + 80° C

Potentiometer 100 $\Omega \pm 10\%$ for position indication

(Correct functioning under fault conditions as in Fig. 5 not proven)

Characteristic

linear

Rated Load

up to 2,5 W

Space heater

Supply voltage

AC 220 V, 110 V, or 24 V

Power

8 to 10 W

Qualification

The qualification was done with the electric rotary actuators of series S-SIWI and S-SIWI-AS.

The performance verification of the closed-loop control actuators is based on verification of identical design and construction with the electric rotary open-loop control actuators of type M76361 / 71 – C .. U (S – SIWI / S-SIWI-AS).

Because of that the results of the type test may be transferred the closed-loop actuators of series R-SIWI and R-SIWI-AS.

The closed-loop actuators of series R-SIWI equipped with **motors with electro-mechanical brake** are **not included** in the scope of the qualification.

➤ **Manufacture**

The rotary actuators are manufactured using strict quality assurance measures.

The qualification of the actuators corresponds to the German standard KTA 3504, edition 11/2006;

KTA means ' Nuclear Commission ')

➤ **Corrosion protection**

The rotary actuators are painted with a decontaminable base coat and a top coat which can be covered by a decontaminable multi-layer paint. Thickness per layer at least 120 µm.

➤ **Strength**

The strength of the parts in the direct flux of force is calculated according to recognized methods. The calculation takes into consideration the current specifications, regulations and standards for the manufacture of machines and gear units.

➤ **Service life**

A service life of at least 5000 load cycles is guaranteed for the rotary actuators under following test conditions :

- a) Sequence of load cycle :
 - Start from an end position
 - 30 s running time
 - Torque switch-off at maximum adjustable tripping torque
 - Pause < 70 s
 - Start in opposite direction
 - 30 s running time
 - Torque switch-off
- b) Torque during the running time greater than 50% of the maximum adjustable tripping torque
- c) An overshoot of at least 1,2 to 2 times the maximum adjustable tripping torque must occur during switch-off procedure

➤ **Vibration resistance**

The rotary actuators are vibration-resistant to forces and torques which occur during normal operation as well as induced shocks as a result of earthquake (4,5*g) or a plane crash (5*g).

The strength of the connection flange with respect to shocks has been proven; a constant acceleration of 5*g acting at the center of gravity is taken into consideration.

➤ **Permissible radiation**

Electric rotary actuators, Series	Permissible energy dose
SIWI	50 kGy (= $5 \cdot 10^6$ rad)
SIWI - AS	250 kGy (= $25 \cdot 10^6$ rad)

➤ **Permissible ambient temperature and permissible pressure**

Rotary actuators, SIWI series :

Permissible ambient temperature : - 5° to +60° C at 95 % relative humidity
(A space heater is recommended for 100% humidity and changes in temperature)

Continuous temperature for design : + 35° C

Worst case design temperature : + 10° C

Rotary actuators, SIWI - AS series:

Permissible values as for rotary actuators, S - SIWI series;

Permissible excess pressure compared to atmospheric :- 10 mbar to 5,5 bar

Actuators additionally suitable for pressure / temperature response as in Fig. 5 as resulting from the effect of saturated steam with the designed fault.

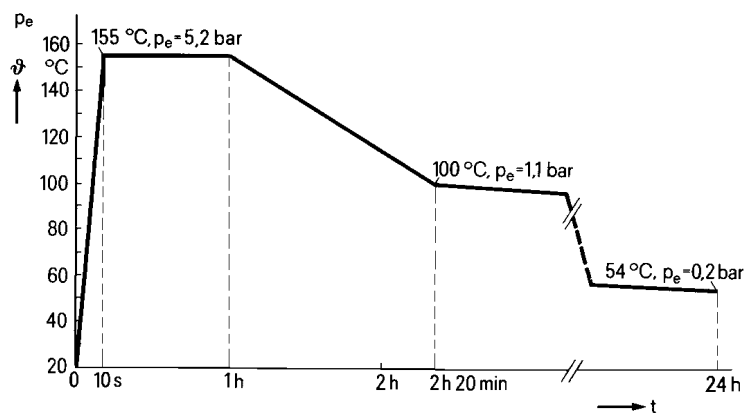
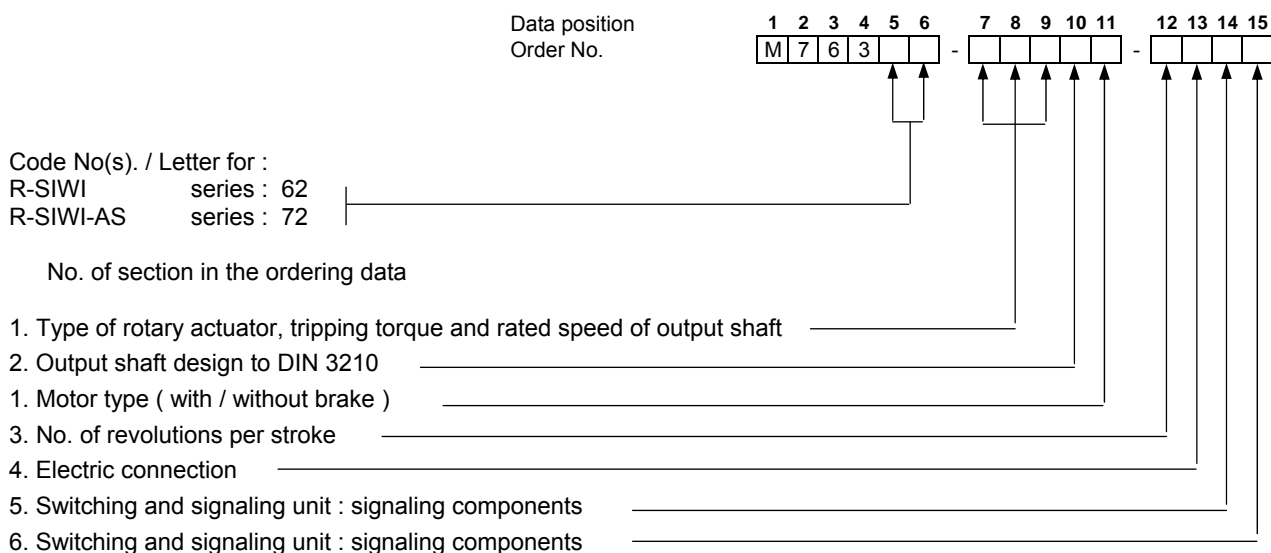
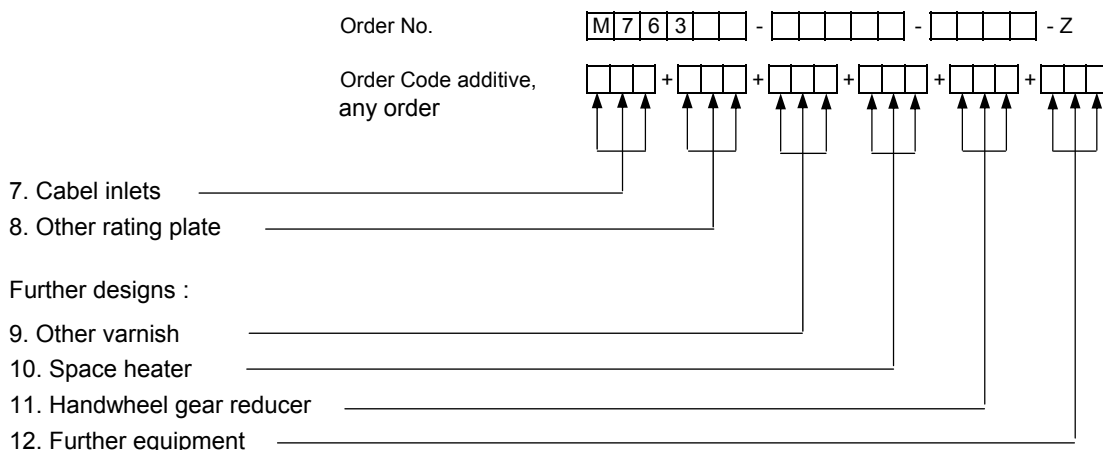


Fig. 5 : Pressure / temperature response with designed fault; the pressure p_e are excess pressures

Configuration of Order No.



Suffix to Order No.



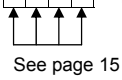
Electric rotary actuators M76362-C (SIWI) and M76372-C (SIWI-AS)

Tripping torques 20Nm and 30Nm, size 0 to DIN 3210

R series

Ordering data

Order No.: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 - Z
M 7 6 3 6 2 - - - Z
M 7 6 3 7 2 - - - Z



Basic design:

- Motor three-phase system 3/PEN AC 50 Hz 380 V (L1, L2, L3, N), with 3 PTC thermistors, insulation class H (actuators with brake motor ins.cl. H)
- 2 torque-dependent switches for clockwise and anti-clockwise rotation,
- 4 travel-dependent switches,
- output shaft design B to DIN 3210,
- electric connection via 10-way motor plug and 24-way plug for switching and signalling unit,
- cable inlets via metal screwed glands with conduit thread to DIN 46320,
- rating plate without customer position plate, labelled in German/English,
- coated with decontaminable primer

The actuator is self-locking.

1. Type of rotary actuator, rated speed of output shaft and tripping torque range

Rated speed of output shaft min ⁻¹	Gear reducer i	Tripping torque (not adjustable) Nm	Three-phase motor 3/PEN AC 50 Hz 380 V (further data assigned to consecutive motor No. see page 18 – 19)					Approx. weight for M76362-...) ca. kg	Dimensions	page 20	ca. kg ⁴⁾																		
			Rated power kW	Rated speed min ⁻¹	Consecutive number for motor		with brake ³⁾																						
					M76362-	M76372-						M76362-																	
5	268	20	0,06	1235	3	3	2	28	C 1 2	1	27																		
									C 1 2	2	29																		
									C 1 3	1	27																		
									C 1 3	2	29																		
									C 1 4	1	27																		
									C 1 4	2	28																		
									C 1 5	1	27																		
									C 1 5	2	29																		
7,5	182	30	0,12	1300	12	12	11	28	C 1 6	1	27																		
									C 1 6	2	30																		
									C 1 7	1	28																		
									C 1 7	2	31																		
									C 1 8	1	29																		
									C 1 8	2	32																		
									C 3 2	1	27																		
									C 3 2	2	29																		
10	124,8	30	0,18	1310	15	15	14	28	C 3 3	1	27																		
									C 3 3	2	29																		
									C 3 4	1	27																		
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									C 3 5	1	27																		
									C 3 5	2	30																		
									C 3 6	1	29																		
									C 3 6	2	31																		
15	87,2	30	0,25	1350	24	30	23	30	C 3 7	1	29																		
									C 3 7	2	32																		
									C 3 8	1	32																		
									C 3 8	2	37																		
									20	63,6	30	0,37	1385	30	30	29	33	C 3 8	1	32									
																		C 3 8	2	37									
																		30	44,8	30	0,55	1260	39	39	38	36			

*) : Additional weight for type M76372 - ... : see page 16

2. Output shaft design to DIN 3210 (dimensions see page 29)

Output shaft		2	3	4	5	6	8	9	Add. Weight [approx. kg]
B : hollow shaft with insert bush									---
C : hollow shaft with claw coupling									---
D : free shaft end with featherkey ²⁾									- 1
E : bore with featherkey slot ²⁾									- 1,5
DD : with free shaft at both ends ²⁾									on request
B : with stem protection tube 250 mm long ²⁾									on request
C : with stem protection tube 250 mm long ²⁾									on request

¹⁾ Values for R-SIWI-AS differing from R-SIWI

²⁾ Design **not** qualified according to KTA 3504, edition 11/2006; strength with safety factors required by this standard not proven.

³⁾ Design **not** qualified according to KTA 3504, edition 11/2006

⁴⁾ Weight of actuator of type M76362-C with Siemens motor for comparison

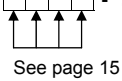
Electric rotary actuators M76362-E and -F (SIWI) and M76372-E and -F (SIWI-AS)

Tripping torques 60Nm, size0 and 120Nm, size 1/2 to DIN 3210

R series

Ordering data

Order No.: **M 7 6 3 6 2** - - - **Z**
M 7 6 3 7 2 - - - **Z**



Basic design:

- Motor three-phase system 3/PEN AC 50 Hz 380 V (L1, L2, L3, N), with 3 PTC thermistors, insulation class H (actuators with brake motor ins.cl. H)
- 2 torque-dependent switches for clockwise and anti-clockwise rotation,
- 4 travel-dependent switches,
- output shaft design B to DIN 3210,
- electric connection via 10-way motor plug and 24-way plug for switching and signalling unit,
- cable inlets via metal screwed glands with conduit thread to DIN 46320,
- rating plate without customer position plate, labelled in German/English,
- coated with decontaminable primer

The actuator is self-locking.

1. Type of rotary actuator, rated speed of output shaft and tripping torque range

Rated speed of output shaft min ⁻¹	Gear reducer i	Tripping torque (not adjustable) Nm	Three-phase motor 3/PEN AC 50 Hz 380 V (further data assigned to consecutive motor No. see page 18 – 19)					Approx. weight for M76362-... *) ca. kg	Dimensions	ca. kg ⁴⁾	
			Rated power kW	Rated speed min ⁻¹	Consecutive number for motor without brake		with brake ³⁾				
					M76362-	M76372-	M76362-				
5	258	60	0,12	1300	12	12	11	38	page 21	E 1 2 1	37
								40		E 1 2 2	39
			0,18	1310	15	15	14	38		E 1 3 1	37
								41		E 1 3 2	40
			0,18	1310	15	24	14	38		E 1 4 1	37
			0,25 ¹⁾	1350 ¹⁾	30	30	29	40		E 1 4 2	39
			0,37	1385	30	30	29	39		E 1 5 1	38
								41		E 1 5 2	42
20	63,2		0,55	1260	39	39	38	42	E 1 6 1	41	
							44	46	E 1 6 2	46	
30	38		0,75	1330	48	48	47	44	E 1 7 1	42	
							47	46	E 1 7 2	47	
40	31,1		0,75	1330	48	48	47	44	E 1 8 1	42	
							47	46	E 1 8 2	47	
5	243,1	120	0,25	1350	19	27	20	72	page 22	F 1 2 1	72
			0,37 ¹⁾	1385 ¹⁾	27	27	26	74		F 1 2 2	74
			0,37	1385	27	27	26	72		F 1 3 1	72
								74		F 1 3 2	75
			0,55	1260	36	36	35	74		F 1 4 1	74
			0,55	1260	36	45	35	74		F 1 4 2	79
			0,75 ¹⁾	1330 ¹⁾	45	45	44	77		F 1 5 1	72
								75		F 1 5 2	76
20	62,2		0,75	1330	45	45	44	74	F 1 6 1	72	
							76	76	F 1 6 2	77	
30	42,9		1,1	1300	54	54	53	76	F 1 7 1	81	
							80	80	F 1 7 2	83	
40	35,9		1,5	1320	57	57	56	79	F 1 8 1	84	
							82	82	F 1 8 2	87	

*) : Additional weight for type M76372 - ... : see page 16

xxx : Inertia of motor has increased

mmmm : Weight of motor / actuator has increased

2. Output shaft design to DIN 3210 (dimensions see page 29)

Output shaft	Description	Add. Weight [approx. kg]	Add. Weight [approx. kg]	
			M763.2-E	M763.2-F
	B : hollow shaft with insert bush	2	---	---
	C : hollow shaft with claw coupling	3	---	---
	D : free shaft end with featherkey ²⁾	4	---	- 1,5
	E : bore with featherkey slot ²⁾	5	---	- 2
	DD : with free shaft at both ends ²⁾	6	on request	on request
	B : with stem protection tube 250 mm long ²⁾	8	on request	on request
	C : with stem protection tube 250 mm long ²⁾	9	on request	on request

1) Values for R-SIWI-AS differing from R-SIWI

2) Design not qualified according to KTA 3504, edition 11/2006; strength with safety factors required by this standard not proven.

3) Design not qualified according to KTA 3504, edition 11/2006

4) Weight of actuator of type M76362-E / -F with Siemens motor for comparison

R series

Ordering data

Order No.: - - Z

M 7 6 3 6 2 - - - Z

M 7 6 3 7 2 - - - Z

See page 15

Basic design:

- Motor three-phase system 3/PEN AC 50 Hz 380 V (L1, L2, L3, N), with 3 PTC thermistors, insulation class H (actuators with brake motor ins.cl. H)
- 2 torque-dependent switches for clockwise and anti-clockwise rotation,
- 4 travel-dependent switches,
- output shaft design B to DIN 3210,
- electric connection via 10-way motor plug and 24-way plug for switching and signalling unit,
- cable inlets via metal screwed glands with conduit thread to DIN 46320,
- rating plate without customer position plate, labelled in German/English,
- coated with decontaminable primer

The actuator is self-locking.

1. Type of rotary actuator, rated speed of output shaft and tripping torque range

Rated speed of output shaft min ⁻¹	Gear reducer i	Tripping torque (not adjustable) Nm	Three-phase motor 3/PEN AC 50 Hz 380 V (further data assigned to consecutive motor No. see page 18 – 19)				Approx. weight for M76362-... *) ca. kg	Dimen- sions	ca. kg ⁴⁾	
			Rated power kW	Rated speed min ⁻¹	Consecutive number for motor without brake with brake ³⁾					
			M76362-	M76372-	M76362-					
5	243,1	200	0,37 0,55 ¹⁾	1385 1260 ¹⁾	27	36	26	79 80	G 1 2 1 G 1 2 2	78 79
			0,55	1260	36	36	35	79 81	G 1 3 1 G 1 3 2	78 82
			0,75	1330	45	45	44	81 82	G 1 4 1 G 1 4 2	79 83
			1,1	1300	54	54	53	81 84	G 1 5 1 G 1 5 2	84 86
			1,5	1320	57	57	56	84 86	G 1 6 1 G 1 6 2	87 90
			2,2	1355	63	63	62	91 95	G 1 7 1 G 1 7 2	92 104
			2,2	1355	63	63	62	92 96	G 1 8 1 G 1 8 2	93 105
			5	124,4	400	0,75	650	69	69	68
7,5	84,8	1,1	650	75		75	74	175 175	M 1 3 1 M 1 3 2	164 180
10	124,4	1,5	1320	57		57	56	158 161	M 1 4 1 M 1 4 2	162 165
15	84,8	2,2	1355	63		63	62	166 170	M 1 5 1 M 1 5 2	166 178
20	64	3,0	1375	72		72	71	169 174	M 1 6 1 M 1 6 2	169 181
30	49,2	4,0	1400	81		81	80	178 182	M 1 7 1 M 1 7 2	183 196
40	36,3	5,5	1340	87		87	86	201 211	M 1 8 1 M 1 8 2	187 200

*) : Additional weight for type M76372 - ... : see page 16

xxx : Inertia of motor has increased

mmm : Weight of motor / actuator has increased

2. Output shaft design to DIN 3210 (dimensions see page 29)

Output shaft	Description	Add. Weight [approx. kg]	M763.2-G		M763.2-M	
			2	3	4	5
B	: hollow shaft with insert bush	---	---	---	---	---
C	: hollow shaft with claw coupling	---	---	---	---	---
D	: free shaft end with featherkey ²⁾	- 2	---	---	---	+ 11
E	: bore with featherkey slot ²⁾	- 3	---	---	---	+ 8
DD	: with free shaft at both ends ²⁾	on request	on request	on request	on request	on request
B	: with stem protection tube 250mm (M762.2-G)/ 500mm (M763.2-M) long ²⁾	8	on request	on request	on request	on request
C	: with stem protection tube 250mm (M762.2-G)/ 500mm (M763.2-M) long ²⁾	9	on request	on request	on request	on request

1) Values for R-SIWI-AS differing from R-SIWI

2) Design not qualified according to KTA 3504, edition 11/2006; strength with safety factors required by this standard not proven.

3) Design not qualified according to KTA 3504, edition 11/2006

4) Weight of actuator of type M76362-G / -M with Siemens motor for comparison

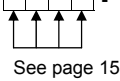
Electric rotary actuators M76362-N,S and -U (SIWI) and M76372-N,S and -U (SIWI-AS)

Tripping torques 600Nm and 1000Nm, size 4 and 2000Nm, size 5 to DIN 3210

R series

Ordering data

Order No.: **M 7 6 3 6 2** - - - **Z**
M 7 6 3 7 2 - - - **Z**



Basic design:

- Motor three-phase system 3/PEN AC 50 Hz 380 V (L1, L2, L3, N), with 3 PTC thermistors, insulation class H (actuators with brake motor ins.cl. H)
- 2 torque-dependent switches for clockwise and anti-clockwise rotation,
- 4 travel-dependent switches,
- output shaft design B to DIN 3210,
- electric connection via 10-way motor plug and 24-way plug for switching and signalling unit,
- cable inlets via metal screwed glands with conduit thread to DIN 46320,
- rating plate without customer position plate, labelled in German/English,
- coated with decontaminable primer

The actuator is self-locking.

1. Type of rotary actuator, rated speed of output shaft and tripping torque range

Rated speed of output shaft min ⁻¹	Gear reducer i	Tripping torque (not adjustable) Nm	Three-phase motor 3/PEN AC 50 Hz 380 V (further data assigned to consecutive motor No. see page 18 – 19)				Approx. weight for M76362-.. *) ca. kg	Dimensions	ca. kg ⁴⁾	
			Rated power kW	Rated speed min ⁻¹	Consecutive number for motor without brake with brake ³⁾					
					M76362-	M76372-	M76362-			
5	124,4	600	1,1	645	75	75	74	178	N 1 2 1	170
7,5	124,4		1,5	865	66	66	65	178	N 1 2 2	186
10	124,4		2,2	1355	63	63	62	182	N 1 3 1	172
15	84,8		3,0	1375	63	63	62	174	N 1 3 2	185
20	64		4,0	1400	72	72	71	178	N 1 4 1	172
30	49,2		5,5	1340	81	81	80	176	N 1 4 2	185
40	36,2		7,5	1350	87	87	86	181	N 1 5 1	175
						90	90	89	222	N 1 5 2
5	272,9	1000	1,5	1320	57	57	56	129	N 1 6 1	189
7,5	184,5		2,2	1355	63	63	62	133	N 1 6 2	202
10	134,65		3,0	1375	72	72	71	143	N 1 7 1	193
15	92,7		5,5	1340	87	87	86	148	N 1 7 2	206
5	181,4		2000	3,0	1375	90	90	89	222	N 1 8 1
7,5	191,6	5,5		1340	87	87	86	208	N 1 8 2	209
10	133,8	7,5		1350	90	90	89	231	S 1 2 1	134
									S 1 2 2	137
7,5	184,5	1000	2,2	1355	63	63	62	139	S 1 3 1	139
10	134,65		3,0	1375	72	72	71	143	S 1 3 2	152
15	92,7		5,5	1340	87	87	86	191	S 1 4 1	142
5	181,4	2000	3,0	1375	72	72	71	148	S 1 4 2	154
7,5	191,6		5,5	1340	87	87	86	201	S 1 5 1	176
10	133,8		7,5	1350	90	90	89	257	S 1 5 2	189
									U 1 2 1	203
5	181,4	2000	3,0	1375	72	72	71	205	U 1 2 2	215
7,5	191,6		5,5	1340	87	87	86	209	U 1 3 1	226
10	133,8		7,5	1350	90	90	89	243	U 1 3 2	239
									U 1 4 1	239
									U 1 4 2	242

*) : Additional weight for type M76372 - .. : see page 16

xxx : Inertia of motor has increased
mmm : Weight of motor / actuator has increased

2. Output shaft design to DIN 3210 (dimensions see page 29)

Output shaft	Description	Add. Weight [approx. kg]		
		M763.2-N	M763.2-S	M763.2-U
B	: hollow shaft with insert bush	2	---	---
C	: hollow shaft with claw coupling	3	---	+ 7
D	: free shaft end with featherkey ²⁾	4	+ 2	- 2,5
E	: bore with featherkey slot ²⁾	5	---	+ 5
DD	: with free shaft at both ends ²⁾	6	on request	+ 9,5
B	: with stem protection tube 500 mm long ²⁾	8	on request	on request
C	: with stem protection tube 500 mm long ²⁾	9	on request	on request.

¹⁾ Values for R-SIWI-AS differing from R-SIWI

²⁾ Design **not** qualified according to KTA 3504, edition 11/2006; strength with safety factors required by this standard not proven.

³⁾ Design **not** qualified according to KTA 3504, edition 11/2006

⁴⁾ Weight of actuator of type M76362-N / -S / -U with Siemens motor for comparison

R series

Ordering data

Order No.: M 7 6 3 6 2 - [] [] [] [] [] [] - [] [] [] [] [] [] - Z
 M 7 6 3 7 2 - [] [] [] [] [] [] - [] [] [] [] [] [] - Z

3. Number of revolutions per stroke	
Revolutions/stroke up to	
0,25	
0,5	
1	
2,5	
5	
7,5	
10	
15	
30	
60	
120	

↓
A
B
C
D
E
F
H
J
K
L
N

4. Electric connection		
Electric connection via plug (compact plug), consisting of		
Motor plug for AC 380 V, 16 A	Plug for switching and signaling unit	
Silver-plated sockets and pins, max conductor cross-section : 2,5 mm ²	conductor cross-section : 0,5 mm ²	sockets and pins
10-way	24-way	Silver-plated
	24-way	Gold-plated
	2 x 24-way	Silver-plated
	2 x 24-way	Gold-plated

R-SIWI M76362-	R-SIWI-AS M76372-
1	
2	
3	
4	

5. Switching and signaling unit: signaling components	
Without signaling component	
ESR Electronic position transmitter ¹⁾	
POT Potentiometer 100 Ω for position indication ¹⁾	
SA Mechanical position indicator	
ESR ¹⁾ and SA	
POT ¹⁾ and SA	

R-SIWI M76362-	R-SIWI-AS M76372-
0	
1	
2	
3	
4	
5	

6. Switching and signaling unit: switching components		
Torque switches (DE)	Travel switches (WE) without flashing indicator, activated via cam-type mechanism ²⁾	Switches contact
2 DE	4 WE	Silver-plated
	6 WE	
2 DE	4 WE	Gold-plated
	6 WE	
4 DE	4 WE	
	6 WE	

R-SIWI M76362-	R-SIWI-AS M76372-
1	
2	
3	
4	
5	
6	

¹⁾ Correct functioning under conditions of designed fault not proven.

²⁾ Concerning the design with 6 WE the travel switches are activated via two cam-type mechanism (4 WE + 2 WE); redundant design not possible.

R series

Ordering data

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Note				
Order No.:	M	7	6	3	6	2	-					-					Z			
	M	7	6	3	7	2	-					-					Z			

Order codes and plain text
(suffixes to Order No.)

7. Cable inlets		Add. weight [approx. kg]	
		R-SIWI M76362-	R-SIWI M76362-
Via metal screwed glands with conduit thread to DIN 46 320	R 1 4	---	3
Qualified cable inlets >> Only for rotary actuators R-SIWI-AS, M76372-... <<			
For motor Max. conductor cross-section 4mm ² (external)	For switching and signalling unit Conductor cross-section 0,5 mm ² (external)		
7 - way cable	24 - way cable	R 1 8	---
	2 x 24 - way cable	R 1 9	---

8. Rating plate			
Rating plate	Labelling		
Without customer position plate	Spanish / Portuguese	B 0 6	
	German / French	B 0 7	
	German / Russian	B 0 8	
With customer position plate	German / Englisch	B 0 0	
	Spanish / Portuguese	B 0 1	
	German / French	B 0 2	
	German / Russian	B 0 3	

9. Other varnish			
Decontaminable varnish Varnish consisting of base coat and decontaminable top coat (entire thickness: min 120µm, colour RAL 7030)		L 1 8	

R series

Ordering data

Order No.: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 Note
 M 7 6 3 6 2 - [] [] [] [] [] - [] [] [] [] [] - Z [] [] [] [] []
 M 7 6 3 7 2 - [] [] [] [] [] - [] [] [] [] [] - Z [] [] [] [] []

Order codes and plain text
(suffixes to Order No.)

10. Space heater for switching and signalling unit			
Power supply AC	220 V	A 2 2	
	110 V	A 2 3	
	24 V	A 2 4	

11. Output shaft design to DIN ISO 5210 or DIN 3338 (dimensions of flanges to DIN ISO 5210, part 1, see page 30)			
	Standard	Order no., data position 10	
Design A : hollow shaft with threaded bush ¹⁾	EN ISO 5210, Teil 3	1	A 3 2
B1 : with insert bush	EN ISO 5210, Teil 3	2	A 3 3
C : with claw coupling	DIN 3338	3	A 3 4
B3 : bore with featherkey slot ¹⁾	EN ISO 5210, Teil 3	5	A 3 6

1) : Strength with safety factors required by KTA 3504, edition 11/2006, not proven.

12. Handwheel gear reducer Handwheel mounted at side; design not qualified to KTA 3504; dimensions on page 28				
For rotary actuator M76362- and M76372-	Reduction ratio Handwheel/output shaft	Add. weight, [appr. kg]	Output shaft design to DIN 3210 / DIN ISO 5210	
-F and -G	13:1	13	B / B1 or C without stern protect. tube	A 8 1
			B / B1 or C without stern protect. tube	A 8 2
			D or E / B3	A 8 3
-M and -N	18,5:1	3	B/B1, C, D or E/B3 without stern p. t.	A 8 6
			B / B1 or C with stern protection tube	A 8 7

13. Connection with metric thread to EN 50262 (only with order suffix R14 possible)		
Thread in plug hood	2x M20 x 1,5 / 1x M25 x 1,5	P 0 7

14. Alternative motor supply		
Three phase motor with voltage	3/PEN AC 50 Hz 400 V	M 5 0

15. Accessories		Order No.	
Parking socket	Unpainted, to protect and secure the removed top part of the plug	R540621	
Protective cover	Unpainted, to protect the plug assemblies on the actuator with the top part of the plug removed	R540485	

Motor data of M76362- (SIWI) and M76372- (SIWI-AS)

R series

Motor con-sec-utive no.	Order no. of motor ¹⁾	Rated power kW	no. of poles	Rated speed 1/min	Efficiency %	Power factor		Rated current at 380 V A	Starting current factor	Rated torque Nm	Starting torque at		Break down torque KT10 Nm	Current at 145% U _N /30 sec A	Size to DIN EN 50347	Flanges hepe to DIN EN 60034-7	Flange size to DIN 50 347 42948	Weight appr. kg	
						cos φ	cos φ _K during start-up				KT10	KT155 +ΔT 2)							
2	OLB 56 S / 4 / 050-B14 / Q28	0,06	4	1235	43	0,81	0,88	0,26	2,25	0,46	0,75	0,69	0,72	0,34	56	B 14	FT 65	C 80	5,5
3	OL 56 S / 4 / 050-B14 / Q29																		3,5
5	OLB 56 L / 4 / 053-B14 / Q28	0,09	4	1270	50	0,76	0,86	0,36	2,6	0,67	1,3	1,2	1,1	0,48	56	B 14	FT 65	C 80	5,5
6	OL 56 L / 4 / 053-B14 / Q29																		3,6
11	OLB 63 S / 4 / 060-B14 / Q28	0,12	4	1300	51	0,75	0,88	0,48	2,4	0,89	1,63	1,47	1,50	0,68	63	B 14	FT 75	C 90	6,5
12	OL 63 S / 4 / 060-B14 / Q29																		4,1
14	OLB 63 L / 4 / 063-B14 / Q28	0,18	4	1310	56	0,75	0,85	0,65	3,0	1,30	3,1	2,63	2,14	1,06	63	B 14	FT 75	C 90	7
15	OL 63 L / 4 / 063-B14 / Q29																		4,5
20	OLB 71 S / 4 / 070-B 5 / Q28	0,25	4	1350	63	0,77	0,76	0,80	3,4	1,85	3,2	2,8	3,5	1,3	71	B 5	FF 130	A 160	8
19	OL 71 S / 4 / 070-B 5 / Q29																		6
23	OLB 71 S / 4 / 070-B14 / Q28	0,25	4	1350	63	0,77	0,76	0,80	3,4	1,85	3,2	2,8	3,5	1,3	71	B 14	FT 95	C 105	8
24	OL 71 S / 4 / 070-B14 / Q29																		6
26	OLB 71 L / 4 / 073-B 5 / Q28	0,37	4	1385	70	0,77	0,78	1,06	3,95	2,6	5,2	4,6	5	2,7	71	B 5	FF 130	A 160	9
27	OL 71 L / 4 / 073-B 5 / Q29																		6,5
29	OLB 71 L / 4 / 073-B14 / Q28	0,37	4	1385	70	0,77	0,78	1,06	3,95	2,6	5,2	4,6	5	2,7	71	B 14	FT 95	C 105	9
30	OL 71 L / 4 / 073-B14 / Q29																		6,5
35	OLB 80 S / 4WU / 080-B 5 / Q28	0,55	4	1260	65	0,78	0,78	1,7	3,2	4,2	9,3	8,35	6,45	3,95	80	B 5	FF 165	A 200	11,5
36	OL 80 S / 4WU / 080-B 5 / Q29																		9,5
38	OLB 80 S / 4WU / 080-B14 / Q28	0,55	4	1260	65	0,78	0,78	1,7	3,2	4,2	9,3	8,35	6,45	3,95	80	B 5	FF 165	A 200	11,5
39	OL 80 S / 4WU / 080-B14 / Q29																		9,5
44	OLB 80 L / 4WU / 083-B 5 / Q28	0,75	4	1330	70	0,72	0,76	2,3	3,85	5,4	13,6	12,3	9,7	7,0	80	B 5	FF 165	A 200	13
45	OL 80 L / 4WU / 083-B 5 / Q29																		11
47	OLB 80 L / 4WU / 083-B14 / Q28	0,75	4	1330	70	0,72	0,76	2,3	3,85	5,4	13,6	12,3	9,7	7,0	80	B 14	FT 100	C 120	13
48	OL 80 L / 4WU / 083-B14 / Q29																		11
53	OLB 90 S / 4WU / 090-B 5 / Q28	1,1	4	1300	70	0,80	0,79	3	3,75	8,1	19,1	17,3	14,9	6,4	90S	B 5	FF 165	A 200	17
54	OL 90 S / 4WU / 090-B 5 / Q29																		13,5
56	OLB 90 L / 4WU / 096-B 5 / Q28	1,5	4	1320	75	0,79	0,79	4	4,25	11,1	31,1	27	19,4	7,2	90L	B 5	FF 165	A 200	19
57	OL 90 L / 4WU / 096-B 5 / Q29																		16

1) : Motor with order no. OL...- are motors without mechanical brake; Motor with order no. OLB...- are motors with mechanical brake.

Motor data of M76362- (SIWI) and M76372- (SIWI-AS)

R series

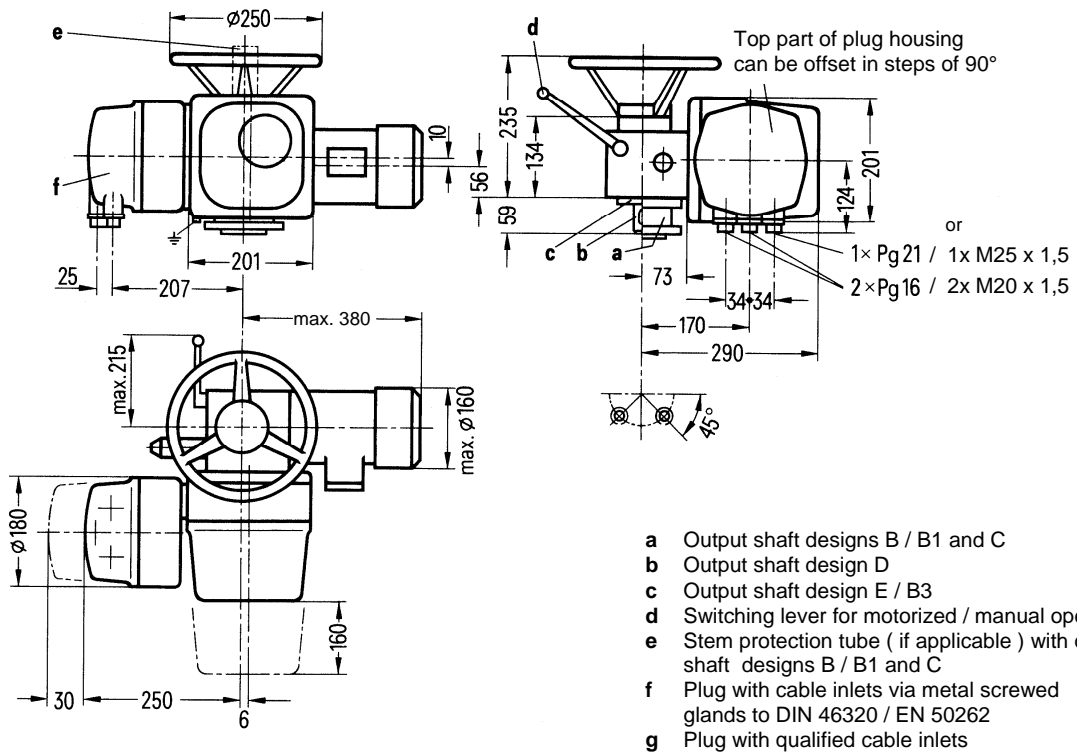
Motor con- sec- utive no.	Order no. of motor ¹⁾	Rated power kW	no. of poles	Rated speed 1/min	Effi- ciency %	Power factor		Rated current at 380 V A	Starting current factor	Rated torque Nm	Starting torque at		Break down torque KT10 Nm	Current at 145% U _N / 30 sec A	Size to DIN EN 50347	Flanges hepe to DIN EN 60034-7	Flange size to DIN EN 50 347 to DIN 42948	Weight appr. kg
						cos φ	cos φ _K during start-up				KT10 Nm	KT60 + ΔT Nm						
62	OLB100 L / 4WU / 106-B 5 / Q28	2,2	4	1355	75	0,79	0,77	5,65	4,6	15,5	43,2	39,7	36,7	17,4	100L	B 5	FF 215 A 250	28
63	OL 100 L / 4WU / 106-B 5 / Q29																	24
65	OLB100 L / 6WU / 106-B 5 / Q28	1,5	6	865		0,79		4,2	4,1	16,6	46				100L	B 5	A 250	30
66	OL 100 L / 6WU / 106-B 5 / Q29																	26
68	OLB100 L / 8WU / 106-B 5 / Q28	0,68	8	650		0,65		2,75	3,0	11	24,7				100L	B 5	A 250	32
69	OL 100 L / 8WU / 106-B 5 / Q29	0,75																28
71	OLB100 L / 4aWU / 107-B 5 / Q28	3,0	4	1375	78	0,78	0,75	7,5	5,05	20,9	65,7	59,5	53,5	24,5	100L	B 5	FF 215 A 250	32
72	OL 100 L / 4aWU / 107-B 5 / Q29																	27
74	OLB100 L / 8WU / 107-B 5 / Q28	1,1	8	645	58	0,59	0,74	5	2,65	16,2	40	36	32,5	19,6	100L	B 5	FF 215 A 250	30
75	OL 100 L / 8WU / 107-B 5 / Q29																	25
80	OLB112 M / 4WU / 113-B 5 / Q28	4,0	4	1400	80	0,82	0,72	9,1	5,8	27,3	88,6	80,2	72,1	19,7	112M	B 5	FF 215 A 250	40
81	OL 112 M / 4WU / 113-B 5 / Q29																	36
86	OLB132 S / 4WU / 130-B 5 / Q28	5,5	4	1410	79	0,81	0,71	13	4,8	37,2	99	96	92	22,5	132S	B 5	FF 265 A 300	76
87	OL 132 S / 4WU / 130-B 5 / Q29																	66
89	OLB132 M / 4WU / 133-B 5 / Q28	7,5	4	1350	78	0,85	0,71	17	5,0	52,6	127	122,8	120	52,6	132M	B 5	FF 265 A 300	88
90	OL 132 M / 4WU / 133-B 5 / Q29																	79

1) : Motor with order no. OL...- are motors without mechanical brake; Motor with order no. OLB...- are motors with mechanical brake.

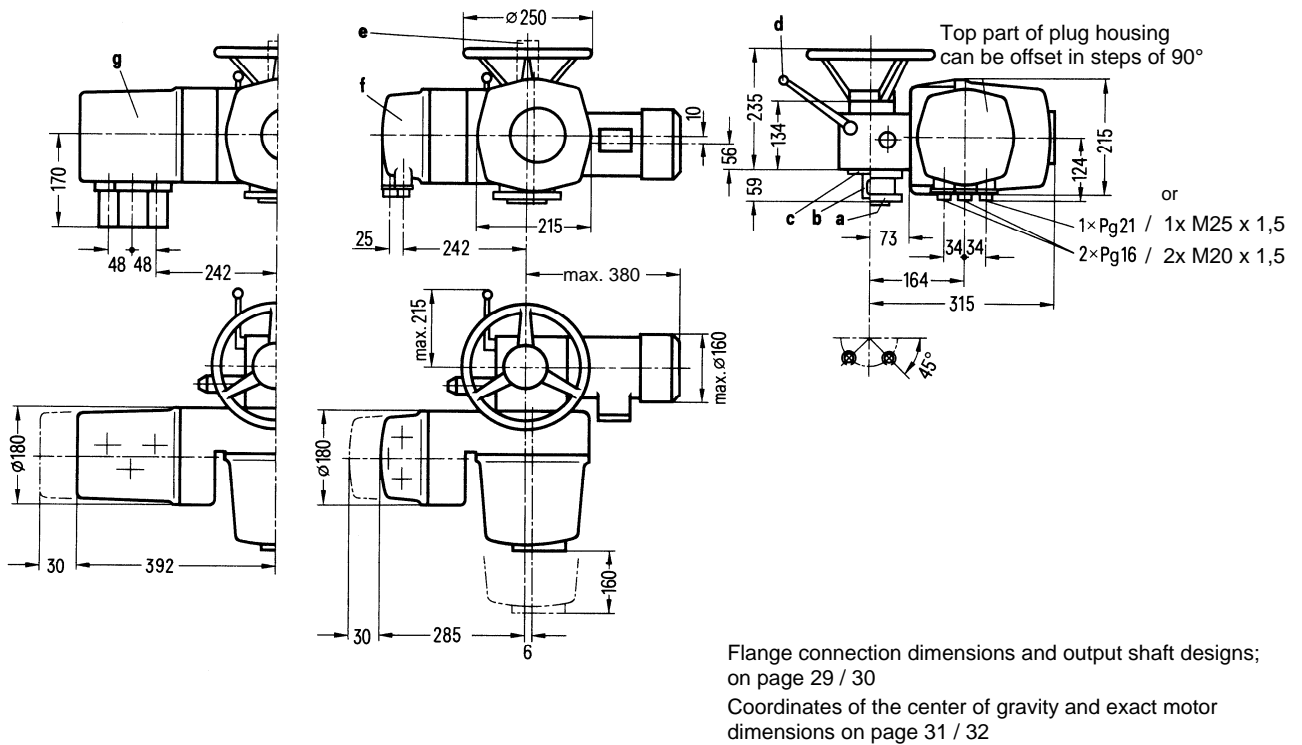
xx xx/LZ	OL xxx
-------------	--------

The motor data were measured during factory workshop test of first manufactured motor.

Rotary actuator M76362 – C, R – SIWI series



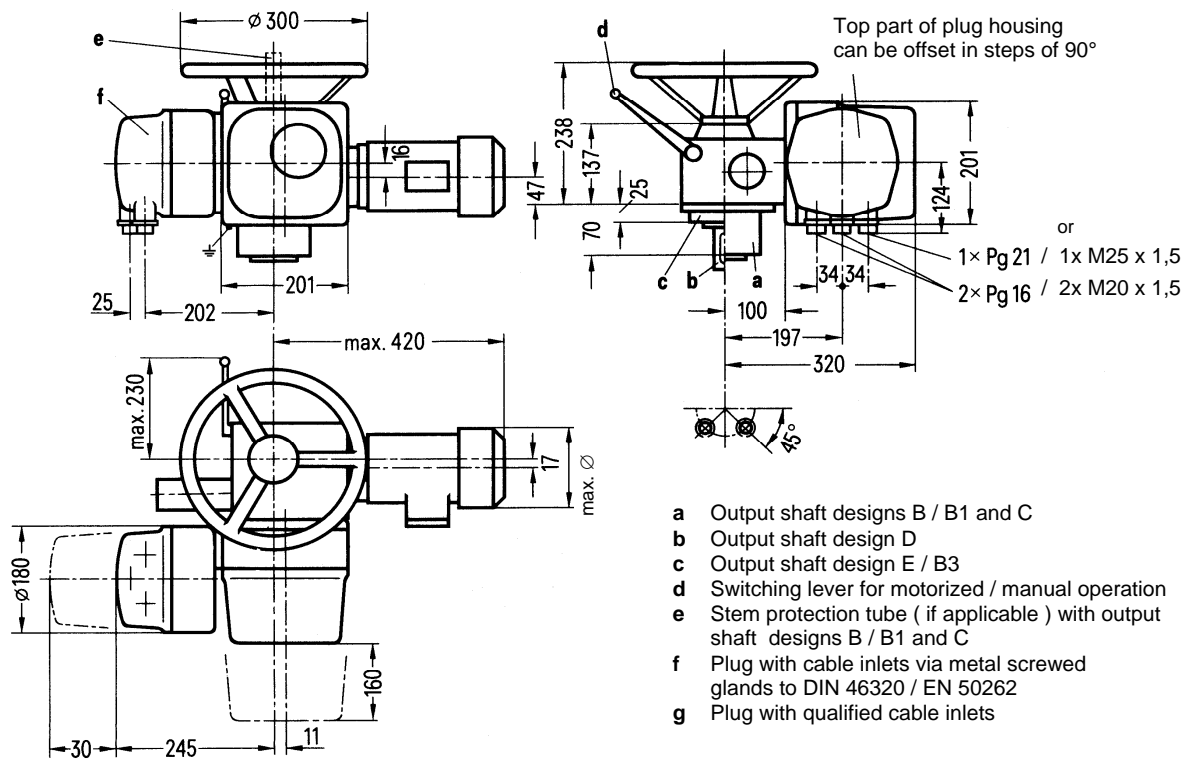
Rotary actuator M76372 – C, R – SIWI – AS series



Flange connection dimensions and output shaft designs;
 on page 29 / 30
 Coordinates of the center of gravity and exact motor
 dimensions on page 31 / 32

Fig. 6 Electric rotary actuators M76362 – C and M76372 – C, size 0 to DIN 3210 / F10 to DIN ISO 5210

Rotary actuator M76362 - E, R – SIWI series



Rotary actuator M76372 - E, R – SIWI – AS series

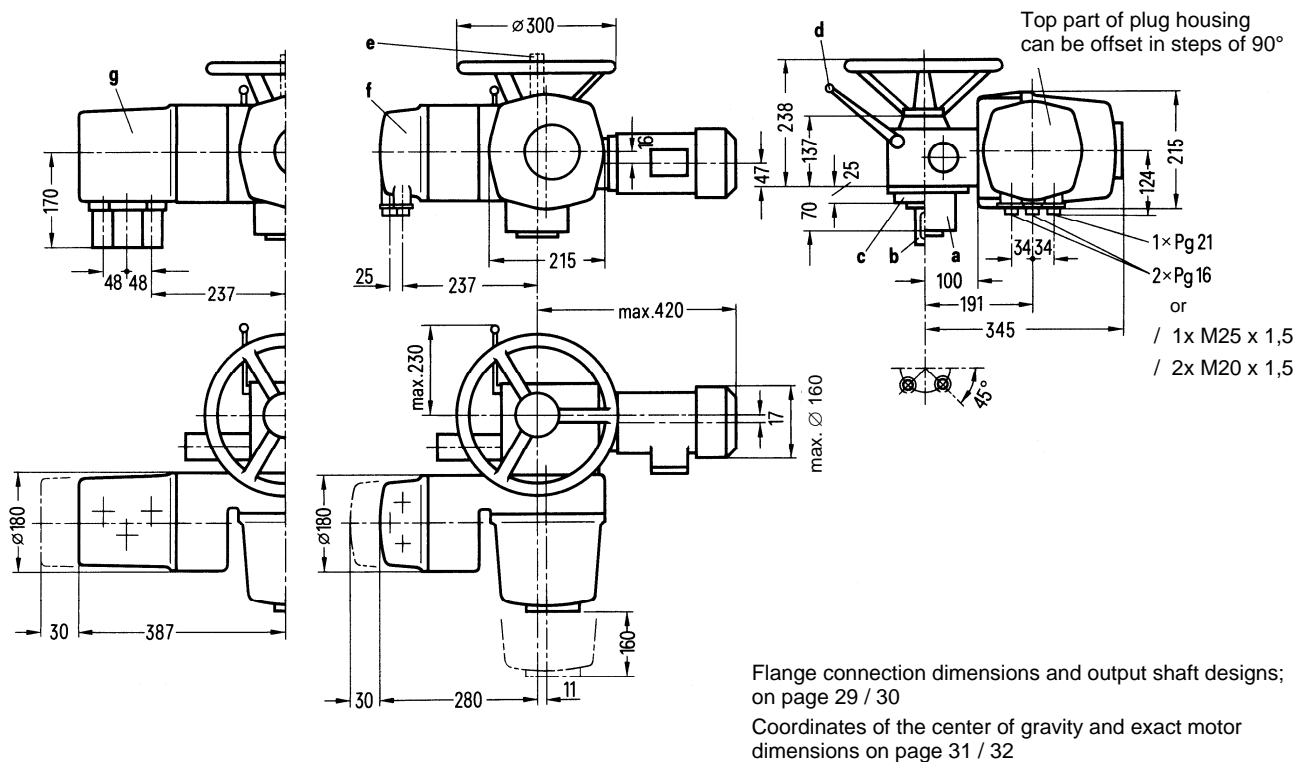
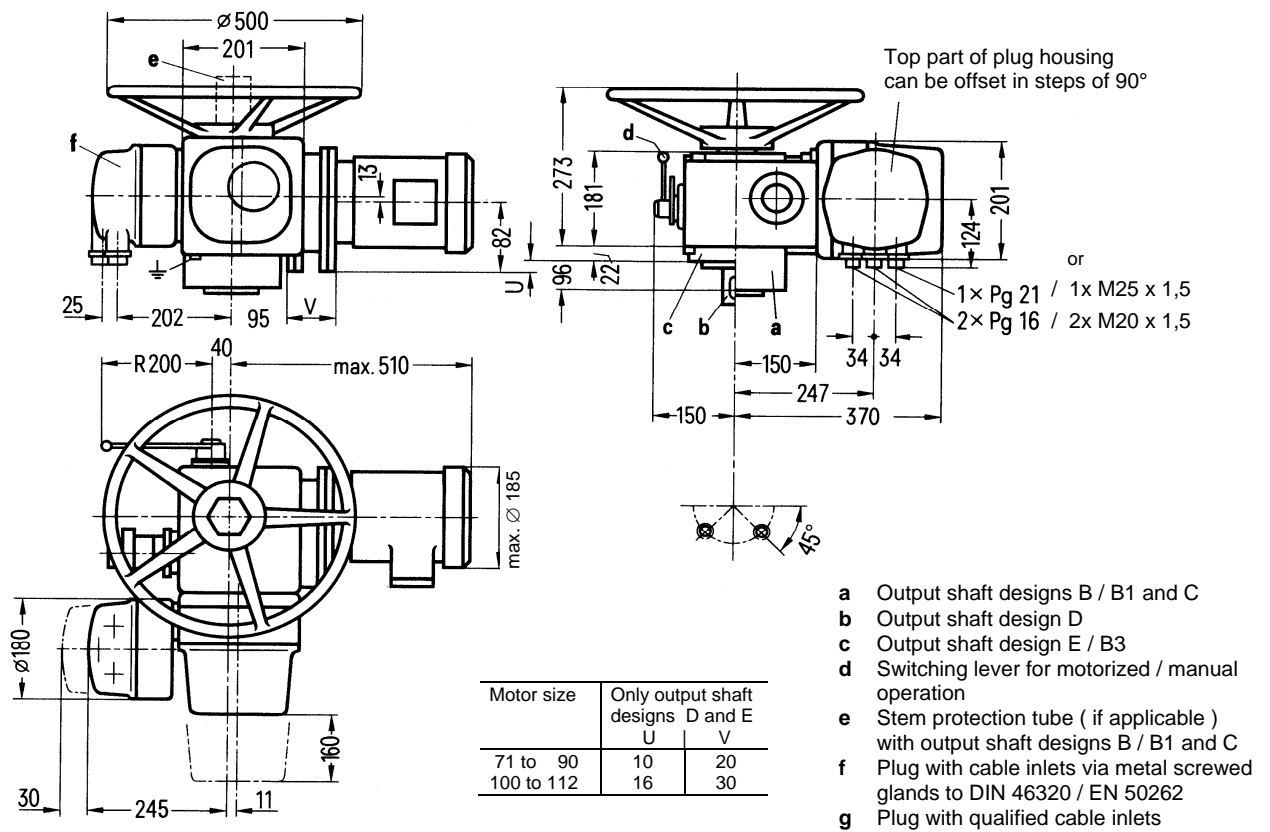


Fig. 7 Electric rotary actuators M76362 – E and M76372 – E, size 0 to DIN 3210 / F10 to DIN ISO 5210

Dimensions of the electric rotary actuators
M76362 – F and M76372 – F
 Size 1/2 to DIN 3210 / F14 to DIN ISO 5210

Rotary actuator M76362 – F, R – SIWI series



Rotary actuator M76372 – F, R – SIWI – AS series

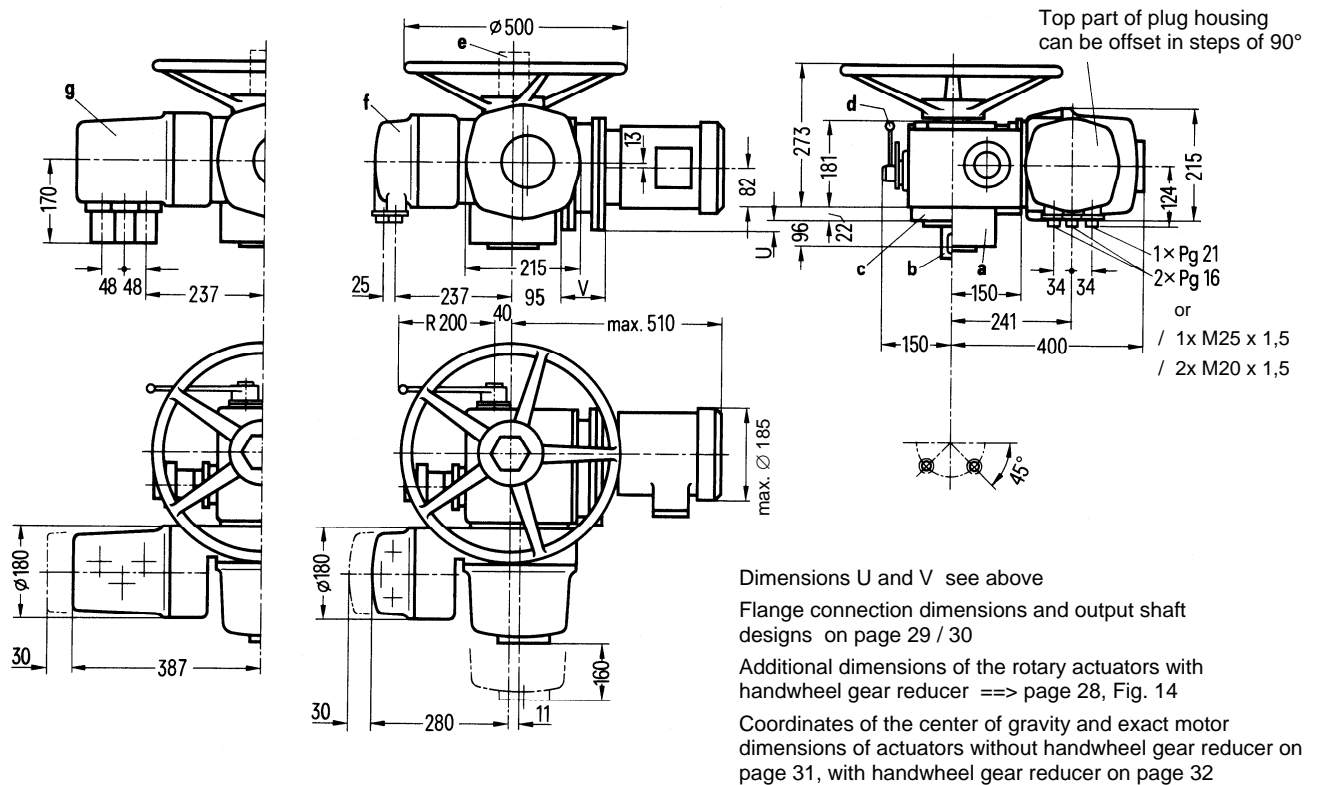
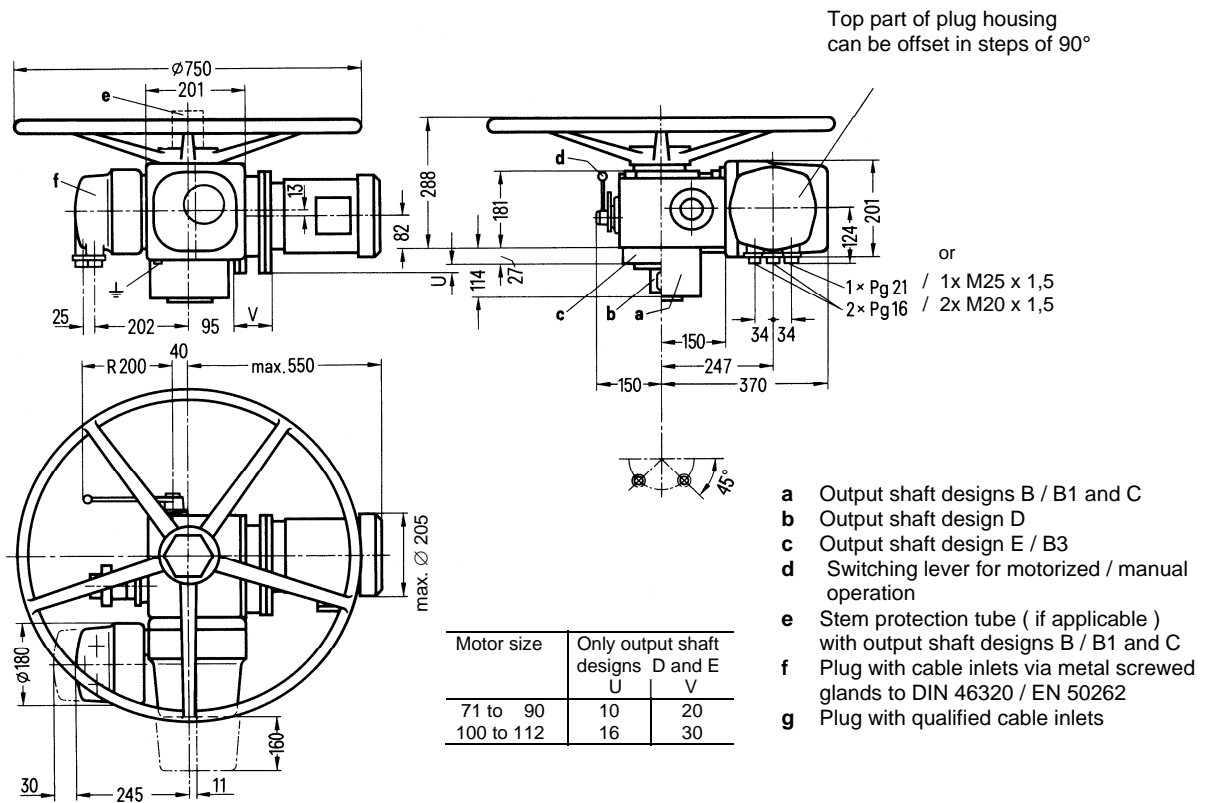


Fig. 8 Electric rotary actuators M76362 – F and M76372 – F, size 1/2 to DIN 3210 / F14 to DIN ISO 5210

**Dimensions of the electric rotary actuators
M76362 – G and M76372 – G**

Size 3 to DIN 3210 / F16 to DIN ISO 5210

Rotary actuator M76362 – G, R – SIWI series



Rotary actuator M76372 – G, R – SIWI – AS series

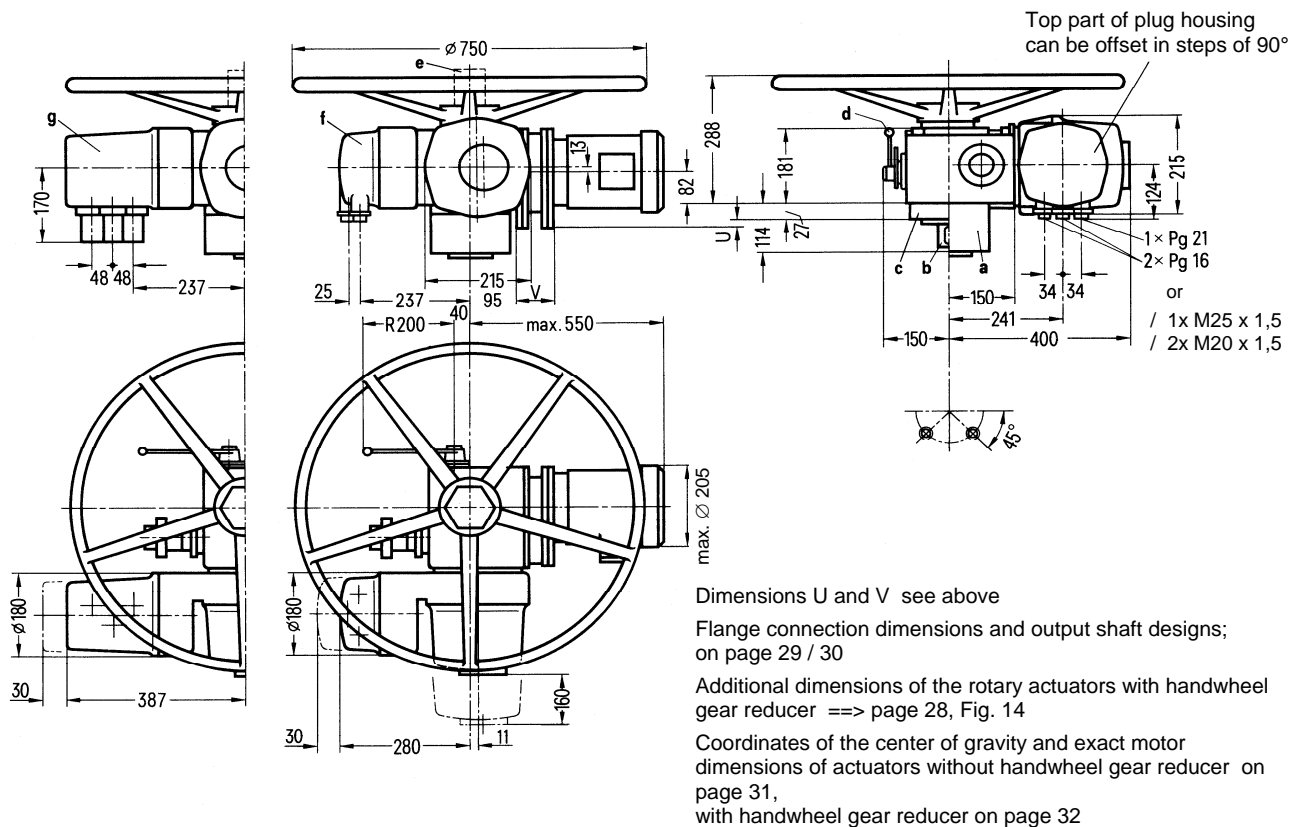
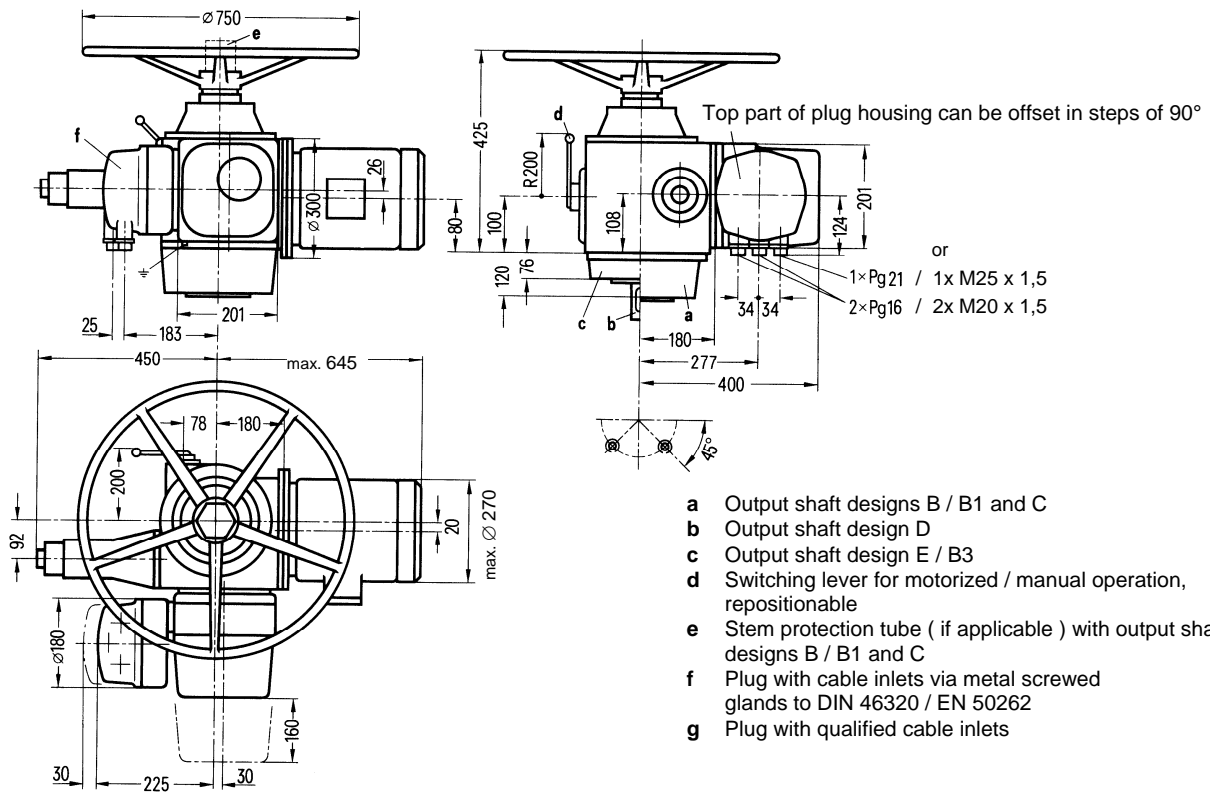


Fig. 9 Electric rotary actuators M76362 – G and M76372 – G, size 3 to DIN 3210 / F16 to DIN ISO 5210

Rotary actuator M76362 – M, R – SIWI series



Rotary actuator M76372 – M, R – SIWI – AS series

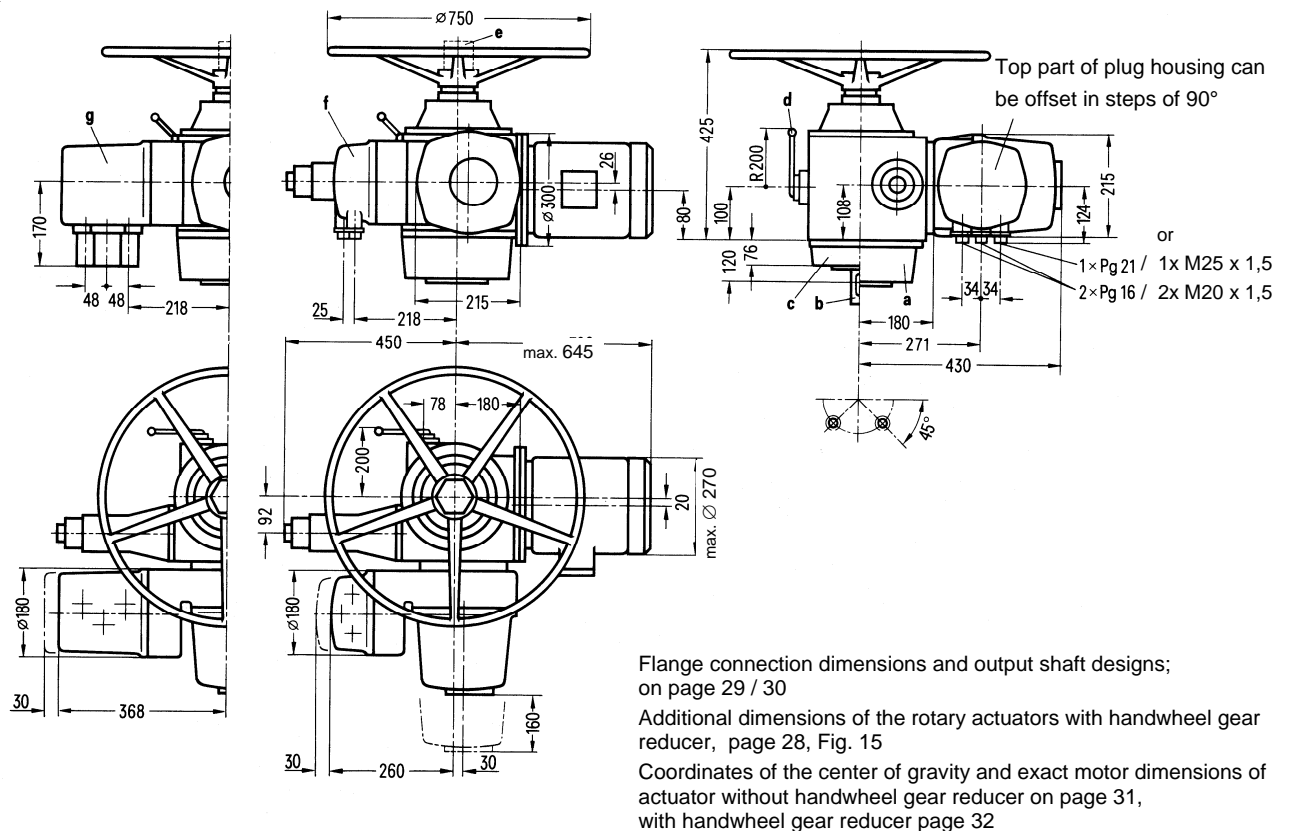
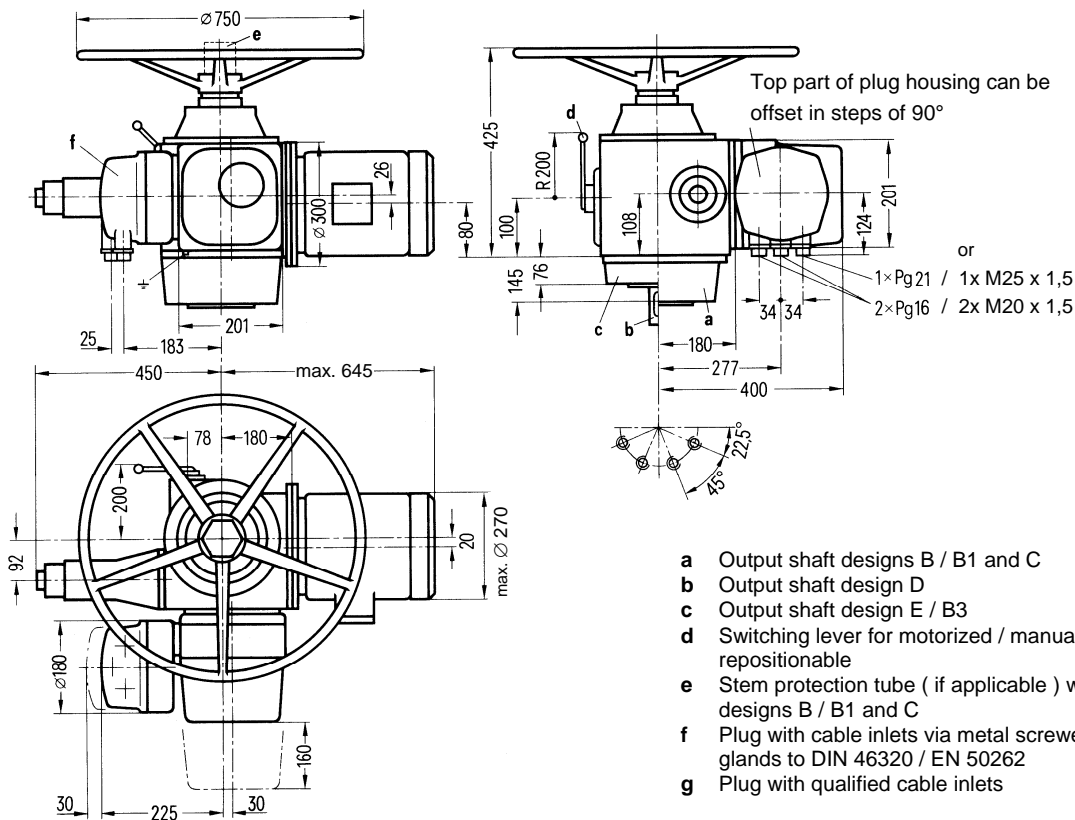


Fig. 10 Electric rotary actuators M76362 – M and M76372 – M, size 3 to DIN 3210 / F16 to DIN ISO 5210

Rotary actuator M76362 – N, R – SIWI series



Rotary actuator M76372 – N, R – SIWI – AS series

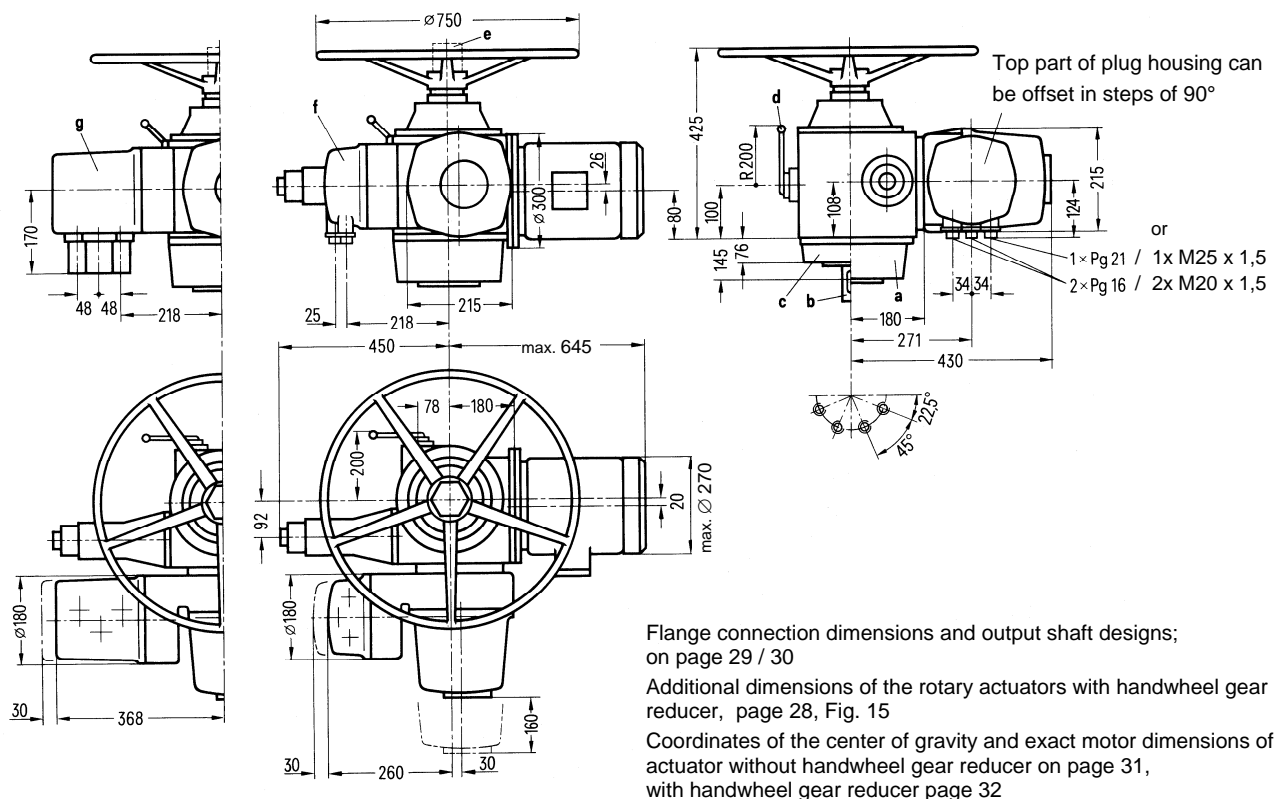
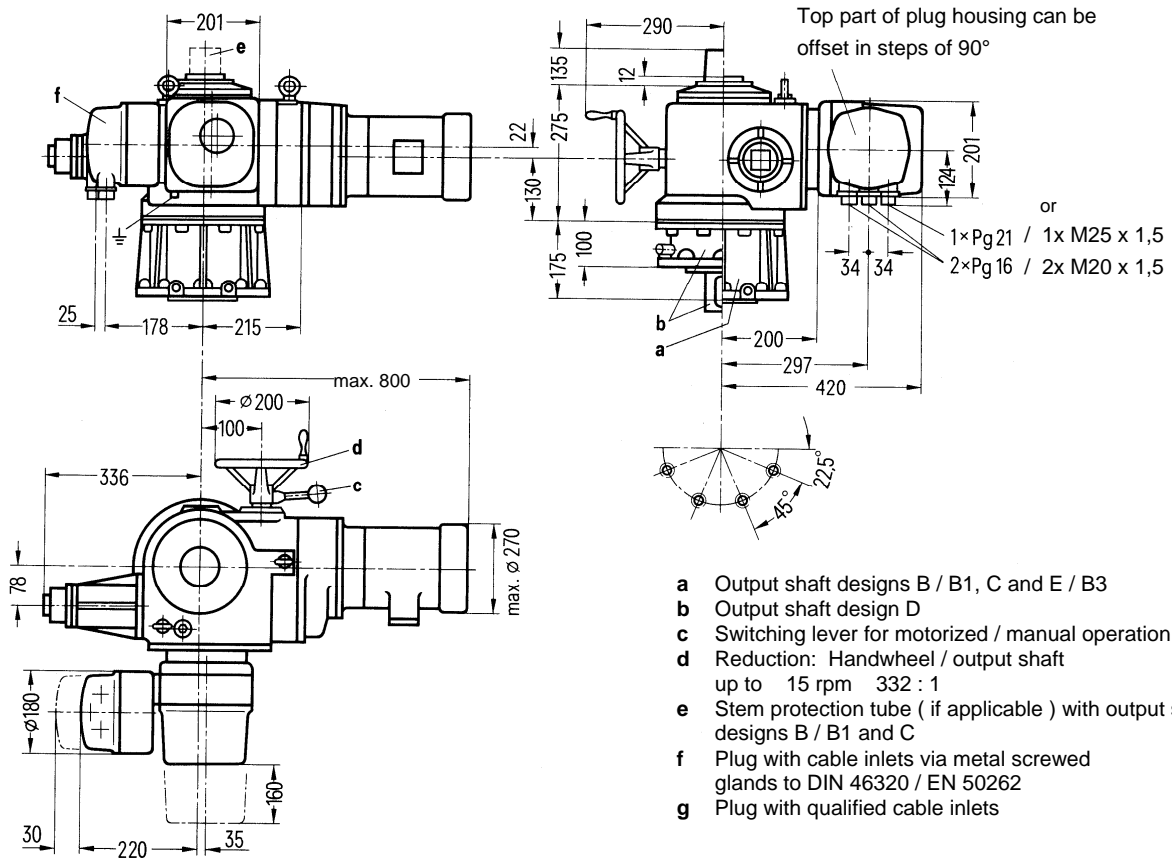


Fig. 11 Electric rotary actuators M76362 – N and M76372 – N, size 4 to DIN 3210 / F25 to DIN ISO 5210

Rotary actuator M76362 – S, R – SIWI series



Rotary actuator M76372 – S, R – SIWI – AS series

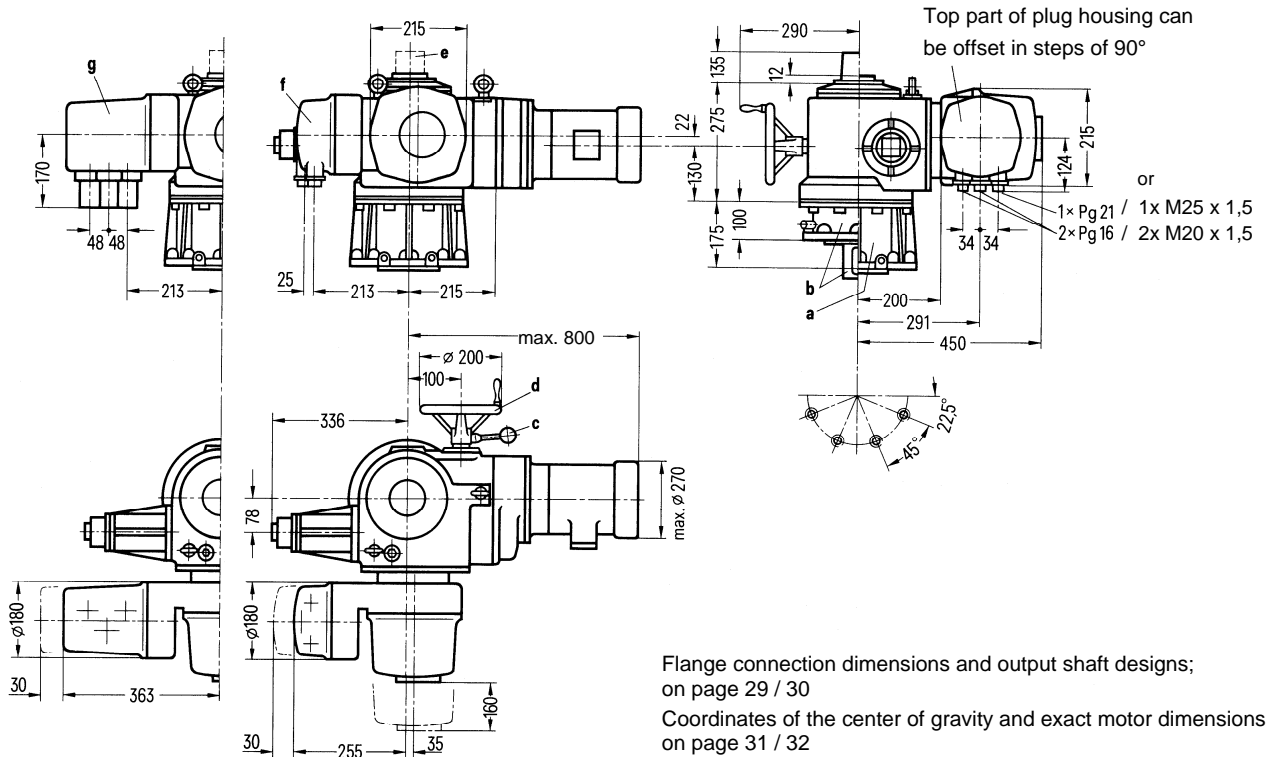
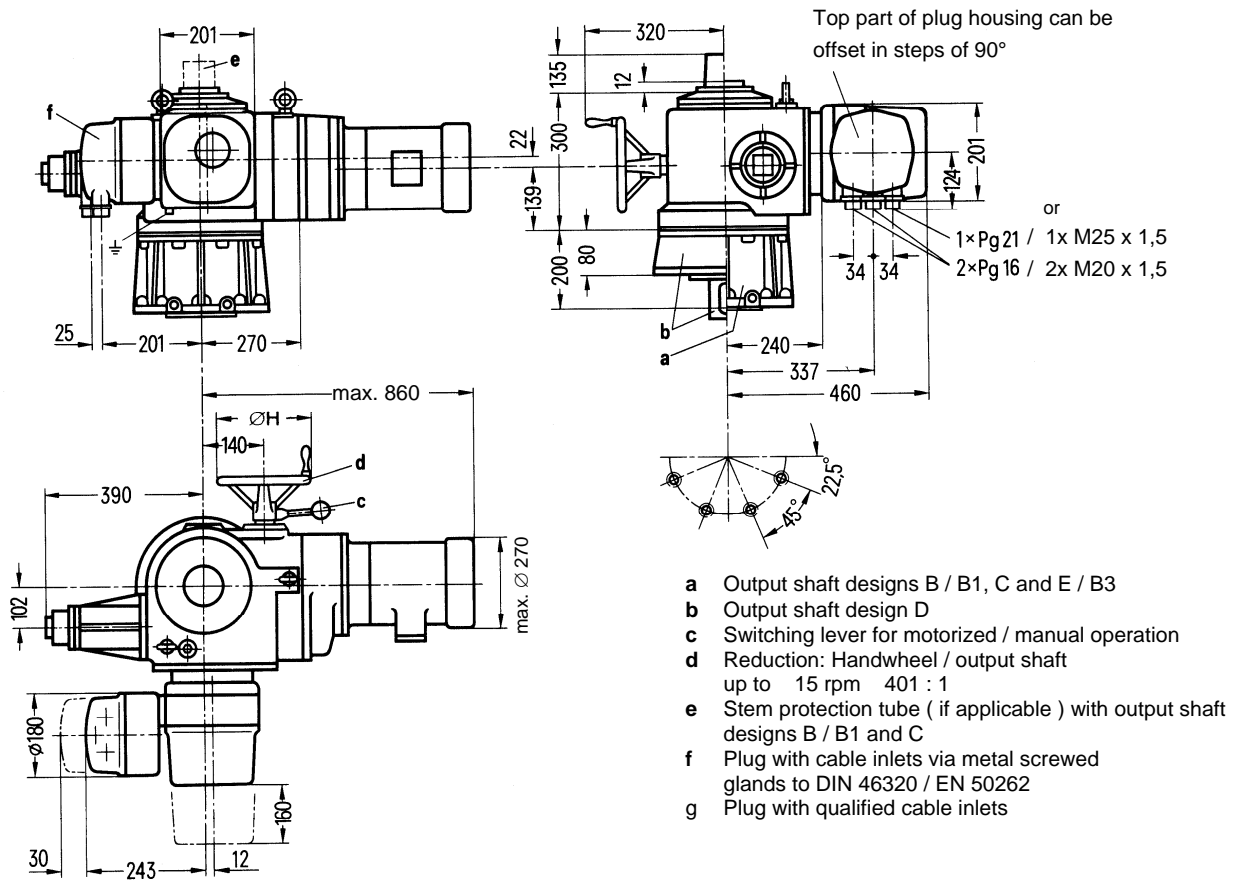


Fig. 12 Electric rotary actuators M76362 – S and M76372 – S, size 4 to DIN 3210 / F25 to DIN ISO 5210

Dimensions of the electric rotary actuators
M76362 – U and M76372 – U
 Size 5 to DIN 3210 / F30 to DIN ISO 5210

Rotary actuator M76362 – U, R – SIWI series



Rotary actuator M76372 – U, R – SIWI – AS series

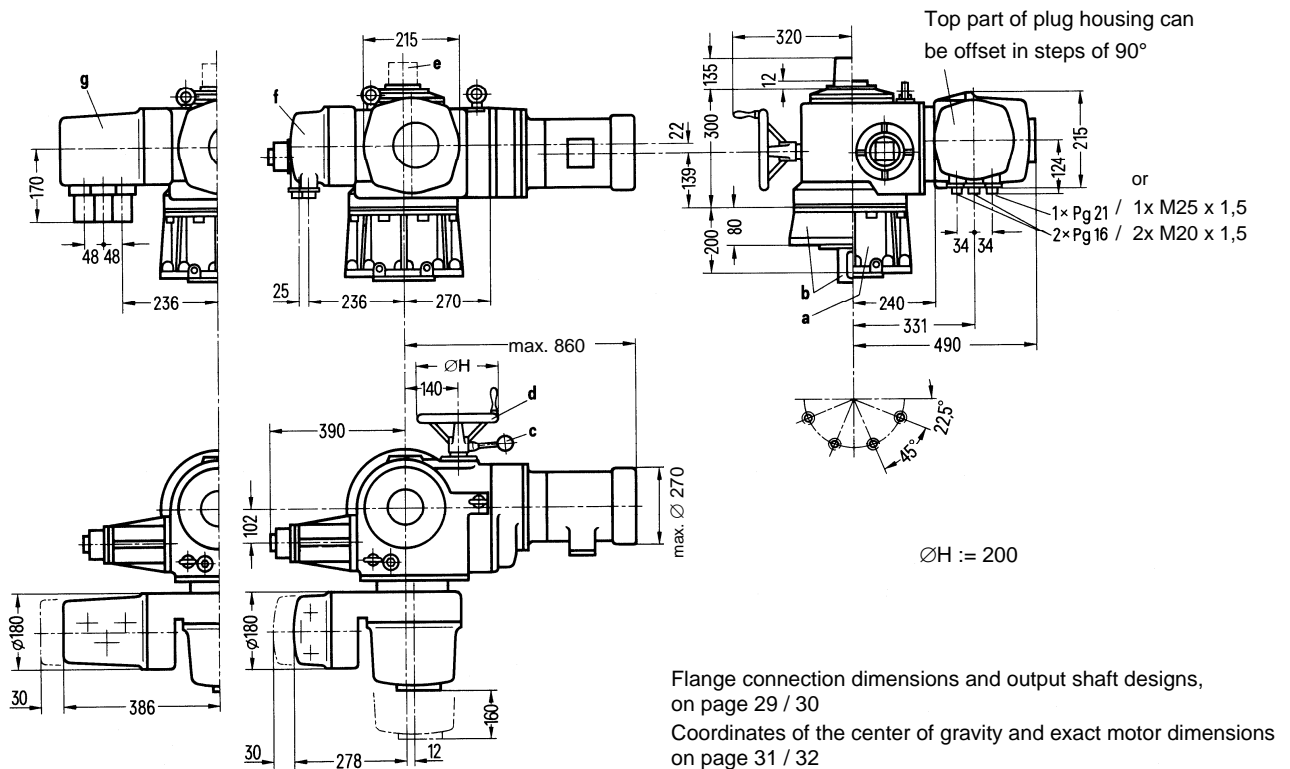


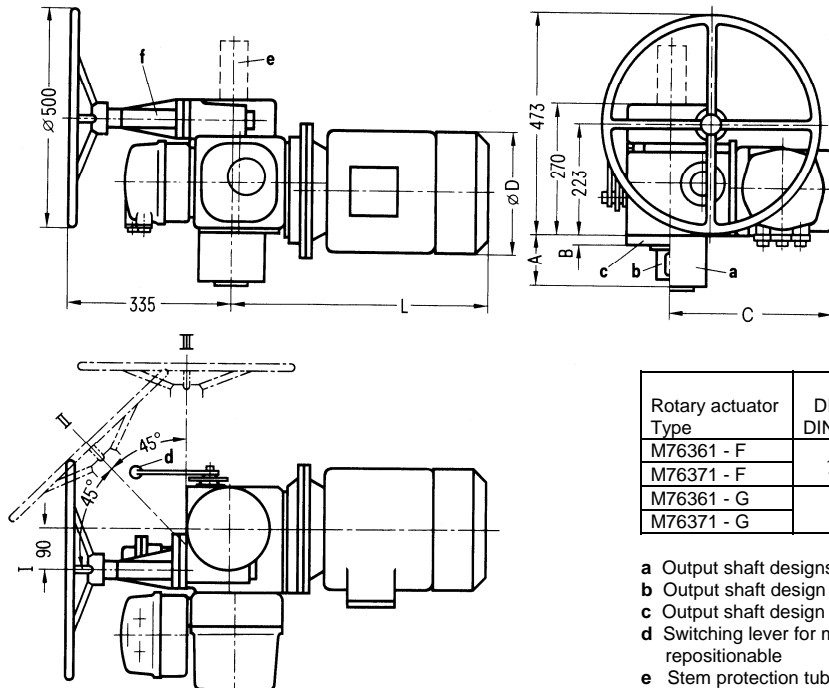
Fig. 13 Electric rotary actuators M76362 – U and M76372 – U, size 5 to DIN 3210 / F30 to DIN ISO 5210

Dimensions of the electric rotary actuators with handwheel gear reducer M76362 – F to N and M76372 – F to N

The Figs. below contain the dimensions applicable to the handwheel gear reducer and a few other dimensions.
Other dimensions of the rotary actuators on page 22 to 25.

Flange, connection dimensions and output shaft designs on page 29 / 30.
Coordinates of center of gravity and exact motor dimensions on page 31.

Rotary actuator M76362 – F, - G, R-SIWI series and M76372 – F, - G, R-SIWI-AS series with handwheel gear reducer (repositionable; possible positions : I, II and III)



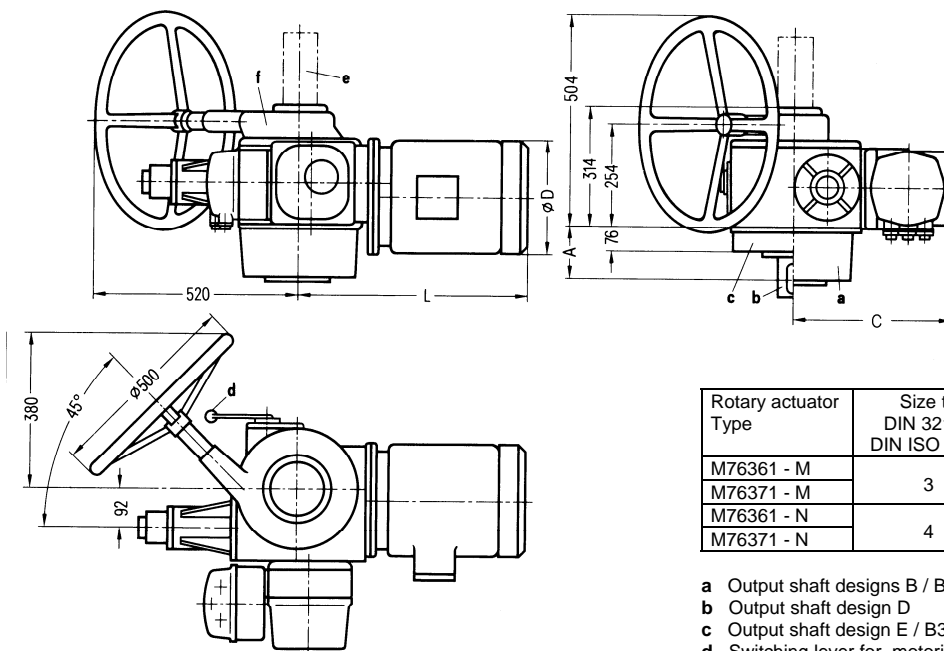
Reduction ratio
Handwheel to output shaft = 13 : 1
Gear efficiency $\eta = 0,45$

Rotary actuator Type	Size to DIN 3210 / DIN ISO5210	A	B	C	D max.	L max.
M76361 - F	1/2 / F14	96	22	370	230	510
M76371 - F				400		
M76361 - G	3 / F16	114	27	370	270	550
M76371 - G				400		

- a Output shaft designs B / B1 and C
- b Output shaft design D
- c Output shaft design E / B3
- d Switching lever for motorized / manual operation repositionable
- e Stem protection tube (if applicable) with output shaft designs B / B1 and C
- f Handwheel gear reducer

Fig. 14 Electric rotary actuators M76362 – F, - G and M76372 – F, - G with handwheel gear reducer

Rotary actuator M76362 – M, - N, R-SIWI series, and M76372 – M, - N, R-SIWI-AS series with handwheel gear reducer (not repositionable)



Reduction ratio
Handwheel to output shaft = 18,5 : 1
Gear efficiency $\eta = 0,6$

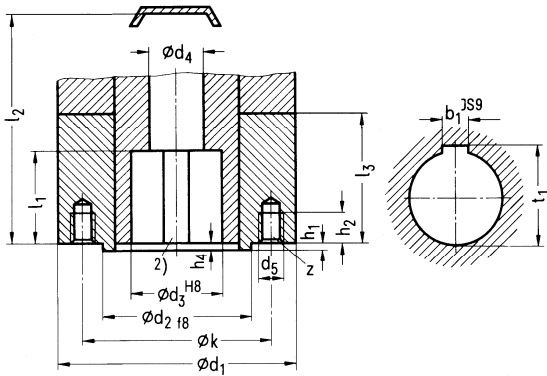
Rotary actuator Type	Size to DIN 3210 / DIN ISO 5210	A	C	D max.	L max.
M76361 - M	3	120	400	325	645
M76371 - M			430		
M76361 - N	4	145	400	325	645
M76371 - N			430		

- a Output shaft designs B / B1 and C
- b Output shaft design D
- c Output shaft design E / B3
- d Switching lever for motorized / manual operation repositionable
- e Stem protection tube (if applicable) with output shaft designs B / B1 and C
- f Handwheel gear reducer

Fig. 15 Electric rotary actuators M76362 – M, - N and M76372 – M, - N with handwheel gear reducer

See design B for missing dimensions in designs C, D and E

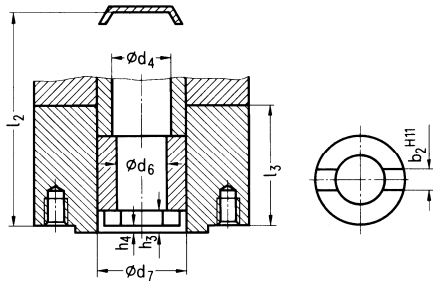
Design B : Hollow shaft with insert bush



Rotary actuator type M76362 - M76372 -	Size	d_1	k	d_2	d_3	d_4	d_5	$z^{1)}$	h_1	h_2	h_4	l_1	l_2	l_3	b_1	t_1
- C	0	125	102	60	42	28	M10	4	3	15	3	45	195	58	12	45,3
- E						36							210	70		
- F	1/2	175	140	100	60	53	M16	4	4	22	2	64	320	96	18	64,4
- G						72							78	340		
- M	3	205	165	130	80	53	M20	4	5	30	4	89	480	120	22	85,4
- N						72							24	4		
- S	4	300	254	160	100	64	M16	8	5	24	1	116	450	175	28	106,2
- U						75							30	1		

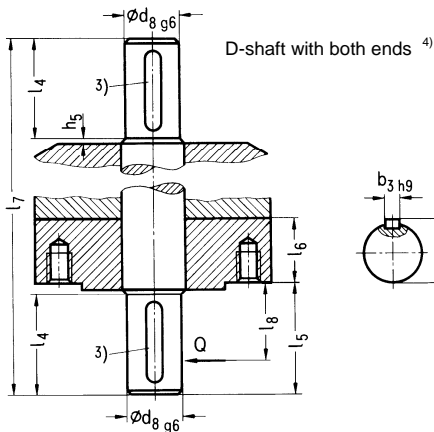
- 1) Number of threaded bores d_5 ; arrangement to DIN 2501, sheet 1
- 2) Groove for featherkey A DIN 6885, sheet 1

Design C : Hollow shaft with claw coupling



Type M76362 - M76372 -	Size	d_4	d_6	d_7	h_3	h_4	l_2	l_3	b_2
- C	0	28	28	42	10	3	195	58	14
- E		36	28	55			210	70	
- F	1/2	53	38	74	12	2	320	96	20
- G		53	53	104			15	2	
- M	3	72	50	80	18	4	480	120	24
- N		72	64	100			21	4	
- S	4	64	63	100	16	1	450	175	30
- U		75	74	120			18	1	

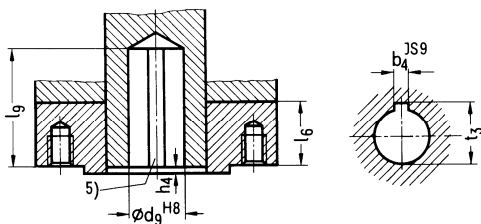
Design D : Free shaft end with featherkey



Type M76362 - M76372 -	Size	d_8	h_5	l_4	l_5	l_6	l_7	l_8	b_3	t_2	Q [kN]
- C	0	20	2	50	55	0	262	40	6	22,5	1,5
- E						25	288				2,5
- F	1/2	30	4	70	76	22	412	60	8	33	7
- G						5	458				12
- M	3	40	-	90	96	76	-	80	12	43	12
- N						76	-				12
- S	4	50	2	110	117	100	609	100	14	53,5	15
- U						80	644				110

- 3) Featherkey A DIN 6885, sheet 1
- 4) Not with rotary actuators M76362-M, -N and M76372-M, -N
- Q Maximum permissible transverse load

Design E : Bore with featherkey slot



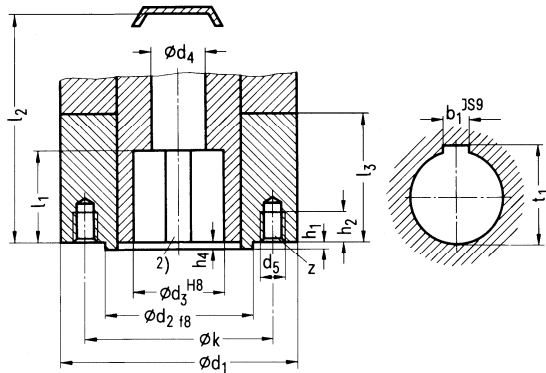
Type M76362 - M76372 -	Size	d_9	h_4	l_6	l_9	b_4	t_3
- C	0	20	2	0	55	6	22,8
- E				25			
- F	1/2	30	2	22	74	8	33,3
- G				27			
- M	3	40	2	76	112	12	43,3
- N				76			
- S	4	50	1	175	107	14	53,8
- U				200			

- 5) Slot for featherkey A DIN 6885, sheet 1

Fig. 16/a Flange connection dimensions and output shaft designs to DIN 3210

See design B1 for missing dimensions in designs C, D and B3

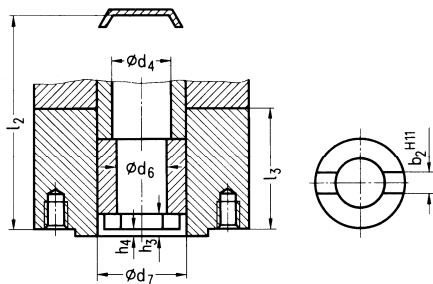
Design B1 : Hollow shaft with insert bush



Rotary actuator type M76361 - M76371 -	Size	d_1	k	d_2	d_3	d_4	d_5	$z^{1)}$	h_1	h_2	h_4	l_1	l_2	l_3	b_1	t_1
- C	F10	125	102	70	42	28	M10	4	3	15	3	45	195	58	12	45,3
- E	F14	175	140	100	60	36	M16	4	4	22	2	64	320	96	18	64,4
- G	F16	205	165	130	80	53	M20	4	4	28	2	78	340	114	22	85,4
- M	F16	205	165	130	80	72	M20	4	5	30	4	89	480	120	22	85,4
- N	F16	205	165	130	80	72	M20	4	5	30	4	89	480	120	22	85,4
- S	F25	300	254	200	100	64	M16	8	5	24	1	116	450	175	28	106,2
- U	F30	350	298	230	120	75	M20	8	5	30	1	130	500	200	32	127,1

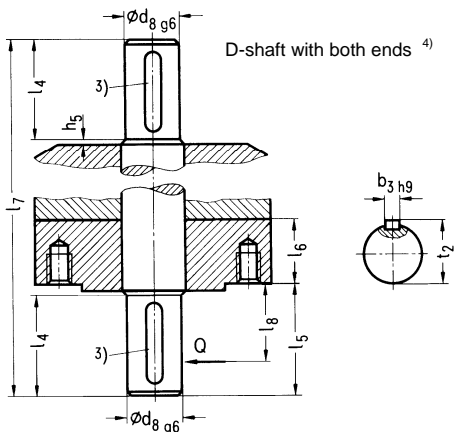
3) Number of threaded bores d_5 ; arrangement to DIN 2501, sheet 1
4) Groove for featherkey A DIN 6885, sheet 1

Design C : Hollow shaft with claw coupling



Type M76361 - M76371 -	Size	d_4	d_6	d_7	h_3	h_4	l_2	l_3	b_2
- C	F10	28	28	42	10	3	195	58	14
- E	F14	36	28	55	12	2	210	70	20
- F	F14	53	38	74	12	2	320	96	20
- G	F16	53	53	104	15	2	340	114	24
- M	F16	72	50	80	18	4	480	120	24
- N	F16	72	50	80	18	4	480	120	24
- S	F25	64	63	100	16	1	450	175	30
- U	F30	75	74	120	18	1	500	200	40

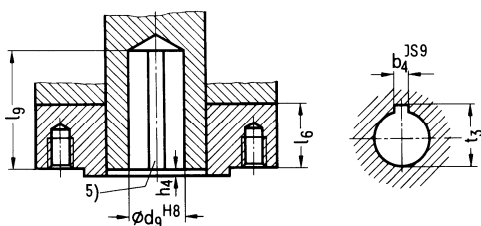
Design D : Free shaft end with featherkey



Type M76361 - M76371 -	Size	d_8	h_5	l_4	l_5	l_6	l_7	l_8	b_3	t_2	Q [kN]
- C	F10	20	2	50	55	0	262	40	6	22,5	1,5
- E	F14	30	4	70	76	25	288	60	8	33	2,5
- F	F14	30	4	70	76	22	412	60	8	33	7
- G	F16	40	5	90	96	27	458	80	12	43	12
- M	F16	40	5	90	96	76	-	80	12	43	12
- N	F16	40	5	90	96	76	-	80	12	43	12
- S	F25	50	2	110	117	100	609	100	14	53,5	15
- U	F30	60	2	120	127	80	644	110	18	64,2	18

3) Featherkey A DIN 6885, sheet 1
4) Not with rotary actuators M76361-M, -N and M76371-M, -N
Q Maximum permissible transverse load

Design B3 : Bore with featherkey slot

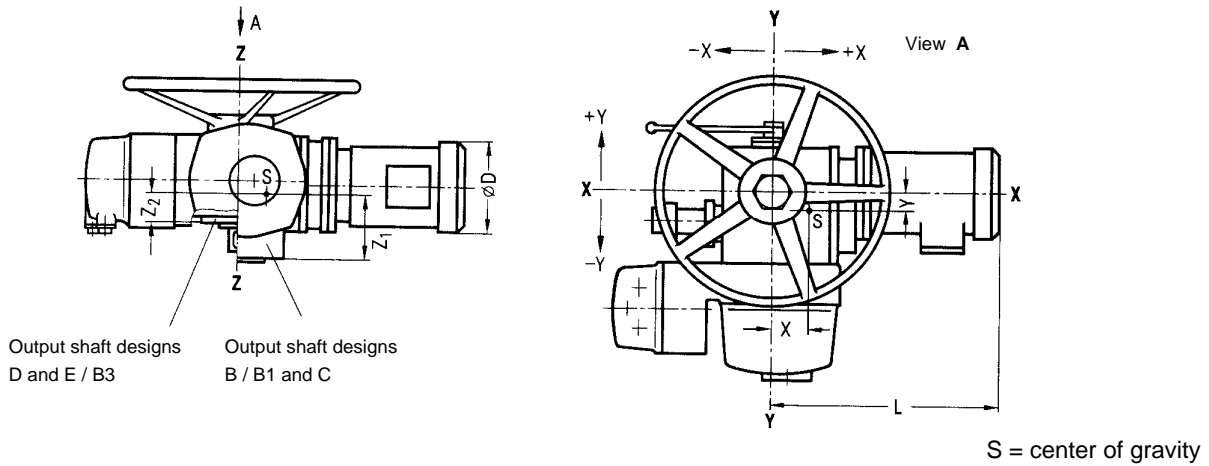


Type M76361 - M76371 -	Size	d_9	h_4	l_6	l_9	b_4	t_3
- C	F10	20	2	0	55	6	22,8
- E	F14	30	2	25	74	8	33,3
- F	F14	30	2	22	74	8	33,3
- G	F16	40	2	27	95	12	43,3
- M	F16	40	2	76	112	12	43,3
- N	F16	40	2	76	120	14	53,8
- S	F25	50	1	175	107	14	53,8
- U	F30	60	1	200	118	18	64,4

6) Slot for featherkey A DIN 6885, sheet 1

Fig. 16/b Flange connection dimensions and output shaft designs to DIN ISO 5210

Coordinates of center of gravity and motor dimensions
of the electric rotary actuators M76362 - C to -U and M76372 - C to -U without additional handwheel gear reducer



xxx : measured value yyy : calculated value ¹⁾

Actuator type		Center of gravity												Motor dimension	
		M76362- ... - Z R14				M76372 - ... - Z R14				M76372 - ... - Z R18 / R19					
		X	Y	Z1	Z2	X	Y	Z1	Z2	X	Y	Z1	Z2	D	L
C12*1	C13*1	25	-60	125	75					-25	-80	125	75		
C32*1	C33*1													110	265
C14*1		20	-65	125	75	10	-65	125	75	-25	-70	125	75	125	245
C15*1	C16*1														
C34*1	C35*1	25	-55	125	75	20	-60	120	70	-25	-70	125	80	125	260
C17*1	C18*1														
C36*1	C37*1	40	-60	125	75	35	-65	125	75	-10	-75	120	70	140	275
C38*1		55	-45	120	70	55	-55	125	75	30	-55	125	75	160	310
E12*1	E13*1	35	-55	135	100	20	-70	130	90	-5	-75	135	95	125	300
E14*1 ²⁾		35	-55	135	100	--	--	--	--	--	--	--	--	125	280
E14*1 ³⁾	E15*1	35	-50	135	95	35	-55	140	100	20	-70	135	95	140	300
E16*1		55	-50	135	95	50	-55	135	95	40	-65	135	95		
E17*1	E18*1													160	335
F12*1	F13*1	40	-60	200	140	40	-65	180	120	35	-70	175	115	140	380
F14*1		55	-45	200	140	30	-60	185	125	35	-65	190	125	160	400
F15*1	F16*1	50	-45	200	140	35	-45	195	135	25	-55	190	130	160	370
F17*1		60	-40	200	140	55	-50	200	140	35	-65	190	130	180	410
F18*1		80	-40	200	140	65	-50	200	140	50	-55	190	130	180	410
G12*1 ²⁾		40	-55	205	135	--	--	--	--	--	--	--	--	140	380
G12*1 ³⁾															
G13*1	G14*1					40	-65	200	135	35	-75	200	135	160	400
G15*1										35	-60	190	125		
G16*1										35	-85	210	145	180	410
G17*1	G18*1													205	430
M12*1	M13*1														
M15*1	M16*1	75	-55	240	195	60	-30	250	215	70	-40	260	215	205	470
M14*1						15	-50	250	205	15	-50	260	215	180	450
M17*1		60	-40	235	190									220	485
M18*1														260	530
N12*1	N13*1														
N14*1	N15*1	65	-55	240	185	65	-55	280	220	65	-55	285	225	205	470
N16*1		65	-45	225	165	65	-50	280	220	65	-50	285	225	220	485
N17*1		105	-40	230	170	110	-45	275	215	110	-50	280	220	260	550
N18*1														260	530
S12*1														180	535
S13*1	S14*1													205	565
S15*1		220	-20	300	225	220	-25	300	225	210	-25	300	225	260	680
U12*1		110	-35	275	180	105	-40	275	180	100	-45	275	180	205	640
U13*1		175	-30	285	190	170	-35	285	190	165	-40	285	190	260	740
U14*1														260	740

Fig. 17 Coordinates of center of gravity and motor dimensions of the electric rotary actuators M76362 - C to - U and M76372 - C to - U without brake motor and without additional handwheel gear reducer

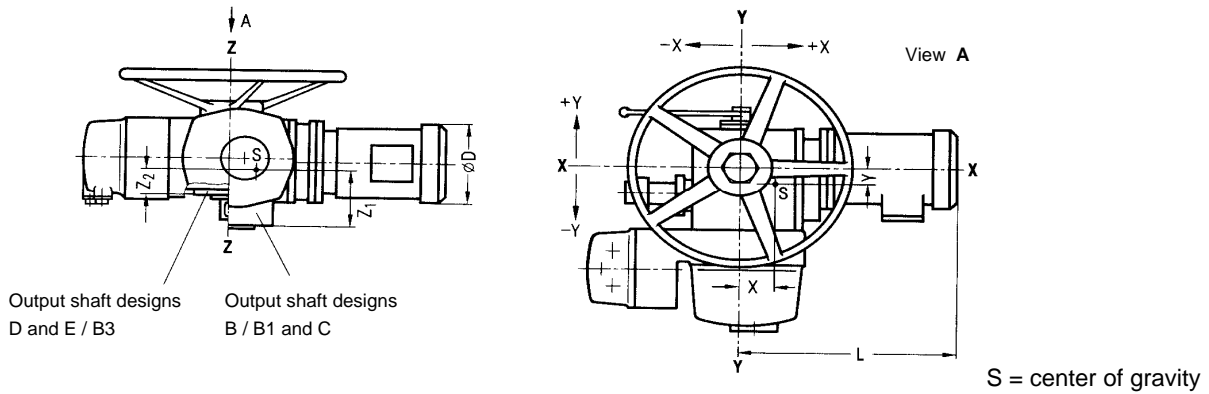
¹⁾ : In the valve calculation the data of center of gravity have to be considered with an additional factor of 1.1 !

²⁾ : applicable to M76362 - ...

³⁾ : applicable to M76372 - ...

Coordinates of center of gravity and motor dimensions

of the electric rotary actuators M76362 - C to -U and M76372 - C to -U without additional handwheel gear reducer



xxx : measured value **yyy** : calculated value ¹⁾

Actuator type		Center of gravity M76362- ... - Z R14				Motor dimen.	
		X	Y	Z1	Z2	D	L
C12*2	C13*2					110	315
C32*2	C33*2						
C14*2						125	295
C15*2	C16*2						
C34*2	C35*2					125	310
C17*2	C18*2					140	325
C36*2	C37*2						
C38*2						160	360
E12*2	E13*2					125	350
E14*2						125	330
E15*2						140	350
E16*2							
E17*2	E18*2					160	385
F12*2	F13*2					140	430
F14*2						160	450
F15*2							
F16*2						160	420
F17*2	F18*2					180	460
G12*2						140	480
G13*2	G14*2					160	490
G15*2							
G16*2						180	460
G17*2	G18*2					205	490

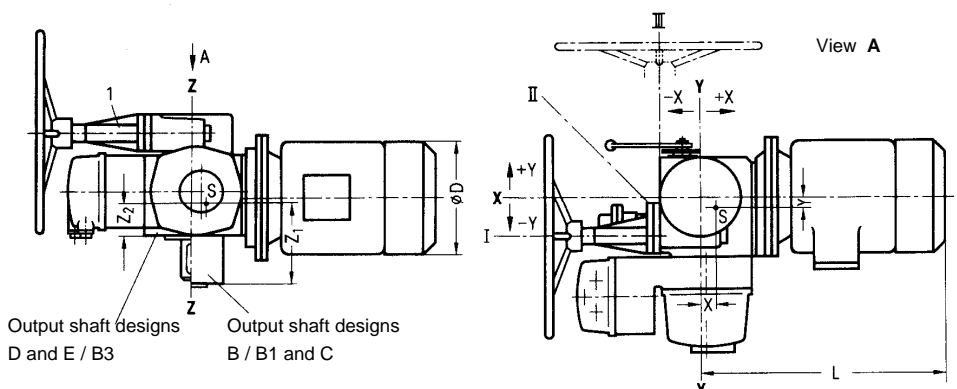
Actuator type		Center of gravity M76362- ... - Z R14				Motor dimen.	
		X	Y	Z1	Z2	D	L
M12*2	M13*2					205	530
M15*2	M16*2						
M14*2						180	500
M17*2						220	550
M18*2						260	530
N12*2	N13*2					205	530
N14*2	N15*2					220	530
N16*2						260	590
N17*2						260	590
N18*2		240	-35	270	210	260	590
S12*2						180	600
S13*2	S14*2					205	630
S15*2						260	740
U12*2						205	700
U13*2						260	800
U14*2						260	800

Fig. 18 Coordinates of center of gravity and motor dimensions of the electric rotary actuators M76362 - C to -U and M76372 - C to -U with brake motor and without additional handwheel gear reducer

¹⁾ : In the valve calculation the data of center of gravity have to be considered with an additional factor of 1.1 !

Coordinates of center of gravity and motor dimensions

of the electric rotary actuators M76362 - F to -N and M76372 - F to -N with handwheel gear reducer



With the rotary actuators M76362 - F, -G and M76372 - F, -G the handwheel gear reducer can be repositioned into positions I, II and III (position I shown).

With the rotary actuators M76362 - M, -N and M76372 - M, -N the gear reducer cannot be repositioned; only position II is possible (see Fig. 14 and 15, page 28).

1 Handwheel gear reducer
S Center of gravity

On request

Parking socket R54 0621
(C79106 - A3001 - C434)

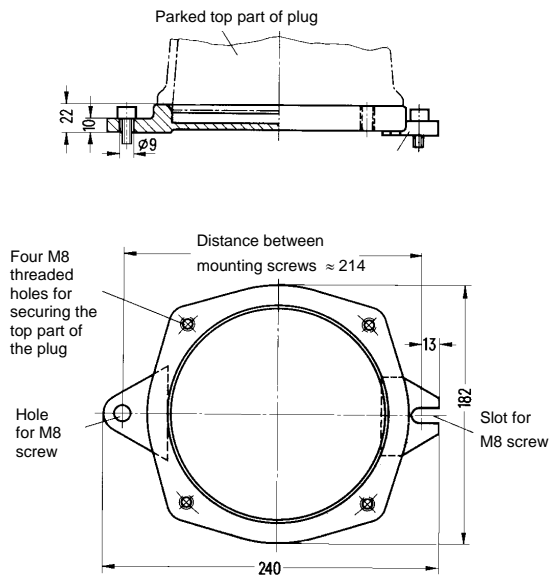


Fig. 19 Parking socket for protecting and securing the removed top part of the plug

Protective cover R54 0485
(C79106 - A3003 - B270)

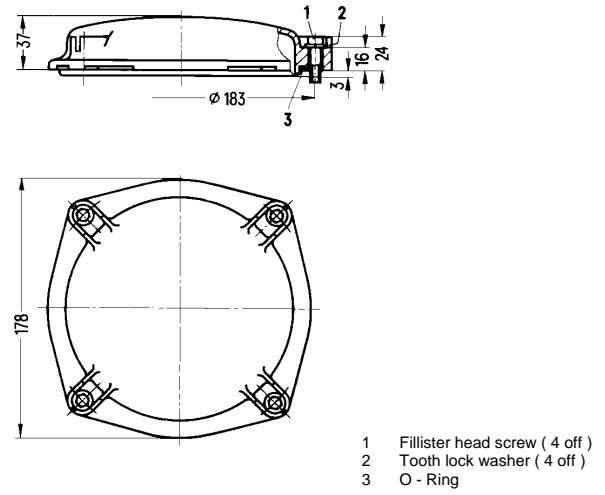


Fig. 20 Protective cover to protect the plug assemblies on the actuator with the top of the plug removed

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