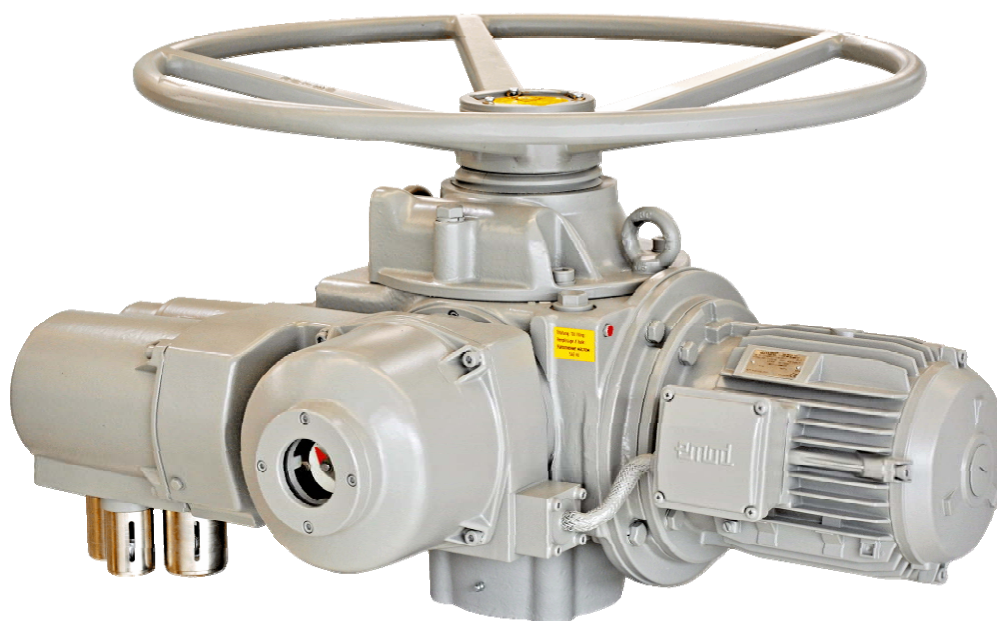


Electric Rotary Actuators For Nuclear Plants

R-SIWI and R-SIWI-AS

for Closed-Loop Control Equipment



Catalog MP 35.2 • 2012 / EM

Electric Rotary Actuators for Nuclear Plants

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

Catalog MP 35.2 • 2012 / 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

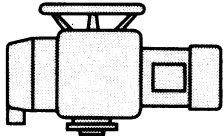
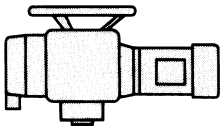
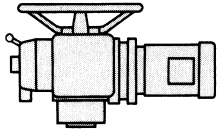
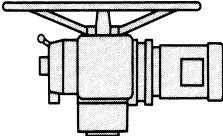
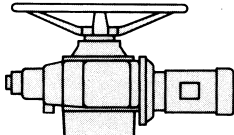
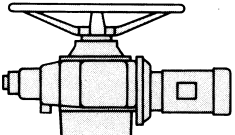
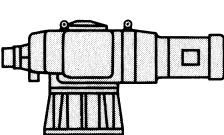
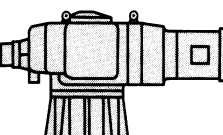
Electric rotary actuator for close-loop control equipment for use in nuclear plants

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 EN ISO 5210

Summary

Electric rotary actuators					
R - SIWI series R – SIWI – AS series Tripping torque, not adjustable	Type Type	M76362 - C M76372 - C 20 and 30Nm	M76362 - E M76372 - E 60 Nm	M76362 - F M76372 - F 120 Nm	M76362 - G M76372 - G 200 Nm
Output speed in steps from .. to .. Size to DIN 3210 / EN 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 Tripping torque, not adjustable	Type Type	M76362 - M M76372 - M 400 Nm	M76362 - N M76372 - N 600 Nm	M76362 - S M76372 - S 1000 Nm	M76362 - U M76372 - U 2000 Nm
Output speed in steps from .. to .. Size to DIN 3210 / EN 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.

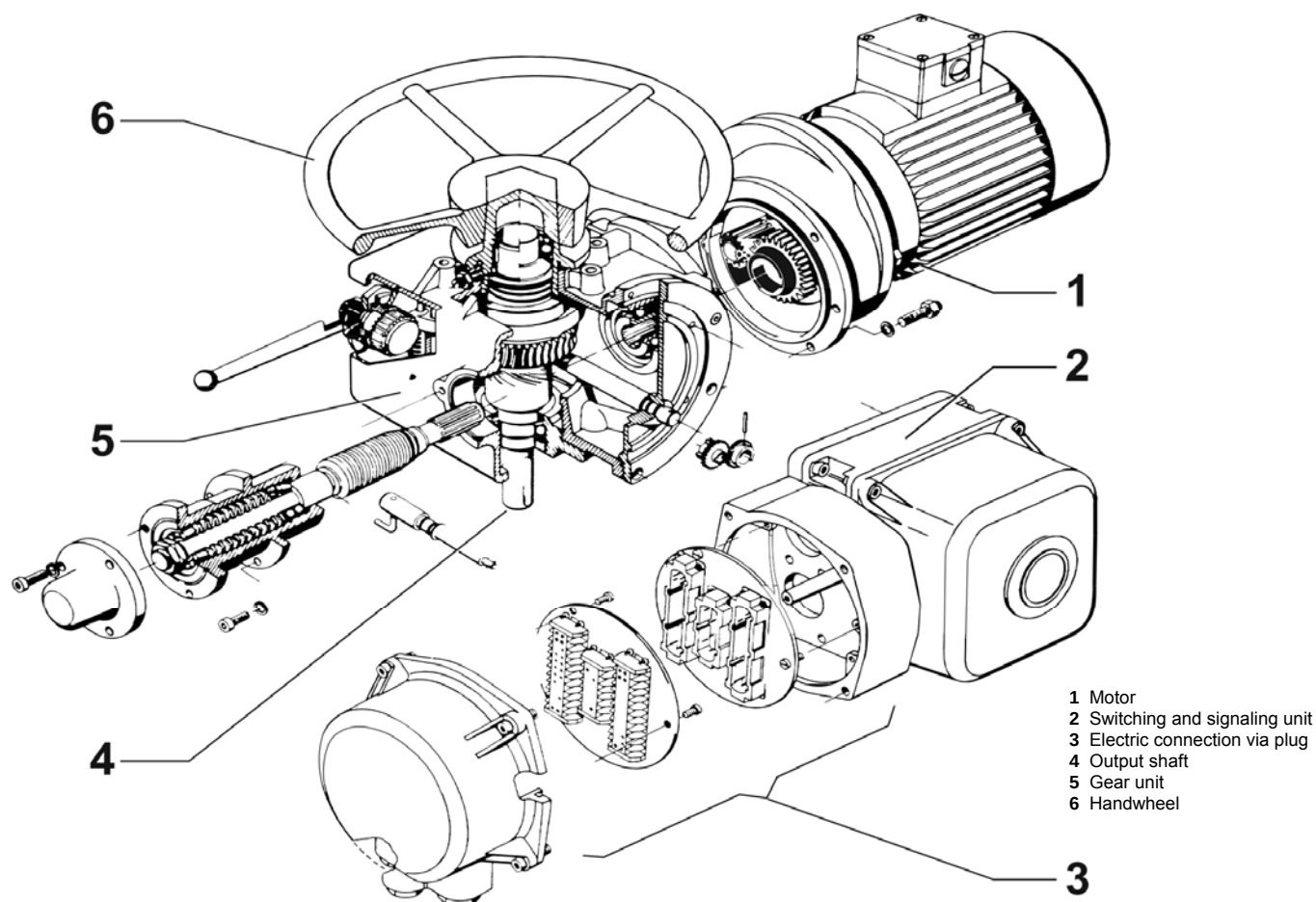


Fig. 2 : Parts of an electric rotary actuators, R-SIWI series

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 EN 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).

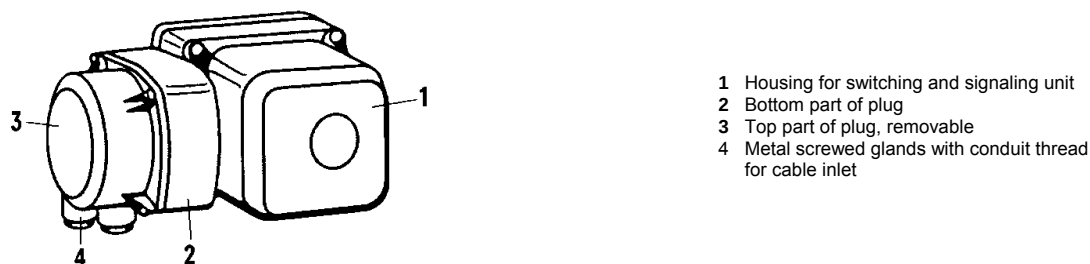


Fig. 3 : Housing for switching and signaling unit and plug housing (design for R - SIWI series)

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	½	3	3	4	4	5
Size to EN 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)

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	
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.

Weights of Actuator :

The weight of the complete actuator consists of the basic weight of the actuator of type M76361-C...U and the additional weights of the output shaft designs (see page 11 – 14), the handwheel gear reducer (see page 17) as well as the kind of electrical connection of the actuator type M76371-C ... U (s. page 16).

The mentioned weights are rated values. Due to production deviations caused by casting of raw parts and machining of cast parts the weights are subject to deviate.

These deviations should be considered with an additional factor of +3% in the calculation, except the actual measured weight is taken as basis.

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 :

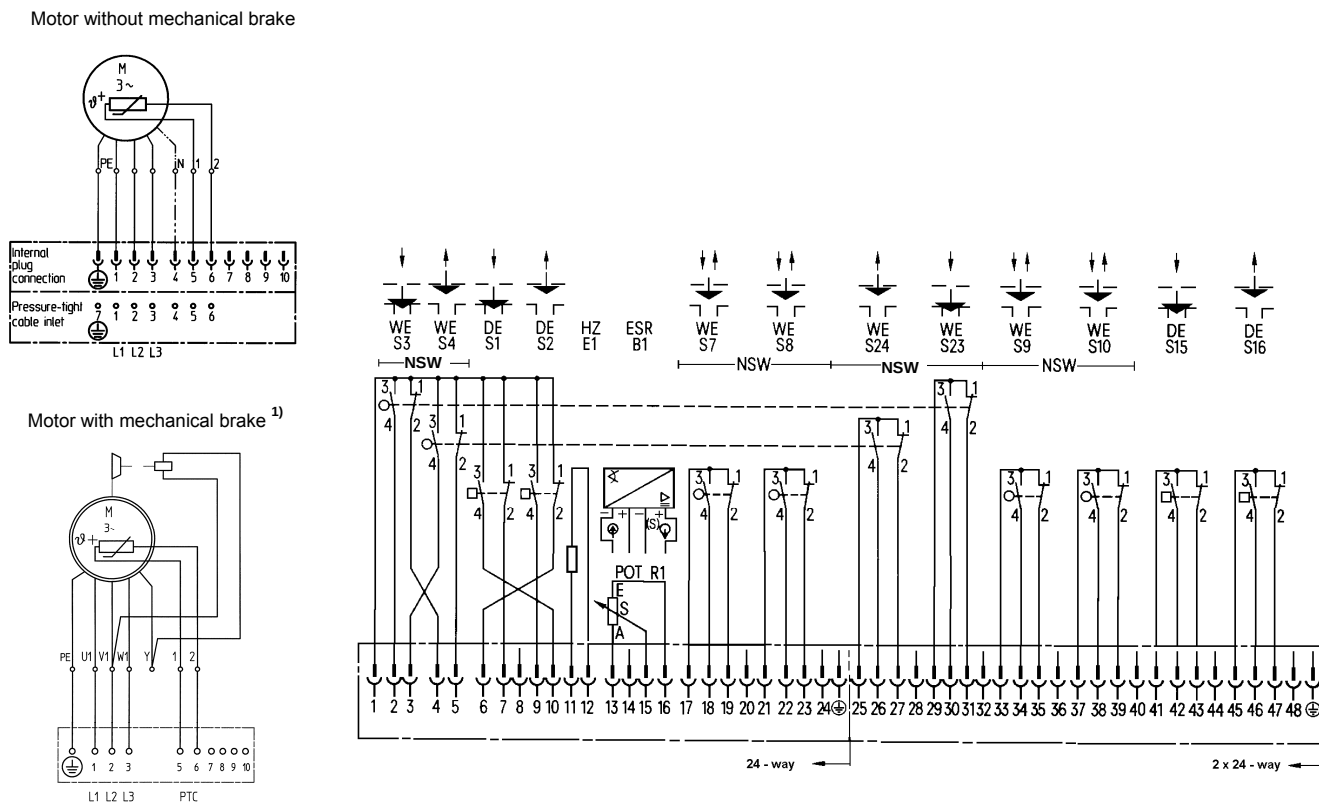
1 10 - way plug assembly with crimp connections, silver-plated sockets and pins
max. conductor cross-section : 2,5 mm²

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 46320 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
DE Torque switch
HZ Space heater

ESR Electronic position transmitter
POT Potentiometer

NSW Cam-type counting and switching mechanism

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
- > R-SIWI-AS series with qualified cable inlets

IP 65

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 |

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

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)	

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.

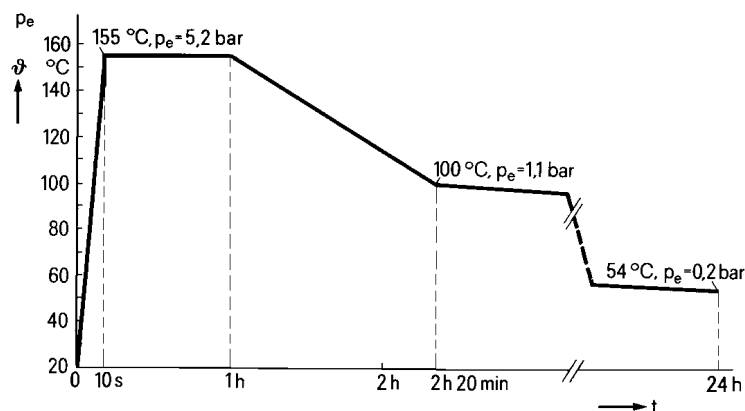


Fig. 5 : Pressure / temperature response with designed fault; the pressure p_e are excess pressures

Configuration of Order No.

Data position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Order No.	M	7	6	3											

Code No(s). / Letter for :
 R-SIWI series : 62
 R-SIWI-AS series : 72

No. of section in the ordering data

1. Type of rotary actuator, tripping torque and rated speed of output shaft
2. Output shaft design to DIN 3210
1. Motor type (with / without brake)
3. No. of revolutions per stroke
4. Electric connection
5. Switching and signaling unit : signaling components
6. Switching and signaling unit : signaling components

Suffix to Order No.

Order No.

M	7	6	3		
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 -

--	--	--	--	--	--

 -

--	--	--	--	--	--

 - Z

Order Code additive,
any order

--	--	--	--	--	--	--	--	--	--	--	--

7. Cabel inlets

8. Other rating plate

Further designs :

9. Other varnish
10. Space heater
11. Handwheel gear reducer
12. Further equipment

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

Ordering data

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

M 7 6 3 6 2 - - - Z

M 7 6 3 7 2 - - - Z

See page 15

- 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.

Rated speed of output shaft	Gear reducer	Tripping torque (not adjustable)	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-..*)	Dimensions									
			Rated power	Rated speed	Consecutive number for motor		ca. kg											
					without brake	with brake ³⁾												
min ⁻¹	i	Nm	kW	min ⁻¹	M76362-	M76372-	M76362-			↓	↓	↓	↓					ca. kg ⁴⁾
5	268	20	0,06	1235	3	3	2	28 30	page 20	C 1 2	1						27	
7,5	182		0,06	1235	3	3	2	28 30		C 1 2	2							29
10	124,8		0,09	1270	6	6	5	27 29		C 1 3	1							27
15	87,2		0,12	1300	12	12	11	28 30		C 1 3	2							29
20	63,6		0,18	1310	15	15	14	28 30		C 1 4	1							27
30	44,8		0,25	1350	24	24	23	29 31		C 1 4	2							28
40	33,6		0,37	1385	30	30	29	30 32		C 1 5	1							27
										C 1 5	2							29
5	268	30	0,06 0,09 ¹⁾	1235 1270 ¹⁾	3	6	2	28 30		C 1 6	1						27	
7,5	182		0,09	1270	6	6	5	28 30		C 1 6	2							29
10	124,8		0,12 0,18 ¹⁾	1300 1310 ¹⁾	12	15	11	28 30		C 1 7	1							27
15	87,2		0,18	1310	15	15	14	28 30		C 1 7	2							29
20	63,6		0,25 0,37 ¹⁾	1350 1385 ¹⁾	24	30	23	30 31		C 1 8	1							27
30	44,8		0,37	1385	30	30	29	32		C 1 8	2							29
40	33,6		0,55	1260	39	39	38	33 36		C 3 2	1							27
										C 3 2	2							29
5	268	30	0,09	1270	6	6	5	28 30		C 3 3	1						27	
7,5	182		0,12	1300	12	15	11	28 30		C 3 3	2							29
10	124,8		0,18	1310	15	15	14	28 30		C 3 4	1							27
15	87,2		0,25	1350	24	30	23	30 31		C 3 4	2							29
20	63,6		0,37	1385	30	30	29	32		C 3 5	1							27
30	44,8		0,55	1260	39	39	38	33 36		C 3 5	2							30
40	33,6		0,55	1260	39	39	38	33 36		C 3 6	1							29
										C 3 6	2							31
5	268	30	0,09	1270	6	6	5	28 30		C 3 7	1						29	
7,5	182		0,12	1300	12	15	11	28 30		C 3 7	2							32
10	124,8		0,18	1310	15	15	14	28 30		C 3 8	1							32
15	87,2		0,25	1350	24	30	23	30 31		C 3 8	2							37
20	63,6		0,37	1385	30	30	29	32		C 3 8	2							37
30	44,8		0,55	1260	39	39	38	33 36		C 3 8	2							37
40	33,6		0,55	1260	39	39	38	33 36		C 3 8	2							37
										C 3 8	2							

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

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

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

Tripping torques 60Nm, size 0 and 120Nm, size 1/2 to DIN 3210

Ordering data

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

M 7 6 3 6 2 -  -  - Z

M 7 6 3 7 2 -  -  - Z

- 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.

Rated speed of output shaft	Gear reducer	Tripping torque (not adjustable)	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-..*)	Dimensions					ca. kg ⁴⁾		
			Rated power	Rated speed	Consecutive number for motor		without brake			with brake ³⁾						
					M76362-	M76372-					M76362-					
min ⁻¹	i	Nm	kW	min ⁻¹	M76362-	M76372-	M76362-	ca. kg		↓	↓	↓	↓			
5	258	60	0,12	1300	12	12	11	38 40	page 21	E 1 2	1				37	
7,5	172		0,18	1310	15	15	14	38 41		E 1 2	2					39
10	137,6		0,18 0,25 ¹⁾	1310 1350 ¹⁾	15	24	14	38 40		E 1 3	1					37
15	93		0,37	1385	30	30	29	39 41		E 1 3	2					40
20	63,2		0,55	1260	39	39	38	42 44		E 1 4	1					37
30	38		0,75	1330	48	48	47	44 46		E 1 4	2					39
40	31,1		0,75	1330	48	48	47	44 46		E 1 5	1					38
										E 1 5	2					42
5	243,1	120	0,25 0,37 ¹⁾	1350 1385 ¹⁾	19	27	20	72 74	page 22	E 1 6	1				41	
7,5	186,5		0,37	1385	27	27	26	72 74		E 1 6	2					46
10	128,8		0,55	1260	36	36	35	74 77		E 1 7	1					42
15	87		0,55 0,75 ¹⁾	1260 1330 ¹⁾	36	45	35	74 75		E 1 7	2					47
20	62,2		0,75	1330	45	45	44	74 76		E 1 8	1					42
30	42,9		1,1	1300	54	54	53	80 82		E 1 8	2					47
40	35,9		1,5	1320	57	57	56	79 82		F 1 2	1					72
										F 1 2	2					74
								F 1 3	1					72		
								F 1 3	2					75		
								F 1 4	1					74		
								F 1 4	2					79		
								F 1 5	1					72		
								F 1 5	2					76		
								F 1 6	1					72		
								F 1 6	2					77		
								F 1 7	1					81		
								F 1 7	2					83		
								F 1 8	1					84		
								F 1 8	2					87		

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

						Add. Weight [approx. kg] M763.2-E M763.2-F	
Output shaft	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	on request	on request	on request
	B : with stem protection tube 250 mm long ²⁾	8	on request	on request	on request	on request	on request
	C : with stem protection tube 250 mm long ²⁾	9	on request	on request	on request	on request	on request

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

Tripping torques 200Nm and 400Nm, size 3 to DIN 3210

Ordering data

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

M 7 6 3 6 2 -  -  - Z

M 7 6 3 7 2 -  -  - Z

- 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

See page 15

Rated speed of output shaft	Gear reducer	Tripping torque (not adjustable)	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-.. *)	Dimen- sions							
			Rated power	Rated speed	Consecutive number for motor		without brake			with brake ³⁾						
					M76362-	M76372-					M76362-					
min ⁻¹	i	Nm	kW	min ⁻¹	M76362-	M76372-	M76362-	ca. kg								ca. kg ⁴⁾
5	243,1	200	0,37 0,55 ¹⁾	1385 1260 ¹⁾	27	36	26	79 80	page 23	G 1 2	1				78	
7,5	164,3		0,55	1260	36	36	35	79 81		G 1 2	2				79	
10	128,8		0,75	1330	45	45	44	81 82		G 1 3	1				78	
15	87		1,1	1300	54	54	53	84 81		G 1 3	2				82	
20	62,2		1,5	1320	57	57	56	84 86		G 1 4	1				79	
30	42,9		2,2	1355	63	63	62	91 95		G 1 4	2				83	
40	36,9		2,2	1355	63	63	62	92 96		G 1 5	1				84	
										G 1 5	2				86	
										G 1 6	1			87		
										G 1 6	2			90		
										G 1 7	1			92		
										G 1 7	2			104		
										G 1 8	1			93		
										G 1 8	2			105		
5	124,4	400	0,75	650	69	69	68	172 176	page 24	M 1 2	1				160	
7,5	84,8		1,1	650	75	75	74	175 171		M 1 2	2				175	
10	124,4		1,5	1320	57	57	56	158 161		M 1 3	1				164	
15	84,8		2,2	1355	63	63	62	166 170		M 1 3	2				180	
20	64		3,0	1375	72	72	71	169 174		M 1 4	1				162	
30	49,2		4,0	1400	81	81	80	178 182		M 1 4	2				165	
40	36,3		5,5	1340	87	87	86	201 211		M 1 5	1				166	
										M 1 5	2				178	
										M 1 6	1			169		
										M 1 6	2			181		
										M 1 7	1			183		
										M 1 7	2			196		
										M 1 8	1			187		
										M 1 8	2			200		

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

			Add. Weight [approx. kg]
			M763.2-G M763.2-M
Output shaft	B : hollow shaft with insert bush	2	--- ---
	C : hollow shaft with claw coupling	3	--- ---
	D : free shaft end with featherkey ²⁾	4	- 2 + 11
	E : bore with featherkey slot ²⁾	5	- 3 + 8
	DD : with free shaft at both ends ²⁾	6	on request on request
	B : with stem protection tube 250mm (M762.2-G)/ 500mm (M763.2-M) long ²⁾	8	
	C : with stem protection tube 250mm (M762.2-G)/ 500mm (M763.2-M) long ²⁾	9	on request on request

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.:
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
 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)		Consecutive number for motor			Approx. weight for M76362-.. *) ca. kg	Dimen- sions					ca. kg ⁴⁾
					Rated power kW	Rated speed min ⁻¹	without brake M76362- M76372- M76362- with brake ³⁾							
5	124,4	600	1,1	645	75	75	74	178 182	page 25	N 1 2	1			170
7,5	124,4		1,5	865	66	66	65	178 182		N 1 2	2			186
10	124,4		2,2	1355	63	63	62	174 178		N 1 3	1			172
15	84,8		3,0	1375	72	72	71	176 181		N 1 3	2			185
20	64		4,0	1400	81	81	80	185 189		N 1 4	1			172
30	49,2		5,5	1340	87	87	86	208 218		N 1 4	2			185
40	36,2		7,5	1350	90	90	89	222 231		N 1 5	1			175
										N 1 5	2			187
5	272,9	1000	1,5	1320	57	57	56	129 133	page 26	N 1 6	1			189
7,5	184,5		2,2	1355	63	63	62	139 143		N 1 6	2			202
10	134,65		3,0	1375	72	72	71	143 148		N 1 7	1			193
15	92,7		5,5	1340	87	87	86	191 201		N 1 7	2			206
5	181,4	2000	3,0	1375	72	72	71	205 209	page 27	N 1 8	1			206
7,5	191,6		5,5	1340	87	87	86	243 253		N 1 8	2			209
10	133,8		7,5	1350	90	90	89	257 266		S 1 2	1			134
										S 1 2	2			137
									page 26	S 1 3	1			139
										S 1 3	2			152
										S 1 4	1			142
										S 1 4	2			154
									page 27	S 1 5	1			176
										S 1 5	2			189
										U 1 2	1			203
										U 1 2	2			215
									page 27	U 1 3	1			226
										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)

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

R series

Ordering data

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

M 7 6 3 6 2 - - - Z

M 7 6 3 7 2 - - - Z

3. Number of revolutions per stroke Revolutions/stroke up to			↓ A B C D E F H J K L N		
0,25			A		
0,5			B		
1			C		
2,5			D		
5			E		
7,5			F		
10			H		
15			J		
30			K		
60			L		
120			N		

4. Electric connection Electric connection via plug (compact plug), consisting of Motor plug for AC 380 V, 16 A Plug for switching and signalling unit conductor cross-section : 0,5 mm² sockets and pins					R-SIWI M76362- R-SIWI-AS M76372-
10-way	24-way	Silver-plated	1		
	24-way	Gold-plated	2		
	2 x 24-way	Silver-plated	3		
	2 x 24-way	Gold-plated	4		

5. Switching and signaling unit: signaling components					R-SIWI M76362- R-SIWI-AS M76372-
without signalling component			0		
ESR Electronic position transmitter ¹⁾			1		
POT Potentiometer 100 Ω for position indication ¹⁾			2		
SA Mechanical position indicator			3		
ESR ¹⁾ and SA			4		
POT ¹⁾ and SA			5		

6. Switching and signaling unit: switching components					R-SIWI M76362- R-SIWI-AS M76372-
Torque switches (DE)	Travel switches (WE) without flashing indicator, activated via cam-type mechanism ²⁾	Switches contact			
2 DE	4 WE	Silver-plated	1		
	6 WE		2		
2 DE	4 WE	Gold-plated	3		
	6 WE		4		
4 DE	4 WE		5		
	6 WE		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 M76372-
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	---	6
	2 x 24 - way cable	R 1 9	---	7

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 EN ISO 5210 or DIN 3338 (dimensions of flanges to EN ISO 5210, see page 30)			
	Standard	Order no., data position 10	
Design A : hollow shaft with threaded bush ¹⁾	EN ISO 5210	1	A 3 2
B1 : with insert bush	EN ISO 5210	2	A 3 3
C : with claw coupling	DIN 3338	3	A 3 4
B3 : bore with featherkey slot ¹⁾	EN ISO 5210	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 / EN ISO 5210	
-F and -G	13:1	13	B / B1 or C without stem protect. tube	A 8 1
			B / B1 or C without stem 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 stem p. t.	A 8 6
			B / B1 or C with stem 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 (Attention : Deviating motor data are to be considered)		
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	Order no. of motor ¹⁾	Rated power	no. of poles	Rated speed	Effi- ciency	Power factor		Rated current	Starting current factor	Rated torque	Starting torque		Break down torque	Current	Size	Flanges hape	Flange size	Weight
con- sec- utive no.	Add. order code	kW		1/min	%	cos φ	cos φ _k during start-up	at 380 V		Nm	KT10	KT60 + ΔT	KT155 + ΔT 2)	at 145% U _N / 30 sec	to DIN EN 50347	to DIN EN 60034-7	to DIN 42948	appr. kg
2 3	OLB 56 S / 4 / 050-B14 / OL 56 S / 4 / 050-B14 /	0,06	4	1235	43	0,81	0,88	0,26	2,25	0,46	0,75	0,69	0,62	0,34	56	B 14	FT 65 C 80	5,5 3,5
5 6	OLB 56 L / 4 / 053-B14 / OL 56 L / 4 / 053-B14 /	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 3,6
11 12	OLB 63 S / 4 / 060-B14 / OL 63 S / 4 / 060-B14 /	0,12	4	1300	51	0,75	0,88	0,48	2,4	0,89	1,63	1,47	1,32	0,68	63	B 14	FT 75 C 90	6,5 4,1
14 15	OLB 63 L / 4 / 063-B14 / OL 63 L / 4 / 063-B14 /	0,18	4	1310	56	0,75	0,85	0,65	3,0	1,30	2,65	2,35	2,1	1,06	63	B 14	FT 75 C 90	7 4,5
20 19	OLB 71 S / 4 / 070-B 5 / OL 71 S / 4 / 070-B 5 /	0,25	4	1350	63	0,77	0,76	0,80	3,4	1,85	3,2	2,8	2,5	1,3	71	B 5	FF 130 A 160	8 6
23 24	OLB 71 S / 4 / 070-B14 / OL 71 S / 4 / 070-B14 /	0,25	4	1350	63	0,77	0,76	0,80	3,4	1,85	3,2	2,8	2,5	1,3	71	B 14	FT 85 C 105	8 6
26 27	OLB 71 L / 4 / 073-B 5 / OL 71 L / 4 / 073-B 5 /	0,37	4	1385	70	0,77	0,78	1,06	3,95	2,6	5,2	4,6	4,3	2,7	71	B 5	FF 130 A 160	9 6,5
29 30	OLB 71 L / 4 / 073-B14 / OL 71 L / 4 / 073-B14 /	0,37	4	1385	70	0,77	0,78	1,06	3,95	2,6	5,2	4,6	4,3	2,7	71	B 14	FT 85 C 105	9 6,5
35 36	OLB 80 S / 4WU / 080-B 5 / OL 80 S / 4WU / 080-B 5 /	0,55	4	1260	65	0,78	0,78	1,7	3,2	4,2	9,3	8,35	7,5	3,95	80	B 5	FF 165 A 200	11,5 9,5
38 39	OLB 80 S / 4WU / 080-B14 / OL 80 S / 4WU / 080-B14 /	0,55	4	1260	65	0,78	0,78	1,7	3,2	4,2	9,3	8,35	7,5	3,95	80	B 5	FF 165 A 200	11,5 9,5
44 45	OLB 80 L / 4WU / 083-B 5 / OL 80 L / 4WU / 083-B 5 /	0,75	4	1330	70	0,72	0,76	2,3	3,85	5,4	13,6	12,3	11	7,0	80	B 5	FF 165 A 200	13 11
47 48	OLB 80 L / 4WU / 083-B14 / OL 80 L / 4WU / 083-B14 /	0,75	4	1330	70	0,72	0,76	2,3	3,85	5,4	13,6	12,3	11	7,0	80	B 14	FT 100 C 120	13 11
53 54	OLB 90 S / 4WU / 090-B 5 / OL 90 S / 4WU / 090-B 5 /	1,1	4	1300	70	0,80	0,79	3	3,75	8,1	19,1	17,3	15,5	6,4	90S	B 5	FF 165 A 200	17 13,5
56 57	OLB 90 L / 4WU / 096-B 5 / OL 90 L / 4WU / 096-B 5 /	1,5	4	1320	75	0,79	0,79	4	4,25	11,1	31,1	27	25	7,2	90L	B 5	FF 165 A 200	19 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

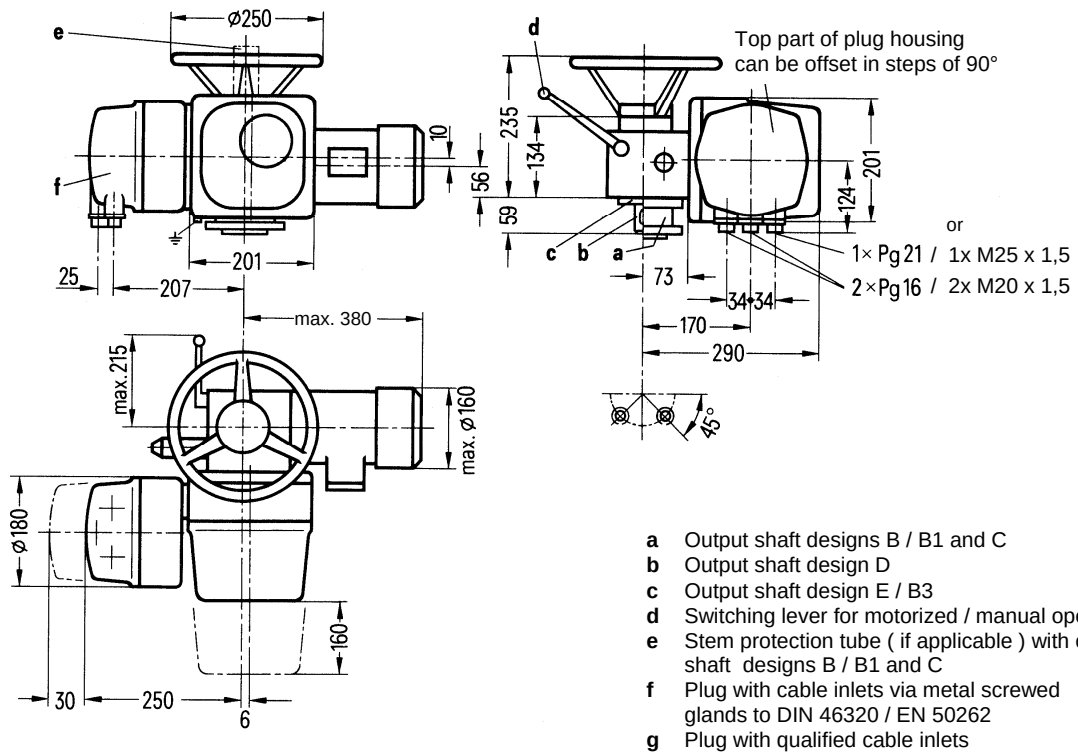
Motor con- sec- utive no.	Order no. of motor ¹⁾	Rated power kW	no. of poles	Rated speed 1/min	Effi- ciency %	Power factor cos φ cos φ _k during start-up	Rated current at 380 V	Starting current factor	Rated torque Nm	Starting torque at KT10 KT60 + ΔT KT155 + ΔT 2)	Break down torque KT10	Current at 145% U _N / 30 sec	Size to DIN EN 50347	Flanges hape to DIN EN 60034-7	Flange size to DIN EN 50 347 to DIN 42948	Weight appr. kg
62	OLB100 L / 4WU / 106-B 5 / Q28	2,2	4	1355	75	0,79	5,65	4,6	15,5	43,2	39,7	17,4	100L	B 5	FF 215	28
63	OL 100 L / 4WU / 106-B 5 / Q29														A 250	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	FF 215	30
66	OL 100 L / 6WU / 106-B 5 / Q29														A 250	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	FF 215	32
69	OL 100 L / 8WU / 106-B 5 / Q29	0,75													A 250	28
71	OLB100 L / 4aWU / 107-B 5 / Q28	3,0	4	1375	78	0,78	7,5	5,05	20,9	65,7	59,5	24,5	100L	B 5	FF 215	32
72	OL 100 L / 4aWU / 107-B 5 / Q29														A 250	27
74	OLB100 L / 8WU / 107-B 5 / Q28	1,1	8	645	58	0,59	5	2,65	16,2	40	36	19,6	100L	B 5	FF 215	30
75	OL 100 L / 8WU / 107-B 5 / Q29														A 250	25
80	OLB112 M / 4WU / 113-B 5 / Q28	4,0	4	1400	80	0,82	9,1	5,8	27,3	88,6	80,2	19,7	112M	B 5	FF 215	40
81	OL 112 M / 4WU / 113-B 5 / Q29														A 250	36
86	OLB132 S / 4WU / 130-B 5 / Q28	5,5	4	1410	79	0,81	13	4,8	37,2	99	96	22,5	132S	B 5	FF 265	76
87	OL 132 S / 4WU / 130-B 5 / Q29														A 300	66
89	OLB132 M / 4WU / 133-B 5 / Q28	7,5	4	1350	78	0,85	17	5,0	52,6	127	122,8	52,6	132M	B 5	FF 265	88
90	OL 132 M / 4WU / 133-B 5 / Q29														A 300	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
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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

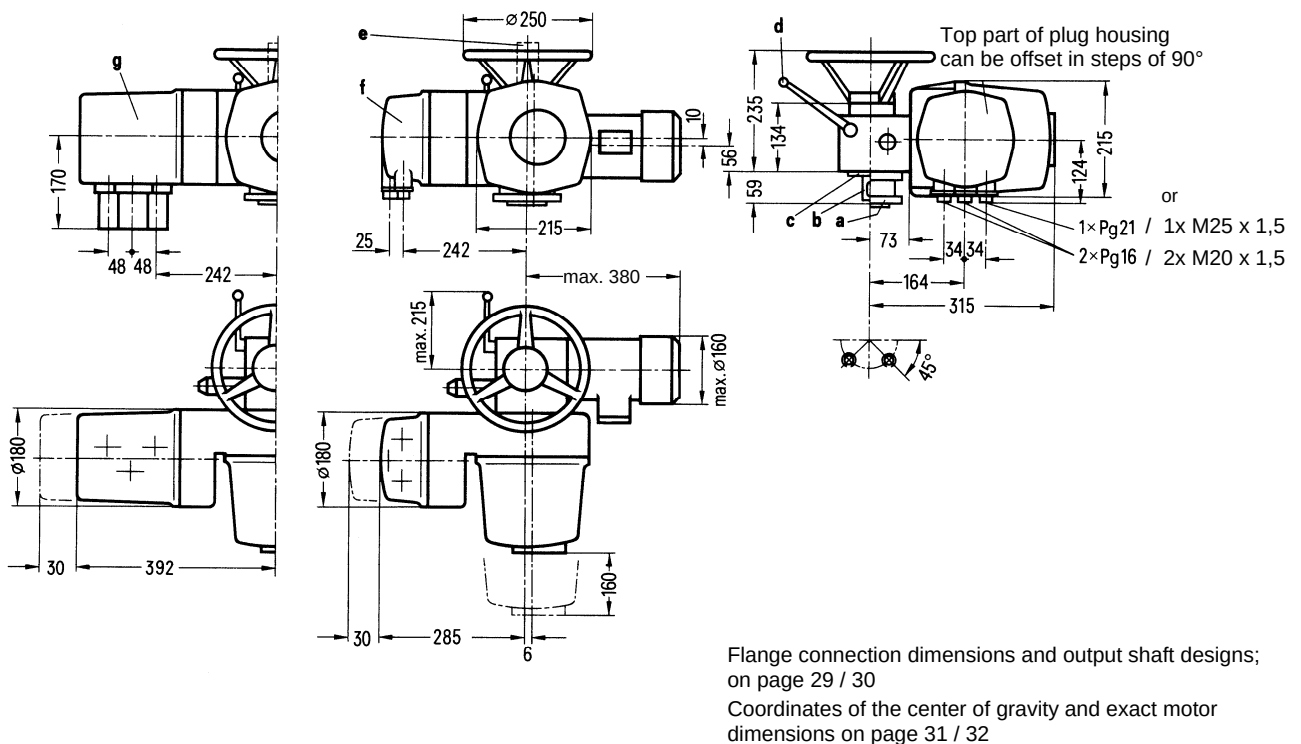
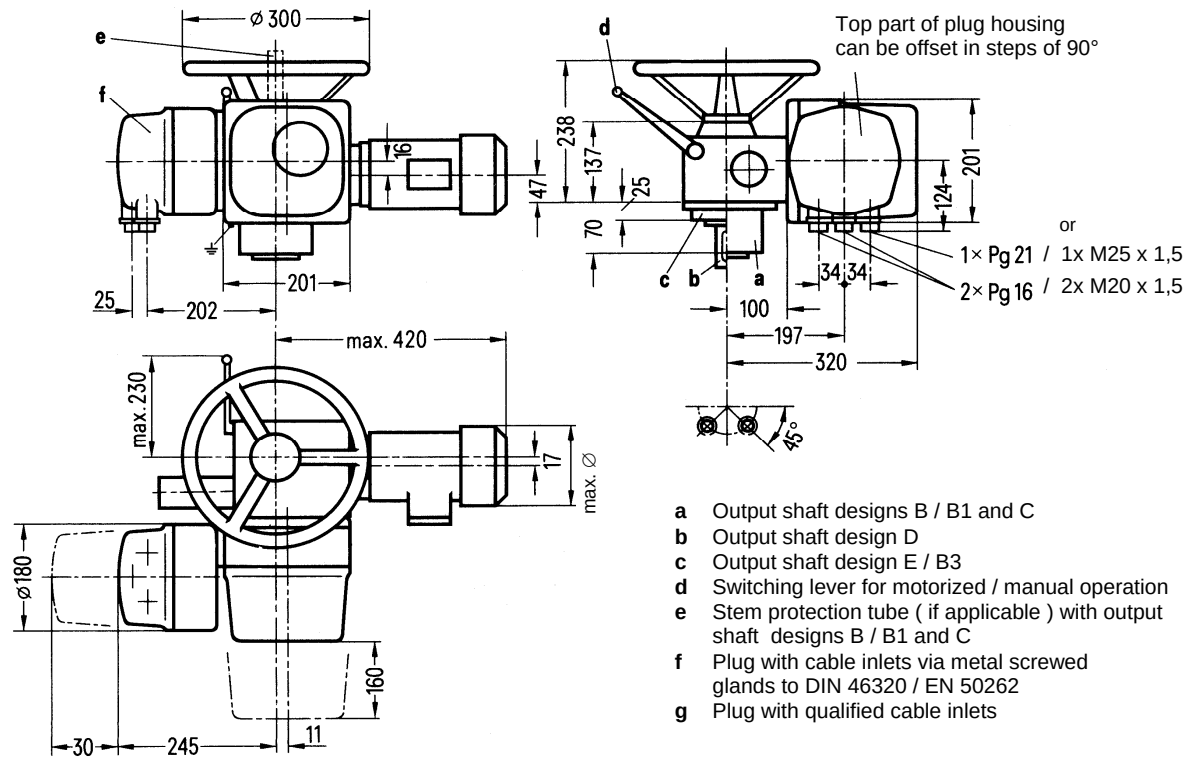


Fig. 6 Electric rotary actuators M76362 – C and M76372 – C, size 0 to DIN 3210 / F10 to EN ISO 5210

Rotary actuator M76362 - E, R – SIWI series



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

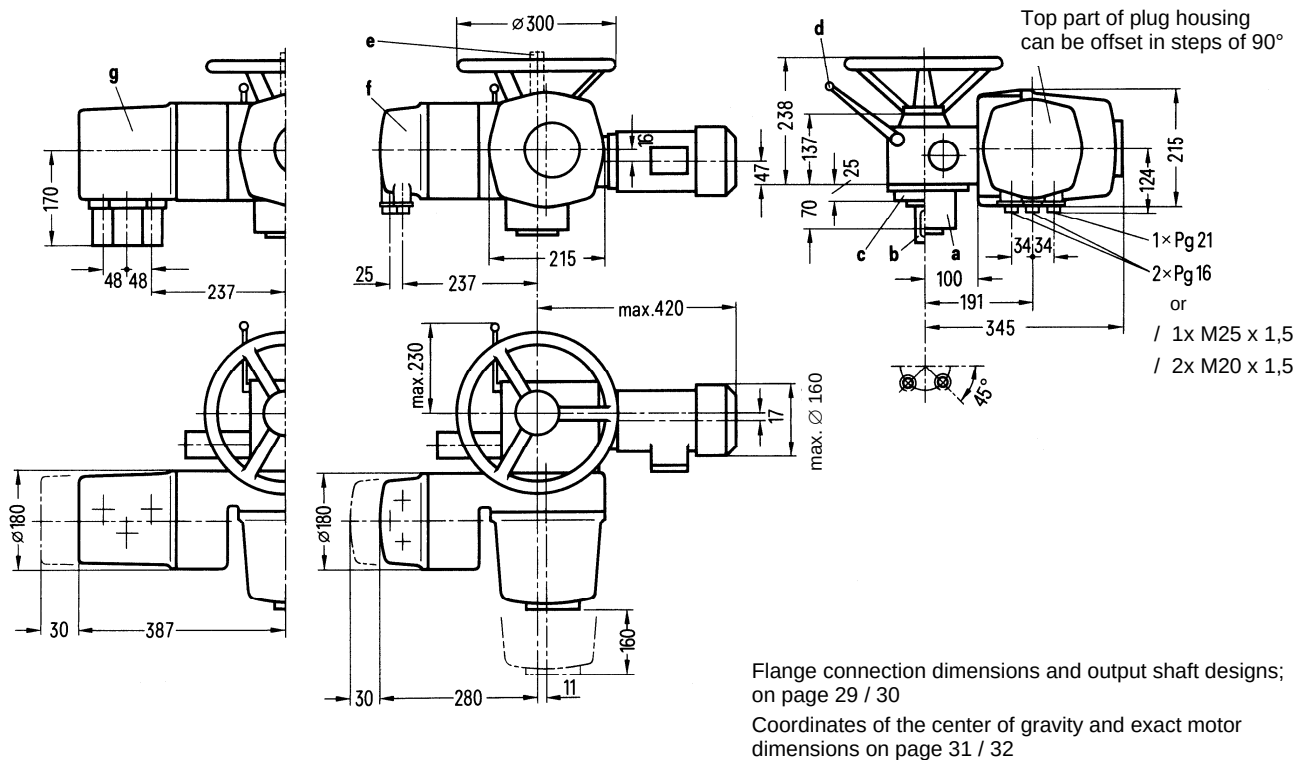
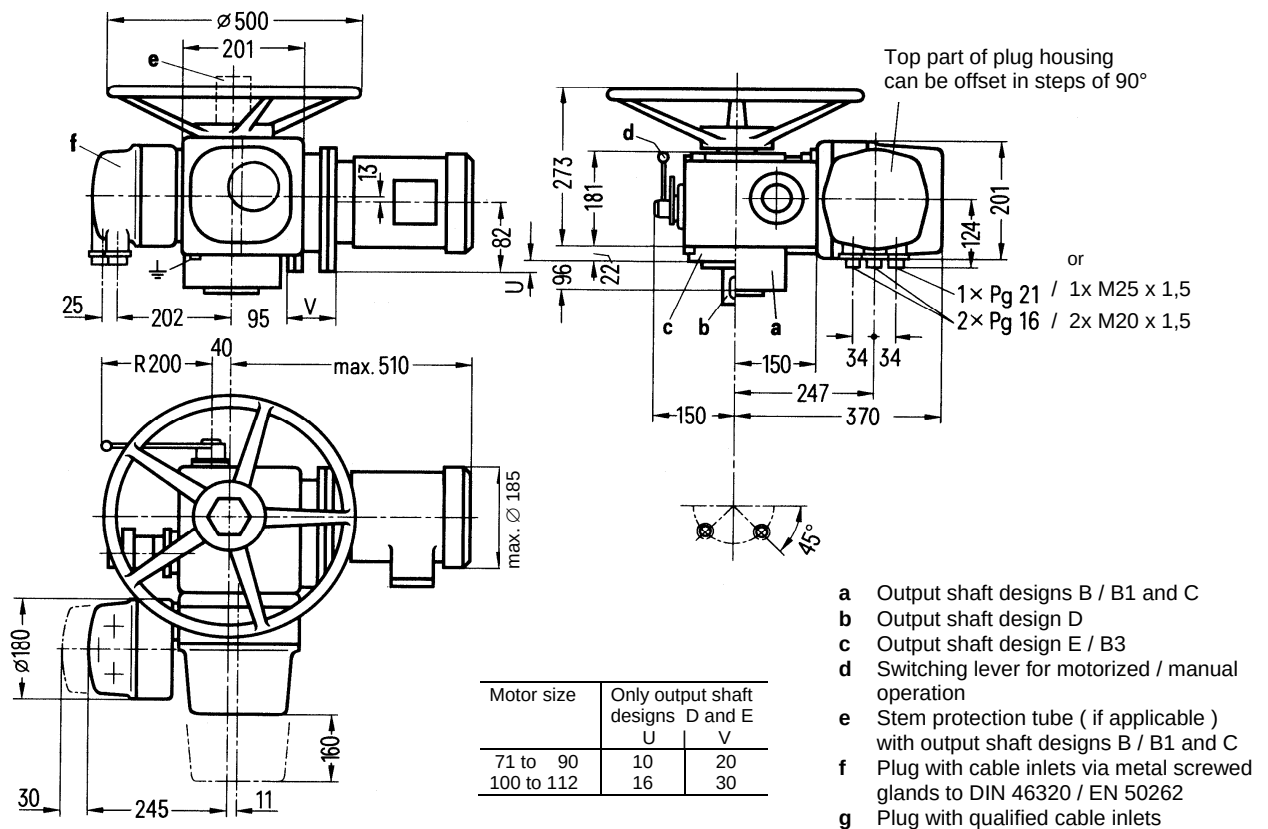


Fig. 7 Electric rotary actuators M76362 – E and M76372 – E, size 0 to DIN 3210 / F10 to EN ISO 5210

Rotary actuator M76362 – F, R – SIWI series



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

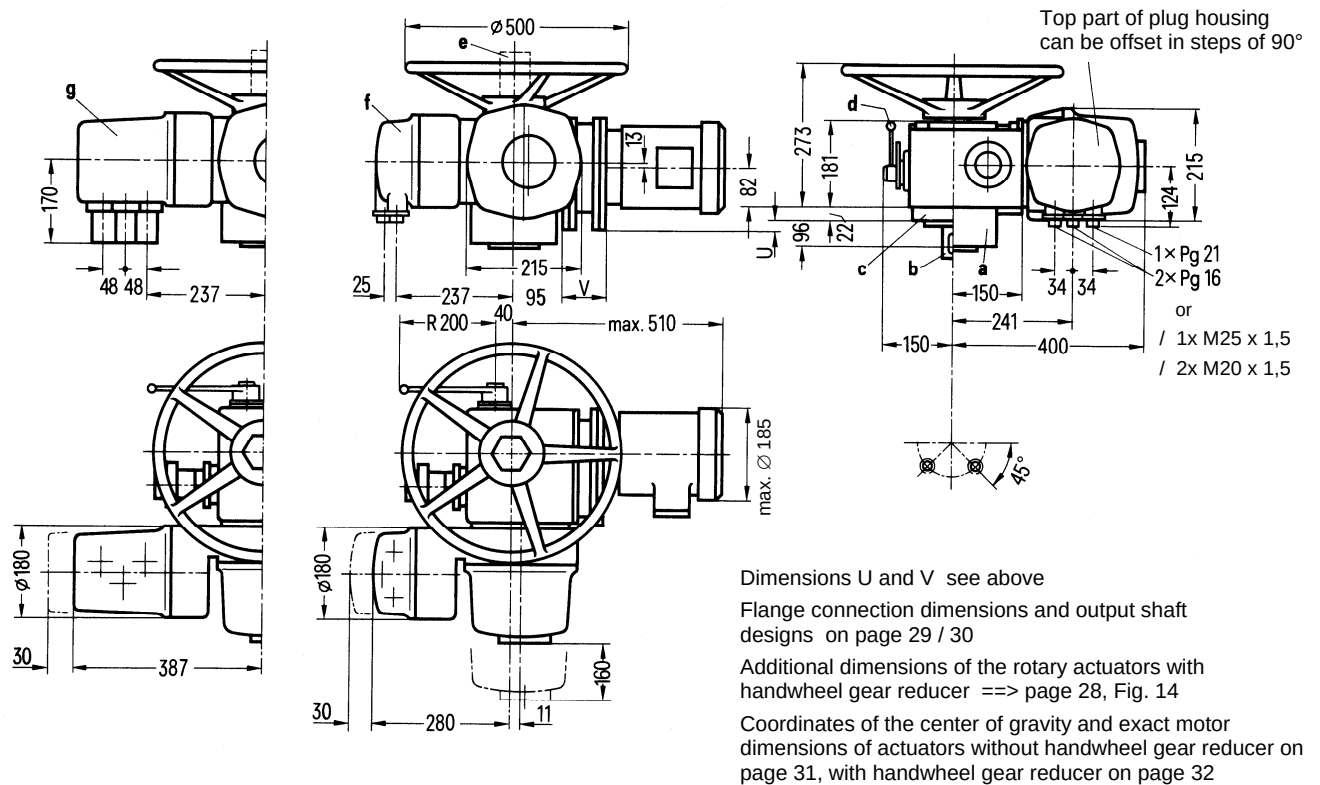
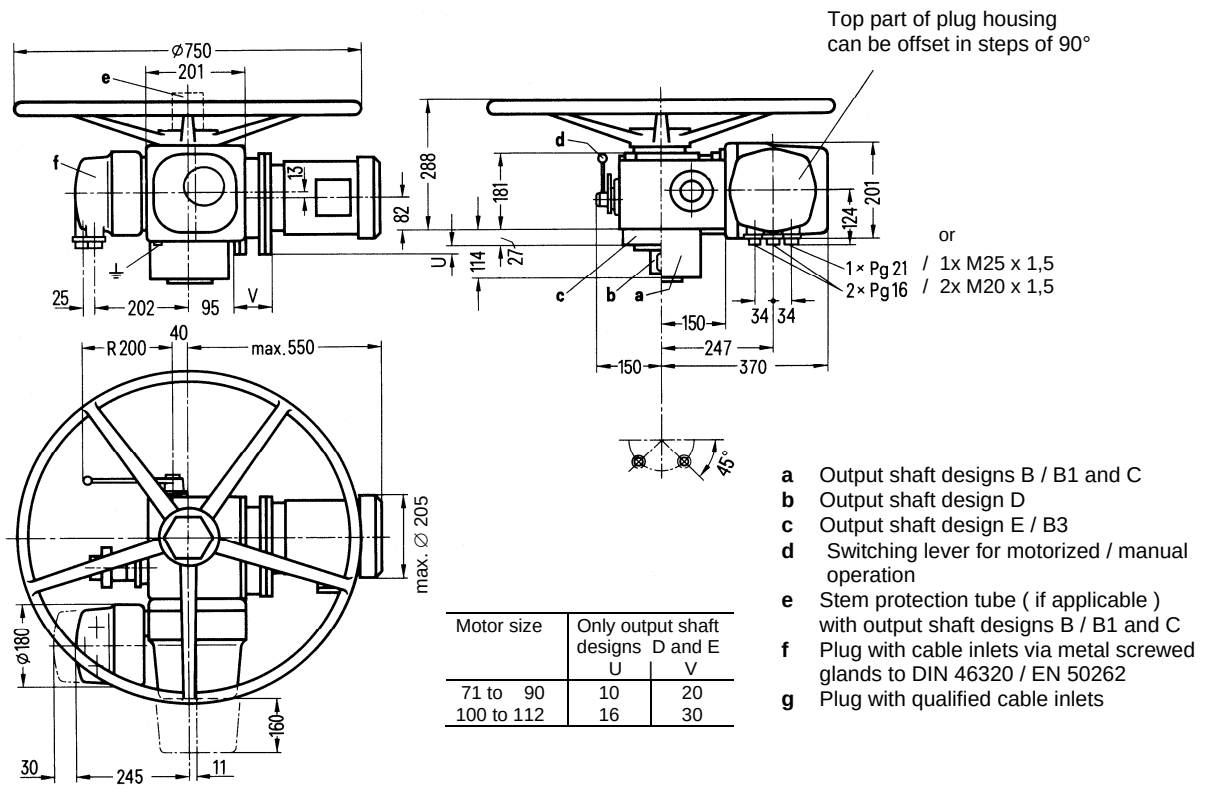


Fig. 8 Electric rotary actuators M76362 – F and M76372 – F, size 1/2 to DIN 3210 / F14 to EN ISO 5210

Rotary actuator M76362 – G, R – SIWI series



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

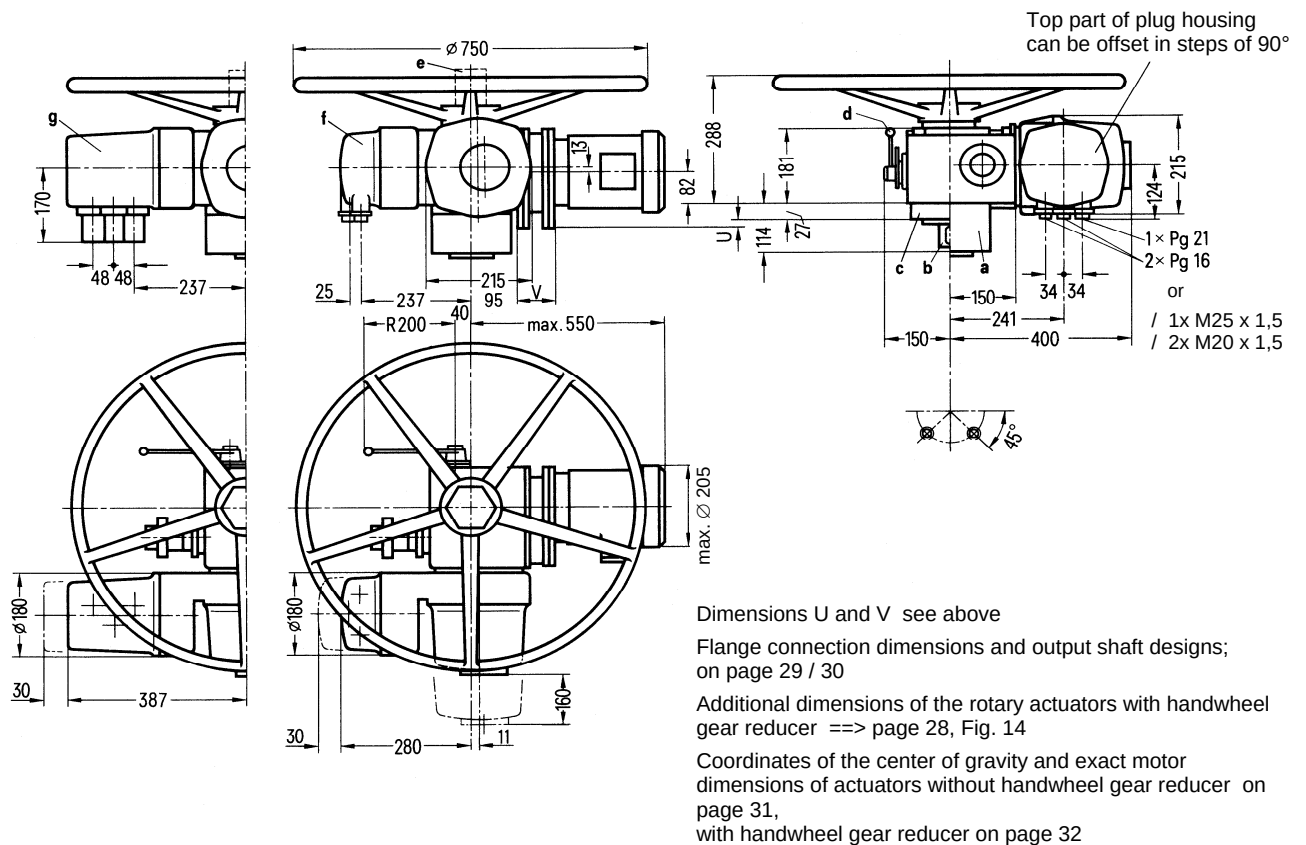
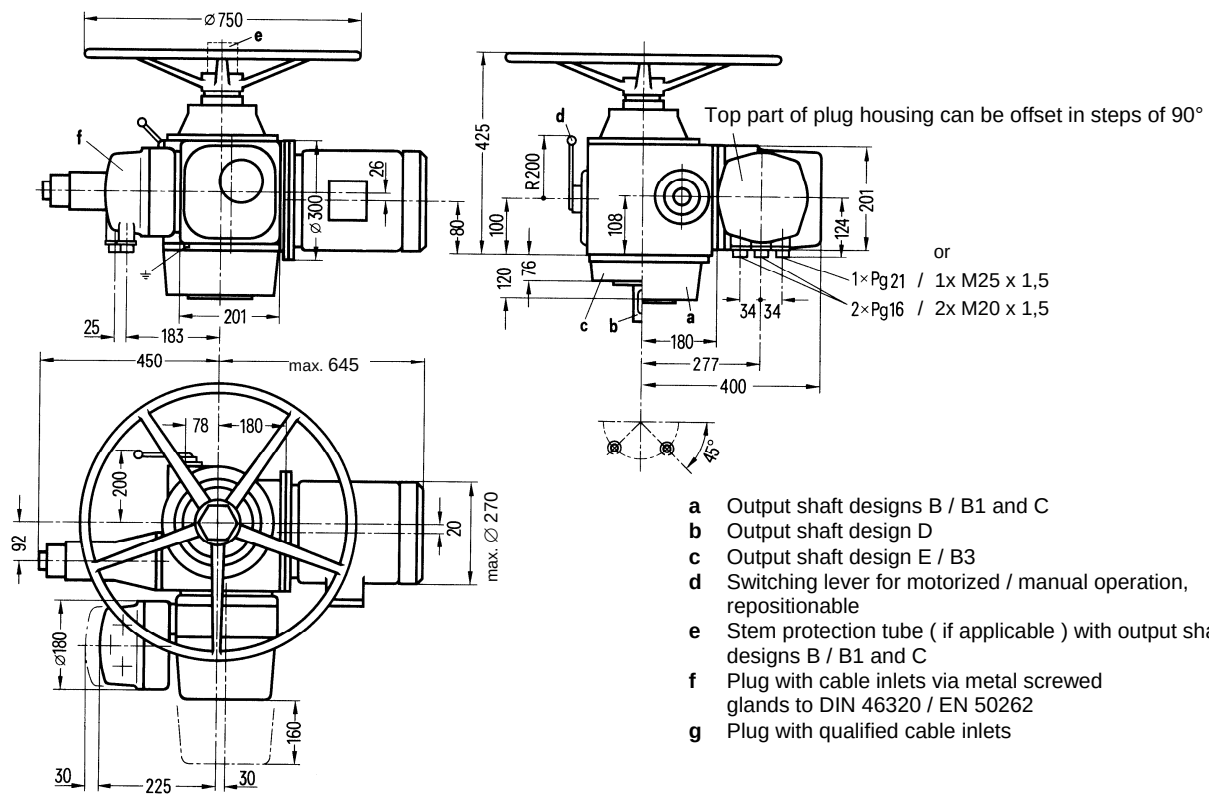


Fig. 9 Electric rotary actuators M76362 – G and M76372 – G, size 3 to DIN 3210 / F16 to EN ISO 5210

Rotary actuator M76362 – M, R – SIWI series



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

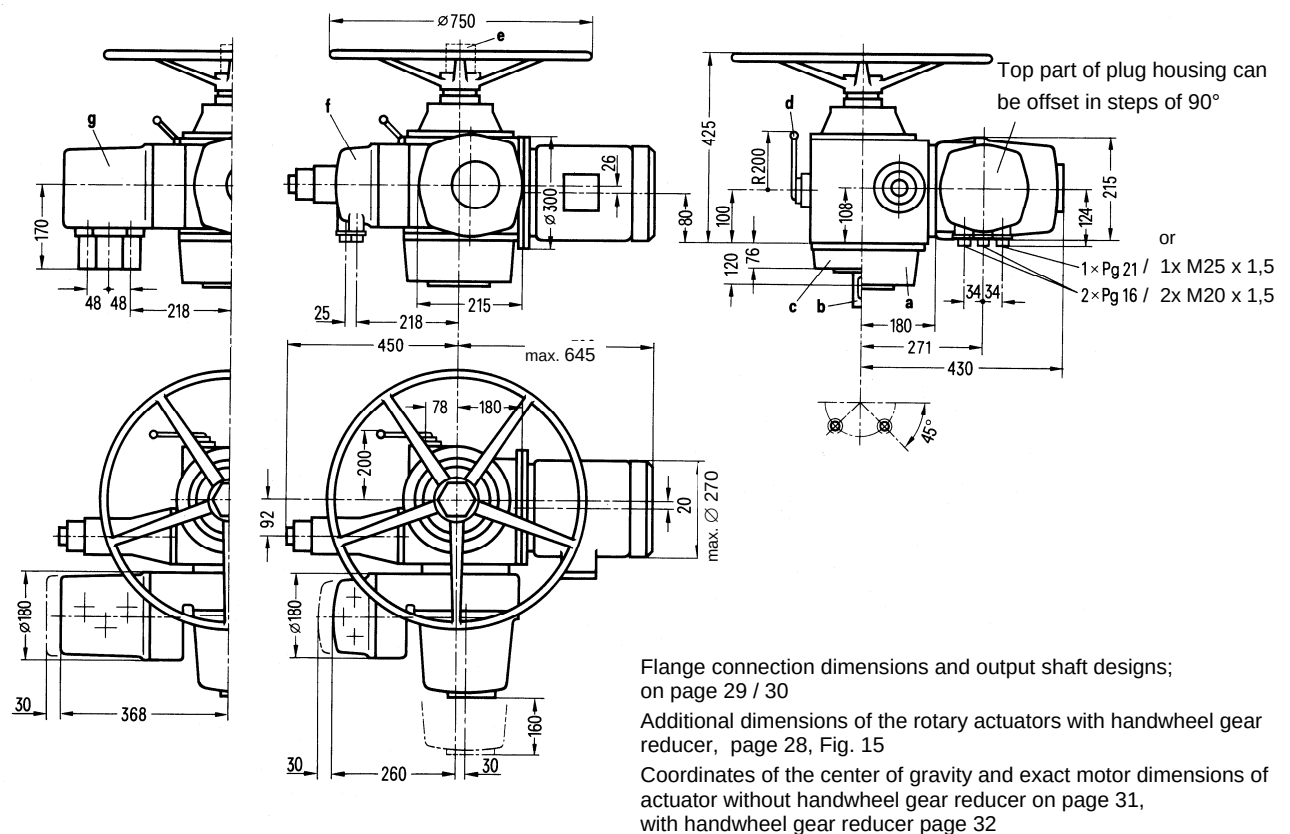
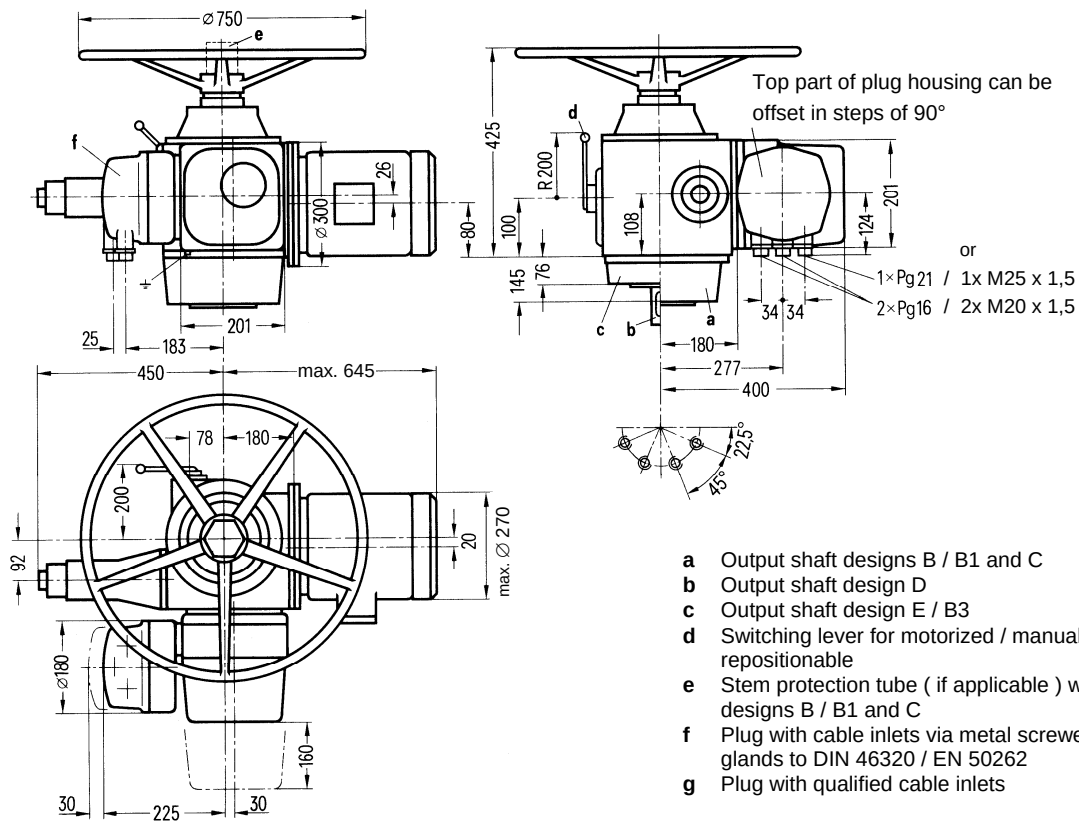


Fig. 10 Electric rotary actuators M76362 – M and M76372 – M, size 3 to DIN 3210 / F16 to EN ISO 5210

Rotary actuator M76362 – N, R – SIWI series



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

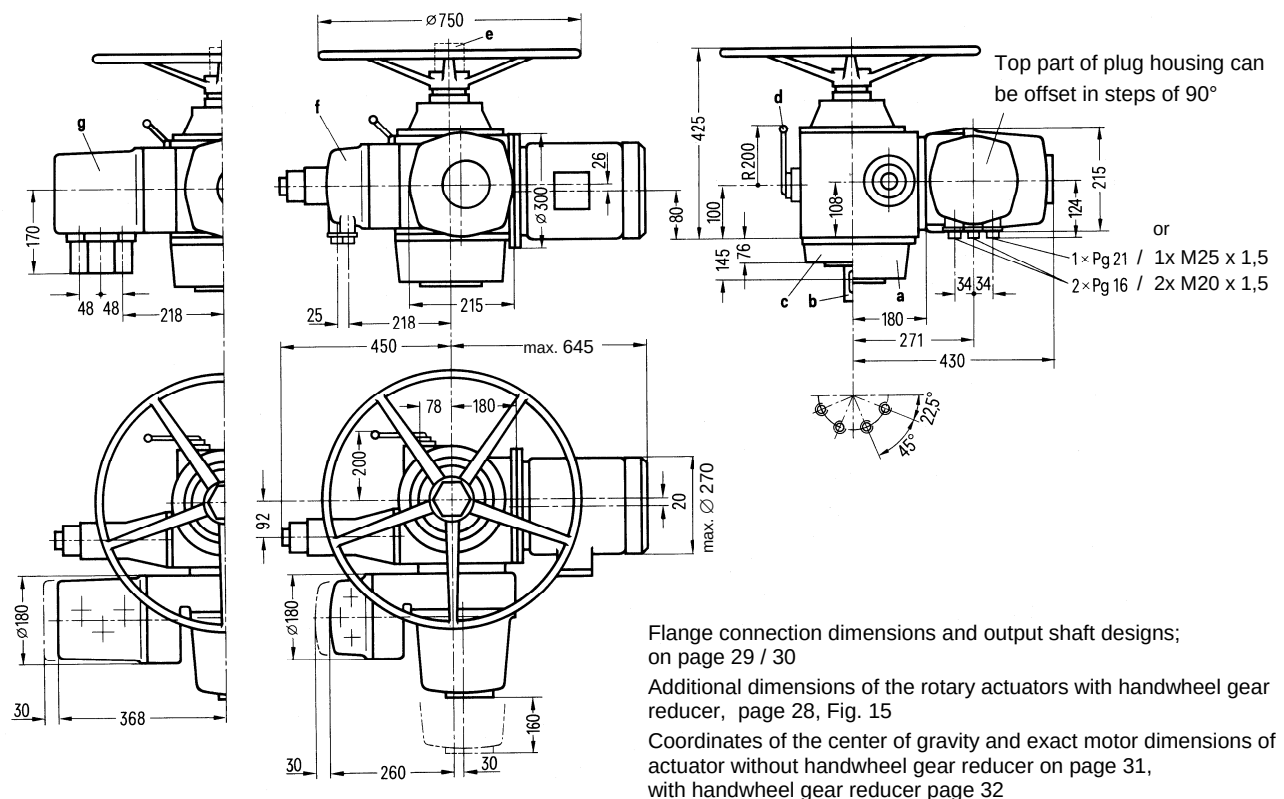
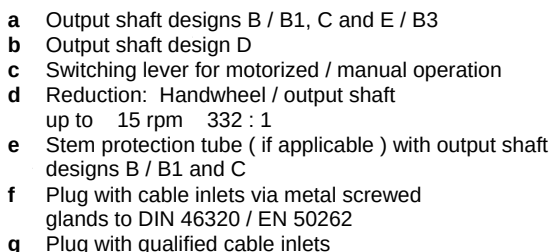


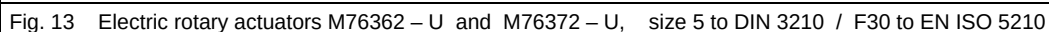
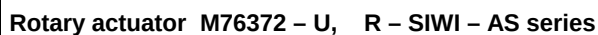
Fig. 11 Electric rotary actuators M76362 – N and M76372 – N, size 4 to DIN 3210 / F25 to EN ISO 5210

[illegible]

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



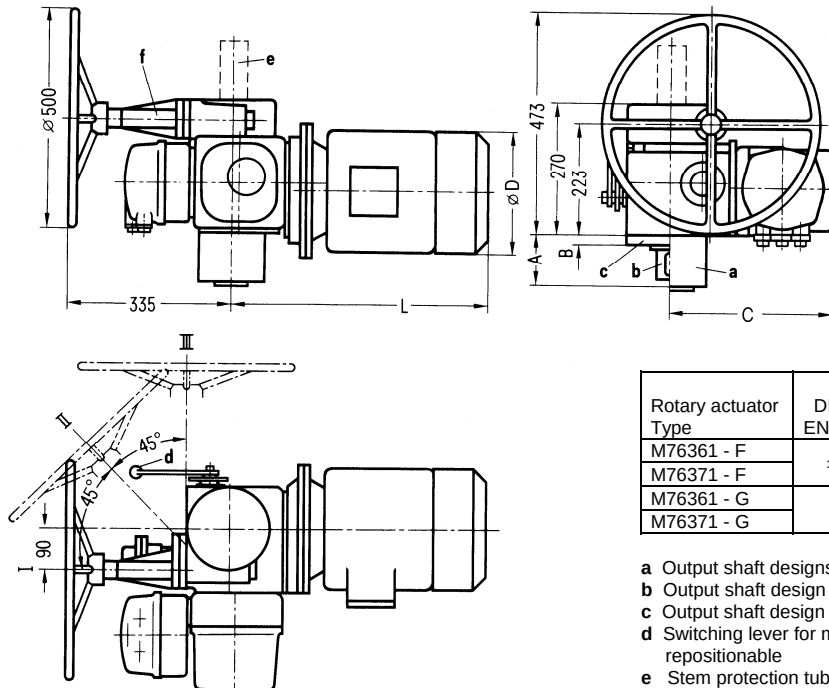
Dimensions of the electric rotary actuators with handwheel gear reducer

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)



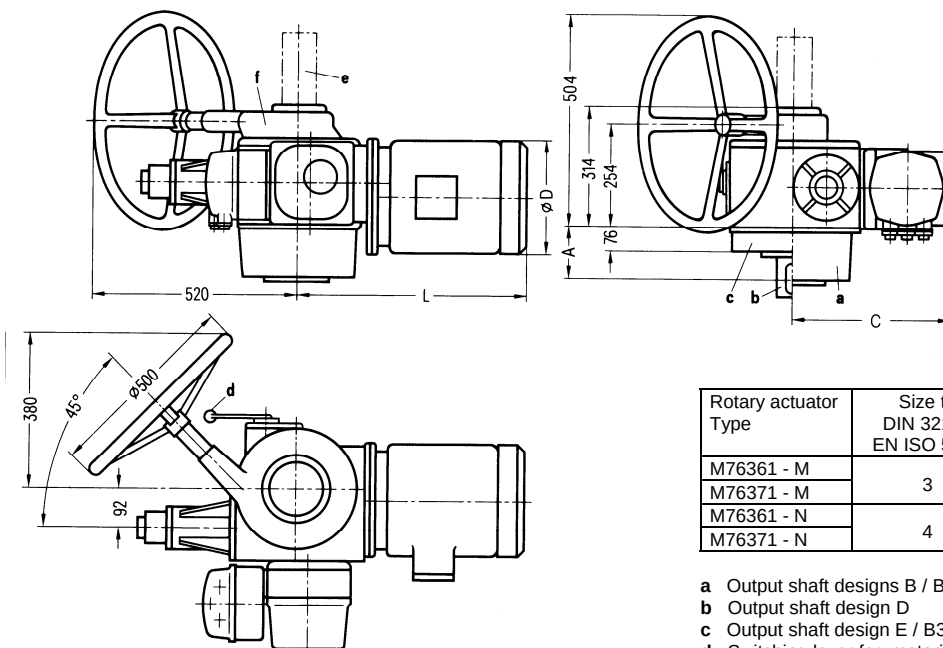
Reduction ratio
Handwheel to output shaft = 13 : 1
Gear efficiency $\eta = 0,45$

Rotary actuator Type	Size to DIN 3210 / EN ISO 5210	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 $\eta = 0,6$

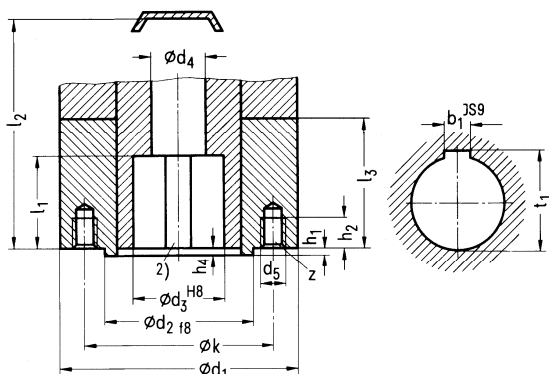
Rotary actuator Type	Size to DIN 3210 / EN ISO 5210	A	C	D max.	L max.
M76361 - M	3	120	400	325	645
M76371 - M			430		
M76361 - N	4	145	400	325	645
M76371 - N			430		

- 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

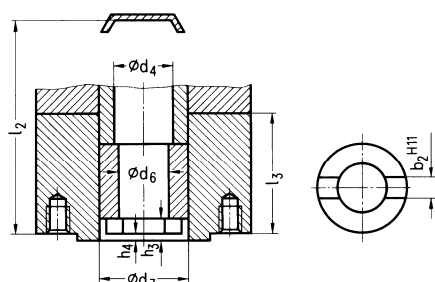


Rotary actuator type M76362 - M76372 -	Size	d ₁	k	d ₂	d ₃	d ₄	d ₅	z ¹⁾	h ₁	h ₂	h ₄	l ₁	l ₂	l ₃	b ₁	t ₁
- C	0	125	102	60	42	28	M10	4	3	15	3	45	195	58	12	45,3
- E	0	125	102	60	42	36	M10	4	3	15	3	45	210	70	12	45,3
- F	1/2	175	140	100	60	53	M16	4	4	22	2	64	320	96	18	64,4
- G	1/2	175	140	100	60	53	M16	4	4	22	2	64	320	96	18	64,4
- M	3	205	165	130	80	72	M20	4	5	30	4	89	480	120	22	85,4
- N	3	205	165	130	80	72	M20	4	5	30	4	89	480	120	22	85,4
- S	4	300	254	160	100	72	M16	8	5	24	1	116	450	175	28	106,2
- U	4	300	254	160	100	72	M16	8	5	24	1	116	450	175	28	106,2
- U	5	350	300	180	120	75	M20	8	5	30	1	130	500	200	32	127,1

1) Number of threaded bores d₅; arrangement to DIN 2501, sheet 1

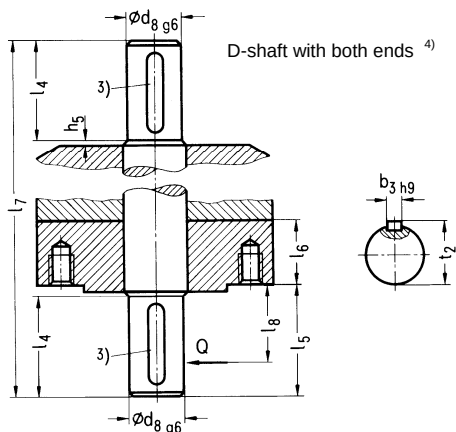
2) Groove for featherkey A DIN 6885, sheet 1

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	0	36	28	55	10	3	210	70	14
- F	1/2	53	38	74	12	2	320	96	20
- G	1/2	53	38	74	12	2	320	96	20
- M	3	72	50	80	18	4	480	120	24
- N	3	72	50	80	18	4	480	120	24
- S	4	64	63	100	16	1	450	175	30
- U	4	64	63	100	16	1	450	175	30
- U	5	75	74	120	18	1	500	200	40

Design D : Free shaft end with featherkey



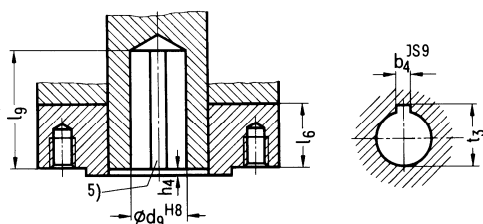
Type M76362 - M76372 -	Size	d ₈	h ₅	l ₄	l ₅	l ₆	l ₇	l ₈	b ₃	t ₂	Q [kN]
- C	0	20	2	50	55	0	262	40	6	22,5	1,5
- E	0	20	2	50	55	25	288	40	6	22,5	2,5
- F	1/2	30	4	70	76	22	412	60	8	33	7
- G	1/2	30	4	70	76	22	412	60	8	33	7
- M	3	40	5	90	96	27	458	80	12	43	12
- N	3	40	5	90	96	27	458	80	12	43	12
- S	4	50	2	110	117	76	-	100	14	53,5	15
- U	4	50	2	110	117	76	-	100	14	53,5	15
- U	5	60	2	120	127	80	644	110	18	64,2	18

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



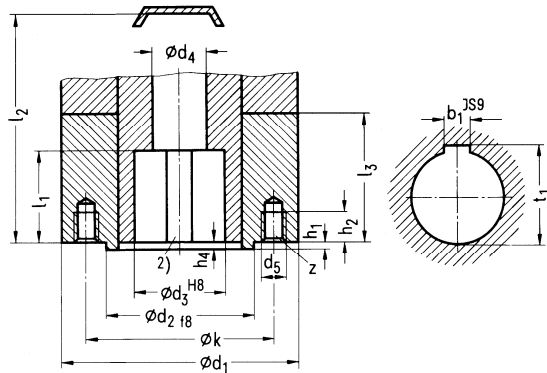
Type M76362 - M76372 -	Size	d ₉	h ₄	l ₆	l ₉	b ₄	t ₃
- C	0	20	2	0	55	6	22,8
- E	0	20	2	25	55	6	22,8
- F	1/2	30	2	22	74	8	33,3
- G	1/2	30	2	22	74	8	33,3
- M	3	40	2	27	95	12	43,3
- N	3	40	2	27	95	12	43,3
- S	4	50	1	76	120	14	53,8
- U	4	50	1	76	120	14	53,8
- U	5	60	1	200	118	18	64,4

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 and B3

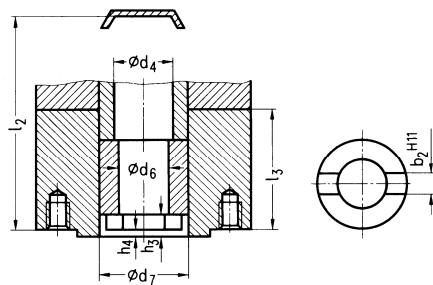
Design B1 : Hollow shaft with insert bush



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	53	M16	4	4	22	2	64	320	96	18	64,4
- G	F16	205	165	130	80	53	M20	4	5	28	2	78	340	114	22	85,4
- M	F16	205	165	130	80	72	M20	4	5	30	4	89	480	120	28	106,4
- N	F25	300	254	200	100	72	M16	8	5	24	4	110	505	145	28	106,2
- 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

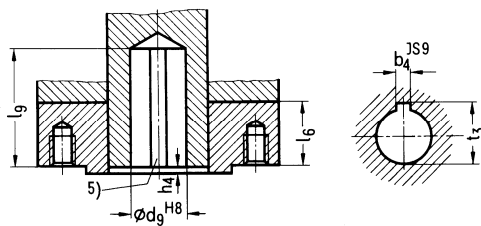
- 3) Number of threaded bores d₅; arrangement to DIN 2501, sheet 1
4) Groove for featherkey A DIN 6885, sheet 1

Design C : Hollow shaft with claw coupling (DIN 3338)



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	15	2	320	96	24
- G	F16	53	53	104	18	4	340	114	30
- M	F16	72	50	80	21	4	480	120	30
- N	F25	72	64	100	16	1	505	145	40
- S	F25	64	63	100	16	1	450	175	40
- U	F30	75	74	120	18	1	500	200	40

Design B3 : Bore with featherkey slot

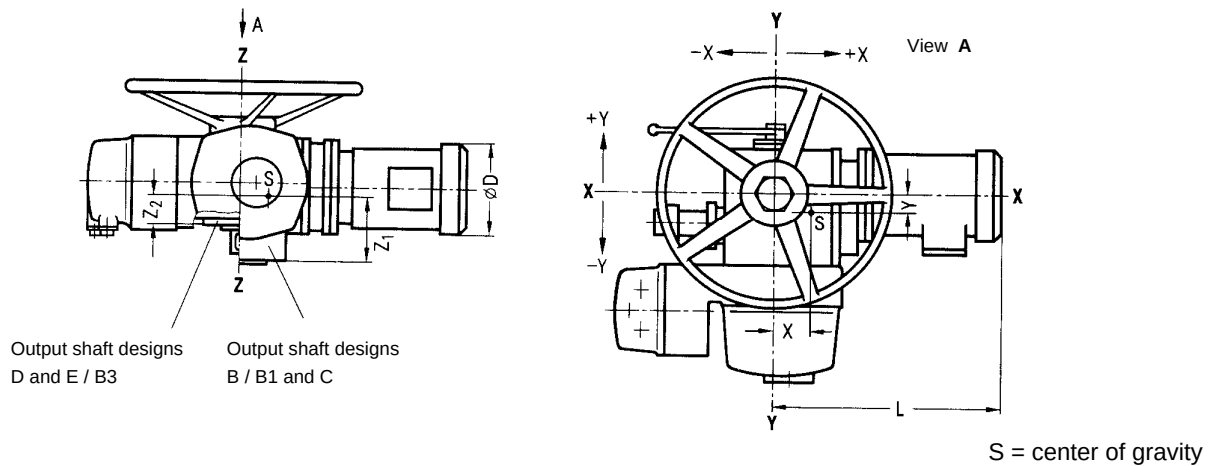


Type M76361 - M76371 -	Size	d ₉	h ₄	l ₆	l ₉	b ₄	t ₃
- C	F10	20	2	0	55	6	22,8
- E	F14	30	2	22	74	8	33,3
- F	F14	30	2	22	74	8	33,3
- G	F16	40	2	27	95	12	43,3
- M	F16	40	2	76	112	14	53,8
- N	F25	50	2	76	120	14	53,8
- S	F25	50	1	175	107	18	64,4
- U	F30	60	1	200	118	18	64,4

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

Fig. 16/b Flange connection dimensions and output shaft designs to EN 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		M76362- ... - Z R14				Center of gravity M76372 - ... - Z R14				M76372 - ... - Z R18 / R19				Motor dimension	
		X	Y	Z1	Z2	X	Y	Z1	Z2	X	Y	Z1	Z2		
C12*1	C13*1														
C32*1	C33*1	25	-60	125	75	-20	-60	125	75	-45	-75	130	80	110	265
C14*1		20	-65	125	75	10	-65	125	75	-25	-70	125	75	110	240
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	45	-55	125	75	20	-65	130	80	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					55	-65	200	135	45	-75	200	135	160	400
G15*1										35	-60	190	125		
G16*1										35	-85	210	145	180	410
G17*1	G18*1													200	430
M12*1	M13*1														
M15*1	M16*1	75	-55	240	195	50	-40	240	195	45	-45	235	190	200	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	200	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					110	-45	255	205	105	-50	255	205	200	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	200	640
U13*1		175	-30	285	190	170	-35	285	190	165	-40	285	190	260	740
U14*1														260	740

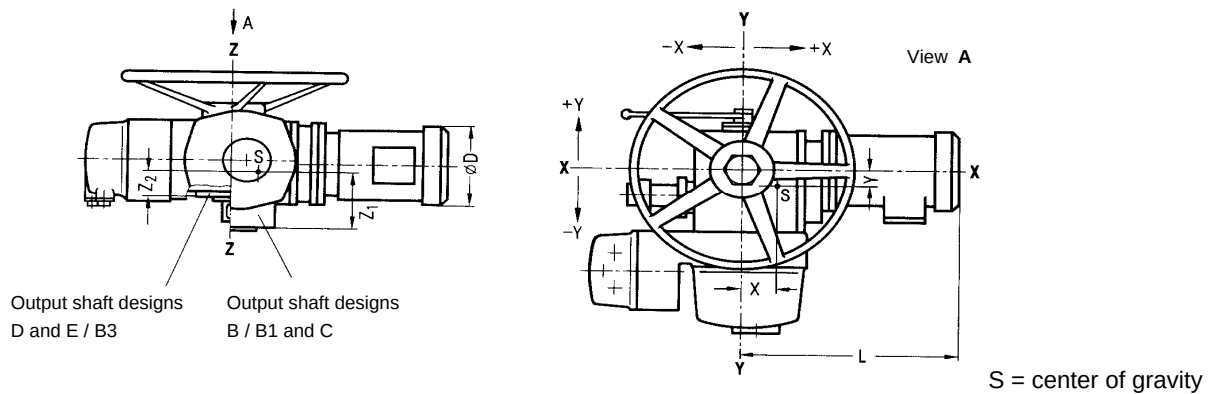
Fig. 17 Coordinates of center of gravity and motor dimensions of the electric rotary actuators M76362 - C to -U and M76372 - C to -U without brake motor and without additional handwheel gear reducer

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⁾

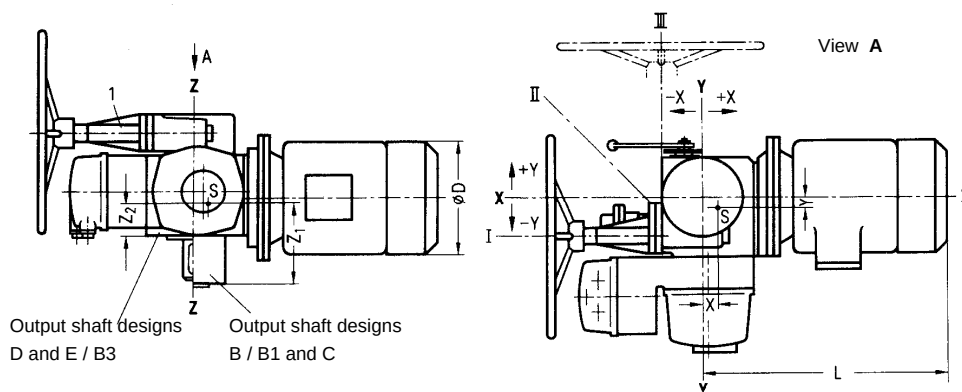
Actuator type		Center of gravity M76362- ... - Z R14				Motor dimen. D L	
		X	Y	Z1	Z2		
C12*2	C13*2					110	315
C32*2	C33*2						
C14*2						125	295
C15*2	C16*2						
C34*2	C35*2	35	-50	125	75	125	310
C17*2	C18*2					140	325
C36*2	C37*2					160	360
C38*2							
E12*2	E13*2					125	350
E14*2						125	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					200	490

Actuator type		Center of gravity M76362- ... - Z R14				Motor dimen. D L	
		X	Y	Z1	Z2		
M12*2	M13*2					200	530
M15*2	M16*2						
M14*2						180	500
M17*2						220	550
M18*2						260	530
N12*2	N13*2					200	530
N14*2	N15*2					220	530
N17*2						260	590
N18*2		240	-35	270	210	260	590
S12*2						180	600
S13*2	S14*2					200	630
S15*2						260	740
U12*2						200	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 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 hand-wheel 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)

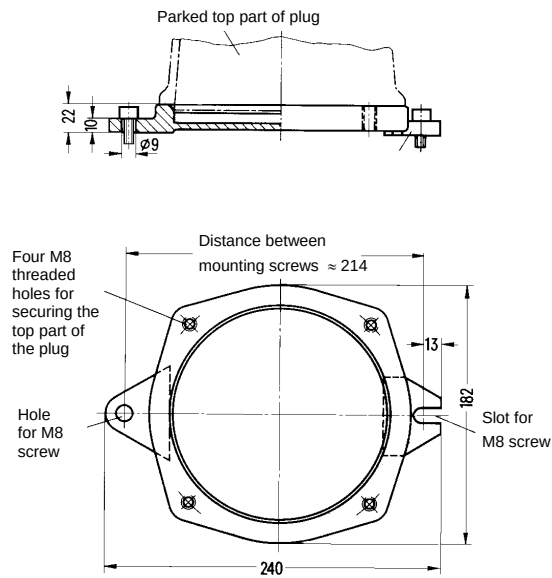


Fig. 19 Parking socket for protecting and securing the removed top part of the plug

Protective cover R54 0485 (C79106 - A3003 - B270)

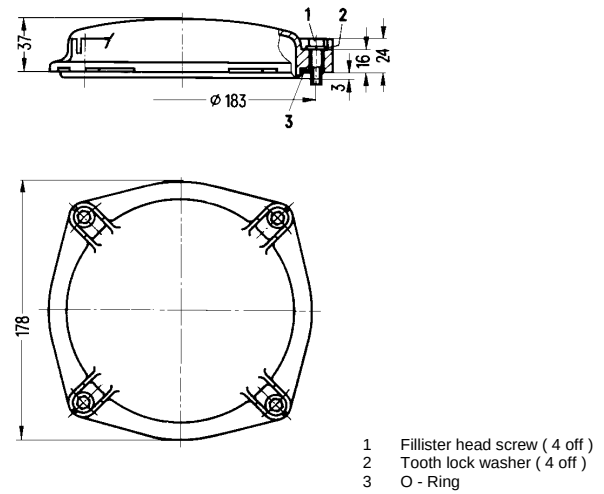


Fig. 20 Protective cover to protect the plug assemblies on the actuator with the top of the plug removed

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