



# PNEUMATIC QUARTER TURN ACTUATOR

**series RT - RK**

**SERVOVALVE spa**

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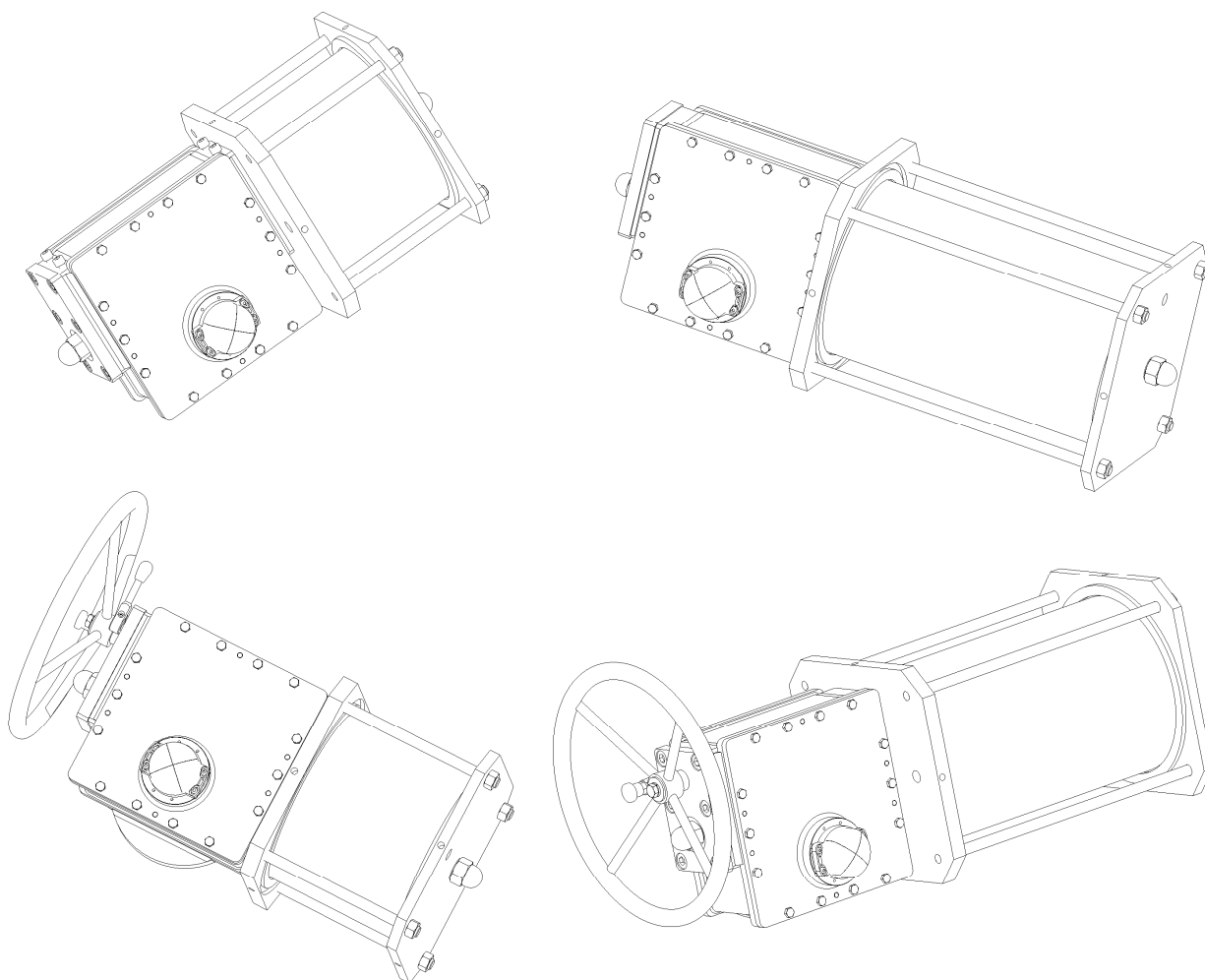
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# PNEUMATIC QUARTER TURN ACTUATOR SCOTCH-YOKE EXECUTION RKP - RTP

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# PNEUMATIC QUARTER TURN ACTUATOR SCOTCH-YOKE EXECUTION RKP - RTP

## TECHNICAL DESCRIPTION

The scotch yoke RKP-RTP & RKPM-RTPM pneumatic actuators have been designed for the transmission of high torque for quarter-turn rotation on the valve shaft, particular suited for ball or butterfly valve.

The scotch yoke mechanism provides to transform the linear thrust of a single (RKPM-RTPM) or double (RKP-RTP) acting cylinder in to quarter turn rotation exalting output torque at break and end valve position.

Scotch yoke is available in both execution :  
Symmetric – Series RTP-RTPM  
Canted – Series RKP-RKPM

In the RKPM-RTPM single acting actuator the spring cartridge is designed to allow the replacement of the springs in field with the utmost security and without disassembling the actuator from the valve.

Special safety stay-bolts allow to open the cartridge and take out the springs only after having completely discharged the spring thrust. After having replaced the springs the same safety stay-bolts preload the new spring and close the cartridge without special tools.

The design, engineering and materials used in construction ensure optimum performances in the heaviest work condition in every environment according to the international standard specifications.

### Technical features

All moving parts are totally enclosed in a weather-proof IP 66 housing, minimizing the possibility of injury to operating personnel and avoid ingress of dust inside actuator .

The housing is realized in fabricated carbon steel to reduce corrosion phenomenon and provide a heavy duty execution; chromium plated shaft is driven by special bushings to guarantee a perfect alignment, a uniform and smooth movement reducing friction and ensuring long life cycle.

Scotch yoke is complete of a second support bar to reduce at minimum transversal friction and assure a smooth and regular rotation avoiding any vibration and providing optimum performances and precise positioning even in the most critical control application.

The pneumatic cylinders are in chromium plated carbon steel to avoid environmental corrosion and to reduce the gaskets wear and stick-slip effects.

Field adjustable end travel-stop are available in both open and close directions to optimize the required valve stroke.

The central cover is equipped with a standard valve position indicator.

# PNEUMATIC QUARTER TURN ACTUATOR SCOTCH-YOKE EXECUTION RKP-RTP SERIES

## Manual emergency handwheel

All series of actuators can be equipped with a manual emergency declutchable handwheel (RKPV-RTPV & RKPMV-RTPMV)

## Special execution

Actuators can be provided in execution without of standard materials for particular environmental working conditions (low or high temperature, aggressive medium, offshore service etc.).

## Test

Every detail has been designed and tested with care and checked during production process (from the receipt of the raw materials to final testing) against the strictest reliability criteria required under EN and ISO 9001 quality and safety standard.

## Service

The Servovalve personnel guarantees prompt assistance to the customer during the start up of the plant and its normal working life.

## TECHNICAL PERFORMANCE

### Pressure range

- minimum working pressure: 2.5 bar
- maximum working pressure: see technical sheet
- design pressure: 10,5 bar (available execution with higher design pressure )

### Angular stroke

- 90° +/-4°

### Environmental temperature range

- min: - 20°C
- max: + 80°C
- Available execution for lower environmental temperature ( up to -60°C )
- Available execution for higher environmental temperature

### Supply medium

- instrument air
- nitrogen or sweet natural gas
- Available out of standard execution for different medium supply

### Painting

Standard execution has surface protection with:

- sandblasting SIS SA 2 ½
- 1 coat epoxy primer
- 1 coat epoxy polyamidic

Different painting procedure available on request

### Dimensions, materials and coupling flange

For dimensions and technical performance see actuators torques table and technical sheets.

### Installation

RKP-RTP & RKPM-RTPM actuator can be assembled on the valve in every vertical or horizontal position.

### Certification

All finished actuators are tested and certified by the quality department before being released according to Servovalve quality system and procedures in compliance with ISO 9001 standard.

RKP-RTP & RKPM-RTPM actuators are according to European directives 97/23/CE (PED) and 94/9/CE (ATEX).

### Warning

The RKPM-RTPM actuator contains a preloaded spring, follow carefully the installation and servicing instruction in operating book for the disassembling.

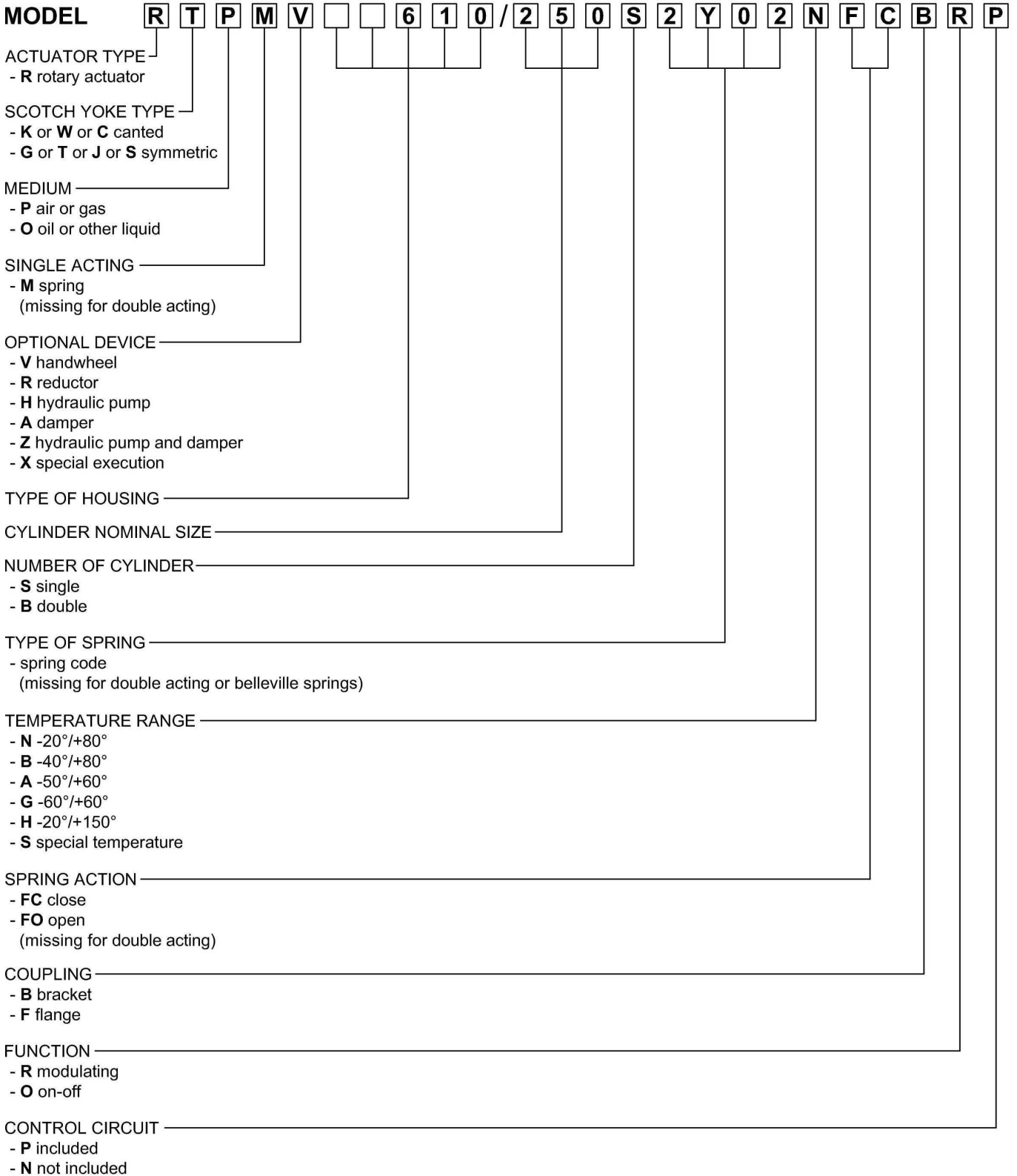
### Maintenance

The inner parts of the actuator are life-lubricated, therefore only replacement of the rubber gaskets may become necessary after a long working time as pointed out in the operating book.

# PNEUMATIC QUARTER TURN ACTUATOR SCOTCH-YOKE EXECUTION

RK-RT SERIES

## SCOTCH YOKE ACTUATOR CODE MODE







# PNEUMATIC QUARTER TURN ACTUATOR SCOTCH-YOKE EXECUTION RK-RT SERIES

ACTUATORS TORQUE – CANTED SCOTCH YOKE

SERIES **RKP**  
**RKPM**

*Single Acting Canted - Spring To Open*

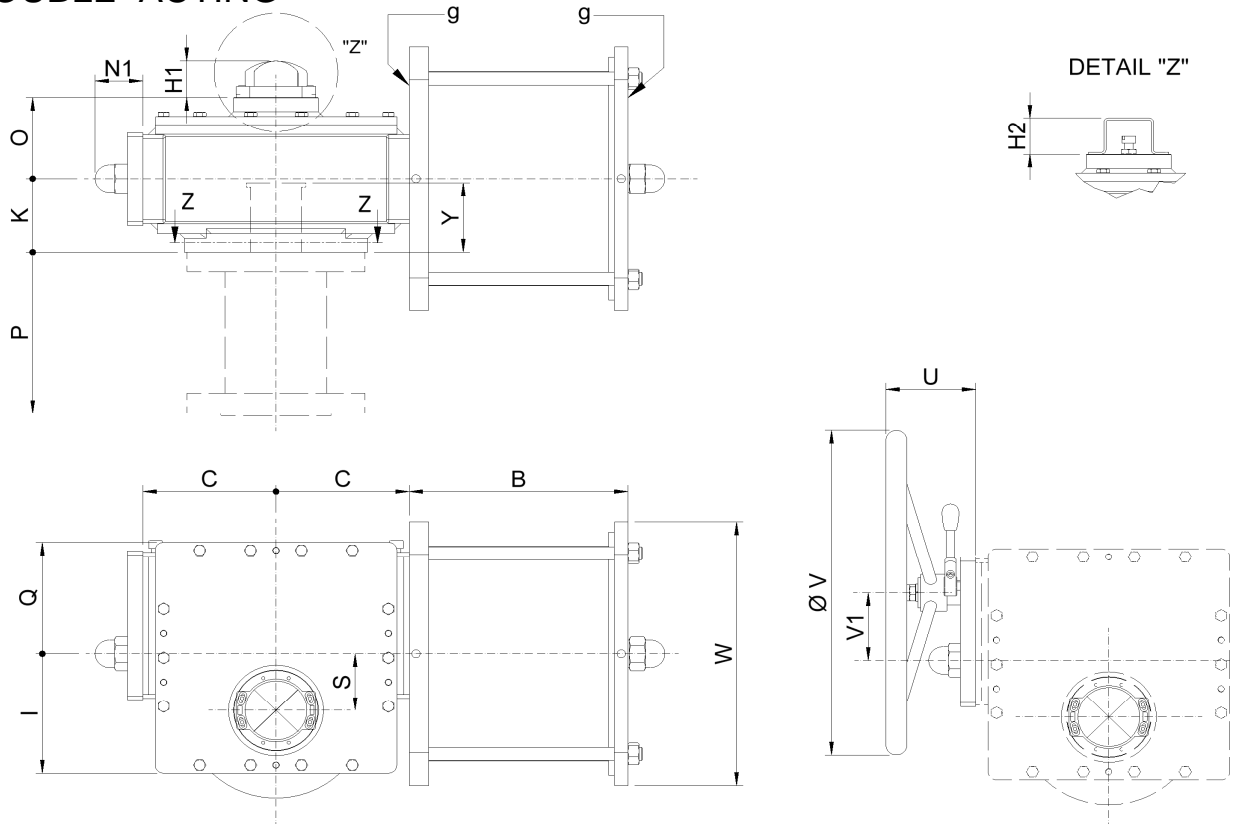
Model	Spring [Nm]			3.5bar			4bar			5bar			5.5bar			6bar			MAX Work Press Bar	AIR Displ. Lt	Approx weight KG			
	BTO	RTO	ETO	BTC	RTC	ETC	BTC	RTC	ETC	BTC	RTC	ETC	BTC	RTC	ETC	BTC	RTC	ETC						
RKPM 310/180	0Z01	245	70	75	575	395	805	670	465	950	855	600	1250	950	670	1400	1045	735	1550	9	3.2	80		
	2Z01	260	80	90	565	390	785	660	455	935	845	590	1230	940	660	1380	1030	725	1530					
	4Z01	280	90	100	555	380	765	645	445	915	835	585	1210	925	650	1360	1020	720	1510					
	RKPM 310/220	0Z02	555	165	175	480	295	490	570	365	640	760	500	935	850	570	1085	945	635	1235	10	3.2	88	
		2Z02	600	185	200	450	275	445	545	345	595	730	480	890	825	550	1040	920	615	1190				
		4Z02	645	205	230	425	255	400	515	325	550	705	460	845	795	530	995	890	595	1145				
		RKPM 310/250	0Z12	800	235	250	405	210	245	495	285	395	685	420	695	775	490	845	870	560	995	10	3.2	98
			2Z12	865	265	290	365	180	180	455	255	330	645	395	630	735	460	780	830	530	930			
			4Z12	930	295	330	325	115	115	415	220	265	605	365	565	695	430	715	790	500	865			
			0Y01	1095	320	340	1035	650	1110	1235	795	1425	1625	1085	2055	1825	1225	2370	2020	1370	2685	10	7	130
2Y01			1170	355	390	990	615	1035	1185	760	1350	1580	1050	1980	1775	1190	2295	1975	1335	2610				
4Y01			1245	390	435	940	580	960	1140	725	1275	1530	1015	1905	1730	1155	2220	1925	1300	2535				
RKPM 610/250			0Y02	1490	435	465	915	520	715	1110	665	1030	1505	955	1660	1700	1100	1975	1900	1245	2290	10	7	133
	2Y02		1590	485	530	850	470	615	1045	620	930	1440	910	1560	1635	1055	1875	1835	1195	2190				
	4Y02		1695	530	590	785	420	510	980	570	825	1375	860	1455	1575	1005	1770	1770	1150	2085				
	RKPM 610/300		0Y03	2075	605	645	730	130	130	925	445	445	1320	760	1075	1520	905	1390	1715	1050	1705	10	7	135
		2Y03	2220	675	735	680	110	110	840	300	300	1230	690	930	1430	840	1245	1625	985	1560				
		4Y03	2360	740	825	620	90	90	750	160	160	1140	625	790	1340	775	1105	1535	920	1420				
		RKPM 610/350	0Y12	2585	755	805	1185	590	600	1470	810	1055	2035	1240	1965	2320	1445	2420	2605	1655	2875	10	10	148
			2Y12	2760	840	915	1075	425	425	1355	725	880	1925	1155	1790	2210	1365	2245	2495	1575	2700			
			4Y12	2940	920	1030	960	245	245	1245	640	700	1815	1075	1610	2100	1285	2065	2385	1490	2520			
			RKPM 610/400	0Y13	3170	925	990	1285	470	470	1855	1035	1380	2140	1250	1835	2420	1465	2290	2420	1465	2290	10	10
2Y13				3390	1030	1125	1150	250	250	1715	930	1160	2000	1150	1615	2285	1360	2070	2285	1360	2070			
4Y13				3610	1130	1260	1580	825	940	1865	1045	1395	2150	1260	1850	2150	1260	1850	2150	1260	1850			

Notes: Above torque table is for information only.  
Due to different possible range oil pressure supply please contact us



# PNEUMATIC QUARTER TURN ACTUATOR SCOTCH-YOKE EXECUTION RKP - RTP

## DOUBLE ACTING



ACTUATOR DIMENSION (mm)															
ACTUATOR TYPE	B	C	H1	H2	K	I	N1	O	Q	S	U	V	V1	W	Y
RTP - RKP 310	235	135	55	45	90	150	50	100	120	60	110	400	70	255	85
RTPV - RKPV 310															
RTP - RKP 610	260	160	55	45	90	180	60	100	135	70	110	400	85	325	85
RTPV - RKPV 610															

FLANGE DIMENSION (mm)							
ACTUATOR TYPE	Ø D	n° x F	Ø G	Ø X	r	t	ISO
RTP - RKP 310	175	4 x M16	140	40	23.3	12	F 14
RTPV - RKPV 310							
RTP - RKP 610	210	4 x M20	165	55	31.8	16	F 16
RTPV - RKPV 610							

ON REQUEST			
MIN	MAX	ØX min	ØX MAX
F10	F14	25	45
F12	F16	40	60

CYLINDER DIAMETER (mm)				
TYPE OF CYLINDER	185	220	250	300
DIMENSION "W"	250	250	325	325

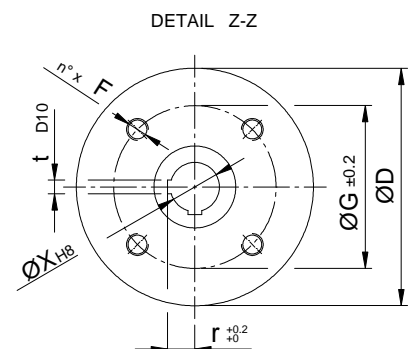
"RKP" WITH HANDWHEEL = "RKPV"

"g" - AIR INLET 1/2 NPT

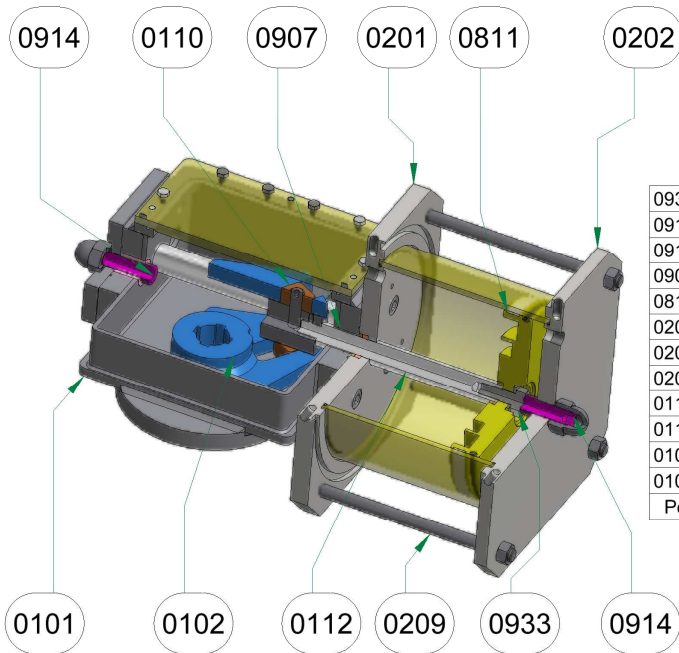
"H1" - STANDARD INDEX

"H2" - MOUNTING KIT ACCORDING TO VDI-VDE 3845 (ON REQUEST)

"P" - BRACKET ACCORDING TO CUSTOMER REQUIREMENT (ON REQUEST)

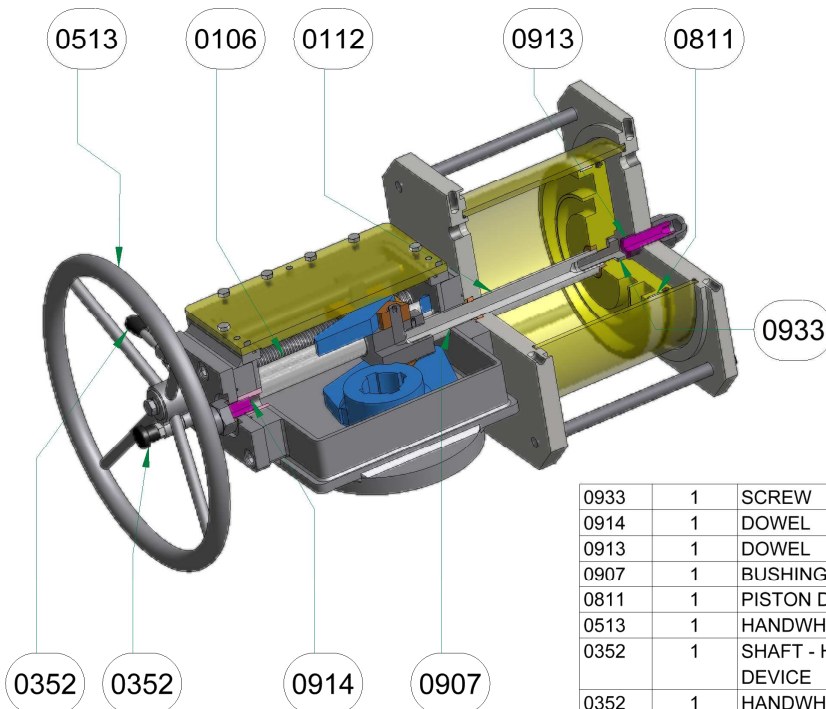


# PNEUMATIC QUARTER TURN ACTUATOR SCOTCH-YOKE EXECUTION RKP - RTP



0933	1	SCREW	8.8 EN 20898-1
0914	1	DOWEL	8.8 EN 20898-1
0914	1	DOWEL	8.8 EN 20898-1
0907	1	BUSHING	BRONZE + PTFE
0811	1	PISTON DRIVE *	PTFE+GRAPHITE
0209	4	STAY BOLT	42CrMo4 EN 10083-3
0202	1	HEAD	P 355 NL1 EN 10028-3
0201	1	HEAD	P 355 NL1 EN 10028-3
0112	1	SHAFT	42CrMo4 EN 10083-3
0110	2	SLIDING RING	CB 333G EN 1982
0102	1	LINK	S 355 J2G3 EN 10025-2
0101	1	HOUSING	P 355 NL2 EN 10028-3
Pos.	Qty	DESCRIPTION	MATERIAL

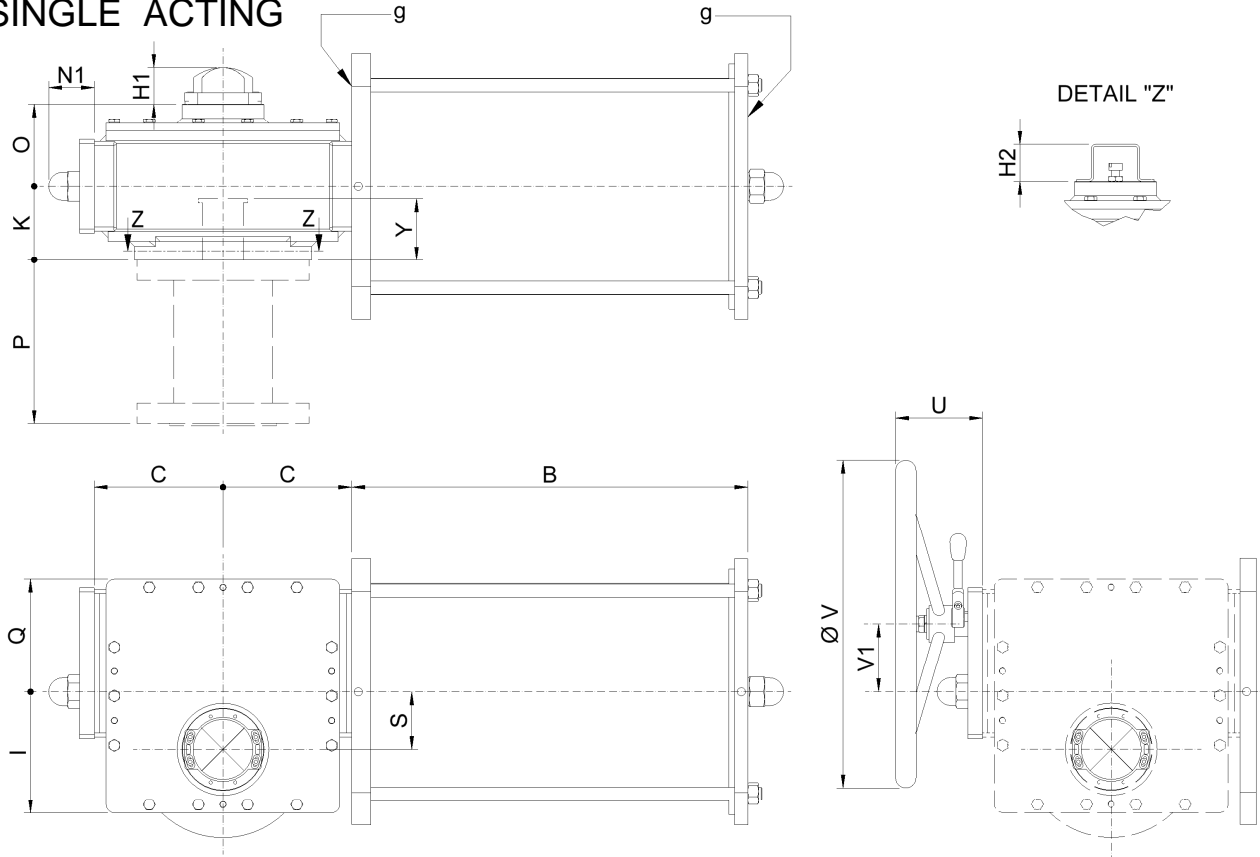
AMB. TEMP.	TEMP.	O-RING	GASKET
STANDARD	-20 / +80	N.B.R.	POLYURETHANE
LOW TERMP	-40 / +60	SILICON	SILICON
HIGH TEMP	-20 / +120	VITON	VITON



0933	1	SCREW	8.8 EN 20898-1
0914	1	DOWEL	8.8 EN 20898-1
0913	1	DOWEL	8.8 EN 20898-1
0907	1	BUSHING	BRONZE + PTFE
0811	1	PISTON DRIVE *	PTFE+GRAPHITE
0513	1	HANDWHEEL	P 195 TR EN 10216-1
0352	1	SHAFT - HANDWHEEL DEVICE	//
0352	1	HANDWHEEL DEVICE	//
0112	1	SHAFT	42CrMo4 EN 10083-3
0106	1	CHROM. SHAFT	42CrMo4 EN 10083-3
Pos.	Qty	DESCRIPTION	MATERIAL

# PNEUMATIC QUARTER TURN ACTUATOR SCOTCH-YOKE EXECUTION RKPM - RTPM

## SINGLE ACTING



ACTUATOR DIMENSION (mm)															
ACTUATOR TYPE	B	C	H1	H2	K	I	N1	O	Q	S	U	V	V1	W	Y
RTPM - RKPM 310	410	135	55	45	90	150	50	100	120	60	110	400	70	255	85
RTPMV - RKPMV 310															
RTPM - RKPM 610	485	160	55	45	90	180	60	100	135	70	110	400	85	325	85
RTPMV - RKPMV 610															

FLANGE DIMENSION (mm)							
ACTUATOR TYPE	Ø D	n° x F	Ø G	Ø X	r	t	ISO
RTPM - RKPM 310	175	4 x M16	140	40	23.3	12	F 14
RTPMV - RKPMV 310							
RTPM - RKPM 610	210	4 x M20	165	55	31.8	16	F 16
RTPMV - RKPMV 610							

ON REQUEST			
MIN	MAX	ØX min	ØX MAX
F10	F14	25	45
F12	F16	40	60

CYLINDER DIAMETER (mm)				
TYPE OF CYLINDER	185	220	250	300
DIMENSION "W"	250	250	325	325

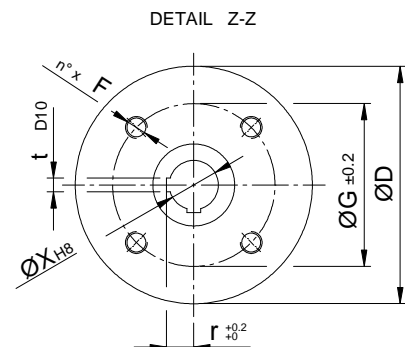
"RKPM" WITH HANDWHEEL = "RKPMV"

"g" - AIR INLET 1/2 NPT

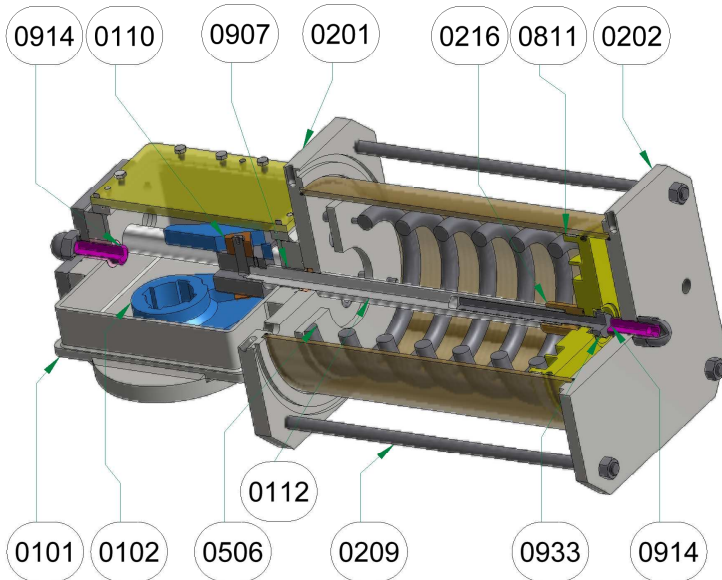
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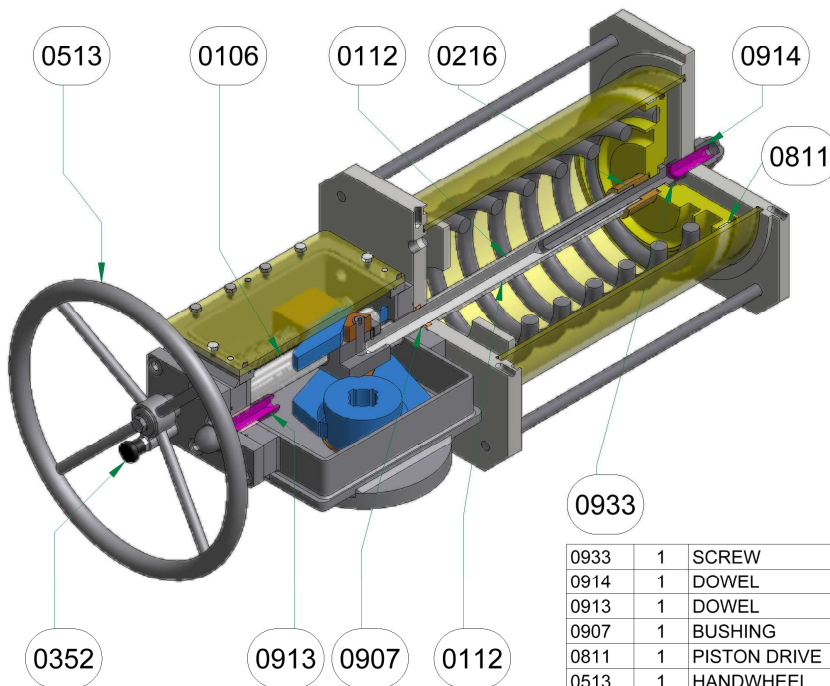


# PNEUMATIC QUARTER TURN ACTUATOR SCOTCH-YOKE EXECUTION RKPM - RTPM



0933	1	SCREW	8.8 EN 20898-1
0914	1	DOWEL	8.8 EN 20898-1
0914	1	DOWEL	8.8 EN 20898-1
0907	1	BUSHING	BRONZE + PTFE
0811	1	PISTON DRIVE *	PTFE+GRAPHITE
0506	1	SPRING	52SiCrNi5 EN 10089
0216	1	SAFETY NUT	CB 331G EN 1982
0209	//	STAY BOLT	42CrMo4 EN 10269
0202	1	HEAD	P 355 NL1 EN 10028-3
0201	1	HEAD	P 355 NL1 EN 10028-3
0112	1	SHAFT	42CrMo4 EN 10083-3
0110	2	SLIDING RING	CB 333G EN 1982
0102	1	LINK	S 355 J2G3 EN 10025-2
0101	1	HOUSING	P 355 NL2 EN 10028-3
Pos.	Qty	DESCRIPTION	MATERIAL

AMB. TEMP.	TEMP.	O-RING	GASKET
STANDARD	-20 / +80	N.B.R.	POLYURETHANE
LOW TEMP	-40 / +60	SILICON	SILICON
HIGH TEMP	-20 / +120	VITON	VITON



0933	1	SCREW	8.8 EN 20898-1
0914	1	DOWEL	8.8 EN 20898-1
0913	1	DOWEL	8.8 EN 20898-1
0907	1	BUSHING	BRONZE + PTFE
0811	1	PISTON DRIVE *	PTFE+GRAPHITE
0513	1	HANDWHEEL	P 195 TR EN 10216-1
0352	1	HANDWHEEL DEVICE	//
0216	1	SAFETY NUT	CB 331G EN 1982
0112	1	SHAFT	42CrMo4 EN 10083-3
0106	1	CHROM. SHAFT	42CrMo4 EN 10083-3
Pos.	Qty	DESCRIPTION	MATERIAL

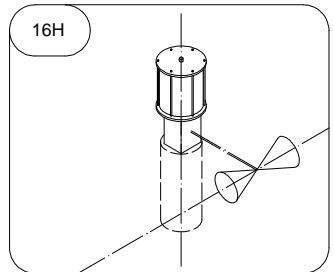
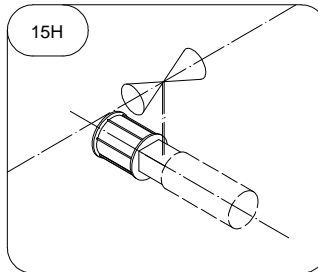
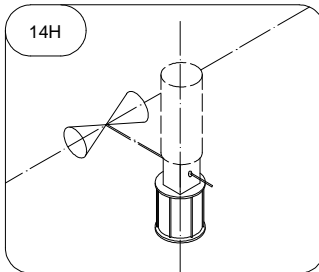
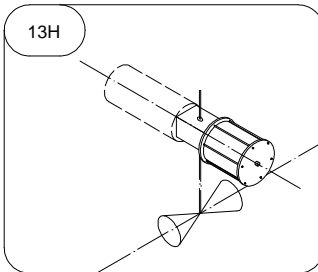
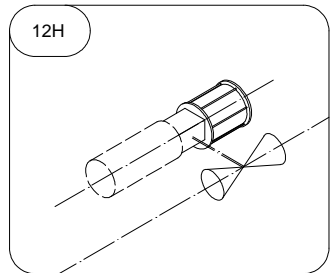
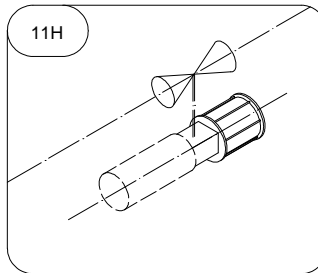
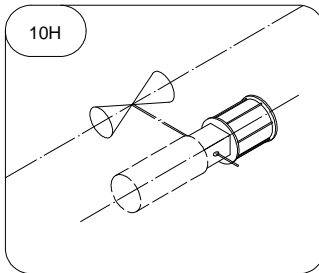
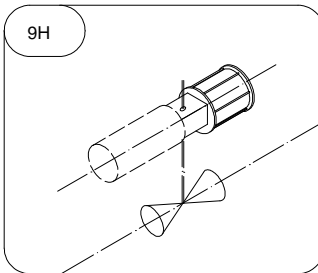
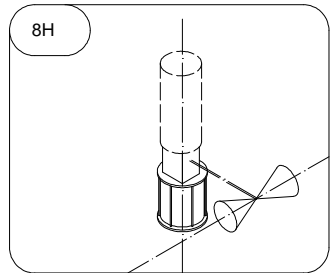
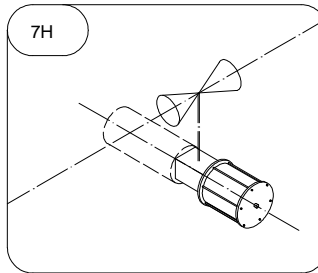
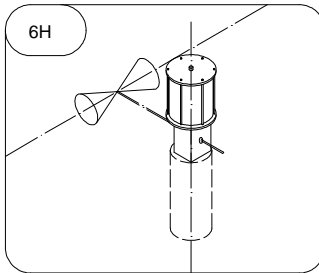
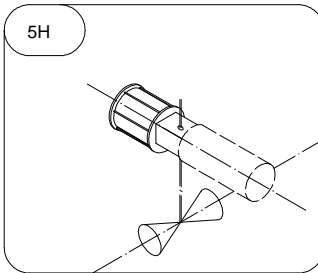
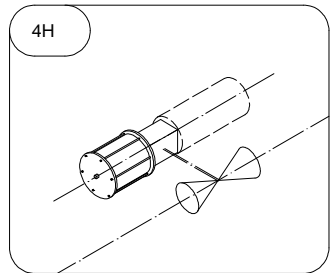
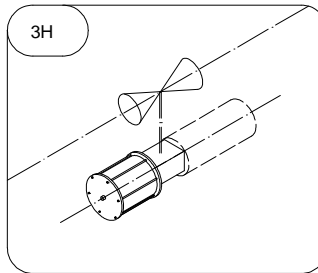
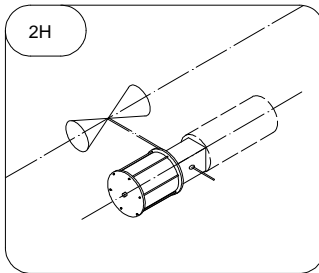
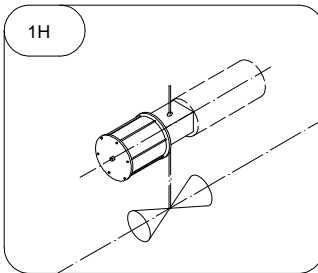
# PNEUMATIC QUARTER TURN ACTUATOR SCOTCH-YOKE EXECUTION

VALVE BOTTOM  
ACTUATOR ABOVE

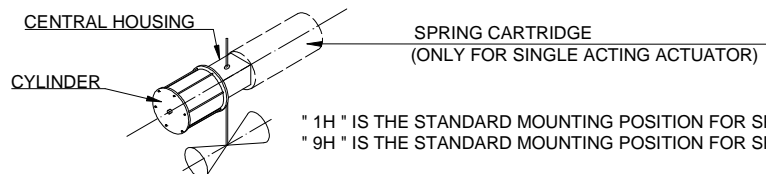
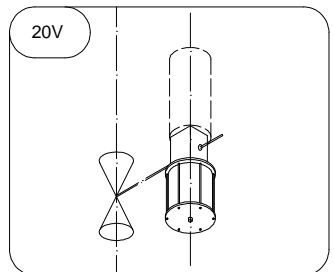
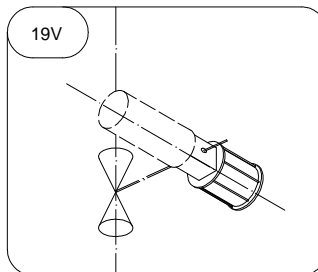
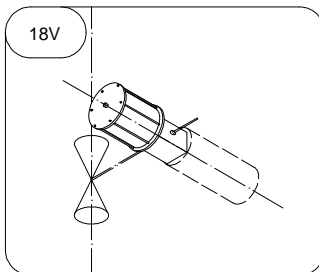
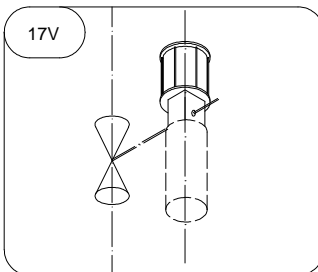
VALVE LEFT SIDE

VALVE ABOVE  
ACTUATOR BOTTOM

VALVE RIGHT SIDE



VALVE VERTICAL PIPE



" 1H " IS THE STANDARD MOUNTING POSITION FOR SPRING TO OPEN.  
" 9H " IS THE STANDARD MOUNTING POSITION FOR SPRING TO CLOSE.