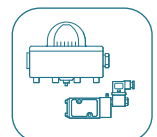
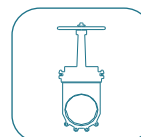
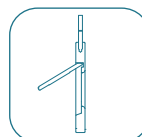
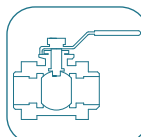
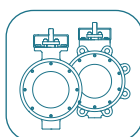
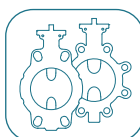


Scotch Yoke pneumatic actuator

Fig.544



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Specifications

Fig.544 scotch yoke actuator features a new scotch yoke design, integrating the latest pneumatic actuator technology and advanced materials. It is based on extensive field installation and product application experience with innovative design. Sufficient practical testing has proven that our products offer the following advantages:

- **High performance and reliability:** Ensures consistent and dependable operation across demanding conditions.
- **Enhanced industrial design:** Suitable for various applications, combining functionality with modern aesthetics.
- **Wider range of specifications:** Offers more options and improved cost-effectiveness for various industrial needs.
- **Compliance with the latest international standards:** Fully meets the most recent global standards and certifications.



Operating temperature:	-20°C~+80°C : Standard (NBR O-ring)
	-40°C~+80°C : Low temperature (Silicone O-ring)
	-20°C~+150°C : High temperature (FPM O-ring)
Travel adjustment:	Adjustable +5°/-5° by 0° and 90° position
Air supply pressure:	3.5bar~7bar
Air supply quality:	Dry or lubricated air, non-corrosive gas
Standard color end caps:	RAL9004 black

Index

page 3	Design features
page 4	Material part list
page 5	Dimensions
page 6	Output torque
page 7	Principle, technical data
page 8	Pneumatic accessories

Design features

Compact and Versatile Design

The actuator features a one-piece compact structure for both double-acting and spring-return models, allowing easy conversion by adding or removing springs or replacing end caps. This greatly enhances flexibility in field applications.

Compliance with International Standards

Fully meets ISO5211, DIN3337, and VDI/VDE3845 standards, ensuring compatibility with NUMAR systems. It supports the installation of solenoid valves, limit switches, and other accessories, providing excellent interchangeability and ease of integration.

High-Performance Scotch Yoke Mechanism

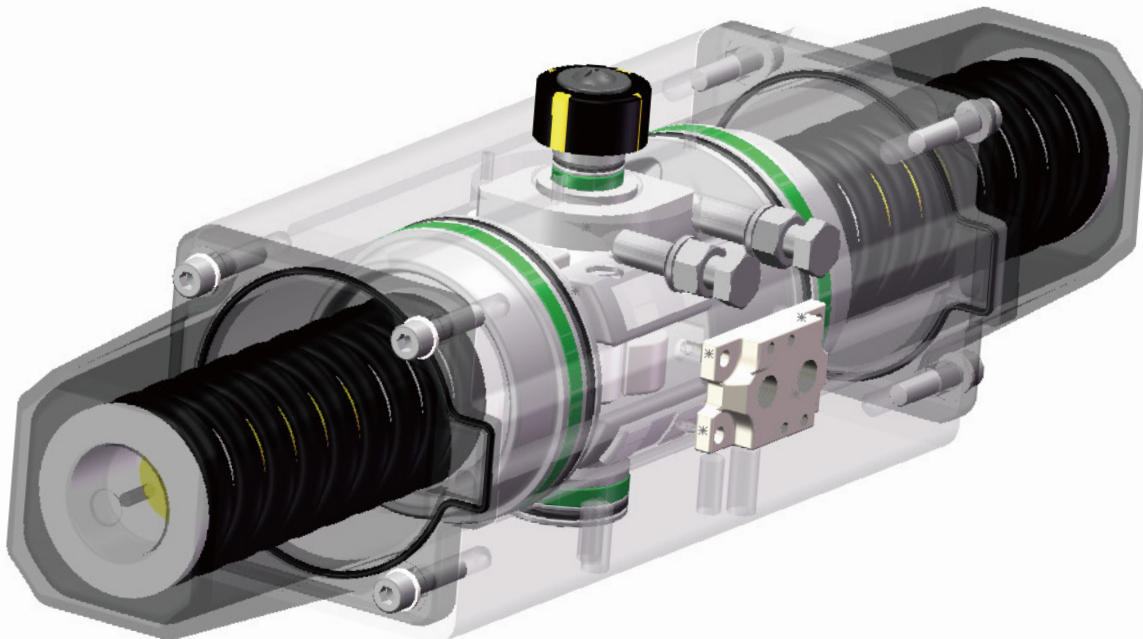
Equipped with a double-piston scotch yoke design, offering advantages like a compact structure, high torque output, rapid action, and stable operation. The design allows for easy directional adjustment via simple piston exchange.

Precise Travel Adjustment

Two independent external adjustment bolts enable precise $\pm 5^\circ$ fine-tuning in both the 0° and 90° positions, ensuring full alignment with valve positions for optimal performance.

Low-Friction Bearings for Longevity

The composite bearing and guide ring on the shaft and piston ensure smooth, low-friction operation, enhancing accuracy and significantly extending service life.



Innovative Sealing System

A specially designed sealing ring between the cylinder body and end cap eliminates issues like rubber plug inhalation found in conventional actuators. This ensures improved safety, higher sealing reliability, and extended lifespan.

Durable Load-Bearing Components

The output shaft, fork disc, stopper, and other load-bearing components are made from high-strength alloy steel, ensuring safe and reliable operation even in demanding environments.

Corrosion-Resistant Spring Mechanism

Pre-compression spring seats combined with specially plated springs make the actuator suitable for various applications, offering enhanced safety and corrosion resistance.

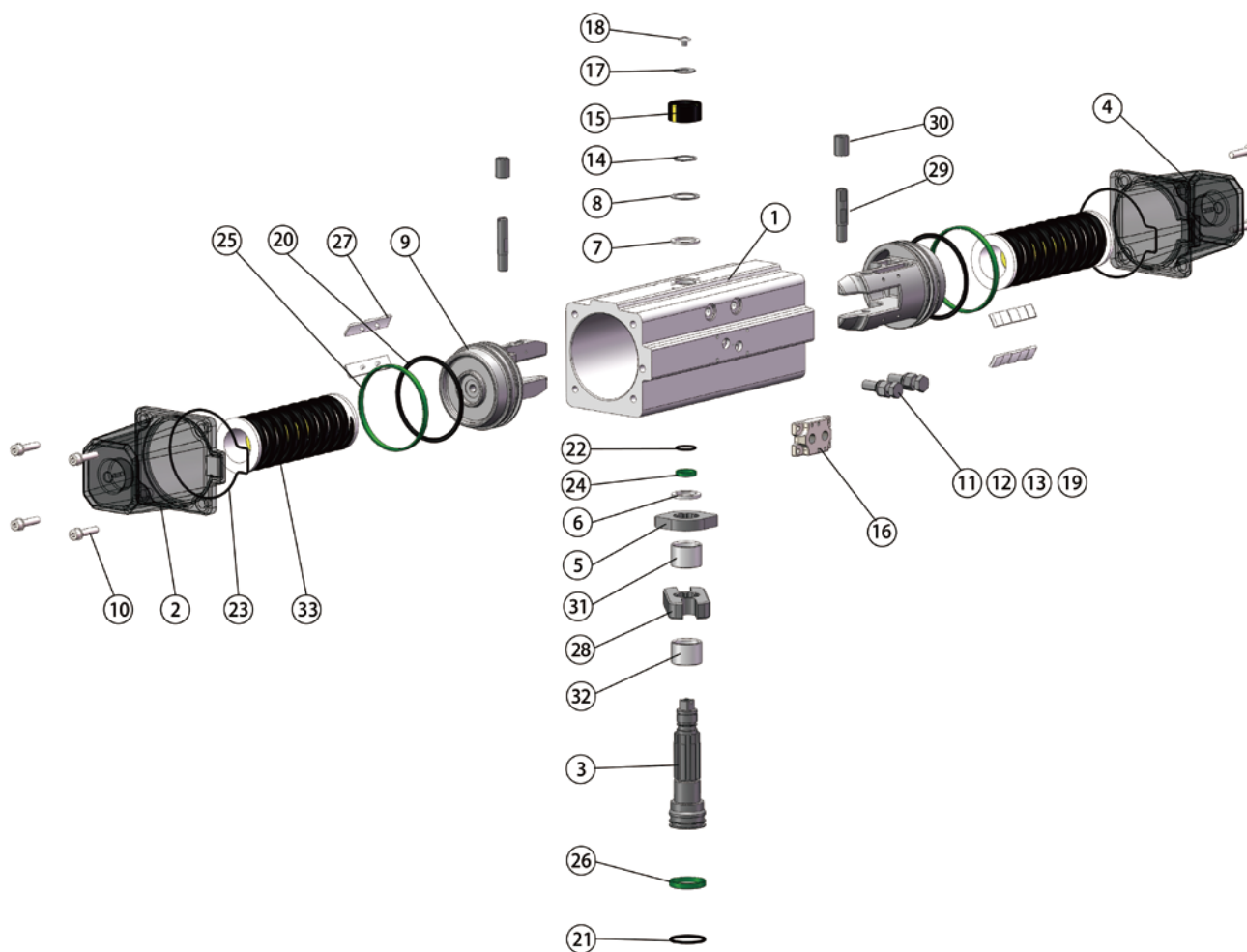
Improved Torque Efficiency

Compared to rack-and-pinion actuators, the scotch yoke design delivers higher torque efficiency for opening and closing. It is lighter in weight, consumes less air, and reduces operational costs by lowering air compressor energy consumption.

Enhanced Stability and Reliability

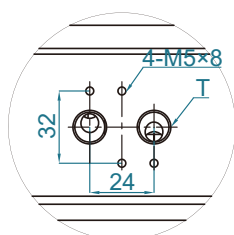
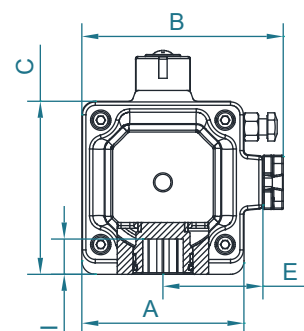
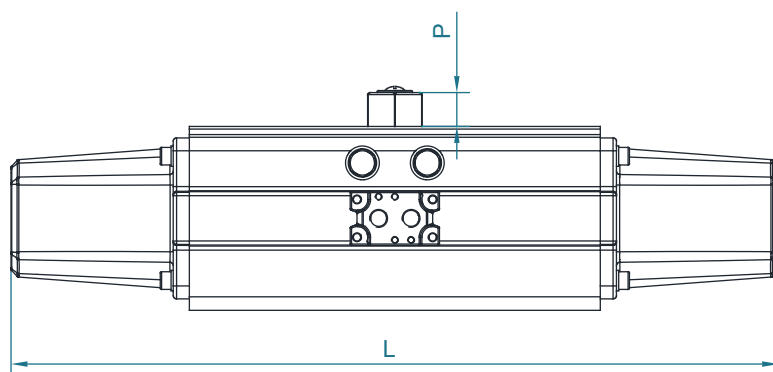
The scotch yoke design minimizes friction between the piston and cylinder wall, reducing wear on related parts. This design improvement significantly enhances the product's stability, reliability, and overall lifespan.

Material part list

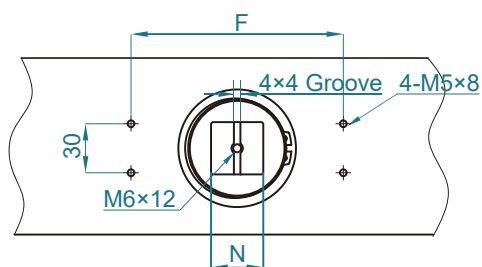


No.	Part Name	Material	Quantity	No.	Part Name	Material	Quantity
1	Cylinder	Aluminium Alloy	1	19	O-Ring (Adjustment) *	Rubber	2
2	Left End Cap	Aluminium Alloy	1	20	O-Ring (Piston) *	Rubber	2
3	Driving Shaft	Alloy Steel	1	21	O-Ring (Lower Part Of Shaft) *	Rubber	1
4	Right End Cap	Aluminium Alloy	1	22	O-Ring (Upper Part Of Shaft) *	Rubber	1
5	Stopper	Alloy Steel	1	23	O-Ring (End Cap) *	Rubber	2
6	Inner Shim *	Acetal Resin (POM)	1	24	Upper Retaining Ring *	Acetal Resin (POM)	1
7	Outer Shim *	Acetal Resin (POM)	1	25	Support Band *	Acetal Resin (POM)	2
8	Washer	Stainless Steel	1	26	Lower Retainer Ring *	Acetal Resin (POM)	1
9	Piston	Aluminium Alloy	2	27	Support Element *	Acetal Resin (POM)	4
10	End Cover Bolt	Stainless Steel	8	28	Scotch Yoke	Alloy Steel	1
11	Adjusting Bolt	Stainless Steel	2	29	Piston Pin	Alloy Steel	2
12	Adjusting Nut	Stainless Steel	2	30	Piston Roller	Alloy Steel	2
13	Washer	Stainless Steel	2	31	Upper Supporting Ring	Acetal Resin (POM)	1
14	Elastic Collar	Spring Steel	1	32	Lower Support Ring	Acetal Resin (POM)	1
15	Indicator	Acetal Resin (POM)	1	33	Spring	Spring Steel	2
16	Adapter Plate	Aluminium Alloy	1				
17	Indicator Gasket	Stainless Steel	1				
18	Screw	Stainless Steel	1	Notes : * Materials Contained In The Repair Kit			

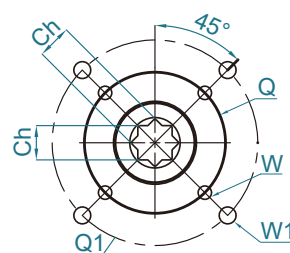
Dimensions



**Air Connection
NAMUR G1/4"**



**Top Connection
VDI/VDE 3845**

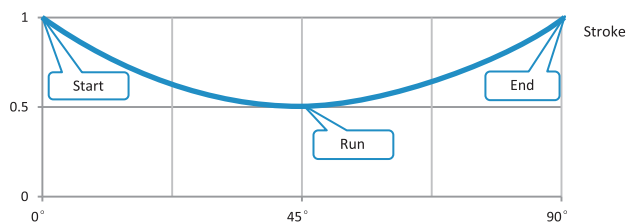


**Bottom View
ISO5211 - DIN3337**

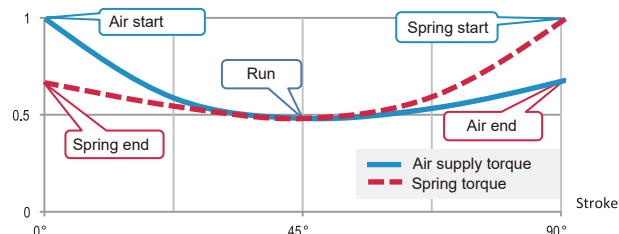
Model	A	B	C	L Air - Air	L Air - Spring	E	F	P	N	ISO5211	Q	Q1	W	W1	Ch	I	Air connection
544100	78	105	89	228	360	51	80	20	10	F05/F07	50	70	M6x9	M8x12	14x14	16	G1/4"
544150	88	115	100	265	398	60	80	20	10	F05/F07	50	70	M6x9	M8x12	14x14	16	G1/4"
544250	100	127	113	301	451	62	80	20	14	F07/F10	70	102	M8x12	M10x15	17x17	19	G1/4"
544350	110	139	123	340	521	69	80	20	14	F07/F10	70	102	M8x12	M10x15	22x22	25	G1/4"
544450	120	149	136	366	568	74	80	20	14	F10/F12	102	125	M10x15	M12x18	22x22	25	G1/4"
544800	142	176	159	450	677	90	80/130	30	22.1	F10/F12	102	125	M10x15	M12x18	27x27	31	G1/4"
5441000	160	195	178	483	769	100	80/130	30	22.1	F10/F14	102	140	M10x15	M16x24	36x36	41	G1/4"
5441500	180	218	200	565	880	113	80/130	30	22.1	F14	-	140	-	M16x24	36x36	41	G1/4"
5442000	202	239	222	605	895	123	130	30	22.1	F14	-	140	-	M16x24	36x36	41	G1/4"

Output torque

Air / Air



Air / Spring



Output torque Air / Air

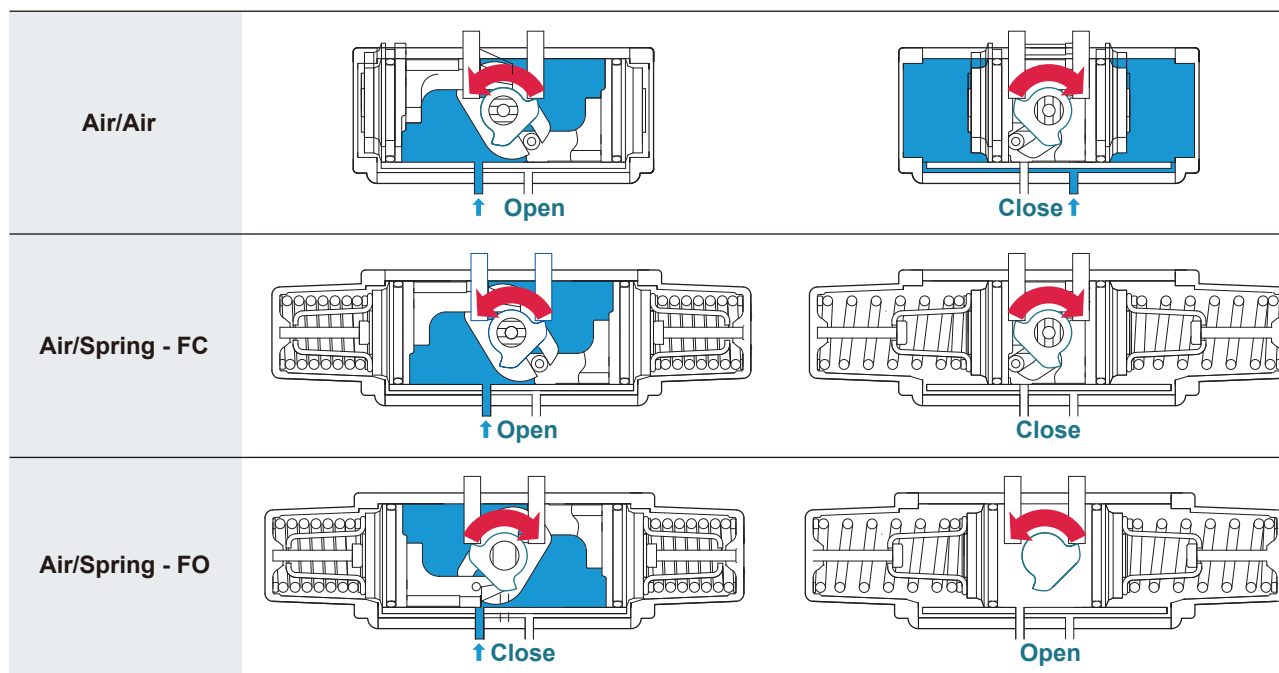
Model	Output Torque - Air/Air [Nm]																				
	Air Supply Pressure [Bar]																				
	3.5			4			4.5			5			5.5			6			7		
	0°	45°	90°	0°	45°	90°	0°	45°	90°	0°	45°	90°	0°	45°	90°	0°	45°	90°	0°	45°	90°
544100	71	35.5	71	81.2	40.6	81.2	91.3	45.7	91.3	101.5	50.75	101.5	111.6	55.8	111.6	121.8	60.9	121.8	142.1	71.05	142.1
544150	107.7	53.9	107.7	123.1	61.6	123.1	138.5	69.3	138.5	153.9	77	153.9	169.3	84.7	169.3	184.7	92.4	184.7	215.5	107.8	215.5
544250	165.4	82.7	165.4	189	94.5	189	212.7	106.4	212.7	236.3	118.2	236.3	260	130.0	260	283.6	141.8	283.6	330.8	165.4	330.8
544350	231.9	116.0	231.9	265.1	132.6	265.1	298.2	149.1	298.2	331.3	165.65	331.3	364.5	182.3	364.5	397.6	198.8	397.6	463.9	231.95	463.9
544450	309.1	154.6	309.1	353.3	176.65	353.3	397.4	198.7	397.4	441.6	220.8	441.6	485.7	242.85	485.7	529.9	265.0	529.9	618.2	309.1	618.2
544800	554.9	277.45	554.9	634.2	317.1	634.2	713.4	356.7	713.4	792.7	396.4	792.7	872	436	872	951.3	475.7	951.3	1109.8	554.9	1109.8
5441000	751	375.5	751	858.3	429.2	858.3	965.6	482.8	965.6	1072.9	536.5	1072.9	1180.2	590.1	1180.2	1287.5	643.75	1287.5	1502.1	751.05	1502.1
5441500	1080.9	540.45	1080.9	1235.3	617.65	1235.3	1389.7	694.9	1389.7	1544.1	772.05	1544.1	1698.5	849.3	1698.5	1853	926.5	1853	2161.8	1080.9	2161.8
5442000	1425	712.5	1425	1628.6	814.3	1628.6	1832.1	916.1	1832.1	2035.8	1017.9	2035.8	2239.3	1119.7	2239.3	2442.9	1221.5	2442.9	2850	1425	2850

Output torque Air / Spring

Model	Output Torque - Air/Spring [Nm]																							
	Air Supply Pressure [Bar]																					Spring torque [Nm]		
	3.5			4			4.5			5			5.5			6			7					
	0°	45°	90°	0°	45°	90°	0°	45°	90°	0°	45°	90°	0°	45°	90°	0°	45°	90°	0°	45°	90°	0°	45°	90°
544100SR1	37.6	15.3	23.3	47.8	20.3	33.5	57.9	25.4	43.6	68.1	30.5	53.8										33.5	20.3	47.8
544100SR2				39.4	15.2	21.5	49.6	20.3	31.6	59.7	25.4	41.8	69.9	30.5	51.9							41.8	25.4	59.7
544100SR3										51.4	20.3	29.9	61.5	25.4	40	71.7	30.5	50.2	92	40.6	70.5	50.2	30.5	71.7
544150SR1	57	23.1	35.2	72.4	30.8	50.6	87.8	38.5	66	103.2	46.2	81.4										50.7	30.8	72.4
544150SR2				59.7	23.1	32.5	75.1	30.8	47.9	90.5	38.5	63.3	105.9	46.2	78.7							63.4	38.5	90.6
544150SR3										77.8	30.8	45.2	93.2	38.5	60.6	127.8	54.3	89.4	164	72.4	125.7	76.1	46.2	108.7
544250SR1	87.6	35.5	54.2	111.2	47.2	77.9	134.9	59.1	101.5	158.5	70.9	125.1										77.8	47.3	111.2
544250SR2				91.8	35.4	50.1	115.4	47.3	73.7	139	59.1	97.3	162.7	70.9	121							97.3	59.1	139
544250SR3										119.6	47.3	69.5	143.2	59.1	93.2	166.8	70.9	116.8	214.1	94.5	164	116.8	70.9	166.8
544350SR1	122.6	49.7	76.3	155.7	66.3	109.4	188.8	82.9	142.6	222	99.4	175.7										109.4	66.3	155.7
544350SR2				128.6	49.8	70.4	161.7	66.3	103.5	194.8	82.9	136.7	228	99.5	169.8							136.5	82.8	194.7
544350SR3										167.7	66.4	97.6	200.9	83	130.8	234	99.5	163.9	300.3	132.7	230.2	163.6	99.4	233.8
544450SR1	163.6	66.3	101.3	207.8	88.3	145.5	252	110.4	189.6	296.1	132.5	233.8										145.5	88.3	207.8
544450SR2				171.5	66.2	93.5	215.6	88.3	137.7	259.8	110.4	181.8	303.9	132.5	226							181.8	110.4	259.7
544450SR3										223.4	88.2	129.9	267.6	110.4	174	311.7	132.5	218.2	400	176.6	306.5	218.2	132.5	311.7
544800SR1	293.8	118.9	181.9	373	158.5	261.1	452.3	198.1	340.4	531.6	237.8	419.7										261.1	158.6	373
544800SR2				307.8	118.9	167.9	387	158.5	247.1	466.3	198.2	326.4	545.6	237.8	405.7							326.4	198.2	466.3
544800SR3										401	158.5	233.2	480.3	198.2	312.4	559.6	237.8	391.7	718.1	317.1	550.3	391.7	237.8	559.6
5441000SR1	397.6	160.9	246.1	504.9	214.6	353.4	612.2	268.2	460.7	719.5	321.9	568										353.5	214.6	504.9
5441000SR2				416.5	160.9	227.2	523.8	214.6	334.5	631.1	268.2	441.8	738.4	321.9	549.1							441.8	268.2	631.1
5441000SR3										542.8	214.6	315.6	650.1	268.2	422.9	757.4	321.9	530.2	971.9	429.2	744.7	530.2	321.9	757.4
5441500SR1	572.2	231.6	354.2	726.6	308.9	508.6	881.1	386.1	663.1	1035.5	463.3	817.5										508.7	308.8	726.6
5441500SR2				599.5	231.6	327	753.9	308.8	481.4	908.3	386	635.8	1062.7	463.3	790.2							635.8	386	908.3
5441500SR3										781.1	308.83	454.1	935.6	386	608.6	1090	463.3	763	1399	617.7	1071.8	763	463.3	1090
5442000SR1	754.6	305.3	466.6	958.2	407.1	670.2	1161.8	508.9	873.8	1365.4	610.7	1077.4										670.4	407.2	958.4
5442000SR2				765.4	305.5	456.6	968.9	407.3	660.2	1172.5	509.1	863.7	1376.1	610.9	1067.3							863.2	508.8	1172
5442000SR3										1078.7	431.5	650.1	1279.3	533.3	853.7	1482.9	635	1057.3	1890	838.6	1464.5	960	586.4	1385.6

Principle, technical data

Operating principle



Technical data

Model	Cylinder Dia.	Working time				Air consumption			
		Air / Air		Air / Spring		Air / Air		Air / Spring	
		Open time [s]	Close time [s]	Open time [s]	Close time [s]	Open volume [L]	Close volume [L]	Open volume [L]	Close volume [L]
544100	φ65	0.1	0.1	0.3	0.3	0.32	0.36	0.32	0.72
544150	φ75	0.12	0.12	0.62	0.82	0.61	0.72	0.61	1.4
544250	φ85	0.13	0.16	0.66	0.86	0.89	1.05	0.89	1.6
544350	φ95	0.2	0.22	0.8	1	1.25	1.47	1.25	3.1
544450	φ105	0.26	0.3	0.8	1	1.73	1.95	1.73	3.8
544800	φ125	0.46	0.5	1.1	1.3	3.08	3.26	3.08	6.5
5441000	φ140	0.63	0.66	1.2	1.5	4.16	4.34	4.16	9.5
5441500	φ160	0.9	0.92	1.6	1.8	5.74	6.01	5.74	13.2
5442000	φ180	1.3	1.4	1.8	2.1	8.67	9.21	8.67	18.2

Notice:

The action time and air consumption values provided are theoretical calculations based on specific conditions and are for reference only. Actual results may vary due to external factors such as environmental conditions, air quality, and operational variables.

Conditions and Details:

Room temperature;

Travel 0° ~ 90°;

Compressed air pressure 5bar;

Flow rate 400 L/min;

Dry and clean compressed air;

No load applied (Air/spring type actuators rely on spring return).

Stroke Times:

Can be reduced by using speed control.

Air Consumption:

The chart values represent the actual free air volume for either the open or close direction.

Air consumption depends on supply pressure, open/close volume, and the number of strokes per minute.

To calculate standard liters per minute, use the following formula:

Air consumption (L/min) = (Open+Close volume.L)× (Air supply pressure.Bar + 1.013)× Strokes/min



Solenoid valve

- 5/2 and 3/2 NC.
- Single coil and double coil.
- Wide range voltage both for DC and AC.
- Namur connection both for 1/4" and 1/2".



Explosion-proof solenoid valve

- Environmentally-protected structure with Atex explosion-proof.
- Extruded enclosure with weather proof IP67.
- F class coil of insulation protection.
- SS316 body material available on request.



Position switch box

- Compact design with visual indicator.
- Easy and safe adjustment of limit switch.
- Mechanical switches, proximity sensor.
- 4-20mA current feedback is available with multi-function type.



Explosion-proof position switch box

- Atex explosion-proof.
- Compact design with visual indicator.
- Easy and safe adjustment of limit switch.
- Mechanical switches, proximity sensor.



Intelligent positioner

- Full digital control, reliability, stability, small size and light weight.
- Convenient for adjustment by simple buttons.
- Simple function setting, convenient for the transform of positive action and counteraction, valve open and closing.
- Intelligent control. It can give analysis, alarm and optimization when medium fluctuates, span excesses, actuator leakage occurs.



Air pressure filter

- Stable outlet pressure regardless of the fluctuation of inputting pressure or flow rate.
- Easy to install and maintain due to light weight and small size.
- To filter minuteness particle is available with 5 micron filter.
- Relief function which discharges to atmosphere if outlet pressure is higher than setting pressure.

Coreline

The contents of this catalogue are confidential and proprietary to Coreline, we reserve the right to change the specifications without any notice.

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