Ready At Any Time. An Overview Of Pneumatic Cylinders

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**AVENTICS<sup>™</sup> Pneumatic Cylinders** Application-oriented cylinder technology.

Competent and well-designed down to the last detail.





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## Competent and well-designed down to the last detail – application-oriented cylinder technology

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#### Perfection is our business

Our customers are demanding. They expect the highest performance from us and our solutions. And that is exactly what we want – because what our customers expect of us is what we expect of ourselves. That applies to all our services, as well as to every single element in our product range – right down to the last detail.

Our comprehensive range of perfected cylinder technology meets the demands of modern automation technology and offers suitable solutions for all applications, with all components reflecting our product philosophy of consistently high standards in quality and design.

- Functionality
- Modularity
- Quality and design

And whatever we do, the benefit for the customer is the focus of all our work – in advice and support, research and development, design and production. An absolute practice and solution orientation – but with an eye on trendsetting innovations that open up new possibilities. Function integration, component reduction, alternative materials management – those are just a few of the trends in modern product development that create future advantages and additional benefits that you can expect from Emerson as a global supplier of automation technology.



Excellently equipped, both outside and inside: from the broad range of electronic and pneumatic connection technologies through the safe and precisely-controlled movements right up to reliable and exact sensors.

## The right cylinder solution for every application. With all options for specific tasks

#### Insight – overview – outlook

This brochure is a fundamental orientation aid for selecting suitable products and provides information on the main features and fields of application of the cylinders. A summary of the program at the end of the brochure serves as an introduction to our detailed catalog.

#### A comprehensive program with a clear platform strategy

The modern applications for pneumatic cylinders dictate the portfolio. A perfect cylinder has to be not only well designed, easy to integrate, strong, durable, and reliable, but also able to function both powerfully and sensitively and able to adapt to a wide variety of demands – it has to prove its high efficiency and cost-effectiveness day after day. Our product range of pneumatic cylinders meets these demands in every respect and is just as versatile as it is comprehensive.

The spectrum ranges from extremely compact cylinders for small handling applications to larger cylinders for the most powerful tasks, as well as rodless cylinders with guide slides for long strokes right up to ISO cylinders with a clean design.

- Cylinders with piston rods
- Rodless cylinders
- Handling technology

#### Cylinder selection made easy

With so many cylinder series on offer, there is one question: which cylinder is the right one for my specific task? Emerson has the answer. Our experienced consultants are always on hand to answer your questions, and our latest Engineering Tool, the AVENTICS CylinderFinder, is available around the clock for basic considerations.

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#### Mini and round cylinders

#### MNI CSI ante RPC ICM Industrial standard ISO 6432

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#### Profile and tie rod cylinders

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#### Short-stroke and compact cylinders



Industrial standard ISO 21287 / ISO 15524 / NFE 49004 Pages 10-13

#### **Rodless cylinders**



Industrial standard ISO 15552 Pages 14-17

# СКР GSU Pages 18-21

Handling technology

#### Special cylinders



Accessories



## The mini range for maxi applications. Mini and round cylinders

Don't underestimate us! Ultra-compact integrated power and intelligence – our mini powerhouses. The continued trend towards product and component miniaturization creates an ever-growing number of applications for our tiny all-rounders. Round cylinders in our signature Clean design are the perfect solution for applications with the strictest hygienic requirements.

| Series               | MNI | RPC | ICM | CSL | ICS |
|----------------------|-----|-----|-----|-----|-----|
| Corrosion resistance | 0   | 0   | +   | ++  | ++  |
| Temperature range    | +   | +   | 0   | +   | 0   |
| Variety of versions  | 0   | +   | 0   | ++  | 0   |
| ATEX                 | ++  |     |     | +   | ++  |
| Easy to clean        | 0   | 0   | +   | ++  | ++  |

++ Highly recommended + Recommended O Suitable

# Ideal cylinders for small handling and food industry applications

Minimal dimensions are not the only feature that make mini and round cylinders the natural choice for small handling. Excellent precision, infinitely adjustable force control and a low net weight are just some of the added benefits for our users in a wide variety of industries.

Our hygienically designed round cylinders are always the first choice for applications that require optimal component cleaning or corrosion protection and heat resistance due to the use of aggressive media. The enormous breadth of our product range, including numerous versions, enable tailor-made solutions for specific applications.

#### MNI series (ISO 6432)

Our proven range of cylinders for general machine construction. This design is characterized by its robustness and long service life. A cylinder for users and developers who rely on the greatest efficiency.

Ø 10 - 25 mm





The cylinder series cover the entire spectrum of applications Mini and round cylinders from the different series in our program with their specific characteristics, strengths and properties are designed for special applications and industry solutions.

#### **RPC series**

The round cylinders from the RPC series offer a wide variety of connection options. They are easy to clean and suitable for packaging applications in the food industry thanks to food-grade lubricants, in addition to standard applications.

#### Ø 32 - 63 mm



RPC

#### CSL-RD series (ISO 6432)

Round cylinder series CSL-RD Stainless Line, optionally in hygienic design or as an ISO version. The CSL-RD has a smooth profile and low surface roughness, and can be used with food-grade lubricants and sealings.

Ø 16 - 25 mm



#### ICM series (ISO 6432)

Mini cylinders from the ICM series offer high corrosion resistance and are a reliable, cost-efficient solution – even in harsh environments. The cylinder tube and piston rod are made of stainless steel, the cylinder covers are fashioned from a high-quality polymer.

Ø 8 - 32 mm



#### **ICS** series

The hygienic design of the ICS with smooth surfaces, interlocking seals and cushioning screws prevents dirt pockets from the outset and guarantees optimum cleaning conditions.

Ø 32 - 100 mm



## Overview of variants – basic versions and optional equipment. Mini and round cylinders

#### Stainless steel mini cylinders: specialized in food industry applications Example: CSL-RD hygienic design series, size Ø 20 mm

- 1 | Scraper without an undercut for FRE variant: no possibility for dirt to accumulate, FDA-compliant in accordance with 21 CFR 177.2600
- 2 | Plastic bearing bush: PEEK high-performance plastic, smooth running, long service life
- 3 | Smooth surfaces: stainless steel AISI 304, especially smooth surfaces thanks to electropolishing (Ra < 0.6  $\mu m)$
- 4 | Grease for food applications: NSF-H1-registered, FDA-compliant in accordance with 21 CFR 178.3570
- 5 | Clean tube/cover connection: optimized rolling geometry, sharp edges/nuts are avoided
- 6 | Cushioning screw: cushioning energy up to 2.7 J at 2 m/s, precisely adjustable via 2.5 mm hexagon head for all diameters



|   | Series                          |   | MNI              |          |                    |    | RPC              |         | CSL-RD                  | )      | ІСМ    |       | ICS                       |                               |                           |
|---|---------------------------------|---|------------------|----------|--------------------|----|------------------|---------|-------------------------|--------|--------|-------|---------------------------|-------------------------------|---------------------------|
|   | Version                         |   | with m<br>piston | agnetic  | withou<br>netic pi |    | with m<br>piston | agnetic | with magnetic<br>piston |        |        |       | with mag-<br>netic piston | without<br>magnetic<br>piston | with mag-<br>netic piston |
|   |                                 | – With elastic cushioning                         |                  |          | Þ                  |    |                  |         |                         |        |        |       |                           |                               |                           |
|   |                                 | <ul> <li>With pneumatic<br/>cushioning</li> </ul> |                  | ¢        |                    | ¢Þ |                  | ¢.      |                         | ¢ P    |        |       | ₩.                        |                               |                           |
| _ |                                 | Heat-resistant up to                              | 120°C            | 120°C    |                    |    | 80 °C            | 120°C   | 120°C                   | 120°C  | 70 °C  | 70°C  | 80 °C                     |                               |                           |
|   | ISO                             | Installation standard ISO 6432                    | ~                | ~        | ~                  | ~  |                  |         | ~                       | ~      | ~      |       |                           |                               |                           |
|   | STAINLESS STEEL<br>RUST<br>FREE | Stainless steel                                   |                  |          |                    |    |                  |         | ~                       | ~      | ~      | ~     | ~                         |                               |                           |
|   | Ĺ ħĂĂ₽                          | Single-acting                                     | ~                |          | ~                  |    | ()               |         | ~                       | ~      |        | ~     |                           |                               |                           |
|   |                                 | Piston rod extension                              | ~                | ~        | ~                  | ~  | ~                | ~       | ~                       | ~      | (🗸)    | (🗸)   | ~                         |                               |                           |
|   |                                 | Through piston rod                                | ~                | ~        | ~                  | (• |                  |         | ()                      | ()     |        |       | ~                         |                               |                           |
|   | <b>—</b>                        | Optional stroke length                            | ~                | ~        | ~                  | ~  | ~                | ~       | ~                       | ~      |        |       | ~                         |                               |                           |
|   | <b>™</b>                        | Non-rotating,<br>without front plate              |                  | ~        |                    |    |                  |         |                         |        |        |       |                           |                               |                           |
|   | Æx>                             | ATEX zone 1/21 cat. 2G/D                          | ~                | ~        | ~                  | ~  | (🗸)              | (🗸)     | ~                       | ~      |        |       |                           |                               |                           |
|   | <b>66</b>                       | Food-grade grease NSF-H1                          |                  |          |                    |    | ~                | ~       | ~                       | ~      | ~      | ~     | ~                         |                               |                           |
|   | +                               | Hygienic design                                   |                  |          |                    |    |                  |         | ~                       | ~      |        |       | ~                         |                               |                           |
|   | -                               | Short type  |                  |          |                    |    | ~                |         | ~                       | ()     |        |       | ~                         |                               |                           |
|   | C FF                            | Adjusted cushioning                               |                  |          |                    |    |                  |         | ~                       |        |        |       |                           |                               |                           |
|   | N                               | Distance measuring system                         | ~                | ~        |                    |    |                  |         |                         |        |        |       |                           |                               |                           |
|   | * ()<br>*                       | Rotated end covers                                |                  |          |                    |    | (🗸)              | (🗸)     |                         |        | ~      | ~     |                           |                               |                           |
|   |                                 | Piston diameter                                   | diameter 10 - 25 |          | 5 mm               |    | 32 - 6           | 3 mm    | 16 - 2                  | .5 mm  | 8 - 3  | 2 mm  | 32 - 100 mm               |                               |                           |
|   |                                 | Stroke range                                      |                  | 10 - 1,3 | 300 mm             |    | 25 - 1,2         | 200 mm  | 25 - 1,3                | 300 mm | 25 - 4 | 00 mm | 1 - 1,600 mm              |                               |                           |

# Short-stroke and compact cylinders. When things get tight, our compacts come out strong

#### Save where you can!

There is always room for our compact cylinders. Save on installation space and costs during the design phase, because our short-stroke and compact cylinder series make it easy to come up with cost-efficient machine constructions. And all that without having to compromise on precision, reliability and innovative technology. The products from our sophisticated program are backed by the experience from many years of cooperation with users in our core industries. They help to save without making compromises. The comprehensive program with large stroke ranges and piston diameters makes the use of our cylinder series the logical choice in practically any machine environment.

#### Concentrated power in a minimum of space

With three different product standards in sizes from 8 mm to 100 mm piston diameter in a very wide range of variants, our short-stroke and compact cylinder program is one of the largest and most varied on the market worldwide. Suitable for strokes from 4 mm. Each series also offers non-rotating versions with a mounted front plate.

| Series              | ссі       | CCL-IC    | SSI       | KPZ       | КНΖ  |
|---------------------|-----------|-----------|-----------|-----------|------|
| Compactness         | +         | +         | ++        | +         | ++   |
| Variety of versions | ++        | +         | +         | ++        | +    |
| Standard            | ISO 21287 | ISO 21287 | ISO 15524 | NFE 49004 | none |
| Diameter range      | +         | +         | ++        | +         | ++   |
| Stroke range        | ++        | ++        | +         | ++        | +    |
| Sensor installation | ++        | 0         | ++        | ++        | +    |
| Mounting options    | ++        | +         | +         | ++        | 0    |

++ Highly recommended + Recommended O Suitable

#### CCI series (ISO 21287)

CCI means: innovative, compact construction and an easy-to-clean design. The CCI is ideal for long strokes and increased requirements for optimized cycle times and moving masses. The sensors can be installed quickly and easily on all sides and over the entire stroke range.



CCI with Sensor

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They get very little room to work, but have to move a lot in the tightest spaces. Do a lot with very little – those are the ideal specifications for the use of our miniature power packs. In the strictest sense of the word you can say here: less is more.

#### Serie CCL-IC (ISO 21287)

The series CCL-IC with their compact and hygienic design can be used in a wide range of applications. Their smooth surface together with their materials, such as anodized aluminum, stainless steel, and NSF-H1 lubricants, make the cylinder ideal for the demanding requirements in the food and beverage industry.



#### KPZ series (NFE 49004)

Series KPZ compact cylinders offer a wide variety of variants. They can be used very flexibly and are suitable for a multitude of applications thanks to their sizing based on the widely used standard NFE 49 004.

Ø 16 - 100 mm



#### SSI series (ISO 15524)

SSI – the short stroke cylinder in accordance with the latest ISO standard 15524. The cylinders are particularly compact and up to 30% lighter than comparable cylinders thanks to weight-optimized profiles and fewer components. In addition, they provide a high degree of flexibility in sensor assembly and extremely effective elastic cushioning.

Ø 12 - 100 mm



SSI non-rotating

#### **KHZ series**

The non-standard short-stroke cylinders in the KHZ series are available from a piston diameter of 8 mm. They are ideal for tight installation spaces and ensure easy, safe integration in machinery.

Ø 8 - 100 mm



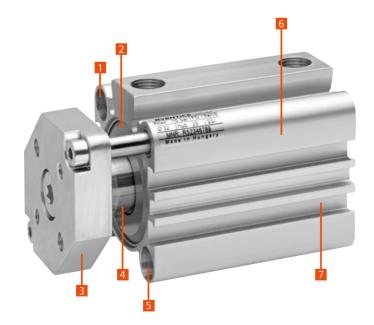
KHZ

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## Overview of variants – basic versions and optional equipment. Short-stroke and compact cylinders

Lightweight, fine-tuned details, easy-to-mount and highly compatible: Example: SSI series with front plate, size Ø 20 mm

- 1 | Compatible: complying with standards and compatible with many existing applications on the market
- 2 | Low noise and vibrations: up to 60% better cushioning properties than comparable products as standard
- 3 | Variations: configurator, intermediate strokes, many variants and analog distance measurement available
- 4 | Easy mounting: hex flats
- 5 | Easy mounting: universal mounting concept with 4 mounting options for all diameters
- 6 | Lightweight: up to 30% lighter than comparable products due to material-optimized profile
- 7 | Space-saving: fully insertable, direct drop-in sensors, customized intermediate stroke lengths without spacer disks



| Series          |                                      | CCI               |          | CCL-IC *                   | SSI               |            |                               | KPZ               |          | KHZ              |         |                              |       |
|-----------------|--------------------------------------|-------------------|----------|----------------------------|-------------------|------------|-------------------------------|-------------------|----------|------------------|---------|------------------------------|-------|
| Version         |                                      | with ma<br>piston | ignetic  | with<br>magnetic<br>piston | with ma<br>piston | ignetic    | without<br>magnetic<br>piston | with ma<br>piston | agnetic  | with m<br>piston | agnetic | without mag-<br>netic piston |       |
|                 | – Double-acting                      |                   |          |                            |                   |            |                               | (C)               |          | Ē                |         | Þ                            |       |
|                 | – Non-rotating,<br>with front plate  |                   | <b>₽</b> |                            |                   | <b>₽</b>   |                               |                   | <b>₽</b> |                  |         |                              | РЩ́(  |
|                 | Heat-resistant up<br>to              | 120°C             | 120 °C   | 120 °C                     | 80 °C             | 80 °C      | 80 °C                         | 120°C             | 120°C    | 80 °C            | 80 °C   | 80 °C                        | 80 °C |
| ISO             | Installation<br>standard             | ISO 21287         |          | ISO 21287                  | ISO 15524         |            |                               |                   |          |                  |         |                              |       |
| •               | Elastic<br>cushioning                | ~                 | ~        | ~                          | ~                 | ~          | ~                             | ~                 | ~        | ~                | ~       | ~                            | ~     |
| Ţ₩ <del>Ŷ</del> | Single-acting                        | ~                 |          | ~                          | ~                 |            |                               | ~                 |          | ~                |         | ~                            |       |
|                 | Internal thread<br>External thread   | ~                 | •        | ~                          | ~                 |            | ~                             | ~                 | ~        | ~                | ~       | ~                            | ~     |
|                 | Piston rod<br>extension              | ~                 | ~        | ~                          | ~                 |            |                               | ~                 | ~        |                  |         |                              |       |
| -               | Through piston<br>rod                | ~                 | ~        | ~                          | ~                 |            | ~                             | ~                 | ~        |                  |         |                              |       |
| <b>—</b>        | Optional stroke<br>length            | ~                 | (🗸)      | ~                          | ~                 | ~          | ~                             | ~                 | (•)      |                  |         |                              |       |
| Ţ <b>E</b> ĘŔ   | Non-rotating,<br>without front plate |                   | ~        |                            |                   |            |                               |                   | ~        |                  |         |                              |       |
| Æx>             | ATEX zone 1/21 cat.<br>2G/D          | ~                 |          | ~                          |                   |            |                               | ~                 |          |                  |         |                              |       |
| N               | Distance<br>measuring system         | ~                 | ~        | ~                          | ~                 | ~          |                               | ~                 | ~        |                  |         |                              |       |
|                 | Piston<br>diameter                   | 16 - 10           | )0 mm    | 16 - 100 mm                |                   | 12 - 100 n | nm                            | 16 - 1            | 00 mm    |                  | 8 - 1   | 00 mm                        | ·     |
|                 | Stroke range                         | 5 - 50            | 0 mm     | 5 - 500 mm                 |                   | 5 - 150 m  | im                            | 5 - 50            | 00 mm    |                  | 4 - 1   | 00 mm                        |       |

(V) On request

\* Clean Design and food-grade grease NSF-H1

# Sturdy and reliable – quality for standard applications. Profile and tie rod cylinders

#### Universal solutions in numerous industries

With sizes from 25 mm to 320 mm piston diameter, the profile and tie rod cylinders in these series cover the entire range of applications. Our customers rely on the indestructible quality of our cylinder solutions in machine and system construction with tasks requiring high precision and regulated force, as well as in industries where enormous forces are needed.

#### **Standardized classic**

Innumerable design variants and sizes in the different cylinder series make it easy for the user to select the most suitable cylinder solutions for his specific application. The broad range of cylinders allows the cylinders to be specifically chosen, not only the basis of function and quality, but also under strict cost considerations.

| Series                 | PRA | TRB | ITS | CCL-IS |
|------------------------|-----|-----|-----|--------|
| Resistance             | 0   | 0   | +   | +      |
| Easy to clean          | 0   | 0   | 0   | ++     |
| Compactness            | ++  | 0   | 0   | +      |
| Variety of versions    | +   | ++  | +   | 0      |
| Configurability        | ++  | ++  | ++  | ++     |
| Temperature resistance | ++  | ++  | ++  | +      |

++ Highly recommended + Recommended O Suitable

#### PRA series (ISO 15552)

The PRA cylinder program is based on a compactly designed profile with integrated sensor nuts. Thanks to incomparable pneumatic cushioning, it is no problem for the PRA cylinders to transform load into speed and strain into control.

Ø 32 - 125 mm





Standardized to international norms and with an outstanding profile. Our profile and tie rod cylinders, in accordance with ISO 15552, have stood the test of decades of user-oriented practice and have established a firm position in professional pneumatics applications. Sturdy and reliable – and all that worldwide.

#### TRB series (ISO 15552)

TRB cylinders are among the most frequently employed cylinders in the process industry, automotive industry, and wood processing industry. The series meets every wish for product variety, durability and adaptability to existing processes.

Ø 32 - 125 mm



#### CCL-IS series (ISO 15552)

This cylinder in clean design is produced specifically for packaging applications in the food industry. It is characterized by practical sensor mountings and its hygienic design that combines simple cleaning with low maintenance.

Ø 25 - 125 mm



#### ITS series (ISO 15552)

The cylinders in the ITS series are the "big brothers" of the TRB series cylinders. They are always specifically used when extremely large masses are involved that have to be moved efficiently and under control with the familiar ease of operation. Thanks to the versatility of the

modular sealing system, the ITS can be optimally adapted to every application.



Ø 160 - 320 mm

ITS with modular scraper (integrated)

## CVI series (ISO 15552)

Typical uses for the CVI series are open/close functions such as flap controls and spool applications. With two ISO cylinder series and five freely combinable valve series, you can custom-configure individual units online.

Ø 32 - 125 mm



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# Large variety with perfect equipment details. Profile and tie rod cylinders

#### Example: ITS series ISO cylinder, size Ø 250 mm

- 1 | Modular scraper
- 2 | Stainless steel piston rod as standard
- 3 | Material-optimized aluminum, die-cast or aluminum chill casting
- 4 | Elastic or pneumatic cushioning system
- 5 | Aluminum body anodized
- 6 | Stainless steel tie rod as standard



| Series    |  | PRA/TRB                  |                             |                   |          | ITS                                     | ITS CCL-    |   |   | CCL-IS *                |
|-----------|--|--------------------------|-----------------------------|-------------------|----------|---|-------------|---|---|-------------------------|
| Version   |  | with mag<br>piston       | jnetic                      | without<br>piston | magnetic | with mag<br>piston                      | gnetic      | without<br>piston                       | magnetic                                | with magnetic<br>piston |
|           | - With elastic cushioning                              |                          |                             | Þ                 |          |   |             | Þ                                       |   | ₫ <b>Ĕ</b>              |
|           | <ul> <li>With pneumatic<br/>cushioning</li> </ul>      |                          | ¢.                          |                   | Ø.       |   | ₩.          |   | ¢                                       |                         |
|           | Heat-resistant up to                                   | 120°C                    | 120 °C                      | 150 °C            | 150 °C   | 120 °C                                  | 120 °C      | 150 °C                                  | 120°C                                   | 120°C                   |
|           | Improved corrosion resistance                          |                          | ~                           |                   |          |   |             |   |   |                         |
|           | Piston rot extension                                   | ~                        | ~                           | ~                 | ~        | ~                                       | ~           | ~                                       | ~                                       | <ul> <li>✓</li> </ul>   |
|           | Through piston rod                                     | ~                        | ~                           | ~                 | ~        | ~                                       | ~           | ~                                       | ~                                       | ~                       |
|           | Non-rotating,<br>without front plate                   |                          | ~                           |                   |          |   |             |   |   |                         |
|           | Modular scraper  | ~                        | ~                           | ~                 | ~        | ~                                       | ~           | ~                                       | ~                                       | ~                       |
|           | Trunnion mounting                                      | ~                        | ~                           | ~                 | ~        | ~                                       | ~           | ~                                       | ~                                       |                         |
| -         | Smooth-running   | PRA                      | PRA                         | TRB               | TRB      |   |             |   |   |                         |
| Æx>       | Zone 21, category 2 G/D**<br>Zone 22, category 3 G/D** |                          | ~                           |                   |          | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | ~ ~         | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ |                         |
| *         | Rotated end covers                                     | ~                        | ~                           | ~                 | ~        | ~                                       | ~           | ~                                       | ~                                       | •                       |
| the state | Holding unit/dynamic brake                             | ~                        | ~                           | ~                 | ~        |   |             |   |   |                         |
|           | Holding unit   | ~                        | ~                           | ~                 | ~        |   |             |   |   | (✔)                     |
| N         | Distance measuring system                              | ~                        | ~                           | ~                 | ~        | ~                                       | ~           | ~                                       | ~                                       | v                       |
| ****      | With mounted valve**                                   | ~                        | ~                           | ~                 | ~        | ~                                       | ~           | ~                                       | ~                                       | (✔)                     |
|           | Piston diameter  | 32 - 125 mm 160 - 320 mm |                             |                   |          |   | 25 - 125 mm |   |   |                         |
|           | Stroke range   |                          | 25 - 2,800 mm 25 - 2,700 mm |                   |          |   |             | 25 - 2,800 mm                           |   |                         |

## Precise guidance, large distances, enormous flexibility – and "Easy-2-Combine". Rodless cylinders

The ideal shuttle service: operates exactly as required. Quick, direct, without detours and always on time. The rodless cylinder concept impresses with absolute repetitive precision, functions highly dynamically with reliable accuracy and is thereby highly cost-effective.

#### The basis for numerous handling applications

Thanks to their high functionality and drive force in a minimum of space and the wide range of sizes and design variants, the rodless cylinders and slide units are predestined for use as basic modules in handling technology. The great flexibility of the pneumatic connections and mechanical interfaces facilitates machine design and integration into existing configurations. Perfect function integration and practical details, such as size-optimized connections and ducts and optimized cushioning systems, are further guarantees of safe and reliable continuous operation.

The wide range of design variants with different connection options allow targeted use in automated handling technology in many industries.

#### Precision and speed for long strokes

The rodless cylinders permit an optimum stroke length in relation to their size. This saves space and facilitates machine design. The application range covers piston diameters from 16 mm to 80 mm and stroke lengths up to 9,900 mm. A wide speed range of 0.05 m/s to 5 m/s can be achieved with extremely high repetitive precision.

| Series                                      | RTC-BV | RTC-SB | RTC-CG | RTC-HD | СКР | GSU |
|---|--------|--------|--------|--------|-----|-----|
| Load capacity                               | 0      | +      | +      | ++     | ++  | +   |
| Precision                                   |        | 0      | +      | +      | ++  | ++  |
| Easy-2-Combine interface                    |        |        | ++     | ++     | ++  | ++  |
| Longer strokes                              | ++     | ++     | 0      | +      | +   |     |
| Stroke limitation with shock ab-<br>sorbers | 0      | ++     | ++     | ++     | ++  | ++  |

++ Highly recommended + Recommended O Suitable



#### **RTC series**

The compact form and unique properties of the RTC series open up completely new application possibilities. Compared with a round piston, the oval piston can withstand higher loads and torques. The slide and piston as a single unit mean high load capacity and reliability. High load capacity with small cylinder dimensions enables a simplified and compact machine design. The RTC series program is based on four variants with different key strengths. For large loads, very precise movement and positioning and a wide range of speeds. Stroke lengths and porting available in metric and inch dimensions.



#### **CKP** series

CKP series cylinders are particularly suitable for moving heavy loads in machine environments with limited space. They are equipped with integrated pneumatic cushioning and ensure extremely precise, sturdy guidance with high repetitive precision.



#### **GSU** series

This high-performance slide unit forms a sturdy basis for a large number of handling applications. The stroke length and position can be set variably over the entire length of the slide unit – individually from both sides, further underlining the enormous flexiblity for installation. The very low overall height and an option for ventilation and exhaust on one side further expand the integration possibilities.

GSU

# Overview of variants – basic versions and equipment details. Rodless cylinders

#### Example: RTC series

Complete product range for numerous tasks and special applications

- 1 | Hightech sealing and lubrication for a wide range of speeds with best-in-class tightness, long service life and high reliability
- 2 | One-piece slide and pistons: increased strength, reduced installation space
- 3 | Oval pistons: an oval piston design permits unusually high loads and bending moments, as well as an even compacter machine design
- 4 | Easy-2-Combine interface: simplified machine design and reduced mounting effort saves time and money









| Series  |                                | RTC-BV          | RTC-SB         | RTC-CG         | RTC-HD            | СКР                     | GSU                     |
|---------|--------------------------------|-----------------|----------------|----------------|-------------------|-------------------------|-------------------------|
| Version |                                | with magnetic p | biston         |                |                   | with magnetic<br>piston | with magnetic<br>piston |
|         | – with pneumatic<br>cushioning | Į <b>į</b>      |                |                | ₫ <b>Ľ</b> ⊅<br>T |                         |                         |
|         | – with hydraulic<br>cushioning |                 |                |                |                   |                         |                         |
|         | Adjustable cushioning          | ~               | ~              | ~              | ~                 | ~                       |                         |
|         | Oval piston                    | ~               | ~              | ~              | v                 | ~                       | ~                       |
| ·····   | Ball rail guide                |                 |                | ~              | ~                 | <b>v</b>                | ~                       |
|         | Adjustable stroke limitation   |                 | ~              | ~              | ~                 | ~                       | ~                       |
|         | Easy-2-Combine<br>interface    |                 |                | ~              | ~                 | ~                       | ~                       |
|         | Piston diameter                | 16 - 80 mm      | 25 - 40 mm     | 16 - 40 mm     | 16 - 63 mm        | 16 - 32 mm              | 16 - 25 mm              |
|         | Stroke range                   | 100 - 9,900 mm  | 100 - 9,900 mm | 200 - 2,000 mm | 200 - 4,300 mm    | 100 - 3,700 mm          | 200 - 1,000 mm          |





Oval piston provides an optimal distribution of transverse forces. Permanently connected to the slide, the oval piston can withstand higher loads and moments than the round piston. Users achieve the same performance with far more compact cylinders, which cuts down on weight and costs.

Adjustable stroke limitation can be used to fix a variable stroke length and position over the entire stroke range. Adjustments can be easily made using different shock absorbers without special tools.

# We are the guide for handling technology

Turning and driving – no more, no less. And all from a single source. AVENTICS. We not only guide objects and workpieces exactly into their positions with our components and complete solutions – we have also established a leading position for ourselves as providers of handling technology.

#### Great solutions for small handling

Adequate solutions for practically all conceivable functions in handling technology can be found in AVENTICS comprehensive pneumatics program. Finely-tuned components and elements that perfectly fit together thanks to this consistent product philosophy, combined with sophisticated sensor technology for high precision, make these pneumatic solutions perfect. Modularity and ease of installation of the individual components are always key features of our product offerings in addition to pure functionality. Easy-2-Combine with the online configurator – it pays off!

- Assembly and handling
- Electronics industry
- Semiconductor production

| Series              | GPC | MSC | MSN | TRR | RCM |
|---------------------|-----|-----|-----|-----|-----|
| Compactness         |     | ++  | ++  |     | ++  |
| Load capacity       | 0   | ++  |     | ++  | +   |
| Precision           | +   | ++  | ++  | +   | ++  |
| Easy-2-Combine      | +   | ++  | ++  |     | ++  |
| Cushioning capacity | +   | ++  |     | +   | ++  |
| Stroke range        | +   | +   |     | ++  | +   |
| Stroke limitation   | 0   | ++  |     | +   | ++  |

++ Highly recommended + Recommended O Suitable

#### Serie TRR

The TRR series can realize angles of rotation up tp 360° and torques up to 110 Nm and offers adjustable pneumatic cushioning.





#### **GPC** series

The GPC series sets itself apart with high side load capacities and torsion protection. The robust, precise drive and guide absorb high torques and transverse forces.



#### **MSC** series

The mini slides from the MSC series have a compact design, require little installation space and reliably ensure the necessary dynamics in the system. They provide maximum rigidity for high torques and loads and feature particularly gentle operation thanks to a unique cushioning system. Air supply options from three sides ensure maximum flexibility when installing the system and variable stroke adjustment enables different strokes within the individual sizes.



#### **RCM series**

Practically all standardized rotary and swivel movements can be performed with the rotary modules in the RCM series. These modules can be installed directly on mini slides and equipped with mechanical grippers.



#### **MSN** series

The mini slides offer a precise guide without play in a slim package. Thanks to an especially wide variety of mounting and air supply options, they can be used in virtually any position and location.



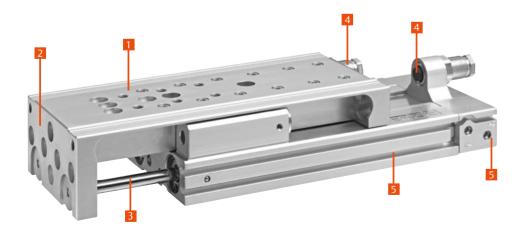
MSN

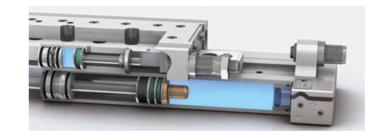
## Overview of variants – basic versions and optional equipment. Handling technology

Mini slides from the new-generation MSC series offer the highest standards paired with highly flexible equipment options.

- 1 | Maximum rigidity: The pre-tensioned guide system without play and one-piece slide table offers maximum stability and reliable precision with minimal tolerance values.
- 2 | Compact and strong: Optimal load bearing capacity, drive force and functionality within a small cross-section enable especially compact machine designs.
- 3 | Maximized payload: The symmetrically operating double-piston system of the guide unit offers maximum load bearing capacity. The MSC can be equipped with one or two pistons.
- 4 | Low-maintenance cushioning: Integrated pneumatic cushioning for the same long service life and the same maintenance intervals as the piston drive. The hydraulic shock absorbers can be replaced without resetting the stroke, which minimizes machine downtimes. The elastic cushioning elements are maintenance-free.
- 5 | Functional design: Sensors, stroke settings and air connections can be installed on both sides. This allows optimal adjustment to the installation situation in the machine.

| Series  |                                     | MSN                     | MSC        |            | GPC-BV      | GPC-E       | TRR                     | RCM                     |
|---------|-------------------------------------|-------------------------|------------|------------|-------------|-------------|-------------------------|-------------------------|
| Version |                                     | with magnetic<br>piston | with magne | tic piston | with magne  | tic piston  | with magnetic<br>piston | with magnetic<br>piston |
|         | – with elastic<br>cushioning        | ~                       | ~          |            | ~           |             | <b>v</b>                | <b>~</b>                |
|         | – with pneumatic<br>cushioning      |                         |            | ~          |             |             |                         |                         |
|         | – with hydraulic<br>cushioning      |                         | •          |            |             | ~           | <b>v</b>                | ~                       |
| ·····   | Number of pistons                   | 1                       | 1 or 2     | 2          | 1           | 1           | 2                       | 2                       |
| <u></u> | Ball rail guide                     | ~                       | ~          | ~          |             |             | Rack                    | Rack                    |
| Ô       | High-performance<br>ball rail guide |                         | •          | ~          |             |             |                         |                         |
|         | Slide bearing                       |                         |            |            | ~           | ~           |                         |                         |
|         | Ball bearing                        |                         |            |            | ~           | •           |                         |                         |
|         | Easy-2-Combine<br>interface         | ~                       | ~          | ~          | ~           | ~           | <b>v</b>                | ~                       |
|         | Piston diameter                     | 6 - 16 mm               | 8 - 25     | 5 mm       | 10 - 100 mm | 12 -20 mm   | 32 - 100 mm             | 6 - 25 mm               |
|         | Stroke range                        | 5 - 30 mm               | 10 - 20    | 00 mm      | 10 - 200 mm | 25 - 150 mm |                         |                         |







The guided slide units offer several cushioning options. Pneumatic cushioning provides a new, unique option that, in addition to the elastic cushioning elements and hydraulic shock absorbers, ensures especially gentle operation.

Depending on the mounting situation, end plates with different air connections can be used. Connections from three sides or in the compact version with connections only at the rear.

# Special cylinders for special applications and customized solutions

# When you need a highly specialized solution: tailor-made cylinders and components

Our pneumatics experts develop customized solutions with functions that are tailored to specific applications. This can include newly designed cylinders or slightly but vitally modified components from the standard cylinder program. Contact our experts! They have know-how from decades of individual design and development work. If there's an individual solution for your application, we'll find it.

- Modification of standard components
- Combining different functions in a single product
- Product development with additional specifications

Rely on our competence from the outset! From the first discussion, the search for a solution, building of prototypes through the test phases, right up to series production of your individual pneumatics solution.

# Cylinder with modified piston rods, specially designed profiles, materials and additional functions





All bellow actuators permit high forces in small installation spaces. They operate practically without wear or the need for maintenance.

BRB

BCP

#### Bellow actuators – BCP, BCC, BCR, BRB series

We offer four series of bellow actuators. The various designs, equipment, and materials mean that each series is predestined for specific tasks.



#### SWN series screw-in cylinders

The cylinders in the SWN series can be easily installed without further accessories. Thanks to a thread integrated directly into the cylinder body, they can be installed in their working environment without taking up space.



# RDC series flexible diaphragm cylinders

Thanks to their low friction, the RDC cylinders can be actuated at low pressure. These cylinders permit precise balancing of forces, particularly in finely-tuned systems.



BCC

27

# The right accessories for all operating conditions and machine environments

They are unimposing but essential. They simply belong there: the right accessories for the job. We have always attached great importance to having an extensive program of accessories in order to ideally meet the needs of the most varied applications.

#### We've thought of everything!

Accessories are an integral part of the scope of supply and have the same high quality as the entire product range. Practical experience from decades of user-oriented work has also gone into perfecting product accessories. This is a precondition and guarantee for efficient and generally trouble-free continuous operation of machines and systems.

- Exactly matched to the product program
- Mountings complying with ISO standard
- Best material and manufacturing quality
- Delivery units configured exactly to the product

#### Example: accessories range for the PRA cylinder series

- 1 | Cylinder rod mountings CM1 series
- 2 | Piston rod mountings CM2 series
- 3 | Locking elements LU1 LU5
- 4 | Sensors SM6, ST6, ST4 series
- 5 | Function units CG1 series



Whether it's a secure cylinder mounting, simple piston rod nut, or plain sensor bracket – the importance of these small parts only becomes apparent when they are missing or don't fit. That is no problem for Emerson customers.

#### Cylinder rod mountings CM1 series

Bolts, flange mountings, foot mountings, clevis mountings, rear eyes, bearing blocks, nuts for cylinder rod mountings, trunnion mountings, intermediate flanges.







#### Piston rod mountings CM2 series

Compensating couplings, rod clevises, ball eye rod ends, piston rod extensions, nuts for piston rod mountings.



#### Function units CG1 series



#### Shock absorbers SA1, SA2, 370 series



## Holding, locking, braking – non-stop machine safety

#### LU6 locking unit/dynamic brake

The LU6 is a mechanical locking unit/brake for piston rods in pneumatic cylinders according to ISO 15552 or comparable round bars. It is a safety component in accordance with the Machinery Directive 2006/42/EC (CE mark) and can be used in safety-relevant controls. The LU6 locking unit for D32-100 has been tested by the German Institute for Occupational Safety and Health (IFA) and certified as a pneumatic braking/holding unit with safety function as per DIN ISO 13849.

- Prevention of hazardous movement (cat. 1 up to max. PL c, "proven component")
- Secure hold in upper end position through clamping and one-sided pressurization (cat. 4 up to max. PL e)
- Interruption of a hazardous movement (emergency stop)
- High B<sub>10d</sub> -dynamic braking values: 2 million cycles
- High B<sub>10d</sub>-static holding values: 5 million cycles
- Optional function query on LU6 by IN1 sensor



#### Modular scraper for series PRA/TRB and ITS cylinders

Five scrapers modules are available for each of the cylinder series. They are available separately as spare parts with fully installed seals and bushings and can be exchanged at any time, guickly and easily, without removing the cylinder.





Ø 32 – 40 mm Ø 50 – 125 mm Modular scrapers for PRA/TRB

Ø 160 – 320 mm Modular scrapers for ITS

#### More flexibility, better sealing quality, longer service life, lower costs

- For series PRA and TRB: cylinder versions with a specific selection of scrapers (optional)
- For series ITS: choice of scrapers as a standard feature

You are free to decide which scrapers mean the greatest benefits for your application and industry. You can even implement a different scraper model with the same cylinder if your needs change.

- Effective scraping, longer service life
- Protected piston rod seal
- Easy exchange, low-maintenance
- Application-specific scraper technology
- Excellent flexibility thanks to a modular concept

#### Modular sealing system – even more process efficiency



#### **Holding unit HU1**

Holds piston rods using spring force. Mounting to cylinder via a corresponding adapter. Holding cartridge can be exchanged in case of wear.



#### Locking unit LU1 – LU5

Eccentric movement holds the piston rod in any position. Flange mounting to cylinder.



| Cylinders  | Series PRA      | /TRB, Ø 32 to   | o Ø 125 mm       |                 |                  | Series          | ITS, Ø 16        | 50 to Ø 320 i  | mm               |                  |
|--|-----------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|----------------|------------------|------------------|
| Modular scrapers   | NBR-PEE         | NBR-PTFE        | FKM-PTFE         | PUR/metal       | FKM/metal        | NBR             | FKM              | PUR/metal      | FKM/metal        | PTFE             |
| Seal   | NBR             | NBR             | FKM              | PUR             | FKM              | NBR             | FKM              | PUR            | FKM              | PTFE             |
| Scraper 1  | PEE             | PTFE            | PTFE             | FKM             | FKM              | NBR             | FKM              | PUR            | FKM              | PTFE             |
| Scraper 2  |                 |                 |                  | metal           | metal            |                 |                  | metal          | metal            |                  |
| Temperature<br>resistance                                | -20 to<br>+80°C | -20 to<br>+80°C | -10 to<br>+150°C | -20 to<br>+80°C | -10 to<br>+150°C | -20 to<br>+80°C | -10 to<br>+150°C | -40 to<br>+80℃ | -10 to<br>+150°C | -10 to<br>+150°C |
| General industry   |                 |                 |                  |                 |                  |                 |                  |                |                  |                  |
| Woodworking<br>industry                                  |                 |                 |                  |                 |                  |                 |                  |                |                  |                  |
| Steel industry   |                 |                 |                  |                 |                  |                 |                  |                |                  |                  |
| Paper/printing<br>industry                               |                 |                 |                  |                 |                  |                 |                  |                |                  |                  |
| Textile industry,<br>food industry,<br>chemical industry |                 |                 |                  |                 |                  |                 |                  |                |                  |                  |

NBR = acrylonitrile butadiene rubber, PTFE = polytetrafluoroethylene, FKM = fluorocarbon rubber, PU = polyurethane, PEE = polyester elastomer, Metall = brass

#### Our sensor technology for pneumatic cylinders

#### Matching sensors for all cylinders including accessories

In addition to high-precision measurements, excellent flexibility during mounting and adjustment are also required to meet varied demands.

- Sensors with cable connection, push-in fitting, M8 plug with knurled screw, contactless, in an ATEX version
- Sensor solutions for all AVENTICS cylinder series
- Mountings, cable holders, connecting cables, angled connector



#### SC4 series

The SC4 is suitable for applications with pneumatic cylinders with a C-slot. Its short housing and connection line rotated by 90° make it ideal for use in tight spaces and with short-stroke cylinders. Thanks to a short, exact switching range, the SC4 is also a perfect fit for the AVENTICS UPG gripper series.



#### **SM6 series**

With four versions, series SM6 distance measuring sensorsflexibly cover any required measurement range. They are easy to assemble and can be adjusted as needed within the maximum measurement range.



#### ST4 |ST4-2P series

Sensors for 4-mm slots offer high-tech in the tightest space and are always the right choice when every millimeter counts – ideal for pneumatic actuators in small handling.



#### **ST6 series**

Universal sensors for standardized 6-mm slots: their optimized form permits flush fitting in the existing slots and even spacesaving integration in any machine environment using sensor mountings.

ST6

#### **SM6-AL series**

The SM6-AL analog distance measuring sensor also enables high-resolution distance measurement across the entire range of 107 to 1,007 millimeters. The distance measuring sensor is thus ideal for the continuous recording of piston movements in pneumatic cylinders. A robust, chemicalresistant aluminum housing, as well as a cable sleeve support, guarantee a long sensor service life and reduce maintenance costs.



For further information on these or any other AVENTICS product, visit Emerson.com

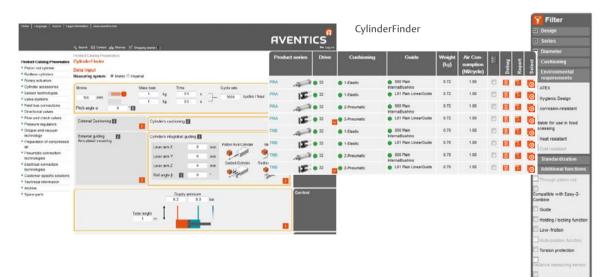
| Overview of the basic compat   | ibility betwee | n the sensor s | eries and cylin | der series           |            |               |            |
|--|----------------|----------------|-----------------|----------------------|------------|---------------|------------|
|  | 75             | 75             |                 | 2                    |            |               |            |
| Recommended sensors<br>for on-cylinder mounting:<br>- via the nut: ●<br>- via sensor mounting: ○ | ST4 series     | -              | and the         | a neria)<br>Tri mana |            | -             |            |
|  | ST4-2P series  | SC4 series     | ST6 series      | ST9 series           | SM6 series | SM6-AL series | SN2 series |
| MNI (ISO) ICM (ISO)  | 0              |                | 0               |                      | 0          |               | 0          |
| CSL  | 0              |                | 0               |                      |            |               | 0          |
| RPC  |                |                | 0               |                      |            |               |            |
| CCI/KPZ (ISO)  |                |                | •               |                      | •          |               |            |
| SSI  | •              | •              | •               |                      | •          |               |            |
| KHZ  |                |                | 0               | •                    |            |               |            |
| PRA/CVI (ISO)  | •              | ٠              | •               |                      | •          | 0             | 0          |
| TRB/CVI (ISO)  |                |                | 0               |                      | 0          |               | 0          |
| ITS (ISO)  |                |                | 0               |                      | ο          | 0             | 0          |
| CCL-IS/CCL-IC<br>(ISO)   |                |                | 0               |                      |            |               |            |
| RTC  | •              |                | 0               |                      |            | 0             |            |
| GSU/CKP  | •              |                |                 |                      |            |               |            |
| GPC  | •              | ٠              | •               |                      | •          |               |            |
| MSC  | •              | •              |                 |                      |            |               |            |
| MSN  | •              | •              |                 |                      |            |               |            |
| RCM  | •              |                |                 |                      |            |               |            |

# The crucial difference: all-round support until everything is running

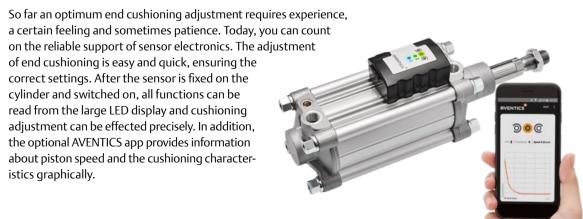
#### How to find the perfect cylinder for your application

Simply enter the key performance parameters for your new cylinder to get an overview of all possible cylinders. Additional filters and comparison analyses narrow down your results. After you have made a decision, you are forwarded to the directly linked configuration program.

- Application data input: stroke, mass load, time, load movement direction and pitch angle, cycles per hour, additional detailed data as an option intuitive navigation with help information.
- As a result, all possible cylinder series are listed with the key basic data and additional comparison values weight, speed, air consumption, etc.
- The selection can be refined according to the desired specifications via the comprehensive filter menu.



#### The easy way for precise cushioning adjustment



## Glossary

| Symbol   | Designation  |
|--|--|
| ļÞ   | Piston rod cylinder without magnet, with elastic cushioning  |
| ſ  | Piston rod cylinder with magnet,<br>with elastic cushioning  |
| Ø.   | Piston rod cylinder without magnet,<br>with pneumatic cushioning                                       |
| ţ <b>É</b>   | Piston rod cylinder with magnet,<br>with pneumatic cushioning  |
| Þ  | Piston rod cylinder without magnet, non-rotating, with front plate                                     |
| Ţ <b>E</b>   | Piston rod cylinder with magnet,<br>non-rotating, with front plate                                     |
|  | Rodless cylinder with magnet, with hydraulic cushioning  |
|  | Rodless cylinder with magnet, with pneumatic cushioning  |
|  | Heat-resistant versions for use up to the specified ambient temperature in °C                          |
| ISO  | Versions comply with the specified installation standards  |
| STAINLESS STEEL<br>RUST<br>FREE  | Version in stainless steel, corrosion-resistant steel<br>x5CrNi 18 – 10, x5CrNi 18 – 9, x17CrNi 16 – 2 |
| Ţ₩₽  | Cylinder with compressed air supply on one side only, return to home position with tension springs     |
|  | Piston rod length can be configured as needed within the technically feasible range                    |
| -F   | Piston rod guided through cover and bottom, mounting on both ends                                      |
| ⟨€x⟩   | Versions are suitable for ATEX applications (zones and corresponding categories)                       |
| ۵ <sup>۵</sup>   | Grease used as a lubricant is suitable for use in the food industry acc. to NSF-H1                     |
|  | Cylinder pistons have a special form with an oval cross-section  |
|  | Number of pistons for slide operation, MSC mini slides, can be operated with 1 or 2 pistons as desired |
| 9 (1) 1<br>6 (1) | Rotated end covers, clean pipe-cover connection thanks to optimized rolling geometry                   |
| •  | Elastic cushioning elements, mainly polymers, to absorb stopping energy in end position                |
|  | Stroke length can be configured as needed within the entire stroke range                               |
| ↔  | Smooth-running versions  |

## Glossary

| Symbol      | Designation  |
|-------------|--|
| A.          | Piston rods available with internal or external thread   |
| a a a       | Cylinders can be individually equipped with the modular sealing system                               |
| <del></del> | Cylinder with improved corosion resistance   |
|             | Cylinder can also be mounted using<br>a trunnion mounting  |
| ette .      | For safe machine applications, cylinder is suitable for use as a mechanical holding and brake unit   |
|             | For safe machine applications, cylinder is suitable for use as a mechanical holding and locking unit |
|             | Cylinder is also available as a preassembled working unit with valve and tubing                      |
| N.          | Adjustable cushioning on the cylinder can be adjusted as needed.                                     |
| E I         | Pneumatic cushioning adjusted at factory, optimized for standard applications                        |
| ·····       | Slide is guided by a ball rail   |
| ·····       | High-performance ball rail guide with optimized precision, rigidity and load capacity                |
|             | Stroke can be limited using shock absorbers situated as needed across the cylinder stroke range      |
|             | Cylinders have an Easy-2-Combine interface, mounting without additional transition plates            |
|             | Hydraulic shock absorber to reduce the stopping energy of the cylinder piston                        |
| 17          | Cylinder suitable for sensors for continuous distance measurement of the piston position             |
| 0           | Slide guide based on a special slide bearing   |
|             | Slide guide based on a special ball bearing  |
| 7           | 4 mm C-slot integrated in cylinder profile for<br>all 4 mm sensors in the ST4, ST4-2P series         |
|             | 6 mm T-slot integrated in cylinder profile for<br>all 6 mm sensors in the ST6, SM6 series            |
| 2           | Dovetail slot integrated in cylinder profile for ST9 series sensors                                  |
|             |  |
|             |  |
|             |  |

#### **Engineering Tools**

#### The homepage for non-stop service



AVENTICS' Engineering Tools bundle the entire pneumatics range and comprehensive expertise at one convenient location - www.engineering-tools.com

#### CAD



Objects can be issued here directly as a CAD file in various formats, as a PDF file, or for fur-

ther configuration in our customers' software.

#### **Configurators**



To create customized products matching their individual requirements, customers can set their

parameters in the configuration program, which then presents a product tailored to their specifications.

#### **Calculation programs**



With transparent calculations. our customers can determine the size or durability needed for

their products and can even keep an eye on energy consumption.

#### **Circuit diagram software**



With the Scheme Editor, our customers can quickly and easily create circuit diagrams

that are based on their components and linked their your catalog selection.

#### **Cross Reference Tool**



This tool shows our customers the right alternatives to competitor products from within the AVENTICS catalog.

#### CylinderFinder



This free online tool helps our customers find the right cylinder for their application

with just a few clicks.

#### Sales Partner Portal



The Sales Partner Portal establishes a direct connection between AVENTICS and our

sales partners and speeds up communication. It also contains a great deal of valuable information.

#### Smart shopping for pneumatics professionals



In the new Online Shop, you can easily, quickly and securely order your pneumatics products - www.pneumatics-shop.com Your advantages:

- Intelligent search and filter functions
- Spare parts and accessories available for every product
- Track your orders online
- Transparent pricing

Simply register with your e-mail address, password and order directly

| Cylinders     |  |                     |
|---------------|--|---------------------|
| Diameter      |  | Series              |
| 6 – 16 mm     |  | SWN                 |
| 10 – 25 mm    | ollo   | MNI<br>ISO 6432     |
| 8 – 32 mm     |  | ICM<br>ISO 6432     |
| 16 – 25 mm    | +  | CSL<br>ISO 6432     |
| 32 – 63 mm    | ard a  | RPC                 |
| 32 - 100 mm   |  | ICS                 |
| 16 – 100 mm   |  | CCI<br>ISO 21287    |
| 16 – 100 mm   | and the second s | CCL-IC<br>ISO 21287 |
| 12 – 100 mm   |  | SSI<br>ISO 15524    |
| 8 – 100 mm    | a la   | КНΖ                 |
| 16 – 100 mm   |  | KPZ<br>NFE 49004    |
| 32 – 125 mm   | and the second second  | PRA<br>ISO 15552    |
| 160 – 320 mm  |  | ITS<br>ISO 15552    |
| 25 - 125 mm   | 47   | CCL-IS<br>ISO 15552 |
| 32 – 125 mm   | and the second second  | TRB<br>ISO 15552    |
| 52.5 – 115 mm | - to a Mile  | RDC                 |

| Cylinders/hand          | Cylinders/handling technology |                  |  |  |  |
|-------------------------|-------------------------------|------------------|--|--|--|
| Diameter                |                               | Series           |  |  |  |
| 32 – 125 mm             |                               | CVI<br>ISO 15552 |  |  |  |
| 16 – 80 mm              | 1                             | RTC              |  |  |  |
| 16 – 32 mm              |                               | СКР              |  |  |  |
| 16 – 25 mm              |                               | GSU              |  |  |  |
| 90 – 640 mm             |                               | ВСР              |  |  |  |
| 80 – 435 mm             |                               | ВСС              |  |  |  |
| 442 – 950 mm            |                               | BCR              |  |  |  |
| 60 – 173 mm             |                               | BRB              |  |  |  |
| 6 – 16 mm               | 1                             | MSN              |  |  |  |
| 8 – 25 mm               |                               | MSC              |  |  |  |
| 10 – 100 mm             |                               | GPC              |  |  |  |
| Torque<br>0.17 – 6,5 Nm |                               | RCM              |  |  |  |
| Torque<br>4.5 – 110 Nm  | 6                             | TRR              |  |  |  |
|                         |                               |                  |  |  |  |
|                         |                               |                  |  |  |  |
|                         |                               |                  |  |  |  |

Sturdy and reliable. The right cylinder solution for every application – perfectly matched to each other



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