Standard drives

FESTO

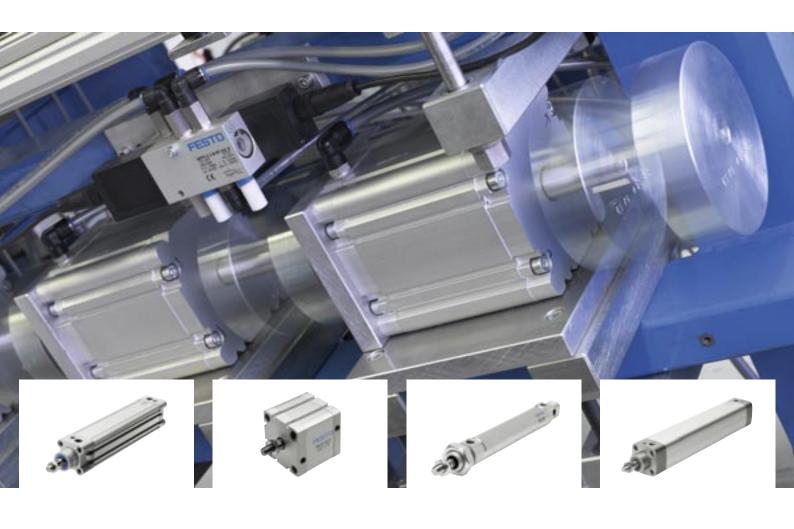


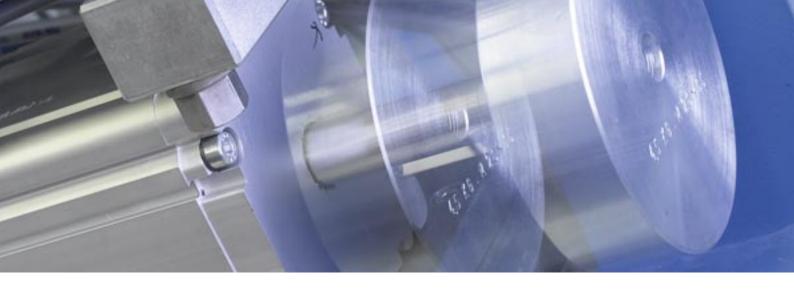


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Note:

You will find all standard drives, variants and special cylinders on **www.festo.com** and in our electronic catalogue.



Relying on new standards

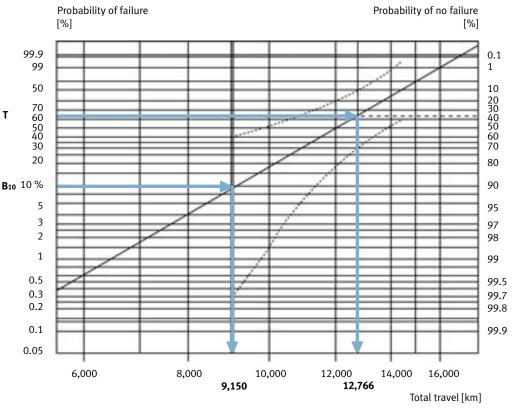
Millions of Festo cylinders are used reliably every day, and they have been for more than 40 years. Whether it's a question of technology, quality or service, you can often only tell how good a cylinder really is when it's put to the test under harsh conditions.



Products with a long service life – quality that pays for itself Festo subjects every product series that leaves the factory to long-term functional and endurance tests, both during development and all other phases of the product life cycle.

We aim to constantly optimise our products for a long service life and increased cost effectiveness. The results from these tests, carried out under standard conditions, form the basis for preventative maintenance concepts – to ensure that your systems are always ready for use.

Example standard cylinder Tests carried out to Festo standards $B_{10} \triangleq 9,150 \text{ km}$ $T \triangleq 12,766 \text{ km}$





Convincing innovation

3K pistons

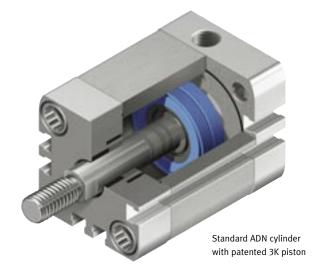
An increase in your productivity – this is what we aim for in research and development at Festo. One example of this is the 3K system piston.

Thanks to its excellent running characteristics and outstanding cushioning performance in the end positions, it can easily accommodate high speeds and machine cycles.

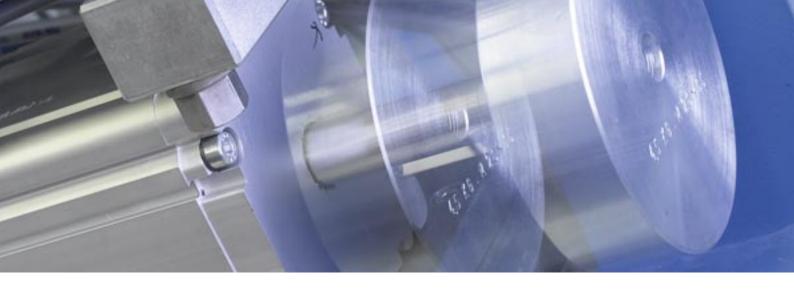
The 3K pistons are also very short; the space saved thus enables the rod bearing to be longer. This guides the rod more precisely and permits increased lateral forces.

The 3K pistons are used in the profile cylinders DNC and DNCB, in the standard round cylinders

DSNU and the compact cylinders ADN. In production, only one processing step is needed to convert the magnetic strip, bearing tape and piston seal into a 3K piston, ready for operation. This saves time and money, which is reflected in attractively priced products.







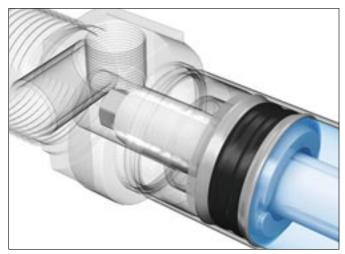
Self-adjusting pneumatic cushioning

It is no longer necessary to adjust the cushioning on the DSNU with PPS. This reduces installation time and simplifies assembly. It is a very interesting alternative to reduce cycle times, especially for OEMs.

The cushioning always adjusts itself, even with changing loads and/or speed. This ensures that all round cylinders DSNU have the same cushioning characteristics under all circumstances. And it means that no accidental changes to the adjustment can be made.



Economical: the round cylinder DSNU with self-adjusting pneumatic cushioning – PPS for short.



The PPS cushioning ensures that the end positions are reached dynamically but gently, without the need for manual intervention. This is achieved by longitudinal slots that allow the air to escape in a controlled manner.



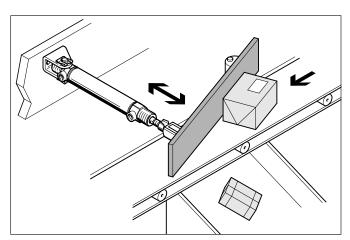
Self-adjusting pneumatic cushioning DSNU-PPS

It is not just that time is no longer lost adjusting the cushioning, but the fact that every cylinder is set-up identically that makes the DSNU-PPS unbeatable in its class.

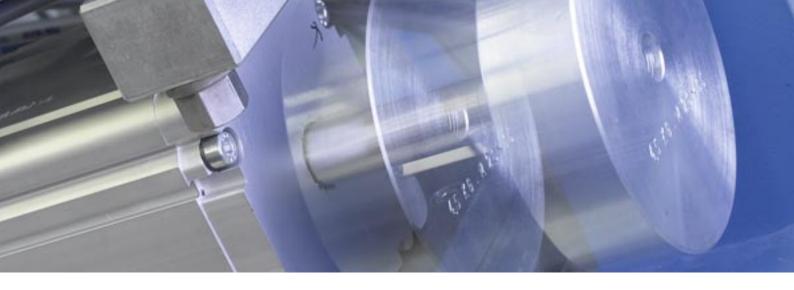
Example

A system for sorting packages consists of 60 stations, each with one round cylinder DSNU. A total of 60 cylinders are used.

Installation and adjustment are reduced by up to 5 minutes per cylinder. This results in a potential saving of 300 minutes or 5 working hours for the 60 cylinders used.



The DSNU with PPS self-adjusting cushioning. For more information see page 5.



A round cylinder to ISO 6432 for almost every industry sector

A better system – the modular round cylinders DSNU. A combination of a few basic types with a variety of characteristics not only produces the optimum round cylinder for every application, but also produces the best technical solution at the best price.

A comprehensive system – with all the accessories. Proximity sensors, flow control valves and an interesting range of mounting fixtures don't leave much to be desired.

A cost-effective alternative to the DSNU: the DSNUP to ISO 6432 with end caps made of high performance polymers. You will find more on the subject of high performance polymers on page 9.











Overview

DSNU - basic cylinder

- Threaded bearing cap
- End cap (AD) with threaded spigot and swivel mounting

DSNU - MQ

- Threaded bearing cap
- Short end cap with lateral supply port

DSNU - MA

- Threaded bearing cap
- Short end cap with axial supply port

DSNU - MH

- Direct mounting on bearing cap (block design)
- Short end cap with lateral supply port



The standard DNC cylinder range: tried and tested millions of times

It can be found in almost all industry sectors. The large number of variants of the DNC range covers virtually every option. One example is positive locking in the end positions (EL) on the modular DNC system, designed as an extremely reliable drop guard to protect sensitive system components or tools. Thanks to integrated mechanical end-position locking, the cylinder does not drop if there is a decrease in pressure, thus preventing damage to systems.



Overview

DNC to ISO 15552

- Stroke lengths up to 2000 mm
- Proximity sensors fit flush on 3 sides in the sensor slot
- The wide range of variants enables a variety of applications
- Selected types conform to ATEX directive for explosive atmospheres

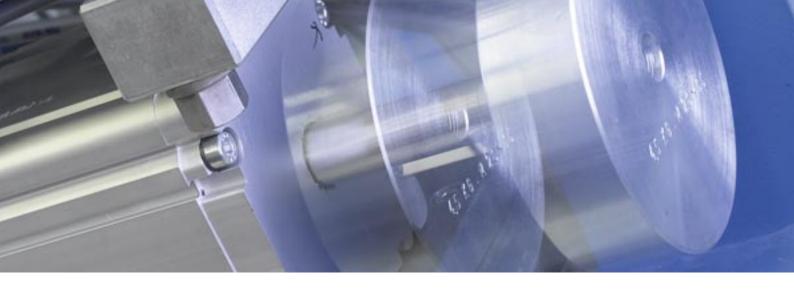


- Ideally suitable for simple tasks
- Attractively priced
- The piston is very compact and can sustain significantly high levels of impact energy. The space saved enables the bearing length to be increased
- Outstanding running characteristics
- All the accessories and mounting components from the DNC range are available



DNCI

- Piston-rod drive with integrated, incremental displacement encoder
- Measuring head in the bearing cap and measuring strips in the piston rod
- Controlled acceleration and braking of large masses at high speeds in connection with the SPC11 Soft Stop
- Force and path regulation and sequence control with SPC200
- Simplest possible combination of movement and measuring functions with transducer DADE



Alternative materials - potential savings for you

Helmets, bicycles, automobile and aircraft components are all products that are expected to provide maximum safety and that are no longer only made of metallic materials. With good reason. For technopolymers no longer have a great deal in common with the old plastic materials; nowadays their material; properties are much more similar to those of heavier metals.

Only pay for the functions that you really need. Innovative materials and attractively priced Festo products are a promising option to optimise the efficiency of your pneumatic applications – without compromising product quality.

Convince yourself of the surprising characteristics of modern, high performance polymers, 50% reinforced with glass fibre.

Property	Die-cast aluminium	Die-cast zinc	Technical polymer
Tensile strength [MPa] 20 °C, dry	220-240	280-300	280
Tensile strength [MPa] 80 °C, dry	190-200	40–50	170
Tension-E-module [MPa] 20 °C, dry	70000	85000	20000
Flexibility [%]	1	3	1.8
Pulsating tensile stress [MPa]	50	55	60
after 106 load changes			
Density [g/cm³]	2.7	6.7	1.64
Resistance to media	Good	Average	Good

Standard drive with high performance polymer



ADNP to ISO 21287

DSNUP to ISO 6432



Compact and short-stroke cylinders

When the compact cylinder ADVU was launched 10 years ago, it was the first in its class. And it immediately set new standards.

The new standard cylinder ADN with its compact design represents the second generation and is again setting standards in the areas of safety, design and assembly.

It has standardised dimensions and innovative technology, offers excellent performance and needs even less space for installation.

The compact cylinders ADN and ADVU as well as the short-stroke cylinder ADVC are used in almost every industry sector.









Overview

ADN/AEN to ISO 21287

- ISO 21287 standard
- Compact design
- Broad area of application
- The comprehensive, modular product range has many variants that can be combined as required
- standard to absorb residual energy facilitate high speeds and fast machine cycles

 Long service life thanks to

• Flexible cushioning rings as

 Long service life thanks to exceptional cushioning characteristics and minimal friction

ADVC to ISO 1552

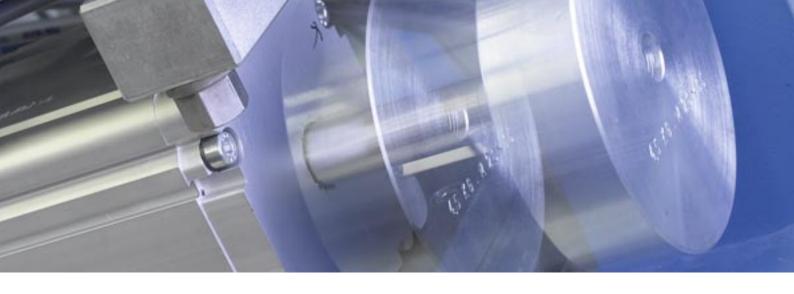
 Optimised fitting space and height There is a choice of suitable housing and piston variants for each application

ADNP to ISO 21287

 Low weight thanks to polymer bearing and end caps and integrated QS fittings Attractive price thanks to the use of the latest materials

ADVU

 The ADVU range has been used for over 10 years and has proved itself a million times over.



Modular variety with the ADN series (ISO 21287)











Main features

Non-rotating compact cylinder

- Double-acting with guide rods
- Non-rotating with plainbearing guide
- For correctly oriented feeding

Non-rotating compact cylinder

- Double-acting with guide rods
- Non-rotating with plainbearing guide
- For correctly oriented feeding

- If the force is insufficient or installation space is tight
- Up to 4 times the force for the

Multi-position cylinders

High-force cylinders

• The in-line connection of multiple cylinders of different lengths facilitates advancing of

ADN with clamping unit (KP)

• Double-acting, mechanical locking for secure clamping in the event of a pressure drop

ADN with end position locking

• Double-acting, positive locking in the end position to avoid

and to absorb low torques and lateral forces.

• Piston: 12 ... 125 mm

• Stroke: 1 ... 500 mm

and to absorb low torques and lateral forces.

• Piston: 12 ... 100 mm

• Stroke: 1 ... 400 mm

same cross-section

• Piston: 25, 40, 63, 100 mm

• Stroke: 1 ... 150 mm

up to 5 positions

• Piston: 25, 40, 63, 100 mm

• Stroke: 1 ... 400 mm

which is effective over the entire stroke range

• Piston: 20 ... 100 mm

uncontrolled movements

• Piston: 20 - 100 mm

• Stroke: 10 ... 500 mm



DGC rodless cylinders

Whether in a basic version, or with a plain guide and ball bearing guide, the large sizes are outstanding because of their high load carrying capacity and precision for moving large masses dynamically.

With diameters from 8 to 63 mm, there is almost no problem that cannot be solved. In addition, with the external intermediate position module for the DGC-25 and DGC-32 one or more intermediate positions can easily be approached, while the end stops with integrated shock absorbers ensure high precision in the end positions as well as dynamic movements.



Overview

DGC

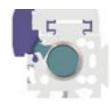
- Rodless drive
- With optional shock absorber and second slide
- Excellent guide quality, high characteristic load values and torque resistance
- The key to compact and higher performance machines due to minimised installation space and proximity switch integrated into the profile



DGCI - the DGC with a displacement encoder

- Developed for pneumatic positioning and soft-stop applications
- Sets standards for precision, reliability and load carrying capacity
- Cost effective

1 drive - 3 guide variants



Basic design
• Backlash < 0.2 mm



Plain-bearing guide
• Backlash < 0.05 mm

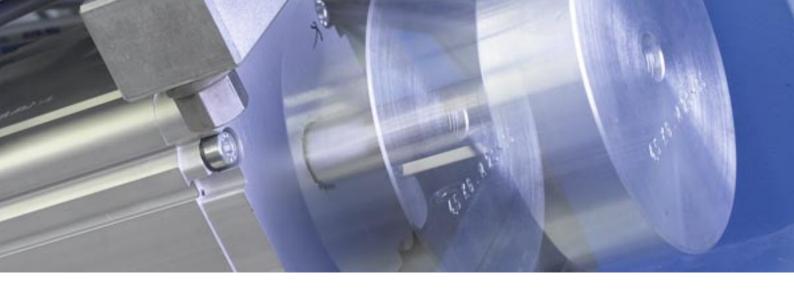


Recirculating ball bearing guide

• Backlash-free

Maximum energy efficiency: the effectively leak-free sealing system of the DGC





Proximity sensor and position transmitter

The highest level of process reliability, optimum performance and maximum safety. Our new and comprehensive sensor portfolio combines these key features and ensures smooth and efficient production processes.

Festo's proximity sensors are position sensors specially adapted and optimised for use with Festo cylinders. Given their special measuring methods, however, this does not prevent them from being used in many other applications where magnetic fields are to be detected.

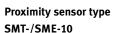
As a system supplier, Festo offers specifically tailored sensing solutions for a broad range of applications. The range of proximity sensors includes stockable parts with fixed or variable configuration according to the module type.

The analogue position transmitter presents the logical development of the binary proximity sensor.



Fits in all profile slot cylinders: SMT-/SME-8M proximity sensor

One for all: universal sensory and mechanical compatibility with all Festo drive units. It fits securely in the slot. Vibration, shock and tensile forces applied to the cable will neither cause the sensor to become loose nor



Reliable sensing solution for Festo drive technology with slot type 10. The sensors can also be fitted in type 8 slots with an installation kit.

Fits in all profile slot cylinders: position transmitter SMAT-8E

It opens up new areas of application for pneumatic cylinders. An analogue, proportional output signal indicates the cylinder piston position within a range of 50 mm. Its integrated OOR (out of range) sensor indicates when the piston leaves the sensing

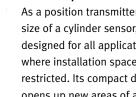
range.

SMAT-8M position transmitter

As a position transmitter in the size of a cylinder sensor, it was designed for all applications where installation space is restricted. Its compact design opens up new areas of application, especially for compact cylinders and grippers. The

lead to unreliable functioning. • Contactless or contacting

- sensing
- Voltage: 24 V AC/DC
- Plug M5, M8, M12, open end
- Contactless or contacting variant
- Voltage 24 V DC
- M8 plug, open end
- Process monitoring/measurement: quality, wear, process feedback
- Object detection: status, position, separating good/bad parts
- Object acquisition: clamping, pressing



piston sensor gives the position as an analogue voltage signal.

- Power supply: 15-30 V
- Measurement principle: contactless, magnetic
- Measuring range: up to 40 mm, depending on the drive
- Protection class: IP65 and 68





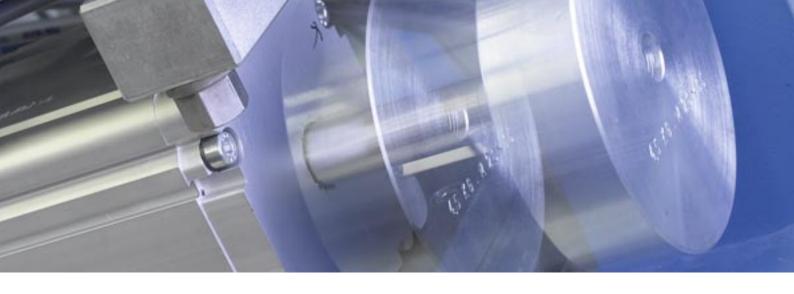
An overview of standard cylinders

Standard cylinder

Туре	Standards	Diameter	Force	Stroke	Special feature
		[mm]	[N]	[mm]	
Standard cylinder	ISO	8 25	30 1870	1 500	For almost all
DSNU/ESNU	6432	30 63			industry sectors
2011					
Standard cylinder	ISO	16 25		25 100	End cap made of
DSNUP	6432				glass-fibre reinforced
- Aller					plastic

Short stroke and compact cylinders

Туре		Standards	Diameter [mm]	Force [N]	Stroke [mm]	Special feature
Compact cylinder ADN/AEN	1	ISO 21287	12 125	68 7363	1 500	For almost all sectors, many vari- ants, requires little installation space
Compact cylinder ADVU/AEVU			12 125	68 7363	1 400	Selected types to ATEX guidelines
Compact cylinder ADNP	0	ISO 21287	20 50	188 1178	50 80	End cap made of glass-fibre reinforced plastic
Short-stroke cylinders ADVC/AEVC	3	ISO 1552	4 100	7.5 4712	2.5 25	



Cylinders for special applications

Туре		Standards	Diameter	Force	Stroke	Special feature
			[mm]	[N]	[mm]	
Compact cylinder		ISO	20 80	141 3016	1 500	Easy-to-clean
Clean Design	1-3	21287				design
CDC cylinder	0					
Profile cylinder		ISO	32 100	483 4712	10 2000	Easy-to-clean
Clean Design	A STATE OF THE PARTY OF THE PAR	15552				design
CDN cylinder	A S					

Standard cylinder

Туре	Standards	Diameter	Force	Stroke	Special feature
			[mm]	[N]	[mm]
Standard cylinder	ISO	32 125	10 2000	10 2000	For almost all
DNC	15552				industry sectors,
10					many variants
Standard cylinder	ISO	32 100	483 7363	2 2000	Cost-effective
DNCB	15552				standard cylinder
A					for almost all
					industry sectors

Rodless cylinder

Туре	Diameter [mm]	Force [N]	Stroke [mm]	Special feature
DGC linear drive	8 63	30 1870	1 5000	Very precise guides, optimised size, simple and easy installation

Note:

This overview only shows a selection from Festo's cylinder portfolio. Other cylinders can be found in the catalogue on www.festo.com

Festo worldwide

Argentina Festo S.A.

Edison 2392 Edison 2592 (B1640 HRV) Martinez Prov. Buenos Aires Tel. ++54 (0)11/47 17 82 00, Fax 47 17 82 82

E-mail: info@ar.festo.com

Australia Festo Pty. Ltd. Head Office (Melbourne) 179-187 Browns Road, P.O. Box 261 Noble Park Vic. 3174 Call Toll Free 1300 88 96 96 Fax Toll Free 1300 88 95 95
Tel. ++ 61(0)3/97 95 95 55, Fax 97 95 97 87
E-mail: info_au@festo.com.au

Austria

Festo Gesellschaft m.b.H. Linzer Straße 227 1140 Wien Tel. ++43 (0)1/91 07 50, Fax 91 07 52 50

E-mail: info_at@festo.com

IP Festo Minsk 220035 Mascherov Prospekt, 78, Belarus Tel. ++375 (0)17/204 85 58, Fax 204 85 59 E-mail: info_by@festo.com

Belgium

Festo Belgium sa/nv Rue Colonel Bourg 101 1030 Bruxelles/Brussel Tel. ++32 (0)2/702 32 11, Fax 702 32 09 E-mail: info_be@festo.com

Brazil

Festo Automação Ltda. resto Automaçao Ltda. Rua Guiseppe Crespi, 76 KM 12,5 - Via Anchieta 04183-080 Sao Paulo SP-Brazīl Tel. ++55 (0)11/50 13 16 00, Fax 50 13 18 68 E-mail: info_br@festo.com

Bulgaria

Festo Bulgaria EOOD 1592 Sofia 9. Christophor Kolumb Blvd. Tel. ++359 (0)2/960 07 12, Fax 960 07 13 E-mail: info_bg@festo.com

Canada

Festo Inc. 5300 Explorer Drive Mississauga, Ontario L4W 5G4 Tel. ++1 (0)905/624 90 00, Fax 624 90 01 E-mail: info_ca@festo.com

Festo S.A. Mapocho 1901 6500151 Santiago de Chile Tel. ++56 (0)2/690 28 00, Fax 695 75 90 E-mail: info.chile@cl.festo.com

Festo (China) Ltd. 1156 Yunqiao Road Jinqiao Export Processing Zone, Pudong, 201206 Shanghai, PRC Tel. ++86 (0)21/58 54 90 01, Fax 58 54 03 00 E-mail: info_cn@festo.com

Colombia

Festo Ltda. Avenida El Dorado No. 98-43 Bogotá Tel. ++57 (0)1/404 80 88, Fax 404 81 01 E-mail: festo@festo.com.co

Croatia Festo d.o.o.

resto d.o.o. Nova Cesta 181 10000 Zagreb Tel. ++385 (0)1/619 19 69, Fax 619 18 18 E-mail: info_hr@festo.com

Czech Republic

Festo, s.r.o. Modranska 543/76 147 00 Praha 4 Tel. ++420 261 09 96 11, Fax ++420 241 77 33 84 E-mail: info_cz@festo.com

Festo A/S Teslov A/J 180 2610 Rødovre Tel. ++45 70 21 10 90, Fax ++45 44 88 81 10 E-mail: info_dk@festo.com

Fstonia

Festo OY AB Eesti Filiaal Laki 11B 12915 Tallinn Tel. ++372 666 15 60. Fax ++372 666 15 61 E-mail: info_ee@festo.com

Finland

Festo OY Mäkituvantie 9, P.O. Box 86 01511 Vantaa Tel. ++358 (09)/87 06 51, Fax 87 06 52 00 E-mail: info_fi@festo.com

Festo Eurl Numéro Indigo Tel. 0820/204640, Fax 204641 ZA des Maisons Rouges 8 rue du Clos Sainte Catherine 94367 Bry-sur-Marne cedex Tel. ++33 (0)1/48 82 64 00, Fax 48 82 64 01 E-mail: info fr@festo.com

Germany Festo AG & Co. KG Postfach 73726 Esslingen Ruiter Straße 82 73734 Esslingen-Berkheim Tel. ++49 (0)711/34 70, Fax 347 21 44 E-mail: info de@festo.com

Greece

Festo Ltd. Hamosfsernas 40 11853 Athens Tel. ++30 210/341 29 00, Fax 341 29 05 E-mail: info_gr@festo.com

Hong Kong Festo Ltd.

Unit C&D, 7/F, Leroy Plaza 15 Cheung Shun Street Cheung Sha Wan, Kowloon Hong Kong
Tel. ++ 852/27 43 83 79, Fax 27 86 21 73
E-mail: info_hk@festo.com

Hungary

Festo Kft. Csillaghegyi út 32-34. 1037 Budapest Tel. ++36 (06)1/250 00 55, Fax 250 15 93 E-mail: info_hu@festo.com

India

Festo Controls Private Ltd. Bommasandra Industrial Area. Bangalore Hosur Highway, Bangalore 560 099 Tel. ++91 (0)80/22 89 41 00, Fax 783 20 58 E-mail: info_in@festo.com

Indonesia PT. Festo

JL. Sultan Iskandar Muda No.68 Arteri Pondok Indah Jakarta 12240 Tel. ++62 (0)21/27 50 79 00, Fax 27 50 79 98 E-mail: info id@festo.com

Festo Pneumatic S.K. #1,Behbahan St. Ramsar ave Tehran 1581975411 Tel. ++98 (0)21/88 82 92 25, Fax 882 21 62 E-mail: info ir@festo.com

Ireland

Festo Limited Unit 5 Sandyford Park Sandyford Industrial Estate Tel. ++ 353(0)1/295 49 55, Fax 295 56 80 E-mail: info ie@festo.com

Festo Pneumatic Israel Ltd. P.O. Box 1076, Ha'atzma'ut Road 48 Yehud 56100 Tel. ++972 (0)3/632 22 66, Fax 632 22 77 E-mail: info_il@festo.com

Italy

Festo S.p.A Via Enrico Fermi 36/38 20090 Assago (MI) Tel. ++39 02/45 78 81, Fax 488 06 20 E-mail: info_it@festo.com

Japan Festo K.K. 1-26-10 Havabuchi, Tsuzuki-ku Yokohama 224-0025 Tel. ++81 (0)45/593 56 10, Fax 593 56 78 E-mail: info_jp@festo.com

Festo Korea Co., Ltd. 470-1 Gasan-dong, Geumcheon-gu Seoul #153-803 Tel. ++82 (0)2/850 71 14, Fax 864 70 40 E-mail: info_kr@festo.com

Latvia

Festo SIA Deglava 60 1035 Riga Tel. ++371 67/57 78 64, Fax 57 79 46 E-mail: info_lv@festo.com

Lithuania

Festo UAB Karaliaus Mindago pr. 22 3000 Kaunas Tel. ++370 (8)7/32 13 14, Fax 32 13 15 E-mail: info_lt@festo.com

Malaysia Festo Sdn.Berhad 10 Persiaran Industri Bandar Sri Damansara, Wilayah Persekutuan 52200 Kuala Lumpur Tel. ++60 (0)3/62 86 80 00, Fax 62 75 64 11 E-mail: info_my@festo.com

Mexico

Festo Pneumatic, S.A. Av. Ceylán 3, Col. Tequesquinahuac 54020 Tlalnepantla, Edo. de México Tel. ++52 (01)55/53 21 66 00, Fax 53 21 66 55 E-mail: festo.mexico@mx.festo.com

Netherlands

Festo B.V. Schieweg 62 2627 AN Delft Tel. ++31 (0)15/251 88 99, Fax 261 10 20 E-mail: info_nl@festo.com

New Zealand

Festo Limited MT. Wellington Auckland NZ Tel. ++64 (0)9/574 10 94, Fax 574 10 99 E-mail: info_nz@festo.com

Norway Festo AS Ole Deviksvei 2 0666 Oslo, Norway Tel. ++47 22 72 89 50, Fax ++47 22 72 89 51 E-mail: info_no@festo.com

Calle Amador Merino Reyna #480, San Isidro Lima, Perú Tel. ++51 (0)1/222 15 84, Fax 222 15 95

Philippines Festo Inc. KM 18, West Service Road, South Superhighway 1700 Paranaque City, Metro Manila Tel. ++63 (0)2/776 68 88, Fax 823 42 19 E-mail: info ph@festo.com

Poland

Festo Sp. z o.o. Janki k/Warszawy, ul. Mszczonowska 7 05090 Raszyn Tel. ++48 (0)22/711 41 00, Fax 711 41 02 E-mail: info_pl@festo.com

Romania

Festo S.R.L. St. Constantin 17 010217 Bucuresti Tel. ++40 (0)21/310 29 83, Fax 310 24 09 E-mail: info_ro@festo.com

Russia Festo-RF 000

Michurinskiy prosp., 49 119607 Moskow Tel. ++7 495/737 34 00, Fax 737 34 01 E-mail: info_ru@festo.com

Singapore Festo Pte. Ltd.

6 Kian Teck Way Singapore 628754 Tel. ++65 62 64 01 52. Fax ++65 62 61 10 26 E-mail: info_sg@festo.com

Slovakia

Festo spol. s r.o. Gavlovicová ul. 1 83103 Bratislava 3 Tel. ++421 (0)2/49 10 49 10, Fax 49 10 49 11 E-mail: info_sk@festo.co

Slovenia

Festo d.o.o. Ljubljana IC Trzin, Blatnica 8 1236 Trzin Tel. ++386 (0)1/530 21 00, Fax 530 21 25 E-mail: info si@festo.com

South Africa

Festo (Pty) Ltd. 22-26 Electron Avenue, P.O. Box 255 Isando 1600 Tel. ++27 (0)11/971 55 00, Fax 974 21 57 E-mail: info_za@festo.co

Spain

Festo Pneumatic, S.A. Tel.: 901243660 Fax: 902243660 Avenida Granvia, 159 Distrito económico Granvia I 'H ES-08908 Hospitalet de Llobregat, Barcelona Tel. ++ 3493/261 64 00, Fax 261 64 20 E-mail: info_es@festo.com

Festo AB Stillmansgatan 1, P.O. Box 21038 20021 Malmö Tel. ++46 (0)40/38 38 40, Fax 38 38 10 E-mail: info se@festo.com

Switzerland

Festo AG Moosmattstrasse 24 8953 Dietikon ZH Tel. ++41 (0)44/744 55 44, Fax 744 55 00 E-mail: info_ch@festo.com

Taiwan

Festo Co., Ltd. 9 Kung 8th Road Linkou 2nd Industrial Zone, Linkou #244 Taipei Hsien Taiwan Tel. ++886 (0)2/26 01 92 81, Fax 26 01 92 87 E-mail: info tw@festo.com

Thailand

Festo Ltd. 67/1 Moo 6 Phaholyothin Road Klong 1, Klong Luang, Pathumthani 12120 Tel. ++66 29 01 88 00, Fax ++66 29 01 88 33 E-mail: info_th@festo.com

Turkey Festo San. ve Tic. A.S. Tuzla Mermerciler Organize Sanayi Bölgesi, 6/18 TR 34956 Tuzla - Istanbul/TR Tel. ++90 (0)216/585 00 85, Fax 585 00 50 E-mail: info_tr@festo.cor

Festo Ukraina Borisoglebskaja 11 Kiev 04070 Tel. ++380 (0)44/239 24 33, Fax 463 70 96 E-mail: info_ua@festo.com

United Kingdom

Festo Limited
Applied Automation Centre, Caswell Road Brackmills Trading Estate Northampton NN4 7PY Tel. ++44 (0)1604/66 70 00, Fax 66 70 01 E-mail: info_gb@festo.com

United States

Festo Corporation (New York) Call Toll-free 800/993 3786 Fax Toll-free 800/963 3786 395 Moreland Road, P.O.Box 18023 Hauppauge, N.Y. 11788 Tel. ++ 1(0)314/770 01 12, Fax 770 16 84 E-mail: info_us@festo.com

Venezuela Festo C.A.

Av. 23, Esquina calle 71, No. 22-62 Maracaibo, Edo. Zulia Tel. ++58 (0)261/759 09 44, Fax 759 04 55 E-mail: festo@festo.com.ve