# techhose
## QUALITY CONNECTIONS

| Hydraulics | Pneumatics & Vacuum | Industrial | Compressed Air & Ring Main | Process & Instrumentation |
|---|---|---|---|---|

# Pneumatic & Vacuum

Grippers & Drives

# PNEUMATIC CYLINDERS

FT PRO®

## Pneumatic Grippers

- Uses a single piston structure to generate a large gripping force
- Integrated variable flow valve to conveniently adjust the speed of opening and closing of the fingers
- Precise positioning accuracy when gripping components
- Body profile adapted with grooves for mounting sensor switches
- Integrated magnet for added control
- Gripping jaw opening and closing angle 30° to -10°
- Single acting N/O available on request
- Interchangeability: SMC
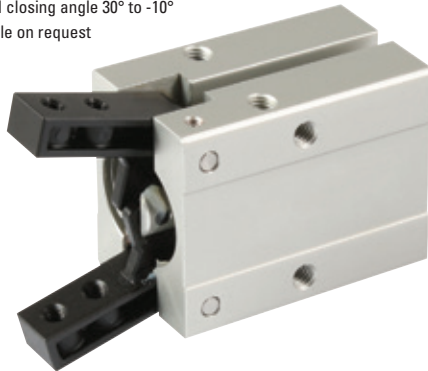
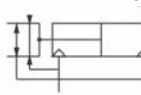**KHFY: Double Acting**
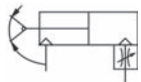
### Double Acting, Angular Style

| 0415 | Thread | Bore mm | Optimum Gripping Points Length mm |
|---|---|---|---|
| KHFY6 | M3 x 0.5 | 6 | 30 |
| KHFY10 | M3 x 0.5 | 10 | 30 |
| KHFY16 | M5 x 0.8 | 16 | 40 |
| KHFY20 | M5 x 0.8 | 20 | 60 |
| KHFY25 | M5 x 0.8 | 25 | 70 |
| KHFY32 | M5 x 0.8 | 32 | 85 |
| Tech Sheet 20470 | | | |

- Integrated linear guide rail for high precision and rigidity
- Positioning pin at the base of the unit to prevent deviation of the rail and body
- Deeper hole on the body to improve precision and consistency when dismounting and positioning
- Variable positioning jaws
- Body profile adapted with grooves for mounting sensor switches
- Other finger types available on request
- Single acting N/O and N/C available on request
- Interchangeability: SMC

**KHFZ: Double Acting**

### Double Acting, Parallel Style

| 0415 | Thread | Bore mm | Optimum Gripping Points Length mm | Open Diameter mm | Closed Diameter mm |
|---|---|---|---|---|---|
| KHFZ10 | M3 x 0.5 | 6 | 5-50 | 15.5 | 11.5 |
| KHFZ16 | M5 x 0.8 | 16 | 5-55 | 21.0 | 15.0 |
| KHFZ20 | M5 x 0.8 | 20 | 5-80 | 26.5 | 16.5 |
| KHFZ25 | M5 x 0.8 | 25 | 5-100 | 33.5 | 19.5 |
| Tech Sheet 20471 | | | | | |

### How to select product:

**Please select pneumatic finger according to the following steps:**
**The selection of the effective gripping force → the confirmation of the gripping point → the confirmation of the external force put on the gripping jaw.**

The selection of the gripping force:
The gripping work-pieces shown, on the impact condition of ordinary handling state, taking safety coefficient a=4, have a gripping force that is more than 10-20 times of the mass of the gripped objects

| $\mu = 0.2$ | $\mu = 0.1$ |
|---|---|
| $F = \dfrac{mg}{2 \times 0.2} \times 4$ $= 10 \times mg$ | $F = \dfrac{mg}{2 \times 0.1} \times 4$ $= 20 \times mg$ |
| **10 times of the mass of the gripped objects** | **20 times of the mass of the gripped objects** |

F:  gripping force (N)

μ:  friction coefficient between fittings and work-pieces

m: mass of work-pieces

g:  acceleration of gravity (=9.8m/s⁻)

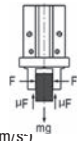The condition that the work-pieces won't drop is 2 x μ F>mg, so:

$$F > \frac{mg}{2 \times \mu}$$

Safety coefficient is a, so F is:

$$F = \frac{mg}{2 \times \mu} \times a$$

Note: if the friction coefficient μ>D.2, for safety, please also select clamping force according to the principle of 10-20 times of the mass of the clamped objects. As for large acceleration and shock, it requires for greater safety coefficient.

Slim profile for discreet safe mounting to grippers.

### Sensor Switch, Two-line, N/O

| 0415 | Connection | Connecting Cable | Length Metres |
|---|---|---|---|
| KDS1-H-C08 | Straight | M8 Quick Joint | 0.15 |
| KDS1-H-020 | Straight | - | 2 |
| KDS1-H-030 | Straight | - | 3 |
| KDS1-H-050 | Straight | - | 5 |
| KDS1-HL-C08 | 90° | M8 Quick Joint | 0.15 |
| KDS1-HL-020 | 90° | - | 2 |
| KDS1-HL-030 | 90° | - | 3 |
| KDS1-HL-050 | 90° Connection | - | 5 |
| Tech Sheet 20472 | | | |

### Sensor Switch, Three-line NPN with No Contact (Current Flows In), N/O

| 0415 | Connection | Connecting Cable | Length Metres |
|---|---|---|---|
| KDS1-H-N-C08 | Straight | M8 Quick Joint | 0.15 |
| KDS1-H-N-020 | Straight | - | 2 |
| KDS1-H-N-030 | Straight | - | 3 |
| KDS1-H-N-050 | Straight | - | 5 |
| KDS1-HL-N-C08 | 90° | M8 Quick Joint | 0.15 |
| KDS1-HL-N-020 | 90° | - | 2 |
| KDS1-HL-N-030 | 90° | - | 3 |
| KDS1-HL-N-050 | 90° | - | 5 |
| Tech Sheet 20472 | | | |

### Sensor Switch, Three-line PNP with No Contact (Current Flows Out), N/O

| 0415 | Connection | Connecting Cable | Length Metres |
|---|---|---|---|
| KDS1-H-P-C08 | Straight | M8 Quick Joint | 0.15 |
| KDS1-H-P-020 | Straight | - | 2 |
| KDS1-H-P-030 | Straight | - | 3 |
| KDS1-H-P-050 | Straight | - | 5 |
| KDS1-HL-P-C08 | 90° | M8 Quick Joint | 0.15 |
| KDS1-HL-P-020 | 90° | - | 2 |
| KDS1-HL-P-030 | 90° | - | 3 |
| KDS1-HL-P-050 | 90° | - | 5 |
| Tech Sheet 20472 | | | |

# CYLINDERS

## DRVS SEMI-ROTARY VANE DRIVE

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### Features

Housing protected against dust

Available with swivel angle 90º, 180º and 270º

Also available with closed unit sensor kit for simple assembly

ATEX variants available

End position cushioning with elastic PU material on the rotary vane

### Product Description

| **DRVS** | - | **12** | - | **180** | - | **P** |
|---|---|---|---|---|---|---|

Cylinder Type

Bore Size mm

Rotation Angle

Elastic polymer buffer
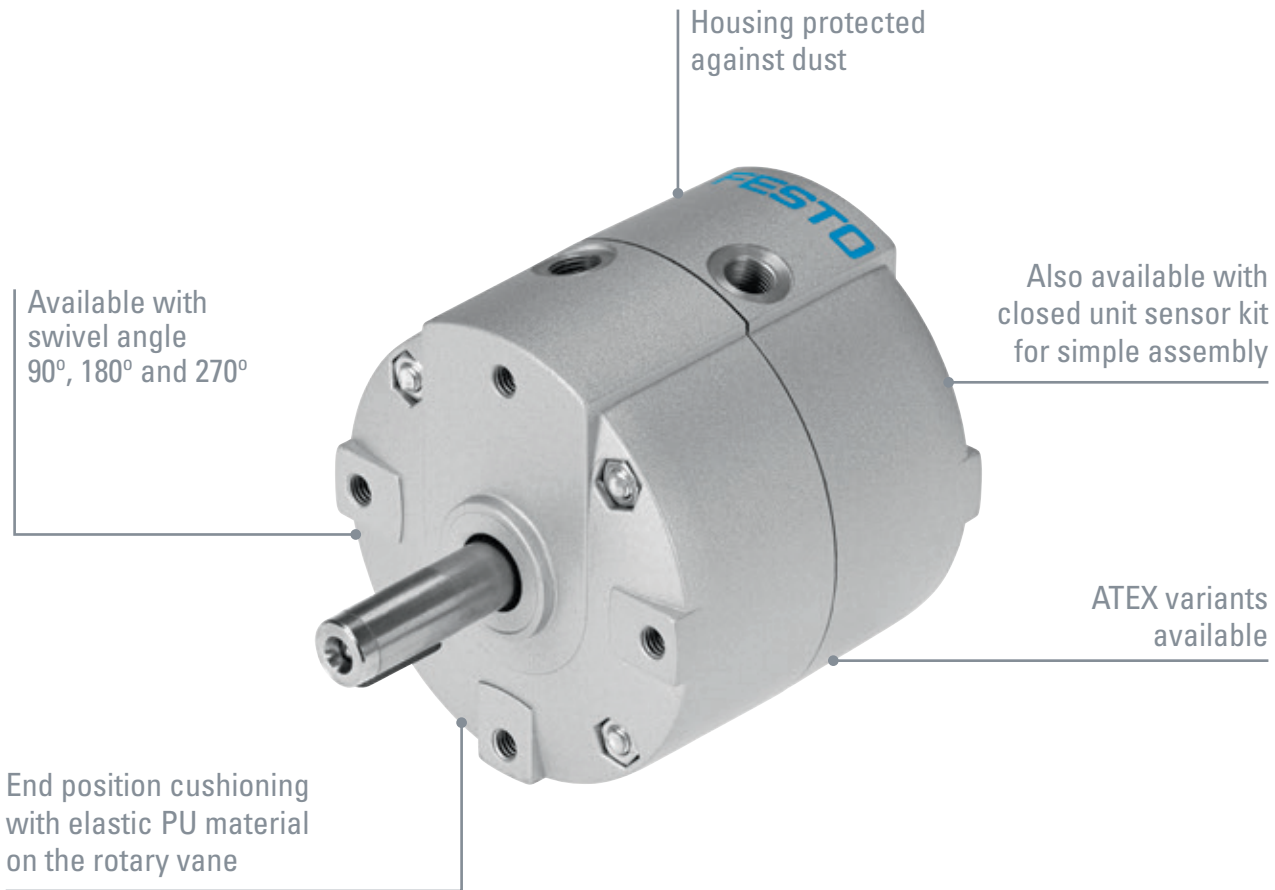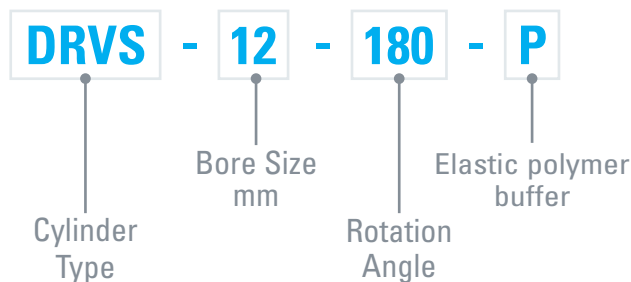
# SEMI-ROTARY DRIVES, DRVS

**FESTO**

## Rotary Vane, Double Acting

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- Modern and compact design
- Lighter than other semi-rotary drives
- Housing protected against splash water and dust
- Selected types in accordance with ATEX directive
  for potentially explosive atmospheres

**Ambient Temperature:**
-10°C to +60°C

**Working Pressure:**
3.5 to 8 bar (Size: 6, 8mm)
2.5 to 8 bar (Size: 12, 16mm)
2 to 8 bar (Size: 25, 32, 40mm)

### Elastic Cushioning Rings, M3 Connection

| 0009 | Size | Nominal Swivel Angle | Manufacturer's Code |
|------|------|---------------------|---------------------|
| 1845706 | 6 | 90° | DRVS-6-90-P |
| 1845707 | 6 | 180° | DRVS-6-180-P |
| 1845708 | 8 | 90° | DRVS-8-90-P |
| 1845709 | 8 | 180° | DRVS-8-180-P |
| | | Tech Sheet 20564 | |

### Elastic Cushioning Rings, M5 Connection

| 0009 | Size | Nominal Swivel Angle | Manufacturer's Code |
|------|------|---------------------|---------------------|
| 1845710 | 12 | 90° | DRVS-12-90-P |
| 1845711 | 12 | 180° | DRVS-12-180-P |
| 1845712 | 12 | 270° | DRVS-12-270-P |
| 1845713 | 16 | 90° | DRVS-16-90-P |
| 1845714 | 16 | 180° | DRVS-16-180-P |
| 1845715 | 16 | 270° | DRVS-16-270-P |
| 1845716 | 25 | 90° | DRVS-25-90-P |
| 1845717 | 25 | 180° | DRVS-25-180-P |
| 1845718 | 25 | 270° | DRVS-25-270-P |
| | | Tech Sheet 71599 | |

### Position Sensor

| 0009 | Weight | For Drives | Type |
|------|--------|-----------|------|
| 2619969 | 25g | DSM 6, DRVS 6 | SRBS-Q12-6-E270-EP-1-S-M8 |

### Elastic Cushioning Rings, G1/8 Connection

| 0009 | Size | Nominal Swivel Angle | Manufacturer's Code |
|------|------|---------------------|---------------------|
| 1845719 | 32 | 90° | DRVS-32-90-P |
| 1845720 | 32 | 180° | DRVS-32-180-P |
| 1845721 | 32 | 270° | DRVS-32-270-P |
| 1845722 | 40 | 90° | DRVS-40-90-P |
| 1845723 | 40 | 180° | DRVS-40-180-P |
| 1845724 | 40 | 270° | DRVS-40-270-P |
| | | Tech Sheet 71600 | |

**FESTO**

## For **Festo MS Series**
see page **658**