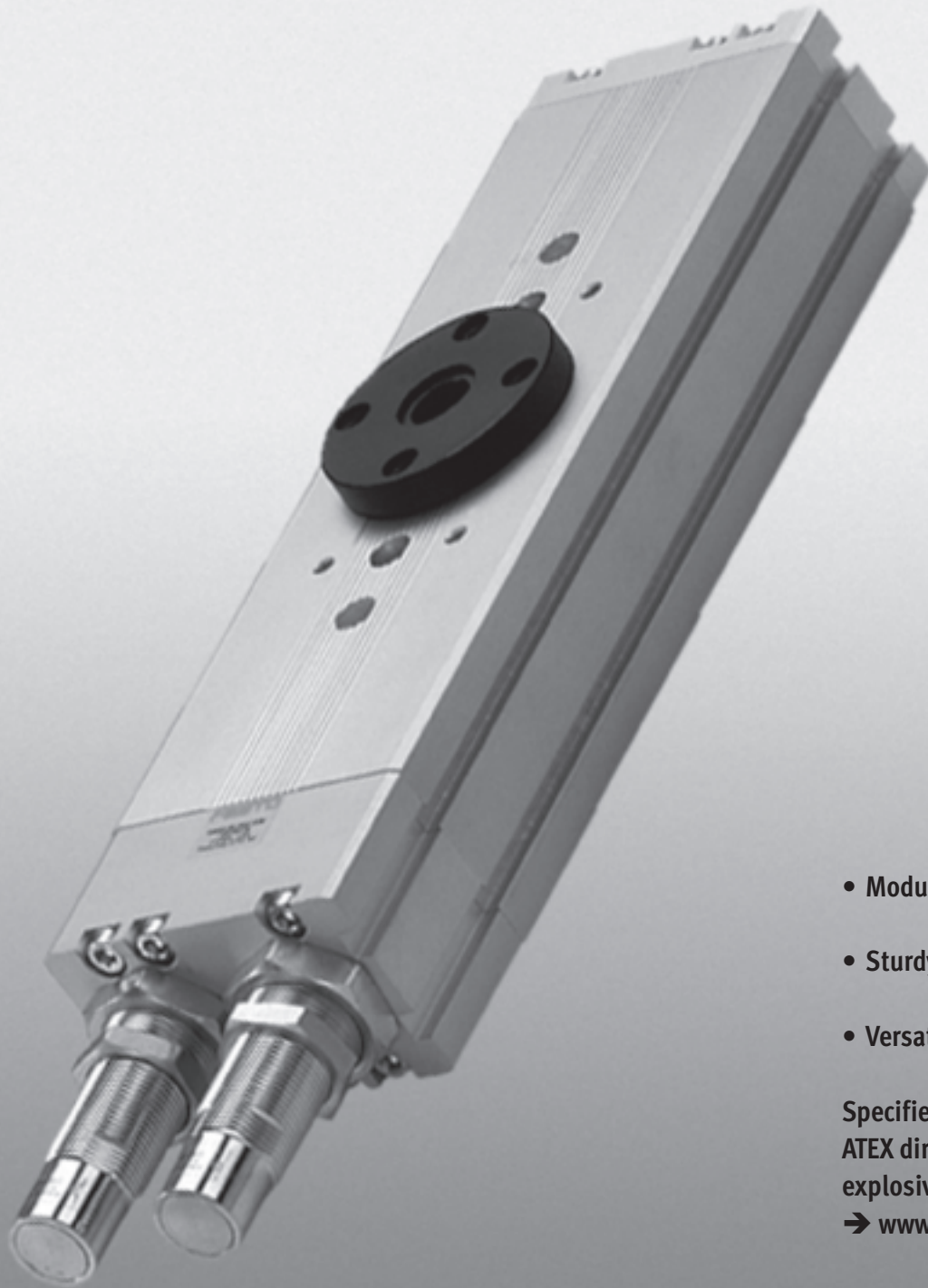




- Modular and functional
- Sturdy and accurate
- Versatile system components

Specified types in accordance with
ATEX directive for potentially
explosive atmospheres

➔ www.festo.com/en/ex

Twin-piston semi-rotary drives DRQD

Key features

General

- Rack and pinion principle
- High accuracy
- Extremely good rigidity
- Backlash-free and dynamic
- Piston $\varnothing$ 6 ... 50 mm
- Torque 0.16 ... 50 Nm
- Swivel angle 0 ... 360°
- End-position adjustment -60 ... +6°
- Defined interfaces
- Choice of mounting options
- Supply port at one end
- Ideal for use in handling applications

Wide choice of variants

Spigot shaft



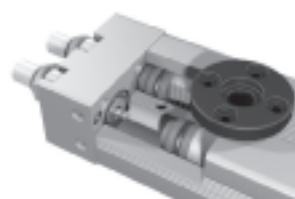
- Piston $\varnothing$ 6 ... 50 mm

Flanged shaft



- Piston $\varnothing$ 6 ... 50 mm

Adjustable end-position cushioning



- Piston $\varnothing$ 16 ... 50 mm
- Pneumatic
- With hydraulic shock absorbers

Intermediate position



- Piston $\varnothing$ 16 ... 50 mm
- Allows positioning of the drive shaft in a mid-position

Position sensing



- Piston $\varnothing$ 6 ... 50 mm
- For piston $\varnothing$ 6 ... 12 mm: proximity sensor SME/SMT-10
- For piston $\varnothing$ 16 ... 50 mm: proximity sensor SME/SMT-8

Adapter kits for grippers and drive combinations



- Piston $\varnothing$ 6 ... 50 mm

Energy through-feed



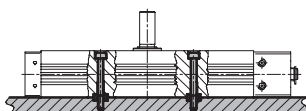
- Piston $\varnothing$ 6 ... 50 mm
- Simple and space-saving installation of tubing through the hollow flanged shaft
- DRQD-...-SD...
1 ... 4 DUO tubes



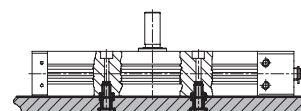
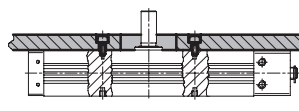
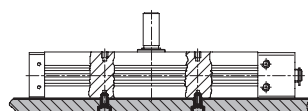
- Piston $\varnothing$ 16 ... 50 mm
- Simple and space-saving installation of tubing and cables through the hollow flanged shaft
- DRQD-...-E...
1 ... 2 DUO tubes and 2 ... 4 electrical cables

Mounting options

using through holes



via thread in housing profile



Twin-piston semi-rotary drives DRQD

Features

FESTO

Possible combinations with grippers										
Semi-rotary drive DRQD	6	8	12	16	20	25	32	40	50	
Parallel grippers HGPM-...-G8 1 / 7.4-2										
	■	■	■	-	-	-	-	-	-	
Parallel grippers HGP 1 / 7.5-2										
	■	■	■	■	■	■	■	■	■	
Radial grippers HGR 1 / 7.5-2										
	■	■	■	■	■	■	■	■	■	
Parallel grippers HGPP 1 / 7.6-2										
	-	-	-	■	■	■	■	■	■	
Parallel grippers HGPL 1 / 7.0-18										
	-	-	-	■	■	■	■	■	■	
Semi-rotary drive DRQD	6	8	12	16	20	25	32	40	50	
Angle grippers HGWM-...-G8 1 / 7.4-2										
	■	■	■	-	-	-	-	-	-	
Three-point gripper HGD 1 / 7.5-2										
	-	■	■	■	■	■	■	■	■	
Angle grippers HGW 1 / 7.5-2										
	■	■	■	■	■	■	■	■	■	
Parallel grippers HGPT 1 / 7.6-2										
	-	-	■	■	■	■	■	■	■	
Parallel grippers HGPC 1 / 7.7-1										
	-	-	■	■	■	■	-	-	-	

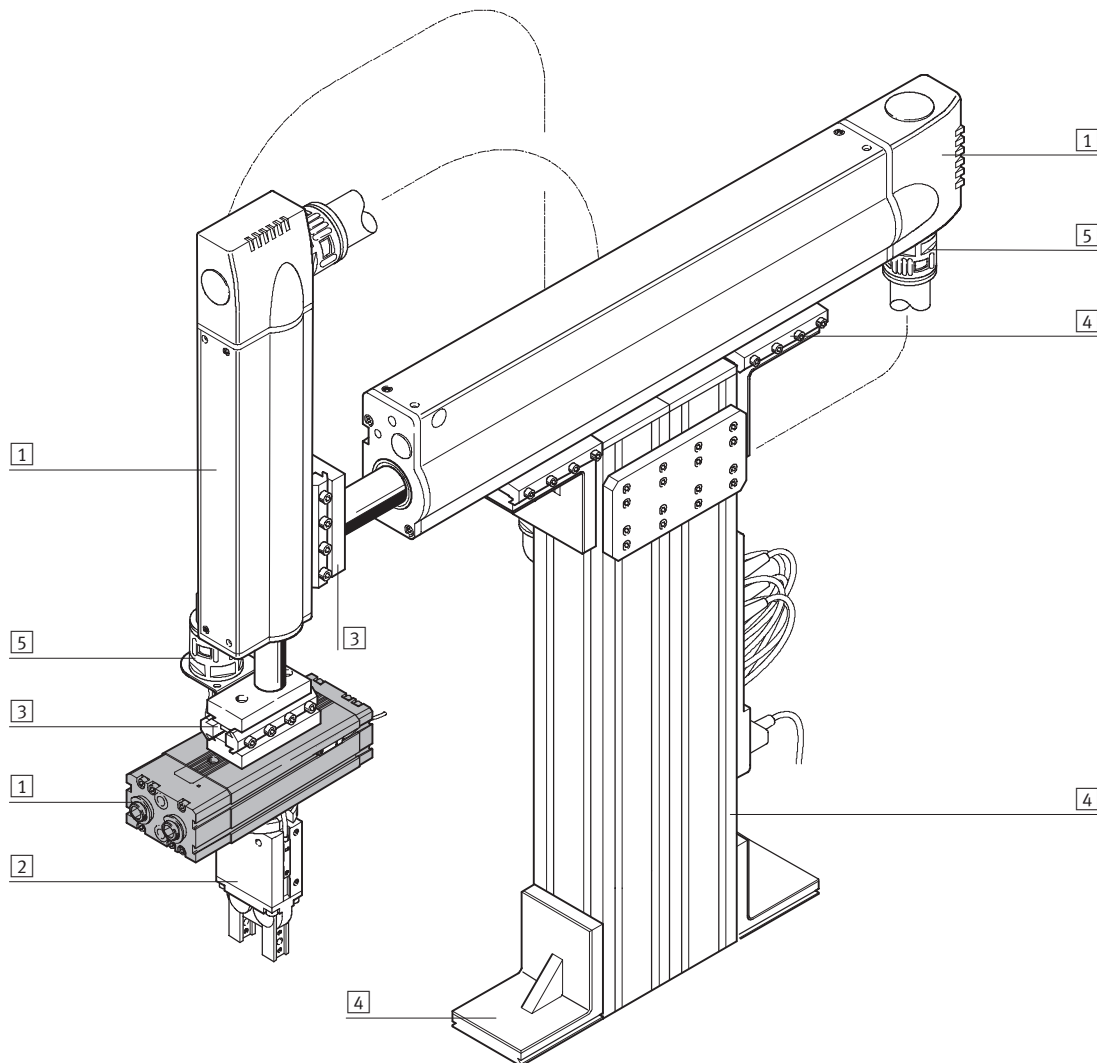
Swivel drives
Semi-rotary rack and pinion drives

4.2

System example

FESTO

System product for handling and assembly technology



Twin-piston semi-rotary drives DRQD

System example

FESTO

System elements and accessories		
	Brief description	→ Page
1 Drive units	Wide range of combination options within handling and assembly technology	Volume 1
2 Grippers	Wide range of combination options within handling and assembly technology	Volume 1
3 Adapters	For drive/drive and drive/gripper combinations	Volume 5
4 Basic mounting components	Profiles and profile connectors as well as profile/drive connectors	Volume 5
5 Installation components	For achieving a clear-cut, safe layout for electrical cables and tubing	Volume 5
– Axes	Wide range of combination options within handling and assembly technology	Volume 5
– Motors	Servo and stepper motors, with or without gearing	Volume 5

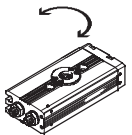
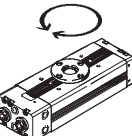
Twin-piston semi-rotary drives DRQD

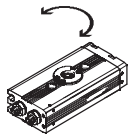
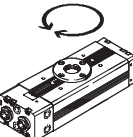
Product range overview

FESTO

Swivel drives
Semi-rotary rack and pinion drives

4.2

Function	Version	Type	Piston Ø [mm]	Swivel angle [°]	Adjustable end-position range [°]	Position sensing A	End-position adjustment with flexible buffers in the end positions J...
Double- acting	Basic version						
		Semi-rotary drive DRQD	6, 8, 12	90	-20 ... +6°	■	■
				180	-60 ... +6°		
			16, 20, 25, 32, 40, 50	90	-20 ... +6°	■	—
				180			
				360 0 ... 340			

Function	Version	Type	Piston Ø	Output shaft		
			[mm]	Spigot shaft ZW	Flanged shaft FW	Integrated adapter for direct mounting of grippers A...
Double- acting	Basic version					
		Semi-rotary drive DRQD	6, 8, 12	■	■	■
			16, 20, 25, 32, 40, 50	■	■	-

Twin-piston semi-rotary drives DRQD

Product range overview

FESTO

Type	Piston Ø	Type of cushioning		Pneumatic connection	
	[mm]	Adjustable, pneumatic PPV]	Adjustable, hydraulic shock absorbers YSR]	left AL	right AR
Basic version					
Semi-rotary drive DRQD	6, 8, 12	—	—	—	■
	16, 20, 25, 32, 40, 50	■	■	■	■

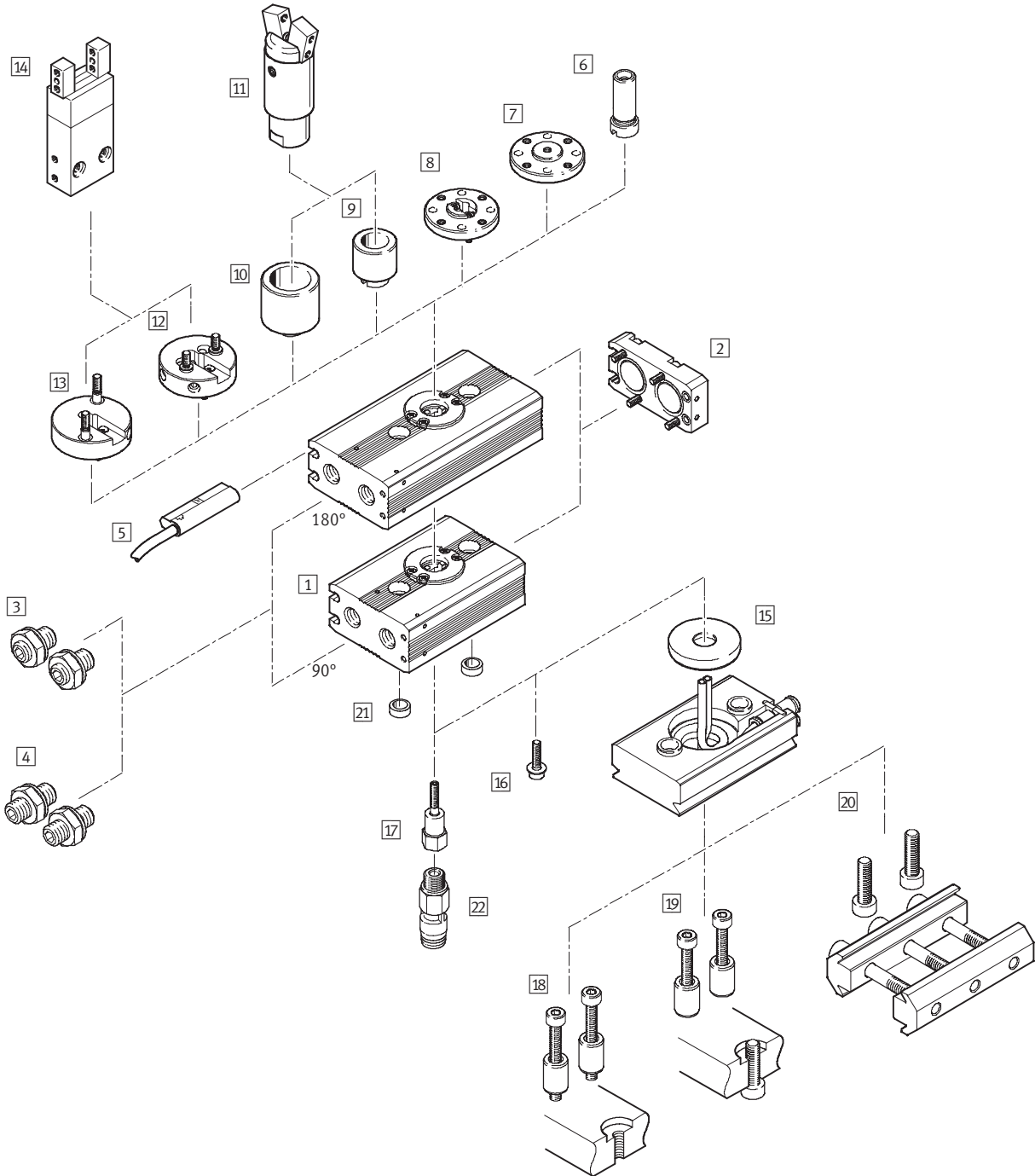
Type	Piston Ø	Intermediate position	Energy through-feed	Adapter kits for grippers	➔ Page
	[mm]	Z1	SD..., E...		
Basic version					
Semi-rotary drive DRQD	6, 8, 12	—	■	■	1 / 4.2-30
	16, 20, 25, 32, 40, 50	■	■	■	1 / 4.2-46

Twin-piston semi-rotary drives DRQD-6 ... 12

Peripherals overview

FESTO

Piston Ø 6 ... 12



Twin-piston semi-rotary drives DRQD-6 ... 12

Peripherals overview

FESTO

Variants, mounting attachments and accessories					
	Brief description	Piston Ø			→ Page
		6	8	12	
1	Centre section	■	■	■	1 / 4.2-33
2	Connector cap	■	■	■	
3	End-position adjustment J20	■	■	■	
4	End-position adjustment J60	■	■	■	
5	Position sensing A	■	■	■	1 / 4.2-83
6	Spigot shaft ZW ¹⁾	■	■	■	1 / 4.2-33
7	Flanged shaft FW ¹⁾	■	■	■	
8	Flanged shaft FW-SD32	–	■	■	
9	Adapters A08 ²⁾	■	■	■	
10	Adapters A12 ²⁾	■	■	■	1 / 7.4-2
11	Grippers HGPM/HGWM	■	■	■	
12	Adapters AS1	–	■	■	1 / 4.2-33
13	Adapters AS2	–	■	■	
14	Grippers HGP/HGD/HGR/HGW	–	■	■	1 / 7.5-2
15	Energy through-feed SD32	–	■	■	1 / 4.2-38
16	Socket head screw ZS	■	■	■	1 / 4.2-33
17	Hollow bolt HS	■	■	■	
18	Type of mounting B1	■	■	■	
19	Type of mounting B2	■	■	■	
20	Type of mounting B3	■	■	■	1 / 4.2-38
21	Centring sleeve ZBH	■	■	■	
22	Rotary push-in fitting ³⁾ QS	■	■	■	

1) The socket head screw ZS is included in the scope of delivery. The hollow bolt HS must be ordered separately

2) Only in conjunction with hollow bolt HS. The hollow bolt HS must be ordered separately

3) For energy through-feed in combination with HS

Swivel drives
Semi-rotary rack and pinion drives

4.2

Twin-piston semi-rotary drives DRQD-6 ... 12

Type codes

FESTO

		DRQD	–	6	–	180	–	J60	–	A	–	A12	–		–	HS	–	B2	–	B
Type																				
Double-acting																				
DRQD	Semi-rotary drive																			
Piston Ø [mm]																				
Swivel angle [°]																				
End-position adjustment [°]																				
J20	–20 ... +6																			
J60	–60 ... +6																			
Position sensing																				
A	For proximity sensing																			
Output shaft/adaptor																				
ZW	Spigot shaft																			
FW	Flanged shaft																			
A08	Adapter for micro, angle and parallel grippers																			
A12	Adapter for parallel, three-point, angle and radial grippers																			
AS1	Adapter for parallel, three-point, angle and radial grippers																			
AS2	Adapter for parallel, three-point, angle and radial grippers																			
Energy through-feed																				
SD32	2 tubes with O.D. 3 mm																			
Type of screw																				
ZS	Socket head screw																			
HS	Hollow bolt																			
Type of mounting																				
B1	Locking screws in centring sleeves																			
B2	Through screws in attachment																			
B3	Clamping via profile, 40 mm																			
User's manual																				
	German																			
E	English																			
F	French																			
S	Spanish																			
I	Italian																			
V	Swedish																			
B	Express waiver – no user manual to be included (already available)																			

Twin-piston semi-rotary drives DRQD-6 ... 12

Technical data

FESTO

Function



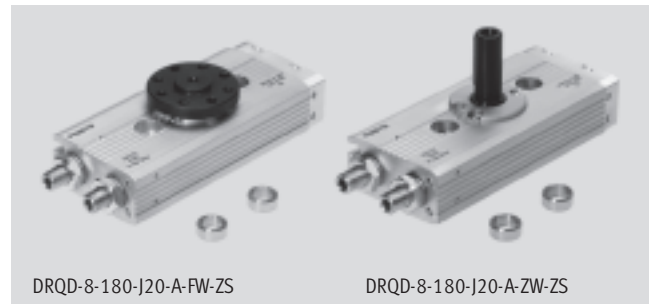
Ø - Diameter
6 ... 12 mm

≡ - Force
0.16 ... 0.76 Nm

www.festo.com/en/
Spare_parts_service

Variants

- 90° and 180° swivel angle
- Spigot or flanged shaft
- Adapters for grippers
- End-position adjustment
- Position sensing
- Energy through-feed
- Different types of mounting



DRQD-8-180-J20-A-FW-ZS

DRQD-8-180-J20-A-ZW-ZS

General technical data			
Piston Ø	6	8	12
Pneumatic connection	M3		
	HS	M5	
	SD32	–	QS....-3 for tube O.D. 3 mm
Constructional design	Semi-rotary drive with twin pistons based on the rack and pinion principle		
Cushioning	Flexible buffer at both ends		
Position sensing	For proximity sensing		
Type of mounting	Via through-hole		
	Via female thread		
Assembly position	Any		

Operating and environmental conditions					
Piston Ø		6		8	12
Operating medium		Filtered compressed air, lubricated or unlubricated			
Operating pressure	[bar]	1 ... 8			
	SD32	–		1.5 ... 8	–
Adjustable end-position range per end position	[°]	J20	–20 ... +6		
		J60	–60 ... +6		
Max. permissible swivelling frequency at 6 bar (for completed cycle of motion)	[Hz]	90°	5	4	3
		180°	3.5	2.5	2
		SD32	–		A reduction of max. 5% of the values indicated above
Repetition accuracy		[°]	< 0.2		
Ambient temperature ¹⁾		[°C]	–10 ... +60		
Corrosion resistance class CRC ²⁾			1		

1) Note operating range of proximity sensors

2) Corrosion resistance class 1 according to Festo standard 940 070

Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers

Twin-piston semi-rotary drives DRQD-6 ... 12

Technical data

FESTO

Forces and torques				
Piston Ø		6	8	12
Theoretical torque [Nm] at 6 bar		0.16	0.33	0.76
	SD32	–	0.28	0.72
		Note: If torque acts against the direction of rotation in the end position, a drive with a rating of twice the maximum theoretical torque should be selected.		
Max. permissible radial and axial forces		Diagrams → 1 / 4.2-37		
Max. permissible mass moment of inertia [kgm ²]		0.075 x 10 ⁻⁴	0.25 x 10 ⁻⁴	0.7 x 10 ⁻⁴
		The data applies to the variants ZW, FW, A... without grippers, unthrottled.		



Pneumatic sizing using Pro Pneu
www.festo.com/en/engineering

Weights [g]					
Piston Ø			6	8	12
Centre section	90°	J20	66	90	145
		J60	67	92	148
	180°	J20	82	111	177
		J60	83	113	180
Output shaft	ZW		2	4	
	FW		4	7	
Adapters	A08		6	11	
	A12		6	11	
	AS1		–	13	
	AS2		–	15	
Screws	ZS		1		
	HS		4		5
Flanged shaft with energy through-feed	SD32		–	71	
Mounting in combination with SD32	B1		–	17	
	B2		–	17	18
	B3		–	81	

Twin-piston semi-rotary drives DRQD-6 ... 12

Technical data

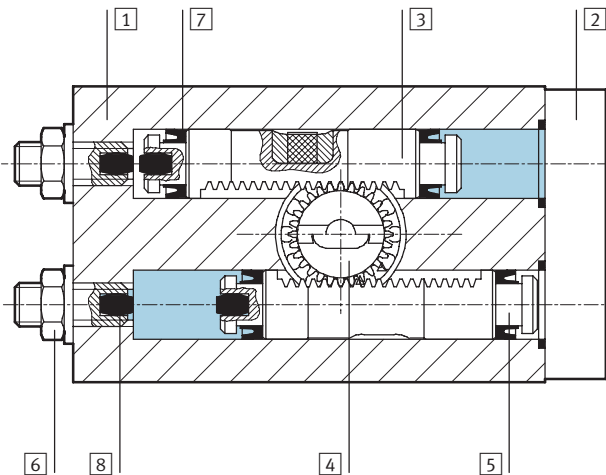
FESTO

Swivel drives
Semi-rotary rack and pinion drives

4.2

Materials

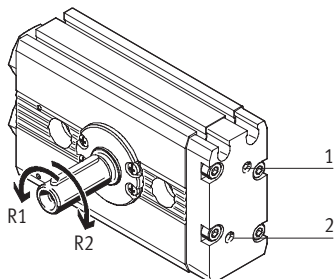
Sectional view



Piston Ø		6	8	12
1	Cylinder barrel (centre section)	Anodised aluminium		
2	Connector cap	Anodised aluminium		
3	Gear rack	Anodised aluminium		
4	Pinion	Stainless steel; milled teeth		
5	Piston	Anodised aluminium		
6	Threaded pin, hex nuts	Galvanised steel		
7	Piston seal	Nitrile rubber	Polyurethane	
8	Buffer for end-position cushioning	Nitrile rubber		
–	DUO spiral tubing	Polyurethane		
–	Woodruff key	Steel		
–	Hollow bolt, centring sleeves	Stainless steel		
–	Static seals	Steel, nitrile rubber		
–	Material note	Copper, PTFE and silicone-free		

Direction of rotation of the drive shaft

Pneumatic actuation of ports 1 or 2 produces a rotational movement in direction R1 or R2 respectively.



Twin-piston semi-rotary drives DRQD-6 ... 12

Technical data

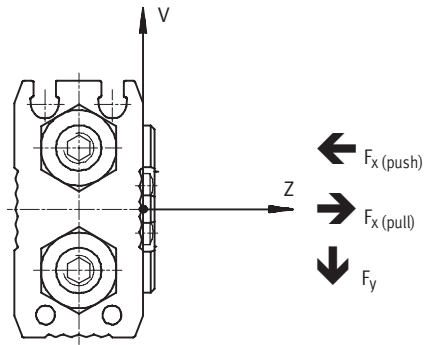
FESTO

Max. permissible radial and axial forces on the drive shaft

Combined load

A semi-rotary drive DRQD-8-... is to be statically loaded with a radial force $F_y = 60 \text{ N}$, which is at a distance of $Z = 5 \text{ mm}$ from the housing, and an

axial force $F_{x, \text{push}} = 30 \text{ N}$, which is at a distance of $V = 12 \text{ mm}$ from the shaft (→ diagram of flanged shaft on right).



Question:

Is it permissible to statically load a semi-rotary drive DRQD-8-... with these combined forces?

Answer:

Graph 1 (→ 1 / 4.2-37) indicates that the maximum permissible radial force is $F_{y, \text{max. (stat.)}} (5) = 193 \text{ N}$ for a

distance $Z = 5 \text{ mm}$. Graph 3 (→ 1 / 4.2-37) indicates that the maximum axial force is

$F_{x, \text{push max. (stat.)}} (12) = 169 \text{ N}$ for a distance $V = 12 \text{ mm}$.

The following equation applies to combined loads:

$$\frac{F_y(z)}{F_{y, \text{max. (z)}}} + \frac{F_{x, \text{push (v)}}}{F_{x, \text{push, max. (v)}}} + \frac{F_{x, \text{pull (v)}}}{F_{x, \text{pull, max. (v)}}} \leq 1$$

The following values are assumed:

$F_y(5) = 60 \text{ N}$
 $F_{x, \text{push (stat.)}} (12) = 30 \text{ N}$
 $F_{y, \text{max. (stat.)}} (5) = 193 \text{ N}$
 $F_{x, \text{max. (stat.)}} (12) = 169 \text{ N}$

With values inserted:

$$\frac{60 \text{ N}}{193 \text{ N}} + \frac{30 \text{ N}}{169 \text{ N}} \leq 1$$

$$0.311 + 0.178 \leq 1$$

$$0.489 \leq 1$$

Thus the drive may be statically loaded with the forces indicated above.

Twin-piston semi-rotary drives DRQD-6 ... 12

Technical data

FESTO

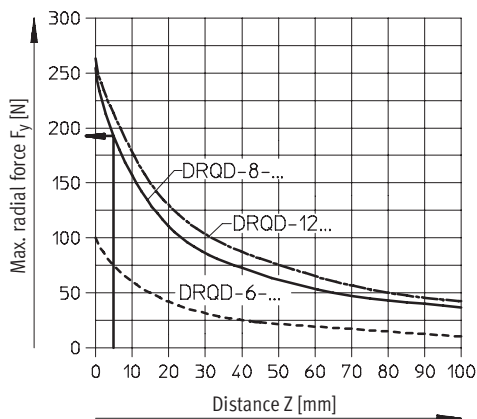
Swivel drives
Semi-rotary rack and pinion drives

4.2

Maximum static radial force

Graph 1

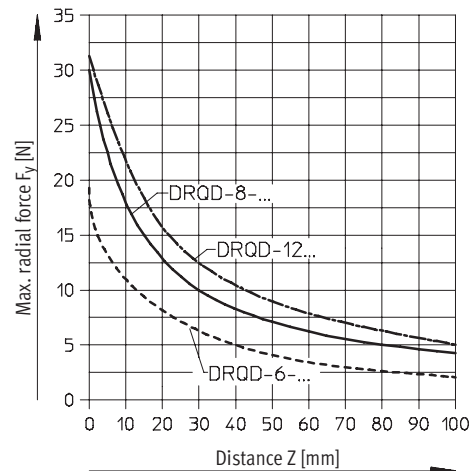
$$F_{y, \max. (stat.)} = f(z)$$



Maximum dynamic radial force

Graph 2

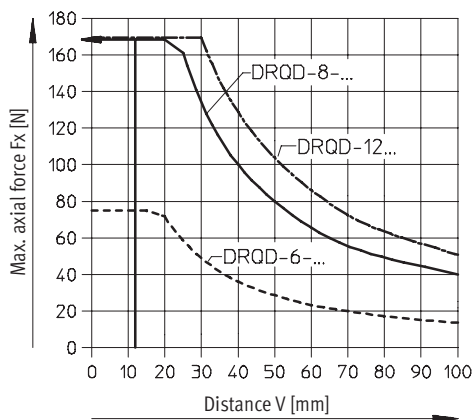
$$F_{y, \max. (dyn.)} = f(z)$$



Maximum static pull and push axial forces

Graph 3

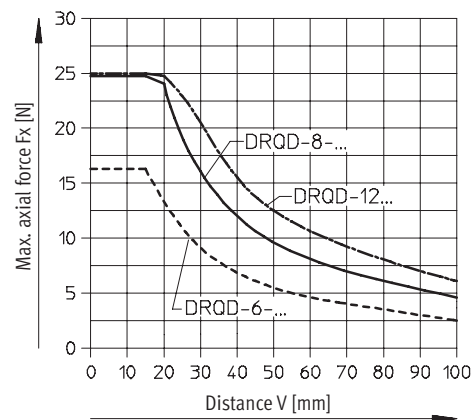
$$F_{x, \max. (stat.)} = f(v)$$



Maximum dynamic pull and push axial forces

Graph 4

$$F_{x, \max. (dyn.)} = f(v)$$



Twin-piston semi-rotary drives DRQD-6 ... 12

Technical data

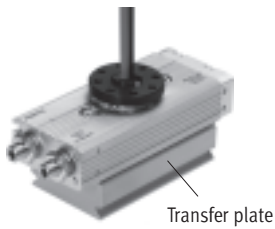
FESTO

Energy through-feed

The energy through-feed consists of DUO tubing (two lengths of tubing are fused together into a pair), whereby each tube has an O.D. of 3 mm. Compressed air is supplied via the push-in

fittings in the transfer plate. Only Quick-Star push-in fittings may be used to connect compressed air tubing to consuming devices (e.g. grippers).

DRQD-...-SD...



- For piston Ø 8 ... 12
- Swivel angles of up to 180° are possible
- 1 DUO tube

Technical data		
Piston Ø	8	12
Number of spiral tubes	1 DUO tube	
Standard nominal flow rate per tube [l/min]	min. 70	
Theoretical air consumption per tube at 6 bar [cm³]	5.3	
Operating pressure as a function of ambient temperature [bar]	0 ... 10 (at -10 ... +30 °C) 0 ... 9 (at +30 ... +40 °C) 0 ... 7.8 (at +40 ... +60 °)	
Push-in fittings for connection to consuming device	QS...-3 for tube O.D. of 3 mm	

Twin-piston semi-rotary drives DRQD-6 ... 12

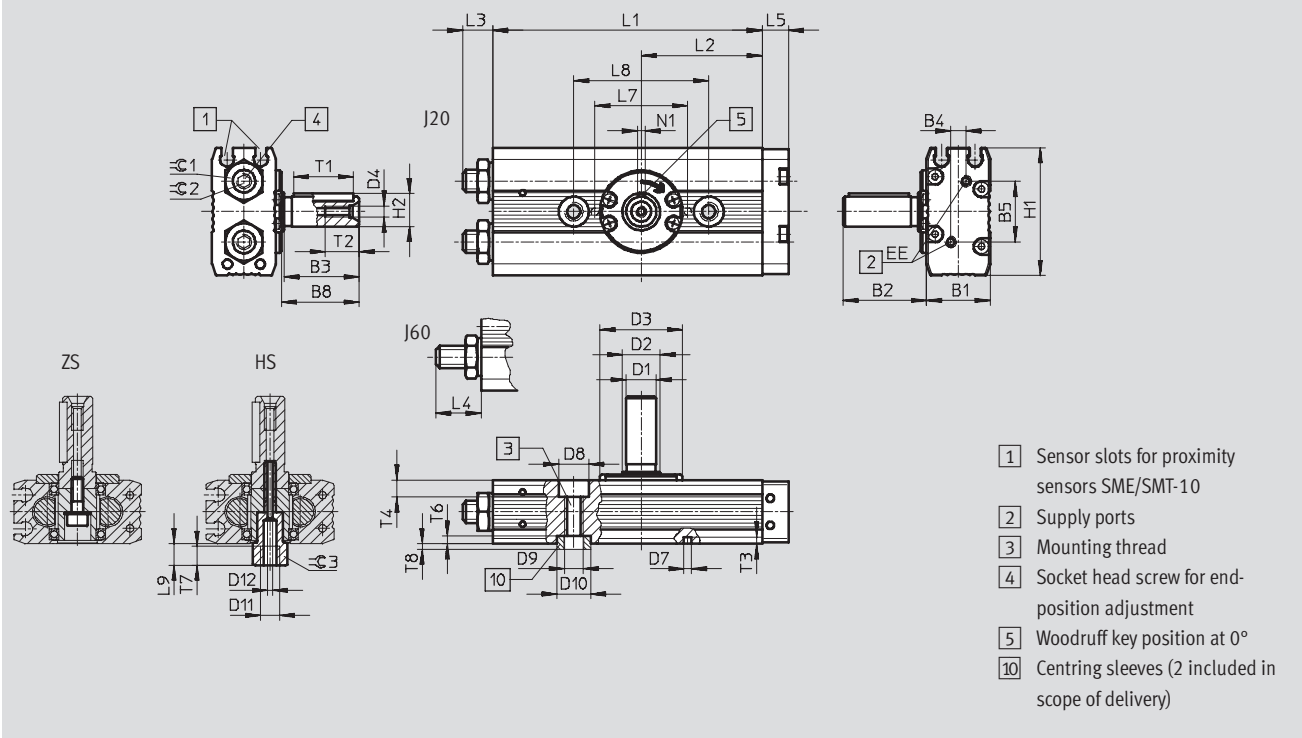
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com/en/engineering

ZW – Spigot shaft



Ø	Swivel angle	B1	B2	B3	B4	B5	B8	D1	D2	D3 ¹⁾	D4	D7	D8	D9	D10	D11	D12	EE	H1	H2
[mm]	[°]							Ø g7	Ø g6	Ø f7		Ø H8	Ø H8		Ø H7					
6	90	15.4	18.2	16	2	13.6	16.7	6	8	20	M2.5	2	6	M4	7	M5	1.3	M3	31	6.8
	180																			
8	90	17	22.2	20	4	16.2	20.7	8	10	22	M3	–	8	M5	9	M5	1.3	M3	34	8.8
	180																			
12	90	21	22.2	20	6	18.2	20.7	8	10	22	M3	–	8	M5	9	M5	1.3	M3	41	8.8
	180																			

Ø	Swivel angle	L1	L2	L3	L4	L5	L7	L8	L9	N1	T1	T2	T3	T4	T6	T7	T8	≈C1	≈C2	≈C3
[mm]	[°]			max.	max.		±0.03	±0.03		P9										
6	90	46.7	20.2	7.1	11.1	7.5	20	30	6.2	2	12	7	1.8	3.4	1.6	5	1.4	8	2.5	8
	180	61.8	27.75																	
8	90	54.2	23.45	8.1	12.1	7	–	36	5.7	2	16	9	–	4.6	2	5	2	10	3	8
	180	71.8	32.25																	
12	90	59.2	25.95	9.1	13.1	8	–	36	5.7	2	16	9	–	4.6	2	5	2	13	4	8
	180	76.8	34.75																	

1) Centring possible with D3

Twin-piston semi-rotary drives DRQD-6 ... 12

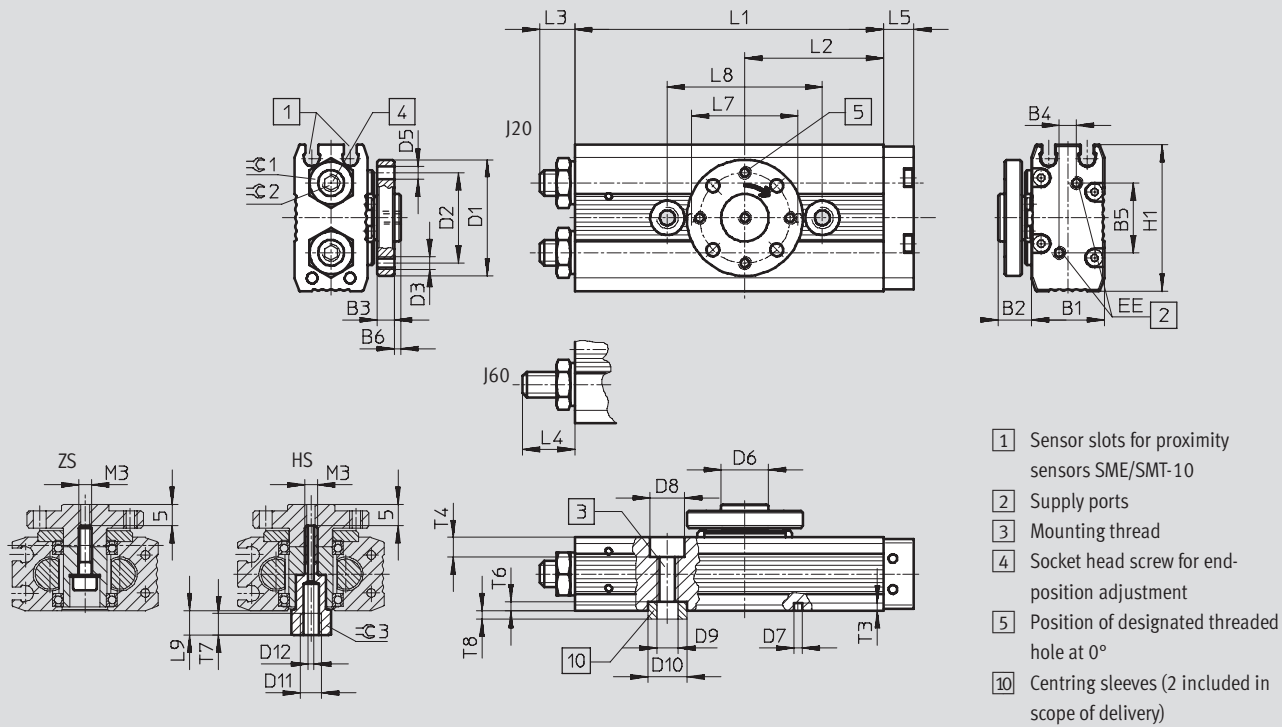
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com/en/engineering

FW – Flanged shaft



Ø	Swivel angle	B1	B2	B3	B4	B5	B6	D1	D2	D3	D5	D6	D7	D8	D9	D10	D11	D12
[mm]	[°]							Ø	Ø		Ø H7	Ø g7	Ø H8	Ø H8		Ø H7		Ø
6	90	15.4	7.7	4	2	13.6	1.5	23	16	M3	3	8	2	6	M4	7	M5	1.3
	180																	
8	90	17	7.7	4	4	16.2	1.5	27	21	M3	3	11	–	8	M5	9	M5	1.3
	180																	
12	90	21	7.7	4	6	18.2	1.5	27	21	M3	3	11	–	8	M5	9	M5	1.3
	180																	

Ø	Swivel angle	EE	H1	L1	L2	L3	L4	L5	L7	L8	L9	T3	T4	T6	T7	T8	≈C1	≈C2	≈C3
[mm]	[°]					max.	max.		±0.03	±0.03									
6	90	M3	31	46.7	20.20	7.1	11.1	7.5	20	30	6.2	1.8	3.4	1.6	5	1.4	8	2.5	8
	180			61.8	27.75														
8	90	M3	34	54.2	23.45	8.1	12.1	7	–	36	5.7	–	4.6	2	5	2	10	3	8
	180			71.8	32.25														
12	90	M3	41	59.2	25.95	9.1	13.1	8	–	36	5.7	–	4.6	2	5	2	13	4	8
	180			76.8	34.75														

Twin-piston semi-rotary drives DRQD-6 ... 12

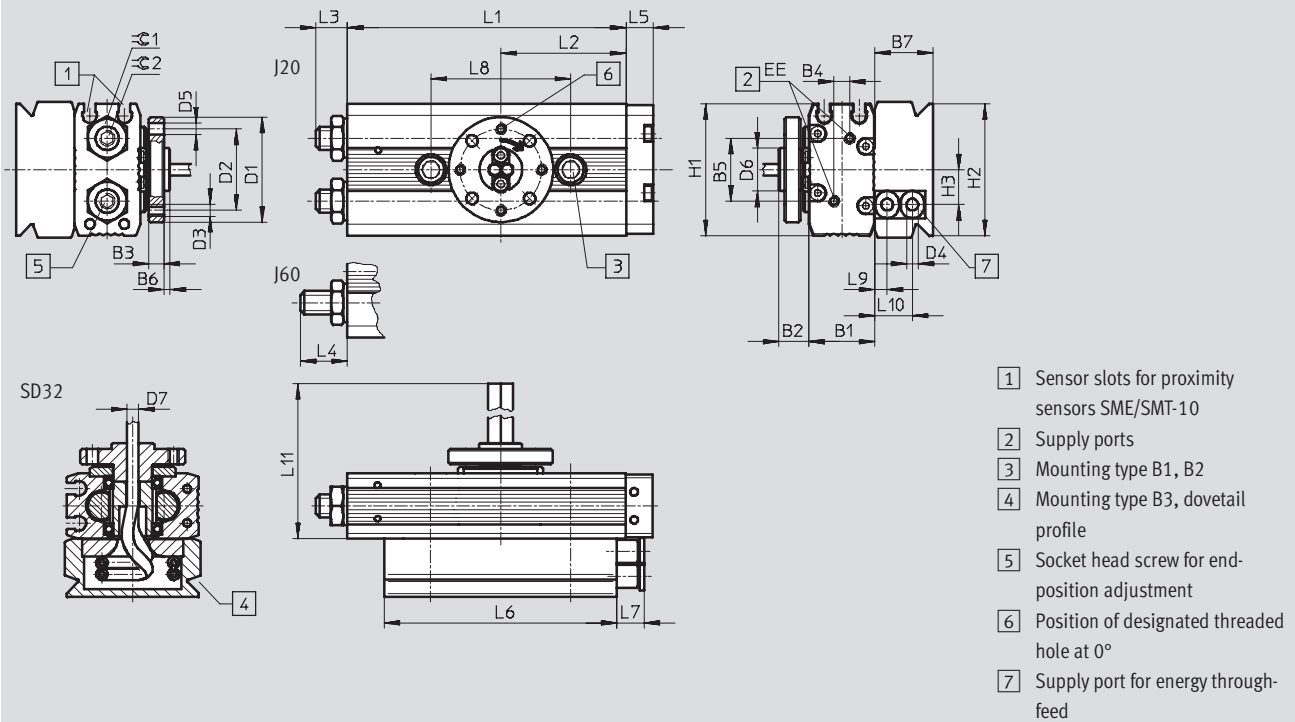
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com/en/engineering

FW-SD32 – Energy through-feed



Ø	Swivel angle	B1	B2	B3	B4	B5	B6	B7	D1	D2	D3	D4	D5	D6	D7	EE
[mm]	[°]								Ø	Ø	Ø	Ø	Ø H7	Ø g7	Ø	
8	90	17	7.7	4	4	16.2	1.5	15	27	21	M3	3	3	11	3	M3
	180															
12	90	21	7.7	4	6	18.2	1.5	15	27	21	M3	3	3	11	3	M3
	180															

Ø	Swivel angle	H1	H2	H3	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	≈G1	≈G2
[mm]	[°]						max.	max.			±0.03						
8	90	34	35	9	54.2	23.45	8.1	12.1	7	60	7	36	3.2	9.7	292	10	3
	180				71.8	32.25											
12	90	41	35	9	59.2	25.95	9.1	13.1	8	60	7	36	3.2	9.7	292	13	4
	180				76.8	34.75											

Twin-piston semi-rotary drives DRQD-6 ... 12

Technical data

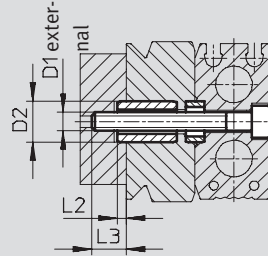
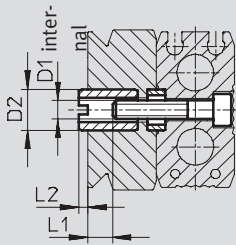
FESTO

Dimensions – Mounting type

Download CAD data → www.festo.com/en/engineering

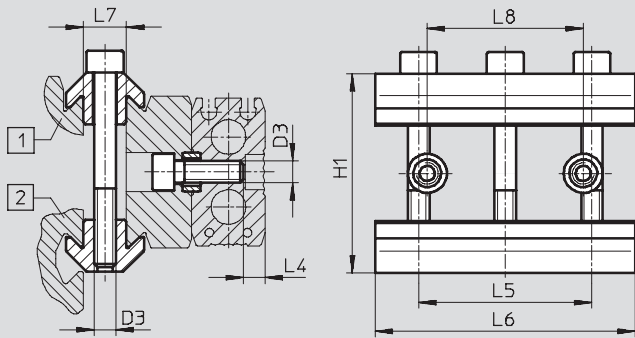
B1 – Counter screws in centring sleeves

B2 – Through screws in attachment



For Ø [mm]	Swivel angle [°]	D11	D2 Ø h7	L1	L2	L3		
8	90	M4	9	4.9	2	8.2		
	180							
12	90					5.9		9.2
	180							

B3 – Clamping via profile



- 1 Dovetail profile
- 2 Profile slot

For Ø [mm]	Swivel angle [°]	D3	H1	L4	L5	L6	L7 +0.1	L8 ±0.03
8	90	M5	46	5	40	60	10	36
	180							
12	90							
	180			9				

Twin-piston semi-rotary drives DRQD-6 ... 12

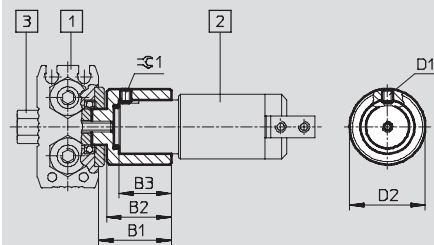
Technical data

FESTO

Dimensions – Adapter for gripper

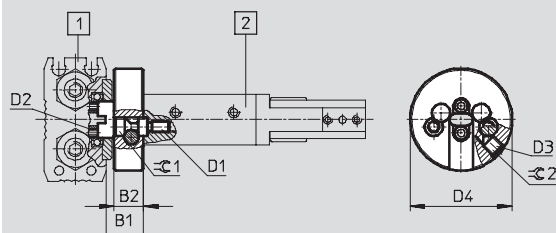
Download CAD data → www.festo.com/en/engineering

A08/A12

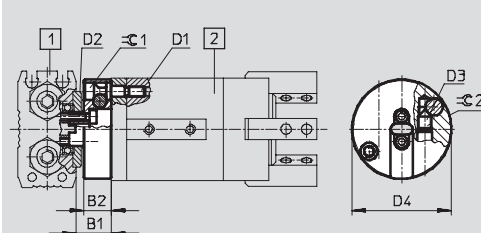


For adapter	1 Drive	2 Grippers	3 Type of screw	B1	B2	B3 ±0.03	D1	D2 Ø	≙C1
A08	DRQD-6-... DRQD-8-... DRQD-12-...	HGWM-08-...-G8 HGPM-08-...-G8	HS	15.2	13	9.6	M3	16	1.5
A12	DRQD-6-... DRQD-8-... DRQD-12-...	HGWM-12-...-G8 HGPM-12-...-G8	HS	20.2	19	14.6	M3	21	1.5

AS1



AS2



For adapter	1 Drive	2 Grippers	B1	B2	D1	D2	D3	D4 Ø	≙C1	≙C2
AS1	DRQD-8-... DRQD-12-...	HGP-06-... HGR-10-... HGW-10-...	10.2	8	M3	M2	M4	28	2.5	2
AS2	DRQD-8-... DRQD-12-...	HGD-16-...	10.2	8	M3	M2	M4	29	2.5	2

Swivel drives
Semi-rotary rack and pinion drives

4.2

Twin-piston semi-rotary drives DRQD-6 ... 12

Ordering data – Modular products

FESTO

Mandatory data →

Module No.	Function	Size	Swivel angle	End-position adjustment	Position sensing	Output shaft/ adapter
187 431	DRQD	6	90	J20	A	ZW
187 432		8	180	J60		FW
187 433		12				A08 A12 AS1 AS2
Ordering example						
187 432	DRQD	- 8	- 180	- J60	- A	- A12

Ordering table

Size	6	8	12	Condi- tions	Code	Enter code
M Module No.	187 431	187 432	187 433			
Function	Semi-rotary drive with twin pistons				DRQD	DRQD
Piston Ø [mm]	6	8	12		-...	
Swivel angle	90°				-90	
	180°				-180	
End-position adjustment	Adjusting range +6°/-20°				-J20	
	Adjusting range +6°/-60°				-J60	
Position sensing	For proximity sensing				-A	-A
Output shaft/adapter	Spigot shaft			1	-ZW	
	Flanged shaft			2	-FW	
	Adapter for HGWM-08	Adapter for HGPM-08/HGWM-08		3	-A08	
	Adapter for HGWM-12	Adapter for HGPM-12/HGWM-12		3	-A12	
	-	Adapter for HGW/HGR-10-A, HGP-6-A		4	-AS1	
	-	Adapter for HGD-16-A		4	-AS2	

- 1 **ZW** Not with energy through-feed SD32
Only with screw type ZS, HS
- 2 **FW** Required for energy through-feed SD32
Only with screw type ZS, HS

- 3 **A08, A12** Not with energy through-feed SD32
Only with screw type HS
- 4 **AS1, AS2** Required for energy through-feed SD32
Not with screw type ZS, HS

Transfer order code

	DRQD	-		-		-	A	-	
--	------	---	--	---	--	---	---	---	--

Twin-piston semi-rotary drives DRQD-6 ... 12

Ordering data – Modular products

FESTO

→ **0 Options**

Energy through-feed	Type of screw	Type of mounting	User's manual
SD32	ZS HS	B1 B2 B3	E F S I V B
- SD32	- HS	- B2	- B

Ordering table							
Size		6	8	12	Condi- tions	Code	Enter code
0	Energy through-feed	–	2x tubing O.D. 3 mm		5	-SD32	
	Type of screw	Socket head screw				-ZS	
		Hollow bolt				-HS	
	Type of mounting	–	Mounting type 1		6	-B1	
		–	Mounting type 2		6	-B2	
		–	Mounting type 3		6	-B3	
	Alternative language user docu- mentation (standard is German)	English				-E	
		French				-F	
		Spanish				-S	
		Italian				-I	
Swedish				-V			
Express waiver – no user manual to be included (already available)				-B			

5 SD32 Only with mounting type B1, B2, B3

6 B1, B2, B3 Only with energy through-feed SD32

Swivel drives
Semi-rotary rack and pinion drives

4.2

Transfer order code

- - - -

Twin-piston semi-rotary drives DRQD-16 ... 50

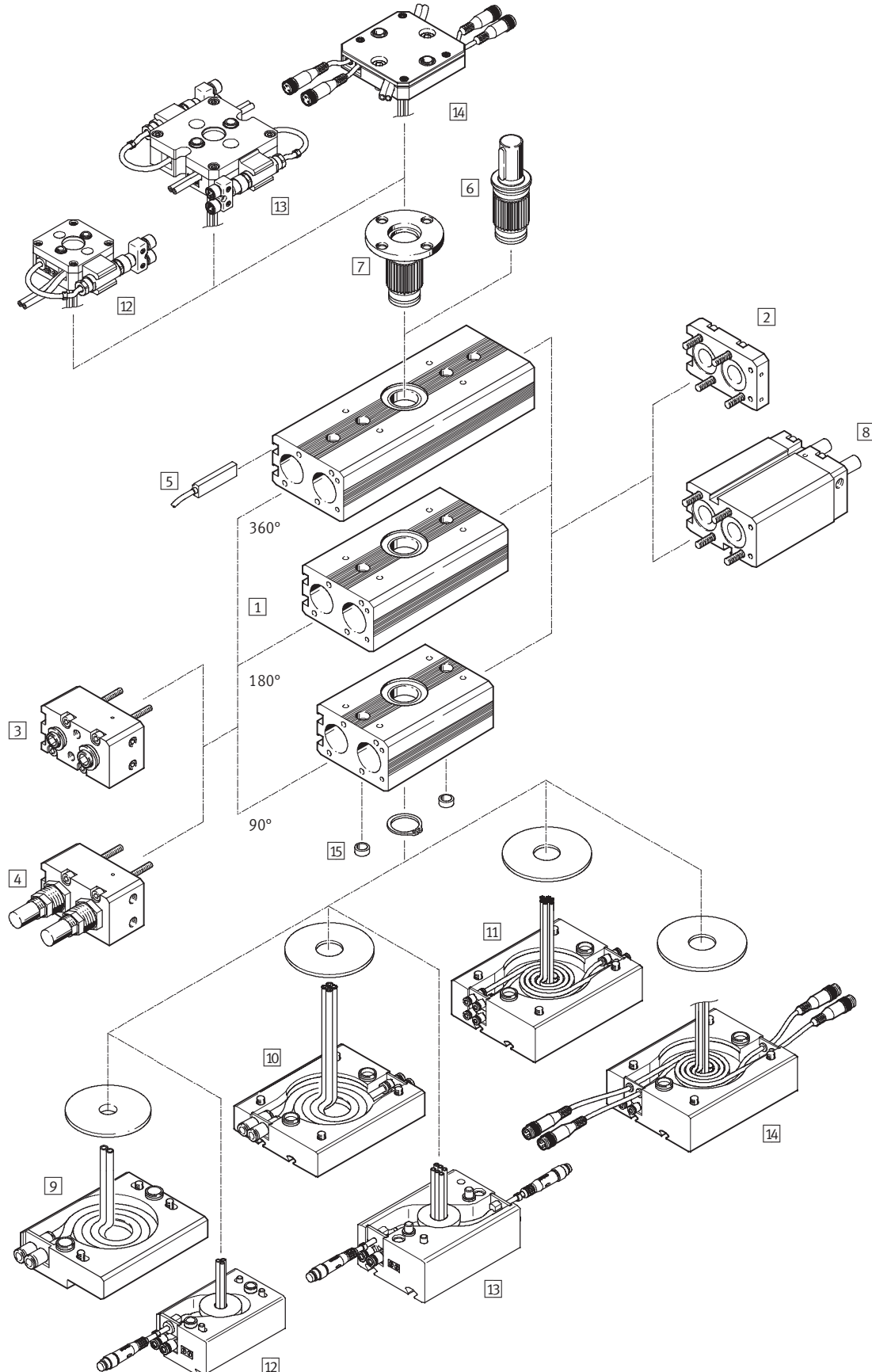
Peripherals overview

FESTO

Piston Ø 16 ... 50

Swivel drives
Semi-rotary rack and pinion drives

4.2



Twin-piston semi-rotary drives DRQD-16 ... 50

Peripherals overview

FESTO

Variants, mounting attachments and accessories								
	Brief description	Piston Ø						→ Page
		16	20	25	32	40	50	
1	Centre section	■	■	■	■	■	■	1 / 4.2-80
2	End cap	■	■	■	■	■	■	
3	Connector cap PPVJ	■	■	■	■	■	■	
4	Connector cap YSRJ	■	■	■	■	■	■	
5	Position sensing A	■	■	■	■	■	■	1 / 4.2-83
6	Spigot shaft ZW	■	■	■	■	■	■	1 / 4.2-80
7	Flanged shaft FW	■	■	■	■	■	■	
8	Intermediate position Z1	■	■	■	■	■	■	1 / 4.2-57
9	Energy through-feed SD32, SD42	■	■	■	■	–	–	1 / 4.2-58
	Energy through-feed SD62	–	–	–	–	■	■	
10	Energy through-feed SD64	–	–	–	–	■	■	
11	Energy through-feed SD48	–	–	–	–	■	■	
12	Energy through-feed E422	■	■	–	–	–	–	
13	Energy through-feed E444	–	–	■	■	–	–	
14	Energy through-feed E644	–	–	–	–	■	■	
15	Centring sleeve ZBH	■	■	■	■	■	■	1 / 4.2-82

Twin-piston semi-rotary drives DRQD-16 ... 50

Type codes

FESTO

		DRQD	–	40	–	90	–	YSRJ	–	A	–	AR	–	FW	–	
Type																
Double-acting																
DRQD	Semi-rotary drive															
Piston Ø [mm]																
Swivel angle [°]																
Type of cushioning																
PPVJ	Adjustable end-position cushioning															
YSRJ	Adjustable shock absorbers															
Position sensing																
A	For proximity sensing															
Pneumatic connection																
AL	Supply port, left															
AR	Supply port, right															
Output shaft																
ZW	Spigot shaft															
FW	Flanged shaft															
Intermediate position																
Z1	1 intermediate position (mid-position)															

Twin-piston semi-rotary drives DRQD-16 ... 50

Type codes

FESTO

		—	SD42	—	B
Energy through-feed					
SD32	2 tubes with O.D. 3 mm				
SD42	2 tubes with O.D. 4 mm				
SD48	8 tubes with O.D. 4 mm				
SD62	2 tubes with O.D. 6 mm				
SD64	4 tubes with O.D. 6 mm				
E422	2 tubes with O.D. 4 mm and 1 4-pin cable to 2 3-pin cables				
E444	4 tubes with O.D. 4 mm and 2 4-pin cables to 4 3-pin cables				
E644	4 tubes with O.D. 6 mm and 4 3-pin cables				
User's manual					
	German (standard)				
E	English				
F	French				
S	Spanish				
I	Italian				
V	Swedish				
B	Express waiver – no user manual to be included (already available)				

Twin-piston semi-rotary drives DRQD-16 ... 50

Technical data

FESTO

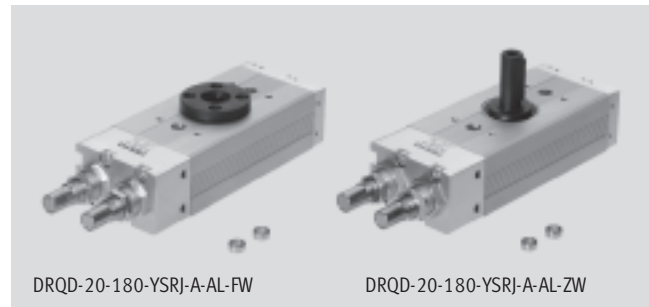
Function



- - Diameter
16 ... 50 mm
- - Force
1.6 ... 50 Nm
- - www.festo.com/en/Spare_parts_service

Variants

- 90°, 180° and 360° or X swivel angle
- Spigot or flanged shaft
- Adjustable end-position cushioning or shock absorbers
- Position sensing
- Intermediate position
- Energy through-feed
- Different types of mounting



General technical data						
Piston Ø	16	20	25	32	40	50
Pneumatic connection		M5			G1/8	
	SD32	QS...-3 for tubing O.D. Ø 3 mm ¹⁾			–	–
	SD42/SD48	QS...-4 for tubing O.D. Ø 4 mm ¹⁾			–	–
	E422	QS...-4 for tubing O.D. 4 mm		–		
	E444	–		QS...-4 for tubing O.D. 4 mm	–	
	SD62/SD64/ E644	–			QS...-6 for tubing O.D. 6 mm	
Constructional design	Semi-rotary drive with twin pistons based on the rack and pinion principle					
Cushioning	PPVJ	Adjustable, pneumatic				
	YSRJ	Adjustable, hydraulic shock absorbers				
Position sensing	For proximity sensing					
Type of mounting	Via through-hole					
	Via female thread					
Assembly position	Any					

Operating and environmental conditions									
Piston Ø			16	20	25	32	40	50	
Operating medium			Filtered compressed air, lubricated or unlubricated						
Operating pressure	[bar]	PPVJ	1 ... 10						
		YSRJ	2 ... 10						
		Z1	1 ... 10						
Adjustable end-position range per end position	[°]	PPVJ	−20 ... +6						
		YSRJ							
Max. permissible swivel- ling frequency at 6 bar (for completed cycle of motion)	[Hz]	PPVJ	90°	4	3	2	1.2	1.2	1.2
			180°	3	2.2	1.3	0.8	0.9	0.9
			360°	1.5	1.2	0.8	0.5	0.5	0.5
	YSRJ	90°	2	2	1.5	1.2	1	0.9	
		180°	1.8	1.8	1.5	1.2	1	0.8	
		360°	1	1	0.9	0.8	0.7	0.6	
	SD.../E...		A reduction of max. 5% of the values indicated above						
	-  Note: At temperatures < 0 °C, a max. frequency of 1 Hz applies in the case of variant YSRJ.								

Twin-piston semi-rotary drives DRQD-16 ... 50

Technical data

FESTO

Operating and environmental conditions									
Piston Ø				16	20	25	32	40	50
Minimum cycle times in conjunction with Z1 (from the end position to the intermediate position)	[s]	PPV]	90°	0.20	0.22	0.18	0.21	0.20	0.18
			180°	0.26	0.41	0.20	0.26	0.21	0.35
	YSR]	90°	0.20	0.22	0.17	0.20	0.47	0.35	
		180°	0.23	0.31	0.22	0.23	1.10	0.99	
Repetition accuracy (approached from both ends)	[°]	Z1	≤ 0.05						
			≤ 0.15				≤ 0.25	≤ 0.20	≤ 0.30
Ambient temperature			[°C]						
Corrosion resistance class CRC ¹⁾			-10 ... +60						
			1						

1) Corrosion resistance class 1 according to Festo standard 940 070

Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers

Forces and torques								
Piston Ø			16	20	25	32	40	50
Theoretical torque at 6 bar	[Nm]	PPVJ	1.6	3.1	6.1	12.5	25	50
		YSRJ	1.6	3.1	6.1	12.5	25	50
		Z1	1.7	3.6	6.2	13.5	32.2	78.6
		Note: If torque acts against the direction of rotation in the end position, a drive with a rating of twice the maximum theoretical torque should be selected.						
	Max. permissible radial and axial forces		Graphs ➔ 1 / 4.2-55					
Max. permissible mass moment of inertia	[kgm ²]	PPVJ	5 x 10 ⁻⁴	10 x 10 ⁻⁴	20 x 10 ⁻⁴	40 x 10 ⁻⁴	200 x 10 ⁻⁴	500 x 10 ⁻⁴
		YSRJ	Graphs ➔ 1 / 4.2-53					
		PPVJ-Z1	5 x 10 ⁻⁴	10 x 10 ⁻⁴	20 x 10 ⁻⁴	40 x 10 ⁻⁴	200 x 10 ⁻⁴	500 x 10 ⁻⁴
	YSRJ-Z1	–	–	–	–	1000 x 10 ⁻⁴	2000 x 10 ⁻⁴	
			The data applies to the variants ZW, FW, without grippers and unthrottled.					



Pneumatic sizing using Pro Pneu
www.festo.com/en/engineering

Weights [g]									
Piston Ø			16	20	25	32	40	50	
Connection cap AL/AR		PPVJ	116	220	358	609	1,170	2,320	
		YSRJ	140	240	441	917	2,170	4,270	
Centre section/output shaft	90°	ZW	379	609	1,026	1,891	3,330	6,860	
		FW	380	586	1,018	1,848	3,960	7,010	
	180°	ZW	467	753	1,267	2,325	4,340	8,850	
		FW	468	730	1,259	2,282	4,570	9,000	
	360°	ZW	643	1,039	1,741	3,199	6,350	12,890	
		FW	644	1,016	1,733	3,165	6,580	13,040	
End cap			40	53	82	140	370	610	
Intermediate position	90°	Z1	235	315	550	805	2,510	3,960	
	180°	Z1	235	315	550	805	2,510	3,960	
Flanged shaft with energy through-feed	SD32	152				303		–	
	SD42	152				303		–	
	SD48	–						1,220	
	SD62	–						900	
	SD64	–						930	
	E422	400				–			
	E444	–				800		–	
	E644	–						2,700	

Twin-piston semi-rotary drives DRQD-16 ... 50

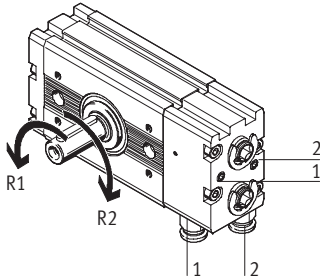
Technical data

FESTO

Direction of rotation of the drive shaft

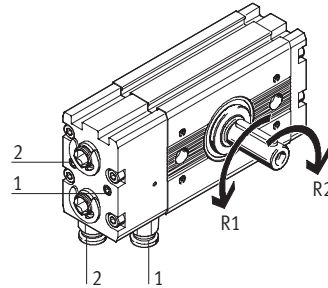
Connection cap on right (AR)

Pneumatic actuation of ports 1 or 2 produces a rotational movement in direction R1 or R2 respectively.



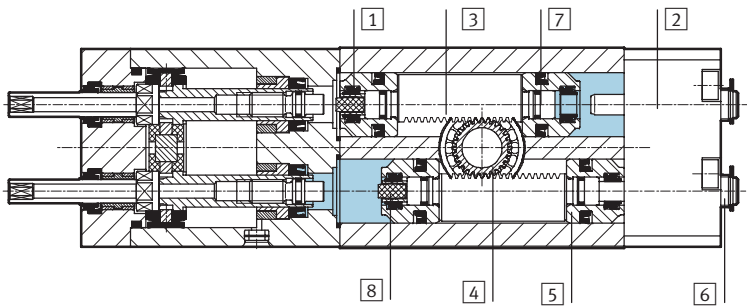
Connection cap on left (AL)

Pneumatic actuation of ports 1 or 2 produces a rotational movement in direction R1 or R2 respectively.



Materials

Sectional view



Piston Ø	16	20	25	32	40	50
Basic drive						
1	Cylinder barrel (centre section)	Anodised aluminium			Wrought aluminium alloy, anodised	
2	Connector cap	Anodised aluminium				
3	Gear rack	High-alloy stainless steel, hardened			High-alloy steel	
4	Pinion	Tempered steel				
5	Piston	Anodised aluminium				
6	Adjustable sleeve	Galvanised steel				
7	Piston seal	Polyurethane				
–	Material note	Copper, PTFE and silicone-free				
Function end cap PPVJ						
–	Cushioning seal	Nitrile rubber/polyurethane			Polyurethane	
–	Buffer sleeve, regulating screw	Anodised aluminium				
Function end cap YSRJ						
–	Buffer	Delrin				
–	Rod wiper seal	Nitrile rubber/polyurethane				
Energy through-feed SD.../E...						
–	Transfer plate/sliding disc	Anodised aluminium				
–	DUO spiral tubing	Polyurethane				
Z1 intermediate position module						
–	Piston	Stainless steel; nitrile rubber				
–	Piston rod, nut	Stainless steel				
–	Bearings	POM				
–	Rod wiper seal	Polyurethane				

Twin-piston semi-rotary drives DRQD-16 ... 50

Technical data

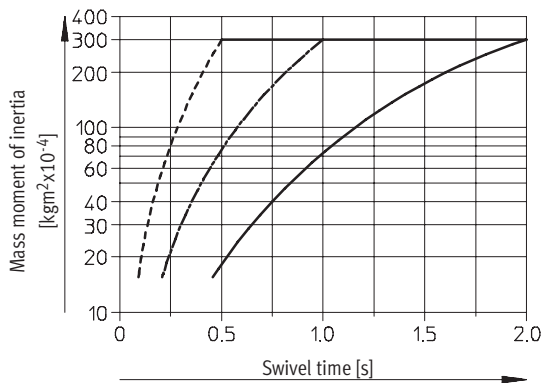
FESTO

Swivel drives
Semi-rotary rack and pinion drives

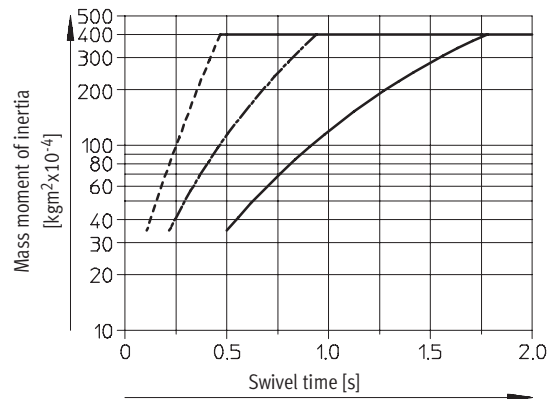
4.2

Maximum permissible mass moments of inertia on the drive shaft

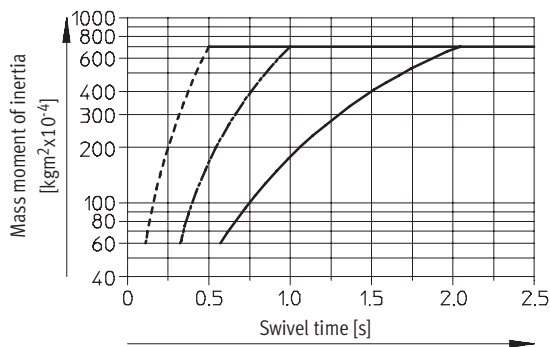
DRQD-16-...-YSRJ



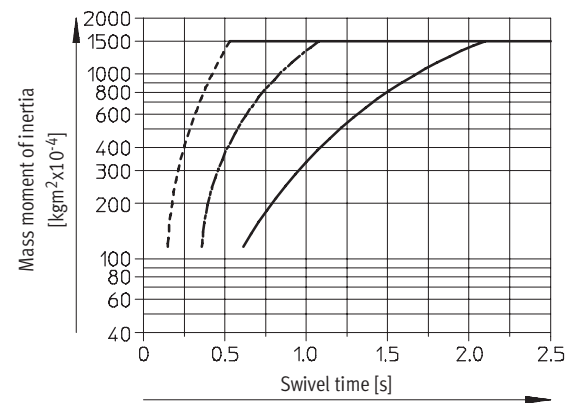
DRQD-20-...-YSRJ



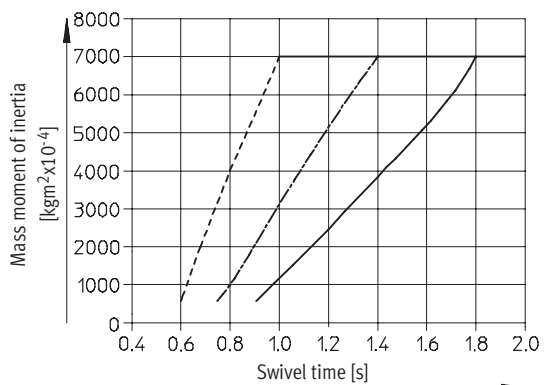
DRQD-25-...-YSRJ



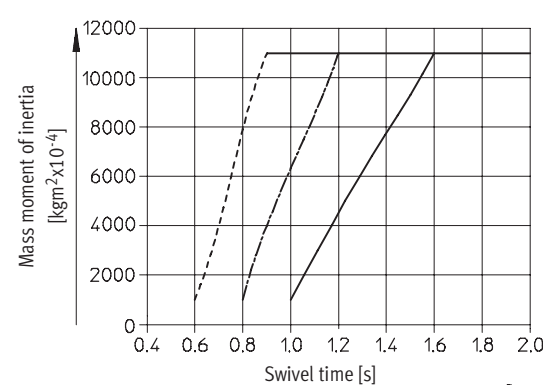
DRQD-32-...-YSRJ



DRQD-40-...-YSRJ



DRQD-50-...-YSRJ



----- 90°
- - - - - 180°
————— 360°

Twin-piston semi-rotary drives DRQD-16 ... 50

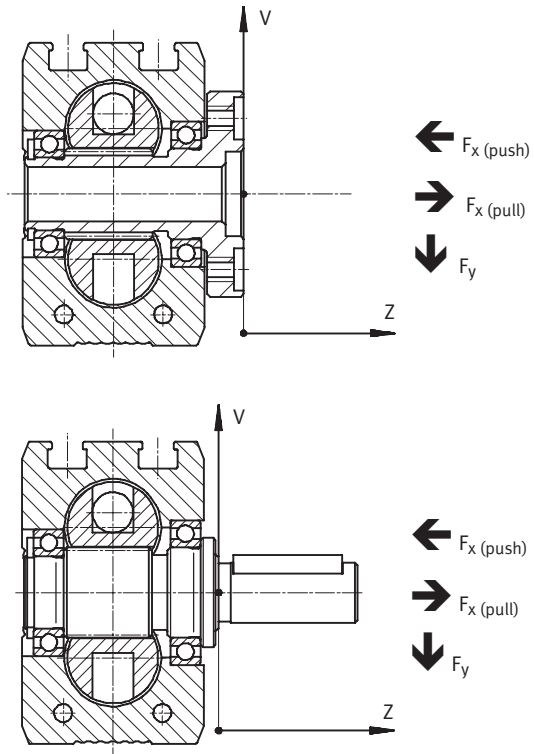
Technical data

Max. permissible radial and axial forces on the drive shaft

Combined load

A semi-rotary drive type DRQD-16-...-FW is to be statically loaded with a radial force $F_y = 300 \text{ N}$, which is at a distance of $Z = 15 \text{ mm}$ from the

flanged shaft, and an axial force $F_{x, \text{push}} = 100 \text{ N}$, which is at a distance of $V = 25 \text{ mm}$ from the shaft (→ diagram of flanged shaft on right).



Question:

Is it permissible to statically load a DRQD-16-...-FW semi-rotary drive with these combined forces?

Answer:

According to graph 1 (→ 1 / 4.2-55), a distance of $Z = 15 \text{ mm}$ results in a maximum permissible radial force

$F_{y, \text{max. (stat.)}} (15) = 400 \text{ N}$.
According to graph 3 (→ 1 / 4.2-55), a distance of $V = 25 \text{ mm}$ results in a

maximum permissible axial force
 $F_{x, \text{push max. (stat.)}} (25) = 550 \text{ N}$.

The following equation applies to combined loads:

$$\frac{F_{y(z)}}{F_{y, \text{max. (z)}}} + \frac{F_{x, \text{push (v)}}}{F_{x, \text{push, max. (v)}}} + \frac{F_{x, \text{pull (v)}}}{F_{x, \text{pull, max. (v)}}} \leq 1$$

The following values are assumed:

$F_{y(15)} = 300 \text{ N}$
 $F_{x, \text{push (stat.)}} (25) = 100 \text{ N}$
 $F_{y, \text{max. (stat.)}} (15) = 400 \text{ N}$
 $F_{x, \text{max. (stat.)}} (25) = 550 \text{ N}$

With values inserted:

$$\frac{300 \text{ N}}{400 \text{ N}} + \frac{100 \text{ N}}{550 \text{ N}} \leq 1$$

$$0.75 + 0.182 \leq 1$$

$$0.932 \leq 1$$

Thus the drive may be statically loaded with the forces indicated above.

Twin-piston semi-rotary drives DRQD-16 ... 50

Technical data

FESTO

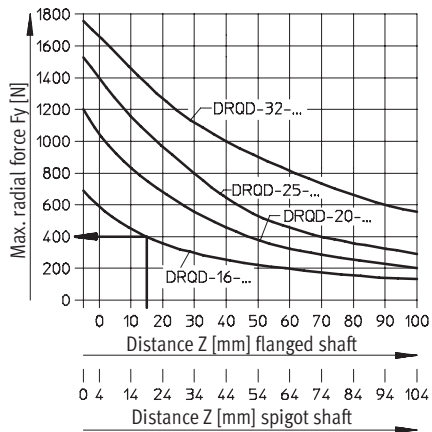
Swivel drives
Semi-rotary rack and pinion drives

4.2

Maximum static radial force

Graph 1

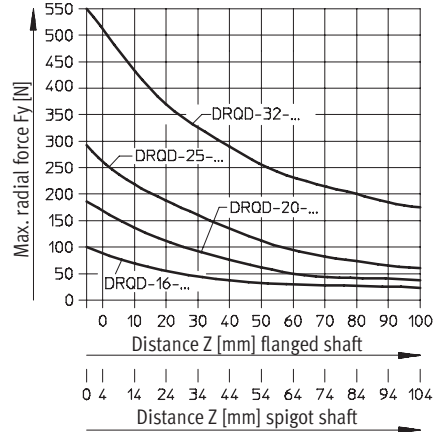
$$F_{y, \text{max. (stat.)}} = f(z)$$



Maximum dynamic radial force

Graph 2

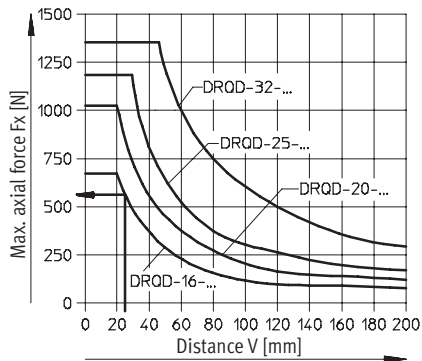
$$F_{y, \text{max. (dyn.)}} = f(z)$$



Maximum static axial pushing force

Graph 3

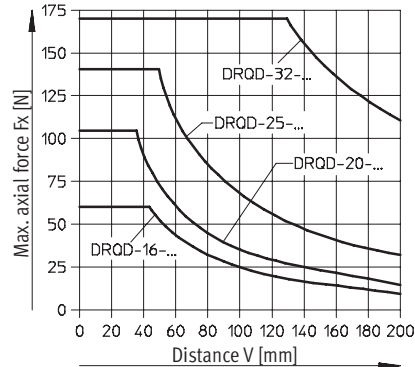
$$F_{x, \text{push max. (stat.)}} = f(v)$$



Maximum dynamic axial pushing force

Graph 4

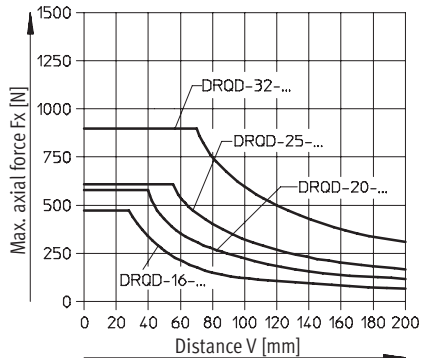
$$F_{x, \text{push max. (dyn.)}} = f(v)$$



Maximum static axial pulling force

Graph 5

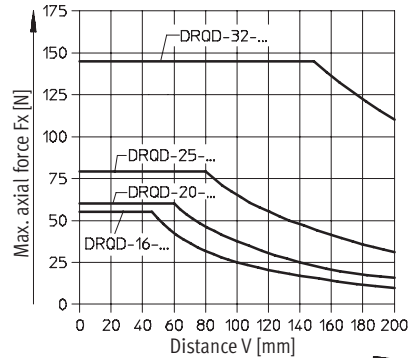
$$F_{x, \text{pull max. (stat.)}} = f(v)$$



Maximum dynamic axial pulling force

Graph 6

$$F_{x, \text{pull max. (dyn.)}} = f(v)$$



Twin-piston semi-rotary drives DRQD-16 ... 50

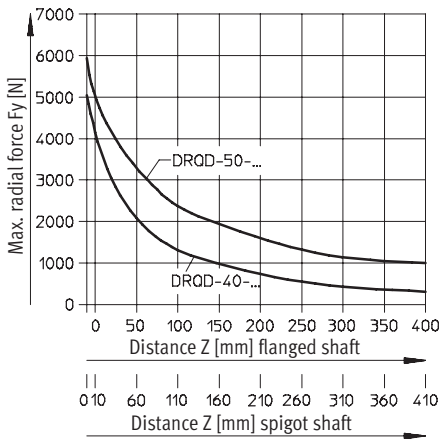
Technical data

FESTO

Maximum static radial force

Graph 1

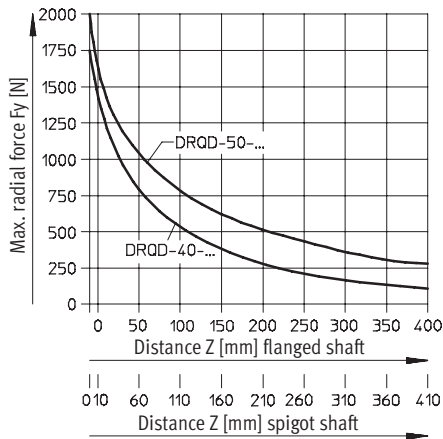
$$F_{y, \text{max. (stat.)}} = f_z$$



Maximum dynamic radial force

Graph 2

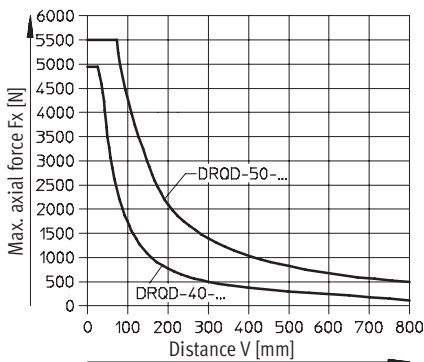
$$F_{y, \text{max. (dyn.)}} = f_z$$



Maximum static axial pushing force

Graph 3

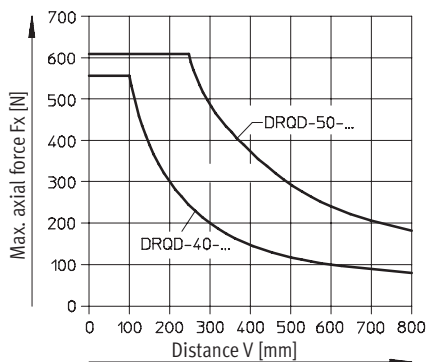
$$F_{x, \text{push max. (stat.)}} = f_v$$



Maximum dynamic axial pushing force

Graph 4

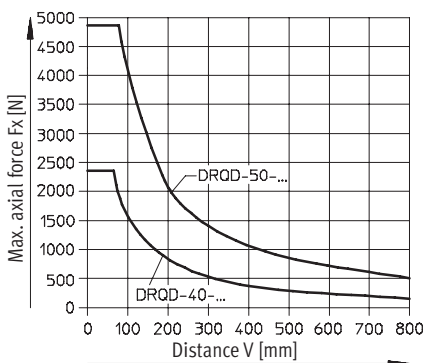
$$F_{x, \text{push max. (dyn.)}} = f_v$$



Maximum static axial pulling force

Graph 5

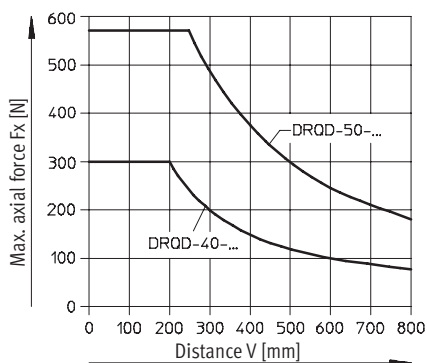
$$F_{x, \text{pull max. (stat.)}} = f_v$$



Maximum dynamic axial pulling force

Graph 6

$$F_{x, \text{pull max. (dyn.)}} = f_v$$



Twin-piston semi-rotary drives DRQD-16 ... 50

Technical data

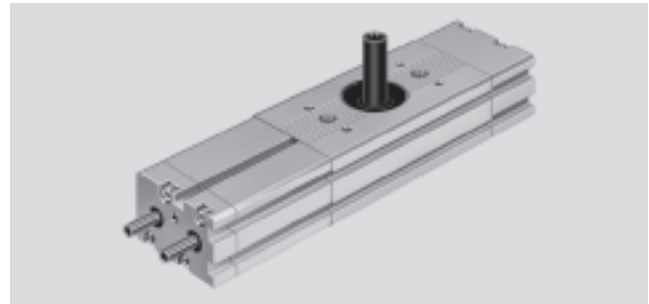
FESTO

Z1 intermediate position module

For DRQD-16 ... 50

The intermediate position module is fitted in place of the end cap, and allows for adjustable, backlash-free positioning of the drive at 50% of its

nominal rotation angle. The intermediate position module is available for nominal rotation angles of 90° and 180°.



Function

A piston incorporating two screw fastened piston rods is pressurised and shifts the semi-rotary drive gear racks until both make full contact with the

piston rods in the mid-position module. The mid-position can be accurately adjusted within a range of $\pm 10^\circ$ with the adjusting screws in the piston

rods. Thanks to the hollow shaft design of the piston rod, adjustment can be performed under pressure. The through rods in the mid-position

module are guided by means of multiple bearings in the cover and in the adapter.

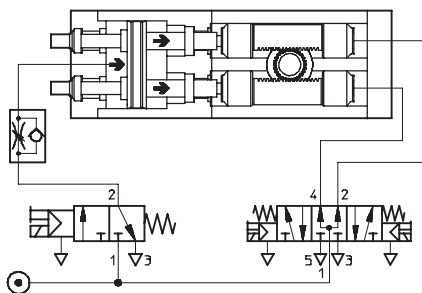
Actuation

In order for the mid-position module to function, the DRQD basic actuator must be pressurised at both sides.

This can be accomplished with two different types of actuation:

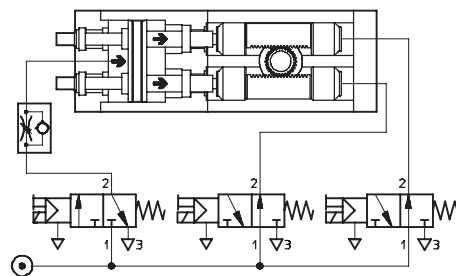
Actuation type 1

- Mid-position module (supply air must be restricted) with a 3/2-way valve
- DRQD basic drive with a 5/3-way valve, mid-position pressurised



Actuation type 2

- Mid-position module (supply air must be restricted) with a 3/2-way valve
- DRQD basic drive with two 3/2-way valves, spring return



Note

Even if the semi-rotary drives DRQD-16 to 32 have been equipped with shock absorbers (type YSRJ), the mid-position may not be loaded with

more than the max. permissible mass moment of inertia for the PPVJ variant! The reason for this is the cushioning: Whereas loads can be absorbed in the

end positions with the shock absorbers, the mid-position is only equipped with basic flexible cushioning. Additional information on the

permissible mass moment of inertia for the sizes 40 and 50 mm:
→ 1 / 4.2-51

Twin-piston semi-rotary drives DRQD-16 ... 50

Technical data

FESTO

Energy through-feed

DRQD-...-SD...

The energy through-feed consists of one to max. four DUO tubes (fused tubing pair), whereby each tube has an O.D. of 3 ... 6 mm. Compressed air is supplied via the push-in fittings in

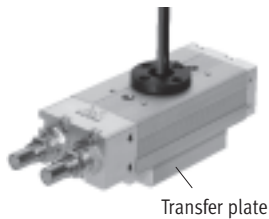
the transfer plate. Only Quick-Star push-in fittings may be used to connect compressed air tubing to consuming devices (e.g. grippers).

DRQD-...-E...

The energy through-feed consists of one to max. two DUO tubes (fused tubing pair), whereby each tube has an O.D. of 4 ... 6 mm. Compressed air is supplied via the push-in fittings in the transfer plate. Only Quick-Star

push-in fittings may be used to connect compressed air tubing to consuming devices (e.g. grippers). In addition, up to four proximity sensors can be connected by means of this energy through-feed.

DRQD-...-SD...



- For piston $\varnothing$ 16 ... 50
- Swivel angles of up to 360° are possible
- 1 ... 4 DUO tubes

Technical data

Piston $\varnothing$		16	20	25	32	40	50
Number of DUO tubes	SD32	1				–	
	SD42	1				–	
	SD48	–				4	
	SD62	–				1	
	SD64	–				2	
Standard nominal flow rate [l/min] (per tube)	SD32	min. 70				–	
	SD42	min. 130				–	
	SD48	–				min. 130	
	SD62	–				min. 250	
	SD64	–				min. 250	
Theoretical air consumption per line at 6 bar [cm ³]	SD32	5.3				–	
	SD42	9.5				–	
	SD48	–				9.5	
	SD62	–				24.4	
	SD64	–				24.4	
Operating pressure as a function of ambient temperature [bar]		0 ... 10 (at –10 ... +30 °C) 0 ... 9 (at –30 ... +40 °C) 0 ... 7 (at –40 ... +60 °)					
Tube O.D. on flanged shaft drive side [mm]	SD32	3				–	
	SD42	4				–	
	SD48	–				4	
	SD62	–				6	
	SD64	–				6	
Push-in fittings for connection to consuming device [mm]	SD32	QS-...-3 for tube O.D. 3 mm				–	
	SD42	QS-...-4 for tube O.D. 4 mm				–	
	SD48	–				QS-...-4 for tube O.D. 4 mm	
	SD62	–				QS-...-6 for tube O.D. 6 mm	
	SD64	–				QS-...-6 for tube O.D. 6 mm	

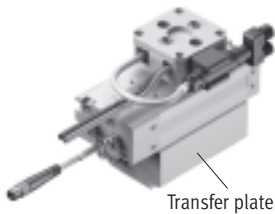
Twin-piston semi-rotary drives DRQD-16 ... 50

Technical data

FESTO

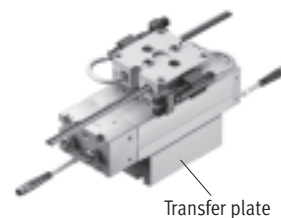
Energy through-feed

DRQD-...-E422



- For piston Ø 16/20
- Swivel angles of up to 180° are possible
- 1 DUO tube with O.D. 4 mm
- 1 4-pin cable to 2 3-pin cables

DRQD-...-E444



- For piston Ø 25/32
- Swivel angles of up to 180° are possible
- 2 DUO tubes each with O.D. 4 mm
- 2 4-pin cables to 4 3-pin cables

DRQD-...-E644



- For piston Ø 40/50
- Swivel angles of up to 180° are possible
- 2 DUO tubes each with O.D. 6 mm
- 4 3-pin cables

Technical data			16	20	25	32	40	50
Piston Ø								
Number of DUO tubes	E422	1		–				
	E444	–		2		–		
	E644	–				2		
Standard nominal flow rate (per tube)	l/min	E422	min. 130	–				
		E444	–	min. 130		–		
		E644	–			min. 250		
Theoretical air consumption per line at 6 bar	cm³	E422	9.5	–				
		E444	–	9.5		–		
		E644	–			24.4		
Operating pressure as a func- tion of ambient temperature	bar		0 ... 10 (at –10 ... +30 °C)					
			0 ... 9 (at +30 ... +40 °C)					
			0 ... 7 (at +40 ... +60 °C)					
Tube O.D. on flanged shaft drive side	mm	E422	4	–				
		E444	–	4		–		
		E644	–			6		
Push-in fittings for connection to consuming device	mm	E422	QS-...-4 for tube O.D. 4 mm		–			
		E444	–		QS-...-4 for tube O.D. 4 mm		–	
		E644	–				QS-...-6 for tube O.D. 6 mm	

Twin-piston semi-rotary drives DRQD-16 ... 32

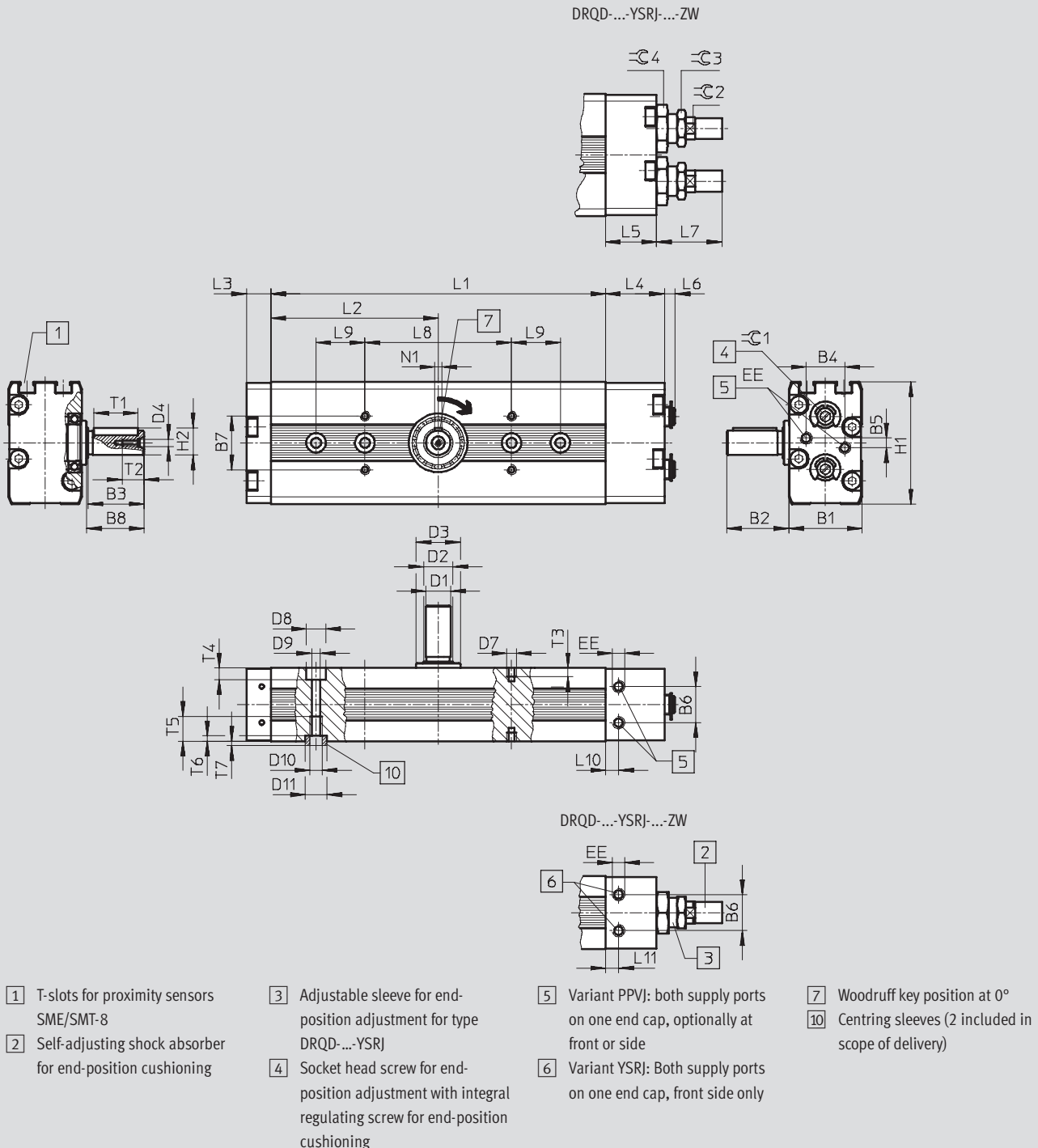
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com/en/engineering

ZW – Spigot shaft



Twin-piston semi-rotary drives DRQD-16 ... 32

Technical data

FESTO

Dimensions															
Ø [mm]	Swivel angle [°]	B1	B2	B3	B4	B5	B6	B7	B8	D1 Ø g6	D2 Ø	D3 Ø	D4	D7	D8 Ø H13
16	90	30	25.5	23	17.8	4	14.8	22	23.5	10	12	18	M3	M4	8
	180														
	360														
20	90	36	32.5	30	21.8	4	19.8	26	30.5	12	15	24	M4	M4	8
	180														
	360														
25	90	42	42.5	40	24.8	4	24.8	30	40.5	16	20	30	M5	M5	10
	180														
	360														
32	90	51	52.5	50	29.8	2	29.8	36	50.5	20	25	35	M6	M5	10
	180														
	360														

Download CAD data → www.festo.com/en/engineering

Ø [mm]	Swivel angle [°]	D9 Ø	D10	D11 Ø H7	EE	H1	H2	L1	L2	L3	L4	L5	L6		L7		L8
													min.	max.	min.	max.	±0.03
16	90	4.2	M5	9	M5	50	11.2	71	35.5	10	24	20.8	1.7	5.7	23.4	28.2	60
	180							93	46.5								
	360							137	68.5								
20	90	4.2	M5	9	M5	56	13.5	78.4	39.2	10	31.5	27	2.4	7	28.6	35.9	60
	180							104.8	52.4								
	360							157.6	78.8								
25	90	5.3	M6	9	M5	67	18	91.2	45.6	11	36.5	33	2.6	8.9	42	50.2	60
	180							124	62								
	360							189.2	94.6								
32	90	5.3	M6	9	G $\frac{3}{8}$	79	22.5	114.8	57.4	13	39	39	4.3	11.8	59.4	70.1	80
	180							155.6	77.8								
	360							237.4	118.7								

Ø [mm]	Swivel angle [°]	L9 ±0.03	L10	L11	N1 P9	T1	T2	T3	T4	T5	T6	T7	≈C1	≈C2	≈C3	≈C4
16	90	–	7.6	5.3	3	18.1	9	3.5	5	10	2	2	4	9	13	17
	180	–														
	360	20														
20	90	–	8	5	4	25.1	10	3.5	5	12	2	2	7	11	15	19
	180	–														
	360	20														
25	90	–	11	5	5	36.1	12.5	5	6	12	2	2	7	15	19	24
	180	–														
	360	20														
32	90	–	13.1	8	6	45.1	16	5	6	14	2	2	8	20	27	32
	180	20														
	360	20														

Swivel drives
Semi-rotary rack and pinion drives

4.2

Twin-piston semi-rotary drives DRQD-40 ... 50

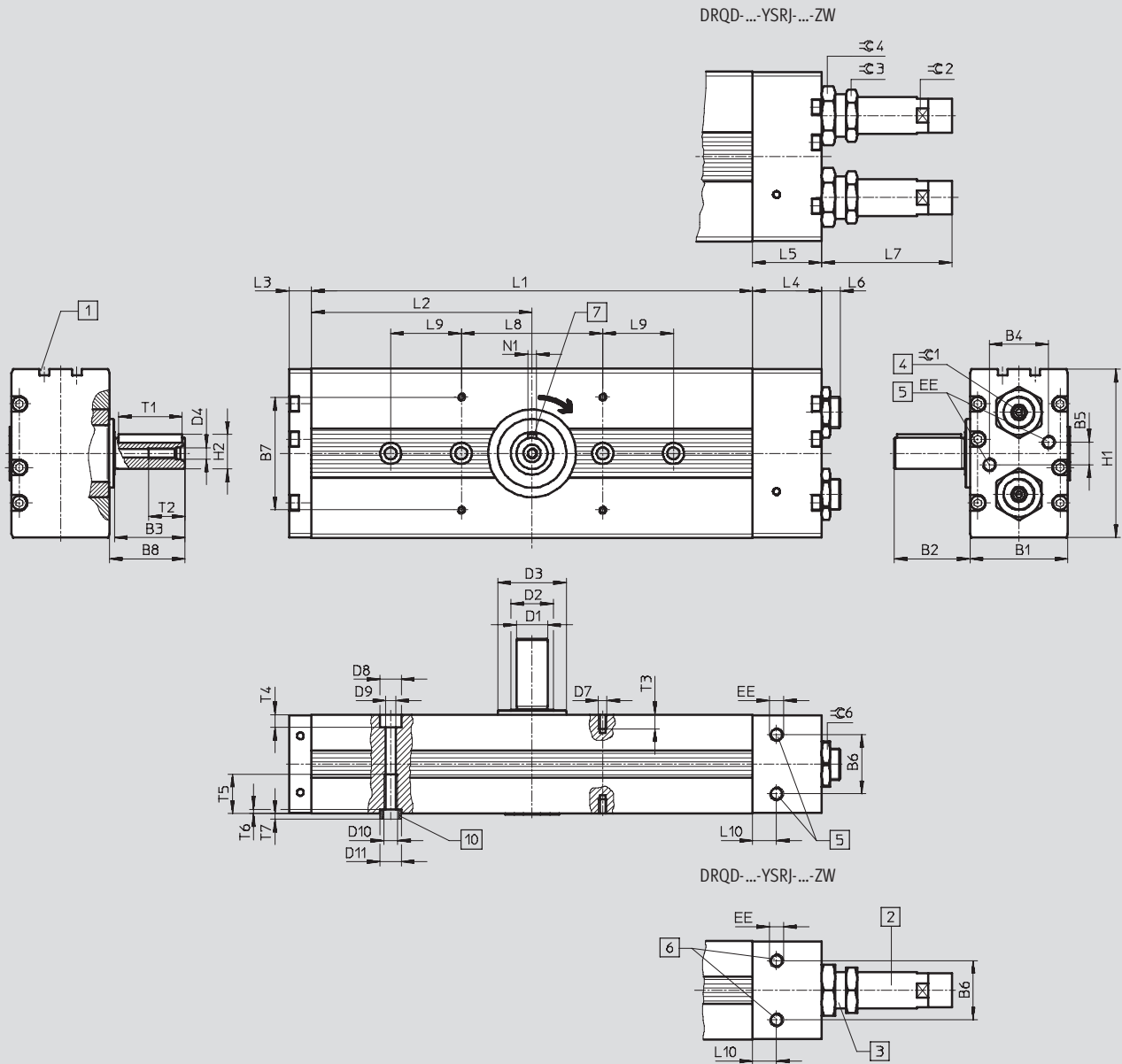
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com/en/engineering

ZW – Spigot shaft



- | | | | |
|---|---|---|---|
| <p>1 T-slots for proximity sensors SME/SMT-8</p> <p>2 Self-adjusting shock absorber for end-position cushioning</p> | <p>3 Adjustable sleeve for end-position adjustment for type DRQD-...-YSRJ</p> <p>4 Socket head screw for end-position adjustment with integral regulating screw for end-position cushioning</p> | <p>5 Variant PPVJ: both supply ports on one end cap, optionally at front or side</p> <p>6 Variant YSRJ: both supply ports on one end cap, front side only</p> | <p>7 Woodruff key position at 0°</p> <p>10 Centring sleeves (2 included in scope of delivery)</p> |
|---|---|---|---|

Twin-piston semi-rotary drives DRQD-40 ... 50

Technical data

FESTO

Dimensions											Download CAD data → www.festo.com/en/engineering					
∅	Swivel angle	B1	B2	B3	B4	B5	B6	B7	B8	D1	D2	D3	D4	D7	D8	D9
[mm]	[°]									∅ g6	∅	∅			∅ H13	∅
40	90	70	53.5	50	42	4	42	80	50.5	22	30	48.5	M8	M6	15	8.5
	180															
	360															
50	90	86	63.5	60	50	16	50	80	60.9	28	38	58.5	M12	M6	15	8.5
	180															
	360															

∅	Swivel angle	D10	D11	EE	H1	H2	L1	L2	L3	L4	L5	L6		L7		L8
[mm]	[°]		∅ H7									min.	max.	min.	max.	±0.03
40	90	M10	15	G1/8	120	24.5	146.8	73.4	16	49	41.5	5	14.6	85.1	96.4	100
	180						201.8	100.9								
	360						311.8	155.9								
50	90	M10	15	G1/4	144	31	191.4	95.7	18	64	55	8	20.7	107.8	120.6	100
	180						262.8	131.4								
	360						405.8	202.9								

∅	Swivel angle	L9	L10	N1	T1	T2	T3	T4	T5	T6	T7	≈C1	≈C2	≈C3	≈C4	≈C6
[mm]	[°]	±0.03		P9		+2										
40	90	–	17	6	45.1	26	10	10	28	3	3	10	24	32	36	27
	180	–														
	360	50														
50	90	–	21.2	8	56.1	28	10	11	28	3	3	14	28	36	46	41
	180	50														
	360	100														

Swivel drives
Semi-rotary rack and pinion drives

4.2

Twin-piston semi-rotary drives DRQD-16 ... 32

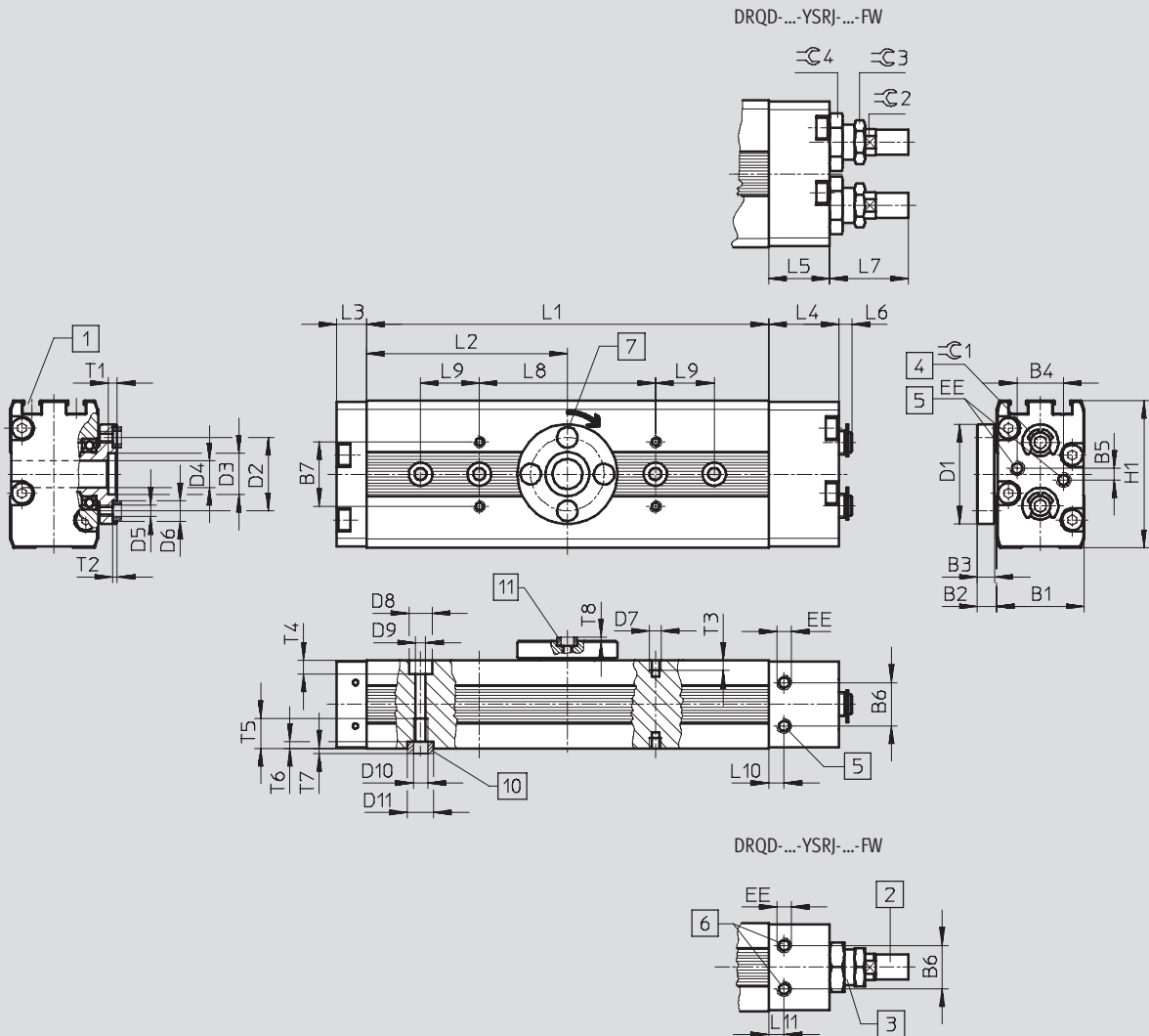
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com/en/engineering

FW – Flanged shaft



- | | | | |
|---|---|---|--|
| <p>1 T-slots for proximity sensors SME/SMT-8</p> <p>2 Self-adjusting shock absorber for end-position cushioning</p> | <p>3 Adjustable sleeve for end-position adjustment for type DRQD-...-YSRJ</p> <p>4 Socket head screw for end-position adjustment with integral regulating screw for end-position cushioning</p> | <p>5 Variant PPVJ: both supply ports on one end cap, optionally at front or side</p> <p>6 Variant YSRJ: both supply ports on one end cap, front side only</p> | <p>7 Position of centring hole at 0°</p> <p>10 Centring sleeves (2 included in scope of delivery)</p> <p>11 Centring sleeves (not included in scope of delivery)</p> |
|---|---|---|--|

Twin-piston semi-rotary drives DRQD-16 ... 32

Technical data

FESTO

Dimensions																
Ø [mm]	Swivel angle [°]	B1	B2	B3	B4	B5	B6	B7	D1 Ø	D2 Ø ±0.025	D3 Ø H8	D4 Ø	D5	D6 Ø H7	D7	D8 Ø H13
16	90	30	6.5	6	17.8	4	14.8	22	34	25	14	9	M4	7	M4	8
	180															
	360															
20	90	36	6.5	6	21.8	4	19.8	26	38	28	16	11	M4	7	M4	8
	180															
	360															
25	90	42	9.5	9	24.8	4	24.8	30	48	34	16	12	M6	9	M5	10
	180															
	360															
32	90	51	9.5	9	29.8	2	29.8	36	58	45	19	14	M6	9	M5	10
	180															
	360															

Ø [mm]	Swivel angle [°]	D9 Ø	D10	D11 Ø H7	EE	H1	L1	L2	L3	L4	L5	L6		L7		L8
												min.	max.	min.	max.	±0.03
16	90	4.2	M5	9	M5	50	71	35.5	10	24	20.8	1.7	5.7	23.4	28.2	60
	180						93	46.5								
	360						137	68.5								
20	90	4.2	M5	9	M5	56	78.4	39.2	10	31.5	27	2.4	7	28.6	35.9	60
	180						104.8	52.4								
	360						157.6	78.8								
25	90	5.3	M6	9	M5	67	91.2	45.6	11	36.5	33	2.6	8.9	42	50.2	60
	180						124	62								
	360						189.2	94.6								
32	90	5.3	M6	9	G1/8	79	114.8	57.4	13	39	39	4.3	11.8	59.4	70.1	80
	180						155.6	77.8								
	360						237.4	118.7								

Ø [mm]	Swivel angle [°]	L9 ±0.03	L10	L11	T1	T2	T3	T4	T5	T6	T7	T8	≈C1	≈C2	≈C3	≈C4
16	90	–	7.6	5.3	3	1.6	3.5	5	10	2	2	1.4	4	9	13	17
	180	–														
	360	20														
20	90	–	8	5	3	1.6	3.5	5	12	2	2	1.4	7	11	15	19
	180	–														
	360	20														
25	90	–	11	5	3	2	5	6	12	2	2	2	7	15	19	24
	180	–														
	360	20														
32	90	–	13.1	8	3	2	5	6	14	2	2	2	8	20	27	32
	180	20														
	360	20														

Swivel drives
Semi-rotary rack and pinion drives

4.2

Twin-piston semi-rotary drives DRQD-40 ... 50

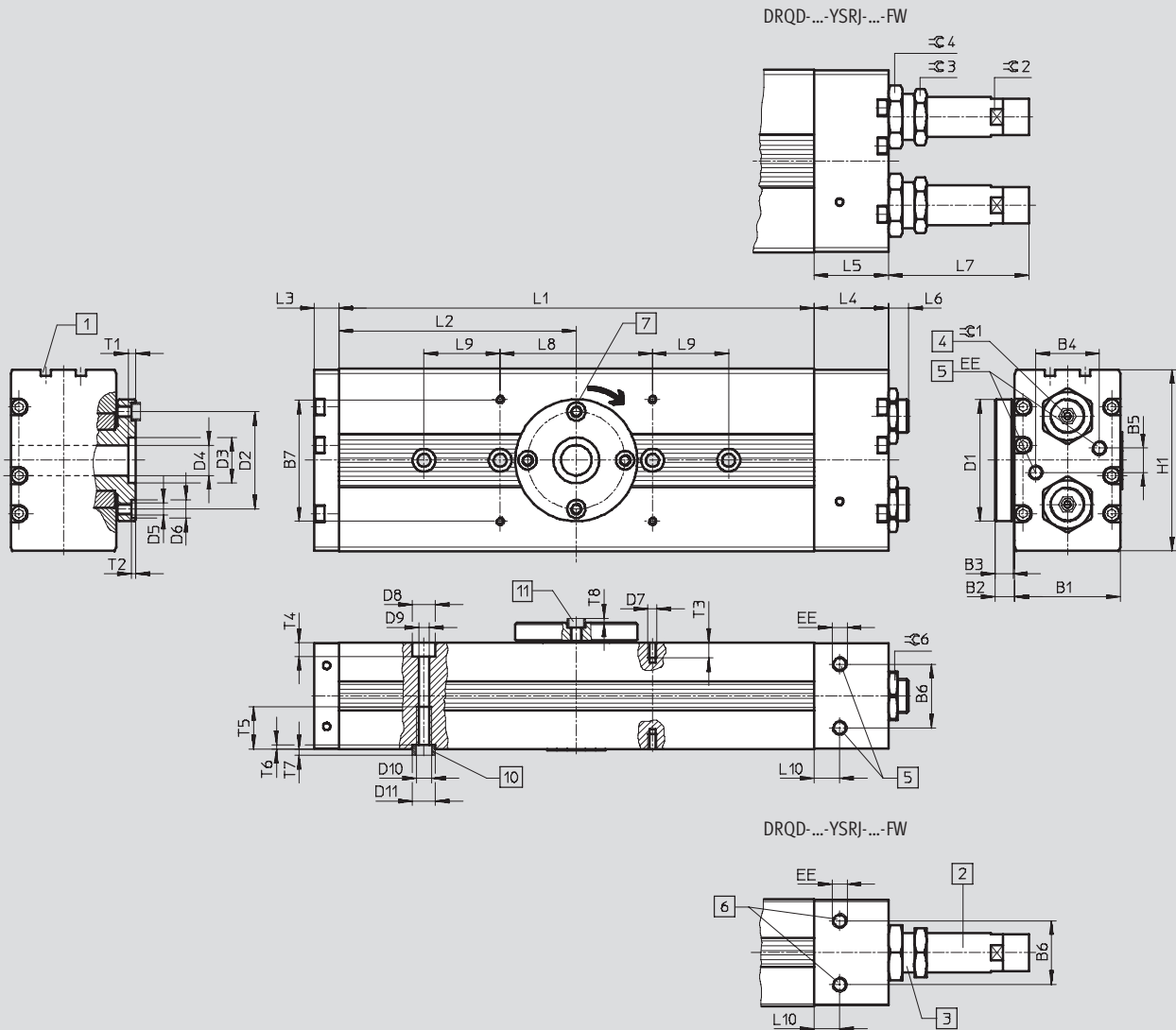
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com/en/engineering

FW – Flanged shaft



- | | | | |
|---|--|---|---|
| 1 T-slots for proximity sensors SME/SMT-8 | 3 Adjustable sleeve for end-position adjustment for type DRQD-...-YSRJ | 5 Variant PPVJ: both supply ports on one end cap, optionally at front or side | 7 Woodruff key position at 0° |
| 2 Self-adjusting shock absorber for end-position cushioning | 4 Socket head screw for end-position adjustment with integral regulating screw for end-position cushioning | 6 Variant YSRJ: both supply ports on one end cap, front side only | 10 Centring sleeves (2 included in scope of delivery) |
| | | | 11 Centring sleeves (not included in scope of delivery) |

Twin-piston semi-rotary drives DRQD-40 ... 50

Technical data

FESTO

Dimensions Download CAD data → www.festo.com/en/engineering																
∅ [mm]	Swivel angle [°]	B1	B2	B3	B4	B5	B6	B7	D1 ∅	D2 ∅ ±0.025	D3 ∅ H7	D4	D5	D6 ∅ H7	D7	D8 ∅ H13
40	90	70	13	12	42	4	42	80	80	64	30	20	M8	12	M6	15
	180															
	360															
50	90	86	13	12	50	16	50	80	85	64	30	24	M8	12	M6	15
	180															
	360															

∅ [mm]	Swivel angle [°]	D9 ∅	D10	D11 ∅ H7	EE	H1	L1	L2	L3	L4	L5	L6		L7	
												min.	max.	min.	max.
40	90	8.5	M10	15	G $\frac{1}{8}$	120	146.8	73.4	16	49	41.5	5	14.6	85.1	96.4
	180						201.8	100.9							
	360						311.8	155.9							
50	90	8.5	M10	15	G $\frac{1}{4}$	144	191.4	95.7	18	64	55	8	20.7	107.8	120.6
	180						262.8	131.4							
	360						405.8	202.9							

∅ [mm]	Swivel angle [°]	L8 ±0.03	L9 ±0.03	L10	T1	T2	T3	T4	T5	T6	T7	≈C1	≈C2	≈C3	≈C4	≈C6
40	90	100	–	17	4	2.7	10	10	28	3	3	10	24	32	36	27
	180		–													
	360		50													
50	90	100	–	21.2	4	2.7	10	11	28	3	3	14	28	36	46	41
	180		50													
	360		100													

Swivel drives
Semi-rotary rack and pinion drives

4.2

Twin-piston semi-rotary drives DRQD-16 ... 32

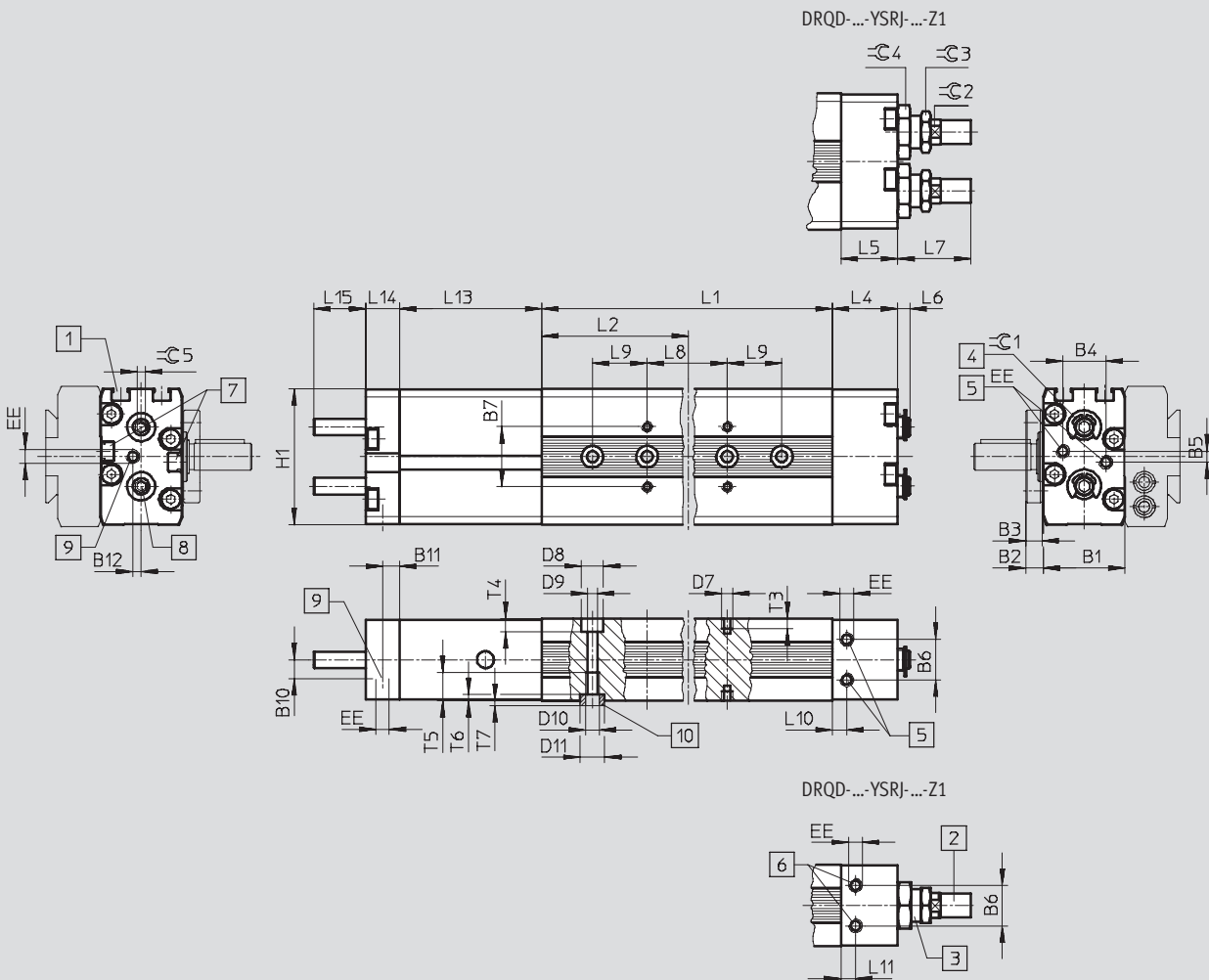
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com/en/engineering

Z1 – Intermediate position module (energy through-feed is optional)



- | | | | |
|--|--|---|---|
| 1 T-slots for proximity sensor SME/SMT-8 for end-position sensing | 4 Socket head screw for end-position adjustment with integral regulating screw for end-position cushioning | 6 Variant YSRJ: both supply ports on one end cap, front side only | 9 Supply port for mid-position module at cap, optionally at side or front |
| 2 Self-adjusting shock absorber for end-position cushioning | 5 Variant PPVJ: both supply ports on one end cap, optionally at front or side | 7 T-slots for proximity sensor SME/SMT-8 for mid-position sensing | 10 Centring sleeves (2 included in scope of delivery) |
| 3 Adjustable sleeve for end-position adjustment for type DRQD-...-YSRJ | | 8 Socket head screw for mid-position adjustment (slightly recessed) | |

Twin-piston semi-rotary drives DRQD-16 ... 32

Technical data

FESTO

Dimensions										Download CAD data → www.festo.com/en/engineering						
Ø	Swivel angle	B1	B2	B3	B4	B5	B6	B7	B10	B11	B12	D7	D8 Ø	D9 Ø	D10	D11 Ø
[mm]	[°]												H13			H7
16	90	30	6.5	6	17.8	4	14.8	22	6.4	4.5	3	M4	8	4.2	M5	9
	180															
20	90	36	6.5	6	21.8	4	19.8	26	6.5	4.5	5.6	M4	8	4.2	M5	9
	180															
25	90	42	9.5	9	24.8	4	24.8	30	9.1	6.9	8.2	M5	10	5.3	M6	9
	180															
32	90	51	9.5	9	29.8	2	29.8	36	9	8	9	M5	10	5.3	M6	9
	180															

Download CAD data → www.festo.com/en/engineering

Ø [mm]	Swivel angle [°]	EE	H1	L1	L2	L4	L5	L6		L7		L8	L9	L10	L11
								min.	max.	min.	max.	±0.03	±0.03		
16	90	M5	50	71	35.5	24	20.8	1.7	5.7	23.4	28.2	60	–	7.6	5.3
	180			93	46.5								–		
20	90	M5	56	78.4	39.2	31.5	27	2.4	7	28.6	35.9	60	–	8	5
	180			104.8	52.4								–		
25	90	M5	67	91.2	45.6	36.5	33	2.6	8.9	42	50.2	60	–	11	5
	180			124	62								–		
32	90	G1/8	79	114.8	57.4	39	39	4.3	11.8	59.4	70.1	80	–	13.1	8
	180			155.6	77.8								20		

Ø [mm]	Swivel angle [°]	L13	L14	L15		T3	T4	T5	T6	T7	≈C1	≈C2	≈C3	≈C4	≈C5
				min.	max.										
16	90	52.2	12.3	0	19.1	3.5	5	10	2	2	4	9	13	17	3
	180														
20	90	55.4	12.3	0	21.8	3.5	5	12	2	2	7	11	15	19	3
	180														
25	90	62.1	15	0	26	5	6	12	2	2	7	15	19	24	4
	180														
32	90	68.2	15.5	0	31.5	5	6	14	2	2	8	20	27	32	4
	180														

Swivel drives
Semi-rotary rack and pinion drives

4.2

Twin-piston semi-rotary drives DRQD-40 ... 50

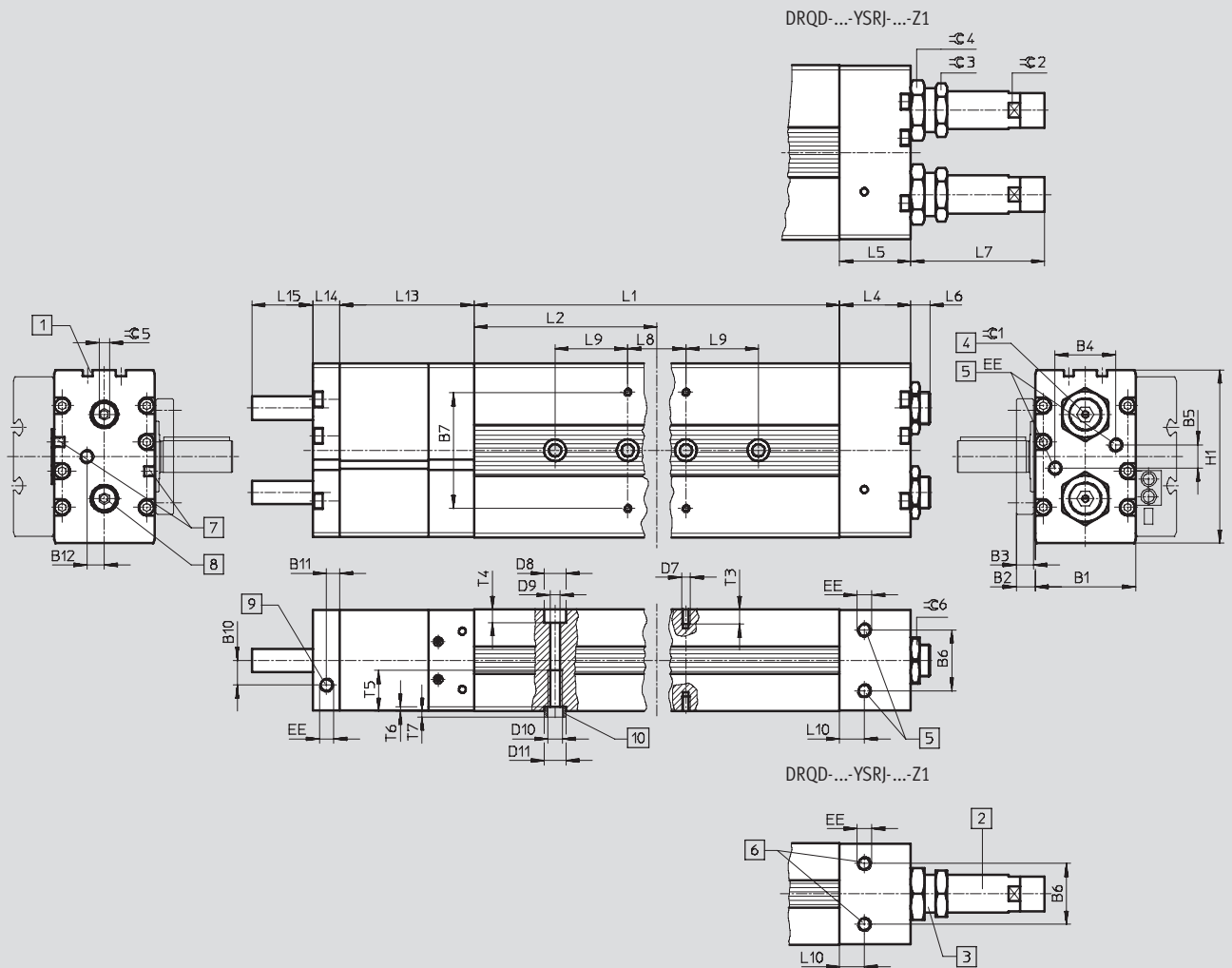
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com/en/engineering

Z1 – Intermediate position module (energy through-feed is optional)



- | | | | |
|---|--|--|---|
| <p>1 T-slots for proximity sensor SME/SMT-8 for end-position sensing</p> <p>2 Self-adjusting shock absorber for end-position cushioning</p> <p>3 Adjustable sleeve for end-position adjustment for type DRQD-...-YSRJ</p> | <p>4 Socket head screw for end-position adjustment with integral regulating screw for end-position cushioning</p> <p>5 Variant PPVJ: both supply ports on one end cap, optionally at front or side</p> | <p>6 Variant YSRJ: both supply ports on one end cap, front side only</p> <p>7 T-slots for proximity sensor SME/SMT-8 for mid-position sensing</p> <p>8 Socket head screw for mid-position adjustment (slightly recessed)</p> | <p>9 Supply port for mid-position module at cap, optionally at side or front</p> <p>10 Centring sleeves (2 included in scope of delivery)</p> |
|---|--|--|---|

Twin-piston semi-rotary drives DRQD-40 ... 50

Technical data

FESTO

Dimensions Download CAD data → www.festo.com/en/engineering															
∅ [mm]	Swivel angle [°]	B1	B2	B3	B4	B5	B6	B7	B10	B11	B12	D7	D8 ∅ H13	D9 ∅	D10
40	90	70	13	12	42	4	42	80	92.5	9	12	M6	15	8.5	M10
	180														
	360														
50	90	86	13	12	50	16	50	80	105.7	9	14	M6	15	8.5	M10
	180														
	360														

∅ [mm]	Swivel angle [°]	D11 ∅ H7	EE	H1	L1	L2	L4	L5	L6		L7		L8 ±0.03	L9 ±0.03	L10
									min.	max.	min.	max.			
40	90	15	G $\frac{1}{8}$	120	146.8	73.4	49	41.5	5	14.6	85.1	96.4	100	-	17
	180				201.8	100.9									
	360				311.8	155.9								50	
50	90	15	G $\frac{1}{4}$	144	191.4	95.7	64	55	8	20.7	107.8	120.6	100	-	21.2
	180				262.8	131.4								50	
	360				405.8	202.9								100	

∅ [mm]	Swivel angle [°]	L13	L14	L15		T3	T4	T5	T6	T7	≈C1	≈C2	≈C3	≈C4	≈C5	≈C6
				min.	max.											
40	90	92.5	18.5	0	41.95	10	10	28	3	3	10	24	32	36	7	27
	180															
	360															
50	90	105.7	20.5	0	52.95	10	11	28	3	3	14	28	36	46	7	41
	180															
	360															

Swivel drives
Semi-rotary rack and pinion drives

4.2

Twin-piston semi-rotary drives DRQD-16 ... 32

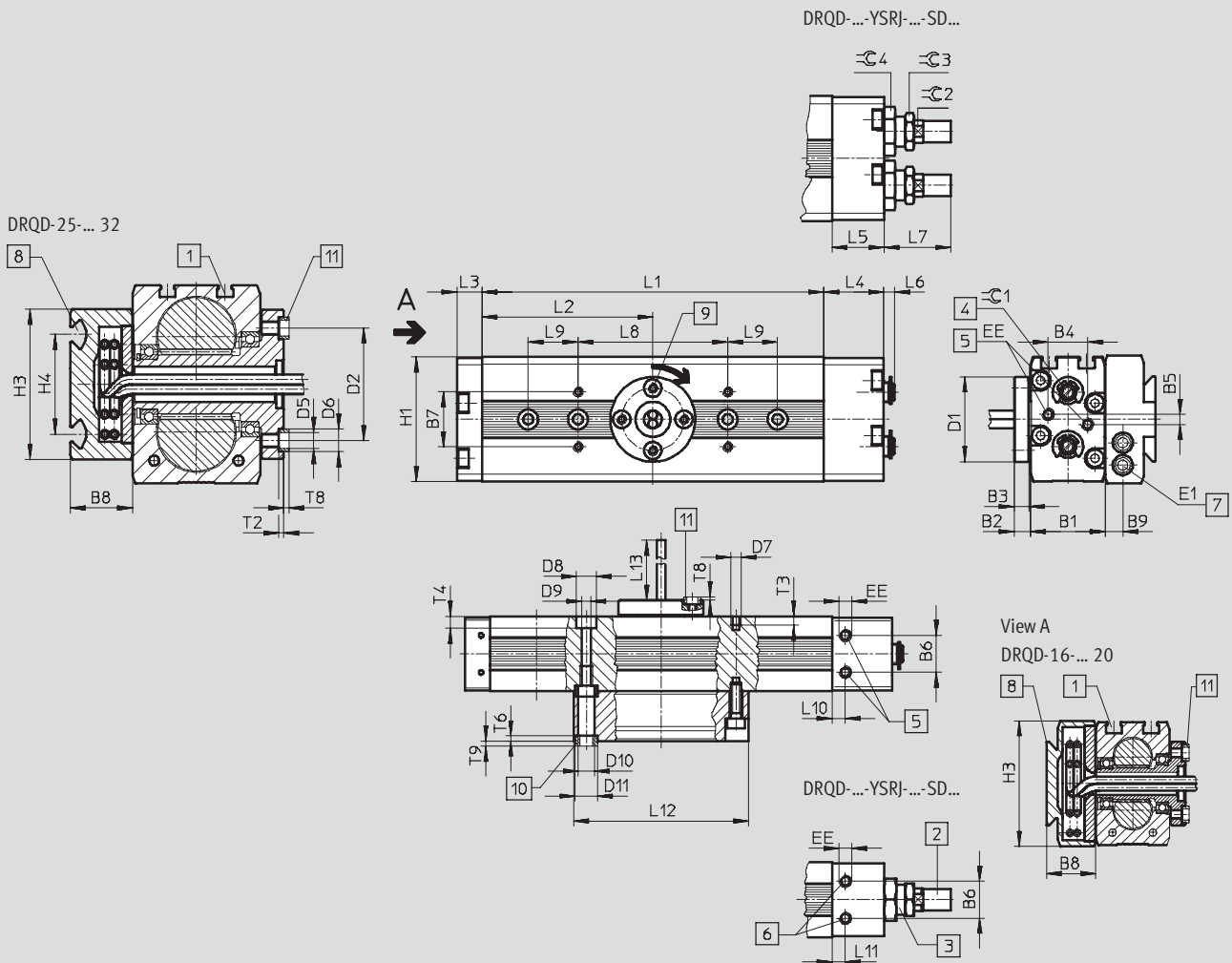
Technical data

FESTO

Dimensions

FW-SD – Energy through-feed

Download CAD data → www.festo.com/en/engineering



- | | | | |
|--|--|--|---|
| 1 T-slots for proximity sensors SME/SMT-8 | 4 Socket head screw for end-position adjustment with integral regulating screw for end-position cushioning | 6 Variant YSRJ: both supply ports on one end cap, front side only | 9 Position of designated centring hole at 0° |
| 2 Self-adjusting shock absorber for end-position cushioning | 5 Variant PPVJ: both supply ports on one end cap, optionally at front or side | 7 Supply port for energy through-feed | 10 Centring sleeves (2 included in scope of delivery)
→ 1 / 4.2-82 |
| 3 Adjustable sleeve for end-position adjustment for type DRQD-...-YSRJ | | 8 Mounting option via dovetail profile (for Ø 16 to 20 mm) or profile slot nut (grid dimensions 40 mm for Ø 25 to 32 mm)
→ 1 / 4.2-82 | 11 Centring sleeves (not included in scope of delivery) |

Twin-piston semi-rotary drives DRQD-16 ... 32

Technical data

FESTO

Dimensions												Download CAD data → www.festo.com/en/engineering						
Ø	Swivel angle	B1	B2	B3	B4	B5	B6	B7	B8	B9	D1 Ø	D2 Ø	D5	D6 Ø	D7	D8 Ø	D9 Ø	
[mm]	[°]											±0.025		H7		H13		
16	90	30	6.5	6	17.8	4	14.8	22	20	7	34	25	M4	7	M4	8	4.2	
	180																	
	360																	
20	90	36	6.5	6	21.8	4	19.8	26	20	7	38	28	M4	7	M4	8	4.2	
	180																	
	360																	
25	90	42	9.5	9	24.8	4	24.8	30	25	7	48	34	M6	9	M5	10	5.3	
	180																	
	360																	
32	90	51	9.5	9	29.8	2	29.8	36	25	7	58	45	M6	9	M5	10	5.3	
	180																	
	360																	

Ø	Swivel angle	D10	D11	EE	E1	H1	H3	H4	L1	L2	L3	L4	L5	L6		L7	
[mm]	[°]	Ø	Ø		Ø									min.	max.	min.	max.
		H13	H7														
16	90	5.5	9	M5	4	50	51	–	71	35.5	10	24	20.8	1.7	5.7	23.4	28.2
	180								93	46.5							
	360								137	68.5							
20	90	5.5	9	M5	4	56	51	–	78.4	39.2	10	31.5	27	2.4	7	28.6	35.9
	180								104.8	52.4							
	360								157.6	78.8							
25	90	6.6	9	M5	4	67	60	40	91.2	45.6	11	36.5	33	2.6	8.9	42	50.2
	180								124	62							
	360								189.2	94.6							
32	90	6.6	9	G $\frac{1}{8}$	4	79	60	40	114.8	57.4	13	39	39	4.3	11.8	59.4	70.1
	180								155.6	77.8							
	360								237.4	118.7							

Ø	Swivel angle	L8	L9	L10	L11	L12	L13	T2	T3	T4	T6	T8	T9	≈C1	≈C2	≈C3	≈C4
[mm]	[°]	±0.03	±0.03				min.										
16	90	60	–	7.6	5.3	72	255	1.6	3.5	5	2.1	1.4	2	4	9	13	17
	180		–														
	360		20														
20	90	60	–	8	5	72	250	1.6	3.5	5	2.1	1.4	2	7	11	15	19
	180		–														
	360		20														
25	90	60	–	11	5	95	240	2	5	6	2.1	2	2	7	15	19	24
	180		–														
	360		20														
32	90	80	–	13.1	8	95	230	2	5	6	2.1	2	2	8	20	27	32
	180		20														
	360		20														

Swivel drives
Semi-rotary rack and pinion drives

4.2

Twin-piston semi-rotary drives DRQD-40 ... 50

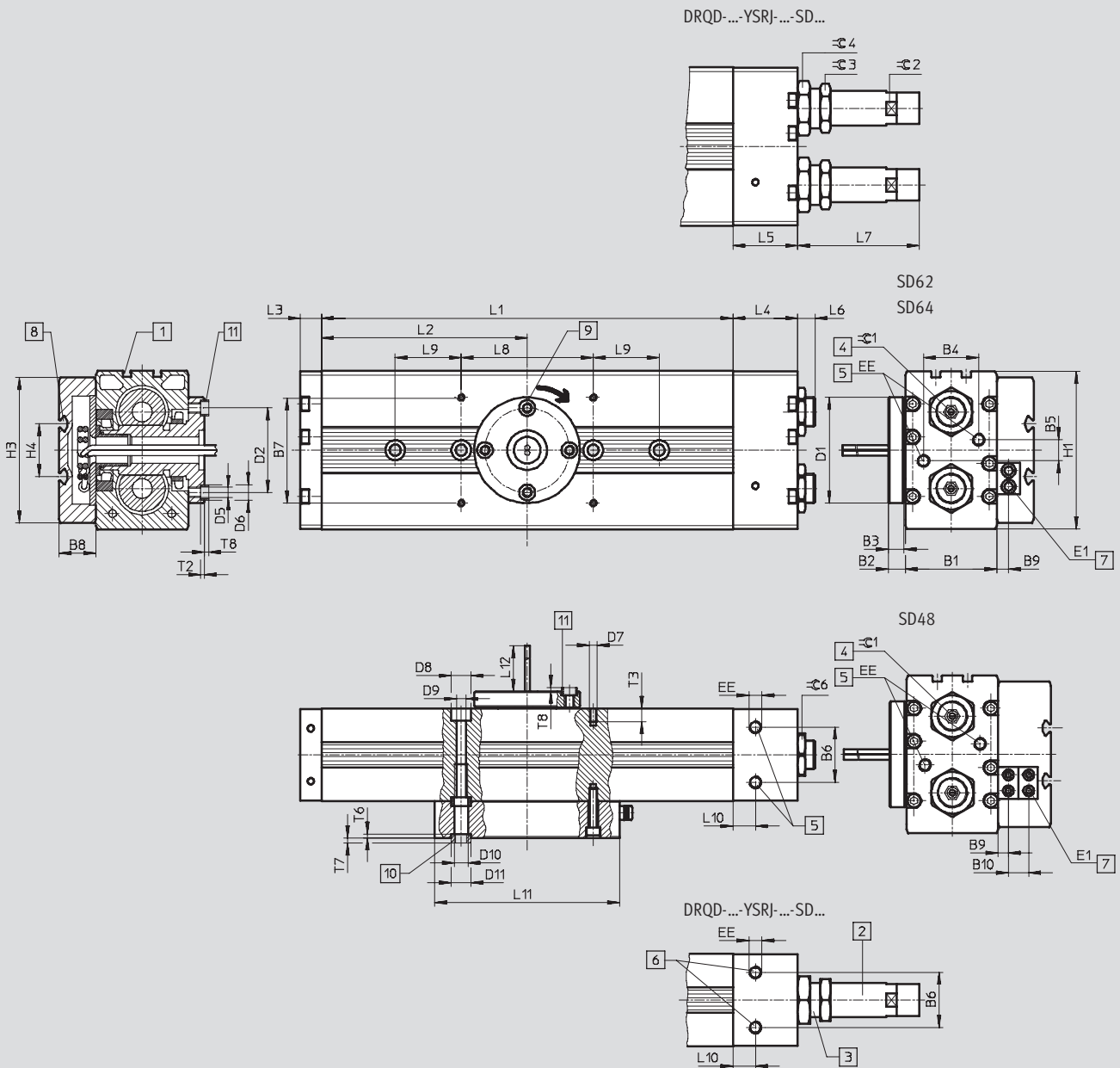
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com/en/engineering

FW-SD – Energy through-feed



- | | | | |
|---|--|--|--|
| <p>1 T-slots for proximity sensors SME/SMT-8</p> <p>2 Self-adjusting shock absorber for end-position cushioning</p> <p>3 Adjustable sleeve for end-position adjustment for type DRQD-...-YSRJ</p> | <p>4 Socket head screw for end-position adjustment with integral regulating screw for end-position cushioning</p> <p>5 Variant PPVJ: both supply ports on one end cap, optionally at front or side</p> | <p>6 Variant YSRJ: both supply ports on one end cap, front side only</p> <p>7 Supply port for energy through-feed</p> <p>8 Mounting option via profile slot nut (grid dimensions 40 mm) → 1 / 4.2-82</p> | <p>9 Position of designated centring hole at 0°</p> <p>10 Centring sleeves (2 included in scope of delivery) → 1 / 4.2-82</p> <p>11 Centring sleeves (not included in scope of delivery)</p> |
|---|--|--|--|

Twin-piston semi-rotary drives DRQD-40 ... 50

Technical data

FESTO

Dimensions													Download CAD data → www.festo.com/en/engineering								
∅	Swivel angle	Variant	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	D1 ∅	D2 ∅	D3 ∅	D4 ∅	D5	D6 ∅	D7	D8 ∅	
[mm]	[°]													±0.05	H7			H7		H13	
40	90	SD62/SD64	70	13	12	42	4	42	80	28	9	–	80	64	30	20	M8	12	M6	15	
		SD48								40	7.75	15.5									
	180	SD62/SD64	70	13	12	42	4	42	80	28	9	–	80	64	30	20	M8	12	M6	15	
		SD48								40	7.75	15.5									
	360	SD62/SD64	70	13	12	42	4	42	80	28	9	–	80	64	30	20	M8	12	M6	15	
		SD48								40	7.75	15.5									
50	90	SD62/SD64	86	13	12	50	16	50	80	28	9	–	85	64	30	24	M8	12	M6	15	
		SD48								40	7.75	15.5									
	180	SD62/SD64	86	13	12	50	16	50	80	28	9	–	85	64	30	24	M8	12	M6	15	
		SD48								40	7.75	15.5									
	360	SD62/SD64	86	13	12	50	16	50	80	28	9	–	85	64	30	24	M8	12	M6	15	
		SD48								40	7.75	15.5									

∅	Swivel angle	Variant	D9	D10	D11	EE	E1	H1	H3	L1	L2	L3	L4	L5	L6		L7	
[mm]	[°]		∅	∅	∅										min.	max.	min.	max.
40	90	SD62/SD64	8.5	M10	15	G1/8	6	120	110	146.8	73.4	16	49	41.5	5	14.6	85.1	96.4
		SD48					4											
	180	SD62/SD64	8.5	M10	15	G1/8	6	120	110	201.8	100.9	16	49	41.5	5	14.6	85.1	96.4
		SD48					4											
	360	SD62/SD64	8.5	M10	15	G1/8	6	120	110	311.8	155.9	16	49	41.5	5	14.6	85.1	96.4
		SD48					4											
50	90	SD62/SD64	8.5	M10	15	G1/4	6	144	110	191.4	95.7	18	64	55	8	20.7	107.8	120.6
		SD48					4											
	180	SD62/SD64	8.5	M10	15	G1/4	6	144	110	262.8	131.4	18	64	55	8	20.7	107.8	120.6
		SD48					4											
	360	SD62/SD64	8.5	M10	15	G1/4	6	144	110	405.8	202.9	18	64	55	8	20.7	107.8	120.6
		SD48					4											

∅	Swivel angle	Variant	L8	L9	L10	L11	L12	T1	T2	T3	T4	T5	T6	T7	T8	≈C1	≈C2	≈C3	≈C4	≈C6
[mm]	[°]		±0.03	±0.03					min.				±0.15							
40	90	SD62/SD64	100	–	17	140	42	4	2.7	10	10	28	3	3	2.3	10	24	32	36	27
		SD48																		
	180	SD62/SD64	100	–	17	140	42	4	2.7	10	10	28	3	3	2.3	10	24	32	36	27
		SD48																		
	360	SD62/SD64	100	50	17	140	42	4	2.7	10	10	28	3	3	2.3	10	24	32	36	27
		SD48																		
50	90	SD62/SD64	100	–	21.2	140	26	4	2.7	10	11	28	3	3	2.3	14	28	36	46	41
		SD48																		
	180	SD62/SD64	100	50	21.2	140	26	4	2.7	10	11	28	3	3	2.3	14	28	36	46	41
		SD48																		
	360	SD62/SD64	100	100	21.2	140	26	4	2.7	10	11	28	3	3	2.3	14	28	36	46	41
		SD48																		

Swivel drives
Semi-rotary rack and pinion drives

4.2

Twin-piston semi-rotary drives DRQD-16 ... 20

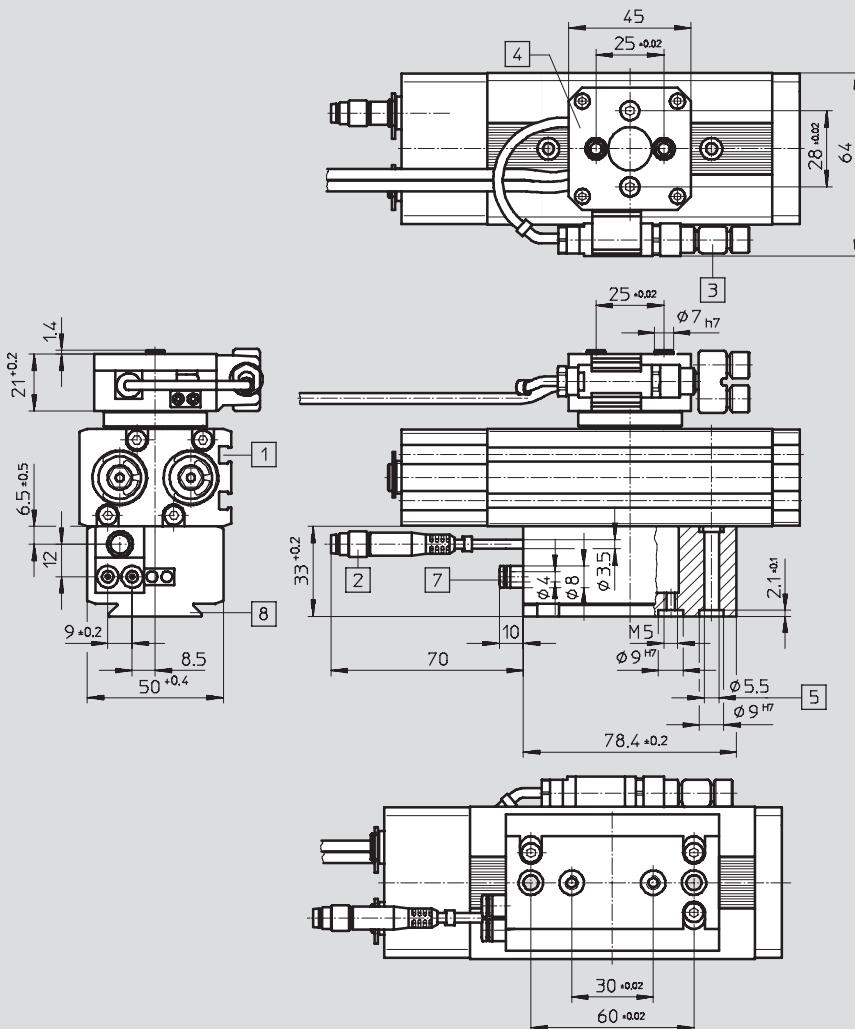
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com/en/engineering

FW E422 – Energy through-feed



- 1 T-slots for proximity sensors SME/SMT-8
- 2 Plug M8x1, 4-pin
- 3 Socket M8x1 for proximity sensor SME/SMT

- 4 Output plate can be repositioned by 90°
- 5 Screw-through option with screw M4

- 7 Supply port for energy through-feed for tubing O.D. 4 mm
- 8 Mounting option via dovetail connection

Twin-piston semi-rotary drives DRQD-25 ... 32

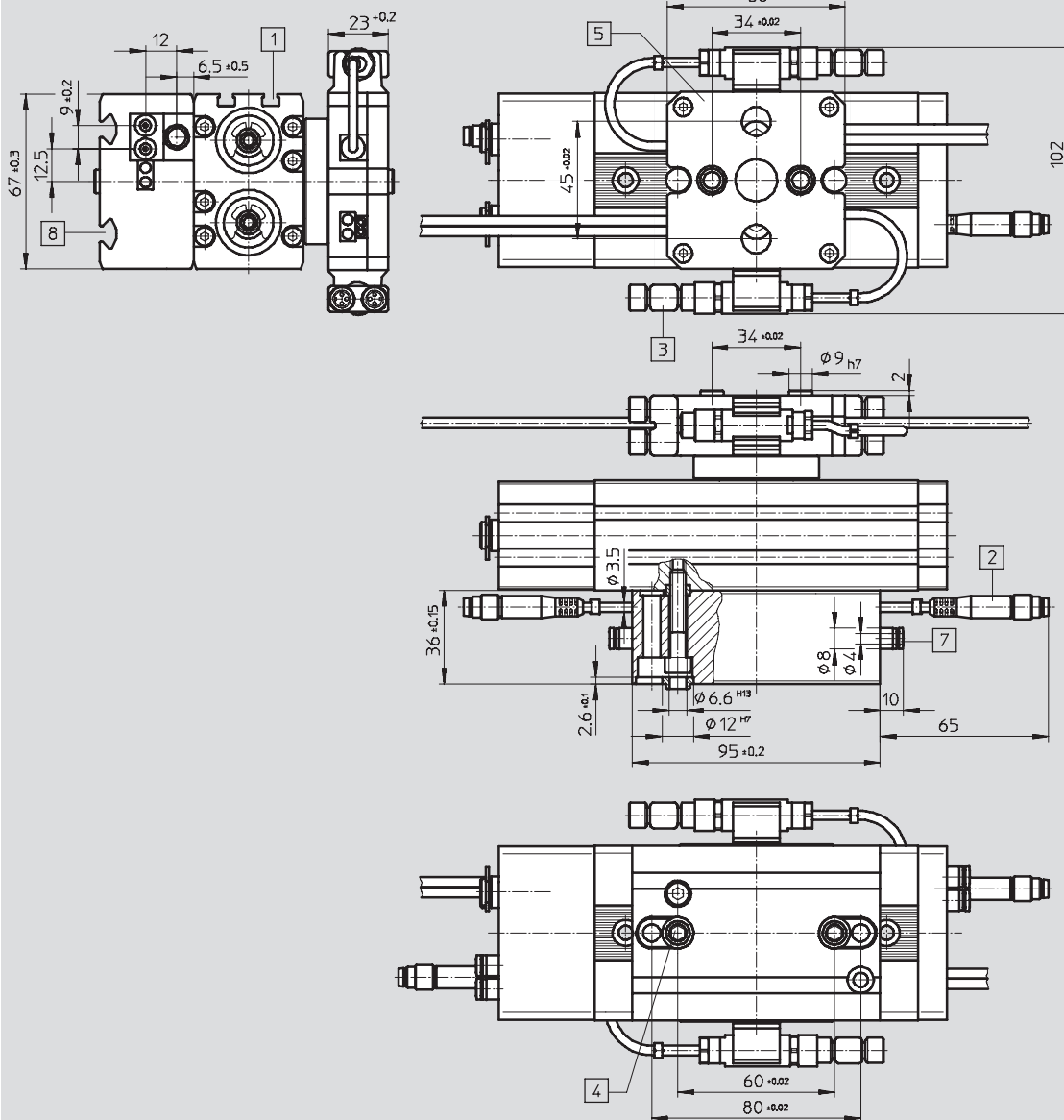
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com/en/engineering

FW-E444 – Energy through-feed



- | | | |
|--|---|--|
| 1 T-slots for proximity sensors SME/SMT-8 | 4 Mounting via through-holes possible with screw M5 (retaining screws must be removed beforehand) | 7 Supply port for energy through-feed for tubing O.D. 4 mm |
| 2 Plug M8x1, 4-pin | 5 Centring hole can be repositioned by 90° | 8 Mounting option via profile slot nut |
| 3 Socket M8x1 for proximity sensor SME/SMT | | |

Swivel drives
Semi-rotary rack and pinion drives

4.2

Twin-piston semi-rotary drives DRQD-40 ... 50

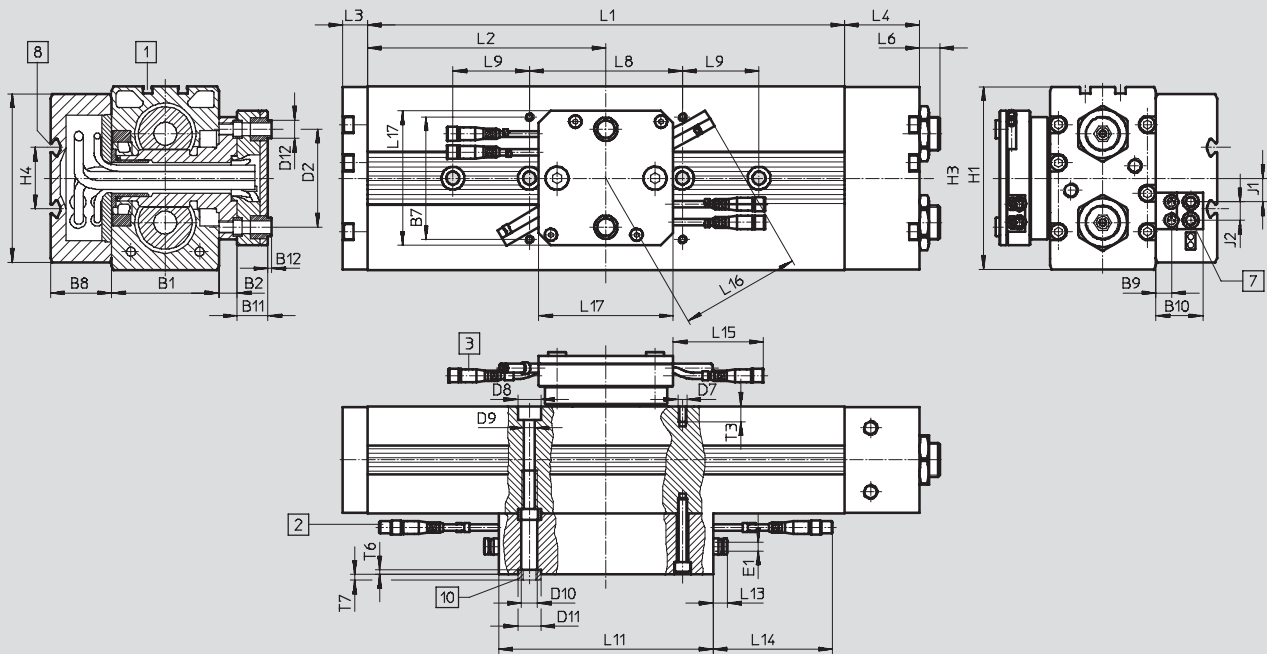
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com/en/engineering

FW-E644 – Energy through-feed



- 1** T-slots for proximity sensors
SME/SMT-8
- 2** Plug M8x1
- 3** Socket M8x1
- 7** Supply port for energy through-feed for tubing O.D. 6 mm
- 8** Mounting option via profile slot nut (grid dimensions 40 mm)
→ 1 / 4.2-82
- 10** Centring sleeves (2 pieces included in scope of delivery)
→ 1 / 4.2-82

Ø	Swivel angle	B1	B2	B7	B8	B9	B10	B11	B12	D2	D7	D8	D9	D10	D11	E1	H1	H3
[mm]	[°]	±0.2	+0.4 -0.3		+0.2 -0.1			±0.2		±0.2		Ø H13	Ø	Ø	Ø H7	Ø		
40	90	70	13	80	40	9.5	12.5	20	2.5	64	M6	15	8.5	M10	15	6	120	110
	180																	
	360																	
50	90	86	13	80	40	9.5	12.5	20	2.5	64	M6	15	8.5	M10	15	6	144	110
	80																	
	360																	

Ø	Swivel angle	H4	L1	L2	L3	L4	L6		L8	L9	L11	L13	L14	L15	L16	L17	T3	T6	T7
[mm]	[°]						min.	max.	±0.03	±0.03			ap- prox.	min.	min.			±0.15	
40	90	40	146.8	73.4	16	49	5	14.6	100	-	140	9.5	64	150	75	88	10	3	3
	180		201.8	100.9															
	360		311.8	155.9															
50	90	40	191.4	95.7	18	64	5	20.7	100	-	140	9.5	65	130	75	88	10	3	3
	180		262.8	131.4															
	360		405.8	202.9															

Twin-piston semi-rotary drives DRQD-16 ... 50

Technical data

FESTO

Ordering data – Standard types				
DRQD	Ø [mm]	Swivel angle [°]	Part No.	Type
PPVJ – Adjustable end-position cushioning				
	AL – Connection on left			
	16	180	540 456	DRQD-16-180-PPVJ-A-AL-FW
	20		540 460	DRQD-20-180-PPVJ-A-AL-FW
	25		540 464	DRQD-25-180-PPVJ-A-AL-FW
	AR – Connection on right			
	16	180	540 457	DRQD-16-180-PPVJ-A-AR-FW
	20		540 461	DRQD-20-180-PPVJ-A-AR-FW
	25		540 465	DRQD-25-180-PPVJ-A-AR-FW
YSRJ – Adjustable shock absorbers				
	AL – Connection on left			
	16	180	540 454	DRQD-16-180-YSRJ-A-AL-FW
	20		540 458	DRQD-20-180-YSRJ-A-AL-FW
	25		540 462	DRQD-25-180-YSRJ-A-AL-FW
	AR – Connection on right			
	16	180	540 455	DRQD-16-180-YSRJ-A-AR-FW
	20		540 459	DRQD-20-180-YSRJ-A-AR-FW
	25		540 463	DRQD-25-180-YSRJ-A-AR-FW

Swivel drives
Semi-rotary rack and pinion drives

4.2

Twin-piston semi-rotary drives DRQD-16 ... 50

Ordering data – Modular products

FESTO

Mandatory data

Module No.	Function	Size	Swivel angle	Cushioning	Position sensing	Pneumatic connection	Output shaft
175 801	DRQD	16	90	PPVJ	A	AL	ZW
175 802		20	180	YSRJ		AR	FW
175 803		25	360				
175 804		32	1 ... 340				
197 373		40					
197 374		50					
Ordering example							
197 373	DRQD	- 40	- 280	- YSRJ	- A	- AR	- FW

Ordering table

Size	16	20	25	32	40	50	Condi- tions	Code	Enter code
M Module No.	175 801	175 802	175 803	175 804	197 373	197 374			
Function	Semi-rotary drive with twin pistons							DRQD	DRQD
Piston Ø [mm]	16	20	25	32	40	50		-...	
Swivel angle (standard)	90°							-90	
Adjusting range +6°/-20°	180°							-180	
(not preset)	360°						1	-360	
X-rotation angle	1° ... 70°, with centre section 90°							-...	
Adjusting range ±6°	100° ... 160°, with centre section 180°							-...	
Angle preset ±1°	190° ... 340°, with centre section 360°						1	-...	
Cushioning	Adjustable end-position cushioning							-PPVJ	
	Adjustable shock absorbers							-YSRJ	
Position sensing	For proximity sensing							-A	-A
Pneumatic connection	Connection on left							-AL	
	Connection on right							-AR	
Output shaft	Spigot shaft						2	-ZW	
	Flanged shaft						3	-FW	

1 190 ... 360 Not with energy through-feed E422, E444, E644

2 ZW Not with energy through-feed SD32, SD42, SD48, SD62, SD64, E422, E444, E644

3 FW

Required for energy through-feed SD32, SD42, SD48, SD62, SD64, E422, E444, E644

Transfer order code

	DRQD	-		-		-	A	-		-	
--	-------------	---	--	---	--	---	----------	---	--	---	--

Twin-piston semi-rotary drives DRQD-16 ... 50

Ordering data – Modular product system

FESTO

Options		
Intermediate position	Energy through-feed	User's manual
Z1	SD32 SD42 SD48 SD62 SD64 E422 E444 E644	E F S I V B
-	- SD64	- B

Ordering table										
Size		16	20	25	32	40	50	Condi- tions	Code	Enter code
0	Intermediate position	1 intermediate position (mid-position)						4	-Z1	
	Energy through-feed	2x tubing O.D. 3 mm				–	–		-SD32	
		2x tubing O.D. 4 mm				–	–		-SD42	
		–	–	–	–	8x tubing O.D. 4 mm			-SD48	
		–	–	–	–	2x tubing O.D. 6 mm			-SD62	
		–	–	–	–	4x tubing O.D. 6 mm			-SD64	
		2x tubing O.D. 4 mm, 1x 4-pin cable to 2x 3-pin cable		–	–	–	–		-E422	
		–	–	4x tubing O.D. 4 mm, 2x 4-pin cable to 4x 3-pin cable		–	–		-E444	
		–	–	–	–	4x tubing O.D. 6 mm, 4x 3-pin cable			-E644	
Alternative language user docu- mentation (standard is German)	English								-E	
	French								-F	
	Spanish								-S	
	Italian								-I	
	Swedish								-V	
	Express waiver – no user manual to be included (already available)								-B	

4 Z1 Cannot be combined with swivel angle (standard) 360° and X swivel angle

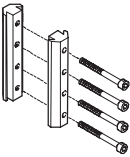
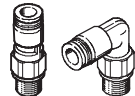
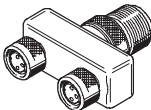
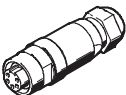
Transfer order code

- - -

Twin-piston semi-rotary drives DRQD

Accessories

FESTO

Ordering data						
	For Ø	Remarks	Design	Part No.	Type	PU ¹⁾
Centring sleeve ZBH				Technical data➔ 1 / 10.1-3		
	6	For centring the drive on attachments		186 717	ZBH-7	10
	8 ... 32			150 927	ZBH-9	
	40/50			191 409	ZBH-15	
	16 ... 32	For centring attachments on the flanged shaft FW		186 717	ZBH-7	
	40/50			189 653	ZBH-12	
Adapter kit HMSV				Technical data➔ Volume 5		
	16/20	Mounting via dovetail profile for variant with energy through-feed SD... and E...		177 647	HMSV-1	1
Slot nut NST				Technical data➔ 1 / 10.1-3		
	25 ... 50	Mounting via profile slot nut for variant with energy through-feed SD... and E...		150 914	NST-5-M5	1
Rotary push-in fitting				Technical data➔ Volume 3		
	6 ... 12 Only in combination with hollow bolt HS	With ball bearing, for standard O.D. tubing	Straight	153 526	QSR-M5-4	1
			L-shape	153 529	QSRL-M5-4	
T-connector NEDU				Technical data➔ Volume 4		
	16 ... 32	Included in the scope of delivery if semi-rotary drive DRQD is ordered with energy through-feed E422 and E444. Suitable for connection of two proximity sensors SME/SMT-8 or SME/SMT-10		544 391	NEDU-M8D3-M8T4	1
Cable socket NECU				Technical data➔ Volume 4		
	16 ... 32	Included in the scope of delivery if semi-rotary drive DRQD is ordered with energy through-feed E422 and E444.		544 392	NECU-M8G4	1

1) Packaging unit quantity

Twin-piston semi-rotary drives DRQD

Accessories

FESTO

Ordering data – Proximity sensors for C-slot, magneto-resistive					Technical data → www.festo.com/catalogue/sm	
	Type of mounting	Switch output	Electrical connection, connection direction	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above, flush with cylinder profile	PNP	Cable, 3-wire, in-line	2.5	525 915	SMT-10F-PS-24V-K2,5L-OE
			Plug M8x1, 3-pin, in-line	0.3	525 916	SMT-10F-PS-24V-K0,3L-M8D
			Plug M8x1, 3-pin, lateral	0.3	526 675	SMT-10F-PS-24V-K0,3Q-M8D
	Insertable in the slot lengthwise	PNP	Plug M8x1, 3-pin, in-line	0.3	173 220	SMT-10-PS-SL-LED-24
			Cable, 3-wire, in-line	2.5	173 218	SMT-10-PS-KL-LED-24

Ordering data – Proximity sensors for C-slot, magnetic reed					Technical data → www.festo.com/catalogue/sm	
	Type of mounting	Switch output	Electrical connection, connection direction	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above, flush with cylinder profile	Contacting	Plug M8x1, 3-pin, in-line	0.3	525 914	SME-10F-DS-24V-K0,3L-M8D
			Cable, 3-wire, in-line	2.5	525 913	SME-10F-DS-24V-K2,5L-OE
			Cable, 2-wire, in-line	2.5	526 672	SME-10F-ZS-24V-K2,5L-OE
	Insertable in the slot lengthwise	Contacting	Plug M8x1, 3-pin, in-line	0.3	173 212	SME-10-SL-LED-24
			Cable, 3-wire, in-line	2.5	173 210	SME-10-KL-LED-24

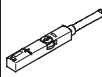
Ordering data – Connecting cables				Technical data → www.festo.com/catalogue/nebu	
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No.	Type
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541 333	NEBU-M8G3-K-2.5-LE3
			5	541 334	NEBU-M8G3-K-5-LE3
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541 338	NEBU-M8W3-K-2.5-LE3
			5	541 341	NEBU-M8W3-K-5-LE3

Ordering data – Proximity sensors for T-slot, magneto-resistive					Technical data → www.festo.com/catalogue/sm	
	Type of mounting	Switch output	Electrical connection	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above, flush with cylinder profile	PNP	Cable, 3-wire	2.5	543 867	SMT-8M-PS-24V-K-2,5-OE
			Plug M8x1, 3-pin	0.3	543 866	SMT-8M-PS-24V-K-0,3-M8D
			Plug M12x1, 3-pin	0.3	543 869	SMT-8M-PS-24V-K-0,3-M12
		NPN	Cable, 3-wire	2.5	543 870	SMT-8M-NS-24V-K-2,5-OE
			Plug M8x1, 3-pin	0.3	543 871	SMT-8M-NS-24V-K-0,3-M8D
	Insertable in the slot lengthwise, flush with the cylinder profile	PNP	Cable, 3-wire	2.5	175 436	SMT-8-PS-K-LED-24-B
			Plug M8x1, 3-pin	0.3	175 484	SMT-8-PS-S-LED-24-B
N/C contact						
	Insertable in the slot from above, flush with cylinder profile	PNP	Cable, 3-wire	7.5	543 873	SMT-8M-PO-24V-K7,5-OE

Twin-piston semi-rotary drives DRQD

Accessories

FESTO

Ordering data – Proximity sensors for T-slot, magnetic reed					Technical data → www.festo.com/catalogue/sm	
	Type of mounting	Switch output	Electrical connection	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above, flush with cylinder profile	Contacting	Cable, 3-wire	2.5	543 862	SME-8M-DS-24V-K-2,5-OE
				5.0	543 863	SME-8M-DS-24V-K-5,0-OE
			Cable, 3-wire	2.5	543 872	SME-8M-ZS-24V-K-2,5-OE
			Plug M8x1, 3-pin	0.3	543 861	SME-8M-DS-24V-K-0,3-M8D
	Insertable in the slot lengthwise, flush with the cylinder profile	Contacting	Cable, 3-wire	2.5	150 855	SME-8-K-LED-24
			Plug M8x1, 3-pin	0.3	150 857	SME-8-S-LED-24
N/C contact						
	Insertable in the slot lengthwise, flush with the cylinder profile	Contacting	Cable, 3-wire	7.5	160 251	SME-8-O-K-LED-24

Ordering data – Connecting cables				Technical data → www.festo.com/catalogue/nebu	
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No.	Type
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541 333	NEBU-M8G3-K-2.5-LE3
			5	541 334	NEBU-M8G3-K-5-LE3
	Straight socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	541 363	NEBU-M12G5-K-2.5-LE3
			5	541 364	NEBU-M12G5-K-5-LE3
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541 338	NEBU-M8W3-K-2.5-LE3
			5	541 341	NEBU-M8W3-K-5-LE3
	Angled socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	541 367	NEBU-M12W5-K-2.5-LE3
			5	541 370	NEBU-M12W5-K-5-LE3

Ordering data – Slot cover for T-slot				Part No.	Type
	Assembly	Length [m]			
	Insertable from above	2x 0.5		151 680	ABP-5-S

Product Range and Company Overview

A Complete Suite of Automation Services

Our experienced engineers provide complete support at every stage of your development process, including: conceptualization, analysis, engineering, design, assembly, documentation, validation, and production.



Custom Automation Components
Complete custom engineered solutions



Custom Control Cabinets
Comprehensive engineering support
and on-site services



Complete Systems
Shipment, stocking and storage services

The Broadest Range of Automation Components

With a comprehensive line of more than 30,000 automation components, Festo is capable of solving the most complex automation requirements.



Electromechanical
Electromechanical actuators, motors,
controllers & drives



Pneumatics
Pneumatic linear and rotary actuators,
valves, and air supply



PLCs and I/O Devices
PLC's, operator interfaces, sensors
and I/O devices

Supporting Advanced Automation... As No One Else Can!

Festo is a leading global manufacturer of pneumatic and electromechanical systems, components and controls for industrial automation, with more than 12,000 employees in 56 national headquarters serving more than 180 countries. For more than 80 years, Festo has continuously elevated the state of manufacturing with innovations and optimized motion control solutions that deliver higher performing, more profitable automated manufacturing and processing equipment. Our dedication to the advancement of automation extends beyond technology to the education and development of current and future automation and robotics designers with simulation tools, teaching programs, and on-site services.

Quality Assurance, ISO 9001 and ISO 14001 Certifications

Festo Corporation is committed to supply all Festo products and services that will meet or exceed our customers' requirements in product quality, delivery, customer service and satisfaction.

To meet this commitment, we strive to ensure a consistent, integrated, and systematic approach to management that will meet or exceed the requirements of the ISO 9001 standard for Quality Management and the ISO 14001 standard for Environmental Management.



© Copyright 2008, Festo Corporation. While every effort is made to ensure that all dimensions and specifications are correct, Festo cannot guarantee that publications are completely free of any error, in particular typing or printing errors. Accordingly, Festo cannot be held responsible for the same. For Liability and Warranty conditions, refer to our "Terms and Conditions of Sale", available from your local Festo office. All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, electronic, mechanical, photocopying or otherwise, without the prior written permission of Festo. All technical data subject to change according to technical update.



Printed on recycled paper at New Horizon Graphic, Inc., FSC certified as an environmentally friendly printing plant.

Festo North America

United States

Customer Resource Center

502 Earth City Expy., Suite 125
Earth City, MO 63045

For ordering assistance, or to find
your nearest Festo Distributor,

Call: 1.800.99.FESTO

Fax: 1.800.96.FESTO

Email: customer.service@us.festo.com

For technical support,

Call: 1.866.GO.FESTO

Fax: 1.800.96.FESTO

Email: product.support@us.festo.com

Headquarters

Festo Corporation
395 Moreland Road
P.O. Box 18023
Hauppauge, NY 11788
www.festo.com/us

Sales Offices

Appleton

N. 922 Tower View Drive, Suite N
Greenville, WI 54942

Boston

120 Presidential Way, Suite 330
Woburn, MA 01801

Chicago

1441 East Business Center Drive
Mt. Prospect, IL 60056

Dallas

1825 Lakeway Drive, Suite 600
Lewisville, TX 75057

Detroit - Automotive Engineering Center

2601 Cambridge Court, Suite 320
Auburn Hills, MI 48326

New York

395 Moreland Road
Hauppauge, NY 11788

Silicon Valley

4935 Southfront Road, Suite F
Livermore, CA 94550

Design and Manufacturing Operations



East: 395 Moreland Road, Hauppauge, NY 11788



Central: 1441 East Business Center Drive, Mt. Prospect, IL 60056



West: 4935 Southfront Road, Suite F, Livermore, CA 94550

Mexico

Headquarters

Festo Pneumatic, S.A.
Av. Ceylán 3, Col. Tequesquihuac
54020 Tlalnepantla, Edo. de México
Call: 011 52 [55] 53 21 66 00
Fax: 011 52 [55] 53 21 66 65
Email: festo.mexico@mx.festo.com
www.festo.com/mx



Canada

Headquarters

Festo Inc.
5300 Explorer Drive
Mississauga, Ontario L4W 5G4
Call: 1.905.624.9000
Fax: 1.905.624.9001
Email: info.ca@ca.festo.com
www.festo.com/ca



Festo Worldwide

Argentina Australia Austria Belarus Belgium Brazil Bulgaria Canada Chile China Colombia Croatia Czech Republic Denmark
Estonia Finland France Germany Great Britain Greece Hong Kong Hungary India Indonesia Iran Ireland Israel Italy Japan
Latvia Lithuania Malaysia Mexico Netherlands New Zealand Norway Peru Philippines Poland Romania Russia Serbia Singapore
Slovakia Slovenia South Africa South Korea Spain Sweden Switzerland Taiwan Thailand Turkey Ukraine United States Venezuela

www.festo.com