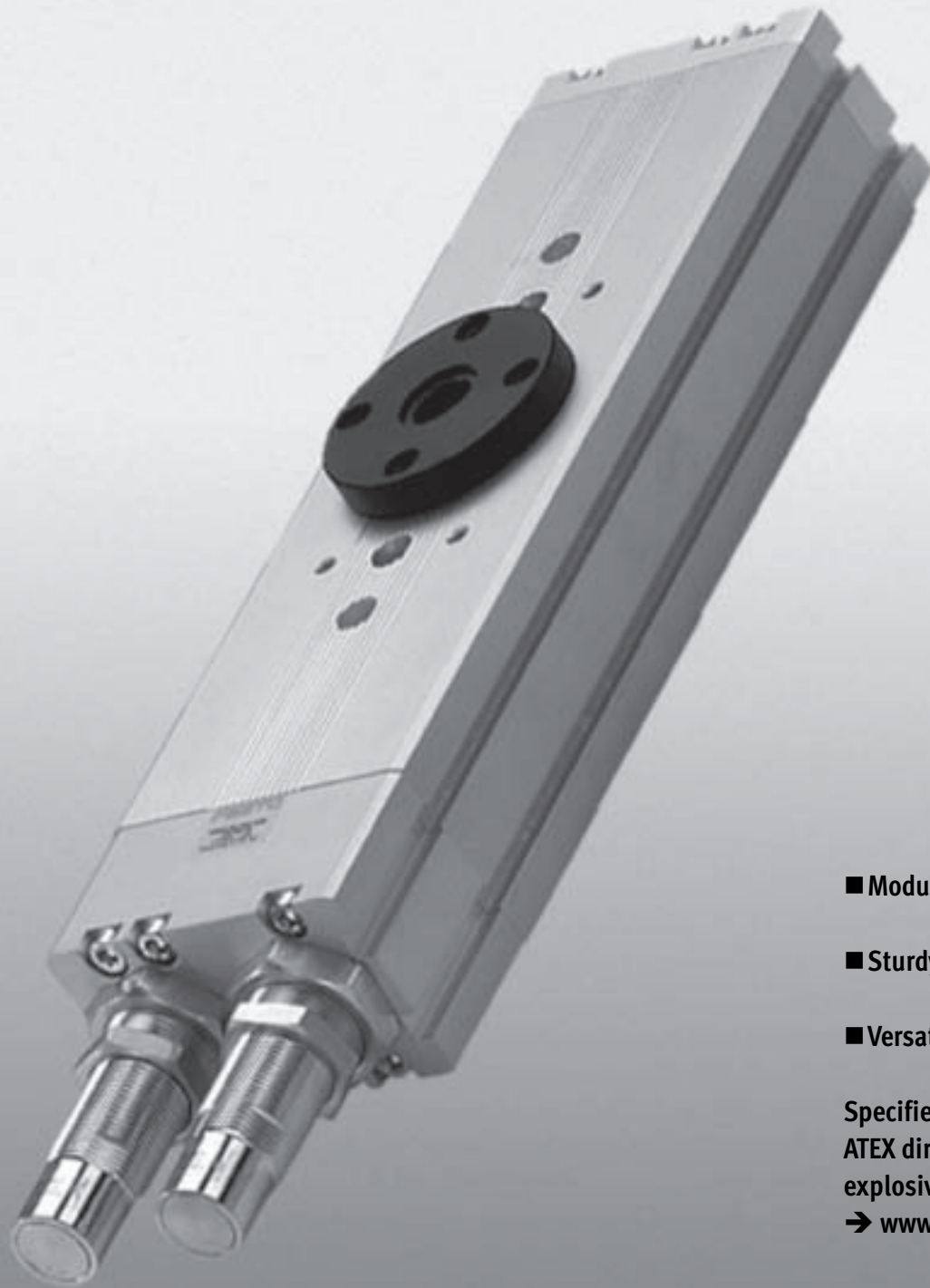


 New

Variants and piston \varnothing 40/50 mm

Twin-piston rotary actuators DRQD

FESTO



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

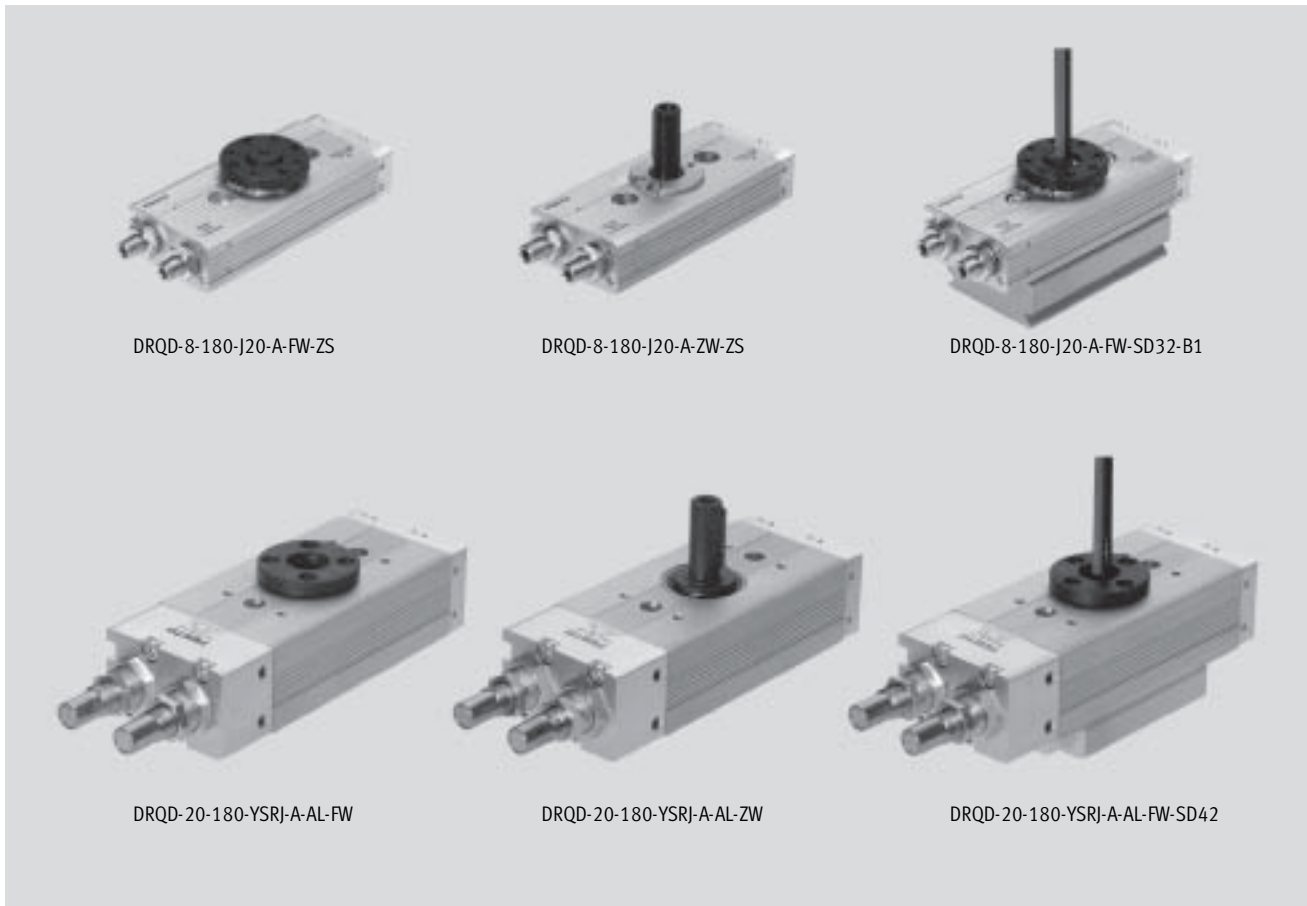
Specified types in accordance with
ATEX directive for potentially
explosive atmospheres

→ www.festo.com/en/ex

Twin-piston rotary actuators DRQD

Features

FESTO



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

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

DRQD-8-180-J20-A-FW-SD32-B1

DRQD-20-180-YSRJ-A-AL-FW

DRQD-20-180-YSRJ-A-AL-ZW

DRQD-20-180-YSRJ-A-AL-FW-SD42

Robust

- Extremely rigid construction
- Twin-piston principle: backlash-free and dynamic

Precise

- Highly accurate
- Flexible end-position cushioning with precision end position adjustment for \varnothing of 6 ... 12 mm
- Adjustable end-position cushioning with precision end position adjustment for \varnothing of 16 ... 50 mm:
 - pneumatic
 - hydraulic shock absorbers

Versatile

- 90° to 360° swivel angle
- Double-acting
- Position sensing
- Flanged shafts with air throughfeed, adaptable
- Supply port at one end
- Pinion variants
 - Spigot shaft
 - Flanged shaft

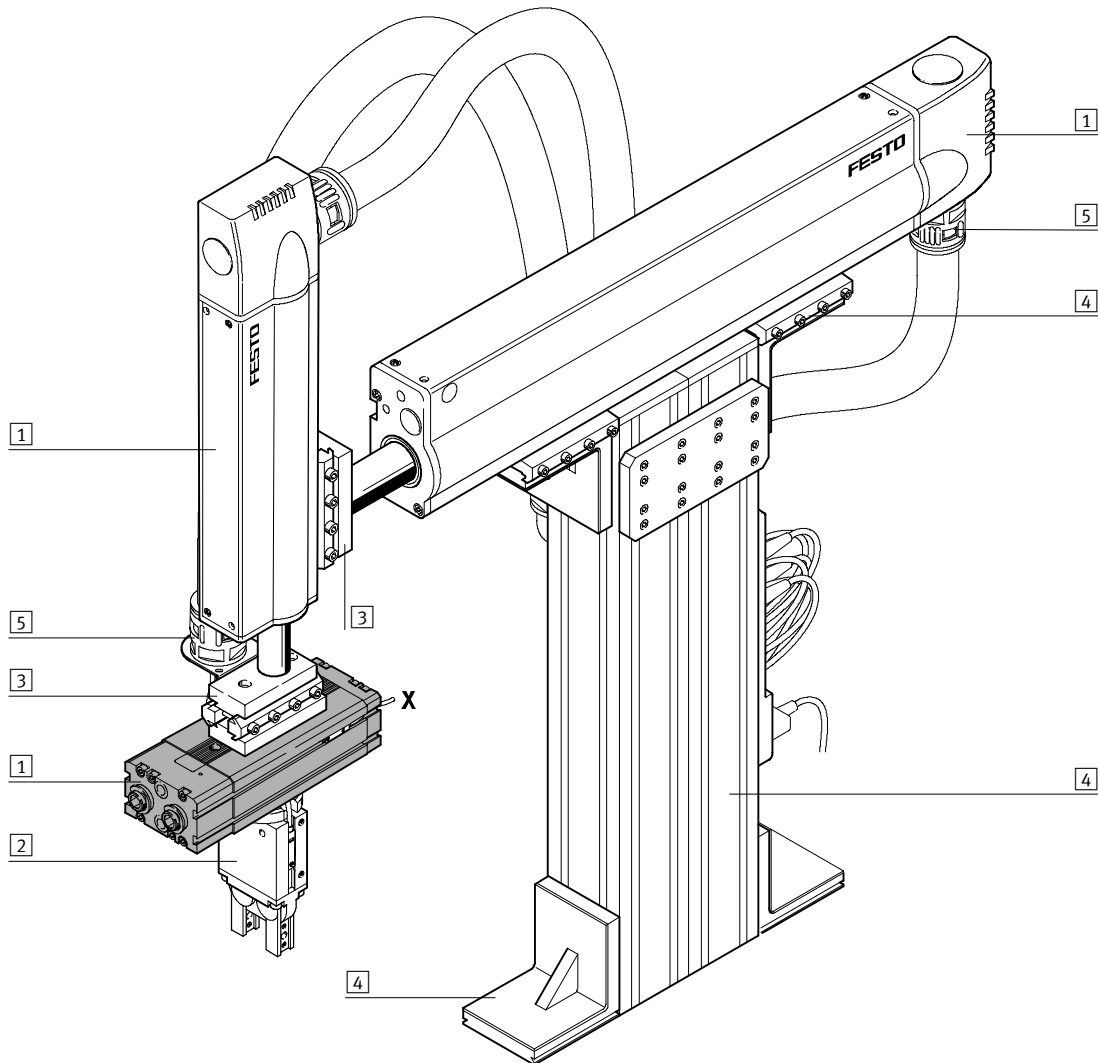
System components

- Defined interfaces
- Variable mounting options, direct via centring sleeves
- Ideal for use in handling applications

Twin-piston rotary actuators DRQD

System example

System product for handling and assembly technology



System elements and accessories		
	Brief description	→ Page
1	Drives	Wide range of combination options within handling and assembly technology
2	Gripper	Diverse variation options in handling and assembly technology
3	Adapter	For drive/drive and drive/gripper connections
4	Basic components	Profiles and profile connections as well as profile/drive connections
5	Installation components	For achieving a clear-cut, safe layout of electrical cables and tubing
-	Axes	Wide range of combination options within handling and assembly technology
-	Motors	Servo and stepper motors, with or without gearing

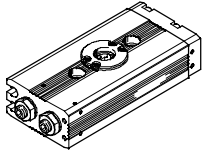
Twin-piston rotary actuators DRQD

Features

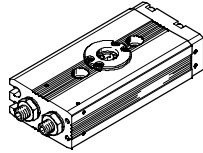
Variant J: End position adjustment

DRQD-6 ... 12

End position adjustment J20
(-20 ... +6°)



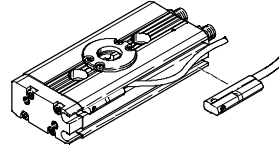
End position adjustment J60
(-60 ... +6°)



Variant A: Position sensing

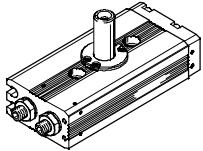
DRQD-6 ... 12

For type SME-/SMT-10 proximity sensors



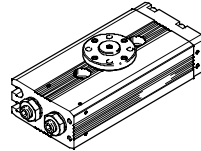
Variant ZW: Spigot type output shaft

DRQD-6 ... 12



Variant FW: Flanged type output shaft

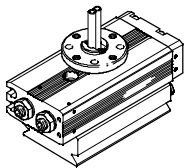
DRQD-6 ... 12



Variant SD: Flanged shaft with air throughfeed

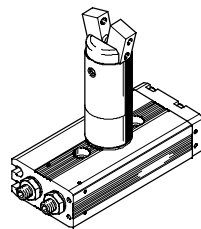
DRQD-8 ... 12

- Pneumatic: 2 to 8 tubes with O.D. of 3, 4 and 6 mm
- Electrical: 4 connecting cables with plug and socket, M8x1



Adapter kits for grippers and drive combinations

DRQD-6 ... 12



Twin-piston rotary actuators DRQD

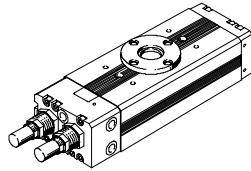
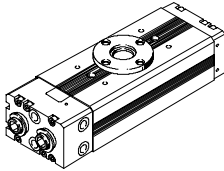
Features

Variant PPVJ/YSRJ: Type of cushioning

DRQD-16 ... 50

Adjustable end position cushioning
PPVJ

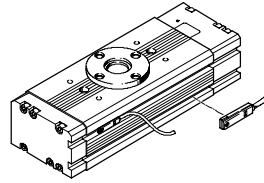
Adjustable shock absorbers
YSRJ



Variant A: Position sensing

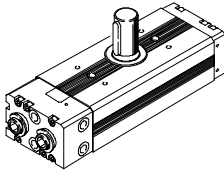
DRQD-16 ... 50

For type SME-/SMT-8 proximity sensors



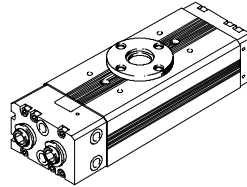
Variant ZW: Spigot type output shaft

DRQD-16 ... 50



Variant FW: Flanged type output shaft

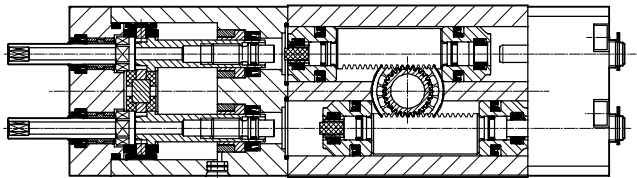
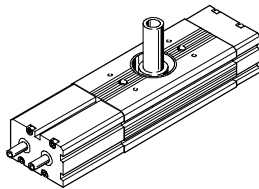
DRQD-16 ... 50



Variant Z1: Mid-position module

DRQD-16 ... 50

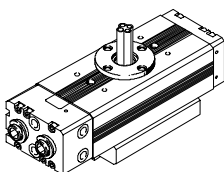
Adjustable mid-position with 90° and 180° swivel angle



Variant SD: Flanged shaft with air throughfeed

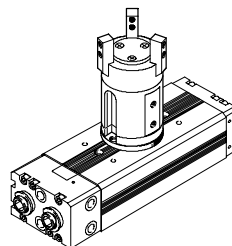
DRQD-16 ... 50

- Pneumatic: 2 to 8 tubes with O.D. of 3, 4 and 6 mm
- Electrical: 4 connecting cables with plug and socket, M8x1



Adapter kits for grippers and drive combinations

DRQD-16 ... 50

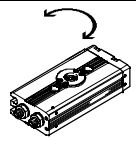
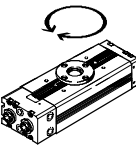


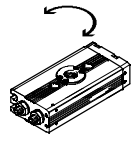
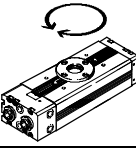
Twin-piston rotary actuators DRQD

Product range overview

Swivel drives
Semi-rotary rack and pinion drives

4.2

Function	Design	Type	Piston \varnothing [mm]	Swivel angle [°]	Adjustable end position range [°]	Position sensing	End position adjustment with flexible buffers in the end positions
Double-acting	Basic version						
		Rotary actuator DRQD	6, 8, 12	90 180	-20 ... +6° -60 ... +6°	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Double-acting	Basic version						
		Rotary actuator DRQD	16, 20, 25, 32, 40, 50	90 180 360 0 ... 340	-20 ... +6°	<input checked="" type="checkbox"/>	-

Function	Design	Type	Piston \varnothing [mm]	Output shaft		
				Spigot shaft	Flanged shaft	Integrated adapter for direct mounting of micro grippers
Double-acting	Basic version					
		Rotary actuator DRQD	6, 8, 12	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Double-acting	Basic version					
		Rotary actuator DRQD	16, 20, 25, 32, 40, 50	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-

Twin-piston rotary actuators DRQD

Product range overview

Type	Piston \varnothing [mm]	Type of cushioning		Pneumatic connection	
		Adjustable, pneumatic	Adjustable, hydraulic shock absorbers	Left	Right
Basic version					
Rotary actuator DRQD	6, 8, 12	-	-	-	■
	16, 20, 25, 32, 40, 50	■	■	■	■

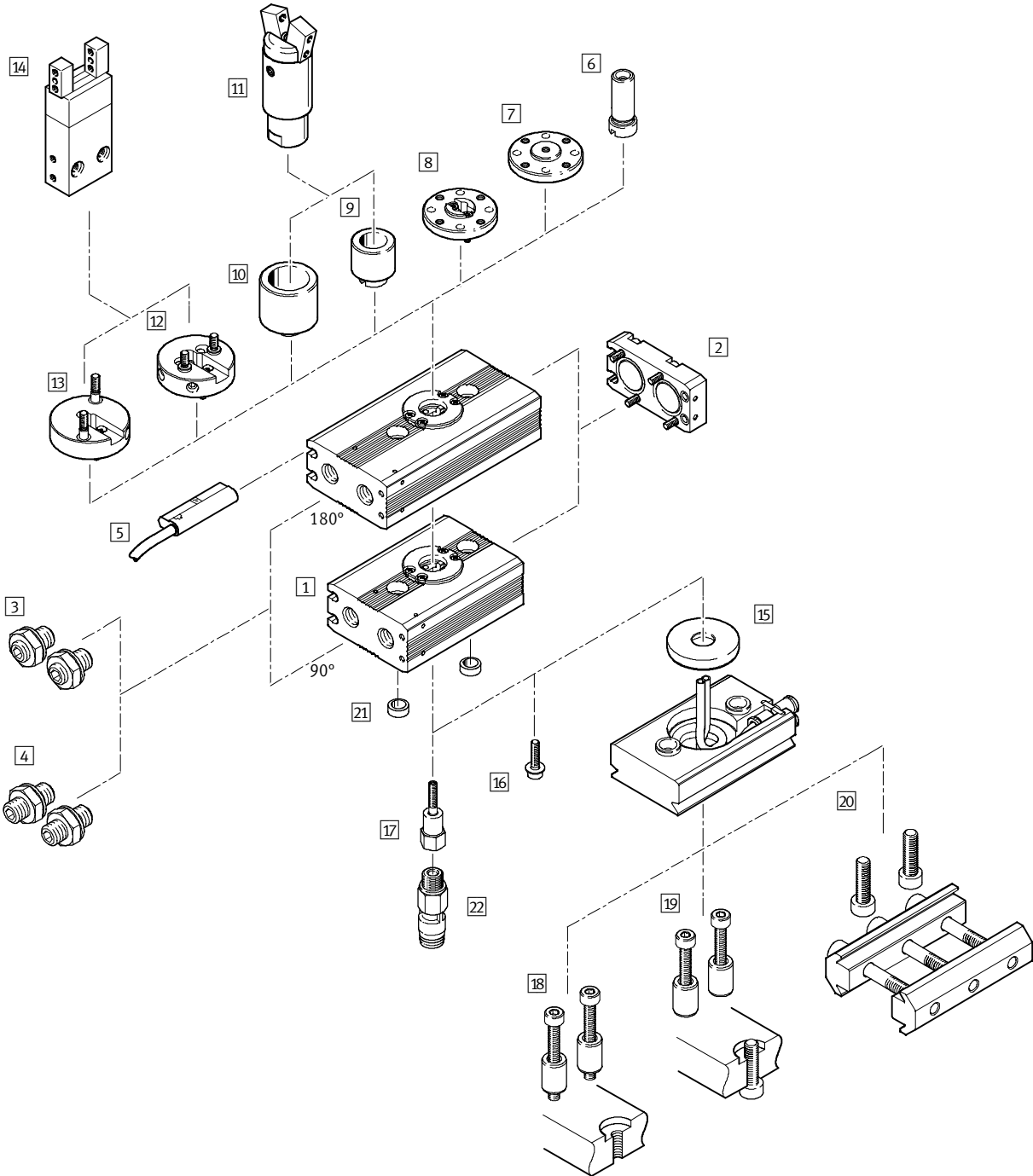
Type	Piston \varnothing [mm]	Mid-position	Flanged shaft with air throughfeed	Adapter kits for grippers	→ Page
Basic version					
Rotary actuator DRQD	6, 8, 12	-	■	■	1 / 4.2-30
	16, 20, 25, 32, 40, 50	■	■	■	1 / 4.2-46

Twin-piston rotary actuators DRQD-6 ... 12

Peripherals overview



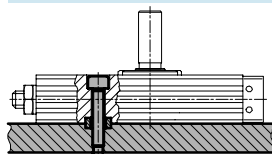
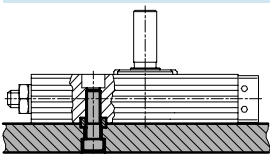
Piston \varnothing 6 ... 12 mm



Mounting options, basic actuator

with threaded hole in housing profile

with through holes



Swivel drives
Semi-rotary rack and pinion drives

4.2

Twin-piston rotary actuators DRQD-6 ... 12

Peripherals overview

Variants, mounting attachments and accessories		Piston \varnothing			→ Page	
		6	8	12		
1	Centre section	Centre section for 90° or 180° swivel angle	■	■	■	1 / 4.2-33
2	Connector cap	With integrated, compressed air directional function	■	■	■	
3	End position adjustment J20	Flexible end position cushioning with adjustable end positions (-20 ... +6°)	■	■	■	
4	End position adjustment J60	Flexible end position cushioning with adjustable end positions (-60 ... +6°)	■	■	■	
5	Position sensing A (accessories)	Contactless via type SME-/SMT-10 proximity sensors	■	■	■	1 / 4.2-78
6	Spigot shaft ZW ⁽¹⁾	Hollow with woodruff key	■	■	■	1 / 4.2-33
7	Flanged shaft FW ⁽¹⁾	Hollow	■	■	■	
8	Flanged shaft FW-SD32	Hollow, for flanged shaft with air throughfeed SD32	-	■	■	
9	Adapter A08 ⁽²⁾	For type HGWM-08-...-G8 and HGPM-08-...-G8 micro-grippers	■	■	■	
10	Adapter A12 ⁽²⁾	For type HGWM-12-...-G8 and HGPM-12-...-G8 micro-grippers	■	■	■	1 / 7.5-1
11	Micro grippers (accessories)	HGPM-...-G8 (not to be used with DRQD-6), HGWM-...-G8	■	■	■	
12	Adapter AS1	For type HGP-06-A, HGR-10-A and HGW-10-A micro-grippers	-	■	■	
13	Adapter AS2	For type HGD-16-A mini-grippers	-	■	■	
14	Standard gripper (accessories)	HGD-16-A, HGP-06-A, HGR-10-A, HGW-10-A	-	■	■	1 / 7.5-2
15	Flanged shaft with air throughfeed SD32	In combination with FW-SD32, AS...: 2 tubes with O.D. 3 mm	-	■	■	1 / 4.2-34
16	Socket head screw ZS	Mounting of ZW and FW	■	■	■	1 / 4.2-33
17	Hollow bolt HS	Mounting of ZW, FW, A08, A12 and air supply for attachments	■	■	■	
18	Type of mounting B1	For connection of DRQD/FW-SD32: Locking screws in centring sleeves	■	■	■	
19	Type of mounting B2	For connection of DRQD/FW-SD32: Through screws in attachment	■	■	■	
20	Type of mounting B3	For connection of DRQD/FW-SD32: Clamping via profile, grid 40 mm	■	■	■	1 / 4.2-34
21	Centring sleeve ZBH (accessories)	For centring (2 pieces included in scope of delivery for DRQD)	■	■	■	
22	Rotary push-in fitting ⁽³⁾ (accessories)	Quick Star push-in fittings, rotatable with ball bearing	■	■	■	

- 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 air throughfeed in combination with HS.

Twin-piston rotary actuators DRQD-6 ... 12

Type codes

FESTO

Swivel drives
Semi-rotary rack and pinion drives

4.2

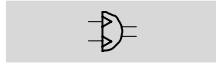
		DRQD	-	6	-	180	-	J60	-	A	-	A12	-		-	HS	-	B2	-	B	
Type																					
Double-acting																					
DRQD	Rotary actuator																				
Piston \varnothing [mm]																					
Swivel angle [°]																					
End-position adjustment [°]																					
J20	-20 ... +6																				
J60	-60 ... +6																				
Position sensing																					
A	With proximity sensor																				
Output shaft/adapter																					
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																				
Flanged shaft with air throughfeed																					
SD32	Dual pneumatic, tubing O.D. 3 mm																				
Screw type																					
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 documentation																					
	German (standard)																				
E	English																				
F	French																				
S	Spanish																				
I	Italian																				
V	Swedish																				
B	Express waiver - no user documentation to be included (already available)																				

Twin-piston rotary actuators DRQD-6 ... 12

Data sheet

FESTO

Function

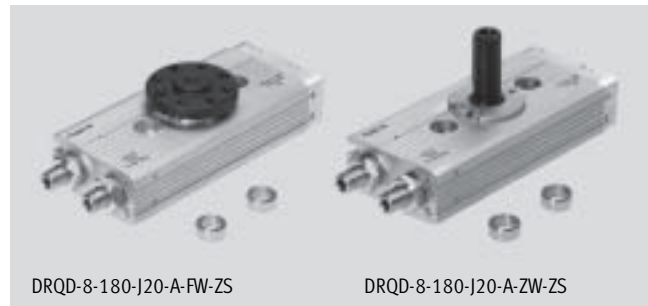


- - Diameters
6 ... 12 mm

- - Force
0.16 ... 0.76 Nm

Variants

- 90° and 180° swivel angle
- Spigot or flanged shaft
- Adapters for grippers
- End position adjustment
- Position sensing
- Flanged shaft with air throughfeed
- Different types of mounting



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

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

General technical data		6	8	12
Piston \varnothing		6	8	12
Pneumatic connection		M3		
	HS	M5		
	SD32	-	QS...-3 for O.D. tubing \varnothing 3 mm	
Constructional design	Twin-piston rotary actuator based on the rack and pinion drive principle			
Cushioning	Flexible buffer at both ends			
Position sensing	Via proximity sensor			
Type of mounting	Via through holes			
	Using internal threads			
Mounting position	Any			

Operating and environmental conditions		6	8	12
Piston \varnothing		6	8	12
Operating medium		Filtered compressed air, lubricated or unlubricated		
Operating pressure	[bar]	1 ... 8		
	SD32	-	1.5 ... 8	-
Adjustable end position range	[°]	-20 ... +6		
	J60	-60 ... +6		
Max. permissible swivelling frequency at 6 bar (for completed cycle of motion)	[Hz]	90°	5	4
		180°	3.5	2.5
	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 rotary actuators DRQD-6 ... 12


Data sheet



Swivel drives
Semi-rotary rack and pinion drives

4.2

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

Flanged shaft with air throughfeed SD32

For DRQD-8... 12

A fused tubing pair (DUO tube) each with an O.D. of 3 mm is fed through the flanged shaft for air throughfeed. This is the equivalent of two single lengths of tubing. Compressed air is supplied via the type QSM push-in/threaded connectors on the transfer plate and is fed via spiral tubing through the hollow flanged shaft at the actuator to the consuming device. Swivel angles of up to 180° are possible.

Only Quick Star push-in threaded connectors may be used for connecting compressed air tubing to consuming devices (e.g. grippers). The O.D. of the spiral tubing is tolerated. The inside dimension has been reduced in favour of a greater wall thickness, which means that type CN and CK fittings may not be used. QS push-in/threaded fittings:
→ Volume 3



Technical data			
Piston Ø		8	12
Number of spiral tubes		1 DUO tube	
Tubing outer Ø [mm]		3	
Standard nominal flow rate per tube [l/min]		min. 70	
Theoretical air consumption per tube at 6 bar [cm ³]		5.3	
Operating pressure [bar]		-10 ... +30 °C: 0 ... 10	
		+30 ... +40 °C: 0 ... 9	
		+40 ... +60 °C: 0 ... 7	
Fittings for connection of the spiral tube to the consuming device		QS...-3: for 3 mm O.D. tubing e.g. for type HGP-06/-10/-16-A gripper	

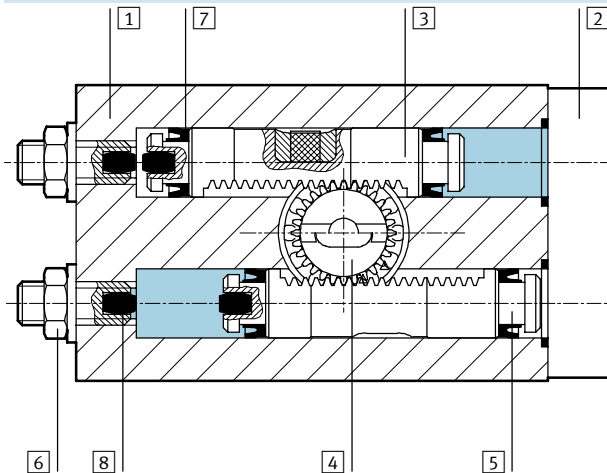
Twin-piston rotary actuators DRQD-6 ... 12

Data sheet

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		
Adapter	A08	6	11		
	A12	6	11		
	AS1	–	13		
	AS2	–	15		
Screws	ZS	1			
	HS	4		5	
Flanged shaft with air throughfeed	SD32	–	71		
Mounting in combination with SD32	B1	–	17		
	B2	–	17		
	B3	–	81		

Materials

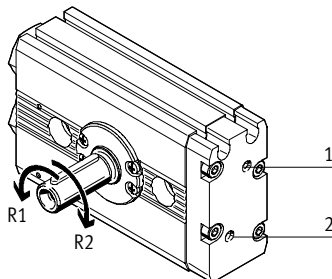
Sectional view



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			Perbunan Polyurethane
8	Buffer for end position cushioning			Perbunan
–	DUO spiral tubing			Polyurethane
–	Woodruff key			Steel
–	Hollow bolt, centring sleeves			Stainless steel
–	Static seals			Perbunan coated steel; perbunan
–	Note on material			Free of copper, PTFE and silicone

Direction of rotation of the drive shaft

Pressure applied at connections 1 or 2 causes a rotary movement in R1 or R2 direction respectively.



Twin-piston rotary actuators DRQD-6 ... 12

Data sheet

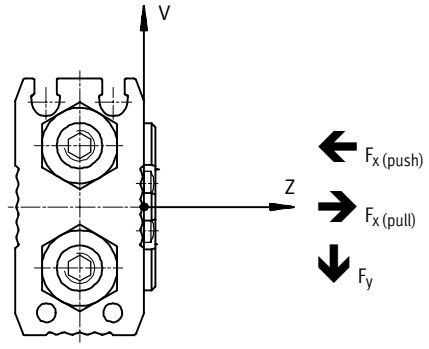


Swivel drives
Semi-rotary rack and pinion drives

Max. permissible radial and axial load on the drive shaft

Combined load

A DRQD-8-... rotary actuator 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 $F_{x, push} = 30\text{ N}$, which is at a distance of $V = 12\text{ mm}$ from the shaft (→ diagram on right).



Question:	Answer:
Is it permissible to statically load a DRQD-8-... rotary actuator with these combined forces?	Diagram 1 (→ 1 / 4.2-37) indicates that the maximum permissible radial force is $F_{y, max. (stat.)} (5) = 193\text{ N}$ for a distance of $Z = 5\text{ mm}$. Diagram 3 (→ 1 / 4.2-37) indicates that the maximum axial force is $F_{x, push max. (stat.)} (12) = 169\text{ N}$ for a distance $V = 12\text{ mm}$.

The following equation applies to combined loads:	The following values are assumed:	With values inserted:
$\frac{F_y(z)}{F_{y, max. (z)}} + \frac{F_{x, push (v)}}{F_{x, pushmax. (v)}} + \frac{F_{x, pull (v)}}{F_{x, pullmax. (v)}} \leq 1$	$F_y(5) = 60\text{ N}$ $F_{x, push (stat.)} (12) = 30\text{ N}$ $F_{y, max. (stat.)} (5) = 193\text{ N}$ $F_{x, max. (stat.)} (12) = 169\text{ N}$	$\frac{60\text{ N}}{193\text{ N}} + \frac{30\text{ N}}{169\text{ N}} \leq 1$ $0.311 + 0.178 \leq 1$ $0.489 \leq 1$ Thus the actuator may be statically loaded with the forces indicated above.

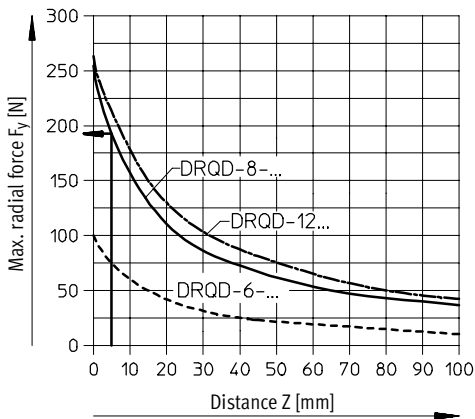
Twin-piston rotary actuators DRQD-6 ... 12

Data sheet

Maximum static radial force

Diagram 1

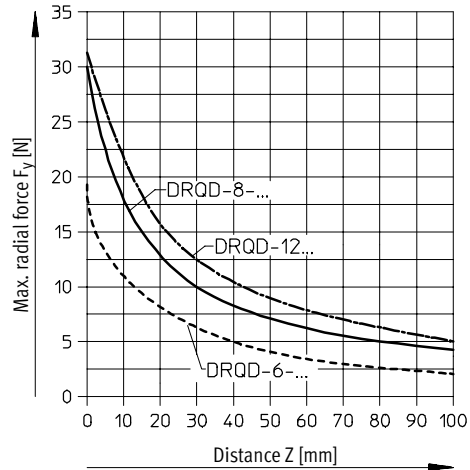
$$F_{y, \text{max. (stat.)}} = f(z)$$



Maximum dynamic radial force

Diagram 2

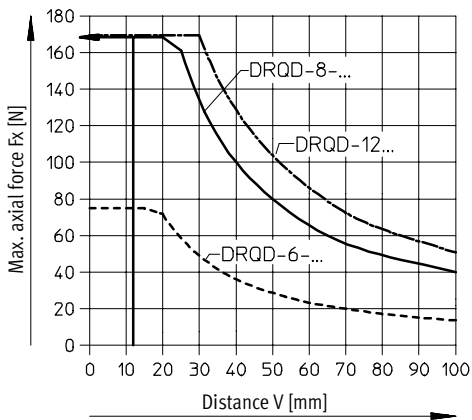
$$F_{y, \text{max. (dyn.)}} = f(z)$$



Maximum static, pull and push axial forces

Diagram 3

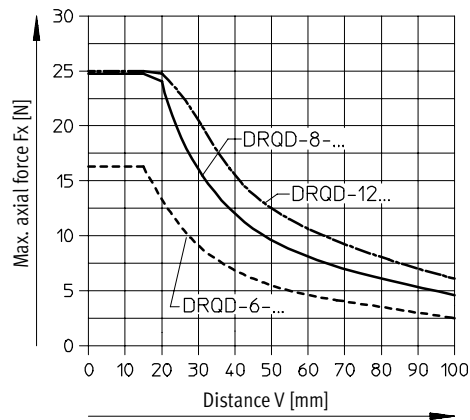
$$F_{x, \text{max. (stat.)}} = f(v)$$



Maximum dynamic, pull and push axial forces

Diagram 4

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



Twin-piston rotary actuators DRQD-6 ... 12

Data sheet

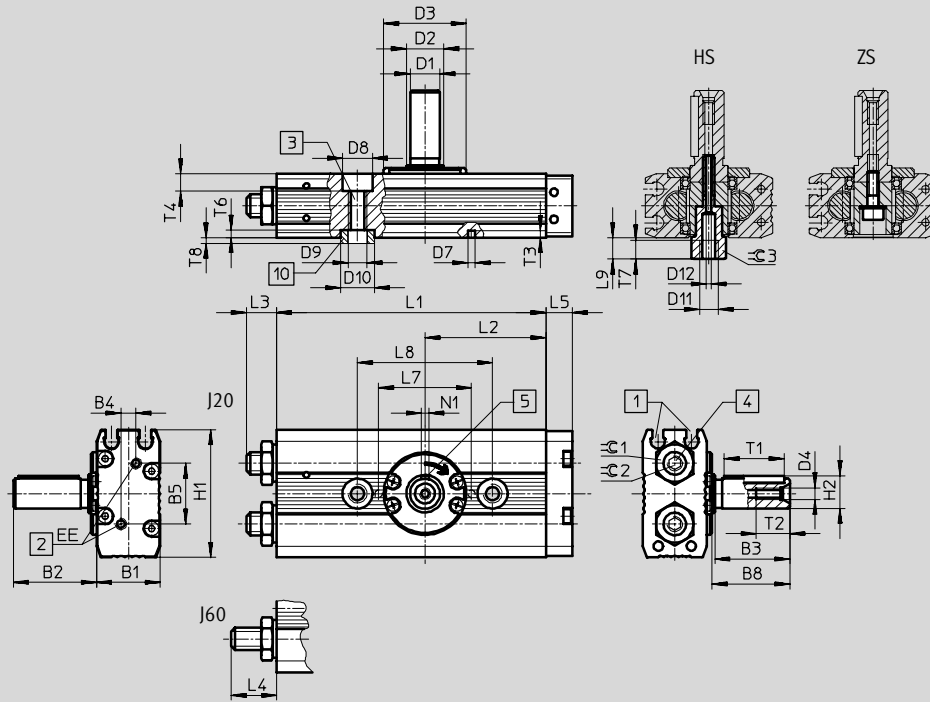


Swivel drives
Semi-rotary rack and pinion drives
4.2

Dimensions – Variant ZW

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

Spigot shaft



- 1 Sensor slots for type SME-/SMT-10- proximity sensors...
- 2 Supply ports
- 3 Mounting thread
- 4 Internal hex-head screw for end position adjustment
- 5 Woodruff key position at 0°
- 10 Centring sleeves (2 ea. included in scope of delivery)

∅	Swivel angle [°]	B1	B2	B3	B4	B5	B8	D1 ∅ g7	D2 ∅ g6	D3 ¹⁾ ∅ f7	D4	D7 ∅ H8	D8 ∅ H8	D9	D10 ∅ H7	D11	D12	EE	H1	H2
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																			

∅	Swivel angle [°]	L1	L2	L3 max.	L4 max.	L5	L7 ±0.03	L8 ±0.03	L9	N1 P9	T1	T2	T3	T4	T6	T7	T8	≙C1	≙C2	≙C3
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 rotary actuators DRQD-6 ... 12

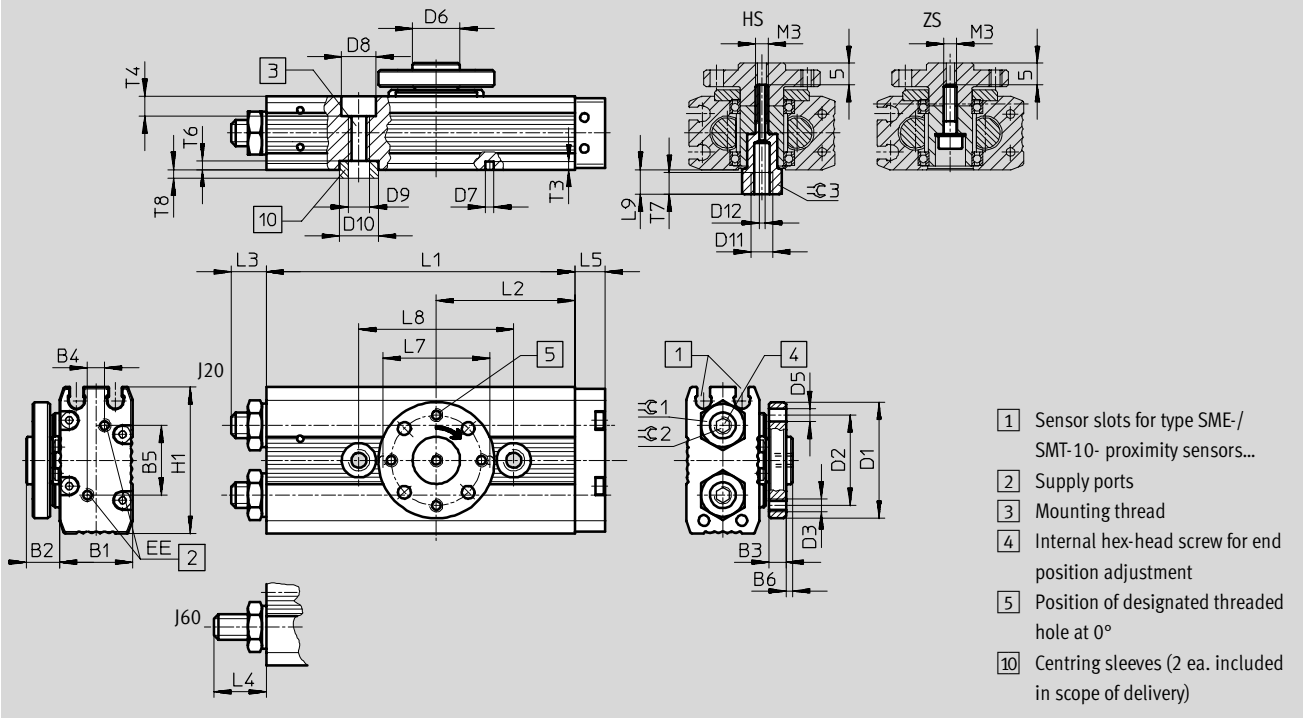
Data sheet



Dimensions – Variant FW

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

Flanged shaft



∅	Swivel angle [°]	B1	B2	B3	B4	B5	B6	D1 ∅	D2 ∅	D3	D5 ∅ H7	D6 ∅ g7	D7 ∅ H8	D8 ∅ H8	D9	D10 ∅ H7	D11	D12 ∅
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																	

∅	Swivel angle [°]	EE	H1	L1	L2	L3	L4	L5	L7	L8	L9	T3	T4	T6	T7	T8	≈C1	≈C2	≈C3
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 rotary actuators DRQD-6 ... 12

Data sheet



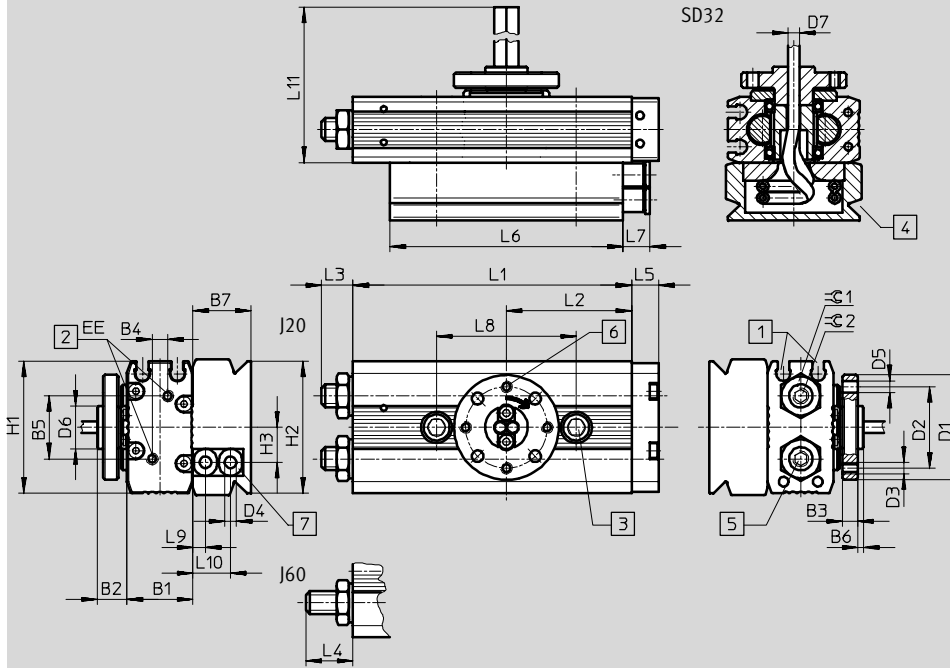
Swivel drives
Semi-rotary rack and pinion drives

4.2

Dimensions – Variant FW-SD32

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

Flanged shaft with air throughfeed



- 1 Sensor slots for type SME-/SMT-10- proximity sensors...
- 2 Supply ports
- 3 Mounting type B1, B2
- 4 Mounting type B3, dovetail profile
- 5 Internal hex-head screw for end position adjustment
- 6 Position of designated threaded hole at 0°
- 7 Supply port for air throughfeed

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

∅	Swivel angle [°]	H1	H2	H3	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	∅C1	∅C2
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 rotary actuators DRQD-6 ... 12

Data sheet

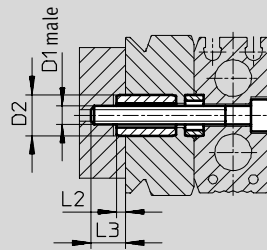
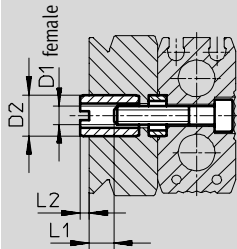


Dimensions – Mounting type

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

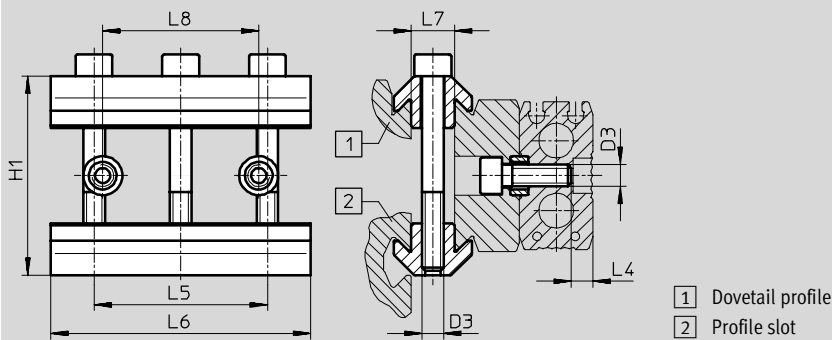
B1 – Locking screws in centring sleeves

B2 – Through screws in attachment



For \varnothing	Swivel angle [°]	D11	D2 \varnothing 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



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

Swivel drives
Semi-rotary rack and pinion drives

4.2

Twin-piston rotary actuators DRQD-6 ... 12

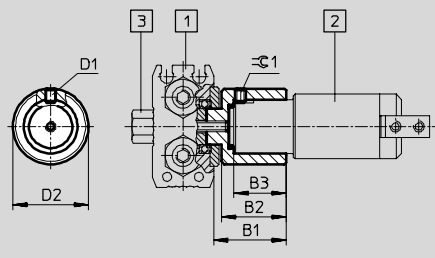
Data sheet



Dimensions – Adapter for gripper

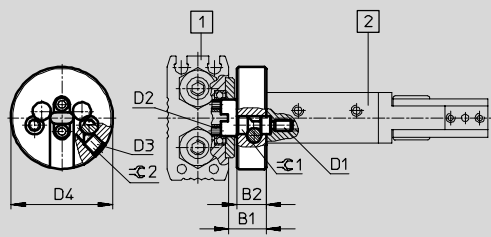
Download CAD data → www.festo.com/en/engineering

A08/A12

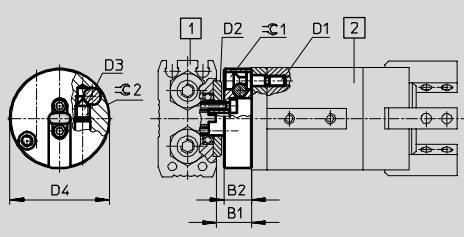


For adapter	1 Drive	2 Gripper	3 Screw type	B1	B2	B3 ±0.03	D1	D2 ∅	≈C1
A08	DRQD-6-... DRQD-8-... DRQD-12-...	HGWM-08-...-G8 HGPM-08-...-G8	HS	15.2	13	9.6	M3	16	1.5
A12	DRQD-6-... DRQD-8-... DRQD-12-...	HGWM-12-...-G8 HGPM-12-...-G8	HS	20.2	19	14.6	M3	21	1.5

AS1



AS2











For adapter	1 Drive	2 Gripper	B1	B2	D1	D2	D3	D4 ∅	≈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 rotary actuators DRQD-6 ... 12

Data sheet

FESTO

Gripper			
HGPM-...-EO-G8	HGPM-...-EZ-G8	HGWM-...-EO-G8	HGWM-...-EZ-G8
			
<ul style="list-style-type: none"> – Gripper jaws normally open 	<ul style="list-style-type: none"> – Gripper jaws normally closed 	<ul style="list-style-type: none"> – Gripper jaws normally open 	<ul style="list-style-type: none"> – Gripper jaws normally closed
→ 1 / 7.4-2	→ 1 / 7.4-2	→ 1 / 7.4-2	→ 1 / 7.4-2
HGD-...-A	HGP-...-A-B	HGR-...-A	HGW-...-A
			
<ul style="list-style-type: none"> – Highest precision – High retention force – 3 sizes 	<ul style="list-style-type: none"> – High performance relative to force-stroke ratio – Maximum repetition accuracy – 6 sizes 	<ul style="list-style-type: none"> – Constant gripping torque over the entire angle range – 180° gripper jaw opening angle – 5 sizes 	<ul style="list-style-type: none"> – Constant gripping torque over the entire angle range – 40° gripper jaw opening angle – 5 sizes
→ 1 / 7.5-2	→ 1 / 7.5-2	→ 1 / 7.5-2	→ 1 / 7.5-2

Swivel drives
Semi-rotary rack and pinion drives

4.2

Twin-piston rotary actuators DRQD-6 ... 12

Ordering data – Modular product system



Swivel drives
Semi-rotary rack and pinion drives
4.2

M Mandatory data →

Module No.	Drive 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			
Drive function	Twin-piston rotary actuator				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 sensor				-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 flanged shaft with air throughfeed SD32.
Only with screw type ZS, HS.
- 2 **FW** Required for flanged shaft with air throughfeed SD32.
Only with screw type ZS, HS.

- 3 **A08, A12** Not with flanged shaft with air throughfeed SD32.
Only with screw type HS.
- 4 **AS1, AS2** Required for flanged shaft with air throughfeed SD32.
Not with screw type ZS, HS.

Transfer order code

DRQD - - - - - **A** -

Twin-piston rotary actuators DRQD-6 ... 12

Ordering data – Modular product system



0 Options			
Flanged shaft with air throughfeed	Screw type	Type of mounting	User documentation
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 Flanged shaft with air throughfeed	Dual pneumatic, 3 mm O.D. tubing			5	-SD32	
Screw type	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 documentation (standard is German)	English				-E	
	French				-F	
	Spanish				-S	
	Italian				-I	
	Swedish				-V	
	Express waiver - no user documentation to be included (already available)					-B

5 SD32 Only with mounting type B1, B2, B3.

6 B1, B2, B3 Only with flanged shaft with air throughfeed SD32.

Transfer order code

- - - -

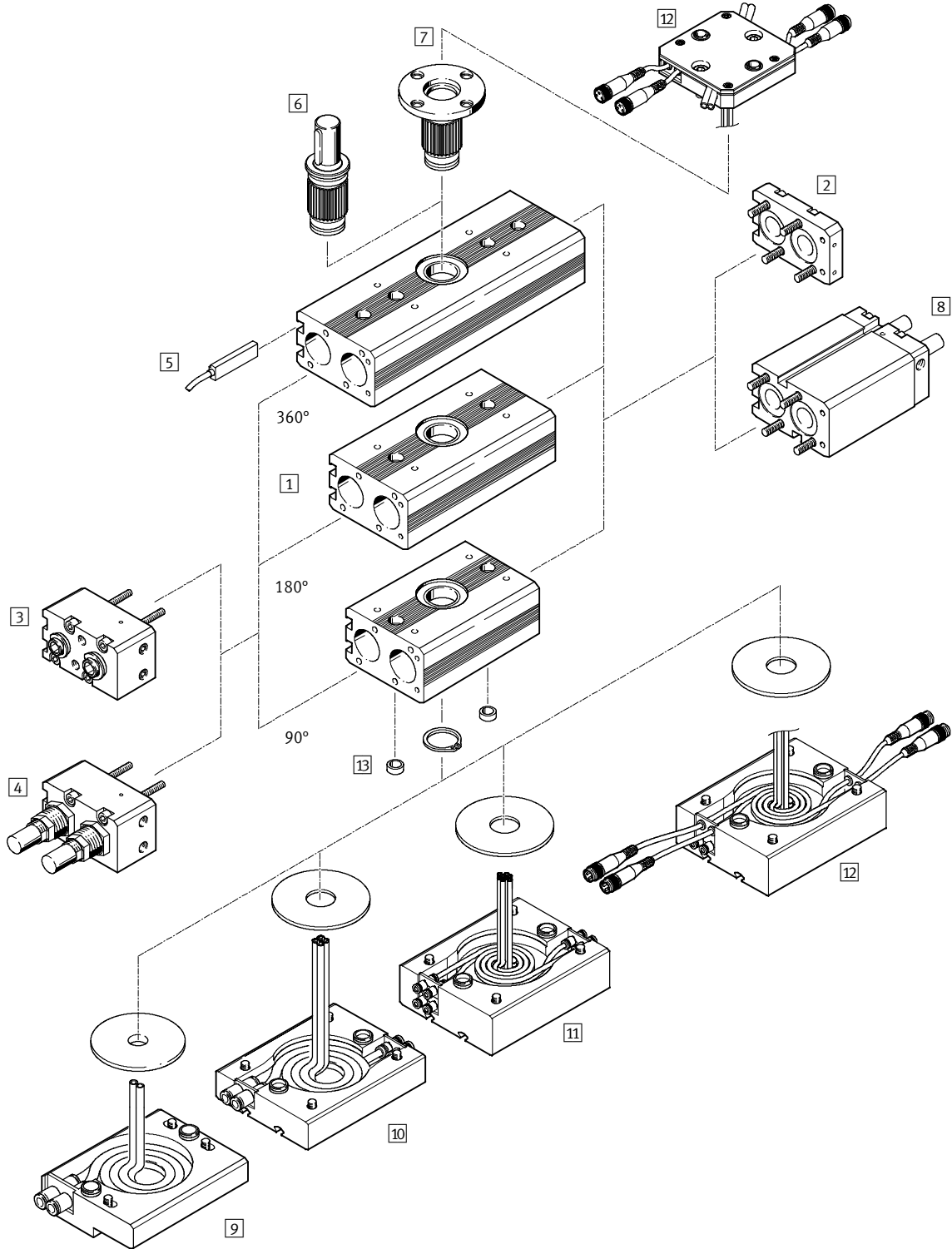
New
Variants and piston \varnothing 40/50 mm

Twin-piston rotary actuators DRQD-16 ... 50

Peripherals overview



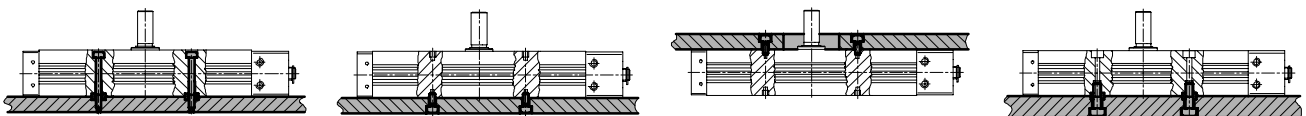
Piston \varnothing 16 ... 50 mm



Mounting options, basic actuator

with through holes







with threaded hole in housing profile



Swivel drives
 Semi-rotary rack and pinion drives
 4.2

Twin-piston rotary actuators DRQD-16 ... 50

Peripherals overview

Variants, mounting attachments and accessories			Piston \varnothing						→ Page
	Brief description	16	20	25	32	40 	50 		
1	Centre section	Centre section for 90°, 180° or 360° swivel angle	■	■	■	■	■	■	1 / 4.2-76
2	End cap	With integrated, compressed air directional function	■	■	■	■	■	■	
3	Connector cap PPVJ	Flexible end position cushioning with adjustable end positions (-20° ...+6°)	■	■	■	■	■	■	
4	Connector cap YSRJ	Adjustable shock absorbers with adjustable end positions (-20° ...+6°)	■	■	■	■	■	■	
5	Position sensing A (accessories)	Contactless via type SME-/SMT-8 proximity sensors	■	■	■	■	■	■	1 / 4.2-79
6	Spigot shaft ZW	With woodruff key	■	■	■	■	■	■	1 / 4.2-76
7	Flanged shaft FW	Hollow, for transfer plate SD... (air throughfeed)	■	■	■	■	■	■	
8	Mid-position Z1	Mid-position at centre of nominal angles of rotation of 90° and 180° ($\pm 10^\circ$)	■	■	■	■	■	■	1 / 4.2-57
9	Flanged shaft with air throughfeed SD32, SD42	In combination with FW: 2 tubes with O.D. 3 or 4 mm	■	■	■	■	-	-	1 / 4.2-51
	Flanged shaft with air throughfeed SD62 	In combination with FW: 2 tubes with O.D. 6 mm	-	-	-	-	■	■	
10	Flanged shaft with air throughfeed SD64 	In combination with FW: 4 tubes with O.D. 6 mm	-	-	-	-	■	■	
11	Flanged shaft with air throughfeed SD48 	In combination with FW: 8 tubes with O.D. 4 mm	-	-	-	-	■	■	
12	Flanged shaft with air throughfeed E644 	In combination with FW: 4 tubes with O.D. \varnothing 6 mm and 4 connecting cables, each with plug and socket, M8x1	-	-	-	-	■	■	
13	Centring sleeve ZBH (accessories)	For centring (2 pieces included in scope of delivery for DRQD)	■	■	■	■	■	■	1 / 4.2-80

Twin-piston rotary actuators DRQD-16 ... 50

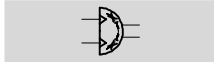
Type codes

		DRQD	-	40	-	90	-	YSRJ	-	A	-	AR	-	FW	-		-	SD42	-	B
Type																				
Double-acting																				
DRQD		Rotary actuator																		
Piston \varnothing [mm]																				
40																				
Swivel angle [°]																				
90																				
Type of cushioning																				
PPVJ		Adjustable end-position cushioning																		
YSRJ		Adjustable shock absorbers																		
Position sensing																				
A		With proximity sensor																		
Pneumatic connection																				
AL		Supply port left																		
AR		Supply port, right																		
Output shaft																				
ZW		Spigot shaft																		
FW		Flanged shaft																		
Mid-position																				
Z1		1 mid-position																		
Flanged shaft with air throughfeed																				
SD32		Dual pneumatic, 3 mm O.D. tubing																		
SD42		Dual pneumatic, 4 mm O.D. tubing																		
SD48		8-off pneumatic, 4 mm O.D. tubing																		
SD62		Dual pneumatic, 6 mm O.D. tubing																		
SD64		4-off pneumatic, 6 mm O.D. tubing																		
E644		4-off pneumatic, 6 mm O.D. tubing, 2 connecting cables, each with plug and socket, M8x1																		
User documentation																				
		German (standard)																		
E		English																		
F		French																		
S		Spanish																		
I		Italian																		
V		Swedish																		
B		Express waiver - no user documentation to be included (already available)																		

Twin-piston rotary actuators DRQD-16 ... 50

Data sheet

Function

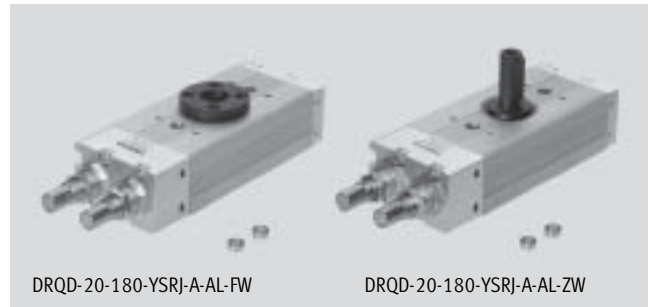


Ø Diameter
16 ... 50 mm

≡ Force
1.6 ... 50 Nm

Variants

- 90°, 180° and 360° or X-swivel angle
- Spigot or flanged shaft
- Adjustable end position cushioning or shock absorbers
- Position sensing
- Mid-position
- Flanged shaft with air throughfeed



DRQD-20-180-YSRJ-A-AL-FW

DRQD-20-180-YSRJ-A-AL-ZW

General technical data		16	20	25	32	40	50
Piston \varnothing		16	20	25	32	40	50
Pneumatic connection		M5			G $\frac{1}{8}$		G $\frac{1}{4}$
	SD32	QS...-3 for 3 mm O.D. tubing ¹⁾				-	-
	SD42/SD48	QS...-4 for 4 mm O.D. tubing ¹⁾				-	-
	SD62/SD64/E644	-				QS...-6 for 6 mm O.D. tubing	
Constructional design	Twin-piston rotary actuator based on the rack and pinion drive principle						
Cushioning	PPVJ	Adjustable, pneumatic					
	YSRJ	Adjustable, hydraulic shock absorbers					
Position sensing	Via proximity sensor						
Type of mounting	Via through holes						
	Using internal threads						
Mounting position	Any						

Operating and environmental conditions		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 [°]	PPVJ	-20 ... +6						
	YSRJ	-						
Max. permissible swivelling 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.../E644		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.						
Minimum cycle times in conjunction with Z1 (from the end position to the mid-position) [s]	PPVJ	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
	YSRJ	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 (actuated from both ends) [°]	≤ 0.05							
	Z1	≤ 0.15			≤ 0.25		≤ 0.20	≤ 0.30
Ambient temperature [°C]	-10 ... +60							
Corrosion resistance class CRC ¹⁾	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.

Twin-piston rotary actuators DRQD-16 ... 50

Data sheet

Swivel drives
Semi-rotary rack and pinion drives

4.2

Forces and torques			16	20	25	32	40	50
Piston \varnothing								
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	Diagrams \rightarrow 1 / 4.2-53							
Max. permissible mass moment of inertia [kgm ²]	PPVJ		5×10^{-4}	10×10^{-4}	20×10^{-4}	40×10^{-4}	200×10^{-4}	500×10^{-4}
	YSRJ		Diagrams \rightarrow 1 / 4.2-55					
	PPV-Z1		5×10^{-4}	10×10^{-4}	20×10^{-4}	40×10^{-4}	200×10^{-4}	500×10^{-4}
	YSRJ-Z1		-	-	-	-	1000×10^{-4}	2000×10^{-4}
The data applies to the variants ZW, FW, without grippers and unthrottled.								



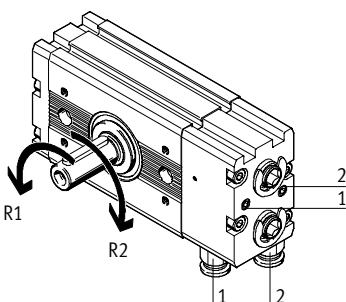
Pneumatic sizing using Pro Pneu
www.festo.com/en/engineering

Weights [g]			16	20	25	32	40	50
Piston \varnothing								
Connector cap AL/AR	PPVJ		116	220	358	609	1170	2320
	YSRJ		140	240	441	917	2170	4270
Centre section/output shaft	90°	ZW	379	609	1026	1891	3330	6860
		FW	380	586	1018	1848	3960	7010
	180°	ZW	467	753	1267	2325	4340	8850
		FW	468	730	1259	2282	4570	9000
	360°	ZW	643	1039	1741	3199	6350	12890
		FW	644	1016	1733	3165	6580	13040
End cap		40	53	82	140	370	610	
Mid-position module	90°	Z1	235	315	550	805	2510	3960
	180°	Z1	235	315	550	805	2510	3960
Flanged shaft with air throughfeed	SD32		152		303		-	
	SD42		152		303		-	
	SD48		-		-		1220	
	SD62		-		-		900	
	SD64		-		-		930	
	E644		-		-		2700	

Direction of rotation of the drive shaft

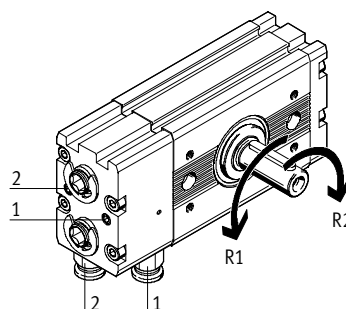
Connector cap right (AR)

Pressure applied at connections 1 or 2 causes a rotary movement in R1 or R2 direction respectively.



Connector cap left (AL)

Pressure applied at connections 1 or 2 causes a rotary movement in R1 or R2 direction respectively.



Twin-piston rotary actuators DRQD-16 ... 50

Data sheet

Flanged shaft with air throughfeed SD.../E644

For DRQD-16... 50

Air throughfeed is available with up to a max. of four DUO tubes. Each tube with O.D 3, 4, and 6 mm consists of two lengths of tubing fused together to form a tubing pair. This is the equivalent of up to a max. of eight single lengths of tubing. Compressed air is supplied via the type QSM push-in/threaded connectors on the transfer plate, and is fed via spiral tubing through the hollow flanged shaft at the actuator to the consuming device. Swivel angles of up to 360° are possible. Air throughfeed E644 additionally offers 2 connecting cables, each with a M8x1 plug and socket.

Only Quick Star push-in threaded connectors may be used for connecting compressed air tubing to consuming devices (e.g. grippers). The O.D. of the spiral tubing is toleranced. The inside dimension has been reduced in favour of a greater wall thickness, which means that type CN and CK fittings may not be used.

QS push-in/threaded fittings:

→ Volume 3



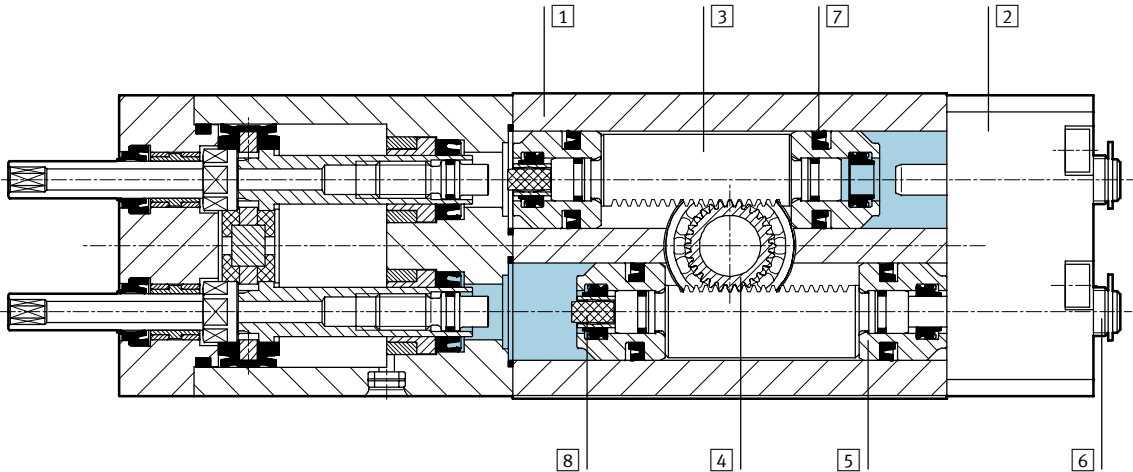
Technical data		16	20	25	32	40	50
Piston \varnothing							
Number of DUO tubes	SD32	1				–	
	SD42	1				–	
	SD48	–				4	
	SD62	–				1	
	SD64/E644	–				2	
Standard nominal flow rate (per tube) [l/min]	SD32	min. 70				–	
	SD42	min. 130				–	
	SD48	–				min. 130	
	SD62	–				min. 250	
	SD64/E644	–				min. 250	
Theoretical air consumption per line at 6 bar [cm ³]	SD32	5.3				–	
	SD42	9.5				–	
	SD48	–				9.5	
	SD62	–				24.4	
	SD64/E644	–				24.4	
Operating pressure [bar]		–10 ... +30 °C: 0 ... 10 +30 ... +40 °C: 0 ... 9 +40 ... +60 °C: 0 ... 7					
Tubing O.D. for connection of the air throughfeed module [mm]	SD32	3				–	
	SD42	4				–	
	SD48	–				4	
	SD62	–				6	
	SD64/E644	–				6	
Fittings for connection of the spiral tube to the consuming device [mm]	SD32	QS-...-3 for 3 mm O.D. tubing				–	
	SD42	QS-...-4 for 4 mm O.D. tubing				–	
	SD48	–				QS-...-4 for 4 mm O.D. tubing	
	SD62	–				QS-...-6 for 6 mm O.D. tubing	
	SD64/E644	–				QS-...-6 for 6 mm O.D. tubing	

Twin-piston rotary actuators DRQD-16 ... 50

Data sheet

Materials

Sectional view



Piston \varnothing	16	20	25	32	40	50
Basic actuator						
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			
-	Screws, hex nuts, woodruff key		Galvanised steel			
-	Static seals		Perbunan			
-	Centring sleeves		Stainless steel			
-	Note on material		Free of copper, PTFE and silicone			
Function end cap PPVJ						
-	Cushioning seal		Perbunan/polyurethane		Polyurethane	
-	Buffer sleeve, regulating screw		Anodised aluminium			
Function end cap YSRJ						
-	Buffer		Delrin			
-	Rod wiper seal		Perbunan/polyurethane			
Flanged shaft with air throughfeed SD.../E644						
-	Transfer plate/sliding disc		Anodised aluminium			
-	DUO spiral tubing		Polyurethane			
Z1 mid-position module						
-	Piston		Stainless steel; Perbunan			
-	Piston rod, nut		Stainless steel			
-	Bearing		POM			
-	Rod wiper seal		Polyurethane			
-	Buffer		Perbunan		Steel	

Swivel drives
Semi-rotary rack and pinion drives

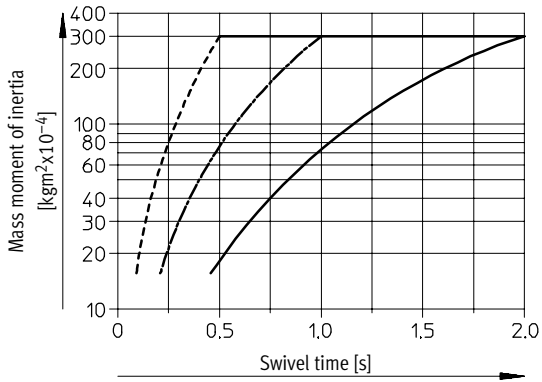
4.2

Twin-piston rotary actuators DRQD-16 ... 50

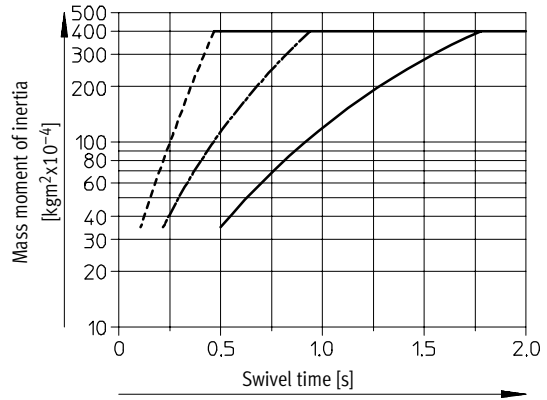
Data sheet

Maximum permissible mass moments of inertia on the drive shaft

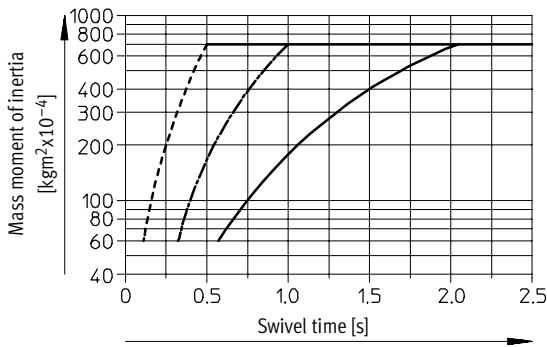
DRQD-16-...-YSRJ



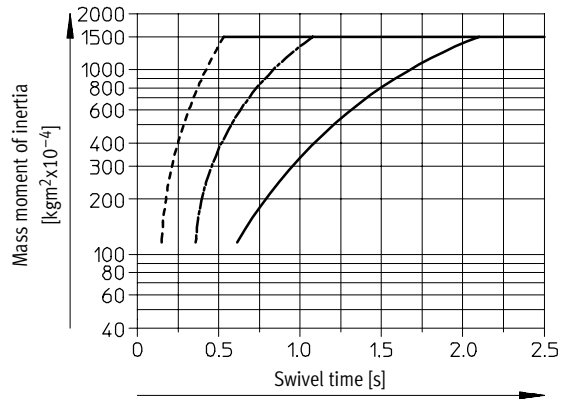
DRQD-20-...-YSRJ



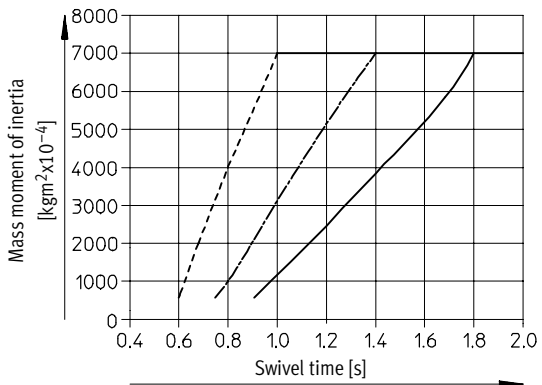
DRQD-25-...-YSRJ



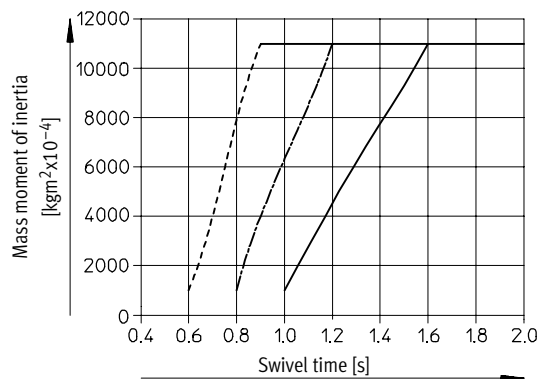
DRQD-32-...-YSRJ



DRQD-40-...-YSRJ



DRQD-50-...-YSRJ



- 90°
- · - · - 180°
- 360°

Twin-piston rotary actuators DRQD-16 ... 50

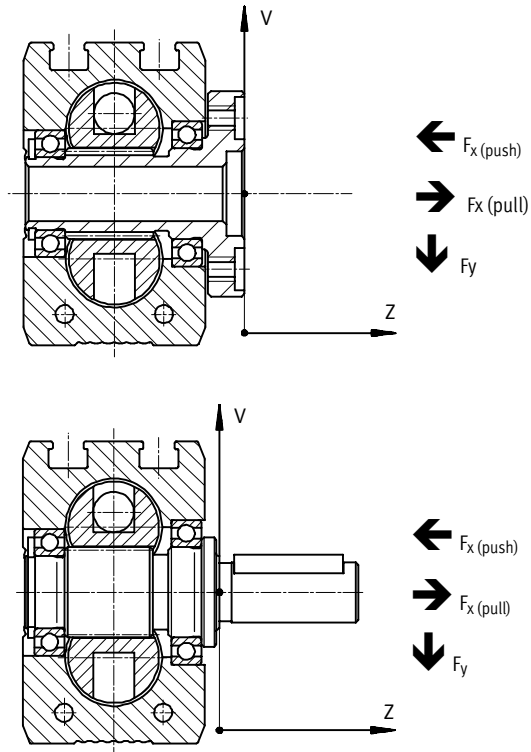
Data sheet

Max. permissible radial and axial load on the drive shaft

Combined load

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

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



Question:

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

Answer:

According to diagram 1 (\rightarrow 1 / 4.2-55), a distance of $Z = 15$ mm results in a maximum permissible radial force

$F_{y, max. (stat.) (15)} = 400$ N
According to diagram 3 (\rightarrow 1 / 4.2-55), a distance of

$V = 12$ mm results in a maximum permissible axial force
 $F_{x, push max. (stat.) (25)} = 550$ N.

The following equation applies to combined loads:

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

The following values are assumed:

$F_y(15) = 300$ N
 $F_{x, push (stat.) (25)} = 100$ N
 $F_{y, max. (stat.) (15)} = 400$ N
 $F_{x, max. (stat.) (25)} = 550$ 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 actuator may be statically loaded with the forces indicated above.

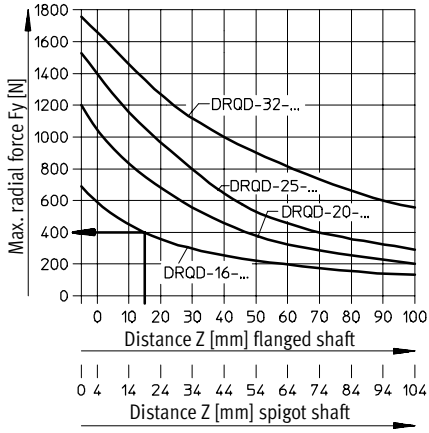
Twin-piston rotary actuators DRQD-16 ... 50

Data sheet

Maximum static radial force

Diagram 1

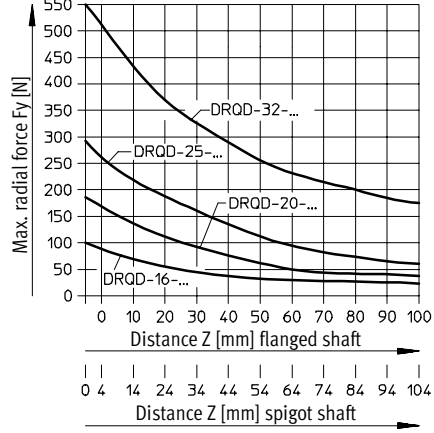
$F_{y, \text{max. (stat.)}} = f_{(z)}$



Maximum dynamic radial force

Diagram 2

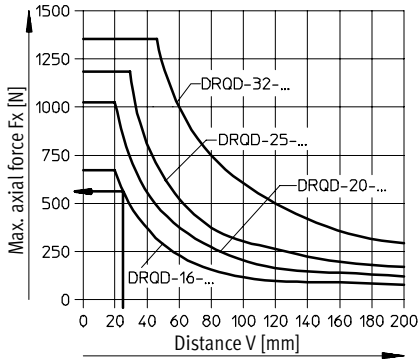
$F_{y, \text{max. (dyn.)}} = f_{(z)}$



Maximum static axial pushing force

Diagram 3

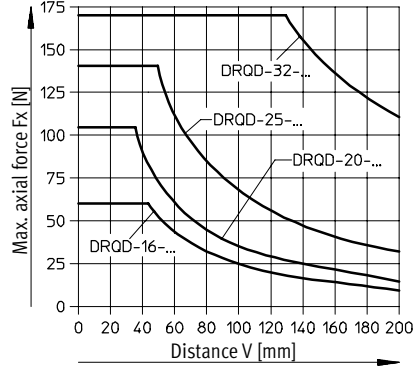
$F_{x, \text{push max. (stat.)}} = f_{(v)}$



Maximum dynamic axial pushing force

Diagram 4

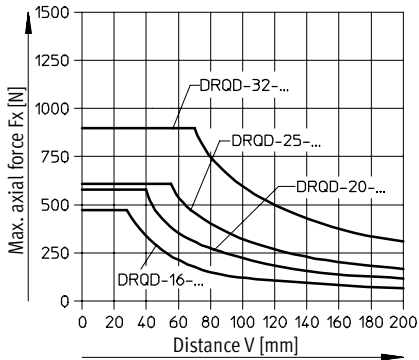
$F_{x, \text{push max. (dyn.)}} = f_{(v)}$



Maximum static axial pulling force

Diagram 5

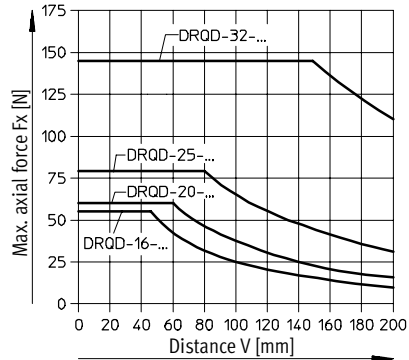
$F_{x, \text{pull max. (stat.)}} = f_{(v)}$



Maximum dynamic axial pulling force

Diagram 6

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



Twin-piston rotary actuators DRQD-16 ... 50

Data sheet



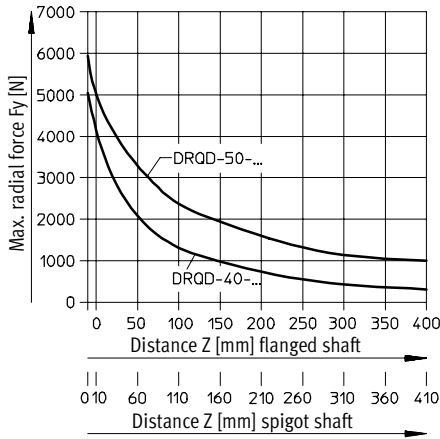
Swivel drives
Semi-rotary rack and pinion drives

4.2

Maximum static radial force

Diagram 1

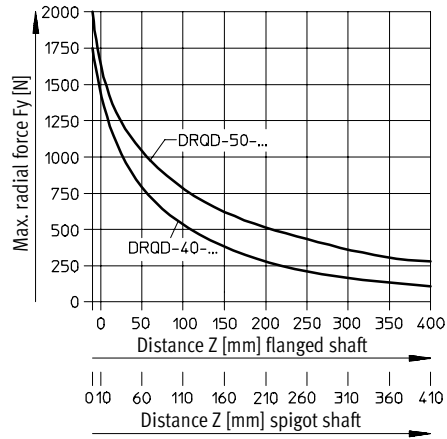
$F_{y, \text{max. (stat.)}} = f(z)$



Maximum dynamic radial force

Diagram 2

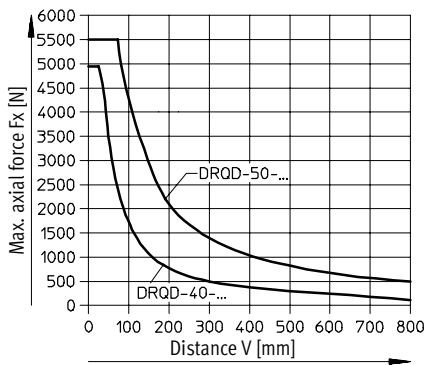
$F_{y, \text{max. (dyn.)}} = f(z)$



Maximum static axial pushing force

Diagram 3

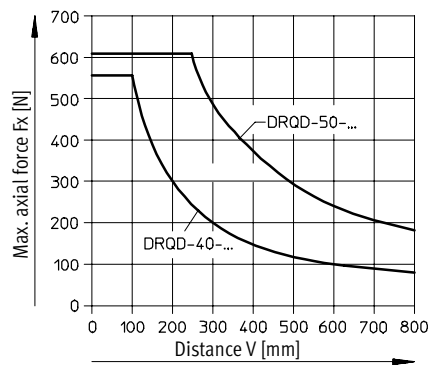
$F_{x, \text{push max. (stat.)}} = f(v)$



Maximum dynamic axial pushing force

Diagram 4

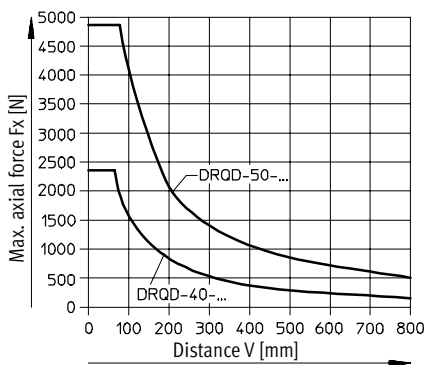
$F_{x, \text{push max. (dyn.)}} = f(v)$



Maximum static axial pulling force

Diagram 5

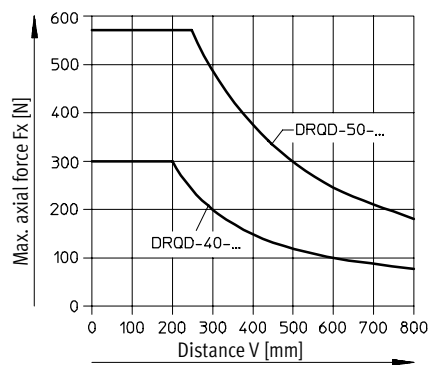
$F_{x, \text{pull max. (stat.)}} = f(v)$



Maximum dynamic axial pulling force

Diagram 6

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



Twin-piston rotary actuators DRQD-16 ... 50

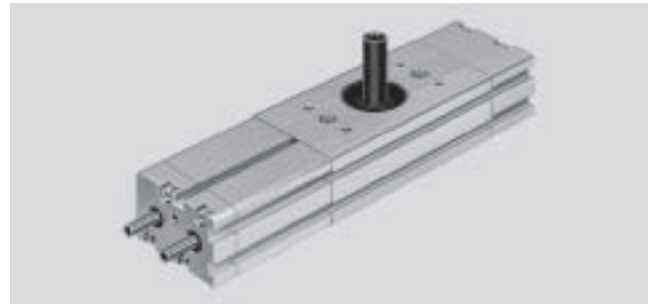
Data sheet

Z1 mid-position module

For DRQD-16... 50

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

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



Function

An encircling piston with two screw fastened piston rods is pressurised and shifts the rotary actuator gear racks until both make full contact with

the piston rods of 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 double-ended piston

rods at the mid-position module are guided by means of multiple bearings in the cover and in the adapter.

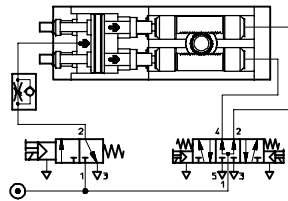
Mid-position activation

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 activation:

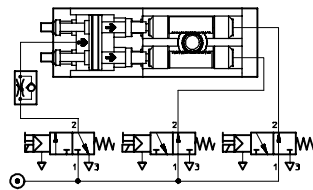
Activation type 1

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



Activation type 2

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



- Note

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

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

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

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

Twin-piston rotary actuators DRQD-16 ... 32

Data sheet

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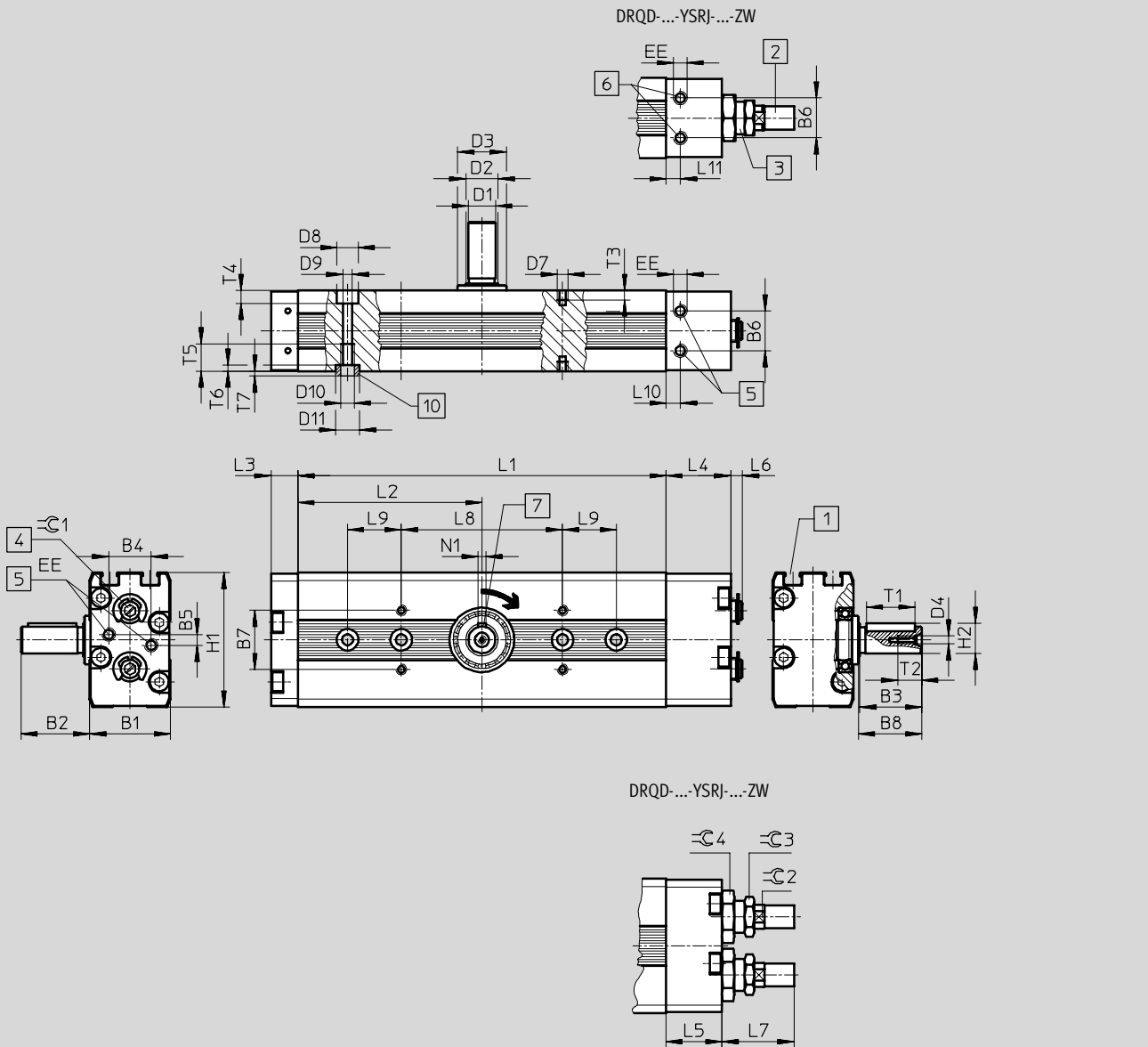
Dimensions – Variant ZW

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

Spigot shaft

Swivel drives
Semi-rotary rack and pinion drives

4.2



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

Twin-piston rotary actuators DRQD-16 ... 32

Data sheet



Dimensions – Variant ZW															Download CAD data → www.festo.com/en/engineering	
∅	Swivel angle [°]	B1	B2	B3	B4	B5	B6	B7	B8	D1 ∅ g6	D2 ∅	D3 ∅	D4	D7	D8 ∅ 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															

∅	Swivel angle [°]	D9 ∅	D10	D11 ∅ H7	EE	H1	H2	L1	L2	L3	L4	L5	L6		L7		L8 ±0.03
													min.	max.	min.	max.	
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								

∅	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														

Twin-piston rotary actuators DRQD-40 ... 50

Data sheet

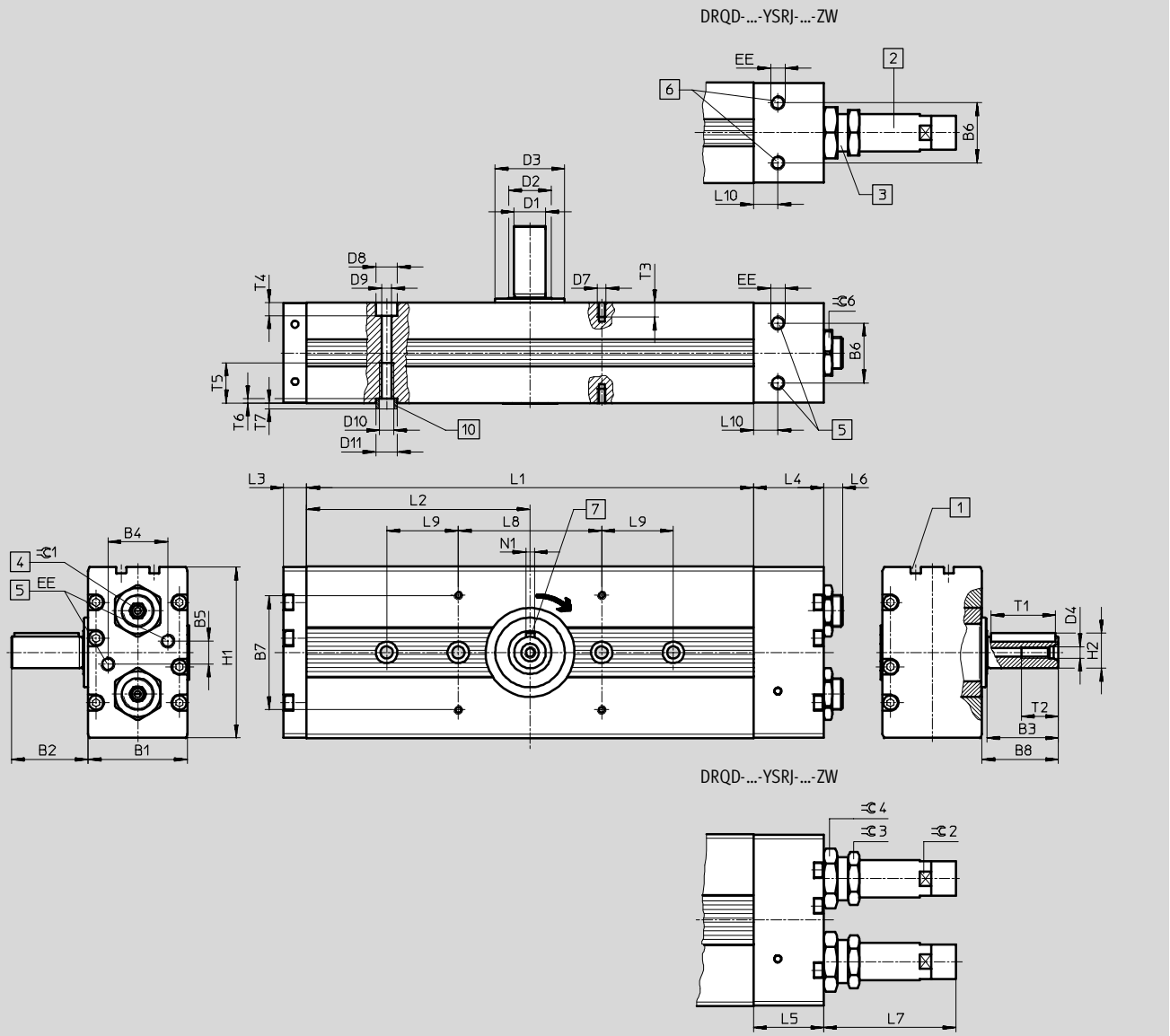
Dimensions – Variant ZW

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

Spigot shaft

Swivel drives
Semi-rotary rack and pinion drives

4.2



- 1 Sensor slots for type SME-/SMT-8- proximity sensors...
- 2 Self-adjusting shock absorbers for end-position cushioning
- 3 Adjustable sleeve for end-position adjustment for type DRQD-...-YSRJ
- 4 Internal hex-head screw for end-position adjustment with integral regulating screw for end-position cushioning
- 5 Model PPVJ: Both air connections on one end cap, optionally at front or side.
- 6 Model YSRJ: Both air connections on one end cap, at side only.
- 7 Woodruff key position at 0°
- 10 Centring sleeves (2 ea. included in scope of delivery)

Twin-piston rotary actuators DRQD-40 ... 50

Data sheet

Dimensions – Variant ZW																Download CAD data → www.festo.com/en/engineering	
\varnothing	Swivel angle [°]	B1	B2	B3	B4	B5	B6	B7	B8	D1 \varnothing g6	D2 \varnothing	D3 \varnothing	D4	D7	D8 \varnothing H13	D9 \varnothing	
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																

\varnothing	Swivel angle [°]	D10	D11 \varnothing H7	EE	H1	H2	L1	L2	L3	L4	L5	L6		L7		L8
												min.	max.	min.	max.	± 0.03
40	90	M10	15	G $\frac{1}{8}$	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	G $\frac{1}{4}$	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								

\varnothing	Swivel angle [°]	L9 ± 0.03	L10	N1 P9	T1	T2 +2	T3	T4	T5	T6	T7	$\approx C1$	$\approx C2$	$\approx C3$	$\approx C4$	$\approx C6$
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														

Twin-piston rotary actuators DRQD-16 ... 32

Data sheet

FESTO

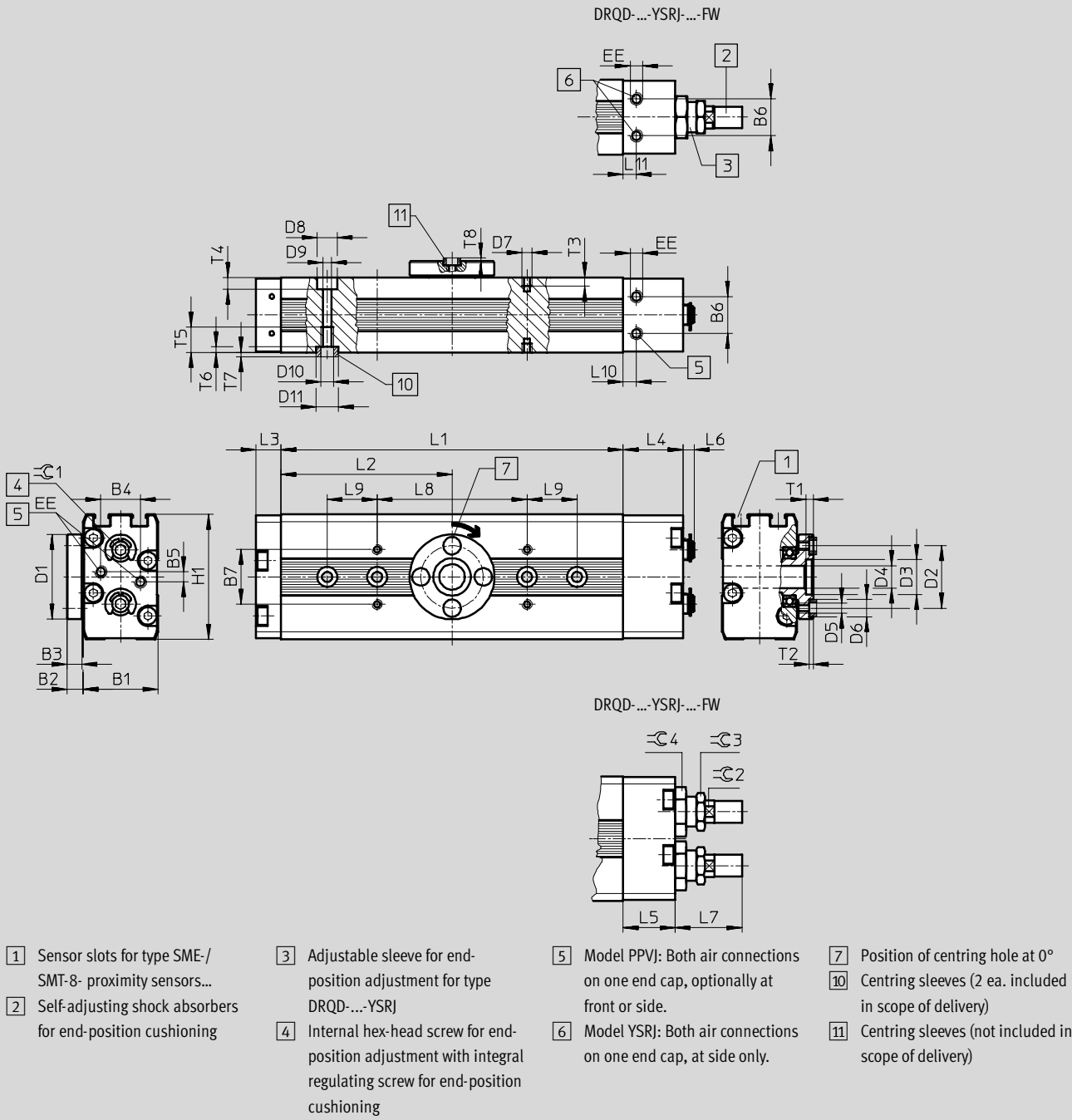
Dimensions – Variant FW

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Flanged shaft

Swivel drives
Semi-rotary rack and pinion drives

4.2



Twin-piston rotary actuators DRQD-16 ... 32



Data sheet

Dimensions – Variant FW									Download CAD data → www.festo.com/en/engineering							
∅	Swivel angle [°]	B1	B2	B3	B4	B5	B6	B7	D1 ∅	D2 ∅ ±0.025	D3 ∅ H8	D4 ∅	D5	D6 ∅ H7	D7	D8 ∅ 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															

∅	Swivel angle [°]	D9 ∅	D10	D11 ∅ H7	EE	H1	L1	L2	L3	L4	L5	L6		L7		L8 ±0.03
												min.	max.	min.	max.	
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	G $\frac{1}{8}$	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								

∅	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 rotary actuators DRQD-40 ... 50

Data sheet

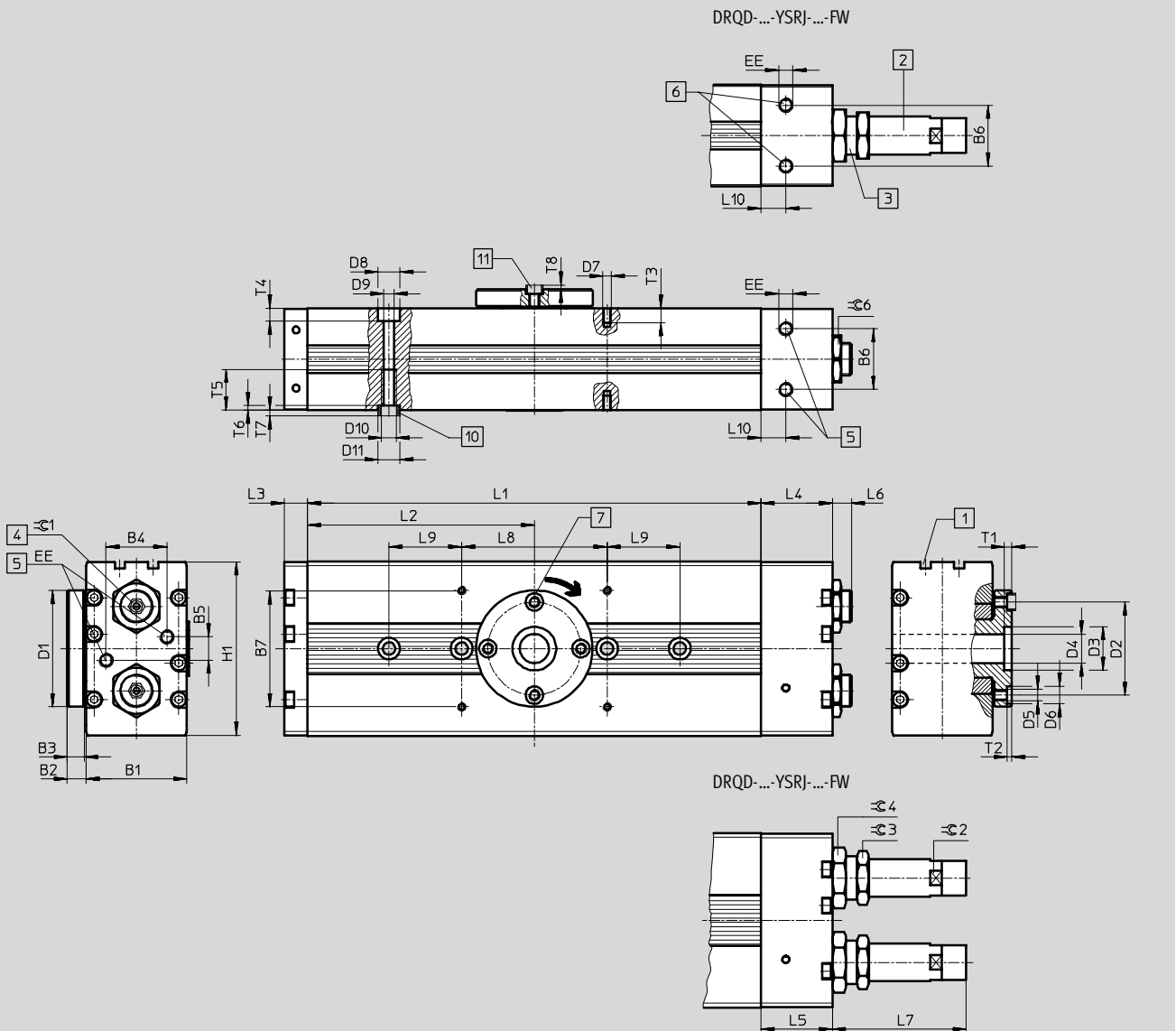
Dimensions – Variant FW

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

Flanged shaft

Swivel drives
Semi-rotary rack and pinion drives

4.2



- 1 Sensor slots for type SME-/SMT-8- proximity sensors...
- 2 Self-adjusting shock absorbers for end-position cushioning
- 3 Adjustable sleeve for end-position adjustment for type DRQD-...-YSRJ
- 4 Internal hex-head screw for end-position adjustment with integral regulating screw for end-position cushioning
- 5 Model PPVJ: Both air connections on one end cap, optionally at front or side.
- 6 Model YSRJ: Both air connections on one end cap, at side only.
- 7 Woodruff key position at 0°
- 10 Centring sleeves (2 ea. included in scope of delivery)

Twin-piston rotary actuators DRQD-40 ... 50

Data sheet

Dimensions – Variant FW																Download CAD data → www.festo.com/en/engineering	
\varnothing	Swivel angle [°]	B1	B2	B3	B4	B5	B6	B7	D1 \varnothing	D2 \varnothing ±0.025	D3 \varnothing H7	D4	D5	D6 \varnothing H7	D7	D8 \varnothing 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																

\varnothing	Swivel angle [°]	D9 \varnothing	D10	D11 \varnothing 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							

\varnothing	Swivel angle [°]	L8 ±0.03	L9 ±0.03	L10	T1	T2	T3	T4	T5	T6	T7	\approx C1	\approx C2	\approx C3	\approx C4	\approx 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													

Twin-piston rotary actuators DRQD-16 ... 32



Data sheet

Dimensions – Variant Z1																Download CAD data → www.festo.com/en/engineering	
∅	Swivel angle [°]	B1	B2	B3	B4	B5	B6	B7	B10	B11	B12	D7	D8	D9	D10	D11	
													∅ 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																

∅	Swivel angle [°]	EE	H1	L1	L2	L4	L5	L6		L7		L8	L9	L10	L11
								min.	max.	min.	max.				
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	G $\frac{1}{8}$	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		

∅	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

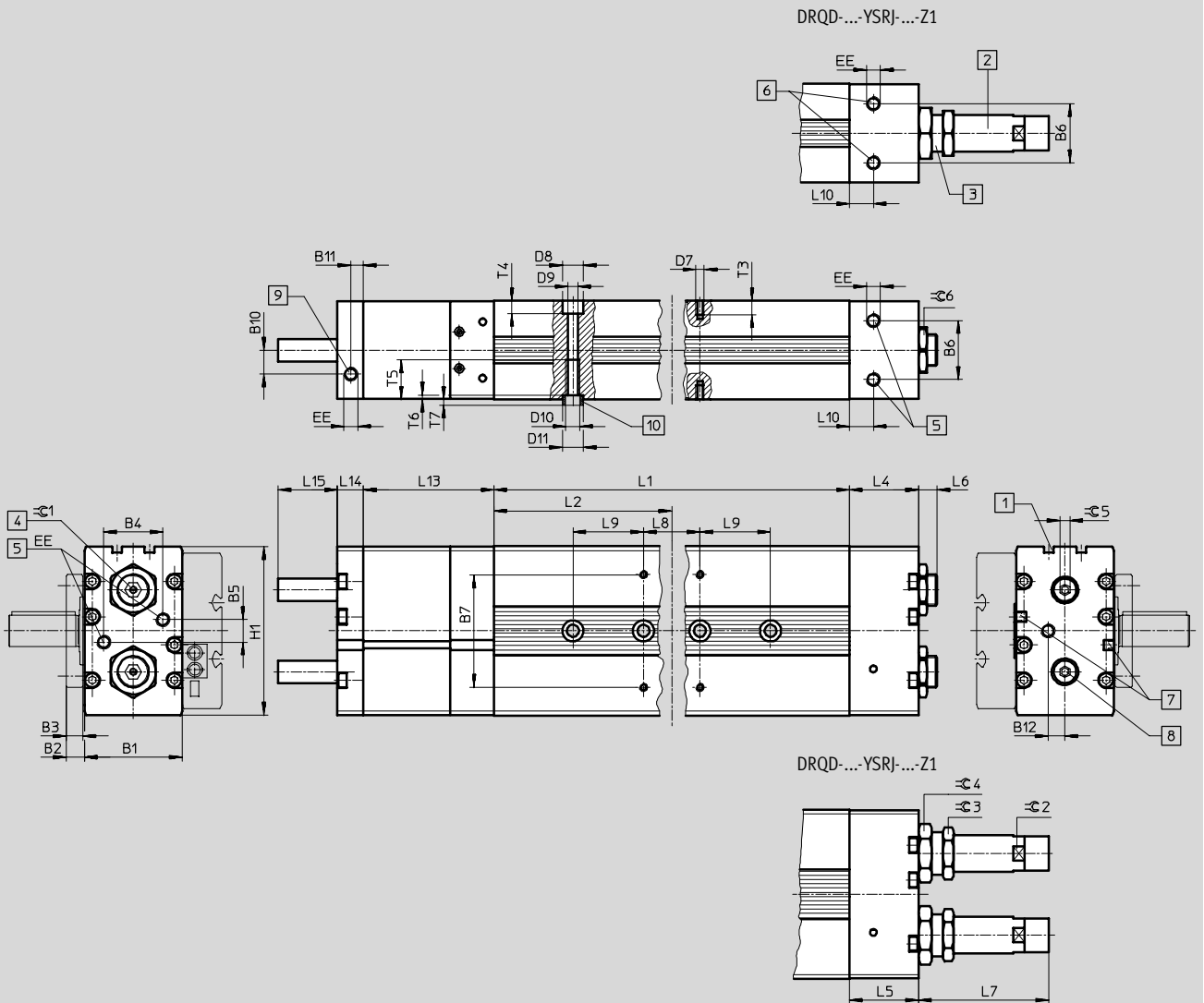
Twin-piston rotary actuators DRQD-40 ... 50

Data sheet

Dimensions – Variant Z1

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

Mid-position module (air throughfeed SD... is optional)



- 1 Sensor slots for type SME-/SMT-8-... proximity sensors for end position sensing
- 2 Self-adjusting shock absorbers for end-position cushioning
- 3 Adjustable sleeve for end-position adjustment for type DRQD-...-YSRJ
- 4 Internal hex-head screw for end-position adjustment with integral regulating screw for end-position cushioning
- 5 Model PPVJ: Both air connections on one end cap, optionally at front or side.
- 6 Model YSRJ: Both air connections on one end cap, at side only.
- 7 Sensor slots for type SME-/SMT-8-... proximity sensors for mid-position sensing
- 8 Internal hex-head screw for mid-position adjustment (slightly recessed).
- 9 Air connection for mid-position module at cap, alternately at side or front.
- 10 Centring sleeves (2 ea. included in scope of delivery)

Swivel drives
Semi-rotary rack and pinion drives
4.2

Twin-piston rotary actuators DRQD-40 ... 50

Data sheet

Dimensions – Variant Z1 Download CAD data → www.festo.com/en/engineering

\varnothing	Swivel angle [°]	B1	B2	B3	B4	B5	B6	B7	B10	B11	B12	D7	D8	D9	D10
													\varnothing H13	\varnothing	
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														

\varnothing	Swivel angle [°]	D11 \varnothing 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	

\varnothing	Swivel angle [°]	L13	L14	L15		T3	T4	T5	T6	T7	$\approx C1$	$\approx C2$	$\approx C3$	$\approx C4$	$\approx C5$	$\approx C6$
				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															

Twin-piston rotary actuators DRQD-16 ... 32

Data sheet



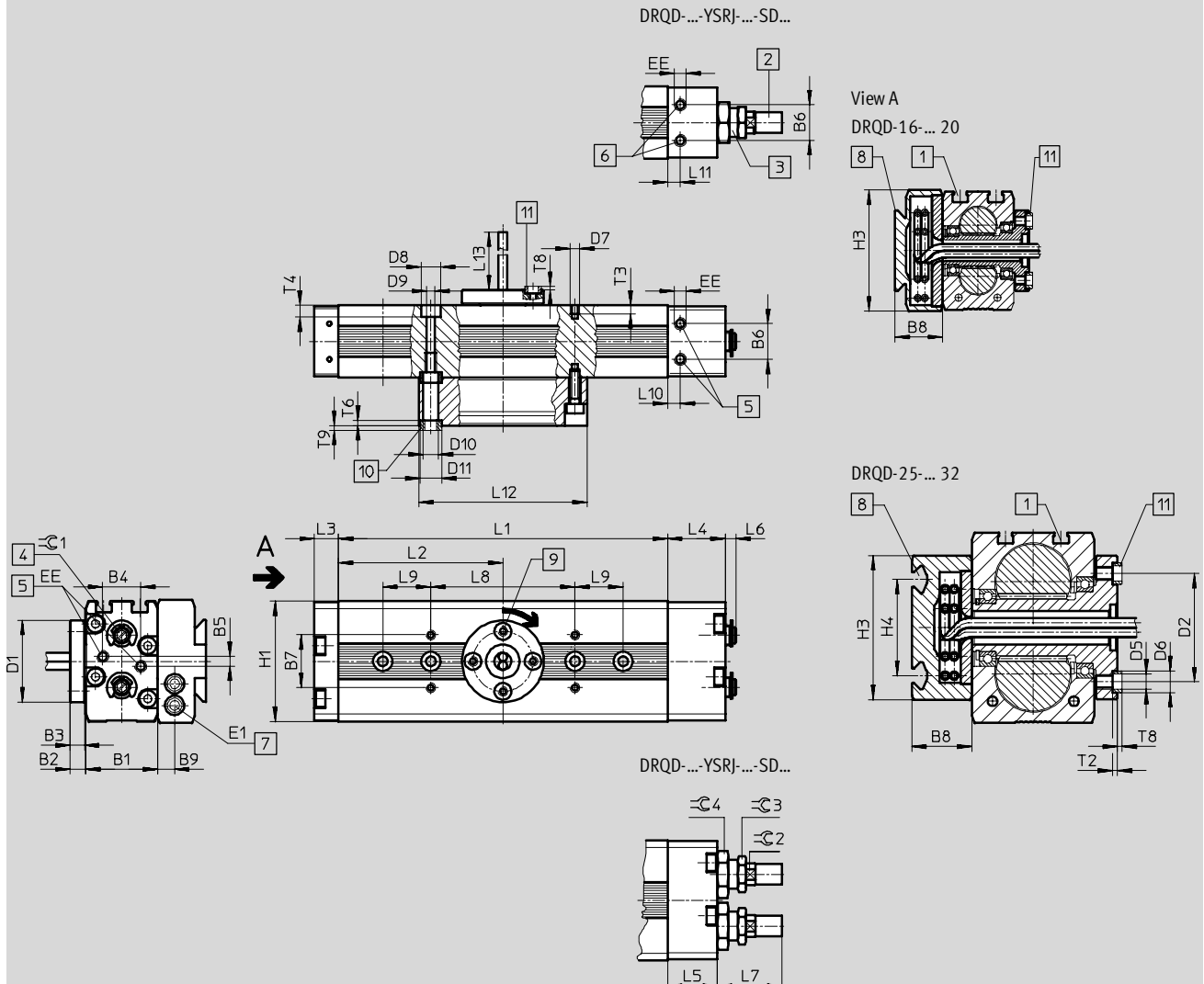
Dimensions – Variant SD...

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

Flanged shaft with air throughfeed

Swivel drives
Semi-rotary rack and pinion drives

4.2



- 1 Sensor slots for type SME-/SMT-8- proximity sensors...
- 2 Self-adjusting shock absorbers for end-position cushioning
- 3 Adjustable sleeve for end-position adjustment for type DRQD-...-YSRJ
- 4 Internal hex-head screw for end-position adjustment with integral regulating screw for end-position cushioning
- 5 Model PPVJ: Both air connections on one end cap, optionally at front or side.
- 6 Model YSRJ: Both air connections on one end cap, at side only.
- 7 Supply port for air throughfeed
- 8 Mounting option with dovetail profile (for \varnothing 16 to 20 mm) or slot nut profile (grid dimensions 40 mm for \varnothing 25 to 32 mm)
- 9 Position of centring hole at 0°
- 10 Centring sleeves (2 ea. included in scope of delivery)
- 11 Centring sleeves (not included in scope of delivery)

Twin-piston rotary actuators DRQD-16 ... 32

Data sheet



Dimensions – Variant SD...																	Download CAD data → www.festo.com/en/engineering	
∅	Swivel angle [°]	B1	B2	B3	B4	B5	B6	B7	B8	B9	D1 ∅	D2 ∅ ±0.025	D5	D6 ∅ H7	D7	D8 ∅ H13	D9 ∅	
16	90	30	6.5	6	17.8	4	14.8	22	20	9.6	34	25	M4	7	M4	8	4.2	
	180																	
	360																	
20	90	36	6.5	6	21.8	4	19.8	26	20	9.6	38	28	M4	7	M4	8	4.2	
	180																	
	360																	
25	90	42	9.5	9	24.8	4	24.8	30	25	10	48	34	M6	9	M5	10	5.3	
	180																	
	360																	
32	90	51	9.5	9	29.8	2	29.8	36	25	10	58	45	M6	9	M5	10	5.3	
	180																	
	360																	

∅	Swivel angle [°]	D10 ∅ H13	D11 ∅ H7	EE	E1 ∅	H1	H3	H4	L1	L2	L3	L4	L5	L6		L7	
														min.	max.	min.	max.
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							

∅	Swivel angle [°]	L8 ±0.03	L9 ±0.03	L10	L11	L12	L13 min.	T2	T3	T4	T6	T8	T9	≈C1	≈C2	≈C3	≈C4
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														

Twin-piston rotary actuators DRQD-40 ... 50

Data sheet

Dimensions – Variant SD...

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Flanged shaft with air throughfeed

Swivel drives
Semi-rotary rack and pinion drives

4.2

DRQD-...-YSRJ-...-SD...

DRQD-...-YSRJ-...-SD...

SD62
SD64

SD48

DRQD-...-YSRJ-...-SD...

1 Sensor slots for type SME-/SMT-8- proximity sensors...

2 Self-adjusting shock absorbers for end-position cushioning

3 Adjustable sleeve for end-position adjustment for type DRQD-...-YSRJ

4 Internal hex-head screw for end-position adjustment with integral regulating screw for end-position cushioning

5 Model PPVJ: Both air connections on one end cap, optionally at front or side.

6 Model YSRJ: Both air connections on one end cap, at side only.

7 Supply port for air throughfeed

8 Mounting option with slot nut profile (grid dimensions 40 mm)

9 Position of centring hole at 0°

10 Centring sleeves (2 ea. included in scope of delivery)

11 Centring sleeves (not included in scope of delivery)

Twin-piston rotary actuators DRQD-40 ... 50

Data sheet

Dimensions – Variant SD...			Download CAD data → www.festo.com/en/engineering																	
\varnothing	Swivel angle [°]	Variant	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	D1 \varnothing	D2 \varnothing	D3 \varnothing	D4 \varnothing	D5	D6 \varnothing	D7	D8 \varnothing
													± 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								

\varnothing	Swivel angle [°]	Variant	D9 \varnothing	D10 \varnothing	D11 \varnothing	EE	E1	H1	H3	L1	L2	L3	L4	L5	L6		L7	
															min.	max.	min.	max.
40	90	SD62/SD64	8.5	M10	15	G $\frac{1}{8}$	$\frac{6}{4}$	120	110	146.8	73.4	16	49	41.5	5	14.6	85.1	96.4
		SD48																
	180	SD62/SD64	8.5	M10	15	G $\frac{1}{8}$	$\frac{6}{4}$	120	110	201.8	100.9	16	49	41.5	5	14.6	85.1	96.4
		SD48																
	360	SD62/SD64	8.5	M10	15	G $\frac{1}{8}$	$\frac{6}{4}$	120	110	311.8	155.9	16	49	41.5	5	14.6	85.1	96.4
		SD48																
50	90	SD62/SD64	8.5	M10	15	G $\frac{1}{4}$	$\frac{6}{4}$	144	110	191.4	95.7	18	64	55	8	20.7	107.8	120.6
		SD48																
	180	SD62/SD64	8.5	M10	15	G $\frac{1}{4}$	$\frac{6}{4}$	144	110	262.8	131.4	18	64	55	8	20.7	107.8	120.6
		SD48																
	360	SD62/SD64	8.5	M10	15	G $\frac{1}{4}$	$\frac{6}{4}$	144	110	405.8	202.9	18	64	55	8	20.7	107.8	120.6
		SD48																

\varnothing	Swivel angle [°]	Variant	L8	L9	L10	L11	L12	T1	T2	T3	T4	T5	T6	T7	T8	$\approx C1$	$\approx C2$	$\approx C3$	$\approx C4$	$\approx C6$
			± 0.03	± 0.03						min.										
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																		

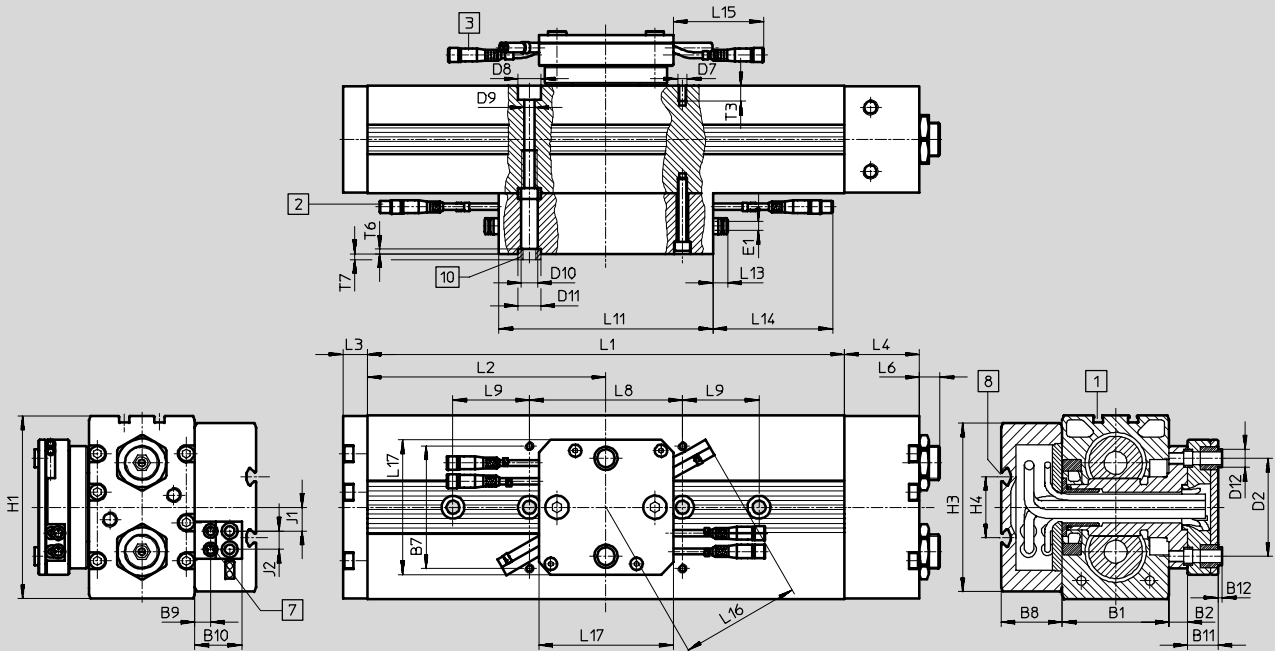
Twin-piston rotary actuators DRQD-40 ... 50

Data sheet

Dimensions – Variant E644

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Flanged shaft with air throughfeed



- 1 Sensor slots for type SME-/SMT-8- proximity sensors...
- 2 Plug M8x1
- 3 Socket M8x1
- 7 Supply port for air throughfeed for 6 mm O.D. tubing
- 8 Mounting option with slot nut profile (grid dimensions 40 mm)
- 10 Centring sleeves (2 pieces included in scope of delivery)

\varnothing	Swivel angle [°]	B1	B2	B7	B8	B9	B10	B11	B12	D2	D7	D8	D9	D10	D11	E1	H1	H3
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																	

\varnothing	Swivel angle [°]	H4	L1	L2	L3	L4	L6		L8	L9	L11	L13	L14	L15	L16	L17	T3	T6	T7	
							min.	max.												
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																50
	360		311.8	155.9																50
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																50
	360		405.8	202.9																50

Twin-piston rotary actuators DRQD-16 ... 50

Data sheet

Precision gripper

HGPP-...-A



- Precision guides
- High torsional loads
- 6 sizes
- 1 / 7.6-2

T-slot grippers

HGPT-...-A



- Sturdy T-slot
- Sealing air
- 7 sizes
- 1 / 7.6-2

Long-stroke gripper

HGPL-...-A



- Sturdy T-slot
- Opening stroke adjustable
- 3 sizes
- 1 / 7.7-34

Micro grippers

HGPM-...-EO-G8



- Gripper jaws normally open
- 1 / 7.4-2

HGPM-...-EZ-G8



- Gripper jaws normally closed
- 1 / 7.4-2

HGWM-...-EO-G8



- Gripper jaws normally open
- 1 / 7.4-2

HGWM-...-EZ-G8



- Gripper jaws normally closed
- 1 / 7.4-2

Standard grippers

HGD-...-A



- Highest precision
- High retention force
- 3 sizes
- 1 / 7.5-2

HGP-...-A-B



- High performance relative to force-stroke ratio
- Maximum repetition accuracy
- 6 sizes
- 1 / 7.5-2

HGR-...-A



- Constant gripping torque over the entire angle range
- 180° gripper jaw opening angle
- 5 sizes
- 1 / 7.5-2

HGW-...-A



- Constant gripping torque over the entire angle range
- 40° gripper jaw opening angle
- 5 sizes
- 1 / 7.5-2

Ordering Data – Basic version

DRQD	\varnothing [mm]	Swivel angle [°]	Part No.	Type
	16	180	540 454	DRQD-16-180-YSRJ-A-AL-FW
			540 455	DRQD-16-180-YSRJ-A-AR-FW
			540 456	DRQD-16-180-PPVJ-A-AL-FW
			540 457	DRQD-16-180-PPVJ-A-AR-FW
	20		540 458	DRQD-20-180-YSRJ-A-AL-FW
			540 459	DRQD-20-180-YSRJ-A-AR-FW
			540 460	DRQD-20-180-PPVJ-A-AL-FW
			540 461	DRQD-20-180-PPVJ-A-AR-FW
	25		540 462	DRQD-25-180-YSRJ-A-AL-FW
			540 463	DRQD-25-180-YSRJ-A-AR-FW
			540 464	DRQD-25-180-PPVJ-A-AL-FW
			540 465	DRQD-25-180-PPVJ-A-AR-FW

Twin-piston rotary actuators DRQD-16 ... 50

Ordering data – Modular product system

M Mandatory data →

Module No.	Drive 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				
Drive function	Twin-piston rotary actuator							DRQD	DRQD	
Piston \varnothing [mm]	16	20	25	32	40	50		-...		
Swivel angle (standard)	90°								-90	
Adjusting range +6°/-20° (not preset)	180°								-180	
	360°							[1]	-360	
X swivel angle	1° ... 70°, with centre section 90°							[1]	-...	
Adjusting range $\pm 6^\circ$	100° ... 160°, with centre section 180°							[1]	-...	
Angle preset $\pm 1^\circ$	190° ... 340°, with centre section 360°							[1]	-...	
Cushioning	Adjustable end-position cushioning								-PPVJ	
	Adjustable shock absorbers								-YSRJ	
Position sensing	For proximity sensor								-A	-A
Pneumatic connection	Air connection on left								-AL	
	Air connection on right								-AR	
Output shaft	Spigot shaft							[2]	-ZW	
	Flanged shaft							[3]	-FW	

[1] **360, ...** Not with mid-position Z1.

[2] **ZW** Not with air throughfeed SD32, SD42, SD48, SD62, SD64

[3] **FW** Required for air throughfeed SD32, SD42, SD48, SD62, SD64, E644.

Transfer order code

DRQD - - - - **A** - -

Twin-piston rotary actuators DRQD-16 ... 50

Ordering data – Modular product system

Options		
Mid-position	Flanged shaft with air throughfeed	User documentation
Z1	SD32 SD42 SD48 SD62 SD64 E644	E F S I V B
-	- SD64 -	- B -

Ordering table									
Size	16	20	25	32	40	50	Condi- tions	Code	Enter code
Options	1 mid-position							-Z1	
Flanged shaft with air throughfeed	Dual pneumatic, 3 mm O.D. tubing					-	-	-SD32	
	Dual pneumatic, 4 mm O.D. tubing					-	-	-SD42	
	-	-	-	-	8-off pneumatic, 4 mm O.D. tubing			-SD48	
	-	-	-	-	Dual pneumatic, 6 mm O.D. tubing			-SD62	
	-	-	-	-	4-off pneumatic, 6 mm O.D. tubing			-SD64	
	-	-	-	-	4-off pneumatic, 6 mm O.D. tubing electrical 4-off cable			-E644	
Alternative language user documentation (standard is German)	English							-E	
	French							-F	
	Spanish							-S	
	Italian							-I	
	Swedish							-V	
	Express waiver - no user documentation to be included (already available)							-B	

Swivel drives
Semi-rotary rack and pinion drives
4.2

Transfer order code

- -






Twin-piston rotary actuators DRQD

Accessories








Swivel drives
Semi-rotary rack and pinion drives
4.2



Ordering data – Proximity sensor for slot 10, magneto-resistive Technical data → 1 / 10.2-47

	Mounting	Switch output	Electrical connection		Cable length [m]	Connection direction	Part No.	Type
			Cables	M8 plug				
NO contact								
	Insertable from above	PNP	3-wire	–	2.5	In-line	525 915	SMT-10F-PS-24V-K2,5L-OE 
			–	3-pin	0.3	In-line	525 916	SMT-10F-PS-24V-K0,3L-M8D 
			–	3-pin	0.3	At right-angle	526 675	SMT-10F-PS-24V-K0,3Q-M8D 
	Insertable from end	PNP	–	3-pin	0.3	In-line	173 220	SMT-10-PS-SL-LED-24
			3-wire	–	2.5		173 218	SMT-10-PS-KL-LED-24

Ordering data – Proximity sensor for slot 10, magnetic reed Technical data → 1 / 10.2-50

	Mounting	Electrical connection		Cable length [m]	Connection direction	Part No.	Type	
		Cables	M8 plug					
NO contact								
	Insertable from above	–	3-pin	0.3	In-line	525 914	SME-10F-DS-24V-K0,3L-M8D 	
		3-wire	–	2.5	In-line	525 913	SME-10F-DS-24V-K2,5L-OE 	
		2-wire	–	–	–	526 672	SME-10F-ZS-24V-K2,5L-OE 	
	Insertable from end	–	3-pin	0.3	In-line	173 212	SME-10-SL-LED-24	
		3-wire	–	2.5		173 210	SME-10-KL-LED-24	

Ordering data – Plug sockets Technical data → 1 / 10.2-100




	Mounting	Switch output		Connection	Cable length [m]	Part No.	Type	
		PNP	NPN					
Straight socket								
	M8 union nut	■	■	3-pin	2.5	159 420	SIM-M8-3GD-2,5-PU	
		■	■		5	159 421	SIM-M8-3GD-5-PU	
Angled plug socket								
	M8 union nut	■	■	3-pin	2.5	159 422	SIM-M8-3WD-2,5-PU	
		■	■		5	159 423	SIM-M8-3WD-5-PU	




 Core Range





Twin-piston rotary actuators DRQD

Accessories

FESTO

Ordering data – Proximity sensor for slot 8, magneto-resistive							Technical data → 1 / 10.2-13		
	Mounting	Switch output	Electrical connection			Cable length [m]	Part No.	Type	
			Cables	M8 plug	M12 plug				
NO contact									
	Insertable from above	PNP	3-wire	–	–	2.5	525 898	SMT-8F-PS-24V-K2,5-OE	☉
				NPN	–		–	525 909	SMT-8F-NS-24V-K2,5-OE
		–	2-wire	–	–	2.5	525 908	SMT-8F-ZS-24V-K2,5-OE	☉
		PNP	–	3-pin	–		0.3	525 899	SMT-8F-PS-24V-K0,3-M8D
		NPN	–	–	–	0.3	525 910	SMT-8F-NS-24V-K0,3-M8D	☉
		PNP	–	–	3-pin		0.3	525 900	SMT-8F-PS-24V-K0,3-M12
	Insertable, flush with the cylinder profile	PNP	3-wire	–	–	2.5	175 436	SMT-8-PS-K-LED-24-B	
				–	3-pin		–	0.3	175 484
NC contact									
	Insertable from above	PNP	3-wire	–	–	7.5	525 911	SMT-8F-PO-24V-K7,5-OE	☉

Ordering data – Proximity sensor for slot 8, magnetic reed							Technical data → 1 / 10.2-16	
	Mounting	Electrical connection			Cable length [m]	Part No.	Type	
		Cables	M8 plug					
NO contact								
	Insertable from above	3-wire	–	–	2.5	525 895	SME-8F-DS-24V-K2,5-OE	☉
			–	–	5.0	525 897	SME-8F-DS-24V-K5,0-OE	☉
		2-wire	–	–	2.5	525 907	SME-8F-ZS-24V-K2,5-OE	☉
			–	3-pin	–	0.3	525 896	SME-8F-DS-24V-K0,3-M8D
	Insertable, flush with the cylinder profile	3-wire	–	–	2.5	150 855	SME-8-K-LED-24	
			–	3-pin	–	0.3	150 857	SME-8-S-LED-24
NC contact								
	Insertable from above	3-wire	–	–	7.5	525 906	SME-8F-DO-24V-K7,5-OE	☉

Ordering data – Plug sockets						Technical data → 1 / 10.2-100	
	Mounting	Switch output		Connection	Cable length [m]	Part No.	Type
		PNP	NPN				
Straight socket							
	M8 union nut	■	■	3-pin	2.5	159 420	SIM-M8-3GD-2,5-PU
					5	159 421	SIM-M8-3GD-5-PU
	M12 union nut	■	■	3-pin	2.5	159 428	SIM-M12-3GD-2,5-PU
					5	159 429	SIM-M12-3GD-5-PU
Angled plug socket							
	M8 union nut	■	■	3-pin	2.5	159 422	SIM-M8-3WD-2,5-PU
					5	159 423	SIM-M8-3WD-5-PU
	M12 union nut	■	■	3-pin	2.5	159 430	SIM-M12-3WD-2,5-PU
					5	159 431	SIM-M12-3WD-5-PU

Ordering data – Slot cover for slot type 8			
	Mounting	Length [m]	Part No. Type
	Insertable from above	2x 0.5	151 680 ABP-5-S

Core Range

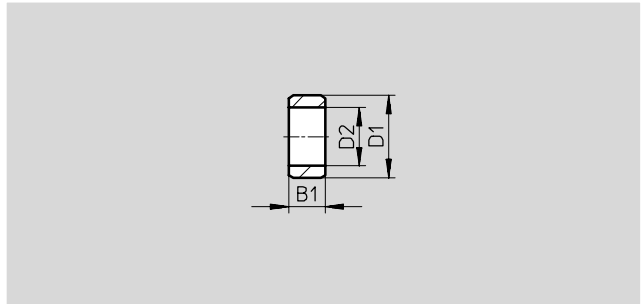
Twin-piston rotary actuators DRQD

Accessories



Centring sleeves ZBH

Material:
Steel, corrosion resistant



Dimensions and ordering data								
For \varnothing	B1	D1	D2	CRC ¹⁾	Weight	Part No.	Type	PU ²⁾
	-0.2	\varnothing h7	\varnothing		[g]			
For centring the drive on attachments								
6	3	7	5.3	2	1	186 717	ZBH-7	10
8 ... 32	4	9	6.4	2	1	150 927	ZBH-9	10
40/50	6	15	12.4	2	3	191 409	ZBH-15	10
For centring attachments on the flanged shaft FW								
16 ... 32	3	7	5.3	2	1	186 717	ZBH-7	10
40/50	5	12	10.3 +0.1	2	1	189 653	ZBH-12	10

- Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.
- Packaging unit quantity

Ordering data – Rotary push-in fittings				Technical data → Volume 3	
	For \varnothing	Brief description	Design	Part No.	Type
	6 ... 12	with ball bearing, for standard O.D. tubing	Straight	153 526	QSR-M5-4
	Only in combination with HS hollow bolt		L-shape	153 529	QSRL-M5-4

Core Range