

Twin piston semi-rotary drives DRRD

FESTO



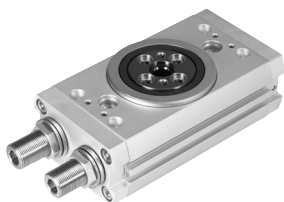
Key features

At a glance

- Rack-and-pinion principle
- Extremely accurate in the end positions
- Very high load bearing capacity
- Very good axial run-out at the flange shaft
- High mass moments of inertia
- Low backlash and good dynamic response
- Splash-proof design IP65 in accordance with EN 60529
- Defined interfaces
- Supply port on one side
- Choice of mounting options
- Ideal for use in handling applications

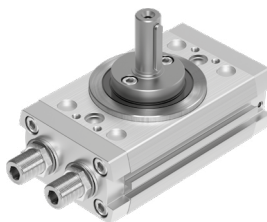
Wide choice of variants

Flanged shaft



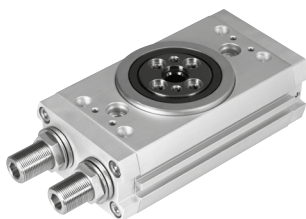
- Size 8 ... 63
- Torque: 0.2 ... 112 Nm
- Swivel angle: 0 ... 180°

Drive shaft adapter



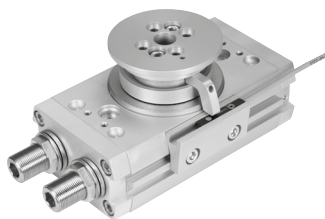
- Size 12 ... 40
- Torque: 0.8 ... 24.1 Nm
- Swivel angle: 0 ... 180°
- Suitable for ATEX
- Can be ordered as an accessory

Position sensing



- Size 8 ... 12
 - C-slot for proximity switches SMT/SME-10
- Size 16 ... 63
 - T-slot for proximity switches SMT/SME-8

External position sensing (sensor mounting)



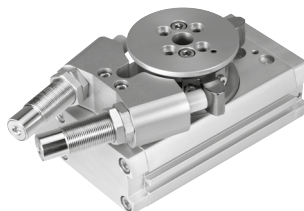
- Size 16 ... 63
- Position sensing possible directly at the flange shaft
- Inductive proximity sensors SIES can be used in conjunction with external position sensing

Cushioning



- Size 12 ... 63
- Five cushioning types can be selected:
 - Elastic cushioning with metal end position (P)
 - Shock absorber (Y9)
 - Shock absorber, hard (Y10)
 - Shock absorber, external (Y12)
 - Shock absorber, soft (Y14)

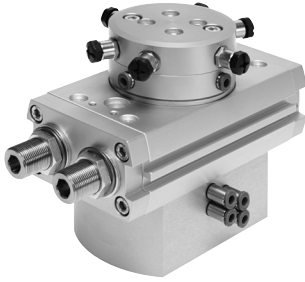
External cushioning



- Size 12 ... 63
- The full torque can be realised in the end positions in combination with external cushioning

Key features

Energy through-feed



- Size 16 ... 63
- The energy through-feed can be used to transfer electrical signals or compressed air through the hollow shaft. This enables fast and easy supply of the parts connected to the flange (e.g. gripper)

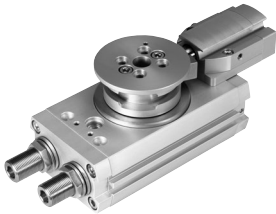
Also suitable for IO-Link signal data transfer.

Intermediate position



- Size 16 ... 50
- The semi-rotary drive can additionally be positioned at 90° using the intermediate-position module.
- The intermediate position can be approached from both directions
- The cushioning for the intermediate position corresponds to the cushioning for the basic drive. Except in the case of cushioning Y12, when shock absorbers Y9 are used

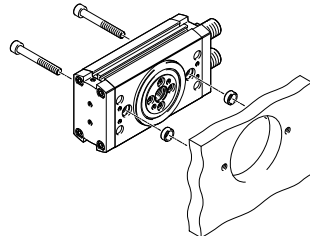
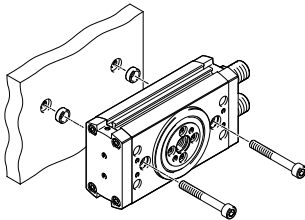
End-position locking



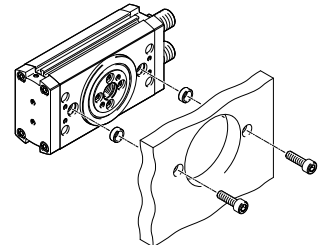
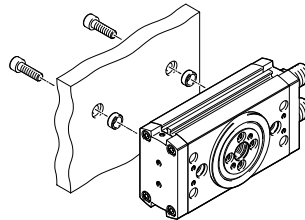
- Size 16 ... 63
- Mechanical lock in the end positions to prevent unwanted movement when unpressurised

Mounting options

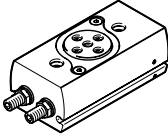
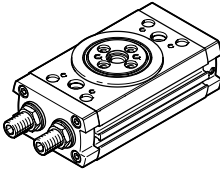
Via through-holes



Via thread in the housing profile



Product range overview

Function	Version	Size	Swivel angle	Energy through-feed					
			[°]	P2	P2E2	P4	P4E6	P8	P8E8
Double-act- ing	DRRD-8 ... 12								
		8	Max. 200	–	–	–	–	–	–
		10	Max. 200	–	–	–	–	–	–
		12	Max. 200	–	–	–	–	–	–
	DRRD-16 ... 63								
		16	Max. 200	■	■	–	–	–	–
		20	Max. 200	■	■	–	–	–	–
		25	Max. 200	–	–	■	■	–	–
		32	Max. 200	–	–	■	■	–	–
		35	Max. 200	–	–	■	■	–	–
		40	Max. 200	–	–	–	–	■	■
		50	Max. 200	–	–	–	–	■	■
		63	Max. 200	–	–	–	–	■	■

Product options

Energy through-feed

- P2 Pneumatic, 2 ducts
- P2E2 Pneumatic, 2 ducts; electric, 2 signals
- P4 Pneumatic, 4 ducts
- P4E6 Pneumatic, 4 ducts; electric, 6 signals
- P8 Pneumatic, 8 ducts
- P8E8 Pneumatic, 8 ducts; electric, 8 signals

Product range overview

Function	Size	Cushioning					Position sensing	EU certification	Intermediate position	End-position locking	External sensor mounting	Splash-proof design	→ Page Internet
	P	Y9	Y10	Y12	Y14								
Double-acting	DRRD-8 ... 12												
	8	■	–	–	–	–	■	–	–	–	–	–	6
	10	■	–	–	–	–	■	–	–	–	–	–	
	12	■	■	–	■	–	■	–	–	–	–	–	
	DRRD-16 ... 63												
	16	■	■	–	■	■	■	■	■	■	■	■	20
	20	■	■	–	■	■	■	■	■	■	■	■	
	25	■	■	■	■	■	■	■	■	■	■	■	
	32	■	■	–	■	■	■	■	■	■	■	■	
	35	■	■	■	■	■	■	■	■	■	■	■	
	40	■	■	■	■	■	■	■	■	■	■	■	
	50	–	■	■	■	–	■	■	■	■	■	■	
	63	–	■	■	■	–	■	■	–	■	■	■	

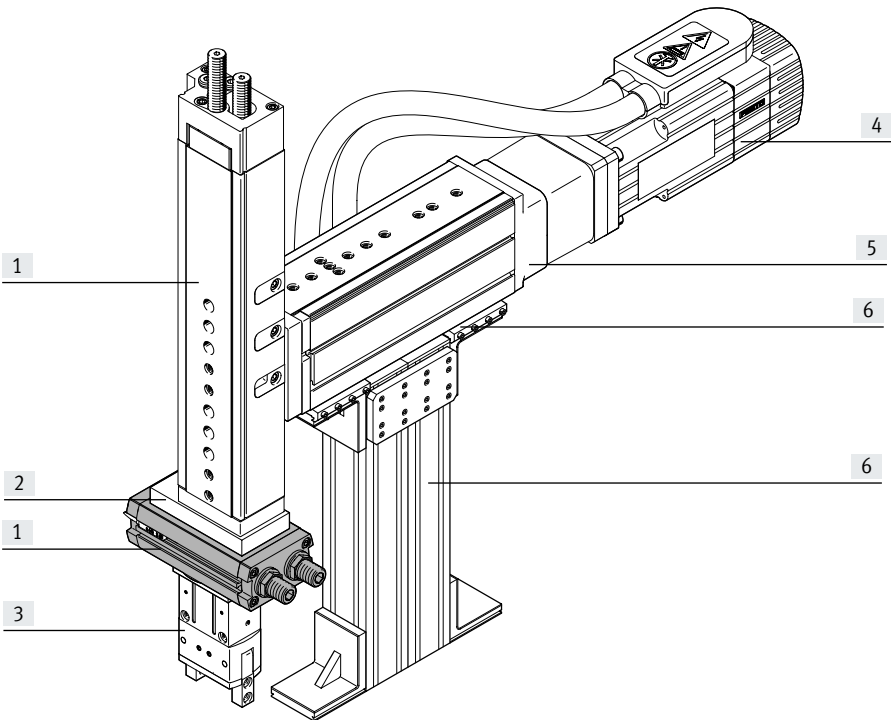
Product options

Cushioning

- P Elastic cushioning at both ends
Y9 Linear shock absorber, self-adjusting at both ends, internal
Y10 Linear shock absorber, self-adjusting at both ends, hard, internal
Y12 Linear shock absorber, self-adjusting at both ends, external
Y14 Linear shock absorber, self-adjusting at both ends, soft, internal

System example

System product for handling and assembly technology



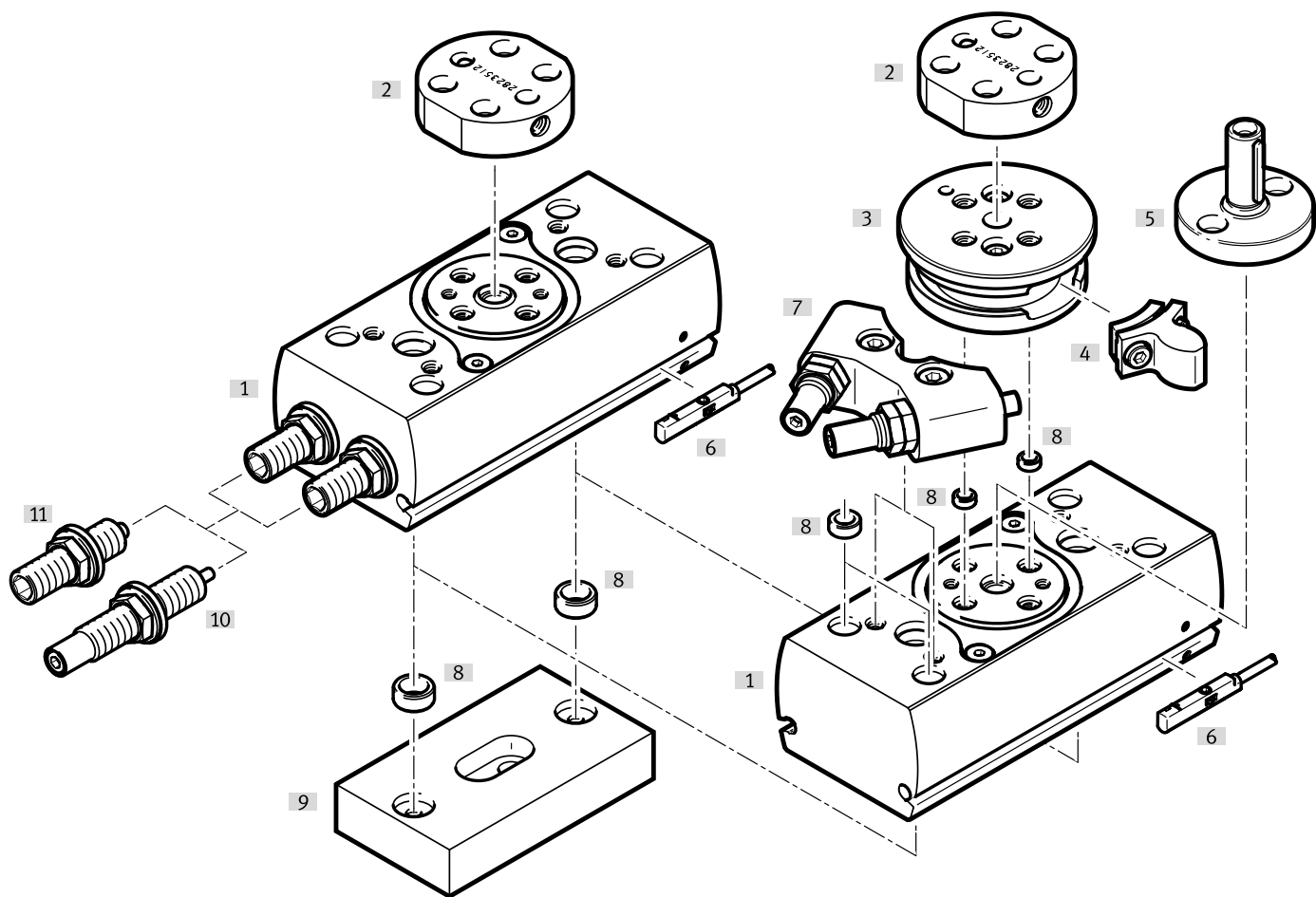
System components and accessories		Description	→ Page/Internet
[1]	Drives	Wide range of combinations possible within handling and assembly technology	drive
[2]	Adapter	For drive/drive and drive/gripper connections	adapter kit
[3]	Gripper	Wide range of variation options within handling and assembly technology	gripper
[4]	Motors	Servo and stepper motors, with or without gear unit	motor
[5]	Axes	Wide range of combinations possible within handling and assembly technology	axis
[6]	Basic components	Profiles and profile connections as well as profile/drive connections	basic component
–	Installation components	For a clear, safe installation of electrical cables and tubes	installation component

Type codes

001	Series	
DRRD	Semi-rotary drive, double piston	
002	Size [mm]	
8	8	
10	10	
12	12	
16	16	
20	20	
25	25	
32	32	
35	35	
40	40	
50	50	
63	63	
003	Nominal swivel angle [°]	
180	180	
004	Output shaft	
FH	Flanged shaft, hollow	
005	Energy through-feed	
	None	
P2	Pneumatic, 2 ducts	
P2E2	Pneumatic, 2 ducts and electric, 2 signals	
P4	Pneumatic, 4 ducts	
P4E6	Pneumatic, 4 ducts and electric, 6 signals	
P8	Pneumatic, 8 ducts	
P8E8	Pneumatic, 8 ducts and electrical, 8 signals	

006	Cushioning	
P	Elastic cushioning rings/plates on both sides	
Y9	Shock absorber, self-adjusting, linear, at both ends	
Y10	Shock absorber, self-adjusting, linear at both ends, hard	
Y12	Shock absorber, self-adjusting, linear at both ends, external	
Y14	Shock absorber, self-adjusting, linear on both sides, soft	
007	Position sensing	
A	For proximity sensor	
008	EU certification	
	None	
EX4	II 2GD	
009	Intermediate position	
	None	
PS1	1 intermediate position	
010	End-position locking	
	None	
E1	Both sides	
011	Sensor mounting, external	
	None	
R	Mounting rail for sensors	
012	Version	
	Standard	
SG	Protected against splash water	

Peripherals overview

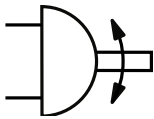


Peripherals overview

Variants, mounting components and accessories		Description	Size			→ Page/Internet
			8	10	12	
[1]	Semi-rotary drive DRRD	Double-acting	■	■	■	6
[2]	Adapter kit DHAA	- Connecting plate between semi-rotary drive and gripper - Included in the scope of delivery: 2 centring sleeves and screws	■	■	■	gripper
[3]	Flange module	Required for mounting the component [4]	–	–	■	18
[4]	Stop element	- Serves as an end stop in combination with external shock absorbers (Y12) - Two stop elements are included in the scope of delivery of external shock absorbers (Y12)	–	–	■	18
[5]	Drive shaft adapter DARF-Q11	- The interface corresponds to that of the semi-rotary drive DRQD - The drive shaft adapter should only be mounted directly onto the flange shaft - Suitable for ATEX	–	–	■	56
[6]	Proximity switch SMT/SME-10	For sensing the piston position	■	■	■	61
[7]	Shock absorber, external Y12	- Shock absorber, linear, self-adjusting at both ends, external - Included in the scope of delivery: [3], 2x [4], [10]	–	–	■	19
[8]	Centring sleeve ZBH	For centring attachments (two centring sleeves for mounting the semi-rotary drive included in the scope of delivery)	■	■	■	60
[9]	Adapter kit DHAA	Connecting plate between semi-rotary drive and drive	■	■	■	adapter
[10]	Shock absorber Y9	Shock absorber, linear, self-adjusting at both ends	–	–	■	19
[11]	Shock absorber P	Elastic cushioning elements with metal end position, at both ends	■	■	■	19

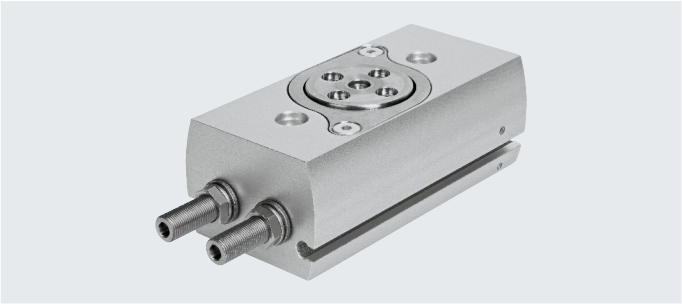
Datasheet

Function



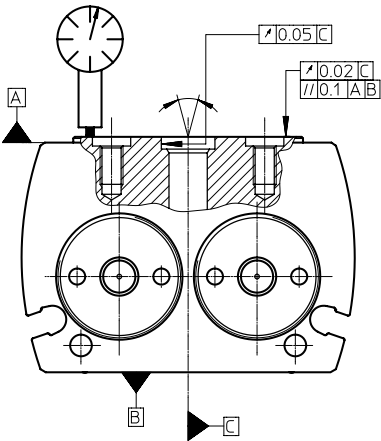
- - Diameter
8 ... 12 mm
- - Torque
0.2 ... 0.8 Nm

- - www.festo.com
- - Repair service



General technical data				
Size	8		10	12
Design	Gear rack/pinion			
Operating mode	Double-acting			
Pneumatic connection	M3		M3	M5
Type of mounting	With through-hole			
	With female thread			
Swivel angle	[°]	180 (→ Page 10)		
Cushioning with fixed stop				
DRRD-...-P	Elastic cushioning, at both ends			
DRRD-...-Y9	–			Linear shock absorber, self-adjusting at both ends
DRRD-...-Y12	–			External linear shock absorber, self-adjusting at both ends
Repetition accuracy	[°]	≤ 0.03		
Axial run-out ¹⁾	[mm]	≤ 0.02		
Max. axial load (static)				
Pulling	[N]	260	260	330
Pushing	[N]	700	1100	1400
Mounting position	Any			

1) Axial run-out in new condition



Datasheet

Operating and environmental conditions		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure		
DRRD-...-P	[MPa]	0.3 ... 0.8
	[bar]	3 ... 8
	[psi]	43.5 ... 116
DRRD-...-Y9/-Y12	[MPa]	0.2 ... 1
	[bar]	2 ... 10
	[psi]	29 ... 145
Ambient temperature	[°C]	-10 ... +60
Storage temperature	[°C]	-20 ... +60

Weight [g]			
Size	8	10	12
DRRD-...-P	155	245	380
DRRD-...-Y9	–	–	385
DRRD-...-Y12	–	–	500

Forces and torques			
Size	8	10	12
Theoretical torque at 0.6 MPa (6 bar, 87 psi) [Nm]	0.2	0.4	0.8
Max. permissible mass moment of inertia			
DRRD-...-P [kgcm ²]	15	20	80
DRRD-...-Y9 [kgcm ²]	–	–	300
DRRD-...-Y12 [kgcm ²]	–	–	300

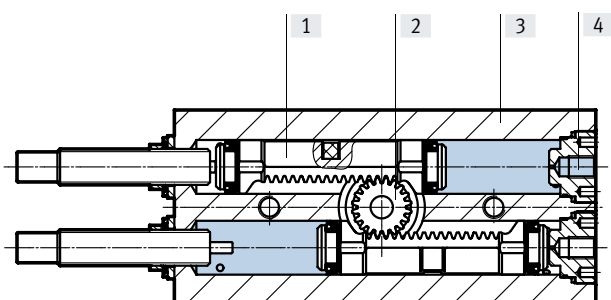


Note

If, in the end positions, a torque which exceeds 50% of the theoretical torque acts against the direction of rotation, no exact end position is guaranteed. This can be avoided by using external shock absorbers (Y12) or a semi-rotary drive with double the torque.

Materials

Sectional view

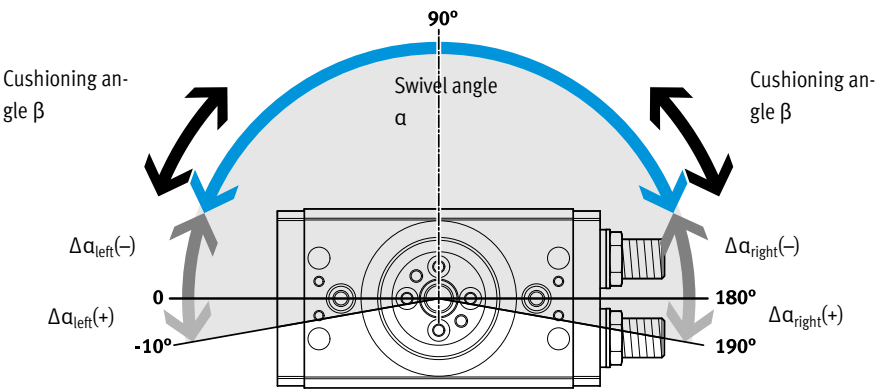


Semi-rotary drive		
[1]	Piston	Copper base alloy
[2]	Flanged shaft	High-alloy stainless steel
[3]	Housing	Smooth-anodised wrought aluminium alloy
[4]	Port plug	High-alloy stainless steel
–	Seals	NBR
	Piston seal	TPE-U(PU)
	Note on materials	RoHS-compliant
		Contains paint-wetting impairment substances
	LABS (PWIS) conformity	VDMA24364-Zone III
	Cleanroom class	Class 5 to ISO 14644-1

Datasheet

Swivel angle

Fundamentally, the following applies:
Swivel angle $\alpha \geq$ cushioning angle β
Swivel angle $\alpha = 180^\circ + \Delta\alpha_{\text{right}} + \Delta\alpha_{\text{left}}$



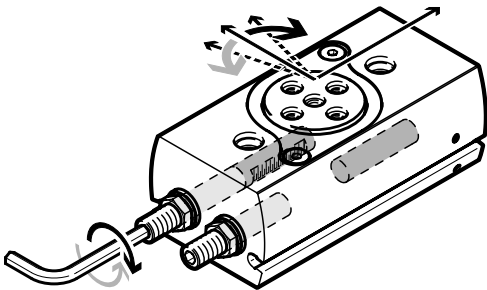
Size		8	10	12
Swivel angle α	[°]	180		
Min. swivel angle $\alpha^{1)}$				
DRRD-...-P	[°]	38	37	32
DRRD-...-Y9	[°]	–	–	48
DRRD-...-Y12	[°]	–	–	20
Max. swivel angle α				
DRRD-...	[°]	200		
DRRD-...-Y12	[°]	–	–	192
Swivel angle adjustment α per side (infinitely adjustable)				
DRRD-...-P	[°]	–100 ... +10		
DRRD-...-Y9	[°]	≥ -100 ... +10		
DRRD-...-Y12	[°]	–	–	–92 ... +6
Cushioning angle α				
DRRD-...-P	[°]	38	37	32
DRRD-...-Y9	[°]	–	–	48
DRRD-...-Y12	[°]	–	–	10

1) It is possible to set smaller swivel angles. However, this reduces the cushioning energy.

Swivel angle adjustment

- Direction of rotation to the right:
- Swivel angle decreases
- Anticlockwise direction of rotation:
- Swivel angle increases

The swivel angle is adjusted via the cushioning components using a hex screwdriver. If possible, the swivel angle should be reduced evenly over both end positions.



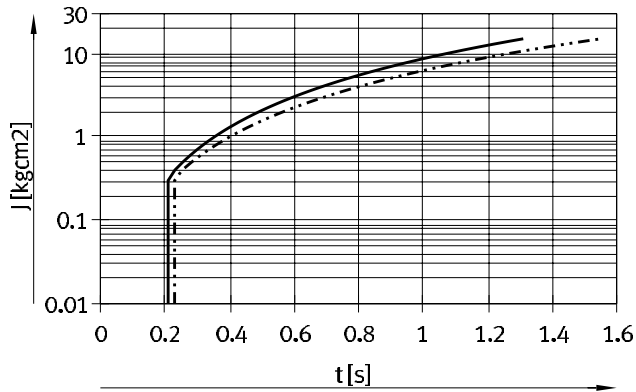
Datasheet

Max. permissible mass moment of inertia J at the flange shaft as a function of swivel time t
(at room temperature and an operating pressure of 6 bar)

Size 8 with cushioning P

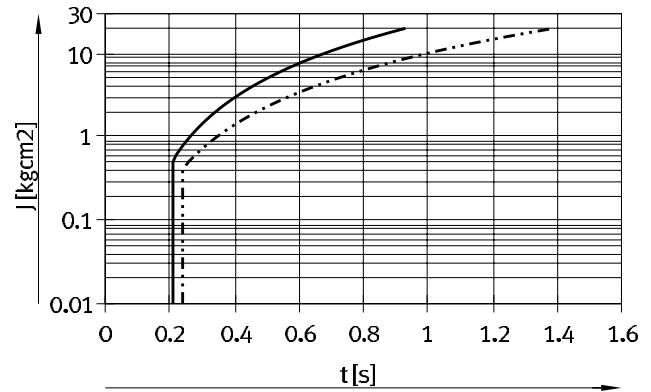
Swivel angle $90^\circ/180^\circ$

Size 10 with cushioning P



— DRRD-8-...-P (90°)
 - - - DRRD-8-...-P (180°)

Zones
 → 0 ... 15 kgcm²
 → 0 ... 15 kgcm²

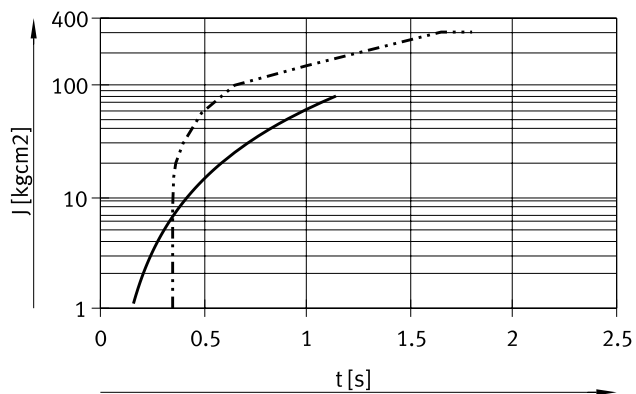


— DRRD-10-...-P (90°)
 - - - DRRD-10-...-P (180°)

Zones
 → 0 ... 20 kgcm²
 → 0 ... 20 kgcm²

Size 12 with cushioning P/Y9

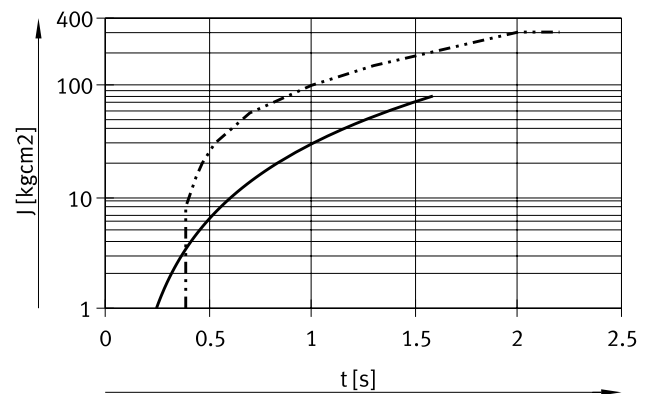
Swivel angle 90°



— DRRD-12-...-P (90°)
 - - - DRRD-12-...-Y9 (90°)

Zones
 → 0 ... 80 kgcm²
 → 0 ... 300 kgcm²

Swivel angle 180°

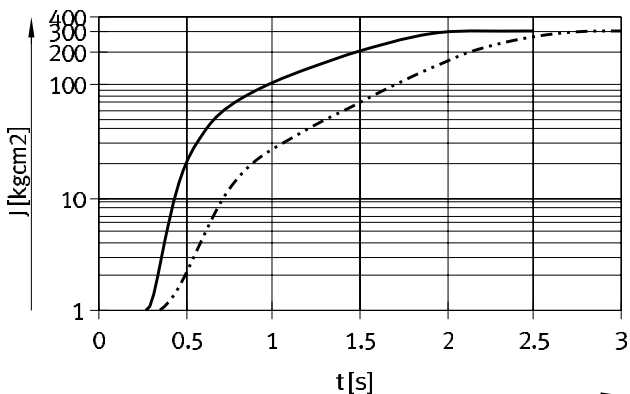


— DRRD-12-...-P (180°)
 - - - DRRD-12-...-Y9 (180°)

Zones
 → 0 ... 80 kgcm²
 → 0 ... 300 kgcm²

Size 12 with cushioning Y12

Swivel angle $90^\circ/180^\circ$



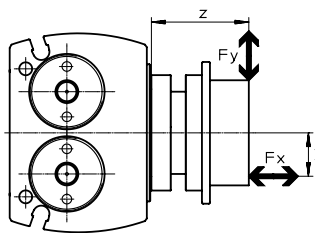
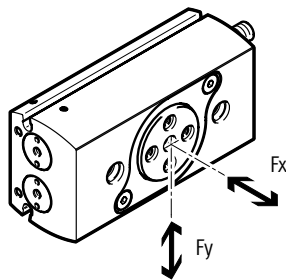
— DRRD-12-...-Y12 (90°)
 - - - DRRD-12-...-Y12 (180°)

Zones
 → 1 ... 300 kgcm²
 → 1 ... 300 kgcm²

Datasheet

Max. load capacity at the flange shaft

The zero point for dimension z is always the flange level of the basic drive, independently of the attachments (flange module).

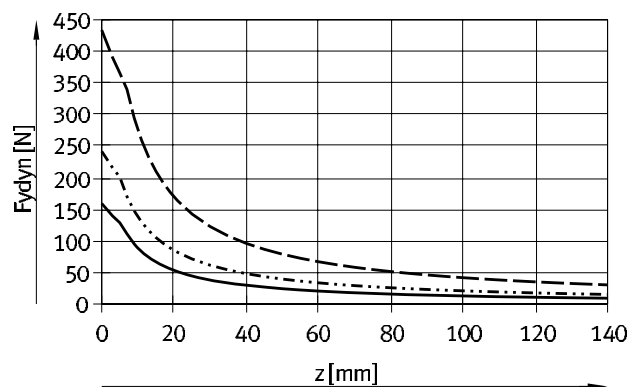


The following equation applies for combined loads (axial and radial):

$$\frac{F_{y(z)}}{F_{y \max. (z)}} + \frac{F_{x(y)}}{F_{x \max. (y)}} \leq 1$$

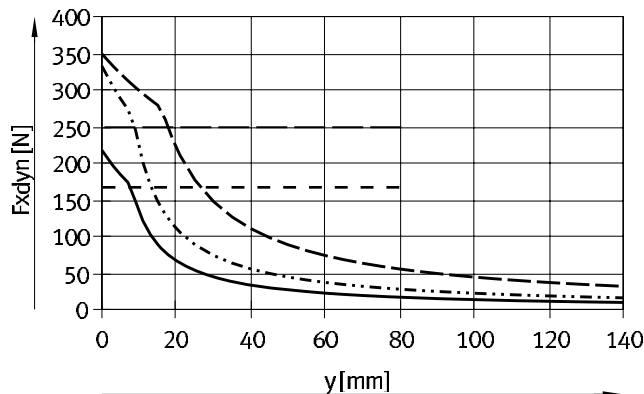
Dynamic values

Max. radial force F_y as a function of distance z



— DRRD-8
 DRRD-10
 - - - DRRD-12

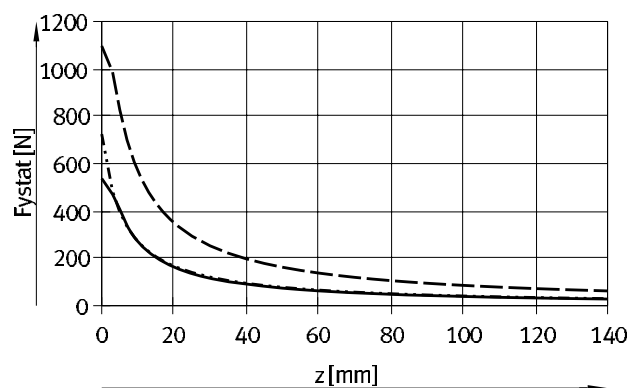
Max. axial force F_x as a function of distance y



..... Tensile force limit DRRD-8/10
 - - - Tensile force limit DRRD-12

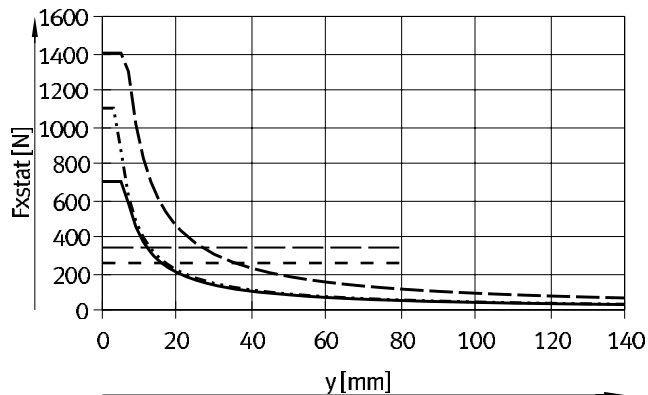
Static values

Max. radial force F_y as a function of distance z



— DRRD-8
 DRRD-10
 - - - DRRD-12

Max. axial force F_x as a function of distance y



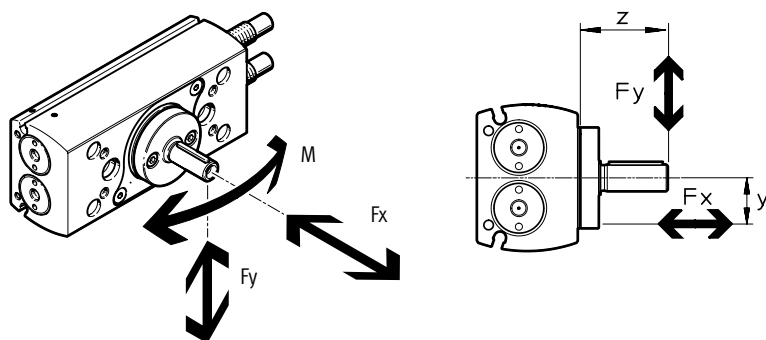
..... Tensile force limit DRRD-8/10
 - - - Tensile force limit DRRD-12

Datasheet

Max. load capacity at the drive shaft adapter (DARF-Q11)

Max. radial forces F_y / axial forces F_x / bending moment M

- For the radial forces F_y , the limits of the flange shaft → page 14 and max. bending moment of the drive shaft adapter apply → table below.
- The bending moment represents the load limit of the drive shaft adapter and must not be exceeded.
- The zero point for dimension z is always the flange level of the basic drive, independently of the attachments (flange module).
- The axial force represents an additional load.

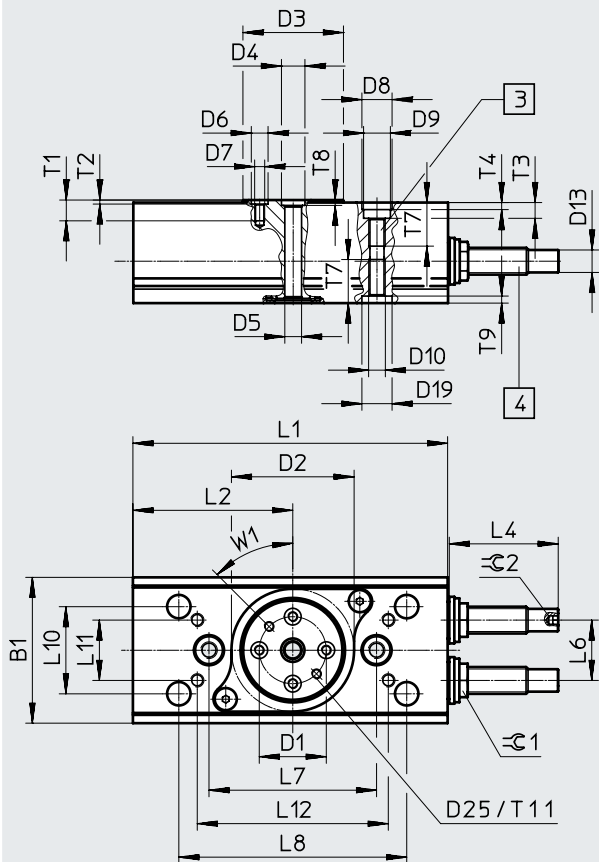


Size		12
Axial force F_x	[N]	170
Bending moment M	[Nm]	5.44

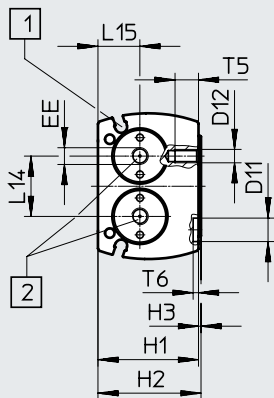
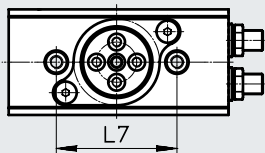
Datasheet

Dimensions

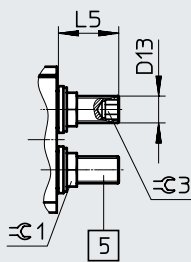
Download CAD data → www.festo.com



DRRD-8/10



DRRD-...-P



 Note

Illustrated position of the flange shaft corresponds to the mid-position (swivel angle 90°).
Dimensions D25, T11 and W1 only for size 12

- [1] Sensor slots for proximity switch
- [2] Supply ports
- [3] Mounting thread
- [4] Shock absorber (DRRD-...-Y9)
- [5] Cushioning elements (DRRD-...-P)

Datasheet

Size	B1 ±0.25	D1 ∅ ±0.025	D2 ∅ +0.1	D3 ∅	D4 ∅ H7	D5 ∅ ±0.1	D6 ∅ H7	D7	D8 ∅ H7	D9 ∅	D10
8	31.5	12	26	20.4	5	3	5	M3	7	6	M4
10	38	15	32	24	5	3	5	M3	7	6	M4
12	43.5	20	37	30	7	5	5	M3	9	8	M5

Size	D11 ∅ H7	D12	D13	D19 ∅ H7	D25	H1 +0.4	H2 ±0.2	H3 +0.2/-0.6	L1 ±0.1	L2 +0.1	L6
8	—	—	M6x0.5	7	—	24.5	25.25	0.75	65.6	32.2	13 _{-0.1}
10	—	—	M6x0.5	7	—	27.5	28.25	0.75	74	38.3	15.2 _{-0.1}
12	7	M4	M8x1	9	M3	30	30.75	0.75	93.9	47.7	18 ^{+0.1}

Size	L7 ±0.02	L8 ±0.2	L10 ±0.02	L11 ±0.15	L12 ±0.2	L14	L15 -0.1	T1	T2 +0.1	T3	T4 +0.4/-0.1
8	36	—	—	—	—	13	11.1	4.8	1.2	3.4	1.5
10	44	—	—	—	—	15.2	11.1	6.2	1.2	3.4	1.5
12	50	68	26	18	57	18	12.5	5.4	1.2	4.7	2.1

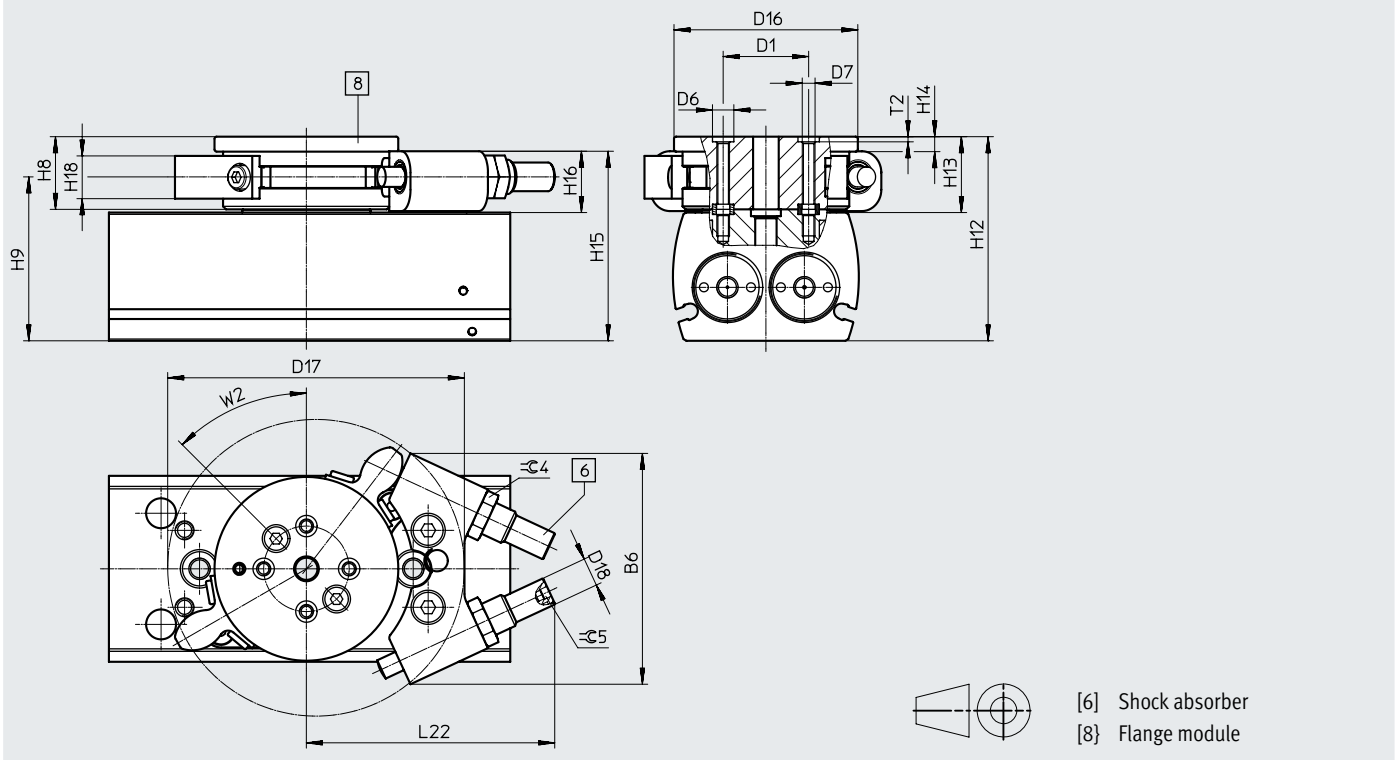
Size	T5	T6 +0.4/-0.1	T7	T8 +0.1	T9 +0.1	T11	EE	W1	⊖ 1	⊖ 2	⊖ 3
8	—	—	10.5	1.2	1.6	—	M3	—	10	—	3
10	—	—	10	1.2	1.6	—	M3	—	10	—	3
12	7	1.6	13	1.6	2.1	5.5	M5	45°	10	2.5	5

Size	Dimension for swivel angle of 180°		Setting range of the swivel angle		
	L4	L5	L4 min./max.	L5 min./max.	1 mm = ...°
8	—	11.1	—	-6.1/+0.8	16.4
10	—	12.6	—	-7.6/+1.2	13.64
12	28	17	-1.9/+1.9	-11/+1.8	9.6

Datasheet

Dimensions – Variants Download CAD data → www.festo.com

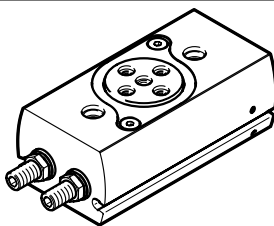
Y12 – With external shock absorber



Size	B6	D1 Ø	D6 Ø H7	D7	D16 Ø	D17	D18	H8 ±0.1	H9	H12 ±0.3
12	54	20	5	M3	43	69.4	M8x1	17	38.25	47.75

Size	H13	H14	H15	H16	H18	L22 max.	T2 +0.1	W2 45°	⌀ 4 10	⌀ 5 2.5
12	17.75	3.5	44	14	10	58.2	1.2	45°	10	2.5

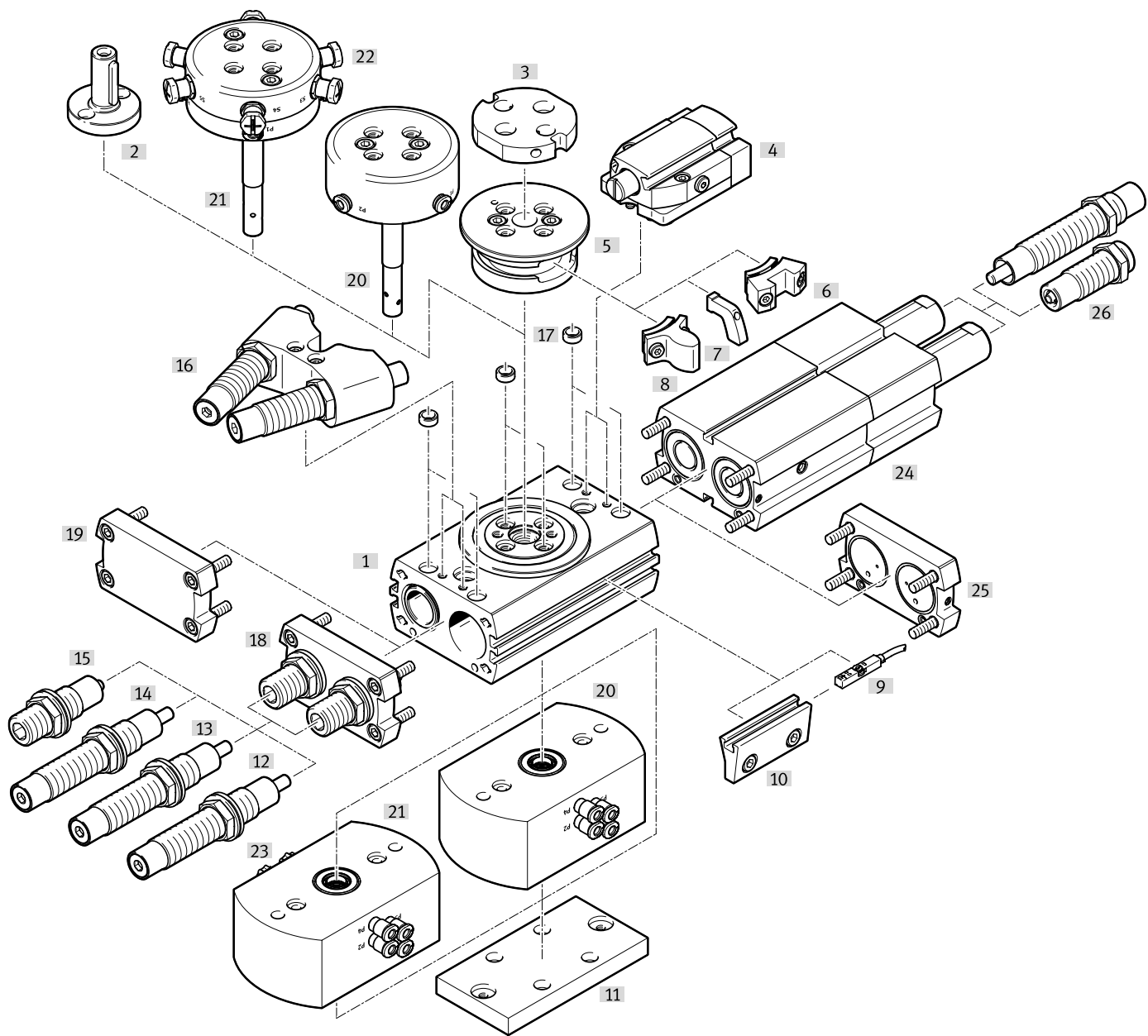
Ordering data

DRRD	Size	Swivel angle [°]	Part no.	Type
	P – Elastic cushioning rings/plates at both ends			
	8	180	2223060	DRRD-8-180-FH-PA
	10		2350968	DRRD-10-180-FH-PA
	12		2282067	DRRD-12-180-FH-PA
	Y9 – Shock absorber, linear, self-adjusting at both ends			
	12	180	2399248	DRRD-12-180-FH-Y9A

Ordering data – Modular product system

Size	12	Conditions	Code	Enter code
Module no.	574398			
Function	Semi-rotary drive		DRRD	DRRD
Size	12		-12	-12
Nominal swivel angle	180°		-180	-180
Output shaft	Flanged shaft, hollow		-FH	-FH
Cushioning	Elastic cushioning rings/plates at both ends		-P	
	Shock absorber, linear, self-adjusting at both ends		-Y9	
	Shock absorber, linear, self-adjusting at both ends, external		-Y12	
Position sensing	Via proximity switch		A	A
Operating manual	With operating instructions			

Peripherals overview



Variants, mounting components and accessories		Size								→ Page /Internet
		16	20	25	32	35	40	50	63	
[1]	Semi-rotary drive DRRD	Double-acting								20
[2]	Drive shaft adapter1) DARF-Q11	- The interface corresponds to that of the semi-rotary drive DRQD - The drive shaft adapter can only be mounted directly on the flange shaft - Suitable for ATEX								56
[3]	Adapter kit DHAA	- Connecting plate between semi-rotary drive and gripper - Included in the scope of delivery: 2 centring sleeves and screws								gripper
[4]	End-position locking E1 ¹⁾ (clamping unit DADL-...-EL as an accessory)	- Mechanical lock in the end positions to prevent unwanted movement when unpressurised - Included in the scope of delivery: [4], [5], 2x [6]								57

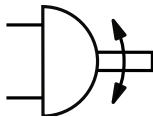
Peripherals overview

Variants, mounting components and accessories		Size								→ Page/Internet
		16	20	25	32	35	40	50	63	
[5]	Flange module	■	■	■	■	■	■	■	■	57
[6]	Clamping component (Type: DADL-EC)	■	■	■	■	■	■	■	■	59
[7]	Switch lug DASI-Q11-...-SL	■	■	■	■	■	■	■	■	59
[8]	Stop element	■	■	■	■	■	■	■	■	55
[9]	Proximity switch SMT/SME-8	■	■	■	■	■	■	■	■	61
	Position transmitter SMAT-8M	■	■	■	■	■	■	■	■	63
[10]	Sensor mounting R (sensing kit DASI-...-KT as an accessory)	■	■	■	■	■	■	■	■	58
[11]	Adapter kit DHAA	■	■	■	■	■	■	■	—	adapter
[12]	Shock absorber Y9	■	■	■	■	■	■	■	■	60
[13]	Shock absorber, hard Y10	—	—	■	—	■	■	■	■	55
[14]	Shock absorber, soft Y14	■	■	■	■	■	■	—	—	55
[15]	Shock absorber P	■	■	■	■	■	■	—	—	55
[16]	Shock absorber, external Y12	■	■	■	■	■	■	■	■	55
[17]	Centring sleeve ZBH	■	■	■	■	■	■	■	■	60
[18]	End cap	■	■	■	■	■	■	■	■	—
[19]	End cap	■	■	■	■	■	■	■	■	—
[20]	Energy through-feed pneumatic	■	■	■	■	■	■	■	■	37
[21]	Energy through-feed pneumatic/electrical	■	■	■	■	■	■	■	■	37
[22]	Connecting cable NEBA	■	■	■	■	■	■	■	■	64
[23]	Connecting cable NEBA	■	■	■	■	■	■	■	■	64
[24]	Intermediate position	■	■	■	■	■	■	■	—	40
[25]	Connection cap	■	■	■	■	■	■	■	—	—
[26]	Shock absorber	■	■	■	■	■	■	■	—	60
—	One-way flow control valves GRLA	■	■	■	■	■	■	■	■	65

1) It is not possible to combine the drive shaft adapter [2] and end-position locking E1 [4].

Datasheet

Function



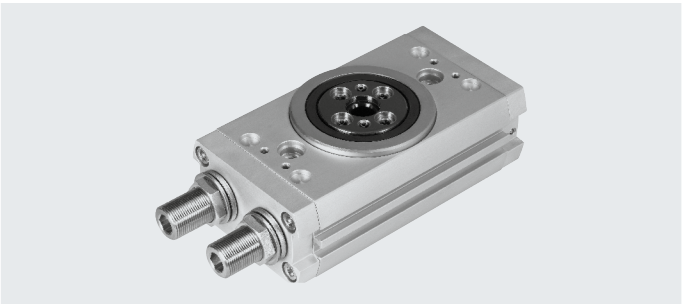
- Diameter
16 ... 63 mm
- Torque
1.6 ... 112 Nm



www.festo.com



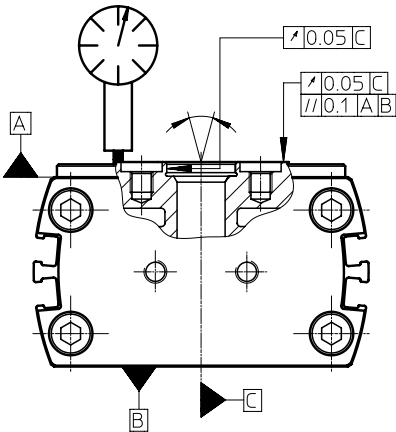
Repair service



General technical data									
Size	16	20	25	32	35	40	50	63	
Design	Gear rack/pinion								
Operating mode	Double-acting								
Pneumatic connection									
DRRD-...	M5			G1/8			G1/4	G3/8	
DRRD-...-PS1	M5						G1/8	–	
Type of mounting	With through-hole								
	With female thread								
Swivel angle									
DRRD-... [°]	180 (→ Page 25)								
DRRD-...-PS1 [°]	90 ±10°								–
Cushioning with fixed stop									
DRRD-...-P	Elastic cushioning rings/plates at both ends							–	
DRRD-...-Y9	Shock absorber, linear, self-adjusting at both ends								
DRRD-...-Y10 ¹⁾	–		Shock absorber, linear, self-adjusting at both ends, hard		–	Linear shock absorber, self-adjusting at both ends, hard			
DRRD-...-Y12	External linear shock absorber, self-adjusting at both ends								
DRRD-...-Y14 ¹⁾	Shock absorber, linear, at both ends, self-adjusting, soft							–	
Repetition accuracy									
DRRD-... [°]	< 0.05							≤0.03	
DRRD-...-PS1									
Approached from one end [°]	0.1								–
Approached from both ends [°]	0.7								–
Axial run-out ²⁾ [mm]	< 0.05								
Max. axial load (static) [N]	1500	2400	2400	3750	6100	6100	9000	11000	
Mounting position	Any								

1) Not in combination with intermediate position DRRD-...-PS1

2) Axial run-out in new condition



Datasheet

Operating and environmental conditions		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure		
DRRD-...		
DRRD-...-P	[MPa]	0.3 ... 0.8
	[bar]	3 ... 8
	[psi]	43.5 ... 118
DRRD-...-Y9/-Y10/-Y12/-Y14	[MPa]	0.2 ... 1
	[bar]	2 ... 10
	[psi]	29 ... 145
DRRD-...-PS1		
DRRD-...-P	[MPa]	0.4 ... 0.8
	[bar]	4 ... 8
	[psi]	58 ... 116
DRRD-...-Y9/-Y12	[MPa]	0.2 ... 1
	[bar]	2 ... 10
	[psi]	29 ... 145
Ambient temperature	[°C]	-10 ... +60
Storage temperature	[°C]	-20 ... +60
Degree of protection based on EN 60529		
DRRD-...-SG		IP65

ATEX ¹⁾	
ATEX category for gas	II 2G
Type of ignition protection for gas	Ex h IIC T4 Gb
ATEX category for dust	II 2D
Type of ignition protection for dust	Ex h IIIC T120°C Db
Explosion-proof ambient temperature	-10°C ≤ Ta ≤ +60°C
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity)	To UK explosion regulations
Explosion protection certification outside the EU	EPL Db (GB)
	EPL Gb (GB)

1) Note the ATEX certification of the accessories.

Weight [g]								
Size	16	20	25	32	35	40	50	63
Basic drive with cushioning								
DRRD-...-P	640	839	1349	2815	4510	6070	–	–
DRRD-...-Y9/-Y10/-Y14	650	883	1358	2976	4784	6424	11300	19100
DRRD-...-Y12	757	1132	1705	3760	5425	7160	12450	22400
Energy through-feed (additional)								
DRRD-...-P	320	350	710	920	1090	1470	1950	2250
DRRD-...-P...E...	460	480	720	900	880	1770	2330	2610
Intermediate position (additional)								
DRRD-...-P	502	701	1078	2304	–	–	–	–
DRRD-...-Y9	511	720	1130	2450	3940	4380	8270	–
End-position locking (additional)								
DRRD-...-E1	166	382	370	600	900	900	1610	2380
Sensor mounting, external (additional)								
DRRD-...-R	110	192	192	366	485	485	810	1390

Datasheet

Forces and torques									
Size		16	20	25	32	35	40	50	63
Theoretical torque at 0.6 MPa (6 bar, 87 psi)	[Nm]	1.6	2.4	5.1	10.1	15.8	24.1	53	112
Max. permissible mass moment of inertia									
Rotation from end position to end position									
DRRD-...-P	[kgcm ²]	175	400	900	1500	2500	6700	–	–
DRRD-...-Y9	[kgcm ²]	700	1250	1500	26000	15000	23000	40000	40000
DRRD-...-Y10	[kgcm ²]	–	–	5500	–	45000	67000	200000	420000
DRRD-...-Y12	[kgcm ²]	900	1500	5500	26000	45000	67000	200000	420000
DRRD-...-Y14	[kgcm ²]	100	150	100	2000	2000	23000	–	–
Rotation with intermediate position									
DRRD-...-P	[kgcm ²]	150	300	400	500	–	–	–	–
DRRD-...-Y9	[kgcm ²]	500	900	1500	8000	15000	23000	40000	–
DRRD-...-Y12	[kgcm ²]	500	900	1500	8000	15000	23000	40000	–

**Note**

If, in the end positions, a torque which exceeds 50% of the theoretical torque acts against the direction of rotation, no exact end position is guaranteed.

This can be avoided by using external shock absorbers (Y12) or a semi-rotary drive with double the torque.

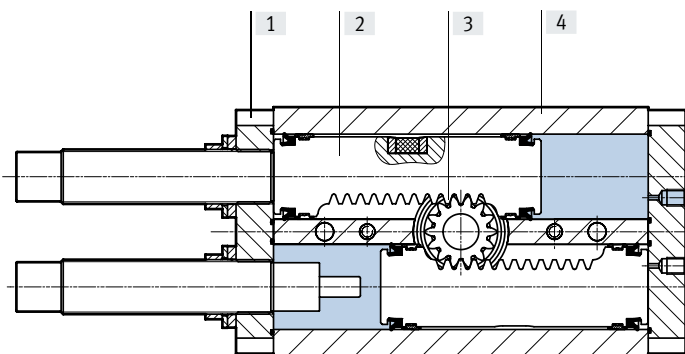
**Note**

The cushioning for the intermediate position corresponds to the cushioning for the basic drive. Except in the case of cushioning Y12, when shock absorbers Y9 are used.

In combination with cushioning P, the intermediate position is only available for sizes 16 ... 32.

Materials

Sectional view



Semi-rotary drive

[1]	Cover	Anodised wrought aluminium alloy
[2]	Piston	Stainless steel
[3]	Flanged shaft	Tempered steel
[4]	Housing	Smooth-anodised wrought aluminium alloy
–	Seals	NBR
	Piston seal	TPE-U(PU)
	Note on materials	RoHS-compliant
		Contains paint-wetting impairment substances
	LABS (PWIS) conformity	VDMA24364-Zone III
	Cleanroom class	
	DRRD-16 ... 40	Class 5 to ISO 14644-1

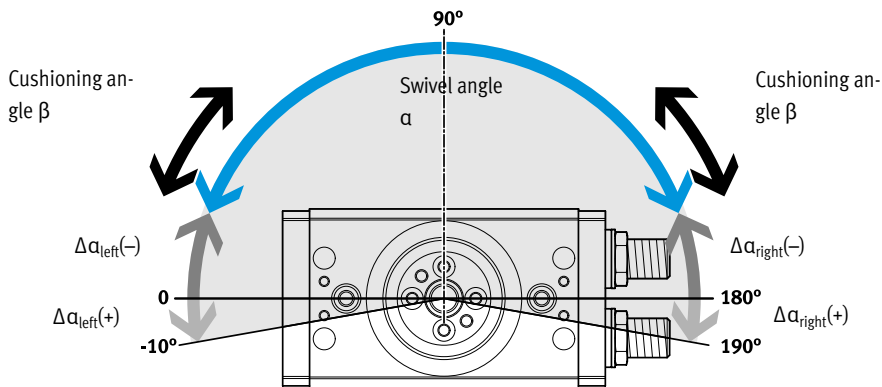
Datasheet

Swivel angle

Fundamentally, the following applies:

Swivel angle $\alpha \geq$ cushioning angle β

Swivel angle $\alpha = 180^\circ + \Delta\alpha_{\text{right}} + \Delta\alpha_{\text{left}}$



Note
Illustrated position of the flange shaft corresponds to the mid-position (swivel angle 90°)

Size		16	20	25	32	35	40	50	63
Swivel angle α	[°]	180							
Min. swivel angle $\alpha^{1)}$									
DRRD-...-P	[°]	36	45	33	33	36	23	–	–
DRRD-...-Y9/-Y10/-Y14	[°]	43	72	79	82	85	56	61	48
DRRD-...-Y12	[°]	20	24	38	34	34	34	30	34
DRRD-...-E1	[°]	60	60	60	55	57	57	62	55
Max. swivel angle $\alpha^{2)}$									
DRRD-...	[°]	200							
DRRD-...-Y12	[°]	192	194	190	190	193	193	186	190
Swivel angle adjustment $\Delta\alpha$ per side (infinitely adjustable)									
DRRD-...-P	[°]	–100 ... +10						–	–
DRRD-...-Y9/-Y10/-Y14	[°]	$\geq -100 \dots +10$							
DRRD-...-Y12	[°]	–94 ... +6	–85 ... +7	–88 ... +5	–93 ... +5	–86 ... +6.5		–86 ... +3	–91 ... +5
Cushioning angle β									
DRRD-...-P	[°]	36	45	33	33	36	23	–	–
DRRD-...-Y9/-Y10/-Y14	[°]	43	72	79	82	85	56	61	48
DRRD-...-Y12	[°]	10	12	19	17	17	17	15	17

- 1) It is possible to set smaller swivel angles. However, this reduces the cushioning energy
 2) The max. swivel angle is reduced by approx. 10° in combination with the external sensor mounting

Swivel angle adjustment

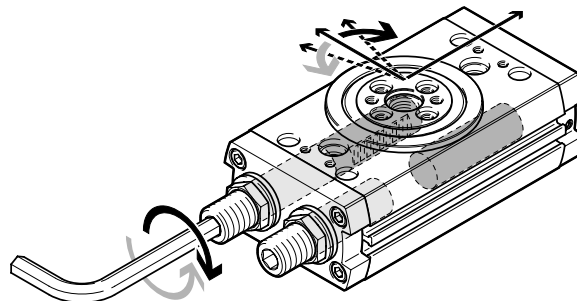
Direction of rotation to the right:

- Swivel angle decreases

Anticlockwise direction of rotation:

- Swivel angle increases

The swivel angle is adjusted via the cushioning components using a hex screwdriver. If possible, the swivel angle should be reduced evenly over both end positions.



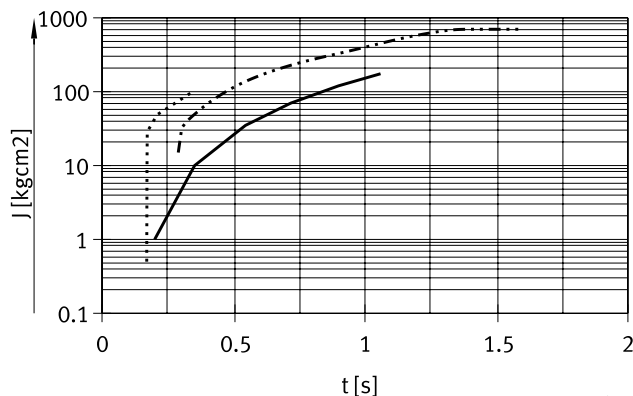
Swivel angle adjustment of the intermediate position → page 40

Datasheet

Max. permissible mass moment of inertia J at the flange shaft as a function of swivel time t
(at room temperature and an operating pressure of 6 bar)

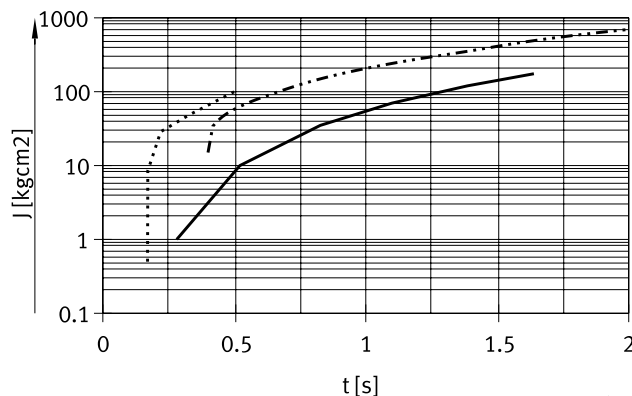
Size 16 with cushioning P/Y9/Y14

Swivel angle 90°



—	DRRD-16-...-P (90°)	Zones	→ 1 ... 175 kgcm ²
- · - · -	DRRD-16-...-Y9 (90°)		→ 15 ... 700 kgcm ²
·····	DRRD-16-...-Y14 (90°)		→ 0.5 ... 100 kgcm ²

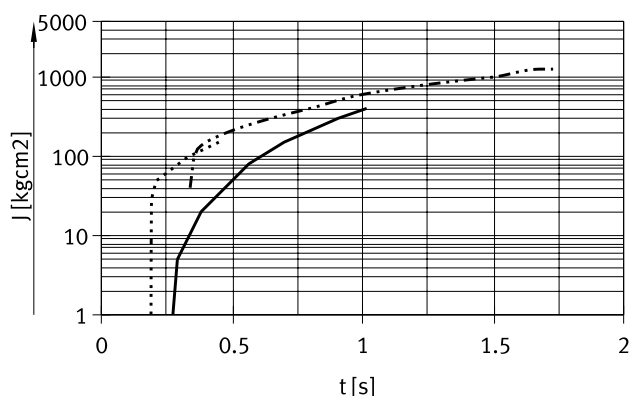
Swivel angle 180°



—	DRRD-16-...-P (180°)	Zones	→ 1 ... 175 kgcm ²
- · - · -	DRRD-16-...-Y9 (180°)		→ 15 ... 700 kgcm ²
·····	DRRD-16-...-Y14 (180°)		→ 0.5 ... 100 kgcm ²

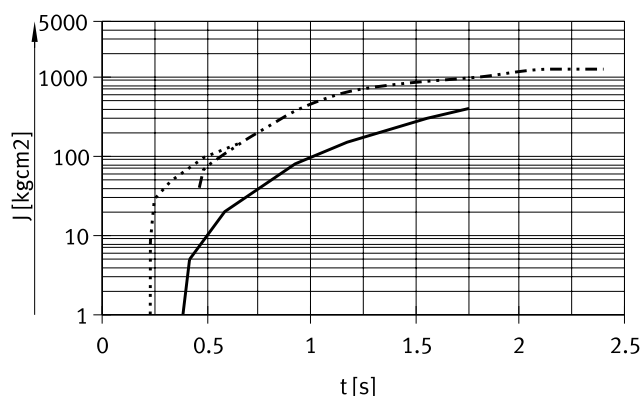
Size 20 with cushioning P/Y9/Y14

Swivel angle 90°



—	DRRD-20-...-P (90°)	Zones	→ 1 ... 400 kgcm ²
- · - · -	DRRD-20-...-Y9 (90°)		→ 40 ... 1250 kgcm ²
·····	DRRD-20-...-Y14 (90°)		→ 1 ... 150 kgcm ²

Swivel angle 180°



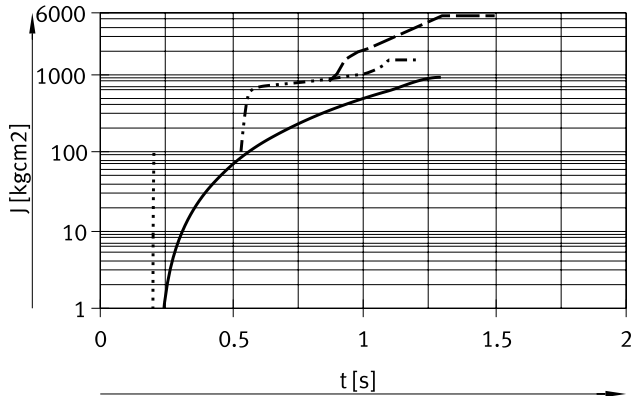
—	DRRD-20-...-P (180°)	Zones	→ 1 ... 400 kgcm ²
- · - · -	DRRD-20-...-Y9 (180°)		→ 40 ... 1250 kgcm ²
·····	DRRD-20-...-Y14 (180°)		→ 1 ... 150 kgcm ²

Datasheet

**Max. permissible mass moment of inertia J at the flange shaft as a function of swivel time t
(at room temperature and an operating pressure of 6 bar)**

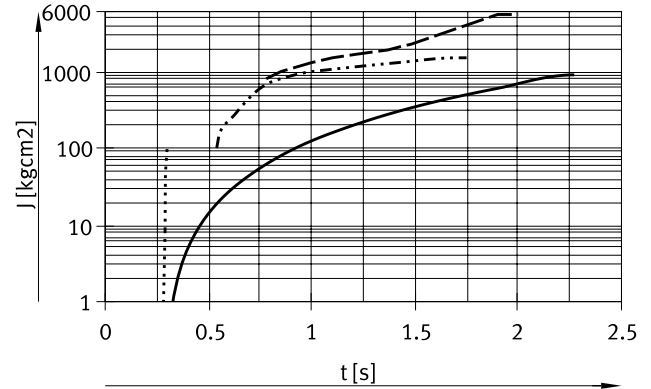
Size 25 with cushioning P/Y9/Y10/Y14

Swivel angle 90°



	Zones
— DRRD-25-...-P (90°)	→ 1 ... 900 kgcm ²
- · - · - DRRD-25-...-Y9 (90°)	→ 100 ... 1500 kgcm ²
- - - DRRD-25-...-Y10 (90°)	→ 800 ... 5500 kgcm ²
· · · · · DRRD-25-...-Y14 (90°)	→ 1 ... 100 kgcm ²

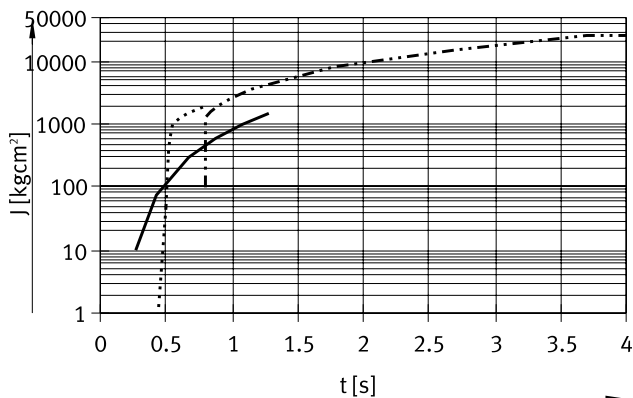
Swivel angle 180°



	Zones
— DRRD-25-...-P (180°)	→ 1 ... 900 kgcm ²
- · - · - DRRD-25-...-Y9 (180°)	→ 100 ... 1500 kgcm ²
- - - DRRD-25-...-Y10 (180°)	→ 800 ... 5500 kgcm ²
· · · · · DRRD-25-...-Y14 (180°)	→ 1 ... 100 kgcm ²

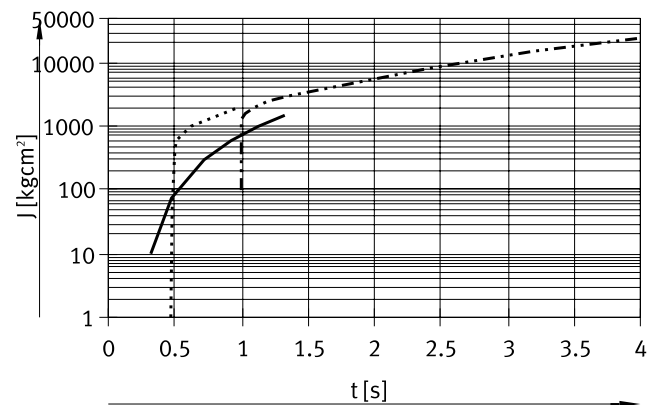
Size 32 with cushioning P/Y9/Y14

Swivel angle 90°



	Zones
— DRRD-32-...-P (90°)	→ 10 ... 1500 kgcm ²
- · - · - DRRD-32-...-Y9 (90°)	→ 100 ... 26000 kgcm ²
· · · · · DRRD-32-...-Y14 (90°)	→ 1 ... 2000 kgcm ²

Swivel angle 180°



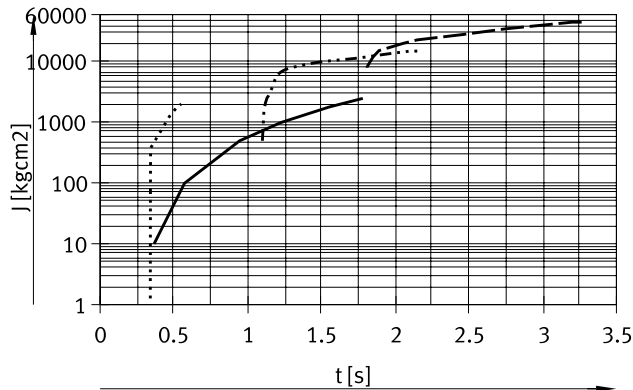
	Zones
— DRRD-32-...-P (180°)	→ 10 ... 1500 kgcm ²
- · - · - DRRD-32-...-Y9 (180°)	→ 100 ... 26000 kgcm ²
· · · · · DRRD-32-...-Y14 (180°)	→ 1 ... 2000 kgcm ²

Datasheet

Max. permissible mass moment of inertia J at the flange shaft as a function of swivel time t
(at room temperature and an operating pressure of 6 bar)

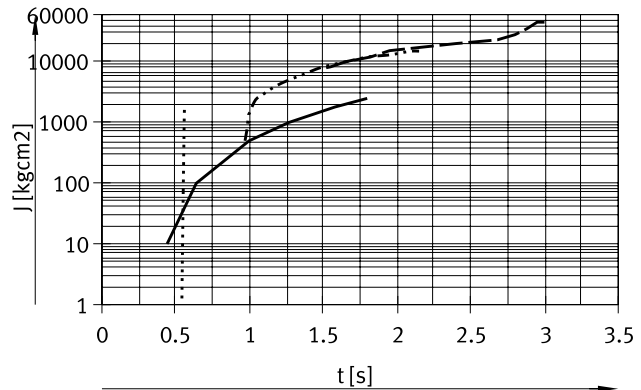
Size 35 with cushioning P/Y9/Y10/Y14

Swivel angle 90°



—	DRRD-35-...-P (90°)	Zones	→ 10 ... 2500 kgcm^2
.....	DRRD-35-...-Y9 (90°)		→ 500 ... 15000 kgcm^2
----	DRRD-35-...-Y10 (90°)		→ 8000 ... 45000 kgcm^2
- . - . - .	DRRD-35-...-Y14 (90°)		→ 1 ... 2000 kgcm^2

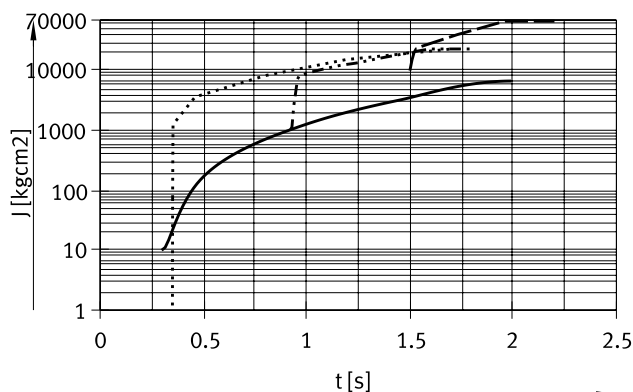
Swivel angle 180°



—	DRRD-35-...-P (180°)	Zones	→ 10 ... 2500 kgcm^2
.....	DRRD-35-...-Y9 (180°)		→ 500 ... 15000 kgcm^2
----	DRRD-35-...-Y10 (180°)		→ 8000 ... 45000 kgcm^2
- . - . - .	DRRD-35-...-Y14 (180°)		→ 1 ... 2000 kgcm^2

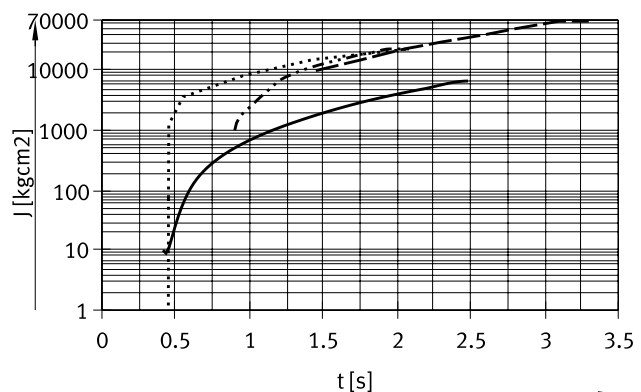
Size 40 with cushioning P/Y9/Y10/Y14

Swivel angle 90°



—	DRRD-40-...-P (90°)	Zones	→ 10 ... 6700 kgcm^2
.....	DRRD-40-...-Y9 (90°)		→ 1000 ... 23000 kgcm^2
----	DRRD-40-...-Y10 (90°)		→ 10000 ... 67000 kgcm^2
- . - . - .	DRRD-40-...-Y14 (90°)		→ 1 ... 23000 kgcm^2

Swivel angle 180°



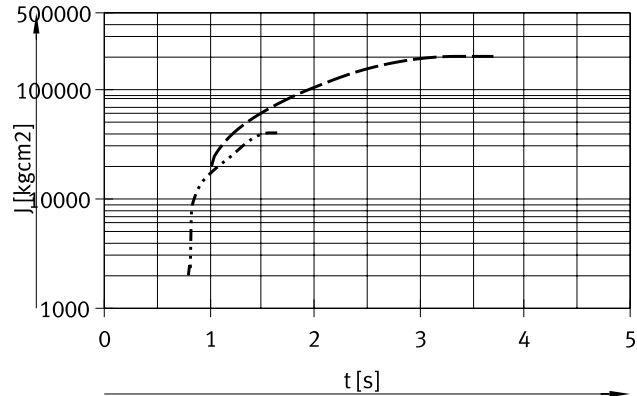
—	DRRD-40-...-P (180°)	Zones	→ 10 ... 6700 kgcm^2
.....	DRRD-40-...-Y9 (180°)		→ 1000 ... 23000 kgcm^2
----	DRRD-40-...-Y10 (180°)		→ 10000 ... 67000 kgcm^2
- . - . - .	DRRD-40-...-Y14 (180°)		→ 1 ... 23000 kgcm^2

Datasheet

**Max. permissible mass moment of inertia J at the flange shaft as a function of swivel time t
(at room temperature and an operating pressure of 6 bar)**

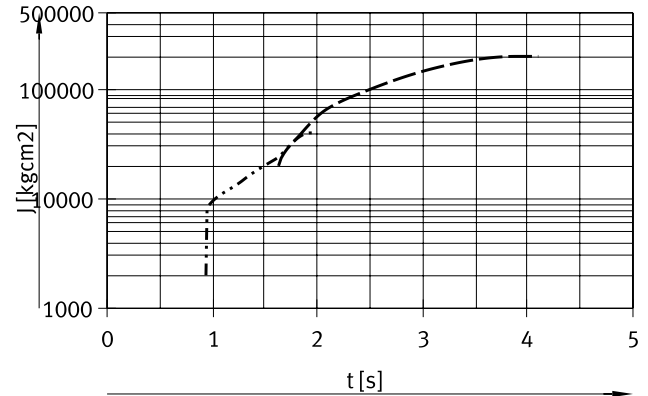
Size 50 with cushioning Y9/Y10

Swivel angle 90°



..... DRRD-50-...-Y9 (90°) → 2000 ... 40000 kgcm²
 ----- DRRD-50-...-Y10 (90°) → 20000 ... 200000 kgcm²

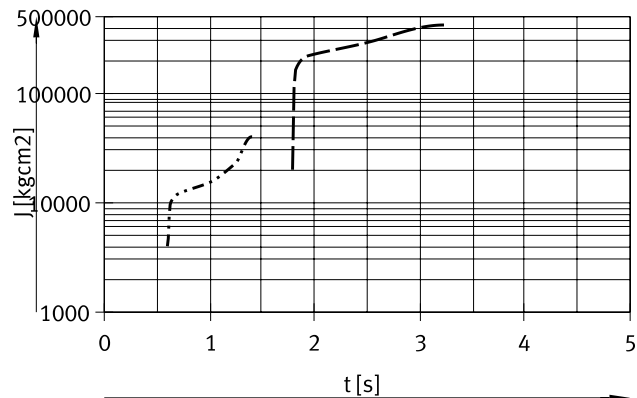
Swivel angle 180°



..... DRRD-50-...-Y9 (180°) → 2000 ... 40000 kgcm²
 ----- DRRD-50-...-Y10 (180°) → 20000 ... 200000 kgcm²

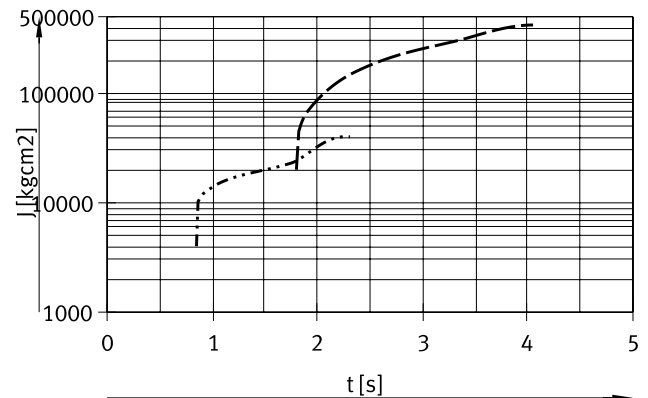
Size 63 with cushioning Y9/Y10

Swivel angle 90°



..... DRRD-63-...-Y9 (90°) → 4000 ... 40000 kgcm²
 ----- DRRD-63-...-Y10 (90°) → 20000 ... 420000 kgcm²

Swivel angle 180°



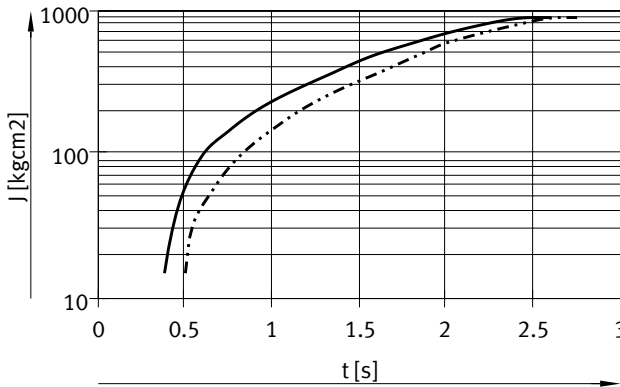
..... DRRD-63-...-Y9 (180°) → 4000 ... 40000 kgcm²
 ----- DRRD-63-...-Y10 (180°) → 20000 ... 420000 kgcm²

Datasheet

Max. permissible mass moment of inertia J at the flange shaft as a function of swivel time t
(at room temperature and an operating pressure of 6 bar)

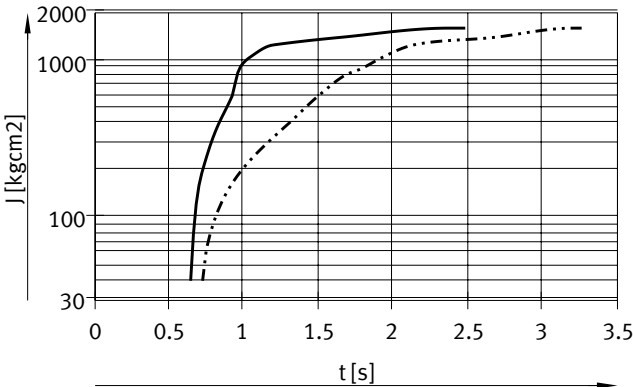
Size 16 with cushioning Y12

Size 20 with cushioning Y12



— DRRD-16-...-Y12 (90°) → 15 ... 900 kgcm²

- - - DRRD-16-...-Y12 (180°) → 15 ... 900 kgcm²

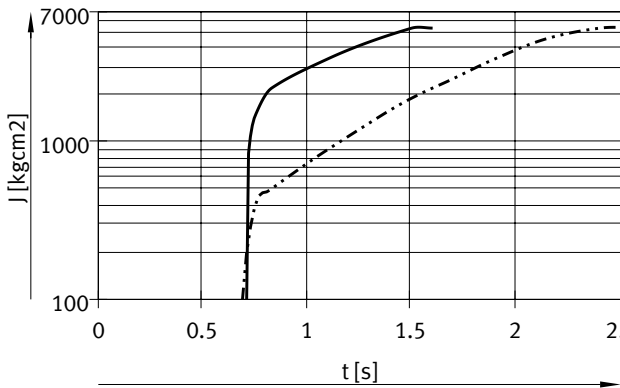


— DRRD-20-...-Y12 (90°) → 40 ... 1600 kgcm²

- - - DRRD-20-...-Y12 (180°) → 40 ... 1600 kgcm²

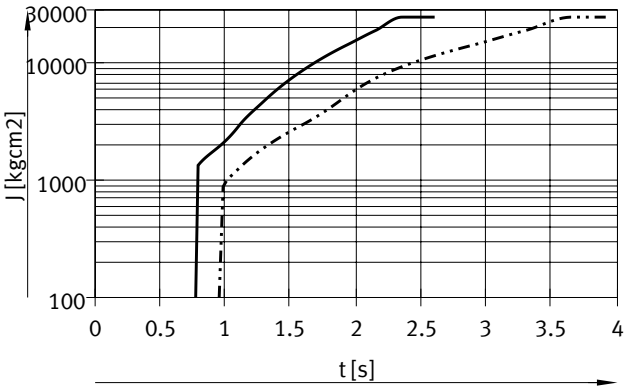
Size 25 with cushioning Y12

Size 32 with cushioning Y12



— DRRD-25-...-Y12 (90°) → 100 ... 5500 kgcm²

- - - DRRD-25-...-Y12 (180°) → 100 ... 5500 kgcm²



— DRRD-32-...-Y12 (90°) → 100 ... 26000 kgcm²

- - - DRRD-32-...-Y12 (180°) → 100 ... 26000 kgcm²

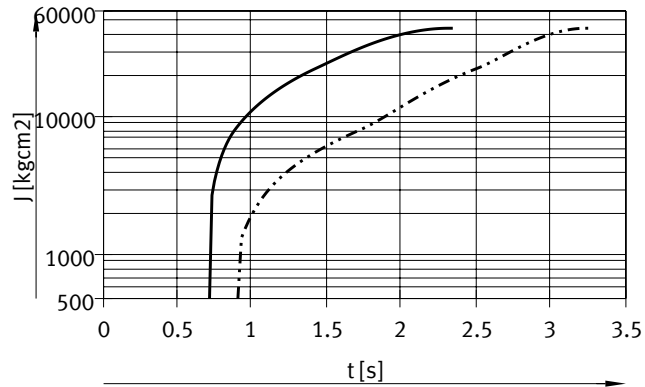
Datasheet

**Max. permissible mass moment of inertia J at the flange shaft as a function of swivel time t
(at room temperature and an operating pressure of 6 bar)**

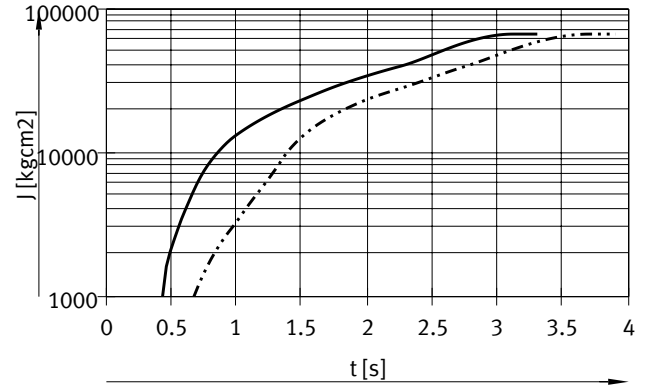
Size 35 with cushioning Y12

Swivel angle 90°/180°

Size 40 with cushioning Y12



Zones
 — DRRD-35-...-Y12 (90°) → 500 ... 45000 kgcm²
 - - - DRRD-35-...-Y12 (180°) → 500 ... 45000 kgcm²

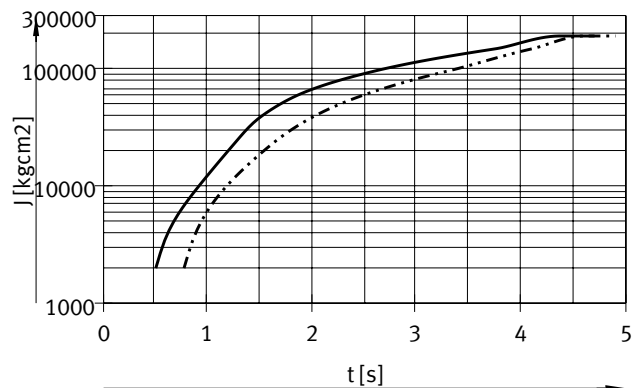


Zones
 — DRRD-40-...-Y12 (90°) → 1000 ... 67000 kgcm²
 - - - DRRD-40-...-Y12 (180°) → 1000 ... 67000 kgcm²

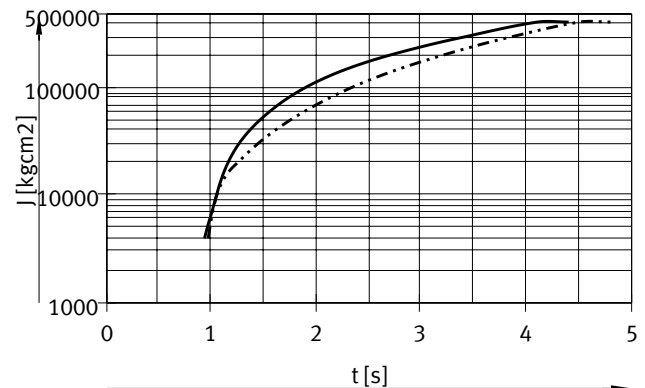
Size 50 with cushioning Y12

Swivel angle 90°/180°

Size 63 with cushioning Y12



Zones
 — DRRD-50-...-Y12 (90°) → 2000 ... 200000 kgcm²
 - - - DRRD-50-...-Y12 (180°) → 2000 ... 200000 kgcm²

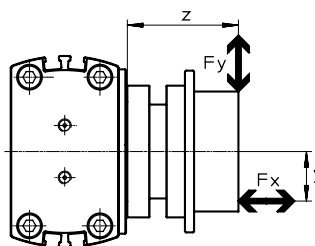
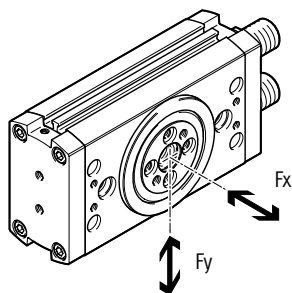


Zones
 — DRRD-63-...-Y12 (90°) → 4000 ... 420000 kgcm²
 - - - DRRD-63-...-Y12 (180°) → 4000 ... 420000 kgcm²

Datasheet

Max. dynamic load capacity at the flange shaft

The zero point for dimension Z is always the flange level of the basic drive, independently of the attachments (flange module).

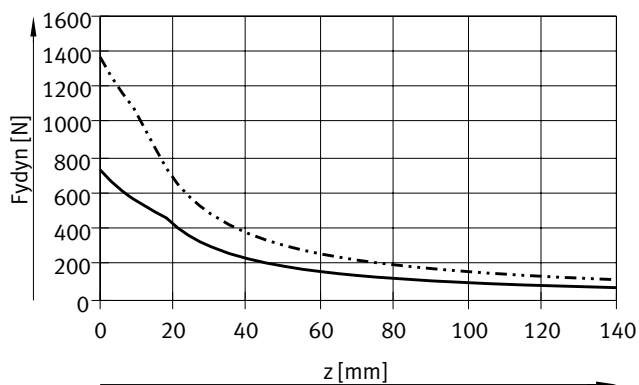


The following equation applies for combined loads (axial and radial):

$$\frac{F_{y(z)}}{F_{y\max.(z)}} + \frac{F_{x(y)}}{F_{x\max.(y)}} \leq 1$$

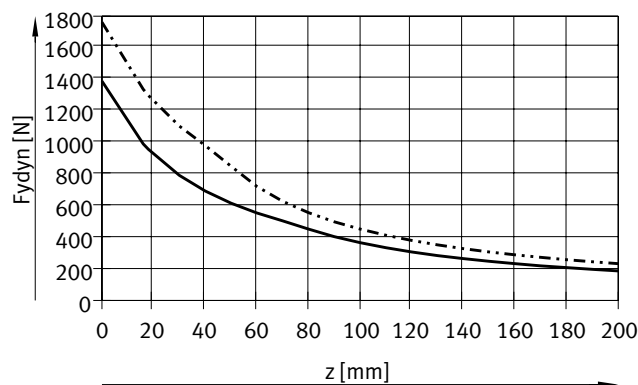
Max. dynamic radial F_y as a function of distance z

Size 16/20



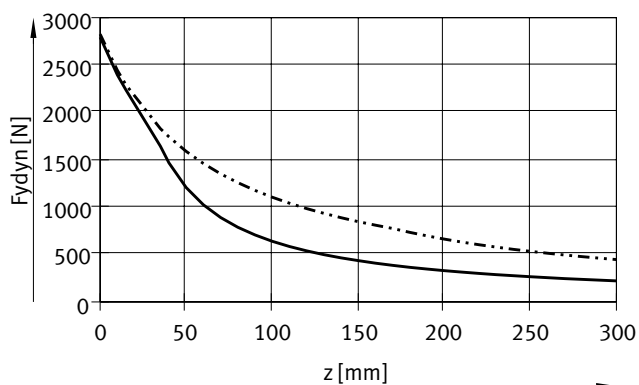
— DRRD-16
- - - DRRD-20

Size 25/32



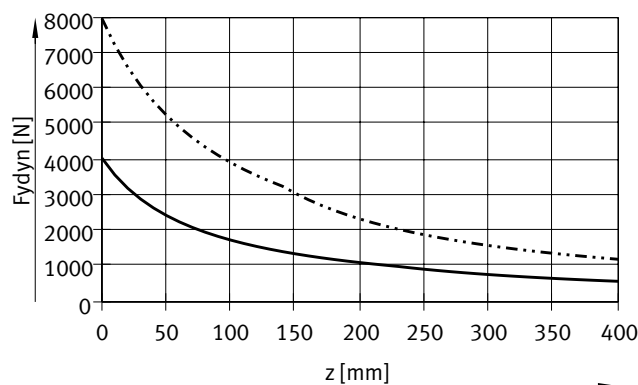
— DRRD-25
- - - DRRD-32

Size 35/40



— DRRD-35
- - - DRRD-40

Size 50/63

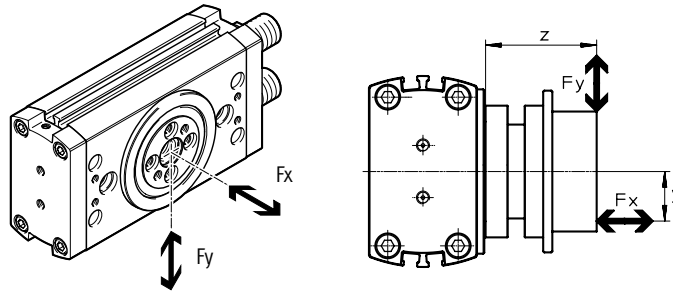


— DRRD-50
- - - DRRD-63

Datasheet

Max. dynamic load capacity at the flange shaft

The zero point for dimension Z is always the flange level of the basic drive, independently of the attachments (flange module).

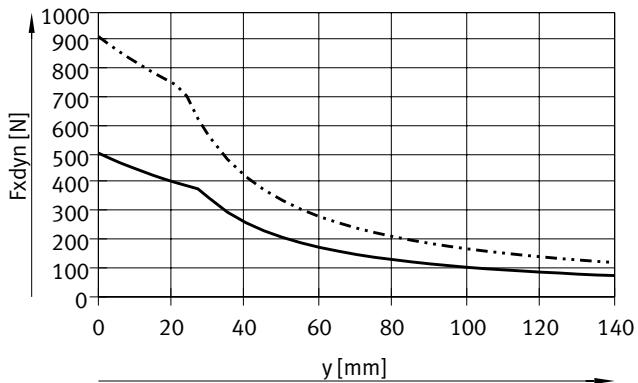


The following equation applies for combined loads (axial and radial):

$$\frac{F_{y(z)}}{F_{y \max. (z)}} + \frac{F_{x(y)}}{F_{x \max. (y)}} \leq 1$$

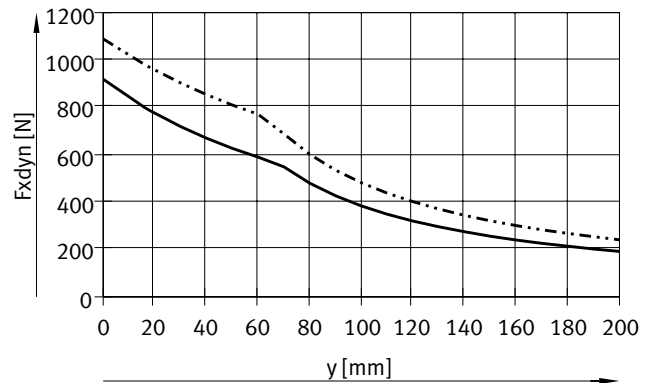
Max. dynamic axial force F_x as a function of distance y

Size 16/20



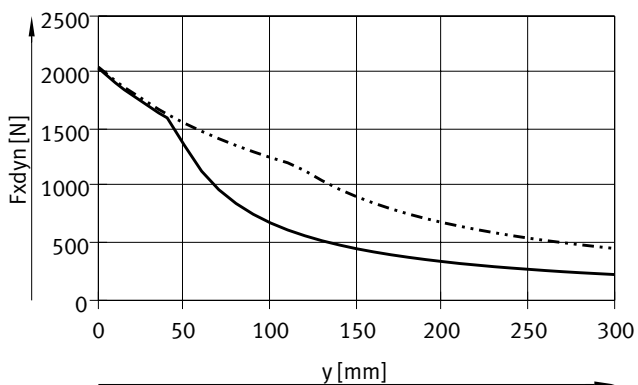
— DRRD-16
- - - DRRD-20

Size 25/32



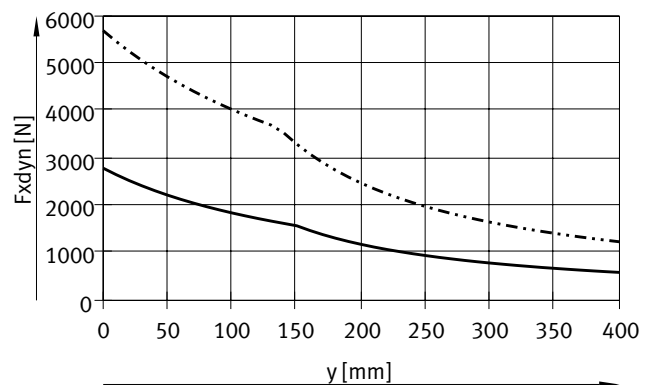
— DRRD-25
- - - DRRD-32

Size 35/40



— DRRD-35
- - - DRRD-40

Size 50/63

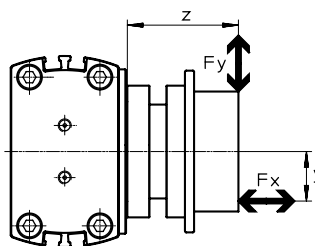
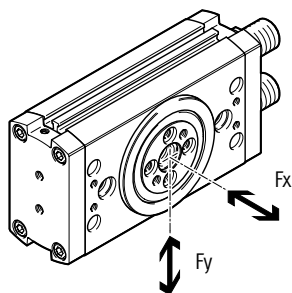


— DRRD-50
- - - DRRD-63

Datasheet

Max. static load capacity at the flange shaft

The zero point for dimension Z is always the flange level of the basic drive, independently of the attachments (flange module).

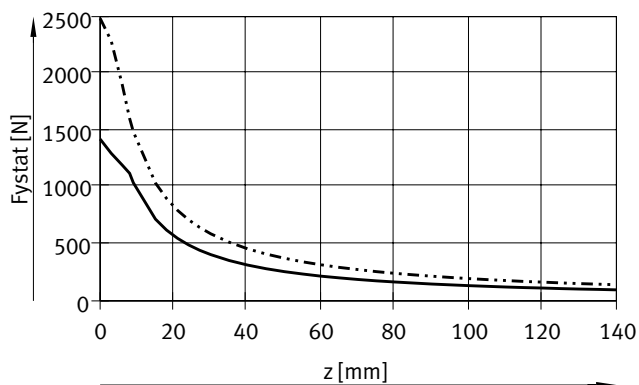


The following equation applies for combined loads (axial and radial):

$$\frac{F_{y(z)}}{F_{y \max. (z)}} + \frac{F_{x(y)}}{F_{x \max. (y)}} \leq 1$$

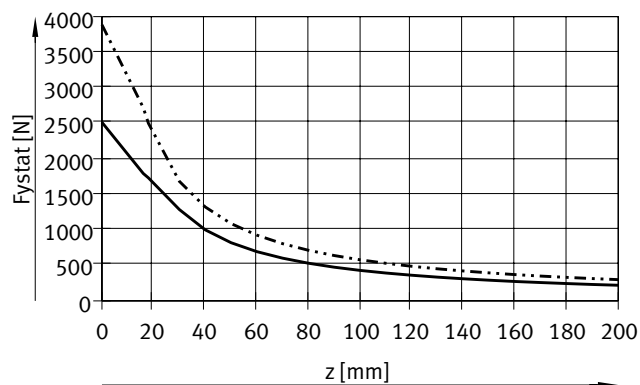
Max. static radial force F_y as a function of distance z

Size 16/20



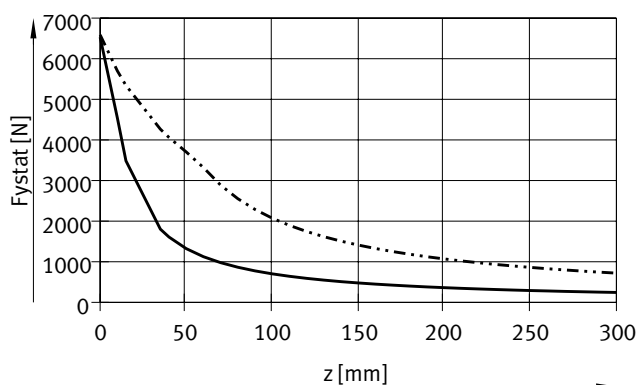
— DRRD-16
- - - DRRD-20

Size 25/32



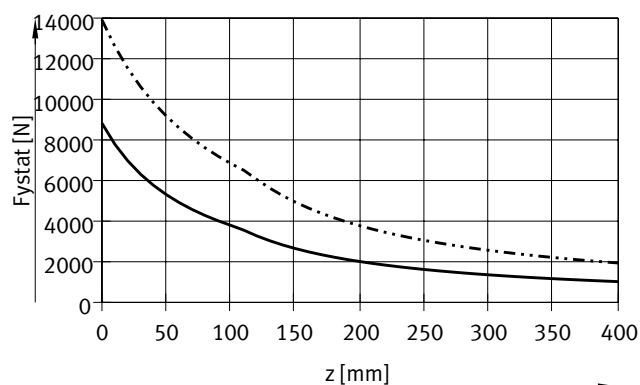
— DRRD-25
- - - DRRD-32

Size 35/40



— DRRD-35
- - - DRRD-40

Size 50/63

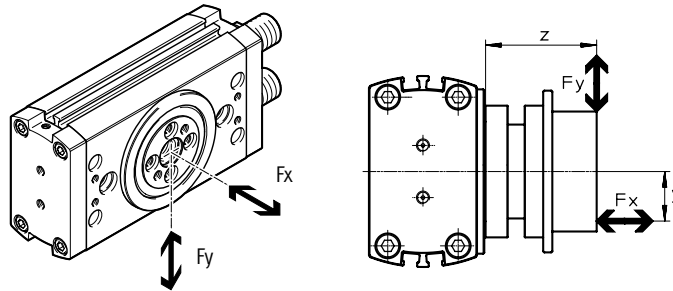


— DRRD-50
- - - DRRD-63

Datasheet

Max. static load capacity at the flange shaft

The zero point for dimension Z is always the flange level of the basic drive, independently of the attachments (flange module).

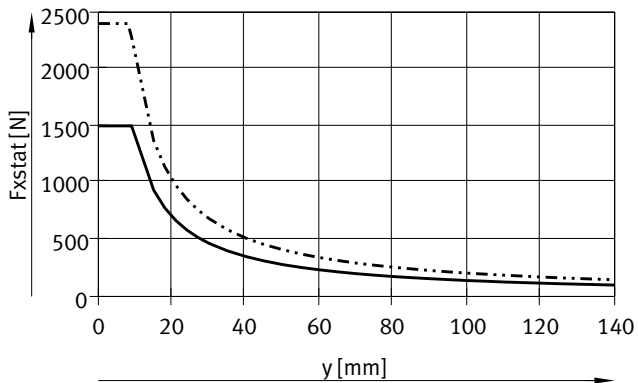


The following equation applies for combined loads (axial and radial):

$$\frac{F_{y(z)}}{F_{y \max. (z)}} + \frac{F_{x(y)}}{F_{x \max. (y)}} \leq 1$$

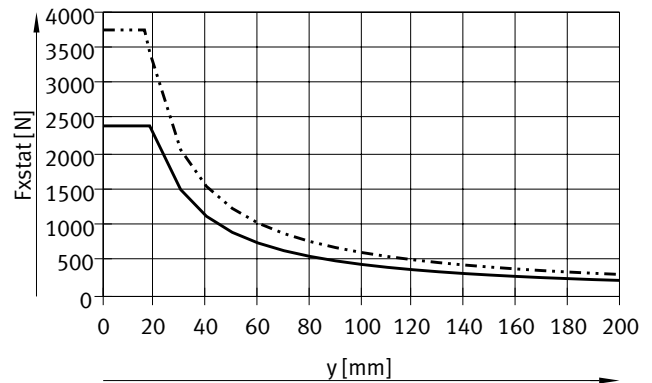
Max. static axial force F_x as a function of distance y

Size 16/20



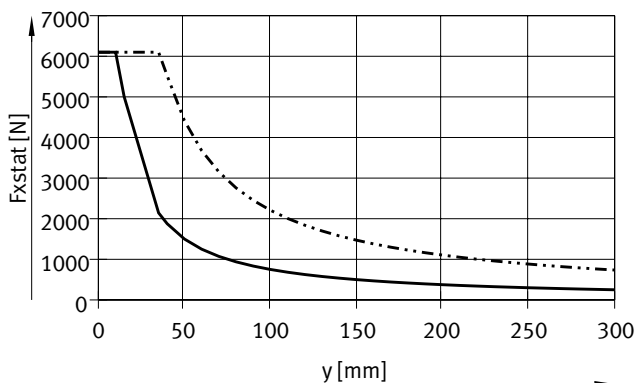
— DRRD-16
- - - DRRD-20

Size 25/32



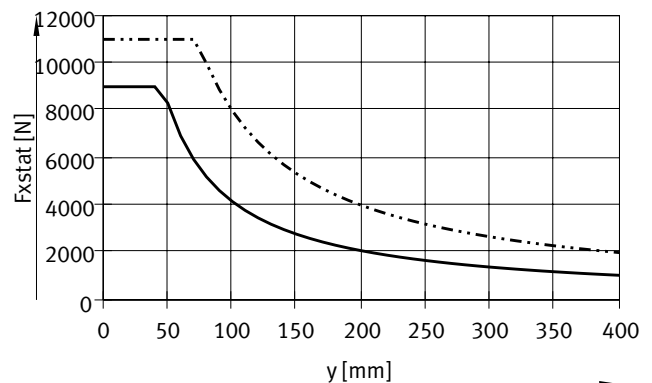
— DRRD-25
- - - DRRD-32

Size 35/40



— DRRD-35
- - - DRRD-40

Size 50/63

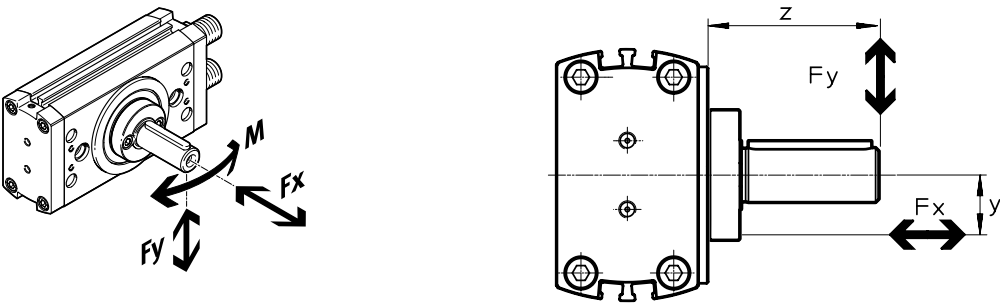


— DRRD-50
- - - DRRD-63

Datasheet

Max. load capacity at the drive shaft adapter (DARF-Q11)
Max. radial forces F_y / axial forces F_x / bending moment M

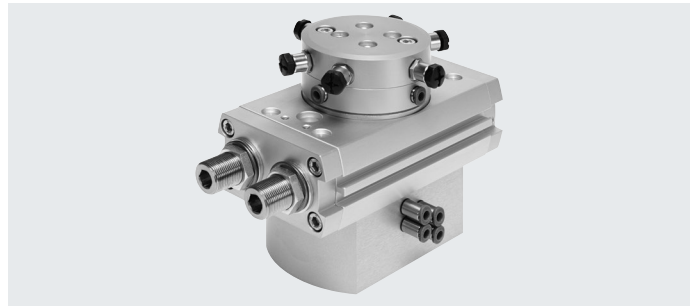
- For the radial forces F_y , the limits of the flange shaft a page 32/34 and max. bending moment of the drive shaft adapter apply → table below.
- The bending moment represents the load limit of the drive shaft adapter and must not be exceeded.
- The zero point for dimension z is always the flange level of the basic drive, independently of the attachments (flange module).
- The axial force represents an additional load.



Size		16	20	25	32	35	40
Axial force F_x	[N]	625	625	625	900	900	2400
Bending moment M	[Nm]	13.5	14.4	34.4	63	63	84

Datasheet

Energy through-feed DRRD-...-P...E...

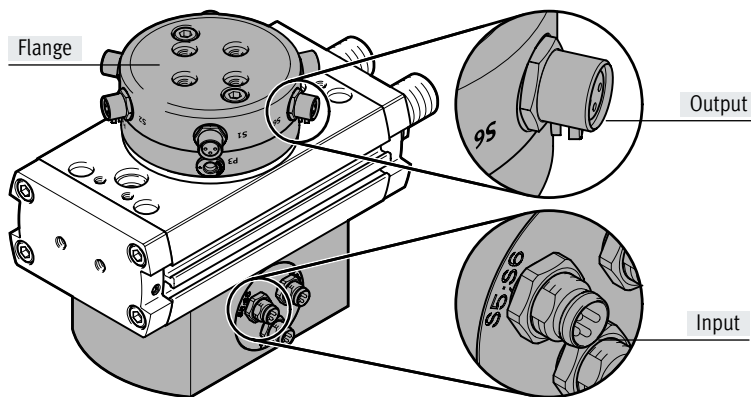


Function

The energy through-feed can be used to transfer electrical signals or compressed air through the hollow shaft.

Advantages

- Fast and easy supply of the parts connected to the flange (e.g. gripper)
- Tubing and electrical cables will not be damaged by the rotary movement
- Two variants available:
 - Pneumatic
 - Pneumatic and electrical
- Different number of connections depending on the size



Note

Only connecting cables with straight connectors can be used (→ page 64).

Technical data

Technical data		16/20		25/32/35		40/50/63	
Size							
Variants		Pneumatic	Pneumatic/electrical	Pneumatic	Pneumatic/electrical	Pneumatic	Pneumatic/electrical
Order code		P2	P2E2	P4	P4E6	P8	P8E8
Pneumatic							
Number of pneumatic ducts		2	2	4	4	8	8
Tubing O.D.		4					
Operating pressure per duct	[bar]	−0.85 ... 8					
Connection		M5					
Flow rate per duct	[l/min]	86				33	
Electrical							
Number of electrical signals		–	2	–	6	–	8
Rated voltage	[V DC]	–	30	–	30	–	30
Max. current ¹⁾	[A]	1.5					
Connection		M8				M12	

1) The positive and negative lines of all electrical connections are connected together. The combined maximum peak current for this common positive and negative line is also 1.5 A.

Note

Also approved for vacuum operation.

Datasheet

DRRD-...-P...E... – Energy through-feed

Pin assignment
Size 16/20

Input Plug M8				Output M8 socket			
Designation	Signals	Pin ¹⁾	Circuit diagram	Circuit diagram	Pin ¹⁾	Signals	Designation
S1	+	1			1	+	S1
		3					
		4					
S2	+	1			1	+	S2
		3					
		4					

1) Pin 1 (+) and Pin 3 (-) are connected to each other between plugs S1 and S2. Unused plugs and sockets should therefore be protected with the cover caps.

Size 25/32/35

Input Plug M8				Output M8 socket			
Designation	Signals	Pin ¹⁾	Circuit diagram	Circuit diagram	Pin ¹⁾	Signals	Designation
S1;S2	+	1			1	+	S1
		2					
		3					
S3;S4	+	1			1	+	S3
		2					
		3					
S5;S6	+	1			1	+	S5
		2					
		3					

1) Pin 1 (+) and Pin 3 (-) are connected to each other between plugs S1 ... S6. Unused plugs and sockets should therefore be protected with the cover caps.

Datasheet

DRRD-...-P...E... – Energy through-feed

Size 40/50/63

Input M12 plug				Output M12 socket			
Designation	Signals	Pin ¹⁾	Circuit diagram	Circuit diagram	Pin ¹⁾	Signals	Designation
S1;S2	+ Sig 2 – Sig 1	1 2 3 4			1 2 3 4	+ Sig 2 – Sig 1	S1;S2
S3;S4	+ Sig 4 – Sig 3	1 2 3 4			1 2 3 4	+ Sig 4 – Sig 3	S3;S4
S5;S6	+ Sig 6 – Sig 5	1 2 3 4			1 2 3 4	+ Sig 6 – Sig 5	S5;S6
S7;S8	+ Sig 8 – Sig 7	1 2 3 4			1 2 3 4	+ Sig 8 – Sig 7	S7;S8

1) Pin 1 (+) and Pin 3 (–) are connected to each other between plugs S1 ... S8. Unused plugs and sockets should therefore be protected with the cover caps.

Datasheet

Intermediate position DRRD-...-PS1



Function

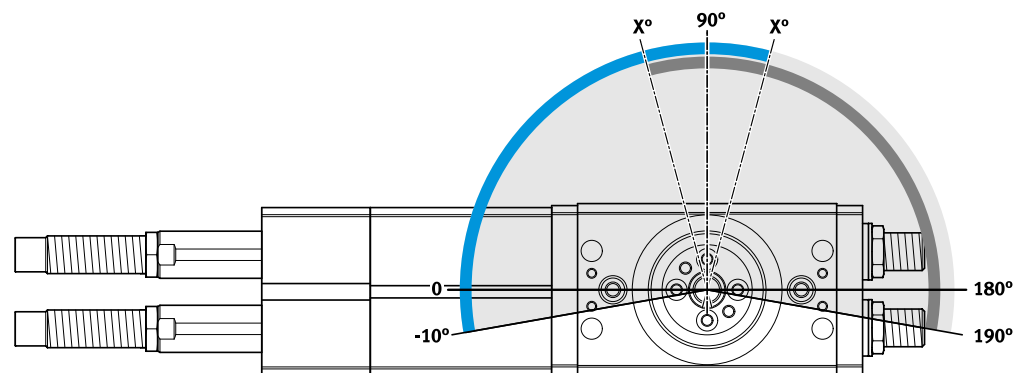
The intermediate-position module enables an additional position to be set, at half of the nominal rotation angle (90°).

A piston with two screwed-in guide systems is supplied with compressed air and moves the gear racks of the unpressurised semi-rotary drive until both pistons rest on the plungers positioned in the guide systems and are held in this position. The movement is cushioned using a shock absorber.

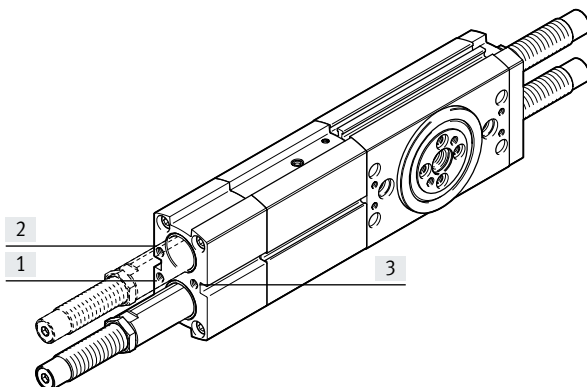
To move to the other end position, the semi-rotary drive is pressurised with compressed air. The piston of the basic drive thus moves the entire intermediate-position piston back into its initial position.

Key features

- Setting range: $90^\circ \pm 10^\circ$
- Cushioning variants: P, Y9
- Can be approached and travelled through from both end positions
- Position sensing of the intermediate position possible



Setting the swivel speed



Semi-rotary drive and intermediate-position module must only be operated with controlled air flow. The flow control should be connected as close as possible to the semi-rotary drive (e.g. one-way flow control valve A-...) → page 65.

In the event of pressure failure, the payload may hit an end position in an uncontrolled manner. In order to prevent this, pilot-operated check valves HGL or an air reservoir VZS are recommended → page 65.

The following movements are adjusted using the supply ports [1] and [2]: end position → intermediate position

Both directions can be adjusted separately from each other.

The following movement is adjusted via supply port [3]:

Intermediate position → end position

Both directions are set simultaneously.

Datasheet

DRRD-...-PS1 – Intermediate position

Swivel angle adjustment

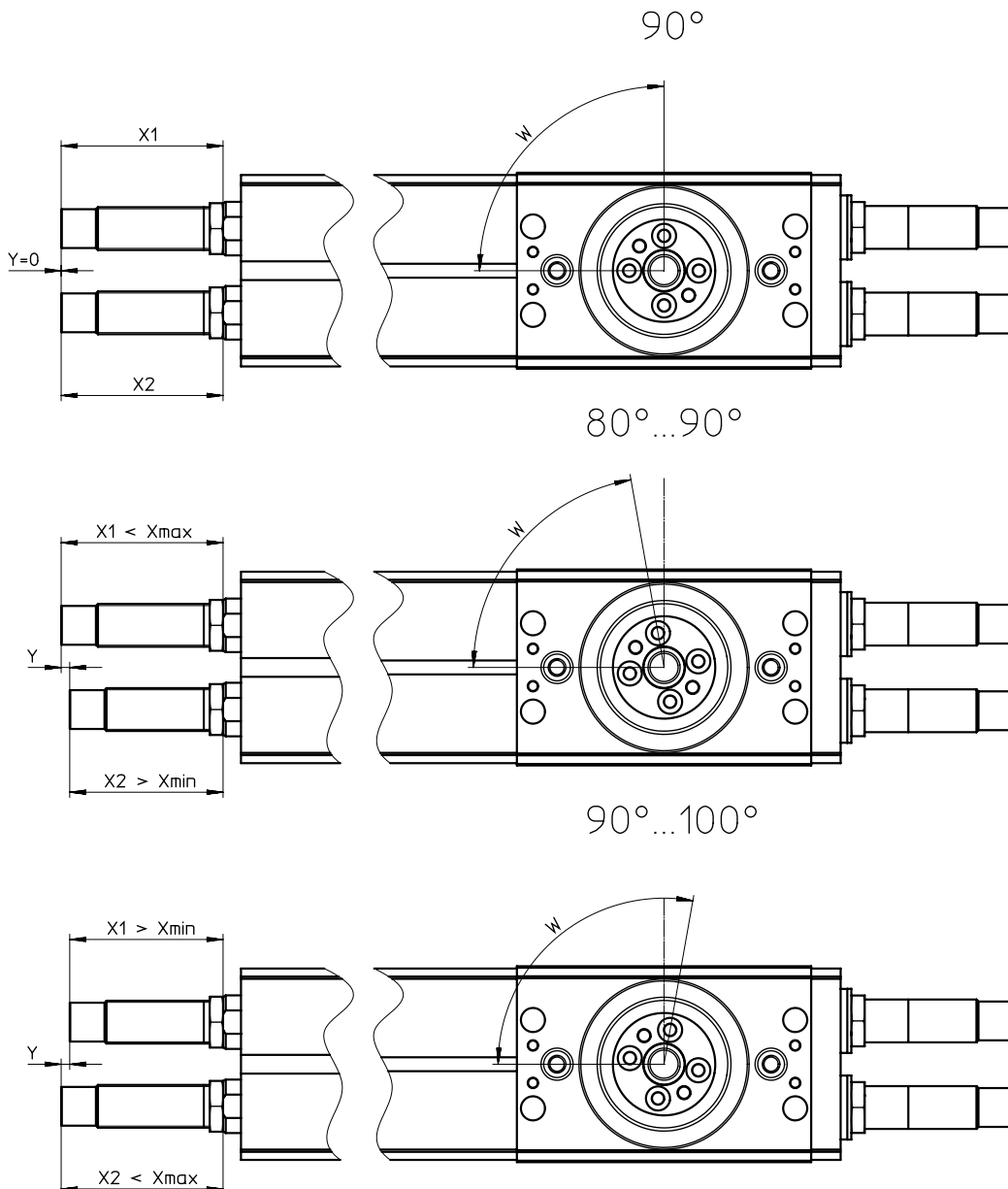
By pushing the shock absorber as far as the stop, the flange shaft of the semi-rotary drive rotates into the intermediate position.

In delivered state, the intermediate position is set to 90°. By screwing in or

unscrewing the shock absorbers, the swivel angle can be adjusted by $\pm 10^\circ$.

If the setting dimension $X_{\max}$ is exceeded, the shock absorber can no longer completely cushion the movement.

If the setting dimension $X_{\min}$ is not reached, the shock absorber not only cushions the intermediate position, but also the end position of the semi-rotary drive.



Size		16	20	25	32	35	40	50
Setting dimension X								
DRRD-...-P								
$X_{\min}$	[mm]	7.7	14.9	14.2	12.5	–	–	–
$X_{\max}$	[mm]	10.1	17.8	20.6	23.2	–	–	–
DRRD-...-Y9								
$X_{\min}$	[mm]	29.6	41.8	56.9	70.3	88.6	86.7	114
$X_{\max}$	[mm]	32	44.5	60.4	78.5	96.2	92.7	128
Dimension Y for 10° change in swivel angle	[mm]	2.3	2.4	3.2	3.7	3.7	5.6	8

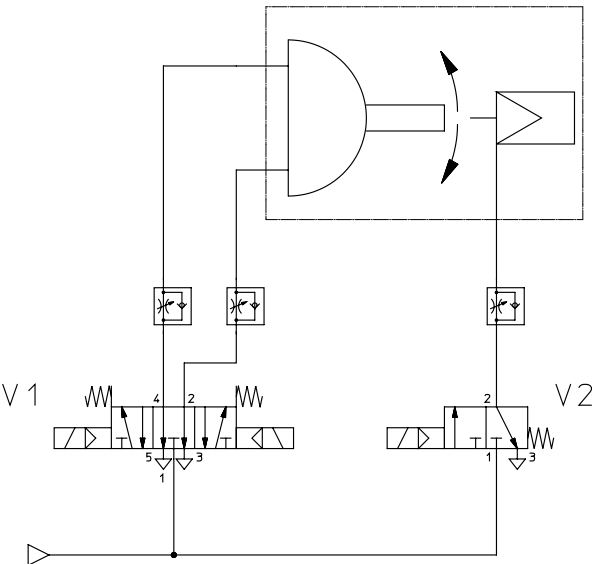
Datasheet

DRRD-...-PS1 – Intermediate position

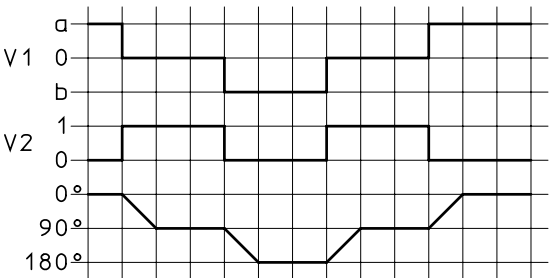
Control variants

Schematic Circuit Diagram

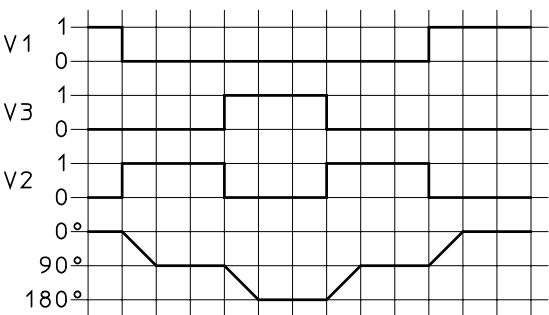
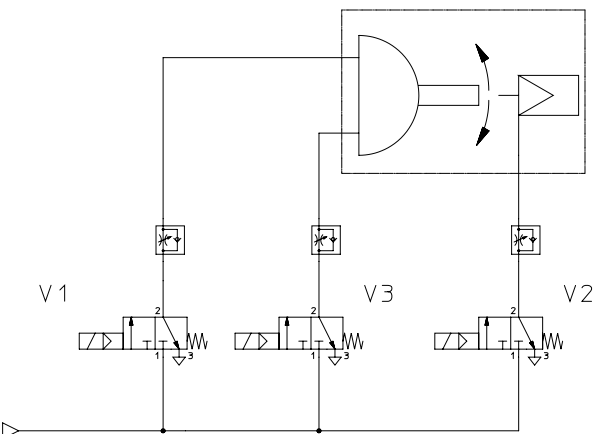
[1] With 1x 5/3-way valve and 1x 3/2-way valve



Control sequence

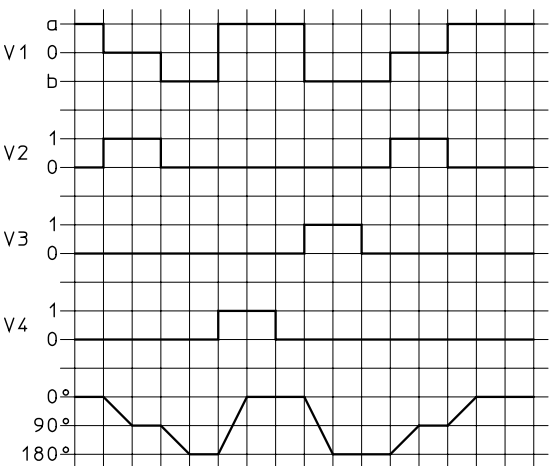
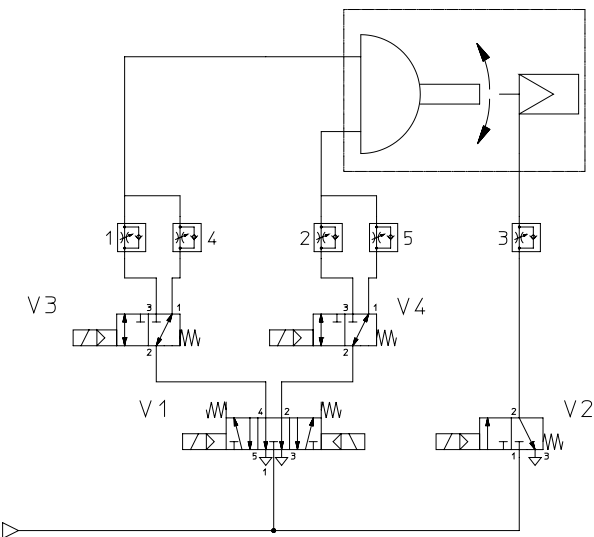


[2] With 3x 3/2-way valves



[3] With 1x 5/3-way valve and 3x 3/2-way valve

The exhaust air flow control valves for the basic drive can be adjusted separately here.



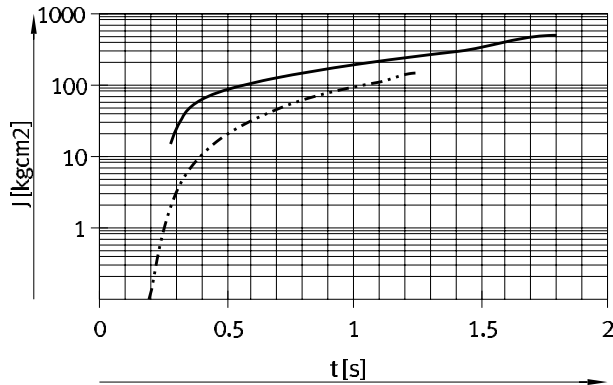
Datasheet

DRRD-...-PS1 – Intermediate position

Max. permissible mass moment of inertia J at the flange shaft as a function of swivel time t
(at room temperature and an operating pressure of 6 bar)

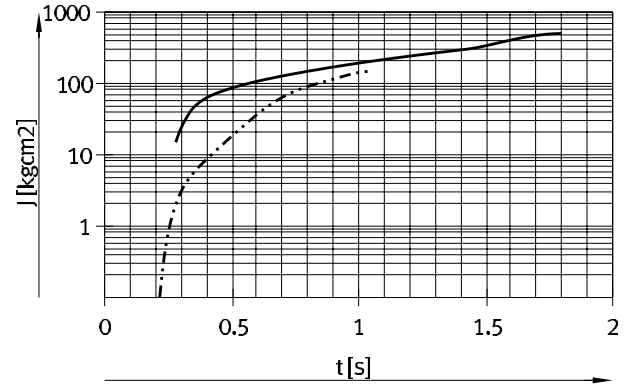
Size 16

End position to intermediate position



— DRRD-16-...-Y9-PS1 → 15 ... 500 kgcm²
 - · - · - · DRRD-16-P-PS1 → 0 ... 150 kgcm²

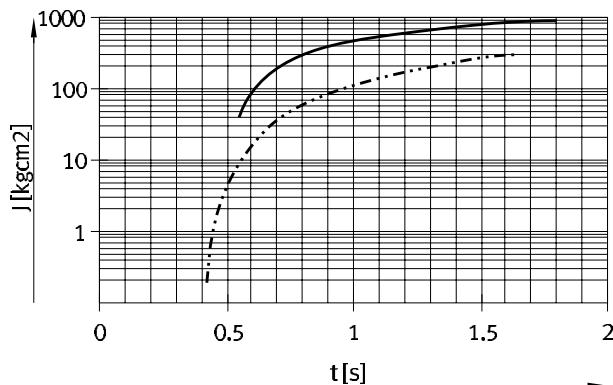
Intermediate position to end position



— DRRD-16-...-Y9-PS1 → 15 ... 500 kgcm²
 - · - · - · DRRD-16-P-PS1 → 0 ... 150 kgcm²

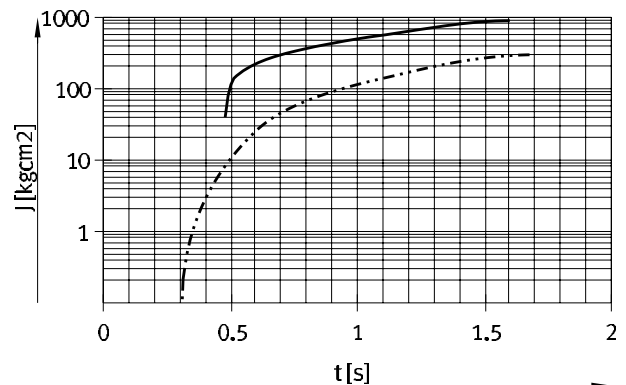
Size 20

End position to intermediate position



— DRRD-20-...-Y9-PS1 → 40 ... 900 kgcm²
 - · - · - · DRRD-20-P-PS1 → 0 ... 300 kgcm²

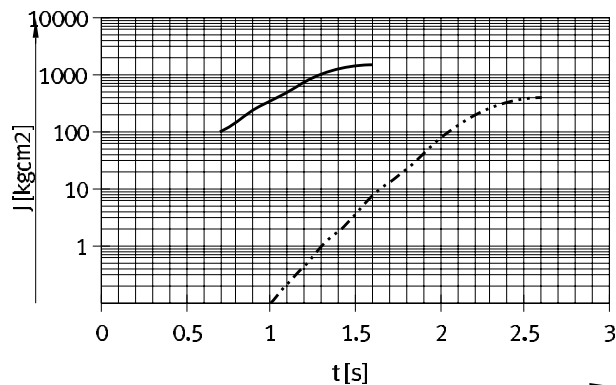
Intermediate position to end position



— DRRD-20-...-Y9-PS1 → 40 ... 900 kgcm²
 - · - · - · DRRD-20-P-PS1 → 0 ... 300 kgcm²

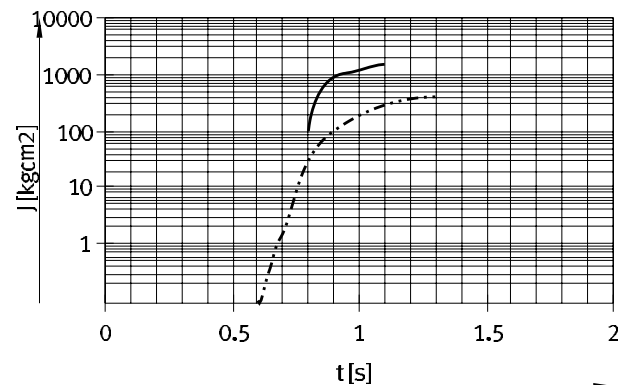
Size 25

End position to intermediate position



— DRRD-25-...-Y9-PS1 → 100 ... 1500 kgcm²
 - · - · - · DRRD-25-P-PS1 → 0 ... 400 kgcm²

Intermediate position to end position



— DRRD-25-...-Y9-PS1 → 100 ... 1500 kgcm²
 - · - · - · DRRD-25-P-PS1 → 0 ... 400 kgcm²

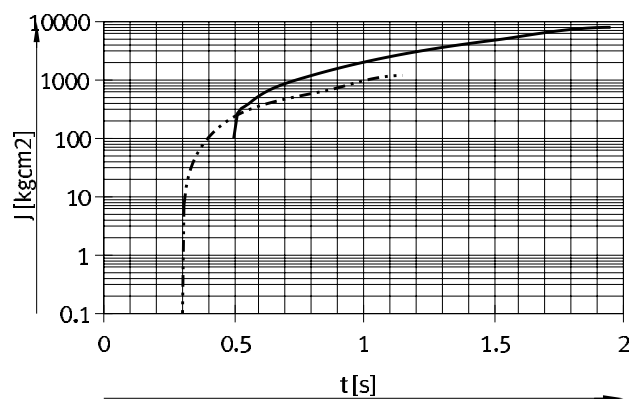
Datasheet

DRRD-...-PS1 – Intermediate position

Max. permissible mass moment of inertia J at the flange shaft as a function of swivel time t (at room temperature and an operating pressure of 6 bar)

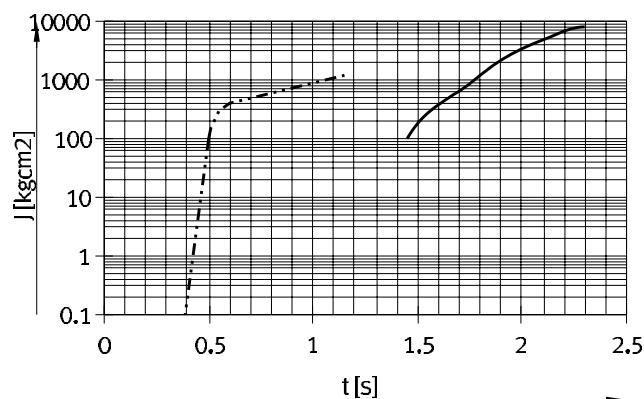
Size 32

End position to intermediate position



— DRRD-32-...-Y9-PS1 → 100 ... 8000 kgcm²
 - - - - - DRRD-32-P-PS1 → 0 ... 500 kgcm²

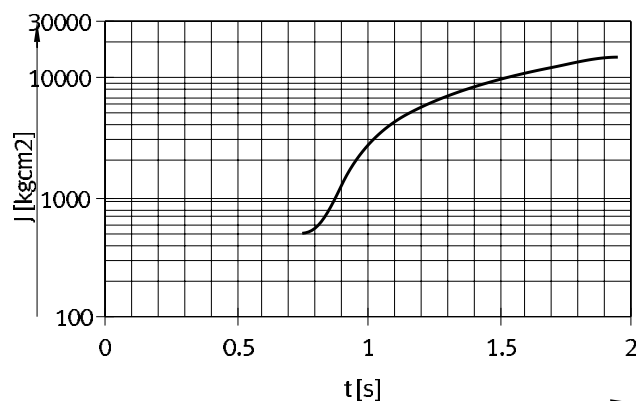
Intermediate position to end position



— DRRD-32-...-Y9-PS1 → 100 ... 8000 kg/cm²
 - - - - - DRRD-32-P-PS1 → 0 ... 500 kg/cm²

Size 35

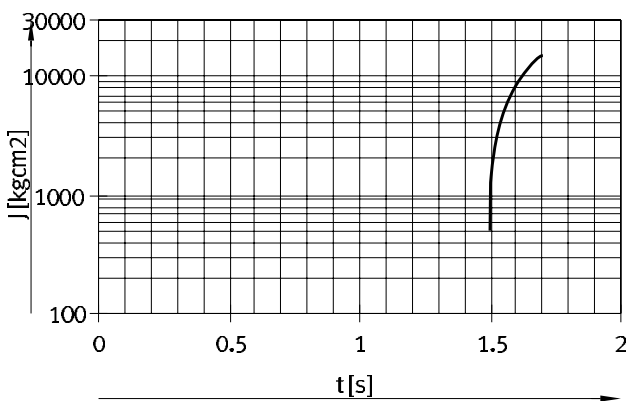
End position to intermediate position



 DRRD-35-...Y9-PS1

Zones
 → 500 ... 15000 kgcm²

Intermediate position to end position



 DRRD-35-...Y9-PS1

Zones
 → 500 ... 15000 kgcm²

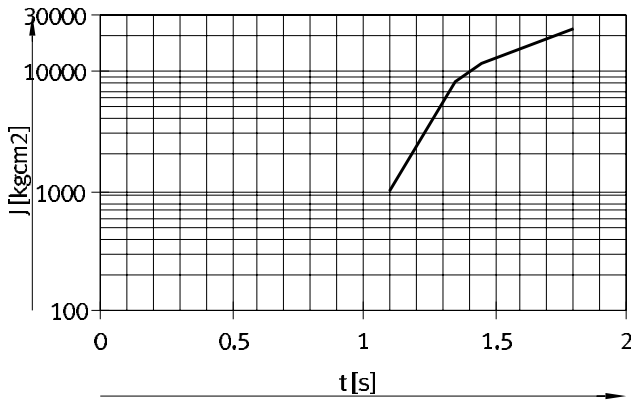
Datasheet

DRRD-...-PS1 – Intermediate position

Max. permissible mass moment of inertia J at the flange shaft as a function of swivel time t
(at room temperature and an operating pressure of 6 bar)

Size 40

End position to intermediate position

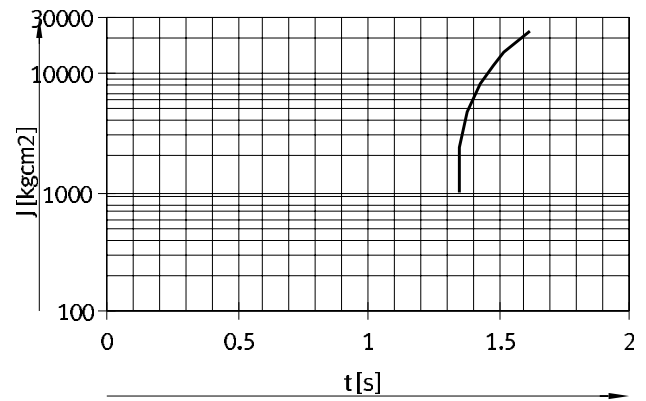


DRRD-40-...-Y9-PS1

Zones

→ 1000 ... 23000 kgcm²

Intermediate position to end position



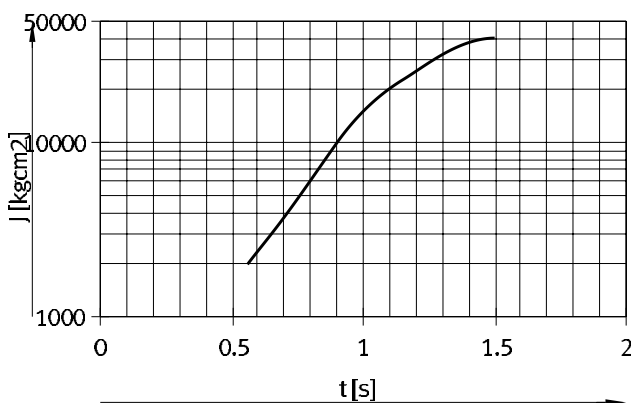
DRRD-40-...-Y9-PS1

Zones

→ 1000 ... 23000 kgcm²

Size 50

End position to intermediate position

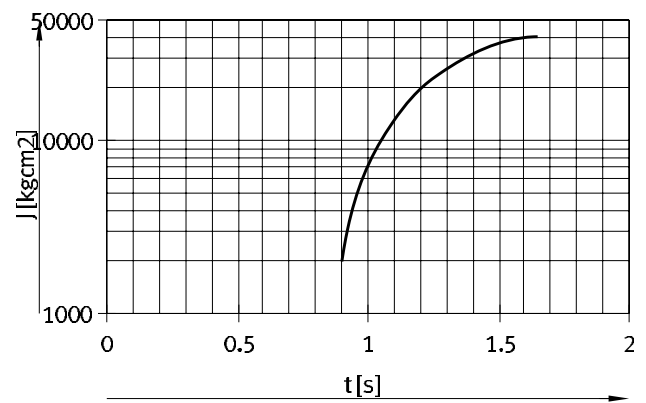


DRRD-50-...-Y9-PS1

Zones

→ 2000 ... 40000 kgcm²

Intermediate position to end position



DRRD-50-...-Y9-PS1

Zones

→ 2000 ... 40000 kgcm²

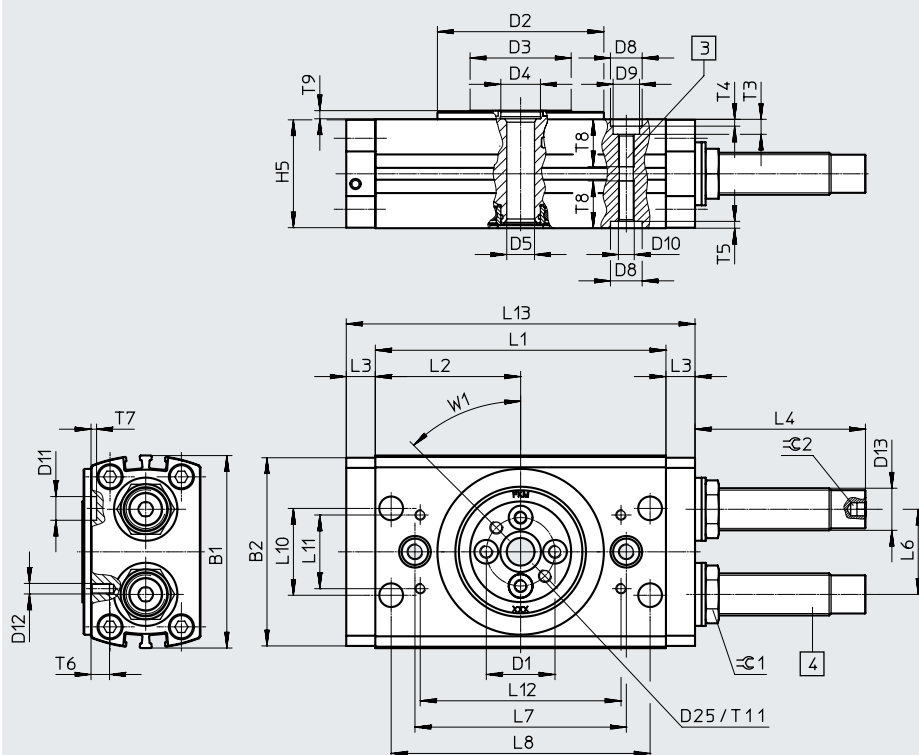
Datasheet

Dimensions

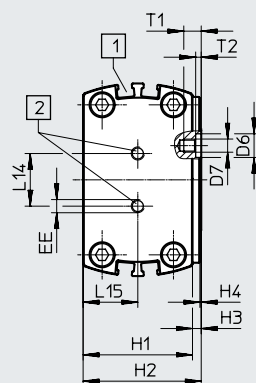
Download CAD data → www.festo.com

The semi-rotary drive must only be operated with controlled air flow. The flow control should be connected as close as possible to the semi-rotary drive (e.g. one-way flow control valve A-...) → page 65.

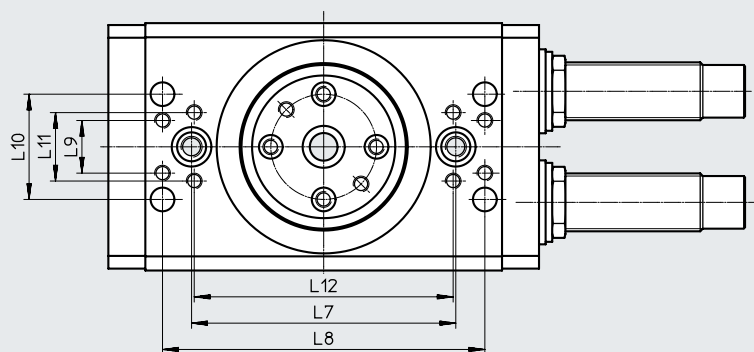
Illustrated position of the flange shaft corresponds to the mid-position (swivel angle 90°).



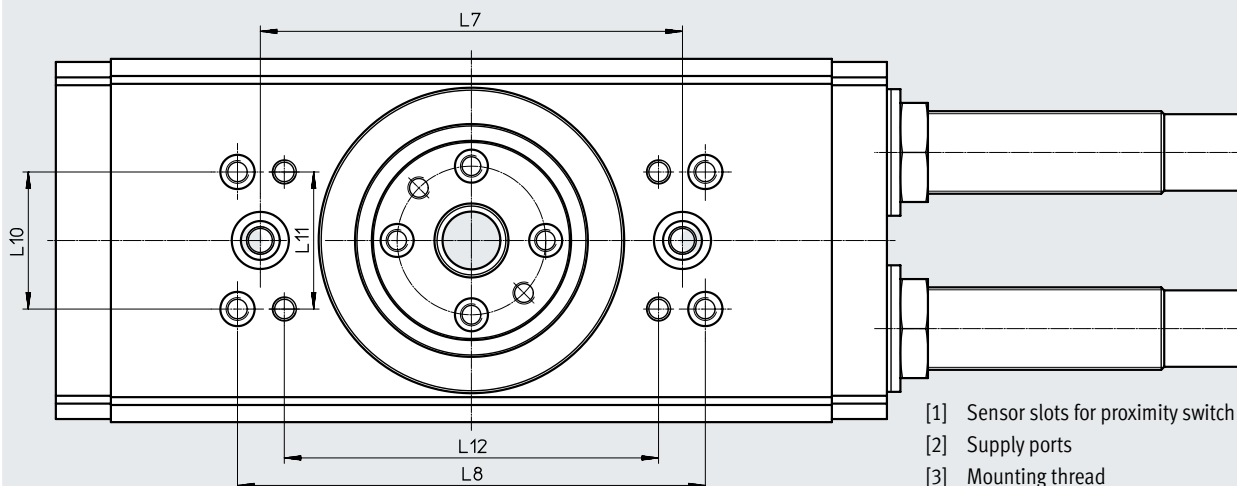
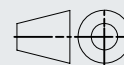
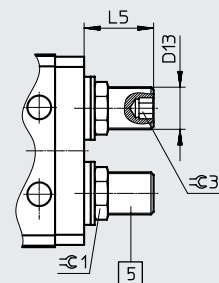
DRRD-32 ... -40



DRRD- ... -P



DRRD-50/63



- [1] Sensor slots for proximity switch
- [2] Supply ports
- [3] Mounting thread
- [4] Shock absorber (DRRD-...-Y9/-Y10/-Y14)
- [5] Cushioning elements (DRRD-...-P)

Datasheet

Size	B1 ±0.25	B2	D1 ∅ ±0.025	D2 ∅ +0/-0.05	D3 ∅	D4 ∅ H7	D5 ∅ +0.15/-0.05	D6 ∅ H7	D7	D8 ∅ H7	D9 ∅	D10
16	58	56.2	21	50	32	12	8	7	M4	9	8	M5
20	65	63.4	24	56	34.9	12	8	7	M4	9	8	M5
25	73.2	71.5	26	63	38.25	15	10.5	9	M5	12	10	M6
32	94	92.6	40	81	54.2	15	10.5	9	M6	15	11	M8
35	106	104	45	91	59.9	25	10.5	9	M6	15	11	M8
40	113	111	45	91	59.9	25	21	9	M6	15	14	M10
50	132	129.9	54	110	73	25	21	12	M8	15	14	M10
63	159	157	63	135	82.8	25	21	15	M10	25	17	M12

Size	D11 ∅ H7	D12	D13	D25	H1 ±0.1	H2 +0.2/-0.1	H3 +0.3/-0.2	H4 ±0.1	H5	L1 ±0.1	L2	L3 ±0.1
16	7	M3	M10x1	M4	33	35.6	2.6	0.5	32.6	84	42	10.5
20	9	M4	M12x1	M5	36	39.6	3.6	0.5	35.6	86	43	11
25	9	M4	M16x1	M5	41.4	44.7	3.3	0.5	41	110	55	11
32	9	M6	M22x1.5	M6	50	55.5	5.5	1	49.6	135	67.5	14
35	9	M6	M26x1.5	M6	63	67	4	1	62.2	148	74	15
40	9	M6	M26x1.5	M6	68	72	4	1	67.2	199	99.5	15
50	15	M8	M30x1.5	M8	78	83	5	1	77.2	262	131	20
63	15	M10	M37x1.5	M10	100	107	7	2	99.2	335	167.5	25

Size	L6	L7 ±0.02	L8 ±0.2	L9 ±0.15	L10 ±0.02	L11 ±0.15	L12 ±0.2	L13	L14	L15	T1	T2 +0.1
16	23.2	64	74	—	26	22	61	105	20	16.3	5.6	1.6
20	26	70	74	—	33	14	80	108	20	17.8	6	1.6
25	32.25	80	98	—	33	14	98	132	20	20.5	6.6	2.1
32	42.2	100	122	20	40	26	98	163	30	24.8	8	2.1
35	49.6	120	130	44	26	44	105	178	42	31.1	8	2.1
40	56	120	130	44	26	44	105	229	42	33.6	8	2.1
50	64	160	160	34	34	54	132	302	50	39	10.6	2.6
63	78	170	190	60	60	60	149	385	50	49.6	14	3.1

Size	T3	T4 +0.1	T5 +0.1	T6	T7 +0.1	T8	T9 +0.1	T11	EE	W1	∠ 1	∠ 2	∠ 3
16	4.7	2.1	2.1	6.3	1.6	15	2.6	5.6	M5	45°	13	3	5
20	4.7	2.1	2.1	6.3	2.1	15	2.6	5.6	M5	45°	15	4	6
25	5.7	2.6	2.6	7	2.1	18	3.1	5.5	M5	45°	19	5	8
32	6.5	3.1	3.1	7.8	2.1	23.1	3.1	8	G1/8	45°	27	5	10
35	6.5	3.1	3.1	8.5	2.1	22.6	3.5	8	G1/8	45°	32	6	10
40	8.6	3.1	3.1	9	2.1	32	3.5	8	G1/8	45°	32	6	10
50	8.6	3.1	3.1	10.5	3.1	30	3.5	10	G1/4	45°	36	8	—
63	11	3.5	3.5	14	3.1	40	3.5	14	G3/8	45°	46	8	—

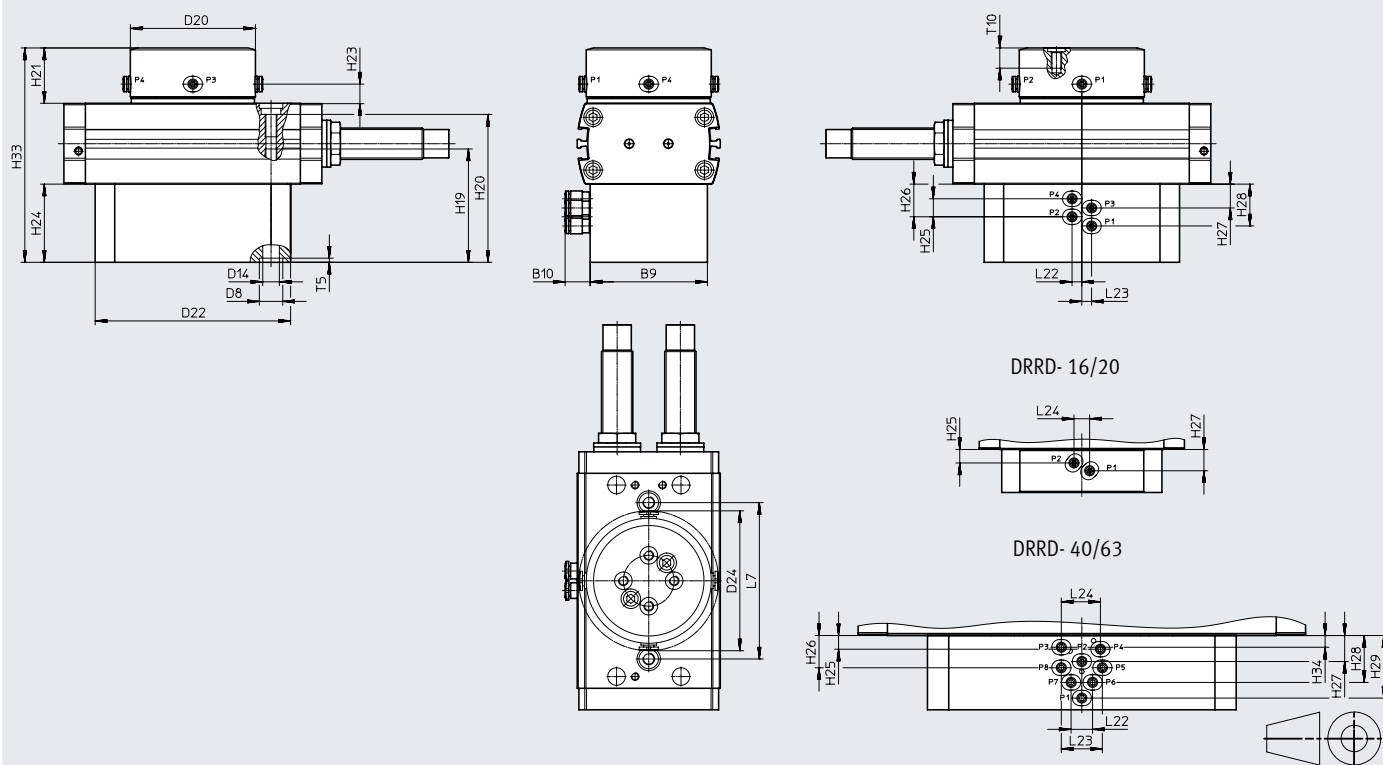
Size	Dimension for swivel angle of 180°		Setting range of the swivel angle		
	L4	L5	L4 min./max.	L5 min./max.	1 mm = ...°
16	37	17.6	-20/+1.5	-12/+1.4	8.7
20	41.8	18	-21.1/+1.5	-11/+1.4	9
25	63	24.3	-28.9/+1.9	-15/+1.8	6.6
32	78.3	29.5	-34.7/+2.4	-19/+2.3	5.6
35	97.5	40.9	-34.7/+2.4	-27/+2.3	5.6
40	98.2	41.6	-53/+3.2	-28/+3.1	3.6
50	126	—	-74.5/+4.4	—	2.6
63	120	—	-71.7/+7.1	—	1.9

Datasheet

Dimensions – Variants

Download CAD data → www.festo.com

P... – Energy through-feed, pneumatic



Size	B9	B10	D8 Ø H7	D14 Ø	D20 Ø	D22 Ø
16	52	13.4	9	6	54	82
20	58	13.4	9	6	54	82
25	60	12.8	12	6.5	64	100
32	70	12.8	15	8.5	64	120
35	80	12.8	15	8.5	64	138
40	80	13.4	15	11	89	158
50	80	13.4	15	11	89	190
63	80	13.4	25	13	89	210

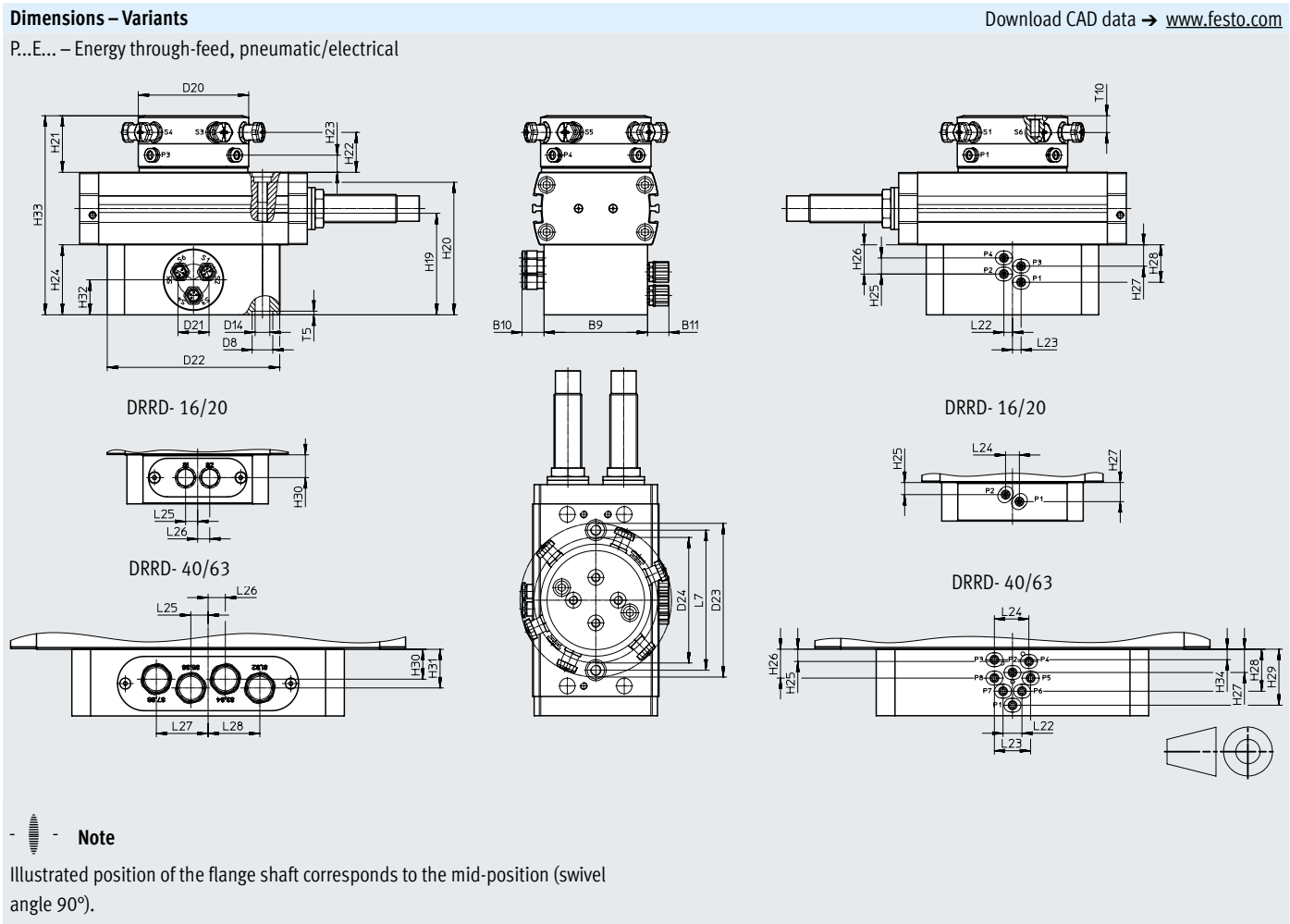
Size	D24 Ø	H19	H20	H21	H23	H24
16	70	43	56.4	16.6	7.6	22
20	70	43	59.3	17.6	8.6	22
25	71.6	57	74.7	28.3	9.8	40
32	71.6	62	82.4	31.5	12	40
35	71.6	61.6	95.5	30	10.5	40
40	96.9	70	97.4	21	10.5	38
50	96.9	68	107.4	24	11.5	38
63	96.9	78	127	29	13.5	38

Datasheet

Size	H25	H26	H27	H28	H29	H33	H34
16	6.9	–	10.9	–	–	71.6	–
20	6.9	–	10.9	–	–	75.6	–
25	7.5	16.7	12.2	21.4	–	109.7	–
32	7.5	16.7	12.2	21.4	–	121.5	–
35	7.5	16.7	12.2	21.4	–	133	–
40	7	16.5	13.3	24	32	127	6
50	7	16.5	13.3	24	32	140	6
63	7	16.5	13.3	24	32	167	6

Size	L7 ±0.02	L22	L23	L24	T5 +0.1	T10
16	64	4	4	8	2.1	8.6
20	70	4	4	8	2.1	8.6
25	80	5	5	–	2.1	9.6
32	100	5	5	–	3.1	11.1
35	120	5	5	–	3.1	11.1
40	120	11	21	20	3.1	10.1
50	160	11	21	20	3.1	14.6
63	170	11	21	20	3.5	17.1

Datasheet



Size	B9	B10	B11	D8 ø H7	D14 ø	D20 ø	D21 ø	D22 ø
16	52	13.4	8.5	9	6	54	16	82
20	58	13.4	8.5	9	6	54	16	82
25	60	12.8	12.4	12	6.5	64	18	100
32	70	12.8	12.4	15	8.5	64	18	120
35	80	12.8	12.4	15	8.5	64	18	138
40	80	13.4	24	15	11	89	–	158
50	80	13.4	24	15	11	89	–	190
63	80	13.4	24	25	13	89	–	210

Size	D23 ø	D24 ø	H21	H22	H23	H24	H25	H26
16	71.1	70	28.6	21.1	7.6	28	6.9	–
20	71.1	70	29.6	22.1	8.6	28	6.9	–
25	89.8	71.6	32.3	22.8	9.8	40	7.5	16.7
32	89.8	71.6	34.5	25	12	40	7.5	16.7
35	89.8	71.6	33	23.5	10.5	40	7.5	16.7
40	138.5	96.9	40	28.5	10.5	38	7	16.5
50	138.5	96.9	44	32.5	11.5	38	7	16.5
63	138.5	96.9	48	36.5	13.5	38	7	16.5

Datasheet

Size	H27	H28	H29	H30	H31	H32	H33	H34	L7 ±0.02
16	10.9	–	–	15.5	–	–	89.6	–	64
20	10.9	–	–	15.5	–	–	93.6	–	70
25	12.2	21.4	–	–	–	20	113.7	–	80
32	12.2	21.4	–	–	–	20	124.5	–	100
35	12.2	21.4	–	–	–	20	136	–	120
40	13.3	24	32	17	22	–	146	6	120
50	13.3	24	32	17	22	–	160	6	160
63	13.3	24	32	17	22	–	186	6	170

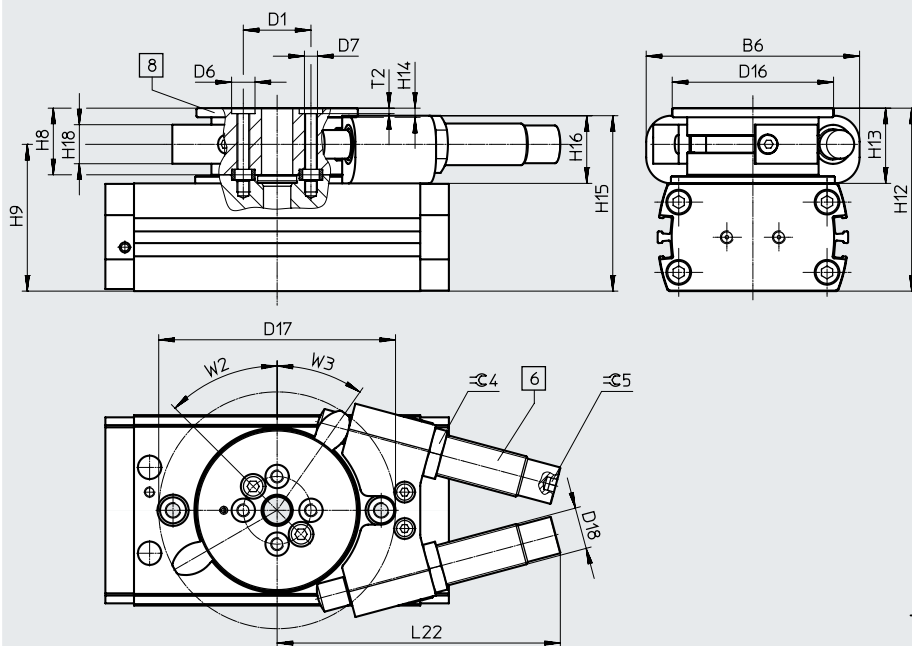
Size	L22	L23	L24	L25	L26	L27	L28	T5 +0.1	T10
16	4	4	8	7	7	–	–	2.1	8.6
20	4	4	8	7	7	–	–	2.1	8.6
25	5	5	–	–	–	–	–	2.1	9.6
32	5	5	–	–	–	–	–	3.1	11.1
35	5	5	–	–	–	–	–	3.1	11.1
40	11	21	20	10	10	30	30	3.1	10.1
50	11	21	20	10	10	30	30	3.1	14.6
63	11	21	20	10	10	30	30	3.5	17.1

Datasheet

Dimensions – Variants

Download CAD data → www.festo.com

Y12 – With external shock absorber



- [6] Shock absorber
[8] Flange module

Size	B6 ±0.2	D1 ∅ ±0.025	D6 ∅ H7	D7	D16 ∅	D17	D18	H8 ±0.1	H9	H12
16	58	21	7	M4	49	69.4	M10x1	17	43.1	52.6
20	75	24	7	M4	62	91	M12x1	25.6	51.2	65.2
25	82	26	9	M5	62	91	M16x1	25.6	56.5	70.3
32	120	40	9	M6	79	126.2	M22x1.5	31.5	68.5	87
35	133	45	9	M6	89	146.7	M22x1.5	34	83	101
40	133	45	9	M6	89	146.7	M22x1.5	34	88	106
50	152	54	12	M8	110	165.2	M26x1.5	42	101.5	125
63	186	63	15	M10	130	212.2	M30x1.5	52	129.5	159

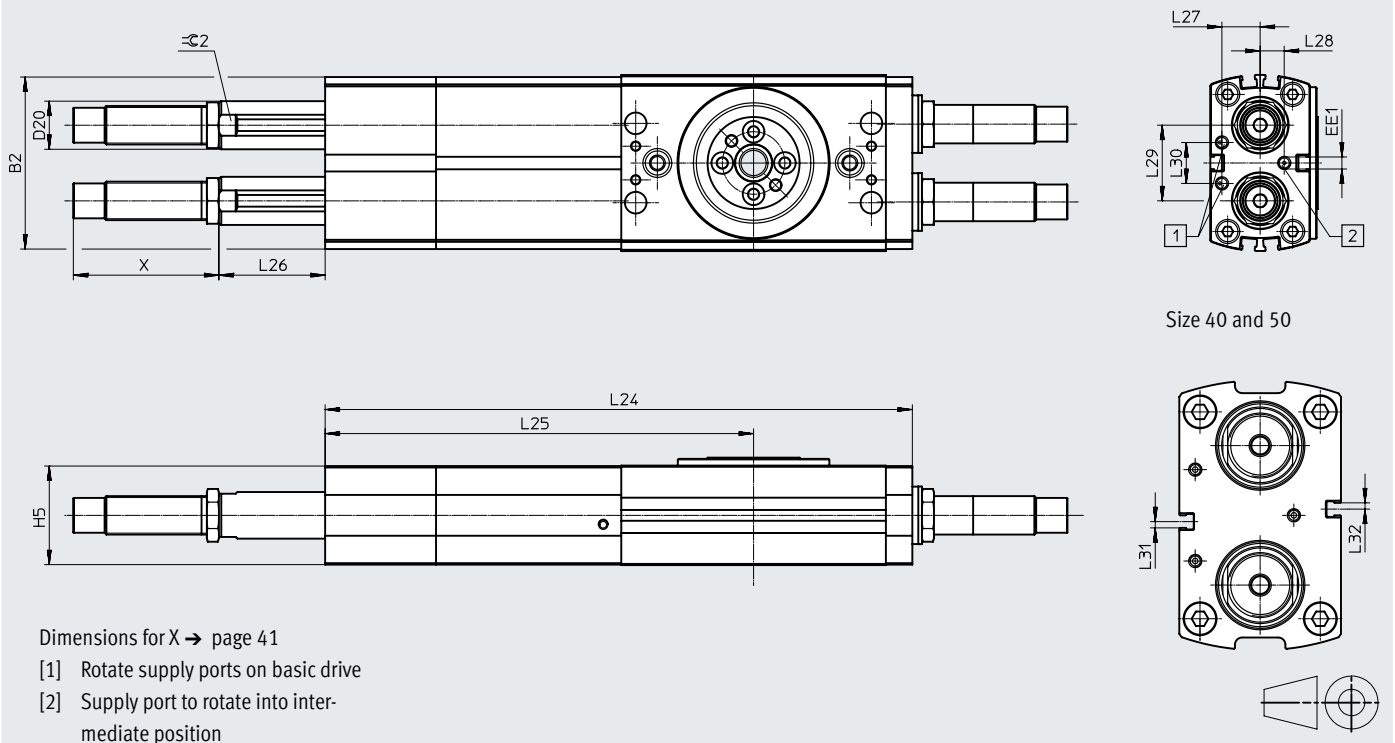
Size	H13	H14	H15	H16	H18	L22 max.	T2 +0.1	W2	W3	∠ 4	∠ 5
16	19.6	3.5	51	18	10	65.2	1.6	45°	36°	13	3
20	29.2	3.5	59.5	23.5	15	85.3	1.6	45°	38°	15	4
25	28.9	3.5	67.4	26	15	108.9	2.1	45°	35°	19	5
32	37	4	85	35	22	149.7	2.1	45°	35°	27	5
35	38	5	99	36	21	155.5	2.1	45°	38°	27	5
40	38	5	104	36	21	155.5	2.1	45°	38°	27	5
50	47	6	123	45	30	171.6	2.6	45°	33°	32	6
63	59	6	155.5	55.5	36	228	3.1	45°	36°	36	8

Datasheet

Dimensions – Variants

Download CAD data → www.festo.com

PS1 – Intermediate position



Size	B2	H5	L24	L25	L26	L26	L27
					min.	max.	
16	56.2	32.6	193.1	140.6	0.3	21.5	12
20	63.4	35.6	205.1	151.1	4.5	28.4	14
25	71.5	41	244.1	178.1	14.1	44.2	15.9
32	92.6	49.6	320.1	238.6	3.4	43.5	19.5
35	104	62.2	343.1	254.1	14.8	54.5	25
40	111	67.2	392.1	277.6	9	54.1	27
50	129.9	77.2	542.6	391.6	12.3	86	30

Size	L28	L29	L30	L31	L32	D20 ø	EE1	≈ 2
16	6.2	21.65	15	–	–	14	M5	12
20	9	26.25	16	–	–	16	M5	14
25	10	31.45	17	–	–	20	M5	18
32	14	38.45	16	–	–	28	M5	24
35	18	49.6	18	–	–	32	M5	27
40	14	58	38	2.6	2.6	32	M5	27
50	20	78	44	5	5	36	G1/8	32

Ordering data

DRRD	Size	Swivel angle [°]	Part no.	Type
P – Elastic cushioning rings/plates at both ends				
	16	180	1577238	DRRD-16-180-FH-PA
	20		1395606	DRRD-20-180-FH-PA
	25		1359980	DRRD-25-180-FH-PA
	32		1578512	DRRD-32-180-FH-PA
	35		1526825	DRRD-35-180-FH-PA
	40		1503269	DRRD-40-180-FH-PA
Y9 – Shock absorber, linear, self-adjusting at both ends				
	16	180	1644389	DRRD-16-180-FH-Y9A
	20		1427379	DRRD-20-180-FH-Y9A
	25		1360248	DRRD-25-180-FH-Y9A
	32		1578518	DRRD-32-180-FH-Y9A
	35		1547102	DRRD-35-180-FH-Y9A
	40		1526986	DRRD-40-180-FH-Y9A

Ordering data – Modular product system

Size	16	20	25	32	35	40	50	63	Conditions	Code	Enter code
Module no.	574399	574400	574401	574402	574403	574404	574405	574407			
Function	Semi-rotary drive									DRRD	DRRD
Size	16	20	25	32	35	40	50	63		-...	
Nominal swivel angle	180°									-180	-180
Output shaft	Flanged shaft, hollow									-FH	-FH
Energy through-feed	None									-	
	Pneumatic, 2 ducts									P2	
	Pneumatic, 2 ducts; electric, 2 signals									P2E2	
	-		Pneumatic, 4 ducts				-			P4	
	-		Pneumatic, 4 ducts; electric, 6 signals				-			P4E6	
	-					Pneumatic, 8 ducts				P8	
	-					Pneumatic, 8 ducts; electric, 8 signals				P8E8	
Cushioning	Elastic cushioning rings/plates at both ends						-			-P	
	Shock absorber, linear, self-adjusting at both ends									-Y9	
	-		Shock absorber, linear, self-adjusting at both ends, hard	-	Linear shock absorber, self-adjusting at both ends, hard					-Y10	
	Shock absorber, linear, self-adjusting at both ends, external								[1] [5]	-Y12	
	Shock absorber, linear, at both ends, self-adjusting, soft						-			-Y14	
	Position sensing	Via proximity switch									A
EU certification	None										
	II 2GD								[2]	-EX4	
Intermediate position	None						-				
	1 intermediate position						-		[3]	-PS1	
End-position locking	None										
	At both ends								[4] [5]	-E1	
Sensor mounting, external	None										
	Mounting rail for proximity switch								[5]	-R	
Version	Standard										
	Splash-proof design									-SG	
Operating manual	With operating instructions										

- [1] **Y12** Not with end-position locking E1 and splash-proof design SG
 [2] **EX4** Not with end-position locking E1, energy through-feed P2E2, P4E6, P8E8 and intermediate position PS1
 [3] **PS1** Not with cushioning Y10, Y14 and with cushioning P only for size 16 ... 32
 [4] **E1** Not with sensor mounting R and splash-proof design SG
 [5] **Y12, E1, R**

Accessories

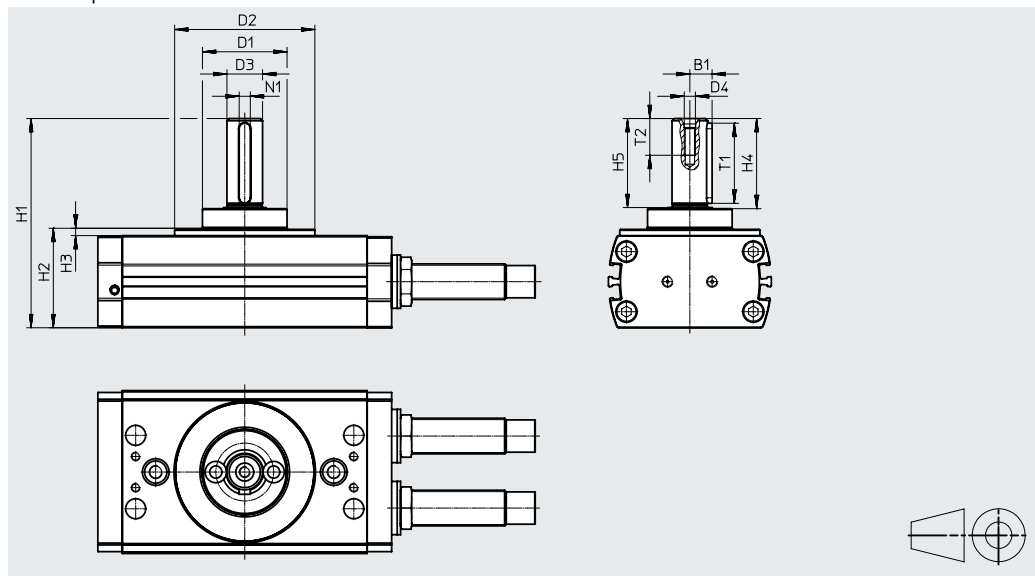
Drive shaft adapter DARF-Q11

For size 12 ... 40

Material:

Tempered steel

RoHS-compliant



Dimensions and ordering data

For size	B1 +0.1/-0.2	D1 Ø -0.2	D2 Ø	D3 Ø g7	D4	H1	H2	H3
12	4.8	30	30	8	M3	56.75±0.3	30.75±0.2	0.75+0.2/-0.6
16	6.2	32	50 _{h7}	10	M3	66.1+0.3/-0.2	35.6+0.2/-0.1	2.6+0.3/-0.2
20	7.5	35	56 _{h7}	12	M4	76.8+0.3/-0.2	39.6+0.2/-0.1	3.6+0.3/-0.2
25	10	38	63 _{h7}	16	M5	94+0.3/-0.2	44.7+0.2/-0.1	3.3+0.3/-0.2
32	12.5	55	81 _{h7}	20	M6	114.8+0.3/-0.2	55.5+0.2/-0.1	5.5+0.3/-0.2
35	13.5	60	91 _{h7}	22	M8	126.2+0.3/-0.2	67+0.2/-0.1	4+0.3/-0.2
40	13.5	60	91 _{h7}	22	M8	131.2+0.3/-0.2	72+0.2/-0.1	4+0.3/-0.2

For size	H4	H5	T1	T2 +2	N1 ²⁾ P9	Weight [g]	Part no.	Type ¹⁾
12	20.5	20±0.1	16 ^{+0.2}	11.6	2	38	4835942	DARF-Q11-12
16	23.5	23±0.1	18.1 ^{+0.3}	11.6	3	60	4835943	DARF-Q11-16
20	30.5	30±0.1	25.1 ^{+0.3}	13.5	4	79	4835941	DARF-Q11-20
25	40.5	40±0.2	36.1 ^{+0.3}	16.5	5	145	4835938	DARF-Q11-25
32	50.5	50±0.2	45.1 ^{+0.3}	21	6	287	4835940	DARF-Q11-32
35	50.5	50±0.2	45.1 ^{+0.3}	32	6	350	4835939	DARF-Q11-35/40
40	50.5	50±0.2	45.1 ^{+0.3}	32	6	350	4835939	DARF-Q11-35/40

1) Suitable for ATEX

2) Feather key to DIN 6885

Accessories

Clamping unit DADL-EL

For size 16 ... 63

(Order code: E1)

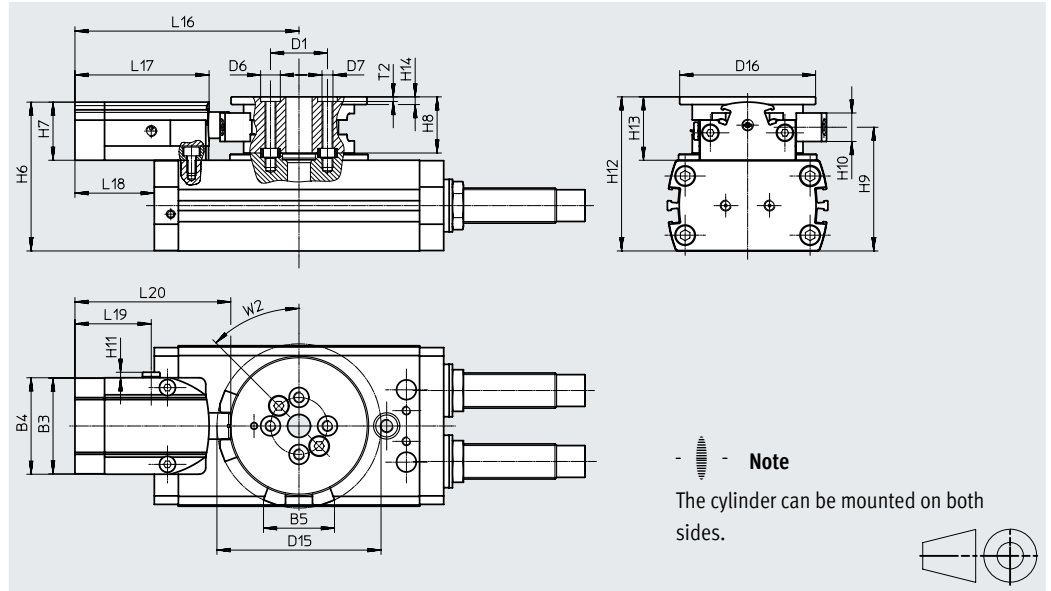
Product in stock

Material:

Housing: Anodised aluminium

Bearing: plastic

RoHS-compliant



Dimensions and ordering data

For size	B3	B4	B5	D1 Ø	D6 Ø	D7	D15 Ø	D16 Ø	H6	H7	H8	H9
	±0.2	±0.2		±0.025	H7					±0.15	±0.1	
16	37.6	38	26.9	21	7	M4	61.9	49	51	18	17	43.1
20	43.6	44	32.4	24	7	M4	74.9	62	62.5	26.5	25.6	51.2
25	43.6	44	32.4	26	9	M5	74.9	62	67.9	26.5	25.6	56.5
32	43.6	44	39.4	40	9	M6	95.4	79	79	26.7	31.5	68.5
35	57.6	58	50.2	45	9	M6	110.9	89	98	35	34	83
40	57.6	58	50.2	45	9	M6	110.9	89	103	35	34	88
50	71.4	72	59.6	54	15	M8	124.3	110	123	45	42	101.5
63	71.4	72	65.8	63	15	M10	148.5	130	149	49	52	129.5

For size	H10	H11	H12	H13	H14	L16	L17	L18	L19	L20	T2	W2
											+0.1	
16	9	2.5	52.6	19.6	3.5	83	50	30.5	34	58.3	1.6	45°
20	13	2.5	65.2	29.2	3.5	102.2	61.2	48.2	34.8	71.1	1.6	45°
25	13	2.5	70.3	28.9	3.5	102.2	61.2	36.2	34.8	71.1	2.1	45°
32	17	2.5	87	37	4	112.2	61.2	30.7	34.8	71.1	2.1	45°
35	14.8	2.5	101	38	5	132.5	70.6	43.5	42.6	85.4	2.1	45°
40	14.8	2.5	106	38	5	132.5	70.6	18	42.6	85.4	2.1	45°
50	19	4.6	125	47	6	151	81	0	46	98	2.6	45°
63	22	4.6	159	59	6	163	81	-29.5	46	99.5	3.1	45°

For size	Pneumatic connection	Operating pressure [bar]	Position sensing	Adjustable swivel angle [°]	Weight [g]	Part no.	Type
16	M5	3 ... 8	Via proximity switch	60 ... 200	166	1692770	DADL-EL-Q11-16
20		5 ... 8			382	1579786	DADL-EL-Q11-20
25					370	1568183	DADL-EL-Q11-25
32		3 ... 8		55 ... 200	600	1631139	DADL-EL-Q11-32
35				57 ... 200	900	1544900	DADL-EL-Q11-35/40
40					900	1544900	DADL-EL-Q11-35/40
50	G1/8			62 ... 200	1610	1796637	DADL-EL-Q11-50
63				55 ... 200	2380	1941568	DADL-EL-Q11-63

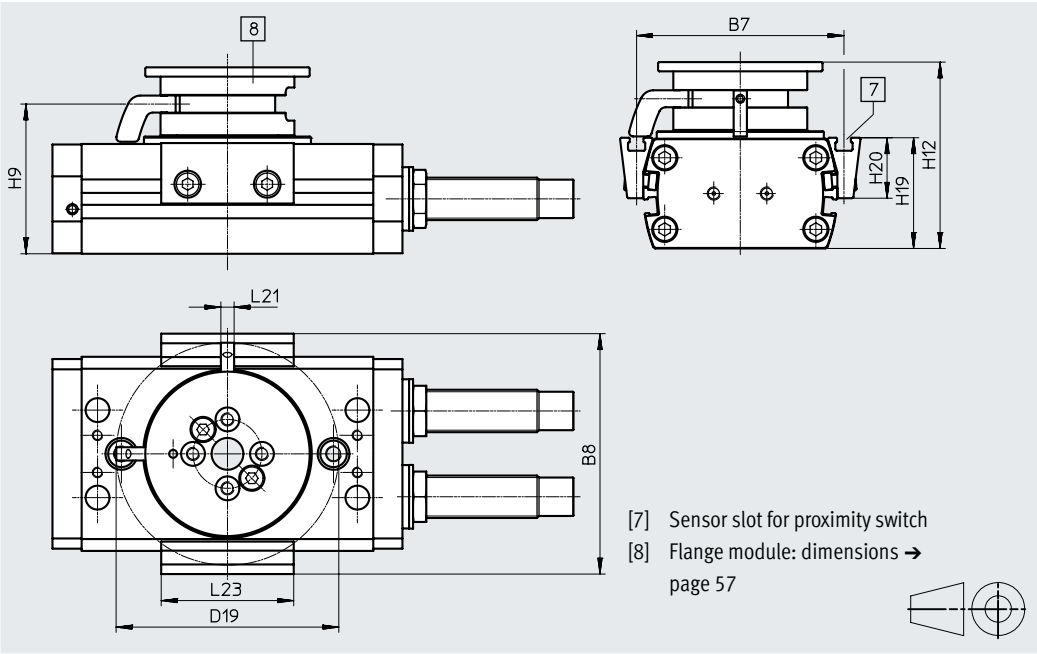
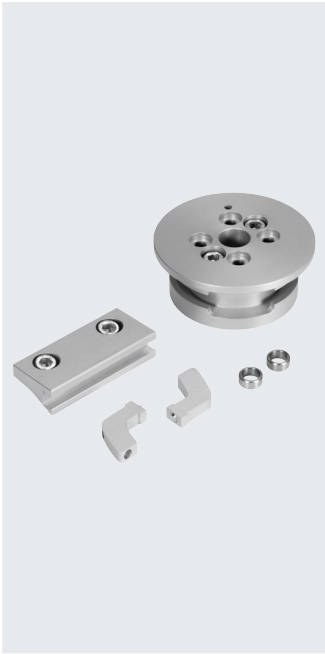
Accessories

Sensing kit DASI-...-KT

For size 16 ... 63
(order code: R)
Product in stock

Material:
Anodised aluminium
RoHs-compliant

For sensing the piston position using
inductive proximity sensors SIES
→ page 61

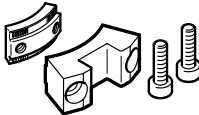
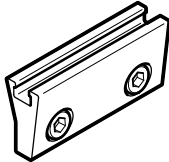


Dimensions and ordering data						
For size	B7	B8	D19 Ø	H9	H12	H19
16	64.4	76.1	70.9	43.1	52.6	33.5
20	74	85.7	84	51.2	65.2	36.4
25	78.2	90.7	84	56.5	70.3	41.8
32	100	113.5	107.5	68.5	87	50.5
35	116	132.9	125.2	83	101	63.5
40	118	135.8	125.2	88	106	68.5
50	136	155.3	146.6	101.5	125	79.1
63	163	185.3	173.9	129.5	159	101

For size	H20 ±0.1	L21	L23	Weight [g]	Part no.	Type ¹⁾
16	18.5	5	50	110	1693008	DASI-Q11-16-A-KT
20	20.2	5	50	192	1580899	DASI-Q11-20-A-KT
25	22.8	5	50	192	1568461	DASI-Q11-25-A-KT
32	26.5	7	50	366	1632097	DASI-Q11-32-A-KT
35	33.1	7	50	485	1551144	DASI-Q11-35-A-KT
40	35.5	7	50	485	1550027	DASI-Q11-40-A-KT
50	43	7	50	810	1797135	DASI-Q11-50-A-KT
63	55	7	50	1390	1946877	DASI-Q11-63-A-KT

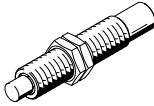
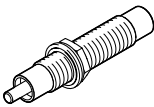
1) Suitable for ATEX

Accessories

Ordering data ²⁾		For size	Description	Weight [g]	Part no.	Type	PU ¹⁾
Clamping component DADL-EC							
	16	For securing an intermediate position in combination with the clamping unit DADL-EL	18	1692496	DADL-EC-Q11-16	1	
	20, 25		36	1435411	DADL-EC-Q11-20/25		
	32		67	1631170	DADL-EC-Q11-32		
	35, 40		98	1535091	DADL-EC-Q11-35/40		
	50		140	1796626	DADL-EC-Q11-50		
	63		220	1941355	DADL-EC-Q11-63		
Sensor bracket DASI-....SR ³⁾							
	16	Additional sensing option in connection with the sensing kit DASI-....KT	28	1692983	DASI-Q11-16-A-SR	2	
	20		32	1581420	DASI-Q11-20-A-SR		
	25		32	1568451	DASI-Q11-25-A-SR		
	32		42	1631997	DASI-Q11-32-A-SR		
	35		62	1550870	DASI-Q11-35-A-SR		
	40		62	1548054	DASI-Q11-40-A-SR		
	50		75	1797071	DASI-Q11-50-A-SR		
	63		110	1971563	DASI-Q11-63-A-SR		
	Switch lug DASI-....SL ³⁾						
	16	Additional sensing option in connection with the sensing kit DASI-....KT	2.5	1692969	DASI-Q11-16-A-SL	1	
	20, 25		4	1568436	DASI-Q11-20/25-A-SL		
	32		6	1631824	DASI-Q11-32-A-SL		
	35, 40		8	1548155	DASI-Q11-35/40-A-SL		
	50		10	1797021	DASI-Q11-50-A-SL		
	63		15	1971550	DASI-Q11-63-A-SL		

- 1) Packaging unit
2) Product in stock
3) Suitable for ATEX

Accessories

Ordering data ²⁾	For size	Description	Weight [g]	Part no.	Type	PU ¹⁾		
Shock absorber DYSC ³⁾								
	12	- Self-adjusting shock absorbers for use as external cushioning (Y12) - Included in the scope of delivery for semi-rotary drive DRRD-...-Y12	9	548011	DYSC-5-5-Y1F	1		
	16		17	548012	DYSC-7-5-Y1F			
	20		36	548013	DYSC-8-8-Y1F			
	25		81	548014	DYSC-12-12-Y1F			
	32, 35, 40		210	553593	DYSC-16-18-Y1F			
	50		370	2479149	DYSC-20-18-Y1F			
	63		575	2480234	DYSC-25-25-Y1F			
Shock absorber DYSD ³⁾								
	12	- Self-adjusting shock absorbers (Y9) - Included in the scope of delivery for semi-rotary drive DRRD-...-Y9 - Especially for pressure chamber	10	8161520	DYSD-Q11-5-5-Y1F-L-Y9	1		
	16		20	8161521	DYSD-Q11-7-5-Y1F-L-Y9			
	20		40	8161523	DYSD-Q11-8-8-Y1F-L-Y9			
	25		95	8161525	DYSD-Q11-12-12-Y1F-Y9			
	32		220	8161528	DYSD-Q11-16-15-Y1F-Y9			
	35, 40		385	8161530	DYSD-Q11-20-16-Y1F-Y9			
	50		635	8161533	DYSD-Q11-25-24-Y1F-Y9			
	63	1050	8161535	DYSD-Q11-32-25-Y1F-S-Y9				
	25	- Self-adjusting shock absorbers, hard version (Y10) - Included in the scope of delivery for semi-rotary drive DRRD-...-Y10 - Especially for pressure chamber	95	8161526	DYSD-Q11-12-12-Y1F-L-Y10			
	35, 40		385	8161531	DYSD-Q11-20-16-Y1F-L-Y10			
	50		635	8161534	DYSD-Q11-25-24-Y1F-L-Y10			
	63		1050	8161536	DYSD-Q11-32-25-Y1F-L-Y10			
	16	- Self-adjusting shock absorbers, soft version (Y14) - Included in the scope of delivery for semi-rotary drive DRRD-...-Y14 - Especially for pressure chamber	20	8161522	DYSD-Q11-7-5-Y1F-Y14			
	20		40	8161524	DYSD-Q11-8-8-Y1F-S-Y14			
	25		95	8161527	DYSD-Q11-12-12-Y1F-S-Y14			
	32		220	8161529	DYSD-Q11-16-15-Y1F-S-Y14			
	35, 40		385	8161532	DYSD-Q11-20-16-Y1F-S-Y14			
	Centring sleeve ZBH ³⁾							
	8, 10	- For centring the semi-rotary drive 2 included in the scope of delivery for the semi-rotary drive	1	8146544	ZBH-7-B	10		
	12, 16, 20		1	8137184	ZBH-9-B			
	25		1	8137185	ZBH-12-B			
	32 ... 50		3	191409	ZBH-15			
	63		5	8023856	ZBH-25			
	8, 10, 12	- For centring attachments on the flange shaft - Centring sleeves are included in the scope of delivery of the attachments	1	8146543	ZBH-5-B			
	16, 20		1	8146544	ZBH-7-B			
	25 ... 40		1	8137184	ZBH-9-B			
	50		1	8137185	ZBH-12-B			
	63		3	191409	ZBH-15			

1) Packaging unit

2) Product in stock

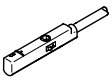
3) Suitable for ATEX

Accessories

Proximity switch for size 8 ... 12

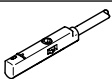
Ordering data – Proximity switch for C-slot, magneto-resistive

Datasheets → Internet: smt

	Type of mounting	Switching output	Electrical connection, outlet direction of connection	Cable length [m]	Part no.	Type
N/O						
	Inserted in the slot from above	PNP	Cable, 3-core, lengthwise	2.5	551373	SMT-10M-PS-24V-E-2.5-L-OE
			Plug M8x1, 3-pin, lengthways	0.3	551375	SMT-10M-PS-24V-E-0.3-L-M8D
			Plug M8x1, 3-pin, crossways	0.3	551376	SMT-10M-PS-24V-E-0.3-Q-M8D
	Inserted into the slot lengthwise	PNP	Cable, 3-core, crosswise	2.5	547862	SMT-10G-PS-24V-E-2.5Q-OE
			Plug M8x1, 3-pin, crossways	0.3	547863	SMT-10G-PS-24V-E-0.3Q-M8D

Ordering data – Proximity switch for C-slot, magnetic reed

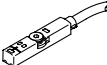
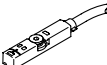
Datasheets → Internet: sme

	Type of mounting	Switching output	Electrical connection, outlet direction of connection	Cable length [m]	Part no.	Type
N/O						
	Inserted in the slot from above	Contacting	Plug M8x1, 3-pin, lengthways	0.3	551367	SME-10M-DS-24V-E-0.3-L-M8D
			Cable, 3-core, lengthwise	2.5	551365	SME-10M-DS-24V-E-2.5-L-OE
			Cable, 2-core, lengthwise	2.5	551369	SME-10M-ZS-24V-E-2.5-L-OE

Proximity switch for size 16 ... 63

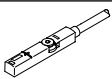
Ordering data – Proximity switch for T-slot, magneto-resistive

Datasheets → Internet: smt

	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part no.	Type
N/O						
	Inserted in the slot from above, flush with the cylinder profile, short design	PNP	Cable, 3-core	2.5	574335	SMT-8M-A-PS-24V-E-2.5-OE
			Plug M8x1, 3-pin	0.3	574334	SMT-8M-A-PS-24V-E-0.3-M8D
			Plug M12x1, 3-pin	0.3	574337	SMT-8M-A-PS-24V-E-0.3-M12
		NPN	Cable, 3-core	2.5	574338	SMT-8M-A-NS-24V-E-2.5-OE
			Plug M8x1, 3-pin	0.3	574339	SMT-8M-A-NS-24V-E-0.3-M8D
N/C						
	Inserted in the slot from above, flush with the cylinder profile, short design	PNP	Cable, 3-core	7.5	574340	SMT-8M-A-PO-24V-E-7.5-OE

Ordering data – Proximity switch for T-slot, magnetic reed

Datasheets → Internet: sme

	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part no.	Type
N/O						
	Inserted in the slot from above, flush with the cylinder profile	Contacting	Cable, 3-core	2.5	543862	SME-8M-DS-24V-K-2.5-OE
				5.0	543863	SME-8M-DS-24V-K-5.0-OE
			Cable, 2-core	2.5	543872	SME-8M-ZS-24V-K-2.5-OE
			Plug M8x1, 3-pin	0.3	543861	SME-8M-DS-24V-K-0.3-M8D
	Inserted in the slot lengthwise, flush with the cylinder profile	Contacting	Cable, 3-core	2.5	150855	SME-8-K-LED-24
			Plug M8x1, 3-pin	0.3	150857	SME-8-S-LED-24

Accessories

Proximity switch for size 16 ... 63

Ordering data – Proximity switches for T-slot, inductive

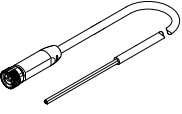
Datasheets → Internet: sies

Mounting data	Mounting dimensions for 4 slot profile	Switching output	Electrical connection	Cable length [m]	Part no.	Type
N/O						
	Inserted in the slot from above, flush with the cylinder profile	PNP	Cable, 3-core	7.5	551386	SIES-8M-PS-24V-K-7.5-OE
			Plug M8x1, 3-pin	0.3	551387	SIES-8M-PS-24V-K-0.3-M8D
		NPN	Cable, 3-core	7.5	551396	SIES-8M-NS-24V-K-7.5-OE
			Plug M8x1, 3-pin	0.3	551397	SIES-8M-NS-24V-K-0.3-M8D
N/C						
	Inserted in the slot from above, flush with the cylinder profile	PNP	Cable, 3-core	7.5	551391	SIES-8M-PO-24V-K-7.5-OE
			Plug M8x1, 3-pin	0.3	551392	SIES-8M-PO-24V-K-0.3-M8D
		NPN	Cable, 3-core	7.5	551401	SIES-8M-NO-24V-K-7.5-OE
			Plug M8x1, 3-pin	0.3	551402	SIES-8M-NO-24V-K-0.3-M8D

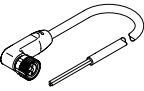
 Note

The inductive proximity sensors SIES can only be used in combination with the sensing kit DASI-...-KT.

Connecting cables NEBA, straight

	Electrical connection 1, connection technology	Electrical connection 2, connection technology	Electrical connection 2, number of pins/cores	Cable length	Part no.	Type
	M8x1 A-coded to EN 61076-2-104	Open end	3	2.5 m	8078223	NEBA-M8G3-U-2.5-N-LE3
				5 m	8078224	NEBA-M8G3-U-5-N-LE3

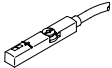
Connecting cables NEBA, angled

	Electrical connection 1, connection technology	Electrical connection 2, connection technology	Electrical connection 2, number of pins/cores	Cable length	Part no.	Type
	M8x1 A-coded to EN 61076-2-104	Open end	3	2.5 m	8078230	NEBA-M8W3-U-2.5-N-LE3
				5 m	8078231	NEBA-M8W3-U-5-N-LE3

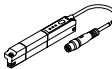
Accessories

Position transmitter for size 16 ... 63

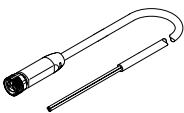
The position transmitter continuously senses the position of the piston.
It has an analogue output with an output signal in proportion to the piston position.

Ordering data – Position transmitter for T-slot						Datasheets → Internet: position transmitter
	Type of mounting	Electrical connection	Analogue output [V]	Cable length [m]	Part no.	Type
	Inserted in the slot from above	Plug M8x1, 4-pin, in-line	0 ... 10	0.3	553744	SMAT-8M-U-E-0.3-M8D

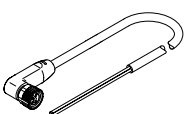
Size	16	20	25	32	35	40	50	63
Position measuring range for SMAT-8M [°]	151	120	183	159	185	132	82	64

	Position measuring range	Type of mounting	Electrical connection	Analogue output [mA]	Cable length [m]	Part no.	Type
	0 ... 50	Inserted in the slot from above	Plug M8x1, 4-pin, in-line	4 ... 20	0.3	1531265	SDAT-MHS-M50-1L-SA-E-0.3-M8
	0 ... 80					1531266	SDAT-MHS-M80-1L-SA-E-0.3-M8
	0 ... 100					1531267	SDAT-MHS-M100-1L-SA-E-0.3-M8
	0 ... 125					1531268	SDAT-MHS-M125-1L-SA-E-0.3-M8
	0 ... 160					1531269	SDAT-MHS-M160-1L-SA-E-0.3-M8

Connecting cables NEBA, straight

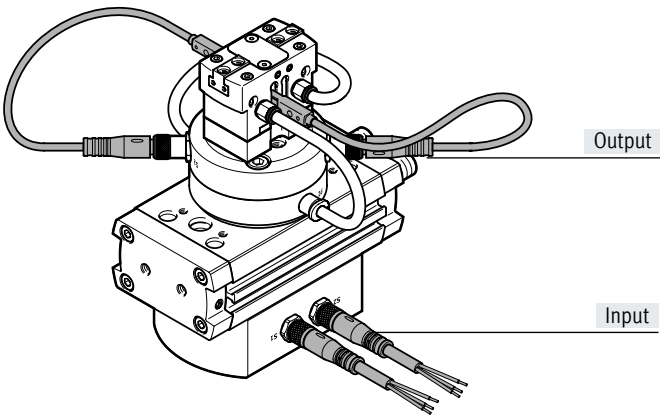
	Electrical connection 1, connection technology	Electrical connection 2, connection technology	Electrical connection 2, number of pins/cores	Cable length	Part no.	Type
	M8x1 A-coded to EN 61076-2-104	Open end	4	2.5 m	8078227	NEBA-M8G4-U-2.5-N-LE4
				5 m	8078228	NEBA-M8G4-U-5-N-LE4

Connecting cables NEBA, angled

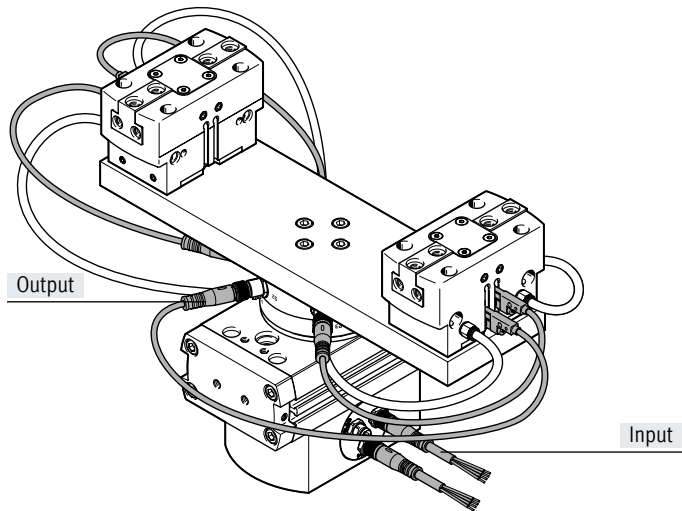
	Electrical connection 1, connection technology	Electrical connection 2, connection technology	Electrical connection 2, number of pins/cores	Cable length	Part no.	Type
	M8x1 A-coded to EN 61076-2-104	Open end	4	2.5 m	8078233	NEBA-M8W4-U-2.5-N-LE4
				5 m	8078234	NEBA-M8W4-U-5-N-LE4

Accessories

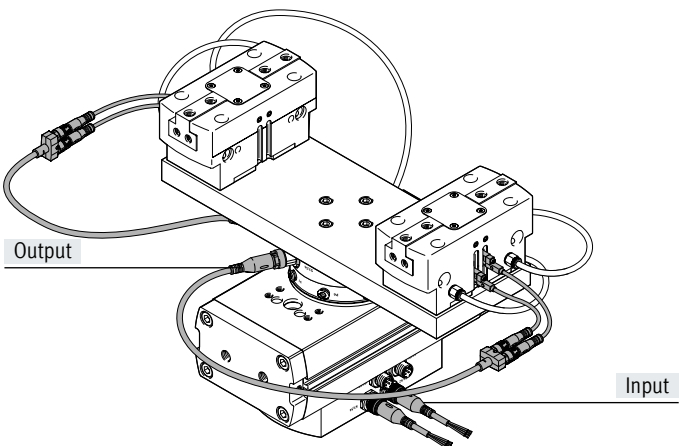
Wiring of the proximity switches in combination with the energy through-feed
Size 16/20



Size 25/32/35

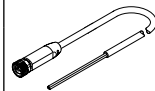
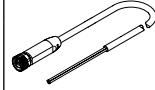
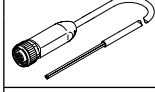
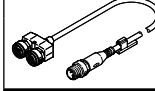


Size 40/50/63



 Note

Proximity switches with plugs must be used for attachments (e.g. grippers) at the output. For sizes 16 ... 35 these can be connected directly to the energy through-feed module.
For sizes 40 ... 63, the proximity switch must be connected to the energy through-feed module through a Y-distributor.

Ordering data						Datasheets → Internet: neba
	Electrical connection left	Electrical connection right	Cable length [m]	Part no.	Type	
Input – Connecting cable						
Size 16/20						
	Straight socket, M8x1, 3-pin	Cable, open end, 3-core	2.5	8078223	NEBA-M8G3-U-2.5-N-LE3	
	Straight socket, M8x1, 3-pin	Cable, open end, 3-core	5	8078224	NEBA-M8G3-U-5-N-LE3	
Size 25/32/35						
	Straight socket, M8x1, 4-pin	Cable, open end, 4-core	2.5	8078227	NEBA-M8G4-U-2.5-N-LE4	
	Straight socket, M8x1, 4-pin	Cable, open end, 4-core	5	8078228	NEBA-M8G4-U-5-N-LE4	
Size 40/50/63						
	Straight socket, M12x1, 5-pin	Cable, open end, 4-core	2.5	8078239	NEBA-M12G5-U-2.5-N-LE4	
	Straight socket, M12x1, 5-pin	Cable, open end, 4-core	5	8078240	NEBA-M12G5-U-5-N-LE4	
Output – Y-distributor						
Size 40/50/63						
	Straight plug M12x1, 4-pin	2x straight sockets, M8x1, 3-pin	0.5 ¹⁾	8032867	NEDY-L2R1-V1-M8G3-U-M12G4-0.5R	
	1) Cable lengths of between 0.3 m and 30 m can be selected → Internet: nedyl					

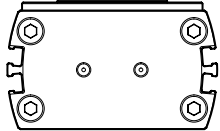
Accessories

Setting the swivel speed

Basic drive and intermediate position module must only be operated with controlled air flow. The flow control should be connected as close as possible to the semi-rotary drive (e.g. one-way flow control valve A-...) → tables below

In the event of pressure failure, the payload may hit an end position in an uncontrolled manner. In order to prevent this, piloted check valves HGL or an air reservoir VZS are recommended.

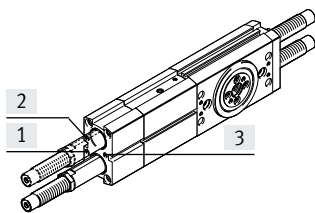
Ordering data – Accessories for basic drive



	For size	Description	Weight [g]	Part no.	Type	PU ¹⁾
One-way flow control valve GRLA						
	16 ²⁾ , 20, 25	• To set the swivel speed	14	197576	GRLA-M5-QS-3-RS-D	1
			14	197577	GRLA-M5-QS-4-RS-D	
	32, 35, 40		30	151169	GRLA-1/8-RS-B	
	50		59	151175	GRLA-1/4-RS-B	
	63		97	151178	GRLA-3/8-B	

1) Packaging unit

Ordering data – Accessories for intermediate position module (PS1)



The following movements are adjusted using the supply ports [1] and [2]: end position → intermediate position
Both directions can be adjusted separately from each other.
The following movement is adjusted via supply port [3]:
Intermediate position → end position
Both directions are set simultaneously.

	For size	Description	Weight [g]	Part no.	Type	PU ¹⁾
One-way flow control valve GRLA						
	16 ²⁾ , 20, 25, 32, 35, 40	• To set the swivel speed from the intermediate position	14	197576	GRLA-M5-QS-3-RS-D	1
			14	197577	GRLA-M5-QS-4-RS-D	
	50		30	151169	GRLA-1/8-RS-B	
Check valve HGL						
	20, 25, 32, 35, 40	• For holding the payload in the event the compressed air fails	21	530029	HGL-M5-B	1
			21	530038	HGL-M5-QS-4	
			26	543253	HGL-1/8-1/8-B	
	50		21	530030	HGL-1/8-B	
Air reservoirs VZS						
	16, 20, 25, 32, 35, 40, 50	• For holding the payload in the event the compressed air fails	8600	192161	VZS-20-B	1

1) Packaging unit

2) Strongly recommended for this size