


Rotary Actuator, Type DSM - Basic Version



Swivel modules DSM – Complete Product Line  = Basic version shown in this catalog. Complete product line information available via www.festo.com or CD ROM catalog.



Piston Dia. 6, 8, 10, 12, 16, 25, 32, 40 mm

Torque 0.15 ... 20 Nm

Rotation Angle 0 ... 270°

- Position sensing
- Fixed cushioning

Variants

- Spigot shaft
- Flanged shaft, hollow
- Shock absorber attachment

Function	Design	Type	Piston Ø [mm]	Swivel angle [°]
Double-acting	Fixed swivel angle	DSM	6 ... 10	90, 180, 240
	Adjustable swivel angle	DSM	6 ... 40	0 ... 270

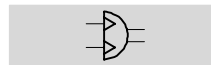
Rotary Actuator, Type DSM - Basic Version

General data

Overview	
Description	Double acting pneumatic rotary actuator with adjustable rotary angle.
Diameters [mm]	12, 16, 20, 25, 32, 40
Maximum Rotation Angle	270°
Operating Medium	Filtered [min. 40 µ] compressed air, unlubricated or lubricated
Operating Pressure [bar]	Dia. 12, 16 mm: 2 - 10 Dia. 25 - 40mm: 1.5 - 10
Ambient Temperature [° C] [Note temperature limits of sensors and tubing]	-10 to 60



DSM-P



Flexible cushioning rings at both ends

Technical data						
Design	Rotary actuator with vane drive					
Position sensing	Permanent magnet fixed to piston, via externally mounted proximity sensor					
Piston Diameter [mm]	12 16 25 32 40					
Max. Rotation Angle	without shock absorber	270°				
	with shock absorber	254°	258°	255°		
	with two shock absorbers	238°	246°	240°		
Cushioning Angle	without shock absorber	1.8° ... 2.1°	1.3° ... 2.1°	1.1° ... 1.9°	0.9° ... 1.7°	1.4° ... 2.1°
	with shock absorber	13°	12°	10°	12.5°	15°
Fine swivel angle adjustment	Without shock absorber: -5° ... 1°; with shock absorber: -1.5°					
Cushioning	Flexible cushioning rings at both ends [P]; adjustable at one end or both ends via shock absorber					
Pneumatic connection	M5			G1/8		

	12	16	25	32	40
Torque at 6 bar [Nm]	1.25	2.5	5	10	20
Max. perm. radial load on drive shaft [N]	45	75	120	200	350
Max. perm. axial load on drive shaft [N]	18	30	50	75	120

Weights [g]	12	16	25	32	40
Piston dia.	12	16	25	32	40
Without shock absorber	250	450	690	1 380	2 600
Shock absorber at one end	260	440	670	1 390	2 670
Shock absorbers on both sides	300	510	730	1 480	2 830

Materials	
Housing, stop lever	Anodized aluminum
Shaft	Nickel-plated steel
Rotary vane	Plastic, glass fiber reinforced
Fixed stops / screws	Galvanized steel
Stop screws	Stainless steel
Cap	Plastic, glass fiber reinforced
Seals	Polyurethane

Conversion Factors

$$\begin{aligned} \text{mm} &\rightarrow \text{inch} &= &\div 25.400 \\ \text{bar} &\rightarrow \text{psi} &= &\times 14.500 \end{aligned}$$

$$\begin{aligned} \text{g} &\rightarrow \text{lb} &= &\times 0.0022 \\ \text{N} &\rightarrow \text{lbs} &= &\times 0.2248 \end{aligned}$$

$$\begin{aligned} \text{C}^\circ &\rightarrow \text{F}^\circ &= &\times [1.8] + 32 \\ \text{Nm} &\rightarrow \text{ft/lbs} &= &\times 0.737 \end{aligned}$$

Rotary Actuator, Type DSM - Basic Version

Ordering Information

M Mandatory data			
Type	Piston \varnothing	Max. Swivel Angle	Cushioning
DSM			
DSM	- 25	- 270	- P

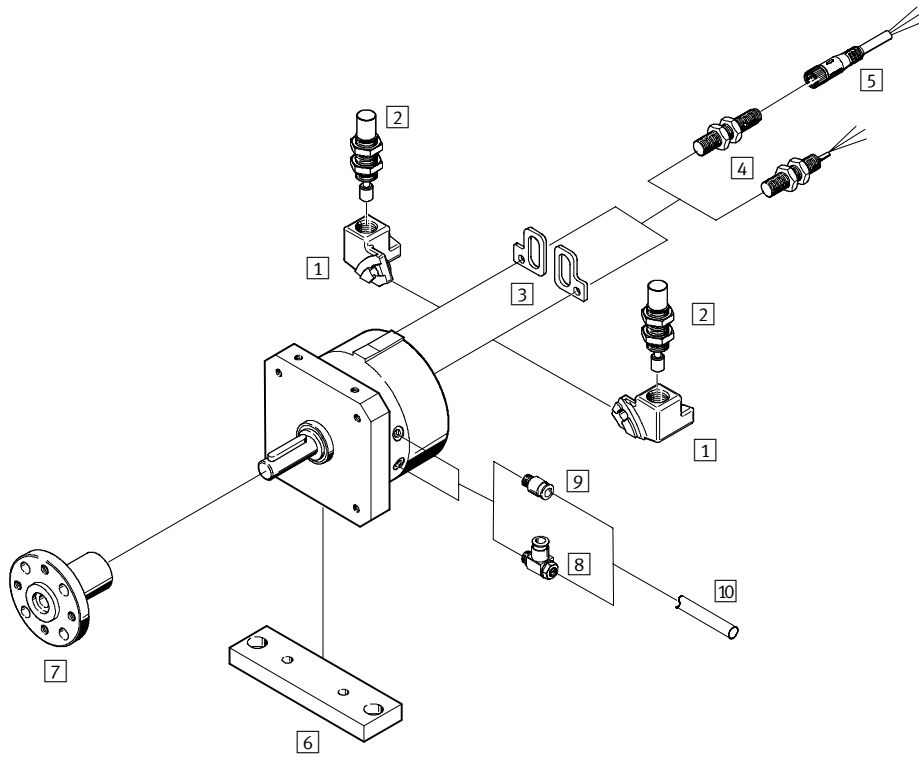
Type Code Data					Code		
M	Type	DSM, Rotary actuator with fixed end steps			DSM		
	Piston Dia.	12	16	25	32	40	-...
	Max. Swivel Angle	without shock absorber			270		-270
	Cushioning	Flexible cushioning rings at both ends					-P

Standard Stroke Cylinder Type Codes → Delivery: Stock

Diameter				
12	16	25	32	40
DSM-12-270-P	DSM-16-270-P	DSM-25-270-P	DSM-32-270-P	DSM-40-270-P

Rotary Actuator, Type DSM - Basic Version

Accessories



Rotary Actuator, Type DSM - Basic Version

Accessories

Mounting attachments and accessories - Part Numbers								Page
Item	Description	Type	Piston Diameter [mm]					
			12	16	25	32	40	
1	Shock absorber retainer	Left	DSM-12-CL	DSM-16-CL	DSM-25-CL	DSM-32-CL	DSM-40-CL	M3-8
		Right	DSM-12-CR	DSM-16-CR	DSM-25-CR	DSM-32-CR	DSM-40-CR	M3-8
2	Shock absorber		YSR-5-5-C	YSR-7-5-C		YSR-8-8-C	YSR-12-12-C	M3-11
3	Mounting kit		WSM-12-J-M5	WSM-16-J-M5	WSM-25-J-M5	WSM-32-J-M8	WSM-40-J-M8	M3-11
4	Proximity Sensor, inductive	Cable	SIEN-M5B-PS-K-L [PNP, 2.5m cable, leads] SIEN-M5B-NS-K-L [NPN, 2.5m cable, leads]			SIEN-M8-PS-K-L [PNP, 2.5m cable, leads] SIEN-M8-NS-K-L [NPN, 2.5m cable, leads]		M3-11
		Plug	SIEN-M5B-PS-S-L [PNP, plug connector] SIEN-M5B-NS-S-L [NPN, plug connector]			SIEN-M8-PS-S-L [PNP, plug connector] SIEN-M8-NS-S-L [NPN, plug connector]		M3-11
5	Plug socket w/cable	2.5 m	SIM-M8-3GD-2,5-PU					M3-11
6	Mounting plate		HSM-12	HSM-16	HSM-25	HSM-32	HSM-40	M3-9
7	Push on flange		FWSR-12	FWSR-16	FWSR-25	FWSR-32	FWSR-40	M3-10
8	One-way flow control valve	4 mm tube Ø	GRLA-M5-QS-4-RS-D			GRLA-1/8-QS-4-RS-D		M5-5
		6 mm tube Ø	GRLA-M5-QS-6-RS-D			GRLA-1/8-QS-6-RS-D		M5-5
		8 mm tube Ø	-			GRLA-1/8-QS-8-RS-B		M5-5
9	Push-in fitting	4 mm tube Ø	QSM-M5-4			-		M5-2
		6 mm tube Ø	QSM-M5-6			QS-1/8-6		M5-2
		8 mm tube Ø	-			QS-1/8-8		M5-2
10	Tubing	4 mm tube Ø	PUN-4x0.75-BL					M5-9
		6 mm tube Ø	PUN-6x1-BL					M5-9
		8 mm tube Ø	-			PUN-8x1.25-BL		M5-9

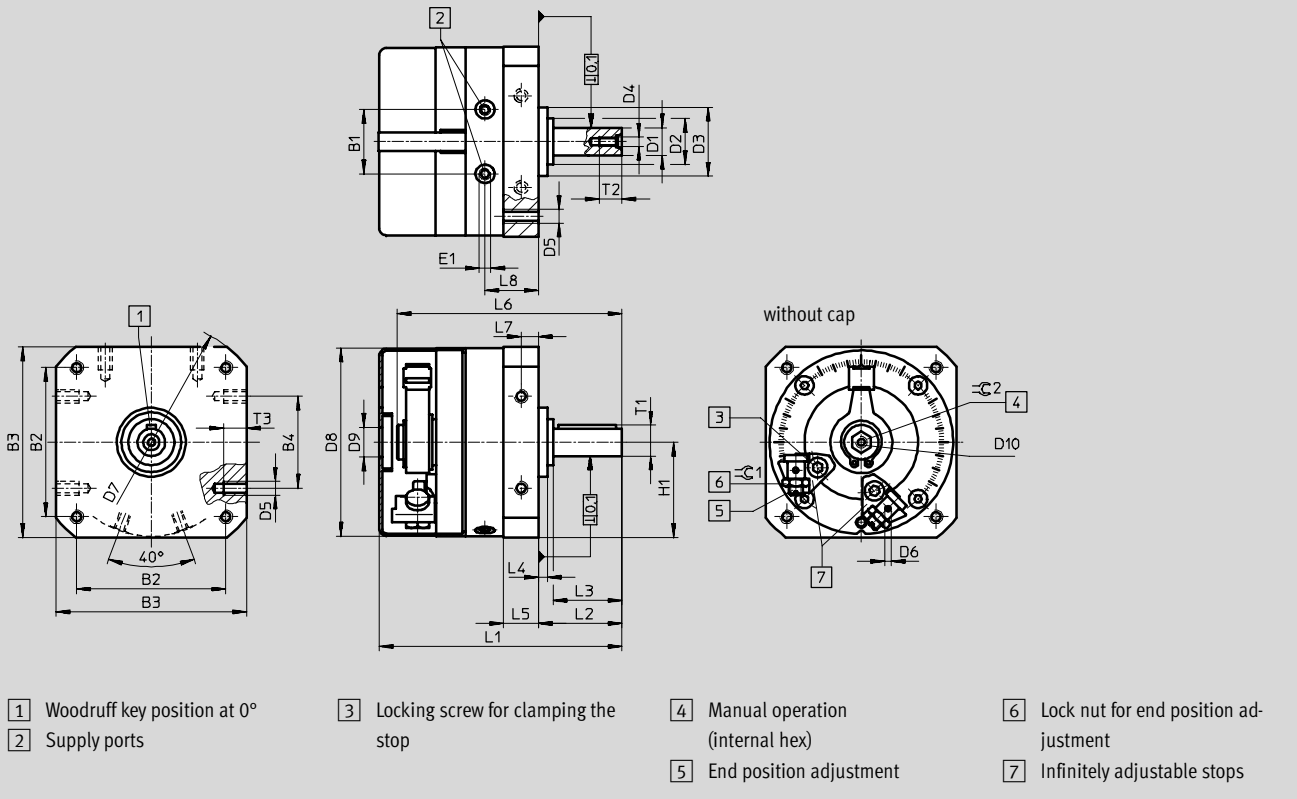
Note: All metric products can be used within inch tubing systems via hybrid fittings (see pages I5-10 to I5-14).

Rotary Actuator, Type DSM - Basic Version

Dimensions

Type DSM-...-P

With spigot shaft and fixed stop



∅	B1	B2	B3	B4	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	E1	H1
[mm]					∅ g7	∅	∅ f8				∅	∅	∅			
12	19.8	48	59	30	8	15	24	M3	M4	M3	78	58	9	M4	M5	29.5
16	23.5	57	70	40	10	18	28	M3	M5	M3	91	69	12.5	M5	M5	35
25	28	65	83	40	12	20	30	M4	M6	M3	106	82	13	M5	M5	41.5
32	35.5	85	105	60	16	27	42	M5	M8	M3	135	104	16.5	M5	G ¹ / ₈	52.5
40	43.8	105	130	80	20	36	52	M6	M10	M3	168	128	23.5	M6	G ¹ / ₈	65

∅	L1	L2	L3	L4	L5	L6	L7	L8	T1	T2	T3	≈C1	≈C2	Woodruff key to DIN 6885
[mm]									max.					
12	77.5	24.5	20	3	10.3	68.3	5	16.5	8.8	9	8	7	6	A2x2x16
16	90.8	28	23	2.6	13	81.2	6.5	20.2	11.2	9	8	8	8	A3x3x18
25	105.5	36.5	30	4	15.2	97.5	7.5	23.5	13.5	10	10	10	8	A4x4x25
32	139.5	51	40	8	19.2	127.1	9.5	30.5	18	12.5	12	13	10	A5x5x36
40	171.5	62	50	8	23.7	155.5	12	36	22.5	16	15	17	10	A6x6x45

Conversion Factors

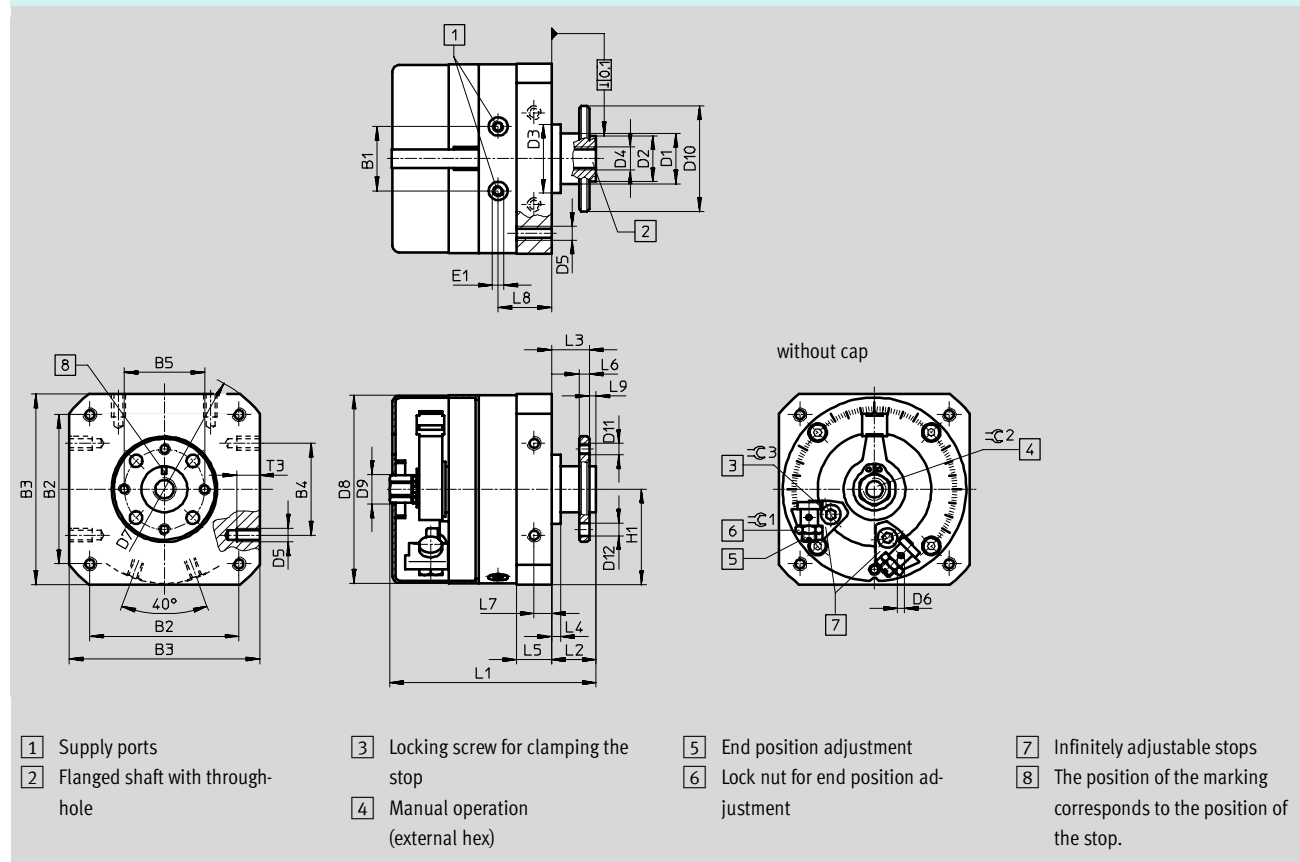
mm → inch = ÷ 25.400

Rotary Actuator, Type DSM - Basic Version

Dimensions

Type DSM-...-P

With fixed stop and flanged shaft



∅	B1	B2	B3	B4	B5	D1 ∅	D2 ∅ f8	D3 ∅ f8	D4	D5	D6	∅	D8 ∅	D9 ∅	∅	D11
12	19.8	48	59	30	25	15	14	24	M5	M4	M3	78	58	9	33	M3
16	23.5	57	70	40	28	18	16	28	M5	M5	M3	91	69	12.5	38	M4
25	28	65	83	40	35	20	20	30	G $\frac{1}{8}$	M6	M3	106	82	13	46	M5
32	35.5	85	105	60	45	27	28	42	G $\frac{1}{8}$	M8	M3	135	104	16.5	60	M6
40	43.8	105	130	80	54	36	36	52	G $\frac{1}{8}$	M10	M3	168	128	23.5	70	M8

∅	D12 ∅	E1	H1	L1	L2	L3	L4	L5	L6	L7	L8	L9	T3	≈C1	≈C2	≈C3
12	3.4	M5	29.5	67.3	13	11	3	10.3	3	5	16.5	2	8	7	8	2.5
16	4.5	M5	35	79	15	13	2.6	13	4	6.5	20.2	2	8	8	11	3
25	5.5	M5	41.5	90	19.5	16.5	4	15.2	4.5	7.5	23.5	3	10	10	13	4
32	6.6	G $\frac{1}{8}$	52.5	115.8	27	23	8	19.2	6	9.5	30.5	4	12	13	13	5
40	9	G $\frac{1}{8}$	65	143.8	33	28	8	23.7	7.5	12	36.	5	15	17	19	8

Rotary Actuator, Type DSM - Basic Version

Accessory Dimensions

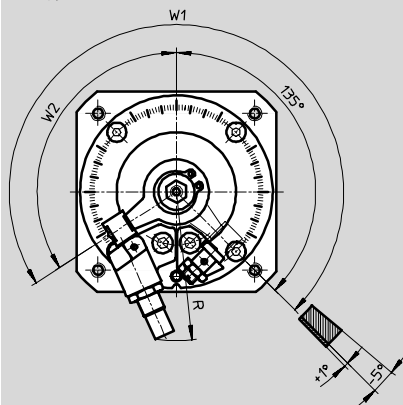
Shock Absorber Retainer Type DSM-...-CL/CR

DSM-...-CL/CR

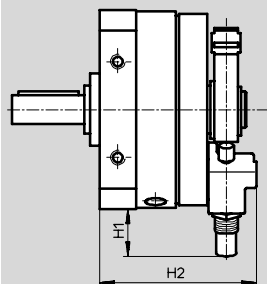
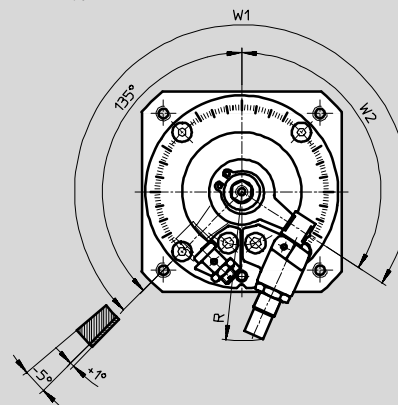
Material:
Galvanized steel



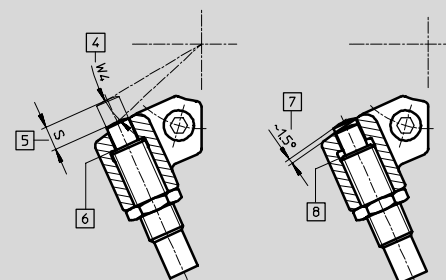
Left type



Right type



Precision adjustment



- 4 Cushioning angle
- 5 Cushioning length
- 6 Shock absorber at internal stop
- 7 Precision adjustment (not with DSM-12)
- 8 Shock absorber unscrewed in retainer

Rotary Actuator, Type DSM - Basic Version

Accessory Dimensions

Type	For shock absorbers	Size [mm]	H1 max.	H2	R max.	S	W1 max.	W2 max.	W4	Weight [g]
DSM-12-CL	Left	12	18	48	48	4.5	254°	119°	13°	30
DSM-12-CR	Right									
DSM-16-CL	Left	16	22	60.8	58	5	254°	119°	12°	50
DSM-16-CR	Right									
DSM-25-CL	Left	25	19	68.3	61	5	258°	123°	10°	51
DSM-25-CR	Right									
DSM-32-CL	Left	32	27	82	81	8	258°	123°	12.5°	95
DSM-32-CR	Right									
DSM-40-CL	Left	40	41	101.5	108	12	255°	120°	15°	175
DSM-40-CR	Right									

Mounting Plate Type HSM-...

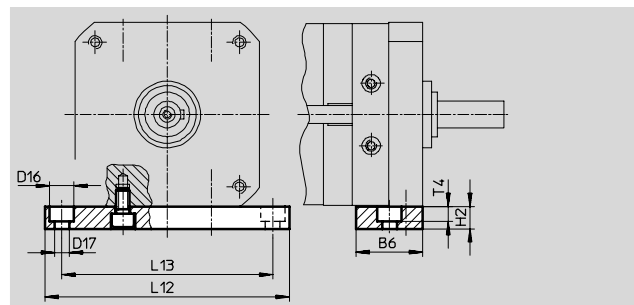
Mounting plate HSM-...

Includes:

- 1 Mounting plate
- 2 Screws

Material:

Aluminum



Type	Size [mm]	B6	D16 Ø	D17 Ø	H2	L12	L13	T4	Weight [g]
HSM-12	12	20	8	4.5	10	84	72	4.6	48
HSM-16	16	28	10	5.5	10	98	84	5.7	80
HSM-25	25	30	11	6.6	10	110	95	6.8	94
HSM-32	32	40	15	9	15	145	125	9	246
HSM-40	40	45	18	11	20	180	155	11	459

Conversion Factors

mm → inch = ÷ 25.400

g → lb = x 0.0022

Rotary Actuator, Type DSM - Basic Version

Accessory Dimensions

Push-on flange Type FWSR-...

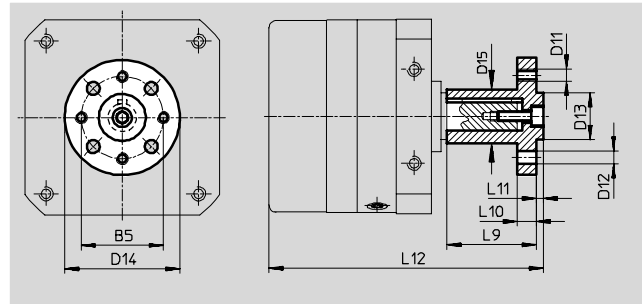
FWSR-...

Includes:

- 1 Flange
- 1 Screw
- 1 Lockwasher

Material:

Anodized aluminum



Type	Size	B5	D11	D12	D13	D14	D15	L9	L10	L11	L12	Weight
	[mm]			∅ H13	∅ g7	∅	∅					[g]
FWSR-12	12	25	M3	3.4	14	35	15	25	3	3	85.5	32
FWSR-16	16	28	M4	4.5	16	40	17	28	5	3	98.8	51
FWSR-25	25	35	M5	5.5	20	50	23	38	8	3	116.5	68
FWSR-32	32	45	M6	6.5	28	60	28	48	10	4	151.5	180
FWSR-40	40	54	M8	9	36	70	38	60	11	5	186.5	300

Shock Absorber Type YSR-...-C

YSR-...-C

Includes:

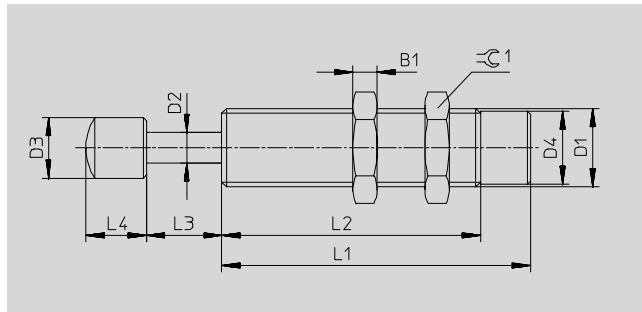
- 1 Shock Absorber

Material:

Housing: galvanized steel

Piston rod: high-alloy steel

Seals: nitrile rubber, polyurethane



Type	Size	B1	D1	D2	D3	D4	L1	L2	L3	L4	∅C1	Weight
	[mm]	[mm]		∅ [mm]	∅ [mm]	∅ [mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[g]
YSR-5-5-C	12	3	M8x1	2.5	5	6.6	29	19	5.3	5.5	10	30
YSR-7-5-C	16/25	3.5	M10x1	3	6	8.6	34	23	5.3	7	13	40
YSR-8-8-C	32	5	M12x1	4	8	10.5	46	33	8.3	8	15	50
YSR-12-12-C	40	5	M16x1	6	12	14.5	64	51	12.5	12	19	70

Conversion Factors


mm → inch = ÷ 25.400

g → lb = x 0.0022


Rotary Actuator, Type DSM - Basic Version

Accessory Dimensions


Mounting Kit Type WSM-...

Type	For dia.	Remarks
	WSM-12-J-M5	For inductive proximity sensors SIEN-M5
	WSM-16-J-M5	
	WSM-25-J-M5	
WSM-32-J-M8	32	For inductive proximity sensors SIEN-M8
WSM-40-J-M8	40	

Proximity Sensor Type SIEN-...

Type	Connection	For dia.	Remarks	
	SIEN-M5B-PS-K-L	Cable	For mounting kit WSM-...-J-M5	
	SIEN-M5B-PS-S-L	Plug		16
				25
SIEN-M8B-PS-K-L	Cable	32	For mounting kit WSM-...-J-M8	
SIEN-M8B-PS-S-L	Plug	40		

Plug Socket Type SIM-...

Type	Mounting	Switch output	Connection	Cable length [m]	
		PNP			
Straight socket					
	SIEN-M8-3GD-2,5-PU	M8 union nut	PNP or NPN	3-pin	2.5

Conversion Factors

$$\text{m} \rightarrow \text{ft} = \times 3.2808$$

Rotary Actuator, Type DSM - Basic Version

Order example

Order example based on the swivel module type DSM-12-270-P and appropriate accessories

Order Quantity	Type	Piston \varnothing	Swivel angle	End-position cushioning	
1	DSM-	12-	270-	P	Rotary Actuator



Order Quantity	Type	Threaded connection	Push-in connection	with knurled screw	
2	GRLA-	M5-	QS-6	RS-	+ one-way flow control valve Threaded connection M5

