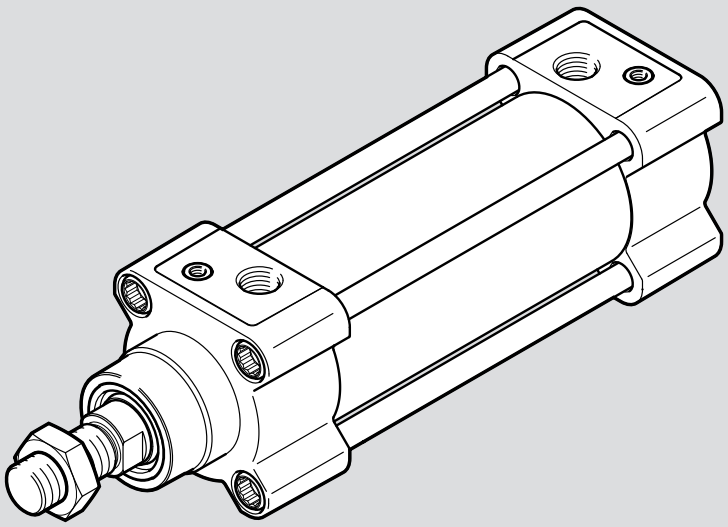
DSBG
Standards-based cylinder



FESTO

Operating instructions

8250554

8250554
2026-06a
[8250556]

Original instructions

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1 Applicable documents



All available documents for the product ➔ www.festo.com/sp.

2 Safety

2.1 Safety instructions

- Only use the product in its original condition without unauthorised modifications.
- Observe the identifications on the product.
- Take into account the ambient conditions at the location of use.
- Store the product in a cool, dry environment protected from UV and corrosion. Keep storage times short.
- Before working on the product, switch off the compressed air supply and lock it to prevent it from being switched on again.

2.2 Intended use

The standards-based cylinder moves masses and transmits forces. The product is intended for use in industrial environments.

2.3 Training of qualified personnel

Work on the product may only be carried out by qualified personnel who can evaluate the work and detect dangers. The qualified personnel have knowledge and experience in pneumatics.

3 Additional information

- For technical issues, contact the regional Festo representative ➔ www.festo.com/contact.
- Accessories and spare parts ➔ www.festo.com/catalogue.

4 Product overview

4.1 Product design

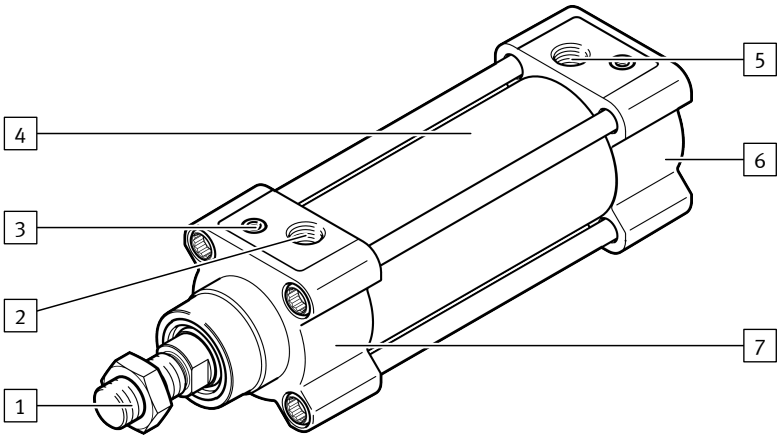


Fig. 1: Standards-based cylinder DSBG

1 Thread for mounting the effective load
2 Pneumatic port 1
3 With DSBG-...-PPV: adjustable end-position cushioning (2x)
4 Cylinder barrel
5 Pneumatic port 2
6 End cap, with mounting option, female thread
7 Bearing cap, with mounting option, female thread

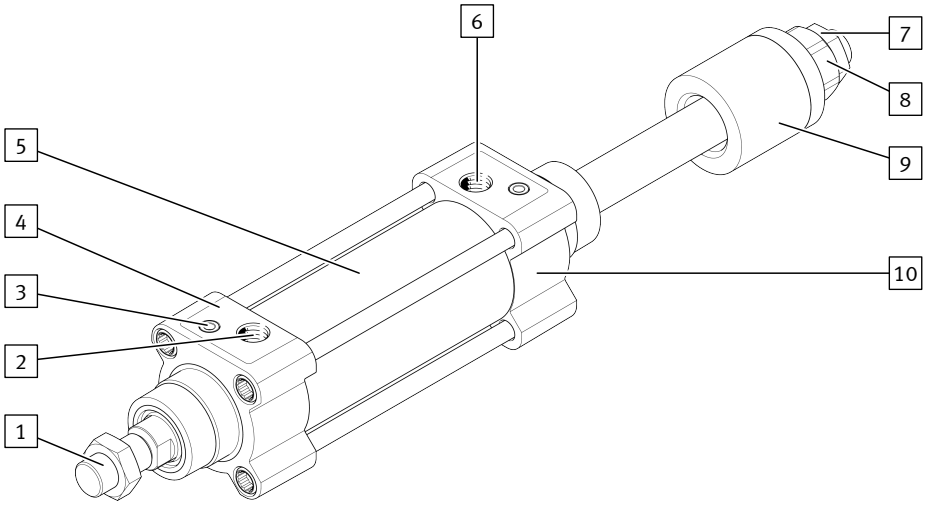


Fig. 2: Standards-based cylinder DSBG-50-80-PPVA-25KE

1 Thread for mounting the effective load
2 Pneumatic port 1
3 With DSBG-...-PPV: adjustable end-position cushioning (2x)
4 Bearing cap, with mounting option, female thread
5 Cylinder barrel
6 Pneumatic port 2
7 Lock nut for adjustable stroke
8 Stop nut for adjustable stroke
9 Stop sleeve for adjustable stroke
10 End cap, with mounting option, female thread

4.2 Function

When the cylinder chamber is pressurised at pneumatic port 1 or 2, the piston rod moves outwards or inwards. The cylinder force varies during advance and retracting. The position of the piston can be queried by proximity switches.
Variant with adjustable stroke:
– DSBG-...-25KE: the extension stroke can be infinitely adjusted by 25 mm.
– DSBG-...-50KE: the extension stroke can be infinitely adjusted by 50 mm.

5 Mounting

5.1 Mounting standards-based cylinder

Requirement:
– The product is installed without tension.
A rigid coupling will reduce the service life and adversely affect the function of the cylinder.

DSBG		-32	-40	-50	-63
Thread		M6		M8	
Screw-in depth	[mm]	11 … 16			
Strength class		≥ A*-70			
		≥ 8.8			
Flange thickness Aluminium, steel	[mm]	≥ 5.5		≥ 6.5	
Tightening torque	[Nm]	5 ± 20%		8 ± 20%	

Tab. 1: Tightening torques DSBG-32 … -63

DSBG		-80	-100	-125	-160
Thread		M10		M12	M16
Screw-in depth	[mm]	7 … 17		10 … 20	14 … 24
Strength class		≥ A*-70			–
		≥ 8.8			
Flange thickness Aluminium, steel	[mm]	≥ 10			
Tightening torque	[Nm]	17 ± 20%		25 ± 20%	105 ± 20%

Tab. 2: Tightening torques DSBG-80 … -160

DSBG		-200	-250	-320
Thread		M16	M20	M24
Screw-in depth	[mm]	14 … 24	15 … 25	18 … 28
Strength class		≥ 8.8		
Flange thickness Aluminium, steel	[mm]	≥ 12	–	–
Flange thickness Steel	[mm]	–	≥ 11	≥ 15
Tightening torque	[Nm]	105 ± 10 %	220 ± 20 %	400 ± 20 %

Tab. 3: Tightening torques DSBG-200 … -320

1. Mount the standards-based cylinder with at least 4 screws. Observe the tightening torque.
2. Avoid a mechanical alignment inaccuracy between the piston rod and, for example, an external guide with one of the following measures:
   – Precise alignment
   – Use of attachments with spherical bearings, e.g. rod eye, swivel flange.
   – Use of a self-aligning rod coupler
   – Use of a guide unit

5.2 Mounting effective load

Requirement:
– An adequately sized intercepting device is used for medium and large effective loads or at high speeds.
– Suitable shock absorbers or external stops are fitted with maximum effective load, maximum piston speed or when using quick exhaust valves.

5.2.1 Piston rod with standard male thread

- With DSBG-...-T: do not counter-rotate the through piston rod by the spanner flats. This may disconnect the piston rod connection from the piston.
- With DSBG-...-...KE: when loosening and tightening the lock nut only counter hold directly against the spanner flat of the stop nut.

- Mount the effective load by the thread. Observe the maximum tightening torque.

DSBG		-32	-40	-50	-63
Thread		M10x1.25	M12x1.25	M16x1.5	
Hex nut		ISO 8675-...-04			
		ISO 8675-...-035			
Max. tightening torque	[Nm]	20	35	85	

Tab. 4: Maximum tightening torque DSBG-32 ... -63

DSBG		-80	-100	-125	-160
Thread		M20x1.5		M27x2	M36x2
Hex nut		ISO 8675-...-04			
		ISO 8675-...-035		ISO 8675-...-025	
Max. tightening torque	[Nm]	170		310	730

Tab. 5: Maximum tightening torque DSBG-80 ... -160

DSBG		-200	-250	-320
Thread		M36x2	M42x2	M48x2
Hex nut		ISO 8675-...-04		
		ISO 8675-...-025		
Max. tightening torque	[Nm]	730	1200	1800

Tab. 6: Maximum tightening torque DSBG-200 ... -320

5.2.2 Piston rod with male thread M...

- Mount the effective load by the thread. Observe the maximum tightening torque.

DSBG-160-...-M16(P)		
Thread DSBG-...-M16		M16
Thread DSBG-...-M16P		M16x1.5
Hex nut		ISO 4035-...-035
		ISO 4035-...-04
		ISO 8675-...-035
		ISO 8675-...-04
Max. tightening torque	[Nm]	85

Tab. 7: Maximum tightening torque DSBG-160-...-M16(P)

DSBG-...-M20(P)		-160	-200
Thread DSBG-...-M20		M20	
Thread DSBG-...-M20P		M20x1.5	
Hex nut		ISO 4035-...-035	
		ISO 4035-...-04	

DSBG-...-M20(P)	-160	-200
Hex nut	ISO 8675-...-035	
	ISO 8675-...-04	
Max. tightening torque	170	

Tab. 8: Maximum tightening torque DSBG-...-M20(P)

DSBG-...-M24		-160	-200	-250
Thread		M24		
Hex nut		ISO 4035-...-035		
		ISO 4035-...-04		
Max. tightening torque	[Nm]	270		

Tab. 9: Maximum tightening torque DSBG-...-M24

DSBG-...-M27(P)	-160	-200	-250	-320
Thread DSBG-...-M27	M27			
Thread DSBG-...-M27P	M27x2			
Hex nut	ISO 4035-...-025			
	ISO 4035-...-04			
	ISO 8675-...-025			
	ISO 8675-...-04			
Max. tightening torque [Nm]	310			

Tab. 10: Maximum tightening torque DSBG-...-M27(P)

DSBG-...-M30(P)	-160	-200	-250	-320
Thread DSBG-...-M30	M30			
Thread DSBG-...-M30P	M30x2			
Hex nut	ISO 8675-...-025			
	ISO 8675-...-04			
Max. tightening torque [Nm]	450			

Tab. 11: Maximum tightening torque DSBG-...-M30(P)

DSBG-...-M36(P)	-160	-200	-250	-320
Thread DSBG-...-M36	M36		–	
Thread DSBG-...-M36P	M36x2			
Hex nut	ISO 4035-...-025			
	ISO 4035-...-04			
	ISO 8675-...-025			
	ISO 8675-...-04			
Max. tightening torque [Nm]	730			

Tab. 12: Maximum tightening torque DSBG-...-M36(P)

DSBG-...-M42(P)	-250	-320
Thread DSBG-...-M42	M42	–
Thread DSBG-...-M42P	M42x2	
Hex nut	ISO 4035-...-025	
	ISO 4035-...-04	
	ISO 8675-...-025	

DSBG-...-M42(P)	-250	-320
Hex nut	ISO 8675-...-04	
Max. tightening torque	1200	

Tab. 13: Maximum tightening torque DSBG-...-M42(P)

DSBG-320-...-M48		
Thread		M48
Hex nut		ISO 4035-...-025
		ISO 4035-...-04
Max. tightening torque	[Nm]	1800

Tab. 14: Maximum tightening torque DSBG-320-...-M48

5.2.3 Piston rod with female thread

- Mount the effective load by the thread. Observe the maximum tightening torque.

DSBG-...-F		-32	-40	-50	-63
Thread		M6	M8	M10	
Screw-in depth	[mm]	7 ... 12		11 ... 16	
Max. tightening torque for screws in strength class ≥ 10.9	[Nm]	10		28	
Max. tightening torque for screws in strength class ≥ A*-70	[Nm]	6	8	25	

Tab. 15: Maximum tightening torque DSBG-32 ... -63-F

DSBG-...-F		-80	-100	-125	-160
Thread		M12		M16	M24
Screw-in depth	[mm]	13 ... 20		22 ... 32	26 ... 36
Max. tightening torque for screws in strength class ≥ 10.9	[Nm]	45		120	540
Max. tightening torque for screws in strength class ≥ A*-70	[Nm]	35		100	390

Tab. 16: Maximum tightening torque DSBG-80 ... -160-F

DSBG-...-F		-200	-250	-320
Thread		M24	M30	M36
Screw-in depth	[mm]	26 ... 36	40 ... 50	45 ... 55
Max. tightening torque for screws in strength class ≥ 10.9	[Nm]	540	1600	2800
Max. tightening torque for screws in strength class ≥ A*-70	[Nm]	390	770	1350

Tab. 17: Maximum tightening torque DSBG-200 ... -320-F

5.3 Mounting accessories

1. To adjust the speed: screw the one-way flow control valves into the pneumatic ports.
2. With DSBG-...-A: use proximity switches and mounting kit. Avoid external influence caused by magnetic or ferritic parts in the vicinity of the proximity switches. Minimum distance: 10 mm

6 Installation

- Connect tubing to the pneumatic ports.

7 Commissioning

Commissioning procedure

1. Screw the one-way flow control valves all the way in on both sides, then back one revolution.
2. With DSBG-...-PPV: screw in the adjustable end-position cushioning on both sides to fully closed, then unscrew by one turn.
3. Pressurise the cylinder simultaneously on both port sides.
   ⇨ The piston rod slowly extends to the end position.
4. Exhaust the cylinder on one side.
   ⇨ The piston rod moves to the end position.
5. Start the test run.
6. If necessary: adjust the speed at the one-way flow control valves and the adjustable end-position cushioning. The piston rod should reach the end stop without hard impact or rebounding.

Stroke setting at DSBG-...-...KE

To avoid unintentional loosening of the piston rod:
- When loosening and tightening the lock nut only counter hold directly against the spanner flat of the stop nut.

Keep the motion range of the piston rod clear:
- There must be no foreign objects between the stop sleeve and the end cap.

DSBG-...-...KE		-32	-40	-50	-63
Lock nut		M10x1.25	M12x1.25	M16x1.5	M16x1.5
Max. tightening torque	[Nm]	20	35	85	85

Tab. 18: Maximum tightening torque DSBG-32 ...-63-...KE

DSBG-...-...KE		-80	-100	-125
Lock nut		M20x1.5	M20x1.5	M27x2
Max. tightening torque	[Nm]	170	170	310

Tab. 19: Maximum tightening torque DSBG-80 ...-125-...KE

1. Loosen the lock nut.
2. Adjust the stop nut. Reduce the stroke by a maximum of 25 mm or 50 mm.
3. Tighten the lock nut. Do not exceed the maximum tightening torque.
4. Pressurise the standards-based cylinder.
5. Start the test run and test the adjusted stroke.

8 Cleaning

- Clean the product with a clean, soft cloth and non-abrasive cleaning agents.

9 Fault clearance

Malfunction	Cause	Remedy
Irregular motion of the piston rod.	The one-way flow control valves throttle the exhaust air too much.	– Reduce exhaust air throttling.
	The adjustable end-position cushioning is set too high.	– Reduce the adjustable end-position cushioning.
	The piston rod is dirty.	– Clean the cylinder. – Relubricate after cleaning.
		– Install a covering.
	The supply air is insufficient.	– Keep the tubing short and select large cross sections.
		– Select the correct operating pressure.
		– Maintain a constant operating pressure.
	The pressure is too low.	– Connect a volume upstream. – Increase the pressure.
	The cylinder is damaged.	– Repair or replace the cylinder.
	Insufficient lubricant.	– Apply lubricant according to information leaflet ➔ www.festo.com/spareparts
	The guide is not parallel to the direction of stroke.	– Use a self-aligning rod coupler.
Hard stops by the cylinder at the end position	The speed is too high.	– Reduce the exhaust air flow control.
	The cushioning is too low.	– Increase the cushioning. – Use additional cushioning components.
The piston does not move to the end position.	The cylinder is damaged.	– Repair or replace the cylinder.
	The adjustable end-position cushioning is set too high.	– Reduce the adjustable end-position cushioning.
	The cylinder travels to an external end stop.	– Readjust the end stop.
Malfunctions with the position sensing	The temperatures are too high or too low.	– Maintain the permissible temperature range.
	The proximity switches are defective.	– Replace the proximity switches.
	Incorrect proximity switch installed.	– Use suitable proximity switches.
	Magnetic or ferritic components near the proximity switches.	– Increase the distance from the components. – Remove the components.
	The cylinder is in a version without position sensing.	– Select the cylinder in a version with position sensing.

Tab. 20: Fault clearance

10 Technical data

10.1 Technical data, general

DSBG		-32	-40	-50	-63
Mounting position		Any			
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]			
Information on the operating medium		Lubricated operation possible, in which case lubricated operation will always be required			
Max. torque on the piston rod					
DSBG-...-Q	[Nm]	0.8	1.1	1.5	
Pneumatic port					
DSBG		G 1/8	G 1/4		G 3/8
Max. impact energy at the end positions					
DSBG	[J]	0.4	0.7	1	1.3
DSBG-...-L/T1/-T3/-T4/-U	[J]	0.2	0.35	0.5	0.65
DSBG-...-L1	[J]	0.1	0.2	0.3	0.4
DSBG-...-KE	[J]	0.32	0.56	0.8	1
Cushioning					
DSBG-...-P		Elastic cushioning rings/plates on both sides			
DSBG-...-PPS		Pneumatically acting, self-adjusting end-position cushioning, on both sides			
DSBG-...-PPV		Pneumatically acting, adjustable end-position cushioning, on both sides			
Ambient temperature					
DSBG	[°C]	–20 ... +80			
DSBG-...-A1	[°C]	0 ... +80			
DSBG-...-A6/-KE	[°C]	–20 ... +80			
DSBG-...-C/-P2	[°C]	–10 ... +80			
DSBG-...-L/-U	[°C]	+5 ... +80			
DSBG-...-L1	[°C]	0 ... +60			
DSBG-...-T1/-T1-A6	[°C]	0 ... +120			
DSBG-...-T3/-T3-A6	[°C]	–40 ... +80			
DSBG-...-T4/-T4-A6	[°C]	0 ... +150			
DSBG-...-EX4	[°C]	–20 ... +60			

Tab. 21: Technical data, general DSBG-32 ... -63

DSBG		-80	-100	-125	-160
Mounting position		Any			
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]			
Information on the operating medium		Lubricated operation possible, in which case lubricated operation will always be required			
Max. torque on the piston rod					
DSBG-...-Q	[Nm]	3		–	
Pneumatic port					
DSBG		G 3/8	G 1/2		G 3/4
Max. impact energy at the end positions					
DSBG	[J]	1.8	2.5	3.3	
DSBG-...-L/-T1/-T3/-T4/-U	[J]	0.9	1.25	1.65	2.3
DSBG-...-L1	[J]	0.9	1.25	1.65	–
DSBG-...-KE	[J]	1.4	2	2.6	–
Cushioning					
DSBG-...-P		Elastic cushioning rings/plates on both sides			
DSBG-...-PPS		Pneumatically acting, self-adjusting end-position cushioning, on both sides			–
DSBG-...-PPV		Pneumatically acting, adjustable end-position cushioning, on both sides			
Ambient temperature					
DSBG	[°C]	–20 ... +80			
DSBG-...-A1	[°C]	0 ... +80			–
DSBG-...-A6/-KE	[°C]	–20 ... +80			–
DSBG-...-C/-P2	[°C]	–10 ... +80			–
DSBG-...-L	[°C]	+5 ... +80			–
DSBG-...-L1	[°C]	0 ... +60			–
DSBG-...-T1/-T1-A6	[°C]	0 ... +120			
DSBG-...-T3/-T3-A6	[°C]	–40 ... +80			–
DSBG-...-T4/-T4-A6	[°C]	0 ... +150			
DSBG-...-EX4	[°C]	–20 ... +60			

Tab. 22: Technical data, general DSBG-80 ... -160

DSBG		-200	-250	-320
Mounting position		Any		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
Information on the operating medium		Lubricated operation possible, in which case lubricated operation will always be required		
Pneumatic port				
DSBG		G 3/4	G 1	
Max. impact energy at the end positions				
DSBG	[J]	4.8[1)]	7.2	12.6
DSBG-...-T1/-T4	[J]	4	4.2	6
Cushioning				
DSBG-...-P		Elastic cushioning rings/plates on both sides		
DSBG-...-PPV		Pneumatically acting, adjustable end-position cushioning, on both sides		
Ambient temperature				
DSBG	[°C]	–20 ... +80		
DSBG-...-A6	[°C]	–20 ... +80		
DSBG-...-T1	[°C]	0 ... +120		
DSBG-...-T4	[°C]	0 ... +150	–	
DSBG-...-EX4	[°C]	–20 ... +60		

1) When using the SNG and SNGL swivel flanges the maximum impact energy at the end positions is 4 J.

Tab. 23: Technical data, general DSBG-200 ... -320

10.2 Technical data, pneumatic

DSBG		-32	-40	-50	-63
Operating pressure					
DSBG	[MPa]	0.06 ... 1.2		0.04 ... 1.2	
	[bar]	0.6 ... 12		0.4 ... 12	
	[psi]	8.7 ... 174		5.8 ... 174	
DSBG-...-A3	[MPa]	0.15 ... 1.2		0.1 ... 1.2	0.06 ... 1.2
	[bar]	1.5 ... 12		1 ... 12	0.6 ... 12
	[psi]	21.8 ... 174		14.5 ... 174	8.7 ... 174
DSBG-...-A6/-T3-A6	[MPa]	0.15 ... 1.2			
	[bar]	1.5 ... 12			
	[psi]	21.8 ... 174			
DSBG-...-C/-QC	[MPa]	0.15 ... 1			
	[bar]	1.5 ... 10			
	[psi]	21.8 ... 145			
DSBG-...-Q	[MPa]	0.1 ... 1.2			
	[bar]	1 ... 12			
	[psi]	14.5 ... 174			
DSBG-...-E1/-E2/-E3	[MPa]	0.25 ... 1.2		0.15 ... 1.2	
	[bar]	2.5 ... 12		1.5 ... 12	
	[psi]	36.3 ... 174		21.8 ... 174	
DSBG-...-L/-L1	[MPa]	0.03 ... 1.2	0.025 ... 1.2		
	[bar]	0.3 ... 12	0.25 ... 12		
	[psi]	4.35 ... 174	3.63 ... 174		
DSBG-...-T/-KE/-T3/-A2	[MPa]	0.1 ... 1.2			

DSBG		-32	-40	-50	-63
DSBG-...-T/-KE/-T3/-A2	[bar]	1 ... 12			
	[psi]	14.5 ... 174			
DSBG-...-U	[MPa]	0.025 ... 1.2		0.02 ... 1.2	0.015 ... 1.2
	[bar]	0.25 ... 12		0.2 ... 12	0.15 ... 12
	[psi]	3.63 ... 174		2.9 ... 174	2.18 ... 174

Tab. 24: Technical data, pneumatic DSBG-32 ... -63

DSBG		-80	-100	-125	-160
Operating pressure					
DSBG	[MPa]	0.04 ... 1.2		0.02 ... 1	0.06 ... 1
	[bar]	0.4 ... 12		0.2 ... 10	0.6 ... 10
	[psi]	5.8 ... 174		2.9 ... 145	8.7 ... 145
DSBG-...-A3	[MPa]	0.06 ... 1.2		0.06 ... 1	–
	[bar]	0.6 ... 12		0.6 ... 10	–
	[psi]	8.7 ... 174		8.7 ... 145	–
DSBG-...-A6/-T3-A6	[MPa]	0.15 ... 1.2		0.15 ... 1	0.06 ... 1
	[bar]	1.5 ... 12		1.5 ... 10	0.6 ... 10
	[psi]	21.8 ... 174		21.8 ... 145	8.7 ... 145
DSBG-...-C/-QC	[MPa]	0.15 ... 1.2		0.15 ... 1	–
	[bar]	1.5 ... 12		1.5 ... 10	–
	[psi]	21.8 ... 174		21.8 ... 145	–
DSBG-...-Q	[MPa]	0.1 ... 1.2		–	
	[bar]	1 ... 12		–	
	[psi]	14.5 ... 174		–	
DSBG-...-E1/-E2/-E3	[MPa]	0.15 ... 1.2		–	
	[bar]	1.5 ... 12		–	
	[psi]	21.8 ... 174		–	
DSBG-...-L/-L1	[MPa]	0.02 ... 1.2	0.015 ... 1.2	0.01 ... 1	–
	[bar]	0.2 ... 12	0.15 ... 12	0.1 ... 10	–
	[psi]	2.9 ... 174	2.18 ... 174	1.45 ... 145	–
DSBG-...-T/-KE	[MPa]	0.1 ... 1.2		0.1 ... 1	0.06 ... 1
	[bar]	1 ... 12		1 ... 10	0.6 ... 10
	[psi]	14.5 ... 174		14.5 ... 145	8.7 ... 145
DSBG-...-T3/-A2	[MPa]	0.1 ... 1.2		0.1 ... 1	–
	[bar]	1 ... 12		1 ... 10	–
	[psi]	14.5 ... 174		14.5 ... 145	–
DSBG-...-U	[MPa]	0.01 ... 1.2		0.01 ... 1	–
	[bar]	0.1 ... 12		0.1 ... 10	–
	[psi]	1.45 ... 174		1.45 ... 145	–

Tab. 25: Technical data, pneumatic DSBG-80 ... -160

DSBG		-200[1)]	-250	-320
Operating pressure				
DSBG	[MPa]	0.06 ... 1		
	[bar]	0.6 ... 10		
	[psi]	8.7 ... 145		
DSBG-...-A6/-T	[MPa]	0.06 ... 1		

DSBG		-200[1]	-250	-320
DSBG-...-A6/-T	[bar]	0.6 ... 10		
	[psi]	8.7 ... 145		

1) When using the SNG and SNGL swivel flanges the maximum operating pressure is 0.85 MPa (8.5 bar; 116 psi).

Tab. 26: Technical data, pneumatic DSBG-200 ... -320

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