

## Linear actuators DGP/DGPL - Inch Series



Linear actuator for proximity sensing, rodless, with mechanical coupling or positive-locking connection between piston and yoke and adjustable cushioning at both ends

- Piston  $\varnothing$  11/16" to 3"
- Stroke lengths up to 118"
- Double acting, rodless design
- Available with a bearing guide (DGPL) or without (DGP)
- Repairable

Product range overview						
Function	Version	Piston $\varnothing$ [in]	Stroke [in]	Force [lbf]	Variants	
					PPV	A
Double-acting	Without guide	11/16, 1, 1-1/4, 1-5/8, 2, 2-1/2, 3	0.39 ... 118	34.4 ... 678	■	■
	GF Plain-bearing guide				■	■
	KF Recirculating ball bearing guide				■	■

### Variants

- PPV Adjustable air cushioning at both ends  
 A Magnet for position sensing

# Linear actuators DGP/DGPL - Inch Series

Selection aid

## General information

- Double-acting rodless design
- Adjustable end-position cushioning system
- Magnet for position sensing
- Can be combined with the modular system for handling and assembly technology

## Basic design DGP

- Piston  $\varnothing$  11/16 ... 3 inch
- Stroke lengths 0.39 ... 118 inch
- As an actuator for external guides
- Maintenance-free
- For small loads



## With plain-bearing guide DGPL-GF-GK

- Piston  $\varnothing$  11/16 ... 3 inch
- Stroke lengths 0.39 ... 118 inch
- Minimal backlash
- Maintenance-free
- For medium loads and low torques



## With recirculating ball bearing guide DGPL-KF-GK/-GV

- Piston  $\varnothing$  11/16 ... 3 inch
- Stroke lengths 0.39 ... 118 inch
- Backlash-free
- Precision, rigid guide
- Maintenance-free up to  $2 \times 10^8$  inches of travel
- For high loads and torques

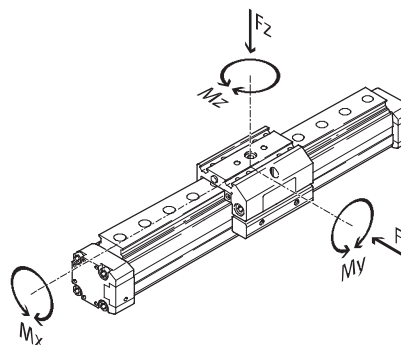


# Linear actuators DGP/DGPL - Inch Series

Selection aid



## Guide characteristics



Version	Piston Ø [in]	Stroke <sup>1)</sup> [in]	Theoretical force at 90 psi [lbf]	Forces and torques				
				Fy [lbf]	Fz [lbf]	Mx [ft-lbf]	My [ft-lbf]	Mz [ft-lbf]
<b>DGP - Basic version without guide</b>								
	11/16	0.39... 71	34.4	-	27.0	1.1	24.3	2.2
	1	0.39... 118	66.3		74.2	2.2	44.3	6.6
	1-1/4	0.39... 118	109		107.9	4.4	88.5	11.1
	1-5/8	0.39... 118	170		179.8	8.9	132.8	17.7
	2	0.39... 118	265		269.8	15.5	265.5	33.2
	2-1/2	0.39... 118	420		359.7	17.7	265.5	53.1
	3	0.39... 118	678		1124.0	35.4	829.8	154.9
<b>DGP-GF - With plain-bearing guide</b>								
	11/16	0.39... 71	34.4	76.4	76.4	2.4	19.9	19.9
	1	0.39... 118	66.3	96.7	96.7	6.0	27.7	27.7
	1-1/4	0.39... 118	109	96.7	96.7	9.4	33.2	33.2
	1-5/8	0.39... 118	170	227.0	227.0	25.4	64.2	64.2
	2	0.39... 118	265	227.0	227.0	35.4	91.8	91.8
	2-1/2	0.39... 118	420	449.6	449.6	81.9	260.0	260.0
	3	0.39... 118	678	449.6	449.6	110.6	254.5	254.5
<b>DGPL-KF - With recirculating ball bearing guide</b>								
	11/16	0.39... 71	34.4	209.1	209.1	7.7	49.8	49.8
	1	0.39... 118	66.3	692.4	692.4	49.8	188.1	188.1
	1-1/4	0.39... 118	109	692.4	692.4	69.7	276.6	276.6
	1-5/8	0.39... 118	170	1641.0	1641.0	188.1	730.2	730.2
	2	0.39... 118	265	1641.0	1641.0	265.5	1017.8	1017.8
	2-1/2	0.39... 118	420	3158.4	3158.4	641.7	2013.5	2013.5
	3	0.39... 118	678	3158.4	3158.4	824.2	1709.3	1709.3

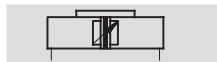
1) With effective strokes of over 78.7 inches the installation of the actuator unit must be with the sealing strip facing down.  
Longer strokes available on request.

# Linear actuators DGP - Inch Series

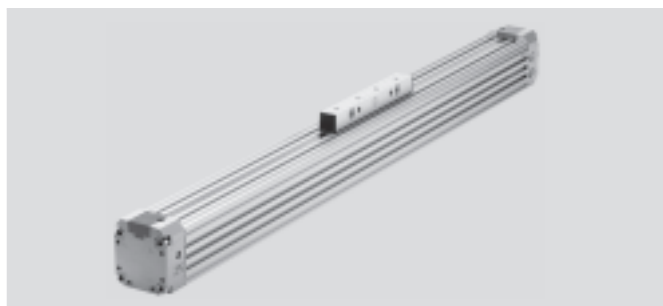


Technical data

Function



- N- Diameter  
1 1/16... 3 inch
- T- Stroke length  
0.04 ... 118 inch



General technical data							
Piston Ø	11/16	1	1-1/4	1-5/8	2	1-1/2	3
Constructional design	Pneumatic linear actuator						
Protection against torsion/guide	Slotted profile barrel						
Mode of operation	Double-acting						
Pneumatic connection	10-32 UNF	1/8 NPT		1/4 NPT		3/8 NPT	1/2 NPT
Stroke length [in]	0.39 ... 71		0.39 ... 118 <sup>1)</sup>				
Cushioning (PPV)	Adjustable at both ends						
Cushioning length [in]	0.63	0.67	0.79	1.18		3.27	
Magnet for position sensing <sup>2)</sup>	Standard						

- 1) With effective strokes of over 2000 mm the installation of the actuator unit must be with the sealing strip facing down; longer strokes available on request.
- 2) Position sensing via magnetic proximity sensor (ordered separately, see accessories).

Operating and environmental conditions							
Piston Ø	11/16	1	1-1/4	1-5/8	2	2-1/2	3
Operating medium	Filtered compressed air, lubricated or unlubricated						
Operating pressure [psi]	29.4 ... 120			22.1 ... 120			
Ambient temperature <sup>1)</sup> [°F]	14 ... +140						

- 1) Note operating range of proximity sensors.

Forces [lbf]							
Piston Ø	11/16	1	1-1/4	1-5/8	2	2-1/2	3
Theoretical force at 90 psi	169.3	326.4	534.4	834.2	1303.3	2068.9	3336.7

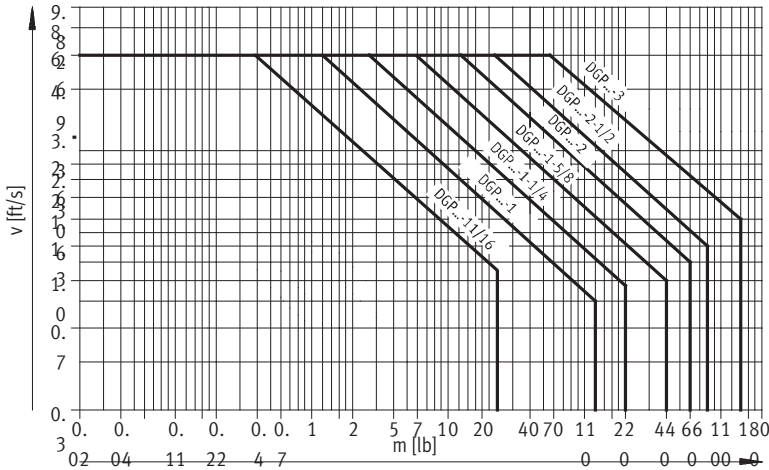
# Linear actuators DGP - Inch Series

Technical data



## Operating range of the integrated end-position cushioning PPV

Maximum permissible speed  $v$  as a function of the moving load  $m$  (when using PPV air cushioning only)



### Note

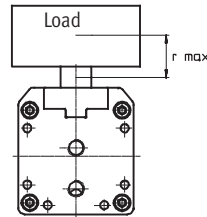
The data applies to a horizontal mounting position, applied load on top.

$m$  = Applied load + mass of carriage

### End-position cushioning

The end-position cushioning must be adjusted to ensure smooth operation. If the operating conditions are outside the permissible range, the load to be moved must be externally

cushioned using suitable equipment (shock absorbers, stops, etc), preferably at the center of gravity of the mass.



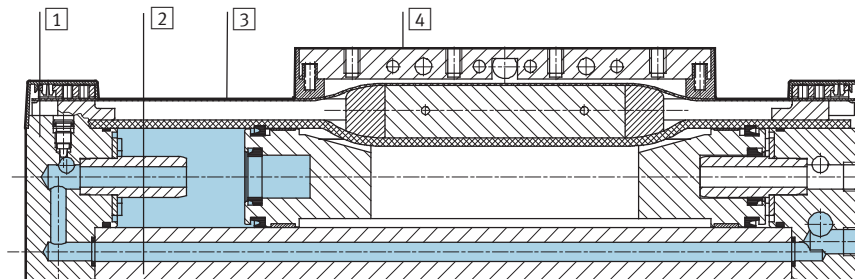
$r_{max.} = 0.8$  inch  
for piston  $\varnothing 11/16$  inch

$r_{max.} = 2.0$  inch  
for piston  $\varnothing 1 \dots 3$  inch  
(data for greater load distances on request)

Weights [oz]	11/16	1	1-1/4	1-5/8	2	2-1/2	3
Piston $\varnothing$	11/16	1	1-1/4	1-5/8	2	2-1/2	3
Basic weight with 0 inch stroke	16.2	29.6	54.7	93.5	207.4	321.0	610.2
Additional weight per 1 inch stroke	1.4	3.2	3.7	5.1	10.0	13.3	14.2
Mass of carriage	2.8	6.4	11.3	19.4	54.7	62.1	176.4

### Materials

Sectional view



Axis	11/16	1	1-1/4	1-5/8	2	2-1/2	3
1 End cap	Anodized aluminum						
2 Profile	Anodized aluminum						
3 Cover strip	Corrosion resistant steel						Polyurethane
4 Carriage	Anodized aluminum						
- Seals	Nitrile rubber, polyurethane						

# Linear actuators DGP - Inch Series

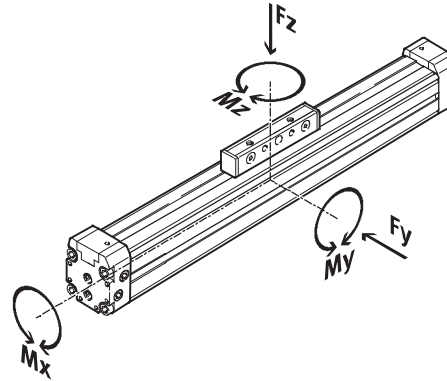
Technical data



## Characteristic load values

The indicated forces and torques refer to the center line of the internal diameter of the profile barrel. They must not be exceeded in the dynamic range.

DGP basic version is designed for use with an external linear guide to accommodate larger forces and moment-loads.



If the actuator is subjected to more than two of the indicated forces and torques simultaneously, the following

equations must be satisfied in addition to the indicated maximum loads:

$$0.4 \times \frac{Fz}{Fz_{max.}} + \frac{Mx}{Mx_{max.}} + \frac{My}{My_{max.}} + 0.2 \times \frac{Mz}{Mz_{max.}} \leq 1$$

$$\frac{Fz}{Fz_{max.}} \leq 1 \quad \frac{Mz}{Mz_{max.}} \leq 1$$

Permissible forces and torques								
Piston Ø		11/16	1	1-1/4	1-5/8	2	2-1/2	3
Fy <sub>max.</sub>		Not designed for lateral forces (see DGPL)						
Fz <sub>max.</sub>	[lbf]	27.0	74.2	107.9	179.8	269.8	359.7	1124.0
Mx <sub>max.</sub>	[ft-lbf]	0.6	1.1	2.2	4.4	7.7	8.9	35.4
My <sub>max.</sub>	[ft-lbf]	12.2	22.1	44.3	66.4	132.8	132.8	829.8
Mz <sub>max.</sub>	[ft-lbf]	1.1	3.3	5.5	8.9	16.6	26.6	154.9

# Linear actuators DGP - Inch Series

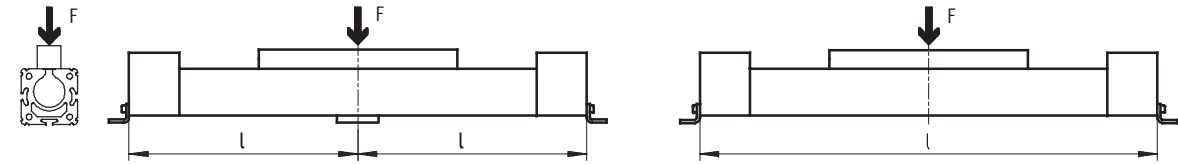
Technical data



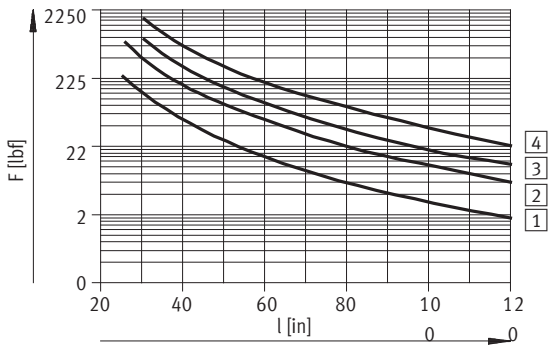
## Maximum permissible support span $l$ as a function of the force $F$

The axis may need to be supported with central supports (Type MUP) in order to restrict deflection with long stroke lengths. The following diagrams serve to determine the maximum permissible support span  $l$  as a function of the force  $F$  acting upon the axis.

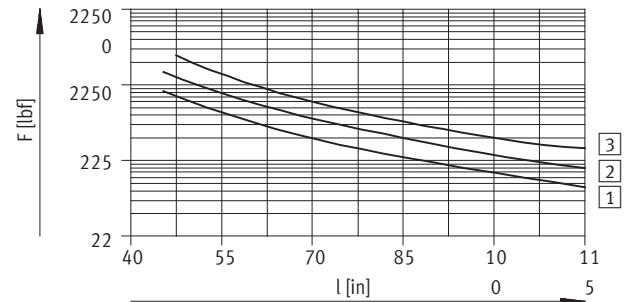
### Force on the surface of the slide



### Piston $\varnothing 11/16 \dots 1-5/8$      Piston $\varnothing 2 \dots 3$



- 1 DGP...-11/16      3 DGP...-1-1/4
- 2 DGP...-1        4 DGP...-1-5/8



- 1 DGP...-2            3 DGP...-3
- 2 DGP...-2-1/2

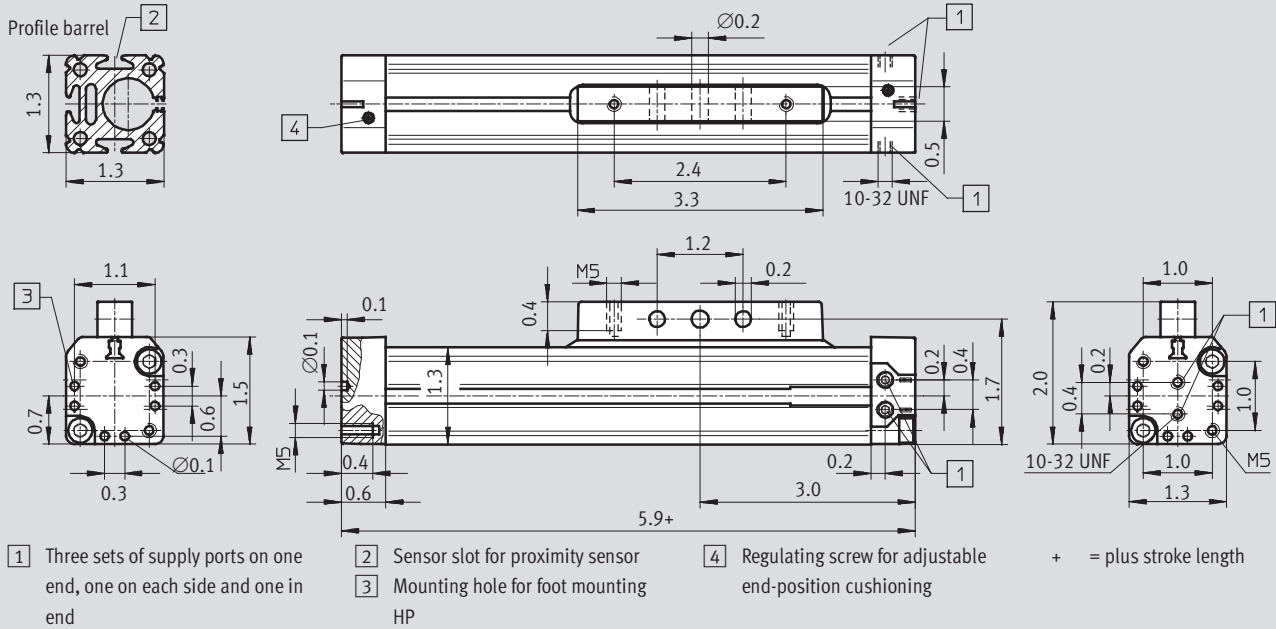
# Linear actuators DGP - Inch Series

Technical data



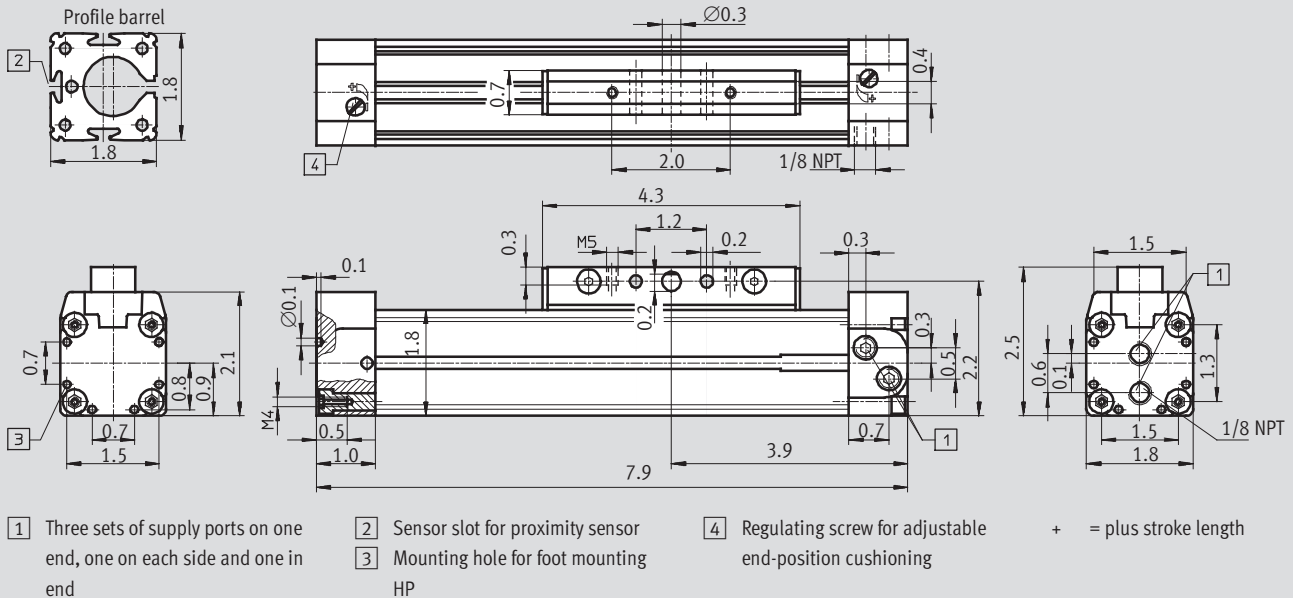
## Dimensions

Piston  $\varnothing 11/16$



## Dimensions

Piston  $\varnothing 1$



Dimensions are in inches, unless otherwise noted.

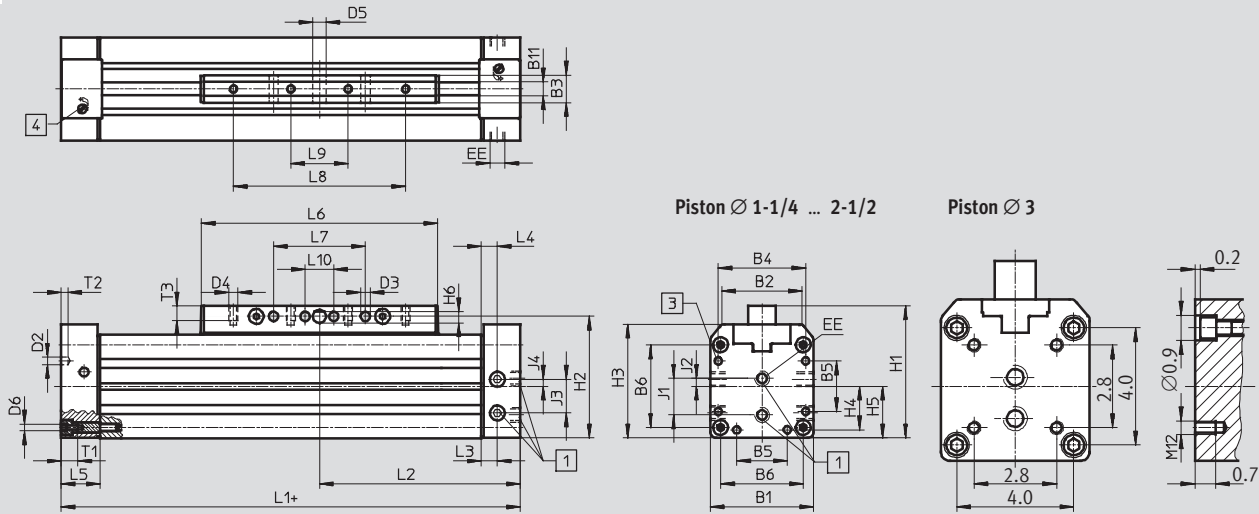


# Linear actuators DGP - Inch Series

Technical data



## Dimensions



- 1 Three sets of supply ports on one end, one on each side and one in end
- 3 Mounting hole for foot mounting HP
- 4 Regulating screw for adjustable end-position cushioning
- + = plus stroke length

Ø	B1	B2	B3	B4	B5	B6	B11	D2 Ø	D3 Ø	D4	D5 Ø	D6	EE	H1	H2
[in]															
1-1/4	2.1	1.4	0.8	1.8	0.8	1.6	9.5	0.2	0.2	10/24 UNC	0.3	M5	1/8 NPT	2.8	2.6
1-5/8	2.5	1.8	0.8	2.1	1.1	1.9			0.3	1/4-20 UNC	0.4		1/4 NPT	3.4	3.1
2	3.5	2.7	0.9	3.0	1.7	2.8	12	0.3	0.3	5/16-18 UNC	0.5	M6	1/4 NPT	4.5	4.2
2-1/2	4.2	3.3		3.5		3.3						M8	3/8 NPT	5.2	4.8
3	5.1	4.0	1.4	-	-	-	-	-	0.5	1/2-13 UNC	0.8	-	1/2 NPT	6.9	6.2

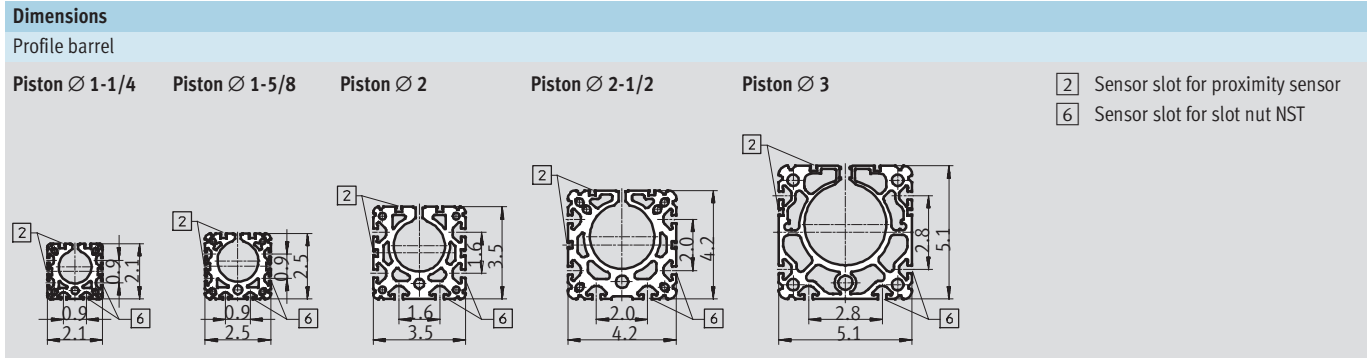
Ø	H3	H4	H5	H6	J1	J2	J3	J4	L1	L2	L3	L4	L5	L6
[in]														
1-1/4	2.4	0.9	1.1	0.2	0.8	0.2	0.6	0.2	9.8	4.9	0.7	0.3	1.2	5.3
1-5/8	2.8	1.0	1.3	0.3	0.9	0.2	0.8	0.4	11.8	5.9	0.5	0.5		6.7
2	3.9	1.4	1.8	0.4	1.3	0.3	1.2	0.2	13.8	6.9	0.6	0.6	1.3	8.1
2-1/2	4.5	1.8	2.1		1.5	0.3	1.2	0.6	15.8	7.9				9.2
3	5.5	2.0	2.6	-	1.4		1.3	0.1	20.5	10.2	0.8	0.8	1.8	13.2

Ø	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16	L22	T1	T2	T3
[in]														
1-1/4	2.0	3.9	1.2	-	15.0	7.5	7.1	-	6.3	9.1	10.4	0.5	0.1	0.3
1-5/8	2.8	5.1	1.6		18.5	9.3	6.3	9.8	8.7	-	13.4		0.2	0.4
2	3.2	5.9	2.0		21.7	10.8	11.0	-	9.8	13.8	16.0	0.6	0.2	0.5
2-1/2	4.3	7.5	2.8		25.6	12.8	15.0		12.2	16.9	19.1	0.8		
3	7.1	9.1	4.5	2.4	-	-	-		-	-	-	-	-	0.8

Dimensions are in inches, unless otherwise noted.

# Linear actuators DGP - Inch Series

Technical data



Dimensions are in inches, unless otherwise noted.

# Linear actuators DGP - Inch Series



Ordering Data

M Mandatory data					
Actuator function	Size	Stroke	Cushioning	Magnet for position sensing	Generation
DGP	11/16 1 1-1/4 1-5/8 2 2-1/2 3	0.39 ... 118	PPV	A	B
<b>DGP</b>	- <b>1</b>	- <b>20</b>	- <b>PPV</b>	- <b>A</b>	- <b>B</b>

Ordering table										
Size	11/16	1	1-1/4	1-5/8	2	2-1/2	3	Conditions	Code	Enter code
M Actuator function	Pneumatic linear actuator								<b>DGP</b>	DGP
Size	11/16	1	1 1/4	1 5/8	2	2 1/2	3		-...	
Stroke [in]	0.39 ... 71	0.39 ... 118							-...	
Cushioning	Adjustable air cushioning at both ends								<b>-PPV</b>	-PPV
Magnet for position sensing	For use with magnetic proximity sensor								<b>-A</b>	-A
Generation	B series								<b>-B</b>	-B

Transfer order code

<b>DGP</b>	-		-		-	<b>PPV</b>	-	<b>A</b>	-	<b>B</b>
------------	---	--	---	--	---	------------	---	----------	---	----------

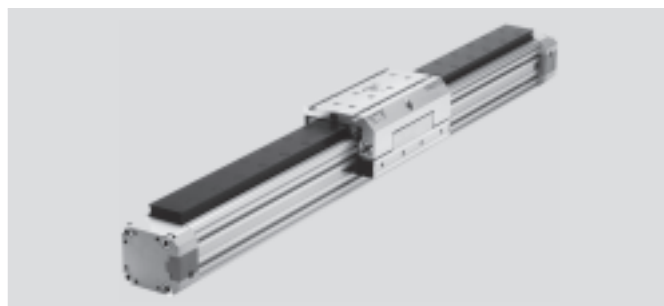
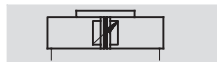
# Linear actuators DGPL, with guide - Inch Series



Technical data

Function

[www.festo.com/en/Spare\\_parts\\_service](http://www.festo.com/en/Spare_parts_service)



- N- Diameter  
11/16 ... 3 inch
- T- Stroke length  
0.39 ... 118 inch

General technical data							
Piston Ø	11/16	1	1-1/4	1-5/8	2	2-1/2	3
Constructional design	Pneumatic linear actuator with integrated bearing guide						
Guide/protection against torsion	Guide rail with carriage and plain-bearing guide GF or recirculating ball bearing guide KF						
Mode of operation	Double-acting						
Pneumatic connection	10-32 UNF	1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT		
Stroke length [in]	0.39 ... 71		0.39 ... 118 <sup>1)</sup>				
Cushioning	Adjustable air cushioning at both ends						
Cushioning length (PPV) [in]	0.7	0.8	0.8	1.2	3.3		
Magnet for position sensing <sup>2)</sup>	Standard						
Max. speed	GF	[ft/s]	3.3				
	KF	[ft/s]	9.8, 6.6 with PPV				

- 1) With effective strokes of over 78.7 inches the installation of the actuator unit must be with the sealing strip facing down; longer strokes available on request.
- 2) Position sensing via magnetic proximity sensor (ordered separately, see accessories).

Operating and environmental conditions							
Piston Ø	11/16	1	1-1/4	1-5/8	2	2-1/2	3
Operating medium	Filtered compressed air, lubricated or unlubricated						
Operating pressure [psi]	29.4 ... 120			22.0 ... 120			
Ambient temperature <sup>1)</sup> [°F]	+14 ... +140						
Corrosion resistance class for variant GF CRC <sup>2)</sup>	2						

- 1) Note operating range of proximity sensors.
- 2) Corrosion resistance class 2 according to Festo standard 940 070  
Components with moderate corrosion resistance for use in normal industrial environments subjected to contact with coolants or lubricating agents.

Forces [lbf]							
Piston Ø	11/16	1	1-1/4	1-5/8	2	2-1/2	3
Theoretical force at 90 psi	34.4	66.3	109	170	265	420	678

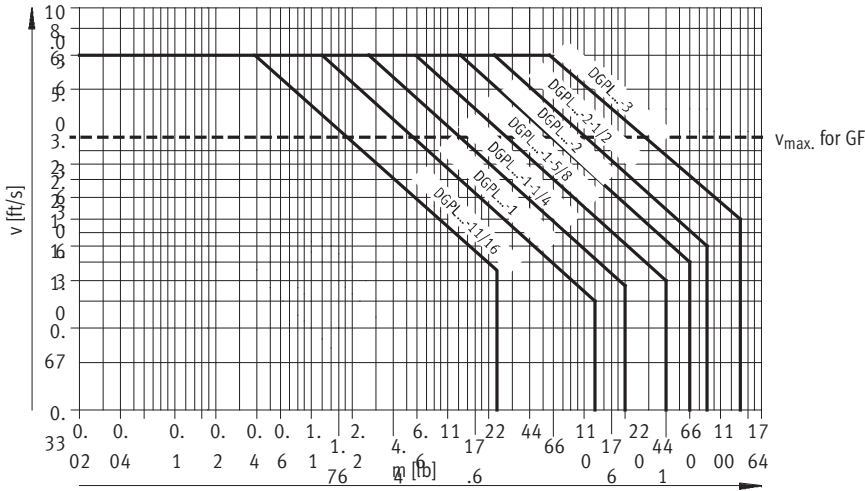
# Linear actuators DGPL, with guide - Inch Series

Technical data



## Operating range of the integrated end-position cushioning PPV

Maximum permissible speed  $v$  as a function of the moving load  $M$  (when using PPV air cushioning only)



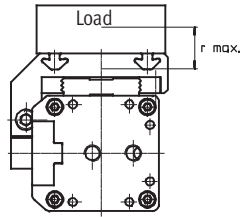
### Note

The data applies to a horizontal mounting position, applied load on top.

$m$  = Applied load + mass of carriage

## End-position cushioning

The end-position cushioning must be adjusted to ensure smooth operation. If the operating conditions are outside the permissible range, the load to be moved must be externally cushioned using suitable equipment (shock absorbers, stops, etc), preferably at the center of gravity of the mass.



$r_{max.} = 0.8$  inch  
for piston  $\varnothing$  11/16 inch

$r_{max.} = 2.0$  inch  
for piston  $\varnothing$  1 ... 3 inch  
(data for greater load distances on request)

### Note

To maximize bearing life and smoothness of operation, the mounting surface that the actuator will be mounted to must maintain a flatness of at least 0.001 inch.

Weights [oz]								
Piston $\varnothing$		11/16	1	1-1/4	1-5/8	2	2-1/2	3
Basic weight with 0 inch stroke	GF	26	48	84	137	303	478	896
	KF	29	54	96	158	339	542	1012
Additional weight per 1 inch stroke	GF	2.0	3.8	4.6	6.5	11.8	16.2	18.1
	KF	2.3	4.7	6.2	8.7	15.0	21.1	24.2
Mass of carriage	GF	8	13	19	34	62	98	250
	KF	10	15	20	41	69	114	265

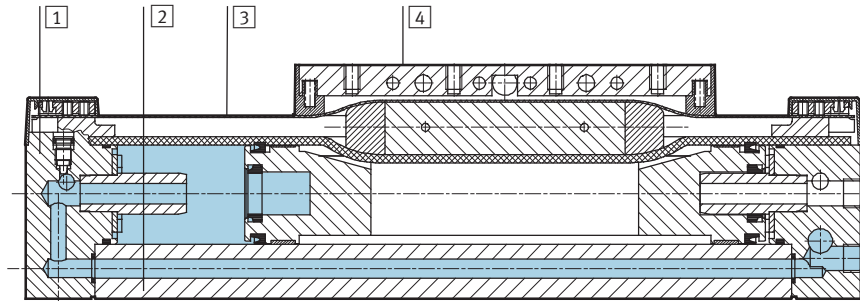
# Linear actuators DGPL, with guide - Inch Series

Technical data



## Materials

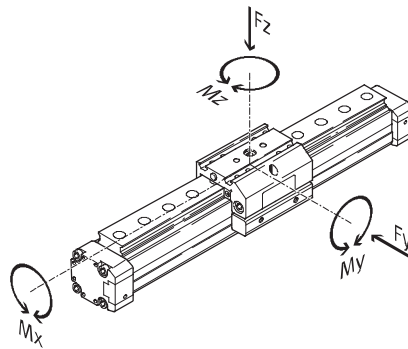
Sectional view



Axis	11/16	1	1-1/4	1-5/8	2	2-1/2	3
1 End cap	Anodized aluminum						
2 Profile	Anodized aluminum						
3 Cover strip	Corrosion resistant steel						Polyurethane
4 Carriage	Anodized aluminum						
- Guide rail	GF	Anodized aluminum					
	KF	Steel	Corrosion resistant steel				
- Seals	Nitrile rubber, polyurethane						

## Characteristic load values for actuator with bearing guide

The indicated forces and torques refer to the center of the guide rail. They must not be exceeded in the dynamic range. Special attention must be paid to the cushioning phase.



Forces and moments based on travel life of  $2 \times 10^8$  inches.

If the actuator is subjected to more than two of the indicated forces and torques simultaneously, the following equations must be satisfied in addition to the indicated maximum loads:

$$\frac{F_y}{F_{y_{max}}} + \frac{F_z}{F_{z_{max}}} + \frac{M_x}{M_{x_{max}}} + \frac{M_y}{M_{y_{max}}} + \frac{M_z}{M_{z_{max}}} \leq 1$$

### Note

All values for the GF version refer to a speed of 0.7 ft/s.

## Permissible forces and torques for plain-bearing guide (GF) version

Piston $\varnothing$		11/16	1	1-1/4	1-5/8	2	2-1/2	3
$F_{y_{max}}$	[lbf]	76.4	96.7	96.7	227.0	227.0	449.6	449.6
$F_{z_{max}}$	[lbf]	76.4	96.7	96.7	227.0	227.0	449.6	449.6
$M_{x_{max}}$	[ft-lbf]	2.4	6.0	9.4	25.4	35.4	81.9	110.6
$M_{y_{max}}$	[ft-lbf]	11.1	15.5	19.9	37.6	57.5	154.9	254.5
$M_{z_{max}}$	[ft-lbf]	11.1	15.5	19.9	37.6	57.5	154.9	254.5

# Linear actuators DGPL, with guide - Inch Series

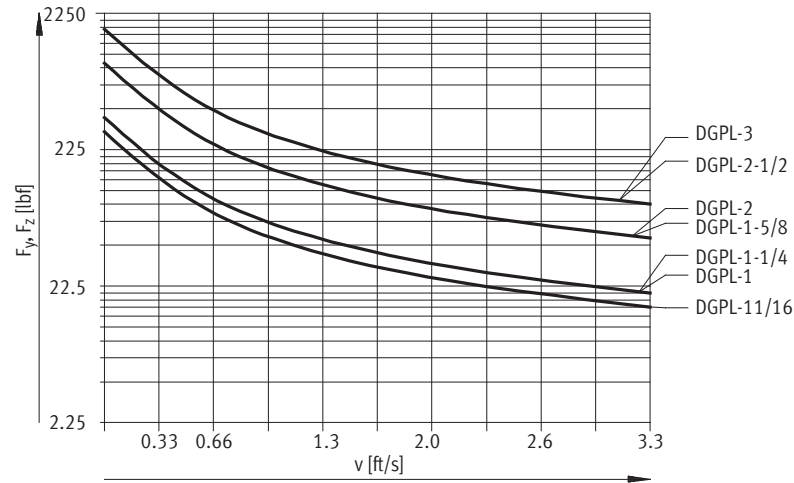
Technical data

Permissible forces and torques for recirculating ball bearing guide (KF) version								
Piston $\varnothing$		11/16	1	1-1/4	1-5/8	2	2-1/2	3
$F_{y_{max}}$	[lbf]	209.1	692.4	692.4	1641.0	1641.0	3158.4	3158.4
$F_{z_{max}}$	[lbf]	209.1	692.4	692.4	1641.0	1641.0	3158.4	3158.4
$M_{x_{max}}$	[ft-lbf]	7.7	49.8	69.7	188.1	265.5	641.7	824.2
$M_{y_{max}}$	[ft-lbf]	25.4	94.0	140.5	365.1	508.9	1006.8	1709.3
$M_{z_{max}}$	[ft-lbf]	25.4	94.0	140.5	365.1	508.9	1006.8	1709.3

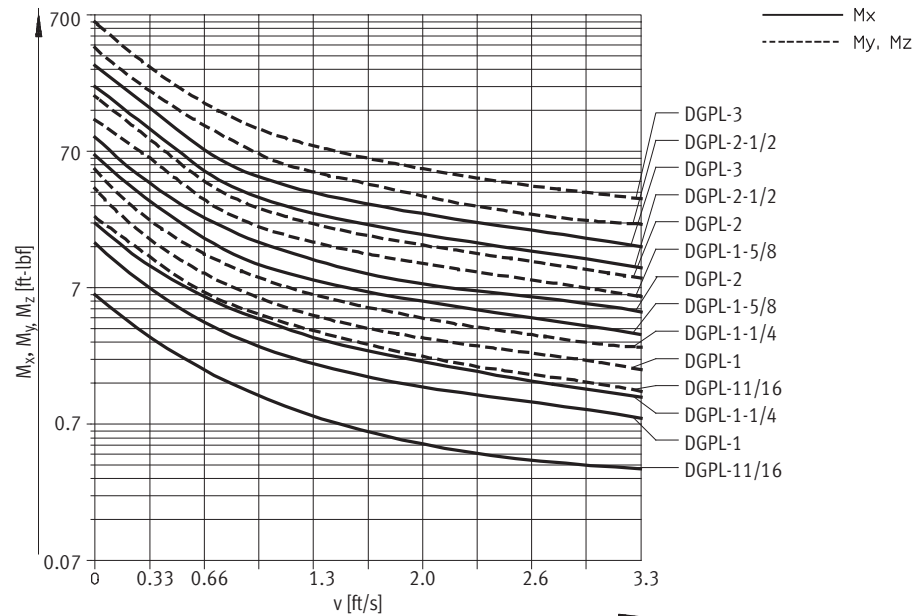
## Maximum permissible static and dynamic characteristic load values Standard slide and plain-bearing guide DGPL...-GF

The pneumatic linear actuator with plain-bearing guide DGPL...-GF is designed for a maximum speed of 3.3 ft/s. At higher speeds and vertical application, it is recommended that pneumatic linear actuators with recirculating ball bearing guide DGPL...-KF are used.

## Maximum permissible speed v as a function of the force F



## Maximum permissible speed v as a function of the permissible torque M



# Linear actuators DGPL, with guide - Inch Series

Technical data

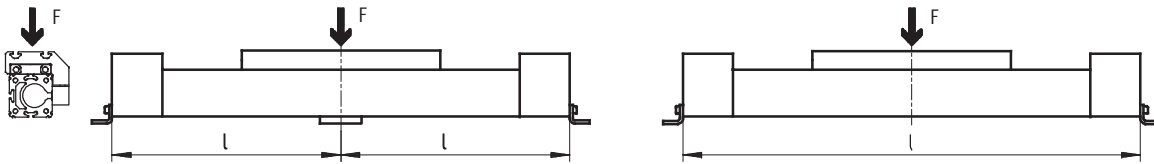


## Maximum permissible support span $l$ as a function of the force $F$

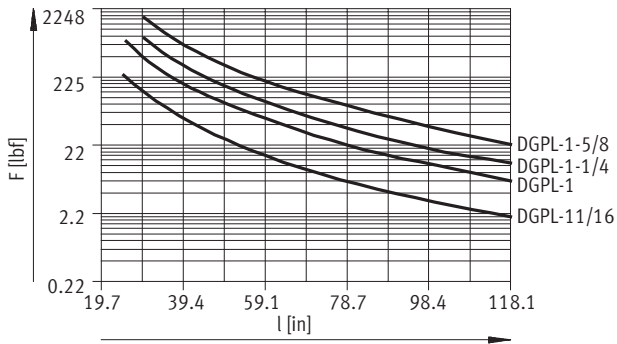
The axis may need to be supported with central supports (type MUP) in order to restrict deflection with long stroke lengths. The following diagrams

serve to determine the maximum permissible support span  $l$  as a function of the force  $F$  acting upon the axis.

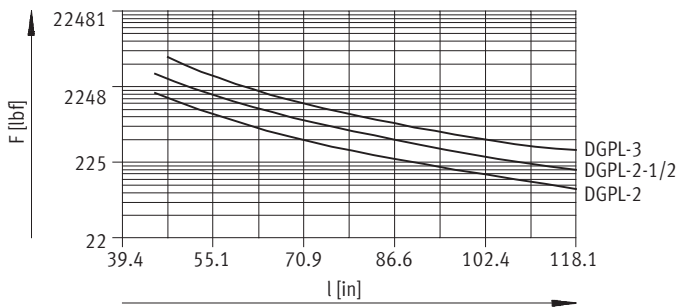
### Force on the surface of the slide



### Piston $\varnothing 11/16 \dots 1-5/8$



### Piston $\varnothing 2 \dots 3$



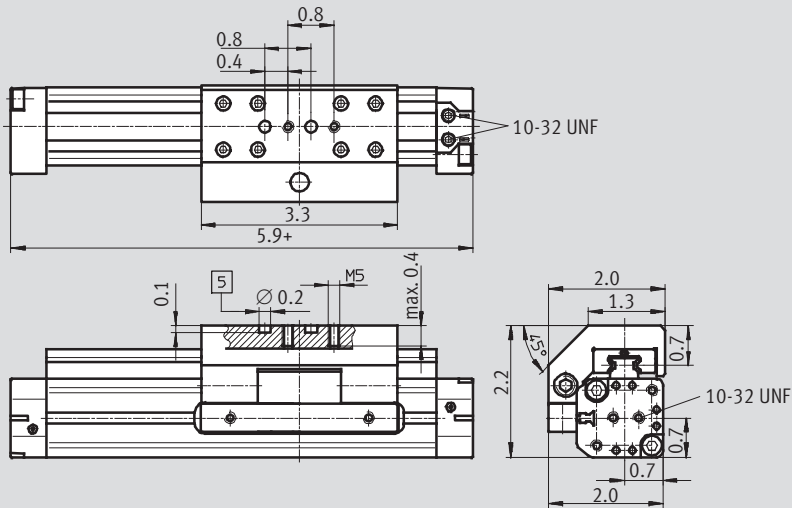


# Linear actuators DGPL, with guide - Inch Series

Technical data

## Dimensions

Piston  $\varnothing$  11/16

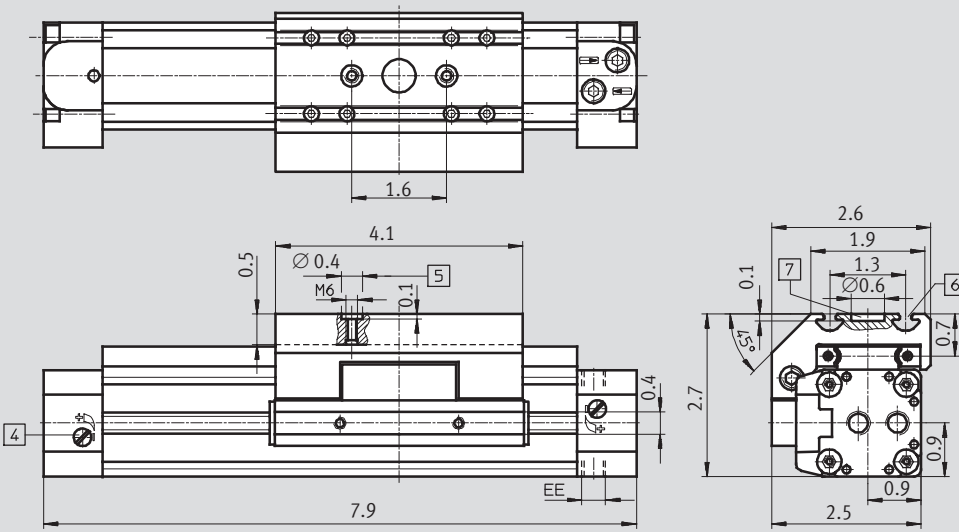


5 Holes for centring pin ZBS 5

+ = plus stroke length

## Dimensions

Piston  $\varnothing$  1



5 Hole for centring sleeve ZBH-9

6 Mounting slot for slot nut NSTL-25

7 Hole for central mounting SLZZ

+ = plus stroke length

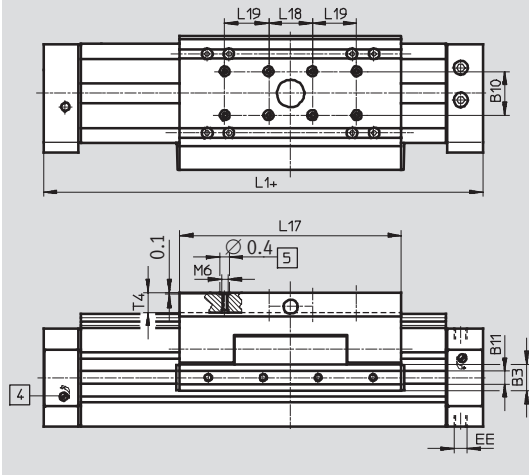
Dimensions are in inches, unless otherwise noted.

# Linear actuators DGPL, with guide - Inch Series

Technical data

## Dimensions

Piston  $\varnothing$  1-1/4 ... 3



- 5 Hole for centring sleeve ZBH-9
- 6 Mounting slot for slot nut NSTL
- 7 Hole for central mounting SLZZ

+ = plus stroke length

$\varnothing$	B3	B7	B8	B9	B10	B11	B12	B14	D1	EE
1-1/4	0.7	2.5	3.1	1.9	0.8	0.4	4.4	2.7	-	1/8 NPT
1-5/8	0.8	3.1	3.8	2.2			5.4	3.1	M5	1/4 NPT
2	0.9	3.8	4.8	2.8	1.6	0.5	-	-	-	3/8 NPT
2-1/2		4.8	5.6	3.5			-	-	1/2 NPT	
3	1.4	6.0	7.4	4.4	-	-	-	-	-	

$\varnothing$	H1	H5	H7	H8	H10	H11	H12	H13	L1	L2
1-1/4	2.8	1.1	3.1	0.7	3.7	-	1.9	1.3	9.8	4.9
1-5/8	3.4	1.3	3.6	0.8	4.2	0.9	2.1	1.4	11.8	5.9
2	4.5	1.8	4.8	1.0	-	-	-	-	13.8	6.9
2-1/2	5.2	2.1	5.7	1.2	-	-	-	-	15.7	7.9
3	6.9	2.6	6.9	1.4	-	-	-	-	20.5	10.2

$\varnothing$	L17	L18	L19	L20	L21	L23	L24	L25	T4	T5
1-1/4	5.2	1.6	-	10.3	1.6	5.2	-	-	0.5	-
1-5/8	6.6		1.6	13.3		6.6	5.9	2.3		0.3
2	8.0	-	15.8	3.1	-	-	-	0.7	-	
2-1/2	9.1	-	18.9	4.7	-	-	-	0.8	-	
3	12.6	-	-	-	-	-	-	1.1	-	

Dimensions are in inches

# Linear actuators DGPL, with guide - Inch Series



Ordering data

Mandatory data						
Actuator function	Size	Stroke	Cushioning	Magnet for position sensing	Guide	Generation
DGPL	11/16 1 1-1/4 1-5/8 2 2-1/2 3	0.39 ... 118	P PPV	A	GF KF	B
<b>DGPL</b>	- <b>2-1/2</b>	- <b>800</b>	- <b>PPV</b>	- <b>A</b>	- <b>KF</b>	- <b>B</b>

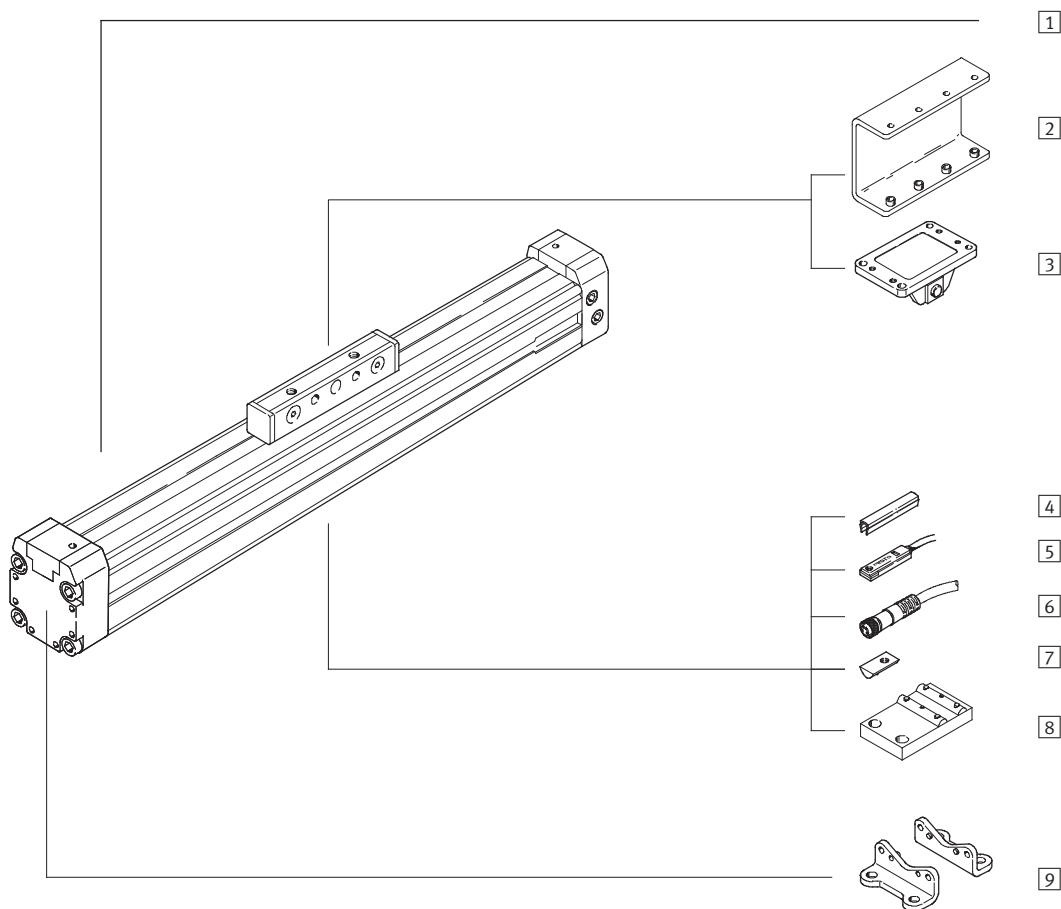
Ordering table											
Size	11/16	1	1-1/4	1-5/8	2	2-1/2	3	Conditions	Code	Enter code	
M Actuator function	Pneumatic linear actuator								<b>DGPL</b>		DGPL
Size	11/16	1	1 1/4	1 5/8	2	2 1/2	3		-...		
Stroke [in]	0.39... 71	0.39 ... 118							-...		
Cushioning	Adjustable air cushioning at both ends								<b>-PPV</b>		-PPV
Magnet for position sensing	For use with magnetic proximity sensor								<b>-A</b>		-A
Guide	Plain-bearing guide								<b>-GF</b>		
	Recirculating ball bearing guide								<b>-KF</b>		
Generation	B series								<b>-B</b>		-B

Transfer order code

<b>DGPL</b>	-		-	<b>A</b>	-	<b>PPV</b>	-		-	<b>B</b>
-------------	---	--	---	----------	---	------------	---	--	---	----------

# Linear actuators DGP - Inch Series

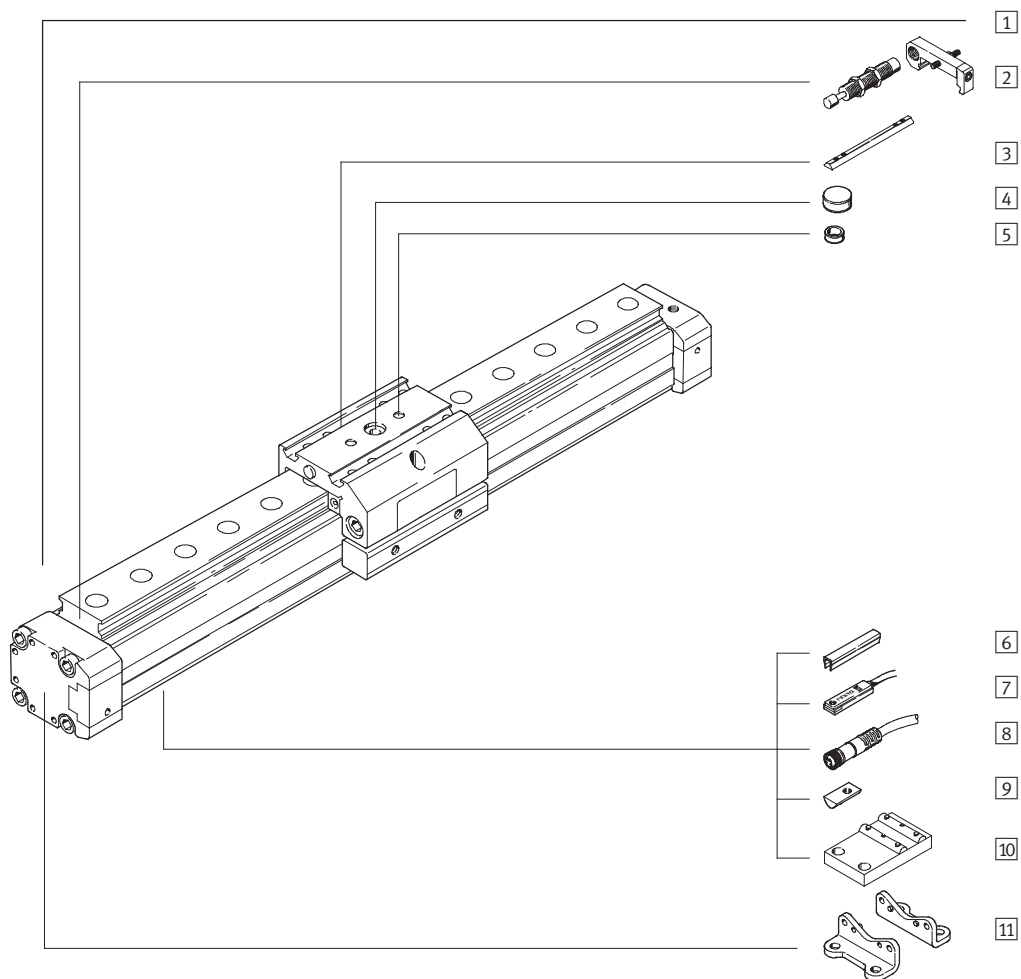
Accessories



Mounting attachments and accessories			
Type	Description	→ Page	
1	Linear actuator DGP	Pneumatic linear actuator	4
2	Load inverter AK	The carriage should be mounted pointing downwards with long strokes > 79" or in unfavorable environments. By using the load inverter it means that the load can be attached from above.	24
3	Moment compensator FKP	For compensating misalignments when using external guides	25
4	Slot cover ABP	For protecting against dirt and securing proximity sensor cables	28
5	Proximity sensor SMT/SME	For sensing the carriage position	29
6	Connecting cable NEBU	For use with proximity sensors with plug connector	29
7	Slot nut for profile slot NST	For mounting attachments	28
8	Central support MUP	For mounting the axis, particularly with long strokes	23
9	Foot mounting HP	For mounting the axis	22

# Linear actuators DGPL, with guide - Inch Series

Accessories



Mounting components and accessories			
Type	Description		→ Page
1	Linear axis DGPL	Pneumatic linear actuator with guide	12
2	Shock absorber kit YSR/KYP	For slowing higher speeds to a stop Shock absorber YSR and Retainer KYP (ordered separately)	26
3	Slot nut for slide NTSL	For mounting loads and attachments on the slide	28
4	Central mounting SLZZ	For centring loads and attachments on the slide	28
5	Alignment pins/sleeves ZBS/ZBH	For aligning loads and attachments on the slide	28
6	Slot cover ABP	For protecting against dirt and securing proximity sensor cables	28
7	Proximity sensor SMT/SME	For sensing the slide position	29
8	Connecting cable NEBU	For proximity sensors with plug connector	29
9	Slot nut for profile barrel NST	For mounting attachments	28
10	Central support MUP	For mounting the axis	23
11	Foot mounting HP	For mounting the axis	22

# Linear actuators DGP/DGPL - Inch Series

Accessories

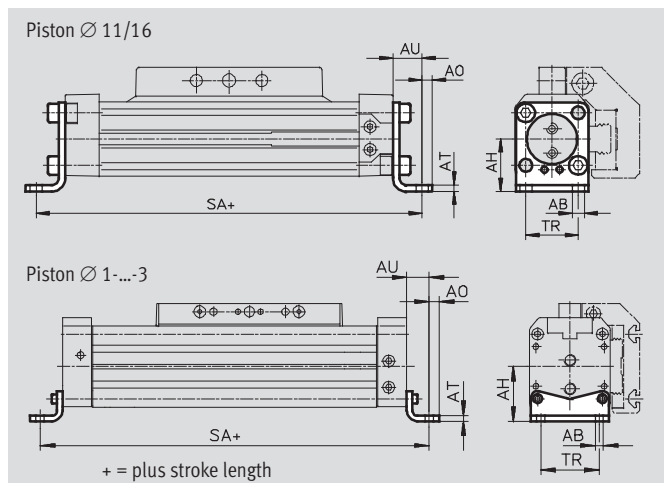


## Foot mounting HP

Material:

Galvanized steel

Free of copper, PTFE and silicone



Dimensions and ordering data										
For $\varnothing$	AB $\varnothing$	AH	AO	AT	AU	SA	TR	Weight	Part No.	Type
[in]								[oz]		
11/16	0.2	0.9	0.2	0.1	0.5	6.9	0.9	2.1	158472	HP-18
1	0.2	1.2	0.2	0.1	0.5	8.9	1.3	2.2	150731	HP-25
1-1/4	0.3	1.5	0.3	0.2	0.7	11.2	1.5	4.1	150732	HP-32
1-5/8	0.3	1.8	0.3	0.2	0.7	13.2	1.8	6.6	150733	HP-40
2	0.4	2.4	0.4	0.2	1.0	15.7	2.6	8.6	150734	HP-50
2-1/2	0.4	2.7	0.5	0.2	1.1	18.0	3.0	10.8	150735	HP-63
3	0.5	3.3	0.5	0.3	1.1	22.7	2.8	21.9	158453	HP-80

Dimensions are in inches, unless otherwise noted.

# Linear actuators DGP/DGPL - Inch Series

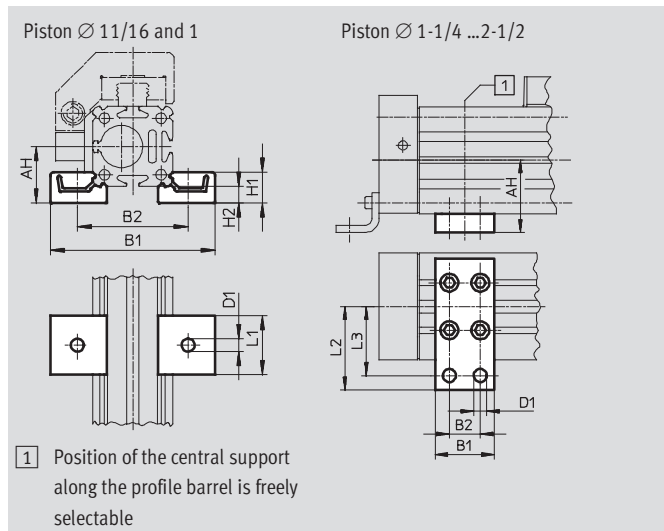
Accessories

## Central support MUP

Material:

Galvanized steel

Free of copper, PTFE and silicone



Dimensions and ordering data												
For $\varnothing$	AH	B1	B2	D1 $\varnothing$	H1	H2	L1	L2	L3	Weight	Part No.	Type
[in]										[oz]		
11/16	0.9	2.8	1.9	0.2	0.5	0.3	1.0	-	-	1.0	150736	MUP-18/25
1	1.2	3.2	2.3	0.2	0.5	0.3	1.0	-	-	1.2	150736	MUP-18/25
1-1/4	1.5	1.4	0.9	0.3	-	-	-	1.63	1.4	3.1	150737	MUP-32
1-5/8	1.8	1.4	0.9	0.3	-	-	-	1.85	1.6	4.4	150738	MUP-40
2	2.4	2.0	1.0	0.4	-	-	-	2.8	2.3	8.5	150739	MUP-50
2-1/2	2.7	2.0	1.0	0.4	-	-	-	3.0	2.6	12.0	150800	MUP-63
3	3.3	2.0	1.0	0.4	-	-	-	3.5	3.0	20.8	158455	MUP-80

Dimensions are in inches, unless otherwise noted.

# Linear actuators DGP/DGPL - Inch Series

Accessories

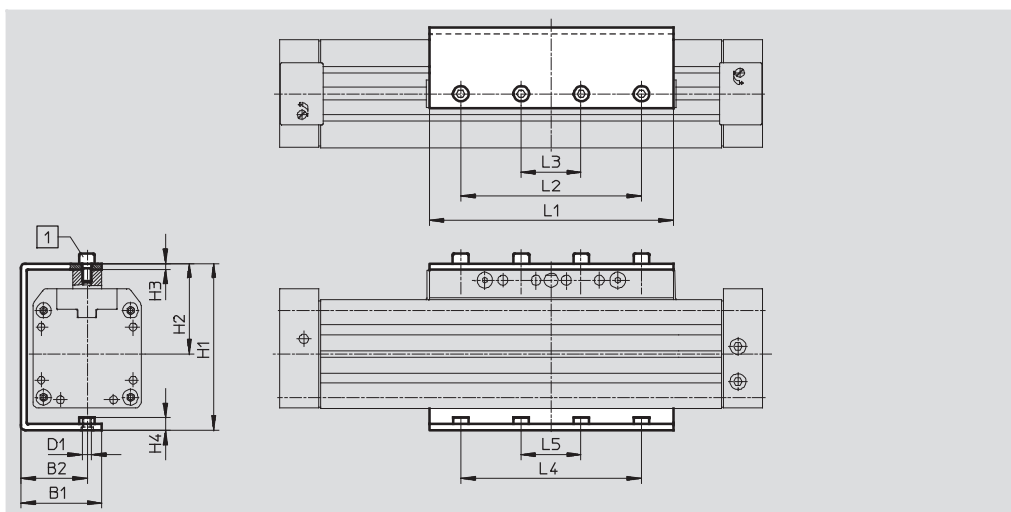
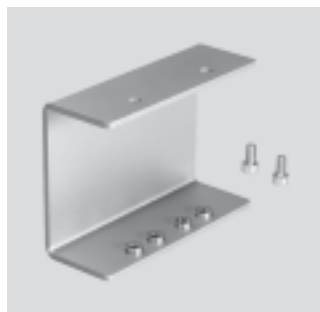


## Load inverter AK

For DGP

Material:

Galvanized steel



Dimensions and ordering data																	
For Ø [in]	B1	B2	D1	H1	H2	H3	H4	L1	L2	L3	L4	L5	1	CRC <sup>1)</sup>	Weight [oz]	Part No.	Type
11/16	1.1	0.9	M5	2.5	1.4	0.1	0.2	3.1	-	2.4	2.4	0.8	M5x12	2	8.0	196105	AK-18
1	1.5	1.2	M5	3.0	1.7	0.1	0.2	4.1	-	2.0	2.0	0.8	M5x10		13.4	196106	AK-25
1-1/4	1.7	1.3	M5	3.4	1.9	0.2	0.2	5.2	3.9	1.2	3.9	1.2	M5x12		24.3	196107	AK-32
1-5/8	2.0	1.6	M6	4.1	2.3	0.2	0.3	6.6	5.1	1.6	5.1	1.6	M6x14		37.0	196108	AK-40
2	2.6	2.2	M8	5.5	3.0	0.2	0.4	8.0	5.9	2.0	5.9	2.0	M8x16		73.4	196109	AK-50
2-1/2	3.0	2.6	M8	6.2	3.3	0.2	0.5	9.1	7.5	2.8	7.5	2.8	M8x18		99.5	196110	AK-63

1) Corrosion resistance class 2 according to Festo standard 940 070  
Components with moderate corrosion resistance for use in normal industrial environments subjected to contact with coolants or lubricating agents.

Dimensions are in inches, unless otherwise noted.



# Linear actuators DGP/DGPL - Inch Series

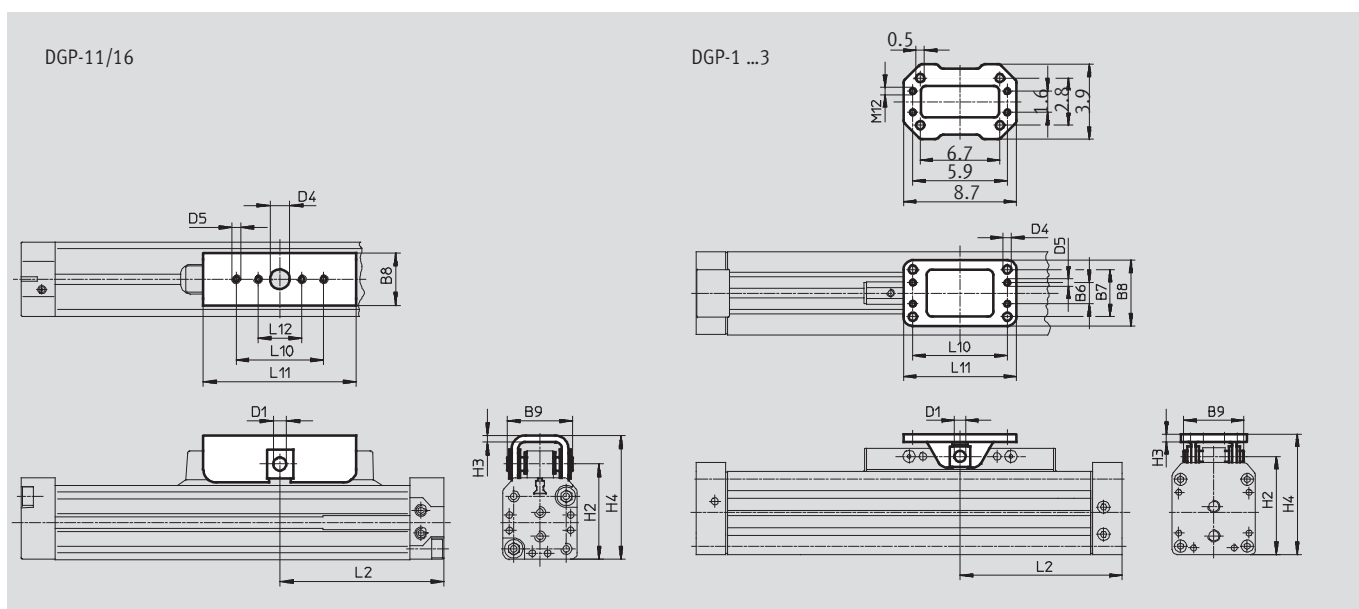
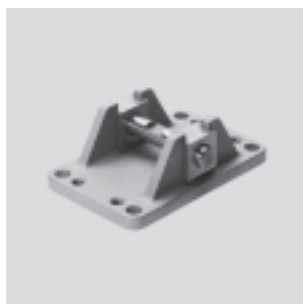
Accessories



## Moment compensator FKP

For DGP

Material:  
Galvanized steel



Dimensions and ordering data																
For Ø	B6	B7	B8	B9	D1	D4	D5	H2	H3	H4	L2	L10	L11	L12	Part No.	Type
[in]					Ø	Ø										
11/16	–	–	1.0	1.2	0.2	0.4	M4	1.7	0.1	2.3	10.2	1.6	2.8	0.8	158474	FKP-18
1	0.8	1.6	2.1	2.0	0.3	0.2	M5	2.2	0.2	3.0	3.9	2.6	3.1	–	150801	FKP-25/32
1-1/4	0.8	1.6	2.1	2.0	0.3	0.2	M5	2.6	0.2	3.3	4.9	2.6	3.1	–	150801	FKP-25/32
1-5/8	0.9	1.7	2.3	2.4	0.4	0.3	M6	3.1	0.2	3.9	5.9	3.0	3.5	–	150802	FKP-40
2	0.9	2.0	2.8	2.5	0.5	0.4	M8	4.2	0.3	5.1	6.9	4.0	4.8	–	150803	FKP-50/63
2-1/2	0.9	2.0	2.8	2.5	0.5	0.4	M8	4.8	0.3	5.7	7.9	4.0	4.8	–	150803	FKP-50/63
3	–	–	–	3.7	0.8	–	–	6.2	0.5	7.7	–	–	–	–	158457	FKP-80

Dimensions are in inches, unless otherwise noted.

# Linear actuators DGP/DGPL - Inch Series



Accessories

## Shock absorber YSR-...-C

For DGPL

Material:  
 Housing: galvanized steel; piston rod:  
 high-alloy steel,  
 seals: nitrile rubber, polyurethane  
 Free of copper, PTFE and silicone



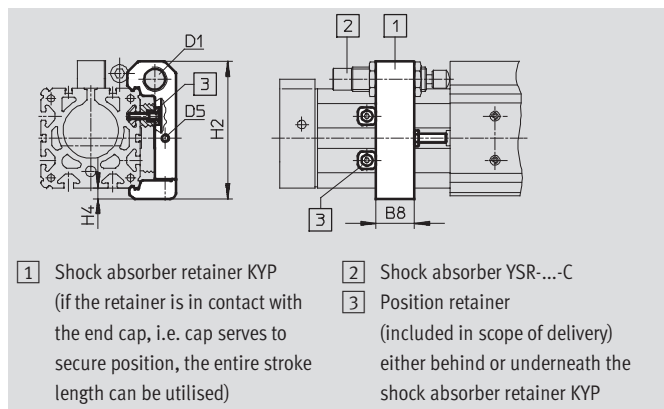
Ordering data			
For Ø [in]	Weight [oz]	Part No.	Type
11/16	1.8	34571	YSR-8-8-C
1	2.5	34572	YSR-12-12-C
1-1/4	2.5	34572	YSR-12-12-C
1-5/8	4.9	34573	YSR-16-20-C
2	4.9	34573	YSR-16-20-C
2-1/2	8.5	34574	YSR-20-25-C
3	8.5	34574	YSR-20-25-C

## Shock absorber retainer KYP

For DGPL

Material:  
 Retainer: Aluminum  
 Sleeve: Corrosion resistant steel

Note: shock absorber not included



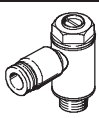
Dimensions and ordering data							
For Ø [in]	B8	D1	D5	H2	H4	Weight [oz]	Part No. Type
11/16	0.6	M12x1	M4	2.0	0.2	2.3	158907 KYP-18
1	0.7	M16x1	M5	2.7	0.2	3.4	158908 KYP-25
1-1/4	1.0	M16x1	M5	3.1	0.3	4.6	158909 KYP-32
1-5/8	1.3	M22x1.5	M5	4.0	0.3	7.4	158910 KYP-40
2	1.4	M22x1.5	M8	4.9	0.4	14.6	158911 KYP-50
2-1/2	1.7	M26x1.5	M10	6.0	0.5	21.5	158912 KYP-63
3	1.7	M26x1.5	M10	7.1	0.5	27.3	158913 KYP-80

Dimensions are in inches, unless otherwise noted.


# Linear actuators DGP/DGPL - Inch Series


Accessories



Ordering data – One-way flow control valves					
	Connection		Material	Part No. Type	
	Thread	For tubing OD (inch)			
	10-32 UNF	5/32	Housing: Polymer SealS: NBR	165008	GRLA-10-32-UNF-QS-5/32-U
		1/4		192753	GRLA-10-32-UNF-QS-1/4-U
	1/8" NPT	3/16		190941	GRLA-1/8-NPT-QS-3/16-U
		1/4		165010	GRLA-1/8-NPT-QS-1/4-U
	1/4" NPT	1/4		165011	GRLA-1/4-NPT-QS-1/4-U
		5/16		165014	GRLA-1/4-NPT-QS-5/16-U
	3/8" NPT	5/16		165015	GRLA-3/8-NPT-QS-5/16-U
		3/8		190950	GRLA-3/8-NPT-QS-3/8-U
	1/2" NPT	3/8		190952	GRLA-1/2-NPT-QS-3/8-U
		1/2		190953	GRLA-1/2-NPT-QS-1/2-U

Dimensions are in inches, unless otherwise noted.


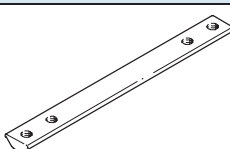


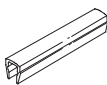
Ordering Data – Push-in Fittings QB, NPT Thread					Technical Data → <a href="http://www.festo.com/catalog/QB">www.festo.com/catalog/QB</a>		
	For tubing O.D. [in]	10/32 UNF		1/8NPT		1/4NPT	
		Part No.	Type	Part No.	Type	Part No.	Type
With external hex							
	1/8	533266	QB-10-32-UNF-1/8-U	533270	QB-1/8-1/8-U	-	
	5/32	533267	QB-10-32-UNF-5/32-U	533271	QB-1/8-5/32-U	-	
	3/16	533268	QB-10-32-UNF-3/16-U	533272	QB-1/8-3/16-U	533275	QB-1/4-3/16-U
	1/4	533269	QB-10-32-UNF-1/4-U	533273	QB-1/8-1/4-U	533276	QB-1/4-1/4-U
	5/16	-	-	533274	QB-1/8-5/16-U	533277	QB-1/4-5/16-U
	3/8	-	-	-	-	533278	QB-1/4-3/8-U
	1/2	-	-	-	-	-	

Ordering Data – Push-in Fittings QB, NPT Thread					Technical Data → <a href="http://www.festo.com/catalog/QB">www.festo.com/catalog/QB</a>		
	For tubing O.D. [in]	3/8NPT		1/2NPT			
		Part No.	Type	Part No.	Type		
With external hex							
	1/8	-	-	-		-	
	5/32	-	-	-		-	
	3/16	-	-	-		-	
	1/4	533279	QB-3/8-1/4-U	-		-	
	5/16	533280	QB-3/8-5/16-U	-		-	
	3/8	533281	QB-3/8-3/8-U	533283	QB-1/2-3/8-U	-	
	1/2	533282	QB-3/8-1/2-U	533284	QB-1/2-1/2-U	-	

# Linear actuators DGP/DGPL - Inch Series

Accessories



Ordering data for DGP/DGPL					
	For Ø [in]	Remarks	Part No.	Type	PU <sup>1)</sup>
<b>Slot nut NST</b>					
	1	For mounting slot	<b>526091</b>	<b>NST-HMV-M4</b>	1
	1-1/4, 1-5/8		<b>150914</b>	<b>NST-5-M5</b>	1
	2, 2-1/2, 3		<b>150915</b>	<b>NST-8-M6</b>	1
<b>Slot nut NSTL</b>					
	1	For slide	<b>158410</b>	<b>NSTL-25</b>	1
	1-1/4		<b>158411</b>	<b>NSTL-32</b>	1
	1-5/8		<b>158412</b>	<b>NSTL-40</b>	1
	2		<b>158413</b>	<b>NSTL-50</b>	1
	2-1/2		<b>158414</b>	<b>NSTL-63</b>	1
	3		<b>161356</b>	<b>NSTL-80</b>	1
<b>Alignment pin/sleeve ZBS/ZBH</b>					
	11/16	For slide	<b>150928</b>	<b>ZBS-5</b>	10
	1... 3		<b>150927</b>	<b>ZBH-9</b>	10
<b>Central mounting SLZZ</b>					
	1	For slide	<b>150900</b>	<b>SLZZ-16/10</b>	1
	1-1/4, 1-5/8		<b>150901</b>	<b>SLZZ-25/16</b>	
	2 ... 3		<b>150904</b>	<b>SLZZ-50/40</b>	1
<b>Slot cover ABP</b>					
	1-1/4, 1-5/8	For mounting slot each 1.6 ft	<b>151681</b>	<b>ABP-5</b>	2
	2, 2-1/2, 3		<b>151682</b>	<b>ABP-8</b>	

1) Packaging unit quantity

Dimensions are in inches, unless otherwise noted.

# Linear actuators DGP/DGPL - Inch Series

Accessories



Ordering Data – Proximity Switches for T-slot, Magneto-resistive					Technical data → <a href="http://www.festo.com/catalog/sm">www.festo.com/catalog/sm</a>	
	Type of mounting	Switch output	Electrical connection	Cable length [m]	Part No.	Type
<b>N/O contact</b>						
	Insertable in the slot from above, flush with cylinder profile	PNP	Cable, 3-wire	2.5	543867	SMT-8M-PS-24V-K-2,5-OE
			Plug M8x1, 3-pin	0.3	543866	SMT-8M-PS-24V-K-0,3-M8D
			Plug M12x1, 3-pin	0.3	543869	SMT-8M-PS-24V-K-0,3-M12
		NPN	Cable, 3-wire	2.5	543870	SMT-8M-NS-24V-K-2,5-OE
			Plug M8x1, 3-pin	0.3	543871	SMT-8M-NS-24V-K-0,3-M8D
	Insertable in the slot lengthwise, flush with the cylinder profile	PNP	Cable, 3-wire	2.5	175436	SMT-8-PS-K-LED-24-B
			Plug M8x1, 3-pin	0.3	175484	SMT-8-PS-S-LED-24-B
<b>N/C contact</b>						
	Insertable in the slot from above, flush with cylinder profile	PNP	Cable, 3-wire	7.5	543873	SMT-8M-PO-24V-K7,5-OE

Ordering Data – Proximity Switches for T-slot, Magnetic Reed					Technical data → <a href="http://www.festo.com/catalog/sm">www.festo.com/catalog/sm</a>	
	Type of mounting	Switch output	Electrical connection	Cable length [m]	Part No.	Type
<b>N/O contact</b>						
	Insertable in the slot from above, flush with cylinder profile	Contacting	Cable, 3-wire	2.5	543862	SME-8M-DS-24V-K-2,5-OE
				5.0	543863	SME-8M-DS-24V-K-5,0-OE
			Cable, 3-wire	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
			Cable, 3-wire	2.5	150855	SME-8-K-LED-24
	Insertable in the slot lengthwise, flush with the cylinder profile	Contacting	Plug M8x1, 3-pin	0.3	150857	SME-8-S-LED-24
<b>N/C contact</b>						
	Insertable in the slot lengthwise, flush with the cylinder profile	Contacting	Cable, 3-wire	7.5	160251	SME-8-O-K-LED-24

Ordering Data – Connecting Cables				Technical data → <a href="http://www.festo.com/catalog/nebu">www.festo.com/catalog/nebu</a>	
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No.	Type
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541333	NEBU-M8G3-K-2.5-LE3
			5.0	541334	NEBU-M8G3-K-5-LE3
	Straight socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	541363	NEBU-M12G5-K-2.5-LE3
			5.0	541364	NEBU-M12G5-K-5-LE3
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541338	NEBU-M8W3-K-2.5-LE3
			5.0	541341	NEBU-M8W3-K-5-LE3
Angled socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	541367	NEBU-M12W5-K-2.5-LE3	
		5.0	541370	NEBU-M12W5-K-5-LE3	

Ordering Data – Slot Cover for T-slot			Part No.	Type
	Assembly	Length [ft]		
	Insertable from above	2x 1.6	151680	ABP-5-S

# Product Range and Company Overview

## A Complete Suite of Automation Services

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



**Custom Automation Components**  
Complete custom engineered solutions



**Custom Control Cabinets**  
Comprehensive engineering support and on-site services



**Complete Systems**  
Shipment, stocking and storage services

## The Broadest Range of Automation Components

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



**Electromechanical**  
Electromechanical actuators, motors, controllers & drives



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



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

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

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

### Quality Assurance, ISO 9001 and ISO 14001 Certifications

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

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



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



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

# Festo North America

## Festo Regional Contact Center

5300 Explorer Drive  
Mississauga, Ontario L4W 5G4  
Canada

### USA Customers:

For ordering assistance,  
**Call:** 1.800.99.FESTO (1.800.993.3786)  
**Fax:** 1.800.96.FESTO (1.800.963.3786)  
**Email:** customer.service@us.festo.com

For technical support,  
**Call:** 1.866.GO.FESTO (1.866.463.3786)  
**Fax:** 1.800.96.FESTO (1.800.963.3786)  
**Email:** product.support@us.festo.com

### Canadian Customers:

**Call:** 1.877.GO.FESTO (1.877.463.3786)  
**Fax:** 1.877.FX.FESTO (1.877.393.3786)  
**Email:** festo.canada@ca.festo.com

---

## USA Headquarters

Festo Corporation  
395 Moreland Road  
P.O. Box 18023  
Hauppauge, NY 11788, USA  
[www.festo.com/us](http://www.festo.com/us)

---

## USA Sales Offices

### Appleton

North 922 Tower View Drive, Suite N  
Greenville, WI 54942, USA

### Boston

120 Presidential Way, Suite 330  
Woburn, MA 01801, USA

### Chicago

1441 East Business Center Drive  
Mt. Prospect, IL 60056, USA

### Dallas

1825 Lakeway Drive, Suite 600  
Lewisville, TX 75057, USA

### Detroit – Automotive Engineering Center

2601 Cambridge Court, Suite 320  
Auburn Hills, MI 48326, USA

### New York

395 Moreland Road  
Hauppauge, NY 11788, USA

### Silicon Valley

4935 Southfront Road, Suite F  
Livermore, CA 94550, USA

## United States



**USA Headquarters, East:** Festo Corp., 395 Moreland Road, Hauppauge, NY 11788  
Phone: 1.631.435.0800; Fax: 1.631.435.8026;  
Email: [info@festo-usa.com](mailto:info@festo-usa.com) [www.festo.com/us](http://www.festo.com/us)

## Canada



**Headquarters:** Festo Inc., 5300 Explorer Drive, Mississauga, Ontario L4W 5G4  
Phone: 1.905.624.9000; Fax: 1.905.624.9001;  
Email: [festo.canada@ca.festo.com](mailto:festo.canada@ca.festo.com) [www.festo.ca](http://www.festo.ca)

## Mexico



**Headquarters:** Festo Pneumatic, S.A., Av. Ceylán 3, Col. Tequesquahuac,  
54020 Tlalnequahuac, Edo. de México  
Phone: 011 52 [55] 53 21 66 00; Fax: 011 52 [55] 53 21 66 65;  
Email: [festo.mexico@mx.festo.com](mailto:festo.mexico@mx.festo.com) [www.festo.com/mx](http://www.festo.com/mx)

---

## Central USA

Festo Corporation  
1441 East Business  
Center Drive  
Mt. Prospect, IL 60056, USA  
Phone: 1.847.759.2600  
Fax: 1.847.768.9480



## Western USA

Festo Corporation  
4935 Southfront Road,  
Suite F  
Livermore, CA 94550, USA  
Phone: 1.925.371.1099  
Fax: 1.925.245.1286



---

## Festo Worldwide

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

[www.festo.com](http://www.festo.com)