New Compact Guide Cylinder with Lock

ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100





Stopping possible at any stroke position

Small auto switches can be directly mounted. Construction without bracket saves mounting time.

Mounting dimensions, performance, and strength (rigidity) are equivalent to the existing MLGP series.

Drop prevention when the pressure is decreased or the residual pressure is released



Drop prevention for press fitting tool





Drop prevention for lifter



Holding a clamped condition



0

ONS

MC6PW32-1002-8

Stopping possible at any stroke position

Simple and reliable locking mechanism is effective in drop prevention when there is a pressure loss.



Unlocked

Unlocking port: Air supplied

 The lock ring becomes perpendicular to the piston rod, creating clearance between the piston rod and lock ring, which allows the piston rod to move freely.



Low profile with compact lock unit



Same dimensions as those of the standard MGP series

								[mm]
Bore size	20	25	32	40	50	63	80	100
Lock unit length	26.5	30.5	31.5	34	35	38	43	51.5

Locking direction is selectable.

 The symbol for the cylinder with lock in the pneumatic circuit uses SMC original symbol.



Easy manual unlocking

Locked



Weight reduced by up to 17% with a shorter guide rod and thinner plate

Weight: Max. 17% lighter

(Compared with the existing MLGPL)

			[kg]
Bore size [mm]	New MLGPL	Existing model MLGPL	Reduction rate [%]
ø 20	0.75	0.86	13
ø 25	1.11	1.22	9
ø 32	1.73	1.89	8
ø 40	2.00	2.16	7
ø 50	3.31	3.69	10
ø 63	4.24	4.77	11
ø 80	6.76	8.11	17
ø 100	13.4	14.7	9

* Compared at 20 mm stroke for ø20 and ø25

* Compared at 25 mm stroke for ø32 to ø80

* Compared at 50 mm stroke for ø100

Guide rod: Max. 22 mm shorter

(Compared with the existing MLGPM)



		[mm]							
	Guide rod								
Bore size	Dimension	Shortened dimension							
ø 32	15.5	22							
ø 40	9	22							
ø 50	16.5	18							
ø 63	11.5	18							
ø 80	8	10.5							
ø 100	10.5	10.5							

Compared at 25 mm stroke For ø20 and ø25, there is no projection at 25 mm stroke.

Small auto switches or magnetic field-resistant auto switches can be directly mounted on two surfaces.





Positioning holes are available on three surfaces.

- · Easy positioning
- · Knock pin holes provided on each mounting surface

Positioning pin holes for workpiece on the mounting plate



for mounting the cylinder



Piping is possible from two directions.



Two types of guide rod bearing

Slide bearing

Excellent wear resistance allows use with high loads.

Ball bushing bearing

Provides high precision and smooth operation

Series Variations

Series	Beering	Locking	Bore size						Stan	dard s	troke	[mm]					
Series	веатіпд	direction	[mm]	20	25	30	40	50	75	100	125	150	175	200	250	300	350
MLGP	Slide bearing Ball bushing bearing	Extension locking Retraction locking	20							•							
			25														
			32								•						
			40														
0			50							•		•				•	
			63														
			80		•				•	•		•				•	
			100														



CONTENTS

Compact Guide Cylinder with Lock *MLGP Series*

How to Order p. 5
Specifications
Weightp. 7
Construction
ø20, ø25, ø32 p. 8
ø40 to ø100 p. 9
Dimensions
ø20, ø25, ø32 p. 10
ø40, ø50, ø63 p. 11
ø80, ø100 p. 12
Auto Switch Mounting p. 13
Prior to Use
Auto Switch Connections and Examples p. 16
Model Selection p. 17
Specific Product Precautions p. 29





Compact Guide Cylinder with Lock MLGP Series ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100



Applicable Auto Switches/Refer to the Web Catalog for further information on auto switches.

			light		Load voltage			Auto swit	ch model	Lead wire length [m]				Due under al		
Туре	Special function	Electrical	ator	(Output)	_			Porpondioulor	In line	0.5	1	3	5	connector	Applicat	ole load
		Critiy	Indic	(Output)	L		AC	reipenuiculai			(M)	(L)	(Z)	CONTRECTO		
				3-wire (NPN)		E V 10 V		M9NV	M9N			•	0	0	IC	
Ę	_			3-wire (PNP)		5 V,12 V		M9PV	M9P				0	0	circuit	
/itc				2-wire		12 V		M9BV	M9B			•	0	0	—	
SV	Dia ana attia in dia attia a			3-wire (NPN)		E V 10 V		M9NWV	M9NW			•	0	0	IC	2
Pf	(2-color indicator)			3-wire (PNP)		5 V,12 V		M9PWV	M9PW				0	0	circuit	Delaw
e al		Grommet	Yes	2-wire	24 V	12 V		M9BWV	M9BW	•	•	•	0	0	—	neiay,
tate	Water registert			3-wire (NPN)		5 V,12 V		M9NAV*1	M9NA*1	0	0	•	0	0	IC	FLO
l si	(2-color indicator)			3-wire (PNP)			'	M9PAV*1	M9PA*1	0	0		0	0	circuit	
olic				2-wire		12 V]	M9BAV*1	M9BA*1	0	0		0	0		
Ň	Magnetic field-resistant			2-wire					P3DWA*3	•	-	•		0	_	
	(2-color indicator)			(Non-polar)		_		_	P4DW*4	—	—			0		
ed witch		Grommet	Yes	3-wire (NPN equivalent)	—	5 V	_	A96V	A96	•	•	•	•	0	IC circuit	_
Red auto si m	_			2 wiro		10.1/	100 V	A93V	A93					O*2	—	Relay,
			2-wire 24 V		24 V 12 V		A90V	A90					O*2	IC circuit	PLC	

*1 Water-resistant type auto switches can be mounted on the above models, but SMC cannot guarantee water resistance. Please contact SMC regarding water-resistant types with the above model numbers.

*2 The load voltage used is 24 VDC.

*3 The D-P3DWA can be mounted on the bore sizes ø25 to ø100. *4 The D-P4DW can be mounted on the bore sizes ø32 to ø100.

* Lead wire length symbols: 0.5 m ······Nil

- (Example) M9NW 1 mM
- (Example) M9NWM 3 mL (Example) M9NWL
- 5 mZ (Example) M9NWZ

 $\ast\,$ Auto switches marked with "O" are produced upon receipt of order.

* Auto switches are shipped together, but not assembled.

多SMC



Symbol







-XC79	Tapped hole, drilled hole, pinned hole machined additionally

Cylinder Specifications

Bore size [mm]	20	25	32	40	50	63	80	100	
Action	Double acting								
Fluid		Air							
Proof pressure	1.5 MPa								
Maximum operating pressure	1.0 MPa								
Minimum operating pressure	0.2 MPa *1								
Ambient and fluid temperatures			-10 t	o 60°C	(No free	zing)			
Piston speed				50 to 40	0 mm/s	;			
Cushion			Rubbe	r bumpe	r on bot	h ends			
Lubrication	Not required (Non-lube)								
Stroke length tolerance	+ ^{1.5} ₀ mm								
Port size (Rc, NPT, G)	1/8 1/4 3/							/8	

*1 When the unlocking air and cylinder operating air are not common, the minimum operating pressure is 0.15 MPa. (The minimum operating pressure for the cylinder alone is 0.15 MPa.)

Lock Specifications

Bore size [mm]	20	25	32	40	50	63	80	100		
Lock operation	Spring locking (Exhaust locking)									
Unlocking pressure	0.2 MPa or more									
Lock starting pressure	0.05 MPa or less									
Locking direction	One direction (Extension locking, Retraction locking)									
Maximum operating pressure				1.0	MPa					
Unlocking port size (Rc, NPT, G)	M5 x 0.8 1/8							1/4		
Holding force (Max. static load) [N] *1	157	245	402	629	982	1559	2513	3927		

*1 The holding force (max. static load) shows the maximum capability and does not show the normal holding capability. For selection of the cylinder, refer to the Model Selection (page 17) and Specific Product Precautions (page 29).

* Refer to the Specific Product Precautions (page 32) for manually unlocking and holding the unlocked state.

Standard Strokes

* When using with auto switches, refer to the Minimum Stroke for Auto Switch Mounting table on page 14.

Bore size [mm]	Standard stroke [mm]
20, 25	20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350
32 to 80	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350
100	50, 75, 100, 125, 150, 175, 200, 250, 300, 350

Manufacture of Intermediate Strokes

Description	Spacer installation type Spacers are installed in the standard ø20 to 32: Stroke can be modified in 1 ø40 to 100: Stroke can be modified in	stroke cylinders. 1 mm increments. 5 mm increments.							
Part no.	Refer to the "How to Order" for the standard model numbers.								
A	ø20, ø25, ø32	1 to 349							
Applicable stroke	ø40 to ø80	5 to 345							
[iiiiii]	ø100	25 to 345							
Example	art no.: MLGPM20-39Z-F A 1 mm spacer is installed in MLGPM20-40Z-F. Dimension C is 77 mm.								

Theoretical Output

										-	}_™	[N]
Bore size	Rod size	Operating	Piston area			Op	erating	press	ure [Mf	Pa]		
[mm]	[mm]	direction	[mm ²]	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
20	10	OUT	314	63	94	126	157	188	220	251	283	314
20	10	IN	236	47	71	94	118	142	165	189	212	236
25	10	OUT	491	98	147	196	246	295	344	393	442	491
25	12	IN	378	76	113	151	189	227	265	302	340	378
22	16	OUT	804	161	241	322	402	482	563	643	724	804
32		IN	603	121	181	241	302	362	422	482	543	603
40	16	OUT	1257	251	377	503	629	754	880	1006	1131	1257
40	10	IN	1056	211	317	422	528	634	739	845	950	1056
50	20	OUT	1963	393	589	785	982	1178	1374	1570	1767	1963
50	20	IN	1649	330	495	660	825	990	1154	1319	1484	1649
63	20	OUT	3117	623	935	1247	1559	1870	2182	2494	2805	3117
03	20	IN	2803	561	841	1121	1402	1682	1962	2242	2523	2803
80	25	OUT	5027	1005	1508	2011	2514	3016	3519	4022	4524	5027
80	20	IN	4536	907	1361	1814	2268	2722	3175	3629	4082	4536
100	30	OUT	7854	1571	2356	3142	3927	4712	5498	6283	7069	7854
100	30	IN	7147	1429	2144	2859	3574	4288	5003	5718	6432	7147

* Theoretical output [N] = Pressure [MPa] x Piston area [mm²]



- Auto Switch Proper Mounting Position (Detection at stroke end) and Mounting Height
- Minimum Stroke for Auto Switch Mounting
- Operating Range
- Auto Switch Mounting
- Prior to Use

Auto Switch Connections and Examples



Weight

Slide Bearing: MLGPM20 to 100

														[kg]
Bore size						:	Standard s	troke [mm]					
[mm]	20	25	30	40	50	75	100	125	150	175	200	250	300	350
20	0.76	_	0.83	0.91	0.98	1.23	1.42	1.61	1.79	1.98	2.17	2.60	2.97	3.35
25	1.12	_	1.22	1.32	1.42	1.79	2.05	2.30	2.56	2.82	3.07	3.69	4.20	4.72
32	—	1.83	—	—	2.19	2.65	3.02	3.38	3.75	4.12	4.48	5.22	5.95	6.64
40	_	2.11	_	_	2.52	3.01	3.42	3.82	4.23	4.63	5.03	6.02	6.83	7.64
50	_	3.55	_	—	4.15	4.91	5.51	6.11	6.71	7.31	7.91	9.42	10.7	11.9
63	—	4.49	—	—	5.18	6.03	6.72	7.41	8.10	8.79	9.48	11.2	12.6	14.0
80	_	7.11	—	—	7.99	9.17	10.1	11.0	11.9	12.7	13.6	15.9	17.7	19.4
100			_	_	13.7	15.4	16.7	17.9	19.2	20.5	21.7	24.8	27.2	29.6

Ball Bushing Bearing: MLGPL20 to 100

														[kg]
Bore size						:	Standard s	stroke [mm]					
[mm]	20	25	30	40	50	75	100	125	150	175	200	250	300	350
20	0.75	—	0.82	0.94	1.01	1.16	1.32	1.53	1.69	1.85	2.01	2.36	2.68	3.00
25	1.11	—	1.20	1.37	1.45	1.66	1.88	2.14	2.36	2.57	2.78	3.26	3.68	4.11
32	_	1.73	—	—	2.03	2.45	2.75	3.14	3.43	3.73	4.02	4.71	5.30	5.85
40	_	2.00	—	—	2.34	2.80	3.13	3.56	3.89	4.22	4.56	5.32	5.98	6.65
50		3.31	—	—	3.82	4.53	5.04	5.66	6.17	6.67	7.18	8.35	9.36	10.4
63		4.24	—	—	4.84	5.65	6.24	6.95	7.55	8.14	8.74	10.1	11.3	12.5
80	_	6.76	_	_	7.81	9.04	9.79	10.6	11.3	12.1	12.8	14.7	16.2	17.7
100	_	—	_	_	13.4	15.1	16.2	17.3	18.4	19.5	19.7	23.1	25.2	27.2

Allowable Rotational Torque of Plate



														Т	[N·m]
Bore size	Rearing type							Str	oke						
[mm]	bearing type	20	25	30	40	50	75	100	125	150	175	200	250	300	350
20	MLGPM	0.77	—	0.70	0.64	0.59	1.62	1.42	1.27	1.15	1.05	0.97	0.83	0.73	0.65
20	MLGPL	0.75	—	0.68	1.49	1.41	1.24	1.11	1.29	1.18	1.08	1.00	0.86	0.76	0.67
05	MLGPM	1.24	—	1.13	1.04	0.97	2.49	2.20	1.98	1.79	1.64	1.51	1.30	1.15	1.02
25	MLGPL	1.23	—	1.14	2.26	2.14	1.90	1.71	1.96	1.79	1.65	1.53	1.33	1.17	1.04
20	MLGPM	—	4.89	—	—	4.13	4.82	4.29	3.87	3.53	3.24	2.99	2.60	2.30	2.06
32	MLGPL	—	4.22	—	_	3.64	4.07	3.67	5.37	4.97	4.62	4.31	3.80	3.39	3.06
40	MLGPM		5.29	—	_	4.49	5.25	4.68	4.23	3.86	3.54	3.28	2.85	2.52	2.26
40	MLGPL	—	4.53	—	—	3.93	4.41	3.98	5.84	5.41	5.03	4.70	4.15	3.70	3.34
50	MLGPM	—	10.06	—	—	8.66	10.13	9.12	8.29	7.60	7.01	6.51	5.70	5.06	4.56
50	MLGPL	—	6.40	—	—	5.57	7.76	7.04	9.75	9.05	8.43	7.88	6.96	6.22	5.60
62	MLGPM	—	11.13	—	—	9.60	11.27	10.15	9.24	8.48	7.83	7.28	6.37	5.67	5.11
03	MLGPL	—	6.91	—	—	6.02	8.48	7.69	10.73	9.95	9.27	8.67	7.65	6.83	6.14
00	MLGPM	—	16.70	_	_	14.67	19.10	17.41	15.99	14.79	13.75	12.85	11.36	10.18	9.23
80	MLGPL	—	9.44	—	_	16.88	17.92	16.51	15.28	14.20	13.24	12.37	10.89	9.66	8.62
100	MLGPM	_	—	—	_	26.17	30.70	28.23	26.12	24.31	22.73	21.35	19.03	17.17	15.64
100	MLGPL	_	—	_	_	21.11	29.10	26.98	25.10	23.43	21.93	20.57	18.21	16.22	14.53





Bore size	Non-rotating	g accuracy θ
[mm]	MLGPM	MLGPL
20		+0.049
25	±0.06°	±0.04*
32	+0.05°	+0 03°
40	±0.05	10.05
50	+0.04°	+0 03°
63	±0.04	10.00
80	+0.03°	+0.03°
100	<u>+</u> 0.05	±0.00

* For the non-rotating accuracy θ without load, use a value no more than the values in the table as a guide.

* Do not apply rotational force in a locked condition, as this will cause damage to the lock mechanism or decrease of the product life.

Construction: Ø20, Ø25, Ø32

MLGPM series







ø20, ø25: For 50 mm stroke or less

(8)

Cross-sectional view B-B

MLGPL series



For over 100 mm stroke

Extension locking (F type)



Cross-sectional view A-A

Retraction locking (B type)



Component Parts

No.	Desci	ription	Material	Note
1	Body		Aluminum alloy	Hard anodized
2	Lock body	1	Aluminum alloy	Hard anodized
3	Piston		Aluminum alloy	
4	Piston	ø20 to ø25	Stainless steel	Hard abrama plating
4	rod	ø32	Structural steel	Hard chrome plating
5	Head cove	er	Aluminum alloy	Chromated
6	Intermedia	ate collar	Aluminum alloy	Chromated
7	Lock ring		Tool steel	Heat treated
8	Brake spri	ng	Steel wire	Zinc chromated
9	Guide rod		Structural steel	Hard chrome plating
10	Plate		Structural steel	Nickel plating
11	Plate mou	nting bolt	Structural steel	Nickel plating
12	Guide bolt	1	Structural steel	Nickel plating
13	Slide bear	ing	Bearing alloy	
14	Slide bear	ing	Bearing alloy	MLGPM type
15	Ball bushi	ng	—	MLGPL type
16	Spacer		Aluminum alloy	
17	Pivot		Structural steel	Heat treated/Electroless nickel plating
18	Dust cove	r	Stainless steel	

Component Parts

No.	Description	Material	Note
19	Retaining ring	Tool steel	Phosphate coated
20	Retaining ring	Tool steel	Phosphate coated
21	Bumper A	Urethane	
22	Bumper B	Urethane	
23	Magnet	_	
24	Parallel pin	Stainless steel	
25	Hexagon socket head cap screw	Structural steel	Nickel plating
26	Dust cover holding bolt	Steel wire	Nickel plating
27	Hexagon socket head taper plug	Steel wire	Nickel plating
28	Rod seal	NBR	
29	Scraper	NBR	
30	Piston seal	NBR	
31	Lock ring seal	NBR	
32	Gasket A	NBR	
33	Gasket B	NBR	
34	Lock body gasket	NBR	
35	Unlocking bolt	Structural steel	Nickel plating
36	Steel ball	Special steel	

Construction: ø40 to ø100



Steel ball

41 42 Plug Special steel

Steel wire

ø40 to ø50

ø63 to ø100, Nickel plating

Heat treated/Zinc chromated

Heat treated/Zinc chromated

Nickel plating

18

19 20 Lever

21

Pivot pin

Pivot key

Dust

cover

ø40

ø50 to ø100

Structural steel

Structural steel

Stainless steel

Steel strip

Stainless steel

Dimensions: Ø20, Ø25, Ø32

MLGPM/MLGPL

WA WB øXAн9 depth 6 a ©XA മ d е ⊕∳€ Pin hole position X±0.02 utina hale cositia **T-slot dimensions** XA × 6 [mm] ⊕⊘∅ Bore size а b С d е Detailed figure of XX section 5.4 4.5 7.8 20 8.4 2.8 25 5.4 8.4 4.5 3 8.2 32 6.5 10.5 5.5 3.5 9.5 Section XX 4 x YY depth YL Bottom view **Extension locking Retraction locking** LOCK LOCK Section XX WA 4 x MM depth ML IA Ζ 4 x ØOA through 4 x NN through IC IC IH 4 x ØOB counterbore depth OL bolt hexagon Section XX (**O** ₫ HA: T-slot for øDA \odot B ۸ œ ഇ т н ₹ ۲ ⊕ \odot R æ 613 £\$3 øXAн9 depth 6 Q 2 x P 2 x **P** PB T-slot (Plug) . ø**XA**н9 depth 6 S GA GB J κ PA + Stroke IE G IF FA FΒ C + Stroke Unlocking port B + Stroke Е (Unlocked when pressurized) A + Stroke

Common Dimensions: MLGPM/MLGPL

Comm	non I	Dime	nsio	ons	: MLC	GPN	//MLC	λPL																				[mm]
Dawa																					IC						IF	
Bore		Star	ndaro	d stro	oke		B	С	DA	FA	FB	G	GA	GB	Н	HA	IA	IB	Extensi	on lockii	ng Re	etraction	locking	ID	IE		т	G
3120																			Rc, NP	T G	Ro	, NPT	G			nc, inf	1	G
20	20, 3	0, 40, 5	50, 75	5, 100	0, 125,	150	79.5	37	10	8	34.5	36	11.5	5 9	83	M5	26.5	36	9.5	9.	5	6	6	—	—	M5 x 0.	8 M5	x 0.8
25	1	175, 20	0, 25	0, 30	0, 350		84	37.5	12	9	37.5	42	11.5	5 10	93	M5	30.5	40	10	10		7.5	7.5	—	_	M5 x 0.	8 M5	x 0.8
32	25, 50, 7	75, 100, 12	25, 150,	175, 20	00, 250, 30	0, 350	91	37.5	16	10	43.5	48	12	9	112	M6	31.5	49	9	8		9	4.5	32	3	1/8	M5	x 0.8
Bore							Ĩ									Р												
size	IG	IH	J	K	L	Ν	лм	ML	N	Ν	OA	OB		Ni		TN	TF	=	PA	PB	PW	Q	R	S	Т	U	VA	VB
20	IG IH J K L MM ML N 6.5 21.2 18 18 24 M5 x 0.8 13 M5 7 23.2 21 21 30 M6 x 1 15 M6										5.4	9.5	5 5.5	Rc1	/8 N	PT1/8	8 G1	/8	13.5 1	0.5	25	18	70	30	81	54	72	44
25	IG IH J K L MM ML N 6.5 21.2 18 18 24 M5 x 0.8 13 M5 x 7 23.2 21 21 30 M6 x 1 15 M6 8 30.2 24 24 34 M8 x 1.25 20 M8 x										5.4	9.5	5 5.5	Rc1	/8 N	PT1/	8 G1	/8	12.5 1	3.5	30	26	78	38	91	64	82	50
32	8	30.2	24	24	34	M8 :	x 1.25	20	M8 x	1.25	6.7	11	7.5	Rc1	/8 N	PT1/8	8 G1	/8	6.5 1	6	35.5	30	96	44	110) 78	98	63
					V	VA				-						WE	3											
Bore	25 st	30 st	Over	25 st	Over 30	st C	Over 100 st	Over	200 st	Ove	er 25	st 3	30 st	Over 25 s	t Ove	r 30 st	Over 10)0 st	Over 200	st O	ver	x	XA	ΧВ	\	/Y	YL	z
size	or less	or less	100 st	or less	100 st or l	ess 20	0 st or less	300 st	or less	300	st or l	ess or	less	100 st or le	ss 100 s	t or less	200 st o	rless	300 st or le	ss 30	0 st							
20	_	24	- 1	_	44		120	20	00	300) –		29	_	3	39	77	'	117	1	67	28	3	3.5	M	3 x 1	12	17
25	_	24	- 1	_	44		120	20	00	300) –		29	_	3	39	77	·	117	1	67	34	4	4.5	M	3 x 1	12	17
32	24	_	4	8	—		124	20	00	300) 3	3	_	45	-		83	;	121	1	71	42	4	4.5	M8 :	x 1.25	16	21
A, DB,	E Din	nensio	ons:	MLC	GPM (Slid	e Bear	ing)	[mn	n] A	, DB	, E I	Dime	ensic	ns:	MLC	GPL	(Ba	ll Bus	shing	gВe	earir	ng)			·		[mm]

Ε Ε Α Bore Bore Over 50 st Over DB 50 st Over 50 st Over 30 st 50 st Over 30 st Over 50 st Over 100 st DB 30 st 50 st Over 30 st Over 50 st Over 100 st Over 50 st Over size size or less 200 st or less 200 st 200 st or less 200 st or less or less 100 st or less 100 st or less 200 st or less 200 st or less or less 100 st or less 100 st or less 200 st or less 200 st or less 20 79.5 104 136.5 12 0 24.5 57 20 85.5 102.5 126.5 144 10 6 47 64.5 23 25 25 84 108 140 24 112 131 148 13 12 47 64 16 0 56 96 28 106.5 125 20 70 32 128 148 170 16 20 37 57 32 161 15.5 34 111 79

Dimensions: Ø40, Ø50, Ø63



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Bore	ІН	J	к	L	ММ	I	ML	NN	OA	ОВ	OL	Nii	P TN		TE	PA	РВ	PW	Q	R	S	т	U	VA	VB
40	34.5	27	27	40	M8 x 1	.25	20	M8 x 1.25	6.7	11	7.5	Rc1/8	NPT	1/8	G1/8	13	18	39.5	30	104	44	118	86	106	72
50	38.5	32	32	46	M10 x	1.5	22	M10 x 1.5	8.6	14	9	Rc1/4	NPT	1/4	G1/4	9	21.5	47	40	130	60	146	110	130	92
63	45.5	39	39	58	M10 x	1.5	22	M10 x 1.5	8.6	—	9	Rc1/4	NPT	1/4	G1/4	13	28	58	50	130	70	158	124	142	110
Dawa					WA							W	/B												
Bore	25 st	Over	25 st	Over	r 100 st	Ove	er 200 s	st Over	25 st	Ove	r 25 st	Over 10	00 st	Over	200 st	Ove	r X	XA	ХВ	XC	XL	ן	Y	YL	Z
0120	or less	100 st	or less	200 s	t or less	300 :	st or le	ss 300 st	or less	100 s	t or less	200 st or	r less 🕻	300 st	t or less	300 s	st								
40	24	4	8	1	24	2	200	300	34		46	84		1	22	172	50	4	4.5	3	6	M8 >	(1.25	16	22
50	24	4	8	1	24	2	200	300	36		48	86		1	24	174	66	5	6	4	8	M10	x 1.5	20	24
63	28	5	2	1	28	2	200	300	38		50	88		1	24	174	80	5	6	4	8	M10	x 1.5	20	24

A, DB, E Dimensions: MLGPM (Slide Bearing) [mm] A, DB, E Dimensions: MLGPL (Ball Bushing Bearing)

A, DB	, E Dim	nensions	: MLG	PM (Slide	Bearing)	[mm]	A, DB	, E Dim	nensions	: MLGPL	. (Ball I	Bush	ning B	earing)		[mm]
Dawa		Α				Е		Dawa			A					E	
size	50 st or less	Over 50 st 200 st or less	Over 200 st	DB	50 st or less	Over 50 st 200 st or less	Over 200 st	size	50 st or less	Over 50 st 100 st or less	Over 100 st 200 st or less	Over 200 st	DB	50 st or less	Over 50 st 100 st or less	Over 100 st 200 st or less	Over 200 st
40	109	127.5	163.5	20	9	27.5	63.5	40	113.5	130.5	150.5	172.5	16	13.5	30.5	50.5	72.5
50	123.5	144.5	185.5	25	16.5	37.5	78.5	50	126.5	147.5	167.5	194.5	20	19.5	40.5	60.5	87.5
63	126.5	147.5	188.5	25	11.5	32.5	73.5	63	129.5	150.5	170.5	197.5	20	14.5	35.5	55.5	82.5
11																	

SMC

Dimensions: Ø80, Ø100

MLGPM/MLGPL



Common	Dimensions:	MLGPM/ML	GPL
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 | Rc3/8 | B NP | Г3/8 G | i3/8 | 17.5 | 32.5
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167.5 66 30 19 82.5 111.5 22.5 IG IH J JA JB JC K L MM NN OA 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M14 x 2 12.5 V V 25 st 50 st Over 20 st 101 st 56 62 M14 x 2 31 M14 x 2 12.5 V V V V V V V V V V 25 st 50 st Over 20 st 10.5 0 Over 100 st O</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139, 5 6.5 25 16 67 91.5 19 16.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 6.5 25 16 67 91.5 19 16.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 6.6 30 19 82.5 111.5 20.5 20.5 166 30 19 16.5 30.5 10.6 17.5 53.7 45.5 38 7.5 10.5 0.00 MIC <th <="" colspan="6" td=""><td>Number of Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 1G IH J JA JB JC K L ML N CA OA OB OL 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20 8 VEV <th< td=""><td>Non Dimensions: MLGPU///LGPL Standard stroke B C DA FA FB G GA GB GC H 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 IG IH J JA JB JC K L MI N OA OB OL MI 7 53.7 45.5 38 7.5 15 46 54 M12 × 1.75 25 M14 × 2 12.5 20 8 Rc3/6 15 64.2 55.5 45 10.5 10 56 62 M14 × 2 31 M14 × 2 12.5 20 8 Rc3/6 25 st 50 st Over 50 st Over 100 st O</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 IG IH J JA JB JC K L MM ML NN OA OB OL MI MI 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 Rc3/8 NP 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20 8 Rc3/8 NP</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 43 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 IG IH J JA JB JC K L MM ML NN OA OB OL P 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 Rc3/8 NPT3/8 G 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20.5 <</td><td>Non Dimensions: MLGPM/MEGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 IG IH J JA JB JC K L MM NN OA OB OL MI4 51.5 137 15 64.2 55.3 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 0 8 RC3/8 NPT3/8 G3/8 15 64.2 55 45 10.5 0 Over 10.st 0ver 20.st 0ver 25.st</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Etens
Rc, NE 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 18.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 23 IG IH J JA JB JC K L MM NN OA OB OL MI14 51.5 137 23 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20 8 Rc3/8 NPT3/8 G3/8 14.5 2 15 64.2 50.5</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Extension look
Rc, NPT 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 300 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M14 51.5 137 23 23 IG IH J JA JB JC K L MM NN OA OB OL P PA PA PA PA PB 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 Rc3/8 NPT3/8 G3/8 14.5 25.5 15 64.2 55.5 45 10.5 10 56 2 M14 x 2 31 M14 x 2 12.5 20 8 Rc3/8 NPT3/8 G3/8 1</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FB G GA GB GC H HA IA IB Extension looking if
Rc, NPT G I 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202
MI2 43 113 18.5 18.5 18.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 MI4 51.5 137 23 23 23 IG IH J JA JB JC K L MM NN OA OB OL P PA PA PB PW 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 3 RC3/8 NPT3/8 G3/8 17.5 32.5 <td< td=""><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Extension locking Retracting 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139, 5 56. 5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 18.5 18.5 7.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 23 23 11 IG IH J JA JB JC K L MIL NN CA 0B 0L PH NII TN TF PA PB VQ 0 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 15.6 17.5 3 RC3/8 NPT3/8</td><td>Non Dimensions: MLGPW/MLGPL Standard stroke B C DA FA FB G GA GB CC H HA IA IB IC Extension locking Retraction locking<</td><td>non Dimensions: MLGPW/MLGPL Standard stroke B C DA FB FB G GA GB GC H HA IA <thia< th=""> IA IA <t< td=""><td>Non Dimensions: MLGPM/MLGPL Standard stroke R <th <<="" colspan="6" td=""><td>non Dimensions: MLGPH/MLGPL Standard stroke B C Da FA FB G GA GB GC H HA IA <</td><td>Non Dimensions: MLGPM/MLGPL B C DA FA FB G GA GB GA B C DA FA FB G GA GB GA B C DA FA FB GA GB GA B A B A B A B A B A B A B A B A B A B A B A B B C DA FA FB G GA GB C DA B C DA DA</td></th></td></t<></thia<></td></td<></td></th<></td></th></td></th></td></th> | <td>NLGPU///LGPL Standard stroke B C DA FA 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 IG IH J JA JB JC K L MII MII 7 53.7 45.5 38 7.5 15 46 54 $MI \pm x \cdot 1.75$ 26 15 64.2 55.5 45 10.5 10 56 62 $MI \pm x \cdot 1.75$ 25 25 st 50 st Over 25 st Over 50 st 0ver 100 st Over 200 st or less 300 st or less</td> <td>Non Dimensions: MLGPW/MLGPL Standard stroke B C DA FB Standard stroke B C DA FB 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 IG IH J JA JB JC K L MM ML ML 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 15 64.2 55.5 45 10.5 10 56 2 M14 x 2 31 M12 VEV VEV VEV VEV VEV VEV VEV VEV VEV <</td> <td>NLGPM/MLGPL Standard stroke B C DA FA FB G 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91. 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111. IG IH J JA JB JC K L MM ML NN 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 VEV VI VI VI VI VI VI VI 25 st 50 st Over 25 st Over 50 st Over 100 st Over 20 st Over 2</td> <td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 17 IM J J J J J IG J J J J J J J J J J J J <th colspan="6" standard="" stroke<="" td=""><td>Non Dimensions: MLGPW/MLGPL Standard stroke B C DA FB G GA 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 IG IH J JA JB JC K L MM NN OA 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M14 x 2 12.5 V V 25 st 50 st Over 20 st 101 st 56 62 M14 x 2 31 M14 x 2 12.5 V V V V V V V V V V 25 st 50 st Over 20 st 10.5 0 Over 100 st O</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139, 5 6.5 25 16 67 91.5 19 16.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 6.5 25 16 67 91.5 19 16.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 6.6 30 19 82.5 111.5 20.5 20.5 166 30 19 16.5 30.5 10.6 17.5 53.7 45.5 38 7.5 10.5 0.00 MIC <th <="" colspan="6" td=""><td>Number of Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 1G IH J JA JB JC K L ML N CA OA OB OL 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5
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Rc, NE 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 18.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 23 IG IH J JA JB JC K L MM NN OA OB OL MI14 51.5 137 23 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20 8 Rc3/8 NPT3/8 G3/8 14.5 2 15 64.2 50.5</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Extension look
Rc, NPT 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 300 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M14 51.5 137 23 23 IG IH J JA JB JC K L MM NN OA OB OL P PA PA PA PA PB 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 Rc3/8 NPT3/8 G3/8 14.5 25.5 15 64.2 55.5 45 10.5 10 56 2 M14 x 2 31 M14 x 2 12.5 20 8 Rc3/8 NPT3/8 G3/8 1</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FB G GA GB GC H HA IA IB Extension looking if
Rc, NPT G I 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 MI2 43 113 18.5 18.5 18.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 MI4 51.5 137 23 23 23 IG IH J JA JB JC K L MM NN OA OB OL P PA PA PB PW 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 3 RC3/8 NPT3/8 G3/8 17.5 32.5 <td< td=""><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Extension locking Retracting 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139, 5 56. 5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 18.5 18.5 7.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 23 23 11 IG IH J JA JB JC K L MIL NN CA 0B 0L PH NII TN TF PA PB VQ 0 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 15.6 17.5 3 RC3/8 NPT3/8</td><td>Non Dimensions: MLGPW/MLGPL Standard stroke B C DA FA FB G GA GB CC H HA IA IB IC Extension locking Retraction locking<</td><td>non Dimensions: MLGPW/MLGPL Standard stroke B C DA FB FB G GA GB GC H HA IA
 <thia< th=""> IA IA <t< td=""><td>Non Dimensions: MLGPM/MLGPL Standard stroke R <th <<="" colspan="6" td=""><td>non Dimensions: MLGPH/MLGPL Standard stroke B C Da FA FB G GA GB GC H HA IA <</td><td>Non Dimensions: MLGPM/MLGPL B C DA FA FB G GA GB GA B C DA FA FB G GA GB GA B C DA FA FB GA GB GA B A B A B A B A B A B A B A B A B A B A B A B B C DA FA FB G GA GB C DA B C DA DA</td></th></td></t<></thia<></td></td<></td></th<></td></th></td></th></td> | NLGPU///LGPL Standard stroke B C DA FA 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 IG IH J JA JB JC K L MII MII 7 53.7 45.5 38 7.5 15 46 54 $MI \pm x \cdot 1.75$ 26 15 64.2 55.5 45 10.5 10 56 62 $MI \pm x \cdot 1.75$ 25 25 st 50 st Over 25 st Over 50 st 0ver 100 st Over 200 st or less 300 st or less | Non Dimensions: MLGPW/MLGPL Standard stroke B C DA FB Standard stroke B C DA FB 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 IG IH J JA JB JC K L MM ML ML 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 15 64.2 55.5 45 10.5 10 56 2 M14 x 2 31 M12 VEV VEV VEV VEV VEV VEV VEV VEV VEV < | NLGPM/MLGPL Standard stroke B C DA FA FB G 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91. 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111. IG IH J JA JB JC K L MM ML NN 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 VEV VI VI VI VI VI VI VI 25 st 50 st Over 25 st Over 50 st Over 100 st Over 20 st Over 2 | Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 17 IM J J J J J IG J J J J J J J J J J J J <th colspan="6" standard="" stroke<="" td=""><td>Non Dimensions: MLGPW/MLGPL Standard stroke B C DA FB G GA 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 IG IH J JA JB JC K L MM NN OA 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M14 x 2 12.5 V V 25 st 50 st Over 20 st 101 st 56 62 M14 x 2 31 M14 x 2 12.5 V V V V V V V V V V 25 st 50 st Over 20 st 10.5 0 Over 100 st O</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139, 5 6.5 25 16 67 91.5 19 16.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 6.5 25 16 67 91.5 19 16.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 6.6 30 19 82.5 111.5 20.5 20.5 166 30 19 16.5 30.5 10.6 17.5 53.7 45.5 38 7.5 10.5 0.00 MIC <th <="" colspan="6" td=""><td>Number of Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 1G IH J JA JB JC K L ML N CA OA OB OL 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20 8 VEV <th< td=""><td>Non Dimensions: MLGPU///LGPL Standard stroke B C DA FA FB G GA GB GC H 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 IG IH J JA JB JC K L MI N OA OB OL MI 7 53.7 45.5 38 7.5 15 46 54 M12 × 1.75 25 M14 × 2 12.5 20 8 Rc3/6 15 64.2 55.5 45 10.5 10 56 62 M14 × 2 31 M14 × 2 12.5 20 8 Rc3/6 25 st 50 st Over 50 st Over 100 st O</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 IG IH J JA JB JC K L MM ML NN OA OB OL MI MI 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 Rc3/8 NP 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31
 M14 x 2 12.5 20 8 Rc3/8 NP</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 43 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 IG IH J JA JB JC K L MM ML NN OA OB OL P 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 Rc3/8 NPT3/8 G 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20.5 <</td><td>Non Dimensions: MLGPM/MEGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 IG IH J JA JB JC K L MM NN OA OB OL MI4 51.5 137 15 64.2 55.3 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 0 8 RC3/8 NPT3/8 G3/8 15 64.2 55 45 10.5 0 Over 10.st 0ver 20.st 0ver 25.st</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Etens
Rc, NE 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 18.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 23 IG IH J JA JB JC K L MM NN OA OB OL MI14 51.5 137 23 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20 8 Rc3/8 NPT3/8 G3/8 14.5 2 15 64.2 50.5</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Extension look
Rc, NPT 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 300 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M14 51.5 137 23 23 IG IH J JA JB JC K L MM NN OA OB OL P PA PA PA PA PB 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 Rc3/8 NPT3/8 G3/8 14.5 25.5 15 64.2 55.5 45 10.5 10 56 2 M14 x 2 31 M14 x 2 12.5 20 8 Rc3/8 NPT3/8 G3/8 1</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FB G GA GB GC H HA IA IB Extension looking if
Rc, NPT G I 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 MI2 43 113 18.5 18.5 18.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 MI4 51.5 137 23 23 23 IG IH J JA JB JC K L MM NN OA OB OL P PA PA PB PW 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 3 RC3/8 NPT3/8 G3/8 17.5 32.5 <td< td=""><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Extension locking Retracting 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139, 5 56. 5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 18.5 18.5 7.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 23 23 11 IG IH J JA JB JC K L MIL NN CA 0B 0L PH NII TN TF PA PB VQ 0 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 15.6 17.5 3 RC3/8 NPT3/8</td><td>Non Dimensions: MLGPW/MLGPL Standard stroke B C DA FA FB G GA GB CC H HA IA IB IC Extension locking Retraction locking<</td><td>non Dimensions: MLGPW/MLGPL Standard stroke B C DA FB FB G GA GB GC H HA IA <thia< th=""> IA IA <t< td=""><td>Non Dimensions: MLGPM/MLGPL Standard stroke R <th <<="" colspan="6" td=""><td>non Dimensions: MLGPH/MLGPL Standard stroke B C Da FA FB G GA GB GC H HA IA <</td><td>Non Dimensions: MLGPM/MLGPL B C DA FA FB G GA GB GA B C DA FA FB G GA GB GA B C DA FA FB GA GB GA B A B A B A B A B A B A B A B A B A B A B A B B C DA FA FB G GA GB C DA B C DA DA</td></th></td></t<></thia<></td></td<></td></th<></td></th></td></th> | <td>Non Dimensions: MLGPW/MLGPL Standard stroke B C DA FB G GA 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 IG IH J JA JB JC K L MM NN OA 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M14 x 2 12.5 V V 25 st 50 st Over 20 st 101 st 56 62 M14 x 2 31 M14 x 2 12.5 V
 V V V V V V V V V 25 st 50 st Over 20 st 10.5 0 Over 100 st O</td> <td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139, 5 6.5 25 16 67 91.5 19 16.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 6.5 25 16 67 91.5 19 16.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 6.6 30 19 82.5 111.5 20.5 20.5 166 30 19 16.5 30.5 10.6 17.5 53.7 45.5 38 7.5 10.5 0.00 MIC <th <="" colspan="6" td=""><td>Number of Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 1G IH J JA JB JC K L ML N CA OA OB OL 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20 8 VEV <th< td=""><td>Non Dimensions: MLGPU///LGPL Standard stroke B C DA FA FB G GA GB GC H 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 IG IH J JA JB JC K L MI N OA OB OL MI 7 53.7 45.5 38 7.5 15 46 54 M12 × 1.75 25 M14 × 2 12.5 20 8 Rc3/6 15 64.2 55.5 45 10.5 10 56 62 M14 × 2 31 M14 × 2 12.5 20 8 Rc3/6 25 st 50 st Over 50 st Over 100 st O</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 IG IH J JA JB JC K L MM ML NN OA OB OL MI MI 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 Rc3/8 NP 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20 8 Rc3/8 NP</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 43 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 IG IH J JA JB JC K L MM ML NN OA OB OL P 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 Rc3/8 NPT3/8 G 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20.5 <</td><td>Non Dimensions: MLGPM/MEGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 IG IH J JA JB JC K L MM NN OA OB OL MI4 51.5 137 15 64.2 55.3 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 0 8 RC3/8 NPT3/8 G3/8 15 64.2 55 45 10.5 0 Over 10.st 0ver 20.st 0ver 25.st</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Etens
Rc, NE 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 18.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 23 IG IH J JA JB JC K L MM NN OA OB OL MI14 51.5 137 23 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20 8 Rc3/8 NPT3/8 G3/8 14.5 2 15 64.2 50.5</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Extension look
Rc, NPT 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 300 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M14 51.5 137 23 23 IG IH J JA JB JC K L MM NN OA OB OL P PA PA PA PA PB 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 Rc3/8 NPT3/8 G3/8 14.5 25.5 15 64.2 55.5 45 10.5 10 56 2 M14 x 2 31 M14 x 2 12.5 20 8 Rc3/8 NPT3/8 G3/8 1</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FB G GA GB GC H HA IA IB Extension looking if
Rc, NPT G I 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 MI2 43 113 18.5 18.5 18.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 MI4 51.5 137 23 23 23 IG IH J JA JB JC K L MM NN OA OB OL P PA PA PB PW 7
 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 3 RC3/8 NPT3/8 G3/8 17.5 32.5 <td< td=""><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Extension locking Retracting 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139, 5 56. 5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 18.5 18.5 7.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 23 23 11 IG IH J JA JB JC K L MIL NN CA 0B 0L PH NII TN TF PA PB VQ 0 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 15.6 17.5 3 RC3/8 NPT3/8</td><td>Non Dimensions: MLGPW/MLGPL Standard stroke B C DA FA FB G GA GB CC H HA IA IB IC Extension locking Retraction locking<</td><td>non Dimensions: MLGPW/MLGPL Standard stroke B C DA FB FB G GA GB GC H HA IA <thia< th=""> IA IA <t< td=""><td>Non Dimensions: MLGPM/MLGPL Standard stroke R <th <<="" colspan="6" td=""><td>non Dimensions: MLGPH/MLGPL Standard stroke B C Da FA FB G GA GB GC H HA IA <</td><td>Non Dimensions: MLGPM/MLGPL B C DA FA FB G GA GB GA B C DA FA FB G GA GB GA B C DA FA FB GA GB GA B A B A B A B A B A B A B A B A B A B A B A B B C DA FA FB G GA GB C DA B C DA DA</td></th></td></t<></thia<></td></td<></td></th<></td></th></td> | | | | | | Non Dimensions: MLGPW/MLGPL Standard stroke B C DA FB G GA 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 IG IH J JA JB JC K L MM NN OA 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M14 x 2 12.5 V V 25 st 50 st Over 20 st 101 st 56 62 M14 x 2 31 M14 x 2 12.5 V V V V V V V V V V 25 st 50 st Over 20 st 10.5 0 Over 100 st O | Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139, 5 6.5 25 16 67 91.5 19 16.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 6.5 25 16 67 91.5 19 16.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 6.6 30 19 82.5 111.5 20.5 20.5 166 30 19 16.5 30.5 10.6 17.5 53.7 45.5 38 7.5 10.5 0.00 MIC <th <="" colspan="6" td=""><td>Number of Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 1G IH J JA JB JC K L ML N CA OA OB OL 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20 8 VEV <th< td=""><td>Non Dimensions: MLGPU///LGPL Standard stroke B C DA FA FB G GA GB GC H 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 IG IH J JA JB JC K L MI N OA OB OL MI 7 53.7 45.5 38 7.5 15 46 54 M12 × 1.75 25 M14 × 2 12.5 20 8 Rc3/6 15 64.2 55.5 45 10.5 10 56 62 M14 × 2 31 M14 × 2 12.5 20 8 Rc3/6 25 st 50 st Over 50 st Over 100 st O</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 IG IH J JA JB JC K L MM ML NN OA OB OL MI MI 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 Rc3/8 NP 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20 8 Rc3/8 NP</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 43 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 IG IH J JA JB JC K L MM ML NN OA OB OL P 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 Rc3/8 NPT3/8 G 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20.5 <</td><td>Non Dimensions:
MLGPM/MEGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 IG IH J JA JB JC K L MM NN OA OB OL MI4 51.5 137 15 64.2 55.3 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 0 8 RC3/8 NPT3/8 G3/8 15 64.2 55 45 10.5 0 Over 10.st 0ver 20.st 0ver 25.st</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Etens
Rc, NE 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 18.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 23 IG IH J JA JB JC K L MM NN OA OB OL MI14 51.5 137 23 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20 8 Rc3/8 NPT3/8 G3/8 14.5 2 15 64.2 50.5</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Extension look
Rc, NPT 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 300 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M14 51.5 137 23 23 IG IH J JA JB JC K L MM NN OA OB OL P PA PA PA PA PB 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 Rc3/8 NPT3/8 G3/8 14.5 25.5 15 64.2 55.5 45 10.5 10 56 2 M14 x 2 31 M14 x 2 12.5 20 8 Rc3/8 NPT3/8 G3/8 1</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FB G GA GB GC H HA IA IB Extension looking if
Rc, NPT G I 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 MI2 43 113 18.5 18.5 18.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 MI4 51.5 137 23 23 23 IG IH J JA JB JC K L MM NN OA OB OL P PA PA PB PW 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 3 RC3/8 NPT3/8 G3/8 17.5 32.5 <td< td=""><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Extension locking Retracting 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139, 5 56. 5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 18.5 18.5 7.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 23 23 11 IG IH J JA JB JC K L MIL NN CA 0B 0L PH NII TN TF PA PB VQ 0 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 15.6 17.5 3 RC3/8 NPT3/8</td><td>Non Dimensions: MLGPW/MLGPL Standard stroke B C DA FA FB G GA GB CC H HA IA IB IC Extension locking Retraction locking<</td><td>non Dimensions: MLGPW/MLGPL Standard stroke B C DA FB FB G GA GB GC H HA IA <thia< th=""> IA IA <t< td=""><td>Non Dimensions: MLGPM/MLGPL Standard stroke R <th <<="" colspan="6" td=""><td>non Dimensions: MLGPH/MLGPL Standard stroke B C Da FA FB G GA GB GC H HA IA <</td><td>Non Dimensions: MLGPM/MLGPL B C DA FA FB G GA GB GA B C DA FA FB G GA GB GA B C DA FA FB GA GB GA B A B A B A B A B A B A B A B A B A B A B A B B C DA FA FB G GA GB C DA B C DA DA</td></th></td></t<></thia<></td></td<></td></th<></td></th> | <td>Number of Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 1G IH J JA JB JC K L ML N CA OA OB OL 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20 8 VEV <th< td=""><td>Non Dimensions: MLGPU///LGPL Standard stroke B C DA FA FB G GA GB GC H 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 IG IH J JA JB JC K L MI N OA OB OL MI 7 53.7 45.5 38 7.5 15 46 54 M12 × 1.75 25 M14 × 2 12.5 20 8 Rc3/6 15 64.2 55.5 45 10.5 10 56 62 M14 × 2 31 M14 × 2
12.5 20 8 Rc3/6 25 st 50 st Over 50 st Over 100 st O</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 IG IH J JA JB JC K L MM ML NN OA OB OL MI MI 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 Rc3/8 NP 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20 8 Rc3/8 NP</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 43 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 IG IH J JA JB JC K L MM ML NN OA OB OL P 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 Rc3/8 NPT3/8 G 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20.5 <</td><td>Non Dimensions: MLGPM/MEGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 IG IH J JA JB JC K L MM NN OA OB OL MI4 51.5 137 15 64.2 55.3 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 0 8 RC3/8 NPT3/8 G3/8 15 64.2 55 45 10.5 0 Over 10.st 0ver 20.st 0ver 25.st</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Etens
Rc, NE 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 18.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 23 IG IH J JA JB JC K L MM NN OA OB OL MI14 51.5 137 23 15 64.2 55.5 45 10.5 10 56 62 M14 x 2 31 M14 x 2 12.5 20 8 Rc3/8 NPT3/8 G3/8 14.5 2 15 64.2 50.5</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Extension look
Rc, NPT 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 300 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M14 51.5 137 23 23 IG IH J JA JB JC K L MM NN OA OB OL P PA PA PA PA PB 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 Rc3/8 NPT3/8 G3/8 14.5 25.5 15 64.2 55.5 45 10.5 10 56 2 M14 x 2 31 M14 x 2 12.5 20 8 Rc3/8 NPT3/8 G3/8 1</td><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FB G GA GB GC H HA IA IB Extension looking if
Rc, NPT G I 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 MI2 43 113 18.5 18.5 18.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 MI4 51.5 137 23 23 23 IG IH J JA JB JC K L MM NN OA OB OL P PA PA PB PW 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 3 RC3/8 NPT3/8 G3/8 17.5 32.5 <td< td=""><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Extension locking Retracting 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139, 5 56. 5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 18.5 18.5 7.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 23 23 11 IG IH J JA JB JC K L MIL NN CA 0B 0L PH NII TN TF PA PB VQ 0 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 15.6 17.5 3 RC3/8 NPT3/8</td><td>Non Dimensions: MLGPW/MLGPL Standard stroke B C DA FA FB G GA GB CC H HA IA IB IC Extension locking Retraction locking<</td><td>non Dimensions: MLGPW/MLGPL Standard stroke B C DA FB FB G GA GB GC H HA IA <thia< th=""> IA IA <t< td=""><td>Non Dimensions: MLGPM/MLGPL Standard stroke R <th <<="" colspan="6" td=""><td>non Dimensions: MLGPH/MLGPL Standard stroke B C Da FA FB G GA GB GC H HA IA <</td><td>Non Dimensions: MLGPM/MLGPL B C DA FA FB G GA GB GA B C DA FA FB G GA GB GA B C DA FA FB GA GB GA B A B A B A B A B A B
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Rc, NPT 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 300 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 M14 51.5 137 23 23 IG IH J JA JB JC K L MM NN OA OB OL P PA PA PA PA PB 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 10.6 17.5 3 Rc3/8 NPT3/8 G3/8 14.5 25.5 15 64.2 55.5 45 10.5 10 56 2 M14 x 2 31 M14 x 2 12.5 20 8 Rc3/8 NPT3/8 G3/8 1 | Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FB G GA GB GC H HA IA IB Extension looking if
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300, 350 139.5 56.5 25 16 67 91.5 19 16.5 14.5 202 MI2 43 113 18.5 18.5 18.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 MI4 51.5 137 23 23 23 IG IH J JA JB JC K L MM NN OA OB OL P PA PA PB PW 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 25 M12 x 1.75 3 RC3/8 NPT3/8 G3/8 17.5 32.5 <td< td=""><td>Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Extension locking Retracting 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139, 5 56. 5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 18.5 18.5 7.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 23 23 11 IG IH J JA JB JC K L MIL NN CA 0B 0L PH NII TN TF PA PB VQ 0 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 15.6 17.5 3 RC3/8 NPT3/8</td><td>Non Dimensions: MLGPW/MLGPL Standard stroke B C DA FA FB G GA GB CC H HA IA IB IC Extension locking Retraction locking<</td><td>non Dimensions: MLGPW/MLGPL Standard stroke B C DA FB FB G GA GB GC H HA IA <thia< th=""> IA IA <t< td=""><td>Non Dimensions: MLGPM/MLGPL Standard stroke R <th <<="" colspan="6" td=""><td>non Dimensions: MLGPH/MLGPL Standard stroke B C Da FA FB G GA GB GC H HA IA <</td><td>Non Dimensions: MLGPM/MLGPL B C DA FA FB G GA GB GA B C DA FA FB G GA GB GA B C DA FA FB GA GB GA B A B A B A B A B A B A B A B A B A B A B A B B C DA FA FB G GA GB C DA B C DA DA</td></th></td></t<></thia<></td></td<> | Non Dimensions: MLGPM/MLGPL Standard stroke B C DA FA FB G GA GB GC H HA IA IB Extension locking Retracting 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 139, 5 56. 5 25 16 67 91.5 19 16.5 14.5 202 M12 43 113 18.5 18.5 7.5 50, 75, 100, 125, 150, 175, 200, 250, 300, 350 167.5 66 30 19 82.5 111.5 22.5 20.5 18 240 M14 51.5 137 23 23 11 IG IH J JA JB JC K L MIL NN CA 0B 0L PH NII TN TF PA PB VQ 0 7 53.7 45.5 38 7.5 15 46 54 M12 x 1.75 15.6 17.5 3 RC3/8 NPT3/8 | Non Dimensions: MLGPW/MLGPL Standard stroke B C DA FA FB G GA GB CC H HA IA IB IC Extension locking Retraction locking< | non Dimensions: MLGPW/MLGPL Standard stroke B C DA FB FB G GA GB GC H HA IA IA <thia< th=""> IA IA <t< td=""><td>Non Dimensions: MLGPM/MLGPL Standard stroke R <th <<="" colspan="6" td=""><td>non Dimensions: MLGPH/MLGPL Standard stroke B C Da FA FB G GA GB GC H HA IA <</td><td>Non Dimensions: MLGPM/MLGPL B C DA FA FB G GA GB GA B C DA FA FB G GA GB GA B C DA FA FB GA GB GA B A B A B A B A B A B A B A B A B A B A B A B B C DA FA FB G GA GB C DA B C DA DA</td></th></td></t<></thia<> | Non Dimensions: MLGPM/MLGPL Standard stroke R <th <<="" colspan="6" td=""><td>non Dimensions: MLGPH/MLGPL Standard stroke B C Da FA FB G GA GB GC H HA IA <</td><td>Non Dimensions: MLGPM/MLGPL B C DA FA FB G GA GB GA B C DA FA FB G GA GB GA B C DA FA FB GA GB GA B A B A B A B A B A B A B A B A B A B A B A B B C DA FA FB G GA GB C DA B C DA DA</td></th> | <td>non Dimensions: MLGPH/MLGPL Standard stroke B C Da FA FB G GA GB GC H HA IA <</td> <td>Non Dimensions: MLGPM/MLGPL B C DA FA FB G GA GB GA B C DA FA FB G GA GB GA B C DA FA FB GA GB GA B A B A B A B A B A B A B A B A B A B A B A B B C DA FA FB G GA GB C DA B C DA DA</td> | | | | | | non Dimensions: MLGPH/MLGPL Standard stroke B C Da FA FB G GA GB GC H HA IA < | Non Dimensions: MLGPM/MLGPL B C DA FA FB G
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Dava		Α				E		Dava			4					E	
Bore	50 st	Over 50 st	Over	DB	50 st	Over 50 st	Over	Bore	25 st	Over 25 st	Over 50 st	Over	DB	25 st	Over 25 st	Over 50 st	Over
SIZE	or less	200 st or less	200 st		or less	200 st or less	200 st	SIZE	or less	50 st or less	200 st or less	200 st		or less	50 st or less	200 st or less	200 st
80	147.5	174.5	223.5	30	8	35	84	80	147.5	171.5	201.5	234.5	25	8	32	62	95
100	178	203	242	36	10.5	35.5	74.5	100		197	230	253	30	—	29.5	62.5	85.5

MLGP Series Auto Switch Mounting

Auto Switch Proper Mounting Position (Detection at stroke end) and Mounting Height



Adjust the auto switch after confirming the operating conditions in the actual setting.



									[mm]
Auto switch model	Number of auto switches	ø 20	ø 25	ø 32	ø 40	ø 50	ø 63	ø 80	ø100
	1	5	5*1 5						
	2		10						
	1		5						
	2					5			
	1					5* ²			
	2				1	0			
D-M9⊟WV	1		5*2						
D-M9⊡AV	2		10						
	1	5*2							
D-INI9_A	2		10*2						
	1	5	*1	5					
D-A3	2	10*1				-	10		
	1		5						
D-A3LIV	2		10						
	1	— 15* ²							
D-F3DWA	2	— 15*2							
	1	-	_			5	;*2		
D-P4DW	2 (Different surfaces)	-		10*2					
	2 (Same surface)	_			7	75			10

Minimum Stroke for Auto Switch Mounting

*1 Confirm that it is possible to secure the minimum bending radius of 10 mm of the auto switch lead wire before use.

*2 Confirm that it is possible to securely set the auto switch(es) within the range of indicator green light ON range before use. For the in-line entry type, also consider *1 shown above.

Operating Range

								[mm]
Auto suitale maailal	Bore size							
Auto switch model	20	25	32	40	50	63	80	100
D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	5	5	6	6	6	6.5	6	7
D-A9□/A9□V	9	9	9.5	9.5	9.5	11	10.5	10.5
D-P3DWA	_	5.5	6.5	6	6	6.5	6	7
D-P4DW	_	_	5	4	4	5	4	4

* Values which include hysteresis are for reference purposes only. They are not a guarantee (assuming approximately ±30% dispersion) and may change substantially depending on the ambient environment.

Auto Switch Mounting

Applicable auto switches	D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV D-A9□/A9□V		D-P3DWA
Bore size [mm]	ø20 to ø100		ø 25 to ø100
Auto switch mounting bracket part no.	No mounti	ing bracket required as t	he auto switch is directly mounted.
Auto switch tightening torque	Auto switch model D-M9□(V) D-M9□W(V) D-A9□(V) D-M9□A(V)	[N·m] Tightening torque 0.05 to 0.15 0.05 to 0.10	0.2 to 0.3 N·m

Applicable auto switches	D-P4DW
Bore size [mm]	ø32 to ø100
Auto switch mounting bracket part no.	BMG7-032
Auto switch mounting bracket/ Quantity	 Auto switch mounting bracket x 1 pc. Auto switch mounting nut x 1 pc. Hexagon socket head cap screw x 2 pcs. Hexagon socket head cap screw x 2 pcs. (With spring washer x 2 pcs.)
Auto switch mounting surface	
Mounting of auto switch	 Attach the auto switch to the auto switch mounting bracket with the hexagon socket head cap screw (M3 x 14 L). The tightening torque for the M3 hexagon socket head cap screw is 0.5 to 0.8 N·m. Fix the auto switch mounting nut and the auto switch mounting bracket temporarily by tightening the hexagon socket head cap screw (M2.5 x 5 L). Insert the temporarily fixed auto switch mounting bracket into the auto switch mounting groove, and slide the auto switch through the auto switch mounting groove. Check the detecting position of the auto switch mounting the hexagon socket head cap screw (M2.5 x 5 L). The tightening torque for the M2.5 hexagon socket head cap screw is 0.2 to 0.3 N·m. If the detecting position is changed, go back to step 3.

A Caution

- 1) Auto switch mounting brackets and auto switches are enclosed with the cylinder for shipment.
- For an environment that needs the water-resistant auto
- a) an environment that needs the water-resistant actors switch, select the D-M9□A(V) type.
 b) When mounting the auto switch, mount it from the body head side. As there is a lock body on the body rod side, it cannot be mounted from that side.



Prior to Use Auto Switch Connections and Examples

Source Input Specifications

Sink Input Specifications



Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

Examples of AND (Series) and OR (Parallel) Connections

* When using solid state auto switches, ensure the application is set up so the signals for the first 50 ms are invalid. Depending on the operating environment, the product may not operate properly.

3-wire AND connection for NPN output



3-wire AND connection for PNP output (Using relays)



2-wire AND connection



When two auto switches are connected in series, a load may malfunction because the load voltage will decline when in the ON state. The indicator lights will light up when both of the auto switches are in the ON state. Auto switches with a load voltage less than 20 V cannot be used.

Load voltage at ON = Power supply voltage – Residual voltage x 2 pcs. = 24 V - 4 V x 2 pcs. = 16 V Example: Power supply is 24 VDC Internal voltage drop in auto switch is 4 V.

(Performed with auto switches only)





2-wire OR connection



Load voltage at OFF = Leakage current x 2 pcs. x Load impedance = 1 mA x 2 pcs. x 3 k Ω = 6 V

Example: Load impedance is 3 k Ω . Leakage current from auto switch is 1 mA.

3-wire OR connection for NPN output



3-wire OR connection for PNP output



(Reed)

Because there is no current leakage, the load voltage will not increase when turned OFF. However, depending on the number of auto switches in the ON state, the indicator lights may sometimes grow dim or not light up, due to the dispersion and reduction of the current flowing to the auto switches.

MLGP Series Model Selection

Precautions on Model Selection

A Caution

 In order that the originally selected maximum speed shall be not exceeded, be certain to use a speed controller to adjust the total movement distance of the load so that movement takes place in no less than the applicable movement time.
 For an intermediate stroke product with spacers installed, select using the base model stroke.

Step 1	Find the maximum load speed	V.
The maxim	um load speed V [mm/s] is approximately equal to V $_1$ x 1.4(1)	 V1: Average load speed [mm/s] V1 = st/t st: Load transfer distance [mm] t: Load transfer time [s]

Find the bore size.

1. For vertical mounting

Step 2

- (1) From Table 1, find applicable selection graphs based on the maximum load speed "V", mounting orientation, and bearing type.
 (2) From the graphs chosen in (1), select the appropriate graph based on the stroke, and then find the intersecting point of the load mass "m" and eccentric distance "L1".
- (3) Compare the intersecting point with the line chart for the operating pressure "P". Select the bore size from the line chart above the intersecting point.

2. For horizontal mounting

- (1) From Table 1, find applicable selection graphs based on the maximum load speed "V" and bearing type.
- (2) From the graphs chosen in (1), select the appropriate graph based on the distance "L2" between the plate and load center of gravity, then find the intersecting point of the load mass "m" and stroke.
- (3) Compare the intersecting point with the line chart. Select the bore size from the line chart above the intersecting point.

Vertical Horizontal Downward Upward L1 = Eccentric = Eccentric distance distance Distance between L2 = Distance between the plate and load center of gravity the plate and load m m center of gravity Mounting orientation m m m ♥ 111111111 mm L1 = Eccentric L1 = Eccentric distance distance 50 to 200 mm/s 201 to 400 mm/s 50 to 200 mm/s 201 to 400 mm/s 50 to 200 mm/s 201 to 400 mm/s Maximum load speed V Graph 1, 2 3,4 13, 14 15, 16 25, 26 27, 28 (Slide bearing type) Graph 5 to 8 9 to 12 17 to 20 21 to 24 29, 30 31, 32 (Ball bushing bearing type)

Selection Conditions/Table 1

• When the maximum speed exceeds 200 mm/s, the allowable load mass is determined by multiplying the value shown in the graph at 400 mm/s by the coefficient listed in the table below.

Max. speed	Up to 300 mm/s	Up to 400 mm/s
Coefficient	1.7	1

Selection Example 1 (Vertical Upward Mounting)

Selection conditions

Mounting: Vertical upward Bearing type: Ball bushing bearing Stroke: 50 mm Load transfer time t: 0.5 s Load mass m: 15 kg Eccentric distance L1: 50 mm Operating pressure P: 0.5 MPa

- Step 1: Find the maximum load speed "V" from formula (1).
- Based on the stroke (load transfer distance) of 50 mm and load transfer time of 0.5 s, the maximum load speed V is approximately equal to 50/0.5 x 1.4, which is approximately 140 mm/s.
- Step 2: Based on the maximum load speed found in Step 1, mounting orientation, and guide type, graphs 5 to 8 are selected. Then, based on the 50 mm stroke, graph 7 is selected from the group. Find the intersecting point of the load mass of 15 kg and the eccentric distance of 50 mm. Since the operating pressure is 0.5 MPa, the bore size of ø80 mm, model MLGPL80-50Z-B, is selected.



Selection Example 2 (Horizontal Mounting)

Selection conditions

Mounting: Horizontal

- Bearing type: Slide bearing
- Stroke: 100 mm Load transfer time t: 0.35 s
- Load mass **m**: 6 kg
- Load mass m: 6 kg

Eccentric distance between the plate and load center of gravity $L_{2}{:}\ \mbox{50 mm}$

Operating pressure P: 0.4 MPa

- Step 1: Find the maximum load speed "V" from formula (1). Based on the stroke (load transfer distance) of 100 mm and load transfer time of 0.35 s, the maximum load speed V is approximately equal to 100/0.35 x 1.4, which is approximately 400 mm/s.
- Step 2: Based on the maximum load speed found in Step 1, mounting orientation, and guide type, graphs 27 and 28 are selected. Then, based on the distance of 50 mm between the plate and load center of gravity, graph 27 is selected from the two graphs. Find the intersecting point of the load mass of 6 kg and the 100 mm stroke. The bore size of ø40 mm, model MLGPM40-50Z-□, is selected.



27 L2 = 50 mm V = 400 mm/s Horizontal Mounting

Vertical Upward Mounting (Slide Bearing)

MLGPM20 to 100







4 Over 50 Stroke V = 400 mm/s

SMC



Operating pressure: 0.4 MPa
 Operating pressure: 0.5 MPa or more

Model Selection MLGP Series

Vertical Upward Mounting (Ball Bushing Bearing)

Operating pressure: 0.4 MPa ---- Operating pressure: 0.5 MPa or more

MLGPL20, 25



MLGPL32 to 100



Vertical Upward Mounting (Ball Bushing Bearing)

- Operating pressure: 0.4 MPa

MLGPL20, 25





MLGPL32 to 100



Vertical Downward Mounting (Slide Bearing)

----- Operating pressure: 0.4 MPa ---- Operating pressure: 0.5 MPa or more

MLGPM20 to 100









16 Over 50 Stroke V = 400 mm/s

SMC



Vertical Downward Mounting (Ball Bushing Bearing)

- Operating pressure: 0.4 MPa - - - - Operating pressure: 0.5 MPa or more

MLGPL20, 25



18 Over 30 Stroke V = 200 mm/s ø**25** Load mass **m** [kg] ø**20** 1 200 10 50 100

Eccentric distance L1 [mm]

MLGPL32 to 100





Model Selection MLGP Series

Vertical Downward Mounting (Ball Bushing Bearing)

Operating pressure: 0.4 MPa

MLGPL20, 25



MLGPL32 to 100



Horizontal Mounting (Slide Bearing)

MLGPM20 to 100



SMC



Horizontal Mounting (Ball Bushing Bearing)



Horizontal Mounting (Ball Bushing Bearing)

Operating Range when Used as Stopper

🕂 Warning

- 1. When the product is used as a stopper, do not allow workpieces to collide in a locked state. If workpieces collide in the locked state, the lock may disengage due to the shock, or the lock mechanism and piston rod may be damaged, causing a dramatic decrease of the product life and/or further damage.
- 2. Model MLGPL (Ball bushing bearing) cannot be used as a stopper.
- When MLGPL (Ball bushing bearing) is used as a stopper, the impact will cause damage to the bearing unit and guide rod.
- 3. Use the pneumatic circuit on page 30, when the product is used as a stopper, so that the workpiece does not collide in a locked state.

ACaution

- 1. When using as a stopper, select a model with 30 stroke or less for bore sizes ø20 and ø25, and 50 stroke or less for bore sizes ø32 to ø100.
- 2. When selecting a model with a longer L dimension, be sure to choose a bore size which is sufficiently large.

MLGPM20/25 (Slide Bearing)





MLGPM32 to 100 (Slide Bearing)





Allowable Kinetic Energy

A Caution

Load mass and a maximum speed must be within the ranges shown below.

MLGP with Rubber Bumper





Be sure to read this before handling the products. Refer to the back cover for safety instructions. For actuator and auto switch precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smcworld.com

Selection

Warning

- 1. The holding force (max. static load) indicates the maximum capability to hold a static load without vibration and impact. Therefore, the maximum load (workpiece mass) should not exceed 50% of the holding force (max. static load). Select the load mass when unlocked in accordance with 6 below.
- 2. Do not use for intermediate stops while the cylinder is operating.

This cylinder is designed for locking against inadvertent movement from a stationary condition. Do not perform intermediate stops while the cylinder is operating, as this may cause unlocking malfunction, damage or shorten the service life.

3. Select the correct locking direction, as this cylinder does not generate holding force opposite to the locking direction.

The extension locking does not generate holding force in the cylinder's retracting direction, and the retraction locking does not generate holding force in the cylinder's extension direction.

- 4. Even when locked, there may be a stroke movement of approximately 0.5 to 2 mm in the locking direction due to external forces, such as the workpiece mass. Even when locked, if air pressure drops, a stroke movement of approximately 0.5 to 2 mm may be generated in the locking direction of the lock mechanism due to external forces such as the workpiece mass.
- 5. When in the locked state, do not apply a load accompanied by an impact shock, strong vibration or turning force, etc.

This may damage the locking mechanism, shorten the service life or cause unlocking malfunction.

6. Operate so that load mass, cylinder speed and eccentric distance are within the limiting ranges in the specifications and model selection graphs.

If the products are used beyond the limiting range, it may lead to a reduced service life or cause damage to the machinery. (Refer to pages 6 and 7 for specifications and pages 17 to 28 for the Model Selection.)

Pneumatic Circuit

A Warning

Orop prevention circuit> * Refer to page 30 for circuit examples.

- Do not use 3-position valves with circuit example 1. The lock may be released due to inflow of the unlocking pressure.
- 2. Install speed controllers for meter-out control. (Circuit example 1)

When they are not installed or they are used under meter-in control, it may cause malfunction.

3. Branch off the compressed air piping for the lock unit between the cylinder and the speed controller. (Circuit example 1)

Note that branching off in another section can cause a reduction in service life.

4. Perform piping so that the side going from the piping junction to the lock unit is short. (Circuit example 1) If the lock release port side is longer than another side from the piping junction, this may cause unlocking malfunction or shorten the service life.

Pneumatic Circuit

\land Warning

5. Be aware of reverse exhaust pressure flow from common exhaust type valve manifolds. (Circuit example 1)

Since the lock may be released due to reverse exhaust pressure flow, use an individual exhaust type manifold or single type valve.

6. Be sure to release the lock before operating the cylinder. (Circuit example 2)

When the lock release delays, the cylinder may eject at high speed, which is extremely dangerous. It may also damage the cylinder, greatly shorten the service life, or cause locking malfunction. Even when a cylinder moves freely, be sure to release the lock when operating the cylinder.

7. Be aware that the locking action may be delayed due to the piping length or the timing of exhaust. (Circuit example 2)

The locking action may be delayed due to the piping length or the timing of exhaust, which also makes the stroke movement toward the lock larger. Install the solenoid valve for locking closer to the cylinder than the cylinder drive solenoid valve.

<Emergency stop circuit>

1. Perform emergency stops with the pneumatic circuit. (Circuit examples 3 and 4)

This cylinder is designed for locking against inadvertent movement from a stationary condition. Do not perform emergency stops while the cylinder is operating, as this may cause unlocking malfunction, damage or shorten the service life. Emergency stops must be performed with the pneumatic circuit, and workpieces must be held with the locking mechanism after the cylinder fully stops.

- 2. When restarting the cylinder from the locked state, remove the workpiece and exhaust the residual pressure in the cylinder. (Circuit examples 3 and 4) The cylinder may eject at high speed, which is extremely dangerous. It may also damage the cylinder, greatly shorten the service life, or cause locking malfunction.
- 3. Be sure to release the lock before operating the cylinder. (Circuit example 4)

When the lock release delays, the cylinder may eject at high speed, which is extremely dangerous. It may also damage the cylinder, greatly shorten the service life, or cause locking malfunction. Even when the cylinder moves freely, be sure to release the lock when operating the cylinder.

<Drop prevention circuit, Emergency stop circuit>

malfunction due to corrosion of internal parts.

 If installing a solenoid valve for a lock unit, be aware that repeated supply and exhaustion of air may cause condensation. (Circuit examples 2 and 4) The lock unit operating stroke is very small and so the pipe is long. If supplying and exhausting air repeatedly, condensation, which occurs by adiabatic expansion, accumulates in the lock unit. This may then cause air leakage and an unlocking

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. When used as a stopper, be careful that the workpiece does not collide with the cylinder in a locked state. Use the guide cylinder with the circuit below. $\underline{}$

If the workpiece were bumped into the cylinder in the locked state, it could be unlocked by shock or the locking mechanism and the piston rod could be damaged, that could shorten its service life substantially or result in breakage.



* The symbol for the cylinder with lock in the basic circuit uses SMC original symbol.

Mounting

A Warning

1. Take precautions to prevent your fingers or hands from getting caught between the plate and the cylinder body or the lock body.

Be very careful to prevent your hands or fingers from getting caught in the gap between the cylinder body and the lock body when air is applied.



Mounting

A Caution

1. Be sure to connect the load to the plate section with the lock in an unlocked state.

If this is done in the locked state, it may cause damage to the lock mechanism.

Sizes Ø20 to Ø32 have a built-in holding function for the unlocked state, allowing the unlocked state to be maintained even without an air supply. For Ø40 to Ø100, simply connect piping to the unlocking port and supply air pressure of 0.2 MPa or more.

- 2. When performing mounting adjustment, supply air pressure only to the unlocking port.
- 3. Use cylinders within the piston speed range.

An orifice is set for this cylinder, but the piston speed may exceed the operating range if the speed controller is not used. If the cylinder is used outside the operating speed range, it may cause damage to the cylinder and shorten the service life. Adjust the speed by installing the speed controller and use the cylinder within the limited range.

4. Pay attention to the operating speed when the product is mounted vertically.

When using the product in the vertical direction, if the load factor is large, the operating speed can be faster than the control speed of the speed controller (i.e. quick extension). In such cases, it is recommended to use a dual speed controller.

5. Do not scratch or dent the sliding portion of the piston rod and the guide rod.

Damaged seals, etc. will result in leakage or malfunction.

6. Do not dent or scratch the mounting surface of a body and a plate.

The flatness of the mounting surface may not be maintained, which would cause an increase in sliding resistance.

7. Make sure that the cylinder mounting surface has a flatness of 0.05 mm or less.

If the flatness of the workpieces and brackets mounted on the plate is not appropriate, sliding resistance may increase.

If it is difficult to maintain a flatness of 0.05 mm or less, put a thin shim ring (provided by the customer) between the plate and the workpiece mounting surface to prevent the sliding resistance from increasing.



8. Be sure that the piston rods are retracted when mounting workpieces on the plate.

If workpieces are mounted on the plate when the piston rods are extended, it can lead to distortion of the guide part, resulting in a malfunction.

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For actuator and auto switch precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smcworld.com

Mounting

A Caution

9. Cylinder bottom

Since the guide rods project from the bottom of the cylinder at the end of the retraction stoke, provide bypass ports in the mounting surface, as well as holes for the hexagon socket head mounting screws, when the cylinder is mounted from the bottom. Furthermore, when subjected to



impact in use as a stopper, etc., screw the mounting bolts in to a depth of 2d or more.

Bore size	Α	в	С	[)	Hexagon socket
[mm]	[mm]	[mm]	[mm]	MLGPM	MLGPL	head cap screw
20	72	24	54	14	12	M5 x 0.8
25	82	30	64	18	15	M6 x 1.0
32	98	34	78	22	18	M8 x 1.25
40	106	40	86	22	18	M8 x 1.25
50	130	46	110	27	22	M10 x 1.5
63	142	58	124	27	22	M10 x 1.5
80	180	54	156	33	28	M12 x 1.75
100	210	62	188	39	33	M14 x 2.0

Piping

A Caution

- 1. Depending on the operating condition, change the position of plugs for the piping port.
- Tapered thread for Rc port (MLGP) and NPT port (MLGP

Tighten with proper tightening torques below. Also, use sealant tape on the plug. With regard to the sunk dimension of a plug ("a" dimension in the drawing), use the stipulated figures as a guide and confirm the air leakage before operation.

* If plugs on the top mounting port are tightened with more than the proper tightening torque, they will be screwed too deeply and the air passage will be constricted, resulting in limited cylinder speed.

Connection thread (plug) size	Applicable tightening torque [N · m]	a dimension	Plug
1/8	7 to 9	0.5 mm or less	
1/4	12 to 14	1 mm or less	
3/8	22 to 24	1 mm or less	



Parallel pipe thread for G port (MLGP□□TF)

Screw in the plug to the surface of the body ("a" dimension in the drawing) by checking visually instead of using the tightening torque shown in the table.

Preparing for Operation

\land Warning

1. Before restarting the cylinder from the locked state, be sure to restore air pressure to the B port of the solenoid valve in the pneumatic circuit.

When pressure is not applied to the B port of the solenoid valve, the load may drop or the cylinder may eject at high speed, which is extremely dangerous. It may also damage the cylinder, greatly shorten the service life or cause unlocking malfunction. When applying pressure to the B port, be sure to confirm whether the environment is safe, since workpieces may move.

2. Since sizes Ø20 to Ø32 are shipped in the unlocked state maintained by the unlocking bolt, be sure to remove the unlocking bolt following the steps below.

If the cylinder is used without removing the unlocking bolt, the lock mechanism will not function.

For ø20 to ø32 only

2.5).

- 1) Confirm that there is no air pressure inside the cylinder, and remove the dust cover 1.
- Supply air pressure of 0.2 MPa or more to unlocking port 2 shown on the right.
 Remove the unlocking bolt 3 with a

hexagon wrench (width across flats



* Since a holding function for the unlocked state is not available for sizes ø40 to ø100, they can be used as shipped.

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For actuator and auto switch precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smcworld.com

Manually Unlocking

A Warning

- 1. Do not perform unlocking while an external force such as a load or spring force is being applied. This is very dangerous because the cylinder will move suddenly. Release the lock after preventing cylinder movement with a lifting device such as a jack.
- 2. After confirming safety, operate the manual release following the steps shown below.

Carefully confirm that personnel are not inside the load movement range, etc., and that there is no danger even if the load moves suddenly.

Manually unlocking

For ø20 to ø32



Extension locking

- 1) Remove the dust cover.
- Screw a manual unlocking bolt (a bolt of M3 x 0.5 x 15 L or more commercially available) into the lock ring threads as shown above, and lightly push the bolt in the direction of the arrow (head end) to unlock.

For ø40 to ø100



Extension locking

- 1) Remove the dust cover.
- 2) Insert a flat head screwdriver on the rod end of the manual unlocking lever as shown above, and lightly push the screwdriver in the direction of the arrow (rod end) to unlock.

Retraction locking

- 1) Remove the dust cover.
- 2) Screw a manual unlocking bolt (a bolt of M3 x 0.5 x 15 L or more commercially available) into the lock ring threads as shown above, and lightly push the bolt in the direction of the arrow (rod end) to unlock.

Lock ring

Rod end

Locking direction

Head end



Retraction locking

- 1) Remove the dust cover.
- 2) Insert a flat head screwdriver on the head end of the manual unlocking lever as shown above, and lightly push the screwdriver in the direction of the arrow (head end) to unlock.

Holding the Unlocked State (Ø20 to Ø32)

\land Caution

- 1. In order to hold the unlocked state, be sure to follow the steps below after <u>confirming</u> safety.
 - 1) Remove the dust cover 1.
 - 2) Supply air pressure of 0.2 MPa or more to the unlocking port 2 shown below to unlock.
 - Screw the attached hexagon socket head cap bolt 3 (ø20, ø25: M3 x 0.5 x 5 L, ø32: M3 x 0.5 x 10 L), into the lock ring to hold the unlocked state.
- 2. To use the lock mechanism again, be sure to remove the unlocking bolt.

When the unlocking bolt is screwed in, the lock mechanism does not function. Remove the unlocking bolt according to the steps prescribed in the section of "Preparing for Operation."



Maintenance

▲ Caution

1. In order to maintain good performance, operate with clean air.

If compressor oil or drainage enters the cylinder, there is a danger of sharply reducing the locking performance.

- 2. Do not apply excessive grease to the piston rod. There is a danger of sharply reducing the locking performance.
- 3. For Ø20 to Ø32, a Ø12 silver seal is labeled on the one surface of the lock body (on the surface opposite from the unlocking port). The seal is meant for dust prevention, but even if it is peeled off, there would be no problem functionally.

4. Never disassemble the lock unit.

It contains a heavy-duty spring which is dangerous and there is also a danger of reducing the locking performance.

▲ Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of "**Caution**," "**Warning**" or "**Danger**." They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)^{*1}, and other safety regulations.

- Caution: indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
- Warning: Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

AWarning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

- 2. Only personnel with appropriate training should operate machinery and equipment.
 - The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.
- 3. Do not service or attempt to remove product and machinery/ equipment until safety is confirmed.
 - The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
 - 2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
 - Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

- 1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
- 2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
- An application which could have negative effects on people, property, or animals requiring special safety analysis.
- 4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

- *1) ISO 4414: Pneumatic fluid power General rules relating to systems.
 - ISO 4413: Hydraulic fluid power General rules relating to systems. IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
 - ISO 10218-1: Manipulating industrial robots Safety. etc.

 The product is provided for use in manufacturing industries. The product herein described is basically provided for peaceful use in manufacturing industries. If considering using the product in other industries, consult SMC beforehand

and exchange specifications or a contract if necessary. If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements".

Read and accept them before using the product.

Limited warranty and Disclaimer

- The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2) Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
- 2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
- Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.
 - *2) Vacuum pads are excluded from this 1 year warranty. A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

- The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
- 2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

A Safety Instructions Be sure to read the "Handling Precautions for SMC Products" (M-E03-3) and "Operation Manual" before use.