

<http://www.koganei.co.jp>

Long Life Cylinder - LL Series



Koganei's Environmental Activities

●Environmentally friendly manufacturing is realized throughout the product lifecycle

We support our customers' activities to protect the global environment throughout the product lifecycle. We also comply with environmental regulations such as the RoHS Directive and design products that do not contain hazardous substances to reduce the environmental impact at the time of disposal.

●Contributing to resource Conservation

In order to ensure durability performance that satisfies our customers, we have made further efforts to extend the service life of air cylinders and have made design improvements.

This has resulted in a product that contributes to resource conservation and a reduction in the burden of parts replacement.

●4R activities in recognition of the impact on biodiversity

We recognize the impact of our corporate activities on biodiversity, and systematically promote 4R activities.

Reduce (Reduction of usage)

Reuse (Reuse of resources)

Recycle (Collection and recycling)

Renewable (Switch to recycled materials and plant materials)

●Environmental contribution of long-life cylinders

We reduce resource usage and waste generation by providing high durability products. **(Reduce)** Pneumatic cylinders are widely used in industrial and social infrastructure.

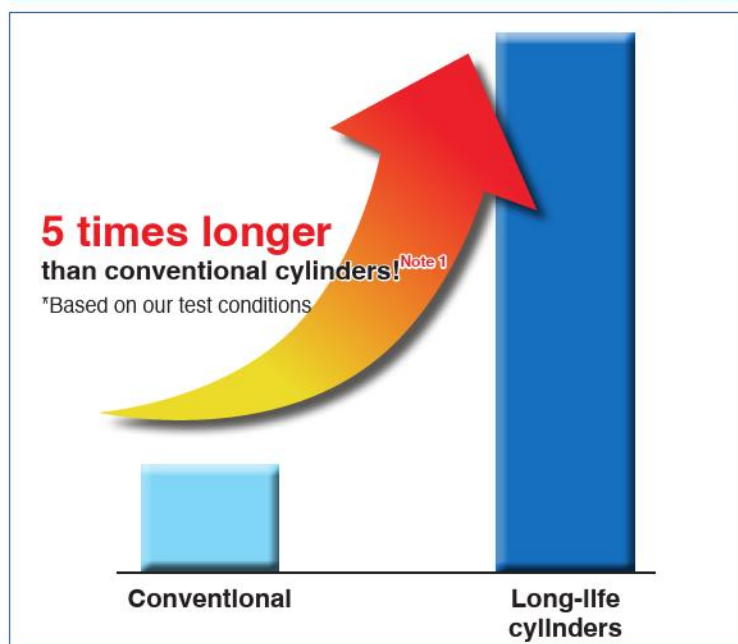
By extending the service life of pneumatic cylinders, we can reduce maintenance time and waste by replacement, and contribute to energy saving and reduction of environmental impact (CO2 emissions reduction).

●Advantages of long-life cylinders



Long Life Cylinder LL Series

Cylinder durability is improved



Note 1: Cylinder durability performance varies depending on operating conditions and environment.

Variations ^{Note 2}

- ① Basic Cylinder
- ② Basic Cylinders with guide
- ③ Slim Cylinder
- ④ Jig Cylinders C Series
- ⑤ Jig Cylinders with guide



Note 2: External dimensions and options are the same as those of standard products (without LL-).
For details, please refer to each series on our website.



Caution *Before using the product, be sure to read the "Safety Precautions" in the general catalog and on the website.

Basic Cylinders

Double acting type (Long Life)

Symbol



Specifications

● Double acting type

Cylinder bore item	6 [0.236]	8 [0.315]	10 [0.394]	12 [0.472]	16 [0.630]	20 [0.787]	25 [0.984]	32 [1.260]	40 [1.575]	
Operating type	Double acting type									
Medium	Air									
Operating pressure range	MPa [psi]	0.12 to 0.7 [17 to 102]		0.06 to 0.7 [9 to 102]			0.05 to 0.7 [7 to 102]			
Proof pressure	MPa [psi]	1.05 [152]								
Operating temperature range	°C [°F]	0 to 60 [32 to 140]								
Operating speed range	mm/s [in/sec]	10 to 500 [0.4 to 20]								
Cushion		Rubber bumper								
Lubrication		Not required								
Port size		M3×0.5			M5×0.8			Rc1/8		

Cylinder bore and stroke

● Double acting type

Cylinder bore	Standard stroke	Maximum available stroke
6, 8, 10 [0.236, 0.315, 0.394]	5, 10, 15, 20, 25, 30	30 [1.18]
12, 16 [0.472, 0.630]	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	50 [1.97]
20, 25 [0.787, 0.984]	5 ^{Note1} , 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 70, 75, 80, 90, 100	100 [3.94]
32, 40 [1.260, 1.575]	10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 70, 75, 80, 90, 100	100 [3.94]

Note1: Collar stopper is used in this stroke.

Order Codes

LL- BC × - - -

Long Life Cylinder

Basic Cylinders

Cylinder bore
x
Stroke
● See cylinder bores and strokes.

Piston rod
Shape of rod end
Blank: Female thread
B: Male thread

Bracket
Blank: No bracket
BK: With bracket ^{Note 1}

Lead wire length
A: 1000 mm [39 in]
B: 3000 mm [118 in]
G: 300 mm [11.8 in] with M8 connector, only on the **ZE175, ZE177, ZE275, ZE277**

Sensor switch model
Blank: No sensor switch
ZE135: 2-lead wires, solid state type, horizontal lead wire
ZE155: 3-lead wires, solid state NPN output type, horizontal lead wire
ZE175: 3-lead wires, solid state PNP output type, horizontal lead wire
ZE235: 2-lead wires, solid state type, vertical lead wire
ZE255: 3-lead wires, solid state NPN output type, vertical lead wire
ZE275: 3-lead wires, solid state PNP output type, vertical lead wire
ZE137: 2-lead wires, 2-color LED solid state type, horizontal lead wire
ZE157: 3-lead wires, 2-color LED solid state NPN output type, horizontal lead wire
ZE177: 3-lead wires, 2-color LED solid state PNP output type, horizontal lead wire
ZE237: 2-lead wires, 2-color LED solid state type, vertical lead wire
ZE257: 3-lead wires, 2-color LED solid state NPN output type, vertical lead wire
ZE277: 3-lead wires, 2-color LED solid state PNP output type, vertical lead wire
ZE101: 2-lead wires, reed switch type without indicator, horizontal lead wire^{Note 2}
ZE102: 2-lead wires, reed switch type, horizontal lead wire^{Note 2}
ZE201: 2-lead wires, reed switch type without indicator, vertical lead wire^{Note 2}
ZE202: 2-lead wires, reed switch type, vertical lead wire^{Note 2}

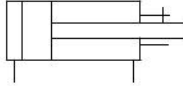
Number of sensor switches
1: 1 sensor switch
2: 2 sensor switches
3: 3 sensor switches
⋮

Note 1: Brackets cannot be attached to cylinders that have $\phi 6$ [0.236] or $\phi 8$ [0.315] cylinder bores.
2: Reed type sensor switches cannot be attached to cylinders that have $\phi 6$ [0.236], $\phi 8$ [0.315], $\phi 10$ [0.394], or $\phi 12$ [0.472] cylinder bores.
3: When using reed switch type sensor switches, operates at cylinder speed of 30 mm/s [1.2 in/sec] or higher.

Basic Cylinders

Cylinder with guide (Long Life)

Symbol



Specifications

Cylinder bore		8 [0.315]	12 [0.472]	16 [0.630]	20 [0.787]	25 [0.984]	32 [1.260]	40 [1.575]
Item								
Operating type		Double acting type						
Medium		Air						
Operating pressure range	MPa [psi]	0.2 to 0.7 [29 to 102]	0.1 to 0.7 [15 to 102]			0.08 to 0.7 [12 to 102]		
Proof pressure	MPa [psi]					1.05 [152]		
Operating temperature range	°C [°F]				0 to 60 [32 to 140]			
Operating speed range	mm/s [in/sec]				50 to 500 [2 to 20]			
Cushion		Rubber bumper						
Lubrication		Not required						
Port size		M3×0.5		M5×0.8			Rc1/8	
Running parallelism	mm [in]	0.1 [0.004] or less						
Allowable moment N·m [in·lbf]	Pitching	0.12 [1.06]		0.40 [3.54]	1.50 [13.28]	2.18 [19.30]	4.46 [39.48]	6.70 [59.30]
	Rolling	0.12 [1.06]		0.40 [3.54]	1.80 [15.93]	2.18 [19.30]	4.46 [39.48]	8.00 [70.80]
	Yawing	0.21 [1.86]		0.68 [6.02]	2.20 [19.47]	4.18 [37.00]	7.31 [64.70]	13.70 [121.26]

Cylinder bore and stroke

Cylinder bore	Standard stroke
8, 12, 16, 20, 25 [0.315, 0.472, 0.630, 0.787, 0.984]	5 ^{Note} , 10, 15 ^{Note} , 20, 25 ^{Note} , 30, 35 ^{Note} , 40, 45 ^{Note} , 50, 55 ^{Note} , 60
32 [1.260]	10, 15 ^{Note} , 20, 25 ^{Note} , 30, 35 ^{Note} , 40, 45 ^{Note} , 50, 55 ^{Note} , 60
40 [1.575]	10 ^{Note} , 15 ^{Note} , 20, 25 ^{Note} , 30, 35 ^{Note} , 40, 45 ^{Note} , 50, 55 ^{Note} , 60

Note: This stroke has a collar stopper.

Order Codes

LL- BCG × - -

Long Life Cylinder

Back side piping block^{Note 1}
 *Available only in $\phi 32$ [1.260] and $\phi 40$ [1.575]
 Blank : Side piping
 BP : Back side piping

Cylinder bore × Stroke
 ● See cylinder bores and strokes.

Locating pin hole
 Blank : Without pin hole
 N : With pin hole

Basic Cylinders
Double acting type with guide

Lead wire length
 A : 1000 mm [39 in]
 B : 3000 mm [118 in]
 G : 300 mm [11.8 in] with M8 connector, only on the ZE175, ZE177, ZE275, ZE277

Sensor switch model
 Blank : No sensor switch
 ZE135 : 2-lead wires, solid state type, horizontal lead wires
 ZE155 : 3-lead wires, solid state NPN output type, horizontal lead wires
 ZE175 : 3-lead wires, solid state PNP output type, horizontal lead wires
 ZE235 : 2-lead wires, solid state type, vertical lead wires
 ZE255 : 3-lead wires, solid state NPN output type, vertical lead wires
 ZE275 : 3-lead wires, solid state PNP output type, vertical lead wires
 ZE137 : 2-lead wires, 2-color LED solid state type, horizontal lead wires
 ZE157 : 3-lead wires, 2-color LED solid state NPN output type, horizontal lead wires
 ZE177 : 3-lead wires, 2-color LED solid state PNP output type, horizontal lead wires
 ZE237 : 2-lead wires, 2-color LED solid state type, vertical lead wires
 ZE257 : 3-lead wires, 2-color LED solid state NPN output type, vertical lead wires
 ZE277 : 3-lead wires, 2-color LED solid state PNP output type, vertical lead wires
 ZE101 : 2-lead wires, reed switch type without indicator, horizontal lead wire^{Note 2}
 ZE102 : 2-lead wires, reed switch type, horizontal lead wire^{Note 2}
 ZE201 : 2-lead wires, reed switch type without indicator, vertical lead wire^{Note 2}
 ZE202 : 2-lead wires, reed switch type, vertical lead wire^{Note 2}

Number of sensor switches
 1 : 1 sensor switch
 2 : 2 sensor switches
 3 : 3 sensor switches

Note 1: Only $\phi 32$ [1.260] and $\phi 40$ [1.575] diameter bore cylinders can be mounted with back side piping blocks. Back side and side piping is possible as standard for $\phi 8$ [0.315] to $\phi 25$ [0.984] models.

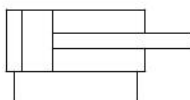
2: Reed type sensor switches cannot be attached to cylinders that have $\phi 8$ [0.315] and $\phi 12$ [0.472] cylinder bores.

JIG CYLINDERS C SERIES STANDARD CYLINDERS

Double acting type (Long Life)



Symbols



Specifications

Item	Cylinder bore	12 [0.472]	16 [0.630]	20 [0.787]	25 [0.984]	32 [1.260]	40 [1.575]
Operating type		Double acting type					
Medium		Air					
Operating pressure range	MPa [psi]	0.1~1.0 [15~145]					
Proof pressure	MPa [psi]	1.05 [152]					
Operating temperature range	°C [°F]	0 to 60 [32 to 140]					
Operating speed range	mm/s [in/sec]	30~500 [1.2~19.7]					
Cushion		Rubber bumper					
Lubrication		Not required					
Port size		M5×0.8				Rc1/8	

Cylinder bore and stroke

Operation type	Bore size	Standard stroke	
		Standard cylinder	Cylinder with magnet
Double acting type	12 [0.472]	5, 10, 15, 20, 25, 30	5, 10, 15, 20, 25, 30
	16 [0.630]		
	20 [0.787]	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
	25 [0.984]		
	32 [1.260]	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
	40 [1.575]		

Remarks 1. Stroke tolerance $+1 \begin{smallmatrix} +0.039\text{in.} \\ 0 \end{smallmatrix}$

2. For intermediate stroke, the tube can be cut every 1mm. Although cylinders with stroke less than 5 mm cannot be supported.

Order Codes

LL- CDA **×** - - - - — Number of sensor switches

Long Life Cylinder

CDA : JIG CYLINDER C SERIES
Single rod Double acting type

CDAS : JIG CYLINDER C SERIES
Single rod Double acting type with sensor

Centering location
Blank : No centering location
G : Rod side with centering location^{Note1}

Attached option
Blank : None
1 : Foot mounting bracket^{Note2}
3 : Flange mounting bracket^{Note2}

Lead wire length
A : 1000 mm [39 in]
B : 3000 mm [118 in]
G : 300 mm [11.8 in] with M8 connector, only on the **ZE175, ZE177, ZE275, ZE277**

Sensor switch model ^{Note3}
Blank : No sensor switch
ZE135 : 2-lead wires, solid state type, horizontal lead wire
ZE155 : 3-lead wires, solid state NPN output type, horizontal lead wire
ZE175 : 3-lead wires, solid state PNP output type, horizontal lead wire
ZE235 : 2-lead wires, solid state type, vertical lead wire
ZE255 : 3-lead wires, solid state NPN output type, vertical lead wire
ZE275 : 3-lead wires, solid state PNP output type, vertical lead wire
ZE137 : 2-lead wires, 2-color LED solid state type, horizontal lead wire
ZE157 : 3-lead wires, 2-color LED solid state NPN output type, horizontal lead wire
ZE177 : 3-lead wires, 2-color LED solid state PNP output type, horizontal lead wire
ZE237 : 2-lead wires, 2-color LED solid state type, vertical lead wire
ZE257 : 3-lead wires, 2-color LED solid state NPN output type, vertical lead wire
ZE277 : 3-lead wires, 2-color LED solid state PNP output type, vertical lead wire
ZE101 : 2-lead wires, reed switch type without indicator, horizontal lead wire
ZE102 : 2-lead wires, reed switch type, horizontal lead wire
ZE201 : 2-lead wires, reed switch type without indicator, vertical lead wire
ZE202 : 2-lead wires, reed switch type, vertical lead wire

Built-in options
Blank : No built-in options (Rod end female thread)
B : Rod end male thread
R : With bumper
B-R : Rod end male thread + with bumper

Cylinder bore
x
Stroke

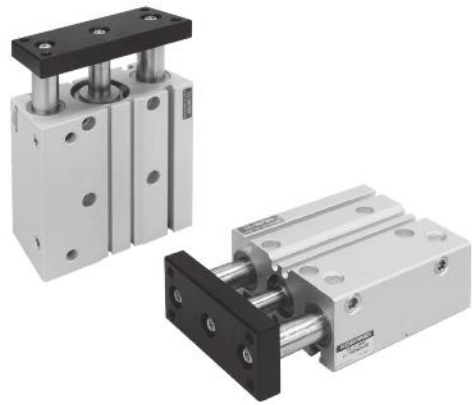
● See cylinder bores and strokes.

Note 1: Cylinder bore: 12 cannot be selected.
2: When "Cylinder bore: 40" and "Centering location: G" is selected, "Attached option: 1 and 3" cannot be selected.
Also, when "Cylinder bore x stroke: 16x5, 25x5" is selected, "Attached option: 1" cannot be selected.
3: Available only for "Order code: CDAS".

JIG CYLINDERS WITH GUIDES

Double acting type (Long Life)

Symbols



Specifications

Item	Cylinder bore	12 [0.472]	16 [0.630]	20 [0.787]	25 [0.984]	32 [1.260]	40 [1.575]
Operating type		Double acting type					
Medium		Air					
Operating pressure range	MPa [psi]	0.15~1.0 [22~145]			0.1~1.0 [15~145]		
Proof pressure	MPa [psi]	1.5 [218]					
Operating temperature range	°C[°F]	0 to 60 [32 to 140]					
Operating speed range	mm/s [in/sec]	100 to 500 [3.9 to 19.7]					
Cushion		Rubber bumper					
Lubrication		Not required					
Port size		M5×0.8		Rc1/8			
Stroke tolerance	mm[in.]	+1.5 [+0.059in.] 0 0					

Cylinder bore and stroke

Cylinder bore	Standard stroke	Maximum available stroke
12 [0.472]	10, 20, 30, 40, 50, 75, 100	100 [3.94]
16 [0.630]		
20 [0.787]	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200	200 [7.87]
25 [0.984]		
32 [1.260]		
40 [1.575]		

Remarks 1. Non-standard strokes are available at 5mm intervals. Since the manufacturing method is collar packed, the total length, etc., are the same dimension as the next size up standard stroke cylinder.

2. For strokes of 75mm or longer, use long bushing type.

Order Codes

LL- SGDA **×** **-** **[]** **[]** **[]**

Jig Cylinders with guides
Double acting type

Cylinder bore
x
Stroke
● See cylinder bores and strokes.

Lead wire length
A: 1000 mm [39 in]
B: 3000 mm [118 in]
G: 300 mm [11.8 in] with M8 connector, only on the ZE175, ZE177, ZE275, ZE277

Sensor switch model
Blank: No sensor switch
ZE135: 2-lead wires, solid state type, horizontal lead wire
ZE155: 3-lead wires, solid state NPN output type, horizontal lead wire
ZE175: 3-lead wires, solid state PNP output type, horizontal lead wire
ZE235: 2-lead wires, solid state type, vertical lead wire
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ZE275: 3-lead wires, solid state PNP output type, vertical lead wire
ZE137: 2-lead wires, 2-color LED solid state type, horizontal lead wire
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ZE257: 3-lead wires, 2-color LED solid state NPN output type, vertical lead wire
ZE277: 3-lead wires, 2-color LED solid state PNP output type, vertical lead wire
ZE101: 2-lead wires, reed switch type without indicator, horizontal lead wire
ZE102: 2-lead wires, reed switch type, horizontal lead wire
ZE201: 2-lead wires, reed switch type without indicator, vertical lead wire
ZE202: 2-lead wires, reed switch type, vertical lead wire

Number of sensor switches
1: 1 sensor switch
2: 2 sensor switches
3: 3 sensor switches
⋮

Long Life Cylinder

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

[illegible]

This image shows a full page of blank, lined paper. It features approximately 28 horizontal blue or grey lines spaced evenly apart, typical of notebook paper. The lines extend across the entire width of the page, leaving small margins at the top and bottom. There are no vertical lines, text, or other markings on the page.

Limited Warranty

KOGANEI CORP. warrants its products to be free from defects in material and workmanship subject to the following provisions.

Warranty Period The warranty period is 180 days from the date of delivery.

Koganei Responsibility If a defect in material or workmanship is found during the warranty period, KOGANEI CORP. will replace any part proved defective under normal use free of charge and will provide the service necessary to replace such a part.

Limitations

- This warranty is in lieu of all other warranties, expressed or implied, and is limited to the original cost of the product and shall not include any transportation fee, the cost of installation or any liability for direct, indirect or consequential damage or delay resulting from the defects.

- KOGANEI CORP. shall in no way be liable or responsible for injuries or damage to persons or property arising out of the use or operation of the manufacturer's product.

- This warranty shall be void if the engineered safety devices are removed, made inoperative or not periodically checked for proper functioning.

- Any operation beyond the rated capacity, any improper use or application, or any improper installation of the product, or any substitution upon it with parts not furnished or approved by KOGANEI CORP., shall void this warranty.

- This warranty covers only such items supplied by KOGANEI CORP. The products of other manufacturers are covered only by such warranties made by those original manufacturers, even though such items may have been included as the components.

The specifications are subject to change without notice.

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