New

Miniature Work Support

The World's Smallest Thread Size $M16 \times 1.0$





Model LD0162 Hydraulic Model (Standard) Model LD0162-S Hydraulic Model (Short Body)



PAT.

Model WNC0100 Pneumatic Model



Hydraulic Pressure : 2.5 ~ 7MPa Miniature Work Support

Model LD0162

Pneumatic Pressure : 0.3 ~ 0.7MPa

Miniature Pneumatic Work Support

Model WNC0100

The World's Smallest Thread Size M16×1.0

Able to set into a narrow space, using multiple work supports prevents chattering and enables high quality finishing surface.

Work Support prevents chattering and deformation caused by thrust load during workpiece machining.



< With Work Support >

< Without Work Support >



PAT.

Cautions	
	Harmony in Innovation

Features

Features

Contact Bolt Design Dimensions Manifold Block

Miniature Work Support

Accessories

Cautions

Excellent machining quality with multiple work supports

WNC0100



Using multiple work supports prevents chattering and enables high quality finishing surface.

Hydraulic Work Support

Miniature Pneumatic Work Support WNC0100

• Application Examples



To avoid chattering of a thin workpiece



To back up a screw fastening machine, etc.



To support an uneven workpiece

Action Description



Pressure: OFF The state of plunger down.



Pressure : ON The plunger lifts up by supplying pressure and stops after touching the workpiece.



Pressure : ON The collet grips the plunger with pressure. After gripping, the plunger does not go down even if pressed from above.

C Model No. Indication



1 Body Size

016 : External Thread M16×1.0



2 Design No.

2 : Revision Number

3 Plunger Spring Force

- L : Low Spring Force
- ${\boldsymbol{\mathsf{H}}}$: High Spring Force

4 Options

Blank : Hydraulic Advance Model (Standard)

S : Hydraulic Advance Short Model

Specifications

Model No.			LD0162-🗆	LD0162-0-S	
Support Force (at 7MPa)			1.0	0.32	
Plunger Stroke		mm	5.0	4.0	
Effective Stroke		mm	4.7	3.7	
Cylinder Capacity		cm ³	0.15	0.07	
Plunger	L:Low Spring	Ν	1.2 ~ 1.7	1.0 ~ 1.6	
Spring Force	H: High Spring	Ν	1.5 ~ 2.4	1.2 ~ 2.4	
Max. Operating Press	ure	MPa	7.0		
Min. Operating Pressu	ıre	MPa	2.5	3.0	
Withstanding Pressur	e	MPa	10.5		
Usable Fluid			General Hydraulic Oil Equivalent to ISO-VG-3		
Operating Temperature			0~70		
Weight		g	40	30	

Features	Action Description	Model No. Indicatio Performance Curve / LD0162	External Dimensions WNC0100	Contact Bolt Design Dimensions Manifold Block	Cautions		DSMEK
© Performance	e Curve (LD0162-	🗆 :Hydraulic Adva	nce Model (Standard	d) / LD0162-□-S:Ну	/draulic Advance Sh	ort Model)	Miniature Work Support
Applicable Moc	lel						Accessories
	2 - L - S]					Cautions
							Miniature Hydraulic Work Support
1 B	ody Size 🛛 🛓	Options : In case	e of Blank, S				LD0162
_	-						Miniature Pneumatic Work Support
Support Force C	Graph ※ This graph	n shows the support fo	orce under static load	condition.			WNC0100



	Support F	orce (kN)
Model No.	LD0162-	LD0162-□-S
Hyd. Pressure (MPa)		
7	1.00	0.32
6.5	0.91	0.29
6	0.82	0.26
5.5	0.73	0.22
5	0.64	0.19
4.5	0.55	0.16
4	0.46	0.13
3.5	0.36	0.10
3	0.27	0.06
2.5	0.18	-
Support Force Formula ^{*1} kN	0.182×P-0.273	0.064×P-0.128

Note : %1. P: Hydraulic Pressure (MPa).

Load / Displacement Graph	* This graph shows the static load-displacement at the time of supplied hydraulic pressure 7MPa
	\approx 1115 yraddi 510ws the static 10au-yrsdiacement at the time of supplied fivulatic diessure / MFa





External Dimensions

※ This drawing shows the released state of LD0162-□ (before the plunger is lifted).





Machining Dimensions of Mounting Area



[※] A vent port is not required.

Note :

※1. When the work support touches a workpiece within 0.3mm stroke from the plunger retract-end, a larger force than the plunger spring force will be applied to the workpiece. Please use the work support within the effective stroke range.

Contact Bolt Dimensions



Features	Action Description	Model No. Indication / Specifications / Performance Curve / External Dimensions		Contact Bolt Design Dimensions	Cautions	KOSMEK
		LD0162	WNC0100	IVIAIIIIOIU DIOCK		Harmony in Innovation

C External Dimensions

※ This drawing shows the released state of LD0162-□-S (before the plunger is lifted).





※ A vent port is not required.



Note :

※1. When the work support touches a workpiece within 0.3mm stroke from the plunger retract-end, a larger force than the plunger spring force will be applied to the workpiece. Please use the work support within the effective stroke range.

Contact Bolt Dimensions



Model No. Indication



1 Support Force

010: Support Force 0.12 kN (Supply Air Pressure 0.5MPa)

2 Design No.

2 : Revision Number

3 Plunger Spring Force

- ${\bm L} \hspace{0.1 in}:\hspace{0.1 in} {\tt Low Spring Force}$
- H : High Spring Force

Specifications

Model No.			WNC0100-
Support Forco	at 0.7MPa		0.22
Support force	at 0.5MPa	kN	0.12
Plunger Stroke		mm	5.0
Effective Stroke		mm	4.7
Cylinder Capacit	у	cm ³	0.44
Plunger Spring Force	L: Low Spring	Ν	1.2 ~ 1.7
	H: High Spring	Ν	1.5 ~ 2.4
Max. Operating	Pressure	MPa	0.7
Min. Operating F	Pressure	MPa	0.3
Withstanding Pressure		MPa	1.0
Usable Fluid	Jsable Fluid		Dry Air
Operating Temp	erature	°C	0~70
Weight		g	40

	Features	Action Description	Model No. Indication Performance Curve / Ex LD0162	/ Specifications / xternal Dimensions WNC0100	Contact Bolt Design Dimensions Manifold Block	Cautions	K Harm	SMEK ony in Innovation
	© Performance	e Curve (WNC010	0-□:Air Advance M	odel)			I	Miniature Work Support
Applicable Medel								
								Cautions
	WNC 0	100-H						Miniature Hydraulic Work Support
		Support Force	2					LD0162
								Miniature Pneumatic Work Support
	Support Force (Graph	shows the support force	ce under static load o	condition.			WNC0100



	Support Force (kN)		
Model No.	WNC0100-		
Air Pressure (MPa)			
0.7	0.22		
0.65	0.20		
0.6	0.17		
0.55	0.15		
0.5	0.12		
0.45	0.09		
0.4	0.07		
0.35	0.04		
0.3	0.02		
Support Force Formula $^{\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!^{\times 1}}kN$	0.522×P-0.141		

Note : %1. P: Air Pressure (MPa).

Load / Displacement Graph * This graph shows the static load-displacement at the time of supplied air pressure 0.7MPa.





External Dimensions

※ This drawing shows the released state of WNC0100-□ (before the plunger is lifted).





• Machining Dimensions of Mounting Area



※ A vent port is not required.

Note :

※1. When the work support touches a workpiece within 0.3mm stroke from the plunger retract-end, a larger force than the plunger spring force will be applied to the workpiece. Please use the work support within the effective stroke range.

Contact Bolt Dimensions



Features	Action Description	Model No. Indication / Specifications / Performance Curve / External Dimensions		Contact Bolt Design Dimensions	Cautions	(IKOSMEK	
		LD0162	WNC0100	Manifold Block		Harmony in Innovation	
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Miniature Work Support

Accessories

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Miniature Hydraulic Work Support LD0162

Miniature Pneumatic Work Support WNC0100

Contact Bolt Design Dimensions

% Please use as reference in case contact bolts (attachment) other than the attached contact bolt are designed and manufactured by a customer. Please be sure to refer to "Notes on Contact Bolt (Attachment) Design".



Note: 1. Tightening torque of the contact bolt is 0.6N·m.

© Notes on Contact Bolt (Attachment) Design

• The weight of a contact bolt (attachment) has to be 30% or less of the plunger spring force.





Plunger direction either vertical or horizontal : Load ratio to the spring force has to be 30% or less.

 ex) In case of LD0162-L, the plunger spring force is 1.2 ~ 1.7N, and the maximum weight of a contact bolt becomes : 1.2 × 0.3/9.807=0.04kg.

It may vary depending on sliding resistance of the plunger and characteristic of the spring, so it is recommended to design a contact bolt as light as possible.

- Dimensions of the mounting thread part should be designed according to the contact bolt design dimensions.
- Contact bolt is also used to fix the plunger spring. Different thread dimensions cause spring force fluctuation and damage, resulting in a malfunction.



Features	Action Description	Model No. Indication / Specifications / Performance Curve / External Dimensions LD0162 WNC0100		Contact Bolt Design Dimensions Manifold Block	Cautions	

Plunger Spring Chamber Dimensions

- ※ Reference in case springs (except an attached plunger spring) are designed by a customer. When designing springs, please make sure to check "Notes on Contact Bolt (Attachment) Design".
- * This drawing shows at the released state.



				(mm)	
Corresponding Product Model	LD0162-	LD0162-□-S		Corresponding Product Model	WNC0100-□
FA	1.5	1.5		FA	1.5
FB	2.6	2.6		FB	2.6
FD	0.5	0.5		FD	0.5
FE	0.5	0.5		FE	0.5
FF **1	14	7.5		FF **1	14
FG *1	9	3.5		FG *1	9
Plunger Stroke	5	4		Plunger Stroke	5

Note: %1. When designing a spring, make sure that the spring set length is below FF dimension and the spring contact length is below FG dimension.

C Manifold Block



Notes :

- 1. Material: S45C Surface Finishing: Alkaline Blackening
- 2. Mounting bolts are not provided. Prepare mounting bolts according to the mounting height using the height of the block (26.5mm) as a reference.

Miniature Work Support

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Hydraulic Work Support

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LD0162

Cautions

- Notes for Design [LD0162 / WNC0100]
- 1) Check Specifications
- Please use each product according to the specifications.
- When using a work support opposite to the clamp, set the support force at more than 1.5 times the clamping force.



- 2) Install a temporary stopper for a workpiece if necessary.
- When multiple work supports are used for a light workpiece, the plunger spring force may be higher than the weight of the workpiece causing it to lift the workpiece.
- 3) Attachment Required for the Plunger
- You must set an attachment to the plunger top.
 Without the attachment, cutting fluid or other contaminants will enter into the product easily and cause malfunction.



- 4) Protect the plunger surface when using on a welding fixture.
 If spatter attaches to the plunger it may lead to sliding failure and insufficient supporting function.
- 5) For Using on a Lathe
- For usage that centrifugal force is applied, such as a lathe, please contact us.

- 6) Notes for Installation of Work Support (Threaded Model)
- The base should be horizontal to the bearing surface, and a load should be received on the base.
 By the following mounting methods, a load cannot be received on the base causing damage to the product and the increase of the displacement amount by load.
- Examples of Improper Use ① Work support is lifted up by tightening the nut, and it cannot receive the load on the bearing surface.



 The contact part of the bearing surface is not horizontal. The load cannot be received due to the gap. Moreover, there is a possibility of damaging equipment by tightening bolts.



③ Since the manifold block to receive the load is floated, the load cannot be received.



Example of Proper Use



Features	Action Description	Model No. Indicatio Performance Curve / LD0162	on / Specifications / External Dimensions WNC0100	Contact Bolt Design Dimensions Manifold Block	Cautions	
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Miniature Work Support

Accessories

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- LD0162 Miniature Pneumatic Work Support

WNC0100



 Usage as illustrated below will increase the displacement against load. Also large load will damage the internal parts.



- 8) The Weight of an Attachment
- When designing an attachment, make sure the attachment weight is 30% or less of the plunger spring force.



Plunger direction either vertical or horizontal : Load ratio has to be 30% or less.

m

- Ex.) In case of LC0162-L with the plunger spring force $1.2 \sim 1.7$ N. The maximum weight of the contact bolt = $1.2 \times 0.3 / 9.807 = 0.04$ kg Since it may vary depending on sliding resistance of the plunger and characteristic of the spring, it is recommended to design the contact bolt as light as possible.
- Dimensions of thread area of an attachment need to be designed according to the contact bolt design dimensions on P.11.
- Since a spring is built in the plunger, if dimensions of thread part are different, it will cause spring force fluctuation or damage leading to malfunction.

Notes for Design [LD0162]

- 9) Notes for Circuit Design
- Please read "Notes on Hydraulic Cylinder Speed Control Unit" on P.18 for proper hydraulic circuit design. Improper circuit design may lead to malfunctions and damages.
- Adjust the amount of hydraulic supply by installing a speed control valve with check valve to the hydraulic circuit.
- If the plunger ascends too fast, it may bounce back and lock itself resulting in a gap with a workpiece. Set the plunger action time at 0.5-1.0 sec. to adjust the hydraulic supply with the speed control valve with check valve (meter-in), and make sure that there is no gap with the workpiece before use.



- 11) Use a speed control valve with check valve that has 0.1MPa or less of cracking pressure.
- High cracking pressure will cause the plunger to descend improperly when releasing.

• Notes for Design 【WNC0100】

12) Notes for Circuit Design

 Please design the air circuit properly and review the circuit design in advance in order to avoid malfunction or breakage of the device.

The circuit should prevent projection, personal injury as well as damage to the equipment or device in case of emergency stops or system errors.

- 13) Adjust the amount of air supply by installing a speed control valve with check valve to the air circuit.
- If the plunger ascends too fast, it may bounce back and lock itself resulting in a gap with a workpiece. Set the plunger action time at 0.5-1.0 sec. to adjust the air supply with the speed control valve with check valve (meter-in), and make sure that there is no gap with the workpiece before use.



Cautions 🔍

- Installation Notes [LD0162 / WNC0100]
- 1) Procedure before Piping
- The pipeline, piping connector and fixture circuits should be cleaned and flushed thoroughly.
- Dust and cutting chips in the circuit can lead to fluid leakage and malfunction.
- There is no filter provided with this product for prevention of contaminants in hydraulic / air circuits.
- 2) Applying Sealing Tape
- Wrap with tape 1 to 2 times following the screwing direction.
 Wrapping in the wrong direction will cause fluid leakage and malfunction.
- Pieces of the sealing tape can lead to fluid leakage and malfunction.
 In order to prevent contaminants from going into the product
- during the piping work, it should be carefully cleaned before working.
- 3) Be careful not to damage the O-ring when installing the product.
- Do not damage the O-ring on the mounting bottom surface. Apply an adequate amount of grease to the mounting bottom surface. (If it is mounted under dry state, the O-ring may be damaged.)
- 4) Tightening Torque for Product Installation
- Tighten the product with the following torque.
 Excessive torque will deform the product and cause malfunction.

Tightening Torque for Installation of LD0162

Model No.	Thread Size	Tightening Torque (N • m)		
LD0162	M16×1.0	8		
Tightening Torque for Installation of WNC0100				
Model No. Thread Size		Tightening Torque (N • m)		

5

M16×1.0

5) Installation of Attachment

WNC0100

 Release the fluid supply to the work support, stop the plunger with a spanner at edge and tighten it with the following torque.



Model No.	Thread Size	Tightening Torque (N • m)	
LD0162	M3×0.5	0.6	
Model No.	Thread Size	Tightening Torque (N • m)	
WNC0100	M3×0.5	0.6	

Installation Notes [LD0162]

- 6) Check the Usable Fluid
- Please use the appropriate fluid by referring to the following Hydraulic Fluid List.

Hydraulic Fluid List

	ISO Viscosity Grade ISO-VG-32		
Maker	Anti-Wear Hydraulic Oil	Multi-Purpose Hydraulic Oil	
Showa Shell Sekiyu	Tellus S2 M 32	Morlina S2 B 32	
Idemitsu Kosan	Daphne Hydraulic Fluid 32	Daphne Super Multi Oil 32	
JX Nippon Oil & Energy	Super Hyrando 32	Super Mulpus DX 32	
Cosmo Oil	Cosmo Hydro AW32	Cosmo New Mighty Super 32	
ExxonMobil	Mobil DTE 24	Mobil DTE 24 Light	
Matsumura Oil	Hydol AW-32		
Castrol	Hyspin AWS 32		

Note : Please contact manufacturers when customers require products in the list above.

- 7) Air Bleeding of the Hydraulic Circuit
- If the hydraulic circuit has excessive air, the action time may become very long. If air enters the circuit after connecting the hydraulic port or under the condition of no air in the oil tank, please perform the following steps.
- 1 Reduce hydraulic pressure to less than 2MPa.
- ② Loosen the cap nut of pipe fitting closest to the work support by one full turn.
- ③ Shake the pipeline to loosen the outlet of pipe fitting.Hydraulic fluid mixed with air comes out.
- 8) Adjustment of Hydraulic Supply Amount
- If the plunger ascends too fast, it may bounce back and lock itself resulting in a gap with a workpiece. Set the plunger action time at 0.5-1.0 sec. to adjust the hydraulic supply with the speed control valve with check valve (meter-in), and make sure that there is no gap with the workpiece before use.

Installation Notes [WNC0100]

- 9) Check the Usable Fluid
- Please supply filtered clean dry compressed air. Install the drain removing device such as an aftercooler, air dryer, and etc.

Since the initial lubricant is applied, oil supply with a lubricator, etc. is unnecessary. If oil is supplied with a lubricator, the product ability decreases and the plunger operation may be unstable due to the loss of the initial lubricant.

10) Adjustment of Air Supply Amount

If the plunger ascends too fast, it may bounce back and lock itself resulting in a gap with a workpiece. Set the plunger action time at 0.5-1.0 sec. to adjust the air supply with the speed control valve with check valve (meter-in), and make sure that there is no gap with the workpiece before use.

Cautions



Miniature Work Support

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Notes on Handling

- 1) It should be operated by qualified personnel.
- The hydraulic machine and air compressor should be operated and maintained by qualified personnel.
- 2) Do not operate or remove the product unless the safety protocols are ensured.
- The machine and equipment can only be inspected or prepared when it is confirmed that the safety devices are in place.
- ② Before the product is removed, make sure that the above-mentioned safety devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
- ③ After stopping the product, do not remove until the temperature drops.
- ④ Make sure there is no abnormality in the bolts and respective parts before restarting the machine or equipment.
- Do not touch the plunger while the work support is working. Otherwise, your hands may be injured due to clinching.



- 4) Do not disassemble or modify.
- If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.



Cautions

- Maintenance and Inspection
- 1) Removal of the Product and Shut-off of Pressure Source
- Before removing the product, make sure that safety devices and preventive devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
- Make sure there is no abnormality in the bolts and respective parts before restarting.
- 2) Regularly clean the area around the plunger.
- If it is used when the surface is contaminated with dirt, it may increase sliding friction and cause supporting malfunction.



- In case of LD Work Support : If disconnecting by couplers, air bleeding should be carried out on a regular basis to avoid air mixed in the circuit.
- 4) Regularly tighten pipe fitting, attachment, work support and others to ensure proper use.
- 5) In case of LD Work Support : Make sure the hydraulic fluid has not deteriorated.
- 6) In case of WNC Pneumatic Work Support : Make sure to supply filtered clean dry air.
- 7) Make sure there is a smooth action without an irregular noise.
- Especially when it is restarted after left unused for a long period, make sure it can be operated correctly.
- 8) The products should be stored in the cool and dark place without direct sunshine or moisture.
- 9) Please contact us for overhaul and repair.

Warranty

- 1) Warranty Period
- The product warranty period is 18 months from shipment from our factory or 12 months from initial use, whichever is earlier.
- 2) Warranty Scope
- If the product is damaged or malfunctions during the warranty period due to faulty design, materials or workmanship, we will replace or repair the defective part at our expense.
 Defects or failures caused by the following are not covered.
- ① If the stipulated maintenance and inspection are not carried out.
- ② If the product is used while it is not suitable for use based on the operator's judgment, resulting in defect.
- ③ If it is used or operated in an inappropriate way by the operator. (Including damage caused by the misconduct of the third party.)
- 4 If the defect is caused by reasons other than our responsibility.
- ⑤ If repair or modifications are carried out by anyone other than Kosmek, or without our approval and confirmation, it will void warranty.
- ⑥ Other caused by natural disasters or calamities not attributable to our company.
- ⑦ Parts or replacement expenses due to parts consumption and deterioration.

(Such as rubber, plastic, seal material and some electric components.)

Damages excluding from direct result of a product defect shall be excluded from the warranty.

LD0162



Notes on Hydraulic Cylinder Speed Control Unit



Accessories Please pay attention to the cautions below. Design the hydraulic circuit for controlling the action speed of hydraulic cylinder. Improper circuit design may lead to malfunctions and damages. Please review the circuit design in advance.

Flow Control Circuit for Single Acting Cylinder

For spring return single acting cylinders, restricting flow during release can extremely slow down or disrupt release action. The preferred method is to control the flow during the lock action using a valve that has free-flow in the release direction.

It is also preferred to provide a flow control valve at each actuator which has limited action speed (swing clamp, hydraulic compact cylinder, etc.)



Accelerated clamping speed by excessive hydraulic flow to the cylinder may sustain damage. In this case add flow control to regulate flow. (Please add flow control to release flow if the lever weight is put on at the time of release action when using swing clamps.)



Flow Control Circuit for Double Acting Cylinder

Flow control circuit for double acting cylinder (except LKE/TLA/TMA) should have meter-out circuits for both the lock and release sides. Meter-in control can have adverse effect by presence of air in the system.

However, in the case of controlling LKE, TLA, TMA, both lock side and release side should be meter-in circuit.

Refer to KWCS Complete Catalog for speed adjustment of LKE. For TLA and TMA, abnormal high pressure is created in case of meter-out circuit, which causes oil leakage and breakage.

[Meter-out Circuit] (Except LKE/TLA/TMA)



[Meter-in Circuit] (LKE/TLA/TMA must be controlled with meter-in.)



In case of meter-out circuit, hydraulic circuit should be designed considering the following points.

① Single acting components should not be used in the same flow control circuit as the double acting components. The release action of the single acting cylinders may become erratic or very slow.



Refer to the following circuit when both the single acting cylinder and double acting cylinder are used together. ○ Separate the control circuit.



○ Reduce the influence of double acting cylinder control unit. However, single acting cylinder may be activated after double acting cylinder due to the back pressure in tank line.



② In case of meter-out circuit, the inner circuit pressure may increase during the cylinder action because of the fluid supply. The increase of the inner circuit pressure can be prevented by reducing the supplied fluid beforehand via the flow control valve. Especially when using sequence valve or pressure switches for clamping detection. If the back pressure is more than the set pressure then the system will not work as it is designed to.



Cautions

Miniature

Work Support



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For Further Information on Unlisted Specifications and Sizes, Please call us. Specifications in this Leaflet are Subject to Change without Notice.



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