FA Pneumatic Hole Clamp

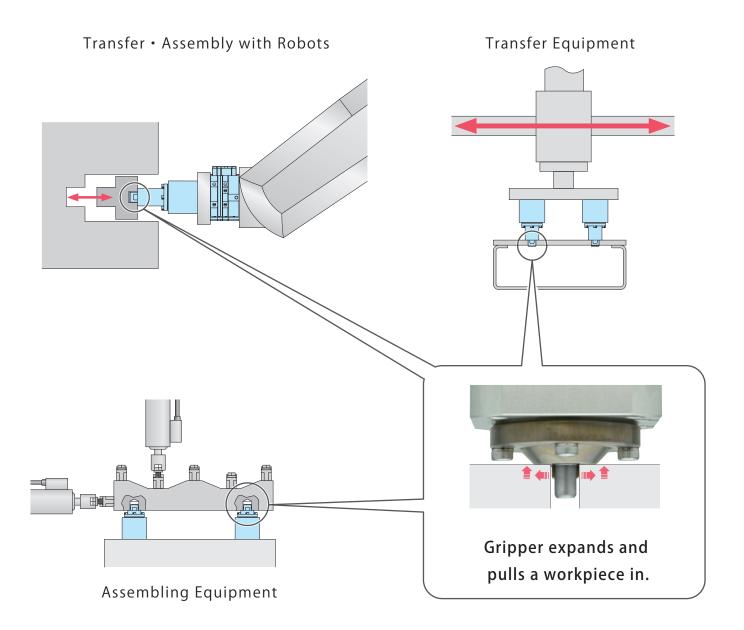
Model WKH

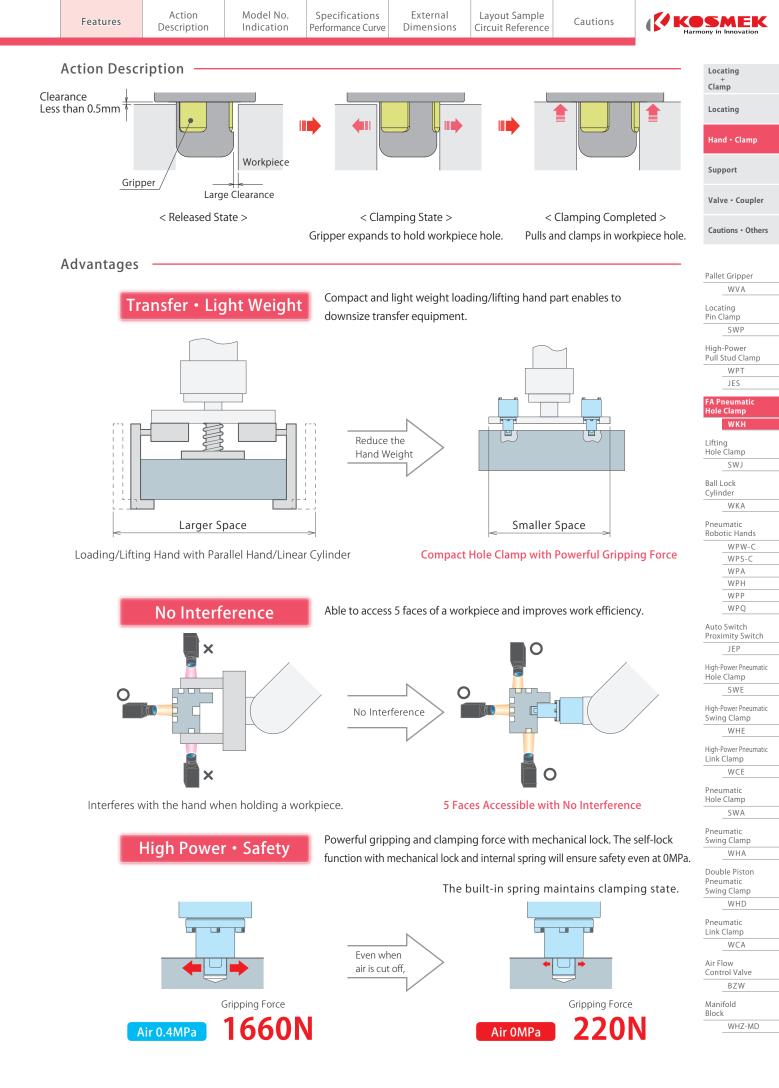


Gripper expands and pulls a workpiece in.

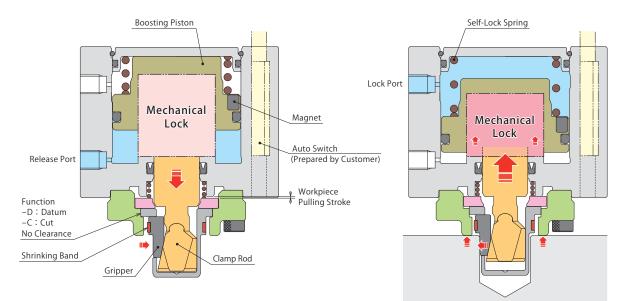
Clamps a workpiece by holding its holes, allowing for 5 faces accessible. Light Weight, Smaller Footprint, and High Power

PAT.





C Action Description * This is a simplified drawing. The actual part components may be different.

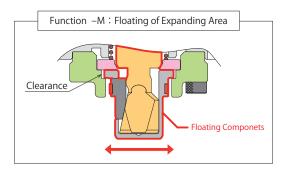


When Loading / Unloading (Release)

1 Air is supplied to the release port.

 ② Air pressure releases the internal mechanical lock and moves the clamp rod forward. The gripper will be retracted.

Ť

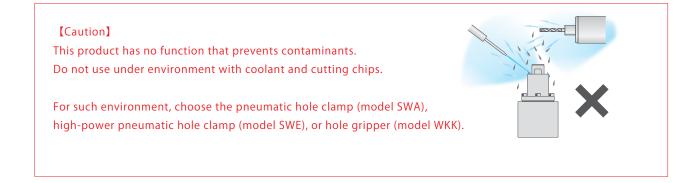


When Gripping / Clamping (Lock)

 Release air to the release port and supply air to the lock port.

 The internal mechanical lock with self-locking spring force and air pressure powerfully pulls in the clamp rod. The gripper will be expanded.

③ After the gripper holds a workpiece, the pulling force pulls in the workpiece onto the seating surface. (Clamping Force = Pulling Force toward Seating Surface)



Features	Action Description	Model No. Indication	Specifications Performance Curve	External Dimensior		out Sample It Reference	Cautions	K Har	DSMEK mony in Innovation
C Auto Swite	ch								Locating + Clamp
Locking actior	n and releasing acti	on can be dete	ected by an auto s	witch (prepai	ed by cust	omer).			Locating
-	-		·						Hand • Clamp
Installation Sa	mple 1		Insta	llation Samp	ole 2				Support
		18-8°				0			Valve • Coupler
		D KOSMEK							Cautions • Others
			Auto Switch				Auto Sv	witch	Pallet Gripper
			\	_	2		·		 Locating
									Pin Clamp SWP
Note :									High-Power Pull Stud Clamp
	pending on differen Ising the auto switch						n be insufficient.		WPT JES
ii u	ISING the auto switch	I (JEF), WUIKPIEC	e noie uidmeter um	lefence should	I De within	±0.mm.			FA Pneumatic Hole Clamp
(Applicable Au	to Switch / High	n-Accuracy S	ensor for Air Cy	linder】					WKH
					Wiring	Cable		Protection	Lifting Hole Clamp
Switch Type	Model No.	Output M	ethod		Method	Length	Shape	Grade	SWJ Ball Lock
						_	Straight		Cylinder WKA
	JEP0000-B2					1m			Pneumatic Robotic Hands
							KOSMEK - 49-82		WPW-C
	JEP0000-B2L	Non Cont			2 Miro	3m			WPS-C WPA
	JEP0000-B3C	NON-CON	act : NPN Output		3-Wire	1	L Shaped		WPH WPP
Auto Switch	JEPUUUU-DJC					1m		IP67	WPQ Auto Switch
Auto Switch	JEP0000-B3CL					3m	And a state of the	IF U7	Proximity Switch
	JEI 0000-DJCE					3m			High-Power Pneumatic

High-Power Pneumatic Hole Clamp SWE

L Shaped

Straight

L Shaped

1m

3m

1m

2-Wire

3-Wire

High-Power Pneumatic Swing Clamp WHE

High-Power Pneumatic Link Clamp WCE

Pneumatic Hole Clamp

SWA Pneumatic

Swing Clamp WHA

IP67

Double Piston Pneumatic Swing Clamp WHD

Pneumatic Link Clamp

WCA Air Flow Control Valve BZW

Manifold Block WHZ-MD

1. For further information, please refer to the following product pages.

JEP0000-B3B

JEP0000-B3BL

JES0000-02GN

JES0000-02GS

JES0000-02GPN

JES0000-02GPS

JES0000-02LGN

JES0000-02LGS

JES0000-02LGPN

JES0000-02LGPS

High-Accuracy

Air Cylinder ^{*1}

Sensor for

Notes :

Auto Switch (JEP): P.405-P.414, High-Accuracy Sensor for Air Cylinder (JES): P.287-P.290

Non-Contact

When using an auto switch not made by Kosmek, check specifications of each manufacture.

Auto Switch / High-Accuracy Sensor for Air Cylinder may be stuck out of the clamp depending on the installation position and direction.
 The detection range of High-Accuracy Sensor for Air Cylinder (JES) is different from Auto Switch (JEP), and even small stroke can be securely detected by JES. Refer to "Performance Curve" on the JES catalog for further information.

Non-Contact : NPN Output N-Pole Sensor^{**}2

Non-Contact : NPN Output S-Pole Sensor^{**}2

Non-Contact : PNP Output N-Pole Sensor^{**2}

Non-Contact : PNP Output S-Pole Sensor^{%2}

Non-Contact : NPN Output N-Pole Sensor^{**}2

Non-Contact : NPN Output S-Pole Sensor^{%2}

Non-Contact : PNP Output N-Pole Sensor^{%2}

Non-Contact : PNP Output S-Pole Sensor^{%2}

*2. When detecting both lock and release actions with High-Accuracy Sensor for Air Cylinder (JES), both N-pole sensor and S-pole sensor are required.

🔍 Model	No. Indica	tion					
W	(H 2 (001.	- 11	5 –	D –	– F B	
		2	3		4	5 6 7	
1 Boo	dy Size						
2	: Standard						
2 De	sign No.						
1	: Revision N	umber					
	rkpiece Ho		er (Workn	iece H	ole Code)		
	orkpiece Hole Code	-					
L	* Indicate the work				m the allowable		
	range in the list b When using with		orkpiece hole dia	meter differ	ence should be		
=	within ±0.1mm. % The allowable tole	=				Workpiece Hole Diameter ϕ d	
		efer to the Workpi			lowable Tolerance	Workpiece Hole Shape: Straig	ht Workpiece Hole Shape: Tapered
	piece Hole Code	060 065			90 095 100 105		
	^p iameter ϕ d $^{\pm 0.3}$ (n per hole model is r		7 7.5 8 /orkpiece Hole		9 9.5 10 10.5).	11 11.5 12 12.5 13 13	3.5 14
_	nctions		·				
D	:Datum (F	or Reference l	ocating)		D	с	М
C		One Direction	-			Gripper	
Μ		Expanding Are			on)		
_	When using it with VWM, VWK, VRA, V	/RC, VX, etc.) plea	ase select Func	tion M .			Floating
	Norkpiece Hole Code Funtion D	060 ~ 085 Not Available	090 ~ 14 Available		Datum Reference Loo		Floating of Expanding Area Expanding area follows a workpiece hole.
-	Funcion	Available	No. of Gripper	7:3			
_	Funtion C	No. of Gripper : 2		r : 2	₩ When roughly lo		040 095
	Funtion M	Available No. of Gripper:2	Available No. of Gripper	r:3		cating with workpiece hole code amp Installation".	2 000~083,
5 Sea	iting Heigh	nt Dimens	ion				
Blan		Standard Hei					
H Sea			-	t (ln 10m	im increments)	Sandard AA ±0.06	
	Blank				(mm)	Mard A	900 900
	(Standard)	H10 H20			H50	start star	
	AA 50 AB 10	60 70 20 30	80 40	90 50	100 60	Seating Seating	Specified Height H □ AB ±0.06
	I					Seating Surface	Checified Photometry
6 Sha	pe of Grip	per (Work	niece Ho	ole)		stands	Seating Surface
F	-	ion (Standard		,	F	S	т
S	: With Serra						T T
Т	: Taper Hole	(With Serration	ו) ※ Contact us for	details.			Slope Angle (Less than 3°)
				_	No Serration Standard	With Serration Digs into and powerfully	Taper Hole
7 Sha	pe of Cap	End			Standard	clamps a workpiece.	
	k · Standard		م ط م ا		Dlauk	В	
В		(Low Head M	odel)		Blank	D	
0	Cone Poir		odel)				When inserting the cap adjusting to a workpiece hole, it should be within
0			odel)		Low Head Model		When inserting the cap adjusting to a workpiece hole, it should be within the floating range, or a workpiece should be light and not fixed.

Features	Action Description	Model No. Indication	Specifications Performance Curve	External Dimensions	Layout Sample Circuit Reference	Cautions	

Specifications

Model I	No.									WI	KH20	01							
	3 Workpiece Hole Co		060	065	070	075	080	085	090	095	100	105	110	115	120	125	130	135	140
	6 Workpiece	Workpiece Hole Diameter $\phi d^{\pm 0.3}$ mr	n 6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14
	Hole Shape S/F	Hardness					Le	ss tha	an HB	3250 (Whe	n Sel	ectin	g 6	S)				
Machine	•	Hole Mouth Diameter ϕdmr	n -	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14
Part	6 Workpiece	Allowable Tolerance of Hole Mouth Diame	er Pl	Please Refer to Workpiece Hole Slope Angle and Allowable Tolerance of Hole Mouth Diameter															
	Hole Shape T	Workpiece Hole Slope Angle		shown in the table below.															
		Hardness		Less than HB250															
Locatin	g Repeatability ^{%1}	n					0.03	(Wh	en Co	ombi	ning	4 D)/C)						
Allowable	e Offset (Floating Clearance of	of Expanding Area) ^{※2} mr	ח ±0.	3 (Wł	nen S	electi	ing 🛛	M)			±	0.5 (\	Wher	n Sele	ecting	14 N	N)		
Workpi	ece Pulling Stroke	mr	n	0.5															
Cylinde	er Capacity	Release Side cm	3	8.9															
(Empty	(Action)	Lock Side cm	3	8.5															
Maxim	um Operating Pressu	re MP	a	0.5															
Minimu	um Release Pressure	MP	a								0.2								
Withsta	anding Pressure	MP	a								0.75								
Operati	ing Temperature	0	2							0	~ 7	0							
Usable	Fluid			Dry Air															
Weight				F	leas	e ref	er to	Exte	ernal	Dim	ensi	ons	for tl	he pi	rodu	ct we	eigh	t.	
Notor'																			

Notes:

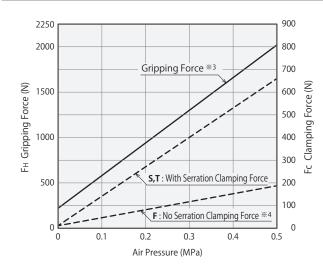
%1. Locating repeatability under the same condition (no load).

※2. The expanding part of option M is an adjusting structure and the clamping operation is done by locating a workpiece hole. The value in the table shows the amount of tolerance value of single clamp. Please consider the distance accuracy of each clamp mounting hole and each workpiece machining hole when using with another location clamp / location cylinder, or when using more than two of these products.

Workpiece Hole Slope Angle and Allowable Tolerance of Hole Mouth Diameter	Workpiece Hole Code	Slope Angle θ	Allowable Tolerance of Hole Mouth Diam.
C0.5 or less Slope Angle θ	$065 \sim 085$	$1 \leq \theta^{\circ} \leq 2.5$	ϕ d $^{\pm 0.3}$
	005~085	$2.5 < \theta^{\circ} \leq 3$	$\phi d^{+0.3}_{-0.15}$
		$1 \leq \theta^{\circ} \leq 2$	$\phi d^{\pm 0.3}$
	090	$2 < \theta^{\circ} \leq 2.5$	$\phi d^{+0.3}_{-0.15}$
		$2.5 < \theta^{\circ} \leq 3$	$\phi d^{+0.3}_{0}$
Hole Mouth Diameter ϕ d	095~140	$1 \leq \theta^{\circ} \leq 2.5$	$\phi d^{\pm 0.3}$
* Please contact us when the slope angle is less than 1°	095~ 140	$2.5 < \theta^{\circ} \leq 3$	$\phi d^{+0.3}_{-0.15}$

Gripping Force • Clamping Force Curve

Model No.		WKH	2001					
	6 Shape of Gripper	F: No Serration	S,T : With Serration					
	Air Pressure 0.5 MPa	2020						
	Air Pressure 0.4 MPa	16	60					
	Air Pressure 0.3 MPa	1300						
Gripping Force **3 N	Air Pressure 0.2 MPa	94	40					
	Air Pressure 0 MPa	22	20					
	Calculation Formula *5	FH = 3600 × P + 220						
	Air Pressure 0.5 MPa	188	660					
	Air Pressure 0.4 MPa	152	530					
Clamping Force **4	Air Pressure 0.3 MPa	117	400					
(Workpiece Pulling Force)	Air Pressure 0.2 MPa	81	270					
(Air Pressure 0 MPa	10	10					
	Calculation Formula *5	$F_{C} = 355 \times P + 10$	$F_{C} = 1300 \times P + 10$					



Fн: Gripping Force

Fc: Clamping Force

Notes :

- 1. This graph shows the relationship among supply air pressure, gripping force and clamping force.
- 2. Gripping force shows the expanding force acting perpendicular to the clamp's center axis. Clamping force shows the pressing force against the seating surface.
- Thin wall around the workpiece hole can be deformed by clamping action, gripping force and clamping force will not fill the specification.
- **3. Gripping force shows the calculated value when the friction coefficient of expanding area is μ 0.15.
- %4. Clamping force of F: No Serration shows the calculated value when the friction coefficient of workpiece and gripper is μ 0.1.
- %5. FH: Gripping Force (N), FC: Clamping Force (N), P: Supply Air Pressure (MPa).

Pallet Gripper WVA

EK

Locating

Hand • Clamp

Valve • Coupler

Cautions • Others

Support

Clamp Locating

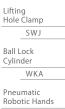
Locating Pin Clamp SWP

High-Power Pull Stud Clamp

WPT JES

FA Pneumati Hole Clamp

WKH



WPW-C WPS-C WPA WPH WPP WPQ

Auto Switch Proximity Switch JEP

High-Power Pneumatic Hole Clamp

SWE High-Power Pneumatic

Swing Clamp WHE

High-Power Pneumatic

Link Clamp WCE

Pneumatic

Hole Clamp SWA

Pneumatic Swing Clamp WHA

Double Piston Pneumatic Swing Clamp

WHD Pneumatic Link Clamp

WCA Air Flow Control Valve

BZW Manifold Block

* Expanding Area Detail

External Dimensions

* The drawing shows the released state of WKH2001- - D-F.

4-M5×0.8 $2-\phi7.5g7 - 0.005$ Thread Depth 10 Clamp Area Clamp Area Locating Pin (Included) ₹₩5 (Recommended to use 2 parts diagonally.) 16±0.02 Ô 8 16 ± 0.02 ×4 ×4 Clamp Diameter Clamp Diameter At Full Stroke 4-φ7.5 Released State (Empty Action) (Locating Pin 16^{±0.02} 16^{±0.02} Mounting Hole) Air Lock Port^{%2} Seating Height: Standard (*φ* 7.5<u>g</u>7) Specified Seating Height: H 🗔 *3 M5×0.8 Thread Depth 4 10 10 \simeq 10 40 Air Release Port^{%2} $AA \pm 0.06$ 40 18 M5×0.8 Thread Depth 4 AA ±0.06 Workpiece Hole (Gripper) Shape: T AB ±0.06 ±0.06 - 1990 h 8 AB മ R1 φA Guide End Diameter $: \phi A$ Ξ Gripper Seating Surface Inside Diameter : ϕG φF ϕ 37.5g7 $^{-0.009}_{-0.034}$ 4-φ4.3 Notes : 1. Mounting bolts are not provided. (🕀 Please prepare them according to the mounting position. (Refer to "Mounting Hole Clamp" on P.305.) 2. This product locks with air pressure and self-locking spring 32 □45 and releases with air pressure. (When air drops to 0MPa, it will be in the locked state with gripper expansion.) %1. The workpiece must be resting on all seating surfaces when clamping. Otherwise the workpiece can be (由 \$55 deformed by the clamping force. %2. The name of each port is marked on the port. (LOCK: Air Lock Port, RELEASE: Air Release Port) 6-*ф* 4.3 Seating Surface^{%1} 3 3 %3. Please refer to Seating Height: Standard for dimensions Auto Switch 17 that is not shown. Mounting Slot %4. For -T: Taper Hole model, the first gripper ridge is the reference diameter. Workpiece (Pallet) Hole Dimensions Workpiece Hole End Diameter φd

Notes :

Slope Angle

(3° or less)

Taper Hole *4

1. Thin wall around the workpiece hole can be deformed by clamping action, gripping force and clamping force will not fill the specification.

Please make sure to test the clamping function before using and adjust to the appropriate supply of pressure.

B+0.5 or more

Workpiece Hole Diameter

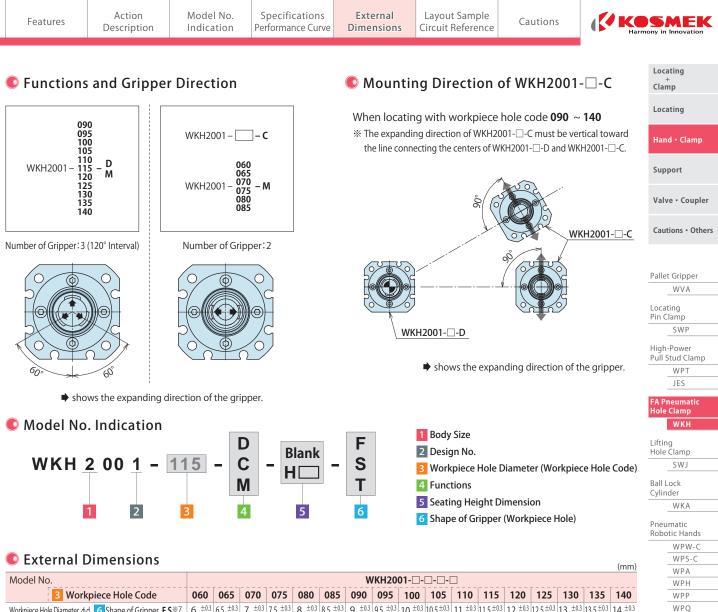
φd

Stop Hole

Workpiece Hole Diameter

φd

Through Hole



3 Work	piece Hole Code	060	065	070	075	080	085	090	095	100	105	110	115	120	125	130	135	140
Workpiece Hole Diameter ϕ d	6 Shape of Gripper F,S ^{%7}	6 ±0.3	6.5 ±0.3	7 ±0.3	7.5 ±0.3	8 ±0.3	8.5 ±0.3	9 ±0.3	9.5 ±0.3	10 ±0.3	10.5 ^{±0.3}	11 ±0.3	11.5 ^{±0.3}	12 ±0.3	12.5 ±0.3	13 ± 0.3	13.5 ^{±0.3}	14 ±0.3
Clamp Diameter	At Release	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5
6 Shape of Gripper F,S	At Idle	6.8	7.3	7.8	8.3	8.8	9.3	9.8	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.8	14.3	14.8
Clamp Diameter	At Release	-	5.7	6.2	6.7	7.2	7.7	8.2	8.5	9	9.5	9.95	10.45	10.95	11.45	11.95	12.45	12.95
6 Shape of Gripper T	At Idle	-	7	7.5	8	8.5	9	9.5	9.8	10.3	10.8	11.25	11.75	12.25	12.75	13.25	13.75	14.25
Workpiece Pulling S	Stroke									0.5								
	A	5.6	6.1	6.6	7.1	7.6	8.1	8.6	9.1	9.6	10.1	10.6	11.1	11.6	12.1	12.6	13.1	13.6
6 Channe of Crimmon F C	В	8	8	8	8	8	8	9.5	9.5	9.5	11	11	11	11	11	11	11	11
6 Shape of Gripper F , S	C	2	2	2.5	2.5	3	3	4.5	4.5	5	5	5.5	5.5	6	6	6.5	6.5	7.5
	E	3.3	3.3	3.3	3.3	3.3	3.3	4.3	4.3	4.3	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
	A	-	6	6.5	7	7.5	8	8.6	9	9.5	10	10.4	10.9	11.4	11.9	12.4	12.9	13.4
C Channel Crimmer T	В	-	8	8	8	8	8	9.5	9.5	9.5	9.5	11	11	11	11	11	11	11
6 Shape of Gripper T	С	-	2	2	2.5	2.5	3	4.5	4.5	4.5	5	5	5	5.5	5.5	6	6.5	6.5
	E	-	3.3	3.3	3.3	3.3	3.3	4.3	4.3	4.3	4.3	5.8	5.8	5.8	5.8	5.8	5.8	5.8
F		15	16	16	17	17	17	19	20	20	21	21	22	22	23	23	24	24
G		9.5	10.5	10.5	11.5	11.5	12	13.5	14.5	14.5	15.5	15.5	16.5	16.5	17.5	17.5	18.5	18.5
4 Function D			N	lot Av	/ailabl	0							0.02					
Locating Repeat	ability ^{%5}		N	IUL AI	allaDi	C							0.03					
4 Function M Allowable Offset (Floating (learance of Expanding Area) %6			±	0.3								±0.5					

Notes: %5. Locating repeatability under the same condition (no load).

Allowable Offset (Floating Clearance of Expanding Area) $^{\otimes 6}$

%6. The clamping part is an adjusting structure and the clamping operation is done by locating a workpiece hole. The value in the table shows the amount of tolerance value of single clamp. Please consider the distance accuracy of each clamp mounting hole and each workpiece machining hole when using with another location clamp / location cylinder, or when using more than two of these products.

 *7. For -T:Taper Hole model, the allowable tolerance of the hole mouth diameter differs depending on the slope angle. (Refer to P.296.)

5 Seating Height Dimension	Standard Seating Height		Specifie	d Seating	g Height	
5 Seating Reight Dimension	Blank	H10	H20	H30	H40	H50
AA	50	60	70	80	90	100
AB	10	20	30	40	50	60
Weight kg	0.30	0.32	0.34	0.36	0.38	0.40

WHZ-MD

Auto Switch Proximity Switch JEP High-Power Pneumatic Hole Clamp SWE High-Power Pneumatic Swing Clamp WHE High-Power Pneumatic Link Clamp WCE Pneumatic Hole Clamp SWA Pneumatic Swing Clamp WHA Double Piston Pneumatic

Swing Clamp

Pneumatic

Link Clamp

Air Flow

Manifold Block

Control Valve BZW

WHD

WCA

External Dimensions

* The drawing shows the released state of WKH2001- - D-FB.

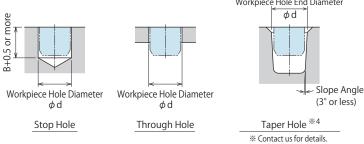
4-M5×0.8 Thread Depth 10 $2-\phi$ 7.5g7 $^{-0.005}_{-0.020}$ Clamp Area Clamp Area Locating Pin (Included) ₹₩5 (Recommended to use 2 parts diagonally.) 16±0.02 (B 8 C 16 ± 0.02 24 Clamp Diameter ×4 Clamp Diameter At Full Stroke 4-φ7.5 Released State (Empty Action) (Locating Pin 16^{±0.02} 16^{±0.02} Mounting Hole) Air Lock Port^{%2} Specified Seating Height: H 🗌 * 3 Seating Height: Standard (\$\phi_7.5g7\$) M5×0.8 Thread Depth 4 10 10 \simeq 10 40 Air Release Port^{%2} $AA \pm 0.06$ 40 18 M5×0.8 Thread Depth 4 $AA \pm 0.06$ Workpiece Hole (Gripper) Shape: T AB ±0.06 * AB±0.06 188 138 £ R1 φA 30 മ Gripper φD Guide End Diameter $: \phi A$ Seating Surface Inside Diameter : ϕG φF ϕ 37.5g7 $^{-0.009}_{-0.034}$ Notes : 4-φ4.3 1. Mounting bolts are not provided. Please prepare them according to the mounting position. (\oplus) (Refer to "Mounting Hole Clamp" on P.305.) 2. This product locks with air pressure and self-locking spring and releases with air pressure. (When air drops to OMPa, 345 32 it will be in the locked state with gripper expansion.) %1. The workpiece must be resting on all seating surfaces when clamping. Otherwise the workpiece can be (Ò deformed by the clamping force. \$55 *2. The name of each port is marked on the port. (LOCK: Air Lock Port, RELEASE: Air Release Port) 3 3 6-*ф* 4.3 Seating Surface^{*1} ※3. Please refer to Seating Height: Standard for dimensions Auto Switch 17 that is not shown. **Mounting Slot** %4. For -T: Taper Hole model, the first gripper ridge is the reference diameter. Workpiece (Pallet) Hole Dimensions Workpiece Hole End Diameter

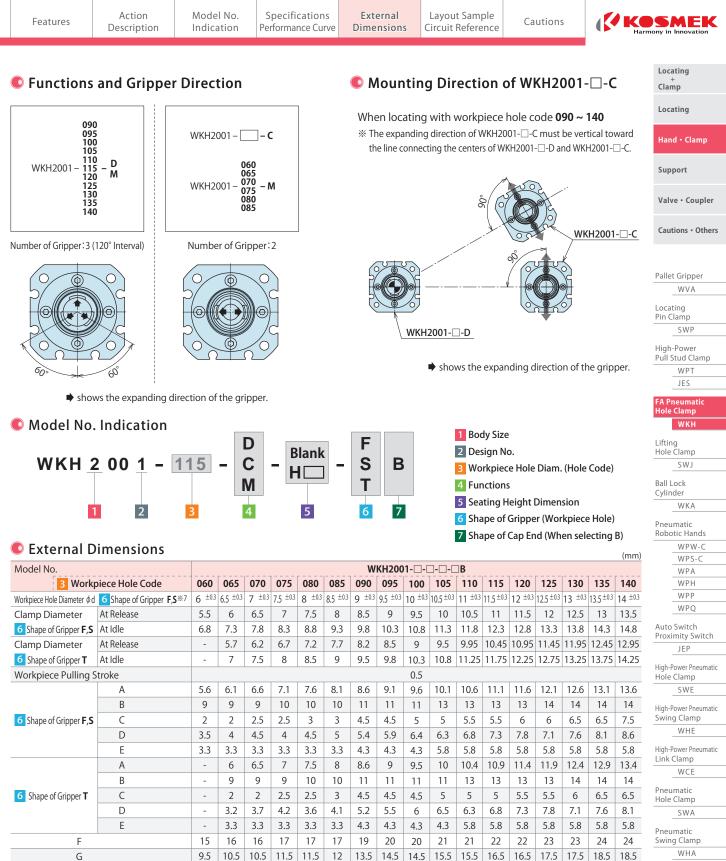
* Expanding Area Detail

Notes :

 Thin wall around the workpiece hole can be deformed by clamping action, gripping force and clamping force will not fill the specification.

Please make sure to test the clamping function before using and adjust to the appropriate supply of pressure.





 G
 9.5
 10.5
 11.5
 11.5
 12
 13.5
 14.5
 15.5

 4 Function D Locating Repeatability^{%5}
 Not Available

 4 Function M
 ±0.3

Allowable Offset (Floating Clearance of Expanding Area) $^{st 6}$

Notes: %5. Locating repeatability under the same condition (no load).

**6. The clamping part is an adjusting structure and the clamping operation is done by locating a workpiece hole. The value in the table shows the amount of tolerance value of single clamp. Please consider the distance accuracy of each clamp mounting hole and each workpiece machining hole when using with another location clamp / location cylinder, or when using more than two of these products.

0.03

 ± 0.5

%7. For -T:Taper Hole model, the allowable tolerance of the hole mouth diameter differs depending on the slope angle. (Refer to P.296.)

5 Seating Height Dimension	Standard Seating Height		Specifie	d Seating	g Height	
5 Seating height Dimension	Blank	H10	H20	H30	H40	H50
AA	50	60	70	80	90	100
AB	10	20	30	40	50	60
Weight kg	0.30	0.32	0.34	0.36	0.38	0.40

Double Piston

Swing Clamp

WHD

BZW

WHZ-MD

Pneumatic

Pneumatic

Link Clamp WCA

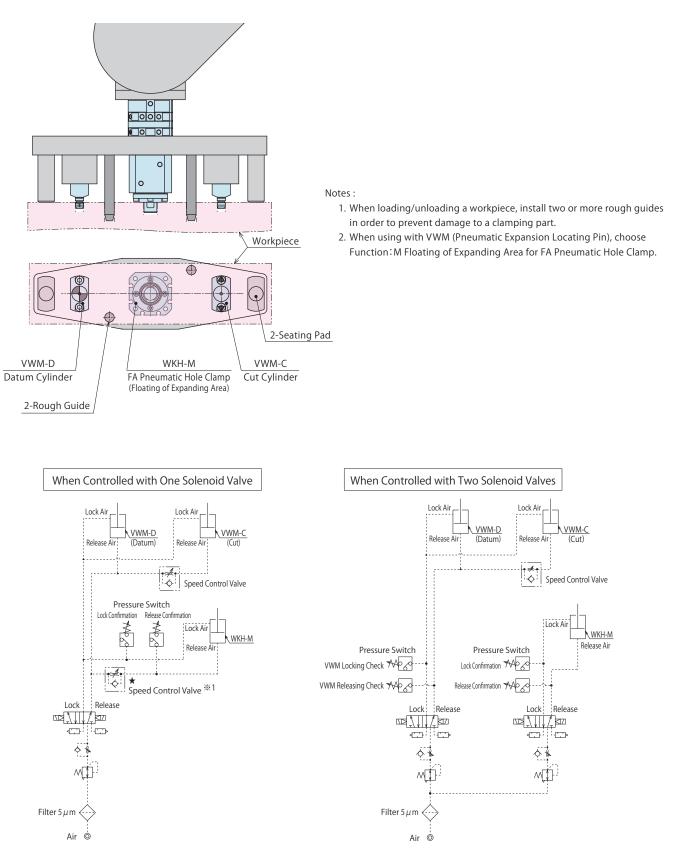
Air Flow Control Valve

Manifold

Block

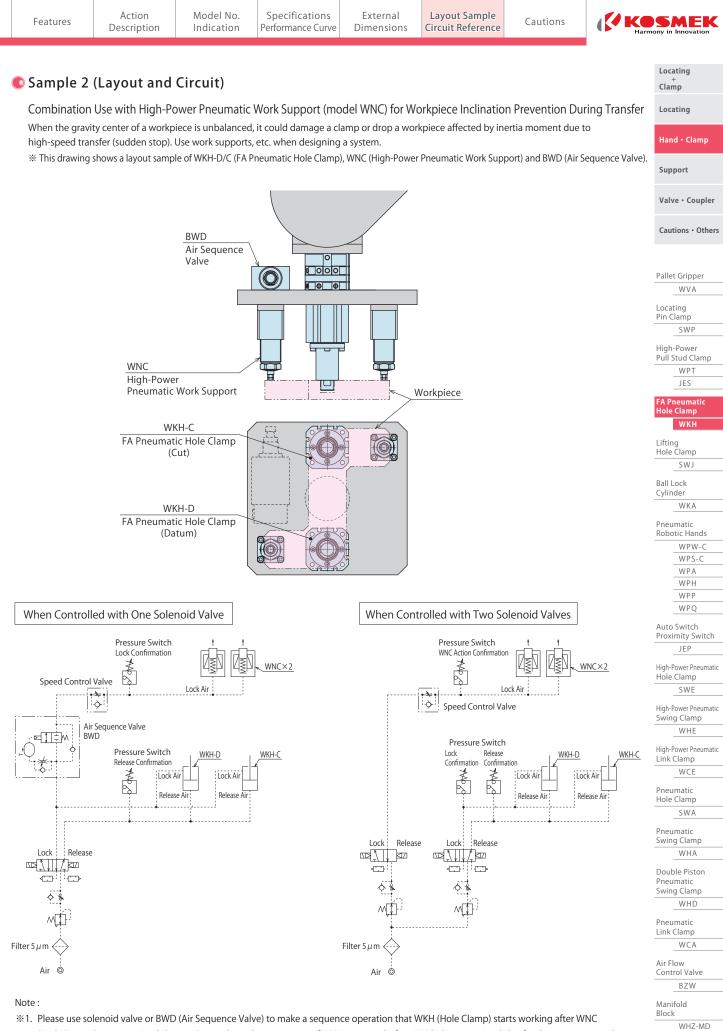
C Sample 1 (Layout and Circuit)

Combination Use with Pneumatic Expansion Locating Pin (model VWM) for High Accuracy Locating (Repeatability : 3 μ m) ** This drawing shows a layout sample of WKH-M (FA Pneumatic Hole Clamp) and VWM (Pneumatic Expansion Locating Pin).



Note :

*1. Please use solenoid valve to make a sequence operation that WKH (Hole Clamp) starts working after VWM (Pneumatic Expansion Locating Pin) completes the movement. When unable to use solenoid valve, please prepare flow control valve with check valve at ★(1 part) to adjust sequencing speed. If WKH operates before VWM, there is a possibility for the equipment to be damaged due to a thrust load on WKH.

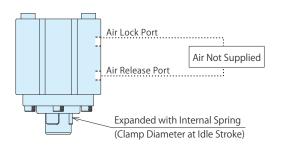


(I. Please use solenoid value or BWD (Air Sequence Value) to make a sequence operation that WKH (Hole Clamp) starts working after WNC (High-Power Pneumatic Work Support) completes the movement. If WKH operates before WNC, there is a possibility for the equipment to be damaged due to a thrust load on WKH.

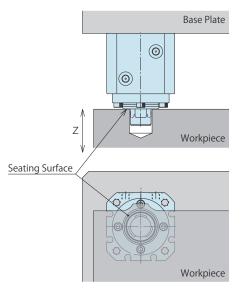
- Notes for Design
- 1) Check Specifications
- Please use each product according to its specifications.

 This product is an air double-acting clamp which locks with air pressure and spring force (gripping and clamping), and releases with air pressure. Even when air is not supplied to either lock or release port, the builtin spring maintains clamped state (clamp diameter is expanded).

- Gripping and clamping force at zero pressure is lower than those when air is supplied. For using at zero pressure, please refer to P.296 Gripping • Clamping Force Curve : Air Pressure 0 MPa.
- ② Supply the release air when loading/unloading a workpiece. Otherwise the workpiece contacts the grippers leading to damage to workpiece or clamp.



- 2) Working Reference Plate (Seating Surface) Z Axis
- The upper surface of the flange of this product is the seating surface of workpiece and locates in Z direction.



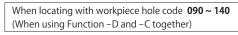
A workpiece must be resting on all seating surfaces when clamping. If not, calculate contacting pressure with clamping force and seating area not to deform a workpiece.

- 3) Wall Thickness around Workpiece Hole
- Thin wall around the workpiece hole can be deformed by clamping action, gripping and clamping forces do not fill the specification.
 Please conduct clamping test and adjust to proper air pressure before use. If clamping force is insufficient, workpiece may fall out.

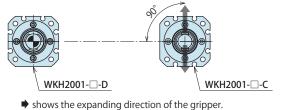


- 4) Clamp Installation
- When Using Functions D/C

-C: Cut locates the orientation using -D: Datum as a reference. Therefore, it is required to determine the phase of -C: Cut when mounting.



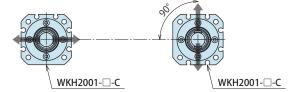
The expanding direction of WKH2001- \Box -C must be vertical toward the line connecting the centers of WKH2001- \Box -D and WKH2001- \Box -C.



When roughly locating with workpiece hole code $060 \sim 085$

(When using Function –C and –C together)

Rotate 90° of the expanding direction of two clamps toward the line connecting the centers of two WKH2001- \Box -C. (Accuracy is not guaranteed since there is no reference locating.)



➡ shows the expanding direction of the gripper.

 When Using Functions -M: Floating of Expanding Area
 -M has the floating function (workpiece hole diameter Φ6 ~ Φ8.5: ±0.3mm, workpiece hole diameter Φ9 ~Φ14: ±0.5mm).
 Please consider the distance accuracy of each clamp mounting hole and each workpiece machining hole when using with another location clamp / location cylinder, or when using more than two of these products.

5) Clamping Force

 Clamping force shows pressing force against the seating surface. Please conduct clamping test and adjust to proper air pressure before use.

Insufficient clamping force causes a workpiece to fall.

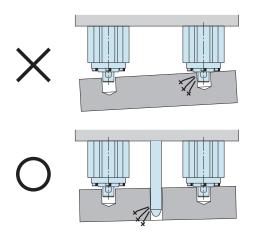
 Workpiece hole size, slope angle and workpiece hardness should be within the range of the specification.

Expansion stroke is insufficient and the gripping force • clamping force will not fill the specifications.
Leads to falling of the workpiece.
Difficult to attach/detach the workpiece leading to damage.
May lead to abnormal seating and damage.
The load concentrates on the gripper point when clamping and could lead to damage.
Gripper does not dig into work enough and it cannot clamp securely.

303

Features	Action Description	Model No. Indication	Specifications Performance Curve	External Dimensions	Layout Sample Circuit Reference	Cautions	

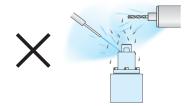
- 7) Horizontal Locating
- When a workpiece is set, please make sure there is no lifting or slope of the workpiece. If the clamping operation is done with lifting or slope of the workpiece, it will lead to possible damage of a clamp and deformation of the workpiece hole.
- 8) Please detach a workpiece with all clamps fully released.
- When detaching a workpiece during lock or release operation, it may cause damage to the clamp or cause the workpiece to fall.
- 9) Please set up rough guides.
- When detaching a workpiece with slope it may cause the damage to the clamp or cause the workpiece to fall.



Please set up rough guides considering the pitch accuracy of location clamp / location cylinder mounting hole and each workpiece machining hole when using with another location clamp / location cylinder, etc.

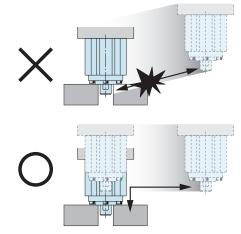
- 10) For Use of Auto Switch
- Select an auto switch depending on the environment.
- An auto switch may be stuck out of the clamp depending on the installation position and direction.
- 2-wire reed auto switch cannot be used.
- Depending on difference of workpiece hole diameter, the detection range of an auto switch can be insufficient.
 If using the auto switch, workpiece hole diameter difference should be within ±0.1mm.
- 11) Fall Prevention Measures
- In case of accident such as detachment of a workpiece, please prepare fall prevention measures for safety.
- 12) Operating Environment

This product has no function that prevents contaminants. Do not use under environment with coolant and cutting chips. For such environment, choose the pneumatic hole clamp (model SWA), high-power pneumatic hole clamp (model SWE), or hole gripper (model WKK).

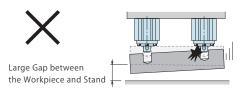


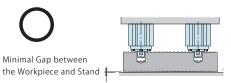
- 13) Damage Prevention during Robot Handling, etc.
- When inserting the Hole Clamp tip into/taking it out of a workpiece hole, the Hole Clamp tip has to be vertical to the workpiece hole.

Especially after releasing a workpiece, the Hole Clamp tip must be fully taken out from the workpiece hole before moving to a next coordinate.



- If the Hole Clamp tip touches a workpiece when inserting, control the insertion speed to avoid damage on the workpiece and Hole Clamp tip.
- When the Hole Clamp is mounting/removing a workpiece, make sure that a robot operates only after the Clamp completes clamping/releasing action by using a sensor or timer.
 If the robot starts operating in the middle of clamping/releasing action, the workpiece may be fallen off.
- When mounting/removing a workpiece, it may be tilted due to a gap between the workpiece and the stand. This causes damage of the Hole Clamp. The gap has to be minimized as much as possible when mounting/removing.





	WVA
Loca	
Pin (Clamp
	SWP
	n-Power Stud Clamp
	WPT
	JES

Pallet Gripper

Locating + Clamp Locating

Hand · Clamp

Valve • Coupler

Cautions • Others

Support

Hole Clamp				
	WKH			
Liftin	g			

Hole Clamp SWJ Ball Lock

Cylinder

WKA					
 Pneumatic Robotic Hands					
WPW-C					
WPS-C					
WPA					
WPH					

WP	Q
Swite mity	:h Switch
JEP	

WPF

High-Power Pneumatic Hole Clamp SWE

High-Power Pneumatic Swing Clamp WHE

High-Power Pneumatic Link Clamp

WCE Pneumatic

Hole Clamp SWA

Pneumatic Swing Clamp WHA

Double Piston Pneumatic Swing Clamp WHD

Pneumatic Link Clamp

WCA Air Flow Control Valve

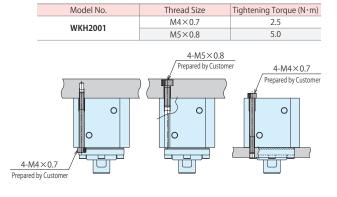
BZW Manifold Block

WHZ-MD

Installation Notes

- 1) Check the fluid to use.
- Please supply filtered clean dry air.
- Oil supply with a lubricator etc. is unnecessary.
- 2) Preparation for Piping
- The pipeline, piping connector and fixture circuits should be cleaned and flushed thoroughly.
 The dust and cutting chips in the circuit may lead to fluid
- leakage and malfunction.
 There is no filter provided with this product for prevention of contaminants in the air circuit.
- 3) Applying Sealing Tape
- Wrap with tape 1 to 2 times following the screwing direction.
- Pieces of the sealing tape may lead to air leaks and malfunction.
- In order to prevent contaminants from entering into the product during the piping work, it should be carefully cleaned before working.
- 4) Mounting Hole Clamp
- When mounting the product use four hexagon socket bolts (with tensile strength of A2-70 or more) and tighten them with the torque shown in the list below.
 Tightening with greater torque than recommended can

depress the seating surface or break the bolt.



- 5) Port Position of Hole Clamp
- The name of each port is marked on the flange surface.
 Be careful with the mounting direction of piping.
 (LOCK : Air Lock Port, RELEASE : Air Release Port)

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.
- ① 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 trouble/issue in the bolts and respective parts before restarting the machine or equipment.
- 3) Do not touch workpieces (pallets) or clamps while they are working. Otherwise, your hands may be injured.

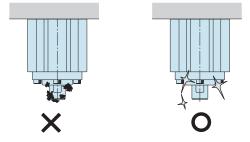


- When transferring a workpiece, make sure the safety of environment in case of a workpiece detachment.
- 5) Do not disassemble or modify.
- If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.
- Powerful spring is built in inside which is very dangerous.

Features	Action Description	Model No. Indication	Specifications Performance Curve	External Dimensions	Layout Sample Circuit Reference	Cautions	
							1

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 trouble/issue in the bolts and respective parts before restarting.
- 2) Regularly clean the clamping part and seating surface.
- If operating with dirt adhering to the clamping part, it will lead to damage to a product and workpiece detachment due to gripping force and clamping force shortage, defective operation, and air leakage, etc.



- 3) Regularly tighten pipe line and mounting bolt to ensure proper use.
- Clamping force will be decreased due to friction of a gripper surface caused by repeated operation.
 Replacement period differs depending on operating pressure, workpiece material, and shape of hole. When you find friction on gripper surface, the gripper needs to be required.
 Please contact us for replacement.
- 5) 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.
- 6) The products should be stored in the cool and dark place without direct sunshine or moisture.
- Please contact us for overhaul and repair.
 Powerful spring is built in inside which is very dangerous.

※ Please refer to P.716 for common cautions.

Warranty

Locating + Clamp

ciamp

Locating

Hand • Clamp

Support

Valve • Coupler

Cautions • Others

Pallet Gripper WVA

Locating Pin Clamp SWP

High-Power Pull Stud Clamp WPT

JES

FA Pneumatic Hole Clamp WKH

Lifting Hole Clamp SWJ

Ball Lock Cylinder WKA

Pneumatic Robotic Hands

> WPW-C WPS-C WPA WPH

WPP WPQ

Auto Switch Proximity Switch JEP

High-Power Pneumatic Hole Clamp

SWE

High-Power Pneumatic Swing Clamp WHE

VVIIL

High-Power Pneumatic Link Clamp WCE

> Pneumatic Hole Clamp

> > SWA

Pneumatic Swing Clamp WHA

Double Piston Pneumatic

Swing Clamp WHD

Pneumatic Link Clamp WCA

Air Flow Control Valve

BZW Manifold

Block WHZ-MD



P2 : 3-Wire Proximity Switch for Gripping Detection (Length 16mm)*1

Notes :

- %1. Please contact us for PNP output.
- %2. Please consider using model JES for PNP output.

Electric Cable Length *3

B2 : 3-Wire Solid State Auto Switch^{*2}

B3C : 3-Wire L-Shaped Solid State Auto Switch^{*2}

Note:

Blank : 1m

: 3m L

3 Electric Cable Length is chosen only for A \square /B \square Auto Switch of 2 Switch Type. For $P\Box$: Proximity Switch for Gripping Detection, electric cable length is all 2m.

Application Table

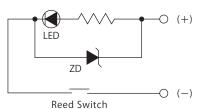
Switch Type	2-Wire Reed	d Auto Switch	3-Wire	Solid State Au	to Switch	2-Wire Solid State Auto Switch	Switch Type		imity Switch g Detection
Model No.	JEP0000-A1	JEP0000-A2	JEP0000-B1	JEP0000-B2	JEP0000-B3C	JEP0000-B3B	Model No.	JEP0000-P	JEP0000-P2
SWJ2000				•	•	•	WPP0300	•	•
SWP050				•	•	•	WPP0400	•	•
SWP100				•	•	•	WPP0500	•	•
WCC 🖂		•		•	•	•	WPP0600	•	•
WCG -T				•	•	•	WPP0800	•	•
WFC 📖		•		•	•	•	WPP1000	•	•
WHC		•		•	•	•	WPP1250	•	•
WHG -T				•	•	•	WPQ0200	•	•
WKH200				•	•	•	WPQ0250	•	•
WKK100				•	•	•	WPQ0300	•	
WKK200				•	•	•	WPQ0400	•	
WPA0120				•	•	•	WPQ0500	•	
WPA0160		•		•	•	•	WPQ0600	•	
WPA0200		•		•	•	•	WPQ0800	•	
WPA0250		•		•	•	•	WPQ1000	•	
WPB0160		•		•	•	•			!
WPB0200		•		•	•	•			
WPB0250		•		•	•	•			
WPE0160		•		•	•	•			
WPE0200	•		•		-				
WPE0300	•		•						
WPE0400	•		•						
WPE0500	•		•						
WPE0800	•		•						
WPF0100			Not Ap	plicable					
WPF0120				•					
WPF0160		•		•	•	•			
WPF0200	•		•						
WPF0300	•		•						
WPH0100		•		•	•	•			
WPH0160		•		•	•	•			
WPH0200	•	_	•	_	_				
WPJ0120				plicable					
WPJ0160				•					
WPJ0200	•		•						
WPJ0250	•		•						
WPJ0300	•		•						
WPJ0400	•		•						
WPS0160-C		•		•	•	•			
WPS0200-C		•		•	•	•			
WPW0500-C				•	•	•			
WPW0600-C				•	•	•			
WVGT -T				•	•	•			

	Model No. Indication	del No. ication Table Specifications Electric Circuit Diagram Electric Dimensions Cautions P.411					Harmony in Innovation		
© JEP0000-A□□ (2-Wire Reed Auto Switch)								Locating + Clamp	
© Specifications								Locating	
							Hand • Clamp		
	Model No.	JE	P0000-A1 JE	P0000-A1L	JEP0000-A2	JEP0000-A2L	JEP0000-A2V	JEP0000-A2VL	
Name Reed Auto Switch							Support		
Wiring Type 2-Wire									
Anni sela Land							Valve • Coupler		

MOUELNO.	JEF 0000-A1	JEF 0000-ATE	JLF 0000-A2	JLF 0000-A2L	JLF 0000-A2V	JEF 0000-AZVE	
Name		Reed Auto Switch					Support
Wiring Type		2-Wire					
Applicable Load		Relay, F	Programmable	Logic Controll	er (PLC)		Valve • Coupler
			Less than D	C24V / 40mA			Cautions • Others
Load Voltage / Load Current		Less than AC100V / 20mA					
Internal Voltage Drop			Less t	han 3V			
Operating Time			11	ns			Pallet Gripper
Ambient Temperature		−10 ~ 60°C					 Locating
Withstand Voltage	AC1	AC1500V (There should be no abnormalities in 1 min. application.)				ion.)	Pin Clamp
Leakage Current				0			SWP
Shock Resistance			30)G			High-Power Pull Stud Clamp
Protection Circuit			No	one			WPT
Protection Grade		IP67 (IEC Standard)					ES
Indicator Light		Red LED illuminates when turned ON					Hole Clamp
5	1	3m				3m	WKH
Electric Cable Length	1m	Sm	1m	3m	1m	SIN	Lifting

Electric Circuit Diagram

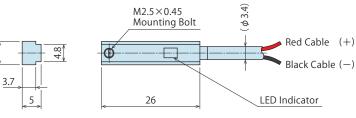
6.2



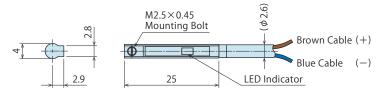
Note :

1. Auto switch will instantly break due to over loading current if turning on the auto switches without connecting the load. (Refer to Notes on Wiring 4) and 5) on P.413.)

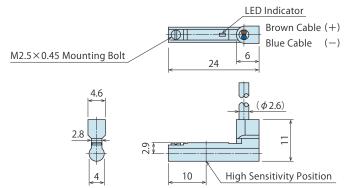
External Dimensions : JEP0000-A1/A1L



External Dimensions : JEP0000-A2/A2L



External Dimensions : JEP0000-A2V/A2VL



FA Pneumatic Hole Clamp						
WKH						
Lifting Hole Clamp						
SWJ						
Ball Lock Cylinder						
WKA						
Pneumatic Robotic Hands						
WPW-C						
WPS-C						
WPA						
WPH						
WPP						
WPQ						
Auto Switch Proximity Switch						

High-Power Pneumatic Hole Clamp SWE

High-Power Pneumatic Swing Clamp WHE

High-Power Pneumatic Link Clamp WCE

> Pneumatic Hole Clamp SWA

Pneumatic Swing Clamp WHA

Double Piston Pneumatic Swing Clamp

WHD

Pneumatic Link Clamp WCA

Air Flow Control Valve BZW

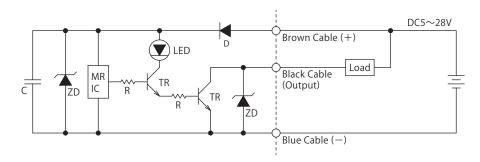
Manifold Block WHZ-MD

JEP0000-B1/B1L/B2/B2L (3-Wire Solid State Auto Switch)

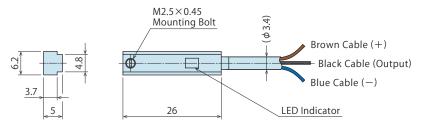
Specifications

Model No.	JEP0000-B1	JEP0000-B1L	JEP0000-B2	JEP0000-B2L			
Name		Solid State Auto Switch					
Wiring Type		3-W	/ire				
Applicable Load		Relay, Programmable	Logic Controller (PLC)			
Output Type		N	PN				
Load Voltage / Load Current		Less than DC5	~ 28V / 50mA				
Internal Voltage Drop		Less th	an 0.8V				
Leakage Current		Less tha	n 0.1mA				
Current Consumption	Less than 10mA						
Operating Time		Less th	an 1ms				
Ambient Temperature		-10 ~	- 60℃				
Withstand Voltage	AC1500V (T	here should be no ab	normalities in 1 min. a	pplication.)			
Insulation Resistance	More than	50MΩ / DC500V (Bet	ween the Case and Sig	gnal Cable)			
Shock Resistance	30G						
Protection Grade	IP67 (IEC Standard)						
Indicator Light	Red LED illuminates when turned ON						
Electric Cable Length	1m	3m	1m	3m			

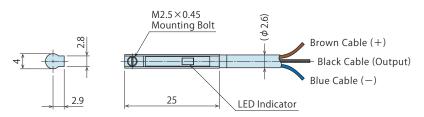
C Electric Circuit Diagram



External Dimensions : JEP0000-B1/B1L



External Dimensions : JEP0000-B2/B2L



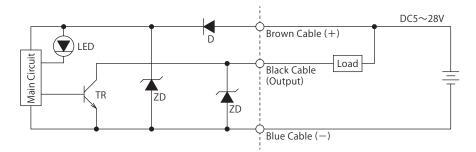
Model No. Indication	Application Table	Specifications	Electric Circuit Diagram	External Dimensions	Cautions P.411	KOSMEK Harmony in Innovation
						Locating

JEP0000-B3C/B3CL (3-Wire L-Shaped Solid State Auto Switch)

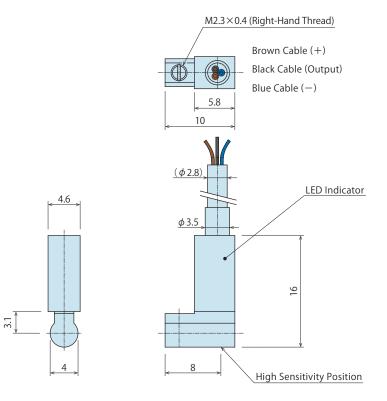
Specifications

Model No.	JEP0000-B3C	JEP0000-B3CL				
Name	Solid State Auto Switch					
Wiring Type	3-V	/ire				
Applicable Load	Relay, Programmable	Logic Controller (PLC)				
Output Type	NE	PN				
Load Voltage / Load Current	DC5 ~ 28	V / 50mA				
Internal Voltage Drop	Less than 0.8V					
Leakage Current	Less than 0.1mA					
Current Consumption	Less than 10 mA					
Operating Time	Less th	an 1ms				
Ambient Temperature	-10 ~	· 60℃				
Withstand Voltage	AC1500V (There should be no ab	normalities in 1 min. application.)				
Insulation Resistance	More than 100M Ω / DC500V (Be	tween the Case and Signal Cable)				
Shock Resistance	30G					
Protection Grade	IP67(IEC Standard)					
Indicator Light	Red LED illuminates when turned ON					
Electric Cable Length	1m	3m				

C Electric Circuit Diagram



External Dimensions : JEP0000-B3C/B3CL



Locating Hand • Clamp Support Valve • Coupler Cautions • Others Pallet Gripper WVA Locating Pin Clamp SWP High-Power Pull Stud Clamp WPT JES FA Pneumatic Hole Clamp WKH Lifting Hole Clamp SWJ Ball Lock Cylinder WKA Pneumatic Robotic Hands WPW-C WPS-C WPA WPH WPP WPQ Auto Switch Proximity Switch JEP High-Power Pneumatic Hole Clamp SWE High-Power Pneumatic Swing Clamp WHE High-Power Pneumatic Link Clamp WCE Pneumatic Hole Clamp SWA Pneumatic Swing Clamp WHA Double Piston Pneumatic Swing Clamp WHD Pneumatic Link Clamp WCA

Clamp

Air Flow Control Valve BZW

Manifold Block WHZ-MD

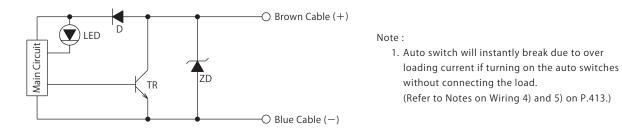
JEP0000-B3B/B3BL (2-Wire L-Shaped Solid State Auto Switch)

Specifications

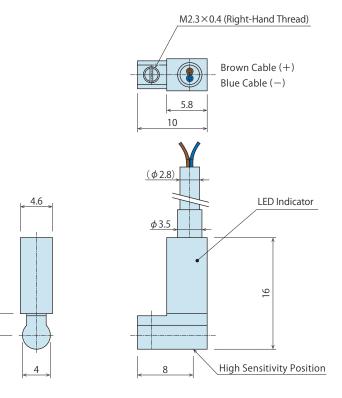
Model No.	JEP0000-B3B	JEP0000-B3BL			
Name	Solid State Auto Switch				
Wiring Type	2-W	/ire			
Applicable Load	Relay, Programmable	Logic Controller (PLC)			
Load Voltage / Load Current	Less than DC10	0∼28V / 50mA			
Internal Voltage Drop	Less th	nan 5V			
Leakage Current	Less than 1mA				
Current Consumption	Less than 10 mA				
Operating Time	Less th	an 1ms			
Ambient Temperature	-10~	∕60°C			
Withstand Voltage	AC1500V (There should be no ab	normalities in 1 min. application.)			
Insulation Resistance	More than 50M Ω / DC500V (Be	tween the Case and Signal Cable)			
Shock Resistance	30G				
Protection Grade	IP67 (IEC Standard)				
Indicator Light	Red LED illuminates when turned ON				
Electric Cable Length	1m	3m			

C Electric Circuit Diagram

... ...



External Dimensions : JEP0000-B3B/B3BL

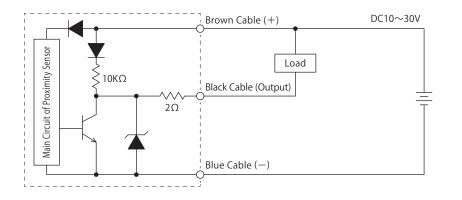


Model No. Indication	Application Table	Specifications	Electric Circuit Diagram	External Dimensions	Cautions P.411	
JEP0000-P	/P2 (3-Wire Pr	oximity Switch	for Gripping [Detection)		Locating + Clamp

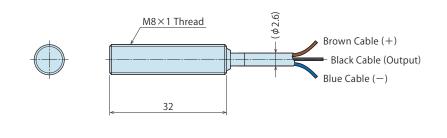
Specifications

Model No.	JEP0000-P	JEP0000-P2		
Name	Proximity Switch for Gripping Detection			
Wiring Type	3-V	/ire		
Output Type	NI	PN		
Moving Distance	1mm	±10%		
Voltage Range	DC10	~ 30V		
Opening / Closing Voltage	Less than 200mA			
Current Consumption	Less than 10mA			
Response Frequency	800Hz			
Ambient Temperature	-25 ~ 70℃			
Withstand Voltage	AC2000V (There should be no abnormalities in 1 min. application.)			
Protection Grade	IP67 (IEC Standard)			
Indicator Light	Red LED illuminates when turned ON			
Electric Cable Length	2m			

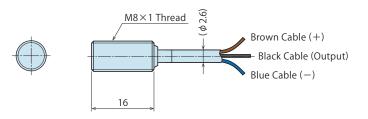
C Electric Circuit Diagram



External Dimensions : JEP0000-P



C External Dimensions : JEP0000-P2



Support
Valve • Coupler
Cautions • Others
Dallet Cripper
Pallet Gripper WVA
WVA
Locating Pin Clamp
SWP
High-Power Pull Stud Clamp
WPT
JES
FA Pneumatic Hole Clamp
WKH
Lifting Hole Clamp
SWJ
Ball Lock
Cylinder WKA
Pneumatic Robotic Hands
WPW-C
WPS-C
WPA WPH
WPH
WPQ
Auto Switch Proximity Switch JEP
High-Power Pneumatic Hole Clamp
SWE
High-Power Pneumatic Swing Clamp
WHE
High-Power Pneumatic Link Clamp
WCE
Pneumatic Hole Clamp
SWA
Pneumatic Swing Clamp
WHA
Double Piston
Pneumatic Swing Clamp
WHD
Pneumatic
rneumatic
Link Clamp
Link Clamp WCA

Locating

Support

BZW

WHZ-MD

Manifold Block

- Notes for Design
- 1) Check the Specifications
- Please use each product according to the specifications. The product may be damaged or malfunction if used outside the range of load or specifications.
- 2) Notes on Use in the Interlock Circuit
- When the auto switch is used for an interlock signal that requires high reliability, please use a double interlock system by providing a mechanical protection function. Or by using another safety switch (sensor) together with the auto switch. Also, please perform periodic maintenance and confirm proper operation.
- 3) Wiring should be prepared as short as possible.
- For the reed auto switch, if the wiring length to the load is excessively long, inrush current to the auto switch increases and the operational life span will be shortened. (Remains ON)
- If the wiring length of the solid state auto switch is long, we recommend installing the ferrite core on both ends of the electric cable for noise control.
- 4) Notes when connecting to a load that generates surge voltage.
- When connecting a load that generates surge voltage such as relay, please use the auto switch equipped with junction protective circuit or use a junction protective element connecting to the auto switch in parallel.
- If surge voltage is repeatedly generated even with the auto switch equipped with junction protective circuit, it may damage the contact. In this case, please reduce the surge voltage by connecting a surgeabsorption element to a surge-generating source (load) in parallel.
- 5) Notes when connecting auto switches in series.
- Due to voltage drop (refer to internal voltage drop on the specifications) caused by LED, voltage drop of n auto switches connected in series will be multiplied by n times. As a result, in some cases the load will not activate even if the auto switch drives properly.
- 6) Be careful with the polarity when wiring.
- When connected reversely, the auto switch may malfunction or be damaged.

- 7) When multiple cylinders or robotic hands are placed close together.
- Please provide enough space when using multiple actuators such as cylinders or robotic hands equipped with auto switches. (If allowable distance of each actuator is specified please follow specified instructions.) If they are too close, auto switches may malfunction due to magnetic interference.
- 8) Secure space for maintenance and inspection
- Please secure space for maintenance and inspection of auto switches when setting actuators such as cylinders and robotic hands equipped with auto switches.





Locating Clamp Locating

Hand · Clamp

Valve • Coupler

Cautions • Others

Pallet Gripper

Pin Clamp SWP

High-Power Pull Stud Clamp

WVA Locating

Support

Notes on Operating Environment

1) Never use the product in an atmosphere with explosive gases.

- Auto switches are not designed to prevent explosion. Do not use the product in an atmosphere with explosive gases since it may cause serious explosions.
- 2) Do not use the product in an area where a magnetic field is generated.
- Auto switches may malfunction, or internal magnet actuators, such as cylinders or robotic hands, equipped with auto switches will be demagnetized.
- 3) Do not use the product in an environment where the auto switches are continuously exposed to water or coolant.
- Although IEC standard IP67 structure is satisfied, please avoid using auto switches in an environment where continuously exposed to water or coolant. This may cause insulation failure or malfunction.
- 4) Do not use the product in an environment with oil or chemicals.
- If auto switches are used in an environment with coolant or cleaning solvent, even in a short time, they may be adversely affected by improper insulation, malfunction due to swelling of potting resin and/or hardening of electric cable.
- 5) Do not use the product in an environment subject to large temperature cycle.
- Heat cycles other than ordinary changes in temperature may adversely affect the internal structure of auto switches.
- 6) Avoid accumulation of steel dust and close connection of magnetic materials.
- An amount of steel chips or steel dusts, such as sputters of welding accumulate around an actuator. Cylinders, robotic hand equipped with auto switches and or magnetic materials (those attracted by magnet) are gathered closely to the actuator. These can weaken internal magnet actuators.
- 7) Do not use the product in an environment with excessive impact.
- Under the condition of the excessive impact of more than 30G, the contact of the reed auto switch will malfunction and the indicator light may signal or may be disconnected.

- The auto switches may be damaged and cause malfunction.
- 2) Tighten auto switches with appropriate tightening torque.
- Please follow the tightening torque below.
- Excessive tightening torque may damage the mounting screw, fitting or main body of the auto switch.

Also, mounting position may be shifted due to insufficient tightening torque.

Mounting Screw Size	Tightening Torque (N·m)
M2.3×0.4	0.15
M2.5×0.45	0.25

- 3) Do not carry cylinders or robotic hands by holding the electric cable of the auto switch.
- It may break the electric cable or damage the internal element.
- 4) Do not fix auto switches with the mounting screws other than attached in main body of the auto switches.
- Using non-designated screws may damage auto switches.

5) Install the auto switches at the center of the operating area.

- Installation position of auto switches should be adjusted so that a detected object (piston etc.) stops at the center of operating range. (Installation position shown in the catalog shows the most suitable fixed position of stroke end.) Please refer to P.345 for WPS, P.355 for WPA, P.363 for WPH, P.375 for WPP and P.391 for WPQ. If the auto switches are installed at the edge of operating range (near the boundary of ON and OFF), output movement may be unstable.
- 6) Installation position of the auto switches should be adjusted by checking actual operating state.
- Depending on the installation environment, actuators such as cylinders and robotic hands may not operate properly even if they are installed to the appropriate position. Make sure to check the operating condition even when mounting them at the middle of the stroke.

WPT
JES
FA Pneumatic Hole Clamp
WKH
Lifting Hole Clamp
SWJ
Ball Lock Cylinder
WKA
Pneumatic Robotic Hands
WPW-C
WPS-C
WPA
WPH
WPP
WPQ
Auto Cuitale
Auto Switch Proximity Switch
JEP

High-Power Pneumatic Hole Clamp SWE

High-Power Pneumatic Swing Clamp WHE

High-Power Pneumatic Link Clamp WCE

Pneumatic Hole Clamp SWA

Pneumatic Swing Clamp WHA

Double Piston Pneumatic Swing Clamp

WHD Pneumatic

Link Clamp WCA

Air Flow Control Valve BZW

Manifold Block WHZ-MD

412

Installation Notes

- 1) Do not drop or bump.
- Do not drop, bump or apply excessive impact on auto switches.

Notes on Wiring

- 1) Check the insulation of wiring.
- Insulation failure (interference with other circuit, ground fault, and insulation failure between terminals) may send excessive voltage or current to the auto switches causing damage.
- 2) Do not place wires and auto switch cables close to other cables and high voltage cables.
- Otherwise, surge voltages will be induced creating noise and leading to malfunctions.
- 3) Repeated bending stress or stretching force should be avoided on electric cables.

 Wiring with bending stress or stretching force repeatedly applied on electric cables will prematurely breakdown.
 Bending stress or stretching force applied on the connecting area of electric cables and main body of the auto switches will damage the electric cables.

Auto switches or wires should not be moving especially near the connecting areas.

 Make sure to check the load state (connection and current value) before turning on the power.

• For 2-Wire Type

Auto switches will instantly break due to over loading current if turning on the auto switches without connecting the load (Shorted Load Circuit). The above statement is also applied to the condition when the brown cable (+, output) of 2-wire type is directly connected to the (+) power terminal of a fixture and etc.

- 5) Avoid shorted load circuit.
- Reed Auto Switch

Auto switches will instantly break due to over loading current if turning on the auto switch in load short circuit condition. Solid State Auto Switch

Be aware of auto switch breakages when products with PNP output is not equipped with short-circuit protection.

- 6) Avoid wrong wiring
- Reed Auto Switch

The electric circuit has polarities. The reed switch can operate even with reversed connection, but LED light will not illuminate. Also, flowing excessive current will damage LED and it will not operate properly.

Solid State Auto Switch

In case of 2-wire type, even if connected reversely, the auto switch will not be damaged due to protection circuit, but it is always ON.

If reversely connected under short circuit condition, the auto switch will be damaged.

In case of 3-wire type, even if the connections are reversed (power supply line "+" and "-"), the auto switch will be protected by a protection circuit.

However, if connecting the power supply "+" to the blue cable and "-" to the black cable, the auto switch will be damaged.

Notes on Handling

- 1) It should be operated by qualified personnel.
- Machines and devices with hydraulic and pneumatic equipment should be operated and maintained by qualified personnel.
- 2) Do not operate or remove the product unless the safety protocols are ensured.
- ① 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 abovementioned 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 trouble/issue in the bolts and respective parts before restarting the machine or equipment.
- 3) Do not disassemble or modify.
- If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.



Locating + Clamp

Locating

Hand • Clamp

Support

Valve • Coupler

Cautions • Others

Pallet Gripper WVA

Locating Pin Clamp SWP

High-Power Pull Stud Clamp

WPT JES

FA Pneumatic Hole Clamp WKH

> Lifting Hole Clamp SWJ

Ball Lock Cylinder

WKA

Pneumatic Robotic Hands WPW-C WPS-C WPA WPH WPP

WPQ Auto Switch Proximity Switch

JEP High-Power Pneumatic Hole Clamp

SWE

High-Power Pneumatic Swing Clamp WHE

High-Power Pneumatic Link Clamp WCE

> Pneumatic Hole Clamp

SWA

Pneumatic Swing Clamp WHA

Double Piston Pneumatic Swing Clamp WHD

Pneumatic Link Clamp WC A

Air Flow Control Valve BZW

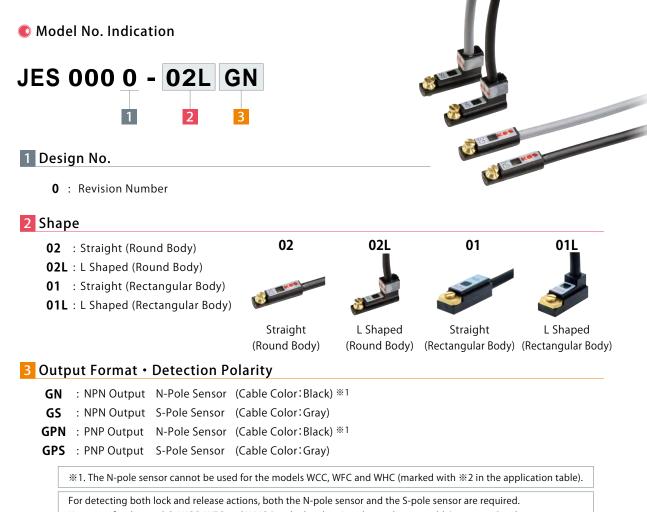
Manifold Block WHZ-MD

Maintenance • Inspection

Conduct the below maintenances and inspections periodically in order to avoid unintended malfunctions and to ensure the safety.

- 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 trouble/issue in the bolts and respective parts before restarting.
- 2) Never touch terminals while the power is on.
- It will cause electric shock, malfunction and damage to the auto switches.
- 3) Retightening of Mounting Screws
- Retighten the screws after adjusting the mounting position when the mounting position of the auto switches is shifted due to the looseness of the mounting screws.
- 4) Check if the electric cable is damaged or not.
- Damaged cables may cause insulation failure.
 Exchange the auto switch or repair the reed if there is damage on the electric cable.
- 5) Check the setting position of the detector.
- Confirm the set position is stopped at the center of the detecting range (the area that red LED illuminates).
- 6) Cleaning Auto Switches
- The auto switch should be clean. Do not use benzene, paint thinner or alcohol for cleaning. Doing so will cause scratches on the product and indications may be erased. If it is hard to remove stains from the product, wipe it out with a cloth soaked in a neutral detergent diluted with water. Wipe with a dry cloth to remove wet residue.
- 7) Product Storage
- Keep the product out of direct sunlight in a cool area where it is protected from water and humidity.
- 8) Please contact us for auto switch replacements.

• Warranty



However, for the models WCC, WFC and WHC (marked with %2 in the application table), use two S-pole sensors.

Application T	able (\bullet = can be installed.	

Shape	Round Body	Rectangular Body	Shape	Round Body	Rectangular Body
Model No.	JES0000-02G JES0000-02GP JES0000-02LG JES0000-02LGP	JES0000-01G JES0000-01GP JES0000-01LG JES0000-01LGP	Model No.	JES0000-02G JES0000-02GP JES0000-02LG JES0000-02LGP	JES0000-01G JES0000-01GP JES0000-01LG JES0000-01LGP
SWJ2000	•	Not Applicable	WPF0100	Not A	pplicable
SWP050	•	Not Applicable	WPF0120	•	Not Applicable
SWP100	•	Not Applicable	WPF0160	•	Not Applicable
wcc 🖂	● ※ 2 (S-pole sensor only)	Not Applicable	WPF0200	Not Applicable	•
WCGT	•	Not Applicable	WPF0300	Not Applicable	•
WFC 🖂	● ※ 2 (S-pole sensor only)	Not Applicable	WPH0100	•	Not Applicable
WHC 🖂	● ※ 2 (S-pole sensor only)	Not Applicable	WPH0160	•	Not Applicable
WHG -T	•	Not Applicable	WPH0200	Not Applicable	•
WKH200	•	Not Applicable	WPJ0120	Not A	pplicable
WKK100	•	Not Applicable	WPJ0160	•	Not Applicable
WKK200	•	Not Applicable	WPJ0200	Not Applicable	•
WPA0120	•	Not Applicable	WPJ0250	Not Applicable	•
WPA0160	•	Not Applicable	WPJ0300	Not Applicable	•
WPA0200	•	Not Applicable	WPJ0400	Not Applicable	•
WPA0250	•	Not Applicable	WPS0160-C	•	Not Applicable
WPB0160	•	Not Applicable	WPS0200-C	•	Not Applicable
WPB0200	•	Not Applicable	WPT	•	Not Applicable
WPB0250	•	Not Applicable	WPW 🗔 - C	•	Not Applicable
WPE0160	•	Not Applicable	WVA 🗔 - M	•	Not Applicable
WPE0200	Not Applicable	•	WVB 🔤 - M	•	Not Applicable
WPE0300	Not Applicable	•	WVGTT	•	Not Applicable
WPE0400	Not Applicable	•			
WPE0500	Not Applicable	•			
WPE0800	Not Applicable				

Note: %2. Please use the S-pole sensor. (N-pole sensor cannot be used.)

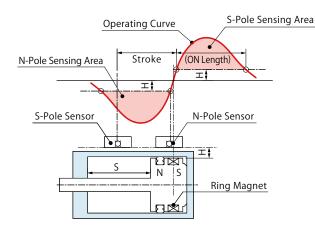
Model No. Indi	cation Application Table	Specifications	Electric Circuit Diagram	External Dimensions	Cautions	
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Specifications

Model No.	JES0000-02G S JES0000-02LG S	JES0000-01G S JES0000-01LG S	JES0000-02GP S JES0000-02LGP S	JES0000-01GP S JES0000-01LGP S	
Body Shape	Round Rectangular		Round	Rectangular	
Output Specification	NPN (ON when in proximity)		PNP (ON when in proximity)		
Output Current	20mA	Max.	80mA	Max.	
Current Consumption	8mA	Max.	8mA	Max.	
Wiring Method	3-Wire				
Applicable Load	Relay, Programmable Logic Controller (PLC)				
Voltage	DC 5 ~ 24V				
Response Speed	16µsec or less				
Material	Case: GF Reinforced PBT Black Set Screw: Brass			355	
Indicator Light	Red				
Withstand Voltage	AC1000V (1 minute / Packaged Charging Part / between the Case)				
Insulation Resistance	DC250V (20M Ω or more in Megohms, between the Case)				
Operating Temperature	-20° C $\sim +85^{\circ}$ C (Make sure no condensation)				
Operating Humidity	20 ~ 95%RH				
Protection Grade	IP67				
Cable Length	1m				

Performance Curve

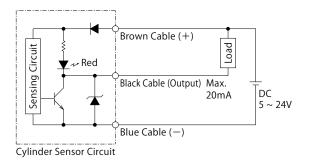
JES detects only the magnetic force that is vertical to the detection surface. The operating curve is shown below. Operating point is on the steep part of the operating curve, so even small stroke can be surely detected.



C Electric Circuit Diagram

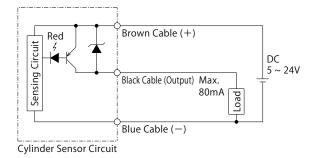
NPN Output

JES0000-02G , JES0000-02LG JES0000-01G , JES0000-01LG



PNP Output

JES0000-02GP . JES0000-02LGP JES0000-01GP . JES0000-01LGP .



Locating Hand • Clamp Support Valve • Coupler Cautions • Others

Locating

Clamp

Pallet Gripper WVA

Locating Pin Clamp SWP

High-Power Pull Stud Clamp WPT JES

FA Pneumatic Hole Clamp WKH

Lifting Hole Clamp SWJ

Ball Lock Cylinder

WKA Pneumatic Robotic Hands

> WPW-C WPS-C WPA WPH WPP WPO

Auto Switch Proximity Switch JEP

High-Power Pneumatic Hole Clamp

SWE

High-Power Pneumatic Swing Clamp WHE

High-Power Pneumatic

Link Clamp WCE

> Pneumatic Hole Clamp SWA

Pneumatic Swing Clamp

WHA Double Piston Pneumatic

Swing Clamp WHD

Pneumatic Link Clamp WCA

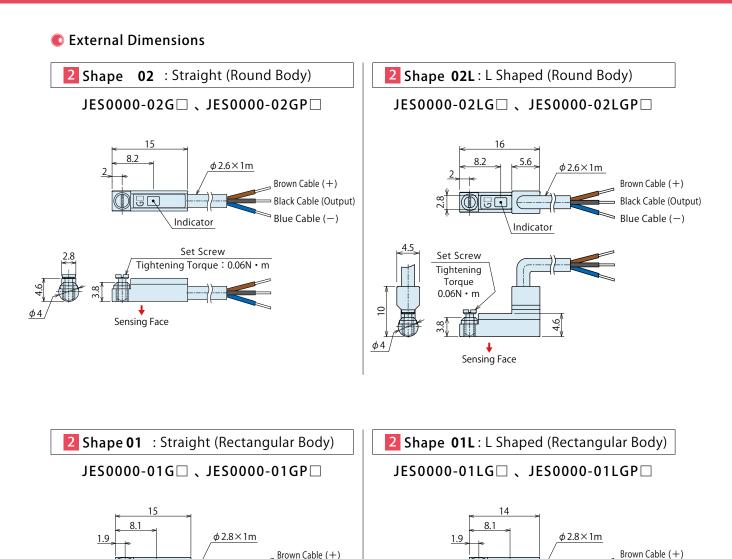
Air Flow Control Valve

BZW Manifold Block

WHZ-MD

Black Cable (Output)

Blue Cable (-)



Brown Cable (+)

Blue Cable (-)

Black Cable (Output)

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Set Screw

Tightening

Torque 0.06N • m

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Sensing Face

4.5

6

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Indicator

¢, 🖯

Sensing Face

4.5

6

2.7

Indicator

Set Screw

Tightening Torque: 0.06N • m



Locating

Clamp Locating

Cautions

- Notes for Design
- 1) Check the Specifications
- Please use each product according to the specifications. The product may be damaged or malfunction if used outside the range of load or specifications.
- 2) Notes on Use in the Interlock Circuit
- When the sensor is used for an interlock signal that requires high reliability, please use a double interlock system by providing a mechanical protection function. Or by using another sensor together with the product. Also, please perform periodic maintenance and confirm proper operation.
- 3) Please avoid using loads that generate surge voltage.
- If driving a relay, put a Zener diode in parallel for surge protection.

Notes on Operating Environment

- 1) Never use the product in an atmosphere with explosive gases.
- Sensor for Air Cylinder is not designed to prevent explosion.
 Do not use the product in an atmosphere with explosive gases since it may cause serious explosions.
- 2) The product may malfunction if an intense magnetic field is applied to a pole body.
- Make sure to prepare shield measures when using in the following environments.
- Where large current and/or strong magnetic field are generated.
- Where noise occurs due to static electricity, etc.
- Where magnetic powder or dust such as iron powder occurs or scatters.
- Do not use the product in an environment where it is continuously exposed to coolant or chemical liquid.
- Although IEC standard IP67 structure is satisfied, please avoid using sensors in an environment where continuously exposed to coolant or chemical liquid. This may cause insulation failure or malfunction.
- 5) Do not use the product in an environment with oil or chemicals.
- If sensors are used in an environment with coolant or cleaning solvent, even in a short time, they may be adversely affected by improper insulation, malfunction due to swelling of potting resin and or hardening of electric cable.
- 6) Do not use the product in an environment with excessive vibrations or impacts.

Installation Notes

- 1) Electric Wiring Reverse Connection Protection
- Follow the electric circuit diagram on P.287 and make sure to connect properly. Never connect the power reversely.
- 2) Tighten sensors with appropriate tightening torque.
- Use the set screw mounted on the sensor body and tighten it with the following torque.
 JES0000 : 0.06N • m

3) Wiring

- Do not damage the cables. Damaged, forcibly bended, stretched, winded, load applied or pinched cables will cause fire, electric shock, and/or malfunction due to electric leakage and/or continuity failure.
- Do not apply excessive stress on the cable port of the sensor.
- Minimum bending radius of the cable port is R7.
- If cables are to move, fix the middle of the cables so that no stress is applied to the cable port.
- Mounting position of the sensor should be adjusted by checking actual operating state.

Hand • Clamp
Support
Valve • Coupler
Cautions • Others

Pallet Gripper

WVA Locating Pin Clamp SWP

-Power Stud Clamp
WPT
JES

FA Pneumatic Hole Clamp WKH

> Lifting Hole Clamp SWJ

> > Ball Lock Cylinder WKA

Pneumatic Robotic Hands WPW-C WPS-C WPA WPH

Auto Switch Proximity Switch JEP

WPP WPO

High-Power Pneumatic Hole Clamp

High-Power Pneumatic Swing Clamp WHE

> High-Power Pneumatic Link Clamp

> > WCE

Pneumatic Hole Clamp SWA

Pneumatic Swing Clamp

WHA

Double Piston Pneumatic Swing Clamp WHD

Pneumatic Link Clamp WCA

Air Flow Control Valve

> BZW Manifold Block WHZ-MD

- Notes on Handling
- 1) It should be operated by qualified personnel.
- The hydraulic and pneumatic equipment should be operated and maintained by qualified personnel.
- 2) Do not operate or remove the product unless the safety protocols are ensured.
- ① 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 trouble/issue in the bolts and respective parts before restarting the machine or equipment.
- 3) Do not disassemble or modify.
- If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.
 Never modify the product as it contains a powerful magnet.
- Keep more than one meter away from this product if you have a heart pacemaker, etc. It may be malfunctioned by strong magnetism.
- This sensor is made by ASA Electronics Industry Co. Ltd.
 Please contact us or ASA Electronics Industry for further inquiries.

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 trouble/issue in the bolts and respective parts before restarting.
- 2) Never touch terminals while the power is on.
- Otherwise it will cause electric shock, malfunction and damage to the sensor for air cylinder.
- 3) Retightening of Set Screw
- When mounting position of the sensor for air cylinder is shifted due to looseness of set screw, retighten it after adjusting the mounting position.
- 4) Check if the electric cable is damaged or not.
- Damaged cables may cause insulation failure.
 Replace a sensor for air cylinder or repair the reed if the electric cable is damaged.
- 5) Product Storage
- The products should be stored in the cool and dark place without direct sunshine or moisture.

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Electric Circuit

Diagram

External Dimensions

Cautions



Model No. Indication

Application Table

Specifications

Locating + Clamp

Locating

and claim

Support

Valve • Coupler

Cautions • Others

Pallet Gripper WVA

Locating Pin Clamp

SWP High-Power Pull Stud Clamp

WPT JES

FA Pneumatic Hole Clamp WKH

Lifting Hole Clamp SWJ

Ball Lock Cylinder WKA

Pneumatic Robotic Hands WPW-C

WPS-C WPA WPH WPP WPQ

Auto Switch Proximity Switch JEP

High-Power Pneumatic Hole Clamp

SWE High-Power Pneumatic

Swing Clamp WHE

High-Power Pneumatic Link Clamp WCE

> Pneumatic Hole Clamp

SWA Pneumatic Swing Clamp

WHA Double Piston

Pneumatic Swing Clamp WHD

Pneumatic Link Clamp WCA

Air Flow Control Valve BZW

Manifold Block WHZ-MD

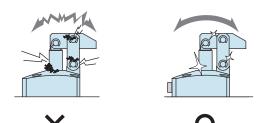
- Notes on Handling
- 1) It should be operated by qualified personnel.
- The hydraulic machine and air compressor should be operated and maintained by qualified personnel.
- 2) Do not operate or remove the product unless the safety protocols are ensured.
- ① The machine and equipment can only be inspected 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 trouble/issue in the bolts and respective parts before restarting the machine or equipment.
- Do not touch a clamp (cylinder) while it is working.
 Otherwise, your hands may be injured.



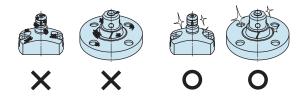
- 4) Do not disassemble or modify.
- If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

Maintenance and Inspection

- 1) Removal of the Machine and Shut-off of Pressure Source
- Before removing the product, make sure that the safety 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 trouble/issue in the bolts and respective parts before restarting.
- 2) Regularly clean the area around the piston rod and plunger.
- If it is used when the surface is contaminated with dirt, it may lead to packing seal damage, malfunctioning, fluid leakage.



- Regularly clean the reference surfaces (taper reference surface and seating surface) of locating products (SWT/SWQ/SWP/VRA/ VRC/VX/VXE/VXF/WVS/VWH/VWM/VWK).
- Locating products (except VRA/VRC/VX/VXE/VXF and SWR without air blow port) can remove contaminants with the cleaning function. When installing a workpiece or a pallet, make sure there are no contaminants such as thick sludge.
- Continuous use with dirt on components will lead to locating failure, fluid leakage and malfunction.



- 4) Regularly tighten pipe, mounting bolt, nut, snap ring, cylinder and others to ensure proper use.
- 5) Make sure the hydraulic fluid has not deteriorated.
- 6) 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.
- The products should be stored in the cool and dark place without direct sunshine or moisture.
- 8) Please contact us for overhaul and repair.

Warranty



Locating

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 Failure caused by the use of the non-confirming state at the user's discretion.
- 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.

Clamp Locating

ocacing

Hand • Clamp

Support

Valve • Coupler

Cautions • Others

Cautions Installation Notes Maintenance/ Inspection Warranty

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Sales Offices



Sales Offices across the World

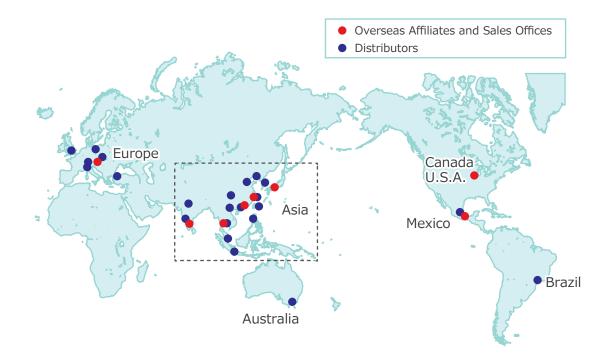
JAPAN HEAD OFFICE Overseas Sales	TEL. +81-78-991-5162 KOSMEK LTD. 1-5, 2-chome, Murotani, Nis 〒651-2241 兵庫県神戸市西区室谷2丁目1番5	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
United States of America	TEL. +1-630-620-7650	FAX. +1-630-620-9015
KOSMEK (USA) LTD.	650 Springer Drive, Lombard, IL 60148 USA	
MEXICO REPRESENTATIVE OFFICE	TEL. +52-442-161-2347	
KOSMEK USA Mexico Office	Av. Santa Fe #103 int 59 Col. Santa Fe Juriquilla C.P. 76230 Queretaro, Qro Mexico	
EUROPE subsidiary	TEL. +43-463-287587	FAX. +43-463-287587-20
KOSMEK EUROPE GmbH	Schleppeplatz 2 9020 Klagenfurt am Wörthersee Austria	
CHINA	TEL. +86-21-54253000	FAX. +86-21-54253709
KOSMEK (CHINA) LTD. 考世美(上海)貿易有限公司	Room601, RIVERSIDE PYRAMID No.55, Lane21, Pusan Rd, Pudong Shanghai 200125, China 中国上海市浦东新区浦三路21弄55号银亿滨江中心601室 200125	
INDIA branch office	TEL. +91-9880561695	
KOSMEK LTD - INDIA	F 203, Level-2, First Floor, Prestige Center	Point, Cunningham Road, Bangalore -560052 India
KOSMEK LTD - INDIA THAILAND REPRESENTATIVE OFFICE	F 203, Level-2, First Floor, Prestige Center TEL. +66-2-300-5132	Point, Cunningham Road, Bangalore -560052 India FAX. +66-2-300-5133
THAILAND		FAX. +66-2-300-5133
THAILAND REPRESENTATIVE OFFICE	TEL. +66-2-300-5132	FAX. +66-2-300-5133
THAILAND REPRESENTATIVE OFFICE KOSMEK Thailand Representation Office TAIWAN	TEL. +66-2-300-5132 67 Soi 58, RAMA 9 Rd., Suanluang, Suanlua	FAX. +66-2-300-5133 ang, Bangkok 10250, Thailand FAX. +886-2-82261890 Taipei City Taiwan 23511
THAILAND REPRESENTATIVE OFFICE KOSMEK Thailand Representation Office TAIWAN (Taiwan Exclusive Distributor) Full Life Trading Co., Ltd.	TEL. +66-2-300-5132 67 Soi 58, RAMA 9 Rd., Suanluang, Suanlua TEL. +886-2-82261860 16F-4, No.2, Jian Ba Rd., Zhonghe District, New	FAX. +66-2-300-5133 ang, Bangkok 10250, Thailand FAX. +886-2-82261890 Taipei City Taiwan 23511
THAILAND REPRESENTATIVE OFFICE KOSMEK Thailand Representation Office TAIWAN (Taiwan Exclusive Distributor) Full Life Trading Co., Ltd. 盈生貿易有限公司 PHILIPPINES	TEL. +66-2-300-5132 67 Soi 58, RAMA 9 Rd., Suanluang, Suanlua TEL. +886-2-82261860 16F-4, No.2, Jian Ba Rd., Zhonghe District, New 台湾新北市中和區建八路2號 16F-4(遠東世紀展 TEL. +63-2-310-7286	FAX. +66-2-300-5133 ang, Bangkok 10250, Thailand FAX. +886-2-82261890 Taipei City Taiwan 23511 _{實場})
THAILAND REPRESENTATIVE OFFICE KOSMEK Thailand Representation Office TAIWAN (Taiwan Exclusive Distributor) Full Life Trading Co., Ltd. 盈生貿易有限公司 PHILIPPINES (Philippines Exclusive Distributor)	TEL. +66-2-300-5132 67 Soi 58, RAMA 9 Rd., Suanluang, Suanlua TEL. +886-2-82261860 16F-4, No.2, Jian Ba Rd., Zhonghe District, New 台湾新北市中和區建八路2號 16F-4(遠東世紀展 TEL. +63-2-310-7286	FAX. +66-2-300-5133 ang, Bangkok 10250, Thailand FAX. +886-2-82261890 Taipei City Taiwan 23511 _{賽場}) FAX. +63-2-310-7286

KOSMEK

Sales Offices in Japan

Head Office Osaka Sales Office Overseas Sales	TEL. 078-991-5162 〒651-2241 兵庫県神戸市	FAX. 078-991-8787 市西区室谷2丁目1番5号
Tokyo Sales Office	TEL. 048-652-8839 〒331-0815 埼玉県さいた	FAX. 048-652-8828 たま市北区大成町4丁目81番地
Nagoya Sales Office	TEL. 0566-74-8778 〒446-0076 愛知県安城市	FAX. 0566-74-8808 市美園町2丁目10番地1
Fukuoka Sales Office	TEL. 092-433-0424 〒812-0006 福岡県福岡市	FAX. 092-433-0426 市博多区上牟田1丁目8-10-101

Global Network









FOR FURTHER INFORMATION ON UNLISTED SPECIFICATIONS AND SIZES, PLEASE CALL US.
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