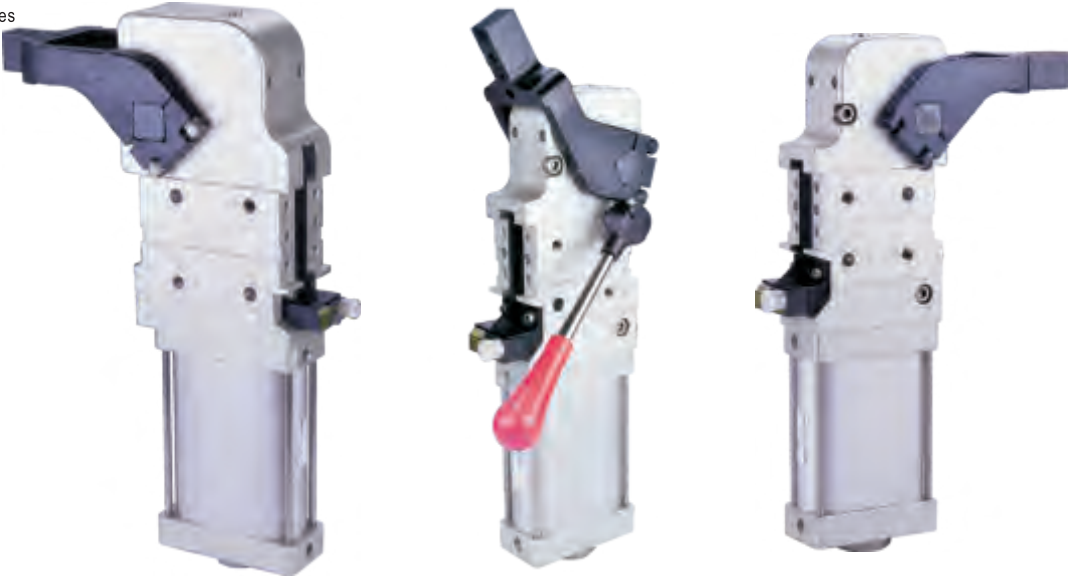




Product series

Series name			Acting type	Bore size
<div>JCK Series</div> 			Double acting	40 50 63 80
Page	422			

Applications

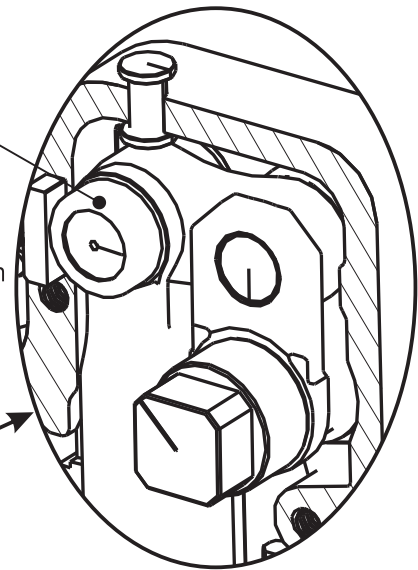


■ Product feature

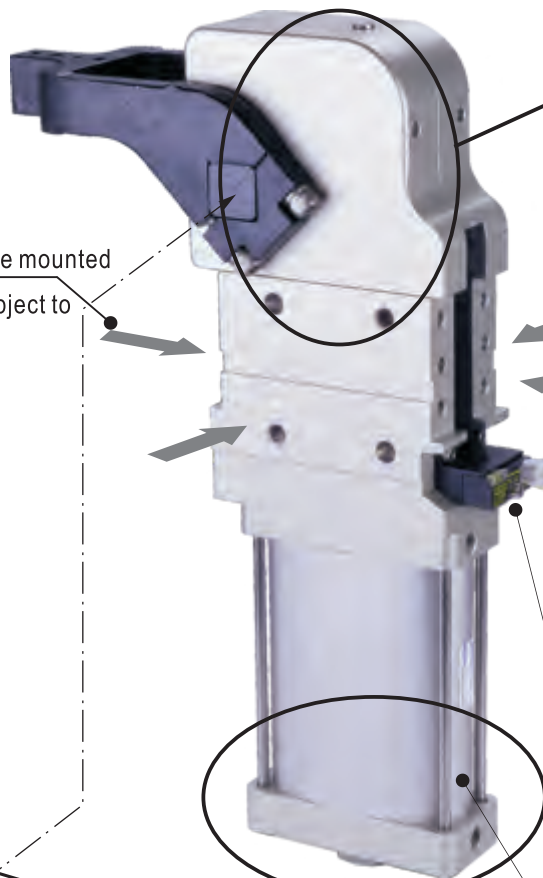
1 Rod-crank-slider structure made of high-strength, highly-wear-resisting material is adopted.

a) Stable and reliable structure which can produce large clamping force at low working pressure.

b) Self-lock mechanism is adopted at clamping position which can still provide clamping force even after compressed air is off.



2 4 sides are to be mounted with dimensions subject to DIN standard.



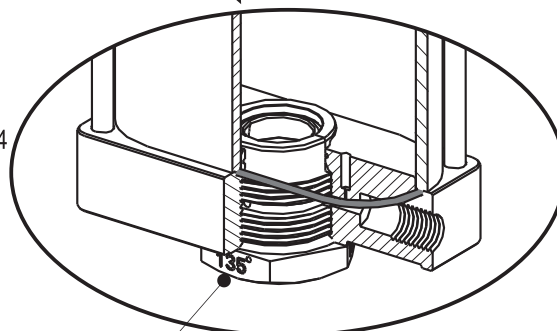
Mechanism

3 Mechanism and cylinder designed as a whole.

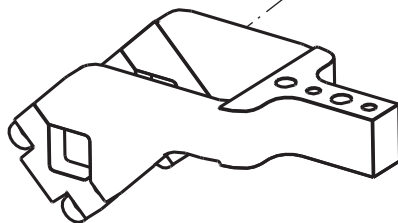
Cylinder

4 Sensor fix adopts special design for convenient angle adjustment and reduction of welding spatter accumulation. Sensing system immune to interference providing steady and reliable signal.

5 Oval-shaped cylinder which is space efficient.



6 4 Arm styles AM1, AM2, AM3 and AM4 each with 3 specifications R, C and L for uses in different situations.



7 Opening angle adjustment by changing adjusting screw is easy and convenient.

Power clamp cylinder

JCK Series——Standard type

■ Specification

Model	JCK40	JCK50	JCK63	JCK80
Output torque (0.5MPa)	120N.m	160N.m	380N.m	800N.m
Acting type	Double acting			
Fluid	Air(to be filtered by 40 μ m filter element)			
Operating pressure	0.3~0.8MPa(43~116psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-10~60 °C			
Opening angle	15°/30°/45°/60°/75°/90°/105°/120°/135°			
Minimum opening and closure time	1 second clamping, 1 second opening			
Position sensing	Inductive approaching sensor			
Cushion type	Air buffer			
Weight (135°) ①	2.2kg	4.0kg	5.5kg	13.0kg
Port size ②	1/8"		1/4"	

① This weight includes 15mm offset clamping arm; ② PT thread, G thread and NPT thread are available.

■ Ordering code

JCK □ 63 × 135 AM1 R K □

Model

JCK: Power clamp cylinder
(Double acting)

Clamping arm position

Blank: horizontal

V: vertical

Bore size

40: $\Phi 40$

50: $\Phi 50$

63: $\Phi 63$

80: $\Phi 80$

Opening angle

Opening angle	Maximum opening angle	
15: 15°	JCK40	AM1: 135°
30: 30°		AM3: 105°
45: 45°	JCKV40	AM1: 120°
60: 60°		AM3: 105°
75: 75°	JCK50/JCK63	135°
90: 90°		
105: 105°	JCKV50	105°
120: 120°	JCKV63	
135: 135°	JCKV80	

Thread type

Blank: PT

G: G

T: NPT

Sensor switch

Blank: No sensor switch

K: With sensor switch

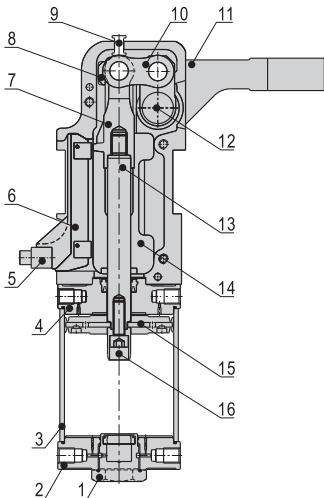
Clamping arm

Bore size	Clamping arm code	Explanation ①
40 ~ 80	Blank	No clamping arm
40	AM1 (Offset 15mm)	R
		C
		L
	AM3 (Offset 45mm)	R
		C
		L
50	AM1 (Offset 15mm)	R
		C
		L
	AM3 (Offset 45mm)	R
		C
		L
63	AM2 (Offset 15mm)	R
		C
		L
	AM4 (Offset 45mm)	R
		C
		L
80	AM2 (Offset 15mm)	R
		C
		L
	AM4 (Offset 45mm)	R
		C
		L

① Please refer to the drawing for detailed dimensions of clamping arm.
Others: Sensor switch can be ordered separately and please refer to relative contents.



■ Inner structure and material of major parts



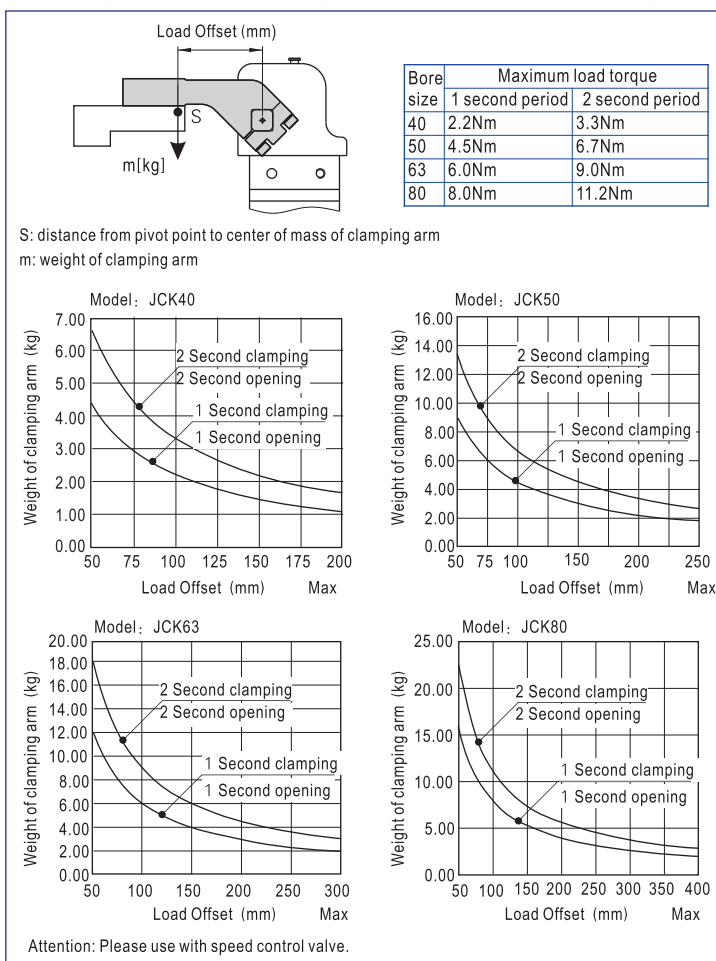
NO.	Item	Material
1	Adjusting screw	Free machining steel
2	Back cover	Aluminum alloy
3	Aluminum barrel	Aluminum alloy
4	Front cover	Aluminum alloy
5	Sensor switch	
6	Sensor switch fix	Plastic
7	Y knuckle	Alloy steel
8	Strengthen steel plate	Alloy steel
9	Retaining pin	Carbon steel
10	Connecting rod	Alloy steel
11	Clamping arm	Cast steel
12	Pivot	Alloy steel
13	Piston rod	Carbon steel
14	End cap	Aluminum alloy
15	Piston	NBR
16	Cushion body	Aluminum alloy

Power clamp cylinder

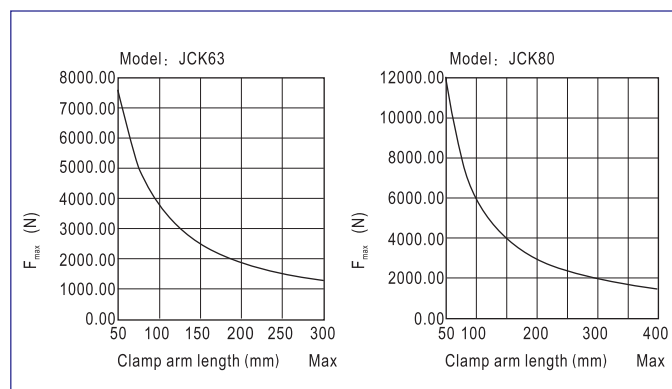
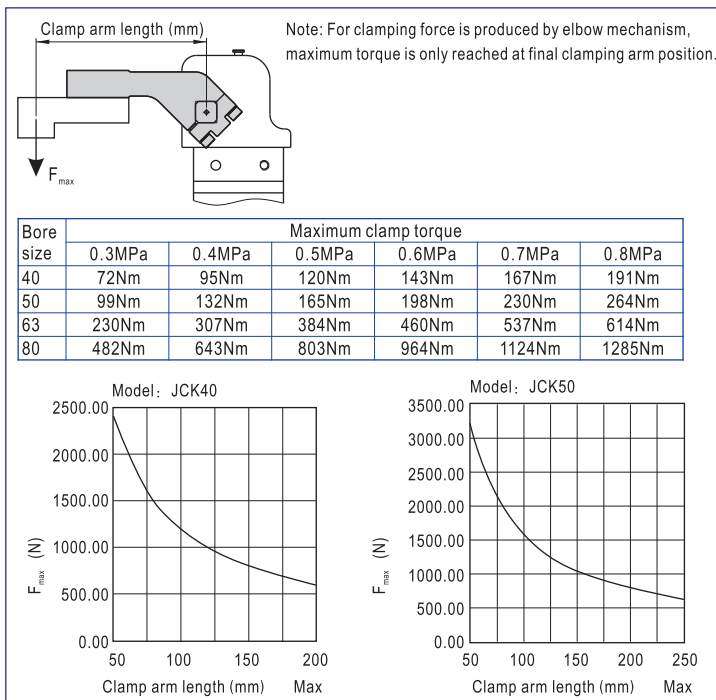
JCK Series—Standard type

How to select product

1. Please design appropriate fixture according to "Allowable Arm Load-Load Offset curve" diagram.



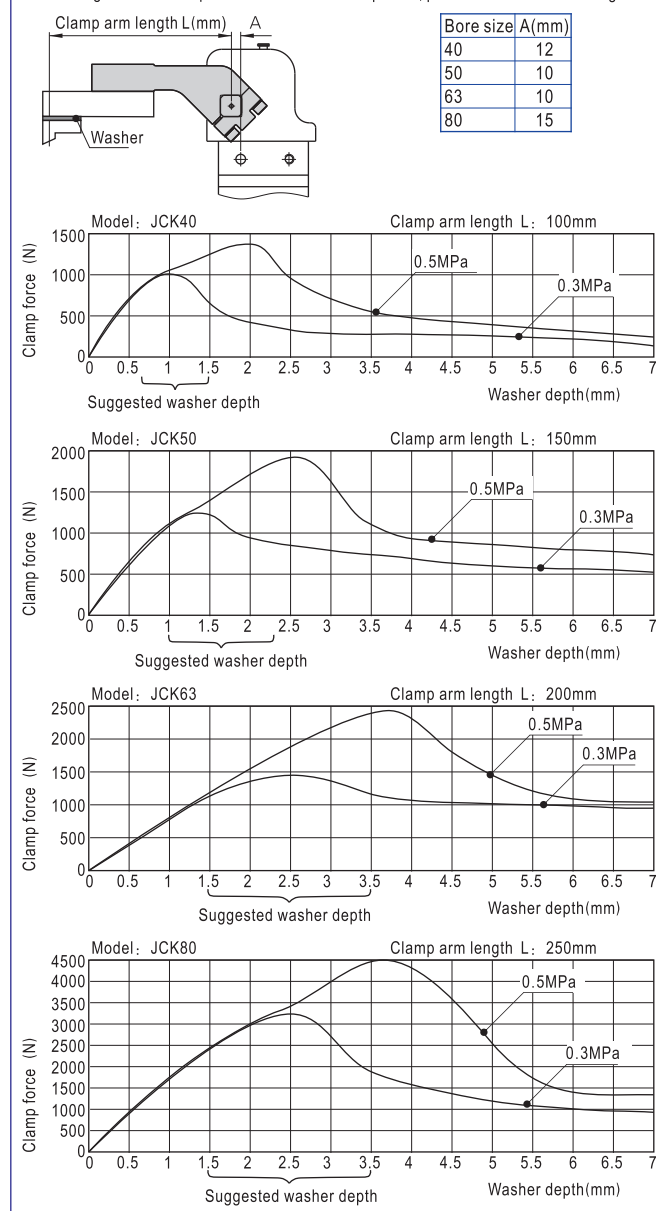
2. Please choose appropriate clamping position according to "Torque-Clamping Arm Length curve" diagram.



3. Please choose appropriate washer according to "Torque-Spacer thickness curve" diagram.

Note: Inserted washer exceeding maximum clamping torque position may lead to self-lock failure. Take safety issue into account when considering thickness of spacer inserted.

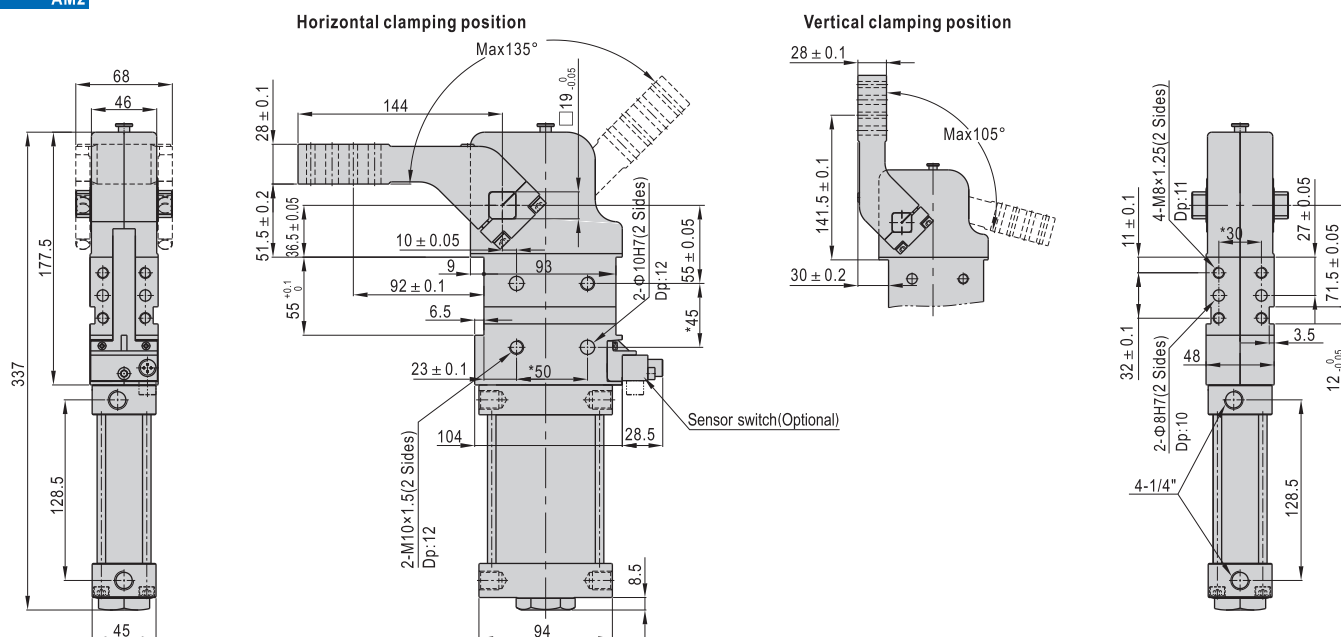
Besides, clamping arm length L represents distance from pivot point to clamping position. For distance from mounting base locating hole to pivot A, please refer to the following table.



Power clamp cylinder

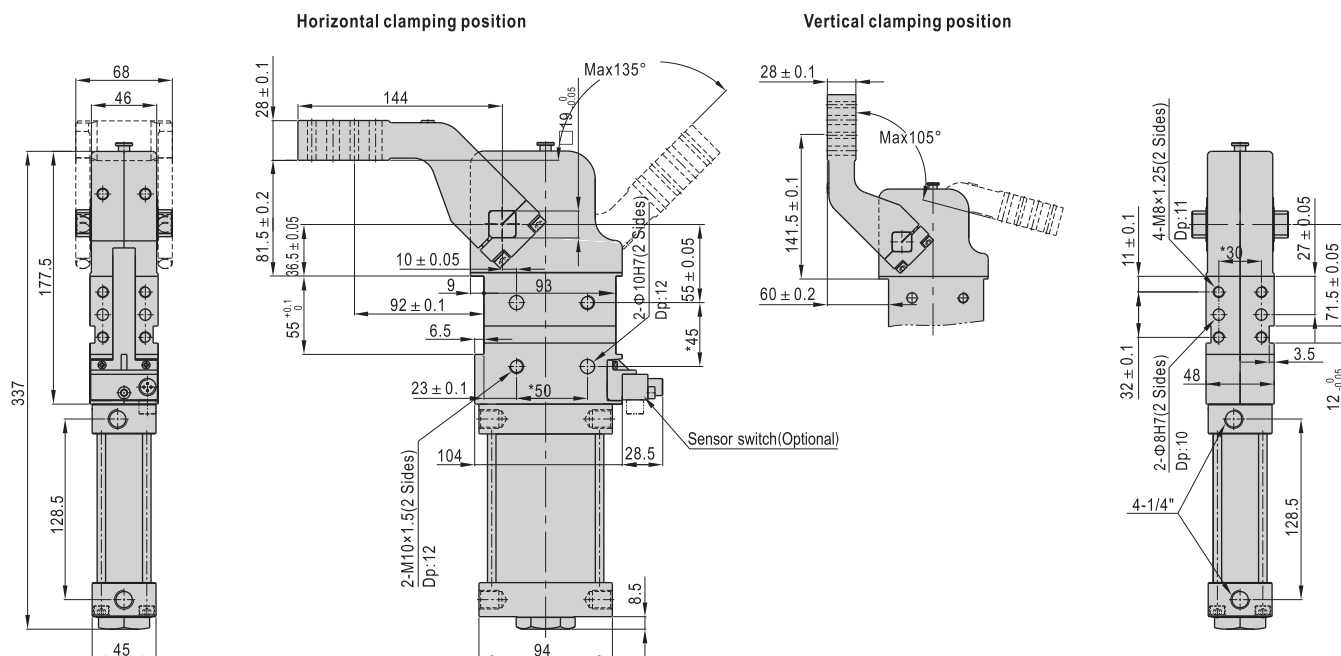
JCK Series—Standard type

JCK50 AM1
AM2



With * dimension: pin hole position tolerance: ±0.02. Thread hole position tolerance: ±0.1.

JCK50 AM3
AM4

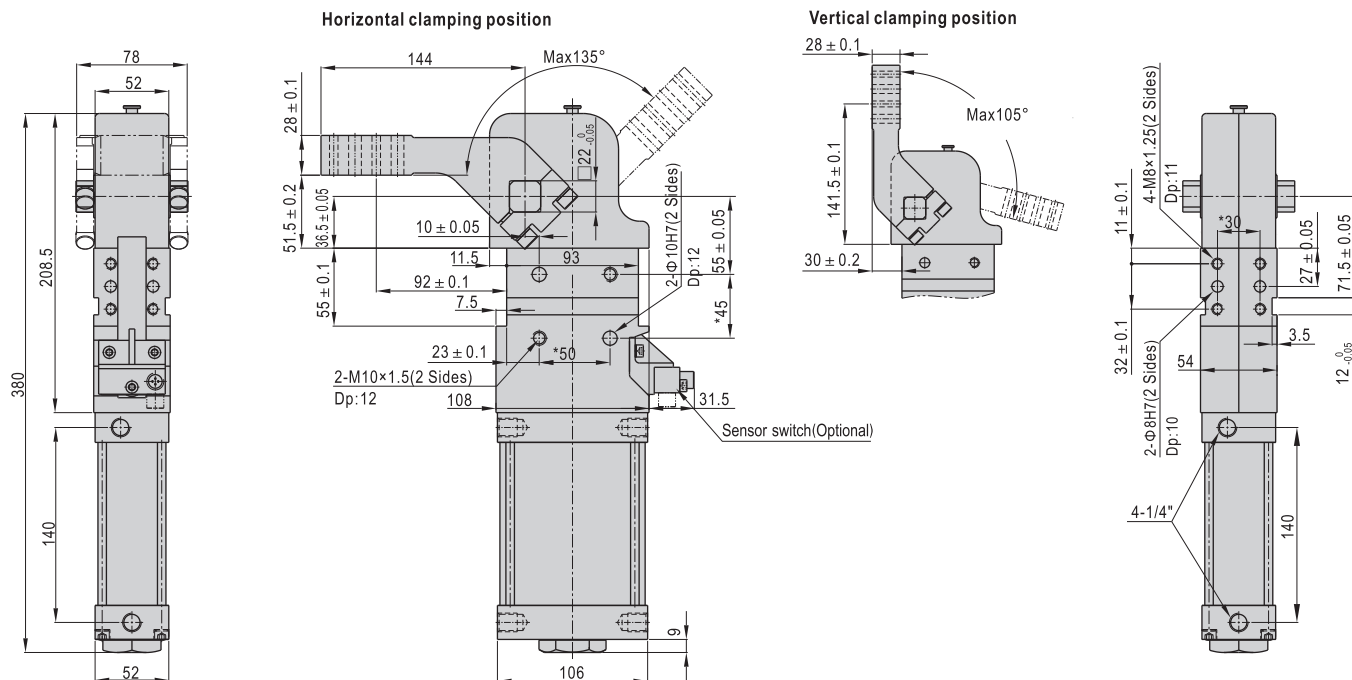


With * dimension: pin hole position tolerance: ±0.02. Thread hole position tolerance: ±0.1.

Power clamp cylinder

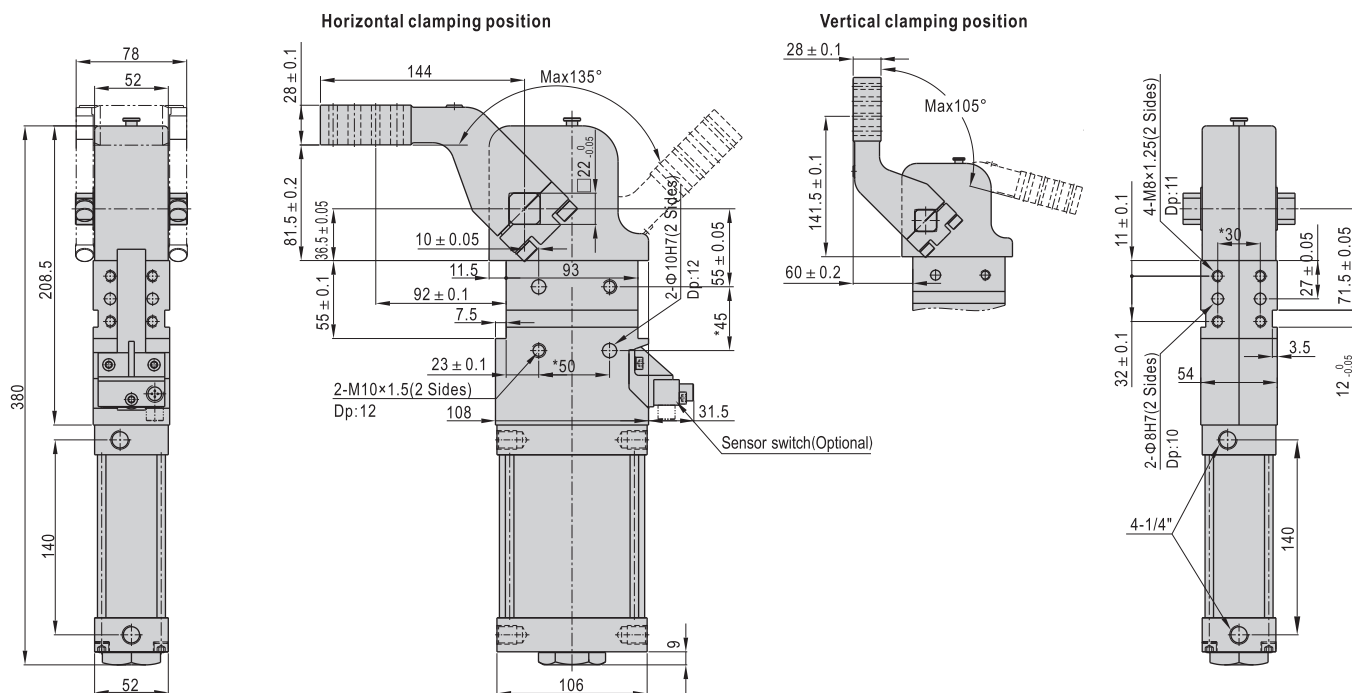
JCK Series—Standard type

JCK63 AM1
AM2



With * dimension: pin hole position tolerance: ±0.02. Thread hole position tolerance: ±0.1.

JCK63 AM3
AM4



With * dimension: pin hole position tolerance: ±0.02. Thread hole position tolerance: ±0.1.

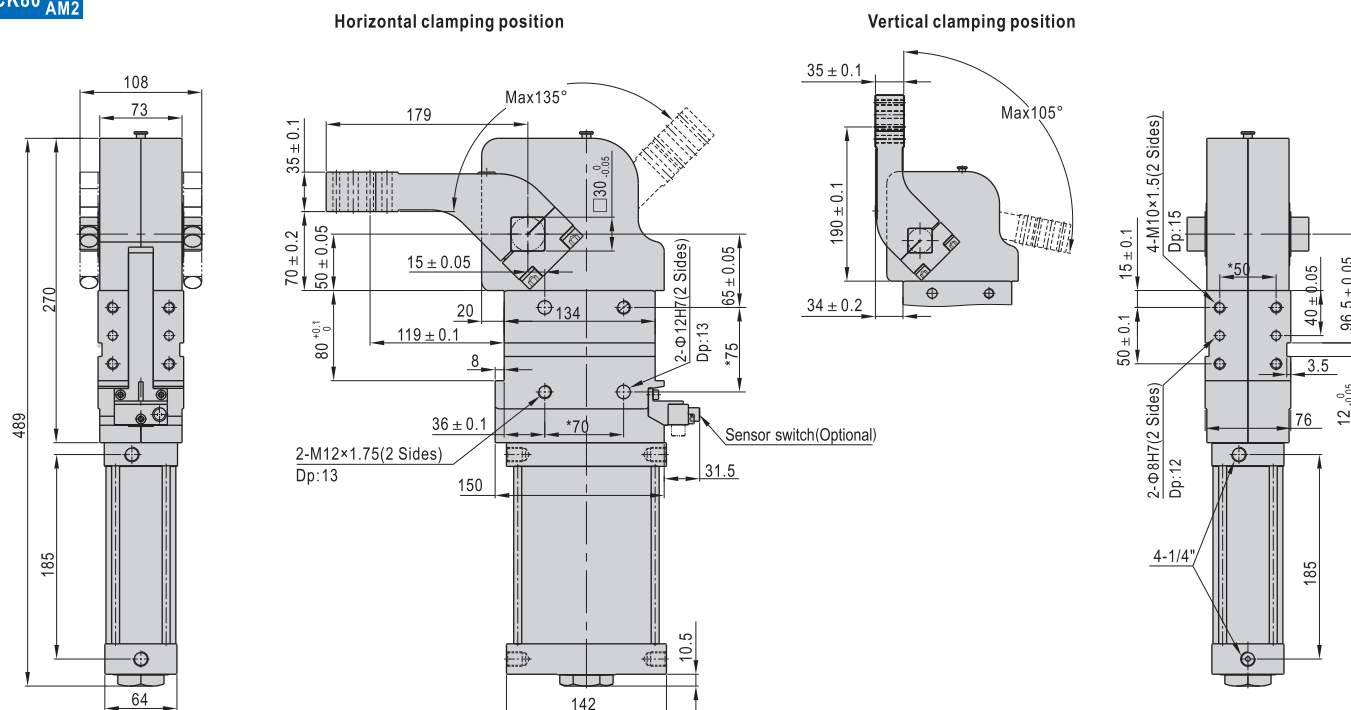


JCK

Power clamp cylinder

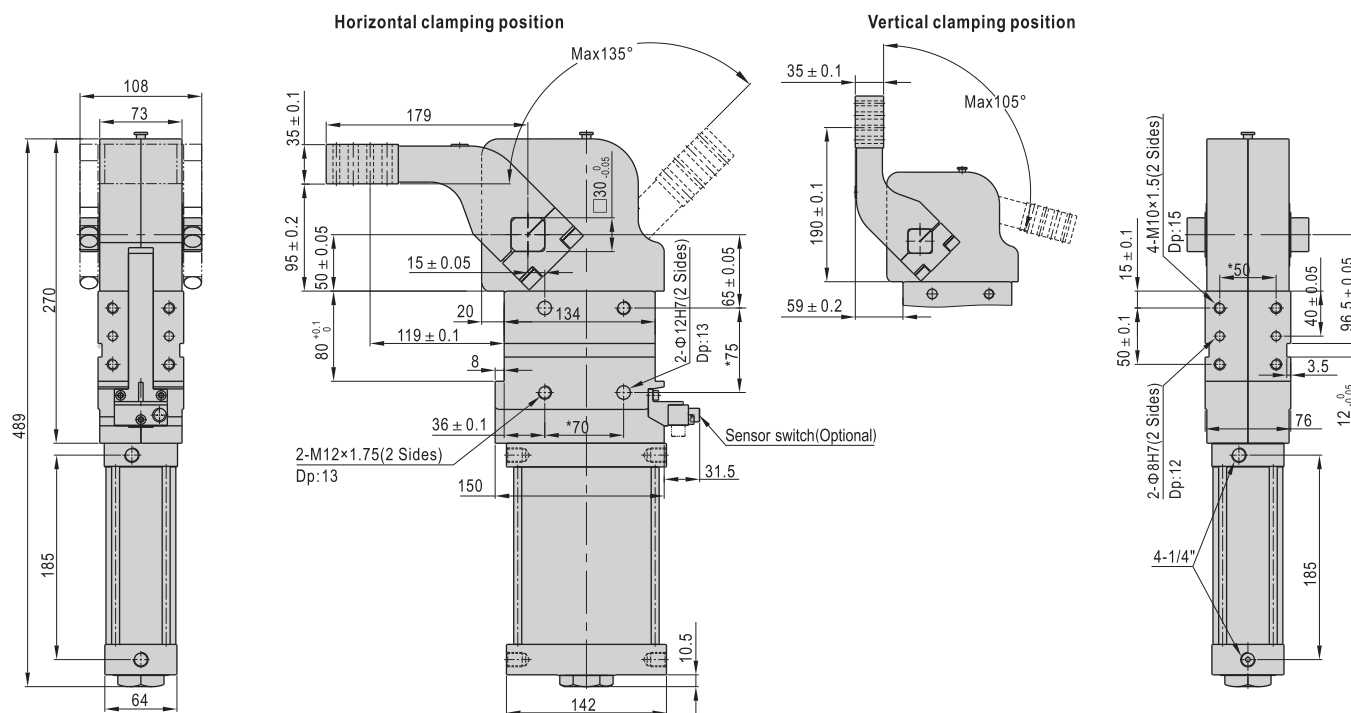
JCK Series—Standard type

JCK80 AM1
AM2



With * dimension: pin hole position tolerance: ±0.02. Thread hole position tolerance: ±0.1.

JCK80 AM3
AM4



With * dimension: pin hole position tolerance: ±0.02. Thread hole position tolerance: ±0.1.

Power clamp cylinder

JCK Series——Manual type



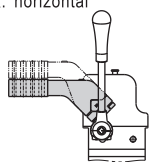
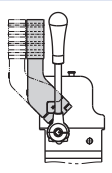
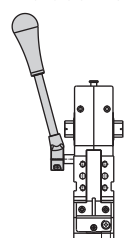
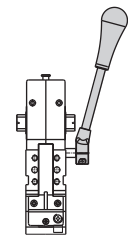
■ Specification

Model	JCK40	JCK50	JCK63	JCK80
Output torque (0.5MPa)	120N.m	160N.m	380N.m	800N.m
Acting type	Double acting			
Fluid	Air(to be filtered by 40 μ m filter element)			
Operating pressure	0.3~0.8MPa(43~116psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-10~60 °C			
Opening angle	15°/30°/45°/60°/75°/90°/105°/120°			
Minimum opening and closure time	1 second clamping, 1 second opening			
Position sensing	Inductive approaching sensor			
Cushion type	Air buffer			
Weight (135°) ①	2.5kg	4.5kg	6.0kg	14.0kg
Port size ②	1/8"		1/4"	

① This weight includes 15mm offset clamping arm; ② PT thread, G thread and NPT thread are available.

■ Ordering code

JCK □ 63 × 120 AM1R HL K □

<p>Model</p> <p>JCK: Power clamp cylinder (Double acting)</p>	<p>Thread type</p> <p>Blank: PT G: G T: NPT</p>																		
<p>Clamping arm position</p> <p>Blank: horizontal</p>  <p>V: vertical</p> 	<p>Sensor switch</p> <p>Blank: No sensor switch K: With sensor switch</p>																		
<p>Bore size</p> <p>40: Φ40 50: Φ50 63: Φ63 80: Φ80</p>	<p>Handle location</p> <p>Blank: non-manual</p> <p>HL: handle on the left</p>  <p>HR: handle on the right</p> 																		
<p>Opening angle</p> <table border="1"> <thead> <tr> <th>Opening angle</th> <th>Maximum opening angle</th> </tr> </thead> <tbody> <tr> <td>15: 15°</td> <td></td> </tr> <tr> <td>30: 30°</td> <td></td> </tr> <tr> <td>45: 45°</td> <td>JCK40 JCKV40 105°</td> </tr> <tr> <td>60: 60°</td> <td></td> </tr> <tr> <td>75: 75°</td> <td>JCK50~80 120°</td> </tr> <tr> <td>90: 90°</td> <td></td> </tr> <tr> <td>105: 105°</td> <td>JCKV50~80 105°</td> </tr> <tr> <td>120: 120°</td> <td></td> </tr> </tbody> </table>	Opening angle	Maximum opening angle	15: 15°		30: 30°		45: 45°	JCK40 JCKV40 105°	60: 60°		75: 75°	JCK50~80 120°	90: 90°		105: 105°	JCKV50~80 105°	120: 120°		<p>Clamping arm</p> <p>Please refer to standard type for details</p>
Opening angle	Maximum opening angle																		
15: 15°																			
30: 30°																			
45: 45°	JCK40 JCKV40 105°																		
60: 60°																			
75: 75°	JCK50~80 120°																		
90: 90°																			
105: 105°	JCKV50~80 105°																		
120: 120°																			

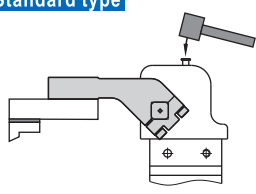
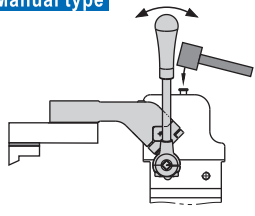
① Please refer to the drawing for detailed dimensions of clamping arm.
Others: Sensor switch can be ordered separately and please refer to relative contents.

■ Examples for using

- When the clamped plate is hollow and thin, the final clamping position should be reached manually at low speed before clamping with force to avoid scallops left by fast clamping.
- When clamping forearm has a locating pin, it should be pushed out of the locating hole manually. (Clamping should be done before the pin is well located.)
- When clamping mechanism is complicated with many small sheet-metal parts, clamping should be done manually at first to avoid compressed air flushing well-assembled sheet-metal parts.

Note: Part of manually clamping applications are listed above.
Other welding process may be in need of manually clamping.

■ Contrast of self-lock and unlock

Standard type	Manual type
 <p>Self-lock:</p> <ol style="list-style-type: none"> By inletting compressed air. <p>Unlock:</p> <ol style="list-style-type: none"> By inletting compressed air. By knocking retaining pin. 	 <p>Self-lock:</p> <ol style="list-style-type: none"> By inletting compressed air. By handle. <p>Unlock:</p> <ol style="list-style-type: none"> By inletting compressed air. By knocking retaining pin. By handle.



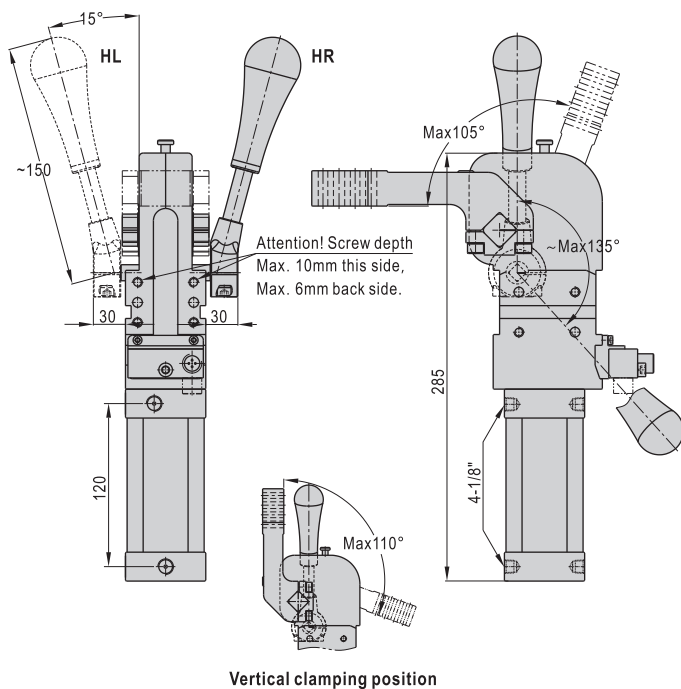
JCK

Power clamp cylinder

JCK Series—Manual type

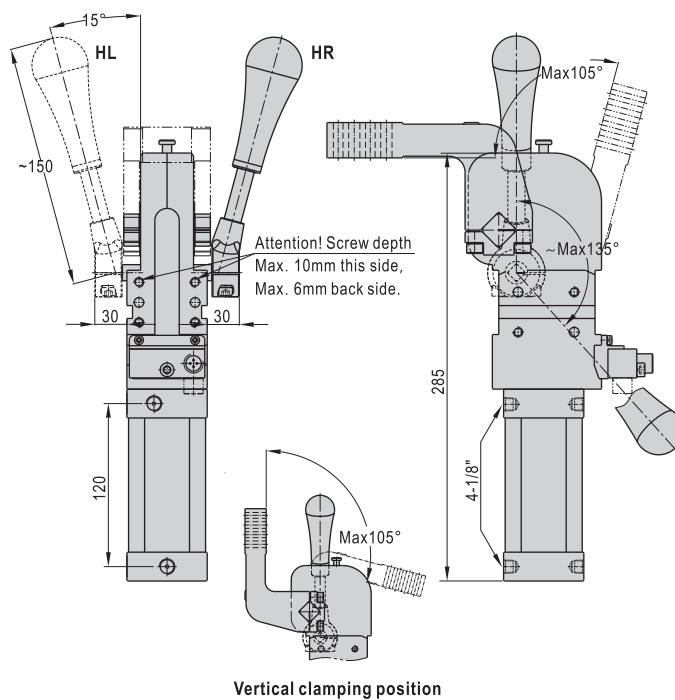
■ Dimensions

JCK40^{AM1}_{AM2}HR(HL)

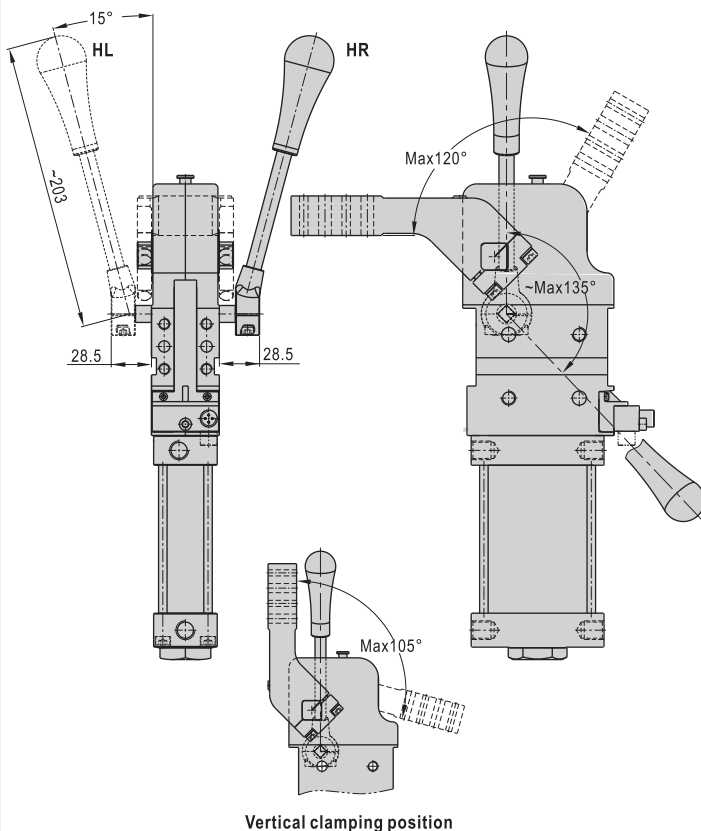


Note: Please refer to standard type for the others dimensions.

JCK40^{AM3}_{AM4}HR(HL)

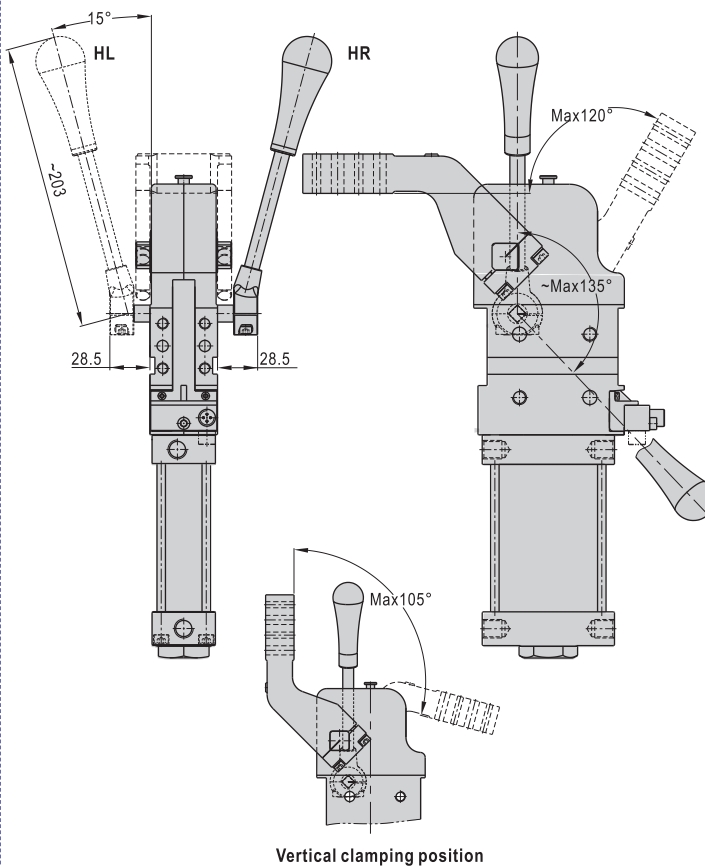


JCK50^{AM1}_{AM2}HR(HL)



Note: Please refer to standard type for the others dimensions.

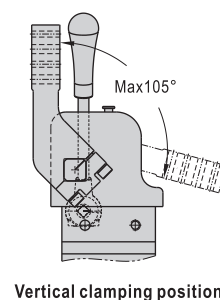
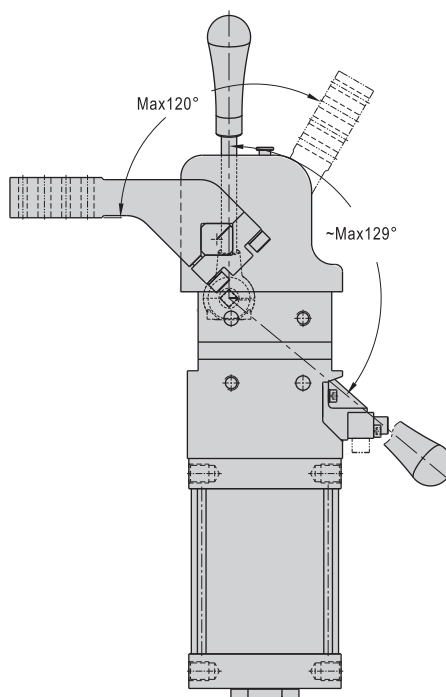
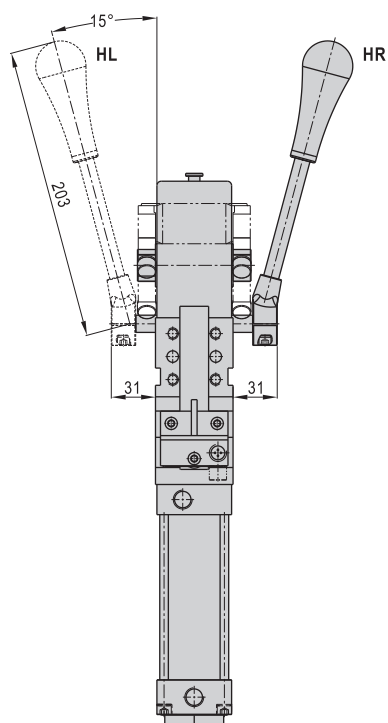
JCK50^{AM3}_{AM4}HR(HL)



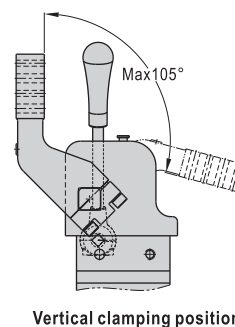
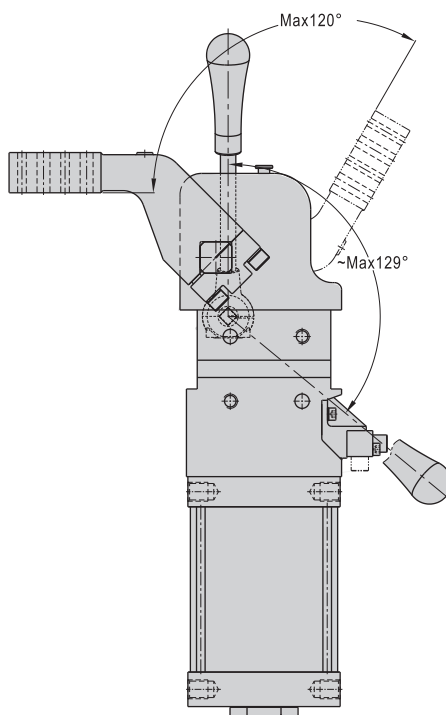
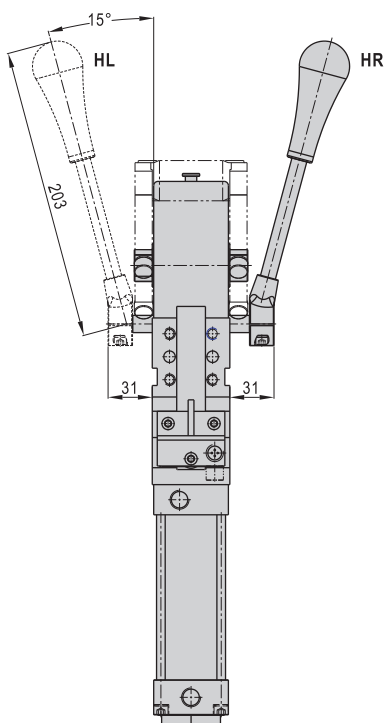
Power clamp cylinder

JCK Series—Manual type

JCK63^{AM1}
AM2^{HR(HL)}



JCK63^{AM3}
AM4^{HR(HL)}



Note: Please refer to standard type for the others dimensions.



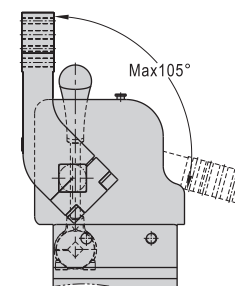
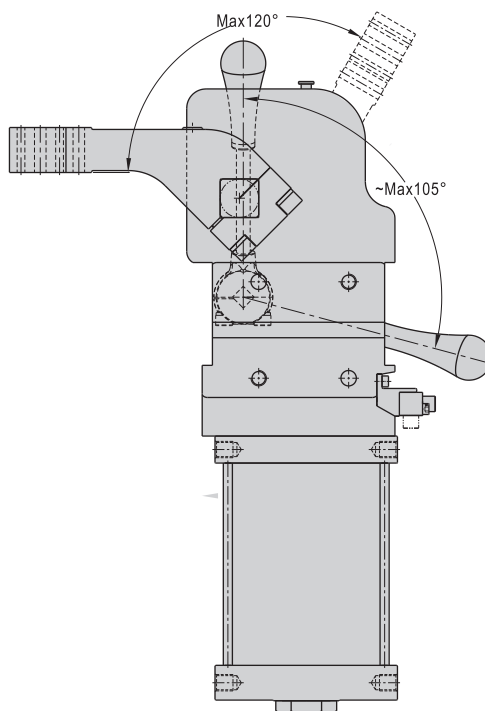
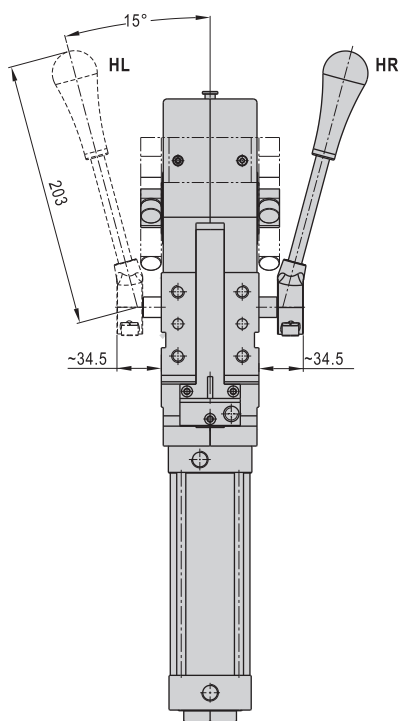
JCK

Power clamp cylinder

JCK Series—Manual type

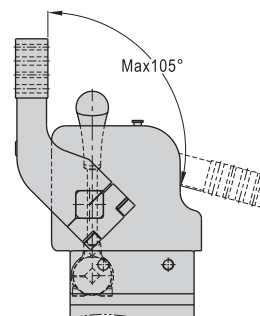
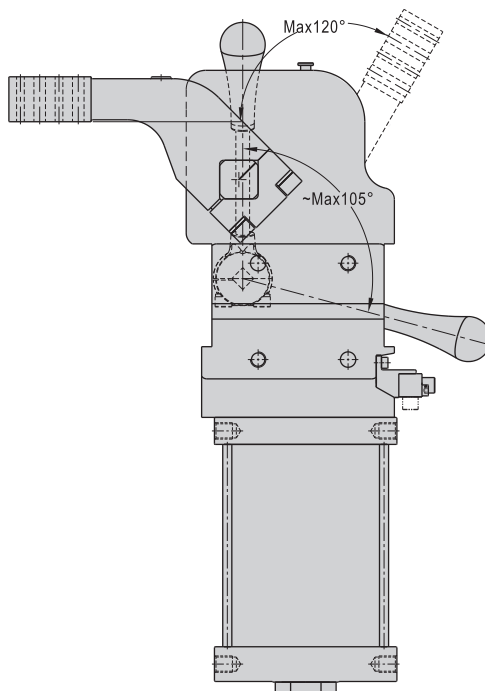
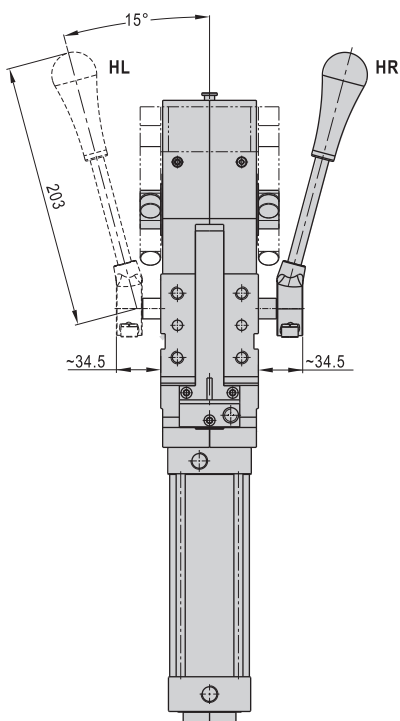
AIRTAC

JCK80^{AM1}_{AM2}HR(HL)



Vertical clamping position

JCK80^{AM3}_{AM4}HR(HL)



Vertical clamping position

Note: Please refer to standard type for the others dimensions.

Power clamp cylinder

JCK Series——Clamp arm and Adjusting screw



Adjusting screw ordering code

F-JCK 63 × 135 LM			
Accessory code		Adjusting screw code	
Cylinder type		LM: Adjusting screw	
Bore size		Adjusting angle	
		15: 15°	
		30: 30°	
		45: 45°	
		60: 60°	
		75: 75°	
		90: 90°	
		105: 105°	
		120: 120°	
		135: 135°	

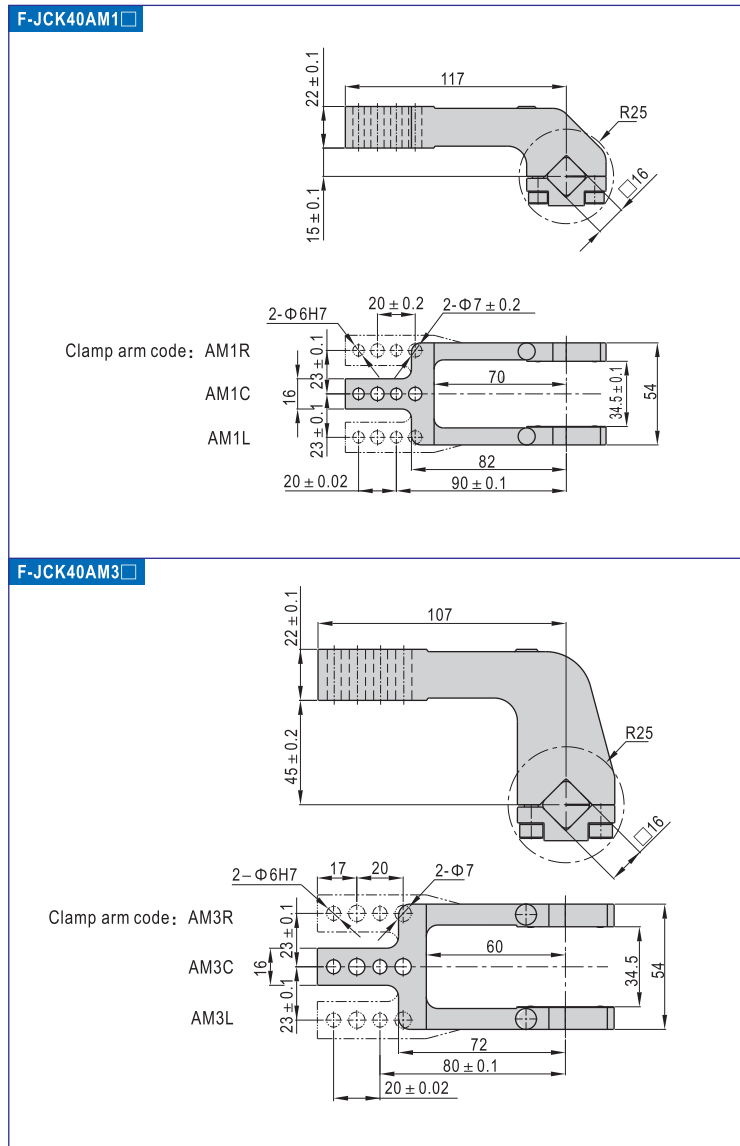
Clamp arm ordering code

F-JCK 63 AM1C			
Accessory code		Clamping arm	
Cylinder type			
Bore size			
		Clamping arm code	Explanation
		40 ~ 80	Blank
			No clamping arm
		AM1 (Offset 15mm)	R
		AM3 (Offset 45mm)	C
			L
		AM1 (Offset 15mm)	R
		AM3 (Offset 45mm)	C
			L
		AM2 (Offset 15mm)	R
		AM4 (Offset 45mm)	C
			L

How to select clamp arm and adjusting screw

Accessories/Cylinder type		JCK40	JCK50	JCK63	JCK80
Adjusting screw	F-JCK□□X15LM	●	●	●	●
	F-JCK□□X45LM	●	●	●	●
	F-JCK□□X75LM	●	●	●	●
	F-JCK□□X105LM	●	●	●	●
	F-JCK□□X135LM	●	●	●	●
Clamp arm	F-JCK□□AM1R	●	●	●	●
	F-JCK□□AM1C	●	●	●	●
	F-JCK□□AM1L	●	●	●	●
	F-JCK□□AM2R	●	●	●	●
	F-JCK□□AM2C	●	●	●	●
	F-JCK□□AM2L	●	●	●	●
	F-JCK□□AM3R	●	●	●	●

Dimensions of clamp arm

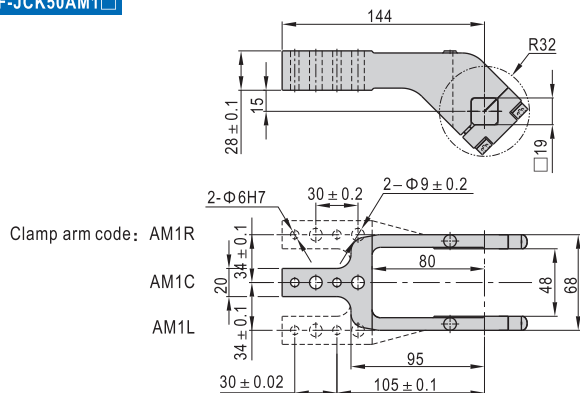


JCK

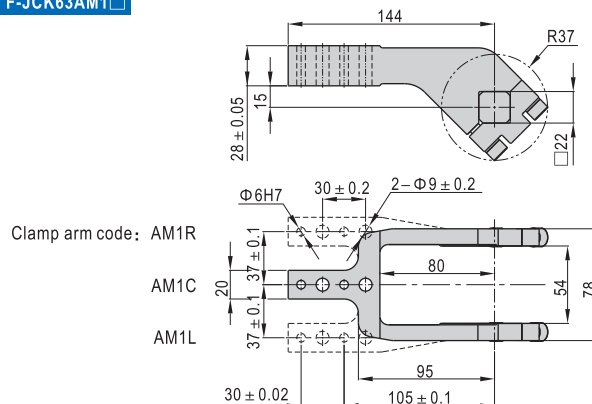
Power clamp cylinder

JCK Series——Clamp arm and Adjusting screw

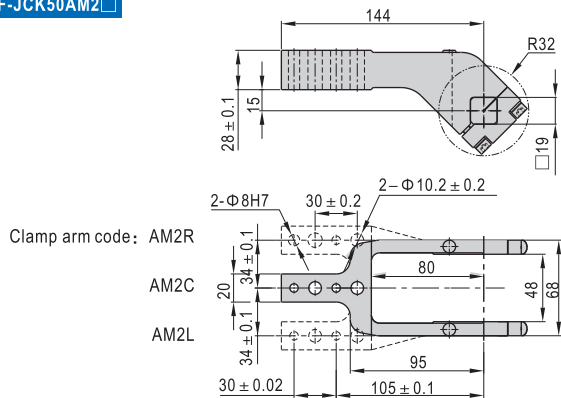
F-JCK50AM1



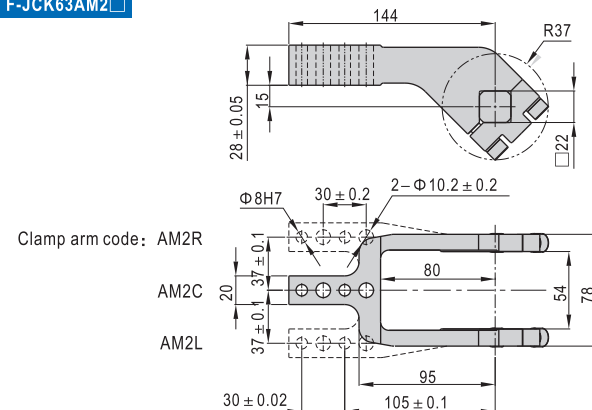
F-JCK63AM1



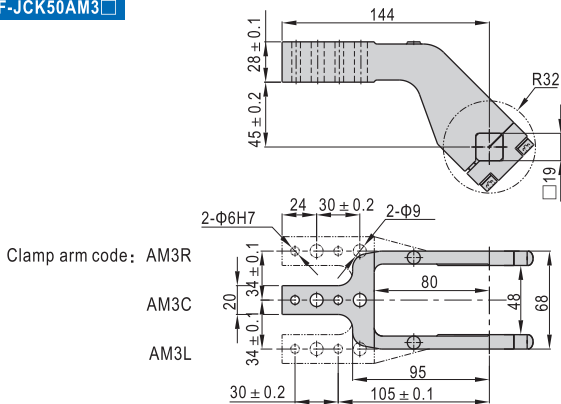
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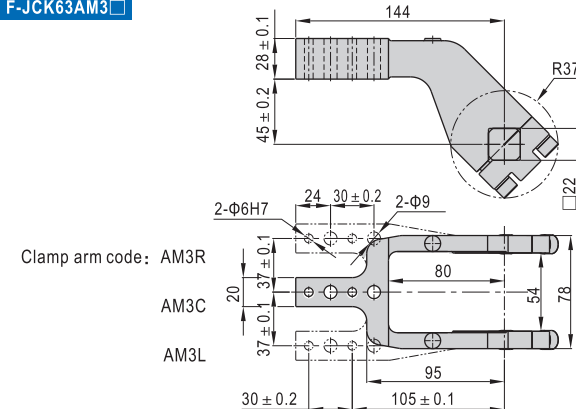
F-JCK63AM2



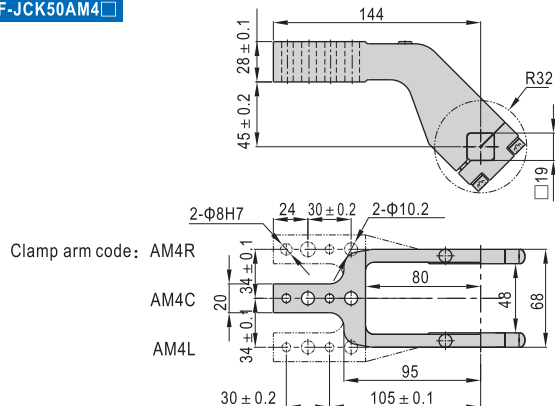
F-JCK50AM3



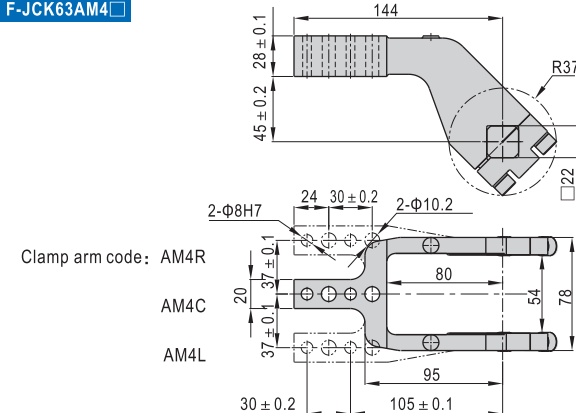
F-JCK63AM3



F-JCK50AM4



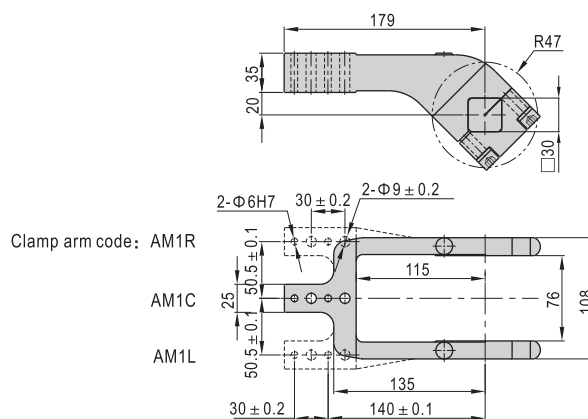
F-JCK63AM4



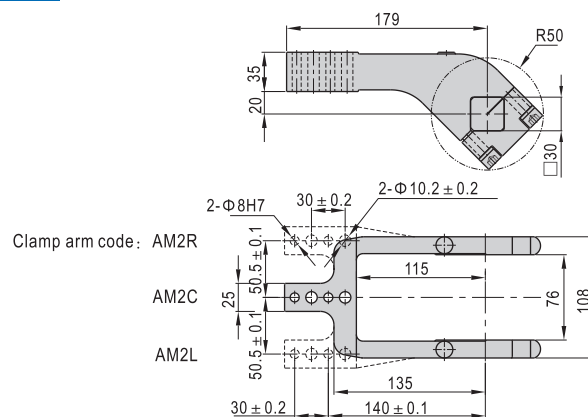
Power clamp cylinder

JCK Series——Clamp arm and Adjusting screw

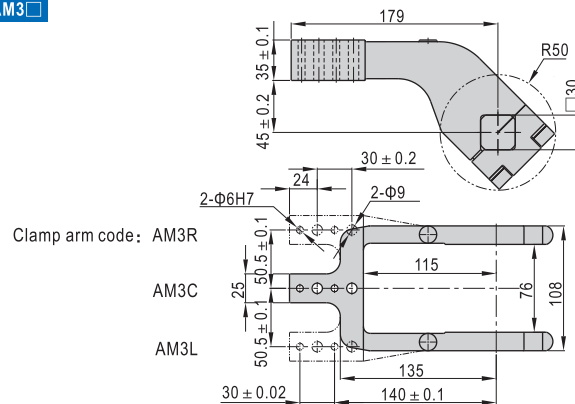
F-JCK80AM1



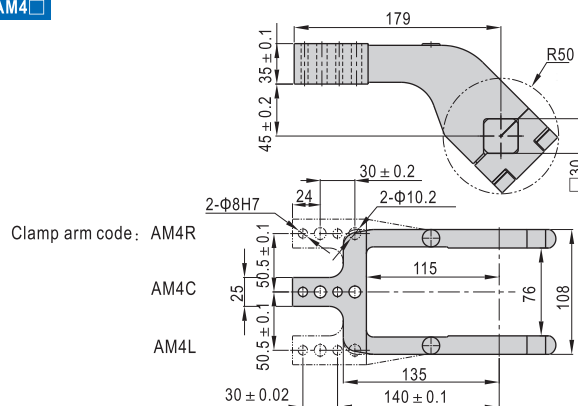
F-JCK80AM2



F-JCK80AM3



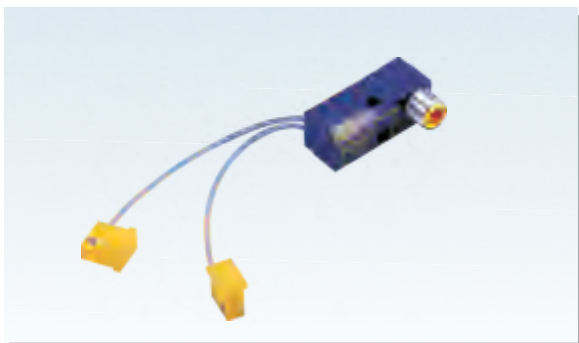
F-JCK80AM4



JCK

Power clamp cylinder

JCK Series——Sensor switch



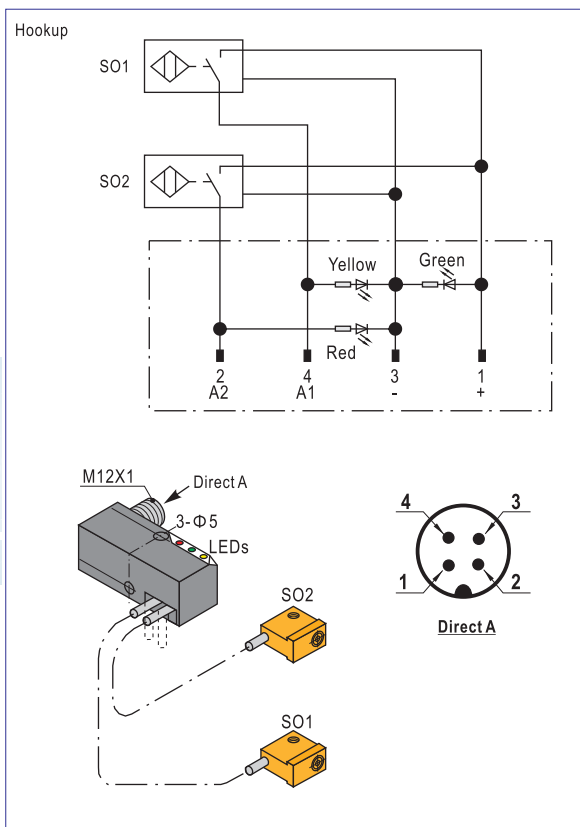
Specification

Operating range	2mm
Voltage range	10~30V DC
Output type	N.O., PNP, NPN
Rated DC	150mA(max)
Switch frequency	30Hz
Shell material	PBT
Switch status indication	Clamping: Red \ Operating: Yellow
Voltage indication	Green

Ordering code

DS1 KP 63			
Model	Bore size		
	DS1: Sensor switch	Code	Bore size
Output type	KP: PNP KN: NPN	63	40、50、63
		80	80

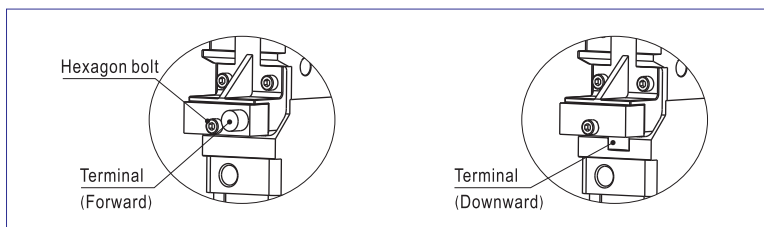
Hookup



Installation and application of sensor switch

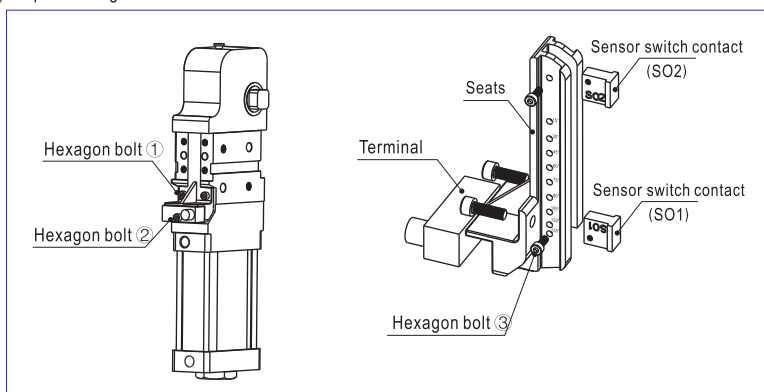
1. Sensor switch is well assembled before leaving factory which is free of adjusting. If you need to change terminals' wiring direction, change new sensor or rearrange angle, please do as follows:

1.1) Steps of changing terminals' wiring direction:



(See figure above.) Unscrew the hexagon bolt→dismount sensor's Terminal→change terminals' wiring direction as you need→remounting→screw up the hexagon bolt.

1.2) Steps of change new sensor switch:



(See figure above.) unscrew two hexagon bolts ①→dismount sensor seats as a whole→unscrew two hexagon bolts ③→dismount two sensor switch contacts(SO1\SO2)→unscrew hexagon bolt ②→remove the sensor switch→choose new sensor switch→replace new sensor switch contact and screw up hexagon bolt ②→replace new wiring box and screw up hexagon bolt ①→finished.

Ecommended lock torque of hexagon bolt is listed in the following table:

Ecommended lock torque of hexagon bolt ①		
Bore size	Hexagon bolt type	Lock torque(N.m)
40、50	M3 × 0.5	1.2~1.5
63、80	M5 × 0.8	4.0~5.0
Ecommended lock torque of hexagon bolt ②		
Bore size	Hexagon bolt type	Lock torque(N.m)
40、50、63、80	M5 × 0.8	4.0~5.0
Ecommended lock torque of hexagon bolt ③		
Bore size	Hexagon bolt type	Lock torque(N.m)
40、50、63、80	M3 × 0.5	1.2~1.5

1.3) Steps of readjusting angle:

For more details, see latter contents.

1.4) Sensor switch's connection:

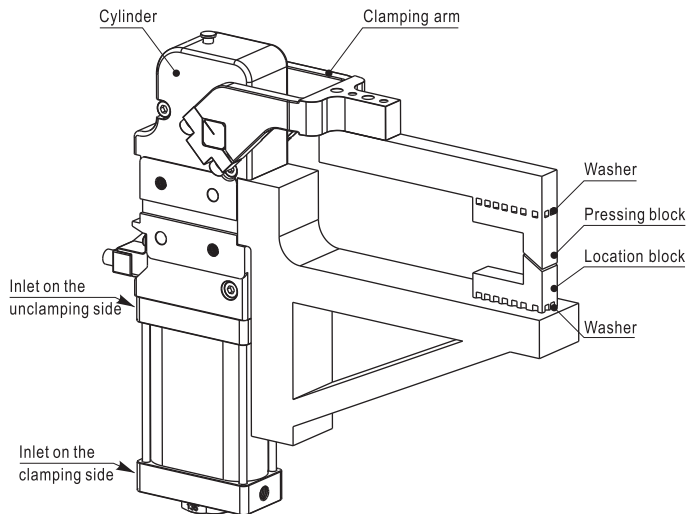
Sensor switch's connection need to use relevant male connector, which have separate male connector, and with wire male connector to be choused. The ordering code as below:

Name: On end cable (3 meters length)	Name: L shape cable (3 meters length)	Name: On end connector (rotundity)	Name: L shape connector (rotundity)
Ordering code: X-F-PPVCS	Ordering code: X-F-PPVCL	Ordering code: X-F-PPVCV	Ordering code: X-F-PPVCH

■ Installation and application

1. Mount the cylinder at desired place with bolts and locating pin after choosing a mounting surface. Connect the cylinder and control valve with joint and rubber hose. To adjust the opening and closure speed, our pneumatic power welding clamp is equipped with return stroke air buffering. Buffering cannot function well if the clamping arm is over-weighted so that clamping arm' weight must be within the allowable limit;
2. Using clamping arm beyond the listed in this catalog is forbidden.
3. Workpiece mounting method:

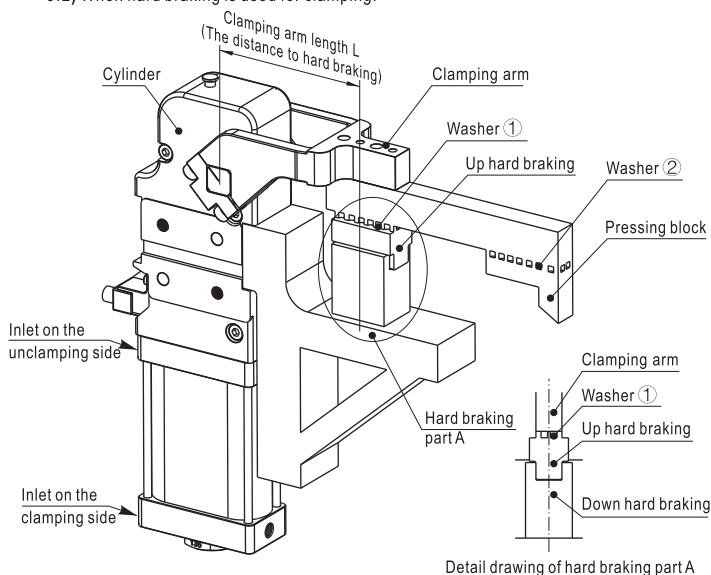
3.1) When only clamping torque is used for clamping:



Please follow the steps to mount the workpiece onto the clamping arm:

- A) Clamping the arm: supply compressed air through the inlet on the clamping side to keep the arm and pressing block at the closure position simultaneously. Make sure the arm is locked up.
- B) Adjusting the clamping gap: adjust the spacer under the mentioned state to make the pressing block in line with the workpiece's thickness. (At this moment no clamping torque is produced theoretically.)
- C) Applying clamping torque: Insert the spacer furthermore under the mentioned state until the gap is smaller than the workpiece's thickness and desired clamping torque is produced. (Make sure the mechanism passes the dead position to produce self-locking i.e. the retaining pin is pushed out.)

3.2) When hard braking is used for clamping:



Detail drawing of hard braking part A

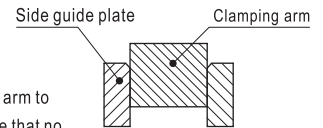
Please follow the steps to mount the workpiece onto the clamping arm:

- A) clamping the arm: supply compressed air through the inlet on the closure side to keep the arm and the braking block at the clamping position simultaneously. Make sure the arm is locked up;

B) Adjusting the clamping gap: Adjust washer ① under the mentioned state until the gap between the upside braking block and downside one. (At this moment no clamping torque is produced theoretically.)

C) Applying clamping torque: insert the washer ① furthermore under the mentioned state to produce desired clamping torque. (Make sure the mechanism passes the dead position to produce self-locking i.e. the retaining pin is pushed out.)

D) Adjust washer ② under the state mentioned in C to make the pressing block in contact with the workpiece.



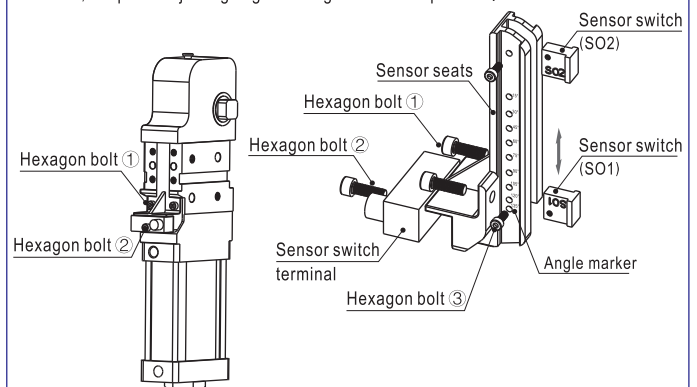
3.3) When side guide plate is mounted:

Side guide plate is mounted on the clamping arm to prevent transverse movement and make sure that no transverse load is applied and that the arm would not be stuck.

4. Angle adjusting method:

Standard adjusting angle range of the pneumatic clamp is 15°~135°. Opening angle can be changed via changing cylinder's stroke distance or the sensor's position;

4.1) Step 1 of adjusting angle--change of sensor's position:



A) Unscrew hexagon bolt ① with inner hexagon wrench to take out the sensor seats;

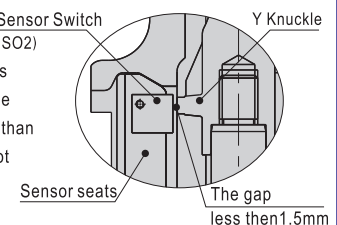
B) Unscrew hexagon bolt ③ with inner hexagon wrench to take out sensor SO1 and align it to your desired angle indication position and re-screw up hexagon bolt ③. (Note: when mounting sensor SO1, the number "SO1" should point downward except 15°.)

C) After the sensor's position is adjusted, replace the sensor seats by screwing up hexagon bolt ① with inner hexagon wrench (lock-up torque by related contents).

Note: 1) sensor SO2 controls the cylinder's end stroke position and its mounting position is well set when leaving factory and is not changeable.

2) the sensor wiring box is provided with two outgoing orientations: forward and downward. Unscrew hexagon bolt ② and then you can change the wiring box orientation. After that, screw up hexagon bolt ②.

3) When remounting the sensor fix to its original position, the gap between the sensor and Y-knuckle should be less than 1.5mm. Otherwise, the sensor may not function well.

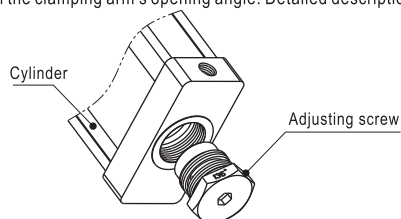


4.2) Step 2 of adjusting angle--change of the cylinder's stroke distance:

The relation between the opening angle of clamping arm and cylinder's stroke distance is listed as follows:

Opening angle\Stroke(mm)	JCK40	JCK50	JCK63	JCK80
15°	20.2	21.6	23.1	36.1
30°	28.1	30.2	33.4	50.5
45°	34.8	37.5	41.6	62.7
60°	41.4	44.6	49.7	74.5
75°	48.0	51.8	57.5	86.3
90°	54.8	59.2	65.7	98.1
105°	61.5	66.4	73.8	109.6
120°	67.4	72.7	81.0	119.5
135°	71.6	77.3	86.2	126.4

During actual operation, the cylinder's stroke can be changed by changing the adjusting screw at the bottom of the clamping arm's opening angle. Detailed description is as follows:



- Unscrew original adjusting screw with inner hexagon wrench
- Choose suitable adjusting screw according to actual need (the bottom is marked with corresponding opening angle).
- Screw up new adjusting screw into the cylinder's end cap.

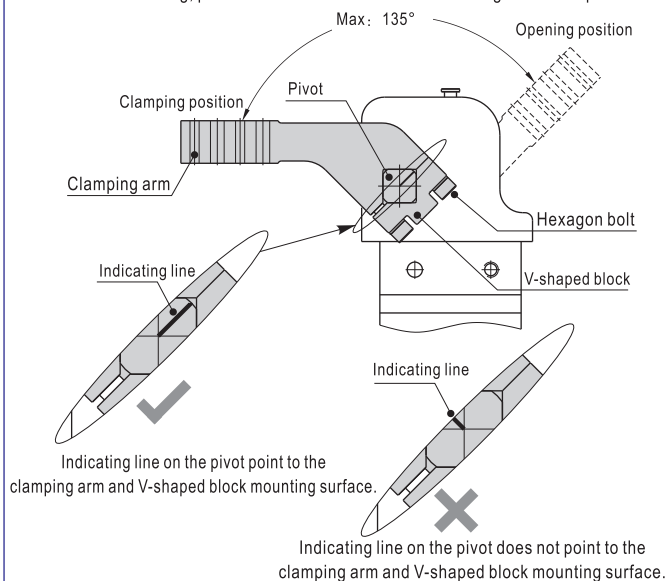
5. Mounting clamping arm:

The clamping arm is already mounted when leaving factory which can be remounted by yourself horizontally or vertically according to your actual need.

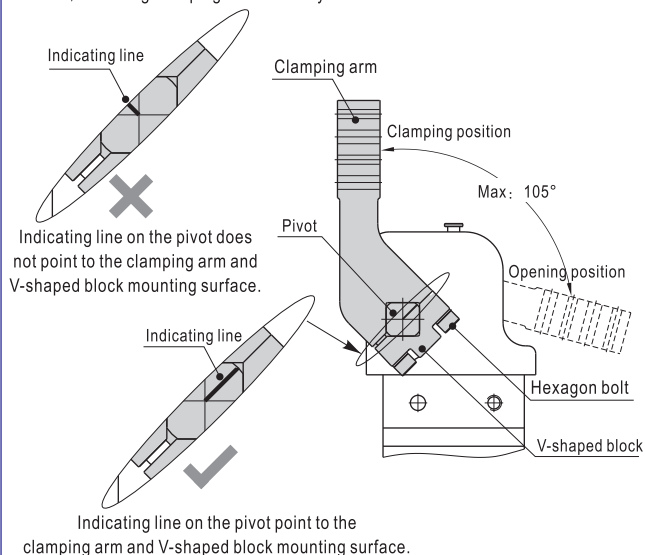
5.1) Mounting clamping arm horizontally:

Unscrew 4 hexagon bolts on both sides of the clamping arm to remove V-shaped block and then the clamping arm for substituting your desired one.

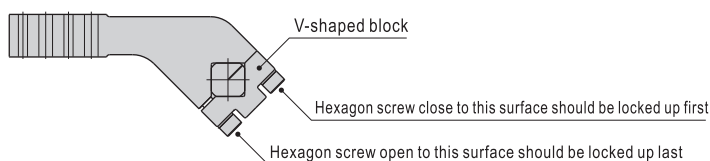
When mounting, please note the direction of the indicating line on the pivot.



5.2) Mounting clamping arm vertically:



5.3) V-shaped block mounting:



5.4) Holding torque of clamping arm (recommended):

When holding clamping arm, please choose recommended value in the following list:

Bore size	Bolt type	Holding torque (N.m)
40	M6 × 1.0	13.8
50	M6 × 1.0	13.8
63	M8 × 1.25	33.0
80	M10 × 1.5	66.0

6. Self-lock function:

At the end of stroke, the crank-slider mechanism passes the dead point and gets self-locked up. The retaining pin gets pushed up at this moment. Even when compressed air is off, the cylinder can remain at closure state for safety. To open self-locking of the crank-slider mechanism, push down the retaining pin when compressed air is off.

Warning:

Pushing down the retaining pin may cause clamping arm to spring off at closure state. So when using the pin, please get yourself away from the clamping arm's operation range.

