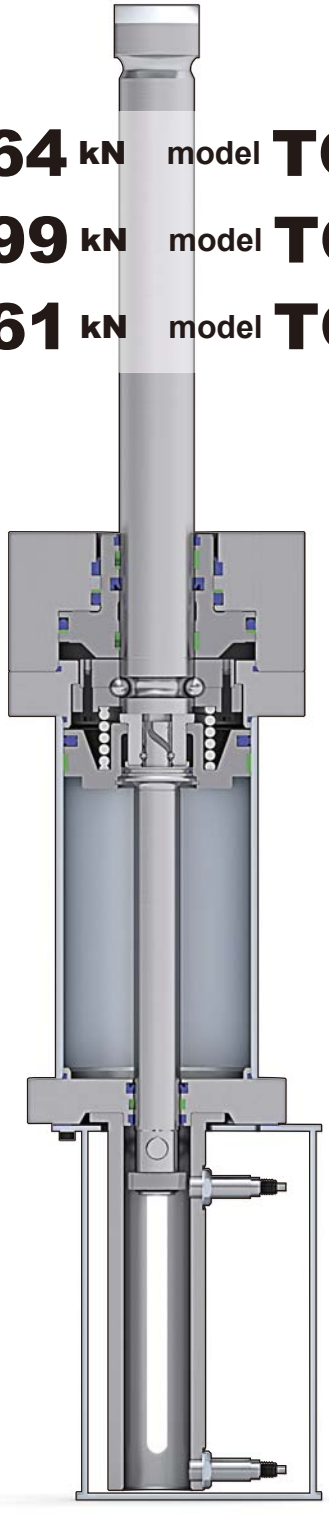
Pascal

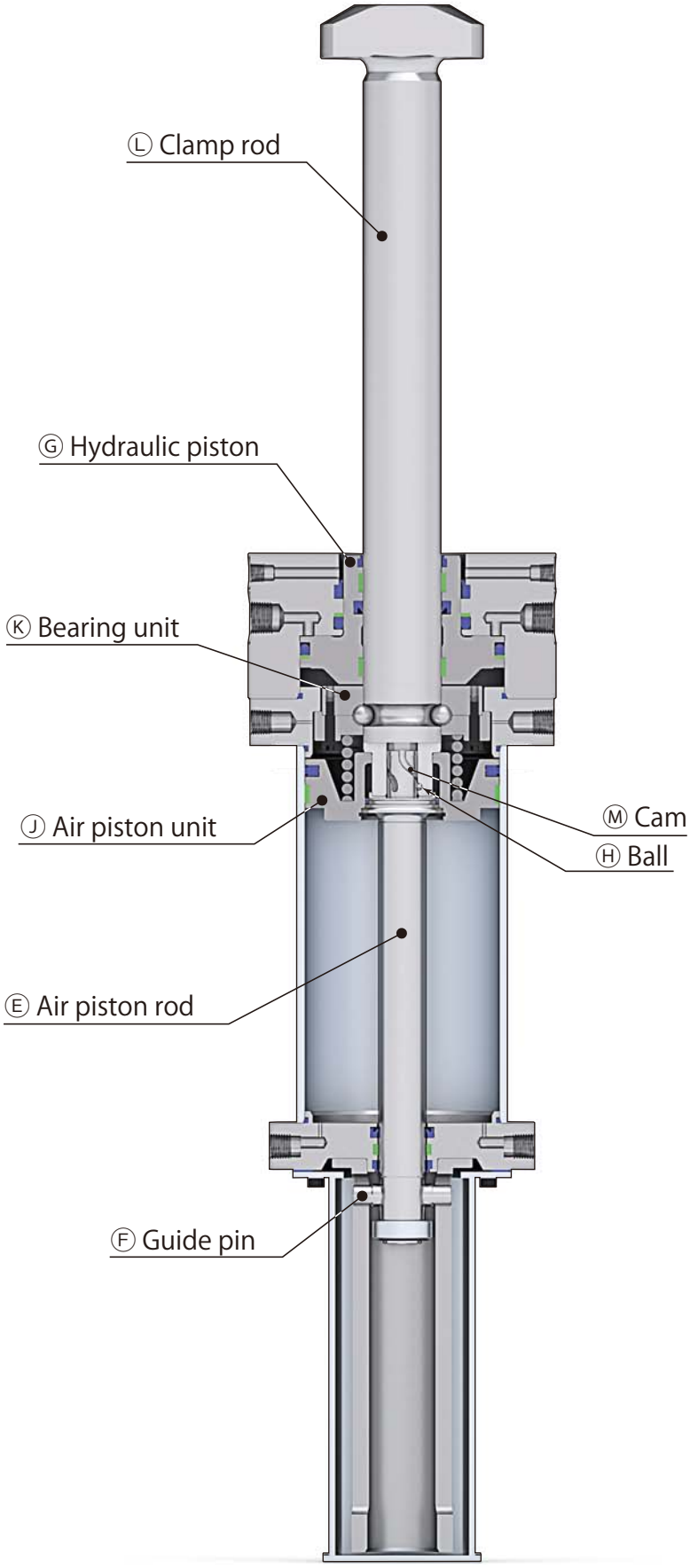
twist clamp

Clamping force **164** kN model **TGC160**

Clamping force **99** kN model **TGC100**

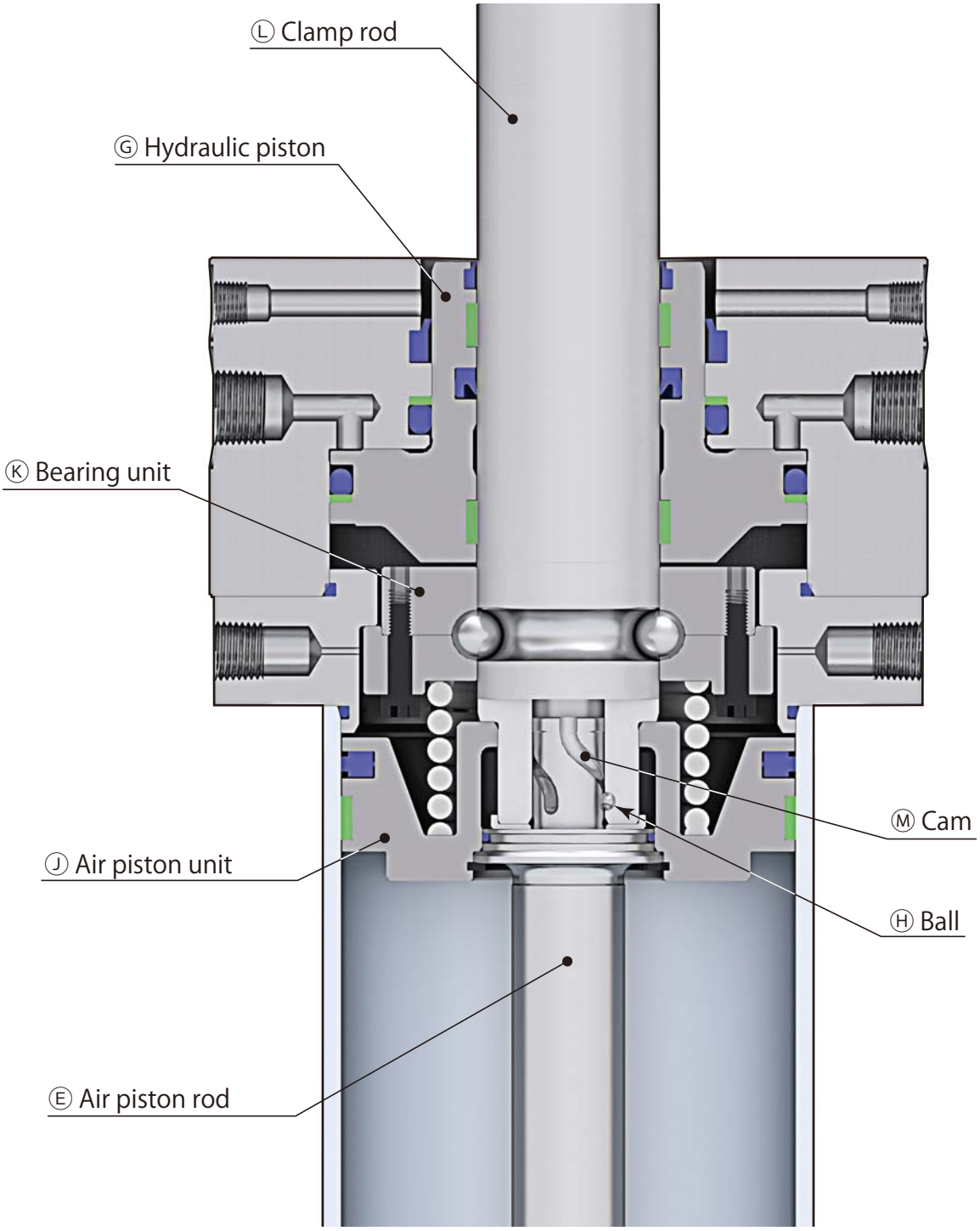
Clamping force **61** kN model **TGC060**




Ⓛ Clamp rod
Ⓖ Hydraulic piston
Ⓚ Bearing unit
Ⓙ Air piston unit
Ⓜ Cam
Ⓗ Ball
Ⓔ Air piston rod
Ⓕ Guide pin

Structure

JP PAT. P. A2019-196783



Details

Model designation

TGC

Clamping force	Proximity switch	Clamping height	Die plate thickness
100	**D**	**200**	**050**

Clamping force

060	61kN
100	99kN
160	164kN

Proximity switch

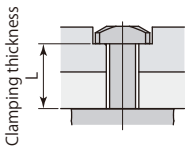
A	AC100V 2-wire model no. E2E-X2Y1
D	DC24V 2-wire model no. E2E-X3D1-N

Maker: Omron
Cable length: 5m

Clamping height

(mm) indicate 3-digit

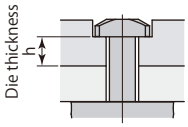
Max. 250mm



Die plate thickness

(mm) indicate 3-digit

Min. 20mm to Max. 100mm
Specify the length in increments of 5mm

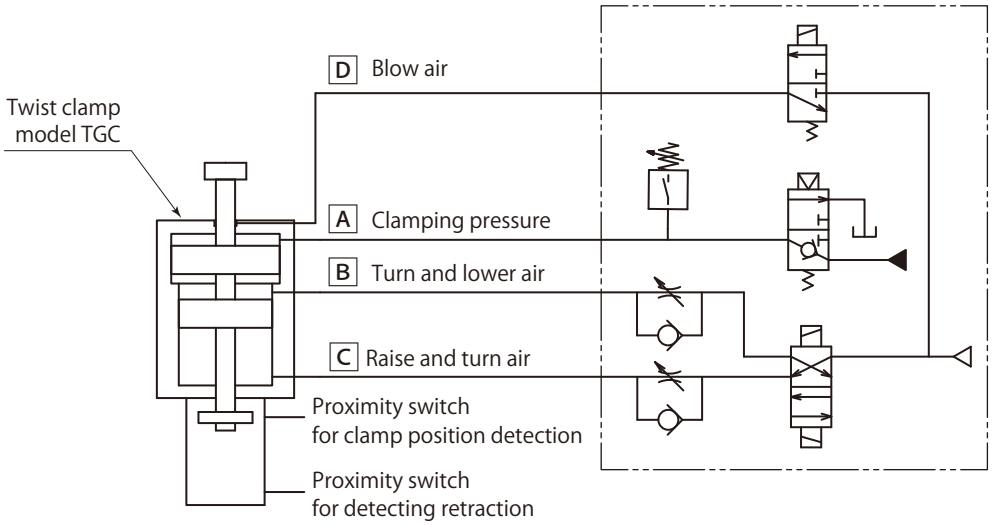


Specifications

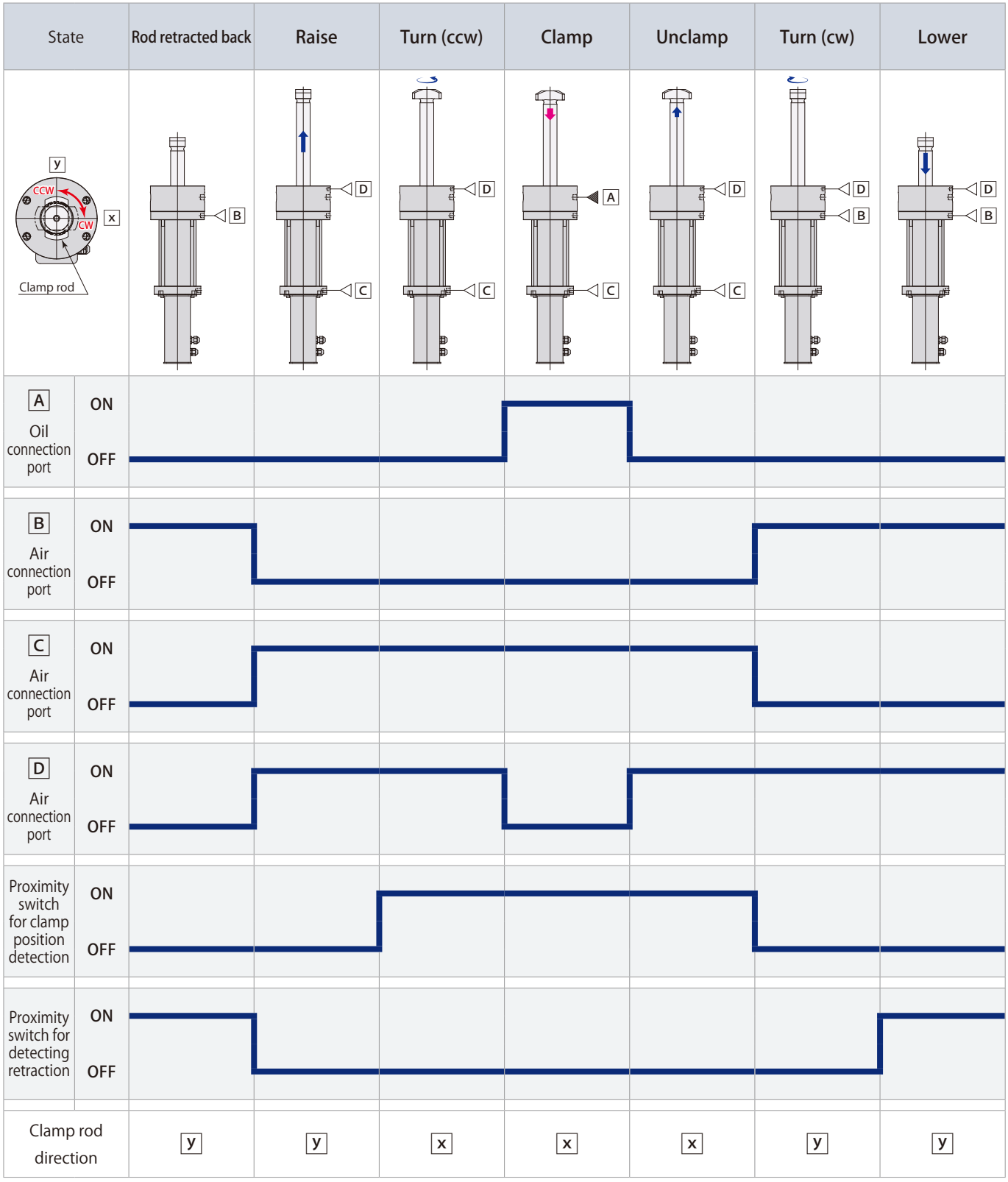
Model			TGC060	TGC100	TGC160
Clamping force (at 18 MPa hyd. Pressure)		kN	61	99	164
Hydraulic portion	Max. operating pressure	MPa	18		
	Proof pressure	MPa	27		
	Overall stroke	mm	8.5		
	Clamp stroke	mm	4		
	Safety stroke	mm	4.5		
	Cylinder capacity (at fully stroked)	cm^3	35	55	90
Pneumatic portion	Operating pressure range	MPa	0.4～0.7		
	Proof pressure	MPa	1		
	Turning angle	°	90±3		
Operating temperature		℃	0～60		
Mounting screw tightening torque (Strength class 12.9)		N-m	(M8 P: thru hole Q: thread) 28	(M10 P: thru hole Q: thread) 55	
			(M12 P: thru hole Q: thread) 78	(M14 P: thru hole Q: thread) 132	(M16 P: thru hole Q: thread) 210

- The clamp rod raise/lower stroke is determined according to the die plate thickness
- Applicable hydraulic fluid: Mineral oil (ISO-VG32 equivalent), Water glycol

Circuit diagram (hydraulic and pneumatic)

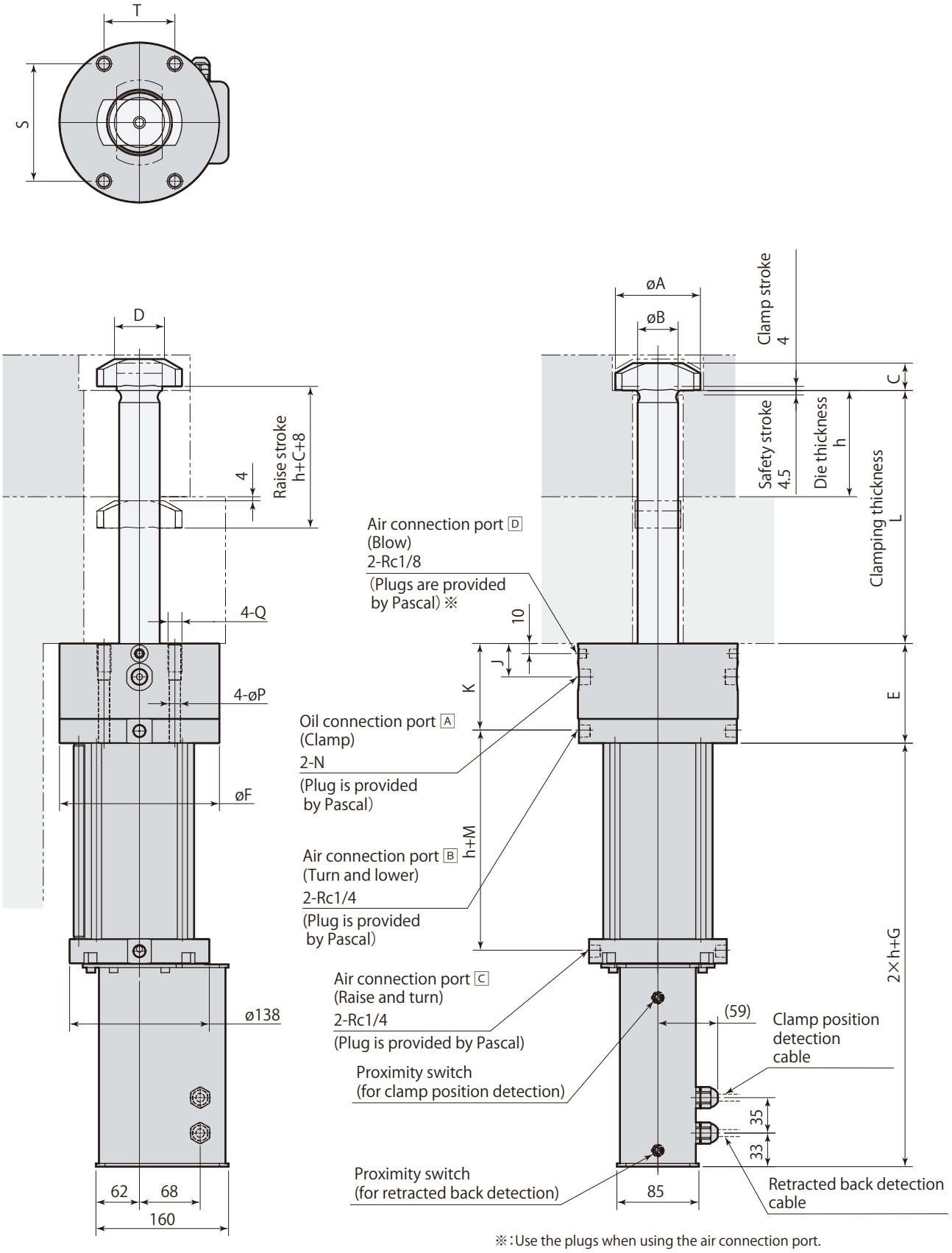


Operation flow



- Do not forcibly turn the rod with tools such as a wrench.
- Use the flow control valve to adjust the 90-deg turning speed to be 0.5sec and over.
- Turning the clamp rod manually or turning it too fast may damage the cam inside the air cylinder.
- To operate use a 2-position type of double solenoid valve.
- The air blowing from connection port D prevents foreign substances from entering and obstructing the cylinder.

External dimensions

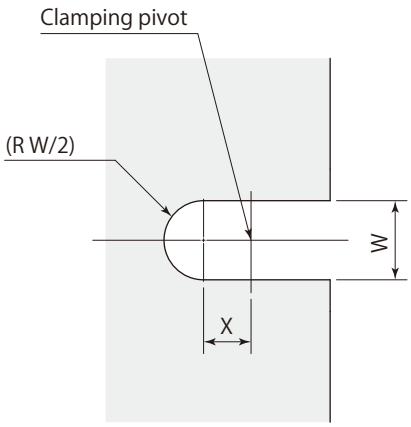


※：Use the plugs when using the air connection port.

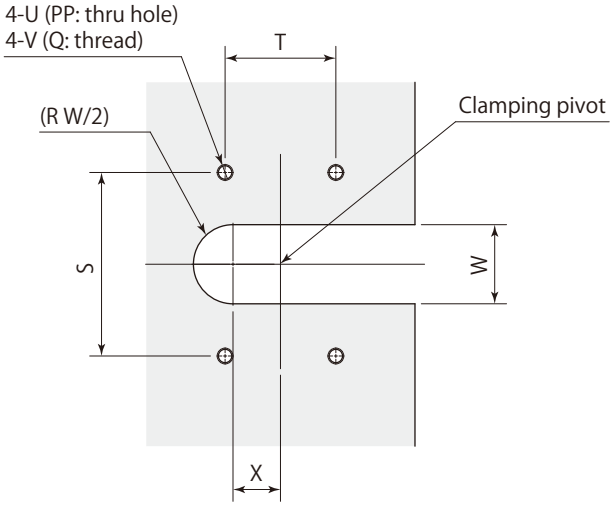
Clamp rod extended-up state

Clamped state

U-slot dimensions

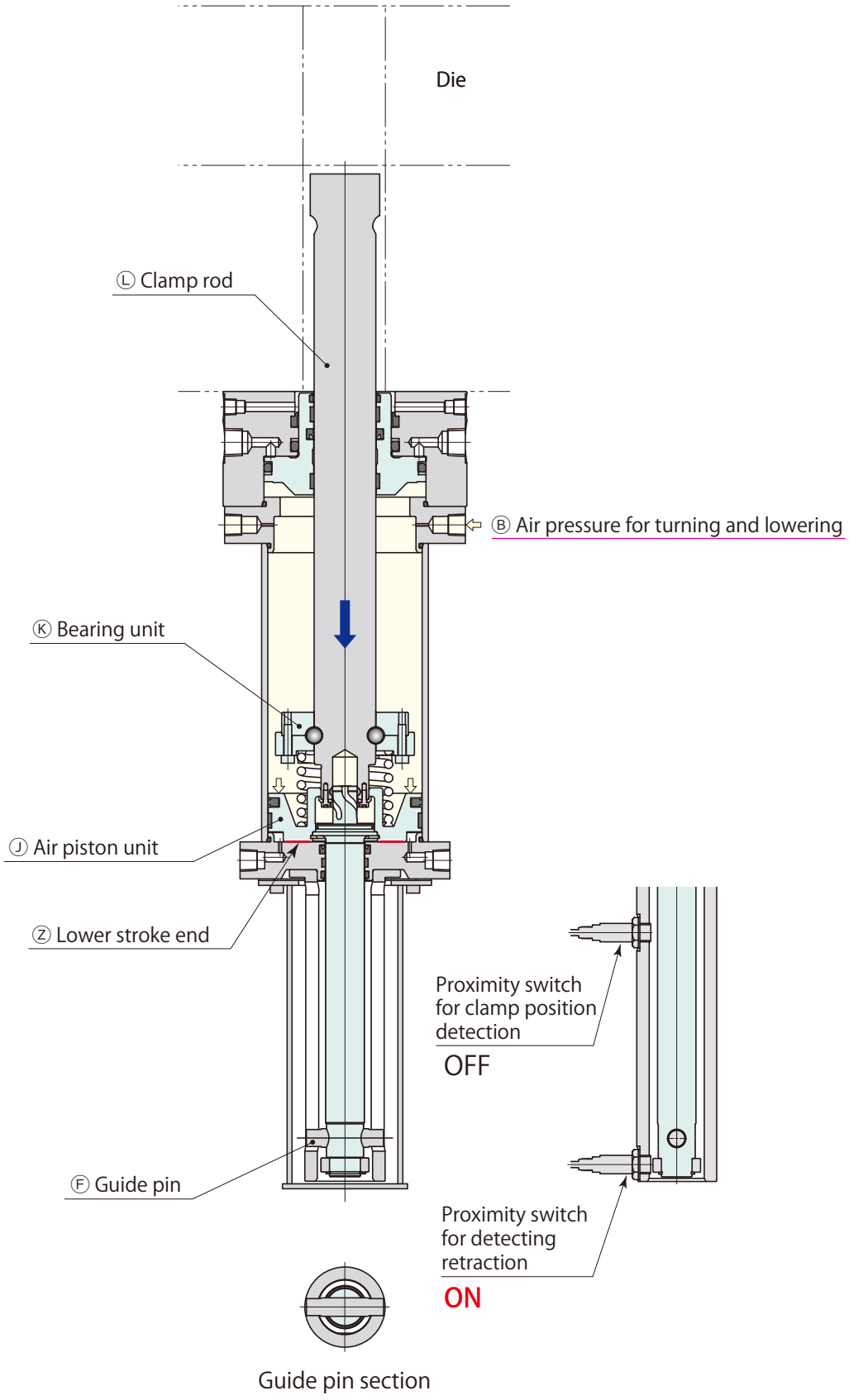


Mounting details

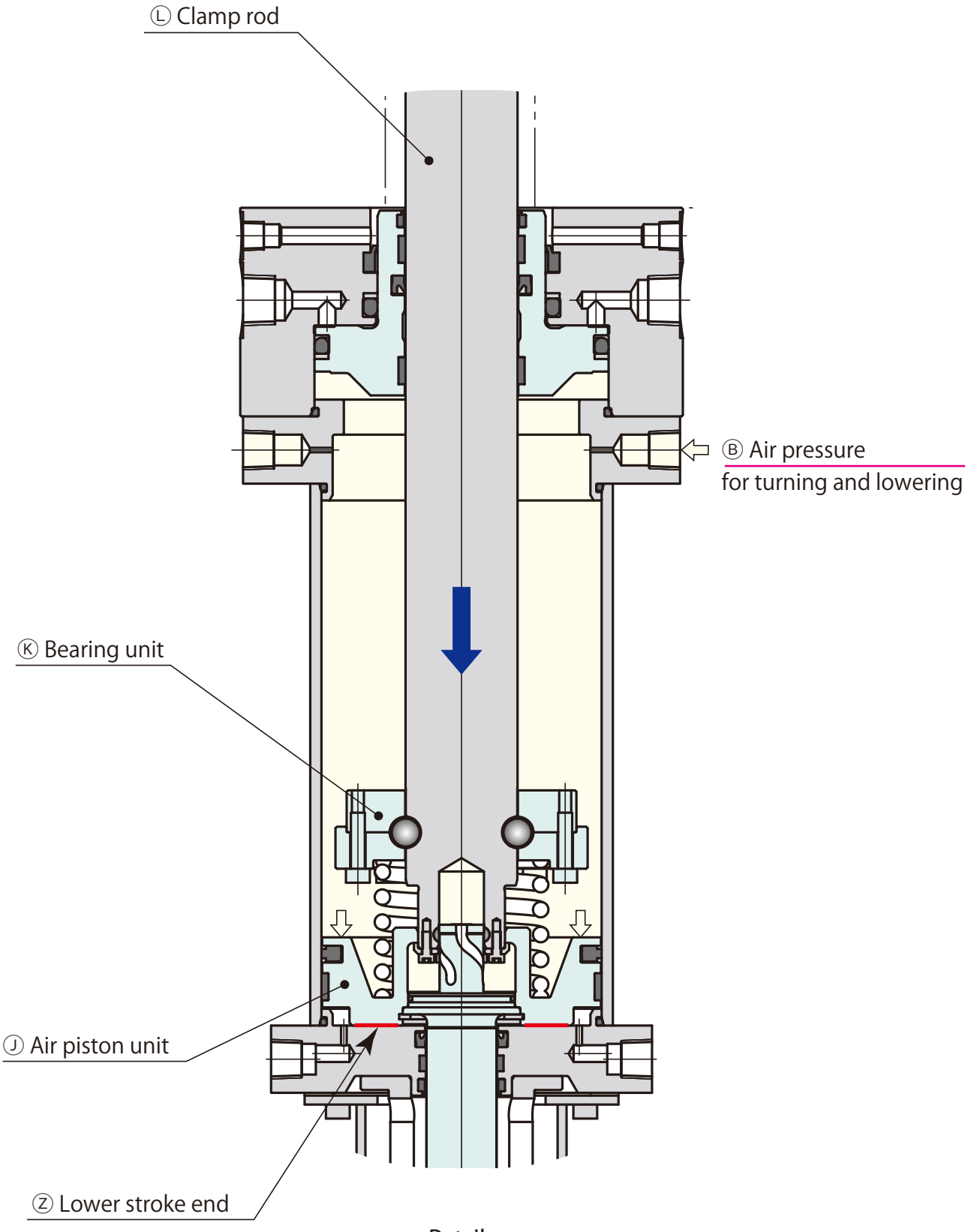


Model	TGC060	TGC100	TGC160
øA	64	84	99
øB	32	40	50
C	22	27	32
D	35	45	55
E	92	98.5	99
øF	154	158	176
G	199	209	219
J	32	33	
K	80	86.5	87
M	107.5	112.5	117.5
N	Rc1/4	Rc3/8	
øP	9	11	
Q	M12 depth 20	M14 depth 28	M16 depth 32
S	112	116	122
T	70		85
U	M8	M10	
V	ø14 M12 counter bore	ø16 M14 counter bore	ø18 M16 counter bore
W	40	50	60
X (Min)	25	35	40

● Mounting screws are not provided by Pascal.

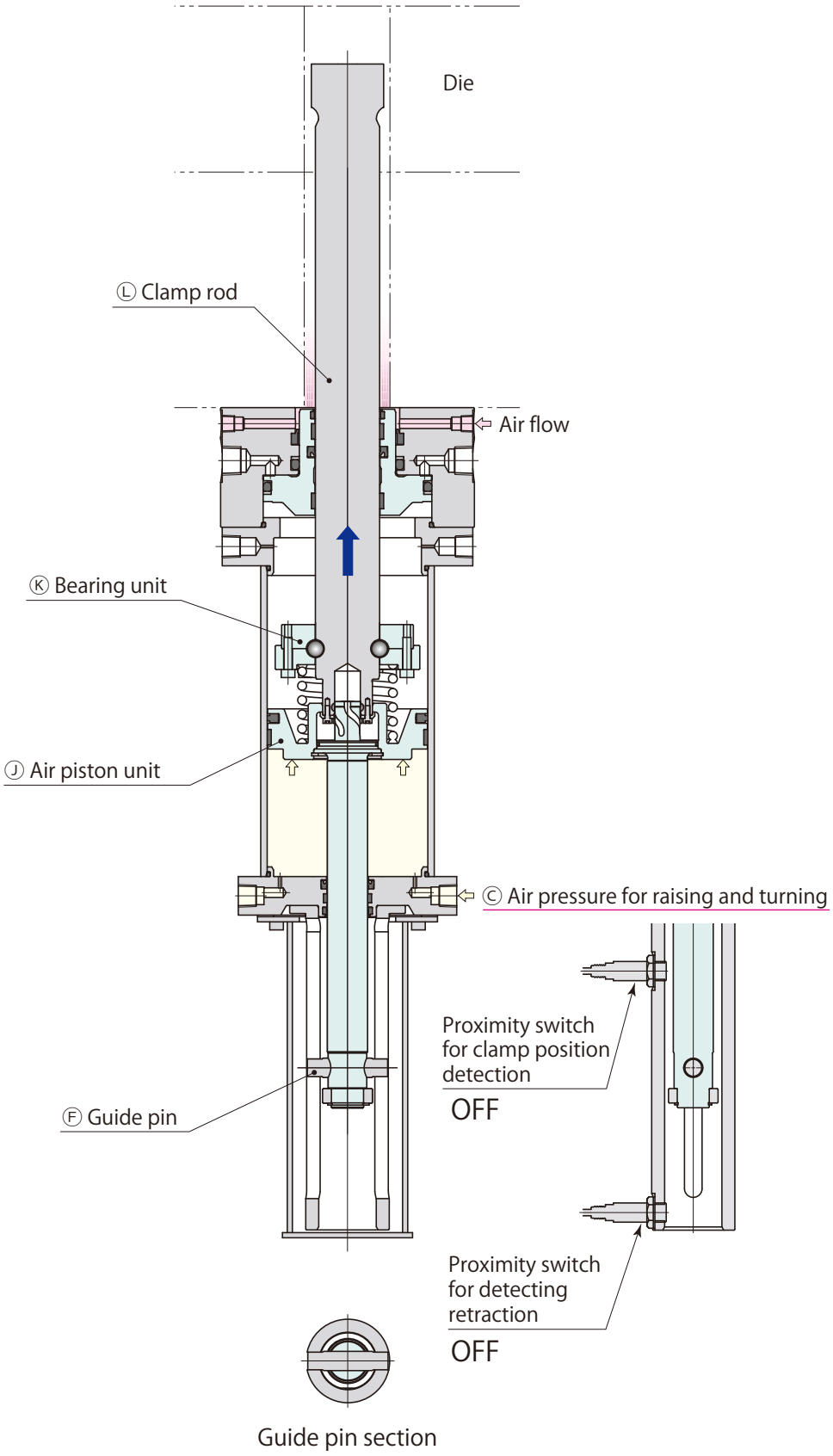

Die
Ⓛ Clamp rod
Ⓑ Air pressure for turning and lowering
Ⓚ Bearing unit
Ⓙ Air piston unit
Ⓩ Lower stroke end
Proximity switch for clamp position detection
OFF
Ⓕ Guide pin
Proximity switch for detecting retraction
ON
Guide pin section

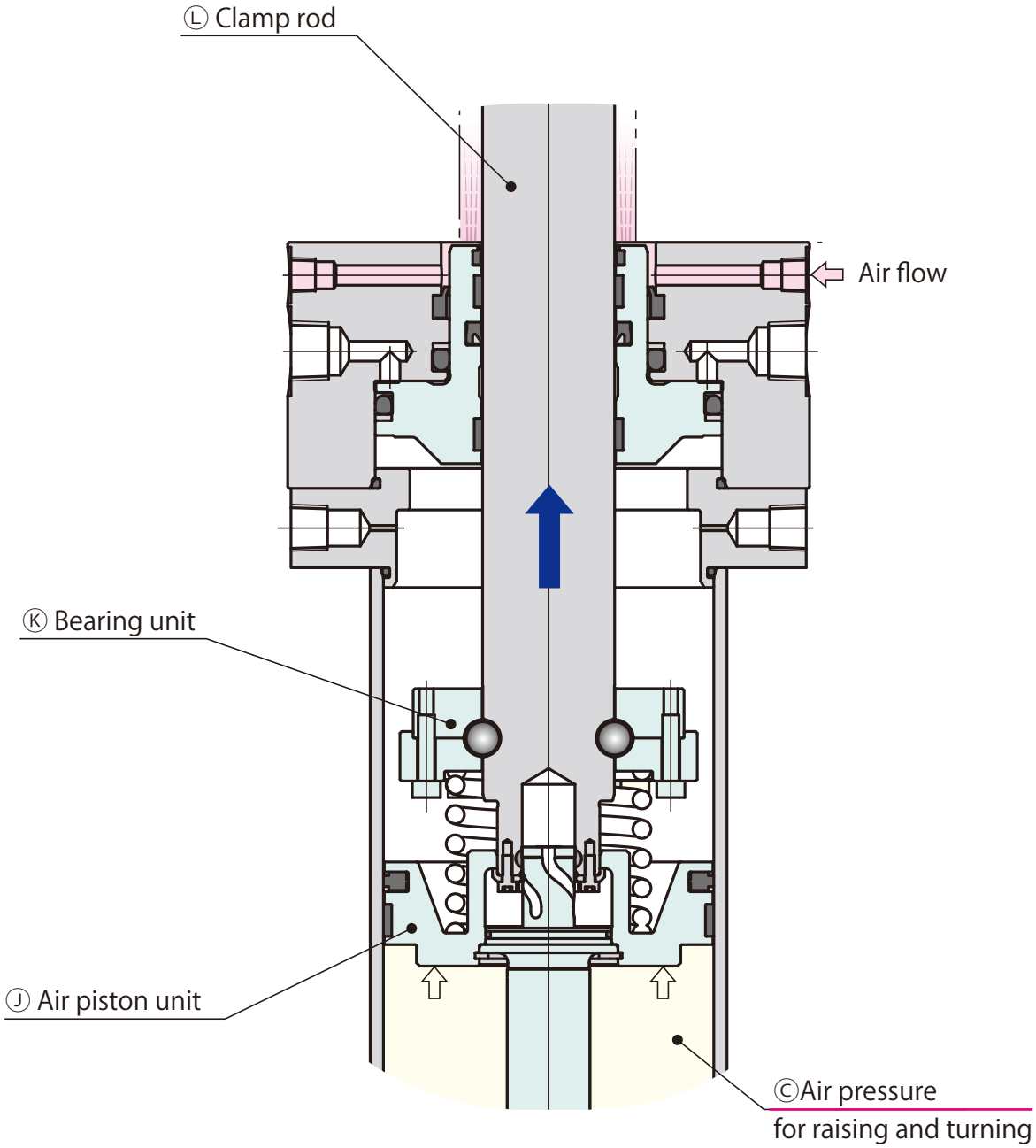
(Retracted position)



Details

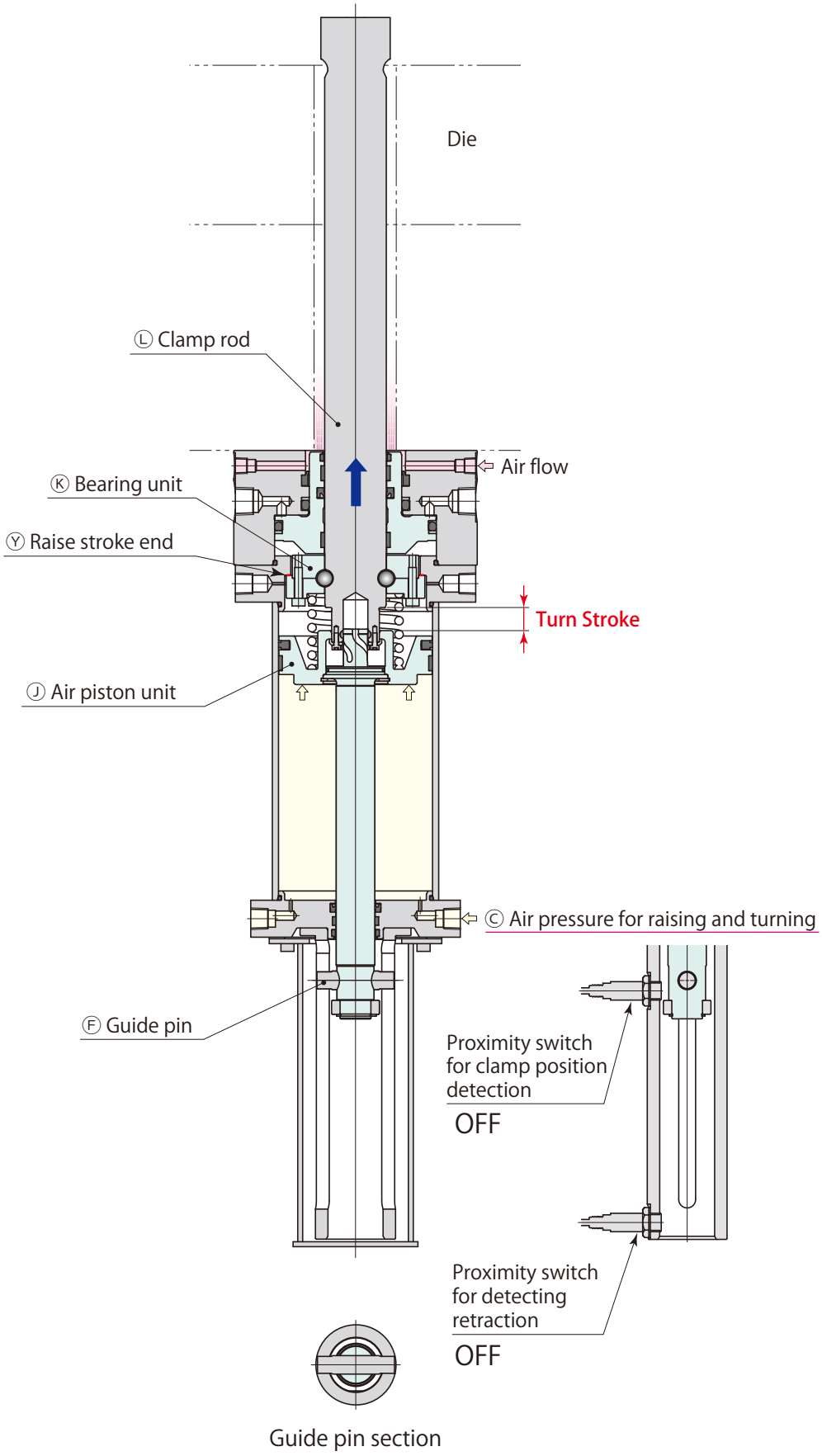
The piston rod Ⓛ , bearing unit Ⓚ and air piston unit Ⓙ are lowered to the end of the stroke Ⓩ by the air pressure Ⓑ.


Die
Ⓛ Clamp rod
Air flow
Ⓚ Bearing unit
Ⓙ Air piston unit
Ⓒ Air pressure for raising and turning
Proximity switch for clamp position detection
OFF
Ⓕ Guide pin
Proximity switch for detecting retraction
OFF
Guide pin section

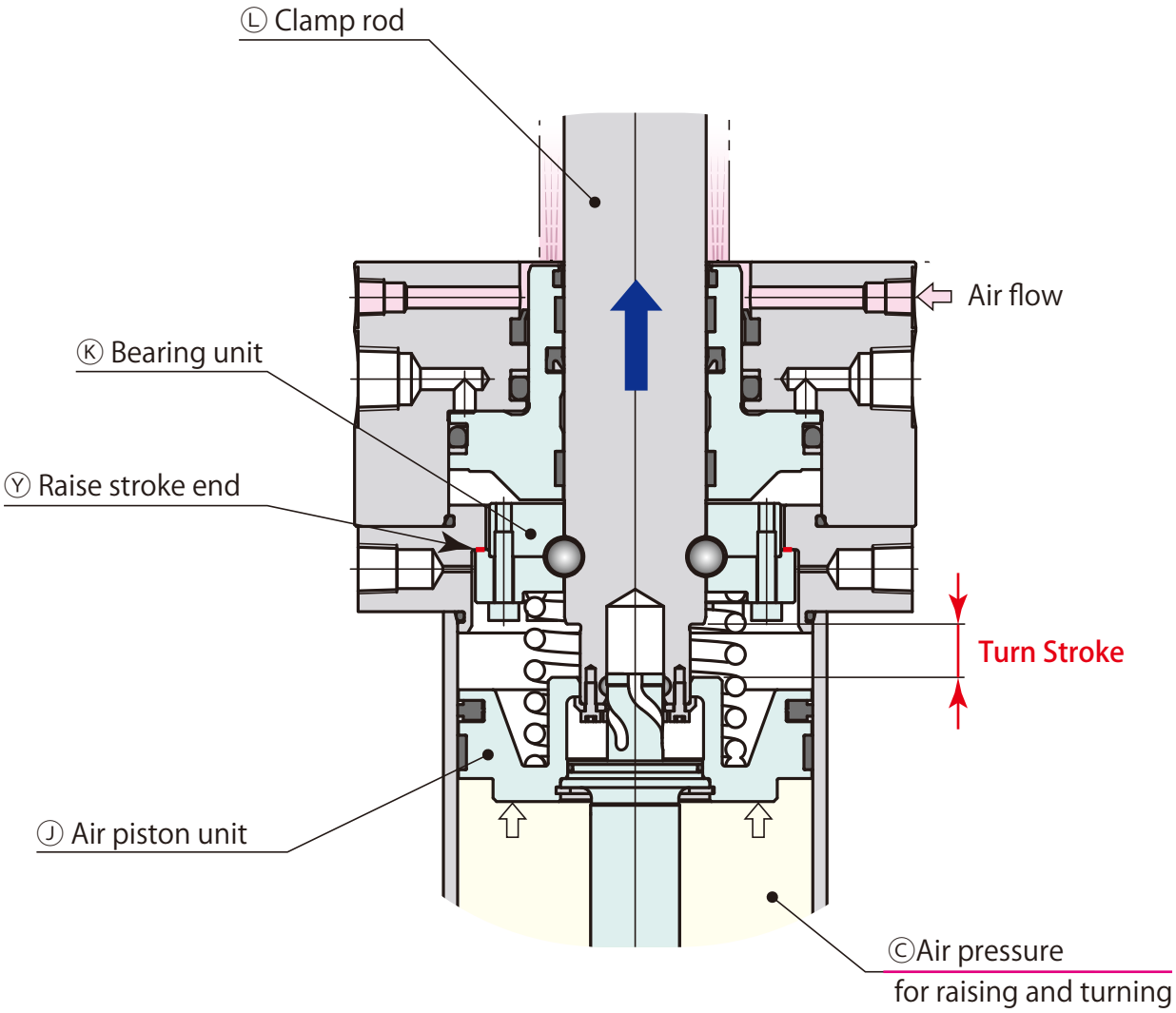


Details

The piston rod Ⓛ, bearing unit Ⓚ and air piston unit Ⓙ are raised by the air pressure Ⓒ.

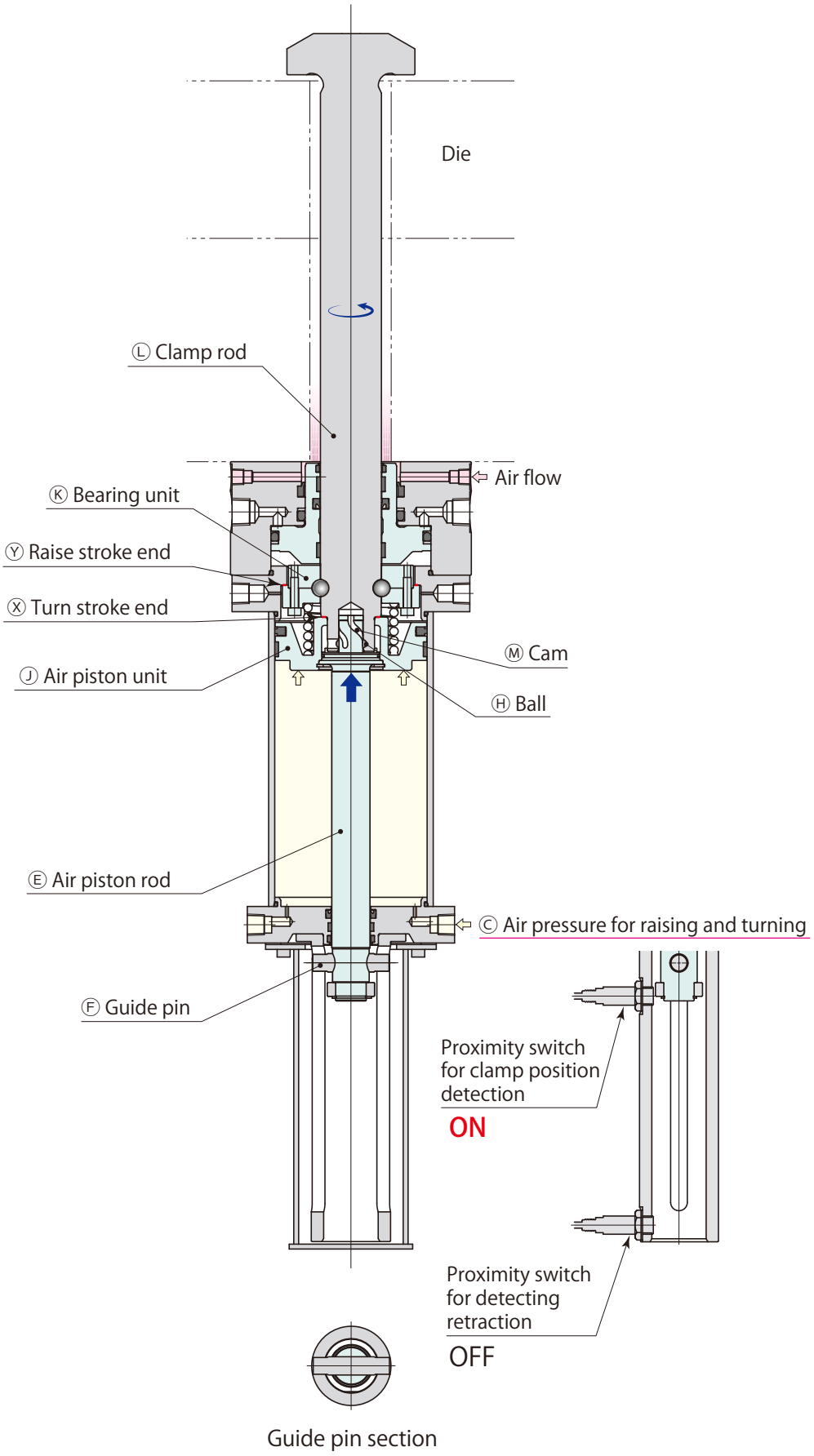

Die
Ⓛ Clamp rod
Air flow
Ⓚ Bearing unit
Ⓨ Raise stroke end
Turn Stroke
Ⓙ Air piston unit
Ⓒ Air pressure for raising and turning
Ⓕ Guide pin
Proximity switch for clamp position detection
OFF
Proximity switch for detecting retraction
OFF
Guide pin section

End

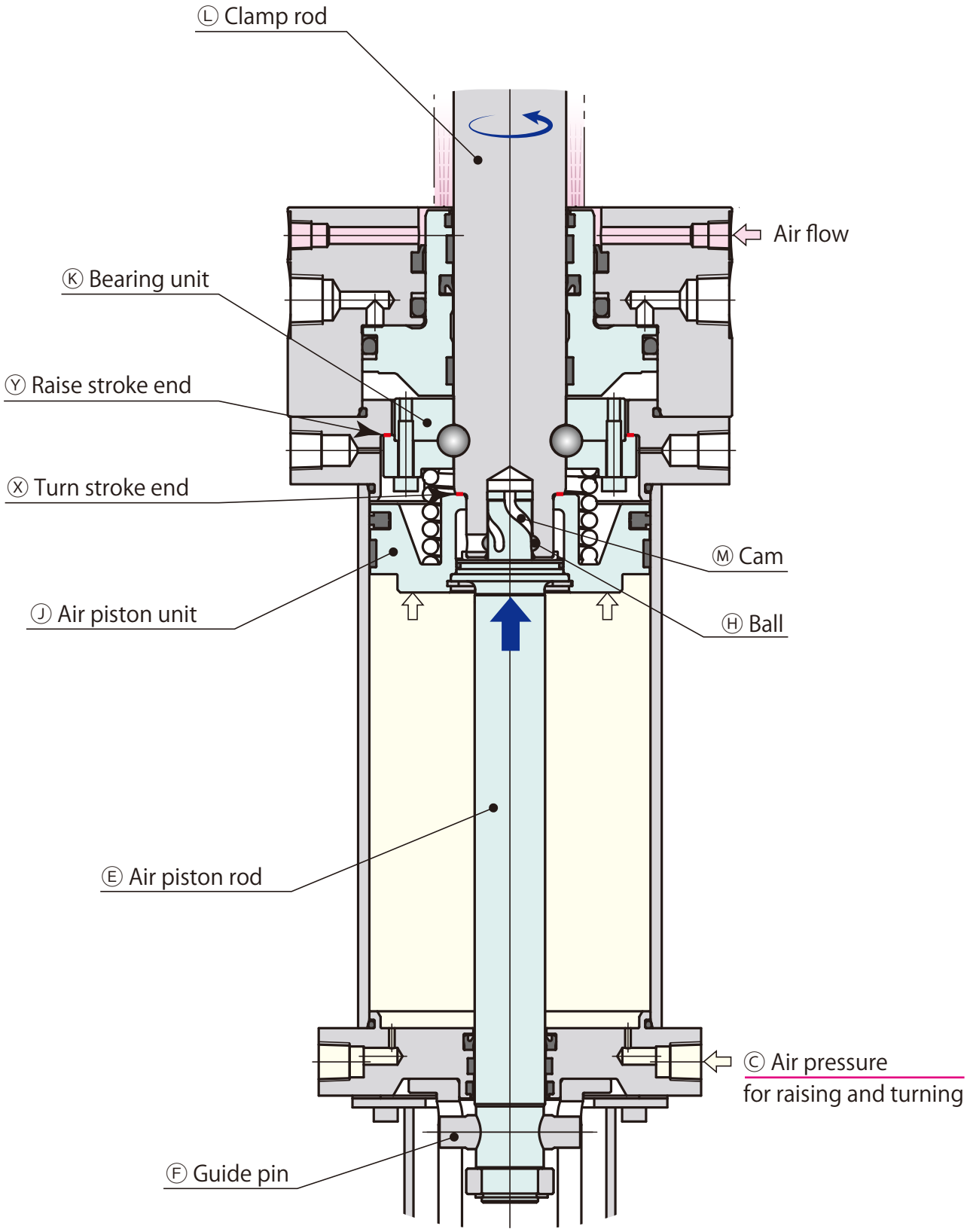


Details

The clamp rod Ⓛ , bearing unit Ⓚ and air piston unit Ⓙ are raised up to the end of the stroke Ⓨ by the air pressure Ⓒ.

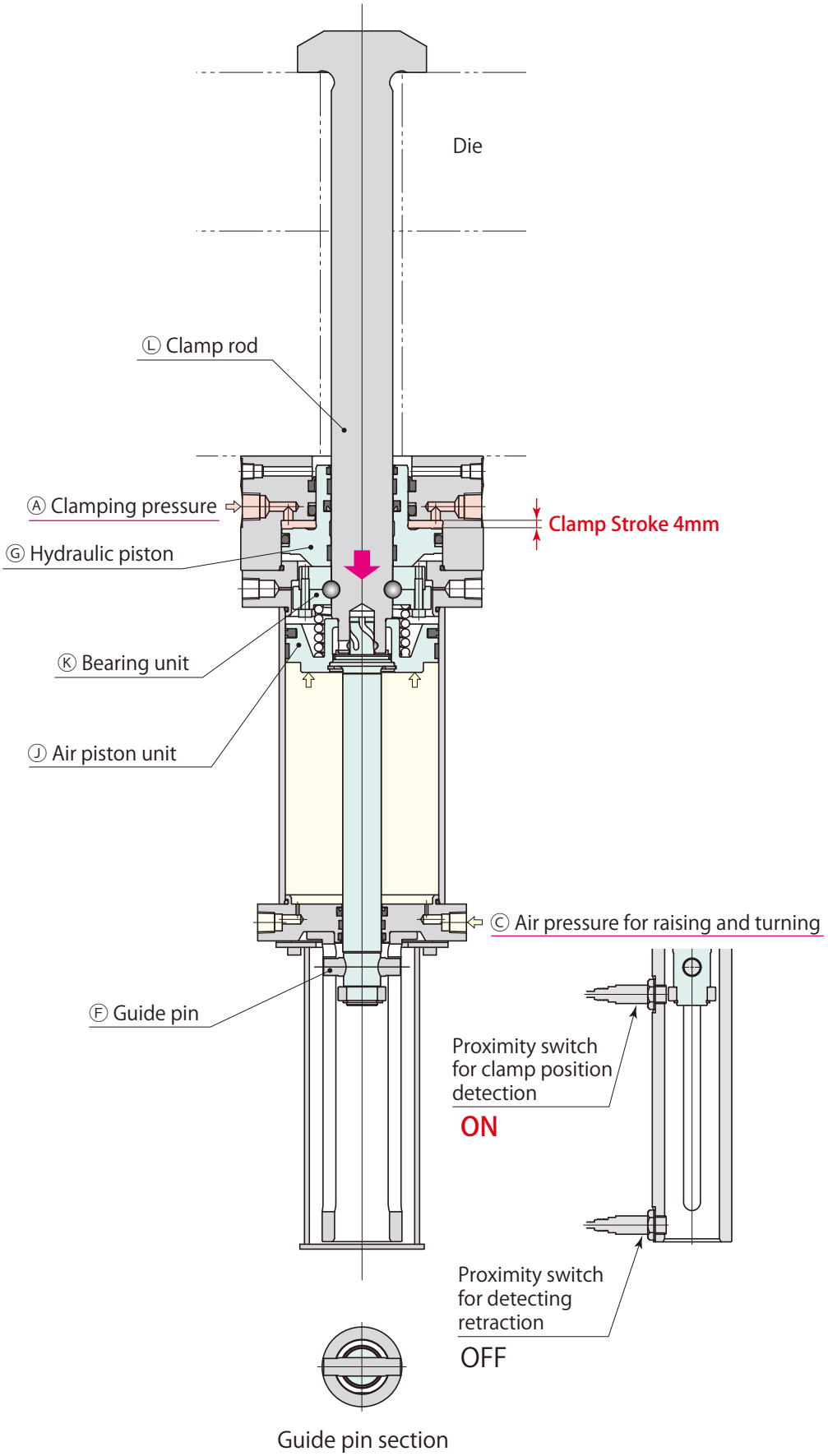

Die
Ⓛ Clamp rod
Air flow
Ⓚ Bearing unit
Ⓨ Raise stroke end
Ⓧ Turn stroke end
Ⓜ Cam
Ⓙ Air piston unit
Ⓗ Ball
Ⓔ Air piston rod
Ⓒ Air pressure for raising and turning
Ⓕ Guide pin
Proximity switch for clamp position detection
ON
Proximity switch for detecting retraction
OFF
Guide pin section

(Ccw direction)

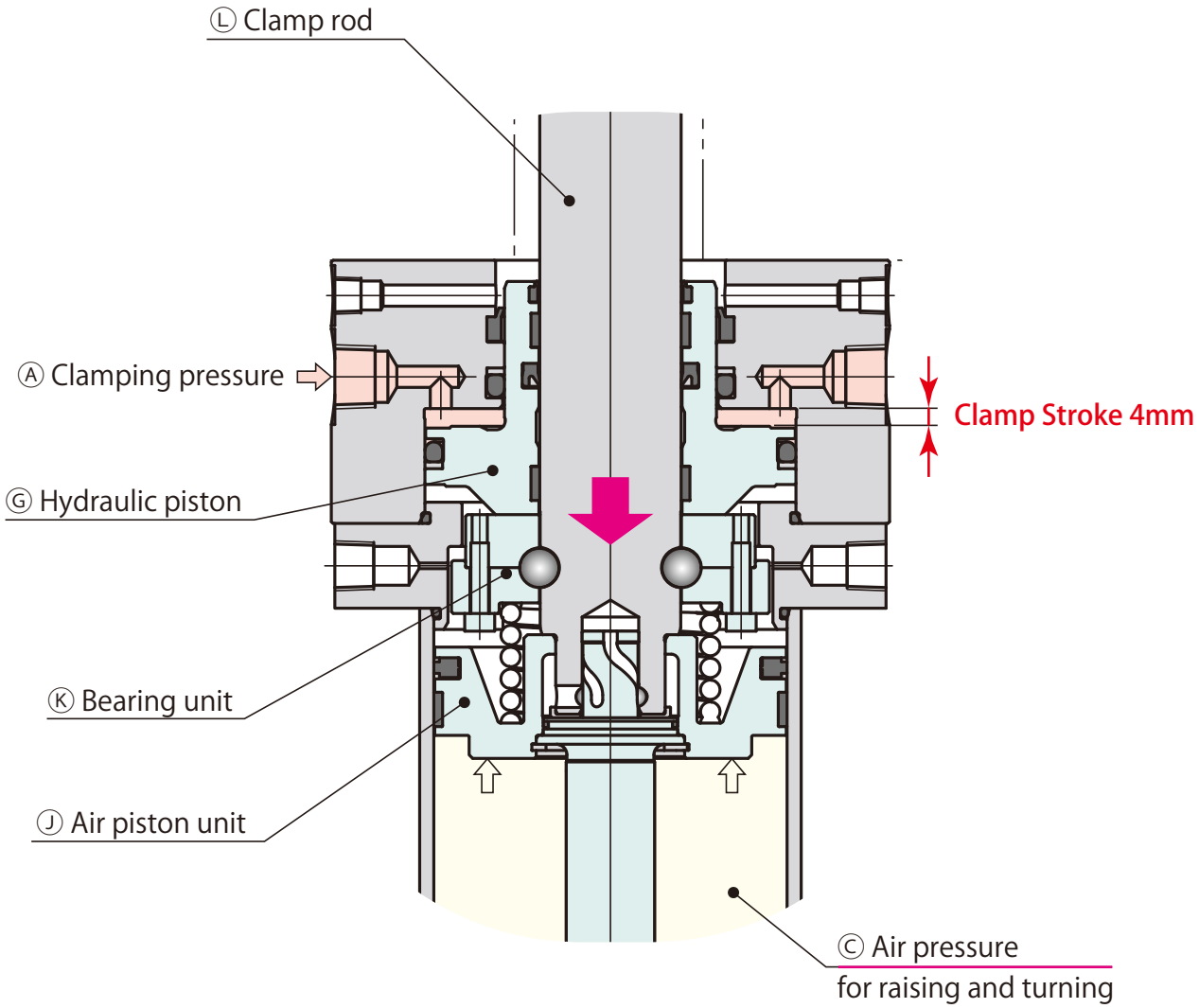


Details

The bearing unit Ⓚ reaches the end of its stroke Ⓨ, the air piston unit Ⓙ overcomes the spring force and rises further to the end of its stroke Ⓧ, where a cam Ⓜ and ball Ⓗ allow the clamp rod Ⓛ to swing 90 deg. The air piston rod Ⓔ is rotationally restrained by guide pins Ⓕ.

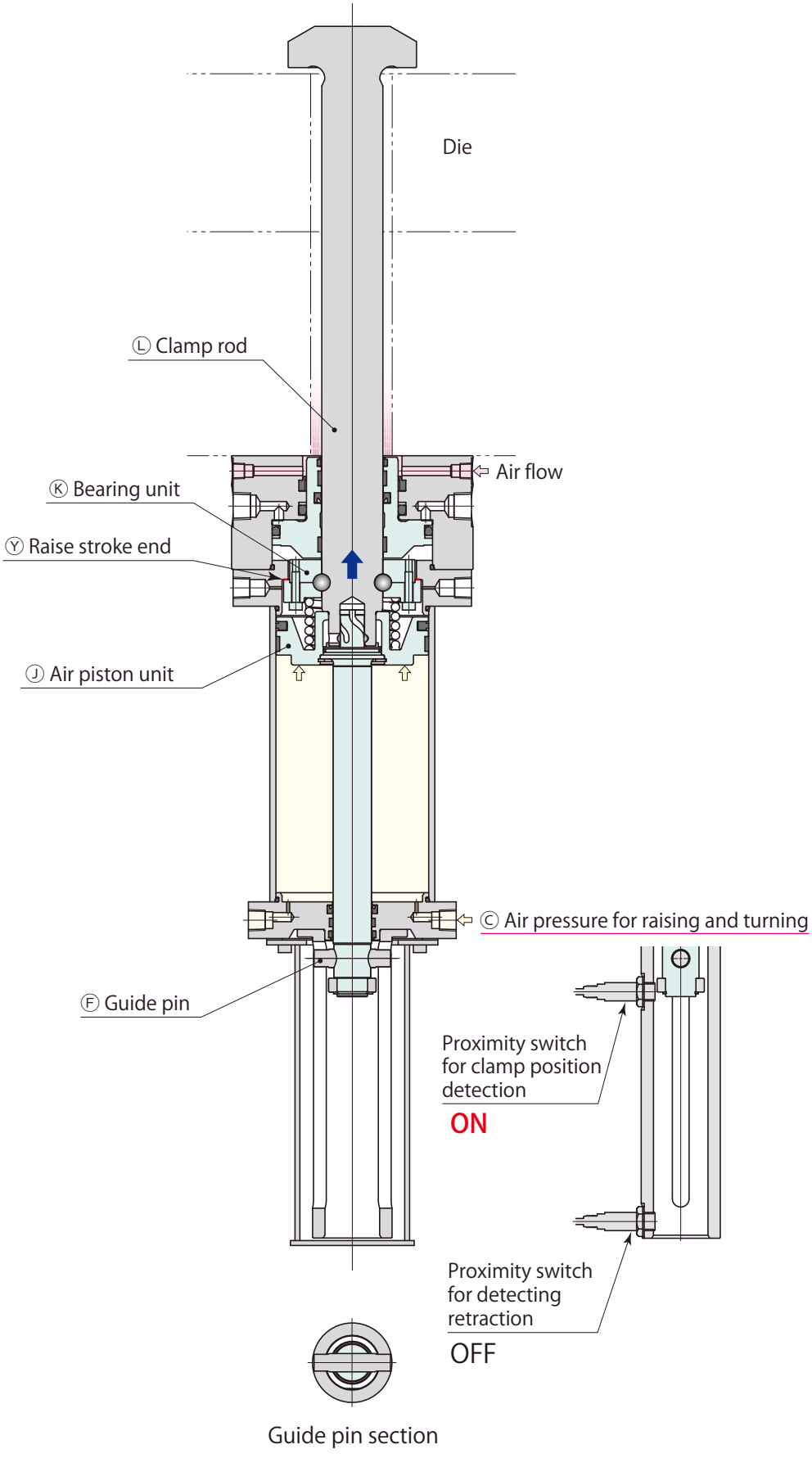

Die
Ⓛ Clamp rod
Ⓐ Clamping pressure
Clamp Stroke 4mm
Ⓖ Hydraulic piston
Ⓚ Bearing unit
Ⓙ Air piston unit
Ⓒ Air pressure for raising and turning
Ⓕ Guide pin
Proximity switch for clamp position detection
ON
Proximity switch for detecting retraction
OFF
Guide pin section

Clamp

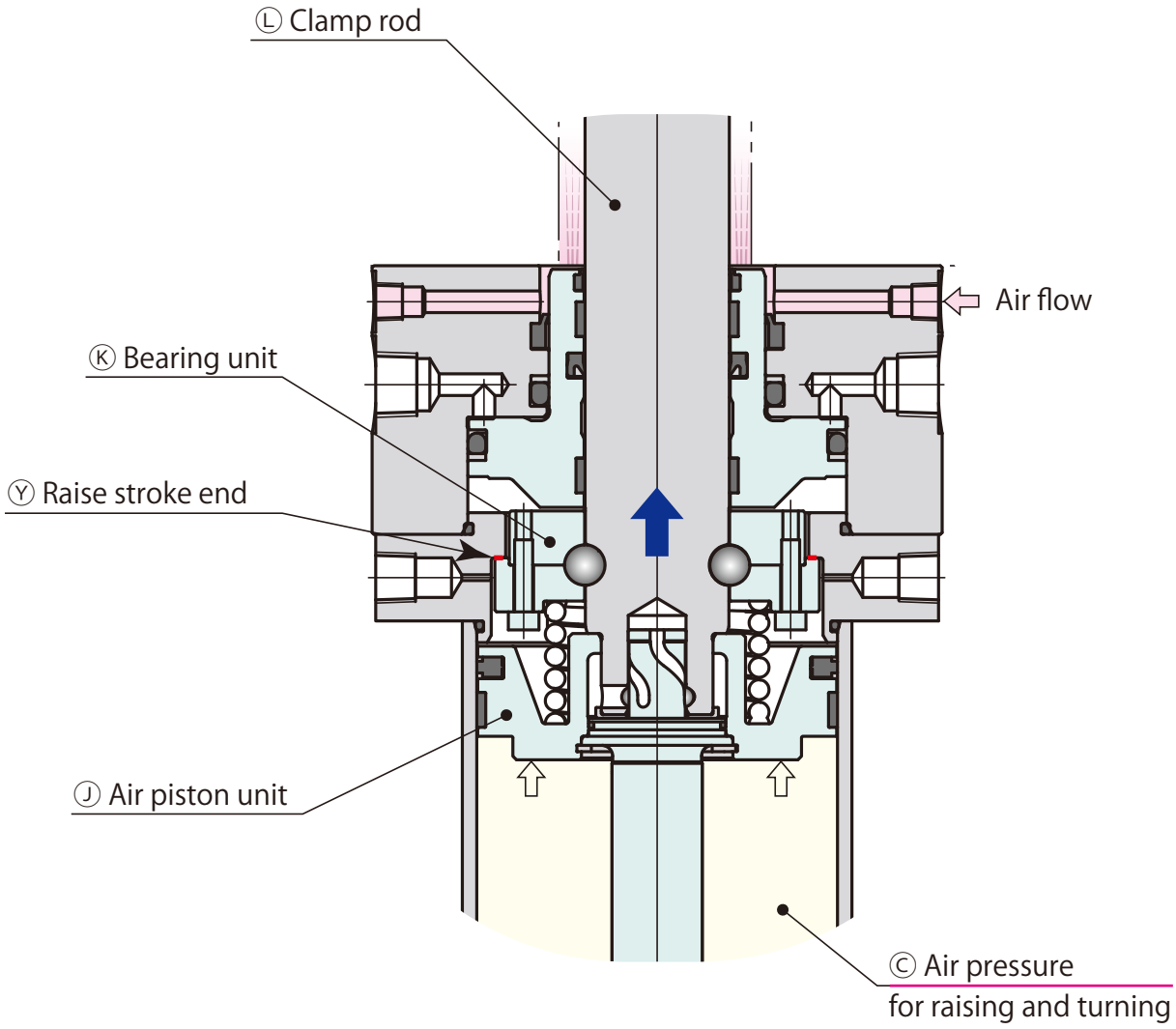


Details

When the clamp rod Ⓛ completes its turn, the clamp position detection proximity switch is activated and the clamping hydraulic pressure Ⓐ is supplied. Once it reaches the 90 deg. position after turning, the hydraulic position Ⓖ, the air piston unit Ⓙ, the bearing unit Ⓚ, and the clamp rod Ⓛ are lowered by the hydraulic pressure Ⓐ, clamping the die.

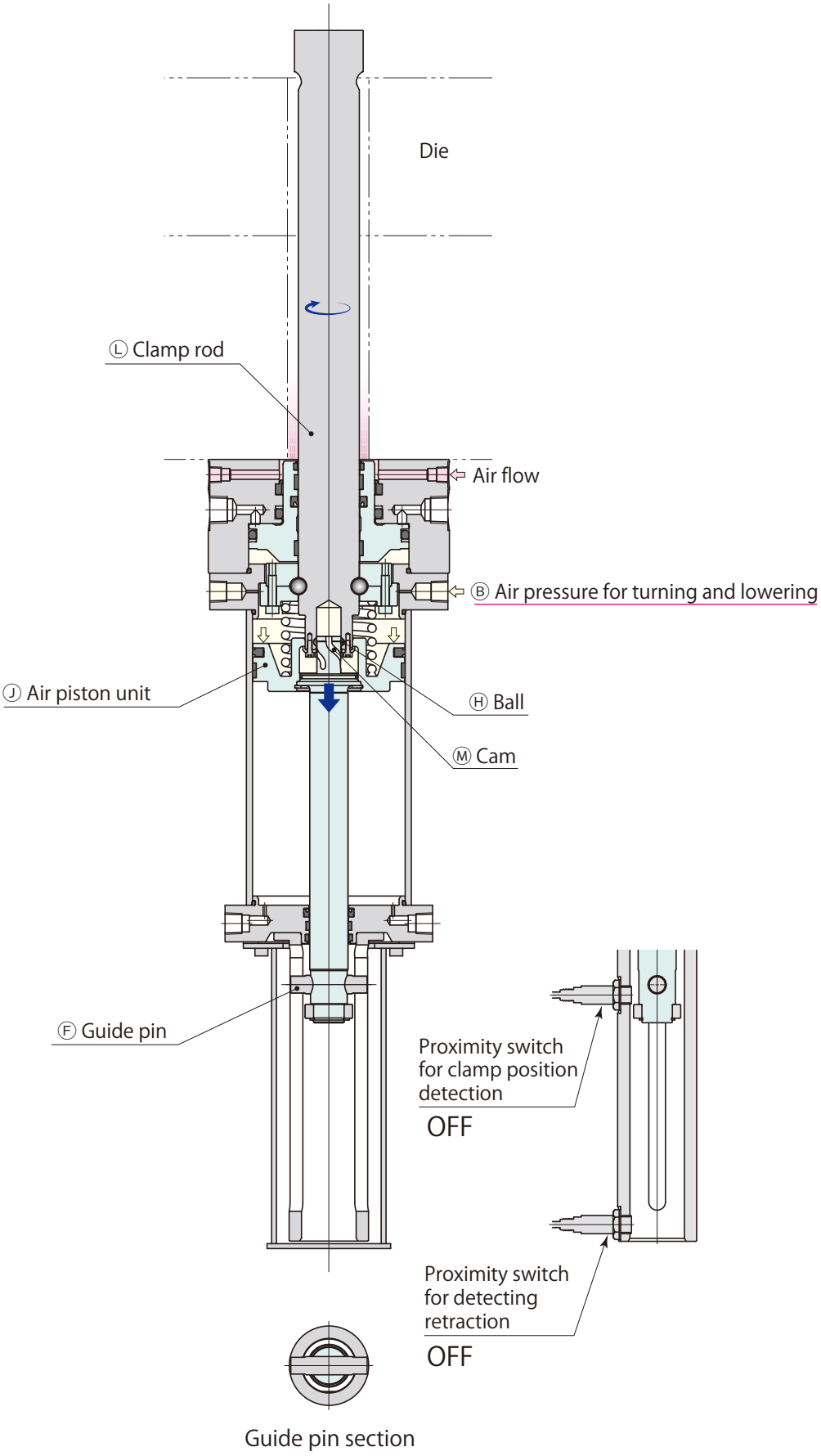

Die
Ⓛ Clamp rod
Air flow
Ⓚ Bearing unit
Ⓨ Raise stroke end
Ⓙ Air piston unit
Ⓒ Air pressure for raising and turning
Ⓕ Guide pin
Proximity switch for clamp position detection
ON
Proximity switch for detecting retraction
OFF
Guide pin section

Unclamp

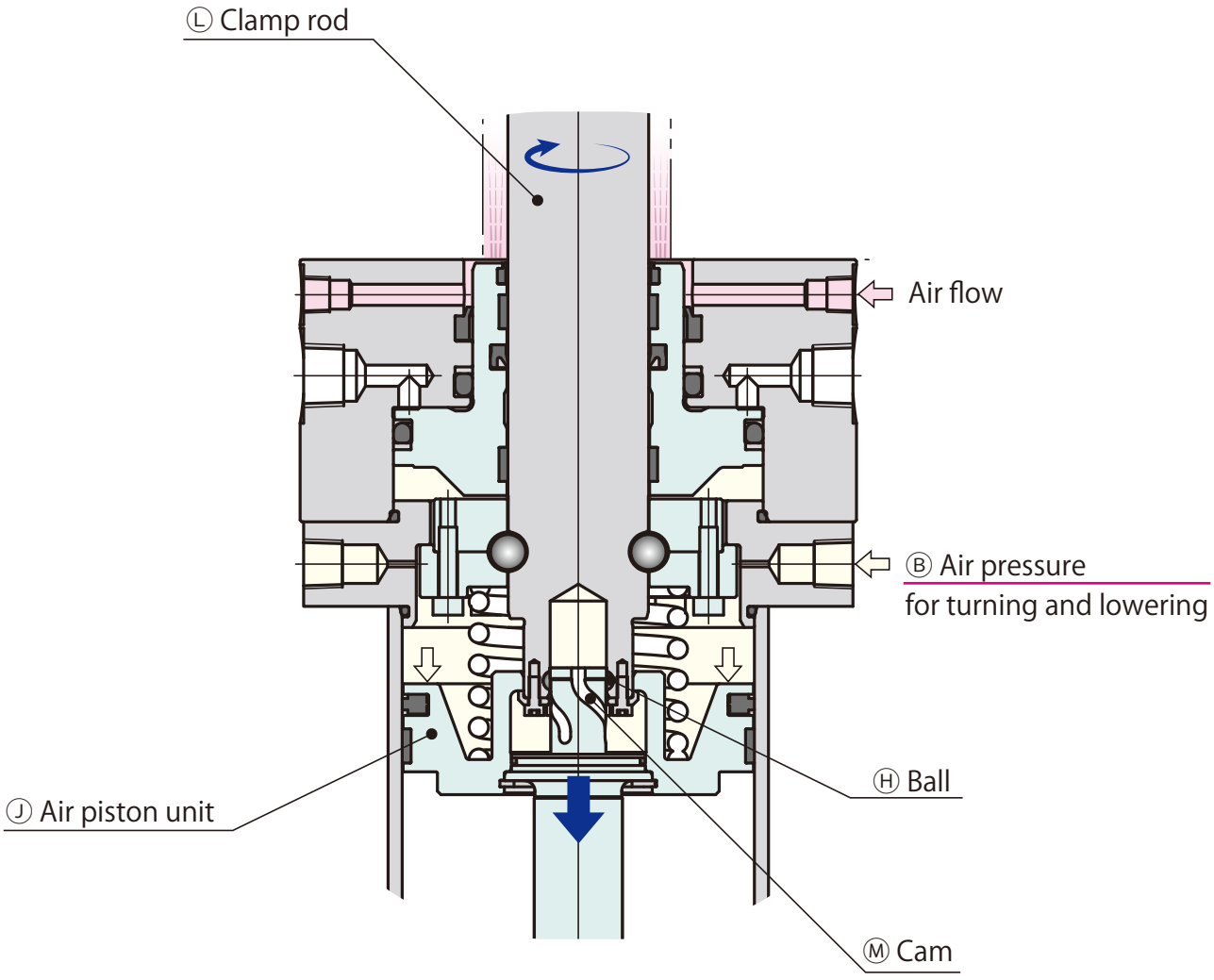


Details

When the clamping hydraulic pressure Ⓐ is released, the air piston unit Ⓙ, bearing unit Ⓚ and the clamp rod Ⓛ are raised by air pressure Ⓒ until they reach the stroke end Ⓨ, unclamping the die.

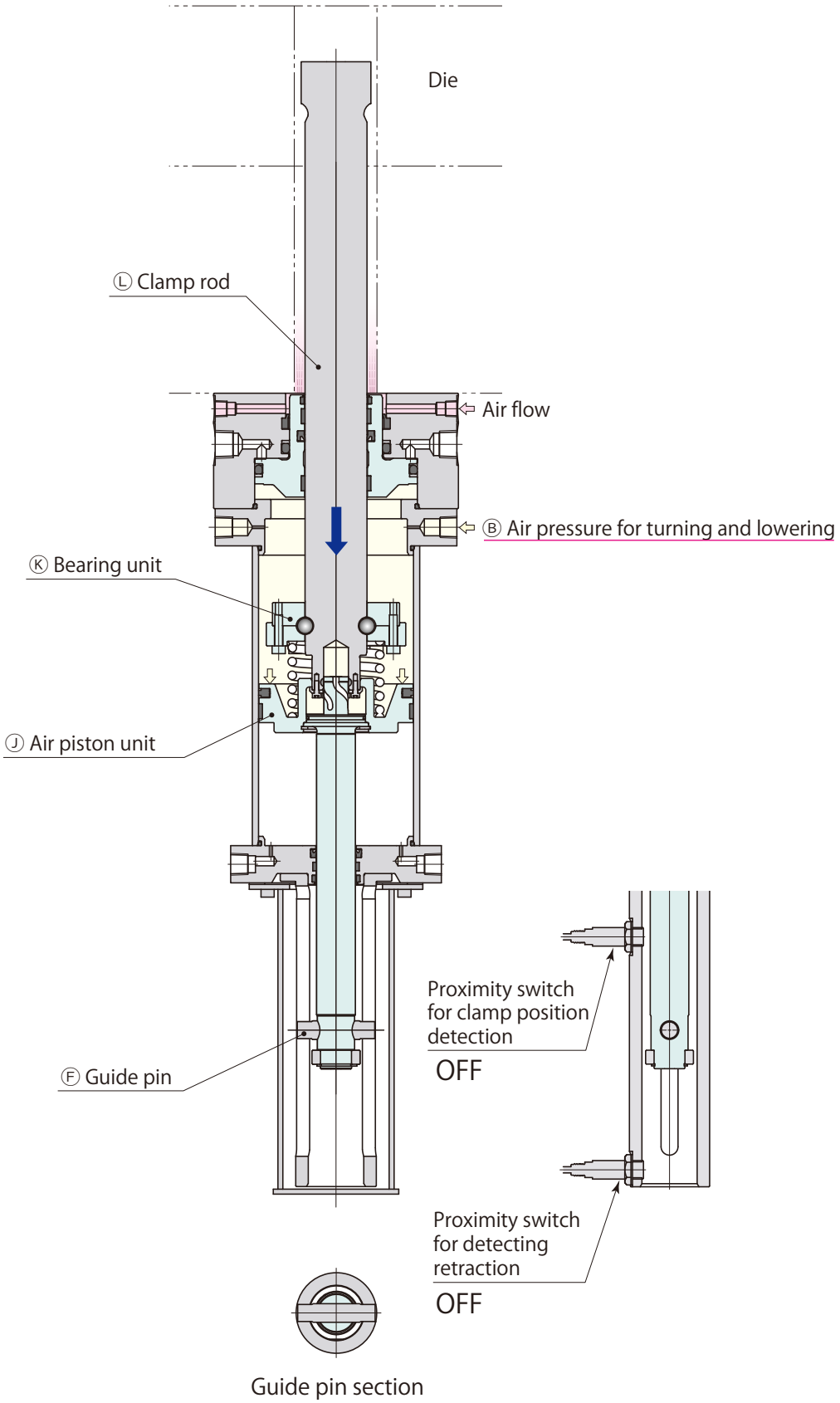

Die
Ⓛ Clamp rod
Air flow
Ⓑ Air pressure for turning and lowering
Ⓙ Air piston unit
Ⓗ Ball
Ⓜ Cam
Ⓕ Guide pin
Proximity switch for clamp position detection
OFF
Proximity switch for detecting retraction
OFF
Guide pin section

(Cw direction)

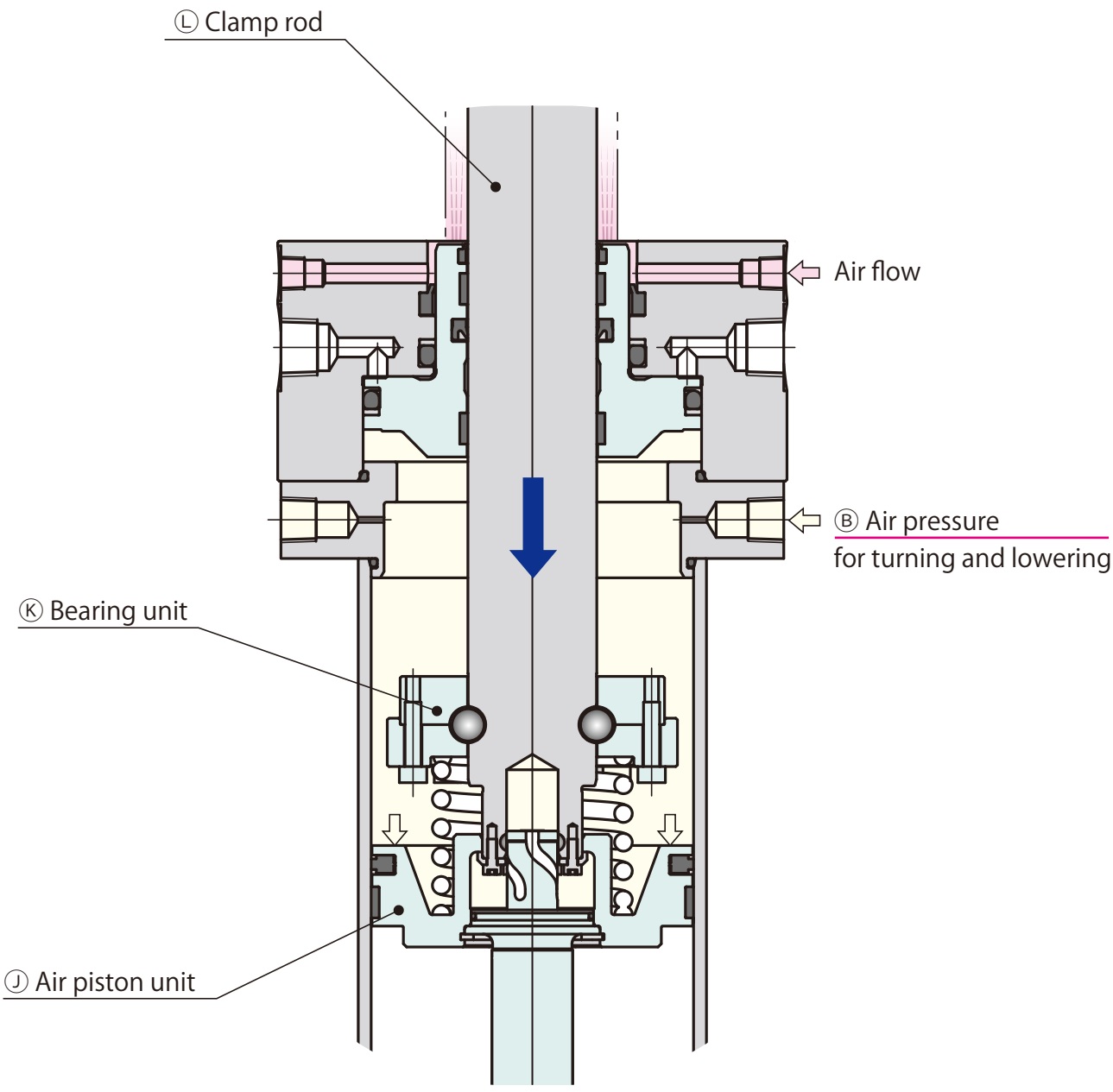


Details

With the clamp rod Ⓛ raised, air pressure Ⓑ is supplied, the air piston unit Ⓙ is lowered, and the cam Ⓜ and ball Ⓗ allow the clamp rod Ⓛ to swivel 90°.

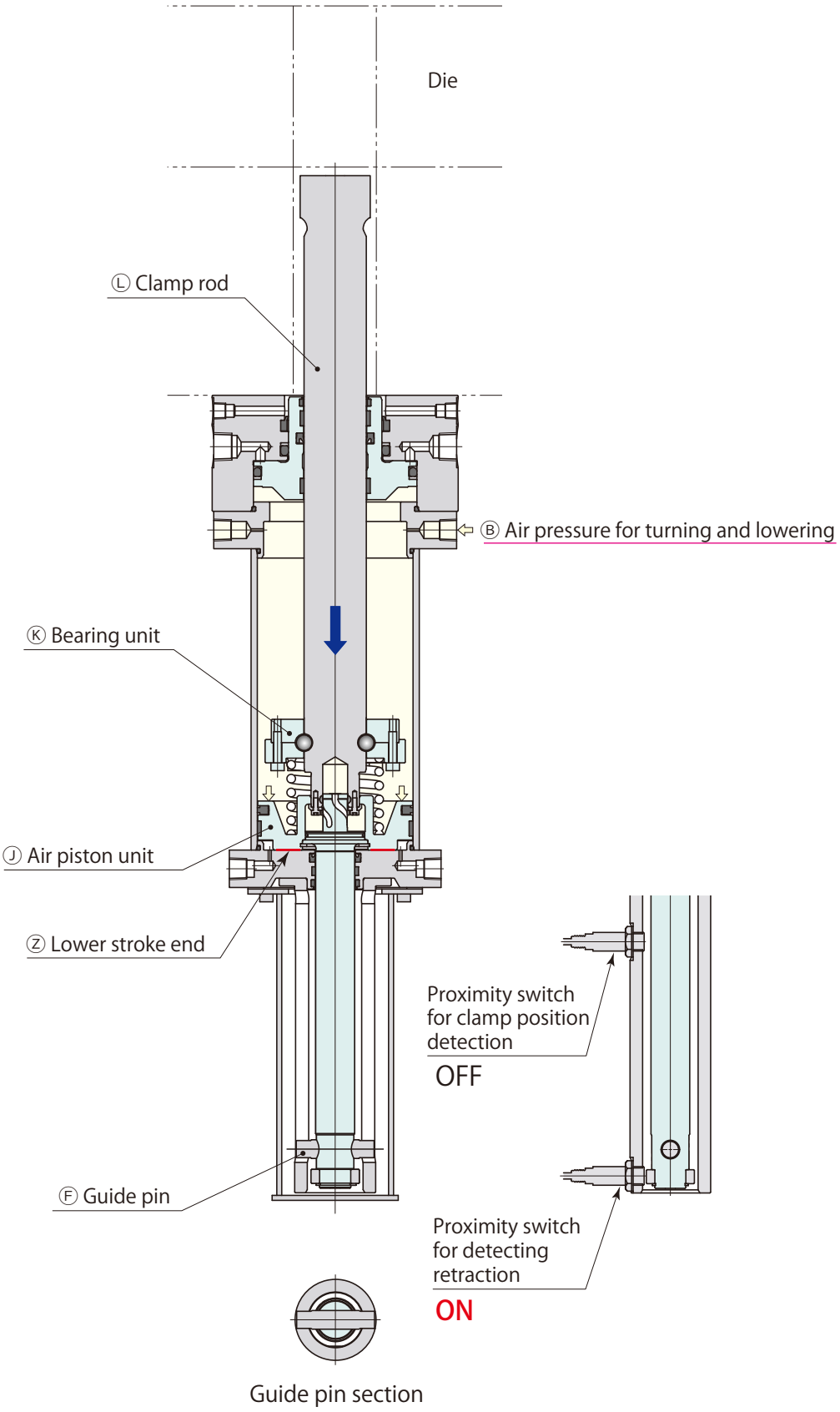

Die
Ⓛ Clamp rod
Air flow
Ⓑ Air pressure for turning and lowering
Ⓚ Bearing unit
Ⓙ Air piston unit
Ⓕ Guide pin
Proximity switch for clamp position detection
OFF
Proximity switch for detecting retraction
OFF
Guide pin section

lower stroke

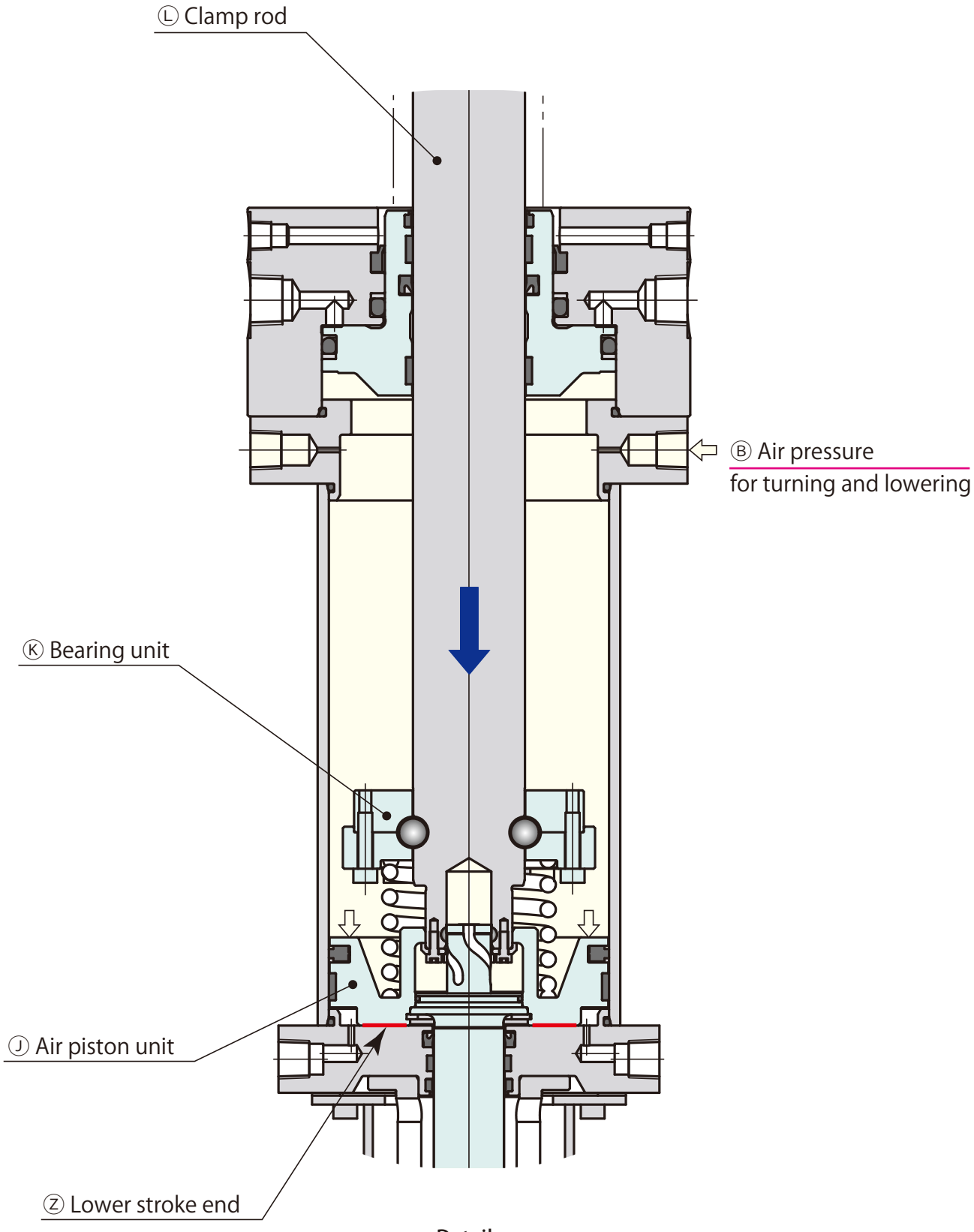


Details

The air piston unit Ⓙ, bearing unit Ⓚ are lowered by the air pressure Ⓑ as the clamp rod Ⓛ retracts back.


Die
Ⓛ Clamp rod
Ⓑ Air pressure for turning and lowering
Ⓚ Bearing unit
Ⓙ Air piston unit
Ⓩ Lower stroke end
Proximity switch for clamp position detection
OFF
Ⓕ Guide pin
Proximity switch for detecting retraction
ON
Guide pin section

(Retracted back position)



Details

The air piston unit Ⓙ, the bearing unit Ⓚ and the clamp rod Ⓛ are lowered down to the end by air pressure Ⓑ.

Pascal

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