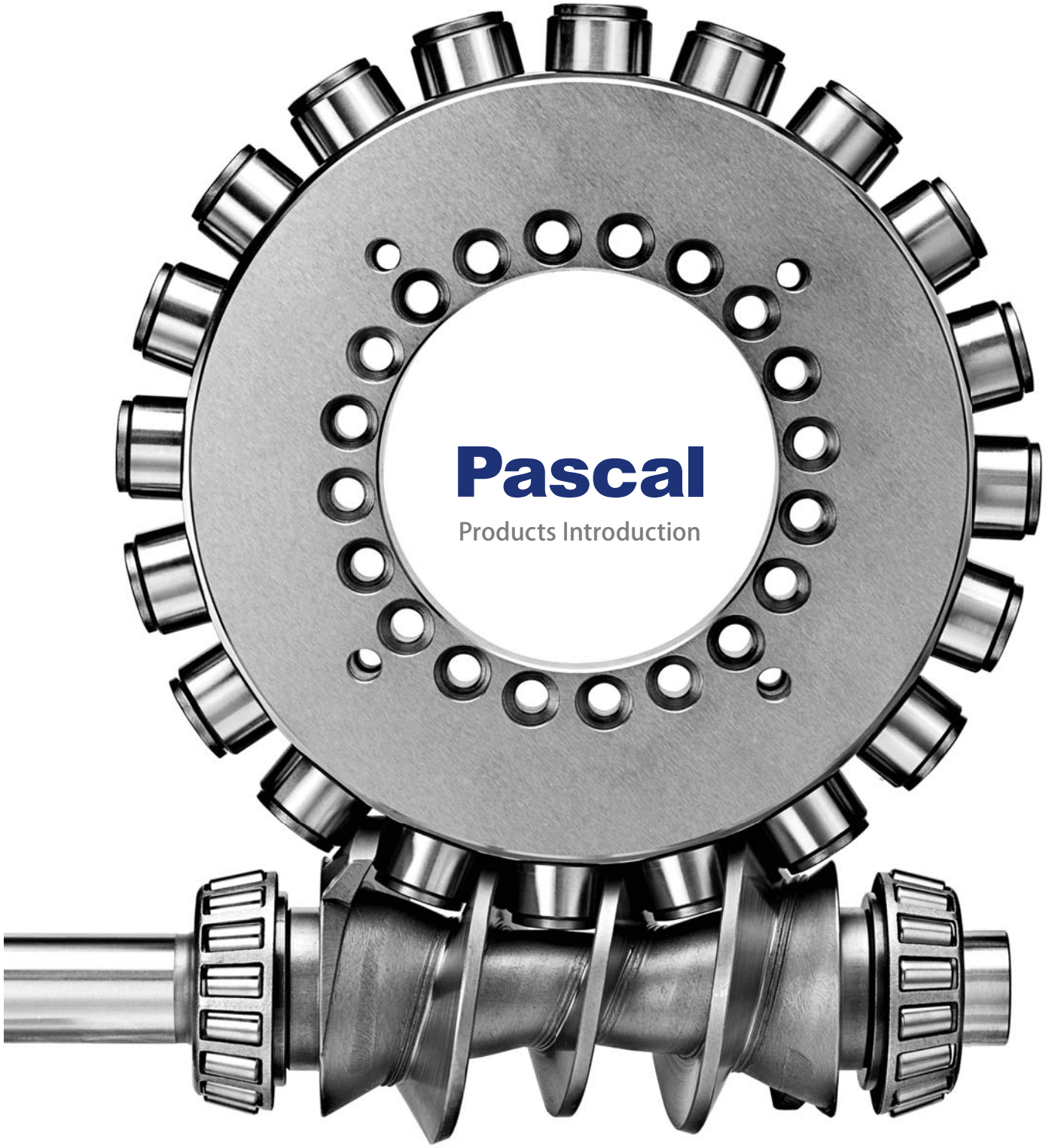


Pascal

Products Introduction

Aiming for highly efficient production

model
CTM PAT.

Built-in air sensor

model
CLM PAT.

Built-in air sensor

model
CTU

# of machining——Work clamping system

model

CTP JP PAT.

Dual cylinder

model

CLP JP PAT.

Dual cylinder

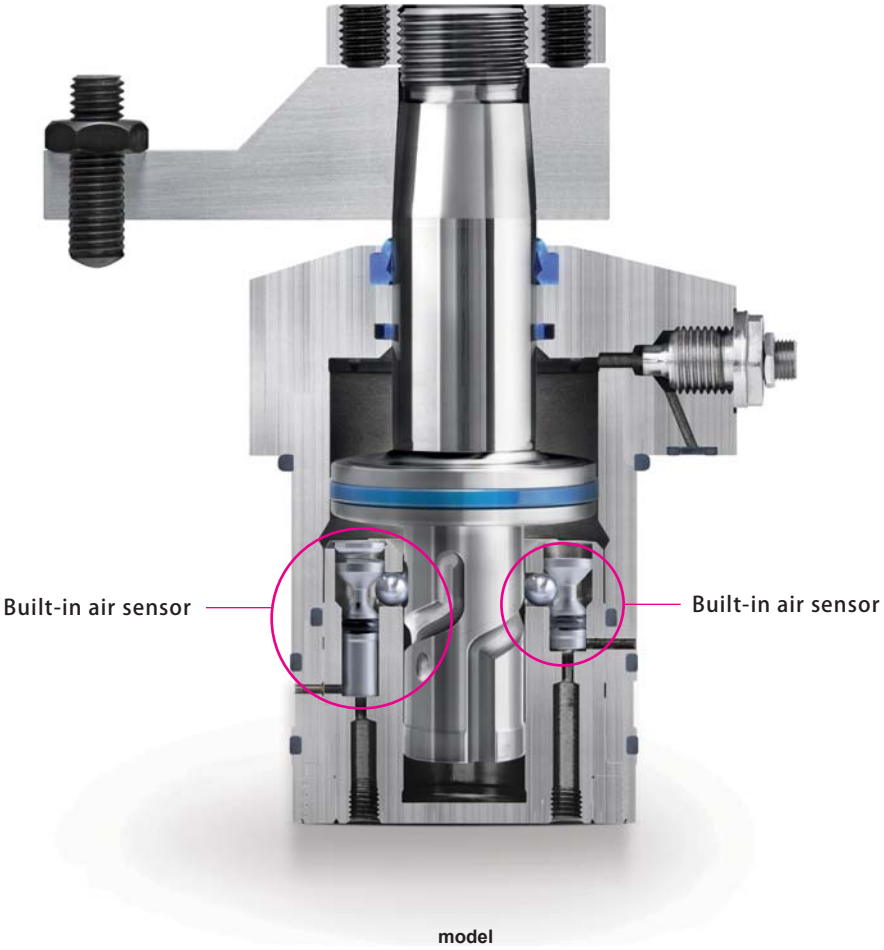
model

CTK PAT.

Built-in air sensor

Swing clamp

Built-in air sensor model



model

CTM PAT.

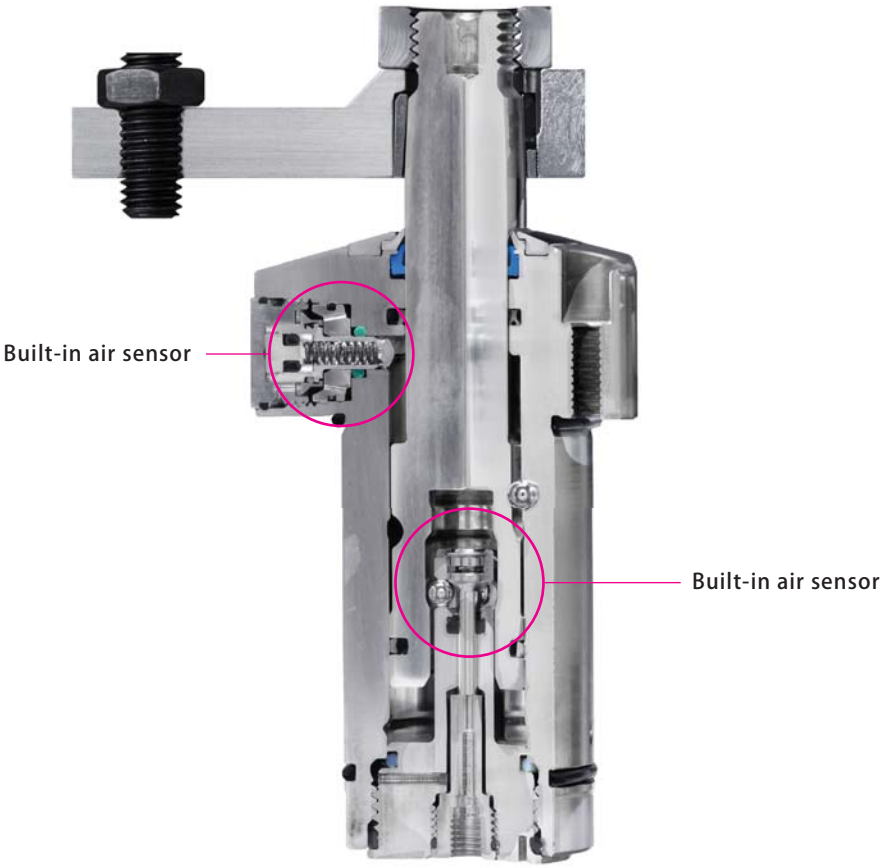
Link clamp

Built-in air sensor model

model
CLM PAT.

25MPa Swing clamp

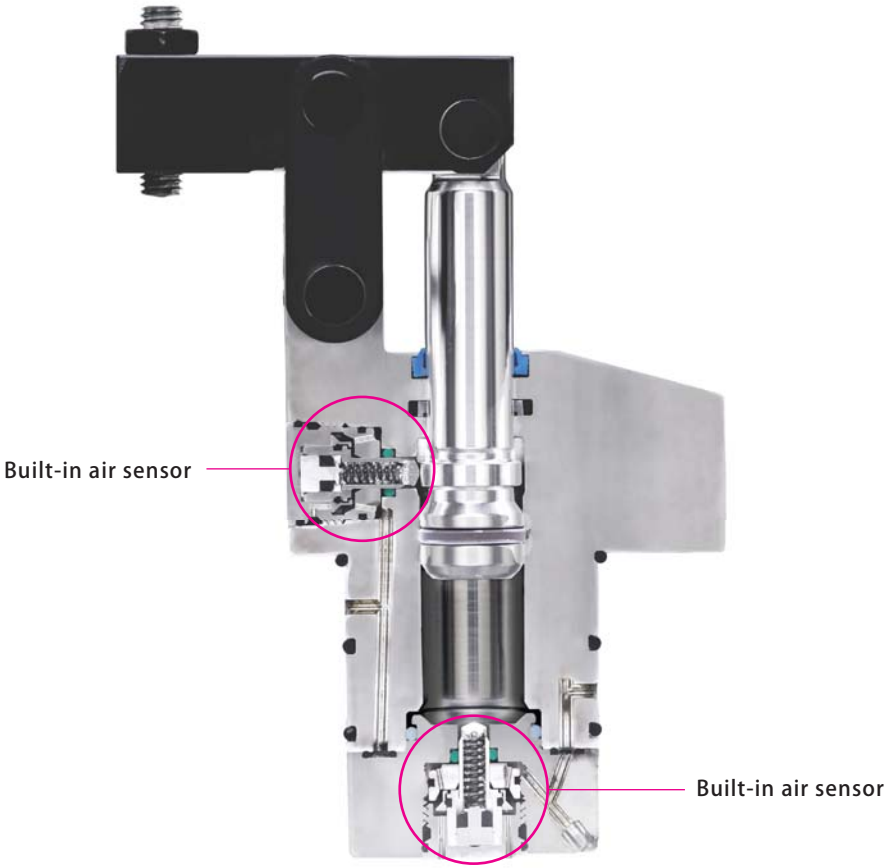
Built-in air sensor model



model
CTK-T PAT.

25MPa Link clamp

Built-in air sensor model



model
CLW-T PAT.

Work clamping system

Standard model

Work support
model
CSU

Work support
model
CST

Work support
model
CSN/CSY

Work support
model
CSK

Flow control valve
model
VCF

Air bleeding valve
model
VCE

Swing clamp
model
CTU

Link clamp
model
CLU

Push cylinder
model
CMC

Pal fix
model
CPK

Pal coupler
model
WVP-2F

Pal coupler
model
WVP-1F

Work clamping system

PAT.

Sensor model

7MPa Swing clamp
model
CTM-T

7MPa Link clamp
model
CLM-T

7MPa Work lift cylinder
model
CNB-D

25MPa Link clamp
model
CLW-T

25MPa Swing clamp
model
CTK-T

Air swing clamp
model
CTX-T

Air link clamp
model
CLX-T

Air swing clamp dual cylinder
model
CTY-T

Boost air link clamp
model
CLY-B

Air swing clamp

Dual cylinder model

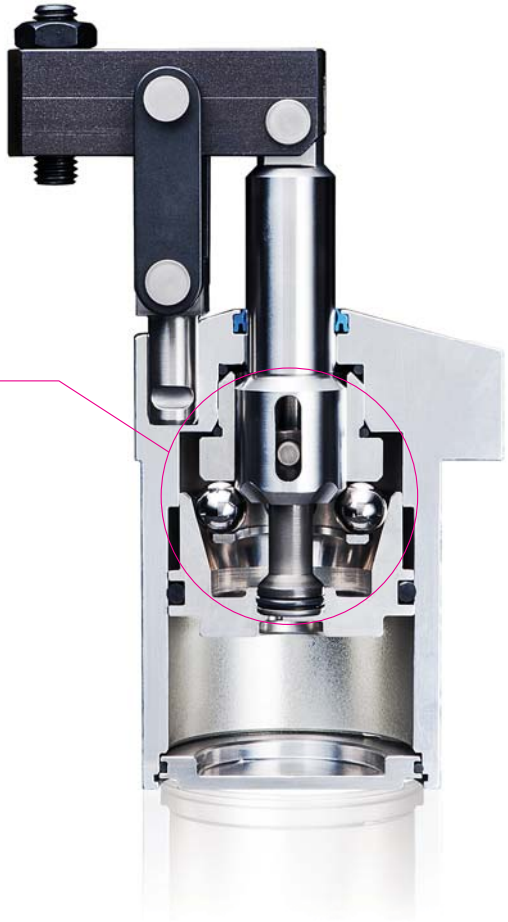
The dual cylinder structure can realize high cylinder force by increasing the pressure receiving area.

model
CTY JP PAT.

Air link clamp

Boost model

The boosting structure realizes
high cylinder force.
Downsized flange takes up
minimum space keeping
the clamping force the same.

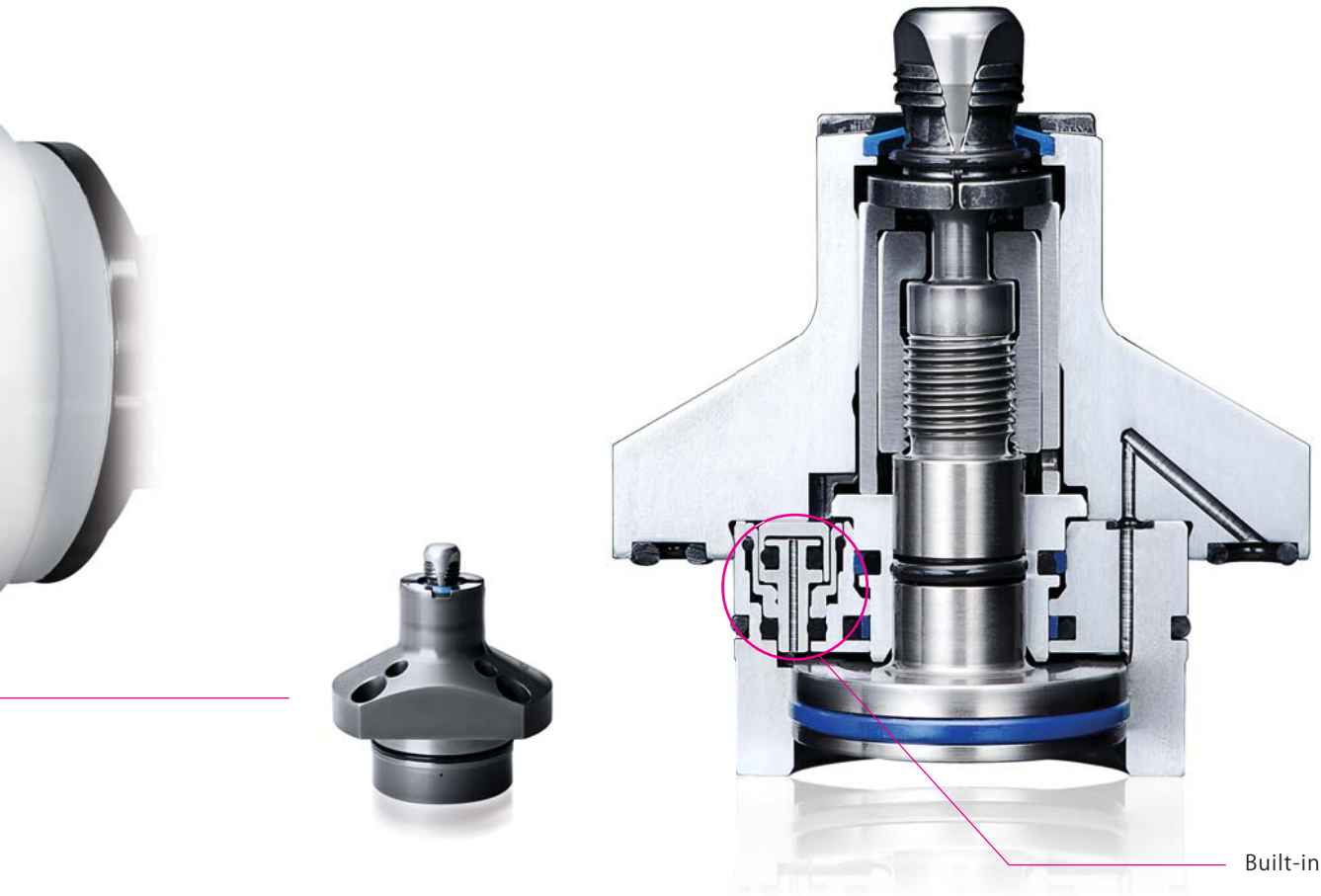


model
CLY PAT.

Enabling a jig compact by clamping at the

bottom of workpiece——Expansion clamp

model
CGC PAT.



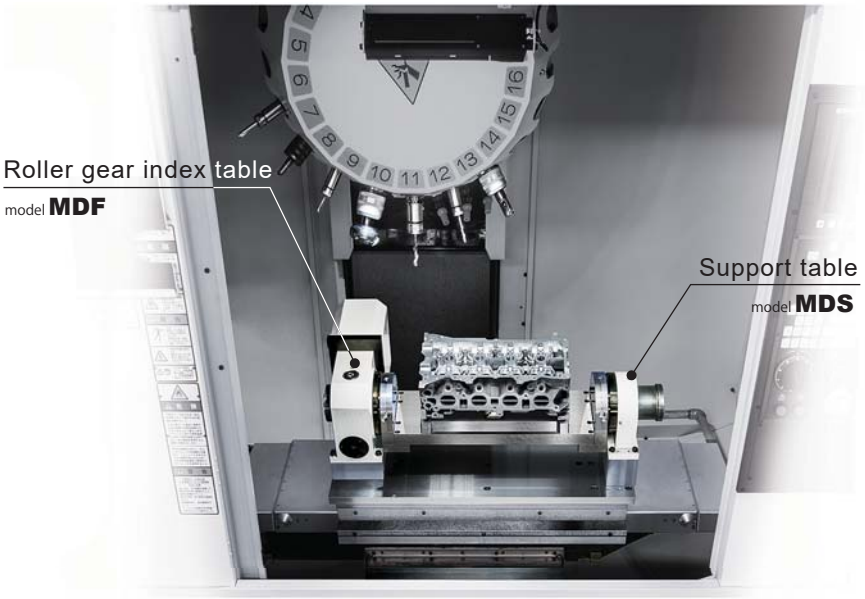
High speed, accurate and maintenance

The roller gear where the pressurization is applied by rolling transmission has few abrasive wear and maintains non-backlash for a long term.

The roller gear index table employs brake-less and non-backlash mechanism and cycle time can be improved.

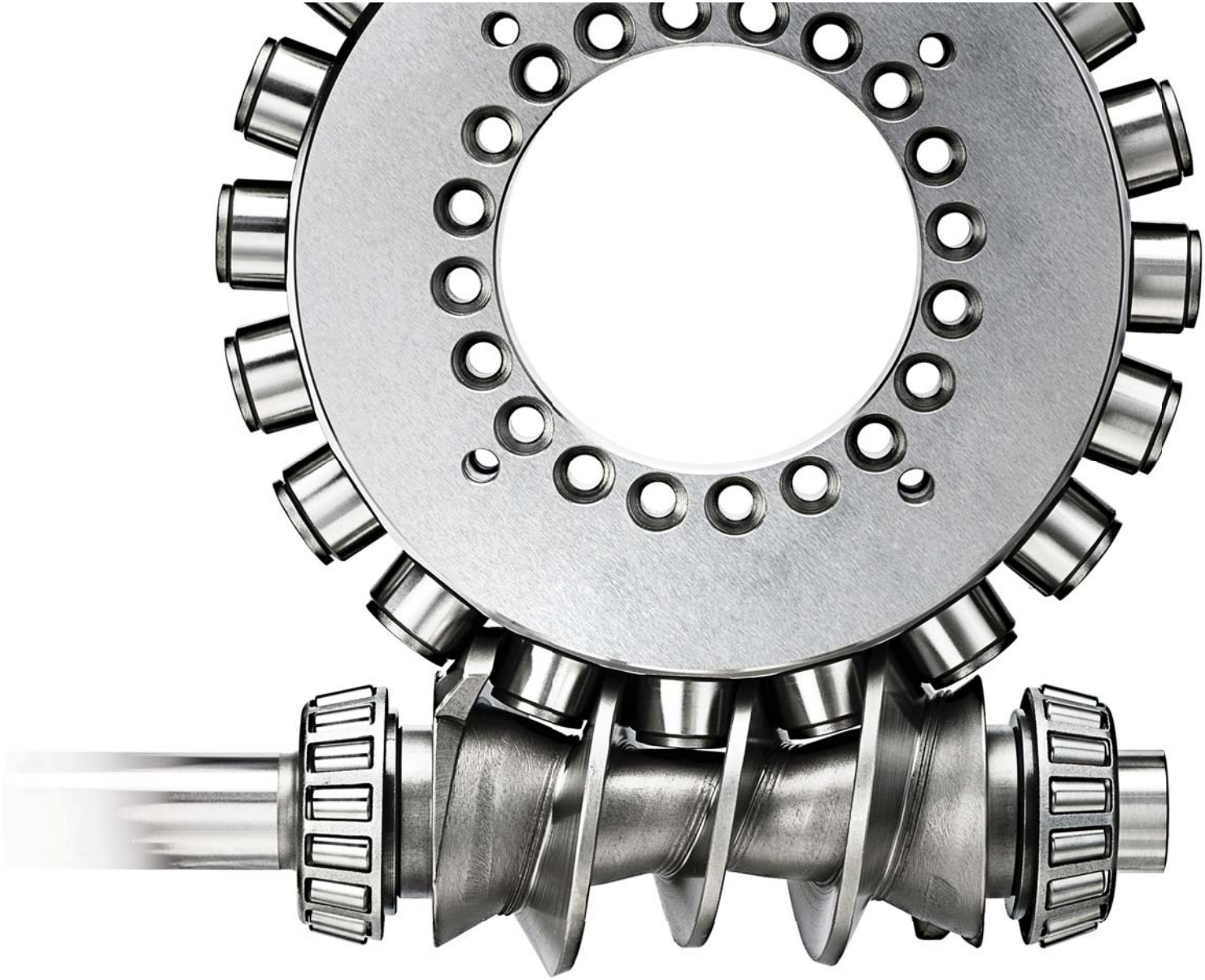
Hydraulic and pneumatic 9 ports & coolant 1 port are built-in.
Clamp and loading operation can be confirmed with multiple circuits of rotary joint and machining line with excellent reliability can be realized.

Roller gear index table model **MDF**

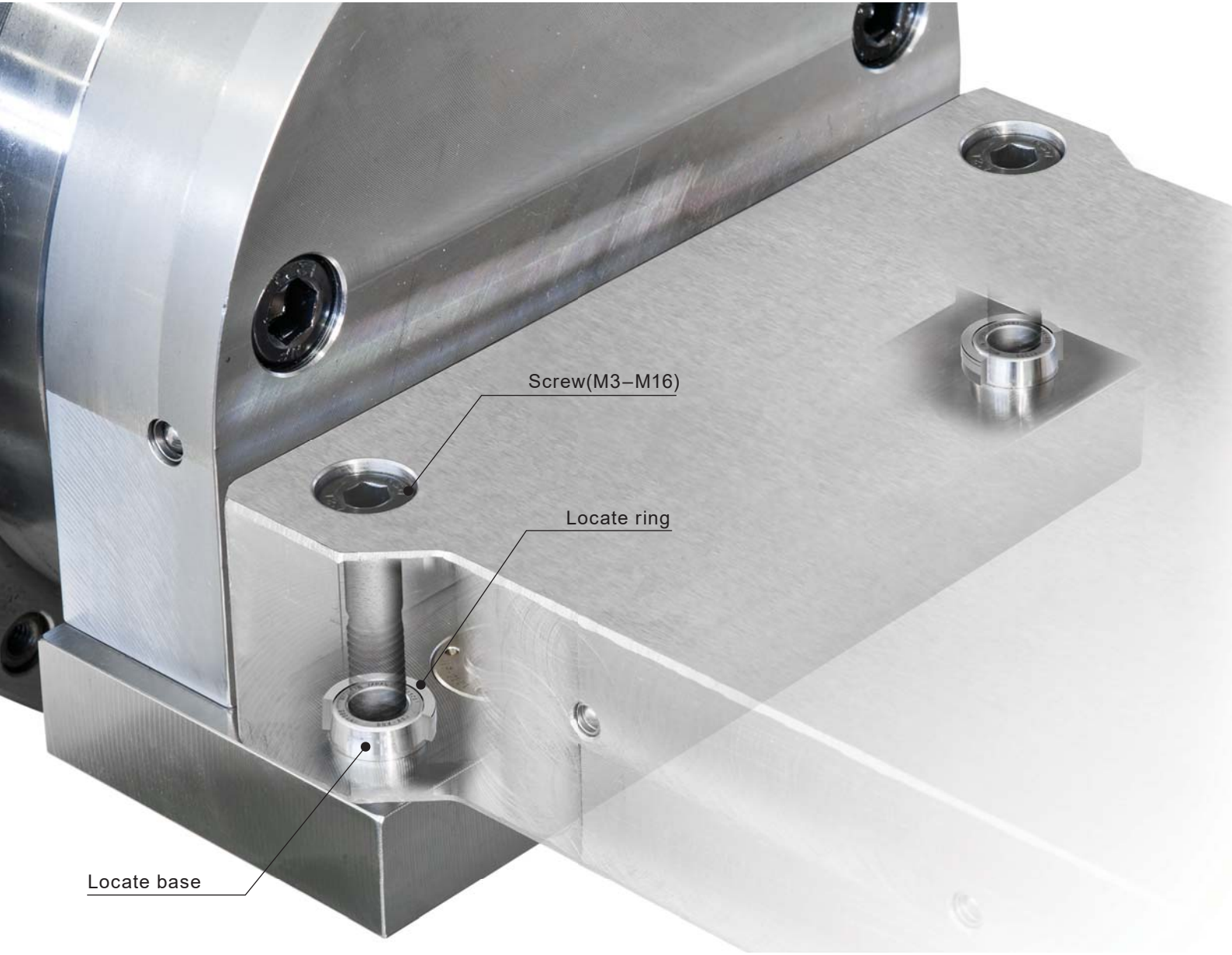


free designed——Roller gear index table

model
MDF



Super compact positioning



device——Pal fix and Pal fix mini

model **CPK** PAT.

model **RPK** PAT. P.

Pal fix

Locate ring
model CPK-N

Locate base
model CPK-A

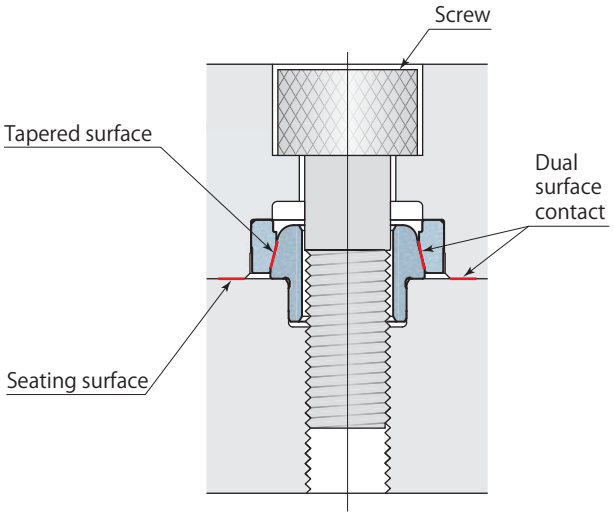
Pal fix mini

Locate ring
model RPK-N

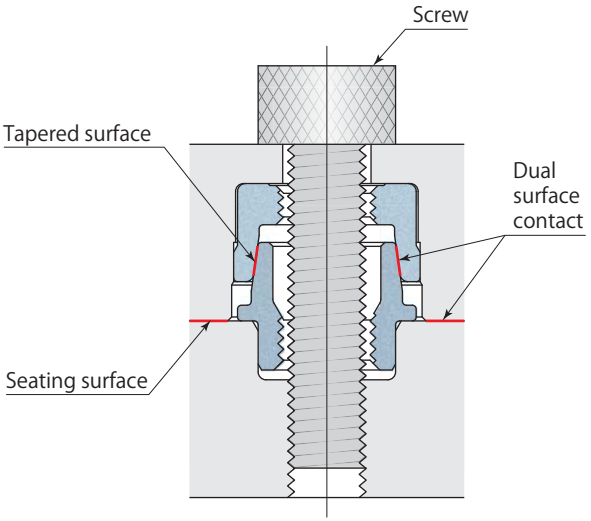
Slit

Locate base
model RPK-A

Screw size
M6, M8, M10, M12, M16



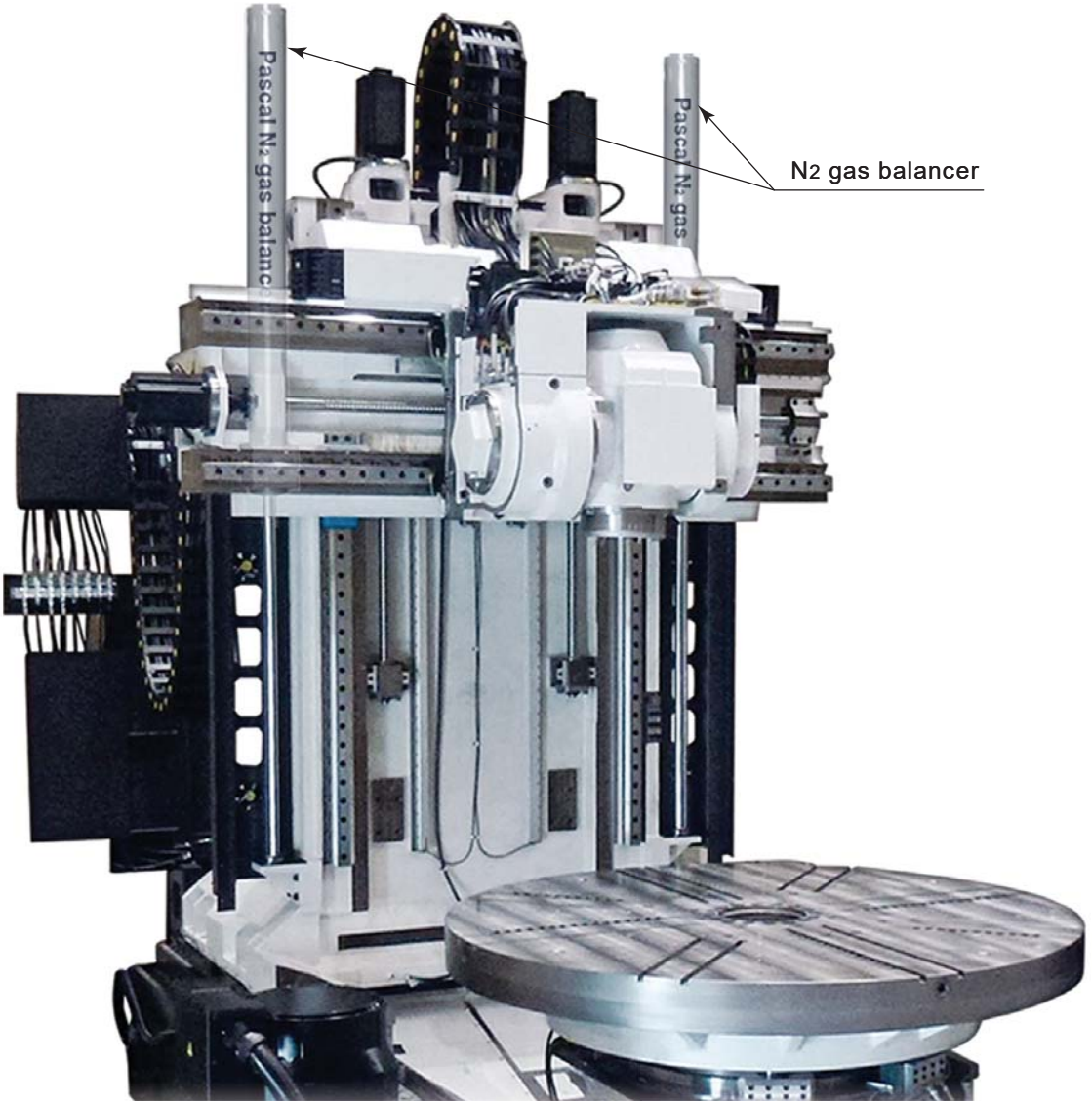
Screw size
M3, M4, M5



N2 gas balancer

model
DNG

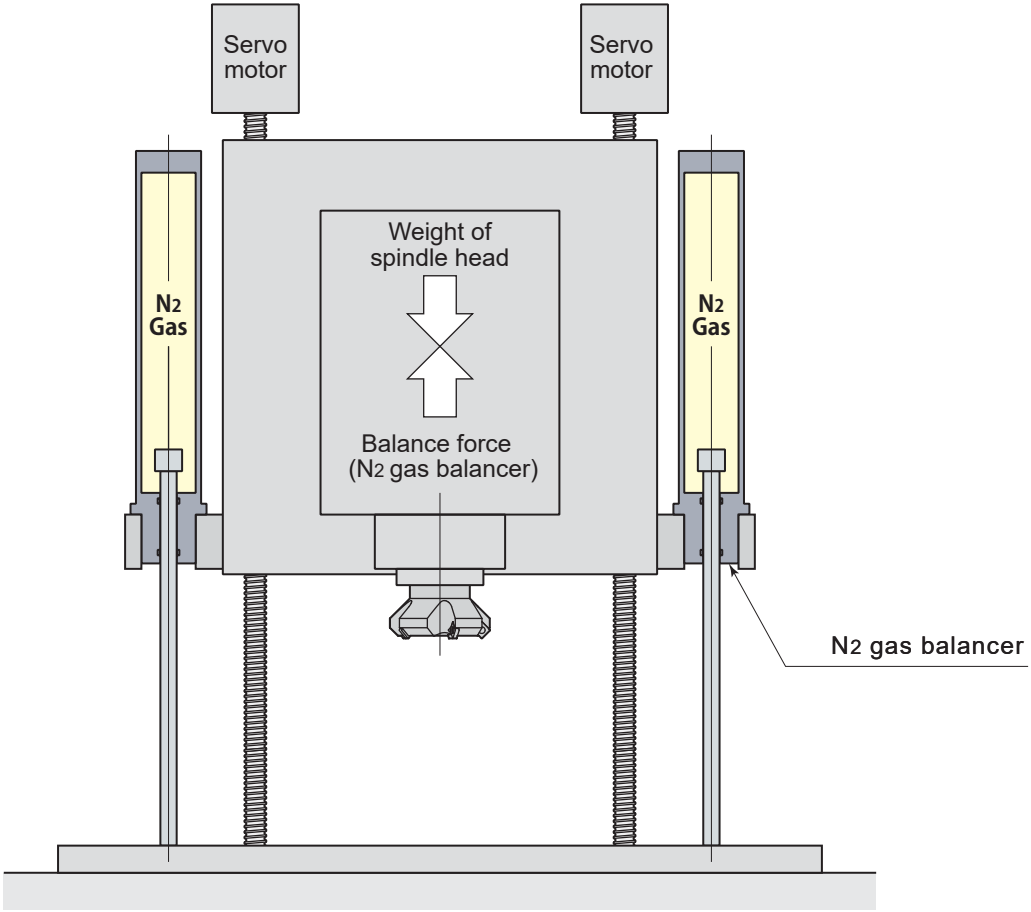
Delivery record 18,000



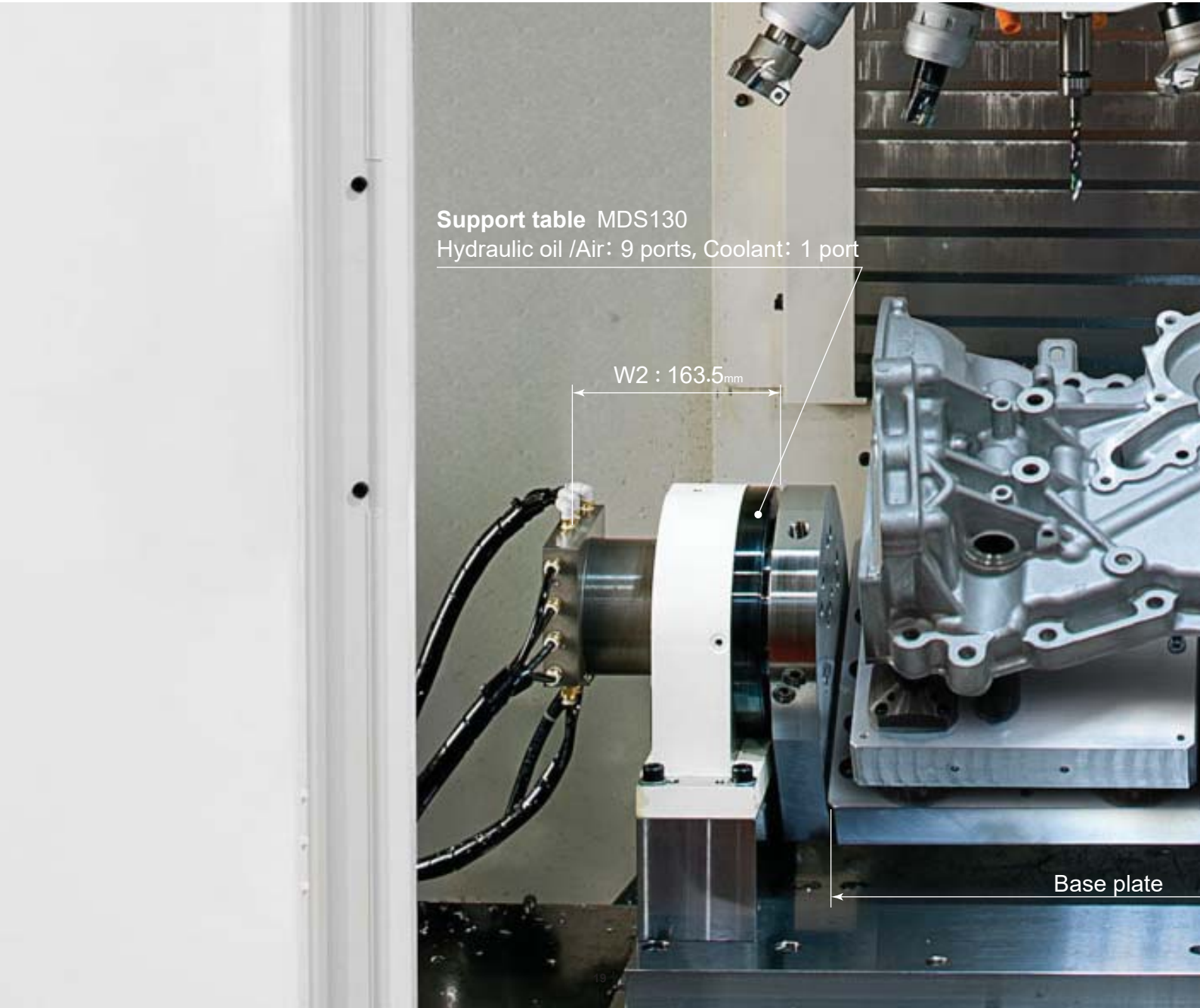
N2 gas balancer

model
DNG

For spindle unit of machining center



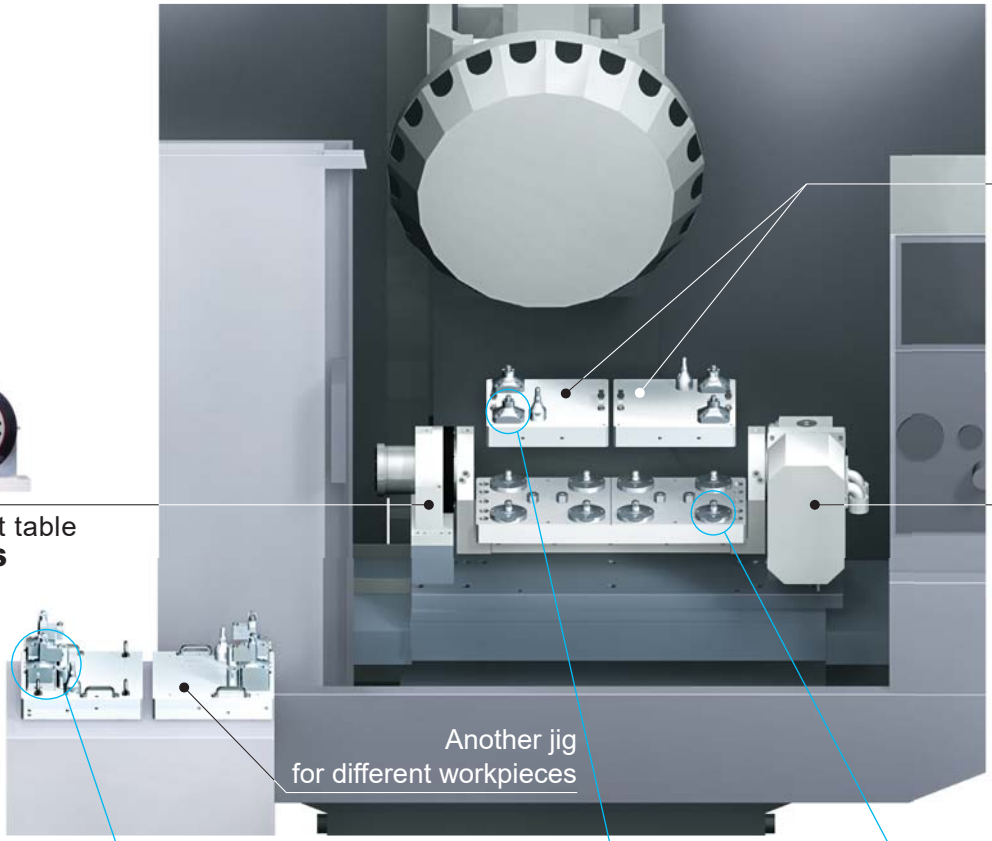
High speed, accurate, long life



Roller gear index table

model
MDF

Quick jig change system



Separated pallet

Support table
model **MDS**

Roller gear index table
model **MDF**

Another jig
for different workpieces

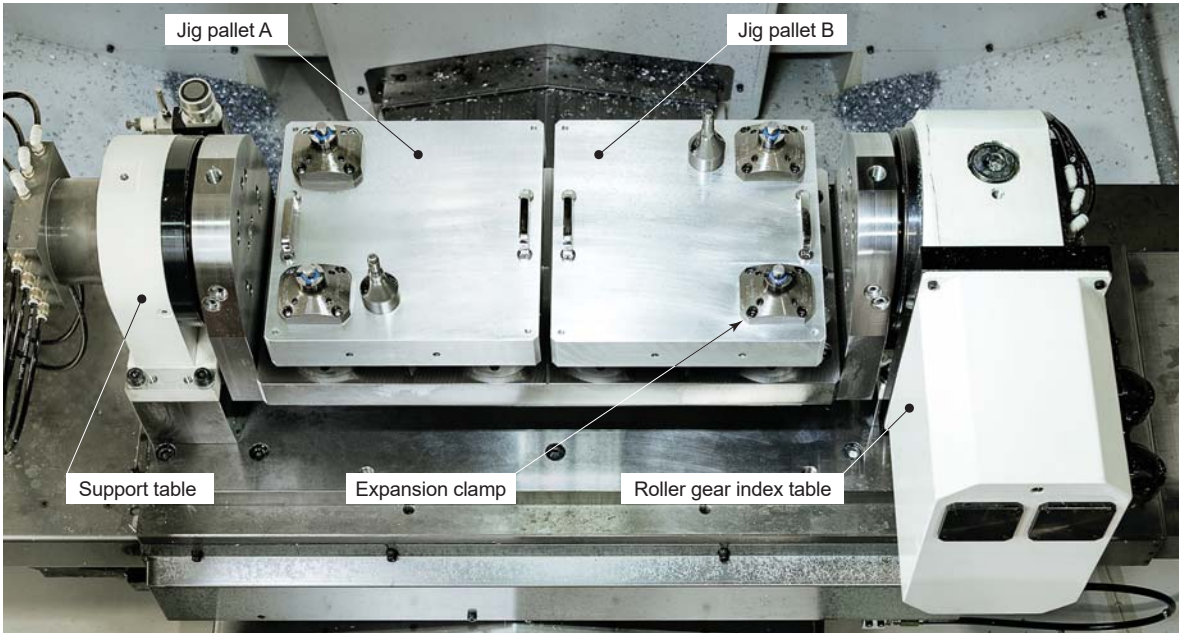
Swing clamp
model **CTX**

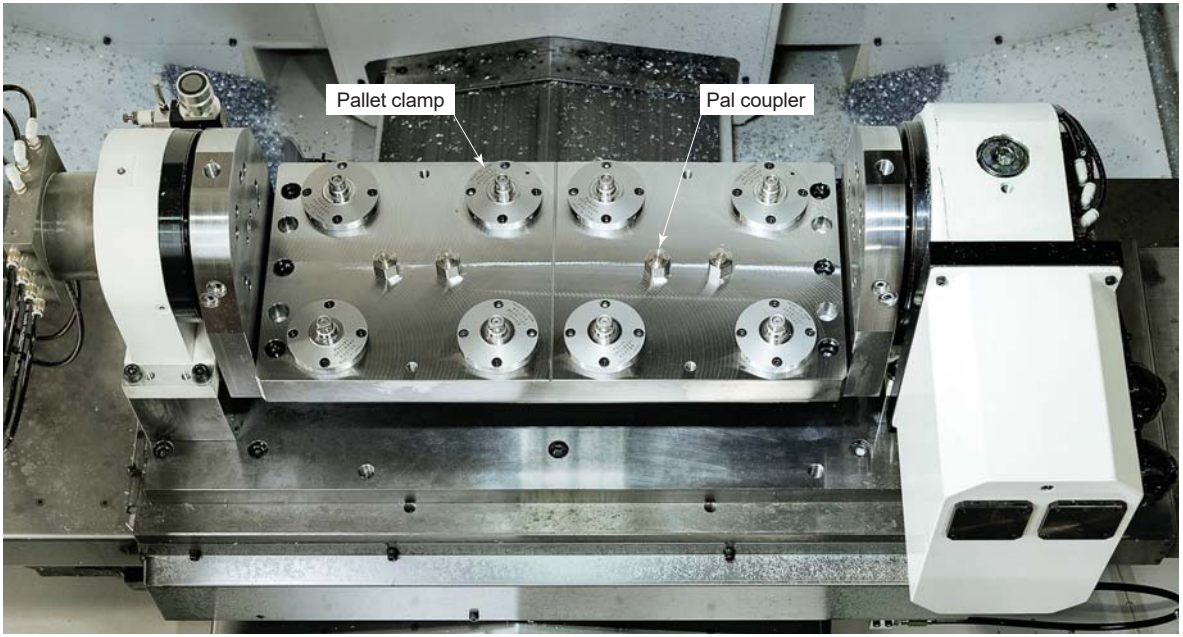
Expansion clamp
model **CGE**

Pallet clamp
model **CPY**

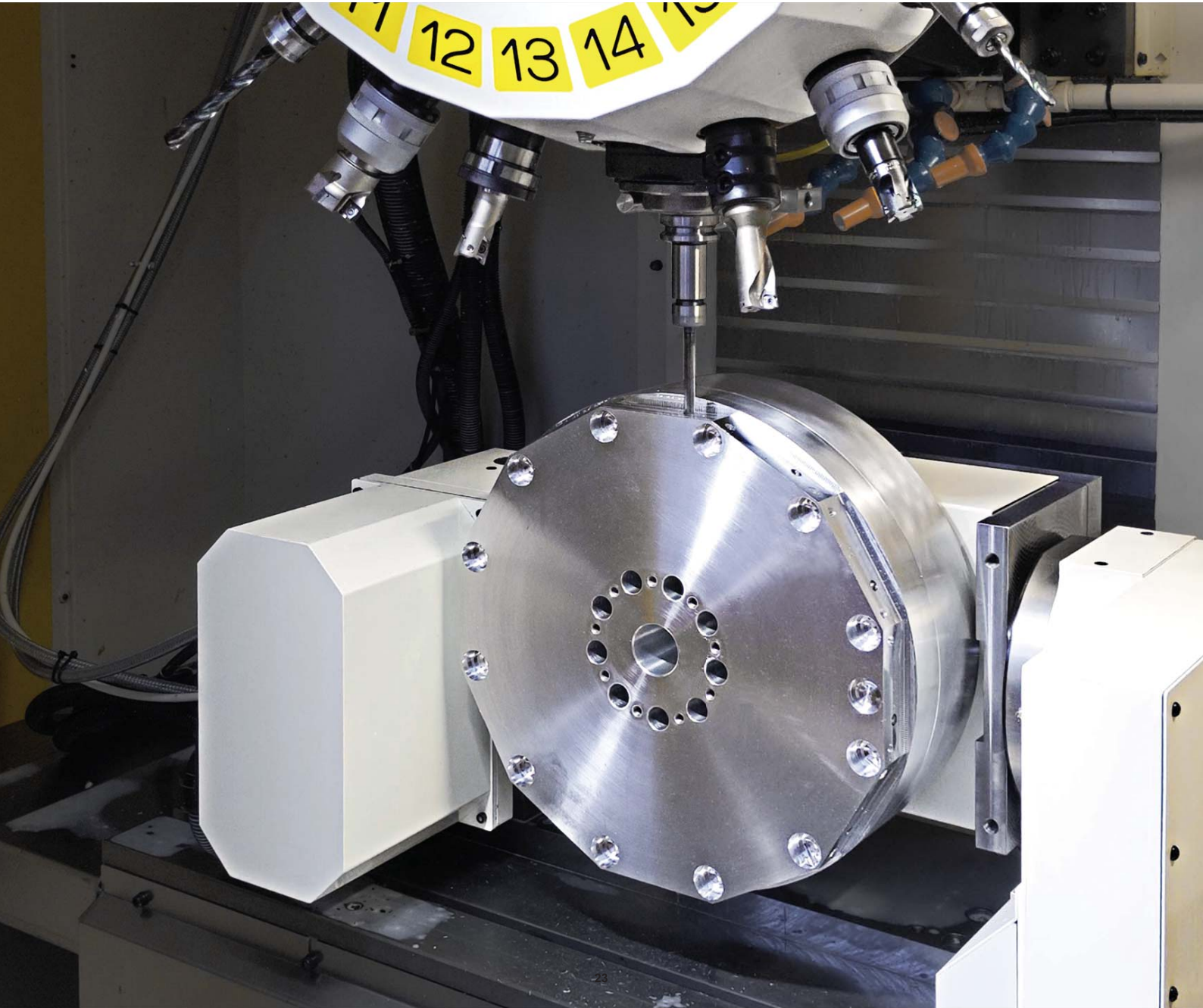
Pallet-change quick and comfortable

model
MDF





Compact, high performance



2-axis Roller gear index table

model
MDT

It helps improve the productivity significantly by reducing takt time to 0.8 seconds per index with non-braking and high-speed rotation.

- Applicable for large workpieces with a max. diameter of 400mm
- Suitable for small size machining centers (Weight 220kg)
- A compact 2-axis index table with a width of 865mm
- The high-precision roller gear maintains stable and accurate positioning.
- 9 built-in rotary joint ports for hydraulic and air +1 coolant port ensures flexibility and optimizes the workstation for workholding components.
- Its biaxial driving mechanism enables process integration so workpiece transferring can be reduced.
- The biaxial driving mechanism provides flexibility for design changes as well as slant hole drilling.

Same workpiece, Equal clamping force

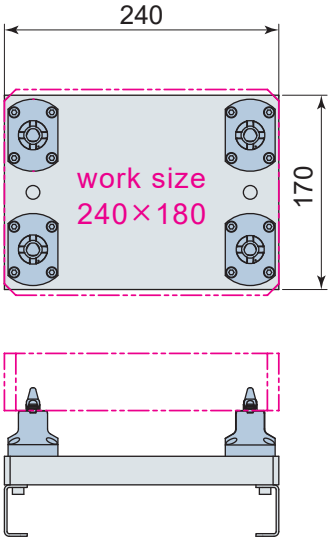
Hyd. **Expansion clamp**

CGC-N22E

59%

Jig area
408cm²

Jig mass
14.5kg
Clamping force
1.77kN (3.5MPa)



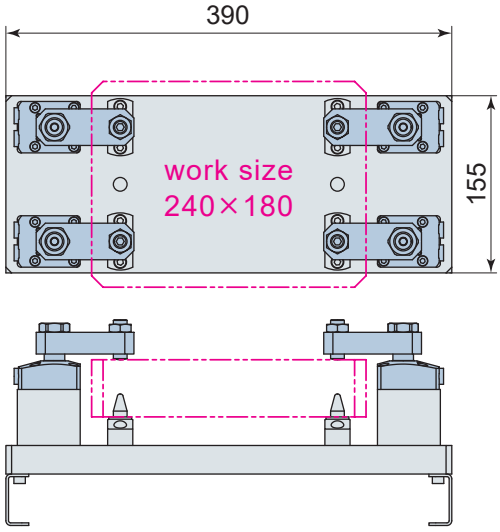
Hyd. **Dual cylinder model**

CTP04

87%

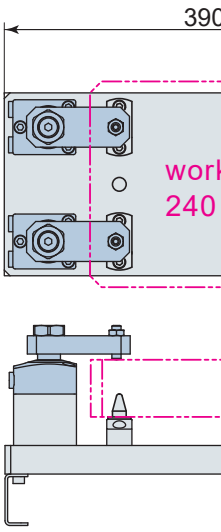
Jig area
604.5cm²

Jig mass
24.8kg
Clamping force
2.52kN (3.5MPa)



Hyd. **Standar**

CTK06U

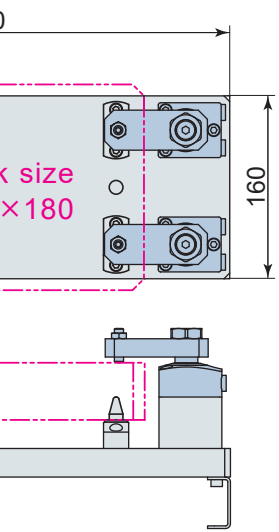


Comparison of jig size

d model

90%

Jig area
624cm²
Jig mass
26.5kg
Clamping force
2.63kN (15MPa)

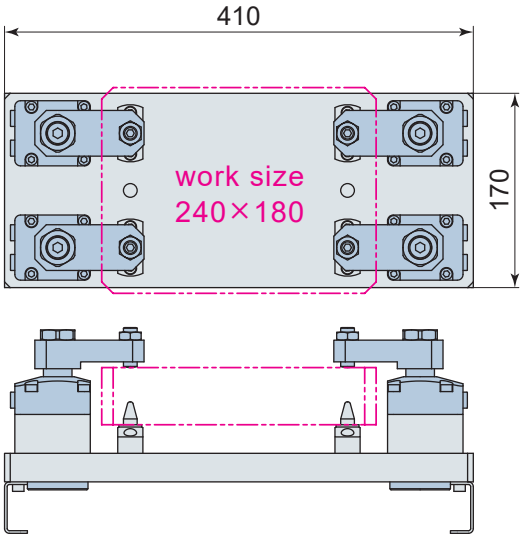


Hyd. **Standard model**

CTU06

100%

Jig area
697cm²
Jig mass
31.6kg
Clamping force
2.52kN (3.5MPa)

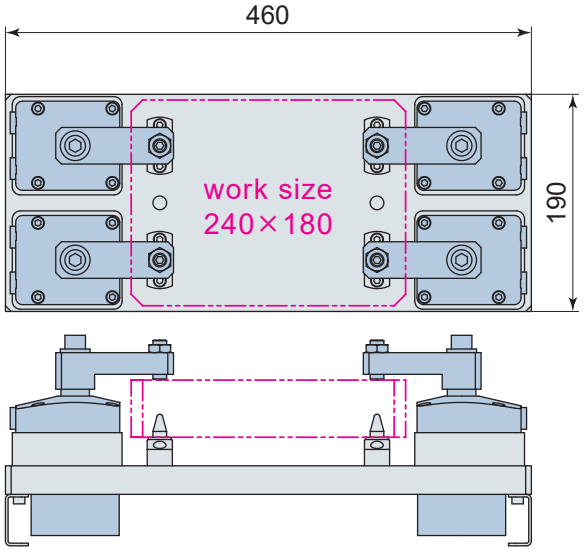


Air **Dual cylinder model**

CTY63

125%

Jig area
874cm²
Jig mass
37.5kg
Clamping force
2.41kN (0.5MPa)



*Jig plate material : Steel, Thickness : 40mm

Swing clamp

model **CTM06-N** PAT.

Compact model
(without sensor)

model **CTU06**

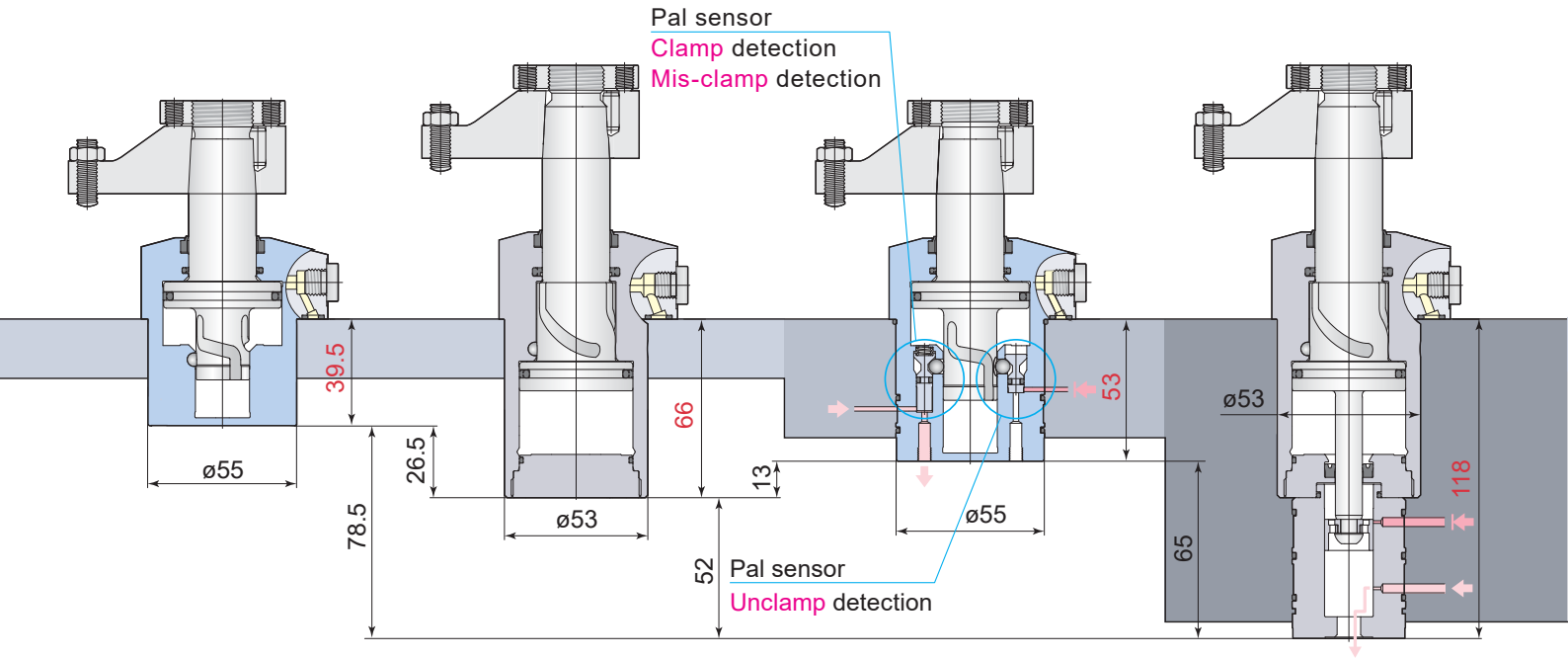
Standard model
(without sensor)

model **CTM06-T** PAT.

Three point sensor model
Clamp, Unclamp, Mis-clamp detection

model **CTU06-A**

Rod sensor model



Link clamp

model **CLM06-FN**

Compact model

(without sensor)

model **CLU06-F**

Standard model

(without sensor)

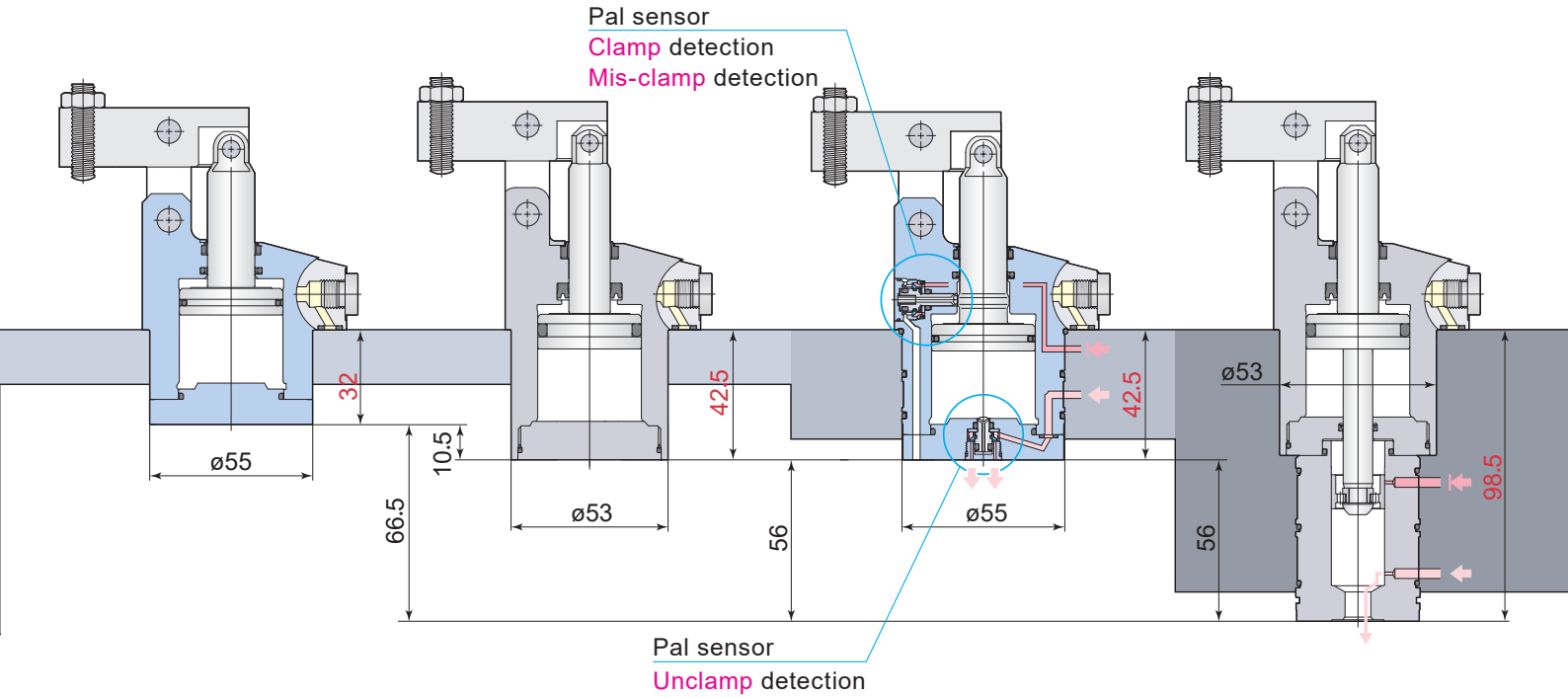
model **CLM06-FT** PAT.

Three point sensor model

Clamp, Unclamp, Mis-clamp detection

model **CLU06-FA**

Rod sensor model



Work lift cylinder

model **CNB02-15TN**

Compact model
(without sensor)

model **CNB02-15TB** PAT.

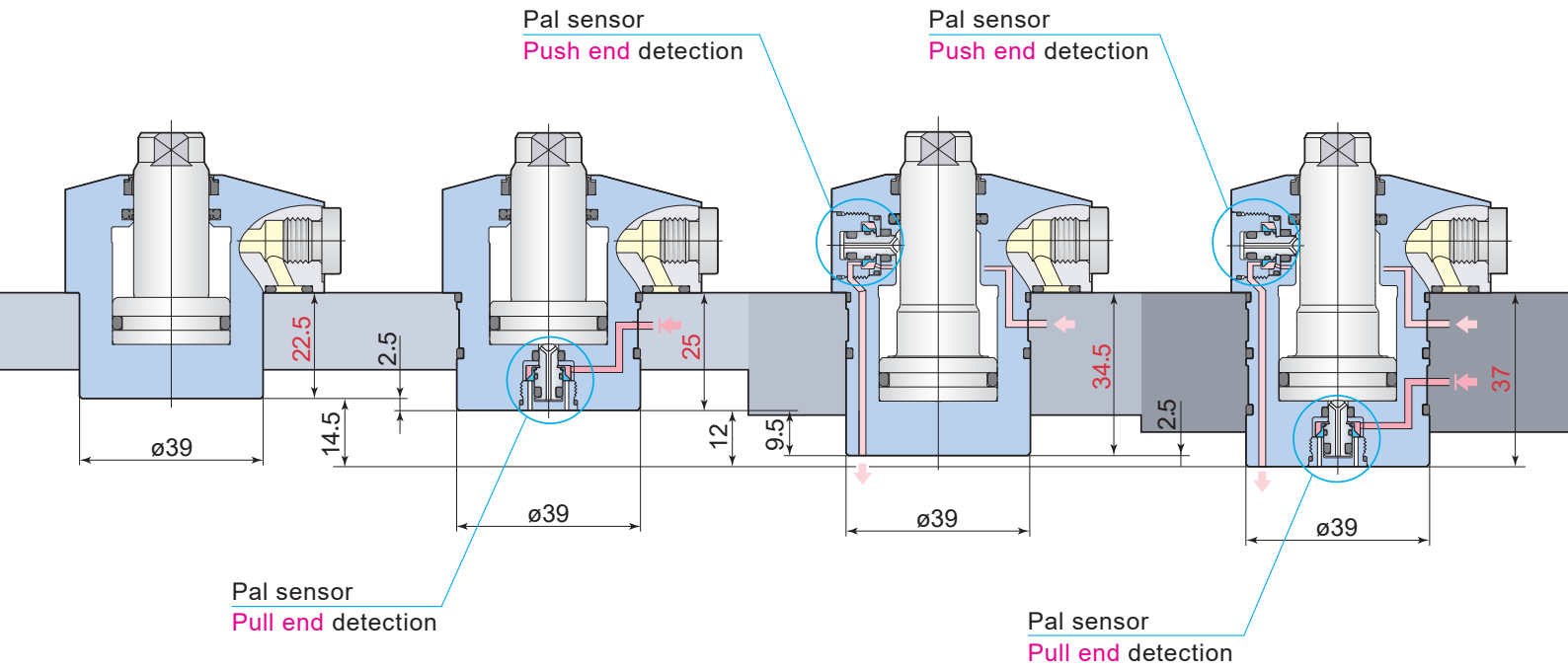
Pull sensor model

model **CNB02-15TU** PAT.

Push sensor model

model **CNB02-15TD** PAT.

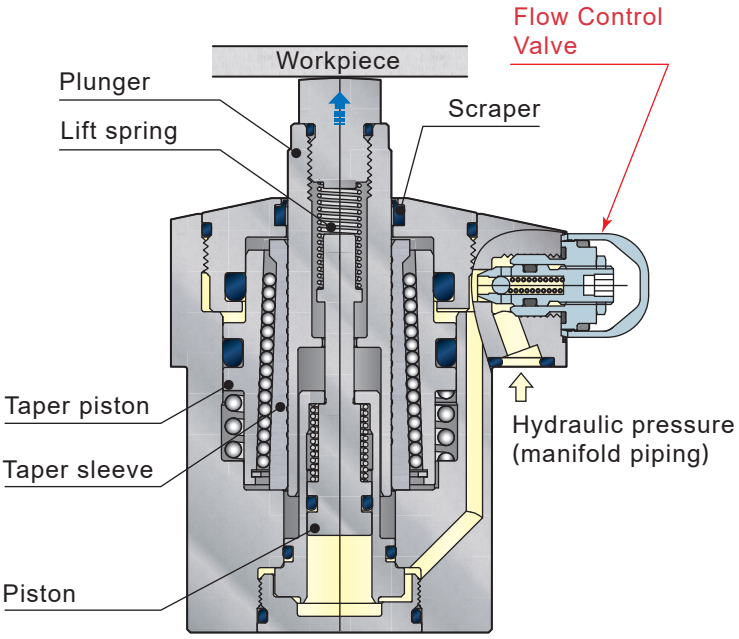
Push / Pull sensor model

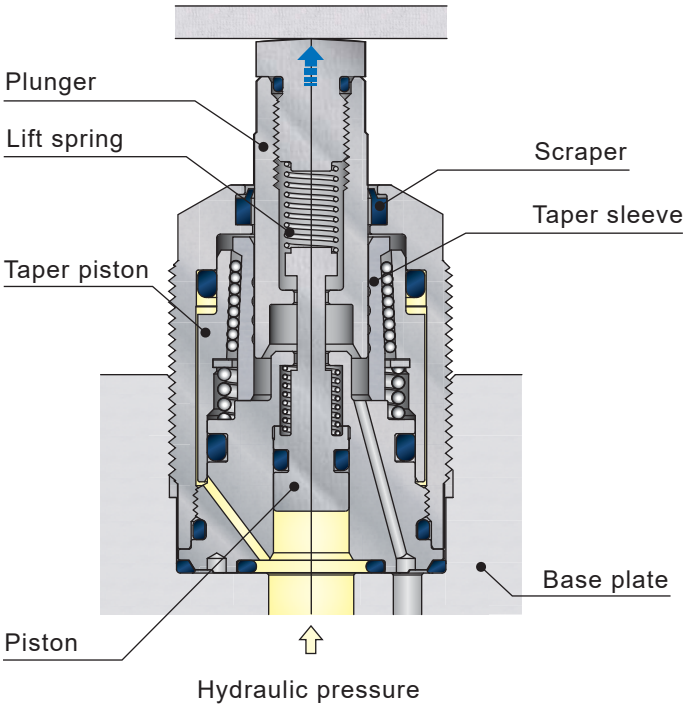


Work support

model
CSU

model
CSN



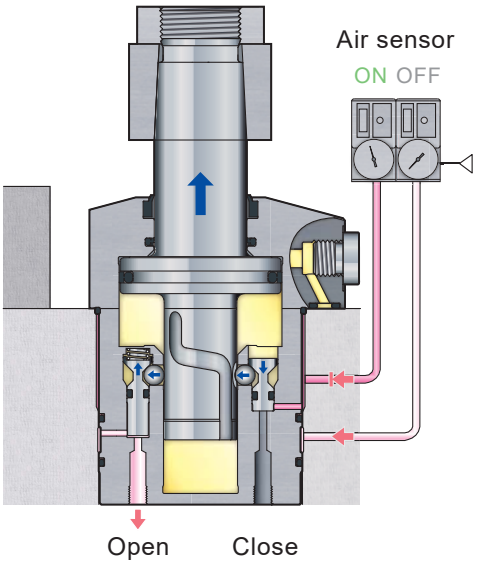


Unclamp / Clamp / Mis-clamp detection

PAT.

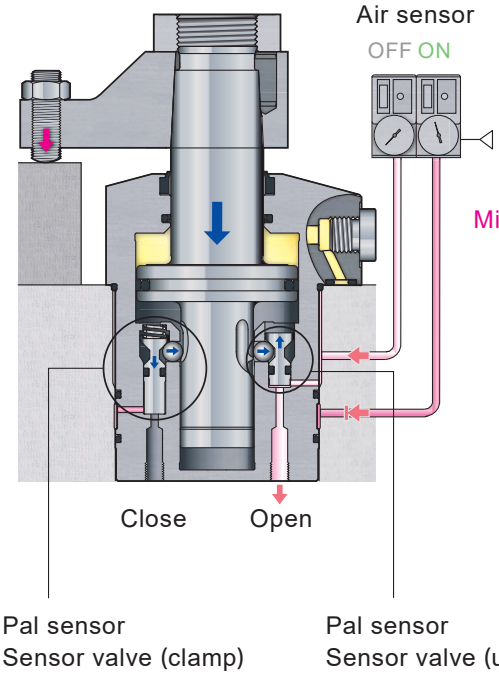
Pal sensor (Built-in air sensor)

Unclamp detection



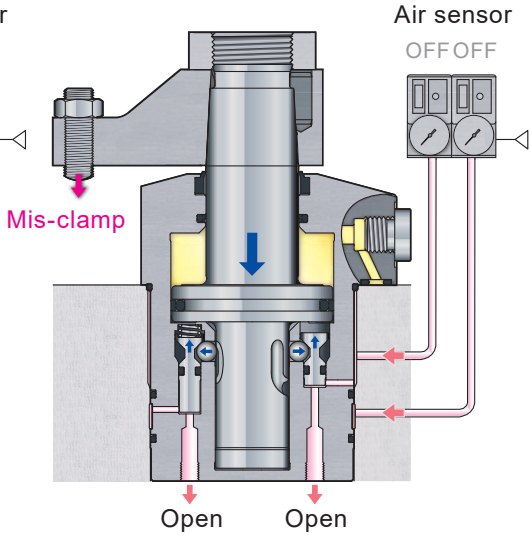
Sensor signal Unclamp	ON
Sensor signal Clamp	OFF

Clamp detection



Sensor signal Unclamp	OFF
Sensor signal Clamp	ON

Mis-clamp detection



Sensor signal Unclamp	OFF
Sensor signal Clamp	OFF

Detected mis-clamp

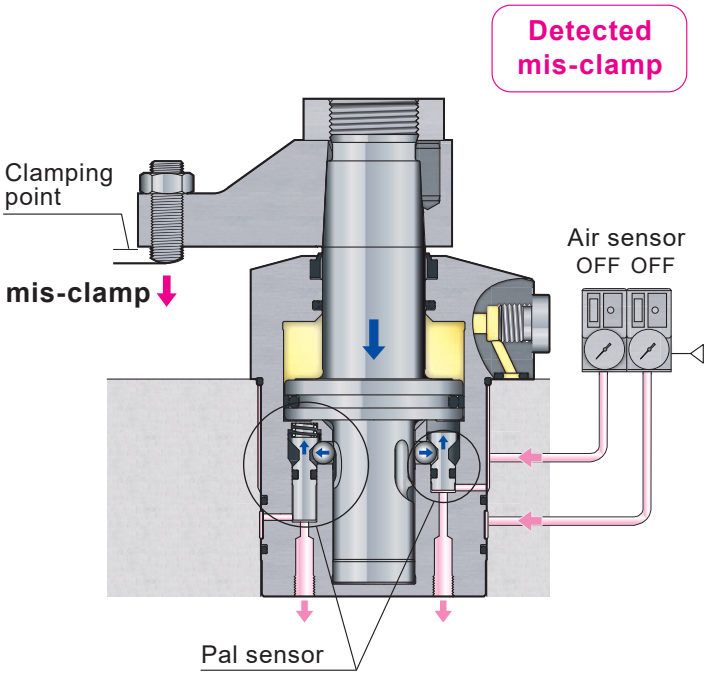
PAT.

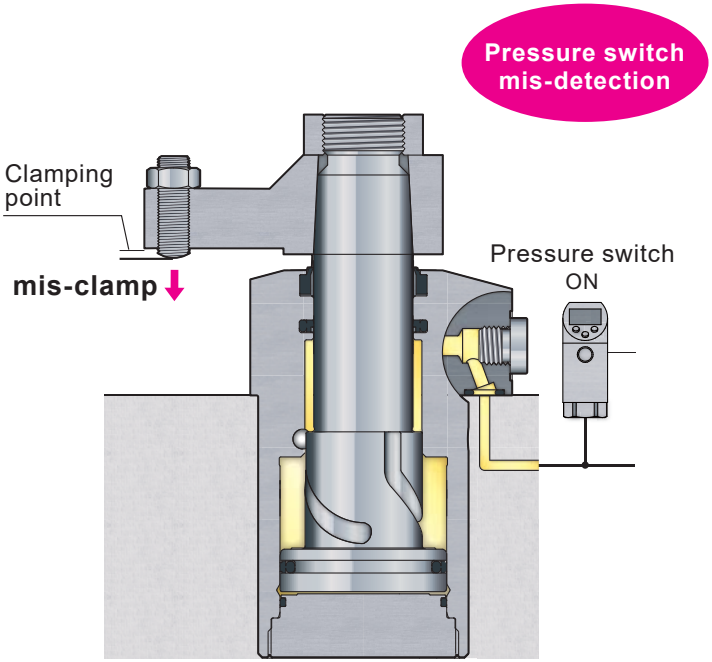
Pal sensor (Built-in air sensor)

Sensor model can prevent tool breakage and defective machining due to incomplete clamp

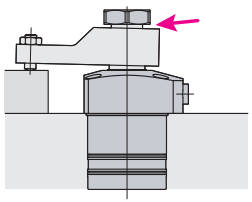
Pressure switch

May not be able to prevent machining defects perfectly

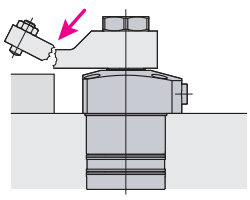




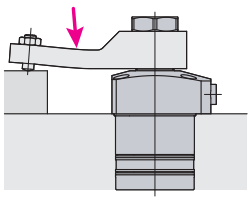
Miss clamping



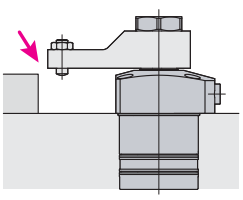
Clamp arm loose



Clamp arm breakage



Clamp arm deformation



Wrong workpiece

Swing clamp Dual cylinder model

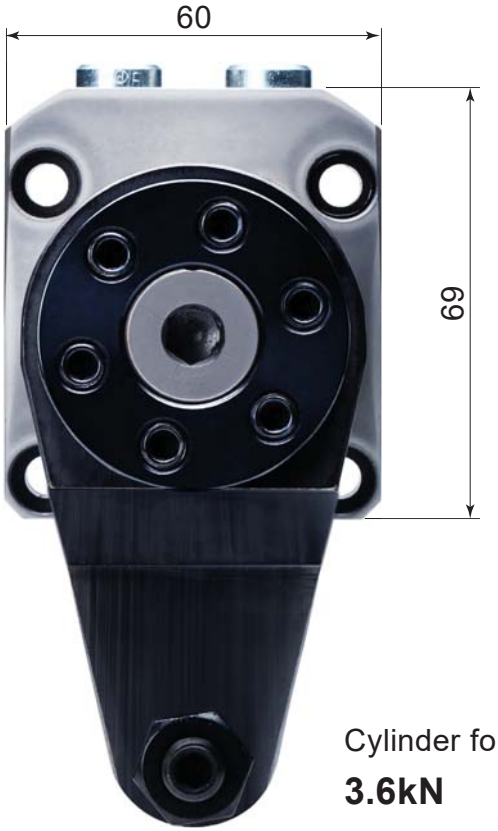
model **CTP** JP PAT.

Flange area **approx. 59%** 2 size smaller ⬇

Dual cylinder model **CTP04**

Cylinder force
3.4kN

Compact model model **CTM06**



Cylinder force
3.6kN

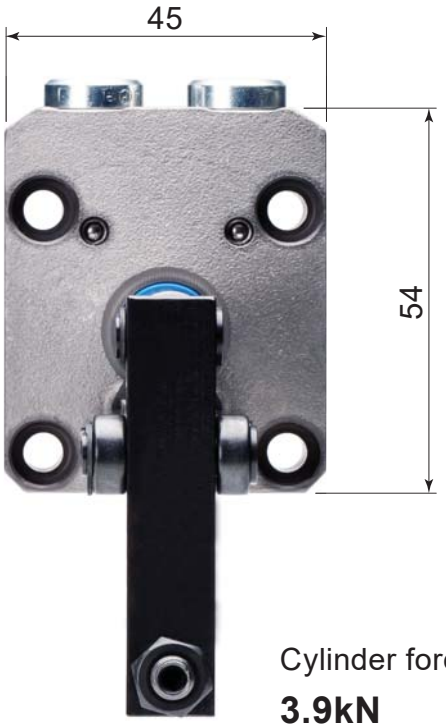
＊Hydraulic pressure 3.5MPa

Link clamp Dual cylinder model

model **CLP** JP PAT.

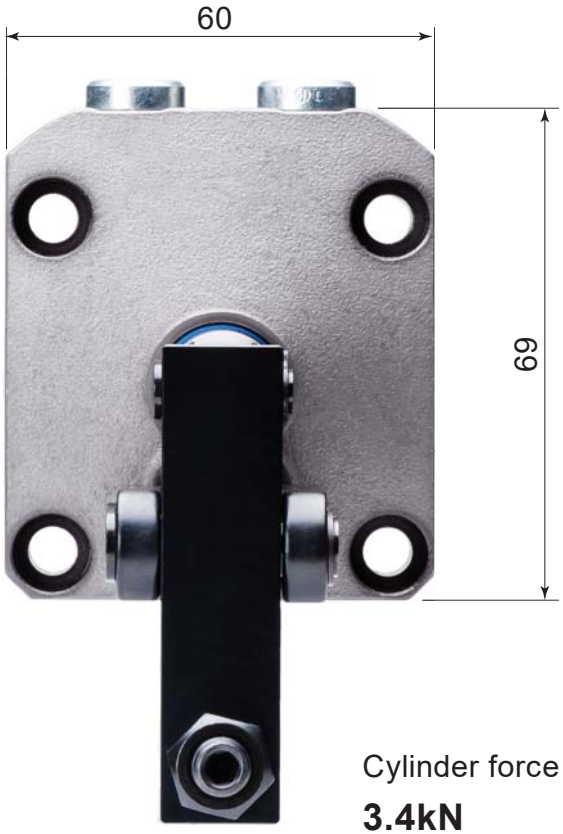
Flange area **approx. 59%** 2 size smaller ⬇

Dual cylinder model **CLP04**



Cylinder force
3.9kN

Compact model model **CLM06**



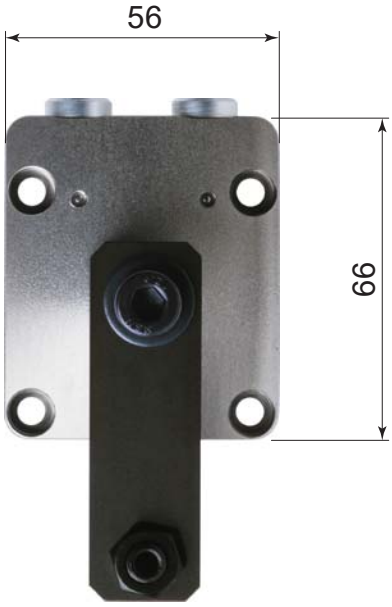
Cylinder force
3.4kN

＊Hydraulic pressure 3.5MPa

Air swing clamp Dual cylinder model model CTY JP PAT.

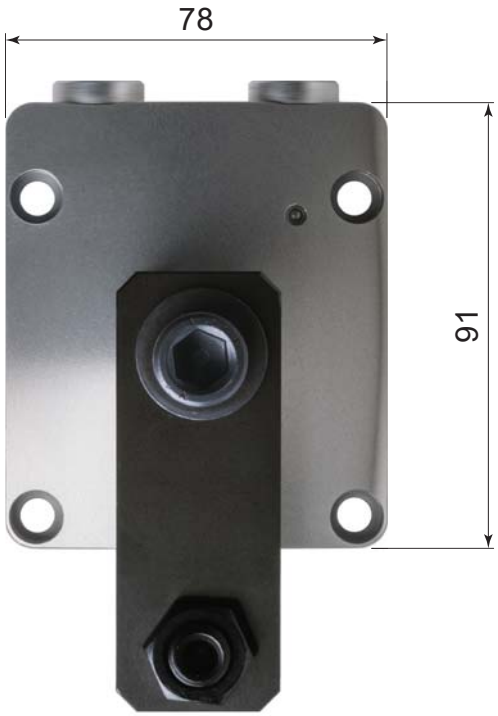
Flange area **approx. 52%** 2 size smaller ⬇

Dual cylinder model **CTY40**



Cylinder force
1430N

Standard model model **CTX63**



Cylinder force
1310N

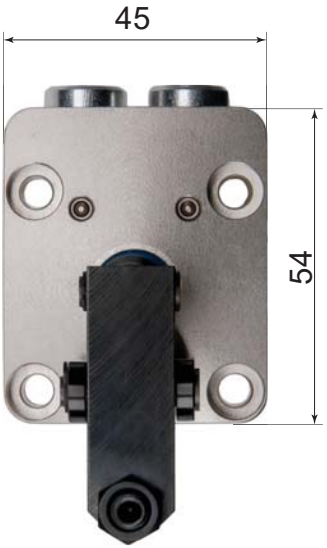
＊Air pressure 0.5MPa

Air link clamp Dual cylinder model

model **CLZ** JP PAT.

Flange area **approx. 65%** 2 size smaller ⬇

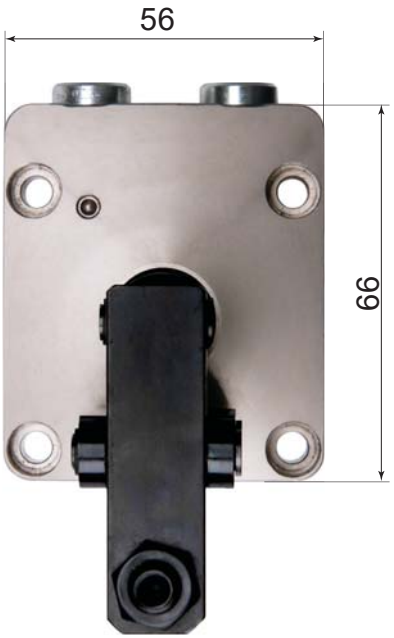
Dual cylinder model **CLZ25**



Cylinder force

590N

Standard model model **CLX40**



Cylinder force

630N

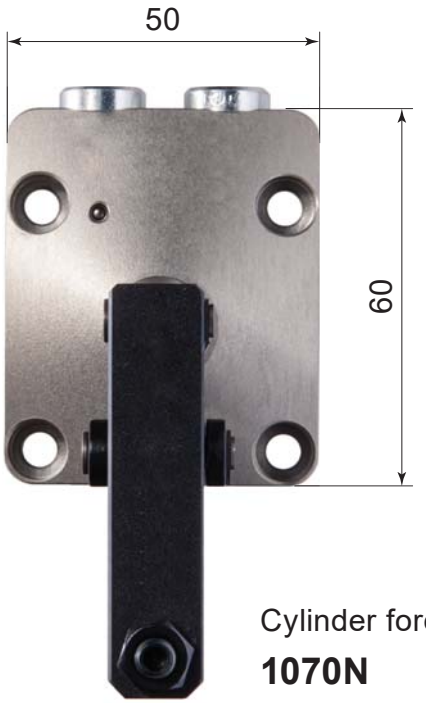
＊Air pressure 0.5MPa

Boost air link clamp

model **CLY** PAT.

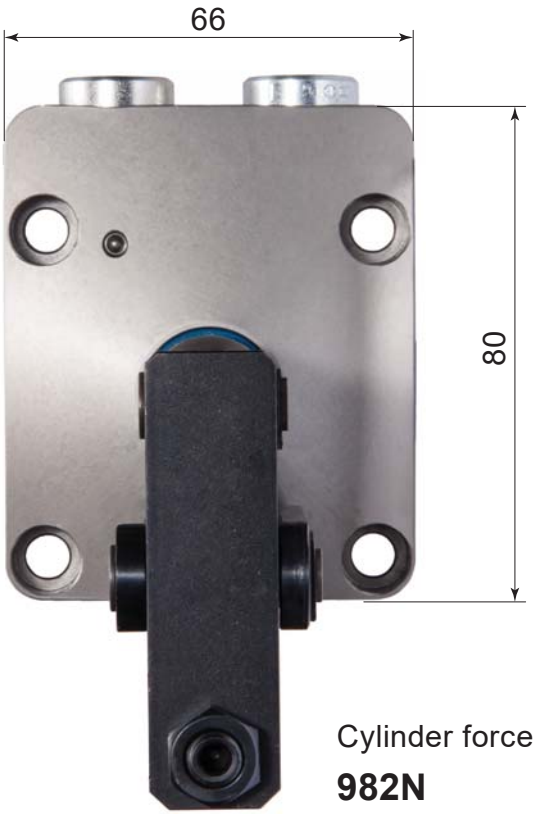
Flange area **approx. 57%** 2 size smaller ⬇

Boost model model **CLY32**



Cylinder force
1070N

Standard model model **CLX50**



Cylinder force
982N

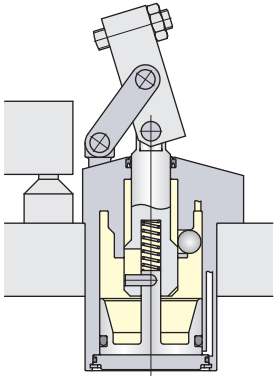
＊Air pressure 0.5MPa

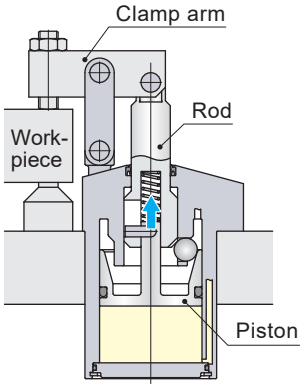
Boost air link clamp

model
CLY PAT.

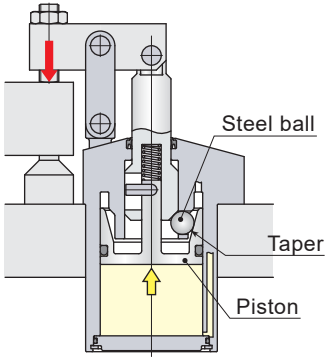
Clamp

① Unclamp ➡ ② Clamp position ➡ ③ Clamping force boosted





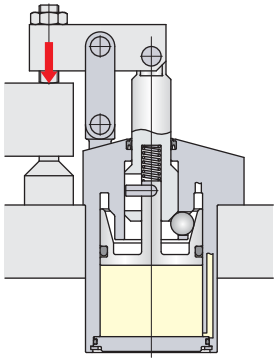
The rod and piston go up at the same time until a clamp arm contacts workpiece.

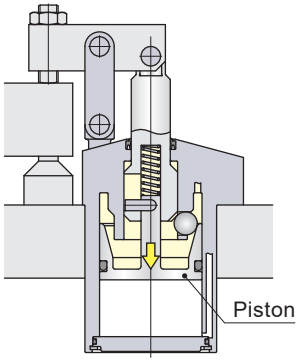


Steel balls and taper can boost clamping force by the upward movement of piston.

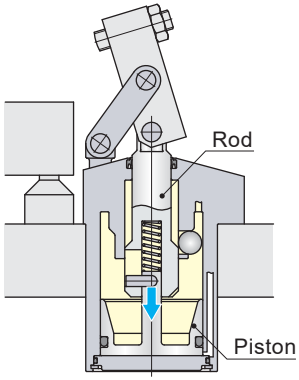
Unclamp

① Clamping force boosted ➡ ② Taper-lock released ➡ ③ Unclamp





Taper lock is securely unlocked by the downward movement of piston



The rod and piston go down at the same time.

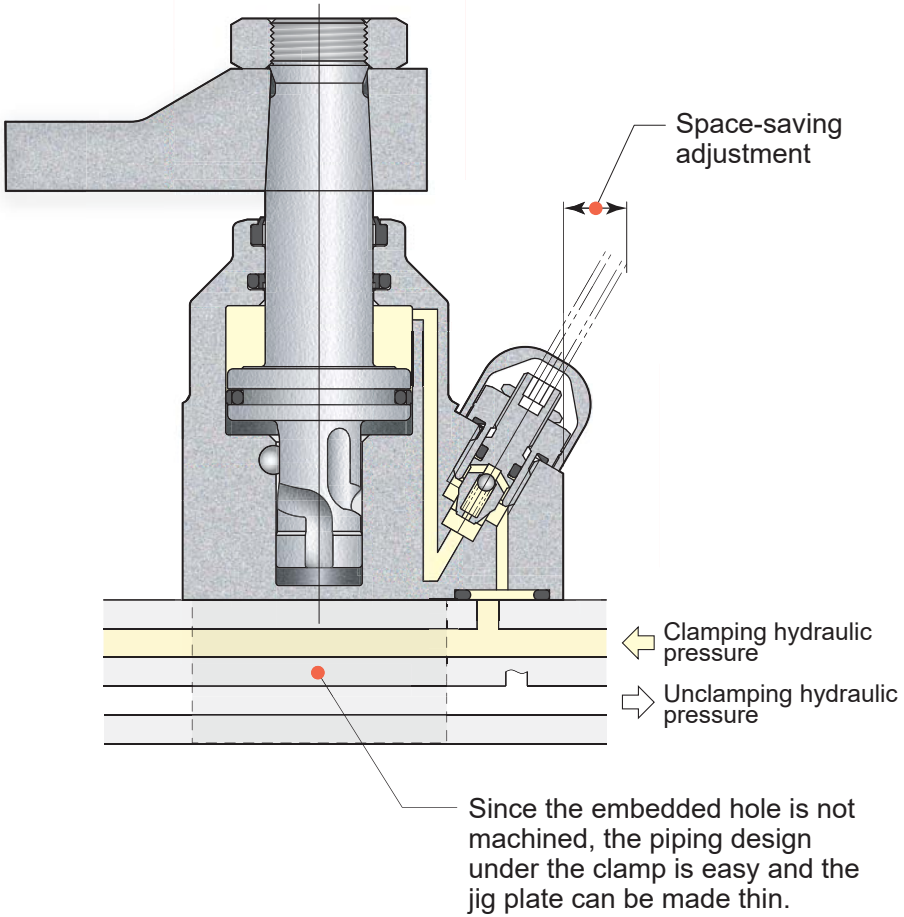
Swing clamp Flat mount model

model **CTJ** JP PAT.

Eliminating the embedding of the main body makes it easier to process the jig plate.

Swing clamp
Flat mount model

model **CTJ**

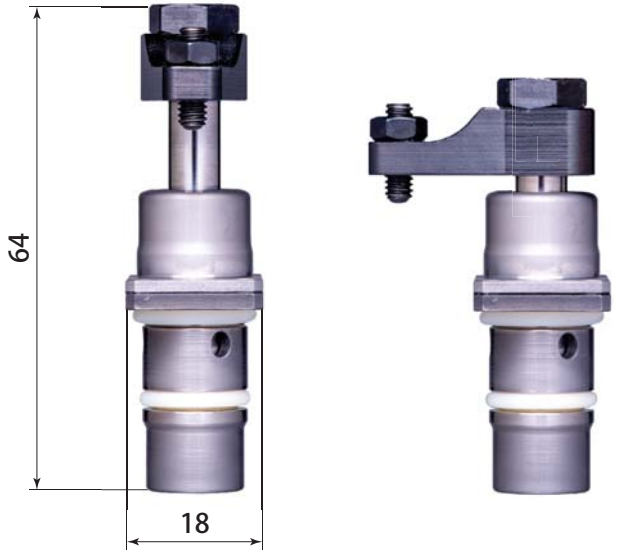


15MPa Swing clamp Cartridge model

model CUC

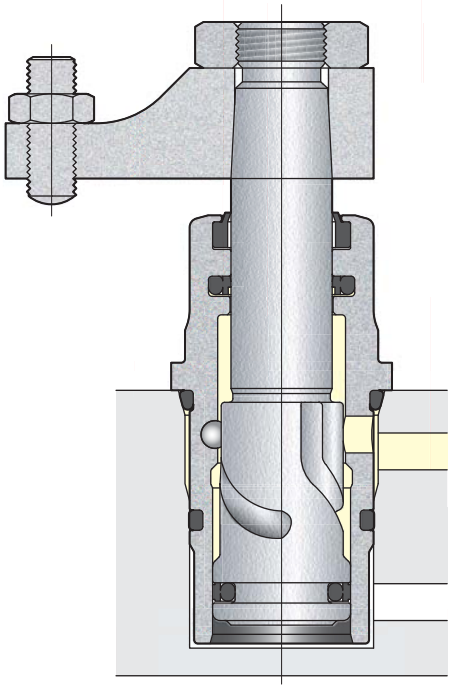
Achieving an unprecedented compact design with portless G-thread piping.

model **CUC04-L**



Unclamp

Clamp



Perfect nut & release nut

Helps to improve the workability on the machine table or the jig

Mounting with Perfect nut

Dismounting with Perfect release nut

The clamp arm can be mounted/dismounted easily and securely with a small torque.

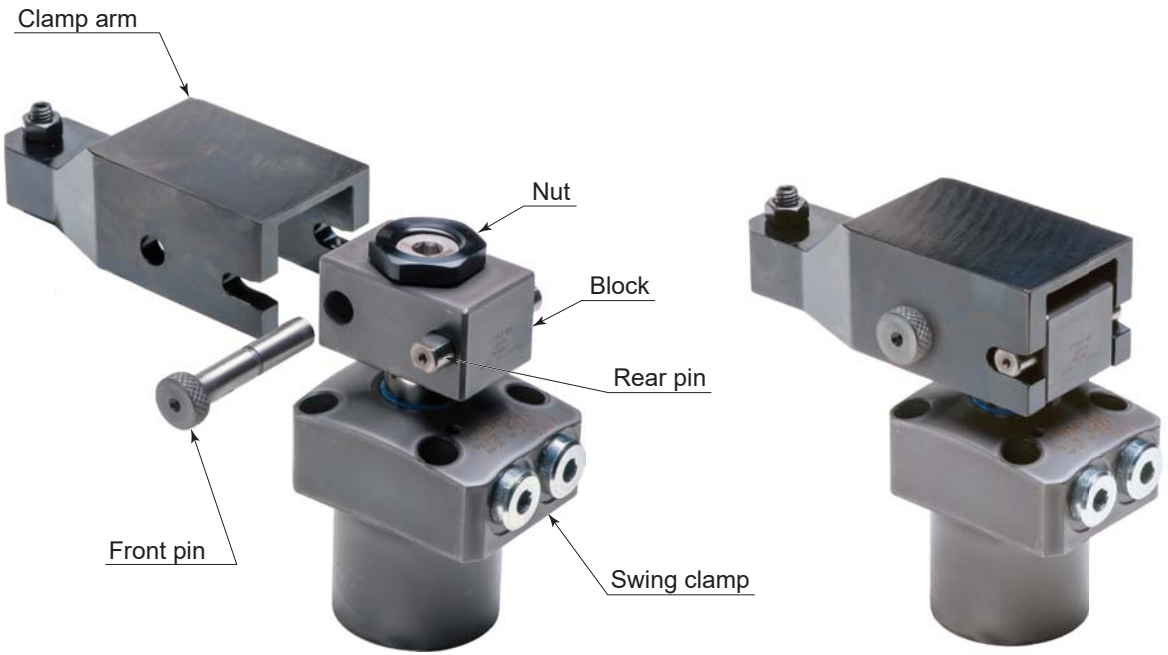
Quick arm change

PAT.

Clamp arm is replaceable quickly with toolless

Dismounting of clamp arm

Mounting of clamp arm



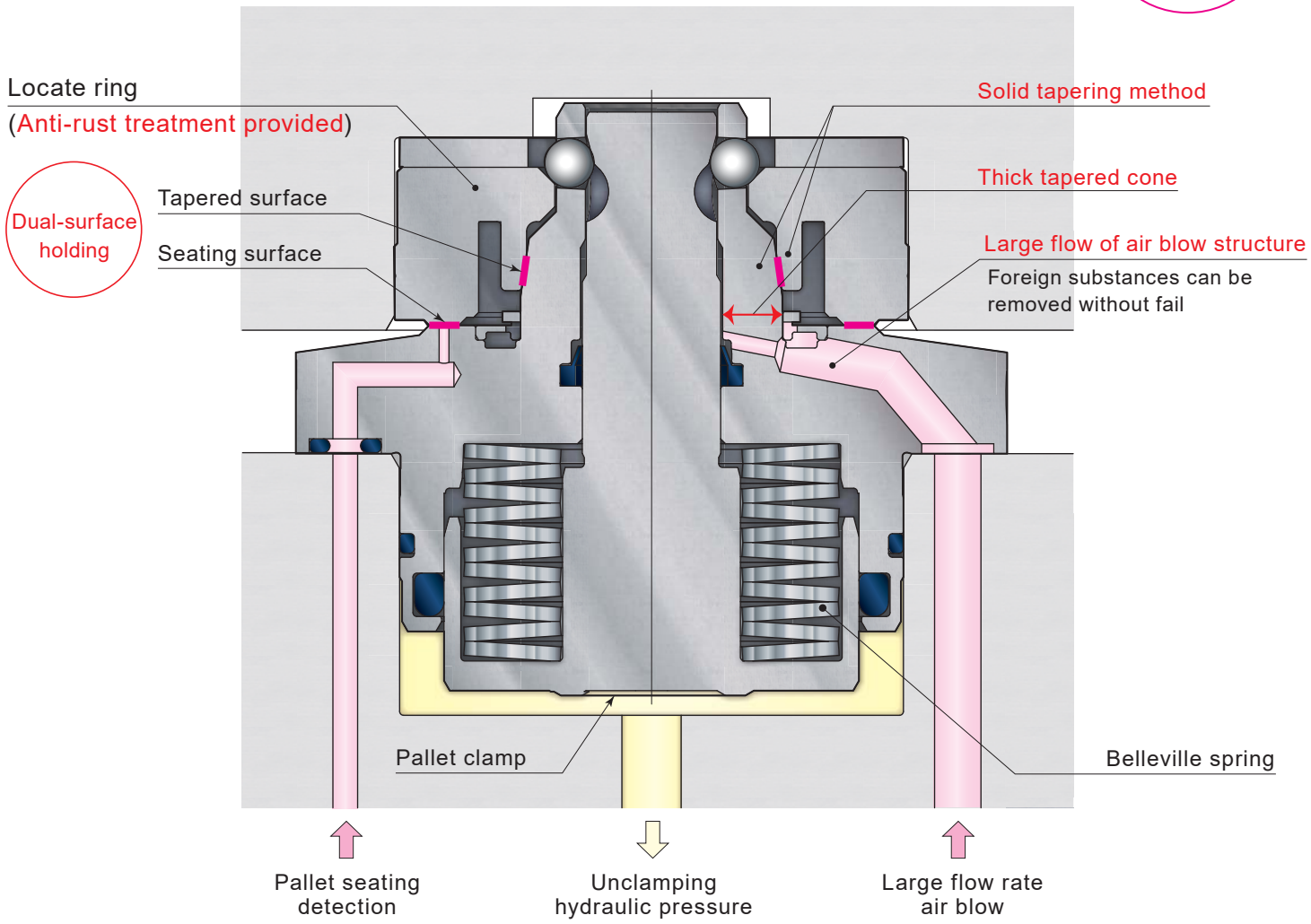
The arm makes the clamp versatile for many kinds of the workpiece and productivity increases.

Pallet clamp

model
CPC US PAT.

High rigidity, high accuracy and high durability of pallet clamp ensured by dual-surface holding of solid tapering structure

Repeatability
3 μm



Air pallet clamp Dual cylinder model model CPY

Dual cylinder model CPY-A04H

Repeatability 3 μm

Clamping force : **3.4kN**

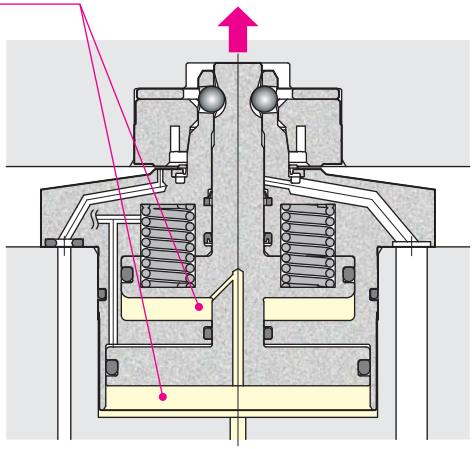
Conventional model CPL-A63H

Clamping force : **3.4kN**

Flange area approx. 68%

size smaller

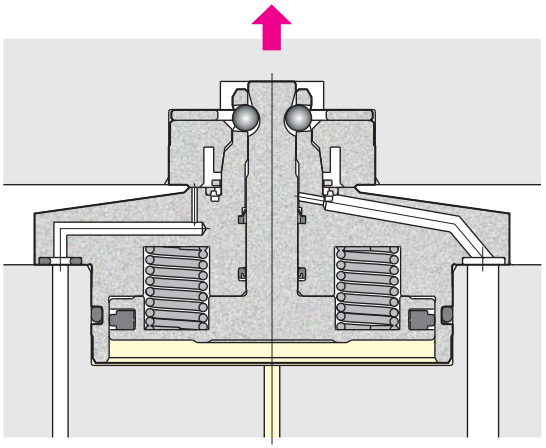
Dual cylinder structure



Lifting force : **0.7kN**

Lifting force 1.8 times

Lifting force increase



Lifting force : **0.4kN**

∗Air pressure 0.4MPa

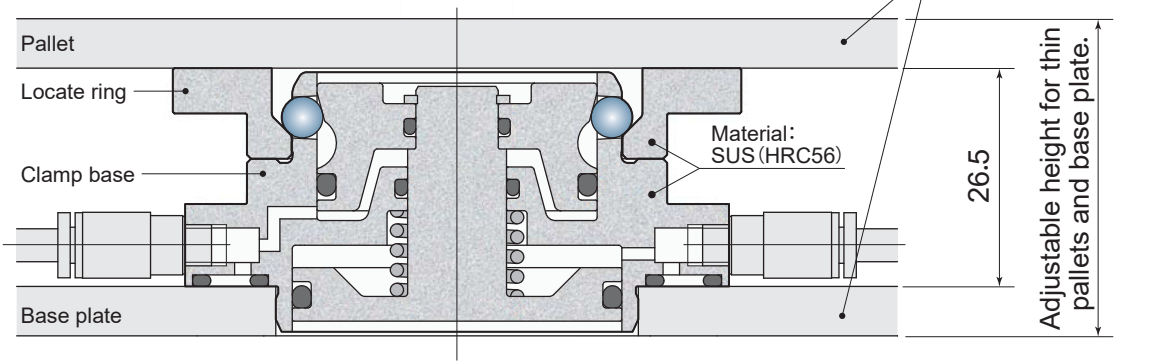
Air pallet clamp

model
RPC PAT. P.

Easily programmable for assembly and transport

Locate ring
model **RPC01-N**

Clamp base
model **RPC01-A**



Coupler module

model **WVP-2BSH** model **WVP-2BPH**

25MPa Pal coupler Oil, air

model **WVP-3DSN** model **WVP-3DPN**

1MPa Pal coupler Air, coolant

model **WVP-2FSL** model **WVP-2FPL**

7MPa Pal coupler Oil, air

model **WVP-3GSN** model **WVP-3GPN**

1MPa Pal coupler Air, coolant

model **WVP-1FSN** model **WVP-1FPN**

1MPa Pal coupler Air

model **WVP-2HS** L H model **WVP-2HP** L H

7MPa / 35MPa Non-leak coupler Connect / disconnect under pressure capable
Oil (Plug hydraulic pressure source)

model **WVP-2SS** L H model **WVP-2SP** L H

7MPa / 35MPa Non-leak coupler Connect / disconnect under pressure capable
Oil (Socket hydraulic pressure source)

model **WVP-2ESL** model **WVP-2EPL**

7MPa Pilot coupler Secondary pressure retainable
Oil

model **WVP-2VSH** model **WVP-2VPH**

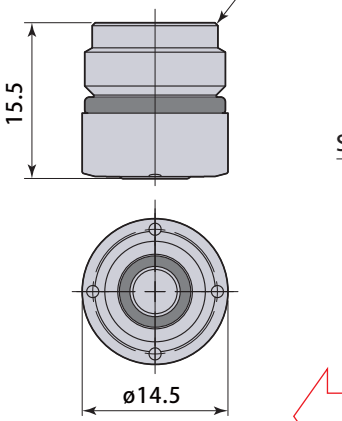
25MPa Pal coupler Oil, air, vacuum

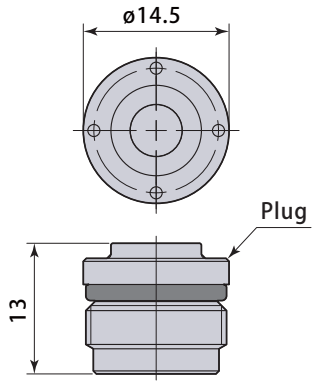
Pal coupler

model
WVP-1F

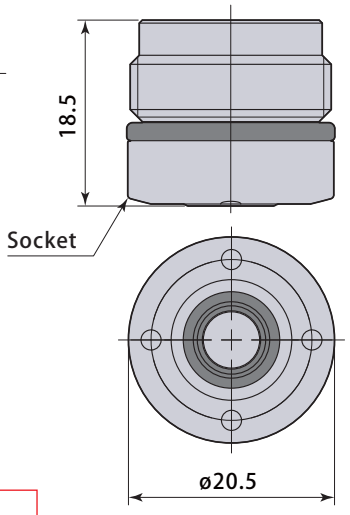
Area 50%, Volume 40% smaller Flow characteristic is improved

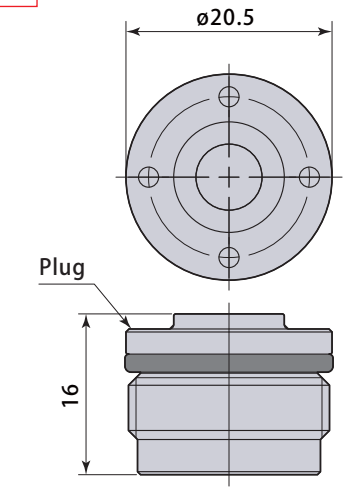
model
WVP-1F





model
WVP-2F





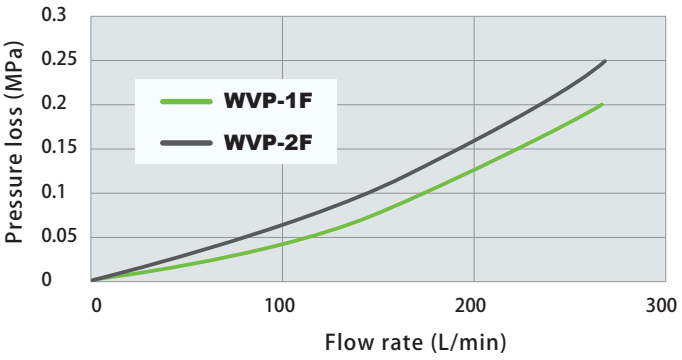
Pal coupler
Coupler only for air

model
WVP-1F

Pal coupler
Common coupler
for hydraulic pressure and air

model
WVP-2F

Flow rate and pressure loss



Pilot coupler

model
WVP-2E

Adopting pilot check mechanism enables the reactive force when connecting lower and the even lightweight jig pallets under hydraulic pressure can be replaced without pull-down structure.

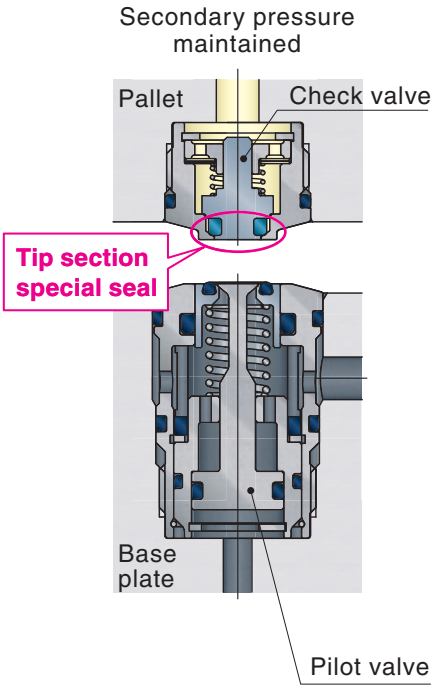
Pilot coupler
Plug

model
WVP-2EPL

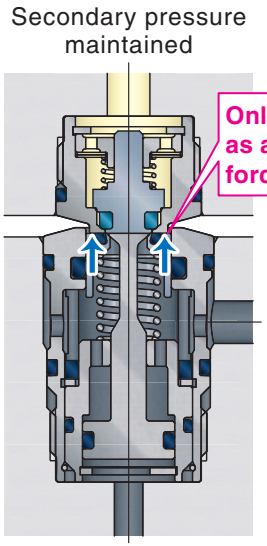
Pilot coupler
Socket

model
WVP-2ESL

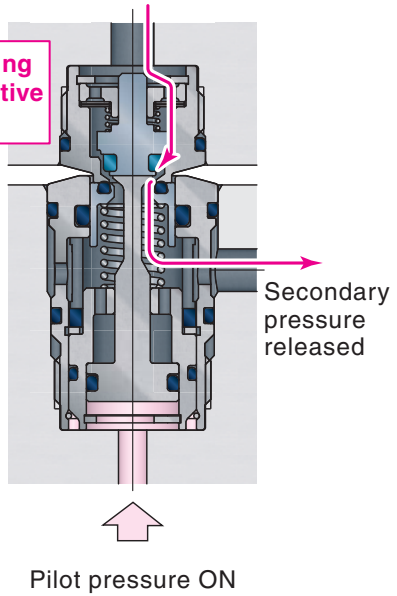
Disconnected



Connected

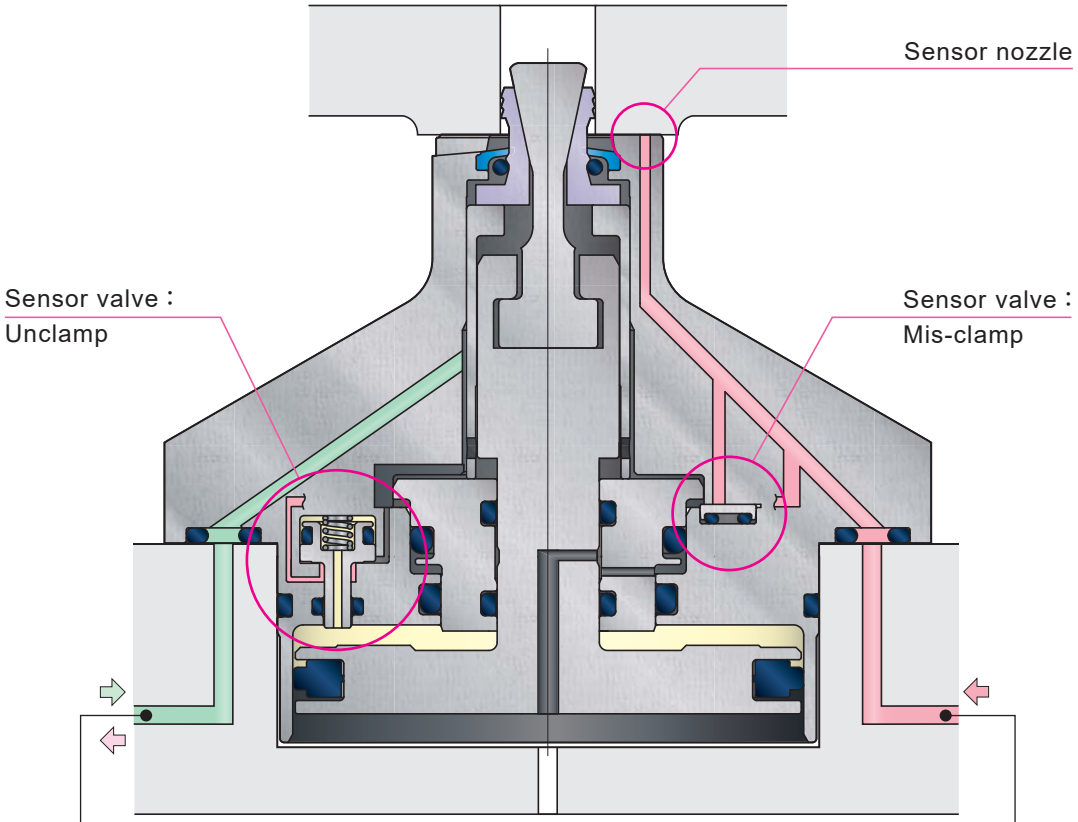


Check valve open



Air expansion clamp

model
CGE PAT.



Air blow **IN**

Unclamping detection **Exh.**

Miss clamping detection **Exh.**

Sensor air **IN**

Workpiece seating detection
Unclamping detection
Miss clamping detection

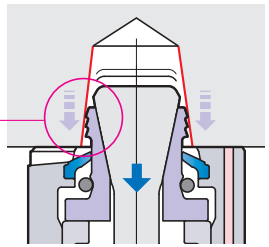
Expansion clamp

PAT.

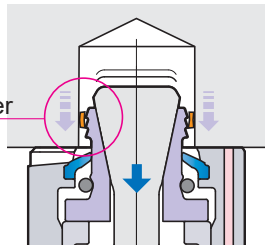
Reliable slipping of gripper detection

Factors of Slipping of gripper

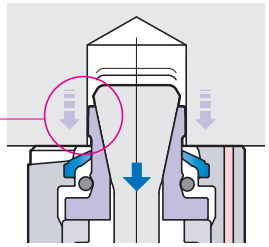
Large taper angle
Circularity is bad



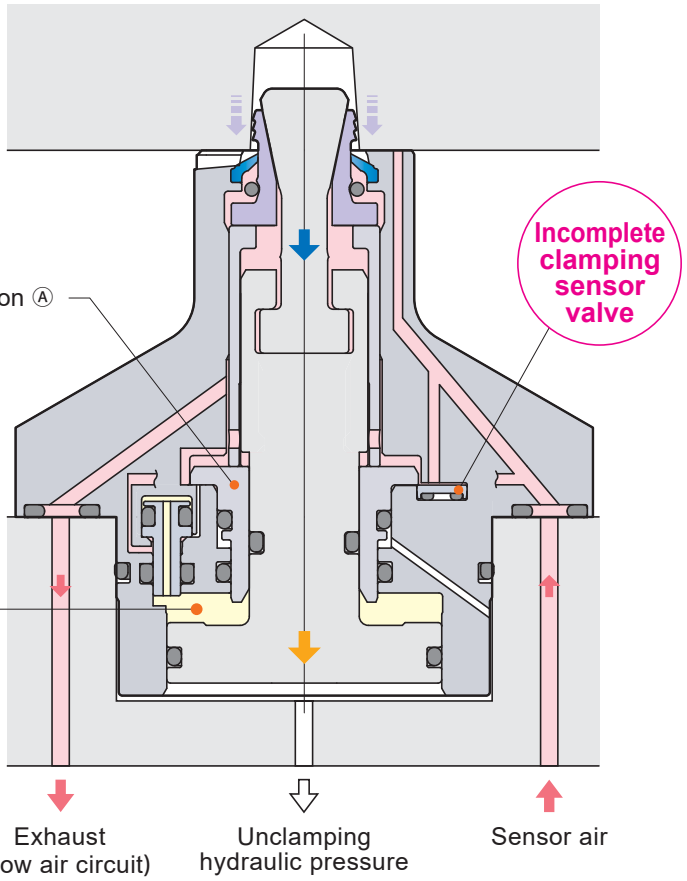
Bite of foreign matter



Wear of gripper



You can monitor incomplete clamping that happens even at invisible place. Mis-clamp detection is necessary.

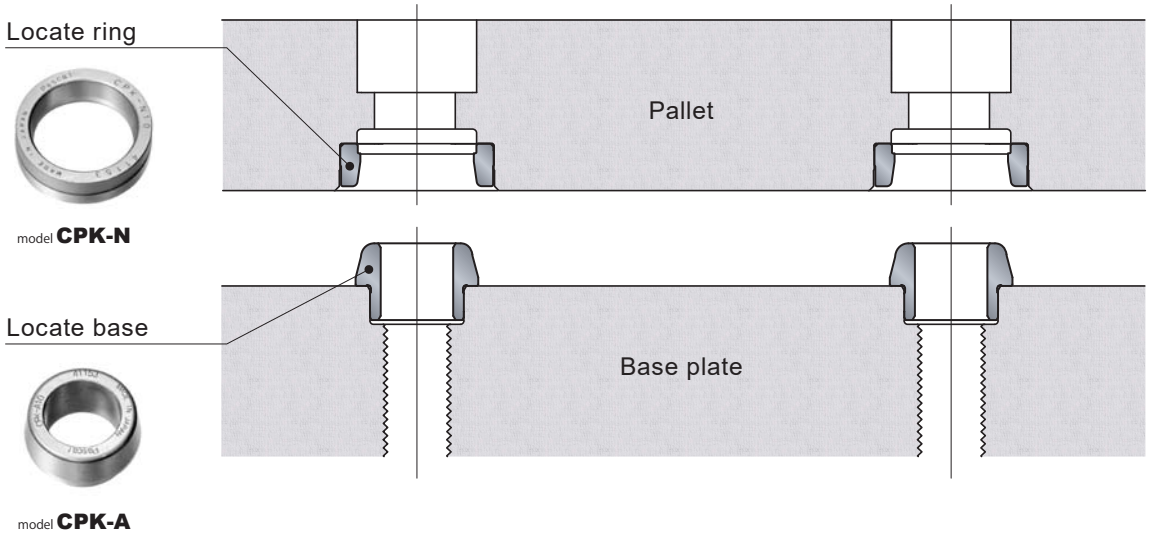


Pal fix

model
CPK PAT.

Super compact positioning device to get the most out of the jig space

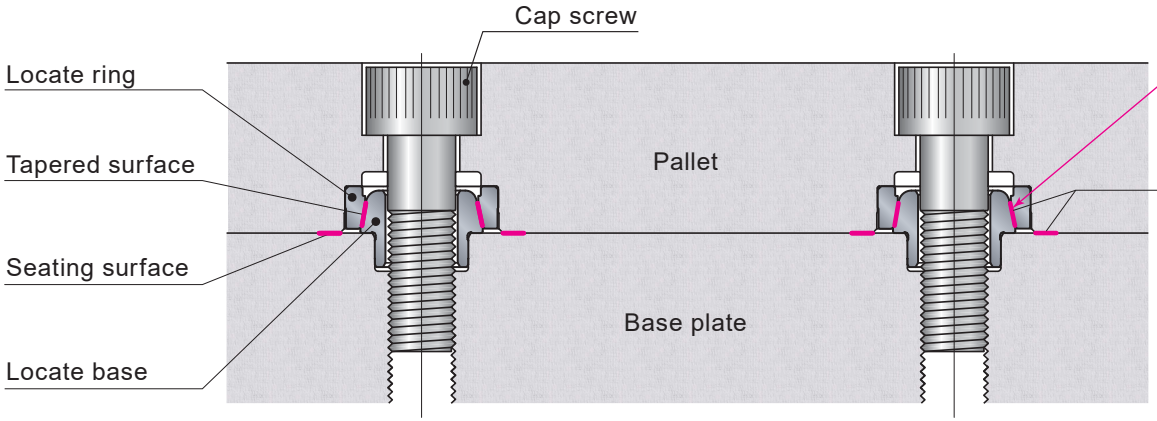
Pallet changed



model **CPK-N**

model **CPK-A**

Pallet clamped



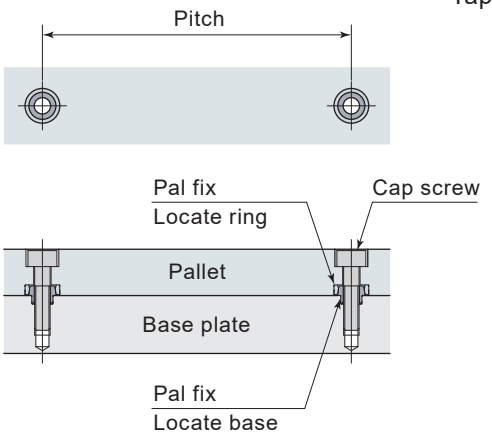
Repeatability
3 μm

Dual-surface holding

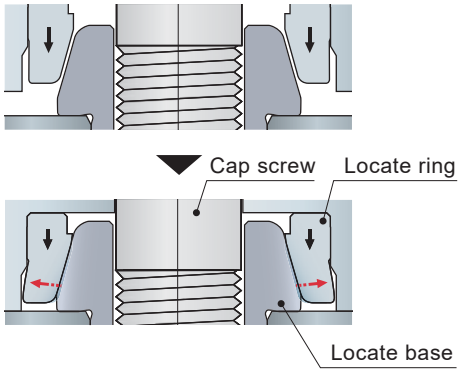
Comparison with Positioning pin

model **CPK** PAT.

Pal fix

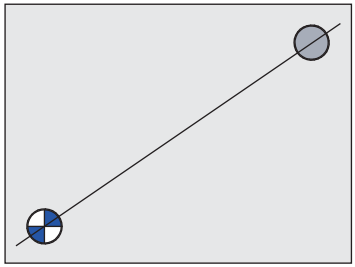


Taper cone makes attaching / detaching easy



By means of elastic deformation

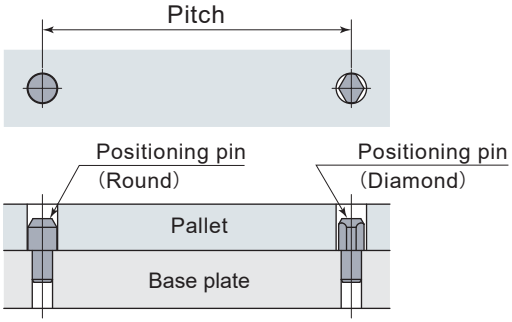
Round and Round

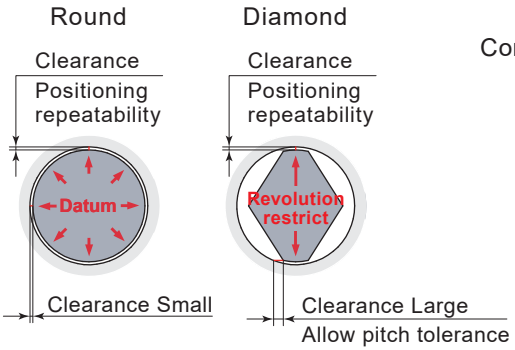


Pal fix only keeps pitch accuracy.

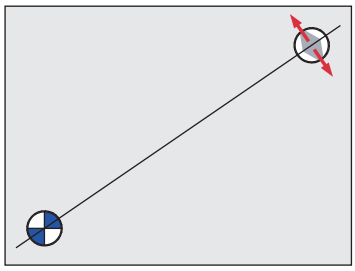
(Positioning repeatability : Within 3μm
Pitch tolerance allowance : ±0.02mm)

Positioning pin





Combination of round and diamond pin



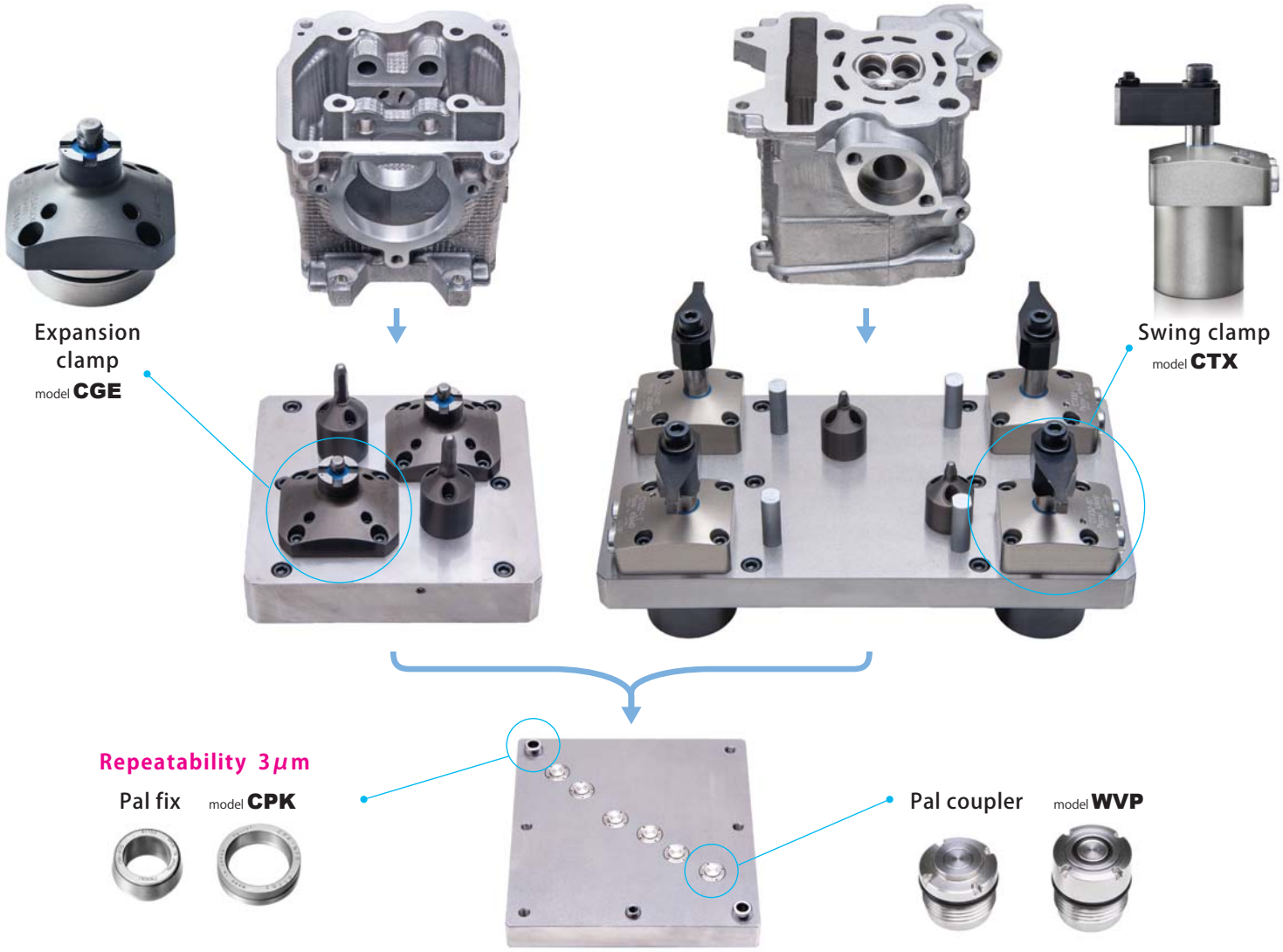
Positioning can be achieved by combination of round and diamond pin to accommodate pitch tolerance.

The positioning repeatability spoils when providing a large clearance.
A small clearance impairs the operability.

The diamond pin must be mounted perpendicularly toward round pin in addition to keeping the pitch accuracy between the two.

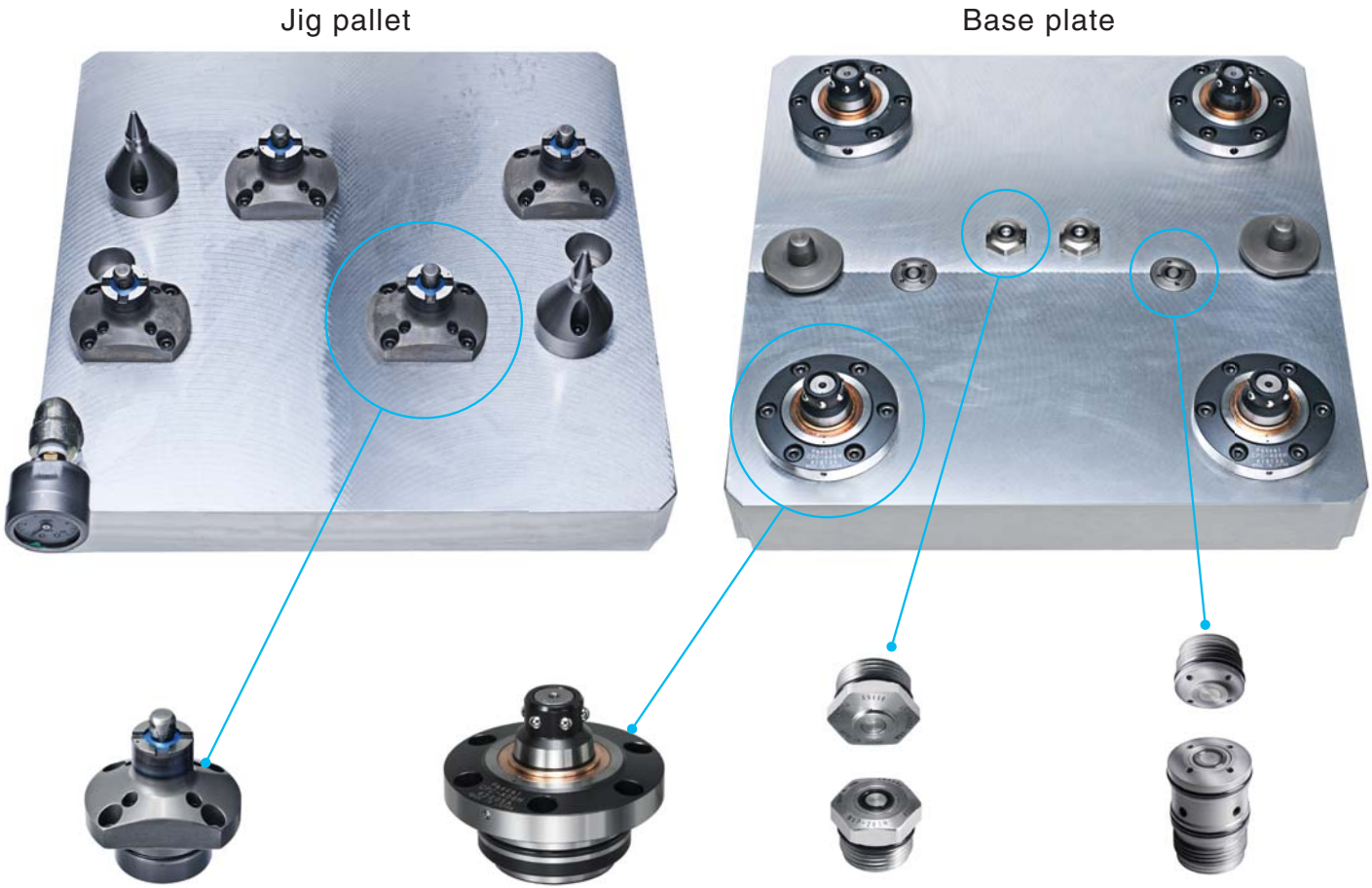
Quick jig change system

High accuracy positioning of plate can be performed easily and jig can be replaced for short time.



Quick jig change system

The pallet can be locked securely with pallet clamp and the pressure can be maintained by pilot coupler.
It is best suited for pallet change while clamping the work piece.

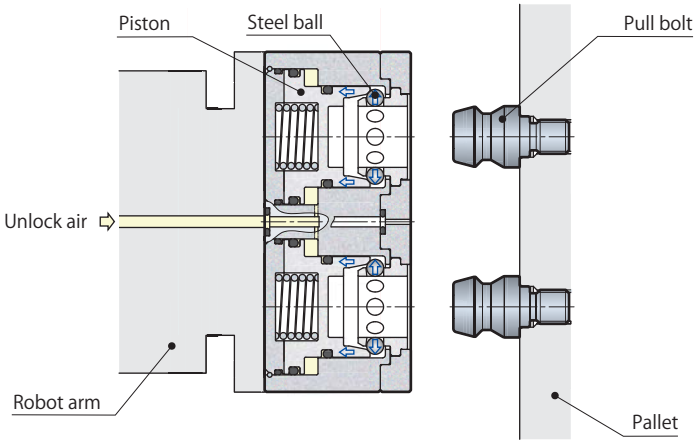


air Pallet gripper

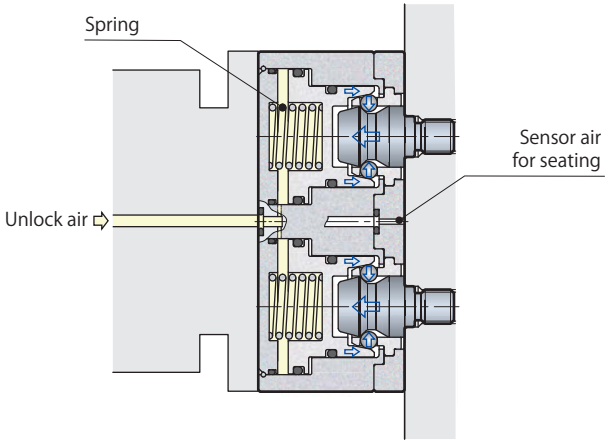
model
RPG PAT. P.

Locks a pallet firmly by 2 grippers

Unlock



Lock

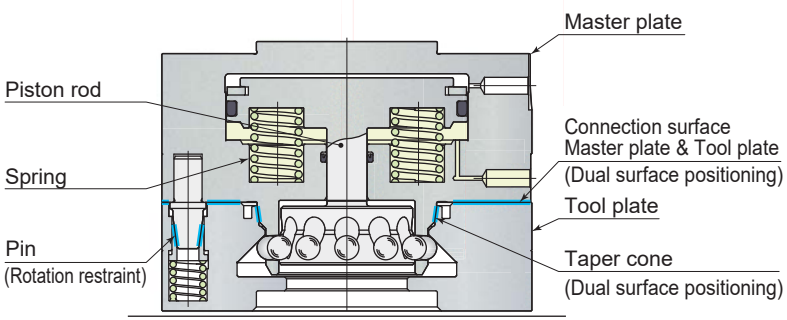


The tool plate is securely held in close contact by means of the dual surface positioning (taper cone and connection surface) and the rotation restraint by the pin.

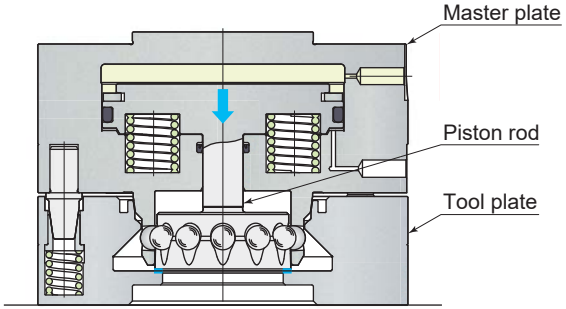
Master plate
model **RHA-M**

Tool plate
model **RHA-T**

The tool plate is held by the spring force even if air supply is stopped.



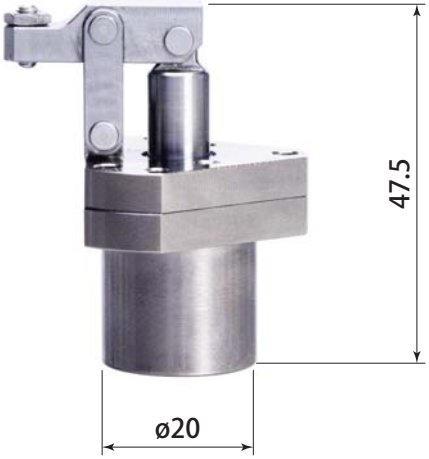
The tool plate can be securely detached by the piston rod.



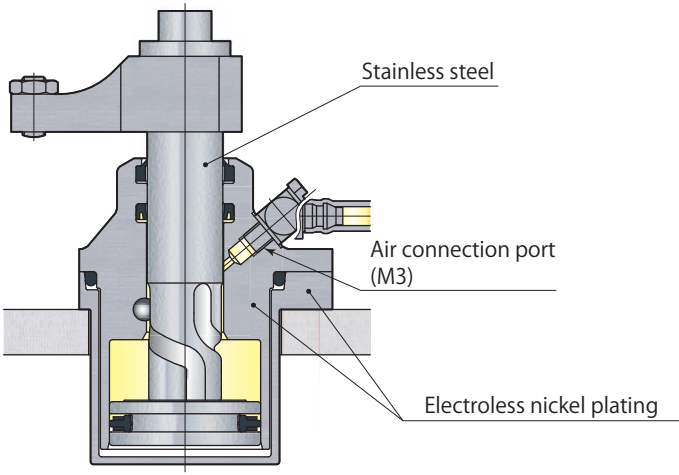
Air swing clamp mini & Air link clamp mini

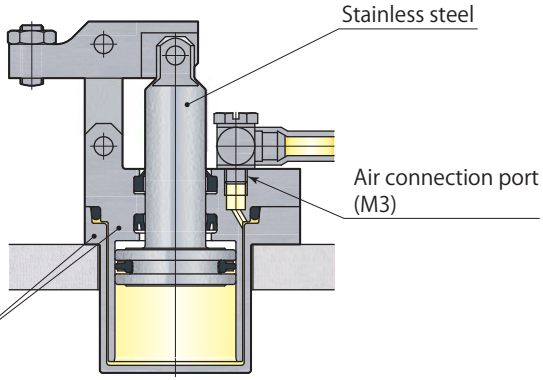
model
RTC PAT. P.

model
RLC PAT. P.



Full-scale photo

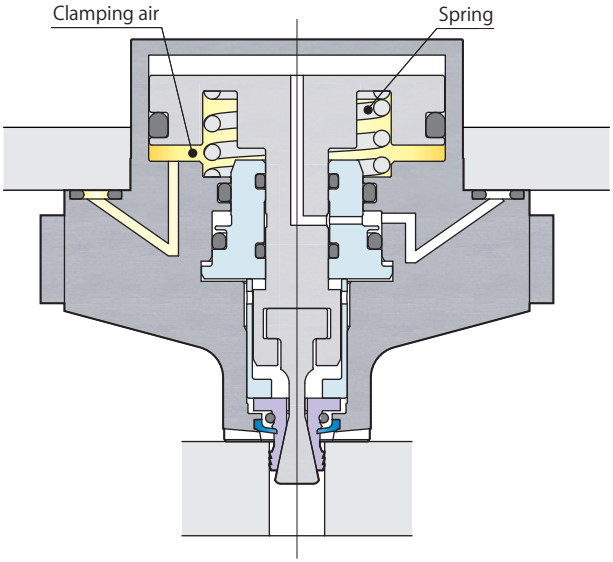




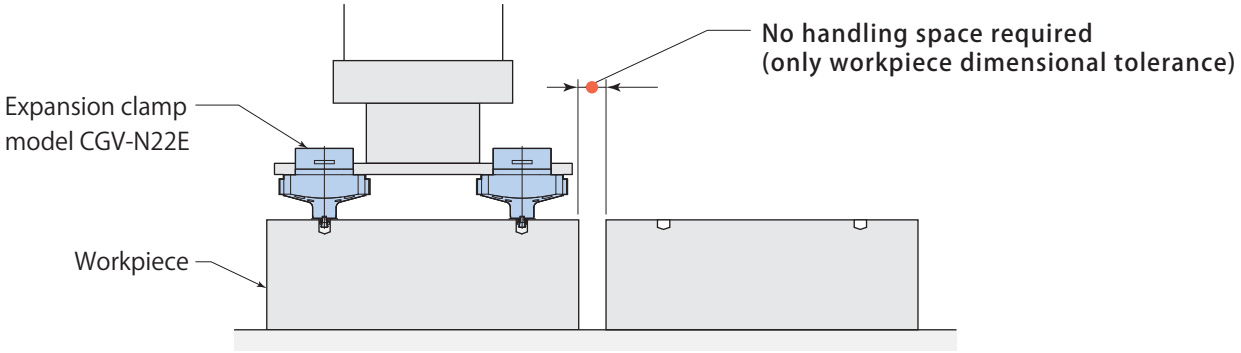
Air expansion clamp

model CGV PAT.

Lightweight and compact transport device



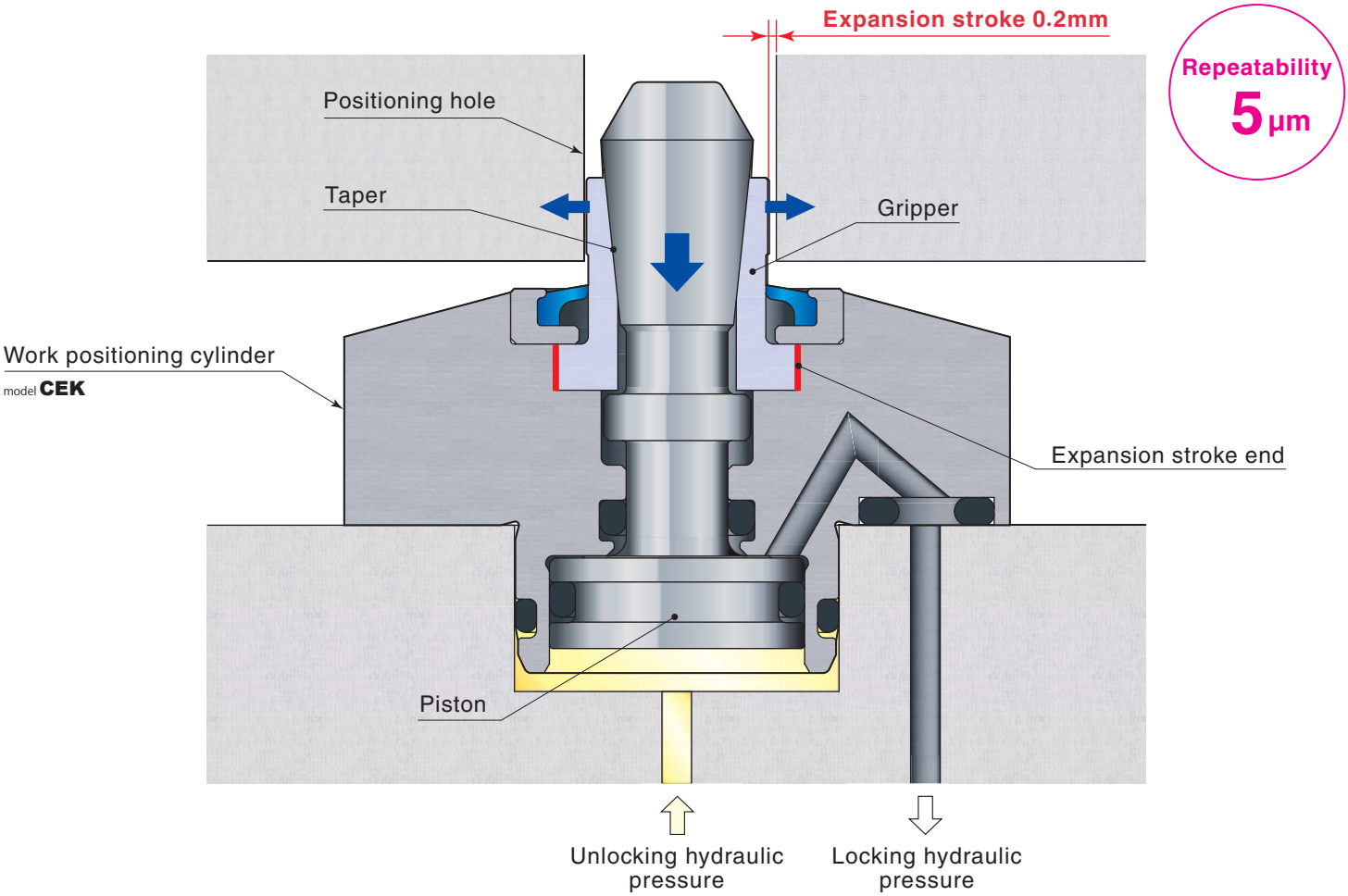
Even if the air stops,
the spring force prevents the workpiece from falling.



Work positioning cylinder

model **CEK** PAT.

Large expansion stroke of grippers allows good clearance against the positioning hole which enables the workpiece or pallet exchange easier and smoother.



Work positioning cylinder

model **CEK** PAT.

The workpiece can be set up with high accuracy.

Work positioning cylinder

X&Y axes positioning

model **CEK-A**

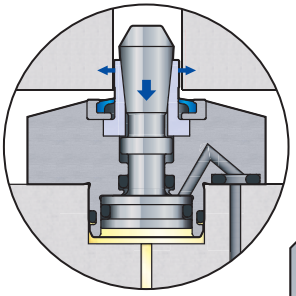
Repeatability 5μm

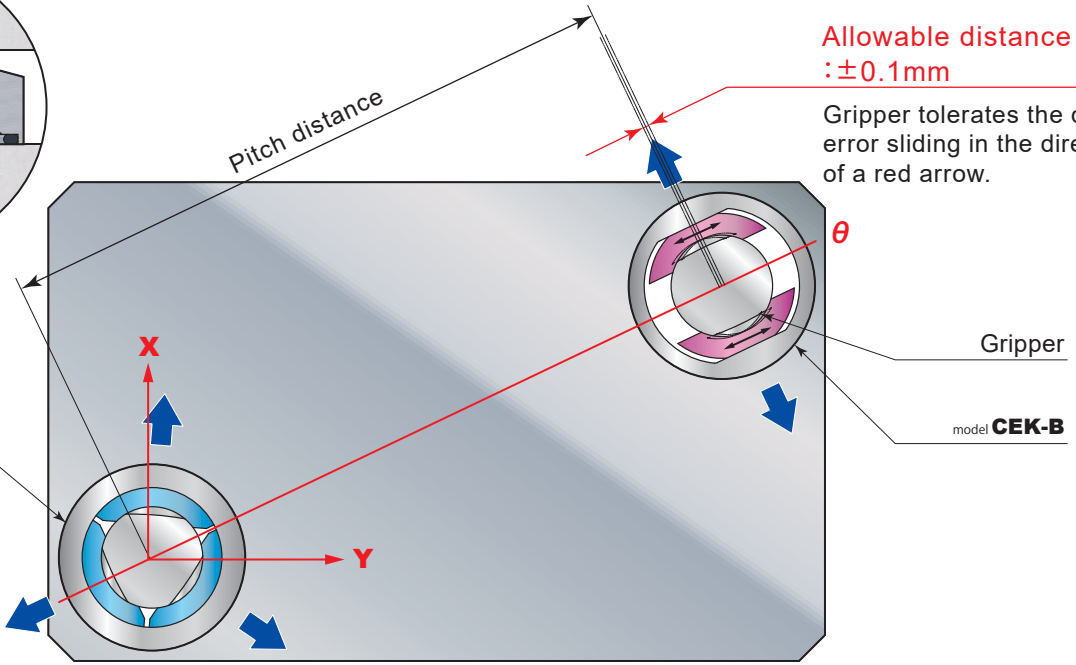
Work positioning cylinder

θaxis positioning

model **CEK-B**

Repeatability 5μm





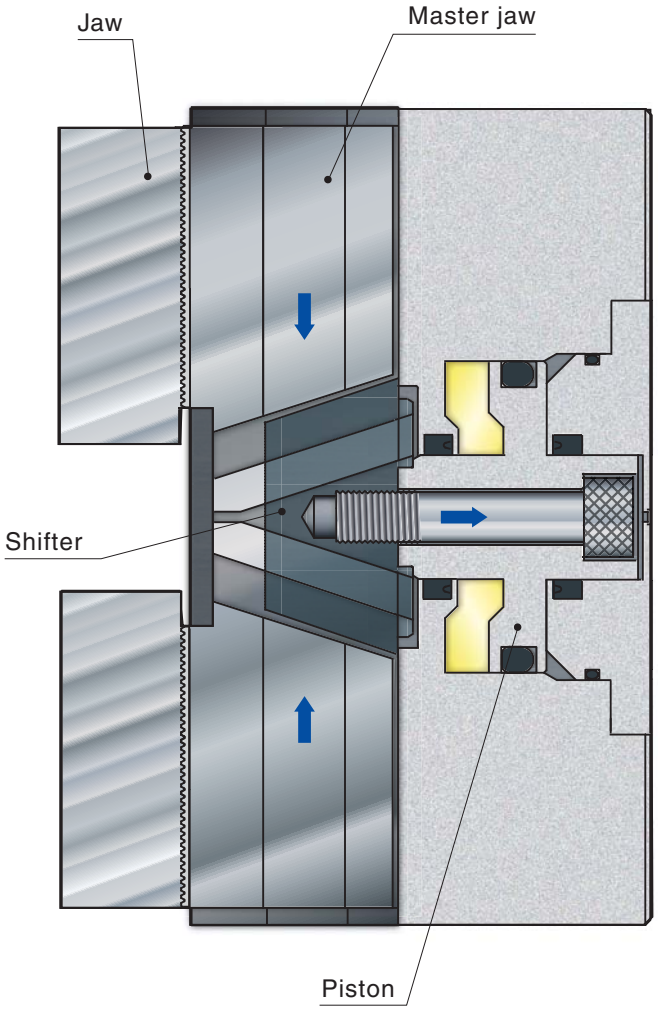
Allowable distance error
:±0.1mm

Gripper tolerates the distance error sliding in the direction of a red arrow.

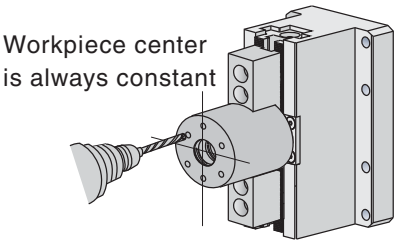
Centering vise

model
CVH

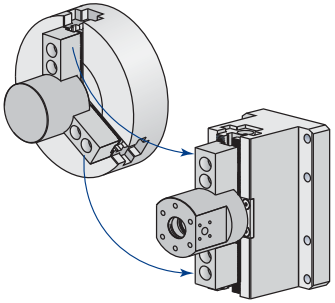
Ideal for milling after lathe turning



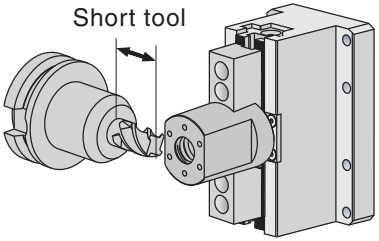
For centering clamp



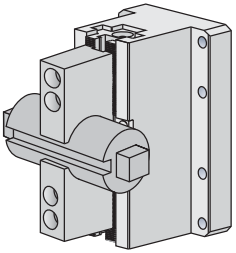
Common use of jaws is available.



Improve tool accessibility.



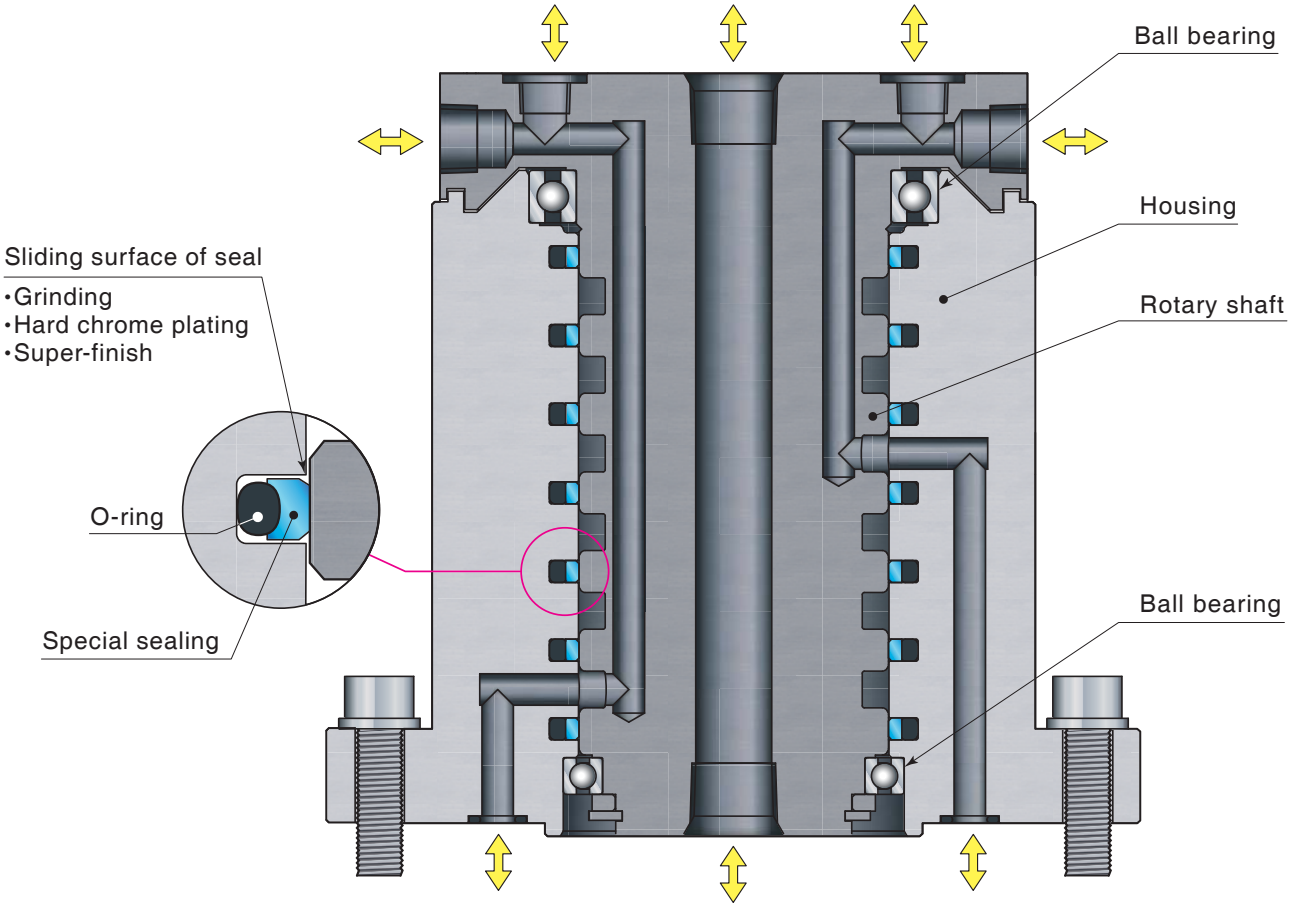
Clamping example (round bar)



Rotary joint

model
WRB

2 million rotations with excellent durability 2, 4, 6, 8 ports



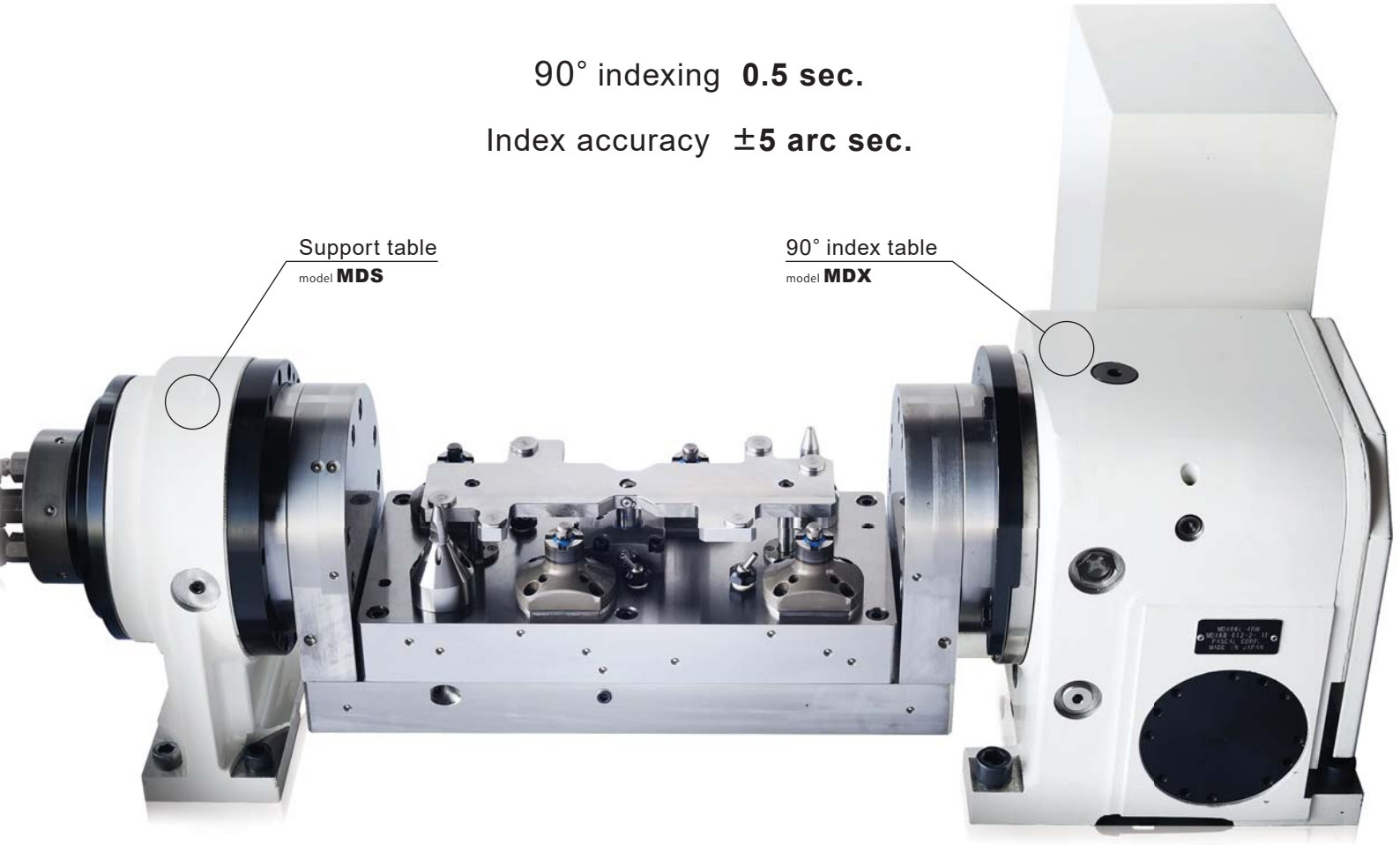
90°index table

model
MDX

10 years without maintenance

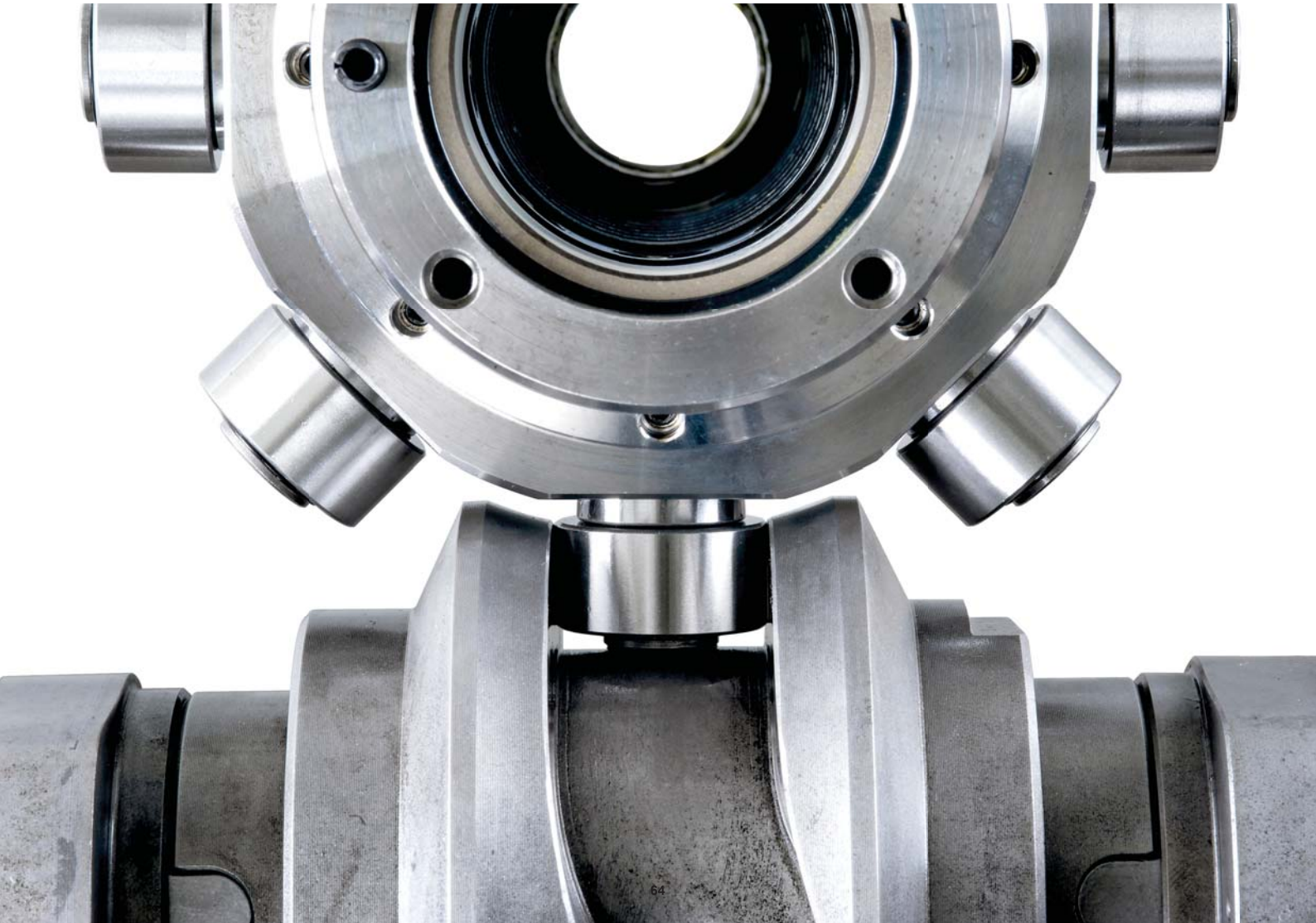
90° indexing **0.5 sec.**

Index accuracy **±5 arc sec.**



Roller gear cam drive & Hirth coupling model MDX

Quick, Accurate, Durable



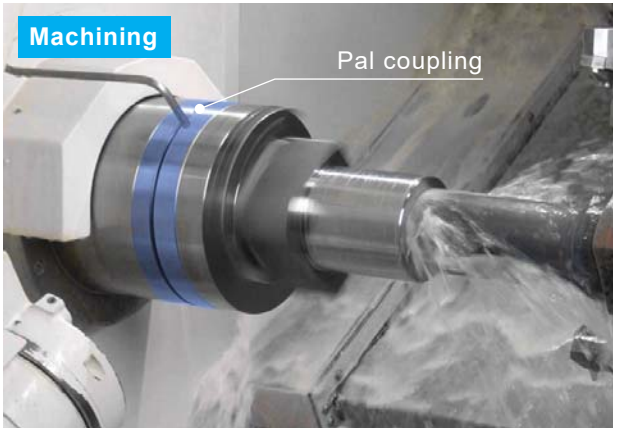
Pal coupling

model
CPM PAT.

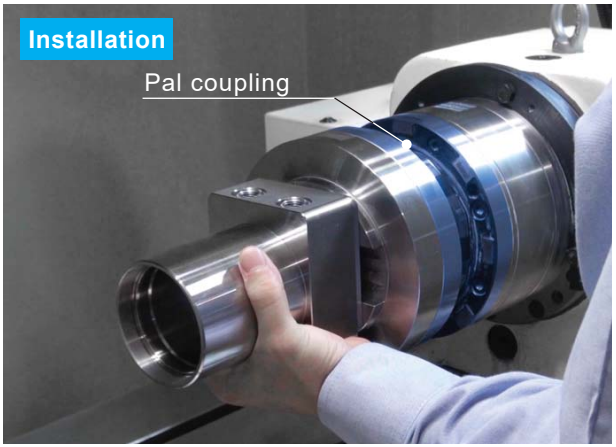
For combined machining of small and medium-sized parts

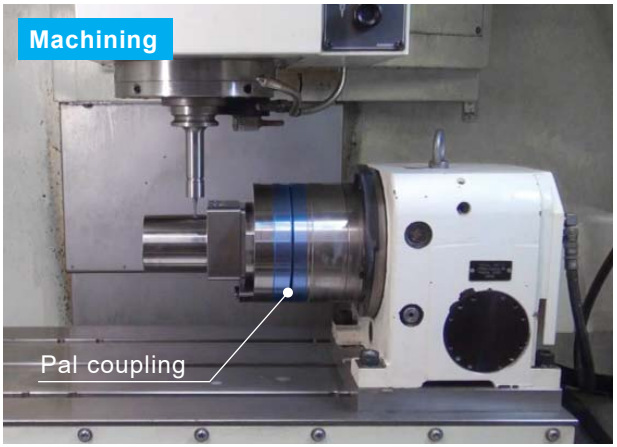
Process 1　Lathe machining

Before installing workpiece



Process 2　Machining 4-side of workpiece with 90° index table.



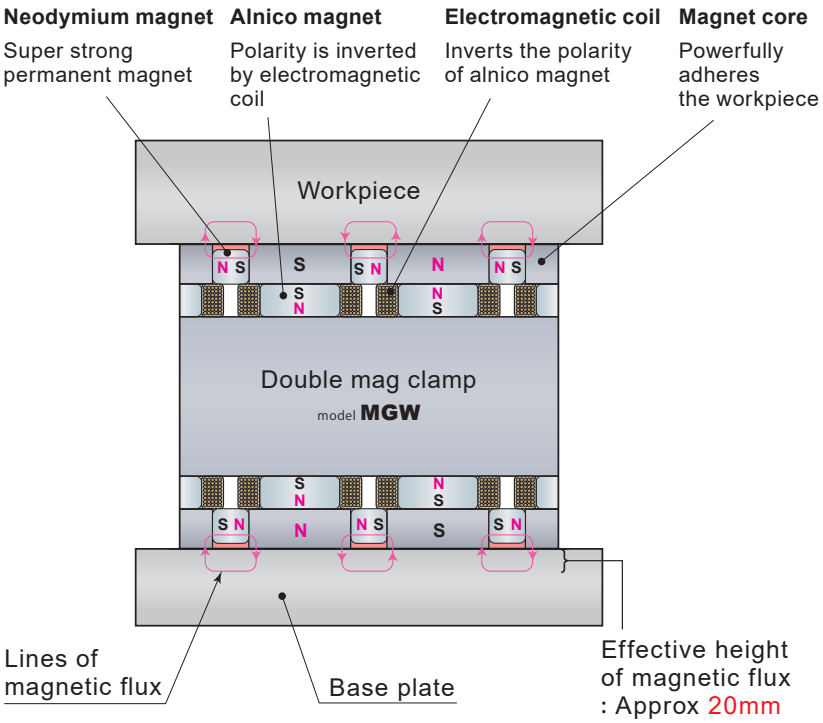


Double mag clamp

model **MGW** PAT.

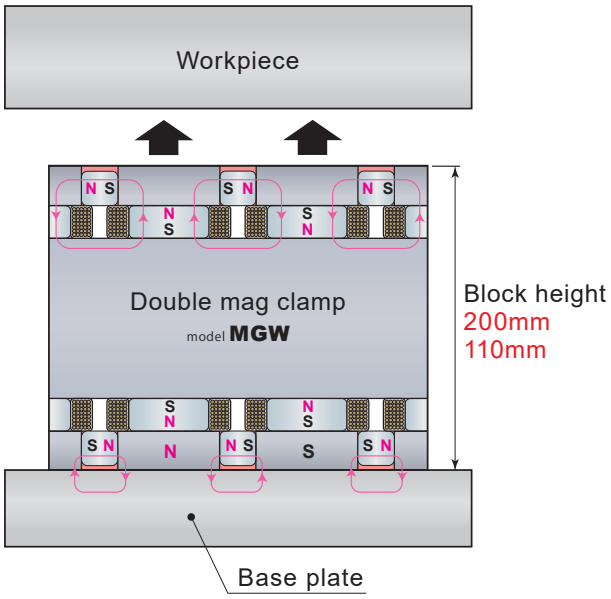
For machining the side face, drilling a through-hole of large-sized workpiece

Clamp (Magnetized)



1. Electromagnetic coil is energized for 0.5 sec.
2. Polarity of alnico magnet is inverted.
3. Neodymium magnet and alnico magnet become homopolar.
4. Magnet core becomes a strong magnet to clamp the work.

Unclamp (Demagnetized)



1. Electromagnetic coil is energized for 0.5 sec.
2. Polarity of alnico magnet is inverted.
3. Magnetic flux of neodymium magnet and alnico magnet is not emitted from the surface of the magnet core so that the work can be unclamped.

Mini N2 gas springs

model
DSD

High initial force and excellent durability

Pascal DSD38-38 Cylinder diameter ø38mm Stroke 38mm

Outer diameter ø38mm Initial force 1ton

Model		DSD32	DSD38	DSD50
Cylinder diameter	mm	ø32	ø38	ø50
Initial force	kN	6.6	10.3	20.2
Stroke	mm	10 15 20 25	32 38 45 50	56 63 80

- The initial force is at 21MPa(20℃) for gas charging pressure.
- The initial force is approx.1.25 times larger than the model DSA.

Robot N_2 gas balancer

model
DNA

Realization of considerably lightweight and compact robot

Robot
Weight reduction & High speed

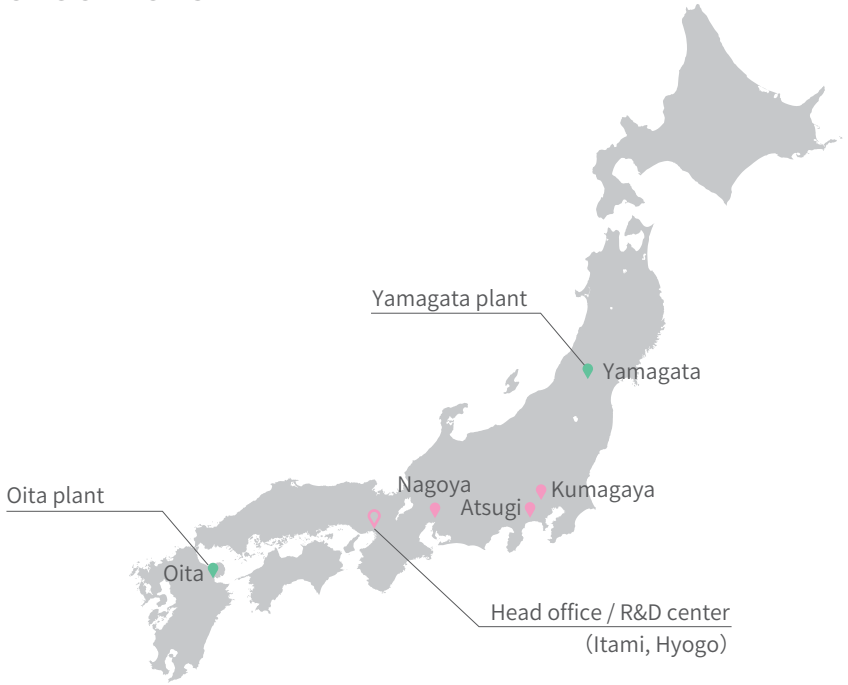
Robot
Downsizing

Robot N_2 gas balancer

Model	DNA3000-200
Max. charging pressure MPa	15
Operating temperature ℃	0–70
Compression ratio	1.62
Mass kg	12.6

The introduction of Gas balancer allows the downsize the robot and design a free stroke length and capacity. The gas balancer with low spring constant reduces the burden on machine.

DOMESTIC LOCATIONS



Head office / R&D center
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Hyogo, 664-8502, Japan

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Kunisaki, Oita, 873-0231, Japan

Yamagata plant
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Yamagata, 999-3701, Japan

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307 Ihori, Nagakute,
Aichi, 480-1143, Japan

Yamagata
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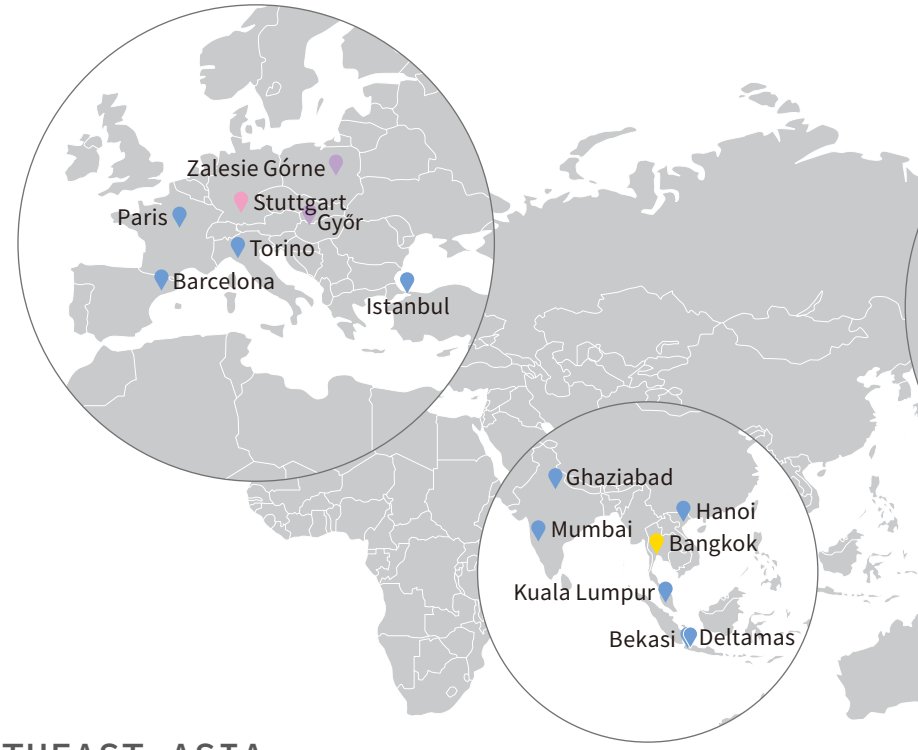
Yamagata, 999-3701, Japan

Head office / R&D center


Oita plant


Yamagata plant

GLOBAL NETWORK



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Supratec Enomax

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AG TECHNIK S.r.l.

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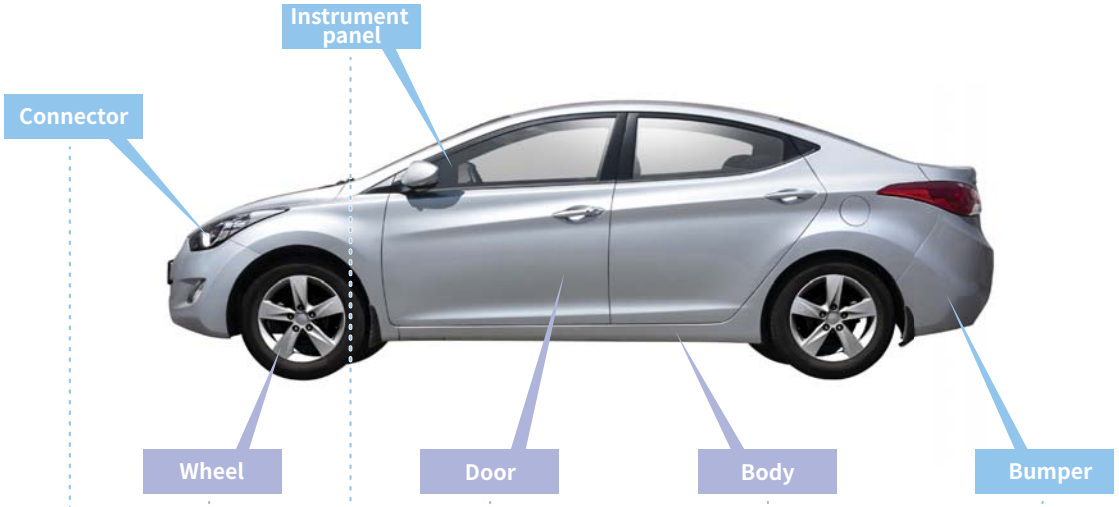
- Sales office
- Liaison office
- Plant
- Agent
- Sales representative

Pascal products support automotive production lines all over the world.



For sheetmetal stamping

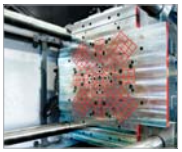

Traveling clamp


Die clamping system


Die changer


Slide lock

For plastic molding


Mag clamp

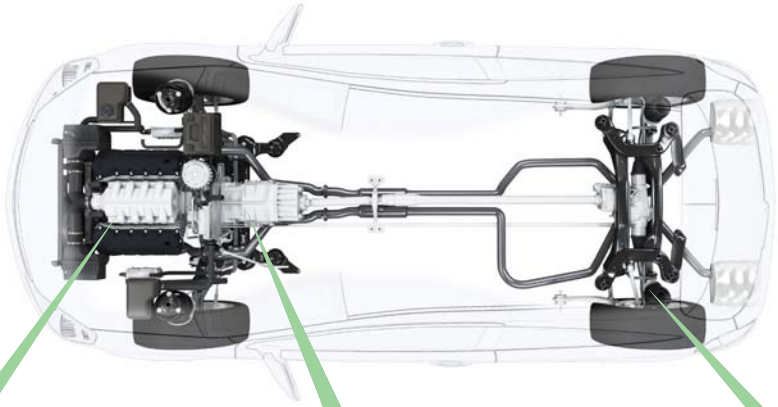

Mold die changer


Hydraulic / Air clamp


Auto coupling

Die

Mold



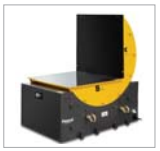
Engine

Transmission

Axle

For die and mold

N_2 Gas springs



Rotator

For die cast machine

Die clamp

C-plate Mag clamp

For metal cutting machine line

Expansion clamp

Work clamp

Index table

Pallet clamp

N_2 Gas balancer

Pascal

CERTIFICATE OF APPROVAL ISO9001
Pascal Corporation
Head office, Oita plant, and Yamagata plant

PA-517E-16 2025. 07