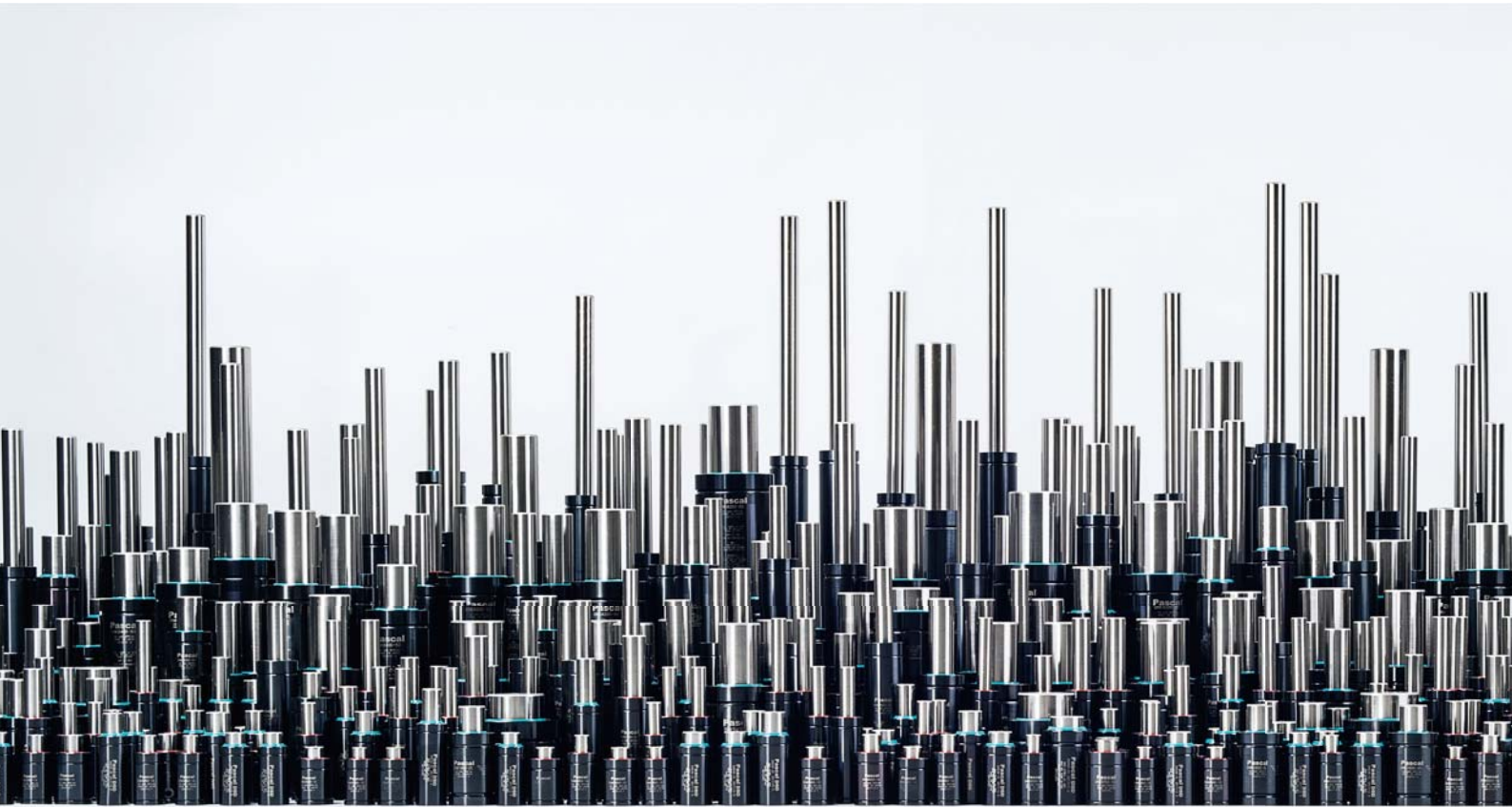


Pascal N₂ gas springs



Pascal

N2 gas

Ensures high grade of the parts



springs

with high degree of accuracy



N₂ gas springs model list at a glance

Standard model

model **DNK**



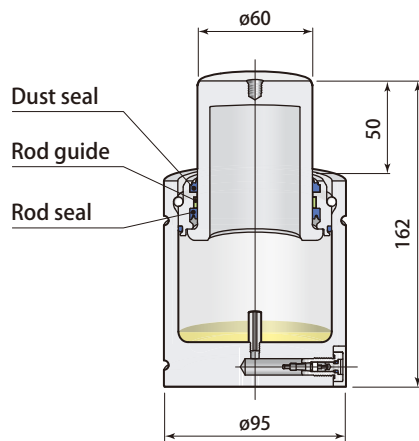
model DNK4200-50
Initial force 42.4 kN

Compact body

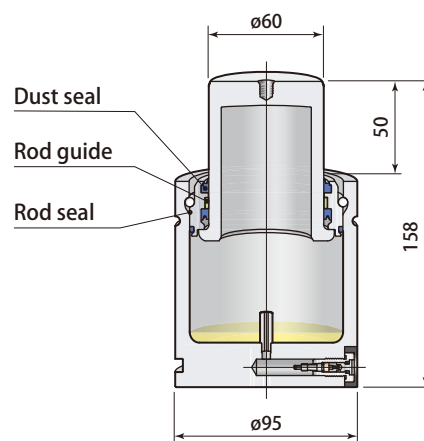
model **DNR**



model DNR4200-50
Initial force 42.4 kN



Rod seal
Rod guide



Rod seal
Rod guide

High power, short stroke

model **DNP**



model DNP4700-25

Initial force 46.8 kN

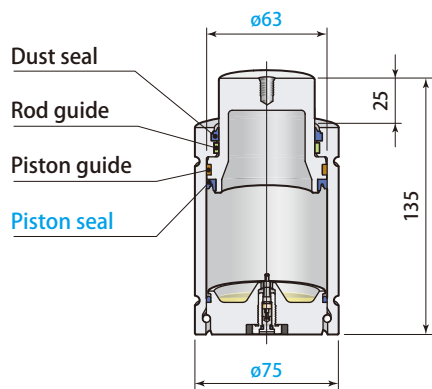
Long stroke

model **DNA**

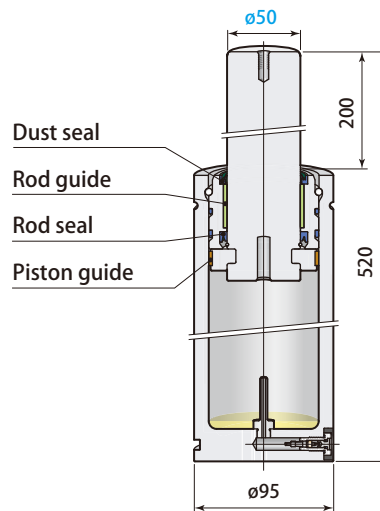


model DNA3000-200

Initial force 29.5 kN



Piston seal
Piston & Rod guide



Rod seal
Piston & Rod guide

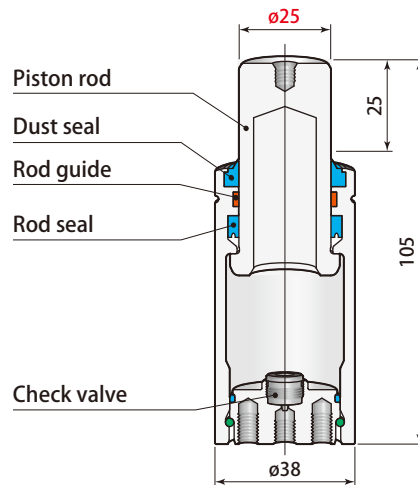
mini gas springs model list at a glance

Large diameter rod High initial force

model **DSD**



model DSD38-25
Initial force 10.3 kN



Rod seal
Rod guide

High durability against side-load

model **DSA**



model DSA38-25

Initial force 7.98 kN

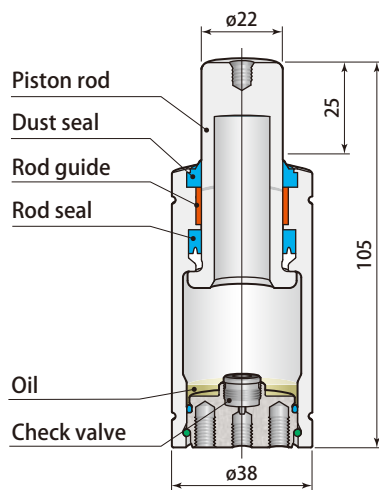
Compact body

model **DSC**

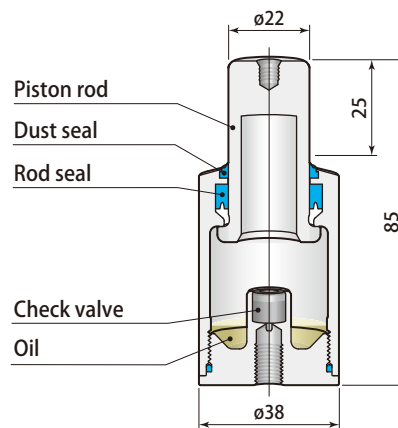


model DSC38-25

Initial force 7.98 kN



Rod seal
Rod guide



Rod seal

micro hose system

It is high pressure gas piping system that is developed exclusively for N2 Gas spring. The micro hose system enables to install gas springs easily, securely and quickly.

micro hose

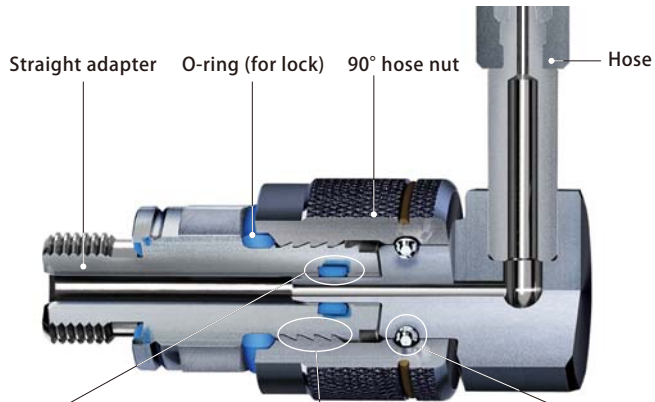
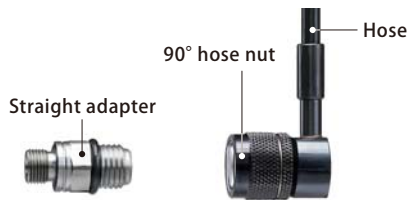


The hose is connectable just by tightening with fingers.

- Tools are not required for connecting micro hose. (Tool less)
- It can be tightened easily and quickly by hand.

Structure of micro hose

The hose will not loose even under high to vibration environments and maintains a secured sealing for a long term by adopting buttress thread and locking O-ring.

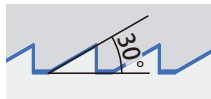


1 O-ring

Built-in O-ring can positively seal the fluid and sealing ability can stably maintained regardless of the quality of operator or circumstances. Also sealing performance will not change even after repetitive connection/disconnection work.

2 Buttress thread

The buttress thread with an unique inclination has a strong resistance against the strong vibration and the nut will not easily loosen even by the vibration of press machine.



3 Steel ball

Steel balls in the nut can reduce the friction and enable the nut tighten/loosen smoothly.

Specification of micro hose

Fluid used	N2 (Nitrogen) gas
Proof pressure	42MPa(50°C)
Operating temperature	0 ~ 70°C
Inside diameter of hose	ø2mm
Outside diameter of hose	ø5mm
Minimum bending radius	R20mm
Material	Hose core, outer coating : Polyamide resin
	Reinforcing layer : Aramid fiber
Proof pressure varies according to the temperature of hose	0°C : 51 MPa
	30°C : 46 MPa
	50°C : 42 MPa
	70°C : 38 MPa

- Sealing tape or agent should not be used for hose adaptor (gas pressure shall be sealed by packing).
- The hose adaptor must be installed by the tools.
- The hose nut must be tightened till O-ring (for lock) is securely compressed.

Swivel adapter

Finger adjustable hose adapter without applying any excessive force to the hose.



Tips for swivel adapter mounting

1. Mount a swivel adaptor on gas spring.



2. Mount a hose on swivel adaptor.
The angle of hose is adjustable easily by turning a adaptor.



Other Piping parts



micro hose



Straight adapter



Swivel adapter



Multi coupling block



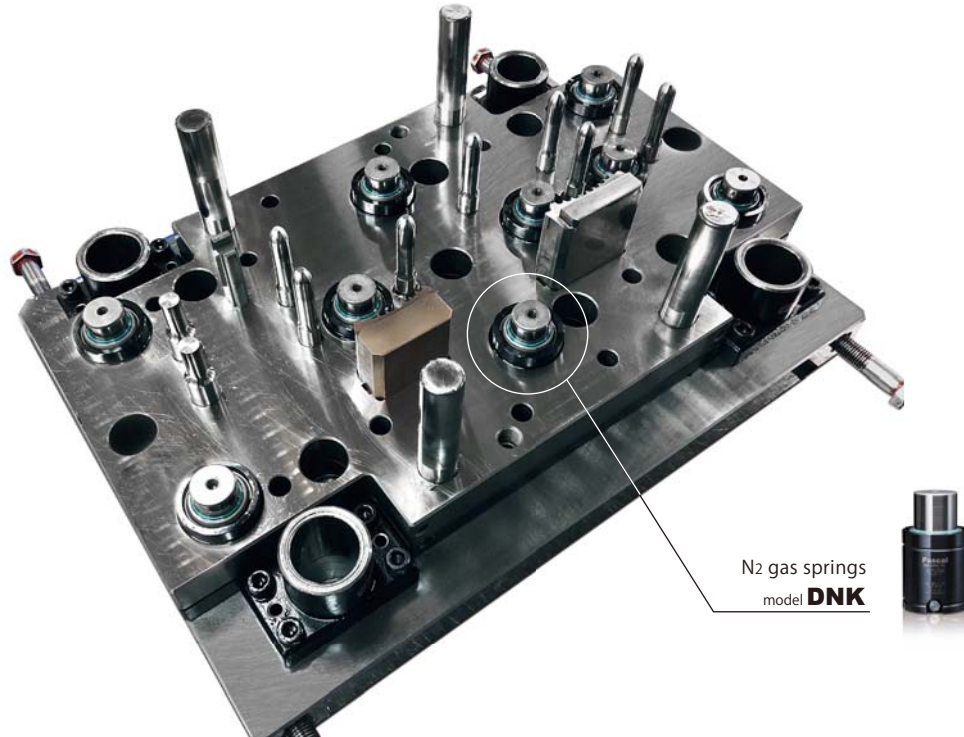
Control panel



Hose clip, Plug

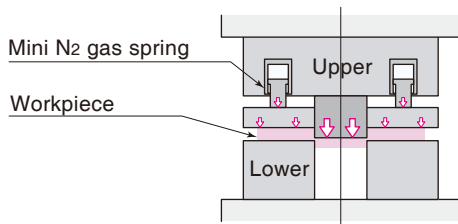
Practical example of N₂ gas springs

model **DNK** in the steel die

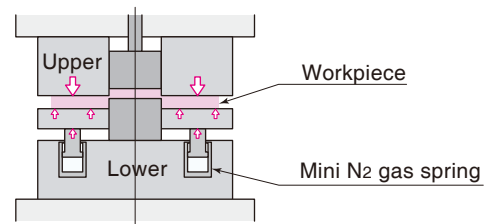


For die (Press machine)

Mini N₂ gas spring in the upper die



Mini N₂ gas spring in the lower die

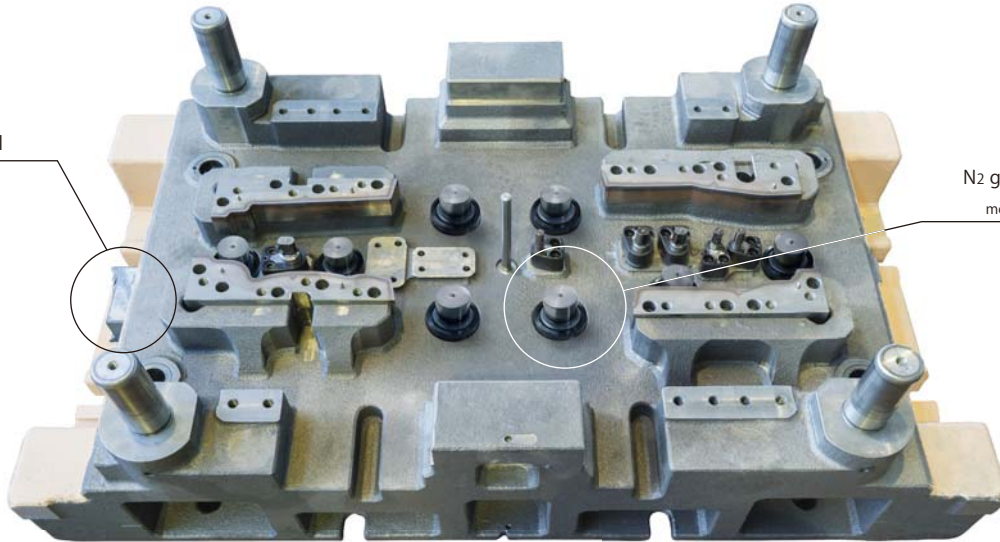


Practical example of N₂ gas springs

model **DNK** in the casting die with piping



Control panel

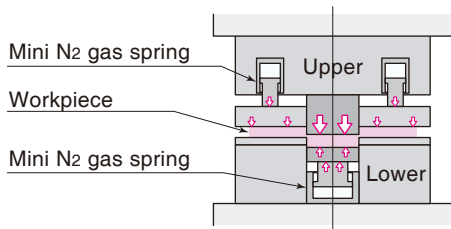


N₂ gas springs
model **DNK**

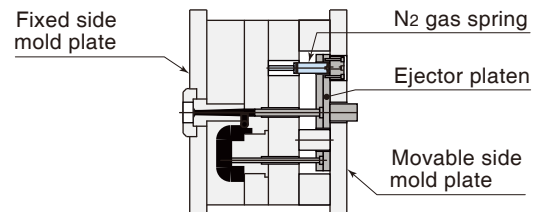


For plastic mold

Mini N₂ gas spring in the upper and lower die



Ejector Plate for quick reaction



Comparison with conventional coil spring

Pascal N₂ gas spring contains a stronger force rather than an ordinary coil spring and exhibits excellent characteristics and durability on the application that requires a large load and stroke.

	Initial deflection	Initial force	Stroke	Durability	Maintenance	Space-saving
Gas springs	○ (Not required)	○	○	○	○ (Easy)	○
Coil springs	× (Required)	×	×	×	× (It takes effort)	×

Mini N₂ gas spring
DSD38-20 × 1unit

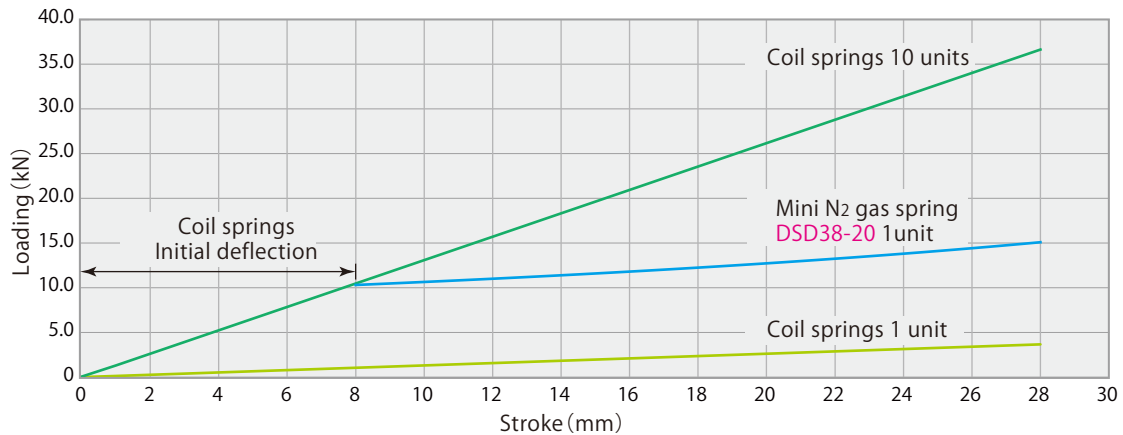


VS

Coil springs
ø40 × 150 × 10 units



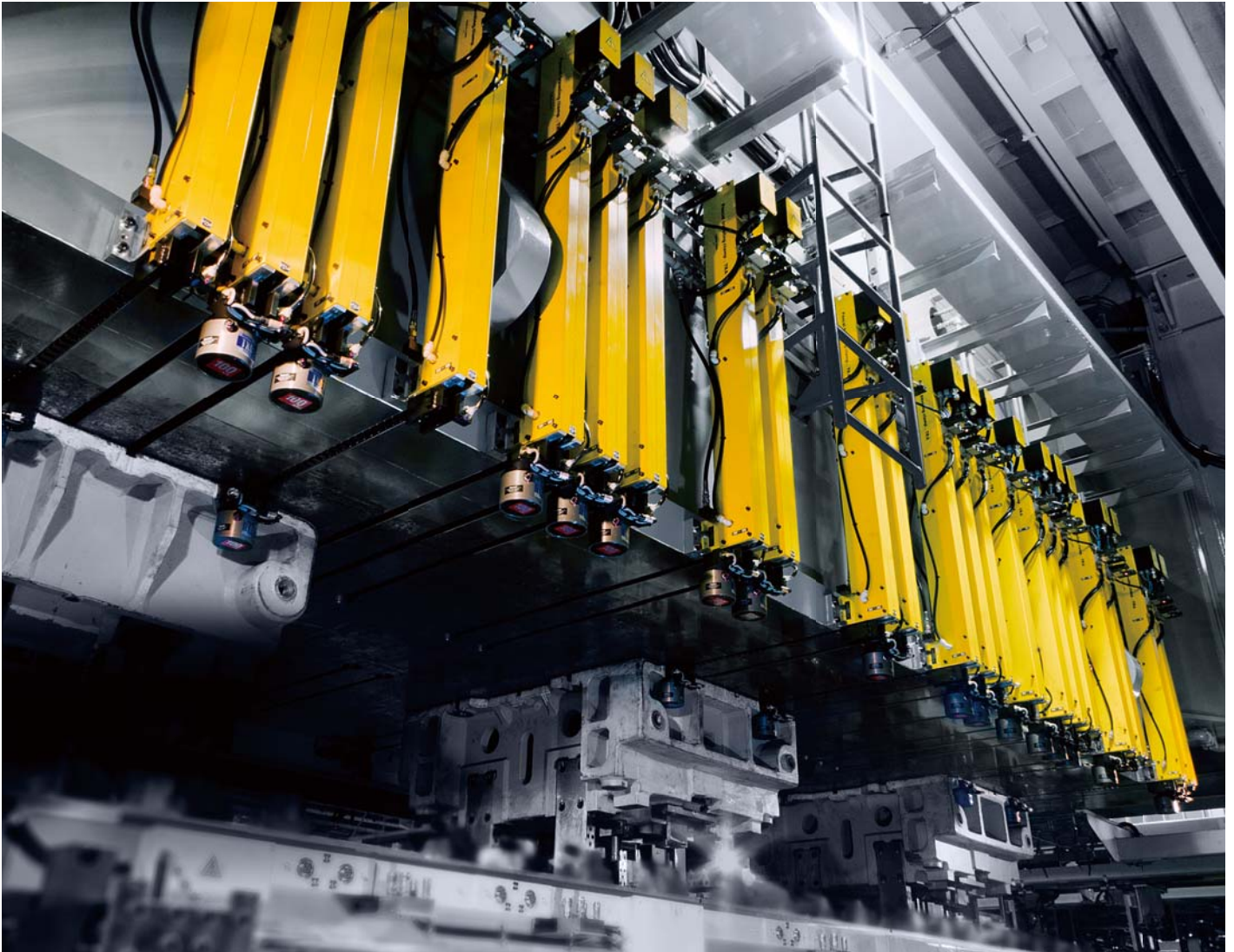
Load comparison between model DSD and coil spring



Delivery record
40,000
units

Pascal traveling clamp

A die clamping system which has changed considerably the stamping style in the world.



30,000kN(3,000tonf) Transfer press Traveling clamp



34,000kN(3,400tonf) Transfer press

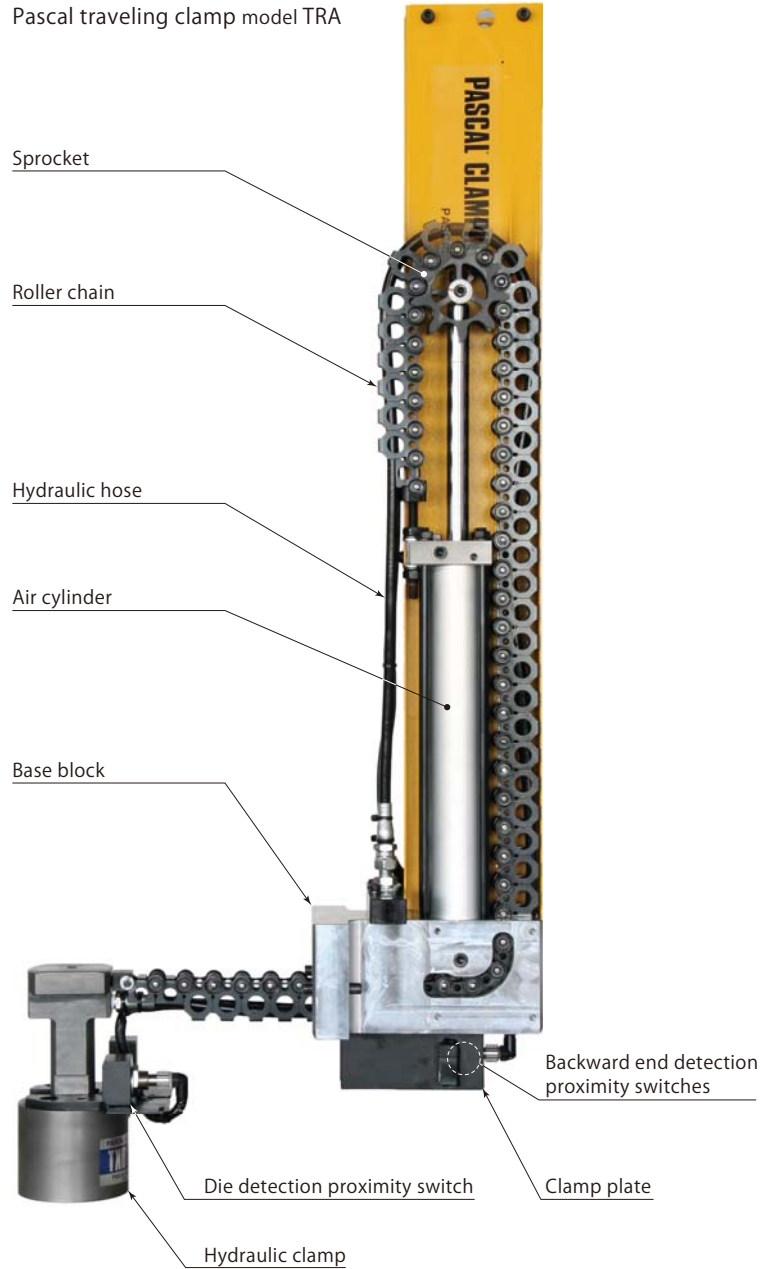


23,000kN(2,300tonf) Transfer press



6,000kN(600tonf) Transfer press

Pascal traveling clamp model TRA



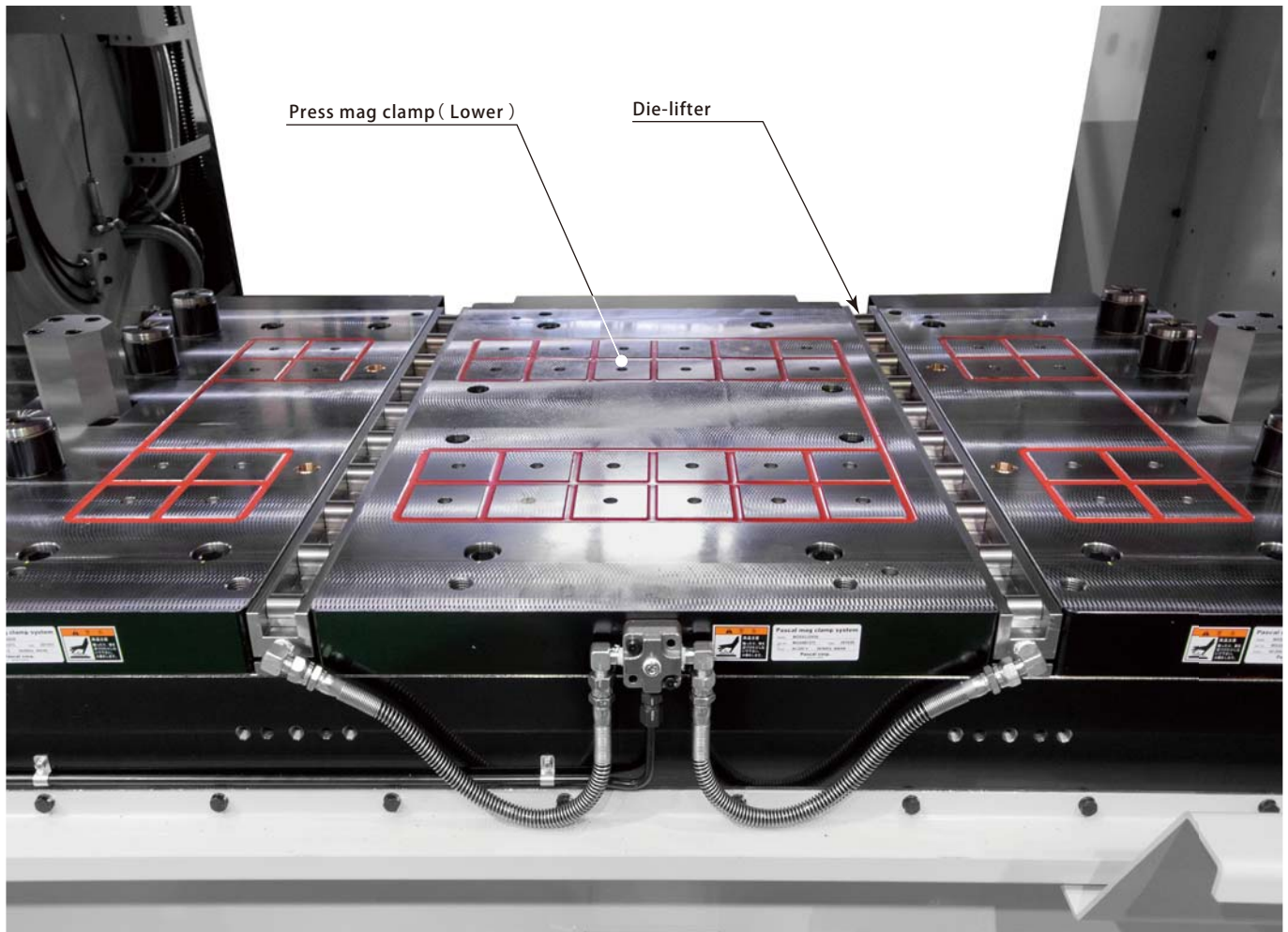
Press mag clamp MGP

The magnet clamp enables the die change in one minute.

Pascal mag clamp is a die clamping system which absorbs and fixes the die with strong everlasting magnets (Neodymium magnet and Alnico magnet).

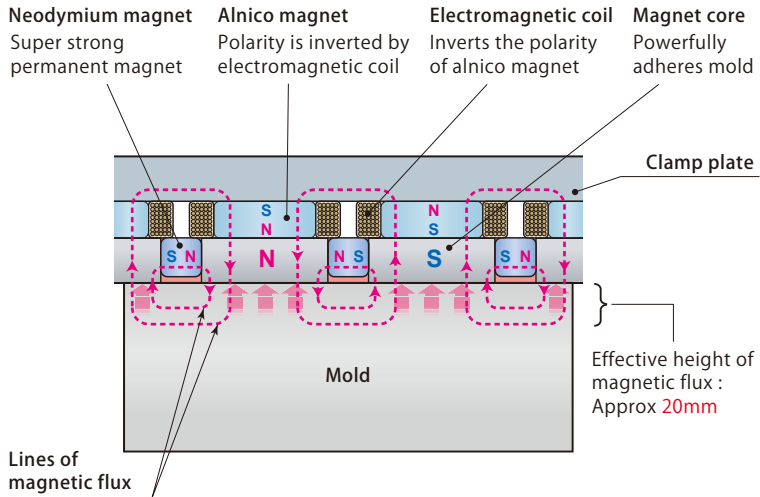
It is unnecessary to unify the die size and it can clamp instantly at one touch operation. Applying current is only when switching on and off. The electric power is not consumed during clamping and the die will not be fall down due to the power blackout.

The clamping force works against the entire die surface, so it prevents the deflection and improves the quality of machined parts.



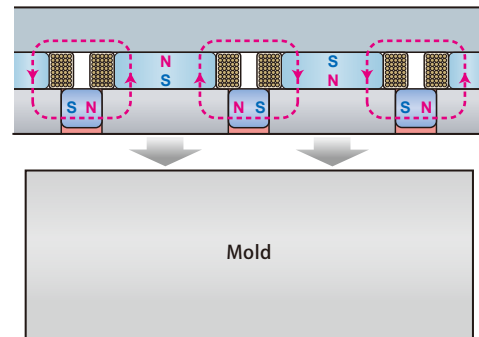
2,000kN (200tonf) Press Press mag clamp & Die-lifter

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 strong magnet to adhere the mold.

Unclamp (Demagnetize)



- 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 mold can be unclamped.



2,000kN (200tonf) High velocity press machine
Press mag clamp



800kN (80tonf) Press Press mag clamp



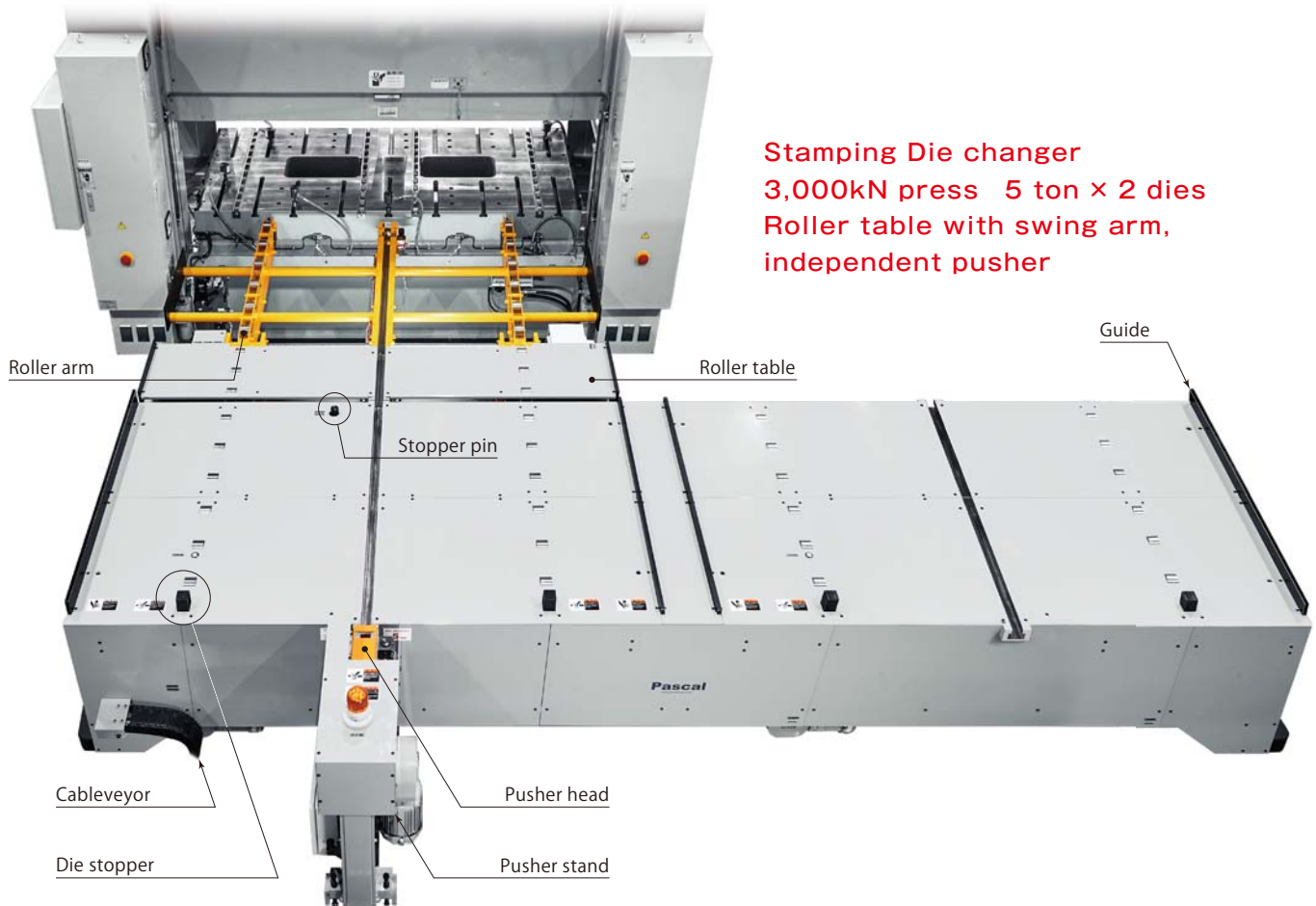
4,000kN (400tonf) Transfer press
Press mag clamp & TXA

1,000
unit sales

For space
and
cost saving

The Proposal instead of moving bolster

Stamping Die changer
3,000kN press 5 ton × 2 dies
Roller table with swing arm,
independent pusher



Stamping Die changer
3,000kN press 4 ton × 2 dies
With roller table and independent pusher



Die stage
6,300kN press 10 ton × 1 dies
With pusher and swing roller arm



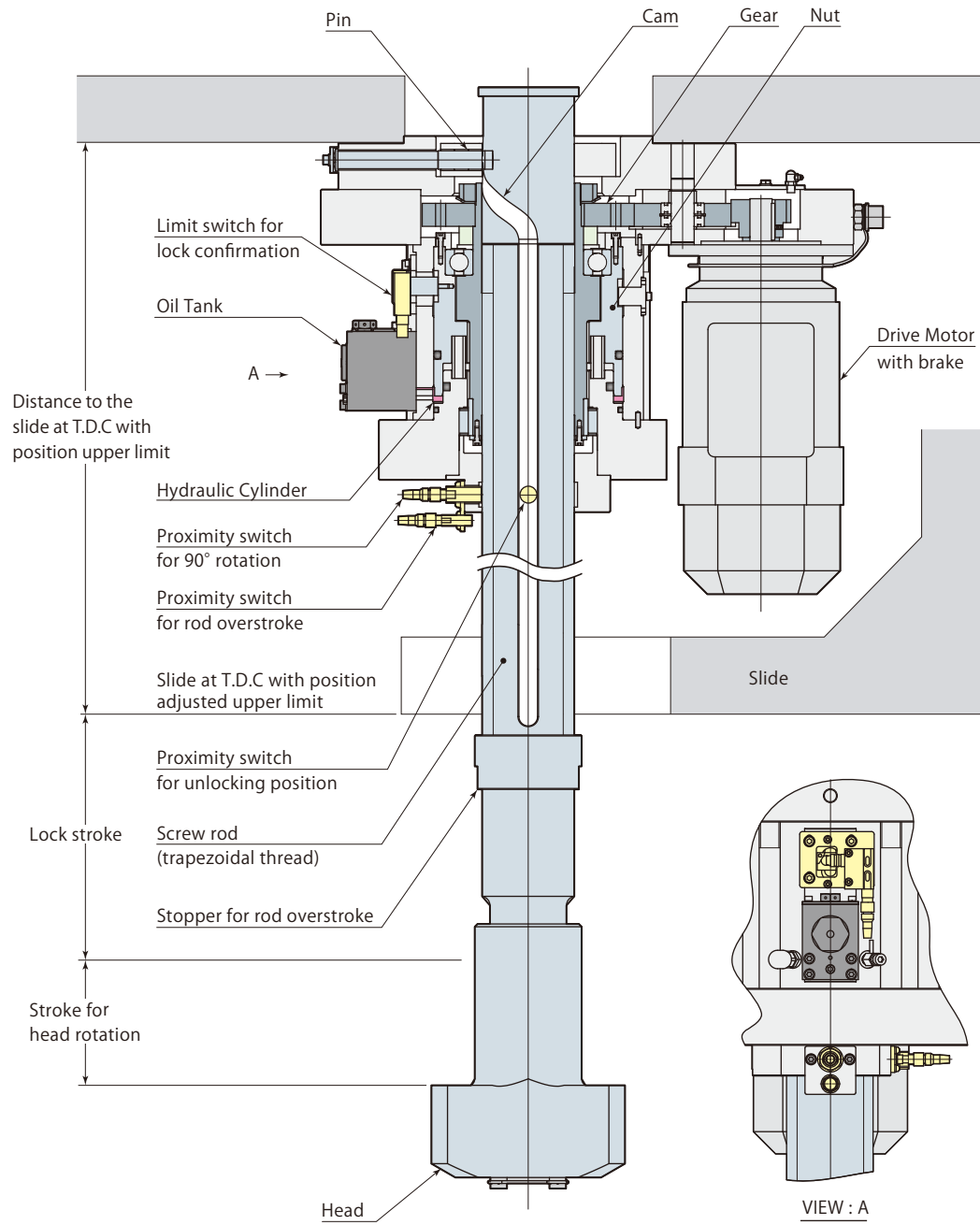
Slide lock PAT.

The electric slide-fall protection system which eliminates the risk of physical injury accident or damages on the dies.



Slide lock





DOMESTIC LOCATIONS



JAPAN

Head office / R & D center

- Itami, Hyogo

Plant

- Oita
- Yamagata

Sales office

- Osaka, Hyogo
- Kumagaya, Saitama
- Atsugi, Kanagawa
- Nagoya, Aichi
- Yamagata



Oita plant



Yamagata plant

GLOBAL NETWORK



ASIA

- Dalian [China]
- Shanghai [China]
- Changchun [China]
- Tianjin [China]
- Wuhan [China]
- Chongqing [China]
- Guangzhou [China]
- Taichung [Taiwan]
- Kaohsiung [Taiwan]
- Bangkok [Thailand]
- Changwon [Korea]
- Bekasi [Indonesia]
- Kuala Lumpur [Malaysia]
- Ghaziabad [India]
- Melbourne [Australia]



Dalian plant

AMERICA

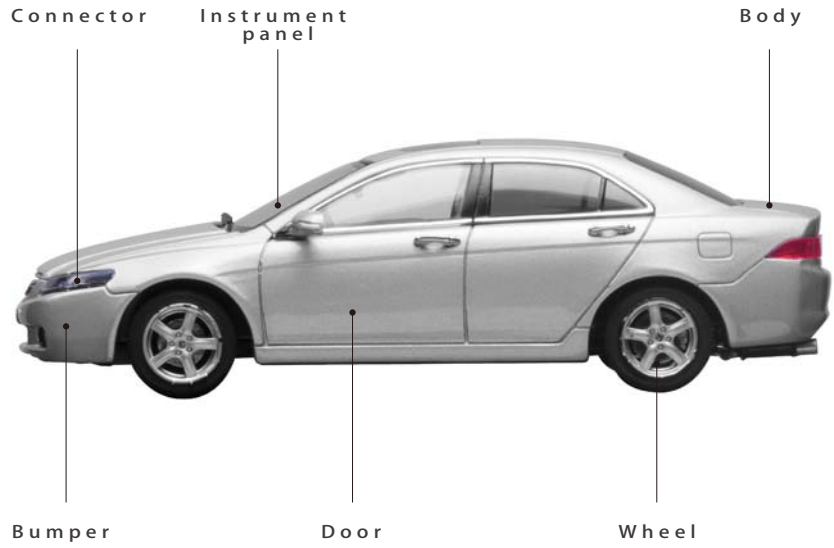
- Chicago [U.S.A.]
- Lexington [U.S.A.]
- Sao Paulo [Brazil]
- Queretaro, Leon [Mexico]

EUROPE

- Stuttgart [Germany]

- Plant
- Subsidiary
- Sales office
- Liaison office
- Agent

Pascal products are supporting



For sheetmetal stamping



Traveling clamp



Stamping die clamp

For plastic molding



Mag clamp



Mold die clamping system



Auto coupler

For die and mold

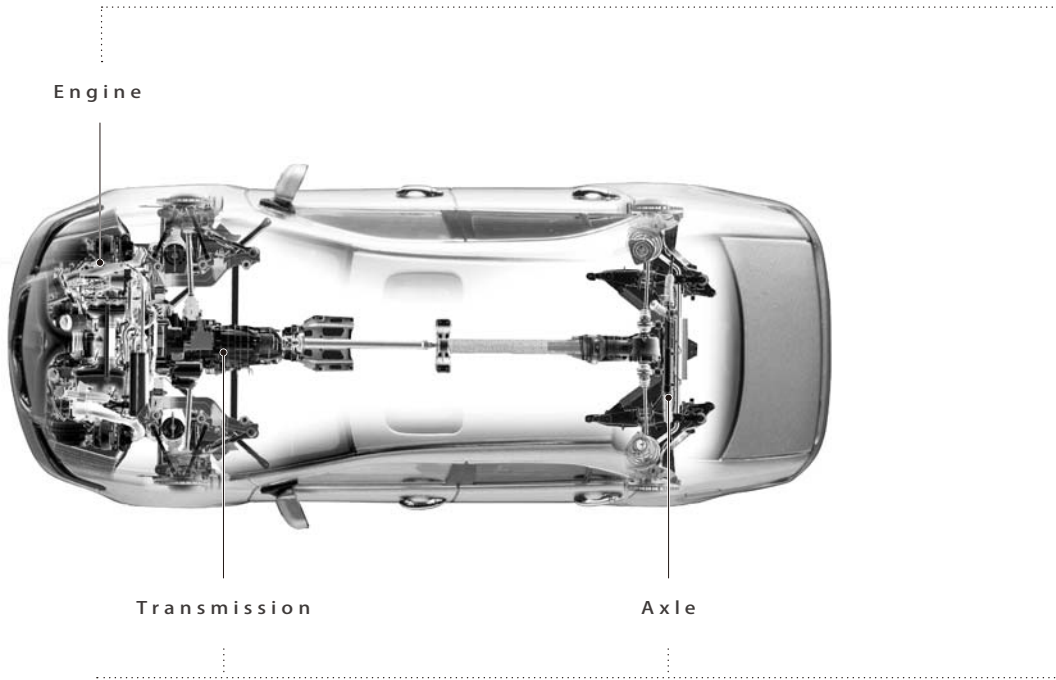
Press machine:
Body, Roof, Door
etc...

Molding machine:
Bumper,
Instrument panel
etc...



N2 gas springs

automotive production lines in the world.



For die cast machine



Die-clamping system



C-plate mag clamp

For metal cutting machine line



Work clamp



Pallet clamp



Index table



N2 gas balancer

Pascal



CERTIFICATE OF APPROVAL ISO9001