

Hydraulic clamp, slidable type **TYB**

T-slotted slidable clamp with compact body and long clamp stroke, equipped with a strong clamping force and high rigidity to resist shock.



5,000kN (500ton) Die-casting machine Hydraulic clamp, slidable type TYB

- Long clamping stroke
- Perfect protection against dust or die release agents.
- Best solution for heat and corrosion



model **TYB**

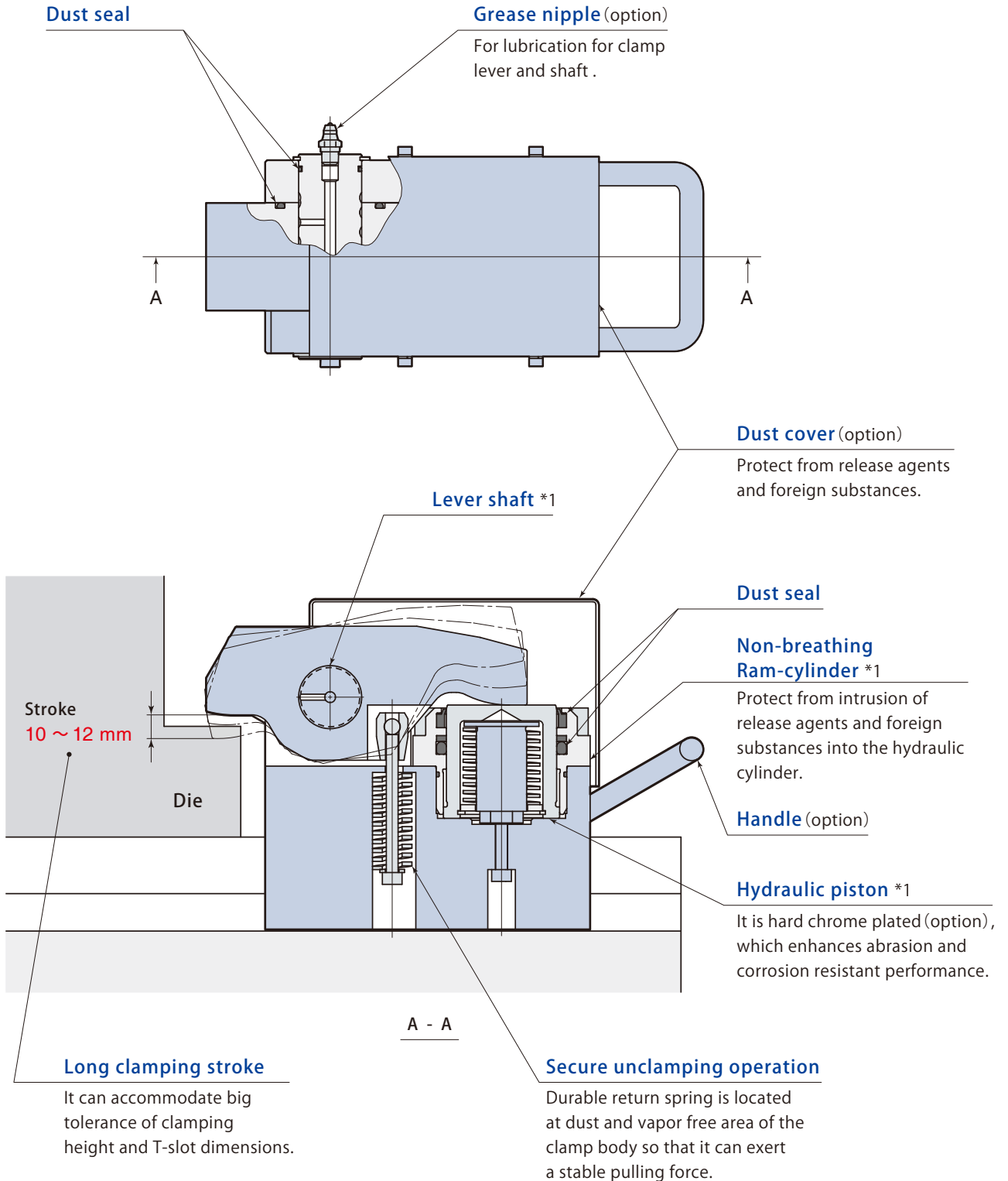
Clamping stroke : 10 ~ 12 mm

Clamping force : 4, 6, 10, 16, 25 ton

page → 15

Structure

It has high reliability and durability capable of enduring severe use conditions such as high temperature, foreign substances and release agent scattering. Dust proof seal/cover and viton seals are provided to protect from high temperature (under 120°C).



*1: To improve the wear resistance of the product, Pascal performs ion-nitriding treatment as standard.

Clamping stroke : 10 ~ 12 mm
Clamping force : 4, 6, 10, 16, 25 ton



model **TYB**

■ Model designation

TYB 063-DGPV

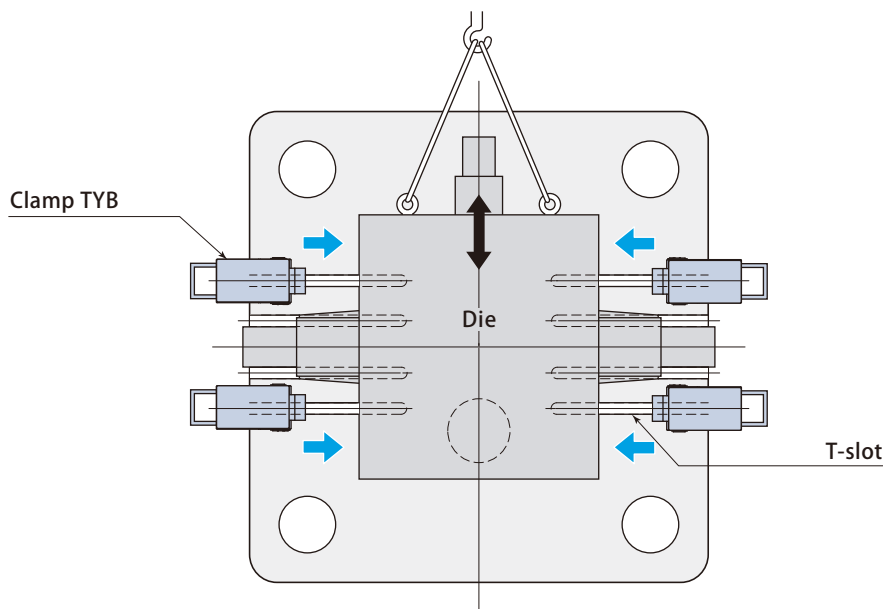
1 Clamping force

■ Option

※If you select multiple options, list them in alphabetical order.

■ Option Refer to page → 17

- D** With dust cover
- G** With handle
- H** Clamp lever high distance type
- J** Rear piping type
- N** NPT port
- P** With grease nipple
- S1** Body strengthened (S45C)
- S2** Body strengthened (SCM435)
- T** Low distance clamp type
- V** High temperature
- W** Wide lever
- Die detection limit switch

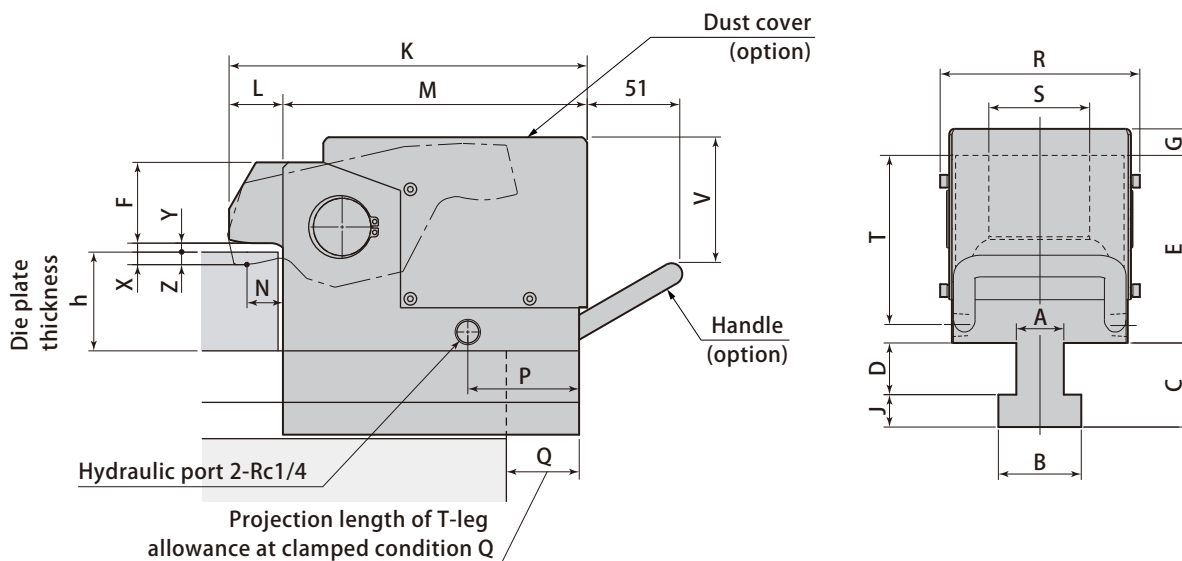


1 Specifications

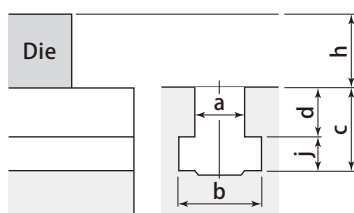
| Model | | TYB040 | TYB063 | TYB100 | TYB160 | TYB250 |
|------------------------------------|-----------------|-------------------------------------|-----------|-----------|-----------|-----------|
| Clamping force (at 24.5 MPa) | kN | 39.2 | 61.7 | 98 | 156 | 245 |
| Full stroke | mm | 10 | 10 | 12 | 12 | 12 |
| Clamping stroke | mm | 4 | 4 | 4 | 4 | 4 |
| Safety stroke | mm | 6 | 6 | 8 | 8 | 8 |
| Cylinder capacity (at full stroke) | cm ³ | 16.5 | 26.1 | 47.2 | 78.2 | 130 |
| Proof pressure | MPa | 36.7 | | | | |
| Max. hydraulic pressure | MPa | 24.5 | | | | |
| Operating temperature | °C | 0 ~ 70 (5 ~ 120 by heat proof type) | | | | |
| Weight | kg | 4.5 | 9 | 15 | 25 | 45 |

- Safety stroke and clamping stroke shown above are subject to change depending on dimensions of die and T -slot.
- Weight varies according to the dimension of clamp T-leg and die plate thickness h.

Dimensions



T-slot dimension and die plate thickness



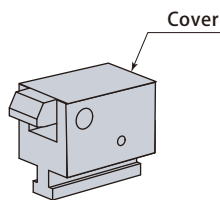
- Specify T-slot dimensions (a, b, c, d, j) and die plate thickness (h).
- Regarding "d" dimension of T-slot, for retrofit : specify to 0.1 mm. For new machine : machining tolerance shall be ± 0.2 mm.
- Dimensions (A, B, C, D, J) shall be determined according to T-slot dimensions.

| Model | TYB040 | TYB063 | TYB100 | TYB160 | TYB250 |
|---|-------------------------------------|--|-------------------------------------|---------------------------------------|---------------------------------------|
| Height of lever F range of h inside the brackets | 27.5 ($45 \leq h$) | 29.5 ($50 \leq h$) | 45 ($58 \leq h$) | 60 ($58 \leq h$) | 106 ($58 \leq h$) |
| | 32.5 ($40 \leq h < 45$) | 39.5 ($40 \leq h < 50$) | 55 ($48 \leq h < 58$) | 70 ($48 \leq h < 58$) | 116 ($48 \leq h < 58$) |
| | 37.5 ($35 \leq h < 40$) | 49.5 ($30 \leq h < 40$) | 65 ($38 \leq h < 48$) | 80 ($38 \leq h < 48$) | 126 ($38 \leq h < 48$) |
| G | 13 | 13 | 14 | 15 | 20 |
| K | 145 | 168 | 200 | 235 | 285 |
| L | 23 | 30 | 30 | 30 | 35 |
| M | 122 | 138 | 170 | 205 | 250 |
| N | 16 | 20 | 20 | 20 | 20 |
| P | 32.5 | 38 | 62 | 80 | 95 |
| Projection length of T-leg allowance at clamped condition Q | 32 | 36 | 45 | 55 | 65 |
| R | 83 | 103 | 113 | 133 | 168 |
| S | 39.6 | 49.6 | 54.6 | 59.6 | 72 |
| T | 64.5 | 71.5 | 94.5 | 110 | 156 |
| V | - | 58 | 76 | 96 | 118 |
| Min. E | 76.5 | 83.5 | 107 | 122 | 168 |
| Full stroke X | 10 | 10 | 12 | 12 | 12 |
| Clamping stroke Y | 4 | 4 | 4 | 4 | 4 |
| Safety stroke Z | 6 | 6 | 8 | 8 | 8 |
| Min. J | Standard : 10.5 S1 : - S2 : 9 | Standard : 14 S1 : 11.4 S2 : 9.5 | Standard : 16 S1 : 13 S2 : 11 | Standard : 19 S1 : 15.5 S2 : 13 | Standard : 26 S1 : 21.5 S2 : 18 |
| h (Min. ~ Max.) | 35 ~ 50 | 30 ~ 60 | 38 ~ 70 | 38 ~ 70 | 38 ~ 70 |

- When newly machining T-slot, it is recommended to apply the dimensions specified on **page →23**.
- Height of lever F varies according to the dimension of h. ● Min. J dimension varies according to body materials. (Standard : SS400, S1 : S45C, S2 : SCM435) ● **Special specifications** are prepared in case "h" dimension is out of the range.

D With dust cover TYB□-D

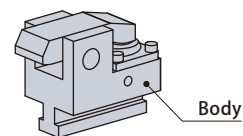
It is applied to protect from release agent and foreign substances.



S1 S2 Body strengthened TYB□-S1, TYB□-S2

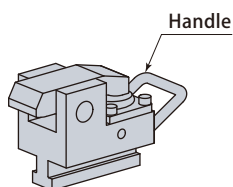
It is applied under condition that the T-slot dimension is under standard and the strength is insufficient.

TYB□-S1 : S45C
TYB□-S2 : SCM435



G With handle TYB□-G

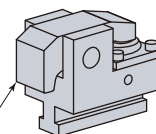
Only for TYB040-250.
It is not applicable for TYB010 and TYB020.



T Low distance clamp type TYB□-T

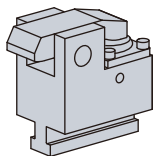
It is applied under condition that the die plate thickness is thinner than standard.

Low distance lever



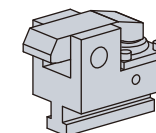
H Clamp lever high distance type TYB□-H

It is applied under condition that the die plate thickness is thicker than standard.



V High temperature TYB□-V

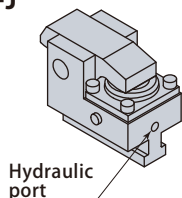
It is applied under condition that the die and its surroundings are in high temperature.



Operating temperature
: 5 ~ 120°C

J Rear piping type TYB□-J

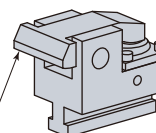
It is applied under condition that there is interference on clamp side and it can not be connected with side hydraulic port (standard specification).



W Wide lever TYB□-W

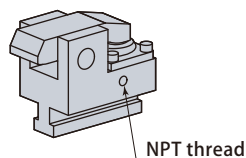
It is applied with U cut (cut out) in the die.

Wide lever



N NPT port TYB□-N

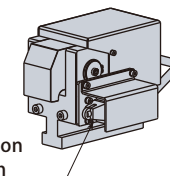
It is applied under condition that hydraulic connection port is connected with NPT thread.



Die detection limit switch

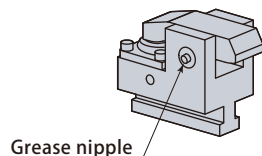
It prevents clamp misplace.

Die detection limit switch



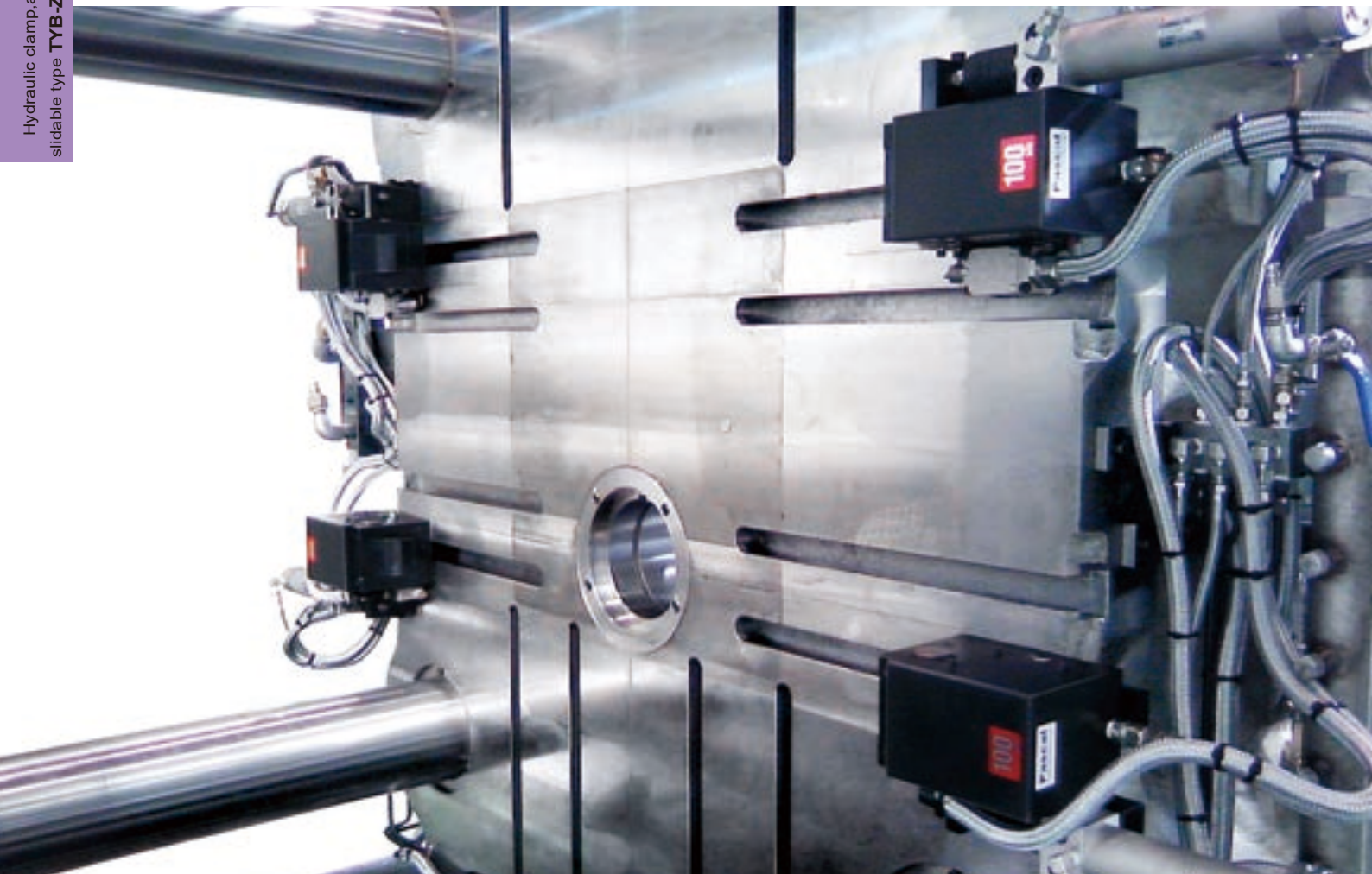
P With grease nipple TYB□-P

For lubrication for clamp lever and shaft (Option).

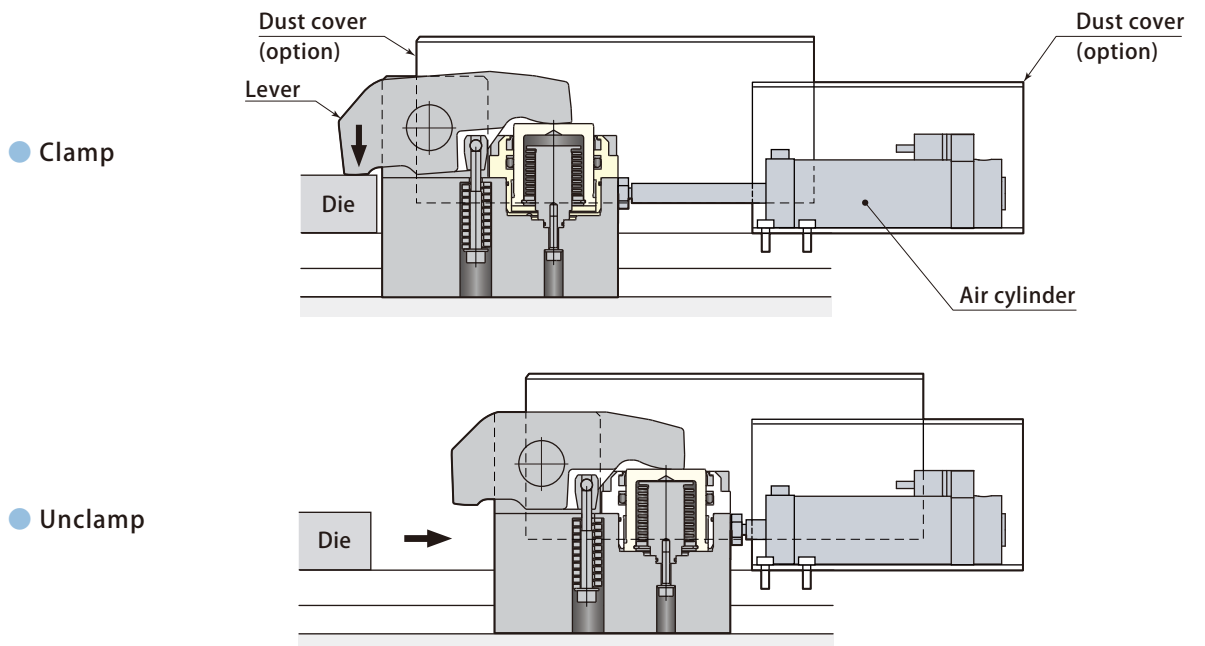


Automatic slidable clamp with an air cylinder. It enables to shorten the die change time.

Hydraulic clamp, automatic
slidable type TYB-Z / TYB-R



6,500kN (650ton) Die-casting machine Hydraulic clamp, automatic slidable type TYB-Z

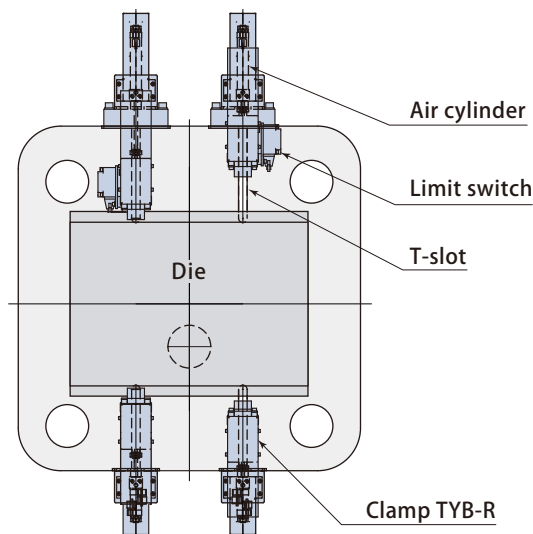
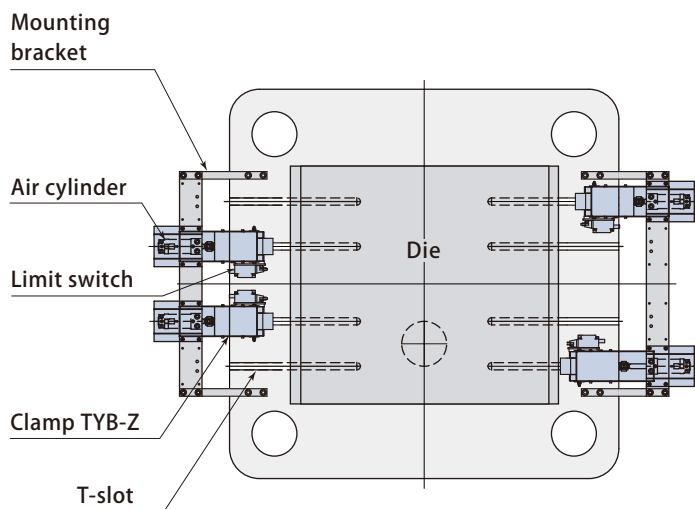


TYB-Z

Slide direction : Horizontal

TYB-R

Slide direction : Vertical



Control unit HCL-T3
3-position center exhaust air solenoid valve equipped

Control unit HCL-T2
2-position double air solenoid valve equipped

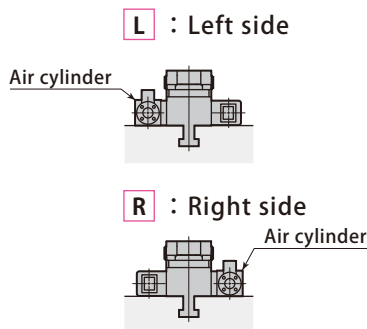
* The control method is different between TYB-Z and TYB-R.

■ Model designation

TYB040 R L - 150

- 1 Clamping force
- 2 Slide direction
- Z** : Horizontal **R** : Vertical
- 3 Air cylinder position
- 4 Sliding stroke (mm)

3 Air cylinder position



■ Option

- D** With dust cover
- J** Rear piping type
- N** NPT port
- P** With grease nipple
- S1** Body strengthened (S45C)
- S2** Body strengthened (SCM435)
- T** Low distance clamp type
- V** High temperature
- W** Wide lever

1 4 Specifications

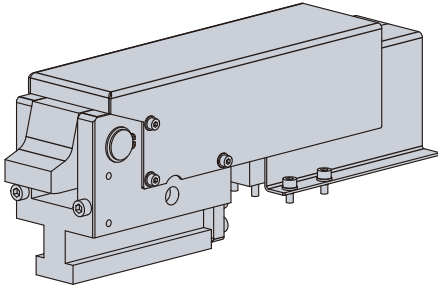
| Model | TYB040Z | | TYB063Z | | TYB100Z | | TYB160Z | | TYB250Z | | |
|------------------------------------|-----------------|--|--|----------------------------|--------------------------------------|------|---------|--|---------|--|--|
| | TYB040R | | TYB063R | | TYB100R | | TYB160R | | TYB250R | | |
| Clamping force (at 24.5 MPa) | kN | | 39.2 | 61.7 | 98.0 | 156 | 245 | | | | |
| Full stroke | mm | | 10 | 10 | 12 | 12 | 12 | | | | |
| Clamping stroke | mm | | 4 | 4 | 4 | 4 | 4 | | | | |
| Safety stroke | mm | | 6 | 6 | 8 | 8 | 8 | | | | |
| Cylinder capacity (at full stroke) | cm ³ | | 16.5 | 26.1 | 47.2 | 78.2 | 130 | | | | |
| Proof pressure | MPa | | 36.7 | | | | | | | | |
| Max. hydraulic pressure | MPa | | 24.5 | | | | | | | | |
| Standard sliding stroke *1 | mm | | 50, 75, 100, 125, 150 | 50, 75, 100, 125, 150, 200 | 50, 75, 100, 125, 150, 200, 250, 300 | | | | | | |
| Slider driving air pressure | MPa | | 0.39 ~ 0.54 | | | | | | | | |
| Clamp sliding speed | mm/s | | 30 ~ 80 (Adjusted by a flow control valve) | | | | | | | | |
| Operating temperature | °C | | 0 ~ 70 (5 ~ 120 by heat proof type *2) | | | | | | | | |

● Mass varies according to specifications. Contact Pascal for the details.

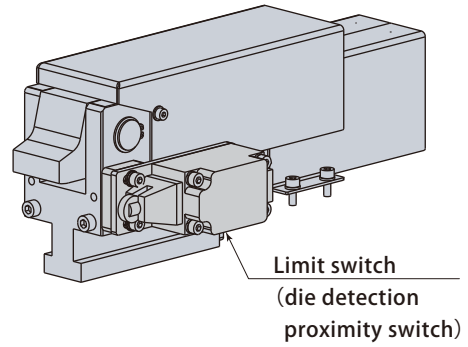
* 1 : Contact Pascal for the sliding stroke which is not mentioned above.

* 2 : Proximity switch and auto switch is not applied to a heat proof type.

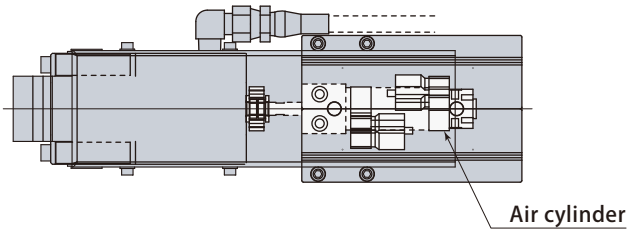
Automatic slidable type



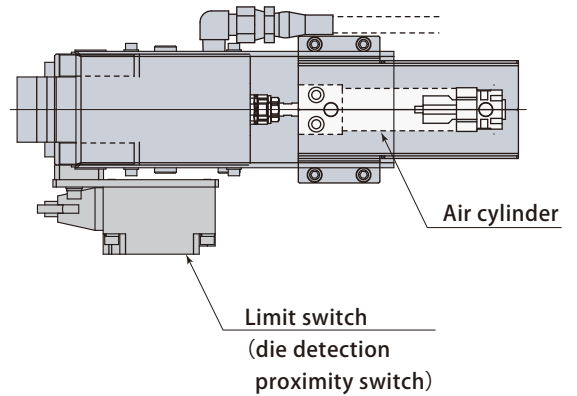
Automatic slidable type with limit switch
(Die detection proximity switch)



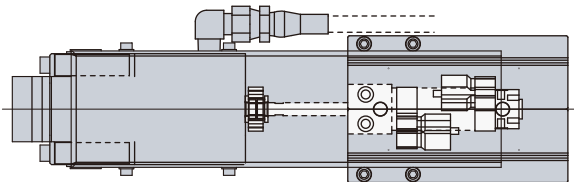
At standby



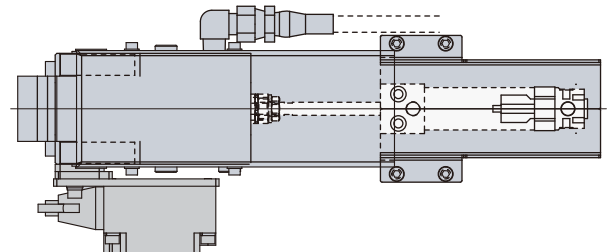
At standby



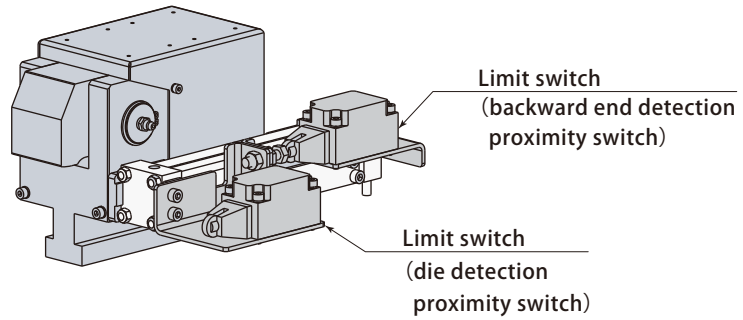
When forwarding



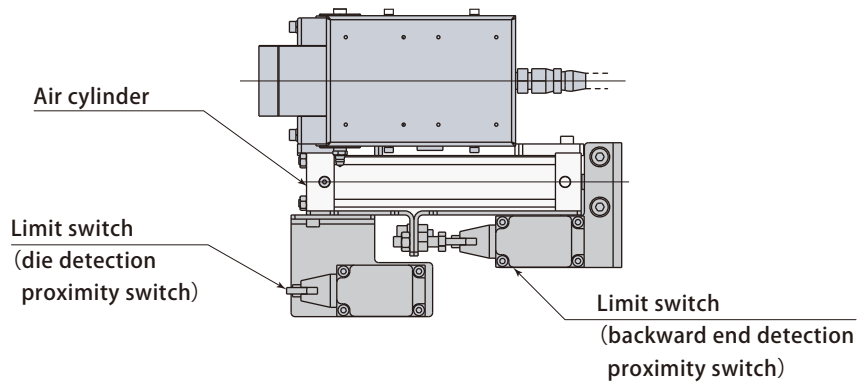
When forwarding



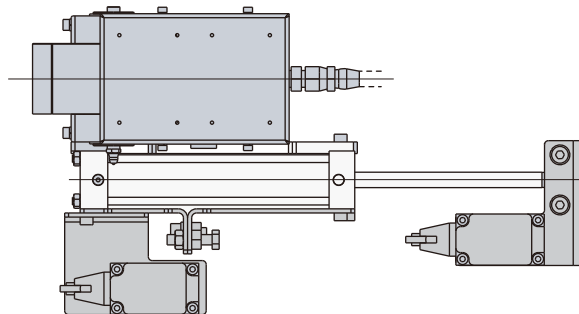
With limit switch
(die and backward end detection proximity switch)



At standby



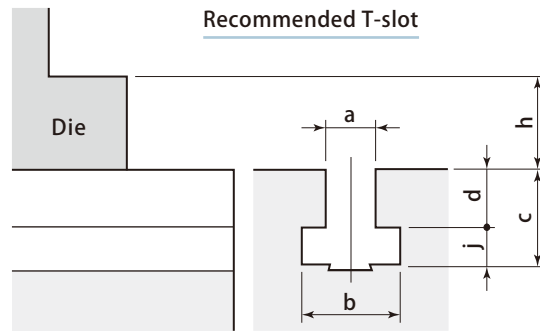
When forwarding



* Configuration varies according to specifications. Contact Pascal for the details.

T-slot and cutout details

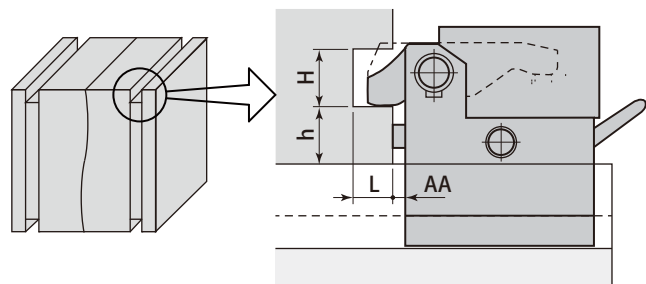
- Process with the below dimension in case of machining T-slot newly.
- Contact Pascal if your T-slot dimensions are less than Min. T-slot dimensions shown below. The main body materials shall be changed and code is S1 and S2 for a special spec.



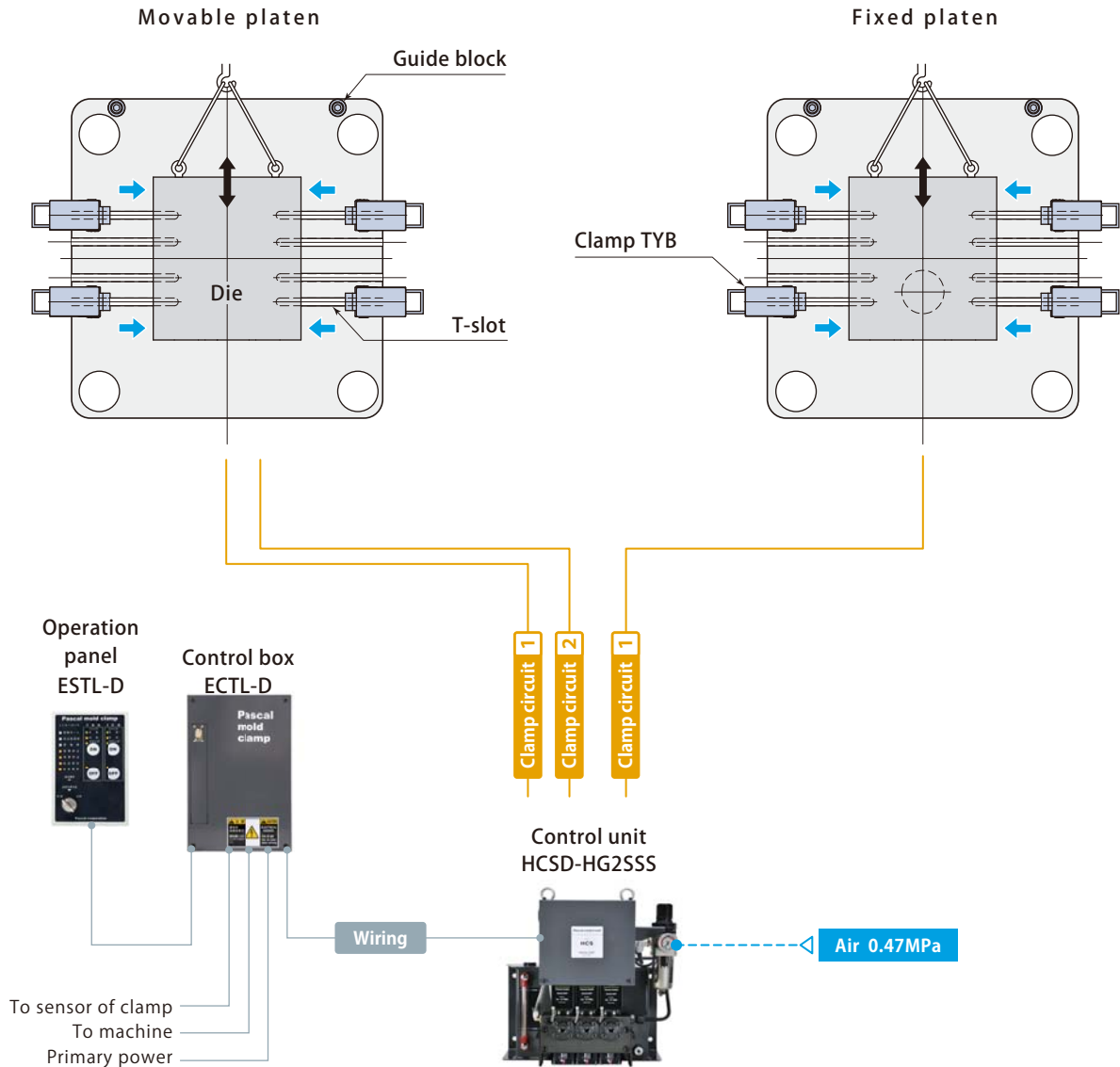
| Model | | | TYB040 | TYB063 | TYB100 | TYB160 | TYB250 |
|------------------------------|---|----|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| | | | TYB040Z | TYB063Z | TYB100Z | TYB160Z | TYB250Z |
| | | | TYB040R | TYB063R | TYB100R | TYB160R | TYB250R |
| Recommended T-slot dimension | a | mm | 22 ^{+0.5} ₀ | 28 ^{+0.5} ₀ | 28 ^{+0.5} ₀ | 32 ^{+0.5} ₀ | 36 ^{+0.5} ₀ |
| | b | mm | 37 ⁺³ ₀ | 46 ⁺⁴ ₀ | 46 ⁺⁴ ₀ | 53 ⁺⁴ ₀ | 56 ⁺⁴ ₀ |
| | d | mm | 22 \pm 0.2 | 28 \pm 0.2 | 28 \pm 0.2 | 28 \pm 0.2 | 32 \pm 0.2 |
| | j | mm | 16 ⁺² ₀ | 20 ⁺² ₀ | 20 ⁺² ₀ | 24 ⁺² ₀ | 30 ⁺² ₀ |
| Minimum T-slot dimensions | a | mm | 15 | 19 | 23 | 27 | 32 |
| | d | mm | 14 | 16 | 18 | 21 | 29 |
| | j | mm | 11.5 | 15 | 17 | 20 | 23 |

- To accommodate the clamp to the die as shown on the right, Pascal can provide a special designed clamp lever with the clamp.
- Specify the dimension H, L and h of the die when ordering. The figures shown in the column L and H in the table are a minimum dimension to make.

Clamp area details



| Model | | | TYB040 | TYB063 | TYB100 | TYB160 | TYB250 |
|--------|-------------|----|---------|---------|---------|----------|---------|
| | | | TYB040Z | TYB063Z | TYB100Z | TYB160Z | TYB250Z |
| | | | TYB040R | TYB063R | TYB100R | TYB160R | TYB250R |
| Min. H | 20 ≤ h < 25 | mm | 20 | - | - | - | - |
| | 25 ≤ h < 30 | mm | 25 | 25 | 35(30) | - | - |
| | 30 ≤ h < 35 | mm | 25 | 30 | 35 | - | - |
| | 35 ≤ h < 40 | mm | 25 | 30 | 35 | - | - |
| | 40 ≤ h < 45 | mm | - | 30 | 40 | 40(30) | - |
| | 45 ≤ h < 50 | mm | - | - | - | 40(30) | - |
| | 50 ≤ h | mm | - | - | - | 45(35) | 50 |
| Min. L | | mm | 15 | 20 | 20 | 25(20) | 30 |
| AA | | mm | 10 | 12.5 | 12.5 | 10(12.5) | 10 |



Selecting table for clamp and control unit

| Die-casting machines | | kN | ~2000 | ~3500 | ~5500 | ~8500 | ~13000 | ~20000 | ~26000 |
|------------------------|-------------------------|----|--|--|---|---|---|---|---|
| Clamp | Die clamping force | | | | | | | | |
| | Model × Quantity *1 | | TYB040 × 8 TYB040Z × 8 TYB040R × 8 | TYB063 × 8 TYB063Z × 8 TYB063R × 8 | TYB100 × 8 TYB100Z × 8 TYB100 R × 8 | TYB160 × 8 TYB160Z × 8 TYB160 R × 8 | TYB250 × 8 (TYB160 × 12) TYB250Z × 8 (TYB160Z × 12) TYB250R × 8 (TYB160R × 12) | TYB250 × 8 (TYB160 × 12) TYB250Z × 8 (TYB160Z × 12) TYB250R × 8 (TYB160R × 12) | TYB250 × 16 TYB250Z × 16 TYB250R × 16 |
| | Total clamping force *2 | kN | 156 | 246 | 392 | 624 | 980 (936) | 1470 (1248) | 1960 |
| Hydraulic control unit | | | HCSD-HG2SSS / HCLD-HG2SSS | | | | HCLD-HG2SSS | | |

● Regarding Control unit, refer to page →25, Operation panel page →29, and Control box page →30.

*1 : Quantity for one machine.

*2 : Clamping force per platen. (For half of the quantity mentioned above.) Inquire the clamp selection, when the actual die opening force is greater than above value.