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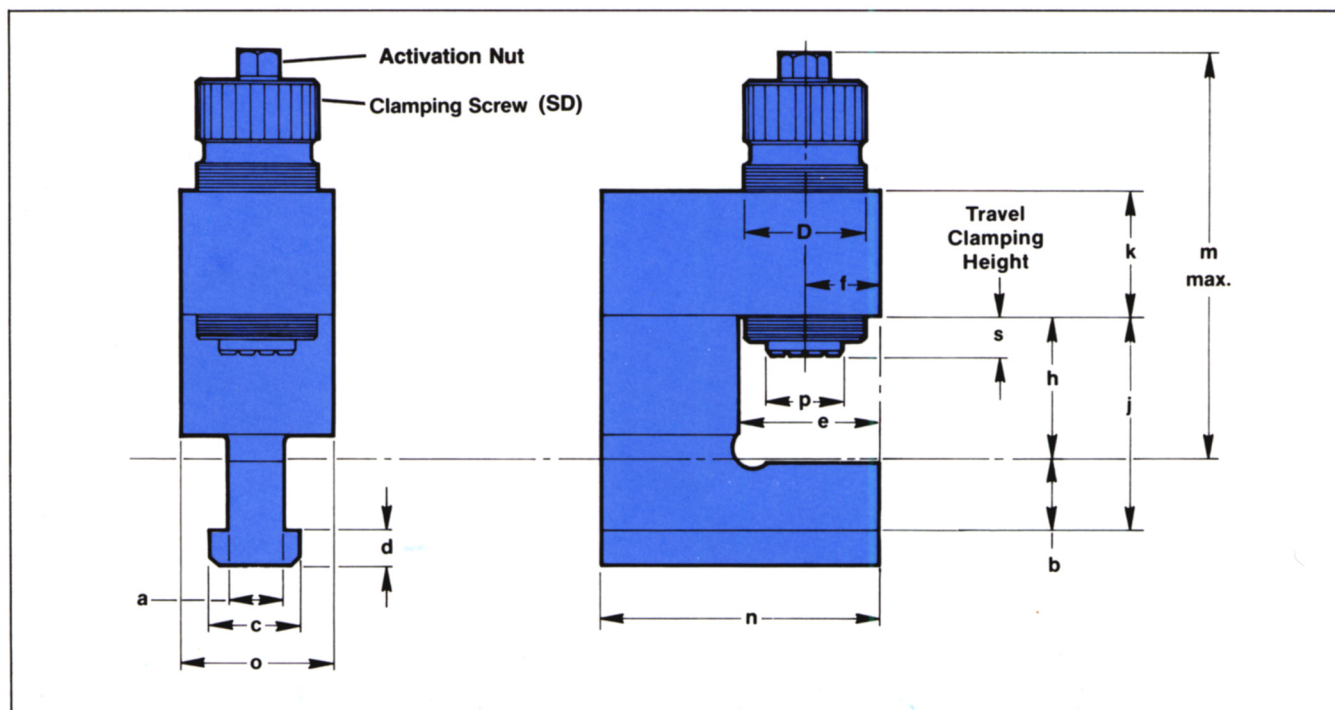
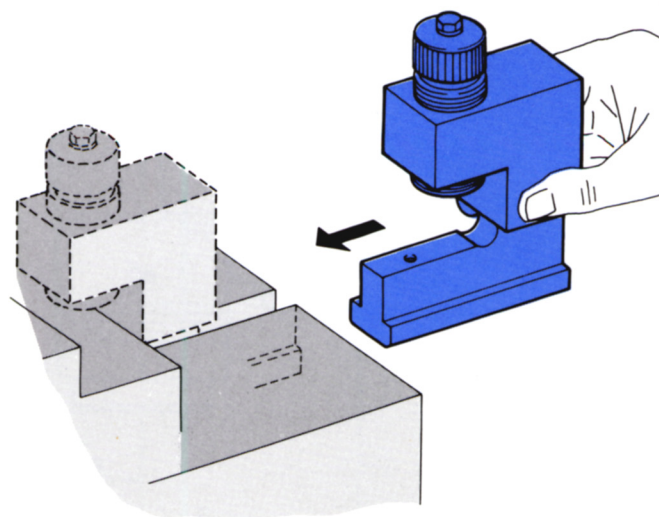
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## Features:

- A safe, quick and simple way to clamp Dies, Work-pieces and Fixtures
- Easily inserted into existing T-Slots. Easy positioning without additional fixing
- Manually operated. No hydraulic or pneumatic components necessary
- Clamping force is obtained through the patented OPTIMA Toggle System. Full pressure is achieved quickly and easily by turning the low torque "power nut" 180°
- Self-locking in clamped position



| Model           | Clamp Force (Nominal) Tons | Pre-Torque of Clamping Screw lb-ft $\pm 10\%$ | D     | a | b | c | d | e    | f    | h | j  | k    | m (Max.) | n    | o    | p    | s    |
|-----------------|----------------------------|---|-------|---|---|---|---|------|------|---|----|------|----------|------|------|------|------|
| MEE25 (SD-36)   | 3                          | 22  | M36x3 | * | * | * | * | 1.77 | 0.94 | * | h+ | 1.57 | h+3.35   | 3.54 | 1.97 | 0.79 | 0.80 |
| MEE40 (SD-48)   | 5                          | 63  | M48x3 | * | * | * | * | 2.17 | 1.18 | * | h+ | 1.97 | h+3.94   | 4.33 | 2.36 | 1.18 | 0.86 |
| MEE63 (SD-A64)  | 7                          | 103   | M64x3 | * | * | * | * | 2.95 | 1.50 | * | b  | 2.36 | h+5.91   | 5.51 | 3.15 | 1.38 | 1.77 |
| MEE100 (SD-A72) | 11                         | 111   | M72x4 | * | * | * | * | 3.15 | 1.65 | * | b  | 2.76 | h+6.89   | 5.91 | 3.35 | 1.57 | 2.56 |

\*Customer specified.



# Technical Data

## Operating Procedure (SD):

### To Clamp

1. Visually inspect clamp for obvious defects and make sure that the arrow on top of the "activation-nut" is pointing toward the **RED** dot.
2. Place clamp into T-slot.
3. Unscrew clamping screw sufficiently so that it easily passes over the die shoe.
4. Push clamp forward (toward die) as far as possible to ensure proper seating. Make certain that the die shoe surface is free of debris and lubricants.
5. Pre-clamp by hand tightening the clamping screw as far as possible (to pre-torque value) so that solid contact with the die surface has been achieved. Make certain that the unit is not cocked. Tapping the frame of the unit (with fist) while hand-tightening will ensure proper fit.

**Note:** Maximum clamping force can be achieved by pre-clamping with a spanner wrench rather than hand-tightening.

6. With the use of a hex head wrench turn the "activation nut" 180° until it reaches its stop and the arrow is pointing toward the **GREEN** dot.

**To Unclamp** — Reverse procedure.

## Operating Procedure (SD-A):

### To Clamp

Due to an internal clutch mechanism preclamping and clamping are both activated by the activation nut. The activation nut is turned with a socket or open end wrench until the indicator line is pointing toward the green dot.

**To Unclamp** — Reverse procedure.

## Ordering Information

When ordering or requesting a quote, please take a few minutes to complete the following data sheet.

### Necessary Data

Range of die shoe thickness: \_\_\_\_\_ min. \_\_\_\_\_ max.

Press tonnage: \_\_\_\_\_

Weight of dies: \_\_\_\_\_ top \_\_\_\_\_ bottom

Clearance between ram and bolster (shut height): \_\_\_\_\_

### T-Slot Dimensions

If standard: \_\_\_\_\_

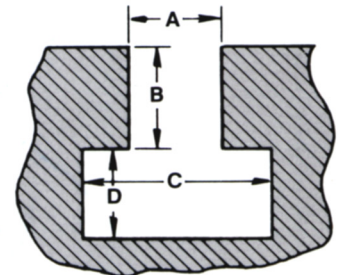
If non-standard:

Width of throat (A) \_\_\_\_\_

Depth of throat (B) \_\_\_\_\_

Width of head (C) \_\_\_\_\_

Depth of head (D) \_\_\_\_\_



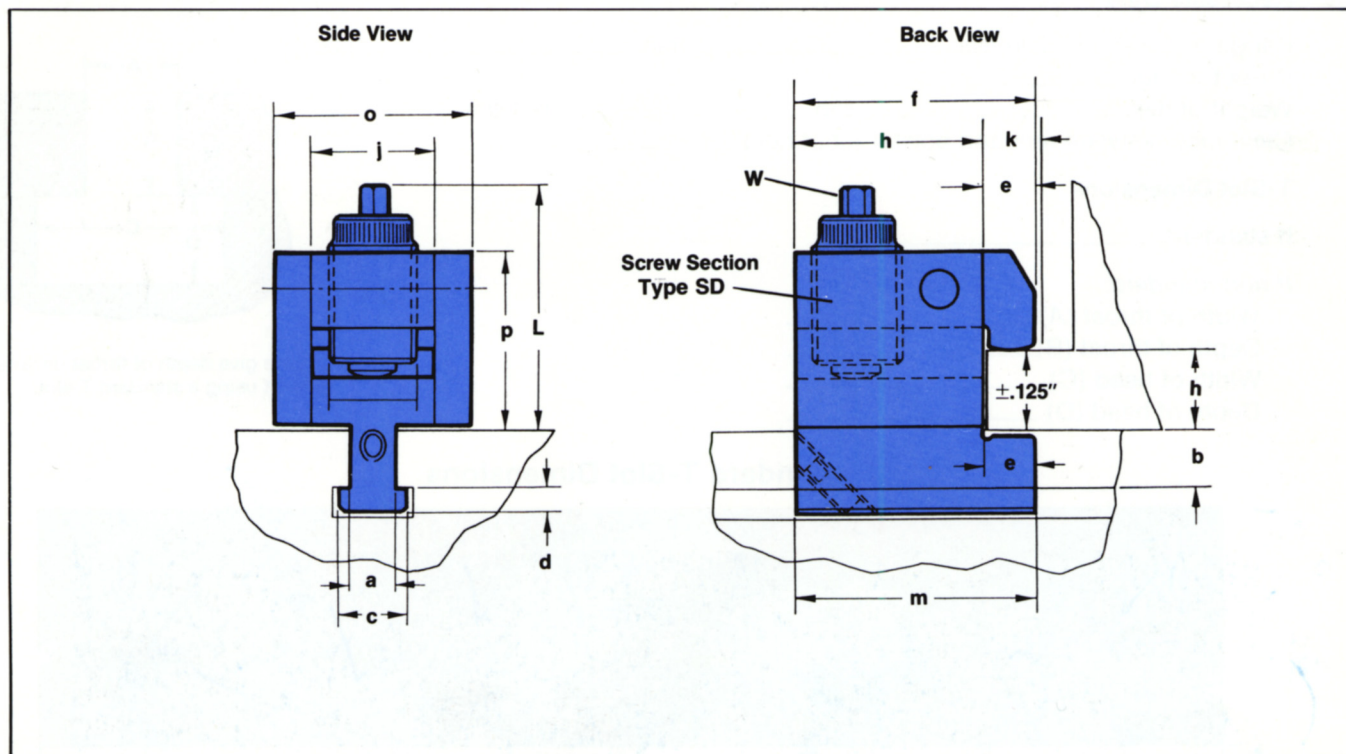
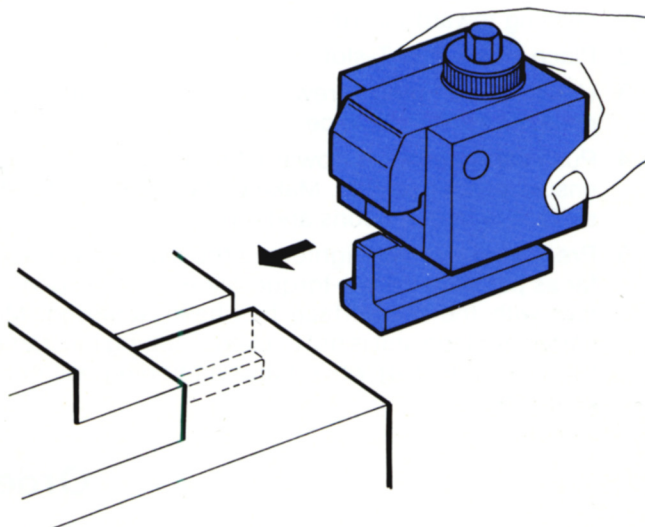
**Note:** Please give depth of throat dimension "B" even if using a standard T-slot.

## Standard T-Slot Dimensions

| Diameter of T-Bolt | Width of Throat A | Depth of Throat B |         | Head Space Dimensions and Tolerances |                   |         |                 |                   |         |
|--------------------|-------------------|-------------------|---------|--------------------------------------|-------------------|---------|-----------------|-------------------|---------|
|                    |                   |                   |         | Width C                              |                   |         | Depth D         |                   |         |
|                    |                   | Maximum           | Minimum | Maximum (Basic)                      | Tolerance (Minus) | Minimum | Maximum (Basic) | Tolerance (Minus) | Minimum |
| 1/4                | 9/32              | 3/8               | 1/8     | 9/16                                 | 0.063             | 1/2     | 15/64           | 0.031             | 13/64   |
| 5/16               | 11/32             | 7/16              | 5/32    | 21/32                                | 0.063             | 19/32   | 17/64           | 0.031             | 15/64   |
| 3/8                | 7/16              | 9/16              | 7/32    | 25/32                                | 0.063             | 23/32   | 21/64           | 0.031             | 19/64   |
| 1/2                | 9/16              | 11/16             | 5/16    | 31/32                                | 0.063             | 29/32   | 25/64           | 0.031             | 23/64   |
| 5/8                | 11/16             | 7/8               | 7/16    | 1 1/4                                | 0.063             | 13/16   | 31/64           | 0.031             | 29/64   |
| 3/4                | 13/16             | 1 1/16            | 9/16    | 1 15/32                              | 0.094             | 13/8    | 5/8             | 0.031             | 19/32   |
| 1                  | 1 1/16            | 1 1/4             | 3/4     | 1 27/32                              | 0.094             | 13/4    | 53/64           | 0.047             | 25/32   |
| 1 1/4              | 1 5/16            | 1 9/16            | 1       | 2 7/32                               | 0.094             | 2 1/8   | 1 3/32          | 0.063             | 1 1/32  |
| 1 1/2              | 1 9/16            | 1 15/16           | 1 1/4   | 2 21/32                              | 0.094             | 2 9/16  | 1 11/32         | 0.063             | 1 9/32  |

### Features:

- A safe, quick and simple way to clamp Dies, Work-pieces and Fixtures
- Easily inserted into existing T-Slots. Easily positioned without any set-up
- Manually operated. No hydraulic or pneumatic components necessary
- Clamping force is obtained through the patented OPTIMA Toggle System. Full pressure is achieved quickly and easily by turning the low torque "activation nut" 180°
- Self-locking in clamped position



| Type  | Screw Section | Clamp Force - Tons | D       | a | b | c | d | e    | f    | h+        | j    | k    | L    | m    | n    | o    | p    | Activation Nut W |
|-------|---------------|--------------------|---------|---|---|---|---|------|------|-----------|------|------|------|------|------|------|------|------------------|
| MWE25 | SD-36         | 3                  | M36 x 3 | * | * | * | * | .79  | 3.78 | .95-1.50  | 1.97 | 1.02 | 3.82 | 3.79 | 3.00 | 3.54 | 2.80 | 10 mm            |
| MWE40 | SD-48         | 5                  | M48 x 3 | * | * | * | * | .98  | 4.80 | 1.18-1.81 | 2.36 | 1.26 | 4.92 | 4.80 | 3.82 | 4.33 | 3.43 | 17 mm, 11/16"    |
| MWE63 | SD-A64        | 7                  | M64 x 4 | * | * | * | * | 1.26 | 6.07 | 1.42-2.13 | 3.15 | 1.57 | 6.30 | 6.06 | 4.80 | 5.51 | 4.37 | 17 mm, 11/16"    |



# Technical Data

## Operating Procedure (SD):

### To Clamp

1. Visually inspect clamp for obvious defects and make sure that the arrow on top of the "activation-nut" is pointing toward the **RED** dot.
2. Place clamp into T-slot.
3. Unscrew clamping screw sufficiently so that clamp jaw easily passes over the die shoe.
4. Push clamp forward (toward die) as far as possible to ensure proper seating. Make certain that the die shoe surface is free of debris and lubricants.
5. Pre-clamp by hand tightening the clamping screw as far as possible (to pre-torque value) so that solid contact with the die surface has been achieved. Make certain that the unit is not cocked. Tapping the frame of the unit (with fist) while hand-tightening will ensure proper fit.

**Note:** Maximum clamping force can be achieved by pre-clamping with a spanner wrench rather than hand-tightening.

6. With the use of a hex head wrench turn the "activation nut" 180° until it reaches its stop and the arrow is pointing toward the **GREEN** dot.

**To Unclamp** — Reverse procedure.

## Operating Procedure (SD-A):

### To Clamp

Due to an internal clutch mechanism preclamping and clamping are both activated by the activation nut. The activation nut is turned with a socket or open end wrench until the indicator line is pointing toward the green dot.

**To Unclamp** — Reverse procedure.

## Ordering Information

When ordering or requesting a quote, please take a few minutes to complete the following data sheet.

### Necessary Data

Range of die shoe thickness: (min. and max. values must be within .25" of each other) \_\_\_\_\_ min. \_\_\_\_\_ max.

Press tonnage: \_\_\_\_\_

Weight of dies: \_\_\_\_\_ top \_\_\_\_\_ bottom

Clearance between ram and bolster (shut height): \_\_\_\_\_

### T-Slot Dimensions

If standard: \_\_\_\_\_

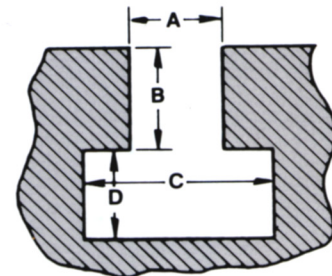
If non-standard:

Width of throat (A) \_\_\_\_\_

Depth of throat (B) \_\_\_\_\_

Width of head (C) \_\_\_\_\_

Depth of head (D) \_\_\_\_\_



**Note:** Please give depth of throat dimension "B" even if using a standard T-slot.

### Standard T-Slot Dimensions

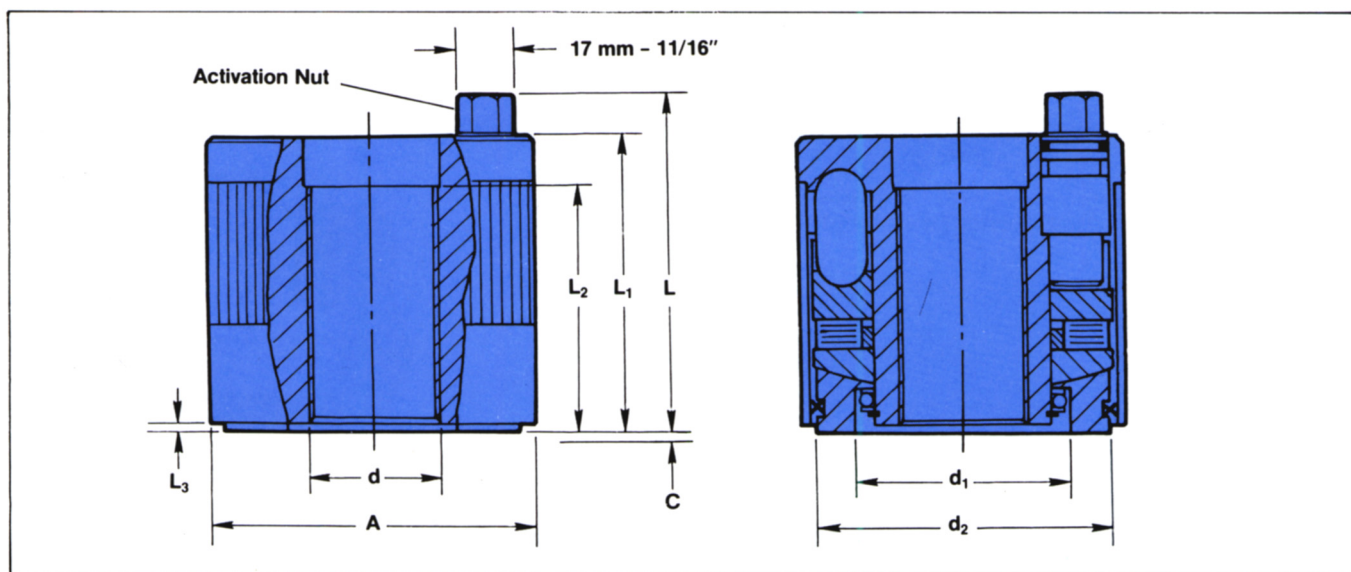
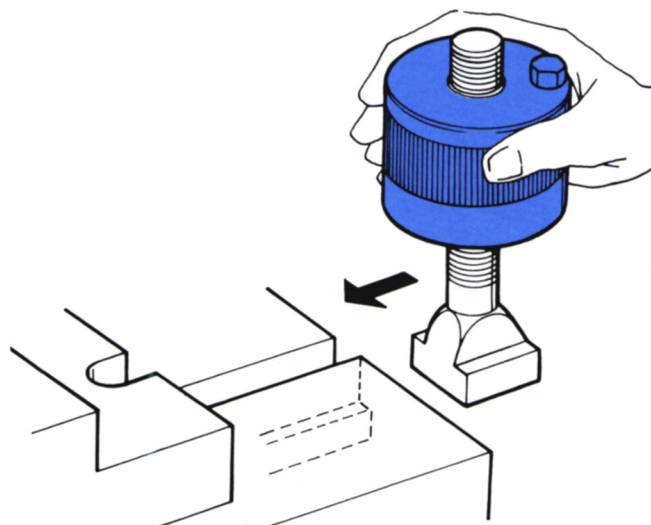
| Diameter of T-Bolt | Width of Throat A | Depth of Throat B |         | Head Space Dimensions and Tolerances |                   |         |                 |                   |         |
|--------------------|-------------------|-------------------|---------|--------------------------------------|-------------------|---------|-----------------|-------------------|---------|
|                    |                   |                   |         | Width C                              |                   |         | Depth D         |                   |         |
|                    |                   | Maximum           | Minimum | Maximum (Basic)                      | Tolerance (Minus) | Minimum | Maximum (Basic) | Tolerance (Minus) | Minimum |
| 1/4                | 9/32              | 3/8               | 1/8     | 9/16                                 | 0.063             | 1/2     | 15/64           | 0.031             | 13/64   |
| 5/16               | 11/32             | 7/16              | 5/32    | 21/32                                | 0.063             | 19/32   | 17/64           | 0.031             | 15/64   |
| 3/8                | 7/16              | 9/16              | 7/32    | 25/32                                | 0.063             | 23/32   | 21/64           | 0.031             | 19/64   |
| 1/2                | 9/16              | 11/16             | 5/16    | 31/32                                | 0.063             | 29/32   | 25/64           | 0.031             | 23/64   |
| 5/8                | 11/16             | 7/8               | 7/16    | 1 1/4                                | 0.063             | 13/16   | 31/64           | 0.031             | 29/64   |
| 3/4                | 13/16             | 1 1/16            | 9/16    | 1 15/32                              | 0.094             | 13/8    | 5/8             | 0.031             | 19/32   |
| 1                  | 1 1/16            | 1 1/4             | 3/4     | 1 27/32                              | 0.094             | 13/4    | 53/64           | 0.047             | 25/32   |
| 1 1/4              | 1 5/16            | 1 9/16            | 1       | 2 7/32                               | 0.094             | 2 1/8   | 1 3/32          | 0.063             | 1 1/32  |
| 1 1/2              | 1 9/16            | 1 15/16           | 1 1/4   | 2 21/32                              | 0.094             | 2 9/16  | 1 11/32         | 0.063             | 1 9/32  |



# “Power-Nut”

## Features:

- A safe, quick and simple way to clamp Dies, Work-pieces and Fixtures
- Easily inserted into existing T-slots. Clamps at any position along the length of the T-bolt
- Manually operated. No hydraulic or pneumatic components necessary
- Clamping force is obtained through the patented OPTIMA Toggle System. Full pressure is achieved quickly and easily by turning the low torque “power nut” 180°
- Self-locking in clamped position
- Can be used with existing or specially hardened T-bolts



| Model | Screw Thread<br>Dia. = d* | A<br>φ<br>in. | L<br>in. | L <sub>1</sub><br>in. | L <sub>2</sub><br>in. | L <sub>3</sub><br>in. | d <sub>1</sub><br>φ<br>in. | d <sub>2</sub><br>φ<br>in. | Clamp<br>Force<br>Tons | Pre-Torque<br>of Power-Nut<br>Lb-Ft. ± 10% | C<br>Max. |
|-------|---------------------------|---------------|----------|-----------------------|-----------------------|-----------------------|----------------------------|----------------------------|------------------------|--|-----------|
| MK 16 | M16 = .63"*               | 2.95          | 3.98     | 3.35                  | 1.97                  | .08                   | 1.69                       | 2.56                       | 6.0                    | 60   | .016"     |
| MK 20 | M20 = .79"*               | 2.95          | 3.98     | 3.35                  | 1.97                  | .08                   | 1.69                       | 2.56                       | 6.0                    | 60   |           |
| MK 24 | M24 = .94"*               | 3.70          | 4.13     | 3.54                  | 1.97                  | .12                   | 2.13                       | 3.31                       | 10.0                   | 75   |           |
| MK 30 | M30 = 1.18"*              | 3.70          | 4.13     | 3.54                  | 2.36                  | .12                   | 2.13                       | 3.31                       | 10.0                   | 75   | .028"     |
| MK 36 | M36 = 1.42"*              | 4.13          | 4.33     | 3.74                  | 3.15                  | .12                   | 2.64                       | 3.86                       | 12.0                   | 90   |           |
| MK 42 | M42 = 1.65"*              | 4.13          | 4.33     | 3.74                  | 3.15                  | .12                   | 2.64                       | 3.86                       | 12.0                   | 90   |           |
| MK 48 | M48 = 1.89"*              | 4.72          | 5.08     | 4.53                  | 3.27                  | .12                   | 3.15                       | 4.33                       | 15.0                   | 150  | .016"     |
| MK 56 | M56 = 2.20"*              | 4.72          | 5.08     | 4.53                  | 3.27                  | .12                   | 3.15                       | 4.33                       | 15.0                   | 150  |           |

\* Actual screw thread diameter is customer specified and can be any value less than and including that shown.

## Technical Data

### MK Operating Procedure:

#### To Clamp

1. Visually inspect power-nut and T-bolt for obvious defects and make sure that the arrow on top of the "activation nut" is pointed toward the **RED** dot or minus  $\ominus$  symbol.
2. Place power-nut and T-bolt into T-slot.
3. Unscrew power-nut sufficiently so that it easily passes over the die shoe.
4. Push power-nut and T-bolt assembly forward (toward die) as far as possible to ensure proper seating.

Make certain that the die shoe surface is free of debris and lubricants.

5. Pre-clamp by hand screwing the power-nut down as far as possible (to pre-torque value) so that solid contact with the die surface has been achieved. Make certain that the nut is not cocked. Tapping the nut of the unit (with fist) while hand tightening will ensure proper fit.
6. With the use of the hex head wrench (17 mm—11/16") turn the "activation nut" 180° until it reaches its stop and the arrow is pointing toward the **GREEN** dot or plus  $\oplus$  symbol.

**To Unclamp** – Reverse procedure.

## Ordering Information

When ordering or requesting a quote, please take a few minutes to complete the following data sheet.

### Necessary Data

Range of die shoe thickness: \_\_\_\_\_ min. \_\_\_\_\_ max.

Press tonnage: \_\_\_\_\_

Weight of dies: \_\_\_\_\_ top \_\_\_\_\_ bottom

Clearance between ram and bolster (shut height): \_\_\_\_\_

### T-Slot Dimensions

If standard: \_\_\_\_\_

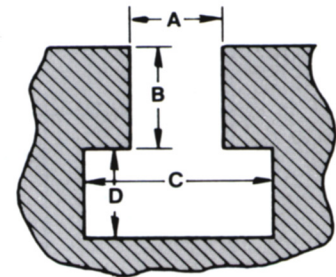
If non-standard:

Width of throat (A) \_\_\_\_\_

Depth of throat (B) \_\_\_\_\_

Width of head (C) \_\_\_\_\_

Depth of head (D) \_\_\_\_\_



**Note:** Please give depth of throat dimension "B" even if using a standard T-slot.

### Standard T-Slot Dimensions

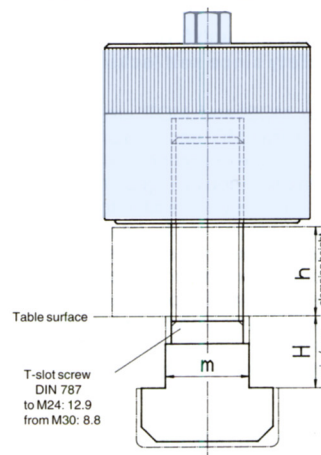
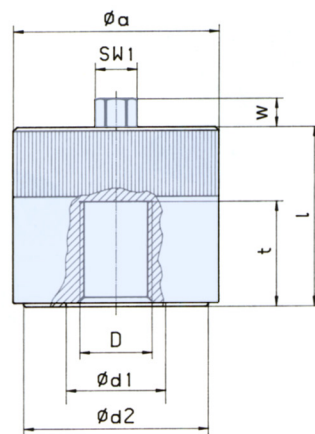
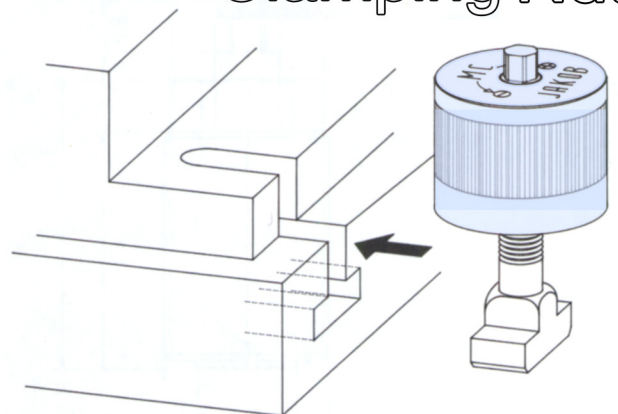
| Diameter of T-Bolt | Width of Throat A | Depth of Throat B |         | Head Space Dimensions and Tolerances |                   |         |                 |                   |         |
|--------------------|-------------------|-------------------|---------|--------------------------------------|-------------------|---------|-----------------|-------------------|---------|
|                    |                   |                   |         | Width C                              |                   |         | Depth D         |                   |         |
|                    |                   | Maximum           | Minimum | Maximum (Basic)                      | Tolerance (Minus) | Minimum | Maximum (Basic) | Tolerance (Minus) | Minimum |
| 1/4                | 9/32              | 3/8               | 1/8     | 9/16                                 | 0.063             | 1/2     | 15/64           | 0.031             | 13/64   |
| 5/16               | 11/32             | 7/16              | 5/32    | 21/32                                | 0.063             | 19/32   | 17/64           | 0.031             | 15/64   |
| 3/8                | 7/16              | 9/16              | 7/32    | 25/32                                | 0.063             | 23/32   | 21/64           | 0.031             | 19/64   |
| 1/2                | 9/16              | 11/16             | 5/16    | 31/32                                | 0.063             | 29/32   | 25/64           | 0.031             | 23/64   |
| 5/8                | 11/16             | 7/8               | 7/16    | 1 1/4                                | 0.063             | 13/16   | 31/64           | 0.031             | 29/64   |
| 3/4                | 13/16             | 1 1/16            | 9/16    | 1 15/32                              | 0.094             | 13/8    | 5/8             | 0.031             | 19/32   |
| 1                  | 1 1/16            | 1 1/4             | 3/4     | 1 27/32                              | 0.094             | 13/4    | 53/64           | 0.047             | 25/32   |
| 1 1/4              | 1 5/16            | 1 9/16            | 1       | 2 7/32                               | 0.094             | 2 1/8   | 1 3/32          | 0.063             | 1 1/32  |
| 1 1/2              | 1 9/16            | 1 15/16           | 1 1/4   | 2 21/32                              | 0.094             | 2 9/16  | 1 11/32         | 0.063             | 1 9/32  |



- self-locking
- simple operation
- clamping force range 40 - 160 kN

The unique design feature of the mechanical clamping nut "MC" is an integral planetary gearbox for the multiplication of the manual tightening torque. With this, the user has a rugged and adjustable clamping element, which enables highest clamping forces with simple manual operation and maximum operating safety. The MC clamping nut can be used for various clamping tasks throughout the machine tool industry, particularly for die clamping in presses and punches.

## MC Clamping Nut



### Dimensions: length dimensions according to DIN ISO 2768 (rough tolerances)

| MC  | max.<br>Clamping<br>force<br>(kN) | thread<br>D* | max.<br>tightening<br>torque<br>(Nm) | max.<br>static<br>load<br>(kN) | T-slot<br>„m“<br>DIN 650 | H<br><br>min/max | weight<br>approx.<br><br>(kg) | Ø a | Ø d1 | Ø d2 | l  | screw-in depth<br>„t“<br>min.    max. |    | SW1 | w  |
|-----|-----------------------------------|--------------|--------------------------------------|--------------------------------|--------------------------|------------------|-------------------------------|-----|------|------|----|---------------------------------------|----|-----|----|
| 40  | 40                                | M 10         | 15                                   | 50                             | 10                       | 9/13             | 0,8                           | 55  | 32   | 48   | 47 | 16                                    | 24 | 10  | 9  |
|     |                                   | M 12         | 17                                   | 70                             | 14                       | 13/18            |                               |     |      |      |    |                                       |    |     |    |
|     |                                   | M 14         | 18                                   | 80                             | (16)                     |                  |                               |     |      |      |    |                                       |    |     |    |
|     |                                   | M 16         | 20                                   | 100                            | 18                       | 18/24            |                               |     |      |      |    |                                       |    |     |    |
| 50  | 50                                | M 12         | 20                                   | 70                             | 14                       | 13/18            | 1,5                           | 69  | 38   | 60   | 65 | 24                                    | 33 | 15  | 10 |
|     |                                   | M 16         | 25                                   | 100                            | 18                       | 18/24            |                               |     |      |      |    |                                       |    |     |    |
|     |                                   | M 20         | 30                                   | 100                            | 22                       | 22/29            |                               |     |      |      |    |                                       |    |     |    |
|     |                                   | M 24         | 35                                   | 100                            | 28                       | 28/36            |                               |     |      |      |    |                                       |    |     |    |
| 80  | 80                                | M 16         | 40                                   | 130                            | 18                       | 18/24            | 2                             | 80  | 48   | 70   | 70 | 25                                    | 35 | 17  | 12 |
|     |                                   | M 20         | 45                                   | 160                            | 22                       | 22/29            |                               |     |      |      |    |                                       |    |     |    |
|     |                                   | M 24         | 50                                   | 160                            | 28                       | 28/36            |                               |     |      |      |    |                                       |    |     |    |
|     |                                   | M 30         | 60                                   | 160                            | 36                       | 36/46            |                               |     |      |      |    |                                       |    |     |    |
| 120 | 120                               | M 20         | 70                                   | 200                            | 22                       | 22/29            | 3                             | 95  | 60   | 85   | 75 | 25                                    | 40 | 17  | 12 |
|     |                                   | M 24         | 70                                   | 240                            | 28                       | 28/36            |                               |     |      |      |    |                                       |    |     |    |
|     |                                   | M 30         | 90                                   | 300                            | 36                       | 36/46            |                               |     |      |      |    |                                       |    |     |    |
|     |                                   | M 36         | 100                                  | 300                            | 42                       | 45/56            |                               |     |      |      |    |                                       |    |     |    |
| 160 | 160                               | M 24         | 100                                  | 300                            | 28                       | 28/36            | 5                             | 120 | 80   | 110  | 80 | 30                                    | 45 | 19  | 12 |
|     |                                   | M 30         | 110                                  | 300                            | 36                       | 36/46            |                               |     |      |      |    |                                       |    |     |    |
|     |                                   | M 36         | 125                                  | 400                            | 42                       | 45/56            |                               |     |      |      |    |                                       |    |     |    |
|     |                                   | M 42         | 140                                  | 450                            | –                        | –                |                               |     |      |      |    |                                       |    |     |    |
|     |                                   | M 48         | 150                                  | 450                            | –                        | –                |                               |     |      |      |    |                                       |    |     |    |

\* Further Thread Sizes i.e. Inch Sizes on Request (Property of the threaded bolt up to M24 minimum Q 10.9, from M30 Q8.8)



## Technical Data

Only two easy manual operations are required to gain the very high clamping force of the MC. First the nut has to be turned clockwise to bring all clamping surfaces in tight contact. The knurled housing makes prestressing possible if needed. The planetary gears are activated by turning the actuation hexagon SW1 clockwise, and the T-bolt is pulled into the nut, and force magnified by the planetary gearbox.

Dependent on the actuation torque and the strain deformation of the complete system a very high clamping force is generated. For release use reverse procedure.

The clamping travel is limited by the thread reach (t) or screw in depth of the nut. The system is self-locking in each and every position.

Combined with a T-screw the MC nut can be used as an adjustable T-slot slide-in clamping device.

The clamping and operating forces are supported via an axial bearing and a pressure plate directly at the table or at the fixture. This clamping mechanism enables a theoretically unlimited clamping stroke, which, however, is limited in practice due to the screw-in depth. It is self-locking in each clamping position. The release is carried out in reverse order by turning the operating hexagon anti-clockwise.

### ORDERING INFORMATION

**MC 120 - M 24**

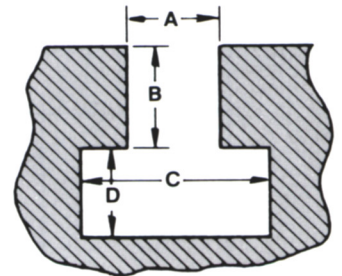
**Incl. T-bolt** **MC 120 - 28 - 50 - 32**

Series and size (max. clamping force 120 kN) \_\_\_\_\_

T-slot dimension according to DIN 650 (dimension "m" = 28 mm) \_\_\_\_\_

Clamping height ("h" = 50 mm) \_\_\_\_\_

Size of T-slot ("H" = 32 mm) \_\_\_\_\_



**Note:** Please give depth of throat dimension "B" even if using a standard T-slot.

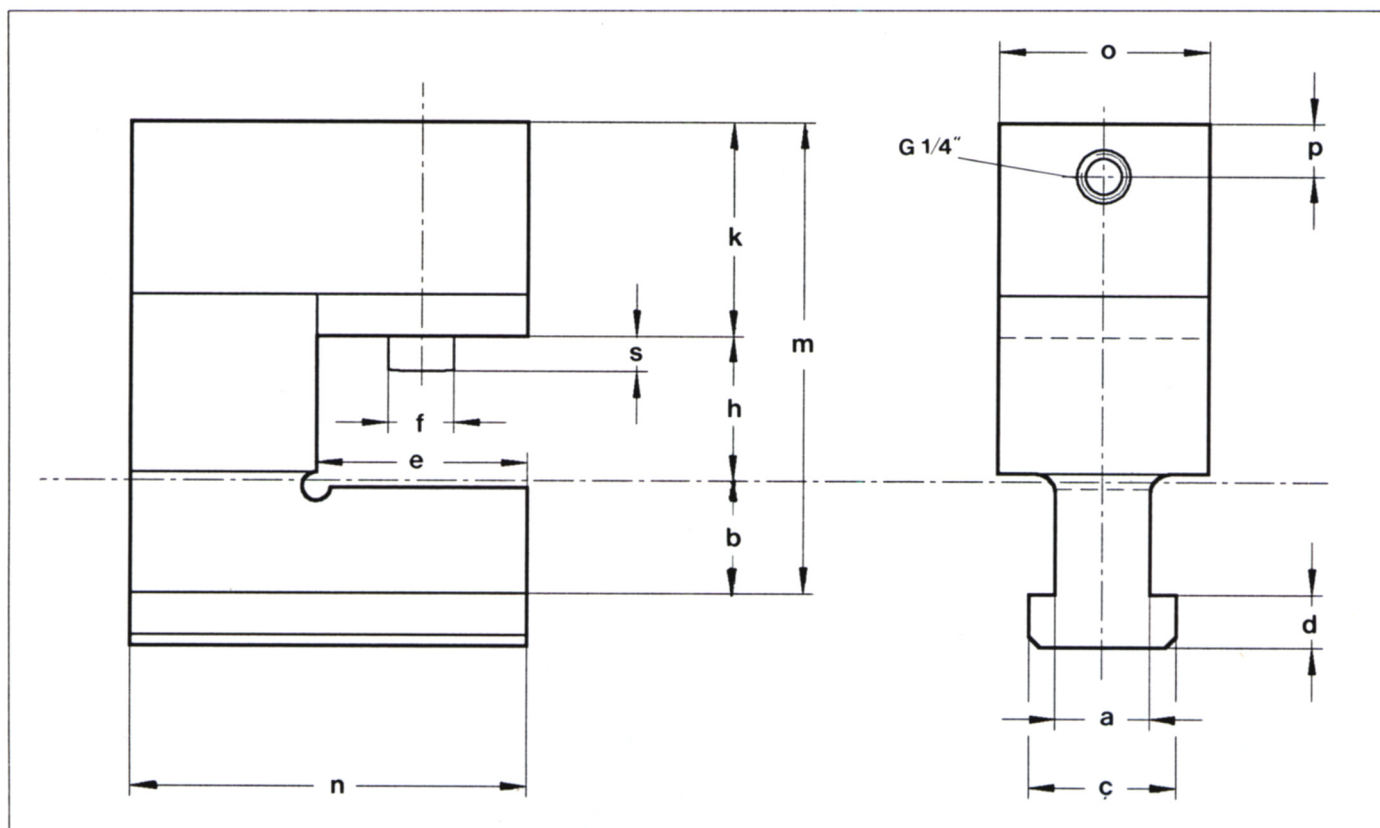
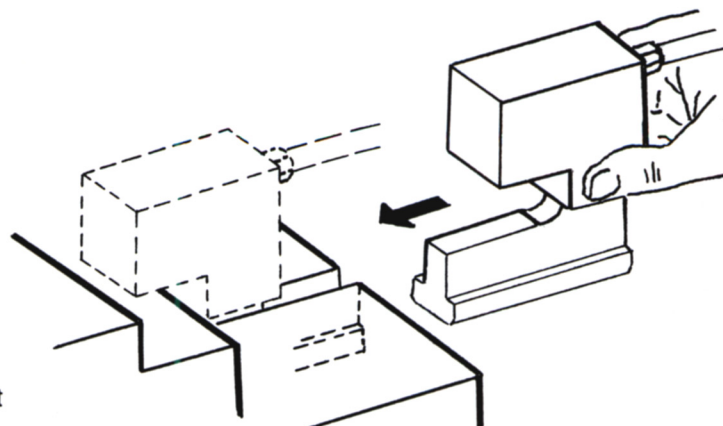
### Standard T-Slot Dimensions

| Diameter of T-Bolt | Width of Throat A | Depth of Throat B |         | Head Space Dimensions and Tolerances |                   |         |                 |                   |         |
|--------------------|-------------------|-------------------|---------|--------------------------------------|-------------------|---------|-----------------|-------------------|---------|
|                    |                   |                   |         | Width C                              |                   |         | Depth D         |                   |         |
|                    |                   | Maximum           | Minimum | Maximum (Basic)                      | Tolerance (Minus) | Minimum | Maximum (Basic) | Tolerance (Minus) | Minimum |
| 1/4                | 9/32              | 3/8               | 1/8     | 9/16                                 | 0.063             | 1/2     | 15/64           | 0.031             | 13/64   |
| 5/16               | 11/32             | 7/16              | 5/32    | 21/32                                | 0.063             | 19/32   | 17/64           | 0.031             | 15/64   |
| 3/8                | 7/16              | 9/16              | 7/32    | 25/32                                | 0.063             | 23/32   | 21/64           | 0.031             | 19/64   |
| 1/2                | 9/16              | 11/16             | 5/16    | 31/32                                | 0.063             | 29/32   | 25/64           | 0.031             | 23/64   |
| 5/8                | 11/16             | 7/8               | 7/16    | 1 1/4                                | 0.063             | 1 3/16  | 31/64           | 0.031             | 29/64   |
| 3/4                | 13/16             | 1 1/16            | 9/16    | 1 15/32                              | 0.094             | 1 3/8   | 5/8             | 0.031             | 19/32   |
| 1                  | 1 1/16            | 1 1/4             | 3/4     | 1 27/32                              | 0.094             | 1 3/4   | 53/64           | 0.047             | 25/32   |
| 1 1/4              | 1 5/16            | 1 9/16            | 1       | 2 7/32                               | 0.094             | 2 1/8   | 1 3/32          | 0.063             | 1 1/32  |
| 1 1/2              | 1 9/16            | 1 15/16           | 1 1/4   | 2 21/32                              | 0.094             | 2 9/16  | 1 11/32         | 0.063             | 1 9/32  |

## Hydraulic C-Frame Clamp

### Features:

- A safe, quick and simple way to clamp Dies, Workpieces and Fixtures
- Easily inserted into existing T-Slots, adapts to any Die width
- Allows semi-automated Die change operations
- Hydraulic activation assures quick and effortless clamping
- Generous piston stroke allows for variations in Die shoe thickness
- Compact design assures minimal space requirement



| Type   | Clamp Force<br>(tons at 5800 psi) | Stroke<br>$s$ | $a$ | $b$ | $c$ | $d$ | $e$  | $f$ | $h$ | $k$  | $m$        | $n$  | $o$  | $p$ | Oil Volume<br>(in <sup>3</sup> ) |
|--------|-----------------------------------|---------------|-----|-----|-----|-----|------|-----|-----|------|------------|------|------|-----|----------------------------------|
| HEE 25 | 2.75                              | .35           | *   | *   | *   | *   | 1.57 | .55 | *   | 1.89 | $h + 2.24$ | 2.95 | 1.57 | .43 | .40                              |
| HEE 40 | 4.4                               | .39           | *   | *   | *   | *   | 1.71 | .70 | *   | 2.17 | $h + 2.56$ | 3.54 | 1.97 | .43 | .61                              |
| HEE 63 | 7                                 | .47           | *   | *   | *   | *   | 2.17 | .70 | *   | 2.36 | $h + 2.84$ | 4.33 | 2.17 | .43 | 1.16                             |

(\*) customer specified



# Technical Data

## Operation Procedure (HEE): To Clamp

1. Visually inspect clamp for obvious defects and make certain that the hydraulic power supply is disactivated and the clamp piston is in its fully retracted position.
2. Place clamp into T-slot.
3. Push clamp forward (toward die) as far as possible to ensure proper seating. Make

certain that the die shoe surface is free of debris and lubricants.

4. Inspect the gap between the clamping cylinder and die surface to ensure that it does not exceed the stroke "s" of the clamp. Warning: Clamp will not generate clamp force if gap exceeds the stroke "s".
5. Activate hydraulic supply

**To Unclamp** - Reverse procedure

## Ordering Information

When ordering or requesting a quote, please take a few minutes to complete the following data sheet.

### Necessary Data

Range of die shoe thickness: (min. and max. values must be within .25" of each other) \_\_\_\_\_ min. \_\_\_\_\_ max.

Press tonnage: \_\_\_\_\_

Weight of dies: \_\_\_\_\_ top \_\_\_\_\_ bottom

Clearance between ram and bolster (shut height): \_\_\_\_\_

### T-Slot Dimensions

If standard: \_\_\_\_\_

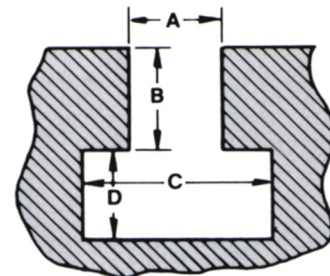
If non-standard:

Width of throat (A) \_\_\_\_\_

Depth of throat (B) \_\_\_\_\_

Width of head (C) \_\_\_\_\_

Depth of head (D) \_\_\_\_\_



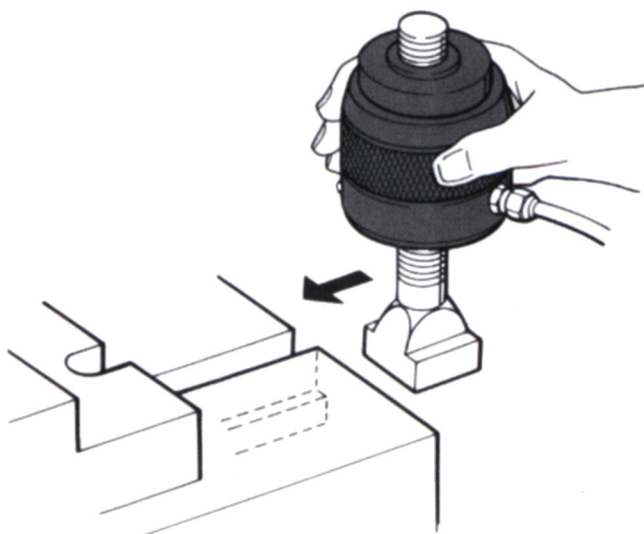
**Note:** Please give depth of throat dimension "B" even if using a standard T-slot.

### Standard T-Slot Dimensions

| Diameter of T-Bolt | Width of Throat A | Depth of Throat B |         | Head Space Dimensions and Tolerances |                   |         |                 |                   |         |
|--------------------|-------------------|-------------------|---------|--------------------------------------|-------------------|---------|-----------------|-------------------|---------|
|                    |                   |                   |         | Width C                              |                   |         | Depth D         |                   |         |
|                    |                   | Maximum           | Minimum | Maximum (Basic)                      | Tolerance (Minus) | Minimum | Maximum (Basic) | Tolerance (Minus) | Minimum |
| 1/4                | 9/32              | 3/8               | 1/8     | 9/16                                 | 0.063             | 1/2     | 15/64           | 0.031             | 13/64   |
| 5/16               | 11/32             | 7/16              | 5/32    | 21/32                                | 0.063             | 19/32   | 17/64           | 0.031             | 15/64   |
| 3/8                | 7/16              | 9/16              | 7/32    | 25/32                                | 0.063             | 23/32   | 21/64           | 0.031             | 19/64   |
| 1/2                | 9/16              | 11/16             | 5/16    | 31/32                                | 0.063             | 29/32   | 25/64           | 0.031             | 23/64   |
| 5/8                | 11/16             | 7/8               | 7/16    | 1 1/4                                | 0.063             | 13/16   | 31/64           | 0.031             | 29/64   |
| 3/4                | 13/16             | 1 1/16            | 9/16    | 1 15/32                              | 0.094             | 13/8    | 5/8             | 0.031             | 19/32   |
| 1                  | 1 1/16            | 1 1/4             | 3/4     | 1 27/32                              | 0.094             | 13/4    | 53/64           | 0.047             | 25/32   |
| 1 1/4              | 1 5/16            | 1 9/16            | 1       | 2 7/32                               | 0.094             | 2 1/8   | 13/32           | 0.063             | 1 1/32  |
| 1 1/2              | 1 9/16            | 1 15/16           | 1 1/4   | 2 21/32                              | 0.094             | 2 9/16  | 1 11/32         | 0.063             | 1 9/32  |

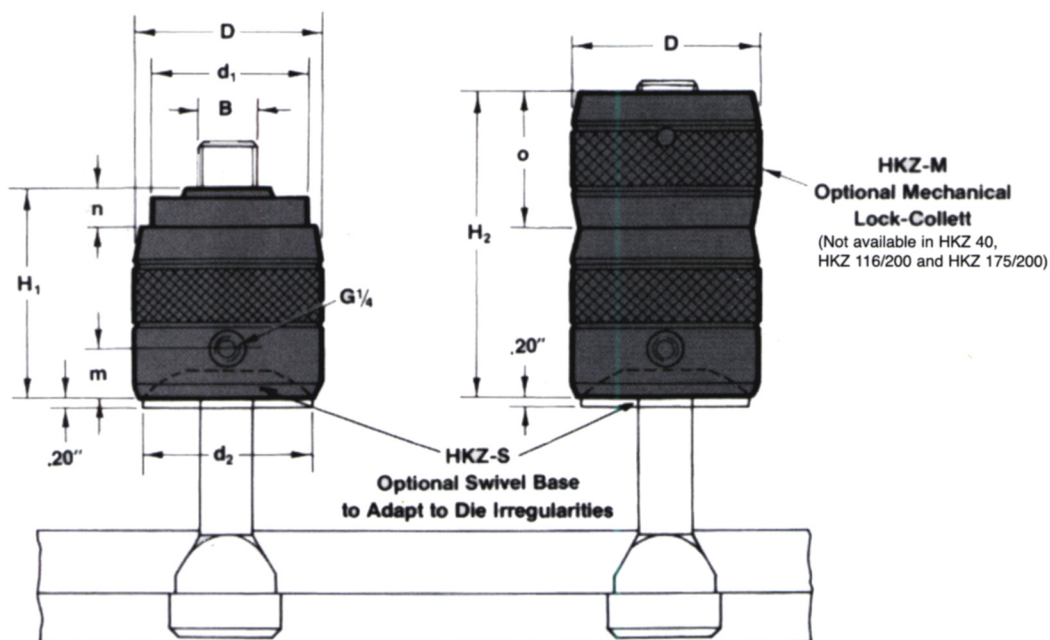


## Hydraulic T-Bolt Clamp



### Features

- A safe, quick and simple way to clamp Dies, Workpieces, and Fixtures
- Easily inserted into existing T-slots. Clamps at any position along the length of the T-bolt
- Hydraulically operated. Available with or without Mechanical Lock-Collett
- Self-locking in clamped position with the Mechanical Lock-Collett option
- Can be used with existing or specially hardened T-bolts



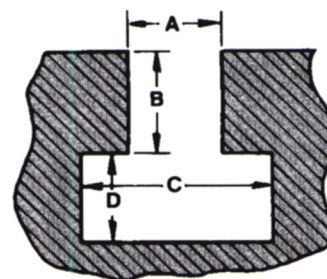
| Type        | Clamp Force<br>(tons) |          | Stroke<br>S | T-Bolt Dia<br>B         | H <sub>1</sub> | H <sub>2</sub> | D    | d <sub>1</sub> | d <sub>2</sub> | m   | n   | o    |
|-------------|-----------------------|----------|-------------|-------------------------|----------------|----------------|------|----------------|----------------|-----|-----|------|
|             | 3000psi               | 6000 psi |             |                         |                |                |      |                |                |     |     |      |
| HKZ 40      | 2.2                   | 4.4      | .47         | 5/8", M16               | 3.15           | N/A            | 2.76 | N/A            | 2.20           | .49 | N/A | N/A  |
| HKZ 65      | 3.5                   | 7.0      | .47         | 5/8", M16 and 3/4", M20 | 3.54           | 5.20           | 3.15 | 2.7            | 2.68           | .83 | .47 | 2.25 |
| HKZ 104     | 5.7                   | 11.4     | .47         | 7/8", M24 and 1", M30   | 3.94           | 5.91           | 3.54 | 2.83           | 3.07           | .84 | .79 | 2.88 |
| HKZ 116/200 | 13.0                  | 26.0     | .35         | 1", M30 and 1-1/4", M36 | 4.72           | N/A            | 4.72 | 3.82           | N/A            | .94 | .79 | N/A  |
| HKZ 175/200 | 19.5                  | N/A      | .35         | 1", M30 and 1-1/4", M36 | 4.72           | N/A            | 5.51 | 4.76           | N/A            | .94 | .79 | N/A  |

## Hydraulic T-Bolt Clamp

### Operating Procedures: To Clamp

1. Visually inspect clamp and T-bolt-for obvious defects. Clean off any debris or chips that may be in the T-slot or on the die shoe surface.
2. Place clamp and T-bolt into T-slot.
3. Unscrew clamp sufficiently so that it easily passes over the die shoe.
4. Push clamp and T-bolt assembly forward (toward die) as far as possible to ensure proper sealing. Make certain that the die shoe surface is free of debris and lubricants.
5. Pre-clamp by hand screwing the unit down as far as possible while still allowing free access to the hydraulic port located at the front of the clamp. Make certain that the clamp is down to within 1/16" or less of the die shoe surface before activating the hydraulic pump and clamping the HKZ unit.

6. If using the "M"-Type Mechanical Lock-Collett one needs to turn down the collett on every clamped HKZ unit **after** the hydraulic circuit has been activated. Once the "M" collett has been hand-turned so that it's snug on top of the hydraulic portion of the HKZ cylinder, the hydraulic pump **must be turned off** and all line pressure going to the clamps must be at **zero** psi in order for the units to be hydraulically independent and mechanically fail safe.



**Note:** Please give depth of throat dimension "B" even if using a standard T-slot.

### ORDERING INFORMATION

When ordering or requesting a quote, please take a few minutes to complete the following data sheet.

#### Necessary Data

Range of die shoe thickness: \_\_\_\_\_ min. \_\_\_\_\_ max.

Press tonnage: \_\_\_\_\_

Weight of dies: \_\_\_\_\_ top \_\_\_\_\_ bottom

Clearance between ram and bolster (shut height): \_\_\_\_\_

#### T-Slot Dimensions

If standard: \_\_\_\_\_

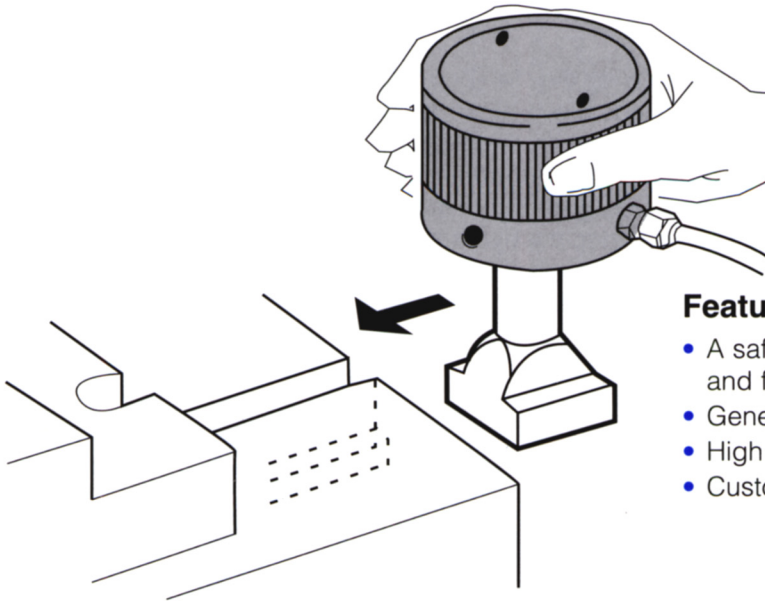
If **not-standard**: Width of throat (A) \_\_\_\_\_ Depth of throat (B) \_\_\_\_\_  
Width of head (C) \_\_\_\_\_ Depth of head (D) \_\_\_\_\_

### STANDARD T-SLOT DIMENSIONS

| Diameter of T-Bolt | Width of Throat A | Depth of Throat B |         | Head Space Dimensions and Tolerances |                   |         |                 |                   |         |
|--------------------|-------------------|-------------------|---------|--------------------------------------|-------------------|---------|-----------------|-------------------|---------|
|                    |                   |                   |         | Width C                              |                   |         | Width D         |                   |         |
|                    |                   | Maximum           | Minimum | Maximum (Basic)                      | Tolerance (Minus) | Minimum | Maximum (Basic) | Tolerance (Minus) | Minimum |
| 1/2                | 9/16              | 11/16             | 5/16    | 31/32                                | 0.063             | 29/32   | 25/64           | 0.031             | 23/64   |
| 5/8                | 11/16             | 7/8               | 7/16    | 1-1/4                                | 0.063             | 1-3/16  | 31/64           | 0.031             | 29/64   |
| 3/4                | 13/16             | 1-1/16            | 9/16    | 1-15/32                              | 0.094             | 1-3/8   | 5/8             | 0.031             | 19/32   |
| 1                  | 1-1/16            | 1-1/4             | 3/4     | 1-27/32                              | 0.094             | 1-3/4   | 53/64           | 0.047             | 25/32   |
| 1-1/4              | 1-5/16            | 1-9/16            | 1       | 2-7/32                               | 0.094             | 2-1/8   | 1-3/32          | 0.063             | 1-1/32  |
| 1-1/2              | 1-9/16            | 1-15/16           | 1-1/4   | 2-21/32                              | 0.094             | 2-9/16  | 1-11/32         | 0.063             | 1-9/32  |



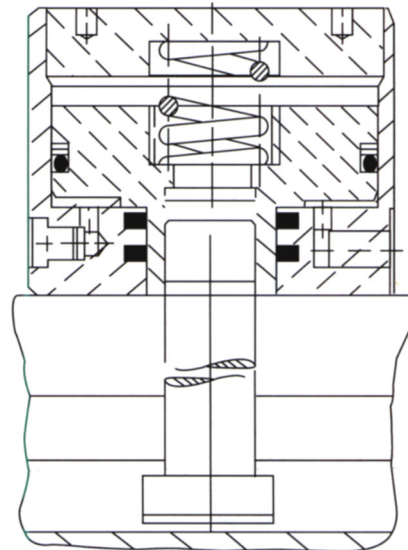
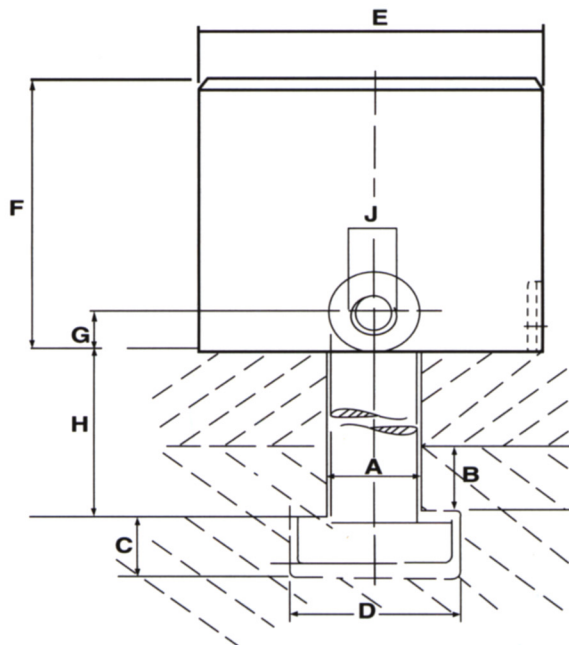
## T-Bolt Clamp



### Features

- A safe, quick and simple way to clamp dies, work pieces and fixtures
- Generous clamping stroke
- High Clamp force at low operating pressure
- Custom T-bolt configurations available

| Clamp Model | Recommended T-Slot Size |
|-------------|-------------------------|
| HTB-40      | 1/2" - 3/4"             |
| HTB-63      | 3/4" - 7/8"             |
| HTB-100     | 7/8" - 1"               |
| HTB-160     | 1-1/4" - 1-1/2"         |



| Model No. | Clamp Force | Operating Pressure | Stroke "S" | a | b | c | d | E     | F     | G     | H | J                             |
|-----------|-------------|--------------------|------------|---|---|---|---|-------|-------|-------|---|-------------------------------|
| HTB-40    | 4.4 tons    | 2900 psi           | 0.32"      | * | * | * | * | 2.68" | 2.52" | 0.59" | * | G <sup>1</sup> / <sub>4</sub> |
| HTB-60    | 7 tons      | 2900 psi           | 0.32"      | * | * | * | * | 3.27" | 3.30" | 0.59" | * | G <sup>1</sup> / <sub>4</sub> |
| HTB-100   | 11 tons     | 2900 psi           | 0.32"      | * | * | * | * | 3.94" | 3.30" | 0.59" | * | G <sup>1</sup> / <sub>4</sub> |
| HTB-160   | 18 tons     | 2900 psi           | 0.32"      | * | * | * | * | 5.51" | 3.54" | 0.59" | * | G <sup>1</sup> / <sub>4</sub> |

\* Customer specified

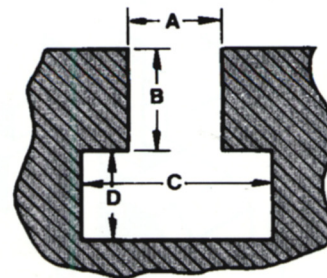


## T-Bolt Clamp

### Operating Procedures:

#### To Clamp

1. Visually inspect clamp and T-bolt-for obvious defects. Clean off any debris or chips that may be in the T-slot or on the die shoe surface.
2. Place clamp and T-bolt into T-slot.
3. Push clamp and T-bolt assembly forward (toward die) as far as possible to ensure proper seating. Make certain that the die shoe surface is free of debris and lubricants.
4. Activate hydraulic system.
5. Monitor hydraulic pressure during press operation.



**Note:** Please give depth of throat dimension "B" even if using a standard T-slot.

### ORDERING INFORMATION

When ordering or requesting a quote, please take a few minutes to complete the following data sheet.

#### Necessary Data

Range of die shoe thickness: \_\_\_\_\_ min. \_\_\_\_\_ max.

Press tonnage: \_\_\_\_\_

Weight of dies: \_\_\_\_\_ top \_\_\_\_\_ bottom

Clearance between ram and bolster (shut height): \_\_\_\_\_

#### T-Slot Dimensions

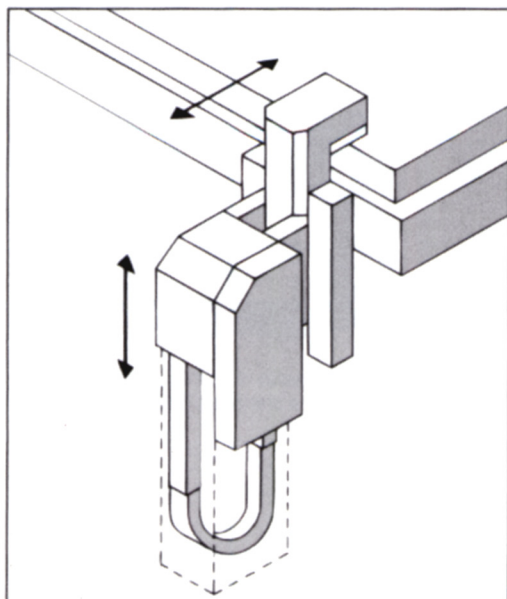
If standard: \_\_\_\_\_

If not-standard: Width of throat (A) \_\_\_\_\_  
 Depth of throat (B) \_\_\_\_\_  
 Width of head (C) \_\_\_\_\_  
 Depth of head (D) \_\_\_\_\_

### STANDARD T-SLOT DIMENSIONS

| Diameter of T-Bolt | Width of Throat A | Depth of Throat B |         | Head Space Dimensions and Tolerances |                   |         |                 |                   |         |
|--------------------|-------------------|-------------------|---------|--------------------------------------|-------------------|---------|-----------------|-------------------|---------|
|                    |                   |                   |         | Width C                              |                   |         | Width D         |                   |         |
|                    |                   | Maximum           | Minimum | Maximum (Basic)                      | Tolerance (Minus) | Minimum | Maximum (Basic) | Tolerance (Minus) | Minimum |
| 1/2                | 9/16              | 11/16             | 5/16    | 31/32                                | 0.063             | 29/32   | 25/64           | 0.031             | 23/64   |
| 5/8                | 11/16             | 7/8               | 7/16    | 1-1/4                                | 0.063             | 1-3/16  | 31/64           | 0.031             | 29/64   |
| 3/4                | 13/16             | 1-1/16            | 9/16    | 1-15/32                              | 0.094             | 1-3/8   | 5/8             | 0.031             | 19/32   |
| 1                  | 1-1/16            | 1-1/4             | 3/4     | 1-27/32                              | 0.094             | 1-3/4   | 53/64           | 0.047             | 25/32   |
| 1-1/4              | 1-5/16            | 1-9/16            | 1       | 2-7/32                               | 0.094             | 2-1/8   | 1-3/32          | 0.063             | 1-1/32  |
| 1-1/2              | 1-9/16            | 1-15/16           | 1-1/4   | 2-21/32                              | 0.094             | 2-9/16  | 1-11/32         | 0.063             | 1-9/32  |

## Hydraulic Sinking Traveling Clamp



(shown with HEE)

### Area of application

The hydraulic positioning unit model HFT is designed for bolster clamping applications that require a traveling clamp. Its purpose is to position hydraulic clamps (either the HKZ T-Bolt style or the HEE C-Frame style) automatically at the die location. The unique feature of the HFT is the ability to "sink" below the bolster surface so that the die can be removed without interference.

### Mode of operation

The positioning unit raises the clamp above the bolster surface and aligns the clamp with the t-slot. By means of an electrical drive the unit next moves the clamp in the t-slot to the die location. Upon sensing the die, the clamp is activated and secures the die. To unclamp, the clamp is released, retracted via the electrical drive and finally lowered below the bolster surface.

#### **Movement sequence for applying the clamping force:**

- Raising the clamp unit to the level of the T-slot
- Presenting the clamp unit to the die to be clamped
- Clamping stroke of the clamp unit  
(release the clamp unit in the reverse order)

### Distinguishing features

When a die is changed, the position unit returns the clamp unit from the work area automatically, thus ensuring a free working area. Access to the work area is additionally simplified by the lowering of the drive and the clamp unit.

### Technical data

|                     |   |
|---------------------|---|
| Motor:              | DC motor.   |
| Supply voltage:     | 24 volt DC or 120 volt AC   |
| Switches:           | 4 inductive proximity switches<br>p-n-p normally open contact<br>10-30 V DC |
| Travel distance:    | up to 1000 mm   |
| Smallest T-slot:    | 18 mm (according to DIN 650)  |
| Sliding speed:      | 125 mm/s  |
| Operating pressure: | 400 bar (clamp unit)<br>100 bar (lifting cylinder)                          |
| Wiring:             | Harting plug connection HAN 25 D*   |

\* Alternative plug connections available on request.

In addition, a pressure switch is required in the hydraulic unit for controlling the clamping pressure.

### **Electric control of the following function (switches):**

|      |                                  |      |
|------|----------------------------------|------|
| HFT: | Clamp unit in parked position    | (S1) |
|      | Clamp unit positioned at the die | (S2) |
|      | Lifting cylinder lowered         | (S3) |
|      | Lifting cylinder extended        | (S4) |

### Advantages

- Infinitely variable adjustment to differing die sizes
- Large clamping tolerance
- Free bolster surface for die change.

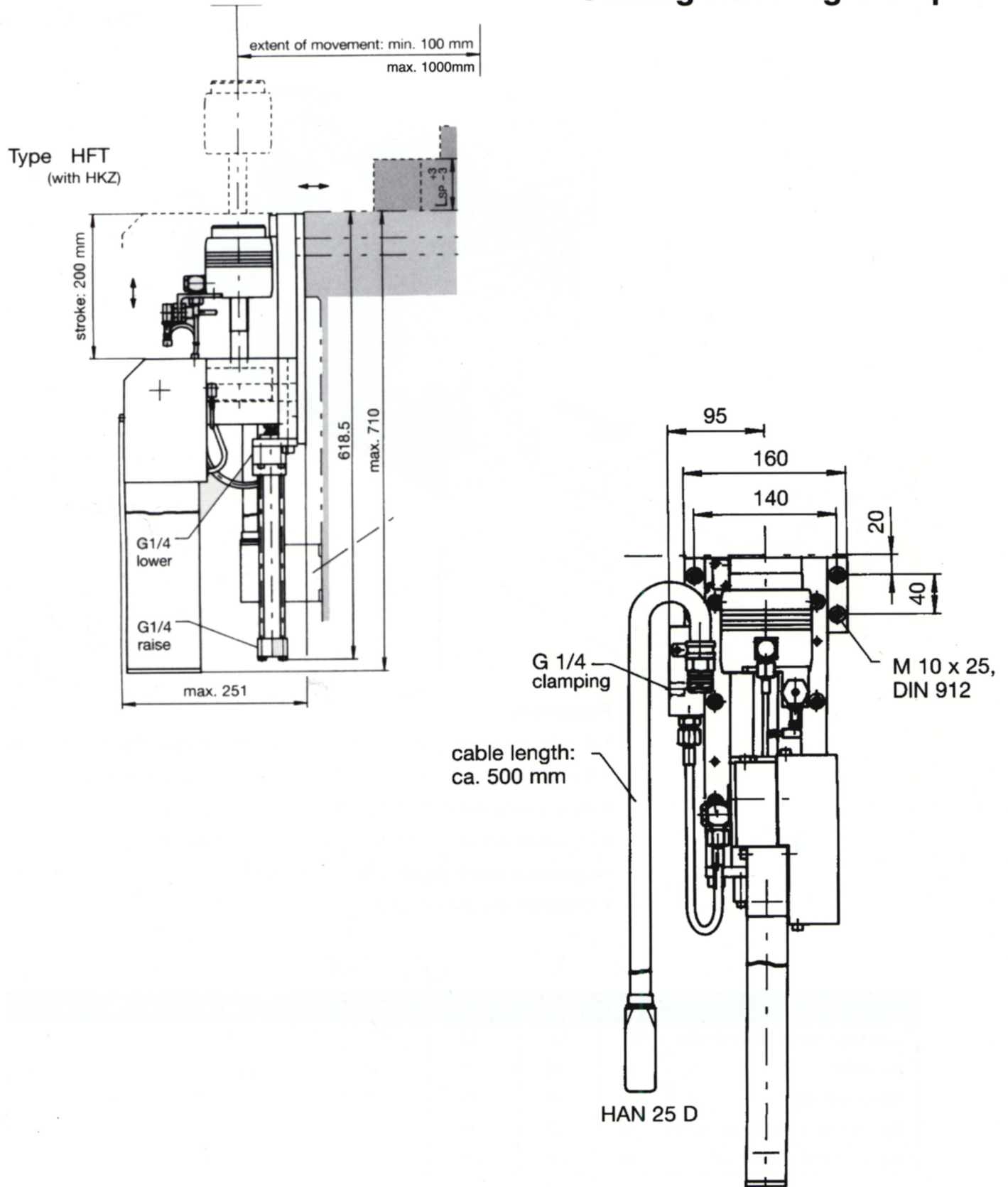
### Construction

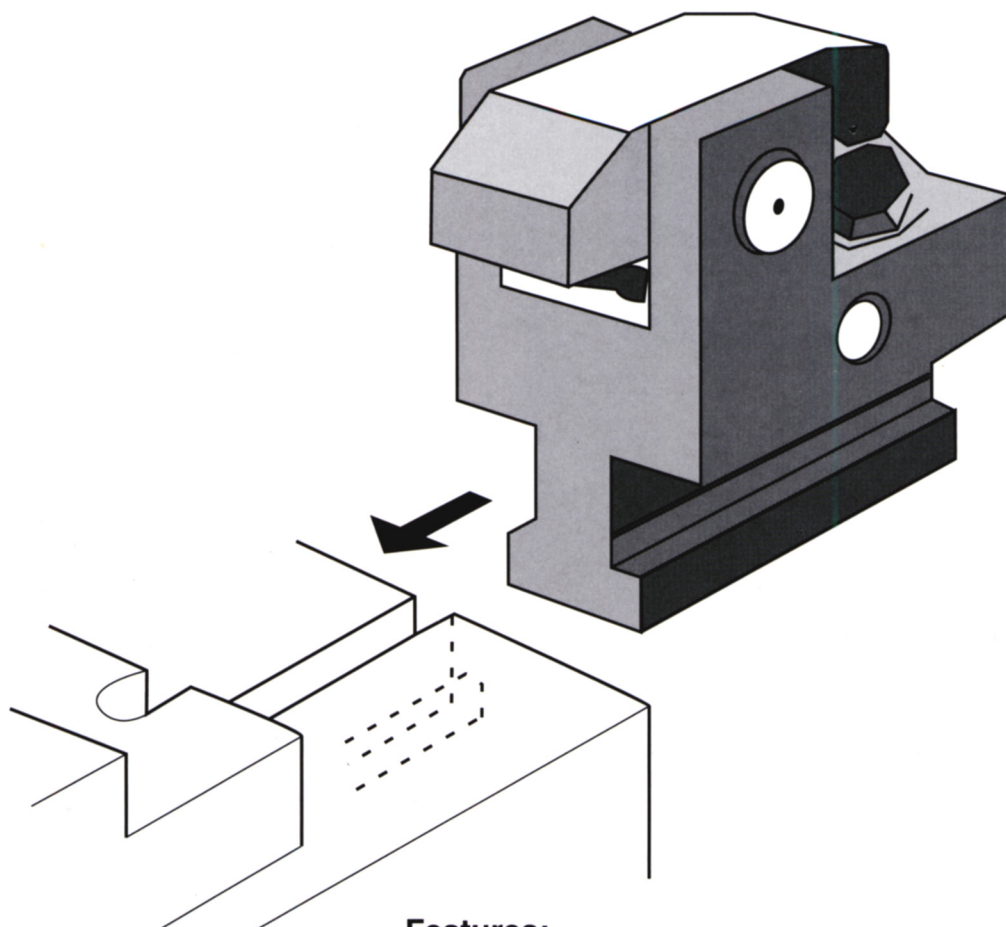
The clamp has a gunmetal-finish housing.

1.300



Hydraulic  
**Sinking Traveling Clamp**





**Features:**

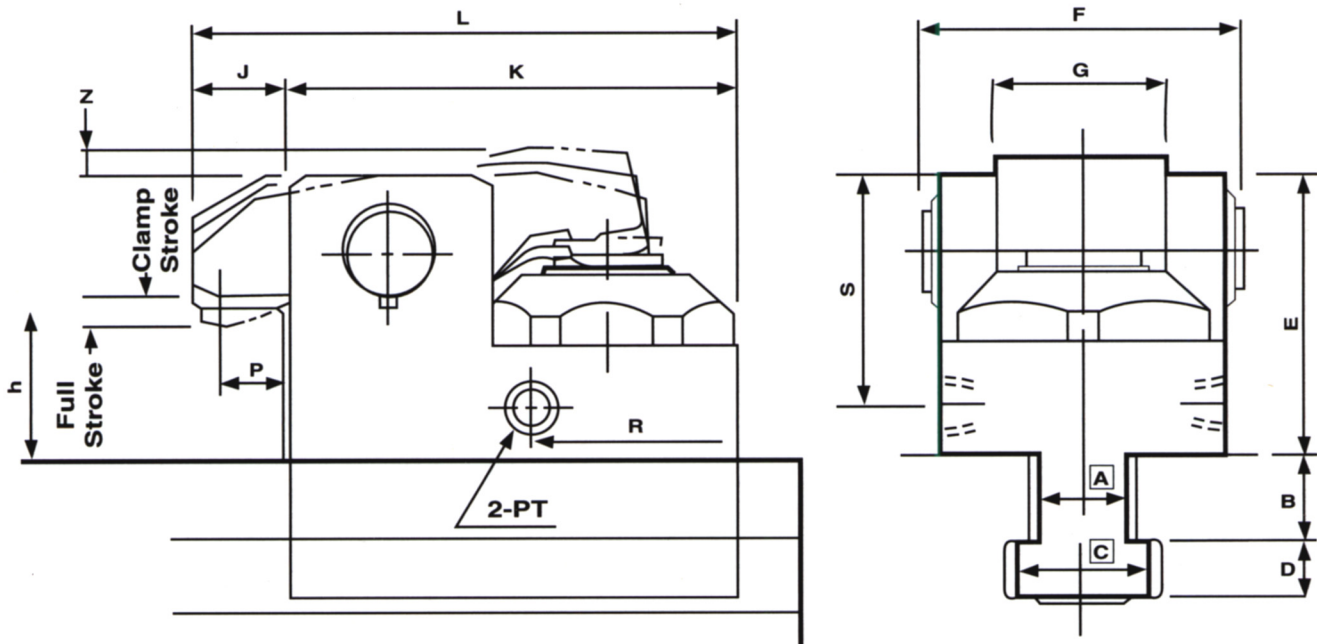
- A safe, quick and simple way to clamp dies, workpieces and fixtures
- Easily inserted into existing T-slots, adapts to any die width
- Allows semi-automated die change operation
- Hydraulic activation assures quick and effortless clamping
- Generous piston stroke allows for variations in die shoe thickness
- Compact jaw design requires minimal clamping surface

| MODEL                              | HLC 10 | HCL16 | HCL25 | HCL40 | HCL63 | HCL100 | HCL160 | HCL250 |
|------------------------------------|--------|-------|-------|-------|-------|--------|--------|--------|
| Clamping Force (at 3500 psi) tons  | 1.0    | 1.7   | 2.7   | 4.2   | 6.7   | 10.6   | 17.0   | 26.5   |
| Full Stroke in.                    | .24    | .28   | .28   | .28   | .31   | .31    | .31    | .31    |
| Clamping Stroke in.                | .12    | .14   | .14   | .14   | .16   | .16    | .16    | .16    |
| Cylinder Cap. @ Full Stroke cu.in. | .15    | .29   | .44   | .73   | 1.32  | 2.12   | 3.37   | 5.34   |
| Minimum T-slot "a" Dimension       | .50    | .50   | .625  | .750  | 8.75  | 1.00   | 1.25   | 1.50   |



### Notes:

1. Clamping strokes and full strokes are for standard models; custom strokes available on request.
2. Dimensions A, B, C and D determined by T-slot dimensions.
3. Specify T-slot dimensions (a, b, c, d) and clamping height (h) when ordering.
4. Specify dimension "h" down to 0.20" increments.
5. Clamps with a dimension greater than Max. h are also optionally available.



| Type    | MIN E | F    | G    | J    | K    | L     | h           | P   | R    | S    | PT  |
|---------|-------|------|------|------|------|-------|-------------|-----|------|------|-----|
| HLC 10  | 2.01  | 2.09 | 1.02 | .71  | 2.76 | 3.46  | .75-1.125   | .49 | 1.46 | 1.61 | 1/8 |
| HLC 16  | 2.01  | 2.09 | 1.02 | .71  | 2.76 | 3.46  | .75-1.125   | .49 | 1.46 | 1.61 | 1/8 |
| HLC 25  | 2.32  | 2.48 | 1.26 | .79  | 3.31 | 4.09  | 1.00-1.375  | .55 | 1.71 | 1.85 | 1/4 |
| HLC 40  | 2.68  | 2.87 | 1.57 | .91  | 4.15 | 5.06  | 1.00-1.375  | .63 | 2.02 | 2.20 | 1/4 |
| HLC 63  | 3.19  | 3.66 | 1.97 | 1.18 | 5.12 | 6.30  | 1.125-1.875 | .79 | 1.93 | 2.72 | 1/4 |
| HLC 100 | 4.25  | 4.09 | 2.17 | 1.18 | 6.26 | 7.44  | 1.50-2.375  | .79 | 2.64 | 3.74 | 1/4 |
| HLC 160 | 5.12  | 4.92 | 2.36 | 1.18 | 7.83 | 9.02  | 1.75-2.625  | .79 | 2.80 | 4.57 | 1/4 |
| HLC 250 | 5.98  | 5.98 | 2.87 | 1.18 | 9.45 | 10.63 | 2.00-2.75   | .79 | 2.73 | 5.31 | 1/4 |

### Operation Procedure:

1. Visually inspect clamp for obvious defects and make certain that the hydraulic power supply is disactivated and that the clamp jaw is fully tipped back (hydraulic piston is its retracted position).
2. Place clamp into T-slot.
3. Push clamp forward (toward die) as far as possible to ensure proper seating. Make certain that the die shoe surface is free of debris and lubricants.
4. Inspect the gap between the clamping jaw and the die surface to ensure that it does not exceed the full stroke of the clamp. **WARNING:** Clamp will not generate clamp force if gap exceeds the full stroke.
5. Activate hydraulic supply.

**TO UNCLAMP:** Reverse procedure.

### ORDERING INFORMATION

When ordering or requesting a quote, please take a few minutes to complete the following data sheet.

#### Necessary Data

Range of die shoe thickness: (min. and max. values must be within .25" of each other)

\_\_\_\_\_ min. \_\_\_\_\_ max.

Press tons: \_\_\_\_\_

Weight of dies: \_\_\_\_\_ top \_\_\_\_\_ bottom

Clearance between ram and bolster (shut height): \_\_\_\_\_

T-Slot Dimensions

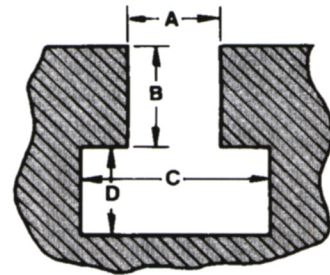
If standard: \_\_\_\_\_

*If not-standard:* Width of throat (A) \_\_\_\_\_

Depth of throat (B) \_\_\_\_\_

Width of head (C) \_\_\_\_\_

Depth of head (D) \_\_\_\_\_



**Note:** Please give depth of throat dimension "B" even if using a standard T-slot.

### STANDARD T-SLOT DIMENSIONS

| Diameter of T-Bolt | Width of Throat A | Depth of Throat B |         | Head Space Dimensions and Tolerances |                   |         |                 |                   |         |
|--------------------|-------------------|-------------------|---------|--------------------------------------|-------------------|---------|-----------------|-------------------|---------|
|                    |                   |                   |         | Width C                              |                   |         | Width D         |                   |         |
|                    |                   | Maximum           | Minimum | Maximum (Basic)                      | Tolerance (Minus) | Minimum | Maximum (Basic) | Tolerance (Minus) | Minimum |
| 1/2                | 9/16              | 11/16             | 5/16    | 31/32                                | 0.063             | 29/32   | 25/64           | 0.031             | 23/64   |
| 5/8                | 11/16             | 7/8               | 7/16    | 1-1/4                                | 0.063             | 1-3/16  | 31/64           | 0.031             | 29/64   |
| 3/4                | 13/16             | 1-1/16            | 9/16    | 1-15/32                              | 0.094             | 1-3/8   | 5/8             | 0.031             | 19/32   |
| 1                  | 1-1/16            | 1-1/4             | 3/4     | 1-27/32                              | 0.094             | 1-3/4   | 53/64           | 0.047             | 25/32   |
| 1-1/4              | 1-5/16            | 1-9/16            | 1       | 2-7/32                               | 0.094             | 2-1/8   | 1-3/32          | 0.063             | 1-1/32  |
| 1-1/2              | 1-9/16            | 1-15/16           | 1-1/4   | 2-21/32                              | 0.094             | 2-9/16  | 1-11/32         | 0.063             | 1-9/32  |



**Hydraulic  
Traveling Clamp****Area of application**

The latest OPTIMA Traveling Mechanisms uses Hollow Piston Cylinder Clamps (HKZ) to automatically clamp varying die widths. This model can be used in standard t-slots and is extremely easy to install. No die modifications are required, clamps fit into existing t-bolt cut-outs. All electrical connections are incorporated into a single quick disconnect plug. This HFS is ideal for new presses as well as retro-fit applications.

**Functional Description**

The HFS model is driven by an extremely rugged chain design that rides in the t-slot "head" area. This compact and maintenance free drive mechanism allows the clamps to be positioned anywhere along their travel range. Once the clamp reaches the die, its travel is halted by a proximity sensor and the clamp is hydraulically energized thereby securing the die. Clamp forces are continuously monitored via pressure switches in a redundant dual safety circuit. When unclamping, the clamp releases and is automatically retracted to its "home position".

**Features and Advantages**

- Travel of up to 40 inches
- Use of New or Existing T-Slots as small as 3/4 inch
- Operating Pressures of 2900 or 5800 psi
- Compact chain drive with Reversible 24VDC (115VAC) motor
- Electronical monitoring via two Proximity Switches
- Single Plug Multi-Pin Electrical Connection
- Generous Clamping Stroke (0.47")

*The following functions are Electronically Monitored*

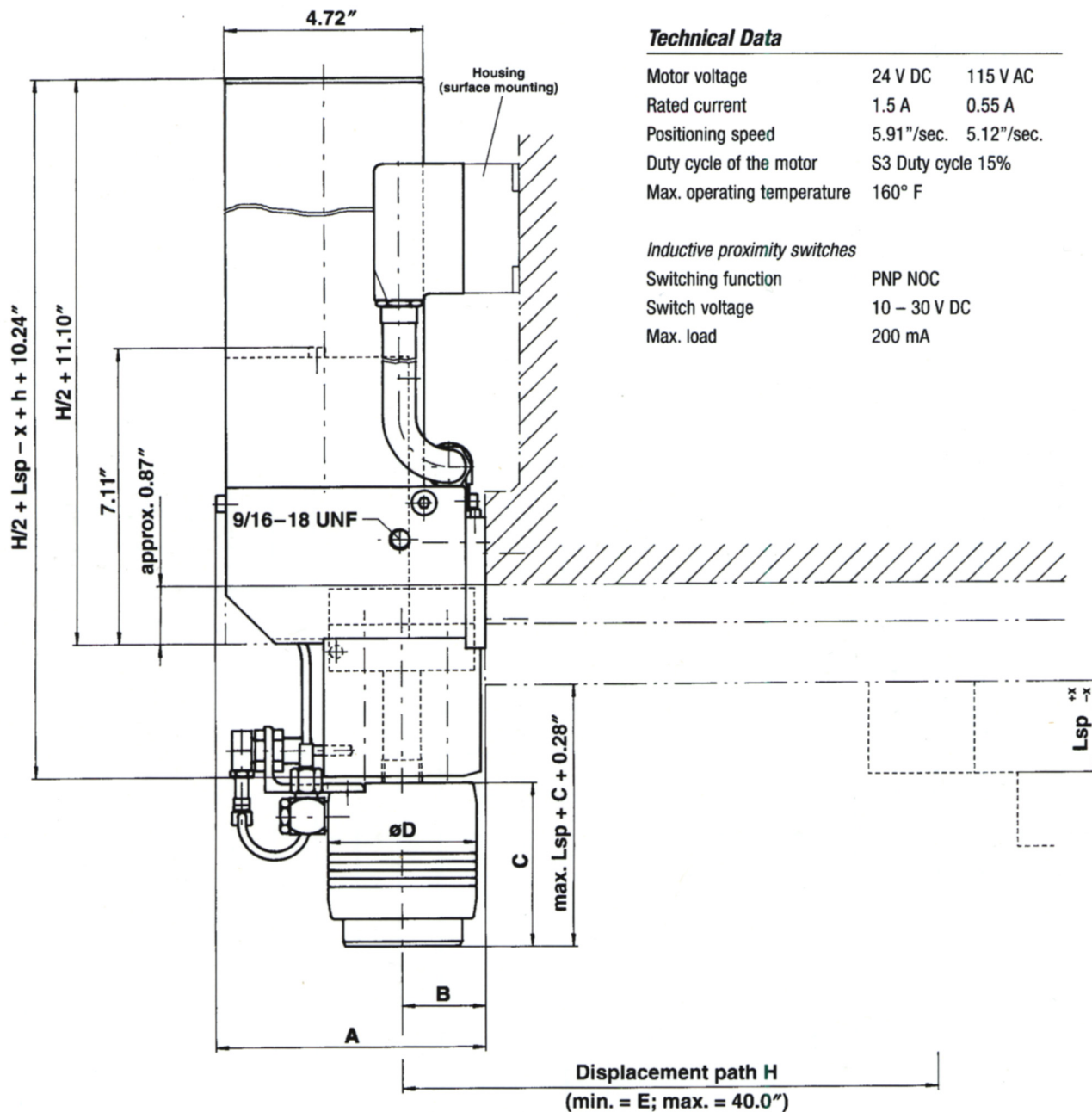
- Clamp Traveled Back (Home)
- Clamp Traveled Forward (Die)

**Additional Equipment Available**

- Pump/Tank Unit with Fail Safe Check-Valve Circuits
- PLC Control Panels
- Operator Stations

Note: For Bolster Applications please inquire about our HFT Model.

## Hydraulic Traveling Clamp



### Technical Data

|                            |                   |            |
|----------------------------|-------------------|------------|
| Motor voltage              | 24 V DC           | 115 V AC   |
| Rated current              | 1.5 A             | 0.55 A     |
| Positioning speed          | 5.91"/sec.        | 5.12"/sec. |
| Duty cycle of the motor    | S3 Duty cycle 15% |            |
| Max. operating temperature | 160° F            |            |

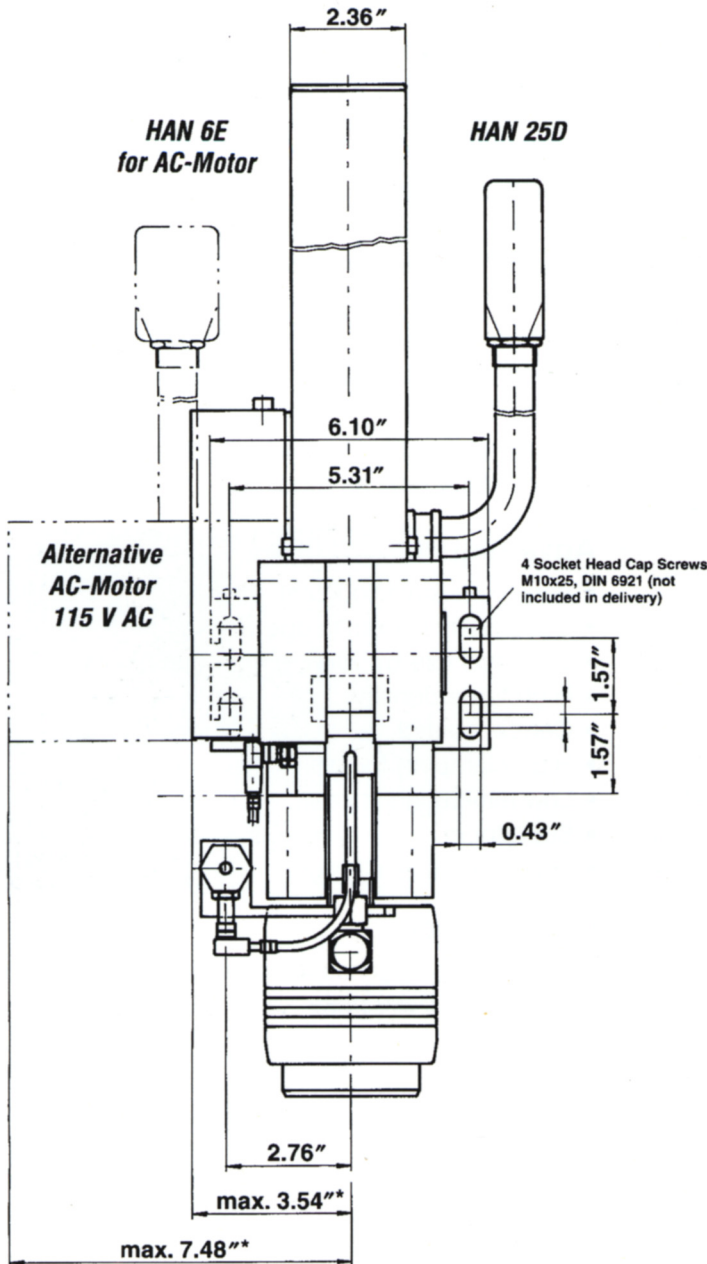
### Inductive proximity switches

|                    |              |
|--------------------|--------------|
| Switching function | PNP NOC      |
| Switch voltage     | 10 – 30 V DC |
| Max. load          | 200 mA       |

| Clamp Unit  | Clamping Force (tons) | Operating Pressure (psi) | A     | B     | C     | $\phi D$ | E     | x     |
|-------------|-----------------------|--------------------------|-------|-------|-------|----------|-------|-------|
| HKZ 104     | 11.4                  | 5800                     | 6.42" | 2.05" | 3.94" | 3.54"    | 3.94" | 0.12" |
| HKZ 116/200 | 12.8                  | 2900                     | 7.01" | 2.64" | 4.72" | 4.72"    | 4.72" | 0.08" |
| HKZ 175/200 | 19.3                  | 2900                     | 7.40" | 3.03" | 4.72" | 5.51"    | 5.51" | 0.08" |



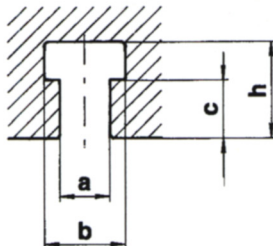
# Hydraulic Traveling Clamp



## T-slot dimension

a = min. 0.875"  
max. 1.50"

Please indicate machine T-slot dimensions when ordering!

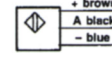


\*depending on T-slot dimension "a"

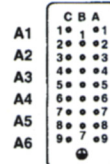
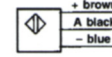
## Terminal Connection Diagram for

### Standard version with DC motor

S1  
Clamp in  
parked position

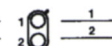


S2  
Clamp at  
the tool



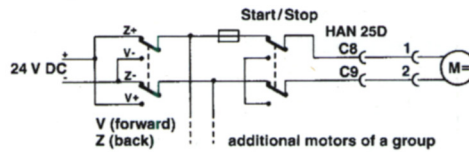
Pin insert  
25-pole + GND  
Make: Harting  
Model: Han 25D  
No. 09 21 025 3001

M  
Drive motor



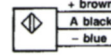
C8 View  
C9 Connection side

### Driving the 24 V DC motors

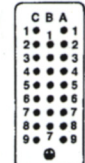
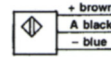


### Optional version with AC motor

S1  
Clamping element  
in parked position



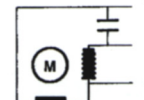
S2  
Clamping element  
at the tool



Pin insert  
25-pole + GND  
Make: Harting  
Model: Han 25D  
No. 09 21 025 3001

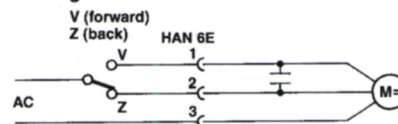
View  
Connection side

M  
Drive motor

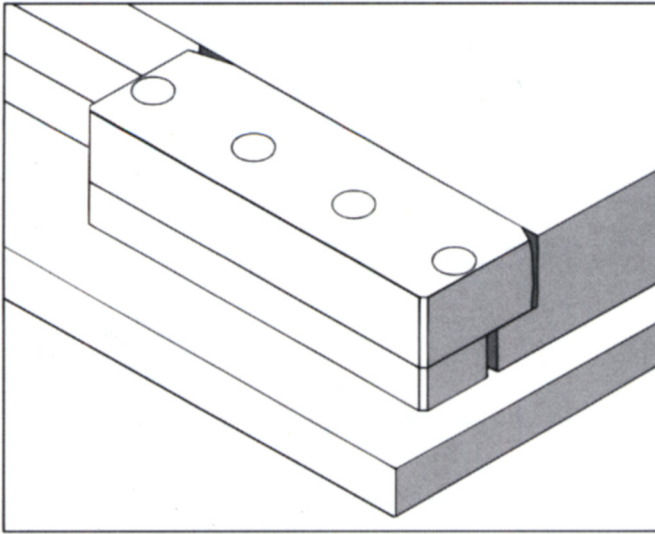


Pin insert  
6-pole + GND  
Make: Harting  
Model: Han 6E  
No. 09 33 006 2601  
View  
Connection side

### Driving the AC motors



## Hydraulic Clamping Strip



### Area of application

The hydraulic clamping strip type HSL is designed for smaller and medium-sized presses exerting a force of up to 800 tons. It is suitable both for bottom and top die clamping, for dies with straight clamping edges.

The clamping strip is installed in a fixed position. The dies used must all have the same base dimensions.

The clamp unit places little demands on the periphery of the machine, and is therefore suitable both for initial installation and for retro-fits.

### Mode of operation

Several single-acting hydraulic cylinders, hydraulically controlled, transmit the required clamping force to the die.

Releasing the clamp is done by shifting the hydraulic valve. The clamp pistons retract via spring force.

### Application of the clamping force through:

- clamping stroke of the hydraulic piston

### Distinguishing features

The hydraulically operated clamping strip directly produces the clamping force required. The hydraulic pressure must be maintained throughout the clamping process (optional equipment with releasing non-return valves and pressure switches recommended).

By means of the optional insertion of ball castors, the clamping strip can take over the lateral die guidance function. The compact construction dimensions enable it to be accommodated in limited space applications.

### Electrical control of the following:

- Pressure control by means of pressure switches on the hydraulic unit is advisable.

### Technical data

The clamping strip is mounted on a base plate which is customer specified and is available in 5 different lengths (other lengths available on request).

The hydraulic clamping strip can be used at operating temperatures up to 135°C and at a maximum operating pressure of 400 bar.

The connections to the hydraulic lines may be at the side or at the rear, as required.

### Advantages

- Very low installation cost
- Completely hydraulic operation
- Universal use by varying the base plates
- High force density
- Central control
- High clamping force
- Low maintenance costs
- Superior corrosion protection
- Low construction height

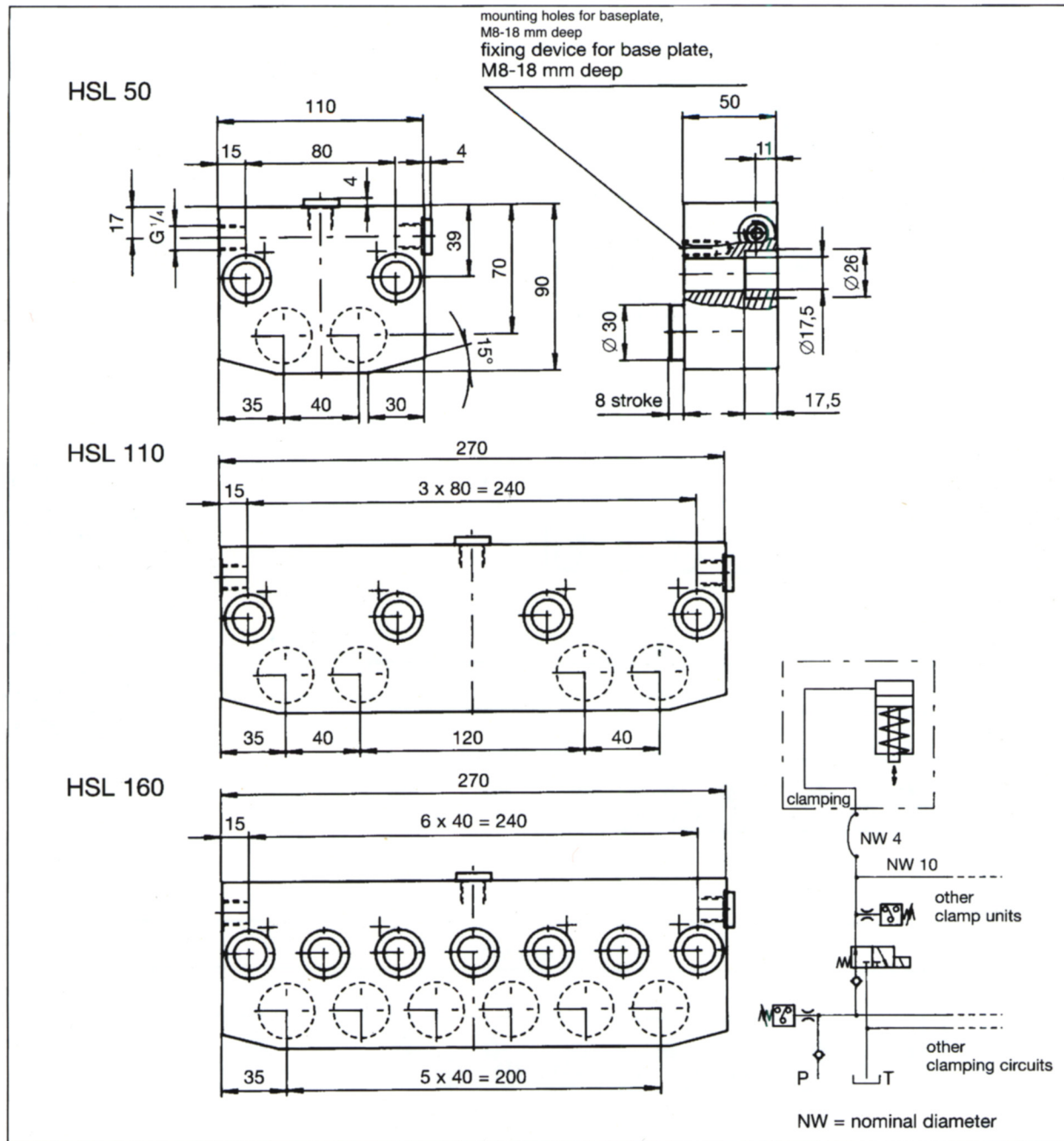
### Construction

The clamping strip has a nickel-plated housing and a nickel-plated base plate.

1.400

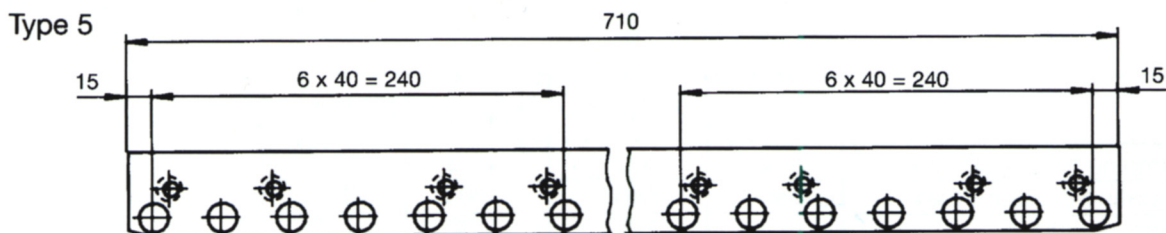
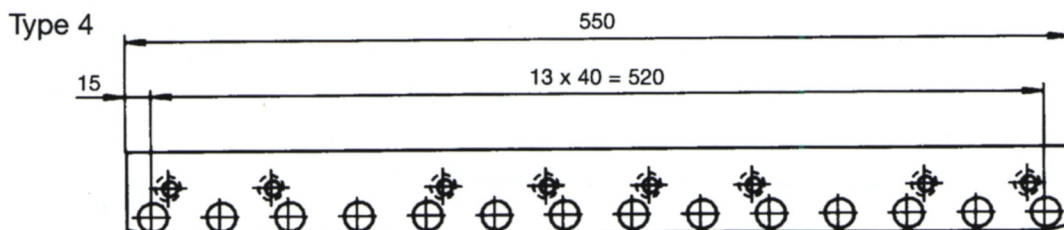
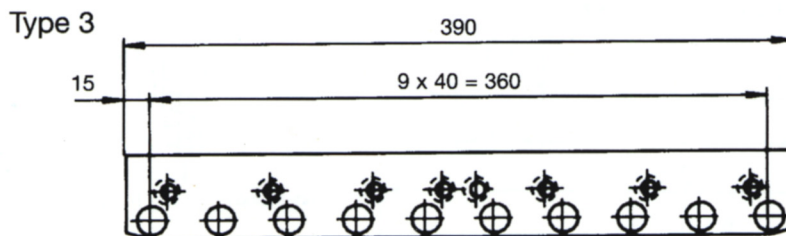
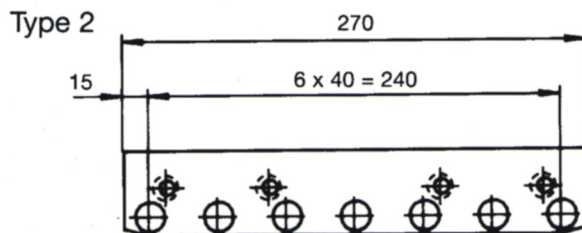
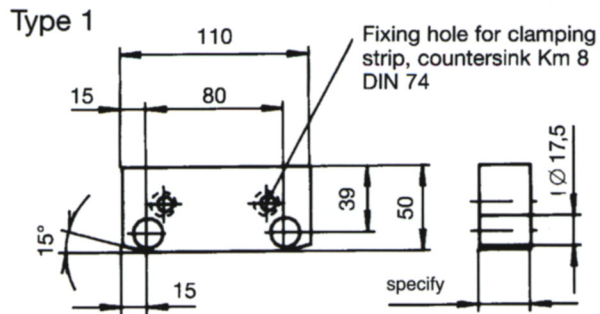


# Hydraulic Clamping Strip

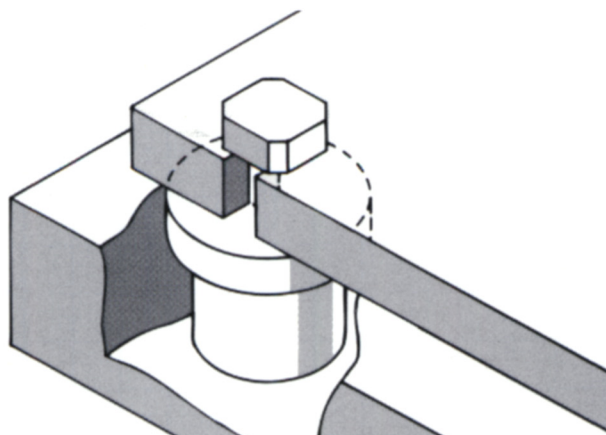


| Type                     |         | HSL 50             | HSL 110            | HSL 160            |
|--------------------------|---------|--------------------|--------------------|--------------------|
| Clamping for at 5800 psi | tons    | 6.2                | 12.3               | 18.5               |
| Operating pressure max.  | psi     | 5800               | 5800               | 5800               |
| Clamping stroke          | in.     | 0.32               | 0.32               | 0.32               |
| Hydraulic connection     |         | BSPP $\frac{1}{4}$ | BSPP $\frac{1}{4}$ | BSPP $\frac{1}{4}$ |
| Oil requirement          | cu. in. | 0.70               | 1.37               | 2.05               |
| Oil viscosity            |         | 25-60 cST/40°C     |                    |                    |
| Oil filter               |         | 20-25µm            |                    |                    |

## Base Plates







### Area of application

The hydraulic automatic clamp cylinder type HSZ is designed for machines exerting a force of up to about 700 tons. It is particularly suitable for bottom die clamping (with and without clamping edge). The dies to be clamped must have T-slots.

The clamp cylinder is fitted in recesses in the press bed (or ram).

The clamp cylinder places little demands on the periphery of the machine. Its control can easily be combined in the existing machine control system.

### Mode of operation

A double-acting hydraulic cylinder, hydraulically controlled, transmits the necessary clamping force to the die.

Release is effected by reversing the hydraulic valve and driving out the tie rod.

#### **The clamping force is applied by:**

- The clamping stroke of the tie rod

### Distinguishing features

The hydraulically operated clamp cylinder directly produces the necessary clamping force. In so doing, the hydraulic pressure must be maintained throughout the clamping process (optional equipment with releasing non-return valves and pressure switches recommended).

Due to the installation of the cylinder in recesses provided for it in the press bed, the surface of the clamp cylinder ends just below the bed surface; only the tie rod projects from the surface.

### **Electrical control of the following functions (switches):**

- Tie rod in the clamping area  
(nominal clamping length  $\pm 3\text{mm}$ ) (S1)
- Pressure control by means of pressure switches in the hydraulic unit is advisable

### Technical data

|                 |   |
|-----------------|---|
| Switch:         | an inductive proximity switch;<br>p-n-p normally open contact |
| Supply voltage: | 10-30 V DC  |
| Cable length:   | ca. 3 m   |

### Advantages

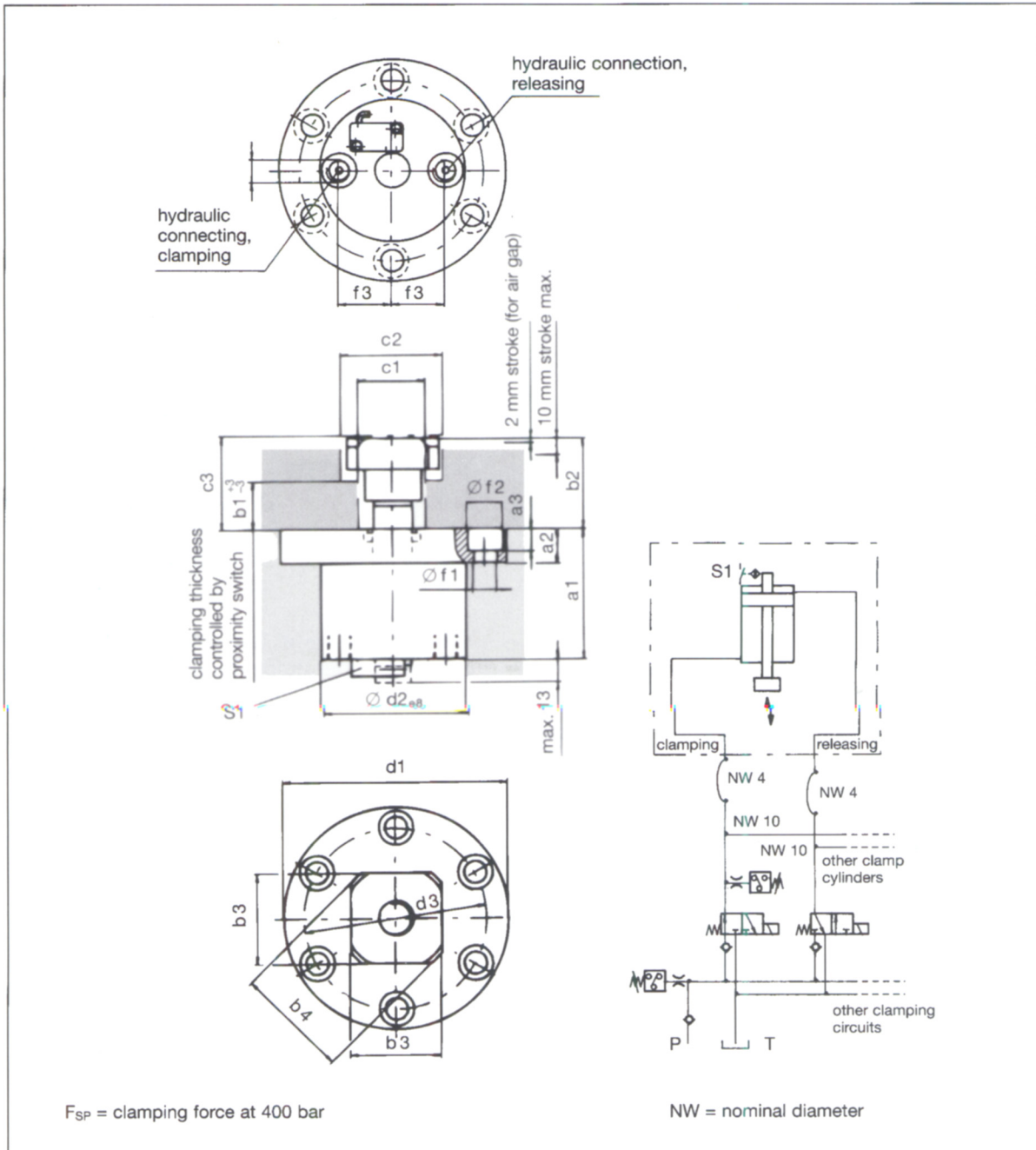
- Completely automatic and also purely hydraulic operation
- Large clamping thickness tolerance
- Central control
- Highest standard of safety due to electrical control
- Low installation cost
- Low maintenance cost
- Highest clamping force, despite compact dimensions of the clamp cylinders

### Construction

The clamp cylinder had a gunmetal-finish housing and a gunmetal-finish tie rod.

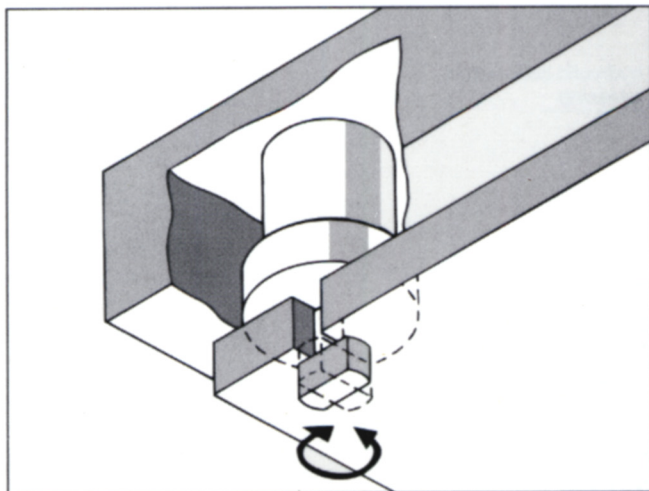
It is secured by four bolts, of strength class 10.9 according to DIN 912 (not included). The thread dimension depends on the type (see technical drawing).

3.400





## Hydraulic Turn-Clamp Cylinder



### Area of application

The hydraulic automatic clamp cylinder, type HDSZ is designed for medium-sized machines exerting a force of up to about 700 tons. It is mainly used for top die clamping (with and without clamping edge). For this purpose, T-slots or lock plates in the dies to be clamped are required.

Rigid fixing of the clamp cylinder in recesses in the press ram (or bed) is necessary.

The clamp cylinder places little demands on the periphery of the machine. Its control can be easily combined in the existing machine control system.

### Mode of operation

The clamping process is effected by a single-acting hydraulic cylinder with return spring. The subsequent rotary movement of the tie rod is also effected hydraulically (2 hydraulic connections). In so doing the tie rod pinion, and hence the tie rod head, is rotated by means of a toothed rack until the clamping stroke is completed by way of an edge control boring.

Release is effected hydraulically after reversing the hydraulic valve, with the aid of a return spring and the subsequent rotation of the tie rod.

#### **Movement sequence for applying the clamping force:**

- 90° rotation
- the clamping stroke of the tie rod  
(release of the clamp unit in reverse order)

### Distinguishing features

The hydraulically operated clamping cylinder directly produces the necessary clamping force. In so doing,

the hydraulic pressure must be maintained throughout the clamping process (optional equipment with non-return valves and pressure switches recommended).

By installing the cylinder in recesses provided for it in the press bed, the surface of the clamp cylinder ends just below the ram surface; only the tie rod projects from the surface (also in the released position).

#### **Electrical control of the following functions (switches):**

- Tie rod released and rotated into the release position (S1)
- Tie rod rotated into clamping position (S2)
- Pressure control by means of pressure switch on the hydraulic unit is advisable.

### Technical data

|                 |  |
|-----------------|--|
| Switches:       | 2 inductive proximity switches;<br>p-n-p normally open contact |
| Supply Voltage: | 10-30 V DC   |
| Cable length:   | ca. 3 m  |

The clamp cylinder type HDSZ can be used for operating at temperatures of up to 70°C, and a maximum operating pressure of 400 bar.

The clamp cylinder has a manually operated emergency actuation device.

### Advantages

- Completely automatic, purely hydraulic operation
- Large clamping thickness tolerance
- Central control
- Highest safety standard due to electrical control
- Low installation cost
- Low maintenance cost
- Highest clamping force, despite compact dimensions of the clamp cylinders.

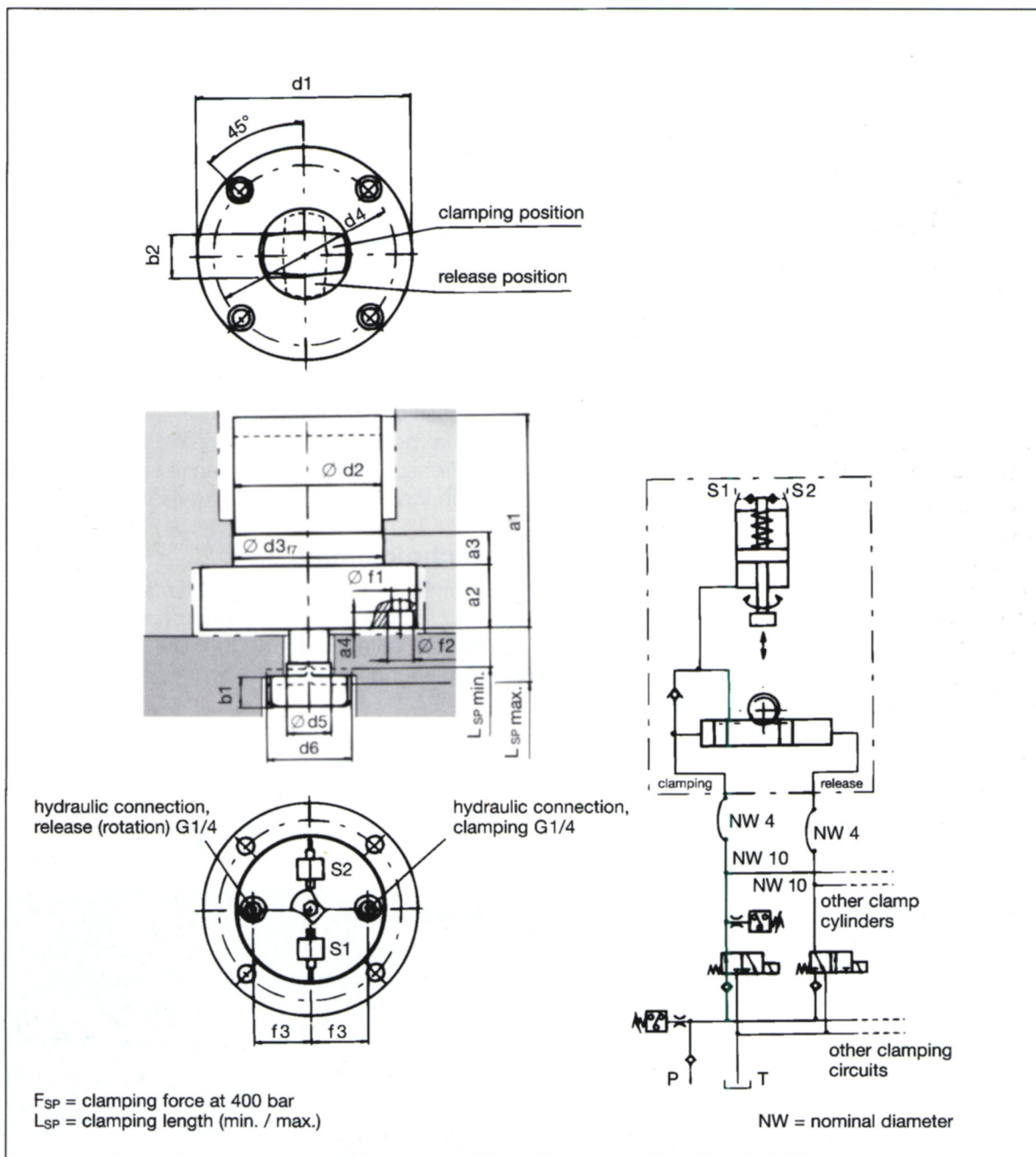
### Construction

The clamp cylinder has a gunmetal-finish housing and a gunmetal-finish tie rod.

It is secured by four bolts, of strength class 10.9 according to DIN 912 (not included). The thread dimension depends on the type (see technical drawing).

1.600

# Hydraulic Turn-Clamp Cylinder

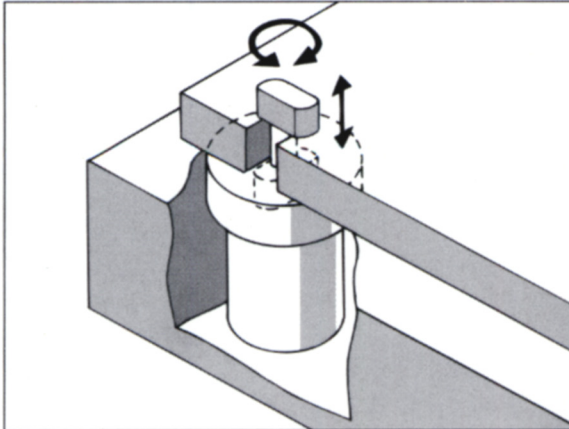


The company reserves the right to make technical changes.

| Type     | $F_{SP}$<br>[kN] | $L_{SP}$<br>min.<br>[kN] | $L_{SP}$<br>max.<br>[kN] | Oil requirement<br>[cm <sup>3</sup> ]<br>clamping release | a1  | a2 | a3 | a4   | b1 | b2 | d1  | d2  | d3  | d4  | d5 | d6 | f1 | f2 | f3 | Weight<br>[kg] |
|----------|------------------|--------------------------|--------------------------|---|-----|----|----|------|----|----|-----|-----|-----|-----|----|----|----|----|----|----------------|
| HDSZ 63  | 63               | 16                       | 22                       | 13,5 15,5   | 135 | 35 | 20 | 13   | 24 | 34 | 150 | 109 | 110 | 128 | 34 | 65 | 13 | 20 | 40 | 11             |
| HDSZ 100 | 100              | 21                       | 27                       | 19 21   | 145 | 35 | 20 | 13   | 28 | 40 | 170 | 119 | 120 | 140 | 40 | 80 | 13 | 20 | 45 | 15             |
| HDSZ 160 | 160              | 26                       | 32                       | 29 31   | 155 | 40 | 20 | 16,5 | 35 | 50 | 195 | 139 | 140 | 165 | 50 | 95 | 17 | 26 | 54 | 22,5           |



## Hydraulic Retracting Turn-Clamp Cylinder



### Area of application

The hydraulic automatic turn-clamp cylinder, type HDHSZ, is designed for medium- to large-sized machines exerting a force of up to about 1,200 tons. It is mainly used for bottom die clamping (with and without clamping edge). For this purpose, T-slots or lock plates in the dies to be clamped are required.

The clamp cylinder is fitted in recesses in the press bed (or press ram) where it is fixed.

The clamp cylinder places little demand on the periphery of the machine. Its control can be easily combined in the existing machine control system.

### Mode of operation

The double-acting hydraulic cylinder, hydraulically controlled, actuates the clamping process. In so doing, the tie rod is advanced from the housing of the clamp cylinder until it reaches the clamping position. The tie rod pinion, and hence the tie rod head, is rotated by means of a toothed rod until (by means of an edge bore) the clamping stroke is carried out.

The release process is carried out by reversing the hydraulic valve. After releasing the tie rod, the latter is rotated through 55° and then returns to the housing of the clamp cylinder.

### Movement sequence for applying the clamping force:

- Driving out the tie rod
- 55° rotation
- Clamping stroke of the tie rod  
(release of the clamp unit in reverse order)

### Distinguishing features

The hydraulically operated clamping cylinder directly produces the necessary clamping force. In so doing, the hydraulic pressure must be maintained throughout

the clamping process (optional equipment with non-return valves and pressure switches recommended).

By installing the cylinder in recesses provided for it in the press bed/ram, the surface of the clamp cylinder ends flush with the surface of the press bed or the ram. In addition, the tie rod is withdrawn to the idle position below the surface of the ram or bed, thus avoiding any difficulty in changing dies.

### Electrical control of the following functions (switches):

- Tie rod released, rotated into the release position and retracted (S1)
- Tie rod rotated into clamping position (S2)
- Pressure control by means of pressure switch on the hydraulic unit is advisable

### Technical data

|                 |  |
|-----------------|--|
| Switch:         | 2 inductive proximity switches;<br>p-n-p normally open contact |
| Supply Voltage: | 10-30 V DC   |
| Cable length:   | ca. 3 m  |

The automatic clamp cylinder type HDHSZ can be used for operating temperatures of up to 70°C, and a maximum operating pressure of 400 bar.

The clamp cylinder has a manually operated emergency actuation device.

### Advantages

- Fully automatic, purely hydraulic operation
- Large clamping thickness tolerance
- Central control
- Highest standard of safety due to electrical control
- Low installation cost
- Low maintenance cost
- High clamping force, despite compact dimensions of the clamp cylinders

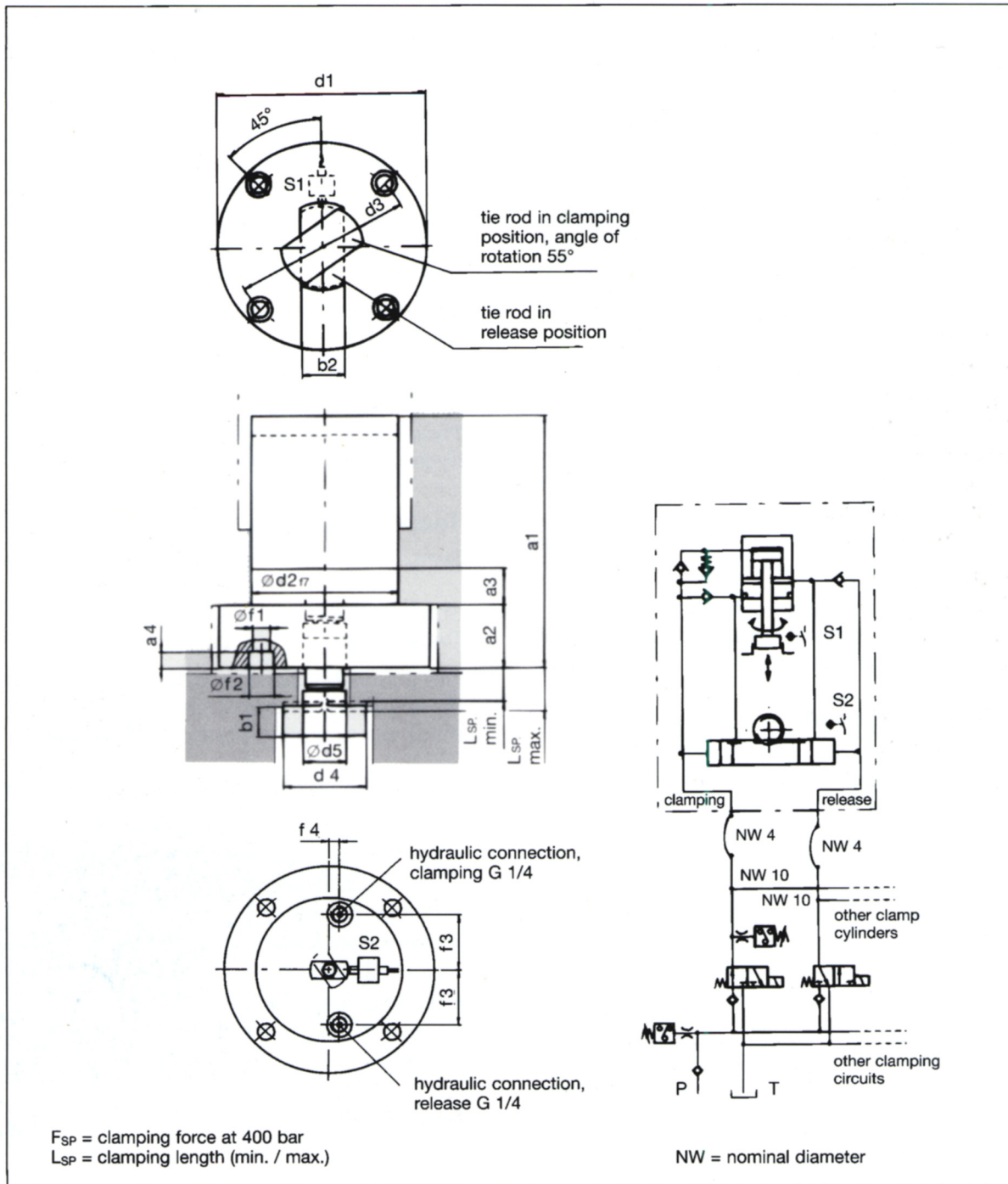
### Construction

The clamp cylinder has a gunmetal-finish housing and a gunmetal-finish tie rod.

It is secured by four bolts, of strength class 10.9 according to DIN 912 (not included). The thread dimension depends on the type (see technical drawing).

1.700

## Hydraulic Retracting Turn-Clamp Cylinder

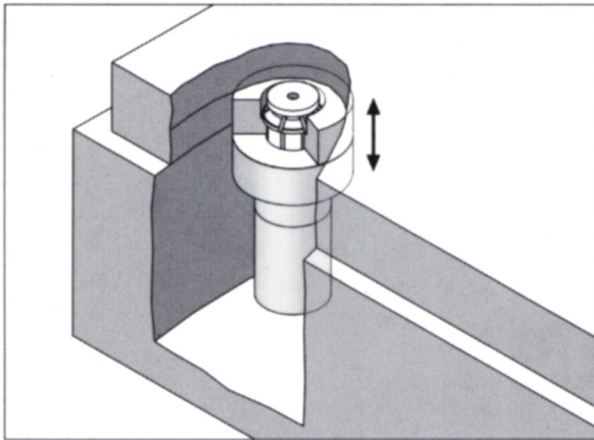


The company reserves the right to make technical changes.

| Type      | $F_{SP}$<br>[kN] | $L_{SP}$<br>min.<br>[mm] | $L_{SP}$<br>max.<br>[mm] | Oil requirement<br>[cm <sup>3</sup> ]<br>clamping/release | a1  | a2 | a3 | a4   | b1 | b2 | d1  | d2  | d3  | d4  | d5 | f1 | f2 | f3 | f4 | Weight<br>[kg] |
|-----------|------------------|--------------------------|--------------------------|---|-----|----|----|------|----|----|-----|-----|-----|-----|----|----|----|----|----|----------------|
| HDHSZ 100 | 100              | 21                       | 27                       | 93  | 235 | 50 | 25 | 13   | 28 | 40 | 170 | 120 | 145 | 80  | 40 | 13 | 20 | 45 | 10 | 24             |
| HDHSZ 200 | 200              | 26                       | 32                       | 176   | 285 | 70 | 25 | 21,5 | 35 | 60 | 215 | 145 | 175 | 100 | 60 | 22 | 33 | 45 | 10 | 46             |



## Hydraulic Clamp Arbour



### Area of application

The hydraulic automatic clamp cylinder, type HSD, is designed for medium- and large-sized machines exerting a force of up to about 1,200 tons. It is mainly used for bottom die clamping (with and without clamping edge). In this case lock plates are required on dies which are to be clamped.

The clamp cylinder is fitted in recesses in the press bed (or press ram) where it is fixed.

The clamp cylinder places little demand on the periphery of the machine. Its control can be easily combined in the existing machine control system.

### Mode of operation

A double-acting hydraulic cylinder, hydraulically controlled, actuates the clamping process. In so doing, the arbour is driven out from the housing of the clamping element until it reaches the clamping position. The arbour is then forced to expand through the push movement of the piston in order to finally apply the clamping force via a tension incline. This method of operation enables all three following movement sequences to be carried out via the push movement of the clamping cylinder

The release process is carried out by reversing the hydraulic valve. After the arbour is released, it contracts in order to finally retract into the housing of the clamp unit.

#### **Movement sequence for applying the clamping force:**

- Driving out the arbour
- Expansion of the arbour
- Clamping stroke of the arbour  
(release of the clamp cylinder in reverse order)

### Distinguishing features

The hydraulically operated clamping cylinder directly

produces the necessary clamping force. In so doing, the hydraulic pressure must be maintained throughout the clamping process (optional equipment with non-return valves and pressure switches recommended).

By installing the cylinder in recesses provided for it in the press bed/ram, the surface of the clamping cylinder lies flush with the surface of the press bed or the ram. In addition, the arbour is withdrawn to the idle position below the surface of the ram or bed, thus avoiding any difficulty in changing the dies.

#### **Electrical control of the following functions (switches):**

- Arbour released (S1)
- Arbour expanded (S2)

Pressure control by means of pressure switch on the hydraulic unit advisable.

### Technical data

|                 |   |
|-----------------|---|
| Switch:         | 2 inductive proximity switch<br>p-n-p contact |
| Supply voltage: | 10-30V DC                                     |
| Cable length:   | ca. 3 m                                       |

The automatic clamp cylinder type HSD can be used for operating temperatures of up to 70°C, and a maximum operating pressure of 220 bar.

### Advantages

- Fully automatic, and also purely hydraulic operation
- Large clamping thickness tolerance
- Low installation cost
- Central control
- High safety standard due to electric control
- Low maintenance
- Superior corrosion protection
- High clamping force despite compact dimensions of clamping elements

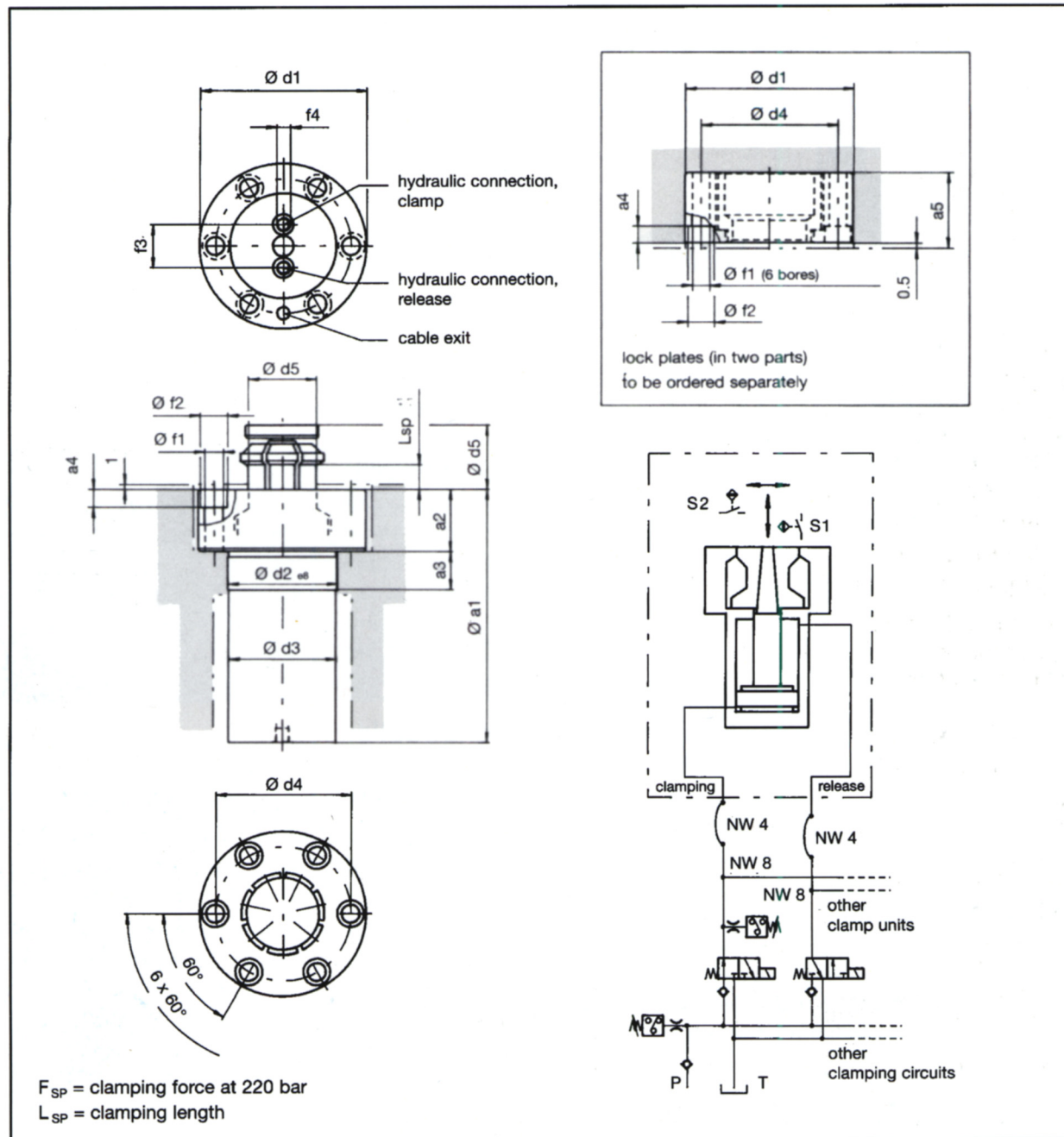
### Construction

The clamping element has a gunmetal-finish housing and a gunmetal-finish arbour.

It is secured by four bolts, of strength class 10.9 according to DIN 912 (not included). The thread dimension depends on the type (see technical drawing).

1.800

# Hydraulic Clamp Arbour

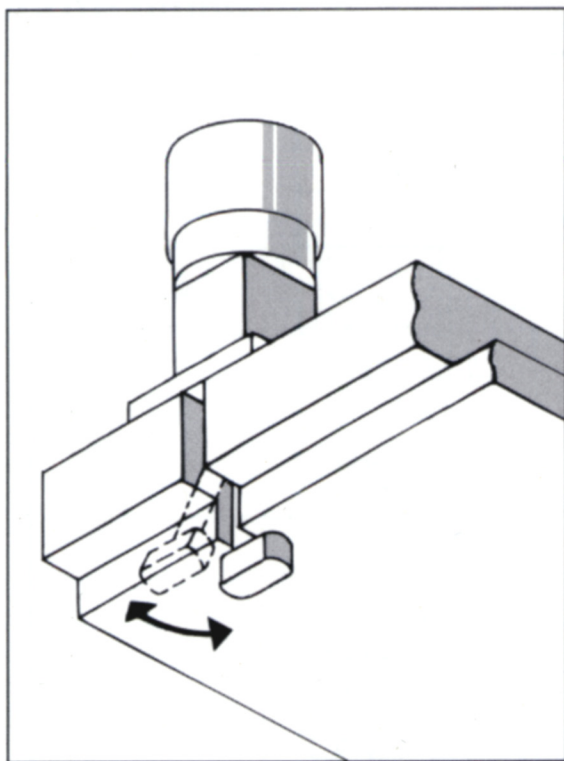


| Type    | $F_{SP}$<br>(kN) | $L_{SP}$<br>min.<br>(mm) | $L_{SP}$<br>min.<br>(mm) | Oil requirement<br>(cm <sup>3</sup> ) |     | a 1 | a 2 | a 3 | a 4  | a 5 | d 1 | d 2 | d 3 | d 4 | d 5 | f 1  | f 2 | f 3 | f 4   | Weight<br>(kg) |
|---------|------------------|--------------------------|--------------------------|---------------------------------------|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|------|-----|-----|-------|----------------|
| HSD 65  | 65               | 18                       | 20                       | 138                                   | 37  | 200 | 49  | 30  | 13   | 55  | 128 | 82  | 81  | 104 | 56  | 13.5 | 20  | 35  | G 1/8 | 9              |
| HSD 120 | 120              | 22                       | 24                       | 270                                   | 72  | 246 | 60  | 37  | 17.5 | 70  | 160 | 104 | 102 | 130 | 70  | 17.5 | 26  | 42  | G 1/4 | 18             |
| HSD 200 | 200              | 28                       | 30                       | 342                                   | 124 | 295 | 71  | 46  | 21.5 | 83  | 192 | 126 | 124 | 156 | 84  | 22   | 33  | 50  | G 1/4 | 33             |

The company reserves the right to make technical changes



## Hydro-Mechanical Swing-Clamp Unit



### Area of application

Hydraulic swing-clamp units are designed for medium-sized and large presses exerting a force of about 500 tons upwards. Basically, they are suitable only for top die clamping.

Rigidly mounted on the press ram ledge, they require dies that have clamping edges with U-cut outs.

### Mode of operation

The tie rod is swung into the clamping position via a mechanical register slot. After this swing movement (standard swing angle 20°), a double acting hydraulic cylinder transmits its clamping force, via the tie rod, to the die.

In the release process, the tie rod is released by an axial movement, and then swings back into the release position.

### Movement sequence for applying the clamping force:

- Retraction of the tie rod
- Clamping stroke of the tie rod

### Distinguishing features

The hydraulically operated clamping cylinder directly produces the necessary clamping force. In so doing, the hydraulic pressure must be maintained throughout

the clamping process (optional equipment with non-return valves and pressure switches recommended).

### Electrical control of the following functions (switches):

- Tie rod released and swung outward (S5)
- Pressure control by means of pressure switch on the hydraulic unit is advisable.

### Technical data

|                            |   |
|----------------------------|---|
| Switch:                    | 1 inductive proximity switch<br>p-n-p normally open contact |
| Supply voltage:            | 10-30 V DC  |
| Cable length:              | ca. 3 m   |
| Max operating temperature: | 70°C  |

### Advantages

- Fully automatic, and also purely hydraulic operation
- Large clamping thickness tolerance
- Compact dimensions
- High safety standard due to electrical monitoring
- Central control
- Superior corrosion protection
- Continuous pressure control possible

### Construction

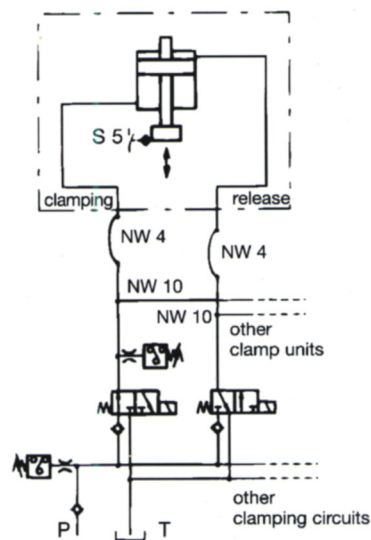
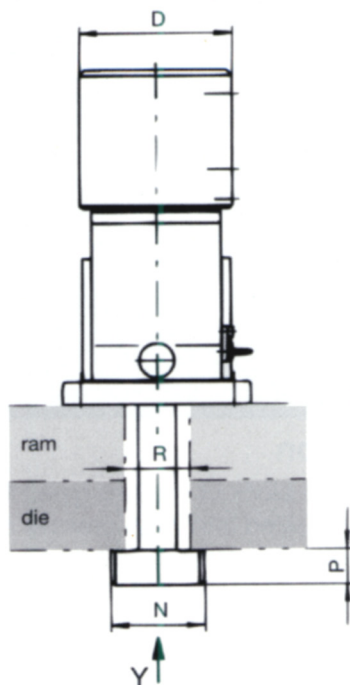
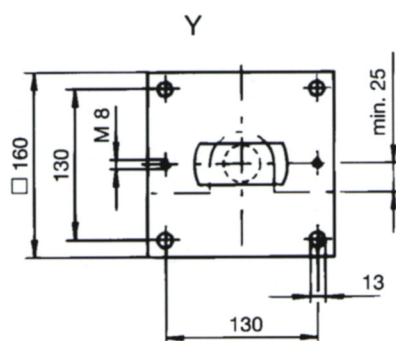
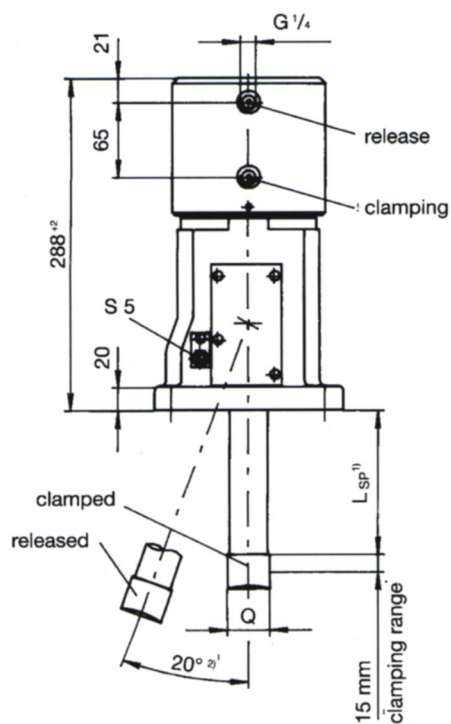
The clamp unit has a nickel-plated swing housing and a forged and gunmetal-finish tie rod.

The swing angle of the tie rod can be adjusted between 10° and 30°, in 5° increments as required by the customer.

To fix the clamp unit to the machine, please use four M12 bolts of strength class 8.8 according to DIN 912 (not included).

1.800

## Swing-Clamp Unit



NW = nominal diameter

 $F_{SP}$  = clamping force

$F_{SP}$  = clamping force

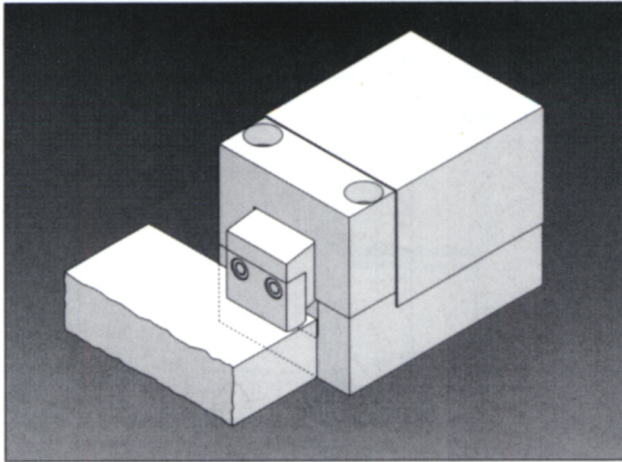
$F_B$  = load capacity

<sup>1)</sup> LSP = clamping length - please state when ordering

<sup>2)</sup> The swing angle range is 10 to 30° and can be provided in 5° increments - please state when ordering.

| Type    | F <sub>SP</sub> at p |       | P <sub>max.</sub><br>[kN] | F <sub>B</sub><br>[kN] | D   | N  | P  | Q  | R    |     |  | Weight<br>[kg] |
|---------|----------------------|-------|---------------------------|------------------------|-----|----|----|----|------|-----|--|----------------|
|         | [kN]                 | [bar] |                           |                        |     |    |    |    | min. | max |  |                |
| HSS 100 | 100                  | 190   | 250                       | 130                    | 130 | 80 | 30 | 36 | 45   | 50  |  |                |
| HSS 200 | 200                  | 195   | 250                       | 250                    | 160 | 98 | 50 | 42 | 50   | 60  |  |                |





### Area of application

The hydro-mechanical block clamp unit type HBS is designed for medium-sized and large presses exerting a pressure of ca. 500 tons upwards. It is particularly suitable for bottom die clamping and rolling bolster clamping. It is also being used increasingly for top die clamping.

The clamp unit can be fixed to the bed or ram surface or on the inside of the press frame in the case of bolster clamping.

Its use requires dies that have straight clamping edges.

### Mode of operation

A hydraulically actuated mechanically locking clamping wedge mechanism transmits its clamping force to a clamping jaw.

In the clamping process, the jaw is forced out of the housing, and clamps the die to the surface of the bed or the slide. The movement sequence is internally controlled.

#### **Movement sequence for applying the clamping force:**

- Driving out the clamping jaw up to a point above the clamping edge of the die
- Clamping movement of the clamping jaw.  
(release of the clamp unit in reverse order)

### Distinguishing features

The clamp unit is fitted with a clamping wedge mechanism. In this system, the clamping force required is transmitted by mechanical components which are actuated by low hydraulic pressure only

during the clamping or release process. The clamping wedge mechanism ensures that the clamp unit is mechanically self-locking when clamping. Nevertheless, a pilot-controlled non-return valve in both the clamping and release ports must secure the clamp unit against vibrations occurring during the production process. Thus, the hydraulic power unit can be switched off in clamped or released condition. Because of this, the clamping force is independent of the compressibility of the compression media, the operating temperatures and the line losses.

In the parked position, the clamping jaw is completely retracted into the housing, and thus protected from damage. The clamping edge of the die is released, and changing dies without interference is assured.

In the case of the dies used, maximum thickness tolerances of  $\pm 1.0$  mm are permitted.

#### **Electrical control of the following functions (switches):**

- Jaw in clamping position (S4)
- Jaw in retracted position (S5)

Pressure controls by means of a pressure switch on the hydraulic unit advisable.

### Advantages

- Mechanical self-locking
- Occupies little space, due to compact dimensions
- Large clamping thickness tolerance
- Central control
- Hydraulic pressure required only during the clamping or release process
- High mechanical load capacity

### Construction

The individual components of the clamp unit are made from high-strength steels. The element is secured by two bolts of strength class 10.9 (not included). The thread dimension depends on the type (see technical drawing).

2.110

## Technical Data

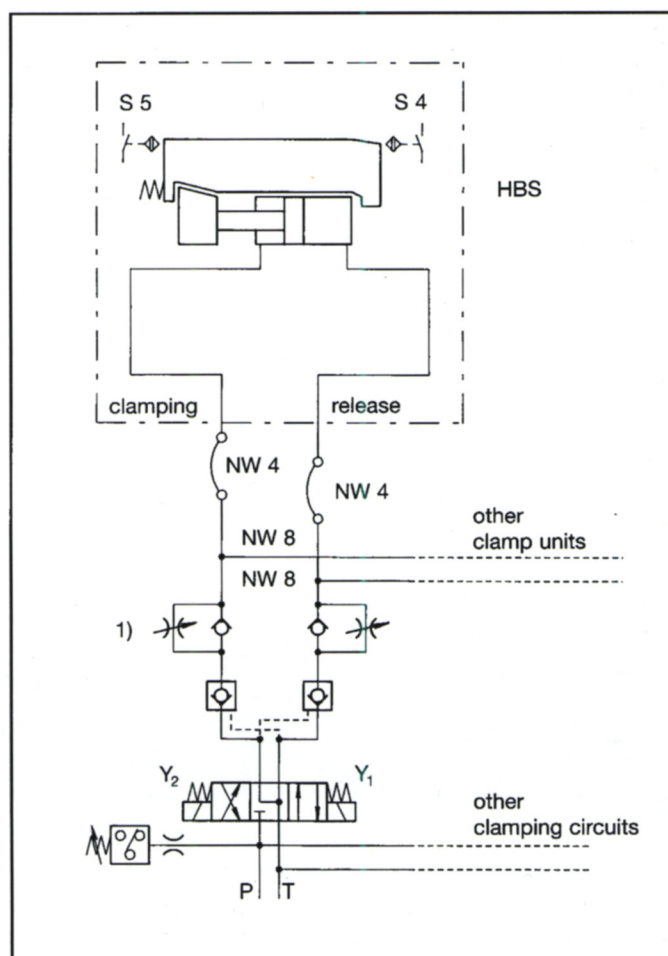
| Type                               |          | HBS 50   | HBS 100   | HBS 200   |
|------------------------------------|----------|--|-----------|-----------|
| Nominal clamping force             | kN       | 50   | 100       | 200       |
| Max. load capacity                 | kN       | 80   | 160       | 320       |
| Max. operating pressure            | bar      | 110  | 110       | 110       |
| Die thickness tolerance            | mm       | +/- 1,0  | +/- 1,0   | +/- 1,0   |
| Oil volume required (each process) | clamping | 12   | 54        | 58        |
|                                    | release  | 20   | 79        | 73        |
| Delivery rate per element          | l/min.   | 0,2 - 0,3  | 0,6 - 1,2 | 0,6 - 1,2 |
| Weight                             | kg (ca.) | 25   | 30        | 50        |
| Hydraulic connections              |          | G 1/4  | G 1/4     | G 1/4     |
| Max. operating temperature         | °C.      | 70   | 70        | 70        |
| Pressure medium                    |          | Hydraulic Oil Standard 3448<br>ISO Vce (DIN 51519) |           |           |
| Viscosity                          |          | 25 - 60 cST/40 °C                                  |           |           |
| Filter                             |          | 20 - 25 µm   |           |           |

## Hydraulic circuit diagram

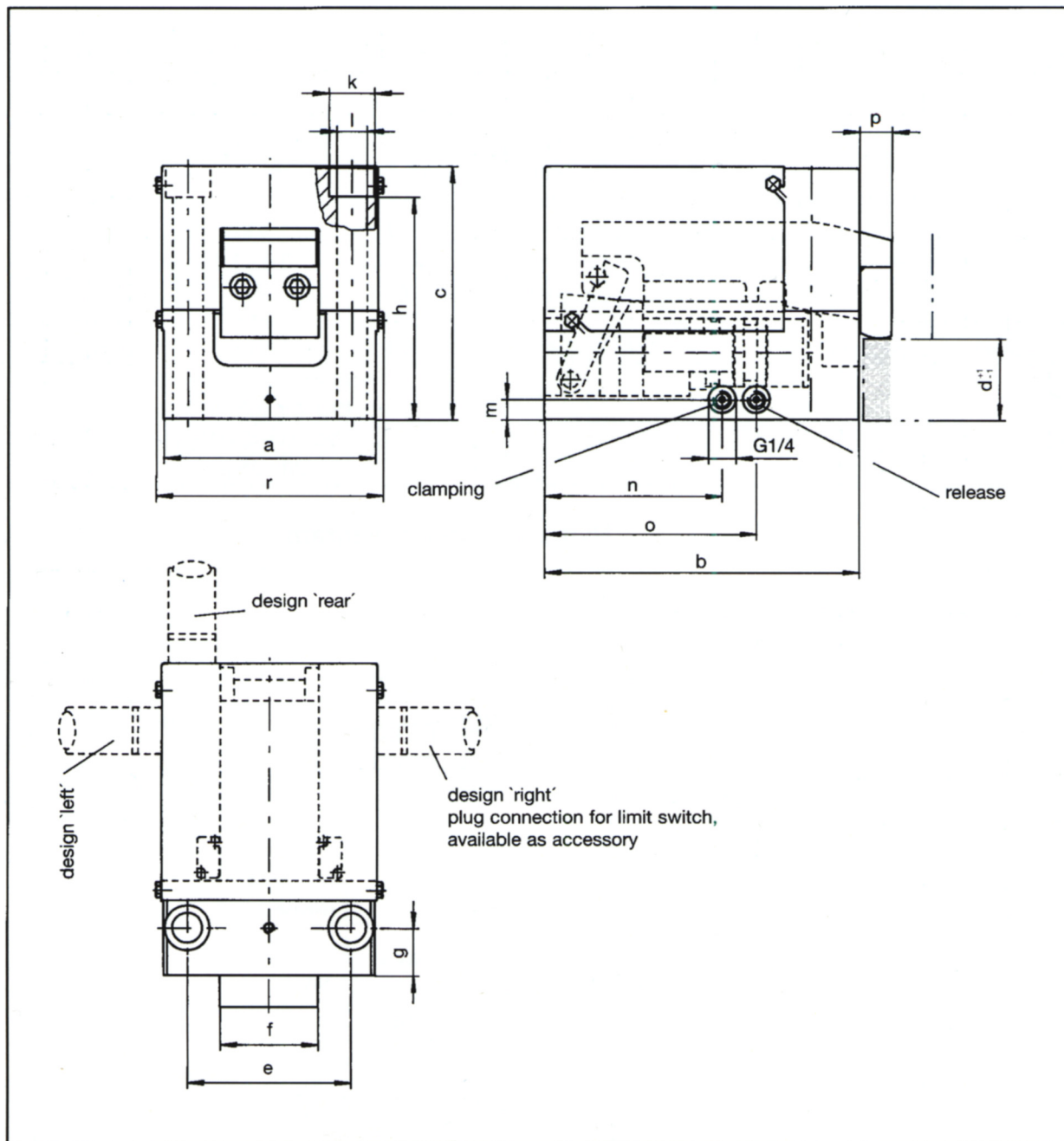
1) If a pump with a higher delivery rate than necessary is used, the oil flow must be reduced by means of flow regulating valves or one-way restrictors.

### Precision position switches

2 inductive proximity switches  
PNP contact





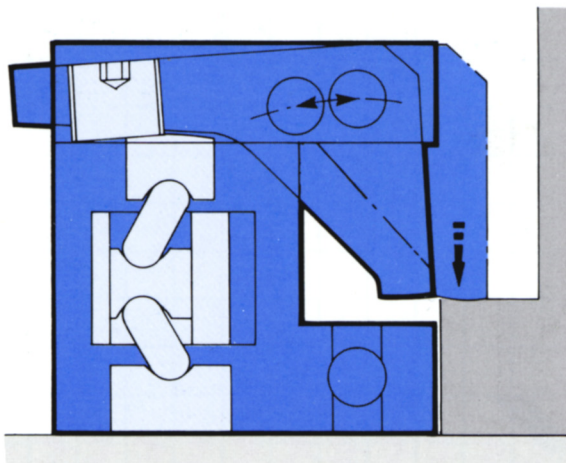
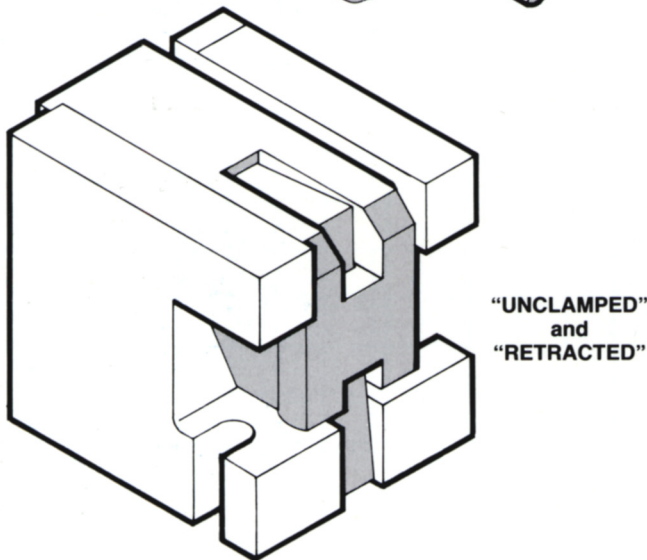
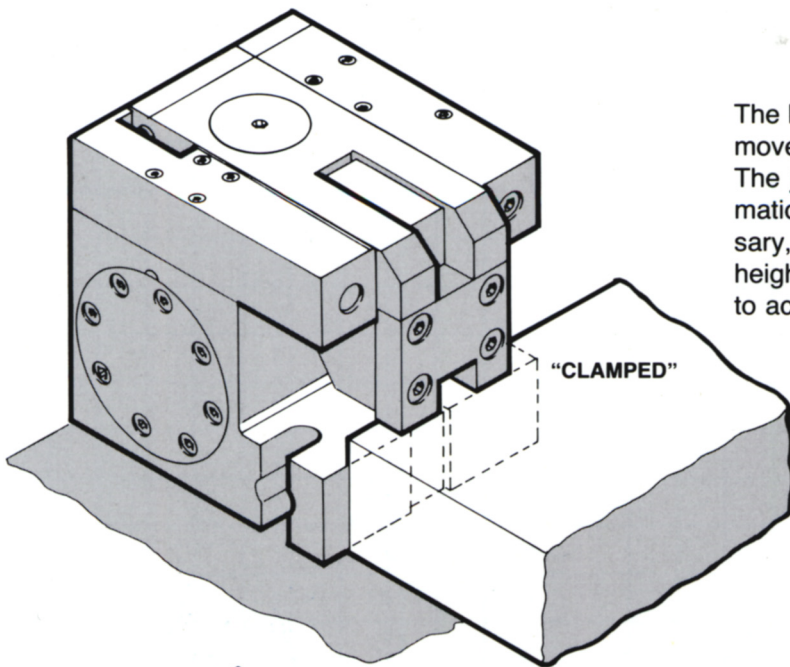


| Type       | a   | b   | c   | d*    | e   | f  | g  | h     | k  | l    | m  | n   | o   | p<br>max. | r   | Weight<br>(kg) |
|------------|-----|-----|-----|-------|-----|----|----|-------|----|------|----|-----|-----|-----------|-----|----------------|
| HBS<br>50  | 140 | 223 | 158 | 45-55 | 100 | 60 | 30 | 138.5 | 26 | 17.5 | 15 | 116 | 141 | 33        | 151 | 25             |
| HBS<br>100 | 155 | 232 | 187 | 55-65 | 120 | 72 | 35 | 163.5 | 33 | 22   | 15 | 132 | 157 | 33        | 166 | 30             |
| HBS<br>200 | 173 | 233 | 221 | 65-85 | 133 | 85 | 40 | 193.5 | 40 | 26   | 15 | 127 | 152 | 33        | 184 | 50             |

The company reserves the right to make technical changes. \* Other clamping thicknesses on request.

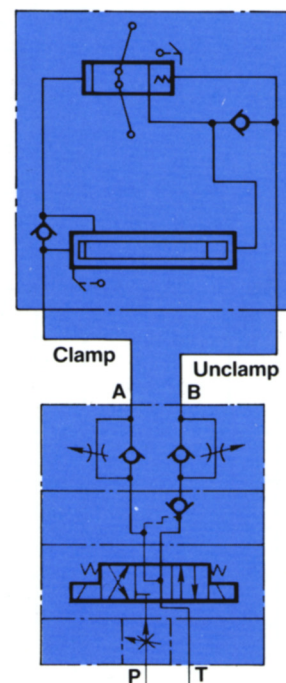
**Extremely rugged unit with a fully retractable clamp jaw.**

The PDV's retractable jaw allows dies to be raised and moved past the clamp without clearance limitations. The jaw's movements and clamping take place automatically in series. Only two hydraulic lines are necessary, one to clamp and one to unclamp. If clamping heights are varied the PDV-VSB version can be ordered to accept tolerances of  $\pm .020"$ .



**Features**

- Hydraulically activated mechanical clamping
- Fully retracting jaw
- Clamp force of 4 to 22 tons
- Unsurpassed rigidity and operational safety
- Compact Dimensions
- Ideally suited for rolling bolsters





# Technical Data

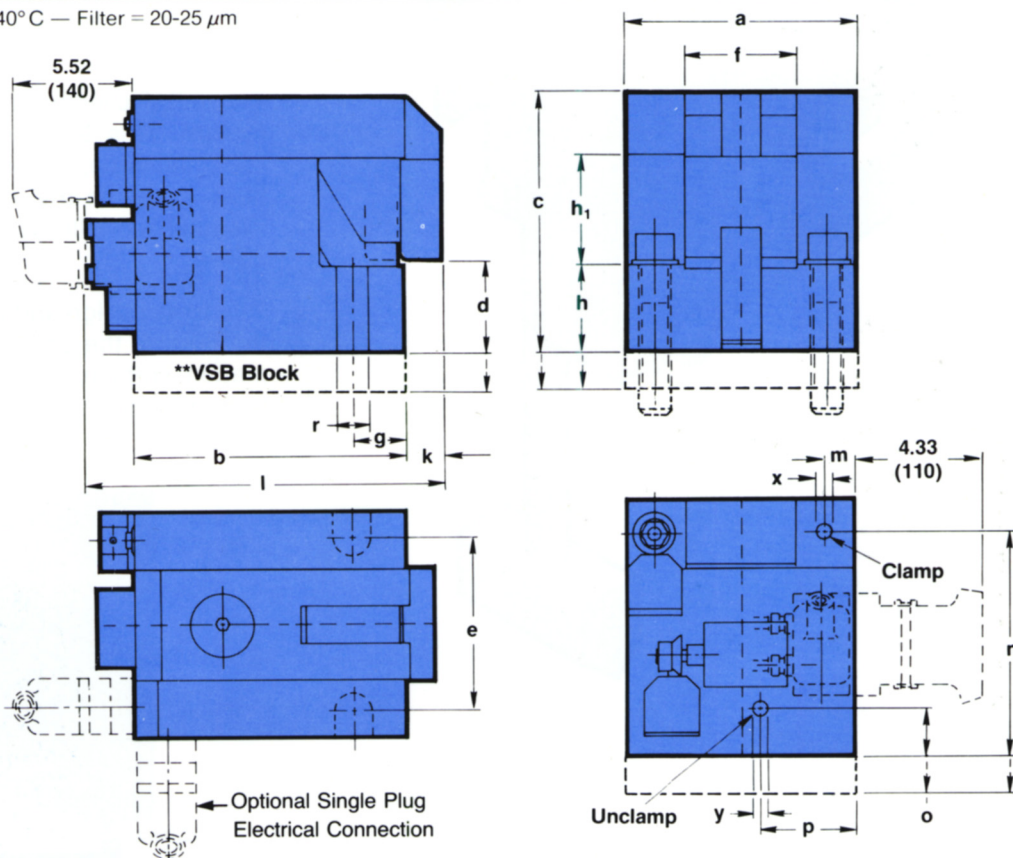
| Model                                   |                      | PDV 4         | PDV 6.3       | PDV 10        | PDV 20        |
|---|----------------------|---------------|---------------|---------------|---------------|
| Clamp Force                             | tons                 | 4             | 7             | 11            | 22            |
| Setting Pressure                        | psi                  | 1150          | 1000          | 1300          | 1450          |
| Operating Pressure                      | min. psi<br>max. psi | 1450<br>2000  | 1300<br>2000  | 1600<br>2000  | 1750<br>2000  |
| Holding Capacity — Maximum              | tons                 | 7             | 11            | 14            | 28            |
| Clamping Stroke                         | inches (mm) ≈        | .10 (2.5)     | .10 (2.5)     | .10 (2.5)     | .10 (2.5)     |
| Clamping Tolerance **                   | inches (mm)          | ±.008 (± 0.2) | ±.008 (± 0.2) | ±.008 (± 0.2) | ±.008 (± 0.2) |
| Oil Volume Required per Event (cu. in.) | Clamp                | 1.5           | 3.4           | 3.4           | 5.9           |
|   | Unclamp              | 1.2           | 3.0           | 3.0           | 5.3           |
| Oil Flow Required per Unit*             | gal/min              | 0.05-.075     | 0.1-.15       | 0.15-.25      | 0.15-.30      |
| Hydraulic Fittings                      |                      | R 1/8         | R 1/4         | R 1/4         | R 1/4         |

Hydraulic Fluid Viscosity = 25-60 cSt/40° C — Filter = 20-25 µm

\*If a pump of greater flow capacity than required is used, it is necessary to throttle the flow.

\*\*Optional VSB version allows tolerances of ± .020 (± 0.5mm)

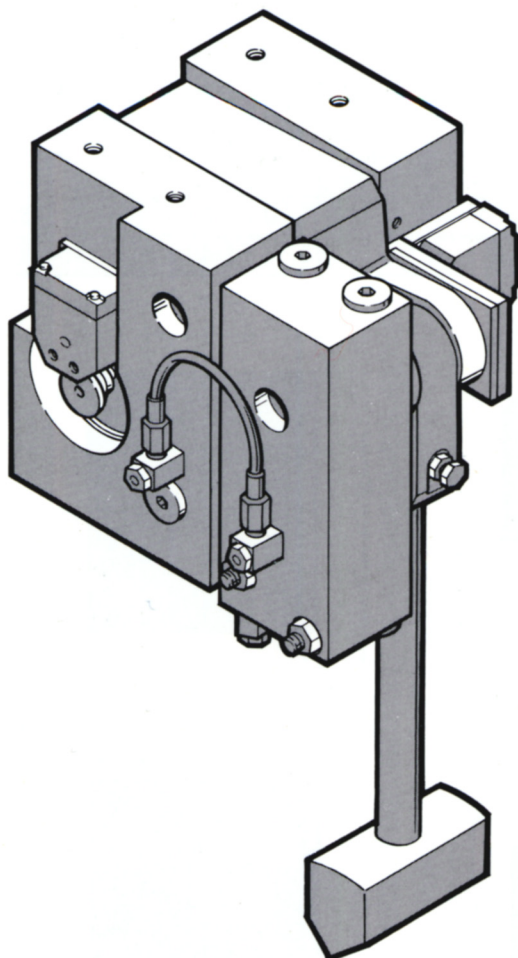
Note: ( ) indicates mm



| Model          | Clamp Force Tons | Operating Pressure psi | Dimensions |            |            |                     |            |           |           |           |                |           |             |             |              |           |           |           |       |       |
|----------------|------------------|------------------------|------------|------------|------------|---------------------|------------|-----------|-----------|-----------|----------------|-----------|-------------|-------------|--------------|-----------|-----------|-----------|-------|-------|
|                |                  |                        | a          | b          | c          | d                   | e          | f         | g         | h         | h <sub>1</sub> | k         | l           | m           | n            | o         | p         | r         | y     | x     |
| PDV 4          | 4                | 1450                   | 5.12 (130) | 5.43 (138) | 5.04 (128) | 1.97 (50)           | 3.74 (95)  | 2.36 (60) | 0.98 (25) | 1.57 (40) | 2.13 (54)      | 0.59 (15) | 7.09 (180)  | 0.67 (17)   | 4.45 (113)   | 0.94 (24) | 3.86 (98) | 0.67 (17) | R 1/8 | R 1/8 |
| PDV 4 w. VSB   |                  |                        |            |            | 6.22 (158) | 3.15 (80)           |            |           |           | 2.76 (70) |                |           |             |             | 5.63 (143)   | 2.13 (54) |           |           |       |       |
| PDV 6.3        | 7                | 1300                   | 5.51 (140) | 6.02 (153) | 6.69 (170) | 2.36 (60)           | 3.94 (100) | 2.28 (58) | 1.18 (30) | 2.28 (58) | 2.83 (72)      | 0.79 (20) | 8.27 (210)  | 0.79 (20)   | 6.02 (153)   | 1.38 (35) | 3.35 (85) | 0.67 (17) | R 1/4 | R 1/4 |
| PDV 6.3 w. VSB |                  |                        |            |            | 7.32 (186) | 3.15 (80)           |            |           |           | 2.91 (74) |                |           |             |             | 6.65 (169)   | 2.01 (51) |           |           |       |       |
| PDV 10         | 11               | 1600                   | 6.10 (155) | 6.69 (170) | 6.89 (175) | 2.36 (60)           | 4.72 (120) | 2.87 (73) | 1.38 (35) | 1.97 (50) | 3.15 (80)      | 0.79 (20) | 8.70 (221)  | 0.79 (20)   | 6.00 (152.5) | 0.87 (22) | 2.28 (58) | 0.83 (21) | R 1/4 | R 1/4 |
| PDV 10 w. VSB  |                  |                        |            |            | 8.07 (205) | 3.54 (90)           |            |           |           | 3.15 (80) |                |           |             |             | 7.19 (182.5) | 2.05 (52) |           |           |       |       |
| PDV 20         | 22               | 1750                   | 6.81 (173) | 8.07 (205) | 7.91 (201) | 2.76-3.15 (70-80)   | 5.24 (133) | 3.35 (85) | 1.57 (40) | 2.44 (62) | 3.50 (89)      | 0.79 (20) | 10.24 (260) | 0.85 (21.5) | 6.93 (176)   | 1.42 (36) | 2.87 (73) | 0.98 (25) | R 1/4 | R 1/4 |
| PDV 20 w. VSB  |                  |                        |            |            | 9.09 (231) | 3.94-4.33 (100-110) |            |           |           | 3.62 (92) |                |           |             |             | 8.11 (206)   | 2.60 (66) |           |           |       |       |

All dimensions in inches unless otherwise specified. ( ) indicates mm.

## Versatile and Compact Unit with unique 180° Tie-Rod Swing Action.



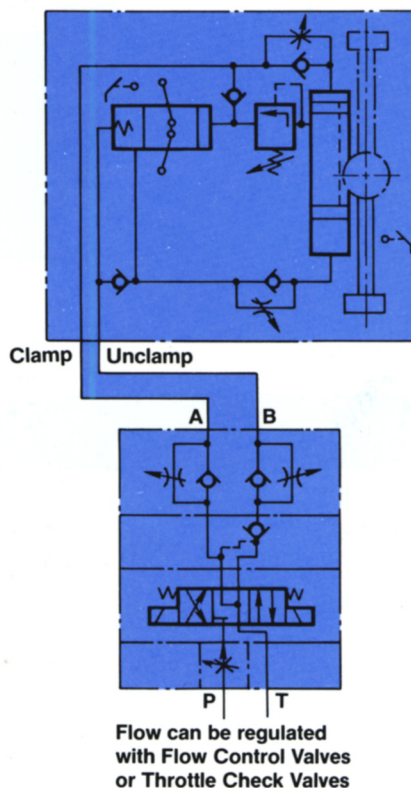
The PDS unit offers Optima's toggle system in a compact and versatile form. Clamp force is generated mechanically after being hydraulically activated. In the clamped position the unit is mechanically locked and fail-safe.

The unit also incorporates Optima's unique "Activator" system. This system allows the clamp to monitor clamping force, tie-rod failures, die or platten deformations, as well as any changes along the clamp line. Any irregularities will result in an immediate press shut-down.

Due to its design and the unique 180° swing radius of the tie-rod, the unit completely disappears from the platten surface. This allows dies or bolsters to be brought in from any direction.

### Features:

- 180° swing tie-rod.
- Compact size.
- Unique application possibilities.
- Hydraulically activated mechanical clamping.



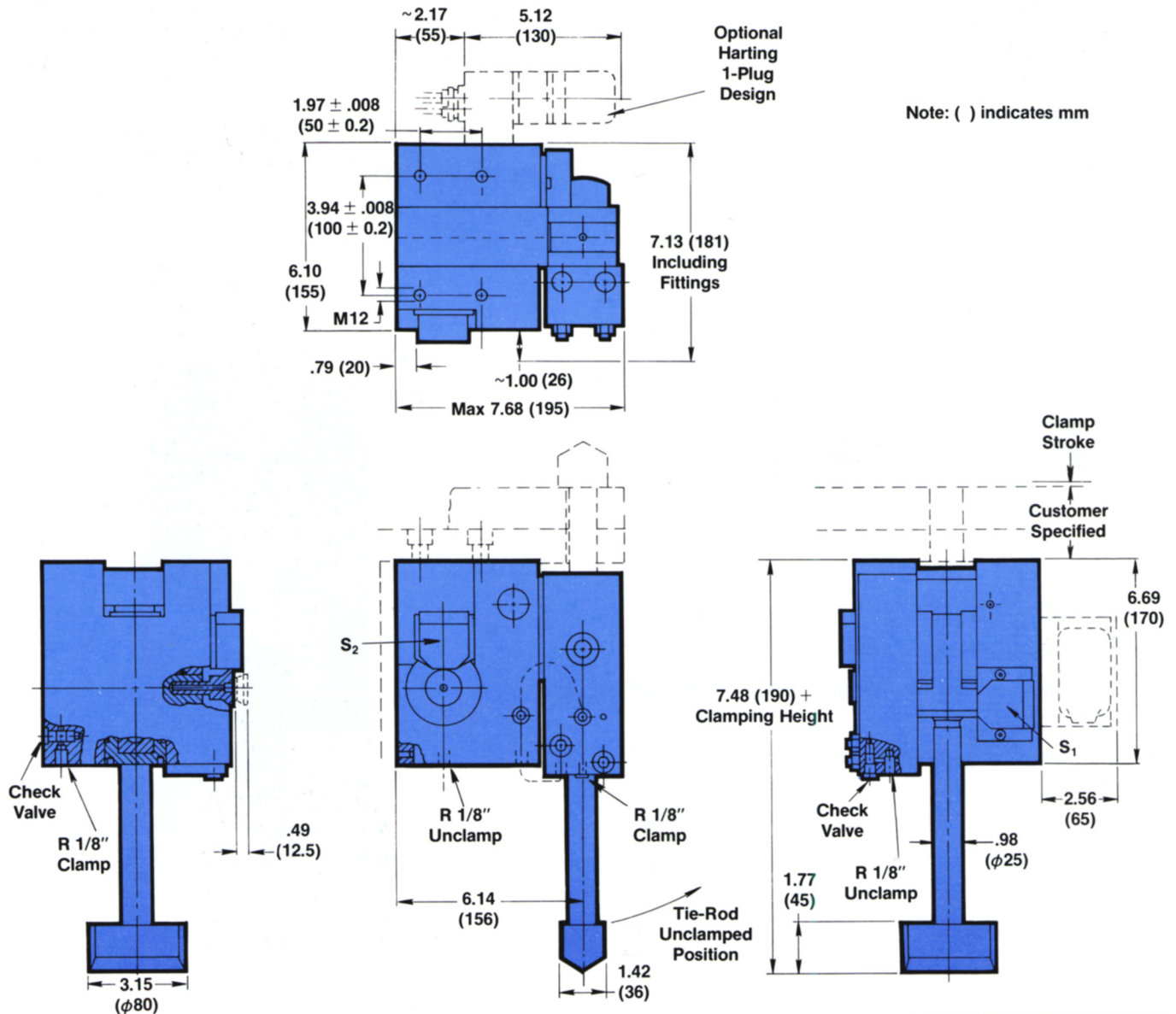


## Technical Data

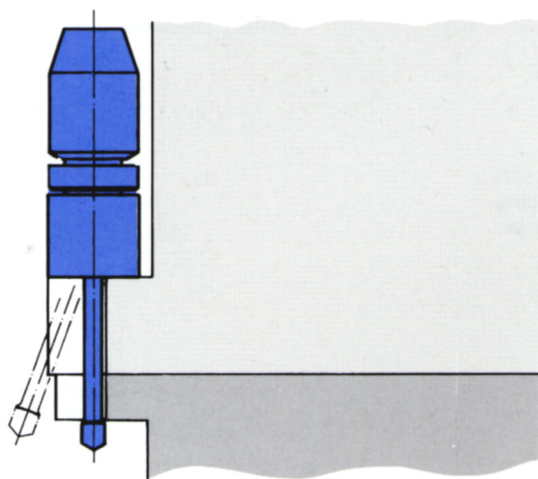
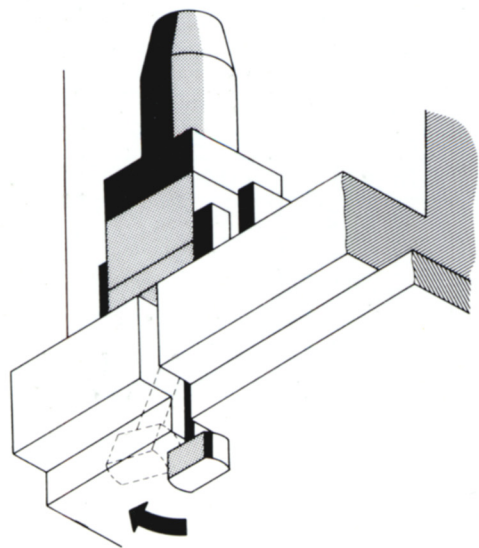
| Model                                    |                      | PDS 6.3                  | PDS 10                   |
|--|----------------------|--------------------------|--------------------------|
| Clamp Force                              | tons                 | 7                        | 11                       |
| Setting Pressure                         | psi                  | 1300                     | 1450                     |
| Holding Capacity                         | tons                 | 11                       | 16                       |
| Operating Pressure                       | min. psi<br>max. psi | 1600<br>2000             | 1750<br>2000             |
| Clamping Stroke                          | inches (mm)          | 0.18 (4.5)               | 0.14 (3.5)               |
| Clamping Tolerance                       | inches (mm)          | $\pm .008$ ( $\pm 0.2$ ) | $\pm .008$ ( $\pm 0.2$ ) |
| Tie-Rod Swing Angle (adjustable)         |                      | 180°                     | 180°                     |
| Oil Volume per Event (in. <sup>3</sup> ) | Clamp                | 2.4                      | 2.4                      |
|  | Unclamp              | 2.4                      | 2.4                      |
| Oil Flow Require per Unit*               | gal/min              | 0.1-.15                  | 0.1-.15                  |

Hydraulic Fluid H-LP Viscosity = 25-60 cST/40° C. Filter = 20-25  $\mu$ m.

\*If a pump with a greater flow volume than necessary is used, the flow must be throttled.



## A Swing Clamp of unsurpassed strength and reliability.



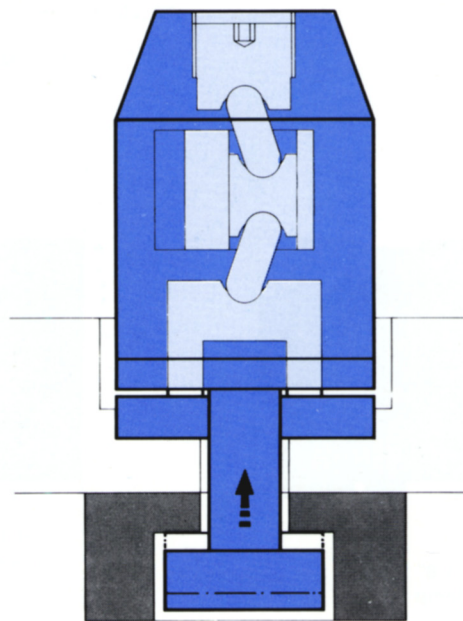
These units are mounted on the Press Slide and swing into position through slot in the die. The swing-in action of the Tie-Rod and Clamping are controlled automatically, and occur in series. Once the unit is clamped, through its mechanical toggle system, it becomes completely hydraulic independent and all line pressures go to zero.

While clamped, the unit monitors clamp force and thereby can detect such irregularities as tool failure, die shoe compression, tie rod failure, etc. A drop in clamp force beyond a pre-set limit will result in an immediate press shut-down.

Finally, due to its mechanically rigid clamp action, the tool remains positively fixed to ensure the highest possible level of stamping precision.

### Features:

- Clamp force 11 and 22 tons
- Purely mechanical clamping — hydraulically activated
- Complete independence from hydraulics during press operation
- Low operational hydraulic pressure of 1750 psi (only during activation)
- Fully automatic swing action and clamping
- Unsurpassed rigidity and operational safety
- Proven reliability in automotive plants throughout the world





## Technical Data

| Model                             |                        | SSE 10       | SSEV 10      | SSEA 10    | SSE 20       | SSEV 20      | SSEA 20     |
|-----------------------------------|------------------------|--------------|--------------|------------|--------------|--------------|-------------|
| Clamp Force                       | (tons)                 | 11           | 11           | 11         | 22           | 22           | 22          |
| Setting Pressure                  | (psi)                  | 1300-1450    | 1300-1450    | 1300-1450  | 1300-1450    | 1300-1450    | 1300-1450   |
| Operating Pressure                | min. (psi)             | 1600         | 1600         | 1600       | 1600         | 1600         | 1600        |
|                                   | max. (psi)             | 2000         | 2000         | 2000       | 2000         | 2000         | 2000        |
| Holding Capacity-Maximum          | (tons)                 | 14           | 14           | 14         | 28           | 28           | 28          |
| Clamping Stroke                   | inches (mm)            | .18 (4.5)    | .14 (3.5)    | .12 (3.0)  | .18 (4.5)    | .14 (3.5)    | .12 (3.0)   |
| Clamping Tolerance                | inches (mm)            | ±.008 (±0.2) | ±.020 (±0.5) | ±.20 (±5)  | ±.008 (±0.2) | ±.020 (±0.5) | ±.20 (±5)   |
| Swing-Angle (adjustable) max.     |                        | 20°          | 20°          | 20°        | 20°          | 20°          | 20°         |
| Oil Volume Required per Operation | Clamp                  | 7.02         | 7.02         | 5.4        | 9.09         | 9.09         | 8.24        |
|                                   | Unclamp                | 4.94         | 4.94         | 5.4        | 8.46         | 8.46         | 8.91        |
| Oil Flow Required per Unit*       | (gal/min)              | .25 - .375   | .25 - .375   | .25 - .375 | .375 - .500  | .375 - .500  | .375 - .500 |
| Hydraulic Fittings                | (adaptable to NPT 1/4) | R 1/4        | R 1/4        | R 1/4      | R 1/4        | R 1/4        | R 1/4       |

Hydraulic Fluid Viscosity = 25-60 cSt/40° C — Filter = 20-25  $\mu$ m

\*If a pump of greater flow capacity than required is used, it is necessary to throttle the flow.

### Safety Features — Clamp Force Monitoring

A safety circuit is monitored by Optima's internal "Activator" assembly. Any reduction in clamp force, past a pre-set limit, automatically trips a limit switch and results in a press shut-down.

Limit Switch: Switch Rating 5A/250V

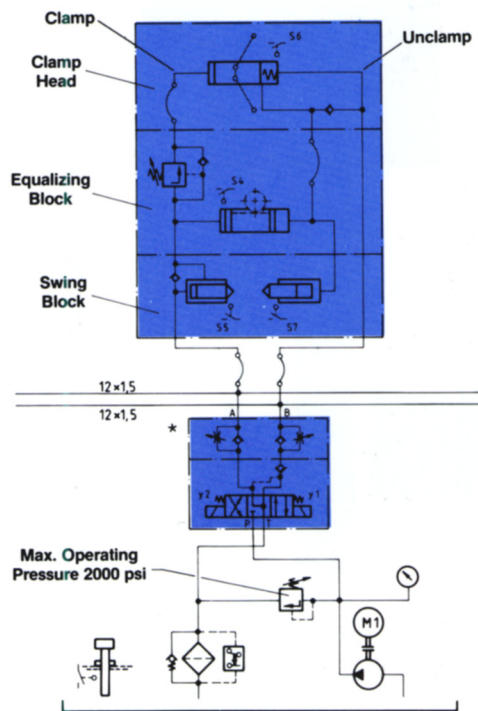
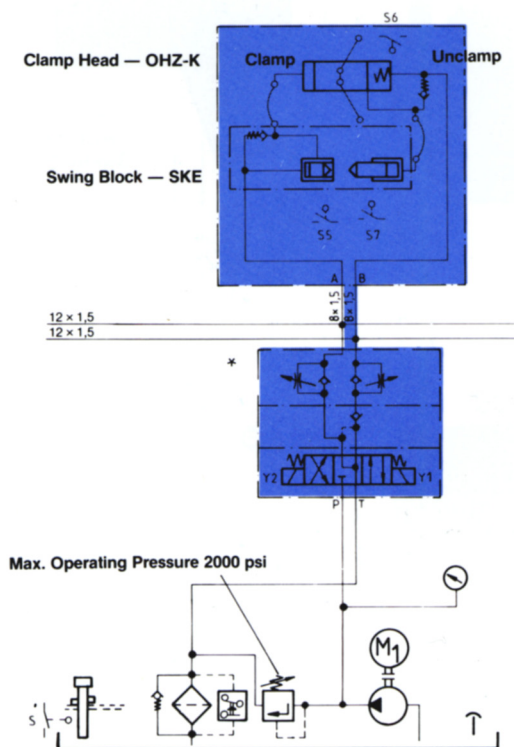
Inductive 3A/ 30V

Resistive 3A 30v

If a water and oil tight installation is desired, we would recommend that limit switch fittings be used in conjunction with a protective hose.

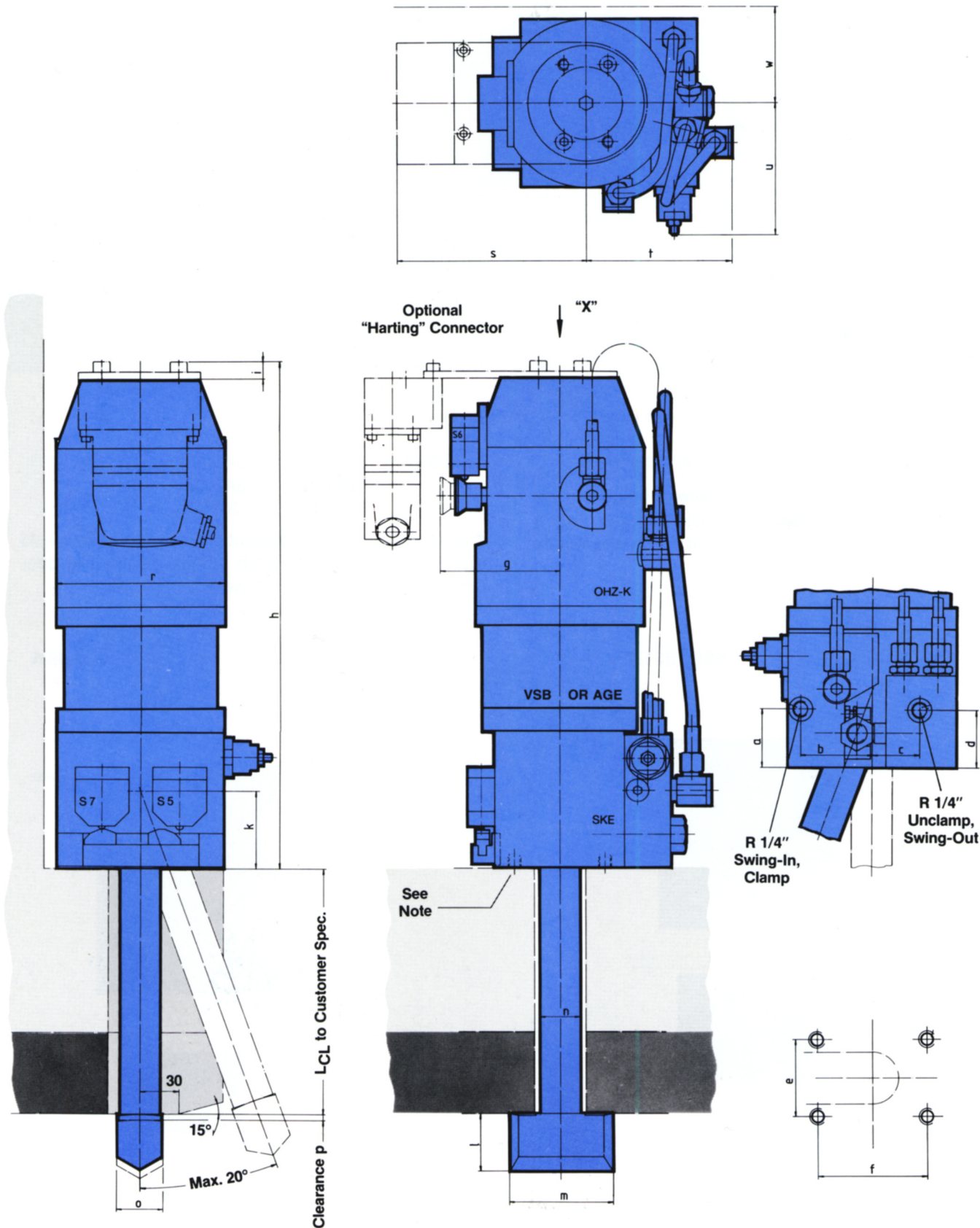
### SSE, SSEV

### SSEA



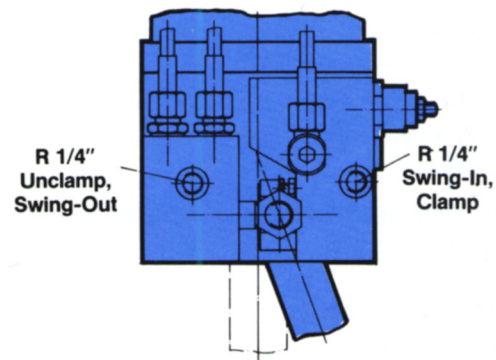
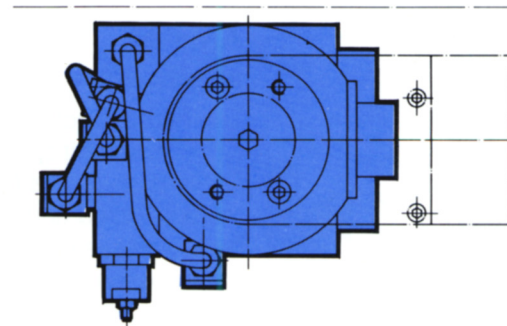
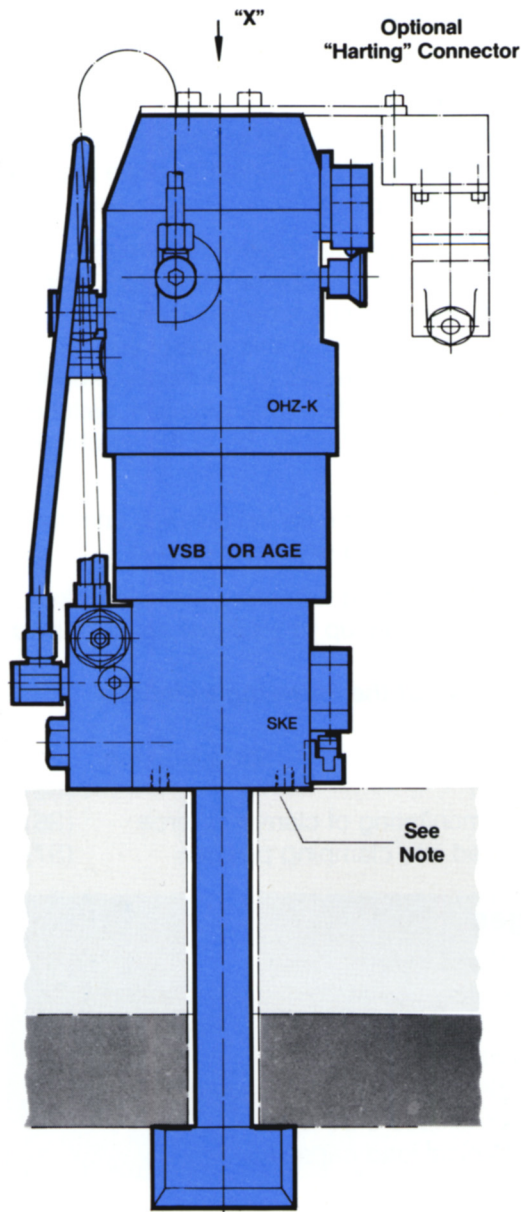
# Technical Data

Left Version — All limit switches and plug connectors are on the left.





Right Version — All limit switches and plug connectors are on the right.



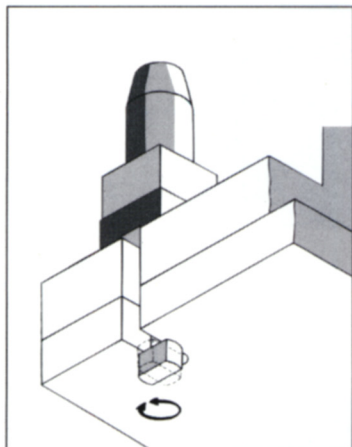
#### NOTE

Units are secured by bolting into taped holes in the swing-out block.

Top-down bolting can be achieved with an optional .79" adapter plate. (Note that overall height "h" is increased by .79" also.)

| Model   | Clamp Force<br>(tons) | Holding Capacity<br>(tons) | Dimensions   |                |              |              |               |               |               |                |             |              |              |              |              |              |              |               |               |               |               |              |
|---------|-----------------------|----------------------------|--------------|----------------|--------------|--------------|---------------|---------------|---------------|----------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|--------------|
|         |                       |                            | a            | b              | c            | d            | e             | f             | g             | h              | i           | k            | l            | m            | n            | o            | p            | r             | s             | t             | u             | w min        |
| SSE 10  | 11                    | 14                         | 1.77<br>(45) | 2.20<br>(56)   | 1.42<br>(36) | 1.43<br>(44) | 2.76<br>(70)  | 3.15<br>(80)  | 3.74<br>(95)  | 13.70<br>(348) | .43<br>(11) | 2.36<br>(60) | 1.77<br>(45) | 3.15<br>(80) | 1.26<br>(32) | 1.42<br>(36) | .18<br>(4.5) | 5.12<br>(130) | 6.02<br>(153) | 4.72<br>(120) | 3.54<br>(90)  | 2.95<br>(75) |
| SSEV 10 | 11                    | 14                         | 1.77<br>(45) | 2.20<br>(56)   | 1.42<br>(36) | 1.43<br>(44) | 2.76<br>(70)  | 3.15<br>(80)  | 3.74<br>(95)  | 16.85<br>(428) | .43<br>(11) | 2.36<br>(60) | 1.77<br>(45) | 3.15<br>(80) | 1.26<br>(32) | 1.42<br>(36) | .14<br>(3.5) | 5.12<br>(130) | 6.02<br>(153) | 4.72<br>(120) | 3.54<br>(90)  | 2.95<br>(75) |
| SSEA 10 | 11                    | 14                         | 1.77<br>(45) | 2.20<br>(56)   | 1.42<br>(36) | 1.43<br>(44) | 2.76<br>(70)  | 3.15<br>(80)  | 3.74<br>(95)  | 19.13<br>(486) | .47<br>(12) | 2.36<br>(60) | 1.77<br>(45) | 3.15<br>(80) | 1.26<br>(32) | 1.42<br>(36) | .12<br>(3.0) | 5.12<br>(130) | 6.02<br>(153) | 4.69<br>(119) | 3.54<br>(90)  | 2.95<br>(75) |
| SSE 20  | 22                    | 28                         | 1.85<br>(47) | 2.74<br>(69.5) | 1.89<br>(48) | 1.89<br>(48) | 3.94<br>(100) | 4.92<br>(125) | 3.94<br>(100) | 15.51<br>(394) | .43<br>(11) | 3.03<br>(77) | 1.97<br>(50) | 3.86<br>(98) | 1.26<br>(32) | 1.65<br>(42) | .18<br>(4.5) | 6.10<br>(155) | 6.50<br>(165) | 5.91<br>(150) | 5.12<br>(130) | 3.54<br>(90) |
| SSEV 20 | 22                    | 28                         | 1.85<br>(47) | 2.74<br>(69.5) | 1.89<br>(48) | 1.89<br>(48) | 3.94<br>(100) | 4.92<br>(125) | 3.94<br>(100) | 18.23<br>(463) | .43<br>(11) | 3.03<br>(77) | 1.97<br>(50) | 3.86<br>(98) | 1.26<br>(32) | 1.65<br>(42) | .14<br>(3.5) | 6.10<br>(155) | 6.50<br>(165) | 5.91<br>(150) | 5.12<br>(130) | 3.54<br>(90) |
| SSEA 20 | 22                    | 28                         | 1.85<br>(47) | 2.74<br>(69.5) | 1.89<br>(48) | 1.89<br>(48) | 3.94<br>(100) | 4.92<br>(125) | 3.94<br>(100) | 21.02<br>(534) | .47<br>(12) | 3.03<br>(77) | 1.97<br>(50) | 3.86<br>(98) | 1.26<br>(32) | 1.65<br>(42) | .12<br>(3.0) | 6.10<br>(155) | 6.50<br>(165) | 5.51<br>(140) | 3.54<br>(90)  | 3.54<br>(90) |

Dimensions shown in inches ( ) millimeters.



## Area of application

The hydro-mechanical turn-clamp unit type DESV is designed for medium-sized and large presses exerting a force of ca. 500 tons and upwards. It is particularly suitable for top die clamping and for internal die clamping with multiple action presses.

The clamp unit is installed rigidly on the ram ledge. Alternatively, installation in the surface of the ram or bed is possible.

Its use requires dies that have lock plates or clamping edges with a U-recess.

## Mode of operation

After a 90° rotation of the tie rod into the clamping position, a hydraulically actuated mechanically locking toggle mechanism transmits its clamping force to the tie rod.

Whereas the clamping force is developed mechanically, the rotary movement of the tie rod is produced hydraulically. The tie rod pinion rotates over a toothed rod unit, after a maximum 90° rotary movement, the tie rod reaches the clamping position. In this position, an edge control bore releases the hydraulic pressure to the clamping cylinder which actuates the toggle mechanism.

In the clamping position, automatic mechanical locking is carried out, and this can only be released by means of hydraulic pressure when unclamping.

### Movement sequence for securing the slide:

- 90° rotation of the tie rod
- Clamping stroke of the tie rod  
(release of the slide in reverse order)

## Distinguishing features

The clamp unit is fitted with the well-proven Optima toggle mechanism. In this system, the clamping force required is transmitted by mechanical components which are actuated by low hydraulic pressure during

the clamping or release process. By so doing, the clamping force is independent of the compressibility of the pressure medium, operating temperatures and line losses.

The clamping force is continuously and directly monitored by the patented *Optima "Aktivator"*. For this to function, there must not be any hydraulic pressure on the clamp unit. In this type of control, the clamp units are connected to the machine control system via electrical switches (precision limit switches) and in the event of irregularities, bring the machine to a standstill.

In this clamping system, the tie rod projects from the surface of the ram or bed when unclamped.

Due to the standard fitting with a pre-clamping block, die thickness tolerances up to  $\pm 0.5$  mm are permitted.

### Electrical control of the following functions (switches):

- Tie rod rotated into the unclamping position and released (S5)
- Continuous monitoring of clamping force (S6)
- Tie rod rotated into clamping position (S7)

## Advantages

- Mechanical self-locking
- Maximum safety due to continuous monitoring of clamping force by means of the "Aktivator"
- Central control
- Hydraulic pressure only necessary during the clamping or release process
- High mechanical load capacity.

## Construction

The clamp unit has a forged and gunmetal finish tie rod. The individual components of the toggle mechanism are made of hardened steels.

The clamp unit is secured by four bolts, of strength class 10.9 (not included). The thread dimension depends on the type (see technical drawing).

2.400



## Technical data

| Type   |          | DESV 100   | DESV 200  |
|--|----------|--|-----------|
| Nominal clamping force                               | kN       | 100  | 200       |
| Set pressure   | bar      | 100  | 100       |
| max. load capacity                                   | kN       | 125  | 250       |
| max. operating pressure (min. set pressure + 20 bar) | bar      | 140  | 140       |
| Release stroke                                       | mm (ca.) | 3,5  | 3,5       |
| Die thickness tolerance                              | mm       | +/- 0.5  | +/- 0.5   |
| Oil volume required (each process)                   | clamping | 76   | 144       |
|  | release  | 76   | 144       |
| Delivery rate per unit <sup>1)</sup>                 | l/min.   | 1.0 - 1.5  | 1.5 - 2.0 |
| Weight   | kg (ca.) | 48   | 68        |
| Hydraulic connections                                |          | see drawing                                      |           |
| max. operating temperature                           | °C       | 70   |           |
| Pressure medium                                      |          | Hydraulic oil DIN 51524 - HLP<br>(ISO DIN 51519) |           |
| Viscosity  |          | 25 - 60 cST/40° C                                |           |
| Filter   |          | 20 - 25 µm                                       |           |

"If a pump with a higher delivery rate then necessary is used, the oil flow must be reduced by means of flow regulating valves or one-way restrictors.

## Precision Limit Switches

Switching function: single-pole change-over snap -action contact

Supply voltage: 250 V AC

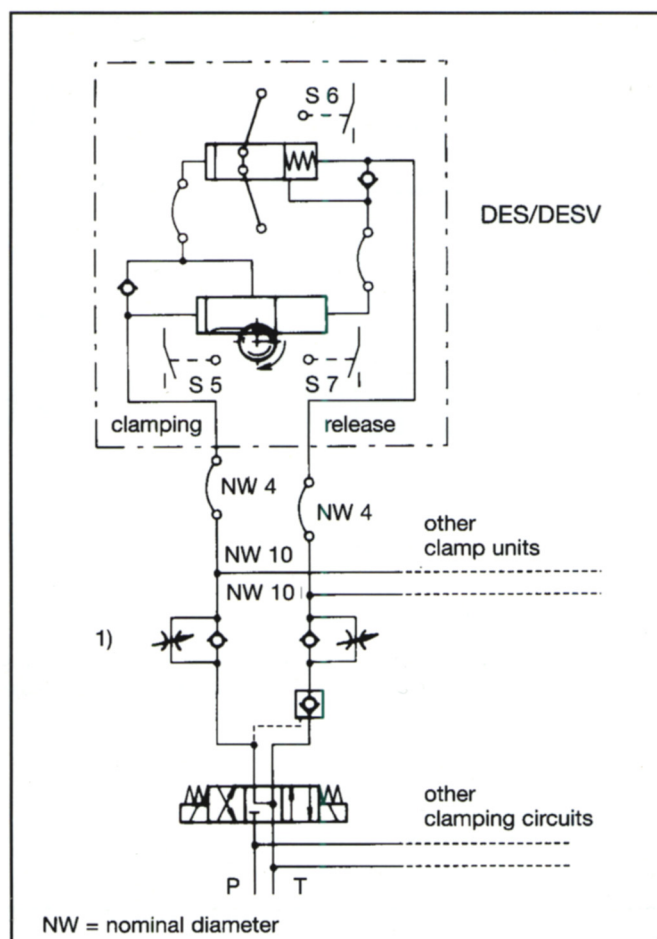
Switching capability: 2A/230 V AC  
5A/ 24 V DC

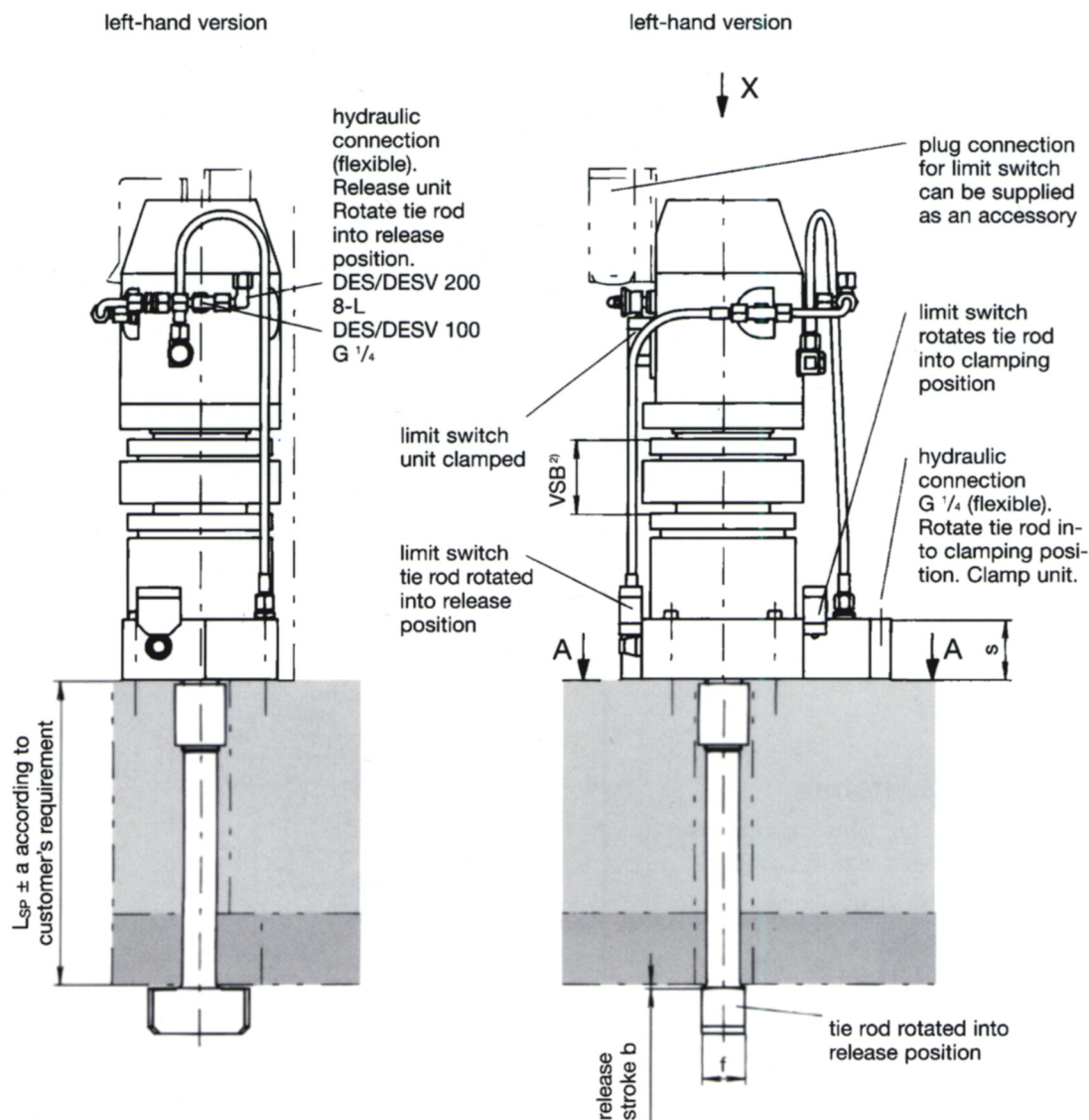
Contacts: screw connection

Cable lead-in: armoured cable 9

For a water- and oil-tight installation, we recommend cable screw joints, in conjunction with a protective sleeve.

## Hydraulic circuit diagram





$F_{SP}$  = clamping force  
 $F_B$  = load capacity

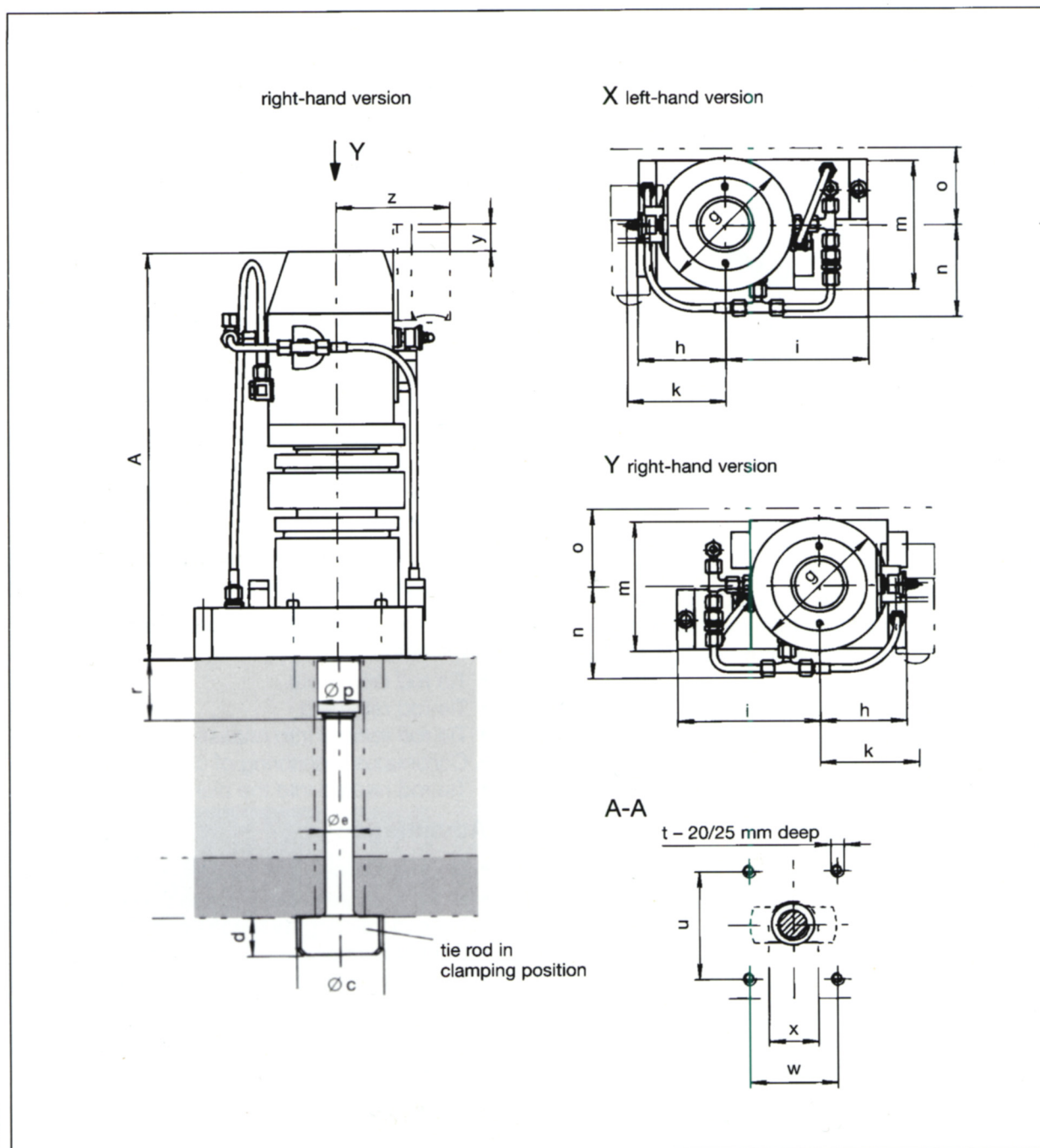
<sup>1)</sup> For a greater clamping length tolerance ( $\pm 6$  mm) the DESA version can be supplied on request.

<sup>2)</sup> If a clamping length tolerance of  $\pm 0.2$  mm is sufficient, please ask for type DES (without pre-clamping block).

The company reserves the right to make technical changes.

| Type     | $F_{SP}$<br>[kN] | $F_B$<br>[kN] | A<br>max. | a <sup>1)</sup> | b<br>ca. | c  | d  | e  | f  | g   | h   | i   |
|----------|------------------|---------------|-----------|-----------------|----------|----|----|----|----|-----|-----|-----|
| DESV 100 | 100              | 125           | 390       | $\pm 0,5$       | 3,5      | 80 | 30 | 32 | 36 | 130 | 91  | 119 |
| DESV 200 | 200              | 250           | 485       | $\pm 0,5$       | 3,5      | 98 | 45 | 32 | 42 | 155 | 100 | 162 |

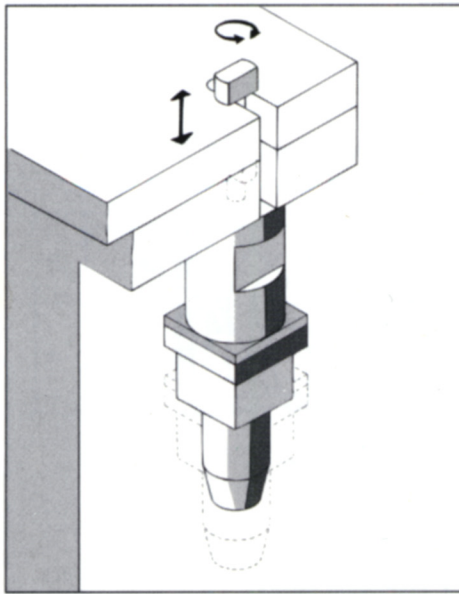




The company reserves the right to make technical changes.

| k<br>max. | m   | n   | o<br>min. | p  | r<br>max. | s  | t  | u   | w   | x  | y  | z   | Weight |
|-----------|-----|-----|-----------|----|-----------|----|----|-----|-----|----|----|-----|--------|
| 112       | 125 | 92  | 75        | 38 | 50        | 50 | M8 | 92  | 108 | 40 | 20 | 162 | 48     |
| 114       | 150 | 107 | 90        | 49 | 70        | 60 | M8 | 125 | 100 | 50 | 32 | 166 | 68     |

## Retracting Turn-Clamp



### Area of application

The hydro-mechanical retracting turn-clamp unit type DESHV is designed for medium-sized and large presses exerting a force of ca. 500 tons upwards. It is particularly suitable for bottom die clamping, and for inner die clamping in draw presses. It is also used for top die clamping.

The clamp unit is installed rigidly in the surface of the ram or bed. Alternatively, it may be fitted to the ram bracket.

The use of the clamp unit requires dies that have lock plates or that have clamping edges with a U-recess.

### Mode of Operation

A double-acting hydraulic cylinder hydraulically initiates the clamping process by extending the tie rod outward. The tie rod is driven out to a point above the clamping edge of the die, into the clamping position. In the subsequent 90° rotation of the tie rod, a pinion is rotated by means of a toothed rod until the tie rod reaches the clamping position. In this position, an edge control bore allows the hydraulic pressure to flow to the clamping cylinder which actuates the toggle mechanism. This hydraulically actuated but mechanically locking system transmits its clamping force to the die.

The mechanical locking effect, produced in the clamping position, is automatic and can only be released hydraulically.

#### **Movement sequence for applying the clamping force:**

- Driving out the tie rod to a point above the clamping edge
- 90° rotation of the tie rod
- Clamping stroke of the tie rod (release of the clamp unit in reverse sequence).

### Distinguishing features

The clamp unit is fitted with the well-proven Optima toggle mechanism. In this system, the clamping force required is transmitted by mechanical components which are actuated, only during the clamping or release process, by low hydraulic pressure.

The clamping force is continuously and directly controlled by the *Optima "Aktivator"*. For this to function there must not be any hydraulic pressure on the clamp unit. In this type of control, the clamp units are connected to the machine control system via electrical switches (precision limit switches) and, in the event of irregularities, bring the machine to a standstill.

In the idle position, the tie rod is completely withdrawn into the surface of the bed or ram, and thus protected from damage. Die changing is therefore possible without interference.

Due to the standard equipment with a pre-clamping block, die thickness tolerances up to  $\pm 0.5$  mm are permitted.

#### **Electrical control of the following functions (switches):**

- Tie rod driven out (S2)
- Tie rod retracted (S3)
- Tie rod rotated into release position (S5)
- Continuous monitoring of clamping force (S6)
- Tie rod rotated into the clamping position (S7)

### Advantages

- Mechanical self-locking
- Highest degree of safety due to continuous clamping force monitoring by means of the "Aktivator"
- Central control
- Hydraulic pressure only necessary during the clamping or release process
- High mechanical load capacity

### Construction

The clamp unit has a forged and gunmetal-finish tie rod.

The individual components of the toggle mechanism are made from various special alloys. Two hydraulic circuits are controlled by way of four hydraulic connections.

The clamp unit is secured by four M12 bolts of strength class 10.9 (not included).



## Hydro-mechanical Retracting Turn-Clamp

### Technical data

| Type   |          | DESHV 100  | DESHV 200 |
|--|----------|--|-----------|
| Nominal clamping force                               | kN       | 100  | 200       |
| Set pressure   | bar      | 100  | 100       |
| max. load capacity                                   | kN       | 125  | 250       |
| max. operating pressure (min. set pressure + 20 bar) | bar      | 140  | 140       |
| Release stroke                                       | mm (ca.) | 3,5  | 3,5       |
| Die thickness tolerance                              | mm       | +/- 0.5  | +/- 0.5   |
| Oil volume required (each process)                   | clamping | 160.5  | 247.5     |
|  | release  | 278  | 412       |
| Delivery rate per unit <sup>1)</sup>                 | l/min.   | 1.0 - 1.5  | 1.5 - 2.0 |
| Weight   | kg (ca.) | 63   | 90        |
| Hydraulic connections                                |          | see drawing                                      |           |
| max. operating temperature                           | °C       | 70   |           |
| Pressure medium                                      |          | Hydraulic oil DIN 51524 - HLP<br>(ISO DIN 51519) |           |
| Viscosity  |          | 25 - 60 cST/40° C                                |           |
| Filter   |          | 20 - 25 µm                                       |           |

<sup>1)</sup> If a pump with a higher delivery rate than necessary is used, the oil flow must be reduced by means of flow regulating valves or one-way restrictors.

### Precision position switches

Switching function: single-pole change-over snap-action contact

Supply voltage: 250 V AC

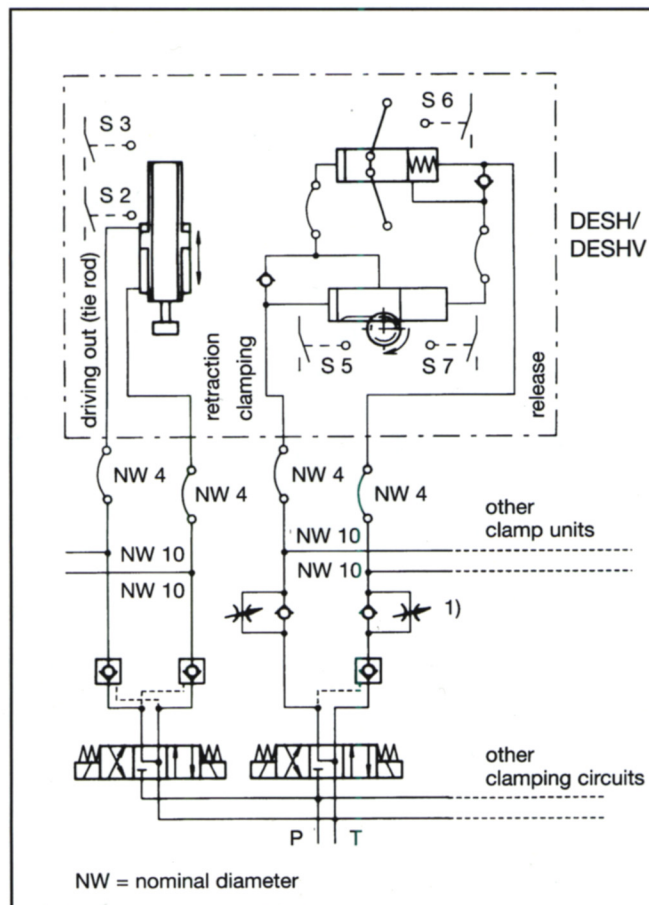
Switching capability: 2A/230 V AC  
5A/ 24 V DC

Contacts: screw connection

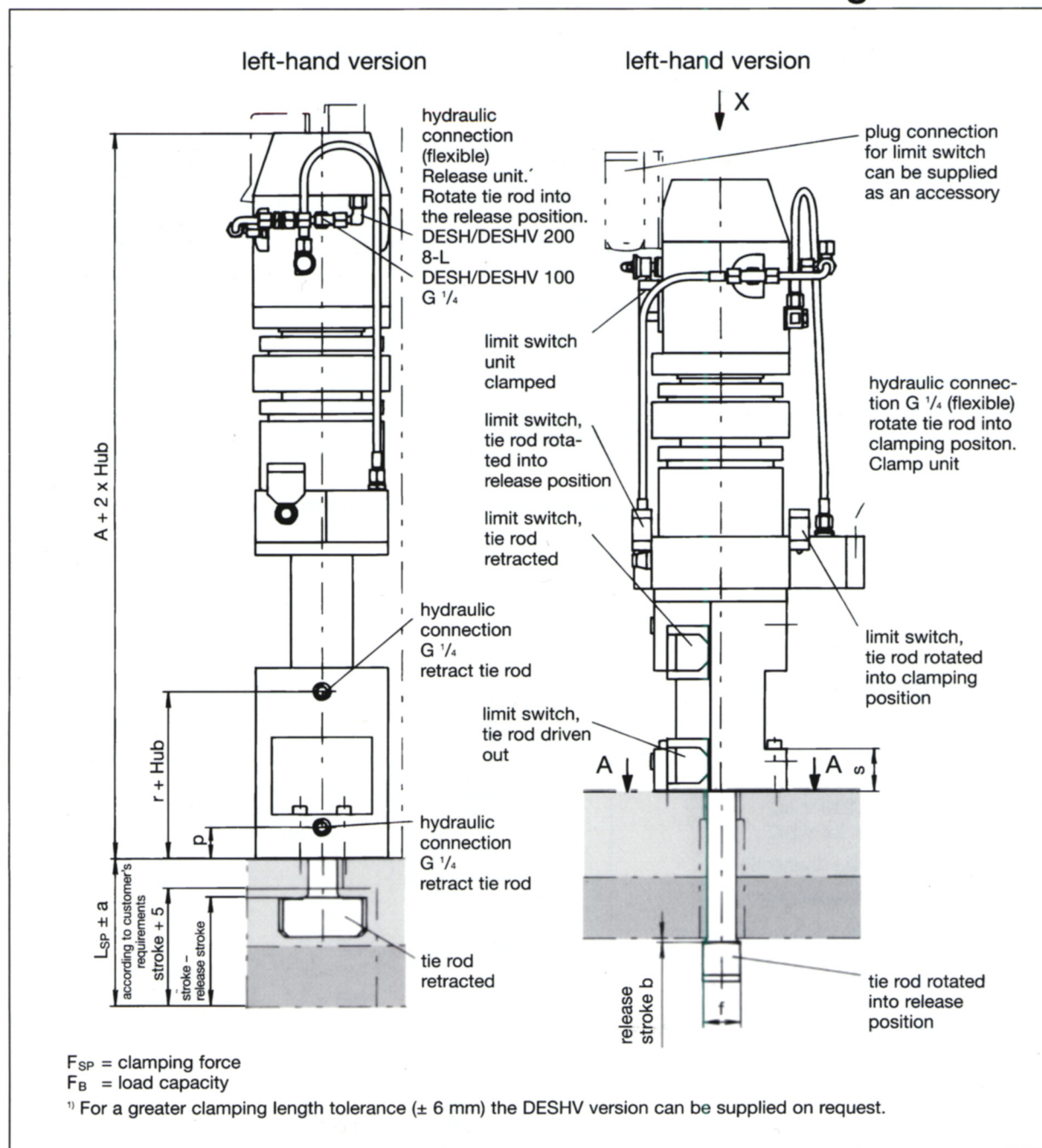
Cable lead-in: armoured cable 9

For a water- and oil-tight installation, we recommend cable screw joints, in conjunction with a protective sleeve.

### Hydraulic circuit diagram



## Hydro-mechanical Retracting Turn-Clamp

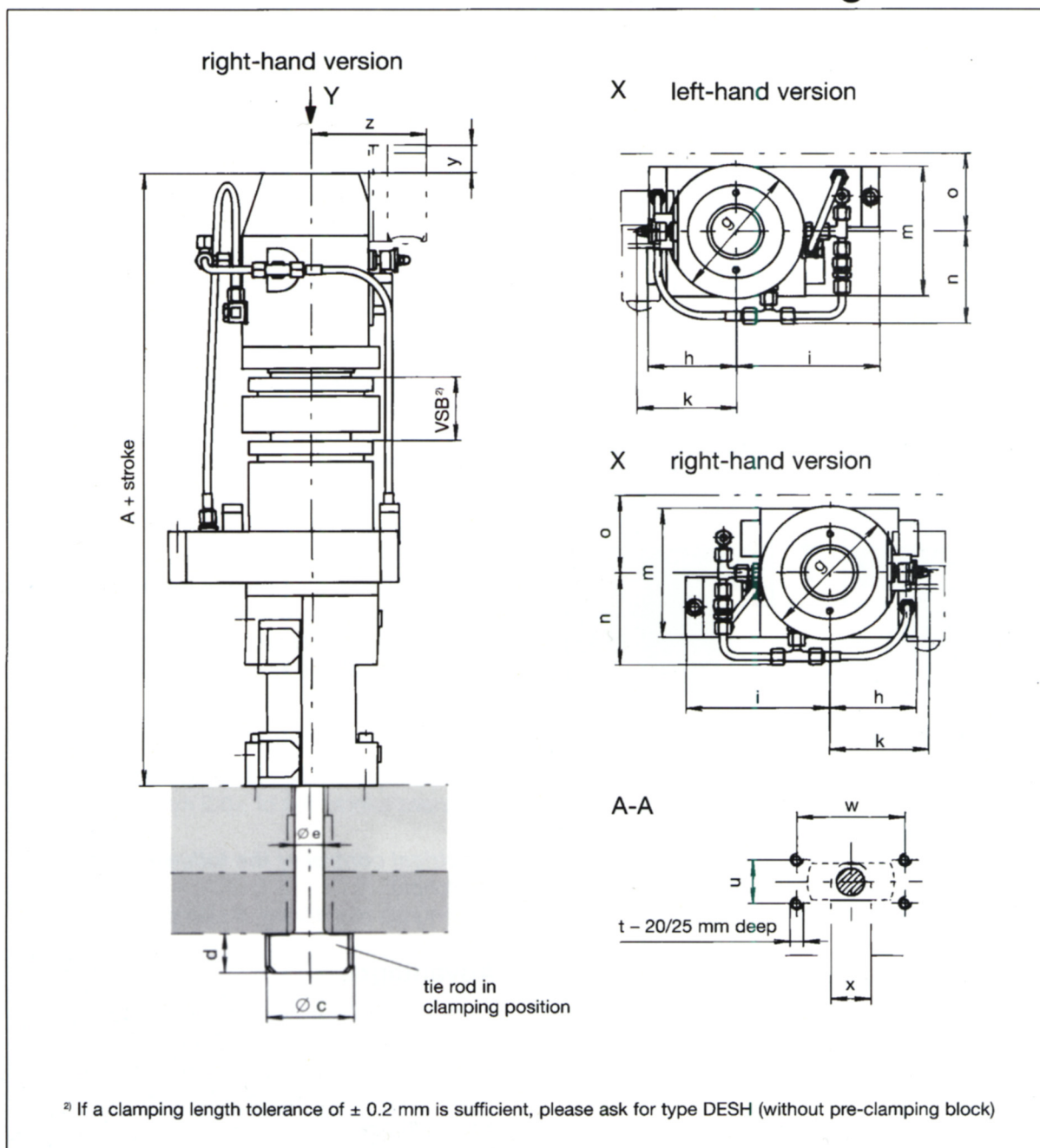


**The company reserves the right to make technical changes.**

| Type      | F <sub>SP</sub><br>[kN] | F <sub>B</sub><br>[kN] | Stroke<br>from/to | A<br>max. | a <sup>o)</sup> | b<br>ca. | c  | d  | e  | f  | g   | h   | i   |
|-----------|-------------------------|------------------------|-------------------|-----------|-----------------|----------|----|----|----|----|-----|-----|-----|
| DESHV 100 | 100                     | 125                    | 90-150            | 500       | ± 0,5           | 3,5      | 80 | 30 | 32 | 36 | 130 | 91  | 119 |
| DESHV 200 | 200                     | 250                    | 100-150           | 620       | ± 0,5           | 3,5      | 98 | 45 | 32 | 42 | 155 | 100 | 162 |

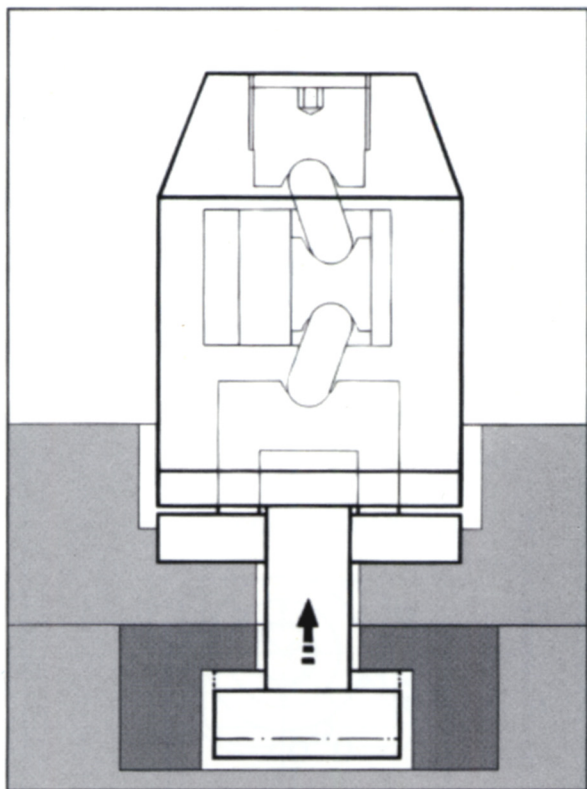


# Hydro-mechanical Retracting Turn-Clamp



The company reserves the right to make technical changes.

| k max. | m   | n   | o min. | p    | r    | s  | t   | u  | w   | x  | y  | z   | Weight [kg]        |
|--------|-----|-----|--------|------|------|----|-----|----|-----|----|----|-----|--------------------|
| 112    | 125 | 92  | 75     | 35,5 | 65   | 50 | M10 | 40 | 100 | 40 | 20 | 162 | 63 with stroke 90  |
| 114    | 150 | 107 | 90     | 35,5 | 62,5 | 50 | M12 | 50 | 122 | 46 | 32 | 166 | 90 with stroke 120 |



## Area of application

The hydro-mechanical clamp unit type OHZ-K is designed for machine dies and special machines of various types. It is particularly suitable for clamping carriages, pallets, turn-tables and similar objects. It is rigidly installed at various points, for example, on tailstocks, machine frames or gantries. Its use requires flat clamping surfaces.

Due to the low installation cost, the hydro-mechanical clamp unit is suitable both for initial installations and retro-fits.

## Mode of Operation

A hydraulically actuated mechanically locking toggle mechanism transmits its clamping force to a tie rod that clamps the die in the tool surface.

The clamping force is applied in a purely mechanical manner whereby the toggle mechanism is moved to the clamping point by means of hydraulic pressure. The clamp unit, together with the tie rod, produces a tension effect. Due to the tension thus produced, the die is clamped between the tie rod head and the clamping surface, and at the same time is mechanically locked in place.

## Application of the clamping force by:

- Tension movement of the clamp unit

## Distinguishing features

The clamp unit is fitted with the well-proven Optima toggle mechanism. In this system, the clamping force required is transmitted by mechanical components which are actuated, with low hydraulic pressure, only during the clamping or release process. The clamping force is thus independent of the compressibility of the pressure medium, operating temperatures and line losses.

Due to the patented *Optima-“Aktivator”*, the clamping force is continuously and directly monitored. For this to function there must not be any hydraulic pressure on the clamp unit.

In this control system, the clamp units are connected to the machine control system via electrical switches (precision limit switches). In the event of failure of the clamping force, snapping of the tie rod, or plastic deformations at the clamping point, an electrical signal is produced and passed to the machine control system. Irregularities of this kind result in the machine being stopped.

This control system ensures the highest degree of safety.

When using multiple clamping surfaces, maximum thickness tolerances of  $\pm 0.2$  mm are permitted.

## Electrical control of the following functions (switches):

Continuous monitoring of clamping force (S6)

## Advantages

- Mechanical self-locking
- Limited space required due to compact dimension
- Maximum safety due to continuous monitoring of clamping force by the “Aktivator”
- Central control
- Hydraulic pressure only necessary during the clamping or release process
- High mechanical load capacity

## Construction

The individual components of the toggle mechanism are made from various hardened steels.

The clamp unit is secured by four bolts of strength class 10.9 (supplied). The thread dimension depends on the type (see technical drawing).

2.300



## Clamping Unit

## Technical data

| Type   |          |          | OHZ-K 50 S  | OHZ-K 100 S | OHZ-K 200 S |
|--|----------|----------|---|-------------|-------------|
| Nominal clamping force                               |          | kN       | 50  | 100         | 200         |
| Set pressure   |          | bar      | 70  | 90          | 90          |
| max. load capacity                                   |          | kN       | 63  | 125         | 250         |
| max. operating pressure (min. set pressure + 20 bar) |          | bar      | 100   | 140         | 140         |
| Release stroke                                       |          | mm (ca.) | 2   | 4,5         | 4,5         |
| Die thickness tolerance                              |          | mm       | +/- 0.2   | +/- 0.2     | +/- 0.2     |
| Oil volume required (each process)                   | clamping | cm³      | ca. 30  | ca. 70      | ca. 130     |
|  | release  | cm³      | ca. 30  | ca. 70      | ca. 130     |
| Delivery rate per unit <sup>1)</sup>                 |          | l/min.   | 0.4 - 0.6   | 1.0 - 1.5   | 1,5 - 2.0   |
| Weight   |          | kg (ca.) | 10  | 15          | 20          |
| Hydraulic connections                                |          |          | G 1/4   | G 1/4       | G 1/4       |
| max. operating temperature                           |          | °C       | 70  |             |             |
| Pressure medium                                      |          |          | Hydraulic oil ISO Standard 3448 ISO VCE (DIN 51519) |             |             |
| Viscosity  |          |          | 25 - 60 cST/40° C                                   |             |             |
| Filter   |          |          | 20 - 25 µm  |             |             |

"If a pump with a higher delivery rate than necessary is used, the oil flow must be reduced by means of flow regulating valves or one-way restrictors.

### Monitoring of clamping force

## OHZ-K 50 S

### Inductive proximity switch

Switching function: p-n-p normally open end

Supply voltage: 10-30 V DC

Switching capability: 200 mA

## OHZ-K 100 S

## OHZ-K 200 S

### Precision limit switch

Switching function: single pole  
change-over  
snap-action contact

Supply voltage: 250 V AC

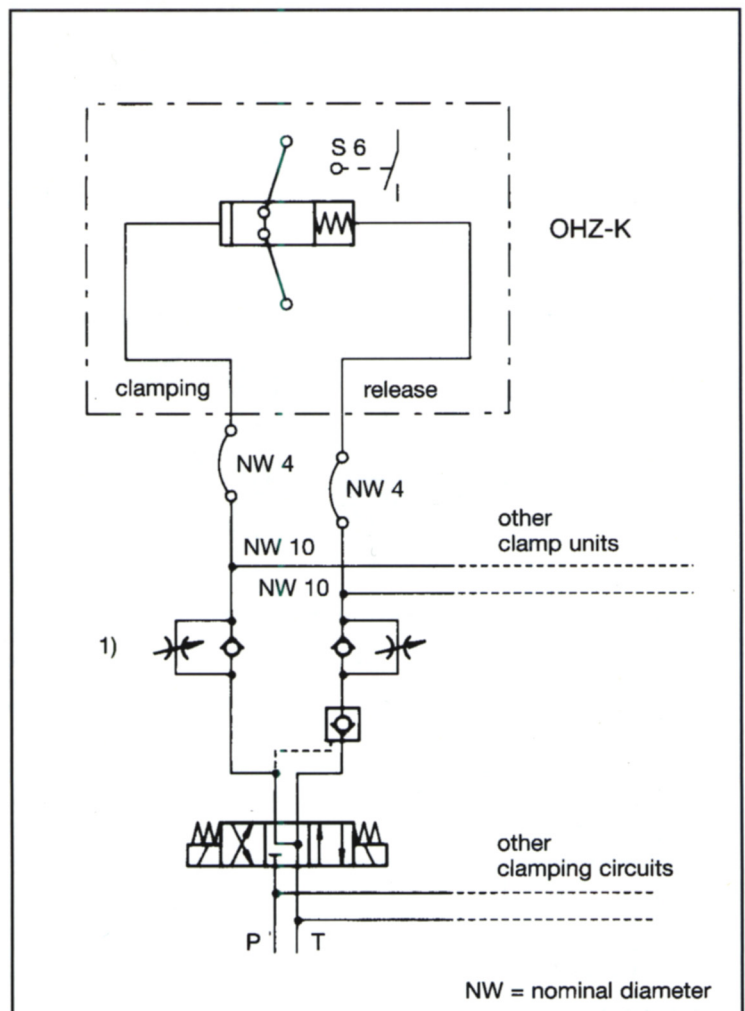
Switching capability: 2A /230 V AC  
5A / 24 V DC

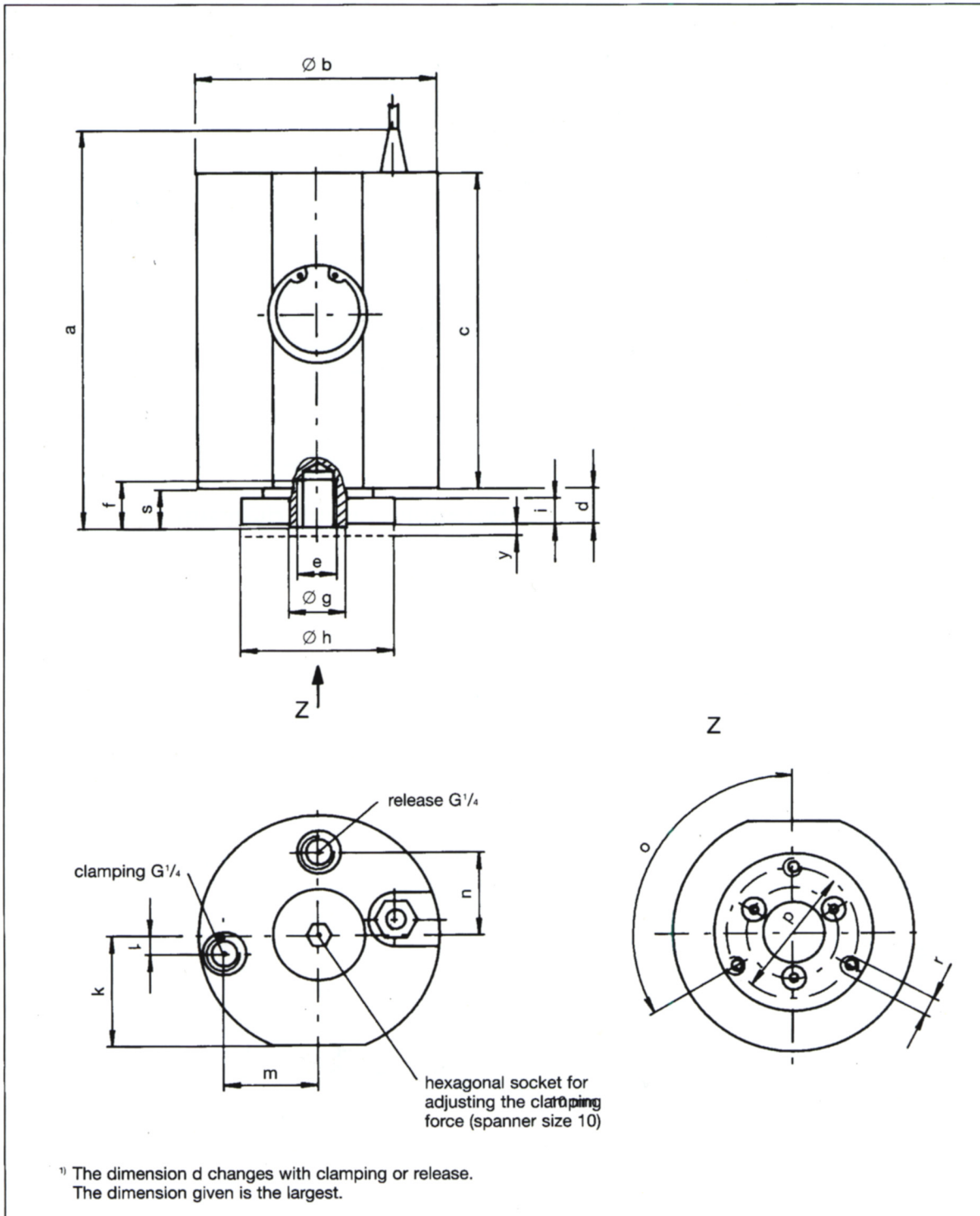
|                |                  |
|----------------|------------------|
| Contacts:      | screw connection |
| Cable lead-in: | armoured cable 9 |

Connection cable: 3 m long

For a water- and oil-tight installation, we recommend cable screw joints, in conjunction with a protective sleeve.

## Hydraulic circuit diagram

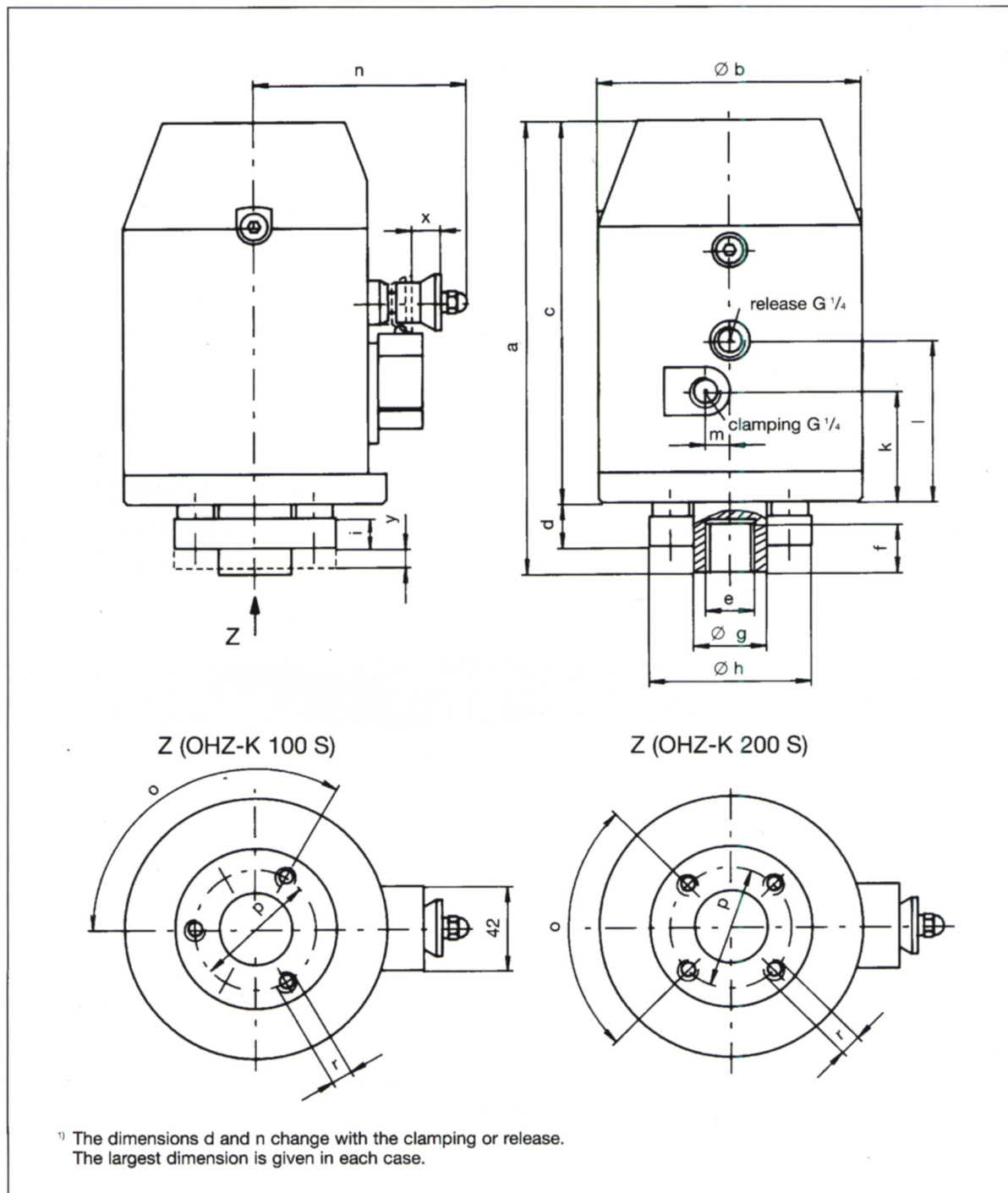




The company reserves the right to make technical changes.

| Type       | a   | b   | c   | d <sup>1)</sup> | e          | f  | g  | h  | i  | k  | l   | m    | n  | o        | p  | r  | s  | y<br>ca. | Weight<br>[kg] |
|------------|-----|-----|-----|-----------------|------------|----|----|----|----|----|-----|------|----|----------|----|----|----|----------|----------------|
| OHZ-K 50 S | 190 | 110 | 145 | 21,5            | M 18 x 1,5 | 22 | 26 | 70 | 12 | 51 | 8,5 | 43,2 | 38 | 3 x 120° | 60 | M6 | 18 | 2        | 10             |





The company reserves the right to make technical changes.

| Type        | a   | b   | c   | d <sup>1)</sup> | e         | f  | g    | h   | i  | k  | l   | m  | n <sup>1)</sup> | o        | p  | r   | x  | y<br>ca. | Weight<br>[kg] |
|-------------|-----|-----|-----|-----------------|-----------|----|------|-----|----|----|-----|----|-----------------|----------|----|-----|----|----------|----------------|
| OHZ-K 100 S | 225 | 130 | 190 | 28              | M24 x 1,5 | 42 | 35,5 | 80  | 15 | 55 | 80  | 12 | 112             | 3 x 120° | 60 | M8  | 14 | 4,5      | 15             |
| OHZ-K 200 S | 262 | 155 | 226 | 30              | M36 x 3   | 55 | 50   | 100 | 15 | 76 | 125 | 20 | 114             | 4 x 90°  | 78 | M10 | 14 | 4,5      | 20             |

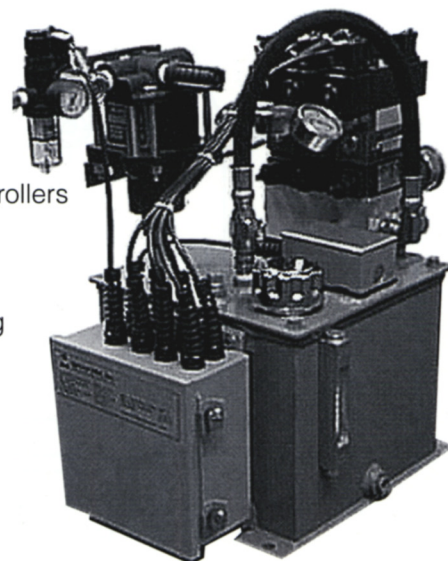
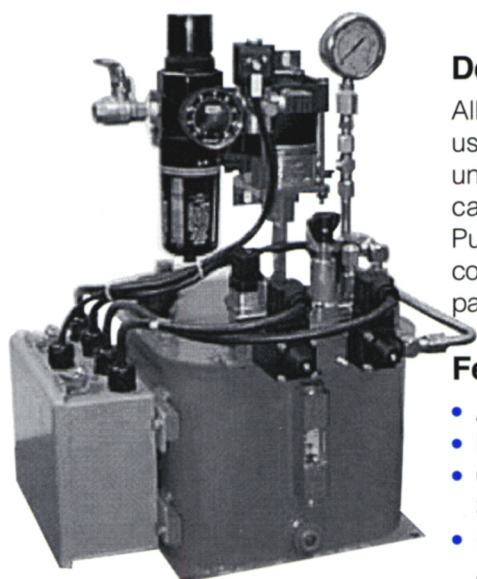
## Pump/Tank Unit

### Description

All Optima Pump/Tank units are designed and built as ready to use power supplies incorporating all necessary hardware. The units feature rugged all steel construction with generous tank capacities for long term trouble free operation. Pump/Tank units are designed to work in conjunction with Optima OPEC Operator panels to achieve seamless system performance.

### Features

- A reliable power source for clamps and die rollers
- Economical Air Operation
- Constant Pressure Monitoring via Pressure Switches
- Redundant safety circuits for Slide Clamping Applications
- Fail safe E-Stop integration with Optima Operator Panels
- Custom configurations available for diverse customer requirements
- Designed as turn key systems with all necessary components included



| Model   | Max. Operating Pressure | Tank Capacity*                                      | Dimensions W X L X H     | Description and Recommended Application  |
|---|-------------------------|---|--------------------------|--|
| OPPTM-1   | 3000 psi                | .3 Gal.   | 15.00" x 4.50" x 7.50"   | Manual Pump for Die Rollers  |
| OPPTA-1M<br>(Note: Replace "1" with desired number of hydraulic circuits) | 3500 psi                | 3 Gal.  | 14.50" x 15.00" x 17.50" | Compact Air Driven Pump for Clamps and/or Die Rollers                          |
| OPPTA-1H<br>(Note: Replace "1" with desired number of hydraulic circuits) | 6000 psi                | 3 Gal.  | 14.50" x 15.00" x 17.50" | Compact Air Driven High Pressure Pump for Clamps and/or Die Rollers            |
| OPPTA-1L<br>(Note: Replace "1" with desired number of hydraulic circuits) | 2000 psi                | 5 Gal. (Note: 10 Gal. Extra-Duty Version available) | 21.00" x 14.00" x 23.00" | Air Driven Pump for Hydro-Mechanical Clamps and Die Rollers                    |
| OPPTE-1H<br>(Note: Replace "1" with desired number of hydraulic circuits) | 6000 psi                | 1 Gal./2 Gal.                                       | 12.75" x 18.00" x 20.75" | Electric Driven Pump for Hydraulic and Hydro-Mechanical Clamps and Die Rollers |



## Electric Control Panel



### Description

All OPECP Operator Panels are designed and built to function seamlessly with OPPTA Pump/Tanks. Panels provide the necessary interface between clamps, die rollers and pump/tank unit. Constant state monitoring provides unparalleled operator safety. Large Switch Gear and Pilot Lights provide easy Operator monitoring and information feedback. The panels are NEMA 12 rated and feature rugged all steel construction.

### Features

- Easy to use control of clamps and die rollers
- Constant State Indicator Pilot Lights
- Fail Safe Relay Logic E-Stop Interface
- Designed as a Turn Key System when used in conjunction with OPPTA Pump/Tank Unit
- NEMA 12 rated enclosures
- **Allen Bradley\*** Switch Gear and Operator Interface
- Custom PLC Controlled Operator Interfaces including Touch Screen Operation and Messaging available upon request

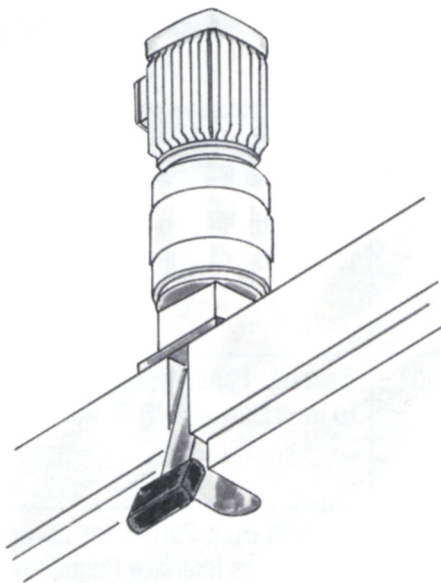
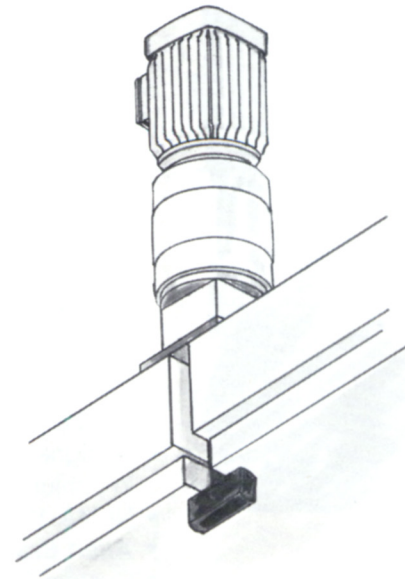
\* Note: **Square D, Cuttler Hammer**, Etc. available upon request



| Model   | Operating Voltage         | Control Logic      | Dimensions W X L X H    | Description and Recommended Application                          |
|---|---------------------------|--------------------|-------------------------|--|
| OPECP-1U<br>(Note: Replace "1" w/desired # of control circuits)   | 120 VAC                   | Relay Based        | 10.00" x 12.00" x 5.00" | Standard Operator Panel designed to interface w/OPPTA Pump/Tank  |
| OPECP-1E<br>(Note: Replace "1" w/desired # of control circuits)   | 24 VDC                    | Relay Based        | 10.00" x 12.00" x 5.00" | Operator Panel designed to interface w/OPPTE Pump/Tank           |
| OPECP-1S<br>(Note: Replace "1" w/desired # of hydraulic circuits) | 24 VDC, 120VAC or 480 VAC | Relay or PLC Based | Application Depended    | Custom Built Panels for Large Scale Press Interface Requirements |

## Electro-Mechanical Swing-Out Clamp

Optima's ESS Swing-Out Clamp represents the culmination of 25 years experience in the tool clamping field. These electro-mechanical units offer the highest degree of operational safety with unmatched reliability and clamping versatility. The unique advantages of these self contained units (no external power sources, i.e. hydraulics, required) make them ideal for both OEM and retrofit applications.

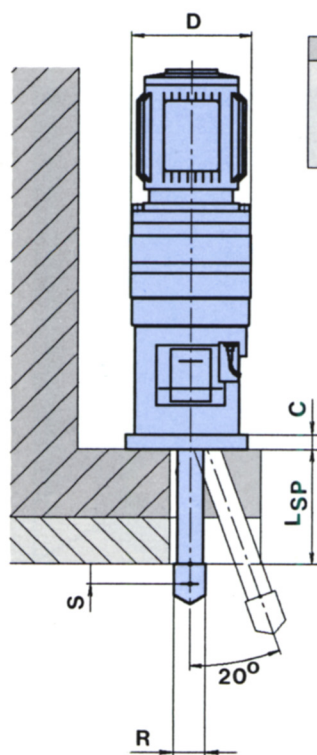
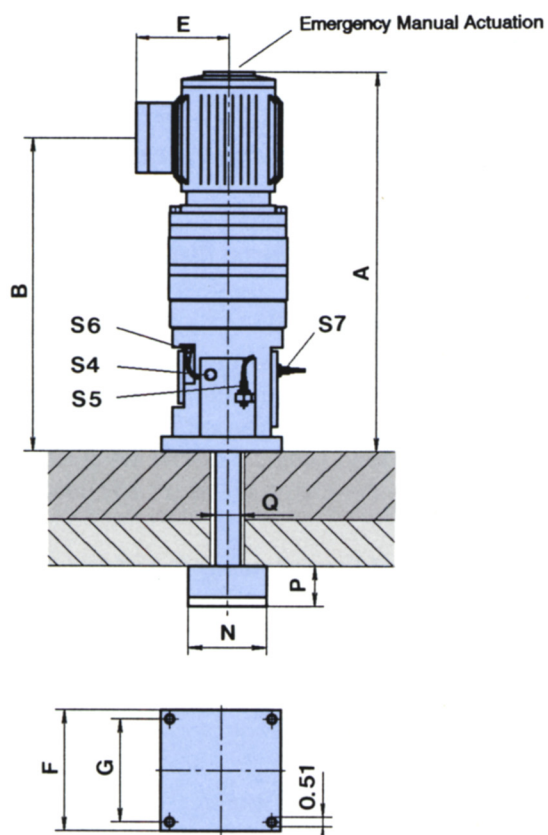


### Features:

- Compact Design
- High Clamp Forces
- Continuous Clamp Force Monitoring
- Simple Installation (2 cables) - No external power source required (no lines, valves, pumps, etc.)
- High Clamping Tolerance ( $\pm .30$  inches)
- Mechanically Self Locking (power is only required during clamp/unclamp operation)
- Trouble Free Operation
- High Operational Safety
- Emergency Manual Operation
- Electrical Monitoring of All Important Functions



## Technical Data:



| PROXIMITY SWITCH FUNCTION |                                      |
|---------------------------|--------------------------------------|
| S4                        | = Tie-Rod Swung In                   |
| S5                        | = Tie-Rod Swung Out                  |
| S6                        | = Continuous Clamp Force Monitoring  |
| S7                        | = Maximum Upper Tie-Rod Travel Limit |

Dimensions shown in inches

| TYPE    | Clamp force (tons) | Holding capacity (tons) | Stroke S | Motor-power (hp) | A     | B     | C    | D    | E    | F    | G    | L <sub>SP</sub> | N    | P    | Q    | R    | Weight (lbs.) |
|---------|--------------------|-------------------------|----------|------------------|-------|-------|------|------|------|------|------|-----------------|------|------|------|------|---------------|
| ESS 60  | 6.6                | 11                      | 0.59     | 0.75             | 18.30 | 14.17 | 0.79 | 5.90 | 4.02 | 6.30 | 5.12 | *               | 2.48 | 0.98 | 0.94 | 0.98 | 66            |
| ESS 120 | 13.2               | 22                      | 0.59     | 1.00             | 19.49 | 15.19 | 0.79 | 6.30 | 4.88 | 6.30 | 5.12 | *               | 3.15 | 1.18 | 1.26 | 1.42 | 77            |
| ESS 240 | 26.4               | 33                      | 0.59     | 2.00             | 21.61 | 17.32 | 0.79 | 6.30 | 4.88 | 6.30 | 5.12 | *               | 3.86 | 1.97 | 1.42 | 1.65 | 77            |

\* Customer specified

### Motors:

Standard 3-phase motors  
Voltage 460V/60 Hz  
DF 3%-15%  
n = 3000 rpm

### Limit Switches:

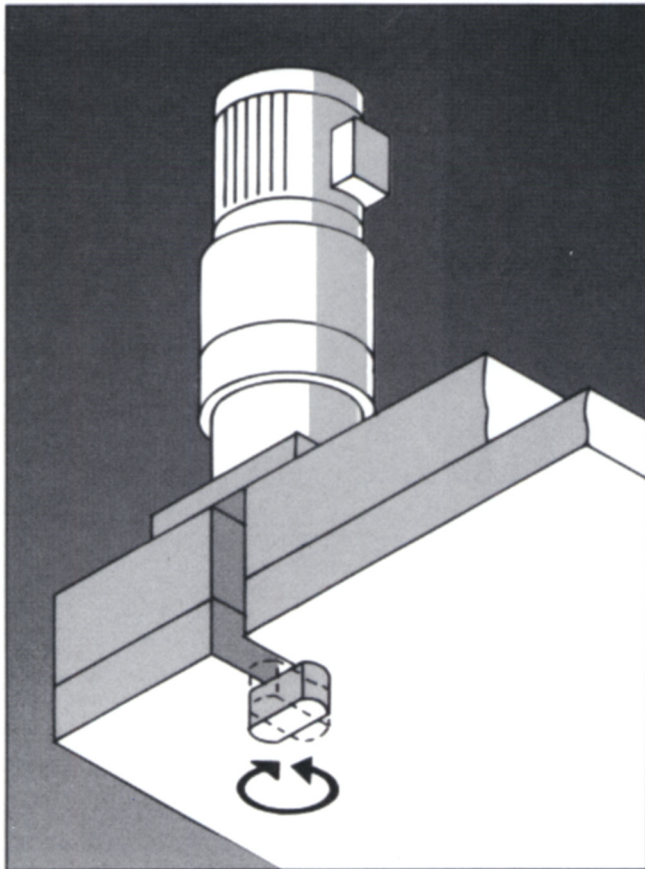
4 "Balluff" proximity switches  
Voltage 24V  
Cable length 10 ft.

### Temperature:

Applications up to 160°F

### Mounting:

For installation please use  
4 socked head cap screws  
(1/2", Grade 8)



### Area of application

The turn-clamp unit type ED is designed for mechanical and hydraulic presses exerting a force of ca. 500 tons or more. It is suitable both for top die clamping and for inner punch die clamping, in multiple acting presses.

It can be installed rigidly either on the press ram ledge or in recesses in the ram surface. The dies used should have a lock plate or a clamping edge with a U-recess.

### Mode of operation

By means of an electric motor and a gear system, a threaded nut is set in rotation. The nut, in cooperation with the associated spindle, initiates the rotary movement by friction. After the clamping process is started, the tie rod of the clamp unit is brought to the clamping position by means of a 90° rotation, and the die is finally clamped in the required position.

The mechanical self-locking of the clamp unit prevents accidental release of the clamped die. Electric power is only required during the clamping and release processes.

### Movement sequence for applying the clamping force:

- 90° rotation
- Clamping stroke of the tie rod  
(reverse order to release clamp unit)

### Distinguishing features

Due to the fact that the clamping process takes place in the most compact space, the clamp unit may also be used with multiple acting presses. In the released position the tie rod head projects below the surface of the ram. As a result, this clamp unit is usually used on the ram.

### Electrical control of the following functions (switches):

- Tie rod released, rotated to clamp position (S5)
- Continuous monitoring of clamping force (S6)
- Tie rod is rotated to unclamp position (S7)

### Technical data

|                      |   |
|----------------------|---|
| Motor:               | DC motor  |
| Supply voltage:      | 460 V, 60 Hz; n = 300 rpm;                                    |
| Switches:            | 3 inductive proximity switches<br>p-n-p normally open contact |
| Supply voltage:      | 10-30 V DC  |
| Cable length:        | ca. 3 m   |
| Clamping rate:       | ca. 3 mm/sec.   |
| Clamping time:       | ca. 1-6 sec.  |
| Max operating temp.: | 70°C  |

### Advantages

- Large clamping thickness tolerance
- Central control
- Compact dimensions
- Mechanical self-locking
- Electrical control of all important functions
- Continuous monitoring of clamping force

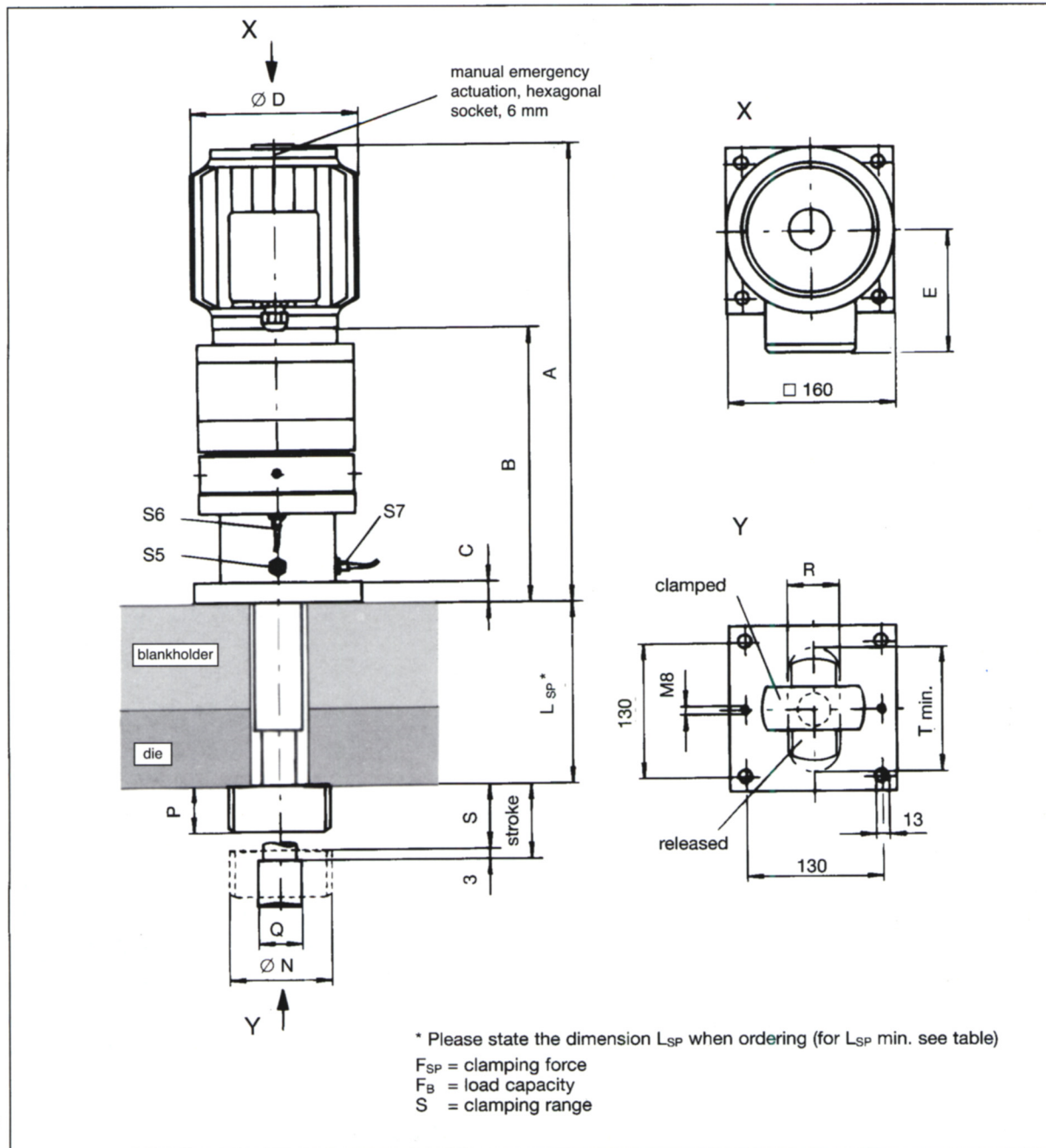
### Construction

The clamp unit has a forged and gunmetal finish tie rod. A high-ratio epicyclic gear box provides the necessary driving power.

To secure the clamp unit to the machine, please use four M12 bolts, strength class 8.8 according to DIN 912 (not included).

3.200



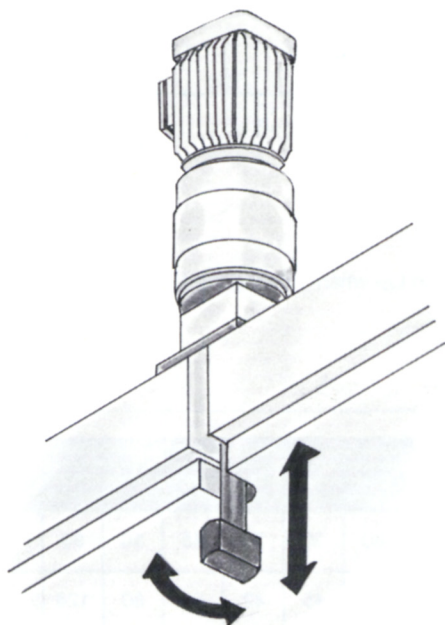
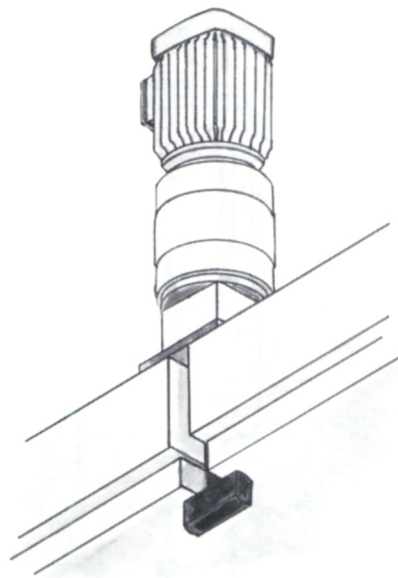


The company reserves the right to make technical changes.

| Type   | $F_{SP}$<br>[kN] | $F_B$<br>[kN] | S  | Stroke | $L_{SP}$<br>min. | Motor<br>power<br>[kW] | A   | B   | C  | D   | E   | N   | P  | Q  | R<br>min. max. | T<br>min. | Weight<br>[kg] |
|--------|------------------|---------------|----|--------|------------------|------------------------|-----|-----|----|-----|-----|-----|----|----|----------------|-----------|----------------|
| ED 60  | 60               | 100           | 15 | 18     | 105              | 0,55                   | 418 | 253 | 20 | 150 | 102 | 80  | 30 | 36 | 45 50          | 90        | 33             |
| ED 120 | 120              | 200           | 15 | 18     | 105              | 0,75                   | 440 | 253 | 20 | 160 | 123 | 98  | 45 | 42 | 50 60          | 120       | 36             |
| ED 240 | 240              | 400           | 15 | 18     | 130              | 1,50                   | 484 | 297 | 20 | 160 | 123 | 120 | 60 | 62 | 65 70          | 160       | 45             |

## Electro-Mechanical Turn-Sink Clamp

Optima's EDH Turn-Sink Clamp represents the culmination of 25 years experience in the tool clamping field. These electro-mechanical units offer the highest degree of operational safety with unmatched reliability and clamping versatility. The unique advantages of these self contained units (no external power sources, i.e. hydraulics, required) make them ideal for both OEM and retrofit applications.

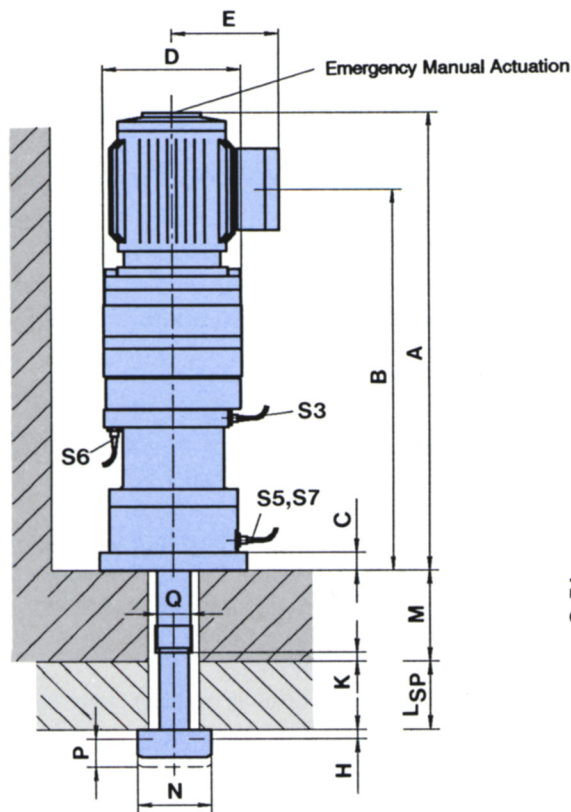


### Features:

- Compact Design
- High Clamp Forces
- Continuous Clamp Force Monitoring
- Simple Installation (2 cables) - No external power source required (no lines, valves, pumps, etc.)
- High Clamping Tolerance
- Mechanically Self Locking (power is only required during clamp/unclamp operation)
- Trouble Free Operation
- High Operational Safety
- Emergency Manual Operation
- Electrical Monitoring of All Important Functions

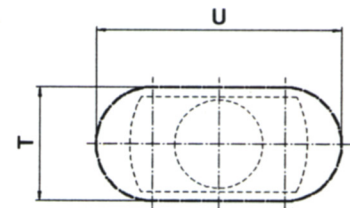
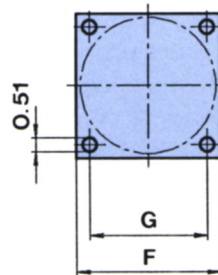


## Technical Data:



### PROXIMITY SWITCH FUNCTION

- S3 = Tie-Rod Retracted
- S5 = Tie-Rod In Clamped Position
- S6 = Continuous Clamp Force Monitoring
- S7 = Tie-Rod In Unclamped Position



### Cutout Dimensions for Tie-Rod

| Type    | T    |      | U    |
|---------|------|------|------|
|         | min. | max. |      |
| EDH-60  | 1.77 | 1.97 | 2.75 |
| EDH-120 | 1.77 | 1.97 | 3.54 |
| EDH-240 | 2.36 | 2.75 | 4.33 |

Dimensions shown in inches

| TYPE    | Clamp force<br>(tons) | Holding capacity<br>(tons) | L <sub>SP</sub> * |      | Motor power<br>(hp) | A     | B     | C    | D    | E    | F    | G    | H    | K    | M*<br>(min) | N    | P    | Q    | Weight<br>(lbs.) |
|---------|-----------------------|----------------------------|-------------------|------|---------------------|-------|-------|------|------|------|------|------|------|------|-------------|------|------|------|------------------|
|         |                       |                            | min               | max  |                     |       |       |      |      |      |      |      |      |      |             |      |      |      |                  |
| EDH 60  | 6.6                   | 11                         | 0.39              | 2.36 | 0.75                | 18.97 | 15.24 | 0.79 | 5.90 | 4.02 | 6.30 | 5.12 | 0.12 | 0.08 | 1.30        | 2.48 | 0.98 | 1.57 | 77               |
| EDH 120 | 13.2                  | 22                         | 0.39              | 2.76 | 1.00                | 20.55 | 16.25 | 0.79 | 6.30 | 4.88 | 6.30 | 5.12 | 0.12 | 0.08 | 1.50        | 3.15 | 1.18 | 1.57 | 88               |
| EDH 240 | 26.4                  | 44                         | 0.39              | 3.15 | 2.00                | 23.35 | 19.06 | 0.79 | 6.30 | 4.88 | 6.30 | 5.12 | 0.12 | 0.08 | 2.28        | 3.86 | 1.97 | 2.17 | 88               |

\* Customer specified, L<sub>SP</sub> represents maximum die shoe thickness range

### Motors:

Standard 3-phase motors  
Voltage 460V/60 Hz  
DF 3%-15%  
n = 3000 rpm

### Limit Switches:

4 "Balluff" proximity switches  
Voltage 24V  
Cable length 10 ft.

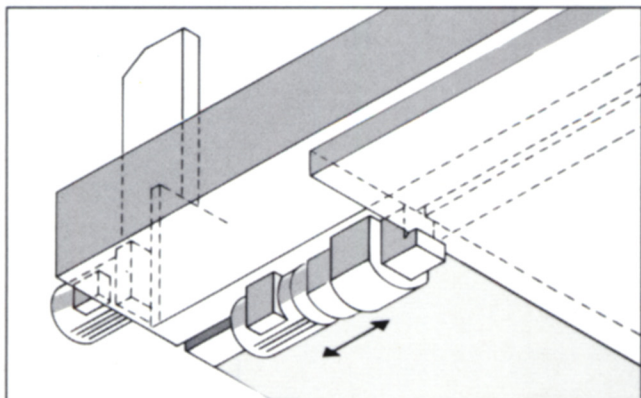
### Temperature:

Applications up to 160°F

### Mounting:

For installation please use  
4 socked head cap screws  
(1/2", Grade 8)

## Electro-Mechanical Traveling Block Clamping



### Area of application

The flexible block clamp unit of the type EFS is designed for mechanical and hydraulic presses exerting a force of ca. 500 tons force upwards. This includes large multi die station transfer presses. It is particularly suitable for top die clamping and require dies with straight clamping edges.

### Mode of operation

*The traveling block clamp unit type EFS:* operates by means of an electric motor operating through a gear-box and a spindle. The angle clamping jaw is rotated about its position, and thus exerts a force on the clamping edge of the die. The clamp unit is secured in the T-slot of the ram and can be moved as required in this slot with the aid of the positioning unit type EFV.

#### **Movement sequence for applying the clamping force:**

- Sliding the clamp unit up to the die clamping edge
- Clamping movement of the clamping jaw (release of the clamp unit in reverse order)

### Distinguishing features

The infinitely variable adaptation to different die widths renders standardization of the die/adaptor plates in terms of their width superfluous. Due to the continuous control of all important functions, and monitoring with the machine control system, fully automatic operation is ensured. The cables which are needed for transmitting the electrical signals and the drive power of the clamp unit are combined in a flexible trailing chain which travels in the machine T-slot.

#### **Electrical control of the following functions (switches):**

- Clamping jaw in the permitted clamping range (S4)
- Clamping jaw released (S5)
- Continuous monitoring of clamping force (S6)
- Clamp unit in parking position (S7)
- Clamp unit at the die clamping edge (S8)

#### **Technical data**

|                      |   |
|----------------------|---|
| Motor:               | DC motor (EFV, EFS)   |
| Supply voltage:      | 460 V, 60 Hz; n = 3000 rpm; (EFS)<br>N=1500 rpm (EFV),<br>S3-duty factor 15%                                |
| Switches:            | 4 inductive proximity switches (EFS)<br>1 inductive proximity switches (EFV)<br>p-n-p normally open contact |
| Supply voltage:      | 10-30 V DC  |
| Sliding rate:        | 91 mm/sec.  |
| Clamping rate:       | depending on type (see reverse)   |
| Max operating temp.: | 70°C  |
| Wired to:            | plug-in connections   |

#### **Advantages**

- Large variable adaptation to different die widths
- Large clamping thickness tolerance
- Mechanical self-locking
- Electrical control of all important functions
- Automatic positioning at die
- Continuous control/monitoring of clamping force

#### **Construction**

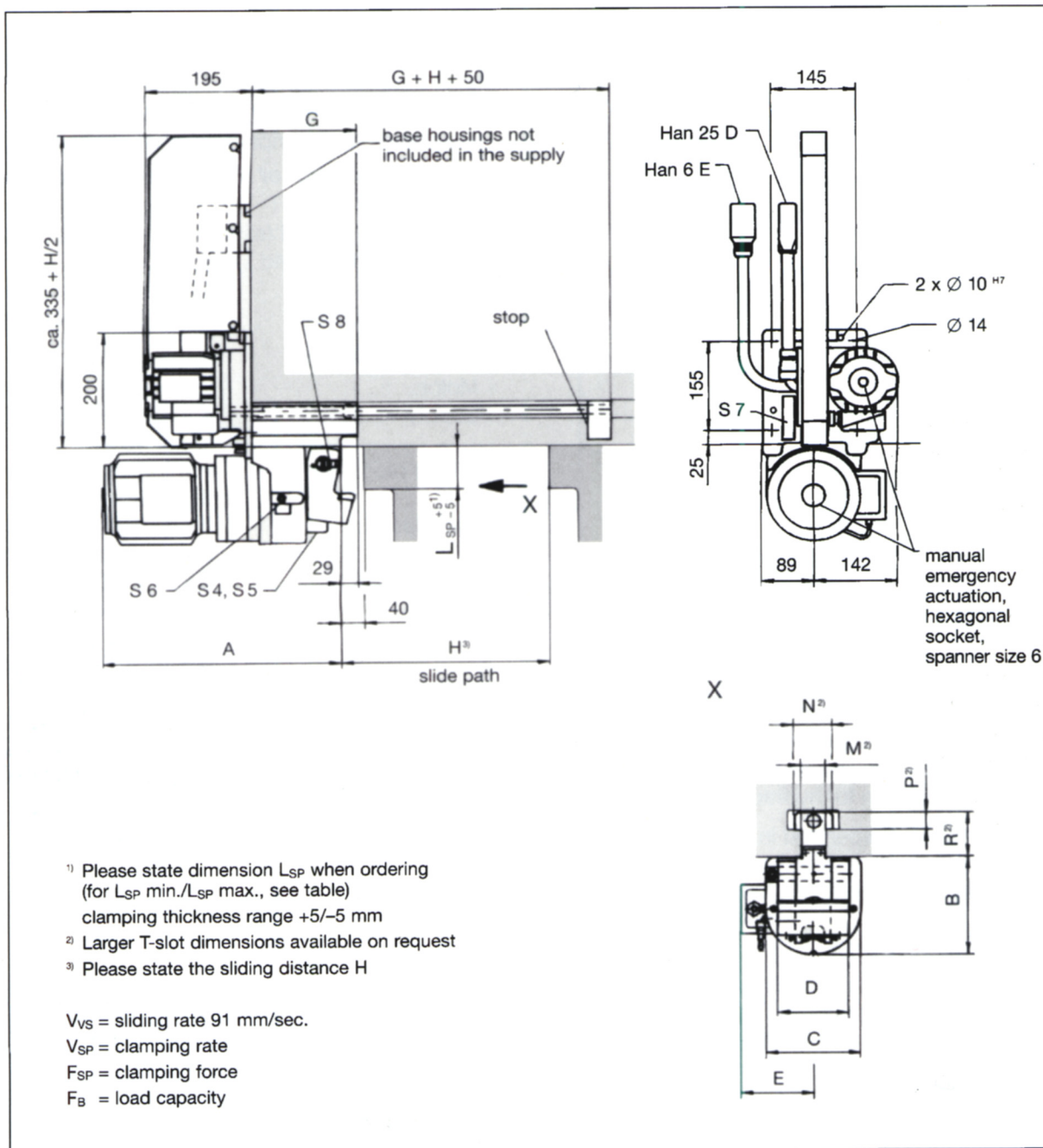
The clamp unit has a nickel-plated housing. A high-ratio epicyclic gear ensures the drive power required.

To secure the clamp unit to the machine, please use four M12 bolts, strength class 8.8 according to DIN 912 (not included).

3.400



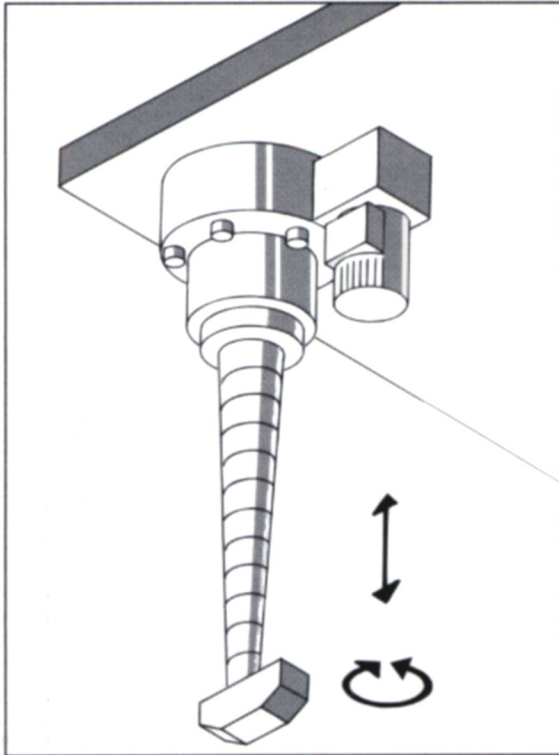
# Electro-Mechanical Traveling Block Clamping



The company reserves the right to make technical changes.

| Type    | $F_{SP}$<br>[kN] | $F_B$<br>[kN] | $L_{SP}$ <sup>1)</sup><br>min. max. | Motor<br>power<br>[kW] | $V_{SP}$<br>[mm/s] | A   | B   | C   | D   | E   | G   | $M$ <sup>2)</sup><br>min. | $N$ <sup>2)</sup><br>min. | $P$ <sup>2)</sup><br>min. | $R$ <sup>2)</sup><br>min. | Weight<br>[kg] |
|---------|------------------|---------------|-------------------------------------|------------------------|--------------------|-----|-----|-----|-----|-----|-----|---------------------------|---------------------------|---------------------------|---------------------------|----------------|
| EFS 60  | 60               | 100           | 50 75                               | 0,55                   | 1,4                | 383 | 170 | 160 | 120 | 102 | 180 | 42                        | 65                        | 30                        | 80                        | 53             |
| EFS 120 | 120              | 200           | 50 75                               | 0,75                   | 1,4                | 415 | 170 | 160 | 120 | 123 | 180 | 42                        | 65                        | 30                        | 80                        | 56             |
| EFS 240 | 240              | 450           | 60 80                               | 1,50                   | 0,9                | 512 | 210 | 200 | 150 | 123 | 240 | 42                        | 65                        | 30                        | 80                        | 98             |

## Electro-Mechanical Slide Lock System



### Area of application

The Optima slide lock system type OSV is used for rendering the slide safe when working in the die space or on the machine itself. It is mainly used for mechanical, but also for hydraulic presses.

Rigidly installed, suspended in the press crown area, its use requires a slide which has externally welded-on contour plates, or cut-outs in the slide.

### Mode of operation

By means of an electric motor and a gearbox, a threaded nut is set in rotation. The nut, in cooperation with the associated spindle, initiates the necessary rotary movement. The tie rod, which is in the parked position (fully extended), first performs a 90° rotation, and then moves directly to the slide and prevents it from being lowered accidentally.

A hydraulic cushion ensures release of the tie rod, even under load (within the possible release distance). Sticking of the tie rod is thus virtually impossible.

#### Movement sequence for securing the slide:

- 90° rotation of the tie rod into the locking position
- Movement of the tie rod to the underside of the slide (release of the slide in reverse order)

### Distinguishing features

Due to the continuous variation in length of the tie rod, the press slide can be locked in any position. The single-motor construction ensures simple electrical installation and compact external dimensions.

#### Electrical control of the following functions (switches):

- Tie rod extended (slide free) (S1, inductive)
- Tie rod rotated into slide secure position (S2, inductive)
- Slide secured (S3, mechanical)

### Technical data

|  |  |
|--|--|
| Motor:                                   | DC motor   |
| Supply voltage:                          | 460 V, 60 Hz; S3- duty factor 15%  |
| Wiring plug:                             | Harting-plug connection HAN 3HvE*  |
| Switches:                                | 2 inductive proximity switches p-n-p normally open contact                           |
| Supply voltage:                          | 10-30 V DC   |
|  | 1 mechanical limit switch: 1 normally closed contact separated according to VDE 0113 |
|  | 1 normally open contact 250 V AC, 230 V DC   |
| Wiring plug:                             | Harting-plug connection HAN 25 D*  |
| Valve:                                   | 24 V DC; 1.1A  |
| Release stroke of the hydraulic cushion: | ca. 10 mm  |
| Locking rate:                            | 80 mm/sec.   |
| Max. Operating temp.                     | 70°C   |

\*Alternative plug connections on request

### Advantages

- Securing the slide in any position
- Press overload independent
- Electrical control of all important functions
- Compact dimensions
- Central control
- One-motor operation

### Construction

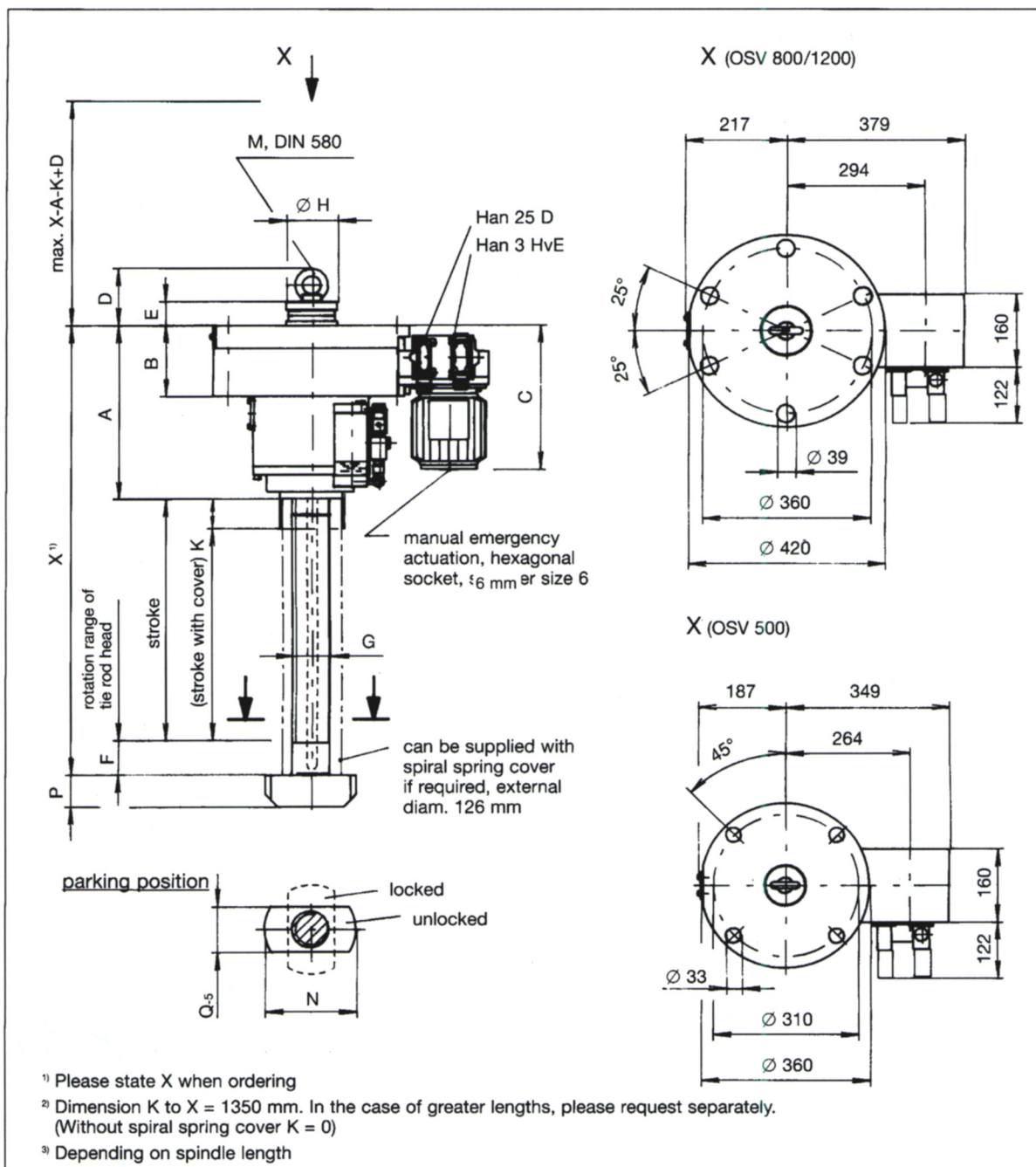
The slide lock system has a forged chromium-molybdenum steel tie rod.

To secure the machine, please use four bolts strength class 10.9 according to DIN 912 (not included). The thread dimension depends on the type.

4.100



# Electro-Mechanical Slide Lock System

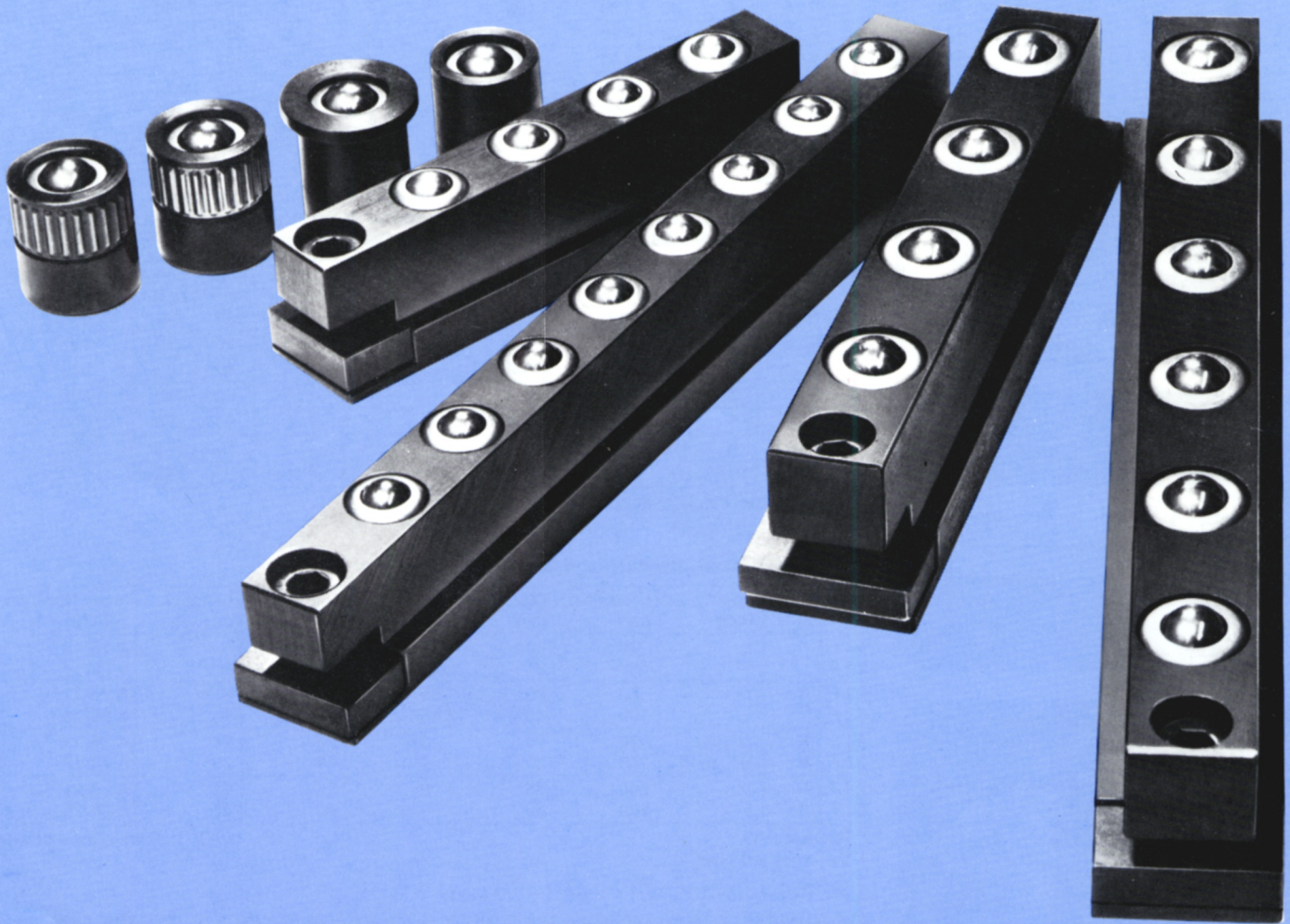
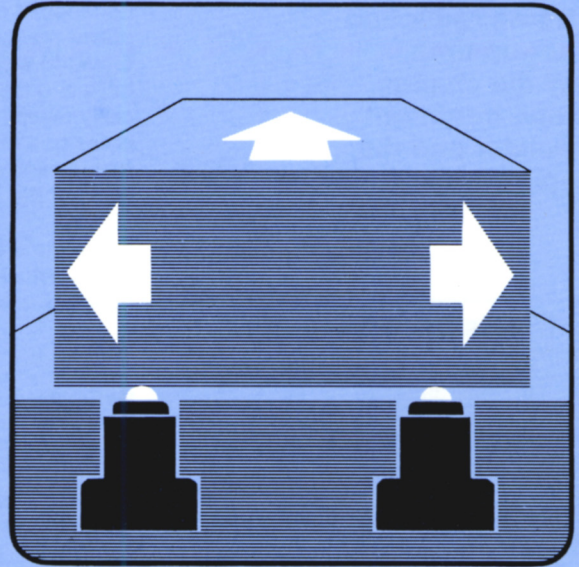


The company reserves the right to make technical changes.

| Type     | F <sub>B</sub><br>[kN] | Motor<br>power<br>[kW] | A   | B   | C   | D   | E  | F  | G       | H   | K <sup>2)</sup> | M   | N   | P  | Q   | Weight<br>[kg] <sup>3)</sup> |
|----------|------------------------|------------------------|-----|-----|-----|-----|----|----|---------|-----|-----------------|-----|-----|----|-----|------------------------------|
| OSV 500  | 500                    | 0,75                   | 340 | 145 | 315 | 109 | 47 | 60 | Tr60x9  | 90  | 75              | M16 | 145 | 50 | 70  | ca. 200                      |
| OSV 800  | 800                    | 1,5                    | 380 | 155 | 325 | 124 | 52 | 75 | Tr80x10 | 110 | 100             | M20 | 195 | 70 | 100 | ca. 280                      |
| OSV 1200 | 1200                   | 1,5                    | 380 | 155 | 325 | 124 | 52 | 75 | Tr80x10 | 110 | 100             | M20 | 195 | 70 | 100 | ca. 300                      |

# SWT-rollbloc

for die change





# SWT-rollbloc

## Ball Type N

**Advantages:**  
**Extreme reduction**  
**of set-up time,**  
**easy die change,**  
**careful treatment**  
**of bolster and die,**  
**simple die centering.**

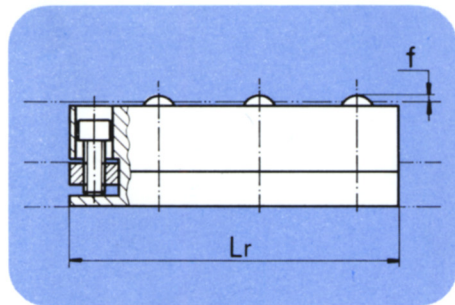
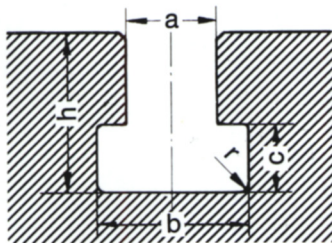
### T-slots DIN 650 (metric)

|      |    |    |    |    |
|------|----|----|----|----|
| a    | 18 | 22 | 28 | 36 |
| b    | 30 | 37 | 46 | 56 |
| c    | 12 | 16 | 20 | 25 |
| *h   | 30 | 38 | 48 | 60 |
| Size | 18 | 22 | 28 | 36 |

### T-slots ASA B 5.1 – 1949 (JIC)

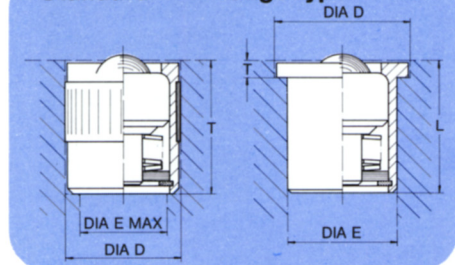
|      |         |         |         |         |
|------|---------|---------|---------|---------|
| a    | 1 3/16" | 1 1/16" | 1 5/16" | 1 9/16" |
| a    | 20,6    | 27      | 33,3    | 39,7    |
| b    | 34,9    | 44,5    | 54      | 65      |
| c    | 15,1    | 19,8    | 26,2    | 32,5    |
| *h   | 29,4    | 38,9    | 51,6    | 64,3    |
| Size | 13      | 17      | 21      | 25      |

\*h = minimum dimension



#### Standard

#### Flange type



SWT-rollbloc stands for 15 years of experience in changing dies on any kind of power presses. It consists of a gib that is provided with spring loaded supporting balls and inserted into T-slots or especially machined rectangular slots of the press bed or bolster plate. The size of rollbloc and set depends upon the dimensions of the slots and the load requirements.

Since the die weight is carried by individually actuated balls, an even load distribution is ensured.

Rollbloc are designed to lift dies from bolster surface and provide a rolling friction during die change for quick and easy displacement. Only when clamped, the die is resting on the bolster. The SWT-rollbloc elements below the die cannot be removed.

For less rolling friction, hardened strips to be glued in prepared die base can be supplied.

Dimensions: 50×1,5; 80×1,5; 125×1,5 mm.

#### SWT-rollbloc

**N 18** for T-slot 18 DIN 650  $f = 2 \text{ mm}$   
**NS 18** for rect. slot 18×30 mm  $f = 1,5 \text{ mm}$   
**NA 13** for T-slot 1 3/16 ASA  $f = 2 \text{ mm}$

| Type | N 18<br>NS 18<br>NA 13 | No.<br>of<br>balls | Load<br>Pr<br>daN | Length Lr<br>N, NA<br>mm | Length Lr<br>NS**<br>mm |
|------|------------------------|--------------------|-------------------|--------------------------|-------------------------|
| F 3  | 3                      | 3                  | 60                | 80                       | 105                     |
| F 4  | 4                      | 4                  | 80                | 100                      | 135                     |
| F 5  | 5                      | 5                  | 100               | 120                      | 165                     |
| F 6  | 6                      | 6                  | 120               | 140                      | 195                     |
| F 8  | 8                      | 8                  | 160               | 180                      | 255                     |
| F 10 | 10                     | 10                 | 200               | 220                      | 215                     |

#### SWT-rollbloc

**N 28** for T-slot 28 DIN 650  $f = 3 \text{ mm}$   
**NS 28** for rect. slot 28×44 mm  $f = 2 \text{ mm}$   
**NA 21** for T-slot 1 5/16 ASA  $f = 3 \text{ mm}$

| Type | N 28<br>NS 28<br>NA 21 | No.<br>of<br>balls | Load<br>Pr<br>daN | Length Lr<br>N, NA<br>mm | Length Lr<br>NS**<br>mm |
|------|------------------------|--------------------|-------------------|--------------------------|-------------------------|
| F 3  | 3                      | 3                  | 180               | 150                      | 155                     |
| F 4  | 4                      | 4                  | 240               | 195                      | 200                     |
| F 5  | 5                      | 5                  | 300               | 240                      | 245                     |
| F 6  | 6                      | 6                  | 360               | 285                      | 290                     |
| F 8  | 8                      | 8                  | 480               | 375                      | 380                     |
| F 10 | 10                     | 10                 | 600               | 465                      | 470                     |

\*\* Length without locking device.

#### SWT-rollbloc

**N 22** for T-slot 22 DIN 650  $f = 3 \text{ mm}$   
**NS 22** for rect. slot 22×38 mm  $f = 1,5 \text{ mm}$   
**NA 17** for T-slot 1 1/16 ASA  $f = 3 \text{ mm}$

| Type | N 22<br>NS 22<br>NA 17 | No.<br>of<br>balls | Load<br>Pr<br>daN | Length Lr<br>N, NA<br>mm | Length Lr<br>NS**<br>mm |
|------|------------------------|--------------------|-------------------|--------------------------|-------------------------|
| F 3  | 3                      | 3                  | 120               | 120                      | 140                     |
| F 4  | 4                      | 4                  | 160               | 150                      | 180                     |
| F 5  | 5                      | 5                  | 200               | 180                      | 220                     |
| F 6  | 6                      | 6                  | 240               | 210                      | 260                     |
| F 8  | 8                      | 8                  | 320               | 270                      | 340                     |
| F 10 | 10                     | 10                 | 400               | 330                      | 420                     |

#### SWT-rollbloc

**N 36** for T-slot 36 DIN 650  $f = 3 \text{ mm}$   
**NS 36** for rect. slot 36×53 mm  $f = 2 \text{ mm}$   
**NA 25** for T-slot 1 5/16 ASA  $f = 3 \text{ mm}$

| Type | N 36<br>NS 36<br>NA 25 | No.<br>of<br>balls | Load<br>Pr<br>daN | Length Lr<br>N, NA<br>mm | Length Lr<br>NS**<br>mm |
|------|------------------------|--------------------|-------------------|--------------------------|-------------------------|
| F 3  | 3                      | 3                  | 300               | 150                      | 185                     |
| F 4  | 4                      | 4                  | 400               | 195                      | 240                     |
| F 5  | 5                      | 5                  | 500               | 240                      | 295                     |
| F 6  | 6                      | 6                  | 600               | 285                      | 350                     |
| F 8  | 8                      | 8                  | 800               | 375                      | 460                     |
| F 10 | 10                     | 10                 | 1000              | 465                      | 570                     |

#### SWT-rollbloc-insert, standard- and flange type $f = 1 \text{ mm}$

| Type     | E | No. of<br>balls | Load Pr<br>daN | Dia. D<br>mm | Depth T<br>mm + | Dia. E<br>mm | Length L<br>mm | Insert Remover<br>Tool No. |
|----------|---|-----------------|----------------|--------------|-----------------|--------------|----------------|----------------------------|
| 18 F 1   | 1 | 1               | 20             | 20*          | 24              | 14           | —              | A 18/13                    |
| 22 F 1   | 1 | 1               | 40             | 24*          | 29              | 17           | —              | A 22/17                    |
| 28 F 1   | 1 | 1               | 60             | 30*          | 35              | 22           | —              | A 28/21                    |
| 36 F 1   | 1 | 1               | 100            | 40*          | 45              | 29,5         | —              | A 36/25                    |
| 18 F 1 F | 1 | 1               | 20             | 25           | 3,5             | 20           | 24             | A 18/13                    |
| 22 F 1 F | 1 | 1               | 40             | 30           | 4               | 24           | 29             | A 22/17                    |
| 28 F 1 F | 1 | 1               | 60             | 35           | 5               | 28           | 35             | A 28/21                    |
| 36 F 1 F | 1 | 1               | 100            | 50           | 5               | 40           | 45             | A 36/25                    |

\* Tolerance H9

+ Tolerance +0.1 mm

Do not use upside down.

**Lift Capacity shown in daN (1.0 daN = 2.2 lbs.)**

Other dimensions and designs upon inquiry! We reserve the right to alter our designs. High temperature versions (suffix HT) up to 200° C available on request — load capacity reduced by 25 %.



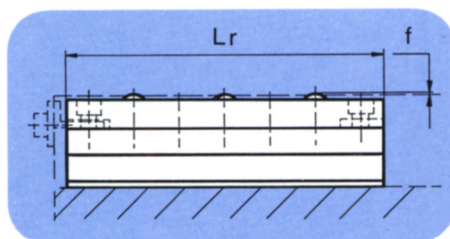
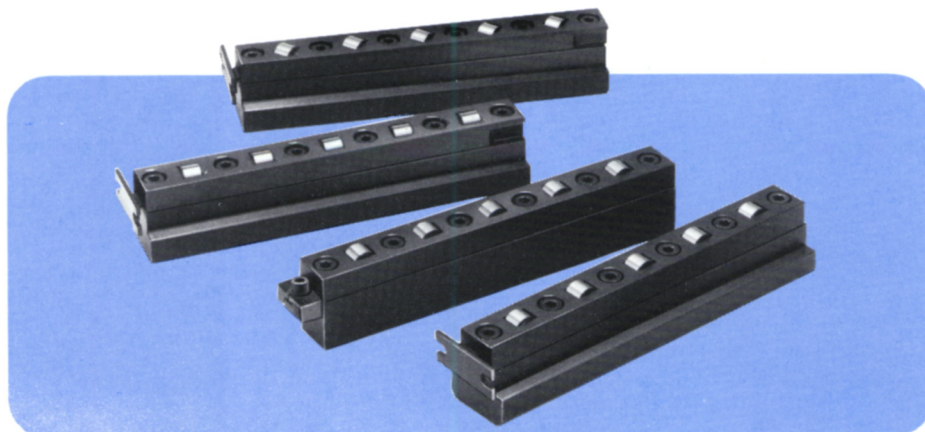
# SWT-rollbloc

## Roller Type R

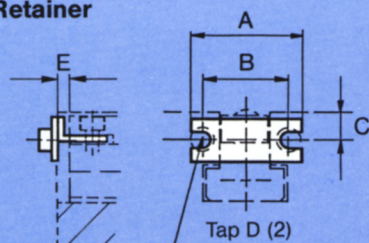
The SWT-rollbloc with rollers complements the existing ball-type version. It meets the request of many customers for an element with linear movement and higher load carrying capacity, particular for die change in connection with hydraulic die clamping.

As a result of the line contact of the rollers, a smooth load transfer is achieved.

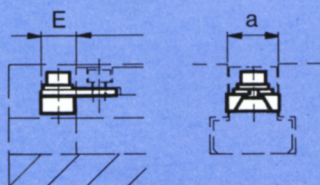
Roller arrangement enables movement in longitudinal, transverse or diagonal direction to T-slot.



**Retainer**



**Wedge type clamp**



**SWT-rollbloc R 18 for T-slot 18 DIN 650**  
**RS 18 for rect. slot 18 × 30 mm**  
**f = 1,5 mm RA 13 for T-slot 1<sup>3</sup>/<sub>16</sub> ASA**

| Type | R 18<br>RS 18<br>RA 13 | No.<br>of<br>rollers | Load<br>Pr<br>daN | Length<br>Lr<br>mm** |
|------|------------------------|----------------------|-------------------|----------------------|
| F 3  |                        | 3                    | 120               | 105                  |
| F 4  |                        | 4                    | 160               | 135                  |
| F 5  |                        | 5                    | 200               | 165                  |
| F 6  |                        | 6                    | 240               | 195                  |
| F 8  |                        | 8                    | 320               | 255                  |
| F 10 |                        | 10                   | 400               | 315                  |

**SWT-rollbloc R 22 for T-slot 22 DIN 650**  
**RS 22 for rect. slot 22 × 38 mm**  
**f = 1,5 mm RA 17 for T-slot 1<sup>1</sup>/<sub>16</sub> ASA**

| Type | R 22<br>RS 22<br>RA 17 | No.<br>of<br>rollers | Load<br>Pr<br>daN | Length<br>Lr<br>mm** |
|------|------------------------|----------------------|-------------------|----------------------|
| F 3  |                        | 3                    | 240               | 140                  |
| F 4  |                        | 4                    | 320               | 180                  |
| F 5  |                        | 5                    | 400               | 220                  |
| F 6  |                        | 6                    | 480               | 260                  |
| F 8  |                        | 8                    | 640               | 340                  |
| F 10 |                        | 10                   | 800               | 420                  |

**SWT-rollbloc R 28 for T-slot 28 DIN 650**  
**RS 28 for rect. slot 28 × 44 mm**  
**f = 2 mm RA 21 for T-slot 1<sup>5</sup>/<sub>16</sub> ASA**

| Type | R 28<br>RS 28<br>RA 21 | No.<br>of<br>rollers | Load<br>Pr<br>daN | Length<br>Lr<br>mm** |
|------|------------------------|----------------------|-------------------|----------------------|
| F 3  |                        | 3                    | 360               | 155                  |
| F 4  |                        | 4                    | 480               | 200                  |
| F 5  |                        | 5                    | 600               | 245                  |
| F 6  |                        | 6                    | 720               | 290                  |
| F 8  |                        | 8                    | 960               | 380                  |
| F 10 |                        | 10                   | 1200              | 470                  |

**SWT-rollbloc R 36 for T-slot 36 DIN 650**  
**RS 36 for rect. slot 36 × 53 mm**  
**f = 2 mm RA 25 for T-slot 1<sup>9</sup>/<sub>16</sub> ASA**

| Type | R 36<br>RS 36<br>RA 25 | No.<br>of<br>rollers | Load<br>Pr<br>daN | Length<br>Lr<br>mm** |
|------|------------------------|----------------------|-------------------|----------------------|
| F 3  |                        | 3                    | 600               | 185                  |
| F 4  |                        | 4                    | 800               | 240                  |
| F 5  |                        | 5                    | 1000              | 295                  |
| F 6  |                        | 6                    | 1200              | 350                  |
| F 8  |                        | 8                    | 1600              | 460                  |
| F 10 |                        | 10                   | 2000              | 570                  |

\*\* Length without locking device.

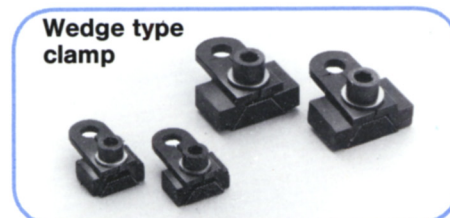
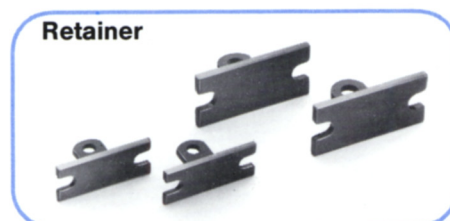
**SWT-rollbloc retainer**

| Retainer<br>type | Rollbloc<br>type          | A<br>mm | B<br>mm | C<br>mm | E<br>mm | Tap D |
|------------------|---------------------------|---------|---------|---------|---------|-------|
| R 1              | R 18, RS 18, NS 18, RA 13 | 40      | 30      | 7       | 5       | M 5   |
| R 2              | R 22, RS 22, NS 22, RA 17 | 49      | 38      | 11      | 5       | M 6   |
| R 3              | R 28, RS 28, NS 28, RA 21 | 49      | 38      | 14,5    | 5       | M 6   |
| R 4              | R 36, RS 36, NS 36, RA 25 | 64      | 52      | 19      | 7       | M 8   |

**SWT-rollbloc wedge type clamp**

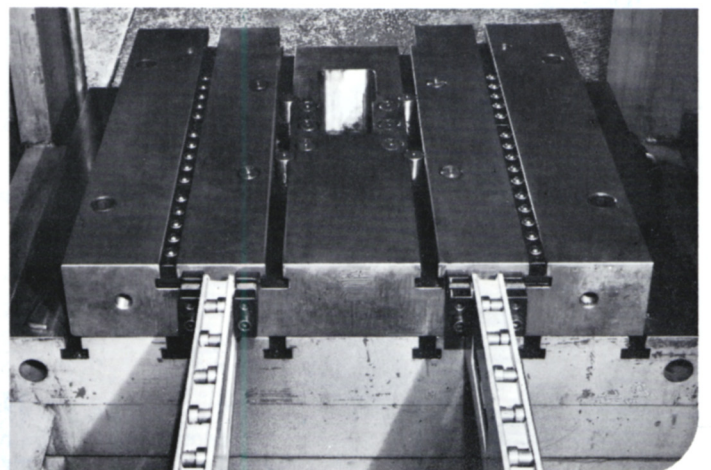
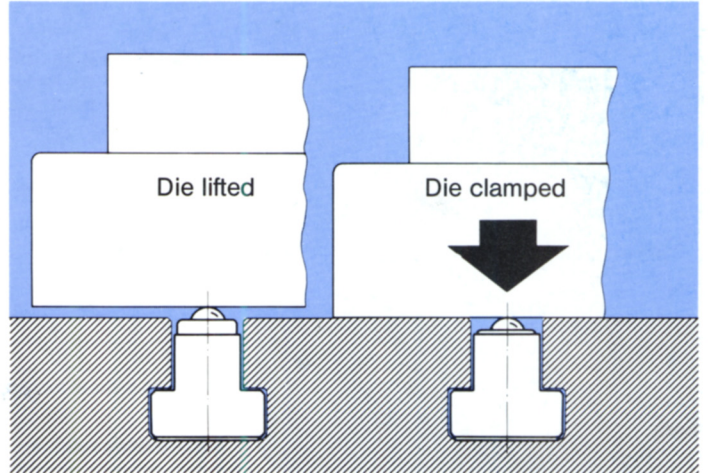
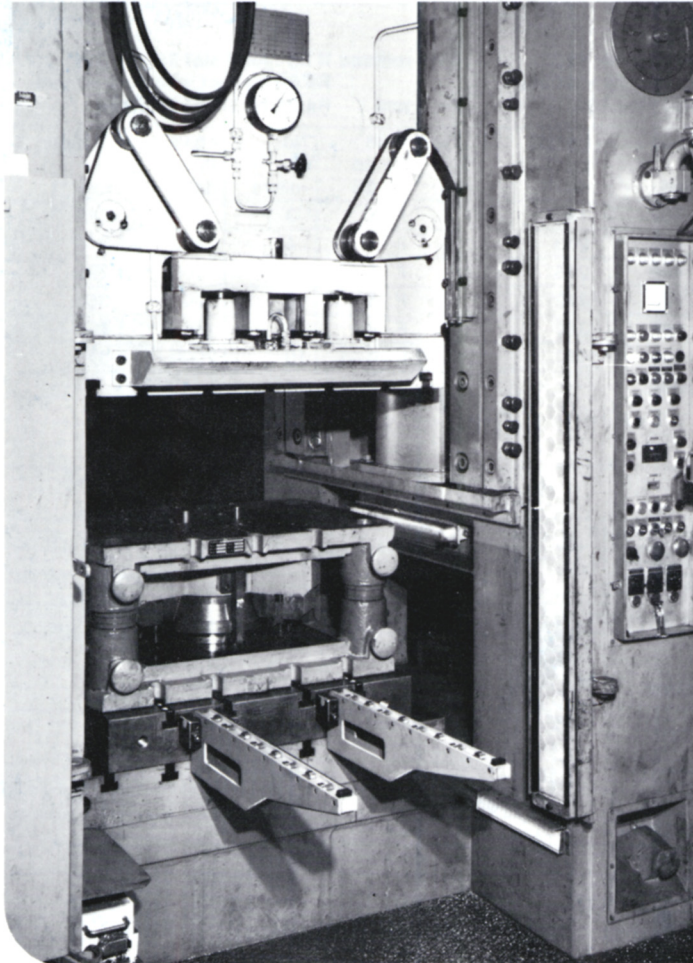
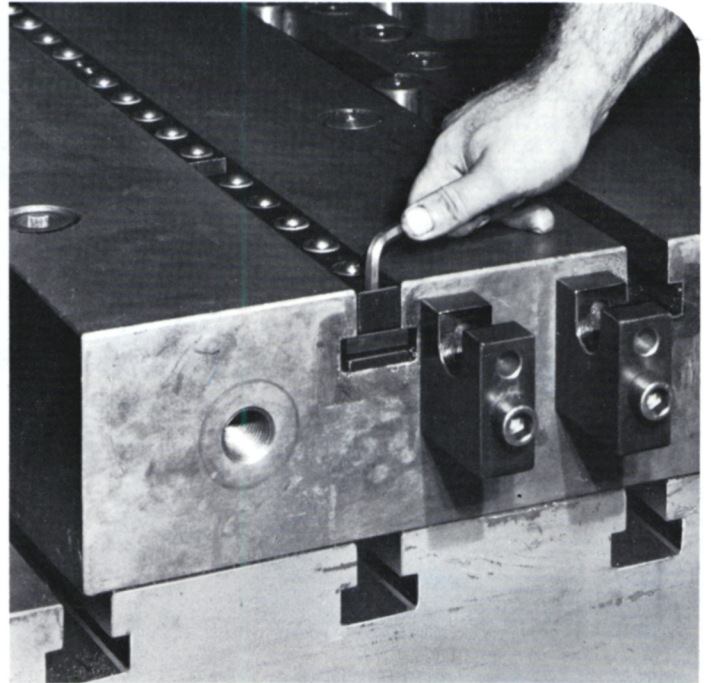
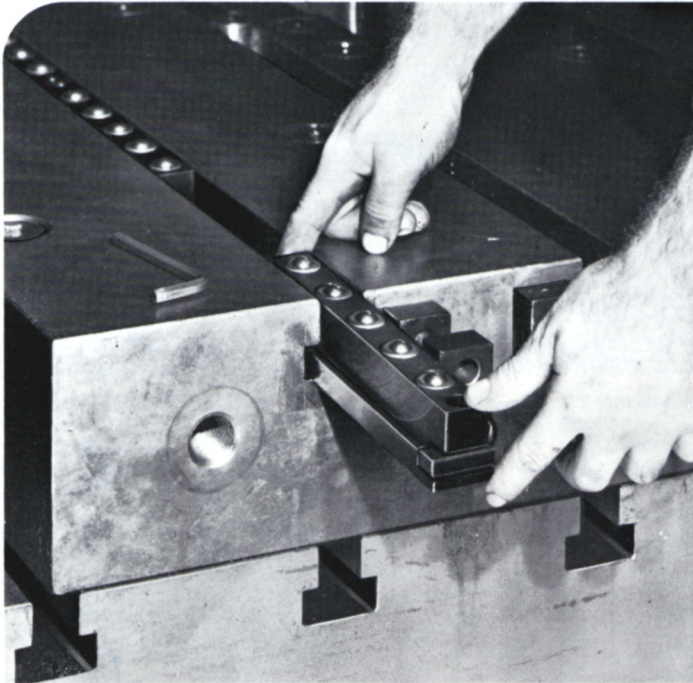
| Clamp<br>type | Rollbloc<br>type   | E<br>mm | Clamp<br>type | Rollbloc<br>type | E<br>mm |
|---------------|--------------------|---------|---------------|------------------|---------|
| K 1           | R 18, RS 18, NS 18 | 19      | K 1 A         | RA 13            | 20      |
| K 2           | R 22, RS 22, NS 22 | 15      | K 2 A         | RA 17            | 15      |
| K 3           | R 28, RS 28, NS 28 | 15      | K 3 A         | RA 21            | 15      |
| K 4           | R 36, RS 36, NS 36 | 20      | K 4 A         | RA 25            | 20      |

Mounting of wedge type clamps optional on both ends of rollbloc.  
 Dim. E must be added to rollbloc length Lr to achieve total length.





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# SWT-rollbloc H

hydraulic  
for die change





# SWT-rollbloc H

## hydraulic

### Ball Type N

#### Advantages:

**Extreme reduction of set-up time, easy die change, careful treatment of bolster and die, simple die centering.**

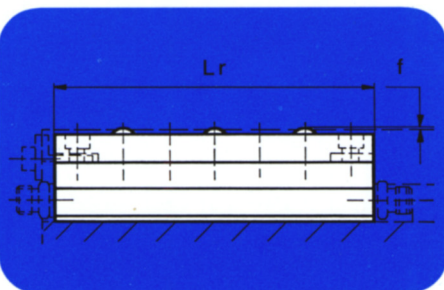
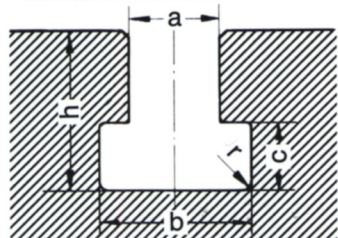
#### T-slots DIN 650 (metric)

|      |    |    |    |    |
|------|----|----|----|----|
| a    | 18 | 22 | 28 | 36 |
| b    | 30 | 37 | 46 | 56 |
| c    | 12 | 16 | 20 | 25 |
| *h   | 30 | 38 | 48 | 60 |
| Size | 18 | 22 | 28 | 36 |

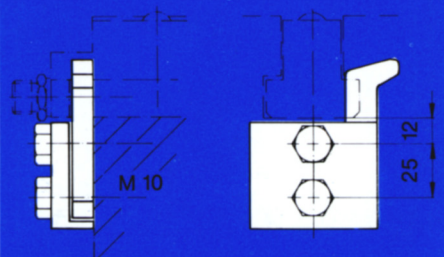
#### T-slots ASA B 5.1 – 1949 (JIC)

|      |        |         |         |         |
|------|--------|---------|---------|---------|
| a    | 13/16" | 1 1/16" | 1 5/16" | 1 9/16" |
| a    | 20,6   | 27      | 33,3    | 39,7    |
| b    | 34,9   | 44,5    | 54      | 65      |
| c    | 15,1   | 19,8    | 26,2    | 32,5    |
| *h   | 29,4   | 38,9    | 51,6    | 64,3    |
| Size | 13     | 17      | 21      | 25      |

\*h = minimum dimension



#### Quick lock



SWT-rollbloc H, means 15 years of experience in changing dies on any kind of power presses. It consists of a bar that is equipped with hydraulically operated supporting balls. SWT-rollbloc are to be used in pairs or sets, which are placed into T-slots or especially machined rectangular slots of the press bed or bolster. The size of the rollbloc depends on the slot dimensions and load requirements.

Since the die weight is carried by individually actuated balls an even load distribution is ensured.

Rollbloc are designed to lift dies from bolster and provide a rolling friction

during die change for quick and easy displacement. After pressure relief the die will rest on the bolster. SWT-rollbloc then can be removed if desired.

A variety of pumps and pressure intensifiers are available.

Optional hardened strips are available. These strips can be glued into slots in the die base, reducing rolling friction to a minimum.

Dimensions: 50 × 1,5 mm;  
80 × 1,5 mm and 125 × 1,5 mm

**Required hydraulic pressure 40 bar**  
**Ports 1/8" BSP.**

#### SWT-rollbloc H

**N 18 for T-slot 18, DIN 650**  
**NS 18 for rect. slot 18 × 30 mm**  
**NA 13 for T-slot 13/16 ASA**  
**F = 40 daN, R = 30 mm, f = 1,5 mm \***

| Type | N 18<br>NS 18<br>NA 13 | No.<br>of<br>balls | Mean load<br>Pr<br>daN | Length<br>Lr<br>mm ++ |
|------|------------------------|--------------------|------------------------|-----------------------|
| H 6  | 6                      | 6                  | 240                    | 215                   |
| H 8  | 8                      | 8                  | 320                    | 275                   |
| H 10 | 10                     | 10                 | 400                    | 335                   |
| H 12 | 12                     | 12                 | 480                    | 395                   |
| H 16 | 16                     | 16                 | 640                    | 515                   |
| H 20 | 20                     | 20                 | 800                    | 635                   |
| H 24 | 24                     | 24                 | 960                    | 755                   |
| H 30 | 30                     | 30                 | 1200                   | 935                   |
| H 36 | 36                     | 36                 | 1440                   | 1115                  |

#### SWT-rollbloc H

**N 22 for T-slot 22, DIN 650**  
**NS 22 for rect. slot 22 × 38 mm**  
**NA 17 for T-slot 1 1/16 ASA**  
**F = 80 daN, R = 40 mm, f = 1,5 mm \***

| Type | N 22<br>NS 22<br>NA 17 | No.<br>of<br>balls | Mean load<br>Pr<br>daN | Length<br>Lr<br>mm ++ |
|------|------------------------|--------------------|------------------------|-----------------------|
| H 6  | 6                      | 6                  | 480                    | 260                   |
| H 8  | 8                      | 8                  | 640                    | 340                   |
| H 10 | 10                     | 10                 | 800                    | 420                   |
| H 12 | 12                     | 12                 | 960                    | 500                   |
| H 16 | 16                     | 16                 | 1280                   | 660                   |
| H 20 | 20                     | 20                 | 1600                   | 820                   |
| H 24 | 24                     | 24                 | 1920                   | 980                   |
| H 30 | 30                     | 30                 | 2400                   | 1220                  |
| H 36 | 36                     | 36                 | 2880                   | 1460                  |

#### SWT-rollbloc H

**N 28 for T-slot 28, DIN 650**  
**NS 28 for rect. slot 28 × 44 mm**  
**NA 21 for T-slot 1 5/16 ASA**  
**F = 125 daN, R = 45 mm, f = 2 mm \***

| Type | N 28<br>NS 28<br>NA 21 | No.<br>of<br>balls | Mean load<br>Pr<br>daN | Length<br>Lr<br>mm ++ |
|------|------------------------|--------------------|------------------------|-----------------------|
| H 6  | 6                      | 6                  | 750                    | 290                   |
| H 8  | 8                      | 8                  | 1000                   | 380                   |
| H 10 | 10                     | 10                 | 1250                   | 470                   |
| H 12 | 12                     | 12                 | 1500                   | 560                   |
| H 16 | 16                     | 16                 | 2000                   | 740                   |
| H 20 | 20                     | 20                 | 2500                   | 920                   |
| H 24 | 24                     | 24                 | 3000                   | 1100                  |
| H 30 | 30                     | 30                 | 3750                   | 1370                  |
| H 36 | 36                     | 36                 | 4500                   | 1640                  |

#### SWT-rollbloc H

**N 36 for T-slot 36, DIN 650**  
**NS 36 for rect. slot 36 × 53 mm**  
**NA 25 for T-slot 1 9/16 ASA**  
**F = 200 daN, R = 55 mm, f = 2 mm \***

| Type | N 36<br>NS 36<br>NA 25 | No.<br>of<br>balls | Mean load<br>Pr<br>daN | Length<br>Lr<br>mm ++ |
|------|------------------------|--------------------|------------------------|-----------------------|
| H 6  | 6                      | 6                  | 1200                   | 350                   |
| H 8  | 8                      | 8                  | 1600                   | 460                   |
| H 10 | 10                     | 10                 | 2000                   | 570                   |
| H 12 | 12                     | 12                 | 2400                   | 680                   |
| H 16 | 16                     | 16                 | 3200                   | 900                   |
| H 20 | 20                     | 20                 | 4000                   | 1120                  |
| H 24 | 24                     | 24                 | 4800                   | 1340                  |
| H 30 | 30                     | 30                 | 6000                   | 1670                  |
| H 36 | 36                     | 36                 | 7200                   | 2000                  |

\* F = Ballcapacity, R = Distance between balls, f = Lift of die.

+ Length includes port adapter on both ends with 20 mm each and "E"-Dim. of locking devices.

++ Length without locking device and optional bleeding valve.

**Lift Capacity shown in daN (1.0 daN = 2.2 lbs.)**

Other dimensions and versions on inquiry! We reserve the right to alter our designs.



# SWT-rollbloc H

## hydraulic

### Roller Type R

The SWT-rollbloc H with rollers complements the existing ball-type version. It meets the request of many customers for an element with linear movement and higher load carrying capacity, particular for die change in connection with hydraulic die clamping.

As a result of the line contact of the rollers, a smooth load transfer is achieved.

Roller arrangement enables movement in longitudinal, transverse or diagonal direction to T-slot.

**Required hydraulic pressure 80 bar.**  
**Ports 1/8" BSP.**

#### Rolling direction optional

##### SWT-rollbloc H

**R 18 for T-slot 18, DIN 650**

**RS 18 for rect. slot 18 × 30 mm**

**RA 13 for T-slot 13/16 ASA**

**F = 80 daN, R = 30 mm, f = 1,5 mm \***

| Type | R 18<br>RS 18<br>RA 13 | No.<br>of<br>rollers | Mean load<br>Pr<br>daN | Length<br>Lr<br>mm ++ |
|------|------------------------|----------------------|------------------------|-----------------------|
| H 6  | 6                      | 6                    | 480                    | 215                   |
| H 8  | 8                      | 8                    | 640                    | 275                   |
| H 10 | 10                     | 10                   | 800                    | 335                   |
| H 12 | 12                     | 12                   | 960                    | 395                   |
| H 16 | 16                     | 16                   | 1280                   | 515                   |
| H 20 | 20                     | 20                   | 1600                   | 635                   |
| H 24 | 24                     | 24                   | 1920                   | 755                   |
| H 30 | 30                     | 30                   | 2400                   | 935                   |
| H 36 | 36                     | 36                   | 2880                   | 1115                  |

##### SWT-rollbloc H

**R 22 for T-slot 22, DIN 650**

**RS 22 for rect. slot 22 × 38 mm**

**RA 17 for T-slot 17/16 ASA**

**F = 160 daN, R = 40 mm, f = 1,5 mm \***

| Type | R 22<br>RS 22<br>RA 17 | No.<br>of<br>rollers | Mean load<br>Pr<br>daN | Length<br>Lr<br>mm ++ |
|------|------------------------|----------------------|------------------------|-----------------------|
| H 6  | 6                      | 6                    | 960                    | 260                   |
| H 8  | 8                      | 8                    | 1280                   | 340                   |
| H 10 | 10                     | 10                   | 1600                   | 420                   |
| H 12 | 12                     | 12                   | 1920                   | 500                   |
| H 16 | 16                     | 16                   | 2560                   | 660                   |
| H 20 | 20                     | 20                   | 3200                   | 820                   |
| H 24 | 24                     | 24                   | 3840                   | 980                   |
| H 30 | 30                     | 30                   | 4800                   | 1220                  |
| H 36 | 36                     | 36                   | 5760                   | 1460                  |

##### SWT-rollbloc H

**R 28 for T-slot 28, DIN 650**

**RS 28 for rect. slot 28 × 44 mm**

**RA 21 for T-slot 21/16 ASA**

**F = 250 daN, R = 45 mm, f = 2 mm \***

| Type | R 28<br>RS 28<br>RA 21 | No.<br>of<br>rollers | Mean load<br>Pr<br>daN | Length<br>Lr<br>mm ++ |
|------|------------------------|----------------------|------------------------|-----------------------|
| H 6  | 6                      | 6                    | 1500                   | 290                   |
| H 8  | 8                      | 8                    | 2000                   | 380                   |
| H 10 | 10                     | 10                   | 2500                   | 470                   |
| H 12 | 12                     | 12                   | 3000                   | 560                   |
| H 16 | 16                     | 16                   | 4000                   | 740                   |
| H 20 | 20                     | 20                   | 5000                   | 920                   |
| H 24 | 24                     | 24                   | 6000                   | 1100                  |
| H 30 | 30                     | 30                   | 7500                   | 1370                  |
| H 36 | 36                     | 36                   | 9000                   | 1640                  |

##### SWT-rollbloc H

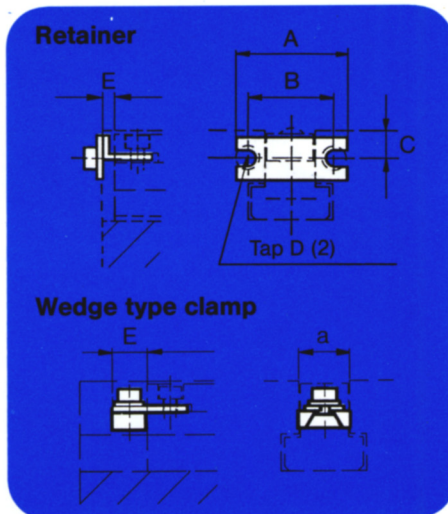
**R 36 for T-slot 36, DIN 650**

**RS 36 for rect. slot 36 × 53 mm**

**RA 25 for T-slot 25/16 ASA**

**F = 400 daN, R = 55 mm, f = 2 mm \***

| Type | R 36<br>RS 36<br>RA 25 | No.<br>of<br>rollers | Mean load<br>Pr<br>daN | Length<br>Lr<br>mm ++ |
|------|------------------------|----------------------|------------------------|-----------------------|
| H 6  | 6                      | 6                    | 2400                   | 350                   |
| H 8  | 8                      | 8                    | 3200                   | 460                   |
| H 10 | 10                     | 10                   | 4000                   | 570                   |
| H 12 | 12                     | 12                   | 4800                   | 680                   |
| H 16 | 16                     | 16                   | 6400                   | 900                   |
| H 20 | 20                     | 20                   | 8000                   | 1120                  |
| H 24 | 24                     | 24                   | 9600                   | 1340                  |
| H 30 | 30                     | 30                   | 12000                  | 1670                  |
| H 36 | 36                     | 36                   | 14400                  | 2000                  |



#### Locking devices

For locating SWT-rollbloc H elements in bolster plate three different locking devices are available.

Retainer type is Std. equipment.

Wedge type clamps and quick lock type optional. Note: Quick lock type not to be used with rollbloc type NS and RS.

#### SWT-rollbloc retainer

| Retainer type | Rollbloc size | A mm | B mm | C mm | E mm | Tap D metric |
|---------------|---------------|------|------|------|------|--------------|
| R 1           | 18, 13        | 40   | 30   | 7    | 5    | M5           |
| R 2           | 22, 17        | 49   | 38   | 11   | 5    | M6           |
| R 3           | 28, 21        | 49   | 38   | 14,5 | 5    | M6           |
| R 4           | 36, 25        | 64   | 52   | 19   | 7    | M8           |

#### SWT-rollbloc wedge type clamp

| Clamp type | Rollbloc size | E mm | Clamp type | Rollbloc size | E mm |
|------------|---------------|------|------------|---------------|------|
| K 1        | 18            | 19   | K 1 A      | 13            | 20   |
| K 2        | 22            | 15   | K 2 A      | 17            | 15   |
| K 3        | 28            | 15   | K 3 A      | 21            | 15   |
| K 4        | 36            | 20   | K 4 A      | 25            | 20   |

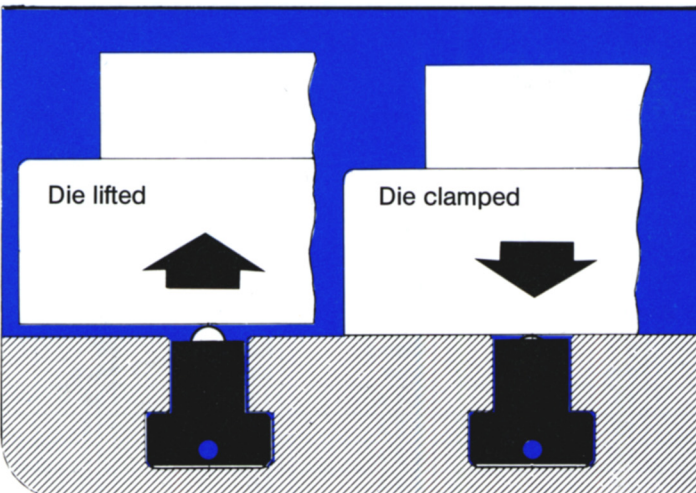
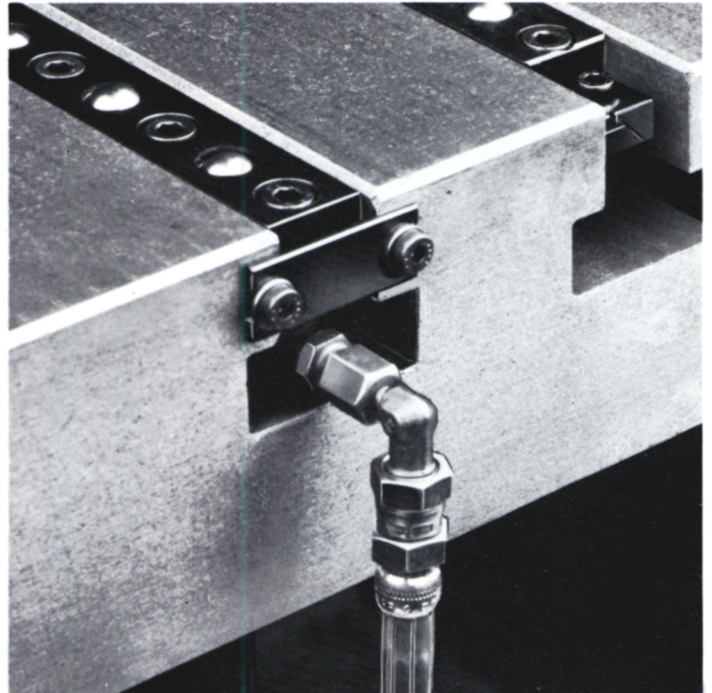
Use of wedge type clamps optional on both ends of rollbloc. Dim. "E" must be added to rollbloc length Lr to achieve total length, except rollbloc size 18 and 13.



**Optima U.S.A. Inc.**  
P.O. Box 615 • Elm Grove, WI  
Phone (262) 790-9595 • FAX (262) 790-9771



Shop trolley with pressure intensifier



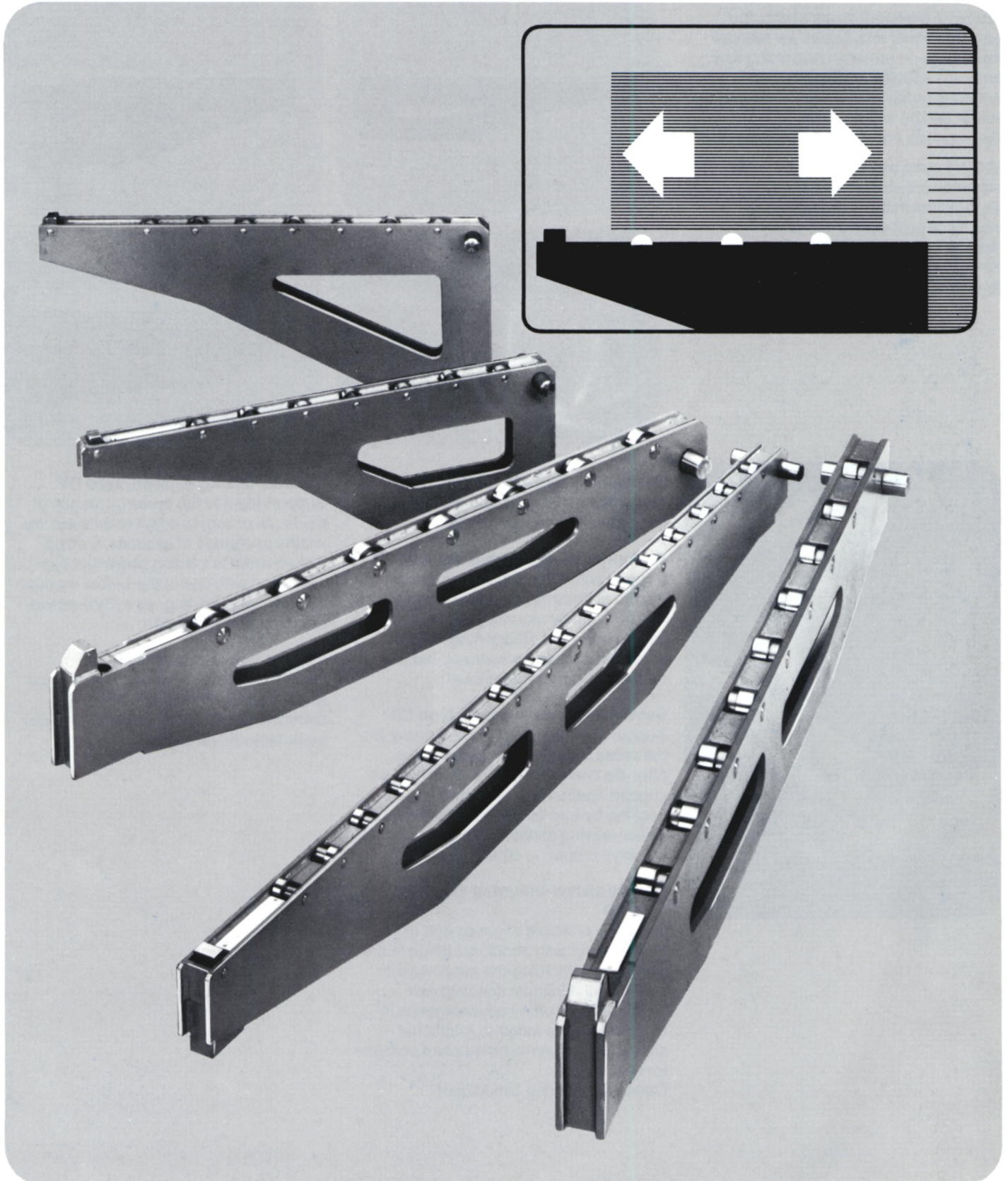
Hydraulic pump type HP 1





# SWT-console

die support serving for quick  
die change on presses





# SWT-console

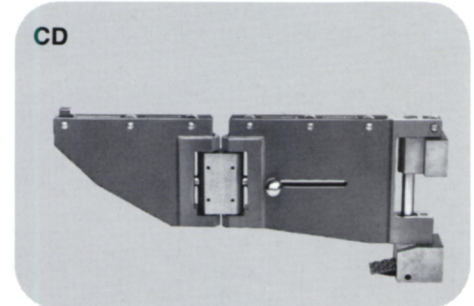
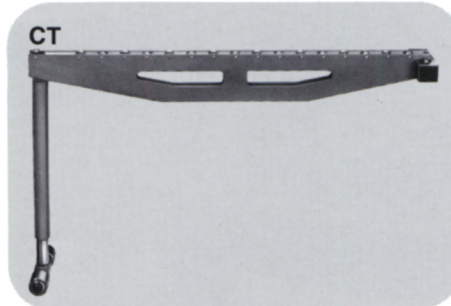
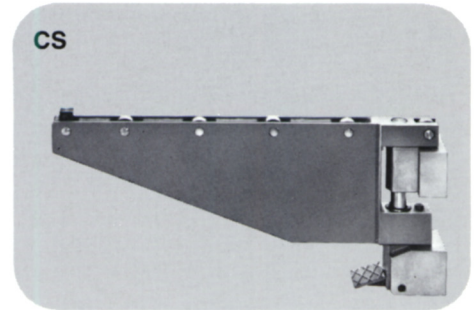
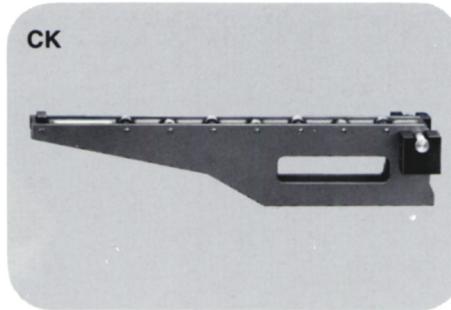
## die support serving for quick die change on presses

The SWT die support represents the ideal additional attachment for rational die change on presses. According to carrying capacity, application and mounting conditions, a wide variety of design can be supplied.

The supports are always used in pairs.

All SWT supports are equipped with hardened rollers on which the die is placed outside the press table and from where it is pushed into the press.

The SWT support signifies easy die change, short change-over times, minimum of down-time and optimum safety.



### **Overhung support, type CK**

Detachable support hooked on to press bed. Observe mounting height!

### **Support with adjustable leg, type CT**

Support with slight height adjustment by means of threaded spindle in supporting leg. Fixation by mounting hooks. Support can be removed. Supporting leg with rollers to facilitate movement. Indicate table height above floor level!

### **Swivel-mounted support, type CS**

Support, usually mounted stationary to the press body by pivot bearing that, after die change, allows pivoting of the support against the press body. Locking by foot-operated indexing pin. Space-saving construction. Observe mounting conditions!

### **Double swivel-mounted support, type CD**

Design in principle same as that of CS-type, but with additional hinge in the cantilever for folding the support so it needs only minimum space in rest position. Particularly advantageous in case of extreme lengths. Additional supporting leg at the hinge point possible for heavy loads. Observe mounting conditions!

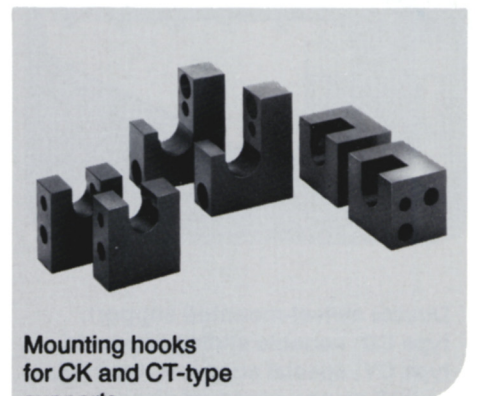
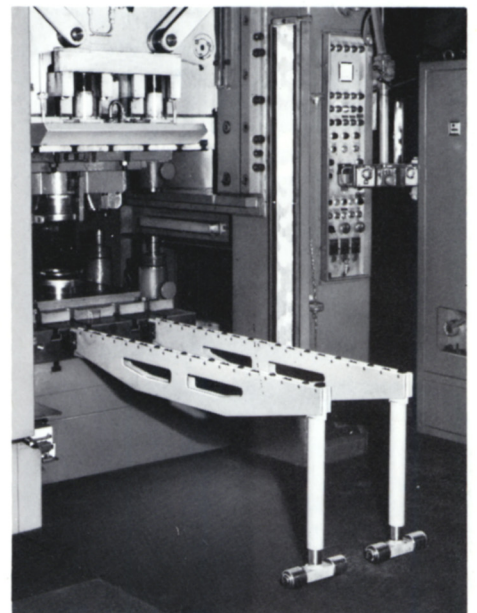
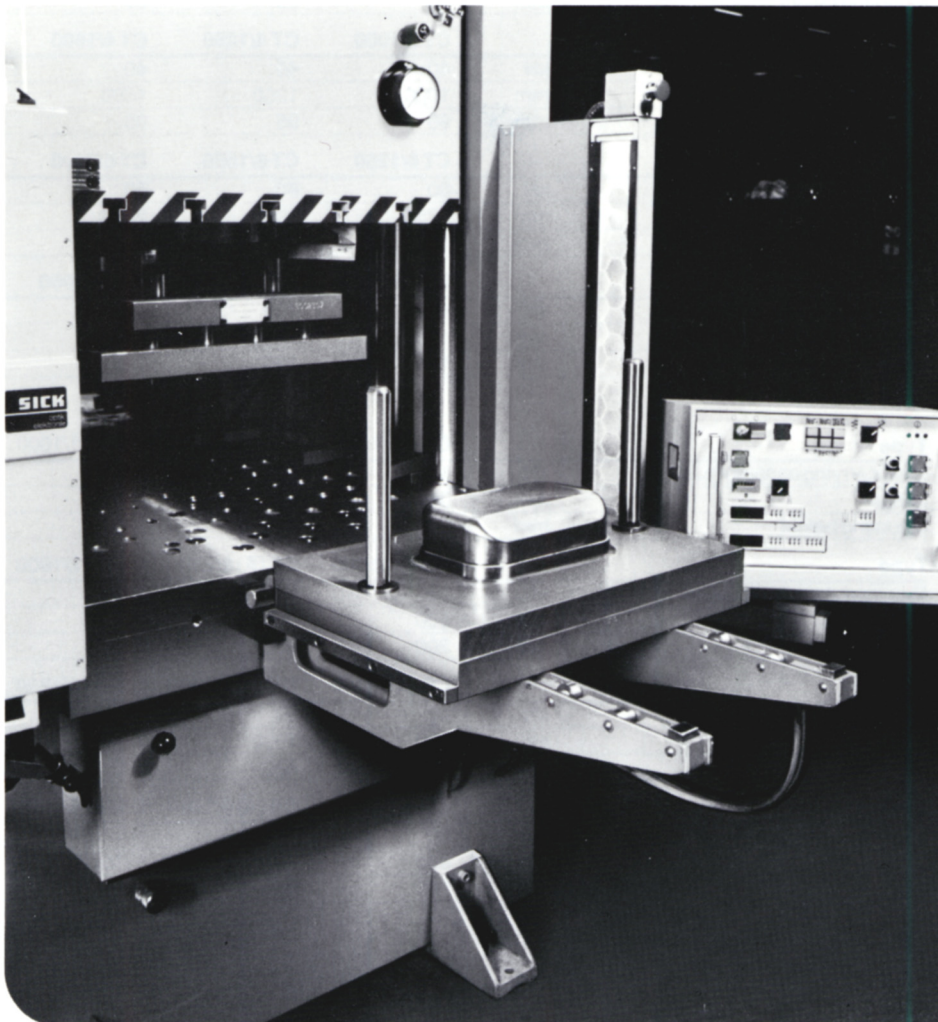
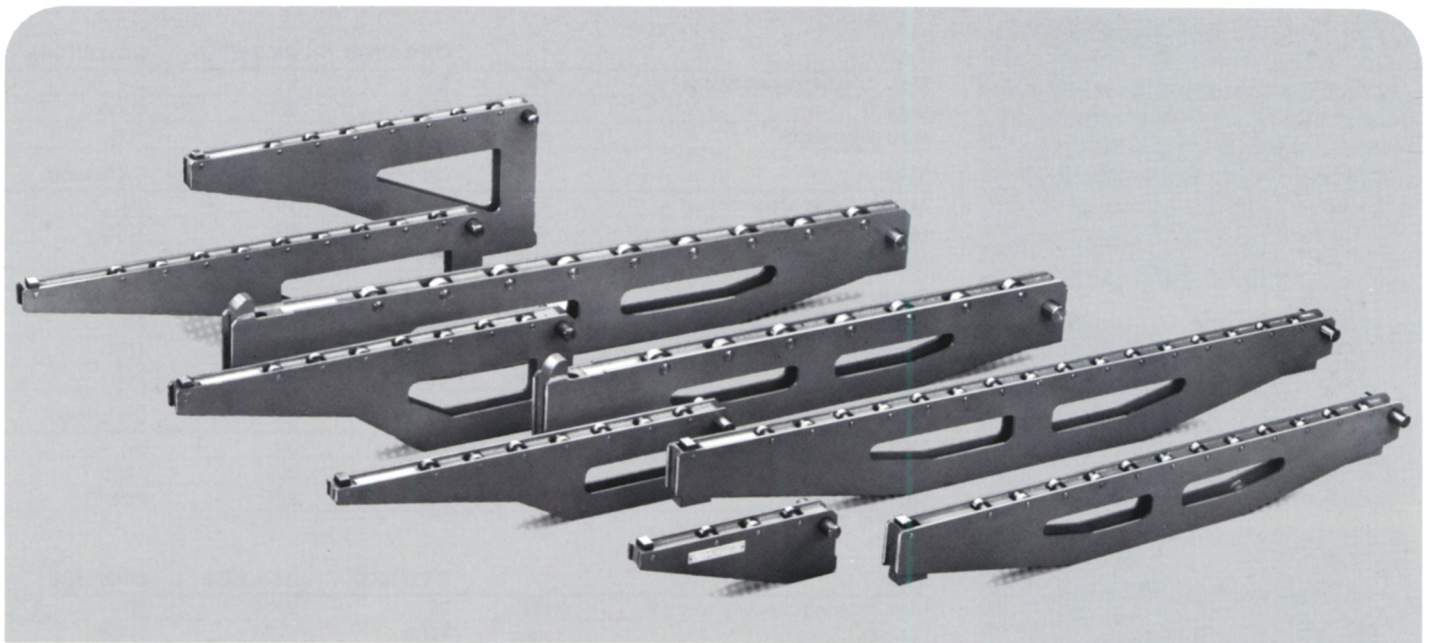
### **Variable sliding support, type CV**

Support fixed to the press by means of guide rail or rod, to adapt to different die widths or change of sections. Can be locked when in loading position. Often combined with one of the before mentioned support types, e.g. as a CVS swivel-mounted sliding support.

### **Special support, type CX**

Supports to meet customers' individual requirements as regards execution, dimension and carrying capacity, will be manufactured on inquiry.



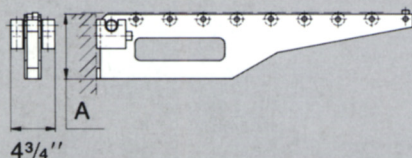


Mounting hooks  
for CK and CT-type  
supports



### Overhung support, type CK

Die support equipped with rollers, without supporting leg, to attach to presses for rapid die change. Used in pairs.



| Type                        |    | CK 0.5/500 | CK 0.5/800 | CK 0.5/1000 |
|-----------------------------|----|------------|------------|-------------|
| Max. carrying capacity/pair | kN | 5          | 5          | 5           |
| Length                      | mm | 500        | 800        | 1000        |
| Mounting height             | mm | 120        | 120        | 150         |

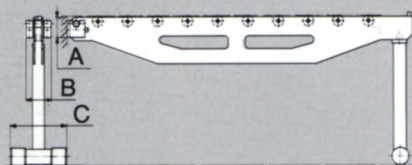
| Type                        |    | CK 1/500 | CK 1/800 | CK 1/1000 |
|-----------------------------|----|----------|----------|-----------|
| Max. carrying capacity/pair | kN | 10       | 10       | 10        |
| Length                      | mm | 500      | 800      | 1000      |
| Mounting height             | mm | 150      | 180      | 250       |

| Type                        |    | CK 2/500 | CK 2/800 | CK 2/1000 |
|-----------------------------|----|----------|----------|-----------|
| Max. carrying capacity/pair | kN | 20       | 20       | 20        |
| Length                      | mm | 500      | 800      | 1000      |
| Mounting height             | mm | 175      | 250      | 300       |

| Type                        |    | CK 3/500 | CK 3/800 | CK 3/1000 |
|-----------------------------|----|----------|----------|-----------|
| Max. carrying capacity/pair | kN | 30       | 30       | 30        |
| Length                      | mm | 500      | 800      | 1000      |
| Mounting height             | mm | 250      | 375      | 450       |

### Support with adjustable leg, type CT

Die support with rollers and vertically adjustable supporting leg to attach to presses for rapid die change. Used in pairs.



| Type                        |    | CT 2/1000 | CT 2/1250 | CT 2/1600 |
|-----------------------------|----|-----------|-----------|-----------|
| Max. carrying capacity/pair | kN | 20        | 20        | 20        |
| Length                      | mm | 1000      | 1250      | 1600      |
| Mounting height             | mm | 95        | 95        | 95        |

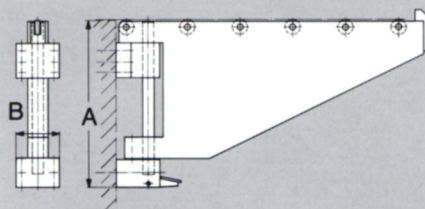
| Type                        |    | CT 4/1000 | CT 4/1250 | CT 4/1600 |
|-----------------------------|----|-----------|-----------|-----------|
| Max. carrying capacity/pair | kN | 40        | 40        | 40        |
| Length                      | mm | 1000      | 1250      | 1600      |
| Mounting height             | mm | 95        | 95        | 95        |

| Type                        |    | CT 6/1250 | CT 6/1600 | CT 6/2000 |
|-----------------------------|----|-----------|-----------|-----------|
| Max. carrying capacity/pair | kN | 60        | 60        | 60        |
| Length                      | mm | 1250      | 1600      | 2000      |
| Mounting height             | mm | 120       | 120       | 120       |

| Type                        |    | CT 10/1250 | CT 10/1600 | CT 10/2000 |
|-----------------------------|----|------------|------------|------------|
| Max. carrying capacity/pair | kN | 100        | 100        | 100        |
| Length                      | mm | 1250       | 1600       | 2000       |
| Mounting height             | mm | 120        | 120        | 120        |

### Swivel-mounted support, type CS – folds outward, type CSA – folds inward

Die support with rollers. Swivel-mounted to the press and provided with locking device. Used in pairs.



| Type                        |    | CS (A) 1/500 | CS (A) 1/800 | CS (A) 1/1000 |
|-----------------------------|----|--------------|--------------|---------------|
| Max. carrying capacity/pair | kN | 10           | 10           | 10            |
| Length                      | mm | 500          | 800          | 1000          |
| Mounting height             | mm | 200          | 200          | 250           |

| Type                        |    | CS (A) 2/500 | CS (A) 2/800 | CS (A) 2/1000 |
|-----------------------------|----|--------------|--------------|---------------|
| Max. carrying capacity/pair | kN | 20           | 20           | 20            |
| Length                      | mm | 500          | 800          | 1000          |
| Mounting height             | mm | 200          | 250          | 300           |

| Type                        |    | CS (A) 4/800 | CS (A) 4/1000 | CS (A) 4/1250 |
|-----------------------------|----|--------------|---------------|---------------|
| Max. carrying capacity/pair | kN | 40           | 40            | 40            |
| Length                      | mm | 800          | 1000          | 1250          |
| Mounting height             | mm | 400          | 450           | 500           |

| Type                        |    | CS (A) 6/800 | CS (A) 6/1000 | CS (A) 6/1250 |
|-----------------------------|----|--------------|---------------|---------------|
| Max. carrying capacity/pair | kN | 60           | 60            | 60            |
| Length                      | mm | 800          | 1000          | 1250          |
| Mounting height             | mm | 500          | 580           | 680           |

Type CSA with asymmetrical swivel points and parallel rest position

Carrying Capacity shown in kN (10.0 kN = 1.1 tons = 2,240 lbs.)

Subject to modification of design.

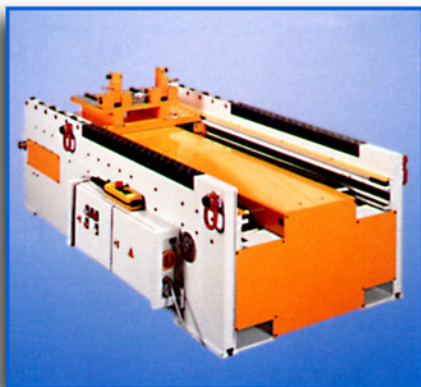
Double swivel-mounted support, type CD; variable sliding supports, type CV; special supports, type CX, as well as non-standard sizes on inquiry!





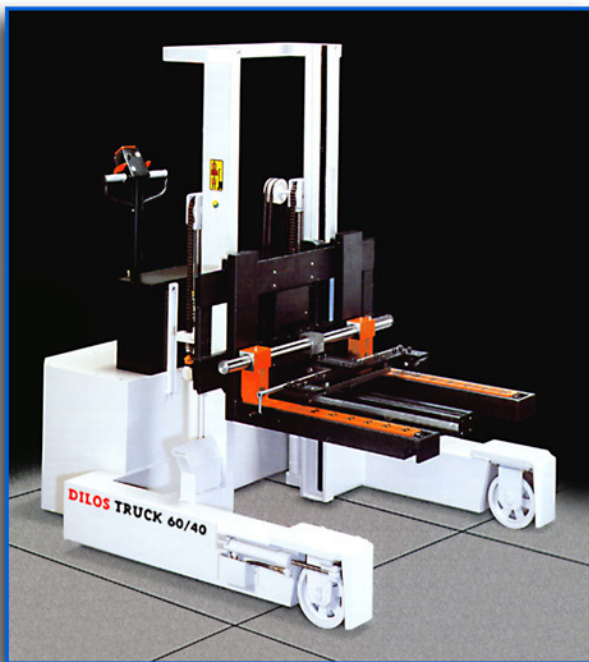
## SWT Liftmatic

Accessory unit for all types of existing fork lift trucks. Used for transporting, changing and storing dies. Numerous options and variations available including single and double tier units. Die weights of up to 2.2 tons.



## SWT Consolmatic

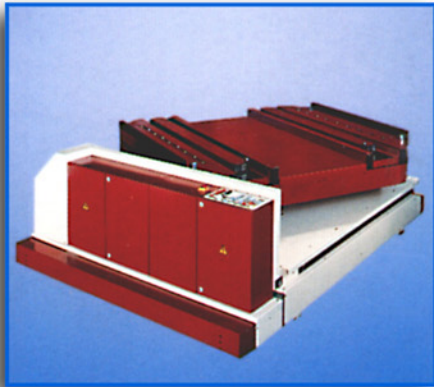
Die Changing Table with motorized transfer unit. Designed for semi or fully automatic die changes. Fixed or movable for die weights of up to 5 tons.



## Dilos Truck 60 and Rollbloc Buggy

The Dilos Truck Die Transporter and Rollbloc Buggy combine two functions in one unit. They can pick up and lower dies the same way as a forklift. In addition they can use their integrated die roller forks to position dies accurately and safely. Both are available with a wide range of options including automatic loading/unloading, magnetic die attachment, and optical sensor positioning.





The die changing transporter, Dilos Shuttle, is suitable for die weights of 4 to 44 tons. The rail mounted Shuttle travels back and forth between die prep and die staging positions. Since the die prep work is not carried out in front of the press, production can proceed unhindered until the die is ready to be changed.



Available as tracked or wheeled versions with forward and sideways drives. The units can be ordered as single or tandem units, with fixed or adjustable transfer heights in both semi or fully automatic versions.

