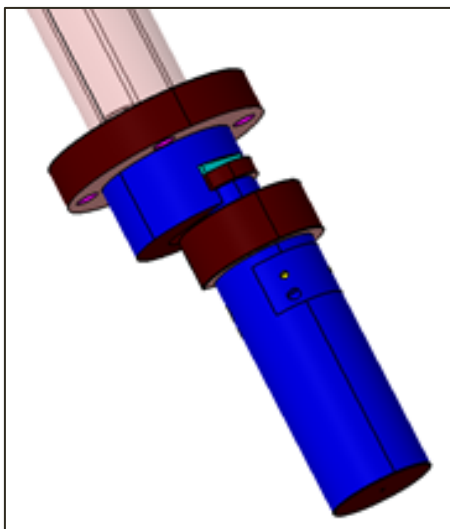# TrueCam

Data sheet

SMALL – Pillar Cam

Diameter pillar [mm]	Shank diameter punch [mm]	Working angle	Max. stroke pillar [mm]	Max. working force [kN]	Retraction force [kN]
28	10 + 13	0° - 45°	50	38	3,8
40	16 + 20	0° - 45°	50	63	6,3
50	25 + 32	0° - 45°	50	101	10,1

**Order example for punching unit: PIN-SMALL-028-PUN-10-V1**
Order example for forming unit: PIN-SMALL-028-V1

Advantages of the SMALL Pillar Cam

- Small, compact and sturdy design
- Positive locking device of the pillar
- Working angles 0° to 45°
- As a complete assembled unit installed in the die: Time saving in designing, die manufacturing and processing due to easy handling
- The pillar is secured against falling out
- The pillar can be mounted / dismantled when the guide plate / blank holder is installed and in the down position
- High working force can be applied
- Guides are maintenance-free / self-lubricating
- This pillar cam is usable in two options:
  - Pillar with punch retainer
  - Pillar with working space for forming / coining

1

Typical assembly for a punching unit

Top plate

Guide plate

Base plate
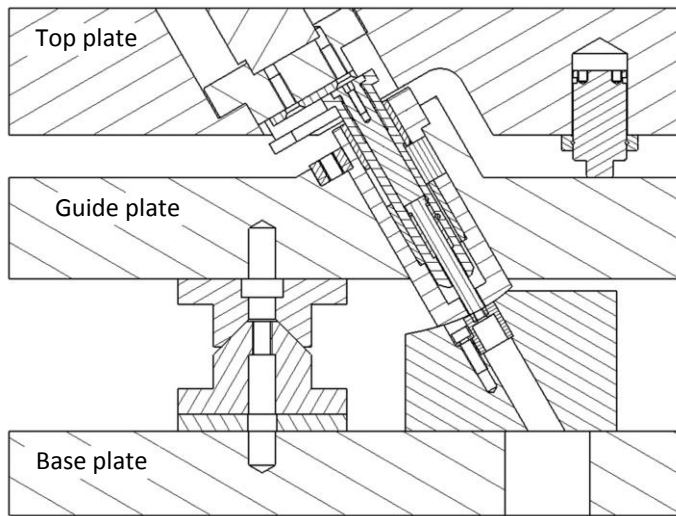
Driver (both options):

- The driver is screwed to the top plate and keyed against rotation.
- The spacer, screwed on at the driver, is supported against the press ram.
- The T-guide of the driver is securing the pillar against falling out when inserting it into the die.

Housing (both options):

- The head of the housing is locked by a key against the guide plate / blank holder to secure it against rotation.
- In the housing is a locking device installed, which is backed up by the mounting bore inside the guide plate / blank holder, which secures the pillar against twisting.
- The nose of the housing is reworked and adjusted to the part form by the die maker (end user) and performs that way like a stripper function. Machined housing with contour is deliverable. Contour has to be specified by the customer.
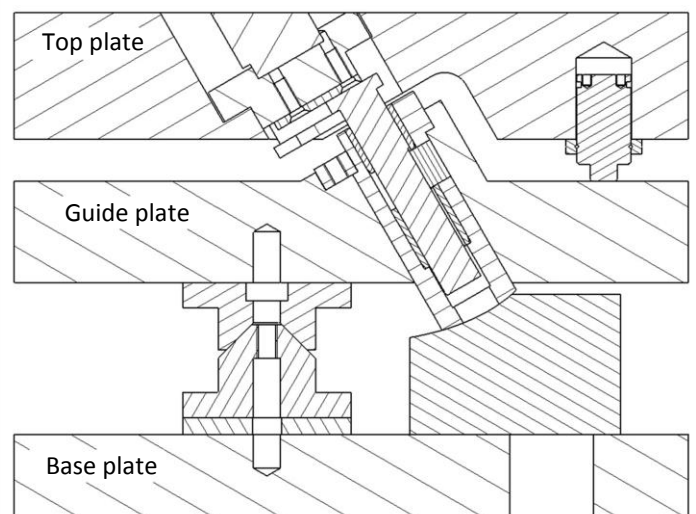
Pillar for punching unit:

- The punch is inserted directly into the pillar bore and is pressed down by a screw bolt.
- The position of the punch location may be changed if needed by up to 0,5 mm in each direction by exchanging a reworked guide bushing.
- The screw bolt in the pillar is made with a pull-out thread in the top.

Relevant for both options:

- The pillar is guided by self-lubricating bushings.
- The pillar can be mounted / dismantled when the guide plate / blank holder is installed and in the down position after screwing off the driver.
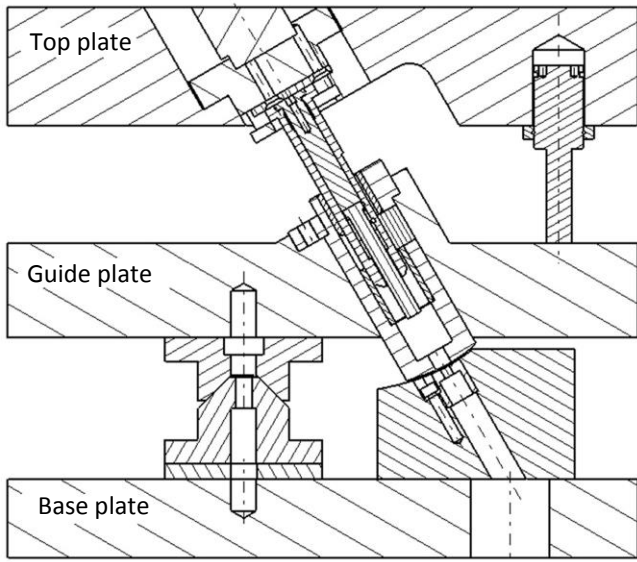
... for a forming unit

Top plate

Guide plate

Base plate

Pillar for forming unit:

- The pillar can be used directly for forming / coining or as a retainer for screwed punches / inserts.

Top plate

Guide plate

Base plate

Guide groove for pillar

In this position the driver and the pillar can be mounted or dismantled.

Dismantling:
- Unscrew the driver and pull out the dowel pin of the driver.
- Insert a screw into the pull-out thread of the driver and pull out the driver with the pillar.

Mounting:
- Pillar head must be inserted into the T-slot of the driver.
- Because of this T-slot design the pillar cannot slip out of the driver.
- Push the driver and pillar together into the inside of the housing.
- The large chamfer at the pillar front allows an easy entrance.
- Screw the driver in tight put in and the dowel pin of the driver.

# Set up instructions: location of punch to button

For adjusting the die clearance rest the guide plate / blank holder on the base plate.
- The pillar can now be moved by hand to check the clearance to the die button.
- To adjust the clearance of punch point to the die button, a new guide bushing must be machined by wire cutting with a proper off set. Max. movement: 0,5 mm per side.
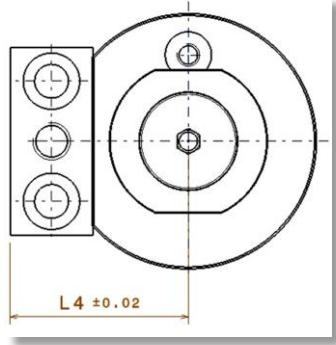

A

B

Detail „B"

Detail „A"

3
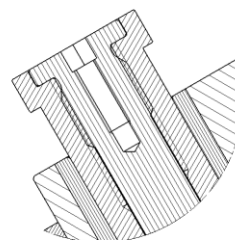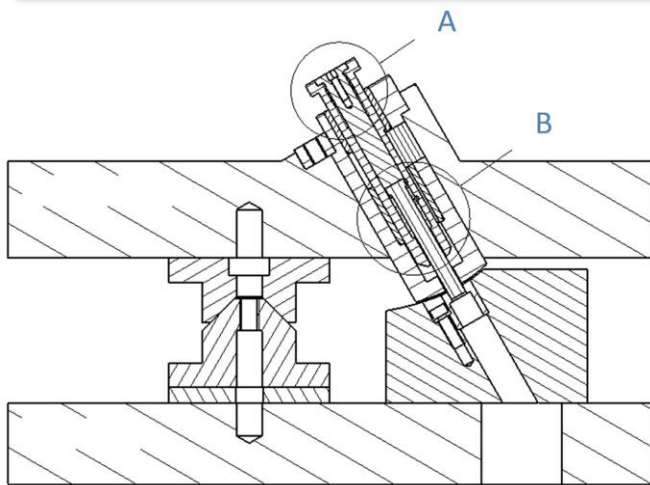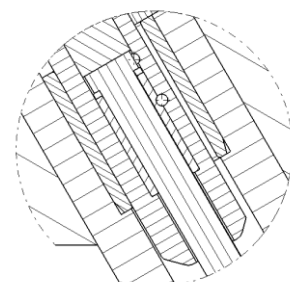
driver matched with top of upper die plate surface

$L4 \pm 0.02$

rigid contact to the surface of the upper die plate

$\Phi D3 \, ^{H7}_{g6}$

housing with key secured against twisting and falling out of the blank holder

rigid contact to the surface of the guide plate / blank holder

Unspecified dimensions please infer from the CAD-files.

Diameter pillar = D1

$L1$

$L2$

$L3$

shape to follow the contour of the part

$\Phi D2 \, ^{H7}_{g6}$

$L5 \pm 0.01$
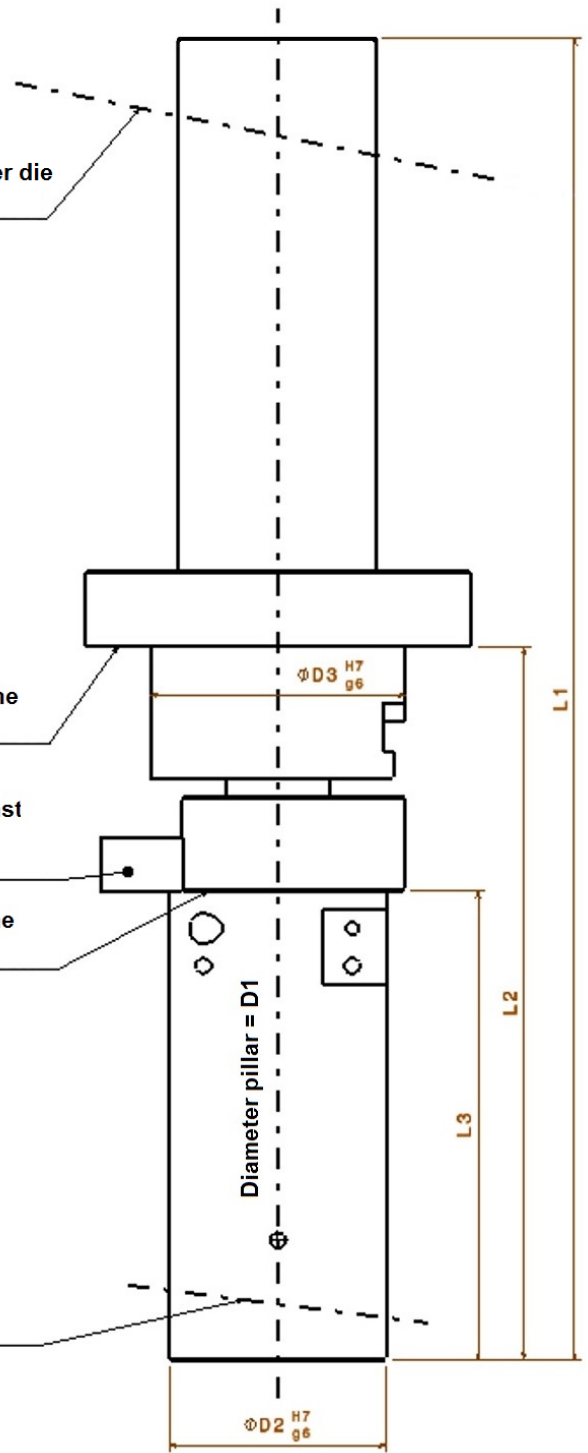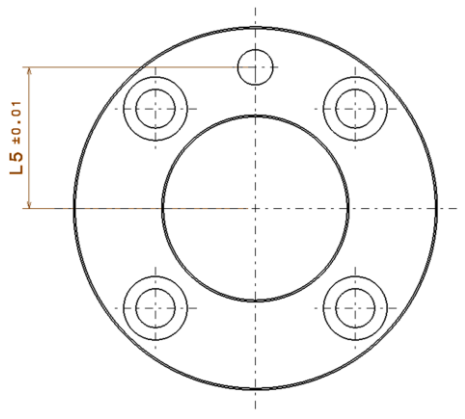
Ø Pinole	D1	D2	D3	L1	L2	L3	L4	L5
28	28	58	68	352	190	125	47,3	40
40	40	71	86	362	200	125	53,8	50
50	50	94	98	362	200	125	65,3	56

All dimensions in [mm]

Positioning of the SMALL Pillar Cam in the CAD

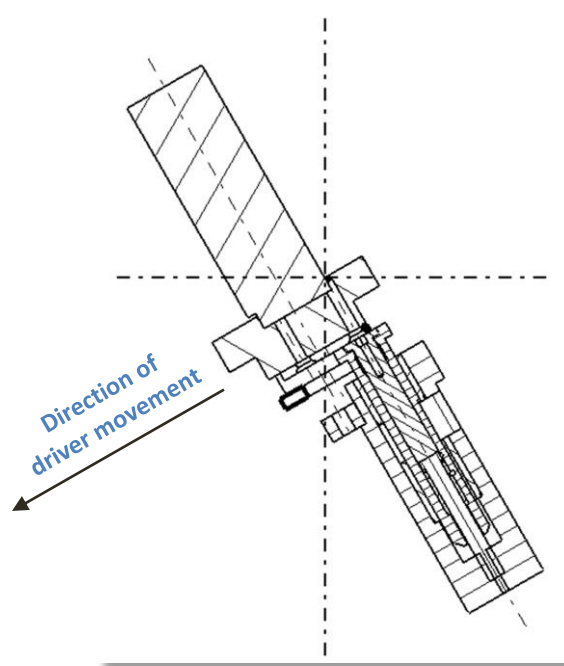| Cam position during downloading data file	Driver position when the die is closed

Direction of driver movement
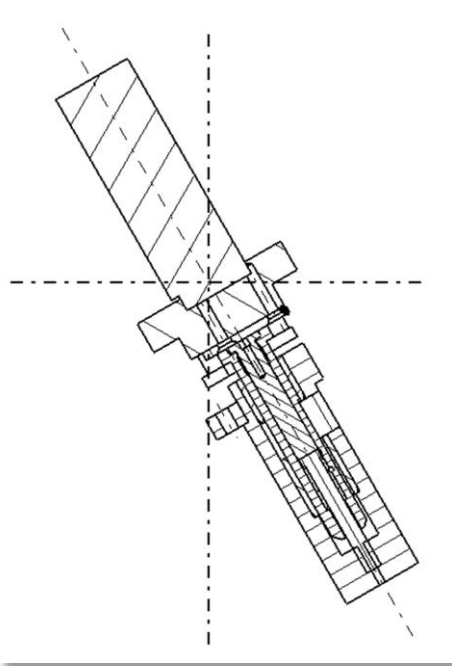
Cam position:
- Driver is in start position (centerlines are aligning)
- Pillar is pushed down into the housing

Cam position:
- Driver is in end position (movement must be calculated)
- Pillar is pushed down into the housing

Procedure:
- Download the CAD data.
- Calculate the movement of the driver as shown on the following pages.
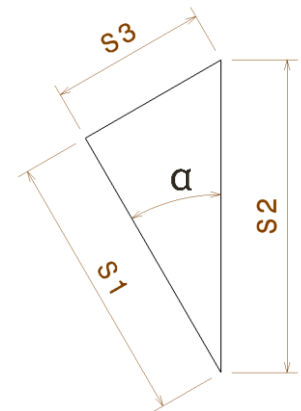- Move the driver in the CAD-data accordingly and adopt to the die.

Calculating the blank holder stroke for a working angle of the pillar „α = 26,6° to 45°“ when „S3 = max. 25mm" is to be considered:

Calculation S1:　　$S1 = \dfrac{S3}{\tan \alpha}$

Calculation S2:　　$S2 = \dfrac{S1}{\cos \alpha}$

S1 = max. 50mm

Calculating the blank holder stroke for a working angle of the pillar „α = 0° to 26,6°“ when „S1 = max. 50mm" is to be considered:

Calculation S2:　　$S2 = \dfrac{S1}{\cos \alpha}$

Calculation S3:　　$S3 = \tan \alpha \; x \; S1$

S3 = max. 25mm

Explanations:

S1: Pillar stroke
S2: Blank holder stroke
S3: Pillar stroke on driver
α: Working angle pillar

Example 1:

Preexisting:	S3:	25mm
	α:	30°
Searched:	S1:	(mm)
	S2:	(mm)

Calculation S1:　$S1 = \dfrac{25mm}{\tan 30°} = 43,3mm$

Calculation S2:　$S2 = \dfrac{43,3mm}{\cos 30°} = \mathbf{50mm}$

Result:

If the working angle is **30°** then the max. pillar stroke is **43,3mm**.

Therefore a max. blank holder stroke is **50mm**.

Example 2:

Preexisting:	S1:	50mm
	α:	29°
Searched:	S1:	(mm)
	S2:	(mm)

Calculation S2:　$S2 = \dfrac{50mm}{\cos 26,6°} = 55,9mm$

Calculation S3:
$S3 = \tan 26,6° \; x \; 50mm = \mathbf{25mm}$

Result:

If the working angle is **26,6°** then the max. blank holder stroke is **55,9mm**.

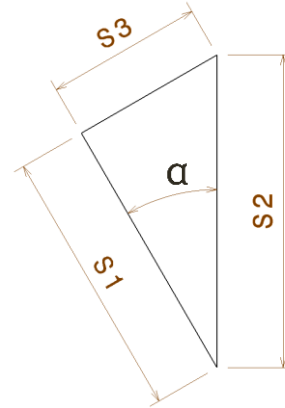The pillar is making a side stroke on the driver of **25,0mm**.

Calculating the pillar stroke with a given blank holder stroke

Calculating the pillar stroke „S1" in relation to a given blank holder stroke „S2":

Calculation S1: $S1 = \cos\alpha \; x \; S2$

Calculating the side stroke of the pillar on the driver „S3" in relation to a given blank holder stroke „S2":

Calculation S3: $S3 = \sin\alpha \; x \; S2$

Example 1:

Preexisting: S2:   30mm
                α: 15°
Searched: S1:   (mm)

Calculation S1:
$S1 = cos15° \; x \; 30mm = 29mm$

Result:
If the working angle is **15°** and if the blank holder stroke is **30mm** then the pillar stroke is **29mm**.

Example 2:

Preexisting: S2:   30mm
                α: 15°
Searched: S3:   (mm)

Calculation S3:
$S3 = sin15° \; x \; 30mm = 7,8mm$

Result:
If the working angle is **15°** and if the blank holder stroke is **30mm** then the pillar is making a side stroke on the driver of **7,8mm**.

Ihr Systemlieferant für
Stanz- und Formenbaunormalien

MICRONORM