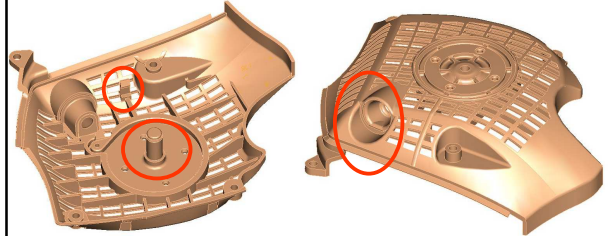


Design and manufacturing of plastic injection mould

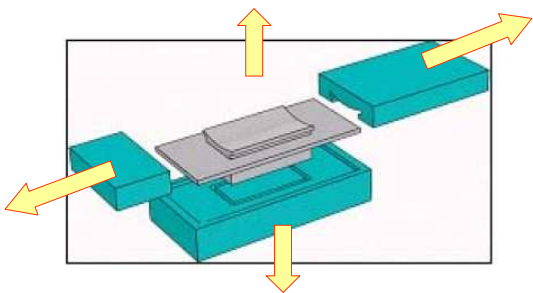
11 – Undercutted parts

Undercutted part

- Hidden feature from the opening direction
- Size / Shape / Matching of the inserts

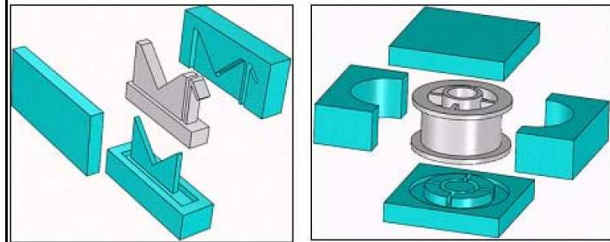


Example 1



3

Example 2-3



4

Design facilities

- Moving insert
- Conventional ejection bar
- Ejection rod
- 2 stage ejector
- Slider
- Lifter
- Spring core

5

Moving insert

- In case of proto moulds
- Move with the plastic part
- Ensure the position of the insert
- Fixture for disassemble of insert and part

6

Conventional ejection

- Simple undercut,
- Surface can be damaged.

Ejection rod

- Ejection bar with form.
- Simple undercut.
- Demoulding can be problematic.

2 stage ejection

- Small undercut.
- Part can be damaged.

2 stage ejection

Slider

- Insert, which is moved to the direction of the undercut
- Problems:
 - Closing
 - Moving
 - Guiding
 - Fixing

Moving

- Moving by angle pin
- Moving in time of opening

Geometric parameters

$$\tan \alpha = \frac{H}{L}$$

$$H = L \cdot \tan \alpha$$

$$\alpha_{\max} = 30^\circ (18^\circ - 22^\circ)$$

13

Design

14

Slider body

- Shoulder for guiding (5x5)

15

Angle pin

- 1 or 2 pin

16

Holder insert

- Egyszerűbb gyártás

17

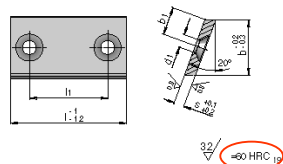
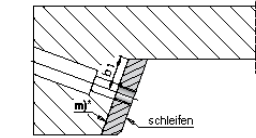
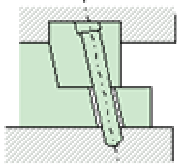
Guide of the slider

- Guide
- Fitting in mould plate (dowel pin and slot)
- Fixing by screws
- Self lubricated or hardened
- In case of wide slider more guiding elements can be used

18

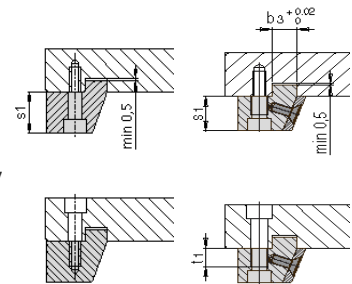
Pressure insert and wear plate

- Erő felvétele
- Zárás beállítása
- Formalappból kialakítva



Pressure insert

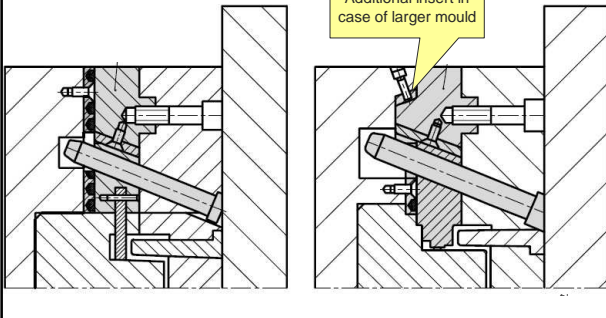
- Külön alkatrész
- Megfelelő illesztés és rögzítés
- Kopólappal vagy a nélkül



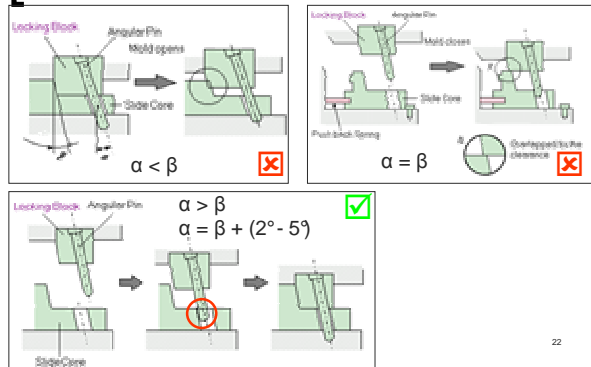
20

Pressure insert

Additional insert in case of larger mould



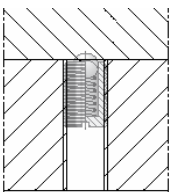
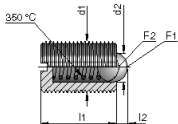
Recommended geometric par.



22

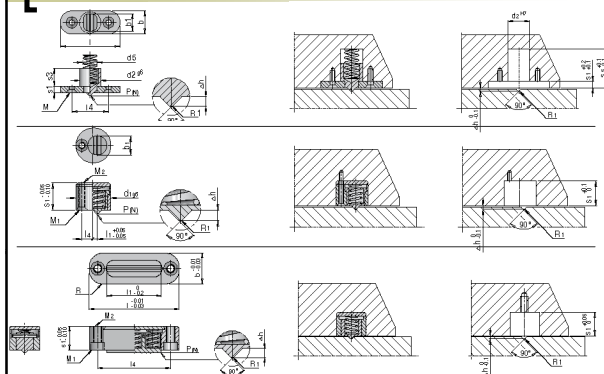
Fixing the open position

- In open stage the position of the sliders have to be fixed
- The recommended slider direction is level
- Ball screw
- Hole in the slider
- Bottom of the slider or in the side (not recommended)

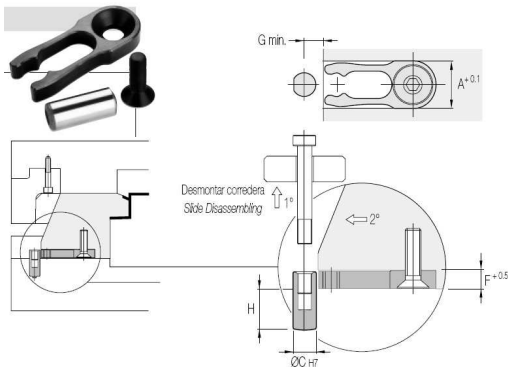


23

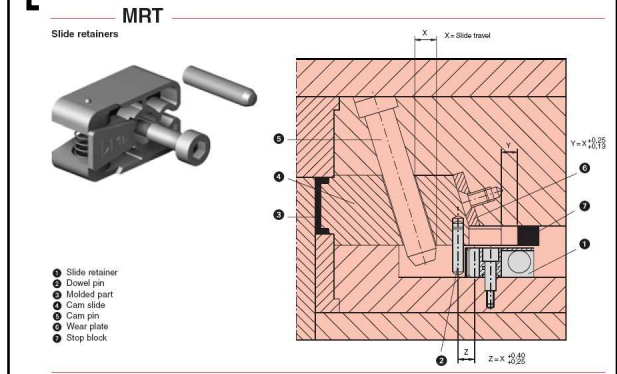
Fixing the open position



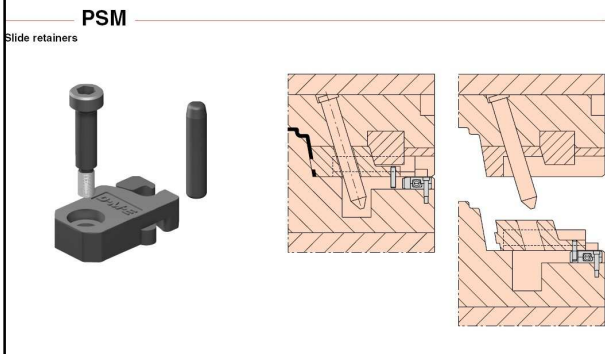
Fixing the open position



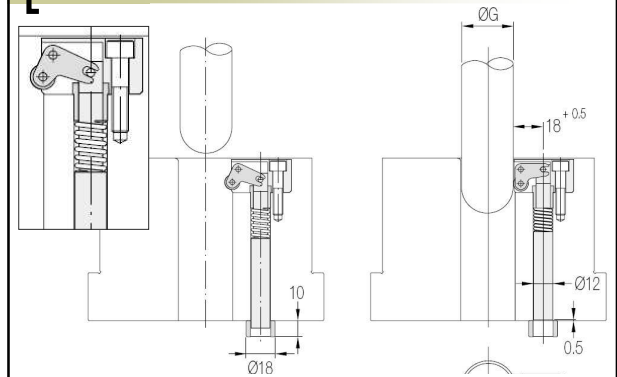
Fixing the open position



Fixing the open position

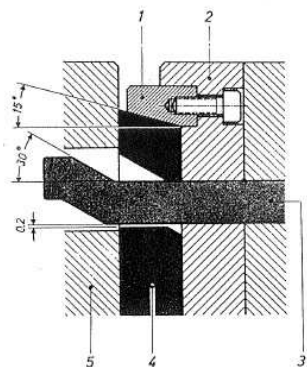


Fixing the open position

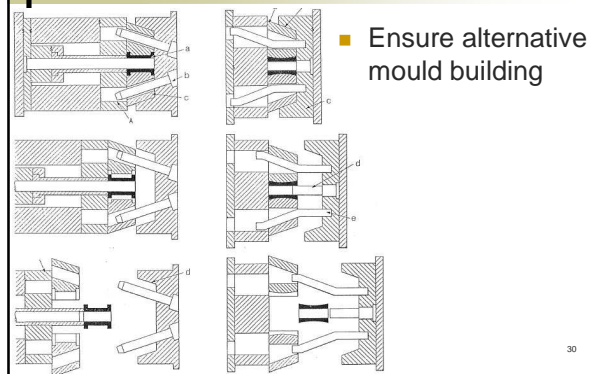


Moving of sliders

- Z rod
- Moving after the opening

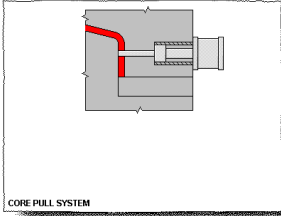


Z rod



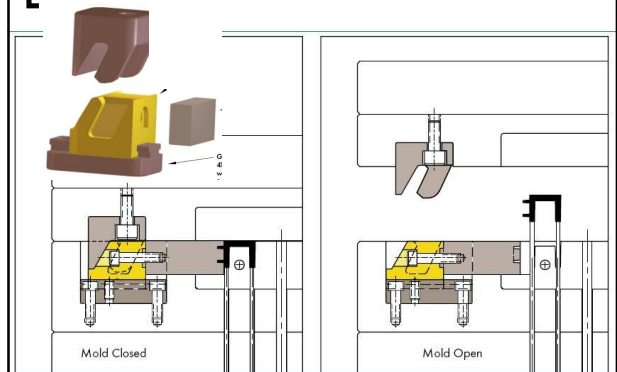
Drive by hydraulic cylinder

- Long move
- In the A side
- Action before opening
- In mould or standard cylinder

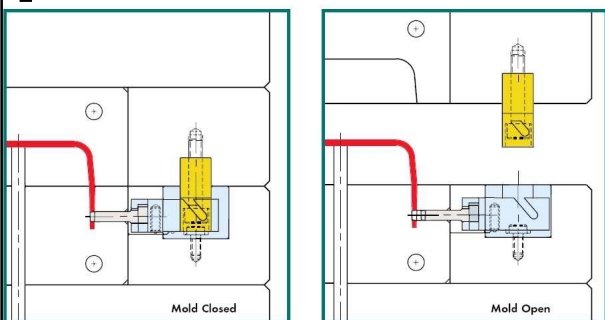


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Mini slider

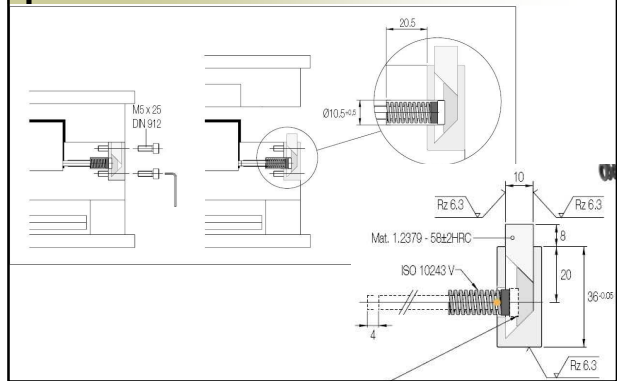


Special slider

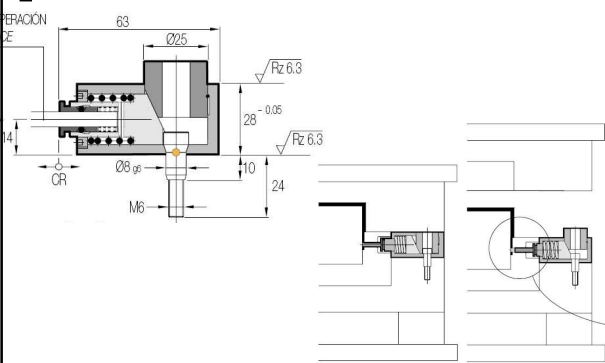


The CamAction assembly is activated by an angled driver installed in the cavity. Upon mold closing, the driver cams the core pin forward into the molding position. When the mold opens, the core pin retracts for 230° of travel and is captured by the ball plunger.

Special slider

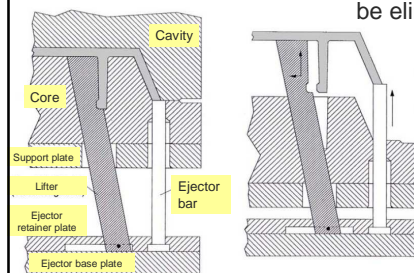


Special slider

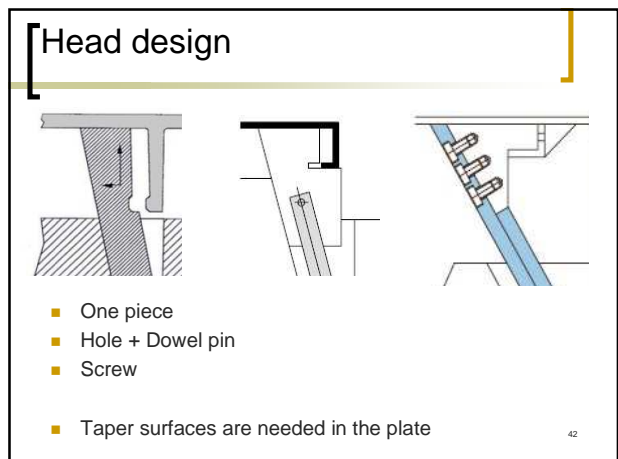
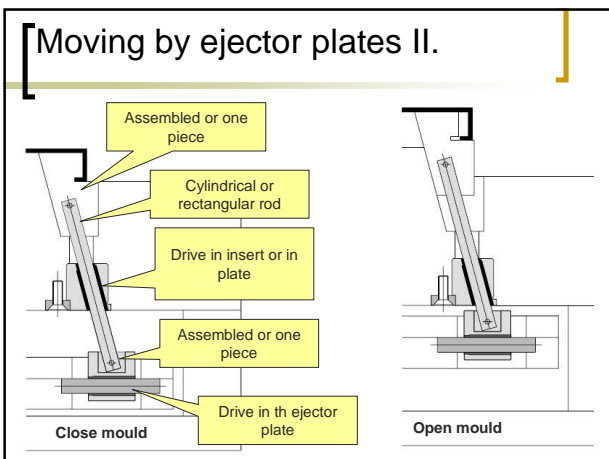
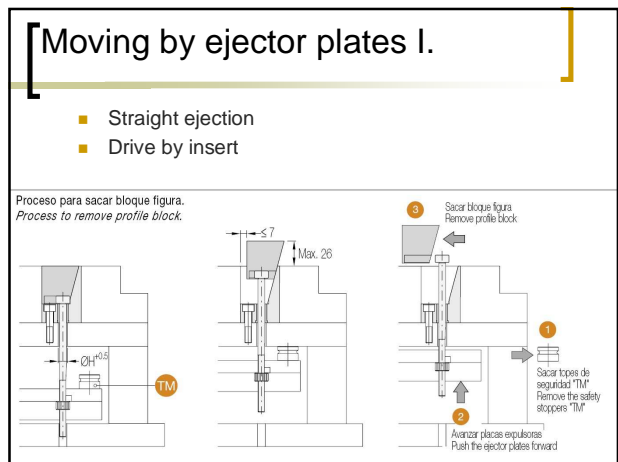
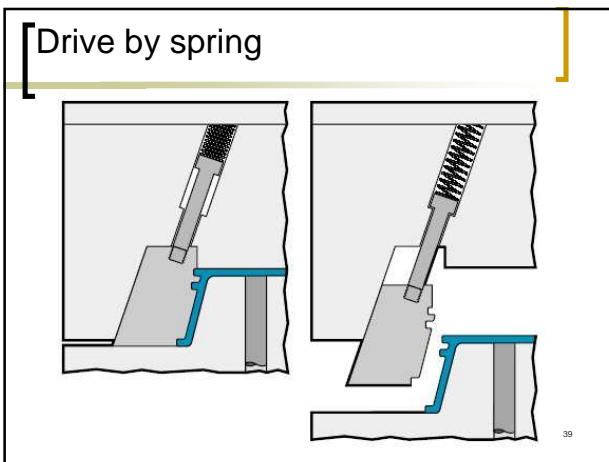
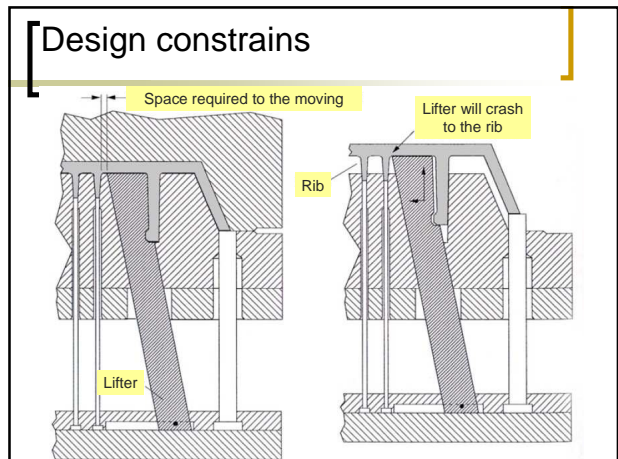
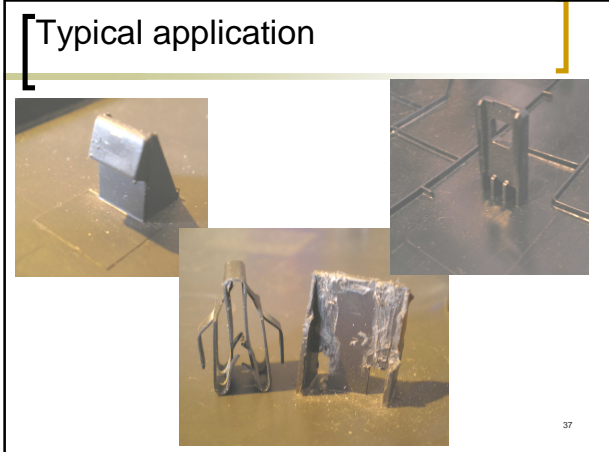


Lifter

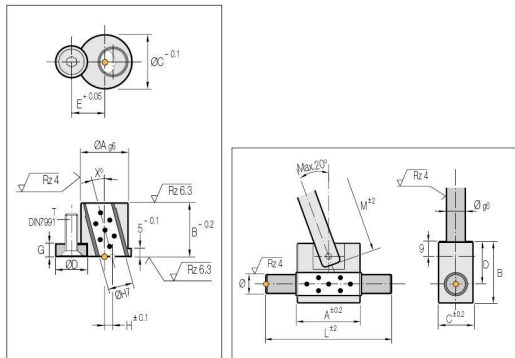
- Small undercut
- No space for slider
- Space for lifter exists
- Support the ejection
- The slip of the part must be eliminated



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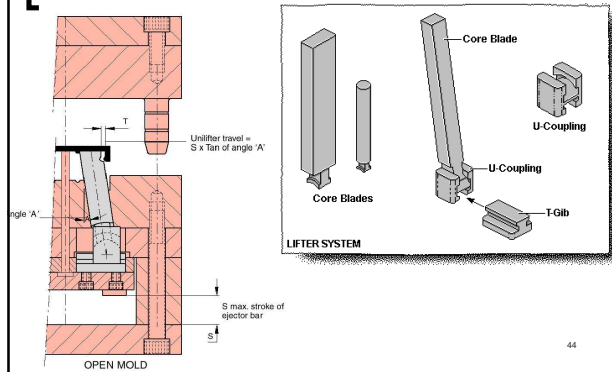


Guide of the lifter



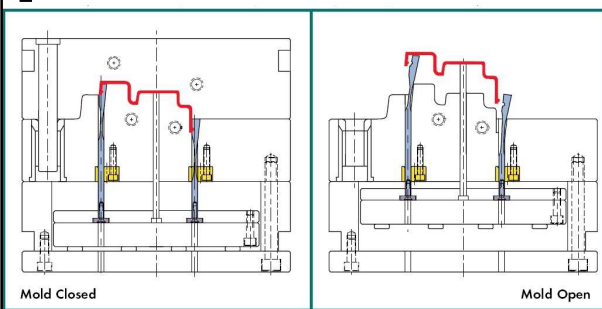
43

Lifter



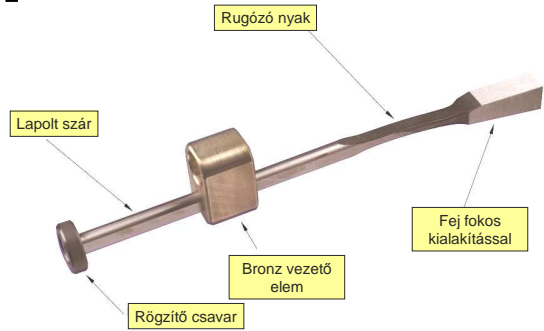
44

Spring core



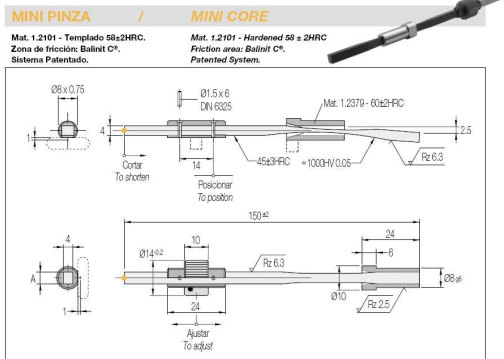
45

Spring core



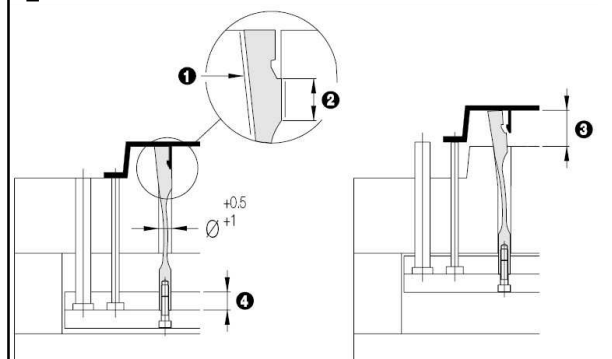
46

Spring core



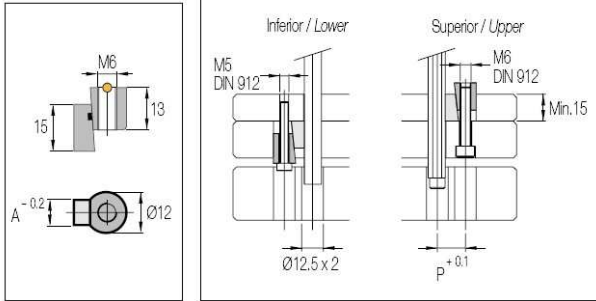
47

Spring core

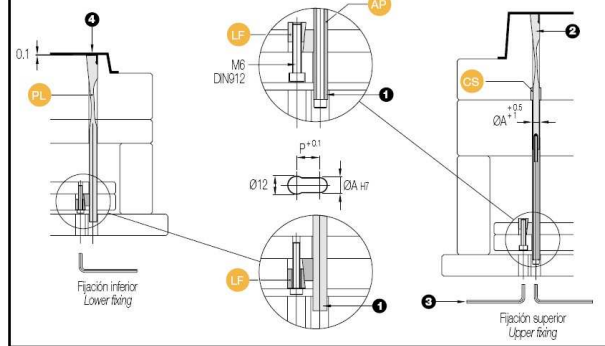


Spring core

Mat. 1.2510 - 50/55HRC.



Spring core

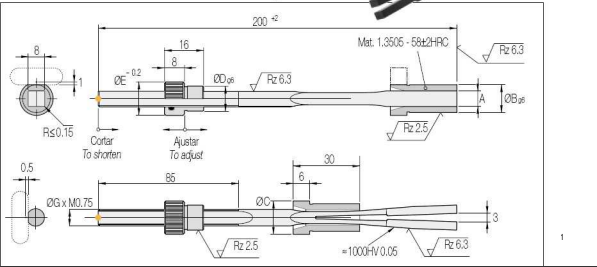


Double spring core

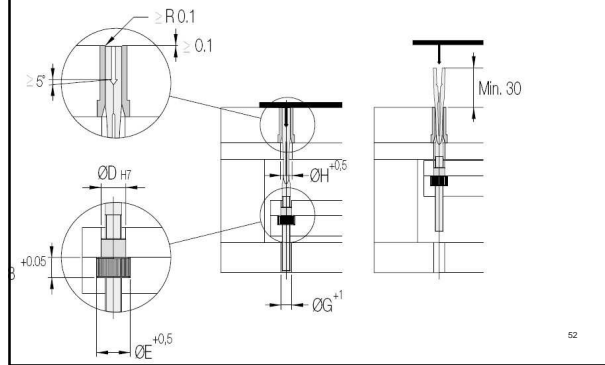
EXPULSOR DOBLE / DOUBLE EJECTOR

Mat. 1.2101 Templado 58 ± 2HRC. Zona de fricción: Balinit C[®]. Sistema Patentado.

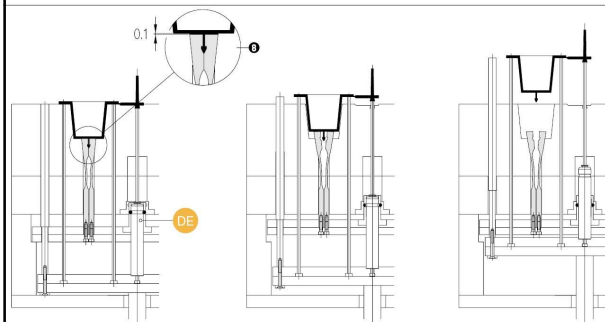
Mat. 1.2101 - Hardened 58 ± 2HRC Friction area: Balinit C[®]. Patented System.



Double spring core



Double spring core



Tulip ejector

EXPULSOR ELASTICO / TULIP EJECTOR

Mat. 1.2101 Templado 58 ± 2HRC. Zona de fricción: Balinit C[®]. Sistema Patentado.

Mat. 1.2101 - Hardened 58 ± 2HRC Friction area: Balinit C[®]. Patented System.

