

# Design and manufacturing of plastic injection mould

## 05 – Accessories

1

## Guide elements

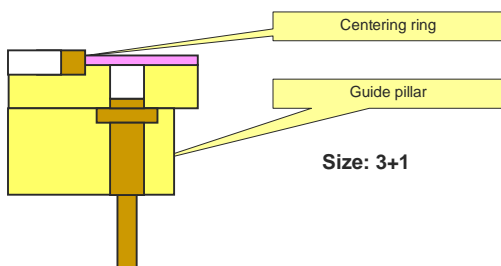
- Centering
- Guiding



- The injection machine ensures these functions, but in the mould we should ensure too.

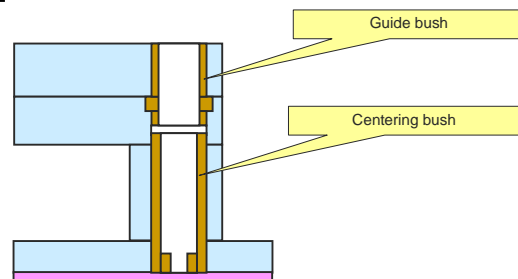
2

## A-side guide elements



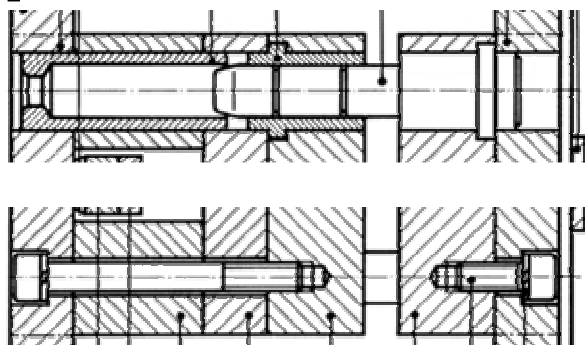
3

## B-side guide elements

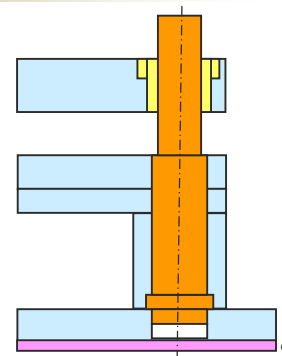


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## Centering and fitting

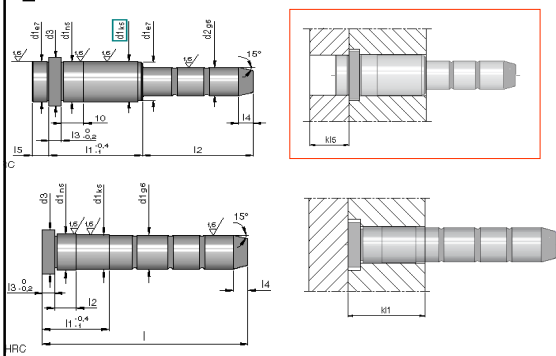


## Stripper plate guide

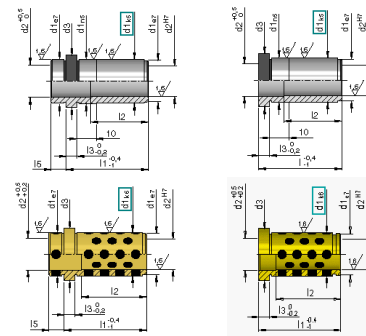


5

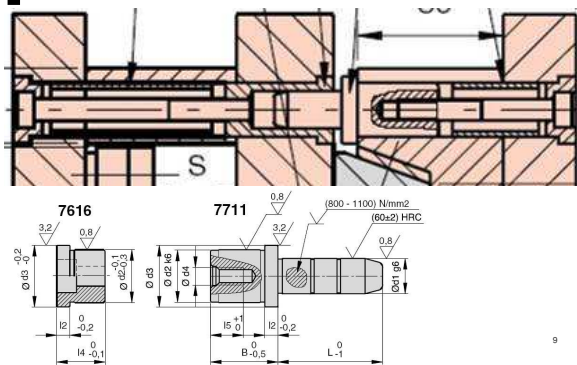
## Guide pillar design



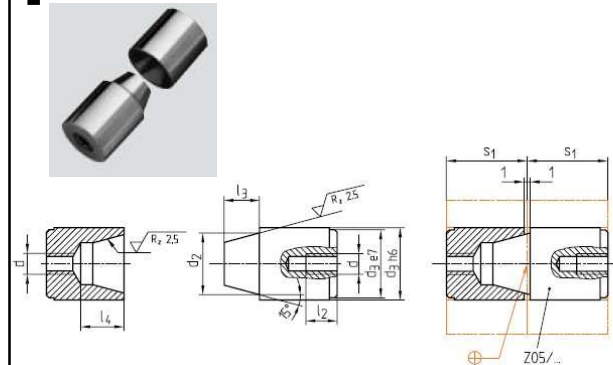
## Guide bush design



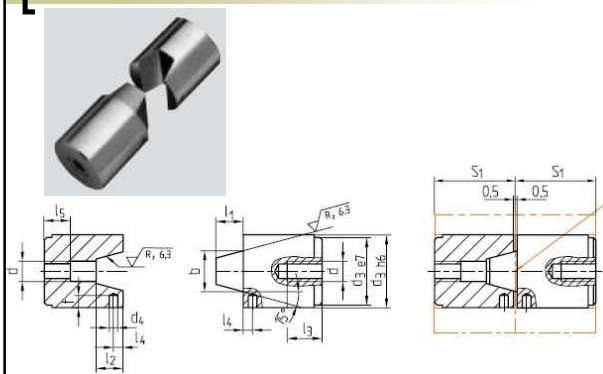
## Centering and fitting



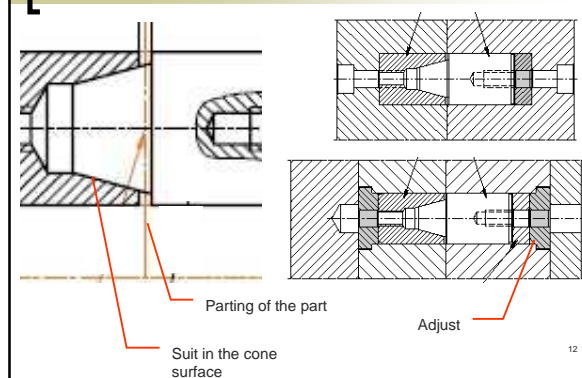
## Centering unit



## Centering unit



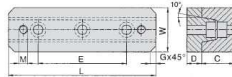
## Application



## Tapered interlock

\_\_\_\_\_ **RSI** \_\_\_\_\_

- Zentriereinheiten
- Cônes de centrage



- Assembling only per set
- Nur als Satz einbauen
- Enkel per set inbouwen

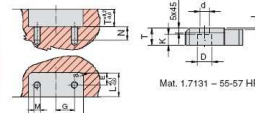
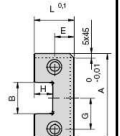
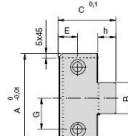
assemblage uniquement par jeu

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## Straight interlock / top lock

## SS1

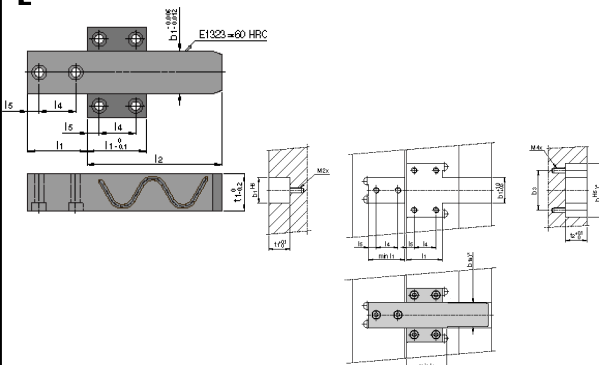
- Zentrierstücke
- Centreurs prismatiques



Mat. 1.7131 – 58-60 HRC

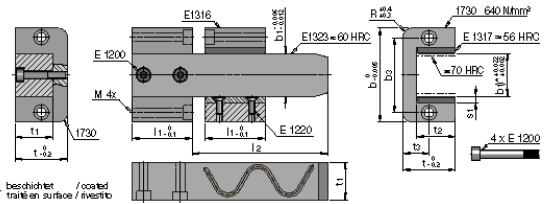
- Assembling only per set
  - Nur als Satz einbauen
  - Enkel per set inbouwen
- Assemblage uniquement par jeu

## Flat guiding unit



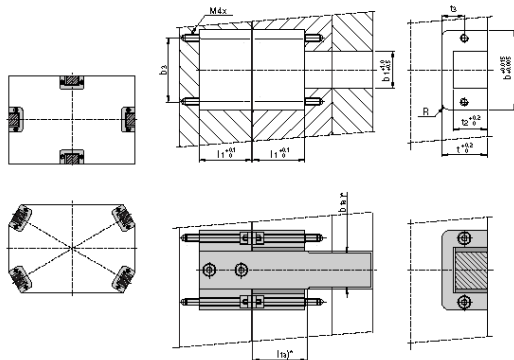
## Flat guiding unit

## E 1315



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## Application



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## Additional accessories

- Transport bar
- Safety fastener
- Eye screw for lifting
- Cycle counter
- Support legs

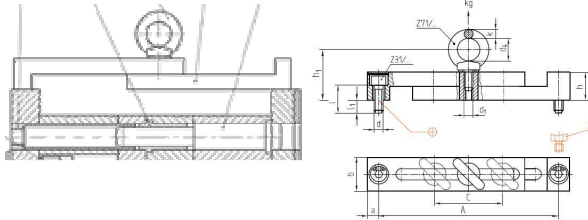
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## Transport bar

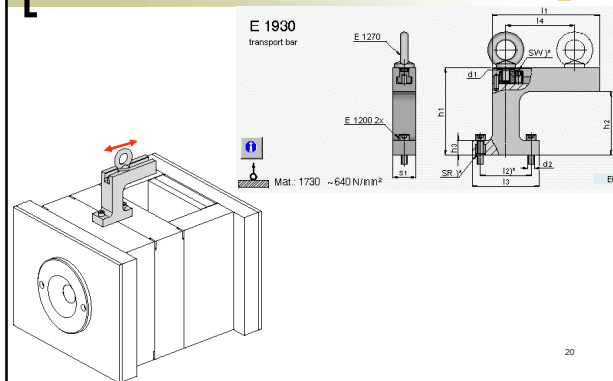


**Task:** hold the mould in assembled position during the transport

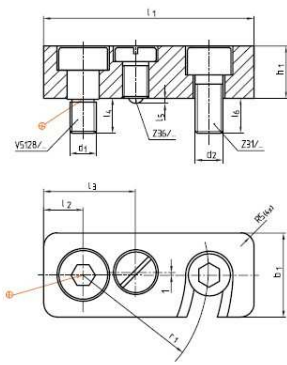
**Position:** center of the weight



## Transport bar



## Safety fastener



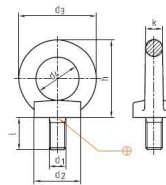
**Task:** hold the mould in assembled position during the transport

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## Eye screw

Z71/...

Mat.: 1.0401  
DIN 580



**Task:** support the lifting

**Position:** center of the weight

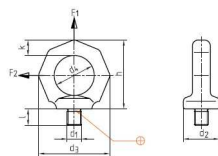
max. kg	max. kg	l	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h	k	d <sub>4</sub>	Nr./No.
140	95	13	20	36	20	36	8	M 8	Z71/ 8
230	170	17	25	45	25	45	10	M 10	10
340	240	20,5	30	54	30	53	12	M 12	12
700	500	27	35	63	35	62	14	M 16	16
1200	830	30	40	72	40	71	16	M 20	20
1800	1270	36	50	90	50	90	20	M 24	24
3600	2600	45	65	108	60	109	24	M 30	30

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## Eye screw

Z711/...

Mat.: 1.6541

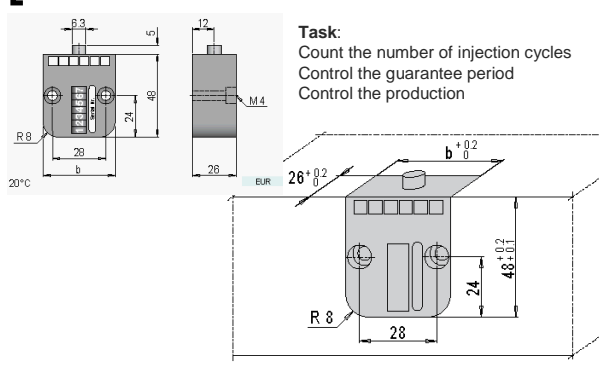


Higher load

F <sub>1</sub> max. kg	F <sub>2</sub> max. kg	l	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	h	k	d <sub>4</sub>	Nr./No.
1000	250	12	25	45	25	45	10	M 10	Z711/10
1600	400	15	30	54	30	53	12	M 12	12
4000	1000	19	35	67	35	64	16	M 16	16
6000	1500	30	40	80	40	75	20	M 20	20
8000	2000	36	50	90	50	90	24	M 24	24
12000	3000	45	60	108	65	109	24	M 30	30

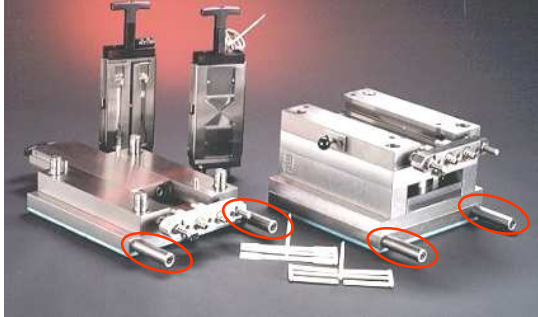
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## Cycle counter



## Support legs

- For storage



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## Example

### Example 127. Single-Cavity Injection Mold for a PE-HD Clothes Hanger Produced via Gas-Assisted Injection Molding

The clothes hanger (Fig. 1) is basically a bent round rod 16 mm in diameter with a hook at one end. An I-beam-shaped cross piece with a wall thickness of 2.2 mm connects the two ends of the rod. Two button-shaped projections for hanging women's skirts are located on the bottom cross piece.

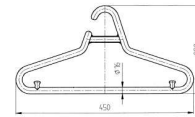


Figure 1 PE-HD clothes hanger

#### Mold (Fig. 2)

To save material, reduce cycle time and prevent sink marks, the mold (dimensions: 546 mm x 346 mm x 297 mm shut height) was designed for gas-assisted injection molding.

The mold cavity and runner channel, which enters the cavity close to the connecting cross piece, are located between the mold plates (1, 2). The gas injection pin, consisting of injection pin body (4) and gas injection needle (5), is located immediately adjacent to the gate.

#### Molding Sequence

Molding of the clothes hanger begins with injection of a metered amount of resin. The injection pressure required is relatively low, because the mold is filled only partially and the large cross-section of the part does not create any significant resistance to flow. For the same reason, no resin flows into the air gap between the injection pin body (4) and gas injection needle (5).

Next, nitrogen gas at a pressure of about 150 bar/2175 psi is introduced into the runner, and from there into the still-molten resin in the cavity, via the gas injection pin. An over-larger bubble forms in the resin, while the still-molten core advances via fountain flow to the ends of the flow paths leading away from the gate. The result is a part with a tubular cross-section 16 mm in diameter and a wall thickness of 2.5 mm.

#### Part Release/Ejection

As the mold opens, the two loosely fitted mold inserts (6) release the bottom cross piece of the hanger from the stationary-side mold plate (2) under the action of springs (7). The sprue is pulled out of the sprue bushing and the hollow runner stem is pulled out of the gas injection pin. Once the mold has opened completely, the profiled ejector pins (8) and the runner ejector pins (9, 10) eject the molded part and runner, respectively. After the molded part has been degassed, a hole about 3 mm in diameter that was formed by the nitrogen gas remains at the gate.

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## Example

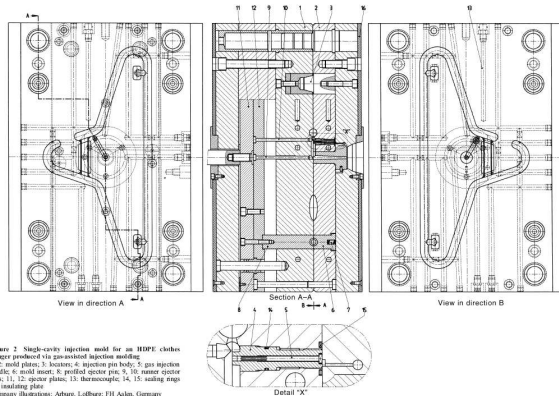


Figure 2 Single-cavity injection mold for an HDPE clothes hanger produced via gas-assisted injection molding. 1, 2: mold plates; 3: bushing; 4: injection pin body; 5: gas injection needle; 6: mold insert; 7: profiled sprue pin; 8: runner ejector pins; 9, 10: sprue ejector pins; 11: bushing; 12: cooling plate; 13: bushing; 14, 15: cooling plate. Company illustration: Ashurg, Lötzbach, T.H. Aachen, Germany