



# Plastsystem

# Mould Standard

**Rev 0**

2022-08-19

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# 1. Material

## **Steel grade and standard parts:**

Plastsystem AB requires that only materials from LKM, Buderus, Gröditz, ASSAB, Thyssen, Uddeholm, Hasco and Meusburger must be used for the moulding areas and mould base.

Standard parts like pillars, bushings and ejector pins are to be according to Hasco or Meusburger standard.

Hardening must be done according to each material specification.

The hardness difference between moving parts and inserts/ molding area must be at least 2 Hrc.






Certificate from the steel supplier and the hardening process must be provided with the mould.

## 2. Lifting

### Thread for Eye bolts

All moulds must be delivered with enough threads for eye bolts to lifting the mould, and to lift each half separated.

The eye bolt threads are to be dimensioned primarily for: M12, M16, M20, M24 or M30. Maximum load as follows:

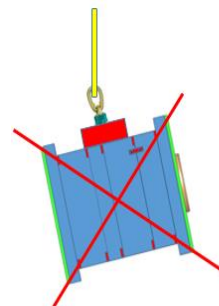
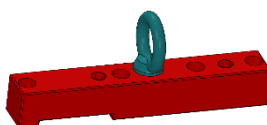
Kind of attachment								
Number of pieces	1	1	2	2	2	3 or 4		
Inclination angle	0°	90°	0°	90°	0° - 45°	45° - 60°	0° - 45°	45° - 60°
Designation	WLL		WLL		WLL		WLL	
	(t)		(t)		(t)		(t)	
<b>THEIPA Point 6,7</b>								
M 12 x 18	1,4	0,7	2,8	1,4	1,0	0,7	1,4	1,0
M 10 x 18	1,0	0,5	2,0	1,0	0,7	0,5	1,0	0,75
M 12 x 25	1,4	0,7	2,8	1,4	1,0	0,7	1,4	1,0
M 14 x 20	2,0	1,0	4,0	2,0	1,4	1,0	2,12	1,5
<b>THEIPA Point 1,4</b>								
M 16 x 20	2,8	1,4	5,6	2,8	2,0	1,4	3,0	2,12
M 16 x 30	2,8	1,4	5,6	2,8	2,0	1,4	3,0	2,12
M 20 x 30	3,4	1,7	6,8	3,4	2,4	1,7	3,55	2,5
M 24 x 30	3,4	1,7	6,8	3,4	2,4	1,7	3,55	2,5
<b>THEIPA Point 2,5</b>								
M 20 x 30	5,0	2,5	10,0	5,0	3,55	2,5	5,3	3,75
M 20 x 40	5,0	2,5	10,0	5,0	3,55	2,5	5,3	3,75
M 20 x 50	5,0	2,5	10,0	5,0	3,55	2,5	5,3	3,75
M 20 x 70	5,0	2,5	10,0	5,0	3,55	2,5	5,3	3,75
<b>THEIPA Point 4,0</b>								
M 24 x 30	8,0	4,0	16,0	8,0	5,6	4,0	8,5	6,0
M 24 x 45	8,0	4,0	16,0	8,0	5,6	4,0	8,5	6,0
M 24 x 50	8,0	4,0	16,0	8,0	5,6	4,0	8,5	6,0
M 24 x 30	8,0	4,0	16,0	8,0	5,6	4,0	8,5	6,0
<b>THEIPA Point 6,7</b>								
M 30 x 35	12,0	6,7	24,0	13,4	9,5	6,7	14,0	10,0
M 30 x 45	12,0	6,7	24,0	13,4	9,5	6,7	14,0	10,0
M 30 x 50	12,0	6,7	24,0	13,4	9,5	6,7	14,0	10,0
M 30 x 60	12,0	6,7	24,0	13,4	9,5	6,7	14,0	10,0

### Lifting device:

Lifting devices are to be designed for correct balancing of the mould. Thread for Eye bolts must be provided on each plate, each mould half, for separate lifting of each half.

Hasco Z73 or similar security locking between fix half and movable half must exist if lifting device does not exist.

The lifting device and security locking shall be painted red.



### 3. Clamping

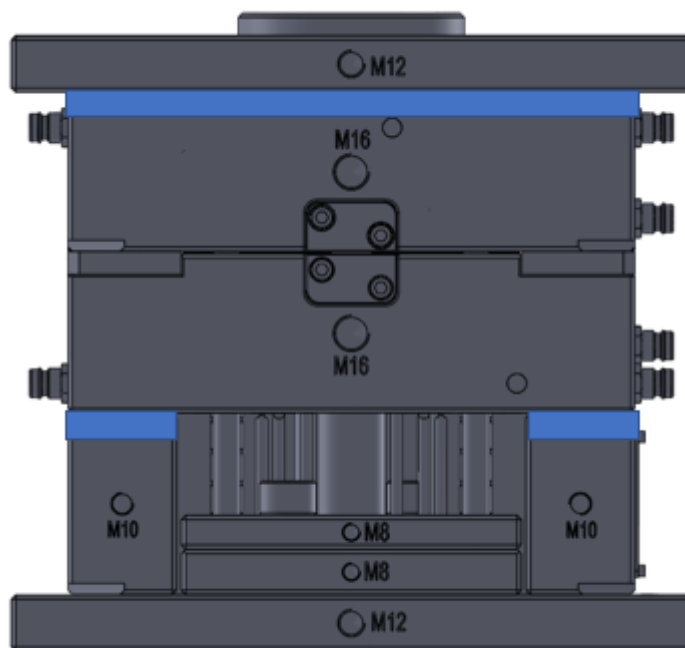
Plastsystem AB use magnetic clamping system.

**Insulation plates:**

If insulation plates are required, the minimum thickness is 5 mm. The plates are to be included in the total mould height and be placed as in the picture below.

The insulation plates parallelism must be within 0,1mm.

The insulation plate can't be placed on the back of the clamping plate because of the magnetic clamping system.

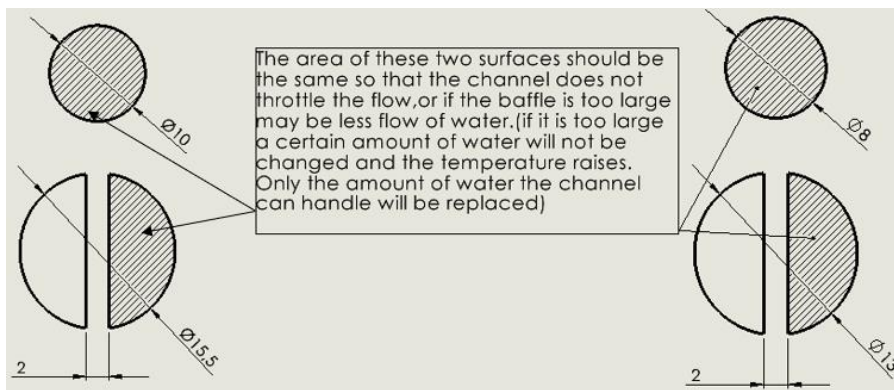


## 4. Cooling

### Cooling channels:

Cooling channels should allow free flow and be free of fluid, chips and burrs. When using a cooling tower, the baffle should be made of brass.

The cooling channels are to be pressure tested with a minimum water pressure of 8bar.



### Water connections:

Water connectors shall never be located on the top side of the mould.

Other solutions can only be approved by Plastsystem AB.

Brand: DYROS 90 or Hasco Z81

G1/8"	N918	Z81/13xG1/8
G1/4"	N914	Z81/13xG1/4
G3/8"	N938	Z81/13xG3/8



The cooling channels are to be clearly marked with 1-IN/1-OUT; 2-IN/2- OUT; and so on.

### Cooling Schedule Plate:

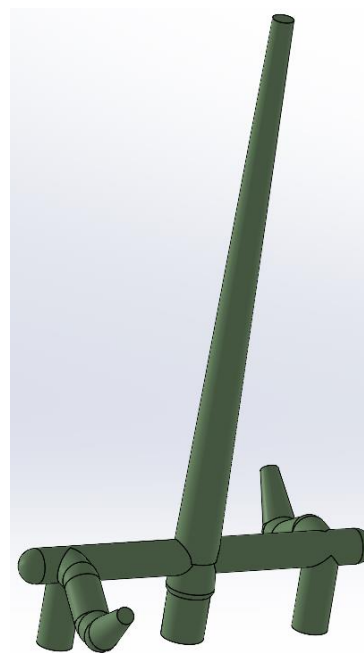
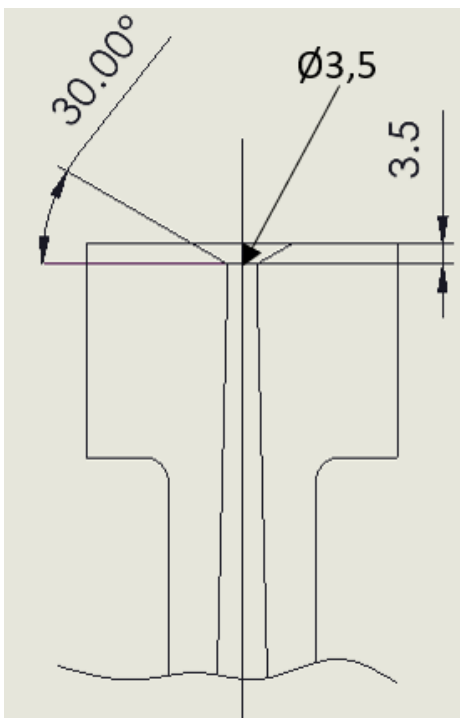
A cooling schedule plate must be provided on each half of the mould.

The plates should be placed at the side of the mould so it's easy to see during the connection of the cooling.

The plate should be in metal and the size to be dimensioned so it fit the mould, the plate must be easy to read.

## 5. Intake bushing & Cold runner

The material of the intake bushing should be hardened to 54Hrc. Chamfer 30°



The chamfer and the intake diameter should be clearly showed in the drawing.  
The chamfer on the intake bushing must be clean and free from punch marks at delivery to Plastsystem.

Good cooling around the intake bushing is a demand, the cooling channel should be in a separated circuit not connected to any other cooling channel.

Use standard intake bushing of brand Hasco.

Plastsystem AB prefer round cold runner.

## 6. Slides

### **Hardened mould:**

The difference in steel hardness between the insert and the slide must be at least 2Hrc.

### **Mechanical Slides:**

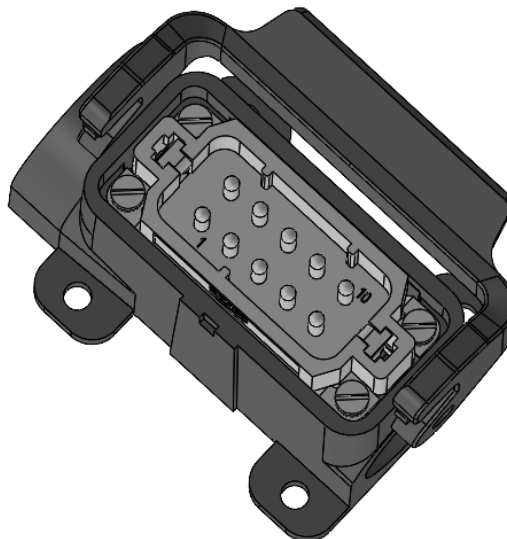
Mechanical slides must be provided with a spring or slide retainer (Z1895) from HASCO. If the slide is UP in the mould, there must be a combination of spring and slide retainer.

### **Hydraulic slides, moving core:**

If the core is extracted hydraulically, a sensor must be fitted to indicate the end positions (front and back). The sensor indication must be based on sensing the slide/core. The sensor must not be sensing on the hydraulic cylinder. The sensors are to be set, tested and connected on delivery. The sensors must be mounted in a way that will allow replacement without mould disassembly.

For wiring diagram see appendix **PSW1** (page 1&2) and below you have information about connector.

10- pin Harting stick  
Type 09200102612  
Chassie  
Type 19200100251  
Color: Grey





## 7. Hydraulic

### Generally:

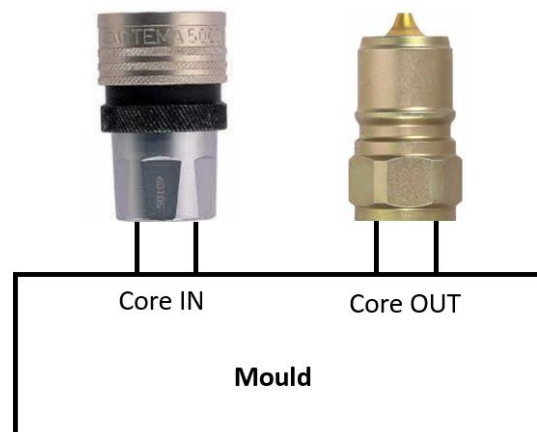
Hydraulic systems for core movement are to be pressure tested according to class S (25-64MPa). The pipe diameter is to be 10 mm. The pipe thread at the cylinder end is to be R1/4", 3/8" or 1/2". Hydraulic and blocks are to be located on the back side of the mould. The cylinders approved by Plastsystem are: Merkle or Vega.

All hydraulic components must be **CE** marked according to the European Union demands



IN and OUT are to be fitted with quick connectors according to tables below:

### Hydraulic connection for both core movement and ejection:



	IN	OUT
<b>Core movement</b>	<b>3811 Tema</b>	<b>3821 Tema</b>
<b>Ejection</b>	<b>3811 Tema</b>	<b>3821 Tema</b>

## 8. Hot Runner:

When using hot gating, standard components from the following suppliers are to be used:

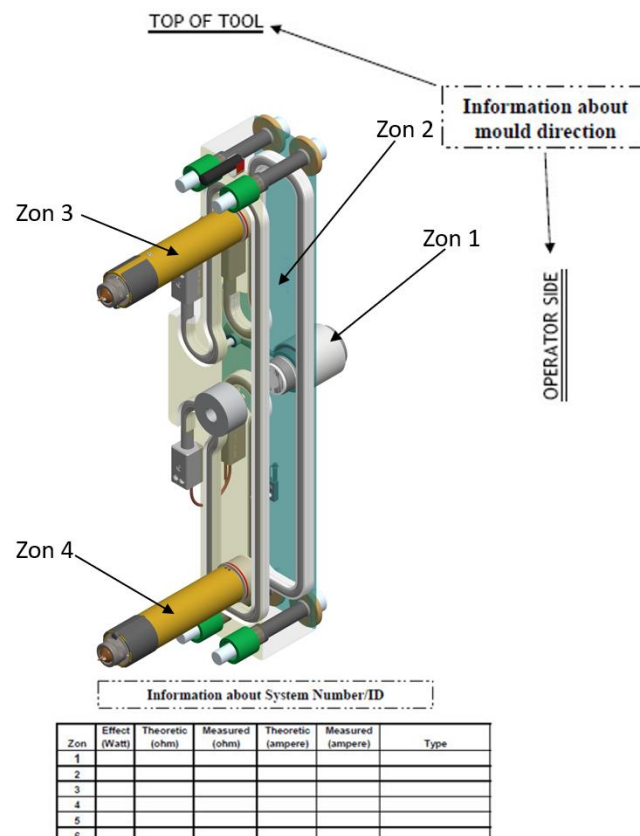
Temec ([www.temec.se](http://www.temec.se))

MasterFlow ([www.masterflow.se](http://www.masterflow.se))

YUDO ([www.yudo.com](http://www.yudo.com))

The mould must be fitted with a rating plate, stating type, ID, power requirements and the number of each zone.

The plate should be in metal and the size to be dimensioned so it fit the mould, the plate must be easy to read.



### **Electric connectors:**

All electric connectors must be located on the top of the mould and be protected. All connectors must be clearly marked with its function (such as for hot runner or core extraction).

On delivery, all electric connections must be made, according to description.  
For wiring diagram see appendix **PSW1** (page 3-5).

Always use smallest Harting stick as possible. 10, 16 or 24-pin. See art no below.  
The Harting chassie shall be in red color.

In case of lack of space for electrical connectors on the top, Plastsystem can approve to put the connectors on the backside.

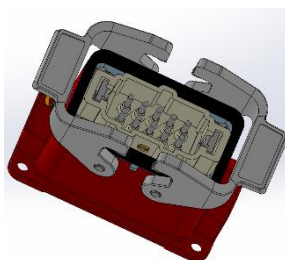
#### **10- pin Harting stick**

Type 09330102601

Chassie

Type 19300101230

Color: Red



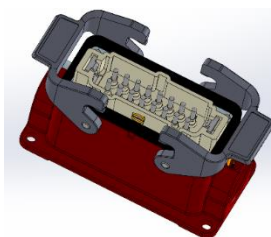
#### **16- pin Harting stick**

Type 09330162601

Chassie

Type 19300161231

Color: Red



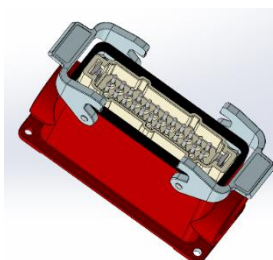
#### **24- pin Harting stick**

Type 09330242601

Chassie

Type 19300240232

Color: Red



If hydraulic and air are to be connected to the hot runner, the connection is to be placed at the backside of the mould (opposite side of the operator).  
Plastsystem prefer Air for the valve gate.



Hydraulic connection for hot runner:

	<b>Needle closed</b>	<b>Needle open</b>
	<b>2520 Tema</b>	<b>2510 Tema</b>

Air connection for hot runner:



	<b>Needle closed</b>	<b>Needle open</b>
	<b>186096 FESTO</b>	<b>186096 FESTO</b>

## 9. Ejection:

### Ejector pins:

Ejector pins should be in mm according to Hasco standard.

The guidance of the ejector pins should not be more than 30mm, or not less than 15mm.

If plastic part is white, then ejector pins shall be coated with DLC, and no lubrication should be applied to the ejectors.

### Return pins:

Return pins should be in mm according to Hasco dimension standard.

It should be a clearance of 0,25-0,5mm around the return pins.

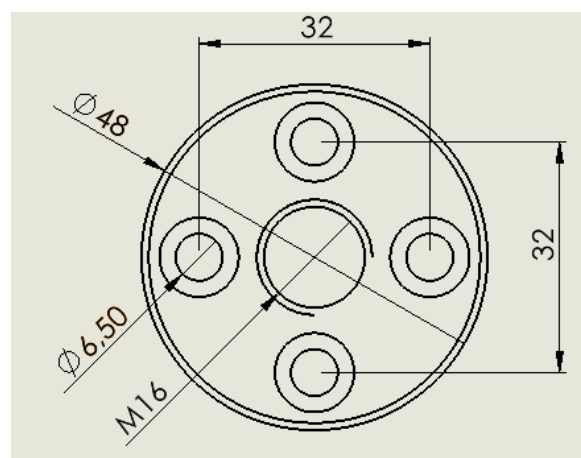
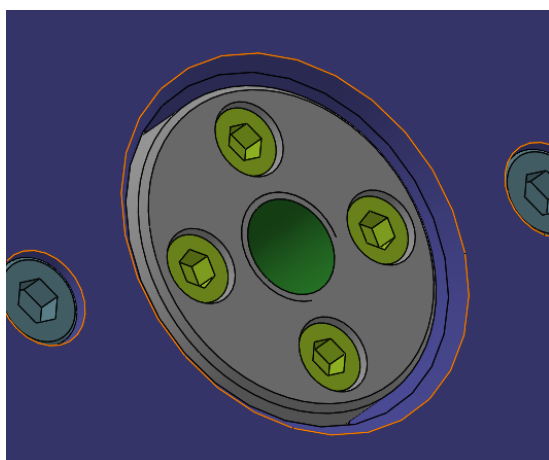
### Ejector plate guidance; plate lock:

The ejector plate is to be provided with non-lubricated bushings or ball bushings for plate guidance. These bushings shall be of brand Hasco standard.

Always M16 in the ejector bushing except for the 500T machine where it shall be M20.

Bushing shall always be placed 1mm under the clamping plate.

Ejector bushing fixed like picture below.



**Electric connectors:**

If there any risk of collision between ejector pins and slides, the ejection plate must be secure by microswitch.

All electric connectors must be located on the top of the mould and be protected. All connectors must be clearly marked with its function (such as for hot runner or core extraction).

For wiring diagram see appendix **PSW1** (page 6), below you have information about connectors and microswitch.

Brand name: Crouzet

Art No: 83123\*\*\*

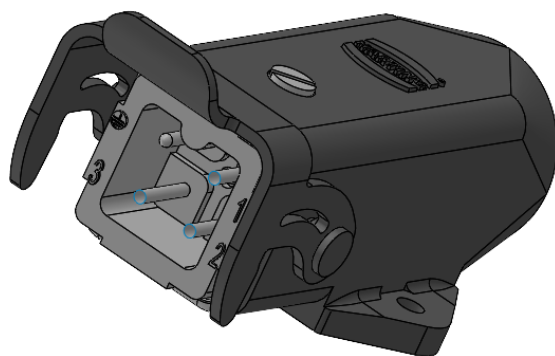
3-pin Harting stick

Type 09200032611

Chassie

Type 19200031252

Color: Grey



## 10. Guiding

### Guiding pins and bushings:

The guiding pins and bushing shall be of Hasco standard type in mm.

One of the guiding pins and bushings must have a different diameter for rotation safety.

The length of the pins must be equal length and exceed the lengths of any inserts or the length of any pins for slides.

### Guiding bars (Interlocks):

The moulds are to be provided with sufficient guidance between the mould halves, such as Hasco Z07, Z17 or DME PLM and PLF

The interlocks should be placed at the centerlines of the mould.

### Guiding ring:

The size of the guiding ring depends on the size of the injection machine.

Machine 30T - 50T: Ø100mm guiding ring.

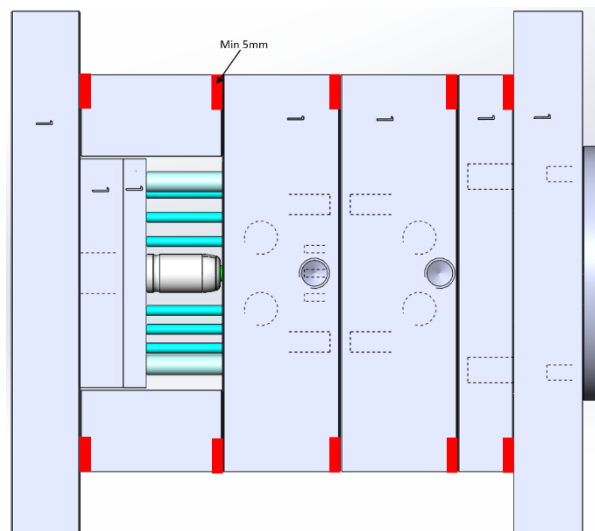
Machine 60T - 150T: Ø125mm guiding ring.

Machine 160T - 400T: Ø160mm guiding ring.

Machine 500T - 1000T: Ø200mm guiding ring.

### Slots for parting tool:

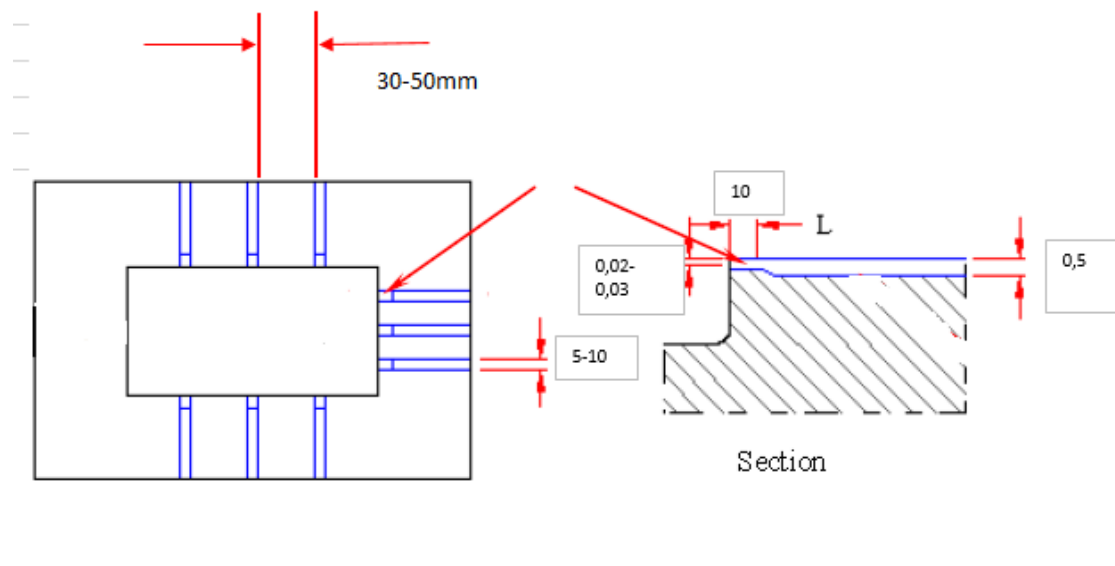
The fixed or the movable mould plate is to be provided with a milled slot for a parting tool



## 11. Air Vent:

### Air vent:

Air vent must be located around each part in the mould.







## 12. Marking

### **Marking of cavity:**

Cavity marking shall be carried out according to the instructions on the 2D- drawing or the 3D model. Cavity marking according: 1/4, 2/4, 3/4 and 4/4.

Date stamps should be of brand Hasco, separated for year and month.

### **External marking of the mould:**

The mould number provided by Plastsystem AB, height, length, width and weight are to be stamped on each mould half; the characters are to be about 10-15 mm high.

A marking plate must be mounted on the front side of the mould. Part number, mould number etc.

The rating plate is to be fitted on the side of the mould facing the operator.

## 13. Documentation and other information:

- All moulds should be delivered with documentation in 2D (.dwg or .dxf) and 3D (.xt) on a USB-stick.
- Steel and hardening certificate should be delivered on USB-stick.
- Weekly report with time plan and pictures during tool manufacturing shall be delivered by email weekly.
- All adjustments on plastic part MUST be informed and approved by Plastsystem and the adjustment shall be lightened up on 3D file.
- Welding in new tool is not allowed. Needs to be approved by Plastsystem if needed.
- If plastic part is white, then ejector pins shall be coated with DLC, and no lubrication should be applied to the ejectors.



