Design For Manufacturing

DFM Report Of Upmold

From Design To Manufacturing

Customer-Oriented & Quality-Adherence

August 7, 2018

http://upmold.com
## Design For Manufacturing

<table>
<thead>
<tr>
<th><strong>Customer</strong></th>
<th>VALEO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
<td>V54X</td>
</tr>
<tr>
<td><strong>Part Number</strong></td>
<td>Right:L90060929  Left:L90060885</td>
</tr>
<tr>
<td><strong>Part Name</strong></td>
<td>HOUSING halogen</td>
</tr>
<tr>
<td><strong>Mold Number</strong></td>
<td>UP-140801</td>
</tr>
</tbody>
</table>
### Base information for part and mold

<table>
<thead>
<tr>
<th>No.</th>
<th>Information</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cavity No.</td>
<td>1L*1R</td>
</tr>
<tr>
<td>2</td>
<td>Material</td>
<td>PP TD40</td>
</tr>
<tr>
<td>3</td>
<td>Shrinkage</td>
<td>1.009?</td>
</tr>
<tr>
<td>4</td>
<td>Part Size</td>
<td>238 mm X 520 mm X 365 mm</td>
</tr>
<tr>
<td>5</td>
<td>Part Weight</td>
<td>875g per part</td>
</tr>
<tr>
<td>6</td>
<td>Cor. /Cav. /Slide steel</td>
<td>定模仁 Cav steel: LKM738HH HRC33-36</td>
</tr>
<tr>
<td></td>
<td></td>
<td>动模仁 Cor steel: 2738HH HRC33-36</td>
</tr>
<tr>
<td></td>
<td></td>
<td>滑块 Slide steel: 2738HH HRC33-36</td>
</tr>
<tr>
<td></td>
<td></td>
<td>镶件 Inserts steel: 2343 HRC46~48</td>
</tr>
<tr>
<td>7</td>
<td>Mold base steel</td>
<td>A板 Plate: 2312</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B板 B Plate: LKM738HH HRC33-36</td>
</tr>
<tr>
<td></td>
<td></td>
<td>托板 Plate: 2312</td>
</tr>
<tr>
<td></td>
<td></td>
<td>顶针底板 Lower ejector plate: 2312</td>
</tr>
<tr>
<td></td>
<td></td>
<td>其它 Other: 1.1730</td>
</tr>
<tr>
<td>8</td>
<td>Injection machine</td>
<td>Please offer the machine datasheet of size 1000 Ton</td>
</tr>
</tbody>
</table>
Catalogue

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一：产品优化设计
(The part design optimizing)
二：产品缩痕分析
(The analysis of sink marks)
2.1 The analysis of sink marks

1. The normal thickness of part is 1.9mm.
2. But there are some big side of rib are 1.6-3.8mm on part that will be sink mark on the visible side, UpMold proposed to make it with 1.5mm.
3. That will be potential risk of sink mark at red area as below picture showing, please improve that.
2.2 The analysis of sink marks

1. The normal thickness of part is 1.9mm.
2. But there are some big side of rib are 1.6-3.8mm on part that will be sink mark on the visible side, UpMold proposed to make it with 1.5mm.
3. That will be potential risk of sink mark at red area as below picture showing, please improve that.
4. It will be sink mark of potential risk at the root of all bosses, please improve it.
2.3 The analysis of sink marks

Origin（原始数据）

1. Normal thickness is 1.9mm

Problem description

SEC A-A

Corrective Actions

It will be sink mark on part as the Section A-A showing.

Upmold proposed to reduce the wall as above picture.
2.4 The analysis of sink marks

Origin（原始数据）

1. Normal thickness is 1.9mm

Problem description

SEC D-D

It will be sink mark at part as the SEC D-D showing

Proposal（优化建议）

Corrective Actions

Our Proposal as above pictures showing that suggests to reduce wall thickness.
2.5 The analysis of sink marks

Origin (原始数据)
1. Normal thickness is 1.9 mm

Problem description
There will be sink mark on rib as above SEC E-E showing

Proposal (优化建议)
Upmold proposed to reduce the thickness of rib as above picture showing, please concern and change the design

Corrective Actions

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2.6 The analysis of sink marks

Origin（原始数据）
1. Normal thickness is 1.9mm

Problem description
It will be sink mark on rib as above SEC F-F showing

Proposal（优化建议）
Upmold proposed to change the thickness by 1.5mm for sink mark issue.
## 2.7 The analysis of sink marks

### Origin

1. Normal thickness is 1.9mm

### Proposal

It will be sink mark at root of boss as SEC E-E showing.

### Corrective Actions

Our proposed to reduce the wall of boss by 2mm.
2.8 The analysis of sink marks

**Origin (原始数据)**

1. Normal thickness is 1.9mm

**Problem description**

These ribs will be sink mark as pictures.

**Corrective Actions**

Please reduce the thickness by 1.5mm.
三．产品拔模角分析

(The analysis of draft)
3.1 The analysis of draft

Please add a draft with 1 degree on these green surface for demold.
3.2 The analysis of draft

Please add a draft angle with 1 degree on these area for demold necessary.
3.3 The analysis of draft

Please add a draft angle by 0.5 degree to avoid scratch problem.
四： 产品刻字及外观要求

(Engraving and Aspect )
Please select following mark you want:  （请选择你需要的标记）

[ ] Date Code: Year & Month （日期章，年月合并型）

[ ] Date Code: Year （日期章年章）

[ ] Date Code: Month （日期章月章）

[ ] Cavity No. （型腔号）

[ ] Part No. （零件编号）

[ ] Rev. No. （版本号）

[ ] Material （材料标识）

[ ] Recycle Symbol （回收标志）
4.1 Engraving and Aspect

The 2.4V will be removed, right?
4.2 The difference on right and left hand

Please approve tow parts is mirroring design

Housing-Hal-L

Housing-Hal-R
4.3 The difference on right and left hand

Please confirm these rib features is different on R&L part.
五：　分型线

（Parting Line Design）
5.1: Parting Line design
5.2 Parting Line design

Problem description

We proposed to add a radius at the root of lock as right picture for part strengthened
六：镶件线

（Insert Line Design）
6.1 Split mark at cavity side that will be mark on part
6.2 Insert mark at cavity side
6.3 Insert mark at core side

- Insert mark
- Insert mark
- Insert mark
- Insert mark
- Insert mark
- Insert mark
- Insert mark
6.4 Insert mark at core side
七：行位线和内抽线

(Slide and retractor Line)
7.1 Slide 1 design concept for left part

Housing-Hal-L

- Insert mark
- Slide mark
- Insert mark
- Inset mark
- Slider1 direction
  Stroke is 35mm
7.2 Slide 1 design concept for right part

Housing-Hal-R

Slider 1 direction
Stroke is 35mm

Insert mark

Insert mark

Insert mark

Insert mark
7.3 Slide 2 design concept for left part

Housing-Hal-L

- Slider2 direction
- Stroke is 18mm

Slide mark
7.4 Slide 3 design concept for left part

Housing-Hal-L

Slider3 direction
Stroke is 28mm

Insert mark

Insert mark
7.5 Slide 4 design concept for left part

Housing-Hal-L

Slider4 direction
Stroke is 45mm

Insert mark
7.6 Slide 4 design concept for left part

Housing-Hal-L

Insert mark

Insert mark for ejector pin

Insert mark for ejector pin

http://upmold.com
We proposed to change the slide split line as right picture.

It will be a draft angle with 0.5 degree for demold.

New parting line for slide
7.8 Slide 5 design concept for left part

Housing-Hal-L

Slider5 direction
Stroke is 48mm

Slide mark
7.9 Lifter design concept for left part

Housing-Hal-L

Guide angle for lifter

Ejector stroke

Lifter mark

stroke 7
八：顶出

(Ejector)
8.1: Ejector layout on cavity side

Movable inserts
8.2 Ejector mark at cavity side
8.2 Ejector mark at cavity side

There will be thinnest, we proposed to move the feature with 8 mm as right pictures showing.
8.3 Ejector layout on core side

- Ejector pin Ø12X19
- Ejector pin Ø8X4
- Ø10X3 ejector pin
- Ø7.5X2 sleeves
- Ø8X2 sleeves
- Ø4X2 ejector pin with shoulder
- Ø6X4 ejector pin
8.3 Ejector layout at core side

We proposed to add some boss with 4 mm for ejector pin.
九：浇口位置及尺寸

（Gate location and size）
9.1 Injection gate design concept

It will be used INCOE DFQ 18 hot runner system 2 drops with hydraulic valve gates. Option 1 will be good for cooling design, but it will be left a pads which is high 12mm. Option 2 is that good for cooling design, but it will be left a pads which is high 12mm.
十：模具排位

（Mold Layout）
10.1 Mold design layout sketch

Option 1

Insert for cavity
10.2 Mold design layout sketch

It will be weakness at red mark showing, we suggest to choose option 2

Option 1 side view
10.3 Mold design layout sketch

Option 2

There without insert for cavity

TOP

CAVITY

CORE

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10.4 Mold design layout sketch

Option 2

A complete plate

SEC A1-A1

SEC B1-B1
十一：机台确认
（Injection machine）:
Please offer us machine datasheet, connectors for water and electronics, clamping type etc.
THANK YOU

Thanks for attention