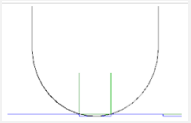
WMG Tooling Solutions

# Best Practice Document

## Part Engraving Terminology

| | | | | |
|---|---|---|---|---|
| **Type 1** | Centerline Curve<br>Single Line Curve .005" Deep |  | Machined 0.5mm ball cutter | |
| **Type 2** | Double Line Curve<br>Outline Only – Not Filled<br>.005" Deep |  | Machined 0.5mm ball cutter | |
| **Type 3** | Solid Recess in Steel (3D)<br>.005" Deep and Round at the Bottom |  | Cutter size determined by width of engraving |  |
| **Type 4** | Solid Recess in Steel (3D)<br>.005" Deep and Sharp at Bottom |  | EDM or Laser | |
| **Type 5** | Solid Proud in Steel (3D)<br>.005" to .008" Standing Steel | | Machined or EDM | |

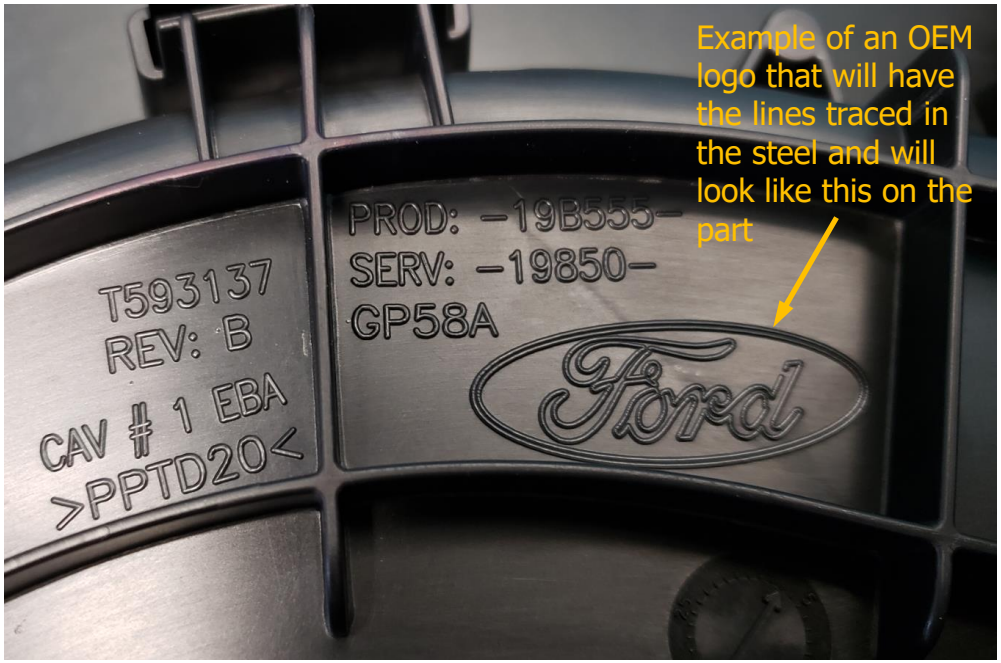
## Part Engraving Terminology

**TYPE 1 Engraving**

### Single Line Curves

Single Line Curves is always the **BEST** option. Use Modern Font in NX and project to the part surface

- Single line curves will either be provided in customer part data or created by WM Engineering to meet the customer requirements
- Engineering will always review GD&T drawings and customer standards for required engraving content
- Machining will trace the curves with a small .5mm ball cutter to a depth of .005”/.12mm

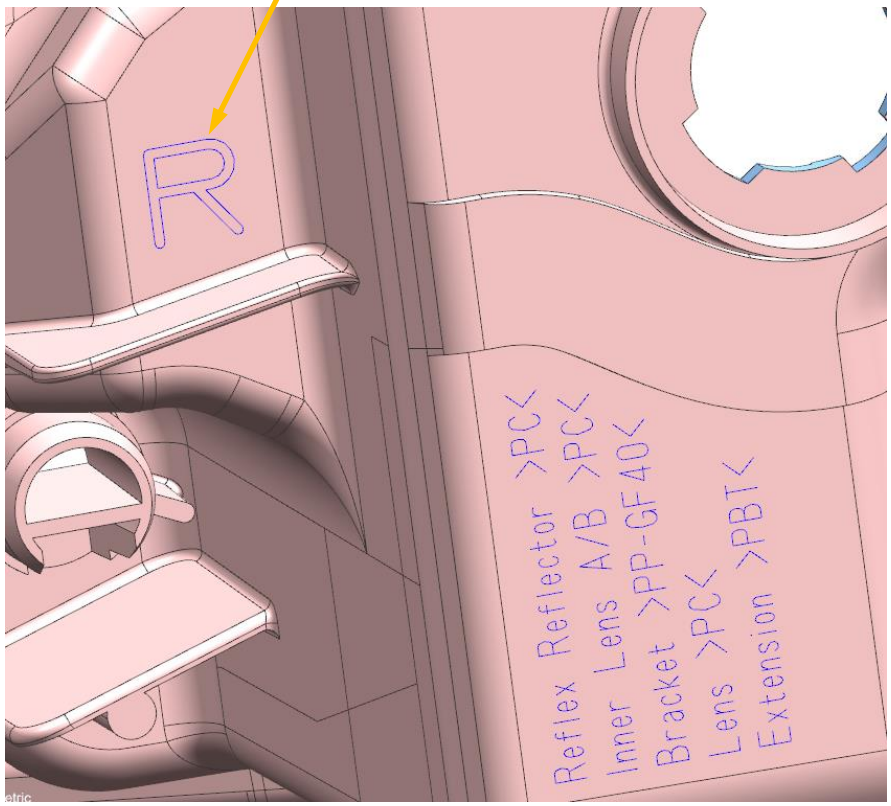

TYPE 2 Engraving

# Part Engraving Terminology

**TYPE 2 Engraving**

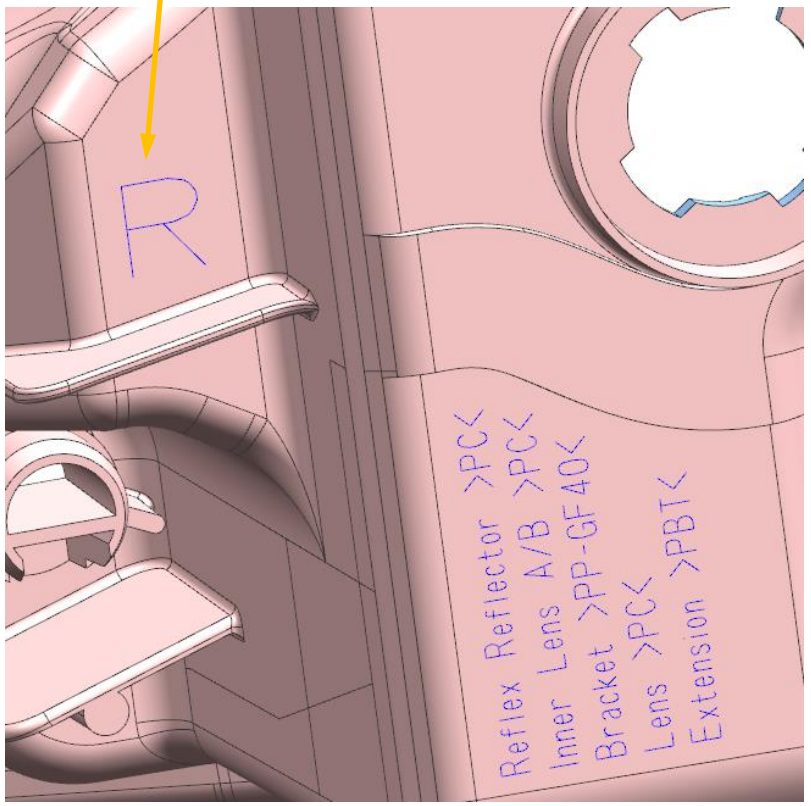
## Double Line Curves

When Double Line Curves are provided in the customer data WM Engineering will create the Engraving EOI showing single line curves if approved




**TYPE 1 Engraving**

Single Line Curves is always the **BEST** option. Use Modern Font in NX and project to the part surface

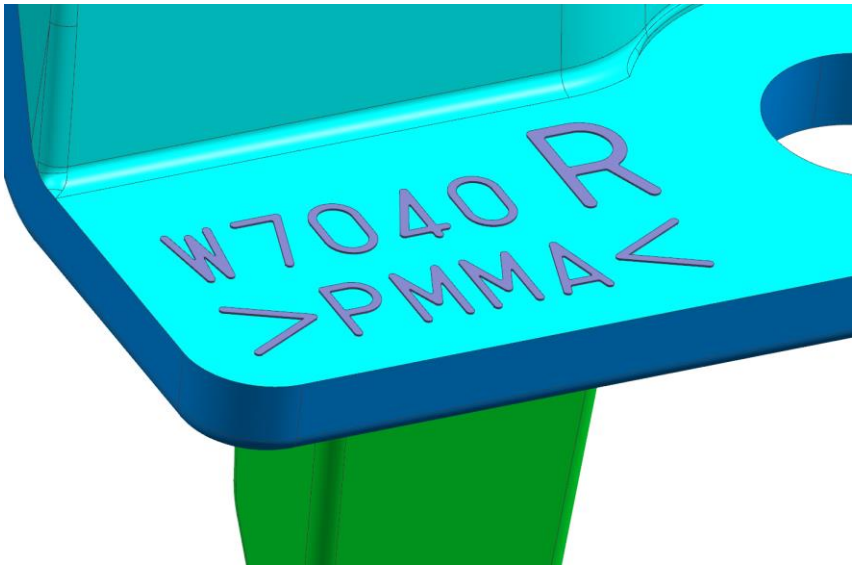


# Part Engraving Terminology

***TYPE 3, 4, or 5 Engraving***
( Need direction from PM)

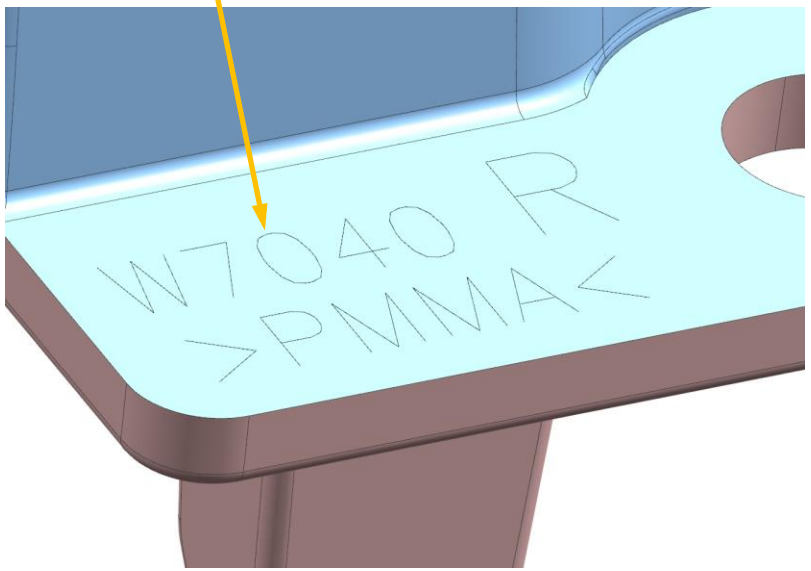
## Solid Engraving

When customer provided part data shows solid engraving (raised or recessed in the part in the solid part data) an EOI will always be created to advise the customer that we will machine as a single line curve.




**TYPE 1 Engraving**

Follow the same concept that was shown in the customer part data but re-create it using Modern Font in NX projected to the part surface

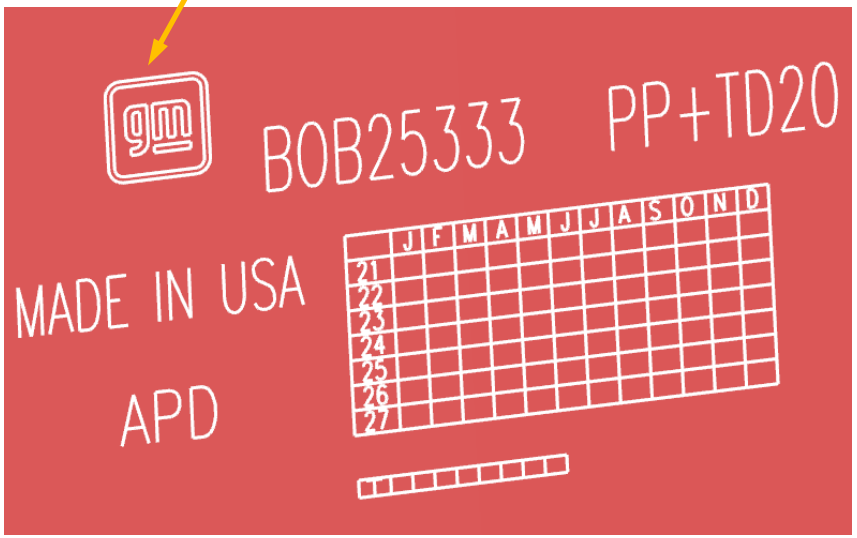


## Part Engraving Terminology
## OEM Logos for Engraving

OEM Logos can be
TYPE 2, 3, 4, or 5

OEM specific logos will never be modified from their original format in Engraving files.
APG/Machining will determine how the logo will be machined/EDM/laser to provide the best clarity. When a customer logo is given to WM shown as a solid in part data (picture on left) Engineering will issue this recessed into the face .005" deep and it will be EDM/Laser as it will be standing plastic on the finished part.


NOTE: When the option exists to modify the size of the OEM logo WM Engineering will attempt to make it a minimum .375"/10mm in height so it can be machined



# Part Engraving Terminology

## Responsibilities

PM

- Need to have the engraving Engineering Open Issue (EOI) approved for Engineering well before 6S files are required
- Engraving approval is called out in the PM checklist matrix and will be discussed in the weekly PM/Engineering meetings

ENG

- Engraving EOI should be started and ready to review in the MLM including what mechanisms or blocks will require engraving
- Engraving **must** be issued with the first 6S file release and **must** be compared to the approved EOI for content and accuracy
- If we are pulling ahead machining and requesting a PK file, engraving must be part of the PK file release
- Mechanism engraving must be included in the file release. This includes mechanisms sent to an outsource company
- Engraving is issued in the original file and must be included in all subsequent file releases

APG

- Engraving has to be present in all machine files issued to the machine
- Should the engraving not be feasible it should be removed from the machine file and a comment in the lineup should say engraving not required
- Every machine lineup should have a comment regarding engraving; required or not required
- Every file released from ENG will have the DRW Engraving pull-down filled in indicating one of the three states; “Included and Approved”, “Not Required” or “Not Included – Pending Customer Approval”.
- Consider EDM for OEM logos. If the job is going to EDM anyways it can be done at that time.

Machining

- No job should come off HSM without part engraving completed. This needs to be questioned regardless if it’s in the file or not.
- There is a line item in the programming checklist for “Part Engraving”

## Part Engraving Terminology

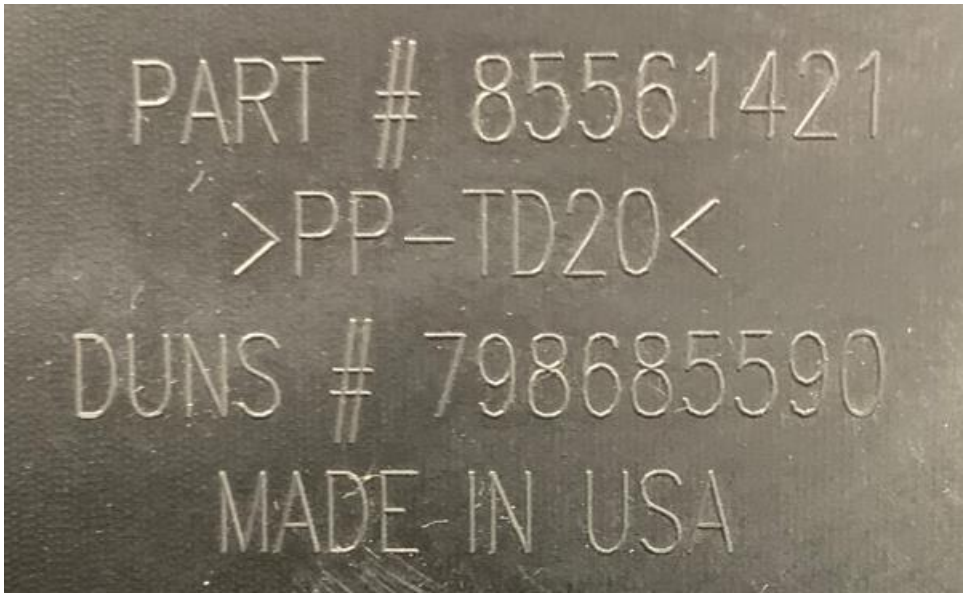
**TYPE 1**

**Preferred**

**Center Line Curve**

**Machined**

0.5mm Ball



## Part Engraving Terminology

**TYPE 2**

**Double Line Curve**

**Outline Only**

**Not Filled**

**Machined**

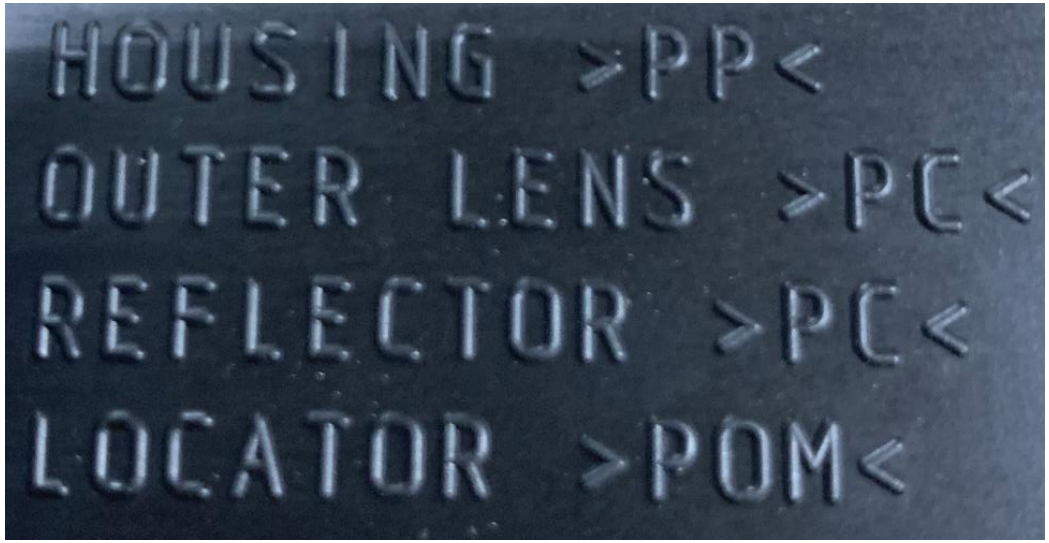
0.5mm Ball

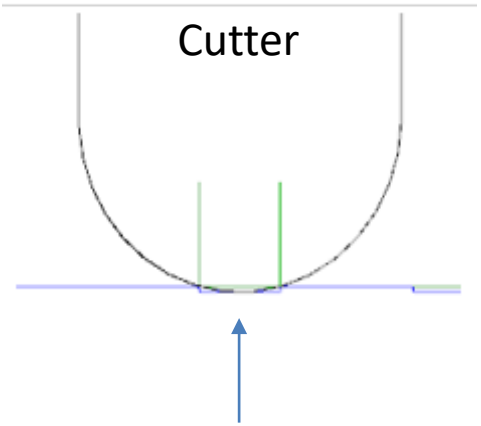
## Part Engraving Terminology

**TYPE 3**

**Solid Recessed** (Steel) **3D**
**0.005"-0.008" Deep**
**Engraving is round at the bottom**

**Machined**
Cutter size determined by
Width of engraving letters
**APG to Create any required CL**




Cutter size is determined by
Text width at 0.005” depth

## Part Engraving Terminology

**TYPE 4**

**Solid Recessed** (Steel) **3D**

**0.005"-0.008" Deep**

**Engraving is sharp at the bottom**

**EDM or Laser**


Raised on Part

## Part Engraving Terminology

TYPE 5

**Solid Proud**

(Steel)

**0.005"-0.008" Pad**

Machined or EDM

Need to add example picture

Recessed on Part