S12ZVH-REF-V1 Assembly Document

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This document will help you understand the different mechanical parts that comprise the S12ZVH-REF-V1. It will also cover the different file types, materials and manufacture processes used to build an S12ZVH-REF-V1 reference design.

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Figure 1. Fully assembled S12ZVH-REF-V1 reference design

1 The Components

To build an S12ZVH-REF-V1 reference design the user requires five different components (plus the PCB). All the required files to build them are attached to this document and will be explained individually.

1.1 Graphic Overlay

All the graphics on the reference design are part of a graphic overlay printed on a 0.008” transparent polyester sheet. The design contemplates sections on the overlay that are left open (transparent) so that light from the LEDs on the back can illuminate a particular section. The provided file is called “S12ZVH-REF-V1_GraphicOverlay.AI” and contains the sources for Adobe Illustrator® where the design can be edited and modified. The graphic overlay requires adhesive on the back so it can be mounted on a solid backplate to provide rigidity.

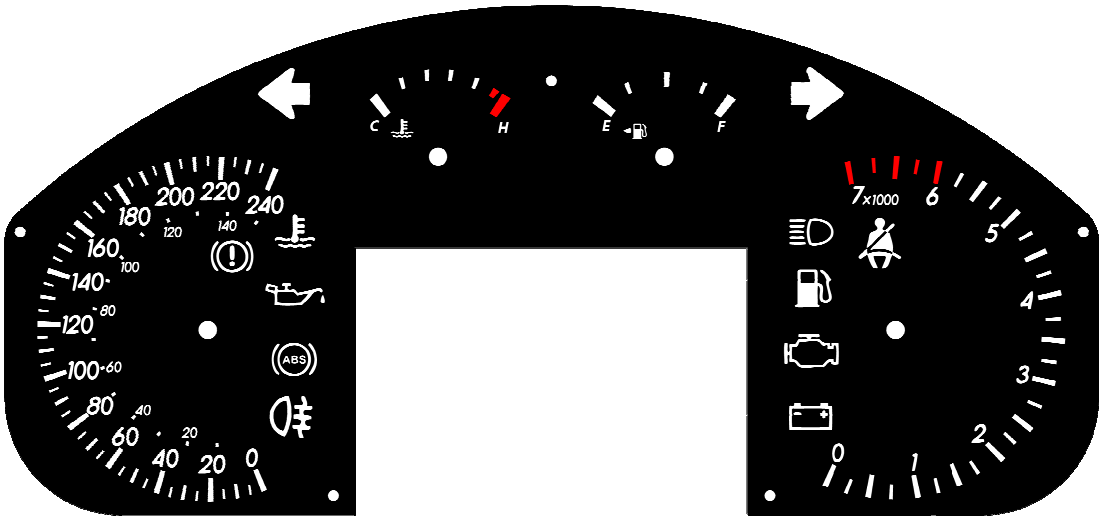

Figure 2. Graphic Overlay design

1.2 Acrylic backplate

The graphic overlay is not rigid enough and requires a support where to be mounted on. The acrylic backplate is made of 3 mm transparent acrylic with the exact same shape as the graphic overlay. This acrylic backplate also has the mounting and motor holes so it is easier and faster to mount. It is manufactured using laser cut. The file “S12ZVH-REF-V1_AcrylicParts.pdf” includes all the measurements required to replicate this backplate. The file “S12ZVH-REF-V1_AcrylicLaserCut.DXF” is the file ready for laser cutting, this file also includes the cutting information of the acrylic supports.

1.3 Acrylic supports

In order to ensure a constant separation between the acrylic-graphic assembly and the PCB, some separators are needed. These separators are small donut-like acrylic cutouts that are placed on the

mounting screws. The design requires five separators, one for each mounting screw and are cutout together with the acrylic backplate. Refer to files “S12ZVH-REF-V1_AcrylicParts.pdf” and “S12ZVH-REF-V1_AcrylicLaserCut.DXF”.

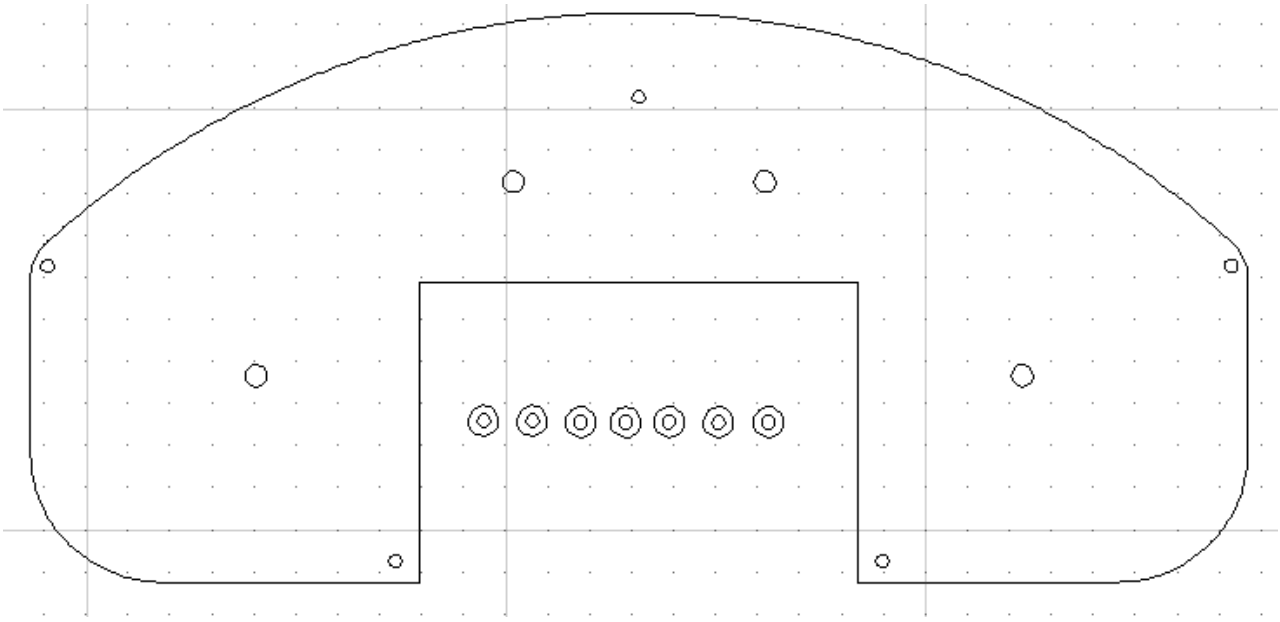

Figure 3. Acrylic backplate and supports

1.4 Plastic Enclosure

The largest mechanical piece is the mechanical enclosure. This enclosure was built using 3D printing technology and the file “S12ZVH-REF-V1_Enclosure.SLDPRT” is the source file for this process (editable using SolidWorks®). This design was printed on black ABS plastic and then hand detailed and painted to remove the rough finish of the printing process.

1.5 Mounting Screws

The S12ZVH-REF-V1 requires five mounting screws. They must be 8 mm, ½ in, standard thread screws.

2 Assembling

The following images explain how to mount all the pieces together to get a finalised product

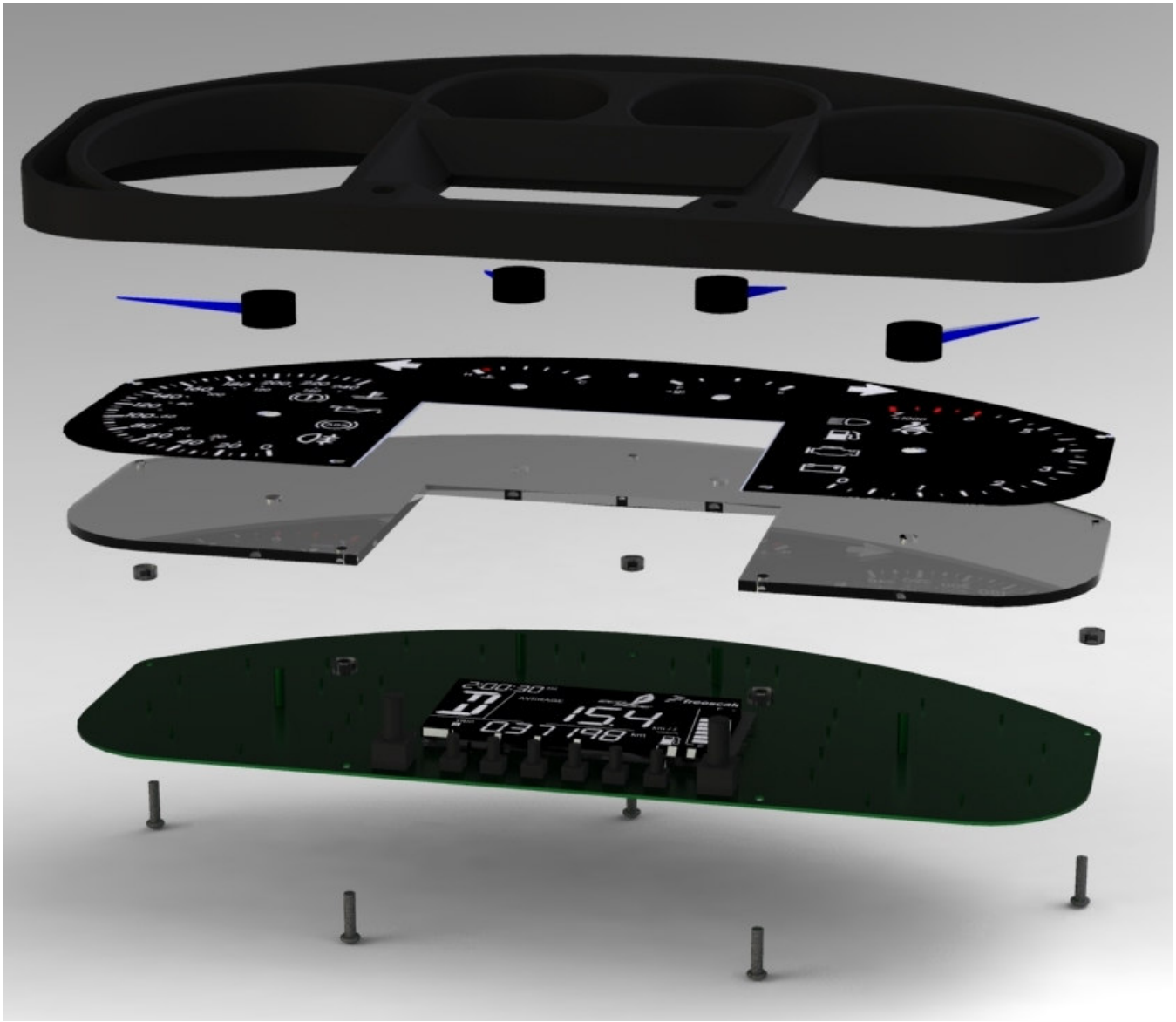

Figure 4. Assembly View 1

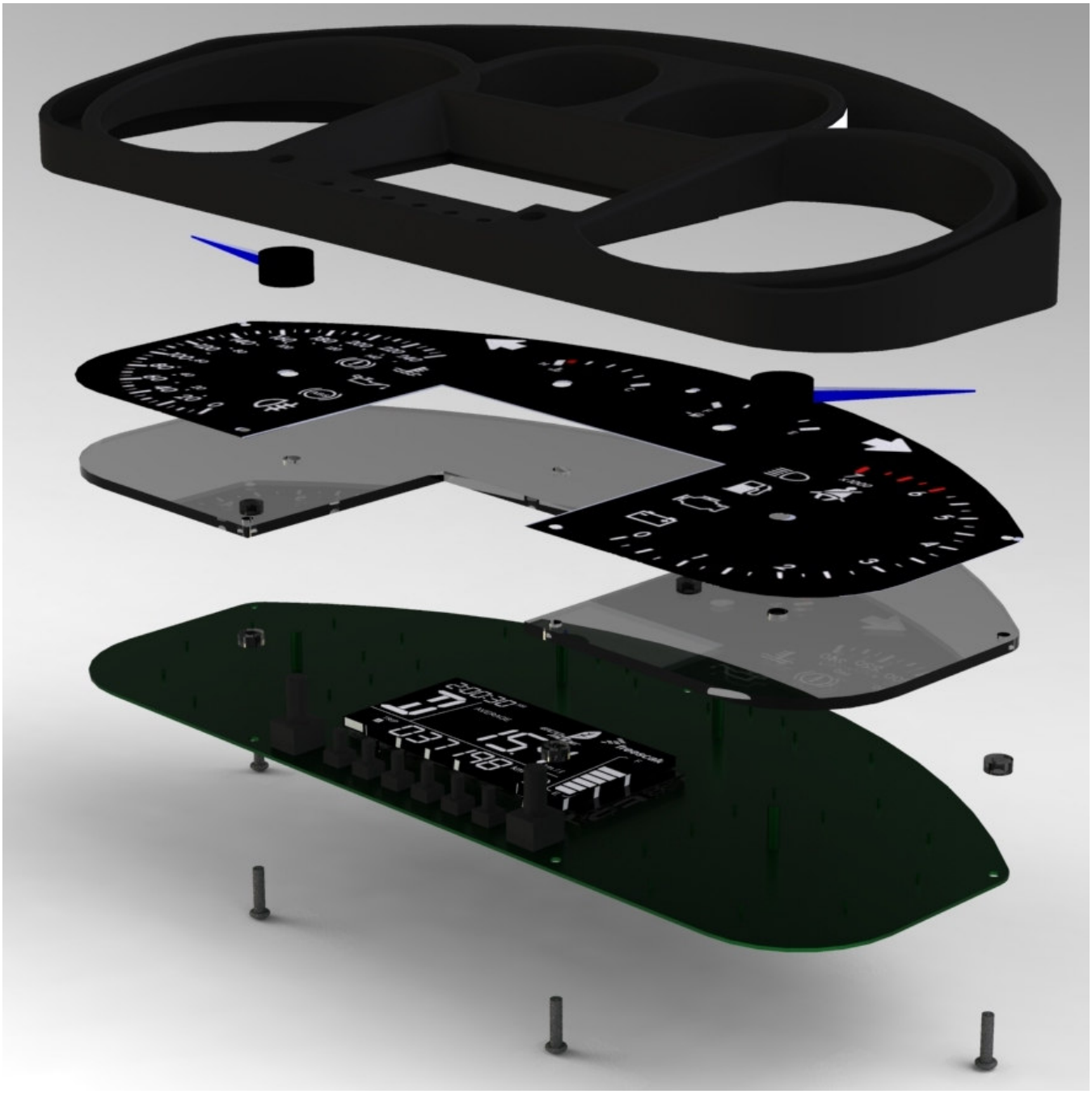

Figure 5. Assembly view 2

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