

Engineering Design – 1st Place



ISOMETRIC VIEW

THIS PART IS CALLED THE "OLED" (Organic Light Emitting Diode) ILLUMINATES AND IS LOCATED BETWEEN THE CEILING LAYER AND LOWER SILL PLATE SHELL.

EXPLODED ASSEMBLY VIEW

SECTION A-A SCALE 1 : 1

SECTION B-B SCALE 1 : 1

SECTION F-F SCALE 1 : 2

DETAIL C SCALE 30 : 1

THE LIGHT DIFFUSER WILL BE WEDGED IN THE LOWER SILL PLATE SHELL TO MAKE A WATER PROOF SEAL.

DETAIL D SCALE 4 : 1

SCREW IS USED TO PRESS THE LAYERS TOGETHER. THIS IS USED TO SECURE THE LAYERS TO EACH OTHER.

DETAIL E SCALE 16 : 1

THE UPPER SILL PLATE SHELL IS USED IN TANDEM WITH THE LIPE ON THE LOWER SILL PLATE SHELL TO HOLD THE SCREEN PROTECTOR IN PLACE. USING THIS METHIDE ALLOWS THE LIGHT DIFFUSER TO BE HELD IN PLACE WITHOUT TOCKING THE FRAGILE OLED SCREEN.

ONE PAGE DESIGN DESCRIPTION:
 THE OLED SCREEN IS PLACED BETWEEN THE SEAL AND LOWER SILL SHELL. THEN THE SCREEN PROTECTOR IS PLACED OVER THE SCREEN. IT IS THEN HELD IN PLACE BY PUTTING THE UPPER SILL PLATE SHELL OVER TOP AND SCREWING THE SILL PLATE TOGETHER (DETAIL D), SELING THE SILL PLATE (SECTION A-A). FOR MOST OF THE PROJECT I USE AISI 304 STAINLESS STEEL. I CHOSE THIS METAL FOR ITS OVER ALL CHEMICAL/WHETHER RESISTANCE. ALSO, 304 STAINLESS STEEL IS ALSO CHEAPER THEN MOST OTHER FORM OF STAINLESS STEEL. HOWEVER, AISI 316 STAINLESS STEEL WAS ALSO A OPTION I CONSIDERED DO TO IT HIGH CHEMICAL RESISTANCE. IN THE END I CHOOSE 304 STAINLESS STEEL BECAUSE IT IS CHEAPER AND MORE WIDELY AVAILABLE. THE CHOICE TO USE A OLED SCREEN INSTEAD OF THE MORE TRADITIONAL LED STRIPE IS FOR THE FREEDOM OF CHOICE. YOU CAN CONCEIT TO THE OLED THRU YOUR PHONE AND CHANGE WHAT IS SHOWN.

DTL	QTY	DESCRIPTION	MATL
1	1	WEATHER SEAL	AISI 304 STAINLESS STEEL
2	1	OLED LIGHT	NA
3	1	LOWER SILL PLATE SHELL	AISI 304 STAINLESS STEEL
4	1	SCREEN PROTECTOR	ACRYLIC MEDIUM-HIGH IMPACT
5	1	UPPER SILL PLATE SHELL	AISI 304 STAINLESS STEEL
6	4	SELF TAPPING PHILLIPS FLAT HEAD SCREWS	AISI 304 STAINLESS STEEL
7	1	16GA POWER SUPPLY WIRE	STD

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Engineering Design – 2nd Place



4 CUSTOM 3D PRINTED INSERT

CUSTOM LOGO

CUSTOM 3D PRINTED DESIGN/LOGO

THE RIM OF EACH CUSTOM 3D PRINTED PIECE IS SNAPPED INTO PLACE AND CAN BE REMOVED WITH A SIMPLE FLATHEAD SCREW DRIVER

DETAIL B
SCALE 6 : 1

3M ADHESIVE TAPE SHADED BELOW IS USED TO KEEP THE DIFFUSER IN PLACE.
LED STRIP SITS FLUSH WITH THE DIFFUSER

INSTALLATION PROCESS:
PLASTIC SILL PIECE WITH MAGNETIC STRIP LINING THE BOTTOM CAVITY
METAL SILL PLATE WITH TABS INSERTED THROUGH SLOTS (IN THE PLASTIC PIECE) AND FOLDED INWARDS
PLACE LED STRIP AND POLYCARBONATE DIFFUSER IN CENTER OF METAL PLATE'S CUTOUT
APPLY 3M ADHESIVE TAPE ALONG BOTH ENDS OF DIFFUSER
FINALLY, INSERT ANY CUSTOM 3D PRINTED DESIGN THAT FITS INTO PLACE USING A DEFAULT RIM DIMENSION

3 LED STRIP

WIRE

FLUSH FITTED LED STRIP INSIDE POLYCARBONATE DIFFUSER

3 DIFFUSER

3M ADHESIVE TAPE ON OPPOSITE ENDS OF THE DIFFUSER TO SECURE IT IN PLACE

1 SILL

WITNESS MARKS CREATED BY EJECTOR PINS DURING THE MANUFACTURING PROCESS

6 MAGNETIC STRIP

THE SHADED AREAS IN THE FIGURE ABOVE INDICATE THE MAGNETIC STRIPS LINING THE INSIDE CAVITY OF THE PLASTIC INJECTED SILL.

2 PLATE

FOLD LOCATION FOR TABS (UNDERSIDE)

METAL SILL PLATE COVER WITH A DOCKING BAY FOR 3D PRINTED PARTS IN CENTER CUTOUT

SECTION A-A
SCALE 3 : 1

DETAIL C
SCALE 6 : 1

THE TABS ALONG THE BOTTOM OF THE PLATE ARE FOLDED 90 DEGREES TOWARDS THE INBOARD SIDE OF THE SILL PLATE ASSEMBLY TO KEEP ALL COMPONENTS SECURED WITH EACH OTHER WHILE THE MAGNETS ARE USED TO FASTEN ASSEMBLY TO THE VEHICLE SILL.

QTY.	DESCRIPTION	MATL
1	SILL	ABS PL
1	PLATE	STL
1	DIFFUSER	PC
1	CUSTOM 3D PRINTED INSERT	ABS PL
1	LED STRIP	PL
2	MAGNETIC STRIP	STD
2	TAPE	STD

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