



## Approach and techniques used to install a Yaesu FT-857D in a Jeep Wrangler

KI5MCD – Gavin

# What to expect

---

*(From the voices in my head)*

**Me:** I won't be teaching most of you anything new specific to HAM...

**You:** So, why present this content?

**Me:** In short, I've heard the same question asked on a few occasions: 'How can we attract new members?'. My perspective:

- Share my thoughts/decision making process as a complete newbie to this hobby (with the hope that other 'noobs' can look at this content online and get some ideas, maybe get interested). A lot of advanced topics are great for the seasoned experts, but can seem overwhelming, even discouraging, for new enquiring minds
- Provide some insights into how we can introduce 'Maker' elements into what we do. Younger, engineering minded individuals are very much attracted to this movement.  
*(<nudge> We're already of the 'Maker Mindset', we just take it for granted)*

**KI5MCD - Gavin**



# My Build Objectives

## 1. Discrete! I didn't want:

- a) Bulky components 'out in the open' looking out of place
- b) Anything obstructing free movement of people and pets in the vehicle
- c) Unnecessary visible wiring

## 2. Professional

- a) Had to look as 'factory' as possible
- b) Blend in with the vehicle aesthetics

## 3. Inconspicuous and 'hideable'

- a) Avoid tempting would be thieves



KI5MCD - Gavin

# Radio Evaluation Criteria

## 1. Quality.

Being new to this hobby, I wanted to ensure that any issues encountered, and subsequent troubleshooting activities, would not be as a result of poor-quality gear.

## 2. Remote Face

I wanted the in-cabin footprint to be as small as possible, so being able to mount the main body of the radio in a hidden location was a must.

## 3. Easily detachable mic

When not in use, I wanted to be able to easily detach the mic and stow it in the glove compartment. Especially if I'm ever parked in a location where would be thieves would be led into temptation.

## 4. Tri-Band

Again, being new to the hobby I wasn't sure what bands I'd end up using (were most popular), so I figured having multiple options would be better.

Yaesu FT-857D



KI5MCD - Gavin

# Placement in the vehicle

---

1. Most locations were not suitable



KI5MCD - Gavin



# Placement in the vehicle

---

1. Up near the rear-view mirror was perfect – discrete but easily accessible!
2. But... how do I mount it on the curved trim (and make it look 'factory')?



KI5MCD - Gavin

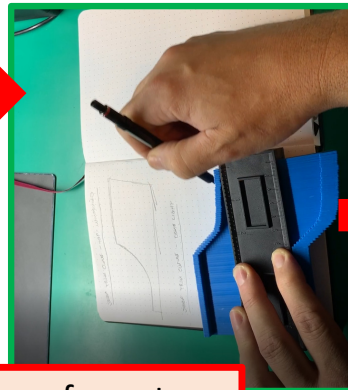


# Mounting the Remote face

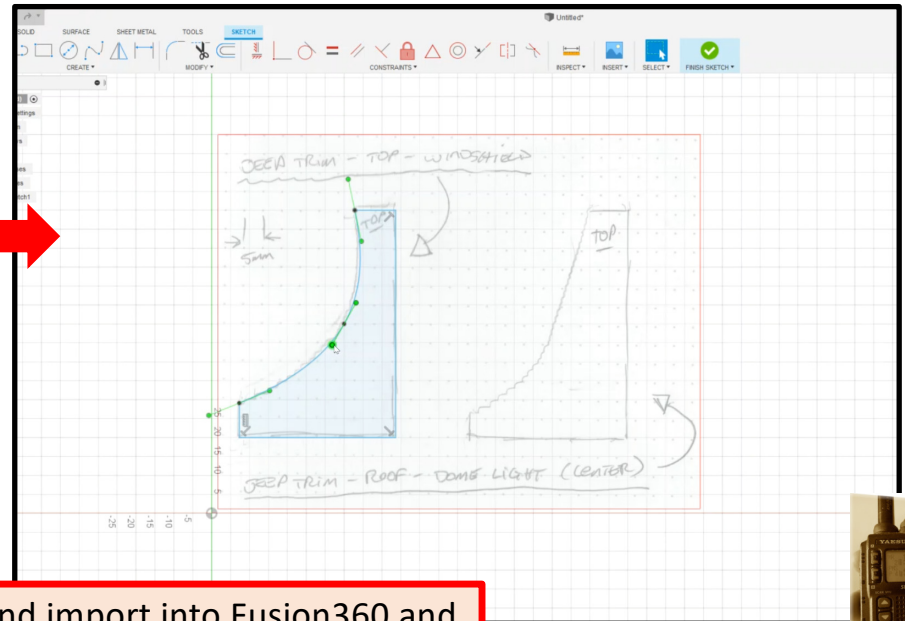
1. I knew a custom 3D printed part was going to be the best way to create an elegant mount, but accurately defining the curve in a 3D model... Head scratcher for a while. Turned out to be pretty easy with a contour gauge!



Find the curve



Transfer onto grid/graph paper



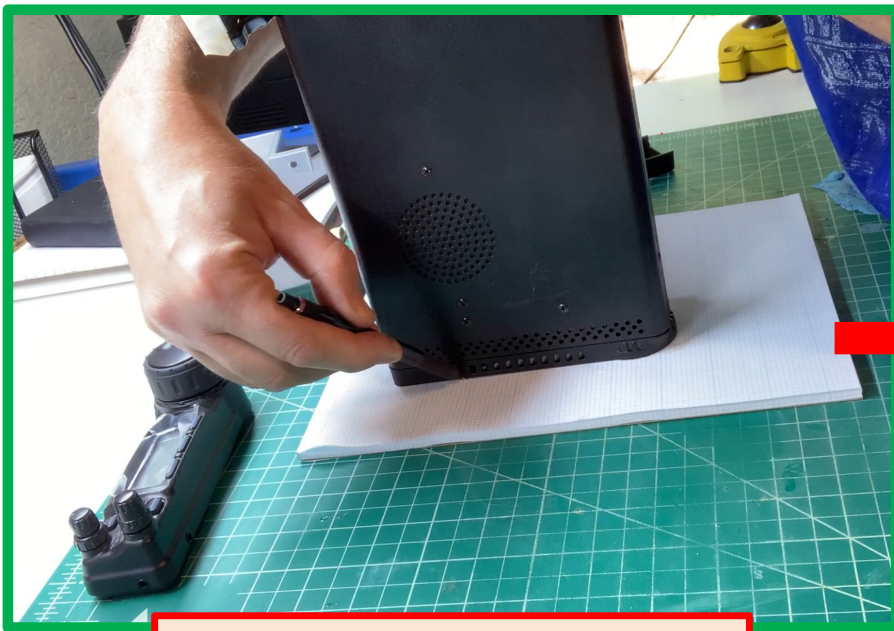
Scan and import into Fusion360 and align paper grid to Fusion360 grid

K15MCD - Gavin

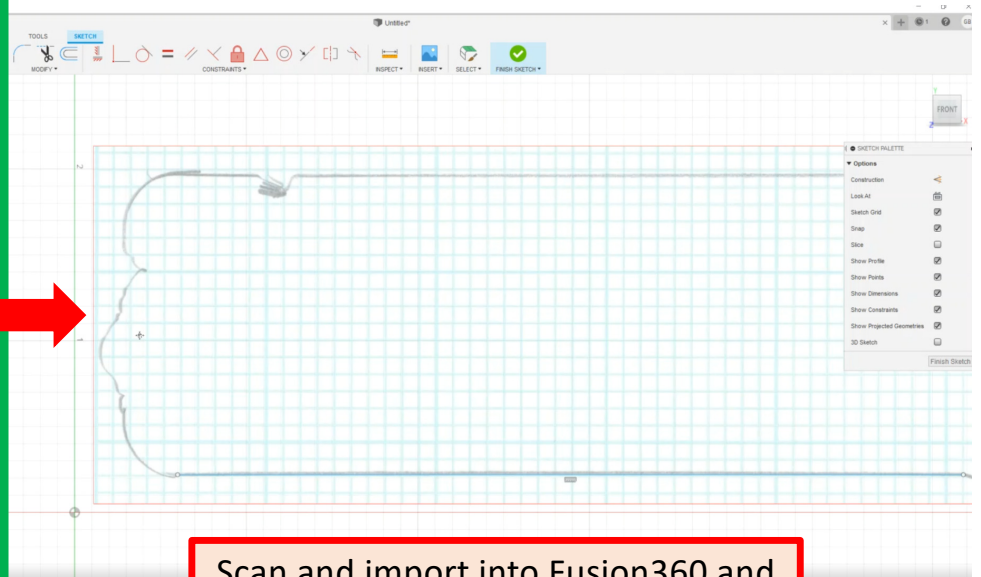


# Mounting the Remote face

1. Similar process for the radio remote face outline



Trace the curve onto grid paper



Scan and import into Fusion360 and align paper grid to Fusion360 grid

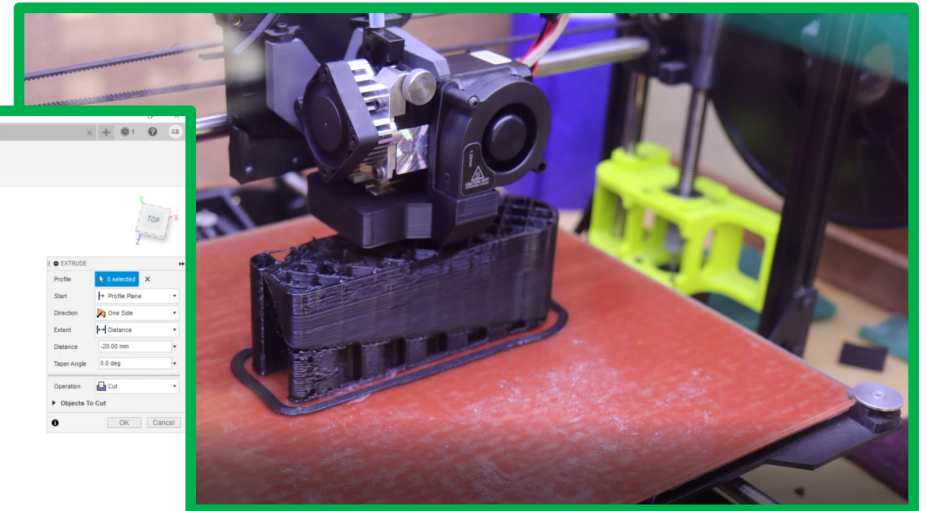
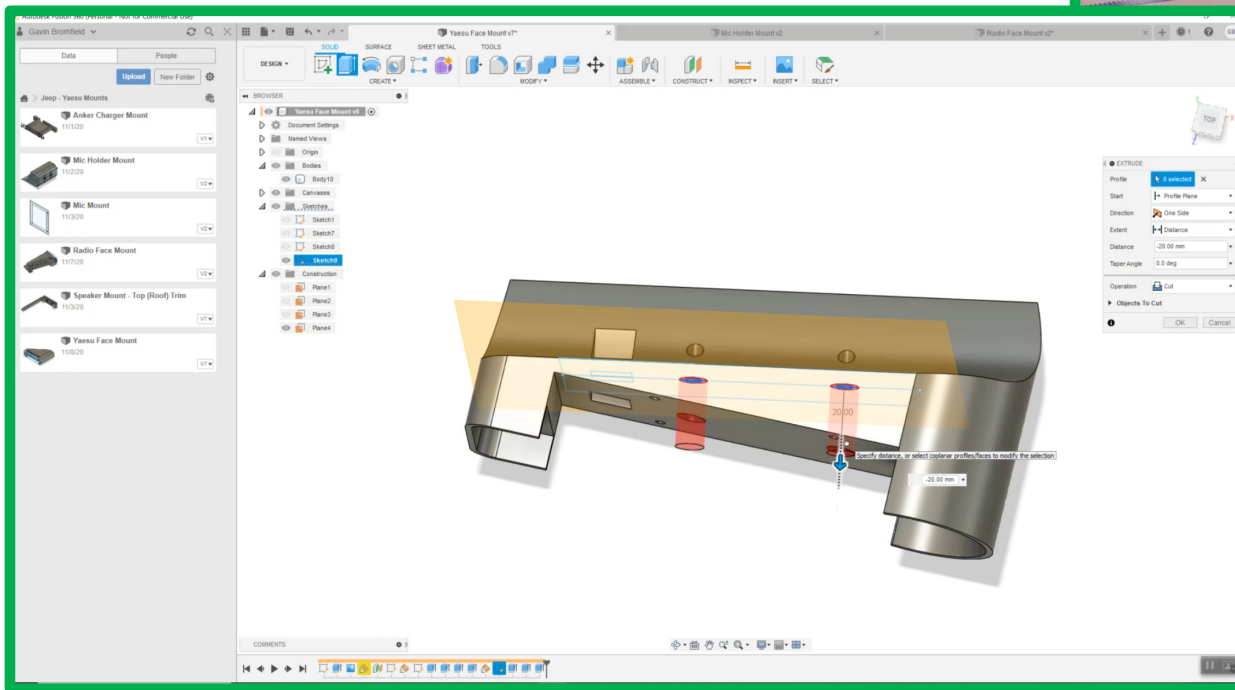


KI5MCD - Gavin



# Mounting the Remote face

1. With the 'difficult' dimensions captured it was merely a matter of finishing up the model and making a print. Easy, right?



KI5MCD - Gavin

# Mounting the Remote face

1. **Nope.** Be patient when you're learning about 3D modelling and printing. Mistakes will be made!



Attempt 1: A little bit too 'chunky' for my liking. Try again.



Attempt 2: Set out to make it a little less chunky, and managed to accomplish the exact opposite. Yay me.



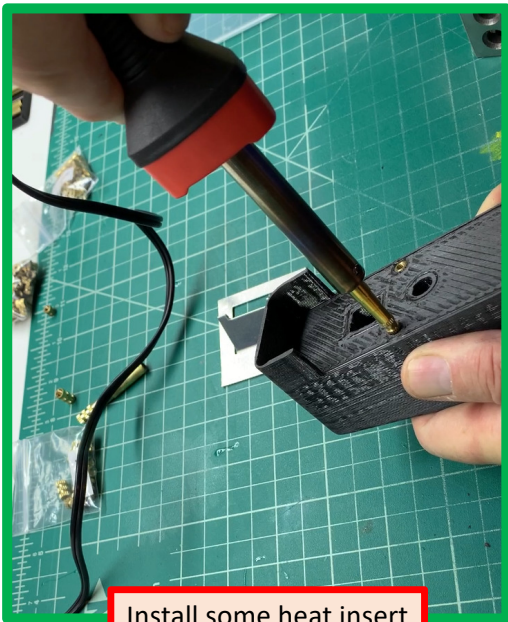
3rd time's the charm



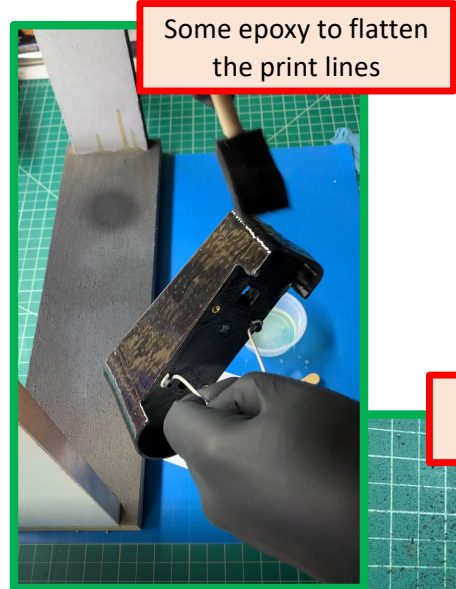
K15MCD - Gavin

# Mounting the Remote face

1. Once the part fitted everywhere it needed to fit, the rest is just finishing



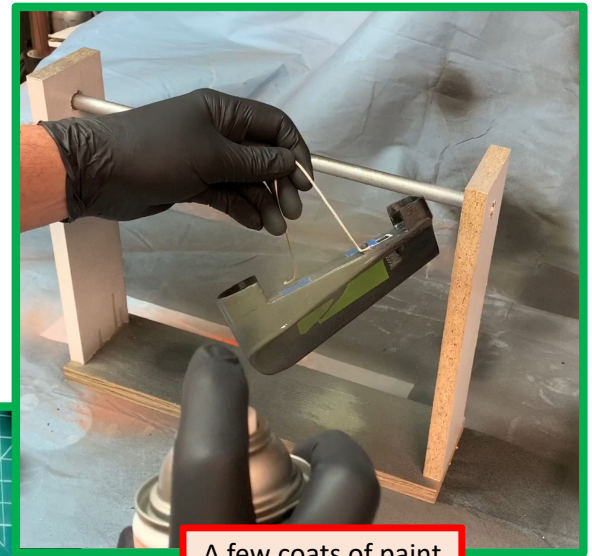
Install some heat insert fasteners



Some epoxy to flatten the print lines



Some Good old-fashioned sanding



A few coats of paint



K15MCD - Gavin

# The Final Products : Remote Face



## Maker Topics:

1. 3D Modelling (Fusion360)
2. 3D Printing
3. Mechanical Heat Insert Fasteners
4. Finishing (Epoxy/sanding/painting)

KI5MCD - Gavin



# The Final Products : Mic Mount



## Maker Topics:

1. 3D Modelling (Fusion360)
2. 3D Printing
3. Mechanical Heat Insert Fasteners
4. Finishing (Epoxy/sanding/painting)



KI5MCD - Gavin

# The Final Products : External Speaker



Close to ears, easy to hear at low volume



Folds away



Easy to remove

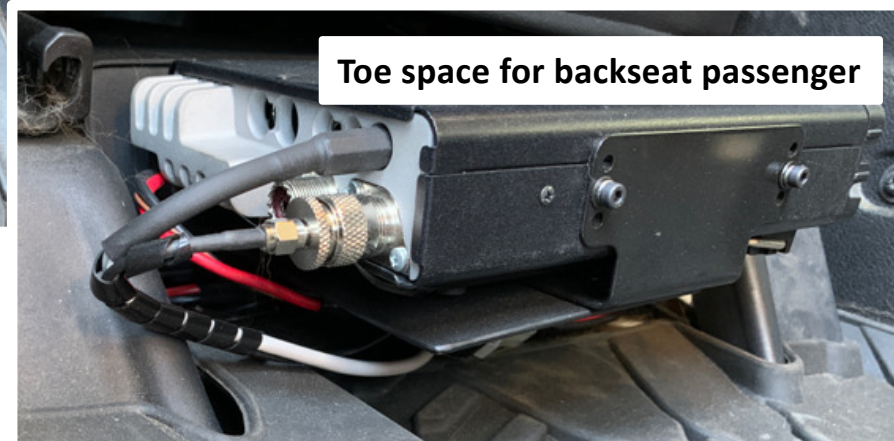
## Maker Topics:

1. 3D Modelling (Fusion360)
2. 3D Printing
3. Mechanical Heat Insert Fasteners
4. Finishing (Epoxy/sanding/painting)

KI5MCD - Gavin



# C) The Final Products : Main Body



## Maker Topics:

1. Basic Metal Manipulation (Cutting/Bending)
2. Tig Welding
3. Finishing (Acid/Grinding/Painting)

KI5MCD - Gavin



# Summary

---

1. **ROI:** *-\$7,372,187.03c but, worth every single penny*
2. **Suggestion:** Add some focus onto the 'maker' aspects of what we do. We may foster some interest in our hobby to engineering/maker minded folks that might not ordinarily be interested in Amateur Radio.
3. **Ask:** Give me your honest feedback. This was a quick high-level presentation, if any of what was shared is of interest, I'd be happy to do more in depth presentations in the future.



KI5MCD - Gavin