The Definitive Rear e-Brake Retrofit Solution!

By Loyale 2.7 Turbo, June 30, 2012 in Transmission, Axle, and Brakes

Loyale 2.7 Turbo | Disc Brakes | Nissan | Honda | Retrofit | EA82 | JesZeK | e Brake | Park Brake | Rear

★★★★★

Loyale 2.7 Turbo

The Mighty "BumbleBeast"

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Roatán, Honduras.

Posted June 30, 2012 (edited)

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THE DEFINITIVE REAR E-BRAKE RETROFIT SOLUTION!

► This writeup is intended for the '84 ~ '94 Subaru GL / Loyale \ EA82 Models which are the **third gen of the Subaru Leone**, however, you can retrofit the Rear disc brakes' system, from the EA82 lineup (third gen), to the EA81 lineup (second gen), and then, what I written here also will apply on the previous generation.

► "**e-Brake**" and "**Park Brake**" means **the Same** for this writeup.

► There are other Ways to swap a Rear e-Brake, but Usually they include **expensive** and / or hard to find parts, from Legacy or Impreza, even parts from the XT6, etc ... Here I want to explain an **Easier** and pretty **inexpensive** Way to do a Reliable Retrofit with Amazing Results.

pay attention to the Important Notes...

Warning! - Use this information at your Own Risk

A Brief Introduction:

Those of us who own a Subaru that came with Front e-Brake and always desired to retrofit a reliable Rear e-Brake system, but was afraid about the Parts Needed, the works to be done and the Results; here I will do my Best to Guide you in this Step by Step Photo Procedure to do it Right & Easy.

Different reasons might have each one to do such Retrofitting; mine is that the Front e-Brake on my Subaru **BumbleBeast** after all these years and *thousands* of miles of Rude use, became too rusty & worn that leaked brake fluid; no matter if that was just rebuilt... So I Got rid of the Front e-Brake as you can see pics, ~►**Here**, from Post № **61**.

First Part: Your Subaru Must have **Rear Disc Brakes**.

My Subaru "**BumbleBeast**" already had the Rear Disc Brakes from a Turbo Loyale, as you can see, ~►**Here**; Having the Rear Disc Brakes makes this Retrofit much **easier**, because if your subie Still has rear Drum Brakes, you'll need to Find a good Set of Rear Disc Brakes for your Model, **Prior** to do this Conversion.

Second Part: Background Information.

I've read & Heard about Rear e-Brake conversions, using **Nissan**'s parts, usually because both Nissan & Subaru used Brake Parts made by the same Japanese "Tokiko" Brand, but that parts aren't exactly a Direct fit and you must do certain works to make them Work; as you can see & Read, ~►**Here**, and ~►**Here**, but also I've heard that the e-Brake on Nissans with Rear Disc Brakes, is Weak because isn't very well designed...

So, **Forget about Nissan** parts*!*

Third part: How I Found the Donor Car & Parts Used.

So, I Went to Hunt for Parts to do my Rear e-Brake Retrofit at our local Junk Yards (Called here: "Yonkers" more info and photos ~► Here) and miraculously I Found in one of those, a Subaru 1986 Turbo Sedan that still had its Rear Disc Brakes intact - *beside some Rust & Dirt*- also many other useful pieces & Parts.

I Took out a Rear Trail arm from it, to do many Tests with its Disc Brake, in order to Find the Proper Calipers that could Fit there easy, also without any Risk to the Security on the Road.

I Tested **Nissan 200** and **240** Calipers there but I Don't liked the way they fit, because was somehow a Little "Forced" and the 4WD subies will have problems with the e-Brake Cable levers on the Nissan's calipers, 'cos they must be in the

way of the Rear Axles...

Long time ago, I Read that Certain Honda Accords with Rear Disc Brakes, has very similar calipers to the Subaru ones; ~►**Here**; So I Started to Search within Hondas with Rear Disc Brakes.

Found the Perfect Donor in a '**92** Honda Accord with Rear Disc Brakes, like this one:

I Removed one of its Rear trail Arms too and I Started to figure out,

how to Fit the Honda's Rear Caliper onto the Subaru's Rear Disc.

This is the **Subaru**'s Rear Trail Arm:

This is the **Honda**'s Rear Trail Arm:

As Written above, Subaru uses the Japanese brand "**Tokiko**" for their Brake parts, while Honda Uses the also Japanese brand "**Nisin**" for their Brake Parts; but Despite that both Rear Calipers Looked Very Similar, they're Very Different at the Same Time; because the Honda's "**Nisin**" has built-in e-Brake and a Special protective Metallic Cover; while the Subaru's "**Tokiko**" has Nothing like That.

The Honda's "**Nisin**" e-Brake System Looks very much Better Designed & Protected than the Nissan's "**Tokiko**" Design for Sure.

Edited August 10, 2016 by Loyale 2.7 Turbo
Mispelled word, fixed.

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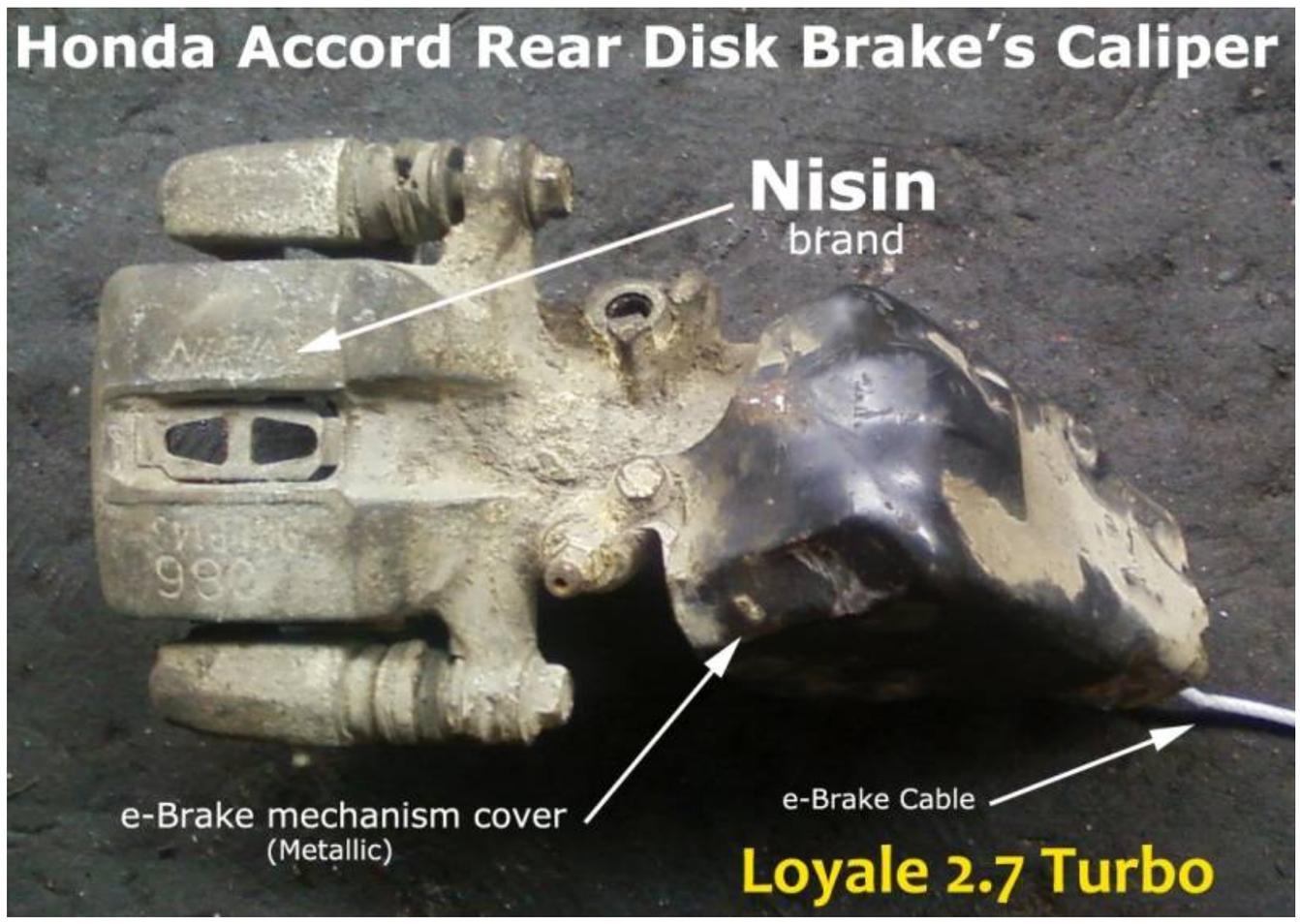
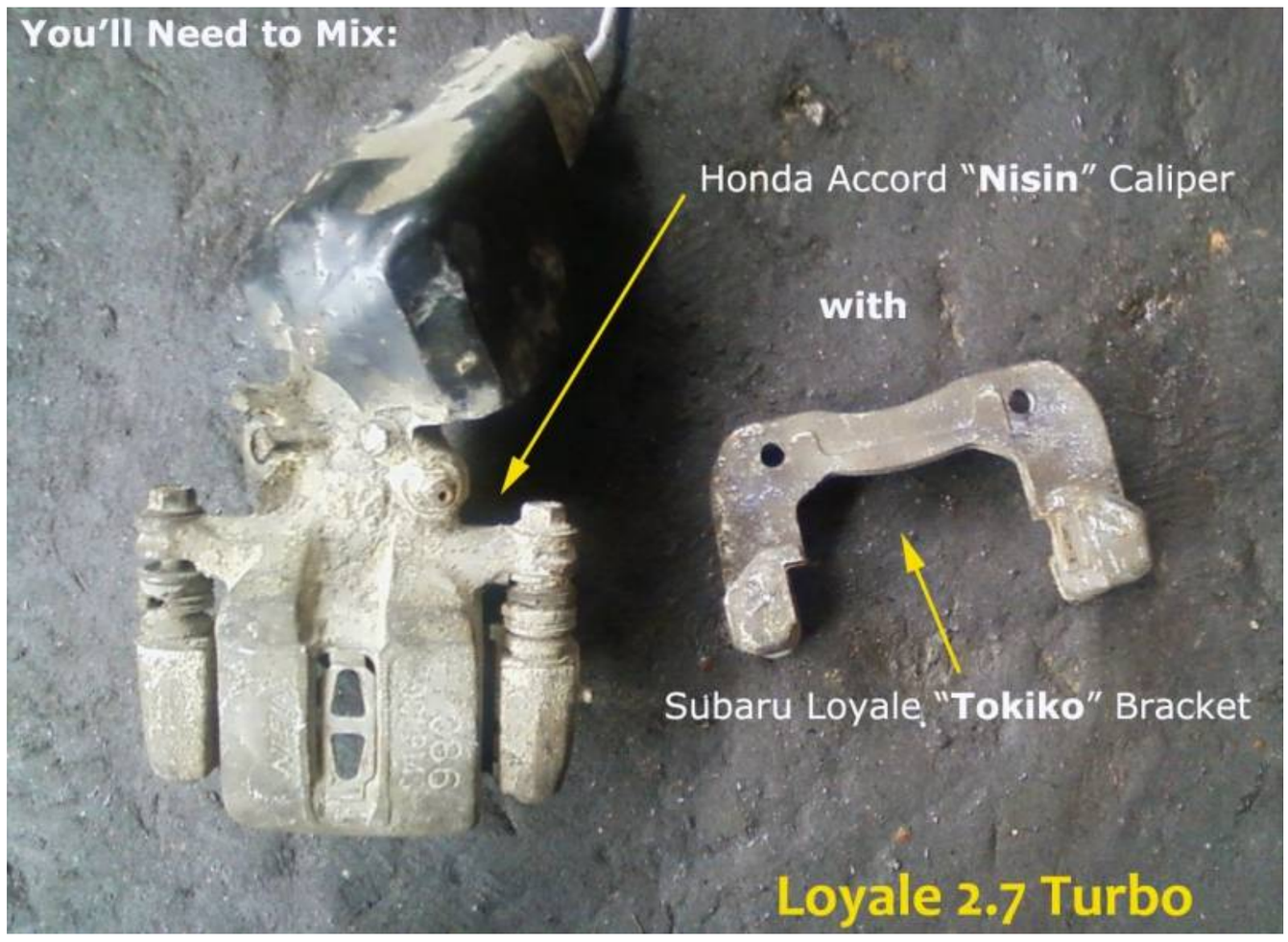
This is the **Subaru** Caliper:

This is the **Honda** Caliper:

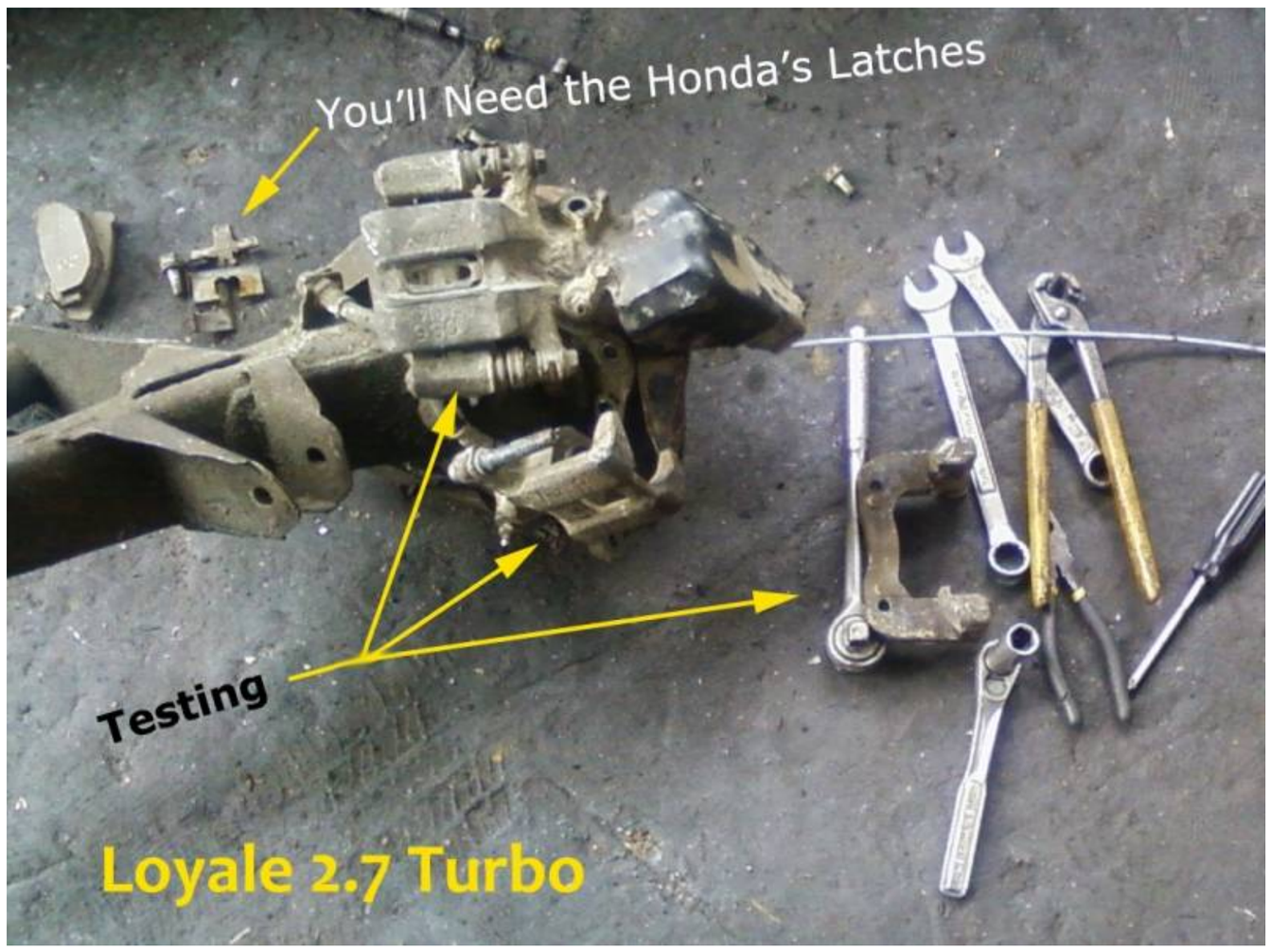


After many Tests done, I found:

► The Honda's Caliper only Needs the Subaru Bracket to Fit on the Subaru's rear Disc Brake *!*



► I used the **Subaru Brake Pads**, however the Honda pads might fit as well.



► But the Pads must use the **Honda**'s **Latches**.

And this are the Results: The "**Mixed**" Calipers:

This is the Way I Purchased them from the "Yonker"

Also I Purchased the Honda's e-Brake Lever:

Because it Pulls from the Rear, the Subaru one Pulls from the Front.

Then after I Grab those Mixed Calipers, and a Whole Lot of

Other Subaru Parts, that can be seen in this...

...Pictures, I Went Home and Started to Work in my **BumbleBeast** to do the Swap.

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This is How the Honda Calipers Looked Like onto my **BumbleBeast**'s Rear Disc Brakes:

On the Right Rear Side:

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On the Left Rear Side:

Perfect!

Even the Flexible Lines that came with the Honda Calipers, fitted Perfectly my Subie's Lines.

So I Started to Deeply Clean those Calipers before Definitively Mounting them.

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Fourth Part: The Interior Works.

This includes to Install the Honda **Lever** and the **Cables**.

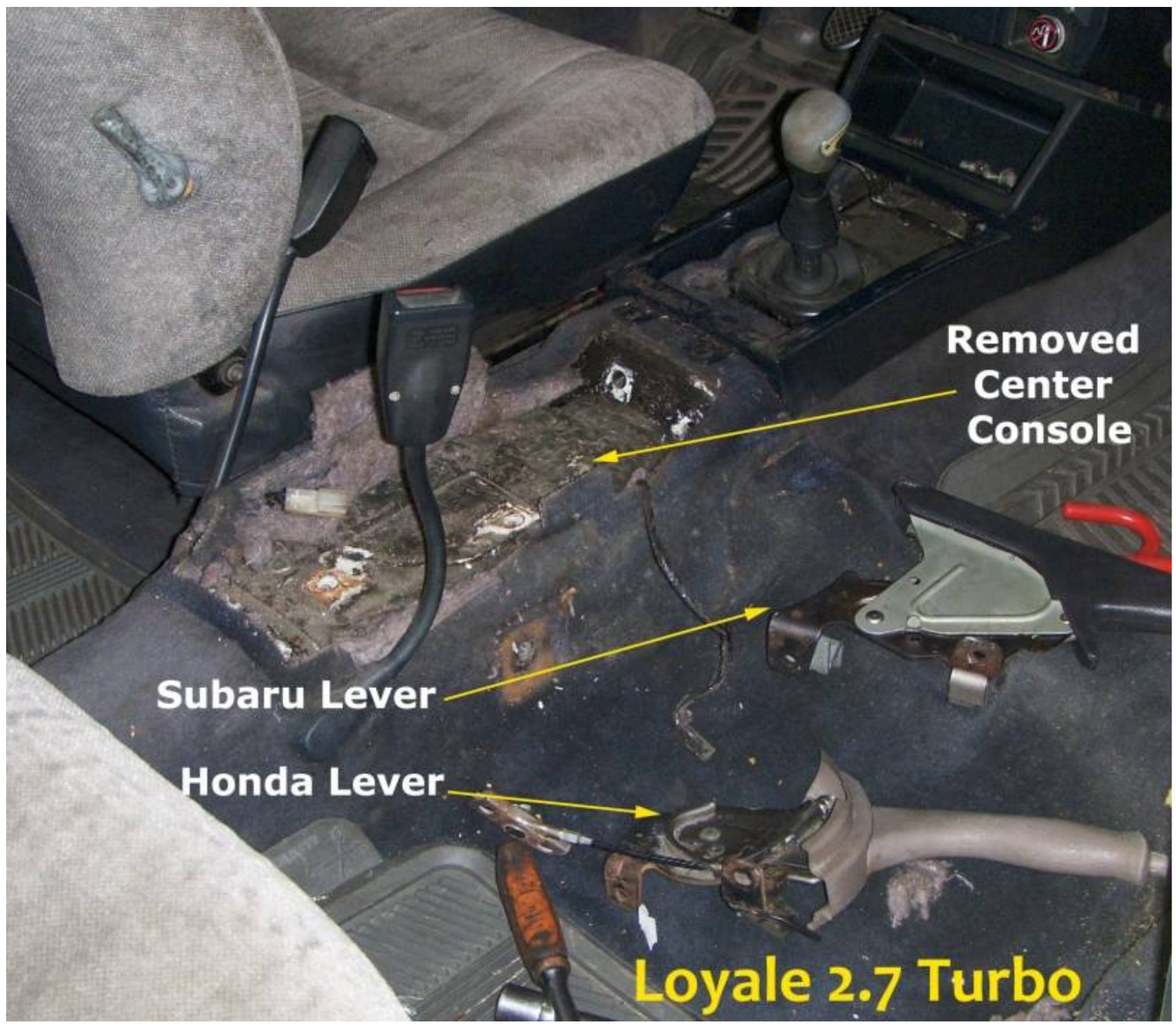
► **Important Note:** about the Cables: Forget about the Honda's ones and the Subie's ones. Why *?* ...

- The Subie's ones are Designed to work to the **Front**, so they're **Short** and doesn't worth to work on trying to re-route them.

- The Honda's ones are way Too **Long**...

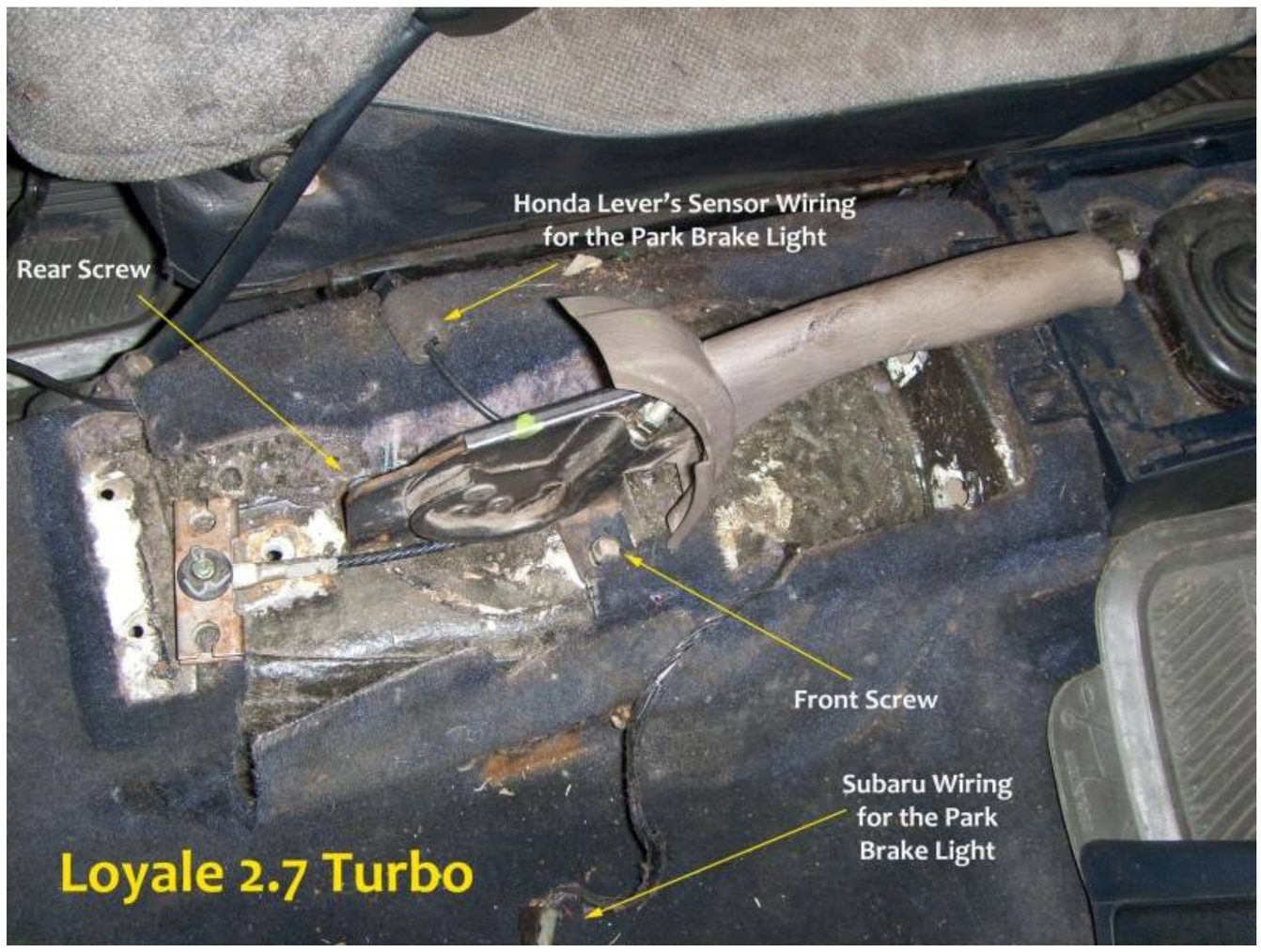
I made the Mistake of Grab the Honda's ones and buy them from the Local Junk Yard, just to throw them away... they're very much Longer than needed; So, I had to ask to a Local Shop to make a Pair of **Custom Cables** with the Proper Lenght for my Subie. But **Prior of That**, I Must have to Install the **Honda Lever** and **then** Take the Measurements for the Cables.

Just Removed the Center Console:



Testing the Honda Lever:

Placing the Lever:



.

It Fits on the Front Hole for the Screw on the Subie's Body, but you'll Need to Drill a New Hole for the Rear Screw. I Drilled it and Reinforced the Subie's Structure from Below the Floor, so no body could see the Reinforcement. The Reinforcement consists in a metal plate with a Hole of the Same size of the Drilled one, to work as a Welded Washer.

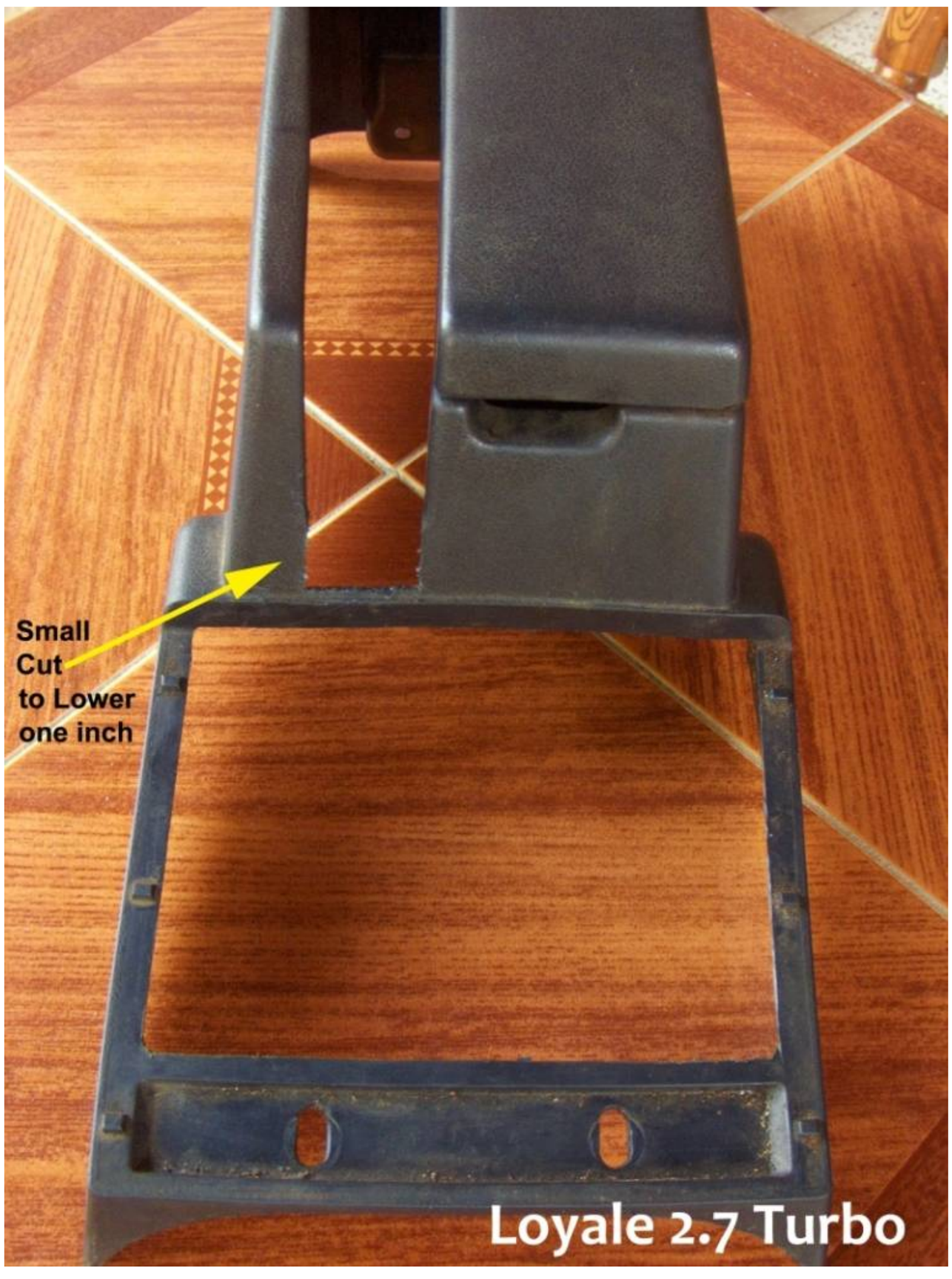
Next I Tested the Center Console and... **Surprise*!!!*** ... it Fits with the Honda's Lever*!*

Testing it with the Lever all the Way Down:

and All the Way Up:

The Console does Not interfere with the New Lever Movements.

► **Important Note:** you'll Need to do a small Cut of around an **inch** in the Plastic at the Lower portion of the Center Console, where the Lever sits, to let the New Lever to reach all the Way Down, as you can see in the Followin' Photo:



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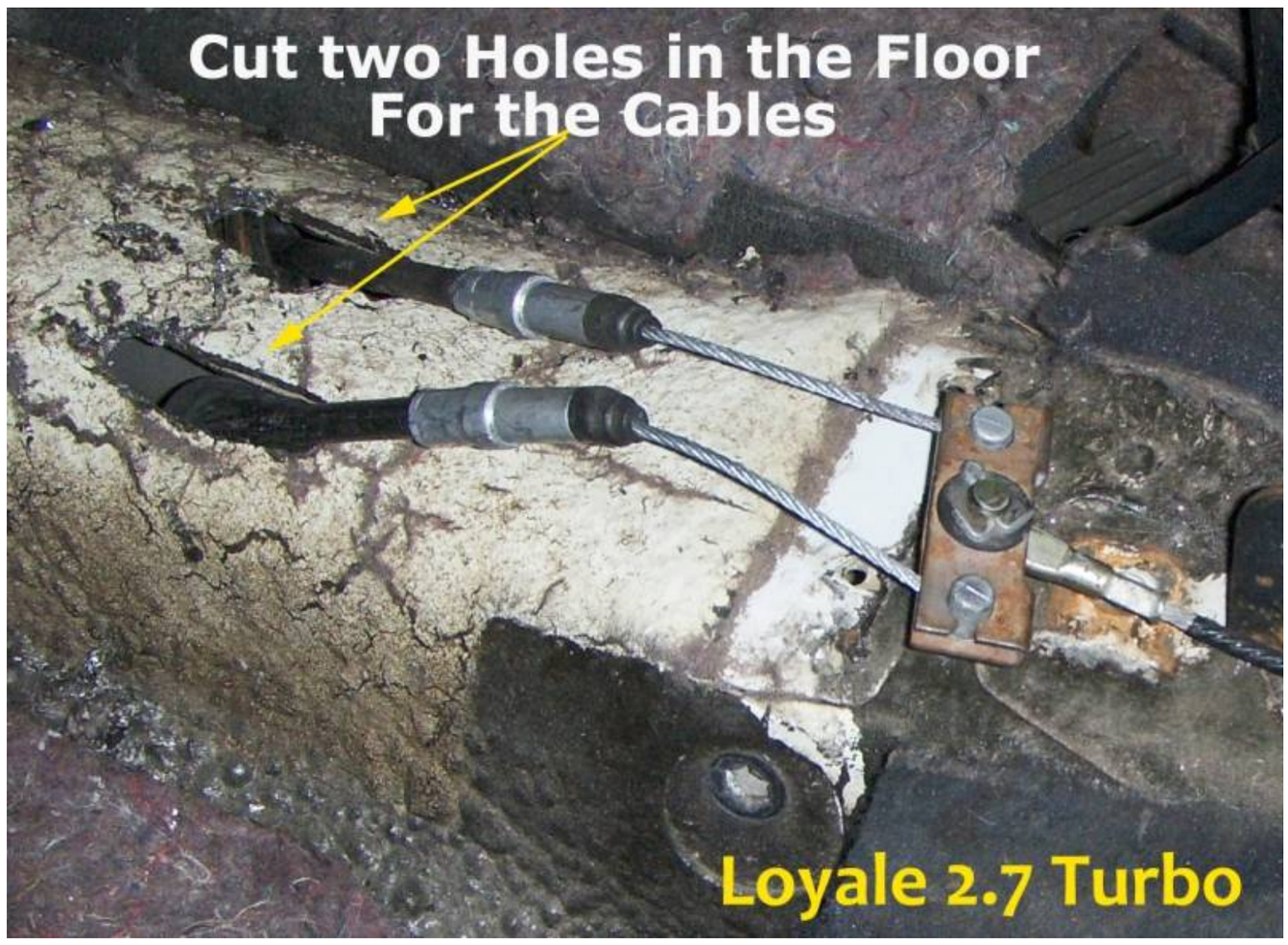
To do the **Interior Works**, you'll Need to Move the Floor Mat to Make enough Space to Work on that area, either Removing the Seats to Remove the Floor Mat, or Cutting it a Little to move it faster & Easier. I Chose to do a Small Cut on the Floor Mat.

Next, you will need to Drill another Two holes in the Subie's Floor, to pass both Cables:

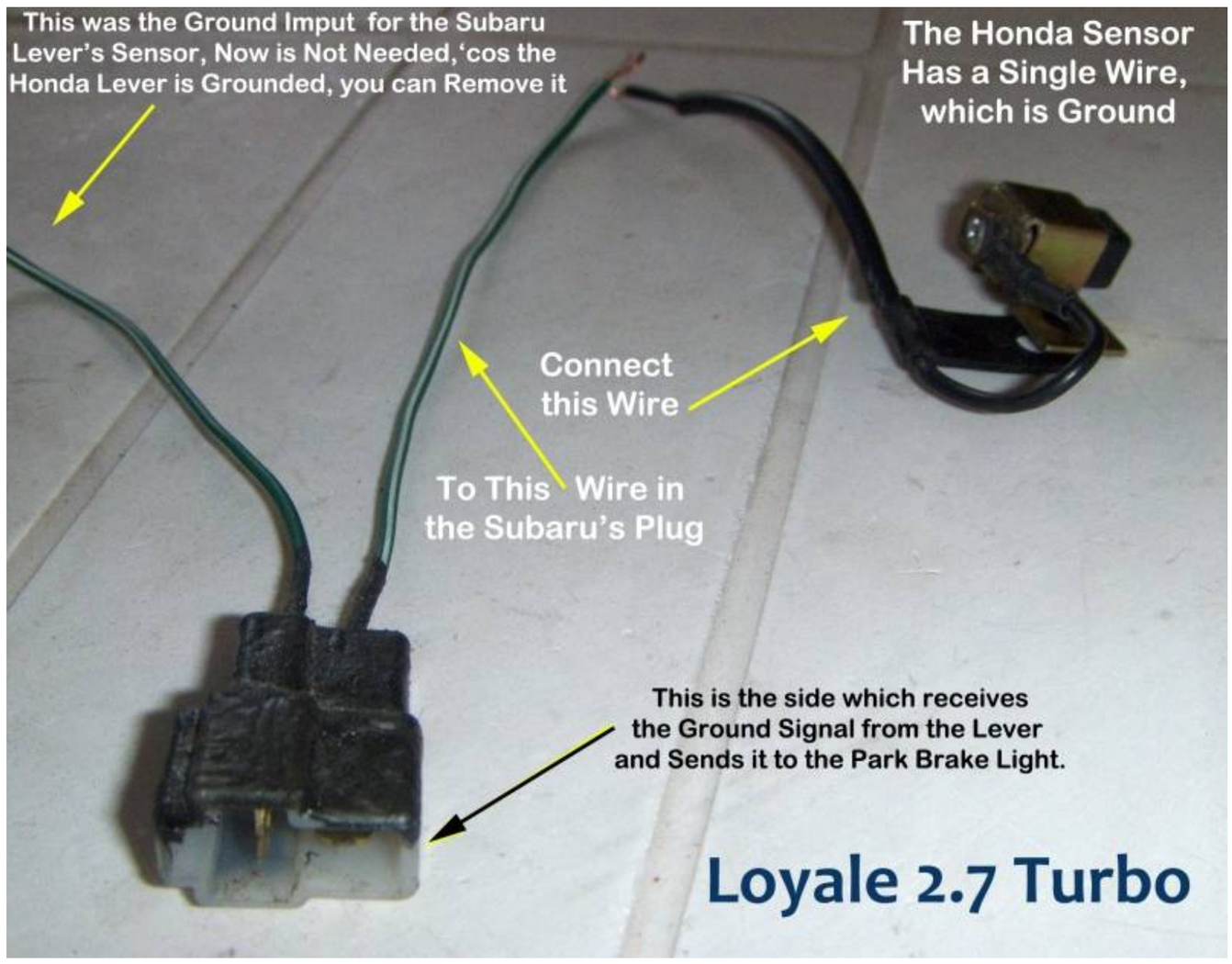


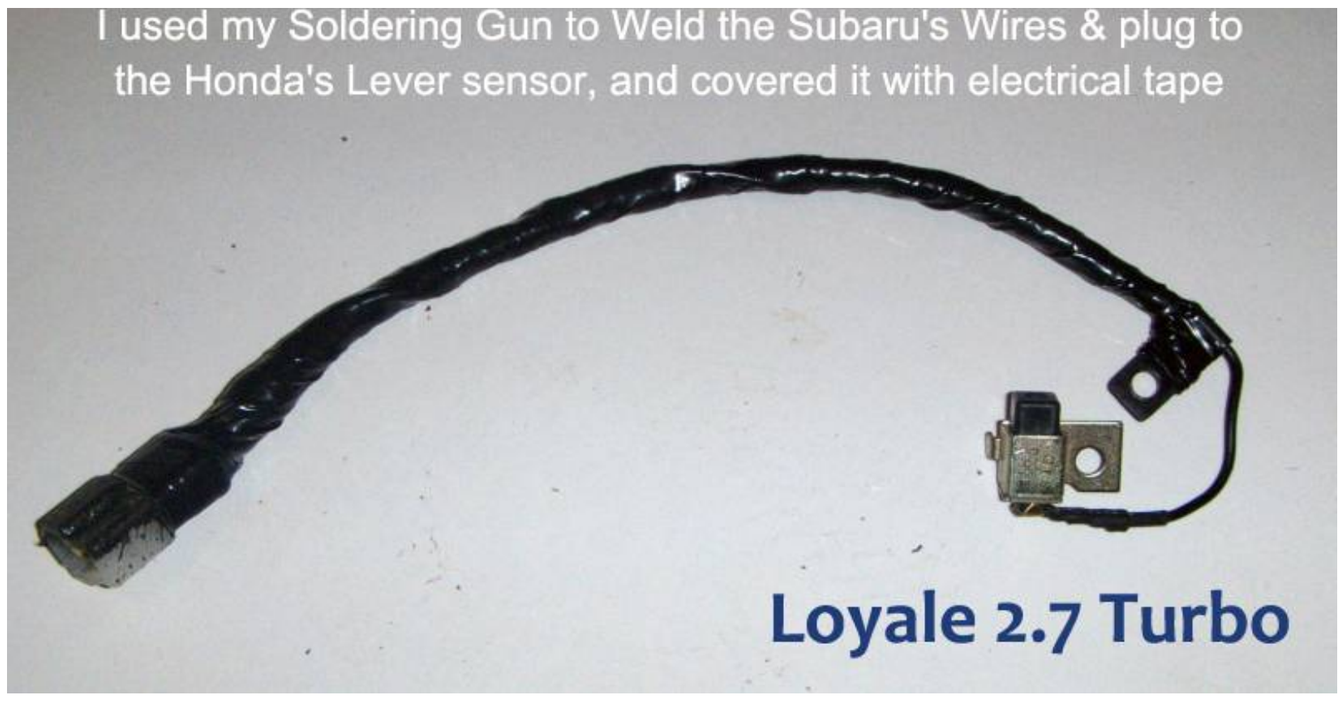
► **Important Note**: The Cables work on the Transmission Tunnel in the **2WD** Models without any problem, my Friend **Numbchux** wrote to me about the **4WD** Models:

> ... cutting holes, and having the cables drop down through the tunnel will cause clearance issues with the driveshaft.
>
> That's how I did it in my Loyale too, and the driveshaft would rub on the cables under hard accel. The next time I do it, I will run the cable straight back, and through the bulkhead under the back seat.

Once the Lever is Installed, pass the Cables and use its Rubber endings to cover the Holes.

Then you will need to Connect the **Wires** from the Honda Lever's Sensor to the Subaru's Wiring, in order to have a functional "Park Brake" warning light at the instrument cluster, See the Following Diagram for easy Understanding how to do that:

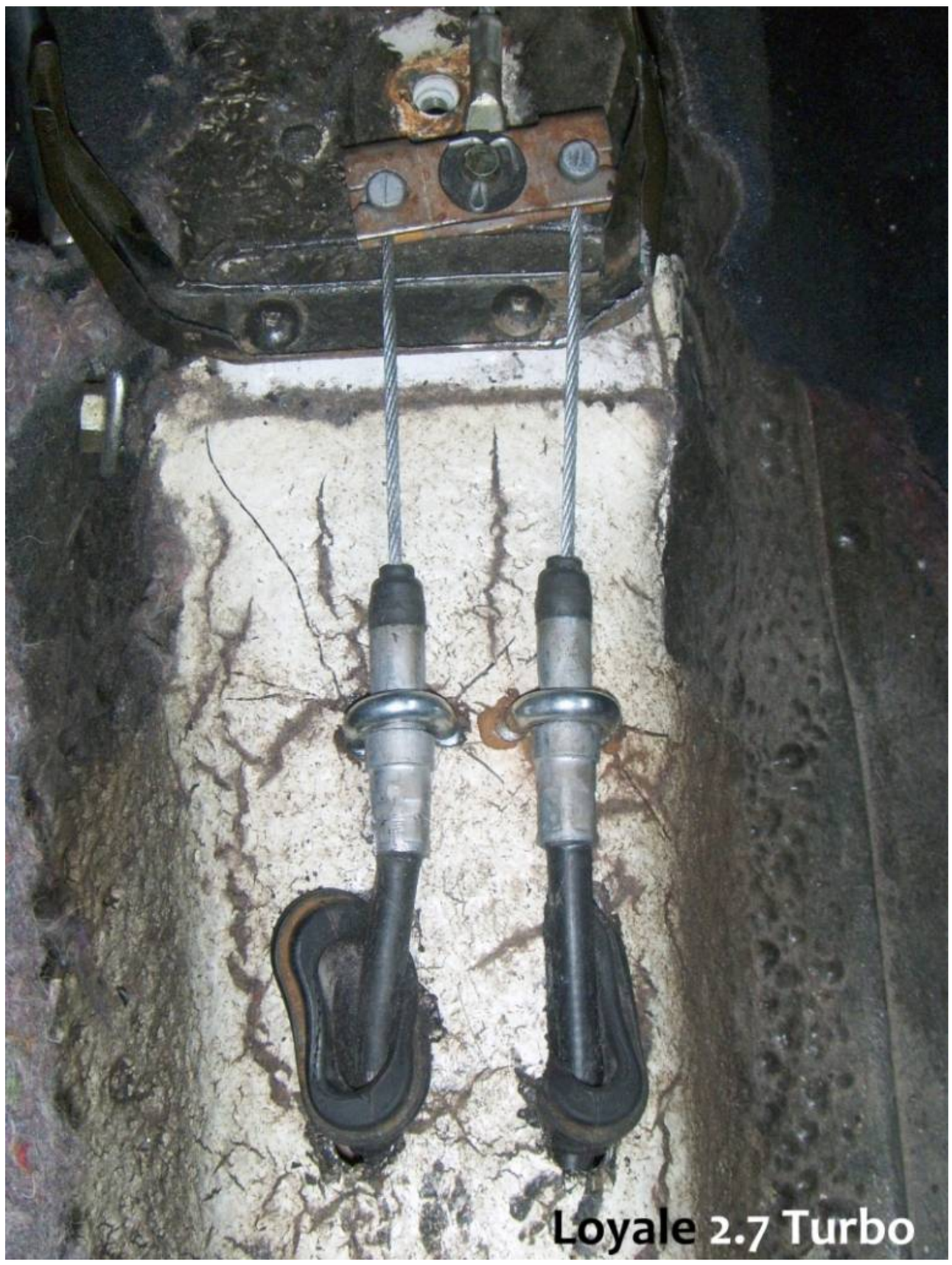




Also you can see how I Closed the Unused openings for the Old front e-Brake Cables.

Finally, you'll Need to Place a Pair of **3/8**" (10 mm) **U-Bolt Clamps**, one for each Cable.

They're placed on the cable's Metallic endings, to Hold them in Place while the Lever is Pulled or Released. This requires another (much smaller) Four Holes on the Subie's Floor, which I Reinforced from underneath, with a Single Metal Plate with matching holes, welded to the Subie's Body. (it works as a Washer)



I Placed a screw on the Unused hole on the Floor, that was for the Subaru Lever, to seal the floor, then I smeared and Covered all the openings and the Screws with Clear Silicone to Completely Seal the Floor Against Water, Dust and even Road Noise. Also I smeared and covered with Clear Silicone on the Same Places & Screws from Under The Car, to somehow Rustproof them.

You can See that the Floor mat could be Placed Again, Hiding the cut.

The Floor Mat Also Hides **Perfectly** the Cables, the Cut part of the Mat part is Held in its place by the Screw that Holds the Fixed Portion of the Seat Belts on the Floor.

I Kindly suggest to cover the Cables with some thick plastic bag wrap, before placing the Floor mat, to avoid damage to the Cables if someone spill Liquids on that floor mat area, But let it Loose enough to let the Cables Move Freely. Then Place the Floor Mat over it and now you can Reinstall the Center Console back on its Place.

Edited August 10, 2016 by Loyale 2.7 Turbo
To add more information.

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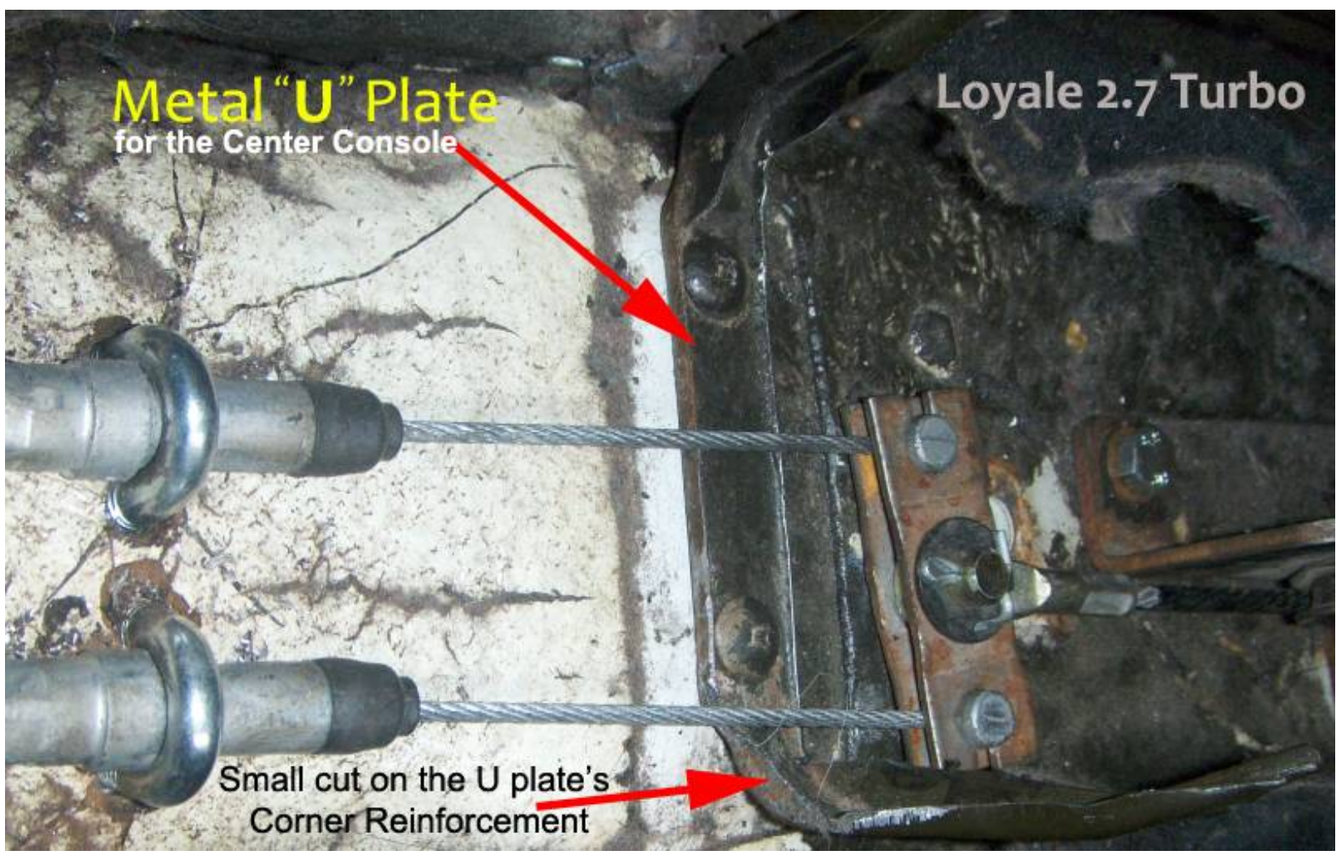
The thin metallic plate shaped like an "**U**" that is intended for holding the Center Console to the Floor in its place, does sit **below** the new Rear e-Brake Cables, so they pass above it without touching it, if the New Honda Lever Handle is installed in the middle of the area; even you can remove that "**U**" plate if you want to install another car's center console.

But if you install the Lever Handle to the Right side, as the original Subaru lever Handle comes factory (Needed to let the use the Original Subaru Center Console) and as I did, the Cables still will pass above the base of the said "**U**" plate without touching it, but one of those cables can rub a little on one of the thin metal reinforcements of that "**U**" plate, the one that is on the Right side.

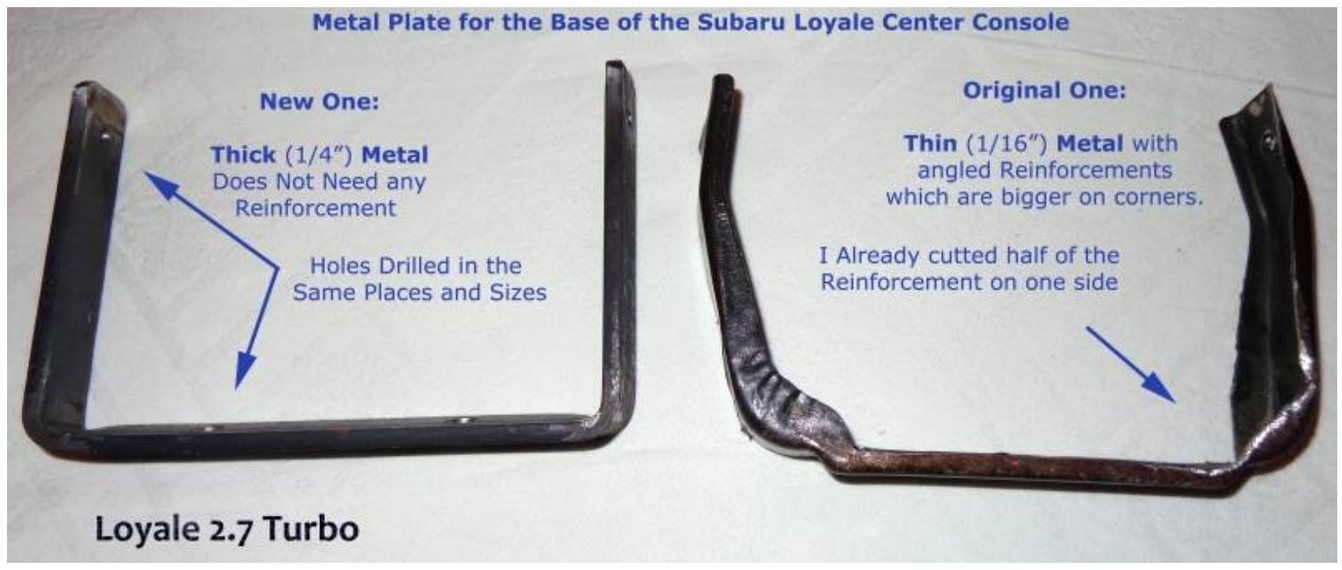
My **first** Solution was, to cut a Little from that "**U**" plate's reinforcements, in order to gain enough clearance to let the Cables pass without rubbing the Plate...

As you can see in the Photo Below:



But then, I noticed that the very thin Metal of the "**U**" plate (looked like **1/16**") felt *weak*. So I decided to obtain an equal lenght of thicker metal plate and bent it, to **make** a new and *stronger* "**U**" plate. The Metal Plate I obtained is 1/4" thick, so it does Not need any reinforcements

You can see both Metal "**U**" Plates together, in the Followin' photo:



I Painted it with Yellow Rustoleum ... 😂 ... here you can see it already fixed in its Place:
(also you can see the Smeared Clear Silicone over the Clamps)

Now the Cables pass far enough from the new metallic "**U**" plate I Made, Hard to see clear on the Picture due to the Camera's angle, but there are More than **1/4**" Clearance, as you can see in the Next Photo:

Even with the Center Console fixed in its Place, the Cables doesn't Touch it:

They have more than enough clearance there, so No more Modifications were Needed.

► **Important Note:** If you do your own "**U**" Plate, you must bent it certain degrees to the same inclination of the original one: The arms on the "**U**" does have certain inclination from their Base, they're not straight up.

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Fifth Part: To Paint the Cleansed Calipers, install 'em and Route the Cables.

So, after the Deep Cleansing of the Calipers, I proceeded to Paint them with Engine (Ceramic) Enamel of 500º F Temp, not only to Protect them but also to gain better Looks ... ... and finally, I installed them on my "**BumbleBeast**" Subaru.

This is the Paint I Purchased at our Local **NAPA** Store:

After install, I added a Couple of Coats on the Right Side:

same on the Left Side:

Then I Connected the Cables:

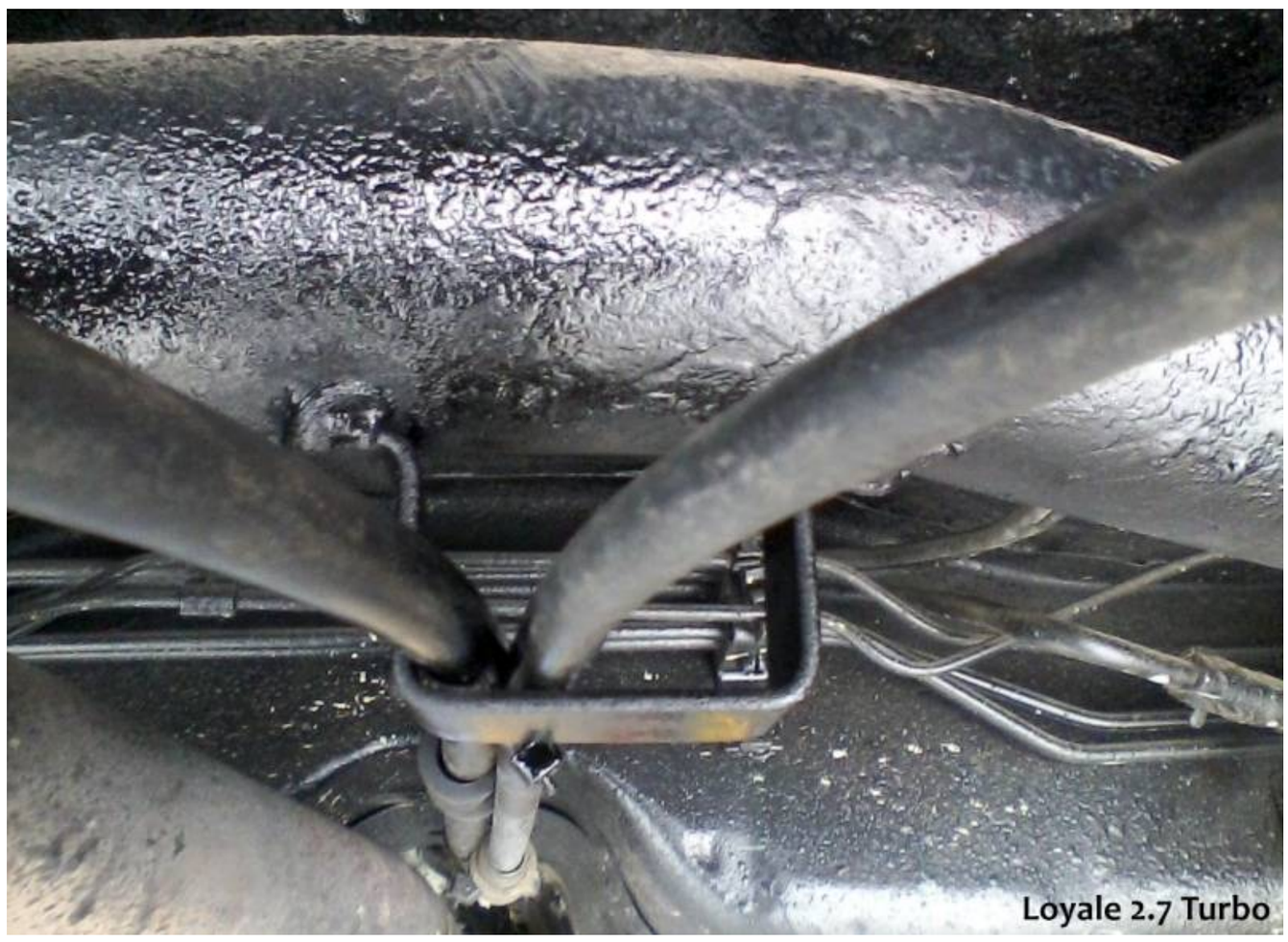
Even the Front Calipers had their couple of Fresh paint Coatings:
(you can see the Deleted e-Brake from them)

This is How they Finally ended Looking, already installed,
Right Side from Behind, you can see the Cable route:

Left Side from Behind:

These are the New (Custom made in Honduras) Cables and How I Routed them:

Finally, I welded a metal plate, twisted to make a Cable Holder:



Remember to run the cables avoiding them from touching the Exhaust piping,
the cables Must run **far** from it to avoid melt their covers.

► **Edit:** As usual in my posts, Underlined words are web links
to further information and photos regarding the underlined subject.

Edited August 10, 2016 by Loyale 2.7 Turbo

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Sixth Part: Detailing & Finishing.

Going again to the interior, here are Some Pictures of the Center console back in its Place, and the Honda Lever conected to the Cables in its Place; **everything works awesome*!*** 😁

This is a Wooden piece I Made for the center console, to Susbsitute the old Plastic one, which was cracked, it just needs to be Painted like the rest of the Dashboard:

So, my **BumbleBeast**'s center console looked like This:

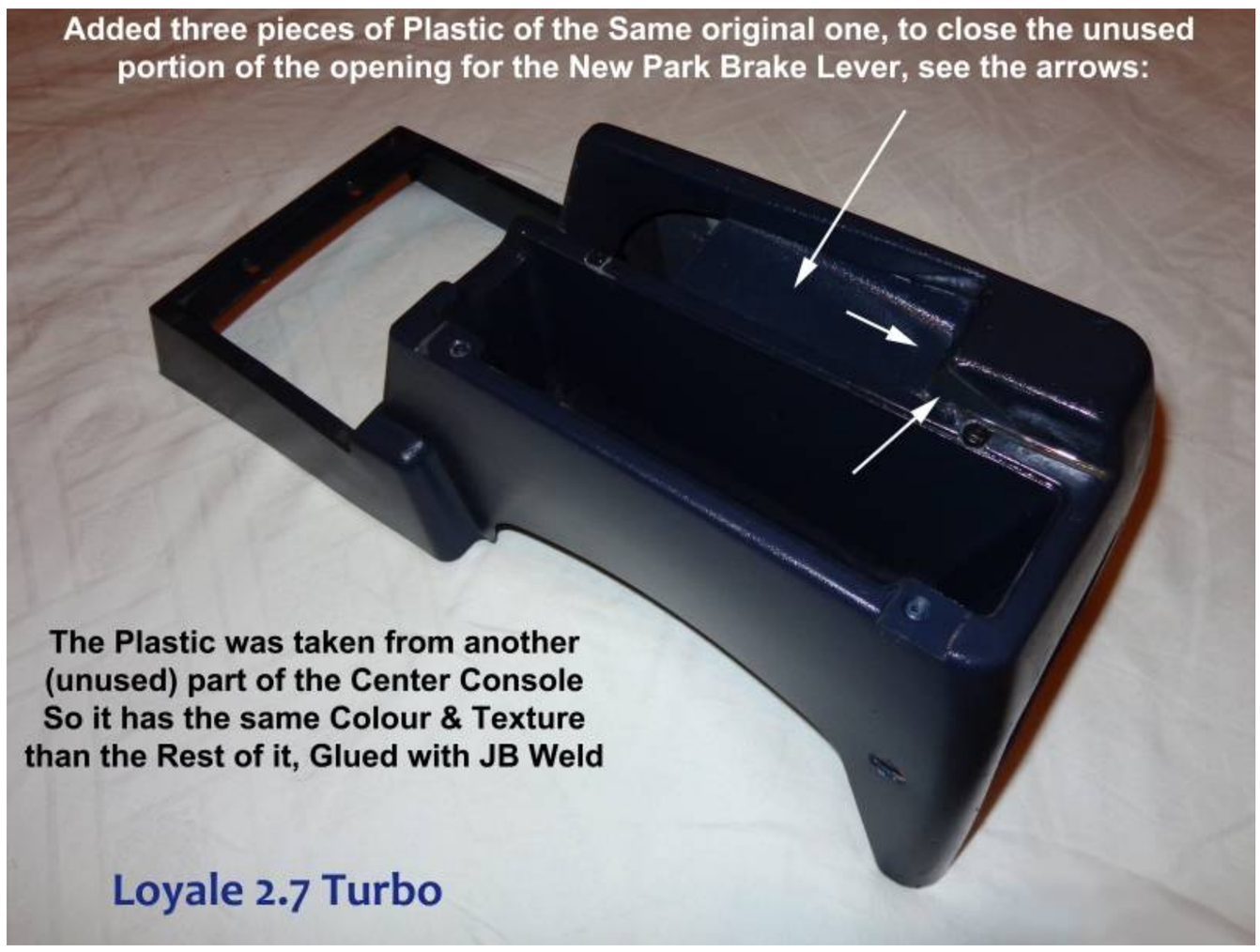
You can see that the Honda Lever has the Proper Space to Work:

But also it Really Feels "**Natural**" for the Car.

Then I needed to...

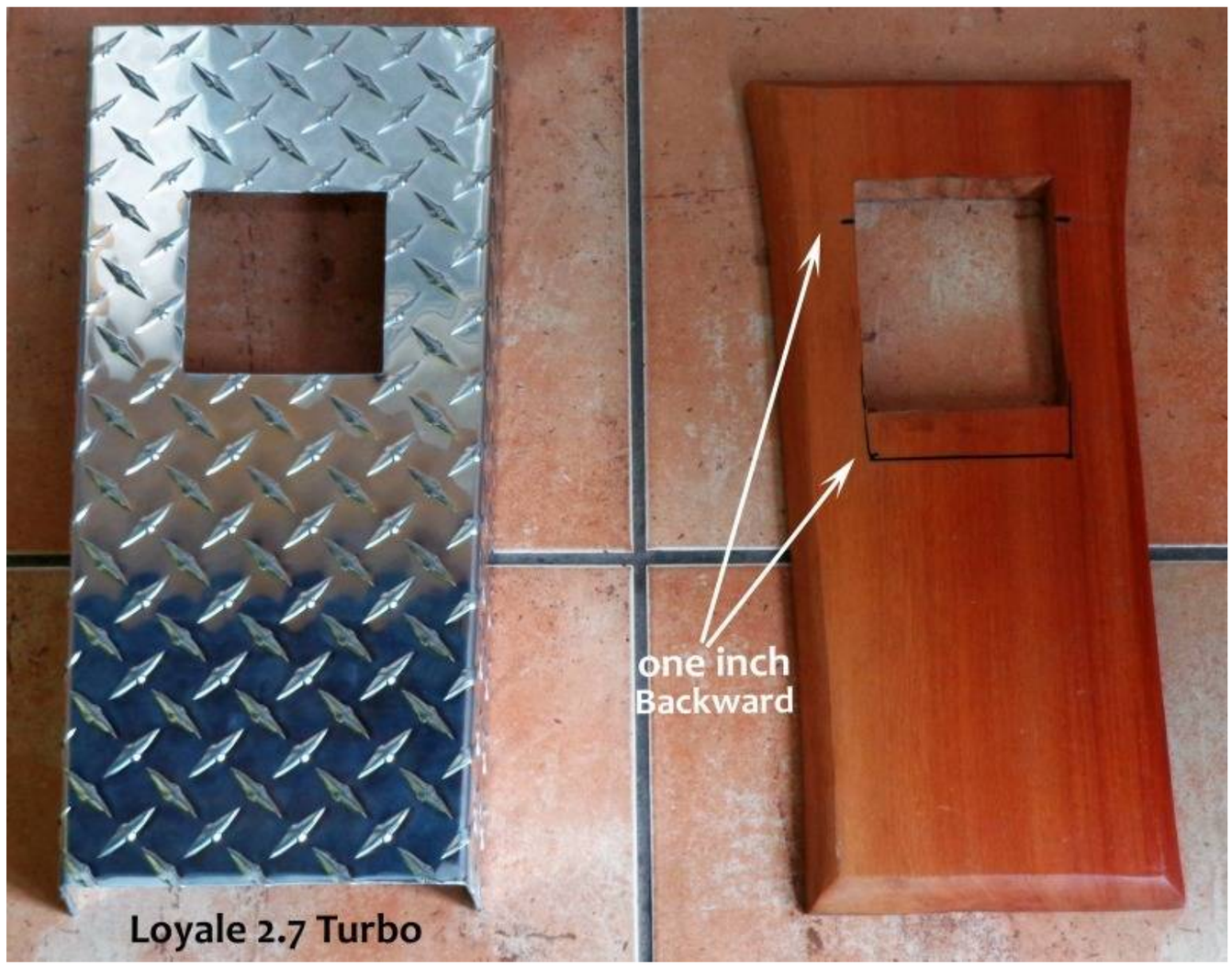
...Hide the Opening behind the Honda Lever on the Subie's Center Console. So, I Cut parts of that unused Plastic leftovers, which has the same Colour & Texture than the Center console...

...and Glued them with Epoxi Glue to the Center Console's openings, as Follows:



So now, the Center Console Looks like This:

However, After I lift the car with a **2**" SJR lift kit (More information ~► Here) the Wooden part which I made, became off center, due to the Shifter's linkage change of position with said lift; so I decided to improve things, and make a new one, but this time Not with Wood, but with chromed Aluminium, shaped as Diamond Plate, see:



This is How my Lifted "**BumbleBeast**" interior looks like now:

► **Important Note**: The center console's rear, mount on a pair of Screws one on each side, to the above mentioned "**U**" plate, Now you can **not** use the center console's Bottom Screw to the Subie's Floor, because it will interfere with the Cables and their Movements; But that Screw isn't *really* needed.

As I Said in the end of the Above Post № **5**:

> I Kindly suggest to cover the Cables with some thick plastic bag wrap, before placing the Floor mat, to avoid damage to the Cables if someone spill Liquids on that floor mat area, But let it Loose enough to let the Cables Move Freely. Then Place the Floor Mat over it and now you can Reinstall the Center Console back on its Place.

I obtained a Semi-Transparent (with Green Tint) **3/16**" Vinyl and used it to Cover the Cables:

Then I Placed the Floor Mat above it:

Finally, I Installed the Modified Center Console with Screws to the New "**U**" Plate:

And here is the Final Look, with all the Job done:

The Cables Move **Freely** and nobody could Notice them, Hiding underneath the Vinyl and the Floor Mat; only a trained eye could Notice the Different Park Brake Lever Handle and the Minor Modifications done to the Center Console.

Edited August 10, 2016 by Loyale 2.7 Turbo
again, mispelled word; fixed.

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Seventh (and Last) **Part**: To Drain the Old Brake Fluid from the System.

You'll need to do a complete Bleeding to the System & Recharge it with Fresh Fluid, following the proper Cross Pattern: First bleed the Rear Wheel which is Farther from the Master Cylinder, next the Front Wheel from the other side (Following a Diagonal basis) Then the other Rear Wheel & Finish with the other front Wheel.

Test the Pressure on the Complete Brake System; Remember: Those good ol' subies' brake systems tend to be Tricky, so you might need to repeat this bleeding procedure twice, in order to have it in good Working conditions.

Use the Best Brake Fluid you can, DOT 3 or 4; **avoid DOT 5** because it isn't Compatible backwards with the older ones, and older **seals**.

Finally do a Test Ride to *"Feel"* the Brakes Behaviour, then if everything is Normal, test your Subie's New Rear e-Brake System.

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Roatán, Honduras.

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I'm Sure that the Off-Roading crowd will want to do this **Rear e-Brake** Retrofit that I've done, while Keeping the **Front e-Brake**; both with independent Levers, side by side, next to each other Without the center console ... ... as a Great Slipping Control during 4X4 action.

► **Edit**: Some USMB Members already has done it, sucessfully *!*

► **Update** (added August 2016): Much more than four Years of daily driving had already passed since I finished this Retrofitting, and my **BumbleBeast** Drives & Feels Natural, with a Good working Rear e-Brake.

My Experience: This Swap is **Easier** than it looks like, and the Results are **Awesome**; the New Rear e-Brake from Honda is More than enough for the Subaru; it only needs less than Half lever up to Hold **Strong** the Car, and also at half lever it has enough clamping force to Stop it*!*

Is a Strong Rear e-Brake... not like the Average one found on common Rear Disc Brakes.

I Hope This Write-up will be Helpful, If you like it, let me know by hitting the "**Like**" Button.

Kind Regards.

Edited August 10, 2016 by Loyale 2.7 Turbo

To add the Update.

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