

Turbo variable flow boost control arm eyebolt and pin replacement. To remove play in the pivot point for variable flap boost control the eyebolt and pin must be replaced, both will be worn. P2263 code if these parts are worn too much.

Below is a link to a good source of variable geometry turbo information and the Acura RDX turbo type is near the end of doc, the RDX turbo is a variable area, variable flow turbo type with a flap to control the exhaust flow to the dual scroll turbine wheel. The linkage arm with the pin and eyebolt prone to wear at higher mileage controls the opening of this flap.

[Variable Geometry Turbocharger \(VGT\) – x-engineer.org](http://x-engineer.org/Variable-Geometry-Turbocharger-VGT/)

To check for eyebolt/pin wear look here; view from the right side of the engine compartment, between engine and firewall. There is a spring-loaded force from the actuator shaft pulling the eyebolt upward so wear will show as a gap between the pin and top part of the eyebolt.



Below is a close look at the visible gap between the eyebolt and pin. Both the eyebolt and pin had ~2mm of wear so 4mm of total play.



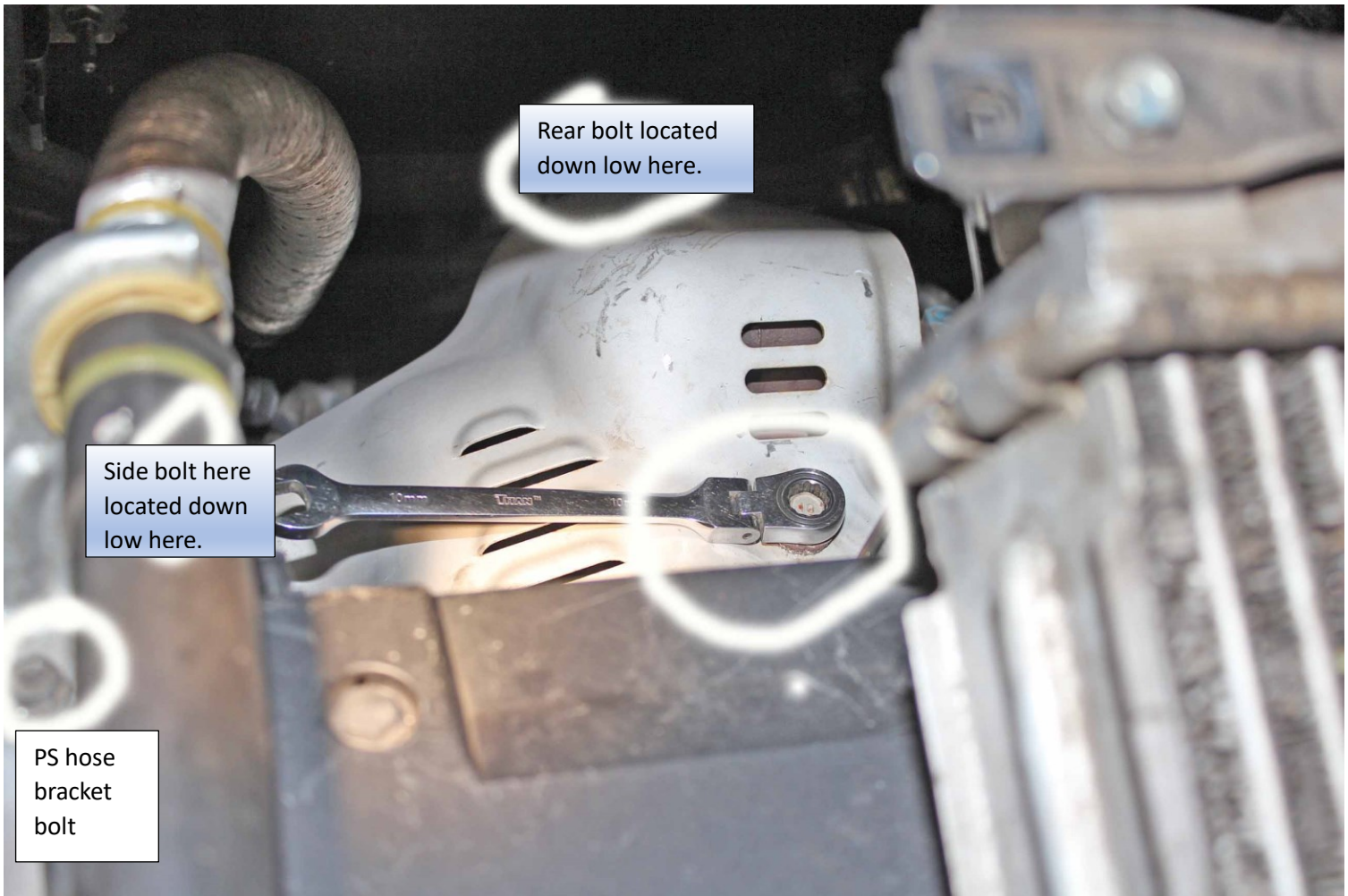
Here you can see the wear pattern of the eyebolt and pin. Marks on the side of the eyebolt were from prying on the eyebolt to get the pin out of the linkage arm.



Repair Notes- pin replacement, turbo in-car

Remove power steering hose bracket and exhaust cover

To remove exhaust cover, remove one 10mm bolt, furthest left to remove power steering hose bracket, then remove 3 10mm bolts for the exhaust cover. Back and side bolts are removed and installed by feel, you can just reach down and feel for the bolt head and use a 10mm box end to loosen, 10mm flex head ratcheting box wrench shown on top bolt.



Grinding the rivet head off

Remove exhaust cover and one exhaust manifold bolt for access, see photo. Hand held belt sander used to file off the rivet head of the factory pin. Access to the rivet head is in a difficult position to grind down, this type of belt sander is an ideal tool to do the job, I was surprised how well it worked. Note the one exhaust bolt removed for better access.

With this in-car repair I'd say the belt type 3/8" X 13" handheld sander is almost a must have tool for this job. These tools can be purchased for as low as \$30 and can be used for many other future projects. This tool does a great job of quickly grinding away the rivet head and control is good. Keep the length of the at tool to 14 inches or under so go with the 3/8" X 13" belt size sander. A long shaft carbide burr tool could also be used and for a lower price than the belt sander but I doubt will do as good of a job or as fast as the belt sander. 3M 80 grit Cubitron II sanding belt, finer grit could be used.



Getting the pin out of the linkage arm- the most difficult part of the repair

With the rivet head ground off the pin it's still held tightly in the linkage arm from being peened on at the factory. The 6mm round part of the pin shaft that goes through the linkage arm needs to be punched or pried out. I did attempt to drill out the center but there just wasn't room to get a drill bit in a good position so gave up on drilling. The pin is hard drilling too (stainless steel?). Tried to punch it out with no success and using too much force can damage parts so moved on. What eventually worked was heating around the pin area with a small Benzomatic butane torch and prying between the linkage arm and eyebolt with large screwdriver using a twisting motion.



If I were to do this repair again here are a couple of things I would do to help get the pin out of the arm

I'd removed the eyebolt from the actuator shaft and pin and should have done this no matter what to prevent bending or damaging the actuator rod. I originally left the eyebolt on the pin and attached to the actualor rod to hold the linkage arm in the up position for better access to the rivet head and to pry between the arm and eyebolt to remove the pin from the arm but this puts a lot of stress on the actuator arm.

1st idea: Vise-Grip pliers and small pry bar to help loosen and remove the pin from the linkage arm



What is shown in the photos below, which is obviously not in the car but something I would have done differently to help remove the pin quicker, easier from the linkage arm. After the rivet head is ground off, clamp the 6 inch long nose Vice-Grip pliers tightly to the pin still on the arm, the Vise-Grip pliers will be parallel to the linkage arm. Apply some penetrating oil to the part of the pin still in the linkage arm and use the Vise-Grips to rotate the pin some in both directions if possible. With the pliers in this position and using an open end wrench on the pliers, the pliers can be twisted using the wrench to put force on the pin in a downward and upward direction to help loosen the pin within the linkage arm hole. This pin is a tight interference fit inside the linkage arm even after the rivet head is ground off.

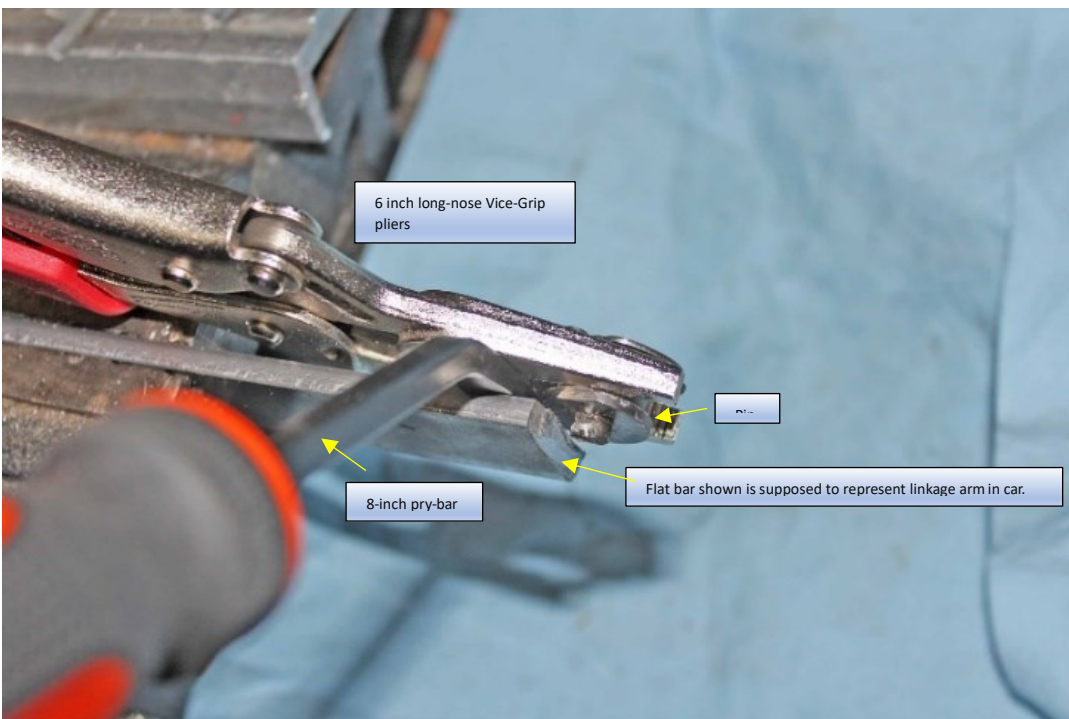
To pry out the pin from the linkage arm; use a large screwdriver or small pry bar (recommend a 8 or 12 inch pry bar) and then insert the screwdriver or pry bar down in-between the linkage arm and the side of the vice grips pliers (see photos) and using a twisting motion with the screwdriver or pry bar, you will be prying against and in between the

linkage arm and pliers, this is done to apply a force on the pin to extract it from the linkage arm. Add another pair of vice grips or wrench to the screwdriver or pry bar shaft for added leverage. Use heat around the pin on the linkage arm if the pin still won't pry out of the arm. Note, the top outlet tube of turbo will need to be removed for better access with the Vice-Grip pliers.



Above shows benchtop views of the Vice-Grips clamped on the pin and the use of wrench on the pliers for added leverage to put an up and down force on the pin to help loosen the pin in the linkage arm.

Below is a benchtop photo to show the position of the pliers when clamped onto the pin in the car. The pliers will be on the inside and parallel to the linkage arm. The pin in this photo is not flush with the plate as it would be in the car before removal. Pliers will be used to rotate the pin some back and forth and twist the pliers with a wrench to apply side force on the pin, this is all done to help loosen the tight fitting pin in the linkage arm even after the rivet head is ground off. The pliers will also be used as a surface for prying between the linkage arm and pliers. This is done to extract the pin from the arm. The pin c-clip should be put back on the pin to help hold the pliers in place during prying.



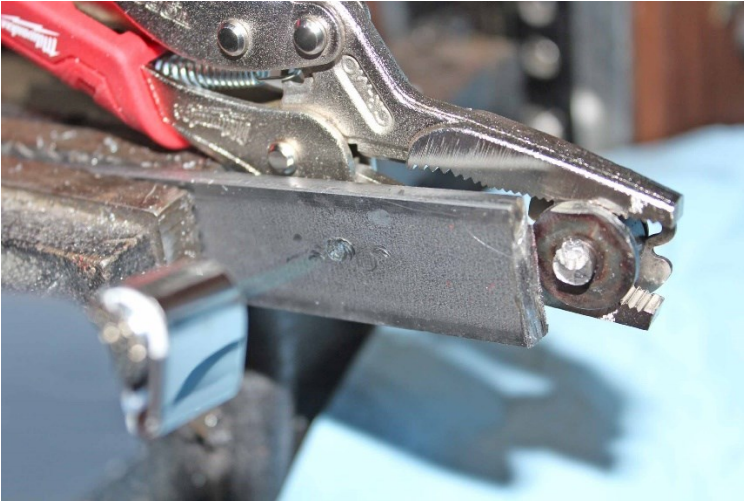
Above shows an 8 inch pry bar inserted between linkage arm (shown as a flat bar here) and Vice-Grip pliers, pry as close to the pin as possible to help extract the pin from arm. Use a wrench on the square shaft of the pry bar for even more leverage, which may be needed. Pry bar is recommended because of the offset and a better angle when inserting the tool to pry. The actuator diaphragm canister gets in the way when using a screwdriver.



Above shows the pry bar position as you would see it while working on the car, flat bar represents linkage arm. Goal is to pry out the part of the pin that's still in the linkage arm. Pin shown here has already been removed and you can see the smaller diameter piece of the pin that's was pried out of the linkage arm.



Above, highly recommended tools to have on hand. 8 or 12 inch pry bar with square shaft to use wrench for more leverage. Butane torch to heat the linkage arm around the pin. Shown below the 6" long nose Vice-Grips are a must have, a pair of them would be better.



Above, hard to see the flame but showing the butane torch being used to heat up the area around the where the pin were would be in the linkage arm.

So Vise-Grip pliers, small butane torch, penetrating oil, large screwdriver or small pry bar are must have tools and items to have on hand. Another thing I would do is removed the curved top outlet pipe of the turbo for better access, two nuts and have new gasket on hand, part # 17284-RWC-A01. This is a point in the repair where you don't want to get stuck and this could happen here if you can't get the pin out of the linkage arm so be as prepared as you can be at this point. Once the head of the rivet is ground off you have to continue and replace the pin

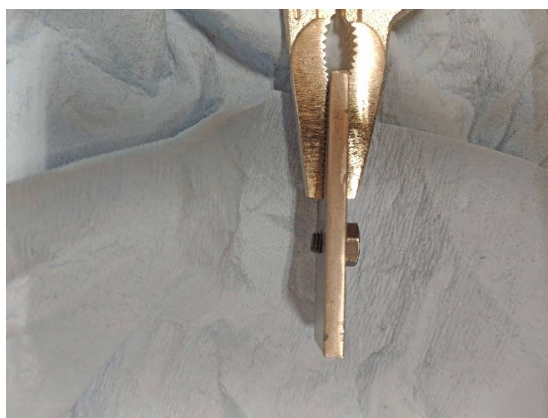
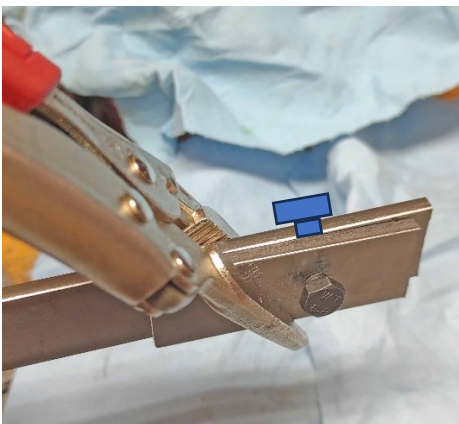
2nd Idea: Use a clamped on plate with a bolt to press out pin

Here's another idea to possibly help remove the rivet from the linkage arm after the rivet head has been ground off. A small flat plate with a short bolt will be clamped onto the side of the linkage arm. The simple fabricated plate will have a short bolt that can be tightened to press out the rivet/pin.

After the pin rivet head is ground off a plate can be clamped onto the side of the linkage arm with Vice-Grip pliers. The pliers will clamp on at an angle (red line) to the left of the actuator.



Below is a workbench example of how the plate will be clamped onto the linkage arm. The longer flat bar represents the turbo linkage arm and the shorter plate with a bolt would clamp on using 6 inch long-nose Vice-Grip pliers like shown here. The bolt will have to be carefully aligned directly over the remaining rivet shaft inside the linkage arm. The bolt would then be tightened to press the rivet/pin out of the linkage arm. The fabricated short plate just has a 5mm drilled hole, tapped for a 6mm short bolt. May or may not work, haven't tried this in an actual car yet. This may be a little tedious but it will be important to align the bolt carefully to only to press on the pin shaft in the linkage arm. If the bolt is misaligned the bolt will be pressing against the linkage arm and instead of the pin shaft. It's possible this may just flex or bend the linkage arm and the pin won't come out.



Key milestone in the repair- pin detached from linkage arm

After a long struggle I was finally able to pry the pin out of the arm. Other methods suggested above to hopefully lessen the struggle of getting this pin out of the arm. It's important not to damage other parts when removing this pin, the linkage arm can bend, the actuator arm can bend, it does take a considerable amount of force to remove this pin so care is needed to protect the other parts.



Before I knew there were custom made pins available for this repair I purchased some over-the-counter parts to replace the pin. Some modifications were needed for the shoulder bolt used, thinning the head and cutting off some threads for clearance. The parts purchased were a new eyebolt, a stainless steel shoulder bolt (10mm shoulder diameter, 10mm shoulder length, M6 threads) and two shielded stainless steel flange type ball bearings, 10mm ID, 15mm OD X 4mm width (includes 0.8mm flange). Not shown are a couple of washers used, a 2mm thick washer is used between the eyebolt and linkage arm to duplicate the width of the shoulder on the original pin, there's also a spacer washer on the other side.

The use of ball bearings seemed like a good idea at the time to prevent further wear but I'm not sure if the small bearings will hold up over time, the location of these parts are in an environment that gets very hot so it's a pretty harsh environment for any parts, we'll see how it goes. I did recently purchase the custom made pin for this repair from Joshua Fletcher as a backup if these parts fail, the pin is solid, simple and should be very reliable. He's on Facebook at group Acura RDX owners (stock or with mod's). Sure appreciate the effort on his part to create a replacement part for this repair. This repair can save a ton of money and headaches from not having to replace the turbo itself. I have experience with Mitsubishi turbos from owning a Volvo for many years. The Volvo turbo in the car I had didn't have the variable flow control flap but it is a similar Mitsubishi turbo and they're very reliable and long lasting in the Volvos.

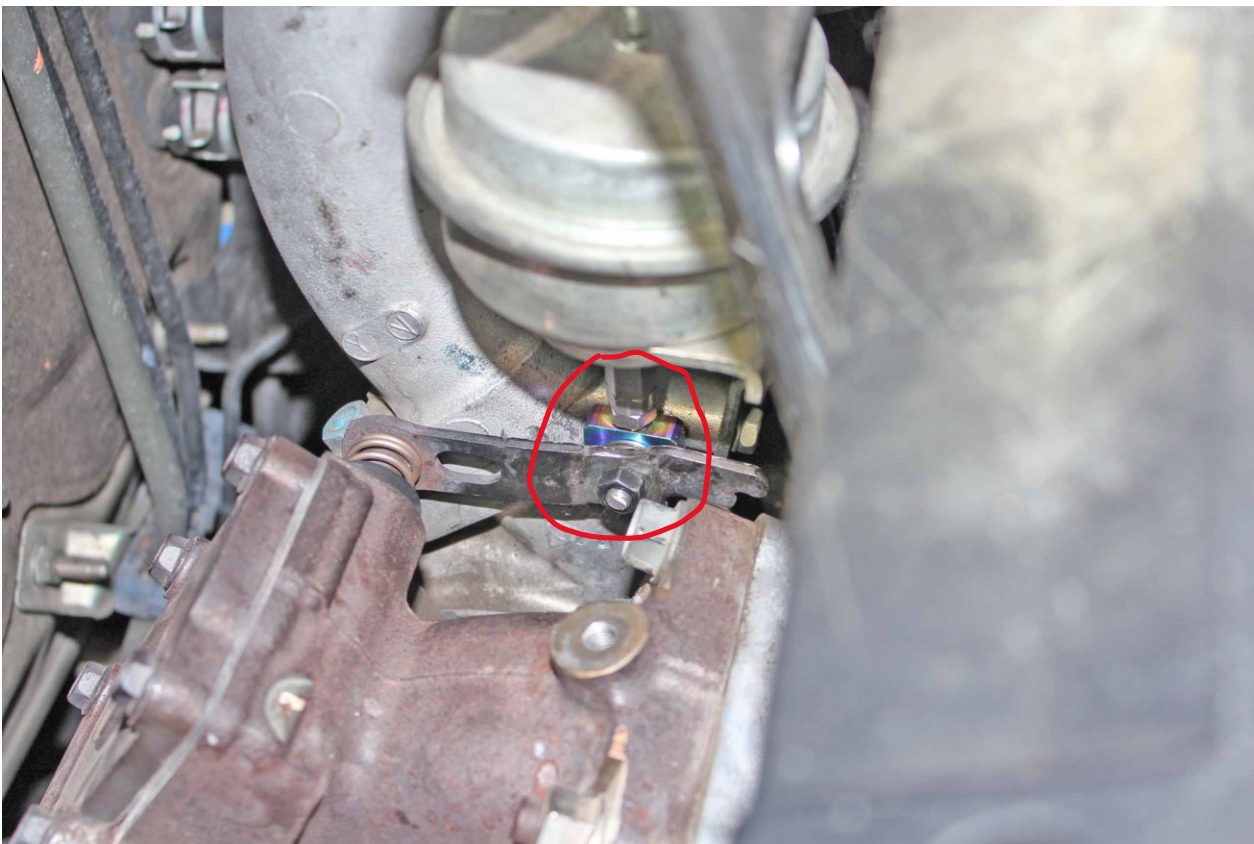


Above, new eyebolt, shoulder bolt and ball bearings for repair. Shoulder bolt head is cut down for clearance and flats ground on the head for a holding wrench. Some thread length was shortened for installation and clearance.

Prior to cutting shoulder bolt to length.



New parts installed. I did have problems using a wrench on the inside of the eyebolt to hold the shoulder bolt from turning when tightening the nut. I should have removed the curved top outlet piece to get better access to the bolt head with the wrench. Only two nuts to remove outlet tube but you should have a new gasket on hand to replace for reinstall.



Here's the nicely made pin I just received from from Joshua Fletcher, Facebook group Acura RDX owners (stock or with mod's). This custom made pin is available through Joshua and he includes red threadlocker and some high-temp lubricant for a good repair.

