Having replaced the worn eyebolt and pin on my RDX to fix a P2263 code I was thinking of a way to overcome the worn pin problem when replacing the eyebolt so the pin doesn't need to be replaced as well because replacing the pin with turbo still in the car makes the job far more difficult. The pin is 15mm OD and at 170K miles on my car the variable boost linkage pin had about 1.75mm of wear. The eyebolt had approximately 2mm of wear so replacing the eyebolt would still leave about 1.75mm of play at the pivot point. This may not generate a code but what if you could also get rid of this play too without replacing the pin.

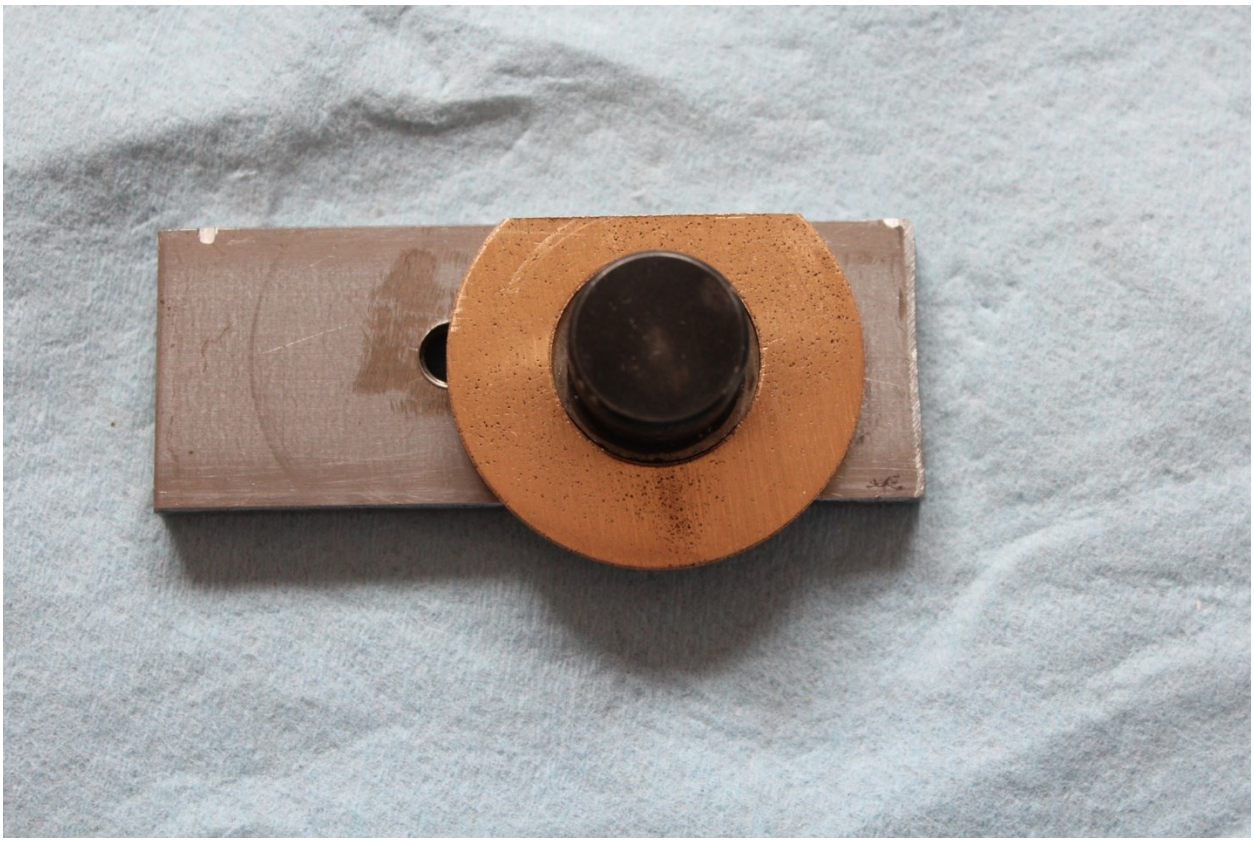
The idea I have is based on the fact that most of the pressure and wear on the pin and eye bolt is at the bottom of the pin and eyebolt. The wear in the bottom location of the pin and eyebolt is due to the actuator pulling up on with a strong internal spring force to hold the variable flow exhaust flap closed under low speed, low exhaust flow to spool the turbo faster. I think the spring-loaded force is strong to counteract the flap being pushed open from pressure of the exhaust flow. Under most conditions it appears the actuator is moving or holding the flap in position using internal spring force to offset the exhaust pressure flow on the flap. Most of the pressure on the pin and eyebolt is on the bottom side as the actuator is pulling up against the natural force of the exhaust to open the flap and why all the wear is on the lower areas of the eyebolt and pin.

When replacing the eyebolt there's still slop in the linkage pivot point due to the pin being worn too. To overcome the pin wear without replacing the pin I had this idea.

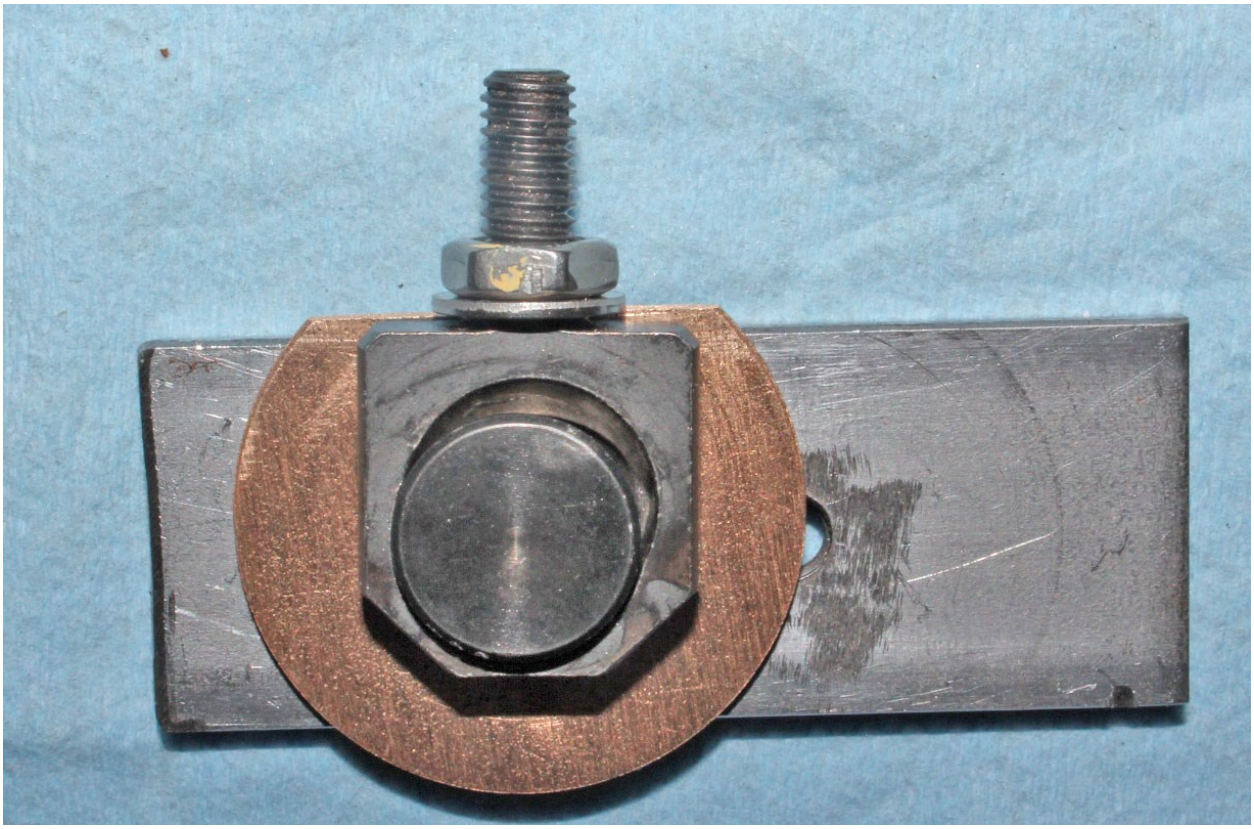
There's an 18mm OD 2mm wide flange on the inside of the pin next to the linkage arm and this flange can be used with an off-the-shelf 18MM ID 2mm thick bronze thrust washer to take up the downward play due to the worn pin.

The 2mm thick thrust washer with an 18mm ID can be installed over the pin flange and in between the eyebolt and linkage arm. The one modification needed to the thrust washer is a measurement and cut to the washer to provide an edge for the actuator arm (nut and washer) to push on the thrust washer flat during the downward stroke. The cut to the washer is based on the pin wear and the location of the top edge of the eyebolt with the eyebolt positioned it the upper most position, where the eyebolt bottom is contacting the pin and all the gap between the worn pin and eyebolt is in the upper most position.

Here the washer is installed over the pin flange before the eyebolt is installed. The actuator will push down on the thrust washer top flat section and move the linkage arm downward. The rectangular metal piece shown is used to represent the turbo linkage arm (not the same size). See next page for more details.



With the thrush washer flat cut based on the amount of pin wear and eyebolt positoned as shown; the nut and added washer on the eyebolt threaded will push on the flat of the thrust washer so the play from the worn pin and between the eyebolt and pin doesn't change on the downward stroke of the acutator. The thrust washer pushes directly on the pin flange and rotates as the linkage moves up and down. The reason I think this will work over the long run without much wear is because there's not a lot of pressure on the thrust washer or flange area during the downward stroke, the exhaust pressure naturally opens the flap and not much force or pressure is required by the actuator on the downward stroke to open the flap. Washer flat cut is marked with the eyebolt in place on the pin and in the uppermost position so the pin contacts the bottom of the eyebolt and any wear will show up as a gap in the upper pin and eyebolt location as shown below. The thrust washer and nut/washer holds the eyebolt in this position to keep the pin wear and gap from creating slop during the downward stroke. Washer flat should be measured and cut so the top edge of the eyebolt is flush with the flat portion of the washer with the eyebolt position up against the bottom of the pin with all wear gap above the pin as shown. Not sure if the bottom area of the thrust washer needs to be trimmed for clearance.



It there is any binding the thrust washer thickness may need to be filed or sanded down a slight amount.

Shown is the added washer, 11mm OD installed below the adjustment nut of the eyebolt. The existing jam nut should be hand tightened against the washer flat and held in this position when the actuator barrel adjusting nut is locked in place with the nut. The nut should just take up any play between the washer and washer flat. On the downward stroke the acutator pushed down on the top of the thrust washer which transfers the force through the inner flange of the pin so no play on the downward stroke. The upward force of the actuator rod will still be the eyebolt in contact with the pin. Adding high-temp dry lube should help prevent future wear. I haven't actually tried this idea out but I think it should work as long the washer is cut in the proper location and there's no binding in the pivot point.

Parts needed, 18mm OD x 2mm thick thrust washer McMaster Carr part number 2011N123 and an 11mm OD M6 washer. 11mm M6 washer McMaster Carr part number is 98689A115 . Thrust washer marked and cut using a hacksaw based on pin wear and files or sanded as needed for best fit. Thrust washer purchased is shown after the needed flat cut was made. Pin shown for reference and a larger 12mm OD washer is shown in the photo(not used). Only the two parts needed.