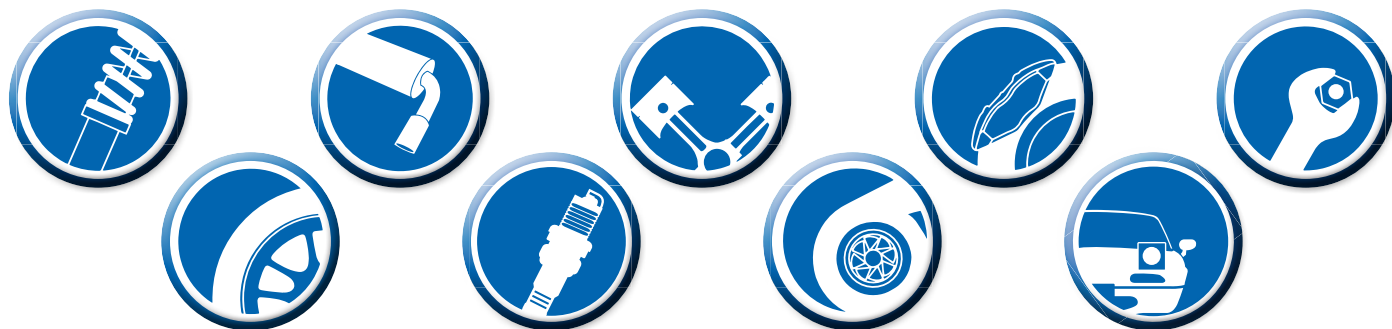




THROTTLE LINEARIZER, 1990-93 04-96110



Flyin' Miata

Thanks for purchasing our throttle linearizer. If you have any questions during installation or suggestions for improvement to the product or the instructions - please don't hesitate to call or email.

WARNING: Not everyone can perform every installation. It is critical that you be honest with yourself in regards to your ability. We're more than happy to help, but there are only so many things we can do from the other end of a phone / computer. If in doubt, discuss the install with us before you dive in. Improper installation could cause injury and / or death!

Required tools:

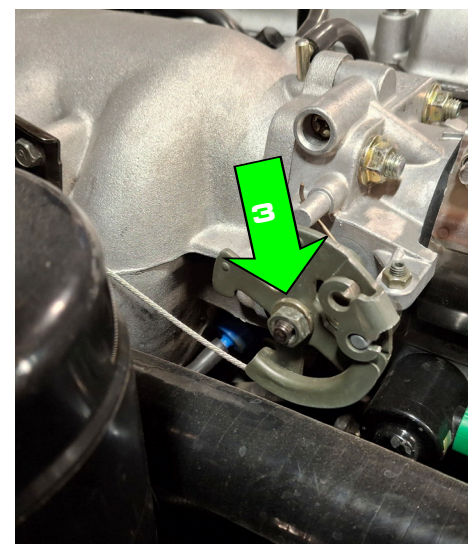
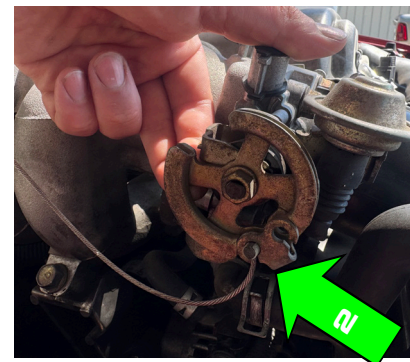
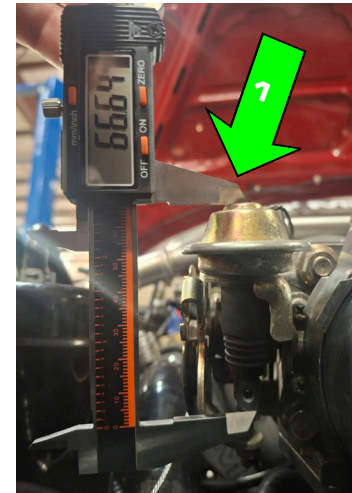
- Metric tool set
- Caliper (recommended) or rule
- Chrome (thin-wall) 12mm socket
- 7mm deep socket or wrench
- Blue Loctite
- 2.5mm allen key

1. Before you begin;

We are going to be measuring the current damper resting length, and replicating that length with the new wheel installed. This is typically easier than the Mazda Factory Service Manual (FSM) procedure.

We have listed the out the Mazda FSM procedure at the end of these instructions in case you prefer to follow those. Note that if you do not get a measurement before disassembly, then you will be required to follow the FSM method.

2. To measure the damper screw's original position, measure the distance between the top of the body of the throttle damper and the resting position of the tip of the damper. This is most easily done by using a set of calipers. Rest one of the calipers' blades on the top of the damper, and open them until the bottom blade is lined up with the bottom of the damper as it sits at rest, with the throttle plate fully shut (1). Lock the calipers in place, typically done by tightening the adjustment screw near the caliper's display, so you can easily remove the calipers without sliding the calipers. Write this dimension down, or snap a picture of the calipers, as we will need this to set the new throttle wheel position, or you will be forced to use the Mazda FSM method. Note, do not use the measurement shown here, as this is specific to our vehicle, and an inaccurate setting may cause the car to stall when lifting throttle.
3. Now we can proceed with disassembly; Manually rotate the throttle wheel clockwise until you reach the stop. This will give slack on the throttle cable, allowing you to line up the cable end with the slot in the throttle wheel, so you can then slide the barrel end of the cable out of the wheel (2). With the cable removed, you can return the throttle wheel to the closed position.
4. Use a 12mm socket to remove the nut and lock washer from the original throttle wheel (3).
5. Remove the original throttle wheel. It may take rocking it



back and forth to work it off the stud.

6. Install the included bracket on the linearizer as shown (4) with the two included countersunk screws using a 2.5mm allen key, adding a bit of blue loctite on each screw. Once the bracket is installed, line it up with the bracket on the original throttle wheel. Install the included bolt (5), and screw it in until it is even with the height of the corresponding bolt on the original throttle wheel. Don't worry about getting it perfect now, we will adjust it once it's installed. Thread the included jamnut up from the bottom of the bolt but don't cinch it down just yet.
7. Install the throttle linearizer onto the throttle body stud as shown. Ensure the linearizer is fully seated onto the stud. Install the original lock washer and nut and using a chrome thin-walled 12mm socket to tighten down until the lock washer becomes flat. Do not exceed 12 lb-ft, or you can casue damage to the stud. If you don't have a suitable socket, an open ended 12mm wrench can be used instead.
8. Manually rotate the throttle linearizer to the full throttle position. Position the cable to allow the barrel of the cable end to slide into the linearizer. Ensure the cable rests in the groove of the linearizer as you return the throttle to the closed position.
9. Now that the new wheel is installed, we can turn the adjustment to match the dimension we pulled in Step 2. Verify with your caliperes once again to make sure the dimension matches. Once the adjustment scew on the new throttle wheels matches the relative location of the original screw, **make sure** you tighten the jam nut underneath the bracket!



Mazda Factory Service Manual (FSM) Procedure for Adjusting Dashpot:

This is Mazda's official proceedure for adjusting the dashpot, directly from the Factory Service Manual:

1. Open the throttle valve fully. Push the dashpot rod with a finger and verify that it goes into the dashpot slowly.
2. Release the rod and check that it comes out quickly.
3. Replace the dashpot if necessary.
4. Warm up the engine and run it at idle.
5. Connect a tachometer to the engine, and increase the engine speed to 4,000 rpm.
6. Slowly decrease the engine speed and check that the lever touches the dashpot rod as specified; Specification: $2,500 \pm 150$ rpm
If not as specified, loosen the locknut and turn the adjusting screw to adjust.
7. Fine tune the adjustment of the bracket screw to ensure the screw slightly compresses the dashpot at resting position. This ensures the throttle does not close too abruptly, which can lead to stalling the engine.
8. (Note from FM:) Once you have the dashpot screw adjusted, make sure to tighten the jam nut underneath the bracket! This is imperative to make sure the adjustment bolt does not loosen and cause the throttle to stick open.

Checking your throttle cable adjustment:

1. The required cable deflection is 1-3mm. That means the cable should move 1-3mm perpendicular to the cable's span between the bracket on the intake and the throttle wheel. Be sure, as you're checking your cable deflection, not to pull on the cable so hard that it opens the throttle wheel. It only takes light pressure. Also, be sure not to adjust your cable to have zero deflection, as that may result in your throttle being cracked at idle, potentially causing problems.
2. If your cable needs to be adjusted, use a 12mm wrench to loosen and tighten the nuts on the cable sleeve (3). Shift the cable sleeve end toward the throttle wheel to loosen the cable and shift the cable end away from the throttle wheel to tighten the cable. After each adjustment, recheck your cable deflection to ensure it's correct.

