

# Checking Out a Used NA or NB Miata

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Here are some things to look for when checking out a used NA (1990-1997) or NB (1999-2005) Mazda MX-5 Miata. This article attempts to call out generation-specific items. Assume that the advice applies to both generations if not noted otherwise.

Items to bring along: flashlight, Phillips or “Japanese Industry Standard” (JIS - better fit than Phillips) screwdriver, a ground cloth to lay on while peering at the underside of the car, something to clean your hands with and, if available, a car-knowledgeable friend.

## FRONT END

Start with the front end and lay on the ground on your back (use a floor mat or the ground cloth to keep clean), stick your head under the front bumper and look up at the structure behind the bumper. Use the flashlight to help you see under here. You are looking for bent metal, evidence of paint overspray in the wheel wells and coil springs, missing pieces, etc. Painted front tie-downs are a telltale sign of a cheap respray possibly from collision repair. If they have not been removed, they should be black:



All of the above items are evidence of serious accidents. Unless there is a severe shortage of used Miatas in your area, reject any that show damage. While under there, have a look around for evidence of oil leaks, shock absorber leaks and bent suspension. Ask if the car has been wrecked. Many people will lie about this until you point out evidence of the damage.

## REAR END

Repeat the above for the rear end of the car. Check the shocks, axle boots, differential, exhaust system and the metal forward of the rear bumper. Look forward at the driveshaft and transmission, looking for leaks and bent pieces. Check the rear suspension for bent pieces. Check the floor pan and rocker panels for large dents and for rust if you are in an area where rust is a problem. See section below about rust.

Ask if the car has a salvage title. The traditional opinion on salvage title is to stay away from any that have them. Cars with salvage titles are hard to insure and finance and are worth about 50% of a non-salvage title car. Many are bought at auction and repaired by people who do a less than professional job. If you have any doubts about the car or its title, go elsewhere. Counterpoint to the traditional opinion is that you must consider

the value of the car you are buying and how long you intend to keep it. Today, a used NA or NB can be a total loss to insurance very easily, even if there is only cosmetic damage. If the car is mechanically sound, purchased back from the insurance company and repaired, it will have a "branded" or "salvage" title. It will likely not be insurable for anything but liability and the value will take a hit. If you plan to keep the car a few years, the loss in value cannot be much on a car that cost less than \$4k to begin with. However, it is advisable to get a pre-purchase inspection on any salvage title car you are considering.

Using the flashlight, peer through the wheels into the brake calipers. Try to determine how much pad is left. It is sometimes difficult to see just how thick the pads are. It helps to move the car a little to see around the spokes. Are the rotors scored? It's good to know if you'll be replacing pads and/or rotors soon after purchase. Research the cost for pads and rotors for the car you are looking at.

## TRUNK

**NA:** Open the top of the vertical fabric panel on the rear of the trunk area. The little round plastic thingies come out easily if you use a fingernail to lift the center piece first and then pull out the whole fastener. Look behind this panel for evidence of bodywork, bent panels, etc. Check down in the jack well on the left for water/rust. The outer skin just above this area is unprotected from junk in the trunk and you can get dents from the inside. Many Miatas have an aftermarket panel bolted in here to protect from this. Check here for signs of repair. Don't be afraid to remove the spare tire and look under/behind the area where it sits. Check the battery on the right side of the trunk. Ask if it has been replaced. It should be a sealed battery and should not have been replaced with a lead acid (normal) battery. There should be two rubber drain tubes attached to the battery and leading down and out of the trunk. Check the area for signs of acid corrosion. If it has been replaced with a lead acid battery, plan to spend the money to put the correct battery back in. The long-term effects of the acid in your trunk can be expensive.



**NB:** Similar to above except the spare tire and battery will be down below the bottom liner.



## INTERIOR

Check for signs of unusual wear. Miata interiors are fairly rugged. Black fabric seats will fade if left in the sun. Look for wear on the driver's seat bolsters where your backside rubs as you get in the car. Check the clutch and brake pedal pads. Do they look like the right amount of wear for the car's mileage?



Check the door sill near the certification sticker for another sticker that tells of a replaced speedometer and if available, check the owner's manual and warranty manual for notations of a changed speedo. Sometimes this info is scratched into the paint near the certification sticker. Most states require the installer of a replacement speedometer to make notification in one or more of these places. Ask the seller if the speedo has been changed or if the odometer reading is known to be inaccurate.

## OEM MAZDA RADIO

**NA:** If applicable (few still have the original working radio) ask the seller(s) if they have the security code for the radio. Ask if it is slow to come on when the car is started means that the radio has to come out for a repair. Try all controls and check all lights. Check general appearance. After you have seen a few Miatas, you will know what a good one looks like. Also check operation of the power antenna if so equipped. These have a tendency to fail.

## CONVERTIBLE SOFT TOP

Inspect the top carefully. Look for wear spots on the underside. If the top has a zipper above the rear window, check its operation. ALWAYS unlatch the top from the windshield header and lift it a little before operating the zipper. This removes tension. If it has a plastic window, check it for scratches and brown spots. If you find brown spots, the window will soon become opaque and will require replacement.



With the window unzipped, lower the top. Does it go down smoothly? Raise the top. ALWAYS zip up the window before clamping the top to the windshield header. Learn this sequence. Does the top latch easily to the windshield header? Check the exterior of the top for wear, cracks, tears, etc. Tears and window separation can be fixed temporarily but the only real fix is replacement. Many NA and some NB original tops have been replaced due to wear. Some NAs may have a newer style top with a glass rear window or a non-zippered window. Quality of replacement tops vary. New tops range in price from around \$200 to over \$600 for a top-of-the-line Robbins with glass defrost zippered window. Installation can run \$300-500 depending on the area you live in. Figure these into the cost and negotiations if they are bad and you decide to buy the car.

## HARD TOP

Some NA and NB Miatas were purchased with matching factory hard tops. This fits over the folded soft top, providing a third option in addition to the usual top up and top down arrangements.



Later examples included headliner and window defroster while some early ones were more basic. They connect to the car using the two "Frankenstein" bolts on the rear deck, two side latches near the seat belt retractor, and the two latches that the soft top uses above the windshield. The hard top is interchangeable between NA and NB although some need latch modifications; more info here:

<https://www.miata.net/garage/hardtop/> (Note that the car shown above has non-original tinted glass.)

## BODY

Inspect the body panels. Are they smooth and do the gaps/seams match well? Sight down the sides of the car in bright light. Do you see any ripples, roughness or other signs of body repair? If possible, check the paint under fluorescent light. It will show sanding marks and other signs of body and paint work.

How good is the paint? Do some of the painted panels look fresher than the others? If they do, the car will be two shades of the color after a few years of fading. If you find some discrepancies, ask again about accidents. Inspect the door sills for overspray; check the black rubber parts next to the paint for overspray. All are signs of a repaint which likely means an accident. Most NA models have a black painted section along the rocker panel. Body color rockers indicate a respray and possible repair. Unless the car you are looking at is a '96 M-edition (Starlight Blue), '97 M-edition (Marina Green), a '96-97 Montego Blue car, or '97 STO (Twilight Blue), all of which have body-color rockers. The plastic bumper covers and rear finish panel (between the tail lights) tend to fade more quickly than the painted metal parts of the car.

All metallic color cars and a few of the solid color cars were painted with clear-coat. If it fails and becomes cloudy or flakes off, the only repair is new paint. Faded solid color cars (Classic Red, Mariner Blue, white) can usually be restored to original shine with a dual-action polisher and compound followed by polish or wax.

## RUST

The worst enemy of used Miatas is rust. The most likely locations are the rocker panels and fender arches, although it can appear elsewhere. On the NB, also look for front frame rail rust (photos below.) For rocker panels especially, by the time it appears externally there is likely significant rust in the underlying structure and repairs can be very costly. Check the door sill areas and rocker panels for signs of rust. Look for little bubbles in the paint. If the car has metallic door sill plates, ask if you can remove them to look for rust. You will need the Phillips or JIS screwdriver for this. You can also look for poorly done rust repair using a magnet in these areas. The hood is aluminum but everywhere else a magnet should stick. If there's rust it WILL get worse.

### EXAMPLES OF BODY PANEL RUST:







EXAMPLE OF A BAD REPAIR JOB:



NB FRAME RAIL RUST



NB FRAME RAIL INTACT (NO RUST)



## SUSPENSION

Miatas use springs and shocks. While springs likely never wear out, shocks, shock mounts, and bump stops DO wear out. Replacement of aged suspension parts can improve handling and ride quality significantly. In some cases the driver can feel a failing shock, especially someone familiar with Miata handling. If small road imperfections are spine-jarring, the upper mounts (aka “top hats”) have likely collapsed. Check for this by looking under the hood. If the front are collapsed it is likely the rear are also and all four should be replaced together along with worn shocks.

COLLAPSED SHOCK MOUNT ON LEFT



Photo credit: Flyin' Miata

COLLAPSED SHOCK MOUNT CLOSE-UP



Miatas rely heavily on bump stops when cornering. This is a cushioning component that sits atop the shock body and slides up and down the rod, eventually being compressed when the car's weight is transferred to that corner of the car.

**NA:** OEM bump stops were rubber and have all aged out of their useful service life. Many have completely disintegrated. New bump stops are made of superior materials. These can be visually inspected by looking behind the wheel at the top of the shock absorber body. If there's nothing there, or only a thin disk, bump stops are needed.

## ENGINE

Check for general cleanliness, oil leaks, and missing parts and inspect the area around the radiator and headlights for signs of accident damage. Also look for leaking coolant. Ask when the timing belt was last changed. It is due at 60K mile intervals although it can reasonably go 90K without significant concern. Ask if the spark plug wires have been changed; many go bad at about 30K miles.

Consider doing a compression check if the car has very high mileage and/or is running unevenly. You can do it yourself if you have the tools and a compression gauge or you can pay a shop to do it for you. See note about PPI below.

Pull the oil dipstick Be aware that the dipstick handle is often broken off on NA Miatas. If not, handle with care! Check the oil for visible contaminants. It should be clean but it will darken as the miles add up since the last change. If you see metallic particles sparkling in the oil, stop now and leave. Ask when the oil was last changed. Ask to see maintenance records, especially of oil changes. 3K intervals are great; up to 7.5K intervals are OK. Longer intervals or no records, not so good. If they claim frequent oil changes but have no records, you will have to decide whether to believe them or not.

If the car has an automatic transmission, pull the dipstick and check the cleanliness of the transmission oil. Smell the oil when the transmission is hot. If it smells at all burnt, walk away and find another. If you see sparkling metallic particles, walk away.

NA 1.6L ENGINE



NA 1.8L ENGINE



NB 1.8L ENGINE



Check the fan belts for cracks and obvious wear. Grab the water pump pulley with both hands and rock it back and forth to see if there is excessive wear (unlikely on most Miatas). Be careful; it might be hot. Inspect the brake and clutch fluid reservoirs for proper level and color of fluid. If it is very dark and dirty looking, plan on repairs in the future and get the fluids changed as soon as you buy the car. Check the power steering fluid reservoir for level and leaks. Check the air conditioner compressor for oil leaks.

Look at the plastic top of the radiator. It should be black as in the example photos above. If it is brown in color, it is likely brittle from age and heat cycling. There have been reports of these brown radiator tops failing with cracks or bursts so be aware that the car may need a new radiator. Cost is under \$100. If the top is olive colored, it is between black and brown.



**NA:** With the engine cool, feel below the crank angle sensor (CAS) which is on the passenger side on the 1.6L and the driver side on the 1.8L (for left-hand-drive cars).

#### 1.6L CAS LOCATION:



## 1.8L CAS LOCATION:



If there's an oil leak below the CAS, the heater hoses (1.8) or water plug (1.6) are on the way to failure. There is an O-ring to repair this which is inexpensive but may require replacement of the valve cover gasket also. Have someone start the car while you watch the exhaust pipe. Look for smoke. In general, a white cloud indicates water in the cylinders from a leaking head gasket or cracked block. If it pumps out great clouds of smoke, thank the owner politely and leave.

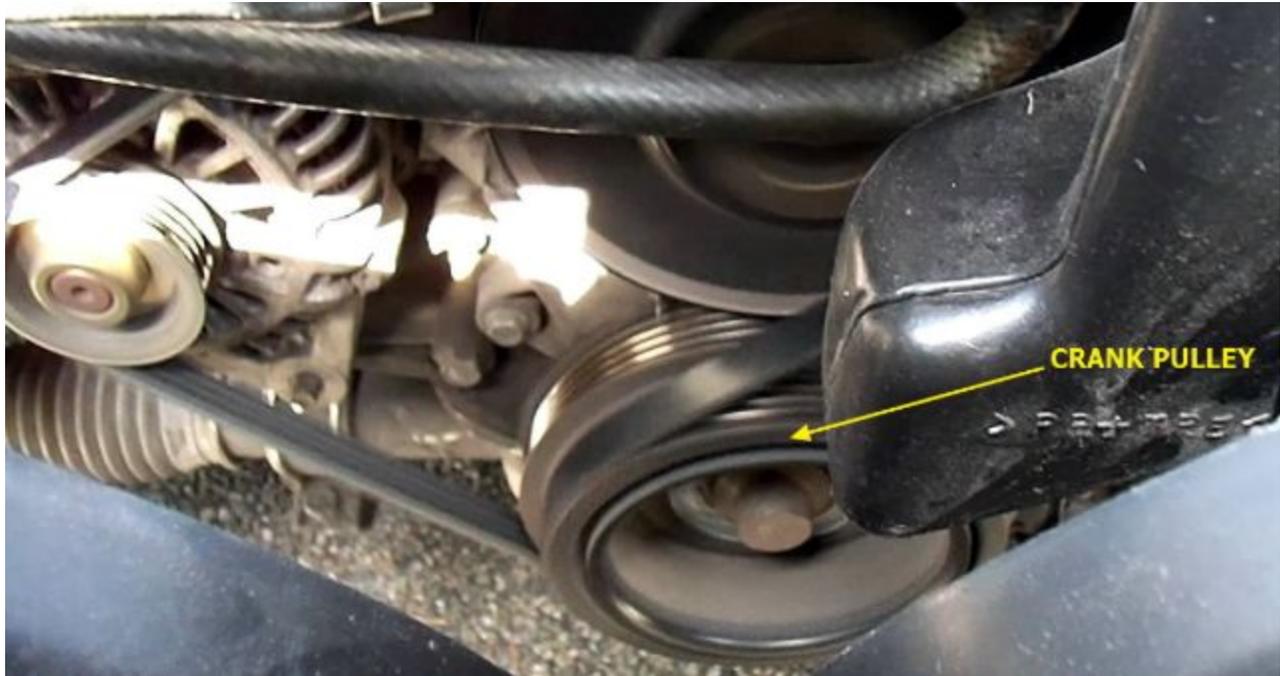
Go back to the front and listen to the engine. Listen for knocks and any unusual sounds. If you are not familiar with the noises engines make, bring along your favorite gearhead friend to help. **NA:** 1.6L and 1.8L engines in the NA Miata have become somewhat notorious for varying degrees of hydraulic lash adjuster (HLA) tick. This is casually referred to as "lifter tick" within the community. Some never do it, some do it when cold, others when warm, some only when it's time for an oil change, and many are unpredictable as to when they will tick. It is not considered significantly harmful but it is annoying to most owners. Often an engine will stop ticking with the right oil, filter, or combination of the two. There are many Miata.net discussion threads on this topic where possible solutions are recommended and debated. If the car you are inspecting has a tick that corresponds to engine speed and is not persistent, it is likely HLA tick. More info here:

<https://www.miata.net/garage/hla/index.html>

Turn on the A/C and check to see that both electric fans behind the radiator come on. Listen to the sounds that start when the A/C compressor comes on. Loud knocking probably means replacement of the compressor. Squealing sounds generally mean the belt is too loose. Some Miata A/Cs whistle a little, and that is generally not a problem. Check to see if the A/C blows cold air. On a hot day, you should feel cold air at the vents within 30 seconds. If it takes much longer, there may be a refrigerant leak to fix and a recharge of R12/R134a.

Once the engine is warmed up, grab the throttle valve and rev the engine slowly up, listening for knocking sounds that come on at a certain rpm levels and fade away. Early signs of rod and main bearing wear will show up here. Does the engine idle smoothly without shaking from side to side?

There have been reports of crankshafts failing in the 1990 Miata as well as some 1991 Miatas (VIN ending 209446 and lower). It is nearly impossible to check for cracking in the crankshaft without taking things apart, however you can inspect the crankshaft pulley to see if it is wobbling when the engine is running. A wobble could indicate a failed crankshaft or a worn keyway. Low speed loss of power and hesitation can also be a symptom, though that may simply be worn ignition wires or in need of proper timing.



## MODIFICATIONS

There are many ways people can customize a Miata, some good and some not so good. The value of these alterations can be debated. Some are reversible while others are more permanent. If you are looking at a modified car, do the research on that mod, the brands of products used, etc. You will be inheriting someone else's project so it will be good to know if they used quality components, installed things correctly, etc. Hopefully they have some documentation to go with the mods. This list cannot cover all the various modifications that might be out there. Buyer beware.

## TEST DRIVE

Start with the top up, windows closed and the radio off. This minimizes the wind noise and allows you to better hear the mechanical noises. Again, if you are not familiar with these sounds, bring along your gearhead friend. The Miata is a fairly noisy car with the top up. With it down, the wind noise drowns out the mechanical noises. You will hear whirring sounds from the rear which are usually tire noise. Listen for the sound of dry bearings grinding away. If it changes with road speed, but not with engine RPM as you change gears, it is probably the rear wheel bearings or the differential. Listen to the sounds of the transmission as you go through the gears. High-pitched whining noises in one or more gears are indicative of bad bearings in the transmission. Be sure you try out the reverse gear as well.

Note: We are leaving out the automatic transmission as most enthusiasts are not familiar with automatic transmission Miatas and have minimal experience as to normal shifting behavior.

With the car stopped, set the handbrake. Does it feel solid? It should go up about 3 inches. If you feel it hit a solid stop at the top, it is either maladjusted or the rear pads are worn out. Gently try to move the car with the brake applied. Does it seem to hold?

Is the clutch smooth on engagement? Any slippage? Go up and down the gears several times. Any sound or feel of bad synchronizers? Is the acceleration about right (you will have to drive several to get a baseline for this comparison)? Try the brakes. Do they have a solid feel? Does the car stop straight? Do you feel pulsations in the brake pedal? On a deserted road or large parking lot, make some quick left and right turns. Does the car feel solid or does it wallow back and forth?

**NB:** 2001-2002 had an issue with clutch shudder on cold take-off. There is a service bulletin for this. More info: <https://www.miata.net/garage/tsb/sb05-002.02.html>

At about 15 mph in 1st gear, get on and off the gas quickly several times. Do you feel or hear any slack in the driveline? Drive about 45 mph in 5th. Disengage the clutch, rev the engine about 2K above what it was doing and pop the clutch. If the engine immediately drops back to the original rpm area, the clutch is probably good. If it comes back slowly and the car sounds like it has a slipping automatic transmission, you have the first signs of clutch slippage. Be gentle--it's not your car yet and it is easy to cook the flywheel doing this!

Drive at 60, 65, 70 mph and whatever speeds you can safely do under the conditions. Miatas are infamous for the 65 mph shimmy. Check for this. It can be reduced or eliminated with properly balanced wheels; sometimes new tires are also needed if they are old. Does the car wander or follow the longitudinal grooves in the road? Does it feel controlled over bumps, or does it wallow like an old Buick?

While you are driving in stop and go traffic, does the engine stutter, misfire, bog down after a shift? All are signs that the plug wires need replacing, or worse.

NB: Immobilizer system failure has become an increasing issue for NB2 (2001-2005) models. It is an internal failure and as of this update, parts are scarce. The immobilizer unit ECU are paired for life. Mazda is rumored to be working on this problem.

#### PRE-PURCHASE INSPECTION (PPI)

If you have ANY concerns after doing your own inspection, paying for a pre-purchase inspection at a local shop may be worthwhile. Usually they charge an hour of shop time and will check every major system, providing you with a concise run-down of anything the car will need. You can ask them to focus on a particular area if there's something you are concerned about. Handy to have as a new owner and also useful for bargaining. If the seller balks at this, that's an obvious red flag.

#### SUMMARY

All in all, the Miata is a well built, tough little car with an excellent reliability record. If the car has had good care and maintenance, it will give you good service. If you suspect the car has not had good care, pass on it and find another. If you have been reading the Miata.net forums for a while, you are aware of the few problems that Miatas have. Also, check the Garage section which includes information covering all the wear/maintenance/problems/rattles etc. of the Miata. The above may be overkill for many people, especially if you are looking at low mileage cars. If you are not mechanically inclined, bring along that gearhead friend to help out (if he/she really knows what he/she is talking about). If you don't have a gearhead friend, find a local Miata club and ask if they have someone who will help you evaluate your possible purchase. Most enthusiasts love helping others become Miata owners.

## FIRST STEPS AS A NEW OWNER

After you have found and bought that perfect (for you) used Miata, do the following:

Change the engine oil now and at 3k intervals. Check and replace the air and fuel filters if needed. If the antifreeze has not been changed recently, change it and use a 50-50 mix of a good quality antifreeze and distilled water.

If the car has high mileage, consider changing the transmission and differential fluids. Motorcraft, Redline, Mobil1 are forum favorite fluid brands. It would also be a good idea to change the brake and clutch fluids as well, especially if they are dark and dirty. Do any other maintenance per the owner's manual. If the timing belt has not been changed and is between 60K and 90K or equivalent later interval (ie 120K, etc.), do it now. Clean and detail it (the previous owner probably didn't keep it as clean as you want your new baby to be), and then give it a coat of polish and/or wax.

Then, enjoy the Miata experience.

Skip Cannon and other Miata.net forum regulars

## FOR REFERENCE

### VIN Locations

Front of driver's side dash, in windshield

Door jamb next to strike plate (both sides, sticker)

Door next to latch mechanism (both sides, sticker)

Fire wall (1/4" tall stamped letters on welded plate)

Hood (sticker)

Front fenders

    NA: in water run-off gully (both sides, sticker)

    NB: rear edge of the fender where it meets the door, viewed with the door open (both sides, sticker)

Inside front bumper, passenger side, just under turn signal (sticker)

Trunk (sticker)

Inside rear driver's side fender just in front of bumper, under gas fill hose (sticker)

Passenger side of aluminum oil pan (riveted metal plate)

PPF, top side roughly in the center (stamped letters)