

## Mazda Repairs

### Front end

1. Loosen lugs. Jack up front end on jackstands, make sure high. Secure rear wheels
2. Remove driver side wheel (21mm), place under car
3. Spray everything with PBblaster. Do it again.
4. Get bottle of vinegar for rusty hardware not being replaced

#### 1) CV Axle:

- 14, 32 mm socket
- Flathead screwdriver
- Breaker bar
- Torque wrench
- Pickle fork (autozone)
- Seal puller
- Hammer
- Rubber mallet
- Prybar
- Drip pan
- Penetrating oil
- **Cv axle**
- **Spindle nut 32mm**
- **CV axle c clip**
- **Tie rod cotter pin**
- **Stabilizer links**

1. Unplug ABS wheel speed sensor
2. Unindent axle nut on hub with flathead and hammer
3. Wedge big prybar onto lugs, unscrew axle nut (32mm socket) **USE BREAKER BAR**
4. Spray splines & ball joint nut again
5. **ONLY IF NEED** Remove tie rod (14mm), may need hammer.
6. Remove stabilizer bar link & ABS bracket (14mm & allen)
7. Go to **lower control arm step 1** ↗
8. Reverse old axle nut on bolt, hammer cv joint inwards and pull hub out. Be careful of brakeline, might be good to disconnect
9. Place drip pan. Insert fork onto tranny side cv, hammer until pop out. Can also use prybar to pop out.
10. Pull seal with seal-puller if need. Replace by hammering with large socket.
11. Line up and insert outer end into hub. Hand tighten axle nut.

#### 2) Front lower control arms:

- 14, 17, 19 mm
- Flathead screwdriver
- Breaker bar
- Torque wrench
- Pickle fork or balljoint remover (autozone)
- Hammer
- Prybar
- Wirebrush
- Penetrating oil
- Loctite
- Jack for engine swing
- **Balljoint pinch bolt/nut**
- **Lower control arm with balljoint**

1. Remove ball joint bolt (14mm). Use wrench on opposite to keep nut still.
2. Remove front (19mm) and rear (2x17mm) control arm mounting bolts as much as possible.
3. Turn wheel to left. Hammer flathead into balljoint pinch groove.
4. Either use pickle fork or hammer control arm downwards until balljoint is out. Turn wheel straight.
5. **SKIP FOR DRIVER SIDE.** Remove rear engine mount bolt (17mm). Pry or jack engine forward, remove pass. side front mount bolt for control arm.
6. Wiggle out whole control arm.
7. Wire brush clean mounting surfaces
8. Compare new and old parts to ensure correct fit.
9. ↖Go to **CV axle step 8.**
10. Insert new control arm. Loctite & hand tighten bolts & nuts. Rear bolts (17mm) require centering, use prybar.

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| 12. Grease spline with fluid, insert tranny side into tranny. Aim & hammer until clipped in. Might take a lot of force. Pull to ensure clipped<br>13. Go to <b>lower control arm step 10.</b> ↗<br>14. Fully torque axle nut to 200 ft/lb. Indent rim into groove.<br>15. Refill tranny fluid<br>16. Lower jack to suspend hub.<br>17. Go to <b>front struts</b> ↓ | 11. Pry/jack engine forward again for front mount bolt (19mm), loctite & insert.<br>12. Line up & insert new ball joint end into hub.<br>13. Lower & reattach rear engine mount bolt, loctite! (17mm, 80 ft/lb)<br>14. Jack balljoint into hub. Hammer down if necessary until it lines up properly. Loctite & insert pinch bolt.<br>15. Jack to ride height & torque bolts. Rears (77 ft/lb), front (110 ft/lb), balljoint bolt (43 ft/lb)<br>16. Reinstall tie rod end (14mm) & pin, torque (35 ft/lb).<br>17. ↖Go to <b>CV axle step 14.</b> |
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| <b>3) Front struts</b> <ul style="list-style-type: none"> <li>• 14, 17mm</li> <li>• Flathead screwdriver</li> <li>• Allen wrench</li> <li>• Breaker bar</li> <li>• Torque wrench</li> <li>• Needlenose</li> <li>• Brakleen</li> <li>• Loctite</li> <li>• Paper towels</li> <li>• Hammer</li> <li>• Rubber mallet</li> <li>• Wire brush</li> <li>• Penetrating oil</li> <li>• <b>Strut assembly &amp; hardware</b></li> </ul> <hr/> 1. Spray knuckle and all stuff with pb blaster, turn wheel left<br>2. Pry out brakeline clip & remove brakeline to side<br>3. Remove knuckle/strut pinch bolt (17mm). BREAKER BAR<br>4. Spray knuckle again, hammer knuckle down until strut is out<br>5. Remove 3 strut tower bolts & remove strut<br>6. Wire brush and clean inside of knuckle. Brakleen & paper towel to finish.<br>7. Insert new strut top first. | <b>4) Front brakes</b> <ul style="list-style-type: none"> <li>• 17, 21mm</li> <li>• 7mm Allen</li> <li>• Extension</li> <li>• Torque wrench</li> <li>• Wire brush</li> <li>• Paper towels</li> <li>• Pliers</li> <li>• Flathead</li> <li>• Mallet</li> <li>• <b>Brakleen</b></li> <li>• <b>Lithium grease</b></li> <li>• <b>Silicone brake grease</b></li> <li>• <b>New brake components</b></li> </ul> <hr/> 1. Remove wheels, turn hub outwards<br>2. Use pliers to remove spring clip<br>3. 7mm allen, remove slider pins on back. Pry off plastic<br>4. Remove caliper & outer brake pad, be careful of hose. Hang on coil to get out of way.<br>5. Unbolt caliper bracket, 2x17mm. Remove and set aside for cleaning.<br>6. Remove rotor. May need hammer the rotor itself.<br>7. Use brakleen on hub, wire brush. Clean bracket. <b>Lithium</b> grease hub<br>8. Brakleen new rotor surfaces, wipe off film. Mount on hub. |
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| 8. Loctite new top bolts, hand tighten strut<br>9. Align strut bottom with knuckle, watch back guide.<br>10. Jack knuckle upwards onto strut until bolt hole matches.<br>11. Clean pinch bolt, loctite, and reinsert. Torque to 54 ft/lb (17mm).<br>12. Reinstall sway bar end link & ABS bracket(14mm + allen). Torque 40 ft/lb.<br>13. Reinstall brake clip and tap in. ABS plug too.<br>14. Lower jack & tighten upper bolts (25 ft/lb).<br>15. Reattach wheels (87 ft/lb). Done! | 9. Remount bracket, clean bolts, loctite, torque to 75ft/lb.<br>10. Remove inner pad from caliper, clean caliper & pins. Silicone into pin holes<br>11. Use tool to depress piston<br>12. <b>Silicone</b> grease & mount outer pad into bracket. Brakleen pad surface<br>13. Clean & silicone new inner pad & mount. Grease piston seal as well.<br>14. Reinstall caliper, insert slider pins & torque 22ft/lb. Rubber caps.<br>15. Install new spring clips, hammer lightly, Brakleen rotor again in case<br>16. Depress brake couple times, recheck seating, done! |
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## Rear end

- Loosen wheel lugs. Jack up rear end on jackstands, make sure high. Secure front wheels
- Remove wheels (21mm), place under car
- Spray everything with PBblaster. Do it again.

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| <b>1) Rear coils</b> <ul style="list-style-type: none"> <li>14, 17mm</li> <li>Allen</li> <li>Torque wrench</li> <li>Breaker bar</li> <li>Wirebrush</li> <li>Penetrating oil</li> <li>Loctite</li> <li><b>Coilsprings</b></li> <li><b>Grease</b></li> <li><b>Rubber hose</b></li> <li><b>Sway bar end links</b></li> </ul>        | <b>2) Rear control arms</b> <ul style="list-style-type: none"> <li>17mm</li> <li>Prybar</li> <li>Breaker bar</li> <li>Torque wrench</li> <li>Ratchet extension</li> <li>Rubber mallet</li> <li>Wirebrush</li> <li>Penetrating oil</li> <li>Loctite</li> <li><b>Upper arms &amp; lateral links</b></li> </ul>                                                                           |
| 1. Unplug ABS clip<br>2. Remove both sway bar end links (14mm & allen), swing sway bar down<br>3. Jack up knuckle/lower control arm, then undo connecting bolt (17mm).<br>4. Slowly lower jack until spring is free. Spring will force arm out of knuckle.<br>5. Repeat 3-4 to other side.<br>6. Go to <b>rear control arm</b> ↗ | 1. Remove upper arm inner bolt (17mm). Need long extension<br>2. Remove outer bolt (17mm), hold away brake assembly. Pry out upper arm<br>3. Remove lateral link lower & upper bolts (17mm). Pry out.<br>4. Compare parts. Match upper arm length to old, use bolt to line up<br>5. Wirebrush clean mounting surfaces<br>6. Loctite bolts<br>7. Replace lateral link, torque 85 ft/lb. |

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| 7. Replace sway bar bushings if can/need.<br>8. Compare coils & orient<br>9. Clean spring seat & grease. Cut tube of rubber for bottom of new coil & grease. Clean lower mounting area.<br>10. Replace spring, jack up arms until bolt lined up.<br>11. Loctite bolt & torque 70 ft/lb.<br>12. Reattach new sway bar links (14mm & allen). Torque 35 ft/lb.<br>13. Go to <b>rear shocks</b> ↓ | 8. Replace upper arm. Pound in with mallet if need. Reattach brake assembly. Torque 85 ft/lb. Go to <b>rear</b> ← <b>coils step 7.</b> |
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### 3) Rear shocks

- 12, 13, 17mm
- Torque wrench
- Breaker bar
- Ratchet extension
- Penetrating oil
- Rubber mallet
- Vise grips
- Flathead screwdriver
- Wirebrush
- **Shock**
- ½ tsp almond extract
- 1 cup chopped pecans

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1. Lower knuckle to hang free.
  2. Spray topbolts & bottom bolt.
  3. Remove 2 topbolts (13mm). Pull down shock.
  4. Spray bottom bolt again, remove (17mm). Compress shock & jimmy out
  5. Remove upper mount nut (12mm). Use impact or vise.
  6. Place mount & boot on new shock. Tighten nut (13mm). Vise to hold stud in place.
  7. Wirebrush clean mounting surfaces.
  8. Reinstall shock into bottom mount. Bolt & torque (74 ft/lb)
  9. Jack up knuckle to get upper mount into position over studs.
  10. Secure upper mount nuts (13mm, 21 ft/lb).
  11. Lower jack, reattach ABS plug, reattach wheels (87ft/lb). Done!

**GET AN ALIGNMENT!!!**