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BMW 3-Series and Z4 (99-05) Includes 2006 325ci/330ci Coupe and Convertible models Haynes Online Manual.

4 Front suspension strut - removal, overhaul and installation

Note:

New strut upper mounting nuts and a strut-to-steering knuckle bolt will be required for installation.

Removal

1 Loosen the wheel bolts, chock the rear wheels, apply the parking brake, then raise the front of the vehicle and support it securely on jackstands. Remove the appropriate wheel.

2 To prevent the lower arm assembly hanging down while the strut is removed, screw a wheel bolt into the hub, then wrap a piece of wire around the bolt and tie it to the car body. This will support the weight of the steering knuckle. Alternatively, support the steering knuckle with a jack.

3 Unclip the brake hose and wiring harness from the clips on the base of the strut (see illustration) .

4.3 Pull the brake hose and wiring harness grommets from the bracket



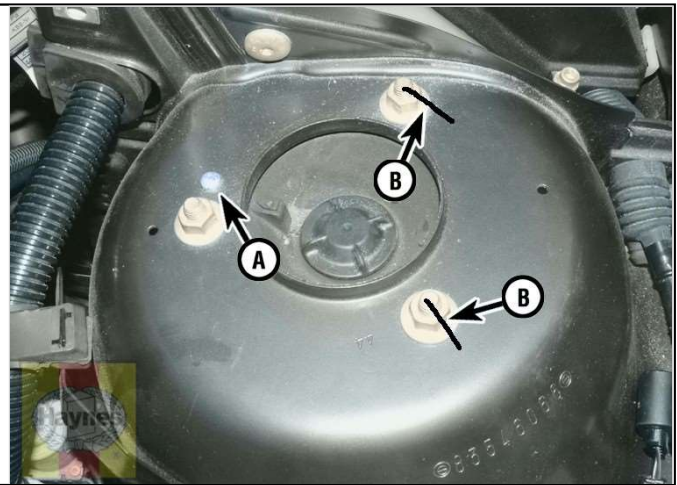
4 Loosen and remove the retaining nut and washer, then disconnect the stabilizer bar link from the strut. Use a wrench to hold the stabilizer bar link balljoint while loosening the nut.

5 On models equipped with a ride height sensor for headlamp range adjustment, unscrew the nut and remove the link bracket from the lower control arm.

6 Loosen and remove the bolt securing the suspension strut to the steering knuckle. Slide the steering knuckle down and off from the end of the strut. To ease removal, insert a large screwdriver into the slot on the back of the steering knuckle and slightly spread the steering knuckle clamp (see illustration 3.6) . Take care to spread the steering knuckle clamp only as much as absolutely necessary, as excessive force will cause damage.

7 From within the engine compartment, unscrew the strut upper mounting nuts, then carefully lower the strut assembly out from underneath the wing. On some models, a centering pin fixed to the strut upper mounting plate aligns with a corresponding hole in the strut tower. On models where no centering pin is installed, make alignment marks between the mounting plate studs and strut tower before removing the strut (see illustration) . It is essential that the mounting plate is installed to its original location to preserve the strut camber angle.

4.7 The location of the centering pin (A) and two strut mounting studs and nuts with index marks (B)



Overhaul

Warning:

Disassembling a strut spring is potentially dangerous and utmost attention must be directed to the job, or serious injury may result. Use only a high-quality spring compressor and carefully follow the manufacturer's instructions furnished with the tool. After removing the coil spring from the shock assembly, set it aside in a safe, isolated area.

Note:

A new mounting plate nut will be required.

8 With the strut removed from the car, clean away all external dirt, then mount it upright in a vice.

9 Install the spring compressor, and compress the coil spring until all tension is relieved from the upper spring seat (see illustration) .

4.9 Install the spring compressor



10 Remove the cap from the top of the strut to gain access to the strut upper mounting retaining nut. Loosen the nut while retaining the strut piston with a suitable tool (see illustrations) .

4.10a Remove the plastic cap . . .



4.10b . . . and remove the nut



11 Remove the mounting nut, and lift off the mounting plate complete with thrust bearing. Remove the conical washer and flat washer, followed by the upper spring plate and upper spring seat.

12 Lift off the coil spring, followed by the bump stop, boot and lower spring seat.

13 With the strut assembly now completely dismantled, examine all the components for wear, damage or deformation, and check the upper mounting bearing for smoothness of operation. Replace any of the components as necessary.

14 Examine the strut for signs of fluid leakage. Check the strut piston for signs of pitting along its entire length, and check the strut body for signs of damage. While holding it in an upright position, test the operation of the strut by moving the piston through a full stroke, and then through short strokes of 2 to 4-inches (50 to 100 mm). In both cases, the resistance felt should be smooth and continuous. If the resistance is jerky, or uneven, or if there is any visible sign of wear or damage to the strut, replacement is necessary.

15 If any doubt exists about the condition of the coil spring, carefully remove the spring compressors, and check the spring for distortion and signs of cracking. Replace the spring if it is damaged or distorted, or if there is any doubt as to its condition.

16 Inspect all other components for damage or deterioration, and replace any that are suspect.

17 Reinstall the lower spring seat, and slide the bump stop and boot onto the strut piston (see illustrations) .

4.17a Reinstall the lower seat . . .



4.17b . . . followed by the boot and bump stop



18 Install the coil spring onto the strut, making sure the rubber seat and spring are correctly located (see illustration) .

4.18 Note the spring will only fit into the lower seat in one position



19 Install the upper spring seat so that the spring end is against the seat stop (see illustration) .

4.19 Ensure the spring end is against the seat stop



20 Reinstall the flat washer followed by the conical washer (concave side up) and the upper mounting plate. Install the new mounting plate nut and tighten it to the specified torque (see illustrations) . If the damper rod rotates while attempting to tighten the nut, a special cut-away socket is available from BMW dealers and good tool retailers that allows an Allen key to be inserted into the top of the damper rod while the torque wrench is used.

4.20a Install the flat washer . . .



4.20b . . . followed by the conical washer, concave side up . . .



4.20c . . . then reinstall the upper mounting . . .



4.20d . . . and install the new nut



21 Ensure the spring ends and seats are correctly placed, then carefully release the compressor and remove it from the strut. Reinstall the cap to the top of the strut.

Installation

22 Prior to installation, ensure that the threads on the steering knuckle clamp for the strut are clean. If necessary, clean the threads of the old strut-to-steering knuckle bolt with a wire wheel (or equivalent) and use it to clean the threads of the clamp on the steering knuckle.

23 Maneuver the strut assembly into position, aligning the centering pin with its corresponding hole, or previously made marks, and install the new upper mounting nuts.

24 Locate the steering knuckle correctly with the suspension strut (see [Section 3](#)), and insert the retaining bolt. Tighten the bolt to the specified torque. Note that the wiring/hose support bracket is also retained by the bolt.

25 Tighten the strut upper mounting nuts to the specified torque.

26 Where applicable, reinstall the suspension height sensor link bracket to the lower control arm, and tighten the retaining nut securely.

27 Engage the stabilizer bar connecting link with the strut. Make sure the flat on the balljoint shank is correctly located against the lug on the strut, then install the washer and new retaining nut and tighten to the specified torque.

28 Clip the hose/wiring back onto the strut, then reinstall the wheel. Lower the car to the ground and tighten the wheel bolts to the specified torque.

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