



Haynes
shows you how

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

21 Steering gear - removal, overhaul and installation

Note:

New tie-rod balljoint nuts, steering gear mounting nuts, intermediate shaft clamp bolt, and line fitting bolt sealing washers will be required on installation.

Removal

1 Loosen the front wheel bolts. Chock the rear wheels, firmly apply the parking brake, then raise the front of the vehicle and support it securely on jackstands. Remove both front wheels, remove the screws and remove the engine splash shield.

2 Loosen and remove the nuts securing the steering gear tie-rod balljoints to the steering knuckles, and release the balljoint tapered shanks using a universal balljoint separator.

3 Using paint or a suitable marker pen, make alignment marks between the intermediate shaft flexible coupling and the steering gear pinion. **Note:** *On some models an alignment mark is already provided on the pinion flange, which aligns with a mark cast into the pinion housing (see illustration) .*

21.3 Align the mark on the pinion flange with the mark on the housing



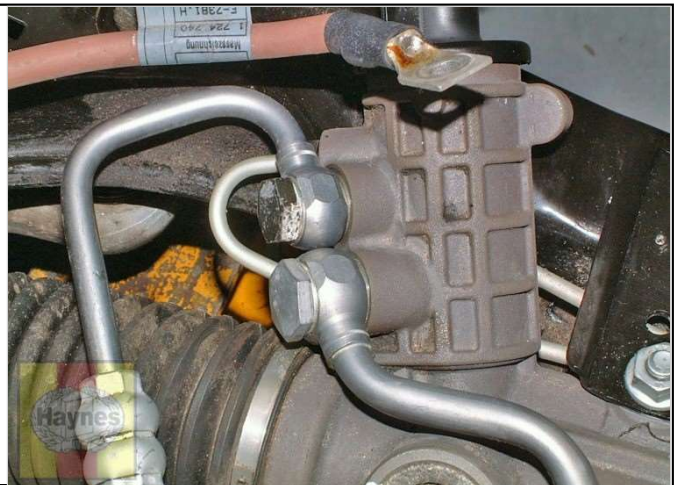
4 Loosen and remove the flexible coupling pinch-bolt (see illustration) .

21.4 Remove the flexible coupling pinch-bolt



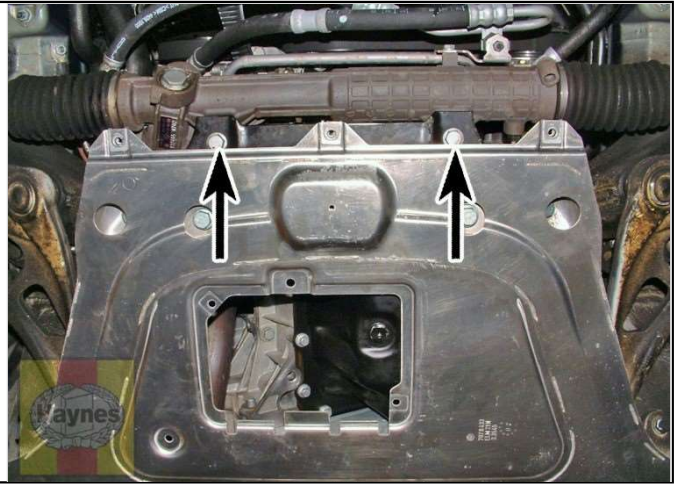
5 Using brake hose clamps, clamp both the supply and return hoses near the power steering fluid reservoir. This will minimize fluid loss. Mark the unions to ensure they are correctly positioned on reassembly, then loosen and remove the feed and return pipe union bolts and recover the sealing washers. Be prepared for fluid spillage, and position a suitable container beneath the pipes while unscrewing the bolts (see illustration) . Plug the pipe ends and steering_gear orifices, to prevent fluid leakage and to keep dirt out of the hydraulic system.

21.5 Steering gear line fittings



6 Loosen and remove the steering_gear mounting bolts and nuts, and remove the steering gear from underneath the car (see illustration) .

21.6 Remove the steering gear mounting bolts



Overhaul

7 Examine the steering gear assembly for signs of wear or damage, and check that the gear moves freely throughout the full length of its travel, with no signs of roughness or excessive free play between the steering gear pinion and gear. It is not possible to overhaul the steering gear assembly housing components; if it is faulty, the assembly must be replaced. The only components which can be replaced individually are the steering gear boots, the tie-rod balljoints and the tie-rods. These procedures are covered later in this Chapter.

Installation

8 Place the steering gear into position and insert the mounting bolts. Install new nuts on the bolts and tighten them to the specified torque setting.

9 Position a new sealing washer on each side of the pipe hose unions and reinstall the union bolts. Tighten the union bolts to the specified torque.

10 Align the marks made on removal, and connect the intermediate shaft coupling to the steering gear. Insert the new clamp bolt then tighten it to the specified torque.

11 Connect the tie-rod balljoints to the steering knuckles, then install the new nuts and tighten them to the specified torque.

12 Reinstall the wheels, and the engine splash shield, then lower the car to the ground and tighten the wheel bolts to the specified torque.

13 Bleed the power steering system as described in [Section 23](#) .