

**Haynes**
shows you how

BMW 3-Series (92-98) & Z3 (96-98) Haynes Online Manual

12 Oil pan - removal and installation

1992 models

Note:

A new oil pan gasket and/or a new dipstick tube sealing ring may be required on installation, and suitable gasket sealant will be required.

Removal

- 1 Drain the engine oil (see [Chapter 1](#)).
- 2 Apply the parking brake, then jack up the front of the vehicle and support securely on axle stands.
- 3 Remove the exhaust system (see [Chapter 4B](#)).
- 4 Open the hood, then raise the hood to its fully open position (see [Chapter 11](#)).
- 5 Unscrew the securing bolts and/or nuts, and remove the alternator air ducting from the front of the vehicle.
- 6 Remove the air cleaner assembly and air mass meter, (see [Chapter 4B](#)).
- 7 Remove the heater/ventilation intake air ducting from the rear of the engine compartment as follows.
 - A. Lift the grille from the top of the ducting (on certain Coupe models, it will be necessary to remove the securing screws and lift off the complete scuttle grille assembly).
 - B. Working through the top of the ducting, remove the screws securing the cable ducting to the air ducting and move the cable ducting clear.
 - C. Unscrew the nuts and/or screw(s) securing the air ducting to the firewall (where applicable, bend back the heat shielding for access).
 - D. Remove the air ducting by pulling upwards.
 - E. Move the previously removed cable ducting clear of the valve cover.
- 8 Remove the viscous cooling fan and fan cowl assembly (see [Chapter 3](#)).

9 Release the radiator upper securing clips with reference to [Chapter 3](#) .

10 Unscrew the dipstick tube bracket securing bolt, and pull the dipstick tube from the cylinder block.

11 Unbolt the power steering fluid reservoir from the left-hand engine mounting bracket, and move the reservoir to one side, taking care not to strain the fluid hose.

12 Remove the drivebelt (see [Chapter 1](#)).

13 Unbolt the power steering pump support bracket from the oil pan, then unbolt the power steering pump, and move it to one side, clear of the engine, leaving the fluid lines connected. Ensure that the pump is adequately supported, and take care not to strain the fluid lines.

14 Similarly, on models with air conditioning, unbolt the air conditioning compressor from the engine and suspend it to one side, leaving the refrigerant lines connected. **Warning:** *Do not disconnect the refrigerant lines - refer to [Chapter 3](#) for precautions to be taken.*

15 Unscrew the nuts securing the left- and right-hand engine mounting brackets to the engine mountings. Loosen the nuts approximately four complete turns.

16 Unbolt the ground cable(s) from the engine mounting bracket(s).

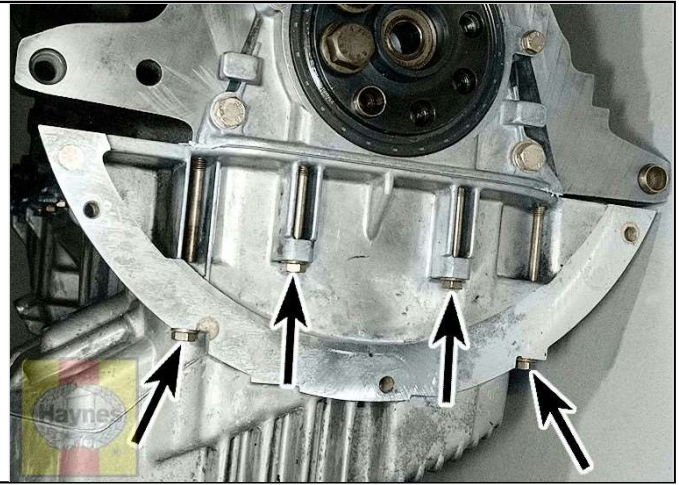
17 Where applicable, unclip any pipes, hoses and/or wiring from the engine mounting brackets.

18 Connect an engine hoist and lifting tackle to the engine lifting bracket on the front of the cylinder head, and to the engine mounting brackets. Adjust the lifting tackle so that the engine is equally supported at all three points.

19 Slowly lift the engine as far as possible, continually checking that no pipes, hoses or wiring is being stretched or trapped.

20 Working under the vehicle, progressively unscrew and remove all the oil pan securing bolts. Note that the rear oil pan securing bolts are accessible through the access slots provided in the transmission bellhousing (**see illustration**) . Also note that the three lower transmission-to-engine bolts must be removed, as they screw into the oil pan.

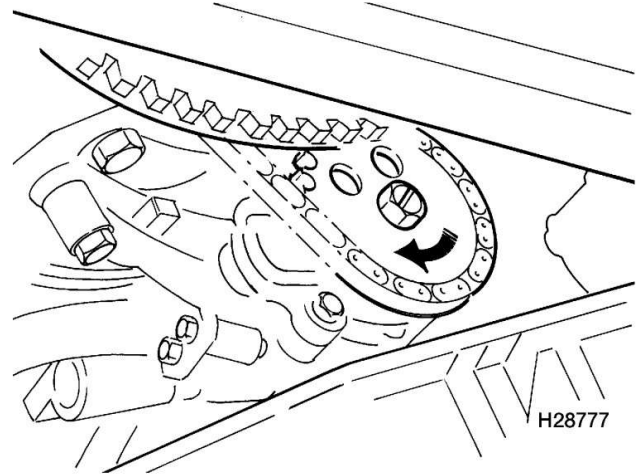
12.20 The rear oil pan securing bolts (arrows) are accessible through the access slots in the bellhousing - viewed with transmission and flywheel removed for clarity



21 Lower the oil pan as far as possible (with the engine in the car, the oil pan cannot be removed until the oil pump and pick-up tube have been removed).

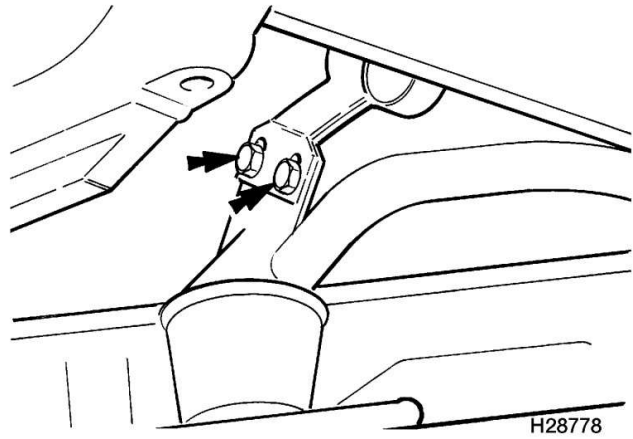
22 The oil pump drive sprocket securing nut must now be unscrewed - note that the nut has a left-hand thread, i.e. it must be turned clockwise to loosen it (see illustration) . If necessary, prevent the crankshaft from turning as the nut is unscrewed using a wrench or sprocket on the crankshaft sprocket bolt. **Caution:** *The oil pump drive sprocket securing nut has a left-hand thread.*

12.22 Unscrew the oil pump sprocket securing nut, noting that it has a left-hand thread



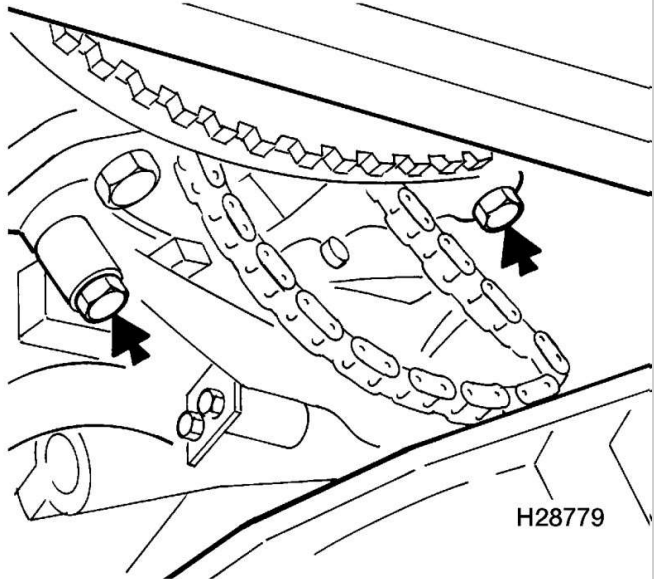
23 Unbolt the oil pump pick-up tube from its mounting bracket (see illustration) .

12.23 Unbolt the oil pick-up pipe from the mounting bracket



24 Unscrew the securing bolts and lower the oil pump into the oil pan (see illustration) .

12.24 Unscrew the oil pump securing bolts (arrows)



25 Slide the oil pan (with the oil pump) rearwards, and manipulate it out from under the vehicle (see illustration)

12.25 Removing the oil pan - viewed with engine removed for clarity



26 Recover the oil pan gasket.

Installation

27 Commence installation by thoroughly cleaning the mating faces of the oil pan and cylinder block. Check the condition of the gasket and replace if necessary.

28 Lightly coat the areas where the crankshaft rear oil seal housing and front timing chain cover join the cylinder block with a little gasket sealant (see illustration) .

12.28 Applying sealant to the crankshaft rear oil seal housing/cylinder block joint



29 Place the gasket in position on the oil pan flange. If necessary, apply more sealant (sparingly) to hold the gasket in place.

30 Offer the oil pump into position, ensuring that it locates on the positioning dowels. Install and tighten the oil pump securing bolts.

31 Install and tighten the bolts securing the oil pump pick-up tube to its mounting bracket.

32 Install the oil pump drive sprocket, ensuring that it engages with the splines on the oil pump shaft. Make sure that the drive chain is correctly positioned on the crankshaft and oil pump sprockets.

33 Install the oil pump drive sprocket securing nut, and tighten it to the specified torque - note that the nut has a left-hand thread, i.e. it must be turned counterclockwise to tighten it. If necessary, prevent the crankshaft from turning as during removal. **Caution:** *The oil pump drive sprocket securing nut has a left-hand thread.*

34 Offer the oil pan up to the cylinder block, ensuring that the gasket stays in place, and install the oil pan securing bolts, tightening them finger-tight only at this stage.

35 Progressively tighten the oil pan-to- cylinder block securing bolts to the specified torque.

36 Tighten the oil pan-to-transmission and the transmission-to-engine bolts to the specified torque.

37 Further installation is a reversal of the removal procedure, noting the following points.

- A. When lowering the engine into position, make sure that no pipes, hoses and/or wiring are trapped.
- B. Tighten the engine mounting nuts to the specified torque.
- C. Install and tension the drivebelt (see [Chapter 1](#)).
- D. When installing the dipstick tube, check the condition of the sealing ring (at the oil pan end of the tube), and replace if necessary.
- E. Install the viscous cooling fan and cowl assembly (see [Chapter 3](#)).
- F. Install the exhaust system with reference to [Chapter 4B](#) .
- G. On completion, refill the engine with oil (see [Chapter 1](#)).

1993 and later models

Note:

A new oil pan gasket and/or a new dipstick tube sealing ring may be required on installation, and suitable gasket sealant will be required.

Removal

38 On models with VANOS (variable cam-shaft timing control - see [Section 1](#)), the front suspension subframe must be lowered in order to remove the oil pan. Proceed as follows.

39 Follow the procedure outlined in steps 1 through 6 inclusive.

40 Set the steering wheel to the straight-ahead position, then loosen the clamp screw, and disconnect the steering intermediate shaft from the steering gear pinion. Refer to *[Steering gear - removal and installation](#)* in [Chapter 10](#) for details.

41 Siphon the power steering fluid from the reservoir, or alternatively, unbolt the reservoir, and drain the fluid into a suitable container. Assuming that the fluid is clean and uncontaminated, save it in a sealed container for re-use.

42 Working under the vehicle, unscrew the unions and disconnect the power steering fluid lines from the steering gear. Be prepared for fluid spillage.

43 Where applicable, unclip any pipes, hoses and/or wiring from the engine mounting brackets.

44 Connect an engine hoist and lifting tackle to the engine lifting bracket on the front of the cylinder head, and to the engine mounting brackets. Adjust the lifting tackle so that the engine is equally supported at all three points. If necessary, remove the air cleaner assembly and air mass meter, (see [Chapter 4B](#)) to allow sufficient clearance for the lifting tackle to be connected to the left-hand engine mounting bracket.

45 Working under the vehicle, unscrew the nuts securing the left- and right-hand engine mountings to the brackets on the subframe.

46 Raise the lifting tackle to lift the engine approximately 1/4-inch.

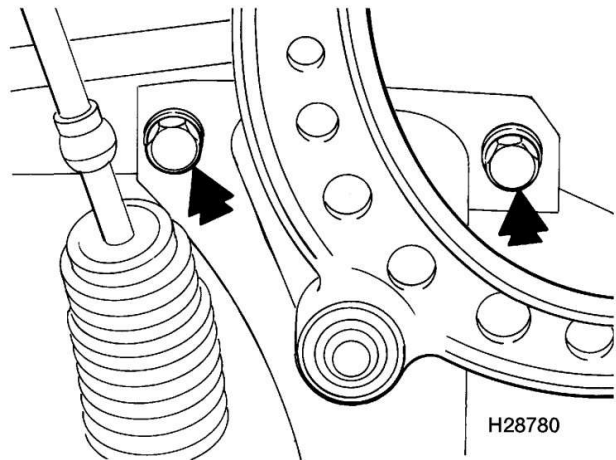
47 Again working under the vehicle, unscrew the bolts securing the suspension lower arms to the body.

48 Support the center of the subframe, using a jack and a block of wood.

49 Unscrew the subframe securing bolts, then lower the subframe slightly using the jack (see illustration) .

Caution: Do not remove the steering gear from the subframe.

12.49 Unscrew the subframe securing bolts (arrows)



50 On models with automatic transmission, release the fluid cooler lines from the oil pan.

51 Unscrew the dipstick tube bracket securing bolt, and pull the dipstick tube from the oil pan.

52 Progressively unscrew and remove all the oil pan securing bolts. Note that the rear oil pan securing bolts are accessible through the access slots provided in the transmission bellhousing. Also note that the three lower transmission to engine bolts must be removed, as they screw into the oil pan.

53 Lower the oil pan from the engine, and manipulate it out from under the vehicle. If necessary, lower the subframe further, using the jack, to give sufficient clearance.

54 Recover the oil pan gasket, and discard it.

Installation

55 Commence installation by thoroughly cleaning the mating faces of the oil pan and cylinder block. Check the condition of the gasket and replace if necessary.

56 Lightly coat the areas where the crankshaft rear oil seal housing and front timing chain cover join the cylinder block with a little gasket sealant.

57 Place a new gasket in position on the oil pan flange. If necessary, apply more sealant (sparingly) to hold the gasket in place.

58 Offer the oil pan up to the cylinder block, ensuring that the gasket stays in place, and install the oil pan securing bolts, tightening them finger-tight only at this stage.

59 Progressively tighten the oil pan-to- cylinder block securing bolts to the specified torque.

60 Tighten the oil pan-to-transmission bellhousing bolts to the specified torque.

61 Check the condition of the dipstick sealing ring (at the oil pan end of the tube) and replace if necessary. Install the dipstick tube and tighten the bracket securing bolt.

62 On models with automatic transmission, secure the fluid cooler lines to the oil pan.

63 Raise the subframe using the jack, then install the securing bolts and tighten to the specified torque.

64 Install the bolts securing the suspension lower arms to the body, ensuring that the washers are in place, and tighten the bolts to the specified torque.

65 Lower the engine until the mountings are resting on the subframe, ensuring that the lugs on the engine mountings engage with the corresponding holes in the subframe. Install the engine mounting nuts and tighten them to the specified torque.

66 Disconnect and withdraw the engine lifting tackle and hoist.

67 Further installation is a reversal of removal, bearing in mind the following points.

- A. Top-up the fluid level in the power steering fluid reservoir, and bleed the system (see [Chapter 10](#)).
- B. Reconnect the steering intermediate shaft to the steering gear pinion, with reference to
- C. "Steering gear - removal and installation" in [Chapter 10](#) .
- D. On completion, refill the engine with oil (see [Chapter 1](#)).