8. TECHNICAL DATA

I. Tightening Torques

Camshaft chain tensioner rail securing nut	35 ± 5 Nm (26 ± 4 ft. lb.)
Camshaft drive belt tensioner to engine (bolts)	22 ± 2 Nm (16 ± 1 ft. lb.).
Camshaft oil carrier to cylinder head	
M6 bolts	9 ± 1 Nm (80 ± 9 in. lb.)
M8 bolts	22 ± 2 Nm (16 ± 1 ft. lb.)
Camshaft sprocket to camshaft (bolt)	
4-cylinder engine	7 Nm (5 ft. lb.)
6-cylinder engine	65–70 Nm (48-52 ft. lb.)
Connecting rod cap to connecting rod	
4-cylinder engine	52–57 Nm (38–42 ft. lb.)
6-cylinder engine	20 Nm (15 ft. lb.) plus an additional 70°
Cylinder head cover to cylinder head (nut)	15 ± 1.5 Nm (11 ± 1 ft. lb.)
Cylinder head to cylinder block (bolt)	
4-cylinder engine (Hex-head)	
stage 1	60 ± 2 Nm (44 ± 1 ft. lb.)
stage 2 (after waiting 15 minutes)	33 ± 3°
stage 3 (with engine at operating temperature)	25 ± 5°
6-cylinder engine (Torx® head)	
stage 1	30 Nm (22 ft. lb.)
stage 2	90° (torque angle)
stage 3	90° (torque angle)
6-cylinder engine (Hex-head)	
stage 1	40^{+5}_{-0} Nm (30^{+4}_{-0} ft. lb.)
stage 2 (after waiting 15 minutes)	60^{+5}_{-0} Nm (44^{+4}_{-0} ft. lb.)
stage 3 (with engine at operating temperature)	$25^{+5°}_{-0}$ (torque angle)
Engine mount bracket to engine (bolt)	
M8	22–24 Nm (16–18 ft. lb.)
M10	43–48 Nm (32–35 ft. lb.)
Engine mount to mount bracket (nut)	43–48 Nm (32–35 ft. lb.)
Engine mount to subframe (nut)	
M8	25–28 Nm (18–21 ft. lb.)
M10	43–48 Nm (32–35 ft. lb.)
Engine to transmission bellhousing	
Manual transmission	
Torx® head bolts	
M8	20–24 Nm (14–18 ft. lb.)
M10	38–47 Nm (29–35 ft. lb.)
M12	64–80 Nm (47–59 ft. lb.)
Hex-head bolts	
M8	22–27 Nm (16–20 ft. lb.)
M10	47–51 Nm (35–38 ft. lb.)
M12	66–82 Nm (49–60 ft. lb.)
Automatic transmission	
Torx® head bolts	
M8	21 Nm (15 ft. lb.)
M12	72 Nm (53 ft. lb.)
Hex-head bolts	
M8	24 Nm (18 ft. lb.)
M10	45 Nm (33 ft. lb.)
M12	78–86 Nm (58–63 ft. lb.)
Exhaust manifold to cylinder head(nut)	22–25 Nm (16–18 ft. lb.)
Flywheel or drive plate to crankshaft	105 ± 7 Nm (77 ± 5 ft. lb.)
Front end cover to engine (bolt)	
M6	9 ± 1 Nm (6.5 ± 0.5 ft. lb.)
M8	22 ± 2 Nm (16 ± 1 ft. lb.)
Intake manifold to cylinder head (nut)	30–33 Nm (22–24 ft. lb.)
Intermediate shaft sprocket to intermediate shaft (bolt)	60 ± 5 Nm (44 ± 4 ft. lb.)
Main bearing caps (nuts)	58–63 Nm (43–46 ft. lb.)

continued on next page

I. Tightening Torques (continued)

Oil cooler pipes to oil filter housing	
325i(is), 325i Convertible	30–40 Nm (22–30 ft. lb.)
Oil filter to filter flange	hand tighten
Oil filter housing to engine (bolt)	
except 325i(is), 325i Convertible	24–26 Nm (18–19 ft. lb.)
325i(is), 325i Convertible	40 ± 5 Nm (30 ± 4 ft. lb.)
Oil pan to cylinder block	9–11 Nm (7–8 ft. lb.)
Oil pressure switch to cylinder head or cylinder block	30–40 Nm (22–30 ft. lb.)
Oil pump to engine (bolt)	22 ± 2 Nm (16 ± 1 ft. lb.)
Oil pump sprocket to oil pump (bolt)	
4-cylinder engine	25–30 Nm (18–22 ft. lb.)
Oil supply tube to cylinder (shoulder bolt)	
4-cylinder engine	11–13 Nm (8–10 ft. lb.)
6-cylinder engine	6–8 Nm (4.5–5.5 ft. lb.)
Rear crankshaft oil seal carrier to engine	
M6	9 ± 1 Nm (6.5 ± 0.5 ft. lb.)
M8	22 ± 2 Nm (16 ± 1 ft. lb.)
Rear reinforcement plate to transmission	22–24 Nm (16–18 ft. lb.)
Reference sensor mounting bolt	7 ± 1 Nm (5 ± 0.5 ft. lb.)
Rocker arm eccentric to rocker arm	10 ± 1 Nm (89 ± 9 in. lb.)
Spark plugs to cylinder head	20–30 Nm (15–22 ft. lb.)
Starter to bellhousing	47–50 Nm (35–37 ft. lb.)
Steering rack to subframe bolts	42 Nm (31 ft. lb.)
Torque converter to converter drive plate	
M8	23–26 Nm (17–19 ft. lb.)
M10	46 Nm (34 ft. lb.)
Upper and lower timing chain covers and drive belt covers to engine (bolt)	
M6	9–11 Nm (7–8 ft. lb.)
M8	22 ± 2 Nm (16 ± 1 ft. lb.)
Vibration damper to crankshaft (nut)	
4-cylinder engine	190 ± 10 Nm (140 ± 7 ft. lb.)
6-cylinder engine	22 ± 2 Nm (16 ± 1 ft. lb.)
Vibration damper pulley to vibration damper (bolt)	22 ± 2 Nm (16 ± 1 ft. lb.)

II. Crankshaft and Bearing Specifications

Crankshaft main bearing journal diameter	
4-cylinder engine	
standard (nominal dia. 55.00 mm)	
red	54.980–54.990 mm (2.1646–2.1650 in.)
blue	54.971–54.980 mm (2.1642–2.1646 in.)
yellow	54.984–54.990 mm (2.1647–2.1650 in.)
green	54.977–54.983 mm (2.1644–2.1647 in.)
white	54.971–54.976 mm (2.1642–2.1644 in.)
undersize 1 (nominal dia. 54.75 mm)	
red	54.730–54.740 mm (2.1547–2.1551 in.)
blue	54.721–54.730 mm (2.1544–2.1547 in.)
yellow	54.734–54.740 mm (2.1549–2.1551 in.)
green	54.727–54.733 mm (2.1546–2.1548 in.)
white	54.721–54.726 mm (2.1544–2.1546 in.)
undersize 2 (nominal dia. 54.50 mm)	
red	54.480–54.490 mm (2.1449–2.1453 in.)
blue	54.471–54.480 mm (2.1445–2.1449 in.)
yellow	54.484–54.490 mm (2.1450–2.1453 in.)
green	54.477–54.483 mm (2.1448–2.1450 in.)
white	54.471–54.476 mm (2.1445–2.1447 in.)
undersize 3 (nominal dia. 54.25 mm)	
red	54.230–54.240 mm (2.1350–2.1354 in.)
blue	54.221–54.230 mm (2.1347–2.1350 in.)
yellow	54.234–54.240 mm (2.1352–2.1354 in.)
green	54.227–54.233 mm (2.1349–2.1352 in.)
white	54.221–54.226 mm (2.1347–2.1349 in.)

continued

II. Crankshaft and Bearing Specifications (continued)

6-cylinder engine	
standard (nominal dia. 60.00 mm)	
red	59.980–59.990 mm (2.3614–2.3618 in.)
blue	59.971–59.980 mm (2.3611–2.3614 in.)
yellow	59.984–59.990 mm (2.3616–2.3618 in.)
green	59.977–59.983 mm (2.3613–2.3615 in.)
white	59.971–59.976 mm (2.3611–2.3613 in.)
undersize 1 (nominal dia. 59.75)	
red	59.730–59.740 mm (2.3516–2.3520 in.)
blue	59.721–59.730 mm (2.3512–2.3516 in.)
yellow	59.734–59.740 mm (2.3517–2.3520 in.)
green	59.727–59.733 mm (2.3515–2.3517 in.)
white	59.721–59.726 mm (2.3512–2.3514 in.)
undersize 2 (nominal dia. 59.50 mm)	
red	59.480–59.490 mm (2.3417–2.3421 in.)
blue	59.471–59.480 mm (2.3414–2.3417 in.)
yellow	59.484–59.490 mm (2.3419–2.3421 in.)
green	59.477–59.483 mm (2.3416–2.3418 in.)
white	59.471–59.476 mm (2.3414–2.3416 in.)
Crankshaft connecting rod journals	
Connecting rod journal diameter	
4-cylinder engine	
standard	
(nominal dia. 48.00 mm)	47.975–47.991 mm (1.8888–1.8894 in.)
undersize 1	
(nominal dia. 47.75 mm)	47.725–47.741 mm (1.8789–1.8796 in.)
undersize 2 (nominal dia. 47.50 mm)	47.475–47.491 mm (1.8691–1.8697 in.)
Double classification	
standard	47.975–47.991 mm (1.8888–1.8894 in.)
undersize 1	47.725–47.741 mm (1.8789–1.8796 in.)
undersize 2	47.475–47.491 mm (1.8691–1.8697 in.)
undersize 3	47.225–47.241 mm (1.8592–1.8599 in.)
6-cylinder engine	
standard (nominal dia. 45.00 mm)	44.975–44.991 mm (1.7707–1.7713 in.)
undersize 1 (nominal dia. 44.75 mm)	44.725–44.741 mm (1.7608–1.7615 in.)
undersize 2 (nominal dia. 44.50 mm)	44.475–44.491 mm (1.7510–1.7516 in.)
Double classification	
standard	44.975–44.991 mm (1.7707–1.7713 in.)
undersize 1	44.725–44.741 mm (1.7608–1.7607 in.)
undersize 2	44.475–44.491 mm (1.7510–1.7516 in.)
Crankshaft thrust bearing width	
4-cylinder engine	
standard	30.020–30.053 mm (1.1819–1.1832 in.)
oversize 1	30.224–30.264 mm (1.1899–1.1915 in.)
oversize 2	30.425–30.464 mm (1.1978–1.1994 in.)
oversize 3	30.625–30.664 mm (1.2057–1.2072 in.)
6-cylinder engine	
standard	25.020–25.053 mm (0.9850–0.9863 in.)
oversize 1	25.220–25.253 mm (0.9929–0.9942 in.)
oversize 2	25.420–25.453 mm (1.0008–1.0021 in.)
Crankshaft main bearing radial clearance (Plastigage®)	
red or blue classification	0.030–0.070 mm (0.0012–0.0028 in.)
yellow, green, or white classification	0.020–0.046 mm (0.0008–0.0018 in.)
Crankshaft rod bearing radial clearance (Plastigage®)	
no classification	0.030–0.070 mm (0.0012–0.0028 in.)
double classification	0.020–0.055 mm (0.0008–0.0022 in.)
Crankshaft axial clearance	
4-cylinder engine	0.085–0.174 mm (0.0033–0.0069 in.)
6-cylinder engine	0.080–0.163 mm (0.0031–0.0064 in.)
Maximum permissible crankshaft runout	
4-cylinder engine	0.10 mm (0.004 in.)
6-cylinder engine	0.15 mm (0.006 in.)

III. Piston, Piston Ring, and Cylinder Specifications

Cylinder bore diameter
- 4-cylinder engine
  - standard . . . . . $89.00^{+0.01}_{-0}$ mm ($3.5039^{+0.0004}_{-0}$ in.)
  - special . . . . . $89.08^{+0.01}_{-0}$ mm ($3.5071^{+0.0004}_{-0}$ in.)
  - oversize 1 . . . . . $89.25^{+0.01}_{-0}$ mm ($3.5138^{+0.0004}_{-0}$ in.)
  - oversize 2 . . . . . $89.50^{+0.01}_{-0}$ mm ($3.5236^{+0.0004}_{-0}$ in.)
- 6-cylinder engine
  - standard . . . . . $84.00^{+0.01}_{-0}$ mm ($3.3071^{+0.0004}_{-0}$ in.)
  - special . . . . . $84.08^{+0.01}_{-0}$ mm ($3.3102^{+0.0004}_{-0}$ in.)
  - oversize 1 . . . . . $84.25^{+0.01}_{-0}$ mm ($3.3169^{+0.0004}_{-0}$ in.)
  - oversize 2 . . . . . $84.50^{+0.01}_{-0}$ mm ($3.3268^{+0.0004}_{-0}$ in.)

Maximum out-of-round
- 4-cylinder engine . . . . . .0.01 mm (0.0004 in.)
- 6-cylinder engine . . . . . .0.03 mm (0.0012 in.)

Maximum conicity
- 4-cylinder engine . . . . . .0.01 mm (0.0004 in.)
- 6-cylinder engine . . . . . .0.02 mm (0.0008 in.)

Piston diameter
- 4-cylinder engine
  - standard . . . . . .88.97 mm (3.5027 in.)
  - special . . . . . .89.05 mm (3.5059 in.)
  - oversize 1 . . . . . .89.22 mm (3.5126 in.)
  - oversize 2 . . . . . .89.47 mm (3.5224 in.)
- 6-cylinder engine
  - standard . . . . . .83.98 mm (3.3063 in.)
  - special . . . . . .84.06 mm (3.3094 in.)
  - oversize 1 . . . . . .84.23 mm (3.3161 in.)
  - oversize 2 . . . . . .84.48 mm (3.3260 in.)

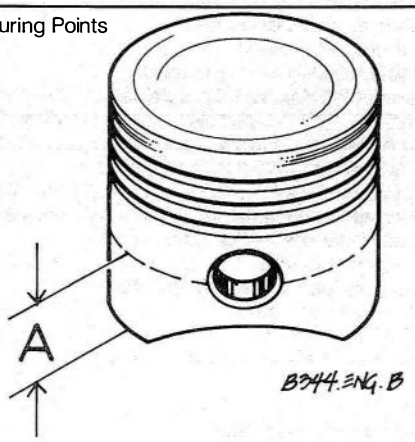
Piston to cylinder clearance
- 4-cylinder engine
  - new . . . . . .0.02–0.05 mm (.0008–.0020 in.)
  - wear limit . . . . . .0.15 mm (0.006 in.)
- 6-cylinder engine
  - new . . . . . .0.01–0.04 mm (.0004–.0016 in.)
  - wear limit . . . . . .0.12 mm (0.0047 in.)

Piston ring end gap
- 4-cylinder engine
  - upper compression ring (top ring) . . . . . .0.30–0.70 mm (0.012–0.028 in.)
  - lower compression ring (middle ring) . . . . .0.20–0.40 mm (0.008–0.016 in.)
  - oil ring (bottom ring) . . . . . .0.25–0.50 mm (0.010–0.020 in.)
- 6-cylinder engine
  - upper compression ring (top ring) . . . . . .0.30–0.50 mm (0.012–0.020 in.)
  - lower compression ring (middle ring) . . . . .0.30–0.50 mm (0.012–0.020 in.)
  - oil ring (bottom ring) . . . .0.25–0.50 mm (0.010–0.020 in.)

continued

III. Piston, Piston Ring, and Cylinder Specifications (continued)

Piston Skirt Measuring Points



Distance A

4-cylinder engine
- Mahle . . . . . .14.00 mm (0.551 in.)
- KS . . . . . .30.85 mm (1.215 in.)
- Alcan . . . . . .15.50 mm (0.610 in.)

6-cylinder engine

325,325e models
- Mahle
  - piston height, 68.7 mm (2.705 in.) . . . . .8 mm (0.315 in.)
- KS
  - piston height, 68.7 mm (2.705 in.) . . . . .14 mm (0.551 in.)
- Mahle and KS
  - piston height, 77.7 mm (3.059 in.) . . . . .23 mm (0.905 in.)

325i models
- Mahle
  - piston height, 73.6 mm (2.898 in.) . . . . .9 mm (0.354 in.)

Piston ring side clearance
- 4-cylinder engine
  - upper compression ring (top ring) . . . . . .0.06–0.09 mm (0.0024–0.0035 in.)
  - lower compression ring (middle ring) . . . .0.03–0.072 mm (0.0012–0.0028 in.)
  - oil ring (bottom ring) . . . . . .0.02–0.06 mm (0.0008–0.0024 in.)
- 6-cylinder engine
  - upper compression ring (top ring) . . . . .0.040–0.072 mm (0.0016–0.0028 in.)
  - lower compression ring (middle ring) . . . .0.030–0.062 mm (0.0012–0.0024 in.)
  - oil ring (bottom ring) . . . . . .0.020–0.042 mm (0.0008–0.0017 in.)

IV. Connecting Rod Specifications

Big end diameter	
4-cylinder engine	
standard (no classification)	52.000–52.010 mm (2.0472–2.0476 in.)
double classification	
red	52.000–52.008 mm (2.0472–2.0475 in.)
blue	52.009–52.016 mm (2.0476–2.0479 in.)
6-cylinder engine	
red	48.000–48.008 mm (1.8898–1.8901 in.)
blue	48.009–48.016 mm (1.8901–1.8904 in.)
Connecting rod bushing	
outside diameter	24.060–24.100 mm (0.9472–0.9488 in.)
inside diameter	
(nominal diameter 22.0 mm)	22.003–22.008mm (0.8662–0.8664 in.)
Maximum parallel deviation of connecting rod bores (bearing shells installed)	
at distance of 150 mm (5.905 in.)	0.04 mm (0.0016 in.)
Maximum deviation of weight between connecting rods (bearing shells removed)	
total	±4.0 grams (.14 oz.)
small end only	±2.0 grams (.07 oz.)
big end only	±2.0 grams (.07 oz.)
Connecting rod bolt torque	
4-cylinder engine	52–57 Nm (38–42 ft. lb.)
6-cylinder engine	20 Nm (14.5 ft. lb.) plus an additional 70°

V. Valve and Cylinder Head Specifications

Cylinder head thickness	
4-cylinder	
new	129.0 ± 0.1 mm (5.079 ± .004 in.)
after machining	128.6 mm (5.063 in.)
6-cylinder	
new	125.1 ± 0.1 mm (4.925 ± .004 in.)
after machining	124.7 mm (4.909 in.)
Valve guide wear, maximum	
(measured with new valve)	0.8 mm (0.031 in.)
Valve guide inside diameter (tolerance per ISO allowance H7)	
4-cylinder engine	
standard	8.0 mm (0.315 in.)
oversize 1	8.1 mm (0.319 in.)
oversize 2	8.2 mm (0.323 in.)
Valve guide inside diameter (tolerance per ISO allowance H7)	
6-cylinder engine	
standard	7.0 mm (0.275 in.)
oversize 1	7.1 mm (0.279 in.)
oversize 2	7.2 mm (0.283 in.)
Valve guide outside diameter (tolerance per ISO allowance u6)	
4-cylinder engine	
standard	14.0 mm (.5512 in.)
oversize 1	14.1 mm (.5551 in.)
oversize 2	14.2 mm (.5590 in.)
oversize 3	14.3 mm (.5630 in.)
6-cylinder engine	
standard	
old version	13.0 mm (.5118 in.)
new version	13.2 mm (.5197 in.)
oversize 1	
old version	13.1 mm (.5157 in.)
new version	13.3 mm (.5236 in.)
oversize 2	
old version	13.2 mm (.5197 in.)
new version	13.4 mm (.5276 in.)
oversize 3	13.3 mm (.5236 in.)

continued

V. Valve and Cylinder Head Specifications (continued)

Valve guide bore diameter in cylinder head (tolerance per ISO allowance M7)	
4-cylinder engine	
standard	14.0 mm (.5512 in.)
oversize 1	14.1 mm (.5551 in.)
oversize 2	14.2 mm (.5590 in.)
oversize 3	14.3 mm (.5630 in.)
6-cylinder engine	
standard	
old version	13.0 mm (.5118 in.)
new version	13.2 mm (.5197 in.)
oversize 1	
old version	13.1 mm (.5157 in.)
new version	13.3 mm (.5236 in.)
oversize 2	
old version	13.2 mm (.5197 in.)
new version	13.4 mm (.5276 in.)
oversize 3	13.3 mm (.5236 in.)
Valve guide installation temperature	
cylinder head	122°F (50°C)
valve guide	−238°F (−150°C)
Valve guide installed depth (height above cylinder head surface)	
4-cylinder engine	15.0 mm (.5906 in.)
6-cylinder engine	14.5 mm (.5709 in.)
Valve seat dimensions	
seat angle	45°
seat correction angles	15°/75°
seat width (intake and exhaust)	
4-cylinder engines	1.3–2.0 mm (0.051–0.079 in.)
6-cylinder engines	1.65 ± 0.35 mm (0.065 ± 0.014 in.)
seat diameter	
1984 and 1985 318i models	
intake	44.6 mm (1.756 in.)
exhaust	36.6 mm (1.441 in.)
1984–1987 325, 325e, 325es	
intake	38.6 mm (1.520 in.)
exhaust	32.6 mm (1.283 in.)
325i(is), 325i Convertible, 1988 325	
intake	40.6 mm (1.598 in.)
exhaust	34.6 mm (1.362 in.)
Valve seat insert outside diameter (tolerance as per ISO allowance g6)	
1984 and 1985 318i models	
intake	
standard	47.15 mm (1.8562 in.)
oversize 0.2 mm	47.35 mm (1.8642 in.)
oversize 0.4 mm	47.55 mm (1.8720 in.)
exhaust	
standard	40.15 mm (1.5807 in.)
oversize 0.2 mm	40.35 mm (1.5886 in.)
oversize 0.4 mm	40.55 mm (1.5964 in.)
1984–1987 325, 325e, 325es	
intake	
standard	42.15 mm (1.6594 in.)
oversize 0.2 mm	42.35 mm (1.6673 in.)
oversize 0.4 mm	42.55 mm (1.6752 in.)
exhaust	
standard	37.65 mm (1.4823 in.)
oversize 0.2 mm	37.85 mm (1.4902 in.)
oversize 0.4 mm	38.05 mm (1.4980 in.)
1988 325 and all 325i models	
intake	
standard	43.15 mm (1.6988 in.)
oversize 0.2 mm	43.35 mm (1.7067 in.)
oversize 0.4 mm	43.55 mm (1.7146 in.)
exhaust	
standard	37.65 mm (1.4823 in.)
oversize 0.2 mm	37.85 mm (1.4902 in.)
oversize 0.4 mm	38.05 mm (1.4980 in.)

continued on next page

V. Valve and Cylinder Head Specifications (continued)

Valve seat bore diameter in cylinder head (tolerance as per ISO allowance H7)	
1984 and 1985 318i models	
intake	
standard	47.00 mm (1.8504 in.)
oversize 0.2 mm	47.20 mm (1.8583 in.)
oversize 0.4 mm	47.40 mm (1.8661 in.)
exhaust	
standard	40.00 mm (1.5748 in.)
oversize 0.2 mm	40.20 mm (1.5827 in.)
oversize 0.4 mm	40.40 mm (1.5905 in.)
1984–1987 325, 325e, 325es	
intake	
standard	42.00 mm (1.6535 in.)
oversize 0.2 mm	42.20 mm (1.6614 in.)
oversize 0.4 mm	42.40 mm (1.6693 in.)
exhaust	
standard	37.50 mm (1.4764 in.)
oversize 0.2 mm	37.70 mm (1.4842 in.)
oversize 0.4 mm	37.90 mm (1.4921 in.)
1988 325 and all 325i models	
intake	
standard	43.00 mm (1.6929 in.)
oversize 0.2 mm	43.20 mm (1.7008 in.)
oversize 0.4 mm	43.40 mm (1.7086 in.)
exhaust	
standard	37.50 mm (1.4764 in.)
oversize 0.2 mm	37.70 mm (1.4842 in.)
oversize 0.4 mm	37.90 mm (1.4921 in.)
Cylinder head installation temperature	
All models	122°F (50°C)
Valve seat insert installation temperature	
All models	-238°F(-150°C)
Valve head diameter	
1984 and 1985 318i	
intake	46 mm (1.811 in.)
exhaust	38 mm (1.496 in.)
1984–1987 325, 325e, 325es	
intake	40 mm (1.575 in.)
exhaust	34 mm (1.339 in.)
325i(is), 325i Convertible, 1988 325	
intake	42 mm (1.654 in.)
exhaust	36 mm (1.417 in.)
Valve head thickness (minimum)	
intake	1.3 mm (0.051 in.)
exhaust	2.0 mm (0.079 in.)
Valve face angle	45°
Valve stem diameter	
4-cylinder engine	
standard	8.0 mm (0.315 in.)
oversize 1	8.1 mm (0.319 in.)
oversize 2	8.2 mm (0.323 in.)
6-cylinder engine	
standard	7.0 mm (0.275 in.)
oversize 1	7.1 mm (0.279 in.)
oversize 2	7.2 mm (0.283 in.)
Valve clearance	
engine warm (coolant temperature above 176°F (80°C))	
intake and exhaust	
4-cylinder	0.25 mm (0.010 in.)
6-cylinder	0.30 mm (0.012 in.)
engine cold (coolant temperature below 95°F (35°C))	
intake and exhaust	
4-cylinder	0.20 mm (0.008 in.)
6-cylinder	0.25 mm (0.010 in.)
Rocker arm radial play	between 0.016 mm and 0.052 mm (0.0006 and 0.0020 in.)

VI. Flywheel or Drive Plate Specifications

Maximum axial runout (measured at outer diameter)	0.10 mm (0.004 in.)
Minimum flywheel thickness	
4-cylinder engine	23.5 mm (.925 in.)
1984 6-cylinder engines	25.0 mm (.984 in.)
1985–1990 6-cylinder engine	32.0 mm (1.260 in.)
Mounting bolt tightening torque (installed with Loctite®270)	105 ± 7 Nm (77 ± 5 ft. lb.)
Starter ring gear replacement temperature (manual transmission only)	395°–445°F (200°–230°C)

VII. Lubrication System Specifications

Oil pressure at idle	
4-cylinder engine	0.5–2.0 bar (7–28 psi)
6-cylinder engine	0.5–2.0 bar (7–28 psi)
Oil pressure at maximum engine speed	
4-cylinder engine	4.0–5.0 bar (57–71 psi)
6-cylinder engine	4.0–6.0 bar (57–85 psi)

6. Technical Data

I. TCI-i Ignition System Specifications (Bosch control unit)

Ignition control unit code number	0 227 100 111
Ignition coil code number	0 221 122 319 (gray label)
Distributor code number	
1984 (early)	0 237 002 080
1984 and 1985	0 237 002 096
Ignition timing (vacuum hose disconnected at distributor)	
0 237 002 080 distributor	15° BTDC @2000 ± 50 rpm
0 237 002 096 distributor	26° BTDC @4000 ± 50 rpm
Engine idle speed	
0 237 002 080 distributor	750 ± 50 rpm
0 237 002 096 distributor	
manual transmission	850 ± 50 rpm
automatic transmission	750 ± 50 rpm

continued

III. Motronic (DME) Ignition System Specifications

Ignition coil code number	0 221 118 335 (yellow label)
Firing order	1 - 5 - 3 - 6 - 2 - 4
Spark plugs	
1984-1987 325 and 325e(es)	
Bosch	WR9LS
Beru	14 R/9 LS
325i(is), 1988-1990 325	
Bosch	W8LCR
Spark plug gap	0.7 + 0.1 mm (.027 + .004 in.)
Spark plug tightening torque	20-30 Nm (15-22 ft. lb.)
Reference or speed sensor coil resistance (325e, 325es engine)	960 ± 96 ohms
Pulse sensor coil resistance (Motronic 1.1)	540 ± 54 ohms
Ignition rotor tightening torque (6-cylinder engines)	3 Nm (27 in. lb.)
Reference, speed, or pulse sensor tightening torque	7 ± 1 Nm (62 ± 9 in. lb.)

7. TECHNICAL DATA

I. L-Jetronic Fuel Injection Specifications (1984 and 1985 318i models)

Fuel pump delivery rate	
with fuel pump operated for 30 seconds	.875 ml (30 oz.)
Transfer pump delivery pressure	.0.3 bar (4.3 psi)
System fuel pressure	.3.0 ± 0.06 bar (43.5 ± 0.9 psi)
System regulating pressure	.2.8–3.2 bar (40.6–46.4 psi)
Fuel injector coil resistance	
code no. 0 280 150 704	.14.5–17.5 ohms
code no. 0 280 150 211	.14.5–17.5 ohms
Idle speed (non-adjustable)	.750/850 ± 50 rpm
Idle mixture (electronically adjusted)	.See **5.6 Idle Specifications (rpm and % CO)**

NOTE

Most 318i models have an idle speed of 750 ± 50 rpm. Models with an idle speed of 850 ± 50 rpm have been modified according to an authorized BMW dealer field fix (No. 84-1.8V5-2). To determine if the car has been modified, look for a sticker attached to the driver's side fender, near the shock tower. The sticker will contain the new idle speed specification.

II. Motronic Fuel Injection Specifications (1984-1987 325, 325e models)

Fuel pump delivery rate	
with fuel pump operated for 30 seconds	.875 ml (30 oz.)
Transfer pump delivery pressure	.0.3 bar (4.3 psi)
System fuel pressure	.2.5 ± 0.05 bar (36.3 ± 0.7 psi)
System regulating pressure	.2.3–2.7 bar (33.4–39 psi)
Fuel injector coil resistance	
code no. 0 280 150 716	.14.5–17.5 ohms
code no. 0 280 150 126	.2.0–3.0 ohms
Idle speed (non-adjustable)	.700 ± 50 rpm
Idle mixture	.0.2–1.2% CO

III. Motronic 1.1 Fuel Injection Specifications (1988 325 and all 325i models)

Fuel pump delivery rate	
with fuel pump operated for 30 seconds	.875 ml (30 oz.)
System fuel pressure	
1988 325	.2.5 ± 0.05 bar (36.3 ± 0.7 psi)
325i, 325is, 325iC	.3.0 ± 0.06 bar (43.5 ± 0.9 psi)
System regulating pressure	
1988 325	.2.3–2.7 bar (33.4–39 psi)
325i, 325is, 325iC	.2.8–3.2 bar (40.6–46.4 psi)
Fuel injector coil resistance	
code no. 0 280 150 715	.14.5–17.5 ohms
code no. 0 280 150 126	.2.0–3.0 ohms
Idle speed (non-adjustable)	
1988 325	.720 ± 40 rpm
325i, 325is, 325iC	.760 ± 40 rpm
Idle mixture (non-adjustable)	
1988 325	.0.2–1.2% CO
325i, 325is, 325iC	.0.4–0.8% CO

5. TECHNICAL DATA

I. Cooling System Specifications

Cooling system leakage test	
maximum test pressure	1 bar (14 psi)
Expansion tank cap	
opening pressure	see specification on cap top
Thermostat opening temperature	
4-cylinder engines	
begins to open	176°F (80°C)
fully open	212°F (100°C)
thermostat stroke	8 ± 1 mm (5/16 ± 3/64 in.)
6-cylinder engines	
begins to open	176°F (80°C)
fully open	N/A
thermostat stroke	N/A
Cooling fan thermo-switch switching temperature	
Low-speed	
ON (switch closed)	196°F (91°C)
High-speed	
ON (switch closed)	210°F (99°C)
Cooling system capacity	
318i	7,0 ltrs. (7.4 qts)
325e(es), 325	11.0 ltrs. (11.6 qts)
325i(is), 325i convertible	10.5 ltrs (11.1 qts)
V-belt tension	See **LUBRICATION and MAINTENANCE**.
Coolant type	Phosphate-free, containing ethylene glycol

II. Tightening Torques

Automatic transmission cooler lines to radiator	18^{+3}_{-0} Nm (13^{+2}_{-0} ft. lb.)
Coolant pump pulley to coolant pump (bolt)	9 ± 1 Nm (80 ± 5 in. lb.)
Coolant pump to cylinder block	
M6 bolt	9 ± 1 Nm (80 ± 5 in. lb.)
M8 bolt	22 ± 2 Nm(16 ± 1 ft. lb.)
Coolant primary fan to: coolant fan clutch	9 ± 1 Nm (80 ± 5 in. lb.)
Coolant fan clutch to coolant pump	
with special tool (BMW Part No. 11 5 040)	30 Nm (22 ft. lb.)
without special tool	40 Nm (29 ft. lb.)
Coolant temperature sending unit to cylinder head water outlet	18 ± 1 Nm (13 ± 1 ft. lb.)
Thermo-switch to radiator (maximum permissible)	15 Nm (11 ft. lb.)
Upper radiator mounting to body (nut)	9 ± 1 Nm (80 ± 5 in. lb.)

6. TECHNICAL DATA

I. Tightening Torques

Front exhaust pipe to rear exhaust pipe (nut or bolt)	22–24 Nm (16–17 ft. lb.)
Exhaust manifold to cylinder head (nut)	22–24 Nm (16–17 ft. lb.)
Front exhaust pipe to exhaust manifold (nut)	
1st stage	30–35 Nm (22–25 ft. lb.)
2nd stage	50–55 Nm (36–40 ft. lb.)
Front exhaust pipe clamp to exhaust pipe (nut or bolt)	22–24 Nm (16–17 ft. lb.)
Front exhaust pipe bracket to transmission bracket (nut or bolt)	22–24 Nm (16–17 ft. lb.)
Heat shield to exhaust system (self-tapping screw)	7–8 Nm (5–6 ft. lb.)
Oxygen sensor to exhaust manifold or exhaust pipe	55 ± 5 Nm (41 ± 3 ft. lb.)
Rear muffler clamp to rear muffler maximum permissible (clamping bolt)	
4-cylinder engine	16 Nm (12 ft. lb.)
6-cylinder engine	14 Nm (10 ft. lb.)
Rear muffler clamping bracket to rear axle (bolt)	22–24 Nm (16–17 ft. lb.)
Front pipe clamping bracket to transmission bracket (rubber mounts)	
M6 bolts	9–10 Nm (7–8 ft. lb.)
M8 bolts	22–24 Nm (16–17 ft. lb.)

8. TECHNICAL DATA

I. Tightening Torques

Shift console rear mounting nut	11 Nm (8 ft. lb.)
Sheet-metal console to transmission (bolts, with locking compound)	23 Nm (17 ft. lb.)
Transmission support bolts	22–24 Nm (16–18 ft. lb.)
Clutch master cylinder mounting bolts	9 Nm (7 ft. lb.)
Clutch master cylinder pushrod to clutch pedal (bolt)	21 Nm (15 ft. lb.)
Clutch master cylinder pushrod locknut	4
Clutch hydraulic hose connections	13–16 Nm (10–12 ft. lb.)
Clutch slave cylinder mounting nuts	24 Nm (18 ft. lb.)
Clutch pressure plate mounting bolts	
Grade 8.8	22–24 Nm (16–18 ft. lb.)
Grade 10.9	30–35 Nm (22–26 ft. lb.)

continued on next page

I. Tightening Torques (continued)

Transmission to engine (hex-head)	
M8	22–27 Nm (16–20 ft. lb.)
M10	47–51 Nm (35–38 ft. lb.)
M12	66–82 Nm (49–60 ft. lb.)
Transmission to engine (Torx®-head)	
M8	20–24 Nm (15–18 ft. lb.)
M10	38–47 Nm (28–35 ft. lb.)
M12	64–80 Nm (47–59 ft. lb.)
Rear transmission support to body (nut)	22–24 Nm (16–18 ft. lb.)
Transmission rubber mount (nut, to transmission or support)	43–48 Nm (32–35 ft. lb.)
Transmission drain plug/fill plug	40–60 Nm (30–44 ft. lb.)
Transmission output flange collar nut	
Getrag 240/260	
initial	170 Nm (125 ft.lb.)
final	120 Nm (89 ft. lb.)
ZF	100–120 Nm (74–89 ft. lb.)
Release bearing guide sleeve (bolt)	
M8 x 22	18 Nm (13 ft. lb.)
M8 x 30	25 Nm (18 ft. lb.)
M6	10 Nm (89 in. lb.)
Getrag Transmission Assembly Tightening Torques	
Front transmission case to rear case (bolt)	25 Nm (18 ft. lb.)
Drive flange to output shaft (nut)	
Initial torque	170 Nm (127 ft. lb.)
Reverse gear shaft to transmission case (bolt)	25 Nm (18 ft. lb.)
Reverse gear shaft retaining bracket to transmission case (bolt)	25 Nm (18 ft. lb.)
Detent ball and spring locking plate to transmission case (bolt)	10 Nm (89 in. lb.)
Clutch guide sleefe to front transmission case	10 Nm (89 in. lb.)
Back-up light switch to transmission case	6–10 Nm (53–89 in. lb.)

II. Transmission Tolerances, Wear Limits and Settings

Shift fork guide wear limit	4.8 mm (0.189 in.)
Layshaft axial play, maximum	0.13–0.23 mm (0.005–0.009 in.)
Output shaft axial play, maximum	0–0.09 mm (0–0.0035 in.)
Input shaft axial play, maximum	0–0.09 mm (0–0.0035 in.)
Output shaft radial runout, maximum	0.07 mm (0.0027 in.)
Guide sleeve pressing-off force (maximum permissible)	
1st/2nd gear	
Getrag 240	3.0 tons
Getrag 260	3.7 tons
3rd/4th gear	
Getrag 240	2.7 tons
Getrag 260	3.0 tons
5th/Reverse gear	
Getrag 240	3.0 tons
Getrag 260	3.7 tons

continued

II. Transmission Tolerances, Wear Limits and Settings (continued)

Guide sleeve pressing-on force (maximum permissible)	
1st/2nd gear	
Getrag 240	2.1 tons
Getrag 260	2.5 tons
3rd/4th gear	
Getrag 240	1.9 tons
Getrag 260	2.1 tons
5th/Reverse	
Getrag 240	2.1 tons
Getrag 260	2.5 tons
Synchronizer ring specifications (measured between ring and gear)	
Forward gears	
new	1.0–1.3 mm (0.039–0.051 in.)
wear limit	0.8 mm (0.031 in.)
Reverse	
new	0.5–0.6 mm (0.020–0.024 in.)
wear limit	0.4 mm (0.016 in.)
Transmission case bearing installation temperature	176°F (80°C)

III. Clutch Tolerances, Wear Limits and Settings

Slave cylinder pushrod travel (measured with slave cylinder installed)	at least 20 mm (¾ in.)
Clutch pedal adjustment (measured from firewall)	253 mm $^{+11}_{-0}$ (10 in. $^{+.4}_{-0}$)
Release lever tips deviation from parallel, maximum	0.6 mm (.024 in.)
Clutch disc runout, maximum	0.5 mm (.020 in.)
Clutch disc thickness, minimum	7.5 mm (.295 in.)

IV. Manual Transmission Gear Ratios

Transmission type	Getrag 240	ZF S5-16	Getrag 260
Gear ratios			
1st gear	3.72	3.72	3.83
2nd gear	2.02	2.04	2.20
3rd gear	1.32	1.34	1.40
4th gear	1.00	1.00	1.00
5th gear	0.81	0.80	0.81
Reverse gear	3.45	3.54	3.46

6. TECHNICAL DATA

I. Automatic Transmission Test Data

Stall speed specifications			
Transmission	Model	Converter code	Stall speed (rpm)
3 HP 22	All	P	1970–2070
4 HP 22 H	318i	U4	1980–2220
	325, 325e(es) (through 1987)	R2	1900–2050
	325i, 325i Convertible (through 1987)	W2	2210–2420
	325e (1988-1990)	C7	1900–2100
	325i, 325i Convertible (1988-1990)	W2	2200–2400
4 HP 22 EH	325, 325i, 325i Convertible	R2	2210–2420

Main pressures		
3 HP 22	Transmission accelerator cable pulled out to kickdown position in **R**	16.5 to 18.3 bar (240 to 265 psi)
	At 1500 rpm, all other drive ranges except in **R**	5.5 to 6.4 bar (80 to 93 psi)
	Transmission accelerator cable pulled fully out to kickdown position in all other drive ranges except **R**	7.2 to 8.0 bar (104 to 116 psi)
4 HP 22	At idle, in **D**	6.0 to 7.5 bar (87 to 109 psi)
	At idle, in **R**	11 to 13 bar (160 to 189 psi)
	At 4000 rpm, on road, in any gear from **2** to **4**	4.6 to 5.8 bar (67 to 84 psi)

II. Torque Specifications

Bolt	Torque
Transmission to engine (hex-head)	M 8: 24 Nm (18 ft. lb.)
	M 10: 45 Nm (33 ft. lb.)
	: 78–86 Nm (58–63 ft. lb.)
Transmission to engine (Torx®-head)	M 8: 21 Nm (15 ft. lb.)
	M 12: 72 Nm (53 ft. lb.)
Rear transmission support (to body)	22–24 Nm (16–18 ft. lb.)
Rear transmission support (to transmission)	43–48 Nm (32–35 ft. lb.)
Torque converter to drive plate	M 8: 25–27 Nm (18–20 ft. lb.)
	M 10: 47–51 Nm (35–38 ft. lb.)
Transmission reinforcement plate	22–24 Nm (16–18 ft. lb.)
ATF cooler lines to transmission case	35 $^{+3}_{-0}$ Nm (26 $^{+2}_{-0}$ ft. lb.)
ATF filler tube to ATF sump	
3 HP 22	100–115 Nm (74–85 ft. lb.)
4 HP 22 H/EH	98 Nm (72 ft. lb.)
ATF sump drain plug	M 10: 15–17 Nm (11–13 ft. lb.)
Output flange collar nut	100 Nm (74 ft. lb.)
Pressure tap plug	40–46 Nm (30–34 ft. lb.)
Manual valve lever to transmission	8–10 Nm (6–7 ft. lb.)
Drive plate to flywheel	
M 12	113 –130 Nm (82–94 ft. lb.)

III. Automatic Transmission Specifications.

Model	318i	318i	325 325e(es)	325	325i, Convertible	325i, Convertible
Type	3 HP 22	4 HP 22 H	4 HP 22 H	4 HP 22 EH	4 HP 22 EH	4 HP 22 H
Code letters	RX	UC, XX VM,XS	AB, TY, XG,AB,AT	AR	AP	AC,GA
Torque converter code	P	U4	C7, R2	R2	R2	W2
Gear ratios						
1st gear	2.73	2.73	2.48	2.48	2.48	2.48
2nd gear	1.56	1.56	1.48	1.48	1.48	1.48
3rd gear	1.0	1.0	1.0	1.0	1.0	1.0
4th gear	N/A	0.73	0.73	0.73	0.73	0.73
Reverse	2.09	2.09	2.09	2.09	2.09	2.09

6. TECHNICAL DATA

I. Driveshaft Flange Runout Specifications

Axial play	
transmission output flange	.0.10 mm (.004 in.) maximum
Radial play	
transmission output flange	.0.07 mm (.003 in.) maximum
final drive input flange (measured at driveshaft centering lip)	.0.07 mm (.003 in.) maximum

II. Universal Joint Play Specifications

Maximum allowable play	.0.15 mm (.006 in.)

III. Driveshaft Installation Specifications

Center bearing preload (towards front of car)	.4–6 mm (.157–.236 in.)

IV. Tightening Torques

Driveshaft to final drive, bolt and nut	.72 Nm (53 ft. lb.)
Flexible coupling to transmission or driveshaft	
M 10, 8.8 bolt and nut	.46 Nm (34 ft. lb.)
M 10, 10.9 bolt and nut	.72 Nm (53 ft. lb.)
M 12 bolt and nut	.123 Nm (91 ft. lb.)
Center bearing to body, bolt	.22 Nm (16 ft. lb.)
Clamping sleeve for splined coupling	.17 Nm (13 ft. lb.)
Final drive to rear axle carrier, bolts	
1984–1987	.110–123 Nm (81–91 ft. lb.)
1988–1990	.80 Nm (59 ft. lb.)
Final drive rubber mounting bushing to body	
1984–1987	.80–87 Nm (59–64 ft. lb.)
1988–1990	.87 Nm (64 ft. lb.)
Final drive flange to input shaft, collar nut	
318i	.at least 150 Nm (111 ft. lb.) until matching marks line up
Other models	.at least 310 Nm (229 ft. lb.) until matching marks line up
Speedometer pulse sender to final drive	.10 Nm (7 ft. lb.)

8. TECHNICAL DATA

I. Tolerances, Wear Limits, and Settings

Brake rotor, front solid	
thickness after machining (minimum)	11.1 mm (0.437 in.)
wear limit (minimum thickness)	10.7 mm (0.421 in.)
axial runout (maximum permissible)	
rotor installed	0.20 mm (0.008 in.)
rotor removed	0.05 mm (0.002 in.)
thickness tolerance	
(maximum permissible)	0.02 mm (0.0008 in.)
Brake rotor, front ventilated	
thickness after machining (minimum)	23.4 mm (0.921 in.)
wear limit (minimum thickness)	23 mm (0.905 in.)
axial runout (maximum permissible)	
rotor installed	0.20 mm (0.008 in.)
rotor removed	0.05 mm (0.002 in.)
thickness tolerance	
(maximum permissible)	0.02 mm (0.0008 in.)
Brake drum, rear	
inside diameter, maximum	
after resurfacing	229.5 mm (9.035 in.)
radial runout (maximum permissible)	0.05 mm (0.002 in.)
Brake rotor, rear	
thickness after machining (minimum)	8.4 mm (0.331 in.)
wear limit (minimum thickness)	8.0 mm (0.315 in.)
axial runout (maximum permissible)	
rotor installed	0.20 mm (0.008 in.)
rotor removed	0.05 mm (0.002 in.)
thickness tolerance	
(maximum permissible)	0.02 mm (0.0008 in.)

II. Tightening Torques

Front brake caliper to steering knuckle (bolt)	110–123 Nm (80–89 ft. lb.)
Front brake caliper to guide bolt (self-locking bolt)	31–35 Nm (23–25 ft. lb.)
Rear brake caliper to brake pad carrier (guide bolt)	30–35 Nm (22–25 ft. lb.)
Rear brake pad carrier to trailing arm (bolt)	60–67 Nm (44–49 ft. lb.)
Wheel cylinder to backing plate	9–10 Nm (6.5–7 ft. lb.)
Bleeder valve to caliper or wheel cylinder	
7-mm	3.5–5.0 Nm (31–44 in. lb.)
9-mm	4.0–6.0 Nm (35–53 in. lb.)
Brake line unions (union nuts)	10–15 Nm (7–11 ft. lb.)
Brake hose unions (union nuts)	13–16 Nm (10–12 ft. lb.)
Master cylinder to vacuum booster (nut)	22–24 Nm (16–17 ft. lb.)
Vacuum booster to pedal base (nut)	22–24 Nm (16–17 ft. lb.)
Wheel to rotor or brake drum (lug bolt)	100 ± 10 Nm (74 ± 7 ft. lb.)

8. TECHNICAL DATA

I. Tightening Torques

Connecting link to bracket	22 Nm (16 ft. lb.)
Connecting link bracket to control arm	42 Nm (30 ft. lb.)
Control arm ball joint to strut (locknut)	65 Nm (47 ft. lb.)
Control arm ball joint to subframe (locknut)	85 Nm (61 ft. lb.)
Control arm rubber bushing (bracket to underbody, bolts)	42 Nm (30 ft. lb.)
Final drive rubber mount to body	80–87 Nm (58–63 ft. lb.)
Front brake caliper to suspension strut (bolt)	110–123 Nm (80–90 ft. lb.)
Front strut mounting nuts (top)	22 Nm (16 ft. lb.)
Front shock absorber cartridge threaded collar	130 ± 13 Nm (94 ± 9 ft. lb.)
Front shock absorber top nut	65 ± 6 Nm (47 ± 5 ft. lb.)
Front wheel bearing collar (axle) nut	290 ± 29 Nm (210 ± 21 ft. lb.)
Power steering pressure line to steering gear	40 Nm (29 ft. lb.)
Rear brake caliper to wheel bearing housing (bolts)	60–67 Nm (43–48 ft. lb.)
Rear shock absorber to trailing arm	72–87 Nm (52–63 ft. lb.)
Rear shock absorber to upper mounting bracket	13–15 Nm (9–11 ft. lb.)
Rear stabilizer bar to trailing arm (tighten in normal position)	22–24 Nm (16–17 ft. lb.)
Stabilizer bar to connecting link	42 Nm (30 ft. lb.)
Stabilizer bar mounting brackets to subframe	22 Nm (16 ft. lb.)
Steering gear to front suspension subframe	42 Nm (30 ft. lb.)
Subframe anchor bolts M10	42 Nm (30 ft. lb.)
Subframe anchor bolts M12	77 Nm (56 ft. lb.)
Tie rod end locknut	36.5 ± 3.5 Nm (26.5 ± 2.5 ft. lb.)
Universal joint shaft clamping bolts	22 Nm (16 ft. lb.)
Universal joint shaft coupling	22 Nm (16 ft. lb.)
Upper bracket to body (nuts)	22–24 Nm (16–17 ft. lb.)
Wheel lug bolts	100 ± 10 Nm (74 ± 7 ft. lb.)

Table b. Air Conditioning Specifications

Refrigerant capacity (R-12)	.975 grams (2.1 lbs.)
Refrigerant oil capacity (total)	
Swash plate-type compressor	.300 cc
Valve-type compressor	.200 cc
Oil to add after replacement of:	
Drier	.10 grams (.35 oz.)
Evaporator	.40 grams (1.4 oz.)
Condenser	.20 grams (.70 oz.)
Any pipe or hose	.10 grams (.35 oz.)
High pressure switch	
Opens	.25.5–27.5 bar (370–399 psi)
Closes	.20–22.5 bar (290–326 psi)
Low pressure switch	
Opens	.1.72–2.22 bar (25–32 psi)
Closes	.2.0–2.4 bar (29–35 psi)
Temperature switches	
Low fan speed, closes	.approx. 91°C (196°F)
High fan speed, closes	.approx. 99°C (210°F)

Table s. Wiring Harness Connector Locations

Connector	Location
C1	Rear of instrument cluster (blue, 26-pin)
C2	Rear of instrument cluster (white, 26-pin)
C3	Rear of instrument cluster (yellow, 26-pin)
C4	Rear of instrument cluster, under rear panel (16-pin)
C5	Rear of instrument cluster, under rear panel (19-pin)
C101	1984–1985—On side of fuse/relay panel (19-pin) 1986–1990—On rear fire wall, near fuse relay panel (20-pin)

continued

Table s. Wiring Harness Connector Locations (continued)

Connector	Location
C103	1984–1988—Beneath instrument panel, on steering column (29-pin) 1989–1990—Beneath instrument panel, on steering column (30-pin)
C114	Underside of fuse relay panel (8-pin)
C115	Underside of fuse relay panel (2-pin)
C128	Behind right front side marker light (2-pin)
C200	1984–1988—Beneath instrument panel, near steering column (9-pin) 1989–1990—Beneath instrument panel, near steering column (10-pin)
C201	Beneath instrument panel, on steering column (6-pin)
C202	Beneath instrument panel, on steering column (13-pin)
C204	1984–1987—Beneath left side of instrument panel, on right side of steering column (9-pin) 1988–1990—Beneath left side of instrument panel, on right side of steering column (12-pin)
C208	Automatic transmission—Beneath instrument panel, connected to C204 (2-pin)
C209	Manual transmission—Beneath instrument panel, on clutch pedal support (2-pin)
C210	1984–1988—Beneath instrument panel, near steering column (4-pin) 1989–1990—Beneath instrument panel, near steering column (7-pin)
C240	Beneath left side of instrument panel (6-pin)
C241	Beneath instrument panel, near steering column (1-pin)
C260	Beneath left side of instrument panel, near chime module (2-pin)
C301	In center console, at base of shift lever (2-pin)
C302	Beneath left side of instrument panel (25-pin)
C304	At base of driver's side B-pillar (3-pin)
C305	Beneath left side of instrument panel, near C302 (1-pin)

continued on next page

Table s. Wiring Harness Connector Locations (continued)

Connector	Location
C306	In center console, near base of shift lever (9-pin)
C351	Beneath left side of instrument panel (1-pin)
C401	1984—Above passenger's side footwell speaker (13-pin) 1985–1990—In driver's side B-pillar (7-pin)
C402	1984—Above driver's side footwell speaker (13-pin) 1985–1990—In passenger's side B-pillar (7-pin)
C404	Above passenger's side door jamb switch (21-pin)
C405	Above driver's side door jamb switch (21-pin)

Table t. Wiring Harness Ground Locations

Ground point	Location
G100	In luggage compartment, behind battery (6-cylinder models with trunk-mounted battery) In engine compartment on right shock tower (all models with engine compartment-mounted battery)
G102	On top rear of engine (4-cylinder engine only)
G103	On right front shock tower (2.5i engine only) On left side of engine block, above starter (2.7e engine only)
G104	On front fender, behind left headlights
G200	Beneath instrument panel, above brake pedal
G201	On steering column, near horn brush/slip ring
G300	Beneath left side of rear seat bottom
G301	In luggage compartment
G600	In windshield header

Table u. Wiring Harness Splice Locations

Splice (welded connection in wiring harness)	Harness and Approximate Location
S100	Main harness, front left corner in engine compartment
S102	Main harness, front left corner in engine compartment
S103	Main harness, front right corner in engine compartment
S107	1984–1985 318i—Engine harness, top of engine 1986–1990 325—Engine harness, beneath left side of instrument panel, above glove compartment
S114	Main hamess, front center in engine compartment
S201	On-board computer harness, beneath center of instrument cluster
S202	On-board computer harness, beneath center of instrument panel, beneath heating and ventilation controls
S207	1984–1986—Main harness, behind instrument panel 1987–1990—Main harness, beneath left side of driver's seat
S209	1984–1986—Main harness, behind instrument panel 1987–1990—Main harness, beneath left side of driver's seat
S210	1984–1986—Main harness, behind instrument panel 1987–1990—Main harness, beneath left side of driver's seat
S211	1984–1986—Main harness, behind instrument panel 1987–1990—Main harness, beneath left side of driver's seat
S212	1984–1986—Main harness, behind instrument panel 1987–1990—Main harness, beneath left side of driver's seat
S213	Main harness, behind instrument panel
S215	1984–1986—Main harness, on driver's side floor, beneath instrument panel 1987–1990—Main harness, beneath left side of driver's seat
S221	1984–1986 Instrument panel harness, beneath center of instrument cluster 1987–1990 Instrument panel harness, beneath left side of instrument panel
S223	Cruise control harness
S224	Multi function clock harness
S228	Cruise control harness

continued on next page

Table u. Wiring Harness Splice Locations (continued)

Splice (welded connection in wiring harness)	Harness and Approximate Location
S229	Air conditioning harness
S230	Main harness, behind left side of instrument cluster
S231	Main harness, behind left side of instrument cluster
S232	Main harness, behind center of instrument cluster
S233	Main harness, beneath left side of driver's seat
S240	Air conditioning harness
S241	Main harness, in rear left quarter of luggage compartment
S250	Air conditioning harness
S251	Air conditioning harness
S300	Door harness, in driver's side footwell
S301	Door harness, beneath front edge of drivers door
S303	Door harness, beneath left side of driver's seat
S304	Door harness, in driver's side footwell
S305	Door harness, beneath door switch assembly in center console
S306	1984–1986—Instrument panel harness, beneath center of instrument panel, beneath heating and ventilation controls 1987–1990—Instrument panel harness, beneath left side of instrument panel
S308	Door harness, inside door in front of mirror switch
S309	Door harness, inside door in front of mirror switch
S316	Main harness, on driver's side floor beneath instrument panel
S322	Main harness, beneath right side of driver's seat
S324	Main harness, left rear corner of luggage compartment
S326	Main harness, left rear corner of luggage compartment
S328	Main harness, beneath right side of rear seat
S332	Door harness, beneath right side of passenger's seat

continued

Table u. Wiring Harness Splice Locations (continued)

Splice (welded connection in wiring harness)	Harness and Approximate Location
S333	Door harness, beneath right side of passenger's seat
S340	Main harness, on driver's side floor, beneath instrument panel
S342	Door harness, beneath left side of driver's seat
S346	Main harness
S402	1984–1988—Door Harness, beneath driver's seat 1989–1990—Door harness, beneath passenger's seat
S411	Door harness, inside passenger's door, front edge
S501	Door harness, inside driver's door
S502	Door harness, inside driver's door
S503	Door harness, inside driver's door
S504	Door harness, inside driver's door
S600	Sunroof harness
S601	Sunroof harness

Table v. Relay Locations

Relay	Location
Fuel pump	Auxiliary relay panel. See **14. Fuse/Relay Panel**
Fog light relay	In fuse/relay panel
High beam relay	In fuse/relay panel
Horn relay	In fuse/relay panel
Load reduction relay	In fuse/relay panel
Low beam relay	In fuse/relay panel
Low beam check relay	Integrated into fuse/relay panel and part of printed circuit board
On-board computer relay	Beneath left side of instrument panel, behind ABS control unit
Rear lights check relay	Luggage compartment, near power antenna
Rear window blower relay (convertible only)	Behind center of rear seat, attached to blower motor
Start relay (automatic transmission only)	Upper left corner of driver's footwell
Sunroof motor relay	In windshield header
Wiper control unit relay	In fuse/relay panel

Table w. Other Electrical Component Locations

Other Components	Location
ABS control unit	Beneath driver's side of instrument panel
Active check control unit	In windshield header
Back-up light switch	On transmission side
Brake light switch	Above brake pedal
Central locking system control unit	In driver's footwell, below speaker
Chime module	Beneath driver's side of instrument panel, attached to lower trim panel
Clutch switch	Above clutch pedal
Coolant level switch	In coolant expansion tank
Convertible top position switch	Driver's side of top stowage compartment
Cruise control unit	Beneath instrument panel, above glove compartment on top of fuel injection control unit
Cruise control servo	In engine compartment, in front of left shock tower
Flasher	In steering column, above lower steering column trim
Fuel tank sender	Under rear seat, driver's side of fuel tank
Fresh air blower motor	Behind firewall trim panel
Fresh air blower resistors	Behind firewall trim panel, attached to blower motor housing
Interior light timer control	In driver's footwell, below speaker
Neutral/park/backup light switch	In center console, at base of shift lever
Oil level sensor	In oil pan, left side of engine
On-board computer horn and diode	Under driver's side of front bumper
On-board computer module	In center of instrument panel, to right of radio
Rear window blower motor (convertible only)	Behind center of rear seat back
Seat belt warning timer	Beneath driver's side of instrument panel, left side of steering column
Starter	Left side of engine, rear
Sunroof motor	In windshield header
Windshield washer fluid level switch	In washer fluid reservoir in engine compartment
Windshield washer pump	In washer fluid reservoir in engine compartment
Wiper motor	Rear of engine compartment, behind firewall panel
Horns	Above left and right side of front bumper, behind splash guard
Horn brush/slip ring assembly	Beneath steering wheel on steering column

Table x. Fuse Location and Designation

Fuse	Rating and color	Description
1	7.5 amp (brown)	Headlight, left high beam
2	7.5 amp (brown)	Headlight, right high beam
3	15 amp (lt. blue)	Auxiliary radiator cooling fan, low speed (also see fuses 18, 19, and 20)
4	15 amp (lt. blue)	Turn signal and emergency flasher lights (also see fuse 24) Active check control (also see fuses 6, 10, 21, 22, and 23) Digital clock (also see fuse 21)
5	30 amp (lt. green)	Windshield wipers and washer
6	7.5 amp (brown)	Stop lights Cruise control (also see fuse 10) Active check control (also see fuses 4, 10, 21, 22, and 23) Anti-lock Braking System (ABS) (1986 and later models) Interior lighting (also see fuse 19, 21, 27)
7	15 amp (lt. blue)	Horns
8	30 amp (lt. green)	Rear defogger (also see fuse 23)

continued on next page

Table x. Fuse Location and Designation (continued)

Fuse	Rating and color	Description
9	15 amp (lt. blue)	Fuel delivery (also see fuse 10 and 21) Idle speed (also see fuse 10)
10	7.5 amp (brown)	Seat belt warning system (also see fuse 21) Service interval indicator (also see fuse 21) Tachometer/fuel economy gauge (also see fuse 21) Instrument gauges and indicators Brake warning system Back-up lights On-board computer (also see fuses 12, 21, 23, and 27) Starter Fuel delivery (also see fuse 9 and 21) Idle speed (also see fuse 9) Active check control (also see fuse 21) Stop lights/cruise control (also see fuse 6)
11	15 amp (lt. blue) 1984–1987 7.5 amp (brown) 1988–1990	Fuel delivery (fuel pump)
12	7.5 amp (brown)	Radio, power (also see fuses 21, 27, and 28) Speedometer and instrument indicators (also see fuse 8) On-board computer (also see fuses 10, 21, 23, and 27) Multi-function clock (also see fuses 21 and 23)
13	7.5 amp (brown)	Headlight, left low beam
14	7.5 amp (brown)	Headlight, right low beam
15		Not used
16	15 amp (lt. blue)	Heated seats
17	30 amp (lt. green)	Sunroof Power windows
18	30 amp (lt. green)	Auxiliary radiator cooling fan, high speed (also see fuses 3, 19, and 20)
19	7.5 amp (brown)	Auxiliary radiator cooling fan (also see fuses 3 and 18) Interior lights (also see fuses 6, 21, and 27) Power mirrors
20	30 amp (lt. green)	Heater/air conditioning (also see fuse 28) Auxiliary radiator cooling fan (also see fuses 3, 18, and 19)

continued

Table x. Fuse Location and Designation (continued)

Fuse	Rating and color	Description
21	7.5 amp (brown)	Glove box light and flashlight Ignition key warning/seat belt warning (also see fuse 10) Interior lights (also see fuses 6, 19 and 27) Radio memory (also see fuse 12, 27, and 28) Luggage compartment light Active check control (also see fuses 4, 6, 10, 22, 23) Service interval indicator (also see 10) On-board computer (also see fuses 10, 12, 23, and 27) Fuel delivery-except 318i (also see fuses 9 and 10) Tachometer/fuel economy gauge (also see fuse 10) Digital clock (also see fuse 4) Multi-function clock (also see fuses 12 and 23)
22	7.5 amp (brown)	Active check control (also see fuses 4, 6, 10, 21 and 23) Front parking lights (also see fuse 23) Rear taillights (also see fuse 23) Front side marker lights (also see fuse 23)
23	7.5 amp (brown)	Instrument panel lights Front parking lights (also see fuse 22) Rear taillights (also see fuse 22) Rear side marker and license plate lights Active check control (also see fuses 4, 6, 10, 21, and 22) Rear defogger (also see fuse 8) Multi-function clock (also see fuses 12 and 21) On-board computer (1987 and later)(also see fuses 10, 12, 21, and 27)
24	15 amp (lt. blue)	Turn signal and emergency flasher lights (also see fuse 4)
25		Not used
26		Not used
27	30 amp (lt. green)	Interior lights (also see fuses 6, 19, and 21) Central locking system On-board computer (also see fuses 10, 12, 21, and 23) Radio—amplifier (also see fuses 12, 21, and 28)
28	30 amp (lt. green)	Cigar lighter Radio—power antenna (also see fuses 12, 21, and 27)
29	7.5 amp (brown)	Fog light, left (also see fuse 30)
30	7.5 amp (brown)	Fog light, right (also see fuse 29)
NA	25 amp	Power window circuit breaker