

ATTACHMENTS

Attachment 1

TORQUE WRENCH SETTINGS *

Part	Thread	Tightening torque, N•m (kgf•m)
ENGINE		
Main bearing cap bolt	M10x1.25	68.31-84.38 (6.97-8.61)
Oil pump bolt	M6	5.10-8.20 (0.52-0.85)
Breather cover retaining stud	M8	12.7-20.6 (1.3-2.1)
Breather cover nut	M8	12.7-20.6 (1.3-2.1)
Cylinder head bolt	M12x1.25	Refer to chapter «Engine»
Cylinder head bolt	M8	31.36-39.1 (3.2-3.99)
Nut, inlet and exhaust pipe securing stud	M8	20.87-25.77 (2.13-2.63)
Nut, big end cap bolt	M9x1	43.32-53.51 (4.42-5.46)
Flywheel securing bolt	M10x1.25	60.96-87.42 (6.22-8.92)
Chain tensioner shoe bolt	M10x1.25	41.2-5.0 (4.2-5.2)
Valve cover bolt	M6	1.96-4.60 (0.20-0.47)
Camshaft bearing housing retaining nut	M8	18.33-22.64 (1.87-2.3)
Oil pump shaft sprocket bolt	M10x1.25	41.2-51.0 (4.2-5.2)
Camshaft sprocket bolt	M10x1.25	41.2-51.0 (4.2-5.2)
Nut, valve adjuster bolt	M12x1.25	43.3-53.5 (4.42-5.46)
Valve adjuster bolt sleeve	M18x.5	83.3-102.9 (8.5-10.5)
Spark plug	M14x1.25	30.67-39 (3.13-3.99)
Coolant pump retaining bolt	M8	21.66-26.75 (2.21-2.73)
Nut, water jacket exhaust manifold	M8	15.97-22.64 (1.63-2.31)
Crankshaft ratchet	M20x1.5	101.3-125.64 (10.34-12.8)
Alternator bracket bolt	M10x1.25	44.1-64.7 (4.5-6.6)
Nut, alternator mounting plate	M10x1.25	28.03-45.27 (2.86-4.62)
Nut, alternator-to-bracket securing bolt	M12x1.25	58.3-72.0 (5.95-7.35)
Mounting plate-to-alternator retaining nut	M10x1.25	28.03-45.27 (2.86-4.62)
Retaining nut, engine front mounting bracket	M8	10.4-24.2 (1.1-2.5)
Retaining nut, front mounting rubber-to-crosspiece bracket	M10x1.25	27.4-34.0 (2.8-3.46)
Retaining nut, rear engine mounting crosspiece	M8	15.0-18.6 (1.53-1.9)
Retaining nut, rear engine mounting / transmission	M8	28.3-28.8 (2.38-2.94)
Retaining nut, rear engine mounting / crosspiece	M8	15.9-25.7 (1.62-2.62)
CLUTCH		
Clutch securing bolt	M8	19.1-30.9 (1.95-3.15)
Nut, clutch / brake pedals bolt	M12x1.25	12.7-20.6 (1.3-2.1)
Retaining nut, clutch / brake master cylinders and pedal bracket	M8	9.8-15.7 (1.0-1.6)
Nut, clutch hydraulic drive connection pipes	M12	24.5-31.4 (2.5-3.2)
Nut, brake hydraulic drive connection pipes	M10	14.7-18.6 (1.5-1.9)

TRANSMISSION

Reversing light switch	M14x1.5	28.4-45.1 (2.9-4.6)
Clutch housing-to-engine bolts	M12x1.25	53.9-87.2 (5.5-8.9)
Clutch housing-to-transmission retaining nut	M10x1.25	31.8-51.4 (3.25-5.25)
Clutch housing-to-transmission retaining nut	M8	15.7-25.5 (1.6-2.6)
Shift rod detent cover bolt	M8	15.7-25.5 (1.6-2.6)
End cover retaining nut	M8	15.7-25.5 (1.6-2.6)
Output shaft rear end nut	M20x1.0	66.6-82.3 (6.8-8.4)
Intermediate shaft bearing clamping washer bolt	M12x1.25	79.4-98 (8.1-10.0)
Fork-to-shift rod retaining bolt	M6	11.7-18.6 (1.2-1.9)

TRANSFER BOX

Mounting bracket-to-rubber shaft retaining nut	M10x1.25	26.5-32.3 (2.7-3.3)
Mounting bracket-to-body retaining nut	M8	15.0-18.6 (1.53-1.9)
Nut holding covers of transfer box casing, front axle drive casing, speedometer drive unit housing, control lever bracket	M8	14.7-24.5 (1.5-2.5)
Differential lockup switch	M16x1.5	28.4-45 (2.9-4.6)
Fork-to-selector rod retaining bolt	M6	11.8-18.6 (1.2-1.9)
Fork-to-differential lockup rod retaining bolt	M12x1.25	11.7-18.6 (1.2-1.9)
Driven gear retaining bolt	M10x1.25	66.6-82.3 (6.8-8.4)
Retaining bolt, driving shaft rear bearing and intermediate shaft rear bearing	M18x1.5	96-117.6 (9.8-12.0)
Nut holding propeller shaft flange to driving shaft and to front / rear axle driveshafts	M16x1.5	96-117.6 (9.8-12.0)

DRIVE LINE

Nut, bolts holding flexible coupling to gearbox and transfer box flanges	M12x1.25	57.8-71.5 (5.9-7.3)
Nut, bolt holding propeller shaft flange to flanges of front/rear axles reduction gear and transfer case	M8	27.4-34.3 (2.8-3.5)

FRONT AXLE

Front axle-to-engine retaining bolt	M12x1.25	74.5-92 (7.6-9.4)
Front axle-to-engine retaining nut	M12	60.8-75 (6.2-7.66)
Front axle-to-engine retaining bolt	M10x1.25	42.1-52 (4.3-5.3)
Inner joint housing bearing cover retaining nut	M8x1.25	19.6-24.5 (2.0-2.5)
Differential bearing cover retaining nut	M12x1.25	62.7-75.4 (6.3-7.7)
Retaining bolt, lockplate-to-spring washer	M6x1	3.8-6.2 (0.39-0.63)
Driven gear securing bolt	M10x1.25	83.3-102.9 (8.5-10.5)

REAR AXLE

Bolt holding reduction gear casing to rear axle beam	M8	35-43.2 (3.57-4.41)
Differential bearing cover bolt	M10x1.25	43.3-53,5 (4.42-5.46)
Driven gear bolt	M10x1.25	83.3-102.9 (8.5-10.5)
Flange-to-drive gear nut	M16x1.5	Refer to section «Rear axle»
Retaining nut, axleshaft bearing and rear brake	M10x1.25	41.6-51.4 (4.25-5.25)

FRONT SUSPENSION

Nut, lower bolts holding cross-member to chassis arms	M12x1.25	66.6-82.3 (6.8-8.4)
Nut, upper bolts holding cross-member to chassis arms	M12x1.25	66.6-82.3 (6.8-8.4)

Nut, bolt holding recoil block bracket to cross-member	M8	15.1-18.6 (1.53-1.9)
Nut, upper control arm shaft bolt	M12x1.25	66.6-82.3 (6.8-8.4)
Shock-absorber upper end retaining nut	M10x1.25	27.4-34 (2.8-3.46)
Shock-absorber lower end retaining nut	M10x1.25	50-61.7 (5.1-6.3)
Nut, front wheel hub bearing	M18x1.5	Refer to «Running gear»
Brake caliper-to-steering knuckle retaining bolt	M10x1.25	29.1-36 (2.97-3.67)
Anti-roll bar retaining nut	M8	15-18.6 (1.53-1.9)
Balljoint-to-steering knuckle retaining nut	M14x1.5	83.3-102.9 (8.5-10.5)
Radius rod-to-suspension crosspiece nut	M12x1.25	66.6-82.3 (6.8-8.4)
Radius rod-to-body retaining nut	M16x1.5	104.9-169.5 (10.7-17.3)
Lower arm shaft-to-crosspiece connecting nut	M16x1.5	114.7-185.2 (11.7-18.9)
Balljoint-to-suspension arm retaining nut	M8	20.6-25.75 (2.1-2.63)
Nut, wheel retaining bolt	M12x1.25	62.4-77.1 (6.37-7.87)
Suspension upper arm shaft nut	M14x1.5	63.7-102.9 (6.5-10.5)
Nut, swing arm retaining bolt	M12x1.25	66.6-82.3 (6.8-8.4)

REAR SUSPENSION

Shock-absorber retaining nut	M12x1.25	38.2-61.7 (3.9-6.3)
Nut, Panhard rod and trailing arms retaining bolts	M12x1.25	66.6-82.3 (6.8-8.4)

STEERING

Nut, steering box retaining bolt	M10x1.25	33.3-41.2 (3.4-4.2)
Nut, idler arm bracket retaining bolt	M10x1.25	33.3-41.2 (3.4-4.2)
Nut, steering rod ballpin **	M14x1.5	42.1-53 (4.3-5.4)
Middle shaft-to-upper shaft and worm shaft retaining nut	M8	22.5-27.4 (2.3-2.8)
Steering wheel retaining nut	M16x1.5	31.4-51 (3.2-5.2)
Steering shaft bracket and ignition switch retaining nut	M8	15-18.6 (1.53-1.9)
Drop arm nut	M20x1.5	199.9-247 (20.4-25.2)
Idler arm shaft nut	M14x1.5	63.7-102.9 (6.5-10.5)

* It is allowed to round tightening torques for nuts and bolts to the tenth of kgf-m within the tolerance.

** With the nut recess mismatching the cotter pin hole, tighten to further torque (less than 60°) to ensure a reliable locking

SPECIAL TOOLS FOR MAINTENANCE AND REPAIR *

Designation	Description
ENGINE	
A.40005	Universal pickers kit
A.40026	Removal tool, coolant pump impeller
A.50088	Spanner, intake / exhaust pipe nuts
A.50113	Allen key, crankcase oil drain plug
A.50121	Spanner, crankshaft pulley bolt
A.50126	Spanner for checking cylinder head bolt tightening torques (with camshaft in situ)
A.60153/R	Mandrel for pressing in/out inlet/exhaust valve guide
A.60311/R	Tool, removal / installation of engine valves
A.60312	Removal tool, oil filter
A.60326/R	Tool to press out ignition distributor / oil pump drive gear bush from the cylinder block
A.60330/R	Flywheel fixing arm for fitting flywheel to crankshaft
A.60333/1/2	Tool to press in/out oil pump drive shaft bushes
A.60334	Tool for checking cylinder head tightness
A.60430	Installation tool, coolant pump impeller
A.86010	Tool for pressing in crankshaft plugs
A.90310	Set of reamers, valve guide bore machining
A.90353	Reamer for bushes of oil pump drive shaft, ignition distributor and fuel pump
A.94003	Core drill (75°), inlet valve seat machining
A.94016	Core drill spindle, plug machining
A.94016/10	Core drill, crankshaft plug socket machining
A.94031	Core drill (20°), exhaust valve seat machining
A.94058	Core drill spindle, valve seat machining
A.94059	Set of guides, valve seat machining
A.94069	Grinding wheel spindle, valve seat machining
A.94078	Grinding wheel, exhaust valve seat machining
A.94092	Core drill, exhaust valve seat machining
A.94100	Grinding wheel, inlet valve seat machining
A.94101	Core drill (20°), inlet/exhaust valve seat machining
A.95111	Blade for checking camshaft valve lever/cam lobe clearance
02.7812.9500	Socket spanner (13 mm), removal and refitting of starter motor and downpipe
02.7823.9505	Tool, valve removal and installation (can be used in place of A.60311/R)
41.7816.4013	Socket spanner (21 mm) for tightening valve lever adjuster bolt guides
41.7853.4010	Installation tool, camshaft cover to engine
41.7853.4011	Installation tool, oil seal + retainer to crankshaft
41.7853.4016	Installation tool, valve guide oil caps
67.7812.9513	Dynamometer for checking fan blower belt tension
67.7812.9514	Spark plug spanner
67.7812.9515	Spanner for checking spark plug tightening torque
67.7812.9519	Socket, spark plug removal/installation
67.7824.9521	Tool for checking wear (extension) of camshaft drive chain
67.7834.9506	Tool for checking fuel pump pushrod protrusion
67.7854.9519	Adjuster bush for fitting normal and oversize pistons of 82 mm dia.
67.8125.9502	Ring gauge (82 mm dia.) for setting inside gauge to zero
67.8151.9505	Gauge for checking fuel level in carburettor
TCO-3/379	Crosspiece, engine removal and installation
EC-106	Thermostat inspection rig

CLUTCH

A.70017	Tool, clutch pedal spring removal and installation
A.70081	Mandrel, clutch disc centering
67.7813.9503	Tooling, clutch disc repair
67.7822.9517	Jig, clutch disc lining renewal
67.7851.9500	Mandrel, clutch disc lining rivetting

TRANSMISSION

A.40006	Puller, front input shaft bearing
A.55035	Jointed box spanner, gearbox removal and installation
41.7816.4068	Input shaft fixing arm
41.7816.4069	Tool for fitting (removing) circlip to (from) output shaft
41.7853.4028	Mandrel for fitting output shaft bearing
41.7853.4032	Mandrel, installation of intermediate shaft bearing
41.7853.4039	Mandrel, installation of output shaft oil seal
67.7853.9558	Mandrel for driving on transfer case differential bearing

DRIVE LINE

A.70025	Clasp, removal and installation of flexible coupling
41.8734.4092	Gauge for selection of propeller shaft universal joint bearing circlips
67.7823.9522	Cramp, renewal of universal joint spider
67.7853.9533	Tool for pressing in front wheel CV joint oil seal ring
67.7853.9537	Installation tool, front wheel CV joint rubber boot

DRIVE AXLES

A.45008	Removal tool, driving pinion rear bearing inner race
A.45028	Rest, removal of differential box bearing inner race
A.55085	Spanner, differential bearing nuts
A.70152	Tool for pressing rear bearing inner race to driving pinion
A.70157	Installation tool, axleshaft oil seal
A.70171	Tool for pressing in driving pinion rear bearing outer race
A.70172	Pair of flanges to be fitted to rear axle beam ends during its inspection (truing)
A.70184	Tool to determine shim thickness to adjust clearance in final drive gear meshing
A.70185	Tool for pressing in driving pinion front bearing outer race
A.70198	Tool for pressing out driving pinion bearing outer race
67.7823.9530	Installation tool, axleshaft lockring
67.7823.9529	Removal tool, lockring from axleshaft
A.95601/R	Tool for checking reliable pressing of lockring onto axleshaft
A.95688/R	Tool for adjusting clearance in drive gear/crown wheel meshing and differential bearing tightening
A.95690	Tool for selecting drive pinion shim thickness
A.95697/5	Socket, dynamometer 02.7812.9501
02.7812.9501	Dynamometer for checking rotational resistance moment of drive axle pinion and steering worm shaft
67.7812.9520	Spanner, front axle pinion adjustment
02.7834.9504	Measuring tool, free axial play of axleshaft
67.7823.9516	Removal tool for axleshaft, rear axle
67.7853.9559	Rest, differential bearing removal
67.8701.9508	Bracket with endpiece to tool A.95688/R for adjusting front axle pinion

FRONT SUSPENSION

A.47045	Tool for pressing out silent blocks of suspension upper arms
A.57034/R	Wrench, shock-absorber cartridge nut

A.57070	Spanner, front shock-absorber removal and installation
A.74177/1	Tool for fitting silent blocks to front suspension upper control arm (to be used with tool 67.7853.9519)
02.8701.9502	Tool for checking front suspension balljoints
67.7820.9514	Cross-member for engine lifting
67.7820.9520	Mandrel, nut reduction
67.7820.9521	Lever for moving front wheel hub to check clearance in bearings
67.7823.9514	Removal tool, wheel hub cap
67.7823.9515	Removal tool, lower control arm shaft
67.7823.9517	Tool for pressing out/in lower control arm silent blocks
67.7823.9526	Tool for pressing in/out lower control arm silent blocks on press
67.7823.9527	Tool for pressing out upper control arm silent block
67.7824.9513	Repair tool kit, shock absorber
67.7834.9507	Tool for measuring clearance in front wheel hub bearing
67.7853.9519	Tool for pressing in upper control arm silent block (to be used with tool A.74177/1)
67.7853.9528	Tool for fitting wheel hub cap
67.7853.9534	Washer for pressing out front wheel hub inner bearing outer race
67.7853.9535	Handle to washers for pressing out wheel hub inner bearing outer race
67.7853.9536	Tool for pressing in front wheel hub bearing outer race
67.7853.9540	Washer for pressing out wheel hub bearing inner race / oil seal
67.8732.9501	Tool for checking geometry of front suspension cross-member

REAR SUSPENSION

67.7820.9517	Tool kit, replacement of rear suspension rod silent blocks
--------------	--

STEERING

A.47035	Separator tool for pressing out steering joints from drop arm and idler arm
A.47043	Removal tool, drop arm
A.74076/1	Repair tool, steering box
A.74076/R	Bracket for securing steering box, to be attached to tool A.74076/1
A.74105	Tool for pressing in/out drop arm shaft bush
A.74186	Tool for pressing out worm shaft bearing outer race
A.90336	Reamer, steering box bushes
67.7813.9504	Wrench, steering rod coupling
67.7824.9516	Puller, steering link balljoints
67.7853.9541	Tool for pressing out/in worm upper bearing outer race
67.8720.9501	Tool for checking steering wheel free play

BRAKING SYSTEM

A.56124	Spanner, brake pressure regulator cover plug
67.7820.9519	Installation tool, rear brake pressure regulator
67.7823.9519	Puller, brake drum

ELECTRICAL SYSTEM

02.7823.9504	Removal tool, alternator pulley
--------------	---------------------------------

BODYWORK

A.78034	Removal tool, window lifter handle locking clip
---------	---

* Tool kit to be supplied to the customer is defined separately

Adjustment and checking DATA

Valve clearances, cold engine (18-20°C), mm:	
inlet valves	0.15
exhaust valves	0.20
Coolant temperature, warm engine, at ambient air of 20-30°C, full load and 80 km/h, not greater, °C	
	95
Minimum idle rpm	750-800
Oil pressure in engine lubrication system, oil temperature of 85°C and crankshaft speed of 5400 rpm, MPa (kgf/cm ²)	
	0.35-0.45 (3.5-4.5)
Coolant level in expansion tank, cold engine	3-4 cm above «MIN» mark
Alternator drivebelt deflection at 98 N (10 kgf), mm	10-15
Electrode gap, mm:	
carburettor engine	0.7-0.8
injection engine	1.00-1.13
Initial ignition timing BTDC, degrees:	
91 RON fuel	1±1
93 RON, 95 RON fuel	3±1
Clutch pedal free play, mm	25-35
Brake pedal free play, engine stalled, mm	3-5
Steering wheel play, vehicle in straight-ahead position, not greater, degrees (mm)	5 (18-20)
Front wheel toe-in, run-in vehicle, at 3140 N (320 kgf), mm	2-4
Front wheel camber, run-in wheel, at 3140 N (320 kgf), degrees (mm)	0°30'±20' (1-5)
Castor, run-in vehicle, at 3140 N (320 kgf), degrees	3°30'±30'
Tyre pressure, MPa (kgf/cm ²):	
front wheels	0.21 (2.1)
rear wheels	0.19 (1.9)
Backlash, front wheel hub bearings, mm:	
field adjustment	0.02-0.07
	0.02-0.15
Minimum permissible lining thickness, front pads and rear shoes, mm	1.5
Fluid level, brake /clutch fluid reservoirs	up to lower filler neck edge
Maximum gradient on dry hard ground where laden vehicle is retained unlimited time with handbrake applied, %	
	25
Handbrake lever travel, notch on the ratchet:	
adjustment	4-5 (2-4)*
operation	4-7 (2-8)*

* For vehicles with double tooth pawl

Fuel, lubricants and fluids

Location	Capacity, litres	Description
Fuel tank, VAZ-21213, VAZ-21214, VAZ-21214-20 vehicles	42	Automotive petrol, at least 95 RON as per EN 228
Fuel tank, VAZ-21215-10 vehicle	45	Diesel fuel as per EN 590
Engine cooling system, including heating and ventilation system, VAZ-21213, VAZ-21214, VAZ-21214-20 vehicles	10.7	Ethylene glycol-based coolant meeting ASTM D 3306-86 b
Engine cooling system, including heating and ventilation system, VAZ-21215-10 vehicle	11	Coolants: «PROCOR 3000», «ACO 800», «NAPGEL C 2400», «REVC0 CEL 107»
Engine lubrication system, including oil filter, VAZ-21213, VAZ-21214, VAZ-21214-20 vehicles	3.75	Motor oils: SAE: <i>5W-40 (-30 to +30°C)</i> <i>10W-40 (-25 to +35°C)</i> <i>15W-40 (-20 to +45°C)</i> API: <i>SG/SH/CD</i> ACEA: <i>A2-96</i>
Engine lubrication system, including oil filter, VAZ-21215-10 vehicle	6	Motor oils: SAE: <i>15W-40 (-12 to +40°C)</i> <i>10W-30 (-20 to +30°C)</i> <i>5W-30 (-25 to +30°C)</i> <i>10W-40 (-20 to +40°C)</i> API: <i>SG/CF</i> ACEA: <i>B2 96 mini</i> CCMC: <i>PD2</i>
Gearbox	1.35	Transmission oils:
Rear axle casing	1.3	SAE: <i>75W-90(-40 to +25°C)</i>
Steering box	0.18	<i>80W-90 (-26 to +35°C)</i>
Transfer case	0.75	<i>85W-90 (-12 to +45°C)</i>
Front axle casing	1.15	API: <i>GL5</i>
Clutch hydraulic release system	0.2	Brake fluids: <i>FM VSS : 571 116 DOT 4</i>
Brake hydraulic system	0.66	SAE: <i>J 1713</i>
Windscreen/headlight washer container	5.0	Any alcohol-based glass cleaners
Rear door washer reservoir	2.0	
Front wheel bearings		
Starter motor guide ring	–	Automotive multipurpose lithium grease: <i>NLGI: class 2</i>
Bearings, universal joints	–	Automotive multipurpose lithium grease: <i>NLGI: class 2 c M0S2</i>
Propeller shafts spline joint		
Seat rails		
Door locks	–	Automotive multipurpose lithium grease: <i>NLGI: class 1</i>
Front suspension ballpins, steering joints	–	<i>KB-521 (Fiat Lubrificanti) grease</i>
Front wheel CV joints	–	<i>VN 2461C (Molikot) grease</i>
Transmission / transfer case drive joint	–	<i>Longtern-00 (Dow Corning) grease</i>
Battery terminals and clamps	–	Hydrocarbon grease: <i>NLGI: class 1 or 2</i>
Door key holes		
Rear brake pressure regulator	–	<i>Castrol S 058 grease</i>

Автомобили ВАЗ-21213, ВАЗ-21214, ВАЗ-21214-20, ВАЗ-21215
Руководство по ремонту автомобилей
© ГЕНЕРАЛЬНЫЙ ДЕПАРТАМЕНТ РАЗВИТИЯ А/О АВТОВАЗ
© Авторы-разработчики: Волгин С. Н., Козлов П. Л., Косарев С. Н.

© Перевод З. Анисовой, И. Станковой

© Макет-оригинал изготовлен БКМ УПАВР АО АВТОВАЗ. Компьютерная вёрстка и оформление - В. Алаев, В. Ивков, В. Митрофанов. тел. (8482) 22-54-19.

Изд. № 0021311