Workshop Manual

20 Technical Data

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TAMD63L-A/P-A, TAMD74A-A/B
TAMD74C/L/P-A, TAMD74C/L/P-B
TAMD75P-A

Group 20 Technical Data

Marine diesel engines

TAMD63L-A • TAMD63P-A
TAMD74A-A • TAMD74A-B
TAMD74C-A • TAMD74L-A • TAMD74P-A
TAMD74C-B • TAMD74L-B • TAMD74P-B
TAMD75P-A

Contents

Safety information

Introduction

The workshop manual contains technical data, descriptions and repair instructions for products or product versions noted in the table of contents, supplied by Volvo Penta. Make sure you use the correct workshop literature.

Read the available safety information, “General information” and “Repair instructions” in the workshop manual before you start to do any service work.

Important

The following special warning signs are found in the workshop manual and on the product.

WARNING! Warns for the risk of personal injury, major damage to product or property, or serious malfunctions if the instruction is ignored.

IMPORTANT! Is used to call attention to things which could cause damage or malfunctions to product or property.

NOTE! Is used to call attention to important information, to facilitate work processes or operation.

To give you a perspective on the risks which always need to be observed and precautions which always have to be taken, we have noted them below.

Make it impossible to start the engine by cutting system current with the main switch(es) and lock it (them) in the off position before starting service work. Fix a warning sign by the helmsman’s seat.

All service work should normally be done on a stationary engine. Some work, such as adjustments, need the engine to be running, however. Going close to a running engine is a safety risk. Remember that loose clothes, long hair etc. can catch on rotating components and cause severe injury.

If work is done adjacent to a running engine, a careless movement or a dropped tool can lead to personal injury in the worst case.
Be careful with hot surfaces (exhaust pipes, turbos, charge air pipes, starting heaters etc.) and hot fluids in pipes and hoses on an engine which is running or which has just stopped. Reinstall all guards which have been removed during service work, before re-starting the engine.

Make sure that the warning or information labels on the product are always clearly visible. Replace labels which have been damaged or painted over.

Never start an engine without the air filter in place. The rotating compressor turbine in the turbocharger can cause severe injury. Foreign bodies in the inlet pipe can also cause severe mechanical damage.

Never use start spray or similar products as a starting aid. Explosions could occur in the inlet manifold. Danger of personal injury.

Avoid opening the coolant filling cap when the engine is hot. Steam or hot coolant can spray out at the same time as the pressure which has built up is lost. Open the filler cap slowly, and release the pressure in the cooling system if the filling cap or tap has to be opened, or if a plug or coolant hose has to be removed when the engine is hot. Steam or hot coolant can stream out in an unexpected direction.

Hot oil can cause burns. Avoid skin contact with hot oil. Make sure that the oil system is de-pressurized before doing any work on it. Never start or run the engine with the oil filler cap removed, because of the risk of oil spillage.

Stop the engine and close the sea cocks before doing any work on the cooling system.

Only start the engine in a well-ventilated area. When operated in a confined space, exhaust fumes and crankcase gases must be ventilated from the engine bay or workshop area.

⚠ Always use goggles when doing any work where there is any risk of splinters, grinding sparks, acid splash or other chemicals. Your eyes are extremely sensitive, injury could cause blindness!

⚠ Avoid skin contact with oil! Long-term or repeated skin contact with oil can make your skin dry out. The consequence is irritation, dry skin, eczema and other skin disorders.
Used oil is more hazardous to health than new oil. Use protective gloves and avoid oil-soaked clothes and rags. Wash regularly, especially before meals. Use special skin cream to avoid drying and facilitate skin cleaning.

⚠ Most chemicals intended for the product (e.g. engine and transmission oils, glycol, petrol (gasoline) and diesel oil) or chemicals for workshop use (e.g. degreasers, paints and solvents) are hazardous. Read the instruction on the packages carefully! Always observe the safety advice (e.g. use of breathing protection, goggles, gloves etc.). Make sure that other personnel are not inadvertently exposed to hazardous substances, such as via the air they breathe. Ensure good ventilation. Handle used and surplus chemicals in the prescribed manner.

⚠ Be very careful when searching for leaks in the fuel system and testing fuel injectors. Use goggles. The jet which comes from a fuel injector has very high pressure and considerable penetration ability. Fuel can force its way deep into body tissue and cause severe injury. Risk of blood poisoning (septicemia).

⚠ All fuels, and many chemicals, are flammable. Make sure that open flames or sparks can not set them alight. Petrol (gasoline), some thinners and hydrogen gas from batteries are extremely flammable and explosive when mixed with air in the correct ratio. Do not smoke! Provide good ventilation and take the necessary precautions before you start welding or grinding in the vicinity. Always have a fire extinguisher easily available near the workplace.

⚠ Make sure that oil and fuel soaked rags, and used fuel and oil filters are stored in a safe place. Oil soaked rags can self-ignite in certain circumstances. Used fuel and oil filters are polluting waste and must be handed to an approved waste management facility for destruction, together with used lubrication oil, contaminated fuel, paint residue, solvents, degreasers and wash residue.

⚠ Batteries must never be exposed to open flames or electric sparks. Do not smoke close to the batteries. The batteries generate hydrogen gas when charged, which forms an explosive gas when mixed with air. This gas is very flammable and highly explosive. A spark, which can be formed if the batteries are wrongly connected, is enough to make a battery explode and cause damage. Do not move the connection when you attempt to start the engine (risk of arcing), and do not stand and lean over one of the batteries.

⚠ Never mix up the battery positive and negative poles when the batteries are installed. If the batteries are wrongly connected, this can cause severe damage to the electrical equipment. Please check the wiring diagram!

⚠ Always use goggles when charging and handling batteries. Battery electrolyte contains highly corrosive sulfuric acid. If this comes into contact with your skin, wash at once with soap and a lot of water. If you get battery acid in your eyes, flush at once with a generous amount of water, and get medical assistance at once.

⚠ Stop the engine and cut the system current with the main switch(es) before doing any work on the electrical system.

⚠ The clutch must be adjusted with the engine shut off.

⚠ The existing lugs on the engine/reverse gear should be used for lifting. Always check that the lifting devices are in good condition and that they have the correct capacity for the lift (the weight of the engine plus the reverse gear and extra equipment if installed).

The engine should be lifted with a customized or adjustable lifting boom for safe handling and to avoid damaging components on top of the engine. All chains or cables should be parallel to each other and should be as square as possible to the top of the engine.

If other equipment connected to the engine has altered its centre of gravity, special lifting devises may be needed to obtain the correct balance and safe handling.

Never do any work on an engine which just hangs from a lifting devise.

⚠ Never work alone when heavy components are to be dismantled, even when safe lifting devises such as lockable blocks & tackle are used. Even when lifting devises are used, two people are needed in most cases. One who operates the lifting devise and other who makes sure that components move freely and are not damaged during lifting.

When you work aboard a boat, always make sure that there is enough space for disassembly where you are working, with no risk for personal or material damage.

⚠ Components in the electrical and fuel systems on Volvo Penta products have been designed to minimize the risks of explosion and fire. The engine must not be operated in environments with adjacent explosive media.

⚠ **WARNING**! Fuel delivery pipes must not be bent or straightened under any circumstances. Damaged pipes must be replaced.

⚠ Remember the following when washing with a high pressure washer: Never aim the water jet at seals, rubber hoses or electrical components. Never use a high pressure washer for engine cleaning.

⚠ Only use the fuels recommended by Volvo Penta. Please refer to the operator's manual. The use of fuel of inferior quality can damage the engine. In a diesel engine, poor fuel can cause the regulation rod to bind and the engine will over-rev, entailing a strong risk of personal injury and machinery damage. Poor fuel can also lead to higher maintenance costs.

General information

About the workshop manual

This workshop manual contains technical data for the standard versions of engines TAMD63L-A, TAMD63P-A, TAMD74A-A, TAMD74A-B, TAMD74C-A, TAMD74L-A, TAMD74P-A, TAMD74C-B, TAMD74L-B, TAMD74P-B and TAMD75P-A.

The engine designation and number are noted on the number plate. The engine designation and number must always be given in all correspondence about an engine.

The workshop manual has been primarily prepared for Volvo Penta service workshops and their qualified personnel. This assumes that people who use the Manual have basic knowledge of marine drive systems and can do the tasks of a mechanical or electrical nature associated with the trade.

Volvo Penta constantly improves its products, so we reserve the right to make modifications without prior notification. All information in this manual is based on product data which was available up to the date on which the manual was printed. Any material changes introduced into the product or service methods after this date are notified by means of Service Bulletins.

Spare parts

Spare parts for electrical and fuel systems are subject to various national safety requirements such as the US Coast Guard Safety Regulations. Volvo Penta Original Spares comply with these requirements. No damage whatever, occasioned by use of non-original Volvo Penta spares for the product, will be compensated by the warranty offered by Volvo Penta.

Certified engines

When service or repairs are done to an exhaust emission certified engine, it is important to be aware of the following:

Certification means that an engine type has been checked and approved by the relevant authority. The engine manufacturer guarantees that all engines made of the same type are equivalent to the certified engine.

This put special demands on service and repair work, as follows:

- Maintenance and service intervals recommended by Volvo Penta must be complied with.
- Only Volvo Penta original spares may be used.
- Service to injection pumps, pump settings and injectors must always be done by an authorized Volvo Penta workshop.
- The engine must not be converted or modified, except for the accessories and service kits which Volvo Penta has approved for the engine.
- Installation changes to the exhaust pipe and engine air inlet ducts must not be done.
- No seals may be broken by unauthorized personnel.

The general advice in the operator's manual about operation, care and maintenance apply.

⚠ **IMPORTANT**! Delayed or inferior care/maintenance, and the use of non-original spares, mean that AB Volvo Penta can no longer be responsible for guaranteeing that the engine complies with the certified version.

Damage, injury and/or costs which arise from this will not be compensated by Volvo Penta.

Technical Data

General information

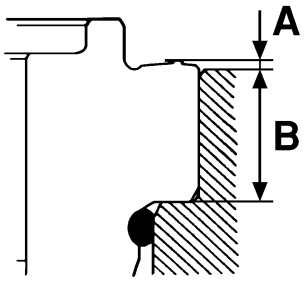
	63 series	74 series 75 series
No. of cylinders	6	6
Bore	98.43 mm (3.8752”)	107.0 mm (4.2126")
Stroke	120 mm (4.724")	135 mm (5.315")
Swept volume, total	5.48 liter (334 in^3)	7.28 liter (444 in^3)
Compression ratio	16.7:1	17.2:1
Compression pressure at starter motor revs. (300 rpm.)	2.7 MPa (391 psi)	2.3 MPa (333 psi)
Firing sequence (cyl. No. 6 closest to flywheel)	1–5–3–6–2–4	1–5–3–6–2–4
Direction of rotation (seen from front)	Clockwise	Clockwise
Power	See sales literature	See sales literature
High idle/regulation speed	Please refer to “Fuel injection pump, Data and settings”, Service Bulletins Group 24–1 No. 9	
Low idle:		
TAMD63L-A, TAMD63P-A	600 ± 20 rpm	–
TAMD74A-A, TAMD74A-B	–	600 ± 30 rpm
TAMD74C/L/P-A, TAMD74C/L/P-B, TAMD75P-A	–	600 ±50 rpm*
Max. permissible rearwards inclination in operation	15°	15°
Weight, engine with heat exchanger, without reverse gear, approx.	745 kg (1642 lbs)	860 kg (1896 lbs)

***** **Note.** Idling speed is adjusted to 600 rpm. when the engine is delivered. If necessary, the idling speed can be adjusted in the area between 550–700 rpm.

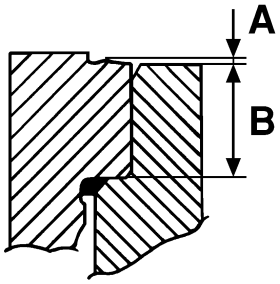
Engine speed is also raised to 800 rpm. for up to 2 minutes with coolant temperature below +15°C (59°F).

Cylinder block

Cylinder liners



63 series



74 series, 75 series

	63 series	**74 series** **75 series**
Type	Wet, replaceable	Wet, replaceable
Cylinder diameter (no overbores)	98.425 mm (3.8750")	107.00 mm (4.2126")
Height, total	287 mm (11.300")	256.8 mm (10.110")
Liner collar height above block plane **(A)**	0.38–0.43 mm (0.0150–0.0169")	0.13–0.18 mm (0.0051–0.0071")
Max height difference between liners 1, 2, 3 and 4, 5, 6	0.02 mm (0.0008")	0.02 mm (0.0008")
Liner collar thickness (**B**)	9.63–9.66 mm (0.3791–0.3803")	9.63–9.66 mm (0.3791–0.3803")
No. of O-rings upper liner seal	1	1
No. of O-rings lower liner seal	3	3

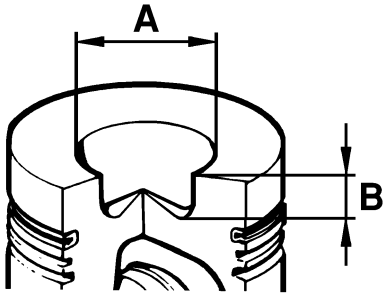
Cylinder liners (and pistons with piston rings) should be changed at 0.35–0.40 mm (0.0138–0.0157") wear.

Pistons

Material	Aluminum with cast iron ring	Aluminum with cast iron ring
Piston installed in engine, height above cylinder block plane, max.	0.55 mm (0.0217")	0.40 mm (0.0157")
Piston clearance	0.11–0.13 mm (0.0043–0.0051")	0.197–0.219 mm (0.0078–0.0086")
Front marking	Arrow to front	Arrow to front

Combustion chamber (piston crown)

Diameter (**A**)	54.6 mm (2.150")	73 mm (2.874")
Depth (**B**)	20.95 mm (0.825")	20 mm (0.787")



Piston rings

	63 series	74 series 75 series
Compression rings, No.	2 pcs	2 pcs
Oil ring, No.	1 pcs	1 pcs
Piston ring gap in cylinder liner at diameter 98.425 mm (3.8750") and 107 mm (4.2126"):		
Compression ring, upper	0.20–0.30 mm (0.0079–0.0118")	0.30–0.50 mm (0.0118–0.0197")
Compression ring 2:nd	0.25–0.50 mm (0.0098–0.0197")	0.60–0.80 mm (0.0236–0.0315")
Oil ring	0.30–0.60 mm (0.0118–0.0236")	0.30–0.55 mm (0.0118–0.0217")

Gudgeon pins

Clearance, gudgeon pin–small end bush	0.014–0.022 mm (0.0006–0.0009")	0.020–0.030 mm (0.0008–0.0012")
Gudgeon pin diameter STD.	40.000–40.004 mm (1.5748–1.5750")	46.996–47.000 mm (1.8502–1.8504")
Gudgeon pin hole diameter in piston	40.000–40.008 mm (1.5748–1.5751")	47.005–47.012 mm (1.8506–1.8509")

Cylinder heads

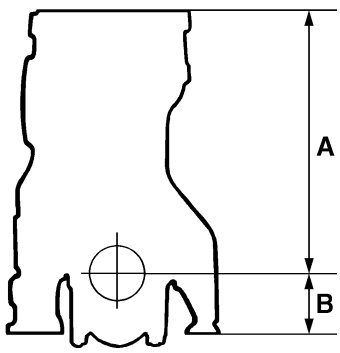
Qty.	2 pcs	2 pcs
Height	100.85–101.15 mm (3.9705–3.9823")	108.85–109.15 mm (4.2854–4.2972")
min.	100.65 mm (3.9626")	108.65 mm (4.2775")
Sealing groove depth	0.10 ±0.02 mm (0.0039 ±0.0008")	0.10 ±0.02 mm (0.0039 ±0.0008")

Screws, cylinder head

Qty per cylinder head	20 pcs	20 pcs
Thread dimension	M 11	M 11
Length	142 mm (5.590")	150 mm (5.905")

Cylinder block

Height, upper block plane – crankcase centre (**A**)	Min. 369 mm (14.528")	Min. 403 mm (15.866")
Height, lower block plane – crankcase centre (**B**)	Min. 90 mm (3.543")	Min. 90 mm (3.543")

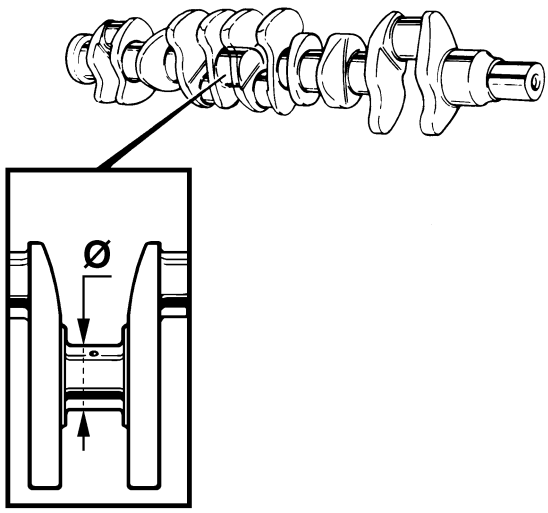


Crank mechanism

Crankshaft

	63 series	74 series 75 series
Crankshaft, end float	0.06–0.26 mm* (0.0024–0.0102")*	0.07–0.27 mm* (0.0028–0.0106")*
Main bearings, radial clearance	0.06–0.12 mm (0.0024–0.0047")	0.06–0.12 mm (0.0024–0.0047")
Permissible ovality on main and big end journals, max.	0.08 mm (0.0031")	0.08 mm (0.0031")
Permissible taper on main and big end journals, max.	0.05 mm (0.0020")	0.05 mm (0.0020")

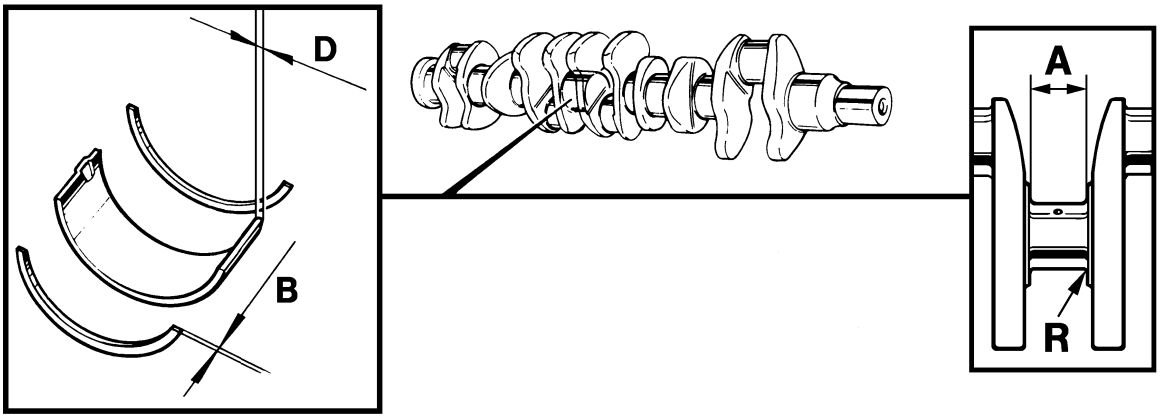
* Wear tolerance, max. 0.40 mm (0.0157").



Main bearing journals

Diameter **(Ø)** for machining:			
Standard		76.149–76.162 mm (2.9980–2.9985")	90.528–90.550 mm (3.5641–3.5650")
Underdim.	0.25 mm (0.01")	75.899–75.912 mm (2.9881–2.9887")	90.274–90.296 mm (3.5541–3.5550")
	0.50 mm (0.02")	75.649–75.662 mm (2.9783–2.9788")	90.020–90.042 mm (3.5441–3.5450")
	0.75 mm (0.03")[1]	75.399–75.412 mm (2.9685–2.9690")	89.766–89.788 mm (3.5341–3.5350")
	1.00 mm (0.04")[1]	75.149–75.162 mm (2.9586–2.9591")	89.512–89.534 mm (3.5241–3.5250")
	1.25 mm (0.05")[1]	74.899–74.912 mm (2.9488–2.9493")	89.258–89.280 mm (3.5141–3.5150")

[1] **Note.** Crankshaft must be nitrocarburized again if machined more than two underdimensions.



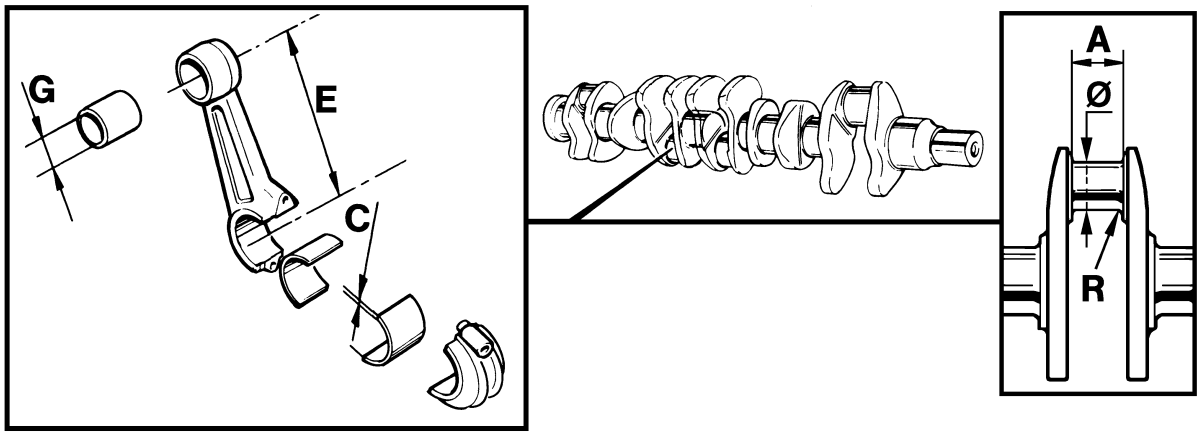
	63 series	74 series 75 series
Width of thrust bearing journal (**A**):		
Standard	43.975–44.025 mm (1.7313–1.7333")	45.975–46.025 mm (1.8100–1.8120")
Overdim.:		
0.2 mm (0.008"), (thrust bearing 0.1 mm (0.004") O.D.)	44.175–44.225 mm (1.7392–1.7411")	46.175–46.225 mm (1.8179–1.8199")
0.4 mm (0.016"), (thrust bearing 0.2 mm (0.008") O.D.)	44.375–44.425 mm (1.7470–1.7490")	46.375–46.425 mm (1.8258–1.8278")
0.6 mm (0.024"), (thrust bearing 0.3 mm (0.012") O.D.)	44.575–44.625 mm (1.7549–1.7569")	46.575–46.625 mm (1.8337–1.8356")
Fillet radius (**R**)	4.28–4.33 mm (0.1685–0.1705")	3.75–4.0 mm (0.1476–0.1575")

Thrust washers (thrust bearing)

Width (**B**):		
Standard	3.073–3.123 mm (0.1210–0.1230")	2.312–2.362 mm (0.0910–0.0930")
Overdim. 0.1 mm (0.004")	3.173–3.223 mm (0.1249–0.1269")	2.412–2.462 mm (0.0950–0.0969")
0.2 mm (0.008")	3.273–3.323 mm (0.1289–0.1308")	2.512–2.562 mm (0.0989–0.1009")
0.3 mm (0.012")	3.373–3.423 mm (0.1328–0.1348")	2.612–2.662 mm (0.1028–0.1048")

Main bearing shells

Thickness (**D**):		
Standard	2.403–2.413 mm (0.0946–0.0950")	2.930–2.940 mm (0.1154–0.1157")
Overdim. 0.25 mm (0.01")	2.530–2.540 mm (0.0996–0.1000")	3.057–3.067 mm (0.1204–0.1207")
0.50 mm (0.02")	2.657–2.667 mm (0.1046–0.1050")	3.184–3.194 mm (0.1254–0.1257")
0.75 mm (0.03")	2.784–2.794 mm (0.1096–0.1100")	3.311–3.321 mm (0.1304–0.1307")
1.00 mm (0.04")	2.911–2.921 mm (0.1146–0.1150")	3.438–3.448 mm (0.1354–0.1357")
1.25 mm (0.05")	3.038–3.048 mm (0.1196–0.1200")	3.565–3.575 mm (0.1404–0.1407")
Diameter, bearing position in block, std.	81.051–81.076 mm (3.1910–3.1920")	96.483–96.508 mm (3.7985–3.7995")



Big end journals

	63 series	74 series 75 series
Diameter for machining (**Ø**):		
Standard	63.449–63.462 mm (2.4980–2.4985")	73.831–73.850 mm (2.9067–2.9075")
Underdim. 0.25 mm (0.01")	63.195–63.208 mm (2.4880–2.4885")	73.577–73.596 mm (2.8967–2.8975")
0.50 mm (0.02")	62.941–62.954 mm (2.4780–2.4785")	73.323–73.342 mm (2.8867–2.8875")
0.75 mm (0.03") [1]	62.687–62.700 mm (2.4680–2.4685")	73.069–73.088 mm (2.8767–2.8775")
1.00 mm (0.04") [1]	62.433–62.446 mm (2.4580–2.4585")	72.815–72.834 mm (2.8667–2.8675")
1.25 mm (0.05") [1]	62.179–62.192 mm (2.4480–2.4485")	72.561–72.580 mm (2.8567–2.8575")
Width, axial bearing journal (**A**)	41.900–42.000 mm (1.6496–1.6535")	43.900–44.000 mm (1.7283–1.7323")
Fillet radius (**R**)	4.20–4.40 mm (0.1654–0.1732")	3.4–3.6 mm (0.1339–0.1417")

[1] **Note.** Crankshaft must be nitrocarburized again if machined more than two underdimensions.

Big end bearing shells

Thickness (**C**):		
Standard	1.892–1.902 mm (0.0745–0.0749")	1.912–1.922 mm (0.0753–0.0757")
Underdim. 0.25 mm (0.01")	2.019–2.029 mm (0.0795–0.0799")	2.039–2.049 mm (0.0803–0.0807")
0.50 mm (0.02")	2.146–2.156 mm (0.0845–0.0849")	2.166–2.176 mm (0.0853–0.0857")
0.75 mm (0.03")	2.273–2.283 mm (0.0895–0.0899")	2.293–2.303 mm (0.0903–0.0907")
1.00 mm (0.04")	2.400–2.410 mm (0.0945–0.0949")	2.420–2.430 mm (0.0953–0.0957")
1.25 mm (0.05")	2.527–2.537 mm (0.0995–0.0999")	2.547–2.557 mm (0.1003–0.1007")

Connecting rods

	63 series	74 series 75 series
Length, center – center **(E)***	230 mm (9.055")	247.5 mm (9.744")
Marking: Connecting rod and cap	1 to. 6	1 to. 6
"FRONT" on connecting rod faces	Forwards	Forwards
Big end bushing internal diameter **(G)***	40.018–40.022 mm (1.5755–1.5757")	47.020–47.026 mm (1.8512–1.8514")
End float, connecting rod – crankshaft	0.25 mm (0.0098")	0.25 mm (0.0098")
Big end bearing, radial clearance	0.08 mm (0.0031")	0.09 mm (0.0035")

* Please refer to illustration on previous page for dimensions.

Valve mechanism

Camshaft

Diameter: front bearing journal	68.996–69.015 mm (2.7164–2.7171")	68.985–69.015 mm (2.7159–2.7171")
2:nd bearing journal	66.621–66.640 mm (2.6229–2.6236")	68.420–68.450 mm (2.6937–2.6949")
3:rd bearing journal	64.233–64.252 mm (2.5289–2.5296")	67.835–67.865 mm (2.6707–2.6718")
4:th bearing journal	63.446–63.465 mm (2.4979–2.4986")	67.235–67.265 mm (2.6470–2.6482")
5:th bearing journal	61.058–61.077 mm (2.4039–2.4046")	66.610–66.640 mm (2.6224–2.6236")
6:th bearing journal	60.271–60.290 mm (2.3729–2.3736")	66.010–66.040 mm (2.5988–2.6000")
7:th bearing journal	56.296–56.315 mm (2.2164–2.2171")	56.285–56.315 mm (2.2159–2.2171")
Permissible ovality (with new bearings), max.	0.05 mm (0.0020")	0.05 mm (0.0020")
End float	0.05–0.18 mm (0.0020–0.0071")	0.05–0.13 mm (0.0020–0.0051")
Radial clearance	0.03–0.08 mm (0.0012–0.0031")	0.035–0.079 mm (0.0014–0.0031")
Check camshaft setting (cold engine and valve clearance = 0): Inlet valve for cylinder No. 1 should open when flywheel is at 10° A.T.D.C.	1.95 ±0.25 mm (0.0768–0.0098")	4.60 ±0. 25 mm (0.1811 ±0.0098")
Max. valve lift:		
inlet	12 mm (0.4724")	13.165 mm (0.5183")
exhaust	12 mm (0.4724")	13.135 mm (0.5171")
Min. valve lift:		
inlet	11.7 mm (0.4606")	
exhaust	11.7 mm (0.4606")	
Lift height, camshaft (new):		
inlet	8.000 mm (0.3150")	8.6161 mm (0.3392")
exhaust	8.000 mm (0.3150")	8.5561 mm (0.3369")
Lift height, camshaft, min.:		
inlet	7.8 mm (0.3071")	
exhaust	7.8 mm (0.3071")	

Camshaft bearings

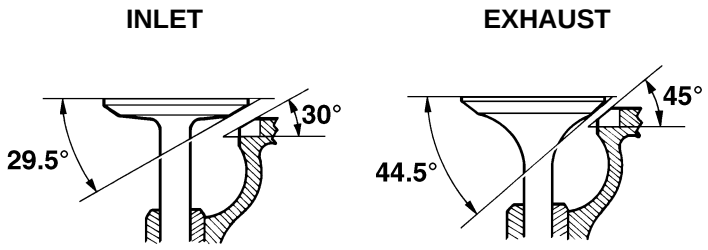
	63 series	74 series 75 series
Diameter after machining:		
front bearing	69.050–69.075 mm (2.7185–2.7195")	69.050–69.075 mm (2.7185–2.7195")
2:nd bearing	66.675–66.700 mm (2.6250–2.6260")	68.485–68.510 mm (2.6963–2.6972")
3:rd bearing	64.287–64.312 mm (2.5310–2.5320")	67.900–67.925 mm (2.6732–2.6742")
4:th bearing	63.500–63.525 mm (2.5000–2.5010")	67.300–67.325 mm (2.6496–2.6506")
5:th bearing	61.112–61.137 mm (2.4060–2.4070")	66.675–66.700 mm (2.6250–2.6260")
6:th bearing	60.325–60.350 mm (2.3750–2.3760")	66.075–66.100 mm (2.6014–2.6024")
7:th bearing	56.350–56.375 mm (2.2185–2.2195")	56.350–56.375 mm (2.2185–2.2195")
Bearing, permissible wear, max.	0.05 mm (0.0020")	0.05 mm (0.0020")

Valves

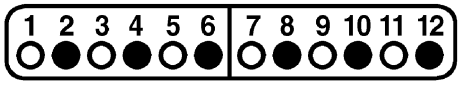
Head diameter:		
Inlet	41 mm (1.614")	43 mm (1.693")
Exhaust	37 mm (1.457")	39 mm (1.535")
Stem diameter:		
Inlet	7.960–7.975 mm (0.3134–0.3140")	7.965–7.975 mm (0.3136–0.3140")
Exhaust	7.935–7.950 mm (0.3124–0.3130")	7.951–7.962 mm (0.3130–0.3135")
Valve stem, max permissible wear	0.02 mm (0.0008")	0.02 mm (0.0008")
Valve seat angle:		
Inlet	29.5°	29.5°
Exhaust	44.5°	44.5°

Note. The valves (Nimonic) must not be ground.

Seat angle in cylinder head:		
Inlet	30°	30°
Exhaust	45°	45°



Valve clearance (cold engine or warmed up):		
Inlet	0.50 mm (0.0197")	0.50 mm (0.0197")
Exhaust	0.65 mm (0.0256")	0.65 mm (0.0256")

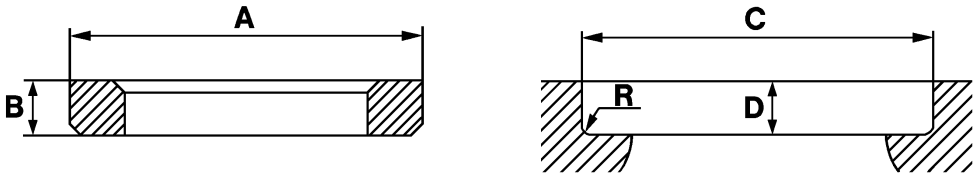


❍ Inlet ● Exhaust

Valve seats

	63 series	74 series 75 series
Outer diameter (dimension **A**) standard:		
Inlet	43.584–43.600 mm (1.7159–1.7165")	46.08 mm (1.8142")
Exhaust	41.584–41.600 mm (1.6372–1.6378")	42.07 mm (1.6563")
Overdimension:		
Inlet	43.784–43.800 mm (1.7238–1.7244")	46.28 mm (1.8220")
Exhaust	41.784–41.800 mm (1.6450–1.6457")	42.27 mm (1.6642")
Height (dimension **B**):		
Inlet	6.90–7.00 mm (0.2717–0.2756")	8.15 mm (0.3209")
Exhaust	8.55–8.65 mm (0.3366–0.3406")	8.65 mm (0.3406")
Distance between valve disc and cylinder head plane:		
Inlet and exhaust	0.0–0.4 mm (0.0–0.0157")	0.0–0.4 mm (0.0–0.0157")
The valve seat may be ground down until the distance from the valve disc (new valve) to the cylinder head plane is max.:		
Inlet valve	1.0 mm (0.0394")*	1.0 mm (0.0394")*
Exhaust valve	1.0 mm (0.0394")*	1.0 mm (0.0394")*

* **Note.** If dimension is greater, change valve seats.



Recess for valve seat

Diameter (dimension **C**), standard:		
Inlet	43.500–43.525 mm (1.7126–1.7136")	46.000–46.025 mm (1.8110–1.8120")
Exhaust	41.500–41.525 mm (1.6339–1.6348")	42.000–42.225 mm (1.6535–1.6624")
Diameter (dimension **C**), overdimension:		
Inlet	43.700–43.725 mm (1.7205–1.7215")	46.200–46.225 mm (1.8189–1.8199")
Exhaust	41.700–41.725 mm (1.6417–1.6427")	42.200–42.225 mm (1.6614–1.6624")
Depth (dimension **D**):		
Inlet	8.9–9.0 mm (0.3504–0.3543")	9.95–10.05 mm (0.3917–0.3957")
Exhaust	9.5–9.6 mm (0.3740–0.3780")	9.8–9.9 mm (0.3858–0.3898")
Bed base radius (dimension **R**):		
Inlet	0.5 mm (0.0197")	0.5 mm (0.0197")
Exhaust	0.5 mm (0.0197")	0.5 mm (0.0197")

Valve guides

	63 series	74 series 75 series
Length	64.5 mm (2.5394")	64.5 mm (2.5394")
Inner diameter (spare part)	8.000–8.015 mm (0.3150–0.3156")	8.000–8.015 mm (0.3150–0.3156")
Height above cylinder head spring plane (outer spring)	23 mm (0.906")	19.5 mm (0.768")
Clearance, valve stem – guide:		
Inlet	0.025–0.050 mm* (0.0010–0.0020")*	0.025–0.050 mm* (0.0010–0.0020")*
Exhaust	0.050–0.080 mm** (0.0020–0.0031")**	0.038–0.064 mm** (0.0015–0.0025")**

* Wear tolerance, max. 0.33 mm (0.0130").
** Wear tolerance, max. 0.38 mm (0.0150").

Valve springs

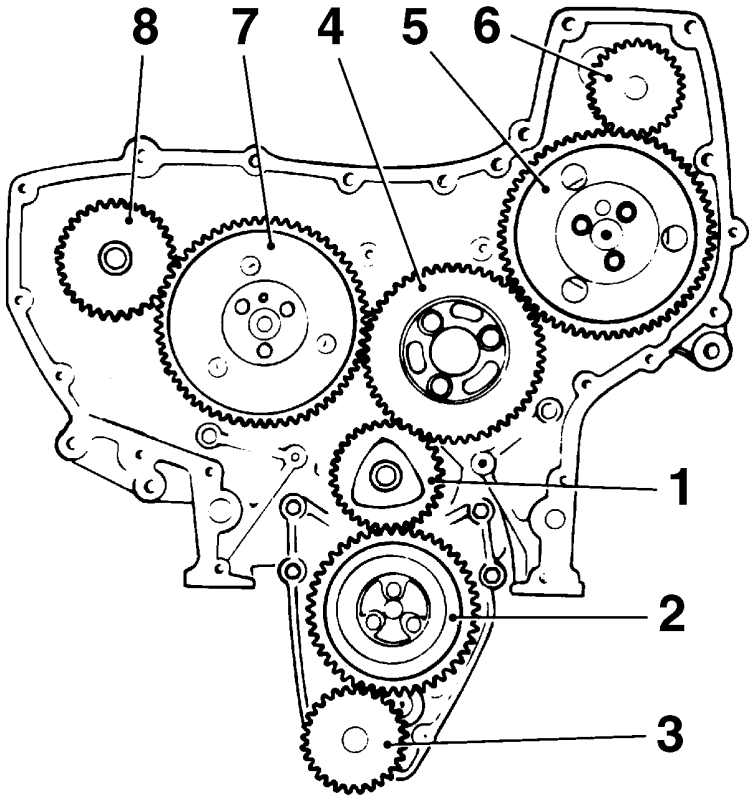
Single valve springs		
Free length	62.8 mm (2.472")	–
Length, loaded 334–374 N (75–84 lbf)	51 mm (2.008")	–
loaded 676–754 N (152–170 lbf)	39 mm (1.535")	–
fully compressed	34.8 mm (1.370")	–
Double valve springs		
Outer valve spring:		
Unloaded length	–	64.1 mm (2.524")
Length, loaded 273–313 N (61–70 lbf)	–	48.6 mm (1.913")
loaded 491–571 N (110–128 lbf)	–	36 mm (1.417")
fully compressed	–	32 mm (1.260")
Inner valve spring:		
Unloaded length	–	60.1 mm (2.366")
Length, loaded 111–131 N (25–30 lbf)	–	44.6 mm (1.756")
loaded 200–240 N (45–54 lbf)	–	32 mm (1.260")
fully compressed	–	28 mm (1.102")

Rocker arm mechanism

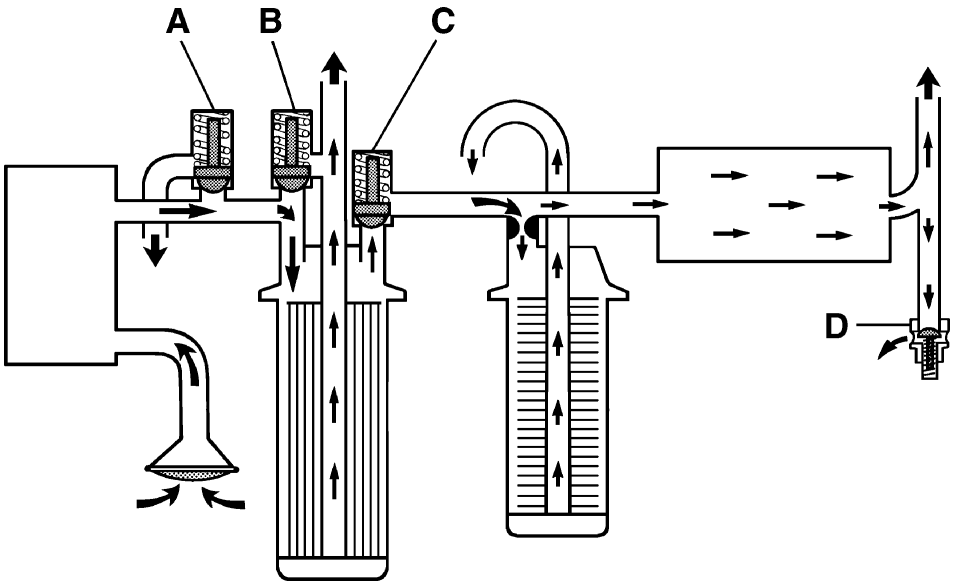
Rocker arm bushing, diameter after pressing in and machining	22.020–22.041 mm (0.8669–0.8678")	25.020–25.042 mm (0.9850–0.9859")

Timing gears

	63 series	74 series 75 series
Gear tooth clearance	0.03–0.17 mm (0.0012–0.0067")	0.03–0.17 mm (0.0012–0.0067")
Radial clearance for idler wheel	0.03–0.08 mm (0.0012–0.0031")	0.03–0.08 mm (0.0012–0.0031")
End float for idler wheel	0.05–0.15 mm (0.0020–0.0059")	0.05–0.15 mm (0.0020–0.0059")
Axial journal for idler wheel, diameter	92.076–92.106 mm (3.6250–3.6262")	92.076–92.106 mm (3.6250–3.6262")
Bushing for idler wheel, diameter	92.131–92.158 mm (3.6272–3.6286")	92.131–92.158 mm (3.6272–3.6283")
No. of teeth, crankcase gear (**1**)	30 teeth	30 teeth
idler wheel, oil pump (**2**)	48 teeth	48 teeth
gear wheel, oil pump(**3**)	27 teeth	27 teeth
idler wheel(**4**)	51 teeth	51 teeth
gear wheel for injection pump (**5**)	60 teeth	60 teeth
gear wheel for coolant pump (**6**)	–	23 teeth
camshaft gear (**7**)	60 teeth	60 teeth
gear for sea water pump/power take-off/ servo pump (**8**)	33 teeth	33 teeth



Lubrication system



	63 series	74 series 75 series
A. Reduction valve		
Color marking	yellow (old model: blue)	yellow (old model: blue)
Opening pressure, yellow	690 kPa (100 psi)	690 kPa (100 psi)
blue (old model)	480 kPa (69.6 psi)	480 kPa (69.6 psi)
B. Bypass valve for oil filter(s)		
Opening pressure	140 kPa (20.3 psi)	140 kPa (20.3 psi)
Spring, unloaded length	68.8 mm (2.7087")	68.8 mm (2.7087")
loaded by 13–15 N (2.9–3.4 lbf)	40 mm (1.575")	40 mm (1.575")
loaded by 17–19 N (3.8–4.3 lbf)	32 mm (1.260")	32 mm (1.260")
C. Piston cooling valve		
Color marking	white	white
Opening pressure	80–120 kPa (11.6– 17.4 psi)	80–120 kPa (11.6– 17.4 psi)
D. By-pass valve for piston cooling oil		
Opening pressure	90–120 kPa (13–17.4 psi)	90–120 kPa (13–17.4 psi)
Oil pressure, warm engine at operating speed	300–500 kPa (43.5–72.5 psi)	420–650 kPa (60.9–94.3 psi)
Oil pressure at idle, min.	150 kPa (21.8 psi)	150 kPa (21.8 psi)
Lube oil pump, type	gear wheel	gear wheel
end float, pump gears	0.07–0.15 mm (0.0028–0.0059")	0.07–0.15 mm (0.0028–0.0059")
gear tooth clearance, gears	0.15–0.30 mm (0.0059–0.0118")	0.15–0.30 mm (0.0059–0.0118")
diameter, idler wheel bearing sleeve	63.97–64.00 mm (2.5185–2.5197")	63.97–64.00 mm (2.5185–2.5197")
diameter, bushing idler wheel	64.03–64.06 mm (2.5209–2.5220")	64.03–64.06 mm (2.5209–2.5220")
radial clearance, idler wheel	0.03–0.09 mm (0.0012–0.0035")	0.03–0.09 mm (0.0012–0.0035")
clearance, bracket – oil pump drive gear	1.0 (+0.5) mm (0.0394 (+0.0197)")	1.0 (+0.5) mm (0.0394 (+0.0197)")

	63 series	74 series 75 series
Max. permissible rearwards inclination in operation	15°	15°
Oil change volume (without oil filter) [1], app.:		
no engine inclination	20 liters (5.3 US gals)	24 liters (6.3 US gals)
volume difference min.– max.	7 liters (1.8 US gals)	7 liters (1.8 US gals)
engine inclination rearwards 5°	16 liters (4.2 US gals)	20 liters (5.3 US gals)
volume difference min.– max.	6 liters (1.6 US gals)	5 liters (1.3 US gals)
engine inclination rearwards 10°	12 liters (3.2 US gals)	14 liters (3.7 US gals)
volume difference min.– max.	5 liters (1.3 US gals)	4 liters (1.1 US gals)

[1] Lube oil filter and by-pass filter hold together app. 1 liter (1 quart), (app. 3 liters/0.8 US gals for engines with change-over oil filters).

Oil grade	**Fuel sulfur content by weight**		
	up to 0.5%	**0.5 – 1.0%**	**more than 1.0% [1]**
	Oil change interval: First reached in operation:		
VDS-2, VDS-3 VDS	**200** hours or 12 months.	**100** hours or 12 months.	**50** hours or 12 months.
ACEA E3–96, E2–96 API CD, CE, CF, CF–4, CG–4	**100** hours or 12 months.	**50** hours or 12 months.	**25** hours or 12 months.

NOTE! Mineral based oil, either fully or semi-synthetic, can be used on condition that it complies with the quality requirements above.

[1] If the sulfur content by weight of the fuel exceeds 1.0% by weight, an oil with TBN 14–20 must be used.

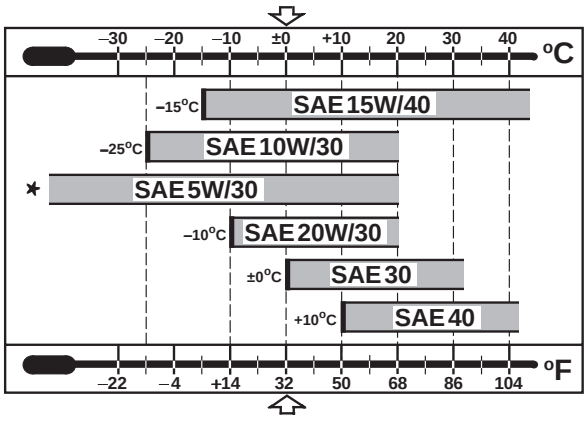
VDS = Volvo Drain Specification
ACEA = Association des Constructeurs Européenne d'Automobiles
API = American Petroleum Institute
TBN = Total Base Number

Viscosity

Viscosity at various ambient temperatures. Select viscosity from the adjacent table.

(The temperature values refer to stable ambient temperatures).

* SAE 5W/30 is only synthetic or semi- synthetic oil.



Fuel system

	63 series	74 series 75 series
Injection pump direction of rotation, seen from front	Clockwise	Clockwise
Injection sequence	1–5–3–6–2–4	1–5–3–6–2–4
Injection volume	See governor sign or SB binder, 24–1 No. 9	
Feed pump working pressure	170–190 kPa (24.7–27.6 psi)	100–150 kPa (14.5–21.8 psi)
Fuel filters		
No. of filter inserts	2 pcs. connected in parallel	2 pcs. connected in parallel

Injection pump

TAMD63L-A
(Up to and incl. engine No. xxxx/171158)

Injection pump	PE6P120A320RS3339
Lift from base circle (stroke position):	
check	3.55 (±0.10) mm (0.1398" (±0.0039")
setting	3.55 (±0.05) mm (0.1398" (±0.0020")
Setting	16° B.T.D.C.
Governor	RSV 325–1400P0A590
Feed pump	FP/KG 24P200

TAMD63L-A
(As from engine No. xxxx/171159)

Injection pump	PE6P120A320RS3417
Lift from base circle (stroke position):	
check	3.55 (±0.10) mm (0.1398" (±0.0039")
setting	3.55 (±0.05) mm (0.1398" (±0.0020")
Setting	16° B.T.D.C.
Governor	RSV 325–1400P0A727
Feed pump	FP/KG 24P200

TAMD63P-A
(Up to and incl. engine No. xxxx/183028)

Injection pump	PE6P120A320RS7319
Lift from base circle (stroke position):	
check	3.65 (±0.10) mm (0.1437" (±0.0039")
setting	3.65 (±0.05) mm (0.1437" (±0.0020")
Setting	15° ± 0.5° B.T.D.C.
Governor	RQV 300–1400PA 1124
Feed pump	FP/KG 24P307

TAMD63P-A
(As from engine No. xxxx/183029)

Injection pump	PE6P120A320RS7319
Lift from base circle (stroke position):	
check	3.65 (±0.10) mm (0.1437" (±0.0039")
setting	3.65 (±0.05) mm (0.1437" (±0.0020")
Setting	16° ± 0.5° B.T.D.C.
Governor	RQV 300–1400PA 1433
Feed pump	FP/KG 24P307

TAMD74A-A

Injection pump	PE6P120A320RS7480
early model	PES6P120A320RS7319
Lift from base circle (stroke position):	
check	3.65 (±0.10) mm (0.1437" (±0.0039")
setting	3.65 (±0.05) mm (0.1437" (±0.0020")
Setting	15° B.T.D.C.
Governor	RQV300–1400PA1442
early model	RQV300–1400PA1124
Feed pump	FP/KG 24P307

TAMD74A-B

Injection pump	PE6P120A320RS7233-1
Lift from base circle (stroke position):	
check	3.35 (±0.10) mm (0.1319" (±0.0039")
setting	3.35 (±0.05) mm (0.1319" (±0.0020")
Setting	12° B.T.D.C.
Governor	RQV300–1400PA1442
Feed pump	FP/KG 24P307

TAMD74C-A, TAMD74L-A, TAMD74P-A,
TAMD74C-B, TAMD74L-B, TAMD74P-B

Injection pump	PE6P120A320RS8056
Lift from base circle (stroke position):	
check	5.10 (±0.10) mm (0.2008" (±0.0039")
setting	5.10 (±0.05) mm (0.2008" (±0.0020")
Setting	11° B.T.D.C.
Actuator	RE30
Feed pump	FP/KG 24P307

TAMD75P-A

Injection pump	PE6P120A320RS8061
Lift from base circle (stroke position):	
check	3.60 (±0.10) mm (0.1417" (±0.0039")
setting	3.60 (±0.05) mm (0.1417" (±0.0020")
Setting	15° B.T.D.C.
Governor	RE30
Feed pump	FP/KG 24P307

Injectors

TAMD63L-A

Nozzle holder	KBEL98P74
Nozzle:	
early model*	DLLA145P331
late model**	DLLA145P785
Injector compl., marked:	
early model*	727
late model**	509
Opening pressure	29 MPa (4206 psi)
Setting pressure (new spring)	29.5 (+0.8) MPa (4279 (+116) psi)
Hole diameter:	
early model*	5 x 0.35 mm (5 x 0.0138")
late model**	6 x 0.294 mm (6 x 0.0116")

* Up to and including engine No. xxxx/171158.
** As from engine No. xxxx/171159.

TAMD63P-A

Nozzle holder:	
early model, version 1*	KBEL98P74
early model, version 2**	KBEL98P160
late model***	KBEL98P160
Nozzle:	
early model, version 1*	DLLA145P393
early model, version 2**	DLLA145P659
late model***	DLLA141P1009
Injector compl., marked:	
early model, version 1*	686
early model, version 2**	581
late model***	425
Opening pressure	30 MPa (4351 psi)
Setting pressure (new spring)	30.5 (+0.8) MPa (4424 (+116) psi)
Hole diameter	5 x 0.32 mm (5 x 0.0126")

* Up to and including engine No. xxxx/121444.
** Between engine Nos. xxxx/121445 and xxxx/183028.
*** As from engine No. xxxx/183029.

TAMD74A-A

Nozzle holder	KBEL98P74
Nozzle	DLLA148P586
Injector compl., marked	600
Opening pressure	25.5 MPa (3698.5 psi)
Setting pressure (new spring)	26.0 (+1.0) MPa (3771 (+145) psi)
Hole diameter	7 x 0.258 mm (7 x 0.0102")

TAMD74A-B

Nozzle holder	KBEL98P160
Nozzle	DLLA145P1062
Injector compl., marked	388
Opening pressure	29.0 MPa (4206 psi)
Setting pressure (new spring)	29.0 (+0.8) MPa (4206 (+116) psi)
Hole diameter	6 x 0.282 mm (6 x 0.0111")

TAMD74C-A, TAMD74L-A, TAMD74P-A,
TAMD74C-B, TAMD74L-B, TAMD74P-B

Nozzle holder	KBEL98P74
Nozzle	DLLA145P832/
Injector compl., marked	492
Opening pressure	29.0 MPa (4206 psi)
Setting pressure (new spring)	29.0 (+0.8) MPa (4206 (+116) psi)
Hole diameter	6 x 0.318 mm (6 x 0.0125")

TAMD75P-A

Nozzle holder	KBEL98P238
Nozzle	DLLA145P1189
Injector compl., marked	339
Opening pressure	29.0 MPa (4206 psi)
Setting pressure (new spring)	29.0 (+1.2) MPa (4206 (+174) psi)
Hole diameter	6 x 0.305 mm (6 x 0.0120")

Inlet and exhaust system

Turbocharger

TAMD63L-A	KKK K27–3667 HHBKA 9.71
TAMD63P-A*	KKK K27–3667 HHBKA 7.61
TAMD74A-A	KKK K27–3767 OHAKB 7.71
TAMD63P-A**, TAMD74A-B	KKK K27–3767 OHAKB 7.61
TAMD74C/L/P-A, TAMD74C/L/P-B, TAMD75P-A	KKK K31–3767 OOAKB 9.61RYCS8
Lubrication system	Pressure lubrication from engine
Max. permissible radial clearance (turbine side)	0.45 mm (0.0177")
Max permissible end float	0.16 mm (0.0063")

* Up to and including engine No. xxxx/183028.
** As from engine No. xxxx/183029.

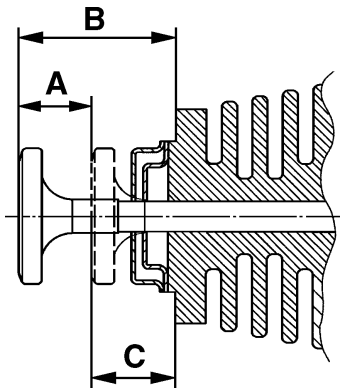
Checking the wastegate function*

Pressurize the wastegate valve to the specified value.
The valve should then move **A = B – C mm** (inch).
Please refer to the table.

Engine	Turbocharger part No.**	Wastegate valve part No.	Check values: Pressure	Check values: Valve movement (A)
TAMD63P-A	866639 3826913 3827451	3828598	2.50 ±0.02 bar (36.26 ±0.29 psi)	2.2 ±0.2 mm (0.0866 ±0.0079")
	3830094	3835670	2.70 ±0.02 bar (39.16 ±0.29 psi)	2.6 ±0.2 mm (0.1024 ±0.0079")
TAMD74*, TAMD75P-A**	3827195 3837691	3829368	2.45 ±0.02 bar (35.53 ±0.29 psi)	3.2 ±0.2 mm (0.1260 ±0.0079")

* The wastegate valve must not be adjusted. If any faults are discovered, the entire wastegate valve must be changed as a unit. An incorrectly adjusted wastegate valve can cause engine failure. The engine warranty ceases to be valid if the valve has been adjusted.
** The part number is marked on the type plate on the turbocharger bearing housing.
*** Apply to TAMD74A-B, TAMD74C/L/P-A and TAMD74C/L/P-B.

A = Valve movement
B = Not pressurized
C = Pressurized



Exhaust back pressure

	63-serien	74-serien, 75-serien
Max permissible back pressure in exhaust pipe at max. power (max. power engine speed)	1500 mm (59.06") water pillar (15 kPa / 2.17 psi)	1500 mm (59.06") water pillar (15 kPa / 2.17 psi)

Charge pressure

Charge pressure (measured at inlet manifold) at 100% load and full throttle.
If full power can not be developed, the pressure will be considerably lower.
The charge pressure in the tables below has a tolerance of ±15 kPa (±2.18 psi).
(100 kPa = 1 kp/cm^2).

	TAMD63L-A [1]	TAMD63L-A [2]
Power – Rating 2*		
2200 rpm.	115 kPa (16.7 psi)	116 kPa (16.8 psi)
2400 rpm.	125 kPa (18.1 psi)	129 kPa (18.7 psi)
2500 rpm.	130 kPa (18.9 psi)	133 kPa (19.3 psi)
Power – Rating 3*		
2400 rpm.	166 kPa (24.1 psi)	181 kPa (26.3 psi)
2600 rpm.	180 kPa (26.1 psi)	194 kPa (28.1 psi)
2800 rpm.	190 kPa (27.6 psi)	204 kPa (29.6 psi)

	TAMD63P-A [3]	TAMD63P-A [4]
Power – Rating 4/5*		
2600 rpm.	210 kPa (30.5 psi)	231 kPa (33.5 psi)
2800 rpm.	215 kPa (31.2 psi)	239 kPa (34.7 psi)

[1] Up to and including engine No. xxxx/171158.
[2] As from engine No. xxxx/171159.
[3] Up to and including engine No. xxxx/183028.
[4] As from engine No. xxxx/183029.

	TAMD74A-A (154 kW)	TAMD74A-A (160 kW)	TAMD74A-A (184 kW)
Power – Rating 1*			
1000 rpm.	41 kPa (5.9 psi)	41 kPa (5.9 psi)	42 kPa (6.1 psi)
1200 rpm.	66 kPa (9.6 psi)	66 kPa (9.6 psi)	82 kPa (11.9 psi)
1400 rpm.	87 kPa (12.6 psi)	87 kPa (12.6 psi)	104 kPa (15.1 psi)
1600 rpm.	105 kPa (15.2 psi)	105 kPa (15.2 psi)	123 kPa (17.8 psi)
1800 rpm.	122 kPa (17.7 psi)	122 kPa (17.7 psi)	145 kPa (21.0 psi)
2000 rpm.	–	136 kPa (19.7 psi)	163 kPa (23.6 psi)
2100 rpm.	–	–	170 kPa (24.7 psi)

* Rating 1 = Heavy duty.
Rating 2 = Medium duty.
Rating 3 = Light duty.
Rating 4 = Special light duty.
Rating 5 = Pleasure craft duty.

	TAMD74A-A (210 kW)	TAMD74A-B (257 kW)
Power – Rating 2*		
1000 rpm.	45 kPa (6.5 psi)	–
1200 rpm.	99 kPa (14.4 psi)	–
1400 rpm.	124 kPa (18.0 psi)	–
1600 rpm.	148 kPa (21.5 psi)	–
1800 rpm.	173 kPa (25.1 psi)	232 kPa (33.6 psi)
2000 rpm.	193 kPa (28.0 psi)	234 kPa (33.9 psi)
2200 rpm.	208 kPa (30.2 psi)	228 kPa (33.1 psi)

	TAMD74C-A TAMD74C-B	TAMD74L-A TAMD74L-B
Power – Rating 3*		
2400 rpm.	220 kPa (31.9 psi)	–
Power – Rating 4*		
2400 rpm.	230 kPa (33.4 psi)	–
Power – Rating 5*		
2400 rpm.	–	220 kPa (31.9 psi)
2500 rpm.	–	220 kPa (31.9 psi)

	TAMD74P-A TAMD74P-B	TAMD75P-A
Power – Rating 4/5*		
2400 rpm.	230 kPa (33.4 psi)	234 kPa (33.9 psi)
2500 rpm.	230 kPa (33.4 psi)	234 kPa (33.9 psi)
2600 rpm.	230 kPa (33.4 psi)	234 kPa (33.9 psi)

* Rating 2 = Medium duty.
Rating 3 = Light duty.
Rating 4 = Special light duty.
Rating 5 = Pleasure craft duty.

Exhaust temperatures

Note. Exhaust temperatures were measured at rated output. Inlet ambient air temperature +27°C (81°F) and exhaust back pressure 10 kPa (1.45 psi).

	TAMD63L-A [1]	**TAMD63L-A** [2]
Power – Rating 2*		
2200 rpm.	450°C (842°F)	451°C (844°F)
2500 rpm.	420°C (788°F)	415°C (779°F)
Power – Rating 3*		
2500 rpm.	425°C (797°F)	435°C (815°F)
2800 rpm.	410°C (770°F)	418°C (784°F)

	TAMD63P-A [3]	**TAMD63P-A** [4]
Power – Rating 4/5*		
2800 rpm.	470°C (878°F)	490°C (914°F)

[1] Up to and including engine No. xxxx/171158.
[2] As from engine No. xxxx/171159.
[3] Up to and including engine No. xxxx/183028.
[4] As from engine No. xxxx/183029.

	TAMD74A-A (154 kW)	**TAMD74A-A (160 kW)**	**TAMD74A-A (184 kW)**
Power – Rating 1*			
1000 rpm.	431°C (808°F)	431°C (808°F)	431°C (808°F)
1200 rpm.	432°C (810°F)	432°C (810°F)	458°C (856°F)
1400 rpm.	403°C (757°F)	403°C (757°F)	414°C (777°F)
1600 rpm.	372°C (702°F)	372°C (702°F)	376°C (709°F)
1800 rpm.	346°C (655°F)	346°C (655°F)	347°C (657°F)
2000 rpm.	–	329°C (624°F)	327°C (621°F)
2100 rpm.	–	–	319°C (606°F)

	TAMD74A-A (210 kW)	**TAMD74A-B (257 kW)**
Power – Rating 2*		
1000 rpm.	445°C (833°F)	–
1200 rpm.	479°C (894°F)	–
1400 rpm.	426°C (799°F)	–
1600 rpm.	384°C (723°F)	–
1800 rpm.	351°C (664°F)	392°C (738°F)
2000 rpm.	331°C (628°F)	403°C (757°F)
2200 rpm.	323°C (613°F)	412°C (774°F)

* Rating 1 = Heavy duty.
Rating 2 = Medium duty.
Rating 3 = Light duty.
Rating 4 = Special light duty.
Rating 5 = Pleasure craft duty.

	TAMD74C-A TAMD74C-B	TAMD74L-A TAMD74L-B
Power – Rating 3*		
2400 rpm.	456°C (853°F)	–
2500 rpm.	461°C (862°F)	–
Power – Rating 4*		
2400 rpm.	467°C (873°F)	–
2600 rpm.	499°C (930°F)	–
Power – Rating 5*		
2500 rpm.	–	461°C (862°F)
2800 rpm.	–	456°C (853°F)

	TAMD74P-A TAMD74P-B	TAMD75P-A
Power – Rating 4/5*		
2400 rpm.	493°C (919°F)	506°C (943°F)
2600 rpm.	528°C (982°F)	520°C (968°F)

* Rating 3 = Light duty.
Rating 4 = Special light duty.
Rating 5 = Pleasure craft duty.

Cooling system

	63 series	74 series 75 series
Type	Pressurized, sealed	Pressurized, sealed
Filler cap valve opens at	43–53 kPa (6.2–7.7 psi)	43–53 kPa (6.2–7.7 psi)
Fresh water system volume, incl. heat exchanger, approx.	27 liter (7.1 US gals)	34 liter (9.0 US gals)
Thermostat, starts to open at	73–77°C (163–171°F)	73–77°C (163–171°F)
	old model: 80– 84°C* (176–183°F)*	–
fully open at	86–90°C (187–194°F)	86–90°C (187–194°F)
	old model: 93– 97°C* (199–207°F)*	–
color marking	Blue	Blue
	old model: Red*	–

* **Note.** Late model thermostats introduced as from engine No. xxxx/51124.

Electrical system

System voltage	12V or 24V	24V or 12V
Battery capacity:		
12V system voltage	2 pcs in parallel 12V, max. 110 Ah, (total max. 220 Ah)	
24V system voltage	2 pcs series connected 12V, max. 143 Ah	
Battery electrolyte density at +25°C (77°F):		
fully charged battery	1.28 g/cm³ (1.24 g/cm³)* (0.0462 lb/in³ (0.0448 lb/in³)*)	1.28 g/cm³ (1.24 g/cm³)* (0.0462 lb/in³ (0.0448 lb/in³)*)
recharge battery at	1.24 g/cm³ (1.20 g/cm³)* (0.0448 lb/in³ (0.0434lb/in³)*)	1.24 g/cm³ (1.20 g/cm³)* (0.0448 lb/in³ (0.0434 lb/in³)*)
Alternator		
Make	Valeo	Valeo
Voltage/max. amperage	14V/60A or 28V/40A	14V/60A or 28V/60A
Power, approx.	840W or 1120W	840W or 1700W
Brush length	min. 8 mm (0.315")	min. 8 mm (0.315")
Make (alternative equipment)	Prestolite	Prestolite
Voltage/max. amperage	14V/130A or 28V/100A	14V/130A or 28V/100A
Power, approx.	1820W or 2800W	1820W or 2800W
Brush length	min. 5 mm (0.197")	min. 5 mm (0.197")
Starter motor		
Make, type	Bosch KB	Bosch KB
Brush length	min. 17.5 mm (0.689")	min. 17.5 mm (0.689")
Brush spring force	12–14 N (2.70–3.15 lbf)	12–14 N (2.70–3.15 lbf)

* **Note.** Applies to batteries with tropical acid.

Tightening torques

	63 series	74 series 75 series
Screws, cylinder head *	See next page	See next page
Main bearings, step 1	150 Nm (111 lbf.ft)	150 Nm (111 lbf.ft)
step 2	–	Angle tightening 90°
Big end bearings, step 1	190 Nm (140 lbf.ft)	35 Nm (26 lbf.ft)
step 2	–	Angle tightening 90°
Flange, front camshaft bearing	70 Nm (52 lbf.ft)	70 Nm (52 lbf.ft)
Thrust bearing, camshaft	65 Nm (48 lbf.ft)	65 Nm (48 lbf.ft)
Gear wheel, pump drive:		
M6	30 Nm (22 lbf.ft)	30 Nm (22 lbf.ft)
M18	70 Nm (52 lbf.ft)	70 Nm (52 lbf.ft)
Idler wheel bearing	90 Nm (66 lbf.ft)	90 Nm (66 lbf.ft)
Pump housing, lube oil pump	22 Nm (16 lbf.ft)	22 Nm (16 lbf.ft)
Bracket, lube oil pump	65 Nm (48 lbf.ft)	65 Nm (48 lbf.ft)
Idler wheel, lube oil pump	33 Nm (24 lbf.ft)	33 Nm (24 lbf.ft)
Bearing cap, rocker shaft	50 Nm (37 lbf.ft)	50 Nm (37 lbf.ft)
Oil sump**	24 Nm (18 lbf.ft)	24 Nm (18 lbf.ft)
Drain plug, oil sump	80 Nm (59 lbf.ft)	80 Nm (59 lbf.ft)
Timing cover	33 Nm (24 lbf.ft)	33 Nm (24 lbf.ft)
Valve cover	24 Nm (18 lbf.ft)	24 Nm (18 lbf.ft)
Flywheel	190 Nm (140 lbf.ft)	190 Nm (140 lbf.ft)
Bell housing	140 Nm (103 lbf.ft)	140 Nm (103 lbf.ft)
Vibration damper, fixing screws	95 Nm (70 lbf.ft)	95 Nm (70 lbf.ft)
Centre screw for hub	260 Nm (192 lbf.ft)	260 Nm (192 lbf.ft)
Injection pump, pressure valve retainer	85 Nm (63 lbf.ft)	85 Nm (63 lbf.ft)
Injectors, nut for stud	50 Nm (37 lbf.ft)	50 Nm (37 lbf.ft)
Nut, injection pump flange	180 Nm (133 lbf.ft)	215 Nm (159 lbf.ft)
Clamping screw, injection pump flange	114 Nm (84 lbf.ft)	150 Nm (111 lbf.ft)
Core plugs in block and cylinder heads	70 Nm (52 lbf.ft)	70 Nm (52 lbf.ft)

* Completely immerse cylinder head screws (including screw heads) in rust preventer not later than 24 hours before assembly. Screws must not drip when installed.
Cylinder head screws must be torqued (at intervals) and angle tightened (60°), please refer to next page.

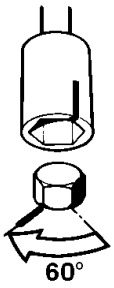
** Torque schedule is on next page.

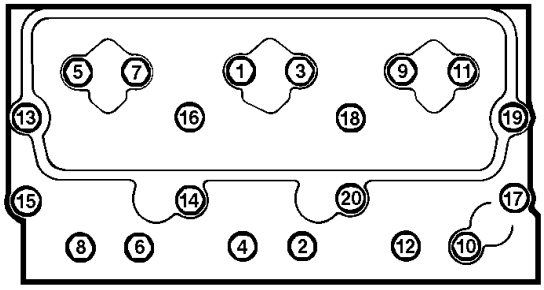
Cylinder heads

63 series

Tighten screws in 4 stages as per schedule:

1:st tightening 30 Nm (22 lbf.ft)
2:nd tightening 85 Nm (63 lbf.ft)
3:rd tightening 85 Nm (63 lbf.ft)
(check tightening)
4:th tightening: Angle tightening: 60°





Torque schedule, cylinder head

74 series, 75 series

Tighten screws in 4 stages as per schedule:

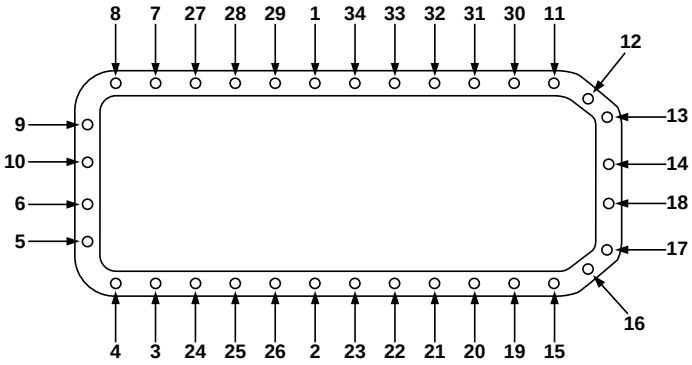
1:st tightening 30 Nm (22 lbf.ft)
2:nd tightening 90 Nm (66 lbf.ft)
3:rd tightening 90 Nm (66 lbf.ft)
(check tightening)
4:th tightening: Angle tightening: 60°

Oil sump

63 series

Torque the sump screws as in the diagram.

Note. The sump screws do not need to be re-tightened.

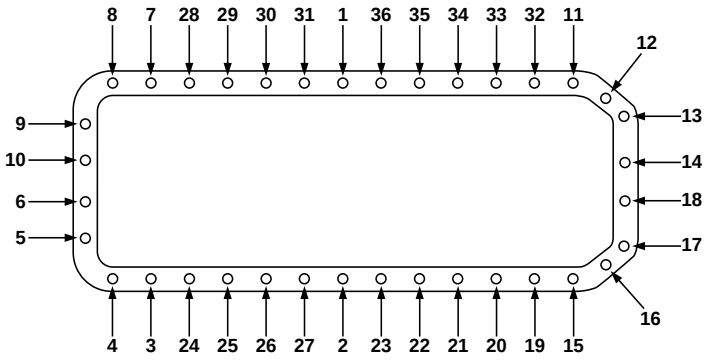


Torque schedule, 63 series

74 series, 75 series

Torque the sump screws as in the diagram.

Note. The sump screws do not need to be re-tightened.

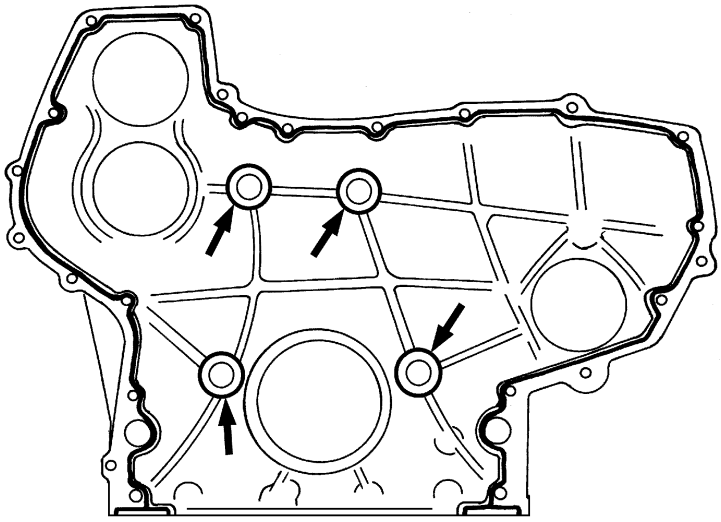


Tightening torque, 74 series, 75 series

Installing seals

63 series, 74 series, 75 series

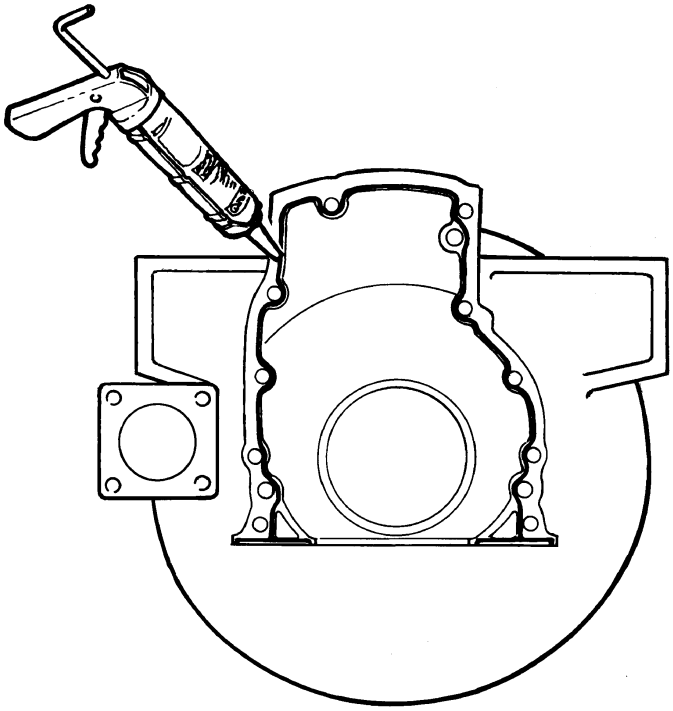
Timing cover



Apply a string of sealant with a diameter of about 2 mm (0.079") all round the timing gear cover and round the four marked holes.

*** Note.** Sealant, part No. 1161231 (cartridge 0,31 l), or 1161277 (tube 20 g).

Bell housing



Apply a string of sealant (part No. 1161231) and with a diameter of about 2 mm (0.079").

References to Service Bulletins

Group No. Date Refers to

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