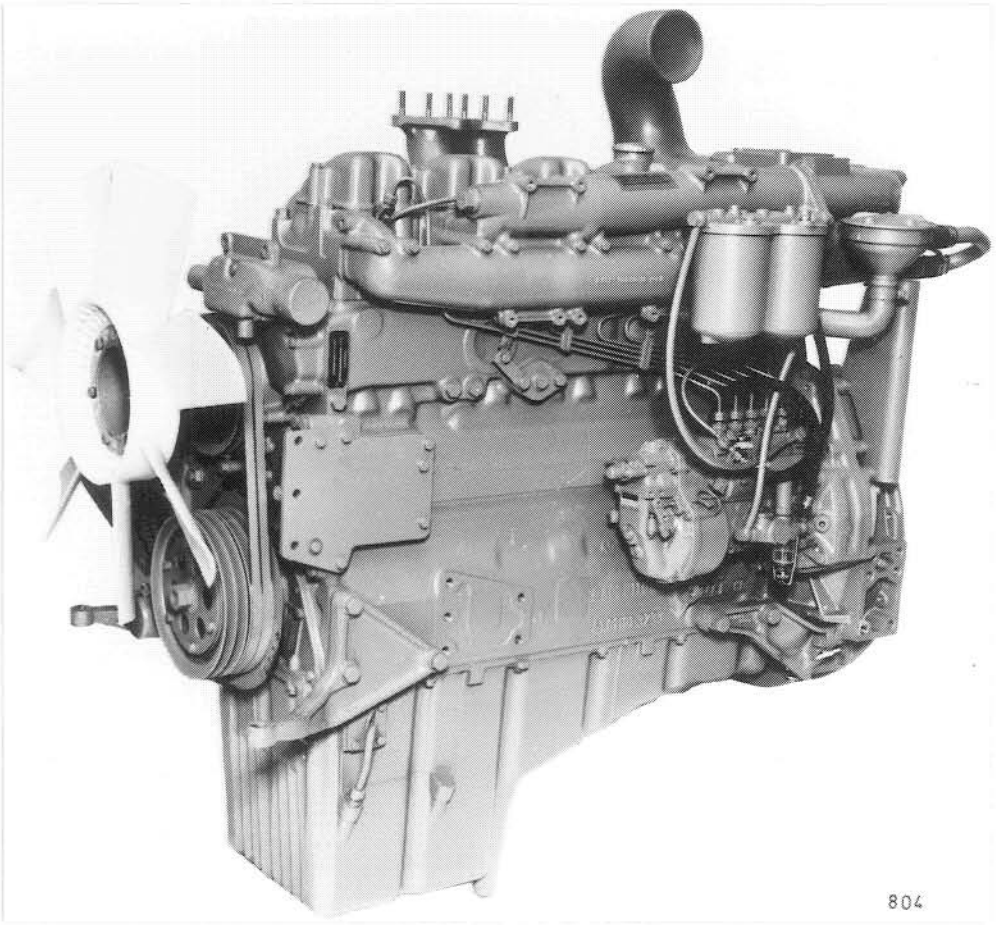
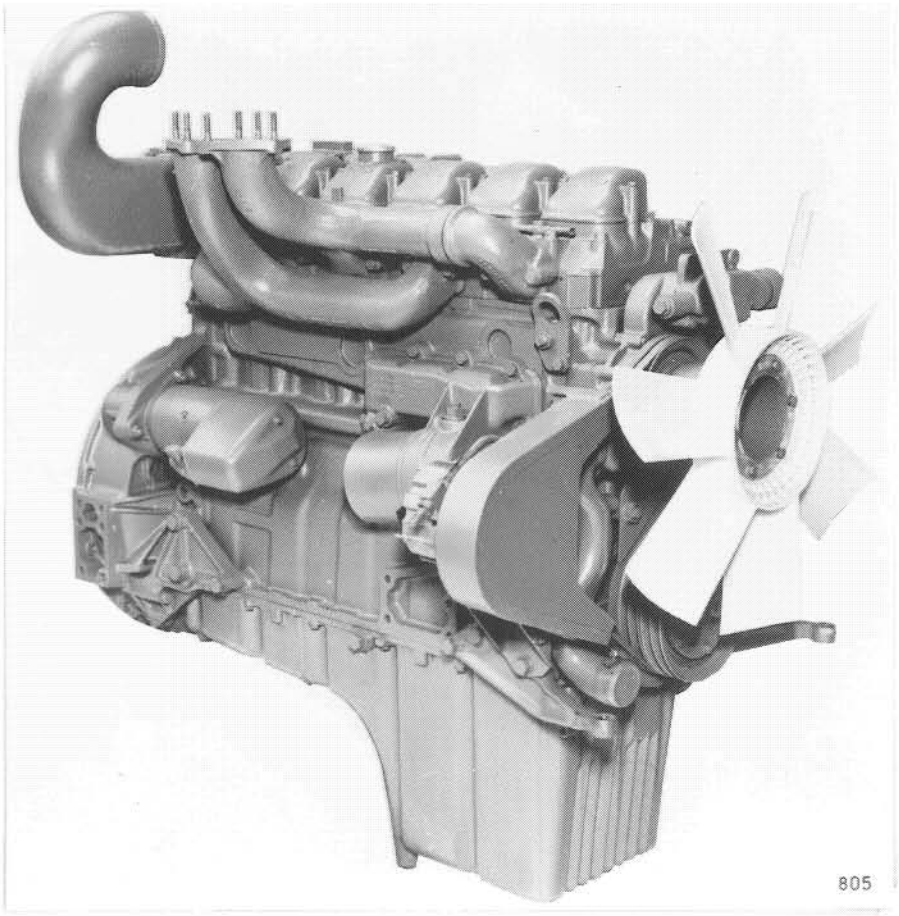


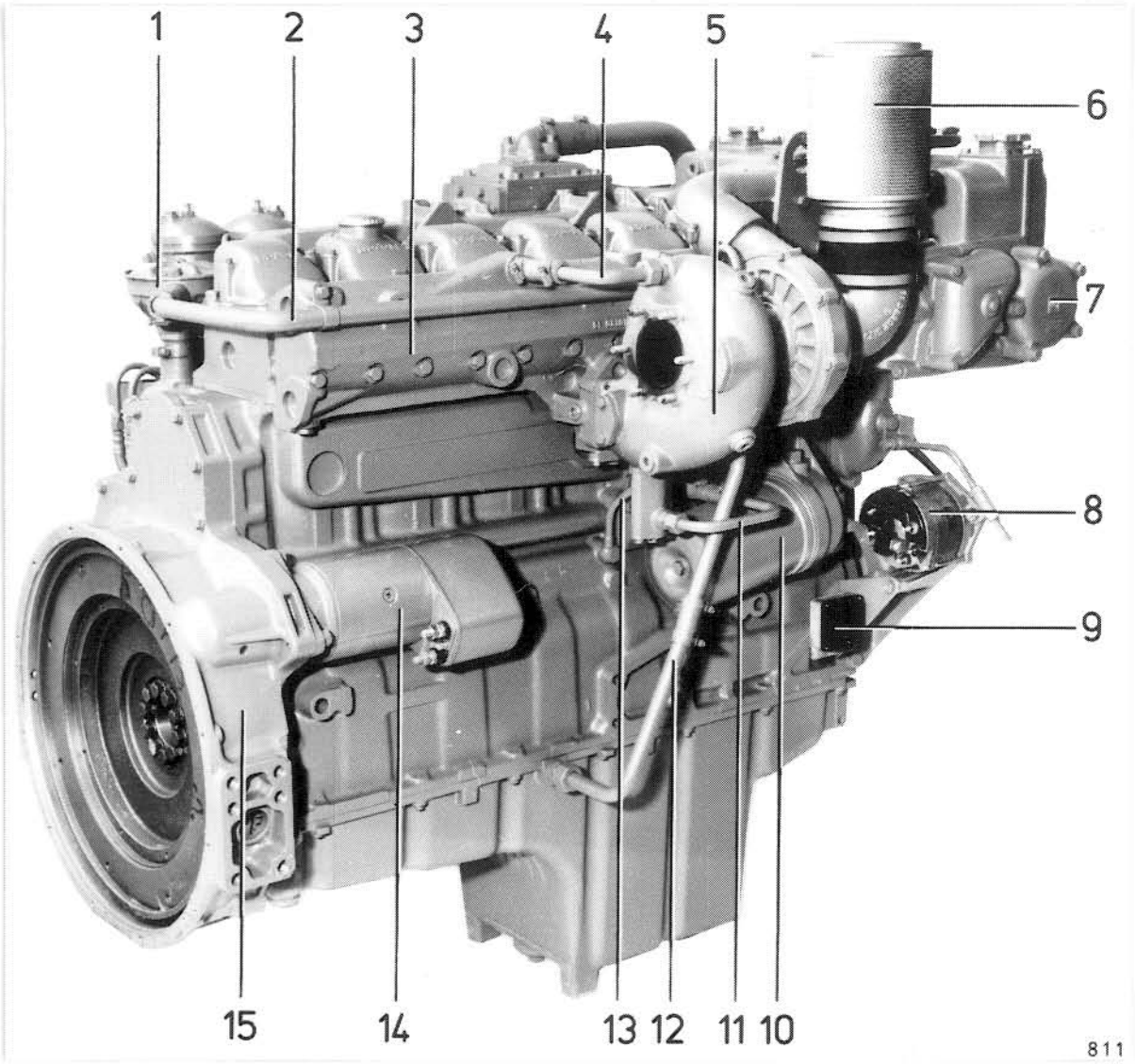
804

D 2565 ME



805

D 2565 ME



D 2566 MLE (Marine Propulsion Engine)
Right-Hand Side

1 Oil separator valve for crankcase vent
2 Vent pipe
3 Exhaust manifold water-cooled
4 Cooling water pipe (drain)
5 Exhaust gas turbocharger water-cooled turbine housing
6 Viscous air cleaner
7 Reversing chamber (heat exchanger)
8 Alternator
9 Regulator for alternator
10 Oil filter
11 Cooling water pipe (supply)
12 Lubricating oil pipe (return)
13 Lubricating oil pipe (supply)
14 Starter
15 Timing case

CROSS SECTION D 2866 E

20

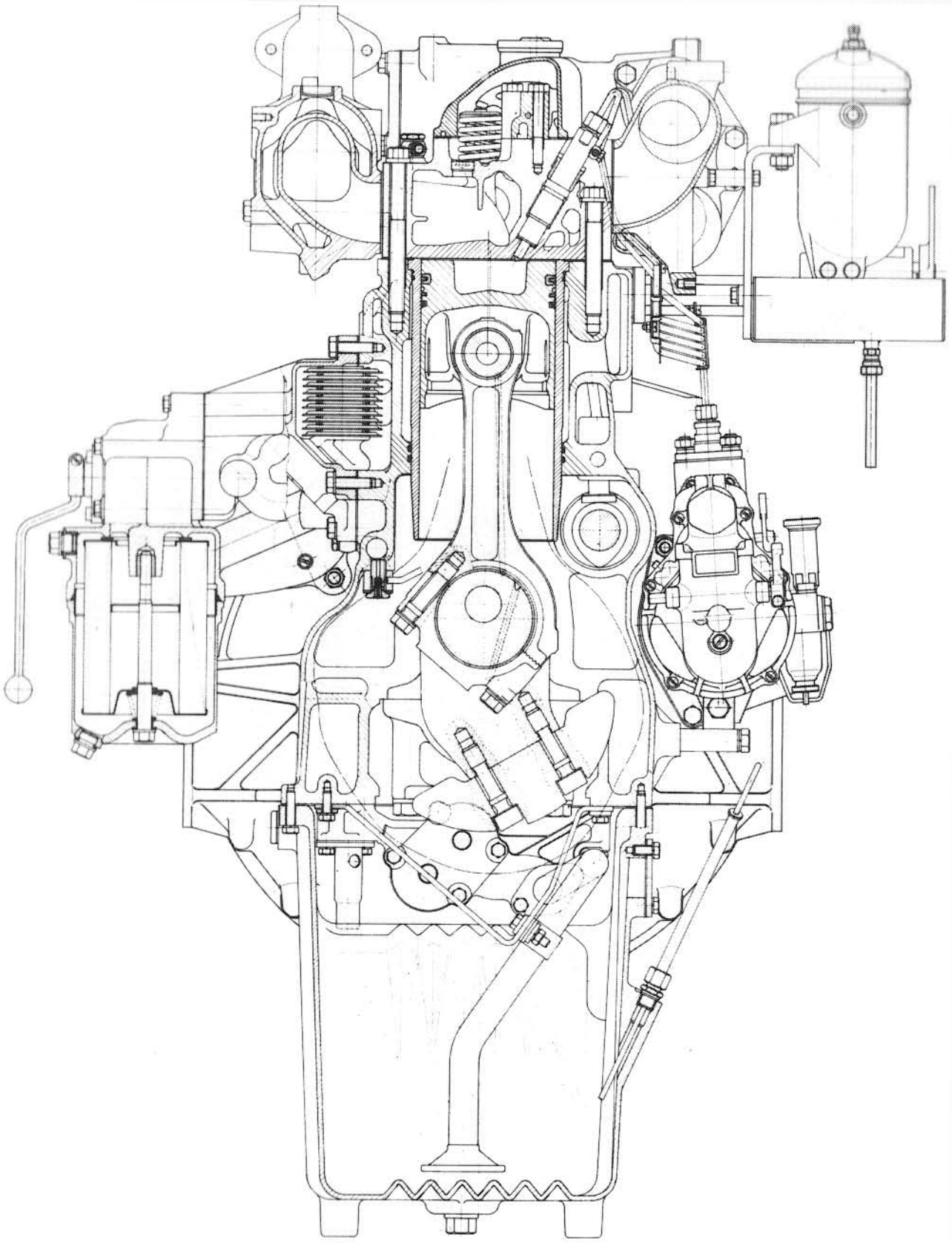
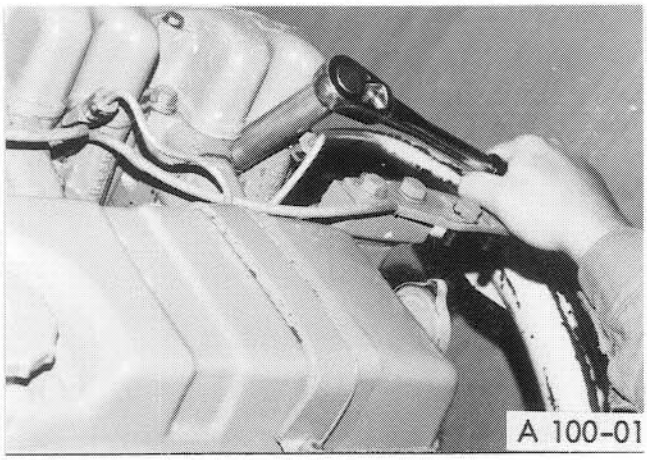


Figure 1

Check valve clearance and adjust, if necessary. Run engine until coolant temperature has reached 60 - 80°C. Remove all injectors with nozzles.

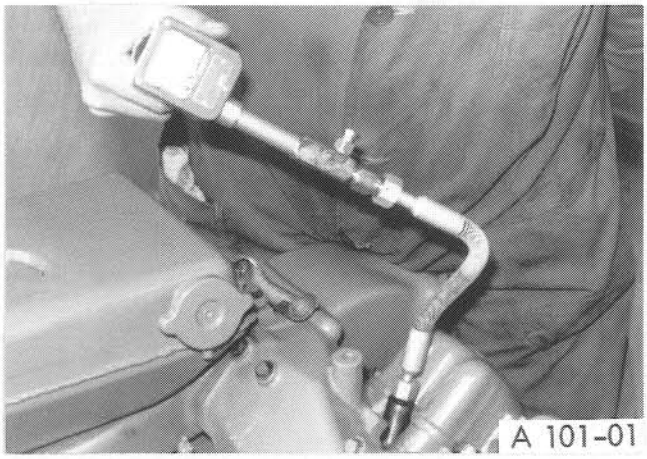


1

Figure 2

Install new gasket and connect compression pressure recorder with union nut and special wrench. Screw compression pressure recorder on connection with the extension. Turn engine with starter motor until needle deflection of compression tester remains steady.

Detach compression pressure recorder and connection. Install nozzle with new gasket and install injector. Apply „Never Seez" to the injector contact points prior to installation. Tighten union nut to specified torque. Connect fuel injection lines.

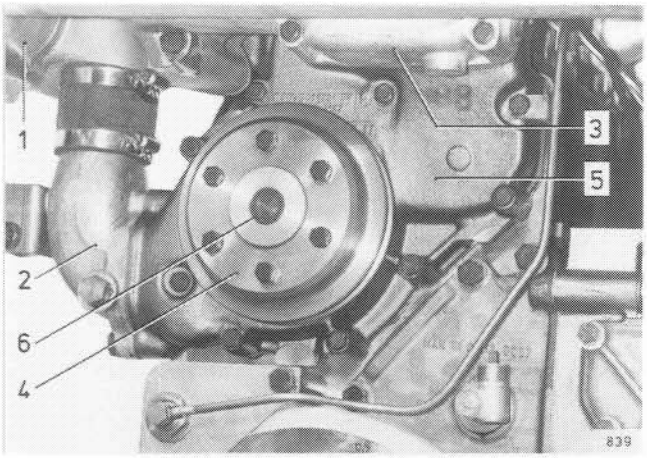


2

Removing

Figure 1

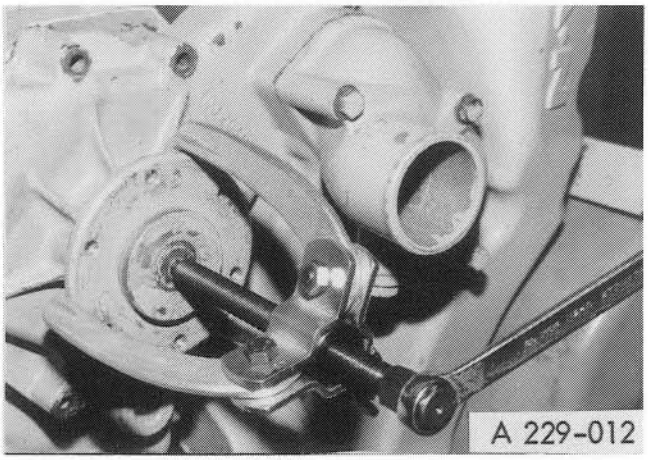
Drain coolant. Remove coolant lines. Depending on engine type remove surge tank with heat exchanger (1), heat exchanger tank or fan. Remove V-belt, elbow (2), thermostat housing, cooling water connection (3) and bypass inserts / thermostats. Remove V-belt pulley (4).



1

Figure 2

Extract water pump hub using a 3-arm puller. Remove water pump screws and take off water pump.

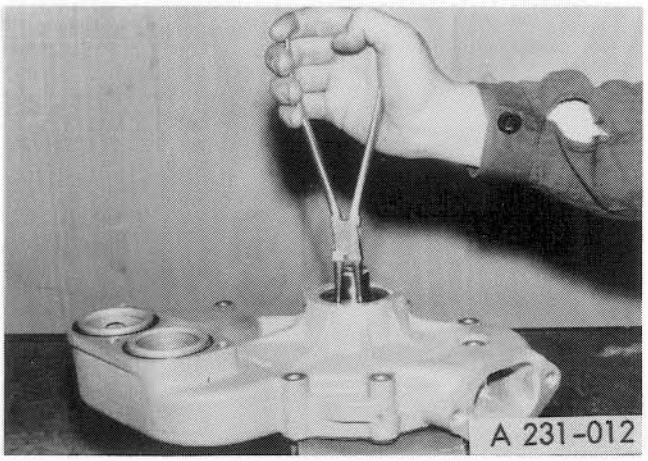


2

Disassembly, repair

Figure 3

Remove circlip from water pump body.

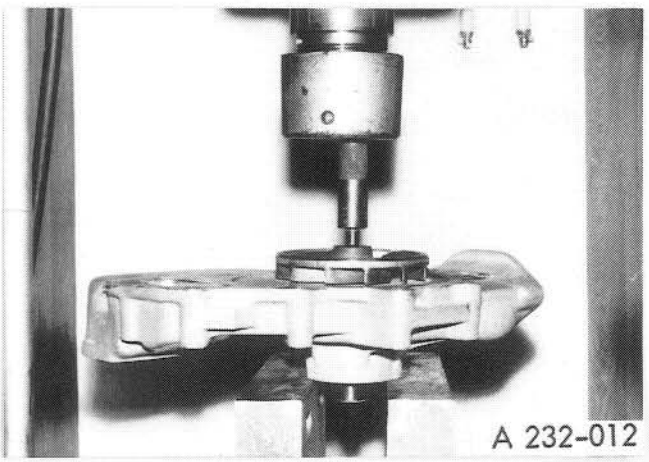


3

Figure 4

Remove impeller from shaft using a suitable mandrel.

Note: The impeller can also be extracted by means of a 3-arm puller. This is of advantage when the seal only has to be replaced.

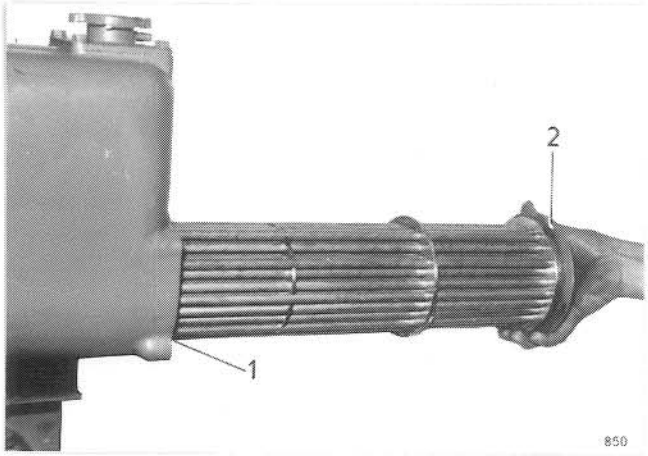


4

Installing heat exchanger insert

Figure 5

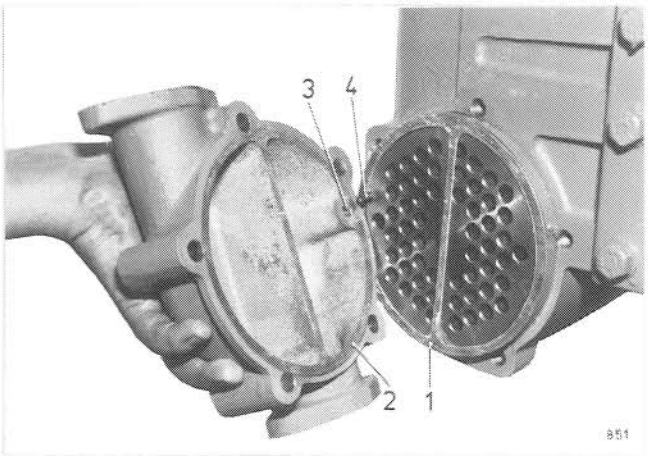
Replace insert if damaged. Clean sealing surface (1) and use new gasket. Clean also sealing surface (2) and fully push in insert.



5

Figure 6

Install new gasket (1) Align heat exchanger insert and cover (2) so that pin (4) engages hole (3). Secure cover (2).



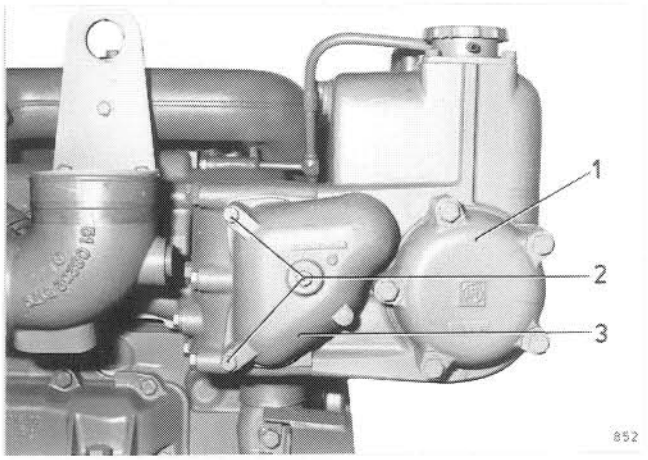
6

Figure 7

Install the two O-rings, Figure 4, lightly coated with oil in insert grooves. Use new gasket for channel cover (1).

Removing/installing thermostats

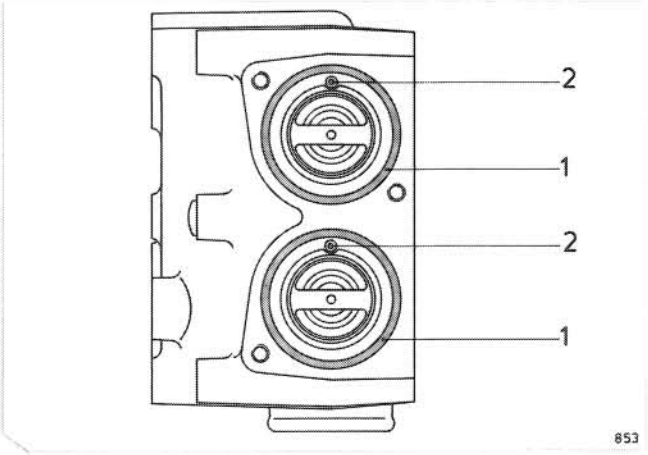
Loosen screws (2) and remove cooling water connection (3).



7

Figure 8

Using a screwdriver lift thermostat inserts off their seats. Replace O-rings (1). Install thermostats with vent holes (2) pointing upward. Fit cooling water connection.



8

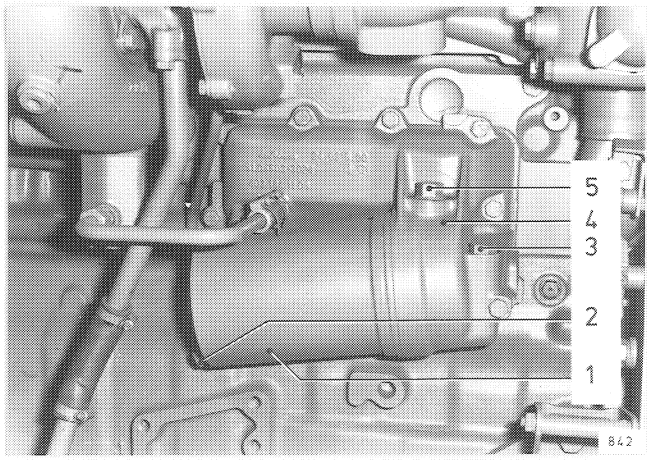
Note: The engine can be equipped with the following filter types:

a) one single-element lube oil filter
b) one twin lube oil filter with change-over facility, mounted on engine, Figure 2 or mounted in remote position.

Figure 1

Single-element lube oil filter

1 Filter bowl
2 Drain plug
3 Plug (access to bypass valve)
4 Oil cooler housing and filter head
5 Plug

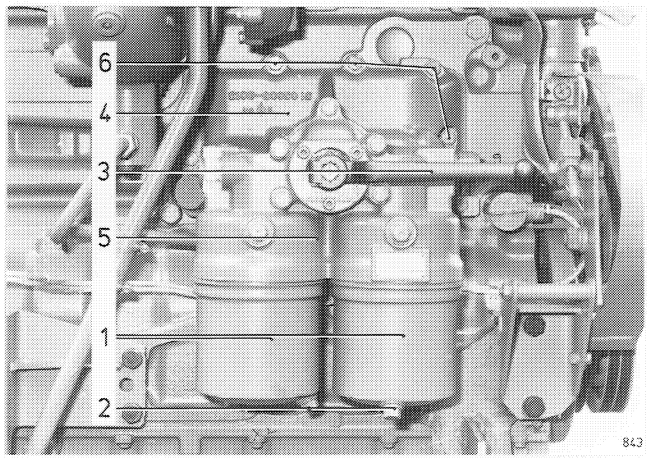


1

Figure 2

Twin lube oil filter

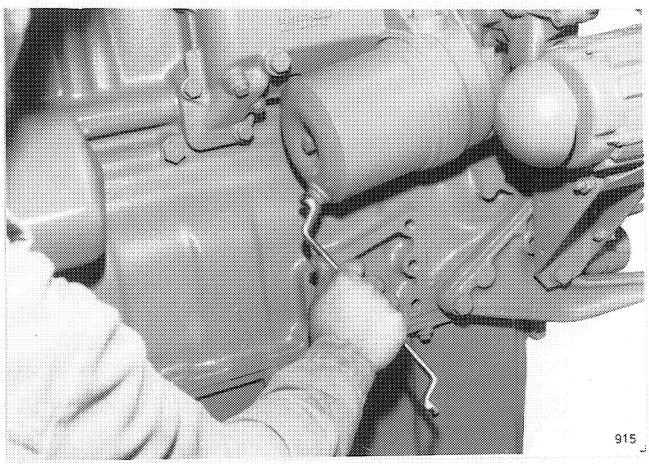
1 Filter bowl
2 Drain plug
3 Changeover lever
4 Oil cooler housing
5 Filter head
6 Screws



2

Figure 3

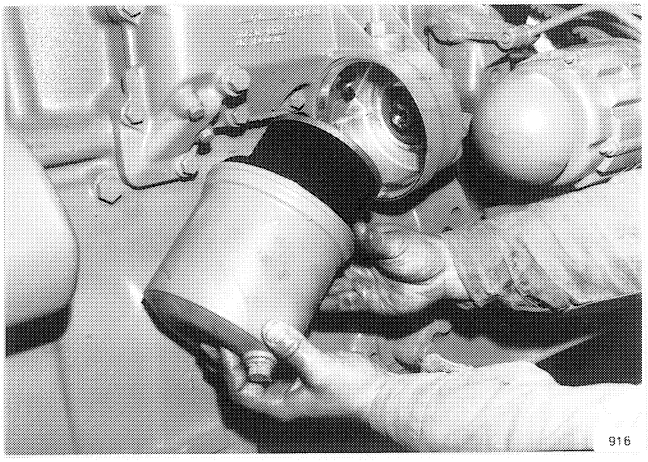
Remove drain plug and re-install with new gasket.



3

Figure 4

Remove screw from filter bowl, take off filter and clean it. Replace filter cartridge.

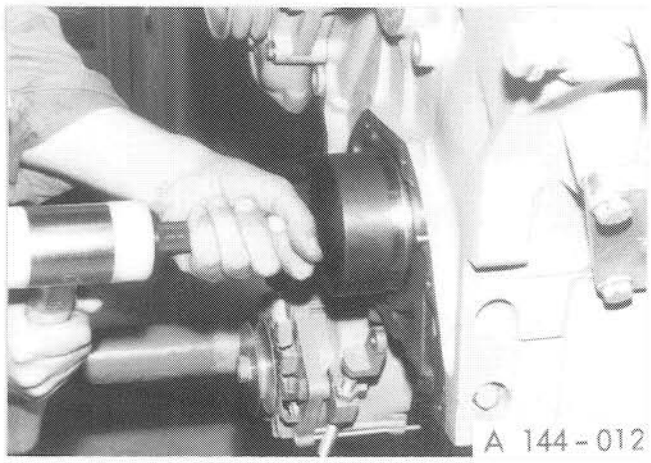


4

Installation

Figure 4

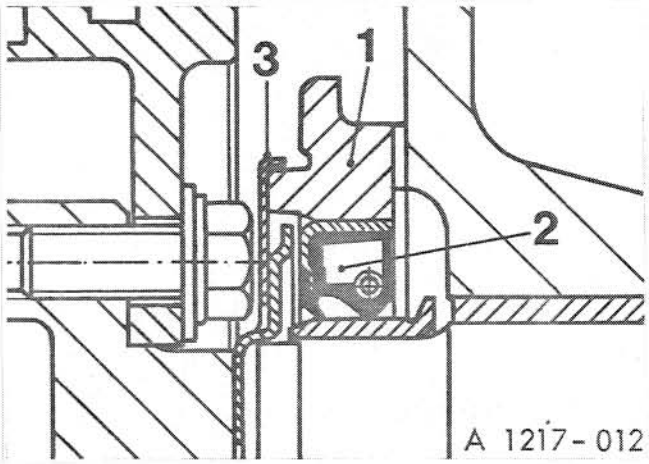
Insert new bearing race with chamfered end on outer diameter first in mandrel and heat both to approx. 150 to 200°C. Press bearing race onto crankshaft until in contact with the drive-in mandrel. After installation clean bearing race and coat with oil. The correct distance between crankshaft front edge and bearing race is ensured only if modified mandrel 80.99617-0016 is used.



4

Figure 5

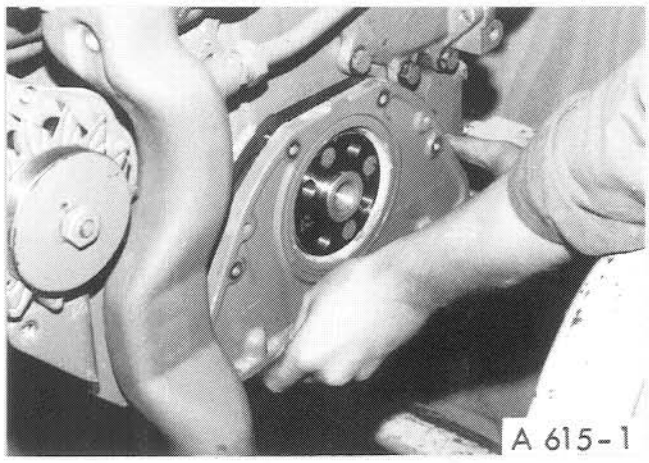
Cover (1) and shaft seal (2) are supplied for replacement as an assembled set only to ensure satisfactory installation.



5

Figure 6

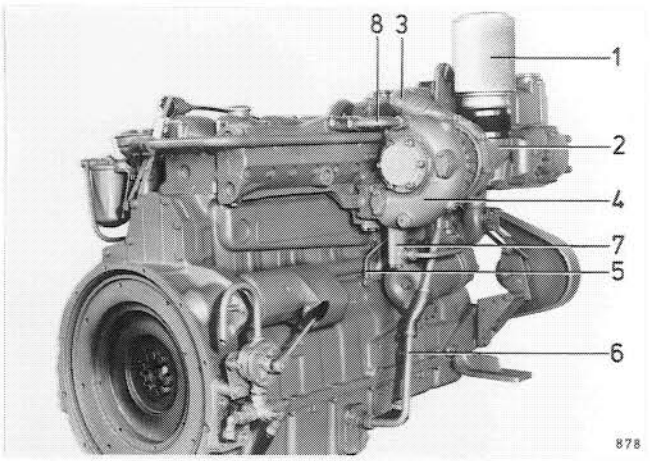
Apply a thin coat of grease to cleaned crankcase surface (do not use liquid sealing compound) and place cover gasket on top. Apply multi-purpose grease to seal lips. Push cover over guide pins and carefully bring into contact. Tighten cover screws to specified torque. Install oil splash ring and all other parts.



6

Figure 1 (D 2566 MTE for marine propulsion)

1 Viscous air filter
2 Inlet bend
3 Charge air pipe to inlet manifold
4 Turbocharger (watercooled turbine housing)
5 Lube oil line (supply)
6 Lube oil line (return)
7 Cooling water pipe (supply)
8 Cooling water pipe (drain)

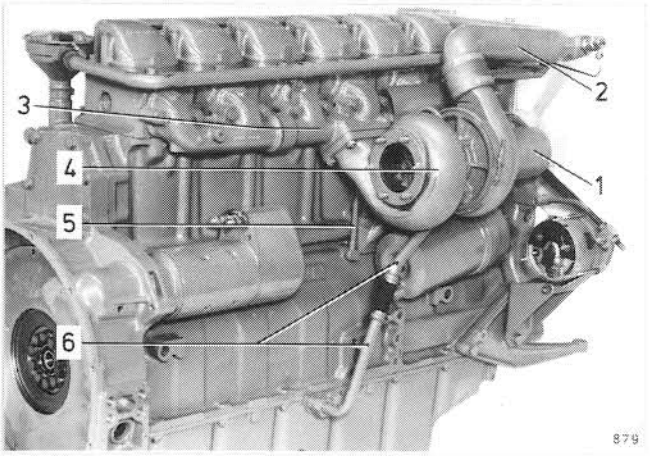


1

Figure 2

1 Inlet bend
2 Charge air pipe
3 Exhaust manifold (non-cooled)
4 Turbocharger
5 Lube oil line (supply)
6 Lube oil line (drain)

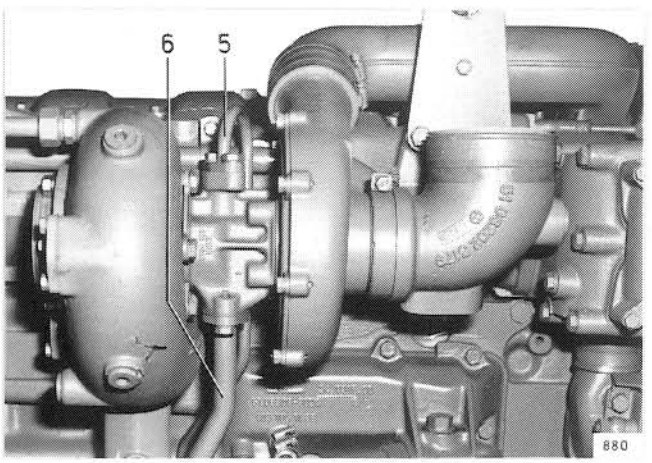
In the case of engines with watercooled turbine housing drain cooling water. Remove air filter, inlet bend, charge air pipe and cooling water pipes.



2

Figure 3

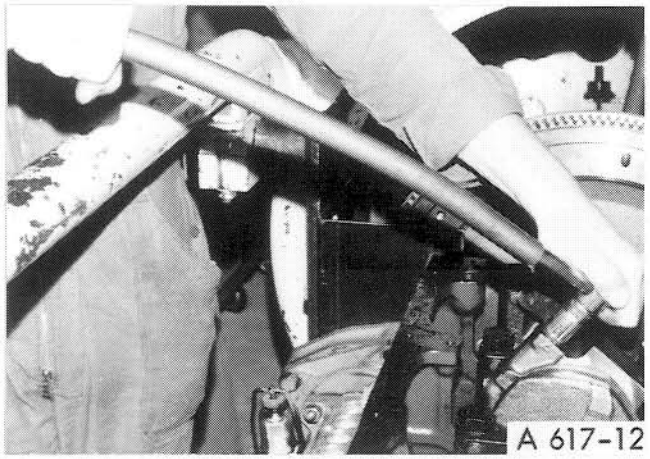
Remove lube oil pipes (5 and 6). Remove complete turbocharger from exhaust manifold. During re-installation replace gaskets, hoses and hose clips.



3

Figure 1

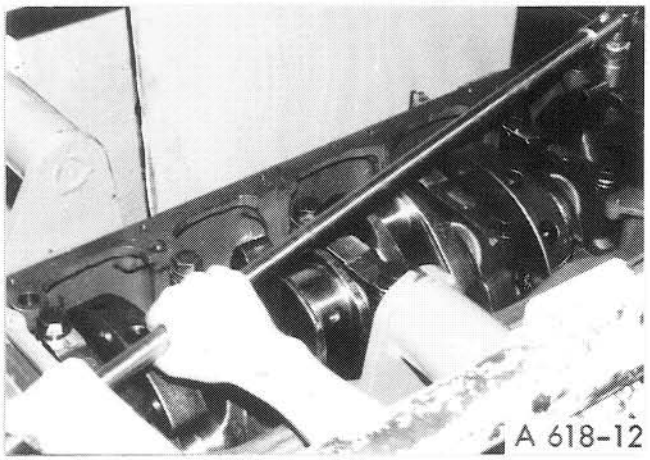
Remove oil pan, oil pump, timing case, cylinder heads and front cover of crankshaft seal. Remove screws of connecting rod bearing caps and remove connecting rod with piston.



1

Figure 2

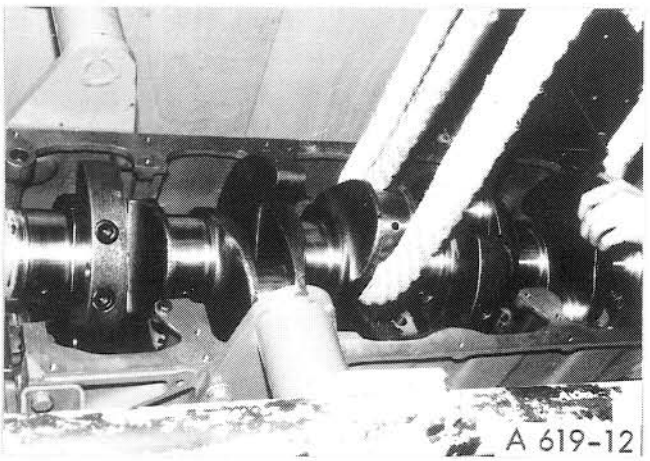
Remove screws of crankshaft bearing caps. Number bearing caps in order of installation and take them off. Match mark bearing shells with bearing caps (electric scriber) unless already marked.



2

Figure 3

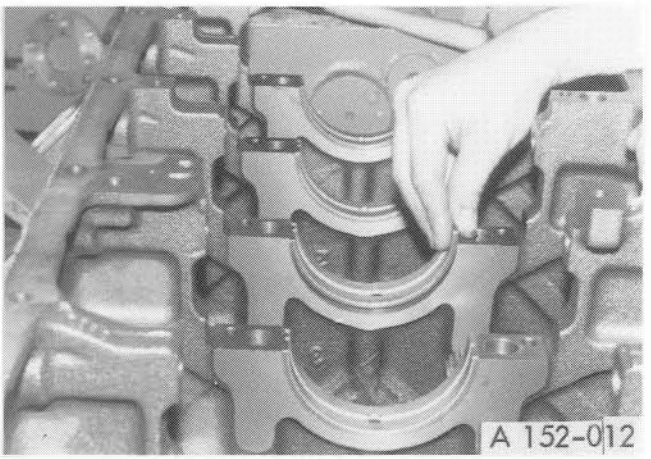
Lift out crankshaft. Remove bearing shell halves of crankcase. Inspect crankshaft and replace if necessary.



3

Figure 4

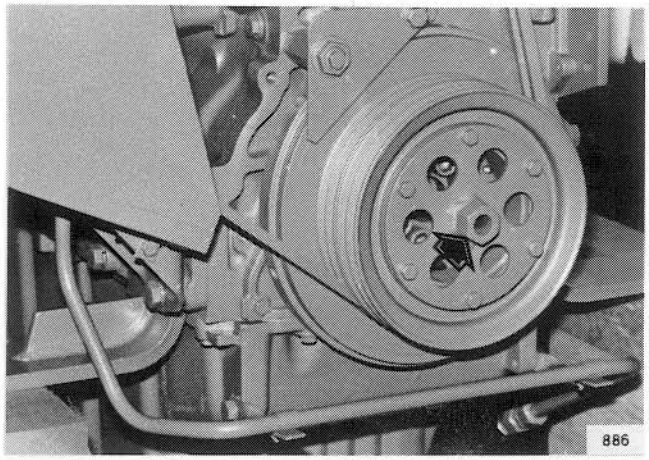
Clean oil passages in crankcase and crankshaft with compressed air. Thoroughly clean bearing shells and bearing pins and install new bearing shells in crankcase if necessary. Observe repair stage.
Numbering of crankshaft bearings: 1 = water pump end!



4

Figure 1

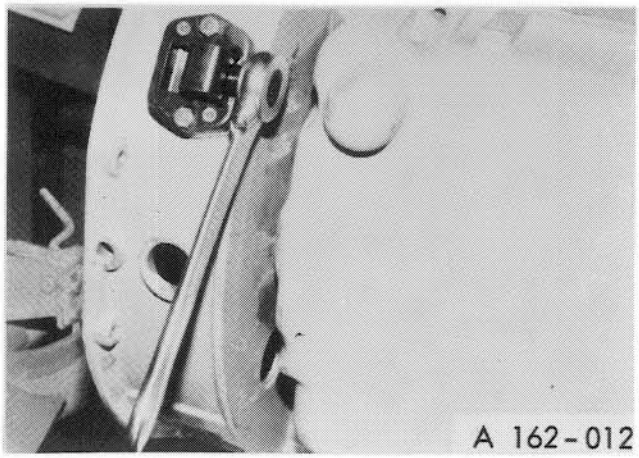
Turn engine via hexagon (32 mm across flats) (arrow) to move piston to TDC.



1

Figure 2

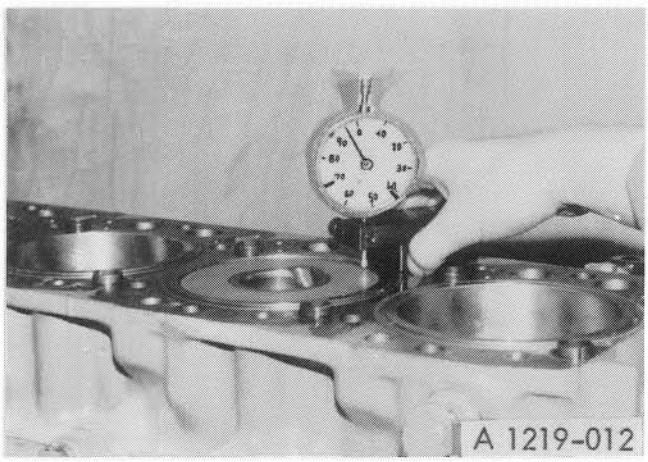
For engines where the turning device shown in Figure 1 is inaccessible, a turning gear is available as a special attachment. With this special gear the engine can be turned via the starter ring gear (inspection hole for start of delivery adjustment).



2

Figure 3

Apply dial gauge in holder without contacting the liner collar and measure piston protrusion above cylinder head sealing surface. Specified values must be maintained.



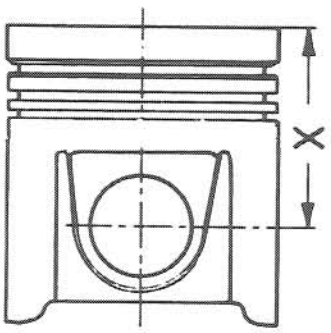
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Figure 4

NOTES FOR RECONDITIONED ENGINES

Selection of piston length for crankcases with remachined sealing surfaces

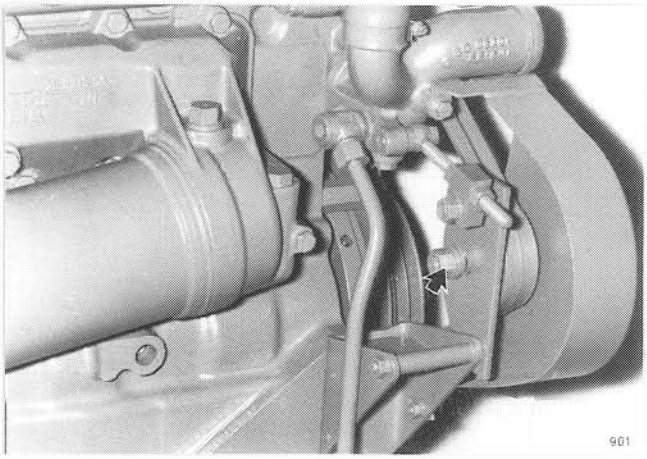
On reconditioned engines the cylinder block parting faces may be remachined. The machined size is stamped in the face of the crankcase/cylinder head parting surface behind the cylinder head in the crankcase. During assembly or disassembly the following must be observed.



4

Figure 1

Remove belt guard.
Slacken V-belt and remove. Remove nut (arrow) and take off tensioning pulley.



1

Disassembling tensioning pulley

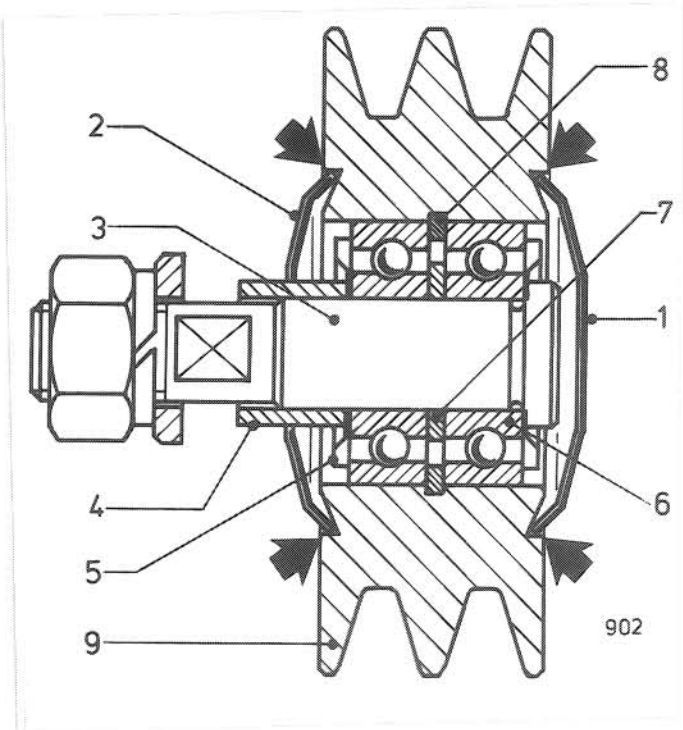
Figure 2

Carefully drive out cover (1 and 2). Drive through bearing pin (3). Remove bush (4) and Nilos rings (5). Extract one deep-groove ball bearing (6) with internal puller, remove spacer (7), circlip (8) and press out second bearing with suitable tool applied to outer race. Clean, inspect and replace parts, if necessary.

Assembling tensioning pulley

Install circlip (8) in tensioning pulley (9). Fully press in one bearing (6) with lettering facing circlip against circlip. Install spacer (7) and fully press in second bearing with lettering facing circlip.

Note: Different depths of circlip and spacer may cause stresses when pressing in the bearings. To avoid this press in second bearing simultaneously at inner and outer race. Fill offset groove for Nilos rings (5) with multi-purpose grease. Install individually into tensioning pulley. Insert bearing pin (3). Slide on bush (4). Install covers (1 and 2) and spread by applying a light blow so that their rim is fully seated (tight) in the notch of the tensioning pulley. Lock cover in position with centre punch at 4 or 5 points (arrow). Secure tensioning pulley in bracket. Place V-belt in position and tension as specified. Fit belt protection.



2

COOLING SYSTEM (continued)

Bore for bearing shaft in impeller	16.000 to 16.018 mm (dia 16 H 7)
Diameter of bearing shaft	16.045 to 16.056 mm (dia 16 x 6)
Interference	0.027 to 0.056 mm
Bearing seat in housing	54.940 to 54.970 mm (dia 55 R 7)
Bearing diameter	54.981 to 55.000 mm (dia 55 h 6)
Interference	0.011 to 0.060 mm
Hub bore	25.000 to 25.021 mm (dia 25 H 7)
Diameter of bearing shaft	25.048 to 25.061 mm (dia 25 u 6)
Interference	0.027 to 0.061 mm
Surge tank	
Filler valve cover	
Relief valve opens at	0.85 to 1.20 bar
Pressure cap with valves	
Relief valve	0.6 to 0.8 bar
Breather valve	0.1 bar

TURBOCHARGER

Manufacturer	KKK
Type for D 2566 MTE	
with non-cooled exhaust manifold	4LGZ 352C30.22
with water-cooled exhaust manifold	4LGZ 352C25.22
Type for D 2566 MTE marine engine water-cooled, for engines with constant or variable speeds above 2000 rpm	K36 4064ND/27.71
water-cooled, for engines with constant speeds below 2000 rpm	K36 4064ND/21.71
Type for D 2566 MLE	
water-cooled, for engines with constant or variable speeds above 2000 rpm	K36 4064ND/27.71
water-cooled, for engines with constant speeds below 2000 rpm	K36 4064ND/21.71
non-cooled, for engines with non-cooled exhaust manifold	4LGZ 352C25.22
Type for D 2866 TE	
water-cooled, with constant speed n = 1500 rpm	K36 4064MNA25.71
water-cooled, with constant speed n = 1800 rpm and variable speeds of 1800 - 2200 rpm	K36 4067MNA27.71
Type for D 2866 LE	
non-cooled, with constant speeds n = 1500 rpm and n = 1800 rpm	4LGZ 352C32.22
water-cooled, with constant speed n = 1500 rpm	K36 4064 MNA25.71
water-cooled, with variable speeds n = 1500 rpm and n = 1800 rpm	K36 4067MNA32.72
Axial play of impeller shaft for	
4LGZ	max. 0.20 mm
K36	max. 0.16 mm
Radial play of impeller shaft for	
4LGZ	max. 0.65 mm
K36	max. 0.55 mm
Negative pressure in air intake pipe (ahead of turbocharger)	max. 0.05 bar (500 mm w.g.)

FUEL SYSTEM (continued)

Injector clamping load	60 to 80 Nm (6 to 8 kpm)
Cover, fine adjustment of start of delivery	25 Nm (2.5 kpm)

STARTER / ALTERNATOR

V-belt pulley to alternator N 1, K 1, threads M 14 and M 16	35 to 45 Nm
V-belt pulley to alternator T 1, thread M 24	120 Nm (12 kpm)
Alternator to bracket (M 10)	65 Nm (6.5 kpm)
Alternator to bracket (M 12)	80 Nm (8 kpm)
Alternator to bracket (M 12 x 1.5)	100 Nm (10 kpm)
Bracket to crankcase	120 Nm (12 kpm)
Clamp for clamping screw to alternator	80 Nm (8 kpm)
Starter to timing case	80 Nm (8 kpm)

TRANSMITTER

Oil pressure transmitter to crankcase	80 Nm (8 kpm)
Temperature transmitter to crankcase	20 Nm (2 kpm)

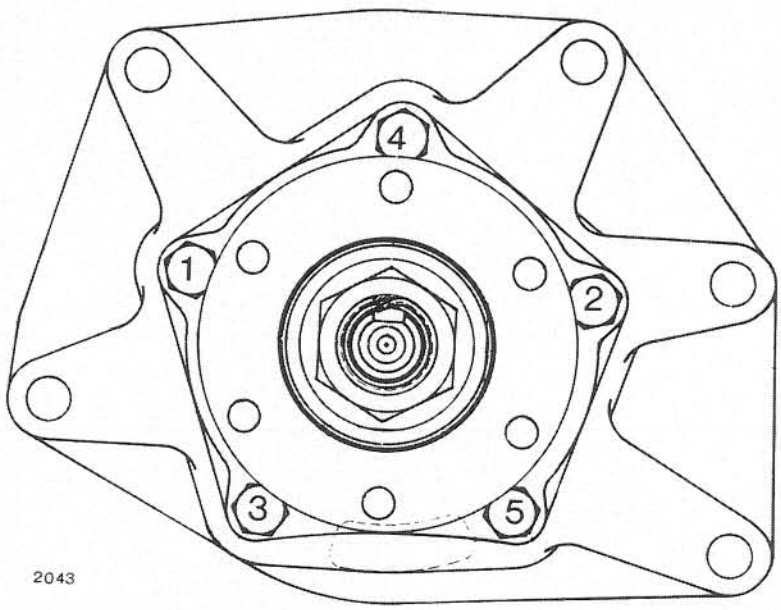
TIMING DEVICES

Adjusting segment to camshaft gear	50 Nm (5 kpm)
Adjusting segment to intermediate gear	50 Nm (5 kpm)

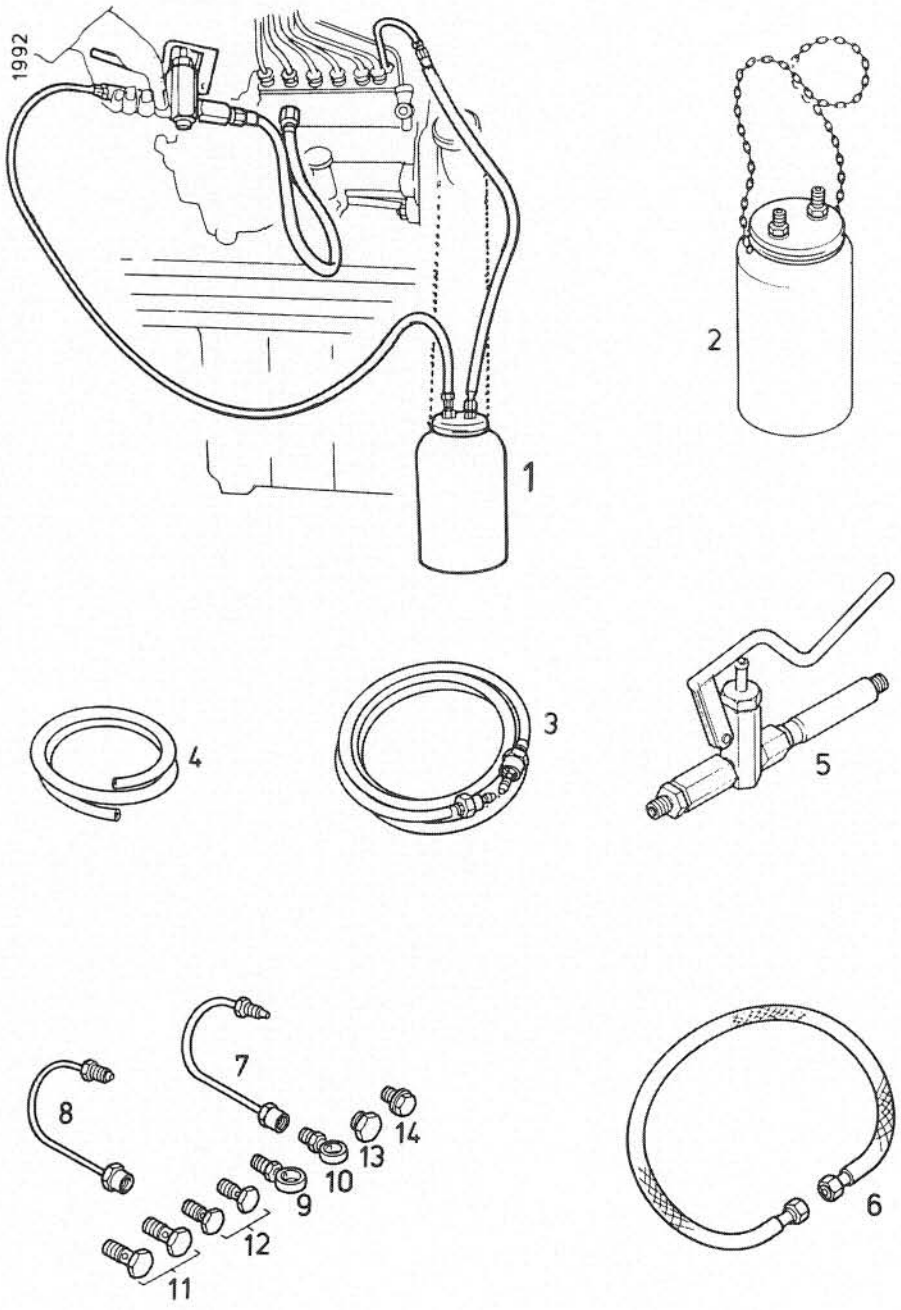
POWER TAKEOFFS

Tachometer drive adapter to cover	80 Nm (8 kpm)
Tachometer drive to adapter	80 Nm (8 kpm)
Power takeoff to timing case	75 Nm (7.5 kpm)
Drive gear to shaft (punch lock after final tightening)	300 Nm (30 kpm)
Flange for drive shaft (punch lock after final tightening)	300 Nm (30 kpm)
Oil jet oil supply, power takeoff (M 12)	60 Nm (6 kpm)
Oil jet oil supply, power takeoff (M 18)	80 Nm (8 kpm)
Bearing flange to bearing housing:	
Initial torque	10 Nm (1 kpm)
Final torque	25 Nm (2.5 kpm)

Tightening-up-pattern for bearing flange nuts



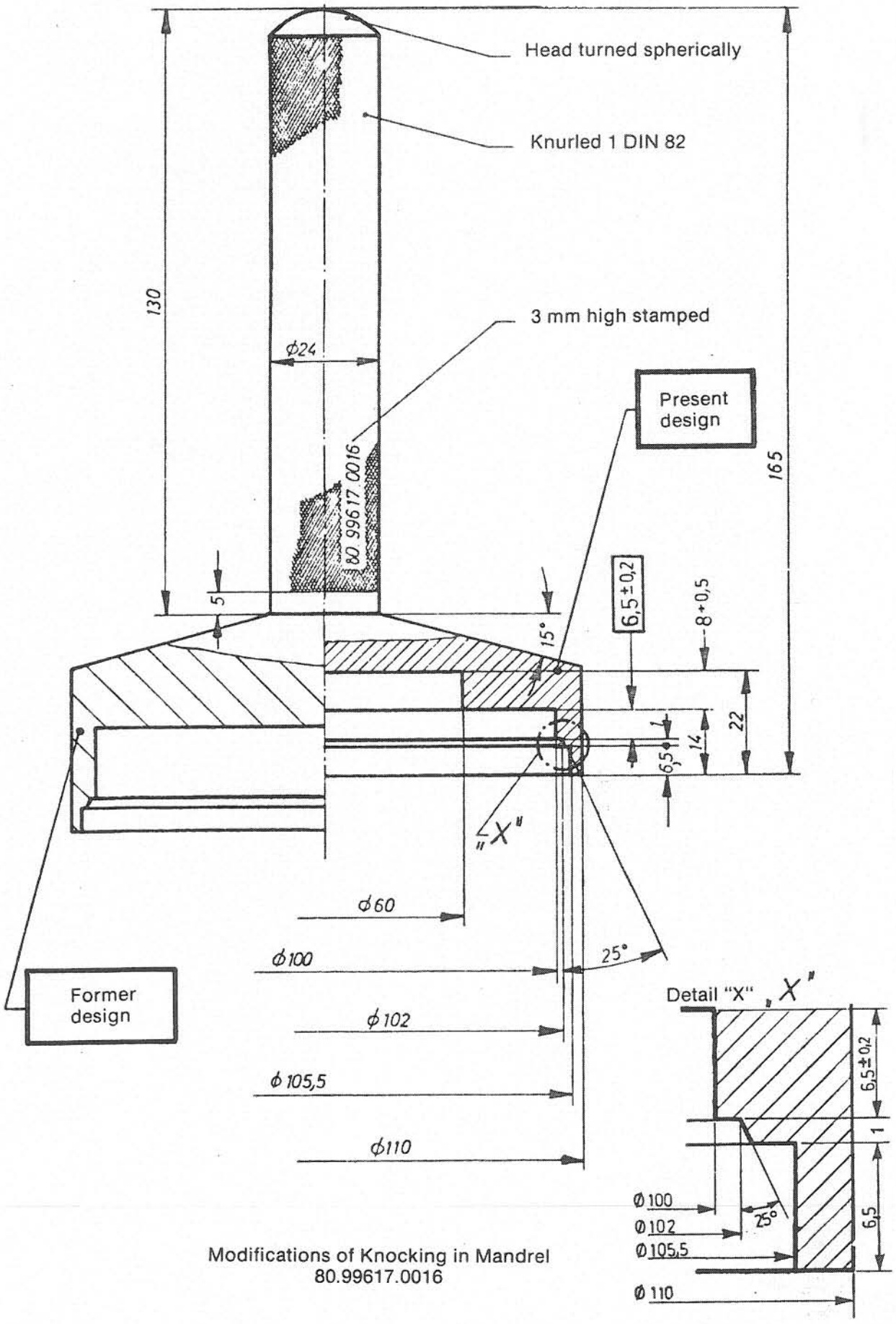
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SPECIAL TOOLS

MANDREL FOR INSTALLATION OF BEARING RACE ON FRONT END OF CRANKSHAFT
(MANDREL AND BEARING RACE HEATED TO 150°C)



Modifications of Knocking in Mandrel
80.99617.0016