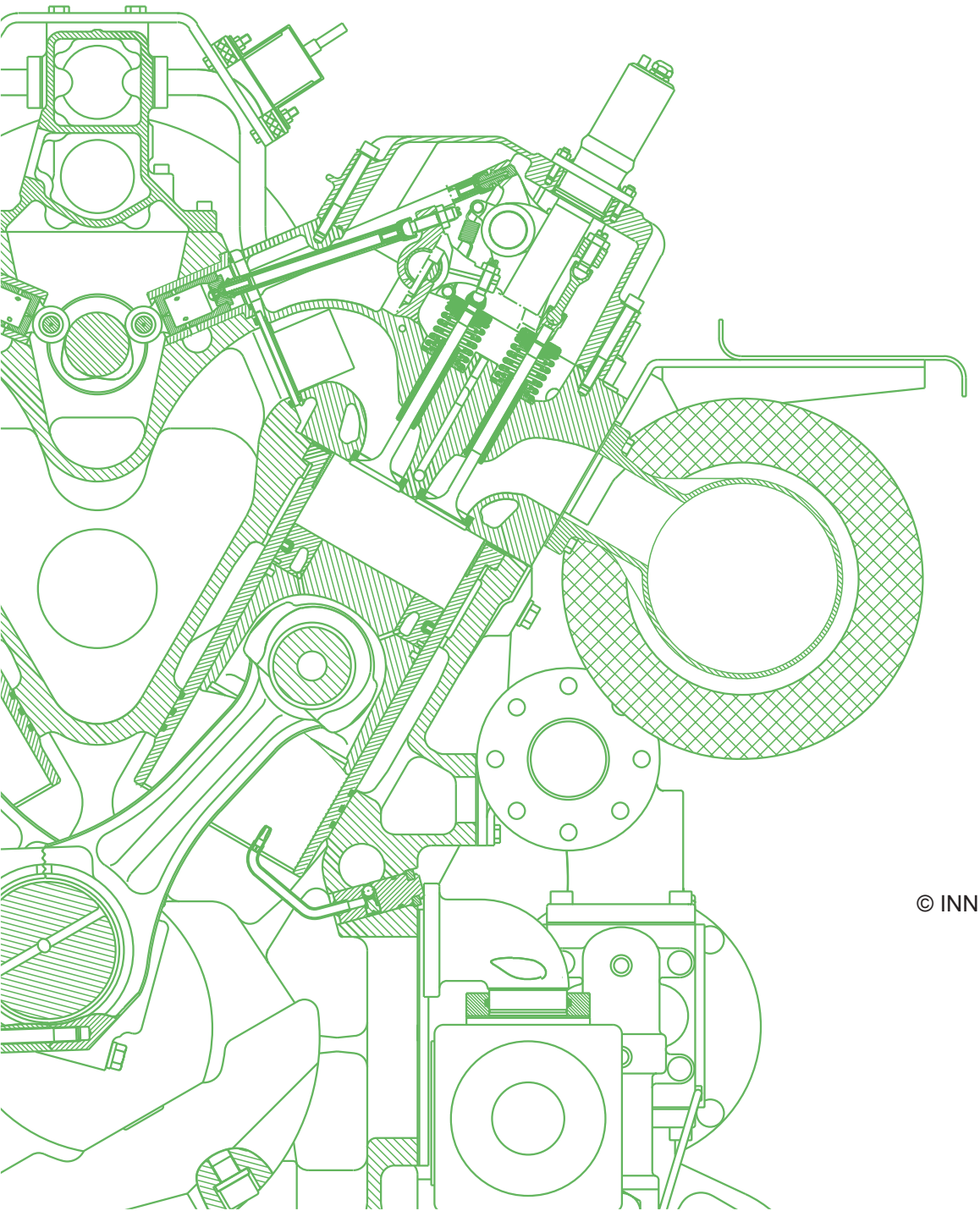
JENBACHER

Standard Maintenance schedule A
Type 3



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INNIO

Maintenance instruction highlighted in green

The maintenance instructions highlighted in green in the maintenance schedule are plant-specific and are incorporated into the customer-specific maintenance schedule according to engine type and version.

Revision history

Index	Date	Description / Revision summary	Expert *Auditor*
1	02.09.2019	First issue	**Technology** *Technology*

The target recipients of this document are:

Service Partners, commissioning partners, subsidiaries/branches, Jenbach location

Note to warranty claims:

Complying with TA 1100-0113 ensures a safe, quick and proper execution of every maintenance task.

The risk assessment to be performed by the plant operator and the official and quasi-official safety rules and laws may give rise to acceptance tests, inspections and maintenance operations which are not included in the Maintenance Plan. The operator is responsible for implementing and enforcing these additional measures.

The maintenance intervals are based on empirical values during average types of operation while fully complying with the manufacturer's operating and maintenance instructions. In individual cases, the operating conditions and other factors relating to wear may affect the actual amount of maintenance required. The manufacturer therefore reserves the right to specify different maintenance intervals where appropriate.

NOTE

Damage to the engine

Damage to the engine may result if the intervals in the maintenance schedule are not followed precisely. Observe intervals related to the condition and starts, or intervals not to the operating hours.

The maintenance instructions highlighted in colour in the maintenance schedule are plant-specific and are incorporated into the customer-specific maintenance schedule according to engine type and version.

inspect	Wear parts and tolerances will be evaluated by INNIO and / or a company selected and authorized by INNIO, and may be changed as required as part of preventive maintenance. Seals require replacement due to disassembly of components for inspection.
replace	Indicates a scheduled preventive part exchange based on operating hours, time or starts.
overhaul	Parts will be disassembled, overhauled (cleaned, wear parts changed etc.) and assembled again.
c (condition-based)	The inspect-, replace-, and overhaul interval is condition based.
s (start-dependent)	The inspect-, replace-, and overhaul interval is start dependent.
t (time-dependent)	The inspect-, replace-, and overhaul interval is time dependent.
z (Thermal cycle)	The inspection, replacement or overhaul interval depends on the thermal cycle. A thermal cycle is defined as heating up to operating temperature and then cooling down to a defined temperature for the component in question. If the operating temperature is reached again before cooling down to below the limit temperature has taken place, there is no thermal cycle.
K	This activity is to be carried out by the customer, INNIO or a company selected and authorised by INNIO to carry out this work.
INNIO	This activity is to be carried out by INNIO or a company selected by INNIO authorised to carry out this work.
WA	Reference for the maintenance instruction.
I	A maintenance instruction which contains only inspection working tasks.
W	A maintenance instruction which contains only replacement / overhaul working tasks.
IW	A maintenance instruction which contains inspection and replacement / overhaul working tasks.
Oh	Operating hours

The line in the maintenance plan after the maintenance <100 Oh is shown as thicker. This line marks the difference between one-off intervals or intervals not related to operating hours, and intervals which have to be repeated after a certain number of operating hours.

The detailed **description of the time-, start- and condition-based intervals** can be found in the chapter maintenance interval in the respective **maintenance instruction.**

If a maintenance step depends on two different factors, for example operating hours and starts, the maintenance step need only be carried out once when a limit value is reached. After the maintenance step has been carried out, both limit values start counting again from the beginning.

Arbeitsschritte

c- Condition-dependent
t- Time-dependent
s- Start-dependent

		c	t	s	< 100 Oh	every 1.000 Oh	8,000 Oh	2,000 Oh	4,000 Oh	6,000 Oh	8,000 Oh	10,000 Oh	12,000 Oh	14,000 Oh	16,000 Oh	18,000 Oh	20,000 Oh	22,000 Oh	24,000 Oh	26,000 Oh	28,000 Oh	30,000 Oh	31,000 Oh	32,000 Oh	34,000 Oh	36,000 Oh	38,000 Oh	40,000 Oh	42,000 Oh	44,000 Oh	46,000 Oh	48,000 Oh	50,000 Oh	52,000 Oh	54,000 Oh	56,000 Oh	58,000 Oh	60,000 Oh
Inspection	I 0103 0																																				
⇨ Inspecting the crankcase ventilation					■			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■
⇨ Checking engine connection in myPlant								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■
⇨ Inspecting the thermal reactor								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■
⇨ Inspecting the exhaust gas/water heat exchanger								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■
⇨ Inspecting the mixture/water heat exchanger												■					■					■						■					■					■
Daily inspection	I 9003 0																																				
⇨ Inspecting the system			■																																		
Leak test	IW 8049 0																																				
⇨ Carrying out the leak test			■								■				■				■					■				■				■				■		
Surge arrestor in the Junction Box	IW 8029 A0																																				
⇨ Checking and cleaning the surge arrestor			■																																		
⇨ Measuring capacitance			■																																		
⇨ Replacing the unit			■																																		
Jenbacher Control cabinet	IW 8031 A0																																				
⇨ Replace the rubber buffer and filter mat			■													■											■										■
⇨ Inspect and clean filter fan including filter mat							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■
⇨ Inspect and clean the interior of the control cabinet																■											■										■
⇨ Inspect and clean the cooling device for the control cabinet																■											■										■
Container	IW 8040 A0																																				
⇨ Replacing the container intake air filter		■																																			
⇨ Checking the louvre shutters			■																																		
⇨ Tightening the bolted joints			■																																		
Intake air filter	IW 8041 A0																																				
⇨ Replace filter mat		■						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■
⇨ Replace rubber buffers			■													■											■										■
Surge arrester	IW 8047 A0																																				
⇨ Checking the surge arrester			■																																		
Overvoltage deflector	IW 8048 A0																																				
⇨ Checking the overvoltage deflector			■																																		
Coupling and engine bearings	IW 8086 A0																																				
⇨ Replace rubber coupling element			■	■												■											■										■
⇨ Replace the rubber rails of the engine and generator			■																		■																	■
⇨ Inspect the rubber rails of the engine and generator																■											■										■
Coupling and engine bearings	IW 8087 A0																																				
⇨ Replace rubber coupling element			■	■												■											■										■

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		c	t	s	< 100 Oh	every 1.000 Oh	8,000 Oh	2,000 Oh	4,000 Oh	6,000 Oh	8,000 Oh	10,000 Oh	12,000 Oh	14,000 Oh	16,000 Oh	18,000 Oh	20,000 Oh	22,000 Oh	24,000 Oh	26,000 Oh	28,000 Oh	30,000 Oh	31,000 Oh	32,000 Oh	34,000 Oh	36,000 Oh	38,000 Oh	40,000 Oh	42,000 Oh	44,000 Oh	46,000 Oh	48,000 Oh	50,000 Oh	52,000 Oh	54,000 Oh	56,000 Oh	58,000 Oh	60,000 Oh
⇨ Replace the rubber rails of the engine and generator	IW 8087 A0		■																			■															■
⇨ Checking the coupling alignment									■		■		■		■		■		■		■			■		■		■		■		■		■		■		■
⇨ Inspect the rubber rails of the engine and generator																	■										■											■
Condensate removal in the fuel gas system	IW 8090 A0																																					
⇨ Manual condensate drain: Drain off condensate		■																																			
⇨ Automatic condensate removal: Check for leaks			■					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Exhaust gas system condensate drain line	IW 8095 A0																																					
⇨ Inspecting the condensate drain line in the exhaust gas system		■																																			
Generator	W 8030 A0																																					
⇨ Relubricating the bearing(s)		■							■		■		■		■		■		■		■			■		■		■		■		■		■		■		■
⇨ Measuring the insulation/polarisation		■										■					■					■					■					■					■
⇨ Daily check			■																																			
⇨ Overhauling the generator				■																																		■
⇨ Inspecting and cleaning the generator												■					■					■					■					■					■
⇨ Carrying out a vibration measurement and replacing the earth brush (if fitted)												■					■					■					■					■					■
⇨ Replacing the bearing(s)																	■										■											■
Generator	W 8032 A0																																					
⇨ Relubricating the bearing(s)		■						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
⇨ Measuring the insulation/polarisation		■										■					■					■					■					■					■
⇨ Replacing the bearing(s)		■															■										■											■
⇨ Daily check			■																																			
⇨ Overhauling the generator				■																																		■
⇨ Carrying out a vibration measurement and replacing the earth brush (if fitted)												■					■					■					■					■					■
Generator	W 8034 A0																																					
⇨ Relubricating the bearing(s)		■			■																																	
⇨ Measuring the insulation/polarisation		■										■					■					■					■					■					■
⇨ Daily check			■																																			
⇨ Overhauling the generator				■																																		■
⇨ Inspecting and cleaning the generator												■					■					■					■					■					■
⇨ Carrying out a vibration measurement and replacing the earth brush (if fitted)												■					■					■					■					■					■
⇨ Replacing the bearing(s)																	■										■											■
Plate heat exchanger	W 8043 A0																																					
⇨ Replace the O-rings and rubber seals		■	■																																			■

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		c	t	s	< 100 Oh	every 1.000 Oh	8,000 Oh	2,000 Oh	4,000 Oh	6,000 Oh	8,000 Oh	10,000 Oh	12,000 Oh	14,000 Oh	16,000 Oh	18,000 Oh	20,000 Oh	22,000 Oh	24,000 Oh	26,000 Oh	28,000 Oh	30,000 Oh	31,000 Oh	32,000 Oh	34,000 Oh	36,000 Oh	38,000 Oh	40,000 Oh	42,000 Oh	44,000 Oh	46,000 Oh	48,000 Oh	50,000 Oh	52,000 Oh	54,000 Oh	56,000 Oh	58,000 Oh	60,000 Oh
⇨ Overhauling the plate heat exchanger	W 8043 A0																																				■
Gas train	W 8045 A0																																				
⇨ Inspect the gas filter and replace if necessary			■						■		■		■		■		■		■		■			■		■		■		■		■		■		■		■
⇨ Overhauling the gas train			■																																		■
⇨ Inspecting the gas train												■					■					■						■					■					■
⇨ Overhauling the gas pressure controller/gas regulator																						■																■
⇨ Overhauling the prechamber differential pressure controller																						■																■
⇨ Overhauling the zero pressure controller (optional)																						■																■
Flat-bed cooler	W 8065 A0																																				
⇨ Inspecting the fan power unit			■																																		
⇨ Inspecting the fan bearing			■																																		
⇨ Inspecting the fans			■																																		
⇨ Inspecting the fan blades			■																																		
Activated carbon adsorber	W 8074 A0																																				
⇨ Flushing the activated carbon adsorber		■																																			
⇨ Checking the activated carbon mass		■																																			
⇨ Emptying and filling the activated carbon		■																																			
Cooling water	W 8080 A0																																				
⇨ Cooling water analysis		■	■					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■
⇨ Replacing the cooling water		■																																			
⇨ Checking the water pressure			■																																		
⇨ Replacing O-rings			■													■												■										■
⇨ Replace hoses			■													■												■										■
Coupling and engine bearings	IW 8086 A3																																				
⇨ Replace rubber coupling element			■	■												■												■										■
⇨ Replace the rubber rails of the engine and generator			■																			■																■
⇨ Checking the coupling alignment								■		■		■		■		■		■		■			■		■		■		■		■		■		■		■
⇨ Inspect the flexible plate pack (optional)										■				■				■		■			■				■				■				■		
⇨ Inspect the rubber rails of the engine and generator																■												■										■
Engine cooling water pump	W 0203 A6																																				
⇨ Relubricating the bearings (only for pumps with grease nipples)								■		■		■		■		■		■		■			■		■		■		■		■		■		■		■
⇨ Replacing the mechanical seal											■					■					■						■					■					■
⇨ Overhauling the engine cooling water pump																					■																■
Lubricating oil / oil filter	IW 0101 M0																																				

Arbeitsschritte

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⇨ Replacing the motor oil filter	IW 0101 M0	■						■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Camshaft/valve timing gear	IW 8052 M0																																				
⇨ Inspecting the camshaft																						■																■
⇨ Replacing roller tappets or cup tappets																						■																■
Combustion chamber	IW 8056 M0																																				
⇨ Inspecting and cleaning the combustion chamber		■																																			
⇨ Checking the fuel gas quality, in particular the silicon content for landfill gas engines			■																																		
⇨ Checking the oil consumption			■																																		
⇨ Check for oil ingress into the engine due to a faulty blow-by filter and inspect the intake line for "Oil wetness"			■																																		
NOx	IW 8057 M0																																				
⇨ Measure NOx value and if necessary adjust LEANOX setting		■					■	■	■	■	■		■		■		■		■		■		■	■	■	■	■		■		■		■		■		■	
⇨ Replacing the NOx sensor (if present)										■			■			■			■			■				■			■			■			■			■
Control rod assembly/throttle valve/actuator	W 0200 M0																																				
⇨ Inspecting and relubricating the control rod assembly			■	■				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■
⇨ Inspect throttle valve			■	■				■																													
⇨ Replacing and lubricating pivot point, replacing throttle valve bearing												■					■				■						■						■				■
⇨ Replacing throttle valve																	■										■											■
⇨ Replacing the final controlling device, control lever and throttle valve shaft																					■																	■
Ignition	W 0303 M0																																				
⇨ Cleaning the pick-ups								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■
⇨ Replacing the spark plug connector gasket									■			■			■			■			■			■			■			■			■			■		■
⇨ Inspecting the ignition system										■				■				■					■				■				■						
Valve clearance	W 0400 M0																																				
⇨ Measuring the valve-stem projection							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■
⇨ Adjusting the valve clearance							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■
Crankcase ventilation	W 0508 M0																																				
⇨ Replacing the oil mist separator		■														■											■										■
⇨ Measuring the differential pressure			■				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■
⇨ Replacing the blow-by hoses			■													■											■										■
⇨ Replacing the preliminary separator element																					■																	■
Vibration damper	W 0601 M0																																				
⇨ Replacing the vibration damper				■												■											■										■

Arbeitsschritte

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		c	t	s	< 100 Oh	every 1.000 Oh	8,000 Oh	2,000 Oh	4,000 Oh	6,000 Oh	8,000 Oh	10,000 Oh	12,000 Oh	14,000 Oh	16,000 Oh	18,000 Oh	20,000 Oh	22,000 Oh	24,000 Oh	26,000 Oh	28,000 Oh	30,000 Oh	31,000 Oh	32,000 Oh	34,000 Oh	36,000 Oh	38,000 Oh	40,000 Oh	42,000 Oh	44,000 Oh	46,000 Oh	48,000 Oh	50,000 Oh	52,000 Oh	54,000 Oh	56,000 Oh	58,000 Oh	60,000 Oh
Gas mixer	W 0704 M0																																				
⇨ Replace circuit board.												■					■					■						■					■					■
⇨ Replacing the actuator motor																	■											■										■
⇨ Overhauling the gas mixer																						■																■
Mixture bypass valve	W 0802 M0																																				
⇨ Mixture bypass valve – replacement																	■											■										■
Revision	W 2100 M0																																				
⇨ Replacing the rubber rails of the engine and generator			■	■																																	■
⇨ Replacing the camshaft				■																																	■
⇨ Inspecting the crankshaft				■																																	■
⇨ Inspecting the crankcase				■																																	■
⇨ Inspecting the gear train				■																																	■
⇨ Inspecting the cylinder heads				■																																	■
⇨ Replacing piston, piston rings and piston pins				■																																	■
⇨ Replacing a cylinder liner				■																																	■
⇨ Replacing the crankshaft main bearings/crankshaft thrust bearings				■																																	■
⇨ Replacing big-end bearing shells				■																																	■
⇨ Replacing the vibration damper				■																																	■
Exhaust-gas turbocharger	W 8023 M0																																				
⇨ Inspecting the compressor side of the exhaust-gas turbocharger		■																																			
⇨ Overhauling the exhaust-gas turbocharger		■	■	■								■					■					■						■					■					■
⇨ Overhauling the exhaust-gas turbocharger		■	■	■													■											■										■
⇨ Replacing the O-rings			■														■											■										■
⇨ Replacing the O-rings			■									■					■					■						■					■					■
⇨ Replacing the exhaust-gas turbocharger																																					■
Exhaust-gas turbocharger	W 8024 M0																																				
⇨ Overhauling the exhaust-gas turbocharger		■	■	■													■											■										■
⇨ Replacing the turbine housing (hot gas package only)		■	■	■													■											■										■
⇨ Inspecting the compressor side of the exhaust-gas turbocharger												■					■					■						■					■					■
⇨ Replacing the drive unit or turbocharger																																					■
Exhaust-gas turbocharger	W 8025 M0																																				
⇨ Inspecting the compressor side of the exhaust-gas turbocharger		■																																			
⇨ Overhauling the exhaust-gas turbocharger		■	■	■													■											■										■

Arbeitsschritte

c- Condition-dependent t- Time-dependent s- Start-dependent		c	t	s	< 100 Oh	every 1.000 Oh	8,000 Oh	2,000 Oh	4,000 Oh	6,000 Oh	8,000 Oh	10,000 Oh	12,000 Oh	14,000 Oh	16,000 Oh	18,000 Oh	20,000 Oh	22,000 Oh	24,000 Oh	26,000 Oh	28,000 Oh	30,000 Oh	31,000 Oh	32,000 Oh	34,000 Oh	36,000 Oh	38,000 Oh	40,000 Oh	42,000 Oh	44,000 Oh	46,000 Oh	48,000 Oh	50,000 Oh	52,000 Oh	54,000 Oh	56,000 Oh	58,000 Oh	60,000 Oh
⇨ Check that all the bolted joints/seals and covers sit properly.	W 8025 M0							■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■
⇨ Replacing O-rings																	■										■										■
Exhaust-gas turbocharger	W 8026 M0																																			
⇨ Overhauling the exhaust-gas turbocharger												■					■					■					■					■					■
Starter motor	W 8032 M0																																			
⇨ Replacing the starter motor				■								■					■					■					■					■					■
Lubricating oil pump	W 8046 M0																																			
⇨ Replacing O-rings			■														■										■										■
⇨ Overhauling the lubricating oil pump																																				■
Piston	W 8047 M0																																			
⇨ Replacing the O-ring at the piston cooling nozzle			■																			■														■
⇨ Replace piston, piston rings and piston pins				■																		■														■
⇨ Overhaul the piston cooling nozzles				■																		■														■
Conrod	W 8048 M0																																			
⇨ Replacing conrods				■																		■														■
⇨ Replacing big-end bolts				■																		■														■
⇨ Replacing big-end bearing shells				■																		■														■
Cylinder liner	W 8049 M0																																			
⇨ Replacing a cylinder liner				■																		■														■
⇨ Replacing O-rings				■																		■														■
⇨ Replacing the scraper ring (if fitted)				■																		■														■
Replace the crankshaft main bearings and thrust bearings	W 8050 M0																																			
⇨ Replace the lower crankshaft thrust bearing shell		■		■																		■														■
⇨ Inspect the upper crankshaft thrust bearing shell and check that it is firmly seated		■		■																		■														■
⇨ Replace crankshaft main bearings				■																		■														■
Exhaust gas manifold	W 8051 M0																																			
⇨ Inspect the exhaust-gas collection line and insulation		■		■																																
Cylinder head	W 8053 M0																																			
⇨ Replacing the cylinder head		■		■																		■														■
⇨ Replacing the rocker cover moulded gasket			■									■					■					■					■					■					■
⇨ Replacing the O-rings on the cylinder head		■																				■														■
Crankcase	W 8061 M0																																			
⇨ Replacing O-rings			■																			■														■
Cooling water pump	W 0201 M3																																			

Arbeitsschritte

c- Condition-dependent t- Time-dependent s- Start-dependent		c	t	s	< 100 Oh	every 1.000 Oh	8,000 Oh	2,000 Oh	4,000 Oh	6,000 Oh	8,000 Oh	10,000 Oh	12,000 Oh	14,000 Oh	16,000 Oh	18,000 Oh	20,000 Oh	22,000 Oh	24,000 Oh	26,000 Oh	28,000 Oh	30,000 Oh	31,000 Oh	32,000 Oh	34,000 Oh	36,000 Oh	38,000 Oh	40,000 Oh	42,000 Oh	44,000 Oh	46,000 Oh	48,000 Oh	50,000 Oh	52,000 Oh	54,000 Oh	56,000 Oh	58,000 Oh	60,000 Oh
⇨ Sealing the cooling water pump	W 0201 M3	■																																		
⇨ Overhauling the cooling water pump												■					■					■						■					■					■
Exhaust-gas turbocharger	W 8025 M3																																				
⇨ Replacing O-rings			■									■					■					■						■					■					■
⇨ Check that all the bolted joints/seals and covers sit properly.								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■
⇨ Overhauling the exhaust-gas turbocharger												■					■					■						■					■					■
⇨ Replacing the exhaust gas turbocharger																																						■
Pre-lubrication pump	W 8054 M3																																				
⇨ Overhauling the pre-lubrication pump																																						■
Safety valve	------																																				
⇨ Inspect safety valve		■	■																																		
Gas and smoke alarm system	------																																				
⇨ Inspect gas and smoke alarm system		■	■																																		