

TOOL CATALOG

BR4000-04/05

MS004009/03E



Power. Passion. Partnership.

Printed in Germany

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Subject to alterations and amendments.

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PREFACE

This tool catalog comprises tools and devices required to carry out maintenance and assembly work. The safety instructions in the relevant operating and maintenance manuals must be observed.

Tool catalog structure

The content is subdivided into the following categories:

- general tools
- qualification level-dependent tools
- workshop equipment
- measuring devices

Within these categories, the tools are arranged by function groups. An overview over these function groups is provided on the following pages.

The below symbols are used for the combination of several tools:



tool kit



individual tool within a tool kit



tool which must be used in combination with other tools



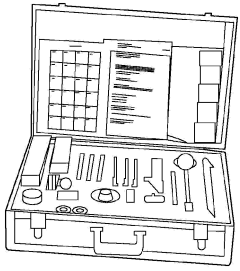

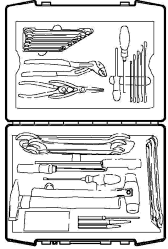

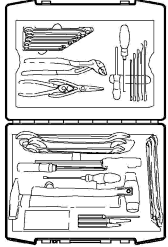

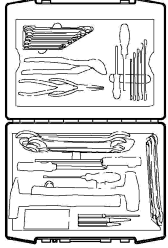

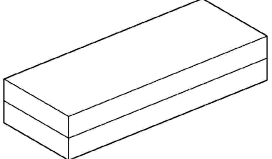

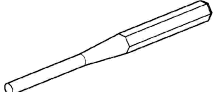
spare tool with position number from illustration

Note: The illustration of the tools may deviate to a minor extent.
When ordering tools, the following information must be provided:


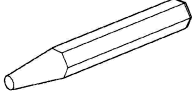

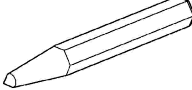

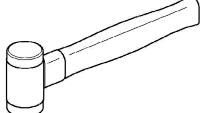

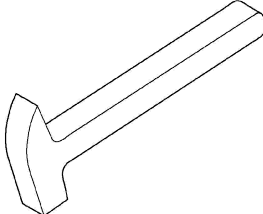

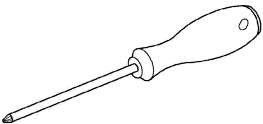

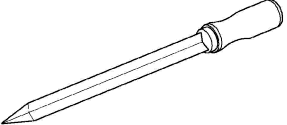
Engine type	.....	Designation	.....
Part No.	.....	Engine No.	.....
Order No.	.....	Tool catalog No.	.....
Quantity	.....	

To avoid transmission errors, please confirm any orders placed over the telephone in writing.


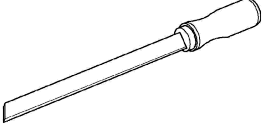

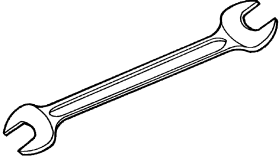

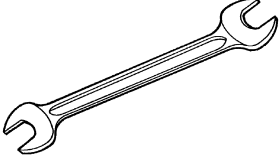

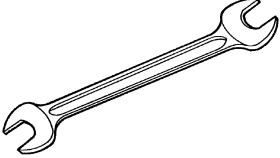

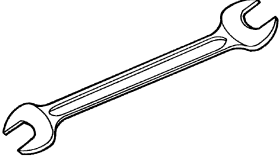

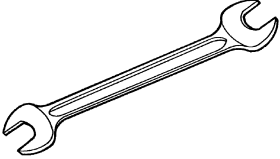
TOOL GENERAL TOOLS

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6798833	TEST KIT to analyze coolant and engine oil samples	1	
	F30454308	TOOL KIT general tool kit	1	
	F30454308/01	TOOL BOX	1	
	F30454308/02	COMPARTMENTS	1	
	F30454308/03	SHARP.STONE, FLAT	1	
	F30454308/04	PIN PUNCH 3x150	1	

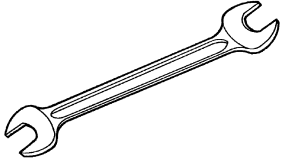
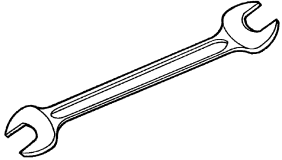
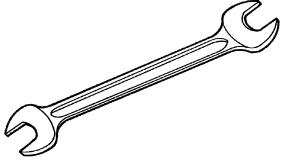
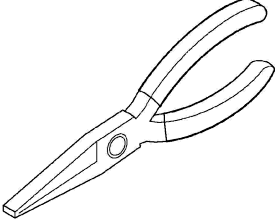
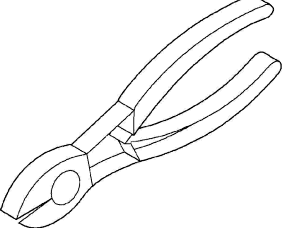
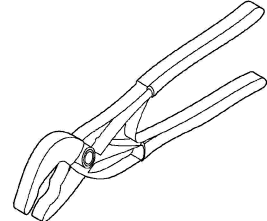
TOOL GENERAL TOOLS

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30454308/05	DRIFT PUNCH 5x120	1	
	F30454308/06	CENTER PUNCH	1	
	F30454308/07	HAMMER Synthetic material	1	
	F30454308/08	HAMMER 500gr.	1	
	F30454308/09	SCREWDRIVER 1,2x7x125	1	
	F30454308/10	THREE-SQUARE HOLLOW SCRAPER	1	


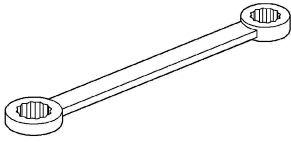

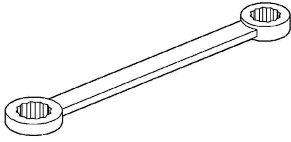

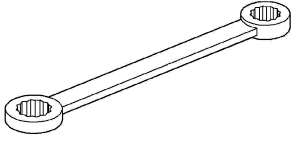

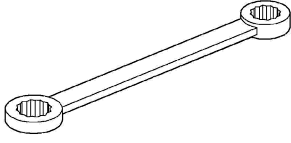

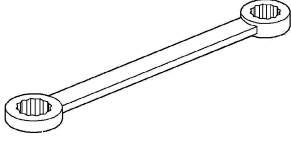

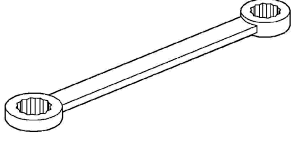
TOOL GENERAL TOOLS

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30454308/11	FLAT SCRAPER	1	
	F30454308/12	OPEN-END WRENCH wrench size 30x32	1	
	F30454308/13	OPEN-END WRENCH wrench size 24x27	1	
	F30454308/14	OPEN-END WRENCH wrench size 30x32	1	
	F30454308/15	OPEN-END WRENCH wrench size 36x41	1	
	F30454308/16	OPEN-END WRENCH wrench size 17x19	1	


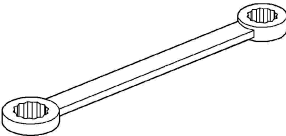

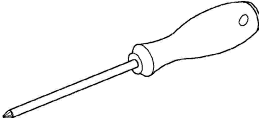

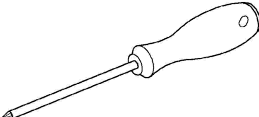

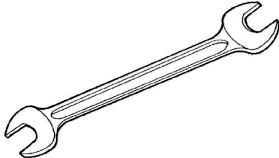

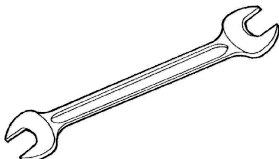

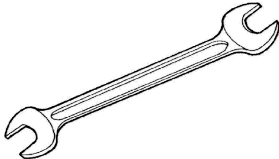
TOOL GENERAL TOOLS

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
🔑	F30454308/17	OPEN-END WRENCH wrench size 20x22	1	
🔑	F30454308/18	OPEN-END WRENCH wrench size 22x24	1	
🔑	F30454308/19	OPEN-END WRENCH wrench size 24x27	1	
🔑	F30454308/20	COMBINATION PLIERS	1	
🔑	F30454308/21	DIAGONAL CUTTING PLIERS	1	
🔑	F30454308/22	WATER PUMP PLIERS	1	

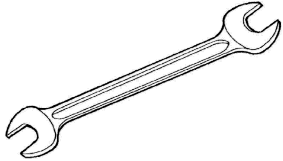
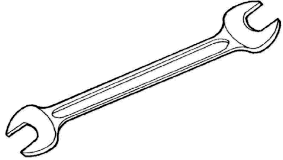

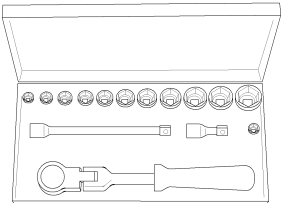
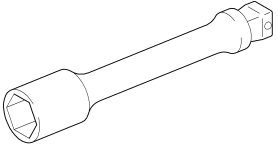
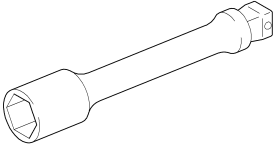
TOOL GENERAL TOOLS

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30454308/23	DOUBLE-HEAD BOX WRENCH wrench size 8x9	1	
	F30454308/24	DOUBLE-HEAD BOX WRENCH wrench size 10x11	1	
	F30454308/25	DOUBLE-HEAD BOX WRENCH wrench size 12x13	1	
	F30454308/26	DOUBLE-HEAD BOX WRENCH wrench size 13x15	1	
	F30454308/27	DOUBLE-HEAD BOX WRENCH wrench size 16x17	1	
	F30454308/28	DOUBLE-HEAD BOX WRENCH wrench size 18x19	1	


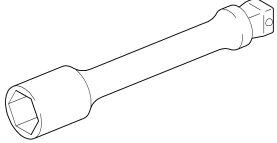

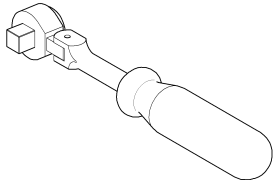

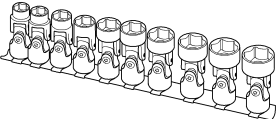
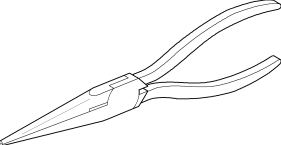
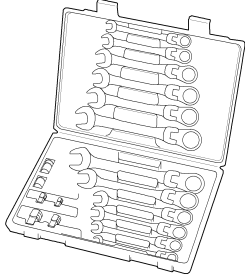
TOOL GENERAL TOOLS

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30454308/29	DOUBLE-HEAD BOX WRENCH wrench size 20x22	1	
	F30454308/30	SCREWDRIVER 0,5x3x80	1	
	F30454308/31	SCREWDRIVER 1,5x0,5x100	1	
	F30454308/32	OPEN-END WRENCH wrench size 6x7	1	
	F30454308/33	OPEN-END WRENCH wrench size 8x10	1	
	F30454308/34	OPEN-END WRENCH wrench size 10x11	1	

TOOL GENERAL TOOLS

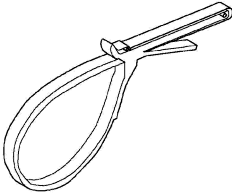

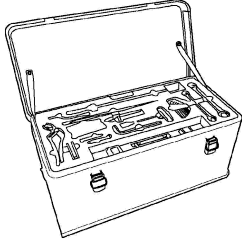

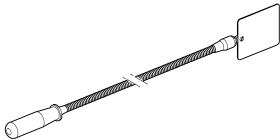

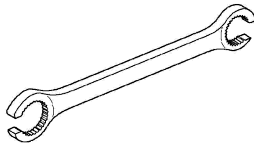

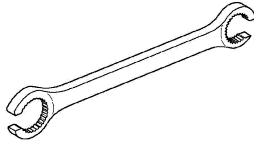

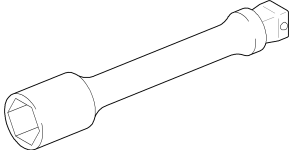
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
🔑	F30454308/35	DOUBLE OPEN-END WRENCH wrench size 12x13	1	
🔑	F30454308/36	DOUBLE OPEN-END WRENCH wrench size 14x15	1	
🔑	F30454308/37	PLATE	1	
	F30454406	TOOL KIT Socket wrench set 3/8"	1	
⊕ 🔑	F30454410	EXTENSION 3/8" square, length 125mm	1	
⊕ 🔑	F30454411	EXTENSION 3/8" square, length 160mm	1	


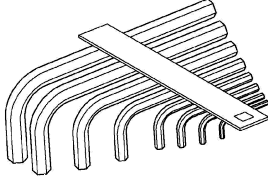

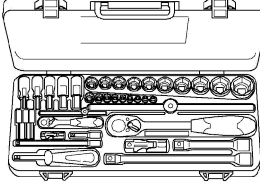

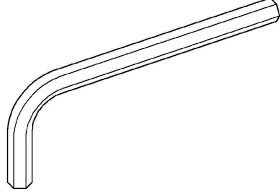

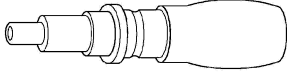

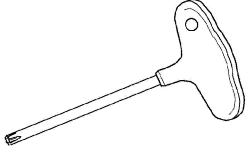

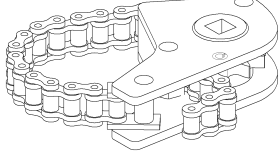
TOOL GENERAL TOOLS


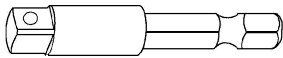

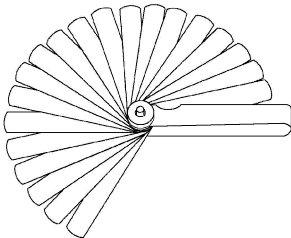

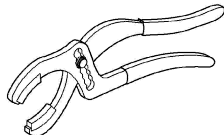

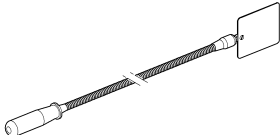

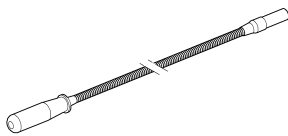

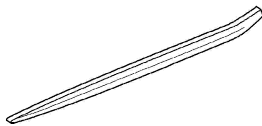
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30452509	EXTENSION 3/8" square, length 150mm	1	
	F30455326	RATCHET joint ratchet	1	
	F30455700	TOOL KIT 3/8" hinge socket kit AF10-19	1	
	F30004655	SNIPE PLIERS 200mm long, straight	1	
	F30455699	TOOL KIT Hinge ratchet wrench kit AF8-19	1	


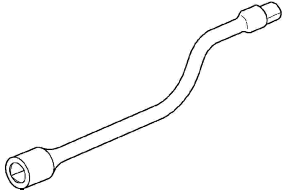

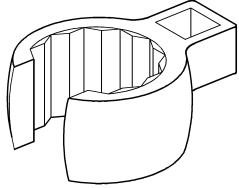

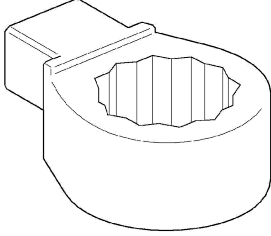

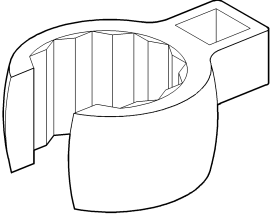

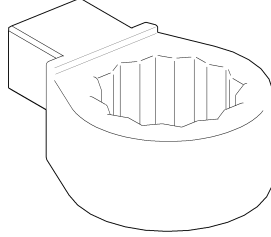

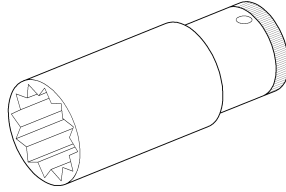
QL - 1


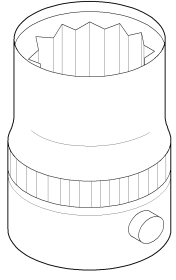

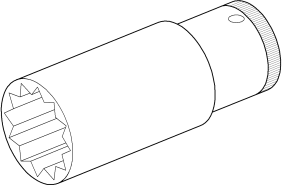

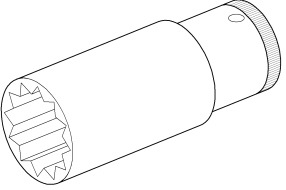

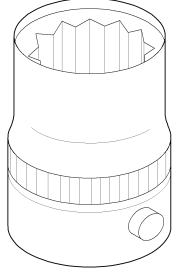

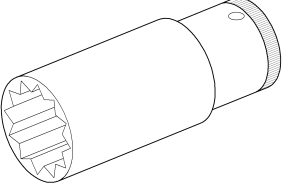

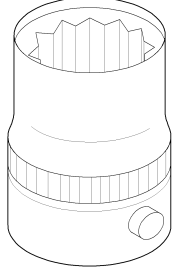
000 - MAJOR DOCUMENTATION	6
010 - CRANKCASE AND ATTACHMENTS	7
050 - VALVE GEAR	8
070 - FUEL SYSTEM (HIGH PRESSURE)	9
120 - AIR SYSTEM / AIR DUCTING	10
150 - EXHAUST AFTER-TREATMENT	11


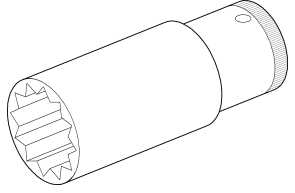

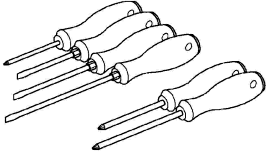

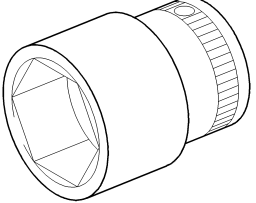

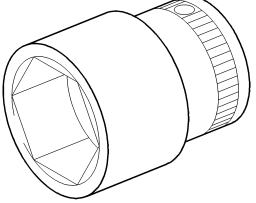

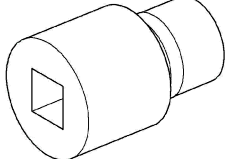

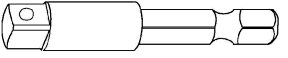
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30006199	STRAP WRENCH for fuel filter with constricted installation area	1	
	F30452561	TOOL KIT multi-purpose tool kit	1	
	8205892061/00	ASSEMBLY MIRROR flexible	1	
	F30022000	WRENCH, RING DE O/SET wrench size 24x27	1	
	F30011450	WRENCH, RING DE O/SET wrench size 17x19	1	
	F30516143	EXTENSION, ROTATABLE 1/2", 50mm long, for exhaust pipe bellows	1	


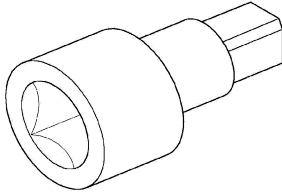

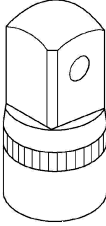

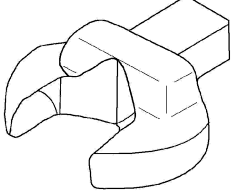

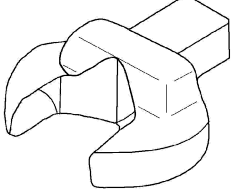

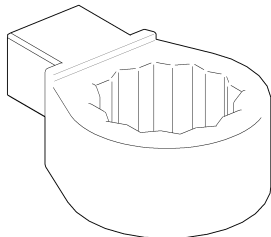

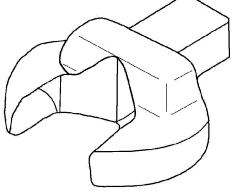
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	<p>F30452766</p>	<p>OFFSET SCREWDRIVER 1,5-10 hexagon</p>	<p>1</p>	
	<p>F30452767</p>	<p>TOOL KIT 1/4" and 1/2", 38 parts</p>	<p>1</p>	
	<p>F30452765</p>	<p>OFFSET SCREWDRIVER 14 hexagon</p>	<p>1</p>	
	<p>F30452774</p>	<p>TORQUE SCREWDRIVER 1,0-5,0Nm</p>	<p>1</p>	
	<p>F30452764</p>	<p>SCREWDRIVER TORX 30</p>	<p>1</p>	
	<p>F30379104</p>	<p>OIL FITER WRENCH Square drive 1/2", also for fuel filter</p>	<p>1</p>	


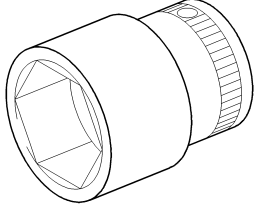

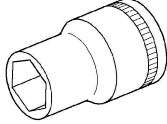

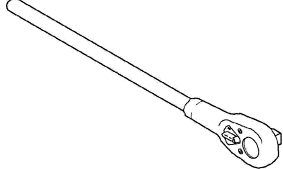

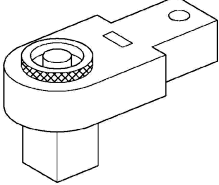

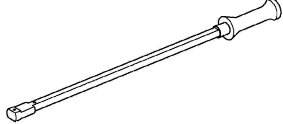

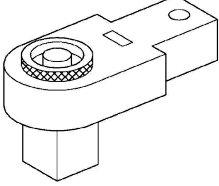
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30452771	ADAPTER 1/4", square - hexagon	1	
	Y20098771	FEELER GAUGE	1	
	F30017884	PIPE WRENCH slip joint pliers for electric plug connections	1	
	8205892061/00	ASSEMBLY MIRROR flexible	1	
	8205892961/03	MAGNET HEAD M10X1 M10x1	1	
	F30515239	PRY BAR WITH DOG	1	


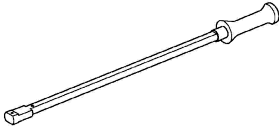

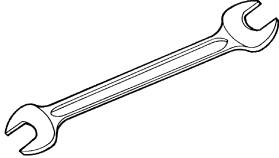

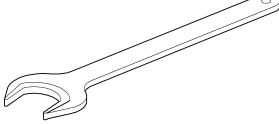

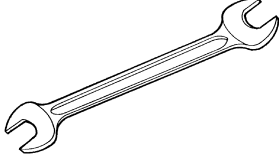

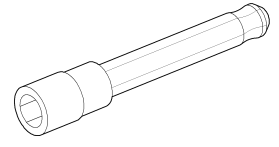

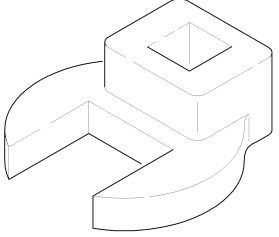
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	<p>F30501569</p>	<p>EXTENSION, OFFSET 3/8" bent, for crowfoot box wrench</p>	<p>1</p>	
	<p>F30027426</p>	<p>CROWFOOT BOX WRENCH wrench size 24, 3/8" square</p>	<p>1</p>	
	<p>F30028347</p>	<p>BOX WRENCH SOCKET wrench size 17, 9x12 square</p>	<p>1</p>	
	<p>F30024325</p>	<p>CROWFOOT BOX WRENCH wrench size 17, 3/8" square</p>	<p>1</p>	
	<p>F30039518</p>	<p>BOX WRENCH BIT wrench size 18, 9x12 square for valve crosshead</p>	<p>1</p>	
	<p>F30011612</p>	<p>SOCKET WRENCH BIT 1/2" 13 A/F, long</p>	<p>1</p>	


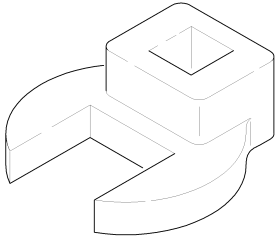
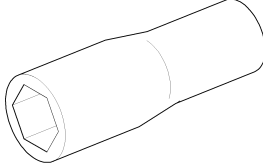
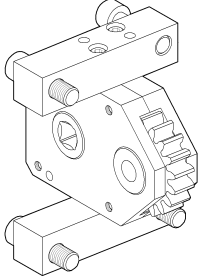
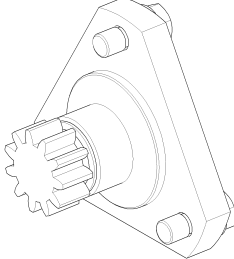
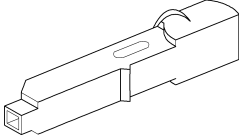
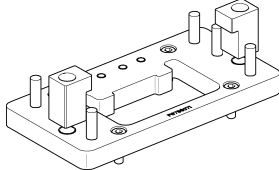
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30005002	SOCKET WRENCH BIT wrench size 17	1	
	F30005003	SOCKET SPANNER INSERT A/F 19, long 1/2"	1	
	F30011637	SOCKET WRENCH BIT 22mm, 1/2" sq. dr. ED clnt. temp. sensor	1	
	F30011640	SOCKET WRENCH BIT Overhaul tools for chargers K42 and K44, 24 A/F, long	1	
	F30011644	SOCKET WRENCH BIT 27mm, 1/2" sq. dr. ED fuel press. sensor	1	
	F30011995	SOCKET 30MM AF 30mm, 1/2" sq. dr. ED, level switch	1	

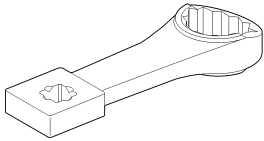
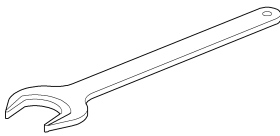
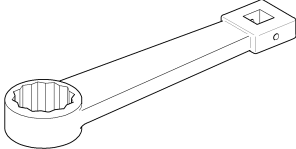
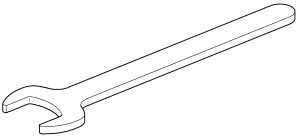
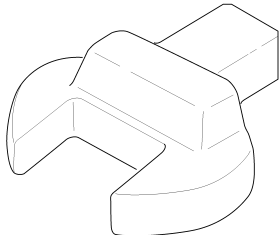
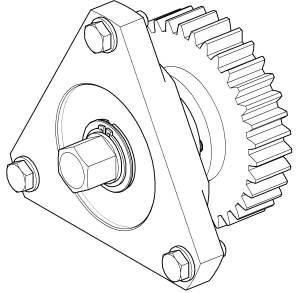
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	<p>F30006120</p>	<p>SOCKET WRENCH BIT wrench size 32, 3/8" long, oil pressure sensor</p>	<p>1</p>	
	<p>F30452770</p>	<p>SCREWDRIVER Complete set of slotted screw drivers size 3,5/5,5/7/8, Phillips head screw drivers size 1/2</p>	<p>1</p>	
	<p>F30025097</p>	<p>SOCKET WRENCH ADAPTER wrench size 60</p>	<p>1</p>	
	<p>F30006129</p>	<p>SOCKET WRENCH BIT wrench size 50</p>	<p>1</p>	
	<p>F30452772</p>	<p>SOCKET 1/2"</p>	<p>1</p>	
	<p>F30452771</p>	<p>ADAPTER 1/4", square - hexagon</p>	<p>1</p>	


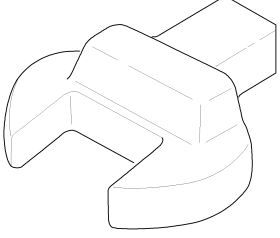
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	<p>F30006234</p>	<p>ADAPTER 3/8" male square, 1/2" female square</p>	<p>1</p>	
	<p>F30006235</p>	<p>ADAPTER Inside 1/2", outside 3/4"3/4" external square, 1/2" internal square</p>	<p>1</p>	
	<p>F30029816</p>	<p>OJ ADAPTER wrench size 27, 14x18 square</p>	<p>1</p>	
	<p>F30025897</p>	<p>OPEN-END WRENCH BIT wrench size 19 (9x12 square)</p>	<p>1</p>	
	<p>F30039530</p>	<p>BOX WRENCH BIT wrench size 41, 14x18 square for engine mount unit</p>	<p>1</p>	
	<p>F30029815</p>	<p>OJ ADAPTER wrench size 24, 14x18 square</p>	<p>1</p>	

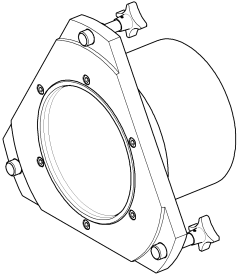
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30501118	SOCKET WRENCH BIT wrench size 12, hexagon - Bit, 1/2"	1	
	F30453226	SOCKET WRENCH wrench size 14, hexagon - Bit, 1/2"	1	
	F30006212	RATCHET WITH EXTENSION 3/4" with extension	1	
	F30027340	RATCHET 1/2" SQ 1/2", 9x12 square	1	
	F30452769	TORQUE WRENCH 10-60Nm	1	
	F30027341	RATCHET 1/2" SQ 1/2", 14x18 square	1	

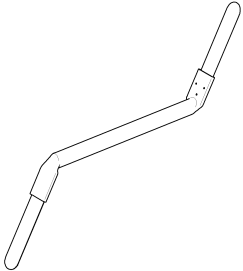
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30452768	TORQUE WRENCH 60-320Nm	1	
	F30006068	DOUBLE OPEN-END WRENCH wrench size 55x60	1	
	F30004455	SINGLE-ENDED OPEN-END WRENCH wrench size 65 for engine mount	1	
	F30002785	DOUBLE OPEN END WRENCH wrench size 41x46	1	
	F30378921	SCREW DRIVER SOCKET wrench size14, female square 1/2", for starter	1	
	F30455321	CROWFOOT BOX WRENCH AF17, 12-flange, 3/8"	1	

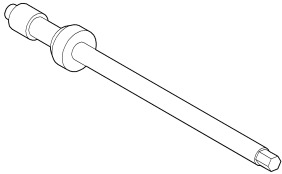
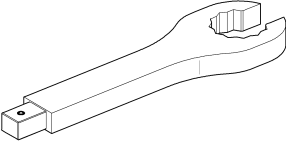
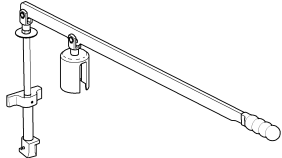
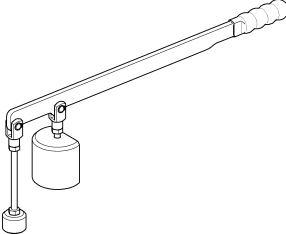
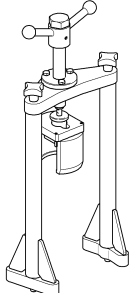
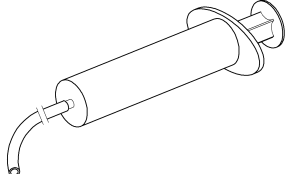
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	<p>F30455322</p>	<p>CROWFOOT BOX WRENCH AF19, 12-flange, 3/8"</p>	<p>1</p>	
	<p>F30453932</p>	<p>SOCKET A/F22, drive, square socket 1/2", for installation and removal of lamda probe</p>	<p>1</p>	
	<p>F6555766</p>	<p>BARRING TOOL to bar engine via ring gear / flywheel</p>	<p>1</p>	
	<p>F6792918</p>	<p>BARRING TOOL for flywheel / engine assembly</p>	<p>1</p>	
	<p>F30044239</p>	<p>TORQUE WRENCH 9x12 square, 4-20Nm</p>	<p>1</p>	
	<p>F6796071</p>	<p>ADAPTER PLATE for barring tool F6555766, fit from below, 12V-16VT94 truck engine, installation positon at 6 o'clock</p>	<p>1</p>	

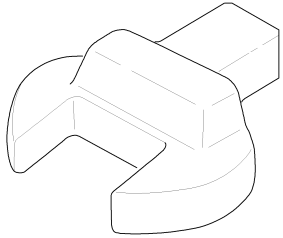
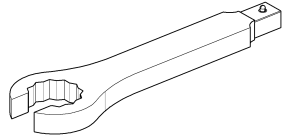
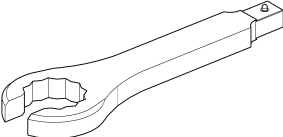
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30379609	BOX WRENCH Tighten damping mount of engine mounting.	1	
	F30453003	OPEN-END WRENCH wrench size 90, flattened, for resilient mount	1	
	F30453947	RATCHET RING WRENCH wrench size 50, for resilient mount	1	
	F30453948	OPEN-END WRENCH wrench size 95, flattened, for resilient mount	1	
	F30454401	OPEN-END WRENCH BIT wrench size 46, 14x18 square	1	
	F6798050	BARRING GEAR Attachment, free end, on PTO flange below HP pump	1	

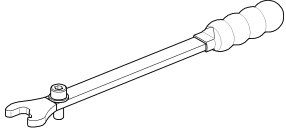
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30455924	OIL FILTER WRENCH	1	
	F30456399	OPEN-END WRENCH BIT AF60 14x18 square	1	

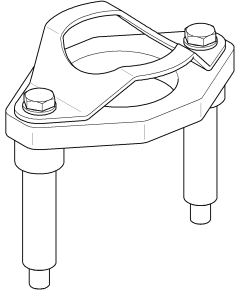
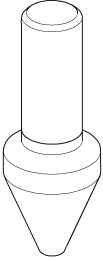
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6796417	MOUNT Accommodate flywheel / hub and guide during assembly	1	

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	Y4349603	VALVE ADJUST GAUGE to adjust valve clearance 0.2mm-0.5mm	1	

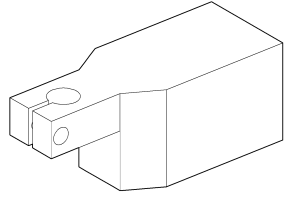
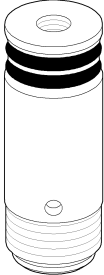



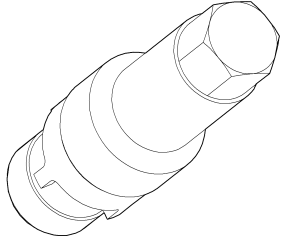

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30452739	MILLING CUTTER for injector seat	1	
	F30453145	RATCHET BOX WRENCH wrench size 36, for tightening fuel HP lines	1	
	F6796354	PRESS-IN TOOL Press injector into cylinder head	1	
	F6790506	EXTRACTION DEVICE for removal of injectors from cylinder heads (T94/Rx4/C64)	1	
	F6795690	FITTING/REMOVAL DEV. for removal of injectors from cylinder heads (T94/Rx4/C64)	1	
	F30378207	FUEL SUCTION DEVICE Suction unit for fuel	1	

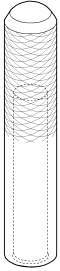
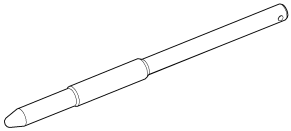
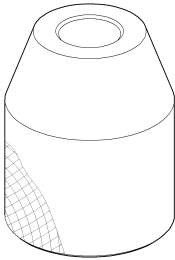

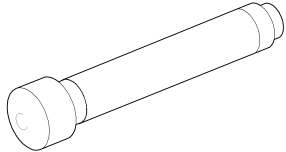
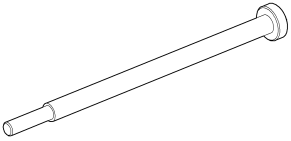
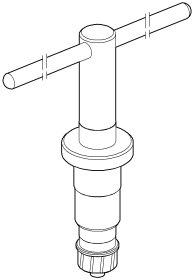
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30456400	OPEN-END WRENCH BIT AF55 14x18 square	1	
	F30456127	RATCHET RING WRENCH AF36	1	
	F30456126	RATCHET RING WRENCH AF41 square 14x18 for HP lines	1	

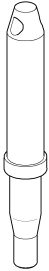
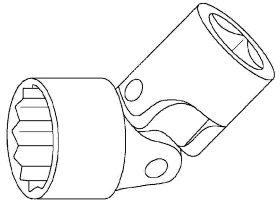
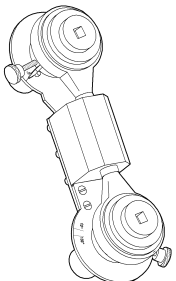
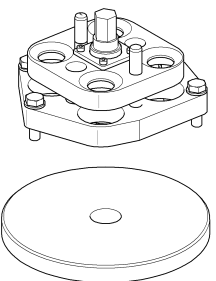
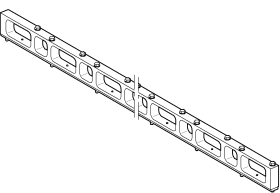
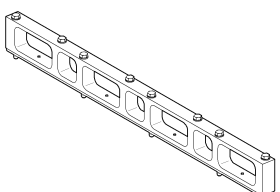
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30455000	OPEN-END WRENCH AF17, adjust emergency air shut-off flaps	1	

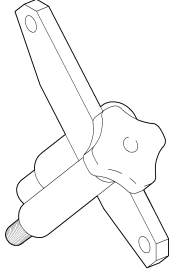
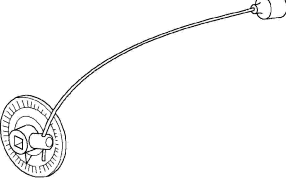
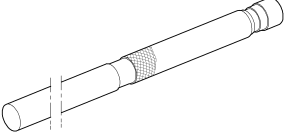
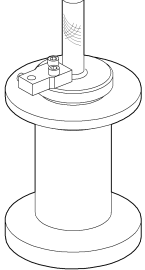
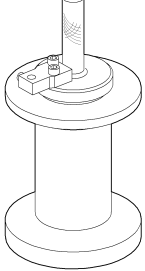
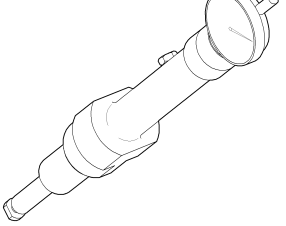
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6794341	ALIGNMENT JIG for diesel particle filter	1	
	F30454450	GUIDE PIN Threading aid for cover union of Boysen cat	1	

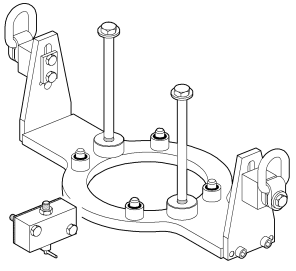
040 - CYLINDER HEAD	13
100 - TURBOCHARGING (EXHAUST TURBOCHARGER / COMPRESSOR)	14
140 - EXHAUST SYSTEM	15
200 - COOLANT SYSTEM	16
230 - MOUNTING / SUPPORT	17
500 - MONITORING AND CONTROL SYSTEM, GENERAL ELECTRICAL EQUIPMENT	18

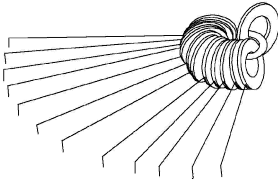
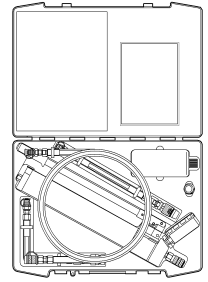


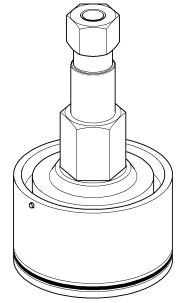
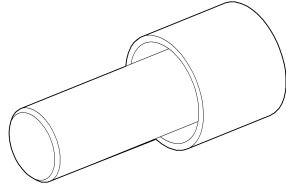
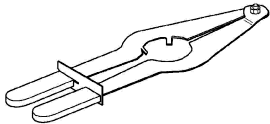
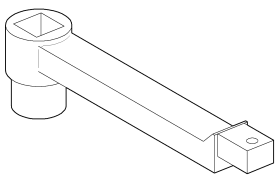
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	3435890040/00	BRACKET dial-gauge holder	1	
	B80144872	PLUG for oil duct cylinder head screw hole, 20 protective plugs are supplied	1	
	F30378956	INSTAL./REMOVAL TOOL for threaded plug	1	
	F30271842	INSTALLATION MANDREL ø24mm, for plug	1	
	F30377634	SOCKET ADAPTER for sleeve of fuel injector	1	
	F30377635	INSTALLATION MANDREL ø30mm, for plug	1	

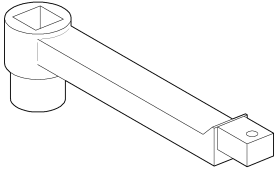
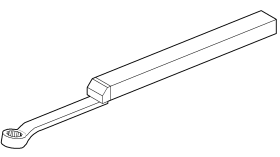
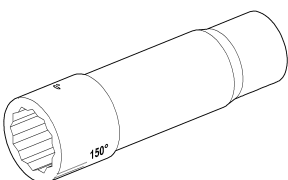
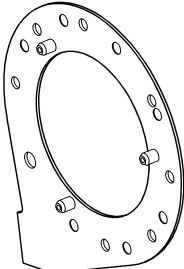
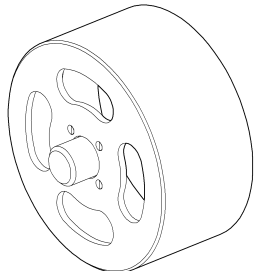
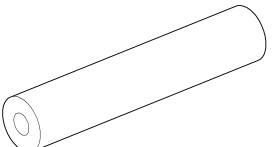
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30378316	INSTALLATION TOOL dowel pin in cylinder head	1	
	F30378324	SETTING MANDREL cylinder head	2	
	F30377862	GUIDE SLEEVE for installation mandrel F30378617	1	
	F30378617	INSTALLATION MANDREL ø20mm, for end cover	1	
	F30450348	DRIFT to remove valve guide	1	
	F30451554	DRILL/REAMING TOOL for mating surface of injection valve sleeve	1	

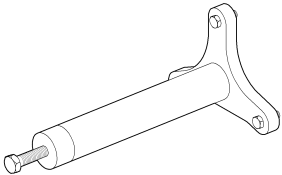
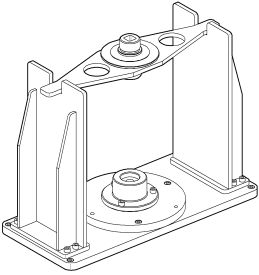
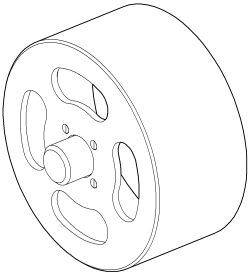
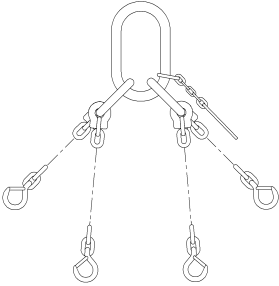


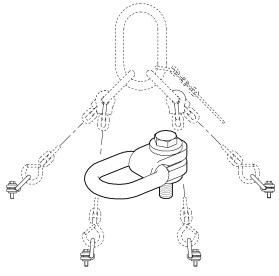
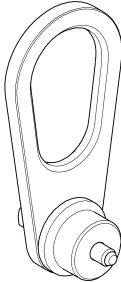
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30453929	GUIDE MANDREL for centering gaskets and exhaust lines on cylinder heads	1	
	F30515760	SOCKET WRENCH INSERT AF16, 3/8" square with hinge for installing exhaust gas pipe flange with charger group installed, M-engine	1	
	F6553658	ANGLE-OF-ROTATION JIG to tighten the cylinder head screws	1	
	F6797411	VALVE SPR. COMP.DEV. for pressing down valve springs in order to install valve keys	1	
	F6789471	ALIGNMENT JIG to align cylinder heads, 16V engines	1	
	F6790544	ALIGNMENT JIG for cylinder heads of 8V engines, may be used for engines up to 20V by changing the installation position of the jig	1	

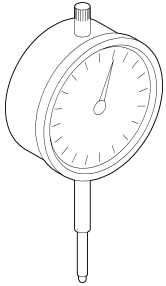


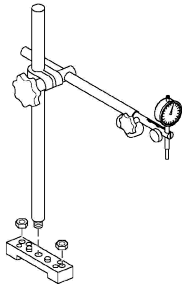
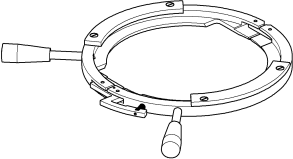
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	T80090944	BRACKET to lift the cylinder head in installation position	1	
	Y20044010	ANGULAR TORQUE JIG 1/2"	1	
	Y20090113	ALIGNMENT LIMIT PLUG GAUGE ø11H7 for valve guide, new-part dimension	1	
	Y4340442	TEST GAUGE INLET for inlet valve seat	1	
	Y4340443	TEST GAUGE EXHAUST for exhaust valve seat	1	
	Y4341919	MEASURING JIG to measure TDC in cylinder head of genset engine - for engines without TDC indicator	1	

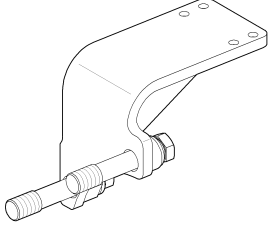
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	Y4343688	PRESSURE TEST DEVICE cylinder head	1	 <p>The image shows a technical drawing of a pressure test device cylinder head. It features a central circular flange with several vertical studs and ports. Two side handles with locking mechanisms are attached to the flange. A separate rectangular component, likely a pressure gauge or sensor, is shown to the left of the main assembly.</p>

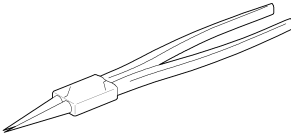
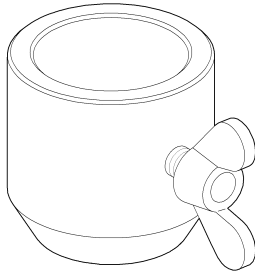

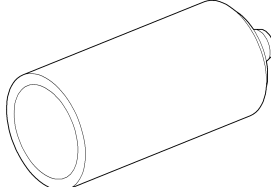

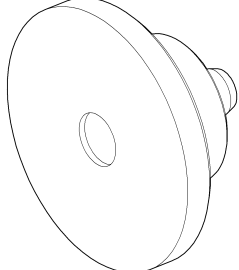

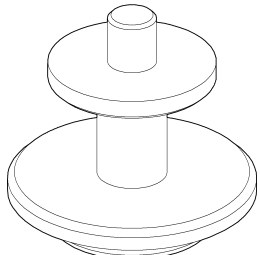

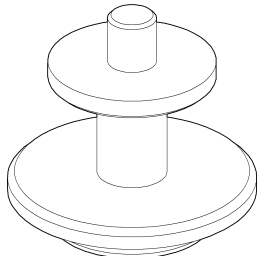
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	5115890021/00	FEELER GAUGE feeler gauge for clearance on ZR turbocharger 0.3-1.4mm	1	
	B80147745	HAND PUMP KIT 3000 bar, for press-on and press-off device	1	
 	F0141931	SPEC. TOOL ASSEMBLY for press-on and press-off device, compressor wheel on turbine wheel, thread M14x1.5	1	
	F30370328	HYD. INSTALLATION TOOL assembly tool for turbochargers ZR175 and ZR195 for ring carrier of intermediate flange and compressor housing	1	
	F30378717	ASSEMBLY PLIERS assembly tool for turbochargers ZR175 and ZR195 for piston ring on turbine side	1	
	F30379258	RATCHET RING WRENCH wrench size 13, 9x12 square, for turbine housing of turbochargers ZR175 and ZR195	1	

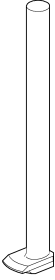
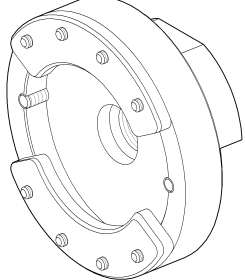
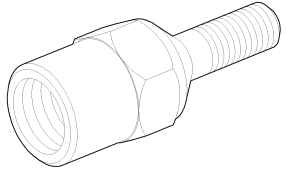
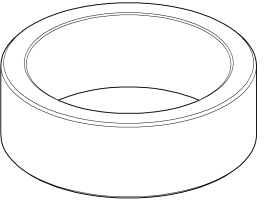
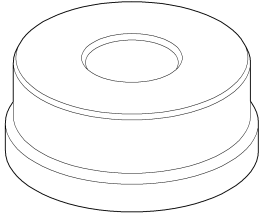
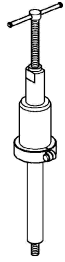
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30379259	RATCHET RING WRENCH wrench size 17, 9 x 12 square, for turbochargers ZR 175 and ZR 195	1	
	F30452807	RATCHET RING WRENCH wrench size 13, for turbochargers ZR115 and ZR125, 8V engines	1	
	F30510059	SOCKET WRENCH BIT wrench size 11, long, for V band clamp of turbochargers	1	
	F6558076	ASSEMBLY TEMPLATE assembly tool for turbochargers ZR 175 and ZR 195 to install studs in turbine housing	1	
	F6558092	PROTECTIVE CAP for turbochargers ZR175 and ZR195 to insert turbine wheel in carrier housing, 20V M engines	1	
	F6782353	ASSEMBLY TOOL to fit heated washer onto turbine wheel, turbocharger ZR205	1	

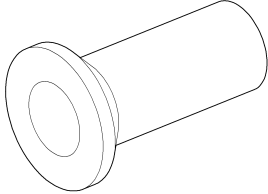
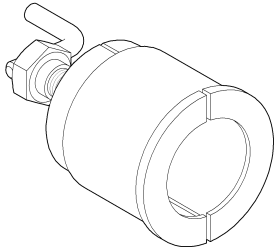
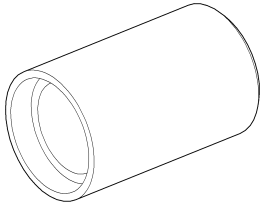
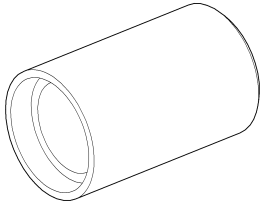
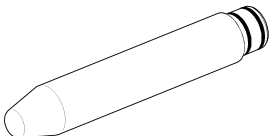
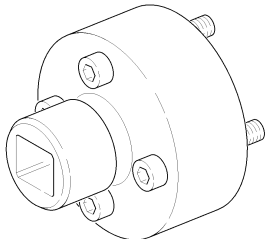
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6782356	PULLER for housing cover of turbocharger ZR205	1	
	F6784926	ASSEMBLY JIG F. EXHAUST TURBOCHARGER to release and tighten the securing nut of the compressor wheel, turbochargers ZR175/ZR195 and ZR205	1	
	F6789908	PROTECTIVE CAP F. EXHAUST TURBOCHARGER for compressor housing of turbochargers ZR175 and ZR195	1	
	T80090748	4-STRAND HOOK CHAIN 1394 mm long	1	
 	T80091140	LIFTING JIG for both exhaust housings, complete, without hook chain	4	
	T80092701	SCREW-ON ADAPTER for assembly of exhaust turbocharger	1	

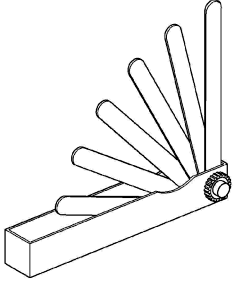
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	Y20011268	DIAL GAUGE display range 10mm	1	
 	Y4274737	MEASURING JIG for turbochargers ZR125, ZR140, ZR175, ZR195 and ZR205 to check axial clearance	1	
	F6790157	INSTALLATION DEVICE Turbine housing assembly, press together FEY rings	1	

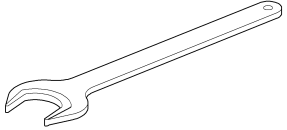
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6786383	RETAINING JIG for exhaust pipe for claim cylinder head at repair work	2	

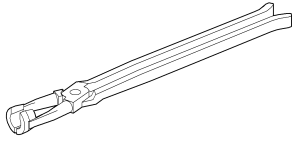
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30002760	CIRCLIP PLIERS to remove/install circlip of bilge pump	1	
	F30275611	MOUNT for mandrel press	1	
⊕ 	F30378152	PRESS-IN TOOL to press-fit angular-contact ball bearing and inner race of roller bearing	1	
⊕ 	F30378153	PRESS-IN TOOL to press-fit roller bearing	1	
⊕ 	F30378550	PRESS-IN TOOL for rotary seal with internal diameter 48mm	1	
⊕ 	F30450990	PRESS-IN TOOL to install rotary seal with internal diameter 50 mm in seal carrier	1	

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30450991	REMOVAL TOOL to install rotary seal with internal diameter 50mm in seal carrier	1	
	F6780561	PULLER to remove gear and impellers	1	
	F6780562	PULLER to remove impeller of freshwater and seawater pump with M20x1.5 thread	1	
	F6780563	SUPPORT support of bearing housing	1	
	F6780565	SUPPORT to press-fit/remove bearing of seawater pump	1	
	F6781539	HYDRAULIC PRESSURE SPINDLE	1	

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6781573	SUPPORT support for shaft with bearing	1	
	F6785817	PULLER for rotary seal of freshwater pump	1	
	F6788557	PRESS-IN TOOL for boot assembly of rotary seal	1	
	F6788558	PRESS-IN TOOL for boot assembly of rotary seal	1	
	F6789813	GUIDE PIN for plate core of seawater cooler	2	
	Y4098566	TESTING DEVICE Tools for (dis)assembling bilge pump for impeller seat on shaft	1	


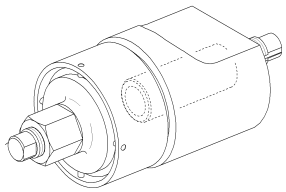

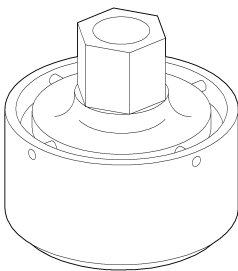

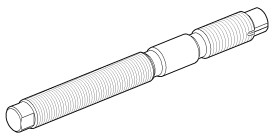

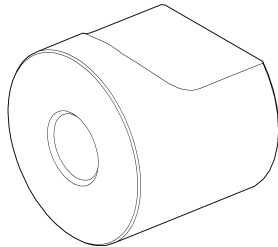

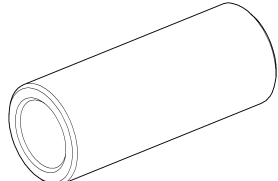


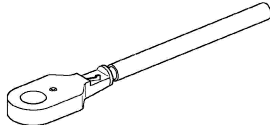
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	Y20010128	FEELER GAUGE 0.05-1.00mm	1	


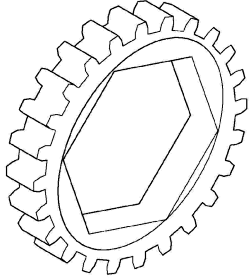
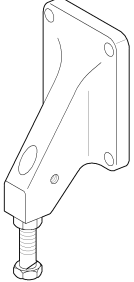
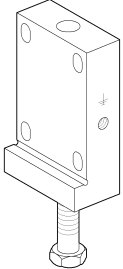

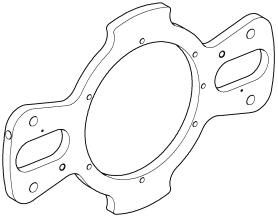

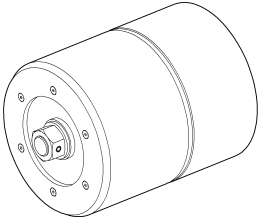

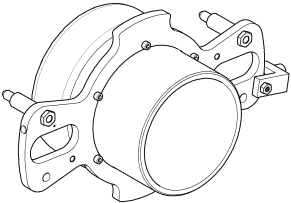
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30453003	OPEN-END WRENCH wrench size 90, flattened, for resilient mount	1	

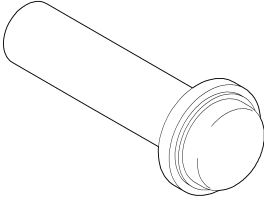
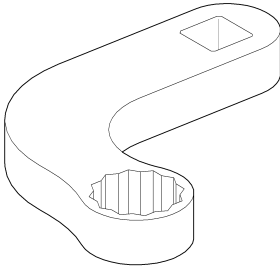
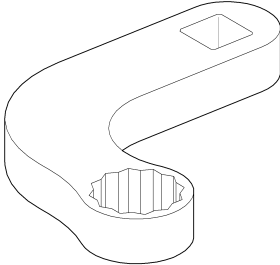
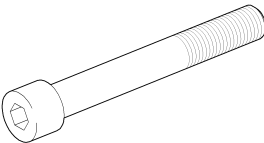


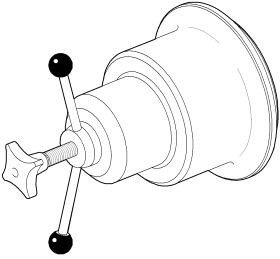


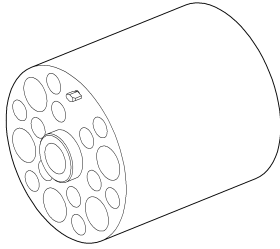
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F3037776	ASSEMBLY PLIERS speed sensor	1	


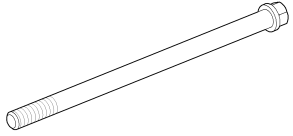

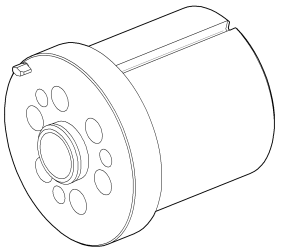
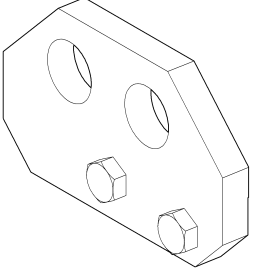
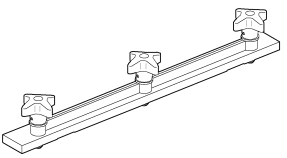
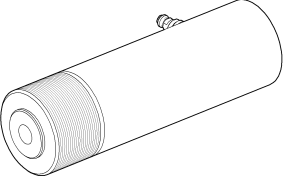

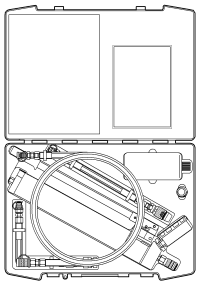
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
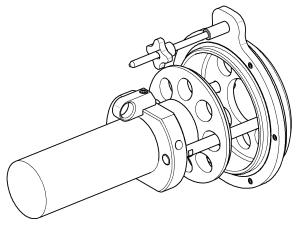
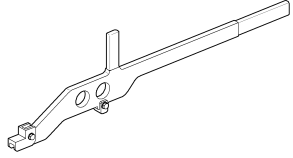
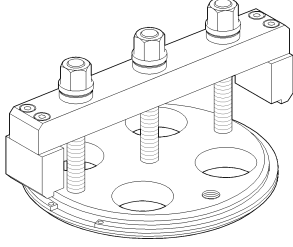
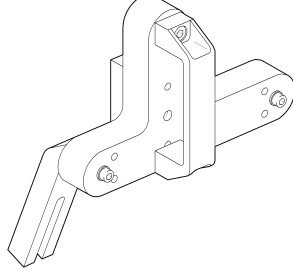
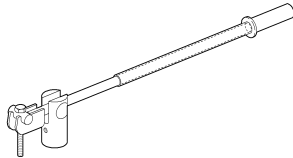
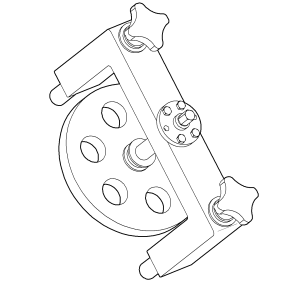
010 - CRANKCASE AND ATTACHMENTS	20
020 - GEAR TRAIN, BELT DRIVE	21
030 - RUNNING GEAR	22
050 - VALVE GEAR	23
070 - FUEL SYSTEM (HIGH PRESSURE)	24
100 - TURBOCHARGING (EXHAUST TURBOCHARGER / COMPRESSOR)	25
180 - LUBRICATING OIL SYSTEM	26
200 - COOLANT SYSTEM	27

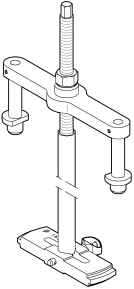
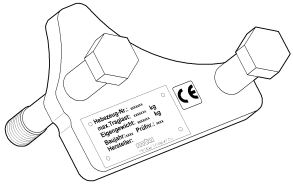
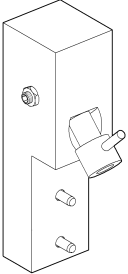
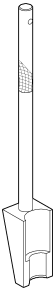
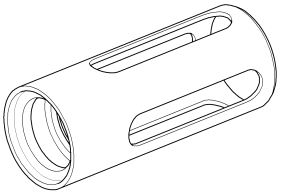

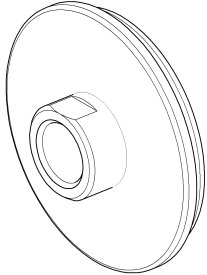
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F0140044	HYDR. INST./REMOVAL TOOL for flange hydraulic pump drive	1	
	F6347310	HYDR. INST./REMOVAL TOOL hydraulic installation/removal tool	1	
	F6557108	PULLER SPINDLE M20 / M20 x 2	1	
	F6555733	PRESSURE BUSHING	1	
	F6557107	BUSH	1	
 	F30026819	RATCHET	1	

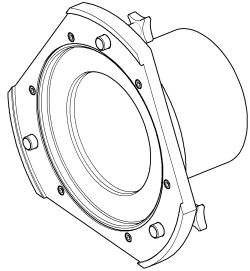
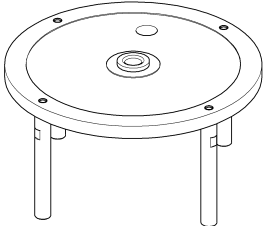
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30026820	HEX. INSERT wrench size 36	1	
	F0140571	ENGINE SUPPORT for 20V engine, driving end, for alignment and crank drive repair	2	
	F0140572	ENGINE SUPPORT for 20V engine, free end, for alignment and crank drive repair	2	
	F0141389	ALIGNMENT JIG for flywheel housing	1	
	F6790621	GUIDE BUSHING ø155mm, 8V-20V engines	1	
	F6791446	MOUNT	1	

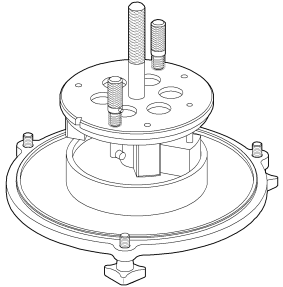

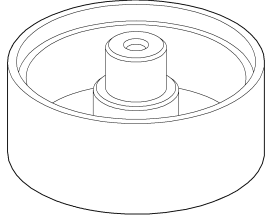
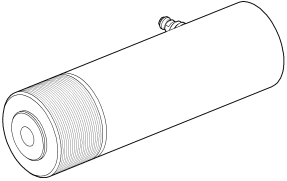

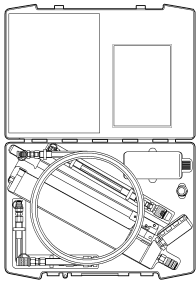

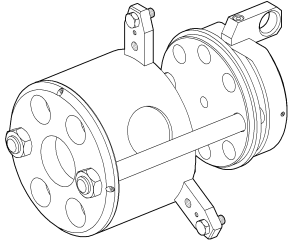
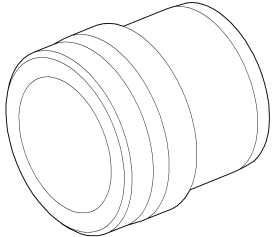
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30378754	ASSEMBLY MANDREL assembly mandrel for plugs ø50mm in crankcase	1	
	F30452055	RATCHET RING WRENCH wrench size 19, for coolant distribution housing	1	
	F30452056	RATCHET RING WRENCH wrench size 18, for coolant distribution housing	1	
	000912016030	SCREW M16x120	6	
 	F6554716	PRESS-IN TOOL to install radial-lip oil seal in (short and long) flywheel housing	1	
 	F6555729	SPACER	1	


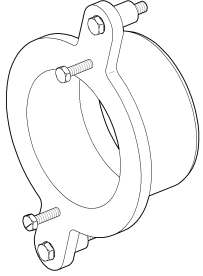

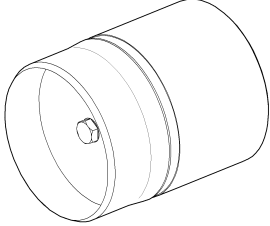
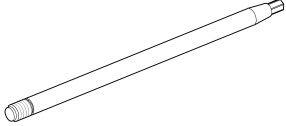
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
✚ 	F6555730	SCREW M16x280	6	
✚ 	F6780532	FLANGE for flywheel housing (long)	1	
	F6555771	STOP PLATE to align oil duct to crankcase	1	
	F6557130	STOP RAIL for the crankcase rail on driving end	1	
	B80096717	LUKAS PRESS LZM 25/200, M110x3	1	
✚ 	B80147075	HAND PUMP KIT 700 bar, for hydraulic installation/removal tools	1	

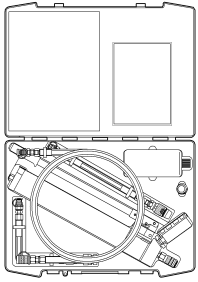

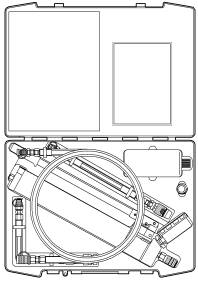

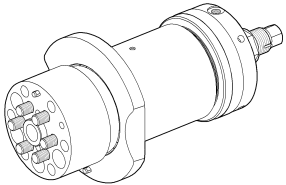

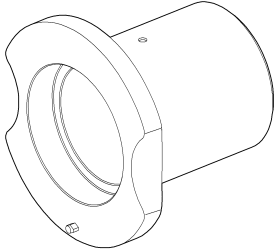

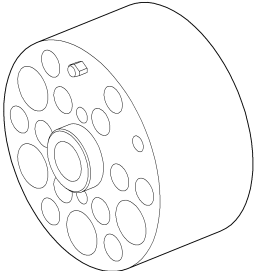

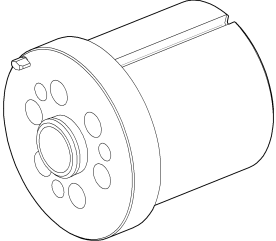
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	<p>F6797658</p>	<p>EJECTION DEVICE Force bearing off flywheel housing, short and long flywheel housing</p>	<p>1</p>	
	<p>F6783567</p>	<p>INSTALLATION DEVICE to install crankshaft bearing caps in crankcase</p>	<p>1</p>	
	<p>F6785078</p>	<p>EXTRACTION DEVICE for carbon scraper ring $\varnothing 170\text{mm}$</p>	<p>1</p>	
	<p>F6787707</p>	<p>ALIGNMENT JIG for oil spray nozzle in crankcase</p>	<p>1</p>	
	<p>F6787778</p>	<p>REMOVAL TOOL to remove crankshaft bearing caps from crankcase</p>	<p>1</p>	
	<p>F6787880</p>	<p>PRESS-IN TOOL cylinder liner</p>	<p>1</p>	


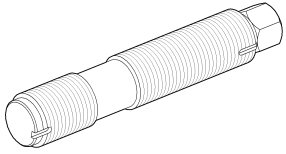

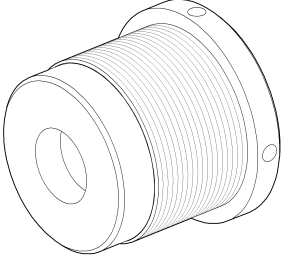

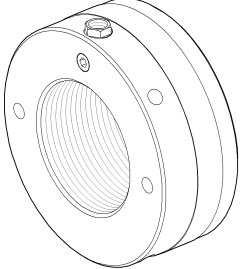

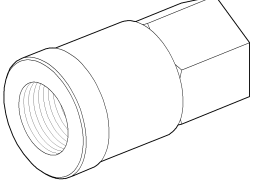

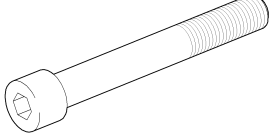


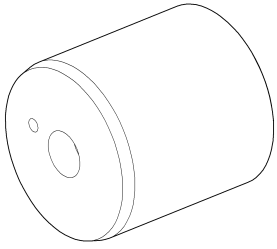
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6789433	PULLER cylinder liner	1	
	T80091033	BASE PLATE for crankcase lifting eye	4	
	Y4347308	TEST RIG test rig for oil spray nozzle	1	
	F6553649	INSTALLATION AID for crankshaft bearing shell	1	
	F6796415	GUIDE SLEEVE for flywheel	1	
⊕ 	F6796416	LOCKNUT Secure guide bushing F6796415 against falling down	1	


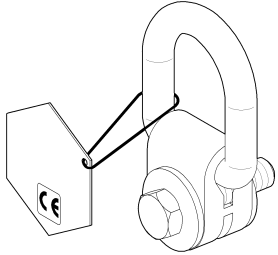

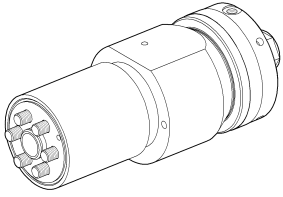

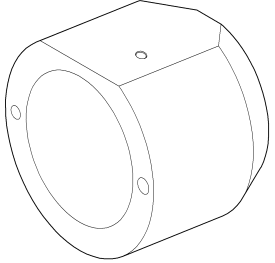

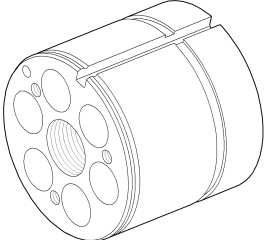

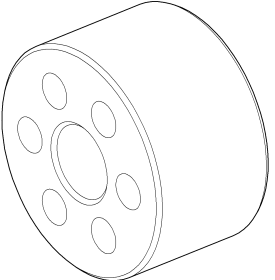

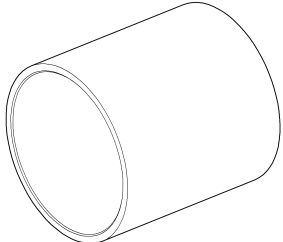
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6796418	MOUNT	1	
	F6796658	LOCATING DEVICE Insertion tool for crankshaft bearing	1	


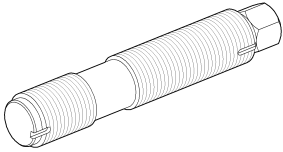

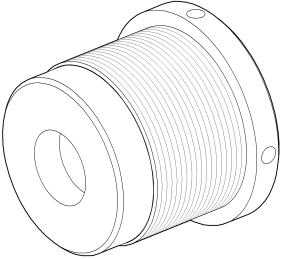

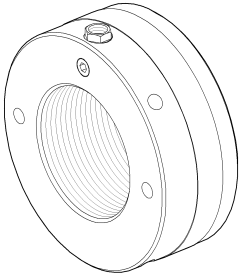

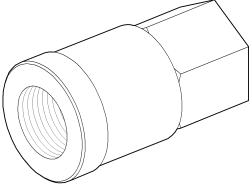

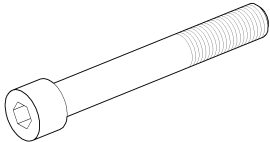


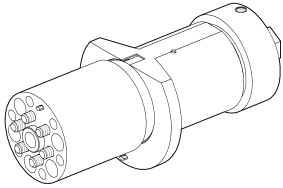
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30378425	INSERTION TOOL to install crankshaft bearing in equipment carrier	1	
⊕ 	F6557152	LOCATING DEVICE for crankshaft bearings	1	
	B80096717	LUKAS PRESS LZM 25/200, M110x3	1	
⊕ 	B80147075	HAND PUMP KIT 700 bar, for hydraulic installation/removal tools	1	
⊕ 	F6557191	EXTRACTION DEVICE to remove crankshaft bearing from equipment carrier, free end	1	
	F6557946	GUIDE BUSHING for insertion in equipment carrier to avoid damage	1	


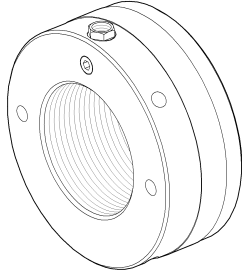

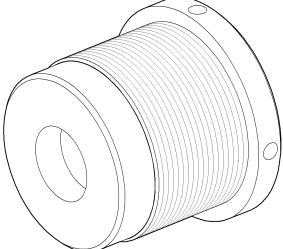

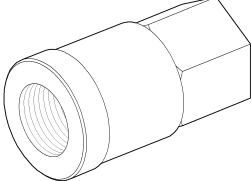

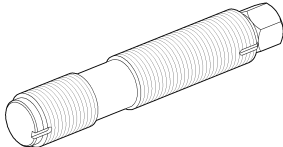

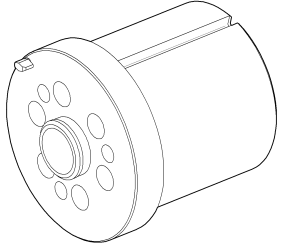

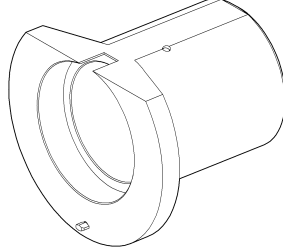
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6782344	ALIGNMENT JIG 8V - 20V 4000 / engines, to align equipment carrier to crankshaft	1	
	F6787809	GUIDE BUSHING to align gearcase eccentricly	1	
	F30379939	ADJ. MANDREL M20, 400mm long	1	


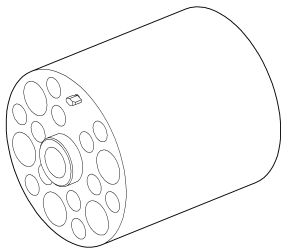

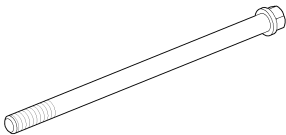

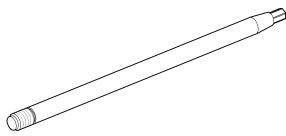

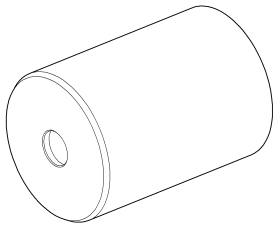

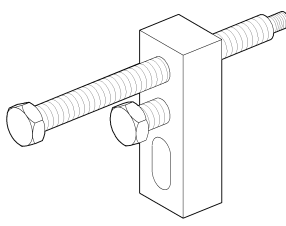

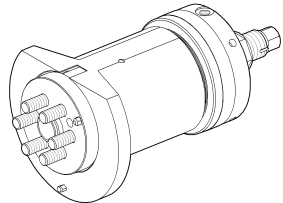
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	B80147745	HAND PUMP KIT 3000 bar, for press-on and press-off device	2	
⊕ 	B80147075	HAND PUMP KIT 700 bar, for hydraulic installation/removal tools	1	
⊕ 	F0140168	HYDR. INST./REMOVAL TOOL 12V - 20V G/C/R/P/CI/L engines and 12V - 16V M engines, to install/remove flywheel on/from crankshaft	1	
	F6780555	PRESSURE BUSHING	1	
	F6780543	SPACER	1	
	F6780532	FLANGE for flywheel housing (long)	1	


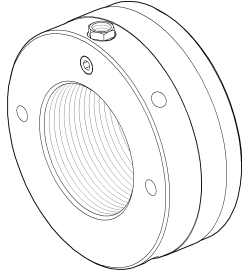

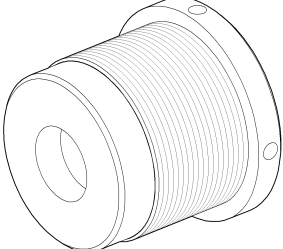

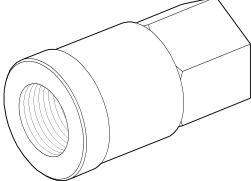

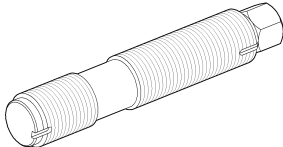

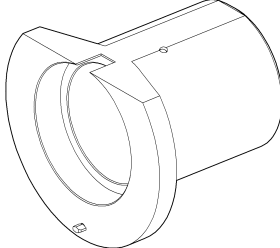

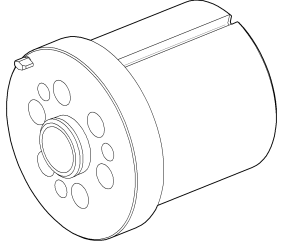
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6782017	PULLER SPINDLE M36x1,5/M36x3	1	
	F6345881	MOUNT	1	
	B80146622	HYDRAULIC NUT M90x2	1	
	B80098529	HEX NUT M36x3	1	
	000912016103	SCREW M16x200	6	
 	F6782322	GUIDE SLEEVE to fit and press flywheel carefully onto crankshaft, 20V engines	1	


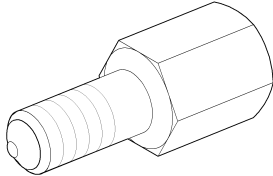

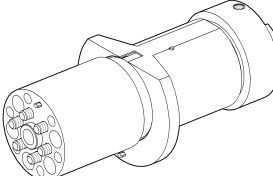

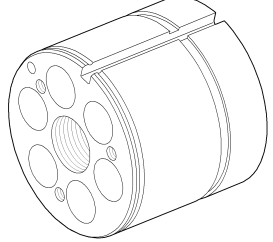

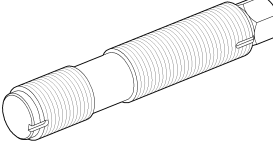

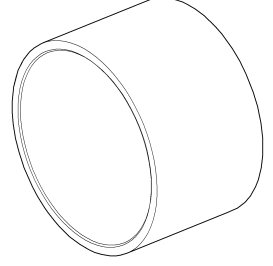

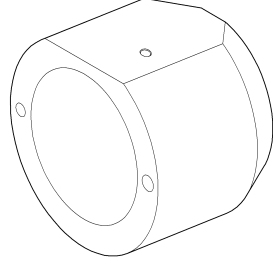
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	<p>T80091387</p>	<p>SHACKLE M16 for flywheel</p>	<p>1</p>	
	<p>F0140169</p>	<p>HYDR. INST./REMOVAL TOOL for 20V 4000 G/C/R/P vibration damper and 12V/16V CI/R/S damper</p>	<p>1</p>	
	<p>F6782016</p>	<p>PRESSURE BUSHING</p>	<p>1</p>	
	<p>F6553672</p>	<p>FLANGE for PTO flange</p>	<p>1</p>	
	<p>F6780552</p>	<p>SPACER BUSHING</p>	<p>1</p>	
	<p>F6780549</p>	<p>SPACER SLEEVE</p>	<p>1</p>	


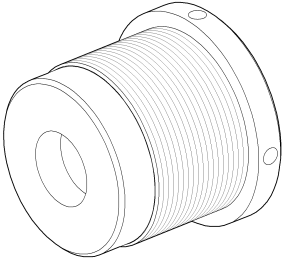

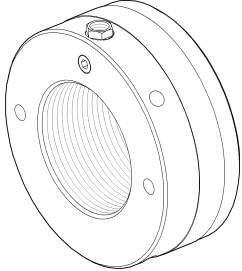

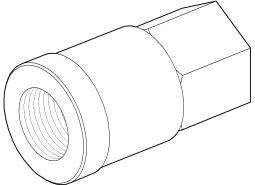

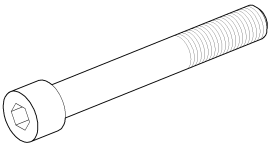


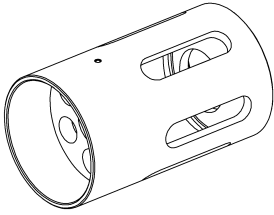


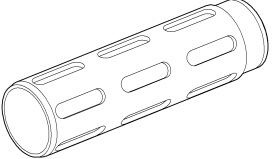
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6782017	PULLER SPINDLE M36x1,5/M36x3	1	
	F6345881	MOUNT	1	
	B80146622	HYDRAULIC NUT M90x2	1	
	B80098529	HEX NUT M36x3	1	
	000912016044	CYLINDER SCREW M16x140, cut to 125 mm length	6	
 	F0140440	HYDR. INST./REMOVAL TOOL 8V-16V4000 M/R/P/E/C engines, for hydr. installation/removal of Geislinger coupling F56/5/89/N flywheel on crankshaft	1	

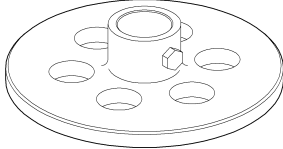
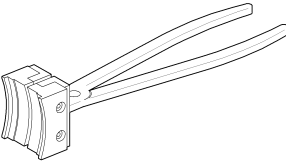
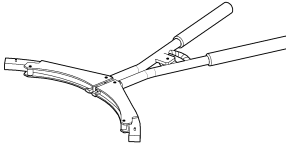
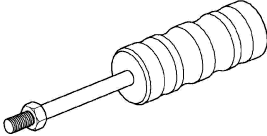


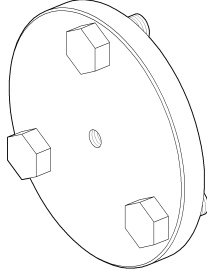
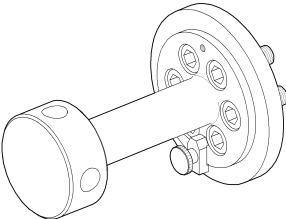
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	<p>B80146622</p>	<p>HYDRAULIC NUT M90x2</p>	<p>1</p>	
	<p>F6345881</p>	<p>MOUNT</p>	<p>1</p>	
	<p>B80098529</p>	<p>HEX NUT M36x3</p>	<p>1</p>	
	<p>F6782017</p>	<p>PULLER SPINDLE M36x1,5/M36x3</p>	<p>1</p>	
	<p>F6780532</p>	<p>FLANGE for flywheel housing (long)</p>	<p>1</p>	
	<p>F6782018</p>	<p>PRESSURE BUSHING</p>	<p>1</p>	


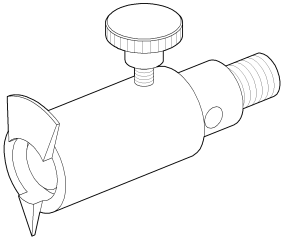

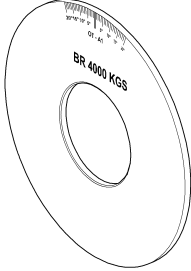
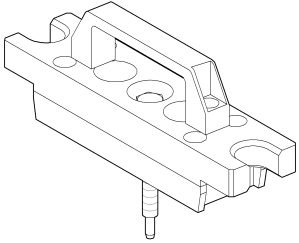

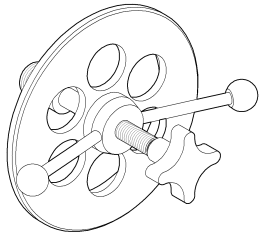

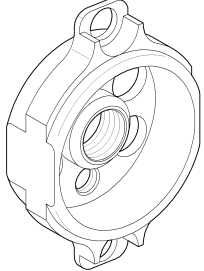
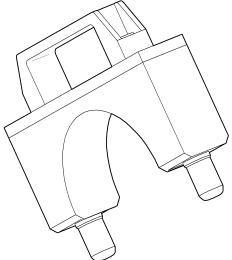
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6555729	SPACER	1	
	F6555730	SCREW M16x280	6	
	F30379307	SETTING MANDREL flywheel	2	
	F6557134	ASSEMBLY SLEEVE for flywheel	1	
	F6557194	FORCE-OFF DEVICE to remove coupling from flywheel	2	
	F0140441	HYDR. INST./REMOVAL TOOL 8V - 16V G/CI engines, for drive flange (driving end) and flywheel of G engine	1	

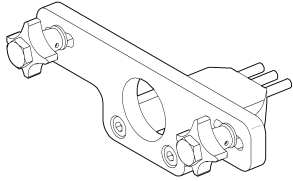
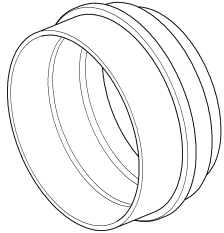
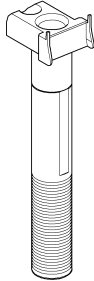
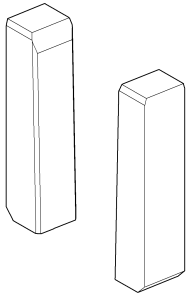
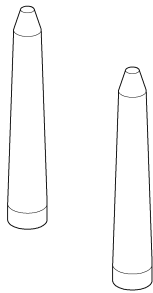
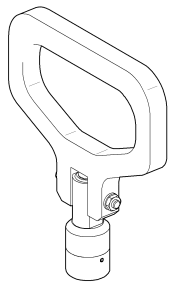
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	<p>B80146622</p>	<p>HYDRAULIC NUT M90x2</p>	<p>1</p>	
	<p>F6345881</p>	<p>MOUNT</p>	<p>1</p>	
	<p>B80098529</p>	<p>HEX NUT M36x3</p>	<p>1</p>	
	<p>F6782017</p>	<p>PULLER SPINDLE M36x1,5/M36x3</p>	<p>1</p>	
	<p>F6782018</p>	<p>PRESSURE BUSHING</p>	<p>1</p>	
	<p>F6780532</p>	<p>FLANGE for flywheel housing (long)</p>	<p>1</p>	

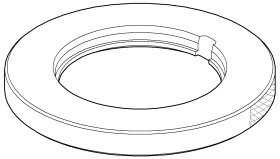
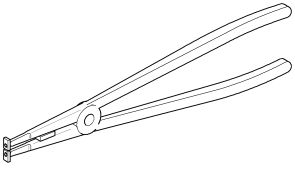
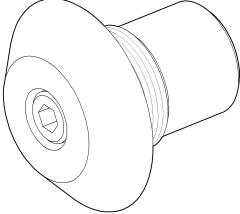
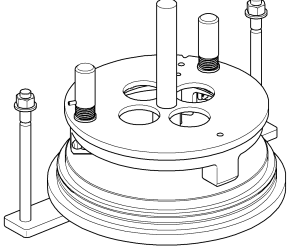
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6374261	ADAPTER R1/4"xR1/4", not contained in ZB assembly!	2	
	F0140771	HYDR. INST./REMOVAL TOOL for 8V/12V/16V4000 G/R/C/M/P/L, vibration damper and driver flange	1	
	F6553672	FLANGE for PTO flange	1	
	F6782017	PULLER SPINDLE M36x1,5/M36x3	1	
	F6554706	SPACER BUSHING	1	
	F6782016	PRESSURE BUSHING	1	

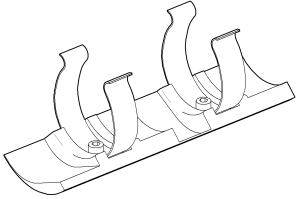
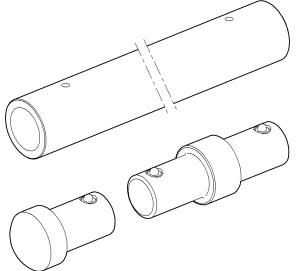


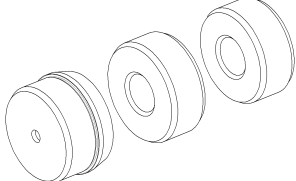
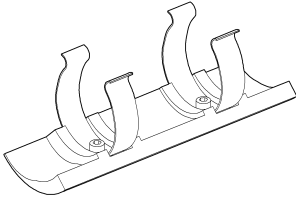
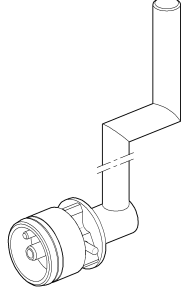


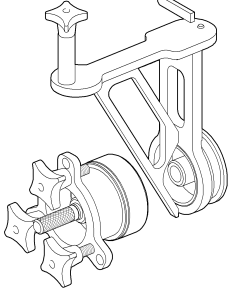
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6345881	MOUNT	1	
	B80146622	HYDRAULIC NUT M90x2	1	
	B80098529	HEX NUT M36x3	1	
	000912016016	SCREW M16x100	6	
 	F6780591	GUIDE SLEEVE for vibration damper and drive flange	1	
 	F6781745	GUIDE SLEEVE to extend guide sleeve F6780591 by the length of the oil cooler	1	

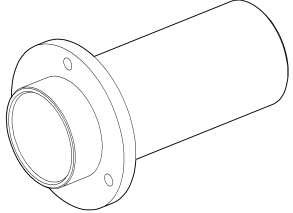

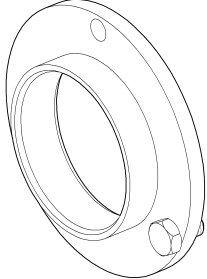

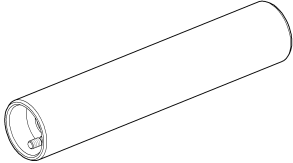

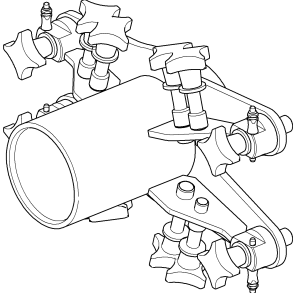

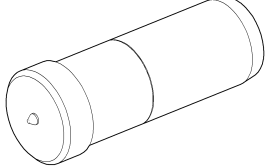
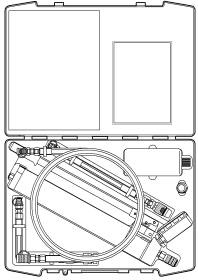
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30377680	PRESS-IN TOOL to install radial-lip oil seal in sealing ring carrier, free end	1	
	F30379021	REMOVAL PLIERS to remove crankshaft bearing	1	
	F30450332	PISTON RING PLIERS ø170mm	1	
	F30377999	EXTRACTOR M8 for nozzle holder and pressure pipe neck	1	
 	F6555788	ADAPTER for flywheel cover	1	
	F6555791	BARRING TOOL free end (KGS)	1	


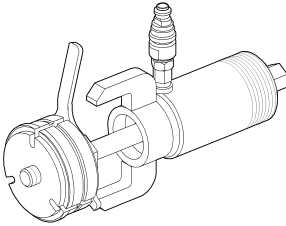
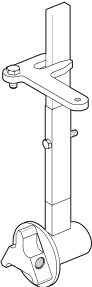
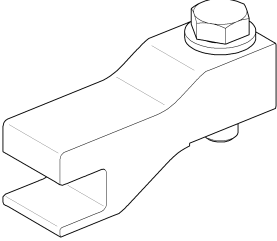

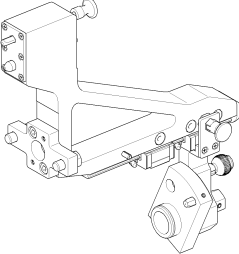
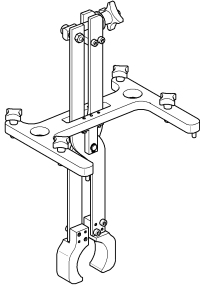

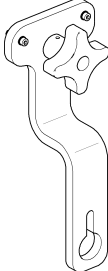
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
✚ 	F6555792	POINTER FOR BARRING TOOL for barring tool	1	
✚ 	Y4341124	GRADUATED DISK KGS to set TDC in cylinder A1	1	
	F6559632	ALIGNMENT JIG to align upper crankshaft bearing shell without "LUG" in axial and radial direction, without crankshaft	1	
✚ 	F6783890	PRESS-IN TOOL to install radial-lip shaft seal in vibration damper	1	
✚ 	F6786758	ASSEMBLY JIG to install radial-lip shaft seal in vibration damper, for all engines	1	
	F6786394	ALIGNMENT JIG for conrod bearing with crankshaft installed	1	


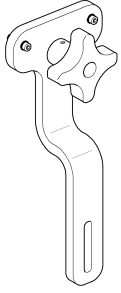
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6789864	PEGGING DEVICE for flywheel	1	
	F6799875	MOUNTING SLEEVE for engines with long carbon scraper ring	1	
	F6795076	ALIGNMENT JIG	1	
	F6791521	INSTALLATION DEVICE for locating crankshafts at free end during installation	2	
	F6791522	INSTALLATION DEVICE for locating crankshafts at driving end during installation	2	
	T80092357	LIFTING RIG for composite pistons with M6 thread	1	

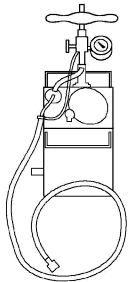
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	Y4277201	GAUGE RING for piston ring clearance \varnothing 170mm	1	
	F30454288	PLIERS for circlip on piston pin	1	
	F6559604	SLIDE for conrod assembly	1	
	F30455003	INSERTION TOOL for main bearing in flywheel housing, short	1	


SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30377893	INST/REMOVAL JIG to install camshaft of 8V-20V engines from driving end and free end	1	
	F30378509	EXTRACTOR DRIFT 8V-20V engines, for camshaft bearing	1	
 	F30378577	EXTRACTION DRIFT for camshaft bearings of Series 4000 engines	1	
	F30450435	INST/REMOVAL SHOE 8V-20V engines, to install camshaft from free end	1	
	F30450446	SHRINKING TOOL camshaft bearing	1	
 	F6555738	ASSEMBLY DEVICE for 8V-20V engines to install camshaft bearings	1	

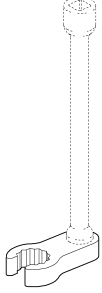
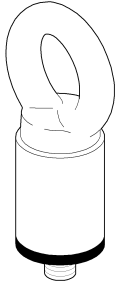
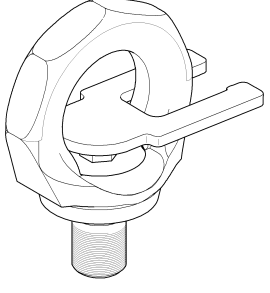
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6780579	GUIDE SLEEVE for installation from free end	1	
⊕ 	F6781676	GUIDE SLEEVE for installation from driving end	1	
⊕ 	F6782970	GUIDE TUBE to install camshaft of 8V,12V,16V engines from driving end and free end	1	
⊕ 	F6797653	GUIDE SLEEVE for installation from camshaft	1	
⊕ 	F6784618	CENTERING SLEEVE FOR CAMSHAFT to install camshaft from free end without M12 central thread	1	
	B80147075	HAND PUMP KIT 700 bar, for hydraulic installation/removal tools	1	

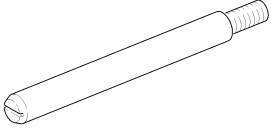
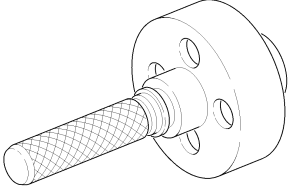
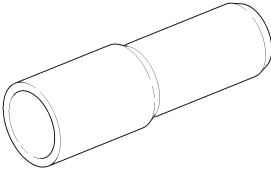
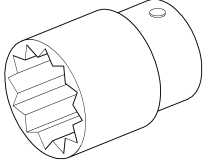
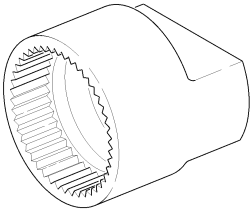
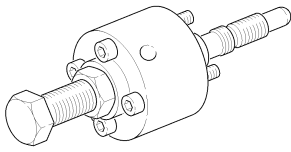
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
+ 	F6783824	REMOVAL TOOL to remove camshaft bearing No. 1 from free end (hydraulic removal)	1	
	F6783825	INSTALLATION DEVICE for camshaft replacement from free end, to chill bearing No. 1	1	
	F6792599	AXIAL LOCATING ELEM.	1	
+ 	F6795334	ALIGNMENT JIG to align crankshaft to camshaft and lock in position	1	
	F6795072	RETAINER Secure camshaft	1	
+ 	F6795538	AXIAL LOCATING ELEM. for press-fitted camshaft gear wheel, free end (KGS)	1	

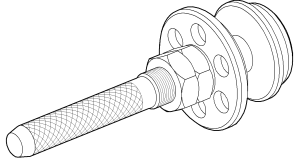
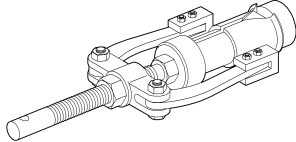
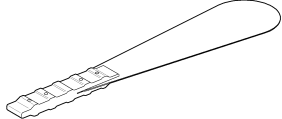
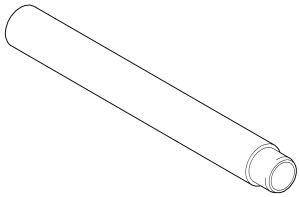
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
+ 	F6785559	AXIAL LOCATING ELEM. for bolted camshaft gear wheel, free end (KGS)	1	

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	B80144852	HYDRAULIC FILLER for LP and HP fuel system	1	

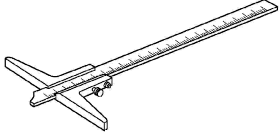
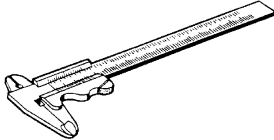
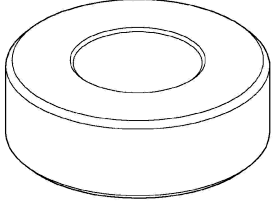
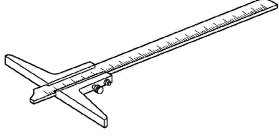
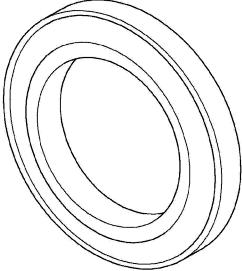
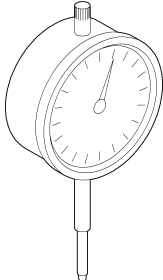
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6792575	ALIGNMENT MANDREL for alignment of ETC support after lowering into place	1	

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30451789	SOCKET WRENCH for oil filter housing	1	
	T80092108	SCREW-ON ADAPTER M14x1,5 for oil filter housing	1	
	T80092565	EYEBOLT M16, maximum carrying capacity 1500Kg	4	

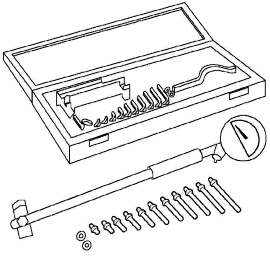
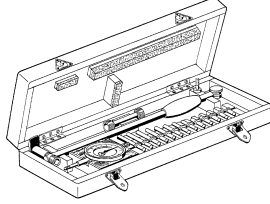
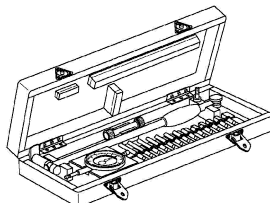
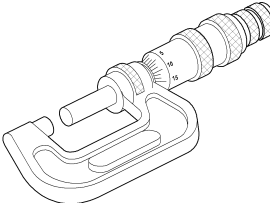
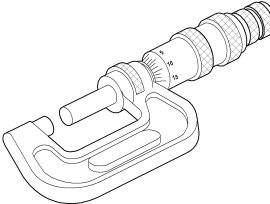
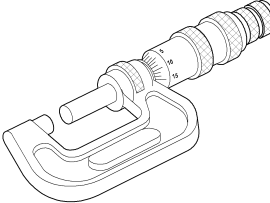
SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30272816	GUIDE PIN Tools for (dis)assembling bilge pump for control disk	1	
	F30272815	DRIVE MANDREL Tools for (dis)assembling bilge pump for shaft seal	1	
	F30140768	DRIVE-IN SLEEVE Tools for (dis)assembling bilge pump for ball bearing	1	
	F30024425	WRENCH SOCKET 24A/F for mounting and dismounting from bilge pump	1	
	5505890531/00	RETAINING FIXTURE for installing/removing the coupling of bilge pump	1	
	5505890333/00	INST/REMOVAL JIG for installing/removing the impeller of bilge pump.	1	

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30379297	PUNCH for sealing ring in thermostat housing	1	
	F6787262	EXTRACTION DEVICE to remove sealing ring from thermostat housing	1	
	F6787996	GUARD PLATE for O-ring of coolant distribution housing	1	
	X00041756	GUIDE, SPECIAL for plates of water cooler	2	

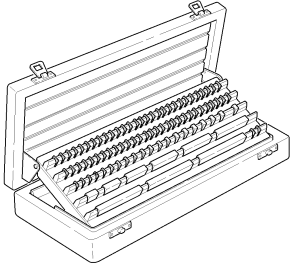
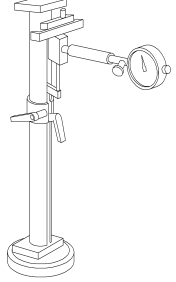
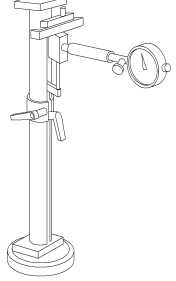
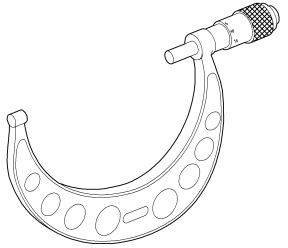
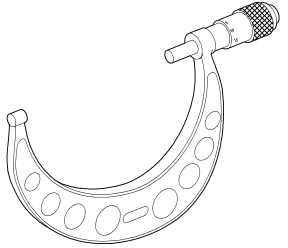
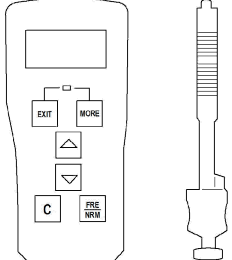
TOOL MEASURING TOOLS

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	Y20000918	DEPTH GAUGE W. HOOK measuring range 200mm	1	
	Y20001743	CALIPERS measuring range 150mm	1	
	Y20001818	ADJUSTING RING 11mm for valve guide	1	
	Y20002779	DEPTH GAUGE W. HOOK measuring range 500mm	1	
	Y20003669	ADJUSTING RING ø170mm for cylinder liner	1	
	Y20011268	DIAL GAUGE display range 10mm	1	

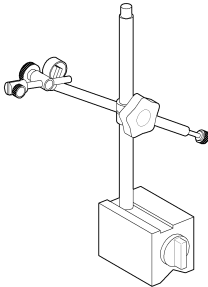
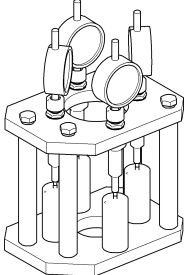
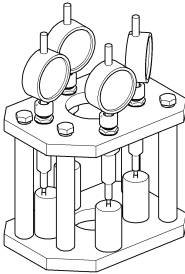
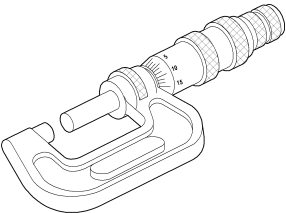
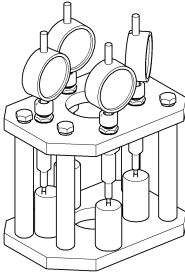

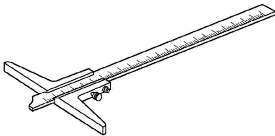
TOOL MEASURING TOOLS

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	Y20016482	PRECISION DIAL BORE GAUGE measuring range 8-12mm for valve guide	1	
	Y20091483	BORE GAUGE measuring range 160-290mm	1	
	Y20091481	BORE GAUGE measuring range 18-100mm	1	
	Y20000432	MICROMETER measuring range 25-50mm	1	
	Y20000088	MICROMETER measuring range 50-75mm	1	
	Y20000169	MICROMETER measuring range 75-100mm	1	

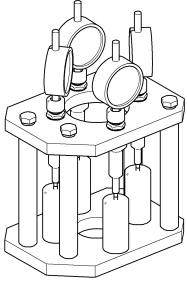
TOOL MEASURING TOOLS

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	0005891619/00	GAUGE BLOCK SET	1	
	Y20014286	ADJUSTING DEVICE for inside caliper; adjusting range: 4.5-160mm	1	
	Y20504005	ADJUSTING DEVICE for inside caliper; adjusting range: 18-290mm	1	
	Y20001745	MICROMETER measuring range 200-225mm	1	
	Y20002705	OUTSIDE MICROMETER Measuring range: 275-300mm	1	
	Y20506341	HARDNESS GAUGE for crankshaft	1	

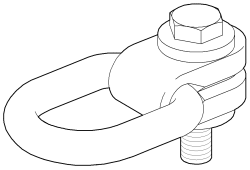
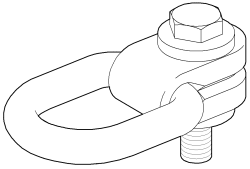
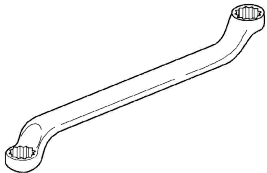
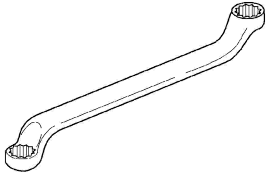
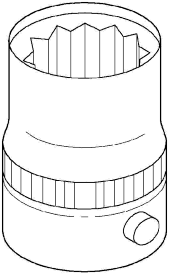
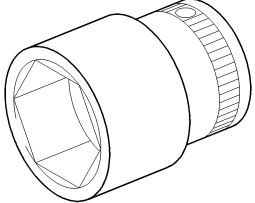
TOOL MEASURING TOOLS

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	0015890321/00	MAGNET STAND Magnetic dial gauge holder	1	
	Y4350010	MEASURING JIG for measuring valve protrusion in situ; measuring point directly on valve with valve bridges removed	1	
	Y4350009	MEASURING JIG for measuring valve protrusion in situ; measuring point on valve head with valve bridges installed	1	
	Y2000083	MICROMETER measuring range 0-25mm	1	
	Y4350009	MEASURING JIG for measuring valve protrusion in situ; measuring point on valve head with valve bridges installed	1	
	Y20000918	DEPTH GAUGE W. HOOK measuring range 200mm	1	

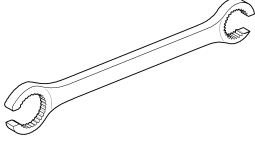
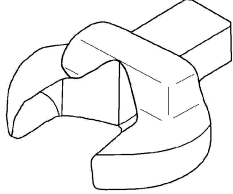
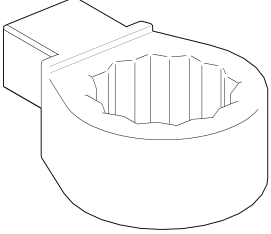
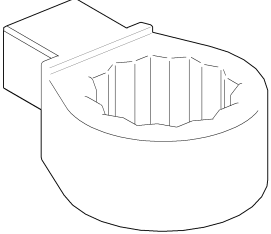
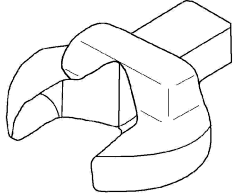
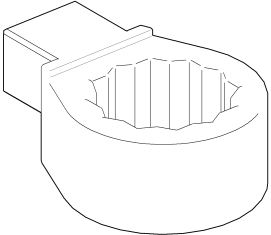
TOOL MEASURING TOOLS

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	Y4350010	MEASURING JIG for measuring valve protrusion in situ; measuring point directly on valve with valve bridges removed	1	

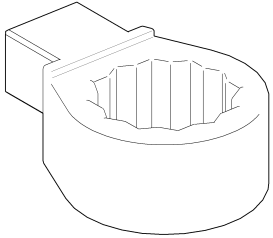
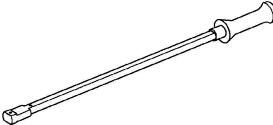
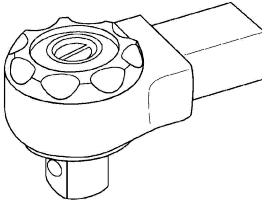
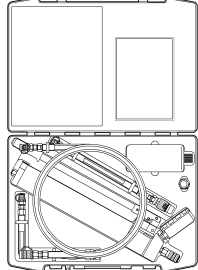

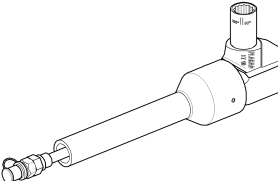
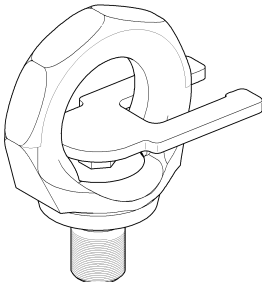
TOOL WORKSHOP GENERAL

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	B80525068	VLBG-SHACKLE-1T M12	4	
	B80525907	VLBG-SHACKLE(1)0,63 M10 to lift cylinder head lower section and turbocharger ZR205	4	
	F30002800	DOUBLE-HEAD BOX WRENCH wrench size 17x19	1	
	F30002803	DOUBLE-HEAD BOX WRENCH wrench size 24x27	1	
	F30006118	SOCKET WRENCH BIT wrench size 28, 1/2" square, for oil cooler	1	
	F30006123	WRENCH SOCKET wrench size 27, 3/4" square	1	

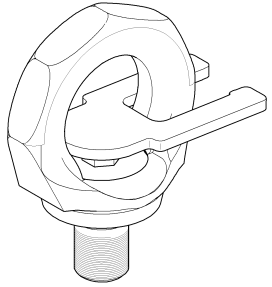
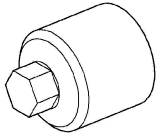
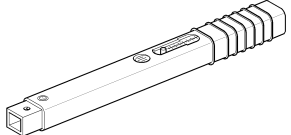
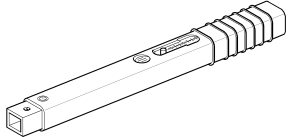
TOOL WORKSHOP GENERAL

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30027139	WRENCH, RING DE O/SE wrench size 19x22	1	
	F30028342	OJ WRENCH ADAPTER wrench size 19, 14x18 square	1	
	F30028349	RING WRENCH ADAPTER wrench size 13, 14x18	1	
	F30028351	RING WRENCH ADAPTER wrench size 19, 14x18	1	
	F30029814	OJ ADAPTER wrench size 22, 14x18 square	1	
	F30039520	RING WRENCH ADAPTER wrench size 14, 14x18	1	

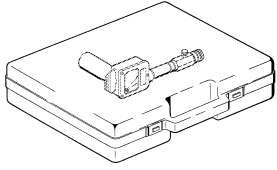

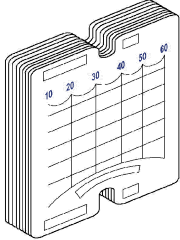

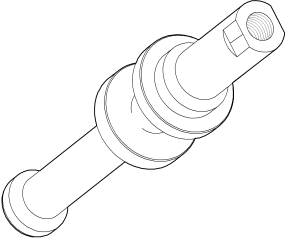

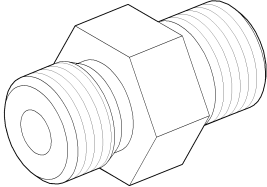

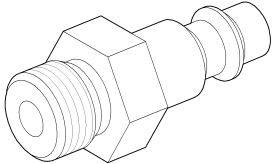
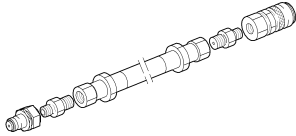
TOOL WORKSHOP GENERAL

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30039526	RING WRENCH ADAPTER wrench size 24, 14x18	1	
	F30047798	TORQUE WRENCH 300-800Nm, 14x18 square, ratchet bit 3/4"	1	
	F30450902	RATCHET ADAPTER 3/4", 14x18 square, designed for 800Nm	1	
	B80147075	HAND PUMP KIT 700 bar, for hydraulic installation/removal tools	1	
	F6795866	HYDR. SCREWDR. SET for tightening/loosening conrod screws with limited access	1	
	T80092052	EYEBOLT M8, maximum carrying capacity 300Kg	4	


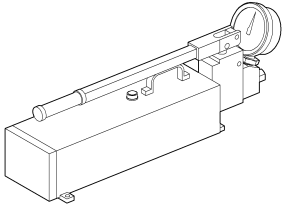
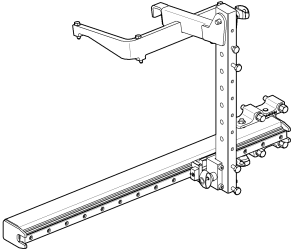
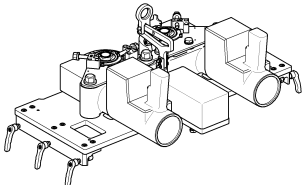

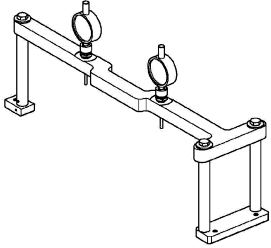
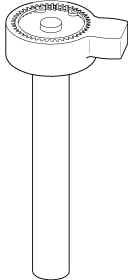
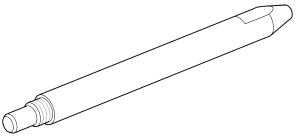
TOOL WORKSHOP GENERAL

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	T80092075	EYEBOLT M10, maximum carrying capacity 400Kg	4	
	F6794673	PROTECTIVE SLEEVE Only for injectors in arrangement drawing XZ52607500002 X52407500021 / 00023 / 00024 / 00025 / 00026 / 00027 X52407500028 / 00029 / 00030. For Reman version with prefix 'R'. With thread M24x1.5	1	
	F30043446	TORQUE WRENCH 8-40Nm, 9x12 inner square, ratchet adapter 1/2"	1	
	F30026582	TORQUE METER 20-100Nm, 9x12 square, ratchet adapter 1/2"	1	

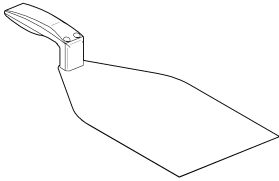
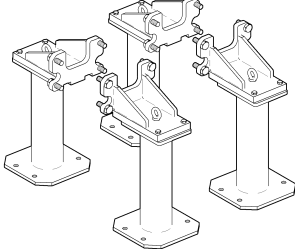
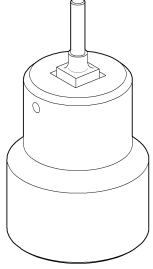
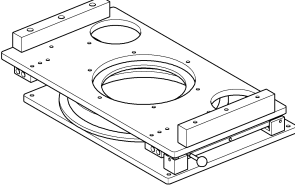
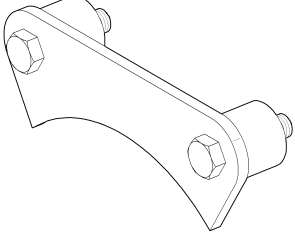
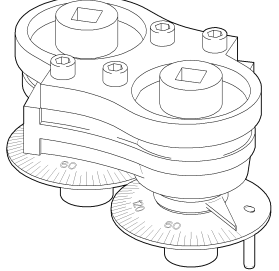
TOOL WORKSHOP EQUIPMENT

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	5505890921/00	COMPRESSION PRESS RECORDER Measuring range 10-60bar, to check compression pressure	1	
+ 	5505890921/06	RECORDER SHEETS (IN PACK OF 100 PCS) for compression pressure recorder	1	
+ 	Y4343683	CONNECTION PIECE for compression pressure test device	1	
+ 	Y4343684	THREADED CONNECTOR for motometer - tester 5505890921/00	1	
+ 	Y4343685	CONNECTION PIECE	1	
	B80146891	HIGH-PRESSURE HOSE	1	

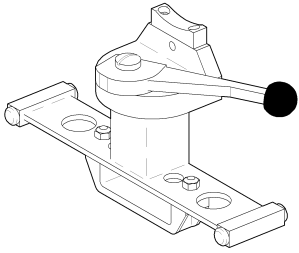
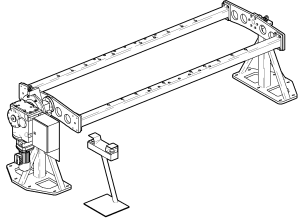
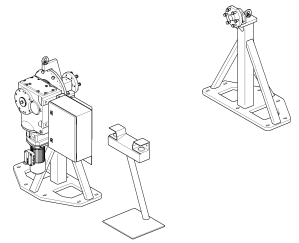
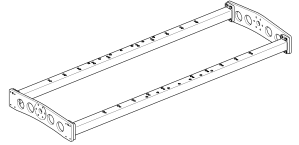
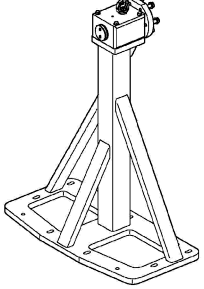
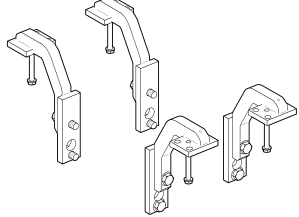
TOOL WORKSHOP EQUIPMENT

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
✚ 	B80146898	HAND PUMP 1000 bar, with large oil volume for press-fit and removal tools	1	
	F0141256	ASSEMBLY JIG to remove/install the HP pump in axial direction with constricted installation area	1	
	F20090147	MULTI MECHANIC SCREWDRIVER for tightening bolts, crankshaft bearing caps and cylinder heads	1	
✚ 	Y4349123	BRIDGE METER	1	
	F30454067	SOCKET	2	
	F30452998	GUIDE MANDREL for oil pan (Rail, Genset, C+I)	4	

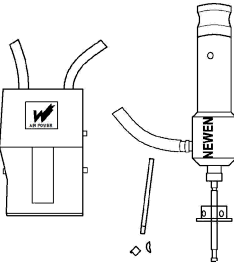
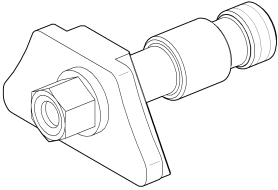
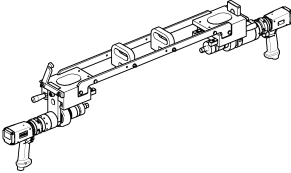

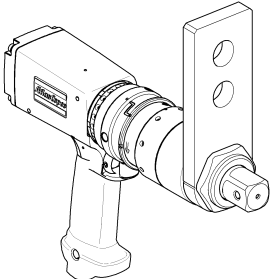

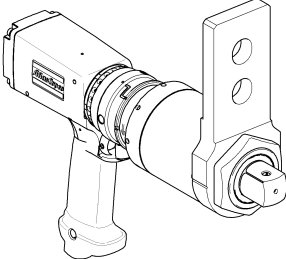
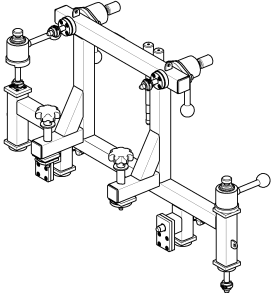
TOOL WORKSHOP EQUIPMENT

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6378992	GUIDE PLATE guide plate for O-ring of cylinder head, plate-core cooler and seawater pump	1	
	F6553639	ENGINE FOOT to set down crankcase	4	
	F6781609	ASSEMBLY JIG to install crankshaft bearing cap screw with screw	1	
	F6782309	ASSEMBLY STAND for fitting charge-air cooler	1	
	F6786628	ALIGNMENT JIG to install the CENTA coupling CL - 71	2	
	F6787133	TIGHTENING TOOL to remove the crankshaft counterweight screws	1	

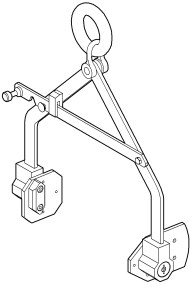
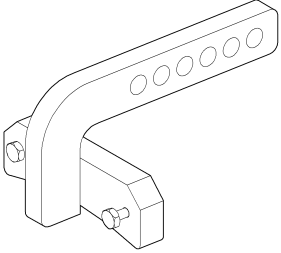
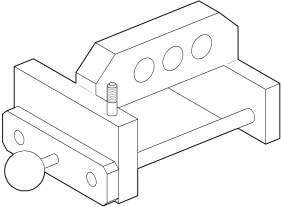
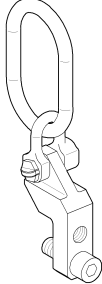
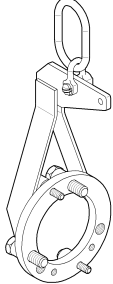
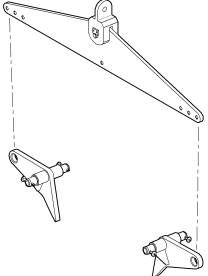
TOOL WORKSHOP EQUIPMENT

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
✚ 🔧	Y4347843	DISTANCE GAUGE 71.9mm for counterweights	1	
⚙️	F6787914	SWIVEL STAND for crankcase	1	
🔧	F6787912	SWIVEL STAND	1	
🔧	F6787913	FRAME	1	
🔧	F6798599	BEARING PEDESTAL Bearing pedestal	1	
✚ 🔧	F6787917	MOUNT for locating crankcases in swivel stands	4	


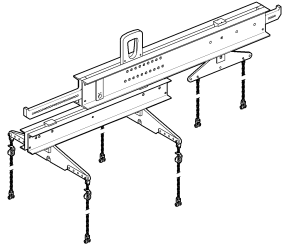
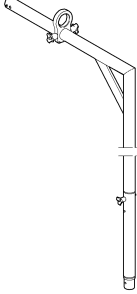

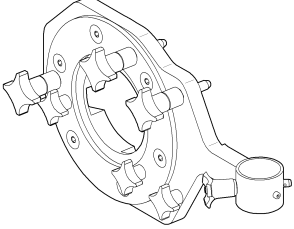
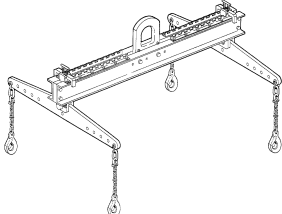
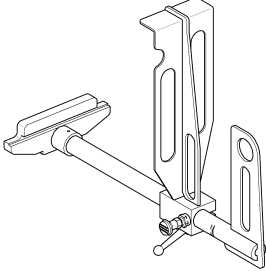
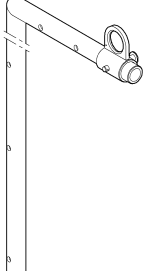
TOOL WORKSHOP EQUIPMENT

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F6789886	EXTRACTION DEVICE pneumatic, to remove the valve-seat inserts	1	
	F6790119	AXIAL LOCATING ELEMENT to secure cylinder liners in swivel stand	1	
	F6791274	RETAINER for tightening cross tie bolts	1	
+ 	F6793230	TORQUE SUPPORT for screwdriver F20090121 up to 950Nm	1	
+ 	F6793231	TORQUE SUPPORT for screwdriver F20090177 up to 1500Nm	1	
	F6792620	ALIGNMENT JIG for alignment of supports and consoles to crankcases	1	


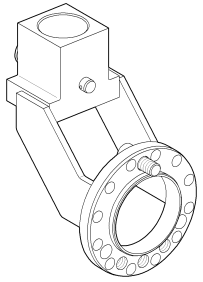

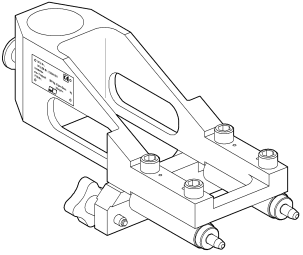

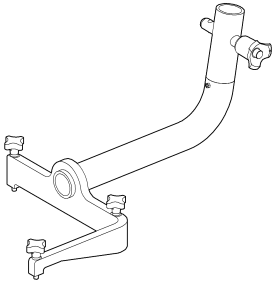
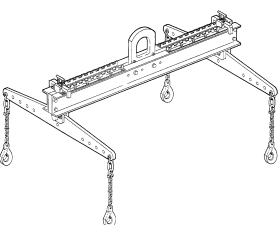
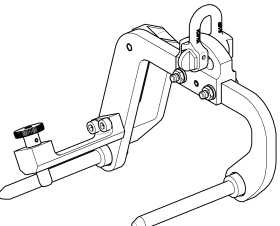

TOOL WORKSHOP EQUIPMENT

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	T80090941	PLIERS to swivel for cylinder-head machining	1	
	T80091102	SUPPORT FRAME for short or long flywheel housing, use only if the crankcase is rotated by 180°	1	
	T80091105	LIFTING EQUIPMENT for gearcase	1	
	T80091383	LIFTING EQUIPMENT for drive flange, truck engines	1	
	T80091386	LIFTING EQUIPMENT 8V-16V engines, for vibration damper and drive flange	1	
	T80091344	CHAIN CROSSBEAM for generator (suspension points in transverse direction) and gearbox	1	

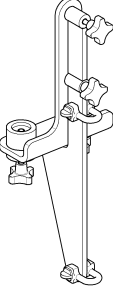
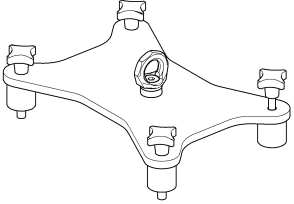
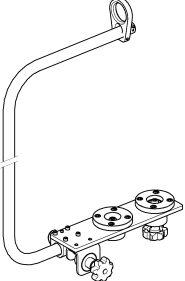
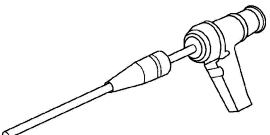
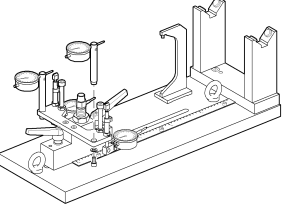


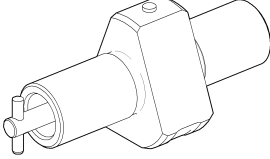
TOOL WORKSHOP EQUIPMENT

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
+ 	T80091826	CROSSBEAM to couple 12V - 20V engines with generator (suspension points in longitudinal direction), 20000 Kg	1	
	T80092139	LIFT HANDLE multi-purpose handle for lifting equipment	1	
+ 	T80092414	ADAPTER for freshwater pump	1	
	T80092210	CROSSBEAM for 8V-16V, 8500kg	1	
	T80092265	LIFT HANDLE for oil cooler 250 Kg	1	
	T80092300	LIFT HANDLE safe working load 340kg	1	


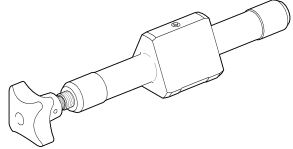
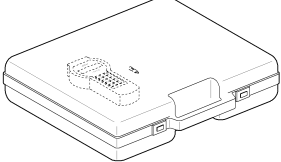
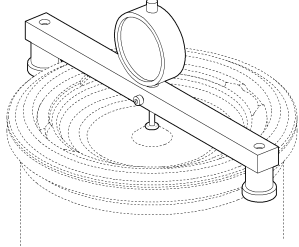
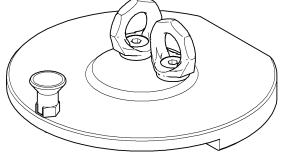
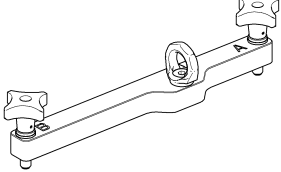
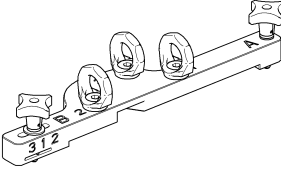
TOOL WORKSHOP EQUIPMENT

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
✚ 	T80092305	ADAPTER for single vibration damper	1	
✚ 	T80092306	ADAPTER 12V-20V engine with long flywheel housing	1	
✚ 	T80092426	ADAPTER for installing and removing HP pump in workshop, 2 and 4 cylinder version	1	
	T80092360	CROSSBEAM for 8V - 20V engine assembly, 4-point suspension, 16000kg	1	
	T80092384	LIFTING RIG for oil pump	1	
	T80092398	LIFT HANDLE for Geislinger steel-spring coupling	1	

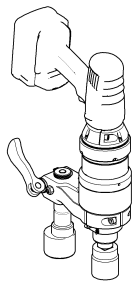
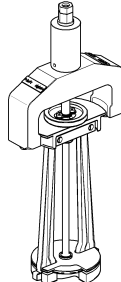

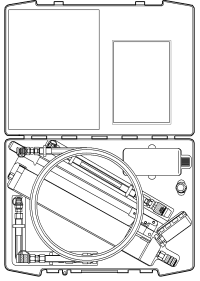
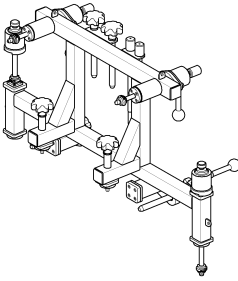
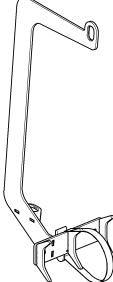
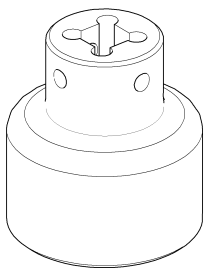
TOOL WORKSHOP EQUIPMENT

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	T80092611	LIFT HANDLE for installation of charge-air coolers and air ducts	1	
	T80092612	LIFT HANDLE for installing EGR intercooler	1	
	T80092779	LIFT HANDLE for installation and removal of fuel filter heads	1	
	Y20097353	BORESCOPE COMPLETE 6x455mm with accessories	1	
	Y4341492	TEST JIG to check conrod parallelism and twist	1	
 	Y4341913	TEST GAUGE ø126mm	1	

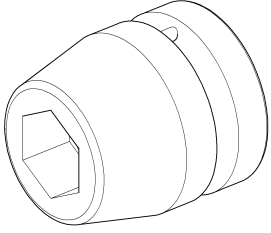
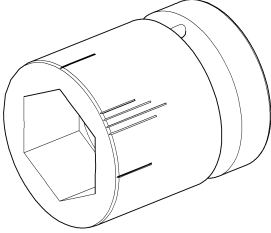
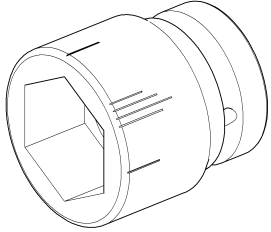
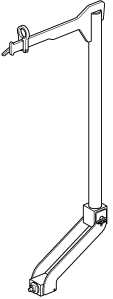


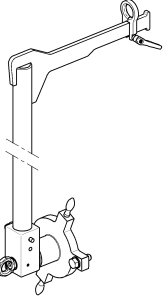
TOOL WORKSHOP EQUIPMENT

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	Y4341914	TEST GAUGE ø68mm	1	
	Y4345711	TEST DEVICE TT3 for belt tension, 10-600Hz	1	
	Y4347522	BRIDGE METER to measure TDC above piston	1	
	T80093080	SUPPORT PLATE for fitting exhaust manifold on engine	1	
	T80093031	SCREW-ON ADAPTER for installing coolant distribution housing on engine	1	
	T80093029	SCREW-ON ADAPTER for bolting coolant distribution housing on engine	1	

TOOL WORKSHOP EQUIPMENT

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F20090213	SCREWER UNIT for tightening an loosening attachment bolt cylinder head	1	
	F6796127	EXTRACTION DEVICE cylinder liner extracting	1	
+ 	B80146893	HAND PUMP KIT 1000bar. For press-fit and removal tools.	1	
	F6797149	ALIGNMENT JIG Align Series 4000-05 consoles for intercooler	1	
	T80093141	LIFT HANDLE for starter	1	
	F6796673	DISASSEMBLY DEVICE Loosen collar nut using cordless screwdriver	1	

TOOL WORKSHOP EQUIPMENT

SYM	ORDER NO.	DESIGNATION USAGE	QTY.	IMAGE
	F30455222	SOCKET AF24 for tightening of coupling	1	
	F30455223	SOCKET AF34 for tightening of coupling	1	
	F30455224	SOCKET AF41 for coupling assembly	1	
	T80093176	MOUNT for flywheel assembly/disassembly	1	
 	T80093179	LIFT HANDLE for assembling torsional resilient coupling while intercooler is installed	1	
	T80093255	LIFT HANDLE for installing flywheel housing	1	