



ISO 9001
CERTIFIED

PAI TRUCK PARTS CATALOG

Mack & Volvo Applications

2018 PAI PARTS CATALOG AND CROSS REFERENCE



**ISO 9001
CERTIFIED**

MACK & VOLVO APPLICATION

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Our Vision

To be recognized as the world's best Service parts provider to the trucking industry by providing a full line of top-quality products, rapid customer support and technical expertise that in turn enable our customers to be successful.

Our Mission

At PAI Industries Inc., our Customers are the foundation of our business and we strive to exceed their expectations. We are committed to expanding our product range to enable PAI to become a single-source supplier to our customers. Through product development, strong customer Service and comprehensive technical support we endeavor to achieve our ultimate goal of complete customer satisfaction.

Quality Policy

PAI Industries, Inc. is committed to compliance of all customer requirements, regulatory requirements and original equipment specifications by means of our Quality Management System. Our goal is to ensure customer satisfaction by maintaining the highest levels of quality for the products and services we provide. Quality, continual improvement and customer satisfaction are the personal responsibility of every PAI employee.



Bold part numbers indicate new parts to this catalog.

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PAI parts are manufactured for the replacement trade. It is not intended to convey the thought that they are original parts made by the original truck manufacturer. They are intended for use in replacing broken or worn parts and should be resold for such purposes only.

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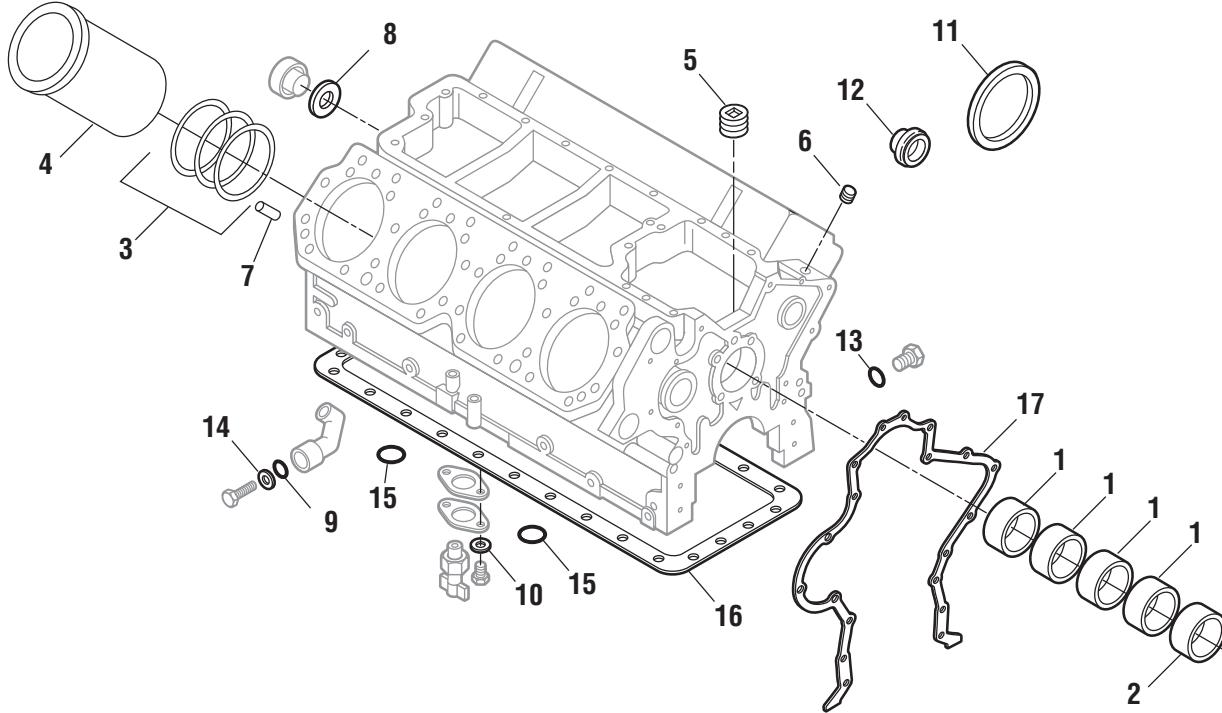


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Starters	868	Miscellaneous Lamps.....	957
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Generators.....	872	Rectangular.....	959
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FIGURE 1

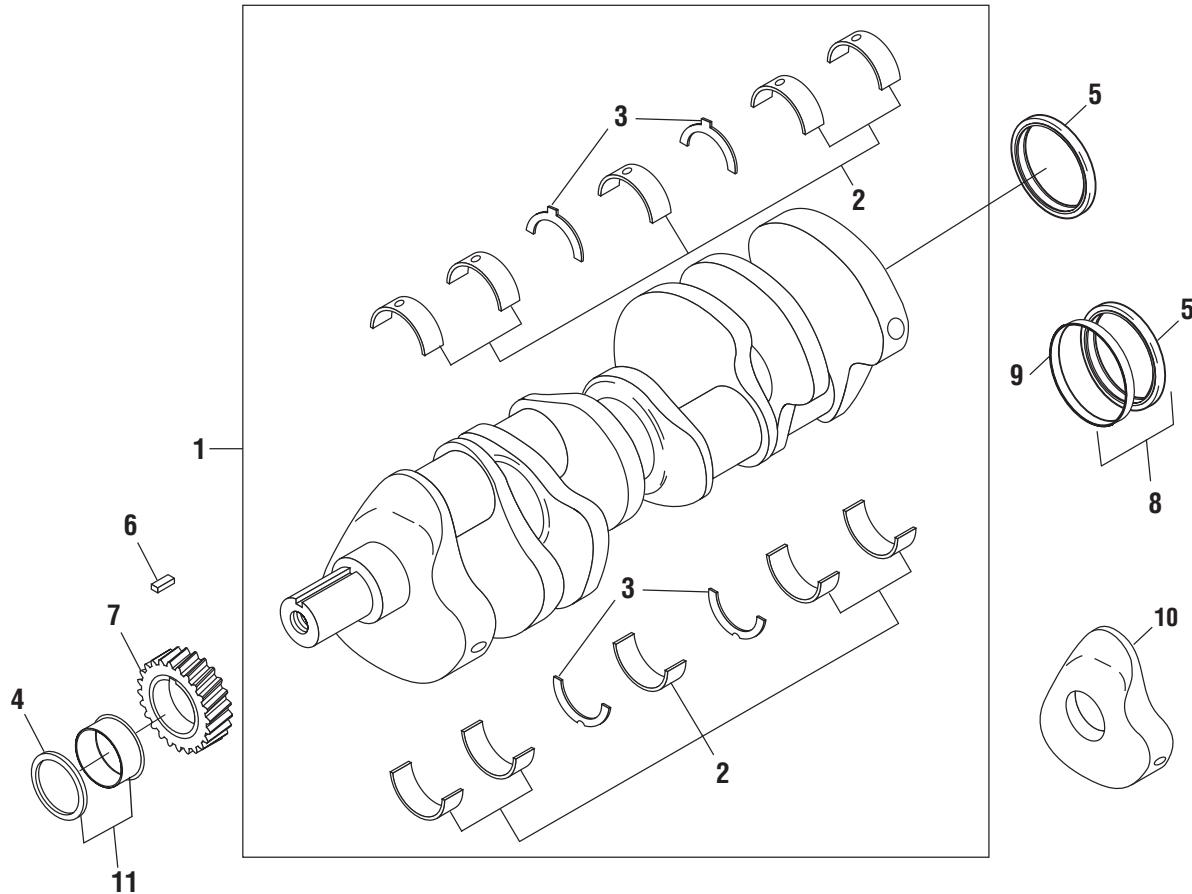


KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ECB-8644		MAK 59GB1109C	BEARING,Cam(Positions #2-5)	
2	ECB-8646		MAK 59GB220	BEARING,Cam(Position #1)	
3	EGA-8908		MAK 447GC233	O-RING,Sleeve(Use w/ ESL-8285 Sleeve)	MAK 447GC213
3	EGA-8909		MAK 447GC219	O-RING,Sleeve(For 865 Engine)	
3	EGA-8911		MAK 447GC225	O-RING,Sleeve(Use w/ ESL-8285 Sleeve)	
4	ESL-8285		MAK 509GC413A	SLEEVE(5.375in Bore)(EM9-400/440)	MAK 509GC3163
5	EPP-3574	9	MAK 49AX233	PLUG,Pipe(3/8in NPT)	MAK 63AX45Z
6	EPP-3573		MAK 49AX230	PLUG,Pipe(1/8in NPT)	
7	EPN-2765		MAK 31AX268	PIN,Head Locating	
8	EWA-2441		MAK 39AX23	WASHER,Main Oil Gallery(Rear)	
9	EGA-1177		MAK 446GC1149	O-RING,Piston Cooling Nozzle	
10	EWA-0059		MAK 37AX7U	WASHER	
11	ESE-8961		MAK 449GC229	SEAL,Exhaust Manifold(EM9-400/440)	
12	EOS-8818		MAK 446GC310P3	SEAL,Fan Drive	
13	EGS-3905-009		MAK 446GC1103	O-RING,Buttress Thread Plug	
14	EGS-3905-010		MAK 446GC1142	O-RING,Piston Cooling Plug	
15	GGA-2946		MAK 56AX533	O-RING,Piston Cooling	MAK 446GC1185
16	EGS-3905-001		MAK 579GB420	GASKET,Oil Pan(EM9-400/440)	MAK 579GB318
17	EGS-3905-002		MAK 548GB423B	GASKET,Timing Gear	

Crankshaft

 PAI

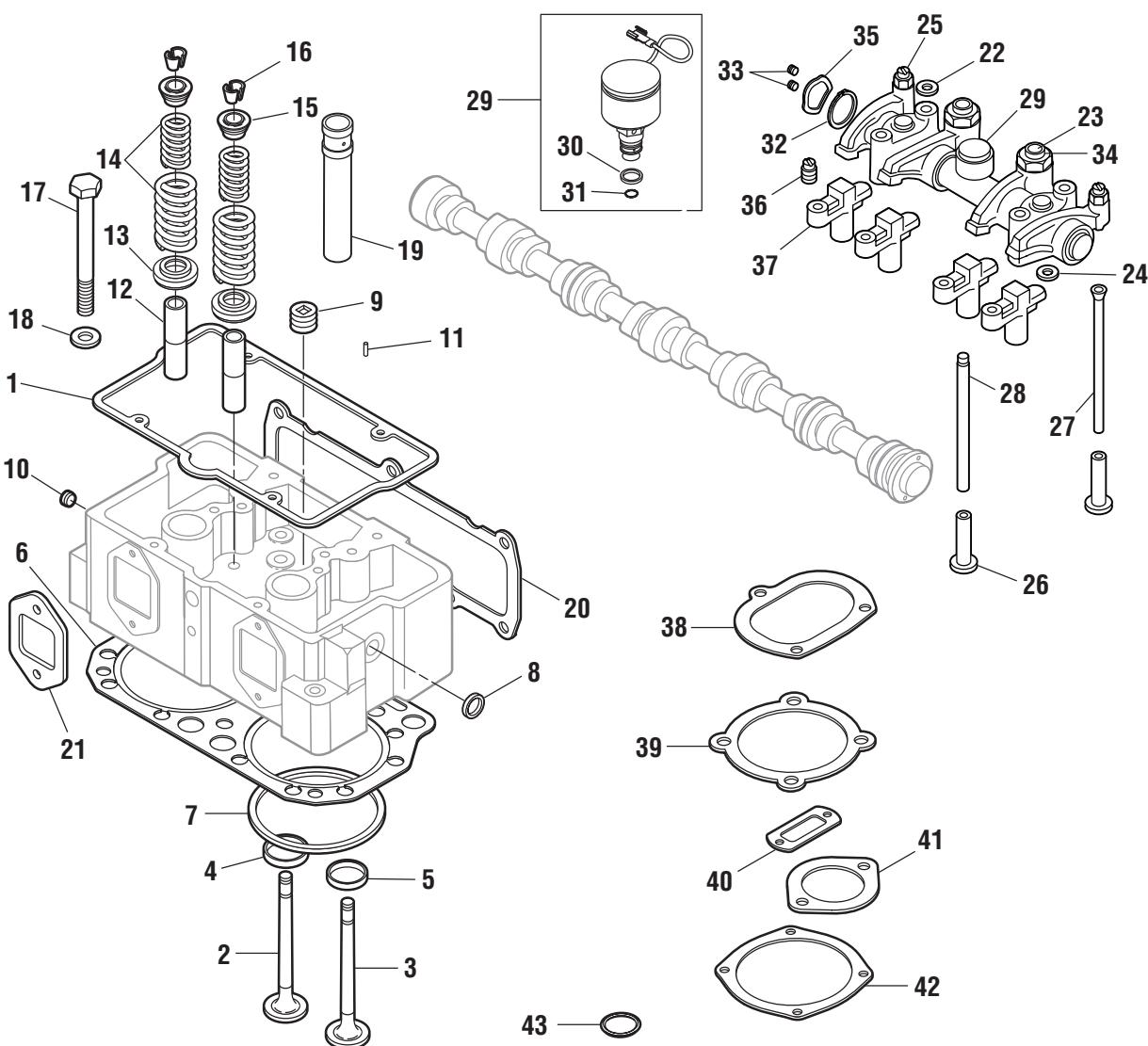
FIGURE 39



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ECR-2079		MAK 57GC393	KIT,Crankshaft(E9-400/500) Includes Bearings (8)EBG-8335-STD (5 pair)EBG-8395-STD (2 pair)EBK-2767-STD	
2	EBG-8395-STD		MAK 64GB21786A	BEARING,Main(STD)(Pair)(5 pair req'd)	MAK 64GB21786AP1
2	EBG-8395-010		MAK 64GB21786P10	BEARING,Main(.010in Undersize)(Pair) (5 pair req'd)	
2	EBG-8395-020		MAK 64GB21786P20	BEARING,Main(.020in Undersize)(Pair) (5 pair req'd)	
3	+EBK-2767-STD		MAK 57GC2144	KIT,Crankshaft Thrust Bearing(Pair)(2 req'd) Includes (1)Upper Bearing (1)Lower Bearing	MAK 57GC277
3	EBK-2767-002		MAK 57GC2144P2	KIT,Crankshaft Thrust Bearing(Pair)(2 req'd) Includes (1)Upper Bearing (1)Lower Bearing	MAK 57GC277P2
4	EOS-8820		MAK 446GC316	SEAL,Front Crankshaft(Neoprene)	
4	EKT-8821	EM88210	MAK 446GC310P2	SEAL,Front Crankshaft(Teflon)	
5	ESE-7960	EM79600	MAK 446GC238B	SEAL,Rear Crankshaft(Neoprene)	
5	ESE-7965	EM79650	MAK 446GC235A	SEAL,Rear Crankshaft(Neoprene) (Used w/ Wear Ring)	NAT 336665H
5	ESE-7969		MAK 446GC310P10	SEAL,Rear Crankshaft(Teflon)	
6	Call		MAK 42AX637	KEY,Crank Gear	
7	Call		MAK 670GB226B	GEAR,Crankshaft	
8	EKT-3800	EM38000	MAK 57GC186A	KIT,Seal and Wear Ring Includes Seal (1)ESE-7965 Wear Ring (1)ERG-3790	NAT 5645
9	ERG-3790		MAK 532GC220B	RING,Rear Crankshaft Wear	NAT JJ2051
10	Call		MAK 761GC32	COUNTERWEIGHT,Crankshaft	
11	836023		N/A	KIT,Front Seal(Neoprene) Includes Seal (1)EOS-8820 Wear Ring (1)ERG-3792	
11	836024		N/A	KIT,Front Seal(Teflon) Includes Seal (1)EOS-8821 Wear Ring (1)ERG-3792	

+High Performance available by adding (HP) to the end of the PAI Reference number when placing your order.

FIGURE 3



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EGS-3895-001		MAK 554GB316G	GASKET, Valve Cover	MAK 554GB316F
2	EVA-8139		MAK 690GC339	VALVE, Intake(3/8in Dia. Stem) (EM9-400/440/500)	
3	EVA-8149		MAK 688GC339	VALVE, Exhaust(3/8in Dia. Stem) (EM9-400/440/500)	
4	EVS-2550-STD		MAK 13GC2237	SEAT, Intake Valve(ENDT-865)	
4	EVS-2550-015		MAK 13GC2237P15	SEAT, Intake Valve(ENDT-865)	
4	EVS-2550-031		MAK 13GC2237P31	SEAT, Intake Valve(ENDT-865)	
4	EVS-2550-047		MAK 13GC2237P47	SEAT, Intake Valve(ENDT-865)	
4	EVS-2550-062		MAK 13GC2237P62	SEAT, Intake Valve(ENDT-865)	
4	EVS-2556-STD		MAK 13GC2253P1	SEAT, Intake Valve(EM9-400)	MAK 13GC2248P1
4	EVS-2556-015		MAK 13GC2253P15	SEAT, Intake Valve(EM9-400)	MAK 13GC2248P15
4	EVS-2556-031		MAK 13GC2253P31	SEAT, Intake Valve(EM9-400)	MAK 13GC2248P31
4	EVS-2556-047		MAK 13GC2253P47	SEAT, Intake Valve(EM9-400)	MAK 13GC2248P47
4	EVS-2556-062		MAK 13GC2253P62	SEAT, Intake Valve(EM9-400)	MAK 13GC2248P62
5	EVS-2545-STD		MAK 13GC2235P1	SEAT, Exhaust Valve(ENDT-865)	
5	EVS-2545-015		MAK 13GC2235P15	SEAT, Exhaust Valve(ENDT-865)	

Cylinder Head Components

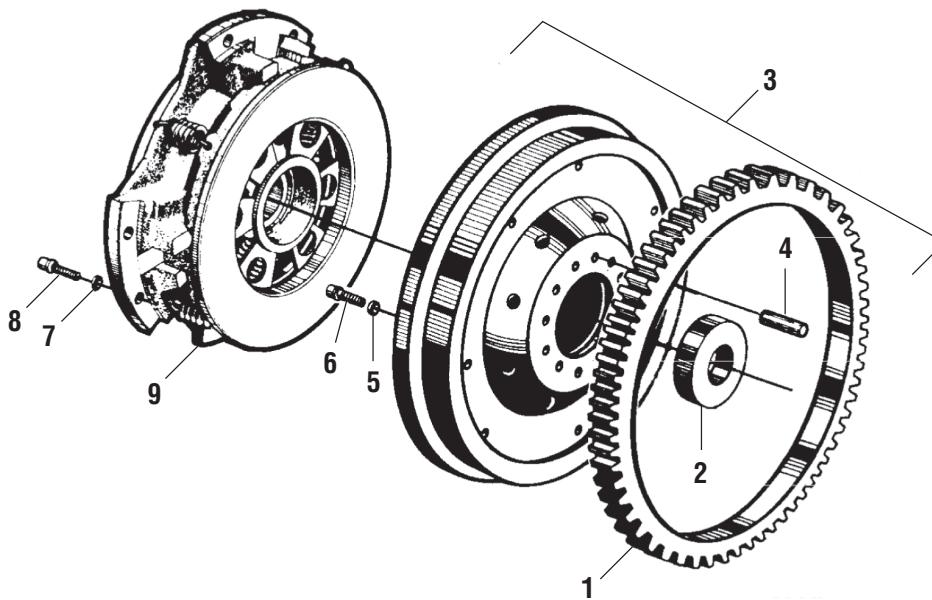


KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
5	EVS-2545-031		MAK 13GC2235P31	SEAT,Exhaust Valve(ENDT-865)	
5	EVS-2545-047		MAK 13GC2235P47	SEAT,Exhaust Valve(ENDT-865)	
5	EVS-2545-062		MAK 13GC2235P62	SEAT,Exhaust Valve(ENDT-865)	
5	EVS-2546-STD		MAK 13GC2226AP1	SEAT,Exhaust Valve(EM9-400)	
5	EVS-2546-015		MAK 13GC2226AP15	SEAT,Exhaust Valve(EM9-400)	
5	EVS-2546-031		MAK 13GC2226AP31	SEAT,Exhaust Valve(EM9-400)	
5	EVS-2546-047		MAK 13GC2226AP47	SEAT,Exhaust Valve(EM9-400)	
6	EGK-8428		MAK 57GC197A	KIT,Gasket(Head)(w/ Fire-Ring)(EM9-400)	
7	EFR-8427		MAK 553GB222	FIRE-RING(EM9-400)	MAK 553GB218
8	ECP-3486		MAK 79AX68Z	PLUG,Core	
9	EPP-3572		MAK 49AX242	PLUG	
10	EPP-3573		MAK 49AX230	PLUG,Fuel Drain	MAK 49AX243
11	EPN-2777		MAK 183GC25	PIN	
12	EVG-2373		MAK 714GB1329	GUIDE,Valve(ENDT-865) (1/2in Dia. ID)(Finished)	
12	EVG-2374		MAK 714GB26	GUIDE,Valve (7/16in Dia. ID)(Semi-Finished)(EM9-400)	
12	EVG-2379		MAK 714GB222P2	GUIDE,Valve(3/8in Dia. ID)(Finished)(EM9-400)	
13	EVR-8327		MAK 722GC313A	ROTATOR,Coil(EM9-400)	MAK 722GC314
14	ESP-8168		MAK 575GC211A	SPRING,Valve	
15	EVR-8355		MAK 722GC321	RETAINER(3/8in Dia. Stem)	MAK 722GC311, MAK 722GC312
15	Call		MAK 722GC224	RETAINER(7/16in Dia. Stem)	
16	EVL-8205		MAK 54GC25	LOCK,Valve(3/8in Dia. Stem)(EM9-400)	NAV 41339D
16	EVL-8210		MAK 54GC126	LOCK,Valve(7/16in Dia. Stem)(EM9-400)	
17	ESC-1603		MAK 400GC33P5	BOLT,Cylinder Head	
18	EWA-1780		MAK 711GC1100P9	WASHER	
18	EWA-1783		MAK 711GC1100P14	WASHER(Reduced OD)	
19	EIS-8341		MAK 12GC212A	SLEEVE,Injector	
20	EGS-3895-002		MAK 573GB38A	GASKET,Inlet/Water Manifold	
21	EGS-3895-003		MAK 573GB236	GASKET,Exhaust	
22	EWA-1772		MAK 35AX1361U	WASHER	
23	ELA-3543		MAK 73GC27D	ADJUSTER,Lash	
24	EGS-3895-006		MAK 446GC193B	O-RING	
25	ENU-0072		MAK 21AX750	NUT,Lock	
26	EML-8582		MAK 72GC347	LIFTER	
26	EML-8583		MAK 72GC357	LIFTER(Current Design)	
27	EPR-3554		MAK 369GC237A	PUSHROD,Exhaust(EM9-400/440/500)	
28	EPR-3517		MAK 369GC314AP3	PUSHROD,Intake(Tubular, Cup & Ball)	
28	EPR-3555		MAK 369GC415A	PUSHROD,Intake(EM9-400/440/500)	MAK 369GC238
29	EKT-1170		MAK 57GC246	KIT,Solenoid	
				Includes Ring (1)ERG-1176 O-Ring (1)EGA-1177	
30	EGA-1177		MAK 446GC1149	O-RING	
31	ERG-1176		MAK 590GB1327P1	RING	
32	ERI-2708		MAK 97AX73	RING,Retaining	
33	EPP-3572		MAK 49AX242	PLUG	
34	ENU-3538		MAK 148GC19	NUT,Lock	
35	EWW-3539		MAK 579GC148A	WASHER,Wave	
36	ESC-8344		MAK 421GC257A	SCREW,Yoke Adjusting	MAK 421GC189
37	EYK-3512		N/A	KIT,Yoke	
				Includes Yoke (1)EVY-3522 Nut (1)ENU-0409 Screw (1)ESC-8342	
38	EGS-3895-004		MAK 573GB230B	GASKET,Inlet Crossover	
39	EGS-3905-012		MAK 590GB277A	GASKET,Alternator Cover	
40	EGS-3905-014		MAK 590GB285A	GASKET,Timing Cover Hole	
41	EGS-3905-017		MAK 590GB2126	GASKET,Oil Fitting	MAK 590GB1318
42	EGS-3905-018		MAK 590GB283A	GASKET,Breather	
43	EGS-3905-019		MAK 56AX478	O-RING,Oil Pressure	
43	EGS-3905-020		MAK 446GC1165	O-RING,Tachometer Drive	
43	EGS-3905-021		MAK 446GC1215	O-RING,Turbo Drain	
43	EGS-3905-022		MAK 446GC1109	O-RING,Auxiliary(Drive Housing)	
43	EGS-3905-023		MAK 446GC194	O-RING,Oil Pump Relief	

ENGINE COMPONENTS

V8 SERIES

FIGURE 7



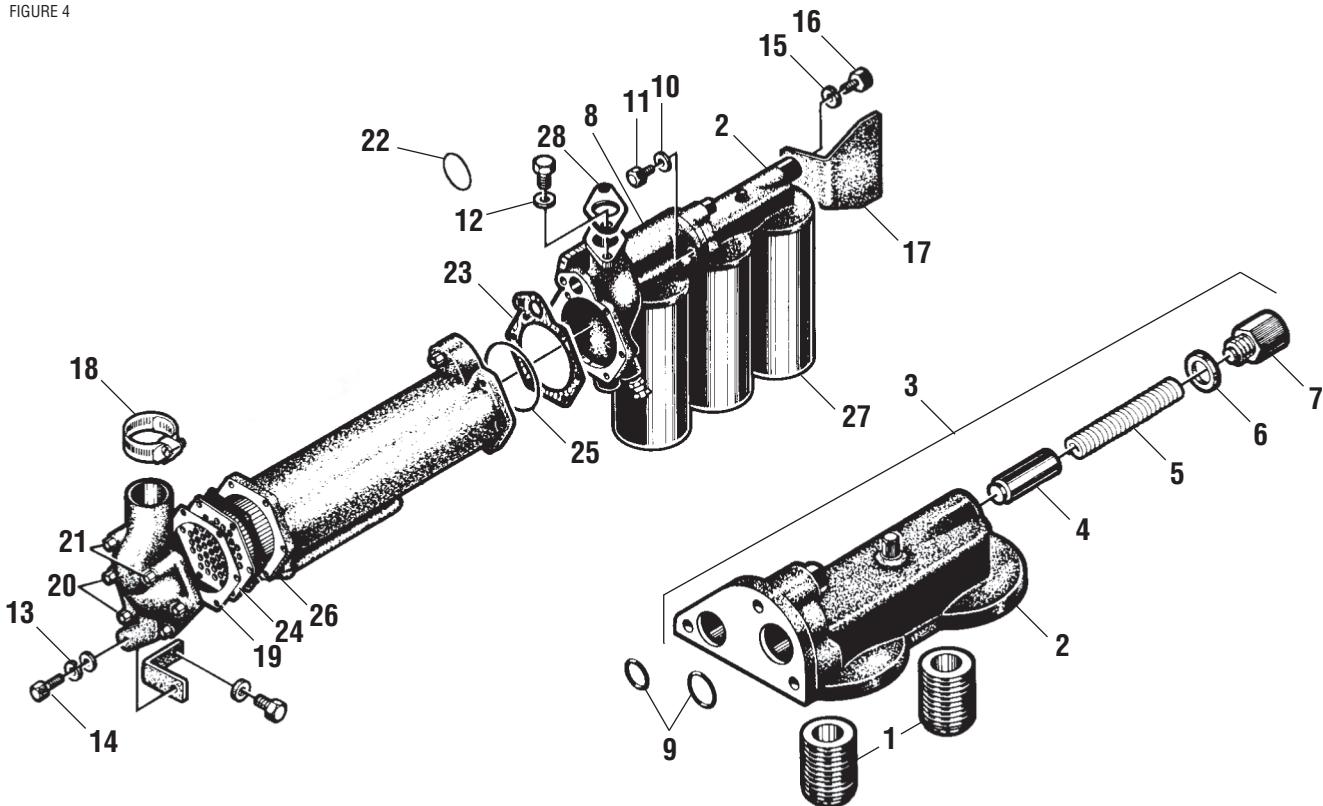
KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ERG-3990		MAK 673GB222	GEAR,Flywheel	
2	+EBG-8639		MAK 46AX534	BEARING,Clutch Pilot(Sealed)	
3	Call		MAK 530GB3118C	ASSEMBLY,Flywheel(E9)	
4	Call		MAK 183GC22	PIN,Flywheel Locating	
5	EWA-1782		MAK 711GC1146	WASHER,Flywheel	
6	ESC-1610		MAK 419GC113B	SCREW,Flywheel(5/8in-18 x 1-3/4in)	
7	BWA-0051		MAK 36AX4	WASHER,Clutch(8 req'd)	
8	CSC-0821		MAK 419GC115	SCREW,Clutch(7/16in-14 x 2-1/2in)(8 req'd)	MAK 6AX1197
9	Call		N/A	ASSEMBLY,Clutch & Components (Please refer to Clutch Section of Drive Train catalog for more information)	

+High Performance available by adding (HP) to the end of the PAI Reference number when placing your order.

Oil Cooler Assembly

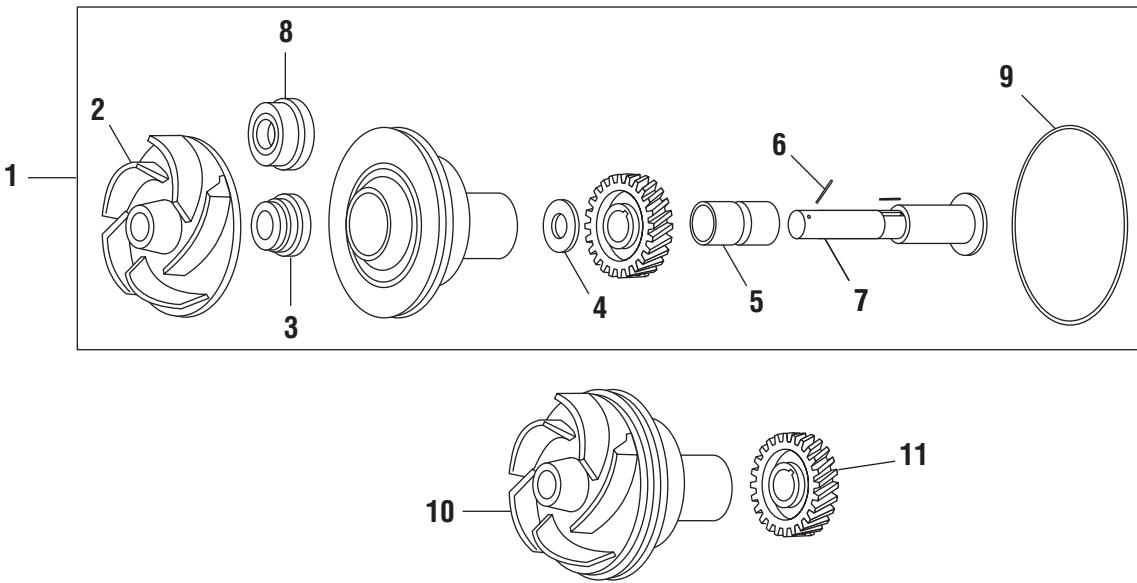
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FIGURE 4



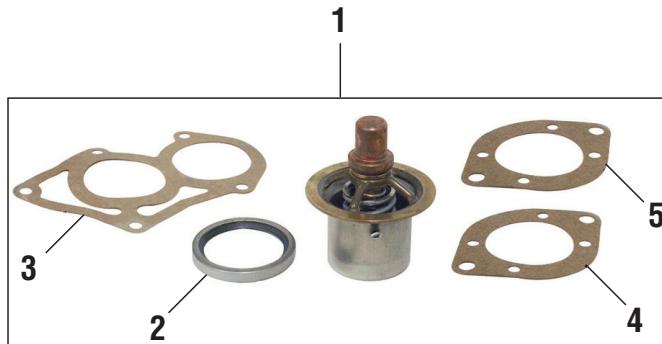
KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EAD-0880		MAK 32GB183	ADAPTER,Filter	
2	Call		MAK 27GB42A	MOUNT,Filter	
3	Call		MAK 27GB317	ASSEMBLY,Mount(Filter)	Includes Adapter (2)EAD-0880 Plunger (1)EPL-3151 Spring (1)ESP-3155 Washer (1)EWA-3156 Mount (1)NSS Cap (1)NSS
4	EPL-3151		MAK 296GC21A	PLUNGER	
5	ESP-3155		MAK 572GC130	SPRING	
6	EWA-3156		MAK 38AX52	WASHER	
7	Call		MAK 226GB152A	CAP	
8	Call		MAK 27GB217A	MOUNT,Filter	
9	EGA-0472		MAK 446GC1161	O-RING	
10	BWA-0066		MAK 37AX265	WASHER	
11	Call		MAK 6AX1467X	CAPSCREW(Short)	
11	Call		MAK 6AX1459X	CAPSCREW(Long)	
12	EWA-0059		MAK 37AX7U	WASHER	
13	FWA-0050		MAK 36AX3	WASHER,Lock	
14	ESC-0017		MAK 4AX58	SCREW(3/8in-16 x 7/8in)	
15	EWA-0052		MAK 36AX5	WASHER,Lock	
16	ESC-0014		MAK 4AX25	SCREW(1/2in-13 x 1-1/2in)	
17	Call		MAK 143GB47B	BRACKET,Oil Cooler(Rear)	
18	ECL-1954		MAK 45SF20	CLAMP,Water Inlet	
19	EGS-3900-015		MAK 549GB28AP1	GASKET	
20	ESC-2189		MAK 6AX1279	SCREW(5/16in-18 x 7/8in)	
21	Call		MAK 6AX1280X	CAPSCREW	
22	EGA-0471		MAK 446GC1160	O-RING	
23	EGS-3905-008		MAK 549GB27A	GASKET	
24	ECC-8607		MAK 57GC269	KIT,Oil Cooler Core	Includes Core Kit (1)ECA-8605-001 Core (1)ECC-8607-001 Gasket (1)EGS-3905-008
25	ESE-8962		MAK 446GC225A	O-RING	
26	EGS-3900-065		MAK 549GB28AP4	GASKET,Oil Cooler	
27	FOF-4570		MAK 485GB3191C	FILTER,Oil	
28	EGS-3905-006		MAK 56AX444	GASKET	

FIGURE 6



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EPK-3508		MAK 202SB43	KIT,Water Pump(E9) Includes Rotor (1)ERW-0748 Seals (1)ESR-3377 (1)EOS-8819 Bushings (2)EBG-3378 Shaft (1)ESH-3888 Pin (1)EPN-5115 O-Ring (1)EGS-3905-011	
2	ERW-0748		MAK 379GC42	ROTOR	
3	ESR-3377		MAK 447GC234A	SEAL	
4	EOS-8819		MAK 446GC310P5	SEAL	
5	EBG-3378		MAK 186GB214	BUSHING	
6	EPN-5115		MAK 31AX364	PIN(3/16in x 3/4in)	
7	ESH-3888		MAK 469GC317	SHAFT	
8	EGS-3905-004		MAK 447GC210B	SEAL	
9	EGS-3905-011		MAK 446GC242	O-RING,Housing	
10	EWP-3363		MAK 316GC3192	ASSEMBLY,Water Pump(E9) Includes Housing (1)EPH-3381 Shaft (1)ESH-3888 Gear (1)EGE-2586 Seals (1)ESR-3377 (1)EOS-8819 Rotor (1)ERW-0748 Pin (1)EPN-5115 O-Ring (1)EGS-3905-011	
10	EWP-3363X		MAK 4103-5001837328	ASSEMBLY,Water Pump(Reman)(E9)	
11	EGE-2586		MAK 691GB234	GEAR	

FIGURE 5

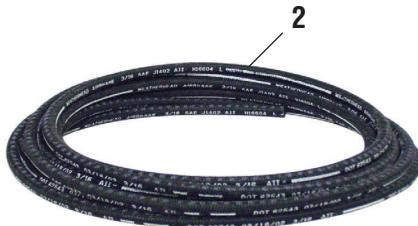


KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EAS-3297-155		MAK 215SB166P1	KIT, Thermostat(155 deg.)(Vented) Includes Gaskets (1)EGS-3905-013 (1)EGS-3905-015 (1)EGS-3905-016 Seal (1)ESE-3304 Thermostat (1)NSS	
1	EAS-3297-170		MAK 215SB166P2	KIT, Thermostat(170 deg.)(Vented) Includes Gaskets (1)EGS-3905-013 (1)EGS-3905-015 (1)EGS-3905-016 Seal (1)ESE-3304 Thermostat (1)NSS	
1	EAS-3297-180		MAK 215SB166P3	KIT, Thermostat(180 deg.)(Vented) Includes Gaskets (1)EGS-3905-013 (1)EGS-3905-015 (1)EGS-3905-016 Seal (1)ESE-3304 Thermostat (1)NSS	
2	ESE-3304		MAK 447GC217A	SEAL, Thermostat	
3	EGS-3905-013		MAK 590GB282A	GASKET, Water Housing	
4	EGS-3905-015		MAK 590GB1325	GASKET, Water Outlet	
5	EGS-3905-016		MAK 56AX390	GASKET, Water Bypass	

FIGURE 8



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION
1	EFI-2315		MAK 203GC4177	EM9-400/440/500
1	EFI-2325		MAK 203GC4178	AMBAC
1	EFI-2339		MAK 203GC4179	
1	EFI-2349		MAK 203GC4180	
1	EFI-2359		MAK 203GC4181	
1	EFI-2376		MAK 203GC4182	
1	EFI-2377		MAK 203GC4183	
1	EFI-2385		MAK 203GC4184	

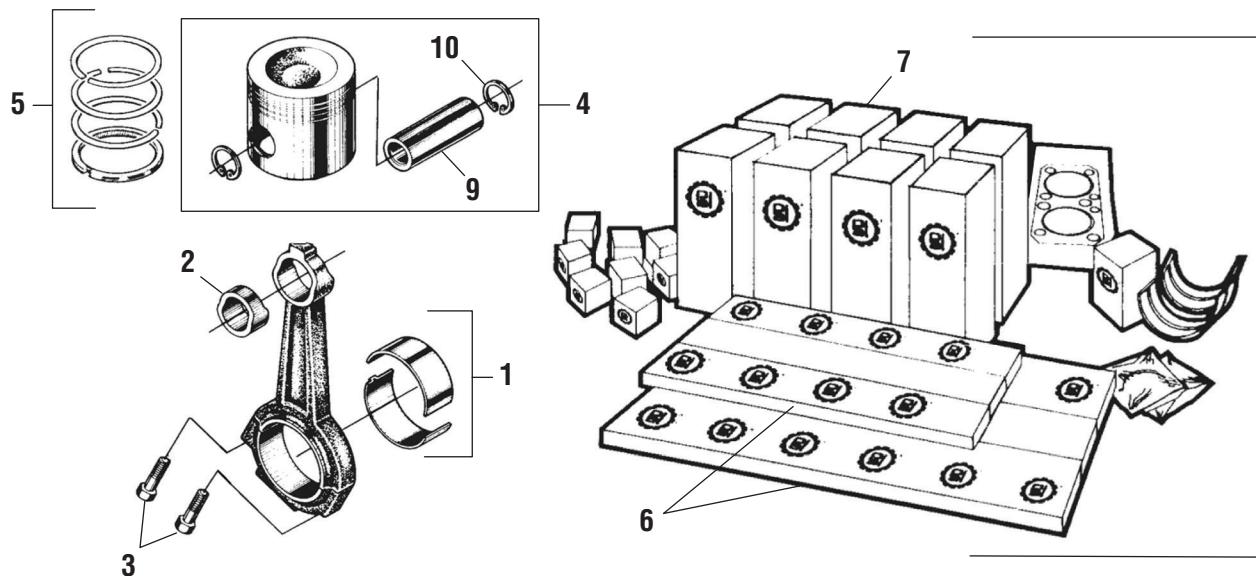


KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	ID	LENGTH
2	MFH-4192-025		MAK 973AX100RF	HOSE,Fuel(Bulk)	3/16in ID	25ft Roll
2	MFH-4194-025		MAK 973AX420RF	HOSE,Fuel(Bulk)	5/16in ID	25ft Roll
2	MFH-4194-050		MAK 973AX120RF50	HOSE,Fuel(Bulk)	5/16in ID	50ft Roll
2	MFH-4195-025		MAK 973AX130RF	HOSE,Fuel(Bulk)	13/32in ID	25ft Roll
2	MFH-4195-050		MAK 973AX130RF50	HOSE,Fuel(Bulk)	13/32in ID	50ft Roll
2	MFH-4196-025		MAK 973AX140RF	HOSE,Fuel(Bulk)	1/2in ID	25ft Roll
2	MFH-4196-050		MAK 973AX140RF50	HOSE,Fuel(Bulk)	1/2in ID	50ft Roll
2	MFH-4196-250		MAK 973AX140RF250	HOSE,Fuel(Bulk)	1/2in ID	250ft Roll
2	MFH-4198-025		MAK 973AX471RF	HOSE,Fuel(Bulk)	1-1/8in ID	25ft Roll
2	MFH-4198-050		MAK 973AX170RF50	HOSE,Fuel(Bulk)	1-1/8in ID	50ft Roll



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION
3	EIN-8934		AMB NBM770042 MAK 114GC39P15	NOZZLE(V8)

FIGURE 2

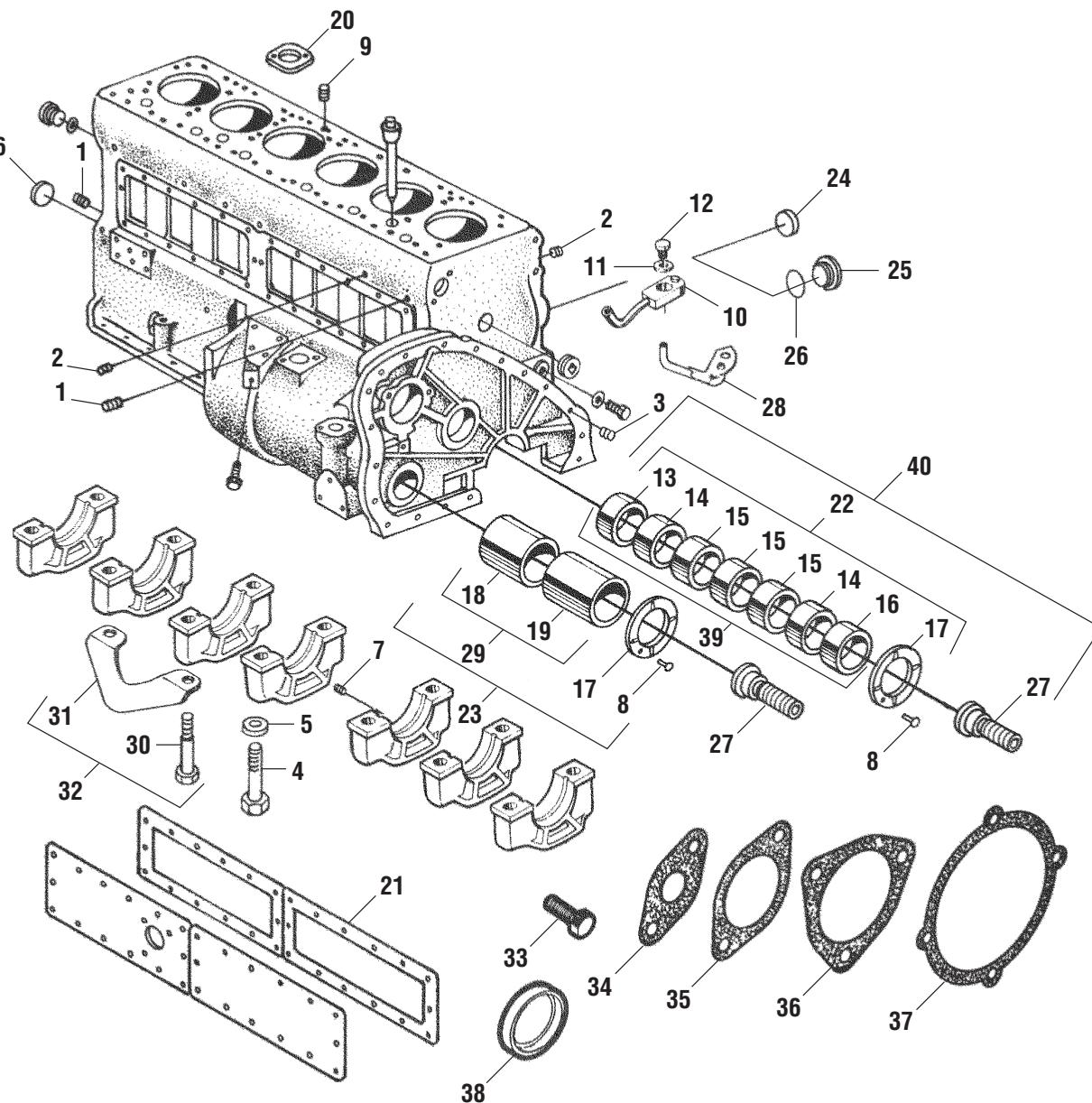


Please note:

Rebuild Kit indicated below is standard only. Specify size of Main Bearings, Rod Bearings and Thrust Washers when ordering Rebuild Kit.
.002 Thrust Washers (EBK-2767-002) sold separately.

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EBG-8335-STD		MAK 62GB2391	BEARING,Connecting Rod(STD) (EM9-400/440/500)	MAK 62GB2391P1
1	EBG-8335-010		MAK 62GB2391P10	BEARING,Connecting Rod(.010in Undersize) (EM9-400/440/500)	
2	EBG-8025		MAK 187GB23	BUSHING,Piston Pin(2.25in OD) (EM9-400/440/500)	
2	EBG-8026		MAK 187GB27	BUSHING,Piston Pin(2.30in OD) (EM9-500 - Late Model Version)	
3	ESC-2091		MAK 396GC138	SCREW,Connecting Rod(EM9-400/440/500) (5/8in-18 x 2-15/16in)	
4	EPA-8066		MAK 57GC191	KIT,Piston(50 Grams lighter weight) (EM9-400/440/500) (Interchanges w/ EPA-8065 Piston Kit in sets only)	MAK 215SB339, MAK 240GC570
5	EPR-8311		MAK 353GC238A	SET,Ring(5.250in Bore) (ENDT-865/866)	
5	EPR-8312		MAK 353GC2134	SET,Ring(5.375in Bore) (EM9-400/440)	
6	EGS-3895		MAK 126SB185	KIT,Upper Gasket(EM9-400/440)	
6	EGS-3905		MAK 126SB186	KIT,Lower Gasket(EM9-400/440)	
7	ELK-8917		MAK 57GC375C	KIT,Liner(17.1 Compression Ratio) (EM9-400/440/500) Includes Piston (1)EPA-8066 Liner (1)ESL-8285 Ring Set (1)EPR-8312 O-Rings (3)EGA-8911 (3)EGA-8908	
8	ERK-8016-001		MAK 215SB204	KIT,Engine Rebuild Includes Liner Kits (8)ELK-8917 Main Bearings (5)EBG-8395(*) Rod Bearings (8)EBG-8335-(*) Thrust Washers (2)EBK-2767-(*) Upper Gasket Set (1)EGS-3895 Lower (1)EGS-3905 Head Sets (4)EGK-8428	
9	EPN-8051		MAK 182GC2208	PIN	MAK 182GC2208P1
10	111178		MAK 97AX165	RETAINER	

FIGURE 11



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EPP-3573		MAK 49AX230	PLUG(1/8in)	MAK 49AX251
2	BPP-3567		MAK 63AX83	PLUG(1/2in)(External Drive)(Opt)	
2	EPP-3575		MAK 49AX234Z	PLUG(1/2in)	
2	EPP-3576		MAK 49AX235	PLUG(3/4in)	
3	EPP-3574		MAK 49AX233	PLUG(3/8in)	
4	ESC-2095		MAK 409GC210	SCREW,Main Bearing Cap(11/16in-12 x 5-3/4in)	
5	EWA-1775		MAK 711GC1100P15	WASHER,Main Bearing Cap	MAK 711GC1100P5
6	ECP-8661		MAK 277GC116	PLUG,Cam(Cup Type)	
7	EPN-2762		MAK 183GC23	PIN,Thrust Washer Locating(Crankshaft)	
8	EPN-2763		MAK 32AX65	PIN,Thrust Washer Locating(Plain)	
8	EPN-2764		MAK 31AX638	PIN,Thrust Washer Locating(Knurled)	
9	EPN-2765		MAK 31AX268	PIN,Cylinder Head Locating	
9	FPN-5111		MAK 31AX443	PIN	
10	EIM-2021		MAK 115GC216	NOZZLE,Piston Cooling(Early E6)	MAK 115GC113A
11	EWA-2070		MAK 87GC133	WASHER,Lock Tab	
12	ESC-2060		MAK 421GC144	SCREW	
13	ECB-8643		MAK 59GB122B	BEARING,Cam	
14	ECB-8645		MAK 59GB1122P1	BEARING,Cam	

Cylinder Block Components

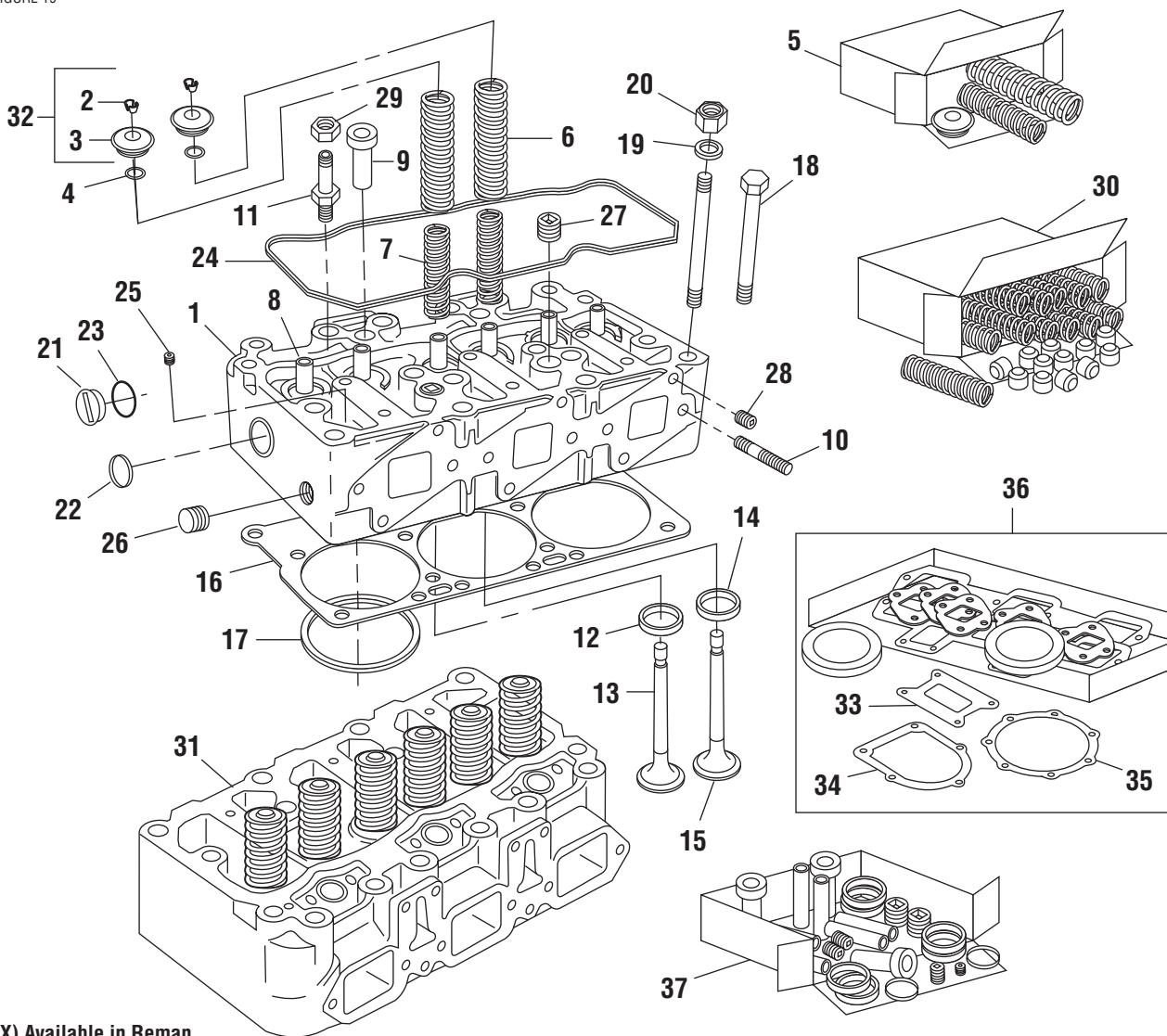


KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
15	ECB-8644		MAK 59GB1109C	BEARING,Cam	
16	ECB-8642		MAK 59GB188CP1	BEARING,Cam	
16	ECB-8647		MAK 59GB214B	BEARING,Cam(�urrent)	
17	ETB-8690		MAK 701GC11A	KIT,Thrust Bearing(Camshaft & Auxiliary Shaft) Includes Pin (1)EPN-2764 Thrust Bearing (1)	
18	EAB-8679		MAK 61GB215	BEARING,Auxiliary (Required when installing early Auxiliary Shaft in new block)	
18	EAB-8680		MAK 61GB15C	BEARING,Rear Auxiliary	
19	EAB-8669		MAK 61GB33	BEARING,Front Auxiliary (w/ Aluminum Timing Cover)	MAK 61GB211
19	EAB-8670		MAK 61GB14C	BEARING,Front Auxiliary	
20	EGS-3900-066		MAK 590GB1362	GASKET	
21	EGS-3900-037		MAK 601GB31D	GASKET,Lifter Cover	
22	EBK-8648		MAK 57GC266	KIT,Cam Bearing(2VH Engine) Includes Bearings (1)ECB-8642 (1)ECB-8643 (5)ECB-8644 Bearing Kit (1)ETB-8690	
22	EBK-8649		MAK 57GC268	KIT,Cam Bearing(4VH Engine) Includes Bearings (1)ECB-8642 (6)ECB-8644 Bearing Kit (1)ETB-8690	
22	EBK-8662		N/A	KIT,Cam Bearing(4VH Engine) (w/ Aluminium Timing Cover) Includes Bearings (1)ECB-8647 (6)ECB-8644 Bearing Kit (1)ETB-8690	
23	EBK-8857		MAK 57GC2128	KIT,Auxiliary Bearing (4VH w/ Aluminium Timing Cover) Includes Bearings (2)EAB-8669 (1)ETB-8696 Washers (2)EWA-0390 Screws (2)ESC-0370	
23	EBK-8865		MAK 57GC267	KIT,Auxiliary Bearing Includes Bearing Kits (1)ETB-8690 (1)EAB-8860	
24	ECP-8660		MAK 79AX66Z	PLUG,Core(Cup Type)(1-3/4in Dia.)	MAK 79AX65
25	ECP-8211		MAK 49AX155	PLUG,Core(Threaded)(Opt)	MAK 49AX142
26	EGA-1660		MAK 446GC175	O-RING(Opt)	
27	ETC-2035-010		MAK 395GC110A	SCREW,Thrust	
28	EIM-2022		MAK 115GC251	NOZZLE,Piston Cooling(Late E6)	
29	EAB-8854		N/A	KIT,Auxiliary Bearing(Late E6) Includes Bearings (1)EAB-8669 (1)EAB-8680	
29	EAB-8860		N/A	KIT,Auxiliary Bearing Includes Bearings (1)EAB-8670 (1)EAB-8680	
30	ESC-2096		MAK 409GC310	SCREW,Main Cap (11/16in-12 x 5-5/8in)	
31	EBK-2098		MAK 253GC47B	BRACKET,Main Cap	
32	EKT-2099		MAK 57GC2112A	KIT,Bracket Includes Brackets (4)EBK-2098 Screws (8)ESC-2096	
33	ESC-0016		MAK 4AX27	SCREW(7/16in-14 x 1in)	
34	EGK-3848		MAK 56AX506	GASKET,Cover	
35	EGS-3900-052		MAK 590GB1214	GASKET,Dust Shield	MAK 590GB196
36	EGS-3900-026		MAK 547GB11A	GASKET,Breather Tube	
37	EGS-3900-012		MAK 538GB11	GASKET,Cam Cover	
38	ECP-3487		MAK 79AX67	PLUG,Core(Cup Type)(1-3/8in Dia.)	
39	ECB-8640		N/A	KIT,Cam Bearing(2VH Engine) Includes Bearings (1)ECB-8642 (1)ECB-8643 (3)ECB-8644 (2)ECB-8645	
39	ECB-8641		N/A	KIT,Cam Bearing(2VH Engine) Includes Bearings (1)ECB-8642 (1)ECB-8643 (5)ECB-8644	
39	ECB-8686		N/A	KIT,Cam Bearing (2VH & 4VH Engines w/ large #7 Cam Journal) Includes Bearings (1)ECB-8647 (6)ECB-8644	
40	ECB-8687		MAK 57GC2132	KIT,Cam Bearing Includes Bearings (6)ECB-8644 (1)ECB-8647 Bearing Kit (1)ETB-8690 Screw (1)ETC-2035-010	

Cylinder Head Assembly

Two Valve Head

FIGURE 19



(X) Available in Reman

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ECH-3310(X)		MAK 732GB4396P2	ASSEMBLY,Cylinder Head Includes Guide Seats & Injector Sleeves (Exhaust drilled for horizontal and diagonal mount Manifolds)	
2	EVL-8190		MAK 54GC19	LOCK,Valve(Use w/ EVA-8130 Intake Valve & EVA-8140 Exhaust Valve)	
2	EVL-8195		MAK 54GC28	LOCK,Valve(Use w/ STD Valve & EVR-8325 Rotator)	
2	EVL-8200		MAK 54GC111	LOCK,Valve(Use w/ EVA-8530 Valve)	
2	EVL-8210		MAK 54GC126	LOCK,Valve(Use w/ EVA-8132 Intake Valve & EVA-8141 Exhaust Valve)	
3	EVR-8325	EM83250	MAK 722GC226	ROTATOR(Use w/ EVL-8210 Lock)(Long Life)	
4	EGA-0440		MAK 446GC139B	O-RING,Valve(For .500in Dia. Valve Stem)	
4	EOS-0442		MAK 446GC279	SEAL,Oil Valve(Use w/ ESP-8151 Inner Spring)	
5	ESS-8950		N/A	KIT,Valve Spring Includes Springs (1)ESP-8151 (1)ESP-8160 Rotator Kit (1)ERK-8324	
6	ESP-8160		MAK 575GC1100	SPRING,Outer Valve	MAK 575GC173
7	ESP-8151		MAK 575GC31	SPRING,Inner Valve(Use w/ EOS-0442 Seal)	
8	EVG-2370		MAK 714GB1308P2	GUIDE,Valve(Finished ID)	
8	EVG-2371		MAK 714GB210P4	GUIDE,Valve(Semi-Finished)	
8	EVG-2372		MAK 714GB210P2	GUIDE,Valve(Semi-Finished)	
9	EIS-8340		MAK 12GC129P1	SLEEVE,Injector	

Cylinder Head Assembly

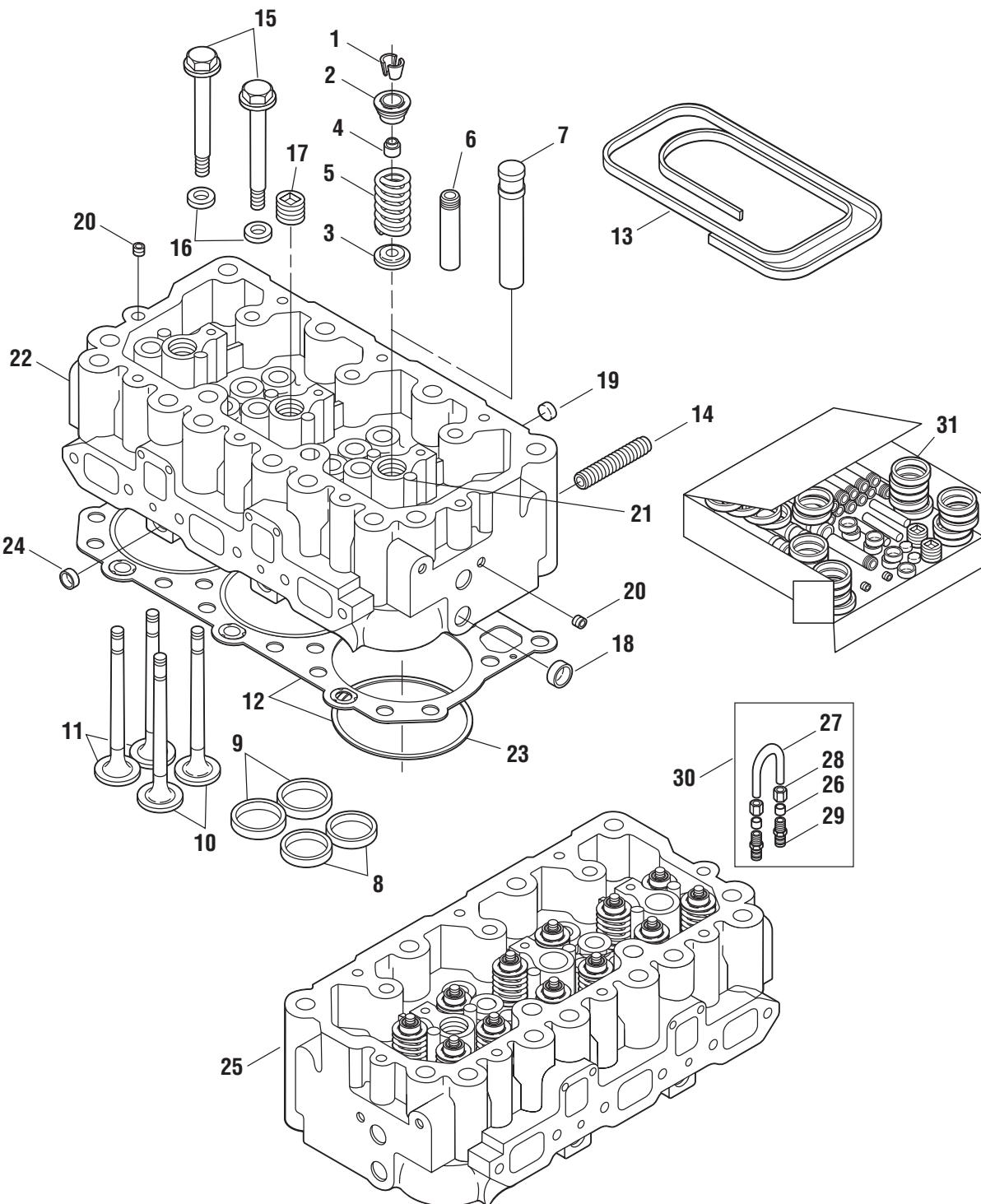


Two Valve Head					
KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
10	EST-0040		MAK 616GC28AP2	STUD,Exhaust Manifold(6 req'd per Head)	MAK 17AX93
10	EST-0041		MAK 616GC28A	STUD,Exhaust Manifold(Long)(Opt)	
11	EST-2650		MAK 616GC116	STUD,Injection Nozzle	
12	EVS-2540-STD		MAK 13GC2247P1	SEAT,Exhaust	
12	EVS-2540-015		MAK 13GC2247P15	SEAT,Exhaust	
12	EVS-2540-031		MAK 13GC2247P31	SEAT,Exhaust	
12	EVS-2540-047		MAK 13GC2247P47	SEAT,Exhaust	
12	EVS-2540-062		MAK 13GC2247P62	SEAT,Exhaust	
13	EVA-8140	EM81400	MAK 688GC2352A	VALVE,Exhaust	
13	EVA-8141	EM81410	MAK 688GC337A	VALVE,Exhaust(Long Life)(Opt)	
14	EVS-2550-STD		MAK 13GC2237	SEAT,Intake	
14	EVS-2550-015		MAK 13GC2237P15	SEAT,Intake	
14	EVS-2550-031		MAK 13GC2237P31	SEAT,Intake	
14	EVS-2550-047		MAK 13GC2237P47	SEAT,Intake	
14	EVS-2550-062		MAK 13GC2237P62	SEAT,Intake	
15	EVA-8130	EM81300	MAK 690GC2187B	VALVE,Intake	
15	EVA-8132	EM81320	MAK 690GC2193	VALVE,Intake(Long Life)(Polished)(Opt)	
16	EGK-8423		MAK 3029-8213C	GASKET,Head(w/o Fire-Ring)(18 Stud)	MAK 553GB3267C
16	EGK-8424		MAK 3029-8197C	GASKET,Head(w/o Fire-Ring)(20 Stud)	MAK 553GB3266B
16	EGK-8425	EM84250	MAK 57GC189A	KIT,Gasket(w/ Fire-Rings)(20 Stud) Includes Fire-Rings (3)EFR-8421	
17	EFR-8421	EM84210	MAK 553GB187B	RING,Fire(ENDT673C/675/676, EM6-300/330)	
18	EST-1600		MAK 610GC1123	STUD,Cylinder Head(20 req'd per Head)	
18	ESC-1601		MAK 400GC33	SCREW,Cylinder Head(Opt)(5/8in-11 x 6in)	
19	EWA-1780		MAK 711GC1100P9	WASHER,Cylinder Head(1-1/8in OD)	
19	EWA-1783		MAK 711GC1100P14	WASHER,Cylinder Head(1in OD)	
20	ENU-2110		MAK 142GC157	NUT,Cylinder Head	
21	ECP-8211		MAK 49AX155	PLUG,Core(Threaded)	
22	ECP-8660		MAK 79AX66Z	PLUG,Core(Cup Type)(1-3/4in Dia.)	
23	EGA-1660		MAK 446GC175	O-RING	
24	EGK-3920		MAK 554GB38	GASKET,Valve Cover(Cork)	
24	EGK-3930		MAK 554GB38A	GASKET,Valve Cover(Rubber)	
25	EPP-3573		MAK 49AX230	PLUG,Pipe(Oil Line)(1/8in)	
26	EPP-3575		MAK 49AX234Z	PLUG,Pipe(1/2in)	
27	EPP-3576		MAK 49AX235	PLUG,Pipe(3/4in)	
28	ESS-0150		MAK 7AX277	SCREW(7/16in-14 x 7/16in)	
29	FNU-0073		MAK 20AX3	NUT	
30	ESK-8951		MAK 57GC278	KIT,Spring & Seal Includes Springs (12)ESP-8151 Seals (12)EOS-0442	
31	EHA-3311		MAK 732GB4397P1	ASSEMBLY,Cylinder Head(Standard Valves) Includes Head Assembly (1)ECH-3310 Springs (6)ESP-8151 (6)ESP-8160 Valves (3)EVA-8130 (3)EVA-8140 Locks (12)EVL-8195 Rotators (6)EVR-8325	
31	EHA-3312(X)		MAK 732GB4397P2	ASSEMBLY,Cylinder Head(Long Life Valves) Includes Head Assembly (1)ECH-3310 Springs (6)ESP-8151 (6)ESP-8160 Valves (3)EVA-8132 (3)EVA-8141 Locks (12)EVL-8210 Rotators (6)EVR-8325	
32	ERK-8324	N/A		KIT,Rotator (Use to Replace EVR-8360 Early Rotator) (Contains Current Rotators and Locks) Includes Rotator (1)EVR-8325 Locks (2)EVL-8195	
33	EGS-3900-046		MAK 590GB1148	GASKET	
34	EGS-3900-054		MAK 590GB223	GASKET	
35	EGS-3900-062		MAK 610GB224	GASKET	
36	EGS-3940		MAK 126SB147	SET,Manifold Gasket(All 2VH / 6 Cylinder Engines) Includes Gaskets (2)EGS-3890-021 (1)EGS-3900-046 (1)EGS-3900-054 (1)EGS-3900-062 (6)EGK-3938 (2)EGS-3890-010	
37	ECH-3310-100	N/A		KIT,Cylinder Head Rebuild Includes Seats (3)EVS-2540-STD (3)EVS-2550-STD Plugs (1)EPP-3573 (2)EPP-3575 (2)EPP-3576 (2)ECP-8660 Guides (6)EVG-2370 Sleeves (3)EIS-8340 Screws (3)ESS-0150	

Cylinder Head Assembly

Four Valve Head

FIGURE 18



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EVL-8205		MAK 54GC25	LOCK, Valve(3/8in Valve Stem) (24 req'd per Head)	
2	EVR-8355		MAK 722GC321	RETAINER(3/8in Valve Stem) (12 req'd per Head)	MAK 722GC311, MAK 722GC312
3	EVR-8327		MAK 722GC313A	ROTATOR(12 req'd per Head)	
4	EGA-0441		MAK 446GC138B	O-RING(7/16in Valve Stem)	
4	EOS-0443		MAK 446GC328	SEAL(3/8in Valve Stem)	MAK 446GC296
5	ESP-8165		MAK 575GC213	SPRING, Valve	
6	EVG-2374		MAK 714GB26	GUIDE(7/16in Valve Stem)(Semi-Finished)	

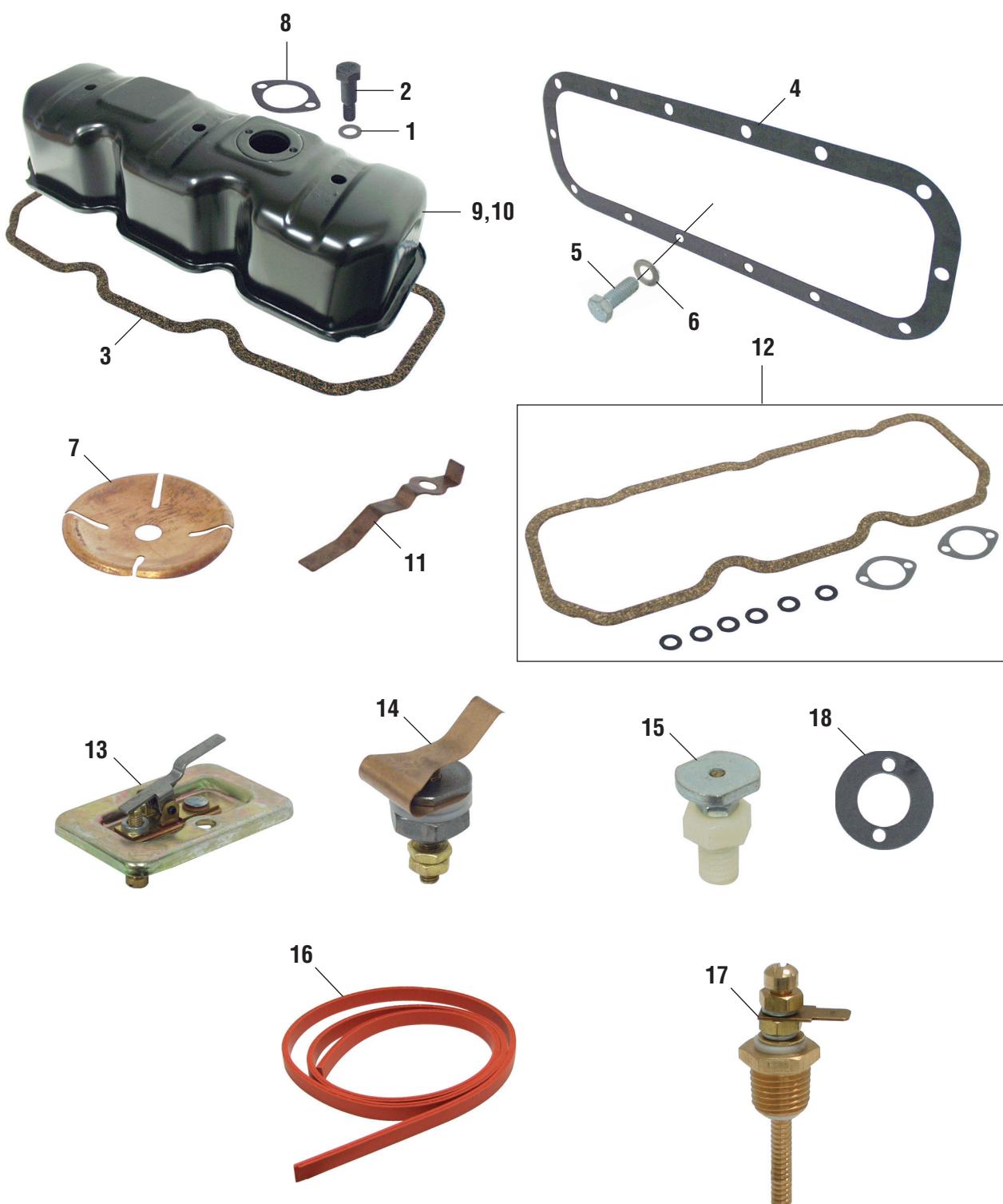
Cylinder Head Assembly

Four Valve Head

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
6	EVG-2378		MAK 714GB26P2	GUIDE(7/16in Valve Stem)(Pre-Reamed)	MAK 714GB217P2
6	EVG-2379		MAK 714GB222P2	GUIDE(3/8in Valve Stem)(Pre-Reamed)	
6	EVG-2386		N/A	GUIDE(3/8in Valve Stem)(Semi-Finished)	
7	EIS-8341		MAK 12GC212A	SLEEVE,Injector(3 req'd per Head)	
7	EIS-8341-020		MAK 12GC212AP20	SLEEVE,Injector(.20in Oversize) (3 req'd per Head)	
8	EVS-2557-STD		MAK 13GC2251P1	SEAT,Intake	
8	EVS-2557-015		MAK 13GC2251P15	SEAT,Intake	
8	EVS-2557-031		MAK 13GC2251P31	SEAT,Intake	
8	EVS-2557-047		MAK 13GC2251P47	SEAT,Intake	
8	EVS-2557-062		MAK 13GC2251P62	SEAT,Intake	
9	EVS-2547-STD		MAK 13GC2264P1	SEAT,Exhaust	
9	EVS-2547-015		MAK 13GC2264P15	SEAT,Exhaust	
9	EVS-2547-031		MAK 13GC2264P31	SEAT,Exhaust	
9	EVS-2547-047		MAK 13GC2264P47	SEAT,Exhaust	
9	EVS-2547-062		MAK 13GC2264P62	SEAT,Exhaust	
10	EVA-8135	EM81350	MAK 690GC2210	VALVE,Intake(3/8in Stem)(6 req'd per Head)	
11	EVA-8145	EM81450	MAK 688GC2378	VALVE,Exhaust(3/8in Stem)(6 req'd per Head)	
12	EGK-8425	EM84250	MAK 57GC189A	KIT,Gasket Includes Fire-Rings (3)EFR-8421	MAK 553GB433A
13	EGK-3426		MAK 554GB321	GASKET,Valve Cover(Silicone Joined Ends)	
13	EGK-3929		MAK 554GB115	GASKET,Valve Cover(Silicone Rubber)	
14	EST-0041		MAK 616GC28A	STUD,Exhaust Manifold (7/16in-14 x 4in Lg)	
15	ESC-1602		MAK 400GC33P4	BOLT,Cylinder Head(7-13/16in Lg)(14 req'd)	
15	ESC-1603		MAK 400GC33P5	BOLT,Cylinder Head(6-3/4in Lg)(6 req'd)	
15	ESC-1604		MAK 400GC33P3	BOLT,Cylinder Head(7-13/16in Lg Tapped Head)	
16	EWA-1780		MAK 711GC1100P9	WASHER(1-1/8in OD)	
16	EWA-1783		MAK 711GC1100P14	WASHER(1in OD)	
17	EPP-3576		MAK 49AX235	PLUG,Pipe	
18	ECP-3486		MAK 79AX68Z	PLUG,Core(1-1/16in Dia.)	
19	ESS-0150		MAK 7AX277	SCREW,Threaded(7/16in-14 x 7/16in)	
20	EPP-3572		MAK 49AX242	PLUG,Pipe(1/16in - 27 NPT)	MAK 49AX179
21	EPN-2647		MAK 183GC2257	PIN,Valve Yoke(Phosphate Coating)	MAK 20706557
21	EPN-2777		MAK 183GC25	PIN,Valve Yoke	
22	ECH-3316		MAK 732GB4484	ASSEMBLY,Cylinder Head(4VH) Includes Seats (6)EVS-2547-STD (6)EVS-2557-STD Sleeves (3)EIS-8341 Pins (6)EPN-2777 Guides (12)EVG-2379 Plugs (2)EPP-3576 (4)ECP-3486 (2)EPP-3572 (3)GCP-3484 (2)ECP-3485 (1)EPP-3574	
23	EFR-8421	EM84210	MAK 553GB187B	RING,Fire	
24	ECP-3485		MAK 79AX63	PLUG,Core(13/16in Dia.)	
25	ECH-3318		MAK 732GB3424	ASSEMBLY,Cylinder Head(4VH) Includes Head Assembly (1)ECH-3316 Valves (6)EVA-8135 (6)EVA-8145 Locks (24)EVL-8205 Rotators (12)EVR-8327 Retainers (12)EVR-8355 Seals (12)EOS-0443 Springs (12)ESP-8165	
26	EGS-3903-005		MAK 52AX47	SEAL,Fuel Crossover Tube	
27	EFR-2326		MAK 207GC178	TUBE,Fuel Return	
28	MNU-4126-004		MAK 63AX3438	NUT	
29	MAF-5213		MAK 63AX3705	FITTING,Connector	MAK 63AX3519
30	ETK-2327		N/A	KIT,Fuel Tube Includes Tube (1)EFR-2326 Connectors (2)MAF-5213 Nuts (2)MNU-4126-004 Seals (2)EGS-3903-005	
31	ECH-3316-101		N/A	KIT,Repair Head Includes Valves (6)EVA-8135 (6)EVA-8145 Sleeves (3)EIS-8341 Locks (24)EVL-8205 Seals (12)EOS-0443 Guides (12)EVG-2379 Seats (6)EVS-2547-STD (6)EVS-2557-STD	
31	ECH-3316-102		N/A	KIT,Rebuild Head Includes Valves (6)EVA-8135 (6)EVA-8145 Locks (24)EVL-8205 Seals (12)EOS-0443 Sleeves (3)EIS-8341 Seats (6)EVS-2547-STD (6)EVS-2557-STD Guides (12)EVG-2379 Springs (12)ESP-8165 Retainers (12)EVR-8355 Rotators (12)EVR-8327 Pins (6)EPN-2777	

Two and Four Valve Head

FIGURE 22

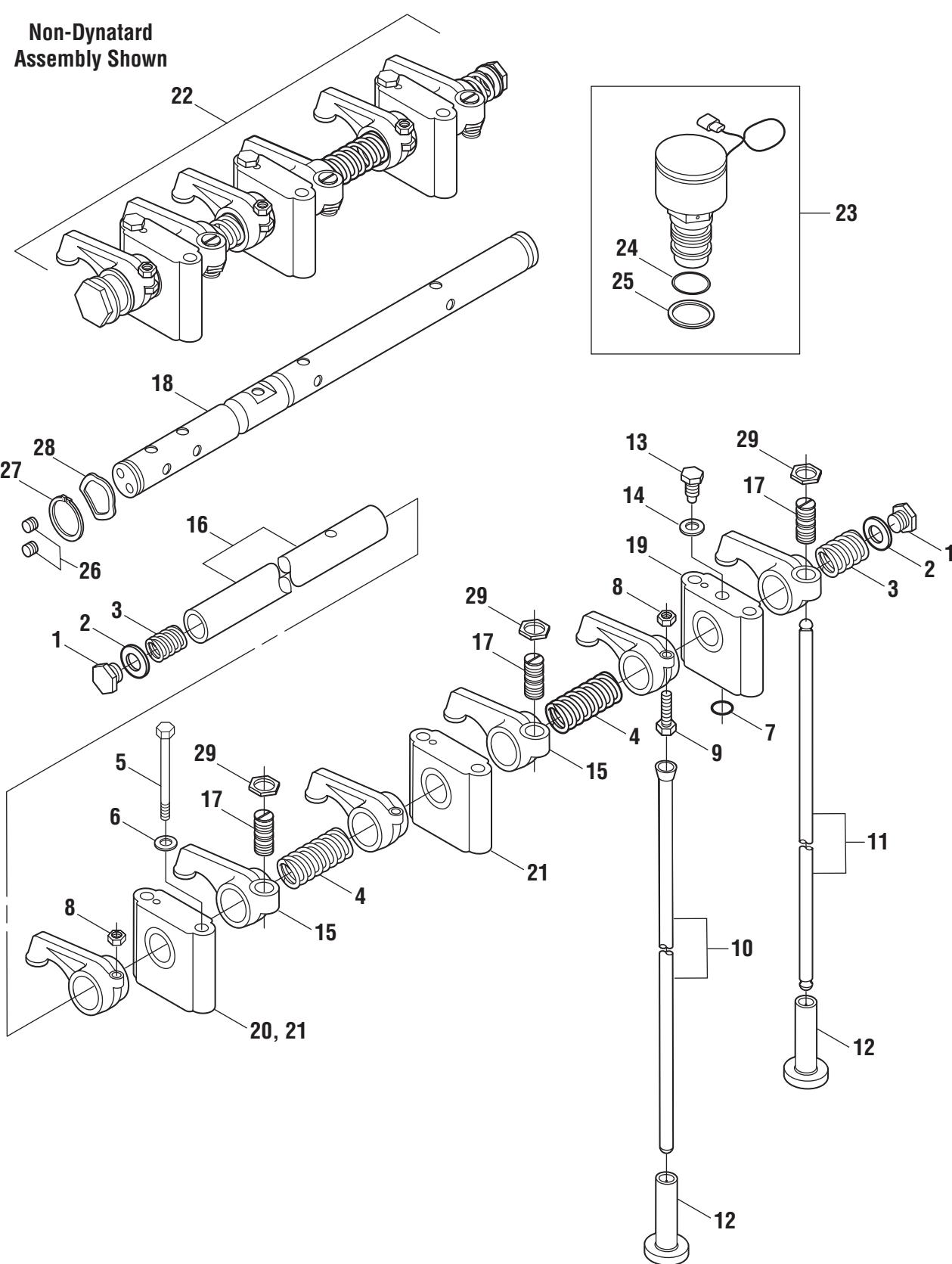


Two and Four Valve Head

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EGS-3890-024		MAK 56AX326	WASHER	
2	ESC-8406		MAK 421GC121A	SCREW(3/8in-16 x 1-1/2in)	
3	EGK-3920		MAK 554GB38	GASKET,Valve Cover(Cork)(2VH)	
3	EGK-3930		MAK 554GB38A	GASKET,Valve Cover(Rubber)(2VH)	
4	EGS-3900-037		MAK 601GB31D	GASKET,Lifter Cover	
5	ESC-0035		MAK 6AX1359X	SCREW(3/8in-16 x 1in)	
5	ESC-0854		MAK 6AX1591	SCREW(3/8in-16 x 3/4in)(Flanged Head)(Locking)	
6	EWA-0059		MAK 37AX7U	WASHER	
7	MSC-1247		MAK 2MR152A	CONTACT	
8	EGS-3890-040		MAK 590GB1176A	GASKET	
8	EGK-3935		MAK 590GB2111A	GASKET(Current)	
9	EVC-2024		MAK 337GB354P2	COVER,Valve(Forward)(w/ Breather Mounting)	
9	EVC-2026		MAK 337GB471	COVER,Valve(Forward/Rear)(w/o Breather Mounting)	
10	EVC-2025		MAK 337GB354P25	COVER,Valve(Rear)(w/ Breather Mounting)	
10	EVC-2027		MAK 337GB354P10	COVER,Valve(Rear)(w/ Breather Mounting)(Manifold)	
11	MSC-1248		MAK 2MR289	CONTACT	
12	EGS-3832		N/A	SET,Gasket Valve Cover Includes Gaskets (2)EGS-3890-040 (2)EGK-3920 Washers (6)EGS-3890-024	
12	EGS-3833		N/A	SET,Gasket Valve Cover Includes Gaskets (2)EGK-3930 (2)EGK-3935 Washers (6)EGS-3890-024	
13	MSC-1249		MAK 1MR2358	SWITCH,Dynatard	
14	MSW-2216		MAK 43MR210A	TERMINAL,Switch	
15	MSW-1243		MAK 43MR220	TERMINAL,Engine Brake	
16	EGK-3426		MAK 554GB321	GASKET,Valve Cover(Viton)(Joined Ends)(4VH)	
16	EGK-3929		MAK 554GB115	GASKET,Valve Cover(Silicone Rubber)(4VH)	
17	MSW-1239		MAK 43MR213P2	TERMINAL,Engine Brake	MAK 43MR213
18	EGS-3890-036		MAK 590GB177	GASKET,Breather(Early)(Cork)	

Two Valve Head

FIGURE 21

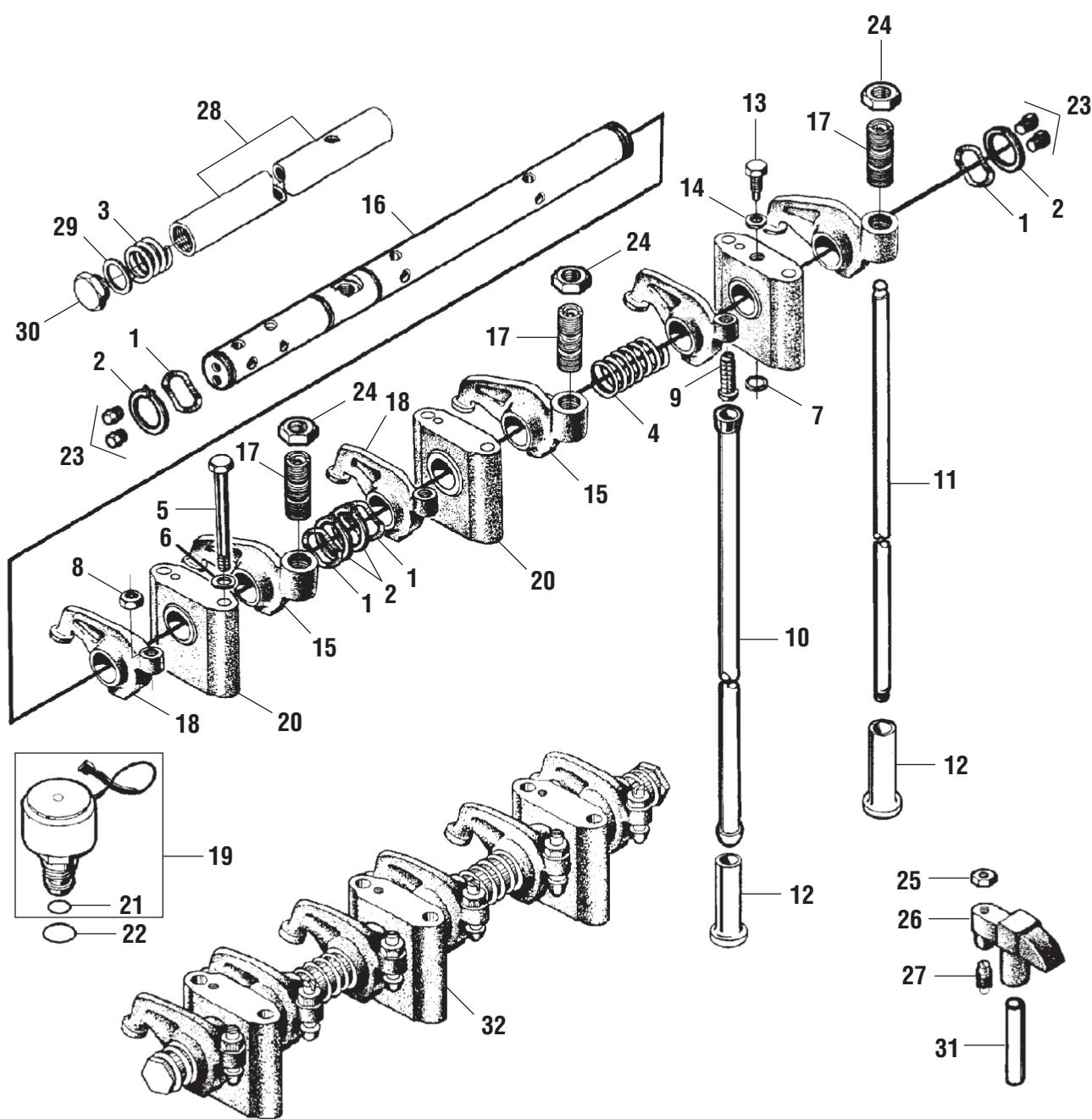
Non-Dynatard
Assembly Shown

Two Valve Head

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ECP-3545		MAK 227GB11	CAP	
2	EWA-3546		MAK 37AX419	WASHER	
3	ESP-8185		MAK 574GC14A	SPRING	
4	ESP-8186		MAK 574GC15	SPRING	
5	ESC-0024		MAK 416GC115	SCREW(7/16in-14 x 4)	
6	EWA-1777		MAK 711GC1100P11	WASHER	
7	EGA-0441		MAK 446GC138B	O-RING	
8	ENU-0072		MAK 21AX750	NUT,Adjusting	
9	ESC-8345		MAK 417GC25A	SCREW,Adjusting	
10	EPR-3550		MAK 369GC314A	PUSHROD(6 Cylinder, 2VH Intake) (Also Exhaust on Non-Dynatard Engines)	
11	EPR-3551		MAK 369GC256A	PUSHROD(6 Cylinder, 2VH Exhaust) (w/ Dynatard)	
12	EML-8582		MAK 72GC347	LIFTER	
12	EML-8583		MAK 72GC357	LIFTER(Current,w/o Oil Hole)	
13	ESC-8407		MAK 421GC171	SCREW,Locking(3/8in-16 x 7/8in)	
14	FWA-0050		MAK 36AX3	WASHER	
15	ERA-3541		MAK 44GB316A	ROCKER Arm,Exhaust(Dynatard)	
15	ERA-3544		MAK 44GB2169B	ROCKER Arm,Exhaust(Non-Dynatard)	
16	ESH-3556		MAK 466GC479	SHAFT,Rocker Arm (Non-Dynatard)	MAK 446GC247B
17	ELA-3543		MAK 73GC27D	ADJUSTER,Lash(Dynatard Assembly only)	MAK 73GC21A
18	ESH-3557		MAK 466GC377A	SHAFT,Rocker Arm(Dynatard)	
19	EBK-3548		MAK 146GB1113A	BRACKET,Support(w/ Oil Hole)	
20	EBK-3547		MAK 146GB323A	BRACKET,Support(w/o Oil Hole)	
21	EBK-3549		MAK 146GB1112A	BRACKET,Support(w/o Oil Hole) (w/ Dynatard Term Mounting)	
22	ERA-3535		MAK 466GC420	ASSEMBLY,Rocker(Complete) Includes Washers (1)FWA-0050 (2)EWA-3546 Nuts (6)ENU-0072 Rocker Intakes (3)ERA-3542 Rocker Arms (3)ERA-3544 Caps (2)ECP-3545 Brackets (2)EBK-3547 (1)EBK-3548 Shaft (1)ESH-3556 Springs (2)ESP-8185 (2)ESP-8186 Screws (6)ESC-8345 (1)ESC-8407	
22	ERA-3536		MAK 466GC427A	ASSEMBLY,Rocker(Complete)(Dynatard) Includes Washers (1)FWA-0050 (4)EWW-3539 Nuts (3)ENU-0072 (3)ENU-3538 O-Rings (4)ERI-2708 Rocker Intakes (3)ERA-3542 Rocker Arms (3)ERA-3541 Adjusters (3)ELA-3543 Brackets (1)EBK-3547 (1)EBK-3548 (1)EBK-3549 Shaft (1)ESH-3557 Plugs (4)EPP-3572 Spring (1)ESP-8186 Screws (3)ESC-8345 (1)ESC-8407	
23	EKT-1170		MAK 57GC246	KIT,Solenoid Includes O-Rings (1)EGA-1177 (1)ERG-1176 Adapter (1)EAD-1175 Solenoid (1)ESO-1171	
24	EGA-1177		MAK 446GC1149	O-RING	
25	ERG-1176		MAK 590GB1327P1	RING	
26	EPP-3572		MAK 49AX242	PLUG,Rocker Shaft(Dynatard)	
27	ERI-2708		MAK 97AX73	RING,Retaining(Dynatard)	
28	EWW-3539		MAK 579GC148A	WASHER,Wave(Dynatard)	
29	ENU-3538		MAK 148GC19	NUT,Adjusting	

Rocker Arm Assembly**Four Valve Head**

FIGURE 20

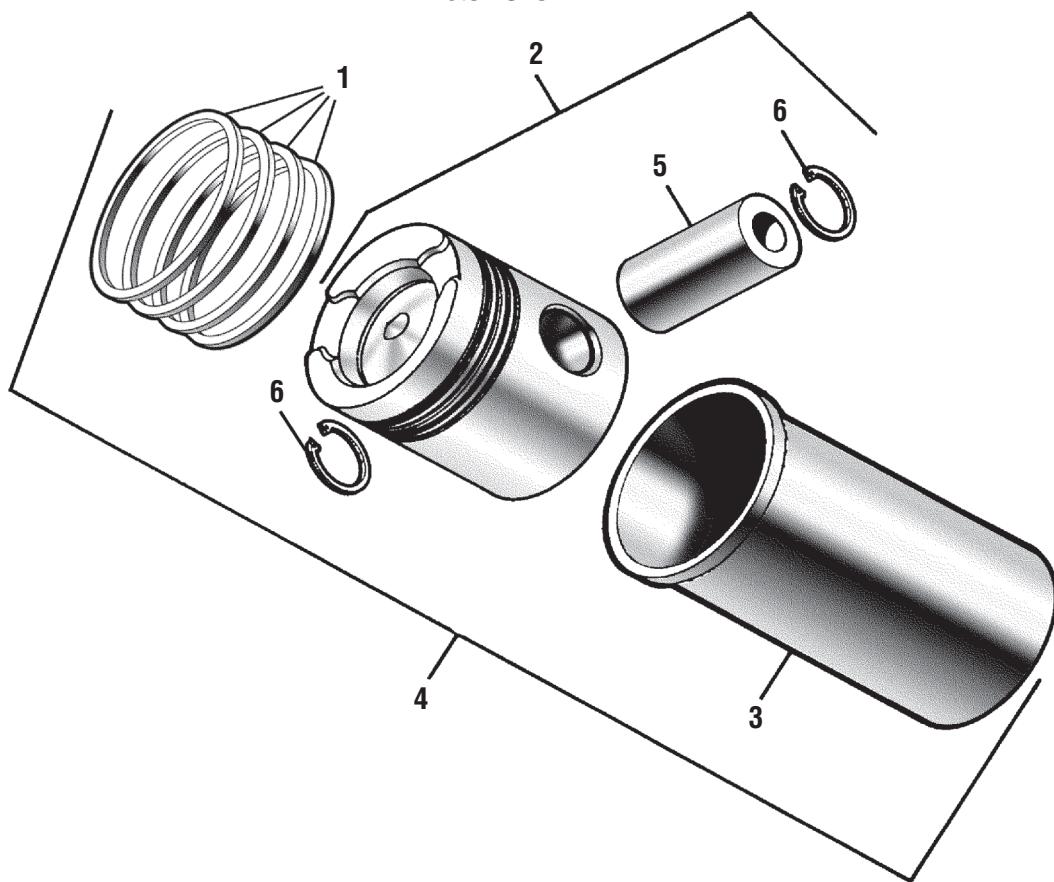


Four Valve Head

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EWW-3539		MAK 579GC148A	WASHER,Wave	
2	ERI-2708		MAK 97AX73	RING,Locking	
3	ESP-8185		MAK 574GC14A	SPRING	
4	ESP-8186		MAK 574GC15	SPRING	
5	ESC-0024		MAK 416GC115	SCREW(7/16in-14 x 4)	MAK 4AX262
5	ESC-0822		MAK 416GC116	SCREW(7/16in-14 x 3)	MAK 6AX1383X
6	EWA-1777		MAK 711GC1100P11	WASHER	
7	EGA-0441		MAK 446GC138B	O-RING	
8	ENU-0072		MAK 21AX750	NUT,Adjusting	
9	ESC-8345		MAK 417GC25A	SCREW,Adjusting	
10	EPR-3553		MAK 369GC314AP2	PUSHROD,Intake and Exhaust(Non-Dynatard)	
11	EPR-3552		MAK 369GC255A	PUSHROD,Exhaust(w/ Dynatard)	
12	EML-8582		MAK 72GC347	LIFTER	
12	EML-8583		MAK 72GC357	LIFTER(Current)(w/o Oil Hole)	
13	ESC-8407		MAK 421GC171	SCREW,Locking(3/8in-16 x 7/8in)	
14	FWA-0050		MAK 36AX3	WASHER	
15	ERA-3462		MAK 44GB459B	ARM,Exhaust Rocker(Dynatard)	
16	ESH-3461		MAK 466GC458	SHAFT,Rocker Arm(Dynatard)	
17	ELA-3543		MAK 73GC27D	ADJUSTER,Lash(Dynatard Assembly only)	MAK 73GC21A
18	ERA-3529		MAK 44GB458AP2	ARM,Intake Rocker	MAK 44GB327A
19	EKT-1103		MAK 57GC198	KIT,Solenoid(12 VDC) Includes O-Ring (1)EGA-1177	
20	EBK-3526		MAK 146GB332P2	BRACKET,Support (w/o Oil Hole)(2 req'd per Head)	MAK 146GB328P2
21	EGA-1177		MAK 446GC1149	O-RING(Dynatard Solenoid)	
22	ERG-1176		MAK 590GB1327P1	RING	
23	EPP-3572		MAK 49AX242	PLUG,Rocker Arm Shaft(1/16in-27 NPT)	
24	ENU-3538		MAK 148GC19	NUT,Adjusting	
25	ENU-0275		MAK 21AX873	NUT,Valve Yoke Screw	
26	EVY-3466		MAK 891GC217	YOKE,Valve(Button Design)	
27	ESC-8344		MAK 421GC257A	SCREW,Yoke Adjusting	MAK 421GC189
28	EBK-3558		MAK 466GC391	SHAFT,Rocker Arm (Non-Dynatard)	MAK 466GC390
29	EWA-3546		MAK 37AX419	WASHER	
30	ECP-3545		MAK 227GB11	CAP	
31	EPN-2647		MAK 183GC2257	PIN,Yoke Guide(Phosphate Coating)	MAK 20706557
31	EPN-2777		MAK 183GC25	PIN,Yoke Guide	
32	ERA-3463		MAK 466GC444C	ASSEMBLY,Rocker(Dynatard) Includes Shaft (1)ESH-3461 Rocker Arms (3)ERA-3529 (3)ERA-3462 Brackets (1)EKB-3525 (2)EBK-3526 Washers (4)EWW-3539 (1)FWA-0050 Rings (4)ERI-2708 Plugs (4)EPP-3572 Screws (1)ESC-8409 (3)ESC-8345 Spring (1)ESP-8186 Nuts (3)ENU-3538 (3)ENU-0072 Adjusters (3)ELA-3543 Solenoid Kit (1)EKT-1103	

FIGURE 17

2VH Piston Shown

**Please note:**

- * Cylinder Kit breakdowns listed are for standard Kits only.
- * If you require Kits with oversized sleeves, please call for correct dash numbers.

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EPR-1810		MAK 353GC241JP1	RING, Set(Bore Dia. 4.875in) (Use w/ EPA-8071 Piston Kit) Includes (2)Keystone Chrome (1)Keystone Ductile, Tapered Face (1)3/16in Oil, Narrow Rail	
1	EPR-1810A		MAK 353GC241JP1	RING, Set(Premium Grade)(Bore Dia. 4.875in) Includes (2)Keystone Chrome (1)Keystone Ductile, Tapered Face (1)3/16in Oil, Narrow Rail	
1	EPR-1810C		MAK 353GC241BP1	RING, Set(Bore Dia. 4.875in) Includes (2)Keystone Chrome (1)Keystone Ductile, Tapered Face (1)3/16in Oil, Narrow Rail	
1	EPR-1816		MAK 353GC280B	RING, Set(Longlife)(Bore Dia. 4.875in) (Use w/ EPA-8074, EPA-8075 & EPA-8076 Piston Kits) Includes (2)Keystone Chrome, Plated Lower Side (1)Keystone Chrome, Tapered Face (1)3/16in Oil, Wide Rail	
1	EPR-1820		MAK 353GC241SP1	RING, Set(Premium Grade)(Bore Dia. 4.875in) (Use w/ EPA-8071, EPA-8074, EPA-8075, EPA-8076 Piston Kits) Includes (2)Keystone Chrome (1)Keystone Ductile, Tapered Face (1)3/16in Oil, Wide Rail	

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EPR-1820C		MAK 353GC241CP1	RING,Set(Bore Dia. 4.875in) Includes (2)Keystone Chrome (1)Keystone Ductile, Tapered Face (1)3/16in Oil, Wide Rail	
1	EPR-1826		MAK 353GC2139	RING,Set(Bore Dia. 4.875in) (Use w/ EPA-8074, EPA-8075 & EPA-8076 Piston Kits) Includes (2)Keystone Plasma (1)Keystone Chrome, Tapered Face (1)3/16in Oil, Wide Rail	
1	EPR-1840		MAK 353GC240CP1	RING,Set(Bore Dia. 4.875in) (Use w/ EPA-8071 and EPA-8091 Piston Kits) Includes (2)Keystone Chrome (1)Keystone Ductile, Tapered Face (1)3/16in Oil, Wide Rail	
1	EPR-7951		MAK 353GC253AP1	RING,Set)(Bore Dia. 4.875in) Includes (2)Keystone Chrome (1)Flat Ductile, Tapered Face (1)3/16in Oil, Wide Rail	
1	EPR-8300		MAK 353GC2121	RING,Set(STD)(Bore Dia. 5.000in) (Use w/ EPA-8081 Piston Kit) Includes (2)Keystone Chrome (1)Flat Ductile, Tapered Face (1)3/16in Oil, Wide Rail	
1	EPR-8310		MAK 353GC226P1	RING,SET(Bore Dia. 4.875in) Includes (2)Keystone Chrome (1)Flat Ductile, Tapered Face (2)3/16in Oil, Wide Rail	
2	EPA-8071		MAK 240GC1550AP1	KIT,Piston(2VH)(4 Ring)(Bore Dia. 4.875in) (15.0:1 Compression Ratio) (Pin Dia. 2in) Includes Pin, Retaining Rings, 1 pc. Piston	
2	EPA-8074		MAK 57GC283A	KIT,Piston(2VH)(4 Ring)(Long Life)(Bore Dia. 4.875in) (15.0:1 Compression Ratio)(Pin Dia. 2in) Includes Pin, Retaining Rings, 1 pc. Piston	
2	EPA-8075		MAK 57GC282A	KIT,Piston(2VH)(4 Ring)(Bore Dia. 4.875in) (Compression Ratio 17.1:1)(Pin Dia. 2in) Includes Pin, Retaining Rings, 1 pc. Piston	
2	EPA-8076		MAK 215SB228	KIT,Piston(4VH)(4 Ring)(Pin Dia. 2in)(Bore Dia. 4.875in) Includes Pin, Retaining Rings, 1 pc. Piston	
2	EPA-8091		MAK 240GC1521CP1	KIT,Piston(2VH)(4 Ring)(Bore Dia. 4.875in) (15.0:1 Compression Ratio)(Pin Dia. 1-7/8in) Includes Pin, Retaining Rings, 1 pc. Piston	
3	ESL-8262-006		MAK 509GC3155P6	SLEEVE,Cylinder(Not Beaded)(Bore Dia. 5.000in)	
3	ESL-8280-STD		MAK 509GC284AP1	SLEEVE,Cylinder(Bore Dia. 4.875in) (Turbo Engine using Head Gasket w/ Fire-Rings)	
3	ESL-8280-002		MAK 509GC284AP2	SLEEVE,Cylinder(Bore Dia. 4.875in) (Turbo Engine using Head Gasket w/ Fire-Rings)	
3	ESL-8280-004		MAK 509GC284AP4	SLEEVE,Cylinder(Bore Dia. 4.875in) (Turbo Engine using Head Gasket w/ Fire-Rings)	
3	ESL-8280-006		MAK 509GC284AP6	SLEEVE,Cylinder(Bore Dia. 4.875in) (Turbo Engine using Head Gasket w/ Fire-Rings)	
3	ESL-8280-008		MAK 509GC284AP8	SLEEVE,Cylinder(Bore Dia. 4.875in) (Turbo Engine using Head Gasket w/ Fire-Rings)	
3	ESL-8280-010		MAK 509GC284AP10	SLEEVE,Cylinder(Bore Dia. 4.875in) (Turbo Engine using Head Gasket w/ Fire-Rings)	
3	ESL-8280-012		MAK 509GC284AP12	SLEEVE,Cylinder(Bore Dia. 4.875in) (Turbo Engine using Head Gasket w/ Fire-Rings)	
3	ESL-8280-015		MAK 509GC284AP15	SLEEVE,Cylinder(Bore Dia. 4.875in) (Turbo Engine using Head Gasket w/ Fire-Rings)	
3	ESL-8280-020		MAK 509GC284AP20	SLEEVE,Cylinder(Bore Dia. 4.875in) (Turbo Engine using Head Gasket w/ Fire-Rings)	
3	ESL-8280-030		MAK 509GC284AP30	SLEEVE,Cylinder(Bore Dia. 4.875in) (Turbo Engine using Head Gasket w/ Fire-Rings)	

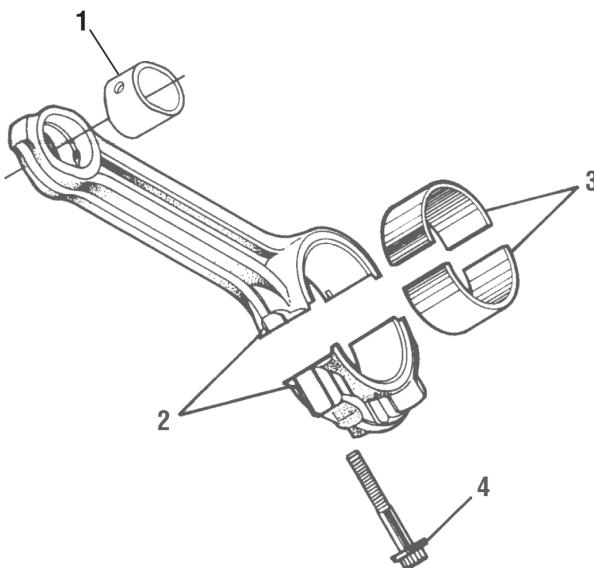
Please see following page for keys 4-6.

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
4	ELK-8900-(*)		MAK 57GC366BP(*)	KIT,Cylinder(15.0:1 Compression Ratio) Includes Sleeve (1)ESL-8280-STD Piston (1)EPA-8071 Ring Set (1)EPR-1820C (6 req'd per Engine)	
4	ELK-8901-(*)		MAK 57GC366BP(*)	KIT,Cylinder(Premium)(15.0:1 Compression Ratio) Includes Sleeve (1)ESL-8280-STD Piston (1)EPA-8071 Ring Set (1)EPR-1810 (6 req'd per Engine)	
4	ELK-8904-(*)		MAK 57GC376P(*)	KIT,Cylinder(Longlife)(2VH)(15.0:1 Compression Ratio) Includes Sleeve (1)ESL-8280-STD Piston (1)EPA-8074 Ring Set (1)EPR-1816 (6 req'd per Engine)	
4	ELK-8905-(*)		MAK 57GC355BP(*)	KIT,Cylinder Includes Sleeve (1)ESL-8280-STD Piston (1)EPA-8075 Ring Set (1)EPR-1816 (6 req'd per Engine)	
4	ELK-8906-(*)		MAK 57GC368AP(*)	KIT,Cylinder(4VH) Includes Sleeve (1)ESL-8280-STD Piston (1)EPA-8076 Ring Set (1)EPR-1816 (6 req'd per Engine)	
5	EPN-8021		MAK 182GC1356P3	PIN,Piston	
6	ERI-8022		MAK 97AX124	RING,Retaining	

Please note:

- * Cylinder Kit breakdowns listed are for standard Kits only.
- * If you require Kits with oversized sleeves, please call for correct dash numbers.

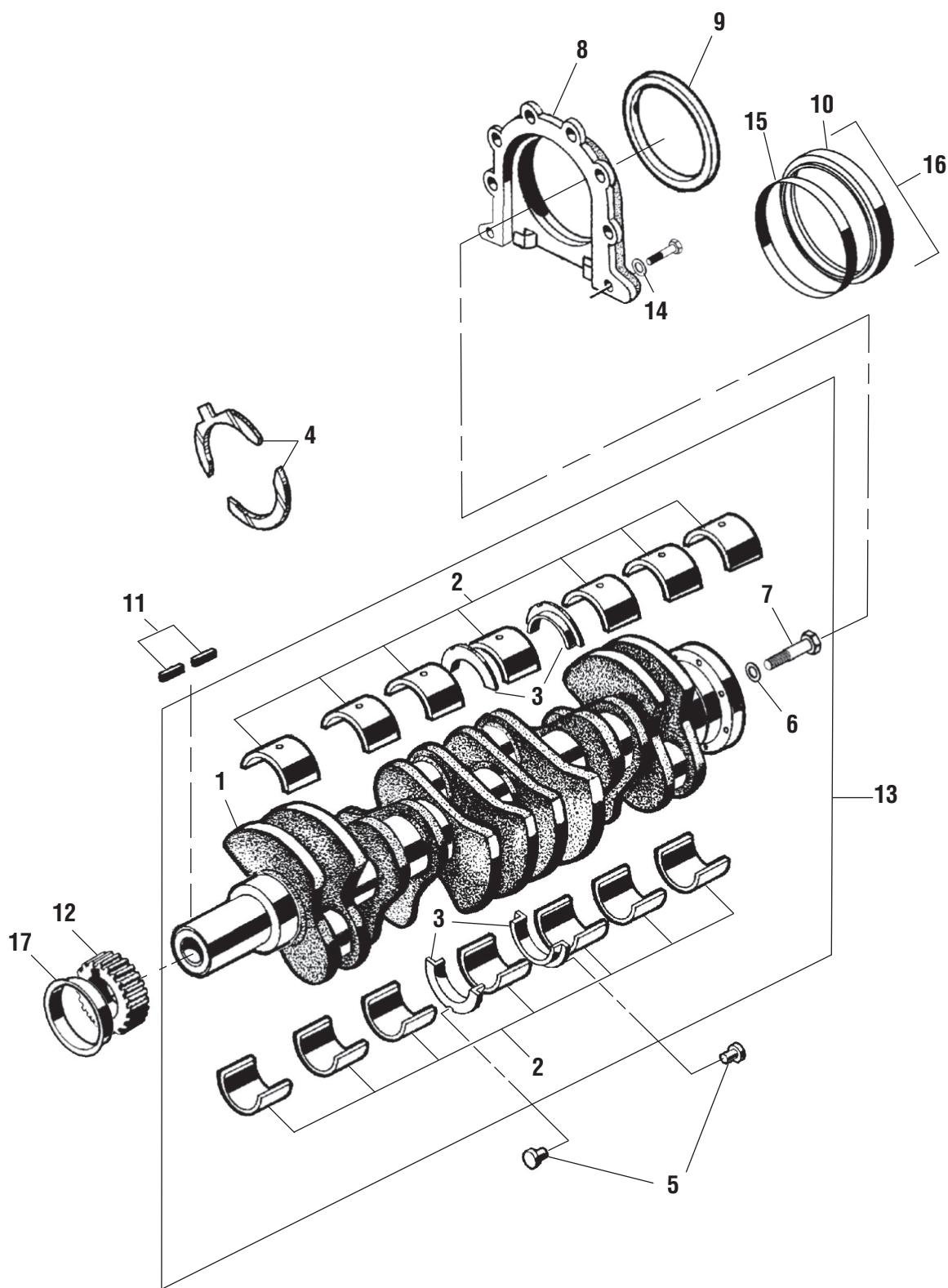
FIGURE 10



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EBG-8020		MAK 187GB138	BUSHING,Pin(For 2in Pin)	
2	ECR-2085		MAK 367GC3219P2	ROD,Connecting(Uses EBG-8330-(*) Bearing) (May be used to replace MAK 367GC3170 Early Rods in sets only) Includes Screws (2)ESC-2090 Bushing (1)EBG-8020	
3	+EBG-8330-STD		MAK 62GB2382	BEARING,Connecting Rod(Pair) (END673/707/711, ENDT673/675/676) (Used in ECR-2085 Connecting Rod) (6 req'd per Engine)	
3	+EBG-8330-010		MAK 62GB2382P10	BEARING,Connecting Rod(Pair) (END673/707/711, ENDT673/675/676) (Used in ECR-2085 Connecting Rod) (6 req'd per Engine)	
3	+EBG-8330-020		MAK 62GB2382P20	BEARING,Connecting Rod(Pair) (END673/707/711, ENDT673/675/676) (Used in ECR-2085 Connecting Rod) (6 req'd per Engine)	
3	+EBG-8330-030		MAK 62GB2382P30	BEARING,Connecting Rod(Pair) (END673/707/711, ENDT673/675/676) (Used in ECR-2085 Connecting Rod) (6 req'd per Engine)	
3	+EBG-8331-STD		MAK 62GB2393P1	BEARING,Connecting Rod (E6-350/4VH and Late E6/2VH) (Pair: (1)Upper (1)Lower)(Not Interchangeable) (Used in ECR-2086 Connecting Rod)(6 req'd per Engine)	
3	+EBG-8331-010		MAK 62GB2393P10	BEARING,Connecting Rod (E6-350/4VH and Late E6/2VH) (Pair: (1)Upper (1)Lower)(Not Interchangeable) (Used in ECR-2086 Connecting Rod)(6 req'd per Engine)	
3	+EBG-8331-020		MAK 62GB2393P20	BEARING,Connecting Rod (E6-350/4VH and Late E6/2VH) (Pair: (1)Upper (1)Lower)(Not Interchangeable) (Used in ECR-2086 Connecting Rod)(6 req'd per Engine)	
3	+EBG-8331-030		MAK 62GB2393P30	BEARING,Connecting Rod (E6-350/4VH and Late E6/2VH) (Pair: (1)Upper (1)Lower)(Not Interchangeable) (Used in ECR-2086 Connecting Rod)(6 req'd per Engine)	
4	ESC-2090		MAK 396GC139	SCREW,Connecting Rod(All E6 Engines) (5/8in-18 x 2-1/2in)(2 req'd per Rod)	

+ High Performance available by adding (HP) to the end of the PAI Reference number when placing your order.

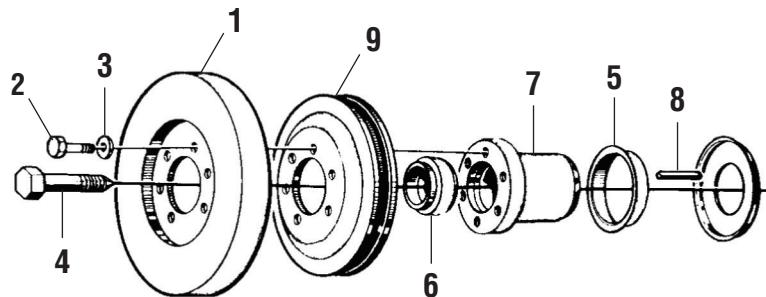
FIGURE 14



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1		EM21240	MAK 456GC5113P1	CRANKSHAFT	
2	+EMS-8570-P1		MAK 215SB72CP1	KIT,Main Bearing(STD)	
2	+EMS-8570-P10		MAK 215SB72CP2	KIT,Main Bearing(.010in Under)	
2	+EMS-8570-P20		MAK 215SB72CP3	KIT,Main Bearing(.020in Under)	
2	+EMS-8570-P30		MAK 215SB72CP4	KIT,Main Bearing(.030in Under)	
2	+EMS-8575-P1		MAK 215SB72D	KIT,Main Bearing(STD) Includes Thrust Washer Kit	
2	+EMS-8575-P10		MAK 215SB72DP2	KIT,Main Bearing(.010in Under) Includes Thrust Washer Kit	
2	+EMS-8575-P20		MAK 215SB72DP3	KIT,Main Bearing(.020in Under) Includes Thrust Washer Kit	
2	+EMS-8575-P30		MAK 215SB72DP4	KIT,Main Bearing(.030in Under) Includes Thrust Washer Kit	
3	+EWA-2761-STD		MAK 57GC279	KIT,Thrust Washer(STD) Includes Pin (1)EPN-2762	
3	EWA-2761-002		MAK 714GC216P2	KIT,Thrust Washer(.002in Over) Includes Pin (1)EPN-2762	
4	EBK-2769-STD		MAK 57GC2110	KIT,Washer Includes Washers (1)EWA-2766-STD (1)EWA-2768-STD	
5	EPN-2762		MAK 183GC23	PIN,Lock(2 req'd)(Use w/ Thrust Washer Kit)	
6	EWA-1780		MAK 711GC1100P9	WASHER,Flywheel(6 req'd) (1-1/8in OD x 5/8in ID x 3/16in thk)	
6	EWA-1782		MAK 711GC1146	WASHER,Flywheel(6 req'd) (1-1/8in OD x 5/8in ID x 1/8in thk)(Opt)	
7	ESC-1610		MAK 419GC113B	SCREW,Flywheel(6 req'd) (5/8in-18 x 1-3/4in)	
8	ERE-7970		MAK 759GB429	RETAINER,Rear Seal(Neoprene Seal) (ESC-2192 Pan Bolts, 1/2in)	
8	ERE-7972		MAK 759GB430	RETAINER,Rear Seal(Neoprene Seal, Flanged Crank) (ESC-2192 Pan Bolts, 1/2in)	
8	ERE-7973		MAK 759GB431	RETAINER,Rear Seal(Neoprene Seal) (ESC-0015 Pan Bolts, 3/8in)	
9	ESE-3340-STD		MAK 446GC25P1	SEAL,Rear Crankshaft(Lead)(.125in Dia.)	
9	ESE-3340-002		MAK 446GC25P2	SEAL,Rear Crankshaft(Lead)(.156in Dia.)	
9	ESE-7960	EM79600	MAK 446GC238B	SEAL,Rear Crankshaft(Neoprene) (Use w/o Wear Ring)	NAT L2297V
9	ESE-7969	EM79650	MAK 446GC310P10	SEAL,Rear Crankshaft(Teflon)	
10	ESE-7965		MAK 446GC235A	SEAL,Rear Crankshaft(Neoprene) (Use w/ Wear Ring)	NAT 336665H
11	EKY-2640		MAK 42AX550	KEY,Hub	
11	EKY-2641		MAK 42AX620	KEY,Timing Gear	
12	EGE-2585		MAK 670GB239	GEAR,Timing	
13		EM21250	MAK 456GC2125	KIT,Crankshaft(2VH, 6 Cylinder) Includes Crankshaft (1)EM21240 Rod Bearings (6)EBG-8330-STD Main Bearing Kit (1)EMS-8575-STD Screws (6)ESC-1610 Washers (6)EWA-1782	
13		EM21260	MAK 456GC2139	KIT,Crankshaft(4VH, 6 Cylinder) Includes Crankshaft (1)EM21240 Rod Bearings (6)EBG-8331-STD Main Bearing Kit (1)EMS-8575-STD Screws (6)ESC-1610 Washers (6)EWA-1782	
14	EWA-0049		MAK 36AX22	WASHER(5/16in ID)(8 req'd)	
15	ERG-3790		MAK 532GC220B	RING,Wear(Rear Crankshaft)	NAT JJ2051
15	ERG-3791		MAK 532GC222A	RING,Wear(Rear Crankshaft) (Use w/ Flanged Crank)	NAT JV2088
16	EKT-3800		MAK 57GC186A	KIT,Seal & Wear Ring Includes Seal (1)ESE-7965 Wear Ring (1)ERG-3790	NAT 5645
16	EKT-3801		MAK 57GC187A	KIT,Seal & Wear Ring Includes Seal (1)ESE-7965 Wear Ring (1)ERG-3791	NAT 5039
17	ERG-3792		MAK 1458-99325	RING,Wear(Front Crankshaft Hub)	NAT 99325

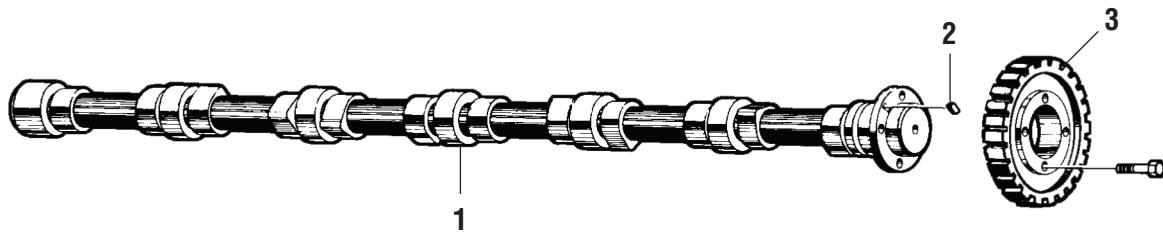
+High Performance available by adding (HP) to the end of the PAI Reference number when placing your order.

FIGURE 16



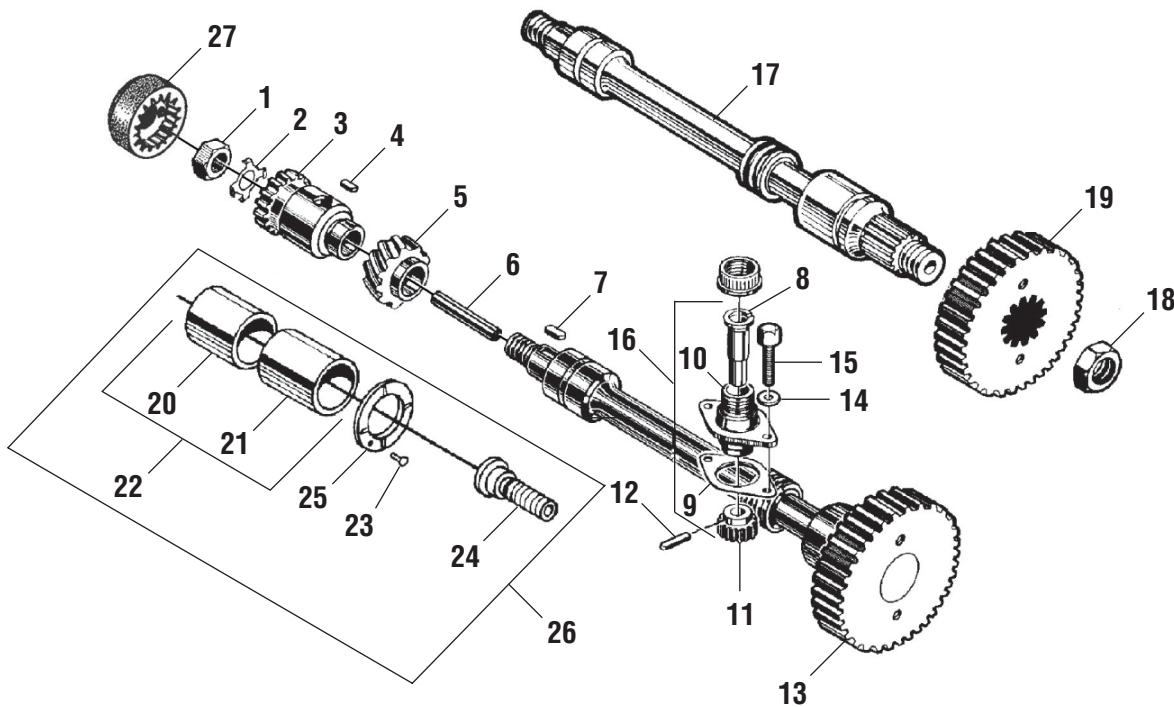
KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EHD-8585		MAK 404GB471	DAMPER,Harmonic(Non-Intercooled w/ Brake) (Except MB Chassis)(Graduated Scale) (Requires use of MAK 796GB271P1 Indicator) (Viscous END707, END711, END673A, ENDT673C)	
1	EHD-8586		MAK 404GB472	DAMPER,Harmonic(Intercooled)(All Chassis) (Graduated Scale) (Requires use of MAK 796GB271P1 Indicator) (Viscous ENDT676, ENDTB676)	
1	EHD-8587		MAK 404GB469	DAMPER,Harmonic(Non-Intercooled) (Except MB Chassis)(Pointer) (Requires use of MAK 796GB317P4 Indicator) (Viscous ET673E, ETB673, ETY673E, ETZ673, ETZ673B, ETZ673C, ETZB673C, ETZ673E, E6-200, EM6-231, E6-235, EM6-237, EME6-237, E6-250, E6-260, ENDT675, ENDTB675, ETAB675, ETY675, ETYB675, ETZ675, ETZB675)	
1	EHD-8588		MAK 404GB470	DAMPER,Harmonic(Intercooled) (Except MC & MR Chassis)(Pointer) (Requires use of MAK 796GB317P4 Indicator) (Viscous ETA673A, ETAY673A, ETAYB673A, ETAZ673, ETAZ673A, ETAZB673, ETAZB673A, ETA676, ETAB676, ETAB676B, ENDT676, ENDTB676B, EM6-250, EMC6-250L, EM6-250L-4VH, EM6-275L, EM6-275R, E6-275-4VH, EM6-275-4VH, EM6-275L-4VH, EM6-285, EME6-285, EM6-300, EM6-300R, E6-300-4VH, EM6-300-4VH, EME6-310, E6-315, E6-320, E6-330, E6-350, E6-350R, E6-350-4VH, EC6-350-4VH)	
2	ESC-0028		MAK 421GC1139	SCREW(7/16in-14 x 1-1/8in)	MAK 6AX819
3	EWA-1772		MAK 35AX1361U	WASHER,Hub(Long)	
4	ESC-8408		MAK 436GC16	SCREW,Hub(7/8in-14 x 3in)	
5	ERG-3792		MAK 1458-99325	RING,Wear(Front Crankshaft Hub) (May be used w/ EOS-8820 Seal and EOS-8821 Seal)	NAT 99325
6	EHB-8532		MAK 710GC145P2	WASHER,Hub(Long)	
6	EHB-8534		MAK 710GC211	WASHER,Hub(Short)	
7	EHB-8535		MAK 788GB283P7	HUB,Crankshaft(Short)(2 Belt)(4.7in)	
7	EHB-8536		MAK 788GB283P5	HUB,Crankshaft(Long)(3 Belt)(5.4in)	
8	EKY-2640		MAK 42AX550	KEY,Hub(Crankshaft)	
8	EKY-2641		MAK 42AX620	KEY,Timing Gear(Crankshaft)	
9	ECP-8627		MAK 302GC2188A	PULLEY,Crankshaft(2 Belt)	

FIGURE 12



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ECM-9002	EM90020	MAK 454GC568B	CAMSHAFT(2VH) (Brake/Non-Brake, EM6-300 Series)	
1	ECM-9003	EM90030	MAK 454GC578C	CAMSHAFT(4VH)	
1	ECM-9004		MAK 454GC580A	CAMSHAFT(2VH)(Large #7 Journal)	
2	EKY-2642		MAK 42AX214	KEY,Timing Gear	
3	EGE-2583		MAK 668GB235	GEAR,Timing	

FIGURE 15



Auxiliary Shaft and Drive Components



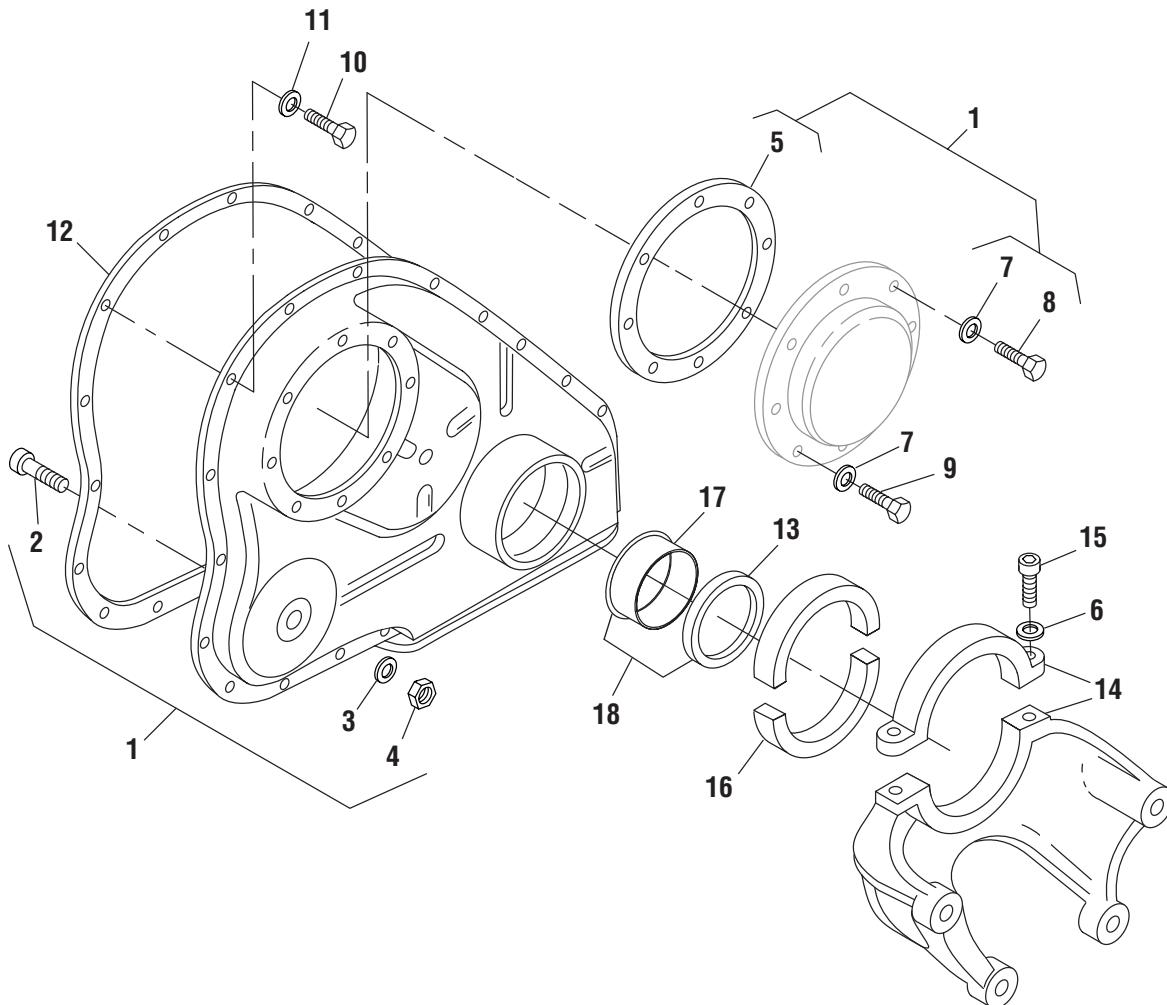
KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ENU-0076		MAK 20AX21	NUT	
2	DLW-4125		MAK 83GC11	LOCK	
3	DCC-4128		MAK 320GB279	COUPLING,Compressor(18 Teeth)	
4	EKY-2644		MAK 42AX336	KEY	
5	EGE-2580		MAK 683GB1154A	GEAR,Oil Pump Drive(17 Teeth)	
6	DTB-0481		MAK 201GC110	TUBE,Oil	
7	EKY-2643		MAK 42AX177	KEY	
8	ESH-2985		MAK 465GC13	SHAFT,Tachometer Drive	MAK 465GC3150
9	EGS-3900-024		MAK 598GB11C	GASKET,Tachometer Drive	
10	ETH-2988		MAK 769GB23	HOUSING,Tachometer Drive Shaft	
11	EGE-2983		MAK 685GB11	KIT,Gear(Tachometer Drive) Includes Pin (1)EPN-2984 (1)Gear	
12	EPN-2984		MAK 31AX13	PIN,Tachometer Drive	
13	EAS-8735		MAK 453GC348A	SHAFT,Auxiliary(w/ Integral Gear)	
14	EWA-0167		MAK 37AX5	WASHER(2 req'd)	
15	Call		MAK 4AX2	SCREW(2 req'd)	
16	EDA-2989		N/A	ASSEMBLY,Drive	
				Includes Shaft (1)ESH-2985 Housing (1)ETH-2988 Gasket (1)EGS-3900-024 Gear (1)EGE-2983-001 Pin (1)EPN-2984	
17	EAS-8734		MAK 453GC239M	ASSEMBLY,Auxiliary Shaft(Current) Includes Shaft (1) Plug (1)	
18	ENU-0408		MAK 142GC1103M	NUT,Auxiliary Shaft (Use w/ EAS-8734 Auxiliary Shaft Assembly)	
19	EGE-2584		MAK 667GB310AM	GEAR,Shaft Auxiliary Drive	
20	EAB-8679		MAK 61GB215	BEARING,Rear Auxiliary (Req'd when installing Early Auxiliary Shaft in new Block)	
20	EAB-8680		MAK 61GB15C	BEARING,Rear Auxiliary	
21	EAB-8669		MAK 61GB33	BEARING,Front Auxiliary (w/ Aluminium Timing Cover)	MAK 61GB211
21	EAB-8670		MAK 61GB14C	BEARING,Front Auxiliary	
22	EAB-8854		N/A	KIT,Auxiliary Bearing(Late E6) (w/ Aluminium Timing Cover) Includes Bearings (1)EAB-8669 (1)EAB-8680	
22	EAB-8860		N/A	KIT,Auxiliary Bearing Includes Bearings (1)EAB-8670 (1)EAB-8680	
23	EPN-2764		MAK 31AX638	PIN,Thrust Washer Locating(Knurled)	
24	ETC-2035-010		MAK 395GC110A	SCREW,Thrust(2 req'd)	
25	ETB-8690		MAK 701GC11A	KIT,Thrust Bearing Includes Pin (1)EPN-2764 (1)Thrust Bearing	
26	EBK-8865		MAK 57GC267	KIT,Auxiliary Bearing Includes Thrust Bearing Kit (1)ETB-8690 Auxiliary Bearing Kit (1)EAB-8860	
27	DHB-4131		MAK 320GB327A	HUB,Compressor Drive	

ENGINE COMPONENTS

E6 SERIES

Steel Timing Cover

FIGURE 23

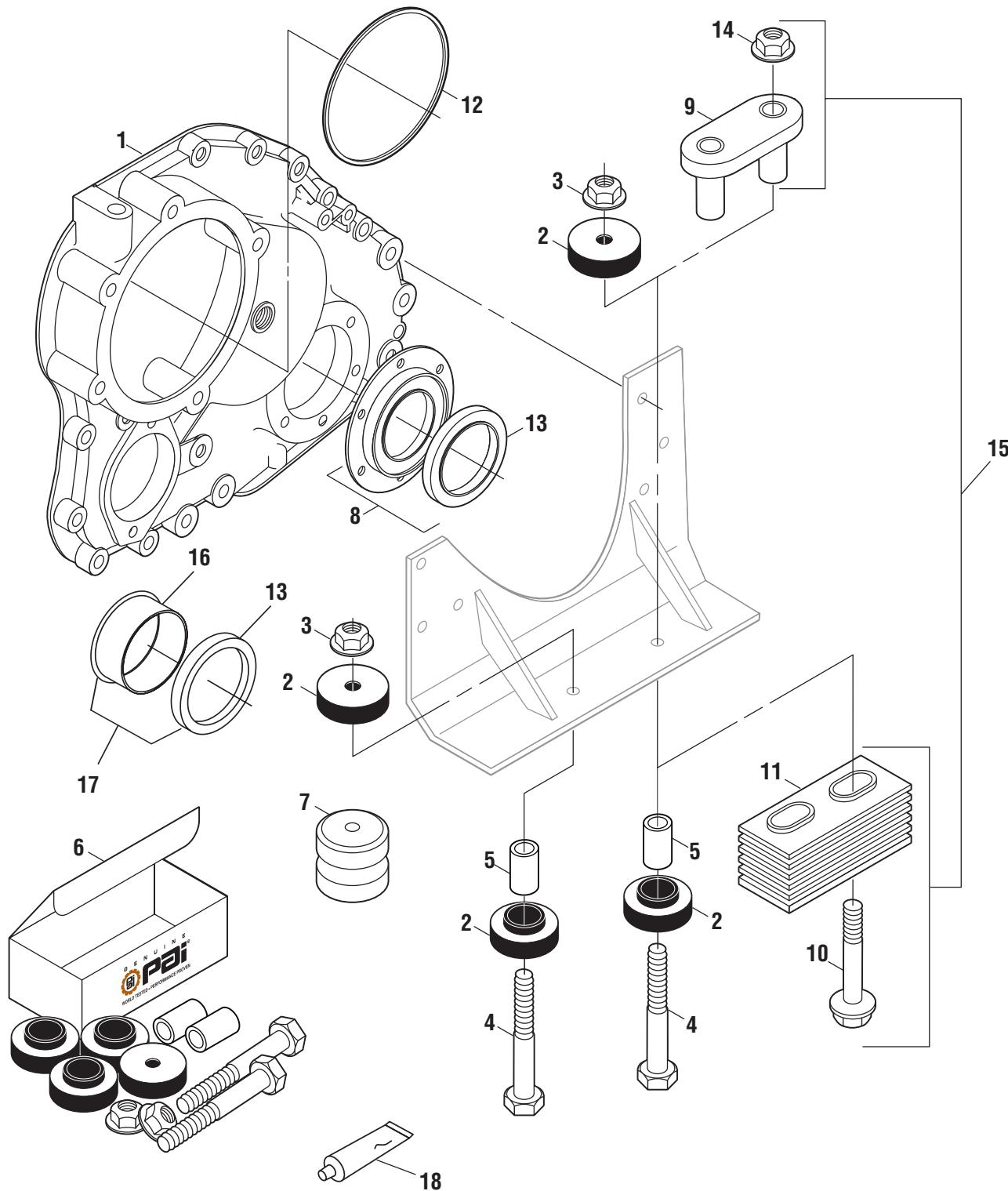


Steel Timing Cover

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ETC-2035		MAK 333GB141DP3	KIT,Timing Cover(Tapped for 1/2in Pan Bolts) Includes Cover (1)ETC-2035-001 Gaskets (1)EGS-3900-041 (1)EGS-3900-049 Screws (2)ETC-2035-010 (6)ETC-2035-016 (2)ETC-2035-017 Washers (8)ETC-2035-018 (2)ETC-2035-019 Nuts (2)ETC-2035-015	
1	ETC-2036		MAK 333GB274	KIT,Timing Cover(Tapped for ESC-0015 3/8in Pan Bolts) Includes Cover (1)ETC-2036-001 Gaskets (1)EGS-3900-041 (1)EGS-3900-049 Washers (8)ETC-2035-018 (2)ETC-2035-019 Screws (2)ETC-2035-010 (6)ETC-2035-016 (2)ETC-2035-017 Nuts (2)ETC-2035-015	
2	ETC-2035-010		MAK 395GC110A	SCREW,Thrust	
3	ETC-2035-019		MAK 39AX25	WASHER	
4	ETC-2035-015		MAK 21AX338	NUT,Lock	
5	EGS-3900-041		MAK 590GB236A	GASKET,Gear Cover	
6	BWA-0054		MAK 36AX7X	WASHER	
7	ETC-2035-018		MAK 37AX421	WASHER	
8	ETC-2035-017		MAK 3AX1641	SCREW(5/16in-24 x 3/4in)(2 req'd)	
9	ETC-2035-016		MAK 3AX1767	SCREW(5/16in-24 x 3/4in)(6 req'd)	
10	ESC-0015		MAK 6AX1306X	SCREW(3/8in-16 x 7/8in)(19 req'd)	
11	EWA-0059		MAK 37AX7U	WASHER	
12	EGS-3900-049		MAK 548GB41D	GASKET,Timing Cover	
13	EOS-8592		MAK 446GC181	SEAL(Neoprene)(4-1/4in OD)	NAT 411275R
13	EOS-8820	EM88200	MAK 446GC316	SEAL(Neoprene)(4in OD)(Current) (May be used w/ ERG-3792 Wear Ring)	NAT 415563N
13	EKT-8821	EM88210	MAK 446GC310P2	SEAL(Teflon)(4in OD)	NAT 5609
14	QEB-1590		MAK 10QL3205	ASSEMBLY,Front Mount (Steel Timing Cover only) Includes Washers (2)BWA-0054 Screws (2)ESC-0088	
15	ESC-0088		MAK 6AX949	SCREW(5/8in-11 x 1-3/4in)	
16	FMM-4650	EM46500	MAK 20QL1166	INSULATOR,Front Motor	
16	FMM-4652	EM46520	MAK 20QL1171	INSULATOR,Front Motor (Use w/ QEB-1590 Front Mount)	
16	FMM-4653		MAK 20QL281	INSULATOR,Front Motor	
17	ERG-3792		MAK 1458-99325	RING,Wear	
18	836023		N/A	KIT,Front Seal(Neoprene) Includes Seal (1)EOS-8820 Wear Ring (1)ERG-3792	
18	836024		N/A	KIT,Front Seal(Teflon) Includes Seal (1)EOS-8821 Wear Ring (1)ERG-3792	

Aluminum Timing Cover

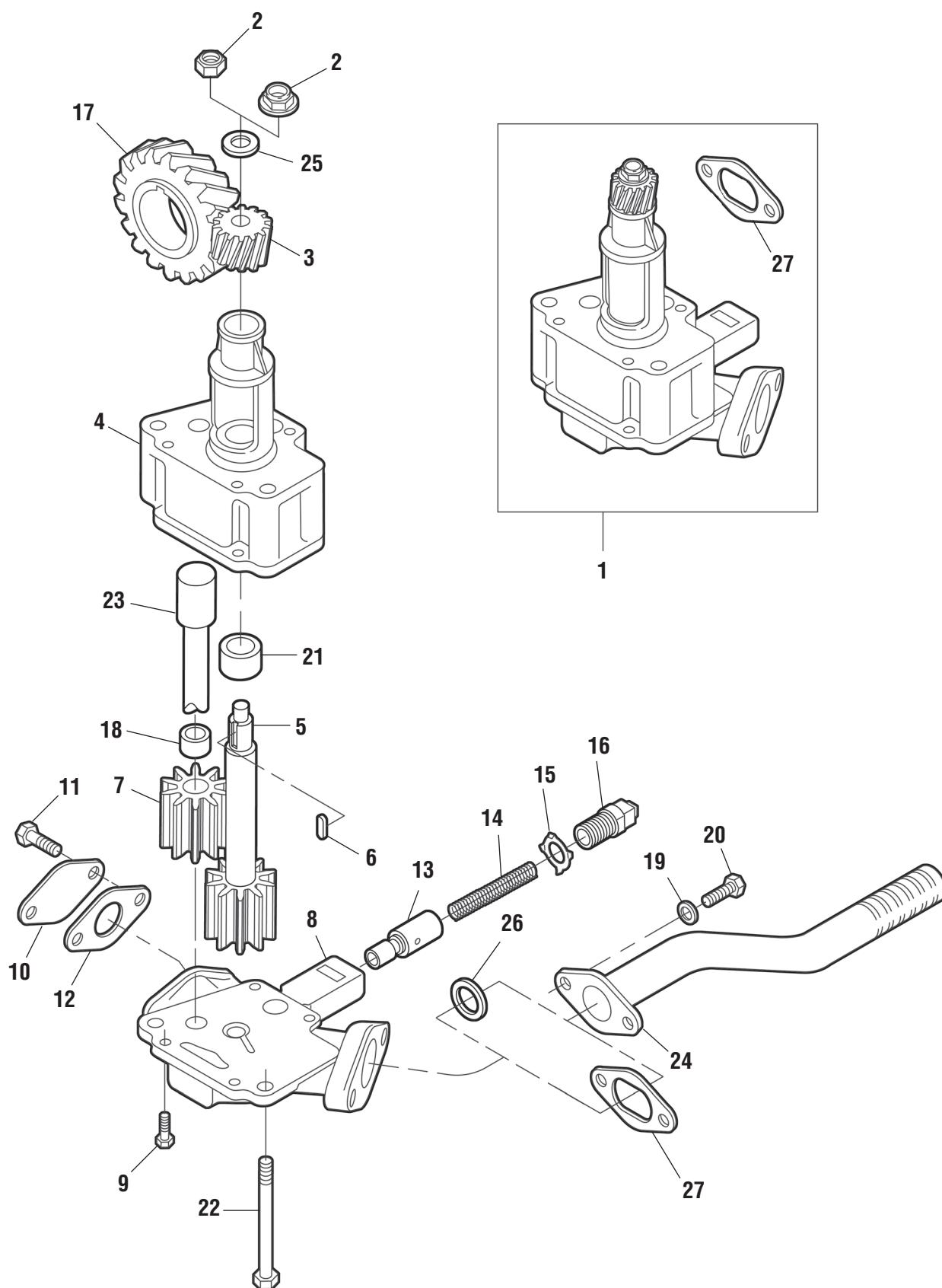
FIGURE 113



Timing Cover and Front Mount

Aluminum Timing Cover					
KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ETC-2037		MAK 333GB5135M	COVER,Timing(Aluminum)	
2	FMT-4656		MAK 20QL313M	INSULATOR,Front Engine(3-1/2in OD)	
2	FMT-4658		MAK 20QL312M2	INSULATOR,Front Engine(2-5/8in OD)	
3	FNU-0404		MAK 171AM6	NUT	
4	FSC-0374		MAK 27AM35	SCREW(M16 x 2 x 100)	
5	FSP-4657		MAK 73RU12254M	SPACER	
6	FMK-5179		N/A	KIT,Front Engine Mounting (CH, CX, RB & RD Models) Includes Insulators (4)FMT-4658 Nuts (2)FNU-0402 Screws (2)FSC-0374 Spacers (2)FSP-4657	
7	FMT-4649		MAK 20QL37P4	INSULATOR,Engine (Front Auxiliary Transmission Mount)	
8	ESA-8815		MAK 449GC32	ASSEMBLY,Oil Seal	
9	FMT-4993		MAK 20QL329	MOUNT,Upper Front(CH Model)	
10	FSC-0377		MAK 27AM38	SCREW,Motor Mount (M16-2 x 130 Lg)(2 req'd)	
11	FMT-4992		MAK 20QL322	MOUNT,Front Engine(Lower)(CH Model)	
12	EGS-3903-004		MAK 56AX548	O-RING	
13	EOS-8820	EM88200	MAK 446GC316	SEAL(Neoprene)(4in OD)(Current) (May be used w/ ERG-3792 Wear Ring)	NAT 415563N
13	EKT-8821	EM88210	MAK 446GC310P2	SEAL(Teflon)(4in OD)	NAT 5609
14	FNU-0402		MAK 191AM6	NUT,Locking	
15	803977		N/A	KIT,Front Engine Mount Includes Mounts (1)FMT-4992 (1)FMT-4993 Screws (2)FSC-0377 Nuts (2)FNU-0402	
16	ERG-3792		MAK 1458-99325	RING,Wear	
17	836023		N/A	KIT,Front Seal(Neoprene) Includes Seal (1)EOS-8820 Wear Ring (1)ERG-3792	
17	836024		N/A	KIT,Front Seal(Teflon) Includes Seal (1)EOS-8821 Wear Ring (1)ERG-3792	
18	831001		MAK 3092340	SEALANT,Silicon(Cartridge gun tube 310 ml)	MAK 2073200
18	BSR-0385		MAK 342SX32	SEALANT,Silicone(Used to seal Timing Cover)	

FIGURE 24



Oil Pump Assembly

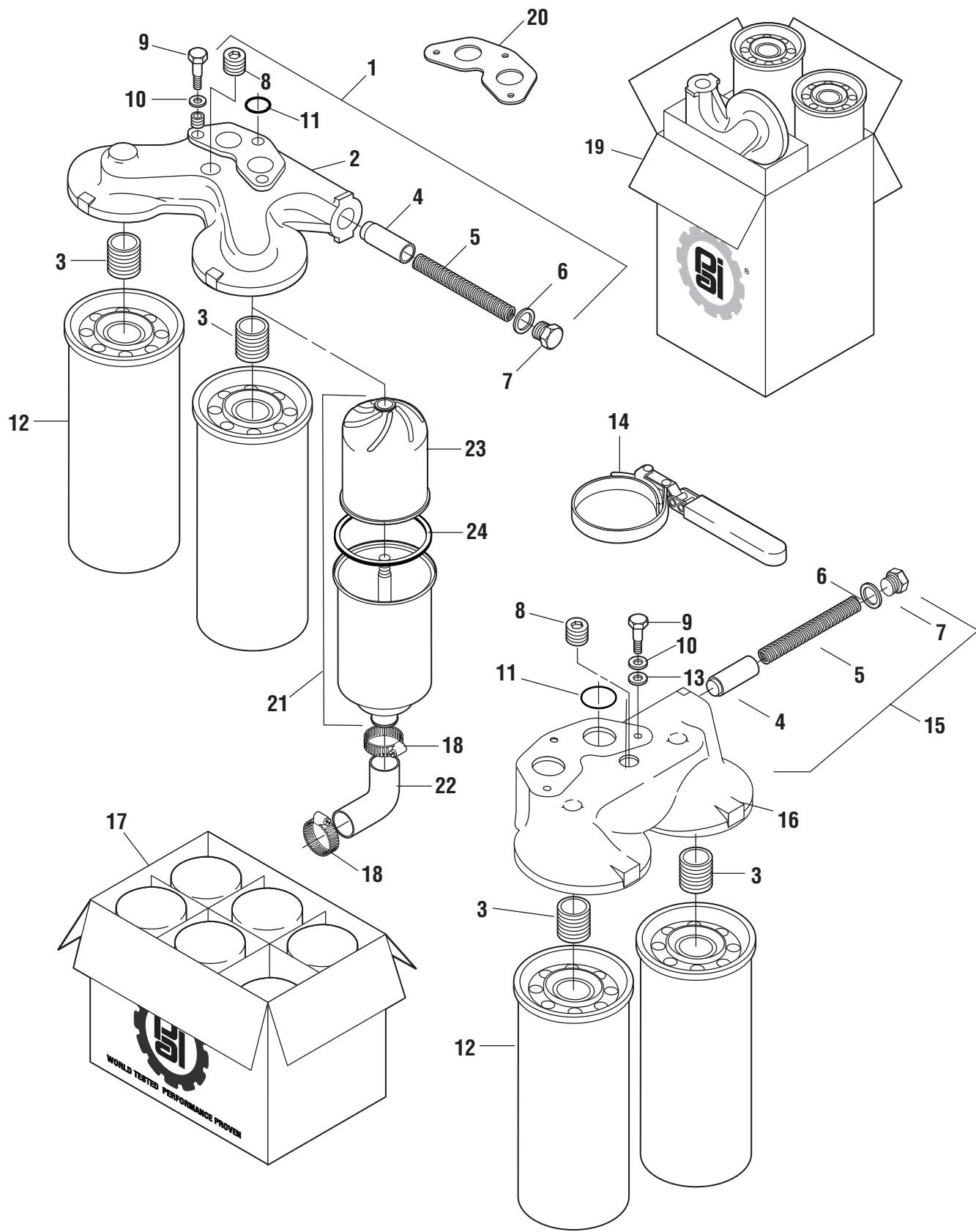


KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EOP-3350		MAK 315GC3118H	ASSEMBLY,Oil Pump(Low Pressure) Includes Gears (1)EGE-2590 (1)EGE-8910 (1)EGE-8920 Housing Assembly (1)EPB-3352 Covers (1)EPC-3353 (1)EPR-3357 Plunger (1)EPL-2061 Spring (1)ESP-3354 Gaskets (1)EGK-3349 (1)EGS-3900-018 Screws (4)ESC-0007 (2)ESC-0854 Nuts (1)BNU-0195 (1)ENU-3355 Lock (1)EPR-3356 Key (1)EKY-2644 O-Ring (1)EGA-2997	
1	EOP-3351		MAK 315GC445G	ASSEMBLY,Oil Pump(High Pressure) Includes Gears (1)EGE-2590 (1)EGE-8910 (1)EGE-8920 Housing Assembly (1)EPB-3352 Covers (1)EPC-3353 (1)EPR-3357 Plunger (1)EPL-2061 Spring (1)ESP-3354 Gaskets (1)EGK-3349 (1)EGS-3900-018 Screws (4)ESC-0007 (2)ESC-0854 Nuts (1)BNU-0195 (1)ENU-3348 Lock (1)EPR-3356 Key (1)EKY-2644 O-Ring (1)EGA-2997	
2	BNU-0192		MAK 21AX638	NUT,Lock(Nylon Insert)	
2	BNU-0195		MAK 21AX872	NUT,Lock(Flanged)(Opt)	
3	EGE-2590		MAK 683GB273	GEAR,Oil Pump	MAK 683GB1153
4	EPB-3352		MAK 767GB238B	ASSEMBLY,Housing Includes Bushings (2)EBG-3359 Shaft (1)ESH-3358 Housing (1)	
5	EGE-8910		MAK 463GC31B	GEAR and Shaft	
6	EKY-2644		MAK 42AX336	KEY	
7	EGE-8920		MAK 683GB1144B	GEAR,Idler Includes Bushings (2)EBG-8921	
8	EPC-3353		MAK 350GB44E	COVER,Housing	
9	ESC-0007		MAK 6AX1291X	SCREW(1/4in-20 x 5/8in)	
10	EPR-3357		MAK 332GB145	COVER	
11	ESC-0008		MAK 6AX1304X	SCREW(3/8in-16 x 5/8in)	
11	ESC-0854		MAK 6AX1591	SCREW,Flanged(Hex)(3/8in-16 x 3/4in)	
12	EGK-3349		MAK 590GB1243A	GASKET	
13	EPL-2061		MAK 296GC135	PLUNGER,Valve	
14	ESP-3354		MAK 572GC114	SPRING	
15	EPR-3356		MAK 85GC11	LOCK,Nut	
16	ENU-3348		MAK 226GB122	NUT,Relief Valve (Use with EOP-3351 Oil Pump Assembly)	
16	ENU-3355		MAK 226GB147	NUT,Relief Valve (Use with EOP-3350 Oil Pump Assembly)	
17	EGE-2580		MAK 683GB1154A	GEAR,Drive	
18	EBG-8921		MAK 186GB169	BUSHING	
19	EWA-0068		MAK 35AX1345	WASHER	
20	GSC-0009		MAK 6AX1308X	SCREW(3/8in-16 x 1-1/4in)	
21	EBG-3359		MAK 186GB172A	BUSHING	
22	BSC-0011		MAK 6AX1317X	SCREW(Short)(7/16in-14 x 1-1/4in)	
22	ESC-0024		MAK 416GC115	SCREW(Long)(7/16in-14 x 4in)	
23	ESH-3358		MAK 464GC145A	SHAFT,Idler	MAK 464GC145
24	EOT-3341		MAK 211GC3122	TUBE,Oil Pump Pickup	
25	EWA-0064		MAK 37AX6	WASHER	
26	EGA-2997		MAK 56AX470	O-RING	
27	EGS-3900-018		MAK 591GB11C	GASKET,Pump Inlet	

ENGINE COMPONENTS

E6 SERIES

FIGURE 25



Oil Filter Mounting Components

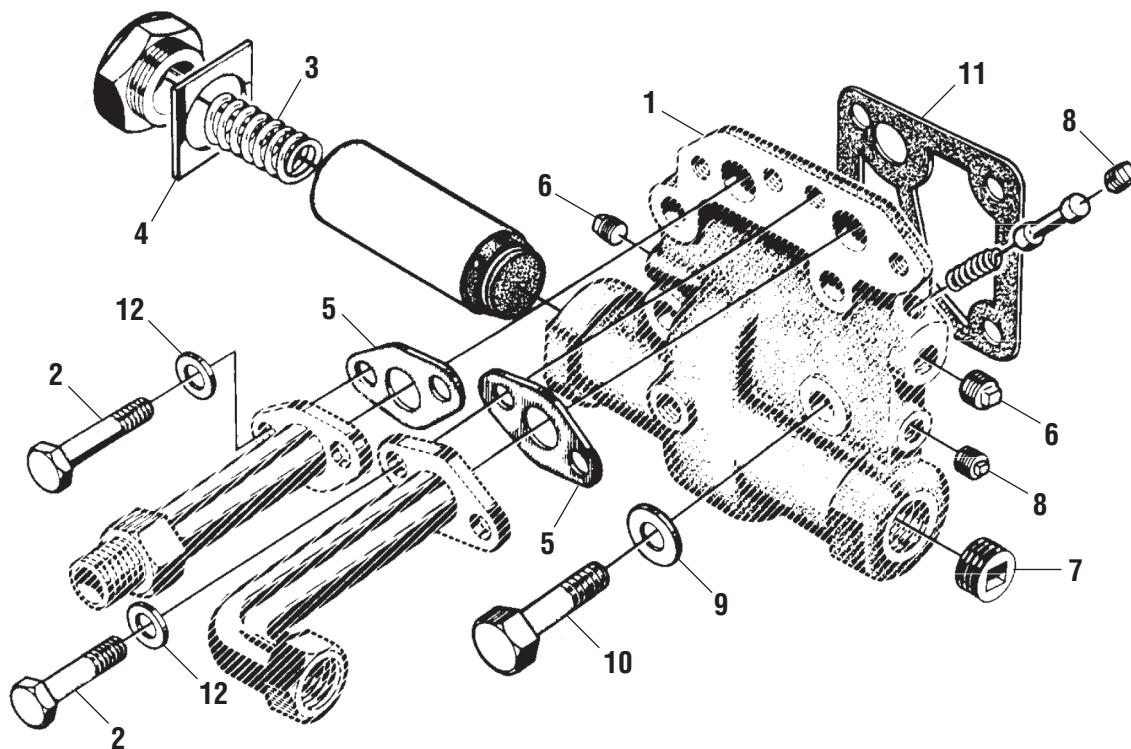


KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EMT-8526		MAK 27GB315	ASSEMBLY,Filter Bracket Includes Bracket Assembly (1)EMT-8527 Plunger (1)EPL-3151 Spring (1)ESP-3155 Washer (1)EWA-3157 Cap (1)ECP-3164 Plug (1)EPP-3573	
2	EMT-8527		MAK 27GB316	ASSEMBLY,Filter Bracket Includes Adapters (3)EAD-0880 Bracket (1)NSS	
3	EAD-0880		MAK 32GB183	ADAPTER,Filter	
4	EPL-3151		MAK 296GC21A	PLUNGER	
5	ESP-3155		MAK 572GC130	SPRING	
6	EWA-3157		MAK 38AX53	WASHER	
7	ECP-3164		MAK 226GB151	CAP	
8	EPP-3573		MAK 49AX230	PLUG(1/8in)	MAK 49AX251
9	ESC-0012		MAK 4AX1	SCREW(3/8in-16 x 1in)	
10	FWA-0050		MAK 36AX3	WASHER	
11	EGA-0472		MAK 446GC1161	O-RING	
12	FOF-4570		MAK 485GB3191C	FILTER,Oil	
13	EWA-0059		MAK 37AX7U	WASHER,Flat	
14	EWR-1480		N/A	WRENCH,Filter	
15	EMT-8524		MAK 27GB213E	ASSEMBLY,Filter Bracket Includes Bracket Assembly (1)EMT-8525 Plunger (1)EPL-3151 Spring (1)ESP-3155 Washer (1)EWA-3157 Cap (1)ECP-3164 Plug (1)EPP-3573	
16	EMT-8525		MAK 27GB46A	ASSEMBLY,Filter Bracket Includes Adapters (2)EAD-0880 Bracket (1)NSS	
17	CHART		N/A	KIT,Filter(Refer to Filter Kits listed in the Miscellaneous Section on page 210)	
18	ECL-1962		MAK 83AX759	CLAMP	
19	FKT-4612		MAK 215SB123	KIT,Filter Conversion Includes Bracket Assembly (1)EMT-8524 Plunger (1)EPL-3151 Caps (1)ECP-3152 (2)ECP-3153 Spring (1)ESP-3155 Washer (1)EWA-3156 O-Rings (6)EGA-0472 Nut (1)ENU-3355 Gasket (1)EGS-3900-008 Filters (2)FOF-4570	
20	EGS-3900-011		MAK 590GB2125	GASKET,Oil Filter Mounting	
21	FKT-4156		MAK 485GB3219D	KIT,Oil Filter Includes Filter Housing (1)804090 Filter (1)FOF-4571 O-Ring (1)EGA-2982	
22	ECH-8677		MAK 744GB236A	HOSE	
23	FOF-4571		MAK 57GC2134	FILTER,Oil(Centrifugal Type)	
24	EGA-2982		MAK 590GB2108	O-RING,Oil Filter Housing	

Please note:

* See page 214 for a complete listing of Oil Filters.

FIGURE 26

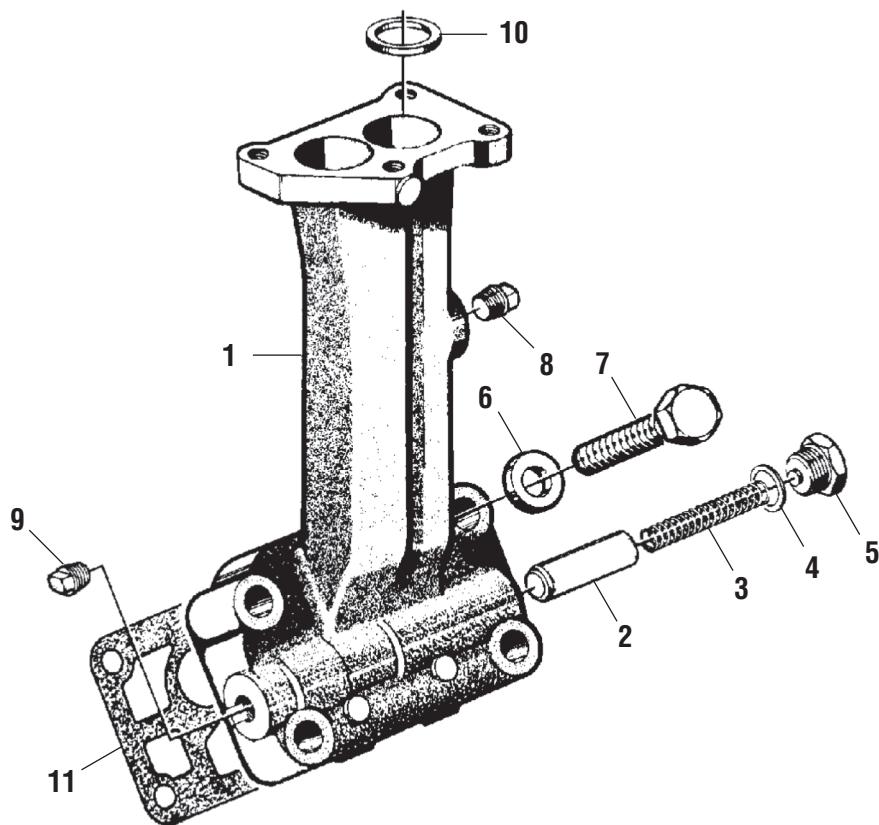


KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	Call		MAK 766GB323B	HOUSING,Oil Pressure Relief Valve	
1	Call		MAK 766GB37D	HOUSING,Oil Pressure Relief Valve	
2	ESC-0017		MAK 4AX58	SCREW(3/8in-16 x 7/8in)	
3	ESP-3165		MAK 572GC110	SPRING,Relief Valve	
3	Call		MAK 572GC122	SPRING,Relief Valve	
4	EWA-3158		MAK 38AX38	WASHER	
5	EGK-3865		MAK 590GB1246	GASKET	
6	EPP-3574		MAK 49AX233	PLUG(3/8in)	
7	FPP-3577		MAK 49AX244	PLUG(1/4in)	
8	EPP-3573		MAK 49AX230	PLUG(1/8in)	
9	EWA-0052		MAK 36AX5	WASHER,Lock(1/2in)	
10	ESC-0087		MAK 4AX289	SCREW(1/2in-13 x 2in)	
11	EGS-3900-002		MAK 590GB1109B	GASKET	
11	EGS-3900-003		MAK 590GB1267B	GASKET	
11	EGS-3900-005		MAK 590GB1266	GASKET	
11	EGS-3900-007		MAK 590GB1152B	GASKET	
12	FWA-0050		MAK 36AX3	WASHER	

Oil Relief Valve Housing

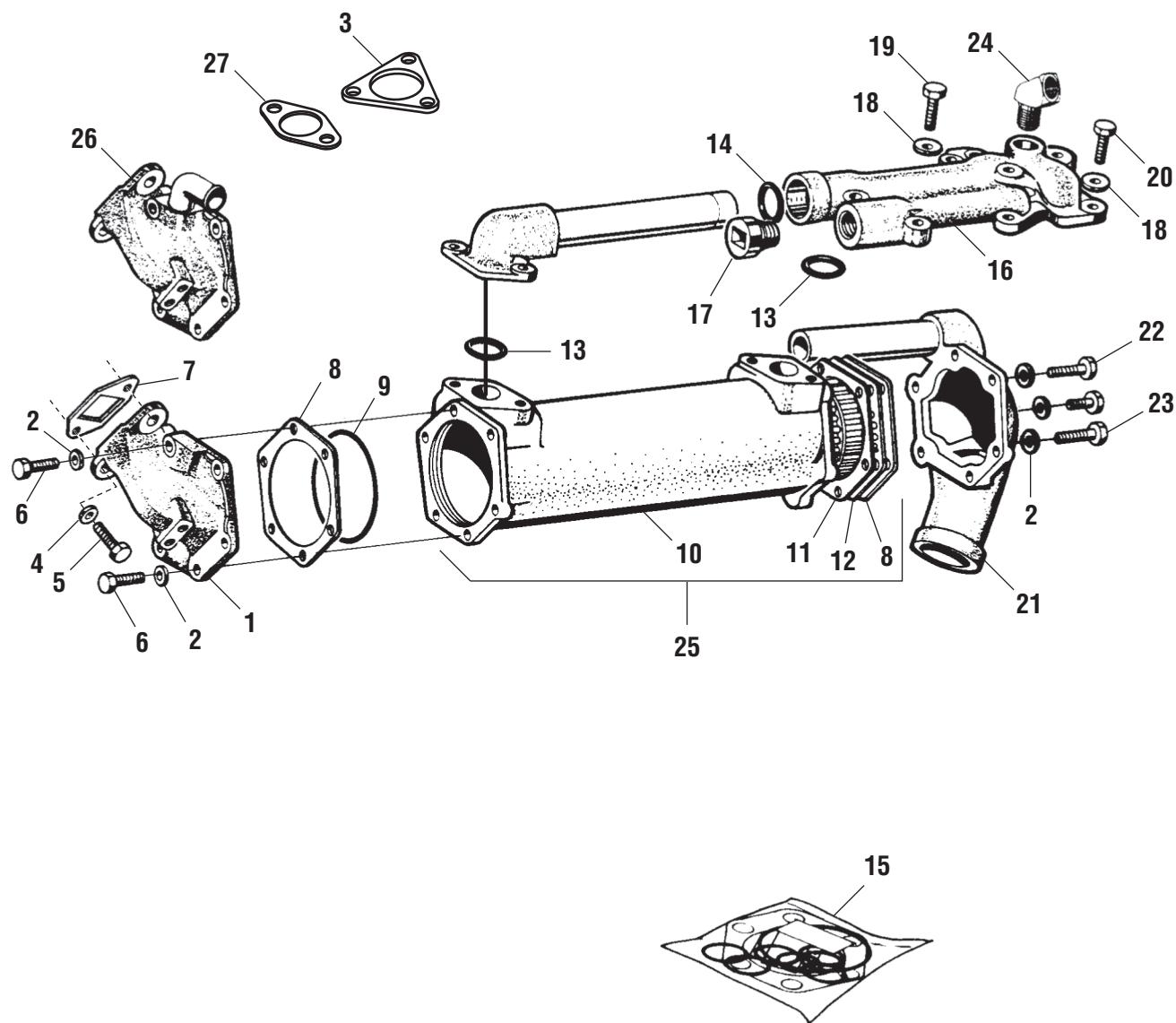
 PAI

FIGURE 27



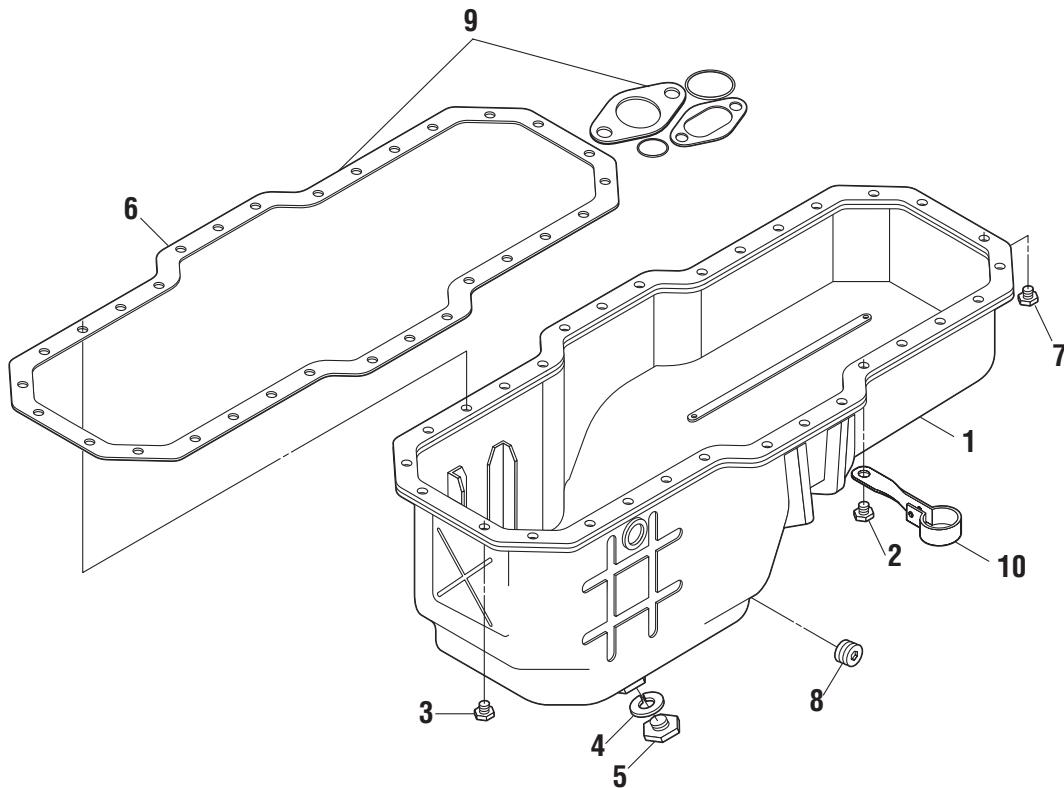
KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EHG-3150		MAK 766GB51P2	ASSEMBLY,Housing Relief Valve Includes Plug (1)EPP-3574 Housing (1)NSS	
2	EPL-3151		MAK 296GC21A	PLUNGER	
3	ESP-3155		MAK 572GC130	SPRING	
4	EWA-3156		MAK 38AX52	WASHER	
5	ECP-3152		MAK 226GB148	CAP(High Pressure)	
5	ECP-3153		MAK 226GB146	CAP(Low Pressure)	
6	EWA-0052		MAK 36AX5	WASHER,Lock(1/2in)	
7	ESC-0032		MAK 4AX155	SCREW,Mounting(1/2in-13 x 3-1/2in)	
8	EPP-3573		MAK 49AX230	PLUG(1/8in)	
9	EPP-3574		MAK 49AX233	PLUG(3/8in)	
9	EPP-3575		MAK 49AX234Z	PLUG(1/2in)	
10	EGA-0472		MAK 446GC1161	O-RING	
11	EGS-3900-008		MAK 590GB1298	GASKET	
11	EGS-3903-001		MAK 590GB2136	GASKET(E7)	

FIGURE 34



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ECH-8602		MAK 493GB3127	HOUSING,Water Outlet	
2	EWA-0049		MAK 36AX22	WASHER	
3	EGS-3890-038		MAK 590GB1131	GASKET,Water Outlet Elbow	
4	BWA-0051		MAK 36AX4	WASHER	
5	Call		MAK 4AX49	SCREW	
6	Call		MAK 4AX339	SCREW	
7	EGK-3847		MAK 56AX392	GASKET	
8	EGS-3900-015		MAK 549GB28AP1	GASKET	
9	ESE-8962		MAK 446GC225A	O-RING	
10	ECH-8606		MAK 312GB444P2	HOUSING(6 Cylinder)	
11	EGS-3900-065		MAK 549GB28AP4	GASKET	
12	ECC-8604		MAK 57GC270	KIT,Oil Cooler Core(6 Cylinder) Includes Oil Cooler Kit (1)ECA-8605-001 Core (1)ECC-8604-001	MAK 316GB35P2
13	EGA-0472		MAK 446GC1161	O-RING	
14	EGA-0471		MAK 446GC1160	O-RING	
15	ECA-8605-001		N/A	KIT,Oil Cooler(Gasket & O-Ring) Includes Gaskets (1)EGK-3847 (2)EGS-3900-015 (1)EGS-3900-065 O-Rings (1)EGA-0471 (4)EGA-0472 (1)ESE-8962	
16	EOM-8598		MAK 497GB56	KIT,Manifold(Oil Cooler) Includes Plug (1)EPP-3575	MAK 497GB410P1
17	EPP-3575		MAK 49AX234Z	PLUG	
18	FWA-0050		MAK 36AX3	WASHER	
19	Call		MAK 6AX28	SCREW	
20	ESC-0012		MAK 4AX1	SCREW(3/8in-16 x 1in)	
21	ECH-8596		MAK 493GB454	HOUSING,Water Inlet(Long Tube)	
21	ECH-8601		MAK 493GB2222	HOUSING,Water Inlet(Short Tube)	
22	ESC-0039		MAK 4AX255	SCREW(5/16in-18 x 2-3/4in)	
23	ESC-2189		MAK 6AX1279	SCREW(5/16in-18 x 7/8in)	
24	FHF-0160		MAK 63AX892	FITTING(45 Elbow)(3/8 NPT)	
25	ECA-8605		MAK 312GB367CP2	KIT,Oil Cooler Includes Housing (1)ECH-8606 Oil Cooler Kit (1)ECA-8605-001 Screw (1)ESC-0006 Washer (1)EWA-0061 Core (1)ECC-8604-001	
26	ECH-8593		MAK 493GB3153	HOUSING,Water Outlet(w/ Tube)	
27	EGS-3890-043		MAK 605GB13B	GASKET,Water Outlet	

FIGURE 35



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EOP-2030		MAK 240GB5199	PAN,Oil(28 qt)	
1	EOP-2032		MAK 240GB5212D	PAN,Oil(ESI+)(51 qt)	MAK 240GB5201
1	EOP-2034		MAK 240GB5218D	KIT,Oil Pan(ESI+)(28 qt) Includes Plugs (1)EPP-3566 (1)EPP-3501 (2)EPP-3575 (2)ENT-3570 Washers (2)EWA-2441	
2	ESC-0015		MAK 6AX1306X	SCREW,Mounting(3/8in-16 x 7/8in) (30 req'd for EOP-2032 Oil Pan) (26 req'd for EOP-2030 Oil Pan)	
3	ESC-2192		MAK 6AX1552	SCREW,Rear Mounting(1/2in-13 x 7/8in) (2 req'd for EOP-2030 Oil Pan)	
4	EWA-2441		MAK 39AX23	WASHER,Drain	
5	ENT-3570		MAK 49AX188	PLUG,Drain(Magnetic)	MAK 49AX187
6	EGK-8401		MAK 579GB41C	GASKET,Oil Pan	
6	EGK-8411		MAK 579GB412A	GASKET,Oil Pan(Segmented)	
6	EGK-8412		MAK 579GB41E	GASKET,Oil Pan(Silicone Printed Seal)	MAK 579GB41D
6	EGK-8413		MAK 579GB412B	GASKET,Oil Pan(1/16in thk)(Segmented)	
6	EGK-8414		MAK 579GB41E	GASKET,Oil Pan(1/16in thk)	
7	Call		MAK 6AX1553X	SCREW,Front Mounting (2 req'd for EOP-2030 Oil Pan)	
8	EPP-3501		MAK 49AX264	PLUG(1-5/8in-12)(w/ O-Ring)	
8	EPP-3566		MAK 49AX226	PLUG,Turbo Drain(1in NPT)	CUM S-962
9	EPK-8435		N/A	KIT,Pan Gasket Includes Pan Gasket (1)EGK-8414 Washers (1)EWA-2441 (1)EWA-2447 Gaskets (1)EGK-3349 (1)EGS-3900-018 O-Ring (1)EGA-2997	
9	EPK-8436		N/A	KIT,Pan Gasket Includes Pan Gasket (1)EGK-8412 Washers (1)EWA-2441 (1)EWA-2447 Gaskets (1)EGK-3349 (1)EGS-3900-018 O-Ring (1)EGA-2997	
10	ECL-1856		MAK 83AX930	CLAMP,Hose(Breather Tube)(1-1/2in)	



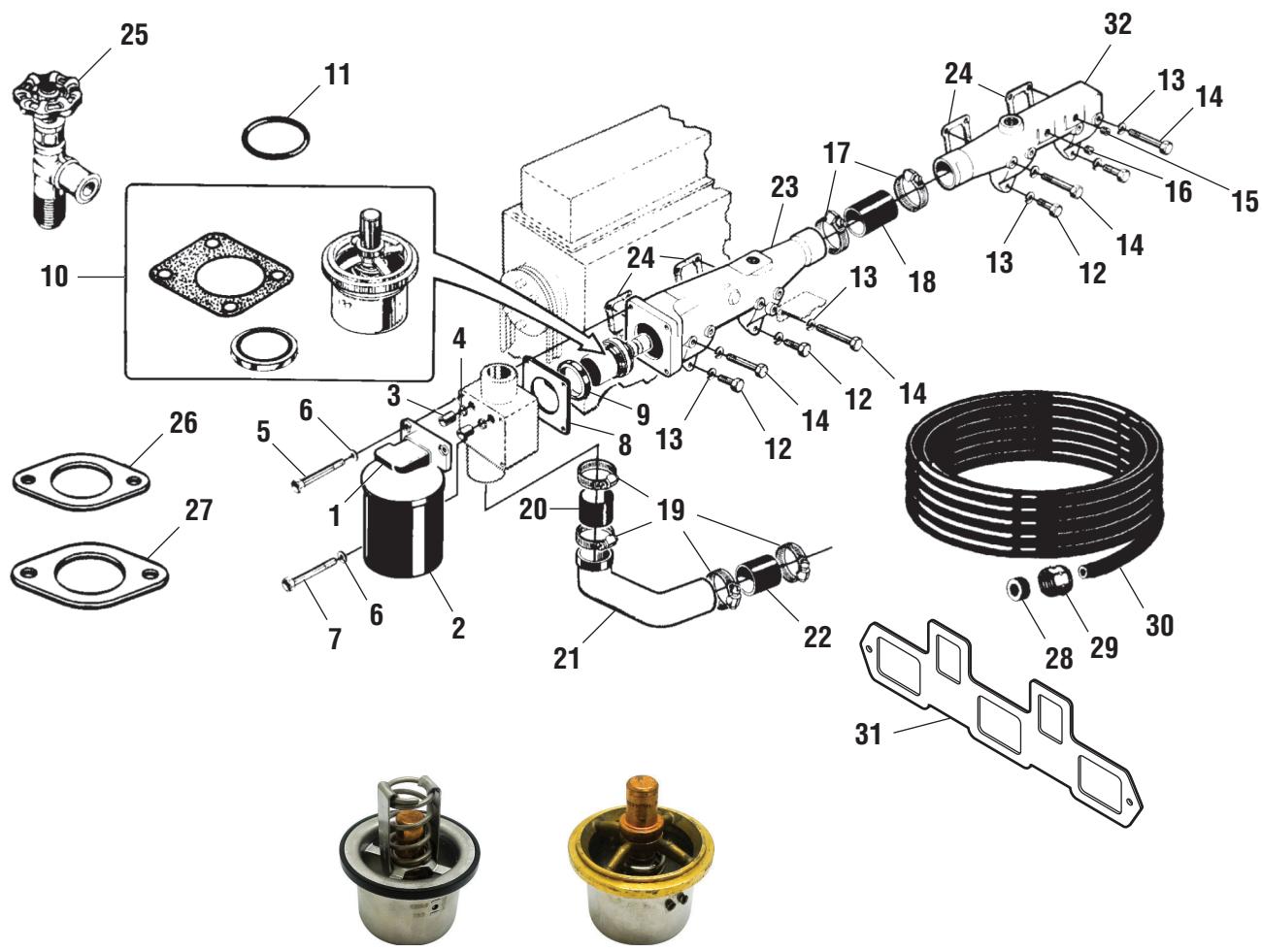
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MACK•CUMMINS•DETROIT DIESEL CATERPILLAR•FULLER•ROCKWELL•EATON INTERNATIONAL•GENUINE HENDRICKSON

ENGINE PARTS•BODY PARTS•ELECTRICAL COMPONENTS•OIL & WATER PUMPS •CHASSIS
DRIVELINE REPLACEMENT PARTS•POWER STEERING COMPONENTS•TAPPETS•SENSORS

FIGURE 33



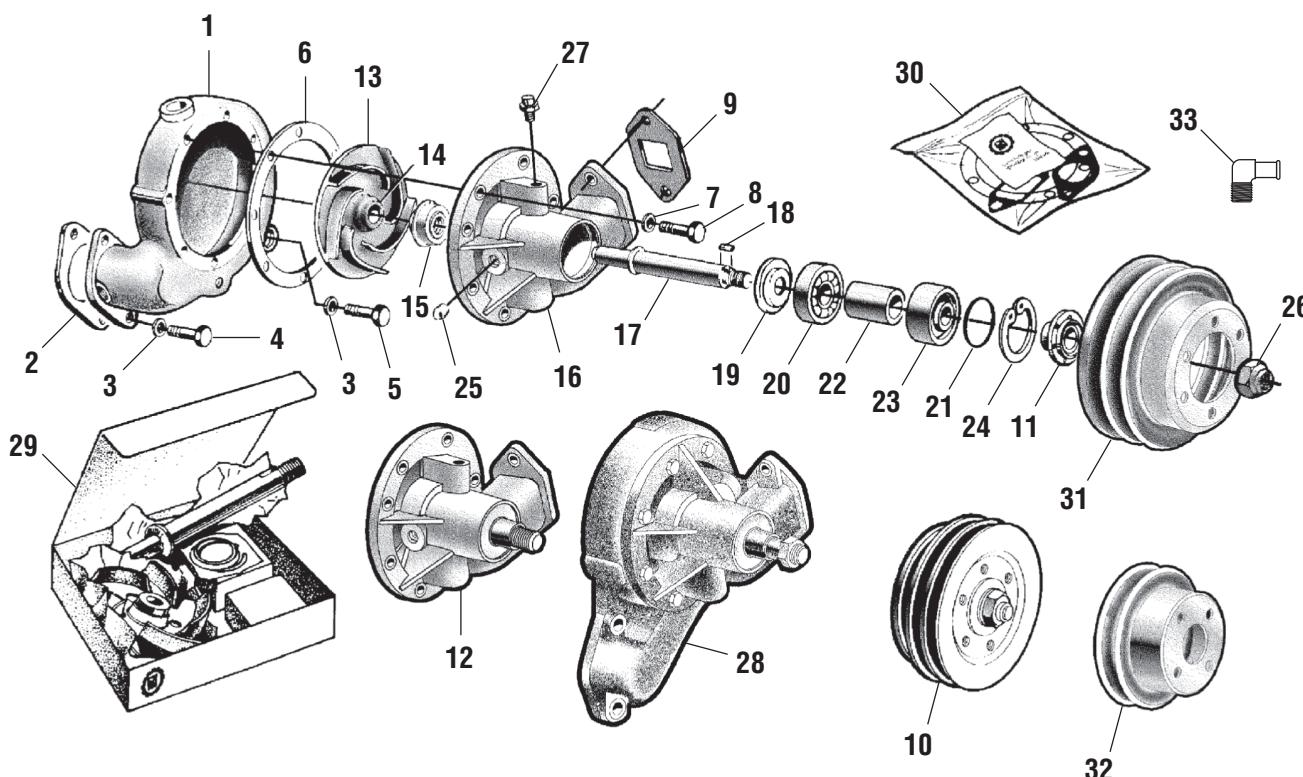
'M' version

Engine Cooling Components



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EMT-8970		MAK 32GB354P2	BRACKET,Coolant (Use w/ FWF-4520 Filter)	
1	EMT-8971		MAK 32GB415	BRACKET,Coolant (Use w/ FWF-4521 Filter)	
2	FWF-4520		MAK 25MF435A	FILTER,Coolant(Use w/ EMT-8970 Bracket)	MAK 25MF314B
2	FWF-4521		MAK 25MF436	FILTER,Coolant(Use w/ EMT-8971 Bracket)	MAK 25MF429
3	ECV-8541		MAK 700GC120	VALVE,Check	
4	EGA-0461		MAK 56AX393	O-RING	
5	ESC-0019		MAK 4AX174	SCREW(5/16in-18 x 3-1/2in)	
6	EWA-0049		MAK 36AX22	WASHER,Lock	
7	ESC-0018		MAK 4AX132	SCREW(5/16in-18 x 3in)	
8	EGS-3890-012		MAK 590GB1334	GASKET	
9	EOS-3305		MAK 447GC216A	SEAL	
10	EAS-3295-155		MAK 215SB165P1	KIT,Thermostat(155 deg.)(Vented) Includes Seal (1)EOS-3305 Gasket (1)EGS-3890-012	
10	EAS-3295M-155		MAK 215SB165P1	KIT,Thermostat(155 deg.)(Vented) Includes Seal (1)EOS-3305 Gasket (1)EGS-3890-012	
10	EAS-3295-170		MAK 215SB165P2	KIT,Thermostat(170 deg.)(Vented) Includes Seal (1)EOS-3305 Gasket (1)EGS-3890-012	
10	EAS-3295M-170		MAK 215SB165P2	KIT,Thermostat(170 deg.)(Vented) Includes Seal (1)EOS-3305 Gasket (1)EGS-3890-012	
10	EAS-3295-180		MAK 215SB165BP3	KIT,Thermostat(180 deg.)(Vented) Includes Seal (1)EOS-3305 Gasket (1)EGS-3890-012	
10	EAS-3295M-180		MAK 215SB165BP3	KIT,Thermostat(180 deg.)(Vented) Includes Seal (1)EOS-3305 Gasket (1)EGS-3890-012	
10	EAS-3295-185		MAK 215SB165P4	KIT,Thermostat(185 deg.)(Vented) Includes Seal (1)EOS-3305 Gasket (1)EGS-3890-012	
11	EGS-3900-033		MAK 446GC155	O-RING,Thermostat Bypass	
12	ESC-0012		MAK 4AX1	SCREW(3/8in-16 x 1in)	
13	FWA-0050		MAK 36AX3	WASHER	
14	ESC-0025		MAK 4AX194	SCREW(3/8in-16 x 2-1/2in)	
15	BPP-3567		MAK 63AX83	PLUG(External Drive)	
15	EPP-3575		MAK 49AX234Z	PLUG	
16	EPP-3574		MAK 49AX233	PLUG	
17	ECL-1953		MAK 83AX452	CLAMP	
18	ECH-8705		MAK 160AX561	HOSE	MAK 160AX533P4
19	ECL-1962		MAK 83AX759	CLAMP	
20	ECH-8691		MAK 160AX534	HOSE(1-1/2in x 1-3/4in)	
20	ECH-8692		MAK 11MF2634P10	HOSE(1-1/2in x 3in)	
21	EBT-3306		MAK 212GC294B	TUBE	
21	EBT-3307		MAK 212GC434	TUBE(Used in FKT-4613 Conversion Kit)	
22	ECH-8681		MAK 160AX532P2	HOSE	
23	EWO-3302		MAK 107GC4121	MANIFOLD,Front Water Outlet	
24	EGS-3890-029		MAK 557GB118	GASKET	
24	EGS-3890-031		MAK 605GB11B	GASKET,Manifold(Early)	
25	MHV-4223		MAK 25MF126	VALVE,Heater	
26	EGK-3141		MAK 56AX47	GASKET,Upper Radiator Neck	
27	EGK-3142		MAK 56AX310	GASKET,Lower Radiator Neck	
28	MSL-4174		MAK 52AX36	SLEEVE(1/4in Tubing)	
29	MNU-4173		MAK 63AX3457	NUT(1/4in Tubing)	
30	MAH-4179-050		MAK 101AX120RF50	TUBING(1/4in OD, 50ft Roll)	
31	EGS-3890-010		MAK 590GB312B	GASKET	
32	EWO-3308		MAK 107GC4115AP1	MANIFOLD,Water Outlet(Rear)	

FIGURE 36



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EPH-8584		MAK 771GB480A	HOUSING, Water Pump	
1	EPH-8597		MAK 771GB341	HOUSING, Water Pump Assembly (w/ Tube)	
1	EPH-8600		MAK 771GB517	HOUSING, Water Pump	
2	EGK-3846		MAK 56AX107	GASKET	
3	EWA-0052		MAK 36AX5	WASHER, Lock(1/2in)	
4	ESC-0014		MAK 4AX25	SCREW(1/2in-13 x 1-1/2in)	
5	ESC-0029		MAK 4AX66	SCREW(1/2in-13 x 1-1/4in)	
6	EGK-3826		MAK 610GB233	GASKET(Steel Shim/Foamette)	
6	EGK-3852		MAK 610GB216	GASKET	
7	EWA-0061		MAK 37AX1	WASHER	
8	ESC-0006		MAK 4AX76	SCREW(5/16in-18 x 5/8in)	
9	EGK-3847		MAK 56AX392	GASKET	
10	EWP-8663		MAK 302GC43A	PULLEY,Cast(3 Belt Application) (2 Groove Drive and 1 Groove for A/C Compressor)	
11	EHB-8531		MAK 786GB234	HUB, Water Pump(3 Belt Application)	
11	EHB-8537		MAK 786GB33	HUB, Water Pump(Current)(2 Belt Application)	
12	EWP-3187	EM31870	N/A	ASSEMBLY, Water Pump (Long Shaft, Long Housing, Stamped Impeller) Includes Hub (1)EHB-8531	
12	EWP-3360	EM33600	MAK 316GC1184	ASSEMBLY, Water Pump (Long Shaft, Long Housing, Cast Impeller)	
12	EWP-3364		N/A	ASSEMBLY, Water Pump (Short Shaft, Long Housing, Stamped Impeller) Includes Pulley (1)EWP-8663	
12	EWP-3365	EM33650	MAK 316GC1205	ASSEMBLY, Water Pump (Short Shaft, Long Housing, Stamped Impeller)	
12	EWP-3366	EM33660	MAK 316GC1211A	ASSEMBLY, Water Pump (Long Shaft, Long Housing, Stamped Impeller)	
12	EWP-3368		MAK 316GC1219A	ASSEMBLY, Water Pump(CH Model) (Short Shaft, Long Housing, Stamped Impeller)	

Water Pump



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
12	EWP-3382		N/A	ASSEMBLY,Water Pump (Short Shaft, Long Housing, Stamped Impeller) Includes Pulley (1)EAP-8628	
12	EWP-3510		MAK 316GC184H	ASSEMBLY,Water Pump (Short Housing, Cast Impeller) (Single Row Front Bearing)	
12	EWP-3515		MAK 316GC184P	ASSEMBLY,Water Pump (Short Housing, Stamped Impeller) (Single Row Front Bearing)	
13	ERW-0742		MAK 379GC36P2	ROTOR(Cast)(Replaceable Ceramic Seal)	
13	ERW-0745		MAK 379GC38	ROTOR(Stamped)	
13	ERW-0746		MAK 379GC316	ROTOR(Stamped)(CH Model)	
14	ERS-3840		N/A	SEAL(Replaceable)(Use w/ ERW-0742 Rotor)	
15	ESR-3370		MAK 447GC145	SEAL	
15	ESR-3371		MAK 447GC25	SEAL(Use w/ ERW-0742 Rotor)	SCH 163026
15	ESR-3372		MAK 447GC224A	SEAL(Use w/ ERW-0745 Rotor)	
15	ESR-3374		MAK 447GC218	SEAL	
16	ECW-3375	EM33750	MAK 360GB443B	HOUSING,Water Pump	
16	ECW-3376		MAK 360GB140A	HOUSING,Water Pump(Short) (Uses Single Row Front Bearing)	
17	ESH-0750		MAK 469GC191C	SHAFT(Short)(Cast Rotor)	
17	ESH-3881		MAK 469GC245	SHAFT(Long)(Stamped Rotor)	
17	ESH-3885		MAK 469GC32B	SHAFT(Short)(Stamped Rotor)	
17	ESH-3886		MAK 469GC248A	SHAFT(Short)(Stamped Rotor)	
17	ESH-3887		MAK 469GC316	SHAFT(Short)(Stamped Rotor)(No Key)	
18	EKY-3171		MAK 42AX28	KEY(5/8in Lg)	
18	EKY-3172		MAK 42AX176	KEY(1/2in Lg)	
19	ESL-3851		MAK 518GC11	SLINGER	
20	EBG-3870		MAK 46AX451	BEARING,Rear	BCA 204F
21	ERS-8480		MAK 446GC1108	O-RING	
22	ETS-0721		MAK 550GC22P1	SPACER	
23	EBG-3860		MAK 46AX497	BEARING,Front(3 Belt Pulley) (Double Row)(2.047in OD)	BCA 5304F
23	EBG-3861		MAK 46AX387	BEARING,Front(2 Belt Pulley) (Single Row)(1.850in OD)	BCA 204FS
23	EBG-3862		MAK 46AX452	BEARING,Front(2 Belt Pulley) (Single Row)(2.047in OD)	BCA 304D
24	ESR-2831		MAK 325GC120	RING,Retaining	
25	EPP-3574		MAK 49AX233	PLUG,Pipe(3/8in)	
26	BNU-0191		MAK 21AX639	NUT,Lock	
27	EBF-6441		MAK 541KB23	BREATHER	NAV 110891H
28	EPR-3361		N/A	KIT,Water Pump & Housing Includes Water Pump Assembly (1)EWP-3360 Housing (1)EPH-8600	
28	EPK-3362		N/A	KIT,Water Pump & Housing Includes Water Pump Assembly (1)EWP-3366 Screws (7)ESC-0006 Washers (7)EWA-0061 Housing (1)EPH-8600	
29	EPK-3500		MAK 202SB31A	KIT,Water Pump Repair (For EWP-3510 Water Pump Assembly) Includes Shaft (1)ESH-0750 Rotor (1)ERW-0742 Bearings (1)EBG-3862 (1)EBG-3870 Seals (1)ESR-3370 (1)ERS-3840 Ring (1)ESR-2831 O-Ring (1)ERS-8480 Slinger (1)ESL-3851 Key (1)EKY-3171 Gasket Kit (1)EGK-3845 Spacer (1)ETS-0721	
29	EPK-3504		MAK 57GC2139A	KIT,Water Pump Repair (For EWP-3368 Water Pump Assembly) Includes Shaft (1)ESH-3887 Rotor (1)ERW-0746 Bearings (1)EBG-3860 (1)EBG-3870 Seal (1)ESR-3372 Ring (1)ESR-2831 O-Ring (1)ERS-8480 Slinger (1)ESL-3851 Gasket Kit (1)EGK-3845	

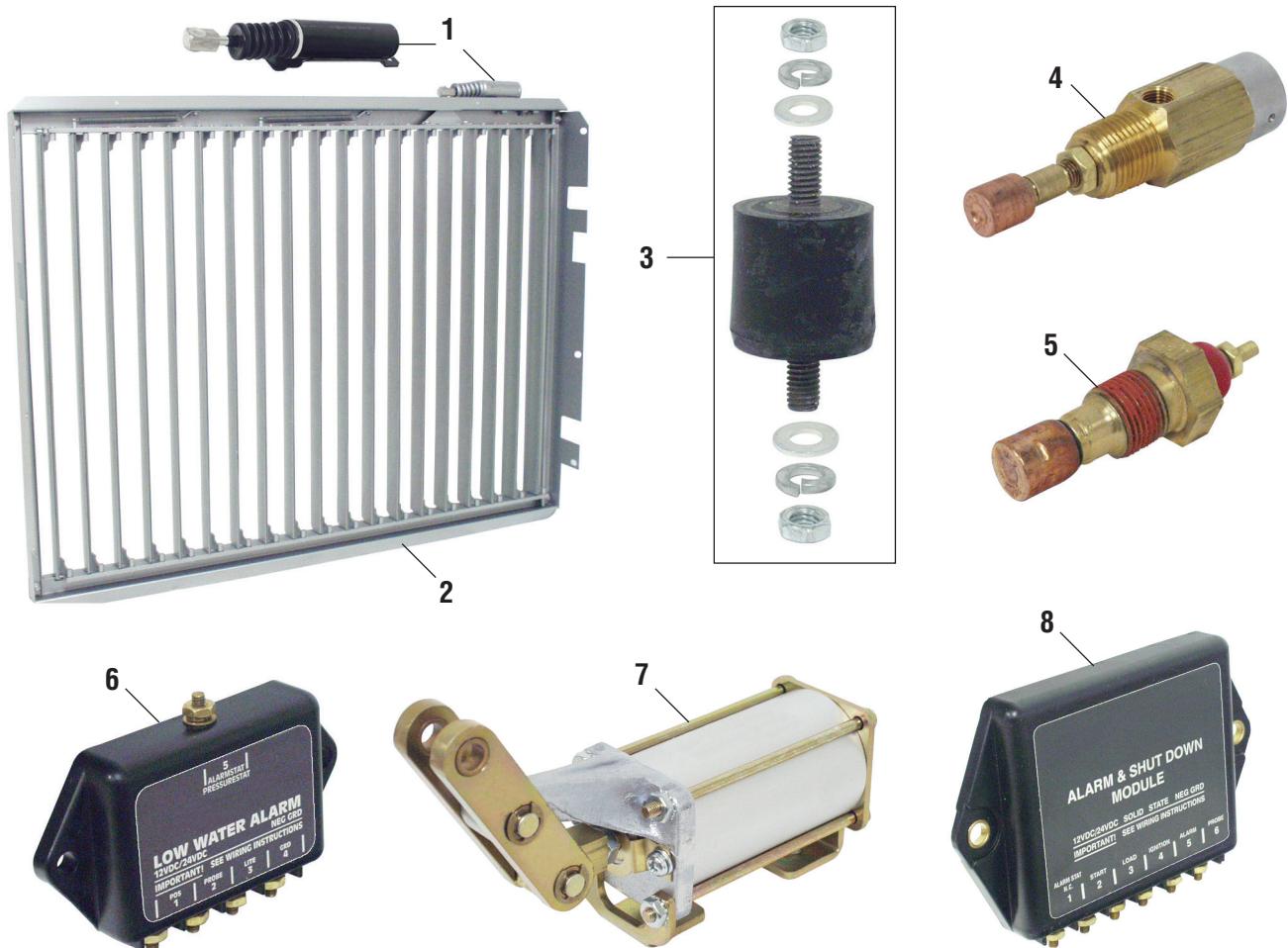
Please see the following page for keys 30-33.

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
29	EPK-3505		MAK 202SB40B	KIT,Water Pump Repair (For EWP-3365 Water Pump Assembly) Includes Shaft (1)ESH-3885 Rotor (1)ERW-0745 Bearings (1)EBG-3860 (1)EBG-3870 Seal (1)ESR-3372 Ring (1)ESR-2831 O-Ring (1)ERS-8480 Slinger (1)ESL-3851 Key (1)EKY-3172 Gasket Kit (1)EGK-3845	
29	EPK-3506		MAK 202SB42A	KIT,Water Pump Repair (For EWP-3515 Water Pump Assembly) Includes Shaft (1)ESH-3886 Rotor (1)ERW-0745 Bearings (1)EBG-3862 (1)EBG-3870 Seal (1)ESR-3372 Ring (1)ESR-2831 O-Ring (1)ERS-8480 Slinger (1)ESL-3851 Key (1)EKY-3171 Gasket Kit (1)EGK-3845	
29	EPK-3850		MAK 202SB38	KIT,Water Pump Repair (For EWP-3360 Water Pump Assembly) Includes Shaft (1)ESH-3881 Rotor (1)ERW-0742 Bearings (1)EBG-3860 (1)EBG-3870 Seals (1)ESR-3370 (1)ERS-3840 Ring (1)ESR-2831 O-Ring (1)ERS-8480 Slinger (1)ESL-3851 Key (1)EKY-3171 Gasket Kit (1)EGK-3845	
29	EPK-3853		MAK 202SB38A	KIT,Water Pump Repair (For EWP-3360 Water Pump Assembly) Includes Shaft (1)ESH-3881 Rotor (1)ERW-0742 Bearings (1)EBG-3860 (1)EBG-3870 Seals (1)ERS-3840 (1)ESR-3374 Ring (1)ESR-2831 O-Ring (1)ERS-8480 Slinger (1)ESL-3851 Key (1)EKY-3171 Gasket Kit (1)EGK-3845	
29	EPK-3855		MAK 202SB41C	KIT,Water Pump Repair (For EWP-3366 Water Pump Assembly) Includes Shaft (1)ESH-3881 Rotor (1)ERW-0745 Bearings (1)EBG-3860 (1)EBG-3870 Seal (1)ESR-3372 Ring (1)ESR-2831 O-Ring (1)ERS-8480 Slinger (1)ESL-3851 Key (1)EKY-3171 Gasket Kit (1)EGK-3845	
30	EGK-3845		MAK 57GC182	KIT,Gasket Includes Gaskets (1)EGK-3852 (1)EGK-3846 (1)EGK-3847	
31	EWP-8626		MAK 302GC2187A	PULLEY,Steel(2 Belt Application)	
32	EAP-8628		MAK 309GC2215	PULLEY,Air Conditioner Drive	
33	MAF-5243		MAK 63AX3566	FITTING,Water Elbow (3/8in pipe thread, 5/8in hose dia.)	
33	840105		MAK 63AX3565	FITTING,Water Elbow (1/2in pipe thread, 5/8in hose dia.)	

Air Cylinder Controls and Shutter Components

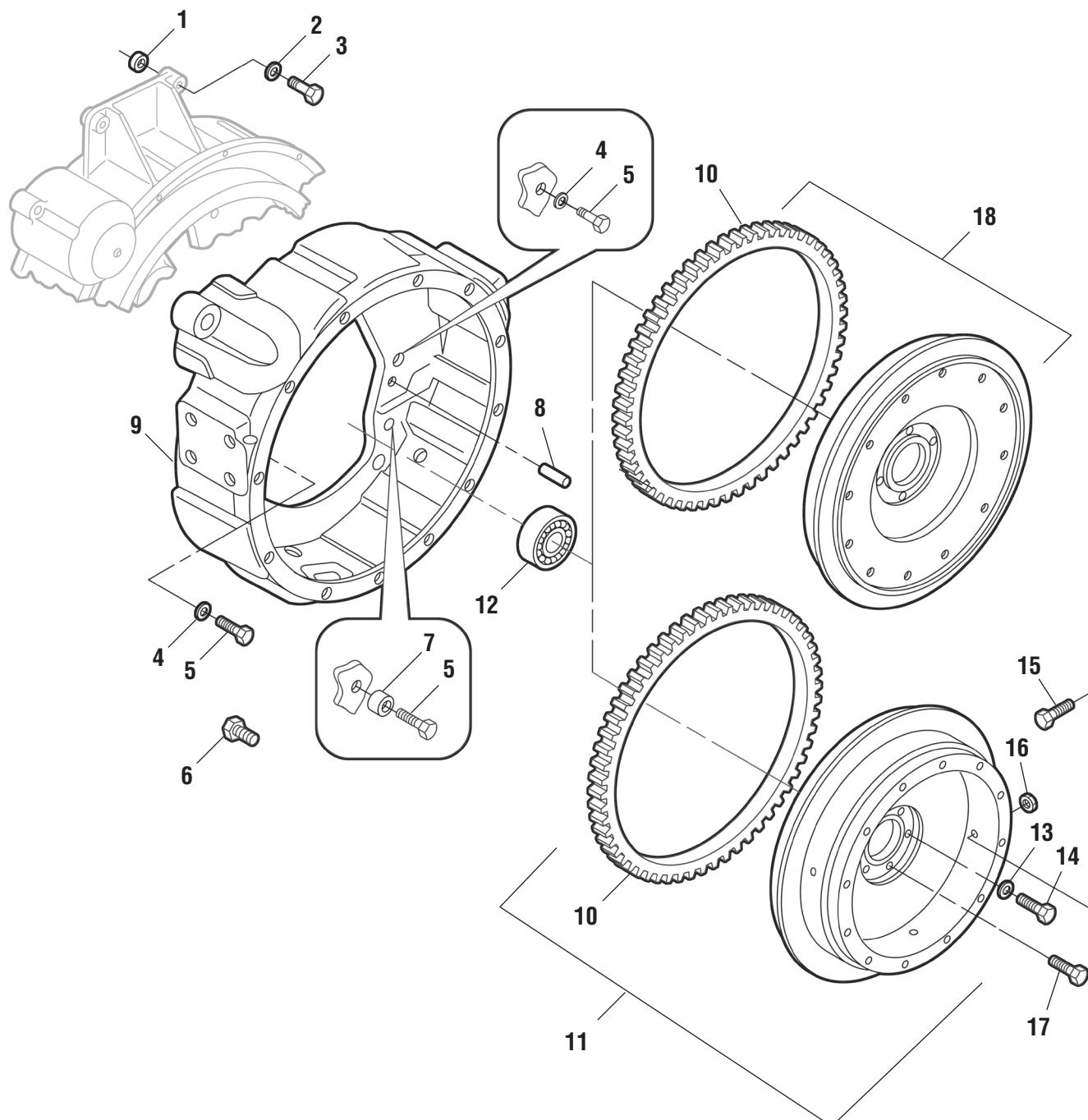
 PAI

FIGURE 37



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EAC-8372		MAK 35MG231	CYLINDER,Air(Shutter Control) (Overall Free Length 8-1/2in)	
1	EAC-8373		MAK 31QC217	CYLINDER,Air(Shutter Control) (Overall Free Length 7in)	
2	ESA-8376		MAK 2MG495A	ASSEMBLY,Shutter	MAK 2MG341C
2	ESA-8377		MAK 2MG463A	ASSEMBLY,Shutter	
3	FMM-4654		MAK 20QL286	KIT,Shutter Insulator Mount (3/8in Threaded Studs) Includes Washers (2)FWA-0050 (2)GWA-0062 Nuts (2)FNU-0075 Mount (1)FMM-4654-001	
4	ECV-8370-165		MAK 2079-SS165	VALVE,Shutter Control(165 deg.)	MAK 7MG215DP1
4	ECV-8370-170		MAK 2079-SS170	VALVE,Shutter Control(170 deg.)	MAK 7MG215DP7
4	ECV-8370-175		MAK 2079-SS175	VALVE,Shutter Control(175 deg.)	MAK 7MG215DP9
4	ECV-8370-180		MAK 2079-SS180	VALVE,Shutter Control(180 deg.)	MAK 7MG215DP11
4	ECV-8370-185		MAK 2079-SS185	VALVE,Shutter Control(185 deg.)	MAK 7MG215DP13
5	EAS-8374-210		MAK 7MG26AP6	ALARMSTAT(210 deg.)	
5	EAS-8374-220		MAK 7MG26AP8	ALARMSTAT(220 deg.)	
6	ESW-8375		MAK 2MR260P2	RELAY,Low Water Alarm	
7	EAC-8378		MAK 20QE2216A	CYLINDER,Air(Shutter Control/PTO Shift)	
8	ECM-8379		MAK 2MR261P2	MODULE,Shutdown Control	

FIGURE 41



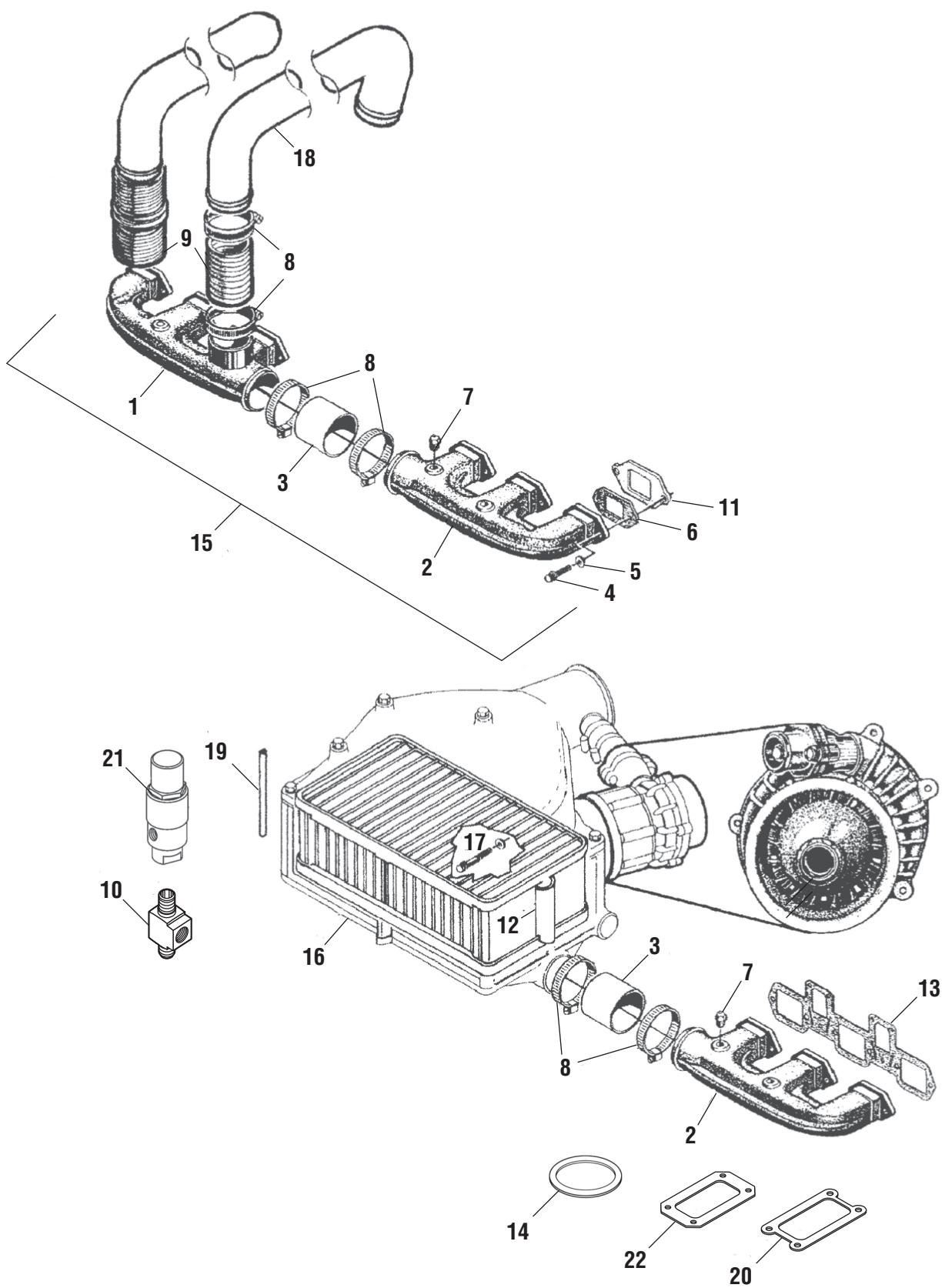
Flywheel Assembly



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	Call		MAK 537GC231	SPACER	
2	BWA-0056		MAK 37AX302	WASHER	
3	ESC-0118		MAK 4AX223	SCREW(1/2in-13 x 2-3/4in)	
4	EWA-1780		MAK 711GC1100P9	WASHER(6 req'd)	
5	ESC-8400		MAK 429GC112P1	SCREW(5/8in-11 x 1-3/4in)(6 req'd)	
5	ESC-8410		MAK 429GC114A	SCREW(5/8in-11 x 2-1/4in)(2 req'd)	
6	BSC-0031		MAK 6AX1303X	SCREW	
7	ESP-1785		MAK 711GC1100P12	SPACER(2 req'd)	
8	EPN-5116-STD		MAK 183GC192P1	PIN,Alignment(STD)	
8	EPN-5116-016		MAK 183GC192P2	PIN,Alignment(.016in Oversize)	
8	EPN-5116-033		MAK 183GC192P3	PIN,Alignment(.033in Oversize)	
8	EPN-5116-063		MAK 183GC192P4	PIN,Alignment(.063in Oversize)	
9	EFH-3998		MAK 634GC5194A	HOUSING,Flywheel	
10	ERG-3990		MAK 673GB222	GEAR,Starter Ring	
11	EFW-3995		MAK 530GB4380P2	KIT,Flywheel(For 14in Dana Type Clutch) Includes Nuts (6)BNU-0261 Pins (1)EPN-5125 (6)CPN-9711	
12	EBG-8040		MAK 46AX310	BEARING,Clutch Pilot	BCA 305S3
12	+EBG-8639		MAK 46AX534	BEARING,Clutch Pilot(Sealed)	
12	EBG-8760		MAK 46AX313	BEARING,Clutch Pilot	BCA 5304
13	EWA-1780		MAK 711GC1100P9	WASHER	
14	ESC-1610		MAK 419GC113B	SCREW(5/8in-18 x 1-3/4in)	
15	CPN-9710		MAK 2104-274C6	PIN,Drive	MAK 303SC29
15	CPN-9711		MAK 183GC191	PIN,Drive(Threaded)	
16	BNU-0261		MAK 21AX814	NUT	
17	EPN-5125		MAK 31AX491	PIN,Locating	
18	EFW-3996		MAK 530GB3142	FLYWHEEL(For 15-1/2in Dana Type Clutch)	

+High Performance available by adding (HP) to the end of the PAI Reference number when placing your order.

FIGURE 47

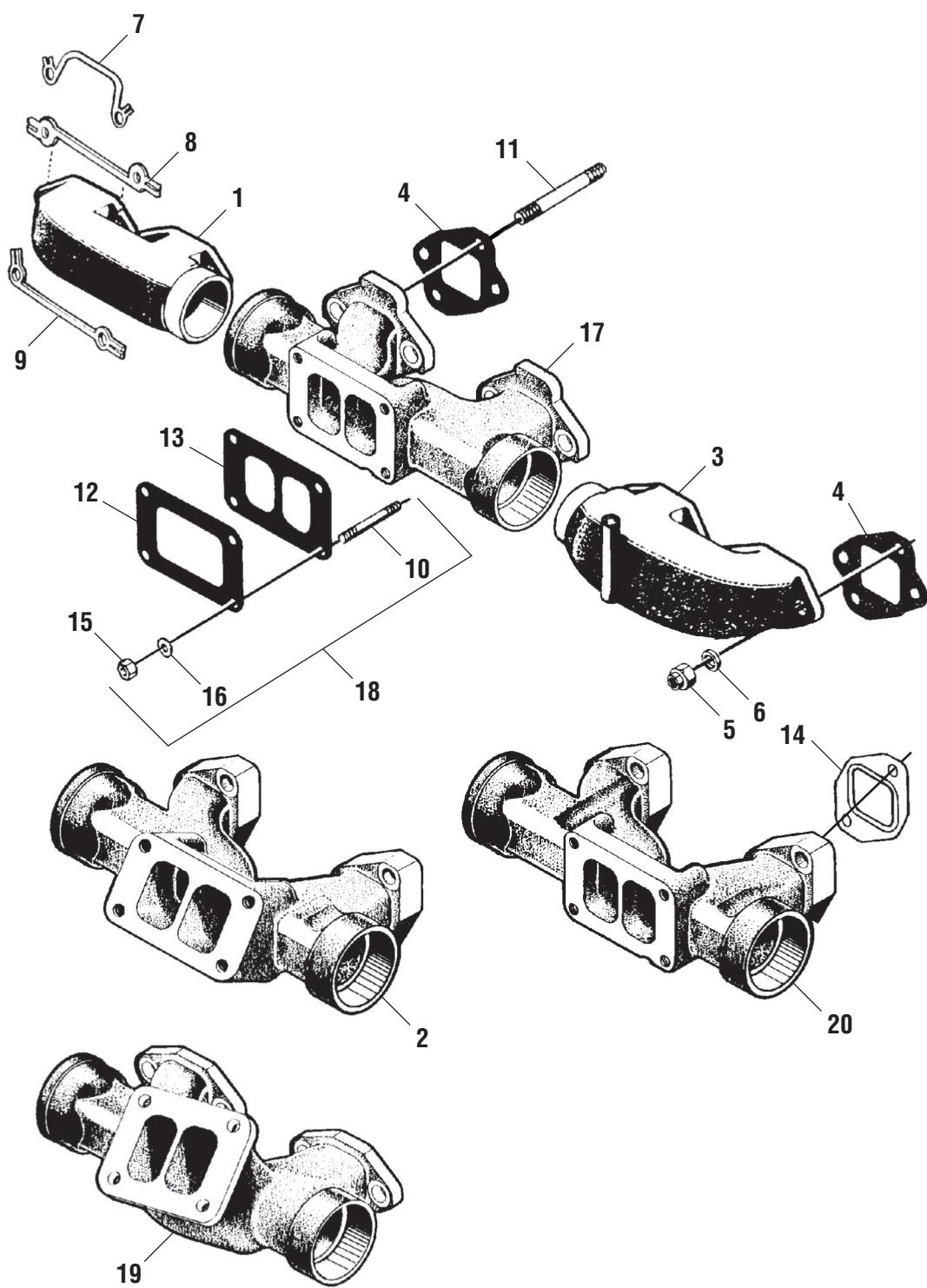


Intake Manifold



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EMA-1969		MAK 105GC4222B	MANIFOLD,Front Intake	MAK 105GC4217B
2	EMA-1968		MAK 105GC249	MANIFOLD,Rear Intake	MAK 744GB216P4
3	EIH-1984		MAK 744GB37P3	HOSE,Inlet(3-1/2in ID x 2-1/2in Lg)	
4	ESC-2198		MAK 6AX1427	SCREW(12 pt)(7/16in-14 x 1-1/4in Lg)	
5	EWA-1772		MAK 35AX1361U	WASHER	
6	EGK-3936		MAK 573GB170	GASKET,Inlet Manifold	
7	EPP-3573		MAK 49AX230	PLUG,Inlet Manifold	MAK 49AX251
8	ECL-1955		MAK 83AX698	CLAMP,Hose	MAK 83AX454
9	EIH-1871		MAK 45MD344M	HOSE,Inlet(4in ID x 6in Lg)	
9	EIH-1872		MAK 45MD344M4	HOSE,Inlet(4in ID x 4-3/4in Lg)	
9	EIH-1873		MAK 45MD344M5	HOSE,Inlet(4in ID x 7-5/8in Lg)	
9	EIH-1874		MAK 45MD344M6	HOSE,Inlet(4in ID x 9-1/2in Lg)	
9	EIH-1875		MAK 45MD344M7	HOSE,Inlet(4in ID x 4in Lg)	
9	EIH-1881		MAK 744GB37	HOSE,Inlet(3in ID x 3in Lg)	MAK 744GB216P1
9	EIH-1887		MAK 45MD29B	HOSE,Inlet(3in ID x 6in Lg)	
9	EIH-1988		MAK 744GB310P2	HOSE,Inlet(Silicone)(3-3/4in ID x 4in Lg)	
9	EIH-1991		MAK 45MD342M	HOSE,Inlet(3-1/2in ID x 6in Lg)	
9	EIH-1992		MAK 45MD342M2	HOSE,Inlet(3-1/2in ID x 4-3/4in Lg)	
9	EIH-1993		MAK 45MD414M3	HOSE,Inlet(4in ID x 7-1/8in Lg)	
10	MAF-5233		MAK 63AX3686	KIT,Intake Manifold	
11	EGS-3890-015		MAK 573GB135	FITTING,Puff Limiter	MAK 63AX3607
12	EIC-1976		MAK 314GB41C	GASKET(Used w/ Stamped Manifold)	
13	EGS-3890-010		MAK 590GB312B	CORE,Intercooler(Air to Air)	
14	EGS-3890-016		MAK 590GB1321	GASKET(1 pc.)	
15	EMK-1967		N/A	GASKET,Crossover(Early)	
				KIT,Intake Manifold	
				(Retrofit Stamped Manifold to Current Cast Intake Manifolds)	
				Includes Manifolds (1)EMA-1968 (1)EMA-1969 Clamps (2)ECL-1955 Hose (1)EIH-1984	
16	EGK-3926		MAK 590GB44	GASKET,Intercooler Core	
17	ESC-2199		MAK 6AX1353	SCREW(12 pt)(3/8in-16 x 3in Lg)	
18	EIT-1891		MAK 680GC524B	TUBE,Turbo Crossover(ETZ673E, EM6-200)	
18	EIT-1892		MAK 680GC520	TUBE,Turbo Crossover(ENDT675)	
19	EGK-3928		MAK 449GC27	SEAL,Intercooler End(6-3/4in Lg)	
19	EGK-3931		MAK 449GC27P2	SEAL,Intercooler End(4-1/2in Lg)	
20	EGS-3890-037		MAK 590GB1107	GASKET,Inlet Elbow(Early)	
21	EVA-2775-001		MAK 691GC218CX	VALVE,Puff Limiter	
21	EVA-2775-004		MAK 691GC218CP4X	VALVE,Puff Limiter	
21	EVA-2775-007		MAK 691GC218CP7X	VALVE,Puff Limiter	
21	EVA-2775-009		MAK 691GC218CP9X	VALVE,Puff Limiter	
22	EGS-3890-033		MAK 573GB149	GASKET,Inlet Elbow(Early)	

FIGURE 48

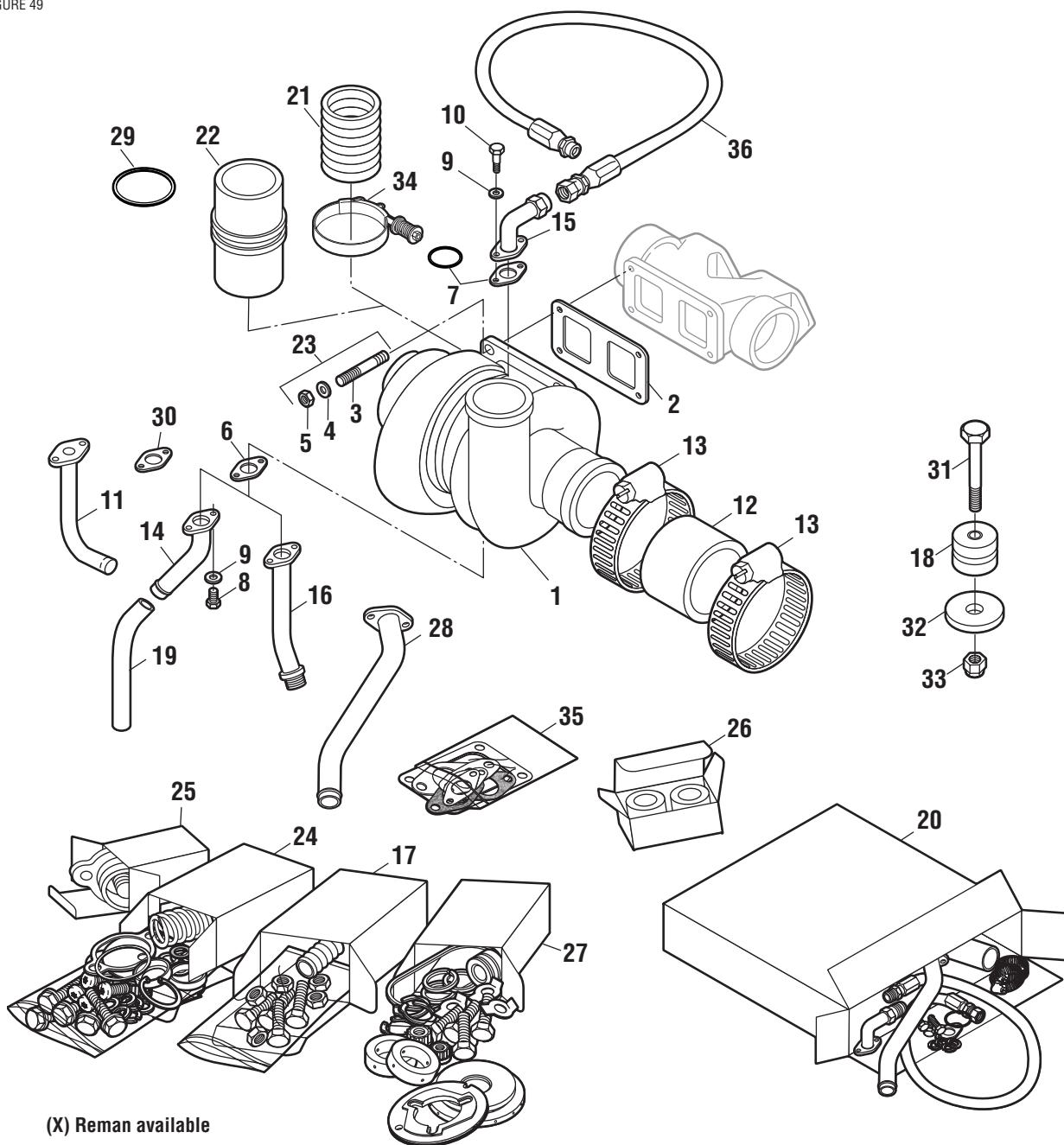


Exhaust Manifold



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EEX-2040		MAK 104GC343A	MANIFOLD,Rear Exhaust (Horizontal Bolt Pattern)	
1	EEX-2053		MAK 104GC5167	MANIFOLD,Front/Rear Exhaust (Short Mounting Bosses) (Diagonal Bolt Pattern)	
2	EEX-1882		MAK 104GC5166	MANIFOLD,Center Exhaust (Short Mounting Bosses) (Angle Turbo Mount)	MAK 104GC5124
3	EEX-2050		MAK 104GC342A	MANIFOLD,Front Exhaust	
4	EGK-3938		MAK 573GB310A	GASKET(4 Bolt Holes)(w/ Steel Bead)	
5	ENU-0070		MAK 23AX395	NUT(Anti-Seize)	
5	ENU-0071		MAK 22AX22C	NUT(7/16in-14)	
5	ENU-0277		MAK 23AX514	NUT,Flanged(Locking)(Copper Plated)(7/16in-14)	
6	BWA-0067		MAK 37AX256	WASHER	
7	ELK-1990		MAK 87GC132	LOCK(Use w/ EEX-1913 & EEX-1911 Center Exhaust Manifolds)	
8	ELK-1995		MAK 87GC212	LOCK(Use w/ EEX-1883 & EEX-1913 Center Exhaust Manifolds)	MAK 87GC27
9	ELK-1996		MAK 87GC213	LOCK(Use w/ EEX-1883 & EEX-1913 Center Exhaust Manifolds)	MAK 87GC28
10	EST-0045		MAK 616GC180B	STUD,Turbo Mount(3/8in-16 x 3/8in-24 x 2-9/16in)	
11	EST-0040		MAK 616GC28AP2	STUD,Exhaust Manifold(7/16in-14 x 1-7/8in)	MAK 17AX93
11	EST-0041		MAK 616GC28A	STUD,Exhaust Manifold(7/16in-14 x 4in)	
11	EST-0043		MAK 616GC248	STUD,Exhaust Manifold(7/16in-14 x 2-3/8in)	
12	EGS-3890-020		MAK 590GB1189A	GASKET,Turbo(Single Port)	SCH 132040
13	EGK-2865		MAK 3316-409038	GASKET,Turbo(Dual Port)	
14	EGK-3934		MAK 573GB257A	GASKET,Exhaust Manifold	
15	ENU-0188		MAK 21AX852	NUT(3/8in-24)	
16	EWA-0176		MAK 37AX495	WASHER	
17	EEX-1911		MAK 104GC4300P4	MANIFOLD,Center Exhaust (Horizontal Bolt Pattern)(Side Mount Turbo)	
18	EKT-0305		MAK 370SB23	KIT,Turbo Mounting Includes Studs (4)EST-0045 Washers (4)EWA-0176 Nuts (4)ENU-0188	
19	EEX-1913		MAK 104GC4274B	MANIFOLD,Center Exhaust (Horizontal Bolt Pattern) (Compound Angle Turbo Mounting)	
20	EEX-1883		MAK 104GC5168	MANIFOLD,Center Exhaust (Short Mounting Bosses)(Diagonal Bolt Pattern) (Side Mount Turbo)	

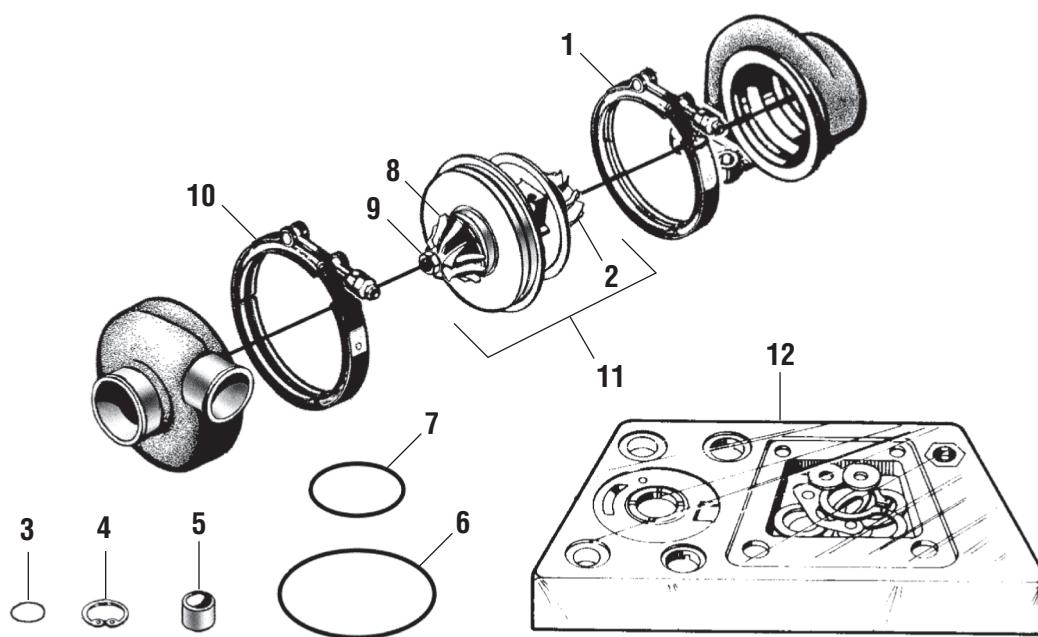
FIGURE 49



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ETC-3723		AIR 465380-5014	TURBOCHARGER(Slip Connection)	AIR 465380-14
1	ETC-3730		AIR 465498-5002	TURBOCHARGER	AIR 465498-2
1	ETC-8289(X)		MAK 631GC5118P6	TURBOCHARGER(S4A)(V-Band Compression Outlet)	
1	ETC-8289		MAK631GC5118P6	TURBOCHARGER(S4A)(V-Band Compression Outlet)	
1	ETC-8293(X)		MAK 631GC485	TURBOCHARGER(4LE)	MAK 631GC485
1	ETC-8294		MAK 631GC487P1	TURBOCHARGER(4LE)(Slip Connection)	SCH 185604
1	ETC-8295(X)	EM82950	MAK 631GC463	TURBOCHARGER(4LE)	MAK 631GC4101P13
1	ETC-8297		MAK 631GC5100P4	TURBOCHARGER(4LE)	SCH 186261
1	ETC-8299		MAK 631GC5118P5	TURBOCHARGER(S4A)	SCH 194768
2	EGK-2865		MAK 3316-409038	GASKET(Dual Port)	AIR 409038
3	EST-0045		MAK 616GC180B	STUD(4 req'd)	
4	EWA-0176		MAK 37AX495	WASHER(4 req'd)	
5	ENU-0188		MAK 21AX852	NUT(4 req'd)	
6	EGS-2862		MAK 590GB1296A	GASKET,Oil Drain Tube	SCH 132040
6	EGS-2863		SCH 148062	GASKET,Oil Drain Tube	

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
6	EGK-3867		MAK 590GB2109A	GASKET,Oil Drain Tube	
7	EGS-2861		MAK 56AX356	GASKET,Oil Inlet Tube	SCH 129119
7	EGA-3877		MAK 446GC1225	O-RING,Oil Inlet	
8	CSC-0134		MAK 4AX17	SCREW(3/8in-16 x 3/4in)	
9	FWA-0050		MAK 36AX3	WASHER	
10	ESC-2202		MAK 6AX1543	SCREW(3/8in-16 x 7/8in)	
11	EFI-1737		MAK 681GC461	TUBE,Turbo Oil Drain	
11	EFI-1738		MAK 681GC474	TUBE,Turbo Oil Drain	
12	EIH-1979		MAK 744GB310	HOSE,Inlet(Silicone)(3in ID x 4in Lg)	
12	EIH-1980		MAK 42QE3158P2	HOSE,Inlet(Rubber)(3-1/2in ID x 3in Lg)	
12	EIH-1981		MAK 744GB37	HOSE,Inlet(Silicone)(3in ID x 3in Lg)	MAK 744GB144P1
12	EIH-1982		MAK 744GB216P2	HOSE,Inlet(Silicone)(4in ID x 2-1/4in Lg)	MAK 744GB144P2
12	EIH-1983		MAK 744GB216P3	HOSE,Inlet(Silicone)(3-1/2in ID x 2in Lg)	MAK 744GB144P3
12	EIH-1984		MAK 744GB37P3	HOSE,Inlet(Silicone)(3-1/2in ID x 2-1/2in Lg)	MAK 744GB216P4
12	EIH-1985		MAK 744GB216P5	HOSE,Inlet(Silicone)(2-1/2in ID x 2-1/2in Lg)	MAK 744GB144P5
12	EIH-1986		MAK 744GB216P6	HOSE,Inlet(Silicone)(1-3/8in ID x 2-1/2in Lg)	MAK 744GB144P6
12	EIH-1988		MAK 744GB310P2	HOSE,Inlet(Silicone)(3-3/4in ID x 4in Lg)	
12	EIH-1989		N/A	HOSE,Inlet(Silicone)(3-1/2in ID x 3-1/2in Lg)	
12	EIH-2006		MAK 45MD442M	HOSE,Inlet (Silicone)(Red)(3-1/2in ID x 5-15/16in Lg)	
12	EIH-2011		MAK 45MD29BP4	HOSE,Inlet(Silicone)(3in ID x 9-1/2in Lg)	
12	EIH-2012		MAK 45MD252	HOSE,Inlet(Silicone)(2in ID x 4-5/8in Lg)	
12	EIH-2013		MAK 45MD354M2	HOSE,Inlet(Silicone)(3-1/2in to 4in ID x 4-3/4in Lg)	
12	EIH-2057		MAK 45MD443M	HOSE,Inlet(Silicone)(Blue)(3-1/2in ID x 5-15/16in Lg)	
13	ECL-1955		MAK 83AX698	CLAMP,Hose(3.06in to 4.500in)	MAK 83AX739
14	EFI-1801		MAK 681GC335	TUBE,Oil Drain	
14	EFI-1861		MAK 681GC419	TUBE,Oil Drain	
15	EFI-1799		MAK 208GC268	TUBE,Oil Inlet	
15	EFI-1800		MAK 208GC168	TUBE,Oil Inlet	MAK 208GC143
16	EFI-1860		MAK 681GC225	TUBE,Oil Drain	
17	ETK-3667		MAK 3316-468210	KIT,Turbocharger Service(TEO)	AIR 468210
18	FIM-4678		MAK 20QL37P6	INSULATOR,Intercooler	MAK 20QL37P3
19	ECH-8675		MAK 744GB230P4	HOSE,Turbo(7/8in ID x 4in Lg)	
19	ECH-8676		MAK 744GB230P6	HOSE,Turbo(7/8in ID x 6in Lg)	
20	ETK-3675		MAK 57GC259	KIT,Turbocharger Retrofit Includes Hoses (1)ECH-8675 (1)804215 Clamps (2)ECL-1962 Screws (4)ESC-0012 Washers (4)FWA-0050 O-Ring (1)EGA-3877 Gasket (1)EGS-2862 Tubes (1)EFI-1799 (1)EFI-1748	
21	EIH-1974		MAK 45MD362M2	HOSE,Outlet(Cold Side)(CH Model) (3-1/2in ID x 6-1/8in Lg)	
21	EIH-1991		MAK 45MD342M	HOSE,Outlet(CH Model)(3-1/2in ID x 6in Lg)	
21	EIH-1992		MAK 45MD342M2	HOSE,Outlet(CH Model)(3-1/2in ID x 4-3/4in Lg)	MAK 45MD360M2
22	EIH-1993		MAK 45MD414M3	HOSE,Outlet(4in ID x 7-1/8in Lg)	
23	EKT-0305		MAK 370SB23	KIT,Turbocharger Mounting Includes Studs (4)EST-0045 Washers (4)EWA-0176 Nuts (4)ENU-0188	
24	ETK-3670		MAK 3316-492900	KIT,Turbocharger Service	AIR 492900
25	ETK-3671		MAK 3316-492901	KIT,Turbocharger Check Valve	AIR 492901
26	ETK-3669		MAK 3316-408906	KIT,Turbocharger Service	MAK 3316-4074321
27	ETK-3668		MAK 3316-468211	KIT,Turbocharger Service(TV/TW)	AIR 468211
28	EFI-1736		MAK 681GC457A	TUBE,Oil Drain	
28	EFI-1748		MAK 681GC266	TUBE,Oil Drain	MAK 681GC267
28	EFI-1862		MAK 681GC352A	TUBE,Oil Drain(R Model)	
29	EGA-2924		MAK 56AX535	O-RING,Turbocharger Compressor Outlet	
30	EAD-1809		SCH 185994	ADAPTER,Oil Return	
31	FSC-0869		MAK 1AX47	SCREW	
32	FWA-0397		MAK 37AX168	WASHER	
33	ENU-0188		MAK 21AX852	NUT	
34	ECL-1857		MAK 83AX983	CLAMP	
35	EKT-2668		SCH 318417	KIT,Turbo Mounting Includes Gaskets (1)EGS-3890-020 (1)EGS-2861 (1)331308 (1)EGS-2862 (1)131480 (1)EGS-2863 (1)131494 O-Ring (1)121227	
36	804215		MAK 42QE44511RP42	ASSEMBLY,Hose	

FIGURE 50

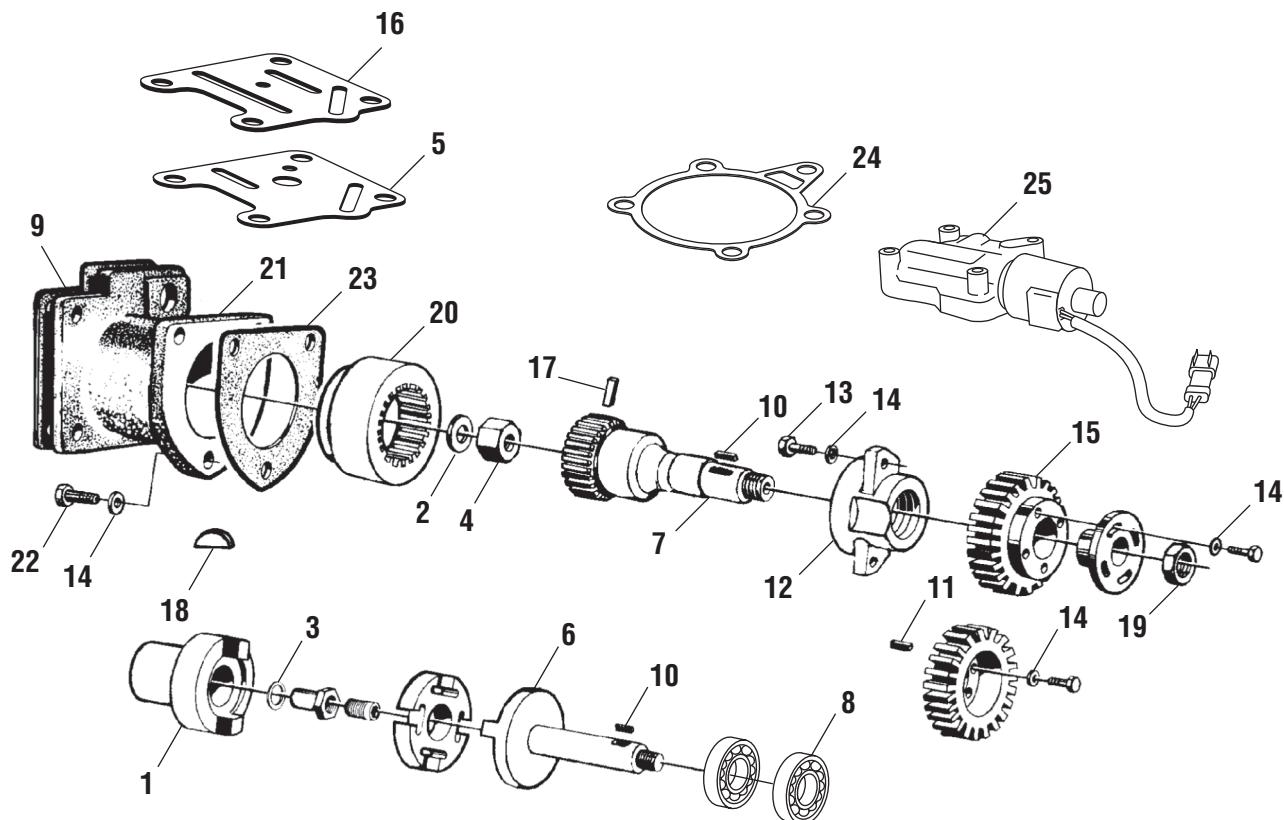


KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ECL-2910		MAK 7536-140353	CLAMP,Turbine Includes Nut (1)ENU-2781	SCH 140353
2	ESH-2940		MAK 364SB73A	SHAFT,Turbine Assembly	SCH 184409
3	EPR-2810		MAK 344SB16P4	RING,Seal	SCH 125647
4	ESR-2897		SCH 128936	RING,Retaining	SCH 130282
4	ESR-2900		MAK 343SZ38	RING,Retaining	SCH 138363
5	EBG-2890		MAK 39SB35	BEARING	SCH 151242
6	EGA-2620		MAK 343SB79	O-RING	SCH 142228
7	EGA-2630		MAK 343SB81	O-RING	SCH 188591
8	ECW-9245		MAK 7536-188591	WHEEL,Compressor(4LE-303)	SCH 192511
9	ENU-0227		MAK 7536-192511	NUT,Compressor	
9	ENU-0229		AIR 144242-0000	NUT,Cmpressor	
9	ENU-2780		MAK 261SB51	NUT,Compressor Lock(Nylock Type)	SCH 141073
9	ENU-2782		MAK 7536-182669	NUT,Compressor Lock	SCH 182669
10	ECL-2860		MAK 48SB21	CLAMP,Compressor	SCH 139677
11		EM38100	MAK 215SB157	CARTRIDGE,Turbocharger (For ETC-8293 & ETC-8297 Turbocharger)	SCH 182348
11	ECR-3811	EM38110	SCH 185606	CARTRIDGE,Turbocharger (For ETC-8294 & ETC-8295 Turbocharger)	
11	ECR-3812		MAK 7536-181999	CARTRIDGE,Turbocharger (For ETC-8291, ETC-8292 & ETC-8296 Turbochargers)	SCH 181999
12	EKT-2778		MAK 7536-199009	KIT,Turbocharger Repair(S3A)	SCH 199009
12	EKT-2791		MAK 7536-183211	KIT,Turbocharger Repair(4LE)	SCH 183211
12	EKT-2792		MAK 7536-197080	KIT,Turbocharger Repair(S4A)	SCH 197080
12	EKT-9239		SCH 181751	KIT,Turbocharger Repair(4GLZ)	
12	EKT-9249		SCH 169936	KIT,Turbocharger Repair(S300)	
12	EKT-9262		MAK 7536-183223	KIT,Turbocharger Repair(3LM)	SCH 183223
12	EKT-9263		MAK 7536-183216	KIT,Turbocharger Repair(4D)	SCH 183216
12	EKT-9264		MAK 7536-188450	KIT,Turbocharger Repair(4LH & 4LF)	SCH 188450

Injection Pump Drive

PAI

FIGURE 51

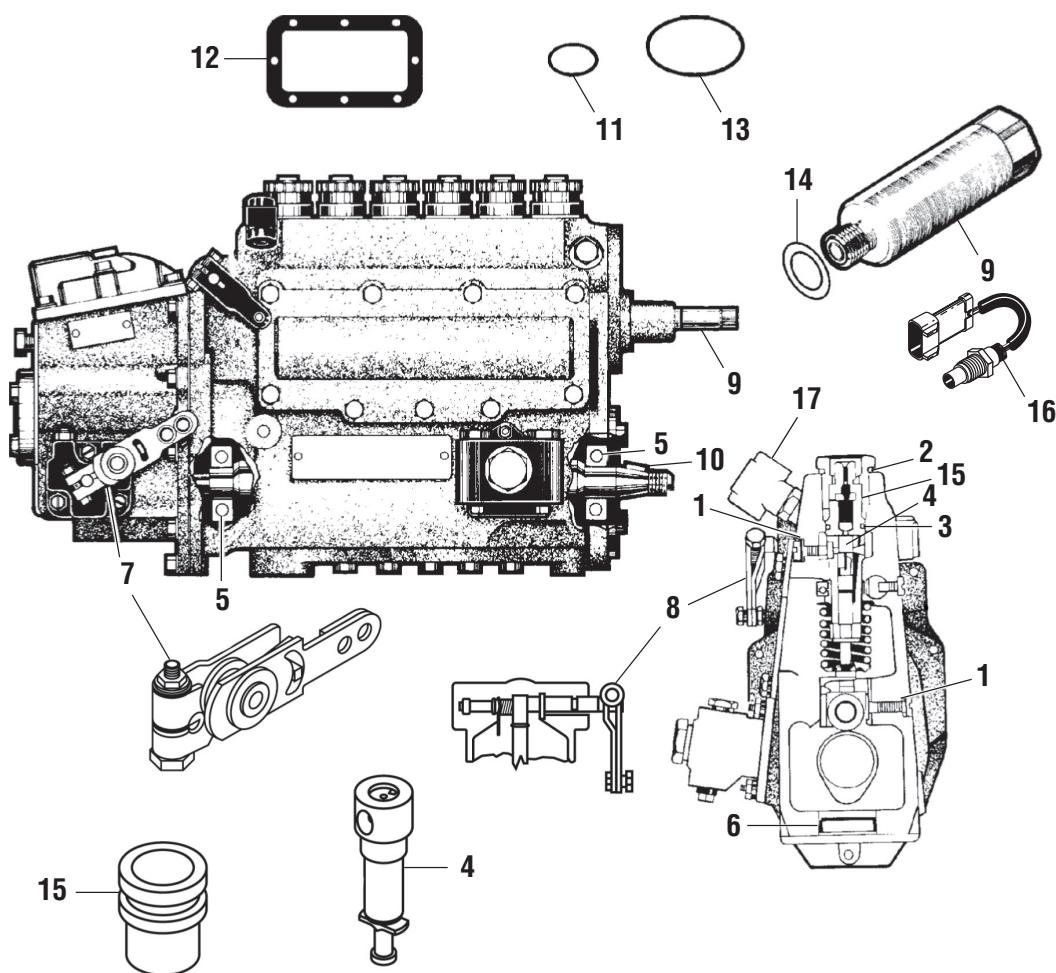


ENGINE COMPONENTS

E6 SERIES

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ECU-1900		MAK 320GB169C	COUPLING,Injection Pump	
2	EWA-0179		MAK 37AX238X	WASHER	AMB WA406067
3	EWA-1781		MAK 711GC1118	WASHER	
4	ENU-0204		MAK 142GC199	NUT	AMB NT403377
5	803902		MAK 590GB2155	GASKET,Econovance	
6	ESH-3031		MAK 461GC125	SHAFT,Drive(Use w/ ECU-2100 Coupling)	
7	ESH-3035		MAK 461GC236	SHAFT,Drive(Use w/ EHB-4135 Coupling) Includes Pin (1)EPN-5124	
8	EBG-8760		MAK 46AX313	BEARING,Front Injection Pump	BCA 5304
9	EGS-3900-042		MAK 562GB33	GASKET,Fuel Pump Mounting	
10	EKY-3170		MAK 42AX618	KEY	
11	EKY-2642		MAK 42AX214	KEY	
12	ECH-3138		MAK 763GB322	HOUSING,Drive(4VH)	
13	Call		MAK 421GC164	SCREW	
14	EWA-0176		MAK 37AX495	WASHER(3/8in)	
14	EWA-1772		MAK 35AX1361U	WASHER(7/16in)	
15	EGE-2587		MAK 678GB327	GEAR	
16	803901		MAK 590GB2137A	GASKET,Econovance	MAK 590GB2137
17	EPN-5124		MAK 31AX532	PIN	
18	EKY-2645		MAK 43AX70	KEY,Injection Pump Coupling	AMB KY403378
19	BNU-0193		MAK 142GC172	NUT(7/8in)	
20	EHB-4135		MAK 7831-5287	COUPLING(Phenolic)	
21	EIH-8595		MAK 26GB412B	HOUSING,Adapter	
22	BSC-0011		MAK 6AX1317X	SCREW(7/16in-14 x 1-1/4in)	
23	EGK-3863		MAK 590GB2133A	GASKET(Current)	
23	EGS-3900-038		MAK 590GB190D	GASKET	
24	803903		MAK 590GB2157	GASKET,Econovance	
25	801091		MAK 805GC319	VALVE,Econovance	

FIGURE 52

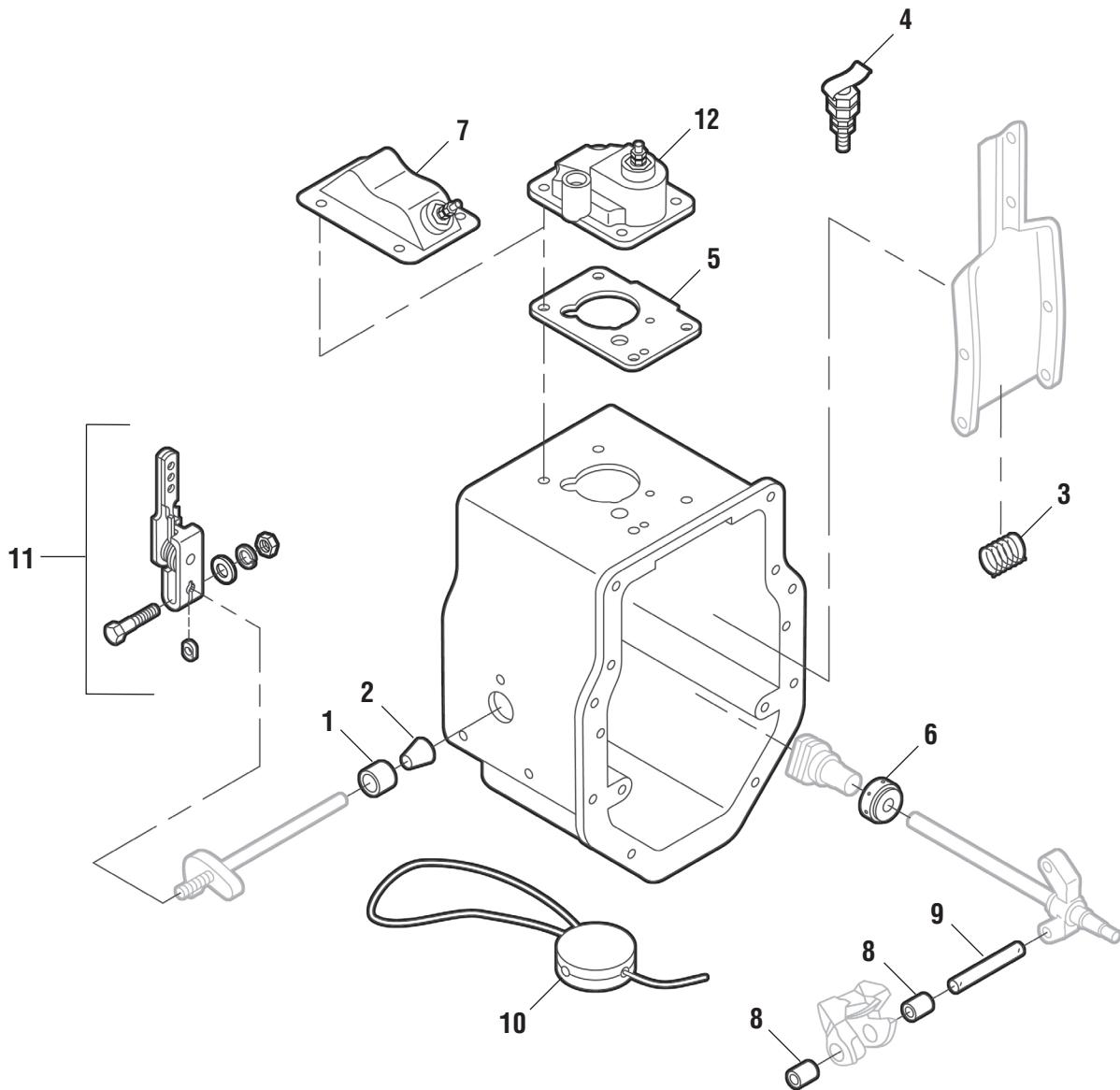


KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EWA-2460		MAK 79-GA403312	WASHER(Copper)	AMB GA403312
2	EGA-2615		MAK 79-GA403439	O-RING	AMB GA403439
3	EGA-0430		MAK 446GC1131	O-RING	AMB GA780423
4	EIP-8938		MAK 79-BC764363A	PLUNGER	
4	EIP-8939		MAK 79-BC764383A	PLUNGER	
5	ERB-1250-TIM		AMB RB1004	ASSEMBLY,Bearing(Cam Roller)	
6	EGA-0420		MAK 122SB99	O-RING,Base Plug	AMB GA76214
7	ELE-2225		MAK 70GC230	ASSEMBLY,Lever(2 Hole)(Ambac)	AMB LE79258A
7	ELE-2226		MAK 79-409975	ASSEMBLY,Lever(3 Hole)(Ambac)	AMB LE79259A
7	ELE-2229		MAK 70GC229A	ASSEMBLY,Lever(Robert Bosch)	RBB 9421270060
8	ELE-2227		MAK 70GC114A	LEVER,Shutoff	AMB LE7951A
8	ELE-2228		MAK 79-LE400481	LEVER,Shutoff	AMB LE400481
9	EAC-3963		MAK 31QC223	CYLINDER,Air(Rack Limiting)(Robert Bosch)	
9	EAC-3964		MAK 31QC212	CYLINDER,Air(Rack Limiting)(Ambac)	
9	EAC-3994		MAK 31QC214	CYLINDER,Air(Rack Limiting)(Ambac)	
10	EKY-2645		MAK 43AX70	KEY,Injection Pump Coupling	AMB KY765
11	EGS-3900-027		MAK 56AX456	O-RING,Pump	
11	EGS-3900-029		MAK 446GC1126A	O-RING,Pump	
12	EGS-3900-009		MAK 590GB1111	GASKET	
13	EGA-3875		MAK 446GC1143	O-RING,Rack	
14	ESH-3849-010		MAK 505GC19P10	SHIM,Air Cylinder(.010in thk)	
14	ESH-3849-015		MAK 505GC19P15	SHIM,Air Cylinder(.015in thk)	
15	EDV-8933		MAK 79-VA76272A	VALVE	
16	MSU-0593		MAK 64MT2105M	SENDER,Timing	
17	801090		MAK 935-2417413011	VALVE,Overflow(Robert Bosch)	MAK 697GC123

Injection Pump Governor

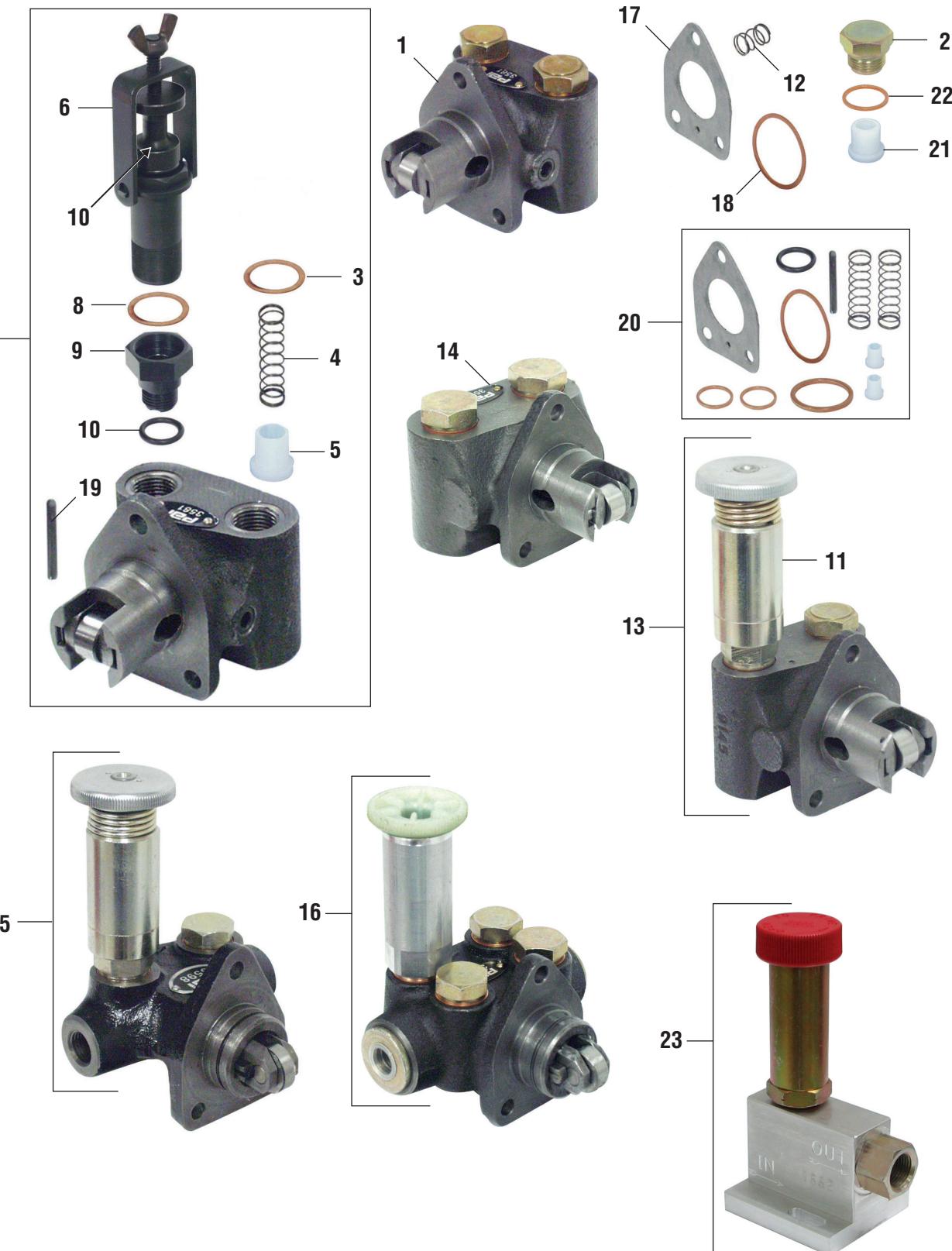
 PAI

FIGURE 53



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EOS-8810		MAK 79-PK400071	SEAL,Operating Shaft	AMB PK400071
2	EBG-8120		MAK 79-BG400704	BUSHING,Operating Shaft	AMB BG400704
3	ESP-3011		MAK 79-SP400179	SPRING,Operating Shaft	AMB SP400179
4	MSW-2216		MAK 43MR210A	TERMINAL,Switch	AMB SW795-3A
5	EGS-3900-004		MAK 590GB191C	GASKET	
6	EBG-8780		MAK 7501-68032JN75	BEARING,Sleeve	AMB BB403798
7	MSW-2217		MAK 1MR2265A	COVER,Switch(4 Hole)	AMB CV79307A
8	EBG-8220		MAK 79-BG400091	BUSHING,Weight	AMB BG400091
9	ESH-8520		MAK 79-PN7986	SHAFT	AMB PN402687
9	ESH-8560		MAK 79-PN79100	SHAFT(w/ Oil Hole)	AMB PN400102
10	ESL-0387		MAK 449GC112B	SEAL,Lead Wire	
11	ELE-2225		MAK 70GC230	ASSEMBLY,Lever(2 Hole)	AMB LE409980
11	ELE-2226		MAK 79-409975	ASSEMBLY,Lever(3 Hole)	AMB LE409975
11	ELE-2229		MAK 70GC229A	ASSEMBLY,Lever	RBB 9421270060
12	MSW-2215		MAK 1MR2292	ASSEMBLY,Switch(6 Hole)	AMB SW795-2A

FIGURE 54



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ESP-3581		MAK 319GC110	PUMP,Supply(w/o Primer)(Up to 250hp) (6 BB Pump)	AMB SPA22B2
2	ESC-8856		MAK 79-SC400609	SCREW,Retaining(Used in ESP-3597 Supply Pump) (18mm thd)	
3	EWA-2450		MAK 122SB115	WASHER	AMB WMR2041/412X
4	ESP-8540		MAK 362SB91	SPRING,Inlet	AMB SP400608
5	EVA-8320		MAK 79-VA7962	SEAT,Inlet Valve	AMB VA7962
6	EPP-3585		MAK 2112-S592AB6	PUMP,Primer	AMB MP7915A
7	EPA-3587		MAK 79-SPA22B6363A	ASSEMBLY,Pump(w/ Primer)(Up to 250hp) (6 BB Pump) Includes Pumps (1)ESP-3581 (1)EPP-3585 Seat (1)EVA-8320 Spring (1)ESP-8540 Adapter (1)EAD-8650 Seal (1)EWA-8940 Washer (1)EWA-2450	AMB SPA22B6363A
8	EWA-8940		MAK 79-GA404770	SEAL	AMB GA404770
9	EAD-8650		MAK 79-FI7922	ADAPTER	AMB F17922
10	EGA-0450		MAK 343SB31	O-RING	AMB GA407748
11	EPP-3586		MAK 318GC17A	PUMP,Primer (Interchangeable w/ EEP-3585 Pump Primer)	
12	ESP-8542		MAK 79-SP400708	SPRING,Plunger (Use w/ ESP-3597 Supply Pump)	AMB SP400708
13	EPA-3588		N/A	ASSEMBLY,Pump(w/ Primer) (Interchangeable w/EPA-3587 Pump Assembly) (Up to 250hp) Includes Pumps (1)ESP-3581 (1)EPP-3586 Washer (1)EWA-2450	
14	ESP-3597	EM35970	MAK 314GC228A	PUMP,Supply(w/o Primer)(PLM Pump) (250hp and Over)	AMB SPA25A, AMB SPT400710
15	ESP-3598		MAK 314GC227	PUMP,Supply(2VH)	MAK 935-0440008015
16	ESP-3599		MAK 314GC227P2	PUMP,Supply(4VH)	MAK 935-0440008030
17	EGK-3443		RBB 1411073006	GASKET,Fuel Supply Pump(Robert Bosch)	
17	EGK-3927		MAK 79-GA400554	GASKET,Fuel Supply Pump	AMB GA400554
18	EWA-2444		MAK 79-WMR2041405X	WASHER	AMB WMR2041405X
19	EPN-5114		MAK 79-PN400605	PIN	AMB PN400605
20	EKT-2221		MAK 79-KT7948	KIT,Fuel Supply Pump Includes Springs (2)ESP-8540 O-Ring (1)EGA-0450 Washers (2)EWA-2450 (1)EWA-2444 Seal (1)EWA-8940 Seats (2)EVA-8320 Pin (1)EPN-5114 Gasket (1)EGK-3927	AMB KT7948
21	EVA-8321		MAK 79-VA400606	VALVE,Large Delivery Inlet (Used in ESP-3597 Supply Pump)	AMB VA7984
22	EWA-2449		MAK 79-GA400612	WASHER,Copper (Used in ESP-3597 Supply Pump)	AMB WA400612
23	880840		MAK 5479-102077	PUMP,Supply(Remote Primer)	

Two Valve Head

FIGURE 55



CYL.	PAI REF.	EXCEL NO.	OEM REFERENCE	DESCRIPTION
1	N/A		MAK 203GC3213A	END673B(AMBAC) (No Turbo)
2	N/A		MAK 203GC3214A	
3	N/A		MAK 203GC3163	
4	N/A		MAK 203GC3164	
5	N/A		MAK 203GC3165	
6	N/A		MAK 203GC3166	

CYL.	PAI REF.	EXCEL NO.	OEM REFERENCE	DESCRIPTION
1	EFI-2311	EM23110	MAK 203GC3221A	ENDT675, ENDT676,
2	EFI-2321	EM23210	MAK 203GC3222	EMC6-250,
3	EFI-2334	EM23340	MAK 203GC3237	EM6-275R
4	EFI-2344	EM23440	MAK 203GC3238	(AMBAC) EM6-285,
5	EFI-2354	EM23540	MAK 203GC3239	EM6-300R
6	EFI-2364	EM23640	MAK 203GC3240	

CYL.	PAI REF.	EXCEL NO.	OEM REFERENCE	DESCRIPTION
1	EFI-2311	EM23110	MAK 203GC3221A	ENDT676(AMBAC)
2	EFI-2321	EM23210	MAK 203GC3222	
3	EFI-2331	EM23310	MAK 203GC3191	
4	EFI-2341	EM23410	MAK 203GC3192	
5	EFI-2351	EM23510	MAK 203GC3193	
6	EFI-2361	EM23610	MAK 203GC3194	

CYL.	PAI REF.	EXCEL NO.	OEM REFERENCE	DESCRIPTION
1	EFI-2451		MAK 203GC3259A	
2	EFI-2452		MAK 203GC3260A	
3	EFI-2483		MAK 203GC3269A	
4	EFI-2484		MAK 203GC3270A	
5	EFI-2485	EM24850	MAK 203GC3271A	
6	EFI-2486		MAK 203GC3272A	

CYL.	PAI REF.	EXCEL NO.	OEM REFERENCE	DESCRIPTION
1	N/A		MAK 203GC389A	ENDT675, ENDT676(AMBAC)
2	N/A		MAK 203GC390A	
3	N/A		MAK 203GC391A	
4	N/A		MAK 203GC392A	
5	N/A		MAK 203GC393A	
6	N/A		MAK 203GC394	

CYL.	PAI REF.	EXCEL NO.	OEM REFERENCE	DESCRIPTION
1	EFI-2311	EM23110	MAK 203GC3221A	EM6-237, EM6-250,
2	EFI-2321	EM23210	MAK 203GC3222	E6-260, E6-330, ETZ675, ETZ673,
3	EFI-2334	EM23340	MAK 203GC3237	E6-200 (AMBAC)
4	EFI-2344	EM23440	MAK 203GC3238	
5	EFI-2354	EM23540	MAK 203GC3239	
6	EFI-2367	EM23670	MAK 203GC3240A	

CYL.	PAI REF.	EXCEL NO.	OEM REFERENCE	DESCRIPTION
1	EFI-2312	EM23120	MAK 203GC3219A	ENDT673E, ENDT675,
2	EFI-2322	EM23220	MAK 203GC3220	E6-200,
3	EFI-2332	EM23320	MAK 203GC3201	EM6-237, ENDT676,
4	EFI-2342	EM23420	MAK 203GC3202	END707, END711,
5	EFI-2352	EM23520	MAK 203GC3203	EM6-315, ETAZ673A (Robert
6	EFI-2362	EM23620	MAK 203GC3204	Bosch) ENDT676
	EFI-2368	EM23680	MAK 203GC3204A	

CYL.	PAI REF.	EXCEL NO.	OEM REFERENCE	DESCRIPTION
1	EFI-2312	EM23120	MAK 203GC3219A	END673, END707, END711 (Robert
2	EFI-2322	EM23220	MAK 203GC3220	Bosch) (No Turbo)
3	EFI-2335	EM23350	MAK 203GC3215	
4	EFI-2345		MAK 203GC3216	
5	EFI-2355		MAK 203GC3217	
6	EFI-2365		MAK 203GC3218	

Fuel Injection Tubes

Two Valve Head

CYL.	PAI REF.	EXCEL NO.	OEM REFERENCE	DESCRIPTION
1	EFI-2311	EM23110	MAK 203GC3221A	ENDT675,
2	EFI-2321	EM23210	MAK 203GC3222	ENDT675(C),
3	EFI-2336		MAK 203GC3227	EC6-235,
4	EFI-2346		MAK 203GC3228	EM6-237
5	EFI-2356	EM23560	MAK 203GC3229	EM6-237, ETZ675
6	EFI-2366		MAK 203GC3230	(AMBAC)

CYL.	PAI REF.	EXCEL NO.	OEM REFERENCE	DESCRIPTION
1	EFI-2314	EM23140	MAK 203GC3253	EM6-235,
2	EFI-2324	EM23240	MAK 203GC3254	EM6-237,
3	EFI-2338		MAK 203GC3265	EM6-250,
4	EFI-2348	EM23480	MAK 203GC3266	EM6-275L,
5	EFI-2358		MAK 203GC3267	EM6-285(AMBAC)
6	EFI-2375		MAK 203GC3268	

CYL.	PAI REF.	EXCEL NO.	OEM REFERENCE	DESCRIPTION
1	EFI-2314	EM23140	MAK 203GC3253	EM6-300R,
2	EFI-2324	EM23240	MAK 203GC3254	EM6-237,
3	EFI-2337	EM23370	MAK 203GC3255	EM6-250/L,
4	EFI-2347		MAK 203GC3256	E6-260,
5	EFI-2357		MAK 203GC3257	EM6-275L,
6	EFI-2369	EM23690	MAK 203GC3258	EM6-285
				E6-350/R(AMBAC)

CYL.	PAI REF.	EXCEL NO.	OEM REFERENCE	DESCRIPTION
1	EFI-2451		MAK 203GC3259A	EM6-250L,
2	EFI-2452		MAK 203GC3260A	EM6-275L,
3	EFI-2453		MAK 203GC3261A	EM6-300, E6-350
4	EFI-2454		MAK 203GC3262A	(AMBAC w/ Barstock Nozzle Holders)
5	EFI-2455		MAK 203GC3263A	
6	EFI-2456		MAK 203GC3264A	



EFI-8930

PAI REF.	EXCEL NO.	OEM REFERENCE	DESCRIPTION
EFI-8930	EM89300	N/A	2VH Straight Line (For Use in Shop Makeup or Emergency Replacement in Route.)

Four Valve Head

FIGURE 38



CYL.	PAI REF.	EXCEL NO.	OEM REFERENCE	DESCRIPTION
1	EFI-2391	EM23910	MAK 203GC4211A	EM6-250L-4VH, EM6-300-4VH, E6-350-4VH, EM6-275L-4VH (AMBAC)
2	EFI-2392	EM23920	MAK 203GC4212A	
3	EFI-2393	EM23930	MAK 203GC4213A	
4	EFI-2394	EM23940	MAK 203GC4214A	
5	EFI-2395	EM23950	MAK 203GC4215A	
6	EFI-2396	EM23960	MAK 203GC4216A	

CYL.	PAI REF.	EXCEL NO.	OEM REFERENCE	DESCRIPTION
1	EFI-2461	EM24610	MAK 203GC4237	EM6-250-4VH, EM6-275-4VH, EM6-350-4VH
2	EFI-2462	EM24620	MAK 203GC4238	
3	EFI-2463	EM24630	MAK 203GC4239	
4	EFI-2464		MAK 203GC4240	
5	EFI-2465		MAK 203GC4241	
6	EFI-2466	EM24660	MAK 203GC4242	

CYL.	PAI REF.	EXCEL NO.	OEM REFERENCE	DESCRIPTION
1	EFI-2401	EM24010	MAK 203GC4217A	E6-275-4VH, E6-300-4VH, EM6-300L-4VH
2	EFI-2402	EM24020	MAK 203GC4218A	
3	EFI-2403	EM24030	MAK 203GC4219A	(Robert Bosch)
4	EFI-2404	EM24040	MAK 203GC4220A	
5	EFI-2405	EM24050	MAK 203GC4221A	
6	EFI-2406	EM24060	MAK 203GC4222A	

CYL.	PAI REF.	EXCEL NO.	OEM REFERENCE	DESCRIPTION
1	EFI-2561	EM25610	MAK 203GC4243	EM6-250-4VH, EM6-275-4VH, EM6-350-4VH
2	EFI-2562	EM25620	MAK 203GC4244	
3	EFI-2563		MAK 203GC4245	
4	EFI-2564	EM25640	MAK 203GC4246	(Robert Bosch w/ Short Adapter Housing)
5	EFI-2565		MAK 203GC4247	
6	EFI-2566	EM25660	MAK 203GC4248	



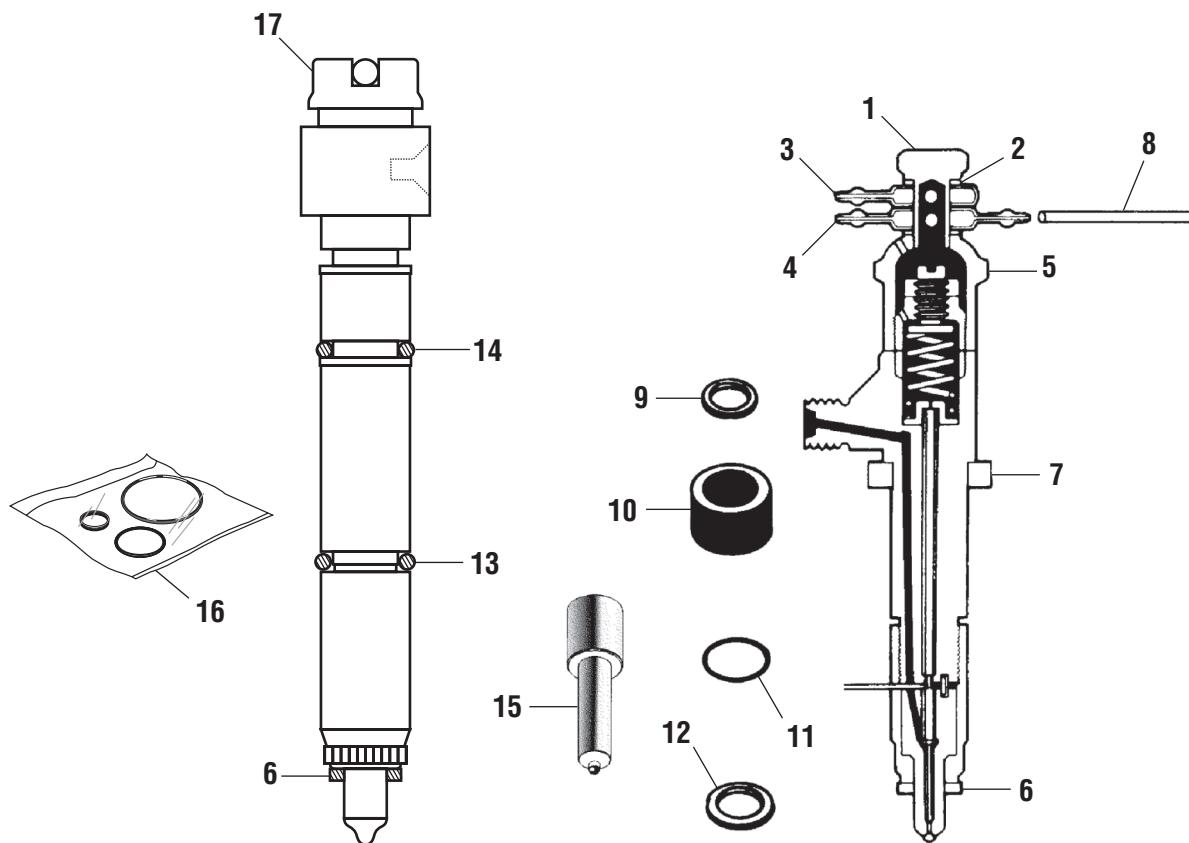
EFI-8931

PAI REF.	EXCEL NO.	OEM REFERENCE	DESCRIPTION
EFI-8931	EM89310	N/A	4VH Straight Line (For use in Shop Makeup or Emergency Replacement in Route.)

Injection Nozzles

 PAI

FIGURE 56



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ESC-8750		MAK 79-SC780649	SCREW, Nozzle	AMB SC780649
2	EWA-2470		MAK 121SB22	WASHER(Copper)	AMB GA404119
3	EFT-2656		MAK 498GB28A	FITTING, Nozzle Drain(Single)	
4	EFT-2655		MAK 498GB27A	FITTING, Nozzle Drain(Double)	
5	Call		MAK 79-CP7825	CAP, Nozzle	
6	EWA-2440		MAK 590GB1127	SEAL, Nozzle(Copper)	AMB GA77009
6	EGS-3895-008		MAK 590GB1338	SEAL, Nozzle(4VH)	
7	EGS-3890-044		MAK 590GB1143	GASKET, Nozzle Holder(Out)	
8	MFH-4175-010		MAK 243AX6F	HOSE, Fuel Return(10ft Lg)	
9	EWA-2471		MAK 79-GA1034	SEAL, Nozzle	AMB GA1034
9	EGA-2610		MAK 79-GA1074	O-RING, Nozzle	AMB GA403396
10	EIS-8960		MAK 449GC120	SEAL, Injector	
11	EGA-3859		MAK 446GC2125	O-RING, Upper Nozzle Holder	
11	EGA-3876		MAK 446GC1195	O-RING	
12	EGK-3866		MAK 590GB1352	GASKET	
13	EGS-3895-007		MAK 56AX460	O-RING(4VH)(6 req'd)	
14	EGS-3895-009		MAK 446GC1208	O-RING(4VH)(6 req'd)	
15	EIN-8783		MAK 114GC222P2	NOZZLE, Injection	MAK 935-0433171010
15	EIN-8935		MAK 114GC39	NOZZLE, Injection	AMB NBM770000
15	EIN-8936		MAK 114GC310	NOZZLE, Injection	AMB ABD155S153-7
15	EIN-8937		MAK 114GC324AP4	NOZZLE, Injection	MAK 935-0433175062
16	ERK-3737		MAK 207SB12	KIT, Injector Seal	
				Includes O-Ring (1)EGS-3895-007	
				Seal (1)EGS-3895-008 Ring (1)EGS-3895-009	
17	891950X		MAK 736GB259P12X	ASSEMBLY, Injector(Reman)(4VH)	
				(Will need truck serial number to verify Injector)	

E6-2VH / 4VH Series

ERK-8001-(*) INFRAME KIT (ESI+) (LONG LIFE)			
PAI Ref.	OEM Ref.	Description	Qty.
EMS-8575-(*)	215SB72DP1	Main Bearing Kit	1
EBG-8331-(*)	62GB2393P1	Rod Bearings	6
EGS-3899	N/A	Upper Gasket Kit	1
Includes Upper Gasket Kit (1)EGS-3898 & Head Gasket Kits (2)EGK-8425			
EGK-8411	579GB412A	Oil Pan Gasket	1
FKT-4611	57GC295B	Filter Kit	1
ELK-8905-(*)	57GC355BP1	Cylinder Kits	6
Cylinder Kit Includes			
ESL-8280-(*)	509GC284AP1	Liner	1
EPR-1816	353GC280B	Ring Set	1
EPA-8075	57GC282A	Piston Kit	1
Includes Pin (1)EPN-8021 Retainers (2)ERI-8022			

ERK-8002-(*) INFRAME KIT (ESI+) (LONG LIFE) USE ERK-8017-(*) KIT			
PAI Ref.	OEM Ref.	Description	Qty.
EMS-8575-(*)	215SB72DP1	Main Bearing Kit	1
EBG-8330-(*)	62GB2382P1	Rod Bearings	6
EGS-3899	N/A	Upper Gasket Kit	1
Includes Upper Gasket Kit (1)EGS-3898 & Head Gasket Kits (2)EGK-8425			
EGK-8411	579GB412A	Oil Pan Gasket	1
FKT-4611	57GC295B	Filter Kit	1
ELK-8904-(*)	215SB214B	Cylinder Kits	6
Cylinder Kit Includes			
ESL-8280-(*)	509GC284AP1	Liner	1
EPR-1816	353GC280B	Ring Set	1
EPA-8075	57GC282A	Piston Kit	1
Includes Pin (1)EPN-8021 Retainers (2)ERI-8022			

ERK-8003-(*) SHORT BLOCK KIT (LONG LIFE)			
PAI Ref.	OEM Ref.	Description	Qty.
EMS-8575-(*)	215SB72DP1	Main Bearing Kit	1
EBG-8330-(*)	62GB2382P1	Rod Bearings	6
EGS-3900	126SB184A	Lower Gasket Kit	1
EAB-8860	N/A	Auxiliary Brg. Kit	1
ECB-8640	N/A	Camshaft Brg. Kit	1
ETB-8690	701GC11A	Thrust Bearings	2
ELK-8904-(*)	215SB214B	Cylinder Kits	6
Cylinder Kit Includes			
ESL-8280-(*)	509GC284AP1	Liner	1
EPR-1816	353GC280B	Ring Set	1
EPA-8074	57GC283A	Piston Kit	1
Includes Pin (1)EPN-8021 Retainers (2)ERI-8022			

ERK-8004-(*) OUT OF FRAME KIT (LONG LIFE)			
PAI Ref.	OEM Ref.	Description	Qty.
EMS-8575-(*)	215SB72DP1	Main Bearing Kit	1
EBG-8330-(*)	62GB2382P1	Rod Bearings	6
EGS-3900	126SB184A	Lower Gasket Kit	1
EGS-3898	126SB183	Upper Gasket Kit	1
EGK-8425	57GC189A	Head Gaskets	2
EAB-8860	N/A	Auxiliary Brg. Kit	1
ECB-8640	N/A	Camshaft Brg. Kit	1
ETB-8690	701GC11A	Thrust Bearings	2
ERK-8324	N/A	Rotator & Lock Kits	12
Includes Rotator (1)EVR-8325 & Lock (2)EVL-8195			
ESP-8151	575GC31	Inner Valve Springs	12
ESP-8160	575GC1100	Outer Valve Springs	12
EVS-2550-(*)	13GC2237	Intake Valve Seats	6
EVS-2540-(*)	13GC2247P1	Exhaust Valve Seats	6
EVG-2370	714GB1308P2	Valve Guides	12
ELK-8904-(*)	215SB214B	Cylinder Kits	6
Cylinder Kit Includes			
ESL-8280-(*)	509GC284AP1	Liner	1
EPR-1816	353GC280B	Ring Set	1
EPA-8074	57GC283A	Piston Kit	1
Includes Pin (1)EPN-8021 Retainers (2)ERI-8022			

Quick Reference Engine Kit Charts

E6-2VH / 4VH Series

ERK-8005-(*) INFRAME KIT (ESI+) (LONG LIFE) USE ERK-8017-(*) KIT			
PAI Ref.	OEM Ref.	Description	Qty.
EMS-8575-(*)	215SB72DP1	Main Bearing Kit	1
EBG-8330-(*)	62GB2382P1	Rod Bearings	6
EGS-3899	N/A	Upper Gasket Kit	1
Includes Upper Gasket Kit (1)EGS-3898 & Head Gasket Kits (2)EGK-8425			
EGK-8411	579GB412A	Oil Pan Gasket	1
FKT-4611	57GC295B	Filter Kit	1
ELK-8904-(*)	215SB214B	Cylinder Kits	6
Cylinder Kit Includes			
ESL-8280-(*)	509GC284AP1	Liner	1
EPR-1816	353GC280B	Ring Set	1
EPA-8074	57GC283A	Piston Kit	1
Includes Pin (1)EPN-8021 Retainers (2)ERI-8022			

ERK-8006-(*) INFRAME KIT (ESI+) (LONG LIFE) USE ERK-8017-(*) KIT			
PAI Ref.	OEM Ref.	Description	Qty.
EMS-8575-(*)	215SB72DP1	Main Bearing Kit	1
EBG-8330-(*)	62GB2382P1	Rod Bearings	6
EGS-3899	N/A	Upper Gasket Kit	1
Includes Upper Gasket Kit (1)EGS-3898 & Head Gasket Kits (2)EGK-8425			
EGK-8411	579GB412A	Oil Pan Gasket	1
FKT-4611	57GC295B	Filter Kit	1
ELK-8904-(*)	215SB214B	Cylinder Kits	6
Cylinder Kit Includes			
ESL-8280-(*)	509GC284AP1	Liner	1
EPR-1816	353GC280B	Ring Set	1
EPA-8074	57GC283A	Piston Kit	1
Includes Pin (1)EPN-8021 Retainers (2)ERI-8022			

ERK-8007-(*) INFRAME KIT (ESI+) (LONG LIFE) USE ERK-8017-(*) KIT			
PAI Ref.	OEM Ref.	Description	Qty.
EMS-8575-(*)	215SB72DP1	Main Bearing Kit	1
EBG-8330-(*)	62GB2382P1	Rod Bearings	6
EGS-3899	N/A	Upper Gasket Kit	1
Includes Upper Gasket Kit (1)EGS-3898 & Head Gasket Kits (2)EGK-8425			
EGK-8411	579GB412A	Oil Pan Gasket	1
FKT-4611	57GC295B	Filter Kit	1
ELK-8904-(*)	215SB214B	Cylinder Kits	6
Cylinder Kit Includes			
ESL-8280-(*)	509GC284AP1	Liner	1
EPR-1816	353GC280B	Ring Set	1
EPA-8074	57GC283A	Piston Kit	1
Includes Pin (1)EPN-8021 Retainers (2)ERI-8022			

ERK-8008-(*) INFRAME KIT (ESI+) (LONG LIFE) USE ERK-8017-(*) KIT			
PAI Ref.	OEM Ref.	Description	Qty.
EMS-8575-(*)	215SB72DP1	Main Bearing Kit	1
EBG-8330-(*)	62GB2382P1	Rod Bearings	6
EGS-3899	N/A	Upper Gasket Kit	1
Includes Upper Gasket Kit (1)EGS-3898 & Head Gasket Kits (2)EGK-8425			
EGK-8411	579GB412A	Oil Pan Gasket	1
FKT-4611	57GC295B	Filter Kit	1
ELK-8904-(*)	215SB214B	Cylinder Kits	6
Cylinder Kit Includes			
ESL-8280-(*)	509GC284AP1	Liner	1
EPR-1816	353GC280B	Ring Set	1
EPA-8074	57GC283A	Piston Kit	1
Includes Pin (1)EPN-8021 Retainers (2)ERI-8022			

ERK-8009-(*) LONG BLOCK KIT (ESI+)			
PAI Ref.	OEM Ref.	Description	Qty.
EMS-8575-(*)	215SB72DP1	Main Bearing Kit	1
EBG-8330-(*)	62GB2382P1	Rod Bearings	6
EGS-3899	N/A	Upper Gasket Kit	1
Includes Upper Gasket Kit (1)EGS-3898 & Head Gasket Kits (2)EGK-8425			
EGS-3900	126SB184A	Lower Gasket Kit	1
EBK-8865	57GC267	Auxilliary Brg. Kit	1
EBK-8648	57GC266	Camshaft Brg.	1
ESC-2090	396GC139	Rod Bolts	12
EBG-8020	187GB138	Pin Bushings	6
FKT-4611	57GC295B	Filter Kit	1
ELK-8904-(*)	215SB214B	Cylinder Kits	6
Cylinder Kit Includes			
ESL-8280-(*)	509GC284AP1	Liner	1
EPR-1816	353GC280B	Ring Set	1
EPA-8074	57GC283A	Piston Kit	1
Includes Pin (1)EPN-8021 Retainers (2)ERI-8022			

ERK-8012-(*) LONG BLOCK KIT (ESI+) (LONG LIFE)			
PAI Ref.	OEM Ref.	Description	Qty.
EMS-8575-(*)	215SB72DP1	Main Bearing Kit	1
EBG-8330-(*)	62GB2382P1	Rod Bearings	6
EGS-3899	N/A	Upper Gasket Kit	1
Includes Upper Gasket Kit (1)EGS-3898 & Head Gasket Kits (2)EGK-8425			
EBK-8865	57GC267	Auxilliary Brg. Kit	1
EBK-8648	57GC266	Camshaft Brg.	1
EOS-0442	446GC279	Seals	12
EVG-2370	714GB1308P2	Valve Guides	12
EBG-8020	187GB138	Pin Bushings	6
ELK-8904-(*)	215SB214B	Cylinder Kits	6
Cylinder Kit Includes			
ESL-8280-(*)	509GC284AP1	Liner	1
EPR-1816	353GC280B	Ring Set	1
EPA-8074	57GC283A	Piston Kit	1
Includes Pin (1)EPN-8021 Retainers (2)ERI-8022			

ERK-8013-(*) INFRAME KIT (ESI+) (LONG LIFE)			
PAI Ref.	OEM Ref.	Description	Qty.
EMS-8575-(*)	215SB72DP1	Main Bearing Kit	1
EBG-8331-(*)	62GB2393P1	Rod Bearings	6
EGS-3899	N/A	Upper Gasket Kit	1
Includes Upper Gasket Kit (1)EGS-3898 & Head Gasket Kits (2)EGK-8425			
EGK-8411	579GB412A	Oil Pan Gasket	1
FKT-4611	57GC295B	Filter Kit	1
ELK-8904-(*)	215SB214B	Cylinder Kits	6
Cylinder Kit Includes			
ESL-8280-(*)	509GC284AP1	Liner	1
EPR-1816	353GC280B	Ring Set	1
EPA-8074	57GC283A	Kit,Piston	1
Includes Pin (1)EPN-8021 Retainers(2)ERI-8022			

ERK-8014-(*) OVERHAUL KIT (LONG LIFE)			
PAI Ref.	OEM Ref.	Description	Qty.
EMS-8575-(*)	215SB72DP1	Main Bearing Kit	1
EBG-8330-(*)	62GB2382P1	Rod Bearings	6
EGS-3900	126SB184A	Lower Gasket Kit	1
EGS-3898	126SB183	Upper Gasket Kit	1
EGK-8425	57GC189A	Head Gaskets	2
ELK-8904-(*)	215SB214B	Cylinder Kits	6
Cylinder Kit Includes			
ESL-8280-(*)	509GC284AP1	Liner	1
EPR-1816	353GC280B	Ring Set	1
EPA-8074	57GC283A	Kit,Piston	1
Includes Pin (1)EPN-8021 Retainers(2)ERI-8022			

Quick Reference Engine Kit Charts



E6-2VH / 4VH Series

ERK-8015-(*) OVERHAUL KIT (LONG LIFE)			
PAI Ref.	OEM Ref.	Description	Qty.
EMS-8575-(*)	215SB72DP1	Main Bearing Kit	1
EBG-8331-(*)	62GB2393P1	Rod Bearings	6
EGS-3897	N/A	Upper Gasket Kit	1
Includes Gasket Kit (1)EGS-3894 & Head Gasket Kits (2)EGK-8425			
EGS-3904	126SB188	Lower Gasket Kit	1
ELK-8906-(*)	57GC368P1	Cylinder Kits	6
Cylinder Kit Includes			
ESL-8280-(*)	509GC284AP1	Liner	1
EPR-1816	353GC280B	Ring Set	1
EPA-8076	215SB228	Piston Kit	1
Includes Pin (1)EPN-8021 Retainers (2)ERI-8022			

ERK-8017-(*) INFRAME KIT (ESI+) (LONG LIFE)			
PAI Ref.	OEM Ref.	Description	Qty.
EMS-8575-(*)	215SB72DP1	Main Bearing Kit	1
EBG-8330-(*)	62GB2382P1	Rod Bearings	6
EGS-3899	N/A	Upper Gasket Kit	1
Includes Upper Gasket Kit (1)EGS-3898 & Head Gasket Kits (2)EGK-8425			
EGK-8411	579GB412A	Oil Pan Gasket	1
FKT-4611	57GC295B	Filter Kit	1
ELK-8904-(*)	215SB214B	Cylinder Kits	6
Cylinder Kit Includes			
ESL-8280-(*)	509GC284AP1	Liner	1
EPR-1816	353GC280B	Ring Set	1
EPA-8074	57GC283A	Piston Kit	1
Includes Pin (1)EPN-8021 Retainers (2)ERI-8022			

ERK-8018-(*) INFRAME KIT (ESI+) (LONG LIFE)			
PAI Ref.	OEM Ref.	Description	Qty.
EMS-8575-(*)	215SB72DP1	Main Bearing Kit	1
EBG-8330-(*)	62GB2382P1	Rod Bearings	6
EGS-3898	126SB183	Upper Gasket Kit	1
EGK-8411	579GB412A	Oil Pan Gasket	1
EGK-8425	57GC189A	Head Gaskets	2
FKT-4611	57GC295B	Filter Kit	1
ELK-8905-(*)	57GC355BP1	Cylinder Kits	6
Cylinder Kit Includes			
ESL-8280-(*)	509GC284AP1	Liner	1
EPR-1816	353GC280B	Ring Set	1
EPA-8076	215SB228	Piston Kit	1
Includes Pin (1)EPN-8021 Retainers (2)ERI-8022			

ERK-8019-(*) INFRAME KIT (ESI+) (LONG LIFE)			
PAI Ref.	OEM Ref.	Description	Qty.
EMS-8575-(*)	215SB72DP1	Main Bearing Kit	1
EBG-8331-(*)	62GB2393P1	Rod Bearings	6
EGS-3897	N/A	Upper Gasket Kit	1
Includes Gasket Kit (1)EGS-3894 & Head Gasket Kits (2)EGK-8425			
EGK-8411	579GB412A	Oil Pan Gasket	1
FKT-4616	57GC298	Filter Kit	1
ELK-8906-(*)	57GC368P1	Cylinder Kits	6
Cylinder Kit Includes			
ESL-8280-(*)	509GC284AP1	Liner	1
EPR-1816	353GC280B	Ring Set	1
EPA-8076	215SB228	Piston Kit	1
Includes Pin (1)EPN-8021 Retainers (2)ERI-8022			

E6-2VH / 4VH Series

ERK-8028-(*) INFRAME KIT (ESI+) (LONG LIFE) USE ERK-8017-(*) KIT			
PAI Ref.	OEM Ref.	Description	Qty.
EMS-8575-(*)	215SB72DP1	Main Bearing Kit	1
EBG-8330-(*)	62GB2382P1	Rod Bearings	6
EGS-3899	N/A	Upper Gasket Kit	1
Includes Upper Gasket Kit (1)EGS-3898 & Head Gasket Kits (2)EGK-8425			
EGK-8411	579GB412A	Oil Pan Gasket	1
FKT-4611	57GC295B	Filter Kit	1
ELK-8904-(*)	215SB214B	Cylinder Kits	6
Piston Kit Includes			
ESL-8280-(*)	509GC284AP1	Liner	1
EPR-1816	353GC280B	Ring Set	1
EPA-8074	57GC283A	Piston Kit	1
Includes Pin (1)EPN-8021 Retainers (2)ERI-8022			

ERK-8029-(*) OVERHAUL KIT (ESI+) (STD)			
PAI Ref.	OEM Ref.	Description	Qty.
EMS-8575-(*)	215SB72DP1	Main Bearing Kit	1
EBG-8331-(*)	62GB2393P1	Rod Bearings	6
EGS-3897	126SB183	Upper Gasket Kit	1
Includes Gasket Kit (1)EGS-3894 & Head Gasket Kits (2)EGK-8425			
EAB-8860	N/A	Auxilliary Brg. Kit	1
ECB-8640	N/A	Camshaft Brg. Kit	1
ETB-8690	701GC11A	Thrust Bearings	2
EVS-2547-015	13GC2264P15	Exhaust Seats	12
EVS-2557-015	13GC2251P15	Intake Seats	12
EBG-8020	187GB138	Bushings	6
EVG-2379	714GB222P2	Guide, Valves	24
ELK-8906-(*)	57GC368P1	Cylinder Kits	6
Cylinder Kit Includes			
ESL-8280-(*)	509GC284AP1	Liner	1
EPR-1816	353GC280B	Ring Set	1
EPA-8076	215SB228	Piston Kit	1
Includes Pin (1)EPN-8021 Retainers (2)ERI-8022			

Rebuild Kit Breakdown

PAI KIT NUMBER	ENGINE TYPE	COMPRESSION RATIO	PISTON KIT PART NUMBER (6)	RING SET PART NUMBER (6)	SLEEVE PART NUMBER (6)	ROD BEARING PART NUMBER (6)
ERK-8001-(*)	2VH LONG LIFE	17/1	EPA-8075 MAK 57GC282A	EPR-1816 MAK 353GC280B	ESL-8280-(*) MAK 509GC284AP1	EBG-8331-(*) MAK 62GB2393P1
ERK-8002-(*)	2VH STD	15/1	Piston EPA-8071 MAK 240GC1550AP1 is no longer available. Use ERK-8017-(*) Kit.			
ERK-8003-(*)	2VH LONG LIFE	15/1	EPA-8074 MAK 57GC283A	EPR-1816 MAK 353GC280B	ESL-8280-(*) MAK 509GC284AP1	EBG-8330-(*) MAK 62GB2382
ERK-8004-(*)	2VH LONG LIFE	15/1	EPA-8074 MAK 57GC283A	EPR-1816 MAK 353GC280B	ESL-8280-(*) MAK 509GC284AP1	EBG-8330-(*) MAK 62GB2382
ERK-8005-(*)	2VH STD	15/1	Piston EPA-8071 MAK 240GC1550AP1 is no longer available. Use ERK-8017-(*) Kit.			
ERK-8006-(*)	2VH STD	15/1	Piston EPA-8071 MAK 240GC1550AP1 is no longer available. Use ERK-8017-(*) Kit.			
ERK-8007-(*)	2VH STD	15/1	Piston EPA-8071 MAK 240GC1550AP1 is no longer available. Use ERK-8017-(*) Kit.			
ERK-8008-(*)	2VH STD	15/1	Piston EPA-8071 MAK 240GC1550AP1 is no longer available. Use ERK-8017-(*) Kit.			
ERK-8009-(*)	2VH STD	15/1	EPA-8074 MAK 57GC283A	EPR-1810 MAK 353GC241JP1	ESL-8280-(*) MAK 509GC284AP1	EBG-8330-(*) MAK 62GB2382
ERK-8012-(*)	2VH LONG LIFE	15/1	EPA-8074 MAK 57GC283A	EPR-1816 MAK 353GC280B	ESL-8280-(*) MAK 509GC284AP1	EBG-8330-(*) MAK 62GB2382
ERK-8013-(*)	2VH LONG LIFE	15/1	EPA-8074 MAK 57GC283A	EPR-1816 MAK 353GC280B	ESL-8280-(*) MAK 509GC284AP1	EBG-8331-(*) MAK 62GB2393P1
ERK-8014-(*)	2VH LONG LIFE	15/1	EPA-8074 MAK 57GC283A	EPR-1816 MAK 353GC280B	ESL-8280-(*) MAK 509GC284AP1	EBG-8330-(*) MAK 62GB2382
ERK-8015-(*)	4VH LONG LIFE	15/1	EPA-8076 MAK 215SB228	EPR-1816 MAK 353GC280B	ESL-8280-(*) MAK 509GC284AP1	EBG-8331-(*) MAK 62GB2393P1
ERK-8017-(*)	2VH LONG LIFE	15/1	EPA-8074 MAK 57GC2838A	EPR-1816 MAK 353GC280B	ESL-8280-(*) MAK 509GC284AP1	EBG-8330-(*) MAK 62GB2382
ERK-8018-(*)	2VH LONG LIFE	17/1	EPA-8075 MAK 57GC282A	EPR-1816 MAK 353GC280B	ESL-8280-(*) MAK 509GC284AP1	EBG-8330-(*) MAK 62GB2382
ERK-8019-(*)	4VH LONG LIFE	15/1	EPA-8076 MAK 215SB228	EPR-1816 MAK 353GC280B	ESL-8280-(*) MAK 509GC284AP1	EBG-8331-(*) MAK 62GB2393P1
ERK-8028-(*)	2VH STD	15/1	Piston EPA-8071 MAK 240GC1550AP1 is no longer available. Use ERK-8017-(*) Kit.			
ERK-8029-(*)	4VH STD	15/1	EPA-8076 MAK 215SB228	EPR-1816 MAK 353GC280B	ESL-8280-(*) MAK 509GC284AP1	EBG-8331-(*) MAK 62GB2393P1

FIGURE 81

Please note:

(*) Specify sizes of Sleeves, Rod Bearings and Main Bearings when ordering Rebuild Kits. All OEM references shown are examples of standard sizes; other sizes are available.

Rebuild Kit Breakdown



MAIN BEARING KIT NUMBER (6)	FILTER KIT PART NUMBER (1)	GASKET SET NUMBERS	ADDITIONAL KIT COMPONENTS	APPLICATION INFORMATION
EMS-8575-(*) MAK 215SB72D	FKT-4611 MAK 57GC295B	Upper (1)EGS-3898 MAK 126SB183 Oil Pan (1)EGK-8411 MAK 579GB412A Heads (2)EGK-8425 MAK 57GC189A	—	Inframe Kit (ESI+)
EMS-8575-(*) MAK 215SB72D	—	Lower (1)EGS-3900 MAK 126SB184A	Camshaft Bearings, Auxiliary Bearings, Thrust Washers	Short Block Kit
EMS-8575-(*) MAK 215SB72D	—	Upper (1)EGS-3898 MAK 126SB183 Lower (1)EGS-3900 MAK 126SB184A Heads (2)EGK-8425 MAK 57GC189A	Camshaft Bearings, Auxiliary Bearings, Washers, Valve Seats, Guides, Springs, Rotators & Locks	Long Block Kit
EMS-8575-(*) MAK 215SB72D	FKT-4611 MAK 57GC295B	Upper (1)EGS-3898 MAK 126SB183 Lower (1)EGS-3900 MAK 126SB184A Head (2)EGK-8425 MAK 57GC189A	Camshaft Bearings, Auxiliary Bearings, Pin Bushings & Rod Bolts	Long Block Kit (ESI+)
EMS-8575-(*) MAK 215SB72D	—	Upper (1)EGS-3898 MAK 126SB183 Head (2)EGK-8425 MAK 57GC189A	Camshaft Bearings, Auxiliary Bearings, Pin Bushings, Guides & Valve Seals	Long Block Kit (ESI+)
EMS-8575-(*) MAK 215SB72D	FKT-4611 MAK 57GC295B	Upper (1)EGS-3899 N/A Oil Pan (1)EGK-8411 MAK 579GB412A	—	Inframe Kit (ESI+)
EMS-8575-(*) MAK 215SB72D	—	Upper (1)EGS-3898 MAK 126SB183 Lower (1)EGS-3900 MAK 126SB184A Heads (2)EGK-8425 MAK 57GC189A	—	Overhaul Kit
EMS-8575-(*) MAK 215SB72D	—	Upper (1)EGS-3894 MAK 126SB187D Lower (1)EGS-3904 MAK 126SB188 Heads (2)EGK-8425 MAK 57GC189A	—	Overhaul Kit
EMS-8575-(*) MAK 215SB72D	FKT-4611 MAK 57GC295B	Upper (1)EGS-3898 MAK 126SB183 Oil Pan (1)EGK-8411 MAK 579GB412A Heads (2)EGK-8425 MAK 57GC189A	—	Inframe Kit (ESI+)
EMS-8575-(*) MAK 215SB72D	FKT-4611 MAK 57GC295B	Upper (1)EGS-3898 MAK 126SB183 Oil Pan (1)EGK-8411 MAK 579GB412A Heads (2)EGK-8425 MAK 57GC189A	—	Inframe Kit (ESI+)
EMS-8575-(*) MAK 215SB72D	FKT-4616 MAK 57GC298	Upper (1)EGS-3894 MAK 126SB187D Oil Pan (1)EGK-8411 MAK 579GB412A Heads (2)EGK-8425 MAK 57GC189A	—	Inframe Kit (ESI+)
EMS-8575-(*) MAK 215SB72D	—	Upper (1)EGS-3897 N/A	Camshaft Bearings, Auxiliary Bearings, Pin Bushings, Guides & Valve Seats	Overhaul Kit

FIGURE 117

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EGS-3890		MAK 126SB183A	SET,Upper Gasket(All 2VH, 6 Cylinder Engines)	
1	EGS-3893		N/A	SET,Upper Gasket (All 2VH, 6 Cylinder Engines) (w/ Block Flow Restricted Head Gaskets)	
1	EGS-3894		MAK 126SB187D	SET,Upper Gasket (All 4VH, E6 Engines)(w/o Head Gaskets)	MAK 126SB187
1	EGS-3897		N/A	SET,Upper Gasket (All 4VH, E6 Engines)(w/ Head Gaskets)	
1	EGS-3898		MAK 126SB183	SET,Upper Gasket(All 2VH, Current Only)	
1	EGS-3899		N/A	SET,Upper Gasket (All 2VH, Current Only)(w/ Head Gaskets)	

Lower Gasket Sets

FIGURE 118

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EGS-3900		MAK 126SB184A	SET,Lower Gasket (All 2VH, E6 Engines)	
1	EGS-3901		MAK 126SB184	SET,Lower Gasket (Same as EGS-3900 except with one piece Pan Gasket EGK-8401)	
1	EGS-3904		MAK 126SB188	SET,Lower Gasket (All 4VH, E6 Engines)	

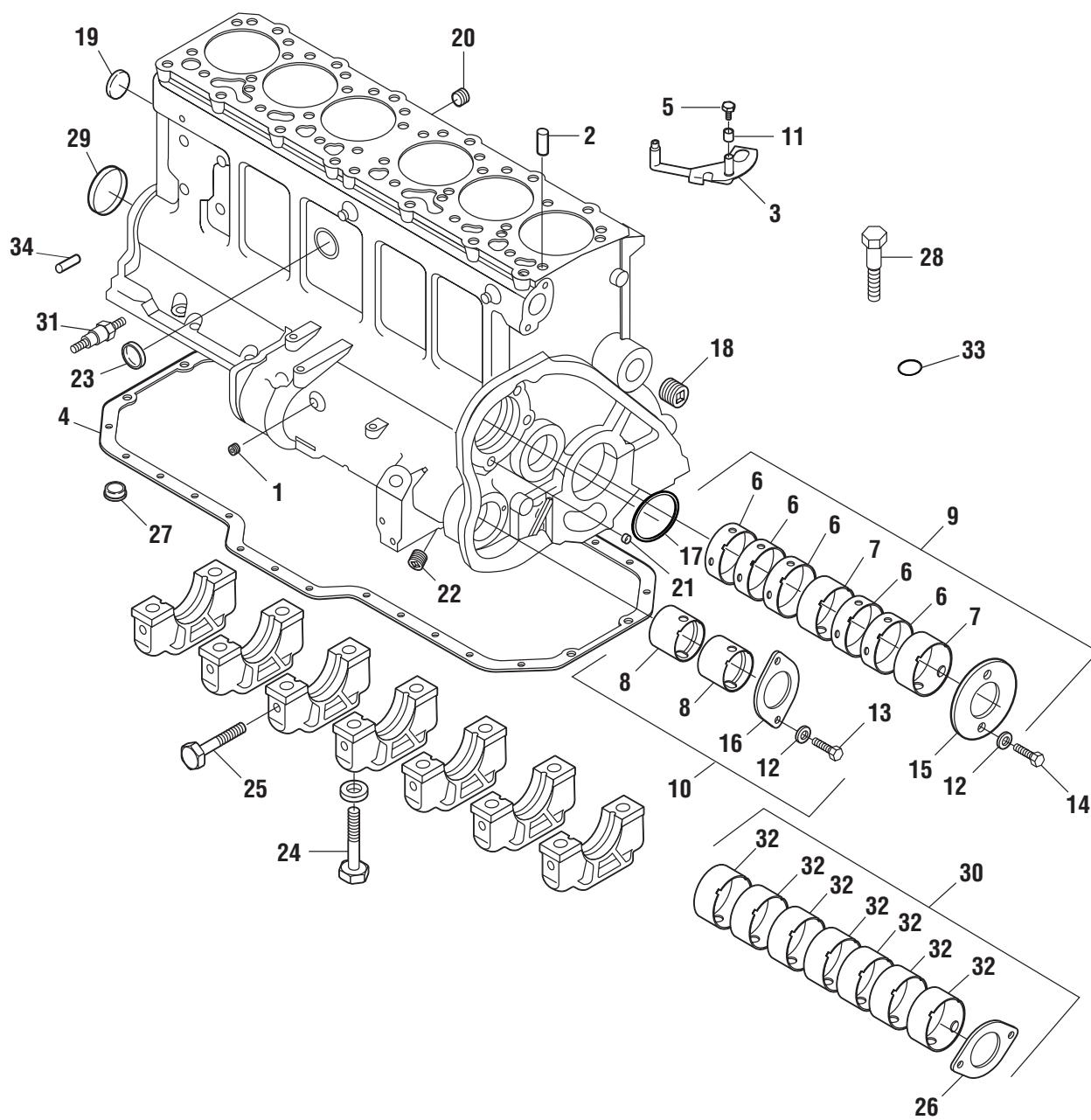
Gasket Sets

Overhaul Gasket Sets

FIGURE 75

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	803910		N/A	SET,Overhaul Gasket (All 2VH Engines) Includes Upper Gasket Set (1)EGS-3899 Lower Gasket Set (1)EGS-3900 Seals (12)EOS-0442	
1	803911		N/A	SET,Overhaul Gasket (All 4VH Engines) Includes Upper Gasket Set (1)EGS-3897 Lower Gasket Set (1)EGS-3904 Seals (24)EOS-0443	

FIGURE 57



Cylinder Block Components



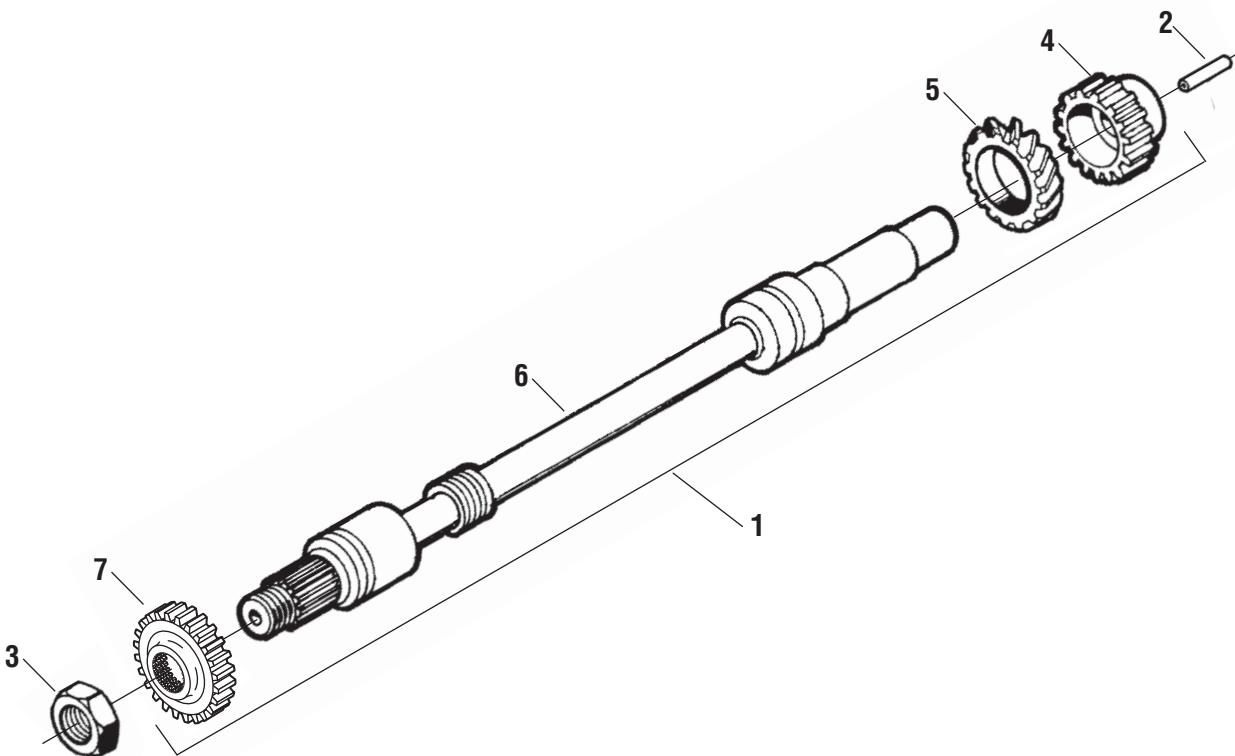
E7/E-Tech/ASET

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EPP-3573		MAK 49AX230	PLUG(1/8in)	MAK 49AX251
2	EPN-2765		MAK 31AX268	PIN,Cylinder Head Locating	
3	EIM-2023		MAK 115GC310	NOZZLE,Piston Cooling(Early) (1 Piece Piston)	
3	EIM-2028		MAK 115GC316	NOZZLE,Piston Cooling(Current) (2 Piece Piston)	
4	EGK-8401		MAK 579GB41C	GASKET,Oil Pan	
4	EGK-8411		MAK 579GB412A	GASKET,Oil Pan(Segmented)	
4	EGK-8412		MAK 579GB41E	GASKET,Oil Pan	
4	EGK-8414		MAK 579GB41E	GASKET,Oil Pan(1/16in thk)	
4	EGK-8439		MAK 579GB422	GASKET,Oil Pan(Rubber) (See page 101 for Mounting Hardware)	
5	Call		MAK 66AM44	SCREW	
6	ECB-8655		MAK 59GB217	BEARING,Cam	
7	ECB-8656		MAK 59GB218	BEARING,Cam	
8	EAB-8669		MAK 61GB33	BEARING,Auxiliary	
9	EBK-8657		MAK 57GC2129	KIT,Cam Bearing(E7) Includes Bearings (5)ECB-8655 (2)ECB-8656 (1)ETB-8695 Washers (2)EWA-0390 Screws (2)ESC-0371	
10	EBK-8857		MAK 57GC2128	KIT,Auxiliary Bearing(E7, E-Tech, ASET) Includes Bearings (2)EAB-8669 (1)ETB-8696 Washers (2)EWA-0390 Screws (2)ESC-0370	
11	EGS-3903-005		MAK 52AX47	SEAL,Oil Nozzle	MAK 52AX44
12	EWA-0390		MAK 271AM5007	WASHER	
13	ESC-0370		MAK 10AM5002	SCREW,Auxiliary Thrust Washer (M8 x 1.25 X 20mm)	
14	ESC-0371		MAK 41AM1	SCREW,Cam Thrust(12 PT)(M8 x 1.25 x 20mm)	
15	ETB-8695		MAK 702GC247A	BEARING,Cam(Thrust)(E7)	
16	ETB-8696		MAK 702GC248B	BEARING,Auxiliary(Thrust)	
17	EGS-3903-004		MAK 56AX548	O-RING,Pump Timing Cover	
18	EPP-3575		MAK 49AX234Z	PLUG(1/2in)	
19	ECP-3487		MAK 79AX67	PLUG,Core(1-3/8in Dia.)	
20	EPP-3574		MAK 49AX233	PLUG(3/8in)	
21	GKP-3488		MAK 79AX59	PLUG,Core(1/2in)	
22	FPP-3577		MAK 49AX244	PLUG(1/4in)	
23	ECP-8660		MAK 79AX66Z	PLUG,Core(1-3/4in Dia.)	MAK 79AX65
24	ESC-2097		MAK 409GC37M	SCREW,Main Bearing (M16 x 2 x 154mm)	
25	ESC-2102		MAK 421GC265M	SCREW,Main Bearing Buttress (M12 x 1.25 x 80mm)	
25	ESC-2103		MAK 421GC265M2	SCREW,Main Bearing Buttress (M12 x 1.25 x 110mm)	
26	ETB-8697		MAK 702GC315	BEARING,Cam(Thrust)(E-Tech)	
27	EIS-8438		MAK 41GC212	ISOLATER (Used w/ EGK-8439 Pan Gasket)	
28	ESC-0338		MAK 421GC2123M	SCREW,EUP Hold Down	
29	ECP-3499		MAK 277GC32	PLUG,Cup(E-Tech)(4in Dia.)	
30	ECB-8700		N/A	KIT,Cam Bearing(E-Tech, ASET) Includes Bearings (7)ECB-8698 (1)ETB-8697	
31	804160		MAK 41GC221M	ISOLATOR,ECM	
32	ECB-8698		MAK 59GB37	BEARING,Cam(E-Tech)(7 req'd)	
33	821036		MAK 4103-5010477823	O-RING,Air Compressor Mounting (Renault E-Tech, ASET)	
34	845006		MAK 183GC252	PIN,EUP Pump(E-Tech, ASET)	

ENGINE COMPONENTS

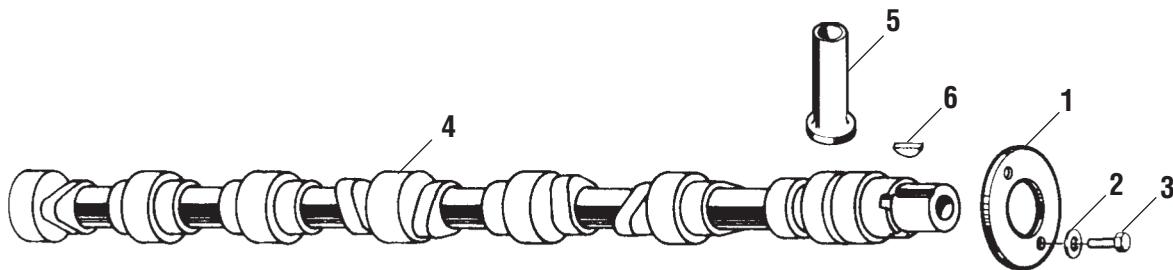
E7 SERIES

FIGURE 42



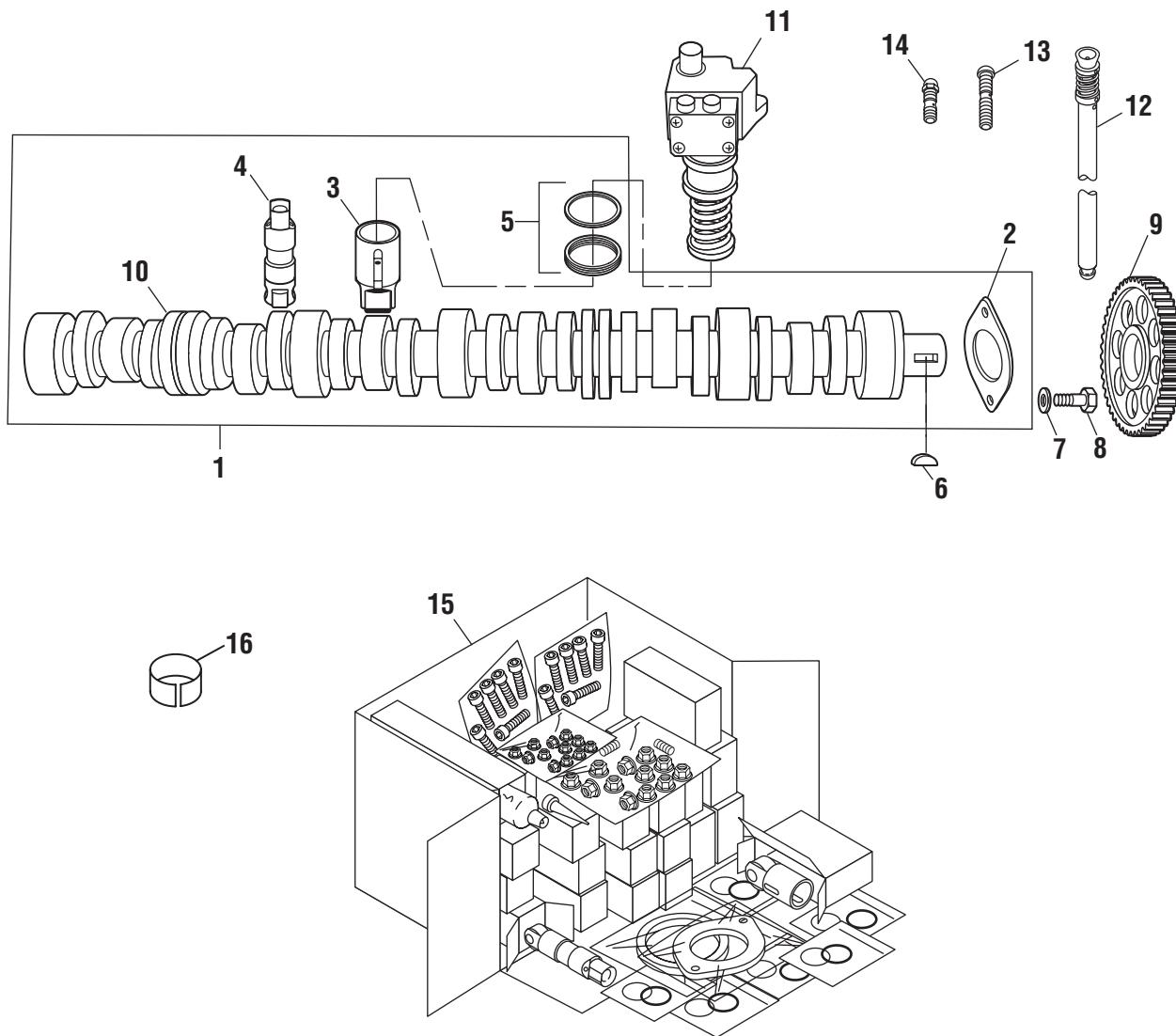
KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EAS-8738		MAK 453GC435M	ASSEMBLY,Auxiliary Shaft (w/ 17 Tooth Oil Pump Gear) Includes Shaft (1)EAS-8737 Hub (1)EHB-4137 Gear (1)EGE-2581	MAK 453GC379AM
1	EAS-8739		MAK 453GC389M	ASSEMBLY,Auxiliary Shaft (w/ 18 Tooth Oil Pump Gear) Includes Shaft (1)EAS-8737 Hub (1)EHB-4137 Gear (1)EGE-2582	MAK 453GC381M
1	EAS-8766		MAK 453GC431AM	ASSEMBLY,Auxiliary Shaft (w/ 17 Tooth Oil Pump Gear) Includes Shaft (1)EAS-8762 Hub (1)EHB-4137 Gear (1)EGE-2578	MAK 453GC431M
2	DTB-0484		MAK 670GC276	TUBE,Oil	
3	ENU-0408		MAK 142GC1103M	NUT,Auxiliary Shaft	
4	EHB-4137		MAK 597GC210	HUB,Compressor Drive	
5	EGE-2578		MAK 683GB327	GEAR,Oil Pump Drive(17 Teeth)	MAK 683GB320
5	EGE-2581		MAK 683GB318	GEAR,Oil Pump Drive(17 Teeth)	
5	EGE-2582		MAK 683GB319	GEAR,Oil Pump Drive(18 Teeth)	
6	EAS-8737		MAK 453GC420BM	SHAFT,Auxiliary	
6	EAS-8762		MAK 453GC430AM	SHAFT,Auxiliary	
7	805011		MAK 667GB316M	GEAR,Auxiliary Shaft	

FIGURE 59



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ETB-8695		MAK 702GC247A	BEARING,Thrust	
2	EWA-0390		MAK 271AM5007	WASHER	
3	ESC-0371		MAK 41AM1	SCREW(M8 x 1.25 x 20)	
4	ECM-9007		MAK 454GC5142A	CAMSHAFT	
5	EML-8583		MAK 72GC357	LIFTER	
6	EKY-3185		MAK 43AX9	KEY,Camshaft Gear(Straight)	MAK 54GC31
6	EKY-3179		MAK 54GC29	KEY,Camshaft Gear(Offset)	

FIGURE 72

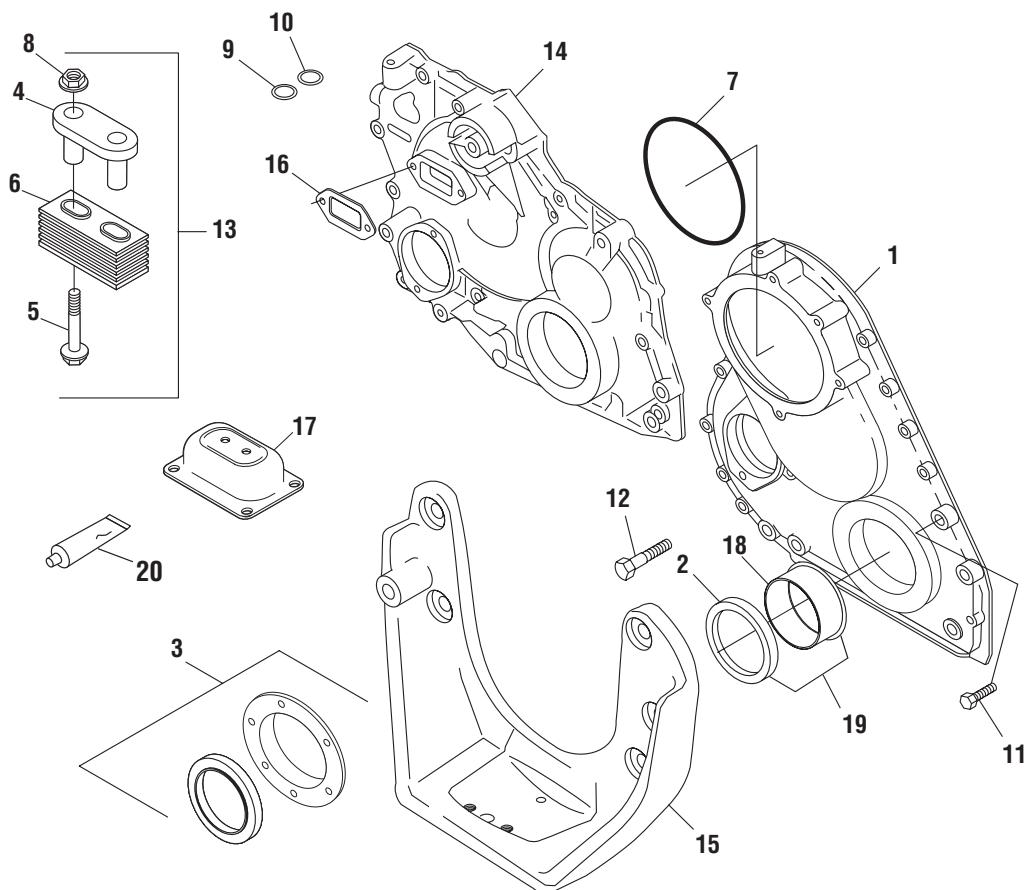


KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ECK-9009	ECK-9009E	MAK 57GC2190E	KIT,Camshaft(Steel Rollers E-Tech) Includes Camshaft (1)ECM-8999 Installation kit (1)ECK-9009-100	
1	ECK-9059	ECK-9059E	MAK 57GC2211	KIT,Camshaft(Ceramic Rollers E-Tech) Includes Camshaft (1)ECM-8999 Installation kit (1)ECK-9059-100	
1	ECK-9066	ECK-9066E	MAK 57GC2205A	KIT,Camshaft(Steel Rollers E-Tech) Includes Camshaft (1)ECM-8788 Installation kit (1)ECK-9009-100	
1	ECK-9078	ECK-9078E	MAK 57GC2209A	KIT,Camshaft(Steel Rollers Late E-Tech & ASET) Includes Camshaft (1)ECM-8789 Installation kit (1)ECK-9009-100	

E-Tech / ASET

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ECK-9148	ECK-9148E	MAK 57GC2210A	KIT,Camshaft(Steel Rollers E-Tech) Includes Camshaft (1)ECM-8791 Installation Kit (1)ECK-9009-100	
1	ECK-9149	ECK-9149E	MAK 57GC2212	KIT,Camshaft(Ceramic Rollers E-Tech) Includes Camshaft (1)ECM-8789 Installation Kit (1)ECK-9059-100	
1	891930		MAK 57GC2225A	KIT,Camshaft(Ceramic Rollers ASET) Includes Camshaft (1)891918 Installation Kit (1)ECK-9059-100	
1	891931	891931E	MAK 57GC2228A	KIT,Camshaft(Ceramic Rollers ASET) Includes Camshaft (1)891915 Installation Kit (1)ECK-9059-100	
1	891932		MAK 57GC2243	KIT,Camshaft(Ceramic Rollers ASET) Includes Camshaft (1)891920 Installation Kit (1)ECK-9059-100	
1	891933		MAK 57GC2249	KIT,Camshaft(Ceramic Rollers E-Tech) Includes Camshaft (1)891913 Installation Kit (1)ECK-9059-100	
1	891934		MAK 57GC2227A	KIT,Camshaft(Ceramic Rollers ASET) Includes Camshaft (1)891917 Installation Kit (1)ECK-9059-100	
2	ETB-8697		MAK 702GC315	BEARING,Thrust	
3	ERT-8563		MAK 72GC266	TAPPET,Roller(Pump)	
4	ERT-8559		MAK 72GC372A	TAPPET,Roller(Ceramic)	
4	ERT-8562	EM85620	MAK 72GC373A	TAPPET,Roller(Valve)(Steel)	MAK 72GC372
5	EKT-8561		MAK 8609-EHL243	KIT,O-Ring	
6	EKY-3185		MAK 43AX9	KEY,Camshaft Gear(Straight)	
6	EKY-3179		MAK 54GC29	KEY,Camshaft Gear(Offset)	MAK 57GC31
7	EWA-0390		MAK 271AM5007	WASHER	
8	ESC-0371		MAK 41AM1	SCREW(M8 x 1.25 x 20)	
9	805010		MAK 668GB411	GEAR,Camshaft	
10	ECM-8788	EM87880	MAK 454GC5232A	CAMSHAFT(E-Tech)	
10	ECM-8789	EM87890	MAK 454GC5236A	CAMSHAFT(Late E-Tech & ASET)	
10	ECM-8791	EM87910	MAK 454GC5235	CAMSHAFT(E-Tech)	
10	ECM-8999	EM8799E	MAK 454GC5227C	CAMSHAFT(E-Tech)	MAK 454GC4256
10	891913		MAK 454GC5234A	CAMSHAFT(E-Tech)	MAK 454GC5234
10	891915	891915E	MAK 454GC5238	CAMSHAFT(ASET)	
10	891917		MAK 454GC5242A	CAMSHAFT(ASET)	MAK 454GC5242
10	891918		MAK 454GC5243	CAMSHAFT(ASET)	
10	891919		MAK 454GC5244	CAMSHAFT(ASET)	
10	891920		MAK 454GC5247	CAMSHAFT(ASET)	
11	EUP-8763X	EM87630	MAK 313GC5227MX	PUMP,Injection Unit Reman(E-Tech)	
11	EUP-8764		MAK 313GC5230M	PUMP,Injection Unit(E-Tech & ASET)	MAK 935-0414755006
11	EUP-8764X		MAK 313GC5230MX	PUMP,Injection Unit Reman(E-Tech & ASET)	RBB 0414-755-006
11	EUP-8765		MAK 313GC5233M	PUMP,Injection Unit(E-Tech & ASET)	RBB 0414-755-007
12	EPR-3393		MAK 369GC336A	PUSHROD,E-Tech	MAK 369GC336
13	ESC-8348		MAK 417GC315M	SCREW	
14	ESC-8349		MAK 417GC316M	SCREW	
15	ECK-9009-100		N/A	KIT,Camshaft Installation(Steel Rollers) Includes Tappets (12)ERT-8562 (6)ERT-8563 O-Ring Kits (6)EKT-8561 Screws (12)ESC-0338 Thrust Bearing (1)ETB-8697 Seal (1)EKT-8821 Nuts (12)ENU-0429 (12)ENU-0412 (2)FNU-0403 Studs (1)EST-0427 (1)EST-0428 Sealant (1)BSR-0385	
15	ECK-9059-100		N/A	KIT,Camshaft Installation(Ceramic Rollers) Includes Tappets (12)ERT-8559 (6)ERT-8563 O-Rings (6)EKT-8561 Screws (6)ESC-8349 (6)ESC-8348 (12)ESC-0338 (7)EDS-0308 Thrust Bearing (1)ETB-8697 Seal (1)EOS-8820 Nuts (12)ENU-0429 (12)ENU-0412 (2)FNU-0403 Studs (1)EST-0427 (1)EST-0428 Sealant (1)BSR-0385 Pushrods (6)EPR-3393	
16	ETG-8512		MAK 718GB36	RING,'H'(E-Tech, ASET)	MAK 718GB35

FIGURE 98



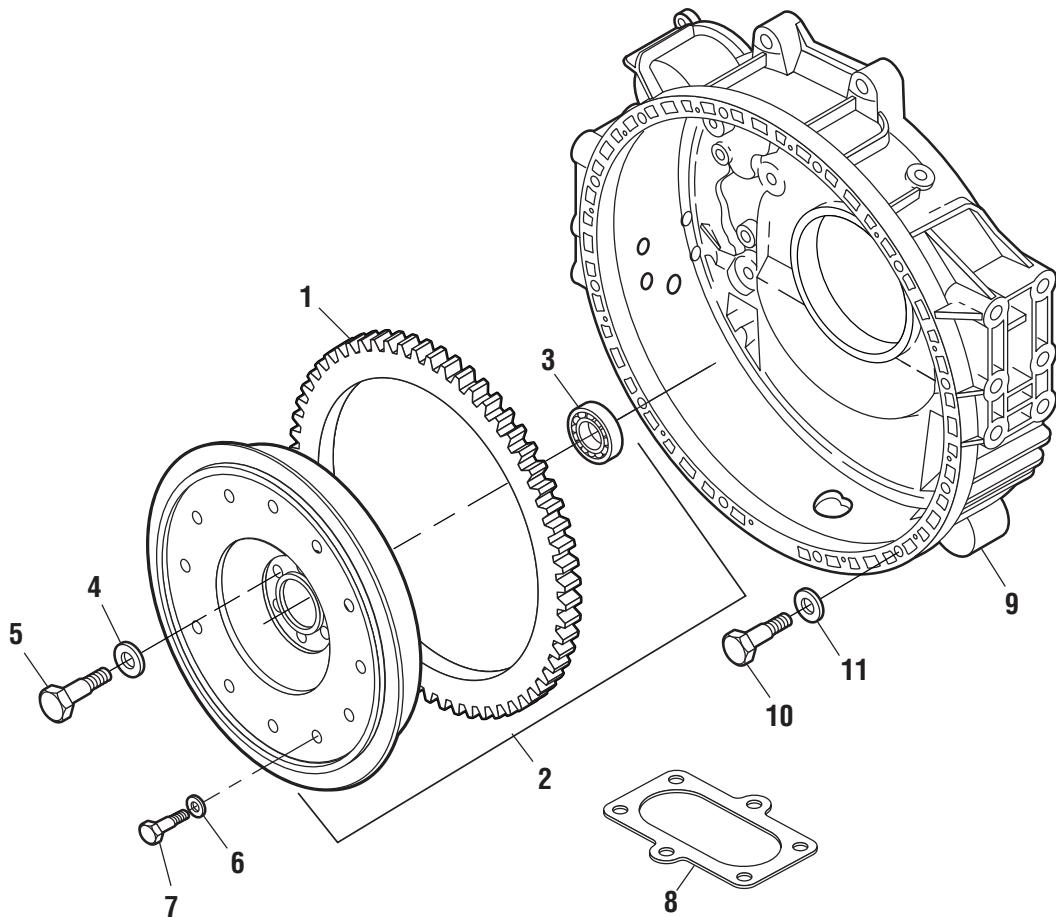
KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ETC-2038		MAK 333GB5123BM	COVER, Timing Gear(1 req'd)	MAK 333GB5123M
2	EOS-8820	EM88200	MAK 446GC316	SEAL(Neoprene)(4in OD)	
2	EKT-8821	EM88210	MAK 446GC310P2	SEAL(Teflon)(4in OD)	NAT 5609
3	ESA-8815		MAK 449GC32	ASSEMBLY,Oil Seal (Use w/ Aluminum Timing Cover) Includes Seal (1)EM88200 Retainer (1)ESA-8815-001	
4	FMT-4993		MAK 20QL329	MOUNT,Upper Front(CH)	
5	FSC-0377		MAK 27AM38	SCREW,Motor Mount(M16 x 2 x 130) (2 req'd)	
6	FMT-4992		MAK 20QL322	MOUNT,Lower Front Engine(CH)	
7	EGS-3903-004		MAK 56AX548	O-RING(Aluminum Timing Cover)	
8	FNU-0402		MAK 191AM6	NUT,Locking	
9	EGA-3169		MAK 446GC2128	O-RING,Crank Case Breather(2.234in ID)	
10	EGA-3173		MAK 446GC2134	O-RING,Crank Case Breather(3.109in ID)	
11	840002		MAK 421GC268M	SCREW(M12 x 1.75 x 50)	
12	840003		MAK 421GC268M2	SCREW(M12 x 1.75 x 100)	
13	803977		N/A	KIT,Front Engine Mount Includes Mounts (1)FMT-4992 (1)FMT-4993 Screws (2)FSC-0377 Nuts (2)FNU-0402	
14	ETC-2039		MAK 333GB5131BM	COVER, Timing Gear(ASET)	
15	803974		MAK 158GB5126M	MOUNT,Engine(ASET)	
16	EGK-3844		MAK 590GB2167	GASKET,Breather	
17	803973		MAK 20QL344M3	MOUNT,Front Engine	
18	ERG-3792		MAK 1458-99325	RING,Wear	
19	836023		N/A	KIT,Front Seal(Neoprene) Includes Seal (1)EOS-8820 Wear Ring (1)ERG-3792	
19	836024		N/A	KIT,Front Seal(Teflon) Includes Seal (1)EOS-8821 Wear Ring (1)ERG-3792	
20	BSR-0385		MAK 342SX32	SEALANT,Silicone(Used to Seal Timing Covers)	
20	831001		MAK 3092340	SEALANT,Silicone(Cartridge Gun Tube 310ml)	MAK 20732000

Flywheel Assembly

PAI

E7/E-Tech/ ASET

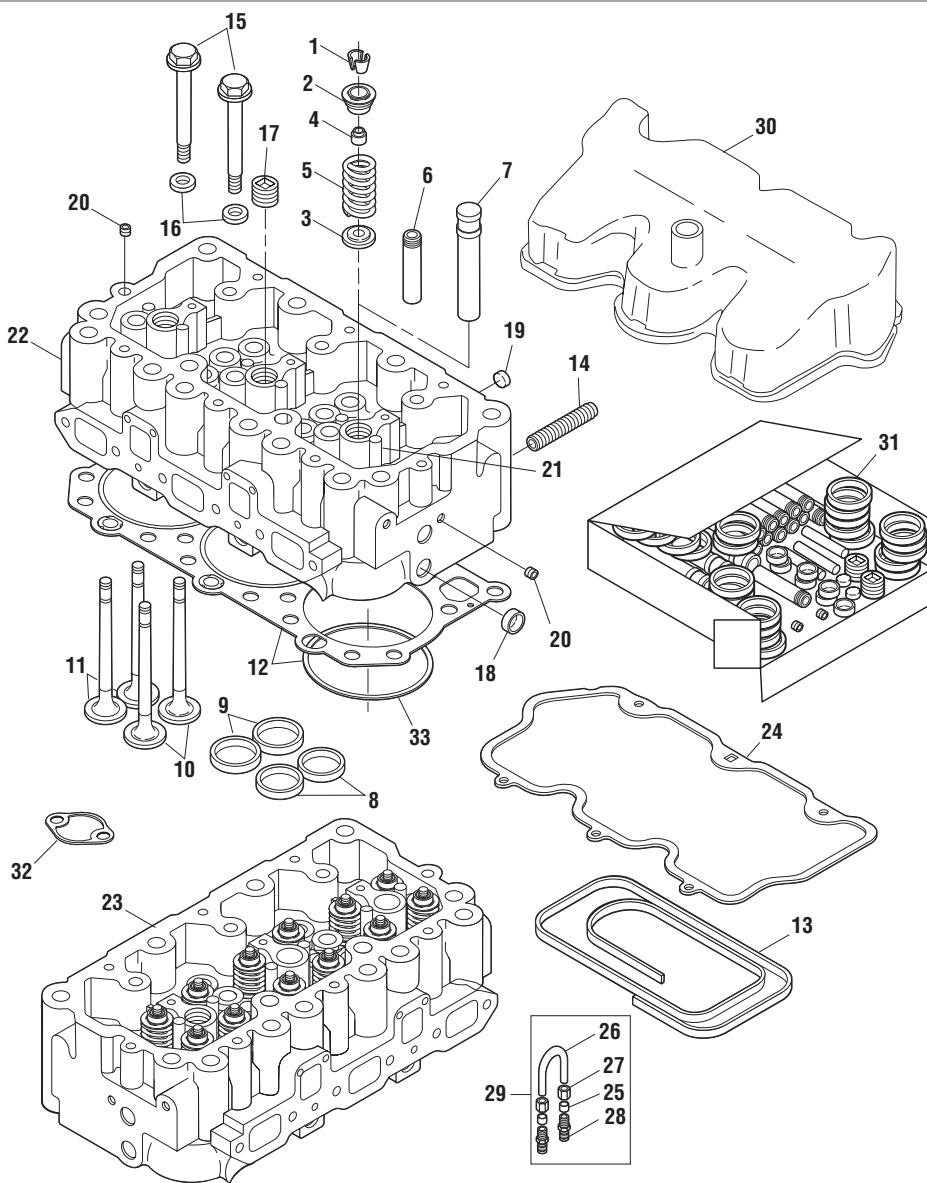
FIGURE 64



KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	ERG-3842		MAK 673GB35	GEAR,Starter Ring(117 Teeth)	
1	ERG-3990		MAK 673GB222	GEAR,Starter Ring(118 Teeth)	
2	EFW-3843		MAK 530GB3170M	FLYWHEEL(Metric) Includes Gear (1)ERG-3842	
2	EFW-3997		MAK 530GB3145BM	FLYWHEEL(For 15-1/2in Spicer Clutch) Includes Gear ERC-3990 Bearing (1)EBG-8639HP	
2	860049		MAK 530GB3174	FLYWHEEL(Allison)(E-Tech, ASET)	
3	+EBG-8639		MAK 46AX534	BEARING,Clutch Pilot(Sealed)	
4	EWA-0393		MAK 271AM5008	WASHER(17.45mm ID x 28mm OD x 3mm thk) (6 required)	
5	ESC-0332		MAK 419GC222M	SCREW(M16 x 1.5 x 60)(E-Tech, ASET)(6 req'd)	
5	ESC-1581		MAK 419GC31M	SCREW w/ Captive Washer (M16 x 1.5 x 40)(6 req'd)	
5	ESC-1611		MAK 419GC29M	SCREW(M16 x 1.5 x 40)(6 req'd)	
6	Call		MAK 36AM1X	WASHER	
7	ESC-0379		MAK 2AM56	SCREW(Clutch Mounting)	
8	EGK-3841-001		MAK 590GB2146	GASKET,Timing Inspection Cover	
9	805024		MAK 634GC5330M	HOUSING,Flywheel(ASET)	
9	805025		MAK 634GC5337M	HOUSING,Flywheel(E7, E-Tech, ASET-Aluminum) (Manual Transmission)	
9	805026		MAK 634GC5337M2	HOUSING,Flywheel(E7, E-Tech, ASET-Aluminum) (Automatic Transmission)	
9	805027		MAK 634GC5337M3	HOUSING,Flywheel(ASET)	
10	840005		MAK 30AM7	SCREW(M10 x 1.5 x 35mm Hex Head w/ Flange)	MAK 25109354
10	840028		MAK 3AX2075	SCREW(7/16 x 14 x 1-1/2in Hex Head w/ Flange)	MAK 25176187
11	841250		MAK 35AX1601	WASHER(Use w/ 840028 Screw)	MAK 25102025

+High Performance available by adding (HP) to the end of the PAI Reference number when placing your order.

FIGURE 61



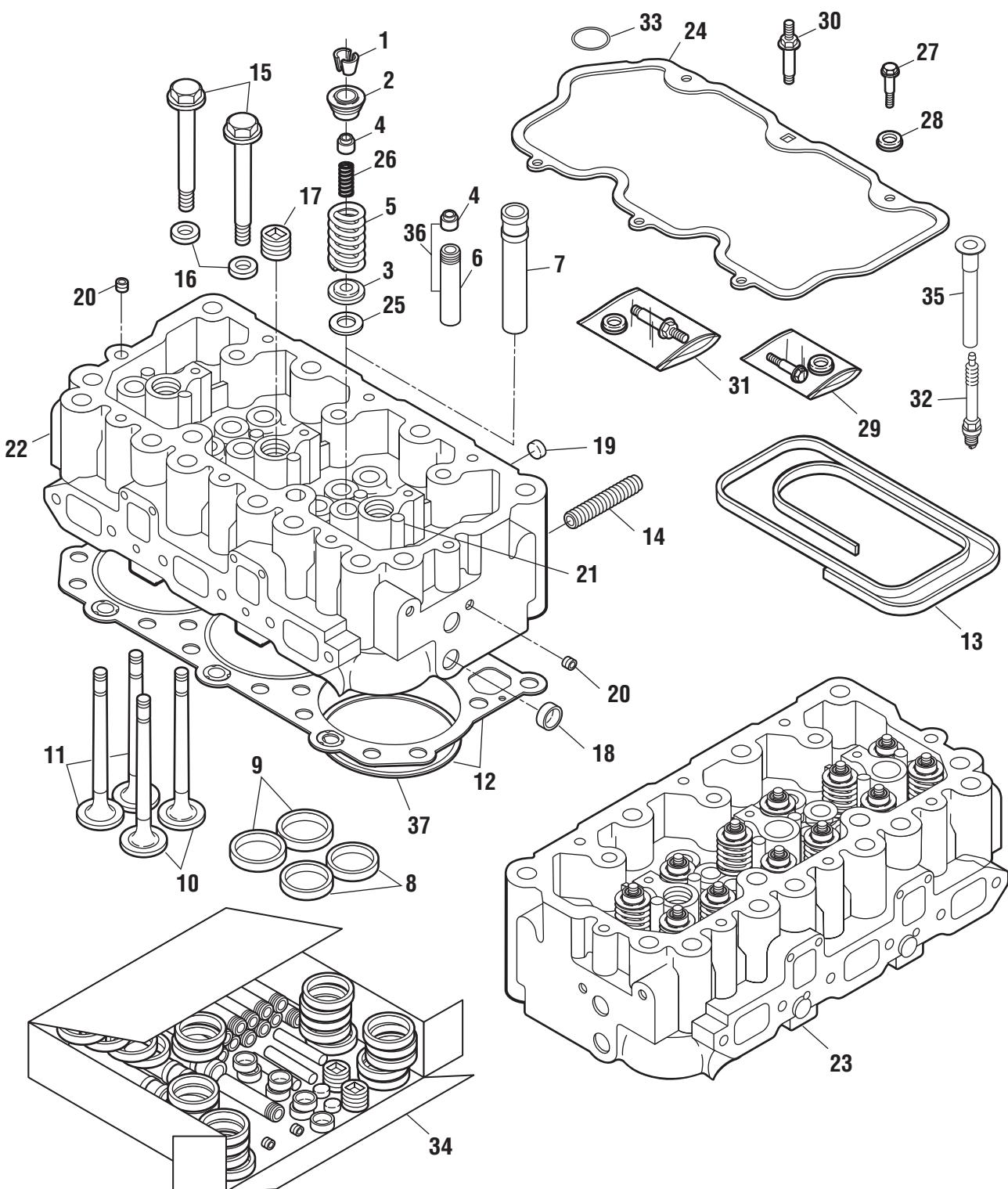
KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
1	EVL-8205		MAK 54GC25	LOCK,Valve(24 req'd per Head)	NAV 41339D
2	EVR-8355		MAK 722GC321	RETAINER(12 req'd per Head)	MAK 722GC311, MAK 722GC312
3	EVR-8327		MAK 722GC313A	ROTATOR(Heavy Duty)(12 req'd per Head)	MAK 722GC314
4	EOS-0443		MAK 446GC328	SEAL(3/8in Valve Stem) (Use w/ Guide EVG-2379)	MAK 446GC296
4	EOS-0444		MAK 446GC332	SEAL(3/8in Valve Stem)(Use w/ Guide EVG-2398)	
5	ESP-8165		MAK 575GC213	SPRING,Valve	
6	EVG-2379		MAK 714GB222P2	GUIDE,Valve(3/8in Valve Stem) (Pre-Reamed)(Use w/ Seal EOS-0443)	
6	EVG-2386		N/A	GUIDE,Valve(3/8in Valve Stem)(Semi-Finished)	
6	EVG-2398		MAK 714GB3113P2	GUIDE,Valve(3/8in Valve Stem)(Semi-Finished)	
6	EVG-2399		N/A	GUIDE,Valve(3/8in Valve Stem)(Finished)	
7	EIS-8341		MAK 12GC212A	SLEEVE,Injector(3 req'd per Head)	
7	EIS-8341-020		MAK 12GC212AP20	SLEEVE,Injector(.20in Oversize)(3 req'd per Head)	
8	EVS-2557-STD		MAK 13GC2251P1	SEAT,Intake	
8	EVS-2557-015		MAK 13GC2251P15	SEAT,Intake	
8	EVS-2557-031		MAK 13GC2251P31	SEAT,Intake	
8	EVS-2557-047		MAK 13GC2251P47	SEAT,Intake	
8	EVS-2557-062		MAK 13GC2251P62	SEAT,Intake	
9	EVS-2547-STD		MAK 13GC2264P1	SEAT,Exhaust	

Cylinder Head Assembly

E7

KEY	PAI REFERENCE	EXCEL NO.	OEM REFERENCE	DESCRIPTION	REFERENCE INFORMATION
9	EVS-2547-015		MAK 13GC2264P15	SEAT,Exhaust	
9	EVS-2547-031		MAK 13GC2264P31	SEAT,Exhaust	
9	EVS-2547-047		MAK 13GC2264P47	SEAT,Exhaust	
9	EVS-2547-062		MAK 13GC2264P62	SEAT,Exhaust	
10	EVA-8135	EM81350	MAK 690GC2210	VALVE,Intake(3/8in Stem, 30 deg. Seat)(6 req'd per Head)	
10	EVA-8136	EM81360	MAK 690GC427	VALVE,Intake	
10	EVA-8137	EM81370	MAK 690GC410	VALVE,Intake	
11	EVA-8145	EM81450	MAK 688GC2378	VALVE,Exhaust(3/8in Stem)(6 req'd per Head)	
11	EVA-8146		MAK 688GC2389	VALVE,Exhaust	MAK 690GC417
11	EVA-8147	EM81470	MAK 688GC344	VALVE,Exhaust	
12	EGK-8429	EM84290	MAK 57GC2115A	KIT,Gasket(Current)(Flat Fire-Ring Design) Includes Gasket (1)EGK-8419 Fire-Rings (3)EFR-8416	
12	EGK-8431		MAK 57GC2155	KIT,Gasket(Early)(Stepped Fire-Ring Design) Includes Gasket (1)EGK-8419 Fire-Rings (3)EFR-8417	
13	EGK-3426		MAK 554GB321	GASKET,Valve Cover(Silicone)(Joined Ends)	
13	EGK-3929		MAK 554GB115	GASKET,Valve Cover(Silicone Rubber)	
14	EST-0415		MAK 616GC245M	STUD,Exhaust Manifold(M12 x 1.75 x 113)	
14	EST-0416		MAK 616GC245M2	STUD,Exhaust Manifold(M12 x 1.75 x 103)	
15	ESC-1605		MAK 400GC39M2	SCREW,Cylinder Head(M16 x 2 x 198)	
15	ESC-1606		MAK 400GC39M4	SCREW,Cylinder Head(M16 x 2 x 225)	
16	EWA-1780		MAK 711GC1100P9	WASHER(1-1/8in OD)	
16	EWA-1783		MAK 711GC1100P14	WASHER(1in OD)	
17	EPP-3576		MAK 49AX235	PLUG,Pipe	
18	ECP-3486		MAK 79AX68Z	PLUG,Core(1-1/16in Dia.)	
19	ECP-3485		MAK 79AX63	PLUG,Core(13/16in Dia.)	
20	EPP-3572		MAK 49AX242	PLUG,Pipe(1/16in-27 NPT)	MAK 49AX179
21	EPN-2647		MAK 183GC2257	PIN,Valve Yoke(Phosphate Coating)	MAK 20706557
21	EPN-2777		MAK 183GC25	PIN,Valve Yoke	
22	ECH-3313		MAK 732GB5382M	ASSEMBLY,Cylinder Head (Uses 20 deg.)(Intake Valve Seat)	
22	ECH-3317		MAK 732GB4482M	ASSEMBLY,Cylinder Head	
23	ECH-3319		MAK 732GB3451M	ASSEMBLY,Cylinder Head(Complete w/ Valves) Includes Cylinder Head (1)ECH-3317 Seals (12)EOS-0443 Valves (6)EVA-8145 (6)EVA-8135 Springs (12)ESP-8165 Locks (24)EVL-8205 Retainers (12)EVR-8355 Rotators (12)EVR-8237	
24	EGS-3809		MAK 4559-13411	SET,Gasket(Engine Brake) Includes Gaskets (2)EGS-3809-001	
25	EGS-3903-005		MAK 52AX47	SEAL,Fuel Crossover Tube	
26	EFR-2326		MAK 207GC178	TUBE,Fuel Return	
27	MNU-4126-004		MAK 63AX3438	NUT	
28	MAF-5213		MAK 63AX3705	CONNECTOR,Fitting	MAK 63AX3519
29	ETK-2327		N/A	KIT,Fuel Tube Includes Tube (1)EFR-2326 Connectors (2)MAF-5213 Nuts (2)MNU-4126-004 Seals (2)EGS-3903-005	
30	EVC-2019		MAK 337GB545	COVER,Valve	MAK 337GB537
31	ECH-3317-100		N/A	KIT,Rebuild Head Includes Seats (6)EVS-2547-STD (6)EVS-2557-STD Sleeves (3)EIS-8341 Pins (6)EPN-2777 Guides (12)EVG-2379 Plugs (2)EPP-3576 (4)ECP-3486 (2)EPP-3572 (3)GCP-3484 (2)ECP-3485 (1)EPP-3574	
31	ECH-3317-101		N/A	KIT,Repair Head Includes Valves (6)EVA-8145 (6)EVA-8135 Sleeves (3)EIS-8341 Locks (24)EVL-8205 Seals (12)EOS-0443 Guides (12)EVG-2379 Seats (6)EVS-2547-STD (6)EVS-2557-STD	
31	ECH-3317-102		N/A	KIT,Rebuild Head Includes Valves (6)EVA-8145 (6)EVA-8135 Locks (24) EVL-8205 Seals (12)EOS-0443 Rotators (12)EVR-8327 Pins (6)EPN-2777 Seats (6)EVS-2547-STD (6)EVS-2557-STD Guides (12)EVG-2379 Springs (12)ESP-8165 Retainers (12)EVR-8355	
32	EGK-3935		MAK 590GB2111A	GASKET,Breather Tube	
33	EFR-8416		MAK 553GB224	RING,Flat Fire(Used w/ Head Gasket EGK-8429)	
33	EFR-8417		MAK 553GB3279	RING,Stepped Fire(Used w/ Head Gasket EGK-8431)	

FIGURE 127

**Please note:**

* Upper Rotators are no longer available. When replacing components of Cylinder Heads with existing upper Rotators, the Head will require conversion to the Lower Rotator system shown.

PAI TRUCK PARTS

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