TECHNICAL MANUAL

UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LISTS (INCLUDING DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LISTS)

CRANE-SHOVEL, CRAWLER MOUNTED:
12-1/2-TON, 3/4 CU YD;
DIESEL ENGINE DRIVEN
NSN 3810-00-869-3092

BUCYRUS-ERIE MODEL 22BM

This manual supersedes TM 5-3810-289-20P, 6 December 1984 and TM 5-3810-289-34P, 7 December 1984 and all changes.

Approved for public release; distribution Is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY

APRIL 1992

TECHNICAL MANUAL

HEADQUARTERS
DEPARTMENT OF THE ARMY

***TM 5-3810-289-24P**

Washington D.C., *1 April 1992*

UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LISTS (INCLUDING DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LISTS)

CRANE-SHOVEL, CRAWLER MOUNTED: 12-1/2-TON, 3/4 CU YD; DIESEL ENGINE DRIVEN NSN 3810-00-869-3092

BUCYRUS-ERIE MODEL 22BM

Current as of 21 November 1989

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 *(Recommended Changes to Publications and Blank Forms)* or DA Form 2028-2, located in the back of this manual, direct to: Commander, U.S. Army Tank-Automotive Command, ATTN: AMSTA-MB, Warren, MI 48397-5000. A reply will be furnished to you.

Approved for public release; distribution is unlimited.

TABLE OF CONTENTS

			Page	Illus Fig
SECTION I.	INTRODUCTION		1	
SECTION II.	REPAIR PARTS LIST		1-1	
GROUP 01	ENGINE			
	0100 -	ENGINE ASSEMBLY	1-1	
		ENGINE ASSEMBLY AND ENGINE MOUNTS	1-1	1
	0101 -	CRANKCASE, BLOCK, CYLINDER HEAD	2-1	
		CYLINDER HEAD	2-1	2
		ENGINE BLOCK ASSEMBLY	3-1	3
	0102 -	CRANKSHAFT	4-1	
		CRANKSHAFT AND COVER	4-1	4
	0103 -	FLYWHEEL ASSEMBLY	5-1	
		FLYWHEEL ASSEMBLY	5-1	5

***This manual supersedes TM 5-3810-289-20P, 6 December 1984 and TM 5-3810-289-34P, 7 December 1984 and all changes.**

TABLE OF CONTENTS - Continued

		Page	Illus Fig
0104 -	PISTONS, CONNECTING RODS	6-1	
	PISTONS AND CONNECTING RODS	6-1	6
0105 -	VALVES, CAMSHAFTS, AND TIMING SYSTEM	7-1	
	CAMSHAFT AND GEAR COVER	7-1	7
	TAPPET ASSEMBLIES	8-1	8
	VALVES AND COVER	9-1	9
	ROCKER ARM ASSEMBLY	10-1	10
0106 -	ENGINE LUBRICATION SYSTEM	11-1	
	CRANKCASE BREATHER ASSEMBLY	11-1	11
	OIL PAN AND OIL TRANSFER CONNECTION	12-1	12
	LUBRICATING OIL COOLER	13-1	13
	LUBRICATING OIL PUMP	14-1	14
	OIL FILTER	15-1	15
	OIL GAGE AND FILLER TUBE	16-1	16
0108-	MANIFOLDS	17-1	
	AIR INTAKE AND EXHAUST MANIFOLDS	17-1	17
0109 -	ACCESSORY DRIVING MECHANISMS	18-1	
	ACCESSORY DRIVE	18-1	18
GROUP 02	CLUTCH		
0200 -	CLUTCH ASSEMBLY	19-1	
	CLUTCH ASSEMBLY	19-1	19
0202 -	CLUTCH RELEASE MECHANISM	20-1	
	CLUTCH RELEASE MECHANISM	20-1	20
GROUP 03	FUEL SYSTEM		
0301 -	CARBURETOR, FUEL INJECTOR	21-1	
	FUEL INJECTOR	21-1	21
0302 -	FUEL PUMPS	22-1	
	FUEL PUMP ASSEMBLY	22-1	22
	FUEL PUMP ASSEMBLY, GEAR PUMP, AND DAMPER ASSEMBLY	23-1	23
	FUEL PUMP ASSEMBLY SHUTDOWN VALVE	24-1	24
0304 -	AIR CLEANER	25-1	
	AIR CLEANER	25-1	25
0306 -	TANKS, LINES, FITTINGS, HEADERS	26-1	
	FUEL TANK	26-1	26
	FUEL INLET AND DRAIN CONNECTORS	27-1	27
	FUEL SUPPLY MANIFOLD DRAIN	28-1	28
0308 -	ENGINE SPEED GOVERNOR AND CONTROLS	29-1	
	GOVERNOR ASSEMBLY, GOVERNOR SPRING PACK, AND MAIN SHAFT COVER	29-1	29
	FUEL PUMP GOVERNOR, MECHANICAL VARIABLE SPEED	30-1	30
0309 -	FUEL FILTERS	31-1	
	FUEL FILTERS	31-1	31
0311 -	ENGINE STARTING AIDS	32-1	
	ENGINE STARTING AIDS	32-1	32
0312 -	ACCELERATOR, THROTTLE OR CHOKE CONTROLS	33-1	33
GROUP 04	EXHAUST SYSTEM		
0401 -	MUFFLER AND PIPES	34-1	
	MUFFLER, PIPES, AND GUARD	34-1	34

TABLE OF CONTENTS - Continued

			Page	Illus Fig
GROUP 05		COOLING SYSTEM		
	0501 -	RADIATOR, EVAPORATIVE COOLER, OR HEAT EXCHANGER	35-1	
		RADIATOR	35-1	35
	0502 -	COWLING, DEFLECTORS, AIR DUCTS, SHROUDS, ETC	36-1	
		RADIATOR SHROUD AND BELT GUARD	36-1	36
	0503 -	WATER MANIFOLD, HEADERS, THERMOSTATS AND HOUSING GASKET	37-1	
		RADIATOR LINES AND FITTINGS	37-1	37
		THERMOSTAT AND HOUSING	38-1	38
	0504 -	WATER PUMP	39-1	
		WATER PUMP	39-1	39
	0505 -	FAN ASSEMBLY	40-1	
		FAN ASSEMBLY AND GUARD	40-1	40
GROUP 06		ELECTRICAL SYSTEM		
	0601 -	GENERATOR, ALTERNATOR	41-1	
		ALTERNATOR MOUNTING	41-1	41
		ALTERNATOR ASSEMBLY	42-1	42
	0603 -	STARTING MOTOR	43-1	
		STARTER AND SWITCH	43-1	43
		STARTER MOTOR COMPONENT PARTS	44-1	44
	0606 -	ENGINE SAFETY CONTROLS	45-1	
		ENGINE SAFETY CONTROL SWITCH	45-1	45
	0607 -	INSTRUMENT OR ENGINE CONTROL PANEL	46-1	
		INSTRUMENT PANEL	46-1	46
	0609 -	LIGHTS	47-1	
		LIGHTS	47-1	47
	0610 -	SENDING UNITS AND WARNING SWITCHES	48-1	
		SENDING UNITS	48-1	48
	0611 -	HORN, SIREN	49-1	
		HORN	49-1	49
	0612 -	BATTERIES, STORAGE	50-1	
		BATTERIES AND CABLES	50-1	50
	0613 -	HULL OR CHASSIS WIRING HARNESS	51-1	
		CHASSIS WIRING HARNESS	51-1	51
GROUP 13		WHEELS AND TRACKS		
	1301 -	SUSPENSION ASSEMBLY	52-1	
		CRAWLER FRAME	52-1	
	1302 -	TRACK SUPPORT ROLLERS AND BRACKETS	53-1	52
		TRACK SUPPORT ROLLER AND BRACKETS	53-1	53
	1303 -	TRACK IDLERS AND BRACKETS	54-1	
		TRACK IDLERS AND BRACKETS	54-1	54
	1304 -	TRACK DRIVE SPROCKETS	55-1	
		TRACK DRIVE SPROCKETS	55-1	55
	1305 -	TRACK ASSEMBLY.	56-1	
		TRACK ASSEMBLY	56-1	56

TABLE OF CONTENTS - Continued

			Page	Illus Fig
GROUP 15	FRAME, TOWING ATTACHMENTS, DRAWBARS, AND ARTICULATION SYSTEMS			
	1502 -	COUNTERWEIGHTS	57-1	
		COUNTERWEIGHTS	57-1	57
GROUP 18	BODY, CAB, HOOD AND HULL			
	1801 -	BODY, CAB, HOOD, AND HULL ASSEMBLIES	58-1	
		CAB	58-1	58
	1806 -	UPHOLSTERY, SEATS, AND CARPETS	59-1	
		SEAT	59-1	59
	1808 -	STOWAGE RACKS, BOXES, STRAPS, CARRYING CASES, CABLE REELS, HOSE REELS, ETC	60-1	
		STOWAGE BOX AND CABLE TROUGH	60-1	60
GROUP 22	BODY, CHASSIS, AND HULL ACCESSORY ITEMS			
	2210 -	DATA PLATES AND INSTRUCTION HOLDERS	61-1	
		DATA PLATES	61-1	61
GROUP 47	GAGES (NONELECTRICAL), WEIGHING AND MEASURING DEVICES			
	4701 -	INSTRUMENTS	62-1	
		TACHOMETER	62-1	62
GROUP 74	CRANES, SHOVELS, AND EARTH MOVING EQUIPMENT COMPONENTS			
	7410 -	SHOVEL FRONT ATTACHMENTS	63-1	
		SHIPPER SHAFT	63-1	63
		DIPPER HANDLE	64-1	64
		SHOVEL PADLOCK	65-1	65
		PULLEY AND GUARDS	66-1	66
		DIPPER	67-1	67
		CROWD CHAIN, SPROCKET WHEEL, AND CABLE DRUM ASSEMBLY	68-1	68
		SHOVEL BOOM	69-1	69
		DIPPER TRIP	70-1	70
	7411 -	CRANE DRAGLINE OR CLAMSHELL ATTACHMENTS	71-1	
		BOOM LOWER SECTION AND EXTENSION.	71-1	71
		BOOM UPPER SECTION	72-1	72
		JIB BOOM AND STRUT	73-1	73
		JIB BOOM GUIDE AND LINK	74-1	74
		FAIRLEAD	75-1	75
		TAGLINE	76-1	76
	7412 -	BACKHOE ATTACHMENTS	77-1	
		BACKHOE SCOOP ASSEMBLY	77-1	77
		BACKHOE BRACE, STICK, AND PULLEY BLOCK	78-1	78
		JACK BOOM ASSEMBLY	79-1	79
		BACKHOE BOOM	80-1	80
	7413 -	PILE DRIVE ATTACHMENT	81-1	
		PILE DRIVER ASSEMBLY	81-1	81
	7414 -	BASE DECK	82-1	
		UPPER FRAME, SIDE FRAMES, AND COUNTERWEIGHT	82-1	82
		REVOLVING FRAME COMPONENTS	83-1	83
	7415 -	CLUTCH	84-1	
		CLUTCH ASSEMBLIES	84-1	84

TABLE OF CONTENTS - Continued

			Page	Illus Fig
	7416 -	SHAFTS	85-1	
		FRONT DRUM SHAFT AND COMPONENTS	85-1	85
		REAR DRUM SHAFT AND COMPONENTS	86-1	86
		VERTICAL SWING SHAFT	87-1	87
		HORIZONTAL SWING SHAFT	88-1	88
	7417-	HOISTS	89-1	
		LOAD LOWERING HOIST, REAR SHAFT	89-1	89
	7418 -	TRANSMISSION ASSEMBLY	90-1	
		TRANSMISSION ASSEMBLY	90-1	90
	7419-	TURNTABLE	91-1	
		TURNTABLE ROLLER	91-1	91
		ANTIROTATION DEVICE	92-1	92
	7420 -	MACHINERY GEAR CASE OR FRAME	93-1	
		FRONT OIL PAN COVERS	93-1	93
	7421 -	INDEPENDENT OR PRECISION BOOM HOIST	94-1	
		INDEPENDENT BOOM HOIST ASSEMBLY, ANCHOR BRACKET AND LEVERS	94-1	94
		INDEPENDENT BOOM HOIST ASSEMBLY, BRAKE LINING AND COVER	95-1	95
		INDEPENDENT BOOM HOIST ASSEMBLY, DRUM AND CLUTCH ASSEMBLY	96-1	96
	7422 -	MACHINERY MECHANISM CONTROLS	97-1	
		STEERING SWING LOCK LEVERS	97-1	97
		SWING PROPEL CLUTCH CONTROLS.	98-1	98
		FRONT AND REAR SWING PROPEL CLUTCH CONTROLS	99-1	99
		SWING LOCKING DOG AND SWING PROPEL LEVERS	100-1	100
		STEERING BRAKE, SWING JAW SHIFTER, AND PROPELLING CLUTCH LEVERS	101-1	101
		HOIST CLUTCH LEVERS	102-1	102
		BOOM HOIST CLUTCH PAWL AND LEVERS	103-1	103
		DRUM CLUTCH LEVERS	104-1	104
		BRAKE PEDAL AND LINKAGE	105-1	105
	7423 -	GANTRY	106-1	
		GANTRY A-FRAME ASSEMBLY	106-1	106
	7424 -	CRAWLER BED, FRAME AND RING GEAR	107-1	
		TRUCK FRAME	107-1	107
	7425 -	PROPEL AND STEERING MECHANISM	108-1	
		VERTICAL PROPEL AND STEERING SHAFTS	108-1	108
		VERTICAL PROPEL SHAFT LUBRICATION LINES AND FITTINGS	109-1	109
GROUP 94	REPAIR KITS			
	9401 -	REPAIR KITS	KITS-1	
		REPAIR KITS	KITS-1	KITS
GROUP 95	GENERAL USE STANDARDIZED PARTS			
	9501 -	BULK MATERIEL	BULK-1	
		BULK MATERIEL	BULK-1	BULK
SECTION III.	SPECIAL TOOLS LIST (NOT APPLICABLE)			
SECTION IV.	CROSS-REFERENCE INDEXES			
	NATIONAL STOCK NUMBER INDEX		I-1	
	PART NUMBER INDEX		I-16	
	FIGURE AND ITEM NUMBER INDEX		I-75	

UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LISTS (INCLUDING DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LISTS)

SECTION I. INTRODUCTION

1. Scope.
This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of Unit, Direct Support, and General Support Maintenance of the Crawler Mounted Crane-Shovel. It authorizes the requisitioning, issue, and disposition of spares, repair parts and special tools as indicated by the source, maintenance and recoverability (SMR) codes.

2. General.
In addition to Section I. Introduction, this Repair Parts.and Special Tools List is divided into the following.sections:

a. *Section II. Repair Parts List.* A list of spares and.repair parts authorized by this RPSTL for use in the.performance of maintenance. The list also includes.parts which must be removed for replacement of the.authorized parts. Parts lists are composed of functional.groups in ascending alphanumeric sequence, with the.parts in each group listed in ascending figure and item.number sequence. Bulk materials are listed in item.name sequence. Repair kits are listed separately in their.own functional group within Section II. Repair parts for.reparable special tools are also listed in the section. Items listed are shown on the associated.illustration(s)/figure(s).

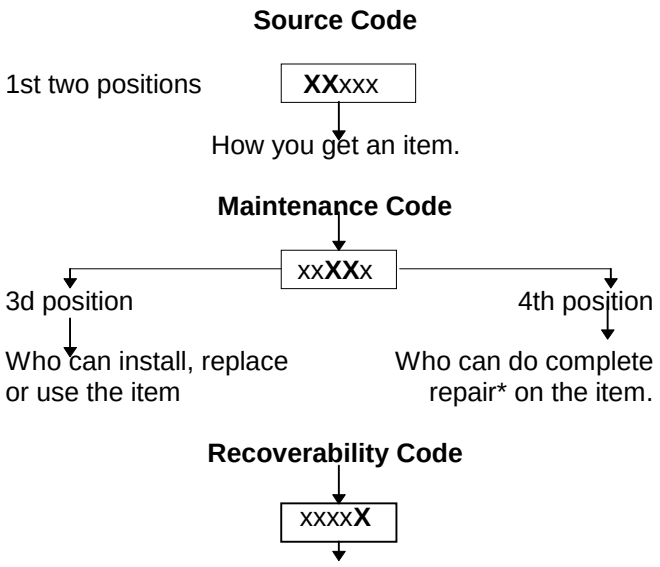
b. Section III. Special Tools List. A list of special.tools, special TMDE, and other special support.equipment authorized by this RPSTL (as indicated by.Basis of Issue (BOI) information in DESCRIPTION AND.USABLE ON CODE column) for the performance of.maintenance.

c. Section IV. Cross-reference Indexes. A list, in.National Item Identification Number (NIIN) sequence, of.all National stock numbered items appearing in the.listing, followed by a list in alphanumeric sequence of all.part numbers appearing in the listings. National stock.numbers and part numbers are cross-referenced to each.illustration/figure and item number appearance. The.figure and item number index lists figure and item.numbers in alphanumeric sequence and cross-references NSN, FSCM or CAGE, and part numbers.

3. Explanation of Columns (Sections II and III).

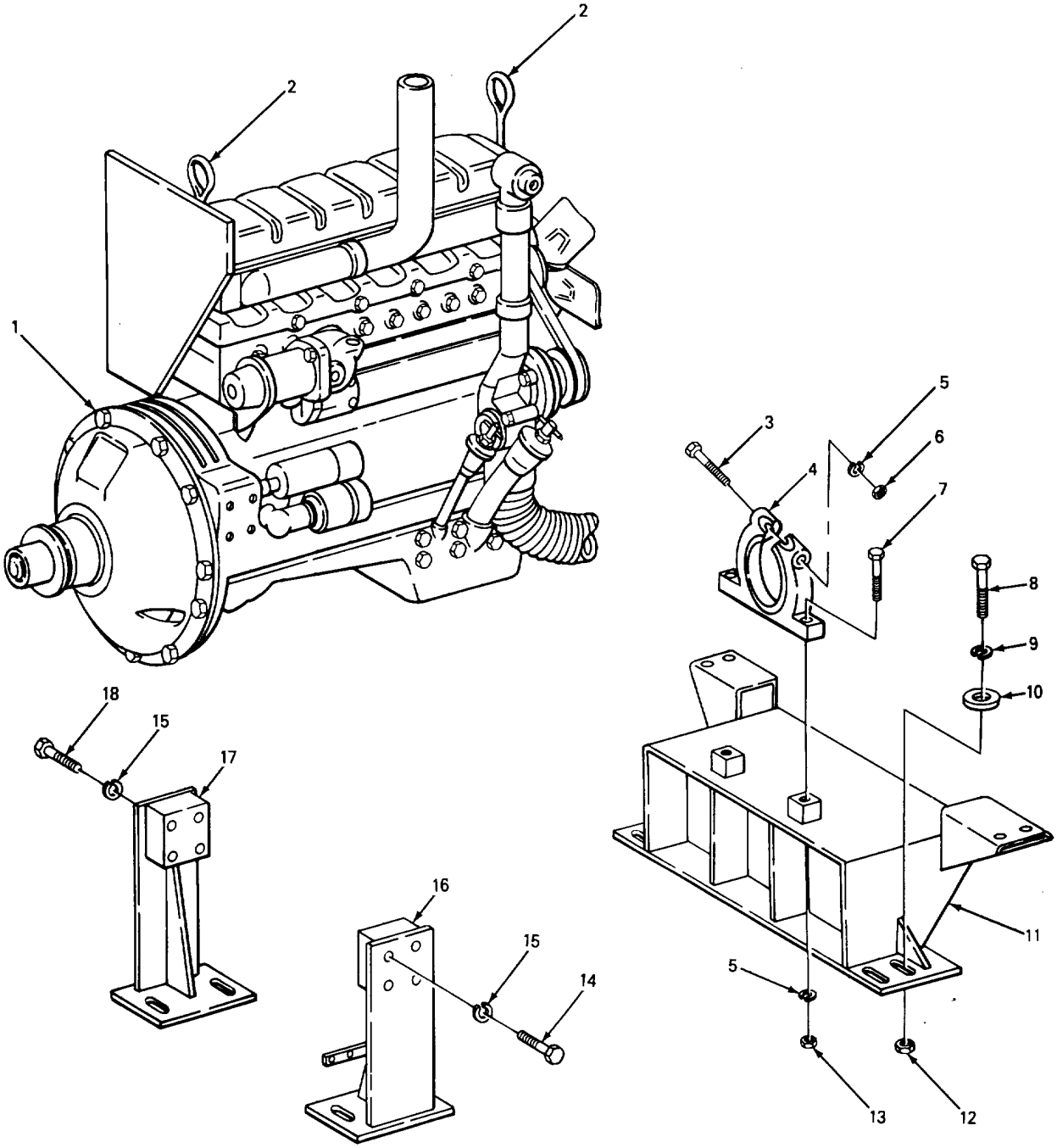
a. ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.

b. *SMR CODE (Column (2)).* The Source, Maintenance, and Recoverability (SMR) code is a 5-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instructions, as shown in the following breakout:



**Complete Repair:* Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

(*1*) *Source Code.* The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follows:

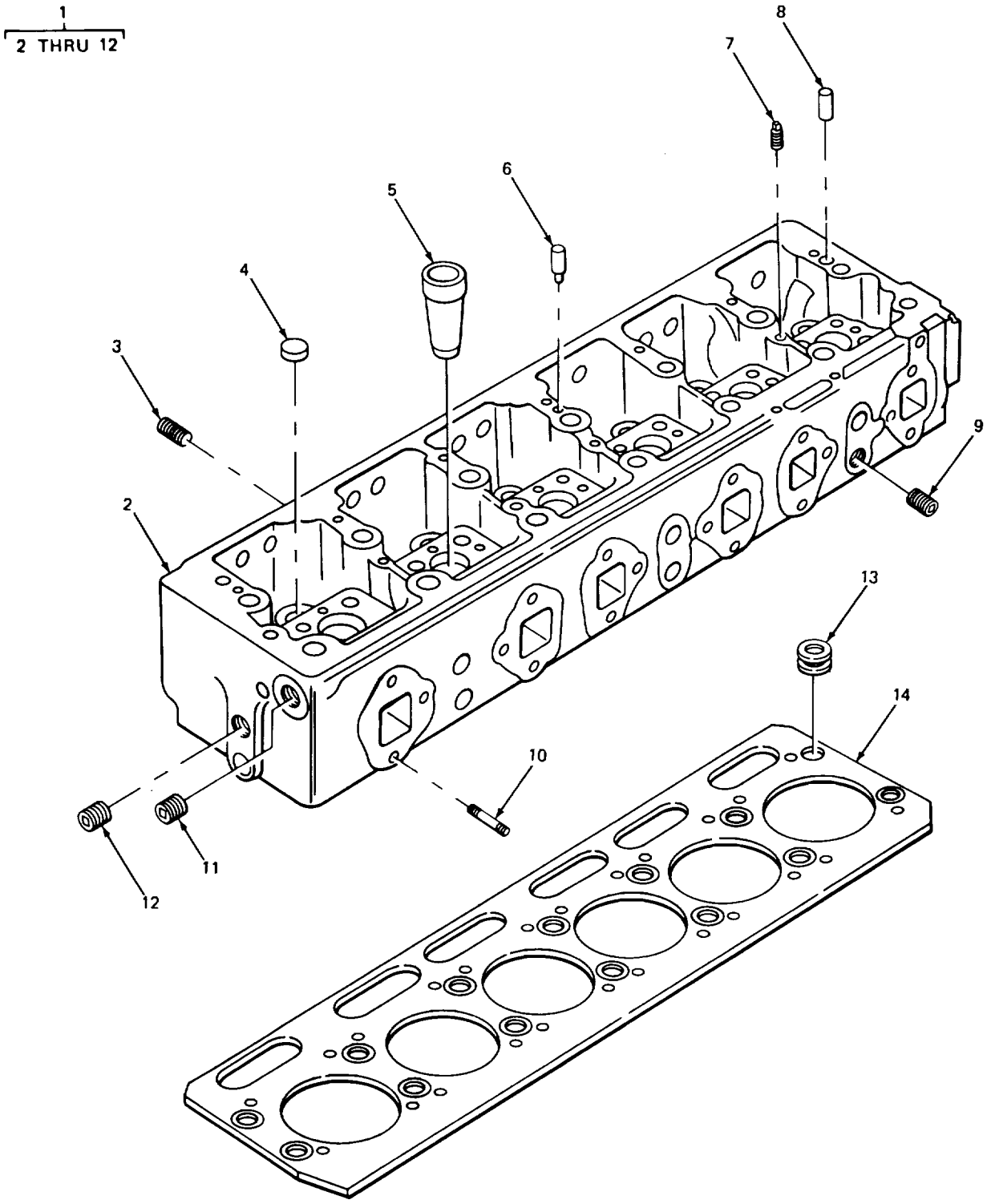


TA502949

FIGURE 1. ENGINE ASSEMBLY.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 01 ENGINE	
				GROUP 0100 ENGINE ASSEMBLY	
				FIG. 1. ENGINE ASSEMBLY AND ENGINE MOUNTS	
1	PBFHH	15434	99045-94	ENGINE, DIESEL	1
2	PFFZZ	15434	135069	BOLT, EYE	2
3	PFFZZ	15434	138046	SCREW, CAP, HEXAGON H FRONT ENGINE SUPPORT	1
4	XDFZZ	15434	153421	SUPPORT, FRONT ENGINE	1
5	PFFZZ	96906	MS35338-50	WASHER, LOCK FRONT ENGINE SUPPORT	3
6	PFFZZ	96906	MS51967-20	NUT, PLAIN, HEXAGON PLAIN, HEXAGON, FRONT ENGINE SUPPORT	1
7	XDFZZ	88853	03192600	SCREW, CAP, HEXAGON HEAD, FRONT SUPPORT MTG	2
8	XDFZZ	88853	03195120	SCREW, CAP, HEXAGON HEAD, FRONT SUPPORT MTG	8
9	XDFZZ	88853	03961800	WASHER, LOCK FRONT SUPPORT MTG	8
10	PFFZZ	88853	506003K1	WASHER, SPECIAL FRONT SUPPORT MTG	8
11	PFFZZ	88853	861427K21	SUPPORT**,**ENGINE ENGINE MTG	1
* 12	XDFZZ	88853	02714050	NUT, PLAIN, HEXAGON FRONT SUPPORT MTG	8
13	PFFZZ	88853	02713050	NUT, PLAIN, HEXAGON FRONT SUPPORT MTG	2
14	PFFZZ	88853	03285800	SCREW, CAP, HEXAGON H HEAD, RH REAR SUPPORT MTG	4
15	XDFZZ	88853	03961500	WASHER, LOCK REAR SUPPORTS MTG	8
16	XDFZZ	88853	725217K21	SUPPORT, ENGINE REAR ENGINE MOUNTING	1
17	PFFZZ	88853	725216K21	SUPPORT, ENGINE REAR, ENGINE MTG,	1
18	XDFZZ	88853	03185960	SCREW, CAP, HEXAGON HEAD, LH REAR ENGINE SUPPORT MTG	4

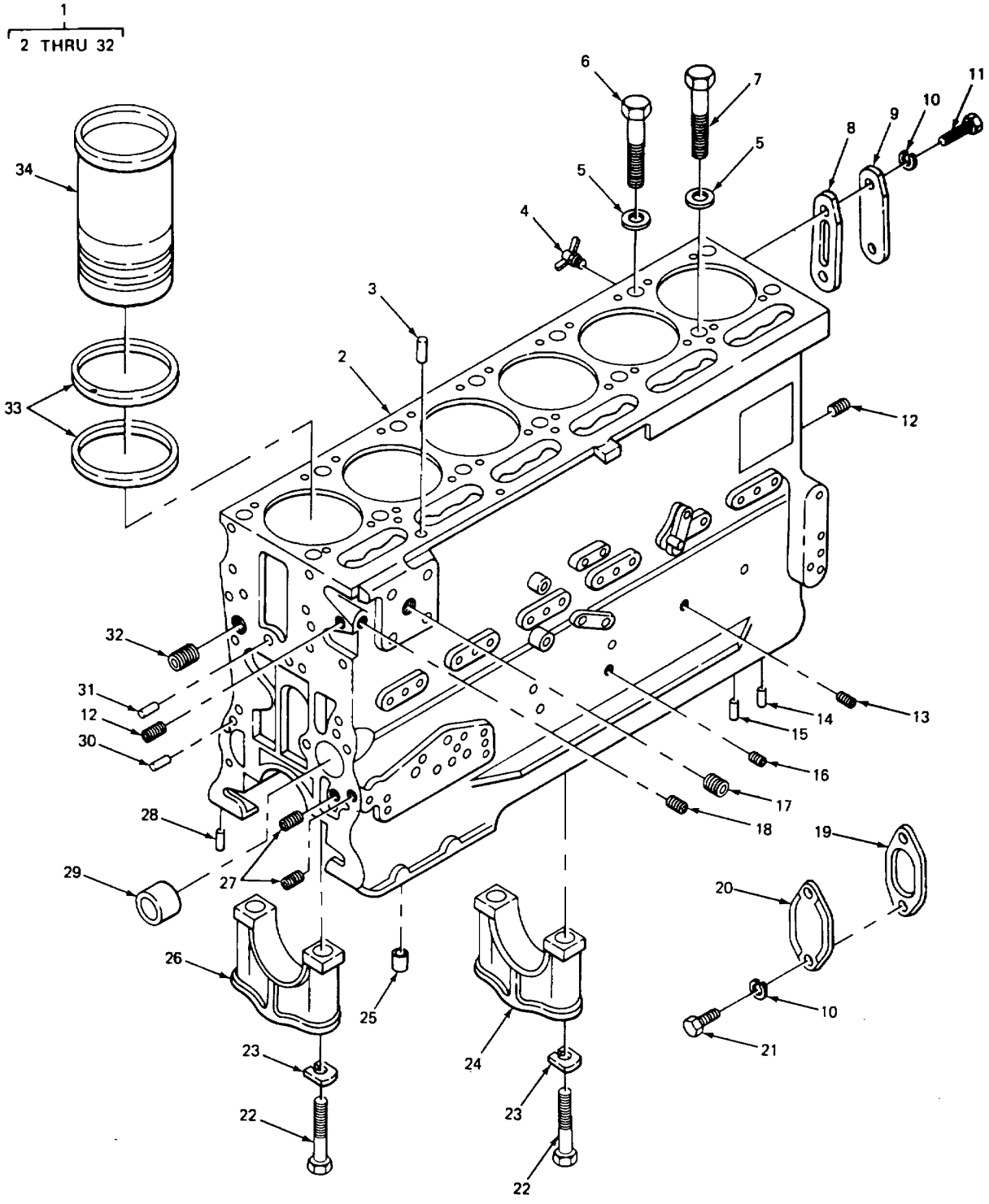
END OF FIGURE



TA502950

FIGURE 2. CYLINDER HEAD.

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0101 CRANKCASE, BLOCK, CYLINDER HEAD	
					FIG. 2. CYLINDER HEAD	
*	1	PAFZZ	15434	AR11757	CYLINDER HEAD DIESE	1
	2	XAHHH	15434	143551	.HEAD CYLINDER	1
	3	PFFZZ	15434	146891	.SETSCREW MANIFOLD	3
	4	PFFZZ	15434	S-915-A	.PLUG, PIPE CYLINDER HEAD	6
	5	PFFZZ	15434	108019	.SLEEVE, NOZZLE, INJEC.....	6
	6	XDFZZ	15434	69233	.ADAPTER, OIL INLET	1
*	7	XDFZZ	15434	63876-1	.PLUG, VENT CYLINDER.....	3
	8	PFFZZ	15434	60488	.PIN, SHOULDER, HEADLE.....	2
	9	PAFZZ	12603	14F12	.PLUG, PIPE CYLINDER HEAD	12
	10	PFFZZ	15434	103847	.STUD, PLAIN.....	6
	11	PFFZZ	00905	H524018	.PLUG, FUSIBLE	1
	12	PFFZZ	15434	67622	.PLUG, PIPE CYLINDER HEAD	1
	13	PFFZZ	15434	193949	GASKET HEAD GASKET PART OF KIT P/N 3012588	24
	14	KFFZZ	15434	143878	GASKET CYLINDER HEAD PART OF KIT..... P/N 3012588	1
					END OF FIGURE	

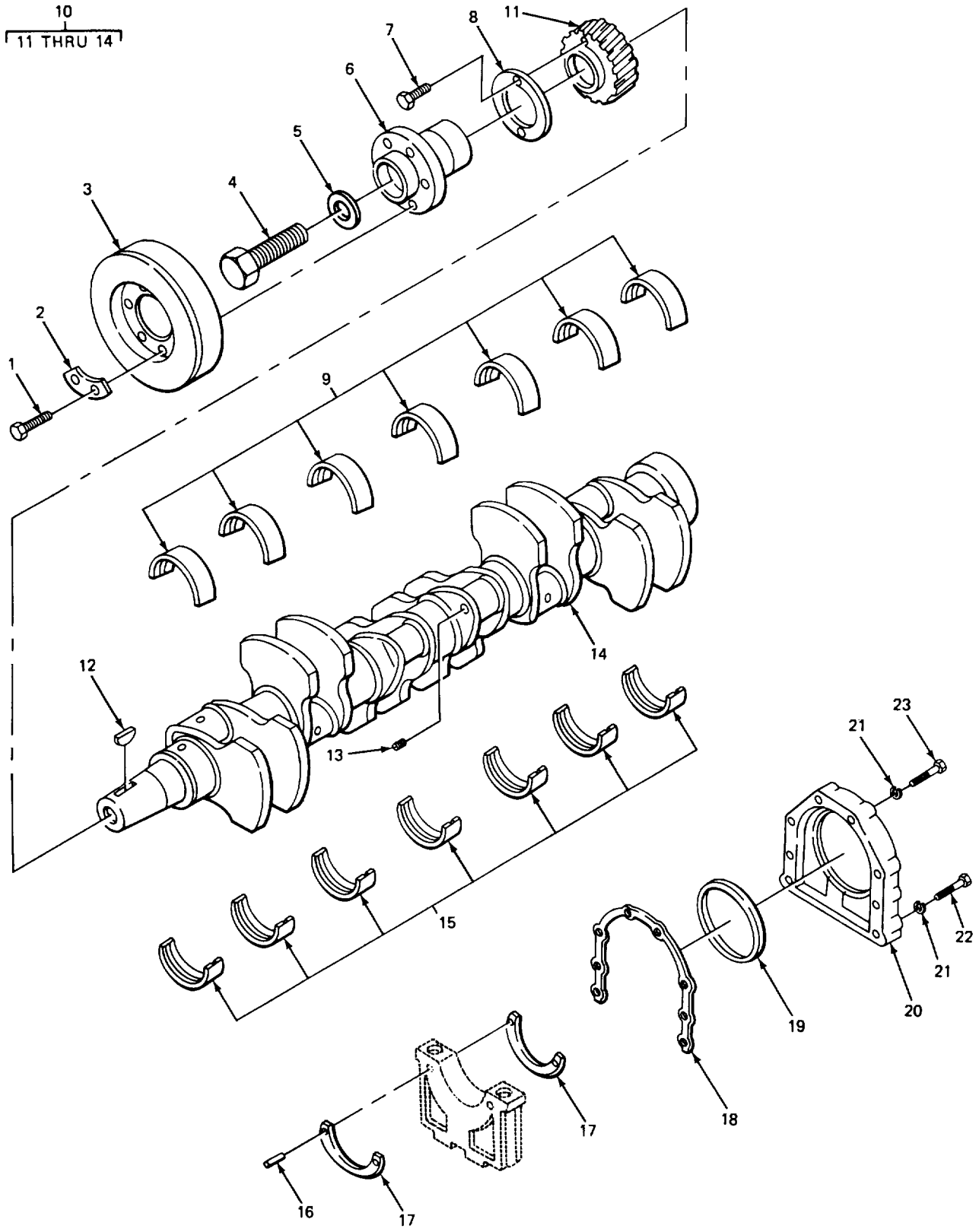


TA502951

FIGURE 3. ENGINE BLOCK ASSEMBLY

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0101 CRANKCASE, BLOCK, CYLINDER HEAD FIG. 3. ENGINE BLOCK, ASSEMBLY	
*	1	PFHZZ	15434	BM56563	ENGINE BLOCK, ASSEMB CYLINDER	1
	2	XAHZZ	15434	150210	.BLOCK, CYLINDER	1
	3	PFFZZ	15434	68445	.PIN, GROOVED, HEADLES HEADLESS, CYLINDER HEAD TO BLOCK,	2
	4	PAFZZ	96906	MS35782-6	.COCK, DRAIN CYLINDER BLOCK,	1
	5	PFFZZ	23862	2432770	.WASHER, FLAT CYLINDER HEAD MTG,	14
	6	PFFZZ	15434	122936	.SCREW, CYLINDER HEAD CYLINDER HEAD MTG, SHORT	7
	7	PFFZZ	15434	122937	.BOLT, MACHINE CYLINDER HEAD MTG, LONG	7
	8	PAFZZ	15434	65474	.GASKET HEADER COVER, PART OF KIT, P/N AR50583	1
	9	PFFZZ	15434	65473	.COVER, CCESS	1
	10	PFFZZ	96906	MS35338-8	.WASHER, LOCK, WATER COVER, MTG,	4
*	11	PFFZZ	80204	B18218H038C075N	.SCREW, CAP, HEXAGON H WATER HEADER, COVER, MTG,	2
	12	PFFZZ	15434	112076	.PLUG, FUEL OUTLET REAR WATER DRAIN.	3
	13	PFFZZ	15434	S911B	.PLUG, PIPE OIL GALLERY	9
	14	PFFZZ	96906	MS16555-43	.PIN, STRAIGHT, HEADLE MAIN	2
	15	PFFZZ	15434	70645	.PIN, OIL PAN, ALIGNIN OIL PAN, TO BLOCK,	1
	16	PFFZZ	79470	C3159X2	.PLUG, PIPE CYLINDER BLOCK,	3
	17	PFFZZ	15434	S-915-A	.PLUG, PIPE CYLINDER BLOCK ,	1
	18	XDFZZ	15434	66351	.PLUG, PIPE BLOCK,	1
	19	PFFZZ	15434	68619	.GASKET CONNECTION PART OF KIT,P/N AR50583	1
*	20	XDFZZ	15434	100902	.COVER, WATER HEADER	1
*	21	PFFZZ	80204	B1821BH038C075N	.SCREW, CAP, HEXAGON H WATER COVER, MTG	2
	22	XDHZZ	15434	104293	.SCREW, CAP, HEXAGON H CAP, MOUNTING	14
	23	PFHZZ	15434	60533	.WASHER, FLAT CAP, MTG	14
	24	PFHZZ	15434	164581	.CAP, MAIN BEARING	6
	25	PFHZZ	15434	3002993	.BUSHING, SLEEVE OIL PUMP TO BLOCK,	2
	26	XDHZZ	15434	164582	.CAP, MAIN BEARING	1
	27	PFFZZ	96906	MS49005-6	.PLUG, PIPE WATER DRAIN	2
	28	PFHZZ	15434	68568	.PIN, STRAIGHT, HEADED OIL PAN, TO BLOCK	1
	29	PFHZZ	15434	100673	.BEARING, SLEEVE	6
	30	PFFZZ	15434	70653	.DOWEL, METALLIC GEAR, CASE COVER,	1
	31	PFFZZ	15434	60408	.PIN, STRAIGHT, HEADLE HEADLESS, GEAR,	1
	32	PFFZZ	12603	14F12	.PLUG, PIPE CYLINDER BLOCK,	1
	33	PFHZZ	96906	MS28775-245	PACKING, REFORMED CYLINDER LINER	12
	34	PFHZZ	15434	AR10333	CYLINDER SLEEVE	6

END OF FIGURE

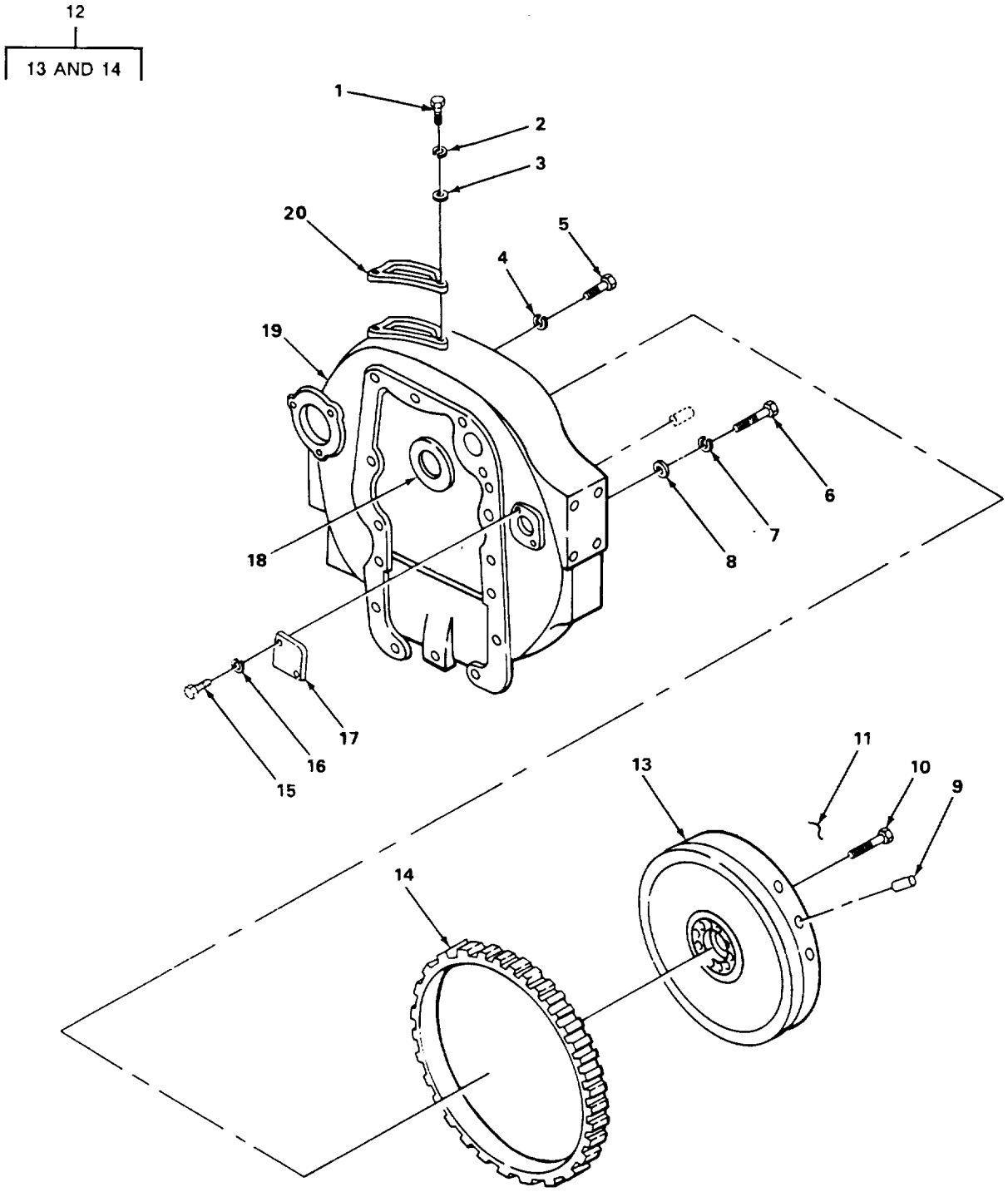


TA502952

FIGURE 4. CRANKSHAFT AND COVER.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP 0102 CRANKCASE, FIG. 4. CRANKSHAFT AND COVER,	
1	PFHZZ	15434	69793	BOLT,MACHINE DAMPER MTG,	6
2	PFHZZ	15434	186839	LOCKING, PLATE,NUT, A DAMPER MTG.	3
3	PFHZZ	15434	20835-1	DAMPER, SHIMMY CRANKSHAFT	1
4	XDHZZ	15434	69369	SCREW, CAP, HEXAGON HEAD CRANKSHAFT GEAR, RETAINER MTG.	1
5	XDHZZ	15434	70077	DEFLECTOR CRANKSHAFT	1
6	PAHZZ	15434	136399	FLANGE, CRANKSHAFT	1
7	PAHZZ	15434	S118A	SCREW, HEAD, DEFLECTOR MTG,	2
8	PFHZZ	15434	140411	WASHER, FLAT CRANKSHAFT GEAR, HUB	1
9	PFHZZ	15434	43214	BEARING, HALF, SLEEVE PART OF KIT,P/N AR7080	7
10	PAHHH	15434	BM77896	CRANKSHAFT ASSEMBLY	1
11	PFHZZ	15434	43213-1	.GEAR, HELICAL	1
12	PFHZZ	96906	MS35756-24	.KEY, WOODRUFF CRANKSHAFT GEAR,	1
13	PFHZZ	15434	S9115	.PLUG, PIPE CRANKSHAFT	6
14	PFHZZ	15434	156290	.CRANKSHAFT, ENGINE	1
15	PFHZZ	15434	44297	BEARING, HALF, SLEEVE PART OF KIT, P/N AR7080	7
16	PFHZZ	15434	124922	PIN, DOWEL, THRUST RI PART OF KIT, P/N AR7080	2
17	PFHZZ	15434	150310	RING,THRUST PART OF KIT,P/N AR7080.	4
18	PFHZZ	15434	102151	GASKET REAR COVER, PART OF KIT, P/N AR50583	1
* 19	PFHZZ	15434	203822	SEAL, PLAIN ENCASED	1
20	XDHZZ	15434	202915	COVER, REAR OIL CRANKSHAFT	1
21	PFHZZ	96906	MS35338-45	WASHER, LOCK, REAR COVER	8
22	PFHZZ	15434	S106A	SCREW, CAP, HEXAGON H HEAD, REAR COVER	2
23	PFHZZ	96906	MS90728-38	BOLT, MACHINE REAR COVER, MTG.	6

END OF FIGURE

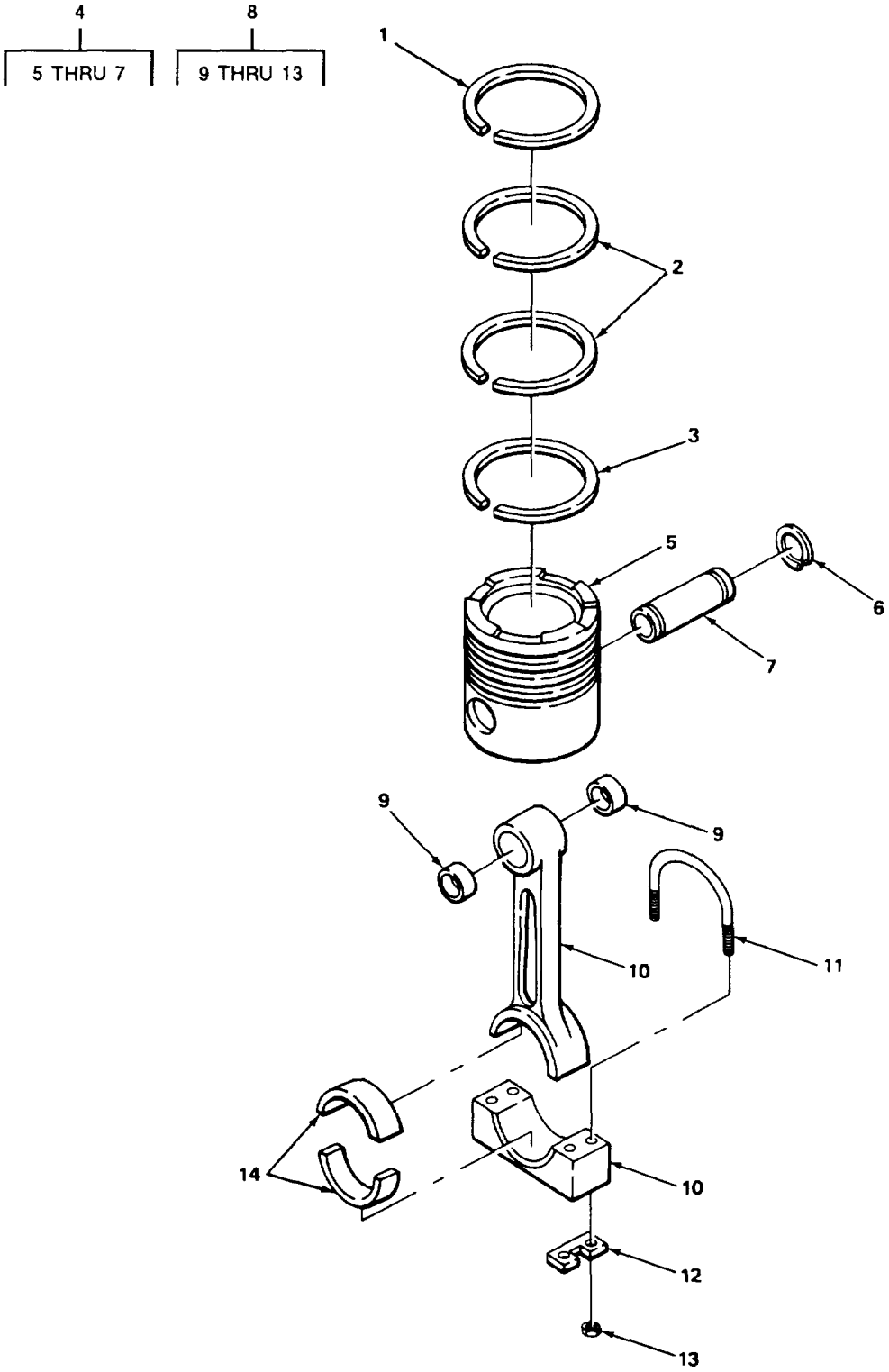


TA502953

FIGURE 5. FLYWHEEL, ASSEMBLY.

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0103 FLYWHEEL, ASSEMBLY	
					FIG. 5. FLYWHEEL, ASSEMBLY	
	1	PFFZZ	15434	S181B	SCREW, CAP, HEXAGON H COVER, MOUNTING.....	2
	2	PFFZZ	96906	MS35338-8	WASHER, LOCK, COVER, MTG,.....	2
	3	PFFZZ	96906	MS27183-14	WASHER, FLAT COVER, MTG,.....	2
	4	XDFZZ	15434	67163	SCREW, CAP, HEXAGON HEAD, FLYWHEEL, ... HOUSING MTG	8
	5	PAFZZ	96906	MS35338-48	WASHER, LOCK, FLYWHEEL, HOUSING	8
	6	PAFZZ	96906	MS90728-90	SCREW, CAP, HEXAGON H FLYWHEEL, ... HOUSING MTG, ...	4
	7	PFFZZ	96906	MS35338-47	WASHER, LOCK, FLYWHEEL, HOUSING ..... MOUNTING	4
	8	PFFZZ	15434	64943	WASHER, FLAT FLYWHEEL, HOUSING MTG	4
	9	PBFZZ	24617	141284	PIN, STRAIGHT, HEADLE FLYWHEEL, ...	3
*	10	XDFZZ	15434	180176	SCREW, FLYWHEEL	1
	11	PAFZZ	15434	64482	LOCKWIRE, BOLT, FLYWH FLYWHEEL, BOLTS.	6
*	12	PFFZZ	15434	BM95173	FLYWHEEL, ENGINE.....	1
	13	PAFZZ	15434	5045	.GEAR, SPUR.....	1
	14	XAFZZ	15434	102633	.FLYWHEEL	1
	15	PFFZZ	96906	MS35206-279	SCREW, MACHINE FLYWHEEL, HOUSING, ... BOTTOM COVER,.....	2
	16	PFFZZ	96906	MS122032	WASHER, LOCK, FLYWHEEL, HOUSING ..... BOTTOM COVER,.....	2
	17	PAFZZ	15434	9246	COVER, ACCESS FLYWHEEL, HOUSING ..... BOTTOM.....	1
	18	PAFZZ	15434	9333-1	GASKET FLYWHEEL, HOUSING	1
	19	PAFZZ	15434	101928	FLYWHEEL, ENGINE.....	1
	20	PAFZZ	15434	70346	COVER, SHIELD FLYWHEEL, HOUSING	1

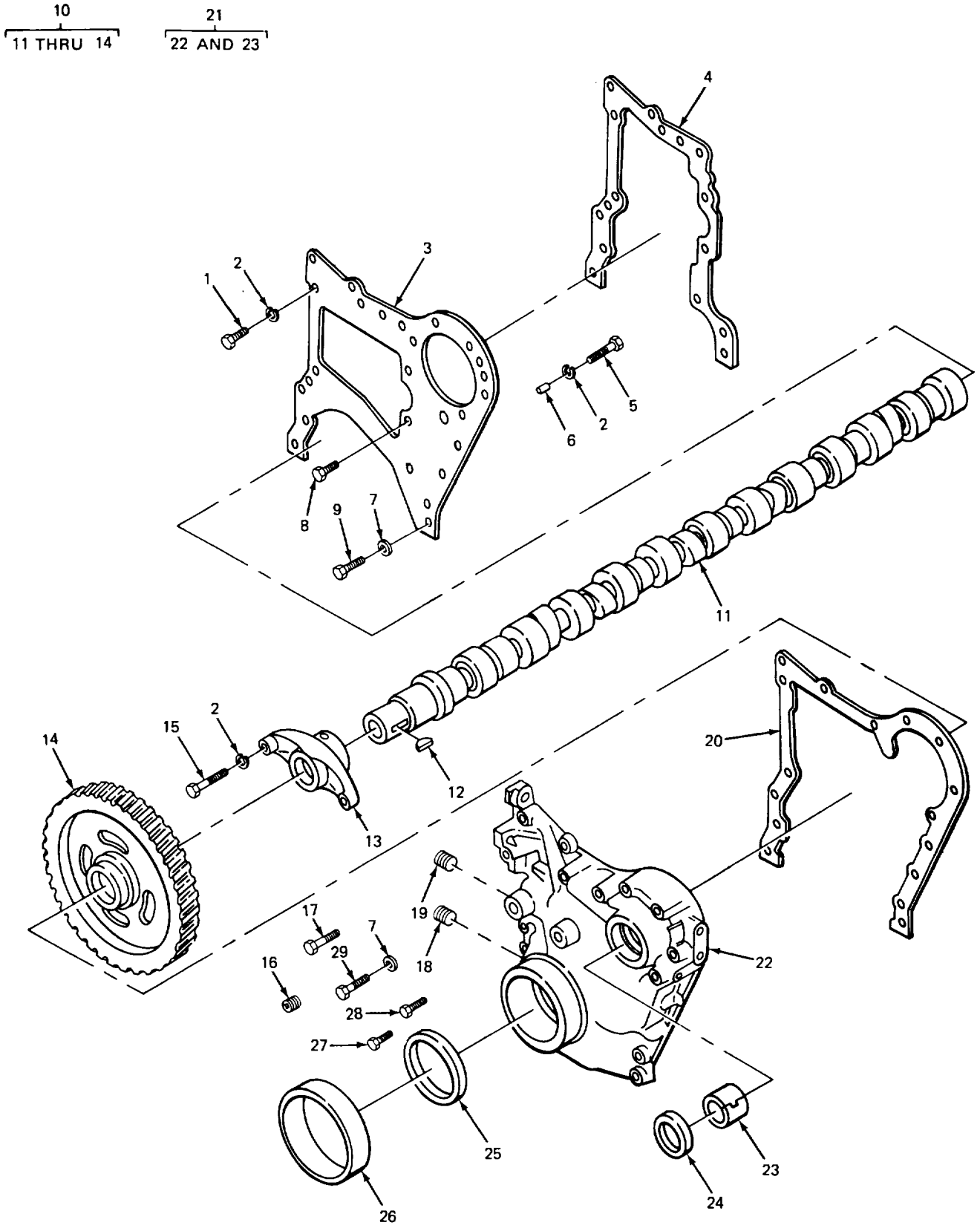
END OF FIGURE



TA502954

FIGURE 6. PISTON, AND CONNECTING RODS.

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0104 PISTON, CONNECTING RODS	
					FIG. 6. PISTON, AND CONNECTING RODS	
	1	KFHZZ	15434	109410	RING PISTON, COMPRESSION PART OF KIT,P/N BM61770	6
	2	KFHZZ	15434	68788	RING PISTON, COMPRESSION PART OF KIT,P/N BM61770O	12 6
	3	KFHZZ	15434	126480	RING PISTON, OIL PART OF KIT,P/N BM61770	6
*	4	PAHZZ	15434	BM62440	PISTON, INTERNAL COM	6
	5	XAHZZ	15434	117380	.PISTON	1
	6	PAHZZ	96906	MS16625-150	.RING RETAINING PISTON, PIN	2
	7	XDHZZ	15434	123610	.PIN, PISTON	1
	8	PAHZZ	15434	BM56854	CONNECTING ROD, PIST	6
	9	PAHZZ	15434	117270	.BUSHING, SLEEVE PISTON, PIN	2
	10	XAHZZ	15434	127725	.CONNECTING ROD	1
	11	PAHZZ	15434	110275	.BOLT, U	2
	12	PAHZZ	15434	60358	.LOCKING PLATE, NUT A, ROD BOLT	2
	13	PAHZZ	15434	S265	.NUT, PLAIN, HEXAGON ROD BOLT	4
	14	PAHZZ	15434	43233-1	BEARING, HALF, SLEEVE SLEEVE CONNECTING ROD	12
					END OF FIGURE	



TA502955

FIGURE 7. CAMSHAFT AND GEAR, COVER.

	(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
					GROUP 0105 VALVES, CAMSHAFTS, AND TIMING SYSTEM FIG. 7. CAMSHAFT AND GEAR COVER,	
	1	PFHZZ	96906	MS90725-69	SCREW, CAP, HEXAGON H GEAR, COVER, MTG.....	6
	2	PFHZZ	96906	MS35338-8	WASHER, LOCK, GEAR, OVER, PLATE MTG,.....	11
	3	PAHZZ	15434	150298	PLATE, GEAR, HOUSING.....	1
	4	PFHZZ	15434	150306	GASKET GEAR, OVER, PLATE PART OF KIT,..... P/N AR50583.....	1
*	5	PFHZZ	80204	B1821BH038C075N	SCREW, CAP, HEXAGON H GEAR, PLATE MTG, ...	3
	6	PFHZZ	15434	67857	PIN, STRAIGHT, HEADLE GEAR, OVER, ... PLATE	3
	7	PFHZZ	96906	MS27183-14	WASHER, FLAT GEAR, OVER, PLATE..... MOUNTING	6
	8	PFHZZ	15434	S105	SCREW, CAP, HEXAGON H PLATE MOUNTING.....	1
*	9	PFHZZ	80204	B1821BH038C075N	SCREW, CAP, HEXAGON H PLATE MOUNTING.....	1
*	10	PAHZZ	15434	BM54813	CAMSHAFT ASSY.....	1
	11	PAHZZ	15434	121580	.CAMSHAFT, ENGINE	1
	12	PFHZZ	96906	MS35756-20	.KEY, WOODRUFF CAMSHAFT GEAR,.....	1
	13	PAHZZ	15434	121720	.BEARING, UNIT CAMSHA CAMSHAFT.....	1
	14	PAHZZ	15434	20836	.GEAR, HELICAL CAMSHAFT	1
*	15	PFHZZ	80204	B1821BH038C075N	SCREW, CAP, HEXAGON H CAMSHAFT..... BEARING, MTG,.....	2
	16	PFHZZ	15434	67622	PLUG, PIPE GEAR, COVER,.....	1
	17	PFHZZ	96906	MS51095-369	SCREW, AP, HEXAGON H GEAR, COVER, MTG, ...	1
	18	PFHZZ	15434	S-915-A	PLUG, PIPE GEAR, COVER,.....	1
	19	PFHZZ	15434	112076	PLUG, FFUEL OUTLET GEAR, COVER,.....	1
	20	PFHZZ	15434	150299	GASKET GEAR, OVER, GEAR, HOUSING ..... PART OF KIT,P/N AR50583.....	1
*	21	PAHZZ	15434	AR50550	COVER, ASSEMBLY GEAR.....	1
	22	XAHZZ	15434	177784	.COVER, GEAR.....	1
	23	PAHZZ	15434	139810	.BEARING, SLEEVE.....	1
	24	PAHZZ	15434	140896	SEAL, PLAIN ENCASED.....	1
	25	PAHZZ	15434	70073	SEAL, PLAIN ENCASED FRONT COVER,.....	1
	26	PFHZZ	15434	68226-1	BUSHING, SLEEVE	1
	27	PFHZZ	96906	MS90728-65	SCREW, CAP, HEXAGON H GEAR, COVER, TO..... BLOCK.....	2
	28	PFHZZ	96906	MS90728-73	SCREW, CAP, HEXAGON H HEAD GEAR ..... COVER MTG.....	2
	29	PFHZZ	96906	MS90725-67	SCREW, CAP, HEXAGON H GEAR COVER MTG.....	1

END OF FIGURE