

**ILLUSTRATED  
PARTS CATALOG  
FOR  
TS10-520 SERIES  
AIRCRAFT ENGINES**

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Aircraft Products Division

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Model: TSIO-520-B, BB, C, D, DB, E, EB, G, H,  
J, JB, K, KB, L, LB, M, N, NB, P, R

PARTS CATALOG  
FORM X-30043A

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# SECTION I

## INTRODUCTION

1-1. In line with the Teledyne Continental Motors program of product improvement, this parts catalog is presented in looseleaf form. Changes will be issued as they occur to those pages which are affected only. In this manner, the parts catalogs will be kept current at all times with manufacturing and service requirements. Changes to this parts catalog will be sent to the purchaser on receipt of the registration card from the front of the manual.

1-2. Page iii of this publication depicts the current status of pages as of the date listed. Each page in the catalog is also dated. To be current, the date on the page should match the date listed for that page on the Status Page. With each change to the catalog issued, a change to the current Status Page will necessarily be issued.

1-3. In this edition, currently available parts are listed for TSIO-520 Series Engines. If accessories or parts attached to any engine installed in an aircraft manufactured in the United States under a production model number do not appear in this catalog, determine whether they are available from the aircraft manufacturer before placing an order with a Teledyne Continental Authorized Distributor.

1-4. Section II contains 54 figures, in each of which one of the major assemblies or groups of the engine is illustrated in "exploded" form. Each figure has its own set of index numbers to indicate the sub-parts. The list of parts in the assembly or group appears on the same page with the illustration or on an adjacent page. The first column of each assembly group list contains the figure number (not repeated on all lines) and, following a dash, the index numbers of the sub-parts in numerical order. Do not order parts by index number. Use the part number, which appears in the second column. Use the name of the part which appears in the column under the title "DESCRIPTION".

1-5. Do not order any parts listed herein when "NO NUMBER" appears on the same line in that part number column or when "NOT SOLD" herein abbreviated as "NS" appears in the "QUANTITY PER ASSEMBLY" column, because these parts are not suitable for installation without factory equipment, or they are major parts of assemblies and are more economically supplied in the assembled condition, or they are assemblies which would have to be disassembled for installation. To replace any detail part "NOT SOLD" order the smallest assembly containing the part

(listed above, with name beginning one column to left). To replace any assembly "NOT SOLD", order whatever sub-assemblies and detail parts (listed below it, with names indented) that are in need of replacement.

1-6. Quantities of parts, as listed in Section II, are for specific application in one assembly. Total quantities of all parts are listed in Section V. Similar assemblies listed in Section II are combined, and quantities of sub-parts are for one assembly.

1-7. Oversize and undersize parts are listed in Section III. These parts must be ordered by the numbers listed herein, with correct descriptions, to avoid errors. Corresponding standard size part numbers in Section II are preceded by a symbol (†) to indicate the availability of the non-standard size. (Refer to list of abbreviations and symbols.)

1-8. Sets of parts listed in Section IV are usually wanted in such groups of overhaul work and should be ordered by set part numbers.

1-9. Section V contains a list of part numbers arranged in numerical order in the first column. If the number of any desired part is known, the name may be located by referring to the figure and index number in Section II, which is listed opposite the part number in Section V.

1-10. Section VI contains a parts listing of customer specifications of the basic engines of each model. Only the differences between the customer specification and the basic engine are shown. There is a Figure Index column which refers back to Section II for an illustrated view of the differences. To assist in identification, an engine specification number to serial number reference list has been added. The serial number appears on the engine nameplate.

### NOTE

*The aircraft manufacturer occasionally changes certain accessories per customer request.*

1-11. Section VII contains the group assembly parts list for the modified crankshaft version of the TSIO-520 series. Modified crankshaft are identified by a second letter "B" in the engine part number (i.e. TSIO-520-EB). Only those group assemblies which are different than the standard engine are included in Section VII.

## LIST OF ABBREVIATIONS AND SYMBOLS

SYMBOL	DEFINITION	SYMBOL	DEFINITION
AR	As Required	NS	Not Sold
dia.	Diameter	PD	Pitch Diameter (thread)
hd.	Head	NPT	National Pipe Tap (or thread)
hex.	Hexagon(al)	NPTF	National Pipe Taper Thread (dryseal)
ID	Inside Diameter	US	Undersize
in.	Inch(es)	No.	Number
lg.	Long	+	Oversize Parts Available
OD	Outside Diameter	+	Undersize Parts Available
OP	Optional	* * * *	End of Group of Attaching Parts
OS	Oversize	\$	Parts Included in a Set
RF	Refer To		

## ACCESSORY MANUFACTURERS

ACCESSORY	MANUFACTURER	ADDRESS
Starter	Delco-Remy	United Motors Service General Motors Building Detroit, Michigan
	Prestolite	The Prestolite Company Division of Eltra Corporation 511 Hamilton Street Toledo, Ohio 43601
Alternator	Delco-Remy	United Motors Service General Motors Building Detroit, Michigan
Magnetos	Scintilla	Scintilla Magneto Division Bendix Aviation Corporation Sidney, New York 13838
	Slick Electro, Inc.	Slick Electro, Inc. Rockford, Illinois 61100
Voltage Regulator	Delco-Remy	United Motors Service General Motors Building Detroit, Michigan

# CUSTOMER SPECIFICATION TO SERIAL NUMBER CROSS REFERENCE

## TSIO-520-B

### SPEC. 1

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**SPEC. 1** 156000 thru 156134

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**SPEC. 1** 165003, 165004, 165006, 165010, 165012, 165015, 165016, 165018, 165021, 165024, 165026, 165028, 165030, 165031, 165032, 165034, 165036, 165038, 165040, 165042, 165043, 165044, 165046, 165048, 165050, 165056, 165057, 165058, 165060, 165062, 165064, 165066, 165068, 165070, 165072, 165074, 165076, 165077, 165079, 165080, 165081, 165085, 165087, 165088, 165090, 165092, 165093, 165095, 165096, 165099, 165102, 165106 thru 165111, 165113, 165114, 165115, 165117, 165118, 165119, 165121, 165123, 165129, 165132, 165135, 165136, 165138 thru 165141, 165145, 165147, 165148, 165151, 165154, 165156, 165158, 165163, 165166, 165167, 165168, 165170, 165171, 165173 thru 165176, 165178, 165180, 165182, 165184, 165187, 165188, 165189, 165192, 165194, 165196 thru 165200, 165202, 165204, 165206, 165207, 165208, 165210, 165212, 165217, 165219, 165221, 165223, 165227, 165229, 165232, 165234, 165236, 165238, 165240, 165242, 165245, 165249, 165253, 165258, 165259, 165261, 165263, 165265, 165266, 165268, 165269, 165271, 165273, 165275, 165277, 165279, 165283, 165284, 165285, 165287, 165288, 165290, 165293, 165295, 165297, 165300, 165301, 165303, 165304, 165305, 165309 thru 165312, 165315, 165317, 165318, 165319, 165321, 165323, 165327, 165329, 165331, 165333, 165336, 165338, 165340, 165343, 165344, 165345, 165347, 165349, 165351, 165353, 165355, 165357, 165359, 165360, 165361, 165363, 165366, 165369, 165370, 165373, 165375, 165376, 165378, 165380, 165381, 165389, 165390, 165392, 165395, 165397, 165399, 165400, 165402, 165405, 165406, 165408, 165410, 165414, 165416, 165418 thru 165426, 165428, 165439, 165441, 165444, 165446, 165448, 165450, 165454, 165456, 165458, 165460, 165461, 165462, 165464, 165466, 165468, 165470, 165472, 165474,

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**SPEC. 10** 165518, 165519, 165520, 165529, 165577, 165578, 165661, 165671, 165826, 165829, 165895, 165896, 165939, 165940, 206224, 206225, 206354, 206405, 206406, 206412, 206434, 206458, 206470, 206471, 206476, 206525

#### TSIO-520-G

**SPEC. 1** 196001 thru 196047, 196049 thru 196067

#### TSIO-520-H

**SPEC. 1** 198501 thru 198650, 198652 thru 198672, 198676 thru 198685, 198691, 198693, 198697

**SPEC. 4** 198686 thru 198690, 198692, 198694, 198695, 198696, 198698 thru 198720

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**SPEC. 1** 208002 thru 208005, 208010, 208011, 208013, 208014, 208016, 208017, 208018, 208020 thru 208023, 208026, 208027, 208030, 208031, 208032, 208034, 208038, 208039, 208040, 208044, 208046, 208048, 208050, 208051, 208052, 208054, 208057, 208059, 208061, 208063, 208066, 208067, 208071, 208073, 208075, 208077, 208078, 208079, 208082, 208084, 208086, 208088, 208089, 208091, 208093 thru 208099, 208101, 208102, 208103, 208105, 208106, 208114, 208121, 208124, 208125, 208127, 208129 thru 208132, 208134, 208135, 208139 thru 208145, 208147, 208150, 208151, 208152, 208155, 208158 thru 208161, 208165, 208166, 208169, 208170, 208173 thru 208176, 208180, 208183, 208187 thru 208191, 208194, 208196, 208199, 208201, 208202, 208206, 208210 thru 208214, 208216, 208217, 208222, 208223, 208226, 208230, 208232, 208233, 208234, 208236, 208237, 208240, 208241, 208242, 208245, 208249, 208251, 208253, 208255, 208257, 208258, 208259, 208261, 208262, 208265, 208267, 208270, 208271, 208273, 208275, 208278

**SPEC. 2** 208001, 208006 thru 208009, 208012, 208015, 208019, 208024, 208025, 208028, 208029, 208033, 208035, 208036, 208037, 208041, 208042, 208043, 208045, 208047, 208049, 208053, 208055, 208056, 208058, 208060, 208062, 208064, 208065, 208068, 208069, 208070, 208072, 208074, 208076, 208080, 208081, 208083, 208085, 208087, 208090, 208092, 208100, 208104, 208107 thru 208113, 208115 thru 208120, 208122, 208123, 208126, 208128, 208133, 208136, 208137, 208138, 208146, 208148, 208149, 208153, 208154, 208156, 208157, 208162, 208163, 208164, 208167, 208168, 208171, 208172, 208177, 208178, 208179, 208181, 208182, 208184, 208185, 208186, 208192, 208193, 208197, 208198, 208200, 208203, 208204, 208205, 208207, 208208, 208209, 208215, 208218, 208219, 208220, 208224, 208225, 208227, 208228, 208229, 208231, 208235, 208243, 208244, 208246, 208247, 208248, 208250, 208252, 208254, 208256, 208260, 208263, 208264, 208266, 208268, 208269, 208272, 208274, 208276, 208277

## TSIO-520-K

**SPEC. 1** 217502, 217506, 217508, 217509, 217510, 217513, 217515, 217517, 217519, 217521, 217523, 217525, 217528, 217529, 217533, 217534, 217535, 217537, 217542, 217543, 217546 thru 217550, 217552, 217554, 217556, 217558, 217563, 217565, 217567, 217568, 217571, 217572, 217575, 217576, 217578, 217580, 217582, 217584, 217586

**SPEC. 2** 217501, 217505, 217507, 217511, 217512, 217514, 217516, 217518, 217520, 217524, 217526, 217527, 217530, 217531, 217532, 217536, 217538 thru 217541, 217544, 217545, 217551, 217553, 217555, 217557, 217559, 217560, 217562, 217564, 217566, 217569, 217570, 217573, 217574, 217577, 217579, 217581, 217583, 217585

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**SECTION II**  
**GROUP ASSEMBLY PARTS LIST**

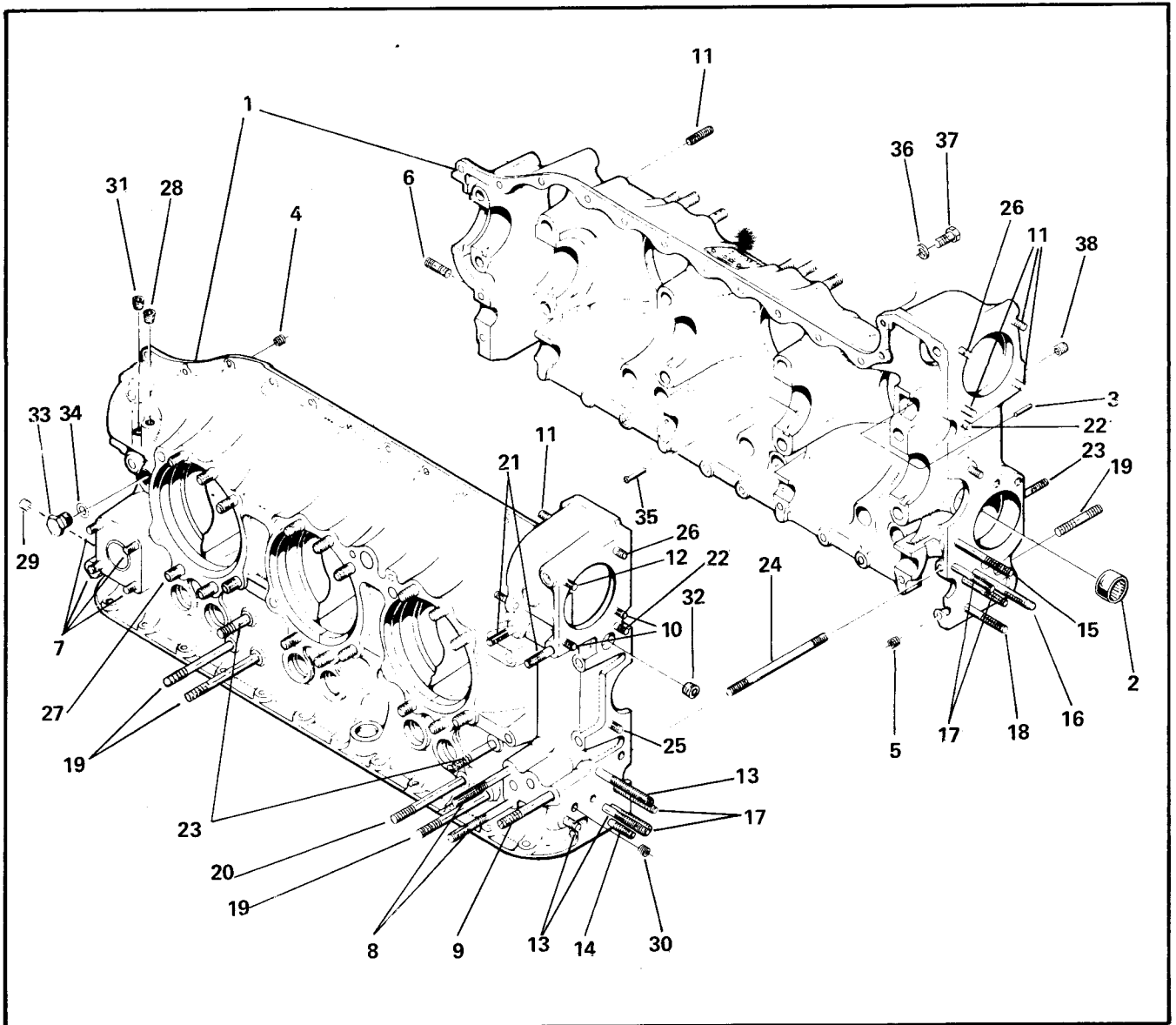


FIGURE 1. STUDDING ASSEMBLY, PERMOLD CRANKCASE, TS10-520-B,D,E,J,K,L,N.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY																	
			TSIO-520																	
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R
1- 1	642094	① Studding Assembly, Crankcase						1			1			1	1			1		
-1	642093	① Studding Assembly, Crankcase								1										
-1	642096	① Studding Assembly, Crankcase														1				
-2	630899	. Bearing, Roller						1		1	1			1	1	1		1		
-3	630873	. Dowel, 3/16 x 1/2 Inch Long						1		1	1			1	1	1		1		
-4	MS122162	. Insert, Thread						4		5	4			4	4	4		4		
-5	MS122122	. Insert, Thread						1		1				1	1	1		1		
-6	401804	† Stud, 1/4 x 1-1/16 Inch Long						2		2	2			2	2	2		2		
-7	401814	† Stud, 5/16 x 1-7/8 Inch Long						4		4	4			4	4	4		4		
-8	401860	† Stud, 3/8 x 1-9/16 Inch Long						2		2				2	2			2		
-8	402127	† Stud, 3/8 x 1-17/32 Inch Long								2										
-8	401861	† Stud, 3/8 x 1-3/4 Inch Long														2				
-9	404584	† Stud, 5/16 x 6-3/8 Inch Long														1				
-10	401975	† Stud, 5/16 x 1-9/16 Inch Long						2		2	2			2	2	2		2		
-10	401885	† Stud, 5/16 x 1-5/16 Inch Long								2										
-11	401885	† Stud, 5/16 x 1-5/16 Inch Long						11		11	11			11	11	11		11		
-12	401885	† Stud, 5/16 x 1-5/16 Inch Long								1										
-12	402044	† Stud, 5/16 x 1-3/8 Inch Long						1		1				1	1	1		1		
-13	401927	† Stud, 3/8 x 3-1/2 Inch Long						3		3	3			3	3	3		3		
-14	401962	† Stud, 1/4 x 2-4/16 Inch Long						1		1	1		1	1	1		1			
-15	401932	† Stud, 5/16 x 4-1/8 Inch Long						1		1	1		1	1	1		1			
-16	402359	† Stud, 5/16 x 4-23/32 Inch Long						1		1	1			1	1	1		1		
-17	401936	† Stud, 1/4 x 3-7/8 Inch Long						4		4	4			4	4	4		4		
-18	401936	† Stud, 1/4 x 3-7/8 Inch Long						1		1				1	1	1		1		
-18	401968	† Stud, 1/4 x 4-17/32 Inch Long								1										
-19	401873	† Stud, 3/8 x 3-7/8 Inch Long						7		7				7	7	7		7		
-20	401873	† Stud, 3/8 x 3-7/8 Inch Long						1		1				1	1	1		1		
-20	629518-1H	. Plug, Pipe, 1/8 - 27 NPTF								1										
-21	401965	† Stud, 3/8 x 13/32 Inch Long						2		2	2			2	2		2			
-21	401945	† Stud, 3/8 x 1-5/8 Inch Long														2				
-22	401963	† Stud, 1/4 x 1 Inch Long						2		2	2			2	2	2		2		
-23	401977	† Stud, 3/8 x 2-3/32 Inch Long						4		4				4	4	4		4		
-24	402034	† Stud, 5/16 x 6 Inch Long						1		1				1	1	1		1		
-25	402151	† Stud, 5/16 x 1-1/4 Inch Long						2		2	2			2	2	2		2		
-26	401965	† Stud, 3/8 x 1-13/32 Inch Long						2		2	2			2	2	2		2		
-27	639418-1	② Stud, 5/16 x 2-1/16 Inch Long						36		36	36			36	36	36		36		
-28	629518-1H	. Plug, Pipe, 1/8 - 27 NPTF						1		1				1	1	1		1		
-29	401752	. Plug, Pipe, 1/8 - 27 NPTF						3		4	3			3	3	3		3		
-30	AN932C2	. Plug, Pipe, 1/8-27 NPTF						2		2	2			2	2	2		2		
-31	402941	. Plug, Pipe, 1/16 - 27 NPTF						4		4	4			4	4	4		4		
-32	2025	. Plug, Pipe						1		1	1			1	1	1		1		
-33	532432	. Plug, Machine Thread, 5/8-18						1		1	1			1	1	1		1		
-34	AN900-10	\$ Gasket, Copper						1		1	1			1	1	1		1		
-35	629847	. Nozzle, Squirt						6		6	6			6	6	6		6		
-36	539374	. Washer, Plain						1		1	1			1	1	1		1		
-37	AN5-13A	. Bolt, 5/16 x 1-3/8 Inch Long						1		1	1			1	1	1		1		
-38	MS122163	. Insert, Thread						2		2	2			2	2	2		2		

NOTE ① If replacing older configuration crankcase, it will be necessary to purchase a kit, Part Number EQ6530.

② Service in accordance with Service Bulletin M72-24.



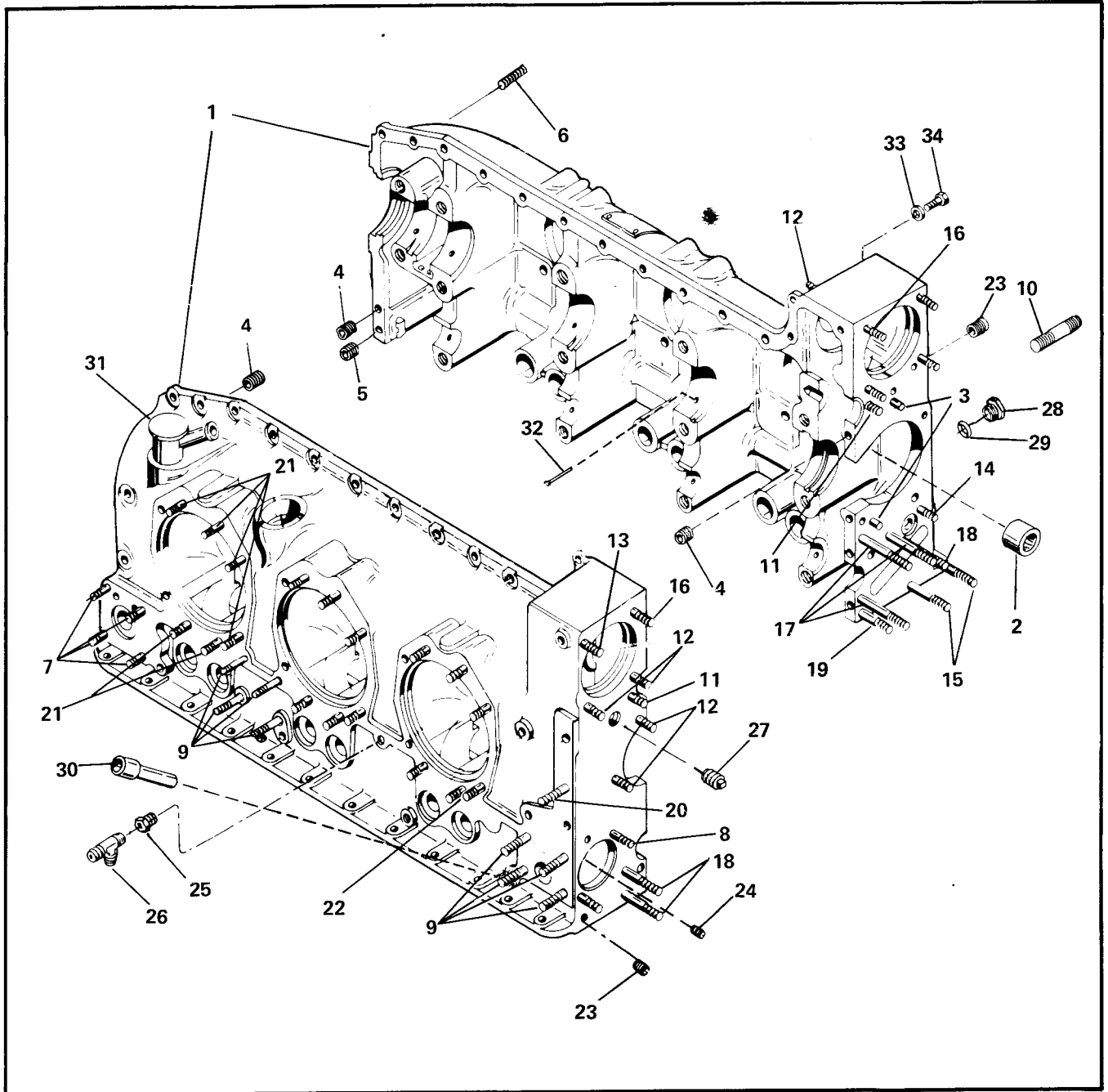


FIGURE 2. STUDDING ASSEMBLY, SANDCAST CRANKCASE, TS10-520-C,G,H,M,P,R.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																		
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R	
2-1	641198	Studding Assembly, Crankcase							1										1	1	
-1	642035	Studding Assembly, Crankcase							1										1	1	
-2	537721	Bearing, Needle																	2	2	2
-3	531548	Dowel, 5/16 x 11/16 Inch Long							2										4	4	4
-4	MS122162	Insert, Thread							4										4	4	4
-5	MS122122	Insert, Thread							1										1	1	1
-6	401808	† Stud, 1/4 x 1-5/16 Inch Long							5										5	5	5
-7	401899	† Stud, 5/16 x 1-7/8 Inch Long							4										4	4	4
-8	402151	† Stud, 5/16 x 1-1/4 Inch Long							4										2	2	2
-9	402066	† Stud, 3/8 x 1-7/8 Inch Long							4										2	2	2
-10	402060	† Stud, 3/8 x 2-15/16 Inch Long							14										14	14	14
-11	401870	† Stud, 1/4 x 1-1/8 Inch Long							2										2	2	2
-12	401885	† Stud, 5/16 x 1-5/16 Inch Long							2										2	2	2
-13	402044	† Stud, 5/16 x 1-3/8 Inch Long							11										11	11	11
-14	401893	† Stud, 1/4 x 1-1/4 Inch Long							1										1	1	1
-15	402129	† Stud, 1/4 x 2-3/4 Inch Long							1										1	1	1
-16	401965	† Stud, 3/8 x 1-13/32 Inch Long							2										2	2	2
-17	402157	† Stud, 1/4 x 6-7/64 Inch Long							2										2	2	2
-18	402158	† Stud, 1/4 x 4-13/32 Inch Long							3										3	3	3
-19	402159	† Stud, 1/4 x 4-7/64 Inch Long							2										2	2	2
-20	531590	† Stud, 5/16 x 1-1/8 Inch Long							2										1	1	1
-21	639418-2	① Stud, 7/16 x 1-19/32 Inch Long							1										12	12	12
-22	639418-1	① Stud, 7/16 x 2-1/16 Inch Long							12										12	12	12
-23	629518-1H	Plug, Pipe, 1/8 - 27 NPTF							24										24	24	24
-24	2025	Plug, Pipe, 3/8 - 18 NPTF							2										2	2	2
-25	632788	Reducer, 3/8 Male to 1/4 Female							4										4	4	4
-26	630063	Tee, Fitting							1										1	1	1
-27	629518-3H	Plug, Pipe, 3/8 - 18 NPTF							1										1	1	1
-28	532432	Plug, Machine Thread, 5/8 - 18							1										1	1	1
-29	AN900-10	\$ Gasket, Copper							1										1	1	1
-30	631927	Housing, Oil Gauge Rod							1										1	1	1
-31	537505	Breather Assembly, Crankcase							1										1	1	1
-32	629847	Nozzle, Squirt							6										6	6	6
-33	2473	Washer, Flat							1										1	1	1
-34	AN5-12A	Bolt							1										1	1	1

NOTE ① Service in accordance with Service Bulletin M72-24.

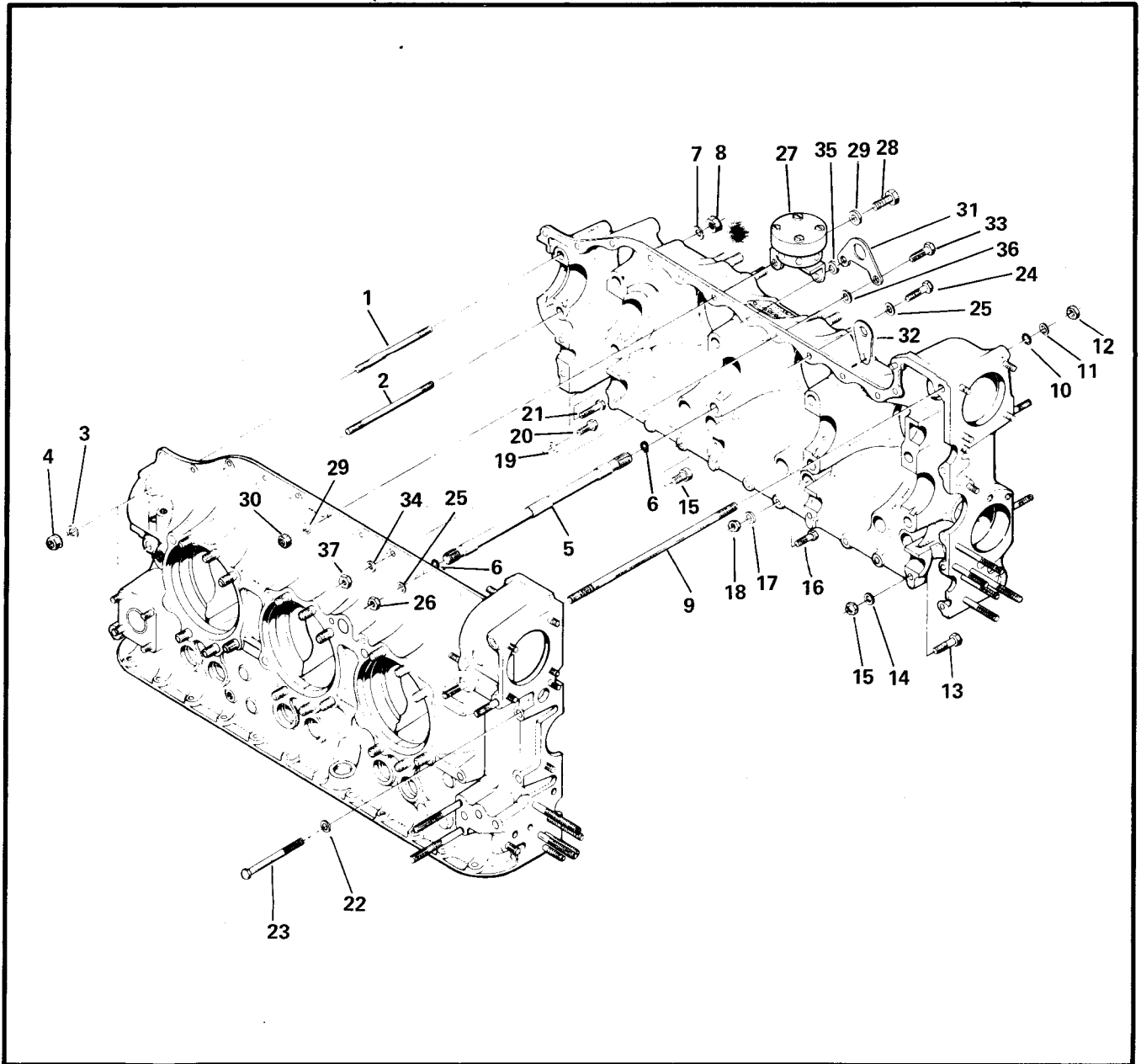


FIGURE 3. ATTACHING PARTS, PERMOLD CRANKCASE, TSIO-520-B,D,E,J,K,L,N.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY															
				TSIO-520															
				B	C	D	E	G	H	J	K	L	M	N	P	R			
3-1	538944-5.31		Bolt, Thru, 7/16 - 20 x 5-5/16 Inch Long	1		1	1			1	1	1					1		
-2	538944-6.19		Bolt, Thru, 7/16 - 20 x 6-3/16 Inch Long	1		1	1			1	1	1					1		
-3	20202		Washer, Plain	4		4	4			4	4	4					4		
-4	531001		Nut, Flanged	4		4	4			4	4	4					4		
-5	641931-10.75		Bolt, Thru, 1/2 - 20 x 10-3/4 Inch Long	8		8	8			8	8	8					8		
-6	MS29513-010 \$		O-Ring	16		16	16			16	16	16					16		
-7	632120		Washer, Plain	4		4	4			4	4	4					4		
-8	634511		Nut, Flanged	4		4	4			4	4	4					4		
-9	630693-10.44		Bolt, Thru, 3/8 - 24 x 10-7/16 Inch Long	1		1	1			1	1						1		
-9	630693-11.67		Bolt, Thru, 3/8 - 24 x 11-11/16 Inch Long									1							
-10	AN123862 \$		O-Ring	2		2	2			2	2	2					2		
-11	24239		Washer, Plain	2		2	2			2	2	2					2		
-11	401507		Washer, Plain			2	2												
-12	2441		Nut, Plain, Hex	2		2	2			2	2	2					2		
-13	MS20073-05-25		Bolt, 5/16 - 24 x 2-21/32 Inch Long	4		4	4			4	4	4					4		
-14	2473		Washer, Plain	8		8	8			8	8	8					8		
-15	632443-6		Nut, Marsden, Lock	4		4	4			4	4	4					4		
-16	24878		Bolt, 1/4 - 28 x 1-21/32 Inch Long	5		5	5			5	5	5					5		
-17	20522		Washer, Plain	10		12	10			10	10	10					10		
-18	632443-4		Washer, Plain	5		6	5			5	5	5					5		
-19	2473		Washer, Plain	2		2	2			2	2	2					2		
-20	537750		Screw, 5/16 - 18 x 1-1/8 Inch Long	1		1	1			1	1	1					1		
-21	539003		Screw, 5/16 - 18 x 1-3/8 Inch Long	1		1	1			1	1	1					1		
-22	2473		Washer, Plain	3		3	3			3	3	3					3		
-23	630966-4.00		Bolt, 5/16 - 18 x 4 Inch Long	3		3	3			3	3	3					3		
-24	AN5-13A	①	Bolt	9		9	9			9	9	9					9		
-25	539374	①	Washer, Plain	19		19	19			19	19	19					19		
-26	2439		Nut, Plain, Hex	12		12	12			12	12	12					12		
-27	No Number	③	Fuel Manifold Valve	rf		rf	rf			rf	rf	rf					rf		
ATTACHING PARTS																			
-28	AN5-14A		Bolt	1		1	1			1	1	1					1		
-29	2473		Washer, Plain	3		3	3			3	3	3					3		
-30	2439		Nut, Plain, Hex	1		1	1			1	1	1					1		
* * * *																			
-31	538650	②	Eye, Engine Lifting	1		1	1			1	1	1					1		
-32	641407		Eye, Engine, Lifting										1						
ATTACHING PARTS																			
-33	AN5-15A		Bolt	2		2	2			2	2	2					2		
-34	2473		Washer, Plain	1		1	1			1	1	1					1		
-35	538949		Washer, Plain	1		1	1			1	1	1					1		
-36	539374		Washer, Plain	1		1	1			1	1	1					1		
-37	2439		Nut, Plain, Hex	2		2	2			2	2	2					2		

- NOTE ① One bolt and washer supplied with crankcase studding assembly.
- ② On the TSIO520L, this lifting eye is located at the 4th and 5th holes from nose.
- ③ See Figure 48 and 49 for Part Number.

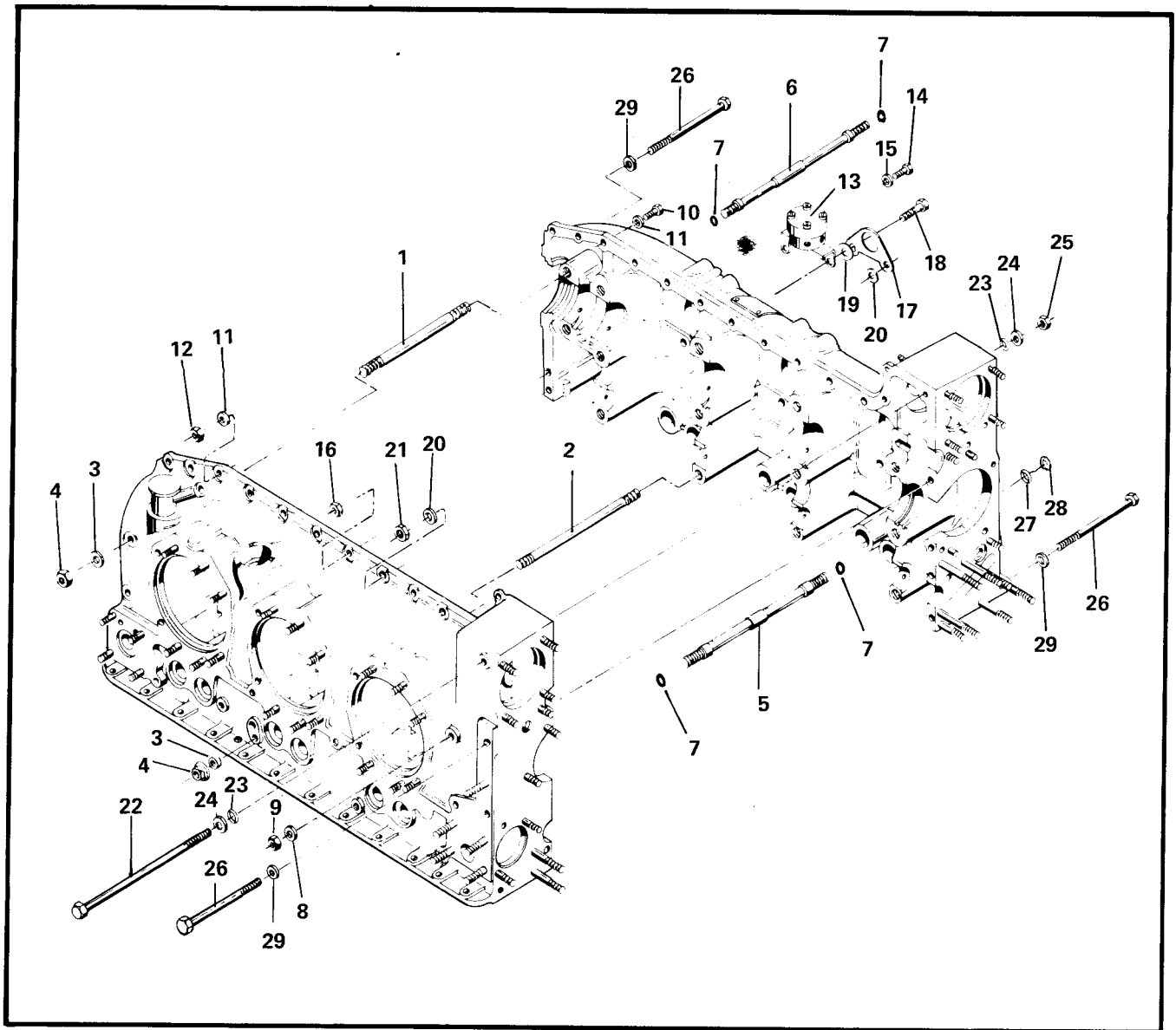


FIGURE 4. ATTACHING PARTS, SANDCAST CRANKCASE, TS10-520-C,G,H,M,P,R.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY														
			TSIO-520														
1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R
4-1	538944-8.88	Bolt, 7/16 - 20 x 8-7/8 Inch Long							2	2				2	2	2	
-2	538944-10.50	Bolt, 7/16 - 20 x 10-1/2 Inch Long							4	4				4	4	4	
-3	25171	Spacer							12	12	12			12	12	12	
-4	531001	Nut, Flanged							12	12	12			12	12	12	
-5	641931-10.75	Bolt, Thru, Cylinder-to-CC							7	7	7			7	7	7	
-6	641930-9.81	Bolt, Thru, Cylinder No. 6 Upper Boss							1	1	1			1	1	1	
-7	MS29513-010	O-Ring							16	16	16			16	16	16	
-8	538989	Washer							4	4	4			4	4	4	
-9	634511	Nut, Plain							3	3	3			3	3	3	
-9	634505	Nut, Flanged, Generator Mount Bracket							1	1	1			1	1	1	
-10	AN5-12A	Bolt, 5/16 - 24 x 1-11/32 Inch Long							9	9	9			9	9	9	
-11	2473	Washer, Plain							10	10	10			10	10	10	
-12	2439	Nut, Plain, Hex							11	11	11			11	11	11	
-13	No Number	① Fuel Manifold Valve							rf	rf	rf			rf	rf	rf	
ATTACHING PARTS																	
-14	AN5-12A	Bolt, 5/16 - 24 x 1-11/32 Inch Long							1	1	1			1	1	1	
-15	2473	Washer, Plain							1	1	1			1	1	1	
-16	2439	Nut, Plain, Hex							1	1	1			1	1	1	
* * * *																	
-17	538650	Eye, Engine Lifting							1	1	1			1	1	1	
ATTACHING PARTS																	
-18	AN5-14A	Bolt, 5/16 - 24 x 1-19/32 Inch Long							2	2	2			2	2	2	
-19	2473	Washer, Plain							3	3	3			3	3	3	
-20	538949	Washer, 1/8 Inch Thick							1	1	1			1	1	1	
-21	2439	Nut, Plain, Hex							2	2	2			2	2	2	
* * * *																	
-22	630693-10.44	Bolt							1	1	1			1	1	1	
-23	AN123862	\$ O-Ring							2	2	2			2	2	2	
-24	24239	Washer, Plain							2	2	2			2	2	2	
-25	2441	Nut, Plain, Hex							1	1	1			1	1	1	
-26	627433	Screw, 5/16 - 18 x 5-1/4 Inch Long							5	5	5			5	5	5	
-27	25328	\$ O-Ring							1	1	1			1	1	1	
-28	539374	Washer, Plain							1	1	1			1	1	1	
-29	2473	Washer, Plain							4	4	4			4	4	4	

NOTE ① See Figure 48 and 49 for Part Number.

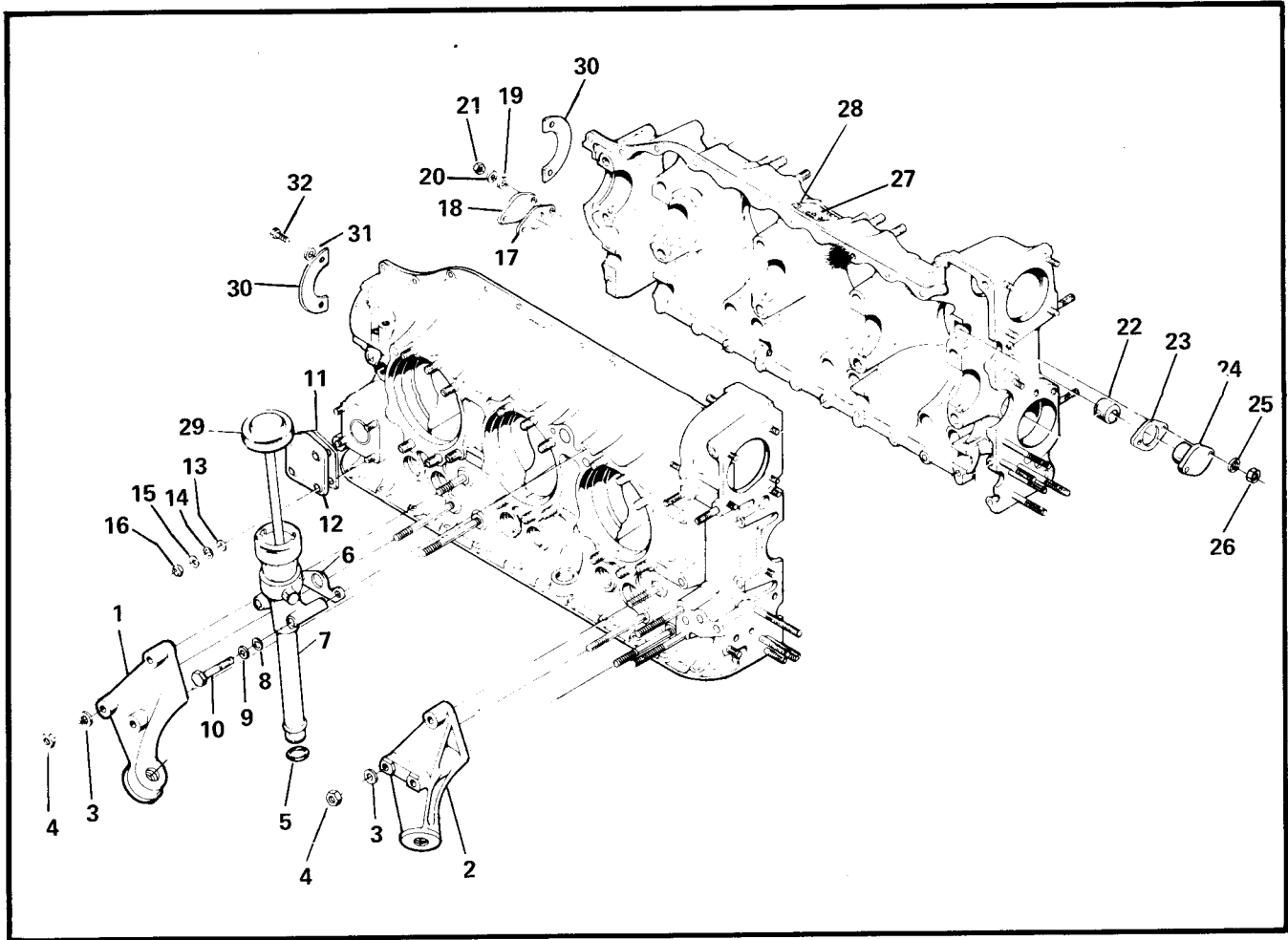


FIGURE 5. ASSOCIATED PARTS, PERMOLD CRANKCASE, TSIO-520-B,D,E,J,K,L,N.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																		
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R	
5-1	631154	Bracket, Engine Mount						2			2			2	2				2		
-2	631152	Bracket, Engine Mount						2			2			2	2				2		
-2	640782	Bracket, Engine Mount														4					
ATTACHING PARTS																					
-3	2474	Washer, Plain						12			12			12	12	12			12		
-4	2441	Nut, Plain, Hex						12			12			12	12	12			12		
* * * *																					
-5	MS9021-210	\$ O-Ring						1		1	1			1	1	1			1		
-6	630892	\$ Gasket						1		1	1			1	1	1			1		
-7	632964-1	Breather Assembly, Oil Filler						1		1				1	1	1			1		
-7	632964-2	Breather Assembly, Oil Filler								1											
ATTACHING PARTS																					
-8	2473	Washer, Plain						2		2	2			2	2	2			2		
-9	MS35338-45	Washer, Lock						2		2	2			2	2	2			2		
-10	539605	Bolt, 5/16 - 18 x 2-3/8 Inch Long						2		2	2			2	2	2			2		
* * * *																					

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																						
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R					
5-11	641651	\$ Gasket, Governor Pad Cover .....							1		1	1			1	1	1			1					
-12	639997	Cover, Governor Pad .....							1		1	1			1	1	1			1					
ATTACHING PARTS																									
-13	22535	Washer .....							8		8	8			8	8	8			8					
-14	2473	Washer, Plain .....							4		4	4			4	4	4			4					
-15	MS35338-45	Washer, Lock .....							4		4	4			4	4	4			4					
-16	2439	Nut, Plain, Hex .....							4		4	4			4	4	4			4					
* * * *																									
-17	629202	\$ Gasket, Cam Hole Cover .....							1		1	1			1	1	1			1					
-18	629201	Cover, Cam Hole .....							1		1	1			1	1	1			1					
ATTACHING PARTS																									
-19	20522	Washer, Plain .....							2		2	2			2	2	2			2					
-20	MS35338-44	Washer, Lock .....							2		2	2			2	2	2			2					
-21	2437	Nut, Plain, Hex .....							2		2	2			2	2	2			2					
* * * *																									
-22	630871	Bushing, Idler Pin .....							1		1	1			1	1	1			1					
-23	534740	\$ Gasket, Idler Pin .....							1		1	1			1	1	1			1					
-24	630870	Bushing, Flanged, Idler Gear .....							1		1	1			1	1	1			1					
ATTACHING PARTS																									
-25	MS35338-44	Washer, Lock .....							2		2	2			2	2	2			2					
-26	2437	Nut, Plain, Hex .....							2		2	2			2	2	2			2					
* * * *																									
-27	No Number	① Plate, Identification .....							rf		rf	rf			rf	rf	rf			rf					
ATTACHING PARTS																									
-28	24764	Screw, Drive .....							6		6	6			6	6	6			6					
* * * *																									
-29	633233-29	Rod and Cap Assembly, Oil Gauge .....							1		1			1	1				1						
-29	633233-3	Rod and Cap Assembly, Oil Gauge .....									1														
-29	633233-6	Rod and Cap Assembly, Oil Gauge, Right Hand .....															1								
-29	633233-7	Rod and Cap Assembly, Oil Gauge, Left Hand .....																			1				
-30	641361	Plate, Seal .....							2		2	2			2	2	2			2					
ATTACHING PARTS																									
-31	AN960-10L	Washer, Plain .....							4		4	4			4	4	4			4					
-32	MS20074-03-03	Bolt .....							4		4	4			4	4	4			4					

NOTE (1) See Service Bulletin M75-5.



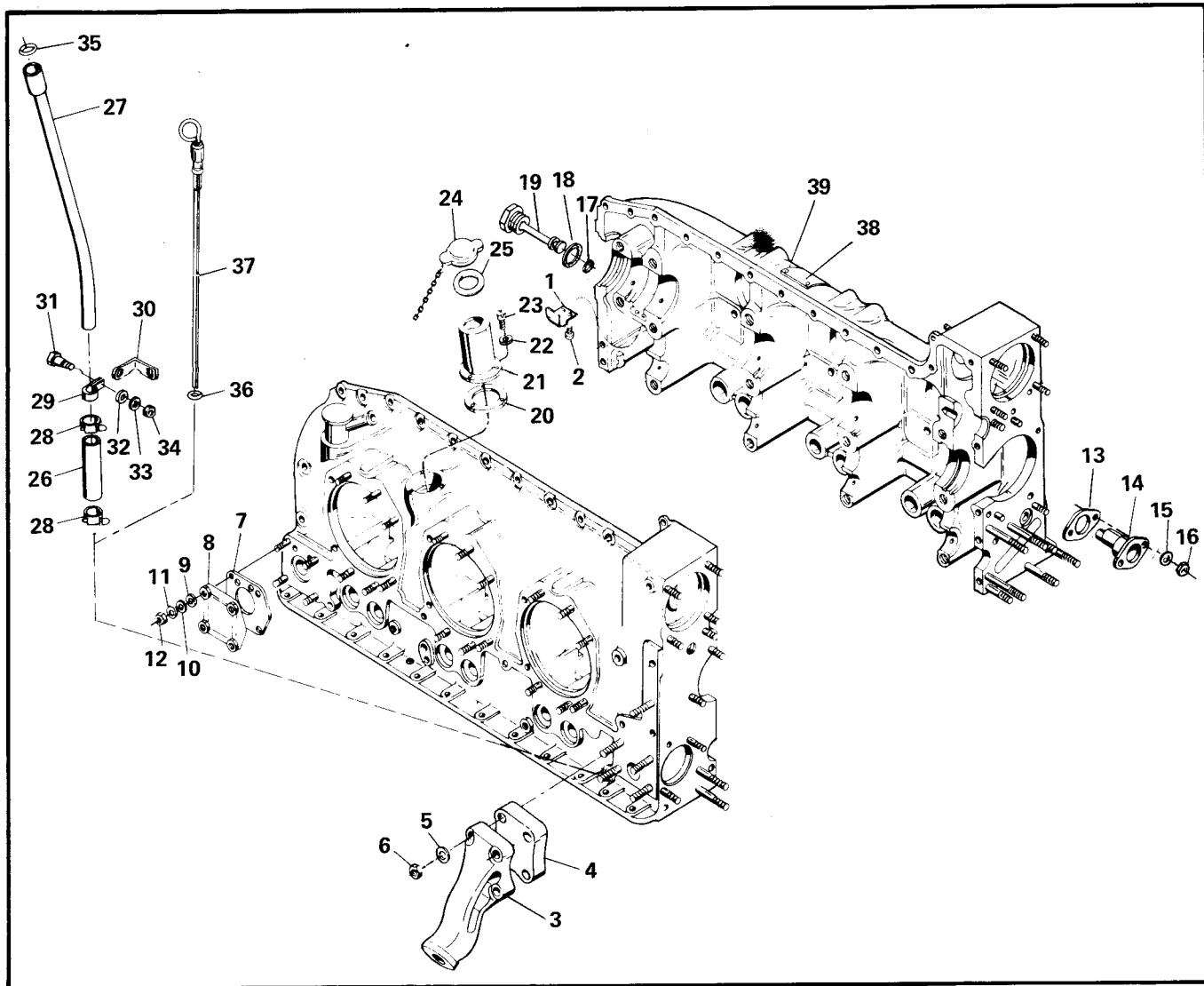


FIGURE 6. ASSOCIATED PARTS, SANDCAST CRANKCASE, TSIO-520-C,G,H,M,P,R.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																		
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R	
6- 1	642250	① Clip, Oil Transfer							1									1		1	1
		ATTACHING PARTS																			
-2	AN500A10-4	Screw							2									2		2	2
		* * * *																			
-3	539518	Bracket, Engine Mounting							3									3		3	3
-3	628257	Bracket, Engine Mounting, Cylinder No. 2							3									3		3	3
		ATTACHING PARTS																			
-4	632357	Spacer, Engine Mount, Cylinder No. 2							1									1		1	1
-5	539058	Washer, Plain							16									16		16	16
-6	2441	Nut, Plain, Hex							16									16		16	16
		* * * *																			

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																			
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R		
6 -7	641651	\$ Gasket, Governor Pad Cover .....							1				1	1			1		1	1		
-8	639997	Cover, Governor Pad .....							1				1	1			1		1	1		
ATTACHING PARTS																						
-9	22535	Washer .....							8				8	8			8		8	8		
-10	2473	Washer, Plain .....							4				4	4			4		4	4		
-11	MS35338-45	Washer, Lock .....							4				4	4			4		4	4		
-12	2439	Nut, Plain, Hex .....							4				4	4			4		4	4		
* * * *																						
-13	534740	\$ Gasket, Idler Pin .....							1				1	1			1		1	1		
-14	534728	Pin Idler Gear Support .....							1				1	1			1		1	1		
ATTACHING PARTS																						
-15	MS35338-44	Washer, Lock .....							2				2	2			2		2	2		
-16	2437	Nut, Plain, Hex .....							2				2	2			2		2	2		
* * * *																						
-17	AN123866	\$ O-Ring .....							1				1	1			1		1	1		
-18	625966	\$ Gasket .....							1				1	1			1		1	1		
-19	626334	Plug, Special .....							1				1	1			1		1	1		
-20	538804	\$ Gasket, Oil Filler Neck .....							1				1	1			1		1	1		
-21	538801	Neck Assembly, Oil Filler .....							1				1	1			1		1	1		
ATTACHING PARTS																						
-22	MS35338-44	Washer, Lock .....							3				3	3			3		3	3		
-23	AN500A416-8	Screw, Fillister Head .....							3				3	3			3		3	3		
* * * *																						
-24	640620-8	Cap Assembly, Oil Filler .....							1				1				1					
-24	640620-5	Cap, Assembly, Oil Filler .....												1						1	1	
-25	<del>635134</del> 535833	\$ Gasket, Oil Filler Cap .....							1				1	1			1		1	1		
-26	631928	\$ Hose .....							1				1	1			1		1	1		
-27	631915	Housing, Extension .....							1				1	1			1		1	1		
-28	36151R	Clamp .....							2				2	2			2		2	2		
-29	631266-1	Clamp .....							1				1	1			1		1	1		
-30	631275-2	Bracket, No. 2 Cylinder Int. Flange .....							1				1	1			1		1	1		
ATTACHING PARTS																						
-31	MS35266-61	Screw .....							1				1	1			1		1	1		
-32	2471	Washer, Plain .....							1				1	1			1		1	1		
-33	MS35338-43	Washer, Lock .....							1				1	1			1		1	1		
-34	13XX1896	Nut, Hex, No. 10-32 .....							1				1	1			1		1	1		
* * * *																						
-35	537299	Ring, Oil Gauge Lock .....							1				1	1			1		1	1		
-36	25328	\$ O-Ring .....							1				1	1			1		1	1		
-37	632062-2A1	Rod Assembly, Oil Gauge .....							1				1				1					
-37	632062-16A1	Rod, Assembly, Oil Gauge .....												1						1	1	
-38	No Number	② Plate, Identification .....							rf				rf	rf			rf		rf	rf	rf	
ATTACHING PARTS																						
-39	24764	Screw, Drive .....							6				6	6			6		6	6		

NOTE ① Early crankcase design uses P/N 626990 (See Service Bulletin M70-18).

NOTE ② See Service Bulletin M75-5.

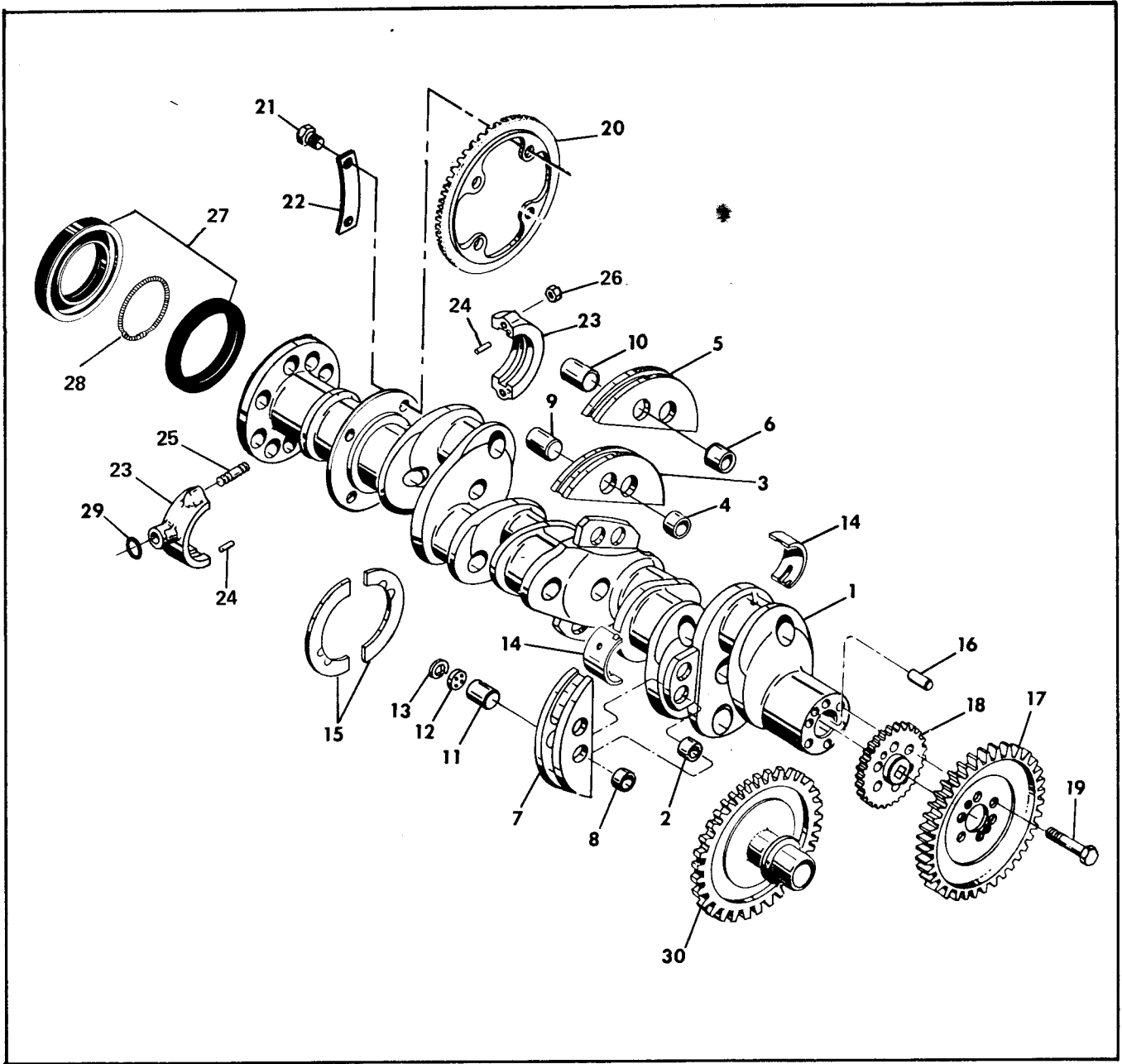


FIGURE 7. CRANKSHAFT GROUP, TS10-520-B, D, E, J, K, L, N.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY															
			TSIO-520															
1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R	
7-1	633620	Crankshaft and Damper Assembly				1		1	1			1	1	1		1		
-2	350998	† Bushing, Crankshaft Damper				8		8	8			8	8	8		8		
-3	639196	. Counterweight Assembly, 4th Order				1		1	1			1	1	1		1		
-4	639193	. Bushing, Crankshaft Counterweight				4		4	4			4	4	4		4		
-5	639196	. Counterweight Assembly, 5th Order				1		1	1			1	1	1		1		
-6	639193	. Bushing, Crankshaft Counterweight				4		4	4			4	4	4		4		
-7	639195	. Counterweight Assembly, 6th Order				2		2	2			2	2	2		2		
-8	639193	. Bushing, Crankshaft Counterweight				4		4	4			4	4	4		4		
-9	630261-38	. Pin, Damper Counterweight, 4th Order				2		2	2			2	2	2		2		
-10	630261-37	. Pin, Damper Counterweight, 5th Order				2		2	2			2	2	2		2		
-11	630261-35	. Pin, Damper Counterweight, 6th Order				4		4	4			4	4	4		4		
ATTACHING PARTS																		
-12	635623	. Plate, Counterweight Pin Retaining				16		16	16			16	16	16		16		
-13	629104	. Ring, Retaining				16		16	16			16	16	16		16		
* * * *																		
-14	635439	\$† Bearing, Crankshaft Main				10		10	10			10	10	10		10		
-15	637579	\$ Washer, Thrust				4		4	4			4	4	4		4		
-16	536563	† Dowel, Crankshaft-to-Crankgear				1		1	1			1	1	1		1		
-17	632893	Gear, Crankshaft, Large				1		1	1			1	1	1		1		
-18	632892	Gear, Crankshaft, Small				1		1	1			1	1	1		1		
ATTACHING PARTS																		
-19	536379	Screw, Drilled Head, 5/16 x 7/8 Inch Long				6		6	6			6	6	6		6		
-20	632018	Gear, Face, Alternator Drive				1		1	1			1	1	1		1		
ATTACHING PARTS																		
-21	634080	Screw, 5/16 - 24 x 13/32 Inch Long				4		4	4			4	4	4		4		
-22	641909	Plate, Tab Lock				2		2	2			2	2	2		2		
* * * *																		
-23	629680	† Collar Assembly, Governor Oil Transfer				1		1	1			1	1	1		1		
-24	626889	. Dowel, 1/8 x 7/16 Inch Long				2		2	2			2	2	2		2		
-25	401893	† Stud, 1/4 x 1-1/4 Inch Long				2		2	2			2	2	2		2		
-26	632443-4	. Nut, Marsden Lock, 1/4 - 28				2		2	2			2	2	2		2		
-27	641250	Seal Assembly, Nose				1		1	1			1	1	1		1		
-28	641306	. Spring				1		1	1			1	1	1		1		
-29	AN123962	\$ O-Ring, Crankcase-to-Collar				1		1	1			1	1	1		1		
-30	629360	Gear, Idler				1		1	1			1	1	1		1		

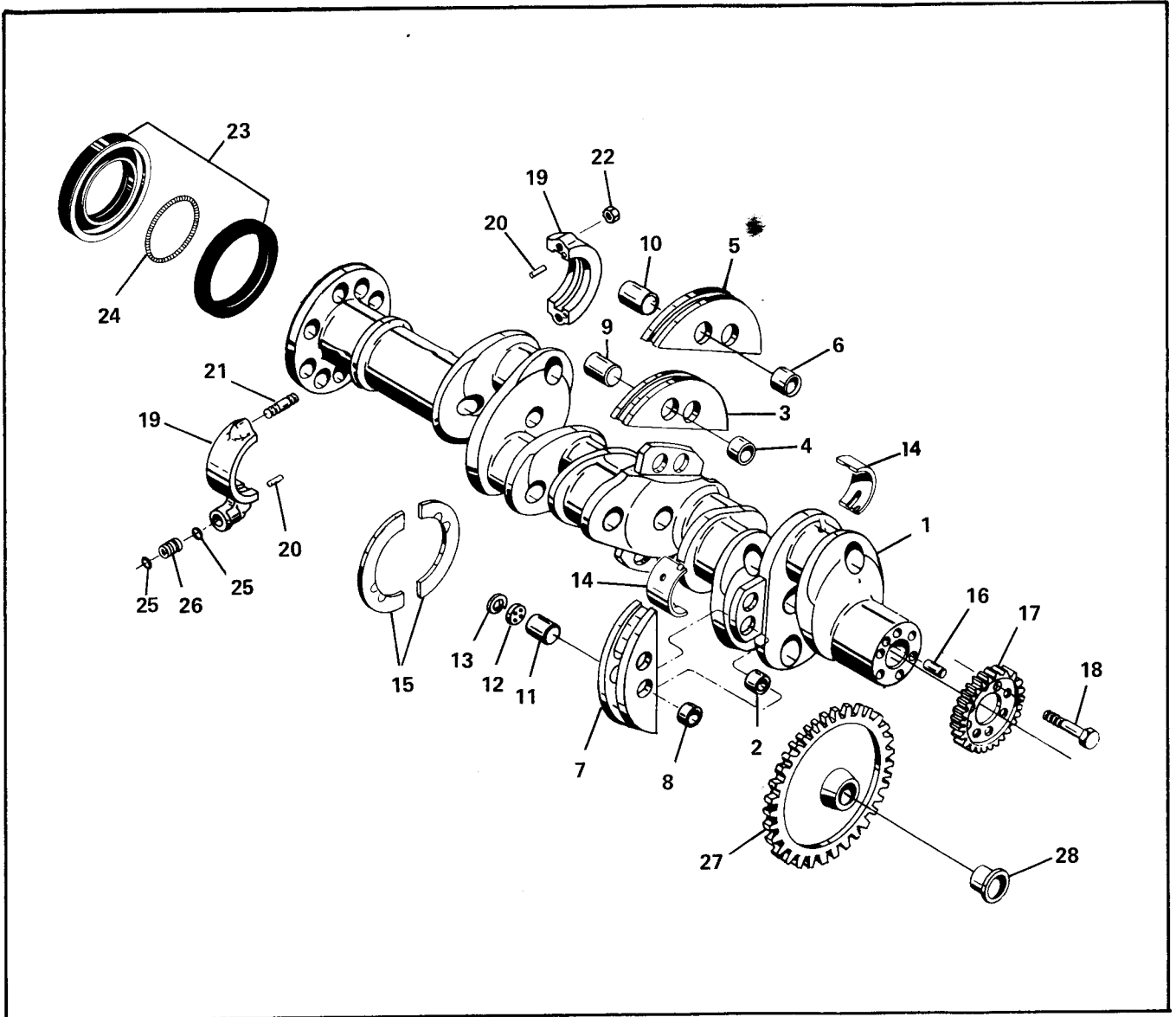


FIGURE 8. CRANKSHAFT GROUP, TSIO-520-C,G,H,M,P,R.

FIG. NDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520														
			B	C	D	E	G	H	J	K	L	M	N	P	R		
8- 1	631716	Crankshaft and Damper Assembly .....	1				1	1					1		1	1	
-2	350998	† . Bushing, Crankshaft Damper .....	8				8	8					8		8	8	
-3	639196	. Counterweight Assembly, 4th Order .....	1				1	1					1		1	1	
-4	639193	. . Bushing, Crankshaft Counterweight .....	4				4	4					4		4	4	
-5	639196	. Counterweight Assembly, 5th Order .....	1				1	1					1		1	1	
-6	639193	. . Bushing, Crankshaft Counterweight .....	4				4	4					4		4	4	
-7	639195	. Counterweight Assembly, 6th Order .....	2				2	2					2		2	2	
-8	639193	. . Bushing, Crankshaft Counterweight .....	4				4	4					4		4	4	
-9	630261-38	. Pin, Damper Counterweight, 4th Order .....	2				2	2					2		2	2	
-10	630261-37	. Pin, Camper Counterweight, 5th Order .....	2				2	2					2		2	2	
-11	630261-35	. Pin, Damper Counterweight, 6th Order .....	4				4	4					4		4	4	
ATTACHING PARTS																	
-12	635623	. Plate, Counterweight Pin Retaining .....	16				16	16					16		16	16	
-13	629104	. Ring, Retaining .....	16				16	16					16		16	16	
* * * *																	
-14	630464	†\$ Bearing, Crankshaft Main .....	10				10	10					10		10	10	
-15	637579	\$ Washer, Thrust .....	4				4	4					4		4	4	
-16	536563	† Dowel, Crankshaft-to-Gear .....	1				1	1					1		1	1	
-17	536421	Gear, Crankshaft .....	1				1	1					1		1	1	
ATTACHING PARTS																	
-18	536379	Screw, Drilled Head, 5/16 x 7/8 Inch Long .....	6				6	6					6		6	6	
* * * *																	
-19	626739	† Collar Assembly, Governor Oil Transfer .....	1				1	1					1		1	1	
-20	626889	. Dowel, 1/8 x 7/16 Inch Long .....	2				2	2					2		2	2	
-21	401893	† . Stud, 1/4 x 1-1/4 Inch Long .....	2				2	2					2		2	2	
-22	MS21042-4	. Nut, Marsden Lock, 1/4 - 28 .....	1				1	1					1		1	1	
-23	641250	Seal Assembly, Crankshaft Oil .....	1				1	1					1		1	1	
-24	641306	. Spring .....	1				1	1					1		1	1	
-25	MS9021-011	\$ O-Ring, Crankcase-to-Collar .....	2				2	2					2		2	2	
-26	642249	Sleeve, Oil Transfer .....	1				1	1					1		1	1	
-27	534757	Gear Assembly, Idler .....	1				1	1					1		1	1	
-28	534741	. Bushing, Idler Gear .....	1				1	1					1		1	1	

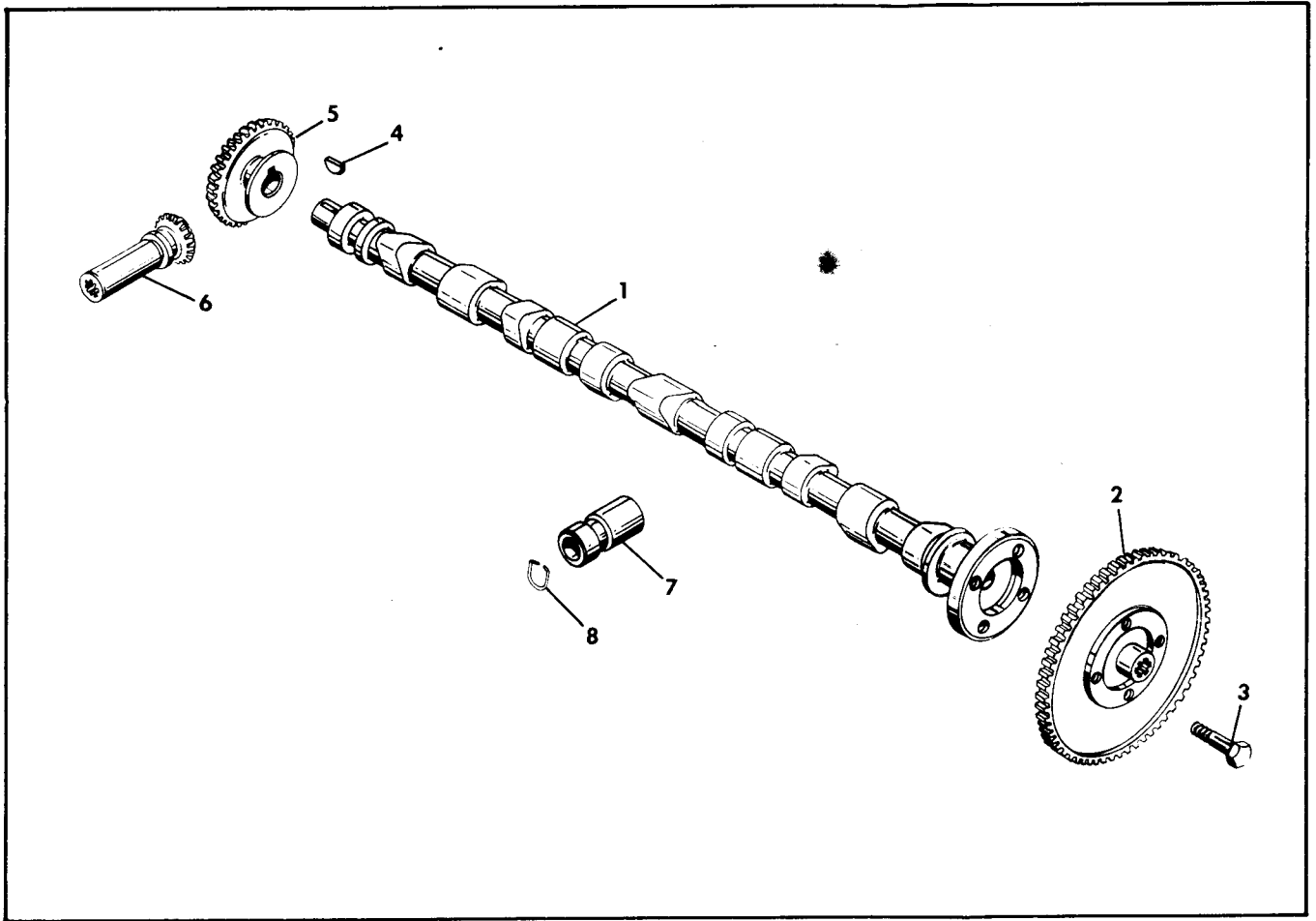


FIGURE 9. CAMSHAFT GROUP, TSIO-520-B,D,E,J,K,L,N.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																		
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R	
9- 1	629726A3	† Camshaft Assembly	1						1	1			1	1	1		1				
- 2	631845	Gear, Camshaft	1						1	1			1	1	1		1				
ATTACHING PARTS																					
- 3	631099-44	Bolt, 5/16 - 24 x 7/16 Inch Long	4						4	4			4	4	4		4				
		* * * *																			
- 4	MS35756-8	. Key, Woodruff	1						1	1			1	1	1		1				
- 5	629748	Gear, Bevel, Governor Drive	1						1	1			1	1	1		1				
- 6	629747	Gear, Bevel, Governor Driven	1						1	1			1	1	1		1				
- 7	628488	Lifter Assembly, Hydraulic Valve	12						12	12			12	12	12		12				
- 8	641862	① . Ring, Retaining	1						1	1			1	1	1		1				

NOTE ① The new configuration of the 628488 hydraulic lifter incorporates this new snap ring P/N 641862 (red in color). However, snap ring P/N 628491 must be used with the older configuration of the lifter. The most discernible difference between the old and new lifter is in the ball socket. The old design socket tapered from the center nearly to the O.D. The newer design that must use the new snap ring (641862) shoulders roughly half-way between the center and O.D. The socket oil hole diameter differences are 1/16" for the old design and 1/8" for the new.

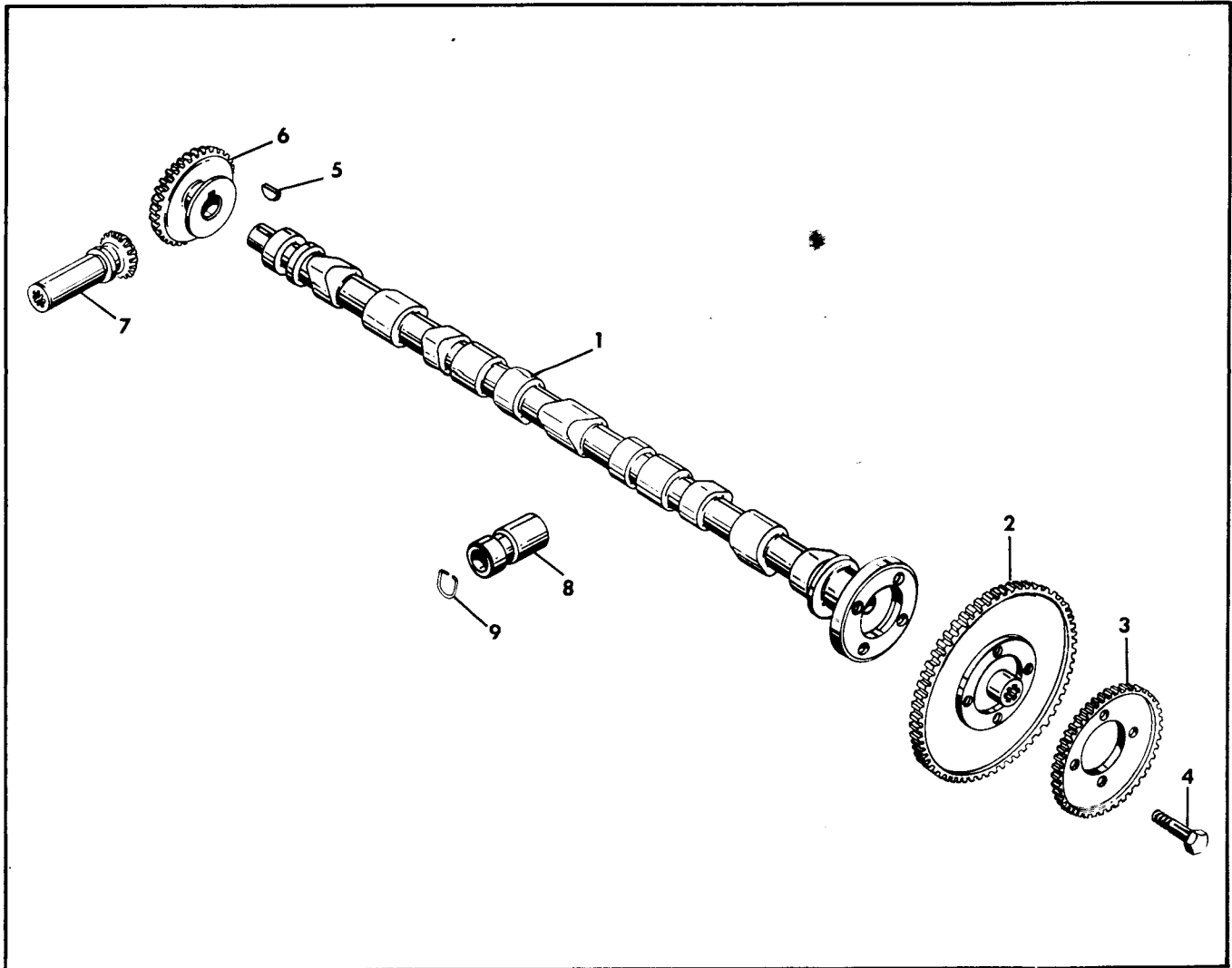


FIGURE 10. CAMSHAFT GROUP, TSIO-520-C,G,H,M,P,R.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY															
			TSIO-520															
			B	C	D	E	G	H	J	K	L	M	N	P	R			
10-1	535661	† Camshaft		1			1	1				1		1	1			
-2	631845	Gear, Camshaft		1			1	1				1		1	1			
-3	535662	Gear, Cam Cluster		1			1	1				1		1	1			
ATTACHING PARTS																		
-4	535666	Screw, 5/16 - 24 x 25/32 Inch Long		4			4	4				4		4	4			
		* * * *																
-5	MS35756-8	Key, Woodruff		1			1	1				1		1	1			
-6	534655	Gear, Bevel, Governor Drive		1			1	1				1		1	1			
-7	538076	Gear, Bevel, Governor Driven		1			1	1				1		1	1			
-8	628488	Lifter Assembly, Hydraulic Valve		12			12	12				12		12	12			
-9	641862	① Ring, Retaining		1			1	1				1		.1	1			

NOTE ① The new configuration of the 628488 hydraulic lifter incorporates this new snap ring P/N 641862 (red in color). However, snap ring P/N 628491 must be used with the older configuration of the lifter. The most discernible difference between the old and new lifter is in the ball socket. The old design socket tapered from the center nearly to the O.D. The newer design that must use the new snap ring (641862) shoulders roughly half-way between the center and O.D. The socket oil hole diameter differences are 1/16" for the old design and 1/8" for the new.



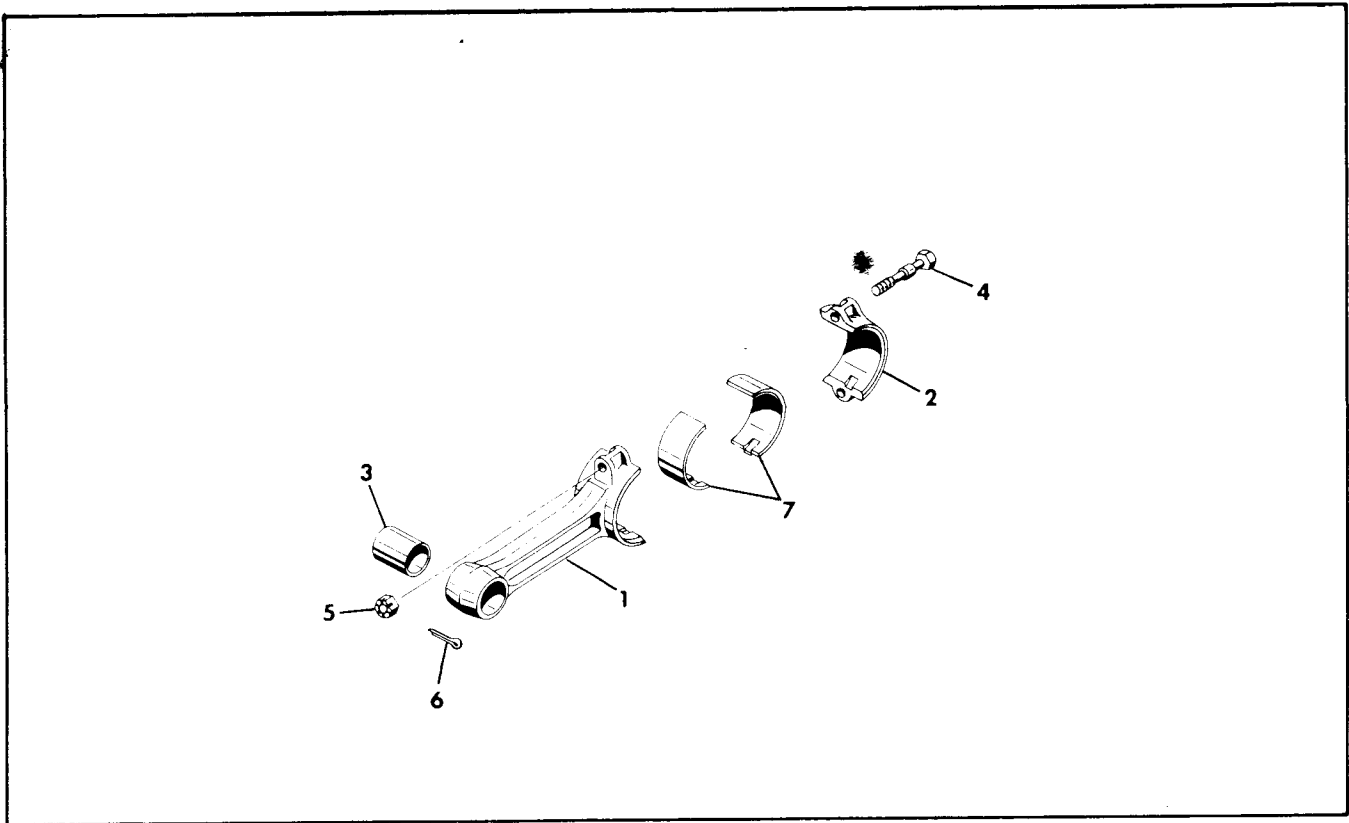


FIGURE 11. CONNECTING ROD ASSEMBLY

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520														
			1	2	3	4	5	6	7	8	9	10	11	12			
11- 1	633403	Connecting Rod Assembly, Complete	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
-2	530658	. Bushing, Piston Pin	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-3	629340	. Bolt, Connecting Rod, Special	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
-4	628109	. Nut, Slotted, Special	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
-5	AN381-25-10	Pin, Cotter	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
-6	630826	†\$ Bearing, Connecting Rod	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12

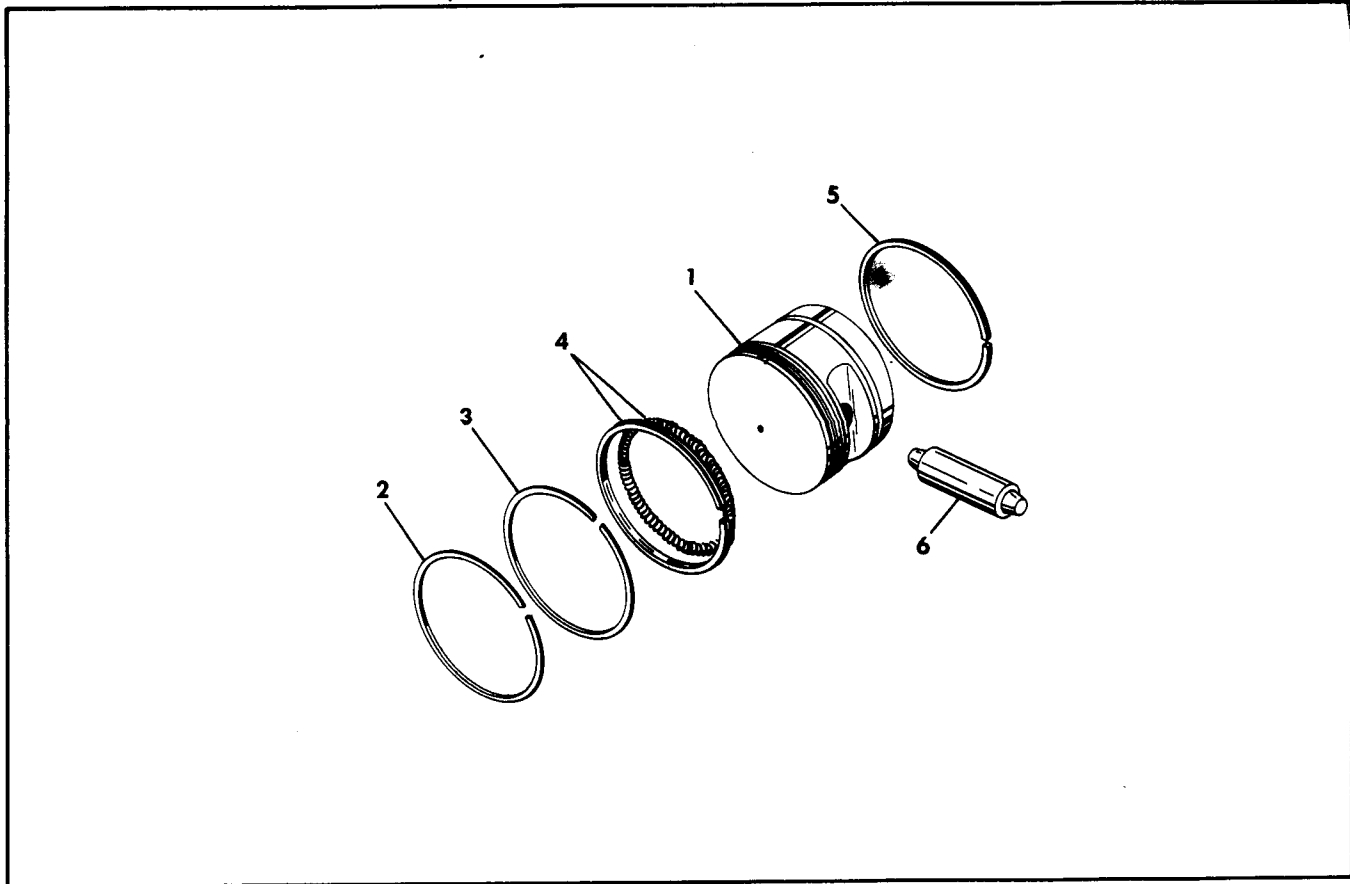


FIGURE 12. PISTON, RINGS AND PIN ASSEMBLY.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																		
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R	
12- 1	632585	† Piston, 7.5 to 1 Compression Ratio .....						6	6	6	6	6	6	6	6	6	6	6	6	6	6
-2	640625	†\$ Ring, Piston, Comp. Top Groove .....						6	6	6	6	6	6	6	6	6	6	6	6	6	6
-2	640230	①\$ Ring, Piston, Comp. Top Groove .....						6	6	6	6	6	6	6	6	6	6	6	6	6	6
-3	640626	†\$ Ring, Piston, Comp. 2nd Groove .....						6	6	6	6	6	6	6	6	6	6	6	6	6	6
-3	640231	①\$ Ring, Piston, Comp. 2nd Groove .....						6	6	6	6	6	6	6	6	6	6	6	6	6	6
-4	641302	②†\$ Ring Assembly, 3rd Groove .....						6	6	6	6	6	6	6	6	6	6	6	6	6	6
-4	636144	①③\$ Ring Assembly, 3rd Groove .....						6	6	6	6	6	6	6	6	6	6	6	6	6	6
-5	629401	†\$ Ring, Piston, Scraper, 4th Groove .....						6	6	6	6	6	6	6	6	6	6	6	6	6	6
-6	630046	† Pin and Plug Assembly, Piston .....						6	6	6	6	6	6	6	6	6	6	6	6	6	6

NOTE:

- ① For use with chrome cylinders
- ② This includes the 640628 Ring, which is not serviced separately.
- ③ This includes the 636145 Ring, which is not service separately.

Complete ring sets are listed in Section IV.

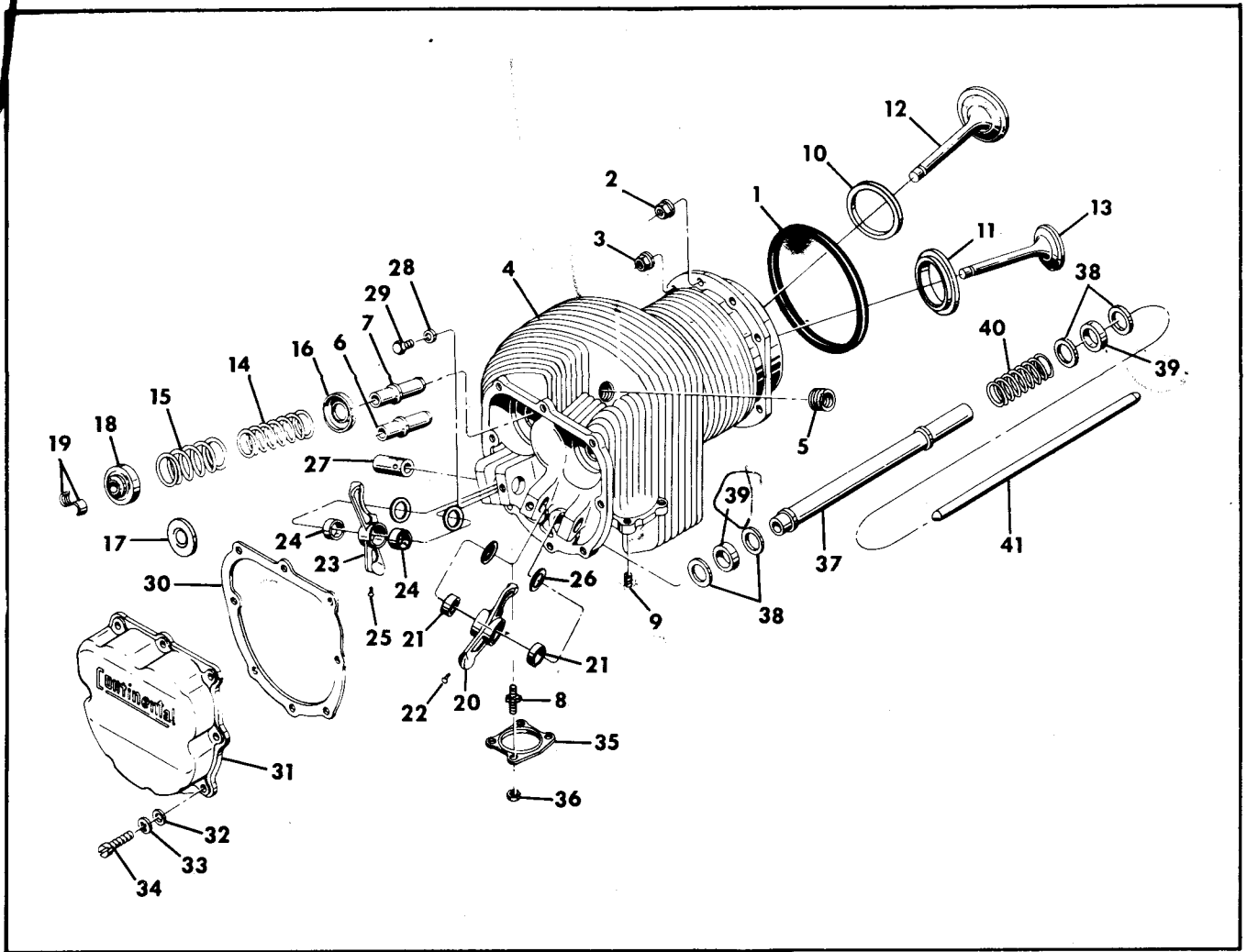


FIGURE 13. CYLINDER ASSEMBLY

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																			
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R		
13- 1	641066	O-Ring Packing, Cylinder Base						6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	639272A1	Cylinder and Valve Assembly						6	6	6	6	6				6		6	6			
	639274A1	Cylinder and Valve Assembly											6	6	6		6					
	635448CP-A1 ①	Cylinder and Valve Assembly						opt	opt	opt	opt	opt	opt			opt		opt	opt	opt		
	636122CP-A1 ①	Cylinder and Valve Assembly											opt	opt	opt		opt					
ATTACHING PARTS																						
-2	531001	Nut, Flanged, 7/16 - 20						36	36	36	36	36	36	36	36	36	36	36	36	36	36	
-3	634505	Nut, Flanged, 1/2 - 20						12	12	12	12	12	12	12	12	12	12	12	12	12	12	
* * * *																						
-4	639272	Cylinder Assembly						1	1	1	1	1	1			1		1	1			
-4	639274	Cylinder Assembly											1	1	1		1					
-4	635448CP ①	Cylinder Assembly						opt	opt	opt	opt	opt	opt			opt		opt	opt	opt		
-4	636122CP ①	Cylinder Assembly											opt	opt	opt		opt					
-5	520112-3	Insert, Spark Plug Thread						2	2	2	2	2	2	2	2	2	2	2	2	2	2	
-6	631496 †	Guide, Valve, Intake						1	1	1	1	1	1	1	1	1	1	1	1	1	1	
-7	636242 †	Guide, Valve, Exhaust						1	1	1	1	1	1	1	1	1	1	1	1	1	1	
-8	401893 †	Stud, 1/4 x 1-1/4 Inch Long						4	4	4	4	4	4			4		4	4	4		
-8	638125	Stud, Ring Locked												4	4	4		4				

FIG. NDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY															
				TSIO-520															
				B	C	D	E	G	H	J	K	L	M	N	P	R			
13	-9	MS122121	. . Insert, Intake Pipe Flange . . . . .	4	4	4	4	4	4	4	4	4	4	4	4	4			
	-10	630591	† . . Insert, Intake Valve Seat . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1			
	-11	35967	† . . Insert, Exhaust Valve Seat . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1			
	-12	539988	. Valve, Intake . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1			
	-13	637781	. Valve, Exhaust . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1			
	-14	631521	. Spring, Valve Inner . . . . .	2	2	2	2	2	2	2	2	2	2	2	2	2			
	-15	631520	. Spring, Valve Outer . . . . .	2	2	2	2	2	2	2	2	2	2	2	2	2			
	-16	625393	. Retainer, Valve Spring Inner . . . . .	2	2	2	2	2	2	2	2	2	2	2	2	2			
	-17	35971	. Retainer, Valve Spring Outer, Intake . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1			
	-18	629117	. Roto-Coil Assembly, Exhaust Valve . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1			
	-19	24802	. Key, Valve Spring Retainer . . . . .	4	4	4	4	4	4	4	4	4	4	4	4	4			
	-20	539742	Rocker Assembly, Intake Valve . . . . .	6	6	6	6	6	6	6	6	6	6	6	6	6			
	-21	639629	. Bushing, Valve Rocker . . . . .	2	2	2	2	2	2	2	2	2	2	2	2	2			
	-22	21007	. Screw, Drive . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1			
	-23	641682	Rocker Assembly, Exhaust Valve . . . . .	6	6	6	6	6	6	6	6	6	6	6	6	6			
	-24	639629	. Bushing, Valve Rocker . . . . .	2	2	2	2	2	2	2	2	2	2	2	2	2			
	-25	21007	. Screw, Drive . . . . .	1	1	1	1	1	1	1	1	1	1	1	1	1			
126A	-26	639573	. Washer, Thrust . . . . .	24	24	24	24	24	24	24	24	24	24	24	24	24			
130	-27	539740	. Shaft, Valve Rocker . . . . .	12	12	12	12	12	12	12	12	12	12	12	12	12			
ATTACHING PARTS																			
	-28	2473	Washer, Plain . . . . .	12	12	12	12	12	12	12	12	12	12	12	12	12			
	-29	537019	Screw, Hex Head, 5/16 - 24 x 16/32 Inch Long . . . . .	12	12	12	12	12	12	12	12	12	12	12	12	12			
* * * *																			
	-30	534857	\$ Gasket, Valve Rocker Cover . . . . .	6	6	6	6	6	6	6	6	6	6	6	6	6			
	-31	625615	Cover, Valve Rocker . . . . .	6	6	6	6	6	6	6	6	6	6	6	6	6			
ATTACHING PARTS																			
	-32	20522	Washer, Plain . . . . .	48	48	48	48	48	48	48	48	48	48	48	48	48			
	-33	MS35338-44	Washer, Lock . . . . .	48	48	48	48	48	48	48	48	48	48	48	48	48			
	-34	535118	Screw, Fillister Head, 1/4 x 3/4 Inch Long . . . . .	48	48	48	48	48	48	48	48	48	48	48	48	48			
* * * *																			
	-35	628260	\$ Gasket, Assembly, Exhaust Flange . . . . .	6	6	6	6	6	6	6	6	6	6	6	6	6			
ATTACHING PARTS																			
	-36	536038	Nut, Hex Head, 1/4 - 28 . . EXHAUST . . . . .	24	24	24	24	24	24	24	24	24	24	24	24	24			
* * * *																			
	-37	537296	Housing, Push Rod . . . . .	12	12	12	12	12	12	12	12	12	12	12	12	12			
	-38	534609	Washer, Push Rod Housing . . . . .	48	48	48	48	48	48	48	48	48	48	48	48	48			
	-39	534610	\$ Packing, Push Rod Housing . . . . .	24	24	24	24	24	24	24	24	24	24	24	24	24			
	-40	626147	Spring, Push Rod Housing . . . . .	12	12	12	12	12	12	12	12	12	12	12	12	12			
	-41	538304	Push Rod Assembly . . . . .	12	12	12	12	12	12	12	12	12	12	12	12	12			

NOTE ① Chrome Plats.

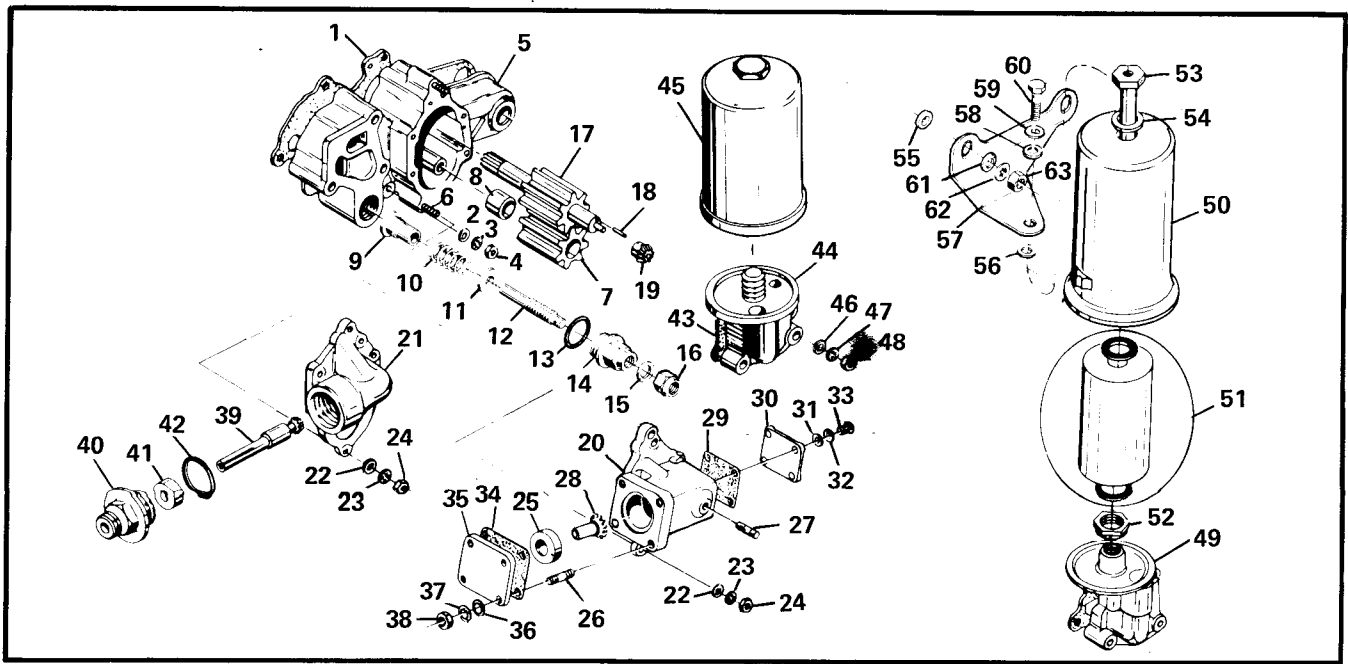


FIGURE 14. OIL PUMP ASSEMBLY, TSIO-520-B,D,E,J,K,L,N.

FIG. INDEX	PART NUMBER	1	2	3	4	5	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																	
								B	C	D	E	G	H	J	K	L	M	N	P	R					
14-1	631034	\$					Gasket, Pump Housing-to-Crankcase . . . . .	1		1	1			1	1	1		1							
	632970						Housing Assembly, Oil Pump Complete . . . . .	1			1			1	1	1		1							
	632977A1						Housing Assembly, Oil Pump Complete . . . . .			1															
							ATTACHING PARTS																		
-2	20522						Washer, Plain . . . . .	1		1	1			1	1	1		1							
-3	MS35338-44						Washer, Lock . . . . .	1		1	1			1	1	1		1							
-4	2437						Nut, Hex, Plain . . . . .	1		1	1			1	1	1		1							
							* * * * *																		
-5	632977						Housing & Shaft Assembly, Oil Pump . . . . .	1		1	1			1	1	1		1							
-6	401801	†					Stud, 1/4 x 1-3/16 Inch Long . . . . .	2		2	2			2	2	2		2							
-7	631016						Gear & Bushing Assy., Oil Pump Driven . . . . .	1		1	1			1	1	1		1							
-8	23024						Bushing, Oil Pump Gear . . . . .	2		2	2			2	2	2		2							
-9	631618						Plunger, Oil Pressure Relief Valve . . . . .	1		1	1			1	1	1		1							
-10	634150						Spring, Oil Pressure Relief Valve . . . . .	1		1	1			1	1	1		1							
-11	631653						Seat, Spring Guide . . . . .	1		1	1			1	1	1		1							
-12	632761						Screw, Adjusting . . . . .	1		1	1			1	1	1		1							
-13	AN900-18	\$					Gasket, Annular . . . . .	1		1	1			1	1	1		1							
-14	642224						Housing, Oil Pressure Relief Valve . . . . .	1		1	1			1	1	1		1							
-15	X1473						Washer, Copper . . . . .	1		1	1			1	1	1		1							
-16	632762						Nut, Stop, 5/16 - 24 . . . . .	1		1	1			1	1	1		1							
-17	631075						Shaftgear Assy., O/P & Tach Drive . . . . .	1		1				1	1	1		1							
-17	631014						Shaftgear Assy., O/P & Tach Drive . . . . .			1															
-18	535634						Pin, Dowel . . . . .	1		1	1			1	1	1		1							
-19	535900						Gear, Bevel, Tach Drive . . . . .	1		1				1	1	1		1							
-19	535008						Gear, Bevel, Tach Drive . . . . .			1															
-20	631056A1						Cover, Assy., Right Angle Tach Drive, O/P . . . . .	1		1				1	1	1		1							
-21	631390						Cover Assy., Right Angle Tach Drive, O/P . . . . .			1															
							ATTACHING PARTS																		
-22	20522						Washer, Plain . . . . .	7		6	7			7	7	7		7							
-23	MS35338-44						Washer, Lock . . . . .	7		6	7			7	7	7		7							
-24	2437						Nut, Plain, Hex . . . . .	7		6	7			7	7	7		7							
							* * * * *																		
-25	531378	\$					Seal, Oil . . . . .	1		1				1	1	1		1							

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY															
			TSIO-520															
			B	C	D	E	G	H	J	K	L	M	N	P	R			
14-26	401893	† . . Stud, 1/4 x 1-1/4 Inch Long . . . . .	4			4				4	4	4			4			
-27	402711	† . . Stud, 1/4 x 7/8 Inch Long . . . . .	1			1				1	1	1			1			
-28	535908	. Shaftgear Assy., Bevel, Tach Drive . . . . .	1			1				1	1	1			1			
-29	535885	\$ . Gasket, Cover-to-Cover . . . . .	1			1				1	1	1			1			
-30	535887	. Cover, Tach Gear Box . . . . .	1			1				1	1	1			1			
ATTACHING PARTS																		
-31	2471	. Washer, Plain . . . . .	4			4				4	4	4			4			
-32	22910	. Washer, Lock . . . . .	4			4				4	4	4			4			
-33	20655	. Screw, Rd. Hd., No. 10-24 x 1 Inch Long . . . . .	4			4				4	4	4			4			
* * * *																		
-34	MS9134-01	\$ . Gasket, Tach Drive Pad . . . . .	1			1				1	1	1			1			
-35	640380	. Cover, Tach Drive Pad . . . . .	1			1				1	1	1			1			
ATTACHING PARTS																		
-36	2472	. Washer, Plain . . . . .	4			4				4	4	4			4			
-37	MS35338-44	. Washer, Lock . . . . .	4			4				4	4	4			4			
-38	2437	. Nut, Plain, Hex . . . . .	4			4				4	4	4			4			
* * * *																		
-39	631650	. Shaft Assembly, Tach Drive . . . . .				1												
-40	21208A1	. Housing, Tach Drive Assembly . . . . .				1												
-41	640087	\$ . . Seal, Oil Tach Housing . . . . .				1												
-42	AN900-22	\$ . Gasket Annular . . . . .	1			1	1			1	1	1			1			
-43	632266	① \$ Gasket, Oil Filter-to-Pump Housing . . . . .	1			1	1			1	1	1			1			
-44	641639	Adapter Assembly, Oil Filter . . . . .	1			1	1			1	1	1			1			
-45	641583	Filter Assembly, Oil . . . . .	1			1				1	1	1			1			
-45	641584	Filter Assembly, Oil . . . . .				1												
ATTACHING PARTS																		
-46	2274	Washer, Plain . . . . .	3			3	3			3	3	3			3			
-47	MS35338-46	Washer, Lock . . . . .	3			3	3			3	3	3			3			
-48	2441	Nut, Plain, Hex, 3/8 - 24 . . . . .	3			3	3			3	3	3			3			
* * * *																		
	No Number	① Filter Assembly, Oil . . . . .	ns			ns	ns			ns	ns	ns			ns			
-49	No Number	① . Adapter, Oil Filter . . . . .	ns			ns	ns			ns	ns	ns			ns			
-50	631646	① . Housing, Oil Filter . . . . .	1			1	1			1	1	1			1			
-51	632379	① . . Element, Oil Filter (Includes Gasket) . . . . .	1			1	1			1	1	1			1			
-52	631782	① Nut, Nylon Lock . . . . .	1			1	1			1	1	1			1			
-53	631783	① Stud Assembly, Center . . . . .	1			1	1			1	1	1			1			
-54	631784	① Gasket, Copper . . . . .	1			1	1			1	1	1			1			
-55	24239	① Spacer, Bracket-to-Crankcase . . . . .	2			2	2			2	2	2			2			
-56	632240	① Spacer, Bracket-to-Oil Filter . . . . .	1			1	1			1	1	1			1			
-57	632239	① Bracket, Oil Filter-to-Crankcase . . . . .	1			1	1			1	1	1			1			
ATTACHING PARTS																		
-58	537539	① Washer, Plain . . . . .	1			1	1			1	1	1			1			
-59	MS35338-44	① Washer, Lock . . . . .	1			1	1			1	1	1			1			
-60	AN5-10A	① Bolt, 5/16 - 24 . . . . .	1			1	1			1	1	1			1			
-61	2473	① Washer, Plain . . . . .	rf			rf	rf			rf	rf	rf			rf			
-62	MS35338-44	① Washer, Lock . . . . .	rf			rf	rf			rf	rf	rf			rf			
-63	2439	① Nut, Plain, Hex . . . . .	rf			rf	rf			rf	rf	rf			rf			

NOTE ① Parts so indicated were used on early models. If adapter (49) is serviceable, new element (51) may be ordered. Ref. Service Bulletin M71-19 for replacement if old style adapter needs replacing. Item 43, Gasket 632266 replaces 632655 for Models B, E.

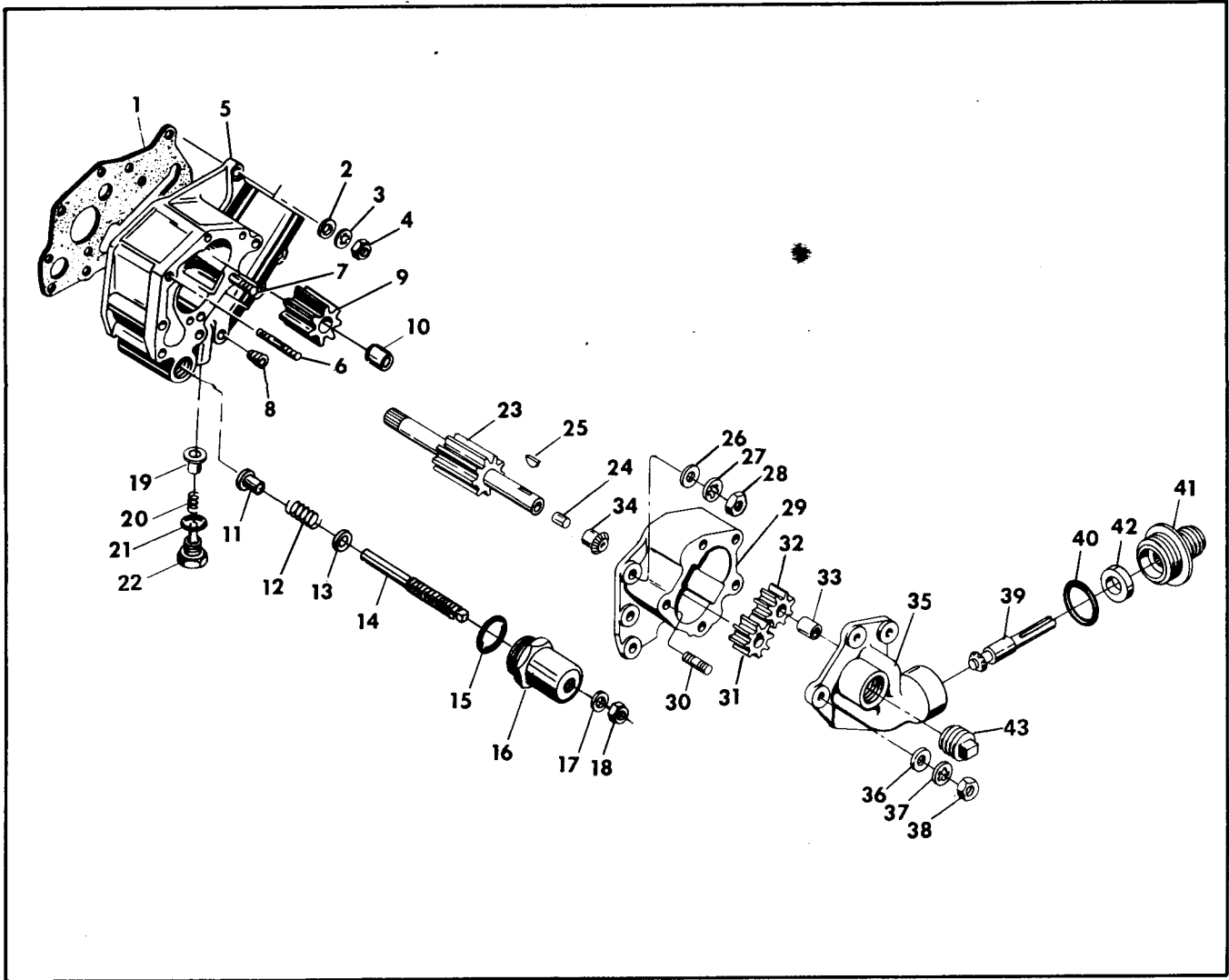


FIGURE 15. OIL PUMP ASSEMBLY, TSIO-520-C,G,H,M,P,R.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY																						
			TSIO-520																						
			1	2	3	4	5				B	C	D	E	G	H	J	K	L	M	N	P	R		
15- 1	538185	\$ Gasket, Oil Pump-to-Crankcase											1			1				1		1	1		
	632856	Housing Assembly, Oil Pump, Complete										1				1				1		1	1		
ATTACHING PARTS																									
-2	20522	Washer, Plain										10			10	10					10		10	10	
-3	MS35338-44	Washer, Lock										11			11	11					11		11	11	
-4	2437	Nut, Plain, Hex 1/4 - 28										11			11	11					11		11	11	
* * * * *																									
-5	632770	. Housing and Shaft Assembly, Oil Pump										1			1	1					1		1	1	
-6	401800	† . . Stud, 1/4 x 1-1/16 Inch Long										1			1	1					1		1	1	
-7	401832	† . . Stud, 1/4 x 2-13/16 Inch Long										1			1	1					1		1	1	
-8	629518-1H	. . Plug, Square Head, 1/8 - 27										1			1	1					1		1	1	
-9	629218	. Gear Assembly, Oil Pump Driven										1			1	1					1		1	1	
-10	539523	. . Bushing, Oil Pump Gear										2			2	2					2		2	2	
-11	631618	. Plunger, Oil Pressure Relief Valve										1			1	1					1		1	1	
-12	634150	. Spring, Oil Pressure Relief Valve										1			1	1					1		1	1	
-13	631653	. Seat, Spring Guide										1			1	1					1		1	1	
-14	632761	. Screw, Adjusting										1			1	1					1		1	1	

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520													
				B	C	D	E	G	H	J	K	L	M	N	P	R	
15-15	AN900-18	\$	Gasket, Annular	1				1	1					1		1	1
-16	642224		Housing, Oil Pressure Relief Valve	1				1	1					1		1	1
-17	X1473		Washer, Copper	1				1	1					1		1	1
-18	632762		Nut, Adjusting Screw, 5/16 - 24	1				1	1					1		1	1
-19	631638		Valve, Oil Filter By-Pass	1				1	1					1		1	1
-20	631478		Spring, Oil Filter By-Pass Valve	1				1	1					1		1	1
-21	AN900-14	\$	Gasket, Annular	1				1	1					1		1	1
-22	631995		Plug & Pin Assy., Oil Pump By-Pass	1				1	1					1		1	1
-23	629263		Shaftgear Assembly, Tach Drive	1				1	1					1		1	1
-24	535634		Pin, Dowel	1				1	1					1		1	1
-25	633342		Key, Woodruff	1				1	1					1		1	1
-26	629084		Body Assembly, Scavenge Pump														
ATTACHING PARTS																	
-27	20522		Washer, Plain			1		1	1					1		1	1
-28	MS35338-44		Washer, Lock			1		1	1					1		1	1
-29	2437		Nut, Plain, Hex, 1/4 - 28			1		1	1					1		1	1
* * * * *																	
-30	401963	†	Stud, 1/4 x 1 Inch Long			1		1	1					1		1	1
-31	628885		Gear, Scavenge Pump Driver			1		1	1					1		1	1
-32	628900		Gear Assy., Scavenge Pump, Driven			1		1	1					1		1	1
-33	628887		Bushing, Driven Gear			1		1	1					1		1	1
-34	535008		Gear, Bevel, Tach Drive			1		1	1					1		1	1
-35	632609		Cover, Scavenge Pump & Right Angle Tach			1		1	1					1		1	1
ATTACHING PARTS																	
-36	20522		Washer, Plain			1		1	1					1		1	1
-37	MS35338-44		Washer, Lock			1		1	1					1		1	1
-38	2437		Nut, Plain, Hex, 1/4 - 28			1		1	1					1		1	1
* * * * *																	
-39	631650		Shaft Assembly, Tach Drive			1		1	1					1		1	1
-40	632085	\$	Gasket, Tach Drive Housing			1		1	1					1		1	1
-41	21208A1		Housing Assembly, Tach Drive			1		1	1					1		1	1
-42	640087	\$	Seal, Oil Tach Housing			1		1	1					1		1	1
-43	629518-4H		Plug, Scavenge Pump Inlet			1		1	1					1		1	1
* * * * *																	



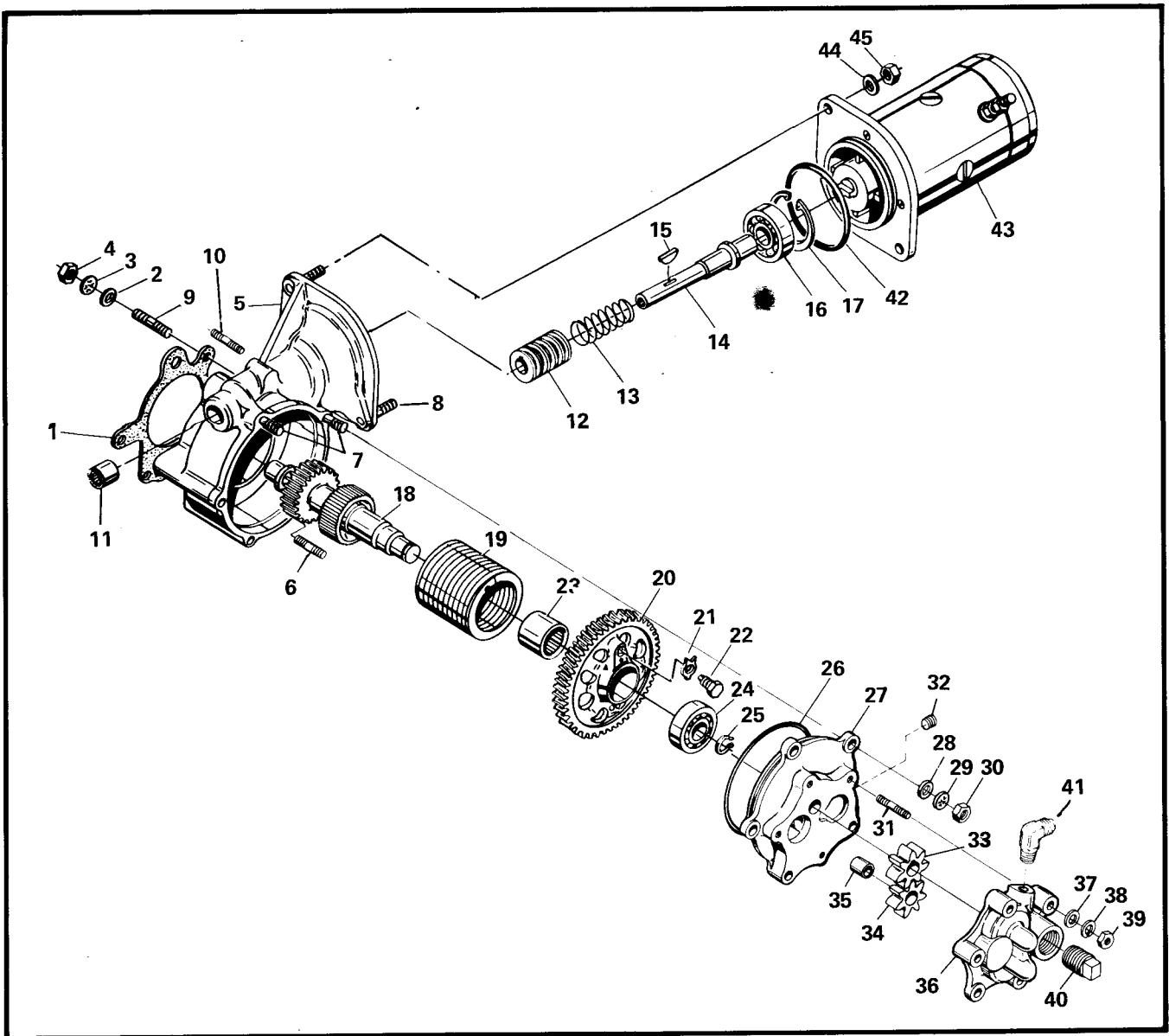


FIGURE 16. STARTER & STARTER ADAPTER ASSEMBLY, TSIO-520-B,D,E,J,K,N.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY																																															
			TSIO-520																																															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45			
16-1	630916	Gasket	1																																															
	642085A2	Adapter Assy., Starter Drive Comp	1																																															
ATTACHING PARTS																																																		
-2	2473	Washer, Plain	4																																															
-3	MS35338-45	Washer, Lock	4																																															
-4	2439	Nut, Plain, Hex	4																																															
* * * *																																																		
-5	642085	Adapter Assembly	1																																															
-6	401814	Stud, 5/16 x 1-7/8 Inch Long	1																																															
-7	401881	Stud, 5/16 x 1-1/8 Inch Long	2																																															
-8	402127	Stud, 3/8 x 1-17/32 Inch Long	2																																															
-9	401814	Stud, 5/16 x 1-7/8 Inch Long	1																																															
-10	401971	Stud, 5/16 x 1-5/8 Inch Long	1																																															
-11	641368	Bearing, Needle	1																																															
-12	539805	Gear, Starter Worm	1																																															
-13	536552	Spring, Starter Worm Gear	1																																															
-14	631252	Shaft, Worm Drive	1																																															

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520														
			B	C	D	E	G	H	J	K	L	M	N	P	R		
16 -15	MS35756-8	. Key, Woodruff	1		1	1				1	1			1			
-16	X13041	. Bearing, Ball	1		1	1				1	1			1			
-17	502287	. Ring, Retaining	1		1	1				1	1			1			
-18	639406	. Shaftgear Assembly, Starter	1		1	1				1	1			1			
-19	539800	† . Spring, Clutch	1		1	1				1	1			1			
-20	630681	. Gear Assembly Starter	1		1	1				1	1			1			
ATTACHING PARTS																	
-21	501867	. Washer, Tab	1		1	1				1	1			1			
-22	633845	. Screw, Special, 1/4 - 20 x 13/32 Inch Long	1		1	1				1	1			1			
* * * *																	
-23	630680	. . Bearing, Roller	1		1	1				1	1			1			
-24	534685	. Bearing, Ball	1		1	1				1	1			1			
-25	521649	. Ring, Retaining	1		1	1				1	1			1			
-26	AN123902	\$ . O-Ring	1		1	1				1	1			1			
-27	639405	① . Cover Assembly	1		1	1				1	1			1			
ATTACHING PARTS																	
-28	2473	. Washer, Plain	3		3	3				3	3			3			
-29	MS35338-45	. Washer, Lock	3		3	3				3	3			3			
-30	2439	. Nut, Plain, Hex	3		3	3				3	3			3			
* * * *																	
-31	401813	† . . Stud, 5/16 x 1-11/16 Inch Long	4		4	4				4	4			4			
-32	AN932-2	. . Plug, Pipe, 1/8 - 27	1		1	1				1	1			1			
-33	639388	. Gear, Scavenge Pump, Driver	1		1	1				1	1			1			
-34	635334	. Gear Assy., Scavenge Pump, Driven	1		1	1				1	1			1			
-35	632595	. . Bushing	1		1	1				1	1			1			
-36	639407	① . Body Assembly, Scavenge Pump	1		1	1				1	1			1			
ATTACHING PARTS																	
-37	2473	. Washer, Plain	4		4	4				4	4			4			
-38	MS35338-45	. Washer, Lock	4		4	4				4	4			4			
-39	2439	. Nut, Plain, Hex	4		4	4				4	4			4			
* * * *																	
-40	629518-4H	. . Plug, Square Head, 1/2 - 14 NPTF	1		1	1				1	1			1			
-41	628437	. . Elbow, 90 Degree	1		1	1				1	1			1			
-42	MS9021.038	\$ O-Ring	1		1	1				1	1			1			
-43	637847	Starter, 24 Volt	1			1				1	1			1			
-43	634592	Starter, 12 Volt				1											
ATTACHING PARTS																	
-44	401507	Washer, Plain	2		2	2				2	2			2			
-45	2441	Nut, Plain, Hex	2		2	2				2	2			2			

NOTE ① See Service Bulletin M72-8 for rework of old pump.

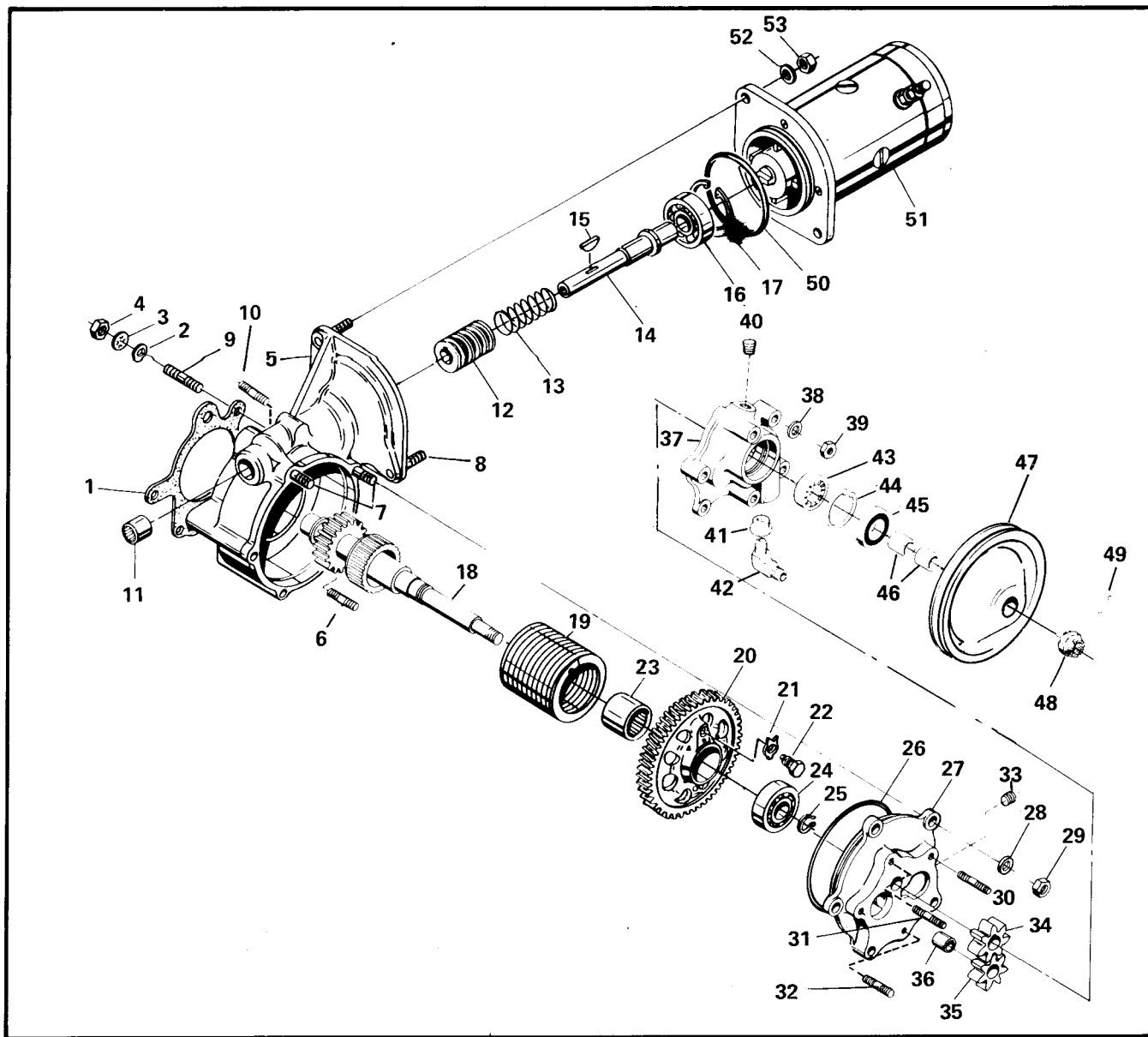


FIGURE 17. STARTER & STARTER ADAPTER ASSEMBLY, TSIO-520-L

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																	
			1	2	3	4	5				J	K	L	M	N	P	R			
17-1	630916	\$ Gasket													1					
	642087A2	Adapter Assy., Starter Drive Complete													1					
		ATTACHING PARTS																		
-2	2473	Washer, Plain													4					
-3	MS35338-45	Washer, Lock													4					
-4	2439	Nut, Plain, Hex													4					
		* * * *																		
-5	642087	. Adapter Assembly													1					
-6	352655	† . Stud, 5/16 x 2-11/16 Inch Long													1					
-7	401881	† . Stud, 5/16 x 1-1/8 Inch Long													2					
-8	402127	† . Stud, 3/8 x 1-17/32 Inch Long													2					
-9	401814	† . Stud, 5/16 x 1-7/8 Inch Long													1					
-10	401971	† . Stud, 5/16 x 1-5/8 Inch Long													1					
-11	641368	. Bearing, Needle													1					

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY																
			TSIO-520																
			B	C	D	E	G	H	J	K	L	M	N	P	R				
17 -12	539805	. Gear, Starter Worm											1						
-13	536552	. Spring, Starter Worm Gear											1						
-14	631252	. Shaft, Worm Drive											1						
-15	MS35756-8	. Key, Woodruff											1						
-16	X13041	. Bearing, Ball											1						
-17	502287	. Ring, Retaining											1						
-18	640803	. Shaftgear Assembly, Starter											1						
-19	539800	† . Spring, Clutch											1						
-20	630681	. Gear Assembly, Starter											1						
ATTACHING PARTS																			
-21	501867	. Washer, Tab											1						
-22	633845	. Screw, Special, 1/4 - 20 x 13/32 Inch Long											1						
* * * *																			
-23	630680	. . Bearing, Roller											1						
-24	640731	. Bearing, Ball											1						
-25	502293	. Ring, Retaining											1						
-26	AN123902	\$ . O-Ring											1						
-27	640749	. Cover Assembly											1						
ATTACHING PARTS																			
-28	2473	. Washer, Plain											3						
-29	2439	. Nut, Plain, Hex											3						
* * * *																			
-30	401813	† . . Stud, 5/16 x 1-11/16 Inch Long											2						
-31	401899	† . . Stud, 5/16 x 2 Inch Long											1						
-32	352655	† . . Stud, 5/16 x 2-5/8 Inch Long											1						
-33	AN932-2	. . Plug, Pipe 1/8 - 27											1						
-34	640808	. Gear, Scavenge Pump Driver											1						
-35	640746	. Gear Assy., Scavenge Pump Driven											1						
-36	632595	. Bushing											1						
-37	640766A1	. Body Assembly, Scavenge Pump											1						
ATTACHING PARTS																			
-38	2473	. Washer, Plain											4						
-39	2439	. Nut, Plain, Hex											4						
* * * *																			
-40	401752	. . Plug, Pipe 1/8 - 27 NPTF											1						
-41	AN912-4	. . Bushing, Reducer											1						
-42	MS20822-8	. . Elbow, 90 Degree											1						
-43	637817	. Bearing, Ball											1						
-44	502020	. Ring, Retaining											1						
-45	640730	. Seal, Oil											1						
-46	640733	. Sleeve, Starter Shaft											2						
-47	640801	. Sheave, Driver											1						
-48	MS9358-15	. Nut, Castle											1						
-49	MS9245-62	. Pin, Cotter											1						
-50	MS9021-038	\$ O-Ring											1						
-51	637847	Starter, 24 Volt											1						
ATTACHING PARTS																			
-52	401507	Washer, Plain											2						
-53	2441	Nut, Plain, Hex											2						

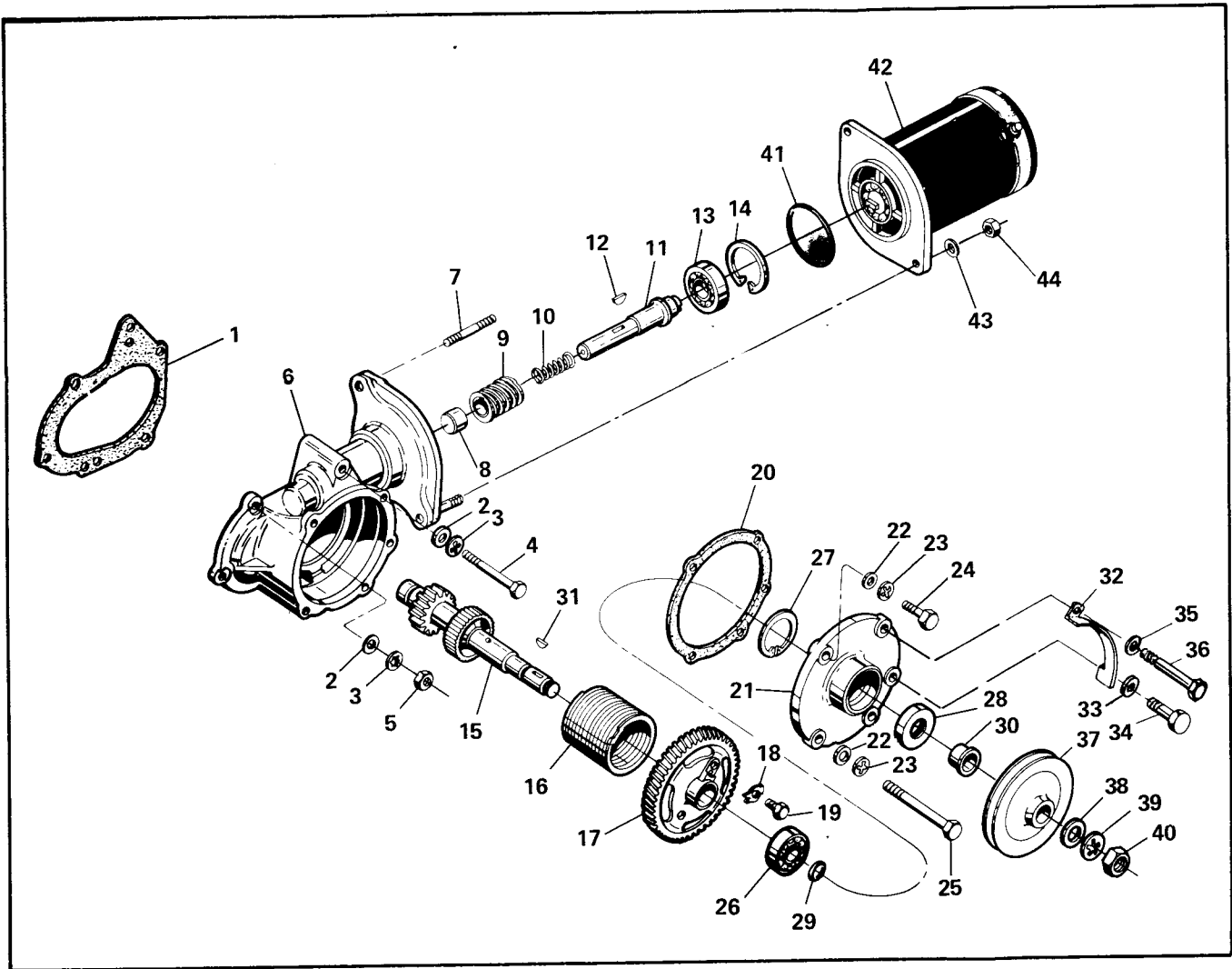


FIGURE 18. STARTER & STARTER ADAPTER ASSEMBLY, TSIO-520-C,G,H,M,P,R.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY																																																
			TSIO-520																																																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44					
18- 1	537745	\$ Gasket, Adapter-to-Crankcase . . . . .	1																																																
	635050A4	Adapter, Assembly, Starter Complete . . . . .	1																																																
		ATTACHING PARTS																																																	
-2	2473	Washer, Plain . . . . .			3																																														
-3	MS35338-45	Washer, Lock . . . . .			3																																														
-4	537742	Screw, Hex Head, 5/16 - 18 x 2-13/16 Inch long . . . . .			1																																														
-5	2439	Nut, Plain Hex . . . . .			2																																														
		* * * * *																																																	
-6	635050A1	Adapter Assembly, Starter . . . . .			1																																														
-7	402127	† Stud, 3/8 x 1-17/32 Inch Long . . . . .			2																																														
-8	641368	Bearing, Needle . . . . .			1																																														
-9	539805	Gear, Starter Worm . . . . .			1																																														
-10	536552	Spring, Starter Worm Gear . . . . .			1																																														
-11	631252	Shaft, Worm Drive . . . . .			1																																														
-12	MS35756-8	Key, Woodruff . . . . .			1																																														
-13	X13041	Bearing, Ball . . . . .			1																																														
-14	502287	Ring, Retaining . . . . .			1																																														

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																			
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R		
18 -15	539568	. Shaftgear, Starter .....							1				1	1				1		1	1	
-16	539800	† . Spring, Clutch .....							1				1	1				1		1	1	
-17	539785	. Gear, Starter .....							1				1	1				1		1	1	
ATTACHING PARTS																						
-18	501867	. Washer, Tab .....							1				1	1				1		1	1	
-19	633845	. Screw, Special, 1/4 - 20 x 13/32 Inch Long .....							1				1	1				1		1	1	
* * * *																						
-20	537749	\$ . Gasket, Cover-to-Adapter .....							1				1	1				1		1	1	
-21	537738A1	. Cover Assembly, Starter Adapter .....							1				1	1				1		1	1	
ATTACHING PARTS																						
-22	2473	. Washer, Plain .....							3				3	3				3		3	3	
-23	MS35338-45	. Washer, Lock .....							3				3	3				3		3	3	
-24	537750	. Screw, 5/16 - 18 x 1-1/8 Inch Long .....							1				1	1				1		1	1	
-25	538999	. Bolt, 5/16 - 18 x 3-5/8 Inch Long .....							2				2	2				2		2	2	
* * * *																						
-26	534685	. . Bearing, Ball .....							1				1	1				1		1	1	
-27	534715	. . Ring, Retaining .....							1				1	1				1		1	1	
-28	534938	\$ . . Seal, Oil .....							1				1	1				1		1	1	
-29	AN123862	\$ . O-Ring .....							1				1	1				1		1	1	
-30	534980	. Sleeve .....							1				1	1				1		1	1	
-31	MS35756-8	Key, Woodruff .....							1				1	1				1		1	1	
-32	628760	Indicator, Engine Timing .....							1				1	1				1		1	1	
ATTACHING PARTS																						
-33	501868	Washer, Tab .....							1				1	1				1		1	1	
-34	537750	Screw, 5/16 - 18 x 1-1/8 Inch Long .....							1				1	1				1		1	1	
-35	MS35338-45	Washer, Lock .....							1				1	1				1		1	1	
-36	538999	Bolt, 5/16 - 18 x 3-5/8 Inch Long .....							1				1	1				1		1	1	
* * * *																						
-37	534775	Sheave, Generator Drive .....							1				1	1				1		1	1	
ATTACHING PARTS																						
-38	AN960C916	Washer, Plain .....							1				1	1				1		1	1	
-39	13XX299	Washer, Lock .....							1				1	1				1		1	1	
-40	AN316-9R	Nut, Check .....							1				1	1				1		1	1	
* * * *																						
-41	MS9021-038	\$ O-Ring .....							1				1	1				1		1	1	
-42	634592	Starter .....							1				1	1				1		1	1	
ATTACHING PARTS																						
-43	539058	Washer, Plain .....							2				2	2				2		2	2	
-44	2441	Nut, Plain, Hex .....							2				2	2				2		2	2	

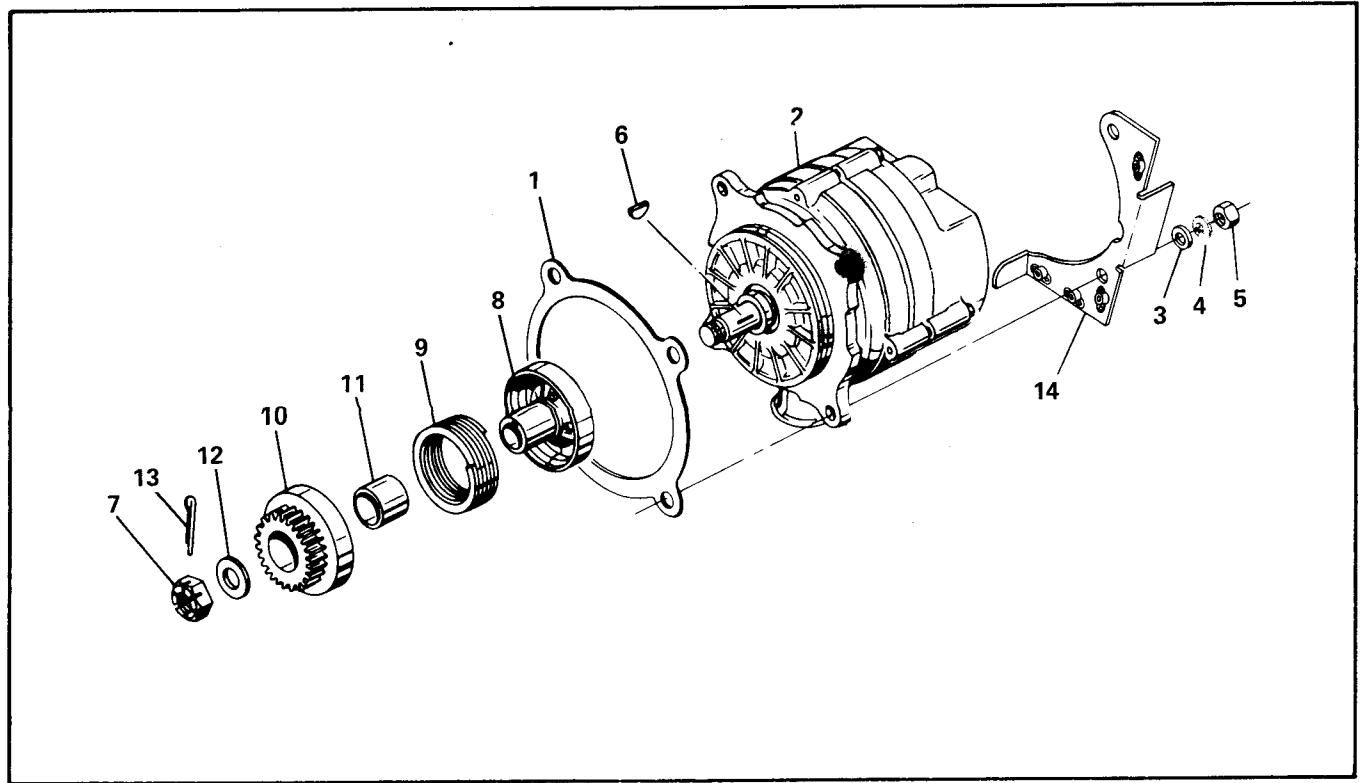


FIGURE 19. ALTERNATOR ASSEMBLY, TSIO-520-B,D,E,J,K,L,N.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																			
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R		
19-1	629436	\$ Gasket, Alternator							1		1											
-2	632590	① Alternator, 24 Volt, 40 AMP							1		1											
-2	631547	① Alternator, 12 Volt, 70 AMP								1												
ATTACHING PARTS																						
-3	2473	Washer, Plain							4		4	4										
-4	MS35338-45	Washer, Lock							4		4	4										
-5	2439	Nut, Hex, 5/16 - 24							4		4	4										
* * * *																						
-6	632437	. Key, Woodruff							1		1	1										
-7	632436	. Nut, Slotted, Hex							1		1	1										
-8	640934	Hub Assy., Alternator Gear Driven							1		1	1		1	1	1				1		
-9	630655	. Spring, Clutch							1		1	1		1	1	1				1		
-10	640932	. Gear Assembly, Alternator Driven							1		1	1		1	1	1				1		
-11	629638	. . Bushing, Alternator Driven							1		1	1		1	1	1				1		
-12	630691	. Washer, Thrust							1		1	1		1	1	1				1		
-13	MS24665-302	Pin, Cotter							1		1	1		1	1	1				1		
-14	640056	Support Assembly, Baffle								1						1						
	631656	Regulator, 24 Volt (Not Illustrated)							1		1											

NOTE ① Alternator and brackets for models C, G, H, J, K, L, M, P & R are to be furnished by customer.

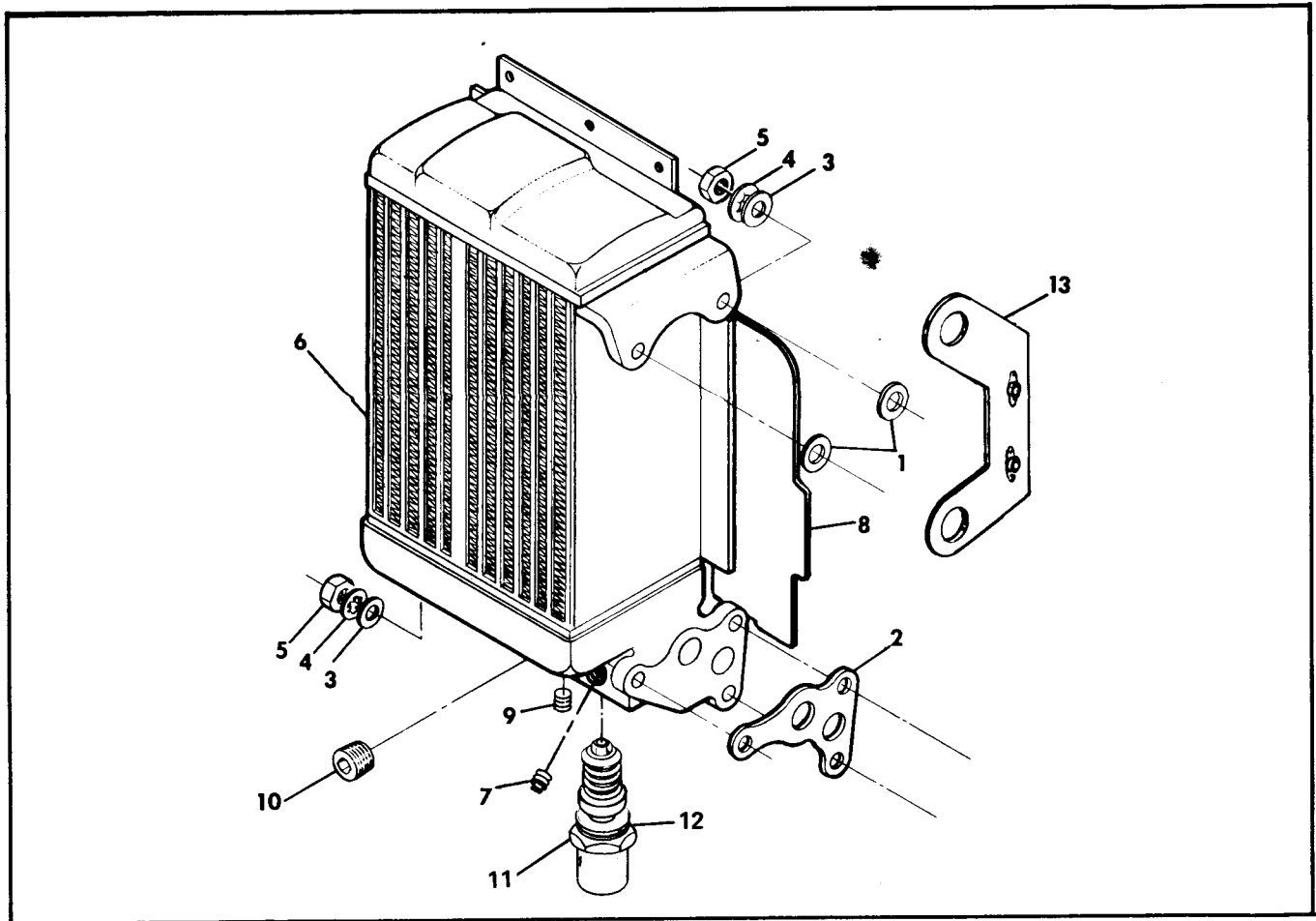


FIGURE 20. OIL COOLER ASSEMBLY, TSIO-520-B,D,E,J,K,N.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																			
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R		
20-1	630849	\$ Gasket, Oil Cooler-to-C/C, Top						2					2	2				2				
-1	632706	Washer, Plain, Oil Cooler-to-C/C, Top									2											
-2	631059	\$ Gasket, Crankcase-to-Oil Cooler						1			1		1	1				1				
	633287	Oil Cooler and Baffle Assembly						1			1		1									
	637132	Oil Cooler and Baffle Assembly									1		1					1				
ATTACHING PARTS																						
-3	2474	Washer, Plain						4		4	4		4	4				4				
-4	MS35338-46	Washer, Lock						4		4	4		4	4				4				
-5	2441	Nut, Plain, Hex, 3/8 x 24						4		4	4		4	4				4				
* * * *																						
-6	635996	. Cooler, Oil						1		1			1									
-6	636900	. Cooler, Oil								1			1					1				
-7	629518-1H	. Plug, 1/8 - 27 NPTF						1		1	1		1	1				1				
-8	632224	. Baffle, Oil Cooler						1		1	1		1	1				1				
-9	2024	Plug, Pressure Port, 1/8 - 27 NPTF						1		1			1	1				1				
-9	634628	Elbow, 90 Degree, 1/8 NPTF-to-1/8 Tube								1												
-10	629518-3H	Plug, Oil Outlet, 3/8 - 18 NPTF						1		1	1		1	1				1				
-11	639305	Oil Temperature Control Valve						1		1	1		1	1				1				
-12	627496	. Gasket, Oil Temperature Control Valve						1		1	1		1	1				1				
-13	632126	Support Assembly, Baffle								1												



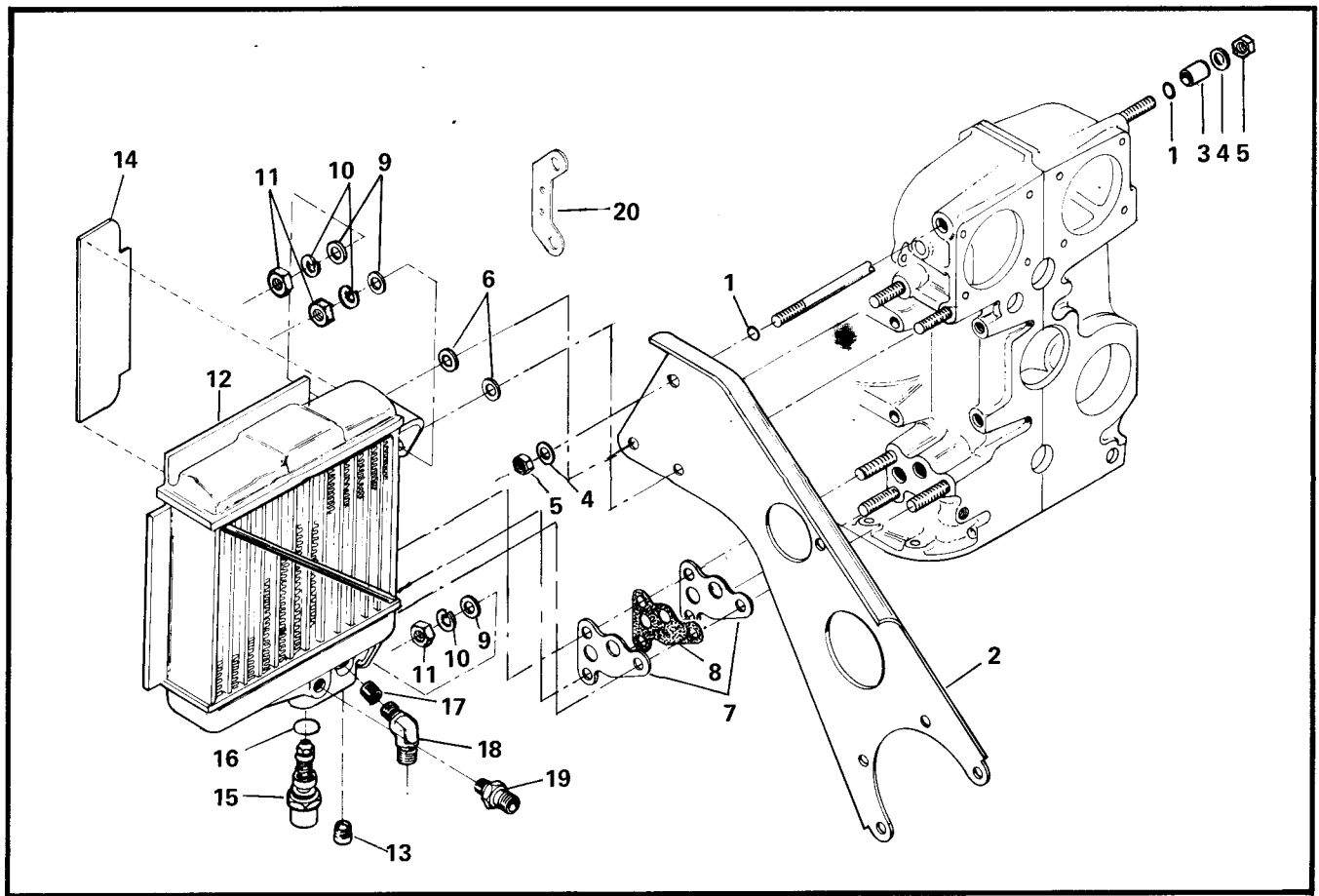


FIGURE 21. OIL COOLER ASSEMBLY, TSIO-520-L

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY															
			TSIO-520															
1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R	
21-1	AN123862	O-Ring												2				
-2	640321	Bracket, Turbo												1				
ATTACHING PARTS																		
-3	640826	Spacer												1				
-4	24239	Washer, Plain												2				
-5	2441	Nut												2				
* * * *																		
-6	630849	Gasket												2				
-7	631059	Gasket												2				
-8	640342	Spacer												1				
	637132	Oil Cooler Assembly												1				
ATTACHING PARTS																		
-9	2474	Washer, Plain												4				
-10	MS35338-46	Washer, Lock												4				
-11	2441	Nut												4				
* * * *																		
-12	636900	Oil Cooler												1				
-13	629518-1H	Plug, 1/8 - 27 NPTF												1				
-14	632224	Baffle												1				
-15	639305	Oil Temperature Control Valve												1				
-16	627496	Gasket, Oil Temperature Control Valve												1				
-17	AN912-2	Bushing, Reducer												1				
-18	MS20823-6B	Elbow												1				
-19	AN816-4B	Nipple												1				
-20	632126	Support Assembly, Baffle												1				

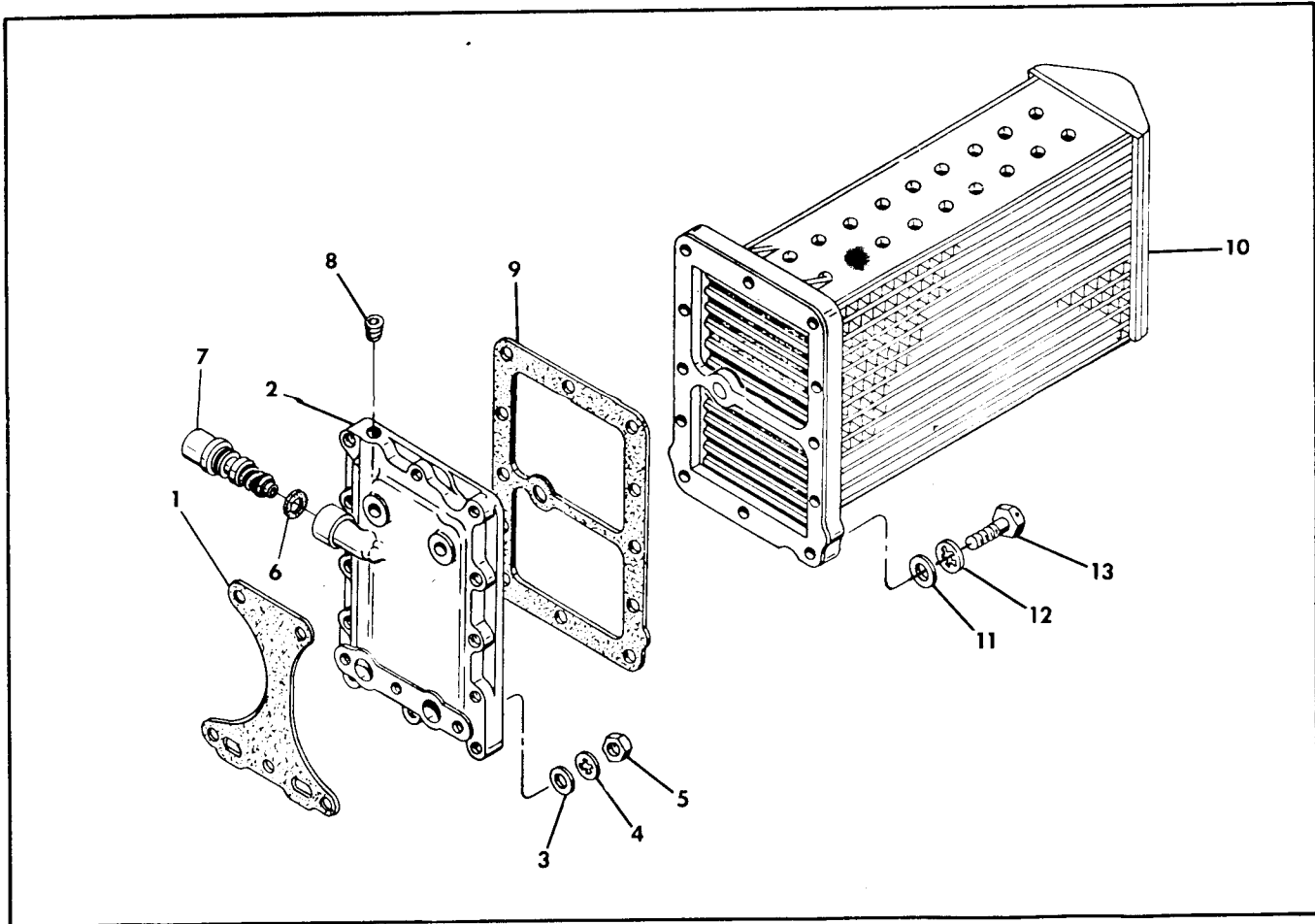


FIGURE 22. OIL COOLER ASSEMBLY, TSIO-520-C,G,H,M,P,R.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																		
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R	
22-1	626341	① \$ Gasket, Crankcase-to-Plate																1	1	1	
-2	626332	Plate Oil Cooler Adapter																2	2	2	
ATTACHING PARTS																					
-3	20522	Washer, Plain																5	5	5	
-4	MS35338-44	Washer, Lock																5	5	5	
-5	2437	Nut, Plain, Hex																5	5	5	
* * * *																					
-6	639305	Oil Temperature Control Valve																1	1	1	
-7	627496	Gasket, Oil Temperature Control Valve																1	1	1	
-8	2026	Plug, Pipe, 1/4 - 18																1	1	1	
-9	626342	① \$ Gasket, Oil Cooler-to-Adapter																1	1	1	
-10	639171	Cooler Assembly, Oil																1	1	1	
ATTACHING PARTS																					
-11	20522	Washer, Plain																12	12	12	
-12	MS35338-44	Washer, Lock																12	12	12	
-13	535668	Screw, 1/4 - 20 x 3/8 Inch Long																12	12	12	

NOTE ① Earlier models using a 626189 oil cooler will require the use of 625303 and 537282 gaskets, respectively.

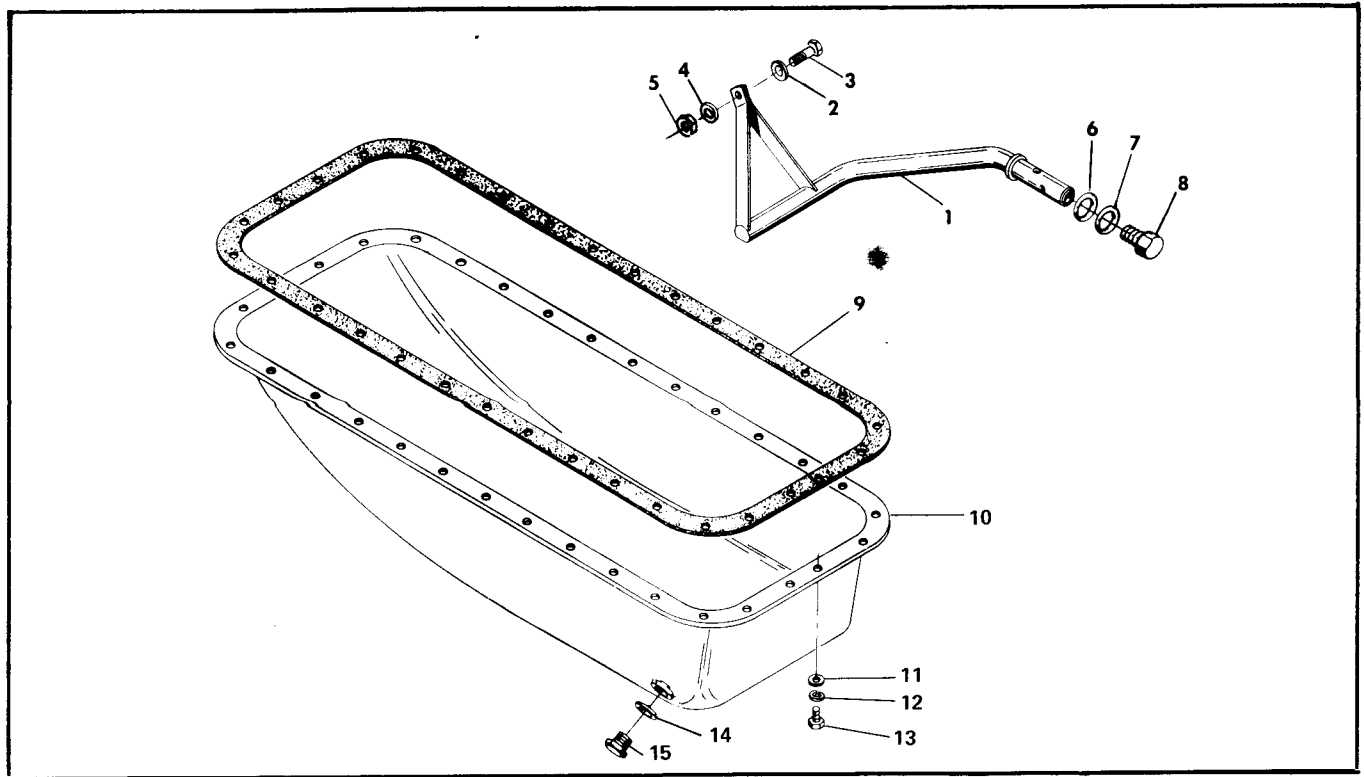


FIGURE 23. OIL SUMP, TSIO-520-B,E,J,K,L,N.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																			
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R		
23- 1	632946	Tube Assembly, Suction Oil Pump	1						1				1	1	1		1					
		ATTACHING PARTS																				
-2	631367	Washer, Special	1						1				1	1	1		1					
-3	AN4-17A	Bolt	1						1				1	1	1		1					
-4	20522	Washer	1						1				1	1	1		1					
-5	632443-4	Nut, 5/16 - 24, Marsden	1						1				1	1	1		1					
		* * * *																				
-6	AN900-12	\$ Gasket, Annular	1						1				1	1	1		1					
-7	MS35769-12	\$ Gasket, Annular	1						1				1	1	1		1					
-8	2265	Plug	1						1				1	1	1		1					
-9	534743	\$ Gasket, Oil Sump	1						1				1	1	1		1					
-10	632876	Sump Assembly, Oil	1						1				1	1			1					
-10	537650	Sump Assembly, Oil													1							
		ATTACHING PARTS																				
-11	2473	Washer, Plain	30						30				30	30	28		30					
-12	13XX202B	Washer, Lock	30						30				30	30	28		30					
-13	530346	Screw, 15/16 - 18 x 7/8 Inch Long	30						30				30	30	28		30					
		* * * *																				
-14	AN900-10	\$ Gasket, Annular	1						1				1	1	1		1					
-15	532432	① Plug, Oil Drain, 5/8 - 18	1						1				1	1	1		1					

NOTE:

① The magnetic drain plug, part number 636376 may be used as an option.

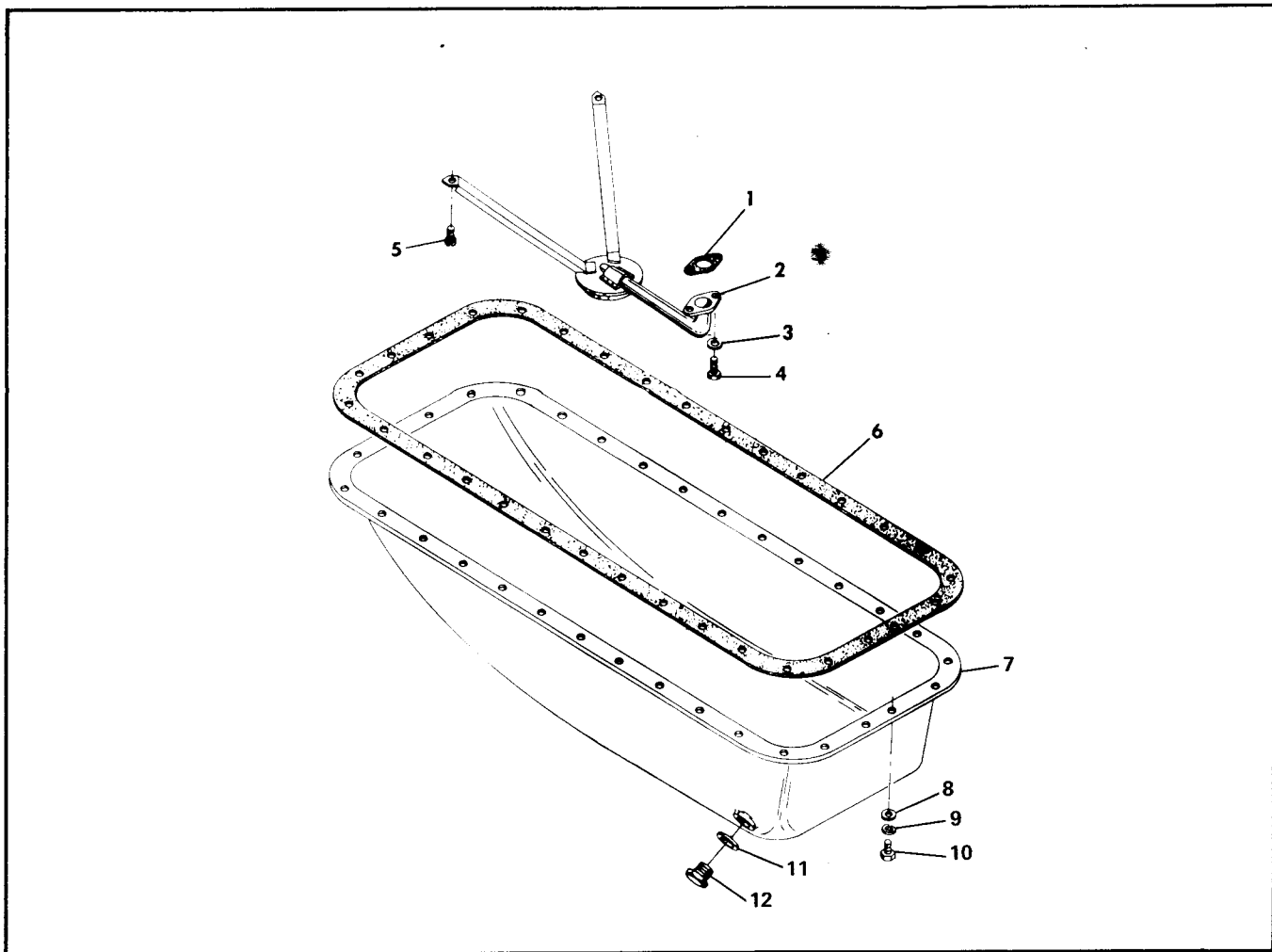


FIGURE 24. OIL SUMP, TSIO-520-C,G,M.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																			
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R		
24- 1	534940	\$ Gasket, Suction Tube Assembly															1					
-2	625207	Tube Assembly, Suction Oil Pump															1					
ATTACHING PARTS																						
-3	20522	Washer, Plain															2					2
-4	MS20074-04-04	Bolt, 1/4 - 20															2					2
-5	MS20074-04-03	Screw, Cap, 1/4 - 28															2					2
* * * *																						
-6	534743	\$ Gasket, Oil Sump-to-Crankcase															1					1
-7	633412	Sump Assembly, Oil															1					1
ATTACHING PARTS																						
-8	2473	Washer, Plain															30					30
-9	13XX202B	Washer, Lock															32					32
-10	530346	Screw, Hex Head, 5/16 - 18 x 7/8 Inch Long															32					32
* * * *																						
-11	AN900-10	\$ Gasket, Annular															1					1
-12	532432	① Plug, Oil Drain, 5/8 - 18															1					1

NOTE:

① The magnetic drain plug, part number 636376 may be used as an option.

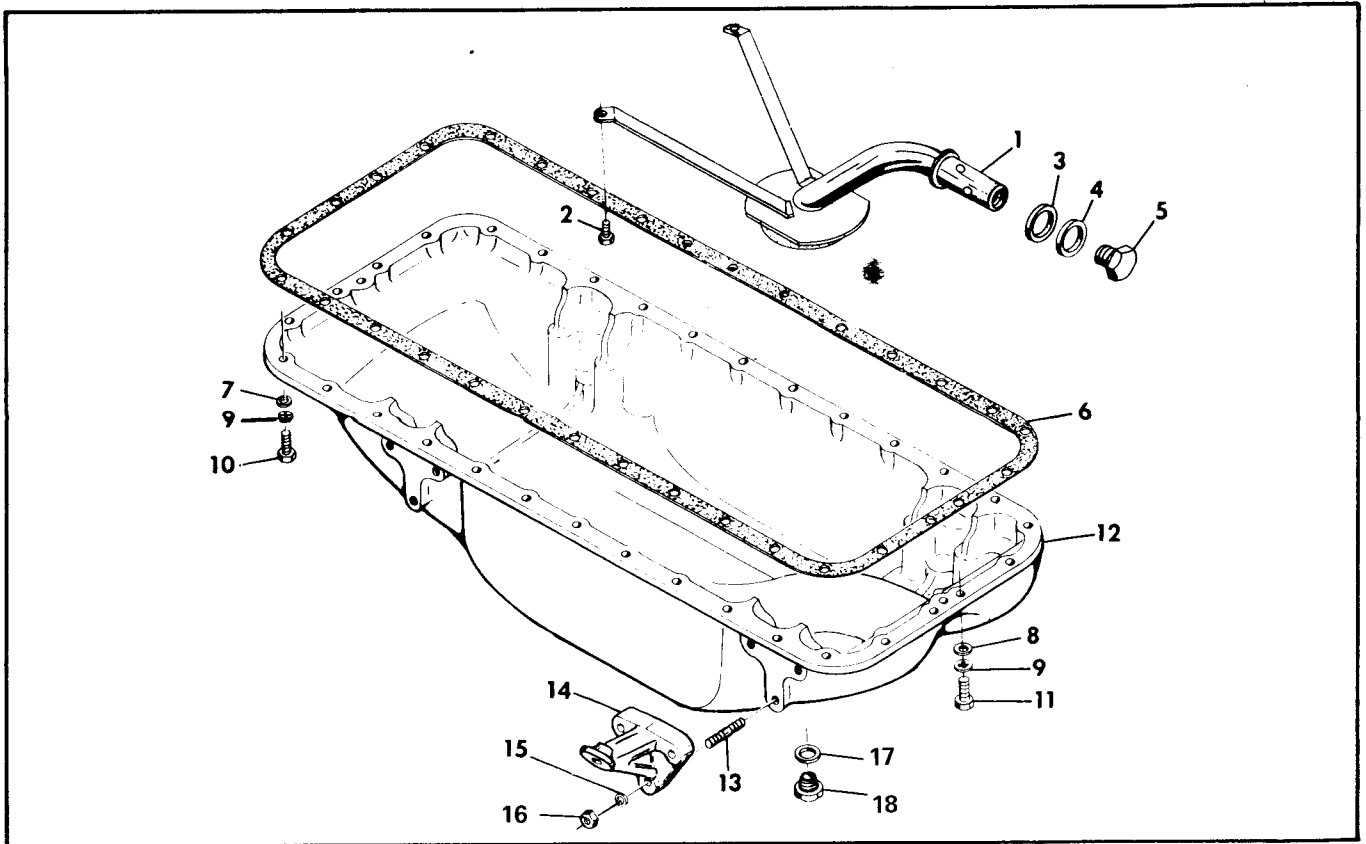


FIGURE 25. OIL SUMP, TSIO-520-D

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																			
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R		
25- 1	631008	Tube Assembly, Suction, Oil Pump .....								1												
		ATTACHING PARTS																				
-2	630966-56	Bolt, 5/16 - 18 x 9/16 Inch Long .....								2												
		* * * * *																				
-3	AN900-12	\$ Gasket, Annular .....								1												
-4	MS35769-12	\$ Gasket, Annular .....								1												
-5	2265	Plug, Oil Drain .....								1												
-6	534743	\$ Gasket, Oil Sump-to-Crankcase .....								1												
-7	628372A2	Sump Assembly, Oil .....								1												
		ATTACHING PARTS																				
-8	2473	Washer, Plain .....								27												
-9	AN960-516	Washer, Plain .....								3												
-10	13XX202B	Washer, Lock .....								30												
-11	537750	Bolt, 5/16 - 18 x 1-1/8 Inch Long .....								29												
-12	539003	Bolt, 5/16 - 18 x 1-3/8 Inch Long .....								1												
		* * * * *																				
-13	401860	† Stud, 3/8 x 1-3/16 Inch Long .....								12												
-14	632663	Bracket, Engine Mount .....								4												
		ATTACHING PARTS																				
-15	AN960-616L	Washer, Plain .....								12												
-16	2441	Nut, Plain, Hex .....								12												
		* * * * *																				
-17	AN900-10	\$ Gasket, Annular .....								1												
-18	2265	Plug, Oil Drain .....								1												

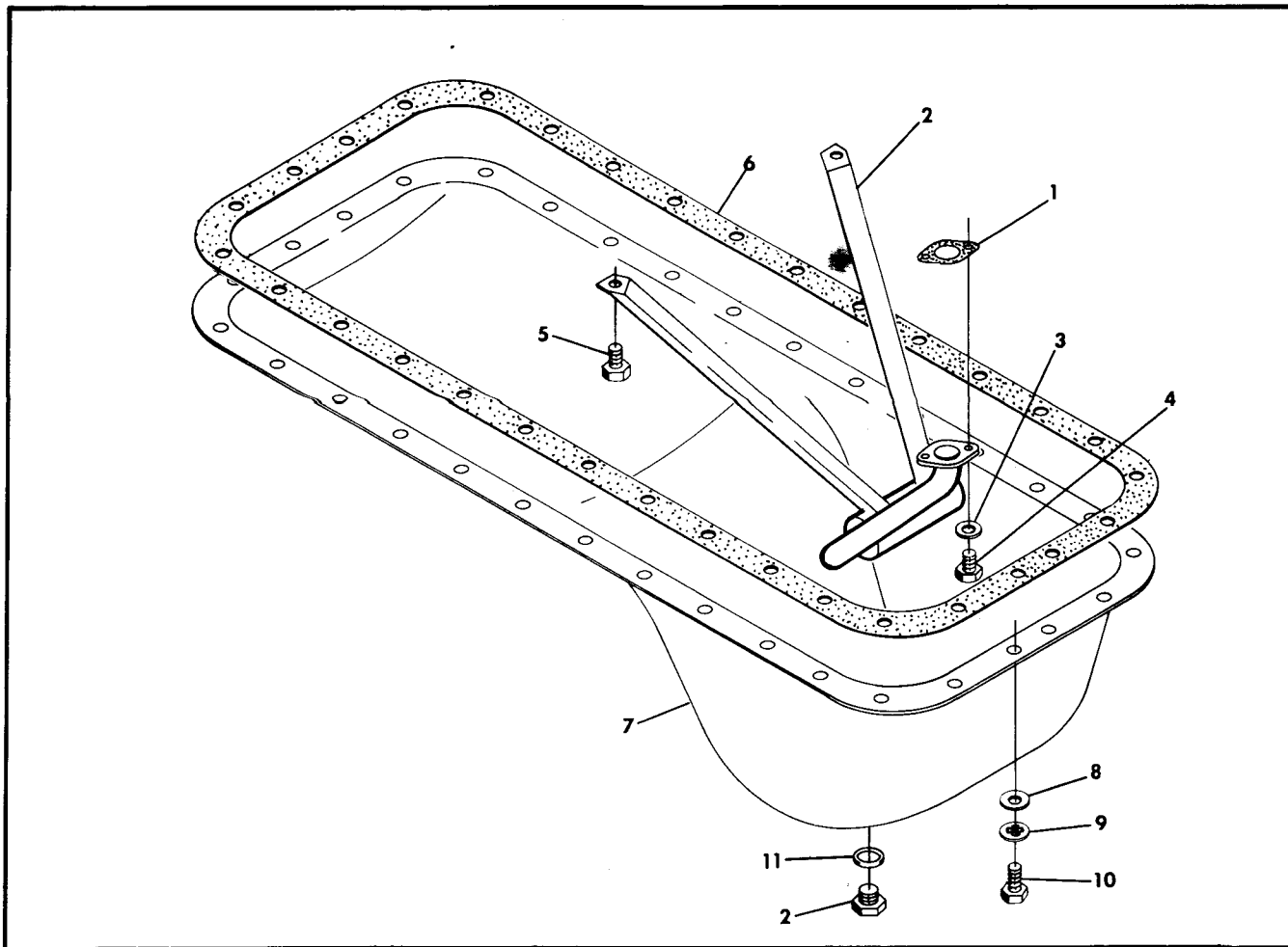


FIGURE 26. OIL SUMP, TSIO-520-H.P.R.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY																		
			TSIO-520																		
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R	
26-1	534940	\$ Gasket, Suction Tube Assembly											1							1	1
-2	635640	Tube Assembly, Oil Pump Suction											1							1	1
ATTACHING PARTS																					
-3	20522	Washer, Plain											2							2	2
-4	MS20074-04-04	Bolt, 1/4 - 20 x 19/32 Inch Long											2							2	2
-5	MS20074-04-03	Bolt, 1/4 - 28 x 15/32 Inch Long											2							2	2
* * * *																					
-6	534743	\$ Gasket, Oil Sump-to-Crankcase											1							1	1
-7	635616	Sump Assembly, Oil											1							1	1
ATTACHING PARTS																					
-8	2473	Washer, Plain											30							30	30
-9	13XX202B	Washer, Lock											30							30	30
-10	530346	Screw, 5/16 - 18 x 7/8 Inch Long											30							30	30
* * * *																					
-11	AN900-10	\$ Gasket, Annular											1							1	1
-12	532432	Plug, Oil Drain											1							1	1

NOTE:

① The magnetic drain plug, part number 636376 may be used as an option

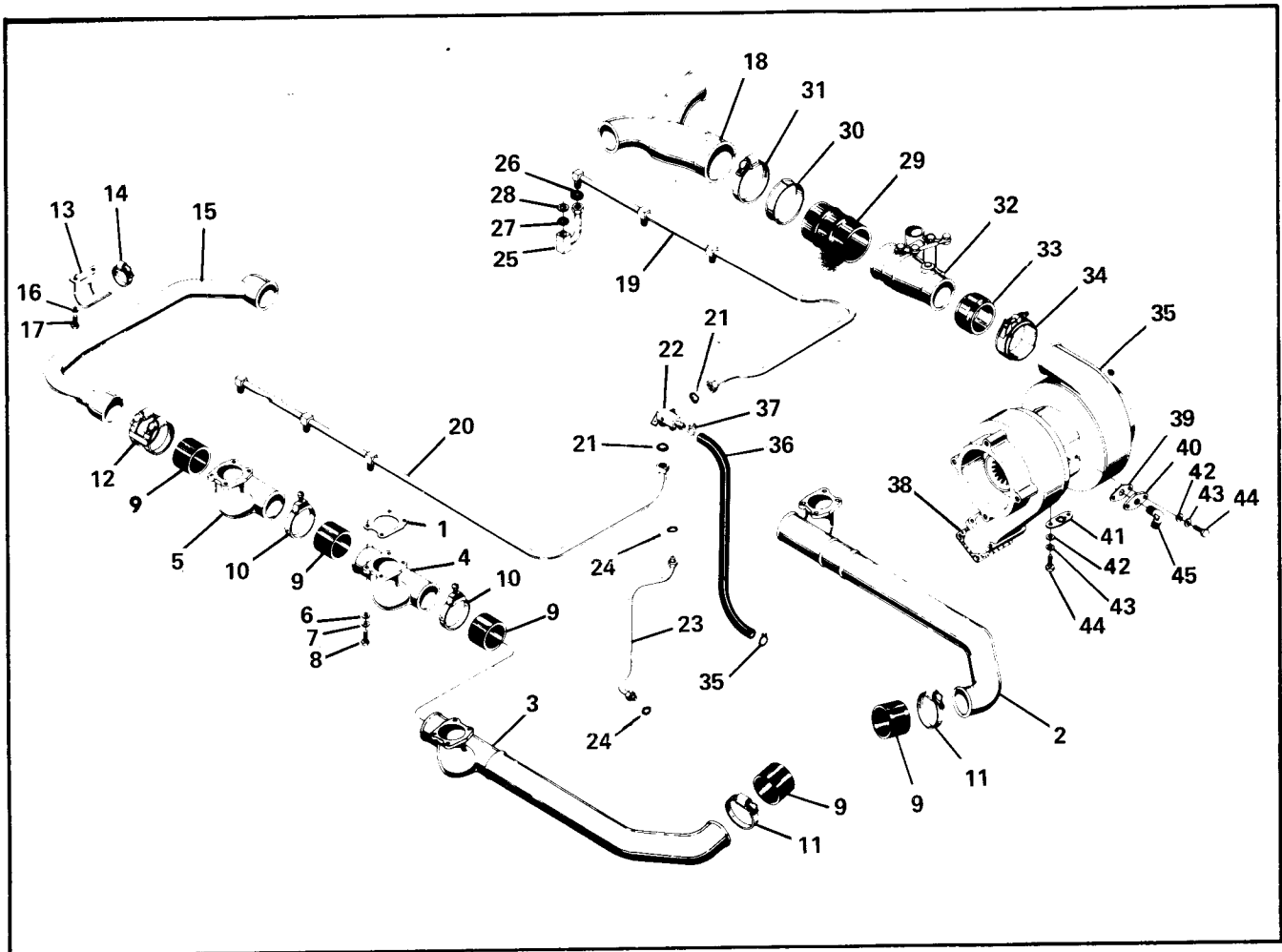


FIGURE 27. INDUCTION SYSTEM, TSIO-520-B,E

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY																			
			TSIO-520																			
			1	2	3	4	5		B	C	D	E	G	H	J	K	L	M	N	P	R	
27-1	536413	\$ Gasket, Intake Manifold							6			6										
-2	630055	Tube Assy., Intake Manifold, Cylinder No. 1							1			1										
-3	630060	Tube Assy, Intake Manifold, Cylinder No. 2							1			1										
-4	629138	Elbow, Intake Manifold, Cyl. 3-4-5							3			3										
-5	629325	Elbow, Intake Manifold, Cylinder No. 6							1			1										
ATTACHING PARTS																						
-6	20522	Washer, Plain							24			24										
-7	MS35338-44	Washer, Lock							24			24										
-8	24835	Screw, 1/4 - 20 x 7/8 Inch Long							24			24										
* * * *																						
-9	639660-11	\$ Hose, Intake Manifold							8			8										
-10	36151L	Clamp, Hose							8			8										
-11	631972	Clamp, Hose							4			4										
-12	539487	Clamp, Assembly, Hose							2			2										
-13	632871	Bracket, Balance Tube							1			1										
-14	634209	Clamp, Balance Tube-to-Bracket							1			1										
-15	637632	Tube Assembly, Balance							1			1										
ATTACHING PARTS																						

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																		
				B	C	D	E	G	H	J	K	L	M	N	P	R						
27	-16	MS35338-45	Washer, Lock	2			2															
	-17	537961	Screw, 5/16 - 18 x 1 Inch Long	2			2															
			* * * *																			
	-18	637634	Riser Assembly, Intake Manifold	1			1															
	-19	632809	Tube Assembly, 1-3-5 Side	1			1															
	-20	632810	Tube Assembly, 2-4-6 Side	1																		
	-20	633704	Tube Assembly, 2-4-6 Side				1															
	-21	633958-5	. Seal, Compression	1			1															
	-22	641888-4	Junction Box Assembly	1																		
	-22	641888-1	Junction Box Assembly				1															
	-23	633283	Tube Assembly, Junction Box-to-F/P	1			1															
	-24	633958-3	. Seal, Compression	1			1															
	-25	630965	Sleeve Assembly, Injector Nozzle	6			6															
	-26	633958-3	. Seal, Compression	1			1															
	-27	640612	\$ Washer, Rubber	6			6															
	-28	628556	Washer, Plain	6			6															
	-29	630817	\$ Convuluted Bellows	1			1															
	-30	630881	Sleeve	2			2															
	-31	AN737W98	Clamp	2			2															
	-32	632855-1A2	Air Throttle and Control Assembly (See Figure 35)	1			1															
	-33	632767	Sleeve, Coupling	1			1															
	-34	632766	Coupling, Channel Band	1			1															
	-35	632729-10	① Turbocharger	1			1															
	-36	628555-1	\$ Hose, 1/2 ID x 16 Inch Long	1			1															
	-37	536388-.75	Clamp, Hose	2			2															
	-38	636465	\$ Gasket, Exhaust Inlet	2			2															
	-39	628572	\$ Gasket, Turbo Oil Inlet	1			1															
	-40	640793	Adapter	1			1															
	-41	632710	\$ Gasket, Turbo Oil Outlet	1			1															
			ATTACHING PARTS																			
	-42	401507	Washer, Plain	4			4															
	-43	MS35338-46	Washer, Lock	4			4															
	-44	629275	Screw, 3/8 - 16 x 1 Inch Long	4			4															
			* * * *																			
	-45	AN844-8	Elbow, 45 Degree, 3/8 NPTF-to-1/2 Hose	1			1															

NOTE ① See Identification Plate for applicable dash number. For detail parts, see turbo-charger overhaul manual and parts catalog, Form X-30055.



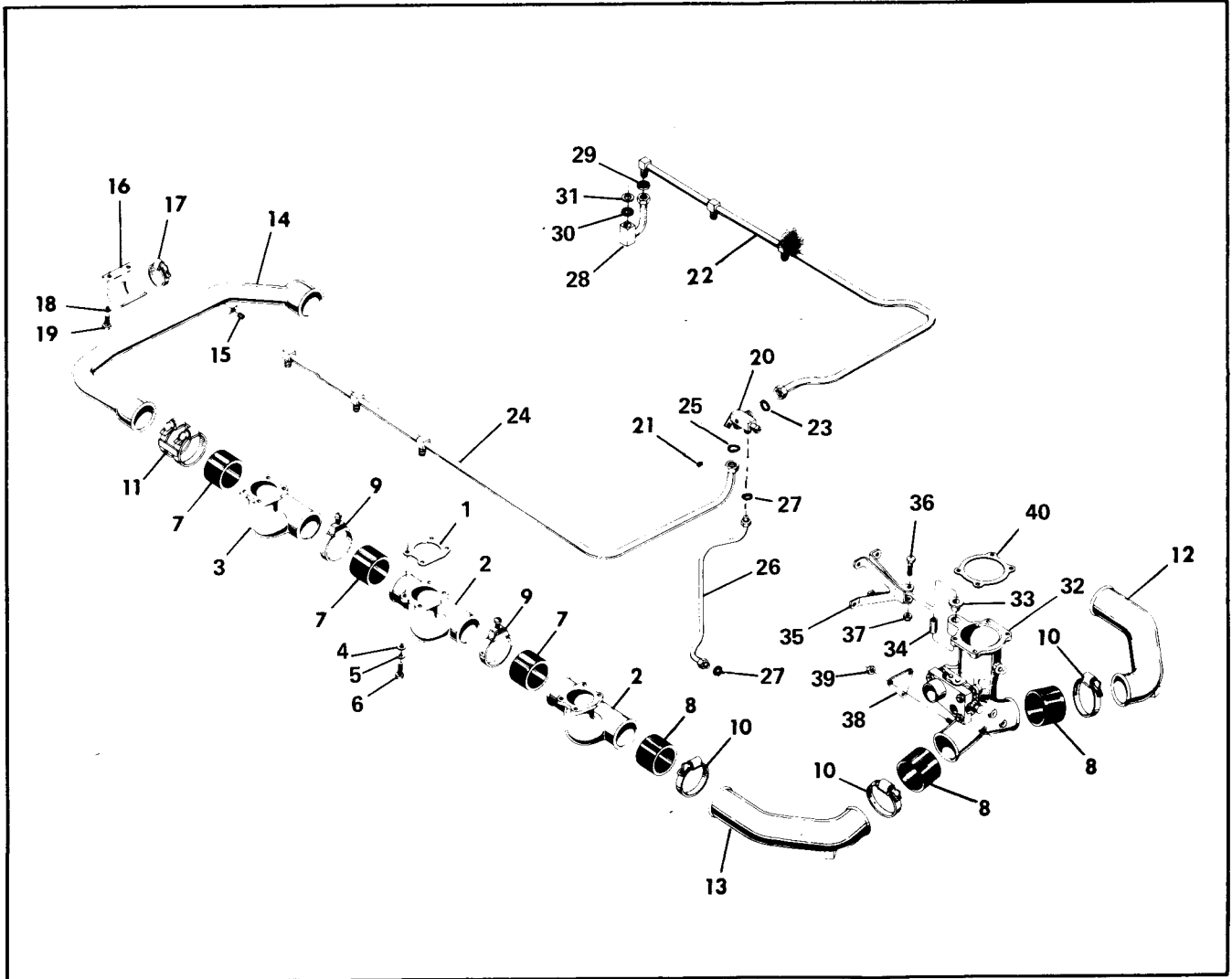


FIGURE 28. INDUCTION SYSTEM, TSIO-520-C,G,H,M,P,R.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520												
			B	C	D	E	G	H	J	K	L	M	N	P	R
28- 1	536413	\$ Gasket, Intake Manifold		6				6	6				6	6	6
-2	629138	Tube, Elbow, Intake Manifold, 1-2-3-4 Cyl		5				5	5				5	5	5
-3	629325	Tube, Elbow, Intake Manifold, Cyl. No. 6		1				1	1				1	1	1
ATTACHING PARTS															
-4	20522	Washer, Plain		24				24	24				24	24	24
-5	MS35338-44	Washer, Lock		24				24	24				24	24	24
-6	24835	Screw, 1/4 - 20 x 7/8 Inch Long		24				24	24				24	24	24
* * * *															
-7	639660-11	\$ Hose, Intake Manifold		6											
-7	639660-13	\$ Hose, Intake Manifold						6	6				6	6	6
-8	639660-12	\$ Hose, Intake Manifold, Rear		4				4	4				4	4	4
-9	36151L	Clamp, Hose		8				8	8				8	8	8
-10	631972	Clamp, Hose		4				4	4				4	4	4
-11	539487	Clamp, Assembly, Hose		4				4	4				4	4	4
-12	633132	Elbow Assy., Intake, 1-3-5 Side, Rear		1				1	1				1	1	1
-13	633333	Elbow Assy., Intake, 2-4-6 Side, Rear		1				1	1				1	1	1
-14	635645	Tube Assembly, Balance		1				1	1				1	1	1
-14	642491	Tube Assembly, Balance												1	
-15	629518-1H	Plug, 1/8 - 27 NPTF		4				4	4				4	4	4
-16	637129	Bracket, Balance Tube		1				1	1				1	1	1
-17	637255-4	Clamp, Balance Tube-to-Bracket		1				1	1				1	1	1
ATTACHING PARTS															
-18	13XX202B	Washer, Lock		2				2	2				2	2	2
-19	530346	Screw, 5/16 - 18 x 7/8 Inch Long		2				2	2				2	2	2
* * * *															
-20	641888-5	Junction Box Assembly		1				1	1				1	1	1
-21	401752	Plug, Pipe, 1/8 - 27		1				1	1				1	1	1
-22	630963	Tube Assy., Air Fuel Nozzle, 1-3-5 Side		1				1	1				1	1	1
-23	633958-5	. Seal, Compression		1				1	1				1	1	1
-24	630964	Tube Assy., Air Fuel Nozzle, 2-4-6 Side		1				1	1				1	1	1
-25	633958-5	. Seal, Compression		1				1	1				1	1	1
-26	642004	① Tube Assy., Fuel Pump-to-Air Manifold		1				1	1				1	1	1
-27	633958-3	. Seal, Compression		2				2	2				2	2	2
-28	630965	Sleeve Assembly, Injector Nozzle		6				6	6				6	6	6
-29	633958-3	. Seal, Compression		1				1	1				1	1	1
-30	640612	\$ Washer, Rubber		6				6	6				6	6	6
-31	628556	Washer, Plain		6				6	6				6	6	6
-32	632774-1A2	Throttle Assy., Air (See Fig. 36)		rf				rf	rf						
-32	632774-1A3	Throttle Assy., Air (See Fig. 36)											rf	rf	rf
-33	629353	Bushing, Air Valve Support		2				2	2				2	2	2
-34	629354	Sleeve, Air Valve Support		1				1	1				1	1	1
-35	630474	Bracket Assembly, Air Throttle Support		1				1	1				1	1	1
ATTACHING PARTS															
-36	537728	Screw, 1/4 - 28 x 1-25/32 Inch Long		1				1	1				1	1	1
-37	22661	Nut, Elastic, Stop		1				1	1				1	1	1
* * * *															
-38	632750	Bracket, Air Throttle Support		1				1	1				1	1	1
ATTACHING PARTS															
-39	2437	Nut, Plain, Hex, 1/4 - 28		2				2	2				2	2	2
* * * *															
-40	630350	Gasket, Air Throttle Body		1				1	1				1	1	1

NOTE: ① The old style Fuel Pump uses a 633335 Tube Assembly.

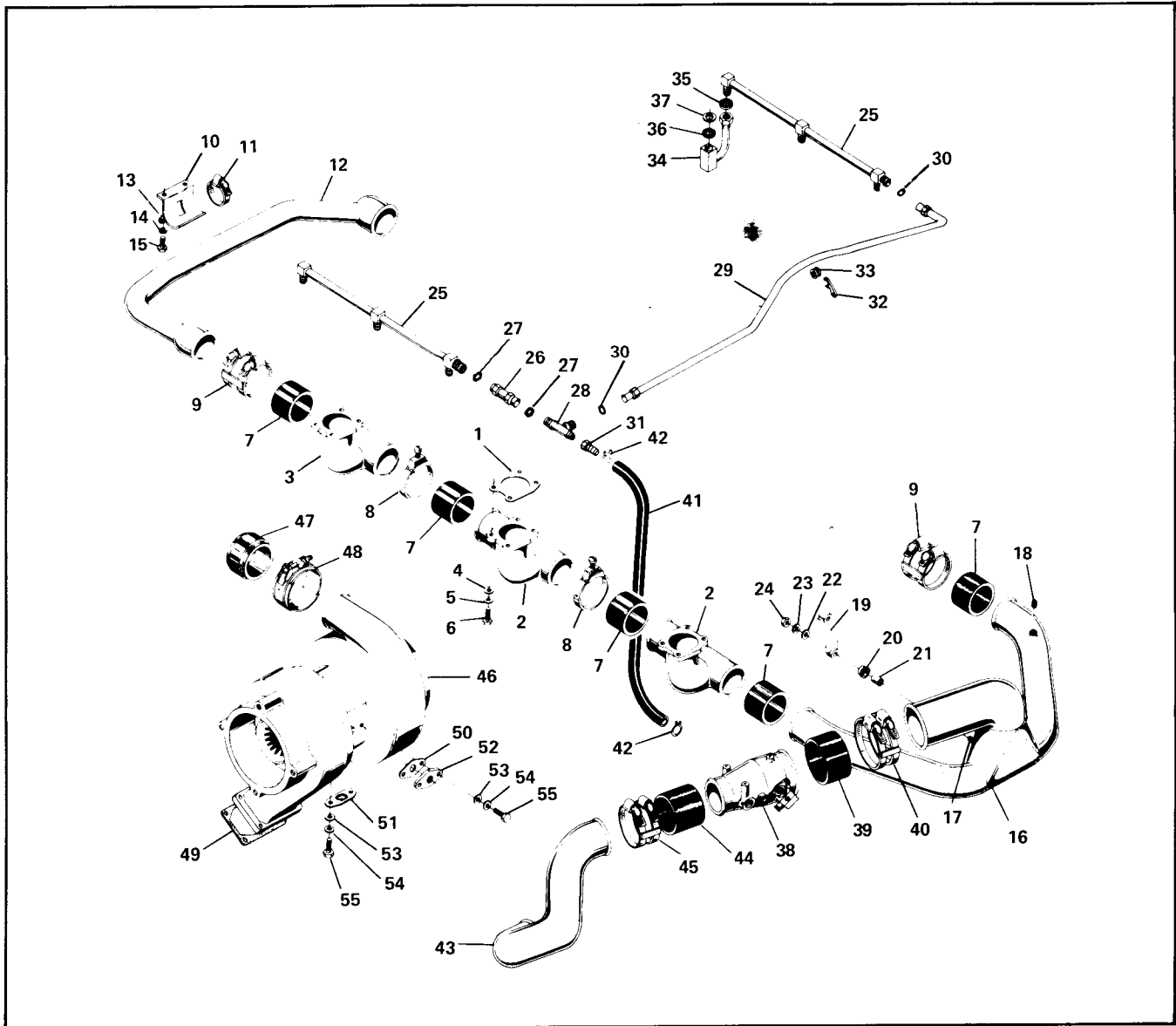


FIGURE 29. INDUCTION SYSTEM, TSIO-520-D

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																		
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R	
29-1	536413	\$ Gasket, Intake Manifold									6										
-2	629138	Elbow, Intake Manifold, Cyl. 1-2-3-4-5									5										
-3	629325	Elbow, Intake Manifold, Cylinder No. 6									1										
ATTACHING PARTS																					
-4	20522	Washer, Plain									24										
-5	MS35338-44	Washer, Lock									24										
-6	24835	Screw, 1/4 - 20 x 7/8 Inch Long									24										
* * * *																					
-7	639660-11	\$ Hose, Intake Manifold									8										
-8	36151L	Clamp, Hose									8										
-9	539487	Clamp Assembly, Hose									4										
-10	633291	Bracket, Balance Tube									1										
-11	632444-2	Clamp, Balance Tube Bracket									1										
-12	626527	Tube Assembly, Balance									1										
ATTACHING PARTS																					

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520														
				B	C	D	E	G	H	J	K	L	M	N	P	R		
29 -13	22535		Washer, Plain															2
-14	13XX202B		Washer, Lock															2
-15	539003		Screw, 5/16 - 18 x 1-3/8 Inch Long															2
			* * * *															
-16	633207		Riser Assembly, Intake Manifold															1
-17	401843	†	Stud, 1/4 x 1-9/16 Inch Long															1
-18	629518-1H		Plug, 1/8 - 27 NPTF															1
-19	634488		Bracket Assembly, Manifold Riser Support															1
			ATTACHING PARTS															
-20	631836		Bushing, Support Bracket															4
-21	631837		Sleeve, Support Bracket															2
-22	538100		Washer, Plain															4
-23	25164		Washer, Special															1
-24	2437		Nut, Plain, Hex															1
			* * * *															
-25	633397		Tube Assembly, Air Manifold															2
-26	633719		Tube Assembly, Air															1
-27	633958-5		Seal, Compression															2
-28	633720-1		Tee, Fitting															1
-29	633718		Tube Assembly, Air Manifold															1
-30	633958-5		Seal, Compression															2
-31	633721		Coupling															1
-32	633787		Bracket															1
-33	MS35489-11S		Grommet															1
-34	630965		Sleeve Assembly, Injector Nozzle															6
-35	633958-3		Seal, Compression															1
-36	640612	\$	Washer, Rubber															6
-37	628556		Washer, Plain															6
-38	640564-1A1		Throttle and Control Assembly															RF
			(See Figure 37)															
-39	633281	\$	Hose															1
-40	629163-1		Clamp Assembly															1
-41	628555-1	\$	Hose															1
-42	536388-.75		Clamp, Hose															2
-43	633282		Elbow															1
-44	639660-6	\$	Hose															1
-45	629163		Clamp Assembly															1
-46	632729-10	①	Turbocharger															1
-47	632767		Sleeve, Coupling															1
-48	632766		Coupling, Channel Band															1
-49	636465		Gasket, Exhaust Inlet															1
-50	628572	\$	Gasket, Turbo Oil Inlet															1
-51	632710	\$	Gasket, Turbo Oil Outlet															1
-52	640793		Adapter, Turbo Oil Inlet															1
			ATTACHING PARTS															
-53	401507		Washer, Plain															1
-54	MS35338-44		Washer, Lock															1
-55	629275		Screw, 3/8 - 16 x 1 Inch Long															1

NOTE ① See Identification Plate for applicable dash number. For detail parts, see turbo-charger overhaul manual and parts catalog, Form X-30055.

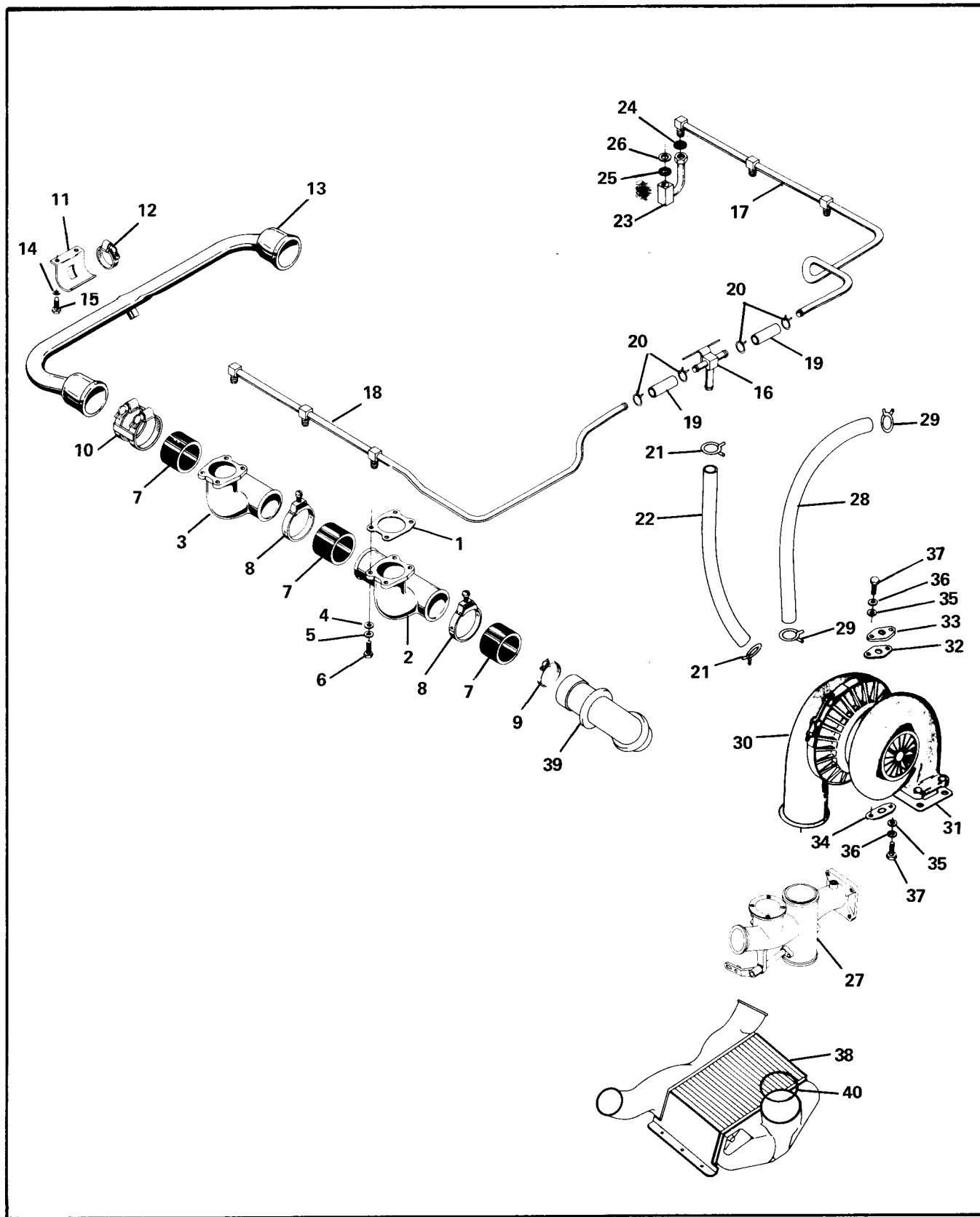


FIGURE 30. INDUCTION SYSTEM, TS10-520-J.N.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY												
				TSIO-520												
				B	C	D	E	G	H	J	K	L	M	N	P	R
30-1	536413	\$	Gasket, Intake Manifold							6						6
-2	629138		Elbow, Intake Manifold, Cyl. 1-2-3-4-5							5						5
-3	629325		Elbow, Intake Manifold, Cylinder No. 6							1						1
			ATTACHING PARTS													
-4	20522		Washer, Plain							24						24
-5	MS35338-44		Washer, Lock							24						24
-6	24835		Screw, 1/4 - 20 x 7/8 Inch Long							24						24
			* * * *													
-7	639660-11	\$	Hose Intake Manifold							6						6
-8	36151L		Clamp, Hose							8						8
-9	631972		Clamp, Hose							4						4
-10	539487		Clamp Assembly, Hose							2						2
-11	632871		Bracket, Balance Tube							1						1
-12	634209		Clamp, Balance Tube-to-Bracket							1						1
-13	637632		Tube Assembly, Balance							1						1
-13	642523		Tube Assembly, Balance													1
			ATTACHING PARTS													
-14	MS35338-45		Washer, Lock							2						2
-15	537961		Screw, 15/16 - 18 x 1 Inch Long							2						2
			* * * *													
-16	636355		Box Assembly, Junction							1						1
-17	636353		Tube Assembly, 1-3-5 Side							1						1
-18	636380		Tube Assembly, 2-4-6 Side							1						1
-19	628555-4		Hose, Tube-to-Junction Box							2						2
-20	536388-.62		Clamp							4						4
-21	536388-.75		Clamp							2						2
-22	628555-5		Hose, Junction Box-to-Fuel Pump							1						1
-23	630965		Sleeve Assembly, Injector Nozzle							6						6
-24	633958-3		Seal, Compression							1						1
-25	640612	\$	Washer, Rubber							6						6
-26	628556		Washer, Plain							6						6
-27	636143A3		Air Throttle and Control Assembly							rf						
			(See Figure 38)													
-27	636143A2		Air Throttle and Control Assembly													rf
			(See Figure 38)													
-28	628555-3		Hose, Junction Box-to-Throttle Body							1						1
-29	536388-.75		Clamp, Hose							2						2
-30	635630		Turbocharger							1						1
-31	636465	\$	Gasket, Exhaust Inlet							1						1
-32	628572	\$	Gasket, Turbo Oil Inlet							1						1
-33	640793		Adapter, Turbo Oil Inlet							1						1
-34	637244	\$	Gasket, Turbo Oil Outlet							1						1
			ATTACHING PARTS													
-35	24767		Washer, Plain							4						4
-36	MS35338-44		Washer, Lock							4						4
-37	629275		Screw, 3/8 - 16 x 1 Inch Long							4						4
			* * * *													
-38	635921		Intercooler Assembly							1						1
-39	635930		Elbow, Flexible							2						2
-40	MS9021-150		O-Ring							1						1

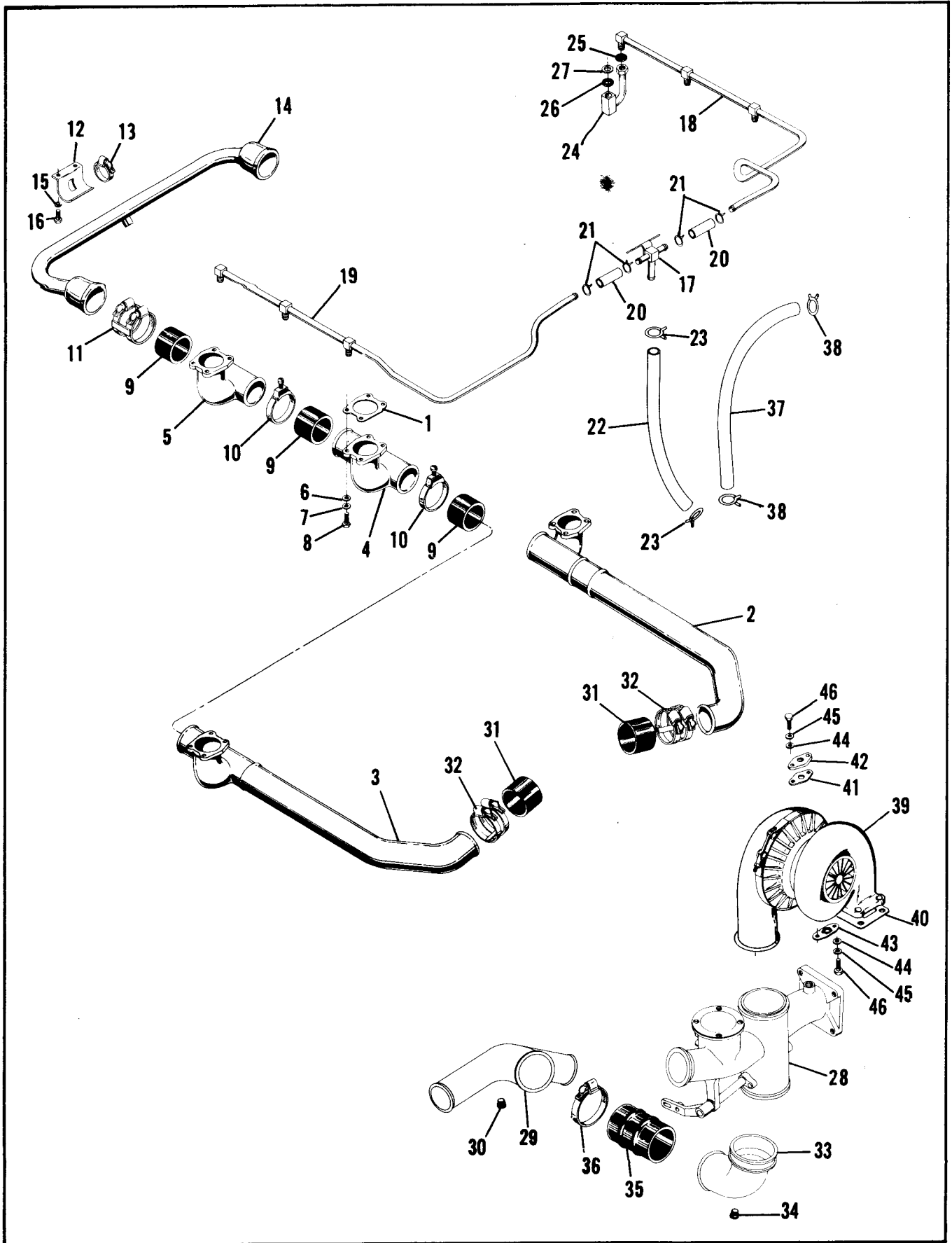


FIGURE 31. INDUCTION SYSTEM, TS10-520-K

FIG. NDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																	
			B	C	D	E	G	H	J	K	L	M	N	P	R					
31- 1	536413	\$ Gasket, Intake Manifold .....										6								
- 2	630055	Tube Assy., Intake Manifold, Cyl. No. 1 .....										1								
- 3	630060	Tube Assy., Intake Manifold, Cyl No. 2 .....										1								
- 4	629138	Elbow, Intake Manifold, Cyl. 3-4-5 .....										3								
- 5	629325	Elbow, Intake Manifold, Cyl. No. 6 .....										1								
ATTACHING PARTS																				
- 6	20522	Washer, Plain .....											24							
- 7	MS35338-44	Washer, Lock .....											24							
- 8	24835	Screw, 1/4 - 20 x 7/8 Inch Long .....											24							
* * * *																				
- 9	639660-11	\$ Hose, Intake Manifold .....										6								
-10	36151L	Clamp, Hose .....										8								
-11	539487	Clamp Assembly, Hose .....										2								
-12	632871	Bracket, Balance Tube .....										1								
-13	634209	Clamp, Balance Tube-To-Bracket .....										1								
-14	637632	Tube Assembly, Balance .....										1								
ATTACHING PARTS																				
-15	MS35338-45	Washer, Lock .....											2							
-16	537961	Screw, 5/16-18 x 1 Inch Long .....											2							
* * * *																				
-17	636355	Box Assembly, Junction .....										1								
-18	636353	Tube Assembly 1-3-5 Side .....										1								
-19	636380	Tube Assembly, 2-4-6 Side .....										1								
-20	628555-4	Hose, Tube Assy. -To-Junction Box .....										2								
-21	536388-.62	Clamp .....										4								
-22	628555-5	Hose, Junction Box-To-Fuel Pump .....										1								
-23	536388-.75	Clamp .....										2								
-24	630965	Sleeve Assembly, Injector Nozzle .....										6								
-25	633958-3	Seal, Compression .....										1								
-26	640612	\$ Washer, Rubber .....										6								
-27	628556	Washer, Plain .....										6								
-28	637735A3	Air Throttle & Cont. Assy. (See Figure 39) .....										RF								
-29	637356	Riser, Air Manifold .....										1								
-30	629518-1H	Plug, 1/8 - 27 NPTF .....										1								
-31	639660-11	\$ Hose, Intake Tube-To-Riser .....										2								
-32	631486	Clamp Assembly .....										2								
-33	637357	Elbow, Air Intake .....										1								
-34	636062	Plug .....										1								
-35	630817-1	Convolute Bellows .....										1								
-36	AN737TW114	Clamp .....										2								
-37	628555-3	Hose, Junction Box-To-Throttle Body .....										1								
-38	536388-.75	Clamp .....										2								
-39	635630	Turbocharger .....										1								
-40	636465	\$ Gasket, Exhaust Inlet .....										1								
-41	628572	\$ Gasket, Turbo Oil Inlet .....										1								
-42	640793	Adapter, Turbo Oil Inlet .....										1								
-43	637244	\$ Gasket, Turbo Oil Outlet .....										1								
ATTACHING PARTS																				
-44	24767	Washer, Plain .....										4								
-45	MS35338-44	Washer, Lock .....										4								
-46	629275	Screw, 3/8 - 16 x 1 Inch Long .....										4								



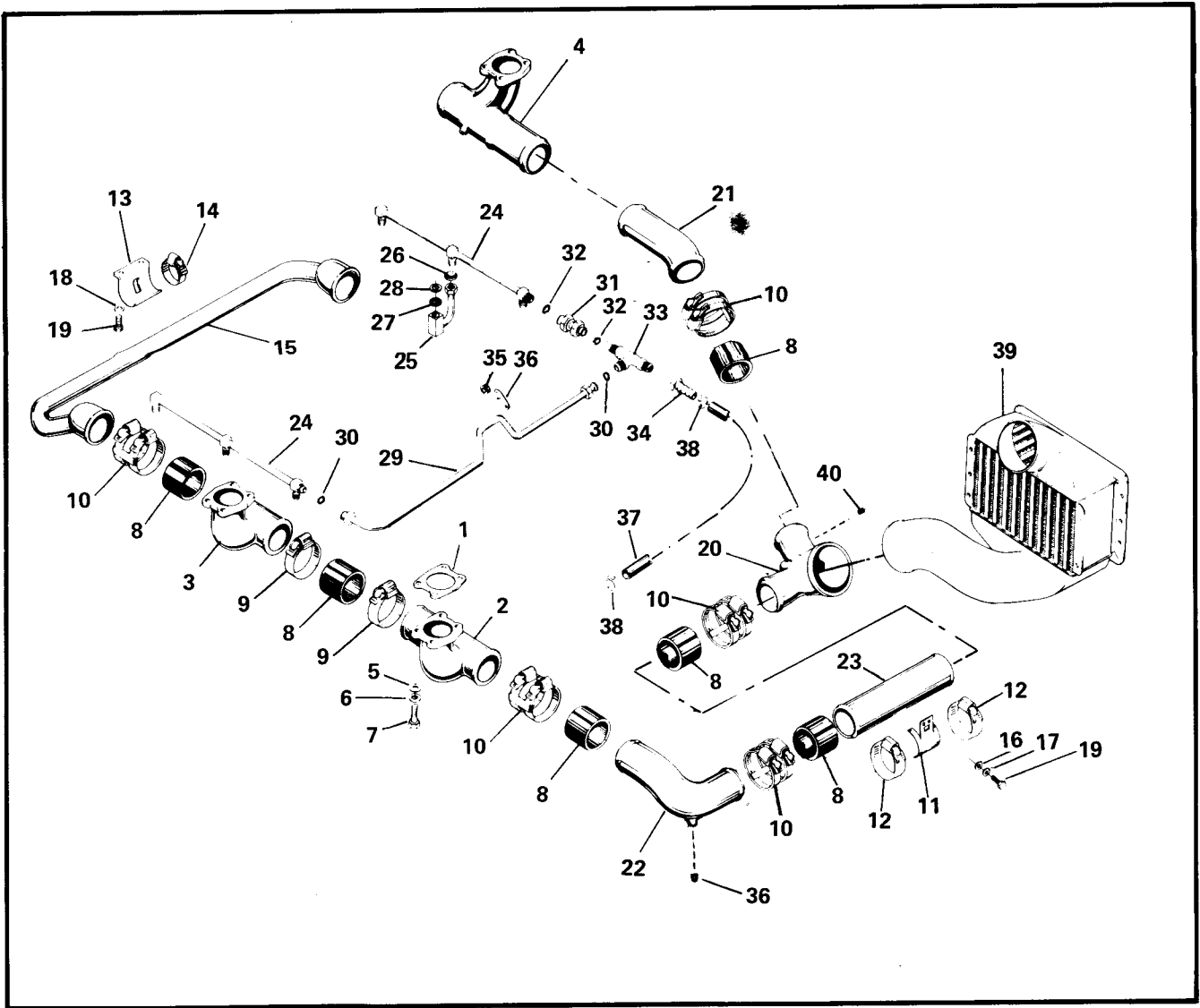


FIGURE 32. INDUCTION SYSTEM, TSIO-520-L

FIG. INDEX	PART NUMBER	1	2	3	4	5	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520															
								B	C	D	E	G	H	J	K	L	M	N	P	R			
32-1	536413	\$					Gasket, Intake Manifold																6
-2	629138						Elbow, Intake Manifold, Cyl. 2-4-5																3
-3	629325						Elbow, Intake Manifold, Cyl. 1, 6																2
-4	641204						Elbow, Intake Manifold, Cyl. 3																1
ATTACHING PARTS																							
-5	20522						Washer, Plain																24
-6	MS35338-44						Washer, Lock																24
-7	24835						Screw, 1/4 - 20 x 7/8 Inch Long																24
							* * *																
-8	639660-13						Hose																11
-9	36151L						Clamp																8
-10	631486						Clamp																5
-11	642324						Bracket, Induction Tube Support																1
-12	631972						Clamp, Induction Tube Bracket																2
-13	632871						Bracket, Balance Tube																1

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520													
				B	C	D	E	G	H	J	K	L	M	N	P	R	
32 -14	634209		Clamp, Balance Tube Bracket										1				
-15	640795		Balance Tube Assembly										1				
			ATTACHING PARTS														
-16	2473		Washer, Plain										2				
-17	13XX202B		Washer, Lock										2				
-18	501868		Washer, Tab										2				
-19	537961		Screw, 5/16 - 18 x 1 inch long * * * *										4				
-20	640642		Riser, Intake Manifold										1				
-21	640761		Elbow, Intake Manifold, 1-3-5 Side										1				
-22	640764		Elbow, Intake Manifold, 2-4-6 Side										1				
-23	640657		Tube, Induction										1				
-24	633397		Tube Assembly, Air Manifold										2				
-25	630965		Sleeve Assembly										6				
-26	633958-3		. Seal, Compression										1				
-27	640612	\$	Washer, Rubber										6				
-28	628556		Washer, Metal										6				
-29	640765		Tube Assembly, Air Manifold										1				
-30	633958-5		. Seal, Compression										2				
-31	633719		Tube, Assy., Air Manifold-To-Tee										1				
-32	633958-5		. Seal, Compression										2				
-33	633720-1		Tee, Fitting										1				
-34	633721		Coupling, Barbed										1				
-35	MS35489-11S		Grommet, Split										1				
-36	633787		Bracket, Air Manifold Tube Support										1				
-37	628555-13		Hose, Air Throttle-To-Air Manifold										1				
-38	536388-.75		Clamp, Hose										2				
-39	640701		Intercooler										1				
-40	629518-1H		Plug										2				

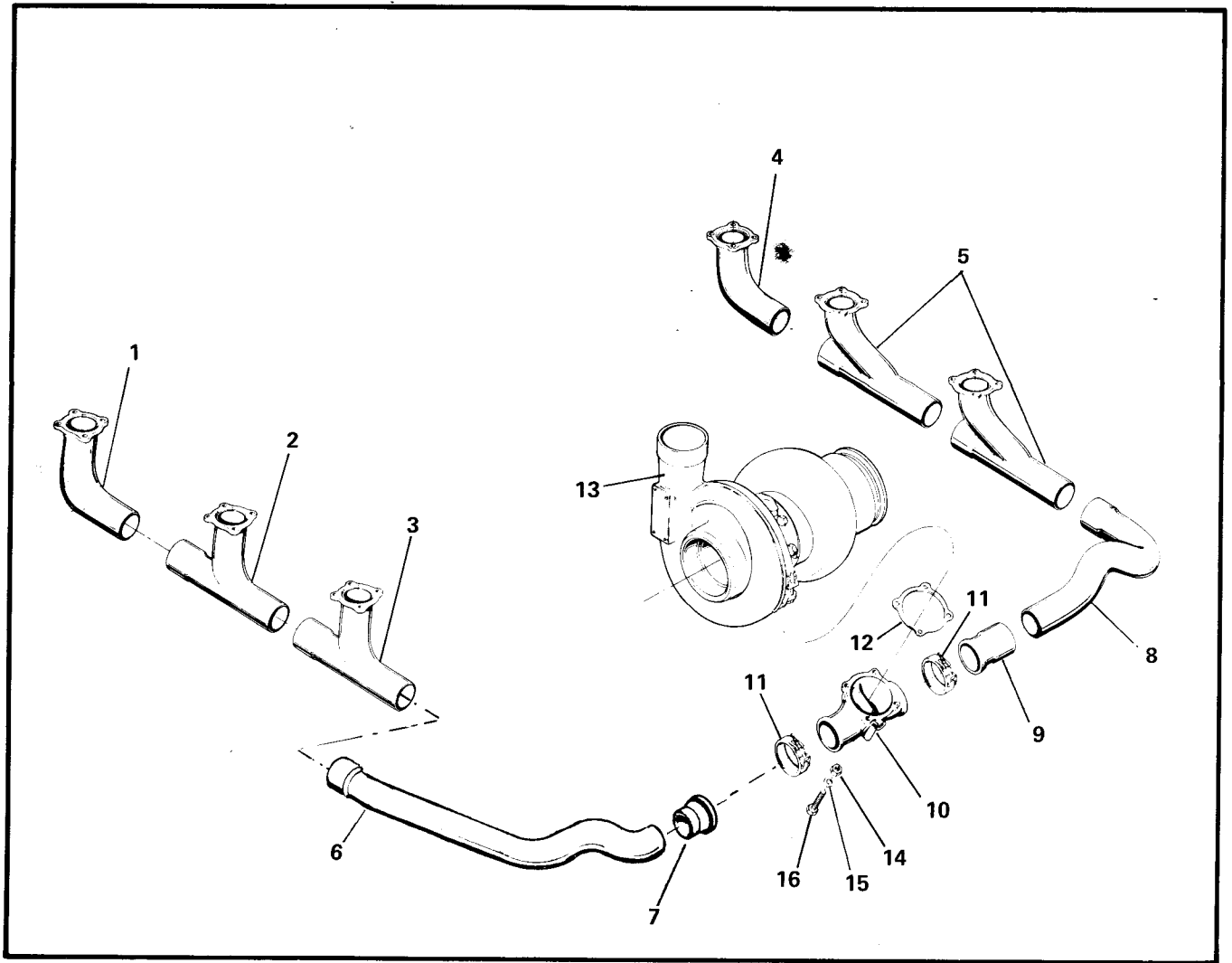


FIGURE 33. EXHAUST SYSTEM, TS10-520-L

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY												
				TSIO-520												
				B	C	D	E	G	H	J	K	L	M	N	P	R
33-	642082		Exhaust System .....										1			
-1	640707		. Elbow, Cylinder No. 6 .....										1			
-2	640677		. Elbow, Cylinder No. 4 .....										1			
-3	640706		. Elbow, Cylinder No. 2 .....										1			
-4	640705		. Elbow, Cylinder No. 5 .....										1			
-5	640704		. Elbow, Cylinder No. 1 & 3 .....										2			
-6	642067	①	. Elbow, 2-4-6 Side .....										1			
-7	642066		. Exhaust Flange .....										1			
-8	640710		. Elbow, 1-3-5 Side .....										1			
-9	640711		. Connector .....										1			
-10	640712		. Turbo Adapter .....										1			
-11	641284		. Coupling .....										2			
-12	640877		Gasket, Turbo .....										1			
-13	640327-1		Turbocharger .....										RF			
ATTACHING PARTS																
-14	NAS1587-6		Washer, Plain .....										8			
-15	639332		Nut, Lock .....										4			
-16	NAS1006-10A		Bolt .....										4			

NOTE:

① This elbow has replaced both the 640708 elbow, and the 640709 connector tube, which are no longer available.

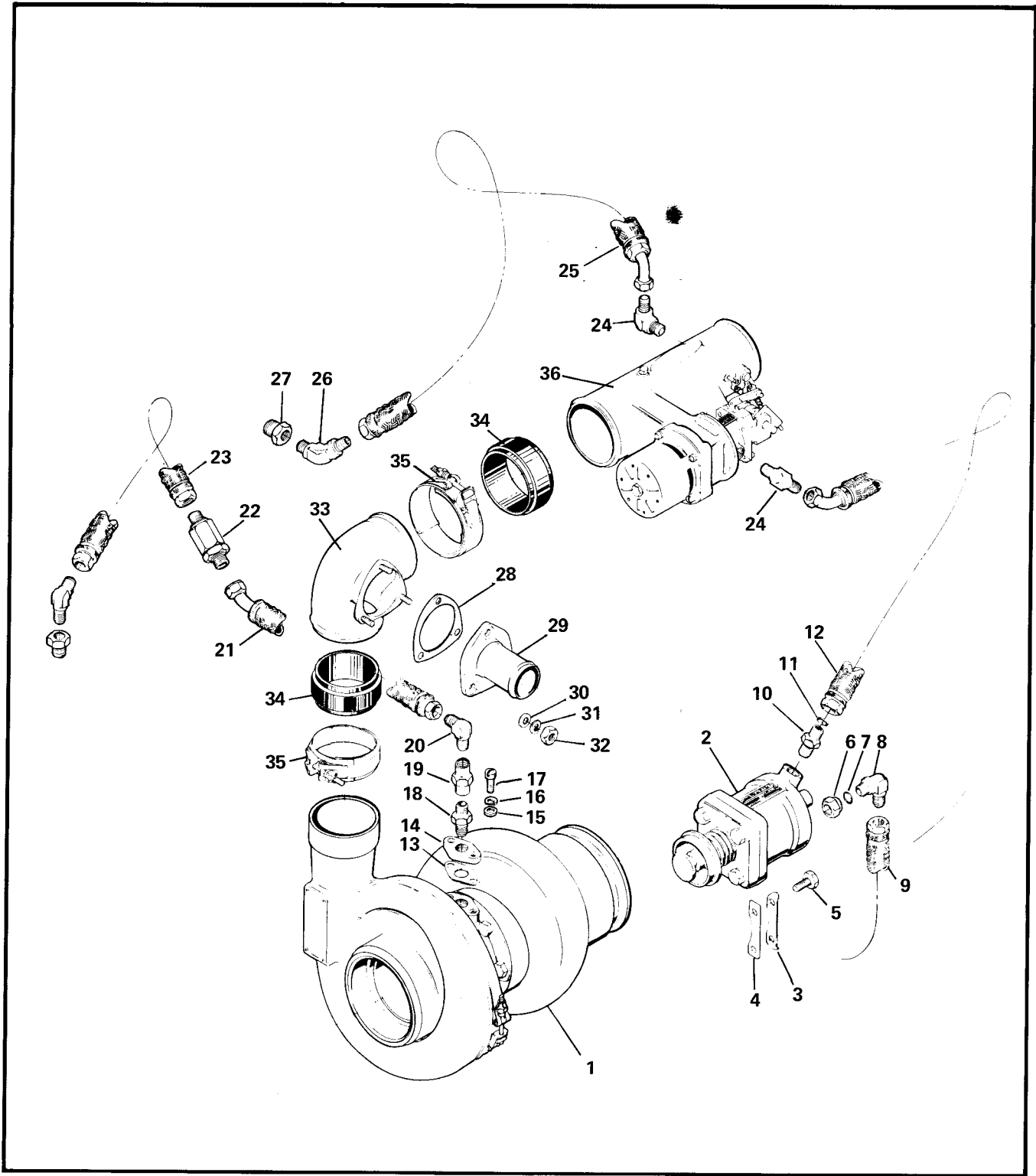


FIGURE 34. INDUCTION/EXHAUST RELATED PARTS, TSIO-520-L

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY												
				TSIO-520												
				B	C	D	E	G	H	J	K	L	M	N	P	R
34-1	640327-1		Turbocharger .....									1				
-2	635381-2		. Wastegate Valve .....									1				
ATTACHING PARTS																
-3	477290	①	. Clamp, Plate .....										2			
-4	477291	①	. Lock, Plate .....										2			
-5	400573-8	①	. Bolt, 5/16 - 18 x 1/2 Inch Long .....										4			
* * *																
-6	AN924-4		Nut, Wastegate Oil Inlet .....									1				
-7	MS28778-4		O-Ring .....									1				
-8	AN921-4		Elbow .....									1				
-9	641100S4S28.00		Hose Assembly, Oil Cooler-To-Wastegate .....									1				
-10	AN815-6		Fitting, Straight, Wastegate Oil Outlet .....									1				
-11	MS28778-6		O-Ring .....									1				
-12	641100Y6S16.00		Hose Assy., Wastegate-To-Controller .....									1				
-13	628572		Gasket .....									1				
-14	640793		Adapter, Turbo Oil Inlet .....									1				
ATTACHING PARTS																
-15	401507		Washer, Plain .....										2			
-16	MS35338-46		Washer, Lock .....										2			
-17	629275		Screw .....										2			
* * *																
-18	AN911-2		Nipple .....									1				
-19	AN910-2		Coupling .....									1				
-20	632616		Elbow .....									1				
-21	641100S6S10.00		Hose Assy, Turbo Inlet-To-Check Valve .....									1				
-22	641218		Check Valve .....									1				
-23	641100S6S6.00		Hose Assy., Check Valve-To-Oil Cooler .....									1				
-24	637459		Elbow, Controller .....									2				
-25	641100Y6S25.75		Hose Assy., Controller-To-Engine .....									1				
-26	MS20823-6B		Elbow, 45 Degree .....									1				
-27	AN912-2		Reducer, Bushing .....									1				
-28	640095		Gasket, Sonic Venturi .....									1				
-29	640094-4		Sonic Venturi .....									1				
ATTACHING PARTS																
-30	AN960-10L		Washer, Plain .....									3				
-31	MS35338-43		Washer, Lock .....									3				
-32	2436		Nut, Plain, Hex .....									3				
* * *																
-33	640641		Induction Tube .....									1				
-34	628672		Sleeve .....									2				
-35	628670		Coupling .....									2				
-36	640971A2		Throttle & Control Assy., (see Fig. 41) .....									1				

NOTE ① AiResearch part numbers.

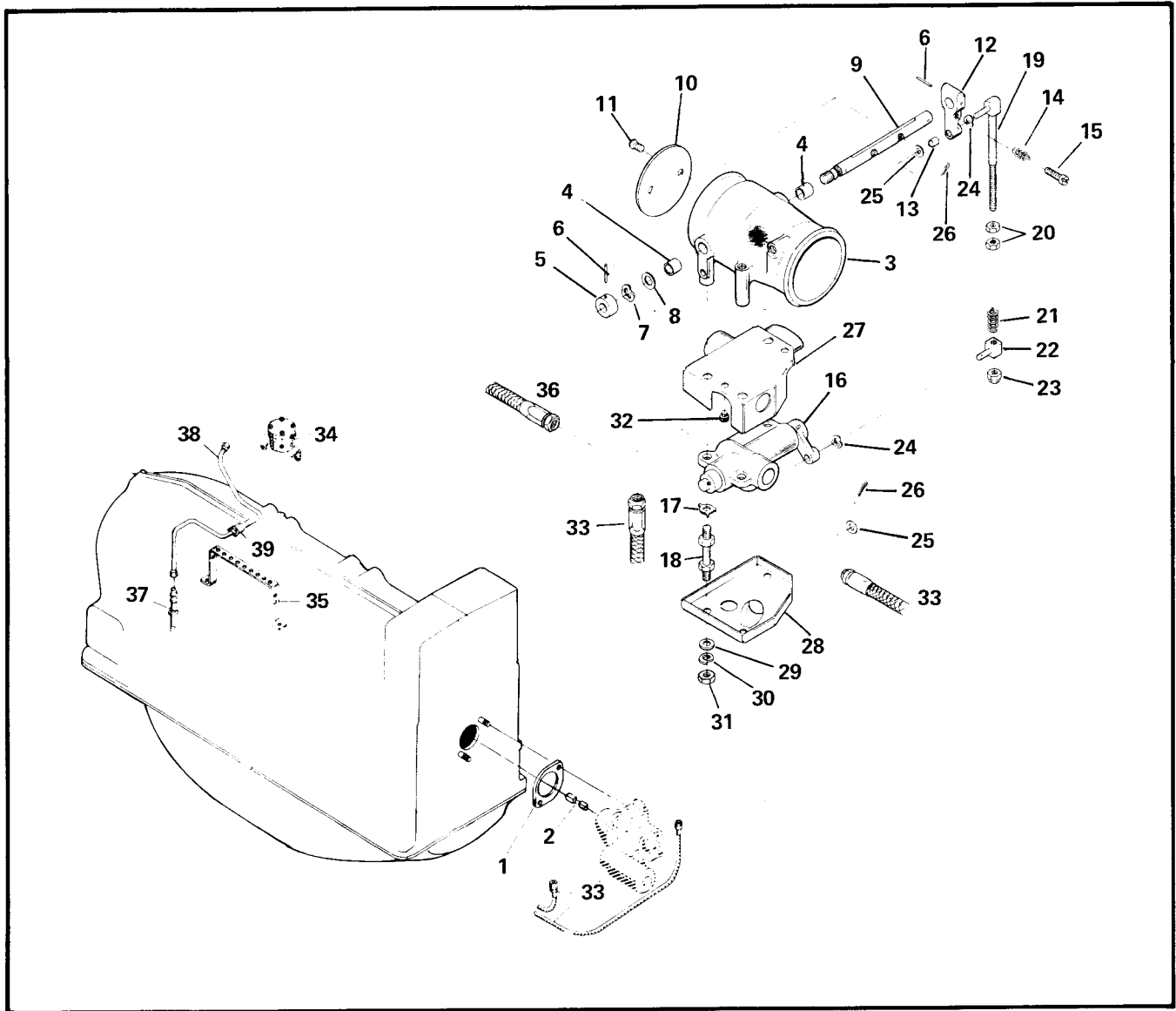


FIGURE 35. FUEL INJECTION SYSTEM, TSIO-520-B,E

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																			
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R		
35-1	630763	Gasket, Fuel Pump							1													
-2	631263	Coupling, Crankshaft Gear-To-F/P							1			1										
	634794A2	Fuel Injection Assy., Complete							1													
	634798A2	Fuel Injection Assy., Complete										1										
	632818-1A1	Fuel Pump Assembly							1													
	632818-2A1	Fuel Pump Assembly										1										
	632855-1A2	Throttle and Control Assembly							1			1										
-3	632853A1	Throttle Assembly, Air							1			1										
-4	630455	Bushing							2			2										
-5	625238	Collar							1			1										
-6	626813	Pin							2			2										
-7	625327-1	Washer, Wave							1			1										
-8	625457	Washer, Plain							2			2										
-9	630124	Shaft, Throttle							1			1										
-10	625601	Plate, Throttle							1			1										

FIG. DEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY												
				TSIO-520												
				B	C	D	E	G	H	J	K	L	M	N	P	R
ATTACHING PARTS																
35 -11	539942		Screw	2			2									
* * *																
-12	632556		Lever Assembly	1			1									
-13	632554-2		Bushing	1			1									
-14	626634		Springs	1			1									
-15	639479		Screw, Adjusting	1			1									
-16	632916-8A1 ①		Control Assy, Complete (See Figure 47)	1			1									
ATTACHING PARTS																
-17	501867		Washer, Tab	3			3									
-18	630387		Screw, 1/4 -20 x 2 Inch Long	3			3									
* * *																
-19	632558A1		Rod and Link Assembly	1			1									
-20	632558		Rod and Link	1			2									
-21	AN121501		Nut	2			1									
-22	626634		Spring, Compression	1			1									
-23	632557		Rod End, Special	1			1									
-24	MS21044N3		Nut, Self-Locking	1			1									
-25	625327-2		Washer, Wave	2			2									
-26	537690		Washer, Plain	2			2									
-27	2500		Pin, Cotter	2			2									
-28	633615		Shroud Assembly, Bottom	1			1									
-28	633622		Shroud, Top	1			1									
ATTACHING PARTS																
-29	20522		Washer, Plain	3			3									
-30	MS35338-44		Washer, Lock	3			3									
-31	2437		Nut, Plain, Hex, 1/4 - 28	3			3									
* * *																
-32	626891		Bumper, Rubber	2			2									
-33	635158-13.00		Hose Assembly, Control Assembly-To-Fuel Pump, Outlet & Inlet	2			2									
-34	631351-9A3 ①②		Valve Assy., Fuel Manif. Comp. (See Figure 47)	1			1									
-34	631351-7A3 ①②		Valve Assy., Fuel Manif. Comp. (See Figure 47)				1									
-34	631351A2 ③		Manifold Valve Assembly	Opt			Opt									
-35	626486		Bracket, Fuel Discharge Tube	2			2									
-36	635158-36.00		Hose Assy., Control Assy.-To-Manifold Vlv.	1			1									
-37	632748-15 ①④		Nozzle Assembly, Fuel Injection	6			6									
-38	636037		Tube Assy., Fuel Discharge Cyl., 1 & 6	2												
	636037-1		Tube Assy., Fuel Discharge Cyl., 1 & 6				2									
	636036		Tube Assy., Fuel Discharge Cyl., 2 & 5	2												
	636036-1		Tube Assy., Fuel Discharge Cyl., 2 & 5				2									
	636035		Tube Assy., Fuel Discharge Cyl., 3 & 4	2												
	636035-1		Tube Assy., Fuel Discharge Cyl., 3 & 4				2									
-39	626577-2		Clamp, Fuel Discharge Tube	6			6									

NOTE ① For detail parts, see Fuel Injection Systems Overhaul Manual and Parts Catalog, Form X-30091.

NOTE ② Use with new style crankcase (backbone width 1.00 inch).

NOTE ③ Use with old style crankcase (backbone width .76 inch).

NOTE ④ Order nozzle size identified on hex of nozzle body.



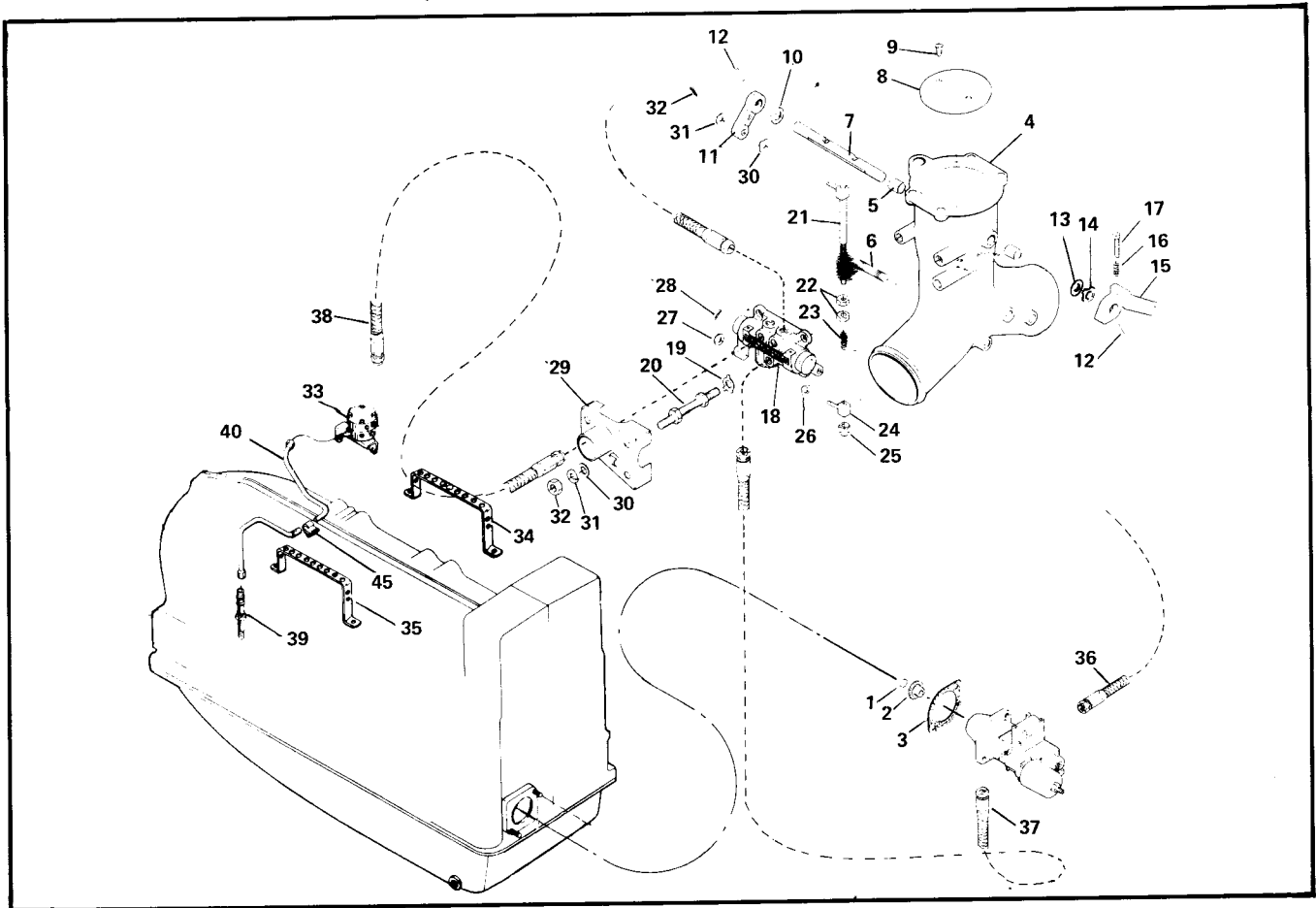


FIGURE 36. FUEL INJECTION SYSTEM, TSIO-520-C,G,H,M,P,R.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY																	
			TSIO-520																	
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R
36 -1	631684	① Gear Assembly, Fuel Pump						1				1	1				1		1	1
-2	539634	① Plug, Expansion						1				1	1				1		1	1
-3	631685	①\$ Gasket, Fuel Pump-To-Crankcase						1				1	1				1		1	1
	635456A3	Fuel Injection Assy., Complete						1												
	637750A3	Fuel Injection Assy., Complete										1								
	637749A4	Fuel Injection Assy., Complete											1							
	637749A2	Fuel Injection Assy., Complete															1		1	1
	632818-5A2	② Fuel Pump Assy., (see Fig. 43)						1				1	1							
	632818-7A1	② Fuel Pump Assy., (see Fig., 43)															1		1	1
	637774-1A2	Throttle and Control Assy.,						1				1	1							
	637774-2A2	Throttle and Control Assy.,															1		1	1
-4	632840A1	Throttle Assembly, Air						1				1	1				1		1	1
-5	630455	Bushing						2				2	2				2		2	2
-6	402711	† Stud, 1/4 x 7/8 Inch Long						2				2	2				2		2	2
-7	631819	Shaft, Air Throttle						1				1	1				1		1	1
-8	625601	Plate, Throttle						1				1	1				1		1	1
ATTACHING PARTS																				
-9	539942	Screw						2				2	2				2		2	2
*****																				
-10	625457-1	Washer, Plain						1				1	1				1		1	1
-11	629329	Lever						1				1	1				1		1	1
-12	626813	Pin						2				2	2				2		2	2
-13	625457	Washer, Plain						ar				ar	ar				ar		ar	ar

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																	
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R
36-14	625327-1	Washer, Wave						1				1	1				1		1	1
-15	631818	Lever, Throttle Control						1				1	1				1		1	1
-16	626634	Spring						1				1	1				1		1	1
-17	639479	Screw, Idel Adjusting						1				1	1				1		1	1
-18	629703-8A1 ②	Control Assy., Complete (See Figure 46)						1				1	1							
-18	629703-8A2 ②	Control Assy., Complete (See Figure 46)															1		1	1
ATTACHING PARTS																				
-19	501867	Washer, Tab						3				3	3				3		3	3
-20	630387	Screw, Special						3				3	3				3		3	3
* * * *																				
	629364A1	Link Rod Assembly						1				1	1				1		1	1
-21	629364	Rod and Link Assembly						1				1	1				1		1	1
-22	AN121501	Nut						2				2	2				2		2	2
-23	626634	Spring, Compression						1				2	2				2		2	2
-24	629330	Rod End, Special						1				1	1				1		1	1
-25	MS21044N3	Nut, Elastic Stop						1				1	1				1		1	1
-26	629327-2	Washer, Wave						2				2	2				2		2	2
-27	537690	Washer, Plain						2				2	2				2		2	2
-28	2500	Pin, Cotter						2				2	2				2		2	2
-29	629338	Shroud, Assembly, Control						1				1	1				1		1	1
ATTACHING PARTS																				
-30	20522	Washer, Plain						3				3	3				3		3	3
-31	MS35338-44	Washer, Lock						3				3	3				3		3	3
-32	2437	Nut, Plain Hex						3				3	3				3		3	3
* * * *																				
-33	631351A10 ②	Valve Assembly, Fuel Manifold Comp.						1												
-33	631351A12 ②	Valve Assembly, Fuel Manifold, Comp.										1								
-33	631351A11 ②	Valve Assembly, Fuel Manifold, Comp.										1								
-33	634326-4A4 ②	Valve Assembly, Fuel Manifold, Comp.															1		1	1
For Details See Fig.47/48																				
-34	641701	Bracket, Fuel Discharge Tube, 1-3-5 Side						1				1	1				1		1	1
-35	628295	Bracket, Fuel Discharge Tube, 2-4-6 Side						1				1	1				1		1	1
-36	635158-10.00	Hose Assy., Control-to-F/P Return						1				1	1				1		1	1
-37	635158-18.00	Hose Assy., Control-to-F/P Outlet						1				1	1							
-37	635158-12.00	Hose Assy., Control-to-F/P Outlet															1		1	1
-38	635158-32.00	Hose Assy., Control-to-Manifold Valve						1				1	1				1		1	1
-39	632748-15 ②③	Nozzle Assy., Fuel Injection						6				6	6							
-39	632748-14 ②③	Nozzle Assy., Fuel Injection															6		6	6
-40	628154	Tube Assy., Fuel Discharge Cyl. 1 & 6						2				2								
	628154-1	Tube Assy., Fuel Discharge Cyl. 1 & 6											2							
	636037-1	Tube Assy., Fuel Discharge Cyl. 1 & 6															2		2	2
	628153	Tube Assy., Fuel Discharge Cyl. 2 & 5						2				2								
	628153-1	Tube Assy., Fuel Discharge Cyl. 2 & 5											2							
	636036-1	Tube Assy., Fuel Discharge Cyl. 2 & 5															2		2	2
	628152	Tube Assy., Fuel Discharge Cyl. 3 & 4						2				2								
	628152-1	Tube Assy., Fuel Discharge Cyl. 3 & 4											2							
	636035-1	Tube Assy., Fuel Discharge Cyl. 3 & 4															2		2	2
-41	626577-2	Clamp, Fuel Discharge Tube						6				6	6				6		6	6

NOTE: ① For old style Fuel pump and its associated parts. See Figure 44.

② For detail parts, see Fuel Injection Systems Overhaul Manual and Parts Catalog, Form X-30091.

③ Order nozzle size identified on hex of nozzle body.

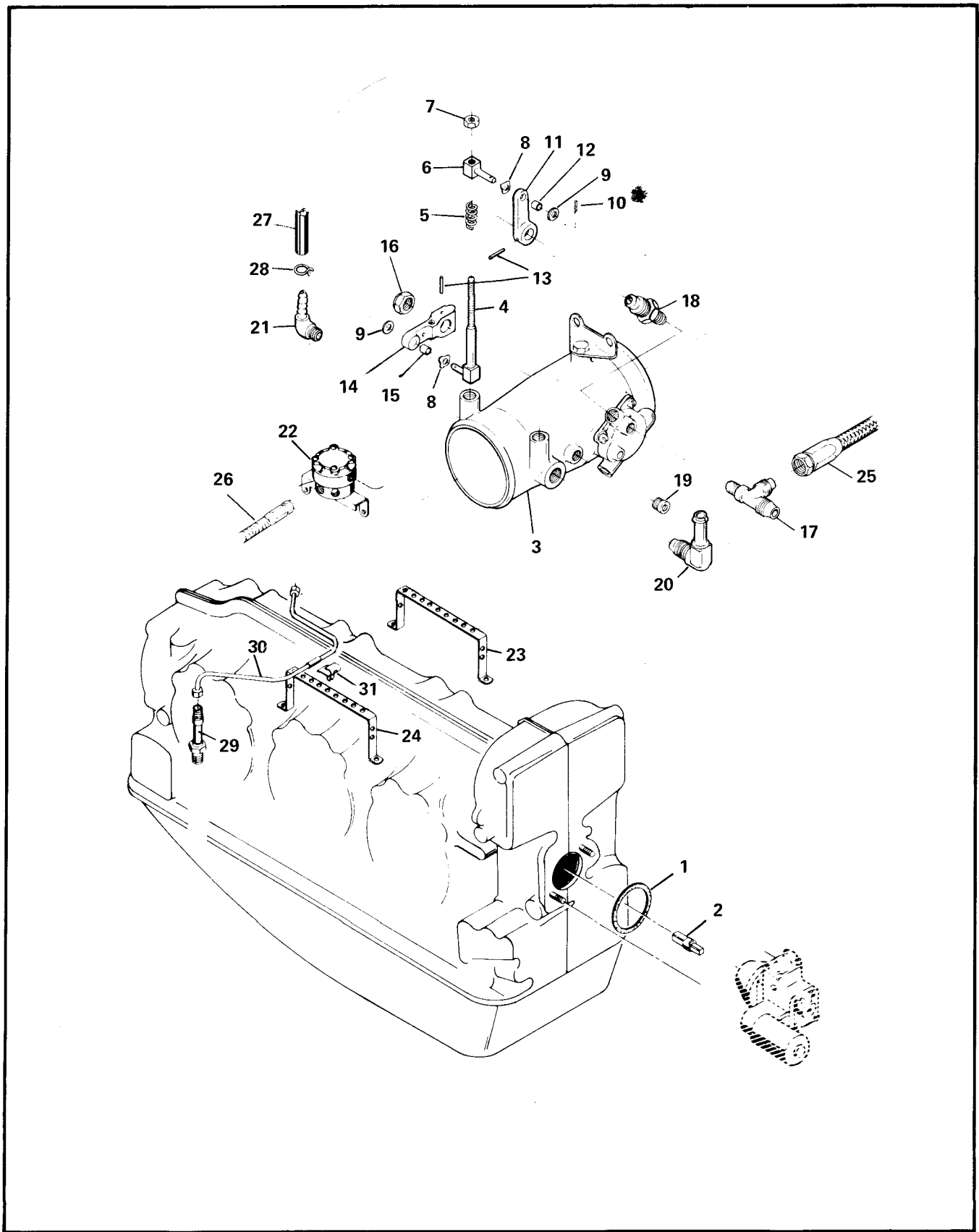


FIGURE 37. FUEL INJECTION SYSTEM, TS10-520-D

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY												
			TSIO-520												
			B	C	D	E	G	H	J	K	L	M	N	P	R
37- 1	630763	\$ Gasket, Fuel Pump			1										
-2	631263	Coupling, Crankshaft-to-Fuel Pump			1										
	635968A4	Fuel Injection Assembly, Complete			1										
	639508-5A1 ①	Fuel Pump Assy. (See Fig. 44)			1										
-3	640564-1A1 ①	Throttle and Control Assembly			1										
-4	633444	Rod and Link Assembly			1										
-5	626634	Spring, Compression			1										
-6	632557	Rod End, Special			1										
-7	MS21044N3	Nut, Self-Locking			1										
-8	625327-2	Washer, Wave			2										
-9	537690	Washer, Plain			2										
-10	2500	Pin Cotter			2										
	632555-7	Lever Assembly, Throttle			1										
-11	632554-1	Bushing			1										
-13	626813	Pin, Tubular			2										
-14	632555-12	Lever Assembly, Throttle Control			1										
-15	632554-1	Bushing			1										
-16	MS21044N5	Nut, Self-Locking			1										
-17	639495	Tee, Fuel Inlet			1										
-18	628438	Fitting, Fuel Outlet			1										
-19	AN932-2	Plug, Pipe, 1/8 - 27 NPTF			1										
-20	AN842-8D	Elbow, 90 Degree, 1/8 NPTF to 1/2 Hose			1										
-21	633790	Fitting, 90 Degree, Coupling			1										
-22	631351A14 ①②	Valve Assy., Fuel Manifold Complete (See Figure 40)			1										
-22	631351A8 ③	Valve Assembly, Fuel Manifold			Opt										
-23	631246	Bracket, Fuel Discharge Tube, 1-3-5 Side			1										
-24	626486	Bracket, Fuel Discharge Tube, 2-4-6 Side			1										
-25	635158-14.00	Hose Assy., Control Assy.-to-Fuel Pump			1										
-26	635158-22.00	Hose Assy., Control Assy.-to-Manifold Valve			1										
-27	628555-2	Hose, Fuel Pump-to-Throttle Body			1										
-28	536388-.50	Clamp			2										
-29	632748-15 ①④	Nozzle Assembly, Fuel Injection			6										
-30	636037	Tube Assy., Fuel Discharge Cyl. 1 & 6			2										
	636036	Tube Assy., Fuel Discharge Cyl. 2 & 5			2										
	636035	Tube Assy., Fuel Discharge Cyl. 3 & 4			2										
-31	626577-2	Clamp			6										

NOTE ① For detail parts, see Fuel Injection Systems Overhaul Manual and Parts Catalog, Form X-30091.

② Use with new style crankcase (backbone width 1.00 inch).

③ Use with old style crankcase (backbone width .76 inch).

④ Order nozzle size identified on hex of nozzle body.

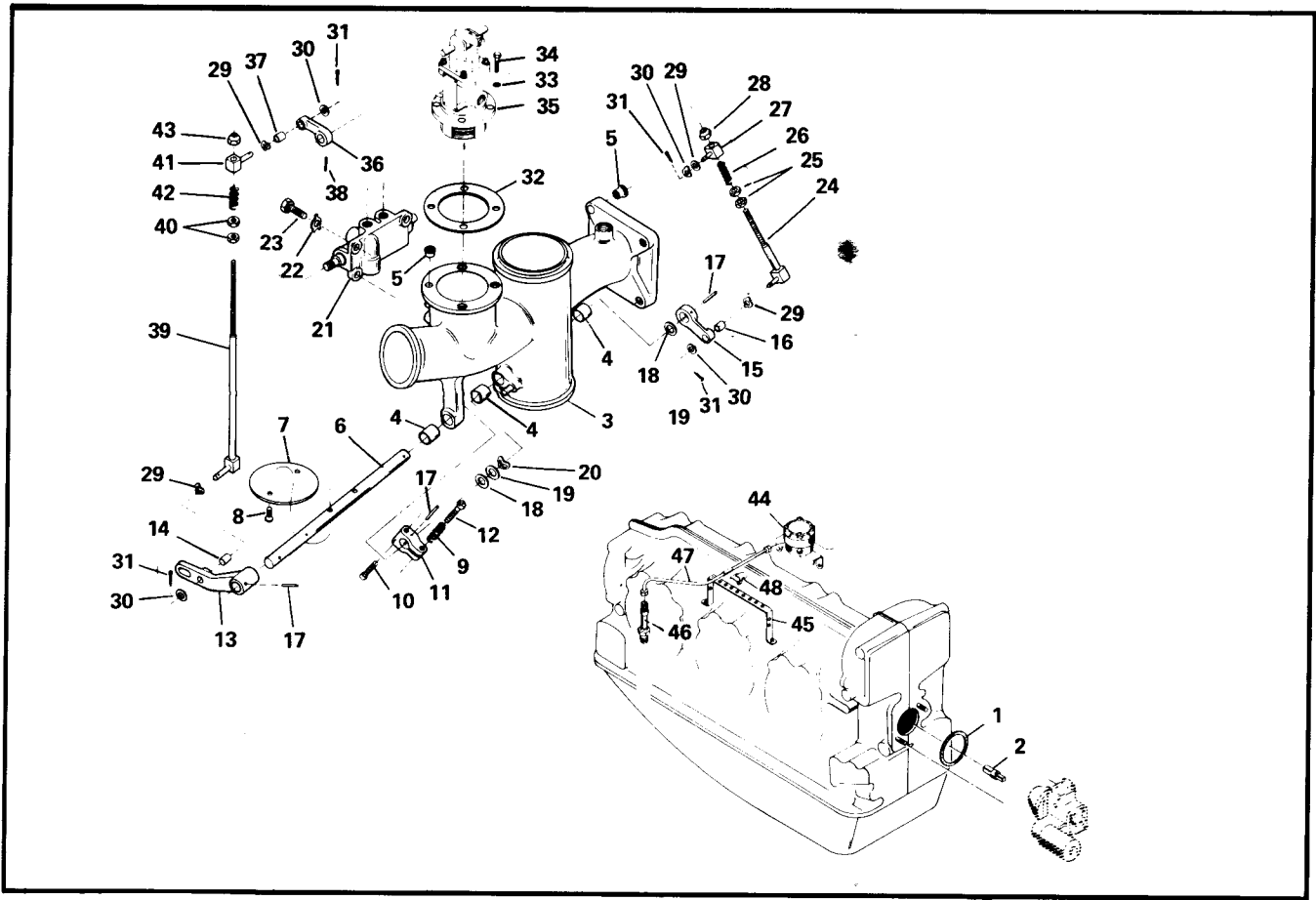


FIGURE 38. FUEL INJECTION SYSTEM, TS10-520-J,N.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TS10-520																			
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R		
38- 1	630763	\$ Gasket, Fuel Pump											1					1				
-2	631263	Coupling, Crankshaft Gear-to-F/P											1					1				
	636134A5	Fuel Injection Assy., Complete											1									
	636134A4	Fuel Injection Assy., Complete																1				
	632818-2A2	① Fuel Pump Assembly											1					1				
	636143A3	Throttle and Control Assembly											1									
	636143A2	Throttle and Control Assembly																1				
-3	635915A2	Throttle Assembly											1					1				
-4	630455	Bushing											3					3				
-5	MS122160	Insert, Helical Coil											12					12				
-6	635950	Shaft, Throttle											1					1				
-7	632931	Plate, Throttle											1					1				
		ATTACHING PARTS																				
-8	539942	Screw											2					2				
		* * * *																				
-9	626634	Spring											1					1				
-10	636805	Screw, Idle Adjusting											1					1				
-11	639497	Lever, Throttle, Idle Control											1					1				
-12	AN565E8H8	Set Screw											1					1				
-13	632555-15	Lever Assembly											1					1				
-14	632554-2	Bushing											1					1				
-15	632555-14	Lever Assembly											1					1				
-16	632554-2	Bushing											1					1				

FIG. NDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY												
				TSIO-520												
				B	C	D	E	G	H	J	K	L	M	N	P	R
38-17	626813		Pin, Lever-to-Shaft							3						3
-18	625457		Washer, Plain, 0.030 Thick							ar					ar	
-19	625457-1		Washer, Plain, 0.015 Thick							ar					ar	
-20	625327-1		Washer, Wave							ar					ar	
-21	632916-11A1 ①		Control Assy., Complete (See Figure 46)							1					1	
ATTACHING PARTS																
-22	501867		Washer, Tab							3					3	
-23	537629		Screw, 1/4 - 20 x 11/16 Inch Long							3					3	
* * * *																
	633381-4A1		Link Rod Assembly							1					1	
-24	633381-4		Rod and Link Assembly							1					1	
-25	AN121501		Nut							2					2	
-26	626634		Spring, Compression							1					1	
-27	632557		Rod End, Sprecial							1					1	
-28	MS21044N3		Nut, Elastic Stop							1					1	
-29	625327-2		Washer, Wave							4					4	
-30	537690		Washer, Plain							4					4	
-31	2500		Pin, Cotter							4					4	
-32	633409	\$	Gasket, Controller							1					1	
-33	641434-3	②	Controller Assembly, Complete							1						
-33	641434-4	②	Controller Assembly, Complete												1	
ATTACHING PARTS																
-34	AN960-10L		Washer, Flat							4					4	
-35	AN500A10-12		Screw, No. 10-24							4					4	
* * * *																
-36	632555-14		Lever Assembly							1					1	
-37	632554-2		Bushing							1					1	
-38	626813		Pin, Tubular							1					1	
	633381-3A1		Link, Rod Assembly							1					1	
-39	633381-3		Rod and Link Assembly							1					1	
-40	13XX1896		Nut, No. 10-32							2					2	
-41	632557		Rod End, Special							1					1	
-42	626634		Spring, Compression							1					1	
-43	MS21044N3		Nut, Elastic Stop							1					1	
-44	634326-4A7 ①③		Valve Assy., Fuel Manifold (See Figure 48)							1					1	
-44	634326-4A1 ④		Valve Assembly, Fuel Manifold								Opt					Opt
-45	626486		Bracket, Fuel Discharge Tube							2					2	
-46	632748-14 ①⑤		Nozzle Assembly, Fuel Injection							6					6	
-47	636037-1		Tube Assy., Fuel Discharge Cyl. 1 & 6							2					2	
-47	636036-1		Tube Assy., Fuel Discharge Cyl. 2 & 5							2					2	
-47	636035-1		Tube Assy., Fuel Discharge Cyl. 3 & 4							2					2	
-48	626577-2		Clamp, Fuel Discharge Tube							6					6	
	642100-5		Regulator Assembly, Fuel Discharge							1					1	

NOTE:

- ① For detail parts, see Fuel Injection Systems Overhaul Manual and Parts Catalog, Form X-30091.
- ② For detail parts, See Controller Overhaul Manual and Parts Catalog, Form X-30086.
- ③ Use with new style crankcase (backbone width 1.00 inch).
- ④ Use with old style crankcase (backbone width .76 inch).
- ⑤ Order nozzle size identified on hex of nozzle body.

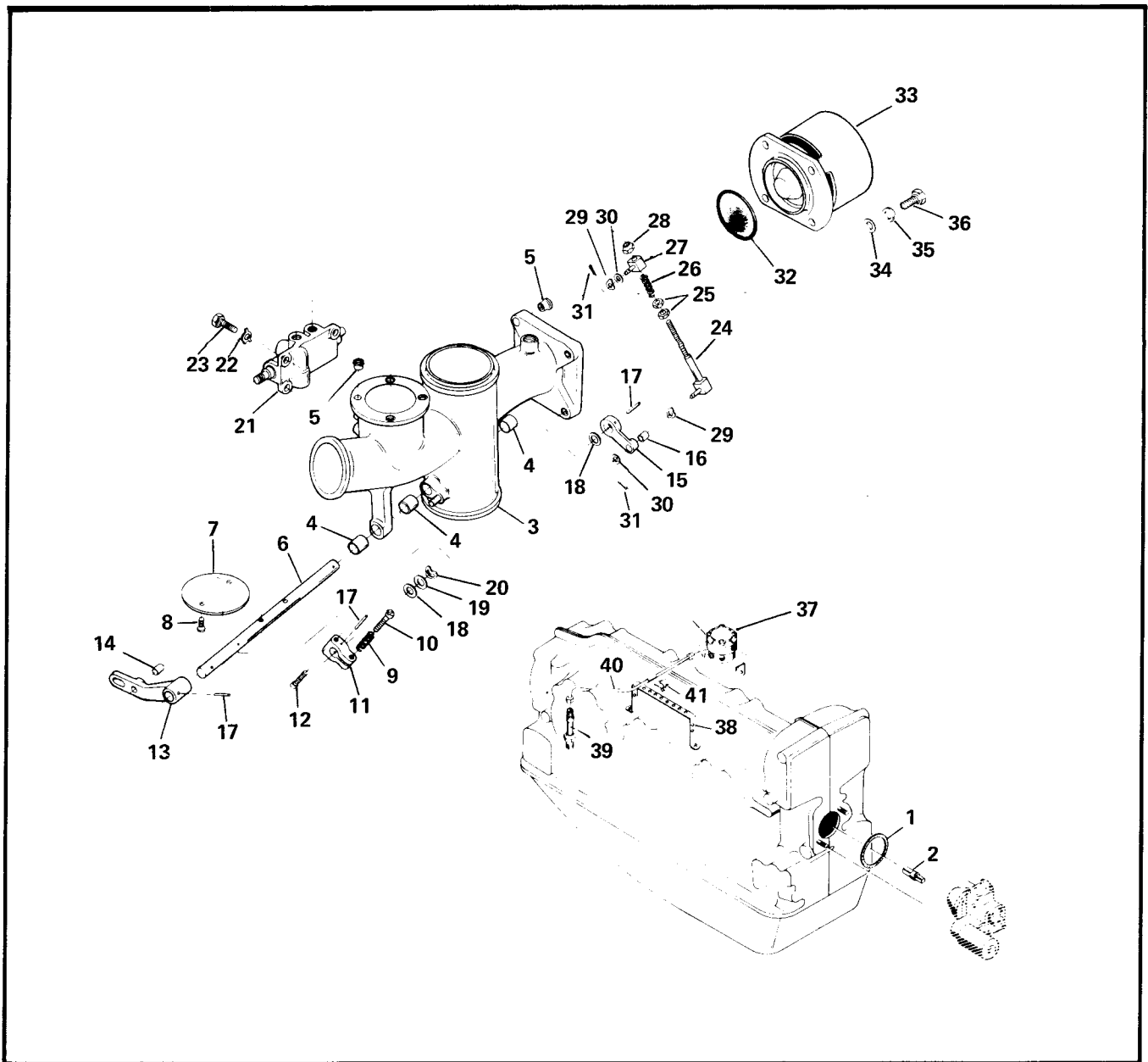


FIGURE 39. FUEL INJECTION SYSTEM, TSIO-520-K

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY												
			1	2	3	4	5	TSIO-520							
			B	C	D	E	G	H	J	K	L	M	N	P	R
39-1	630763	\$ Gasket, Fuel Pump									1				
-2	631263	Coupling, Crankshaft Gear-to-Fuel Pump									1				
	637736A4	Fuel Injection Assembly, Complete									1				
	632818-2A2	① Fuel Pump Assembly (See Figure 42)									1				
	637735A3	Throttle and Control Assembly									1				
-3	635915A2	Air Throttle Assembly									1				
-4	630455	Bushing									3				
-5	MS122160	Insert, Helical Coil									12				
-6	635950	Shaft, Throttle									1				
-7	632931	Plate, Throttle									1				
ATTACHING PARTS															
-8	539942	Screw									2				
* * * *															

FIG. NDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY												
				TSIO-520												
				B	C	D	E	G	H	J	K	L	M	N	P	R
-9	626634		Spring									1				
-10	636805		Screw, Idle Adjusting									1				
-11	639497		Lever, Throttle, Idle Control									1				
-12	AN565E8H8		Set Screw									1				
-13	632555-15		Lever Assembly									1				
-14	632554-2		Bushing									1				
-15	632555-14		Lever Assembly									1				
-16	632554-2		Bushing									1				
-17	632813		Pin, Lever to Shaft									3				
-18	625457		Washer, Plain, 0.030 Thick									ar				
-19	625457-1		Washer, Plain, 0.015 Thick									ar				
-20	625327-1		Washer, Wave									ar				
-21	632916-11A2 ①		Control Assy., Complete (See Figure 46)									1				
ATTACHING PARTS																
-22	501867		Washer, Tab									3				
-23	537629		Screw, 1/4 - 20 x 11/16 Inch Long									3				
* * * *																
	633381-4A1		Link Rod Assembly									1				
-24	633381-4		Rod and Link Assembly									1				
-25	AN121501		Nut									2				
-26	626634		Spring, Compression									1				
-27	632557		Rod End, Special									1				
-28	MS21044N3		Nut, Elastic Stop									1				
-29	625327-2		Washer, Wave									4				
-30	537690		Washer, Plain									4				
-31	2500		Pin, Cotter									4				
-32	MS29513-138 \$		O-Ring									1				
-33	637583-17		Valve Assembly, Pressure Relief									1				
ATTACHING PARTS																
-34	AN960-10L		Washer, Flat									4				
-35	20654		Washer, Lock									4				
-36	AN500A10-12		Screw, No. 10-24									4				
* * * *																
-37	634326-6A2 ①②		Valve Assy., Fuel Manifold (See Fig. 48)									1				
-37	634326-6A1 ③		Valve Assembly, Fuel Manifold									Opt				
-38	626486		Bracket, Fuel Discharge Tube									2				
-39	632748-14 ①④		Nozzle Assembly, Fuel Injector									6				
-40	636037-1		Tube Assy., Fuel Discharge Cyl. 1 & 6									2				
	636036-1		Tube Assy., Fuel Discharge, Cyl. 2 & 5									2				
	636035-1		Tube Assy., Fuel Discharge, Cyl. 3 & 4									2				
-41	632577-2		Clamp, Fuel Discharge Tube									6				
	642100-5		Regulator Assembly, Fuel Pressure									1				

NOTE:

- ① For detail parts, see Fuel Injection Systems Manual and Parts Catalog, Form X-30091.
- ② Use with new style crankcase (backbone width 1.00 inch).
- ③ Use with old style crankcase (backbone width .76 inch).
- ④ Order nozzle size identified on hex of nozzle body.



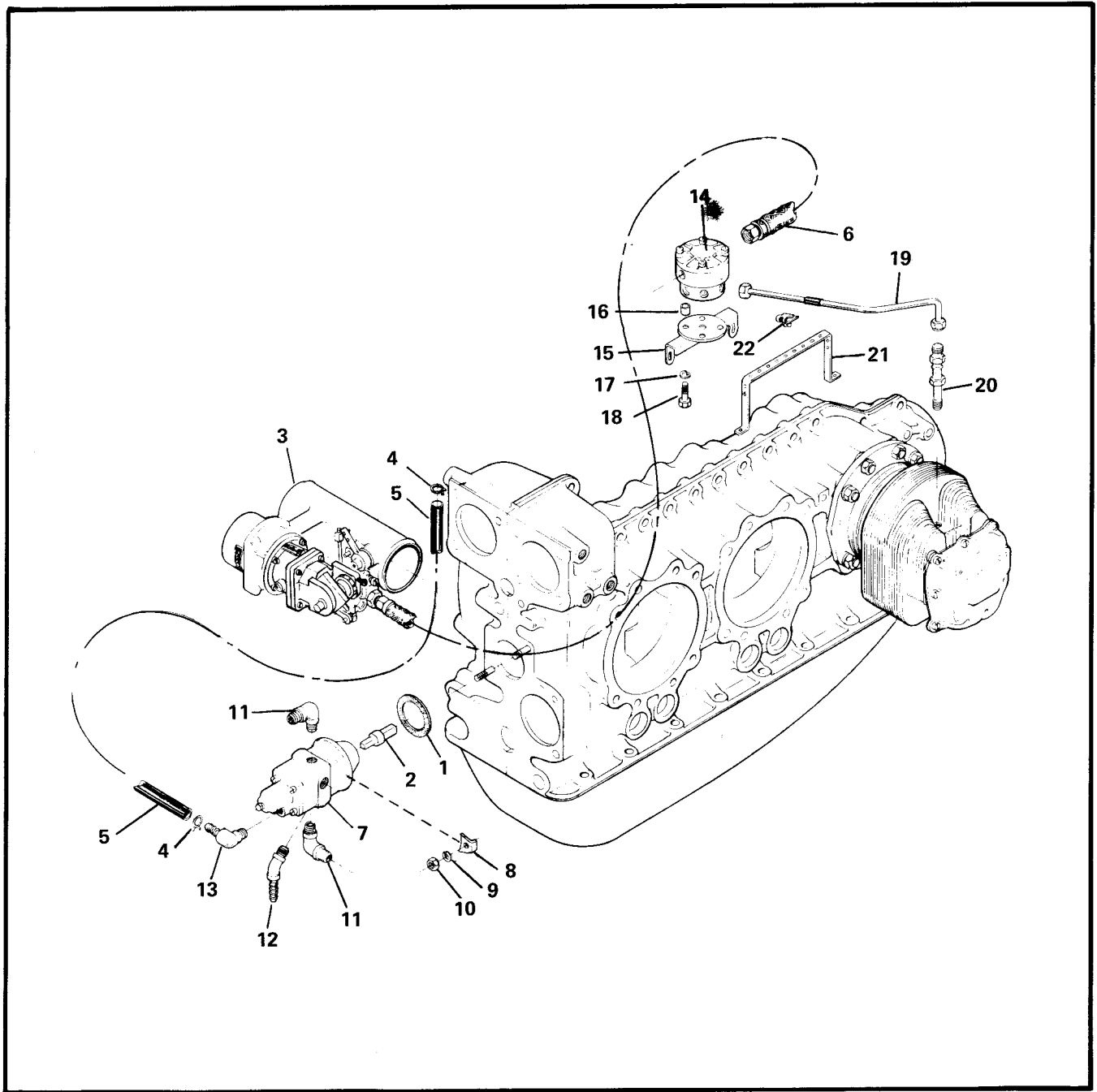


FIGURE 40. FUEL INJECTION SYSTEM, TS10-520-L

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY												
				TSIO-520												
				B	C	D	E	G	H	J	K	L	M	N	P	R
40-1	630763	\$	Gasket, Fuel Pump										1			
-2	631263		Coupling, Crankshaft Gear-to-Fuel Pump										1			
	640792A7		Fuel Injection Assembly, Complete										1			
-3	640791A2		Throttle and Control Assembly										1			
-4	536388-50		Clamp, Hose										2			
-5	628555-14		Hose, Air Throttle-to-Fuel Pump										1			
-6	641100S4S41.00		Hose Assy., Metering Unit-to-Divider										1			
-7	640643-1A2		Fuel Pump Assembly, Complete										1			
ATTACHING PARTS																
-8	535847		Washer, Holding										2			
-9	MS35338-45		Washer, Lock										2			
-10	2439		Nut										2			
* * * *																
-11	641889		Elbow, 90 Degree, Inlet and Outlet										2			
-12	632115		Elbow, 45 Degree										1			
-13	629125		Elbow, 90 Degree										1			
	640668A2		Manifold and Bracket Assembly, Fuel										1			
-14	640668		Flow Divider										1			
-15	642095	①	Bracket										1			
-16	640665		Spacer, Bracket to Flow Divider										4			
-17	MS35338-43		Washer, Lock										4			
-18	AN500A10-16		Bolt										4			
-19	636037-1		Tube Assy., Fuel, Cylinder 1 & 6										2			
-19	636036-1		Tube Assy., Fuel, Cylinder 2 & 5										2			
-19	641015		Tube Assy., Fuel, Cylinder 4										1			
-19	641018		Tube Assy., Fuel, Cylinder 3										1			
-20	632748-14	②	Nozzle Assembly										6			
-21	631246		Bracket, Fuel Discharge Tube										2			
-22	626577-2		Clamp, Fuel Tube to Bracket										6			

NOTE ① The manifold bracket 642095 is for the newer configuration crankcases. Older models used a 640663 bracket.

NOTE ② Order nozzle size identified on hex of nozzle body.

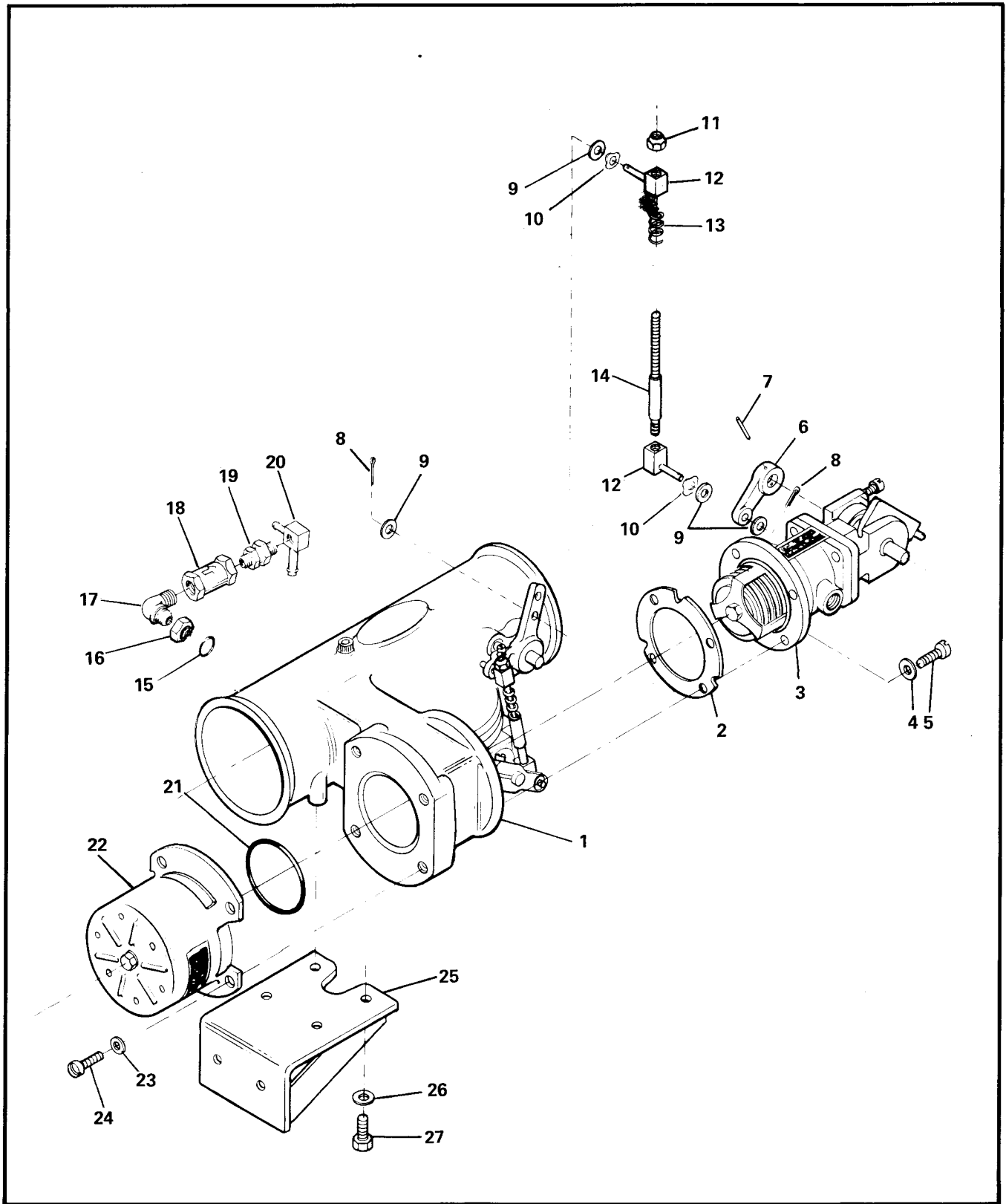


FIGURE 41. THROTTLE AND CONTROL ASSEMBLY, TS10-520-L

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY													
			TSIO-520													
			B	C	D	E	G	H	J	K	L	M	N	P	R	
41-	640791A2	Throttle and Control Assembly . . . . .														1
-1	640667	. Fuel Injection Assembly . . . . .														1
-2	633409	. Gasket, Controller . . . . .														1
-3	640655A1	. Controller and Link Rod Assembly . . . . .														1
		ATTACHING PARTS														
-4	AN960-10L	. . Washer, Flat . . . . .														4
-5	AN500A10-12	. . Screw . . . . .														4
		* * * *														
-6	632553-2	. . Lever . . . . .														1
-7	626813	. . Pin, Tubular . . . . .														1
-8	2500	. . Pin, Cotter . . . . .														2
-9	537690	. . Washer, Flat . . . . .														4
-10	625327-2	. . Washer, Wave . . . . .														2
-11	MS21044N3	. . Nut, Self Locking . . . . .														1
-12	632557	. . Rod End . . . . .														2
-13	626634	. . Spring . . . . .														1
-14	633381-8	. . Rod . . . . .														1
-15	MS29512-06	. O-Ring . . . . .														1
-16	AN924-6	. Nut . . . . .														1
-17	AN833-6	. Elbow, 90 Degree . . . . .														1
-18	MS28882-6	. Valve, Check . . . . .														1
-19	640690	. Adapter . . . . .														1
-20	640692	. Junction Box Assembly . . . . .														1
-21	MS29513-138	. O-Ring . . . . .														1
-22	639319-9	. Valve, Fuel Pressure Relief . . . . .														1
		ATTACHING PARTS														
-23	AN960-10L	. Washer, Flat . . . . .														4
-24	AN500A10-12	. Screw . . . . .														4
		* * * *														
-25	640644	. Bracket . . . . .														1
		ATTACHING PARTS														
-26	534471	. Washer, Flat . . . . .														4
-27	MS9089-10	. Bolt . . . . .														4

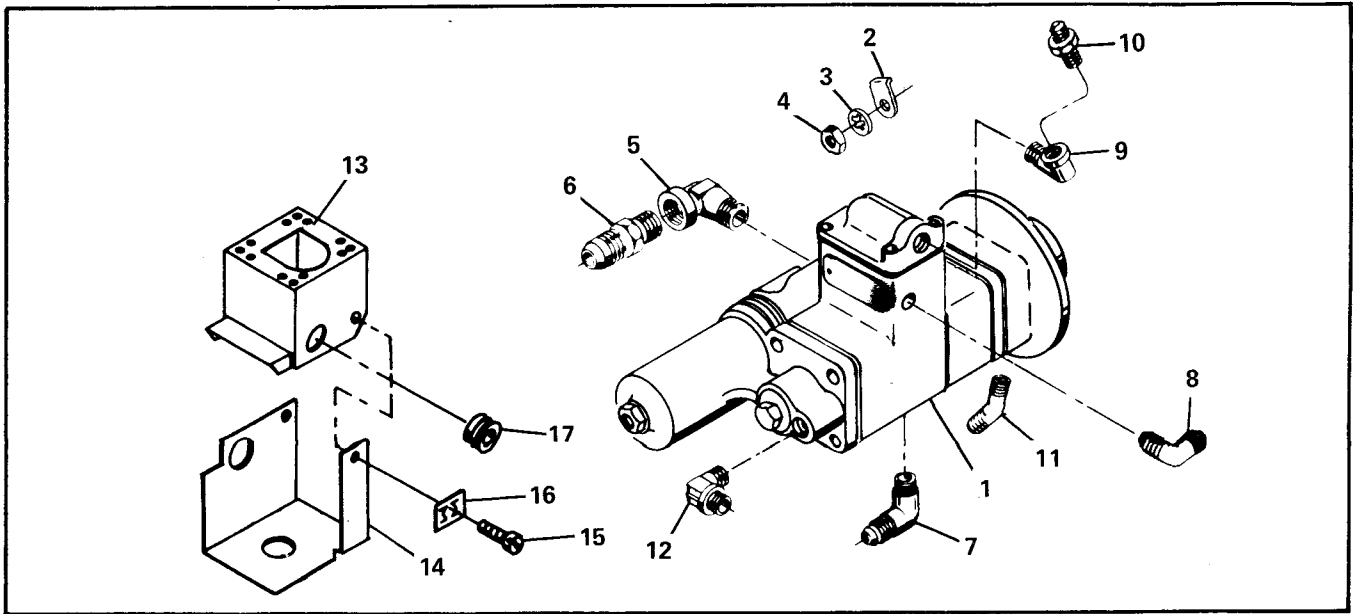


FIGURE 42. FUEL PUMP ASSEMBLY, TSIO-520-B,E,J,K,N.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY															
			TSIO-520															
1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R	
42-1	632818-1A1	Fuel Pump & Pressure Compensator Assembly				1												
-1	632818-2A1	Fuel Pump & Pressure Compensator Assembly						1										
-1	632818-2A2	Fuel Pump & Pressure Compensator Assembly									1	1			1			
ATTACHING PARTS																		
-2	535847	Washer, Holding				2		2		2	2				2			
-3	MS35338-45	Washer, Lock				2		2		2	2				2			
-4	2439	Nut, Plain Hex				2		2		2	2				2			
* * * * *																		
-5	632017	. Elbow, 90 Degree, 1/4 NPTF				1		1		1	1				1			
-6	631308	. Connector, 1/4 NPTF-to-1/2 Tube				1		1		1	1				1			
-7	628437	. Elbow, 90 Degree, 1/8 NPTF-to-1/4 Tube				1		1										
-7	628436	. Elbow, 45 Degree, 1/8 NPTF-to-1/4 Tube									1	1			1			
-8	628476	. Elbow, 45 Degree, 1/8 NPTF-to-1/8 Tube				1		1										
-8	628437	. Elbow, 90 Degree, 1/8 NPTF-to-1/4 Tube									1	1			1			
-9	627119	. Elbow, 90 Degree, 1/8 NPTF				1		1										
-9	631293	. Elbow, 90 Degree, 1/8 NPTF-to-3/8 Tube									1	1			1			
-10	631307	. Connector, 1/8 NPTF-to-3/8 Tube				1		1										
-11	628436	. Elbow, 45 Degree, 1/8 NPTF-to-1/4 Tube				1		1		1	1				1			
-12	X5146	. Elbow, 90 Degree, 1/8 NPTF-to-1/4 Tube				1		1										
-12	636350	. Fitting Assy., Tee, 1/8 NPTF-to-1/2 Tube-to-1/2 Tube									1	1			1			
-13	633036	. Shroud Assembly, Fuel Pump				1		1										
-14	633650	. Shroud, Fuel Pump				1		1										
ATTACHING PARTS																		
-15	AN515-8R5	. Screw, Maching				2		2										
-16	MS21044N08	. Nut, Self-Locking				2		2										
-17	626879-1	\$ . Grommet				3		3										

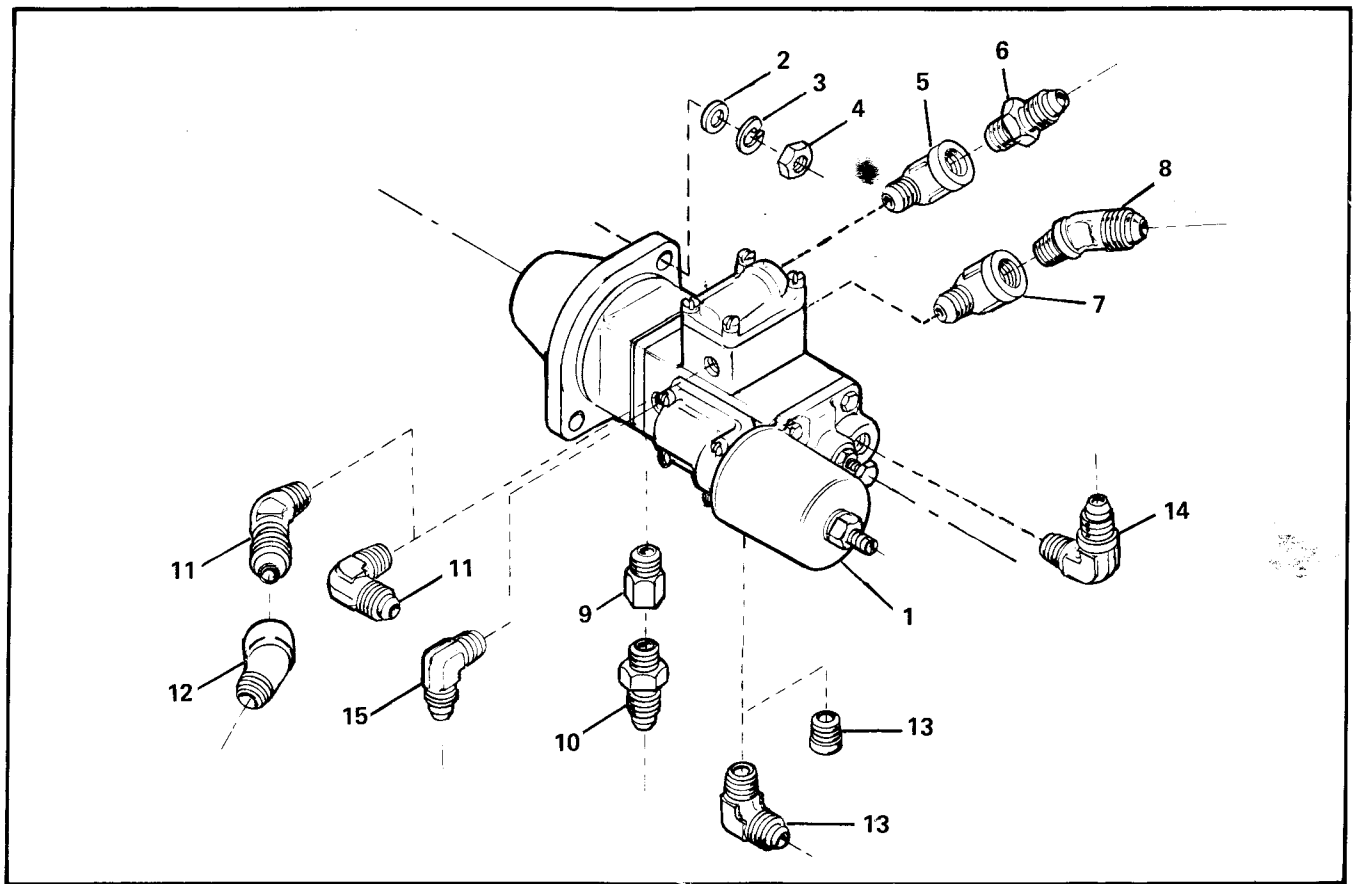


FIGURE 43. Fuel Pump Assembly, TSIO-520-C,G,H,M,P,R. (NEW STYLE)

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY												
			TSIO-520												
			B	C	D	E	G	H	J	K	L	M	N	P	R
43- 1	632818-5A2	Fuel Pump Assembly, Complete	1				1	1							
- 1	632818-7A2	Fuel Pump Assembly, Complete										1		1	1
ATTACHING PARTS															
- 2	2473	Washer, Plain	4				4	4				4		4	4
- 3	MS35338-45	Washer, Lock	4				4	4				4		4	4
- 4	2439	Nut, Plain, Hex	4				4	4				4		4	4
		* * * *													
- 5	627119	Elbow, 90 Degree	1				1	1				1		1	1
- 6	628438	Fitting, Connector	1				1	1				1		1	1
- 7	627119	Elbow, 90 Degree	1				1	1				1		1	1
- 8	628476	Elbow, 45 Degree	1				1	1				1		1	1
- 9	626900	Fitting, Extension										1		1	1
- 10	628438	Fitting, Connector	1				1	1				1		1	1
- 11	631882	Elbow, 90 Degree	1				1	1							
- 11	637286	Elbow, 45 Degree										1		1	1
- 12	633121	Elbow, 45 Degree										1		1	1
- 13	401753	Plug	1				1	1							
- 13	628437	Elbow, 90 Degree										1		1	1
- 14	X5146	Elbow, 90 Degree	1				1	1				1		1	1
- 15	628437	Elbow, 90 Degree	1				1	1							

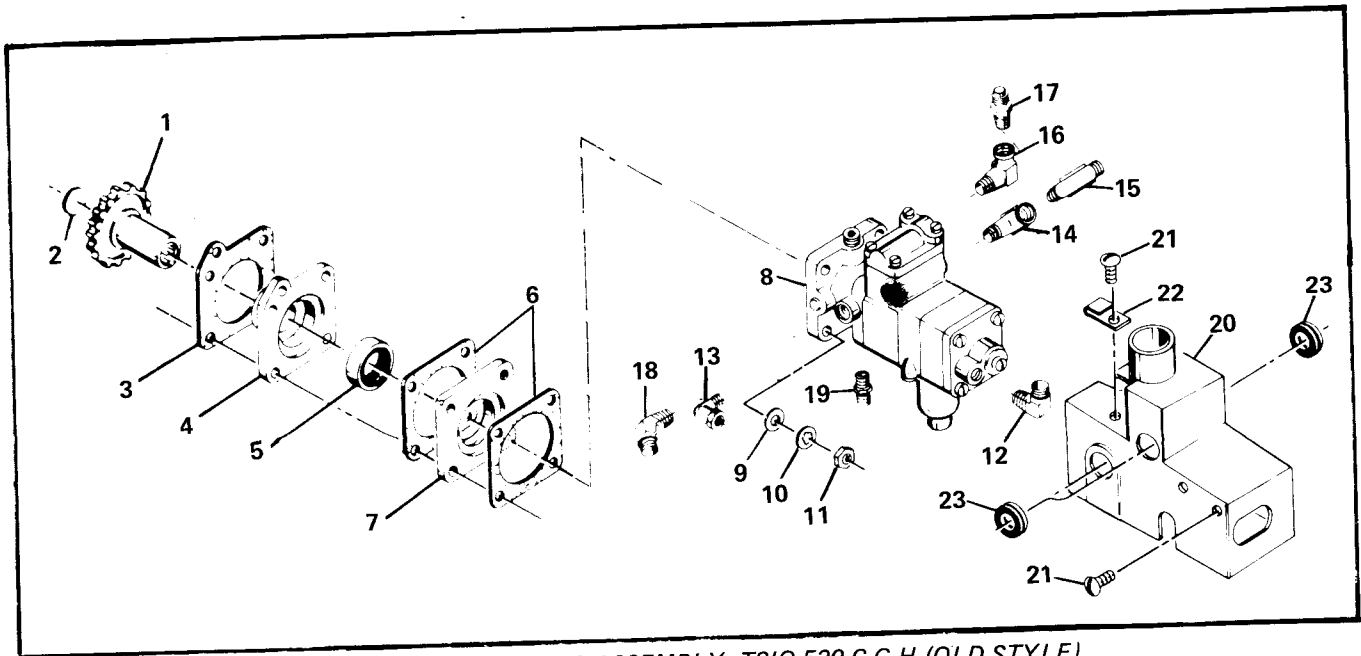


FIGURE 44. FUEL PUMP ASSEMBLY, TSIO-520-C,G,H.(OLD STYLE)

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY																		
			TSIO-520																		
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R	
44-1	534995	Gear Assembly, Fuel Pump									1										
-2	539634	. Plug, Expansion									1										
-3	534941	\$ Gasket, Fuel Pump to Crankcase									1										
-4	627518	Adapter Assembly, Fuel Pump									1										
-5	534956	\$ . Seal, Oil									1										
-6	AN4059-1	\$ Gasket, Adapter to Fuel Pump									1										
-7	626839	Insulator, Fuel Pump									1										
-8	630751-3A1	① Fuel Pump and Vapor Separator Assembly, Complete									1										
ATTACHING PARTS																					
-9	538181	Washer, Plain									4										
-10	AN936A516	Washer, Lock									4										
-11	2439	Nut, Plain, Hex									4										
* * * * *																					
-12	X5146	. Elbow, 90 Degree, 1/8 NPTF to 1/4 Tube									1										
-13	631882	. Elbow, 90 Degree, 1/4 NPTF to 1/4 Tube									1										
-14	627119	. Elbow, 90 Degree, 1/8 NPTF									1										
-15	628476	. Elbow, 45 Degree, 1/8 NPTF to 1/4 Tube									1										
-16	627119	. Elbow, 90 Degree, 1/8 NPTF									1										
-17	628438	. Connector, 1/8 NPTF to 1/4 Tube									1										
-18	629267	. Elbow, 45 Degree, 1/4 NPTF to 1/4 Tube									1										
-19	628438	. Connector, 1/8 NPTF to 1/4 Tube									1										
-20	633158	. Shroud Assembly, Fuel Pump									1										
ATTACHING PARTS																					
-21	AN526-1024-4	. Screw, Sheet Metal									4										
-22	534337	. Nut, Tinnerman, Type J									4										
* * * * *																					
-23	626879-1	S . Grommet									3										

NOTE ① This fuel pump is no longer serviced as a complete assembly. For new style pump see Figure 43.

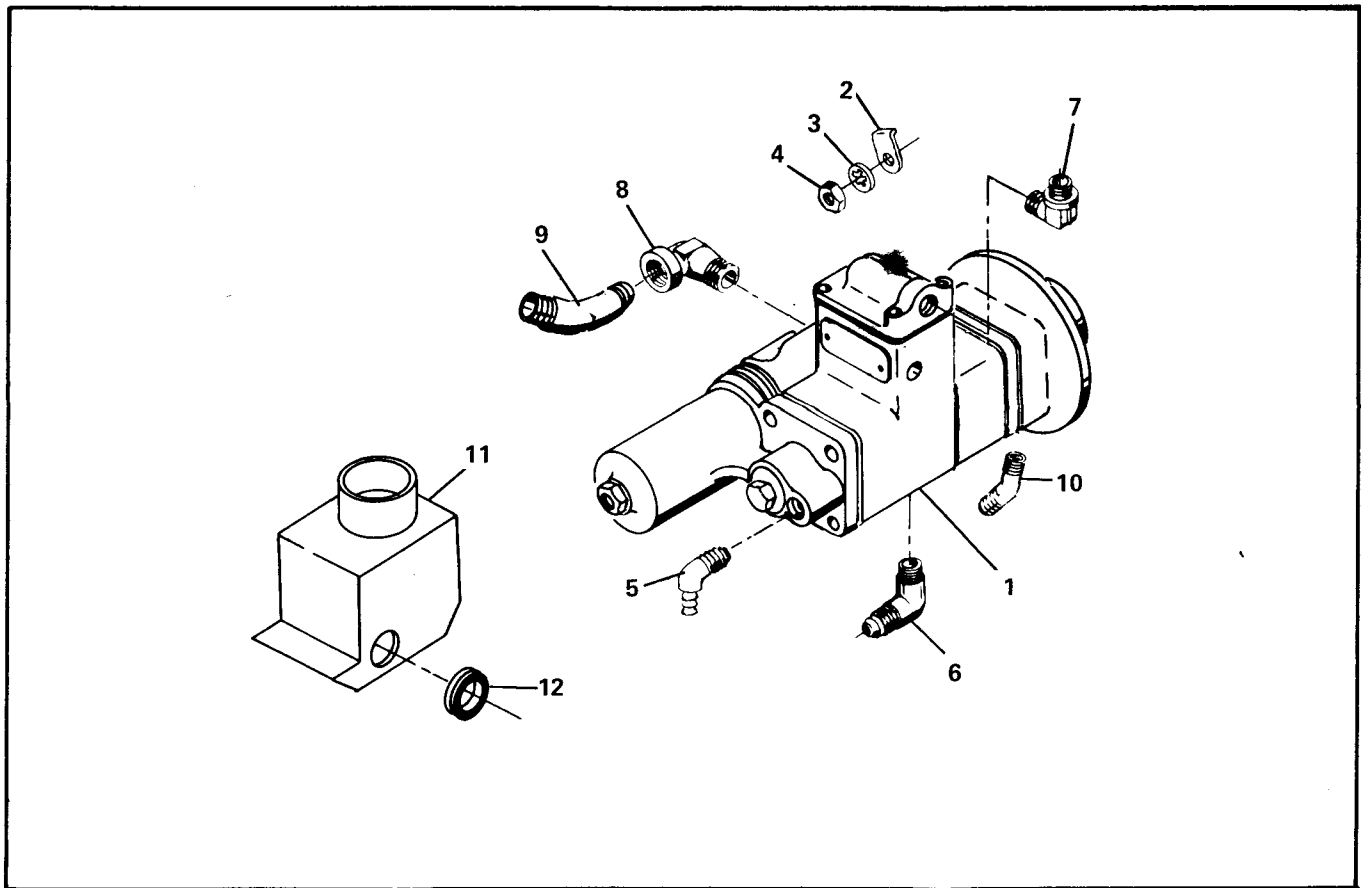


FIGURE 45. FUEL PUMP ASSEMBLY, TSIO-520-D

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																				
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R			
45- 1	639508-5A1	Fuel Pump Assembly, Complete										1											
ATTACHING PARTS																							
-2	535847	Washer, Hold										2											
-3	MS35338-45	Washer, Lock										2											
-4	2439	Nut, Plain										2											
* * * *																							
-5	633789	. Elbow										1											
-6	628437	. Elbow, 90 Degree, 1/8 NPTF to 1/4 Tube										1											
-7	628437	. Elbow, 90 Degree, 1/8 NPTF to 1/4 Tube										1											
-8	632017	. Elbow, 90 Degree										1											
-9	634536	. Elbow, 45 Degree, 1/4 NPTF to 3/8 Tube										1											
-10	632115	. Elbow, 45 Degree, 1/8 NPTF to 1/4 Tube										1											
-11	631764	. Shroud Assembly, Fuel Pump										1											
-12	626879-1	\$ . Grommet										3											



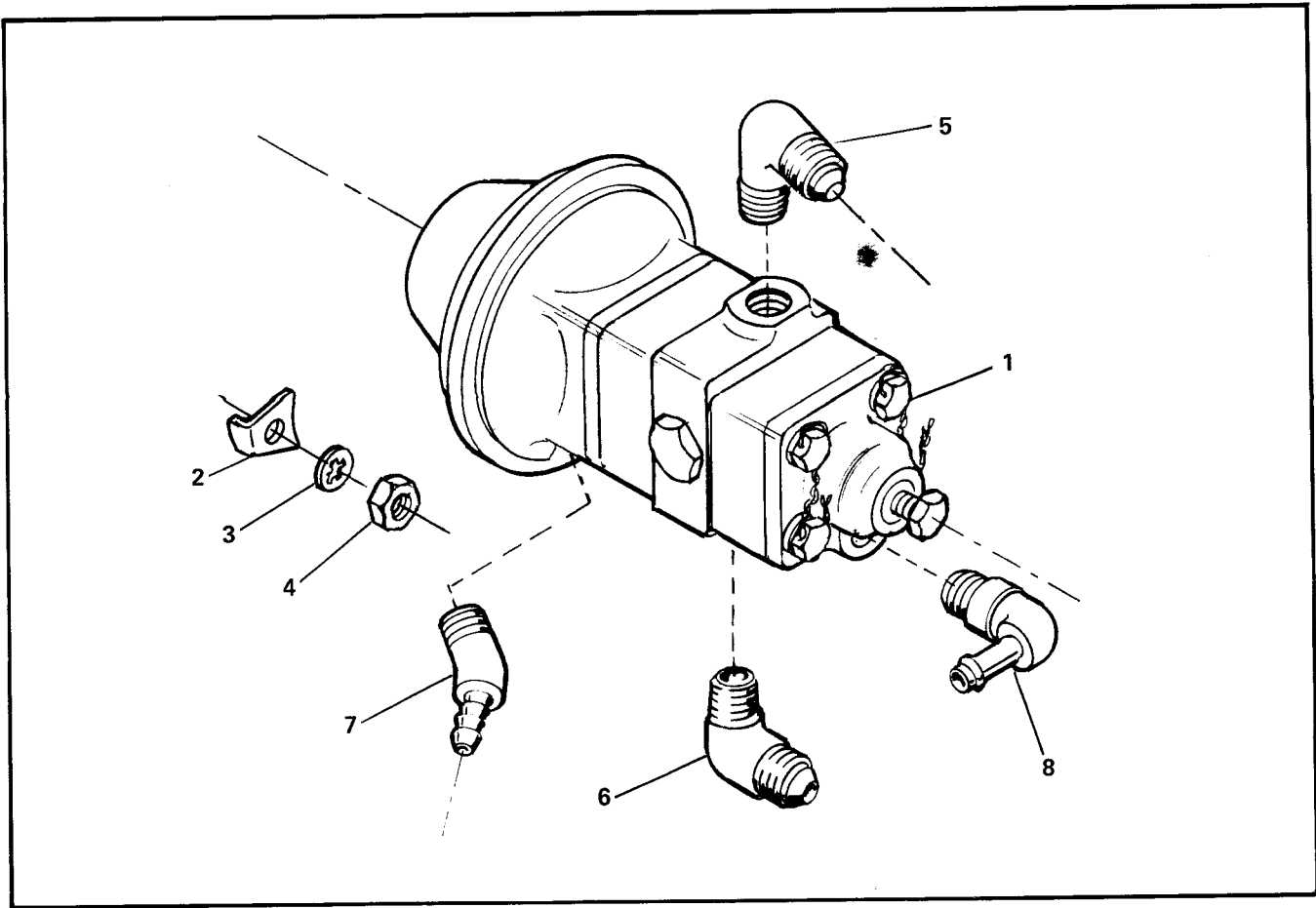


FIGURE 46. Fuel Pump Assembly, TSIO-520-L

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520															
			B	C	D	E	G	H	J	K	L	M	N	P	R			
46- 1	640643-1A2	Fuel Pump Assembly											1					
		ATTACHING PARTS																
-2	535847	Washer, Holding												2				
-3	MS35338-45	Washer, Lock												2				
-4	2439	Nut, Plain, Hex												2				
		* * * *																
-5	641889	. Elbow, 90 Degree												1				
-6	632616	. Elbow, 90 Degree												1				
-7	632115	. Elbow, 45 Degree												1				
-8	629125	. Elbow, 90 Degree												1				

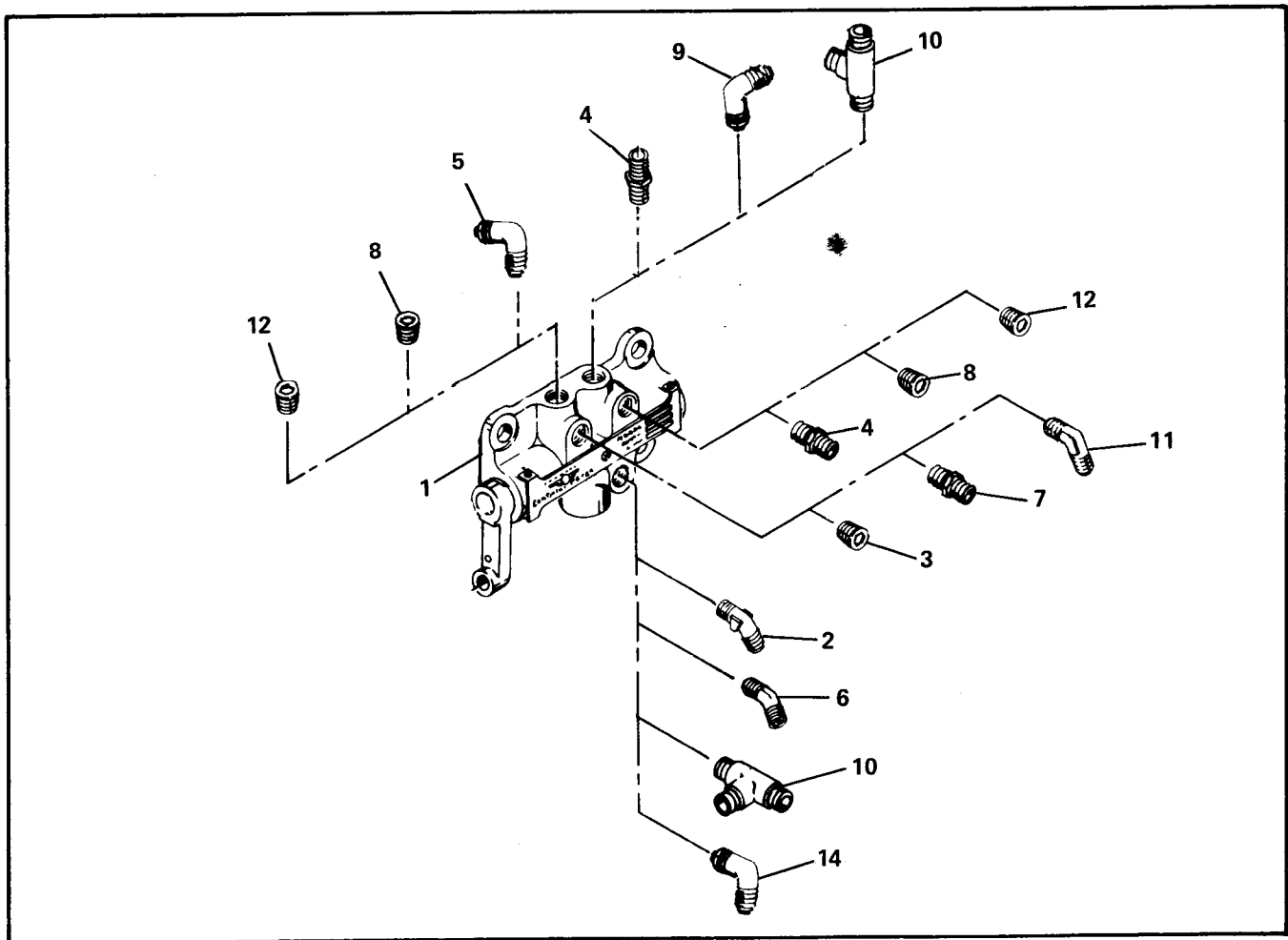


FIGURE 47. FUEL INJECTION CONTROL ASSEMBLY, TSIO-520-B,C,E,G,H,J,K,M,N,P,R.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																		
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R	
47-1	632916-8A1	Control Assembly, Complete	1																		
-1	632916-11A1	Control Assembly, Complete											1					1			
-1	632916-11A2	Control Assembly, Complete												1							
-1	629703-8A1	Control Assembly, Complete						1			1	1									
-1	629703-11A1	Control Assembly, Complete															1		1	1	
-2	628436	. Elbow, 45 Degree, 1/2 NPTF-to-1/4 Tube						1			1										
-3	AN932-2	. Plug, Pipe, 1/8 - 27 NPTF						1			1										
-4	628438	. Connector, 1/8 NPTF-to-1/4 Tube						2			2										
-5	628437	. Elbow, 90 Degree, 1/8 NPTF-to-1/4 Tube						1			1										
-6	628476	. Elbow, 45 Degree, 1/8 NPTF-to-1/4 Tube							1		1	1									
-7	628438	. Connector, 1/8 NPTF-to-1/4 Tube						1			1	1					1		1	1	
-8	AN932-2	. Plug, Pipe, 1/8 - 27 NPTF						2			2	2					2		2	2	
-9	628478	. Elbow, 90 Degree, 1/8 NPTF-to-1/4 Tube						1			1	1					1		1	1	
-10	636349	. Tee, 1/8 NPTF-to-1/4 Tubes											1	1				1			
-11	628436	. Elbow, 45 Degree, 1/8 NPTF-to-1/4 Tube											1	1				1			
-12	AN932-2	. Plug, Pipe, 1/8 - 27 NPTF											2	2				2			
-13	636758	. Tee, 1/8 NPTF-to-1/4 Tubes											1	1				1			
-14	628437	. Elbow, 90 Degree, 1/8 NPTF-to-1/4 Tube															1		1	1	

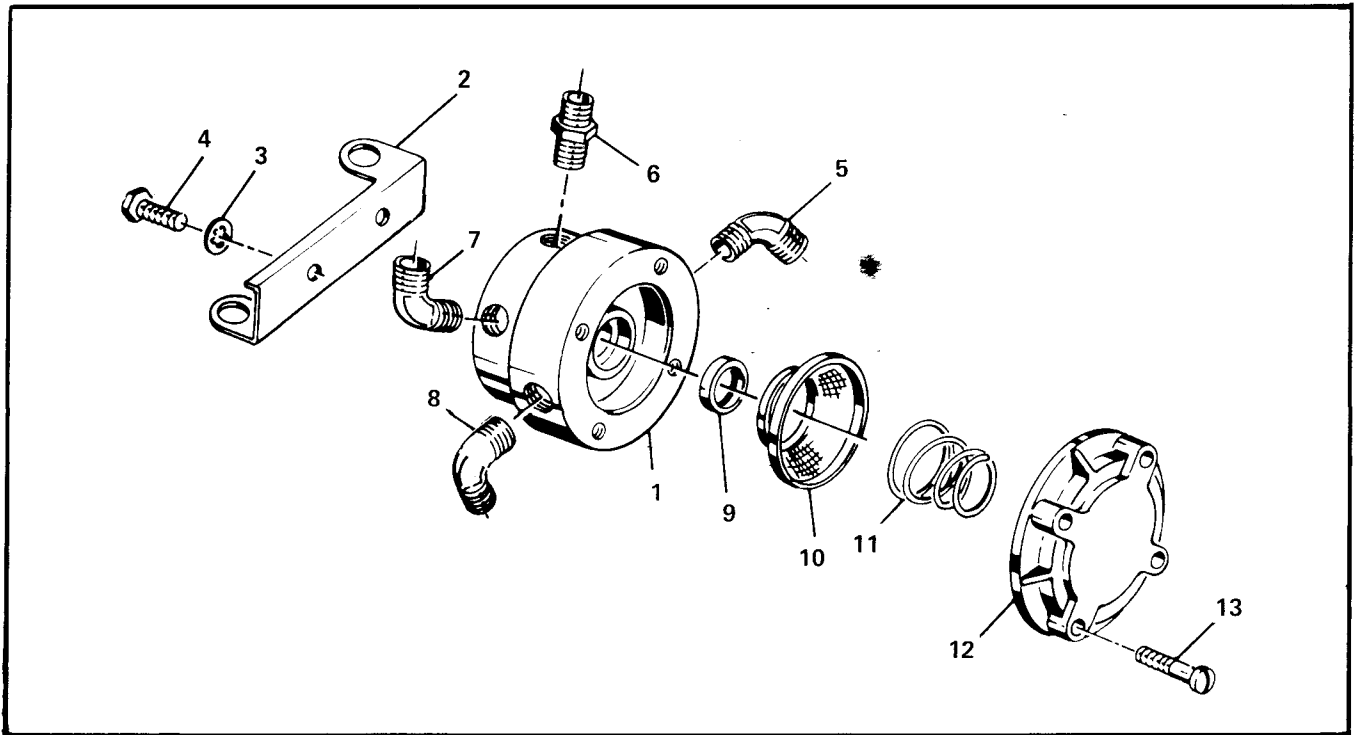


FIGURE 48. FUEL MANIFOLD VALVE ASSEMBLY, TSIO-520-B,C,D,E,G,H

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY															
			TSIO-520															
1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R	
48- 1	631351-9A3	① Valve Assy., Fuel Manifold Complete				1												
-1	631351-7A3	① Valve Assy., Fuel Manifold Complete							1									
-1	631351A10	Valve Assy., Fuel Manifold Complete					1											
-1	631351A14	① Valve Assy., Fuel Manifold Complete						1										
-1	631351A12	Valve Assy., Fuel Manifold Complete								1								
-1	631351A11	Valve Assy., Fuel Manifold Complete									1							
-2	642064	①② Bracket, Fuel Manifold				1		1	1									
-2	634011	Bracket, Fuel Manifold					1			1	1							
ATTACHING PARTS																		
-3	MS35338-43	Washer, Lock				2	2	2	2	2	2							
-4	AN500-10-5	Screw				2	2	2	2	2	2							
* * * *																		
-5	628437	Elbow, 90 Degree, 1/8 NPTF-to-1/4 Tube				1	1	1	1	1	1							
-6	AN780-2	Nipple, Union				2	2	2	2	2	2							
-7	627331	Elbow, 45 Degree, 1/8 NPTF-to-5/16 -32				4	4	4	4	4	4							
-8	631720	Elbow, 90 Degree, 1/8 NPTF-to-1/8 Tube				1	1		1									
-8	631658	Elbow, 90 Degree, 1/8 NPTF-to-1/4 Tube						1										
-8	637430	Elbow, 90 Degree, 1/8 NPTF-to-3/16 Tube								1	1							
-9	631330	Seal				1	1	1	1	1	1							
-10	626557	Screen				1	1	1	1	1	1							
-11	630184	Spring, Compression				1	1	1	1	1	1							
-12	626553	Cover				1	1	1	1	1	1							
ATTACHING PARTS																		
-13	AN500A8-10	Screw				4	4	4	4	4	4							

NOTE

① This manifold valve assembly is used with the new style crankcase, (backbone width 1.00 inch). To order manifold valve for old style crankcase, (backbone width .76 inch) refer to the appropriate Fuel Injection System Figure for your engine.

② For old style case, use bracket 634011.

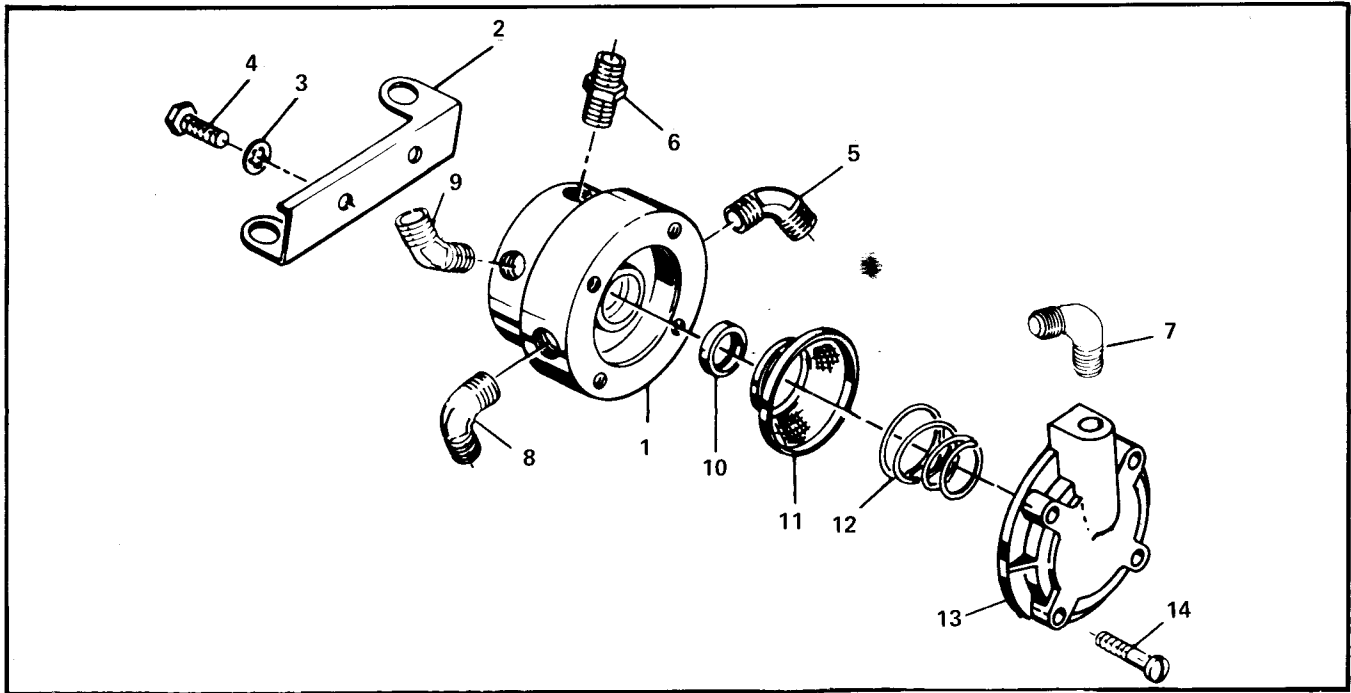


FIGURE 49. FUEL MANIFOLD VALVE ASSEMBLY, TSIO-520-J,K,L,M,N,P,R.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY																		
			TSIO-520																		
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R	
49- 1	634326-4A7	① Valve Assy., Fuel Manifold Complete												1					1		
-1	634326-6A2	① Valve Assy., Fuel Manifold Complete													1						
-1	634326-4A6	① Valve Assy., Fuel Manifold Complete														1					
-1	634326-4A4	Valve Assy., Fuel Manifold Complete															1		1	1	
-2	642064	①② Bracket, Fuel Manifold												1	1	1		1			
-2	634011	Bracket, Fuel Manifold															1		1	1	
ATTACHING PARTS																					
-3	MS35338-43	Washer, Lock												2	2	2	2	2	2	2	
-4	AN500-10-5	Screw												2	2	2	2	2	2	2	
* * * * *																					
-5	631720	Elbow, 90 Degree, 1/8 NPTF-to-1/8 Tube												1	1				1		
-5	2024	Plug, Pipe														1					
-5	637430	Elbow															1		1	1	
-6	AN780-2	Nipple Union												2	2	2	2	2	2	2	
-7	627331	Elbow, 45 Degree, 1/8 NPTF-to-1/8 Tube												4	4	4		4			
-7	MS20823-2	Elbow, 45 Degree															4		4	4	
-8	628437	Elbow, 90 Degree, 1/8 NPTF-to-1/4 Tube												1	1		1	1	1	1	
-8	628436	Elbow, 45 Degree, 1/8 NPTF-to-1/4 Tube														1					
-9	628436	Elbow, 45 Degree, 1/8 NPTF-to-1/4 Tube												1	1			1			
-9	642070	Nipple														1					
-9	MS20823-2	Elbow, 45 Degree															1		1	1	
-10	631330	Seal												1	1	1	1	1	1	1	
-11	626557	Screen												1	1	1	1	1	1	1	
-12	630184	Spring, Compression												1	1	1	1	1	1	1	
-13	634325	Cover												1	1	1	1	1	1	1	
* * * * *																					
-14	AN500A8-10	Screw												4	4	4	4	4	4	4	

NOTE ① This manifold valve assembly is used with the new style crankcase, (backbone width 1.00 inch). To order manifold valve for old style crankcase, (backbone width .76 inch) refer to the appropriate Fuel Injection System Figure for your engine.

② For old style case, use bracket 634011.

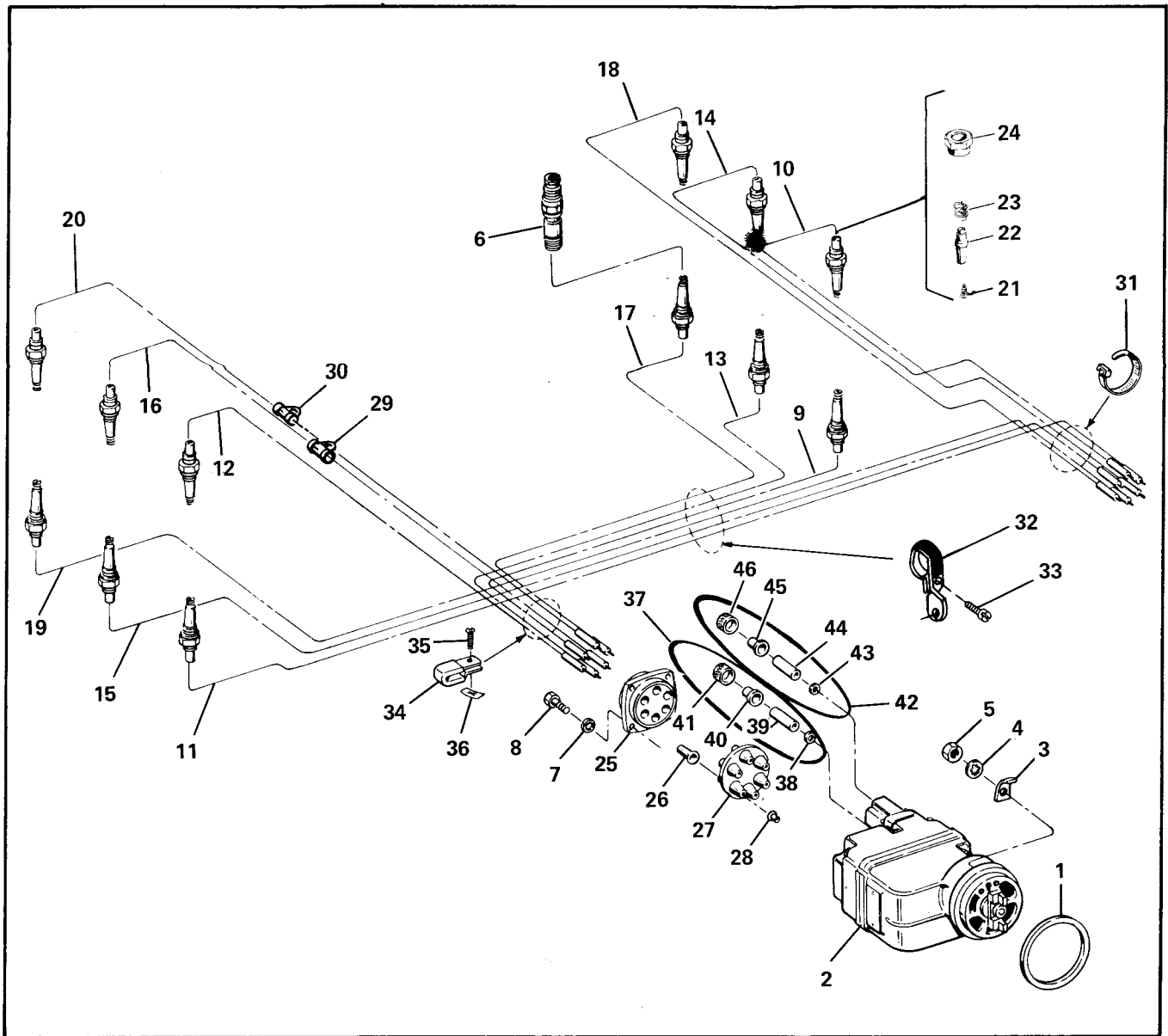


FIGURE 50. IGNITION SYSTEM, TS10-520-B,E

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TS10-520														
			B	C	D	E	G	H	J	K	L	M	N	P	R		
50-1	534750	Gasket, Magneto-to-CC	2			2											
-2	628472	Magneto Assembly, Left Hand	1			1											
-2	628473	Magneto Assembly, Right Hand	1			1											
ATTACHING PARTS																	
-3	535847	Washer, Magneto Holding	4			4											
-4	MS35338-45	Washer, Lock	4			4											
-5	2439	Nut, Plain, Hex	4			4											
* * * *																	
-6	634675	Spark Plug, Champion No. RHB32E	12			12											
	636953	Harness Assembly, Ignition	1			1											
ATTACHING PARTS																	
-7	MS35338-43	Washer, Lock	8			8											
-8	AN501-10-10	Screw	8			8											
* * * *																	

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY												
				TSIO-520												
				B	C	D	E	G	H	J	K	L	M	N	P	R
50 -9	637409-48	①	. Lead Assy., No. 1 Lower, 35.81 In.Lg.	1			1									
-10	637409-48	①	. Lead Assy., No. 1 Upper, 15.31 In.Lg. ....	1			1									
-10	637409-48	①	. Lead Assy., No. 1 Upper, 15.31 In.Lg. ....	1			1									
-11	637409-48	①	. Lead Assy., No. 2 Lower, 39.31 In.Lg. ....	1			1									
-12	637409-48	①	. Lead Assy., No. 2 Upper, 22.31 In. Lg. ....	1			1									
-13	637409-48	①	. Lead Assy., No. 3 Lower, 40.81 In. Lg. ....	1			1									
-14	637409-48	①	. Lead Assy., No. 3 Upper, 20.31 In.Lg. ....	1			1									
-15	637409-48	①	. Lead Assy., No. 4 Lower, 35.81 In.Lg. ....	1			1									
-16	637409-48	①	. Lead Assy., No. 4 Upper, 18.81 In.Lg. ....	1			1									
-17	637409-48	①	. Lead Assy., No. 5 Lower, 47.81 In.Lg. ....	1			1									
-18	637409-48	①	. Lead Assy., No. 5 Upper, 28.31 In.Lg. ....	1			1									
-19	637409-48	①	. Lead Assy., No. 6 Lower, 42.31 In.Lg. ....	1			1									
-20	637409-48	①	. Lead Assy., No. 6 Upper, 26.81 In.Lg. ....	1			1									
-21	629506	②	. Spring, Spark Plug Terminal .....	1			1									
-22	629505	②	. Sleeve, Spark Plug Terminal .....	1			1									
-23	629504	②	. Spring .....	1			1									
-24	629502	②	. Nut, Spark Plug End .....	1			1									
-25	633009		. Plate, Cable Outlet .....	2			2									
-26	629498		. Ferrule, Cable .....	12			12									
-27	629496		. Grommet .....	2			2									
-28	629495		. Eyelet .....	12			12									
-29	632106		. Clamp .....	13			13									
-30	631737-2		. Clamp .....	2			2									
-31	629494		. Strap .....	9			9									
-32	635363		. Clamp .....	1			1									
-33	635360		. Screw .....	1			1									
-34	631739		. Clamp .....	2			2									
-35	632105		. Screw .....	2			2									
-36	629837		. Nut .....	2			2									
-37	628739		Kit, Retard Terminal, L.H. Magneto .....	1			1									
-38	629010		. Washer, Plain .....	1			1									
-39	629009		. Bushing, Insulating .....	1			1									
-40	629008		. Bushing, Shouldered .....	1			1									
-41	629007		. Nut, Coupling, 5/16 - 32 .....	1			1									
-42	628740		Kit, Ground Terminal Magneto .....	2			2									
-43	629010		. Washer, Plain .....	1			1									
-44	629009		. Bushing, Insulating .....	1			1									
-45	629008		. Bushing, Shouldered .....	1			1									
-46	629011		. Nut, Coupling, 7/16 - 28 .....	1			1									

NOTE ① Service leads are furnished in two lengths only, with magneto end not terminated. Cut to length specified in description column. (Part Number 637409-48 for leads up to 48 inches in length and Part Number 637409-72 for leads up to 72 inches in length).

NOTE ② Items 21 thru 24 applicable to all leads.

NOTE ③ Service sleeves - Use Thomas and Betts' Crimping Tool, No. WT-217.

CAUTION: Each lead requires one (1) each 629497 ferrule and 628495 eyelet to complete a cable assembly.

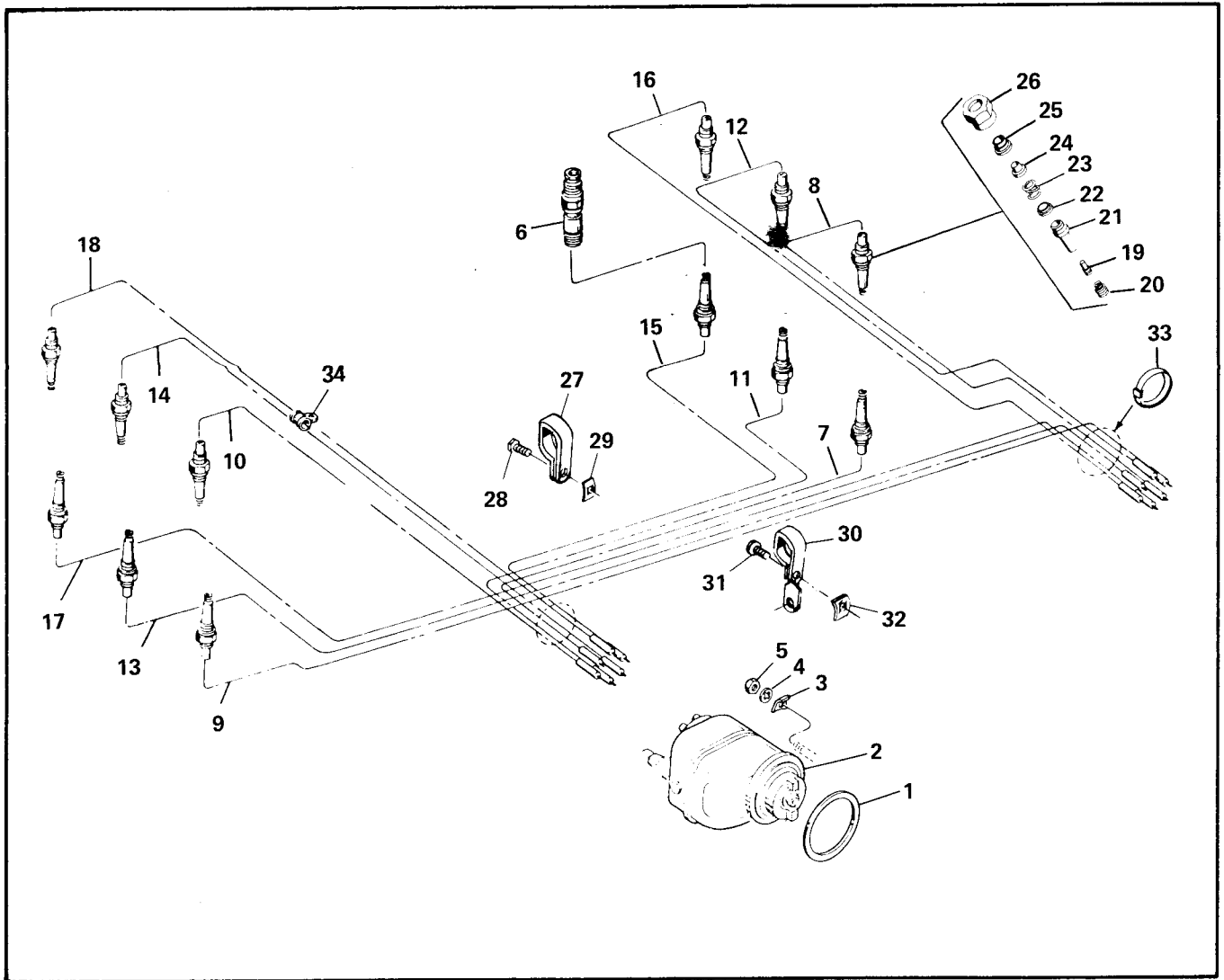


FIGURE 51. IGNITION SYSTEM, TS10-520-C,G,H,M,P,R.

FIG. NDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY TS10-520															
				B	C	D	E	G	H	J	K	L	M	N	P	R			
51- 1	534750	\$	Gasket, Magneto-to-Crankcase		2				2	2					2		2	2	
-2	625765		Magneto Assembly		2				2	2					2		2	2	
			ATTACHING PARTS																
-3	535847		Washer, Magneto Holding		4				4	4					4		4	4	
-4	MS35338-45		Washer, Lock		4				4	4					4		4	4	
-5	2439		Nut, Plain, Hex		4				4	4					4		4	4	
			* * * *																
-6	630533		Spark Plug, A.C. No. 27		12				12	12					12		12	12	
	633311		Harness Assembly, Ignition		1				1	1					1		1	1	
-7	633579	①	Lead Assy., No. 1 Lower, 38.00 In.Lg.		1				1	1					1		1	1	
-8	633580	①	Lead Assy., No. 1 Upper, 19.00 In.Lg.		1				1	1					1		1	1	
-9	633579	①	Lead Assy., No. 2 Lower, 43.00 In.Lg.		1				1	1					1		1	1	
-10	633580	①	Lead Assy., No. 2 Upper, 21.00 In.Lg.		1				1	1					1		1	1	
-11	633579	①	Lead Assy., No. 3 Lower, 42.00 In.Lg.		1				1	1					1		1	1	
-12	633580	①	Lead Assy., No. 3 Upper, 21.00 In.Lg.		1				1	1					1		1	1	
-13	633579	①	Lead Assy., No. 4 Lower, 39.00 In.Lg.		1				1	1					1		1	1	
-14	633580	①	Lead Assy., No. 4 Upper, 18.00 In.Lg.		1				1	1					1		1	1	
-15	633579	①	Lead Assy., No. 5 Lower, 50.00 In.Lg.		1				1	1					1		1	1	
-16	633580	①	Lead Assy., No.5 Upper, 28.00 In. Lg.		1				1	1					1		1	1	
-17	633579	①	Lead Assy., No. 6 Lower, 42.00 In.Lg.		1				1	1					1		1	1	
-18	633580	①	Lead Assy., No. 6 Upper, 25.00 In.Lg.		1				1	1					1		!	!	
-19	633585	②	Screw		1				1	1					1		1	1	
-20	633586	②	Spring		1				1	1					1		1	1	
-21	633591	②	Sleeve		1				1	1					1		1	1	
-22	633592	②	Washer		1				1	1					1		1	1	
-23	633590	②	Spring		1				1	1					1		1	1	
-24	633583	②③	Ferrule		1				1	1					1		1	1	
-25	633589	②③	Ferrule		1				1	1					1		1	1	
-26	633593	②	Nut		1				1	1					1		1	1	
-27	636692		Clamp Assembly		2				2	2					2		2	2	
-28	636921		Screw		2				2	2					2		2	2	
-29	636920		Nut, Tinnerman		2				2	2					2		2	2	
	636922		Clamp Assembly		1				1	1					1		1	1	
-30	636919		Clamp		1				1	1					1		1	1	
-31	636687		Screw		1				1	1					1		1	1	
-32	633927		Nut		1				1	1					1		1	1	
-33	633926		Ty-Rap		10				10	10					10		10	10	
-34	633925		Clamp		15				15	15					15		15	15	

NOTE ① Service leads are furnished in two lengths only with magneto end not terminated. Cut to length specified in description column. (Part Number 633579 leads up to 48 inches in length and Part Number 633580 for leads up to 28 inches in length.)

NOTE ② Items 19 thru 26 applicable to each individual lead.

NOTE ③ Service sleeves - Use Thomas and Betts Crimping Tool, No. WT-217.



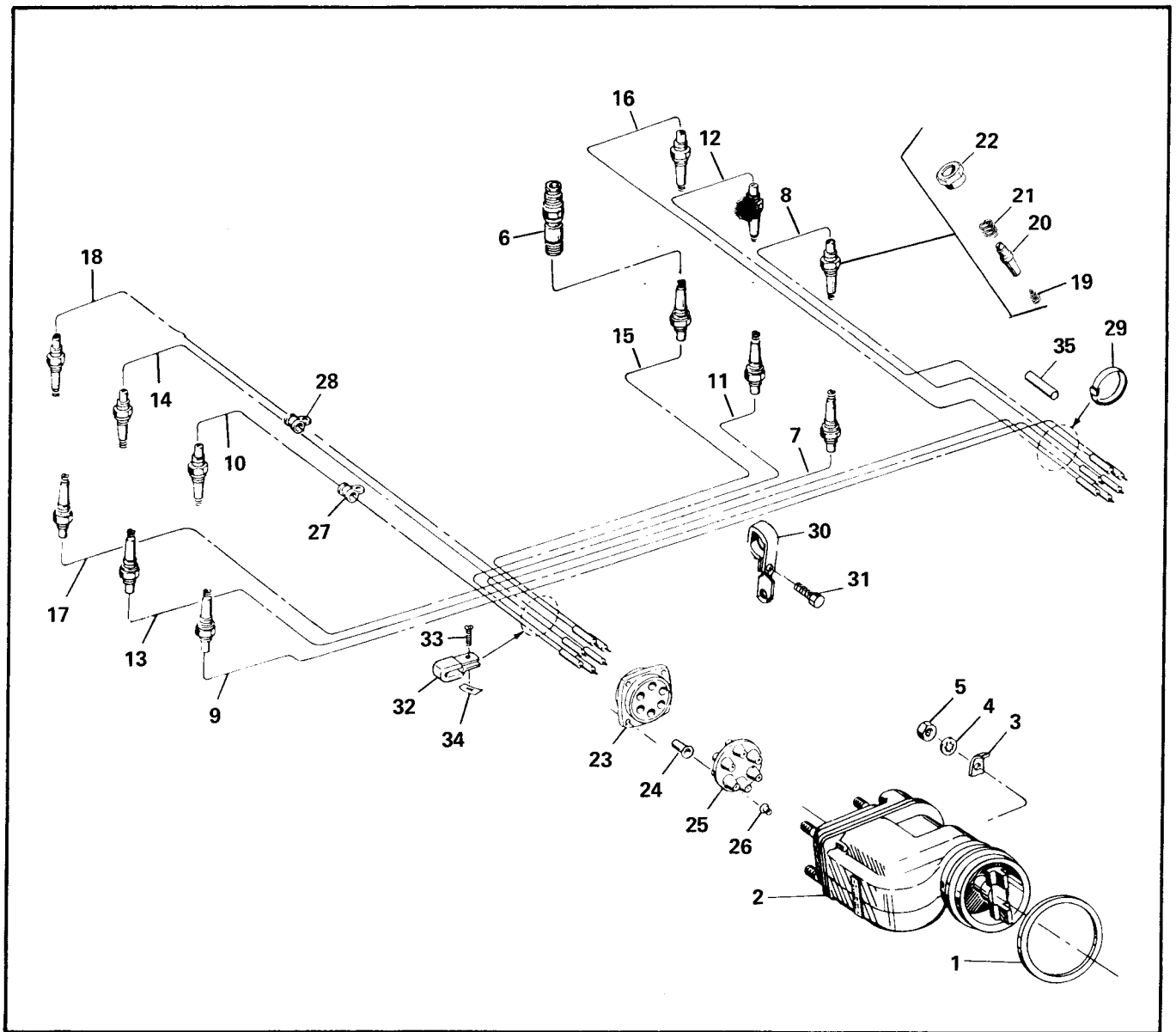


FIGURE 52. IGNITION SYSTEM, TS10-520-D

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY												
				TSIO-520												
				B	C	D	E	G	H	J	K	L	M	N	P	R
52-1	534750	\$	Gasket, Magneto-to-Crankcase			2										
-2	632958		Magneto Assembly, Left Hand			1										
-2	632959		Magneto Assembly, Right Hand			1										
ATTACHING PARTS																
-3	535847		Washer, Magneto Holding			4										
-4	MS35338-45		Washer, Lock			4										
-5	2439		Nut, Plain, Hex			4										
* * * *																
-6	634675		Spark Plug, Champion No. RHB32E			12										
	636951		Harness Assembly, Ignition			1										
-7	637409-48	①	Lead Assy., No. 1 Lower			1										
-8	637409-48	①	Lead Assy., No. 1 Upper			1										
-9	637409-48	①	Lead Assy., No. 2 Lower			1										
-10	637409-48	①	Lead Assy., No. 2 Upper			1										
-11	637409-48	①	Lead Assy., No. 3 Lower			1										
-12	637409-48	①	Lead Assy., No. 3 Upper			1										
-13	637409-48	①	Lead Assy., No. 4 Lower			1										
-14	637409-48	①	Lead Assy., No. 4 Upper			1										
-15	637409-48	①	Lead Assy., No. 5 Lower			1										
-16	637409-48	①	Lead Assy., No. 5 Upper			1										
-17	637409-48	①	Lead Assy., No. 6 Lower			1										
-18	637409-48	①	Lead Assy., No. 6 Upper			1										
-19	629506	②	Spring, Spark Plug Terminal			1										
-20	629505	②	Sleeve, Spark Plug Terminal			1										
-21	629504	②	Spring			1										
-22	629502	②	Nut, Spark Plug End			1										
-23	638139		Plate, Cable Outlet			2										
-24	629498		Ferrule, Cable			12										
-25	635361		Grommet			2										
-26	629495		Eyelet			12										
-27	632106		Clamp			13										
-28	631737		Clamp			2										
-29	629494		Strap			8										
-30	635363		Clamp			1										
-31	635360		Screw			1										
-32	631739		Clamp			2										
-33	632105		Screw			2										
-34	629837		Nut			2										
-35	635991		Tubing, Spiral			ar										

NOTE ① Service leads are furnished in two lengths only, with magneto end not terminated. Cut to length specified in description column. (Part Number 637409-48 for leads up to 48 inches in length and Part Number 637409-72 for leads up to 72 inches in length.)

NOTE ② Service sleeves - Use Thomas and Betts Crimping Tool, No. WT-217.

CAUTION: Each lead requires one (1) each 629498 ferrule and 629495 eyelet to complete a cable assembly.

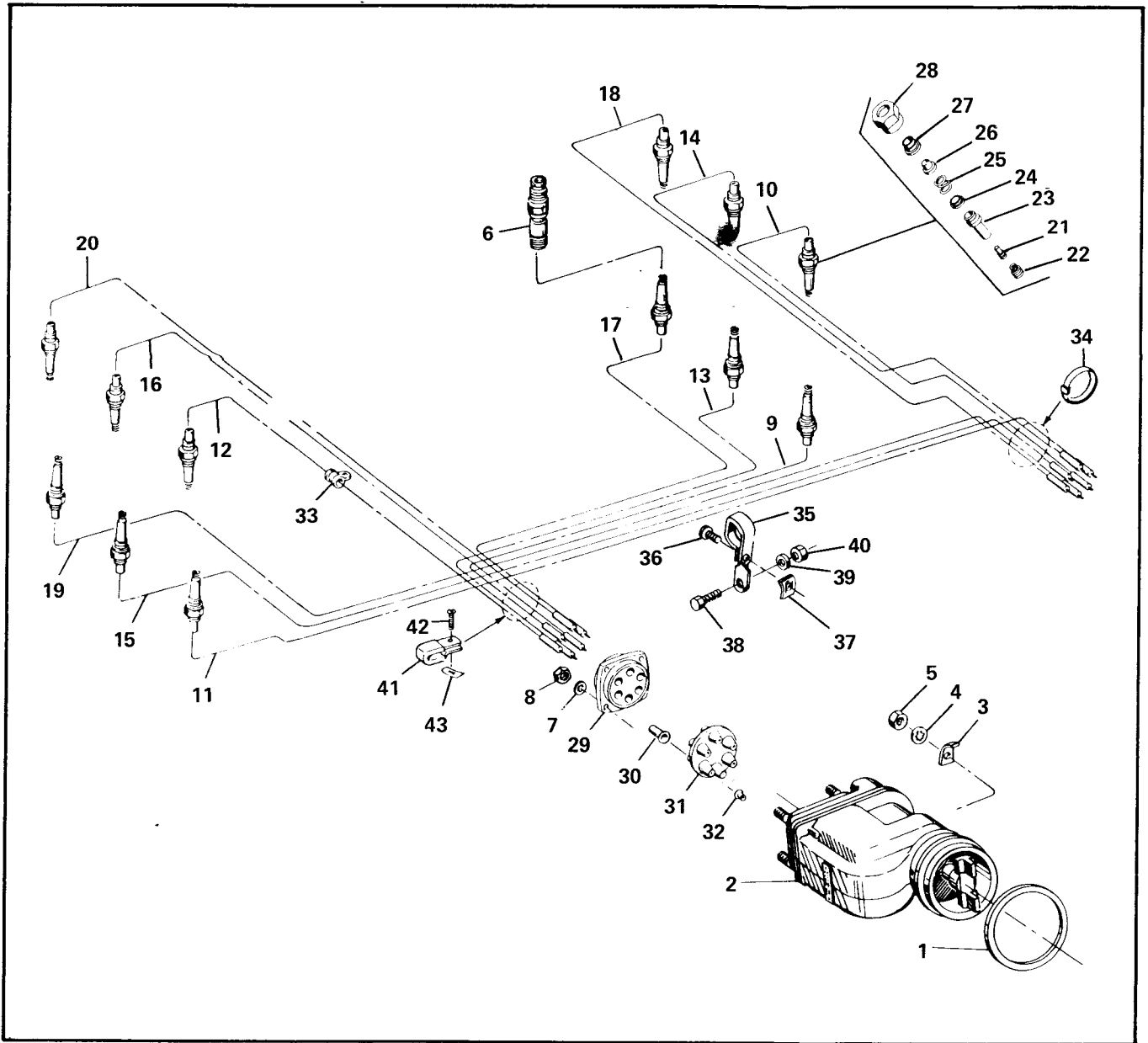


FIGURE 53. IGNITION SYSTEM, TSIO-520-J,K,L,N.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																			
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R		
53- 1	534750	Gasket, Magneto-to-Crankcase												2	2	2		2				
-2	632958	Magneto Assembly, Left Hand												1	1	1		1				
-2	632959	Magneto Assembly, Right Hand												1	1	1		1				
ATTACHING PARTS																						
-3	535847	Washer, Magneto Holding												4	4	4		4				
-4	MS35338-45	Washer, Lock												4	4	4		4				
-5	2439	Nut, Plain, Hex												4	4	4		4				
* * * *																						
-6	634675	Spark Plug, Champion No. RHB32E												12	12	12		12				
	636603	Harness Assembly, Ignition												1	1	1		1				
ATTACHING PARTS																						
-7	MS35338-43	Washer, Lock												8	8	8		8				
-8	AN501-10-10	Screw												8	8	8		8				

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY												
				TSIO-520												
				B	C	D	E	G	H	J	K	L	M	N	P	R
			* * * *													
-9	633579	①	Lead Assy., No. 1 Lower, 38.00 In.Lg. ....							1	1	1			1	
-10	633580	①	Lead Assy., No. 1 Upper, 19.00 In.Lg. ....							1	1	1			1	
-11	633579	①	Lead Assy., No. 2 Lower, 43.00 In.Lg. ....							1	1	1			1	
-12	633580	①	Lead Assy., No. 2 Upper, 21.00 In.Lg. ....							1	1	1			1	
-13	633579	①	Lead Assy., No. 3 Lower, 42.00 In.Lg. ....							1	1	1			1	
-14	633580	①	Lead Assy., No. 3 Upper, 21.00 In.Lg. ....							1	1	1			1	
-15	633579	①	Lead Assy., No. 4 Lower, 39.00 In.Lg. ....							1	1	1			1	
-16	633580	①	Lead Assy., No. 4 Upper, 18.00 In.Lg. ....							1	1	1			1	
-17	633579	①	Lead Assy., No. 5 Lower, 50.00 In.Lg. ....							1	1	1			1	
-18	633580	①	Lead Assy., No. 5 Upper, 28.00 In.Lg. ....							1	1	1			1	
-19	633579	①	Lead Assy., No. 6 Lower, 42.00 In.Lg. ....							1	1	1			1	
-20	633580	①	Lead Assy., No. 6 Upper, 25.00 In.Lg. ....							1	1	1			1	
-21	633585	②	Screw .....							1	1	1			1	
-22	633586	②	Spring .....							1	1	1			1	
-23	633591	②	Sleeve .....							1	1	1			1	
-24	633592	②	Washer .....							1	1	1			1	
-25	633590	②	Spring .....							1	1	1			1	
-26	633583	② ③	Ferrule .....							1	1	1			1	
-27	633589	② ③	Ferrule .....							1	1	1			1	
-28	633593	②	Nut .....							1	1	1			1	
-29	635362		Plate .....							2	2	2			2	
-30	635699		Ferrule .....							12	12	12			12	
-31	635361		Grommet .....							2	2	2			2	
-32	635700		Eyelet .....							12	12	12			12	
-33	633925		Clamp .....							9	9	9			9	
-34	633926		Strap .....							1	1	1			1	
	636922		Clamp Assembly .....							1	1	1			1	
-35	636919		Clamp .....							1	1	1			1	
-36	633928		Screw .....							1	1	1			1	
-37	633927		Nut .....							1	1	1			1	
-38	AN501-10-8		Screw .....							1	1	1			1	
-39	22910		Washer, Lock .....							1	1	1			1	
-40	MS20365-1032A		Nut, Elastic Stop .....							1	1	1			1	
-41	636692		Clamp .....							2	2	2			2	
-42	636921		Screw .....							2	2	2			2	
-43	636920		Nut, Tinnerman .....							2	2	2			2	

NOTE ① Service leads are furnished in two lengths only, with magneto end not terminated. Cut to length specified in description column. (Part Number 633579 for leads up to 48 inches in length and Part Number 633580 for leads up to 72 inches in length.)

NOTE ② Items 21 thru 28 applicable to each individual lead.

NOTE ③ Service sleeves - Use Thomas and Betts Crimping Tool, No. WT-217.

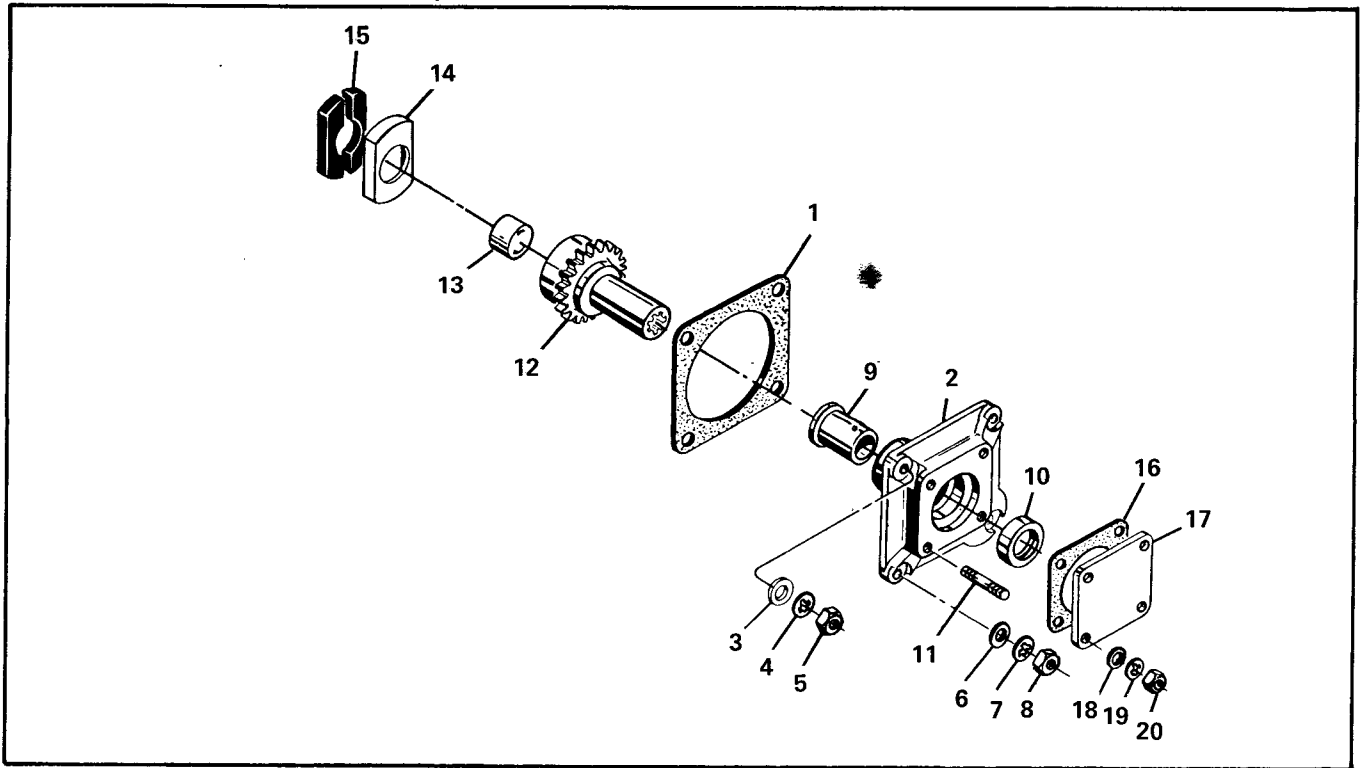


FIGURE 54. ACCESSORY DRIVE ASSEMBLY

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY																	
			TSIO-520																	
			1	2	3	4	5	B	C	D	E	G	H	J	K	L	M	N	P	R
54-	534863	\$ Gasket, Adapter-To-Crankcase						2	2	2	2	2	2	2	2	2	2	2	2	2
-2	534861A1	Adapter Assy., Magneto & Acc. Drive						2	2	2	2	2	2	2	2	2	2	2	2	2
ATTACHING PARTS																				
-3	2473	Washer, Plain						6	6	6	6	6	6	6	6	6	6	6	6	6
-4	MS35338-45	Washer, Lock						6	6	6	6	6	6	6	6	6	6	6	6	6
-5	2439	Nut, Plain, Hex						6	6	6	6	6	6	6	6	6	6	6	6	6
-6	401507	Washer, Plain						2	2	2	2	2	2	2	2	2	2	2	2	2
-7	MS35338-46	Washer, Lock						2	2	2	2	2	2	2	2	2	2	2	2	2
-8	2441	Nut, Plain, Hex						2	2	2	2	2	2	2	2	2	2	2	2	2
* * * *																				
-9	534742	. Bushing, Adapter						1	1	1	1	1	1	1	1	1	1	1	1	1
-10	25102	\$ . Seal, Oil						1	1	1	1	1	1	1	1	1	1	1	1	1
-11	401852	† . Stud, 1/4 x 1-3/8 Inch Long						4	4	4	4	4	4	4	4	4	4	4	4	4
-12	629422	Gear Assy., Magneto & Accessory Drive						2		2	2			2	2	2		2		
-12	629076	Gear Assy., Magneto & Accessory Drive							2			2	2				2		2	2
-13	629077	. Sleeve, Drive Gear						1	1	1	1	1	1	1	1	1	1	1	1	1
-14	531178	Retainer, Drive Coupling						2	2	2	2	2	2	2	2	2	2	2	2	2
-15	638172	Bushing, Drive Couplings						4	4	4	4	4	4	4	4	4	4	4	4	4
-16	MS9134-01	\$ Gasket, Adapter-To-Cover						2	2	2	2	2	2	2	2	2	2	2	2	2
-17	640380	Cover, Accessory Drive						2	2	2	2	2	2	2	2	2	2	2	2	2
ATTACHING PARTS																				
-18	2472	Washer, Plain						8	8	8	8	8	8	8	8	8	8	8	8	8
-19	MS35338-44	Washer, Lock						8	8	8	8	8	8	8	8	8	8	8	8	8
-20	2437	Nut, Plain, Hex						8	8	8	8	8	8	8	8	8	8	8	8	8

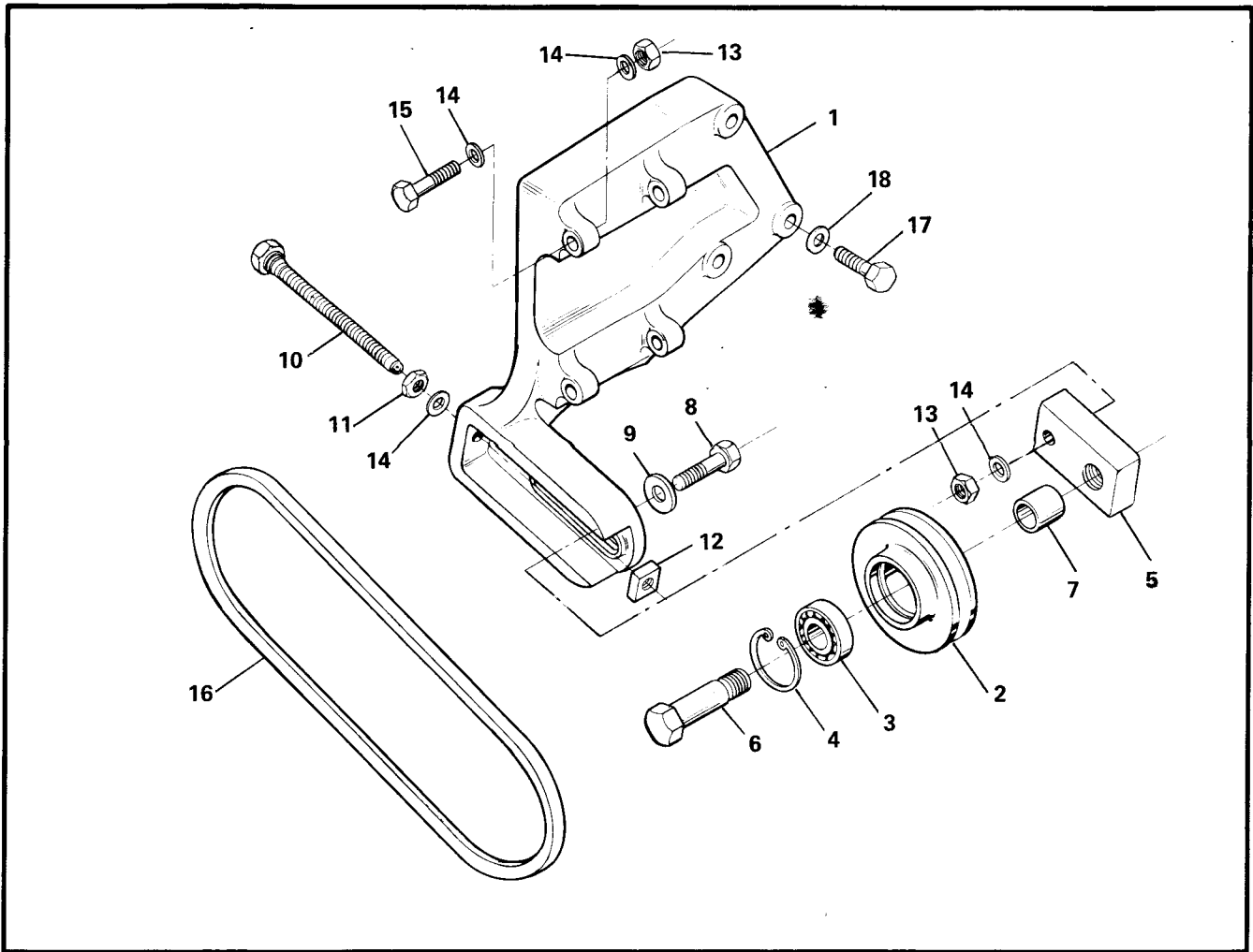


FIGURE 55. FREON COMPRESSOR BRACKET ASSEMBLY (OPTIONAL FOR TSIO-520-L)

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY												
			TSIO-520												
			B	C	D	E	G	H	J	K	L	M	N	P	R
55-	640778	Bracket Assy., Freon Compressor										1			
-1	640767	Bracket										1			
-2	640820	Sheave Assembly										1			
-3	640372	Bearing, Ball										1			
-4	MS16631-1165	Ring, Retaining										1			
-5	640781	Arm, Idler Sheave										1			
-6	640363	Screw										1			
-7	640373	Spacer										1			
-8	AN101319	Bolt										1			
-9	640947	Washer, Special										1			
-10	640774	Bolt, Special										1			
-11	AN316-6R	Nut										1			
-12	640777	Nut, Rectangular										1			
-13	MS20364-624C	Nut										4			
-14	AN960-616	Washer, Plain										10			
-15	AN101319	Bolt										4			
-16	640517-4	Belt										1			
-17	MS90728-66	Bolt										2			
-18	24239	Washer										2			

## SECTION III

### OVERSIZE AND UNDERSIZE PARTS

PART NO.	NAME	DESCRIPTION	PART NO.	NAME	DESCRIPTION
35967P005	Insert	.005" OS on OD	401843P003	Stud	.003" OS on PD
35967P010	Insert	.010" OS on OD	401843P007	Stud	.007" OS on PD
35967P015	Insert	.015" OS on OD	401843P012	Stud	.012" OS on PD
35967P020	Insert	.020" OS on OD			
35967P030	Insert	.030" OS on OD	401860P003	Stud	.003" OS on PD
			401860P007	Stud	.007" OS on PD
350998P0015	Bushing - C/shaft	.0015" OS on OD	401860P012	Stud	.012" OS on PD
350998P003	Bushing - C/shaft	.003" OS on OD			
350998P005	Bushing - C/shaft	.005" OS on OD	401861P003	Stud	.003" OS on PD
			401861P007	Stud	.007" OS on PD
352655P003	Stud	.003" OS on PD	401861P012	Stud	.012" OS on PD
352655P007	Stud	.007" OS on PD			
352655P012	Stud	.012" OS on PD	401870P003	Stud	.003" OS on PD
			401870P007	Stud	.007" OS on PD
401800P003	Stud	.003" OS on PD	401870P012	Stud	.012" OS on PD
401800P007	Stud	.007" OS on PD			
401800P012	Stud	.012" OS on PD	401873P003	Stud	.003" OS on PD
			401873P007	Stud	.007" OS on PD
401801P003	Stud	.003" OS on PD	401873P012	Stud	.012" OS on PD
401801P007	Stud	.007" OS on PD			
401801P012	Stud	.012" OS on PD	401881P003	Stud	.003" OS on PD
			401881P007	Stud	.007" OS on PD
401804P003	Stud	.003" OS on PD	401881P012	Stud	.012" OS on PD
401804P007	Stud	.007" OS on PD			
401804P012	Stud	.012" OS on PD	401885P003	Stud	.003" OS on PD
			401885P007	Stud	.007" OS on PD
401808P003	Stud	.003" OS on PD	401885P012	Stud	.012" OS on PD
401808P007	Stud	.007" OS on PD			
401808P012	Stud	.012" OS on PD	401893P003	Stud	.003" OS on PD
			401893P007	Stud	.007" OS on PD
401813P003	Stud	.003" OS on PD	401893P012	Stud	.012" OS on PD
401813P007	Stud	.007" OS on PD			
401813P012	Stud	.012" OS on PD	401899P003	Stud	.003" OS on PD
401814P003	Stud	.003" OS on PD	401899P007	Stud	.007" OS on PD
401814P007	Stud	.007" OS on PD	401899P012	Stud	.012" OS on PD
401814P012	Stud	.012" OS on PD			
401832P003	Stud	.003" OS on PD	401927P003	Stud	.003" OS on PD
401832P007	Stud	.007" OS on PD	401927P007	Stud	.007" OS on PD
401832P012	Stud	.012" OS on PD	401927P012	Stud	.012" OS on PD

PART NO.	NAME	DESCRIPTION	PART NO.	NAME	DESCRIPTION
401932P003	Stud	.003" OS on PD	402127P003	Stud	.003" OS on PD
401932P007	Stud	.007" OS on PD	402127P007	Stud	.007" OS on PD
401932P012	Stud	.012" OS on PD	402127P012	Stud	.012" OS on PD
401936P003	Stud	.003" OS on PD	402129P003	Stud	.003" OS on PD
401936P003	Stud	.007" OS on PD	402129P007	Stud	.007" OS on PD
401936P003	Stud	.012" OS on PD	402129P012	Stud	.012" OS on PD
401945P003	Stud	.003" OS on PD	402151P003	Stud	.003" OS on PD
401945P007	Stud	.007" OS on PD	402151P007	Stud	.007" OS on PD
401945P012	Stud	.012" OS on PD	402151P012	Stud	.012" OS on PD
401962P003	Stud	.003" OS on PD	402157P003	Stud	.003" OS on PD
401962P007	Stud	.007" OS on PD	402157P007	Stud	.007" OS on PD
401962P012	Stud	.012" OS on PD	402157P012	Stud	.012" OS on PD
401963P003	Stud	.003" OS on PD	402158P003	Stud	.003" OS on PD
401963P007	Stud	.007" OS on PD	402158P007	Stud	.007" OS on PD
401963P012	Stud	.012" OS on PD	402158P009	Stud	.009" OS on PD
401965P003	Stud	.003" OS on PD	402159P003	Stud	.003" OS on PD
401965P007	Stud	.007" OS on PD	402159P007	Stud	.007" OS on PD
401965P012	Stud	.012" OS on PD	402159P012	Stud	.012" OS on PD
401968P003	Stud	.003" OS on PD	402359P003	Stud	.003" OS on PD
401968P007	Stud	.007" OS on PD	402359P007	Stud	.007" OS on PD
401968P012	Stud	.012" OS on PD	402359P012	Stud	.012" OS on PD
401971P003	Stud	.003" OS on PD	402711P003	Stud	.003" OS on PD
401971P007	Stud	.007" OS on PD	402711P007	Stud	.007" OS on PD
401971P012	Stud	.012" OS on PD	402711P012	Stud	.012" OS on PD
401975P003	Stud	.003" OS on PD	404584P003	Stud	.003" OS on PD
401975P007	Stud	.007" OS on PD	404584P007	Stud	.007" OS on PD
401975P012	Stud	.012" OS on PD	404584P012	Stud	.012" OS on PD
401977P003	Stud	.003" OS on PD	531590P003	Stud	.003" OS on PD
401977P007	Stud	.007" OS on PD	531590P006	Stud	.006" OS on PD
401977P012	Stud	.012" OS on PD	531590P009	Stud	.009" OS on PD
402034P003	Stud	.003" OS on PD	535661P020	Camshaft	.020" OS on OD
402034P007	Stud	.007" OS on PD	536563P005	Dowel	.005" OS on OD
402034P012	Stud	.012" OS on PD	539800M015	Spring	.015" US on ID
402044P003	Stud	.003" OS on PD	626739M010	Collar	.010" US on ID
402044P007	Stud	.007" OS on PD	629680M010	Collar	.010" US on ID
402044P012	Stud	.012" OS on PD	629401P005	Ring - Piston	.005" OS on OD
402060P003	Stud	.003" OS on PD	629401P015	Ring - Piston	.015" OS on OD
402060P007	Stud	.007" OS on PD	629726A3P020	Camshaft	.020" OS on OD
402060P012	Stud	.012" OS on PD	630046P005	Pin - Piston	.005" OS on OD
402066P003	Stud	.003" OS on PD	630464M010	Bearing-C/Shaft	.010" US on ID
402066P007	Stud	.007" OS on PD			
402066P012	Stud	.012" OS on PD			



PART NO.	NAME	DESCRIPTION	PART NO.	NAME	DESCRIPTION
630591P005	Insert	.005" OS on OD	636242P005	Guide - valve	.005" OS on OD
630591P010	Insert	.010" OS on OD	636242P010	Guide - valve	.010" OS on OD
630591P015	Insert	.015" OS on OD	636242P015	Guide - valve	.015" OS on OD
630591P020	Insert	.020" OS on OD	636242P020	Guide - valve	.020" OS on OD
630591P030	Insert	.030" OS on OD	636242P030	Guide - valve	.030" OS on OD
630826M010	Bearing-C/Rod	.010" US on ID	640625P005	Ring-Piston	.005" OS on OD
			640625P010	Ring-Piston	.010" OS on OD
631496P005	Guide - valve	.005" OS on OD	640625P015	Ring-Piston	.015" OS on OD
631496P010	Guide - valve	.010" OS on OD			
631496P015	Guide - valve	.015" OS on OD	640626P005	Ring-Piston	.005" OS on OD
631496P020	Guide - valve	.020" OS on OD	640626P010	Ring-Piston	.010" OS on OD
631496P030	Guide - valve	.030" OS on OD	640626P015	Ring-Piston	.015" OS on OD
632585P010	Piston	.010" OS on OD	641302P005	Ring-Piston	.005" OS on OD
632585P015	Piston	.015" OS on OD	641302P010	Ring-Piston	.010" OS on OD
			641302P015	Ring-Piston	.015" OS on OD
635439M010	Bearing-C/Shaft	.010" US on ID			

PART NO.	NAME	DESCRIPTION	PART NO.	NAME	DESCRIPTION
630591P005	Insert	.005" OS on OD	636242P005	Guide - valve	.005" OS on OD
630591P010	Insert	.010" OS on OD	636242P010	Guide - valve	.010" OS on OD
630591P015	Insert	.015" OS on OD	636242P015	Guide - valve	.015" OS on OD
630591P020	Insert	.020" OS on OD	636242P020	Guide - valve	.020" OS on OD
630591P030	Insert	.030" OS on OD	636242P030	Guide - valve	.030" OS on OD
630826M010	Bearing-C/Rod	.010" US on ID	640625P005	Ring-Piston	.005" OS on OD
			640625P010	Ring-Piston	.010" OS on OD
631496P005	Guide - valve	.005" OS on OD	640625P015	Ring-Piston	.015" OS on OD
631496P010	Guide - valve	.010" OS on OD			
631496P015	Guide - valve	.015" OS on OD	640626P005	Ring-Piston	.005" OS on OD
631496P020	Guide - valve	.020" OS on OD	640626P010	Ring-Piston	.010" OS on OD
631496P030	Guide - valve	.030" OS on OD	640626P015	Ring-Piston	.015" OS on OD
632585P010	Piston	.010" OS on OD	641302P005	Ring-Piston	.005" OS on OD
632585P015	Piston	.015" OS on OD	641302P010	Ring-Piston	.010" OS on OD
			641302P015	Ring-Piston	.015" OS on OD
635439M010	Bearing-C/Shaft	.010" US on ID			

## SECTION IV

### REPAIR PARTS SETS AND MATERIALS

PART NUMBER	DESCRIPTION	SIZE	CODE
642188	Gasket Paste	1 Oz. Tube	ALL
633570A2	Gasket Set - Complete Overhaul	Standard	B,E,J,K,L,N
633570A1	Gasket Set - Complete Overhaul	Standard	C,G,H,M,P,R
633570A3	Gasket Set - Complete Overhaul	Standard	D
633570A5	Gasket Set - Complete Overhaul	Standard	L
642109	① Gasket Set - Top Overhaul	Standard	ALL
640625A3	Ring Set - Single Cylinder	Standard	ALL
640625A3P005	Ring Set - Single Cylinder	.005" OS on OD	ALL
640625A3P010	Ring Set - Single Cylinder	.010" OS on OD	ALL
640625A3P015	Ring Set - Single Cylinder	.015" OS on OD	ALL
639742	② Ring Set - Single Cylinder	Standard	ALL
642839A2	Bearing Set - Crankshaft	Standard	B,D,E,J,K,L,N
642839A2M010	Bearing Set - Crankshaft	.010" US on ID	B,D,E,J,K,L,N
642720A2	Bearing Set - Crankshaft	Standard	BB,DB,EB,JB,KB,LB,NB
642720A2010	Bearing Set - Crankshaft	.010" US on ID	BB,DB,EB,JB,KB,LB,NB
630464A1	Bearing Set - Crankshaft	Standard	C,G,H,M,P,R
630464A1M010	Bearing Set - Crankshaft	.010" US on ID	C,G,H,M,P,R
626531-1	Enamel - Gold, Engine	1 Quart	ALL
626531-2	Enamel, Gold, Engine	1 Gallon	ALL
535011S	Lockwire - 0.040 in. dia. steel	Order by 1 Lb. Roll	ALL

NOTE: ① This set does not contain intake hoses.

② For use with chrome cylinders.

## SECTION V

### NUMERICAL PARTS LIST

PART NUMBER	FIGURE & INDEX	QTY PER ASSY	PART NUMBER	FIGURE & INDEX	QTY PER ASSY
AN101319	54-08	1	AN815-6	34-10	1
	54-15	4	AN816-48	21-19	1
AN121501	35-20	2	AN833-6	41-17	1
	36-22	2	AN842-8D	37-20	1
	38-25	2	AN844-8	27-43	1
	39-25	2	AN900-10	1-34	1
AN123862	3-10	2		2-29	1
	4-23	2		23-06	1
	18-29	1		23-14	1
	21-01	2		24-11	1
AN123866	6-17	1		25-03	1
AN123902	17-26	1		25-17	1
AN123962	7-29	1		26-11	1
AN123965	8-25	1	AN900-12	23-07	1
AN316-6R	54-11	1		25-04	1
AN316-9R	18-40	1	AN900-14	15-21	1
AN381-25-10	11-05	12	AN900-18	14-13	1
AN4-17A	23-03	1		15-15	1
AN5-10A	14-60	1	AN900-22	14-42	1
AN5-12A	2-34	1	AN910-2	34-19	1
AN5-12A	4-10	9	AN911-2	34-18	1
	4-14	1	AN912-2	21-17	1
AN5-13A	1-37	1		34-27	1
	3-24	9	AN912-4	17-41	1
AN5-14A	3-28	1		34-08	1
	4-18	2	AN924-4	34-06	1
AN5-15A	3-33	2	AN924-6	41-16	1
AN500-10-5	47-04	2	AN932-2	16-32	1
	48-04	2		17-33	1
AN500A10-12	38-35	4		37-19	1
	39-36	4		46-03	1
	41-05	4		46-08	2
	41-24	4		46-12	2
AN500A10-16	40-18	4	AN932C2	1-30	2
AN500A10-4	6-02	2	AN960-10L	5-31	4
AN500A416-8	6-23	3		34-30	3
AN500A8-10	47-13	4		38-34	4
	48-14	4		39-34	4
AN501-10-10	50-08	8		41-04	4
	53-08	8		41-23	4
AN501-10-8	53-38	1	AN960-516	25-09	3
AN515-8R5	42-15	2	AN960-616	54-14	10
AN565E8H8	38-12	1	AN960-616L	25-15	12
	39-12	1	AN960C916	18-38	1
AN737TW114	31-36	2	MS122121	13-08	4
AN737W98	27-29	2	MS122122	1-05	1
AN780-2	47-06	2		2-05	1
	48-06	2	MS122160	38-05	12

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
MS122160	39-05	12
MS122162	1-04	4
	2-04	4
MS122163	1-38	2
MS16631-1165	54-04	1
MS20073-05-25	3-13	4
MS20074-03-03	5-32	4
	24-05	2
	26-05	2
MS20074-04-04	24-04	2
	26-04	2
MS20364-624C	54-13	4
MS20365-1032A	53-40	1
MS20822-8	17-42	1
MS20823-2	48-07	4
	48-09	1
MS20823-6B	21-18	1
	34-26	1
MS21042-4	8-22	1
MS21044N08	42-16	2
MS21044N3	35-23	1
	36-25	1
	37-07	1
	38-28	1
	38-43	1
	39-28	1
	41-11	1
MS21044N5	37-16	1
MS24665-302	19-13	1
MS28778-4	34-07	1
MS28778-6	34-11	1
MS28882-6	41-18	1
MS29512-06	41-15	1
MS29513-010	3-06	16
	4-07	16
MS29513-138	39-32	1
	41-21	1
MS35266-61	6-31	1
MS35338-43	6-33	1
	34-31	3
	40-17	4
	47-03	2
	48-03	2
	50-07	8
	53-07	8
MS35338-44	5-20	2
	5-25	2
	6-15	2
	6-22	3
	13-32	48
	14-03	1
	14-23	7
	14-37	4

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
MS35338-44	14-59	1
	14-62	RF
	15-03	11
	15-28	1
	15-37	1
	22-04	5
	22-12	12
	27-07	24
	28-05	24
	29-05	24
	29-54	1
	30-05	24
	30-36	4
	31-07	24
	31-45	4
	32-06	24
	35-30	3
	36-31	3
	49-19	8
MS35338-45	5-09	2
	5-15	4
	6-11	4
	16-03	4
	16-29	3
	16-38	4
	17-03	4
	18-03	3
	18-23	3
	19-04	4
	27-16	2
	30-14	2
	31-15	2
	40-09	2
	42-03	2
	43-03	4
	44-03	2
	45-03	2
	49-04	6
	50-04	4
	51-04	4
	52-04	4
	53-04	4
MS35338-46	14-47	3
	20-04	4
	21-10	4
	27-41	4
	34-16	2
	49-07	2
MS35489-11S	29-33	1
	32-31	1
MS35756-8	10-05	1
	16-15	1
	17-15	1

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
MS35756-8	18-12	1
	18-31	1
MS9021-038	17-50	1
	18-41	1
MS9021-150	30-40	1
MS9021-210	5-05	1
MS9021.038	16-42	1
MS90728-66	54-17	2
MS9089-10	41-27	4
MS9134-01	14-34	1
	49-16	2
MS9245-62	17-49	1
MS9358-15	17-48	1
M535756-8	9-04	1
NAS1006-10A	33-16	4
NAS1587-6	33-14	8
NA123902	16-26	1
X13041	16-16	1
	17-16	1
	18-13	1
X1473	14-15	1
	15-17	1
X5146	42-12	1
	43-14	1
13XX1896	6-34	1
	38-40	2
13XX202B	23-12	30
	25-10	30
	26-09	30
	28-18	2
	29-14	2
13XX2023	24-09	32
13XX299	18-39	1
20202	3-03	4
2024	20-09	1
	48-05	1
2025	1-32	1
	2-24	4
2026	22-08	1
20522	3-17	10
	5-19	2
	13-31	48
	14-02	1
	14-22	7
	15-02	10
	15-27	1
	15-36	1
	22-03	5
	22-11	12
	23-04	1
	24-03	2
	26-03	2
	27-06	24
	28-04	24

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
20522	29-04	24
	30-04	24
	31-06	24
	32-05	24
	35-29	3
	36-30	3
20654	39-35	4
20655	14-33	4
21007	13-21	1
	13-24	1
21208A1	14-40	1
	15-41	1
22535	5-13	8
	6-09	8
	29-13	2
2265	23-08	1
	25-05	1
	25-18	1
22661	28-37	1
2274	14-46	3
22910	14-32	4
	53-39	1
23024	14-08	2
24239	3-11	2
	4-24	2
	14-55	2
	21-04	2
	54-18	2
2436	34-32	3
2437	5-21	2
	5-26	2
	6-16	2
	14-04	1
	14-24	7
	14-38	4
	15-04	11
	15-29	1
	15-38	1
	22-05	5
	28-39	2
	29-24	1
	35-31	3
	36-32	3
	49-20	8
2439	3-26	12
	3-30	1
	3-37	2
	4-12	11
	4-16	1
	4-21	2
	5-16	4
	6-12	4
	14-63	RF
	16-04	4

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
2439	16-30	3
	16-39	4
	17-04	4
	17-29	3
	17-39	4
	18-05	2
	19-05	4
	40-10	2
	42-02	2
	43-04	4
	44-04	2
	45-04	2
	49-05	6
	50-05	4
	51-05	4
	52-05	4
	53-05	4
2441	3-12	2
	4-25	1
	5-04	12
	6-06	16
	14-48	3
	16-45	2
	17-53	2
	18-44	2
	20-05	4
	21-05	2
	21-11	4
	25-16	12
	49-08	2
2471	6-32	1
	14-31	4
2472	14-36	4
2473	49-18	8
	2-33	1
	3-14	8
	3-19	2
	3-22	3
	3-29	3
	3-34	1
	4-11	10
	4-15	1
	4-19	3
	4-29	4
	5-08	2
	5-14	4
	6-10	4
13-27	12	
14-61	RF	
16-02	4	
16-28	3	
16-37	4	
17-02	4	
17-28	3	

PART NUMBER	FIGURE & INDEX	QTY PER ASSY	
2473	17-38	4	
	18-02	3	
	18-22	3	
	19-03	4	
	23-11	30	
	24-08	30	
	25-08	27	
	26-08	30	
	43-02	4	
	49-03	6	
	2474	5-03	12
24764	20-03	4	
	21-09	4	
24767	5-28	6	
	6-39	6	
24802	30-35	4	
	31-44	4	
24835	13-18	4	
	27-08	24	
	28-06	24	
	29-06	24	
	30-06	24	
	31-08	24	
	32-07	24	
	24878	3-16	5
	2500	35-26	2
		36-28	2
		37-10	2
38-31		4	
39-31		4	
41-08		2	
49-10		1	
25102		49-10	1
25164		29-23	1
25171		4-03	12
25328		4-27	1
350998	6-36	1	
	7-02	8	
	8-02	8	
352655	17-06	1	
	17-32	1	
	13-10	1	
35967	13-10	1	
35971	13-16	1	
36151L	27-10	8	
	28-09	8	
	29-08	8	
	30-08	8	
	31-10	8	
	36151R	6-28	2
	400573-8	34-05	4
	401507	3-11	2
		16-44	2
		17-52	2
		27-40	4
29-53	1		

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
401507	34-15	2
	49-06	2
401752	1-29	3
	17-40	1
	28-21	1
401753	43-13	1
401800	15-06	1
401801	14-06	2
401804	1-06	2
401808	2-06	5
401813	16-31	4
	17-30	2
401814	1-07	4
	16-06	1
	16-09	1
	17-09	1
401832	15-07	1
401843	29-17	1
401852	49-11	4
401860	1-08	2
	25-13	12
401861	1-08	2
401870	2-11	2
401873	1-19	7
	1-20	1
401881	16-07	2
	17-07	2
401885	1-10	2
	1-11	11
	1-12	1
	2-12	11
401893	2-14	1
	7-25	2
	8-21	2
	13-07	4
	14-26	4
401899	2-07	4
	17-31	1
401927	1-13	3
401932	1-15	1
401936	1-17	4
	1-18	1
401945	1-21	2
401962	1-14	1
401963	1-22	2
	15-30	1
401965	1-21	2
	1-26	2
	2-16	2
401968	1-18	1
401971	16-10	1
	17-10	1
401975	1-10	2

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
401977	1-23	4
402034	1-24	1
402044	1-12	1
	2-13	1
402060	2-10	2
402066	2-09	14
402127	1-08	2
	16-08	2
	17-08	2
	18-07	2
402129	2-15	2
402151	1-25	2
	2-08	4
402157	2-17	3
402158	2-18	2
402159	2-19	2
402359	1-16	1
402711	14-27	1
	36-06	2
402941	1-31	4
404584	1-09	1
477290	34-03	2
477291	34-04	2
501867	16-21	1
	17-21	1
	18-18	1
	35-17	3
	36-19	3
	38-22	3
	39-22	3
501868	18-33	1
	32-14	1
502020	17-44	1
502287	16-17	1
	17-17	1
	18-14	1
	17-25	1
502293	13-04	2
520112-3	16-25	1
521649	23-13	30
530346	24-10	32
	26-10	30
	28-19	2
	11-02	1
530658	3-04	4
531001	4-04	12
	13-02	36
	49-14	2
531178	14-25	1
531378	2-03	2
531548	2-20	1
531590	1-33	1
532432	2-28	1



PART NUMBER	FIGURE & INDEX	QTY PER ASSY
532432	23-15	1
	24-12	1
	26-12	1
534471	41-26	4
534609	13-37	48
534610	13-38	24
534655	10-06	1
534685	16-24	1
	18-26	1
534715	18-27	1
534728	6-14	1
534740	5-23	1
	6-13	1
534741	8-28	1
534742	49-09	1
534743	23-09	1
	24-06	1
	25-06	1
	26-06	1
534750	50-01	2
	51-01	2
	52-01	2
	53-01	2
534757	8-27	1
534775	18-37	1
534857	13-29	6
534861A1	49-02	2
534938	18-28	1
534940	24-01	1
	26-01	1
534980	18-30	1
535008	14-19	1
	15-34	1
535118	13-33	48
535634	14-18	1
	15-24	1
535661	10-01	1
535662	10-03	1
535666	10-04	4
535668	22-13	12
535847	40-08	2
	42-02	2
	44-02	2
	45-02	2
	50-03	4
	51-03	4
	52-03	4
	53-03	4
535885	14-29	1
535887	14-30	1
535900	14-19	1
535908	14-28	1
536038	13-35	24

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
536338-.75	31-23	2
536379	7-19	6
	8-18	6
536388-.50	37-28	2
	40-04	2
536388-.62	30-20	4
	31-21	4
536388-.75	27-35	2
	29-42	2
	30-21	2
	30-29	2
	31-38	2
	32-34	2
536413	27-01	6
	28-01	6
	29-01	6
	30-01	6
	31-01	6
	32-01	6
536421	8-17	1
536552	16-13	1
	17-13	1
	18-10	1
536563	7-16	1
	8-16	1
537019	13-28	12
537296	13-36	12
537299	6-35	1
537505	2-31	1
537539	14-58	1
537629	38-23	3
	39-23	3
537650	23-10	1
537690	35-25	2
	36-27	2
	37-09	2
	38-30	4
	39-30	4
	41-09	4
537721	2-02	1
537728	28-36	1
537738A1	18-21	1
537742	18-04	1
537745	18-01	1
537749	18-20	1
537750	3-20	1
	18-24	1
	18-34	1
	25-11	29
537961	27-17	2
	30-15	2
	31-16	2
	32-15	1

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
538076	10-07	1
538100	29-22	4
538185	15-01	1
538304	13-40	12
538650	3-31	1
	4-17	1
538801	6-21	1
538804	6-20	1
538944-10.50	4-02	4
538944-5.31	3-01	1
538944-6.19	3-02	1
538944-8.88	4-01	2
538949	3-35	1
	4-20	1
538989	4-08	4
538999	18-25	2
	18-36	1
539003	3-21	1
	25-12	1
	29-15	2
539058	6-05	16
	18-43	2
539374	1-36	1
	3-25	19
	3-36	1
	4-28	1
539487	27-12	2
	28-11	4
	29-09	4
	30-10	2
	31-11	2
	32-10	2
539518	6-03	3
539523	15-10	2
539568	18-15	1
539605	5-10	2
539634	36-02	1
539740	13-26	12
539742	13-19	6
539785	18-17	1
539800	16-19	1
	17-19	1
	18-16	1
539805	16-12	1
	17-12	1
	18-09	1
539942	35-11	2
	36-09	2
	38-08	2
	39-08	2
539988	13-11	1
625207	24-02	1
625238	35-05	1

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
625327-1	35-07	1
	36-14	1
	38-20	AR
	39-20	AR
625327-2	35-24	2
	37-08	2
	38-29	4
	39-29	4
	41-10	2
625393	13-15	2
625457	35-08	2
	36-13	AR
	38-18	AR
	39-18	AR
625457-1	36-10	1
	38-19	AR
	39-19	AR
625601	35-10	1
	36-08	1
625615	13-30	6
625765	51-02	2
625966	6-18	1
626147	13-39	12
626332	22-02	2
626334	6-19	1
626341	22-01	1
626342	22-09	1
626486	35-35	2
	37-24	1
	38-45	2
	39-38	2
626527	29-12	1
626553	47-12	1
626557	47-10	1
	48-11	1
626577-2	35-39	6
	36-41	6
	37-31	6
	38-48	6
	40-22	6
626634	35-14	1
	35-21	1
	36-16	1
	36-23	1
	38-09	1
	38-26	1
	38-42	1
	39-09	1
	39-26	1
	41-13	1
626739	8-19	1
626813	35-06	2
	36-12	2

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
626813	37-13	2
	38-17	3
	38-38	1
	41-07	1
626879-1	42-17	3
	44-12	3
626889	7-24	2
	8-20	2
626890	8-26	1
626891	35-32	2
626900	43-09	1
627119	42-09	1
	43-05	1
	43-07	1
627331	47-07	4
	48-07	4
627433	4-26	5
627496	20-12	1
	21-16	1
	22-07	1
627748-14	39-39	6
628109	11-04	2
628152	36-40	2
628152-1	36-40	2
628153	36-40	2
628153-1	36-40	2
628154	36-40	2
628154-1	36-40	2
628257	6-03	3
628260	13-34	6
628295	36-35	1
628372A2	25-07	1
628436	42-07	1
	42-11	1
	46-02	1
	46-11	1
	48-08	1
	48-09	1
628437	16-41	1
	42-07	1
	42-08	1
	43-13	1
	43-15	1
	44-06	1
	44-07	1
	46-05	1
	46-14	1
	47-05	1
	48-08	1
628438	37-18	1
	43-06	1
	43-10	1
	46-04	2

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
628438	46-07	1
628472	50-02	1
628473	50-02	1
628476	42-08	1
	43-08	1
	46-06	1
628478	46-09	1
628488	9-07	12
	10-08	12
628555-1	27-34	1
	29-41	1
628555-13	32-33	1
628555-14	40-05	1
628555-2	37-27	1
628555-3	30-28	1
	31-37	1
628555-4	30-19	2
	31-20	2
628555-5	30-22	1
	31-22	1
628556	27-26	6
	28-31	6
	29-37	6
	30-26	6
	31-27	6
	32-24	6
628572	27-37	1
	29-50	1
	30-32	1
	31-41	1
	34-13	1
628670	34-35	2
628672	34-34	2
628739	50-37	1
628740	50-42	2
628760	18-32	1
628885	15-31	1
628887	15-33	1
628900	15-32	1
629007	50-41	1
629008	50-40	1
	50-45	1
629009	50-39	1
	50-44	1
629010	50-38	1
	50-43	1
629011	50-46	1
629076	49-12	2
629077	49-13	1
629084	15-26	1
629104	7-13	16
	8-13	16
629117	13-17	1

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
629125	40-13	1
	45-08	1
629138	27-04	3
	28-02	5
	29-02	5
	30-02	5
	31-04	3
	32-02	3
629163	29-45	1
629163-1	29-40	1
629201	5-18	1
629202	5-17	1
629218	15-09	1
629263	15-23	1
629275	27-42	4
	29-55	1
	30-37	4
	31-46	4
	34-17	2
629325	27-05	1
	28-03	1
	29-03	1
	30-03	1
	31-05	1
	32-03	2
	36-26	2
629327-2	36-11	1
629329	36-24	1
629330	36-29	1
629338	11-03	2
629340	28-33	2
629353	28-34	1
629354	7-30	1
629360	36-21	1
629364	12-05	1
629401	49-12	2
629422	19-01	1
629436	50-31	9
629494	52-29	8
629495	50-28	12
	52-26	12
629496	50-27	2
629498	50-26	12
	52-24	12
629502	50-24	1
	52-22	1
629504	50-23	1
	52-21	1
629505	50-22	1
	52-20	1
629506	50-21	1
	52-19	1
629518-1H	1-20	1

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
629518-1H	1-28	1
	2-23	1
	15-08	1
	20-07	1
	21-13	1
	28-15	4
	29-18	1
	31-30	1
	32-36	2
629518-3H	2-27	1
	20-10	1
629518-4H	15-43	1
	16-40	1
629638	19-11	1
629680	7-23	1
629703-8A1	36-18	1
	46-01	1
629703-8A2	36-18	1
	46-01	1
629726A3	9-01	1
629747	9-06	1
629748	9-05	1
629837	50-36	2
	52-34	2
629847	1-35	6
	2-32	6
630046	12-06	1
630055	27-02	1
	31-02	1
630060	27-03	1
	31-03	1
630063	2-26	1
630124	35-09	1
630184	47-11	1
	48-12	1
630261-35	7-11	4
	8-11	4
630261-37	7-10	2
	8-10	2
630261-38	7-09	2
	8-09	2
630350	28-40	1
630387	35-18	3
	36-20	3
630455	35-04	2
	36-05	2
	38-04	3
	39-04	3
630464	8-14	10
630474	28-35	1
630533	51-06	12
630591	13-09	1
630655	19-09	1

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
630680	16-23	1
	17-23	1
630681	16-20	1
	17-20	1
630691	19-12	1
630693-10.44	3-09	1
	4-22	1
630693-11.67	3-09	1
630763	35-01	1
	37-01	1
	38-01	1
	39-01	1
	40-01	1
630817	27-27	1
630817-1	31-35	1
630826	11-06	12
630849	20-01	2
	21-06	2
630870	5-24	1
630871	5-22	1
630873	1-03	1
630881	27-28	2
630892	5-06	1
630899	1-02	1
630916	16-01	1
	17-01	1
630963	28-22	1
630964	28-24	1
630965	27-23	6
	28-28	6
	29-34	6
	30-23	6
	31-24	6
	32-21	6
630966-.56	25-02	2
630966-4.00	3-23	3
631008	25-01	1
631014	14-17	1
631016	14-07	1
631034	14-01	1
631056	14-20	1
631059	20-02	1
	21-07	2
631075	14-17	1
631099-.44	9-03	4
631152	5-02	2
631154	5-01	2
631246	37-23	1
	40-21	2
631252	16-14	1
	17-14	1
	18-11	1
631263	35-02	1

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
631263	38-02	1
	39-02	1
	40-02	1
631266-1	6-29	1
631275-2	6-30	1
631293	42-09	1
631307	42-10	1
631308	42-06	1
631330	47-09	1
	48-10	1
631351-7A3	35-34	1
	47-01	1
631351-9A3	35-34	1
	47-01	1
631351A10	36-33	1
	47-01	1
631351A11	36-33	1
	47-01	1
631351A12	36-33	1
	47-01	1
631351A14	37-22	1
	47-01	1
631367	23-02	1
631390	14-21	1
631478	15-20	1
631486	31-32	2
631496	13-05	1
631520	13-14	2
631521	13-13	2
631547	19-02	1
631618	14-09	1
	15-11	1
631638	15-19	1
631646	14-50	1
631650	14-39	1
	15-39	1
631653	14-11	1
	15-13	1
631658	47-08	1
631684	36-01	1
631685	36-03	1
631716	8-01	1
631720	47-08	1
	48-05	1
631737	52-28	2
631737-2	50-30	2
631739	50-34	2
	52-32	2
631764	44-11	1
631782	14-52	1
631783	14-53	1
631784	14-54	1
631818	36-15	1

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
631819	36-07	1
631836	29-20	4
631837	29-21	2
631845	9-02	1
	10-02	1
631882	43-11	1
631915	6-27	1
631927	2-30	1
631928	6-26	1
631972	27-11	4
	28-10	4
	30-09	4
	32-09	16
631995	15-22	1
632017	42-05	1
	44-08	1
632018	7-20	1
632062-16	6-37	1
632062-2	6-37	1
632085	15-40	1
632105	50-35	2
	52-33	2
632106	50-29	13
	52-27	13
632115	40-12	1
	44-10	1
	45-07	1
632120	3-07	4
632126	20-13	1
	21-20	1
632224	20-08	1
	21-14	1
632239	14-57	1
632240	14-56	1
632266	14-43	1
632357	6-04	1
632379	14-51	1
632436	19-07	1
632437	19-06	1
632443-4	3-18	5
	7-26	2
	23-05	1
632443-6	3-15	4
632444-2	29-11	1
632553-2	41-06	1
632554-1	37-12	1
	37-15	1
632554-2	35-13	1
	38-14	1
	38-16	1
	38-37	1
	39-14	1
	39-16	1
632555-12	37-14	1

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
632555-14	38-15	1
	38-36	1
	39-15	1
632555-15	38-13	1
	39-13	1
632555-7	37-11	1
632556	35-12	1
632557	35-22	1
	37-06	1
	38-27	1
	38-41	1
	39-27	1
	41-12	2
632558	35-19	1
632577-2	39-41	6
632585	12-01	1
632590	19-02	1
632595	16-35	1
	17-36	1
632609	15-35	1
632616	34-20	1
	45-06	1
632663	25-14	4
632706	20-01	2
632710	27-39	1
	29-51	1
632729-10	27-33	1
	29-46	1
632748-14	36-39	1
	38-46	6
	40-20	6
632748-15	35-37	6
	36-39	6
	37-29	6
632750	28-38	1
632761	14-12	1
	15-14	1
632762	14-16	1
	15-18	1
632766	27-32	1
	29-48	1
632767	27-31	1
	29-47	1
	15-05	1
632770	28-32	RF
632774-1A2	28-32	RF
632774-1A3	2-25	1
632788	27-19	1
632809	27-20	1
632810	39-17	3
632813	42-01	1
632818-1A1	42-01	1
632818-2A1	42-01	1
632818-2A2	42-01	1
632818-5A2	43-01	1

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
632818-7A2	43-01	1
632840A1	36-04	1
632853A1	35-03	1
632855-1A2	27-30	1
632871	27-13	1
	30-11	1
	31-12	1
	32-11	1
632876	23-10	1
632892	7-18	1
632893	7-17	1
632916-11A1	38-21	1
	46-01	1
632916-11A2	39-21	1
	46-01	1
632916-8A1	35-16	1
	46-01	1
632931	38-07	1
	39-07	1
632946	23-01	1
632958	52-02	1
	53-02	1
632959	52-02	1
	53-02	1
632964-1	5-07	1
632964-2	5-07	1
632977	14-05	1
633009	50-25	2
633036	42-13	1
633121	43-12	1
633132	28-12	1
633207	29-16	1
633233-24	5-29	1
633233-3	5-29	1
633233-6	5-29	1
633233-7	5-29	1
633281	29-39	1
633282	29-43	1
633283	27-22	1
633291	29-10	1
633333	28-13	1
633342	15-25	1
633381-3	38-39	1
633381-4	38-24	1
	39-24	1
633381-8	41-14	1
633397	29-25	2
	32-20	2
633403	11-01	6
633409	38-32	1
	41-02	1
633412	24-07	1
633444	37-04	1

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
633579	51-07	1
	51-09	1
	51-11	1
	51-13	1
	51-15	1
	51-17	1
	53-09	1
	53-11	1
633579	53-15	1
	53-17	1
	53-19	1
633580	51-08	1
	51-10	1
	51-12	1
	51-14	1
	51-16	1
	51-18	1
	53-10	1
	53-12	1
	53-14	1
	53-16	1
	53-18	1
	53-20	1
633583	51-24	1
	53-26	1
633585	51-18	1
	53-21	1
633586	51-20	1
	53-22	1
633589	51-25	1
	53-27	1
633590	51-23	1
	53-25	1
633591	51-21	1
	53-23	1
633592	51-22	1
	53-24	1
633593	51-26	1
	53-28	1
633615	35-27	1
633620	7-01	1
633622	35-28	1
633650	42-14	1
633704	27-20	1
633718	29-29	1
633719	29-26	1
	32-27	1
633720-1	29-28	1
	32-29	1
633721	29-31	1
	32-30	1
633787	29-32	1
	32-32	1

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
633789	44-05	1
633790	37-21	1
633845	16-22	1
	17-22	1
	18-19	1
633925	51-34	15
	53-33	9
633926	51-33	10
	53-34	1
633927	51-32	1
	53-37	1
633928	53-36	1
633958-3	27-24	1
	28-27	2
	28-29	1
	29-35	1
	30-24	1
	31-25	1
	32-22	1
633958-5	28-23	1
	28-25	1
	29-27	2
	29-30	2
	32-26	2
	32-28	2
634011	47-02	1
	48-02	1
634080	7-21	4
634150	14-10	1
	15-12	1
634209	27-14	1
	30-12	1
	31-13	1
	32-12	1
634325	48-13	1
634326-4A4	36-33	1
	48-01	1
634326-4A6	48-01	1
634326-4A7	38-44	1
	48-01	1
634326-6A2	39-37	1
	48-01	1
634488	29-19	1
634505	4-09	1
	13-03	12
634511	3-08	4
	4-09	3
634536	44-09	1
634592	16-43	1
	18-42	1
634628	20-09	1
634675	50-06	12
	52-06	12
	53-06	12

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
635050A1	18-06	1
635134	6-25	1
635158-10.00	36-36	1
635158-12.00	36-37	1
635158-13.00	35-33	2
635158-14.00	37-25	1
635158-18.00	36-37	1
635158-22.00	37-26	1
635158-32.00	36-38	1
635158-36.00	35-36	1
635334	16-34	1
635360	50-33	1
	52-31	1
635361	52-25	2
	53-31	2
635362	53-29	2
635363	50-32	1
	52-30	1
635381-2	34-02	1
635439	7-14	10
635616	26-07	1
635623	7-12	16
	8-12	16
635630	30-30	1
	31-39	1
635640	26-02	1
635645	28-14	1
635699	53-30	12
635700	53-32	12
635915A2	38-03	1
	39-03	1
635921	30-38	1
635930	30-39	2
635950	38-06	1
	39-06	1
635991	52-35	AR
635996	20-06	1
636035-1	36-40	2
	38-47	2
636036-1	35-38	2
	36-40	2
	38-47	2
	40-19	2
636037	35-38	2
	37-30	2
636037-1	36-40	2
	38-47	2
	39-40	2
	40-19	2
636062	31-34	1
636143A2	30-27	RF
636143A3	30-27	RF
636144	12-04	1
636242	13-06	1



PART NUMBER	FIGURE & INDEX	QTY PER ASSY
636349	46-10	1
636350	42-12	1
636353	30-17	1
	31-18	1
636355	30-16	1
	31-17	1
636380	30-18	1
	31-19	1
636465	27-36	2
	29-49	1
	30-31	1
	31-40	1
636634	37-05	1
636687	51-31	1
636692	51-27	2
	53-41	2
636758	46-13	1
636805	38-10	1
	39-10	1
636900	20-06	1
	21-12	1
636919	51-30	1
	53-35	1
636920	51-29	2
	53-43	2
636921	51-28	2
	53-42	2
637129	28-16	1
637244	30-34	1
	31-43	1
637255-4	28-17	1
637286	43-11	1
637356	31-29	1
636357	31-33	1
637409-48	50-09	1
	50-10	1
	50-11	1
	50-12	1
	50-13	1
	50-14	1
	50-15	1
	50-16	1
	50-17	1
	50-18	1
	50-19	1
	50-20	1
	52-07	1
	52-08	1
	52-09	1
	52-10	1
	52-11	1
	52-12	1
	52-13	1

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
637409-48	52-14	1
	52-15	1
	52-16	1
	52-17	1
	52-18	1
637430	47-08	1
	48-05	1
637459	34-24	2
637579	7-15	4
	8-15	4
637583-17	39-33	1
637632	27-15	1
	30-13	1
	31-14	1
637634	27-18	1
637678	6-01	1
637735A3	31-28	RF
637781	13-12	1
637817	17-43	1
637847	16-43	1
	17-51	1
638125	13-07	4
638139	52-23	2
638172	49-15	4
639171	22-10	1
639193	7-04	1
	7-06	4
	7-08	4
	8-04	4
	8-06	4
	8-08	4
639195	7-07	2
	8-07	2
639196	7-03	1
	7-05	1
	8-03	1
	8-05	1
639305	20-11	1
	21-15	1
	22-06	1
639319-9	41-22	1
639332	33-15	4
639388	16-33	1
639405	16-27	1
639406	16-18	1
639407	16-36	1
639418-1	1-27	36
	2-22	24
639418-2	2-21	12
639479	35-15	1
639479	36-17	1
639495	37-17	1
639497	38-11	1

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
639497	39-11	1
639508-5A1	44-01	1
639573	13-25	24
639629	13-20	2
	13-23	2
639660-11	27-09	8
	28-07	6
	29-07	8
	30-07	6
	31-09	6
	31-31	2
	32-08	11
639660-12	28-08	4
639660-13	28-07	6
639660-6	29-44	1
639997	5-12	1
	6-08	1
640056	19-14	1
640087	14-41	1
	15-42	1
640094-4	34-29	1
640095	34-28	1
640230	12-02	1
640231	12-03	1
	21-02	1
640327-1	33-13	RF
	34-01	1
640342	21-08	1
640363	54-06	1
640372	54-03	1
640373	54-07	1
640380	14-35	1
	49-17	2
640517-4	54-16	1
640564-1A2	29-38	1
	37-03	1
640612	27-25	6
	28-30	6
	29-36	6
	30-25	6
	31-26	6
	32-23	6
640620-5	6-24	1
640620-8	6-24	1
640625	12-02	1
640626	12-03	1
640641	34-33	1
640642	32-16	1
640643-1A2	40-07	1
	45-01	1
640644	41-25	1
640655A1	41-03	1
640657	32-19	1

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
640665	40-16	4
640667	41-01	1
640668	40-14	1
640677	33-02	1
640690	41-19	1
640692	41-20	1
640701	32-35	1
640704	33-05	2
640705	33-04	1
640706	33-03	1
640707	33-01	1
640710	33-08	1
640711	33-09	1
640712	33-10	1
640730	17-45	1
640731	17-24	1
640733	17-46	2
640746	17-35	1
640749	17-27	1
640761	32-17	1
640764	32-18	1
640765	32-25	1
640766A1	17-37	1
640767	54-01	1
640774	54-10	1
640777	54-12	1
640781	54-05	1
640782	5-02	4
640791A2	40-03	1
640793	27-38	1
	29-52	1
	30-33	1
	31-42	1
	34-14	1
640795	32-13	1
640801	17-47	1
640803	17-18	1
640808	17-34	1
640820	54-02	1
640826	21-03	1
640877	33-12	1
640932	19-10	1
640934	19-08	1
640947	54-09	1
640971A2	34-36	1
641015	40-19	1
641018	40-19	1
641066	13-01	6
641100S4S28.00	34-09	1
641100S4S41.00	40-06	1
641100S6S10.00	34-21	1
641100S6S6.00	34-23	1
641100Y6S16.00	34-12	1

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
641100Y6S25.75	34-25	1
641198	2-01	1
641204	32-04	1
641218	34-22	1
641218	34-22	1
641250	7-27	1
	8-23	1
641284	33-11	2
641302	12-04	1
641306	7-28	1
	8-24	1
641361	5-30	2
641368	16-11	1
	17-11	1
	18-08	1
641407	3-32	1
641434-3	38-33	1
641434-4	38-33	1
641583	14-45	1
641584	14-45	1
641639	14-44	1
641651	5-11	1
	6-07	1
641682	13-22	6
641701	36-34	1
641862	9-08	1

PART NUMBER	FIGURE & INDEX	QTY PER ASSY
641862	10-09	1
641888-1	27-21	1
641888-4	27-21	1
641888-5	28-20	1
641889	40-11	2
	45-05	1
641909	7-22	2
641930-9.81	4-06	1
641931-10.75	3-05	8
	4-05	7
642004	28-26	1
642035	2-01	1
642064	47-02	1
	48-02	1
642066	33-07	1
642067	33-06	1
642070	48-09	1
642085	16-05	1
642087	17-05	1
642093	1-01	1
642094	1-01	1
642095	40-15	1
642096	1-01	1
642143	14-14	1
642224	15-16	1

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## SECTION VI

### CUSTOMER SPECIFICATION

This section contains a parts listing of customer specifications of the basic engines for each model. There is a Figure and Index column which refers to an illustrated view of the parts or assembly differences. The Figures referenced in this section are located throughout Section II.

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY	FIGURE INDEX
B-1	630817-3		Convolute Bellows . . . . . * * * *	1	27-27
B-2	633233-8		Rod and Cap Assembly, Oil Gauge . . . . .	1	5-29
	630817-4		Convolute Bellows . . . . .	1	27-27
	635158-14.00		Hose Assembly, Control-to-F/P Outlet & Return . . . * * * *	2	35-33
B-5	641668		Alternator . . . . .	1	19-2
	634661		Solenoid . . . . . * * * *	1	
B-9	No Number		Alternator (Customer Furnished) . . . . .	NS	
	636415		Harness Assembly, Complete . . . . . * * * *	1	
B-10	No Number		Alternator (Customer Furnished) . . . . .	NS	
	637633		Riser Assembly, Intake Manifold . . . . .	1	27-18
	633233-30		Rod and Cap Assembly, Oil Gauge . . . . .	1	5-29
	635158-14.00		Hose Assembly, Control-to-F/P Outlet & Return . . .	2	35-33
	636415		Harness Assembly, Complete . . . . . * * * *	1	
B-12	637633		Riser Assembly, Intake Manifold . . . . .	1	27-18
	633233-30		Rod and Cap Assembly, Oil Gauge . . . . .	1	5-29
	635158-14.00		Hose Assembly Control-to-F/P Outlet & Return . . . * * * *	2	35-33
C-3	639660-13		Hose, Intake Manifold . . . . .		28-7
	637430		Elbow, 90 Degree, 1/8 NPTF-to-3/16 Tube . . . . . * * * *	1	47-8
D-2	641670		Alternator . . . . . * * * *	1	19-2
D-3	641670		Alternator . . . . .	1	19-2
	636141		Magneto . . . . .	2	
	633311		Harness Assembly Complete . . . . . * * * *	1	Fig. 51
E-4	641668		Alternator . . . . .	1	19-2
	637633		Riser Assembly, Intake Manifold . . . . .	1	27-18
	633233-30		Rod and Cap Assembly, Oil Gauge . . . . .	1	5-29
	635158-14.00		Hose Assembly, Control-to-F/P Outlet & Return . . . * * * *	2	35-33
E-5	641668		Alternator . . . . . * * * *	1	19-2
E-8	No Number		Alternator (Customer Furnished) . . . . .	NS	
	636415		Harness Assembly, Complete . . . . . * * * *	1	
E-9	No Number		Alternator (Customer Furnished) . . . . .	NS	
	637633		Riser Assembly, Intake Manifold . . . . .	1	27-18
	633233-30		Rod and Cap Assembly, Oil Gauge . . . . .	1	5-29
	635158-14.00		Hose Assembly, Control-to-F/P Outlet & Return . . . * * * *	2	35-33
E-10	637633		Riser Assembly, Intake Manifold . . . . .	1	27-18
	633233-30		Rod and Cap Assembly, Oil Gauge . . . . .	1	5-29
	635158-14.00		Hose Assembly, Control-to-F/P Outlet & Return . . . * * * *	2	35-33
J-2	633233-30		Rod and Cap Assembly, Oil Gauge . . . . .	1	5-29
	632818-2A3		Fuel Pump Assembly, Complete . . . . .	1	42-1
	631882		Elbow, 90 Degree . . . . .	1	42-6

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY	FIGURE INDEX
J-2	628436	.	Fitting, 45 Degree .....	1	42-8
	631307	.	Fitting, Connector .....	1	42-9
	628437	.	Elbow, 90 Degree .....	1	42-12
			* * * *		
J-4	641742		Gear, Magneto Drive .....	2	49-12
	633233-30		Rod and Cap Assembly, Oil Gauge .....	1	5-29
	632818-2A3		Fuel Pump Assembly, Complete .....	1	42-1
	631882	.	Elbow, 90 Degree .....	1	42-6
	628436	.	Fitting, 45 Degree .....	1	42-8
	631307	.	Fitting, Connector .....	1	42-9
	628437	.	Elbow, 90 Degree .....	1	42-12
			* * * *		
K-2	633233-30		Rod and Cap Assembly, Oil Gauge .....	1	5-29
	632818-2A3		Fuel Pump Assembly, Complete .....	1	42-1
	631882	.	Elbow, 90 Degree .....	1	42-6
	628436	.	Fitting, 45 Degree .....	1	42-8
	631307	.	Fitting, Connector .....	1	42-9
	628437	.	Elbow, 90 Degree .....	1	42-12
			* * * *		
M-2	634847		Starter, 24 Volt .....	1	18-42
			* * * *		
N-2	633233-30		Rod and Cap Assembly, Oil Gauge .....	1	5-29
	632818-2A4		Fuel Pump Assembly, Complete .....	1	42-1
	628436	.	Elbow, 45 Degree .....	1	42-8
	631307	.	Fitting, Connector .....	1	42-9
	628437	.	Elbow, 90 Degree .....	1	42-12
			* * * *		
N-4	641742		Gear, Magneto Drive .....	2	49-12
	633233-30		Rod and Cap Assembly, Oil Gauge .....	1	5-29
	632818-2A4		Fuel Pump Assembly, Complete .....	1	42-1
	628436	.	Elbow, 45 Degree .....	1	42-8
	631307	.	Fitting, Connector .....	1	42-9
	628437	.	Elbow, 90 Degree .....	1	42-12

## SECTION VII

### TSIO-520-BB, DB, EB, JB, KB, LB, & NB GROUP ASSEMBLY PARTS LIST

7-1 The TSIO-520-BB,DB,EB,JB,KB,LB and NB are similar to the TSIO-520-B,D,E,J,K,L and N respectively. When specific parts are not referenced in Section VII , refer to the basic parts list in Section II.

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Crankcase Studding Assembly .....	7-2
Crankshaft Group .....	7-4
Connecting Rod Assembly .....	7-5
Fuel Injection System, TSIO-520-BB,EB .....	7-6
Fuel Injection System, TSIO-520-DB .....	7-8
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Fuel Injection System, TSIO-520-KB .....	7-12
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Fuel Pump Assembly, TSIO-520-BB,EB,JB,KB,NB .....	7-16
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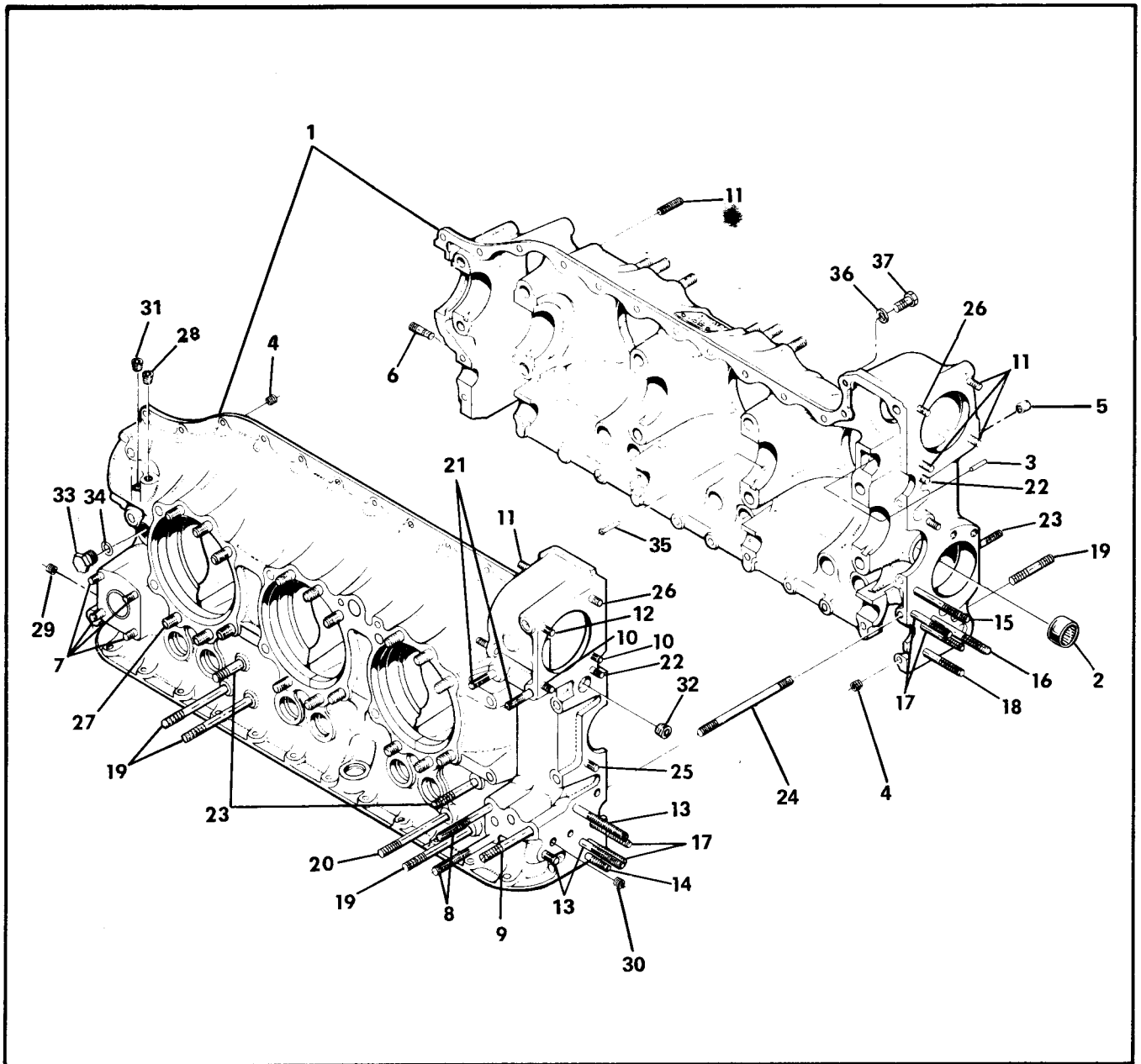


FIGURE 7-1. STUDDING ASSEMBLY, PERMOLD CRANKCASE.



FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY																	
			TSIO-520																	
1	2	3	4	5	6	7	8	9	10	11	12									
7-1-1	642507	Studding Assembly, Crankcase	1					1	1		1									
-1	642506	Studding Assembly, Crankcase						1												
-1	642508	Studding Assembly, Crankcase										1								
-2	630899	Bearing, Roller	1		1	1			1	1	1		1							
-3	630873	Dowel, 3/16 x 1/2 Inch Long	1		1	1			1	1	1		1							
-4	MS122162	Insert, Thread	5		5	5			5	5	5		5							
-5	MS122163	Insert, Thread	2		2	2			2	2	2		2							
-6	401804	† Stud, 1/4 x 1-1/16 Inch Long	2		2	2			2	2	2		2							
-7	401814	† Stud, 5/16 x 1-7/8 Inch Long	4		4	4			4	4	4		4							
-8	401860	† Stud, 3/8 x 1-9/16 Inch Long	2		2				2	2										
-8	402127	† Stud, 3/8 x 1-17/32 Inch Long			2															
-8	401861	† Stud, 3/8 x 1-3/4 Inch Long											2							
-9	404584	† Stud, 5/16 x 6-3/8 Inch Long											1							
-10	401975	† Stud, 5/16 x 1-9/16 Inch Long	2		2				2	2	2		2							
-10	401885	† Stud, 5/16 x 1-5/16 Inch Long			2															
-11	401885	† Stud, 5/16 x 1-5/16 Inch Long	11		11	11			11	11	11		11							
-12	401885	† Stud, 5/16 x 1-5/16 Inch Long			1															
-12	402044	† Stud, 5/16 x 1-3/8 Inch Long	1		1				1	1	1		1							
-13	401927	† Stud, 3/8 x 3-1/2 Inch Long	3		3	3			3	3	3		3							
-14	401962	† Stud, 1/4 x 2-4/16 Inch Long	1		1	1			1	1	1		1							
-15	401932	† Stud, 5/16 x 4-1/8 Inch Long	1		1	1			1	1	1		1							
-16	402359	† Stud, 5/16 x 4-23/32 Inch Long	1		1	1			1	1	1		1							
-17	401936	† Stud, 1/4 x 3-7/8 Inch Long	4		4	4			4	4	4		4							
-18	401936	† Stud, 1/4 x 3-7/8 Inch Long	1		1				1	1	1		1							
-18	401968	† Stud, 1/4 x 4-17/32 Inch Long			1															
-19	401873	† Stud, 3/8 x 3-7/8 Inch Long	7		7				7	7	7		7							
-20	401873	† Stud, 3/8 x 3-7/8 Inch Long	1		1				1	1	1		1							
-20	629518-1H	Plug, Pipe, 1/8 - 27 NPTF			1															
-21	401965	† Stud, 3/8 x 13/32 Inch Long	2		2	2			2	2		2								
-21	401945	† Stud, 3/8 x 1-5/8 Inch Long											2							
-22	401963	† Stud, 1/4 x 1 Inch Long	2		2	2			2	2	2		2							
-23	401977	† Stud, 3/8 x 2-3/32 Inch Long	4		4				4	4	4		4							
-24	402034	† Stud, 5/16 x 6 Inch Long	1		1				1	1	1		1							
-25	402151	† Stud, 5/16 x 1-1/4 Inch Long	2		2	2			2	2	2		2							
-26	401965	† Stud, 3/8 x 1-13/32 Inch Long	2		2	2			2	2	2		2							
-27	639418-1	Stud, 5/16 x 2-1/16 Inch Long	36		36	36			36	36	36		36							
-28	629518-1H	Plug, Pipe, 1/8 - 27 NPTF	1		1				1	1	1		1							
-29	401752	Plug, Pipe, 1/8 - 27 NPTF	3		4	3			3	3	4		3							
-30	AN932C2	Plug, Pipe, 1/8-27 NPTF	2		2	2			2	2	2		2							
-31	402941	Plug, Pipe, 1/16 - 27 NPTF	4		4	4			4	4	4		4							
-32	2025	Plug, Pipe	1		1	1			1	1	1		1							
-33	532432	Plug, Machine Thread, 5/8-18	1		1	1			1	1	1		1							
-34	AN900-10	§ Gasket, Copper	1		1	1			1	1	1		1							
-35	629847	Nozzle, Squirt	6		6	6			6	6	6		6							
-36	539374	Washer, Plain	1		1	1			1	1	1		1							
-37	AN5-13A	Bolt, 5/16 x 1-3/8 Inch Long	1		1	1			1	1	1		1							

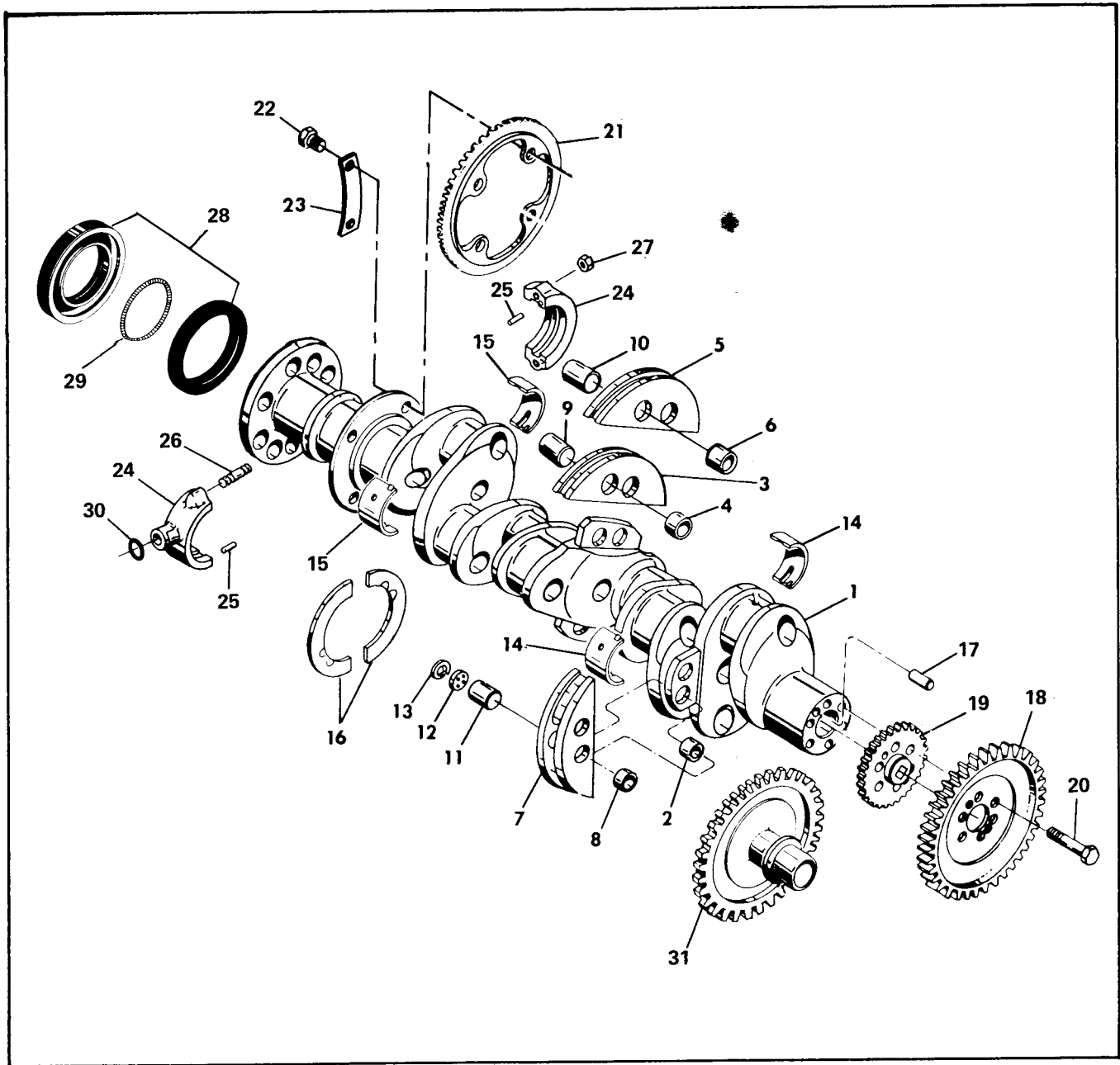


FIGURE 7-2. CRANKSHAFT GROUP

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY										
			TSIO-520										
			1	2	3	4	5	BB	DBEB	JB	KB	LB	NB
7-2-1	642396	Crankshaft and Damper Assembly						1	1	1	1	1	1
-2	350998	† Bushing, Crankshaft Damper						8	8	8	8	8	8
-3	639196	Counterweight Assembly, 4th Order						1	1	1	1	1	1
-4	639193	Bushing, Crankshaft Counterweight						4	4	4	4	4	4
-5	639196	Counterweight Assembly, 5th Order						1	1	1	1	1	1
-6	639193	Bushing, Crankshaft Counterweight						4	4	4	4	4	4
-7	639195	Counterweight Assembly, 6th Order						2	2	2	2	2	2
-8	639193	Bushing, Crankshaft Counterweight						4	4	4	4	4	4
-9	630261-38	Pin, Damper Counterweight, 4th Order						2	2	2	2	2	2
-10	630261-37	Pin, Damper Counterweight, 5th Order						2	2	2	2	2	2
-11	630261-40	Pin, Damper Counterweight, 6th Order						4	4	4	4	4	4

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520									
			1	2	3	4	5	6	7	8	9	10
ATTACHING PARTS												
7-2-12	635623	Plate, Counterweight Pin Retaining	16						16	16	16	16
-13	629104	Ring, Retaining	16						16	16	16	16
* * * *												
-14	634503	\$† Bearing, Crankshaft Main Bearing & Intermediate	6						6	6	6	6
-15	642720	\$† Bearing, Crankshaft Main, No. 4 & 5 Main	4						4	4	4	4
-16	637579	\$ Washer, Thrust	4						4	4	4	4
-17	536563	† Dowel, Crankshaft-to-Crankgear	1						1	1	1	1
-18	632893	Gear, Crankshaft, Large	1						1	1	1	1
-19	632892	Gear, Crankshaft, Small	1						1	1	1	1
ATTACHING PARTS												
-20	536379	Screw, Drilled Head, 5/16 x 7/8 Inch Long	6						6	6	6	6
-21	632018	Gear, Face, Alternator Drive	1						1	1	1	1
ATTACHING PARTS												
-22	634080	Screw, 5/16 - 24 x 13/32 Inch Long	4						4	4	4	4
-23	641909	Plate, Tab Lock	2						2	2	2	2
* * * *												
-24	629680	† Collar Assembly, Governor Oil Transfer	1						1	1	1	1
-25	626889	Dowel, 1/8 x 7/16 Inch Long	2						2	2	2	2
-26	401893	† Stud, 1/4 x 1-1/4 Inch Long	2						2	2	2	2
-27	632443-4	Nut, Marsden Lock, 1/4 - 28	2						2	2	2	2
-28	641250	Seal Assembly, Nose	1						1	1	1	1
-29	641306	Spring	1						1	1	1	1
-30	AN123962	\$ O-Ring, Crankcase-to-Collar	1						1	1	1	1
-31	629360	Gear, Idler	1						1	1	1	1

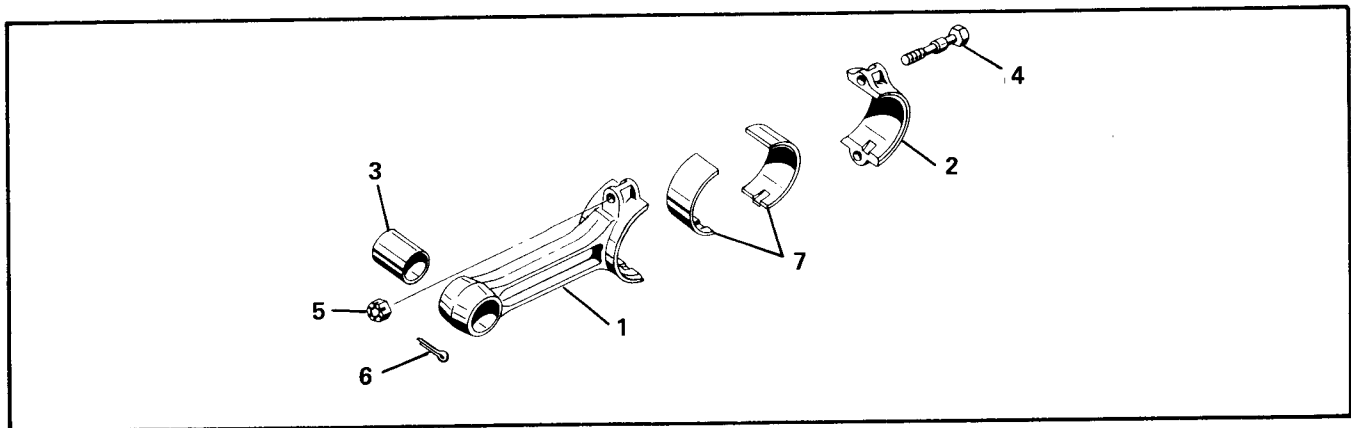


FIGURE 7-3. CONNECTING ROD ASSEMBLY

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520									
			1	2	3	4	5	6	7	8	9	10
7-3-1	642399	Connecting Rod Assembly, Complete	6						6	6	6	6
-2	530658	Bushing, Piston Pin	1						1	1	1	1
-3	629340	Bolt, Connecting Rod, Special	2						2	2	2	2
-4	628109	Nut, Slotted, Special	2						2	2	2	2
-5	AN381-25-10	Pin, Cotter	12						12	12	12	12
-6	642398	†\$ Bearing, Connecting Rod	12						12	12	12	12

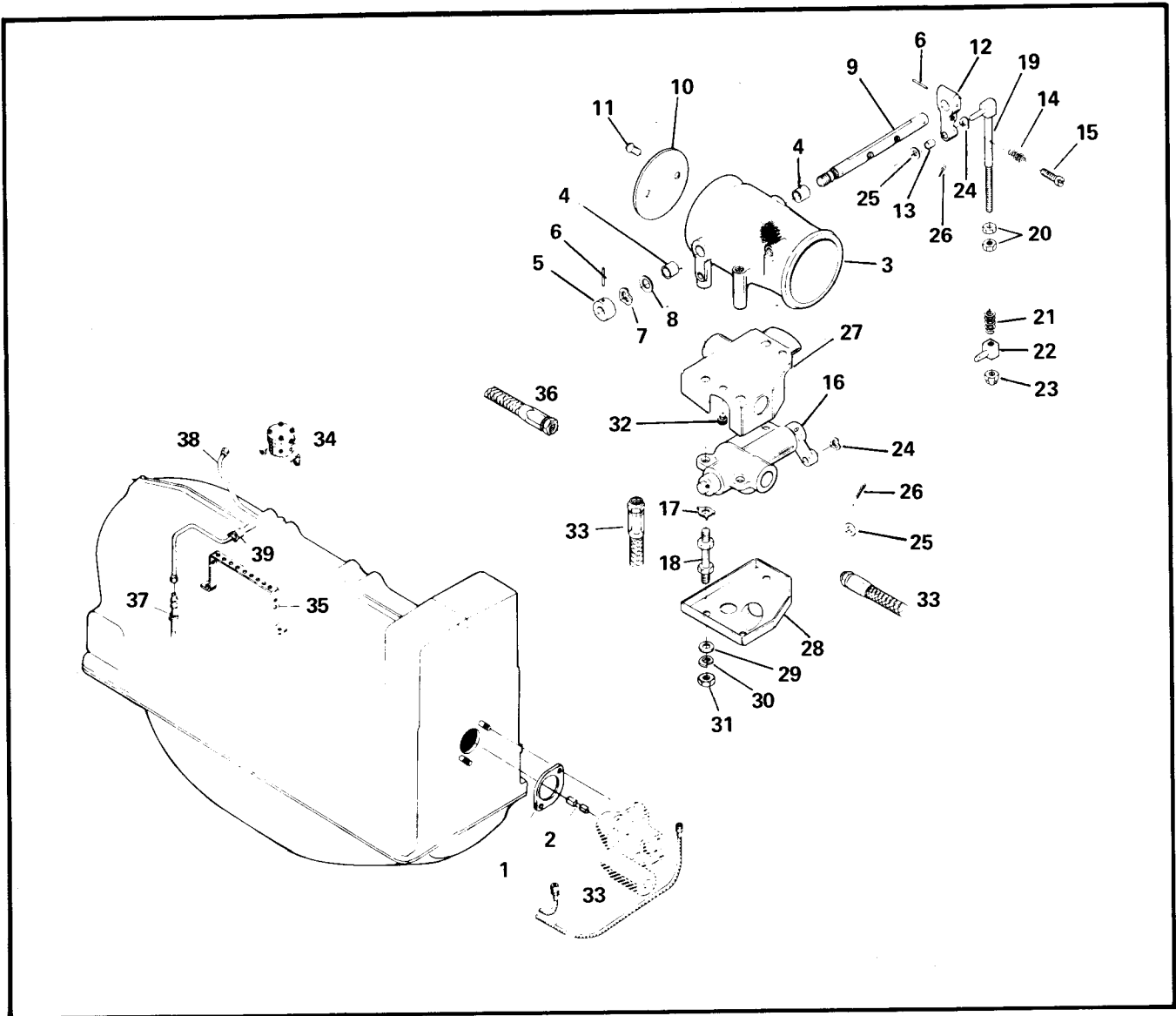


FIGURE 7-4. FUEL INJECTION SYSTEM, TSIO-520-BB,EB

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY																
			TSIO-520																
			1	2	3	4	5	BB	EB										
7-4-1	630763	Gasket, Fuel Pump						1	1										
-2	631263	Coupling, Crankshaft Gear-To-F/P						1	1										
	634794A3	Fuel Injection Assy., Complete						1											
	634798A3	Fuel Injection Assy., Complete							1										
	632818-10A1	Fuel Pump Assembly (See Figure 7-9)						1											
	632818-11A2	Fuel Pump Assembly (See Figure 7-9)							1										
	632855-1A2	Throttle and Control Assembly						1	1										
-3	632853A1	Throttle Assembly, Air						1	1										
-4	630455	Bushing						2	2										
-5	625238	Collar						1	1										
-6	626813	Pin						2	2										
-7	625327-1	Washer, Wave						1	1										
-8	625457	Washer, Plain						2	2										
-9	630124	Shaft, Throttle						1	1										
-10	625601	Plate, Throttle						1	1										

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY												
				TSIO-520												
				BB	EB											
ATTACHING PARTS																
7-4-11	539942		Screw	2	2											
* * *																
-12	632556		Lever Assembly	1	1											
-13	632554-2		Bushing	1	1											
-14	626634		Springs	1	1											
-15	639479		Screw, Adjusting	1	1											
-16	632916-8A1 ①		Control Assy, Complete (See Figure 47)	1	1											
ATTACHING PARTS																
-17	501867		Washer, Tab	3	3											
-18	630387		Screw, 1/4 -20 x 2 Inch Long	3	3											
* * *																
	632558A1		Rod and Link Assembly	1	1											
-19	632558		Rod and Link	1	2											
-20	AN121501		Nut	2	1											
-21	626634		Spring, Compression	1	1											
-22	632557		Rod End, Special	1	1											
-23	MS21044N3		Nut, Self-Locking	1	1											
-24	625327-2		Washer, Wave	2	2											
-25	537690		Washer, Plain	2	2											
-26	2500		Pin, Cotter	2	2											
-27	633615		Shroud Assembly, Bottom	1	1											
-28	633622		Shroud, Top	1	1											
ATTACHING PARTS																
-29	20522		Washer, Plain	3	3											
-30	MS35338-44		Washer, Lock	3	3											
-31	2437		Nut, Plain, Hex, 1/4 - 28	3	3											
* * *																
-32	626891		Bumper, Rubber	2	2											
-33	635158-13.00		Hose Assembly, Control Assembly- To-Fuel Pump, Outlet & Inlet	2	2											
-34	631351-9A3 ①		Valve Assy., Fuel Manif. Comp. (See Figure 47)	1												
-34	631351-7A3 ①		Valve Assy., Fuel Manif. Comp. (See Figure 47)		1											
-34	631351A2		Manifold Valve Assembly	Opt	Opt											
-35	626486		Bracket, Fuel Discharge Tube	2	2											
-36	635158-36.00		Hose Assy., Control Assy.-To-Manifold Vlv.	1	1											
-37	632748-15 ①②		Nozzle Assembly, Fuel Injection	6	6											
-38	636037		Tube Assy., Fuel Discharge Cyl., 1 & 6	2												
	636037-1		Tube Assy., Fuel Discharge Cyl., 1 & 6		2											
	636036		Tube Assy., Fuel Discharge Cyl., 2 & 5	2												
	636036-1		Tube Assy., Fuel Discharge Cyl., 2 & 5		2											
	636035		Tube Assy., Fuel Discharge Cyl., 3 & 4	2												
	636035-1		Tube Assy., Fuel Discharge Cyl., 3 & 4		2											
-39	626577-2		Clamp, Fuel Discharge Tube	6	6											

NOTE ① For detail parts, see Fuel Injection Systems Overhaul Manual and Parts Catalog, Form X-30091.

② Order nozzle size identified on hex of nozzle body.

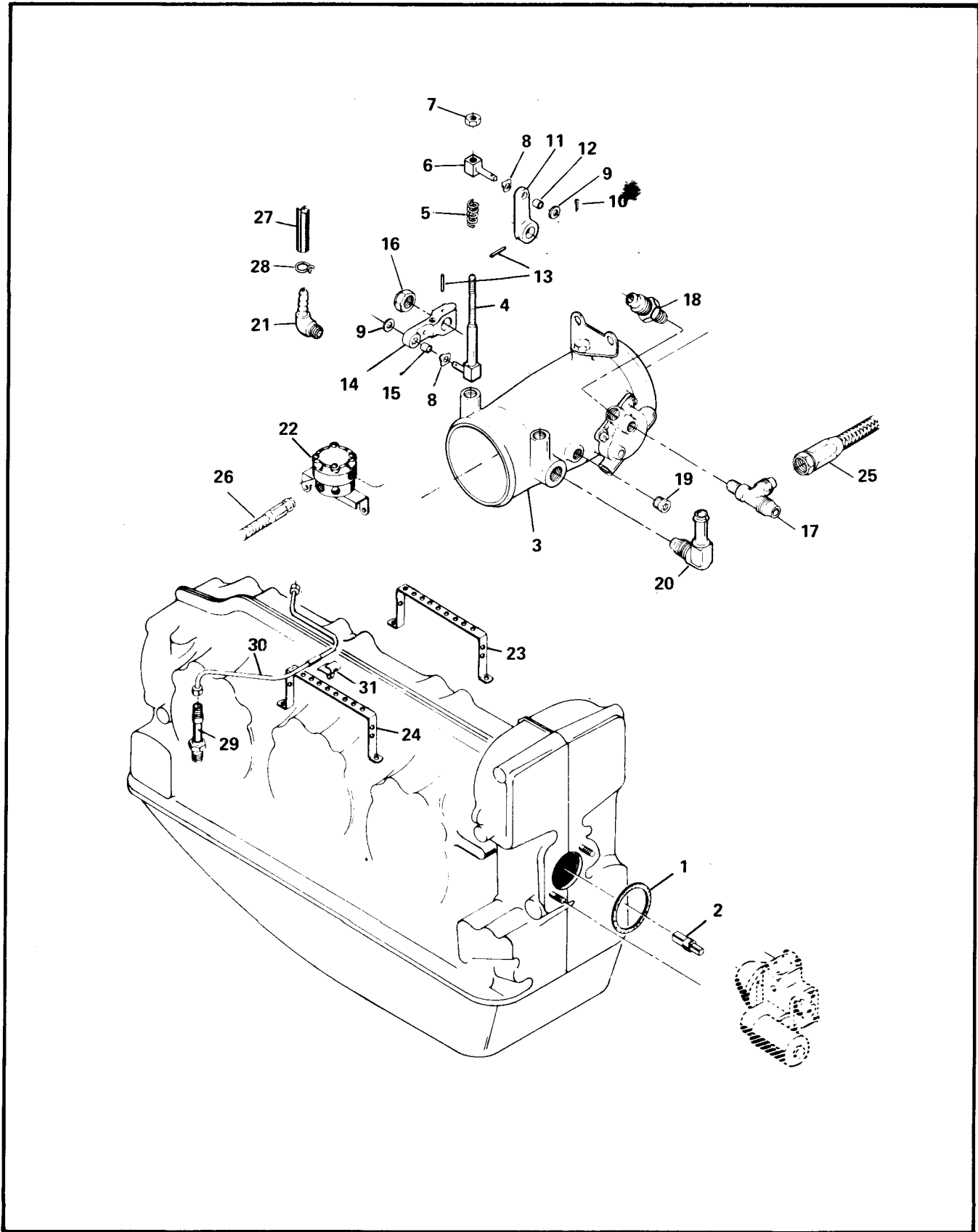


FIGURE 7-5. FUEL INJECTION SYSTEM, TS10-520-DB.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY												
			TSIO-520												
			DB												
7-5-1	630763	S Gasket, Fuel Pump	1												
-2	631263	Coupling, Crankshaft-to-Fuel Pump	1												
	635968A5	Fuel Injection Assembly, Complete	1												
	639508-8A1	① Fuel Pump Assy. (See Figure 7-10)	1												
-3	640564-1A1	① Throttle and Control Assembly	1												
-4	633444	Rod and Link Assembly	1												
-5	626634	Spring, Compression	1												
-6	632557	Rod End, Special	1												
-7	MS21044N3	Nut, Self-Locking	1												
-8	625327-2	Washer, Wave	2												
-9	537690	Washer, Plain	2												
-10	2500	Pin Cotter	2												
	632555-7	Lever Assembly, Throttle	1												
-11	632554-1	Bushing	1												
-13	626813	Pin, Tubular	2												
-14	632555-12	Lever Assembly, Throttle Control	1												
-15	632554-1	Bushing	1												
-16	MS21044N5	Nut, Self-Locking	1												
-17	639495	Tee, Fuel Inlet	1												
-18	628438	Fitting, Fuel Outlet	1												
-19	AN932-2	Plug, Pipe, 1/8 - 27 NPTF	1												
-20	AN842-8D	Elbow, 90 Degree, 1/8 NPTF to 1/2 Hose	1												
-21	633790	Fitting, 90 Degree, Coupling	1												
-22	631351A14	① Valve Assy., Fuel Manifold Complete (See Figure 40)	1												
-22	631351A8	Valve Assembly, Fuel Manifold	Opt												
-23	631246	Bracket, Fuel Discharge Tube, 1-3-5 Side	1												
-24	626486	Bracket, Fuel Discharge Tube, 2-4-6 Side	1												
-25	635158-14.00	Hose Assy., Control Assy.-to-Fuel Pump	1												
-26	635158-22.00	Hose Assy., Control Assy.-to-Manifold Valve	1												
-27	628555-2	Hose, Fuel Pump-to-Throttle Body	1												
-28	536388-50	Clamp	2												
-29	632748-15	①② Nozzle Assembly, Fuel Injection	6												
-30	636037	Tube Assy., Fuel Discharge Cyl. 1 & 6	2												
	636036	Tube Assy., Fuel Discharge Cyl. 2 & 5	2												
	636035	Tube Assy., Fuel Discharge Cyl. 3 & 4	2												
-31	626577-2	Clamp	6												

NOTE ① For detail parts, see Fuel Injection Systems Overhaul Manual and Parts Catalog, Form X-30091.

② Order nozzle size identified on hex of nozzle body.

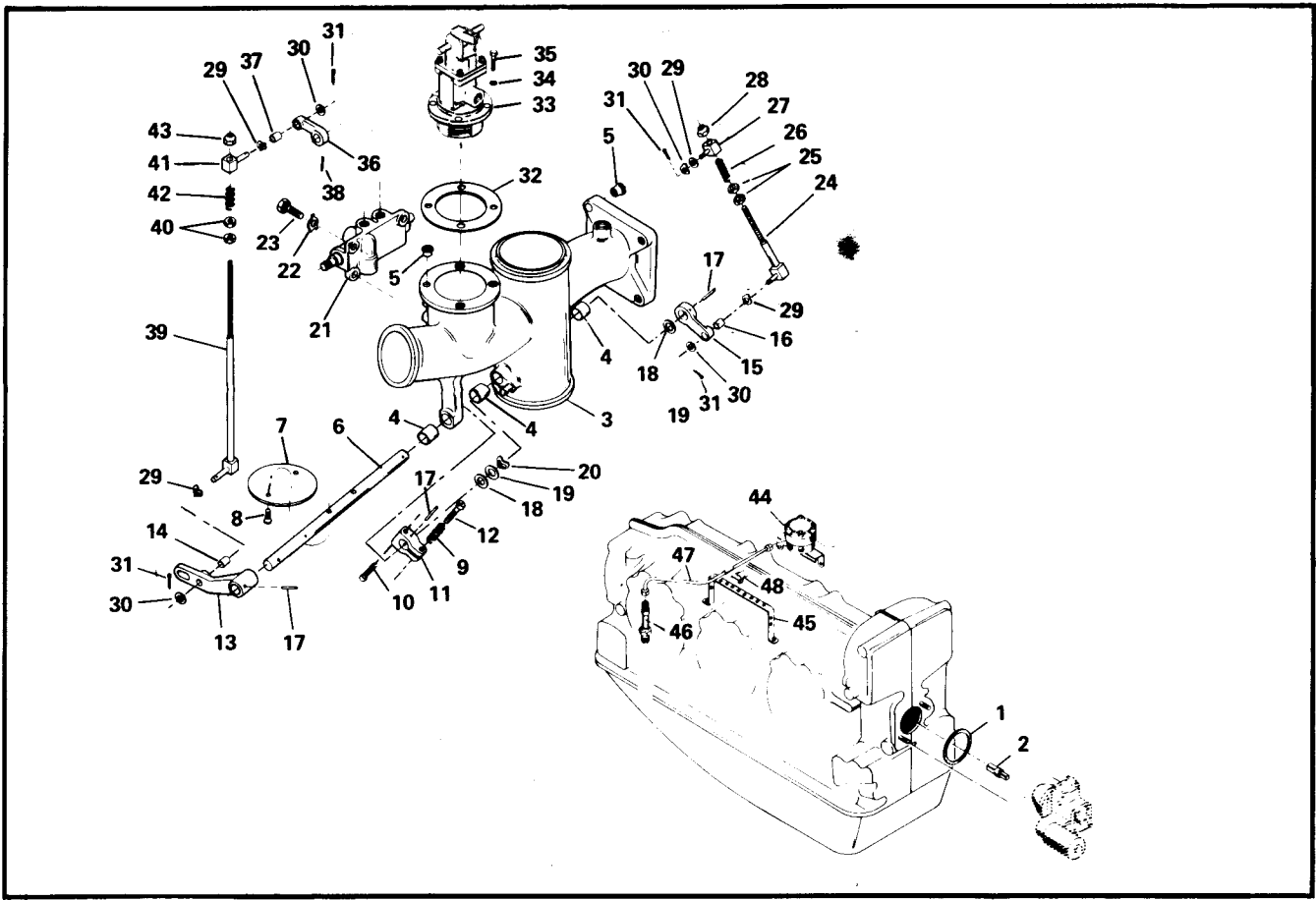


FIGURE 7-6. FUEL INJECTION SYSTEM, TSIO-520-JB,NB.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY	
			TSIO-520	
			JB	NB
7-6-1	630763	\$ Gasket, Fuel Pump	1	1
-2	631263	Coupling, Crankshaft Gear-to-F/P	1	1
	636134A7	Fuel Injection Assy., Complete	1	
	636134A6	Fuel Injection Assy., Complete		1
	632818-11A1 ①	Fuel Pump Assembly (See Figure 7-9)	1	1
	636143A3	Throttle and Control Assembly	1	
	636143A2	Throttle and Control Assembly		1
-3	635915A2	Throttle Assembly	1	1
-4	630455	Bushing	3	3
-5	MS122160	Insert, Helical Coil	12	12
-6	635950	Shaft, Throttle	1	1
-7	632931	Plate, Throttle	1	1
		ATTACHING PARTS		
-8	539942	Screw	2	2
		* * * *		
-9	626634	Spring	1	1
-10	636805	Screw, Idle Adjusting	1	1
-11	639497	Lever, Throttle, Idle Control	1	1
-12	AN565E8H8	Set Screw	1	1
-13	632555-15	Lever Assembly	1	1
-14	632554-2	Bushing	1	1
-15	632555-14	Lever Assembly	1	1
-16	632554-2	Bushing	1	1



FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY												
				TSIO-520												
				JB							NB					
7-6-17	626813		Pin, Lever-to-Shaft								3					3
-18	625457		Washer, Plain, 0.030 Thick								ar					ar
-19	625457-1		Washer, Plain, 0.015 Thick								ar					ar
-20	625327-1		Washer, Wave								ar					ar
-21	632916-11A1 ①		Control Assy., Complete (See Figure 47)								1					1
ATTACHING PARTS																
-22	501867		Washer, Tab								3					3
-23	537629		Screw, 1/4 - 20 x 11/16 Inch Long								3					3
* * * *																
	633381-4A1		Link Rod Assembly								1					1
-24	633381-4		Rod and Link Assembly								1					1
-25	AN121501		Nut								2					2
-26	626634		Spring, Compression								1					1
-27	632557		Rod End, Special								1					1
-28	MS21044N3		Nut, Elastic Stop								1					1
-29	625327-2		Washer, Wave								4					4
-30	537690		Washer, Plain								4					4
-31	2500		Pin, Cotter								4					4
-32	633409	\$	Gasket, Controller								1					1
-33	641434-3	②	Controller Assembly, Complete								1					
-33	641434-4	②	Controller Assembly, Complete													1
ATTACHING PARTS																
-34	AN960-10L		Washer, Flat								4					4
-35	AN500A10-12		Screw, No. 10-24								4					4
* * * *																
-36	632555-14		Lever Assembly								1					1
-37	632554-2		Bushing								1					1
-38	626813		Pin, Tubular								1					1
	633381-3A1		Link, Rod Assembly								1					1
-39	633381-3		Rod and Link Assembly								1					1
-40	13XX1896		Nut, No. 10-32								2					2
-41	632557		Rod End, Special								1					1
-42	626634		Spring, Compression								1					1
-43	MS21044N3		Nut, Elastic Stop								1					1
-44	634326-4A7 ①		Valve Assy., Fuel Manifold (See Figure 48)								1					1
-44	634326-4A1		Valve Assembly, Fuel Manifold								Opt					Opt
-45	626486		Bracket, Fuel Discharge Tube								2					2
-46	632748-14 ①③		Nozzle Assembly, Fuel Injection								6					6
-47	636037-1		Tube Assy., Fuel Discharge Cyl. 1 & 6								2					2
-47	636036-1		Tube Assy., Fuel Discharge Cyl. 2 & 5								2					2
-47	636035-1		Tube Assy., Fuel Discharge Cyl. 3 & 4								2					2
-48	626577-2		Clamp, Fuel Discharge Tube								6					6
	642100-5		Regulator Assembly, Fuel Discharge								1					1

NOTE:

- ① For detail parts, see Fuel Injection Systems Overhaul Manual and Parts Catalog, Form X-30091.
- ② For detail parts, See Controller Overhaul Manual and Parts Catalog, Form X-30086.
- ③ Order nozzle size identified on hex of nozzle body.

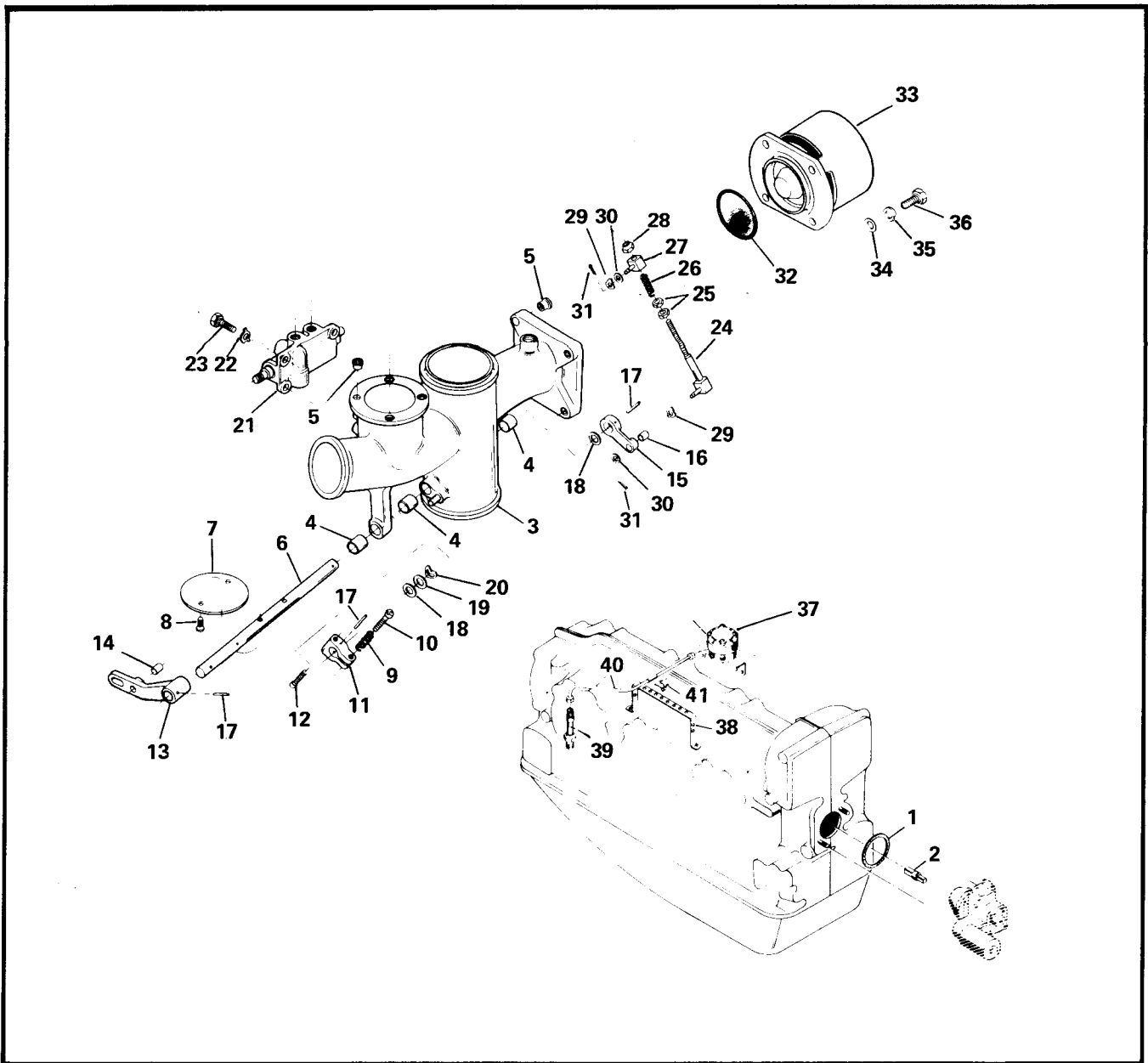


FIGURE 7-7. FUEL INJECTION SYSTEM, TSIO-520-KB

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY													
				TSIO-520											KB		
7-7-1	642238	\$	Gasket, Fuel Pump .....														1
-2	631263		Coupling, Crankshaft Gear-to-Fuel Pump .....														1
	637736A5		Fuel Injection Assembly, Complete .....														1
	632818-11A1	①	Fuel Pump Assembly (See Figure 7-9) .....														1
	637735A3		Throttle and Control Assembly .....														1
-3	635915A2		Air Throttle Assembly .....														1
-4	630455		Bushing .....														3
-5	MS122160		Insert, Helical Coil .....														12
-6	635950		Shaft, Throttle .....														1
-7	632931		Plate, Throttle .....														1
ATTACHING PARTS																	
-8	539942		Screw .....														2
* * * *																	

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY																	
				TSIO-520																	
												KB									
7-7-9	626634		Spring																	1	
-10	636805		Screw, Idle Adjusting																	1	
-11	639497		Lever, Throttle, Idle Control																	1	
-12	AN565E8H8		Set Screw																	1	
-13	632555-15		Lever Assembly																	1	
-14	632554-2		Bushing																	1	
-15	632555-14		Lever Assembly																	1	
-16	632554-2		Bushing																	1	
-17	632813		Pin, Lever to Shaft																	3	
-18	625457		Washer, Plain, 0.030 Thick																	ar	
-19	625457-1		Washer, Plain, 0.015 Thick																	ar	
-20	625327-1		Washer, Wave																	ar	
-21	632916-11A2 ①		Control Assy., Complete (See Figure 46)																	1	
ATTACHING PARTS																					
-22	501867		Washer, Tab																	3	
-23	537629		Screw, 1/4 - 20 x 11/16 Inch Long																	3	
			* * * * *																		
	633381-4A1		Link Rod Assembly																	1	
-24	633381-4		Rod and Link Assembly																	1	
-25	AN121501		Nut																	2	
-26	626634		Spring, Compression																	1	
-27	632557		Rod End, Special																	1	
-28	MS21044N3		Nut, Elastic Stop																	1	
-29	625327-2		Washer, Wave																	4	
-30	537690		Washer, Plain																	4	
-31	2500		Pin, Cotter																	4	
-32	MS29513-138 \$		O-Ring																	1	
-33	637583-17		Valve Assembly, Pressure Relief																	1	
ATTACHING PARTS																					
-34	AN960-10L		Washer, Flat																	4	
-35	20654		Washer, Lock																	4	
-36	AN500A10-12		Screw, No. 10-24																	4	
			* * * * *																		
-37	634326-6A2 ①		Valve Assy., Fuel Manifold (See Fig. 48)																	1	
-37	634326-6A1		Valve Assembly, Fuel Manifold																	Opt	
-38	626486		Bracket, Fuel Discharge Tube																	2	
-39	632748-14 ①②		Nozzle Assembly, Fuel Injector																	6	
-40	636037-1		Tube Assy., Fuel Discharge Cyl. 1 & 6																	2	
	641516		Tube Assy., Fuel Discharge, Cyl. 2																	1	
	636036-1		Tube Assy., Fuel Discharge, Cyl. 5																	1	
	636035-1		Tube Assy., Fuel Discharge, Cyl. 3 & 4																	2	
-41	632577-2		Clamp, Fuel Discharge Tube																	6	
	642100-5		Regulator Assembly, Fuel Pressure																	1	

**NOTE:**

- ① For detail parts, see Fuel Injection Systems Manual and Parts Catalog, Form X-30091.
- ② Order nozzle size identified on hex of nozzle body.

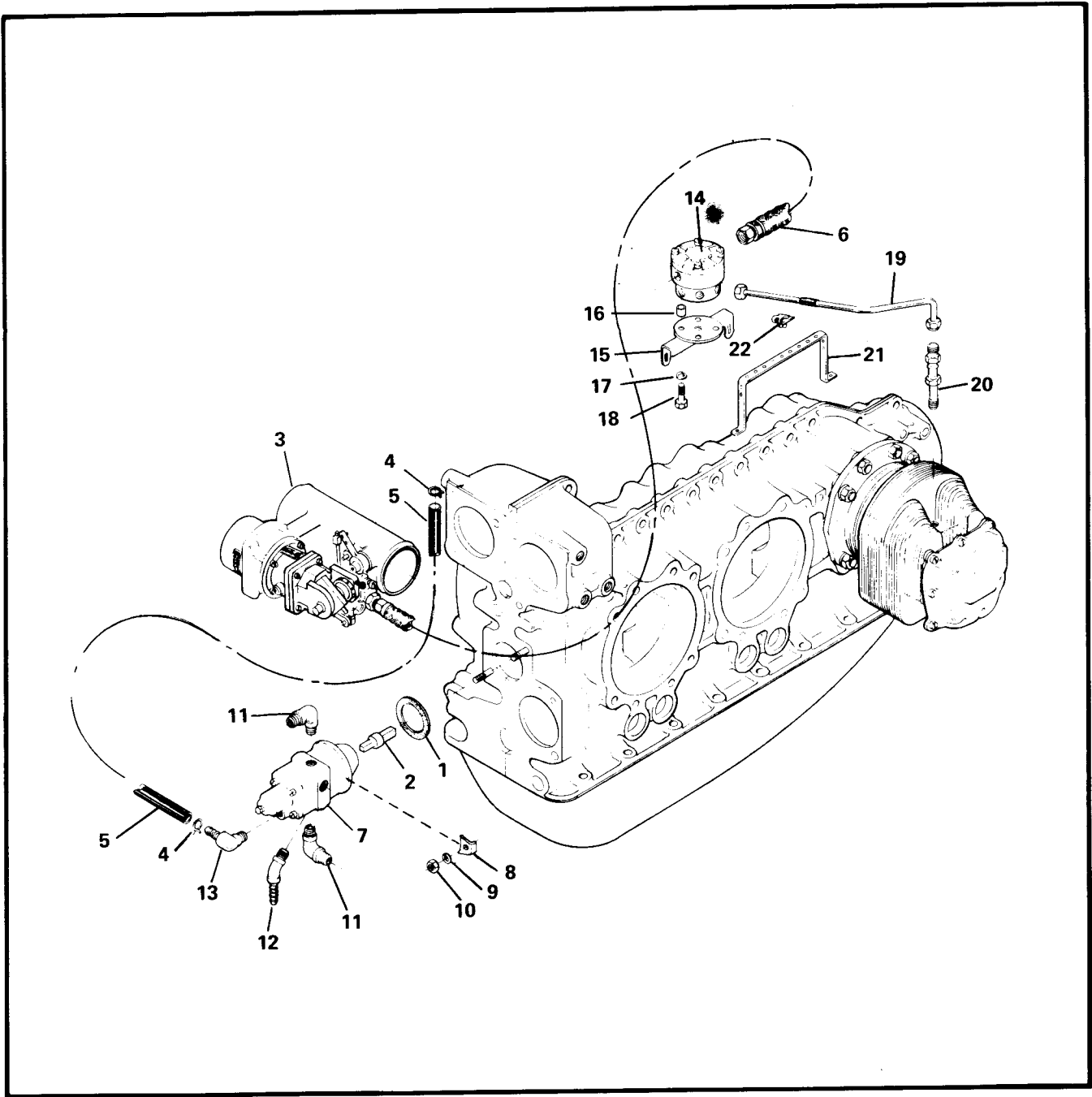


FIGURE 7-8. FUEL INJECTION SYSTEM, TSIO-520-LB.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY											
			1	2	3	4	5	6	7	8	9	10	LB	
7-8-1	630763	\$ Gasket, Fuel Pump												1
-2	631263	Coupling, Crankshaft Gear-to-Fuel Pump												1
	640792A11	Fuel Injection Assembly, Complete												1
-3	640791A2	Throttle and Control Assembly												1
-4	536388-50	Clamp, Hose												2
-5	628555-14	Hose, Air Throttle-to-Fuel Pump												1
-6	641100S4S41.00	Hose Assy., Metering Unit-to-Divider												1
-7	640643-3A1	Fuel Pump Assembly, (See Figure 7-11)												1

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY PER ASSEMBLY																
				TSIO-520																
												LB								
ATTACHING PARTS																				
7-8-8	535847		Washer, Holding										2							
-9	MS35338-45		Washer, Lock										2							
-10	2439		Nut										2							
			* * * *																	
-11	641889		Elbow, 90 Degree, Inlet and Outlet										2							
-12	632115		Elbow, 45 Degree										1							
-13	629125		Elbow, 90 Degree										1							
	640668A2		Manifold and Bracket Assembly, Fuel										1							
-14	640668		Flow Divider										1							
-15	642095		Bracket										1							
-16	640665		Spacer, Bracket to Flow Divider										4							
-17	MS35338-43		Washer, Lock										4							
-18	AN500A10-16		Bolt										4							
-19	636037-1		Tube Assy., Fuel, Cylinder 1 & 6										2							
-19	636036-1		Tube Assy., Fuel, Cylinder 2 & 5										2							
-19	641015		Tube Assy., Fuel, Cylinder 4										1							
-19	641018		Tube Assy., Fuel, Cylinder 3										1							
-20	632748-14	①	Nozzle Assembly										6							
-21	631246		Bracket, Fuel Discharge Tube										2							
-22	626577-2		Clamp, Fuel Tube to Bracket										6							

NOTE ① Order nozzle size identified on hex of nozzle body.

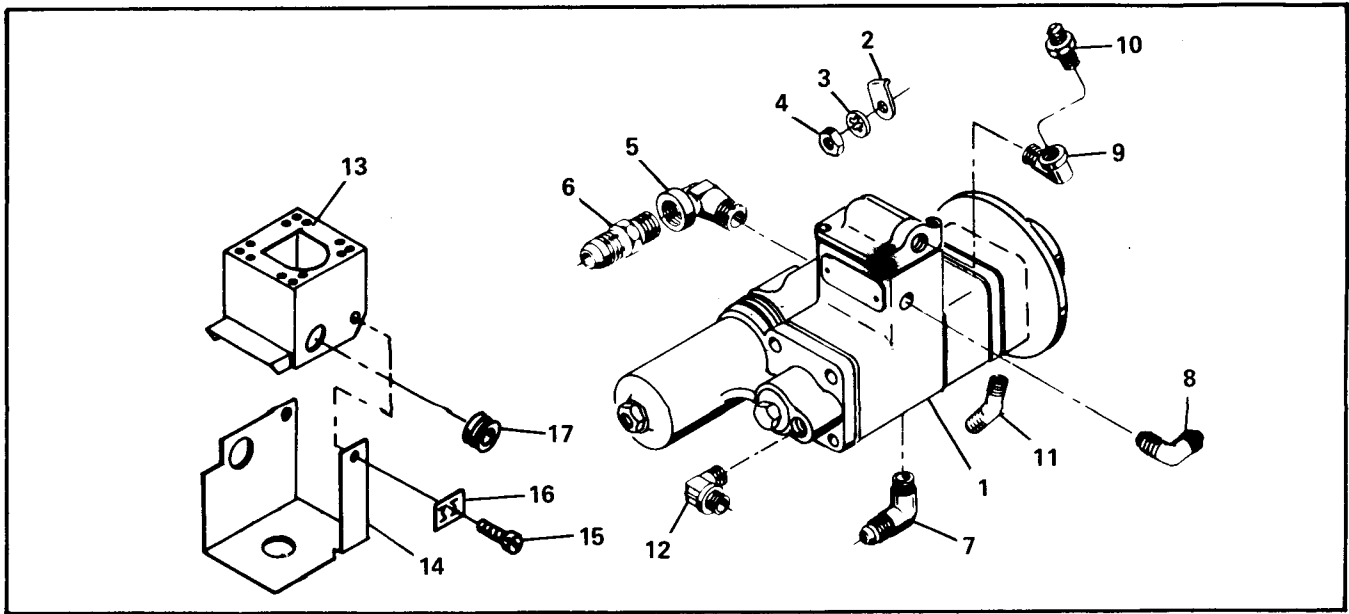


FIGURE 7-9. FUEL PUMP ASSEMBLY, TSIO-520-BB,EB,JB,KB,NB

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY															
			TSIO-520															
			1	2	3	4	5	BB	EB	JB	KB	NB						
7-9-1	632818-10A1	Fuel Pump & Pressure Compensator Assembly						1										
-1	632818-11A2	Fuel Pump & Pressure Compensator Assembly							1									
-1	632818-11A1	Fuel Pump & Pressure Compensator Assembly									1	1		1				
		ATTACHING PARTS																
-2	535847	Washer, Holding						2	2		2	2		2				
-3	MS35338-45	Washer, Lock						2	2		2	2		2				
-4	2439	Nut, Plain Hex						2	2		2	2		2				
		* * * * *																
-5	632017	Elbow, 90 Degree, 1/4 NPTF						1	1		1	1		1				
-6	631308	Connector, 1/4 NPTF-to-1/2 Tube						1	1		1	1		1				
-7	628437	Elbow, 90 Degree, 1/8 NPTF-to-1/4 Tube						1	1									
-7	628436	Elbow, 45 Degree, 1/8 NPTF-to-1/4 Tube									1	1						
-8	628476	Elbow, 45 Degree, 1/8 NPTF-to-1/8 Tube						1	1									
-8	628437	Elbow, 90 Degree, 1/8 NPTF-to-1/4 Tube									1	1		1				
-9	627119	Elbow, 90 Degree, 1/8 NPTF						1	1									
-9	631293	Elbow, 90 Degree, 1/8 NPTF-to-3/8 Tube									1	1		1				
-10	631307	Connector, 1/8 NPTF-to-3/8 Tube						1	1									
-11	628436	Elbow, 45 Degree, 1/8 NPTF-to-1/4 Tube						1	1		1	1		1				
-12	X5146	Elbow, 90 Degree, 1/8 NPTF-to-1/4 Tube						1	1									
-12	636350	Fitting Assy., Tee, 1/8 NPTF-to-1/2 Tube-to-1/2 Tube									1	1		1				
-13	633036	Shroud Assembly, Fuel Pump						1	1									
-14	633650	Shroud, Fuel Pump						1	1									
		ATTACHING PARTS																
-15	AN515-8R5	Screw, Maching						2	2									
-16	MS21044N08	Nut, Self-Locking						2	2									
-17	626879-1	Grommet						3	3									

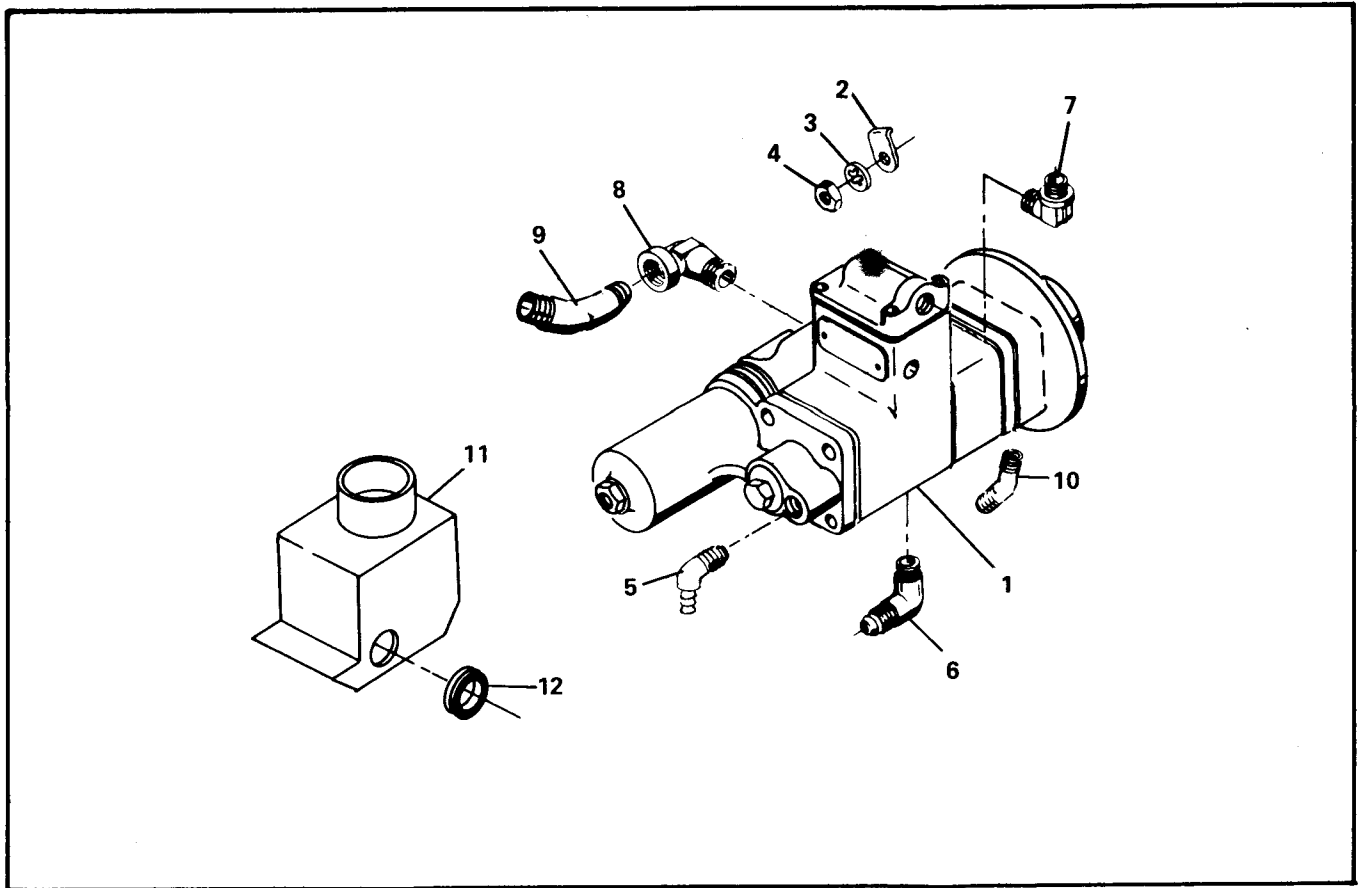


FIGURE 7-10. FUEL PUMP ASSEMBLY, TSIO-520-DB.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY TSIO-520																	
			1	2	3	4	5	DB												
7-10-1	639508-8A1	Fuel Pump Assembly, Complete							1											
		ATTACHING PARTS																		
-2	535847	Washer, Hold																		
-3	MS35338-45	Washer, Lock																		
-4	2439	Nut, Plain																		
		* * * *																		
-5	633789	Elbow																		
-6	628437	Elbow, 90 Degree, 1/8 NPTF to 1/4 Tube																		
-7	628437	Elbow, 90 Degree, 1/8 NPTF to 1/4 Tube																		
-8	632017	Elbow, 90 Degree																		
-9	634536	Elbow, 45 Degree, 1/4 NPTF to 3/8 Tube																		
-10	632115	Elbow, 45 Degree, 1/8 NPTF to 1/4 Tube																		
-11	631764	Shroud Assembly, Fuel Pump																		
-12	626879-1	Grommet																		

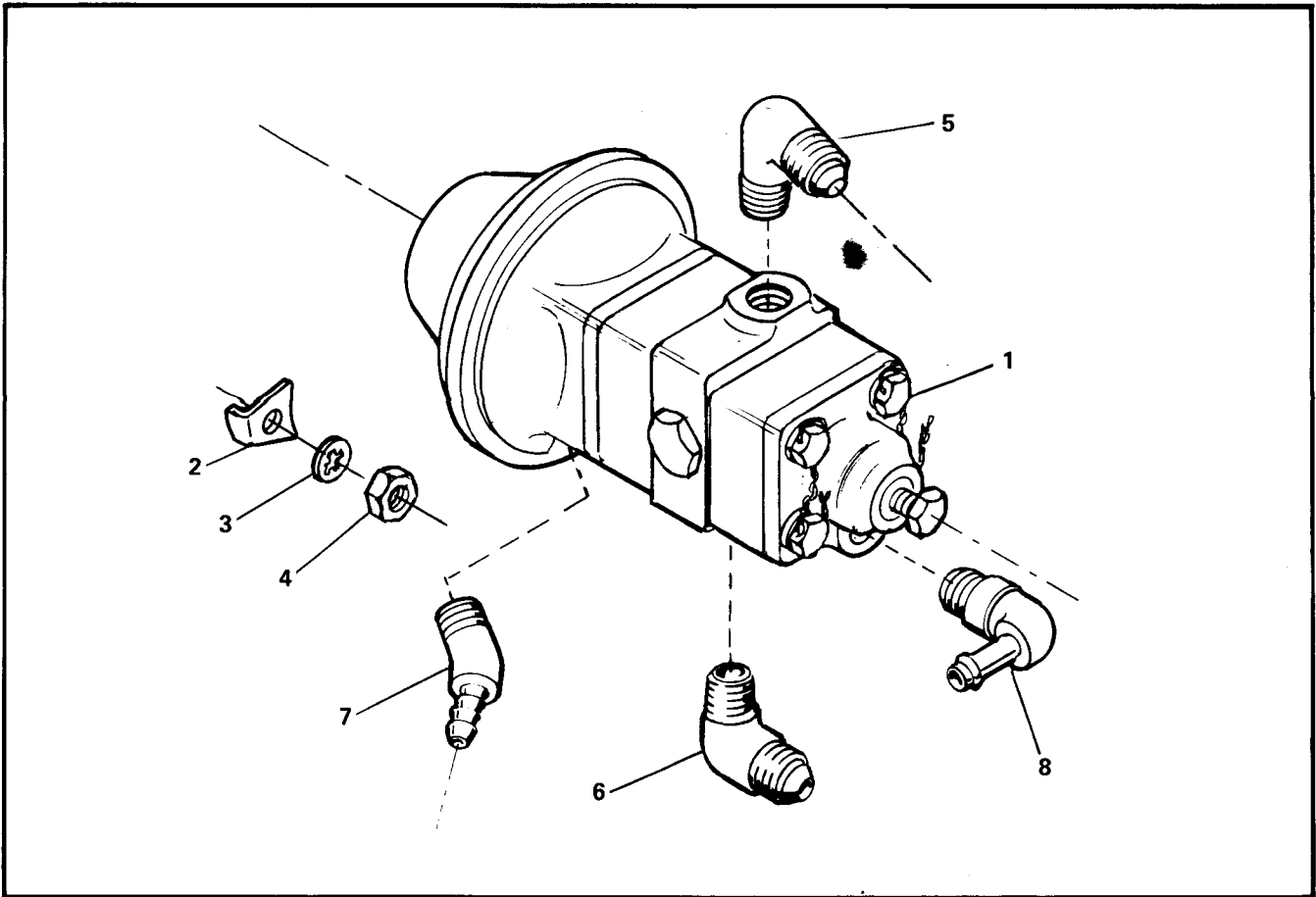


FIGURE 7-11. FUEL PUMP ASSEMBLY, TSIO-520-LB.

FIG. INDEX	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY															
			TSIO-520															
			1	2	3	4	5	6	7	8	LB							
7-11-1	640643-3A1	Fuel Pump Assembly										1						
ATTACHING PARTS																		
-2	535847	Washer, Holding										2						
-3	MS35338-45	Washer, Lock										2						
-4	2439	Nut, Plain, Hex										2						
		* * * *																
-5	641889	Elbow, 90 Degree										1						
-6	632616	Elbow, 90 Degree										1						
-7	632115	Elbow, 45 Degree										1						
-8	629125	Elbow, 90 Degree										1						