

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

DECEMBER 1982

INSERT LATEST PAGES

MODELS: TSIO-520

PARTS CATALOG FORM X30043A

ii DECEMBER 1982

TABLE OF CONTENTS

SECTION I

INTRODUCTION	1-1
ABBREVIATIONS AND SYMBOLS	1-2
ACCESSORY MANUFACTURERS	1-2
CUSTOMER SPECIFICATION TO SERIAL NUMBER CROSS REFERENCE	1-3

SECTION II - GROUP ASSEMBLY PARTS LIST

Figure 1 - Crankcase Studding Assembly Models TSIO-520-B, D, E, J, K, L, N, UB	2-2
Figure 2 - Crankcase Studding Assembly Models TSIO-520-BB, DB, EB, JB, KB, LB, NB, UB, VB, WB	2-4
Figure 3 - Crankcase Studding Assembly Models TSIO-520-C, G, H, M, P, R, T	2-6
Figure 4 - Crankcase Attaching Parts Models TSIO-520-B, D, E, J, K, L, N, UB, VB, WB	2-8
Figure 5 - Crankcase Attaching Parts Models TSIO-520-C, G, H, M, P, R, T	2-10
Figure 6 - Crankcase Associated Parts Models TSIO-520-B, D, E, J, K, L, N, UB, VB, WB	2-12
Figure 7 - Crankcase Associated Parts Models TSIO-520-C, G, H, M, P, R, T	2-14
Figure 8 - Crankshaft Group Models TSIO-520-B, D, E, J, K, L, N, UB	2-16
Figure 9 - Crankshaft Group Models TSIO-520-BB, EB, JB, KB, LB, NB, UB, VB, WB	2-18
Figure 10 - Crankshaft Group Models TSIO-520-C, G, H, M, P, R, T	2-20
Figure 11 - Camshaft Group Models TSIO-520-B, D, E, J, K, L, M, UB, VB, WB	2-22
Figure 12 - Camshaft Group Models TSIO-520-C, G, H, M, P, R, T	2-23

SECTION II - GROUP ASSEMBLY PARTS LIST (Continued)

Figure 13 - Connection Rod Assembly Models TS10-520-B, D, E, J, K, L, N, UB and TS10-520-BB, DB, EB, JB, KB, LB, NB, UB, VB, WB	2-24
Figure 14 - Connecting Rod Assembly Models TS10-520-C, G, H, M, P, R, T	2-25
Figure 15 - Piston, Rings and Pin Assembly Models TS10-520-B, D, E, J, K, L, N, UB	2-26
Figure 16 - Piston, Rings and Pin Assembly Models TS10-520-C, G, H, M, P, R, T	2-27
Figure 17 - Cylinder Assembly Models TS10-520-B, D, E, J, K, L, N	2-28
Figure 18 - Cylinder Assembly Models TS10-520-C, G, H, M, P, R, T	2-30
Figure 19 - Cylinder Assembly Models TS10-520-L, UB, VB, WB	2-32
Figure 20 - Oil Pump Assembly Models TS10-520-B, D, E, J, K, L, N, UB, VB, WB	2-34
Figure 21 - Oil Pump Assembly Models TS10-520-C, G, H, M, P, R	2-36
Figure 22 - Oil Pump Assembly Models TS10-520-T	2-38
Figure 23 - Starter And Starter Adapter Assembly Models TS10-520-B, D, E, J, K, N, UB, VB	2-40
Figure 24 - Starter And Starter Adapter Assembly Models TS10-520-C, G, H, M, P, R	2-42
Figure 25 - Starter And Starter Adapter Assembly Models TS10-520-E, J, K	2-44
Figure 26 - Starter and Starter Adapter Assembly Models TS10-520-L, WB	2-46
Figure 27 - Freon Compressor Bracket Assembly Models TS10-520-L, WB	2-48
Figure 28 - Starter And Starter Adapter Assembly Models TS10-520-T	2-50
Figure 29 - Alternator Assembly Models TS10-520-B, D, E, UB, WB	2-52
Figure 30 - Oil Cooler Assembly Models TS10-520-B, D, E, J, K, N, UB, VB	2-53

SECTION II - GROUP ASSEMBLY PARTS LIST (Continued)

Figure 31 - Oil Cooler Assembly Models TS10-520-C, G, H, M, P, R	2-54
Figure 32 - Oil Cooler Assembly Models TS10-520-L, WB	2-55
Figure 33 - Oil Sump Assembly Models TS10-520-B, E, J, K, L, N, VB, WB	2-56
Figure 34 - Oil Sump Assembly Models TS10-520-C, G, M, T	2-57
Figure 35 - Oil Sump Assembly Models TS10-520-D, UB	2-58
Figure 36 - Oil Sump Assembly Models TS10-520-H, P, R	2-59
Figure 37 - Induction Assembly Models TS10-520-B, E	2-60
Figure 38 - Induction Assembly Models TS10-520-C, G, H, M, P, R	2-62
Figure 39 - Induction Assembly Models TS10-520-D	2-64
Figure 40 - Induction System Models TS10-520-J, N	2-66
Figure 41 - Induction System Models TS10-520-K	2-68
Figure 42 - Induction System Models TS10-520-L, WB	2-70
Figure 43 - Induction System Models TS10-520-T	2-72
Figure 44 - Induction System Models TS10-520-UB	2-74
Figure 45 - Induction System Models TS10-520-VB	2-76
Figure 46 - Exhaust System Models TS10-520-L, WB	2-78
Figure 47 - Exhaust System Models TS10-520-T	2-80
Figure 48 - Exhaust System Models TS10-520-UB	2-82

SECTION II - GROUP ASSEMBLY PARTS LIST (Continued)

Figure 49 - Induction/Exhaust Related Parts Models TSIO-520-L, WB	2-84
Figure 50 - Induction/Exhaust Related Parts Models TSIO-520-T	2-86
Figure 51 - Induction/Exhaust Related Parts Models TSIO-520-UB	2-88
Figure 52 - Fuel Injection Assembly Models TSIO-520-B, E	2-90
Figure 53 - Fuel Injection Assembly Models TSIO-520-BB, EB	2-92
Figure 54 - Fuel Injection Assembly Models TSIO-520-C, G, H, M, P, R	2-94
Figure 55 - Fuel Injection Assembly Models TSIO-520-D	2-96
Figure 56 - Fuel Injection Assembly Models TSIO-520-DB	2-98
Figure 57 - Fuel Injection Assembly Models TSIO-520-J, N	2-100
Figure 58 - Fuel Injection Assembly Models TSIO-520-JB, NB	2-102
Figure 59 - Fuel Injection Assembly Models TSIO-520-K	2-104
Figure 60 - Fuel Injection Assembly Models TSIO-520-KB	2-106
Figure 61 - Fuel Injection Assembly Models TSIO-520-L	2-108
Figure 62 - Fuel Injection Assembly Models TSIO-520-LB, WB	2-110
Figure 63 - Fuel Injection Assembly Models TSIO-520-T	2-112
Figure 64 - Fuel Injection Assembly Models TSIO-520-UB	2-114
Figure 65 - Fuel Injection Assembly Models TSIO-520-VB	2-116
Figure 66 - Throttle and Control Assembly Models TSIO-520-B, E	2-118
Figure 67 - Throttle and Control Assembly Models TSIO-520-C, G, H, M, P, R, AF	2-119

SECTION II - GROUP ASSEMBLY PARTS LIST (Continued)

Figure 68 - Throttle and Control Assembly Models TSIO-520-D, UB	2-120
Figure 69 - Throttle and Control Assembly Models TSIO-520-J, K, N	2-122
Figure 70 - Throttle and Control Assembly Models TSIO-520-L, WB	2-124
Figure 71 - Throttle and Control Assembly Models TSIO-520-T	2-126
Figure 72 - Throttle and Control Assembly Models TSIO-520-VB	2-128
Figure 73 - Fuel Pump Assembly Models TSIO-520-B, E, J, K, N, VB	2-130
Figure 74 - Fuel Pump Assembly Models TSIO-520-C, G, H, M, P, R, T, AF	2-131
Figure 75 - Fuel Pump Assembly (Old Style) Models TSIO-520-C, G, H	2-132
Figure 76 - Fuel Pump Assembly Models TSIO-520-D, UB	2-133
Figure 77 - Fuel Pump Assembly Models TSIO-520-L, WB	2-134
Figure 78 - Fuel Control Fitting Locations All Models	2-134
Figure 79 - Fuel Manifold Valve Assembly Models TSIO-520-B, D, E, J, K, L, N, UB, VB, WB	2-136
Figure 80 - Fuel Manifold Valve Assembly Models TSIO-520-C, G, H, M, P, R, T, AF	2-137
Figure 81 - Fuel Manifold Valve Fitting Locations Models TSIO-520-B, D, E, J, K, L, N, UB, VB, WB	2-138
Figure 82 - Fuel Manifold Locations Models TSIO-520-C, G, H, M, P, R, T, AF	2-139
Figure 83 - Ignition System Models TSIO-520-B, E	2-140
Figure 84 - Fuel Manifold Valve Fitting Locations Models TSIO-520-C, G, H, M, P, R, AF	2-142
Figure 85 - Fuel Manifold Valve Fitting Locations Models TSIO-520-D, UB	2-144

SECTION II - GROUP ASSEMBLY PARTS LIST (Continued)

Figure 86 - Ignition Systems	
Models TSIO-520-J, K, L, N, WB	2-146
Figure 87 - Ignition Systems	
Models TSIO-520-T	2-148
Figure 88 - Ignition Systems	
Models TSIO-520-VB	2-150
Figure 89 - Magneto and Accessory Drive Assembly	
Models TSIO-520-B, D, E, J, K, L, N, UB, VB, WB	2-152
Figure 90 - Magneto and Accessory Drive Assembly	
Models TSIO-520-C, G, H, M, P, R, T, AF	2-153

SECTION III - OVERSIZE AND UNDERSIZE PARTS LIST 3-1

SECTION IV - REPAIR PARTS SETS AND MATERIAL 4-1

SECTION V - NUMERICAL PARTS LIST 5-1

SECTION VI - CUSTOMER SPECIFICATIONS

TSIO-520-B, BB	Spec. 2, 5, 9, 10, 11, 12	6-2
TSIO-520-C	Spec. 3	6-3
TSIO-520-D, DB	Spec. 2, 3	6-3
TSIO-520-E, EB	Spec. 2, 3, 4, 5	6-3
TSIO-520-E, EB	Spec. 8, 9, 10, 14	6-4
TSIO-520-H	Spec. 1	6-4
TSIO-520-J, JB	Spec. 2	6-4
TSIO-520-J, JB	Spec. 4	6-5
TSIO-520-K, KB	Spec. 2	6-5
TSIO-520-L, LB	Spec. 6	6-6
TSIO-520-M	Spec. 2, 3, 4	6-6
TSIO-520-N, NB	Spec. 2, 4	6-6
TSIO-520-N, NB	Spec. 5	6-7
TSIO-520-N, NB	Spec. 6	6-8
TSIO-520-NB	Spec. 8	6-9
TSIO-520-NB	Spec. 9	6-10
TSIO-520-NB	Spec. 12	6-12
TSIO-520-NB	Spec. 13, 14, 16	6-13
TSIO-520-P	Spec. 1, 2, 3	6-14
TSIO-520-R	Spec. 1, 3, 4, 5, 6	6-14
TSIO-520-R	Spec. 7	6-15
TSIO-520-UB	Spec. 2	6-15
TSIO-520-UB	Spec. 3	6-16
TSIO-520-VB	Spec. 2, 4	6-16
L/TSIO-520-AE	Spec. 2	6-16
TSIO-520-AE	Spec. 3	6-16
LTSIO-520-AE	Spec. 3	6-17
TSIO-520-AF	Spec. 2	6-18

SECTION VII - L/TSIO-520-AE PARTS LIST

Figure 1 - Crankcase Studding Assembly	7-2
Figure 2 - Crankcase Attaching Parts	7-4
Figure 3 - Crankcase Associated Parts	7-6
Figure 4 - Crankshaft Group	7-8
Figure 5 - Camshaft Group	7-10
Figure 6 - Connecting Rod Assembly	7-11
Figure 7 - Piston, Rings and Pin Assembly	7-11
Figure 8 - Cylinder Assembly	7-12
Figure 9 - Starter and Adapter Assembly	7-14
Figure 10 - Oil Cooler	7-16
Figure 11 - Oil Sump	7-17
Figure 12 - Oil Pump Assembly	7-18
Figure 13 - Induction System	7-20
Figure 14 - Fuel Injection System	7-22
Figure 15 - Ignition System	7-24
Figure 16 - Magneto and Accessory Drive Assembly	7-26



SECTION I

INTRODUCTION

1-1. 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 ii of this publication depicts the current status of pages as of the date listed. Each page in the catalog is dated when it is changed. To be current, the date of 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 90 figures, in each of which one of the major assemblies or groups of the engines 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 subparts 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 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. 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 for 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 and figure and index column which will refer back to Section II or to the rear of Section VI for an illustration. Only the differences between the customer specification and the basic engine are shown.

1-11. Section VII contains the parts listing for the TSIO-520-AE and LTSIO-520-AE engines.

NOTE

The aircraft manufacturer occasionally changes certain accessories per customer request.

LIST OF ABBREVIATIONS AND SYMBOLS

SYMBOL	DEFINITION	SYMBOL	DEFINITION
AR	As Required	RF	Refer to
Dia.	Diameter	NPT	National Pipe Tap (or thread)
ID	Inside Diameter	US	Undersize
In.	Inches	No.	Number
mm	Millimeters	†	Oversize parts available
OD	Outside Diameter	†	Undersize parts available
OP	Optional	* * * *	End of group of attaching parts
OS	Oversize	NS	Not Sold
PD	Pitch Diameter (thread)	\$	Parts Included in a set

ACCESSORY MANUFACTURERS

AC	AC Spark Plug Division General Motors Corporation Flint, Michigan	Harrison	Harrison Radiator division General Motors Corporation Lockport, New York
Air-Maze	Air-Maze Division Rockwell-Standard Corporation Cleveland, Ohio	Marvel	Marvel-Schebler Products Div. Borg-Warner Corporation Decatur, Illinois
Bendix	Bendix Products Division Bendix Corporation South Bend, Indiana	Modine	Modine Manufacturing Co. Racine, Wisconsin
Bendix- Scintilla	Bendix Corporation Scintilla Division Sidney, New York	Prestolite	The Presolite Company Division of Eltra Corporation Toledo, Ohio
Champion	Champion Spark Plug Company Detroit, Michigan	Slick	Slick Electro Incorporated Rockfor, Illinois
Delco-Remy	United Motors Service General Motors Building Detroit 2, Michigan		

CUSTOMER SPECIFICATION TO SERIAL NUMBER CROSS REFERENCE

Serial numbers listed on the following pages are for engines manufactured prior to January 1, 1972. After January 1, 1972 both the serial number and specification was stamped on the engine data plate.

TSIO-520-B

SPEC. 1 145002, 145004, 145006 thru 145013, 145015, 145016, 145017, 145019, 145021, 145023, 145025, 145027, 145029, 145031, 145033, 145035, 145037, 145040, 145042, 145043, 145044, 145046, 145048, 145050, 145052, 145054, 145056, 145058, 145060, 145062, 145064, 145066, 145068, 145069, 145070, 145072, 145074, 145076, 145078, 145080, 145082, 145084, 145086, 145088, 145090, 145092, 145094, 145096, 145098, 145100, 145102, 145104, 145106, 145108, 145112, 145114, 145116, 145118, 145120, 145122, 145124, 145126, 145127, 145129, 145131, 145133, 145135, 145137, 145138, 145139, 145141, 145142, 145144, 145146, 145148, 145150, 145152, 145156, 145157, 145159, 145162, 145164, 145166, 145168, 145170, 145174, 145176, 145177, 145179, 145181, 145183, 145185, 145187, 145189, 145193, 145195 thru 145198, 145201, 145203, 145205, 145207, 145208, 145211, 145213, 145215, 145216, 145217, 145220, 145222 thru 145236, 145238, 145239, 145242, 145244, 145246, 145248, 145257, 145259, 145261, 145263, 145264, 145267, 145269, 145271, 145275, 145277, 145279, 145281, 145283, 145284, 145285, 145287, 145288, 145289, 145291, 145292, 145293, 145295, 145296, 145297, 145299 thru 145302, 145311, 145313, 145315, 145317, 145318, 145321, 145323, 145325, 145326, 145328, 145330, 145333, 145334, 145338, 145339, 145340, 145342, 145344, 145346, 145349, 145351, 145354, 145356, 145359 thru 145362, 145366, 145368, 145371, 145373, 145375 thru 145381, 145385, 145386, 145389, 145391, 145393, 145395, 145397, 145401, 145403, 145404, 145405, 145407, 145409, 145411, 145413, 145415, 145417, 145419, 145420, 145422, 145424, 145426, 145428, 145430, 145432, 145434, 145436, 145439, 145441, 145442, 145443, 145445, 145449, 145453, 145455, 145457, 145459, 145461, 145463, 145465, 145467, 145469, 145471, 145473, 145475, 145477, 145479, 145480, 145482, 145484, 145486, 145487, 145493, 145495, 145496, 145498, 145500, 145501, 145505, 145508, 145509, 145513, 145515, 145519, 145520, 145521, 145524 thru 145539, 145547 thru 145553, 145555, 145557, 145559, 145563, 145565, 145567, 145569, 145571, 145573, 145575, 145577, 145578, 145580, 145583, 145585, 145586, 145589, 145591, 145594, 145596, 145597, 145598, 145600, 145603, 145604, 145606, 145609, 145611, 145613, 145615, 145617, 145700

SPEC. 2 145001, 145003, 145005, 145014, 145018, 145020, 145022, 145024, 145026, 145028, 145030, 145032, 145034, 145036, 145038, 145039, 145041, 145045, 145047, 145049, 145051, 145053, 145055, 145057, 145059, 145061, 145063, 145065, 145067, 145071, 145073, 145075, 145077, 145079, 145081, 145083, 145085, 145087, 145089, 145091, 145093, 145095, 145097, 145099, 145101, 145103, 145105, 145107, 145109, 145110, 145111, 145113, 145115, 145117, 145119, 145121, 145123, 145125, 145128, 145130, 145132, 145134, 145136, 145140, 145143, 145145, 145147, 145149, 145151, 145153, 145154, 145155, 145158, 145160, 145161, 145163, 145165, 145167, 145169, 145171, 145172, 145173, 145175, 145178, 145180, 145182, 145184, 145186, 145188, 145190, 145191, 145192, 145194, 145199, 145200, 145202, 145204, 145206, 145209, 145210, 145212, 145214, 145218, 145219, 145221, 145237, 145240, 145241, 145243, 145245, 145247, 145249 thru 145256, 145258, 145260, 145262, 145265, 145266, 145268, 145270, 145272, 145273, 145274, 145276, 145278, 145280, 145282, 145286, 145290, 145294, 145298, 145303 thru 145310, 145312, 145314, 145316, 145319, 145320, 145322, 145324, 145327, 145329, 145331, 145332, 145335, 145336, 145337, 145341, 145343, 145345, 145347, 145348, 145350, 145352, 145355, 145357, 145358, 145363, 145364, 145365, 145367, 145369, 145370, 145372, 145374, 145382, 145383, 145384, 145387, 145388, 145390, 145392, 145394, 145396, 145398, 145399, 145400, 145402, 145406, 145408, 145410, 145412, 145414, 145416, 145418, 145421, 145423, 145425, 145427, 145429, 145431, 145433, 145435, 145437, 145438, 145440, 145444, 145446, 145447, 145448, 145450, 145451, 145452, 145454, 145456, 145458, 145460, 145462, 145464, 145466, 145468, 145470, 145472, 145474, 145476, 145481, 145485, 145488, 145489, 145490, 145492, 145494, 145497, 145499, 145502, 145503, 145504, 145506, 145507, 145510, 145511, 145512, 145514, 145516, 145517, 145518, 145522, 145523, 145540 thru 145546, 145554, 145558, 145560, 145561, 145562, 145564, 145566, 145568, 145570, 145572, 145574, 145576, 145579, 145581, 145582, 145584, 145587, 145588, 145590, 145592, 145593, 145595, 145599, 145601, 145602, 145605, 145607, 145608, 145610, 145612, 145614, 145616, 145618, 145620, 145701

SPEC. 9 145630, 145632, 145633, 145636, 145642, 145644, 145646, 145648, 145651, 145653, 145655, 145658, 145660, 145662, 145664, 145669, 145670, 145671, 145674, 145676 thru 145680, 145686, 145687, 145689, 145690, 145692, 145695, 145697, 145699, 145702, 145705, 145708, 145709, 145711, 145712, 145714, 145717, 145721, 145722, 145724, 145725, 145729, 145730, 145731, 145736, 145738, 145740, 145742, 145744, 145745, 145747, 145749, 145750, 145753, 145755, 145757, 145759, 145761, 145762, 145765, 145769, 145771, 145773, 145775, 145779, 145780, 145782, 145784, 145786, 145788, 145789, 145791, 145793, 145796, 145798, 145806, 145807, 145809 thru 145816, 145822, 145823, 145826, 145829, 145831, 145832, 145833, 145835, 145839, 145842, 145844, 145847, 145848, 145854, 145855, 145861, 145863, 145866, 145868, 145870, 145872, 142875, 145876, 145878, 145882, 145887, 145895, 145900, 145902, 145903, 145906, 145908, 145911, 145913, 145916, 145917

SPEC. 10 145625, 145631, 145634, 145637, 145638, 145639, 145643, 145645, 145647, 145649, 145650, 145652, 145654, 145657, 145659, 145661, 145663 thru 145668, 145672, 145673, 145675, 145681 thru 145685, 145688, 145691, 145693, 145694, 145696, 145698, 145703, 145704, 145706, 145707, 145710, 145713, 145715, 145716, 145718, 145719, 145720, 145723, 145726, 145732, 145733, 145735, 145737, 145739, 145741, 145743, 145746, 145748, 145751, 145752, 145754, 145756, 145758, 145760, 145763, 145764, 145766, 145767, 145770, 145772, 145774, 145776, 145778, 145781, 145783, 145787, 145790, 145792, 145794, 145795, 145797, 145799, 145800 thru 145805, 145808, 145817, 145818, 145820, 145821, 145824, 145825, 145830, 145834, 145836, 145837, 145838, 145840, 145841, 145843, 145845, 145846, 145849, 145852, 145856, 145862, 145864, 145867, 145869, 145871, 145873, 145877, 145879, 145885, 145890, 145892, 145896, 145899, 145901, 145904, 145905, 145909, 145912, 145918

SPEC. 11 145619, 145621, 145623, 145626, 145628, 145640, 145641, 145777, 145819, 145853, 145858, 145874, 145880, 145883, 145884, 145886, 145891, 145898, 145914

SPEC. 12 145622, 145624, 145627, 145727, 145728, 145785, 145827, 145828, 145857, 145881, 145889, 145894, 145897, 145907, 145910, 145915

TSIO-520-C

SPEC. 1 140000 thru 140295, 140297 thru 140382, 140384, 140385, 140387, 140388, 140389, 140391 thru 140420, 140422 thru 140428, 140430 thru 140436, 140438, 140439, 140442, 140444 thru 140538, 140540 thru 140661, 140664 thru 140691, 140693 thru 140707, 140709 thru 140720, 140722 thru 140729, 140736, 140741, 140742, 140743, 140745

SPEC. 2 140296, 140429, 140437, 140662, 140663, 140692, 140721, 140753, 140754, 140758, 140759, 140863, 140865, 140884

SPEC. 3 140730 thru 140735, 140737 thru 140740, 140744, 140746 thru 140752, 140755, 140756, 140757, 140760 thru 140862, 140864, 140866 thru 140882, 140885 thru 140894

TSIO-520-D

SPEC. 1 156000 thru 156134

TSIO-520-E

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,

165476, 165478, 165481, 165483, 165485, 165487, 165489, 165491, 165493, 165495,
165496, 165502 thru 165505, 165507, 165509, 165511, 165512, 165513, 165523
thru 165526, 165531, 165533, 165535, 165537, 165539, 165540, 165542, 165543,
165545, 165546, 165551, 165553 thru 165556, 165560, 165562, 165565, 165567,
165569, 165572, 165573, 165574, 165593, 165595 thru 165598, 165600, 165602,
165606, 165608, 165610, 165612, 165613, 165614, 165616, 165617, 165620, 165622,
165624, 165626, 165627, 165629, 165632, 165634, 165636, 165638, 165640, 165642,
165644, 165646, 165648, 165650, 165652, 165656, 165658, 165659, 165668, 165672,
165674, 165676, 165677, 165679, 165680, 165681, 165686, 165687, 165691, 165693,
165694, 165703, 165704, 165705, 165708, 165710, 165711, 165718, 165720, 165786

SPEC. 2 165001, 165002, 165005, 165007, 165008, 165009, 165011, 165013, 165014, 165017,
165019, 165020, 165022, 165023, 165025, 165027, 165029, 165033, 165035, 165037,
165039, 165041, 165045, 165047, 165049, 165051 thru 165055, 165059, 165061,
165063, 165065, 165067, 165069, 165071, 165073, 165075, 165078, 165082, 165083,
165084, 165086, 165091, 165094, 165098, 165100, 165101, 165103, 165104, 165105,
165112, 165116, 165120, 165122, 165124 thru 165128, 165130, 165131, 165133,
165134, 165137, 165142, 165143, 165144, 165146, 165149, 165150, 165152, 165153,
165155, 165157, 165159 thru 165162, 165164, 165165, 165169, 165172, 165177,
165179, 165181, 165183, 165185, 165186, 165190, 165191, 165193, 165195, 165201,
165203, 165205, 165209, 165211, 165213 thru 165216, 165218, 165220, 165222,
165224, 165225, 165226, 165228, 165230, 165233, 165235, 165237, 165239, 165241,
165243, 165244, 165246, 165248, 165250, 165251, 165252, 165254 thru 165257,
165260, 165262, 165264, 165267, 165270, 165272, 165274, 165276, 165278, 165280,
165281, 165282, 165283, 165286, 165289, 165291, 165292, 165294, 165296, 165298,
165299, 165302, 165307, 165308, 165313, 165314, 165316, 165320, 165322, 165324,
165325, 165326, 165328, 165330, 165332, 165334, 165335, 165339, 165341, 165342,
165346, 165348, 165350, 165352, 165354, 165356, 165358, 165362, 165364, 165365,
165367, 165368, 165371, 165372, 165374, 165377, 165379, 165382 thru 165388,
165391, 165393, 165394, 165396, 165398, 165401, 165403, 165404, 165407, 165409,
165411, 165412, 165413, 165415, 165417, 165427, 165429 thru 165438, 165440,
165442, 165443, 165445, 165447, 165449, 165451, 165453, 165455, 165457, 165459,
165463, 165465, 165467, 165469, 165471, 165473, 165475, 165477, 165480, 165482,
165484, 165486, 165488, 165490, 165492, 165494, 165497 thru 165501, 165506,
165508, 165510, 165521, 165522, 165527, 165528, 165530, 165532, 165534, 165536,
165538, 165541, 165544, 165547 thru 165550, 165552, 165557, 165558, 165559,
165561, 165564, 165566, 165568, 165570, 165590, 165591, 165592, 165599, 165601,
165603, 165605, 165607, 165609, 165611, 165615, 165619, 165621, 165623, 165625,
165628, 165630, 165631, 165633, 165635, 165637, 165639, 165641, 165643, 165645,
165647, 165649, 165651, 165653, 165655, 165657, 165660, 165666, 165669, 165673,
165675, 165678, 165682 thru 165685, 165688, 165690, 165695, 165698
thru 165702, 165706, 165709, 165713, 165717, 165723, 165827

SPEC. 3 165231, 165247, 165306, 165337, 165479, 165514 thru 165517, 165575, 165576,
165618, 165670, 165727, 165823, 165824, 165825, 165890, 165897, 166034, 166035,
166091, 166092, 206263, 206304, 206396, 206398, 206404, 206409, 206462, 206474,
206475, 206483

SPEC. 4 165574, 165580, 165583, 165585, 165587, 165589, 165662, 165664, 165692, 166097,
206186, 206231, 206442, 206482, 206526

SPEC. 8

165697, 165707, 165715, 165716, 165719, 165721, 165722, 165724, 165726, 165729,
165738, 165739, 165741, 165744, 165746 thru 165749, 165753, 165754, 165756
thru 165759, 165761, 165763, 165765, 165767, 165769, 165771, 165773, 165775,
165777, 165778, 165780, 165782, 165784, 165787, 165789, 165791, 165793, 165795,
165797, 165801, 165803, 165805, 165807, 165809, 165811, 165813, 165815, 165817,
165819, 165821, 165822, 165831, 165835, 165836, 165837, 165840 thru 165844,
165846, 165848, 165850, 165852, 165854, 165856, 165858, 165860, 165862, 165864,
165866, 165868, 165870, 165872, 165874, 165876, 165878, 165880, 165882, 165884,
165886, 165888, 165892, 165894, 165898, 165900, 165902, 165904, 165906, 165908,
165910, 165912, 165914, 165916, 165918, 165920, 165922, 165924, 165926, 165928,
165930, 165932, 165934, 165936, 165938, 165942, 165944, 165945, 165946, 165948,
165950, 165952 thru 165955, 165957 thru 165961, 165963, 165964, 165966, 165967,
165969, 165975, 165976, 165984, 165986, 165988, 165990, 165991, 165992, 165994,
165997, 165999, 166001, 166003, 166005, 166010 thru 166013, 166015, 166017,
166019, 166023, 166025, 166027, 166029 thru 166032, 166037, 166039, 166043,
166045, 166047, 166049, 166053, 166055, 166057, 166059, 166061, 166063, 166065,
166067, 166069 thru 166073, 166075, 166077, 166079, 166081, 166085, 166086,
166093 thru 166096, 206001, 206003, 206005, 206007, 206008, 206009, 206011,
206013, 206015, 206017, 206019, 206021, 206023, 206024, 206025, 206027, 206029,
206031, 206033, 206035, 206036, 206038, 206040, 206042, 206044, 206046, 206048,
206050, 206051, 206053 thru 206059, 206069, 206071, 206073, 206076, 206077,
206079, 206080, 206082, 206084, 206086, 206088, 206089, 206090, 206093, 206096,
206097, 206102, 206104, 206106, 206114, 206116, 206121, 206123, 206125, 206127,
206130 thru 206134, 206136, 206138, 206140, 206141, 206143, 206144, 206151,
206152, 206154, 206156, 206157, 206161, 206163, 206165, 206167, 206168, 206169,
206171, 206172, 206174, 206176, 206178, 206180, 206185, 206192, 206195, 206196,
206202 thru 206215, 206217, 206219, 206221, 206223, 206226, 206228, 206229,
206232, 206234, 206235, 206237, 206239, 206244, 206246, 206247, 206248, 206250,
206252, 206254, 206260, 206261, 206268, 206273 thru 206277, 206279, 206280,
206282, 206284, 206286, 206288, 206289, 206290, 206292, 206294 thru 206297,
206299, 206300, 206301, 206305, 206309, 206312, 206315, 206318, 206322, 206323,
206324, 206328 thru 206331, 206334, 206336, 206338, 206342, 206348, 206351,
206352, 206353, 206355, 206356, 206357, 206359, 206360, 206361, 206365, 206367,
206369 thru 206372, 206374 thru 206377, 206380, 206382, 206384 thru 206387,
206397, 206400, 206402, 206411, 206413, 206415, 206416, 206419, 206420, 206423,
206425, 206426, 206428, 206430, 206432, 206438 thru 206441, 206443, 206444,
206446, 206448, 206450, 206452, 206454, 206457, 206459, 206460, 206463, 206464,
206473, 206477, 206479, 206482, 206485, 206486, 206487, 206489, 206490, 206492,
206497, 206499, 206500, 206502, 206504, 206507, 206508, 206509, 206512, 206515,
206518, 206521, 206522, 206523, 206527, 206528, 206531, 206534

SPEC. 9

165712, 165714, 165725, 165728, 165730 thru 165737, 165740, 165742, 165743,
165745, 165750, 165751, 165752, 165755, 165760, 165762, 165764, 165766, 165768,
165770, 165772, 165774, 165776, 165779, 165781, 165783, 165785, 165788, 165790,
165792, 165794, 165796, 165798, 165799, 165800, 165802, 165804, 165806, 165808,
165810, 165812, 165814, 165816, 165818, 165820, 165828, 165830, 165832, 165833,
165834, 165838, 165839, 165845, 165847, 165849, 165851, 165853, 165855, 165857,
165859, 165861, 165863, 165865, 165867, 165869, 165871, 165873, 165875, 165877,
165879, 165881, 165883, 165885, 165887, 165889, 165891, 165893, 165899, 165901,
165903, 165905, 165907, 165909, 165911, 165913, 165915, 165917, 165919, 165921,
165923, 165925, 165927, 165929, 165931, 165933, 165935, 165937, 165941, 165943,
165947, 165949, 165951, 165956, 165962, 165965, 165968, 165970 thru 165974,
165977 thru 165983, 165987, 165989, 165993, 165995, 165996, 165998, 166000,
166002, 166004, 166006 thru 166009, 166014, 166016, 166018, 166020, 166021,
166022, 166024, 166026, 166028, 166033, 166036, 166038, 166040, 166041, 166042,
166044, 166046, 166048, 166050, 166051, 166052, 166054, 166056, 166058, 166060,

166062, 166064, 166066, 166068, 166074, 166076, 166078, 166080, 166082, 166083,
166084, 166087 thru 166090, 166098, 166099, 166100, 206004, 206006, 206010,
206012, 206014, 206016, 206018, 206020, 206022, 206026, 206028, 206030, 206032,
206034, 206037, 206039, 206041, 206043, 206045, 206047, 206049, 206052, 206060
thru 206068, 206070, 206072, 206074, 206075, 206078, 206081, 206083, 206085,
206087, 206091, 206092, 206094, 206095, 206098, 206099, 206101, 206105, 206107
thru 206113, 206115, 206117 thru 206120, 206122, 206124, 206126, 206128, 206129,
206135, 206137, 206139, 206142, 206145 thru 206150, 206153, 206155, 206158,
206159, 206162, 206164, 206166, 206170, 206173, 206175, 206177, 206179, 206182,
206183, 206184, 206187 thru 206191, 206193, 206194, 206197 thru 206201, 206216,
206218, 206220, 206222, 206227, 206230, 206233, 206236, 206238, 206240 thru
206243, 206245, 206249, 206251, 206253, 206255 thru 206259, 206262, 206264 thru
206267, 206269 thru 206272, 206278, 206281, 206283, 206285, 206287, 206291,
206293, 206298, 206302, 206303, 206306, 206307, 206310, 206311, 206313, 206314,
206316, 206317, 206319, 206320, 206321, 206325, 206326, 206327, 206332, 206333,
206335, 206337, 206339, 206340, 206341, 206343 thru 206347, 206349, 206350,
206358, 206362, 206363, 206364, 206366, 206368, 206378, 206379, 206381, 206383,
206388 thru 206395, 206399, 206401, 206403, 206407, 206408, 206410, 206414,
206417, 206418, 206421, 206422, 206424, 206427, 206429, 206431, 206433, 206435,
206436, 206437, 206445, 206447, 206449, 206451, 206453, 206455, 206456, 206461,
206465 thru 206469, 206472, 206478, 206480, 206481, 206488, 206491, 206493 thru
206496, 206498, 206501, 206503, 206505, 206506, 206510, 206511, 206513, 206514,
206516, 206517, 206519, 206520, 206524, 206529, 206530, 206535

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

TSIO-520-J

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



SECTION II

GROUP ASSEMBLY

PARTS LIST

**The TSIO-520-BB, DB, EB, JB, KB, LB and NB
are the same as the TSIO-520-B, D, E, J, K, L and N
respectively, except where noted.**

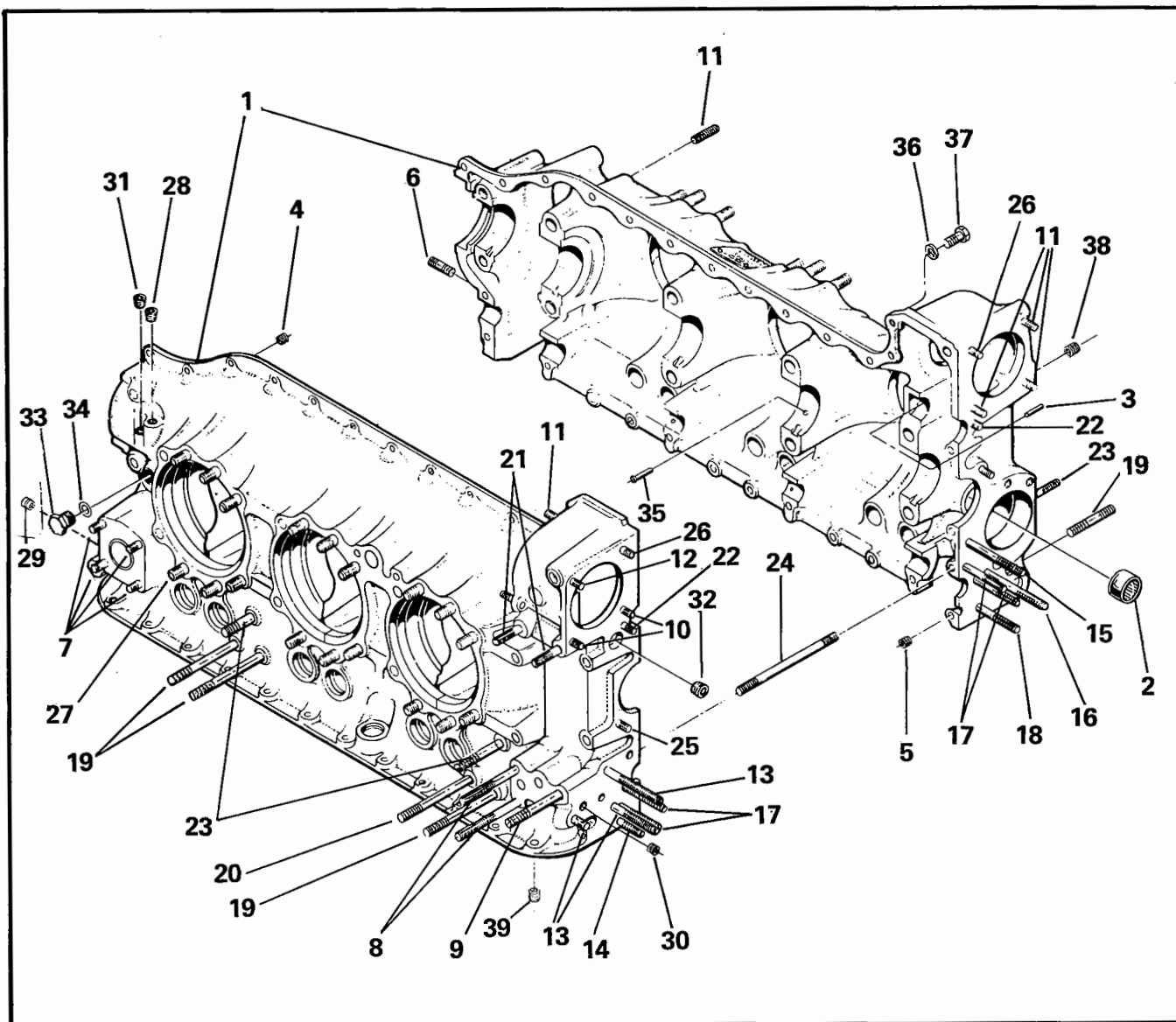


FIGURE 1. STUDDING ASSEMBLY, TS10-520-B, D, E, J, K, L, N,

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
1-1	643202	①②	Studding Assembly, Crankcase	1		1	1	1		1			
-1	643201	①②	Studding Assembly, Crankcase		1								
-1	643212	①②	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	4	4	4	4	4	4			
-5	MS122122		. Insert, Thread	1	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			
-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 2-3/16 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	AN932C2		. Plug, 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	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	646140-1	③	. Stud, 7/16 x 2-3/16 Inch Long	36	36	36	36	36	36	36			
-27	631867	③†	. Stud, 7/16 x 2-1/16 Inch Long	36	36	36							
-28	629518-1H		. Plug, Pipe, 1/8-27 NPTF			1	1	1	1	1			
-29	401752		. Plug, Pipe, 1/8-27 NPTF	4	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	MS35769-11	\$	. 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			

NOTES:

- ① For the TS10-520-BB, DB, EB, JB, KB, LB, NB, UB, VB & WB configuration See Figure 2.
- ② If replacing older configuration crankcase, it will be necessary to purchase a kit, Part Number EQ6530.
- ③ Service in accordance with Service Bulletin M72-24.

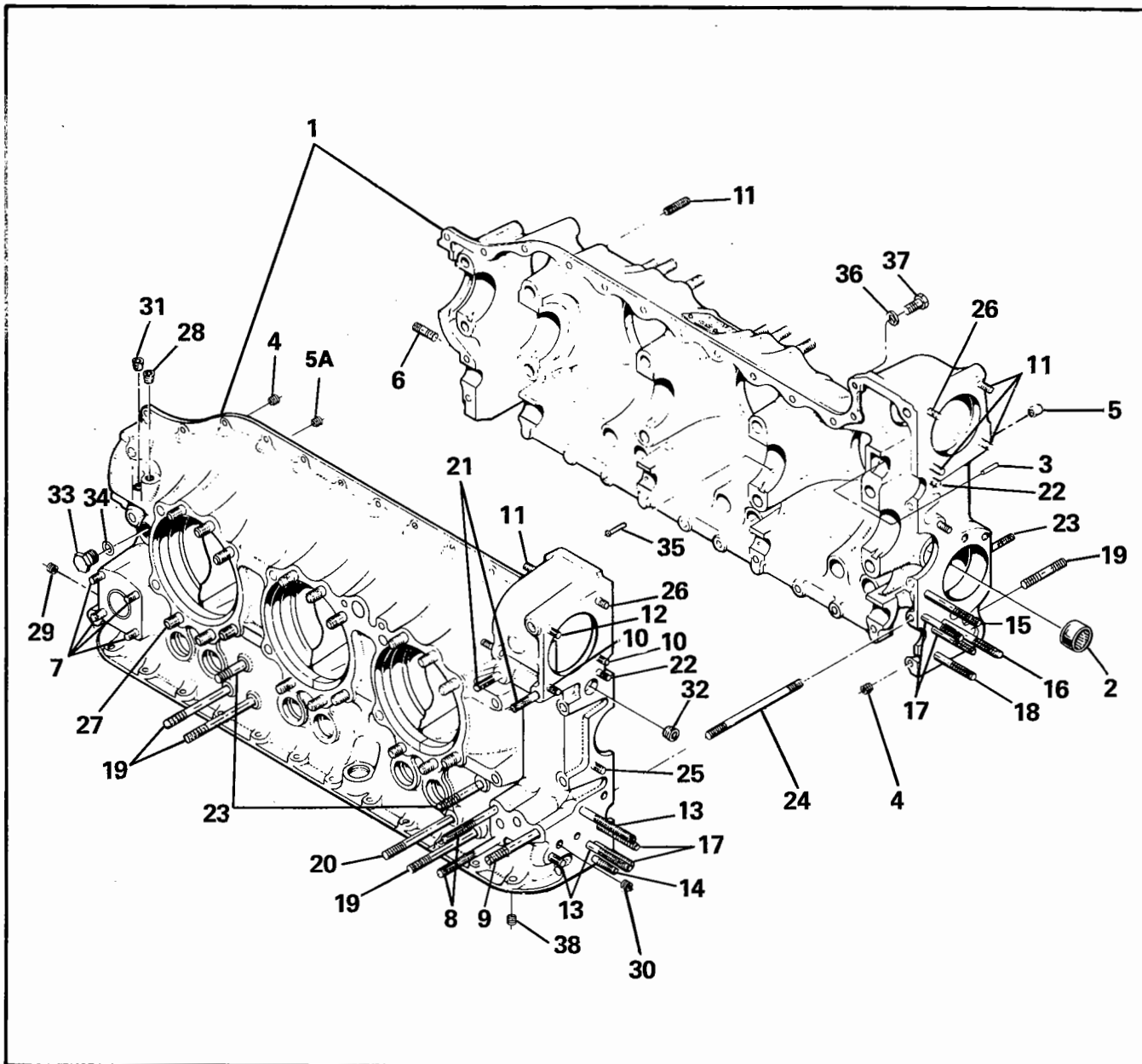


FIGURE 2. STUDDING ASSEMBLY
TS10-520-BB, DB, EB, JB, KB, LB, NB, UB, VB, WB.

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY										
			BB	DB	EB	JB	KB	LB	NB	UB	VB	WB	
2-1	643207	① Studding Assembly, Crankcase	1		1	1	1		1		1		
-1	643206	① Studding Assembly, Crankcase		1									
-1	643208	① Studding Assembly, Crankcase						1				1	
-1	643193	① Studding Assembly, Crankcase								1			
-2	630899	Bearing, Roller	1	1	1	1	1	1	1	1	1	1	
-3	630873	Dowell, 3/16 x 1/2 Inch Long	1	1	1	1	1	1	1	1	1	1	
-4	MS122162	Insert, Thread	4	4	4	4	4	4	4	4	4	4	
-5	MS122163	Insert, Thread	2	2	2	2	2	2	2	2	2	2	
-5A	MS122122	Insert	1	1	1	1	1	1	1	1	1	1	
-6	401804	† Stud, 1/4 x 1-1/16 Inch Long	2	2	2	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	4	4	4	
-8	401860	† Stud, 3/8 x 1-9/16 Inch Long	2		2	2	2		2		2		
-8	402127	† Stud, 3/8 x 1-17/32 Inch Long		2						2			
-8	401861	† Stud, 3/8 x 1-3/4 Inch Long						2				2	
-9	404584	† Stud, 5/16 x 6-3/8 Inch Long						1				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				2		2		2	
-11	401885	† Stud, 5/16 x 1-5/16 Inch Long	11	11	11	11	11	11	11	11	11	11	
-12	401885	† Stud, 5/16 x 1-5/16 Inch Long		1				1		1		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	3	3	3	
-14	401962	† Stud, 1/4 x 2-4/16 Inch Long	1	1	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	1	1	
-16	402359	† Stud, 5/16 x 4-23/32 Inch Long	1	1	1	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	4	4	4	
-18	401936	† Stud, 1/4 x 3-7/8 Inch Long	1		1	1	1	1	1	1	1	1	
-18	401968	† Stud, 1/4 x 4-17/32 Inch Long		1						1			
-19	401873	† Stud, 3/8 x 3-7/8 Inch Long	7		7	7	7	7	7		7	7	
-20	401873	† Stud, 3/8 x 3-7/8 Inch Long	1		1	1	1	1	1		1	1	
-20	629518-1H	Plug, Pipe, 1/8 - 27 NPTF		1						1			
-21	401965	† Stud, 3/8 x 13/32 Inch Long	2	2	2	2	2		2	2	2		
-21	401945	† Stud, 3/8 x 1-5/8 Inch Long					2	2			2		
-22	401963	† Stud, 1/4 x 1 Inch Long	2	2	2	2	2	2	2	2	2	2	
-23	401977	† Stud, 3/8 x 2-3/32 Inch Long	4		4	4	4	4	4	4	4	4	
-24	402034	† Stud, 5/16 x 6 Inch Long	1		1	1	1		1	1	1		
-25	402151	† Stud, 5/16 x 1-1/4 Inch Long	2	2	2	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	2	2	2	
-27	646140-1	Stud, 5/16 x 2-1/16 Inch Long	36	36	36	36	36	36	36	36	36	36	
-28	629518-1H	Plug, Pipe, 1/8 - 27 NPTF	1		1	1	1	1	1		1	1	
-29	401752	Plug, Pipe, 1/8 - 27 NPTF	3	4	3	3	3	4	3	4	3	4	
-30	AN932C2	Plug, Pipe, 1/8 - 27 NPTF	2	2	2	2	2	2	2	2	2	2	
-31	402941	Plug, Pipe, 1/16 - 27 NPTF	4	4	4	4	4	4	4	4	4	4	
-32	2025	Plug, Pipe	1	1	1	1	1	1	1	1	1	1	
-33	532432	Plug, Machine Thread, 5/8-18	1	1	1	1	1	1	1	1	1	1	
-34	MS35769-11	\$ Gasket, Copper	1	1	1	1	1	1	1	1	1	1	
-35	629847	Nozzle, Squirt	6	6	6	6	6	6	6	6	6	6	
-36	539374	Washer, Plain	1	1	1	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	1	1	1	
-38	MS21209C5-15	Insert, Thread								3			

NOTE:

① For TSI0-520-B, D, E, J, K, L, N & U Configuration See Figure 1.

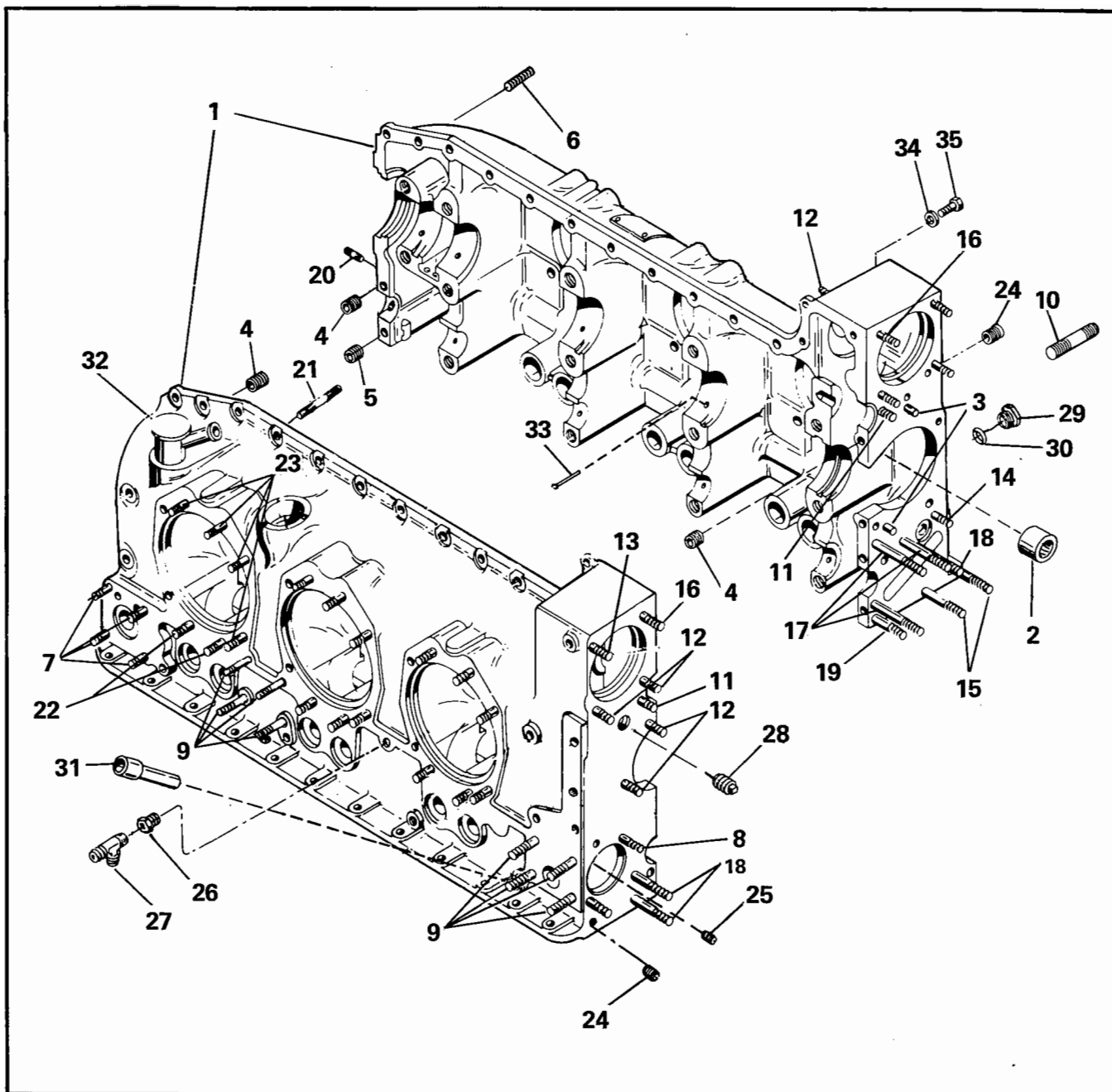


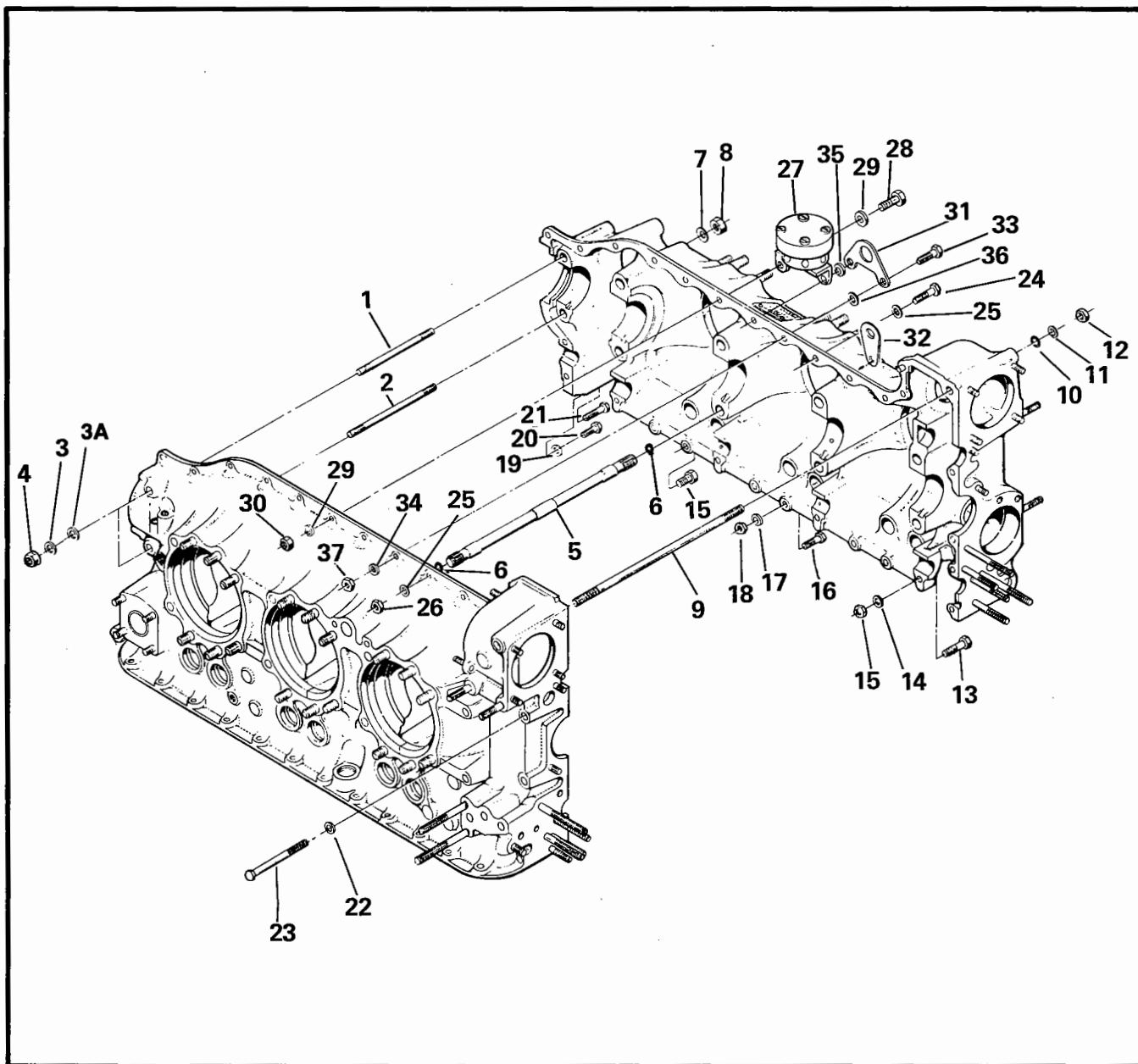
FIGURE 3. STUDDING ASSEMBLY, TSI O-520-C, G, H, M, P, R, T, AF.

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY									
			C	G	H	M	P	R	T	AF		
3-1	642165	① Studding Assembly, Crankcase	1	1	1							
-1	642185	① Studding Assembly, Crankcase				1		1				
-1	643991	Studding Assembly, Crankcase					1					
-1	642331	Studding Assembly, Crankcase							1			
-1	643989	Studding Assembly, Crankcase								1		
-2	537721	. Bearing Needle	1	1	1	1	1	1	1	1		
-3	531548	. Dowell, 5/16 x 11/16 Inch Long	2	2	2	2	2	2	2	2		
-4	MS122162	. Insert, Thread	4	4	4	4	4	4	4	4		
-5	MS122122	. Insert, Thread	1	1	1	1	1	1	1	1		
-6	401808	† Stud, 1/4 x 1-5/16 Inch Long	5	5	5	5	5	5				
-6	401841	† Stud, 1/4 x 2-7/64 Inch Long							3	3		
-7	401899	† Stud, 5/16 x 1-7/8 Inch Long	4	4	4	4	4	4	4	4		
-8	402151	† STud, 5/16 x 1-1/4 Inch Long	4	4	4	2	2	2	2	2		
-9	402066	† STud, 3/8 x 1-7/8 Inch Long	14	14	14	14	16	14	14	14		
-10	402060	† Stud, 3/8 x 2-5/16 Inch Long	2	2	2	2		2				
-10	402066	† Stud, 3/8 x 1-7/8 Inch Long					2		2	2		
-11	401870	† Stud, 1/4 x 1-1/8 Inch Long	2	2	2	2	2	2	2	2		
-12	401885	† Stud, 5/16 x 1-5/16 Inch Long	11	11	11	11	11	11	11	11		
-13	402044	† Stud, 5/16 x 1-3/8 Inch Long	1	1	1	1	1	1		1		
-13	401885	† Stud, 5/16 x 1-5/16 Inch Long							1			
-14	401852	† Stud, 1/4 x 1-13/32 Inch Long	1	1	1	1	1	1	1	1		
-15	402129	† Stud, 1/4 x 2-3/4 Inch Long	2	2	2	2	2	2		2		
-15	402832	† Stud, 1/4 x 2-13/16 Inch Long							2			
-16	401965	† Stud, 3/8 x 1-13/32 Inch Long	2	2	2	2	2	2	2	2		
-17	402157	† Stud, 1/4 x 6-7/64 Inch Long	3	3	3	3	3	3		3		
-17	402158	† Stud, 1/4 x 4-13/32 Inch Long							3			
-18	402158	† Stud, 1/4 x 4-13/32 Inch Long	2	2	2	2	2	2	2	2		
-19	402159	† Stud, 1/4 x 4-7/64 Inch Long	2	2	2	2	2	2	2	2		
-20	401804	† Stud, 1/4 x 1-1/16 Inch Long	2	2	2	2	2	2	2	2		
-21	401950	† Stud, 5/16 x 4-7/8 Inch Long	1	1	1	1	1	1	1	1		
-22	646140-2	② Stud, 7/16 x 1-23/32 Inch Long	12	12	12	12	12	12	12	12		
-22	538404	② † Stud, 7/16 x 1-19/32 Inch Long	12	12	12							
-23	646140-1	② Stud, 7/16 x 2-3/16 Inch Long	24	24	24	24	24	24	24	24		
-23	631687	② † Stud, 7/16 x 2-1/16 Inch Long	24	24	24							
-24	629518-1H	. Plug, Pipe, 1/8-27 NPTF	2	2	2	2	2	2	2			
-24	2025	. Plug, Pipe, 3/18-18 NPTF	4	4	4	4	4	4	4			
-26	632788	. Reducer, 3/8 Male-to-1/4 Female	1	1	1	1	1	1				
-26	AN912-3	. Bushing, Reducer							1			
-27	630063-1	. Tee, Fitting	1	1	1	1	1	1				
-27	639495	. Elbow							1			
-28	629518-3H	. Plug, Pipe, 3/8-18 NPTF	1	1	1	1	1	1	1	1		
-29	532432	. Plug, Machine Thread, 5/8-18 NPTF	1	1	1	1	1	1	1	1		
-30	MS35769-11	\$. Gasket, Copper	1	1	1	1	1	1	1	1		
-31	631927	. Housing, Oil Gage Rod	1	1	1	1	1	1	1	1		
-32	537505	. Breather Assembly Crankcase	1	1	1	1	1	1	1	1		
-33	629847	. Nozzle, Squirt	6	6	6	6	6	6	6	6		
-34	2473	. Washer, Flat	1	1	1	1	1	1	1	1		
-35	AN5-13A	. Bolt	1	1	1	1	1	1	1	1		

NOTES:

① These are Phase 3 style crankcases. For earlier style, Phase 2, See Service Bulletin M78-9.

② Service in accordance with Service Bulletin M72-24.



**FIGURE 4. CRANKCASE ATTACHING PARTS
TS10-520-B, D, E, J, K, L, N, UB, VB, WB.**

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
4-1	538944-5.31		Bolt, Thru, 7/16 - 20 x 5-5/16 Inch Long	1	1	1	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	1	1	1
-3	20202		Washer, Plain	2	2	2	2	2	2	2	2	2	2
-3A	646256		Washer	2	2	2	2	2	2	2	2	2	2
-4	531001		Nut, Flanged	4	4	4	4	4	4	4	4	4	4
-5	641931-10.75		Bolt, Thru, 1/2 x 10-3/4 Inch Long	8	8	8	8	8	8	8	8	8	8
-6	MS29513-010	\$	O-Ring	16	16	16	16	16	16	16	16	16	16
-7	632120		Washer, Plain	4	4	4	4	4	4	4	4	4	4
-8	634511		Nut, Flanged	4	4	4	4	4	4	4	4	4	4
-8	630693-10.44		Bolt, Thru, 3/8 - 24 x 10-7/16 Inch Long	1	1	1	1	1		1	1	1	
-9	630693-11.67		Bolt, Thru, 3/8 - 24 x 11-11/16 Inch Long						1				1
-10	AN123862	\$	O-Ring	2	2	2	2	2	2	2	2	2	2
-11	24239		Washer, Plain	2		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	2	2	2
-13	AN5-23A		Bolt, 5/16 - 24 x 2-21/32 Inch Long	4	4	4	4	4	4	4	4	4	4
-14	2473		Washer, Plain	8	8	8	8	8	8	8	8	8	8
-15	632443-6		Nut, Marsden, Lock	4	4	4	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	6	5	5
-17	20522		Washer, Plain	10	12	10	10	10	10	10	12	10	10
-18	632443-4		Washer, Plain	5	6	5	5	5	5	5	6	5	5
-19	2473		Washer, Plain	2	2	2	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	1	1	1
-21	539003		Screw, 5/16 - 18 x 1-3/8 Inch Long	1	1	1	1	1	1	1	1	1	1
-22	2473		Washer, Plain	3	3	3	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	3	3	3
-24	AN5-13A	①	Bolt	9	9	9	9	9	9	9	9	9	9
-25	2473	①	Washer, Plain	19	19	19	19	19	19	19	19	19	19
-26	2439		Nut, Plain, Hex	12	12	12	12	12	12	12	12	12	12
-27	* * *	②	Fuel Manifold Valve	rf	rf	rf	rf	rf	rf	rf	rf	rf	rf
ATTACHING PARTS													
-28	AN5-14A		Bolt	1	1	1	1	1	1	1	1	1	1
-29	2473		Washer, Plain	3	3	3	3	3	3	3	3	3	3
-30	2439		Nut, Plain, Hex	1	1	1	1	1	1	1	1	1	1
* * * *													
-31	538650	③	Eye, Engine Lifting	1	1	1	1	1	1	1	1	1	1
-32	641407		Eye, Engine, Lifting						1				1
ATTACHING PARTS													
-33	AN5-15A		Bolt	2	2	2	2	2	2	2	2	2	2
-34	2473		Washer, Plain	1	1	2	2	1	1	1	1	1	1
-35	2439		Nut, Plain, Hex	2	2	2	2	2	2	2	2	2	2

NOTES:

- ① One bolt and washer supplied with crankcase studding assembly.
- ② For manifold valve part number, see appropriate Fuel Injection System. Figure 52 and 66.
- ③ On the TS10-520-L, LB & WB, this lifting eye is located at the 4th and 5th holes from nose.

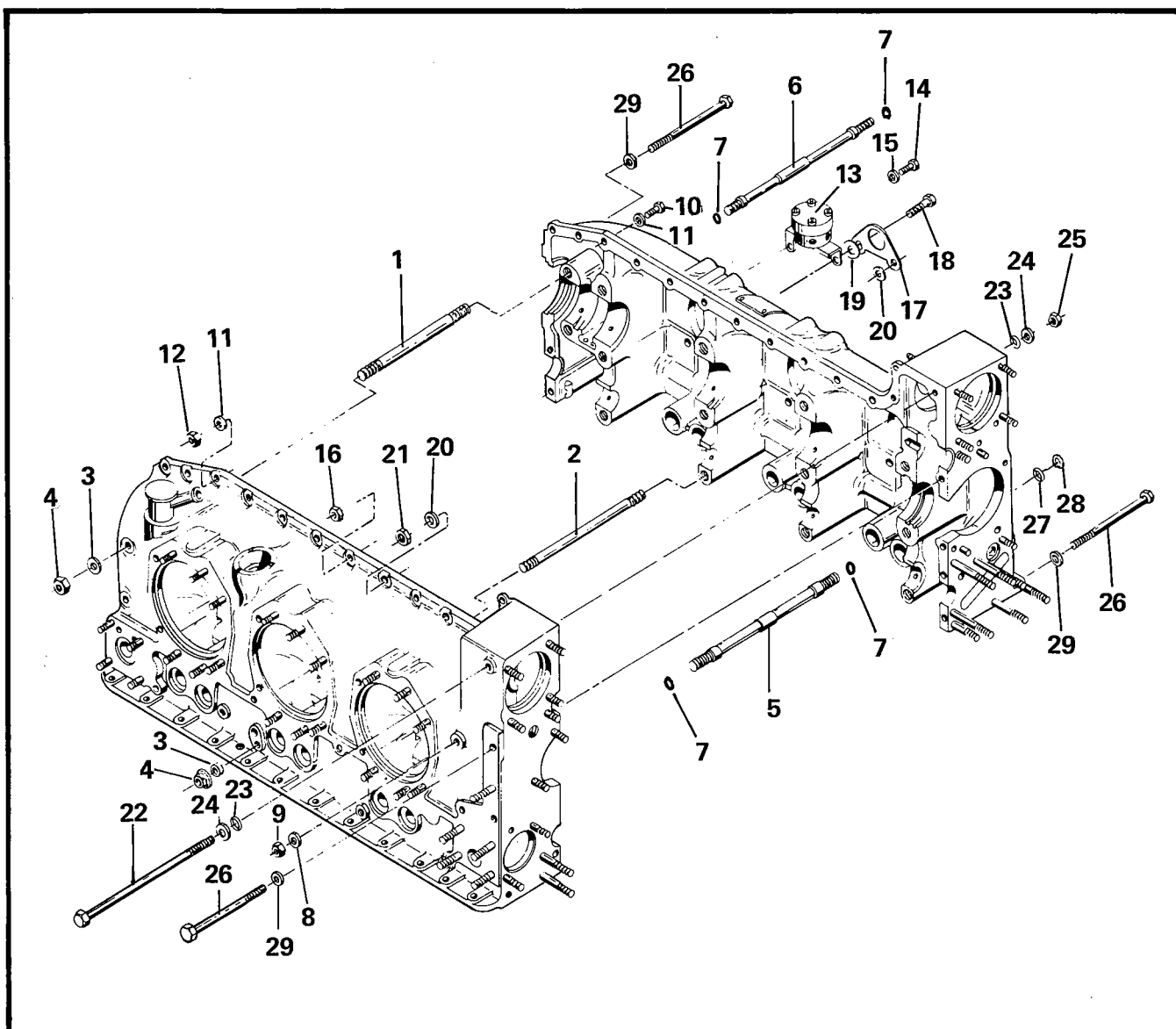
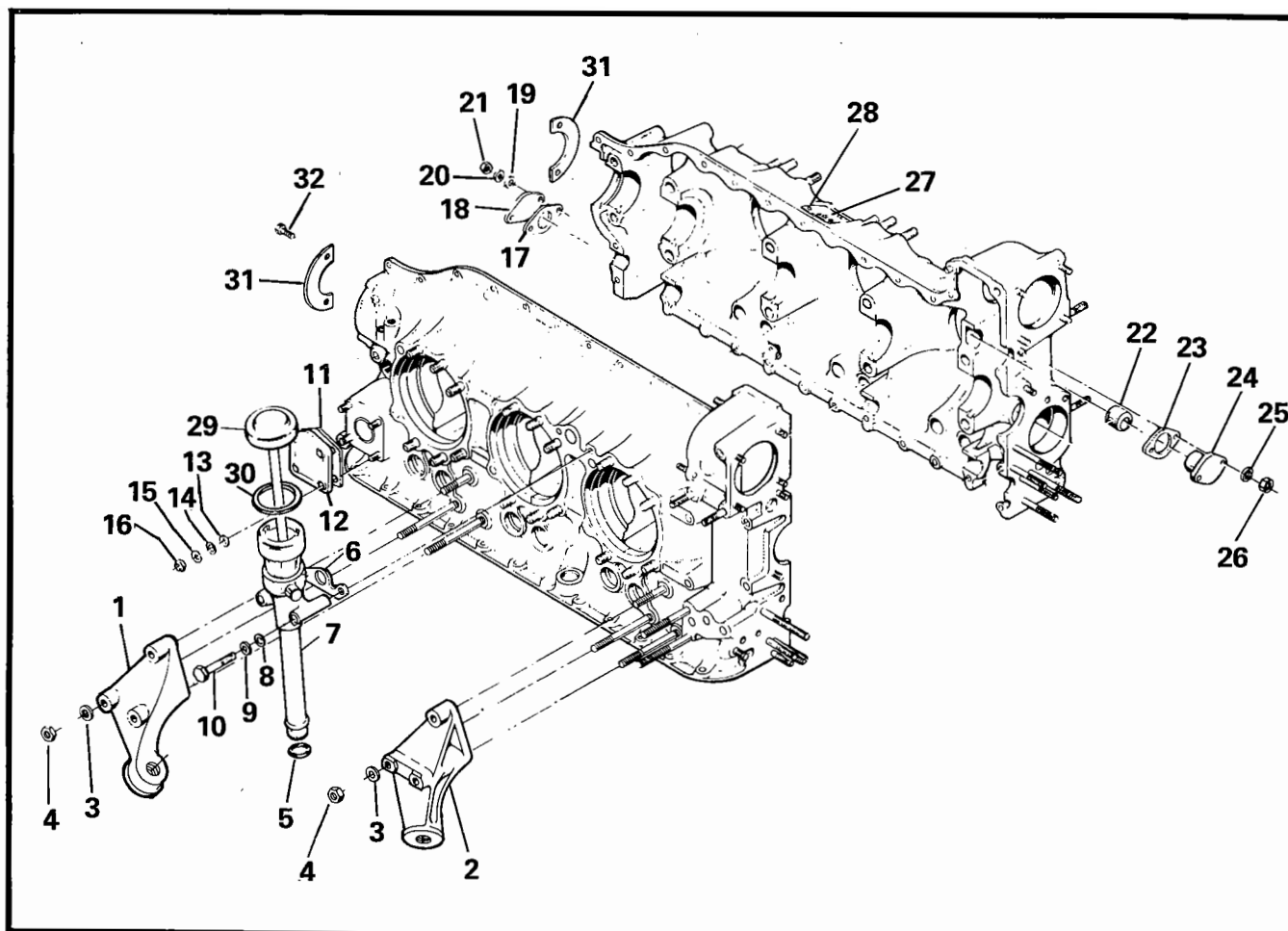


FIGURE 5. CRANKCASE ATTACHING PARTS, TS10-520-C, G, H, M, P, R, T, AF.

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY									
			C	G	H	M	P	R	T	AF		
5-1	538944-8.88	Bolt, Thru, C/C-to-C/C at Nose	2	2	2	2	2	2				
-1	538944-10.00	Bolt, Thru, C/C-to-C/C at Nose							2	1		
-1	538944-11.12	Bolt, Thru, C/C-to-C/C at Nose								1		
-2	538944-10.50	Bolt, Thru, C/C-to-C/C Below Cam	4	4	4	4	4	4	4	4		
-3	25171	Spacer	12	12	12	12	12	12	12	12		
-4	531001	Nut, Flanged	12	12	12	12	12	12	12	12		
-5	641931-10.75	Bolt, Thru, Cylinder-to-C/C	7	7	7	7	7	7	7	7		
-6	641930-9.81	Bolt, Thru, Cyl. No. 6 Upper Boss	1	1	1	1	1	1	1			
-6	641930-10.95	Bolt, Thru, Cyl. No. 6 Upper Boss							1	1		
-7	MS29513-010	\$ O-Ring	16	16	16	16	16	16	16	16		
-8	538989	Washer	4	4	4	4	4	4	4	4		
-9	634511	Nut	3	3	3	3	3	3	3	3		
-9	634505	Nut, Flanged, Generator Mt. Brkt.	1	1	1	1	1	1	1	1		
-10	AN5-13A	① Bolt, 5/16-24 x 2-15/32 Inch Long	9	9	9	9	9	9	9	9		
-10	AN5-12A	② 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	11	11		
-12	2439	Nut	11	11	11	11	11	11	12	12		
-13	* * *	③ Fuel Manifold Valve	rf	rf	rf	rf	rf	rf	rf	rf		
ATTACHING PARTS												
-14	AN5-13A	① Bolt, 5/16-24 x 1-15/32 Inch Long	1	1	1	1	1	1	1	1		
-14	AN5-12A	② 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	1	1		
-16	2439	Nut	1	1	1	1	1	1	1	1		
* * * *												
-17	538650	Eye, Engine Lifting	1	1	1	1	1	1	1	1		
ATTACHING PARTS												
-18	AN5-15A	① Bolt, 5/16-24 x 1-23/32 Inch Long	2	2	2	2	2	2	2	2		
-18	AN5-14A	② Bolt, 5/16-24 x 1-19/32 Inch Long	2	2	2	2	2	2				
-19	2473	Washer, Plain	3	4	5	3	3	3	3	3		
-20	2439	Nut	2	2	2	2	2	2	2	2		
* * * *												
-21	630693-10.44	Bolt	1		1	1	1	1	1	1		
-21	535810	Bolt		1								
-22	AN123862	\$ O-Ring	2	2	2	2	2	2	2	2		
-23	24239	Washer, Plain	2	2	2	2	2	2	2	2		
-24	2441	Nut	1	1	1	1	1	1	1	2		
-25	627433	Screw, 5/16-18 x 5-1/4 Inch Long	5	5	5	5	5	5	4	5		
-26	MS9021-011	\$ O-Ring	1	1	1	1	1	1	1	1		
-27	2473	Washer, Plain	1	5	5	1	1	1	1	5		

NOTES:

- ① These bolts are used with Phase 3 Style crankcases. See Service Bulletin M78-9.
- ② These bolts are used with Phase 2 Style crankcases. See Service Bulletin M78-9.
- ③ For manifold valve part number see appropriate Fuel Injection System. Figure 52 and 66.



**FIGURE 6. CRANKCASE ASSOCIATED PARTS
TS10-520-B, D, E, J, K, L, N, UB, VB, WB.**

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
6-1	631154		Bracket, Engine Mount	2		2	2	2		2		2	
-2	631152		Bracket, Engine Mount	2		2	2	2		2		2	
-2	640782		Bracket, Engine Mount						4				4
			ATTACHING PARTS										
-3	539058		Washer, Plain	12		12	12	12	12	12		12	12
-4	2441		Nut, Plain, Hex	12		12	12	12	12	12		12	12
			* * * *										
-5	MS9021-210	\$	O-Ring	1	1	1	1	1	1	1	1	1	1
-6	630892	\$	Gasket	1	1	1	1	1	1	1	1	1	1
-7	632964-1		Breather Assembly, Oil Filler	1		1	1	1	1	1		1	1
-7	632964-2		Breather Assembly, Oil Filler		1						1		
			ATTACHING PARTS										
-8	2473		Washer, Plain	2	2	2	2	2	2	2	2	2	2
-9	MS35337-45		Washer, Lock	2	2	2	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	2	2	2

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY										
			B	D	E	J	K	L	N	UB	VB	WB	
6-11	641651	\$ Gasket, Governor Pad Cover	1	1	1	1	1	1	1	1	1	1	
-12	639997	Cover, Governor Pad	1	1	1	1	1	1	1	1	1	1	
		ATTACHING PARTS											
-13	22535	Washer	8	8	8	8	8	8	8	8	8	8	
-14	2473	Washer, Plain	4	4	4	4	4	4	4	4	4	4	
-15	MS35337-45	Washer, Lock	4	4	4	4	4	4	4	4	4	4	
-16	2439	Nut, Plain, Hex	4	4	4	4	4	4	4	4	4	4	
		* * * *											
-17	629202	\$ Gasket, Cam Hole Cover	1	1	1	1	1	1	1	1	1	1	
-18	629201	Cover, Cam Hole	1	1	1	1	1	1	1	1	1	1	
		ATTACHING PARTS											
-19	20522	Washer, Plain	2	2	2	2	2	2	2	2	2	2	
-20	MS35337-44	Washer, Lock	2	2	2	2	2	2	2	2	2	2	
-21	2437	Nut, Plain, Hex	2	2	2	2	2	2	2	2	2	2	
		* * * *											
-22	630871	Bushing, Idler Pin	1	1	1	1	1	1	1	1	1	1	
-23	534740	\$ Gasket, Idler Pin	1	1	1	1	1	1	1	1	1	1	
-24	630870	Bushing, Flanged, Idler Gear	1	1	1	1	1	1	1	1	1	1	
		ATTACHING PARTS											
-25	MS35337-44	Washer, Lock	2	2	2	2	2	2	2	2	2	2	
-26	2437	Nut, Plain, Hex	2	2	2	2	2	2	2	2	2	2	
		* * * *											
-27	* * *	① Plate Identification	rf	rf	rf	rf	rf	rf	rf	rf	rf	rf	
		ATTACHING PARTS											
-28	24764	Screw, Drive	6	6	6	6	6	6	6	6	6	6	
		* * * *											
-29	633233-29	② Rod and Cap Assembly, Oil Gage	1		1	1	1		1				
-29	633233-3	② Rod and Cap Assembly, Oil Gage		1						1			
-29	633233-6	② Rod and Cap Assembly, Oil Gage, Right Hand ..						1				1	
-29	633233-7	② Rod and Cap Assembly, Oil Gage, Left Hand ...						1				1	
-29	633233-31	② Rod and Cap Assembly, Oil Gage									1		
-30	633240	\$ ③ Gasket	1	1	1	1	1	1	1	1	1	1	
-30	533355	\$ ③ Gasket	1	1	1	1	1	1	1	1	1	1	
-31	641361	Plate, Seal	2	2	2	2	2	2	2	2	2	2	
		ATTACHING PARTS											
-32	628321-.38	Bolt	4	4	4	4	4	4	4	4	4	4	

NOTES:

- ① Service in accordance with Service Bulletin M75-5.
- ② See Section VI for specification applications.
- ③ Cap assemblies which contain a leaf spring use P/N 633240 gasket, which is 1/16 inch thick. Cap assemblies which contain a coil spring use P/N 533355 gasket, which is 1/8 inch thick.

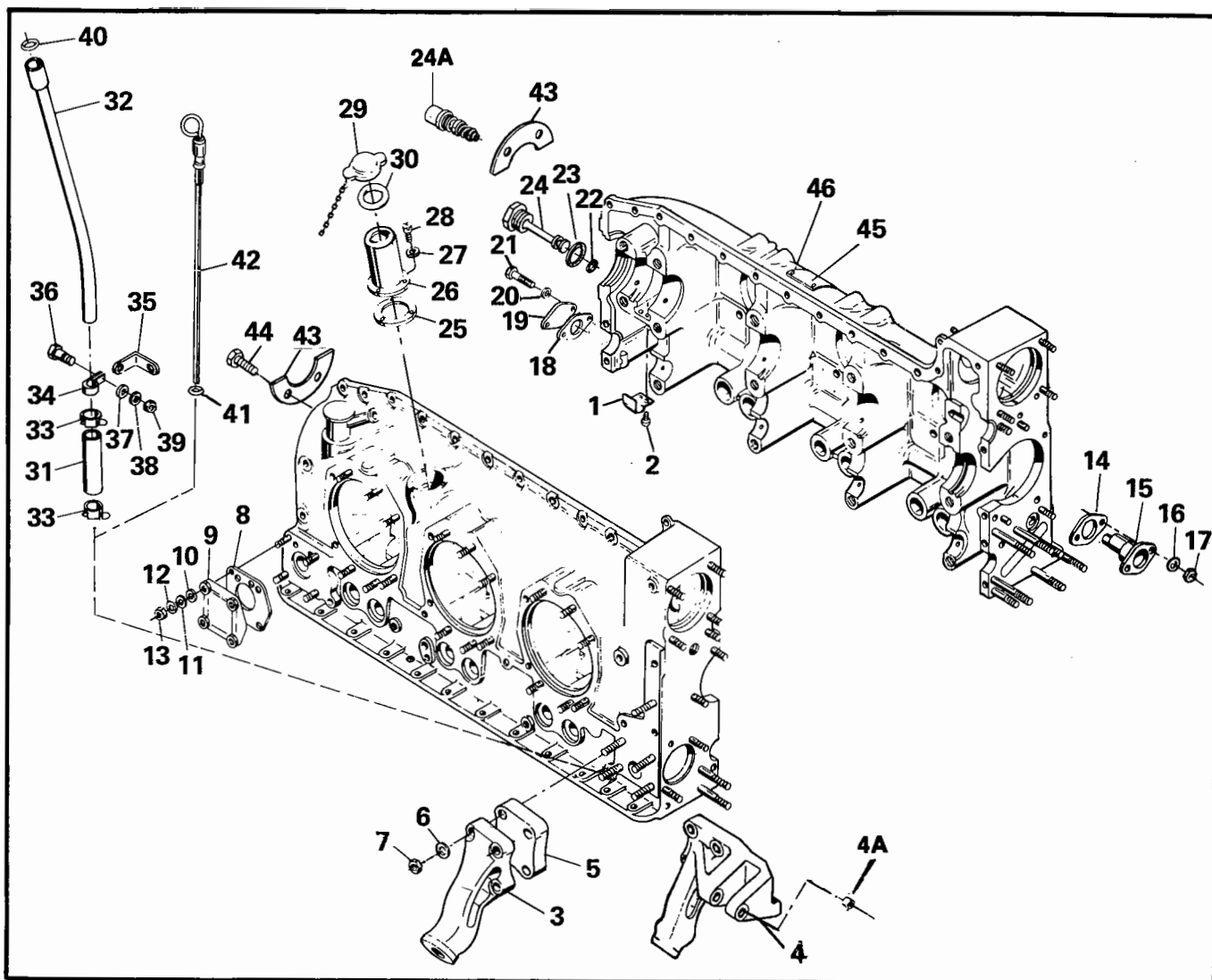


FIGURE 7. CRANKCASE ASSOCIATED PARTS, TS10-520-C, G. H. M. P. R. T. AF.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY							
				C	G	H	M	P	R	T	AF
7-1	642250	①	Clip, Oil Transfer	1	1	1	1	1	1	1	1
			ATTACHING PARTS								
-2	AN500A10-4		Screw	2	2	2	2	2	2	2	2
			* * * *								
-3	539518		Bracket, Engine Mounting	3	3	3	3	3	3	3	3
-3	628257		Bracket, Engine Mtg. Cyl. No. 2	1	1	1	1	1	1	1	1
-4	643935		Bracket, Engine Mtg. Cyl. No. 2							1	1
-4A	643934		. Bushing							1	1
			ATTACHING PARTS								
-5	632357		Spacer, Engine Mount, Cyl. No. 2	1	1	1	1	1	1	1	1
-6	539058		Washer, Plain	16	16	16	16	16	16	16	16
-7	2441		Nut	16	16	16	16	16	16	16	16
			* * * *								
-8	641651	\$	Gasket, Governor Pad Cover	1	1	1	1	1	1	1	1
-9	639997		Cover, Governor Pad	1	1	1	1	1	1	1	1
			ATTACHING PARTS								
-10	22535		Washer	8	8	8	8	8	8	8	8
-11	2473		Washer, Plain	4	4	4	4	4	4	4	4
-12	MS35337-45		Washer, Lock	4	4	4	4	4	4	4	4

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				C	G	H	M	P	R	T	AF		
7-13	2439		Nut, Plain Hex	4	4	4	4	4	4	4	4		
-14	534740		\$ Gasket, Idler Pin	1	1	1	1	1	1	1	1		
-15	534728		Pin, Idler Gear Support	1	1	1	1	1	1	1	1		
			ATTACHING PARTS										
-16	MS35337-44		Washer, Lock	2	2	2	2	2	2	2	2		
-17	2437		Nut	2	2	2	2	2	2	2	2		
			* * * *										
-18	629202		\$ Gasket, Cam Hole Cover	1	1	1	1	1	1	1	1		
-19	642914		Cover, Cam Hole	1	1	1	1	1	1	1	1		
			ATTACHING PARTS										
-20	MS35337-44		Washer, Lock	2	2	2	2	2	2	2	2		
-21	646487		Screw	2	2	2	2	2	2	2	2		
			* * * *										
-22	AN123866		\$ O-Ring	1	1	1	1	1	1				
-23	625966		\$ Gasket	1	1	1	1	1	1				
-24	626334		Plug, Special	1	1	1	1	1	1				
-24A	639304		Valve, Vernatherm								1	1	
-25	538804		\$ Gasket, Oil Filler Neck	1	1	1	1	1	1	1	1		
-26	538801		Neck Assembly, Oil Filler	1	1	1	1	1	1		1		
-26	538773		Neck Assembly, Oil Filler								1		
			ATTACHING PARTS										
-27	MS35337-44		Washer, Lock	3	3	3	3	3	3	3	3		
-28	AN500A416-8		Screw	3	3	3	3	3	3	3	3		
			* * * *										
-29	640620-8		Cap Assembly, Oil Filler	1	1		1				1		
-29	640620-5		Cap Assembly, Oil Filler			1		1	1		1		
-30	635134		\$ Gasket, Oil Filler Cap	1	1	1	1	1	1	1	1		
-31	631928		\$ Hose	1	1	1	1	1	1	1	1		
-32	631915		Housing, Extension	1	1	1	1	1	1		1		
-32	632151		Housing, Extension								1		
-33	36151R		Clamp	2	2	2	2	2	2	2	2		
-34	631266-1		Clamp	1	1	1	1	1	1	1	1		
-35	631275-2		Bracket, No. 2 Cyl. Int. Flange	2	2	2	2	2	2		1		
-35	632149		Bracket								1		
			ATTACHING PARTS										
-36	MS35266-61		Screw	1	1	1	1	1	1	1	1		
-37	2471		Washer, Plain	1	1	1	1	1	1	1	1		
-38	MS35338-43		Washer, Lock	1	1	1	1	1	1	1	1		
-39	13XX1896		Nut	1	1	1	1	1	1	1	1		
			* * * *										
-40	537299		Ring, Oil Gage Lock	1	1	1	1	1	1	1	1		
-41	MS9021-011		\$ O-Ring	1	1	1	1	1	1	1	1		
-42	632062-2A1		② Rod Assembly, Oil Gage	1	1		1						
-42	632062-16A1		② Rod Assembly, Oil Gage			1		1	1		1		
-42	632062-14A1		② Rod Assembly, Oil Gage								1		
-43	641361		Plate, Seal	2	2	2	2	2	2	2	2		
			ATTACHING PARTS										
-44	628321-.38		Bolt	4	4	4	4	4	4	4	4		
			* * * *										
-45	* * *		③ Plate, Identification	rf	rf	rf	rf	rf	rf	rf	rf		
			ATTACHING PARTS										
-46	24764		Screw	6	6	6	6	6	6	6	6		

NOTES:

- ① Early crankcase design uses P/N 626990 (See Service Bulletin M70-18).
- ② See Section VI for specification application.
- ③ Service in accordance with Service Bulletin M75-5.

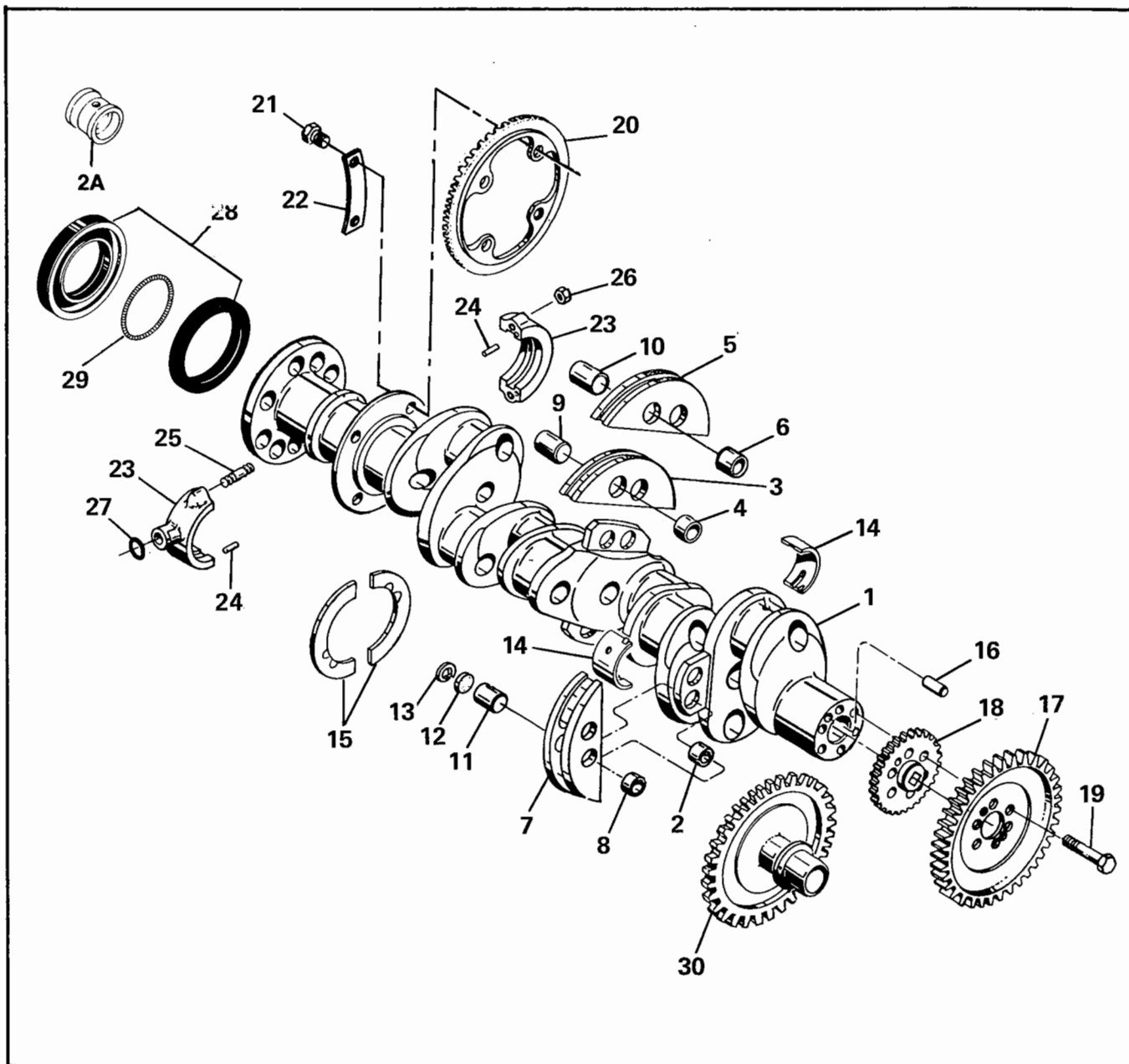
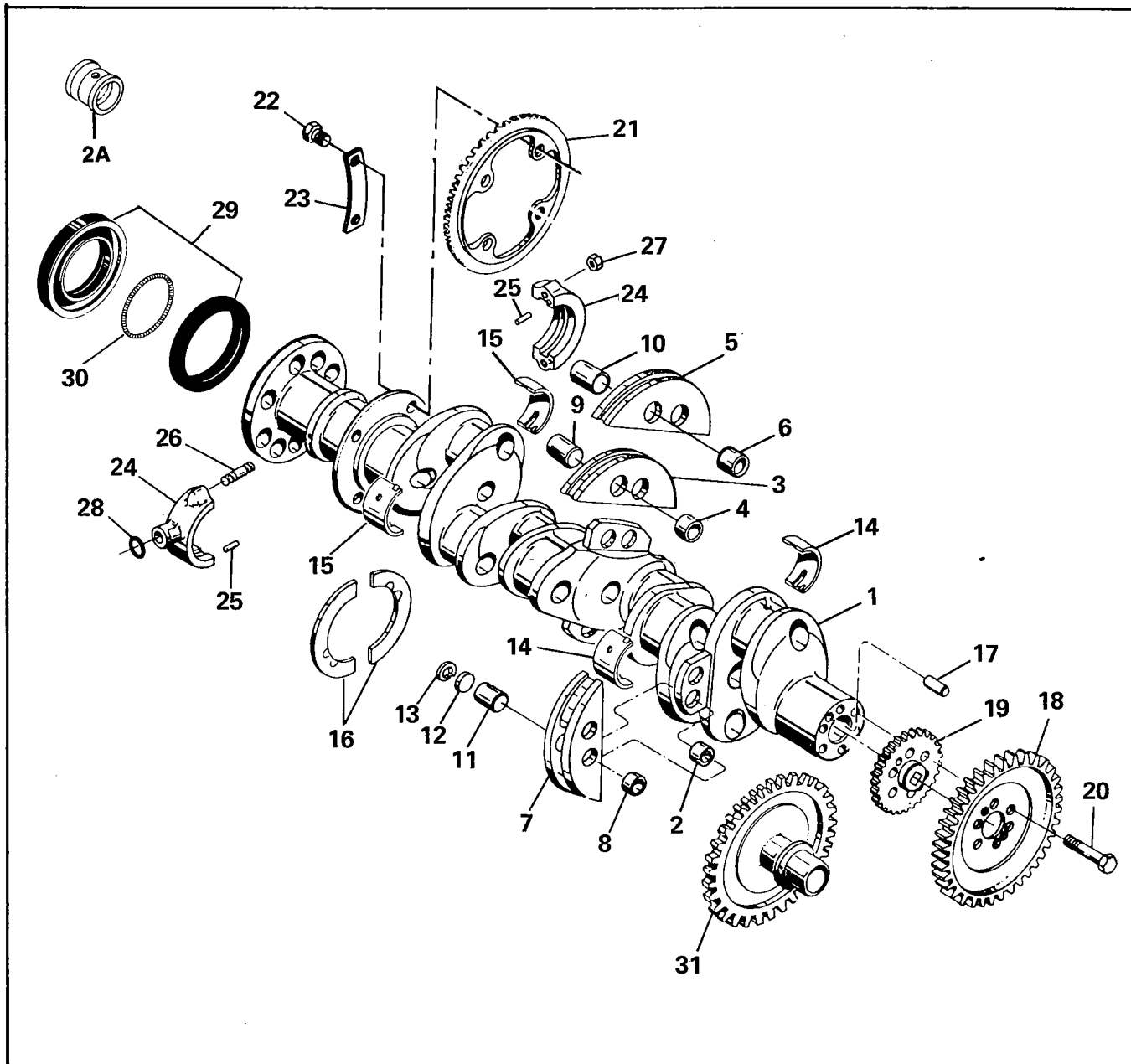


FIGURE 8. CRANKSHAFT GROUP, TS10-520-B, D, E, J, K, L, N.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY										
				B	D	E	J	K	L	N	U	VB	WB	
8-1	633620	⊙	Crankshaft and Damper Assembly	1	1	1	1	1	1	1				
-2	350998	†	. Bushing, Crankshaft Damper	8	8	8	8	8	8	8				
-2A	633189		. Plug, Crankshaft Prop Oil Transfer	1	1	1	1	1	1	1				
-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	8	8	8	8	8	8	8				
-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	642839	\$ †	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, 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	AN123962	\$	O-Ring, Crankcase-to-Collar	1	1	1	1	1	1	1				
-28	641250		Seal Assembly, Nose	1	1	1	1	1	1	1				
-29	641306		. Spring	1	1	1	1	1	1	1				
-30	629360		Gear, Idler	1	1	1	1	1	1	1				

NOTE:

⊙ For TS10-520-BB, DB, EB, JB, KB, LB, NB, UB, UB and WB configuration, See Figure 9.
Complete Bearing Sets Are Listed in Section IV.



**FIGURE 9. CRANKSHAFT GROUP,
TS10-520-BB, DB, EB, JB, KB, LB, NB, UB, VB, WB.**

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY									
			BB	DB	EB	JB	KB	LB	NB	UB	VB	WB
9-1	642396	① Crankshaft and Damper Assembly	1	1	1	1	1	1	1	1	1	1
-2	350998	† . Bushing, Crankshaft Damper	8	8	8	8	8	8	8	8	8	8
-2A	633189	. Plug, Prop Oil Transfer	1	1	1	1	1	1	1	1	1	1
-3	639196	. Counterweight Assembly, 4th Order	1	1	1	1	1	1	1	1	1	1
-4	639193	. . Bushing, Crankshaft Counterweight	4	4	4	4	4	4	4	4	4	4
-5	639196	. Counterweight Assembly, 5th Order	1	1	1	1	1	1	1	1	1	1
-6	639193	. . Bushing, Crankshaft Counterweight	4	4	4	4	4	4	4	4	4	4
-7	639195	. Counterweight Assembly, 6th Order	2	2	2	2	2	2	2	2	2	2
-8	639193	. . Bushing, Crankshaft Counterweight	4	4	4	4	4	4	4	4	4	4
-9	630261-38	. Pin, Damper Counterweight, 4th Order	2	2	2	2	2	2	2	2	2	2
-10	630261-37	. Pin, Damper Counterweight, 5th Order	2	2	2	2	2	2	2	2	2	2
-11	630261-40	. Pin, Damper Counterweight, 6th Order	4	4	4	4	4	4	4	4	4	4
		ATTACHING PARTS										
-12	635623	. Plate, Counterweight Pin Retaining	16	16	16	16	16	16	16	16	16	16
-13	629104	. Ring, Retaining	16	16	16	16	16	16	16	16	16	16
		* * * *										
-14	634503	\$ † Bearing, C/shaft Main & Intermediate	6	6	6	6	6	6	6	6	6	6
-15	642720	\$ † Bearing, C/shaft Main, No. 4 & 5 Main	4	4	4	4	4	4	4	4	4	4
-16	637579	\$ Washer, Thrust	4	4	4	4	4	4	4	4	4	4
-17	536563	† Dowel, Crankshaft-to-Crankgear	1	1	1	1	1	1	1	1	1	1
-18	632893	Gear, Crankshaft, Large	1	1	1	1	1	1	1	1	1	1
-19	632892	Gear, Crankshaft Small	1	1	1	1	1	1	1	1	1	1
		ATTACHING PARTS										
-20	536379	Screw, 5/16 x 7/8 Inch Long	6	6	6	6	6	6	6	6	6	6
		* * * *										
-21	632018	Gear, Face, Alternator Drive	1	1	1	1	1	1	1	1	1	1
		ATTACHING PARTS										
-22	634080	Screw, 5/16 - 24 x 13/32 Inch Long	4	4	4	4	4	4	4	4	4	4
-23	641909	Plate, Tab Lock	2	2	2	2	2	2	2	2	2	2
		* * * *										
-24	629680	† Collar Assembly, Governor Oil Transfer	1	1	1	1	1	1	1	1	1	1
-25	626889	. Dowel, 1/8 x 7/16 Inch Long	2	2	2	2	2	2	2	2	2	2
-26	401893	† . Stud, 1/4 x 1-1/4 Inch Long	2	2	2	2	2	2	2	2	2	2
-27	632443-4	. Nut, Marsden Lock, 1/4 - 28	2	2	2	2	2	2	2	2	2	2
-28	AN123962	\$ O-Ring, Crankcase-to-Collar	1	1	1	1	1	1	1	1	1	1
-29	641250	Seal Assembly, Nose	1	1	1	1	1	1	1	1	1	1
-30	641306	. Spring	1	1	1	1	1	1	1	1	1	1
-31	629360	Gear, Idler	1	1	1	1	1	1	1	1	1	1

NOTE:

① For TS10-520-B, D, E, J, K, L, N & U Configuration, See Figure 8.

Complete Bearing Sets Are Listed In Section IV.

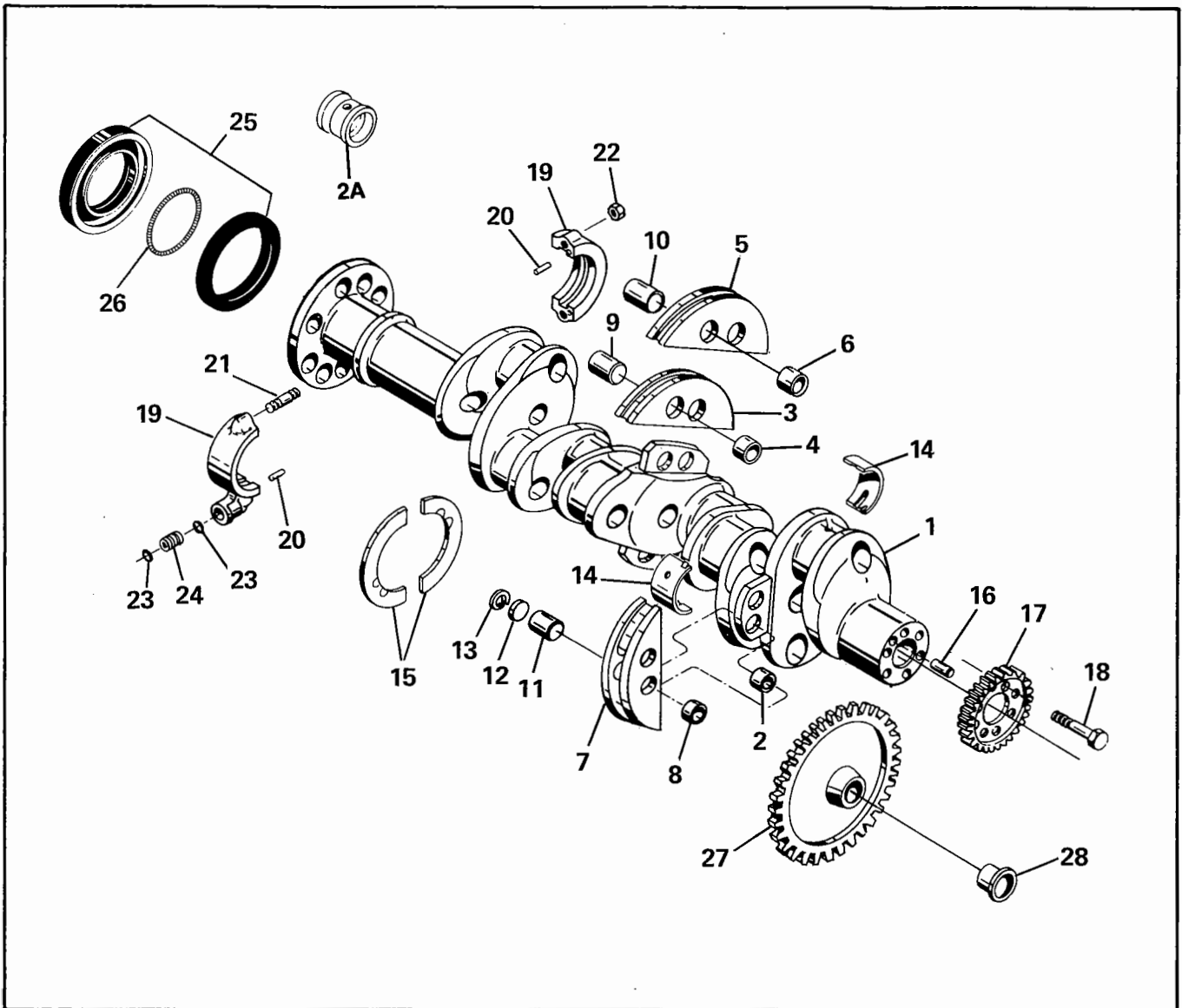


FIGURE 10. CRANKSHAFT GROUP, TS10-520-C, G, H, M, P, R, T, AF.

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY									
			C	G	H	M	P	R	T	AF		
10-1	631716	⊙ Crankshaft and Damper Assembly	1	1	1	1	1	1	1	1		
-2	350998	† . Bushing, Crankshaft, Damper	8	8	8	8	8	8	8	8		
-2A	633189	. Plug, Crankshaft Prop Oil Transfer	1	1	1	1	1	1	1	1		
-3	639196	. Counterweight Assembly, 4th Order	1	1	1	1	1	1	1	1		
-4	639193	. . Bushing, Crankshaft Counterweight	4	4	4	4	4	4	4	4		
-5	639196	. Counterweight Assembly, 5th Order	1	1	1	1	1	1	1	1		
-6	639193	. . Bushing, Crankshaft Counterweight	4	4	4	4	4	4	4	4		
-7	639195	. Counterweight Assembly, 6th Order	2	2	2	2	2	2	2	2		
-8	639193	. . Bushing, Crankshaft Counterweight	4	4	4	4	4	4	4	4		
-9	630261-38	. Pin, Damper Counterweight, 4th Order	2	2	2	2	2	2	2	2		
-10	630261-37	. Pin, Damper Counterweight, 5th Order	2	2	2	2	2	2	2	2		
-11	630261-35	. Pin, Damper Counterweight, 6th Order	4	4	4	4	4	4	4	4		
ATTACHING PARTS												
-12	635623	. Plate, Counterweight Pin Retaining	16	16	16	16	16	16	16	16		
-13	629104	. Ring, Retaining	16	16	16	16	16	16	16	16		
* * * *												
-14	642720	† \$ Bearing, Crankshaft Main	10	10	10	10	10	10	10	10		
-15	637579	\$ Washer, Thrust	4	4	4	4	4	4	4	4		
-16	536563	† Dowel, Crankshaft-to-Gear	1	1	1	1	1	1	1	1		
-17	536421	Gear, Crankshaft	1	1	1	1	1	1	1	1		
ATTACHING PARTS												
-18	536379	Screw, 5/16 x 7/8 Inch Long	6	6	6	6	6	6	6	6		
* * * *												
-19	626739	† Collar Assembly, Governor Oil Transfer	1	1	1	1	1	1	1	1		
-20	626889	. Dowel, 1/8 x 7/16 Inch Long	2	2	2	2	2	2	2	2		
-21	401893	† . Stud, 1/4 x 1-1/4 Inch Long	2	2	2	2	2	2	2	2		
-22	632443-4	. Nut, Marsden Lock, 1/4 - 28	2	2	2	2	2	2	2	2		
-23	MS9021-011	\$ O-Ring, Crankcase-to-Collar	2	2	2	2	2	2	2	2		
-24	642249	Sleeve, Oil Transfer	1	1	1	1	1	1	1	1		
-25	641250	Seal Assembly, Crankshaft Oil	1	1	1	1	1	1	1	1		
-26	641306	. Spring	1	1	1	1	1	1	1	1		
-27	534757	Gear Assembly, Idler	1	1	1	1	1	1	1	1		
-28	534741	. Bushing, Idler Gear	1	1	1	1	1	1	1	1		

NOTE:

⊙ Service earlier crankshafts and bearings in accordance with Service Bulletin M78-9 and M74-12 Rev. 1.
Complete Bearing Sets are Listed in Section IV.

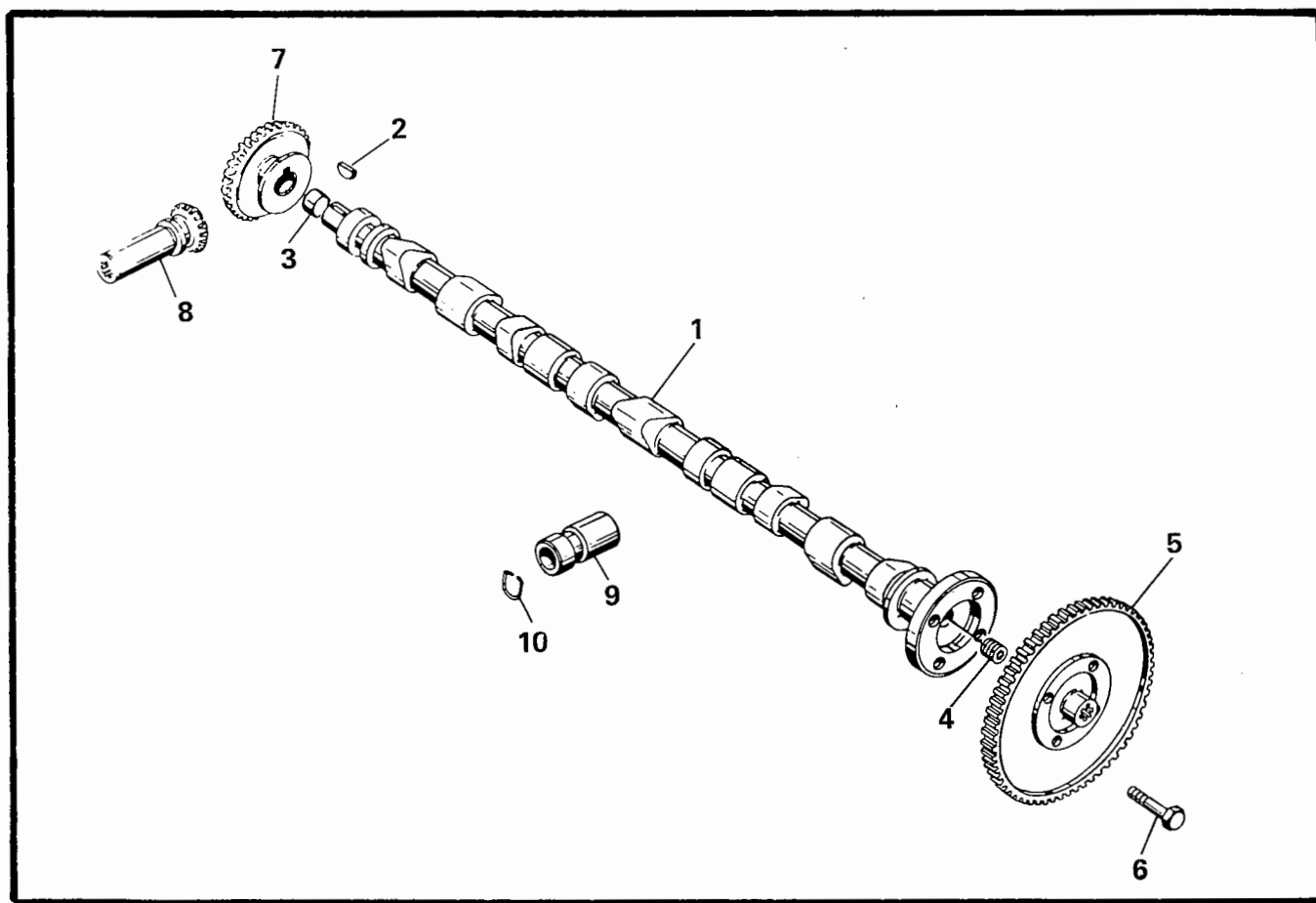


FIGURE 11. CAMSHAFT GROUP, TS10-520-B, D, E, J, K, L, N, UB, VB, WB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
11-1	629726A3	†	Camshaft Assembly	1	1	1	1	1	1	1	1	1	1
-2	MS35756-8		. Key, Woodruff	1	1	1	1	1	1	1	1	1	1
-3	632092-4		. Plug, Expansion	1	1	1	1	1	1	1	1	1	1
-4	524818		. Plug	1	1	1	1	1	1	1	1	1	1
-5	631845		Gear, Camshaft	1	1	1	1	1	1	1	1	1	1
ATTACHING PARTS													
-6	631088-44		Bolt, 5/16 - 24 x 7/16 Inch Long	4	4	4	4	4	4	4	4	4	4
* * * *													
-7	629748		Gear, Bevel, Governor Drive	1	1	1	1	1	1	1	1	1	1
-8	629747		Gear, Bevel Governor Driven	1	1	1	1	1	1	1	1	1	1
-9	628488 int.		Lifter, Assembly, Hydraulic							6	6	6	6
-9	641709 exh.		Lifter Assembly							6	6	6	6
-9	640946 exh.		Lifter Assembly							opt	opt	opt	opt
-10	641862		. Ring, Retaining	1	1	1	1	1	1	1	1	1	1

NOTE:

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.

Exhaust Lifter 641709 or 640946 must be used with nitralloy guides.

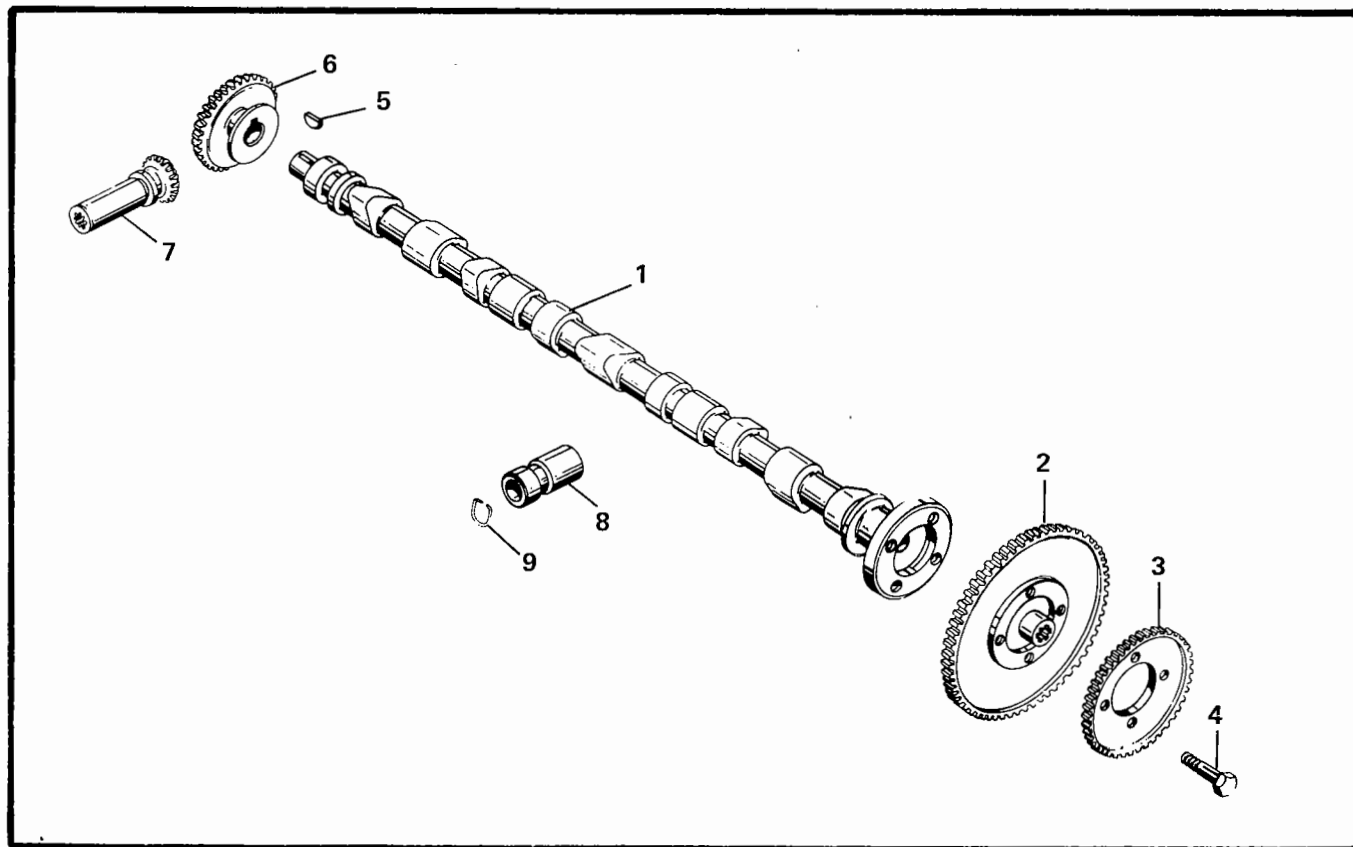


FIGURE 12. CAMSHAFT GROUP, TS10-520-C, G, H, M, P, R, T, AF.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				C	G	H	M	P	R	T	AF		
12-1	535661	†	Camshaft	1	1	1	1	1	1	1	1		
-2	631845		Gear, Camshaft	1	1	1	1	1	1	1	1		
-3	535662		Gear, Cam Cluster	1	1	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	4	4		
* * * *													
-5	MS35756-8		Key, Woodruff	1	1	1	1	1	1	1	1		
-6	534655		Gear, Bevel, Governor Drive	1	1	1	1	1	1	1	1		
-7	538076		Gear, Bevel, Governor Driven	1	1	1	1	1	1	1	1		
-8	628488		Lifter Assembly, Hydraulic Valve	12	12	12	12	12	12	12	6		
-8	641709	②	Lifter Assembly, Hydraulic Valve								6		
-8	640946	②	Lifter Assembly								opt		
-9	641862	①	Ring, Retaining	1	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.

② Exhaust lifter 641709 or 640946 must be used with nitralloy guides.

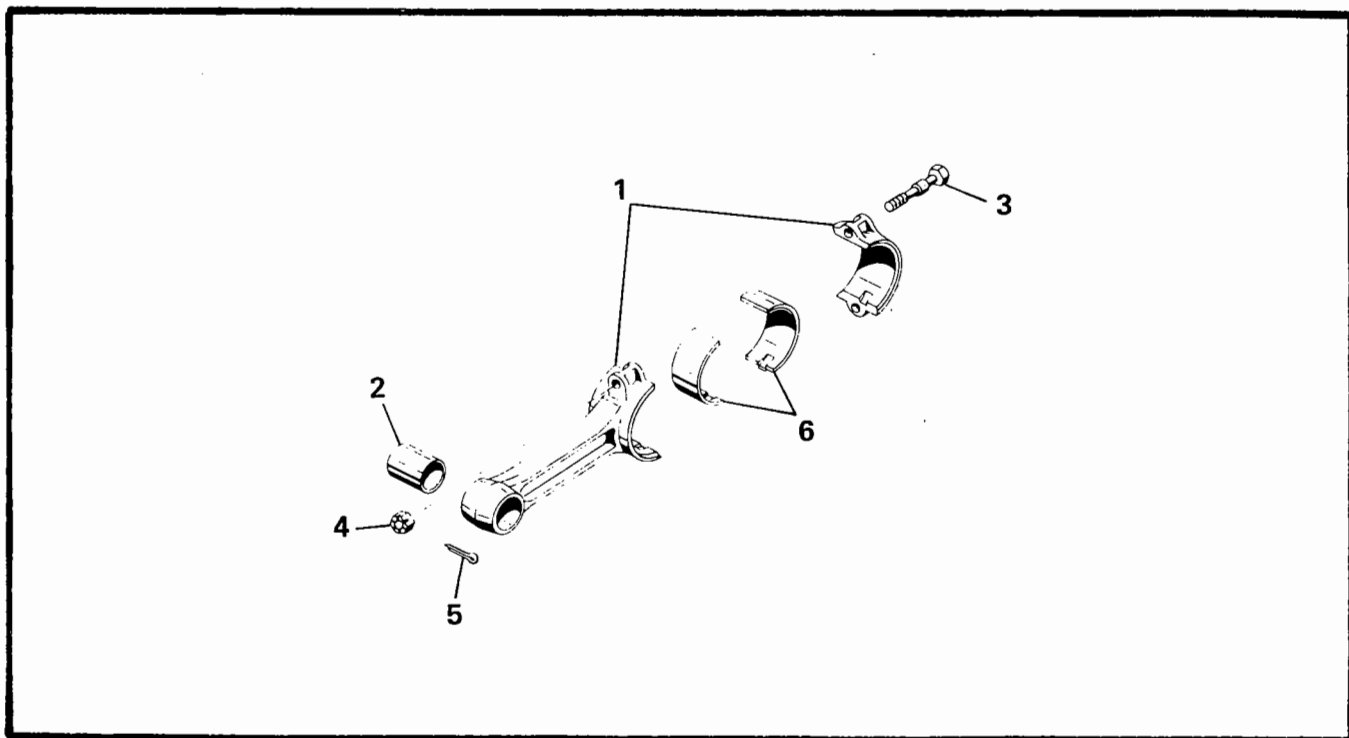


FIGURE 13. CONNECTING ROD ASSEMBLY

MODELS TS10-520-B, D, E, J, K, L, N

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	VB	WB	
13-1	633403		Connecting Rod Assembly, Complete	6	6	6	6	6	6	6			
-2	530658		. Bushing, Piston Pin	1	1	1	1	1	1	1			
-3	629340		. Bolt, Connecting Rod, Special	2	2	2	2	2	2	2			
-4	628109		. Nut, Slotted, Special	2	2	2	2	2	2	2			
-5	AN381-25-10		Pin, Cotter	12	12	12	12	12	12	12			
-6	630826	†	Bearing, Connecting Rod	12	12	12	12	12	12	12			

MODELS TS10-520-BB, DB, EB, JB, KB, LB, NB, UB, VB, WB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				BB	DB	EB	JB	KB	LB	NB	UB	VB	WB
13-1	642399		Connecting Rod Assembly, Complete	6	6	6	6	6	6	6	6	6	6
-2	530658		. Bushing, Connecting Rod, Special	2	2	2	2	2	2	2	2	2	2
-3	629340		. Bolt, Connecting Rod, Special	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
-5	AN381-25-10		Pin, Cotter	12	12	12	12	12	12	12	12	12	12
-6	632398	†	Bearing, Connecting Rod	12	12	12	12	12	12	12	12	12	12

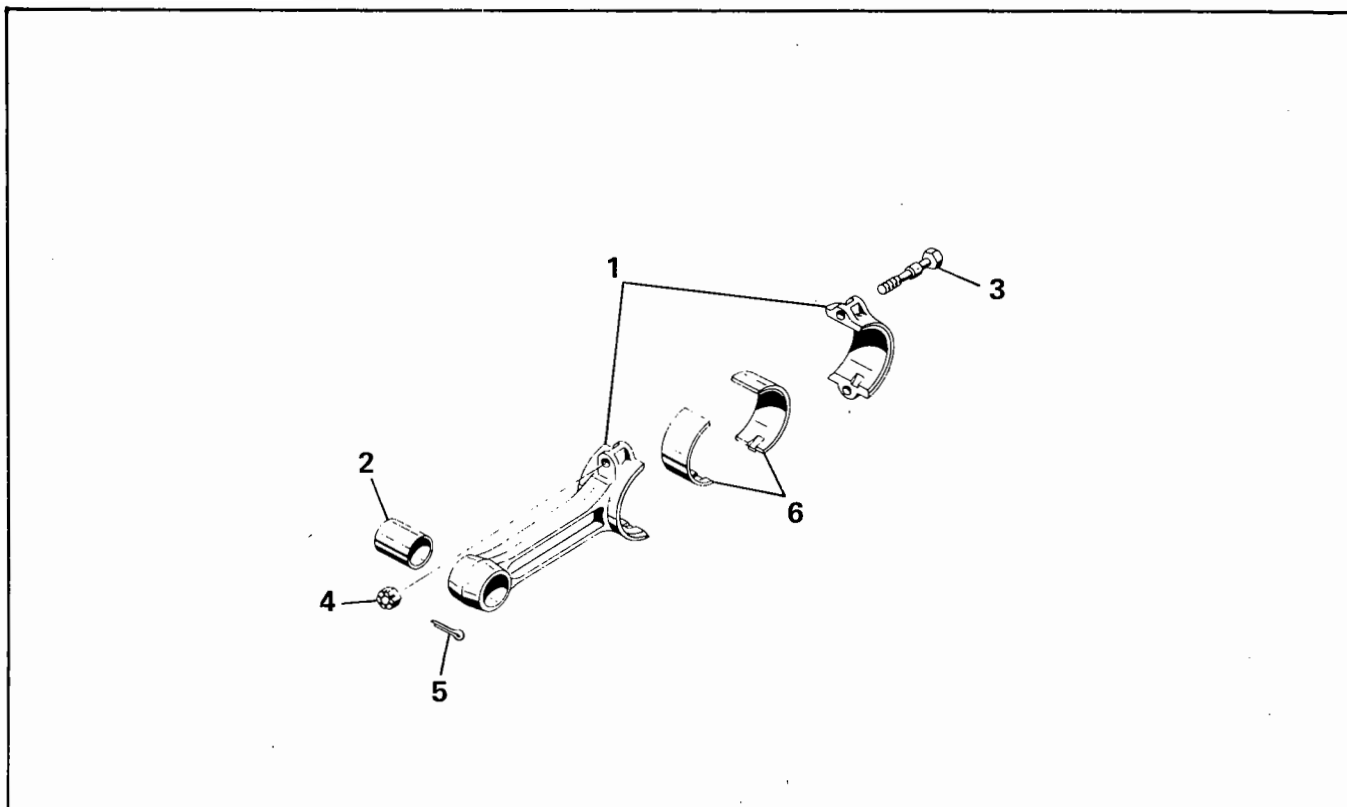


FIGURE 14. CONNECTING ROD ASSEMBLY, TS10-520-C, G, H, M, P, R, T, AF.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				C	G	H	M	P	R	T	AF		
14-1	633403		Connecting Rod Assembly, Complete	6	6	6	6	6	6	6	6		
-2	530658		. Bushing, Piston Pin	1	1	1	1	1	1	1	1		
-3	629340		. Bolt, Connecting Rod, Special	2	2	2	2	2	2	2	2		
-4	628109		. Nut, Slotted, Special	2	2	2	2	2	2	2	2		
-5	AN381-25-10		Pin, cotter	12	12	12	12	12	12	12	12		
-6	630826	†	Bearing, Connecting Rod	12	12	12	12	12	12	12	12		

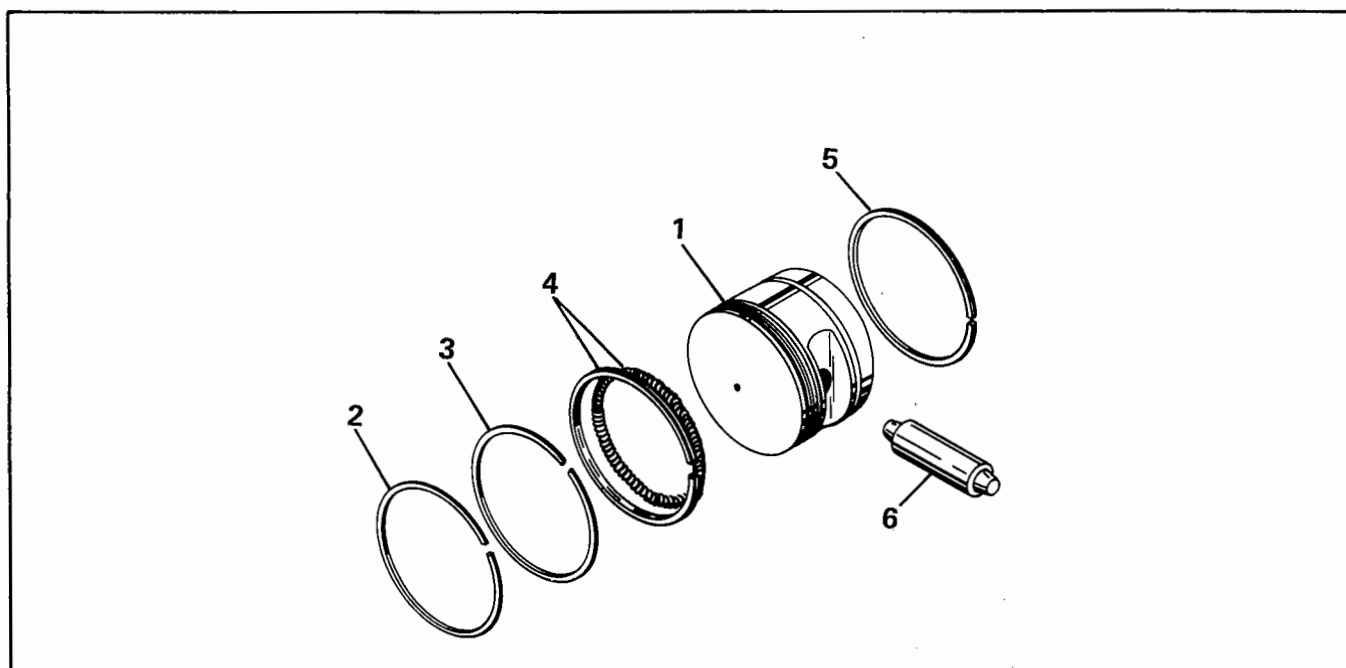


FIGURE 15. PISTON, RINGS & PINS.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
15-1	642761	①②	† Piston	6	6	6	6	6	6	6	6	6	6
-1	646303	①	† Piston	opt	opt	opt	opt	opt	opt	opt	opt	opt	opt
-1	632585	②	† Piston	opt	opt	opt	opt	opt	opt	opt	opt	opt	opt
-2	642602	③⑤	† Ring, Top Groove	6	6	6	6	6	6	6	6	6	6
-2	640625	④	† Ring, Top Groove	opt	opt	opt	opt	opt	opt	opt	opt	opt	opt
-3	642603	③⑤	† Ring, Second Groove	6	6	6	6	6	6	6	6	6	6
-3	640626	④	† Ring, Second Groove	opt	opt	opt	opt	opt	opt	opt	opt	opt	opt
-4	643971	③⑥	† Ring Assembly, Third Groove	6	6	6	6	6	6	6	6	6	6
-4	643121	④⑤	† Ring Assembly, Third Groove	opt	opt	opt	opt	opt	opt	opt	opt	opt	opt
-4	641302	⑤⑧	† Ring Assembly, 3rd Groove	opt	opt	opt	opt	opt	opt	opt	opt	opt	opt
-5	642606	③⑤	† Ring, Fourth Groove	6	6	6	6	6	6	6	6	6	6
-5	629401	④	† Ring, Fourth Groove	opt	opt	opt	opt	opt	opt	opt	opt	opt	opt
-6	630046	†	Pin, Piston	6	6	6	6	6	6	6	6	6	6

NOTES:

- ① Production piston P/N 643619 to be serviced with piston P/N 642761 or 646303. These pistons may be intermixed.
- ② No longer available in std. size. Piston P/N 632585 may **not** be intermixed with other listed pistons.
- ③ Part of ring set P/N 642602A2.
- ④ Part of ring set P/N 640625A3A.
- ⑤ Part of ring set P/N 640625A3.
- ⑥ Includes ring P/N 643972.
- ⑦ Includes ring P/N 642604.
- ⑧ Includes ring P/N 640628.

Ring sets are interchangeable in above pistons. See Section IV, repair parts sets for rings to be used with chrome cylinders.

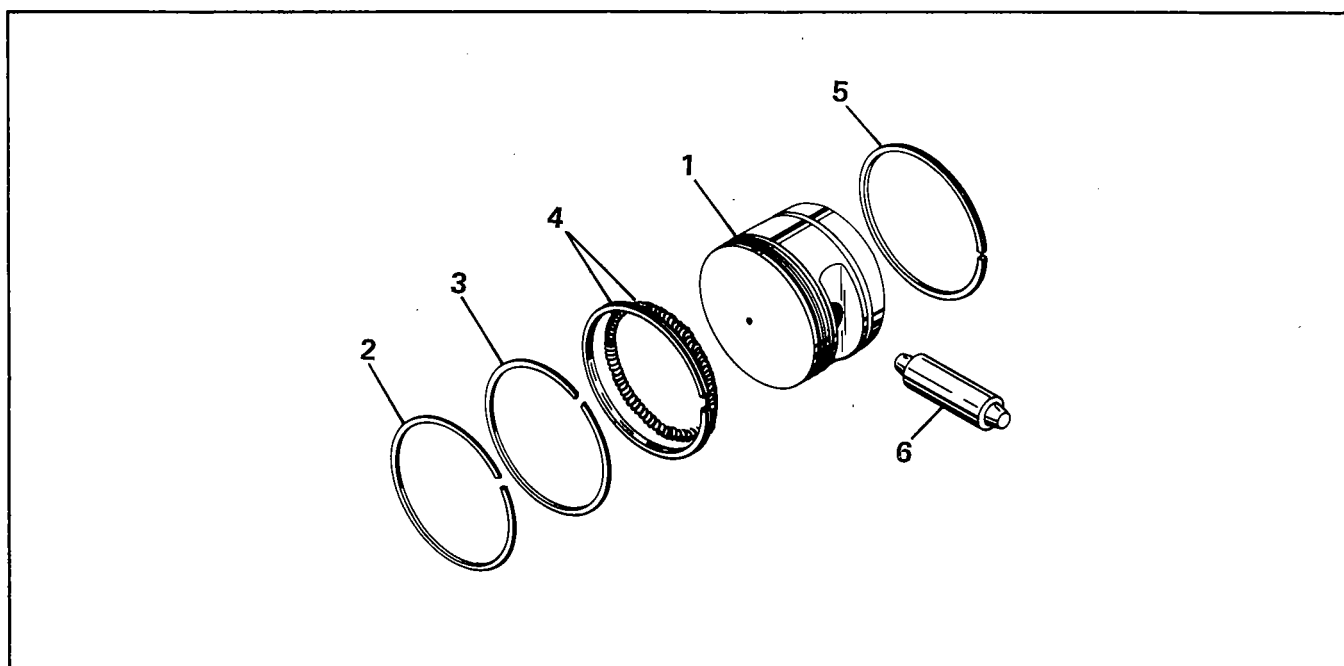


FIGURE 16. PISTON, RINGS & PINS.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				C	G	H	M	P	R	T	AF		
16-1	642761	①②	† Piston	6	6	6	6	6	6	6	6		
-1	646303	①	† Piston	opt	opt	opt	opt	opt	opt	opt	opt		
-1	632585	②	† Piston	opt	opt	opt	opt	opt	opt				
-2	642602	③⑤	† Ring, Top Groove	6	6	6	6	6	6	6	6		
-2	640625	④	† Ring, Top Groove	opt	opt	opt	opt	opt	opt	opt	opt		
-3	642603	③⑤	† Ring, Second Groove	6	6	6	6	6	6	6	6		
-3	640626	④	† Ring, Second Groove	opt	opt	opt	opt	opt	opt	opt	opt		
-4	643971	③⑥	† Ring Assembly, Third Groove	6	6	6	6	6	6	6	6		
-4	643121	④⑦	† Ring Assembly, Third Groove	opt	opt	opt	opt	opt	opt	opt	opt		
-4	641302	⑤⑧	† Ring Assembly, Third Groove	opt	opt	opt	opt	opt	opt	opt	opt		
-5	642606	③⑤	† Ring, Fourth Groove	6	6	6	6	6	6	6	6		
-5	629401	④	† Ring, Fourth Groove	opt	opt	opt	opt	opt	opt	opt	opt		
-6	630046	†	Pin, Piston	6	6	6	6	6	6	6	6		

NOTES:

- ① Production piston P/N 643619 to be serviced with piston P/N 642761 or 646303. These pistons may be intermixed.
- ② No longer available in std. size. Piston P/N 632585 may **not** be intermixed with other listed pistons.
- ③ Part of ring set P/N 642602A2.
- ④ Part of ring set P/N 640625A3A.
- ⑤ Part of ring set P/N 640625A3.
- ⑥ Includes ring P/N 643972.
- ⑦ Includes ring P/N 642604.
- ⑧ Includes ring P/N 640628.

Ring sets are interchangeable in above pistons. See Section IV, repair parts for rings to be used with chrome cylinders.

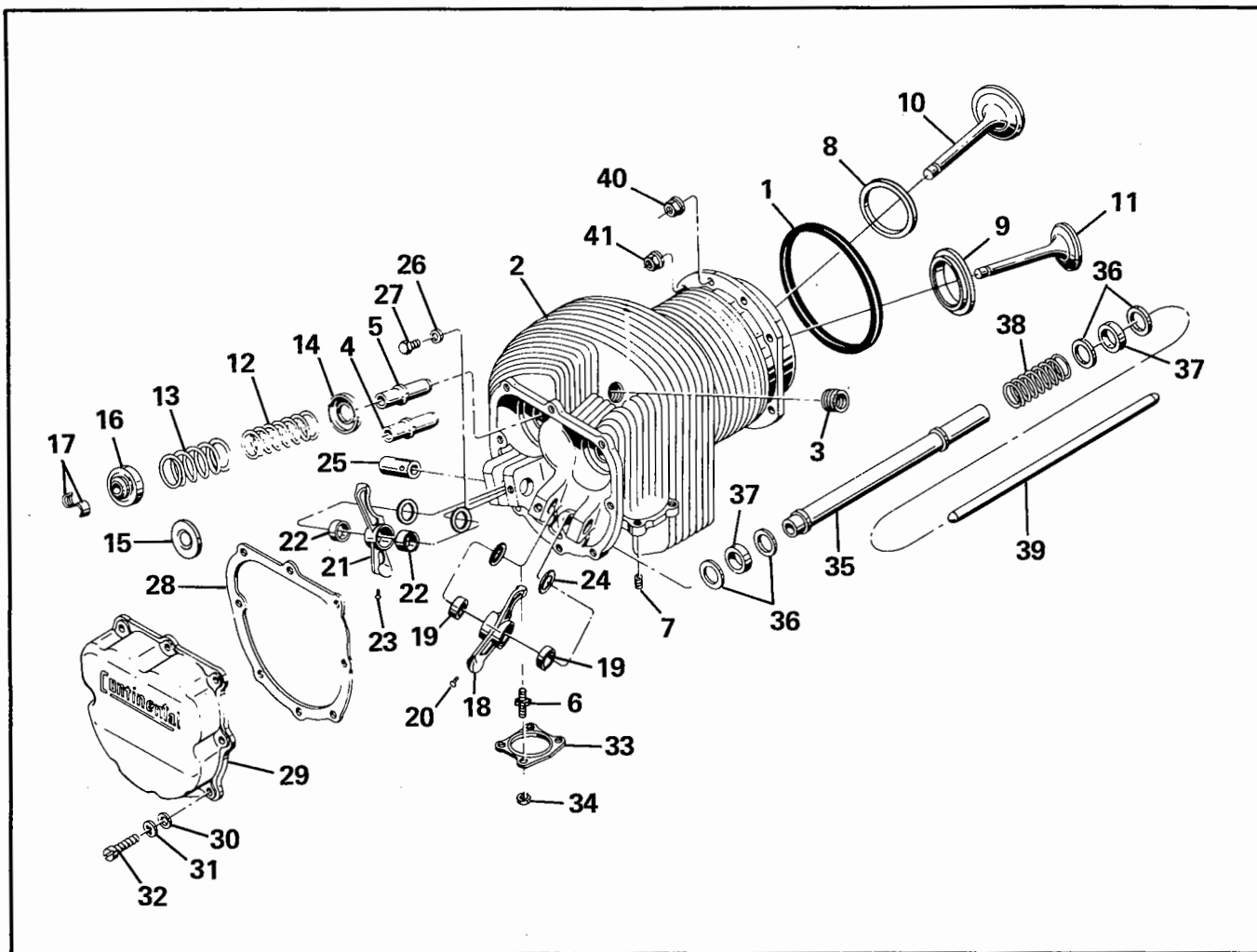


FIGURE 17. CYLINDER ASSEMBLY, TS10-520-B, D, E, J, K, L, N.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	U	VB	WB	
17-1	641066	\$	O-Ring Packing, Cylinder Base	6	6	6	6	6	6				
	639272A1 ①		Cylinder and Valve Assembly	6	6	6							
	639274A1 ①		Cylinder and Valve Assembly				6	6	6				
-2	639272		. Cylinder Assembly	1	1	1							
-2	639274		. Cylinder Assembly				1	1	1				
-3	520112-3		. . Insert, Spark Plug Thread	2	2	2	2	2	2				
-4	631496	†	. . Guide, Valve, Intake	1	1	1	1	1	1				
-5	636242	†	. . Guide, Valve, Exhaust	1	1	1	1	1	1				
-6	401893	†	. . Stud, 1/4 x 1-1/4 Inch Long	4	4	4							
-6	638125	⊙	. . Stud, Ring Locked				4	4	4				
-7	MS122121		. . Insert, Intake Pipe Flange	4	4	4	4	4	4				
-8	630591	†	. . Insert, Intake Valve Seat	1	1	1	1	1	1				
-9	35967	†	. . Insert, Exhaust, Valve Seat	1	1	1	1	1	1				
-10	539988		. Valve, Intake	1	1	1	1	1	1				
-11	637781		. Valve, Exhaust	1	1	1	1	1	1				
-12	631521		. Spring, Valve Inner	2	2	2	2	2	2				

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY									
			B	D	E	J	K	L	UB	VB	WB	
17-13	631520	. Spring, Valve Outer	2	2	2	2	2	2				
-14	625393	. Retainer, Valve Spring Inner	2	2	2	2	2	2				
-15	35971	. Retainer, Valve Spring Outer, Intake	1	1	1	1	1	1				
-16	629117	. Roto-Coil Assembly, Exhaust Valve	1	1	1	1	1	1				
-17	24802	. Key, Valve Spring Retainer	4	4	4	4	4	4				
-18	539742	Rocker Assembly, Intake Valve	6	6	6	6	6	6				
-19	639629	. Bushing, Valve Rocker	2	2	2	2	2	2				
-20	21007	. Screw, Drive	1	1	1	1	1	1				
-21	641682	Rocker Assembly, Exhaust Valve	6	6	6	6	6	6				
-22	639629	. Bushing, Valve Rocker	2	2	2	2	2	2				
-23	21007	. Screw, Drive	1	1	1	1	1	1				
-24	639573	† Washer, Thrust	24	24	24	24	24	24				
-25	539740	Shaft, Valve Rocker	12	12	12	12	12	12				
ATTACHING PARTS												
-26	2473	Washer, Plain	12	12	12	12	12	12				
-27	537019	Screw, Hex Head	12	12	12	12	12	12				
* * * *												
-28	534857	\$ Gasket, Valve Rocker Cover	6	6	6	6	6	6				
-29	625615	Cover, Valve Rocker	6	6	6	6	6	6				
ATTACHING PARTS												
-30	20522	Washer, Plain	48	48	48	48	48	48				
-31	MS35337-44	Washer, Lock	48	48	48	48	48	48				
-32	535118	Screw, Fillister Head, 1/4 x 3/4 Inch Long	48	48	48	48	48	48				
* * * *												
-33	628260	\$ Gasket, Assembly, Exhaust Flange	6	6	6	6	6	6				
ATTACHING PARTS												
-34	643967	Nut, Hex Head, 1/4 - 28	24	24	24	24	24	24				
* * * *												
-35	537296	Housing, Push Rod	12	12	12	12	12	12				
-36	534609	Washer, Push Rod Housing	48	48	48	48	48	48				
-37	534610	\$ Packing, Push Rod Housing	24	24	24	24	24	24				
-38	626147	Spring, Push Rod Housing	12	12	12	12	12	12				
-39	538304	† Push Rod Assembly	12	12	12	12	12	12				
-40	531001	Nut, Flanged, 7/16 - 20	36	36	36	36	36	36				
-41	634505	Nut, Flanged, 1/2 - 20	12	12	12	12	12	12				

NOTES:

① 642594A1 cylinder assy. may be used provided 640946 or 641709 lifter is used in exhaust position.

② See Service Bulletin M78-6.

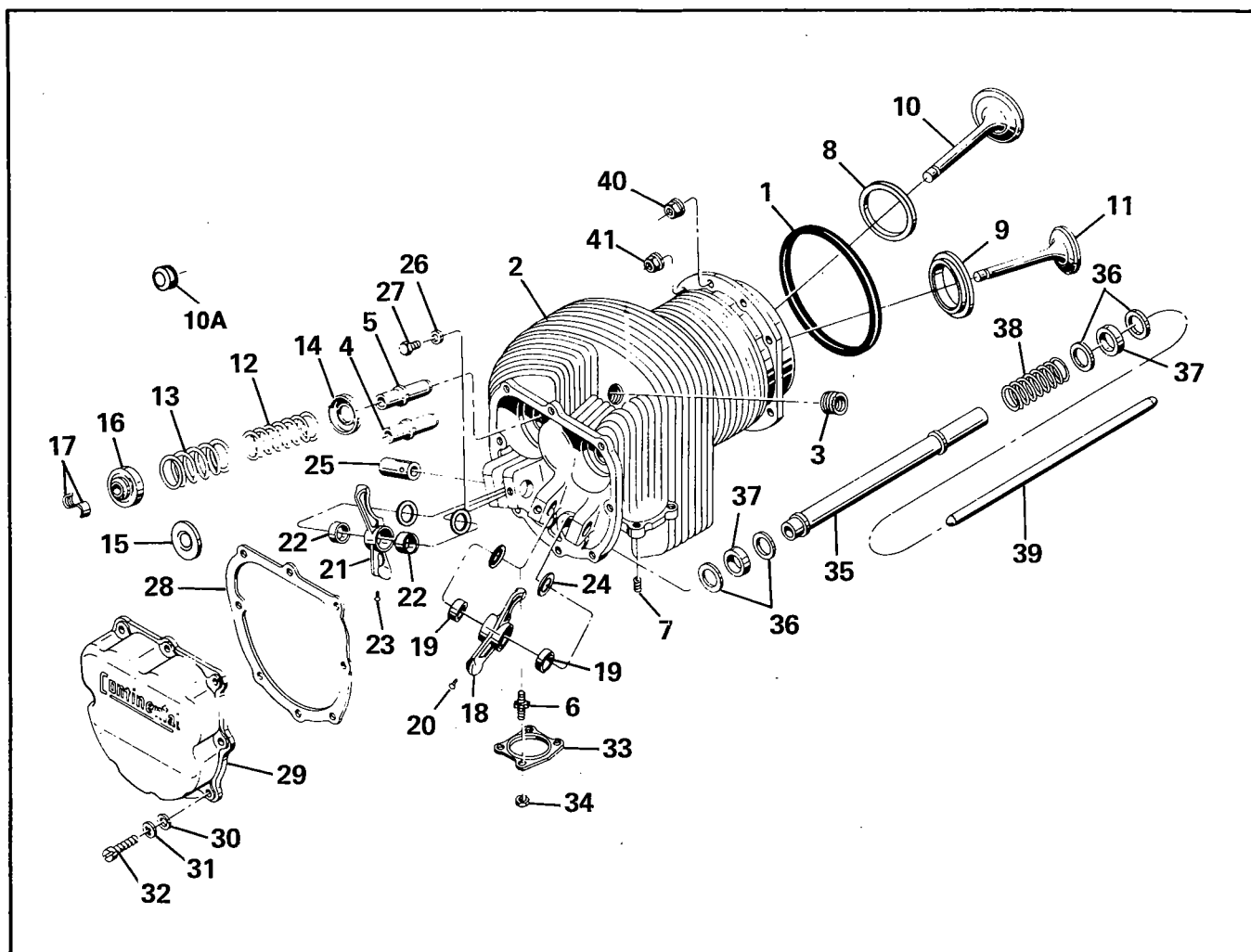


FIGURE 18. CYLINDER ASSEMBLY, TS10-520-C, G, H, M, P, R, T, AF.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY										
				C	G	H	M	P	R	T	AF			
18-1	641066		\$ O-Ring Packing, Cylinder Base	6	6	6	6	6	6	6	6			
	639272A1		① Cylinder and Valve Assembly	6	6	6	6		6	6				
	639274A1		① Cylinder and Valve Assembly					6						
	643771A1		Cylinder and Valve Assembly								6			
-2	639272		. Cylinder Assembly	1	1	1	1		1	1				
-2	639274		. Cylinder Assembly					1						
-2	643771		. Cylinder Assembly								1			
-3	520112-3		. . Insert, Spark Plug Thread	2	2	2	2	2	2	2	2			
-4	631496	†	. . Guide, Valve, Intake	1	1	1	1	1	1	1				
-4	643766	†	. . Guide, Valve, Intake								1			
-5	636242	†	. . Guide, Valve, Exhaust	1	1	1	1	1	1	1				
-5	641951	†	. . Guide, Valve, Intake								1			
-6	401893	†	. . Stud, 1/4 x 1-1/4 Inch Long	4	4	4	4		4	4				
-6	638125		. . Stud, Ring Locked					4			4			
-7	MS122121		. . Insert, Intake Pipe Flange	4	4	4	4	4	4	4	4			
-8	630591	†	. . Insert, Intake, Valve Seat	1	1	1	1	1	1	1				
-8	642318	†	. . Insert, Intake Valve Seat								1			
-9	35967	†	. . Insert, Exhaust Valve Seat	1	1	1	1	1	1	1	1			

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY									
			C	G	H	M	P	R	T	AF		
18-10	539988	. Valve, Intake	1	1	1	1	1	1	1	1		
-10A	641952	. Seal, Intake Valve Guide								1		
-11	637781	. Valve, Exhaust	1	1	1	1	1	1	1	1		
-12	631521	. Spring, Valve Inner	2	2	2	2	2	2	2	2		
-13	631520	. Spring, Valve Outer	2	2	2	2	2	2	2	2		
14	625393	. Retainer, Valve Spring Inner	2	2	2	2	2	2	2	2		
-15	35971	. Retainer, Valve Spring Outer, Intake	1	1	1	1	1	1	1	1		
-16	629117	. Roto-Coil Assembly, Exhaust Valve	1	1	1	1	1	1	1	2		
-17	24802	. Key, Valve Spring Retainer	4	4	4	4	4	4	4	4		
-18	539742	Rocker Assembly, Intake Valve	6	6	6	6	6	6	6	6		
-19	639629	. Bushing, Valve Rocker	2	2	2	2	2	2	2	2		
-20	21007	. Screw, Drive	1	1	1	1	1	1	1	1		
-21	641682	Rocker Assembly, Exhaust Valve	6	6	6	6	6	6	6	6		
-22	639629	. Bushing, Valve Rocker	2	2	2	2	2	2	2	2		
-23	21007	. Screw, Drive	1	1	1	1	1	1	1	1		
-24	639573	† Washer, Thrust	24	24	24	24	24	24	24	24		
-25	539740	Shaft, Valve Rocker	12	12	12	12	12	12	12	12		
ATTACHING PARTS												
-26	2473	Washer, Plain	12	12	12	12	12	12	12	12		
-27	537019	Screw, Hex Head	12	12	12	12	12	12	12	12		
* * * *												
-28	534857	\$ Gasket, Valve Rocker Cover	6	6	6	6	6	6	6	6		
-29	625615	Cover, Valve Rocker	6	6	6	6	6	6	6	6		
ATTACHING PARTS												
-30	20522	Washer, Plain	48	48	48	48	48	48	48	48		
-31	MS35337-44	Washer, Lock	48	48	48	48	48	48	48	48		
-32	535118	Screw, Fillister Head, 1/4 x 3/4 Inch Long	48	48	48	48	48	48	48	48		
* * * *												
-33	628260	\$ Gasket, Assembly, Exhaust Flange	6	6	6	6	6	6	6	6		
ATTACHING PARTS												
-34	643967	Nut, Hex Head, 1/4 - 28	24	24	24	24	24	24	24	24		
* * * *												
-35	537296	Housing, Push Rod	12	12	12	12	12	12	12	12		
-36	534609	Washer, Push Rod Housing	48	48	48	48	48	48	48	48		
-37	534610	\$ Packing, Push Rod Housing	24	24	24	24	24	24	24	24		
-38	626147	Spring, Push Rod Housing	12	12	12	12	12	12	12	12		
-39	538304	† Push Rod Assembly	12	12	12	12	12	12	12	12		
-40	531001	Nut, Flanged 7/16 - 20	36	36	36	36	36	36	36	36		
-41	634505	Nut, Flanged, 1/2 - 30	12	12	12	12	12	12	12	12		
-42	643751	Baffle								1		

NOTE:

① 642594A1 cylinder Assy. may be used provided 640946 or 641709 lifter is used in exhaust position.

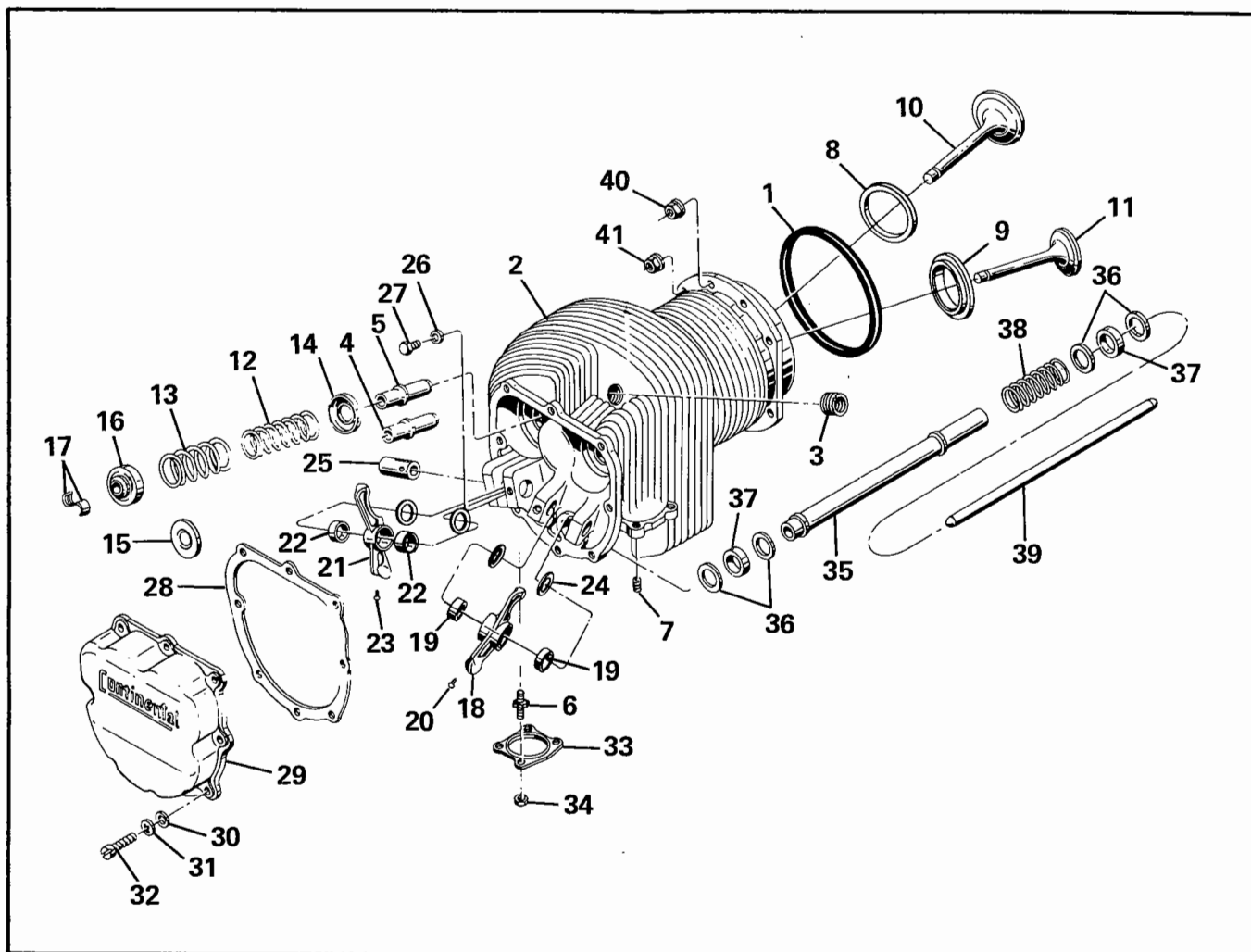


FIGURE 19. CYLINDER ASSEMBLY, TS10-520-L, N, UB, VB, WB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY											
				B	D	E	J	K	L	N	UB	VB	WB		
19-1	641066	\$	O-Ring Packing, Cylinder Base						6	6	6	6	6		
	642594A1		Cylinder and Valve Assembly						6	6		6	6		
	642691A1		Cylinder and Valve Assembly								6				
-2	642594	.	Cylinder Assembly						1	1		1	1		
-2	642691	.	Cylinder Assembly								1				
-3	520112-3	.	Insert, Spark Plug Thread						2	2	2	2	2		
-4	641973	†	Guide, Valve, Intake						1	1		1	1		
-4	631496	†	Guide, Valve, Intake								1				
-5	641951	†	Guide, Valve, Exhaust						1	1		1	1		
-5	636242	†	Guide, Valve Exhaust								1				
-6	638125	①	Stud, Ring Locked						4	4	4	4	4		
-7	MS122121	.	Insert, Thread Intake Pipe Flange						4	4	4	4	4		
-8	630591	†	Insert, Intake Valve Seat						1	1		1	1		
-8	642318	†	Insert, Intake Valve Seat								1				
-9	35967	†	Insert, Exhaust Valve Seat						1	1	1	1	1		
-10	539988	.	Valve, Intake						1	1	1	1	1		
-11	637781	.	Valve, Exhaust						1	1	1	1	1		
-12	631521	.	Spring, Valve, Inner						2	2	2	2	2		

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY										
				B	D	E	J	K	L	N	UB	VB	WB	
19-13	631520		. Spring, Valve, Outer						1	1	1	1	1	
-14	625393		. Retainer, Valve Spring, Inner						2	2	2	2	2	
-15	35971		. Retainer, Valve Spring, Outer (Int.)						1	1	1	1	1	
-16	629117		. Roto-Coil Assembly, Exhaust Valve						1	1	1	1	1	
-17	24802		. Key, Valve Spring Retainer						4	4	4	4	4	
-18	539742		Rocker Assembly, Intake Valve						6	6	6	6	6	
-19	639629		. Bushing, Valve Rocker						2	2	2	2	2	
-20	21007		. Screw, Drive						1	1	1	1	1	
-21	641682		Rocker Assembly, Exhaust Valve						6	6	6	6	6	
-22	639629		. Bushing, Valve Rocker						2	2	2	2	2	
-23	21007		. Screw, Drive						1	1	1	1	1	
-24	639573	†	Washer, Thrust						24	24	24	24	24	
-25	539740		Shaft, Valve Rocker						12	12	12	12	12	
			ATTACHING PARTS											
-26	2473		Washer, Plain						12	12	12	12	12	
-27	537019		Screw, Hex Head						12	12	12	12	12	
			* * * *											
-28	534857	\$	Gasket, Valve Rocker Cover						6	6	6	6	6	
-29	625615		Cover, Valve Rocker						6	6	6	6	6	
			ATTACHING PARTS											
-30	20522		Washer, Plain						48	48	48	48	48	
-31	MS35337-44		Washer, Lock						48	48	48	48	48	
-32	535118		Screw, Fillister Head, 1/4 x 3/4 Inch Long						48	48	48	48	48	
			* * * *											
-33	628260	\$	Gasket, Exhaust Flange						6	6	6	6	6	
			ATTACHING PARTS											
-34	643967		Nut, Hex Head 1/4 - 28						24	24	24	24	24	
			* * * *											
-35	537296		Housing, Push Rod						12	12	12	12	12	
-36	534609		Washer, Push Rod Housing						48	48	48	48	48	
-37	534610	\$	Packing, Push Rod Housing						24	24	24	24	24	
-38	626147		Spring, Push Rod Housing						12	12	12	12	12	
-39	538304	†	Push Rod Assembly						12	12	12	12	12	
-40	531001		Nut, Flanged, 7/16 - 20						36	36	36	36	36	
-41	634505		Nut, Flanged, 1/2 - 20						12	12	12	12	12	

NOTE:

① See Service Bulletin M78-6.

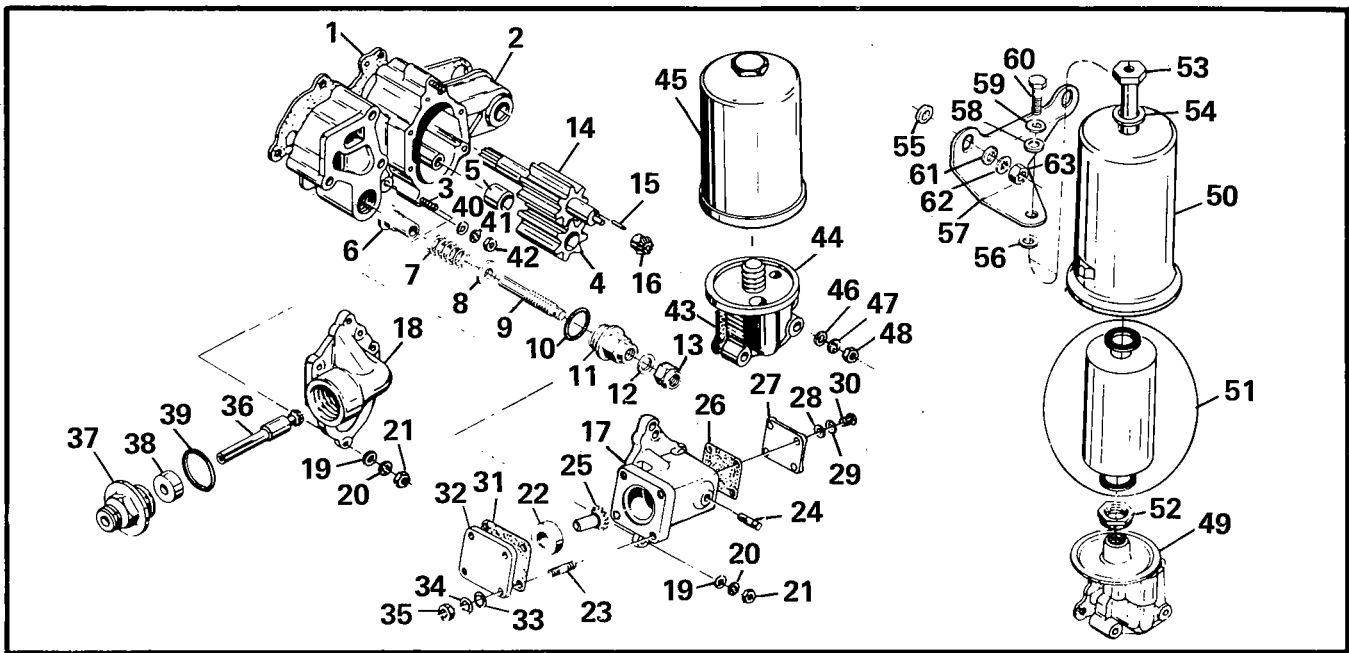


FIGURE 20. OIL PUMP ASSEMBLY, TS10-520-B, D, E, J, K, L, N, UB, VB, WB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
20-1	631034	\$	Gasket, Pump Housing-to-Crankcase	1	1	1	1	1	1	1	1	1	1
	632970		Housing Assembly, Oil Pump Complete	1		1	1	1	1	1		1	1
	632977A6		Housing Assembly, Oil Pump Complete		1						1		
-2	632977		Housing & shaft Assembly, Oil Pump	1	1	1	1	1	1	1	1	1	1
-3	401801	†	Stud, 1/4 x 1-3/16 Inch Long	2	2	2	2	2	2	2	2	2	2
-4	631016		Gear & Bushing Assy., Oil Pump Driven	1	1	1	1	1	1	1	1	1	1
-5	23024		Bushing, Oil Pump Gear	2	2	2	2	2	2	2	2	2	2
-6	642336		Plunger, Oil Pressure Relief Valve	1	1	1	1	1	1	1	1	1	1
-7	634150		Spring, Oil Pressure Relief Valve	1	1	1	1	1	1	1	1	1	1
-8	631653		Seat, Spring Guide	1	1	1	1	1	1	1	1	1	1
-9	642335		Screw, Adjusting	1	1	1	1	1	1	1	1	1	1
-10	AN900-18	\$	Gasket, Annular	1	1	1	1	1	1	1	1	1	1
-11	642224		Housing, Oil Pressure Relief Valve	1	1	1	1	1	1	1	1	1	1
-12	X1473		Washer, Copper	1	1	1	1	1	1	1	1	1	1
-13	632762		Nut, Stop 5/16 - 24	1	1	1	1	1	1	1	1	1	1
-14	631075		Shaftgear Assy., O/P & Tach Drive	1		1	1	1	1	1		1	1
-14	631014		Shaftgear Assy., O/P & Tach Drive		1						1		
-15	535634		Pin, Dowel	1	1	1	1	1	1	1	1	1	1
-16	535900		Gear, Bevel, Tach Drive	1		1	1	1	1	1		1	1
-16	535008		Gear, Bevel, Tach Drive		1						1		
-17	631056A1		Cover, Assy., Right Angle Tach Drive, O/P ...	1		1	1	1	1	1		1	1
-18	646237		Cover Assy., Right Angle Tach Drive O/P		1						1		
ATTACHING PARTS													
-19	20522		Washer, Plain	2	2	2	2	2	2	2	2	2	2
-20	MS35337-44		Washer, Lock	2	2	2	2	2	2	2	2	2	2
-21	2437		Nut, Plain, Hex	2	2	2	2	2	2	2	2	2	2
* * * *													
-22	531378	\$	Seal, Oil	1	1	1	1	1	1	1	1	1	1
-23	401893	†	Stud, 1/4 x 1-1/4 Inch Long	4		4	4	4	4	4		4	4

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
20-24	402711	†	. . Stud, 1/4 x 7/8 Inch Long	1		1	1	1	1	1		1	1
-25	535908		. Shaftgear Assy., Bevel Tach Drive	1		1	1	1	1	1		1	1
-26	535885	\$	. Gasket, Cover-to-Cover	1		1	1	1	1	1		1	1
-27	535887		. Cover, Tach Gear Box	1		1	1	1	1	1		1	1
ATTACHING PARTS													
-28	2471		. Washer, Plain	4		4	4	4	4	4		4	4
-29	MS35338-43		. Washer, Lock	4		4	4	4	4	4		4	4
-30	20655		. Screw, Rd. Hd., No. 10-24 x 1/2 Inch Long	4		4	4	4	4	4		4	4
* * * *													
-31	MS9134-01	\$	. Gasket, Tach Drive Pad	1		1	1	1	1	1		1	1
-32	640380		. Cover, Tach Drive Pad	1		1	1	1	1	1		1	1
ATTACHING PARTS													
-33	2472		. Washer, Plain	4		4	4	4	4	4		4	4
-34	MS35337-44		. Washer, Lock	4		4	4	4	4	4		4	4
-35	2437		. Washer, Plain, Hex	4		4	4	4	4	4		4	4
* * * *													
-36	631650		. Shaft Assembly, Tach Drive		1						1		
-37	21208A2		. Housing, Tach Drive Assembly		1						1		
-38	642714	\$	. . Seal, Oil Tach Housing		1						1		
-39	MS35338-43	\$	. . Gasket Annular	1	1	1	1	1	1	1	1	1	1
-40	20522		Washer, Plain	8	7	8	8	8	8	8	7	8	8
-41	MS35337-44		Washer, Lock	8	7	8	8	8	8	8	7	8	8
-42	2437		Nut, Hex, Plain	8	7	8	8	8	8	8	7	8	8
-43	632266	② ①\$	Gasket, Oil Filter-to-Pump Housing	1	1	1	1	1	1	1	1	1	1
-44	641639		Adapter Assembly, Oil Filter	1	1	1	1	1	1	1	1	1	1
-45	643226		Filter Assembly, Oil, Short	1		1	1	1	1	1		1	1
-45	643227		Filter Assembly, Oil, Long		1						1		
ATTACHING PARTS													
-46	2274		Washer, Plain	3	3	3	3	3	3	3	3	3	3
-47	MS35337-46		Washer, Lock	3	3	3	3	3	3	3	3	3	3
-48	2441		Nut, Plain Hex, 3/8 - 24	3	3	3	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	MS35338-44	①	Washer, Lock	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.

② Use gasket P/N 632659 with old style adapter.

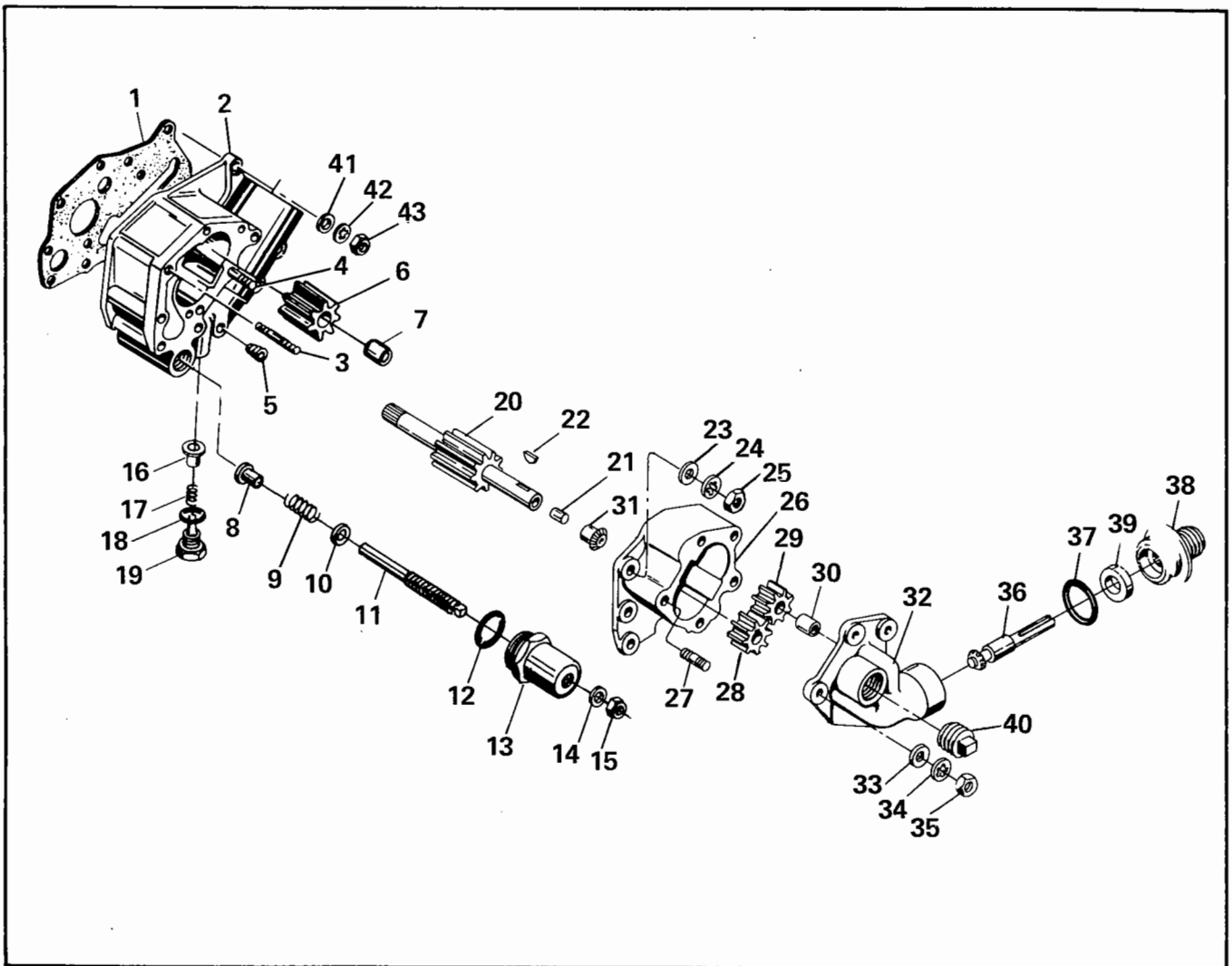


FIGURE 21. OIL PUMP ASSEMBLY, TSI O-520-C, G, H, M, P, R, AF.

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY												
			C	G	H	M	P	R	T	AF					
21-1	538185	\$ Gasket, Oil Pump-to-Crankcase	1	1	1	1	1	1		1					
	632856	Housing Assembly, Oil Pump, Complete	1	1	1	1	1	1		1					
-2	632770	. Housing and Shaft Assy., Oil Pump	1	1	1	1	1	1		1					
-3	401800	† . Stud, 1/4 x 1-1/16 Inch Long	1	1	1	1	1	1		1					
-4	401832	† . Stud, 1/4 x 2-13/16 Inch Long	1	1	1	1	1	1		1					
-5	629518-1H	. Plug, Square Head, 1/8 - 27	1	1	1	1	1	1		1					
-6	629218	. Gear Assembly, Oil Pump Driven	1	1	1	1	1	1		1					
-7	539523	. Bushing, Oil Pump Gear	2	2	2	2	2	2		2					
-8	642336	. Plunger, Oil Pressure Relief Valve	1	1	1	1	1	1		1					
-9	634150	. Spring, Oil Pressure Relief Valve	1	1	1	1	1	1		1					
-10	631653	. Seat, Spring Guide	1	1	1	1	1	1		1					
-11	642335	. Screw, Adjusting	1	1	1	1	1	1		1					
-12	AN900-28	\$ Gasket, Annular	1	1	1	1	1	1		1					
-13	642224	. Housing, Oil Pressure Relief Valve	1	1	1	1	1	1		1					
-14	X1473	. Washer, Copper	1	1	1	1	1	1		1					
-15	632762	. Nut, Adjusting Screw, 5/16 - 24	1	1	1	1	1	1		1					
-16	631638	. Valve, Oil Filter By-Pass	1	1	1	1	1	1		1					
-17	631478	. Spring, Oil Filter By-Pass Valve	1	1	1	1	1	1		1					
-18	AN900-14	\$ Gasket, Annular	1	1	1	1	1	1		1					
-19	631995	. Plug & Pin Assy., Oil Pump By-Pass	1	1	1	1	1	1		1					
-20	629263	. Shaftgear Assembly, Tach Drive	1	1	1	1	1	1		1					
-21	535634	. Pin, Dowel	1	1	1	1	1	1		1					
-22	MS35756-6	. Key, Woodruff	1	1	1	1	1	1		1					
-23	629084	. Body Assembly, Scavenge Pump	1	1	1	1	1	1		1					
-24	401963	† . Stud, 1/4 x 1 Inch Long	1	1	1	1	1	1		1					
ATTACHING PARTS															
-25	20522	. Washer, Plain	1	1	1	1	1	1		1					
-26	MS35337-44	. Washer, Lock	1	1	1	1	1	1		1					
-27	2437	. Nut, Plain, Hex 1/4 - 28	1	1	1	1	1	1		1					
* * * *															
-28	628885	. Gear, Scavenge Pump Driver	1	1	1	1	1	1		1					
-29	628900	. Gear Assy., Scavenge Pump, Driven	1	1	1	1	1	1		1					
-30	628887	. Bushing, Driven Gear	1	1	1	1	1	1							
-31	535008	. Gear, Bevel, Tach Drive	1	1	1	1	1	1		1					
-32	632609	. Cover, Scav. Pump & Right Angle Tach	1	1	1	1	1	1		1					
ATTACHING PARTS															
-33	20522	. Washer, Plain	1	1	1	1	1	1		1					
-34	MS35337-44	. Washer, Lock	1	1	1	1	1	1		1					
-35	2437	. Nut, Plain, Hex 1/4 - 28	1	1	1	1	1	1		1					
* * * *															
-36	631650	. Shaft Assembly, Tach Drive	1	1	1	1	1	1		1					
-37	632085	\$ Gasket, Tach Drive Housing	1	1	1	1	1	1		1					
-38	21208A2	. Housing Assembly, Tach Drive	1	1	1	1	1	1		1					
-39	642714	\$. Seal, Oil Tach Housing	1	1	1	1	1	1		1					
-40	629518-4H	. Plug, Scavenge Pump Inlet	1	1	1	1	1	1		1					
-41	20522	Washer, Plain	10	10	10	10	10	10		10					
-42	MS35337-44	Washer, Lock	11	11	11	11	11	11		11					
-43	2437	Nut Plain, Hex 1/4 - 28	11	11	11	11	11	11		11					

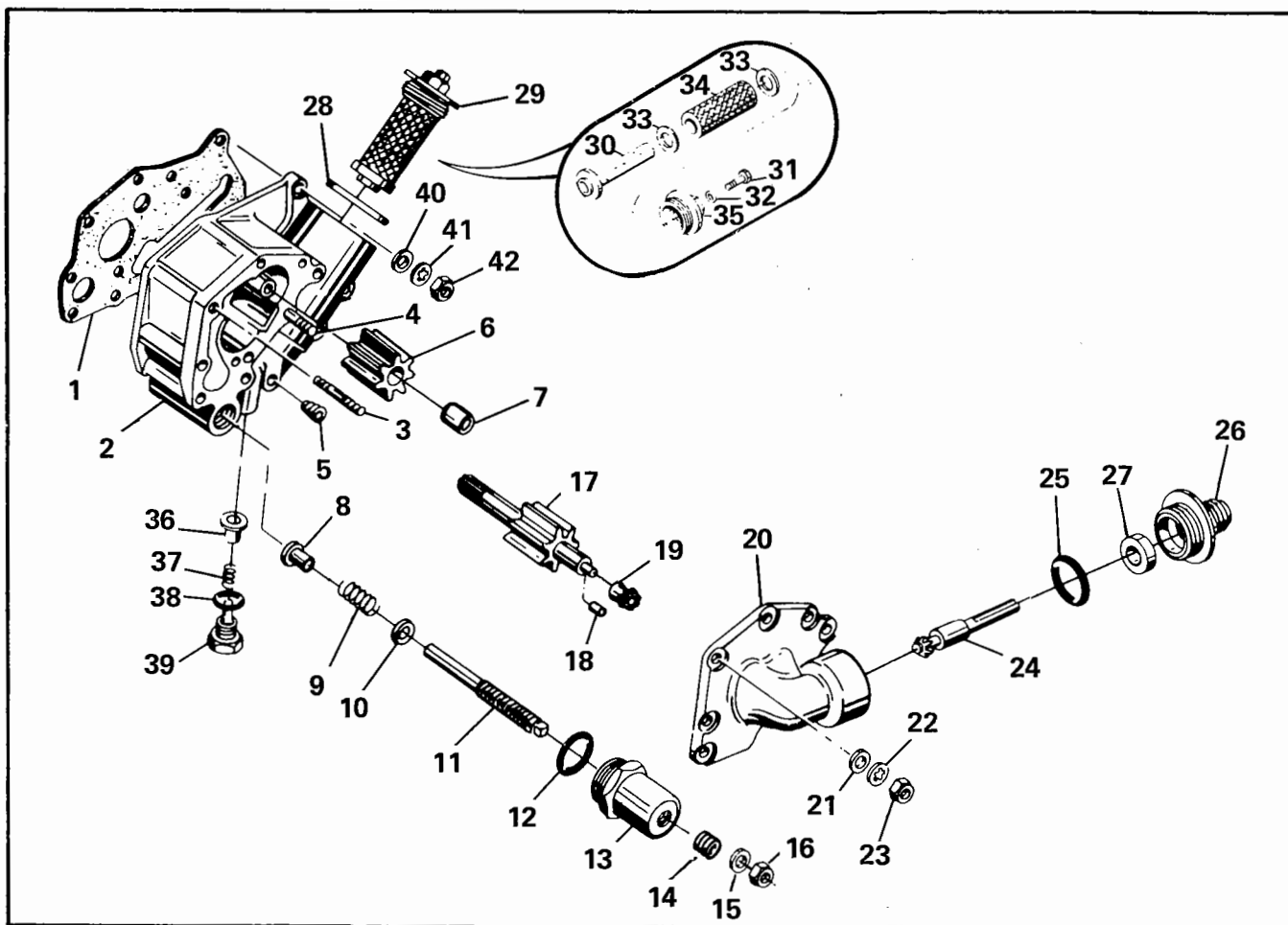
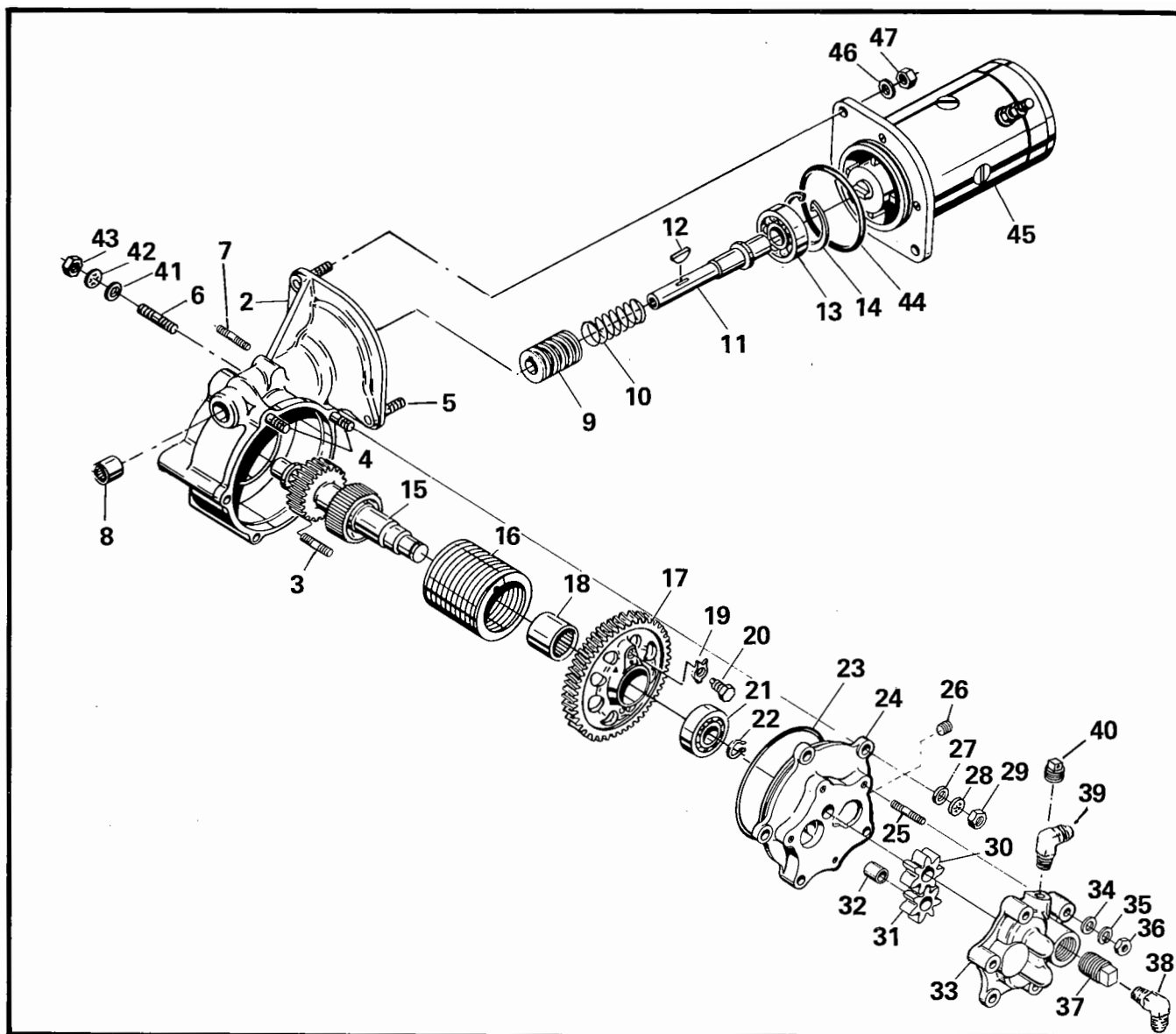


FIGURE 22. OIL PUMP ASSEMBLY, TS10-520-T.

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY									
			C	G	H	M	P	R	T			
22-1	538185	\$ Gasket, Oil Pump Housing-to-Crankcase							1			
	631714A7	Housing Assembly, Oil Pump Complete							1			
-2	631714	. Housing & Shaft Assembly, Oil Pump							1			
-3	401800	† . Stud, 1/4 x 1-1/16 Inch Long							1			
-4	401963	† . Stud, 1/4 x 1 Inch Long							1			
-5	2024	. Plug, Pipe							1			
-6	629218	. Gear Assembly, Oil Pump Driven							1			
-7	539523	. Bushing, Oil Pump Gear							2			
-8	642336	. Plunger, Oil Pressure Relief Valve							1			
-9	634150	. Spring, Oil Pressure Relief Valve							1			
-10	631653	. Washer, Spring Guide							1			
-11	642335	. Screw, Adjusting							1			
-12	AN900-28	\$. Gasket, Copper Asbestos Annular							1			
-13	642224	. Housing Oil Pressure Relief Valve							1			
-14	MS124657	. Helical Coil							1			
-15	X1473	. Washer, Copper							1			
-16	632762	. Nut, Adjusting							1			
-17	629448	. Shaftgear Assembly, Tach Drive, O/P							1			
-18	535634	. Pin, Dowel							1			
-19	535008	. Gear, Bevel, Tach Drive							1			
-20	625886	. Cover, Right angle Tach Drive, O/P							1			
		ATTACHING PARTS										
-21	20522	. Washer, Plain							2			
-22	MS35338-44	. Washer, Lock							2			
-23	2437	. Nut, Plain Hex							2			
-24	631650	. Shaft Assembly, Tach Drive							1			
-25	632085	\$. Gasket, Cover Tach Housing							1			
-26	21208A2	. Housing Assembly, Tach Drive							1			
-27	642714	\$. Seal, Oil, Tach Housing							1			
		* * * *										
-28	MS35769-48	\$. Gasket, Annular							1			
-29	538727	. Filter Assembly, Oil							1			
-30	Q9T116-218	. Tube Assembly Perforated							1			
-31	MS20073-04-10	. Bolt, Drilled Hex Head							1			
-32	Q9S552-06	. Washer, Annular 1/4 Inch							1			
-33	535933	. Gasket, Felt, 5/8 Inch ID							2			
-34	Q9T116-07	. Element Filter							1			
-35	628129	. Body Casting, Filter							1			
-36	631638	. Valve, Filter By-Pass							1			
-37	631478	. Spring, Filter By-Pass							1			
-38	AN900-14	\$. Gasket, Copper							1			
-39	631995	. Pin and Plug Assy., Oil Pump By-Pass							1			
-40	20522	Washer, Pin							11			
-41	MS35338-44	Washer, Lock							11			
-42	2437	Nut, Plain, Hex							11			



**FIGURE 23. STARTER AND STARTER ADAPTER ASSEMBLY,
TS10-520-B, D, E, J, K, N, UB, VB.**

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
23-	642085A2		① Adapter Assy., Starter Drive Comp.	1	1	1	1	1		1		1	
	642085A3		① Adapter Assy., Starter Drive Comp.								1		
-2	642085		. Housing Assy., Starter Adapter	1	1	1	1	1		1	1	1	
-3	401814	†	. Stud, 5/16 x 1-7/8 Inch Long	1	1	1	1	1		1	1	1	
-4	401881	†	. Stud, 5/16 x 1-1/8 Inch Long	2	2	2	2	2		2	2	2	
-5	402127	†	. Stud, 3/8 x 1-17/32 Inch Long	2	2	2	2	2		2	2	2	
-6	401814	†	. Stud, 5/16 x 1-7/8 Inch Long	1	1	1	1	1		1	1	1	
-7	401971	†	. Stud, 5/16 x 1-5/8 Inch Long	1	1	1	1	1		1	1	1	
-8	641368		. Bearing, Needle	1	1	1	1	1		1	1	1	
-9	539805		. Gear, Starter Worm	1	1	1	1	1		1	1	1	
-10	536552		. Spring, Starter Worm Gear	1	1	1	1	1		1	1	1	

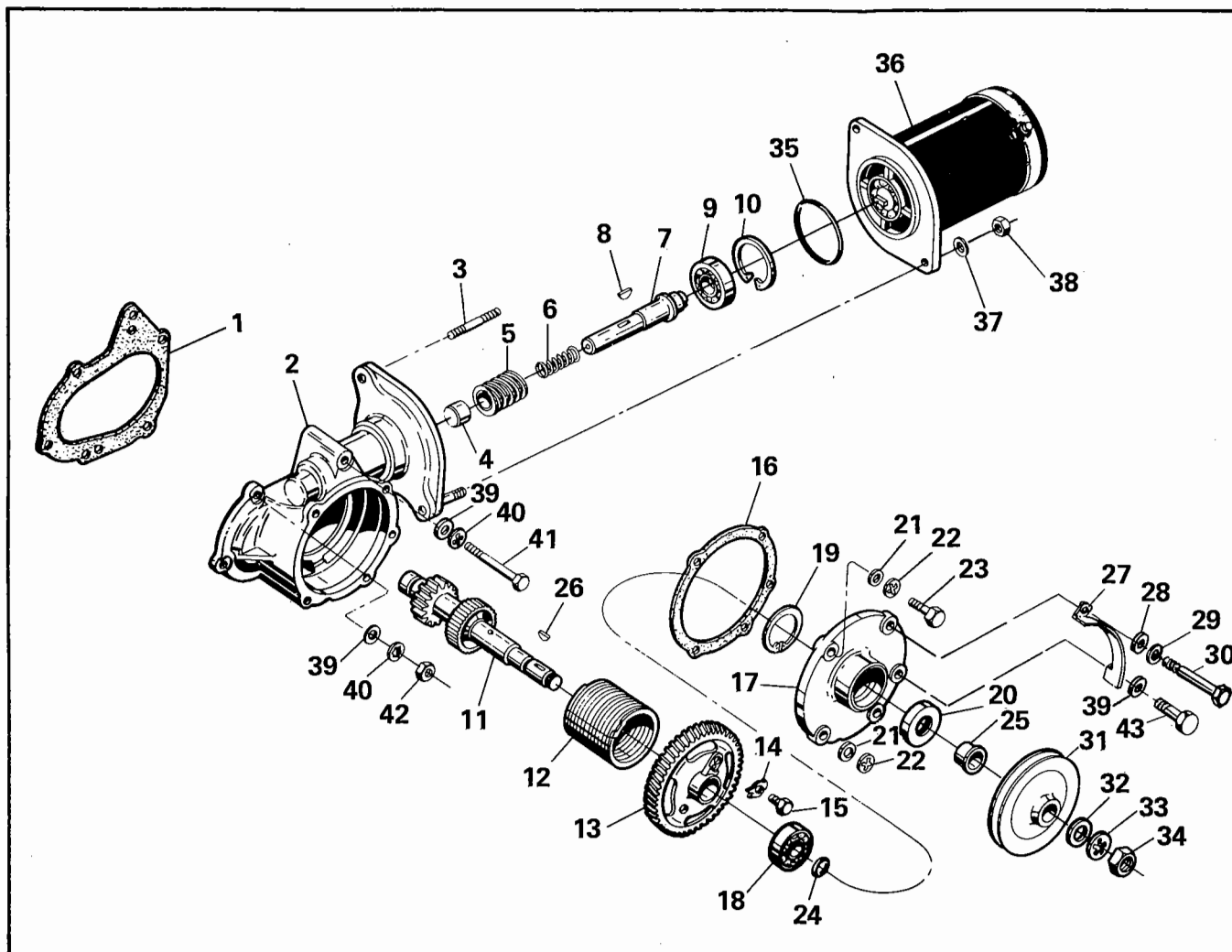
FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY											
			B	D	E	J	K	L	N	UB	VB	WB		
23-11	631252	. Shaft, Worm Drive	1	1	1	1	1		1	1	1			
-12	MS35756-8	. Key, Woodruff	1	1	1	1	1		1	1	1			
-13	X13041	. Bearing, Ball	1	1	1	1	1		1	1	1			
-14	502287	. Ring, Retaining	1	1	1	1	1		1	1	1			
-15	639406	. Shaftgear Assembly, Starter	1	1	1	1	1		1	1	1			
-16	539800	† . Spring Clutch	1	1	1	1	1		1	1	1			
-17	630681	. Gear Assembly Starter	1	1	1	1	1		1	1	1			
-18	630680	. . Bearing, Roller	1	1	1	1	1		1	1	1			
ATTACHING PARTS														
-19	501867	. Washer, Tab	1	1	1	1	1		1	1	1			
-20	633845	. Screw, Special	1	1	1	1	1		1	1	1			
* * * *														
-21	534685	. Bearing, Ball	1	1	1	1	1		1	1	1			
-22	521649	. Ring, Retaining	1	1	1	1	1		1	1	1			
-23	AN123902	\$. O-Ring	1	1	1	1	1		1	1	1			
-24	639405	② . Cover Assembly	1	1	1	1	1		1	1	1			
-25	401813	† . Stud, 5/16 x 1-11/16 Inch Long	4	4	4	4	4		4	4	4			
-26	AN932-2	. . Plug, Pipe, 1/8 - 27	1	1	1	1	1		1	1	1			
ATTACHING PARTS														
-27	2473	. Washer, Plain	3	3	3	3	3		3	3	3			
-28	MS35337-45	. Washer, Lock	3	3	3	3	3		3	3	3			
-29	2439	. Nut, Plain, Hex	3	3	3	3	3		3	3	3			
* * * *														
-30	639388	. Gear, Scavenge Pump, Driver	1	1	1	1	1		1	1	1			
-31	635334	. Gear Assy., Scavenge Pump, Driven	1	1	1	1	1		1	1	1			
-32	632595	. . Bushing	1	1	1	1	1		1	1	1			
-33	639407	② . Body Assembly, Scavenge Pump	1	1	1	1	1		1	1	1			
ATTACHING PARTS														
-34	2473	. Washer, Plain	4	4	4	4	4		4	4	4			
-35	MS35337-45	. Washer, Lock	4	4	4	4	4		4	4	4			
-36	2439	. Nut, Plain, Hex	4	4	4	4	4		4	4	4			
* * * *														
-37	629518-4H	. Plug, Square Head, 1/2 - 14 NPTF	1	1	1	1	1		1		1			
-38	MS51504B8-8	. Elbow, 90 Degree								1				
-39	628437	. Elbow, 90 Degree	1	1	1	1	1		1		1			
-40	629518-1H	. Plug, Square Head, 1/8 - 27 NPTF								1				
ATTACHING PARTS														
-41	2473	Washer, Plain	4	4	4	4	4		4	4	4			
-42	MS35337-45	Washer, Lock	4	4	4	4	4		4	4	4			
-43	2439	Nut, Plain, Hex	4	4	4	4	4		4	4	4			
* * * *														
-44	MS9021-038	\$ O-Ring	1	1	1	1	1		1	1	1			
-45	637847	Starter, 24 Volt	1		1	1	1		1	1	1			
-45	634592	Starter, 12 Volt		1										
ATTACHING PARTS														
-46	539058	Washer, Plain	2	2	2	2	2		2	2	2			
-47	2441	Nut, Plain, Hex	2	2	2	2	2		2	2	2			

NOTES:

① This assembly is also available as rebuilt. See your local TCM Distributor.

② See Service bulletin M72-8 for rework of old adapter.

Use Loctite Sealant #515 between adapter and crankcase. Install per manufacturer's instructions.



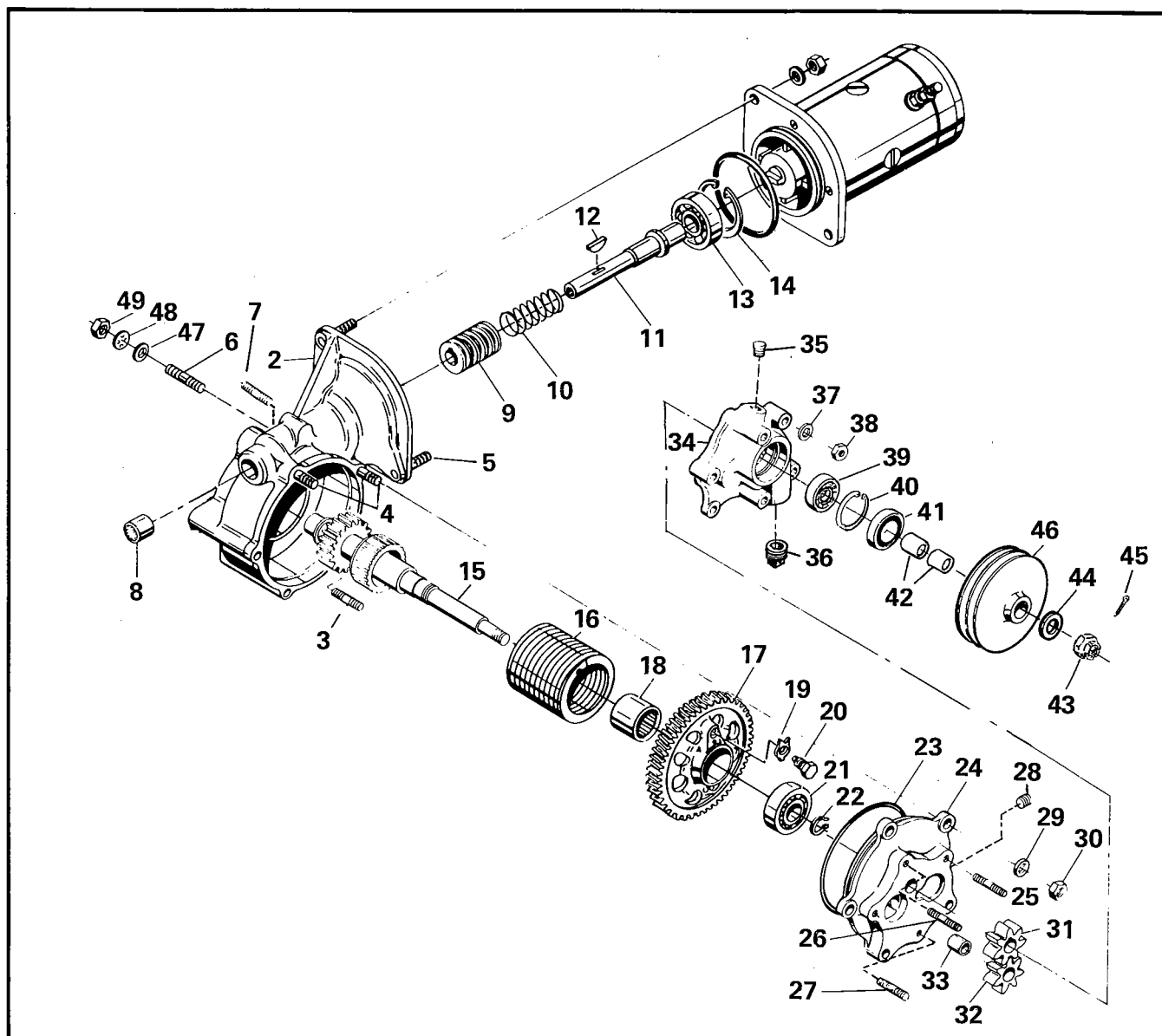
**FIGURE 24. STARTER AND STARTER ADAPTER ASSEMBLY,
TS10-520-C, G, H, M, P, R, AF.**

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY							
				C	G	H	M	P	R	T	AF
24-1	537745		\$ Gasket, Adapter-to-Crankcase	1	1	1	1	1	1		1
	635050A4		Ⓢ Adapter, Assembly, Starter Complete	1	1	1	1	1	1		1
-2	635050A1		. Housing Assy., Starter Adapter	1	1	1	1	1	1		1
-3	402127		† . Stud, 3/8 x 1-17/32 Inch Long	2	2	2	2	2	2		2
-4	641368		. Bearing, Needle	1	1	1	1	1	1		1
-5	539805		. Gear, Starter Worm	1	1	1	1	1	1		1
-6	536552		. Spring, Starter Worm Gear	1	1	1	1	1	1		1
-7	631252		. Shaft, Worm Drive	1	1	1	1	1	1		1
-8	MS35756-8		. Key, Woodruff	1	1	1	1	1	1		1
-9	X13041		. Bearing, Ball	1	1	1	1	1	1		1
-10	502287		. Ring, Retaining	1	1	1	1	1	1		1
-11	539568		. Shaftgear, Starter	1	1	1	1	1	1		1
-12	539800		† . Spring, Clutch	1	1	1	1	1	1		1
-13	539785		. Gear, Starter	1	1	1	1	1	1		1
			ATTACHING PARTS								
-14	501867		. Washer, Tab	1	1	1	1	1	1		1

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY									
			C	G	H	M	P	R	T	AF		
24-15	633845	. Screw, Special * * * *	1	1	1	1	1	1		1		
-16	537749	\$. Gasket, Cover-to-Adapter	1	1	1	1	1	1		1		
-17	537738A1	. Cover Assembly, Starter Adapter	1	1	1	1	1	1		1		
-18	534685	. . Bearing, Ball	1	1	1	1	1	1		1		
-19	534715	. . Ring, Retaining	1	1	1	1	1	1		1		
-20	534938	\$. . Seal, Oil	1	1	1	1	1	1		1		
ATTACHING PARTS												
-21	2473	. Washer, Plain	3	3	3	3	3	3		3		
-22	MS35337-45	. Washer, Lock	3	3	3	3	3	3		3		
-23	537750	. Screw, 5/16 - 18 x 1-1/8 Inch Long * * * *	1	1	1	1	1	1		1		
-24	AN123862	\$. O-Ring	1	1	1	1	1	1		1		
-25	534980	. Sleeve	1	1	1	1	1	1		1		
-26	MS35756-8	Key, Woodruff	1	1	1	1	1	1		1		
-27	628760	Indicator, Engine Timing	1	1	1					1		
ATTACHING PARTS												
-28	2473	Washer, Plain	1	1	1	1	1	1		1		
-29	MS35337-45	Washer, Lock	1	1	1	1	1	1		1		
-30	538999	Bolt, 5/16 - 18 x 3-5/8 Inch Long * * * *	1	1	1	1	1	1		1		
-31	534775	Sheave, Generator Drive	1	1	1	1	1	1		1		
ATTACHING PARTS												
-32	AN960C916	Washer, Plain	1	1	1	1	1	1		1		
-33	13XX299	Washer, Lock	1	1	1	1	1	1		1		
-34	AN316-9R	Nut, Jam	1	1	1	1	1	1		1		
* * * *												
-35	MS9021-038	\$ O-Ring	1	1	1	1	1	1		1		
-36	634592	Starter, 12 Volt	1	1		1						
-36	637847	Starter, 24 Volt			1		1	1		1		
ATTACHING PARTS												
-37	539058	Washer, Plain	2	2	2	2	2	2		2		
-38	2441	Nut, Plain, Hex * * * *	2	2	2	2	2	2		2		
-39	2473	Washer, Plain	3	3	3	3	3	3		3		
-40	MS35337-45	Washer, Lock	3	3	3	3	3	3		3		
-41	537742	Screw, Hex Head	1	1	1	1	1	1		1		
-42	2439	Nut, Plain Hex	2	2	2	2	2	2		2		
-43	538999	Bolt, 5/16 - 18 x 3-5/8 Inch Long	2	2	2	2	2	2				
-43	537750	Screw, 5/16 - 18 x 1-1/8 Inch Long	2	2	2					2		

NOTE:

⊙ This assembly also available as rebuilt. See your local TCM Distributor.



**FIGURE 25. STARTER AND STARTER ADAPTER ASSEMBLY, TS10-520-E, J, K.
(OPTIONAL FOR AIR CONDITIONING DRIVE)**

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	U	VB	WB
25-	642087A8		Ⓢ DELETED										
			Ⓢ Adapter Assy., Starter Drive Comp.			1	1	1					
-2	642087		. Housing Assy., Starter Adapter			1	1	1					
-3	352655	†	. . Stud, 5/16 x 2-11/16 Inch Long			1	1	1					
-4	401881	†	. . Stud, 5/16 x 1-1/8 Inch Long			2	2	2					
-5	402127	†	. . Stud, 3/8 x 1-17/32 Inch Long			2	2	2					
-6	401814	†	. . Stud, 5/16 x 1-7/8 Inch Long			1	1	1					
-7	401971	†	. . Stud, 5/16 x 1-5/8 Inch Long			1	1	1					
-8	641368		. Bearing, Needle			1	1	1					
-9	539805		. Gear, Starter Worm			1	1	1					
-10	536552		. Spring, Starter Worm Gear			1	1	1					

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY										
				B	D	E	J	K	L	N	U	VB	WB	
25-11	631252		. Shaft, Worm Drive			1	1	1						
-12	MS35756-8		. Key, Woodruff			1	1	1						
-13	X13041		. Bearing, Ball			1	1	1						
-14	502287		. Ring, Retaining			1	1	1						
-15	640803	†	. Shaftgear Assembly, Starter			1	1	1						
-16	539800	†	. Spring, Clutch			1	1	1						
-17	630681		. Gear Assembly, Starter			1	1	1						
-18	630680		. . Bearing, Roller			1	1	1						
ATTACHING PARTS														
-19	501867		. Washer, Tab			1	1	1						
-20	633845		. Screw, 1/4 - 20 x 13/32 Inch Long			1	1	1						
* * * *														
-21	640731		. Bearing, Ball			1	1	1						
-22	502293		. Ring, Retaining			1	1	1						
-23	AN123902	\$	. O-Ring			1	1	1						
-24	640749		. Cover Assembly			1	1	1						
-25	401813	†	. . Stud, 5/16 x 1-11/16 Inch Long			2	2	2						
-26	401899	†	. . Stud, 5/16 x 2 Inch Long			1	1	1						
-27	352655	†	. . Stud, 5/16 x 2-5/8 Inch Long			1	1	1						
-28	2024		. . Plug, Pipe 1/8 - 27			1	1	1						
ATTACHING PARTS														
-29	2473		. Washer, Plain			32	3	3						
-30	2439		. Nut			3	3	3						
* * * *														
-31	640808		. Gear, Scavenge Pump Driver			1	1	1						
-32	640746		. Gear Assy., Scavenge Pump Driven			1	1	1						
-33	632595		. . Bushing			1	1	1						
-34	640766		. Body Assembly, Scavenge Pump			1	1	1						
-35	401752		. . Plug, Pipe, 1/8 - 27 NPTF			1	1	1						
-36	629518-4H		. . Plug			1	1	1						
ATTACHING PARTS														
-37	2473		. Washer, Plain			4	4	4						
-38	2439		. Nut			4	4	4						
* * * *														
-39	637817		. Bearing, Ball			1	1	1						
-40	502020		. Ring, Retaining			1	1	1						
-41	642383		. Seal, Oil			1	1	1						
-42	640733		. Sleeve, Starter Shaft			1	1	1						
-43	AN320-9		. Nut, Castle			1	1	1						
-44	MS9320-15		. Washer			1	1	1						
-45	MS9245-62		. Pin, Cotter			1	1	1						
-46	641907	②	. Sheave			1	1	1						
-47	2473		. Washer, Plain			4	4	4						
-48	MS35337-45		. Washer, Lock			4	4	4						
-49	2439		. Nut, Plain Hex			4	4	4						

① This assembly also available as Rebuilt. See your local TCM Distributor.

② See Service Bulletin M79-12.

③ Use Loctite Sealant #515 between starter adapter and crankcase. Install per manufacturer's instructions.

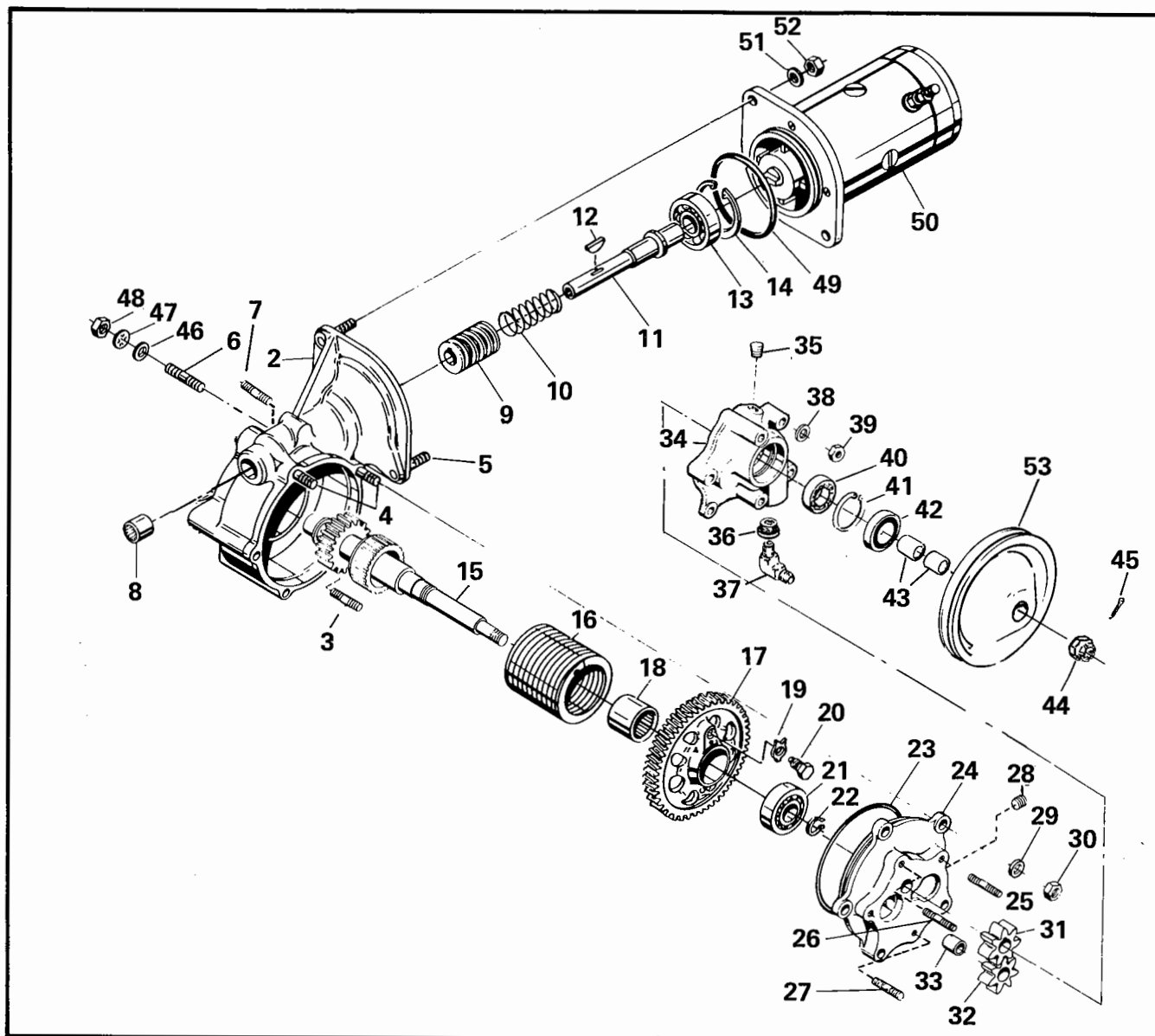


FIGURE 26. STARTER AND STARTER ADAPTER ASSEMBLY, TS10-520-L, WB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	U	VB	WB
26-1			⊙ DELETED										
	642087A5		⊙ Adapter, Assy., Starter Drive Complete						1				1
-2	642087		. Housing Assy., Starter Adapter						1				1
-3	352655	†	. Stud, 5/16 x 1-11/16 Inch Long						1				1
-4	401881	†	. Stud, 5/16 x 1-1/8 Inch Long						2				2
-5	402127	†	. Stud, 3/8 x 1-17/32 Inch Long						2				2
-6	401814	†	. Stud, 5/16 x 1-7/8 Inch Long						1				1
-7	401971	†	. Stud, 5/16 x 1-5/8 Inch Long						1				1
-8	641368		. Bearing, Needle						1				1
-9	539805		. Gear, Starter Worm						1				1
-10	536552		. Spring, Starter Worm Gear						1				1
-11	631252		. Shaft, Worm Drive						1				1
-12	MS35756-8		. Key, Woodruff						1				1
-13	X13041		. Bearing, Ball						1				1
-14	502287		. Ring, Retaining						1				1

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	U	VB	WB
26-15	640803		. Shaftgear Assembly, Starter						1				1
-16	539800	†	. Spring, Clutch						1				1
-17	630681		. Gear Assembly, Starter						1				1
-18	630680		. . Bearing, Roller						1				1
			ATTACHING PARTS										
-19	501867		. Washer, Tab						1				1
-20	633845		. Screw, Special						1				1
			* * * *										
-21	640731		. Bearing, Ball						1				1
-22	502293		. Ring, Retaining						1				1
-23	AN123902	\$	. O-Ring						1				1
-24	640749		. Cover Assembly						1				1
-25	401813	†	. . Stud, 5/16 x 1-11/16 Inch Long						2				2
-26	401899	†	. . Stud, 5/16 x 2 Inch Long						1				1
-27	352655	†	. . Stud, 5/16 x 2-5/8 Inch Long						1				1
-28	2024		. . Plug, Pipe 1/8 - 27						1				1
			ATTACHING PARTS										
-29	2473		. Washer, Plain						3				3
-30	2439		. Nut, Plain, Hex						3				3
			* * * *										
-31	640808		. Gear, Scavenge Pump Driver						1				1
-32	640746		. Gear Assy., Scavenge Pump Driven						1				1
-33	632595		. . Bushing						1				1
-34	640766		. Body Assembly, Scavenge Pump						1				1
-35	401752		. Plug, Pipe 1/8 - 27 NPTF						1				1
-36	AN912-4		. Bushing, Reducer						1				1
-37	MS20822-8		. Elbow, 90 Degree						1				1
			ATTACHING PARTS										
-38	2473		. Washer, Plain						4				4
-39	2439		. Nut, Plain, Hex						4				4
			* * * *										
-40	637817		. Bearing, Ball						1				1
-41	502020		. Ring, Retaining						1				1
-42	642383		. Seal, Oil						1				1
-43	640733		. Sleeve, Starter Shaft						2				2
-44	MS9358-15		. Nut, Castle						1				1
-45	MS9245-62		. Pin, Cotter						1				1
			ATTACHING PARTS										
-46	2473		Washer, Plain						4				4
-47	MS35337-45		Washer, Lock						4				4
-48	2439		Nut, Plain, Hex						4				4
			* * * *										
-49	MS9021-038	\$	. O-Ring						1				1
-50	637847		Starter, 24 Volt						1				1
			ATTACHING PARTS										
-51	539058		Washer, Plain						2				2
-52	2441		Nut, Plain, Hex						2				2
			* * * *										
-53	640801		Sheave, Driver (See Figure 27)						rf				rf

NOTES:

① This assembly also available as rebuilt. See your local TCM Distributor.

② Use Loctite Sealant #515 between starter adapter and crankcase. Install per manufacturer's instructions.

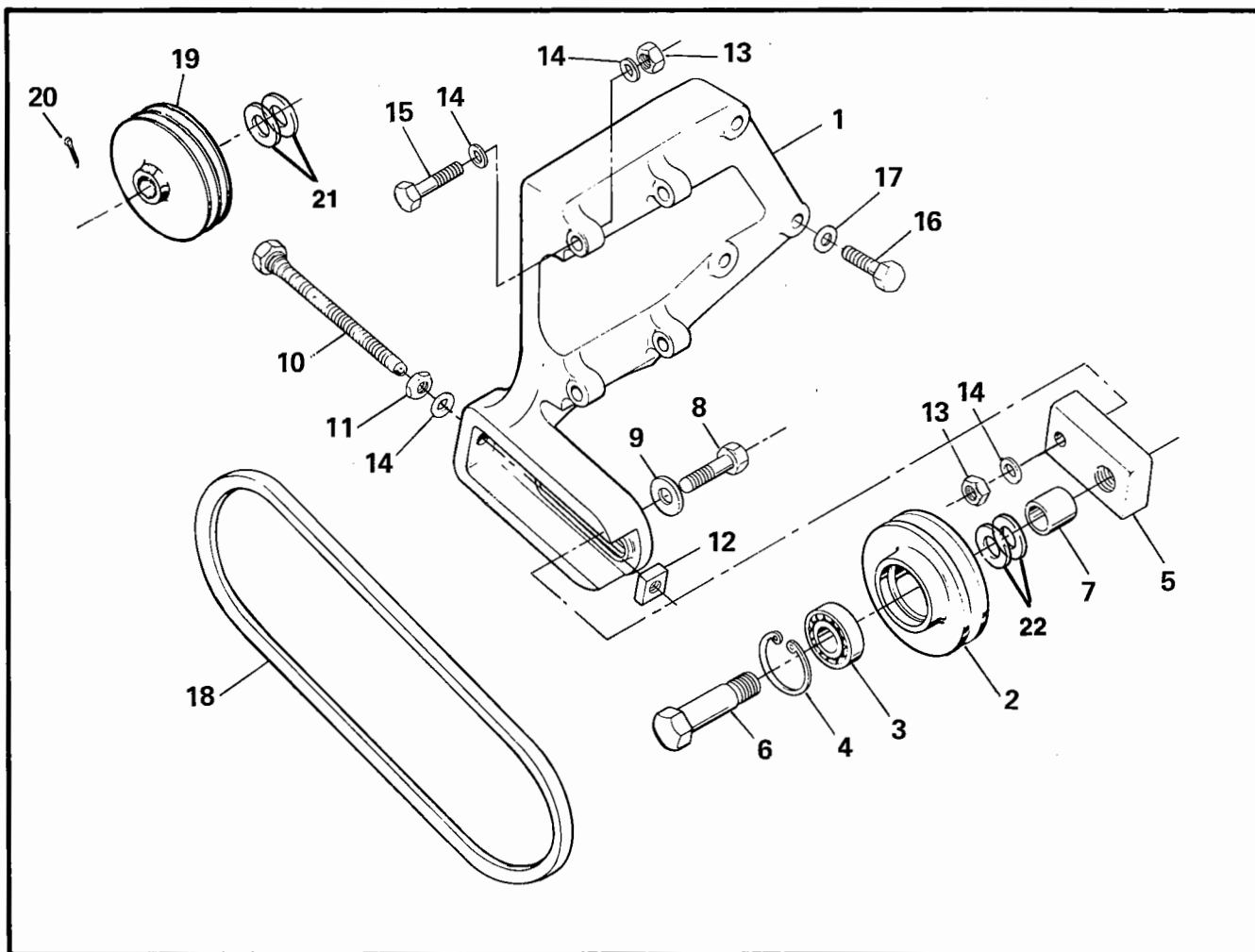


FIGURE 27. FREON COMPRESSOR BRACKET ASSEMBLY.
(Optional For TS10-520-L, WB)

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY									
			B	D	E	J	K	L	N	U	VB	WB
27-	EQ6544	Kit Assembly, Freon Compressor Bracket						opt				opt
	643560	. Bracket Assy., Freon Compressor						1				1
-1	640767	. . Bracket						1				1
-2	643558	. . Sheave Assembly						1				1
-3	643368	. . Bearing, Ball						1				1
-4	MS16631-1165	. . Ring, Retaining						1				1
-5	640781	. . Arm, Idler Sheave						1				1
-6	643556	. . Screw						1				1
-7	643559	. . Spacer						1				1
-8	AN101319	. . Bolt						1				1
-9	640947	. . Washer, Special						1				1
-10	640774	. . Bolt, Special						1				1
-11	AN316-6R	. . Nut						1				1
-12	640777	. . Nut Rectangular						1				1
-13	MS20364-624C	. . Nut						4				4
-14	AN960-616	. . Washer, Plain						10				10
-15	AN101319	. . Bolt						4				4
-16	MS90728-66	. Bolt						2				2
-17	24239	. Washer						2				2
-18	642759	. Belt						1				1
-19	640801	. Sheave, Driver						1				1
-20	MS9245-62	. Pin, Cotter						1				1
-21	646064-20	. Shims						ar				ar
-22	643956-20	. Shims						ar				ar

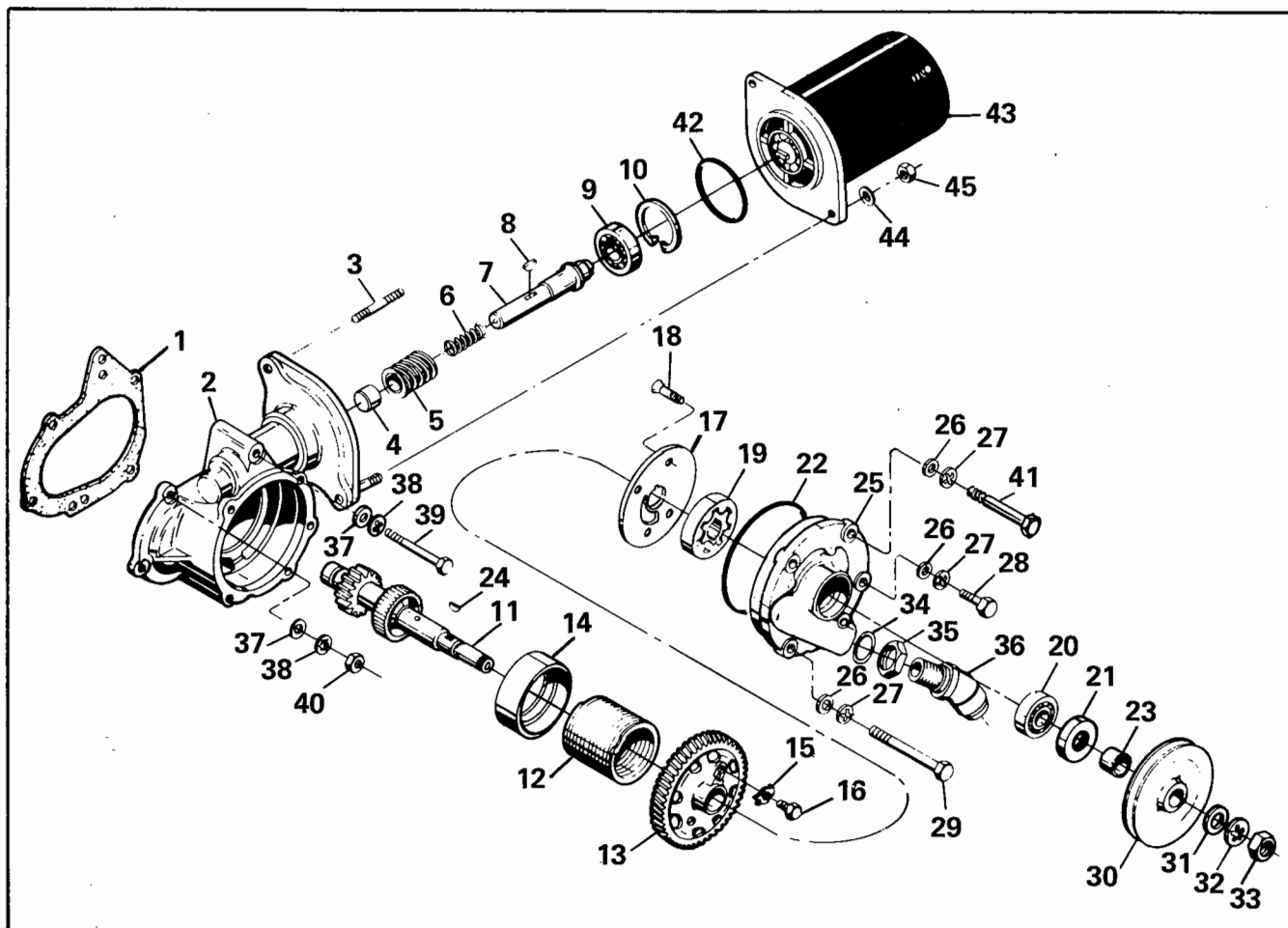


FIGURE 28. STARTER AND STARTER ADAPTER ASSEMBLY, TS10-520-T.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				C	G	H	M	P	R	T			
28-1	537745	\$	Gasket, Adapter-to-Crankcase							1			
	635050A15	⊙	Adapter Assembly, Starter, Complete							1			
-2	635050A1		. Housing Assy., Starter Adapter							1			
-3	402127	†	. . Stud, 3/8 x 1-17/32 Inch Long							2			
-4	641368		. . Bearing, Needle							1			
-5	539805		. Gear, Starter Worm							1			
-6	536552		. Spring, Starter Worm Gear							1			
-7	631252		. Starter, Worm Drive							1			
-8	MS35756-8		. Key, Woodruff							1			
-9	X13041		. Bearing, Ball							1			
-10	502287		. Ring, Retaining							1			
-11	642630		. Shaft Gear, Starter							1			
-12	539800		. Spring, Clutch							1			
-13	642640		. Gear Assembly, Starter							1			
-14	630680		. . Bearing, Roller							1			
ATTACHING PARTS													
-15	501867		. Washer, Tab							1			
-16	633845		. Screw, Special							1			
* * * *													

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				C	G	H	M	P	R	T			
28-17	642612		. Cover, Scavenge Pump							1			
			ATTACHING PARTS										
-18	MS35190-287		. Screw							4			
			* * * *										
-19	642641		. Gerotor, Scavenge Pump							1			
-20	637817		. Bearing, Ball							1			
-21	534938	\$	. Seal, Oil							1			
-22	AN123902	\$	. O-Ring							1			
-23	642622		. Sleeve							1			
-24	MS35756-3		. Key, Woodruff							1			
-25	642608		. Cover, Starter Adapter							1			
			ATTACHING PARTS										
-26	2473		. Washer, Plain							2			
-27	MS35338-45		. Washer, Lock							2			
-28	537750		. Screw, 5/16 18 x 1-1/8 Inch Long							2			
-29	630966-4.25		. Bolt							1			
			* * * *										
-30	642623		. Sheave, Alt. Drive							1			
			ATTACHING PARTS										
-31	AN960-816		. Washer, Plain							1			
-32	MS35338-143		. Washer, Lock							1			
-33	MS9361-14		. Nut							1			
			* * * *										
-34	MS28778-8	\$	. O-Ring							1			
-35	AN924-8		. Nut							1			
-36	AN837-8		. Elbow, 45 Degree							1			
-37	2473		Washer, Plain							5			
-38	MS35337-45		Washer, Lock							5			
-39	537742		Screw, 5/16 - 18 x 2-13/16 Inch Long							1			
-40	2439		Nut, Plain							2			
-41	538999		Bolt, 5/16 - 18 x 3-5/8 Inch Long							2			
-42	MS9021-038	\$	O-Ring							1			
-43	637847		Starter, 24 Volts							1			
			ATTACHING PARTS										
-44	539058		Washer, Plain							2			
-45	2441		Nut							2			

NOTE:

⊙ This assembly also available as rebuilt. See your local TCM Distributor.

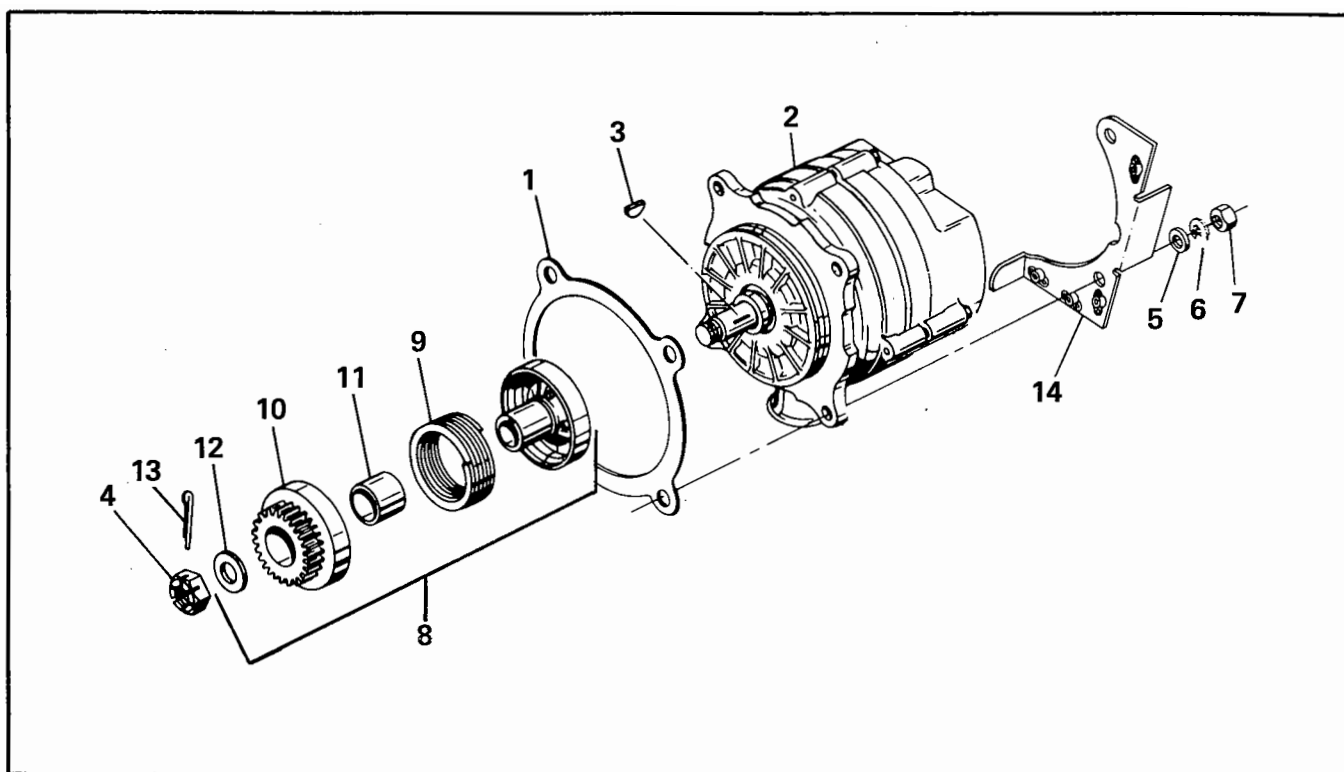


FIGURE 29. ALTERNATOR AND HUB ASSEMBLY, TS10-520-B, D, E, J, K, L, N, UB, VB, WB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
29-1	629436		\$ Gasket, Alternator	1	1	1	1	1			1	1	1
-2	632590		① Alternator, 24 Volt, 50 AMP	1		1							
-2	631547		① Alternator, 12 Volt, 70 AMP		1								
-2	641668		① Alternator, 24 Volt, 50 AMP								1		
-2	642056A2		②① Alternator, 24 Volt, 100 AMP										1
-3	632437		. Key, Woodruff	1	1	1					1		
-3	MS35756-8		. Key, Woodruff										1
-4	642589		. Nut, Slotted Hex	1	1	1					1		1
ATTACHING PARTS													
-5	2473		Washer, Plain	4	4	4	4	4			4	4	4
-6	MS35337-45		Washer, Lock	4	4	4	4	4			4	4	4
-7	2439		Nut	4	4	4	4	4			4	4	4
* * * *													
-8	640934		Hub Assembly, Alternator Gear Driven	1	1	1	1	1	1	1	1	1	
-9	630655		. Spring, Clutch	1	1	1	1	1	1	1	1	1	
-10	640932		. Gear Assembly, Alternator Driven	1	1	1	1	1	1	1	1	1	
-11	629638		. . Bushing, Alternator Driven	1	1	1	1	1	1	1	1	1	
-12	630691		. Washer, Thrust	1	1	1	1	1	1	1	1	1	
-13	MS24665-302		Pin, Cotter	1	1	1	1	1			1	1	1
-14	640056		Support Assembly, Baffle		1				1		1		1
	631656		Regulator, 24 Volt (Not Illustrated)	1		1							

NOTES:

① Alternator and brackets for models C, G, H, J, K, L, M, P, R, T & VB are not supplied by TCM.

② Includes hub assembly, P/N 642362.

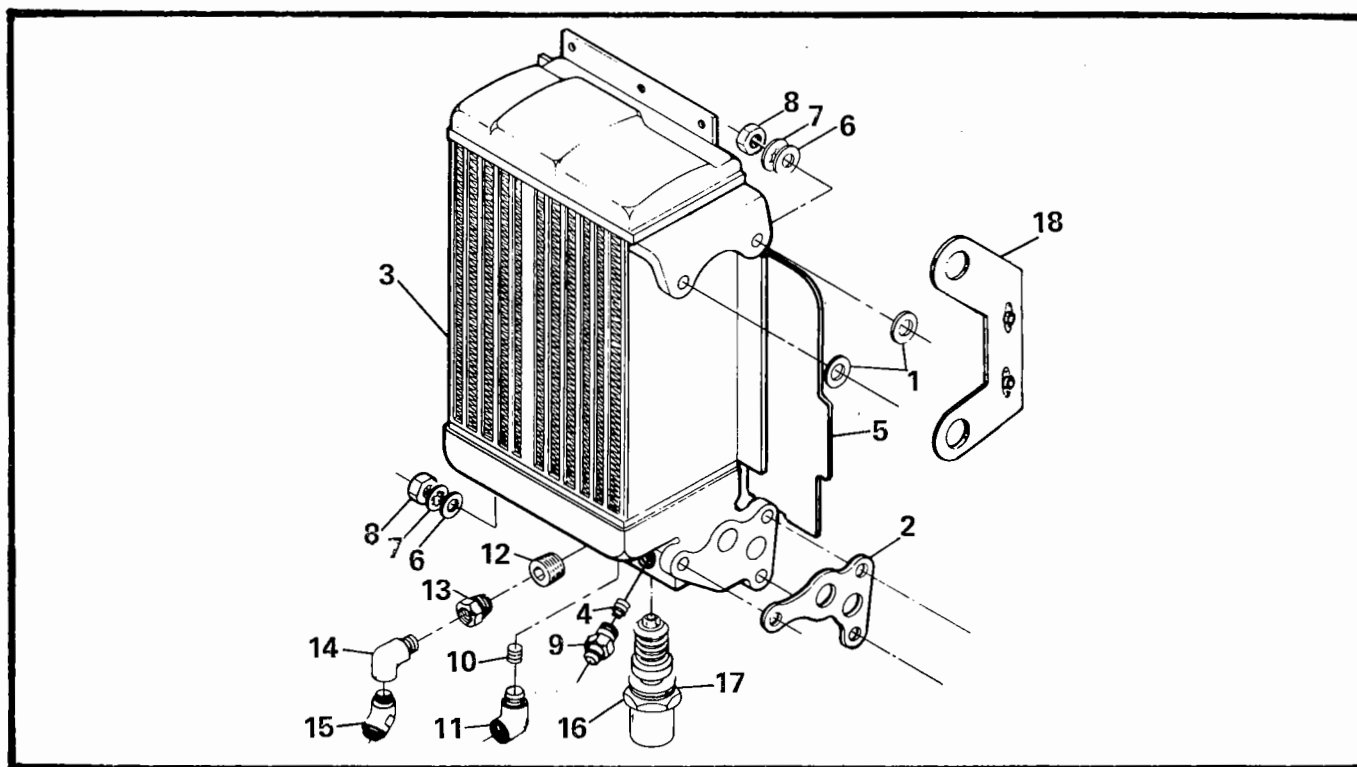


FIGURE 30. OIL COOLER ASSEMBLY, TSIO-520-B, D, E, J, K, N, UB, VB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
30-1	630849		\$ Gasket, Oil Cooler-to-C/C Top	2		2	2	2		2		2	
-1	632706		Washer, Plain, Oil Cooler-to-C/C Top		2						2		
-2	631059		\$ Gasket, C/C-to-Oil Cooler	1	1	1	1	1		1	1	1	
	633287		① Oil Cooler and Baffle Assembly	1	1			1					
	642785		① Oil Cooler and Baffle Assembly								1		
	637132		Oil Cooler and Baffle Assembly			1	1			1		1	
-3	635996		. Cooler, Oil	1	1			1			1		
-3	636900		. Cooler, Oil			1	1			1		1	
-4	629518-1H		. Plug, 1/8 - 27 NPTF	1	1	1	1	1		1		1	
-5	632224		. Baffle, Oil Cooler	1	1	1	1	1		1	1	1	
ATTACHING PARTS													
-6	2474		Washer, Plain	4	4	4	4	4		4	4	4	
-7	MS35337-46		Washer, Lock	4	4	4	4	4		4	4	4	
-8	2441		Nut	2	2	2	2	2		2	2	2	
-8A	531003		Nut	2	2	2	2	2		2	2	2	
			* * * *										
-9	AN816-4B		Fitting, Nipple, Inlet								1		
-10	2024		Plug, Pressure Port, 1/8 - 27 NPTF	1		1	1	1		1		1	
-11	634628		Elbow, 90 Degree 1/8 NPTF-to-1/8 Tube		1						1		
-12	629518-3H		Plug, Oil Outlet, 3/8 - 18 NPTF	1	1	1	1	1		1		1	
-13	AN912-2		Bushing, Reducer, 3/8-to-1/4								1		
-14	632017		Elbow, 90 Degree, Street								1		
-15	MS20823-6		Elbow, 45 Degree								1		
-16	639305		Valve, Oil Temperature Control	1	1	1	1	1		1	1	1	
-17	627496		. Gasket, Oil Temperature Control Valve	1	1	1	1	1		1	1	1	
-18	632126		Support Assembly, Baffle		1						1		

① When ordering the oil cooler and baffle assembly for the TSIO-520-UB it is necessary to order in addition an elbow P/N 634628 to replace plug P/N 629518-1H.

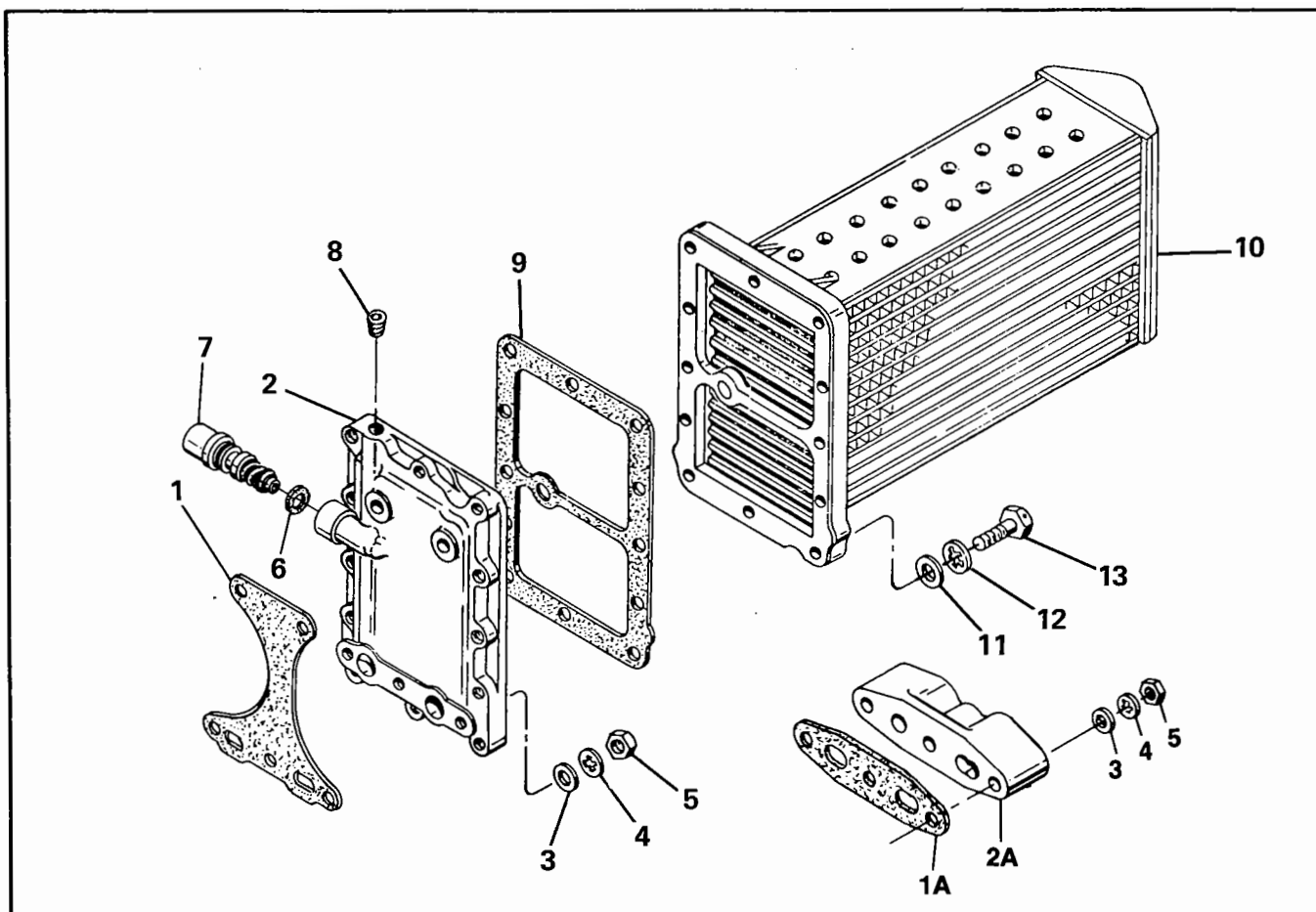


FIGURE 31. OIL COOLER ASSEMBLY, TS10-520-C, G, H, M, P, R, T, AF.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY							
				C	G	H	M	P	R	T	AF
31-1	626341	①	\$ Gasket, Crankcase-to-Plate	1	1	1	1	1	1		
-1A	535756		Gasket							1	1
-2	626332		Plate Oil Cooler Adapter	2	2	2	2	2	2		
-2A	646050	②	Adapter							1	1
ATTACHING PARTS											
-3	20522		Washer, Plain	5	5	5	5	5	5	3	3
-4	MS35337-44		Washer, Lock	5	5	5	5	5	5	3	3
-5	2437		Nut, Plain, Hex	5	5	5	5	5	5	3	3
* * * *											
-6	639305		Oil Temperature Control Valve	1	1	1	1	1	1		
-7	627496	\$	Gasket, Oil Temperature Control Valve	1	1	1	1	1	1		
-8	2026		Plug, Pipe, 1/4 - 18	1	1	1	1	1	1		
-9	626342	①	\$ Gasket, Oil Cooler-to-Adapter	1	1	1	1	1	1		
-10	639171		Cooler Assembly, Oil	1	1	1	1	1	1		
ATTACHING PARTS											
-11	20522		Washer, Plain	12	12	12	12	12	12		
-12	MS35337-44		Washer, Lock	12	12	12	12	12	12		
-13	535668		Screw, 1/4 - 20 x 3/8 Inch Long	12	12	12	12	12	12		

NOTE:

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

② For remote mounted oil cooler.

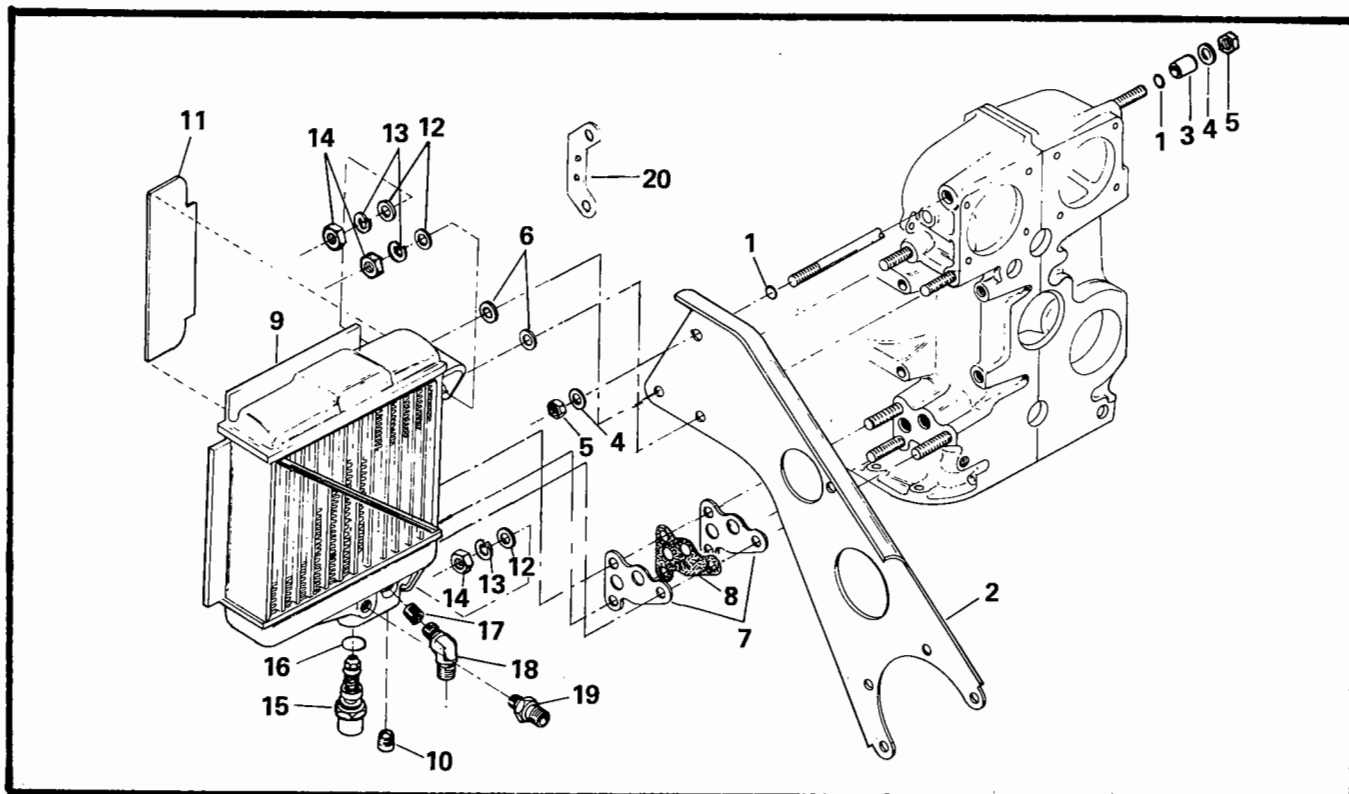


FIGURE 32. OIL COOLER ASSEMBLY, TS10-520-L, WB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	U	VB	WB
32-1	AN123862	\$	O-Ring						2				2
-2	640321		Bracket, Turbo						1				1
			ATTACHING PARTS										
-3	640826		Spacer						1				1
-4	24239		Washer, Plain						2				2
-5	2441		Nut						2				2
			* * * *										
-6	630849	\$	Gasket						2				2
-7	631059	\$	Gasket						2				2
-8	640342		Spacer						1				1
	637132		Oil Cooler Assembly						1				1
-9	636900		Oil Cooler						1				1
-10	629518-1H		Plug, 1/8 - 27 NPTF						1				1
-11	632224		Baffle						1				1
			ATTACHING PARTS										
-12	2474		Washer, Plain						4				4
-13	MS35338-46		Washer, Lock						4				4
-14	2442		Nut						4				4
			* * * *										
-15	639305		Oil Temperature Control Valve						1				1
-16	627496	\$	Gasket, Oil Temperature Control Valve						1				1
-17	AN912-2		Bushing, Reducer						1				1
-18	MS20823-6B		Elbow						1				1
-19	AN816-4B		Nipple						1				1
-20	632126		Support Assembly, Baffle						1				1

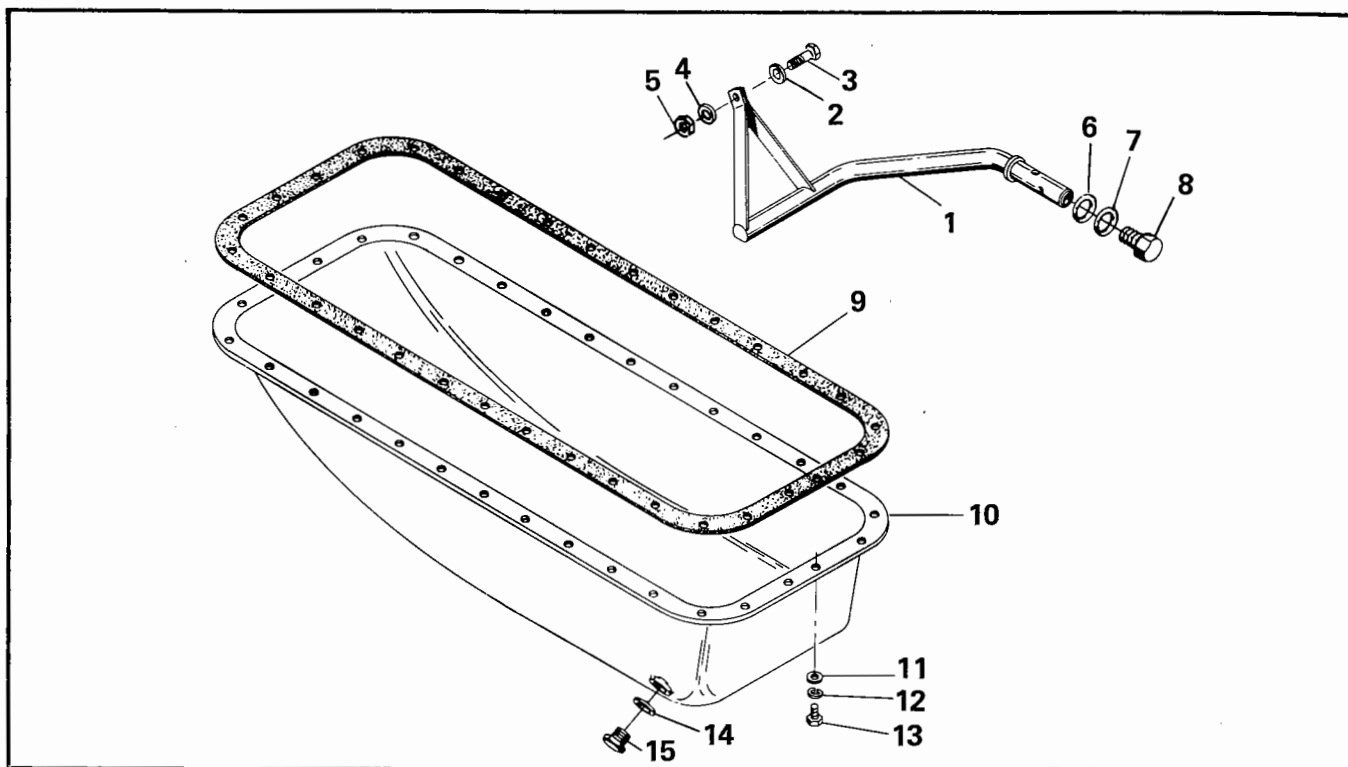


FIGURE 33. OIL SUMP, TS10-520-B, E, J, K, L, N, VB, WB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	U	VB	WB
33-1	632946		Tube Assembly, Suction Oil Pump	1		1	1	1	1	1		1	1
			ATTACHING PARTS										
-2	631367		Washer, Special	1		1	1	1	1	1		1	1
-3	AN4-17A		Bolt	1		1	1	1	1	1		1	1
-4	20522		Washer	1		1	1	1	1	1		1	1
-5	632443-4		Nut, 5/16 - 24 Marsden	1		1	1	1	1	1		1	1
			* * * *										
-6	MS35769-15	\$	Gasket, Annular	1		1	1	1	1	1		1	1
-7	MS35769-12	\$	Gasket, Annular	1		1	1	1	1	1		1	1
-8	2265		Plug	1		1	1	1	1	1		1	1
-9	534743	\$	Gasket, Oil Sump	1		1	1	1	1	1		1	1
-10	632876		Sump Assembly, Oil	1		1	1	1		1		1	
-10	537650		Sump Assembly, Oil						1				1
			ATTACHING PARTS										
-11	2473		Washer, Plain	32		32	32	32	32	32		32	32
-12	MS35337-45		Washer, Lock	32		32	32	32	32	32		32	32
-13	530346		Screw, 15/16 - 18 x 7/8 Inch Long	32		32	32	32	32	32		32	32
			* * * *										
-14	MS35769-11	\$	Gasket, Annular	1		1	1	1	1	1		1	1
-15	532432		Plug, Oil Drain, 5/8 - 18	1		1	1	1	1	1		1	1
-15	636376		Plug, Oil Drain, Magnetic	opt		opt	opt	opt	opt	opt		opt	opt

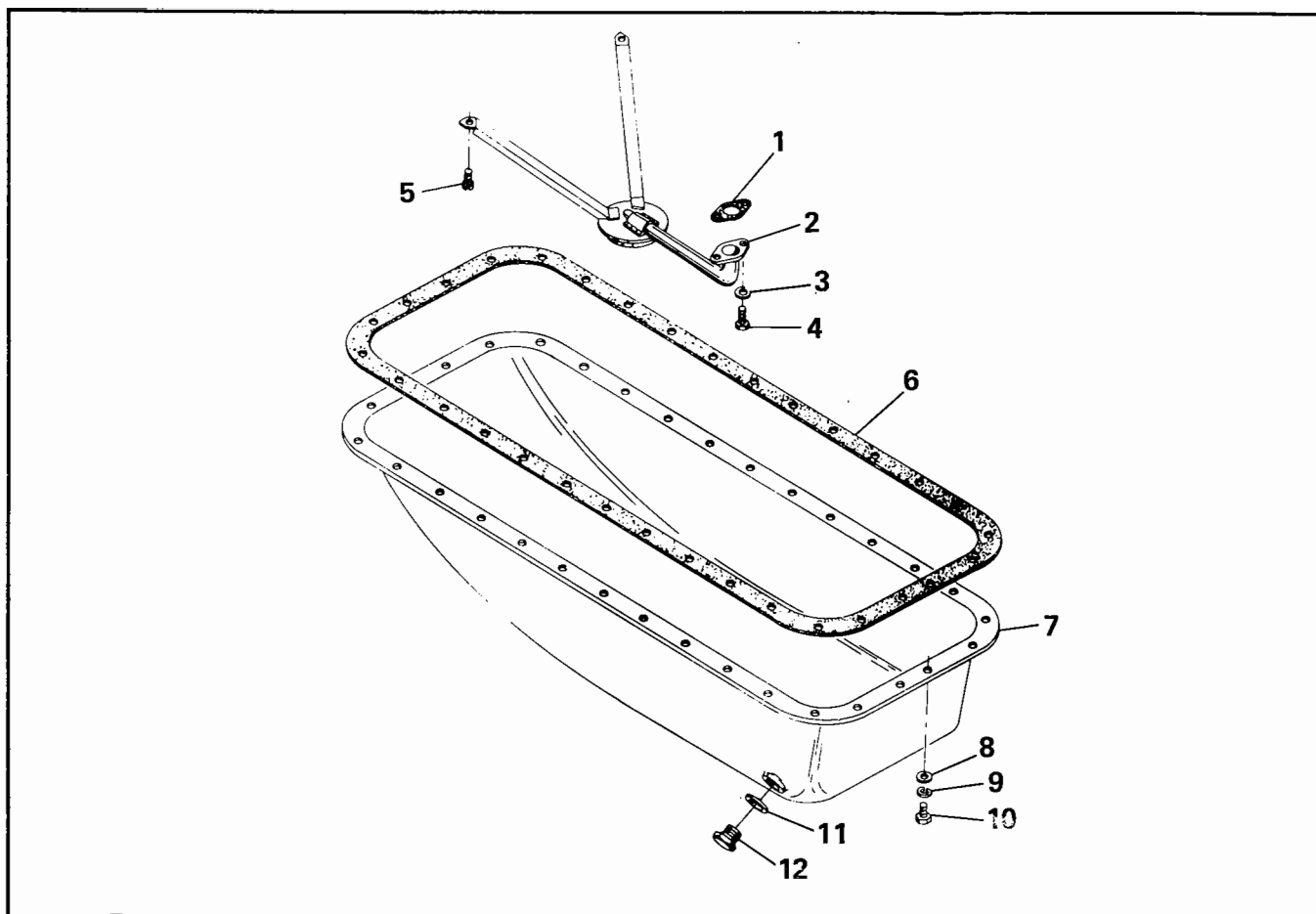


FIGURE 34. OIL SUMP, TS10-520-C, G, M, T.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				C	G	H	M	P	R	T			
34-1	534940	\$	Gasket, Suction Tube Assembly	1	1		1			1			
-2	625207		Tube Assembly, Suction Oil Pump	1	1		1			1			
			ATTACHING PARTS										
-3	20522		Washer, Plain	2	2		2			2			
-4	MS20074-04-04		Bolt, 1/4 - 20	2	2		2			2			
-5	MS20074-04-03		Screw, Cap, 1/4 - 28	2	2		2			2			
			* * * *										
-6	534743	\$	Gasket, Oil Sump-to-Crankcase	1	1		1			1			
-7	633412		Sump Assembly, Oil	1	1		1						
-7	537650		Sump Assembly, Oil							1			
			ATTACHING PARTS										
-8	2473		Washer, Plain	30	30		30			32			
-9	13XX202B		Washer, Lock	32	32		32			32			
-10	530346		Screw, 5/16 - 18 x 7/8 Inch Long	32	32		32			32			
			* * * *										
-11	MS35769-11	\$	Gasket, Annular	1	1		1			1			
-12	532432		Plug, Oil Drain, 5/8 - 18	1	1		1			1			
-12	636376		Plug, Oil Drain Magnetic	opt	opt		opt			opt			

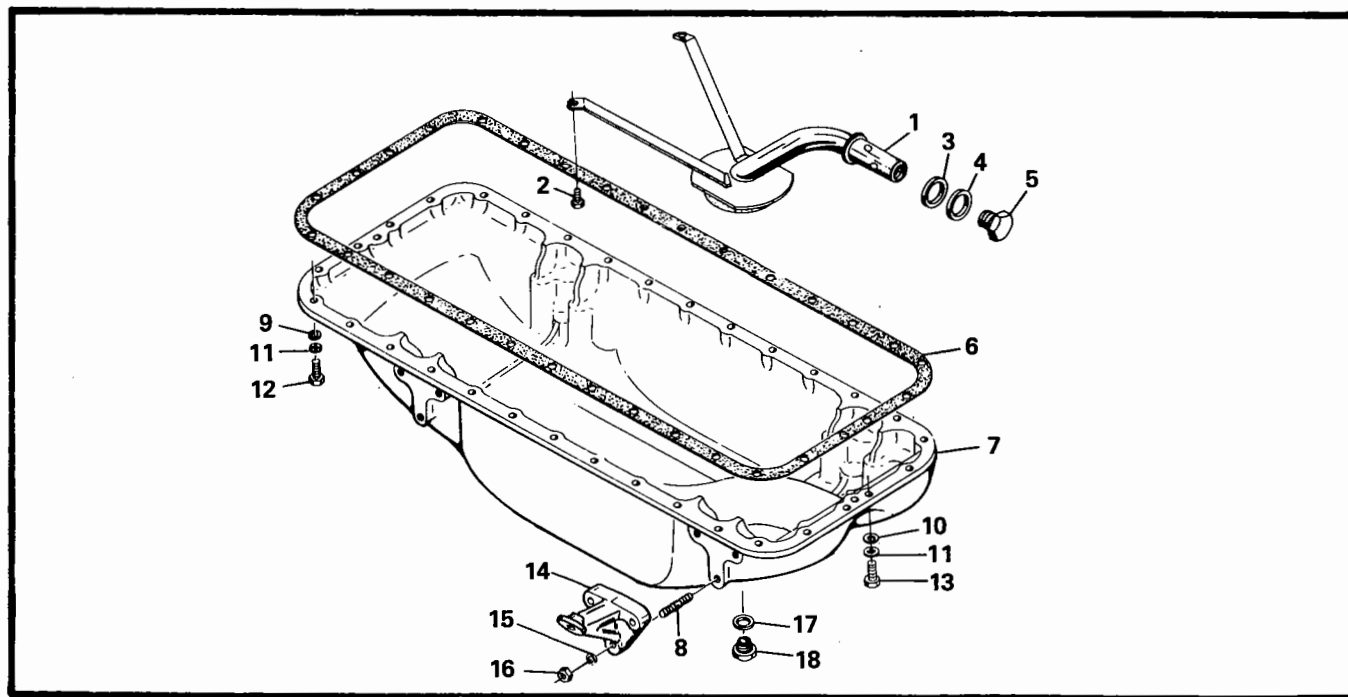


FIGURE 35. OIL SUMP, TS10-520-D, UB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
35-1	631008		Tube Assembly, Suction, Oil Pump		1						1		
			ATTACHING PARTS										
-2	630966-.56		Bolt, 5/16 - 18 x 9/16 Inch Long		2						2		
-3	MS35769-15	\$	Gasket, Annular		1						1		
-4	MS35769-12	\$	Gasket, Annular		1						1		
-5	2265		Plug, Oil Drain		1						1		
-6	534743	\$	Gasket, Oil Sump-to-Crankcase		1								
	No Number	①	Sealant, Sump-to-C/C (Not Illustrated)								ar		
-7	642273A3		Sump Assembly, Oil		1								
	642654A3		Sump Assembly, Oil								1		
-8	401860	†	Sump, 3/8 x 1-3/16 Inch Long		12						12		
			ATTACHING PARTS										
-9	AN960-516L		Washer, Plain		27						25		
-9	22535		Washer, Plain		2						2		
-10	2473		Washer, Plain		3						2		
-10	401506		Washer, Plain, Turbo Brkt.-to-Sump								3		
-11	MS35337-45		Washer, Lock		32						29		
-12	537750		Bolt, 5/16 - 18 x 1-1/8 Inch Long		29						30		
-13	539003		Bolt, 5/16 - 18 x 1-3/8 Inch Long		3						2		
			* * * *										
-14	632663		Bracket, Engine Mount		4						4		
			ATTACHING PARTS										
-15	AN960-616L		Washer, Plain		12						12		
-16	2441		Nut, Plain, Hex		12						12		
			* * * *										
-17	MS35769-17	\$	Gasket, Annular		1						1		
-18	2265		Plug, Oil Drain		1						1		

① Loctite Sealant #515. Apply per manufacturer's instructions.

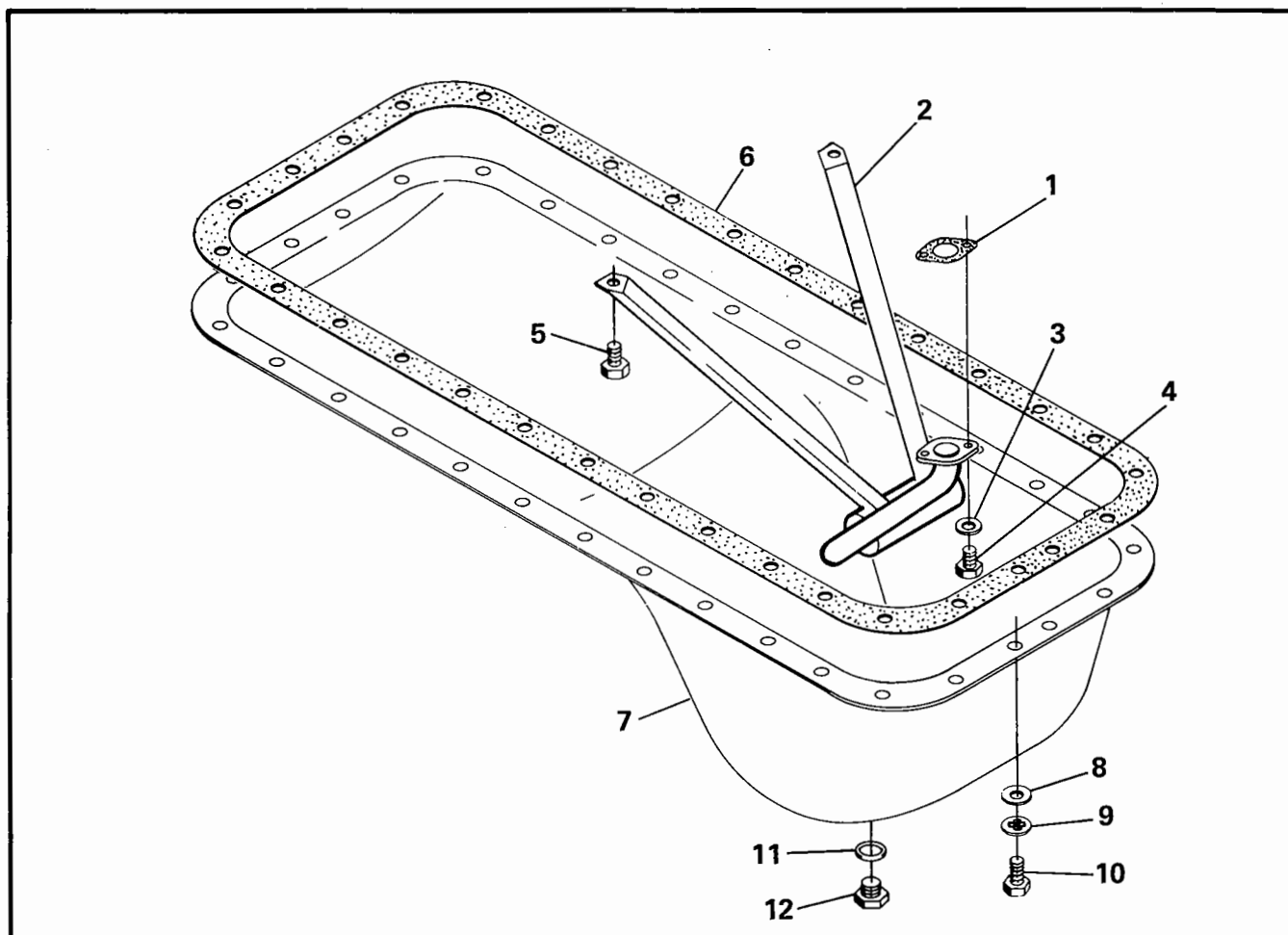


FIGURE 36. OIL SUMP, TS10-520-H, P, R, AF.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				C	G	H	M	P	R	T	AF		
36-1	534940	\$	Gasket, Suction Tube Assembly			1		1	1		1		
-2	635640		Tube Assembly, Oil Pump Suction			1		1	1		1		
			ATTACHING PARTS										
-3	20522		Washer, Plain			2		2	2		2		
-4	MS20074-04-04		Bolt, 1/4 - 20 x 19/32 Inch Long			2		2	2		2		
-5	MS20074-04-03		Bolt, 1/4 - 28 x 15/32 Inch Long			2		2	2		2		
			* * * *										
-6	534743	\$	Gasket, Oil Sump-to-Crankcase			1		1	1		1		
-7	635616		Sump Assembly, Oil			1		1	1		1		
			ATTACHING PARTS										
-8	2473		Washer, Plain			30		30	30		30		
-9	MS35337-45		Washer, Lock			32		32	32		32		
-10	530346		Screw, 5/16 - 18 x 7/8 Inch Long			32		32	32		32		
			* * * *										
-11	MS35769-11	\$	Gasket, Annular			1		1	1		1		
-12	532432		Plug, Oil Drain			1		1	1		1		
-12	636376		Plug, Oil Drain, Magnetic			opt		opt	opt		opt		

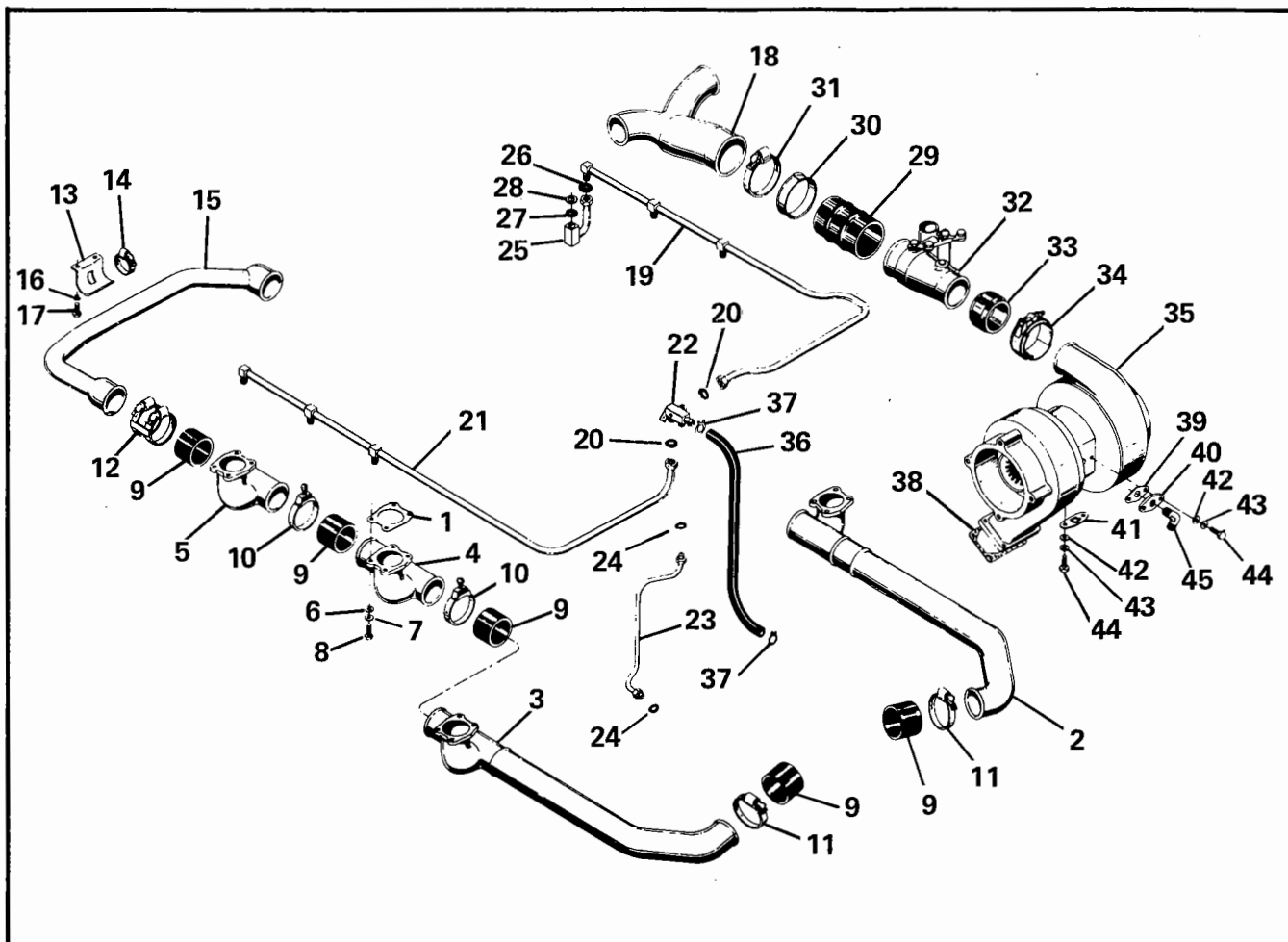


FIGURE 37. INDUCTION SYSTEM, TS10-520-B, E.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	U	VB	WB
37-1	536413	\$	Gasket, Intake Manifold	6		6							
-2	630055		Tube Assembly, Intake Manifold, Cylinder No. 1	1		1							
-3	630060		Tube Assembly, Intake Manifold, Cylinder No. 2	1		1							
-4	629138		Elbow, Intake Manifold, Cylinder 3-4-5	3		3							
-5	629325		Elbow, Intake Manifold, Cylinder No. 6	1		1							
			ATTACHING PARTS										
-6	20522		Washer, Plain	24		24							
-7	MS35337-44		Washer, Lock	24		24							
-8	24835		Screw, 1/4 - 20 x 7/8 Inch Long	24		24							
			* * * *										
-9	639660-13	\$	Hose, Intake Manifold	8		8							
-10	36151L		Clamp, Hose	8		8							
-11	631972		Clamp, Hose	4		4							
-12	629163-5		Clamp, Assembly, Hose	2		2							
-13	632871		Bracket, Balance Tube	1		1							
-14	634209		Clamp, Balance Tube-to-Bracket	1		1							

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY											
			B	D	E	J	K	L	N	UB		VB	WB	
37-15	642523	Tube Assembly, Balance	1		1									
		ATTACHING PARTS												
-16	MS35338-45	Washer, Lock	2		2									
-17	530346	Screw, 5/16 - 18 x 7/8 Inch Long	rf		rf									
		* * * *												
-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, Injection Nozzle	6		6									
-26	633958-3	. Seal, Compression	1		1									
-27	640612	\$ Washer, Rubber	6		6									
-28	628556	Washer, Plain	6		6									
-29	630817	① \$ Convolute Bellows	1		1									
-30	630881	Sleeve	2		2									
-31	AN737TW98	Clamp	2		2									
-32	632855-1A4	Air Throttle and Control Assy. (See Figure 52) .	rf		rf									
-33	632767	632767												
-33	632767	Sleeve, Coupling	1		1									
-34	632766	Coupling, Channel Band	1		1									
-35	632729-10	② 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	MS35337-46	Washer, Lock	4		4									
-44	629275	Screw, 3/8 - 16 1 Inch Long	4		4									
		* * * *												
-45	AN844-8	Elbow, 45 Deg. 3/8 NPTF-to-1/2 Hose	1		1									

NOTES:

① Check Section VI for specification application.

② See Identification Plate for applicable dash number. For detail parts see Airesearch parts catalog TP30.

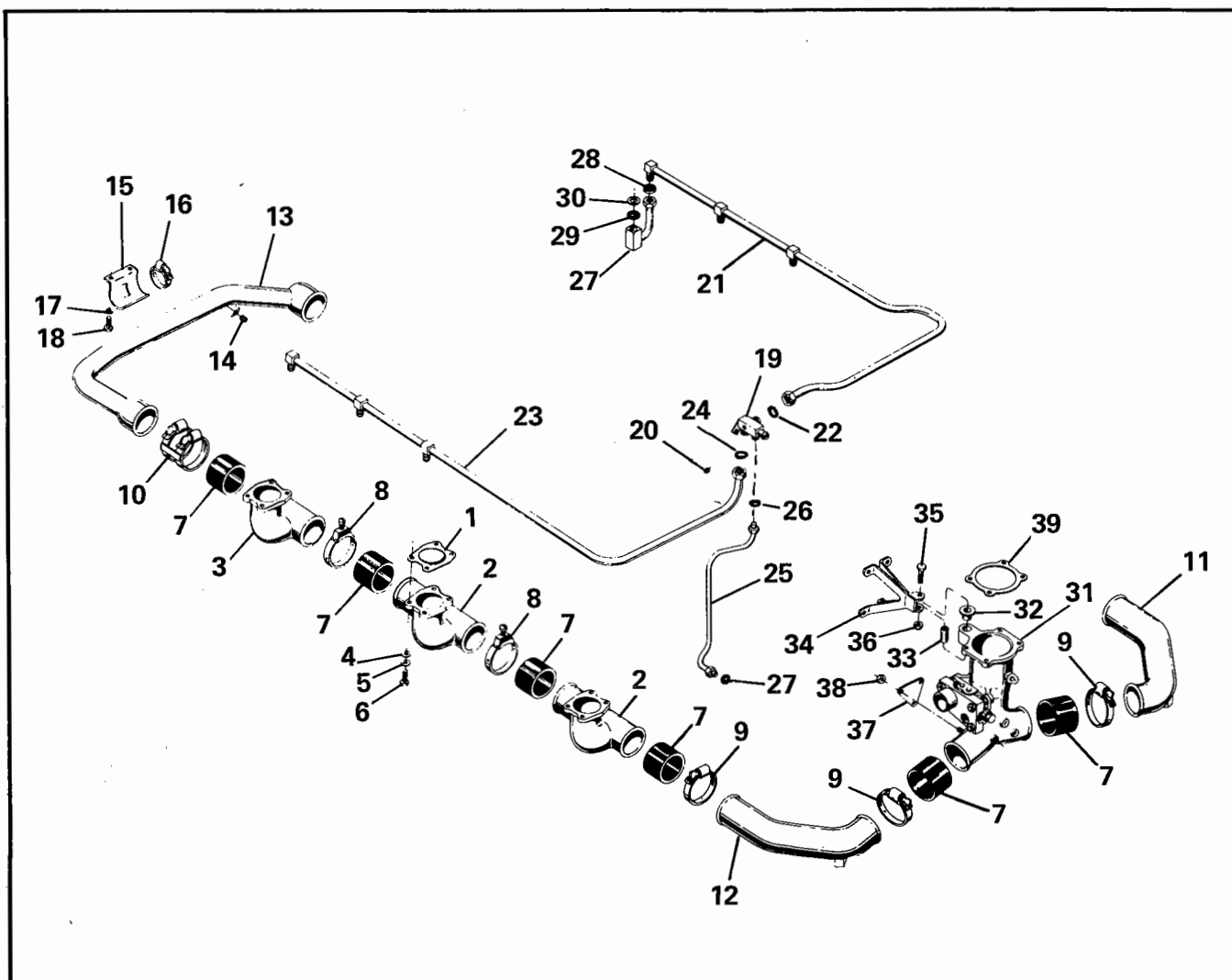


FIGURE 38. INDUCTION SYSTEM, TS10-520-C, G, H, M, P, R, AF.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				C	G	H	M	P	R	T	AF		
38-1	536413	\$	Gasket, Intake Manifold	6	6	6	6	6	6		6		
-2	629138		Tube, Elbow, Intake Manifold 1-2-3 Cylinder ...	5	5	5	5	5	5		5		
-3	629325		Tube, Elbow, Intake Manifold, Cylinder No. 6 ...	1	1	1	1	1	1		1		
			ATTACHING PARTS										
-4	20522		Washer, Plain	24	24	24	24	24	24		24		
-5	MS35337-44		Washer, Lock	24	24	24	24	24	24		24		
-6	24835		Screw, 1/4 - 20 x 7/8 Inch Long	24	24	24	24	24	24		24		
			* * * *										
-7	642917-1		Hose Intake Manifold				10	10	10		10		
-7	639660-13	\$	Hose, Intake Manifold	10	10	10							
-8	36151L		Clamp, Hose	8	8	8	8	8	8		8		
-9	631972		Clamp, Hose	4	4	4	4	4	4		4		
-10	629163-5		Clamp, Assembly, Hose	4	4	4	4	4	4		4		
-11	643254		Elbow, Assy., Intake, 1-3-5 Side, Rear	1	1	1	1	1	1		1		
-12	643255		Elbow, Assy., Intake, 2-4-5 Side, Rear	1	1	1	1	1	1		1		

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY									
			C	G	H	M	P	R	T	AF		
38-12	643998	Elbow, Assy., Intake, 2-4-6 Side, Rear	1	1	1	1	1	1		1		
-13	635645	Tube Assembly, Balance	1	1	1	1		1				
-13	642491	Tube Assembly, Balance					1			1		
-14	629518-1H	Plug, 1/8 - 27 NPTF	4	4	4	4	4	4		5		
-15	633129	Bracket, Balance Tube	1	1	1	1	1	1		1		
-16	637255-4	Clamp, Balance Tube-to-Bracket	1	1	1	1	1	1		1		
		ATTACHING PARTS										
-17	13XX202B	Washer, Lock	rf	rf	rf	rf	rf	rf		rf		
-18	530346	Screw, 5/16 - 18 x 7/8 Inch Long	rf	rf	rf	rf	rf	rf		rf		
		* * * *										
-19	641888-5	Junction Box Assembly	1	1	1	1	1	1		1		
-20	401752	Plug, Pipe, 1/8 - 27	1	1	1	1	1	1		1		
-21	630963	Tube Assy., Air Fuel Nozzle, 1-3-5 Side	1	1	1	1	1	1		1		
-22	633958-5	. Seal Compression	1	1	1	1	1	1		1		
-23	630964	Tube Assy., Air Fuel Nozzle, 2-4-6 Side	1	1	1	1	1	1		1		
-24	633958-5	. Seal, Compression	1	1	1	1	1	1		1		
-25	642004	① Tube Assy., Fuel Pump-to-Air Manifold	1	1	1	1	1	1				
-25	643746	① Tube Assy., Fuel Pump-to-Air Manifold								1		
-26	633958-3	. Seal, Compression	2	2	2	2	2	2		2		
-27	630965	Sleeve Assembly, Injector Nozzle	6	6	6	6	6	6		6		
-28	633958-3	. Seal, Compression	1	1	1	1	1	1		1		
-29	640612	\$ Washer, Rubber	6	6	6	6	6	6		6		
-30	628556	Washer, Plain	6	6	6	6	6	6		6		
-31	632774-1A2	Throttle Assembly, Air (See Figure 54)	rf	rf	rf							
-31	632774-2A7	Throttle Assembly, Air (See Figure 54)				rf	rf	rf				
-32	629353	Bushing, Air Valve Support	2	2	2	2	2	2		2		
-33	629354	Sleeve, Air Valve Support	1	1	1	1	1	1		1		
-34	630474	Bracket Assembly, Air Throttle Support	1	1	1	1						
	643085	Bracket Assembly, Air Throttle Support					1	1		1		
		ATTACHING PARTS										
-35	537728	Screw, 1/4 - 28 x 1-25/32 Inch Long	1	1	1	1	1	1		1		
-36	22661	Nut, Elastic Stop	1	1	1	1	1	1		1		
		* * * *										
-37	632750	Bracket, Air Throttle Support	1	1	1	1	1	1		1		
		ATTACHING PARTS										
-38	626487	Screw, 1/4 - 20 x 5/8 Inch Long	2	2	2	2				2		
		* * * *										
-39	630350	\$ Gasket, Air Throttle Body	1	1	1	1	1	1		1		

NOTE:

① The old style fuel pump uses a 633335 Tube Assembly. See Figure 76.

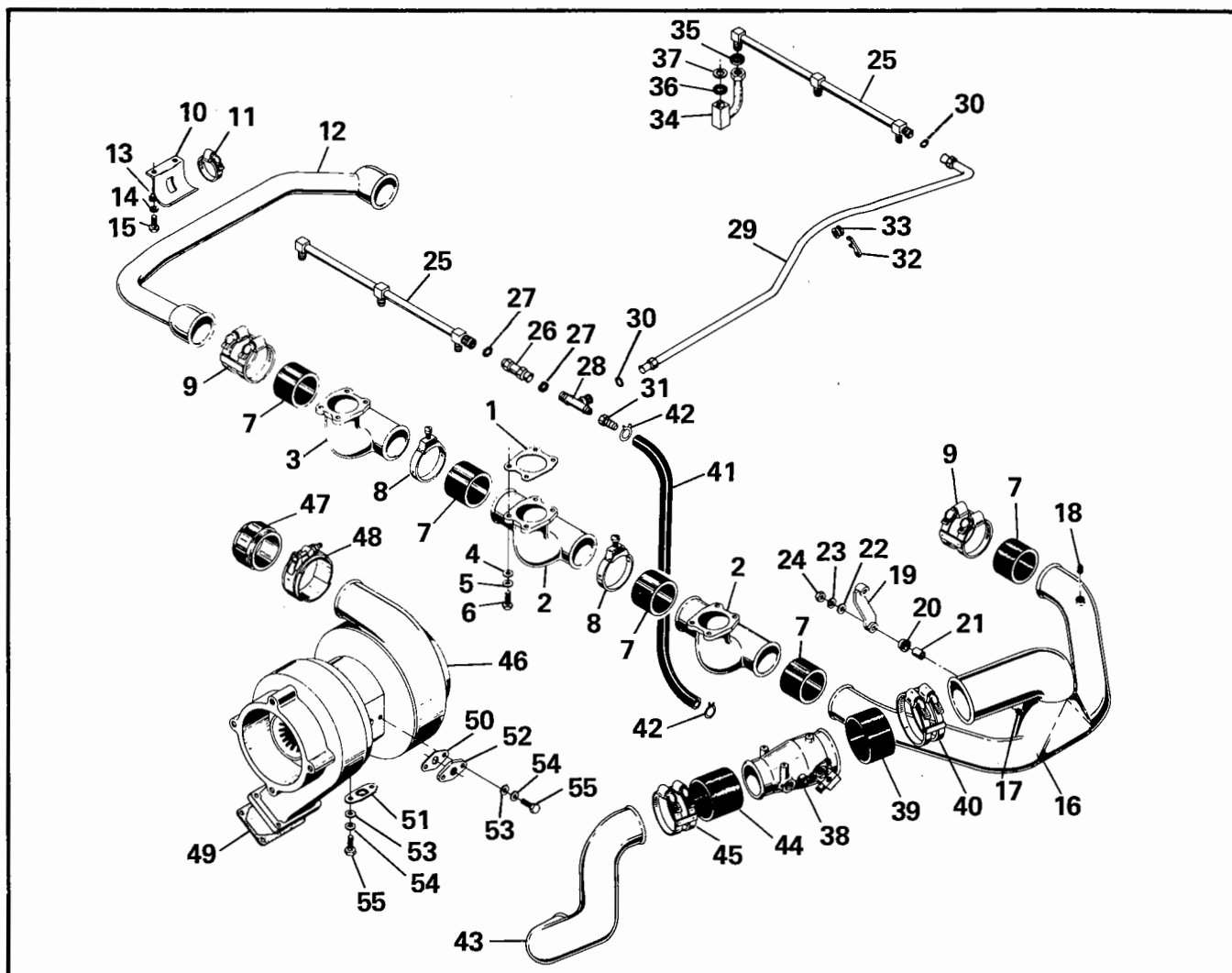


FIGURE 39. INDUCTION SYSTEM, TS10-520-D.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
39-1	536413	\$	Gasket, Intake Manifold		6								
-2	629138		Elbow, Intake Manifold 1-2-3-4-5		5								
-3	629325		Elbow, Intake Manifold, Cylinder No. 6		1								
			ATTACHING PARTS										
-4	20522		Washer, Plain		24								
-5	MS35337-44		Washer, Plain		24								
-6	24835		Screw, 1/4 - 20 x 7/8 Inch Long		24								
			* * * *										
-7	639660-13	\$	Hose, Intake Manifold		8								
-8	36151L		Clamp, Hose		8								
-9	629163-5		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										
-13	22535		Washer, Plain		2								

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY											
				B	D	E	J	K	L	N	UB	VB	WB		
39-14	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 Assy. (See Figure 55)		rf										
-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	①②	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		4										
-54	MS35337-46		Washer, Lock		4										
-55	629275		Screw, 3/8 - 16 x 1 Inch Long		4										

NOTES:

① See Identification Plate for applicable dash number. For detail parts see Airesearch parts catalog TP30.

② When ordering the 632729-10 turbocharger it is also necessary to order a turbo blankoff kit P/N 641561.

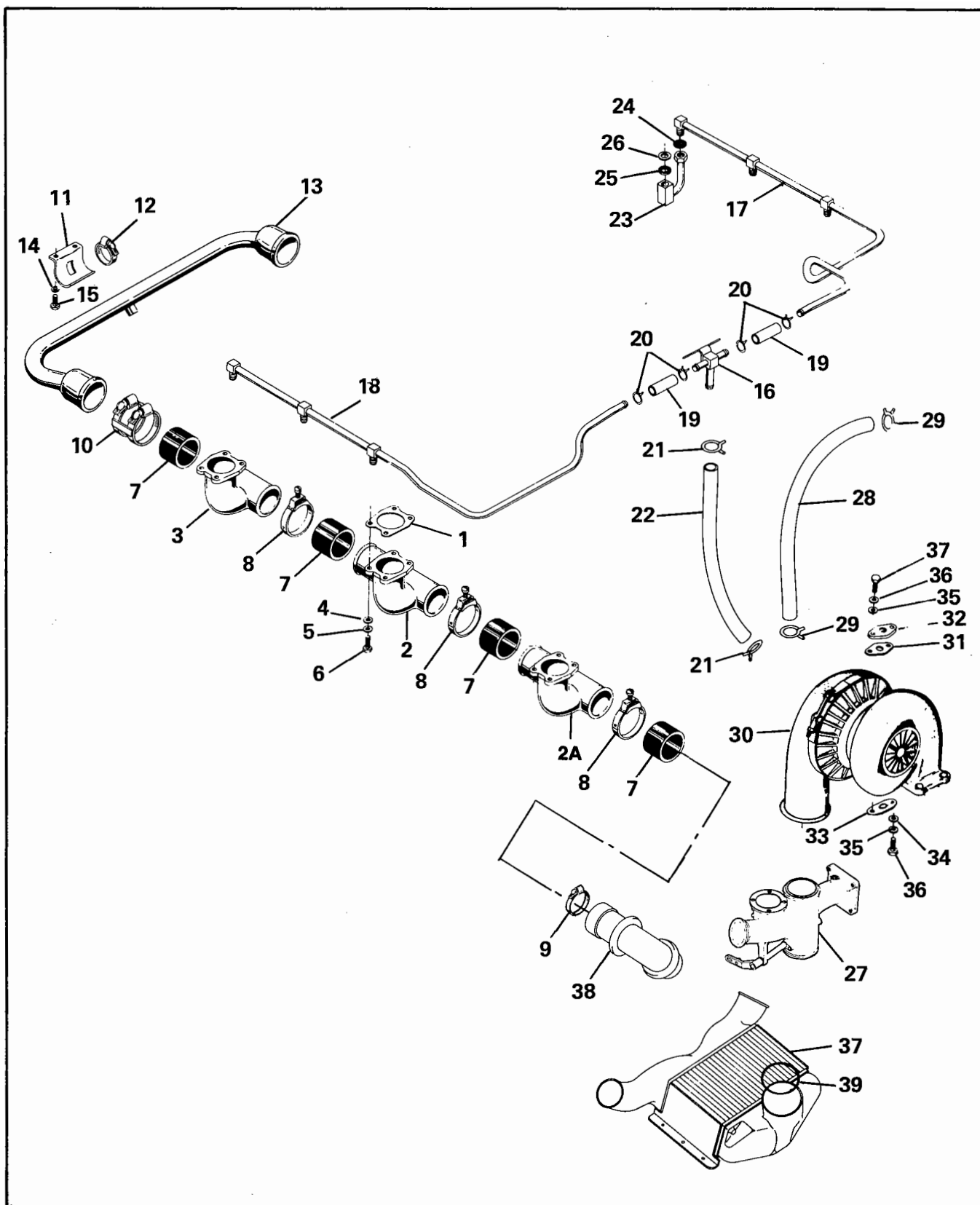


FIGURE 40. INDUCTION SYSTEM, TS10-520-J, N.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY										
				B	D	E	J	K	L	N	UB	VB	WB	
40-1	536413		\$ Gasket, Intake Manifold				6				6			
-2	629138		Elbow, Intake Manifold, Cylinder 1-3-4-5				4				4			
-2A	642590		Elbow, Intake Manifold, Cylinder No. 2				1				1			
-3	629325		Elbow, Intake Manifold, Cylinder No. 6				1				1			
			ATTACHING PARTS											
-4	20522		Washer, Plain				24				24			
-5	MS35337-44		Washer, Lock				24				24			
-6	24835		Screw, 1/4 - 20 x 7/8 Inch Long				24				24			
			* * * *											
-7	639660-13		\$ Hose Intake Manifold				6				6			
-8	36151L		Clamp, Hose				8				8			
-9	631972		Clamp, Hose				4				4			
-10	629163-5		Clamp Assembly, Hose				2				2			
-11	632871		Bracket, Balance Tube				1				1			
-12	634209		Clamp, Balance Tube-to-Bracket				1				1			
-13	642523		① Tube Assembly, Balance				1				1			
	637632		① 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	536338-.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 Assy. (See Figure 57) .				rf							
-27	636143A4		Air Throttle and Control Assy. (See Figure 57) .								rf			
-28	628555-3		Hose, Junction Box-to-Throttle Body				1				1			
-29	536388-.75		Clamp, Hose				2				2			
-30	635630		Turbocharger				1				1			
-31	628572		\$ Gasket, Turbo Oil Inlet				1				1			
-32	640793		Adapter, Turbo Oil Inlet				1				1			
-33	632710		\$ Gasket, Turbo Oil Outlet				1				1			
			ATTACHING PARTS											
-34	24767		Washer, Plain				4				4			
-35	MS35338-44		Washer, Lock				4				4			
-36	629275		Screw, 3/8 - 16 x 1 Inch Long				4				4			
			* * * *											
-37	635921		Intercooler Assembly				1				1			
-38	646019		① Elbow, Flexible				2				2			
-39	MS9021-150		\$ O-Ring				1				1			

NOTE:

① See Section VI for specification applications.

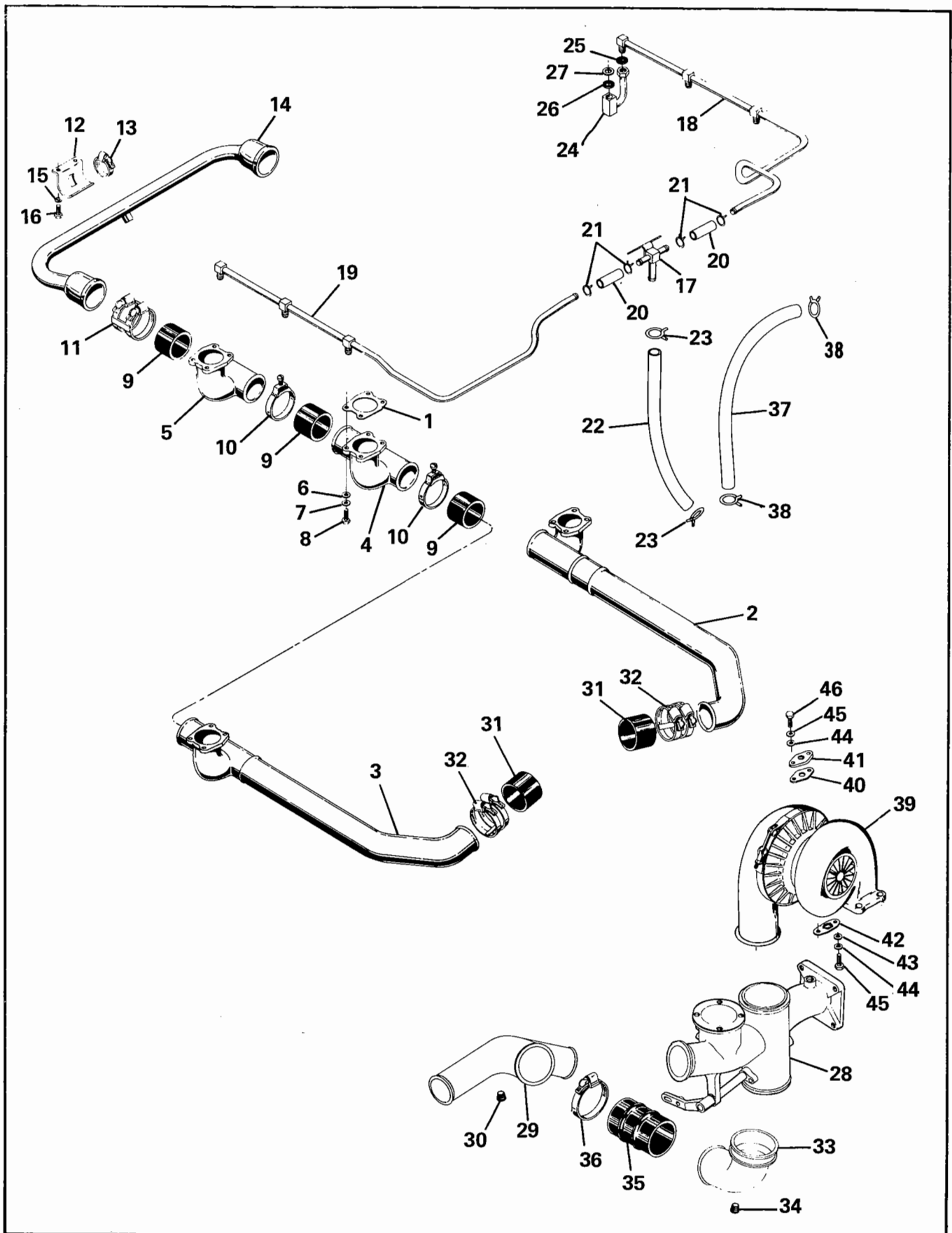


FIGURE 41. INDUCTION SYSTEM, TS10-520-K.

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY										
			B	D	E	J	K	L	N	UB	VB	WB	
41-1	536413	\$ Gasket, Intake Manifold					6						
-2	630055	Tube Assembly, Intake Manifold, Cylinder No. 1					1						
-3	630060	Tube Assembly, Intake Manifold, Cylinder No. 2					1						
-4	629138	Elbow, Intake Manifold, Cylinder 3-4-5					3						
-5	629325	Elbow, Intake Manifold, Cylinder No. 6					1						
		ATTACHING PARTS											
-6	20522	Washer, Plain					24						
-7	MS35337-44	Washer, Lock					24						
-8	24835	Screw, 1/4 - 20 x 7/8 Inch Long					24						
		* * * *											
-9	639660-13	\$ Hose, Intake Manifold					6						
-10	36151L	Clamp, Hose					8						
-11	629163-5	Clamp Assembly, Hose					2						
-12	632871	Bracket, Balance Tube					1						
-13	634209	Clamp Balance Tube-to-Bracket					1						
-14	642523	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. Assembly (See Figure 59) ..					rf						
-29	637356	Riser, Air Manifold					1						
-30	629518-1H	Plug, 1/8 - 27 NPTF					1						
-31	639660-13	\$ Hose, Intake Tube-to-Riser					2						
-32	629163-5	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	536338-.75	Clamp					2						
-39	635630	Turbocharger					1						
-40	628572	\$ Gasket, Turbo Oil Inlet					1						
-41	640793	Adapter, Turbo Oil Inlet					1						
-42	637244	\$ Gasket, Turbo Oil Outlet					1						
		ATTACHING PARTS											
-43	24767	Washer, Plain					4						
-44	MS35337-44	Washer, Lock					4						
-45	629275	Screw, 3/8 - 16 x 1 Inch Long					4						

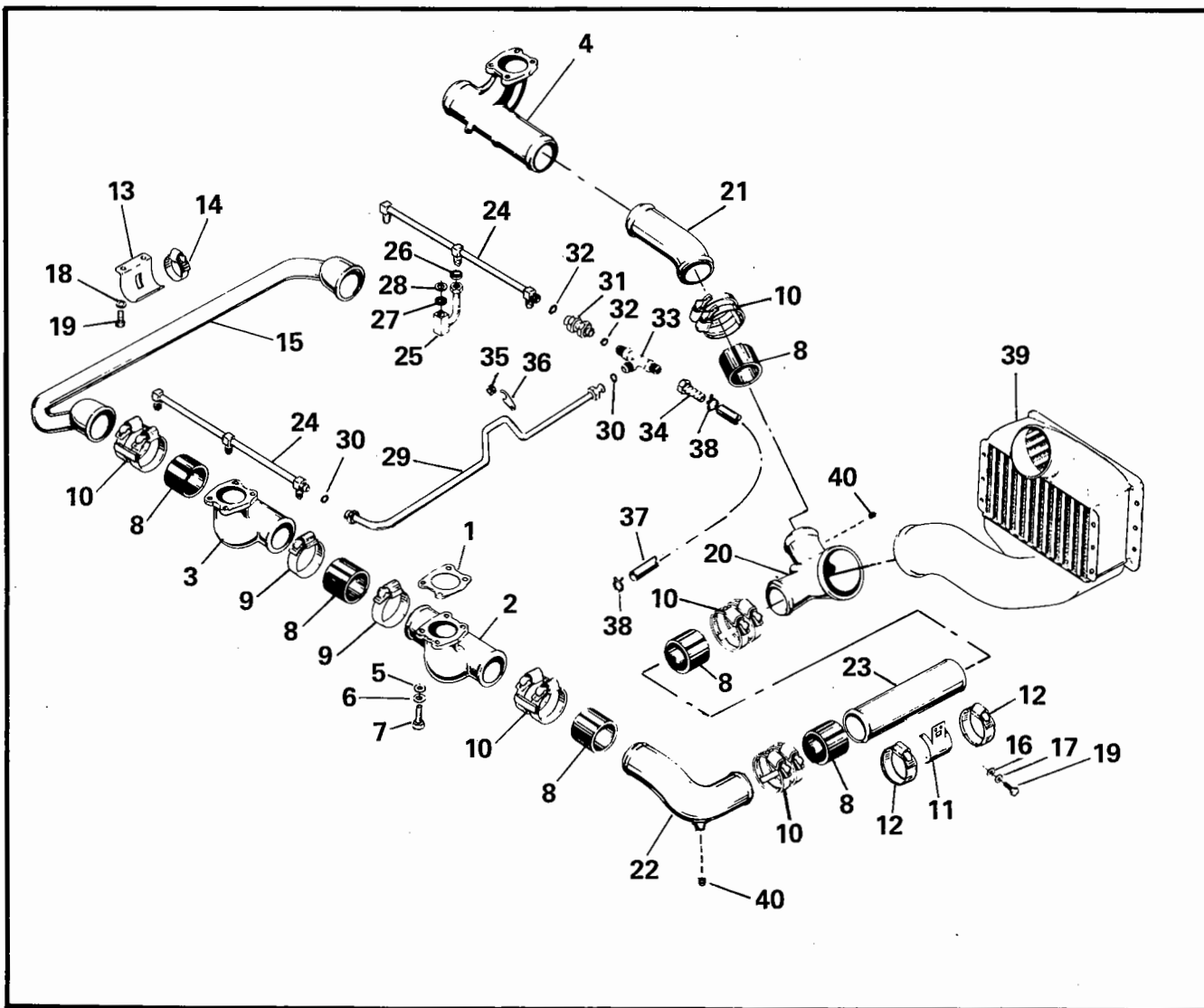


FIGURE 42. INDUCTION SYSTEM, TS10-520-L, WB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY										
				B	D	E	J	K	L	N	UB	VB	WB	
42-1	536413	\$	Gasket, Intake Manifold						6				6	
-2	629138		Elbow, Intake Manifold, Cylinder 2-4-5						3				3	
-3	629325		Elbow, Intake Manifold, Cylinder 1-6						2				2	
-4	641204		Elbow, Intake Manifold, Cylinder 3						1				1	
			ATTACHING PARTS											
-5	20522		Washer, Plain						24				24	
-6	MS35337-44		Washer, Lock						24				24	
-7	24835		Screw, 1/4 - 20 x 7/8 Inch Long						24				24	
			* * * *											
-8	639660-13		Hose						11				11	
-9	36151L		Clamp						8				8	
-10	629163-5		Clamp						5				7	
-11	646134		Bracket, Induction Tube Support						1				1	
-12	631972		Clamp, Induction Tube Bracket						2				2	
-13	632871		Bracket, Balance Tube						1				1	
-14	634209		Clamp, Balance Tube Bracket						1				1	
-15	640795		Balance Tube Assembly						1				1	
			ATTACHING PARTS											
-16	2473		Washer, Plain						2				2	
-17	13XX202B		Washer, Lock						2				2	
-18	501868		Washer, Tab						2				2	
-19	537691		Screw, 5/16 - 18 x 1 Inch Long						4				4	
			* * * *											
-20	640642		Riser, Intake Manifold						1				1	
-21	640761		Elbow, Intake Manifold, 1-3-5 Side						1				1	
-22	640764		Elbow, Intake Manifold, 2-4-6 Side						1				1	
-23	640657		Tube, Induction						1				1	
-24	633397		Tube Assembly, Air Manifold						2				2	
-25	630965		Sleeve Assembly						6				6	
-26	633958-3		. Seal, Compression						1				1	
-27	640612	\$	Washer, Rubber						6				6	
-28	628556		Washer, Metal						6				6	
-29	640765		Tube Assembly, Air Manifold						1				1	
-30	633958-5		. Seal, Compression						2				2	
-31	633719		Tube, Assembly, Air Manifold-to-Tee						1				1	
-32	633958-5		. Seal Compression						2				2	
-33	633720-1		Tee, Fitting						1				1	
-34	633721		Coupling, Barbed						1				1	
-35	MS35489-11S		Grommet, Split						1				1	
-36	633787		Bracket, Air Manifold Tube Support						1				1	
-37	628555-13		Hose, Air Throttle-to-Air Manifold						1				1	
-38	536388-.75		Clamp, Hose						2				2	
-39	640701		Intercooler						1				1	
-40	629518-1H		Plug						2				2	

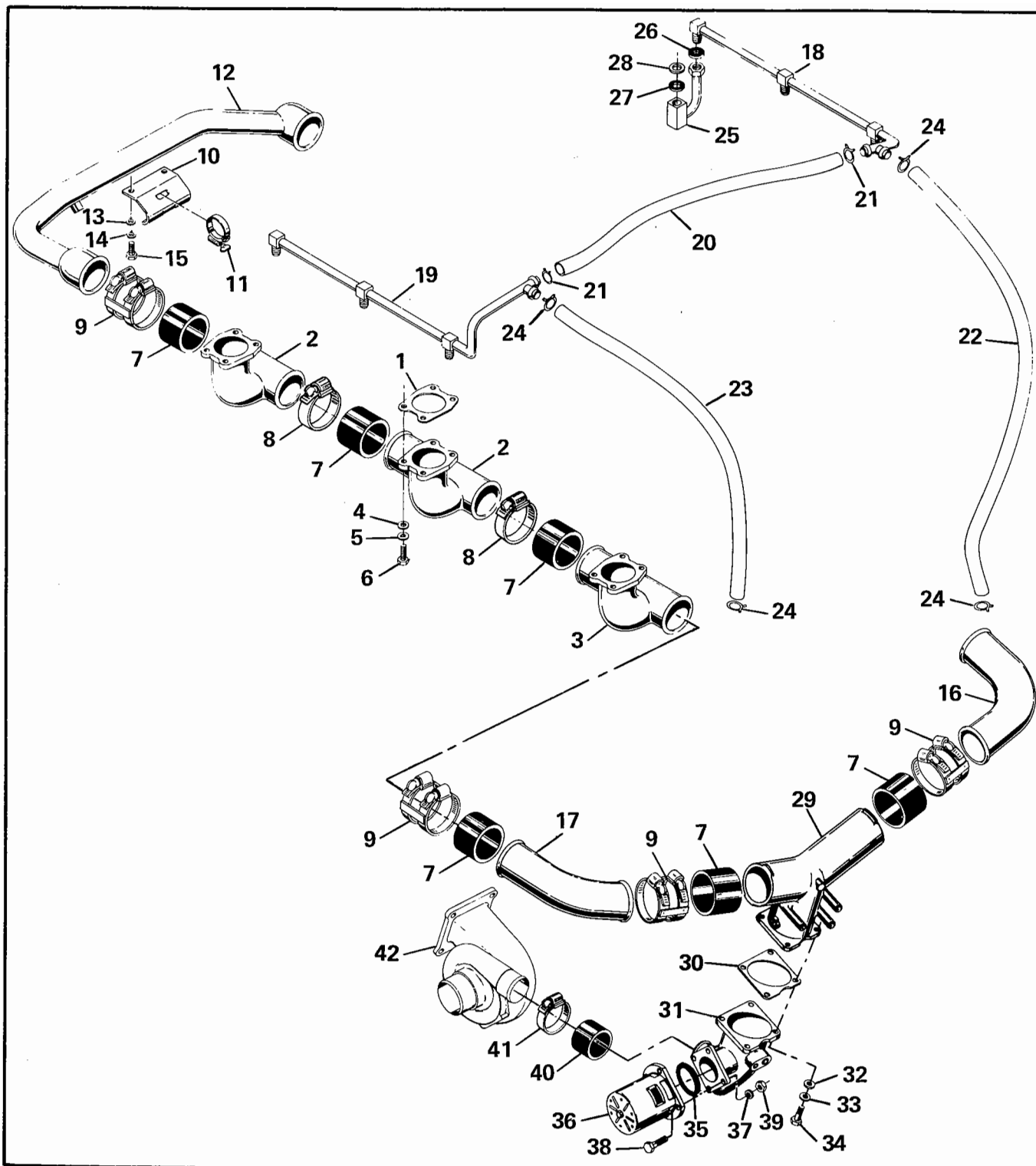


FIGURE 43. INDUCTION SYSTEM, TS10-520-T.

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY									
			C	G	H	M	P	R	T			
43-1	536413	\$ Gasket, Intake Manifold							6			
-2	629138	Tube, Elbow, Intake Manifold 1-2-3-4 Cylinder ..							1			
-3	629325	Tube, Elbow, Intake Manifold, Cylinder No. 6 ..							1			
		ATTACHING PARTS										
-4	20522	Washer, Plain							24			
-5	MS35337-44	Washer, Lock							24			
-6	24835	Screw, 1/4 - 20 x 7/8 Inch Long							24			
		* * * *										
-7	642917-1	\$ Hose, Intake Manifold							10			
-8	631972	Clamp							8			
-9	629163-5	Clamp							6			
-10	633435	Bracket, Balance Tube							1			
-11	AN737TW46	Clamp, Balance Tube Bracket							1			
-12	641261	Tube Assembly, Balance							1			
		ATTACHING PARTS										
-13	22535	Washer, Plain							rf			
-14	13XX202B	Washer, Lock							rf			
-15	530346	Screw							rf			
		* * * *										
-16	627820	Elbow, Intake Tube 1-3-5 Side							1			
-17	535681	Elbow, Intake Tube 2-4-6 Side							1			
-18	642832	Tube Assembly, Air Manifold							1			
-19	642833	Tube Assembly, Air Manifold							1			
-20	628555-21	Hose, 1-3-5 Side-to-2-4-6 Side							1			
-21	536388-.47	Clamp							2			
-22	628555-20	Hose, Tube-to-Thr. Adapter							1			
-23	628555-18	Hose, Tube-to-Fuel Pump							1			
-24	536388-.62	Clamp							4			
-25	630965	Sleeve Assembly, Injection Nozzle							6			
-26	633958-3	Seal, Compression							1			
-27	640612	\$ Washer, Rubber							6			
-28	628556	Washer, Plain							6			
-29	639715A8	Throttle and Control Assy. (See Figure 63)							rf			
-30	642662	Gasket							1			
-31	642512	Adapter, Thr. Body Inlet							1			
		ATTACHING PARTS										
-32	20522	Washer, Plain							4			
-33	MS35337-44	Washer, Lock							4			
-34	24835	Screw							4			
		* * * *										
-35	MS29513-138	O-Ring							1			
-36	639319-24	Valve, Overboost							1			
		ATTACHING PARTS										
-37	AN960-10L	Washer, Flat							8			
-38	AN3-6A	Screw							4			
-39	AN363-1032	Nut, Self Locking							4			
-40	24827	\$ Hose							1			
-41	AN737TW82	Clamp							2			
-42	642518-4	Turbocharger							rf			

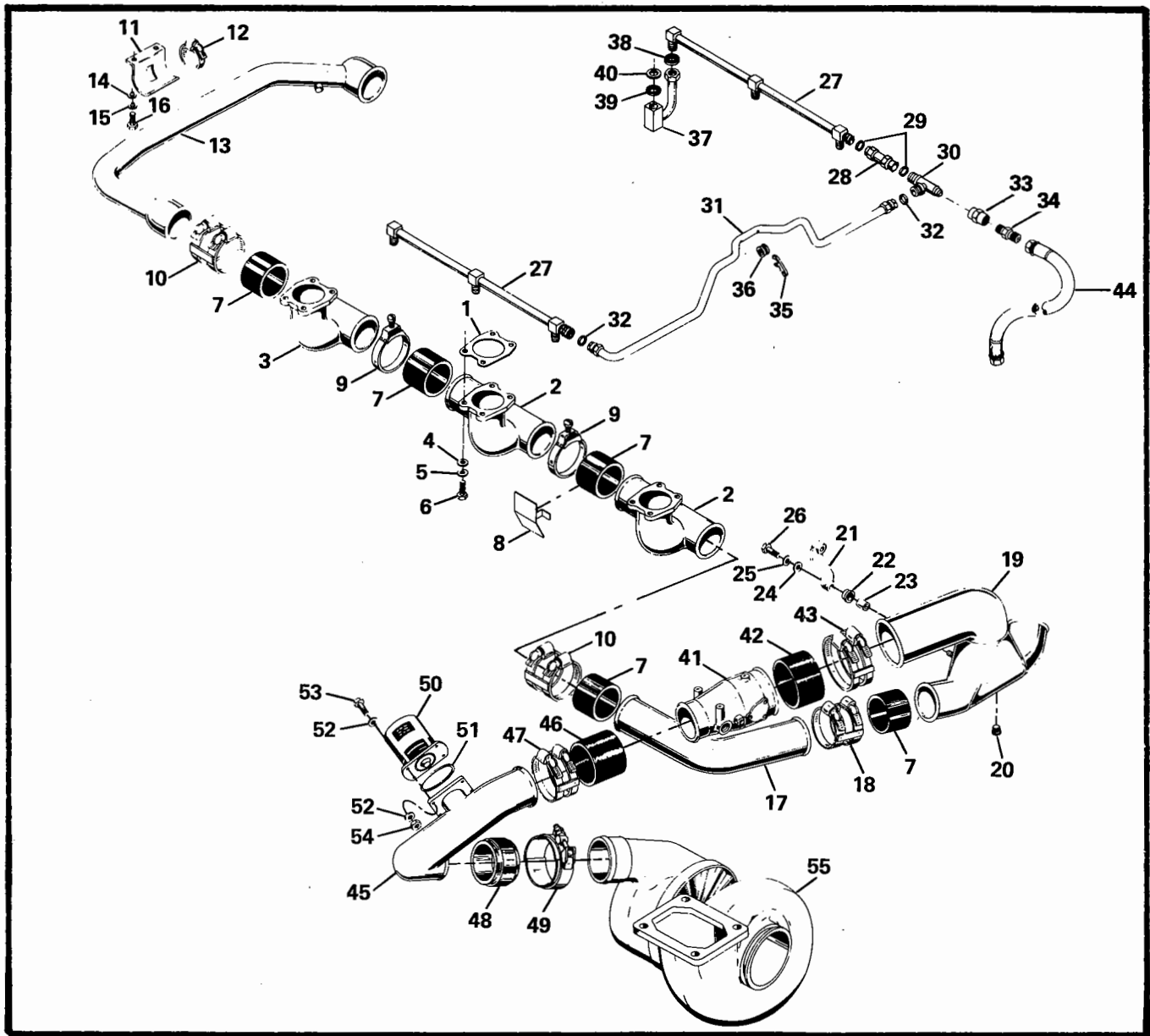


FIGURE 44. INDUCTION SYSTEM, TS10-520-UB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
44-1	536413	\$	Gasket, Intake Manifold								6		
-2	629138		Elbow, Intake Manifold, Cylinder 1-2-3-4-5								5		
-3	629325		Elbow, Intake Manifold, Cylinder No. 6								1		
			ATTACHING PARTS										
-4	20522		Washer, Plain								24		
-5	MS35337-44		Washer, Lock								24		
-6	24835		Screw, 1/4 - 20 x 7/8 Inch Long								24		
			* * * *										
-7	639660-13	\$	Hose, Intake Manifold								10		
-8	642517		Shield, Heat								6		
-9	36151L		Clamp, Hose								8		
-10	629163-5		Clamp								2		

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY									
			B	D	E	J	K	L	N	UB	VB	WB
44-11	633291	Bracket, Balance Tube								1		
-12	632444-2	Clamp, Balance Tube Bracket								1		
-13	642514	Tube Assembly, Balance								1		
		ATTACHING PARTS										
-14	22535	Washer, Plain								rf		
-15	13XX202B	Washer, Lock								rf		
-16	537750	Screw								rf		
		* * * *										
-17	642513	Tube, Intake Manifold								2		
-18	629163-5	Clamp								2		
-19	642465	Riser Assembly, Intake Manifold								1		
-20	642464	Bracket Assembly, Manifold Riser Support								1		
		ATTACHING PARTS										
-22	631836	Bushing, Support Bracket								4		
-23	631837	Sleeve, Support Bracket								2		
-24	538100	Washer, Plain								3		
-25	AN960-416	Washer, Plain								1		
-26	537802	Screw								1		
		* * * *										
-27	633397	Tube Assembly, Air Manifold								2		
-28	633719	Tube Assembly, Air								1		
-29	633958-5	. Seal, Compression								2		
-30	633720-1	Tee, Fitting								1		
-31	640765	Tube Assembly, Air Manifold								1		
-32	633958-5	. Seal, Compression								2		
-33	AN910-2	Coupling								1		
-34	630065	Fitting, Connector								1		
-35	633787	Bracket								1		
-36	MS35489-11S	Grommet								1		
-37	630965	Sleeve Assembly, Injector Nozzle								6		
-38	633958-3	. Seal, Compression								1		
-39	640612	\$ Washer, Rubber								6		
-40	628556	Washer, Plain								6		
-41	642703A5	Throttle and Control Assy. (See Figure 64)								rf		
-42	633281	Hose								1		
-43	629163-1	Clamp								1		
-44	641047S6S-37.00	Hose Assembly								1		
-45	642394	Elbow Assembly								1		
-46	639660-6	Hose								1		
-47	629163	Clamp								1		
-48	632767	Sleeve, Coupling								1		
-49	632766	Coupling, Channel Band								1		
-50	639319-26	Valve, Overboost								1		
		ATTACHING PARTS										
-51	MS29513-138	O-Ring								1		
-52	AN960-10L	Washer, Flat								8		
-53	AN3-6A	Bolt								4		
-54	AN363-1032	Nut								4		
		* * * *										
-55	632729-13	Turbocharger								rf		

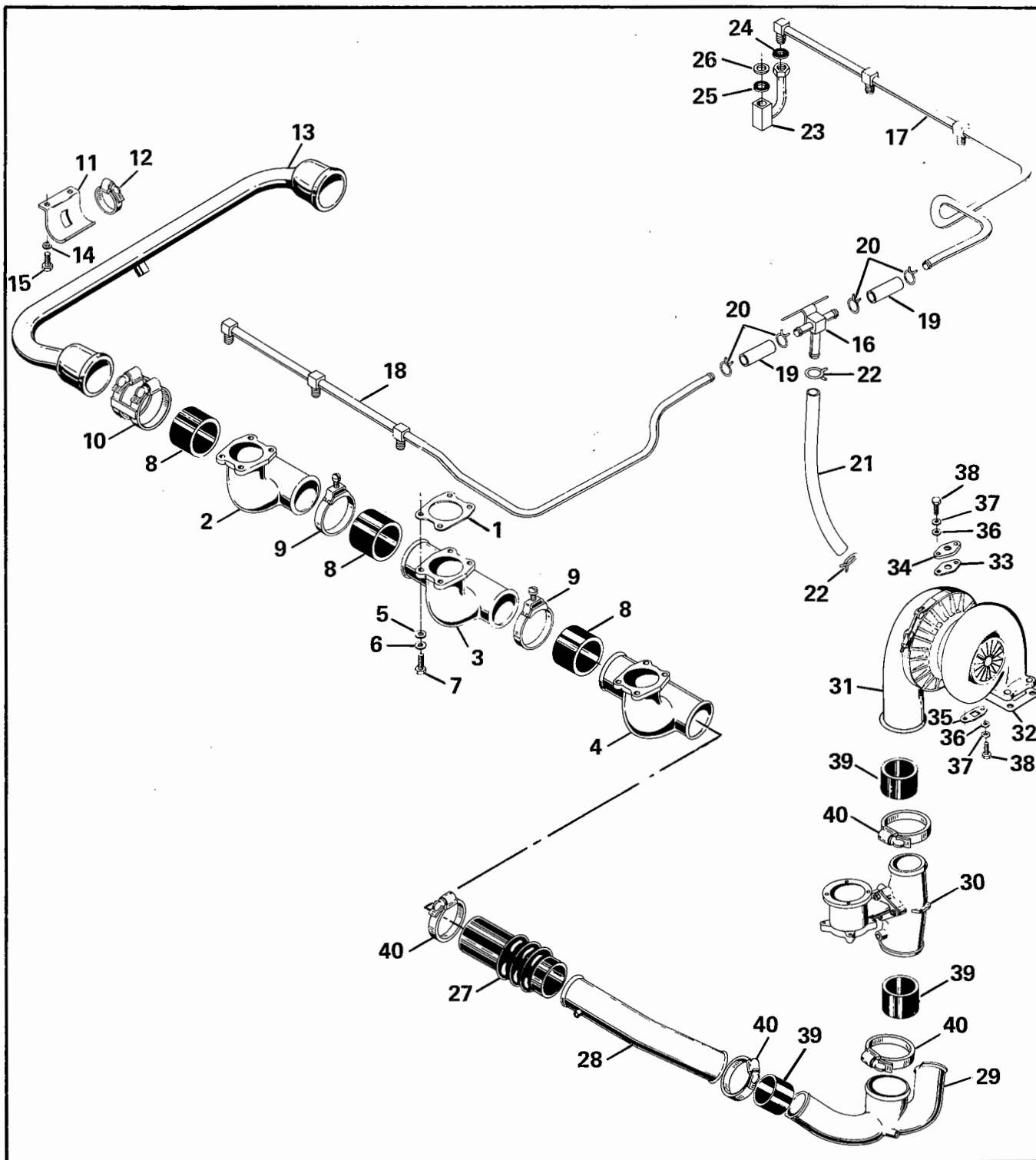


FIGURE 45. INDUCTION SYSTEM, TS10-520-VB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY										
				B	D	E	J	K	L	N	UB	VB	WB	
45-1	536413	\$	Gasket, Intake Manifold									6		
-2	629138		Tube, Intake Manifold, Cylinder 1-3-4-5									4		
-3	642590		Tube, Intake Manifold, Cylinder No. 2									1		
-4	629325		Tube, Intake Manifold, Cylinder No. 6									1		
			ATTACHING PARTS											
-5	20522		Washer, Plain									24		
-6	MS35337-44		Washer, Lock									24		
-7	24835		Screw									24		
			* * * *											
-8	639660-13		Hose									6		
-9	36151L		Clamp									8		
-10	629163-5		Clamp									2		
-11	632871		Bracket, Balance Tube									1		
-12	634209		Clamp, Balance Tube-to-Bracket									1		
-13	642523		Tube Assembly, Balance									1		
			ATTACHING PARTS											
-14	13XX202B		Washer, Lock									rf		
-15	530346		Screw									rf		
			* * * *											
-16	636355		Box Assembly, Junction									1		
-17	636353		Tube Assembly, 1-3-5 Side									1		
-18	636380		Tube Assembly, 2-4-6 Side									1		
-19	628555-4		Hose, Tube-to-Junction Box									2		
-20	536388-.62		Clamp									4		
-21	628555-5		Hose, Junction Box-to-F/P									2		
-22	536388-.75		Clamp									2		
-23	630965		Sleeve Assembly, Injector Nozzle									6		
-24	633958-3		. Seal, Compression									1		
-25	640612	\$	Washer, Rubber									6		
-26	628556		Washer, Plain									6		
-27	642591		Convuluted Bellows									2		
-28	642562		Tube, Intake Manifold									2		
-29	642527		Riser Assembly, Manifold									1		
-30	642702A4		Air Throttle and Control Assy. (See Figure 66) .									rf		
-31	632729-12		Turbocharger									rf		
-32	636465		Gasket, Exhaust Inlet									1		
-33	628572		Gasket, Turbo Oil Inlet									1		
-34	640793		Adapter, Turbo Oil Inlet									1		
-35	632710		Gasket, Turbo Oil Outlet									1		
			ATTACHING PARTS											
-36	401507		Washer, Plain									4		
-37	MS35337-46		Washer, Lock									4		
-38	629275		Screw									4		
			* * * *											
-39	* * *		Hose									2		
-40	* * *		Clamps									8		

NOTE:

* * * These parts are not supplied by TCM. Must be obtained through airframe manufacturer.

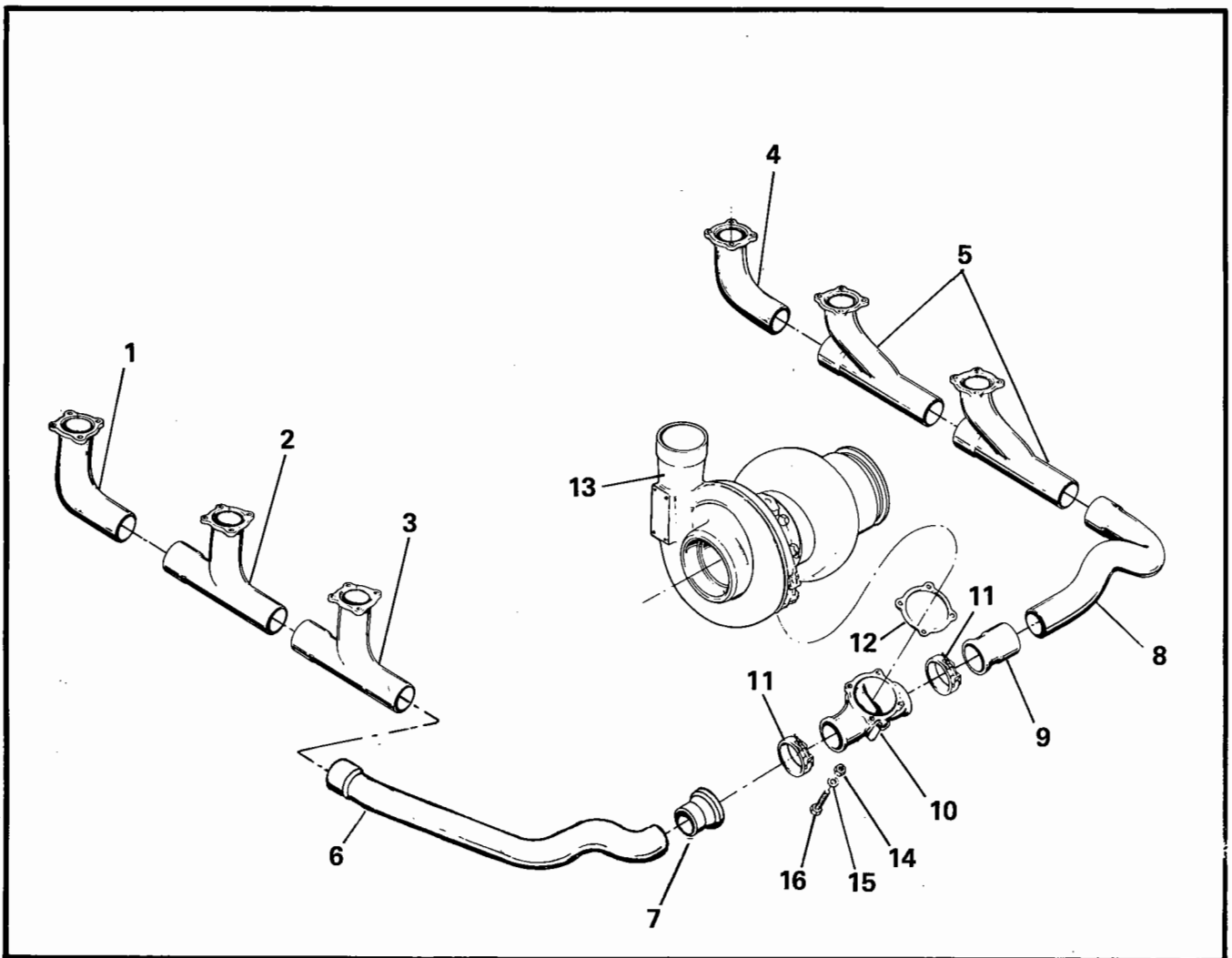


FIGURE 46. EXHAUST SYSTEM, TS10-520-L, WB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY										
				B	D	E	J	K	L	N	UB	VB	WB	
46-1	640707		Elbow, Cylinder No. 6						1				1	
-2	640677		Elbow, Cylinder No. 4						1				1	
-3	640706		Elbow, Cylinder No. 2						1				1	
-4	640705		Elbow, Cylinder No. 5						1				1	
-5	640704		Elbow, Cylinder No. 1 & 3						2				2	
-6	642067	①	Elbow, 2-4-6 Side						1				1	
-7	642066		Exhaust Flange						1				1	
-8	640710		Elbow, 1-3-5 Side						1				1	
-9	640711		Connector						1				1	
-10	640712		Turbo Adapter						1				1	
-11	641284		Coupling						2				2	
-12	640877		Gasket, Turbo						1				1	
-13	640327-1		Turbocharger (See Figure 49)						rf				rf	
ATTACHING PARTS														
-14	NAS1587-6		Washer, Plain						8				8	
-15	639332		Nut, Lock						4				4	
-16	NAS1006-10A		Bolt						4				4	

NOTE:

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

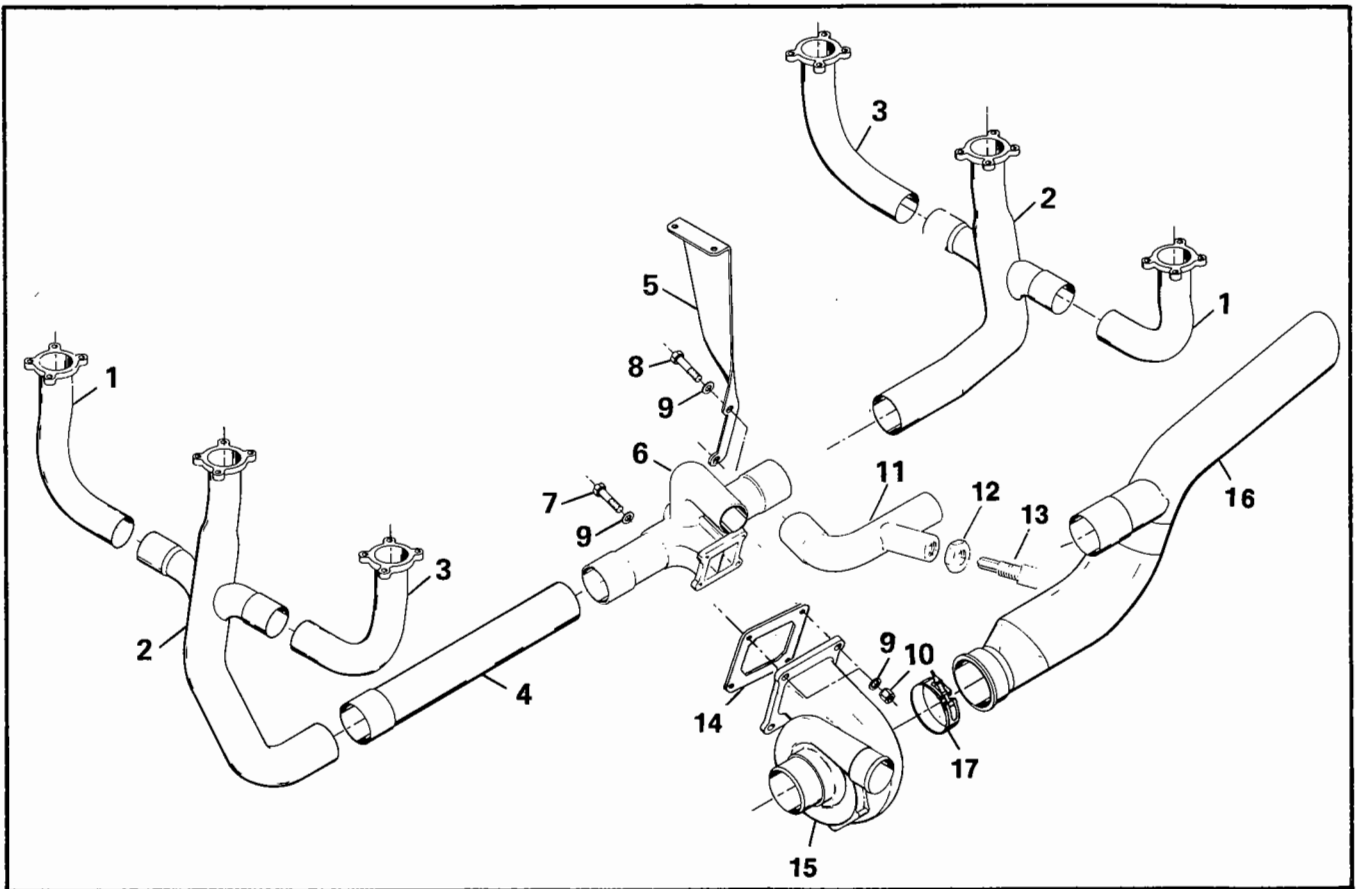


FIGURE 47. EXHAUST SYSTEM, TS10-520-T.

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY									
			C	G	H	M	P	R	T			
47-1	643878	Elbow, Cylinder No. 1 & 6							2			
-2	643876	Elbow, Cylinder No. 3 & 4							2			
-3	643877	Elbow, Cylinder No. 2 & 5							2			
-4	643879	Tube, Exhaust							1			
-5	642680	Bracket, Turbo							1			
-6	643880	Cross Pipe and Flange Assembly							1			
		ATTACHING PARTS										
-7	NAS1006-11A	Bolt							2			
-8	NAS1006-13A	Bolt							2			
-9	NAS1587-6	Washer							8			
-10	NAS1021C6	Nut							4			
		* * * *										
-11	643882	Valve Assembly, By-Pass							1			
-12	AN316C10R	. Nut							1			
-13	642872	. Bolt							1			
-14	636465	\$ Gasket, Exhaust							1			
-15	642518-4	Turbocharger (See Figure 50)							1			
-16	643881	Tailpipe Assembly							1			
		ATTACHING PARTS										
-17	633358	Clamp							1			

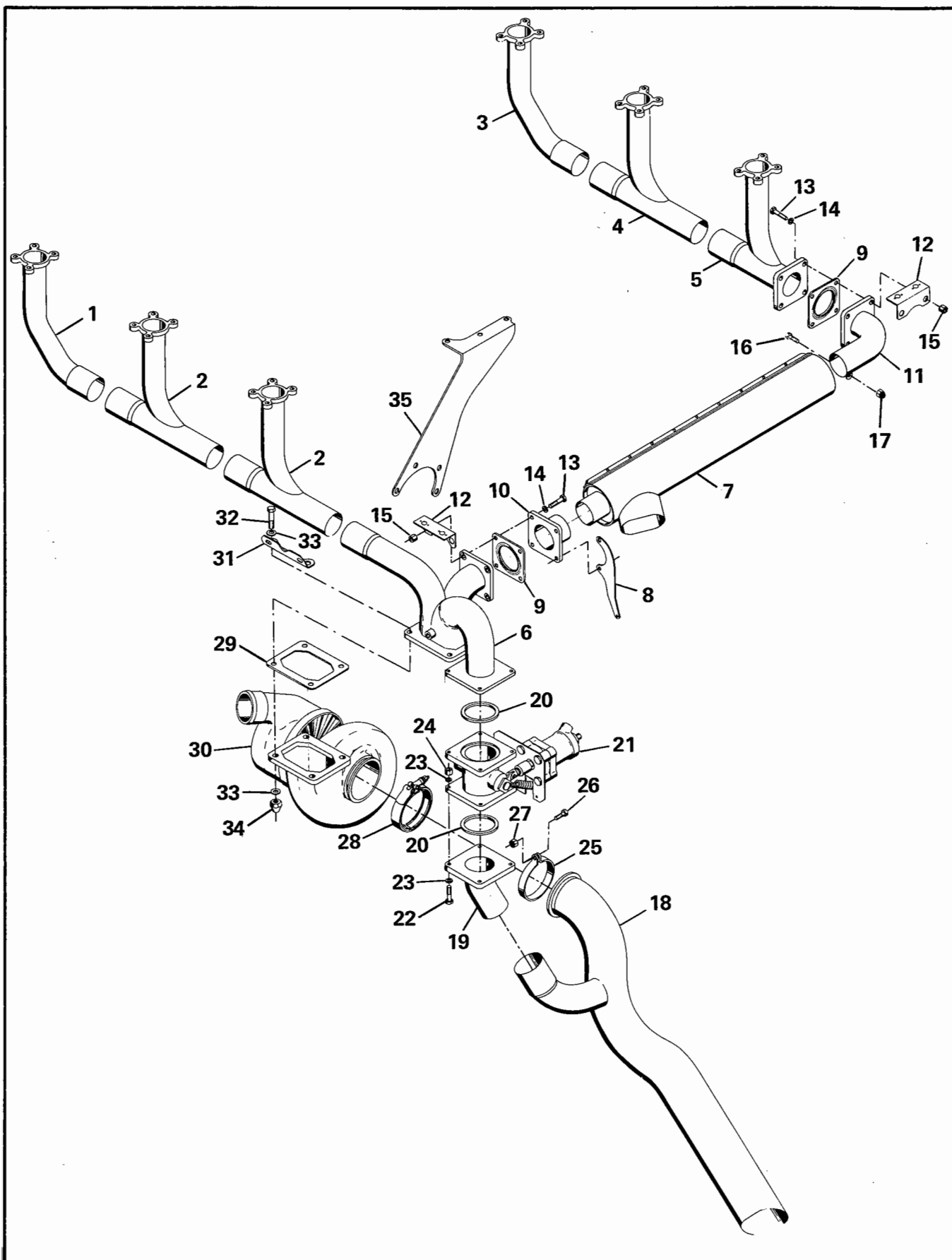


FIGURE 48. EXHAUST SYSTEM, TS10-520-UB.

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY										
			B	D	E	J	K	L	N	UB	VB	WB	
48-1	642674	Elbow, Exhaust, Cylinder No. 6								1			
-2	642671	Tee, Exhaust, Cylinder 2 & 4								1			
-3	642673	Elbow, Exhaust, Cylinder No. 5								1			
-4	642672	Tee, Exhaust, Cylinder No. 3								2			
-5	642670	Tee, Exhaust, Cylinder No. 1								1			
-6	642668	Inlet Assembly, Turbo								1			
-7	642663	Heater Assembly, Exhaust								1			
-8	642539	Bracket, Sleeve-to-Tailpipe								1			
-9	642502	Gasket								2			
-10	642891	Sleeve, Exhaust								1			
-11	642666	Elbow, Exhaust								1			
-12	643719	Bracket, Exhaust								2			
ATTACHING PARTS													
-13	MS20034-4	Bolt								8			
-14	NAS1587-4	Washer								10			
-15	MS20500-428	Nut								8			
-16	AN3-4A	Bolt								1			
-17	MS21044N3	Nut, Self Locking								1			
* * * *													
-18	642392	Tailpipe, Exhaust								1			
-19	642665	Elbow, Tailpipe								1			
-20	642520	Gasket								2			
-21	636188-17	Wastegate (See Figure 51)								rf			
ATTACHING PARTS													
-22	MS20034-5	Bolt								8			
-23	NAS1587-4	Washer								16			
-24	MS20500-428	Nut								8			
-25	642537	Clamp								1			
-26	MS20033-1	Bolt								1			
-27	MS20500-1032	Nut								1			
-28	642519	Coupling								1			
* * * *													
-29	636465	\$ Gasket, Exhaust								1			
-30	632729-13	Turbocharger (See Figure 51)								rf			
-31	642700	Bracket, Turbo Heat Shield								2			
ATTACHING PARTS													
-32	NAS1006-10A	Bolt								4			
-33	NAS1587-6	Washer								8			
-34	639332	Nut								4			
* * * *													
-35	642391	Bracket, Turbocharger								1			

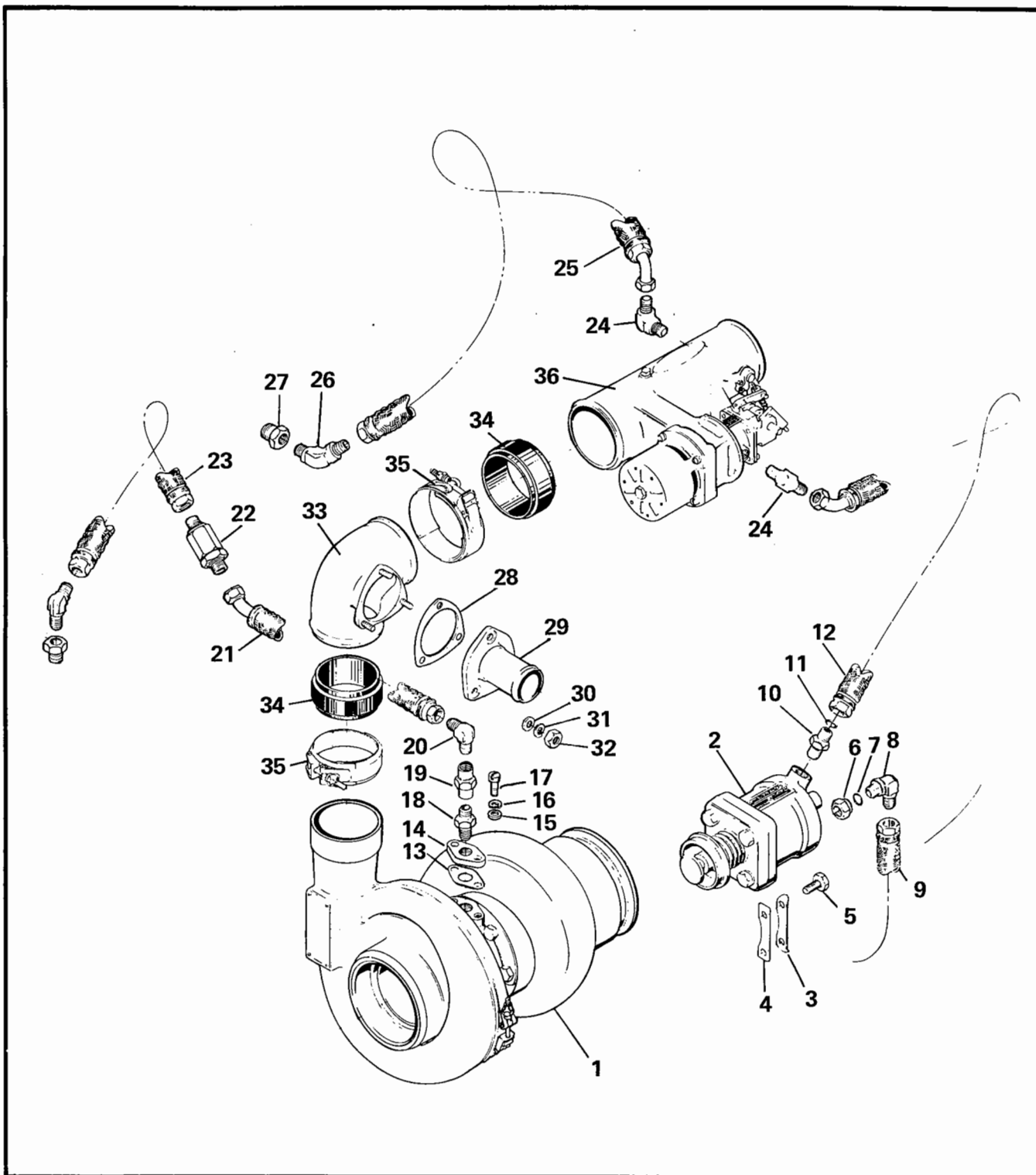


FIGURE 49. INDUCTION/EXHAUST RELATED PARTS, TS10-520-L, WB.

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY										
			B	D	E	J	K	L	N	UB	VB	WB	
49-1	640327-1	Turbocharger						1				1	
-2	635381-2	. Wastegate Valve						1				1	
		ATTACHING PARTS											
-3	477290	⓪ . Clamp, Plate						2				2	
-4	477291	⓪ . Lock, Plate						2				2	
-5	400573-8	⓪ . Bolt, 5/16 - 18 x 1/2 Inch Long						4				4	
		* * * *											
-6	AN924-4	Nut, Wastegate Oil Inlet						1				1	
-7	MS28778-4	O-Ring						1				1	
-8	AN833-4	Elbow						1				1	
-9	641100S4S20.00	Hose, Assembly, Oil Cooler-to-Wastegate						1				1	
-10	AN815-6	Fitting, Straight, Wastegate Oil Outlet						1				1	
-11	MS28778-6	O-Ring						1				1	
-12	641100Y6S16.00	Hose, Assy., Wastegate-to-Controller						1				1	
-13	628572	Gasket						1				1	
-14	640793	Adapter, Turbo Oil Inlet						1				1	
		ATTACHING PARTS											
-15	401507	Washer, Plain						2				2	
-16	MS35337-46	Washer, Lock						2				2	
-17	629275	Screw						2				2	
		* * * *											
-18	AN911-2	Nipple						1				1	
-19	AN910-2	Coupling						1				1	
-20	632616	Elbow						1				1	
-21	64100Y6S10.00	Hose Assembly, Turbo Inlet-to-Check Valve						1				1	
-22	643797	Check Valve						1				1	
-23	641100S6S6.00	Hose Assembly, Check Valve-to-Oil Cooler						1				1	
-24	637459	Elbow, Controller						2				2	
-25	641100Y6S25.75	Hose, Assembly, Controller-to-Engine						1				1	
-26	MS20823-6B	Elbow, 45 Degree						1				1	
-27	AN912-2	Reducer, Bushing						1				1	
-28	640095	Gasket, Sonic Venturi						1				1	
-29	640094-4	Sonic, Venturi						1				1	
		ATTACHING PARTS											
-30	AN960-10L	Washer, Plain						3				3	
-31	MS35338-43	Washer, Lock						3				3	
-32	2436	Nut, Plain, Hex						3				3	
		* * * *											
-33	640641	Induction Tube						1				1	
-34	628672	Sleeve						2				2	
-35	628670	Coupling						2				2	
-36	640971A2	Throttle and Control Assy., (See Figure 71)						1					
-36	640971A3	Throttle and Control Assy., (See Figure 71)										1	

NOTE:

- ⓪ Airesearch part numbers.

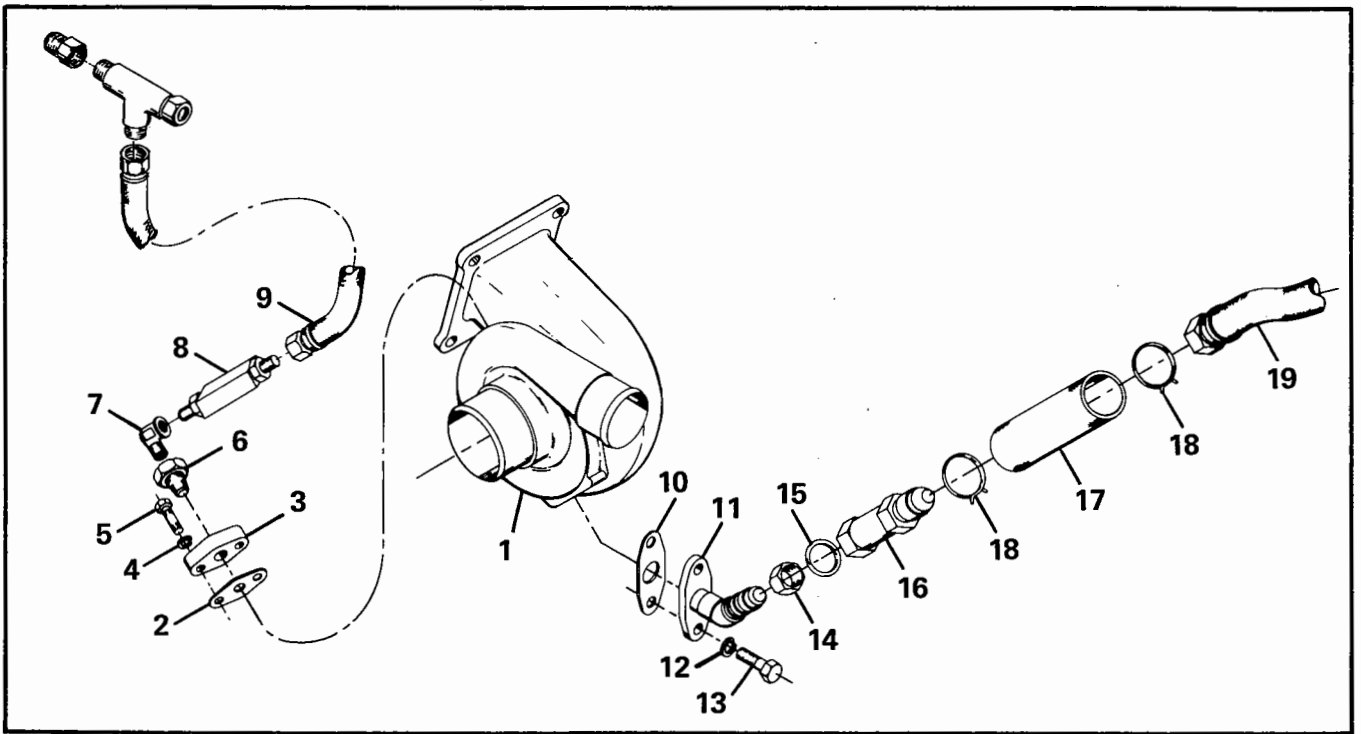


FIGURE 50. INDUCTION/EXHAUST RELATED PARTS, TS10-520-T.

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY									
			C	G	H	M	P	R	T			
50-1	642518-4	Turbocharger							1			
-2	642658	Gasket, Turbo Oil Inlet							1			
-3	642659	Adapter, Turbo Oil Inlet							1			
		ATTACHING PARTS										
-4	MS35337-45	Washer, Lock							2			
-5	537750	Bolt							2			
		* * * *										
-6	AN912-1	Bushing, Reducer							1			
-7	627119	Elbow, 90 Degree Street							1			
-8	643148	Valve Assembly, Check							1			
-9	641047S4S20.00	Hose, C/C-to-Turbo							1			
-10	642657	Gasket, Turbo Oil Outlet							1			
-11	642801	Adapter, Turbo Oil Outlet							1			
		ATTACHING PARTS										
-12	MS35337-46	Washer, Lock							2			
-13	629275	Bolt							2			
		* * * *										
-14	AN924-8	Nut							1			
-15	MS28778-8	O-Ring							1			
-16	642800	Valve Assembly, Check							1			
-17	642874-2	Sleeve, Fire							1			
-18	536388-1.50	Clamp							2			
-19	641047S8S29.00	Hose, Turbo-to-Scav. Pump							1			

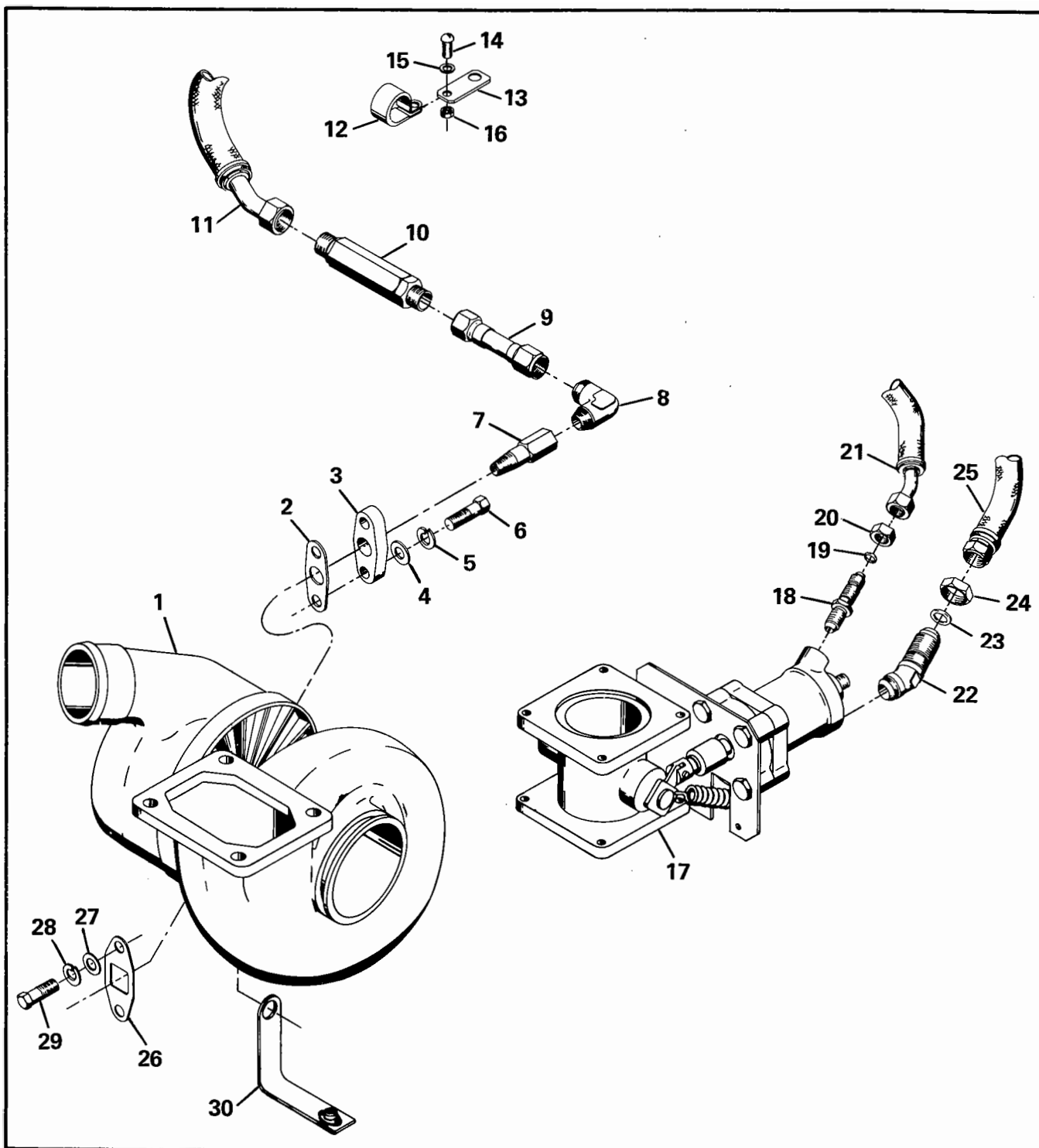


FIGURE 51. INDUCTION/EXHAUST RELATED PARTS, TS10-520-UB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY										
				B	D	E	J	K	L	N	UB	VB	WB	
51-1	632729-13		Turbocharger									1		
-2	628572	\$	Gasket, Turbo Oil Inlet									1		
-3	640793		Adapter, Turbo Oil Inlet									1		
			ATTACHING PARTS											
-4	401507		Washer, Plain									2		
-5	MS35337-46		Washer, Lock									2		
-6	629275		Bolt									2		
			* * * *											
-7	639513		Extension, Turbo Inlet									1		
-8	MS20822-6		Elbow, 90 Degree									1		
-9	642223		Tube Assembly									1		
-10	643797		Valve Assembly, Check									1		
-11	641047Y6S19.00		Hose, C/C-to-Turbo									1		
-12	MS21919DF13		Clamp									1		
-13	642715		Bracket									1		
			ATTACHING PARTS											
-14	AN520-10-8		Screw									1		
-15	An960-10L		Washer									1		
-16	2436		Nut									1		
			* * * *											
-17	636188-17		Valve Assembly, Wastegate									1		
-18	AN832-4		Fitting, Nipple									1		
-19	MS28778-4		O-Ring									1		
-20	AN924-4		Nut									1		
-21	641047Y4YG18.00		Hose, O/C-to-Wastegate									1		
-22	AN837-6		Elbow									1		
-23	MS28778-6		O-Ring									1		
-24	AN924-6		Nut									1		
-25	639356-6-16.00		Hose, Wastegate-to-Controller									1		
-26	632710	\$	Gasket, Turbo Oil Outlet									1		
			ATTACHING PARTS											
-27	401507		Washer, Plain									2		
-28	MS35337-46		Washer, Lock									2		
-29	629275		Bolt									2		
			* * * *											
-30	642701		Bracket, Turbo Heat Shield									1		

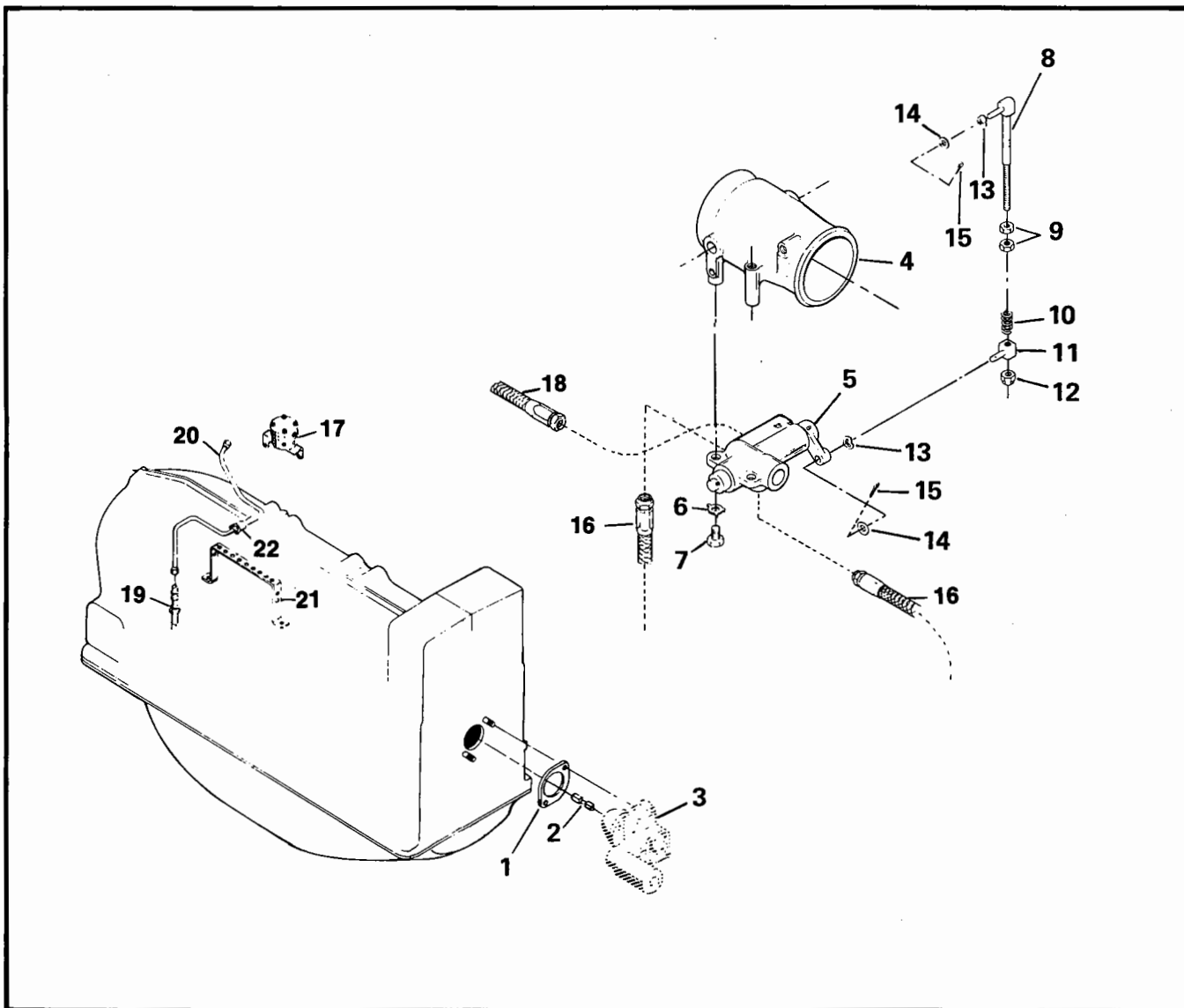


FIGURE 52. FUEL INJECTION SYSTEM, TS10-520-B, E.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY										
				B	D	E	J	K	L	N	UB	VB	WB	
52-1	630763		\$ Gasket, Fuel Pump-to-C/Case	1		1								
-2	631263		Coupling, C/Shaft Gear-to-F/P	1		1								
	634794A6	①	Fuel Injection Assembly, Complete	1										
	634798A9	①	Fuel Injection Assembly, Complete			1								
-3	632818-1A1	②	Fuel Pump Assembly (See Figure 74)	1										
-3	632818-2A1	②	Fuel Pump Assembly (See Figure 74)			1								
	632855-1A4		Throttle and Control Assembly	1		1								
-4	632853A1		Throttle Assembly, Air (See Figure 67)	1		1								
-5	632916-8A1	②	Control Assembly (See Figure 79)	1		1								
ATTACHING PARTS														
-6	501867		Washer, Tab	3		3								
-7	537629		Screw, 1/4-20 x 11/16 Inch Long	3		3								
			* * * *											
	632558A1		Link Rod Assembly, Complete	1		1								
-8	632558		Rod and Link Assembly	1		1								
-9	AN121501		Nut	2		2								
-10	626634		Spring, Compression	1		1								
-11	632557		Rod, End, Special	1		1								
-12	MS21044N3		Nut, Self Locking	1		1								
-13	625327-2		Washer, Wave	2		2								
-14	537690		Washer, Plain	2		2								
-15	2500		Pin, Cotter	2		2								
-16	646021S4S14.00		Hose, Control-to-Fuel Pump	2		2								
-17	631351-9A3	②	Valve Assy., Fuel Manifold (See Fig. 80 & 82)	1										
-17	631351-7A3	②	Valve Assy., Fuel Manifold (See Fig. 80 & 82)			1								
-18	646021S4S36.00		Hose, Control-to-Manifold Valve	1		1								
-19	632748-15	②③	Nozzle Assy., Fuel Injection	6		6								
-20	636037		Tube, Fuel Discharge, Cylinder 1 & 6	2										
-20	636037-1		Tube, Fuel Discharge, Cylinder 1 & 6			2								
-20	636036		Tube, Fuel Discharge, Cylinder 2 & 5	2										
-20	641516		Tube, Fuel Discharge, Cylinder 2			1								
-20	636036-1		Tube, Fuel Discharge, Cylinder 5			1								
-20	636035		Tube, Fuel Discharge, Cylinder 3 & 4	2										
-20	636035-1		Tube, Fuel Discharge, Cylinder 3 & 4			2								
-21	626486		Bracket, Fuel Discharge Tubes	2		2								
-22	636577-2		Clamp, Fuel Discharge Tubes	6		6								

NOTES:

① For TS10-520-BB & EB configuration see Figure 53.

② For detail parts, see Fuel Injection Systems Overhaul Manual and Parts Catalog Form X30091.

③ Order nozzle size identified on hex of nozzle body (i.e. 632748-15B)

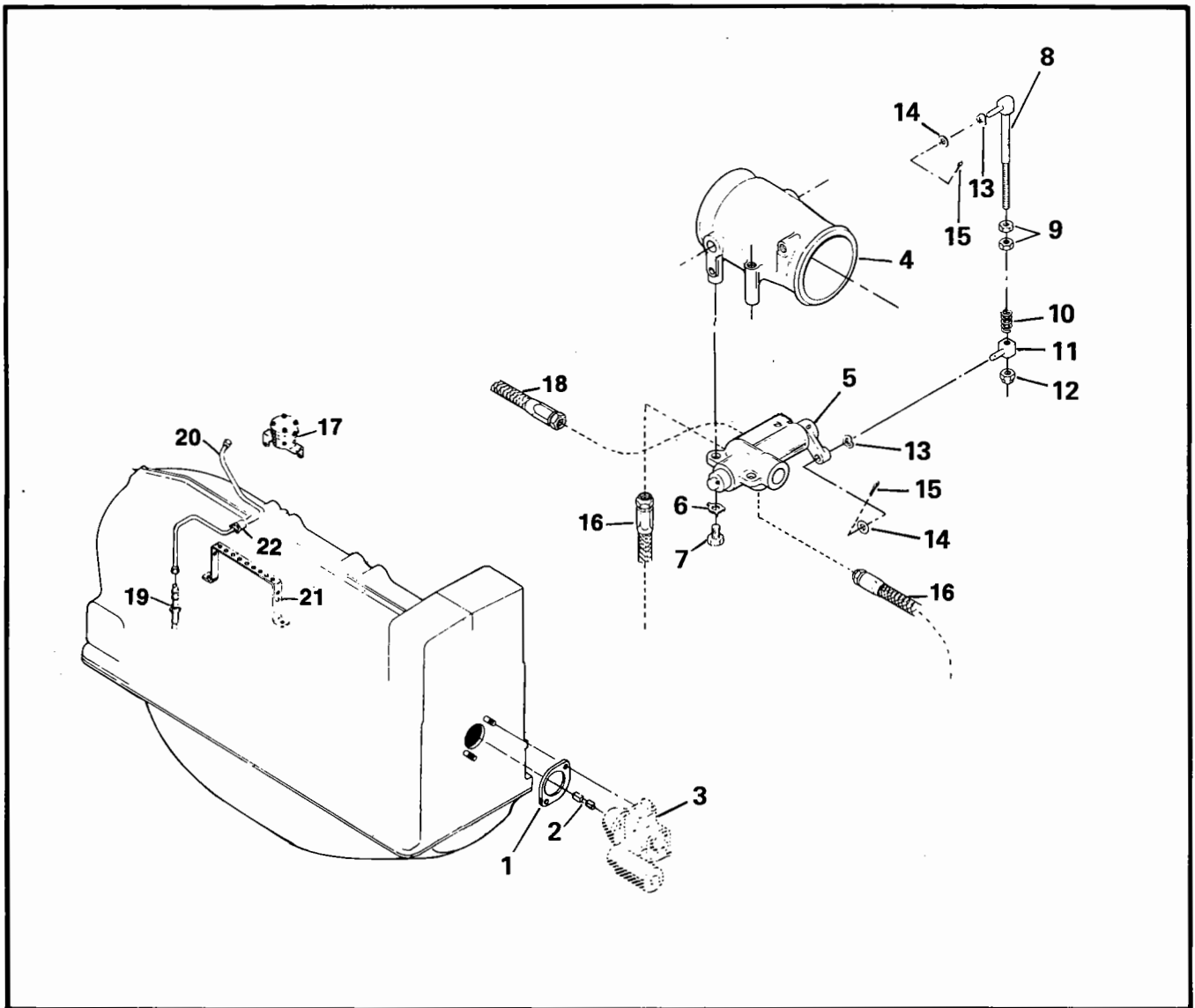


FIGURE 53. FUEL INJECTION SYSTEM, TS10-520-BB, EB.

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY									
			BB	DB	EB	JB	KB	LB	NB	UB	VB	WB
53-1	642238	\$ Gasket, Fuel Pump-to-C/Case	1		1							
-2	631263	Coupling, C/Shaft Gear-to-F/P	1		1							
	634794A7	① Fuel Injection Assembly, Complete	1									
	634798A6	① Fuel Injection Assembly, Complete			1							
-3	632818-10A1	② . Fuel Pump Assembly (See Figure 74)	1									
-3	632818-11A2	② . Fuel Pump Assembly (See Figure 74)			1							
	632855-1A4	. Throttle and Control Assembly	1		1							
-4	632853A1	. . Throttle Assembly, Air (See Figure 67)	1		1							
-5	632916-8A1	② . . Control Assembly (See Figure 79)	1		1							
ATTACHING PARTS												
-6	501867	. . Washer, Tab	3		3							
-7	630387	. . Screw, 1/4 - 20 x 2 Inch Long	3		3							
-7	537629	. . Screw 1/4 - 20 x 11/16 Inch Long	3									
		* * * *										
	632558A1	. . Link Rod Assembly, Complete	1		1							
-8	632558	. . . Rod and Link Assembly	1		1							
-9	AN121501	. . . Nut	2		2							
-10	626634	. . . Spring, Compression	1		1							
-11	632557	. . . Rod End, Special	1		1							
-12	MS21044N3	. . . Nut, Self Locking	1		1							
-13	625327-2	. . Washer, Wave	2		2							
-14	537690	. . Washer, Plain	2		2							
-15	2500	. . Pin, Cotter	2		2							
-16	646021S4S-14.00	. Hose, Control-to-Fuel Pump	2		2							
-17	631351-9A3	② . Valve Assy., Fuel Manifold (See Fig. 80 & 82)	1									
-17	631351-7A3	② . Valve Assy., Fuel Manifold (See Fig. 80 & 82)			1							
-18	646021S4S-36.00	. Hose, Control-to-Manifold Valve	1		1							
-19	632748-15	②③ . Nozzle Assembly, Fuel Injection	6		6							
-20	636037	. Tube, Fuel Discharge Cylinder 1 & 6	2									
-20	636037-1	. Tube, Fuel Discharge Cylinder 1 & 6			2							
-20	636036	. Tube, Fuel Discharge, Cylinder 2 & 5	2									
-26	641516	. Tube, Fuel Discharge, Cylinder 2			1							
-20	636036-1	. Tube, Fuel Discharge, Cylinder 5			1							
-20	636035	. Tube, Fuel Discharge, Cylinder 3 & 4	2									
-20	636035-1	. Tube, Fuel Discharge, Cylinder 3 & 4			2							
-21	626486	Bracket, Fuel Discharge Tubes	2		2							
-22	626577-2	Clamp	6		6							

NOTES:

- ① For TS10-520-B, E configuration See Figure 52.
- ② For detail parts see Fuel Injection Systems Overhaul Manual and Parts Catalog, Form X30091.
- ③ Order nozzle size identified on hex of nozzle body (i.e. 632748-15C).

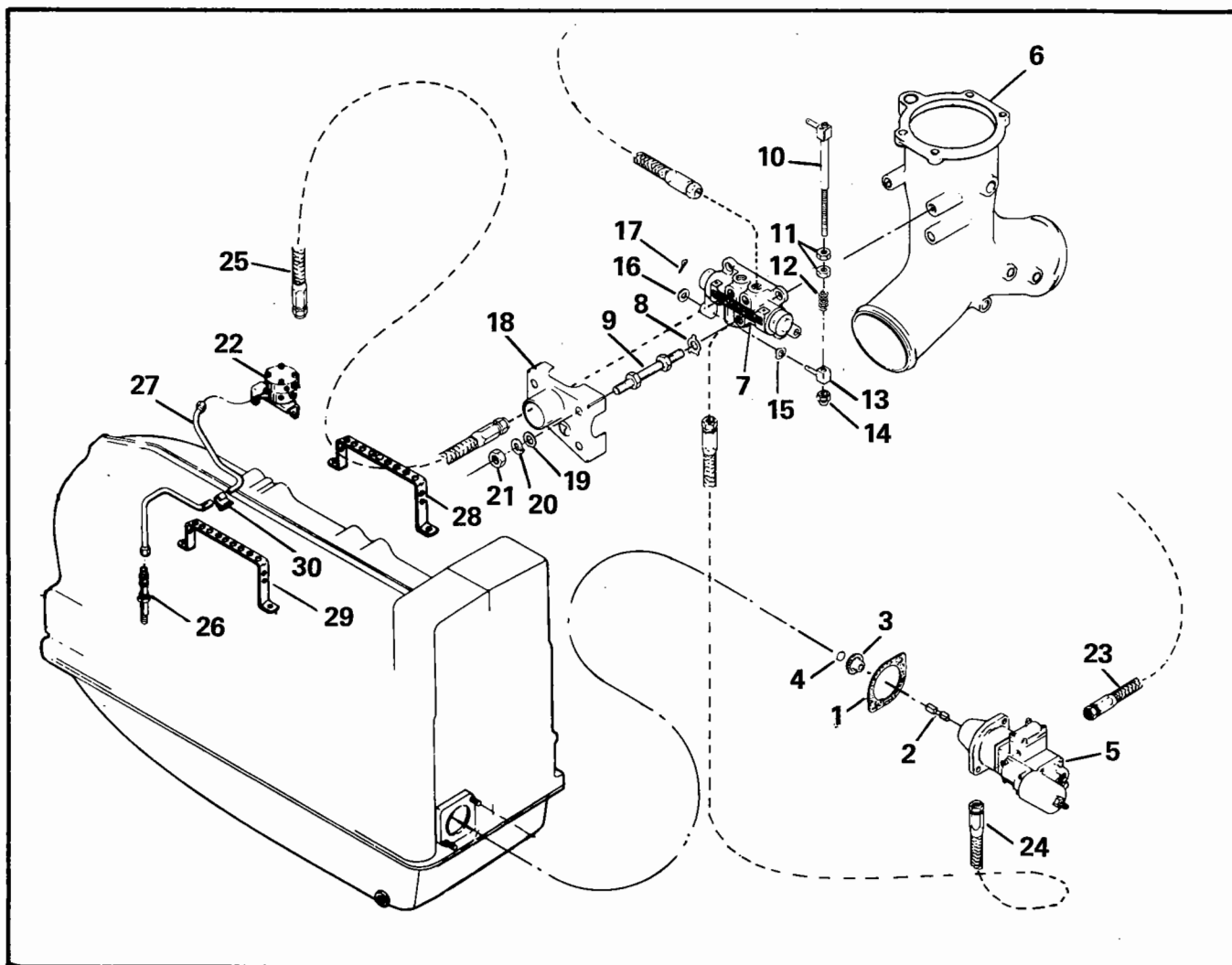


FIGURE 54. FUEL INJECTION SYSTEM, TS10-520-C, G, H, M, P, R, AF.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY												
				C	G	H	M	P	R	T	AF					
54-1	534941	①	\$ Gasket, Fuel Pump-to-C/Case	1	1	1										
-1	631685	①	\$ Gasket, Fuel Pump-to-C/Case				1	1	1				1			
-2	631683	①	Coupling	1	1	1	1	1	1				1			
-3	631684	①	Gear Assembly, Fuel Pump	1	1	1	1	1	1				1			
-4	539634	①	Plug	1	1	1	1	1	1							
	635456A6		Fuel Injection Assembly, Complete	1												
	637750A6		Fuel Injection Assembly, Complete		1											
	637749A23		Fuel Injection Assembly, Complete			1										
	637749A19		Fuel Injection Assembly, Complete				1	1	1							
	637749A11		Fuel Injection Assembly, Complete										1			
-5	632818-5A4	①②	Fuel Pump Assembly (See Figure 75)	1	1	1										
-5	632818-7A3	①②	Fuel Pump Assembly (See Figure 75)				1	1	1				1			
	642650-1A3		Fuel Pump Assembly (See Figure 75)										1			
	632774-1A2		Throttle and Control Assembly	1	1	1										
	632774-2A4		Throttle and Control Assembly				1	1	1				1			

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY									
			C	G	H	M	P	R	T	AF		
54-6	632840A1	.. Throttle Assembly, Air (See Figure 68)	1	1	1	1	1	1		1		
-7	629703-8A1	② .. Control Assembly (See Figure 79)	1	1	1							
-7	629703-11A2	② .. Control Assembly (See Figure 79)				1	1	1		1		
ATTACHING PARTS												
-8	501867	.. Washer, Tab	3	3	3	3	3	3		3		
-9	630387	.. Screw, Special	3	3	3	3	3	3		3		
* * * *												
	642283A1	.. Link Rod Assembly, Complete	1	1	1	1	1	1		1		
-10	642283	.. Rod and Link Assembly	1	1	1	1	1	1		1		
-11	13XX1896	.. Nut	2	2	2	2	2	2		2		
-12	626634	.. Spring, Compression	1	1	1	1	1	1		1		
-13	632557-1	.. Rod End, Special	1	1	1	1	1	1		1		
-14	MS21044N3	.. Nut Elastic Stop	1	1	1	1	1	1		1		
-15	625327-2	.. Washer, Wave	2	2	2	2	2	2		2		
-16	537690	.. Washer, Plain	2	2	2	2	2	2		2		
-17	2500	.. Pin Cotter	2	2	2	2	2	2		2		
-18	629338	.. Shroud Assembly, Control	1	1	1	1	1	1		1		
ATTACHING PARTS												
-19	20522	.. Washer, Plain	3	3	3	3	3	3		3		
-20	MS35337-44	.. Washer, Lock	3	3	3	3	3	3		3		
-21	2437	.. Nut	3	3	3	3	3	3		3		
* * * *												
-22	631351A19	② .. Valve Assembly, Fuel Manifold	1									
-22	631351A21	② .. Valve Assembly, Fuel Manifold		1								
-22	631351A20	② .. Valve Assembly, Fuel Manifold			1							
-22	634326-4A15	② Valve Assy., Fuel Manifold (See Figures 81 & 83)				1	1	1		1		
-23	635158S4S10.00	Hose, Control-to-F/P, Return	1	1	1	1						
-23	635158S4S14.00	Hose, Control-to-F/P, Return					1	1		1		
-24	635158S4S18.00	Hose, Control-to-F/P, Outlet	1	1	1							
-24	635158S4S12.00	Hose, Control-to-F/P, Outlet				1	1	1		1		
-25	635158S4S32.00	Hose, Control-to-Manifold Valve	1	1	1	1	1	1		1		
-26	632748-15	②③ Nozzle Assembly, Fuel Injection	6	6	6							
-26	632748-14	②③ Nozzle Assembly, Fuel Injection				6	6	6		6		
-27	628154	Tube, Fuel Discharge, Cylinder 1 & 6	2		2							
-27	628154-1	Tube, Fuel Discharge, Cylinder 1 & 6		2								
-27	636037-1	Tube, Fuel Discharge, Cylinder 1 & 6				2	2	2		2		
-27	628153	Tube, Fuel Discharge, Cylinder 2 & 5	2		2							
-27	628153-1	Tube, Fuel Discharge, Cylinder 2 & 5		2								
-27	641516	Tube, Fuel Discharge, Cylinder 2				1	1	1		1		
-27	636036-1	Tube, Fuel Discharge, Cylinder 5				1	1	1		1		
-27	628152	Tube, Fuel Discharge, Cylinder 3 & 4	2		2							
-27	628152-1	Tube, Fuel Discharge, Cylinder 3 & 4		2								
-27	636035-1	Tube, Fuel Discharge, Cylinder 3 & 4				2	2	2		2		
-28	641701	Bracket, Fuel Discharge Tubes, 1-3-5 Side	1	1	1	1	1	1		1		
-29	628295	Bracket, Fuel Discharge Tubes, 2-4-6 Side	1	1	1	1	1	1		1		
-30	626577-2	Clamp, Fuel Discharge Tube	6	6	6	6	6	6		6		

NOTES:

- ① For old style Fuel Pump and its associated parts See Figure 76.
- ② For detail parts, see Fuel Injection Systems Overhaul Manual and Parts Catalog Form X30091.
- ③ Order nozzle size identified on hex of nozzle body (i.e. 632748-15B).

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY											
				B	D	E	J	K	L	N	UB	VB	WB		
55-1	630763		\$ Gasket, Fuel Pump-to-C/Case		1										
-2	631263		Coupling, C/Shaft-to-Fuel Pump		1										
	635968A8		① Fuel Injection Assembly, Complete		1										
	639508-5A2		② Fuel Pump Assembly (See Figure 77)		1										
-3	640564-1A3		② Throttle and Control Assy. (See Figure 69) ...		1										
-4	633444		.. Link Rod Assembly, Complete		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										
-11	631351A14		② Valve Assy., Fuel Manifold (See Fig. 80 & 82)		1										
-12	635158S4S14.00		.. Hose, Control-to-Fuel Pump		1										
-13	635158S4S22.00		.. Hose, Control-to-Manifold Valve		1										
-14	628555-2		.. Hose, F/P-to-Throttle Body		1										
-15	536388-47		.. Clamp		2										
-16	632748-15		②③ Nozzle Assembly, Fuel Injection		6										
-17	636037		.. Tube, Fuel Discharge, Cylinder 1 & 6		2										
-17	636036		.. Tube, Fuel Discharge, Cylinder 2 & 5		2										
-17	636035		.. Tube, Fuel Discharge, Cylinder 3 & 4		2										
-18	631246		Bracket, Fuel Discharge Tubes, 1-3-5 Side		1										
-19	626486		Bracket, Fuel Discharge Tubes, 2-4-6 Side		1										
-20	626577-2		Clamp		6										

NOTES:

- ① For TSIO-520-DB configuration see Figure 56.
- ② For detail parts see Fuel Injection Systems Overhaul Manual and Parts Catalog Form X30091.
- ③ Order nozzle size identified on hex of nozzle body (i.e. 632748-15B)

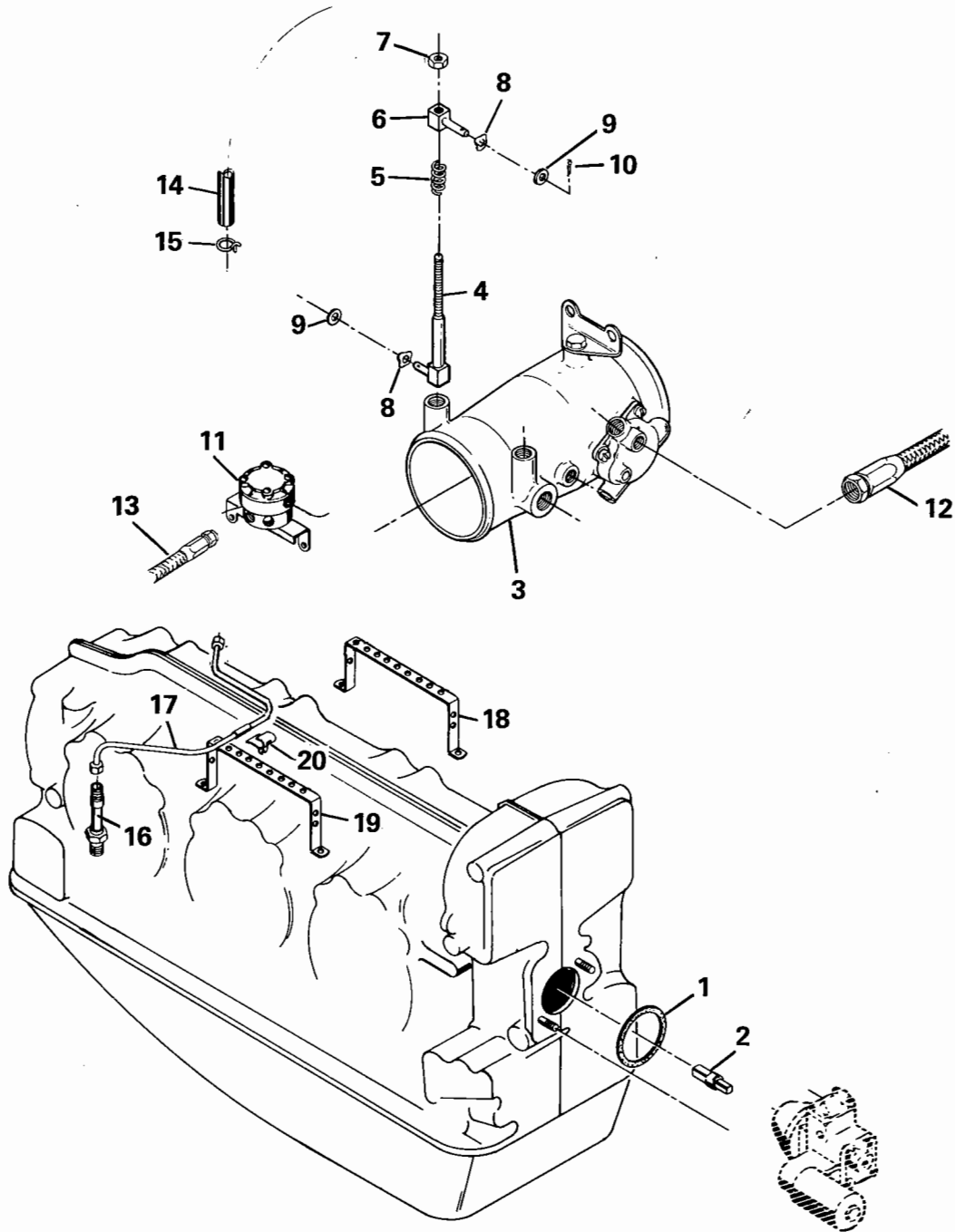


FIGURE 56. FUEL INJECTION SYSTEM, TS10-520-DB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				BB	DB	EB	JB	KB	LB	NB	UB	VB	WB
56-1	642238		\$ Gasket, Fuel Pump-to-C/Case		1								
-2	631263		Coupling, Crankshaft-to-Fuel Pump		1								
	635968A9		① Fuel Injection Assembly, Complete		1								
	639508-8A2		② Fuel Pump Assy. (See Figure 77)		1								
-3	640564-1A1		② Throttle and Control Assy. (See Figure 69) ...		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								
-11	631351A14		② .. Valve Assy., Fuel Manifold (See Fig. 80 & 82)		1								
-12	635158S4S14.00		.. Hose, Control-to-Fuel Pump		1								
-13	635158S4S22.00		.. Hose, Control-to-Manifold Valve		1								
-14	632555-2		.. Hose, Fuel Pump-to-Throttle Body		1								
-15	536388-.47		.. Clamp		2								
-16	632748-15		②③ Nozzle Assembly, Fuel Injection		6								
-17	636037		.. Tube, Fuel Discharge Cylinder 1 & 6		2								
-17	636036		.. Tube, Fuel Discharge Cylinder 2 & 5		2								
-17	636035		.. Tube, Fuel Discharge Cylinder 3 & 4		2								
-18	631246		Bracket, Fuel Discharge Tubes, 1-3-5 Side		1								
-19	626486		Bracket, Fuel Discharge Tubes, 2-4-6 Side		1								
-20	626577-2		Clamp		2								

NOTES:

- ① For TS10-520-D configuration See Figure 55.
- ② For detail Parts see Fuel Injection Systems Overhaul Manual Form X30091.
- ③ Order nozzle size identified on hex of nozzle body (i.e. 632748-15C).



FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY										
				B	D	E	J	K	L	N	UB	VB	WB	
57-1	630763		\$ Gasket, Fuel Pump-to-C/Case				1				1			
-2	631263		Coupling, C/Shaft Gear-to-F/P				1				1			
	636134A5		① Fuel Injection Assembly, Complete				1							
	636134A4		① Fuel Injection Assembly, Complete								1			
-3	632818-2A2		② Fuel Pump Assembly (See Figure 74)				1				1			
	636143A3		Throttle and Control Assembly				1							
	636143A2		Throttle and Control Assembly								1			
-4	635915A2		Throttle Assembly, Air (See Figure 70)				1				1			
-5	632916-11A1		② Control Assembly (See Figure 79)				1				1			
ATTACHING PARTS														
-6	501867		Washer, Tab				3				3			
-7	537629		Screw, 1/4 - 20 x 11/16 Inch Long				3				3			
			* * * *											
	633381-4A1		Link Rod Assembly, Complete				1				1			
-8	633381-4		Rod and Link Assembly				1				1			
-9	626634		Spring, Compression				1				1			
-10	632557		Rod End, Special				1				1			
-11	MS21044N3		Nut, Elastic Stop				1				1			
-12	625327-2		Washer, Wave				4				4			
-13	537690		Washer, Plain				4				4			
-14	2500		Pin, Cotter				4				4			
-15	633409		\$ Gasket, Controller				1				1			
-16	641434-3		③ Controller Assembly, Complete				1							
-16	641434-4		③ Controller Assembly, Complete								1			
ATTACHING PARTS														
-16A	538650-2		Washer, Seal				4				4			
-17	AN960-10L		Washer, Flat				4				4			
-18	AN500A10-12		Screw, No. 10-24				4				4			
			* * * *											
	633381-3A1		Link Rod Assembly, Complete				1				1			
-19	633381-3		Rod and Link Assembly				1				1			
-20	13XX1896		Nut				2				2			
-21	632557		Rod End, Special				1				1			
-22	626634		Spring, Compression				1				1			
-23	MS21044N3		Nut, Elastic Stop				1				1			
-24	634326-4A7		② Valve Assy., Fuel Manifold (See Fig. 80 & 82)				1				1			
-25	632748-14		①④ Nozzle Assembly, Fuel Injection				6				6			
-26	636037-1		Tube, Fuel Discharge, Cyl. 1 & 6				2				2			
-26	641516		Tube, Fuel Discharge, Cylinder 2				1				1			
-26	636036-1		Tube, Fuel Discharge, Cylinder 5				1				1			
-26	636035-1		Tube, Fuel Discharge, Cylinder 3 & 4				2				2			
-27	642100-5		Regulator Assy., Fuel Discharge				1				1			
-28	626486		Bracket, Fuel Discharge Tubes				2				2			
-29	626577-2		Clamp				6				6			

NOTES:

- ① For TS10-520-JB, NB configuration See Figure 58.
- ② For detail parts, see Fuel Injection Systems Overhaul Manual and Parts Catalog, Form X30091.
- ③ For detail parts, see Controller Overhaul Manual and Parts Catalog, Form X30086.
- ④ Order nozzle size identified on hex of nozzle body (i.e. 632748-14B).



FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				BB	DB	EB	JB	KB	LB	NB	UB	VB	WB
58-1	642238		\$ Gasket, Fuel Pump-to-C/Case				1			1			
-2	631263		Coupling, C/Shaft Gear-to-F/P				1			1			
	636134A7		① Fuel Injection Assembly, Complete				1						
	636134A6		① Fuel Injection Assembly, Complete							1			
-3	632818-11A1		② . Fuel Pump Assembly (See Figure 74)				1			1			
	636143A3		. Throttle and Control Assembly				1						
	636143A2		. Throttle and Control Assembly							1			
-4	635915A2		. Throttle Assembly, Air (See Figure 70)				1			1			
-5	632916-11A1		② . Control Assembly (See Figure 79)				1			1			
			ATTACHING PARTS										
-6	501867		. . Washer, Tab				3			3			
-7	537629		. . Screw, 1/4 - 20 x 11/16 Inch Long				3			3			
			* * * *										
	633381-4A1		. . Link Rod Assembly, Complete				1			1			
-8	633381-4		. . . Rod and Link Assembly				1			1			
-9	626634		. . . Spring, Compression				1			1			
-10	632557		. . . Rod End, Special				1			1			
-11	MS21044N3		. . . Nut, Elastic Stop				1			1			
-12	625327-2		. . Washer, Wave				4			4			
-13	537690		. . Washer, Plain				4			4			
-14	2500		. . Pin, Cotter				4			4			
-15	633409		\$. . Gasket, Controller				1			1			
-16	641434-3		. . Controller Assembly, Complete				1						
-16	641434-4		. . Controller Assembly, Complete							1			
			ATTACHING PARTS										
-17	AN960-10L		. . Washer, Flat				4			4			
-17A	638600-2		. . Washer, Seal				4			4			
-18	AN500A10-12		. . Screw, No. 10-24				4			4			
			* * * *										
	633381-3A1		. . Link Rod Assembly, Complete				1			1			
-19	633381-3		. . . Rod and Link Assembly				1			1			
-20	13XX1896		. . . Nut, No. 10-32				2			2			
-21	632557		. . . Rod End, Special				1			1			
-22	626634		. . . Spring, Compression				1			1			
-23	MS21044N3		. . . Nut, Elastic Stop				1			1			
-24	634326-4A7		② . Valve Assembly, Fuel Manifold				1			1			
-25	632748-14		②③ Nozzle Assembly, Fuel Injection				6			6			
-26	636037-1		. Tube, Fuel Discharge, Cylinder 1 & 6				2			2			
-26	641516		. Tube, Fuel Discharge, Cylinder 2				1			1			
-26	636036-1		. Tube, Fuel Discharge, Cylinder 5				1			1			
-26	636035-1		. Tube, Fuel Discharge, Cylinder 3 & 4				2			2			
-27	642100-5		. Regulator Assembly, Fuel Discharge				1			1			
-28	626486		Bracket, Fuel Discharge Tubes				2			2			
-29	626577-2		Clamp				6			6			

NOTES:

- ① For TSIO-520-J and N configuration see Figure 57.
- ② For detail parts, see Fuel Injection Systems Overhaul Manual and Parts Catalog Form X30091.
- ③ Order nozzle size identified on hex of nozzle body (i.e. 632748-14C).

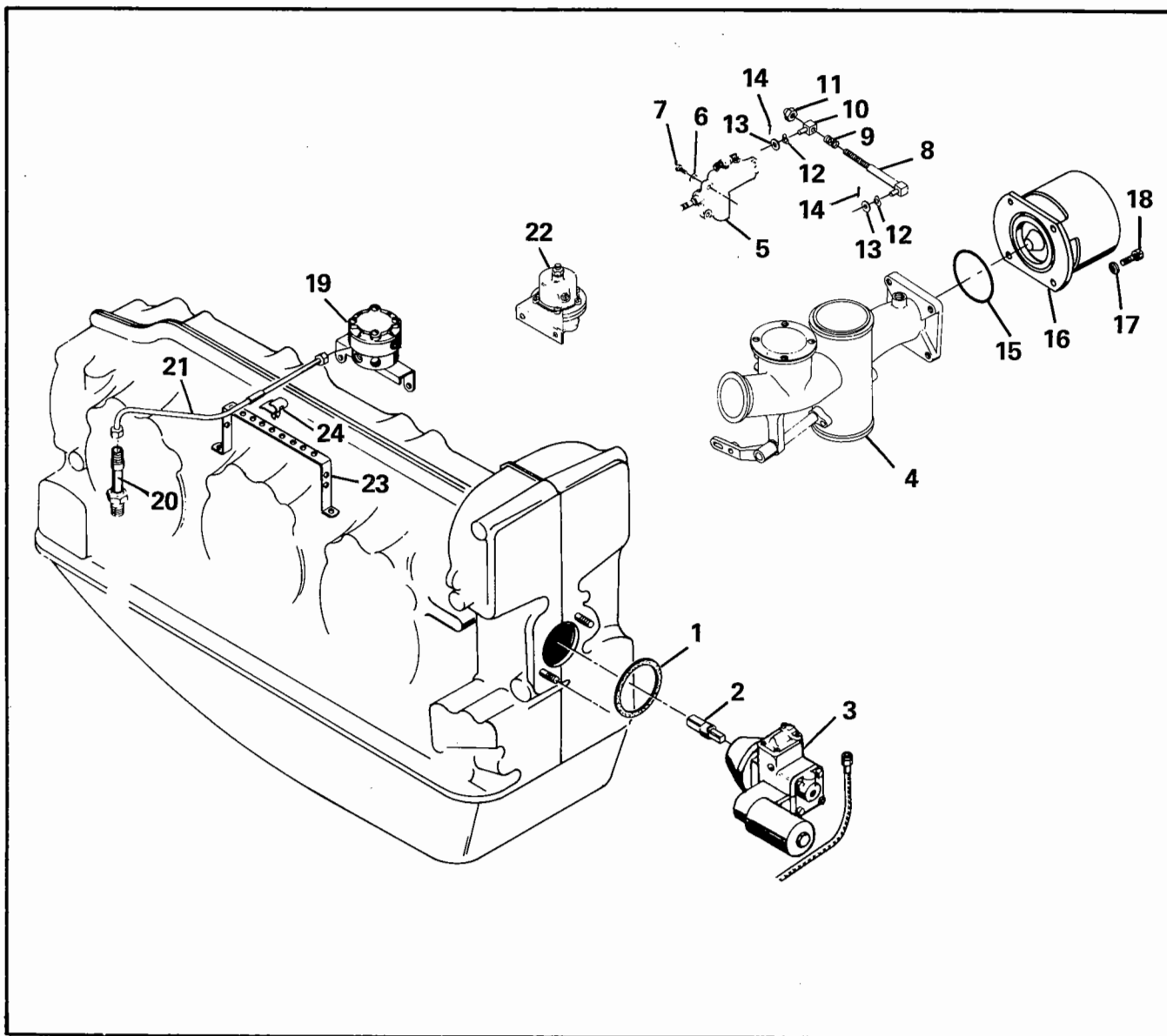


FIGURE 59. FUEL INJECTION SYSTEM, TS10-520-K.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
59-1	630763		\$ Gasket, Fuel Pump-to-C/Case					1					
-2	631263		Coupling, C/Shaft Gear-to-F/P					1					
	637736A4		① Fuel Injection Assembly, Complete					1					
-3	632818-2A2		② . Fuel Pump Assembly (See Figure 74)					1					
	637735A3		. Throttle and Control Assembly					1					
-4	635915A2		. Throttle Assembly, Air (See Figure 70)					1					
-5	632916-11A2		② . Control Assembly (See Figure 79)					1					
			ATTACHING PARTS										
-6	501867		. Washer, Tab					3					
-7	537629		. Screw, 1/4 - 20 x 11/16 Inch Long					3					
			* * * *										
	633381-4A1		. Link Rod Assembly, Complete					1					
-8	633381-4		. Rod and Link Assembly					1					
-9	626634		. Spring, Compression					1					
-10	632557		. Rod End, Special					1					
-11	MS21044N3		. Nut, Elastic Stop					1					
-12	625327-2		. Washer, Wave					2					
-13	537690		. Washer, Plain					2					
-14	2500		. Pin, Cotter					2					
-15	MS29513-138		. O-Ring					1					
-16	637583-17		. Valve Assembly, Pressure Relief					1					
			ATTACHING PARTS										
-17	MS35337-43		. Washer, Lock					4					
-18	AN500A10-12		. Screw, No. 10-24					4					
			* * * *										
-19	634326-6A2		② . Valve Assy., Fuel Manifold (See Fig. 80 & 82)					1					
-20	632748-14		②③ . Nozzle Assembly, Fuel Injection					6					
-21	636037-1		. Tube, Fuel Discharge, Cyl. 1 & 6					2					
-22	641516		. Tube, Fuel Discharge, Cyl. 2					1					
-21	636036-1		. Tube, Fuel Discharge, Cyl. 5					1					
-21	636035-1		. Tube, Fuel Discharge, Cyl. 3 & 4					2					
-22	642100-5		. Regulator, Fuel Discharge					1					
-23	626486		Bracket, Fuel Discharge Tube					2					
-24	632577-2		Clamp					6					

NOTES:

- ① For TSIO-520-KB configuration see Figure 60.
- ② For detail parts, see Fuel Injection System. Overhaul Manual and Parts Catalog, Form X30091.
- ③ Order nozzle size identified on hex of nozzle body (i.e. 632748-14C).

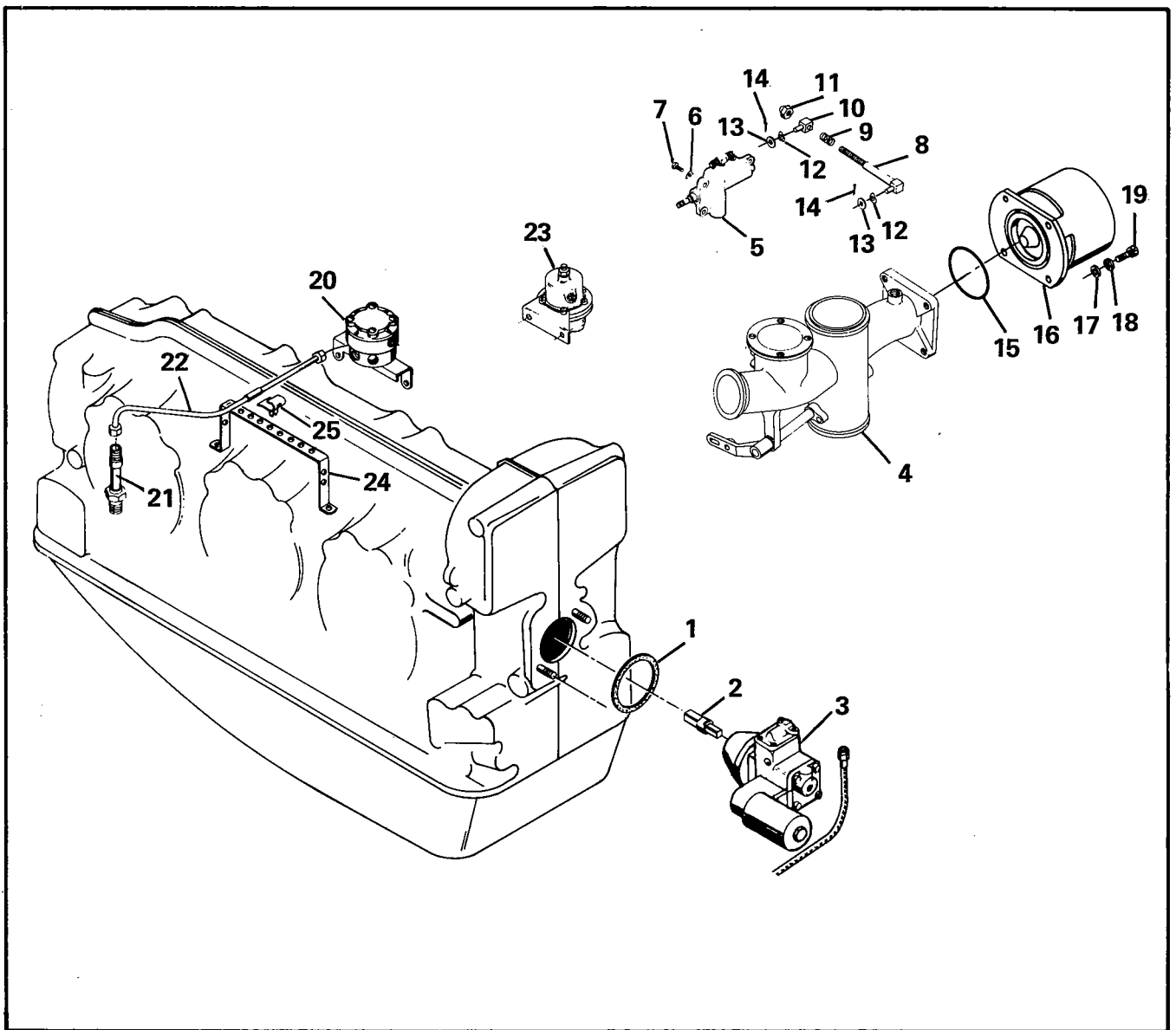


FIGURE 60. FUEL INJECTION SYSTEM, TS10-520-KB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				BB	DB	EB	JB	KB	LB	NB	UB	VB	WB
60-1	642238		\$ Gasket, Fuel Pump-to-C/Case					1					
-2	631263		Coupling, C/Shaft Gear-to-F/P					1					
	637736A5		① Fuel Injection Assembly, Complete					1					
-3	632818-11A1		② . Fuel Pump Assembly (See Figure 75)					1					
	637735A3		. Throttle and Control Assembly					1					
-4	635915A2		. . Throttle Assembly, Air (See Figure 70)					1					
-5	632916-11A2		② . . Control Assembly (See Figure 79)					1					
			ATTACHING PARTS										
-6	501867		. . Washer, Tab					3					
-7	537629		. . Screw, 1/4 - 20 x 11/16 Inch Long					3					
			* * * *										
	633381-4A1		. . Link Rod Assembly, Complete					1					
-8	633381-4		. . . Rod and Link Assembly					1					
-9	626634		. . . Sping, Compression					1					
-10	632557		. . . Rod End, Special					1					
-11	MS21044N3		. . . Nut, Elastic Stop					1					
-12	625327-2		. . Washer, Wave					2					
-13	537690		. . Washer, Plain					2					
-14	2500		. . Pin, Cotter					2					
-15	MS29513-138		. . O-Ring					1					
-16	637583-17		. . Valve Assembly, Pressure Relief					1					
			ATTACHING PARTS										
-17	538600-2		. . Washer, Seal					4					
-18	AN960-10L		. . Washer, Flat					4					
-19	AN500A10-12		. . Screw, No. 10-24					4					
			* * * *										
-20	634326-6A2		② . Valve Assy., Fuel Manifold (See Fig. 80 & 82)					1					
-21	632748-14		②③ . Nozzle Assembly, Fuel Injection					6					
-22	636037-1		. Tube, Fuel Discharge, Cyl. 1 & 6					2					
-22	641516		. Tube, Fuel Discharge, Cylinder 2					1					
-22	636036-1		. Tube, Fuel Discharge, Cylinder 5					1					
-22	636035-1		. Tube, Fuel Discharge, Cylinder 3 & 4					2					
-23	642100-5		. Regulator Assembly, fuel Discharge					1					
-24	626486		Bracket, Fuel Discharge Tubes					2					
-25	632577-2		Clamp					6					

NOTES:

① For TSI0-520-K configuration see Figure 59.

② For detail parts, See Fuel Injection Systems Overhaul Manual and Parts Catalog Form X30091.

③ Order nozzle size identified on hex of nozzle body (i.e. 632748-14C).

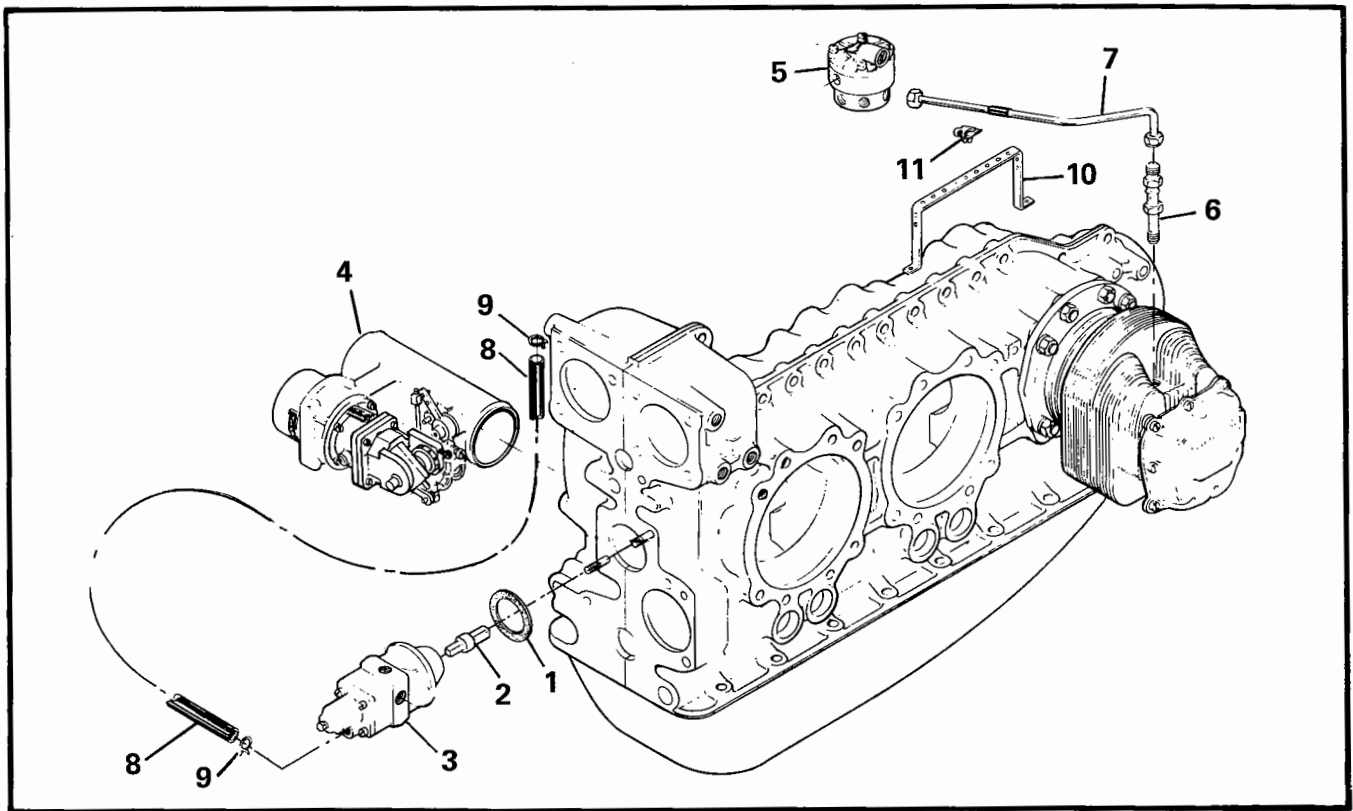


FIGURE 61. FUEL INJECTION SYSTEM, TS10-520-L.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY										
				B	D	E	J	K	L	N	U	VB	WB	
61-1	630763		\$ Gasket, Fuel Pump-to-C/Case						1					
-2	631263		Coupling, C/Shaft Gear-to-F/P						1					
	640792A18		① Fuel Injection Assembly, Complete						1					
-3	640643-6A1		② . Fuel Pump Assembly (See Figure 79)						1					
-4	640791A2		. Throttle and Control Assy. (See Fig. 72)						1					
-5	643397-1A1		② . Valve Assy. Fuel Manifold (See Fig. 80 & 84) .						1					
-6	632748-14	②③	. Nozzle, Assembly, Fuel Injection						6					
-7	636037-1		. Tube, Fuel Discharge, Cylinder 1 & 6						2					
-7	641516		. Tube, Fuel Discharge, Cylinder 2						1					
-7	636036-1		. Tube, Fuel Discharge, Cylinder 5						1					
-7	636035-1		. Tube, Fuel Discharge, Cylinder 3 & 4						2					
-8	628555-12		Hose, Air Throttle-to-Fuel Pump						1					
-9	536388-.47		Clamp						2					
-10	631246		Bracket, Fuel Discharge Tubes						2					
-11	626577-2		Clamp						6					

NOTES:

- ① For TS10-520-LB configuration see Figure 62.
- ② For detail parts see Fuel Injection Systems Overhaul Manual and Parts Catalog, Form X30091.
- ③ Order nozzle size identified on hex of nozzle body (i.e. 632748-14B).

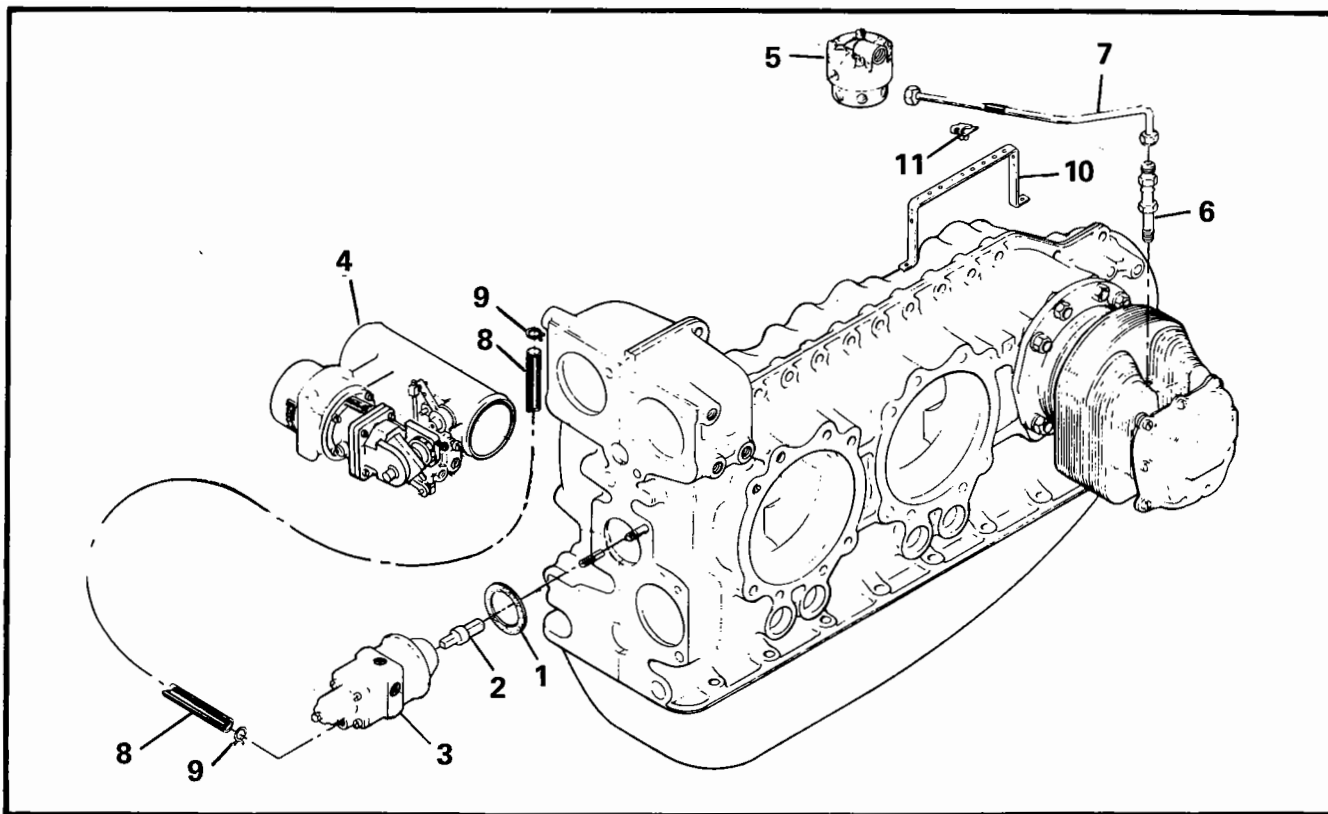


FIGURE 62. FUEL INJECTION SYSTEM, TS10-520-LB, WB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				BB	DB	EB	JB	KB	LB	NB	UB	VB	WB
62-1	642238		\$ Gasket, Fuel Pump-to-C/Case						1				1
-2	631263		Coupling, C/Shaft Gear-to-F/P						1				1
	640792A19		① Fuel Injection Assembly, Complete						1				
	640792A17		Fuel Injection Assembly, Complete									1	
-3	640643-7A1		② . Fuel Pump Assembly (See Figure 78)						1				1
-4	640791A2		. Throttle and Control Assy. (See Figure 71) ...						1				
-4	640791A3		. Throttle and Control Assy. (See Figure 71) ...									1	
-5	643397-1A1		② . Valve Assy., Fuel Manifold (See Fig. 80 & 82)						1				1
-6	632748-14		②③ . Nozzle Assy., Fuel Injection						6				6
-7	636037-1		. Tube, Fuel Discharge, Cylinder 1 & 6						2				2
-7	641516		. Tube, Fuel Discharge, Cylinder 2						1				1
-7	636036-1		. Tube, Fuel Discharge, Cylinder 5						1				1
-7	636035-1		. Tube, Fuel Discharge, Cylinder 3 & 4						2				2
-8	628555-12		Hose Air Throttle-to-Fuel Pump						1				1
-9	536338-.47		Clamp						2				2
-10	631246		Bracket, Fuel Discharge Tubes						2				2
-11	626577-2		Clamp						6				6

NOTES:

- ① For TS10-520-L configuration see Figure 61.
- ② For detail parts, see Fuel Systems Overhaul Manual and Parts Catalog Form X30091.
- ③ Order nozzle size identified on hex of nozzle body (i.e. 632748-14C).

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY							
			C	G	H	M	P	R	T	
63-1	631685	\$ Gasket, Fuel Pump-to-C/Case							1	
-2	631683	Coupling							1	
-3	631684	Gear Assembly, Fuel Pump							1	
-4	539634	Plug							1	
	639713A20	Fuel Injection Assembly, Complete							1	
-5	632818-9A3	① Fuel Pump Assembly (See Figure 75)							1	
	639715A9	Throttle and Control Assembly							1	
-6	639596	Throttle Assembly, Air (See Figure 72)							1	
-7	639717-11A1	① Control Assembly (See Figure 79)							1	
ATTACHING PARTS										
-8	501867	Washer, Tab							3	
-9	630387	Screw, Special							3	
		* * * *								
	632558A1	Link Rod Assembly, Complete							1	
-10	632558	Rod and Link Assembly							1	
-11	AN121501	Nut							2	
-12	626634	Spring, Compression							1	
-13	632557	Rod End, Special							1	
-14	MS21044N3	Nut, Self Locking							1	
-15	635327-2	Washer, Wave							2	
-16	537690	Washer, Plain							2	
-17	2500	Pin, Cotter							2	
-18	632859	Shroud							1	
ATTACHING PARTS										
-19	20522	Washer, Plain							3	
-20	MS35338-44	Washer, Lock							3	
-21	2437	Nut							3	
		* * * *								
-22	641032-16A5	① Valve Assy., Fuel Manifold (See Fig. 80 & 83)							1	
-23	635218S4S13.00	Hose, Control-to-F/P Outlet							1	
-24	635218S4S8.25	Hose, Control-to-F/P Return							1	
-25	635218S4S43.00	Hose, Control-to-Manifold Valve							1	
-26	632748-15	①② Nozzle Assembly, Fuel Injection							6	
-27	642724	Tube, Fuel Discharge, Cylinder No. 1							1	
-27	642726	Tube, Fuel Discharge, Cylinder No. 2							1	
-27	642727	Tube, Fuel Discharge, Cylinder No. 3							1	
-27	642728	Tube, Fuel Discharge, Cylinder No. 4							1	
-27	642729	Tube, Fuel Discharge, Cylinder No. 5							1	
-27	642725	Tube, Fuel Discharge, Cylinder No. 6							1	
-28	641701	Bracket, Fuel Discharge Tubes 1-3-5 Side							1	
-29	628295	Bracket, Fuel Discharge Tubes 2-4-6 Side							1	
-30	626577-2	Clamp							6	

NOTES:

- ① For detail parts, see Fuel Systems Overhaul Manual and Parts Catalog Form X30091.
 ② Order nozzle size identified on hex of nozzle body (i.e. 632748-14C).

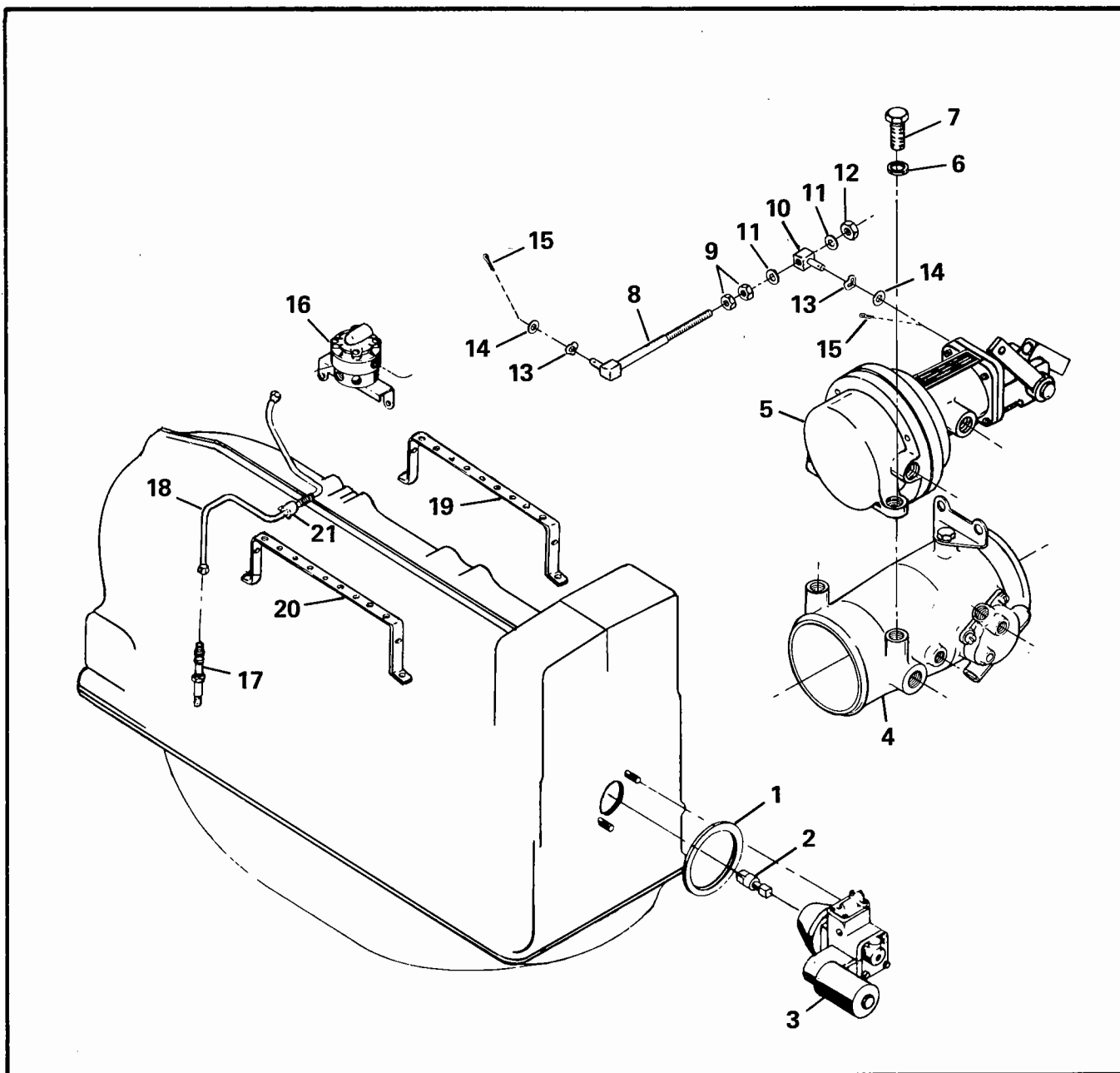


FIGURE 64. FUEL INJECTION SYSTEM, TS10-520-UB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				BB	DB	EB	JB	KB	LB	NB	UB	VB	WB
64-1	642238		\$ Gasket, Fuel Pump-to-C/Case								1		
-2	631263		Coupling, C/Shaft Gear-to-F/P								1		
	642903A15		Fuel Injection Assembly, Complete								1		
-3	639508-9A2	①	Fuel Pump Assembly (See Figure 77)								1		
	642703A19		Throttle and Control Assembly								1		
-4	642703A16		Throttle Assembly, Air (See Figure 69)								1		
-5	642722-1		Controller Assembly								1		
ATTACHING PARTS													
-6	2472		Washer, Plain								4		
-7	MS20074-04-06		Bolt								2		
			* * * *										
-8	633381		Rod and Link Assembly								1		
-9	13XX1896		Nut								2		
-10	632557		Rod End, Special								1		
-11	13XX14340		Washer, Plain								2		
-12	MS21044N3		Nut								1		
-13	625327-2		Washer, Wave								2		
-14	537690		Washer, Plain								2		
-15	2500		Pin, Cotter								2		
-16	641032-15A3	①	Valve Assy., Fuel Manifold (See Fig. 80 & 82)								1		
-17	632748-17	①②	Nozzle Assembly, Fuel Injection								6		
-18	642724		Tube, Fuel Discharge, Cylinder No. 1								1		
-18	642726		Tube, Fuel Discharge, Cylinder No. 2								1		
-18	642727		Tube, Fuel Discharge, Cylinder No. 3								1		
-18	642728		Tube, Fuel Discharge, Cylinder No. 4								1		
-18	642729		Tube, Fuel Discharge, Cylinder No. 5								1		
-18	642725		Tube, Fuel Discharge, Cylinder No. 6								1		
-19	631246		Bracket, Fuel Discharge Tubes, 1-3-5 Side								1		
-20	626486		Bracket Fuel Discharge Tubes, 2-4-6 Side								1		
-21	626577-2		Clamp								6		

NOTES:

- ① For detail parts see Fuel Injection Systems Overhaul Manual and Parts Catalog Form X30091.
 ② Order nozzle size identified on hex of nozzle body (i.e. 632748-17A).

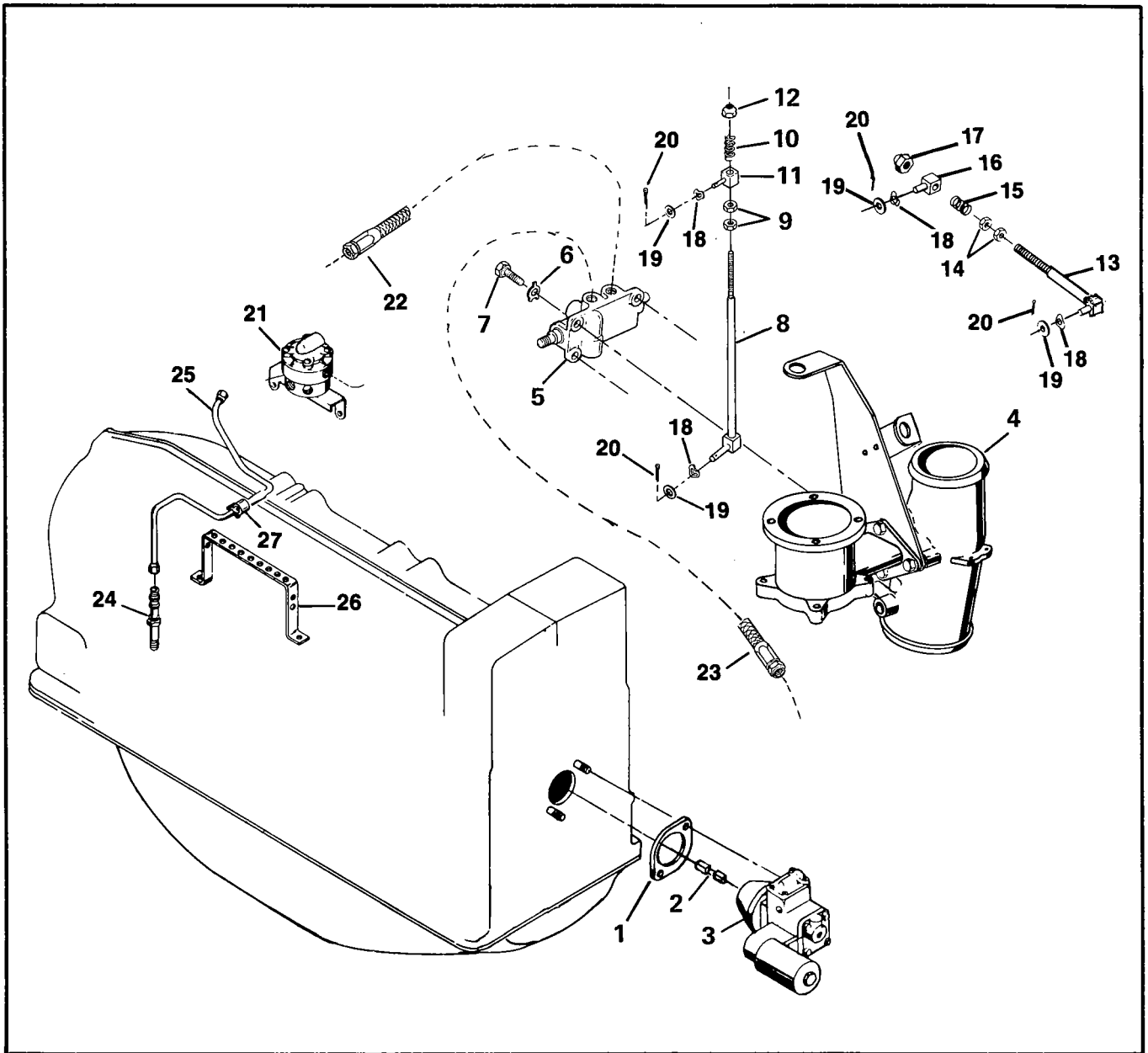


FIGURE 65. FUEL INJECTION SYSTEM, TS10-520-VB.

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY										
			B	D	E	J	K	L	N	UB	VB	WB	
65-1	642238	\$ Gasket, Fuel Pump-to-C/Case									1		
-2	631263	Coupling, C/Shaft Gear-to-F/P									1		
	642904A3	Fuel Injection Assembly, Complete									1		
-3	632818-8A2	① Fuel Pump Assembly (See Figure 74)									1		
	642702A4	Throttle and Control Assembly									1		
-4	642702A1	Throttle Assembly, Air (See Figure 73)									1		
-5	632916-11A5	① Control Assembly (See Figure 79)									1		
		ATTACHING PARTS											
-6	501867	Washer, Tab									3		
-7	537629	Screw, 1/4-20 x 11/16 Inch Long									3		
		* * * *											
	633381-12A1	Link Rod Assembly, Complete									1		
-8	633381-12	Rod and Link Assembly									1		
-9	AN121501	Nut									1		
-10	626634	Spring, Compression									1		
-11	632557	Rod End, Special									1		
-12	MS21044N3	Nut									1		
	633381-11A2	Link Rod Assembly, Complete									1		
-13	633381-11	Rod and Link Assembly									1		
-14	AN121501	Nut									2		
-15	626634	Spring, Compression									1		
-16	632557	Rod End, Special									1		
-17	MS21044N3	Nut, Self Locking									1		
-18	625327-2	Washer, Wave									4		
-19	537690	Washer, Plain									4		
-20	2500	Pin, Cotter									4		
-21	641032-17A1	① Valve Assy., Fuel Manifold (See Fig. 80 & 82)									1		
-22	635158S4S36.00	Hose, Control-to-Manifold Valve									1		
-23	635158S4S13.00	Hose, Control-to-Fuel Pump									2		
-24	632748-16	①② Nozzle Assy., Fuel Injection									6		
-25	642724	Tube, Fuel Discharge, Cylinder No. 1									1		
-25	642726	Tube, Fuel Discharge, Cylinder No. 2									1		
-25	642727	Tube, Fuel Discharge, Cylinder No. 3									1		
-25	642728	Tube, Fuel Discharge, Cylinder No. 4									1		
-25	642729	Tube, Fuel Discharge, Cylinder No. 5									1		
-25	642725	Tube, Fuel Discharge, Cylinder No. 6									1		
-26	626486	Bracket, Fuel Discharge Tube									2		
-27	626577-2	Clamp									6		

NOTES:

① For detail parts see Fuel Injection Systems Overhaul Manual and Parts Catalog Form X30091.

② Order nozzle identified on hex of nozzle body (i.e. 632748-16A).

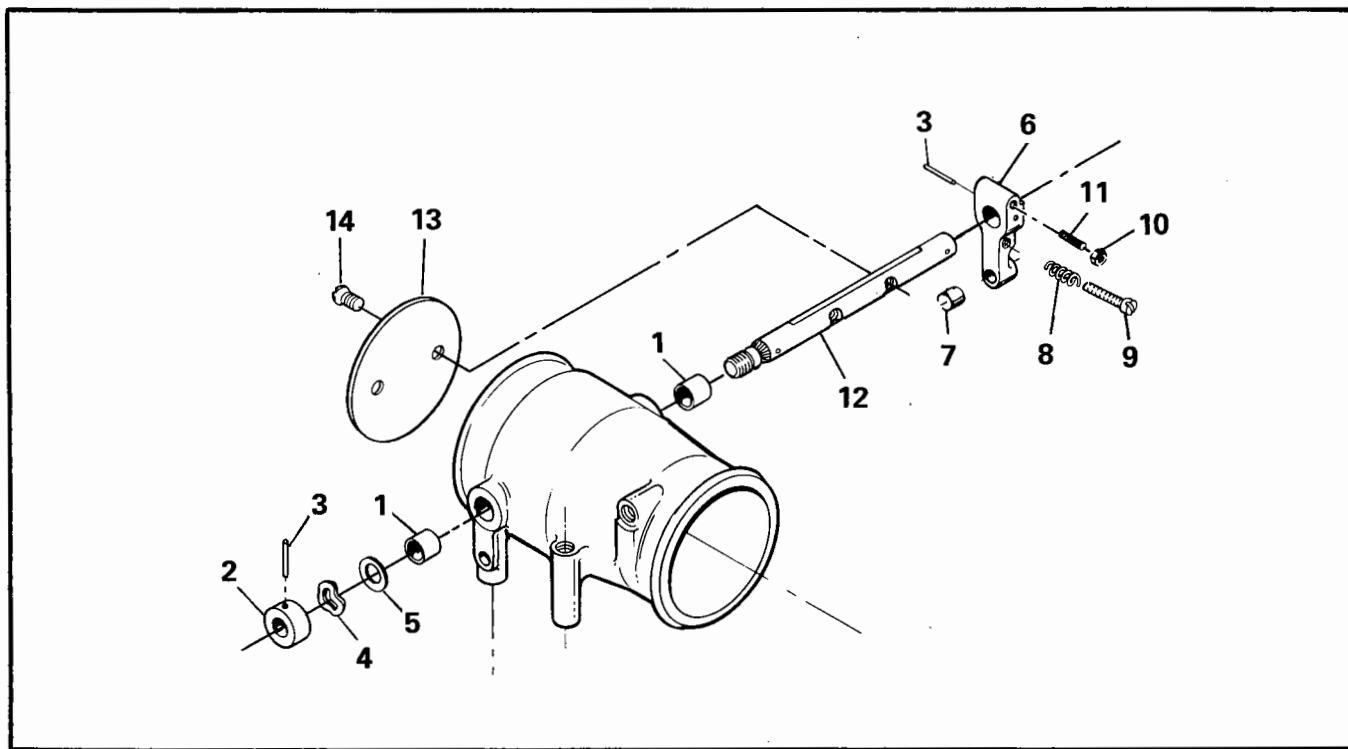


FIGURE 66. THROTTLE AND CONTROL ASSEMBLY, TS10-520-B, E.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY										
				B	D	E	J	K	L	N	UB	VB	WB	
66-	632853A1		Throttle Assembly	1		1								
-1	630455		. Bushing	2		2								
-2	625238		. Collar	1		1								
-3	626813		. Pin	2		2								
-4	625327-1		. Washer, Wave	1		1								
-5	625457		. Washer, Plain	ar		ar								
-5	625457-1		. Washer, Plain	ar		ar								
-6	632556	①	. Lever, Throttle Control	1		1								
-7	632554-2		. Bushing	1		1								
-8	626634		. Spring	1		1								
-9	639479		. Screw, Adjusting	1		1								
-10	13XX18130		. Nut	1		1								
-11	AN565E8H16		. Screw, Set	1		1								
-12	630124		. Shaft, Throttle Plate	1		1								
-13	625601		. Plate, Throttle	1		1								
-14	539942		. Screw	2		2								

NOTE:

- ① This lever is a new style which incorporates a hardened bushing. If replacing old style lever with no bushing, it will be necessary to order, in addition to a new lever a new link rod assembly. See appropriate application Figure 52.

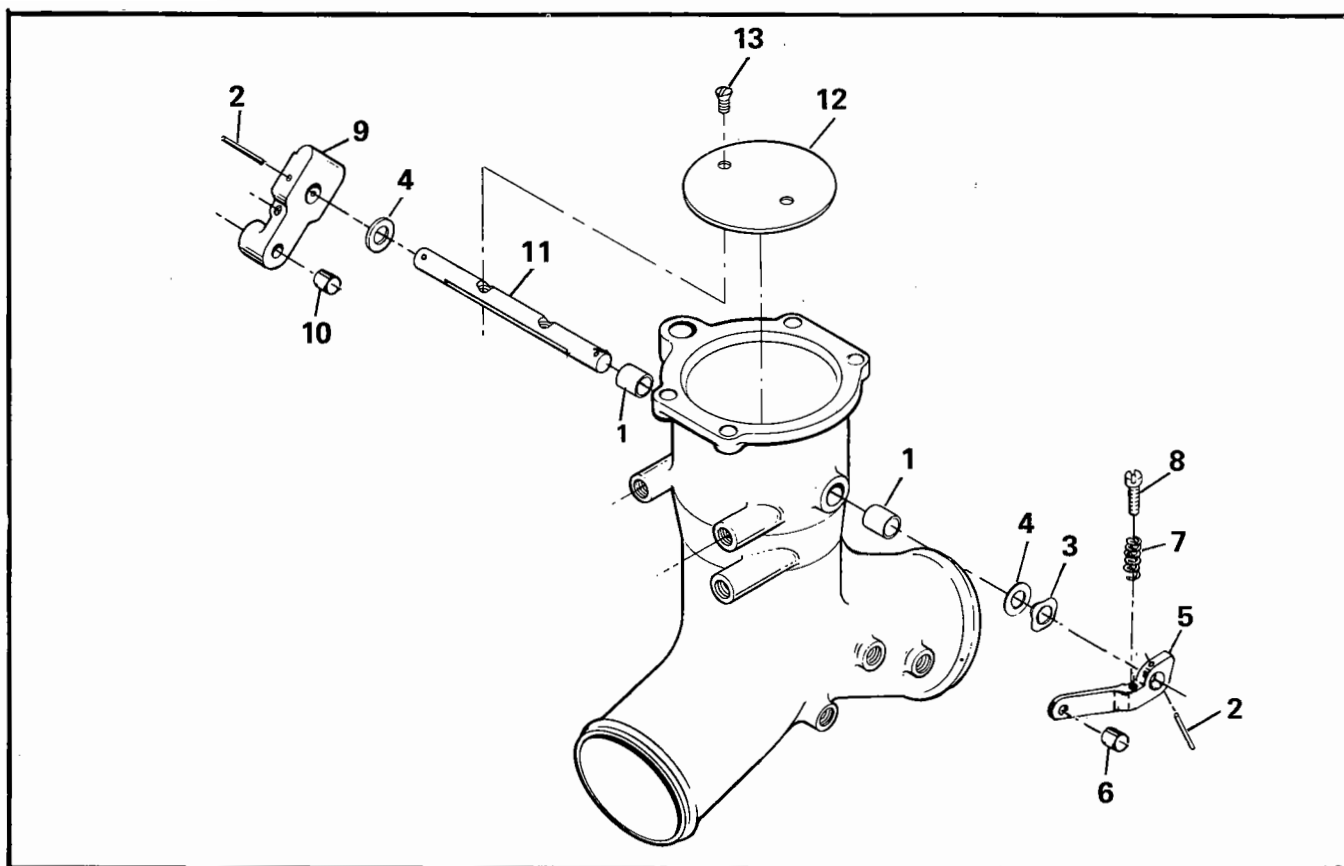


FIGURE 67. THROTTLE AND CONTROL ASSEMBLY, TS10-520-C, G, H, M, P, R, AF.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				C	G	H	M	P	R	T	AF		
67-	632840A1		Throttle Assembly	1	1	1	1	1	1		1		
-1	630455		. Bushing	2	2	2	2	2	2		2		
-2	626813		. Pin	2	2	2	2	2	2		2		
-3	625327-1		. Washer, Wave	1	1	1	1	1	1		1		
-4	625457		. Washer, Plain	ar	ar	ar	ar	ar	ar		ar		
-4	625457-1		. Washer, Plain	ar	ar	ar	ar	ar	ar		ar		
-5	632555-31	①	. Lever, Throttle Control	1	1	1	1	1	1		1		
-6	632554-1		. Bushing	1	1	1	1	1	1		1		
-7	626634		. Spring	1	1	1	1	1	1		1		
-8	639479		. Screw, Adjusting	1	1	1	1	1	1		1		
-9	632555-23	①	. Lever	1	1	1	1	1	1		1		
-10	632554-2		. Bushing	1	1	1	1	1	1		1		
-11	631819		. Shaft, Throttle Plate	1	1	1	1	1	1		1		
-12	625601		. Plate, Throttle	1	1	1	1	1	1		1		
-13	539942		. Screw	2	2	2	2	2	2		2		

NOTE:

- ① These levers are a new style which incorporate hardened bushings. If replacing old style levers with no bushings, it will be necessary to order, in addition to new levers a new link rod assembly. See appropriate application Figure 54.

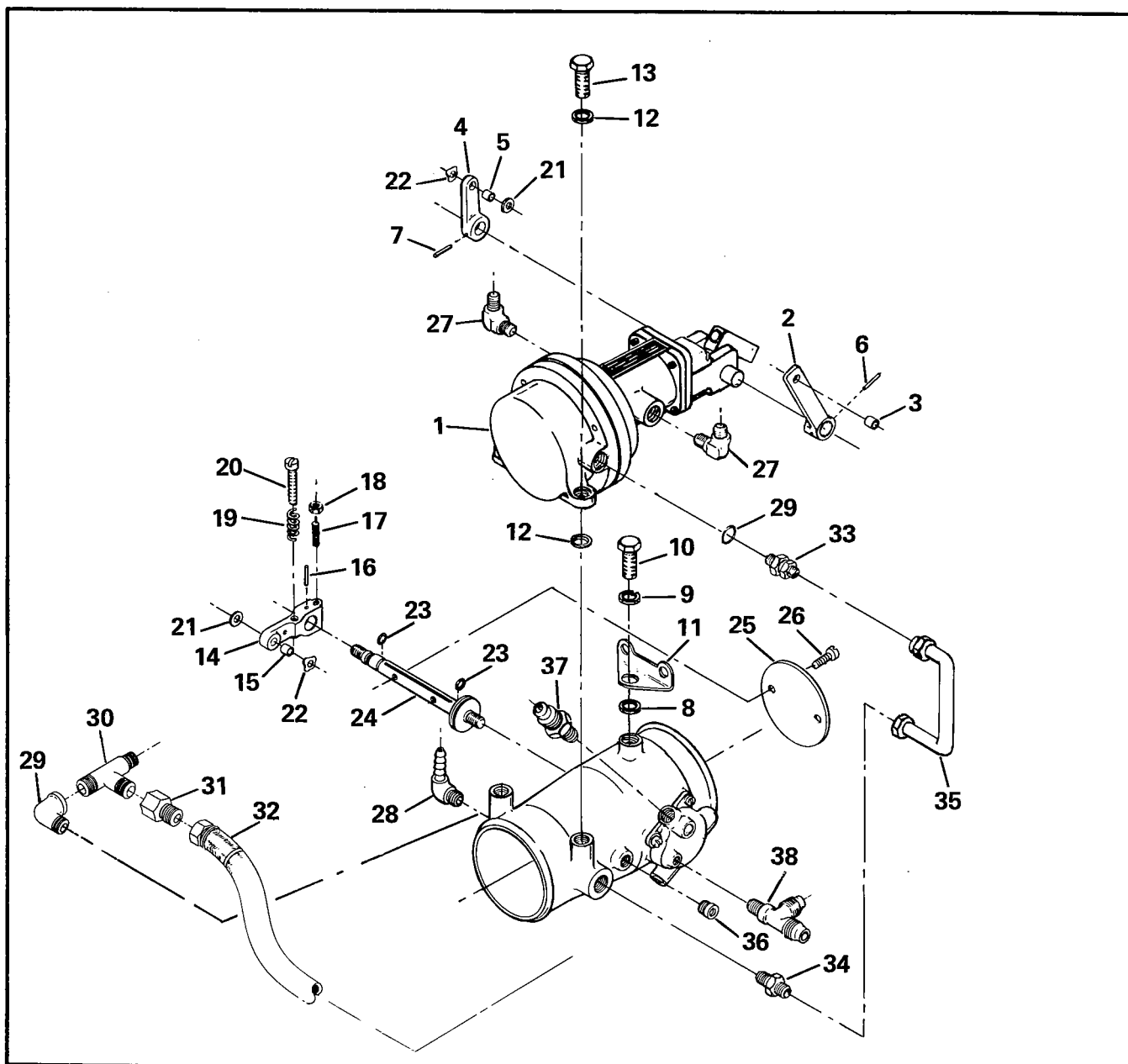
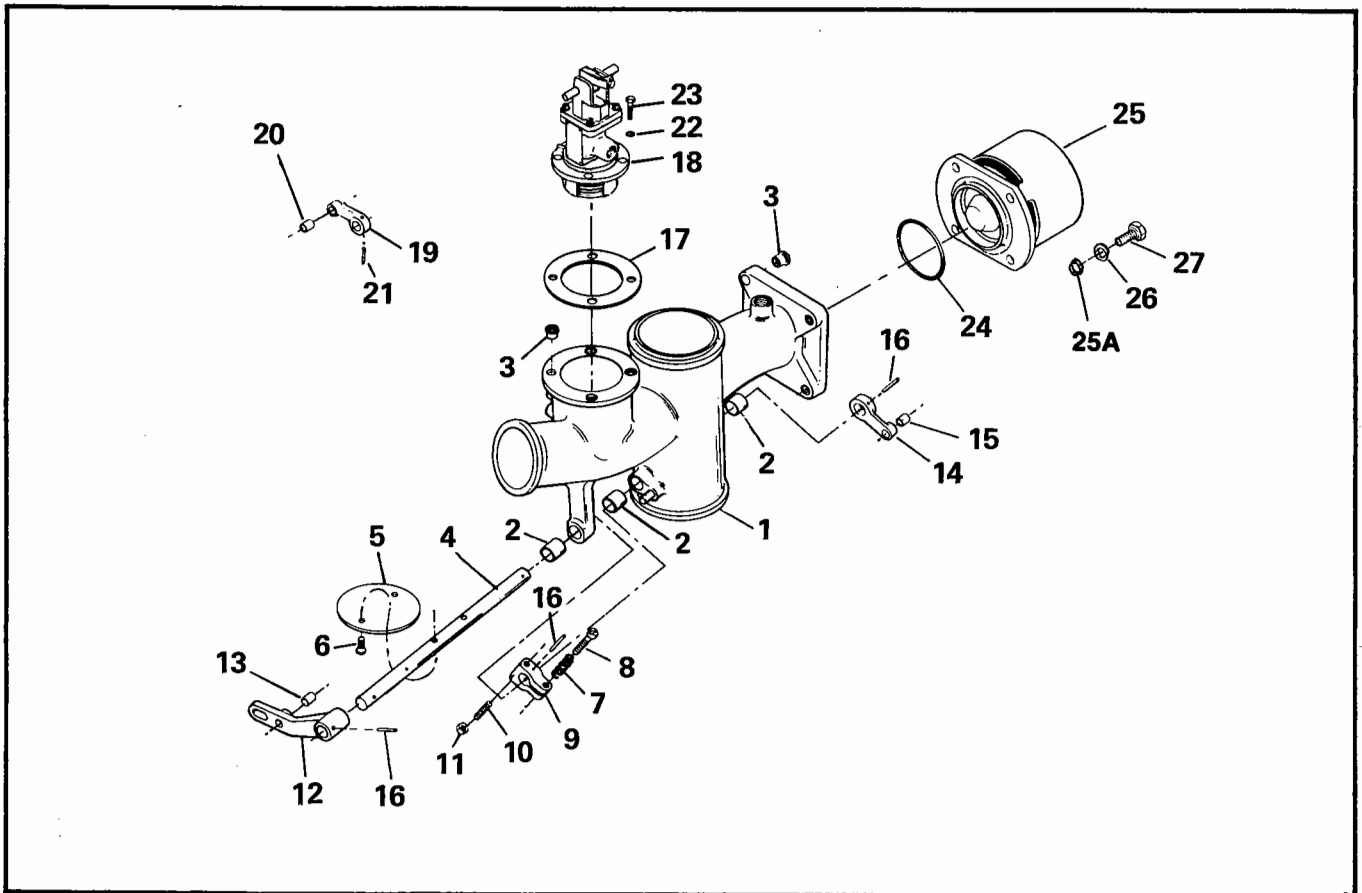


FIGURE 68. THROTTLE AND CONTROL ASSEMBLY, TS10-520-D, UB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY											
				B	D	E	J	K	L	N	UB	VB	WB		
68-	640564-1A3		Throttle and Control Assembly		1										
	642703A19		Throttle and Control Assembly									1			
-1	642722-1	①	Controller and Assembly, Complete									1			
-2	632555-12		. . . Lever		1										
-2	632555-40		. . . Lever									1			
-3	632554-1		. . . Bushing		1							1			
-4	632555-7		. . . Lever		1										
-4	632555-52		. . . Lever									1			
-5	632554-1		. . . Bushing		1										
-5	632554-2		. . . Bushing									1			
-6	626813-1		. . . Pin		1							1			
-7	626813		. . . Pin		1							1			
			* * * *												
-8	AN960-10		. Washer, Plain		2								2		
-9	MS35338-43		. Washer, Lock		2								2		
-10	628321-.38		. Bolt		2								2		
-11	633299		. Bracket		2								2		
-12	2472		. Washer, Plain		4								4		
-13	MS20074-04.06		. Bolt		2								2		
			* * * *												
-14	632556		. Lever		1								1		
-15	632554-2		. . Bushing		1								1		
-16	626813		. Pin		1								1		
-17	AN565E8H16		. Screw, Set		1								1		
-18	13XX18130		. Nut		1								1		
-19	626634		. Spring		1								1		
-20	646044		. Screw, Adjusting		1								1		
-21	537690		. Washer, Plain		ar								ar		
-22	625327-2		. Washer, Wave		ar								ar		
-23	630979-1		. O-Ring		2								2		
-24	635076-1		. Shaft, Throttle		1										
-24	635076-5		. Shaft, Throttle										1		
-25	625601		. Plate, Throttle		1								1		
			ATTACHING PARTS												
-26	539942		. Screw		2								2		
			* * * *												
-27	637459		. Elbow, 90 Degree, Inlet & Outlet		2								2		
-28	633790		. Fitting, Coupling, 90 Degree		1										
-29	632017		. Elbow, 90 Degree										1		
-30	MS20826-6B		. Tee										1		
-31	639522		. Reducer										1		
-32	641047S4S15.00		. Hose Assembly, Thr.-to-Fuel Pump										1		
-33	643172		. Connector, Tube										1		
-34	AN816-6-6B		. Nipple, Flared										1		
-34	AN842-8D		. Elbow, 90 Degree		1										
-35	642486		. Tube Assembly										1		
-36	AN932-2		. Plug		1										
-36	MS20823-3B		. Elbow, 90 Degree										1		
-37	628438		. Fitting, Connector		1										
-37	628436		. Elbow, 45 Degree										1		
-38	639495		. Fitting, Tee, Fuel Inlet		1										
-8	MS20822-4		. Elbow, 90 Degree, Fuel Inlet										1		

① The controller assembly for the TSIO-520-D is not supplied by TCM.



THROTTLE 69. THROTTLE AND CONTROL ASSEMBLY, TS10-520-J, K, N.

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY										
			B	D	E	J	K	L	N	UB	VB	WB	
69-1	639591A2	Throttle Assembly, Air				1	1		1				
-2	630455	. Bushing				3	3		3				
-3	MS122160	. Insert, Helical Coil				12	12		12				
-4	635950	. Shaft, Throttle				1	1		1				
-5	625601	. Plate, Throttle				1	1		1				
ATTACHING PARTS													
-6	539942	. Screw				2	2		2				
		* * * *											
-7	626634	. Spring				1	1		1				
-8	636805	. Screw, Idle Adjustment				1	1		1				
-9	639497	. Lever, Throttle, Idle Control				1	1		1				
-10	AN565E8H16	. Screw, Set				1	1		1				
-11	13XX18130	. Nut				1	1		1				
-12	632555-15	. Lever Assembly				1	1		1				
-13	632554-2	. . Bushing				1	1		1				
-14	632555-14	. Lever Assembly				1	1		1				
-15	632554-2	. . Bushing				1	1		1				
-16	626813	. Pin				3	3		3				
-17	633409	\$ Gasket, Controller				1			1				
-18	641434-3	Controller Assembly				1							
-18	641434-4	Controller Assembly							1				
-19	632555-14	. Lever, Assembly				1			1				
-20	632554-2	. . Bushing				1			1				
-21	626813	. Pin				1			1				
ATTACHING PARTS													
-22	AN960-10L	Washer, Flat				4			4				
-23	AN500A10-12	Screw, No. 10-24				4			4				
		* * * *											
-24	MS29513-138	O-Ring					1						
-25	637583-17	Valve Assembly, Pressure Relief					1						
-25A	538600-2	Washer, Seal					4						
ATTACHING PARTS													
-26	AN960-10L	Washer, Flat					4						
-27	AN500A10-12	Screw, No. 10-24					4						



FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY										
				B	D	E	J	K	L	N	UB	VB	WB	
70 -	640791A2		Throttle and Control Assembly						1					
	640791A3		Throttle and Control Assembly										1	
-1	640667		. Fuel Injector Assembly						1				1	
-2	633409	\$	. Gasket, Controller						1				1	
-3	642777		. Controller						1					
-3	643138-1		. Controller										1	
	633381-8A1		. Link Rod Assembly, Complete						1				1	
-4	633381-8		. . Rod and Link Assembly						1				1	
-5	626634		. . Spring, Compression						1				1	
-6	632557		. . Rod End, Special						1				1	
-7	MS21044N3		. . Nut, Self Locking						1				1	
-8	625327-2		. Washer, Wave						4				4	
-9	537690		. Washer, Flat						2				2	
-10	2500		. Pin, Cotter						2				2	
-11	632555-24		. Lever Assembly, Throttle						1				1	
-12	632554-2		. . Bushing						1				1	
-13	626813		. Pin, Tubular						1				1	
ATTACHING PARTS														
-14A	538600-2		. Washer, Seal						4				4	
-14	AN960-10L		. Washer, Controller-to-Throttle Body						4				4	
-15	AN500A10-12		. Screw, Controller-to-Throttle Body						4				4	
* * * *														
-16	MS29512-06		. O-Ring						1				1	
-17	AN924-6		. Nut						1				1	
-18	AN833-6		. Elbow, 90 Degree						1				1	
-19	MS28882-6		. Valve, Check						1				1	
-20	640690		. Adapter						1				1	
-21	640692		. Junction Box Assembly						1				1	
-22	MS29513-138		. O-Ring						1				1	
-23	639319-9		. Valve, Fuel Pressure Relief						1				1	
ATTACHING PARTS														
-24	AN960-10L		. Washer, Flat						4				4	
-25	AN500A10-12		. Screw						4				4	
* * * *														
-26	640644		. Bracket						1				1	
ATTACHING PARTS														
-27	2472		. Washer, Flat						4				4	
-28	MS9089-10		. Bolt						4				4	
* * * *														
-29	* * *		Link Rod and Lever Assembly						rf				rf	

NOTE:

* * * This link rod and lever assembly not supplied by TCM.

FIG. INDEX	PART NUMBER	1 2 3 4 5 DESCRIPTION	QUANTITY									
			C	G	H	M	P	R	T			
71-	639596	Throttle Assembly, Air							1			
-1	630455	. Bushing							2			
-2	625238	. Collar							1			
-3	626813	. Pin							2			
-4	625327-1	. Washer, Wave							1			
-5	625457	. Washer, Plain							ar			
-6	632555-34	. Lever, Throttle Control							1			
-7	632554-1	. Bushing							1			
-8	MS21042-5	. Nut							1			
-9	632556	. Lever							1			
-10	632554-2	. Bushing							1			
-11	626634	. Spring							1			
-12	639479	. Screw, Adjusting							1			
-13	13XX18130	. Nut							1			
-14	AN565E8H16	. Screw, Set							1			
-15	630124	. Shaft, Throttle							1			
-16	625601	. Plate, Throttle							1			
-17	539942	. Screw							2			

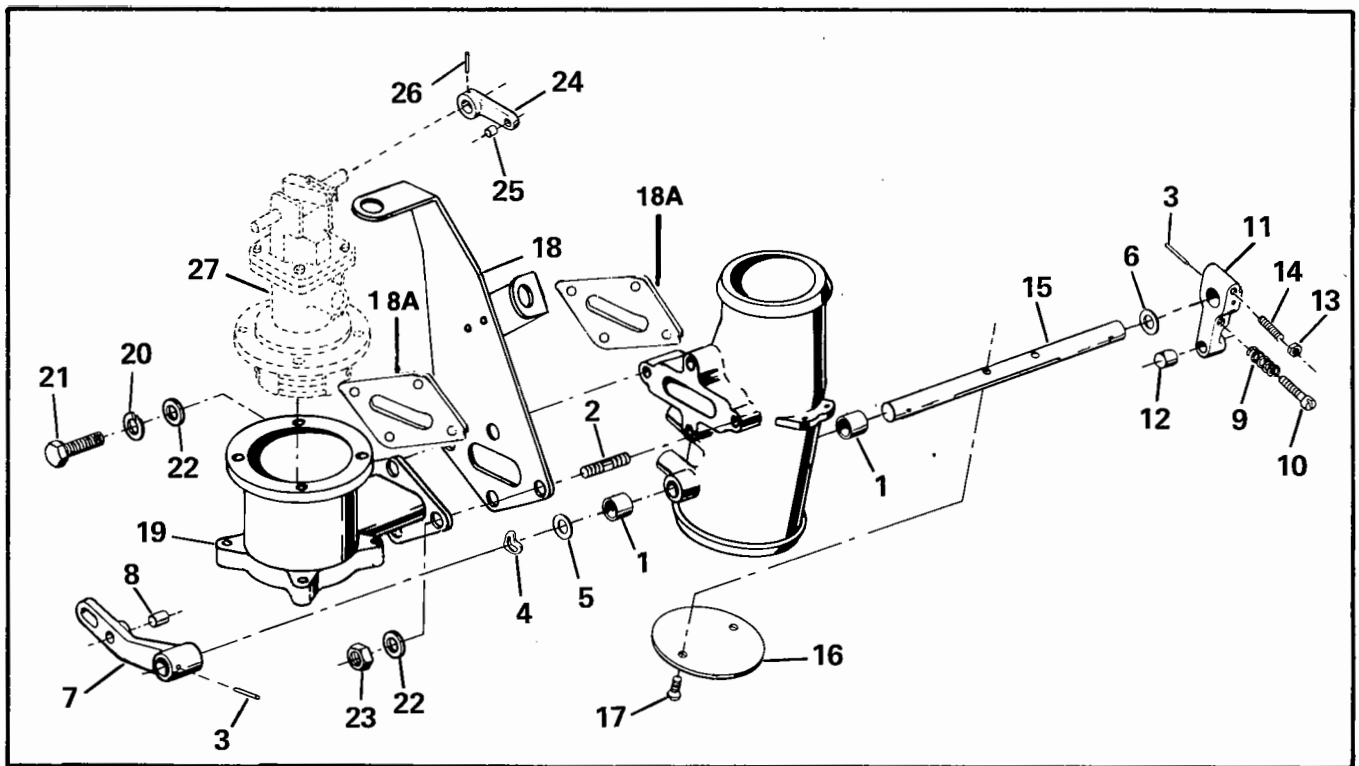


FIGURE 72. THROTTLE AND CONTROL ASSEMBLY, TS10-520-VB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY										
				B	D	E	J	K	L	N	UB	VB	WB	
72-	642702A1		Throttle Assembly, Air										1	
-1	630455		. Bushing										2	
-2	401801	†	. Stud, 1/4 x 1-3/16 Inch Long										3	
-3	626813		. Pin										2	
-4	625327-1		. Washer, Wave										1	
-5	625457		. Washer, Plain										1	
-6	625457-1		. Washer, Plain										1	
-7	632555-50		. Lever Assembly, Throttle										1	
-8	632554-2		. Bushing										1	
-9	626634		. Spring										1	
-10	639479		. Screw, Adjusting										1	
-11	632556		. Lever Assembly										1	
-12	632554-2		. Bushing										1	
-13	13XX18130		. Nut										1	
-14	AN565E8H16		. Screw, Set										1	
-15	642871		. Shaft										1	
-16	625601		. Plate, Throttle										1	
			ATTACHING PARTS											
-17	539942		. Screw										2	
			* * * *											
-18	642578		Bracket, Throttle Body										1	
-18A	642559		Gasket										2	
-19	642526A1		Adapter Assembly, Throttle Body										1	
			ATTACHING PARTS											
-20	MS35337-44		Washer, Lock										1	
-21	24835		Screw										1	
-22	20522		Washer, Plain										4	
-23	MS20364-428		Nut										3	
			* * * *											
-24	632555-51		Lever Assembly										1	
-25	632554-2		. Bushing										1	
-26	626813		Pin										1	
-27	* * *		Controller Assembly										rf	

NOTE:

* * * Controller assembly not supplied by TCM.

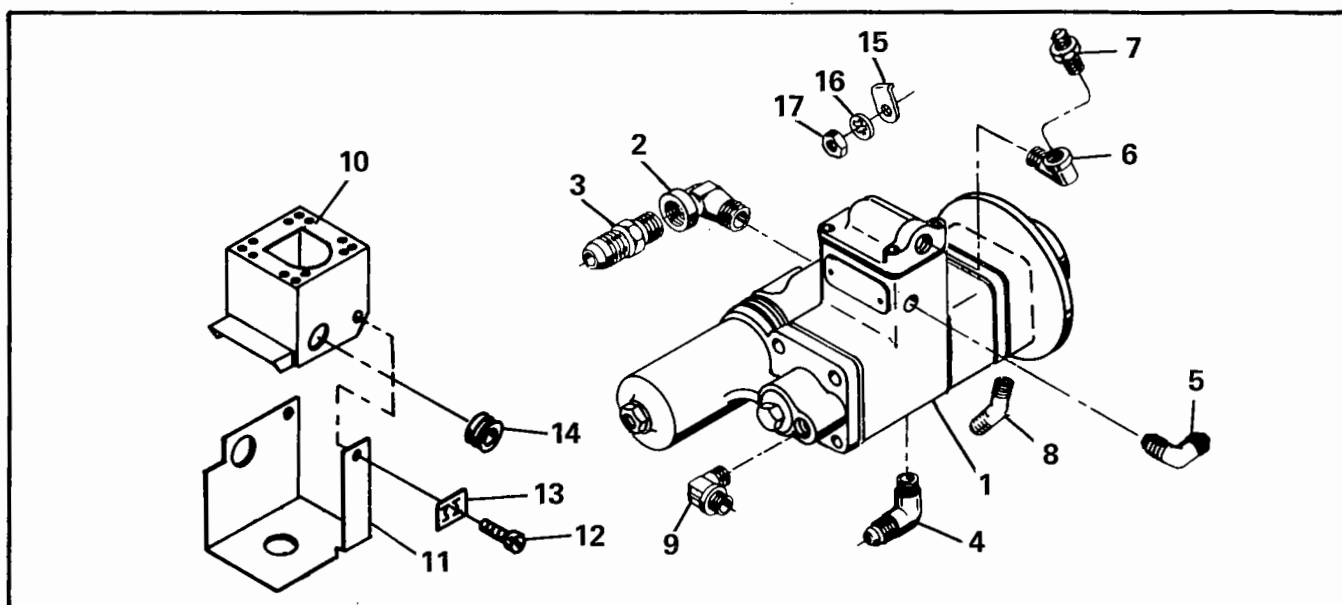


FIGURE 73. FUEL PUMP ASSEMBLY, TSIO-520-B, E, J, K, N, VB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
73-1	632818-1A1		① Fuel Pump & Pressure Compensator Assembly	1									
-1	632818-2A1		① Fuel Pump & Pressure Compensator Assembly			1							
-1	632818-2A2		① Fuel Pump & Pressure Compensator Assembly				1	1		1			
-1	632818-8A2		① Fuel Pump & Pressure Compensator Assembly									1	
-2	632017		. Elbow, 90 Degree, 1/4 NPTF	1		1	1	1		1		1	
-3	631308		. Connector, 1/4 NPTF-to-1/2 Tube	1		1	1	1		1		1	
-4	628437		. Elbow, 90 Degree 1/8 NPTF-to-1/4 Tube	1		1							
-4	628436		. Elbow, 45 Degree 1/8 NPTF-to-1/4 Tube				1	1		1		1	
-5	628476		. Elbow, 45 Degree, 1/8 NPTF-to-1/8 Tube	1		1							
-5	628437		. Elbow, 90 Degree, 1/8 NPTF-to-1/4 Tube				1	1		1		1	
-6	627119		. Elbow, 90 Degree, 1/8 NPTF	1		1							
-6	631293		. Elbow, 90 Degree 1/8 NPTF-to-3/8 Tube				1	1		1		1	
-7	631307		. Connector, 1/8 NPTF-to-3/8 Tube	1		1							
-8	628436		. Elbow, 45 Degree 1/8 NPTF-to-1/4 Tube	1		1	1	1		1		1	
-9	X5146		. Elbow, 90 Degree 1/8 NPTF-to-1/4 Tube	1		1							
-9	636350		. Fitting Assy., Tee, 1/8 NPTF-to-1/8 Tube				1	1		1		1	
-10	633036		. Shroud Assembly, Fuel Pump	1		1							
-11	633650		. Shroud, Fuel Pump	1		1							
ATTACHING PARTS													
-12	AN515-8R5		. Screw, Machine	2		2							
-13	MS21044N08		. Nut, Self Locking	2		2							
-14	626879-1	\$	. Grommet	3		3							
* * * *													
-15	535847		Washer, Holding	2		2	2	2		2		2	
-16	MS35337-45		Washer, Lock	2		2	2	2		2		2	
-17	2439		Nut, Plain Hex	2		2	2	2		2		2	

NOTE:

- ① The fittings and associated hardware for the TSIO-520-BB, EB, JB, KB & NB is the same as the TSIO-520-B, E, J, K & N respectively. Part numbers of complete pump assemblies are for the single suffix engines.

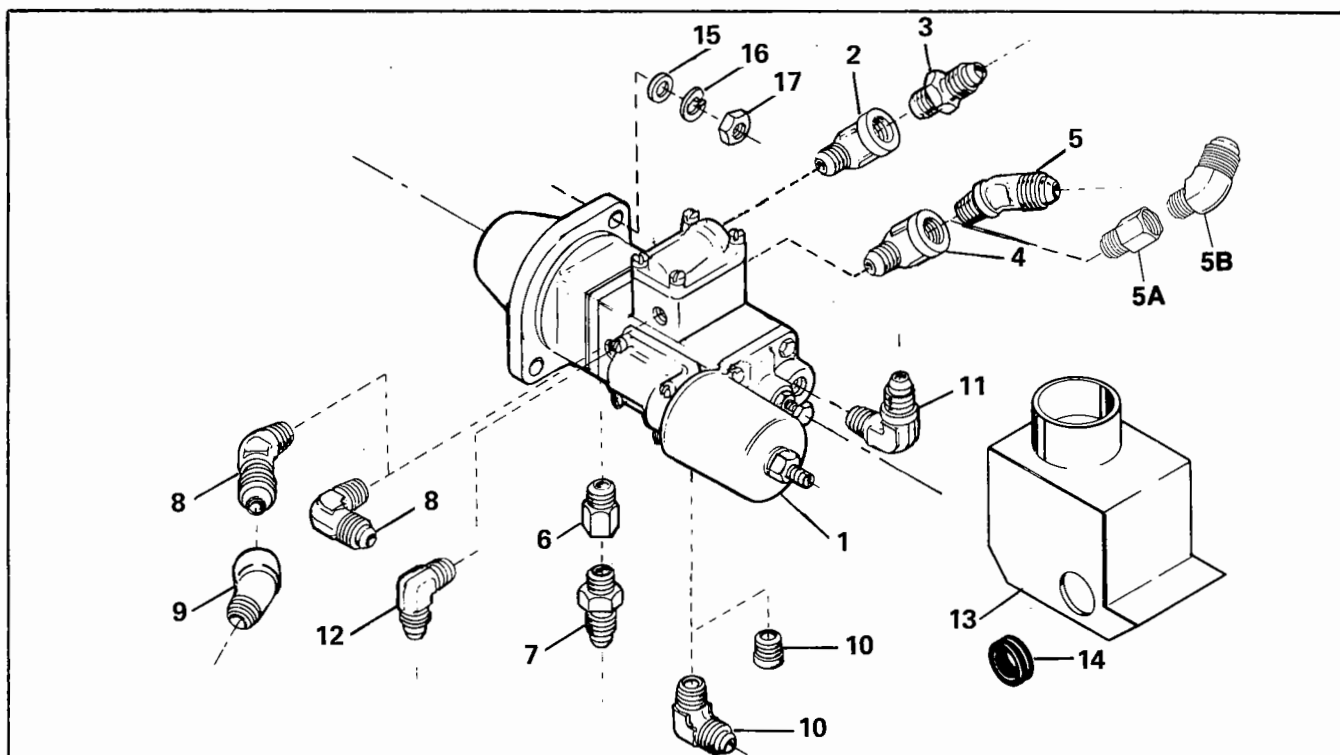
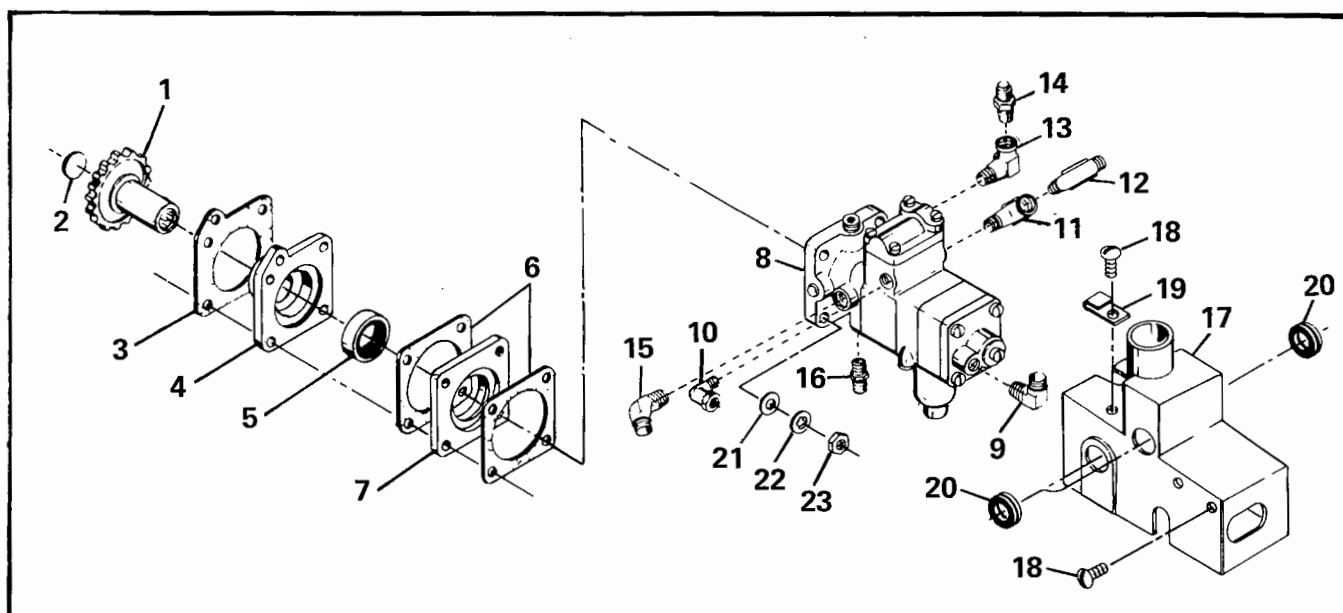


FIGURE 74. FUEL PUMP ASSEMBLY, TS10-520-C, G, H, M, P, R, T, AF.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY							
				C	G	H	M	P	R	T	AF
74-1	632818-5A4		Fuel Pump Assembly, Complete	1	1	1					
-1	632818-7A3		Fuel Pump Assembly, Complete				1	1	1		
-1	632818-9A3		Fuel Pump Assembly, Complete							1	
-1	642650-1A3		Fuel Pump Assembly, Complete								1
-2	627119		. Elbow, 90 Degree	1	1	1	1	1	1	1	
-2	628476		. Elbow, 90 Degree								1
-3	628438		. Fitting, Connector	1	1	1	1	1	1	1	
-4	627119		. Elbow, 90 Degree	1	1	1	1	1	1	1	1
-5	628476		. Elbow, 45 Degree	1	1	1	1	1	1	1	
-5A	630119		. Fitting, Adapter								1
-5B	628436		. Elbow, 90 Degree								1
-6	630119		. Fitting, Adapter				1	1	1	1	1
-7	628438		. Fitting, Connector	1	1	1	1	1	1	1	1
-8	631882		. Elbow, 90 Degree	1	1	1					
-8	637286		. Elbow, 45 Degree				1	1	1	1	1
-9	633121		. Elbow, 45 Degree				1	1	1	1	1
-10	AN932-2		. Plug	1	1	1					
-10	628437		. Elbow, 90 Degree				1	1	1	1	
-11	X5146		. Elbow, 90 Degree	1	1	1	1	1			1
-11	629125		. Fitting, 90 Degree							1	
-12	628437		. Elbow, 90 Degree	1	1	1					1
-13	642796		. Shroud	1	1	1	1	1	1	1	1
-14	626879-1		. Grommet	3	3	3	4	4	4	4	4
ATTACHING PARTS											
-15	2473		Washer, Plain	2	2	2	2	2	2	2	2
-16	MS35337-45		Washer, Lock	2	2	2	2	2	2	2	2
-17	2439		Nut	2	2	2	2	2	2	2	2

* * * *

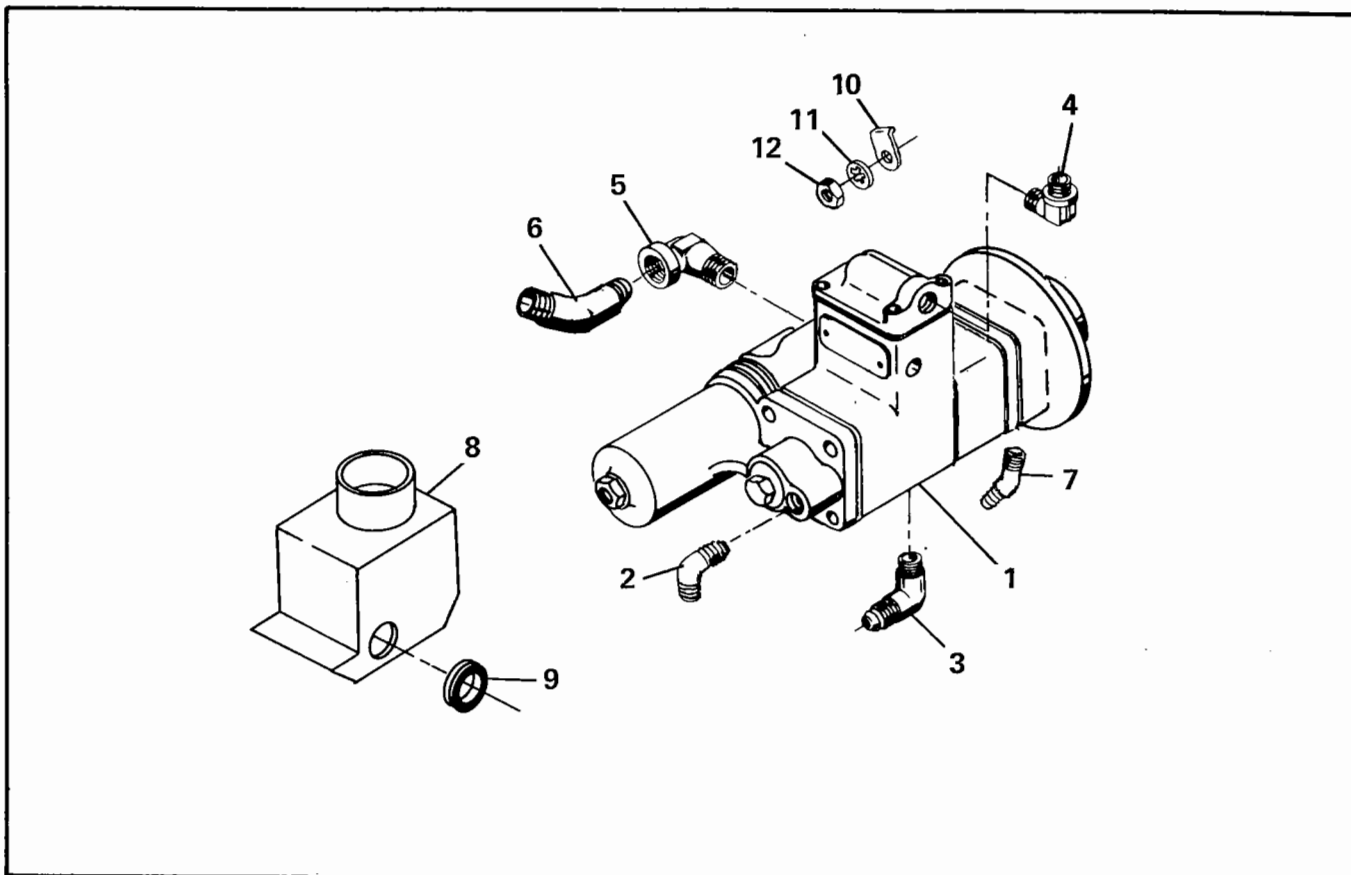


**FIGURE 75. FUEL PUMP ASSEMBLY, TS10-520-C, G, H.
(Old Style)**

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				C	G	H	M	P	R	T			
75-1	534995		Gear Assembly, Fuel Pump	1	1	1							
-2	539634		. Plug, Expansion	1	1	1							
-3	534941		\$ Gasket, Fuel Pump to Crankcase	1	1	1							
-4	627518		Adapter Assembly, Fuel Pump	1	1	1							
-5	534956		\$. Seal, Oil	1	1	1							
-6	MS9137-01		\$ Gasket, Adapter to Fuel Pump	1	1	1							
-7	626839		Insulator, Fuel Pump	1	1	1							
-8	630751-3A1		⊙ Fuel Pump and Vapor Sep. Assembly Comp. ...	1	1	1							
-9	X5146		. Elbow, 90 Degree, 1/8 NPTF to 1/4 Tube	1	1	1							
-10	631882		. Elbow, 90 Degree, 1/4 NPTF to 1/4 Tube	1	1	1							
-11	627119		. Elbow, 90 Degree 1/8 NPTF	1	1	1							
-12	628476		. Elbow, 45 Degree, 1/8 NPTF to 1/4 Tube	1	1	1							
-13	627119		. Elbow, 90 Degree, 1/8 NPTF	1	1	1							
-14	628438		. Connector, 1/8 NPTF to 1/4 Tube	1	1	1							
-15	629267		. Elbow, 45 Degree, 1/4 NPTF to 1/4 Tube	1	1	1							
-16	628438		. Connector, 1/8 NPTF to 1/4 Tube	1	1	1							
-17	633158		. Shroud Assembly, Fuel Pump	1	1	1							
ATTACHING PARTS													
-18	AN526-1024-4		. Screw, Sheet Metal	4	4	4							
-19	537911		. Nut, Tinnerman, Type J	4	4	4							
			* * * *										
-20	626879-1		\$. Grommet	3	3	3							
-21	538181		Washer, Plain	4	4	4							
-22	MS35333-41		Washer, Lock	4	4	4							
-23	2439		Nut, Plain, Hex	4	4	4							
			* * * *										

NOTE:

⊙ This fuel pump is no longer serviced as a complete assembly. For new style pump see Figure 75.



**FIGURE 76. FUEL PUMP ASSEMBLY, TS10-520-D, UB.
(Old Style)**

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
76-1	639508-5A2	⊙	Fuel Pump Assembly, Complete		1								
-1	639508-9A2	⊙	Fuel Pump Assembly, Complete								1		
-2	633789	.	Elbow, 90 Degree		1								
-2	632115	.	Elbow, 45 Degree		1						1		
-3	628437	.	Elbow, 90 Degree		1						1		
-4	628437	.	Elbow, 90 Degree		1						1		
-5	632017	.	Elbow, 90 Degree		1								
-5	628435	.	Elbow, 90 Degree								1		
-6	634536	.	Elbow, 45 Degree		1								
-7	628436	.	Elbow, 45 Degree		1						1		
-8	642796	.	Shroud		1						1		
-9	626879-1	\$	Grommet		3						3		
ATTACHING PARTS													
-10	535847		Washer, Holding		2						2		
-11	MS35337-45		Washer, Lock		2						2		
-12	2439		Nut		2						2		
* * * *													

NOTE:

⊙ The fittings and associated hardware for the TS10-520-DB is the same as the TS10-520-D

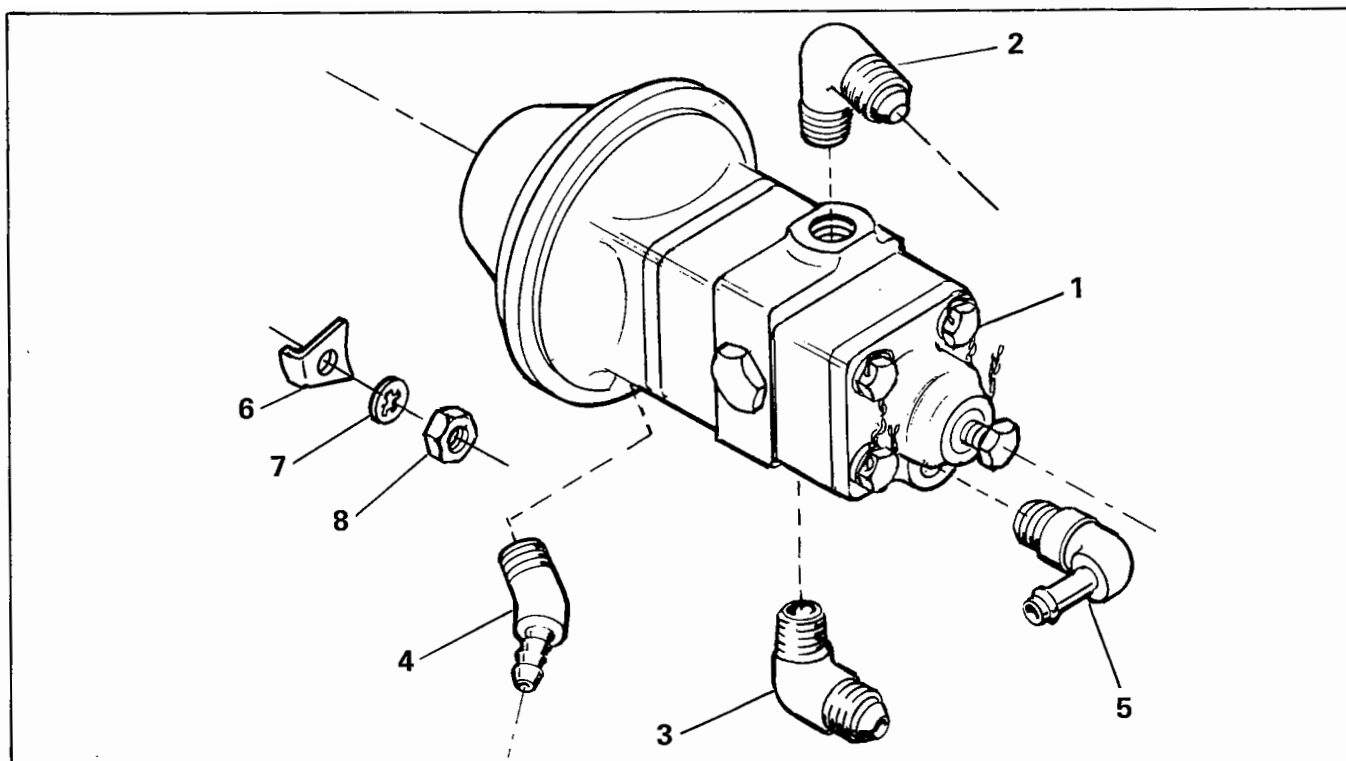


FIGURE 77. FUEL PUMP ASSEMBLY, TSIO-520-L, WB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
77-1	640643-6A1	①	Fuel Pump Assembly, Complete						1				
-1	640643-7A1		Fuel Pump Assembly, Complete										1
-2	641889		. Elbow, 90 Degree						1				1
-3	632616		. Elbow, 90 Degree						1				1
-4	632115		. Elbow, 45 Degree						1				1
-5	629125		. Elbow, 90 Degree						1				1
ATTACHING PARTS													
-6	535847		Washer, Holding						2				2
-7	MS35338-45		Washer, Lock						2				2
-8	2439		Nut						2				2

NOTE:

① The fittings and associated hardware for the TSIO-520-LB is the same as the TSIO-520-L.

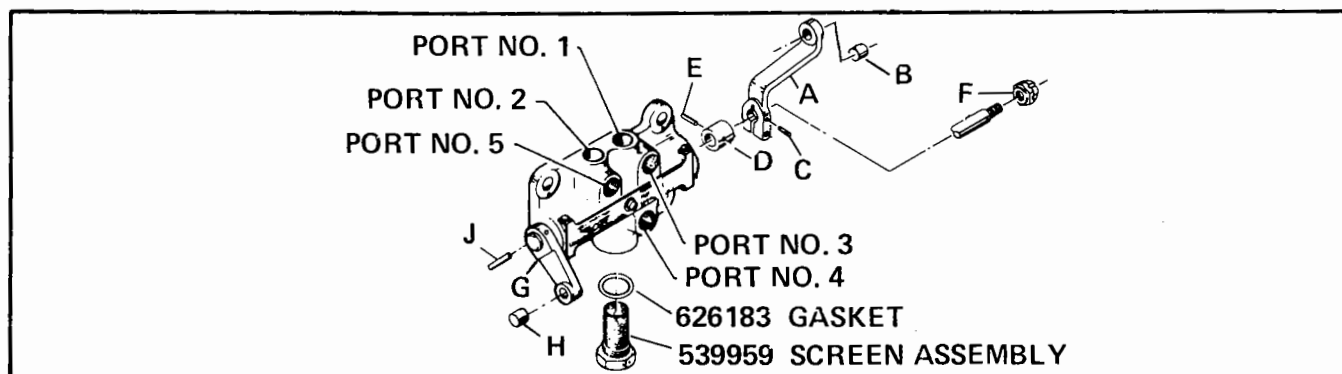
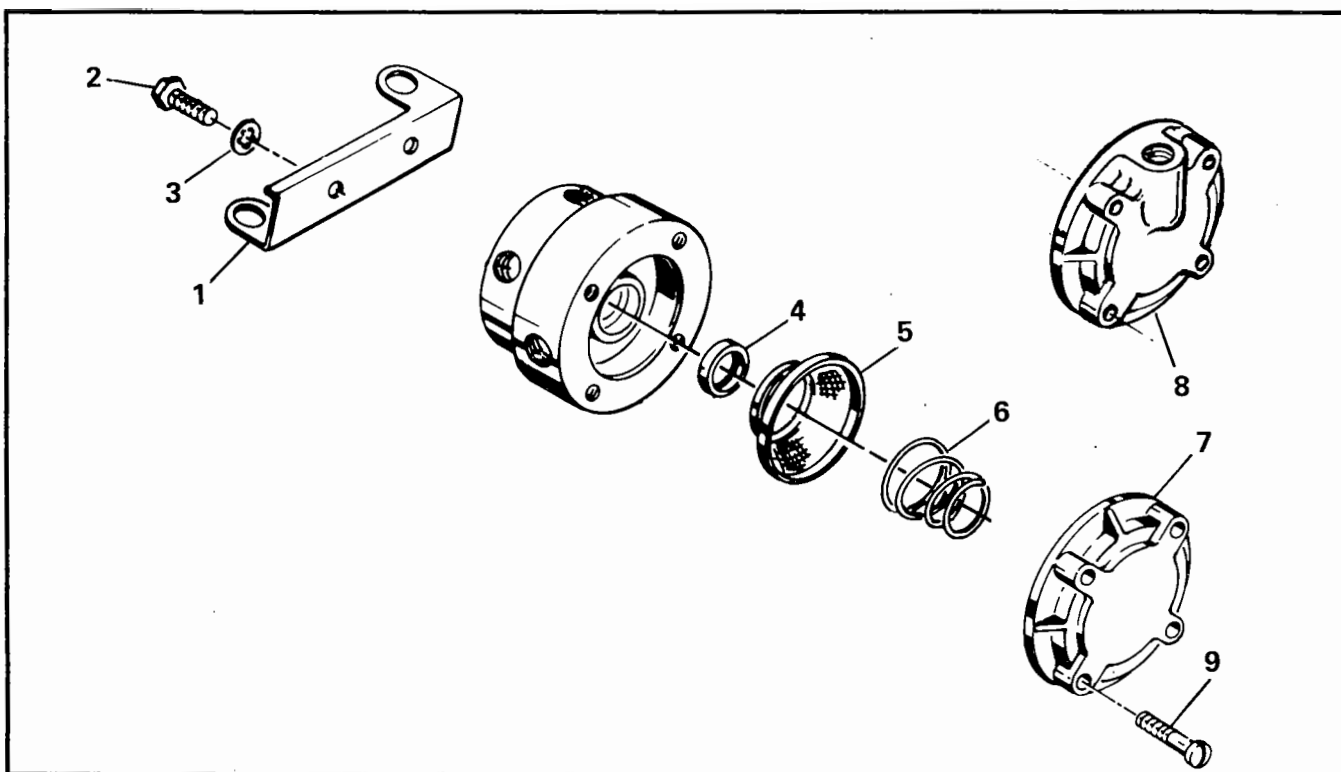


FIGURE 78. FUEL CONTROL FITTING LOCATIONS, ALL MODELS.

MODEL	TSIO-520-B,E	C,G,H	J,K,N,VB	M,P,R,AF	T
Control Assy. Fuel Inj. P/N	632916-8 ①	629703-8 ①	632916-11 ①	629703-11 ①	629904-11 ①
Port No. 1 Fitting No.	628438	628478	636758	628478	630119 628476
Port No. 2 Fitting No.	628437	2024	2024	2024	628437
Port No. 3 Fitting No.	628438	2024	2024	2024	2024
Port No. 4 Fitting No.	628436	628476	636349	630119 MS20823-4B	628478
Port No. 5 Fitting No.	2024	628438	628436	628438	2024
Mixture Control Lever "A" No.	632555-24	632555-28 ②		632555-28 ②	632555-49 ②
Bushing - Mixture Lever "B" No.	632554-2	632554-1		632554-1	632554-1
Pin - Mixture Lever "C" No.		626813-1		626813-1	
Mixture Control Collar "D" No.	629782		629782		
Pin - Mixture Collar "E" No.	629592		625952		
Castle Nut - Mixture Lever "F"					MS21042-5
Metering Lever "G" No.	632555-2 ②	632555-5 ②	632555-24 ②	632555-5 ②	632555-24 ②
Bushing - Metering Lever "H" No.	632554-2	632554-2	632554-2	632554-2	632554-2
Pin - Metering Lever "J" No.	626813	626813	626813	626813	626813

NOTES:

- ① This part number not available. See complete Control Assembly.
- ② These levers are a new style which incorporate hardened bushings. If replacing old style levers with no bushings, it will be necessary to order, in addition to new levers, a new link rod assembly. See appropriate application, Figures 52 thru 66.



**FIGURE 79. FUEL MANIFOLD VALVE ASSEMBLY,
TS10-520-B, D, E, J, K, L, N, UB, VB, WB.**

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
79-	631351	①	Valve Assembly, Manifold	rf	rf								
	634326	①	Valve Assembly, Manifold			rf	rf	rf		rf			
	643397	①	Valve Assembly, Manifold						rf				rf
	641032	①	Valve Assembly, Manifold								rf	rf	
-1	642064		. Bracket	1	1	1	1	1		1	1	1	
-1	642095		. Bracket						1				1
ATTACHING PARTS													
-2	AN500-10-5		. Screw, Fillister Head	2	2	2	2	2	2	2	2	2	2
-3	MS35338-43		. Washer, Lock	2	2	2	2	2	2	2	2	2	2
* * * *													
-4	631330		. Seal	1	1	1	1	1		1	1	1	
-5	626557		. Screen	1	1	1	1	1		1	1	1	
-6	630184		. Spring	1	1	1	1	1		1	1	1	
-6	627378		. Spring						1				1
-7	634325		. Cover	1	1	1	1	1		1	1	1	
-8	643581		. Cover						1				1
ATTACHING PARTS													
-8	AN500A8-10		. Screw	4	4	4	4	4	4	4	4	4	4
* * * *													

NOTE:

① This part number not available. See appropriate Fuel Injection Systems, Figure 52 thru 66 for complete Manifold Valve Assy. P/N.

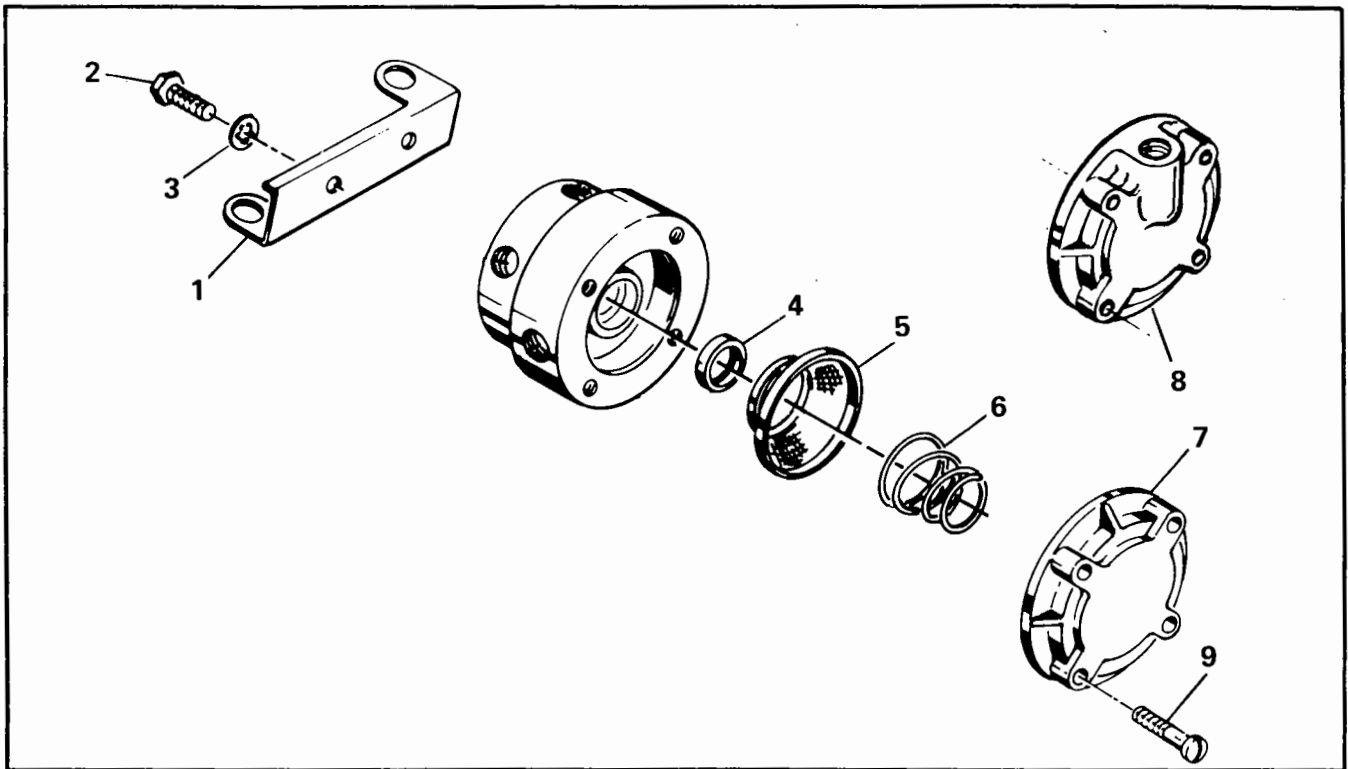
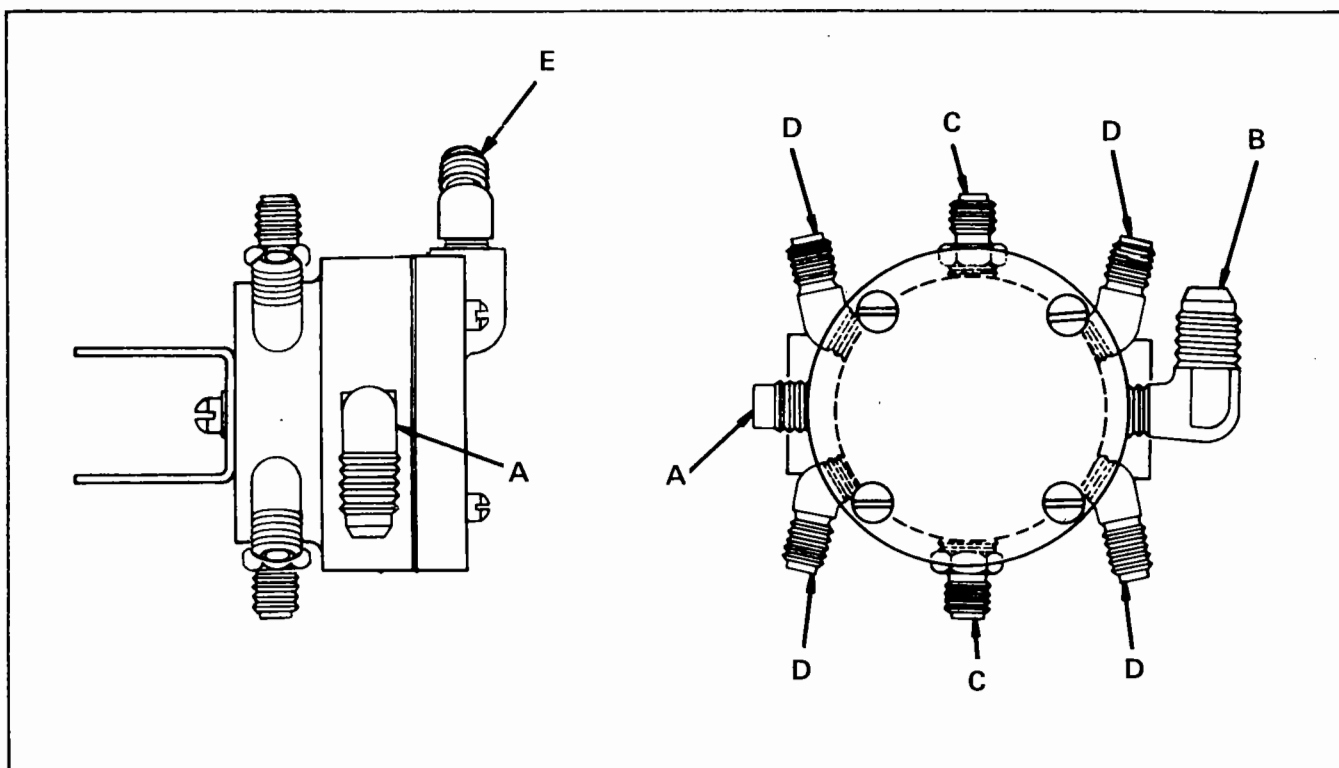


FIGURE 80. FUEL MANIFOLD VALVE ASSEMBLY, TS10-520-C, G, H, M, P, R, T, AF.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY							
				C	G	H	M	P	R	T	AF
80-	631351	①	Valve Assembly, Manifold	rf	rf	rf					
	634326	①	Valve Assembly, Manifold				rf	rf	rf		rf
	641032	①	Valve Assembly, Manifold							rf	
-1	642064	.	Bracket	1	1	1	1	1	1	1	1
			ATTACHING PARTS								
-2	AN500-10-5	.	Screw	2	2	2	2	2	2	2	2
-3	MS35338-43	.	Screw, Lock	2	2	2	2	2	2	2	2
			* * * *								
-4	631330	.	Seal	1	1	1	1	1	1	1	1
-5	626557	.	Screen	1	1	1	1	1	1	1	1
-6	630184	.	Spring	1	1	1	1	1	1	1	1
-7	634325	.	Cover	1	1	1	1	1	1	1	1
			ATTACHING PARTS								
-8	AN500A8-10	.	Screw	4	4	4	4	4	4	4	4

NOTE:

① This part number not available. See appropriate Fuel Injection Systems Figures 52 thru 66 for complete Manifold Valve Assy. P/N.

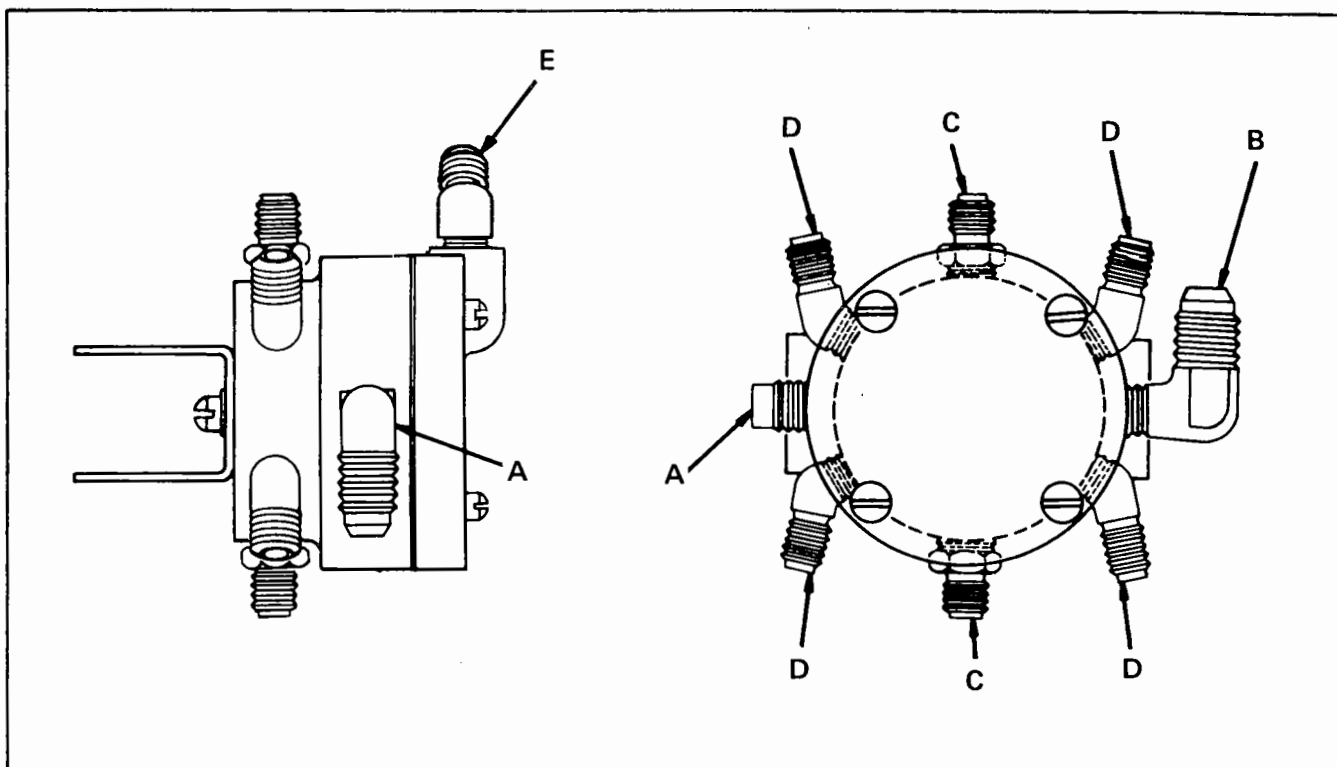


**FIGURE 81. FUEL MANIFOLD VALVE FITTING LOCATIONS,
TSIO-520-B, D, E, J, K, L, N, UB, VB, WB.**

MODEL	Fuel Manifold Assembly Number	Fitting "A" Number	Fitting "B" Number	Fitting "C" Number	Fitting "D" Number	Fitting "E" Number
TSIO-520-B	631351 ①	631720	628437	AN780-2	627331	
TSIO-520-D	631351 ①	631658	628437	AN780-2	627331	
TSIO-520-E	634326 ①	631720	628437	AN780-2	627331	628438
TSIO-520-J,K,N	634326 ①	631720	628437	AN780-2	627331	628436
TSIO-520-L,WB	643397 ①	2024	628436	AN780-2	627331	
TSIO-520-UB	641032 ①	628437	640043			MS20823-4
TSIO-520-VB	641032 ①	628437	631720			628436

NOTE:

- ① This part number not available. See appropriate Fuel Injection Systems. Figure 52 thru 66 for complete Manifold Valve Assembly P/N.



**FIGURE 82. FUEL MANIFOLD VALVE FITTING LOCATIONS,
TSIO-520-C, G, H, M, P, R, T, AF.**

MODEL	Fuel Manifold Assembly Number	Fitting "A" Number	Fitting "B" Number	Fitting "C" Number	Fitting "D" Number	Fitting "E" Number
TSIO-520-C	631351 ①	631720	628437	AN780-2	627331	
TSIO-520-G,H	631351 ①	637430	628437	AN780-2	627331	
TSIO-520-M,P,R	634326 ①	643764	628437	AN780-2	627331	MS20823-4
TSIO-520-T	641302 ①	627119	628437			628437
TSIO-520-AF	634326 ①	643764	628437	AN780-2	627331	MS20823-4

NOTE:

- ① This part number not available. See appropriate Fuel Injection System. Figures 52 thru 66 for complete Manifold Valve Assembly P/N.

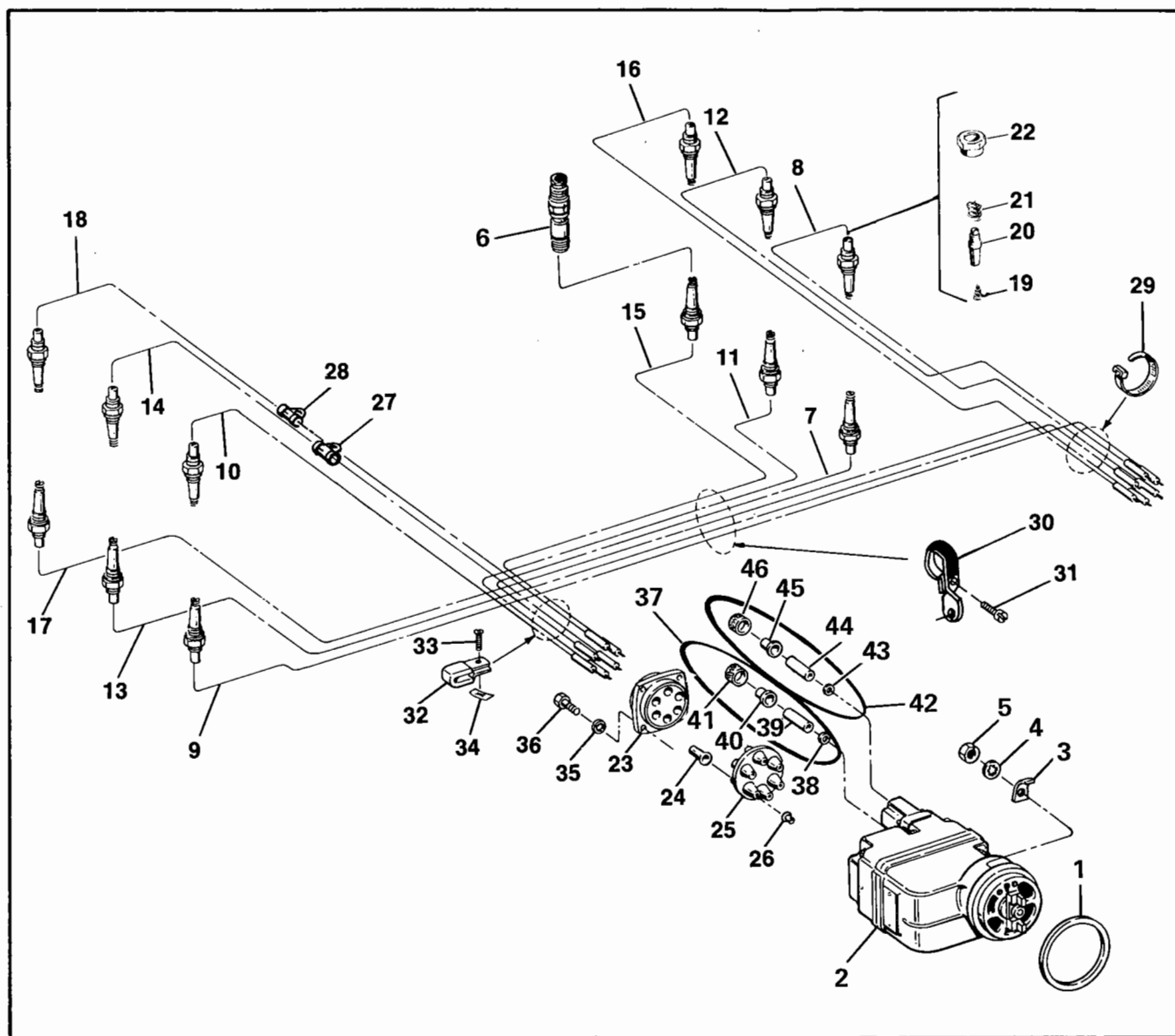


FIGURE 83. IGNITION SYSTEM, TS10-520-B, E.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY										
				B	D	E	J	K	L	N	UB	VB	WB	
83-1	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	MS35337-45		Washer, Lock	4		4								
-5	2439		Nut, Plain, Hex	4		4								
			* * * *											
-6	634675		Spark Plug	12		12								
	636953		Harness Assembly, Ignition	1		1								
-7	637409-48	⊙	Lead Assy., No. 1 Lower, 35.81 In. Lg.	1		1								

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY											
				B	D	E	J	K	L	N	UB	VB	WB		
83-8	637409-48	①	Lead Assembly, No. 1 Upper, 15.31 Inch Long	1		1									
-9	637409-48	①	Lead Assembly, No. 2 Lower, 39.31 Inch Long	1		1									
-10	637409-48	①	Lead Assembly, No. 2 Upper, 22.31 Inch Long	1		1									
-11	637409-48	①	Lead Assembly, No. 3 Lower, 40.81 Inch Long	1		1									
-12	637409-48	①	Lead Assembly, No. 3 Upper, 20.31 Inch Long	1		1									
-13	637409-48	①	Lead Assembly, No. 4 Lower, 35.81 Inch Long	1		1									
-14	637409-48	①	Lead Assembly, No. 4 Upper, 18.81 Inch Long	1		1									
-15	637409-48	①	Lead Assembly, No. 5 Lower, 47.81 Inch Long	1		1									
-16	637409-48	①	Lead Assembly, No. 5 Upper, 28.31 Inch Long	1		1									
-17	637409-48	①	Lead Assembly, No. 6 Lower, 42.31 Inch Long	1		1									
-18	637409-48	①	Lead Assembly, No. 6 Upper, 26.81 Inch Long	1		1									
-19	629506	②	Spring, Spark Plug Terminal	1		1									
-20	629505	②	Sleeve, Spark Plug Terminal	1		1									
-21	629504	②	Spring	1		1									
-22	629502	②	Nut, Spark Plug End	1		1									
-23	633009		Plate, Cable Outlet	2		2									
-24	629498	③	Ferrule, Cable	12		12									
-25	629496	③	Grommet	2		2									
-26	629495		Eyelet	12		12									
-27	632106		Clamp	13		13									
-28	631737-2		Clamp	2		2									
-29	629494		Strap	9		9									
-30	635363		Clamp	1		1									
-31	635360		Screw	1		1									
-32	631739		Clamp	2		2									
-33	632105		Screw	2		2									
-34	629837		Nut	2		2									
-35	MS35337-43		Washer, Lock	8		8									
-36	AN501-10-10		Screw	8		8									
-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									

NOTES:

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 leads up to 48 inches in length and Part Number 637409-72 for leads up to 72 inches in length).

② Items 21 thru 24 applicable to all leads.

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

③ Parts in limited supply. When supply is exhausted P/N 629496 will be superseded by P/N 643062. P/N 629498 will be superseded by P/N 643059.

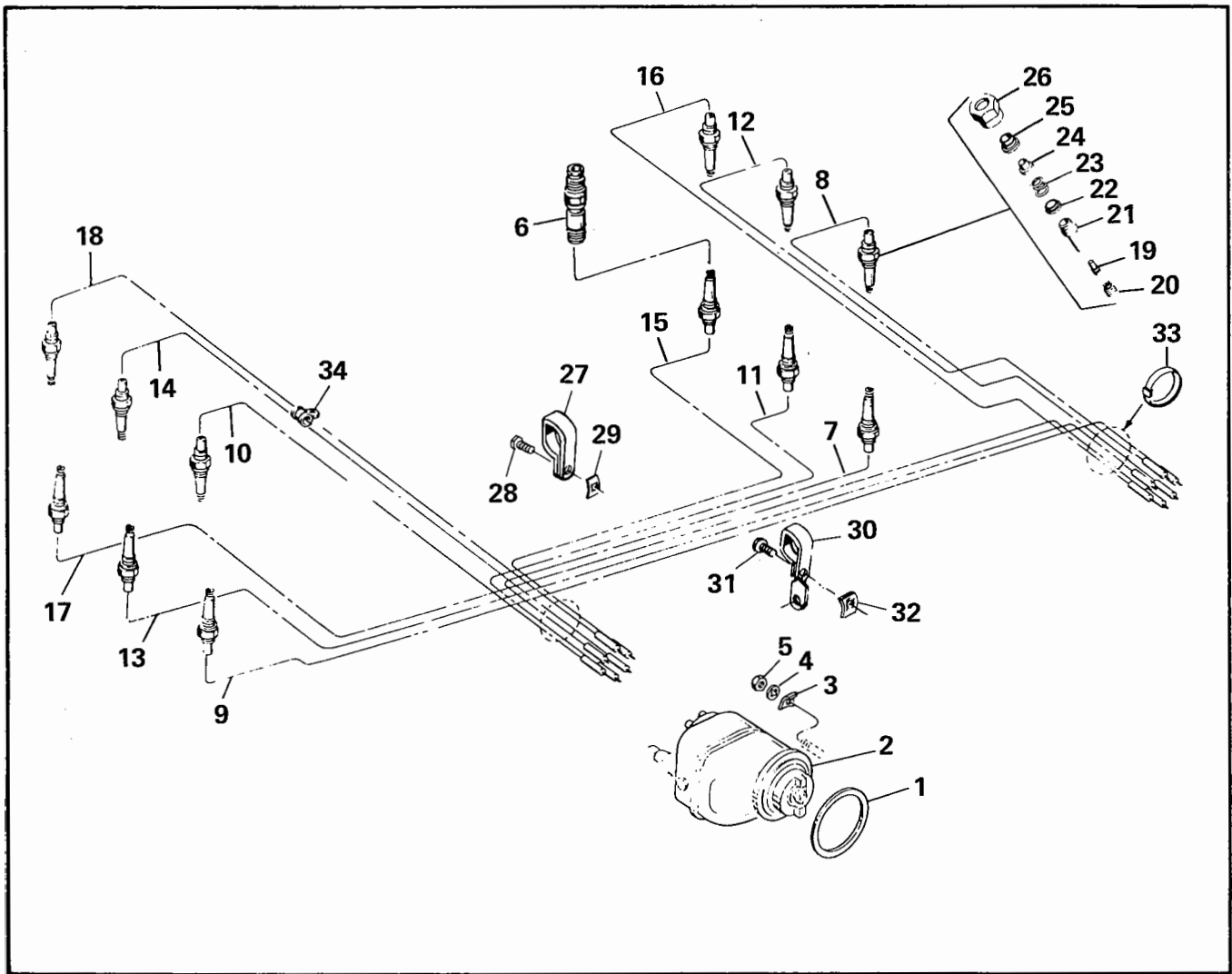


FIGURE 84. IGNITION SYSTEM, TS10-520-C, G, H, M, P, R, AF.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				C	G	H	M	P	R	T	AF		
84-1	534750	\$	Gasket, Magneto-to-Crankcase	2	2	2	2	2	2		2		
-2	625765		Magneto Assembly	2	2	2	2	2	2		2		
			ATTACHING PARTS										
-3	535847		Washer, Magneto Holding	4	4	4	4	4	4		4		
-4	MS35337-45		Washer, Lock	4	4	4	4	4	4		4		
-5	2439		Nut, Plain, Hex	4	4	4	4	4	4		4		
			* * * *										
-6	634675		Spark Plug	12	12	12	12	12	12		12		
	633311		Harness Assembly, Ignition	1	1	1	1	1	1		1		
-7	633579	①	Lead Assembly, No. 1 Lower, 38.00 Inch Long	1	1	1	1	1	1		1		
-8	633580	①	Lead Assembly, No. 1 Upper, 19.00 Inch Long	1	1	1	1	1	1		1		
-9	633579	①	Lead Assembly, No. 2 Lower, 43.00 Inch Long	1	1	1	1	1	1		1		
-10	633580	①	Lead Assembly, No. 2 Upper, 21.00 Inch Long	1	1	1	1	1	1		1		
-11	633579	①	Lead Assembly, No. 3 Lower, 42.00 Inch Long	1	1	1	1	1	1		1		
-12	633580	①	Lead Assembly, No. 3 Upper, 21.00 Inch Long	1	1	1	1	1	1		1		
-13	633579	①	Lead Assembly, No. 4 Lower, 39.00 Inch Long	1	1	1	1	1	1		1		
-14	633580	①	Lead Assembly, No. 4 Upper, 18.00 Inch Long	1	1	1	1	1	1		1		
-15	633579	①	Lead Assembly, No. 5 Lower, 50.00 Inch Long	1	1	1	1	1	1		1		
-16	633580	①	Lead Assembly, No. 5 Upper, 28.00 Inch Long	1	1	1	1	1	1		1		
-17	633579	①	Lead Assembly, No. 6 Lower, 42.00 Inch Long	1	1	1	1	1	1		1		
-18	633580	①	Lead Assembly, No. 6 Upper, 25.00 Inch Long	1	1	1	1	1	1		1		
-19	633585	②	Screw	1	1	1	1	1	1		1		
-20	633586	②	Spring	1	1	1	1	1	1		1		
-21	633591	②	Sleeve	1	1	1	1	1	1		1		
-22	633592	②	Washer	1	1	1	1	1	1		1		
-23	633590	②	Spring	1	1	1	1	1	1		1		
-24	633583	②③	Ferrule	1	1	1	1	1	1		1		
-25	633589	②③	Ferrule	1	1	1	1	1	1		1		
-26	633593	②	Nut	1	1	1	1	1	1		1		
-27	636692		Clamp Assembly	2	2	2	2	2	2		2		
-28	636921		Screw	2	2	2	2	2	2		2		
-29	636920		Nut, Tinnerman	2	2	2	2	2	2		2		
	636922		Clamp Assembly	1	1	1	1	1	1		1		
-30	636919		Clamp	1	1	1	1	1	1		1		
-31	636687		Screw	1	1	1	1	1	1		1		
-32	633927		Nut	1	1	1	1	1	1		1		
-33	633926		Ty-Rap	10	10	10	10	10	10		10		
-34	633925		Clamp	15	15	15	15	15	15		15		

NOTES:

- 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 50 inches in length and Part Number 633580 for leads up to 28 inches in length).
- ② Items 19 thru 26 applicable to each individual lead.
- ③ Service sleeves - Use Thomas and Betts Crimping Tool No. WT-217.

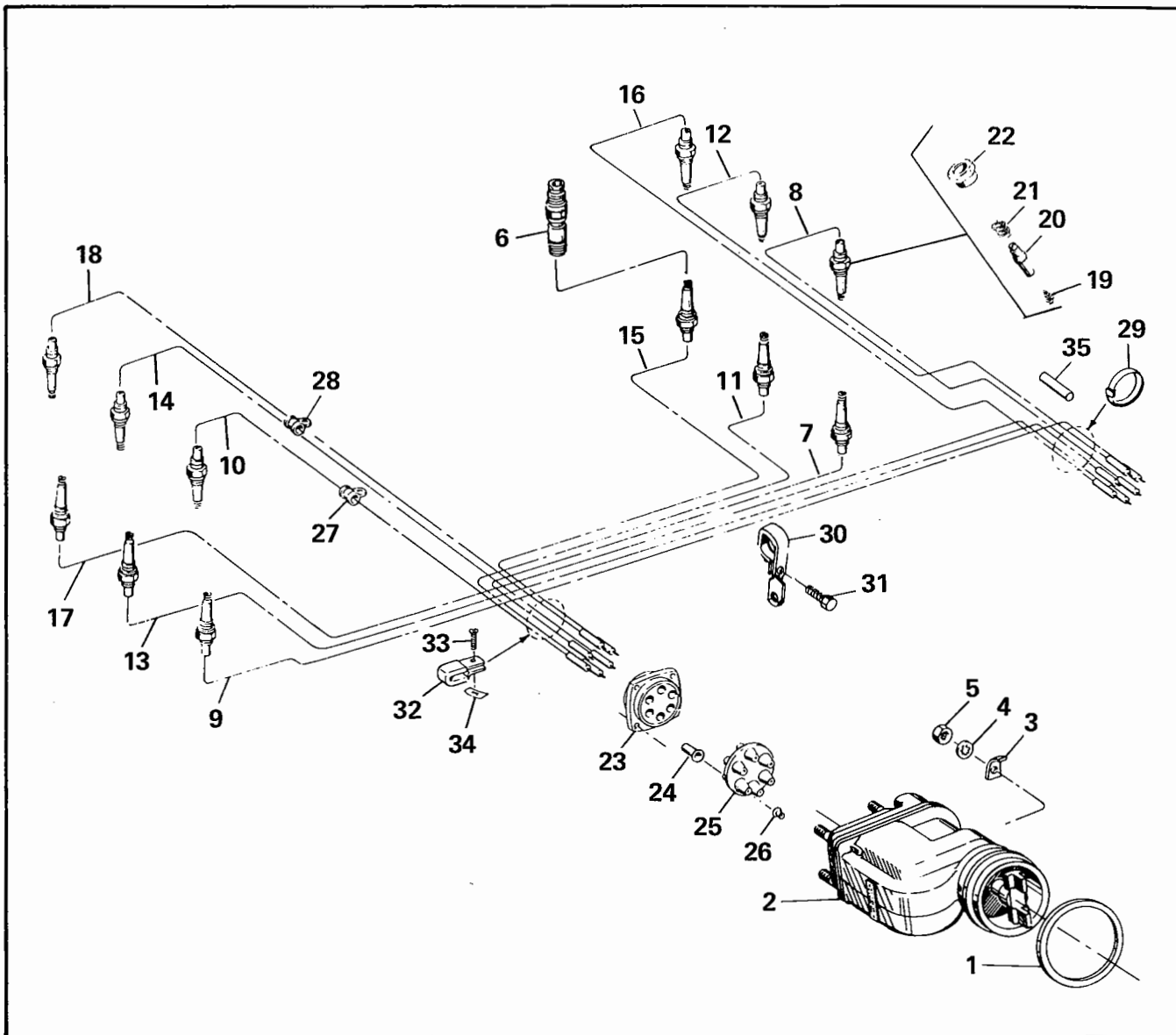


FIGURE 85. IGNITION SYSTEM, TS10-520-D, UB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
85-1	534750	\$	Gasket, Magneto-to-Crankcase		2						2		
-2	643730		Magneto Assembly, Left Hand		1						1		
-2	643808		Magneto Assembly, Right Hand		1						1		
			ATTACHING PARTS										
-3	535847		Washer, Magneto Holding		4						4		
-4	MS35337-45		Washer, Lock		4						4		
-5	2439		Nut, Plain, Hex		4						4		
			* * * *										
-6	634675		Spark Plug		12						12		
	636951		Harness Assembly, Ignition		1						1		
-7	637409-48	①	Lead Assembly, No. 1 Lower		1						1		
-8	637409-48	①	Lead Assembly, No. 1 Upper		1						1		
-9	637409-48	①	Lead Assembly, No. 2 Lower		1						1		
-10	637409-48	①	Lead Assembly, No. 2 Upper		1						1		
-11	637409-48	①	Lead Assembly, No. 3 Lower		1						1		
-12	637409-48	①	Lead Assembly, No. 3 Upper		1						1		
-13	637409-48	①	Lead Assembly, No. 4 Lower		1						1		
-14	637409-48	①	Lead Assembly, No. 4 Upper		1						1		
-15	637409-48	①	Lead Assembly, No. 5 Lower		1						1		
-16	637409-48	①	Lead Assembly, No. 5 Upper		1						1		
-17	637409-48	①	Lead Assembly, No. 6 Lower		1						1		
-18	637409-48	①	Lead Assembly, No. 6 Upper		1						1		
-19	629506	②	Spring, Spark Plug Terminal		1						1		
-20	629505	②	Sleeve, Spark Plug Terminal		1						1		
-21	629504	②	Spring		1						1		
-22	629502	②	Nut, Spark Plug End		1						1		
-23	638139		Plate, Cable Outlet		2						2		
-24	629498	③	Ferrule, Cable		12						12		
-25	635361	③	Grommet		2						2		
-26	629495		Eyelet		12						12		
-27	632106		Clamp		13						13		
-28	631737		Clamp		2						2		
-29	629494		Strap		8						8		
-30	635363		Clamp		1						1		
-31	635360		Screw		1						1		
-32	631739		Clamp		2						2		
-33	632105		Screw		2						2		
-34	629837		Nut		2						2		
-35	635991		Tubing, Sprial		ar						ar		

NOTES:

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.)

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.

③ Limited supply available. When supply is exhausted P/N 629498 will be superseded by P/N 643059. P/N 635361 will be superseded by P/N 643062.

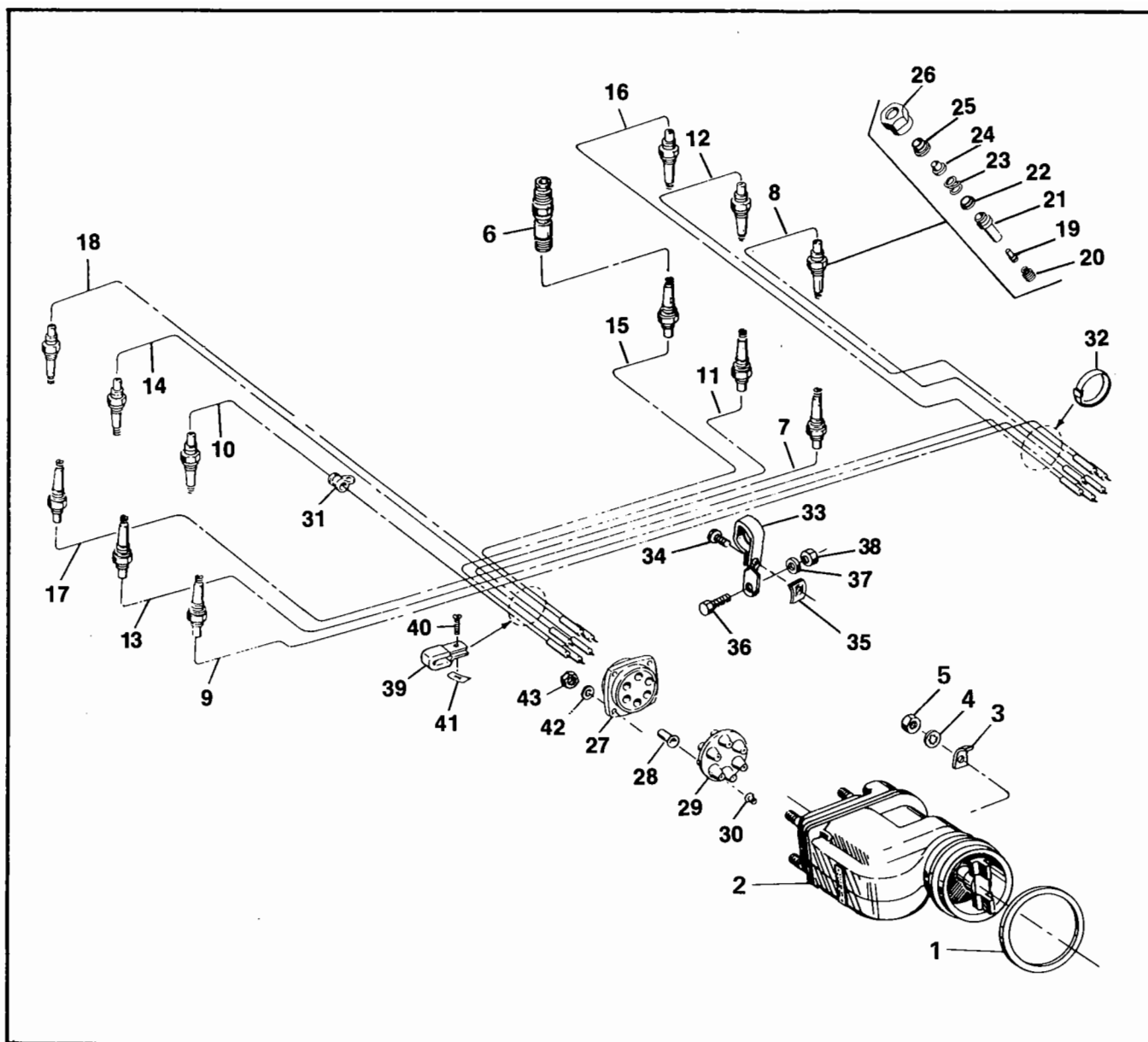


FIGURE 86. IGNITION SYSTEM, TS10-520-J, K, L, N, WB.

FIG. INDEX	PART NUMBER	1	2	3	4	5	DESCRIPTION	QUANTITY										
								B	D	E	J	K	L	N	UB	VB	WB	
86-1	534750	\$					Gasket, Magneto-to-Crankcase				2	2	2	2			2	
-2	643730						Magneto Assembly, Left Hand				1	1	1	1			1	
-2	643808						Magneto Assembly, Right Hand				1	1	1	1			1	
							ATTACHING PARTS											
-3	535847						Washer, Magneto Holding				4	4	4	4			4	
-4	MS35337-45						Washer, Lock				4	4	4	4			4	
-5	2439						Nut, Plain, Hex				4	4	4	4			4	
							* * * *											
-6	634675						Spark Plug				12	12	12	12			12	

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
86-	636603		Harness Assembly, Ignition				1	1	1	1			1
-7	633579	①	Lead Assembly, No. 1 Lower, 38.00 Inch Long				1	1	1	1			1
-8	633580	①	Lead Assembly, No. 1 Upper, 19.00 Inch Long				1	1	1	1			1
-9	633579	①	Lead Assembly, No. 2 Lower, 43.00 Inch Long				1	1	1	1			1
-10	633580	①	Lead Assembly, No. 2 Upper, 21.00 Inch Long				1	1	1	1			1
-11	633579	①	Lead Assembly, No. 3 Lower, 42.00 Inch Long				1	1	1	1			1
-12	633580	①	Lead Assembly, No. 3 Upper, 21.00 Inch Long				1	1	1	1			1
-13	633579	①	Lead Assembly, No. 4 Lower, 39.00 Inch Long				1	1	1	1			1
-14	633580	①	Lead Assembly, No. 4 Upper, 18.00 Inch Long				1	1	1	1			1
-15	633579	①	Lead Assembly, No. 5 Lower, 50.00 Inch Long				1	1	1	1			1
-16	633580	①	Lead Assembly, No. 5 Upper, 28.00 Inch Long				1	1	1	1			1
-17	633579	①	Lead Assembly, No. 6 Lower, 42.00 Inch Long				1	1	1	1			1
-18	633580	①	Lead Assembly, No. 6 Upper, 25.00 Inch Long				1	1	1	1			1
-19	633585	②	Screw				1	1	1	1			1
-20	633590	②	Spring				1	1	1	1			1
-21	633591	②	Sleeve				1	1	1	1			1
-22	633592	②	Washer				1	1	1	1			1
-23	633586	②	Spring				1	1	1	1			1
-24	633583	②③	Ferrule				1	1	1	1			1
-25	633589	②③	Ferrule				1	1	1	1			1
-26	633593	②	Nut				1	1	1	1			1
-27	635362		Plate				2	2	2	2			2
-28	635699	④	Ferrule				12	12	12	12			12
-29	635361	④	Grommet				2	2	2	2			2
-30	635700		Eyelet				12	12	12	12			12
-31	633925		Clamp				9	9	9	9			9
-32	633926		Strap				1	1	1	1			1
	636922		Clamp Assembly				1	1	1	1			1
-33	636919		Clamp				1	1	1	1			1
-34	636687		Screw				1	1	1	1			1
-35	633927		Nut				1	1	1	1			1
-36	AN501-10-8		Screw				1	1	1	1			1
-37	22910		Washer, Lock				1	1	1	1			1
-38	MS20365-1032A		Nut, Elastic Stop				1	1	1	1			1
-39	636692		Clamp				2	2	2	2			2
-40	633927		Screw				2	2	2	2			2
-41	636687		Nut, Tinnerman				2	2	2	2			2
-42	MS35338-43		Washer, Lock				8	8	8	8			8
-43	AN501-10-10		Screw				8	8	8	8			8

NOTES:

- 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 50 inches in length and Part Number 633580 for leads up to 28 inches in length.)
- ② Items 21 thru 28 applicable to each individual lead.
- ③ Service sleeves - Use Thomas and Betts Crimping Tool, No. WT-217.
- ④ Limited supply available. When stock is exhausted P/N 635699 will be superseded by P/N 643059. P/N 635361 will be superseded by P/N 643062.

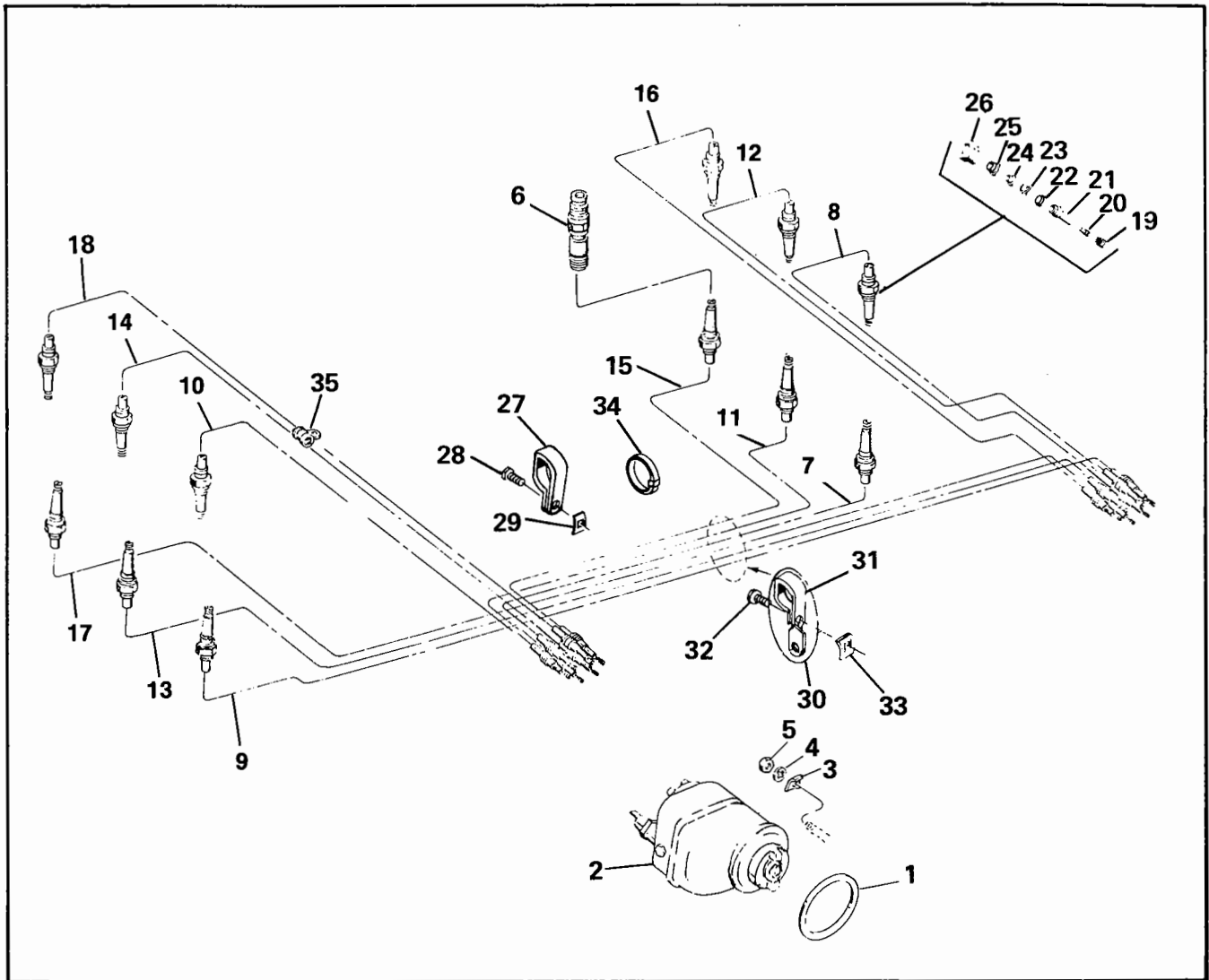


FIGURE 87. IGNITION SYSTEM, TS10-520-T.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				C	G	H	M	P	R	T			
87-1	534750	\$	Gasket, Magneto							2			
-2	642306		Magneto Assembly							2			
			ATTACHING PARTS										
-3	535847		Washer, Magneto Holding							4			
-4	MS35337-45		Washer, Lock							4			
-5	2439		Nut							4			
			* * * *										
-6	634675		Spark Plug							12			
	643228		Harness Assembly, Ignition							1			
-7	633579	①	Lead Assembly, No. 1 Lower, 38 Inch Long ...							1			
-8	633580	①	Lead Assembly, No. 1 Upper, 19 Inch Long ...							1			
-9	6335789	①	Lead Assembly, No. 2 Lower, 45 Inch Long ...							1			
-10	633580	①	Lead Assembly, No. 2 Upper, 21 Inch Long ...							1			
-11	633579	①	Lead Assembly, No. 3, Lower, 42 Inch Long ...							1			
-12	633580	①	Lead Assembly, No. 3 Upper, 21 Inch Long ...							1			
-13	633579	①	Lead Assembly, No. 4 Lower, 39 Inch Long ...							1			
-14	633580	①	Lead Assembly, No. 4 Upper, 18 Inch Long ...							1			
-15	633579	①	Lead Assembly, No. 5 Lower, 50 Inch Long ...							1			
-16	633580	①	Lead Assembly, No. 5 Upper, 28 Inch Long ...							1			
-17	633579	①	Lead Assembly, No. 6 Lower, 42 Inch Long ...							1			
-18	633580	①	Lead Assembly, No. 6 Upper, 25 Inch Long ...							1			
-19	633585	②	Screw							1			
-20	633586	②	Spring							1			
-21	633591	②	Sleeve							1			
-22	633592	②	Washer							1			
-23	633590	②	Spring							1			
-24	633583	②③	Ferrule							1			
-25	633589	②③	Ferrule							1			
-26	633593	②	Nut							1			
-27	636692		Clamp Assembly							2			
-28	633927		Screw							2			
-29	636687		Nut, Tinnerman							2			
-30	636922		Clamp Assembly							1			
-31	636919		Clamp							1			
-32	636687		Screw							1			
-33	633927		Nut, Tinnerman							1			
-34	633926		Ty-Rap							10			
-35	633925		Clamp							15			

NOTES:

- ① Replacement cable assemblies are sold in two lengths only, with magneto end not terminated.
633580 Cable Assembly for leads up to 28 inches long.
633579 Cable Assembly for leads up to 50 inches long.
- ② Items -19 thru -26 applicable to each individual lead.
- ③ Service sleeves - Use Thomas and Betts Crimping Tool, No. WT-217.

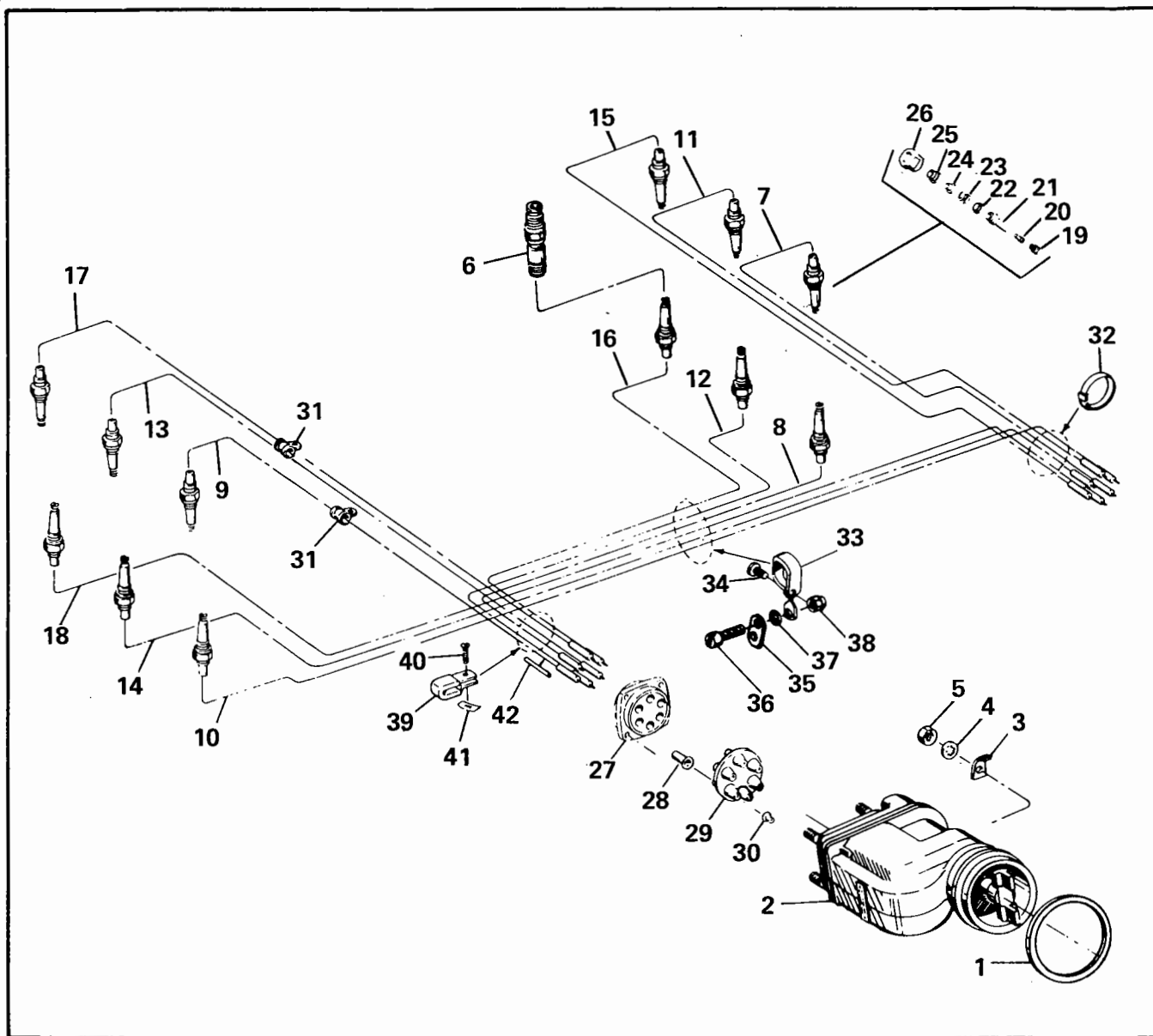


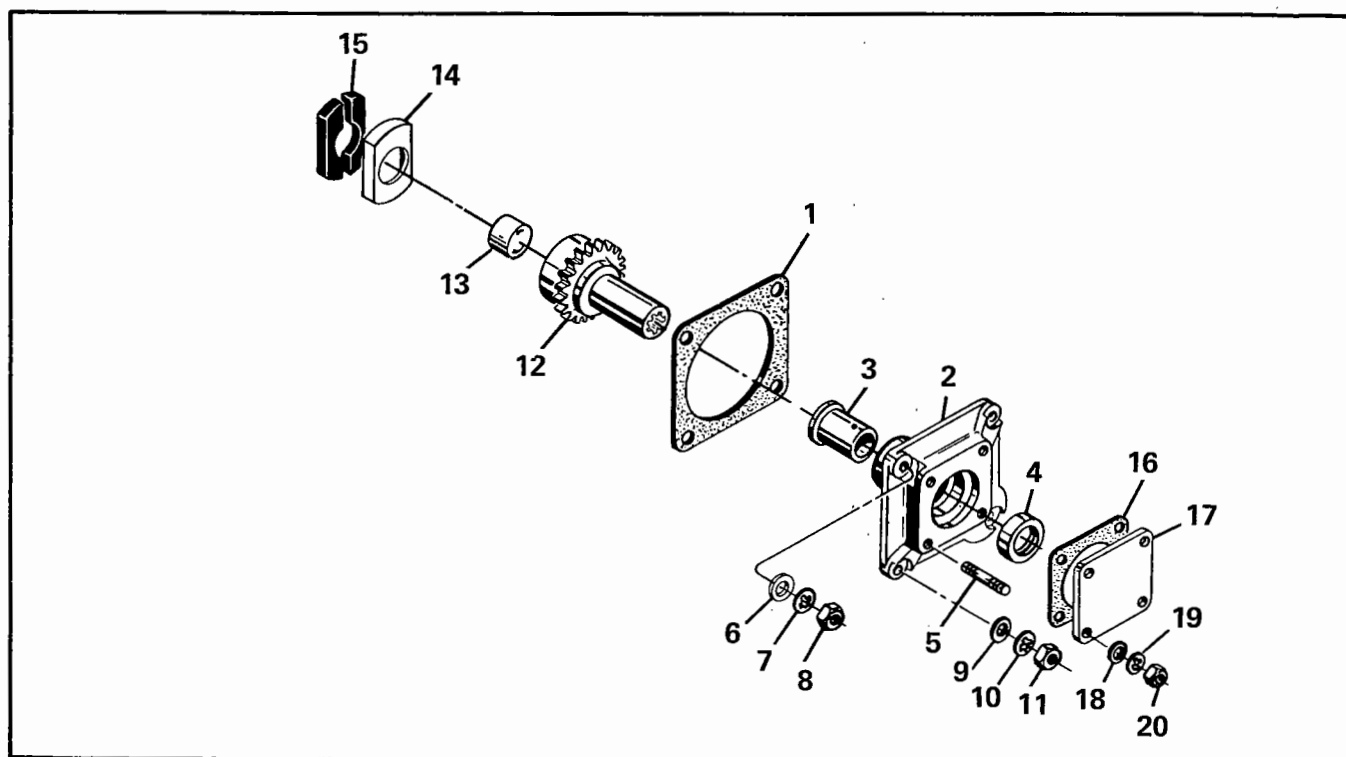
FIGURE 88. IGNITION SYSTEM, TS10-520-VB.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
88-1	534750	\$	Gasket, Magneto-to-Crankcase									2	
-2	628472		Magneto Assembly, Left Hand									1	
-2	628473		Magneto Assembly, Left 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									12	

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY										
				B	D	E	J	K	L	N	UB	VB	WB	
88-	636415		Harness Assembly									1		
-7	633580	①	Lead Assembly, No. 1 Upper, 19.00 Inch Long									1		
-8	633579	①	Lead Assembly, No. 1 Lower, 38.00 Inch Long									1		
-9	633580	①	Lead Assembly, No. 2 Upper, 21.00 Inch Long									1		
-10	633579	①	Lead Assembly, No. 2 Lower, 43.00 Inch Long									1		
-11	633580	①	Lead Assembly, No. 3 Upper, 21.00 Inch Long									1		
-12	633579	①	Lead Assembly, No. 3 Lower, 42.00 Inch Long									1		
-13	633580	①	Lead Assembly, No. 4 Upper, 18.00 Inch Long									1		
-14	633579	①	Lead Assembly, No. 4 Lower, 39.00 Inch Long									1		
-15	633580	①	Lead Assembly, No. 5 Upper, 28.00 Inch Long									1		
-16	633579	①	Lead Assembly, No. 5 Lower, 50.00 Inch Long									1		
-17	633580	①	Lead Assembly, No. 6 Upper, 25.00 Inch Long									1		
-18	633579	①	Lead Assembly, No. 6 Lower, 42.00 Inch Long									1		
-19	633586		Spring, Spark Plug Terminal									1		
-20	633585		Electrode Screw									1		
-21	633591		Sleeve, Spark Plug Terminal									1		
-22	633592		Washer									1		
-23	633586		Spring									1		
-24	633583	②	Ferrule									1		
-25	633589	②	Ferrule, Nut End									1		
-26	633593		Nut, Plug End									1		
-27	633009	③	Plate, Cable Outlet									1		
-28	635699	④	Ferrule, Cable									12		
-29	629496	④	Grommet									2		
-30	635700		Eyelet									12		
-31	633925		Clamp									12		
-32	633926		Strap									9		
-33	633924		Clamp									1		
-34	633928		Screw									1		
-35	636150		Bracket									1		
-36	635988-8		Screw									1		
-37	635990-5		Washer, Lock									1		
-38	635989		Nut									1		
-39	636692		Clamp									2		
-40	633928		Screw									2		
-41	633927		Nut									2		
-42	635991		Tubing, Spiral									1		

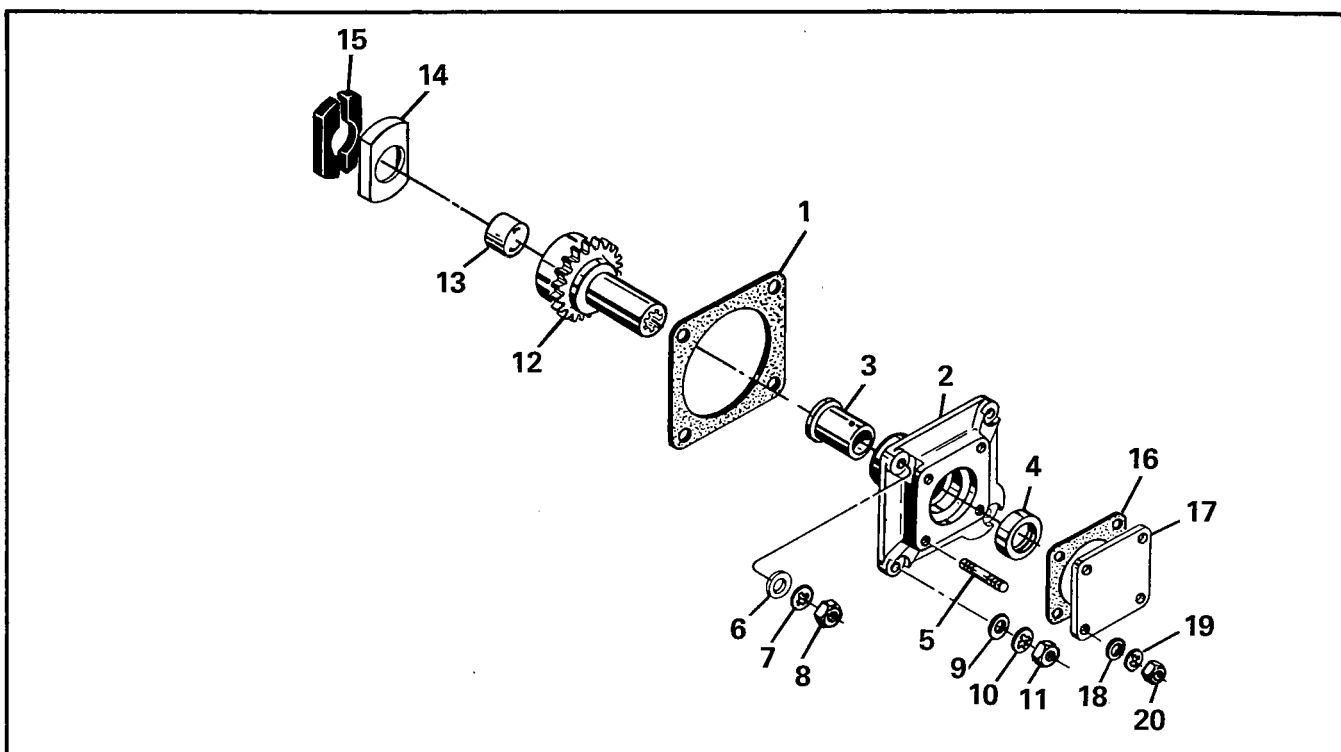
NOTES:

- ① Service leads are furnished in two lengths only, with magneto end not terminated. Cut to length specified in description column. (Part Number 633580 for leads up to 28 inches in length and Part Number 633579 for leads up to 50 inches in length).
- ② Service sleeves. Use Thomas and Betts Crimping Tool, No. WT-217.
- ③ Attaching hardware furnished as a part of magneto assembly.
- ④ Limited supply available. When stock is exhausted P/N 635699 will be superseded by P/N 643059. P/N 635496 will be superseded by P/N 643062.



**FIGURE 89. MAGNETO AND ACCESSORY DRIVE ASSEMBLY,
TS10-520-B, D, E, J, K, L, N, UB, VB, WB.**

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
				B	D	E	J	K	L	N	UB	VB	WB
89-1	534863	\$	Gasket, Adapter-to-C/Case	2	2	2	2	2	2	2	2	2	2
-2	632653A1		Adapter Assembly, Mag & Acc Dr.	2	2	2	2	2	2	2	2	2	2
-3	632330	.	Bushing, Adapter	1	1	1	1	1	1	1	1	1	1
-4	25102	\$	. Seal	1	1	1	1	1	1	1	1	1	1
-5	25008	†	. Stud	4	4	4	4	4	4	4	4	4	4
ATTACHING PARTS													
-6	2473		Washer, Plain	6	6	6	6	6	6	6	6	6	6
-7	MS35337-45		Washer, Lock	6	6	6	6	6	6	6	6	6	6
-8	2439		Nut	6	6	6	6	6	6	6	6	6	6
-9	401507		Washer, Plain	2	2	2	2	2	2	2	2	2	2
-10	MS35337-46		Washer, Lock	2	2	2	2	2	2	2	2	2	2
-11	2441		Nut	2	2	2	2	2	2	2	2	2	2
* * * *													
-12	629422		Gear Assembly, Magneto & Accy. Dr.	2	2	2	2	2	2	2	2	2	2
-13	629077	.	. Sleeve, Drive Gear	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
-15	638172		Bushing, Drive Coupling	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
-17	640380		Cover, Accessory Drive	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
-19	MS35337-44		Washer, Lock	8	8	8	8	8	8	8	8	8	8
-20	2437		Nut	8	8	8	8	8	8	8	8	8	8



**FIGURE 90. MAGNETO AND ACCESSORY DRIVE ASSEMBLY,
TS10-520-C, G, H, M, P, R, T.**

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY							
				C	G	H	M	P	R	T	AF
90-1	534863	\$	Gasket, Adapter-to-C/Case	2	2	2	2	2	2	2	2
-2	632653A1		Adapter Assembly, Mag & Acc. Dr.	2	2	2	2	2	2	2	
-3	632330		. Bushing, Adapter	1	1	1	1	1	1	1	
-4	25102	\$	. Seal	1	1	1	1	1	1	1	
-5	25008	†	. Stud	4	4	4	4	4	4	4	
ATTACHING PARTS											
-6	2473		Washer, Plain	6	6	6	6	6	6	6	
-7	MS35337-45		Washer, Lock	6	6	6	6	6	6	6	
-8	2439		Nut	6	6	6	6	6	6	6	
-9	401507		Washer, Plain	2	2	2	2	2	2	2	
-10	MS35337-46		Washer, Lock	2	2	2	2	2	2	2	
-11	2441		Nut	2	2	2	2	2	2	2	
* * * *											
-12	629076		Gear Assembly, Magneto & Accy. Dr.	2	2	2	2	2	2	1	2
-12	641728		Gear Assembly, Mag. & Acc. Dr. 2-4-6 Side							1	
-13	629077		. Sleeve, Drive Gear	1	1	1	1	1	1	1	
-14	531178		Retainer, Drive Coupling	2	2	2	2	2	2	2	
-15	638172		Bushing, Drive Coupling	4	4	4	4	4	4	4	
-16	MS9134-01	\$	Gasket, Adapter-to-Cover	2	2	2	2	2	2	2	
-17	640380		Cover, Accessory Drive	2	2	2	2	2	2	2	
ATTACHING PARTS											
-18	2472		Washer, Plain	8	8	8	8	8	8	8	
-19	MS35337-44		Washer, Lock	8	8	8	8	8	8	8	
-20	2437		Nut	8	8	8	8	8	8	8	



SECTION III

OVERSIZE AND UNDERSIZE PARTS

PART NO.	NAME	DESCRIPTION	PART NO.	NAME	DESCRIPTION
35967P005	Insert	.005" OS on OD	401852P003	Stud	.003" OS on PD
35967P010	Insert	.010" OS on OD	401852P007	Stud	.007" OS on PD
35967P015	Insert	.015" OS on OD	401852P012	Stud	.012" OS on PD
35967P020	Insert	.020" OS on OD	401860P003	Stud	.003" OS on PD
35967P030	Insert	.030" OS on OD	401860P007	Stud	.007" OS on PD
			401860P012	Stud	.012" OS on PD
350998P0015	Bushing-C/Shaft	.0015" OS on OD			
350998P003	Bushing-C/Shaft	.003" OS on OD	401861P003	Stud	.003" OS on PD
350998P005	Bushing-C/Shaft	.005" OS on OD	401861P007	Stud	.007" ON on PD
			401861P012	Stud	.012" OS on PD
352655P003	Stud	.003" OS on PD			
352665P007	Stud	.007" OS on PD	401870P003	Stud	.003" OS on PD
352655P012	Stud	.012" OS on PD	401870P007	Stud	.007" OS on PD
			401870P012	Stud	.012" OS on PD
401800P003	Stud	.003" OS on PD			
401800P007	Stud	.007" OS on PD	401873P003	Stud	.003" OS on PD
401800P012	Stud	.012" OS on PD	401873P007	Stud	.007" OS on PD
			401873P012	Stud	.012" OS on PD
401801P003	Stud	.003" OS on PD			
401801P007	Stud	.007" OS on PD	401881P003	Stud	.003" OS on PD
401801P012	Stud	.012" OS on PD	401881P007	Stud	.007" OS on PD
			401881P012	Stud	.012" OS on PD
401804P003	Stud	.003" OS on PD			
401804P007	Stud	.007" OS on PD	401885P003	Stud	.003" OS on PD
401804P012	Stud	.012" OS on PD	401885P007	Stud	.007" OS on PD
			401885P012	Stud	.012" OS on PD
401808P003	Stud	.003" OS on PD			
401808P007	Stud	.007" OS on PD	401893P003	Stud	.003" OS on PD
401808P012	Stud	.012" OS on PD	401893P007	Stud	.007" OS on PD
			401893P012	Stud	.012" OS on PD
401813P003	Stud	.003" OS on PD			
401813P007	Stud	.007" OS on PD	401899P003	Stud	.003" OS on PD
401813P012	Stud	.012" OS on PD	401899P007	Stud	.007" OS on PD
			401899P012	Stud	.012" OS on PD
401814P003	Stud	.003" OS on PD			
401814P007	Stud	.007" OS on PD	401927P003	Stud	.003" OS on PD
401814P012	Stud	.012" OS on PD	401927P007	Stud	.007" OS on PD
			401927P012	Stud	.012" OS on PD
401832P003	Stud	.003" OS on PD			
401832P007	Stud	.007" OS on PD	401932P003	Stud	.003" OS on PD
401832P012	Stud	.012" OS on PD	401932P007	Stud	.007" OS on PD
			401932P012	Stud	.012" OS on PD
401841P003	Stud	.003" OS on PD			
401841P007	Stud	.007" OS on PD	401936P003	Stud	.003" OS on PD
401841P012	Stud	.012" OS on PD	401936P007	Stud	.007" OS on PD
			401936P012	Stud	.012" OS on PD
401843P003	Stud	.003" OS on PD			
401843P007	Stud	.007" OS on PD			
401843P012	Stud	.012" OS on PD			

PART NO.	NAME	DESCRIPTION	PART NO.	NAME	DESCRIPTION
401945P003	Stud	.003" OS on PD	402129P003	Stud	.003" OS on PD
401945P007	Stud	.007" OS on PD	402129P007	Stud	.007" OS on PD
401945P012	Stud	.012" OS on PD	402129P012	Stud	.012" OS on PD
401950P003	Stud	.003" OS on PD	402151P003	Stud	.003" OS on PD
401950P007	Stud	.007" OS on PD	402151P007	Stud	.007" OS on PD
401950P012	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	535661P020	Camshaft	.020" OS on OD
401977P007	Stud	.007" OS on PD	536563P005	Dowel	.005" OS on OD
401977P012	Stud	.012" OS on PD	538304P030	Rod-Push	.030" OS
402034P003	Stud	.003" OS on PD	538404P003	Stud	.003" OS on PD
402034P007	Stud	.007" OS on PD	538404P006	Stud	.006" OS on PD
402034P012	Stud	.012" OS on PD	538404P009	Stud	.009" OS on PD
402044P003	Stud	.003" OS on PD	539800M015	Spring	.015" US on ID
402044P007	Stud	.007" OS on PD	626739M001	Collar	.001" US on ID
402044P012	Stud	.012" OS on PD	626739M010	Collar	.010" US on ID
402060P003	Stud	.003" OS on PD	626739M011	Collar	.011" US on ID
402060P007	Stud	.007" OS on PD	629680M001	Collar	.001" US on ID
402060P012	Stud	.012" OS on PD	629680M010	Collar	.010" US on ID
402066P003	Stud	.003" OS on PD	629680M011	Collar	.011" US on ID
402066P007	Stud	.007" OS on PD	629726A3P020	Camshaft	.020" OS on OD
402066P012	Stud	.012" OS on PD			
402127P003	Stud	.003" OS on PD			
402127P007	Stud	.007" OS on PD			
402127P012	Stud	.012" OS on PD			

PART NO.	NAME	DESCRIPTION	PART NO.	NAME	DESCRIPTION
629401P005	Ring - Piston	.005" OS on OD	630826M010	Bearing - C/Rod	.010" US on ID
629401P010	Ring - Piston	.010" OS on OD	631496P005	Guide - Valve	.005" OS on OD
629401P015	Ring - Piston	.015" ON on OD	631496P010	Guide - Valve	.010" OS on OD
631867P003	Stud	.003" OS on PD	631496P015	Guide - Valve	.015" OS on OD
631867P006	Stud	.006" OS on PD	631496P020	Guide - Valve	.020" OS on OD
631867P009	Stud	.009" OS on PD	631496P030	Guide - Valve	.030" 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
634503M010	Bearing - C/Shaft	.010" US on ID	641302P015	Ring - Piston	.015" OS on OD
636242P005	Guide - Valve	.005" OS on OD	641973P005	Guide - Valve	.005" OS on OD
636242P010	Guide - Valve	.010" OS on OD	641973P010	Guide - Valve	.010" OS on OD
636242P015	Guide - Valve	.015" OS on OD	641973P015	Guide Valve	.015" OS on OD
636242P020	Guide-Valve	.020" OS on OD	641973P020	Guide - Valve	.020" OS on OD
636242P030	Guide - Valve	.030" OS on OD	641973P030	Guide - Valve	.030" OS on OD
639573P010	Washer - Thrust	.010" OS	641951P005	Guide - Valve	.005" OS on OD
639573P020	Washer - Thrust	.020" OS	641951P010	Guide - Valve	.010" OS on OD
639573P030	Washer, Thrust	.030" OS	641951P015	Guide - Valve	.015" OS on OD
640625P005	Ring - Piston	.005" OS on OD	641951P020	Guide - Valve	.020" OS on OD
640625P010	Ring - Piston	.010" OS on OD	641951P030	Guide - Valve	.030" OS on OD
640625P015	Ring - Piston	.015" OS on OD	642318P005	Insert	.005" OS on OD
640626P005	Ring - Piston	.005" OS on OD	642318P010	Insert	.010" OS on OD
640626P010	Ring - Piston	.010" OS on OD	642318P020	Insert	.020" OS on OD
640626P015	Ring - Piston	.015" OS on OD	642398M010	Bearing - C/Rod	.010" US on ID
641302P010	Ring - Piston	.010" OS on OD	642602P010	Ring - Piston	.010" OS on OD
641302P015	Ring - Piston	.015" OS on OD	642602P015	Ring - Piston	.015" OS on OD
630046P005	Pin - Piston	.005" OS on OD	642603P010	Ring - Piston	.010" OS on OD
630591P005	Insert	.005" OS on OD	642603P015	Ring - Piston	.015" OS on OD
630591P010	Insert	.010" OS on OD	642604P010	Ring - Piston	.010" OS on OD
630591P015	Insert	.015" OS on OD	642604P015	Ring - Piston	.015" OS on OD
630591P020	Insert	.020" OS on OD	642720M010	Bearing - C/Shaft	.010" US on ID
630591P030	Insert	.030" OS on OD	642761P010	Piston	.010" OS on OD
			642761P015	Piston	.015" OS on OD



SECTION IV

REPAIR PARTS SETS AND MATERIALS

PART NO.	DESCRIPTION	SIZE	CODE
642188	Gasket Paste	1 Oz. Tube	ALL
633570A5	Gasket Set-Complete Overhaul	Standard	B,E,J,K,L,N,VB,WB
633570A4	Gasket Set-Complete Overhaul	Standard	C,G,H,M,P,R,T
633570A8	Gasket Set-Complete Overhaul	Standard	D,UB
633570A9	Gasket Set-Complete Overhaul	Standard	L/TS10-520AE
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
642602A2	Ring Set-Single Cylinder	Standard	ALL (Opt.)
642602A2P005	Ring Set-Single Cylinder	.005" OS on OD	ALL (Opt.)
642602A2P010	Ring Set-Single Cylinder	.010" OS on OD	ALL (Opt.)
642602A2P015	Ring Set-Single Cylinder	.015" OS on OD	ALL (Opt.)
639742	② Ring Set-Single Cylinder	Standard	ALL
642839A2	Bearing Set-Crankshaft	Standard	B,D,F,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,UB,VB,WB
642720A2M010	Bearing Set-Crankshaft	.010" US on ID	BB,DB,EB,JB,KB,LB,NB,UB,VB,WB
630464A1	③ Bearing Set-Crankshaft	Standard	C,G,H,M,P,R,T
630464A1M010	③ Bearing Set-Crankshaft	.010" US on ID	C,G,H,M,P,R,T
642720A1	④ Bearing Set-Crankshaft	Standard	C,G,H,M,P,R,T,AF
642720A1M010	Bearing Set-Crankshaft	.010" US on ID	C,G,H,M,P,R,T,AF
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
641543	Silk Thread	1 spool	ALL

NOTES:

- ① This set does not contain intake hoses.
- ② For use with chrome cylinders.
- ③ For phase 2 crankcases (See Service Bulletin M78-9)
- ④ For phase 3 crankcases (See Service Bulletin M78-9)

SECTION V

NUMERICAL PARTS LIST

PART NUMBER	FIG & INDEX	PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX
AN101319	27-08	AN500A10-12	70-25	AN932C2	01-20
	27-15	AN500A10-4	07-02		01-30
AN121501	52-09	AN500A416-8	07-28		02-30
	53-09	AN500A8-10	79-08	AN960-10	68-08
	63-11		80-08	AN960-10L	43-37
	65-09	AN501-10-10	83-36		44-52
AN123862	04-10		86-43		49-30
	05-22	AN501-10-8	86-36		51-15
	24-24	AN515-8R5	73-12		57-17
	32-01	AN520-10-8	51-14		58-17
AN123866	07-22	AN526-1024-4	75-18		60-18
AN123902	23-23	AN565E8H16	66-11		69-22
	25-23		68-17		69-26
	26-23		69-10		70-14
	28-22		71-14		70-24
AN123962	08-27		72-14	AN960-416	44-25
	09-28	AN737TW114	41-36	AN960-516L	35-09
AN4-4A	48-16	AN737TW46	43-11	AN960-616	27-14
AN3-6A	43-38	AN737TW82	43-41	AN960-616L	35-15
	44-53	AN737TW98	37-31	AN960-816	28-31
AN316-6R	27-11	AN815-6	49-10	AN960C916	24-32
AN316-9R	24-34	AN816-4B	30-09	EQ6544	27-00
AN316C10R	47-12		32-19	MS122121	17-07
AN320-9	25-43	AN816-6-6B	68-34		18-07
AN363-1032	43-39	AN832-4	51-18		19-07
	44-54	AN833-4	49-08	MS122122	01-05
AN381-25-10	13-05	AN833-6	70-18		02-05A
	14-05	AN837-6	51-22		03-05
AN4-17A	33-03	AN837-8	28-36	MS122160	69-03
AN5-10A	20-60	AN842-8D	68-34	MS122162	01-04
AN5-12A	05-10	AN844-8	37-45		02-04
	05-14	AN900-14	21-18		03-04
AN5-13A	01-37		22-38	MS122163	01-38
	02-37	AN900-18	20-10		02-05
	03-35	AN900-28	21-12	MS124657	22-14
	04-24		22-12	MS16631-1165	27-04
	05-10	AN910-2	44-33	MS20033-1	48-26
	05-14		49-19	MS20034-4	48-13
AN5-14A	04-28	AN911-2	49-18	MS20034-5	48-22
	05-18	AN912-1	50-06	MS20073-04-10	22-31
AN5-15A	04-33	AN912-2	30-13	MS20074-04.06	68-13
	05-18		32-17	MS20074-04-03	34-05
AN5-23A	04-13		49-27		36-05
AN500-10-5	79-02	AN912-3	03-26	MS20074-04-04	34-04
	80-02	AN912-4	26-36		36-04
AN500A10-12	57-18	AN924-4	49-06	MS20074-04-06	64-07
	58-18		51-20	MS20364-428	72-23
	59-18	AN924-6	51-24	MS20364-624C	27-13
	60-19		70-17	MS20365-1032A	86-38
	69-23	AN924-8	28-35	MS20500-1032	48-27
	69-27		50-14	MS20500-428	48-15
	70-15	AN932-2	23-26		48-24
			74-10	MS20822-4	68-38

PART NUMBER	FIG & INDEX	PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX
MS20822-6	51-08	MS35337-44	07-27	M35337-45	89-07
MS20822-8	26-37		17-31		90-07
MS20823-3B	68-36		18-31	MS35337-46	20-47
MS20823-6	30-15		19-31		30-07
MS20823-6B	32-18		20-20		37-43
	49-26		20-34		39-54
MS20826-6B	68-30		20-41		45-37
MS21042-5	71-08		21-26		49-16
MS21044N08	73-13		21-34		50-12
MS21044N3	48-17		21-42		51-05
	52-12		31-04		51-28
	53-12		31-12		89-10
	54-14		37-07		90-10
	55-07		38-05	MS35338-43	28-32
	56-07		39-05		07-38
	57-11		40-05		20-29
	57-23		41-07		20-39
	58-11		41-44		49-31
	58-23		42-06		68-09
	59-11		43-05		79-03
	60-11		43-33		80-03
	63-14		44-05		86-42
	64-12		45-06	MS35338-44	20-59
	65-12		54-20		20-62
	70-07		72-20		20-63
MS21209C5-15	02-38	MS35337-45	89-19		22-22
MS21919DF13	51-12		90-19		22-41
MS24665-302	29-13		06-09		40-35
MS28778-4	49-07		06-15		63-20
	51-19		07-12	MS35338-45	28-27
MS28778-6	49-11		23-28		37-16
	51-23		23-35		40-14
MS28778-8	28-34		23-42		41-15
	50-15		24-22		77-07
MS28882-6	70-19		24-29		88-04
MS29512-06	70-16		24-40	MS35338-46	32-13
MS29513-010	04-06		25-48	MS35489-11S	39-33
	05-07		26-47		42-35
MS29513-138	43-35		28-38		44-36
	44-51		29-06	MS35756-3	28-24
	59-15		33-12	MS35756-6	21-22
	60-15		35-11	MS35756-8	11-02
	69-24		36-09		12-05
	70-22		50-04		23-12
MS35190-287	28-18		73-16		24-08
MS35266-61	07-36		74-16		24-26
MS35333-41	75-22		76-11		25-12
MS35337-43	59-17		83-04		26-12
	83-35		84-04		28-08
MS35337-44	06-20		85-04		29-03
	06-25		86-04	MS35769-11	01-34
	07-16		87-04		02-34
07-20					03-30

PART NUMBER	FIG & INDEX	PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX
MS35769-11	33-14	X5146	74-11	20522	43-04
	34-11		75-09		43-32
	36-11	13XX14340	64-11		44-04
MS35769-12	33-07	13XX18130	66-10		45-05
	35-04		68-18		54-19
MS35769-15	33-06		69-11		63-19
	35-03		71-13		72-22
MS35769-17	35-17		72-13	20655	20-30
MS35769-48	22-28	13XX1896	07-39	21007	17-20
MS51504B8-8	23-38		54-11		17-23
MS9021-011	05-26		57-20		18-20
	07-41		58-20		18-23
	10-23		64-09		19-20
MS9021-038	23-44	13XX202B	34-09		19-23
	24-35		38-17	21208A2	20-37
	26-49		39-14		21-38
	28-42		42-17		22-26
MS9021-150	40-39		43-14	22535	06-13
MS9021-210	06-05		44-15		07-10
MS90728-66	27-16		45-14		35-09
MS9089-10	70-28	13XX299	24-33		39-13
MS9134-01	20-31	20202	04-03		43-13
	89-16	2024	22-05		44-14
	90-16		25-28	2265	33-08
MS9137-01	75-06		26-28		35-05
MS9245-62	25-45		30-10		35-18
	26-45	2025	01-32	22661	38-36
	27-20		02-32	2274	20-46
MS9320-15	25-44		03-24	22910	86-37
MS9358-15	26-44	2026	31-08	23024	20-05
MS9361-14	28-33	20522	04-17	24239	04-11
NAS1006-10A	46-16		06-19		05-23
	48-32		17-30		20-55
NAS1006-11A	47-07		18-30		27-17
NAS1006-13A	47-08		19-30		32-04
NAS1021C6	47-10		20-19	2436	49-32
NAS1587-4	48-14		20-40		51-16
	48-23		21-25	2437	06-21
NAS1587-6	46-14		21-33		06-26
	47-09		21-41		07-17
	48-33		22-21		20-21
Q9S552-06	22-32		22-40		20-35
Q9T116-07	22-34		31-03		20-42
Q9T116-218	22-30		31-11		21-27
X13041	23-13		33-04		21-35
	24-09		34-03		2143
	25-13		36-03		22-23
	26-13		37-06		22-42
	28-09		38-04		31-05
X1473	20-12		39-04		39-24
	21-14		40-04		54-21
X1473	22-15		41-06		63-21
X5146	73-09		42-05		89-20

PART NUMBER	FIG & INDEX	PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX
2437	90-20	2472	68-12	24802	19-17
2439	04-26		70-27	24827	43-40
	04-30		89-18	24835	37-08
	04-35		90-18		38-06
	05-12	2473	03-34		39-06
	05-16		04-14		40-06
	05-20		04-19		41-08
	06-16		04-22		42-07
	07-13		04-25		43-06
	23-29		04-29		43-34
	23-36		04-34		44-06
	24-43		05-11		45-07
	24-42		05-15		72-21
	25-30		05-19	24878	04-16
	25-38		05-27	2500	52-15
	25-49		06-08		53-15
	26-30		06-14		54-17
	26-39		07-11		55-10
	26-48		17-26		56-10
	28-40		18-26		57-14
	29-07		19-26		58-14
	73-17		20-61		59-14
	74-17		23-27		60-14
	75-23		23-34		63-17
	76-12		23-41		64-15
	77-08		24-21		65-15
	83-05		24-28		70-10
	84-05		24-39	25008	89-05
	85-05		25-29		90-05
	86-05		25-37	25102	89-04
	87-05		25-47		90-04
	88-05		26-29	25164	39-23
	89-08		26-38	25171	05-03
	90-08		26-46	350998	08-02
2441	04-12		28-26		09-02
	05-24		28-37		10-02
	06-04		29-05	352655	25-03
	07-07		33-11		25-27
	20-48		34-08		26-03
	23-47		35-10		26-27
	24-38		36-08	35967	17-09
	26-52		42-16		18-09
	28-45		74-15		19-09
	30-08		89-06	35971	17-15
	32-05		90-06		18-15
	35-16	2474	30-06		19-15
	89-11		32-12	36151L	37-10
	90-11	24764	06-28		38-08
2442	32-14		07-46		39-08
2471	07-37	24767	40-34		40-08
	20-28		41-43		41-10
2472	20-33	24802	17-17		42-09
	64-06		18-17		44-09

PART NUMBER	FIG & INDEX	PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX
36151L	45-09	401885	01-11	402066	03-09
36151R	07-33		02-12		03-10
400573-8	49-05		02-10	402127	01-08
401506	35-10		02-11		02-08
401507	04-11		02-12		23-05
	37-42		03-12		24-03
	39-53		03-13		25-05
	45-36	401893	08-25		26-05
	49-15		09-26		28-03
	51-04		10-21	402129	03-15
	51-27		17-06	402151	01-25
	89-09		18-06		02-25
	90-09		20-23		03-08
401752	01-29	401899	03-07	402157	03-17
	02-29		25-26	402158	03-17
	25-35		26-26		03-18
	26-35	401927	01-13	402159	03-19
	38-20		02-13	402359	01-16
401800	21-03	401932	01-15		02-16
	22-03		02-15	402711	20-24
401801	20-03	401936	01-17	402832	03-15
	72-02		01-18	402941	01-31
401804	01-06		02-17		02-31
	02-06		02-18	404584	01-09
	03-20	401945	01-21		02-09
401808	03-06		02-21	477290	49-03
401813	23-25	401950	03-21	477291	49-04
	25-25	401962	01-14	501867	23-19
	26-25		02-14		24-14
401814	01-07	401963	01-22		25-19
	02-07		02-22		26-19
	23-03		21-24		28-15
	23-06		22-04		52-06
	25-06	401965	01-21		53-06
	26-06		01-26		54-08
401832	21-04		02-21		57-06
401841	03-06		02-26		58-06
401843	39-17		03-16		59-06
401852	03-14	401968	01-18		60-06
401860	01-08		02-18		63-08
	02-08	401971	23-07		65-06
	35-08		25-07	501868	42-18
401861	01-08		26-07	502020	25-40
	02-08	401975	01-10		26-41
401870	03-11		02-10	502287	23-14
401873	01-19	401977	01-23		24-10
	01-20		02-23		25-14
	02-19	402034	01-24		26-14
	02-20		02-24		28-10
401881	23-04		01-12	502293	25-22
	25-04		02-12		26-22
	26-04		03-13	520112-3	17-03
401885	01-10	402060	03-10		18-03

PART NUMBER	FIG & INDEX	PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX
520112-3	19-03	534750	88-01	536388-.47	56-15
521649	23-22	534757	10-27		61-09
524818	11-04	534775	24-31	536388-.62	40-20
530346	33-13	534857	17-28		41-21
	34-10		18-28		43-24
	36-10		19-28	536388-.75	37-37
	37-17	534863	89-01		39-42
	38-18		90-01		40-21
	43-15	534938	24-20		40-29
	45-15		28-21		41-23
530658	13-02	534940	34-01		41-38
	13-02		36-01		42-38
	14-02	534941	54-01		45-22
531001	04-04		75-03	536388-1.50	50-18
	05-04	534956	75-05	536388-.62	45-20
	17-40	534980	24-25	536413	37-01
	18-40	534995	75-01		38-01
	19-40	535008	20-16		39-01
531003	30-08A		21-31		40-01
531178	89-14		22-19		41-01
	90-14	535118	17-32		42-01
531378	20-22		18-32		43-01
531548	03-03		19-32		44-01
532432	01-33	535634	20-15		45-01
	02-33		21-21	536421	10-17
	03-29		22-18	536552	23-10
	33-15	535661	12-01		24-06
	34-12	535662	12-03		25-10
	36-12	535666	12-04		26-10
533355	06-30	535668	31-13		28-06
534609	17-36	535681	43-17	536563	08-16
	18-36	535756	31-01A		09-17
	19-36	535810	05-21		10-16
534610	17-37	535847	73-15	537019	17-27
	18-37		76-10		18-27
	19-37		77-06		19-27
534655	12-06		83-03	537296	17-35
534685	23-21		84-03		18-35
	24-18		85-03		19-35
534715	24-19		86-03	537299	07-40
534728	07-15		87-03	537505	03-32
534740	06-23		88-03	537539	20-58
	07-14	535885	20-26	537629	52-07
534741	10-28	535887	20-27		53-07
534743	33-09	535900	20-16		57-07
	34-06	535908	20-25		58-07
	35-06	535933	22-33		59-07
	36-06	536338-47	62-09		60-07
534750	83-01	536379	08-19		65-07
	84-01		09-20	537650	33-10
	85-01		10-18	537650	34-07
	86-01	536388-.47	43-21	537690	52-14
534750	87-01		55-15		53-14

PART NUMBER	FIG & INDEX	PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX
537690	54-16	538944-10.50	05-02	539942	68-26
	55-09	538944-11.12	05-01	539942	69-06
	56-09	538944-5.31	04-01		71-17
	57-13	538944-6.19	04-02		72-17
	58-13	538944-8.88	05-01	539988	17-10
	59-13	538989	05-08		18-10
	60-13	538999	24-30		19-10
	63-16		24-43	625207	34-02
	64-14		28-41	625238	66-02
	65-14	539003	04-21		71-02
	68-21		35-13	625327-1	66-04
	70-09		39-15		67-03
537691	42-19	539058	06-03		71-04
537721	03-02		07-06		72-04
537728	38-35		23-46	625327-2	52-13
537738A1	24-17		24-37		53-13
537742	24-41		26-51		54-15
	28-39		28-44		55-08
537745	24-01	539374	01-36		56-08
	28-01		02-36		57-12
537749	24-16	539518	07-03		58-12
537750	04-20	539523	21-07		59-12
	24-23		22-07		60-12
	24-43	539568	24-11		64-13
	28-28	539605	06-10		65-13
	35-12	539634	54-04		68-22
	44-16		63-04		70-08
	50-05		75-02	625393	17-14
537802	44-26	539740	17-25		18-14
537911	75-19		18-25		19-14
537961	40-15		19-25	625457	66-05
	41-16	539742	17-18		67-04
538076	12-07		18-18		71-05
538100	39-22		19-18		72-05
	44-24	539785	24-13	625457-1	66-05
538181	75-21	539800	23-16		67-04
538185	21-01		24-12		72-06
	22-01		25-16	625601	66-13
538304	17-39		26-16		67-12
	18-39		28-12		68-25
	19-39	539805	23-09		69-05
	03-22		24-05		71-16
538600-2	60-17		25-09		72-16
	69-25A		26-09	625615	17-29
	70-14A		28-05		18-29
538650	04-31	539942	66-14		19-29
	05-17		67-13	625765	84-02
538650-2	57-16A			625866	22-20
538727	22-29			625966	07-23
538773	07-26			626147	17-38
538801	07-26				18-38
538804	07-25				19-38
538944-10.00	05-01			626332	31-02

PART NUMBER	FIG & INDEX	PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX
626334	07-24	626813	69-16	628437	23-39
626341	31-01		69-21		73-04
626342	31-09		70-13		73-05
626486	52-21		71-03		74-10
	53-21		72-03		74-12
	55-19		72-26		76-03
	56-19	626813-1	68-06		76-04
	57-28	626839	75-07	628438	68-37
	58-28	626879-1	73-14		74-03
	59-23		74-14		74-07
	60-24		75-20		75-14
	64-20		76-09		75-16
	65-21	626889	08-24	628472	83-02
626487	38-38		09-25		88-02
626527	39-12		10-20	628473	83-02
626557	79-05	627119	50-07		88-02
	80-05		73-06	628476	73-05
626577-2	53-22		74-02		74-02
	54-30		74-04		74-05
	55-20		75-11		75-12
	56-20		75-13	628488	11-09
	57-29	627378	79-06		12-08
	58-29	627433	05-25	628555-1	37-36
	61-11	627496	30-17		39-41
	62-11		31-07	628555-12	61-08
	63-30		32-16		62-08
	64-21	627518	75-04	628555-13	42-37
	65-22	627820	43-16	628555-18	43-23
626634	52-10	628109	13-04	628555-2	55-14
	53-10		13-04	628555-20	43-22
	54-12		14-04	628555-21	43-20
	55-05	628129	22-35	628555-3	40-28
	56-05	628152	54-27	628555-3	41-37
	57-09	628152-1	54-27	628555-4	40-19
	57-22	628153	54-27		41-20
	58-09	628153-1	54-27		45-19
	58-22	628154	54-27	628555-5	40-22
	59-09	628154-1	54-27		41-22
	60-09	628257	07-03		45-21
	63-12	628260	17-33	628556	37-28
	65-10		18-33		38-30
	66-08		19-33		39-37
	67-07	628295	54-29		40-36
	68-19		63-29		41-27
	69-07	628321-.38	06-32		42-28
	70-05		07-44		43-28
	71-11		68-10		44-40
	72-09	628435	76-05		45-26
626739	10-19	628436	68-37	628572	37-39
626813	66-03		73-04		39-50
	67-02		73-08		40-31
	68-07		74-05B		41-40
	68-16		76-07		45-33

PART NUMBER	FIG & INDEX	PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX
628572	49-13	629163-5	45-10	629506	83-19
	51-02	629201	06-18		85-19
628670	49-35	629202	06-17	629518-1H	01-28
628672	49-34		07-18		02-20
628739	83-37	629218	21-06		02-28
628740	83-42		22-06		03-24
628760	24-27	629263	21-20		21-05
628885	21-28	629267	75-15		23-40
628887	21-30	629275	37-44		30-04
628900	21-29		39-55		32-10
629007	83-41		40-36		38-14
629008	83-40		41-45		39-18
	83-45		45-38		41-30
629009	83-39		49-17		42-20
	83-44		50-13	629518-3H	03-28
629010	83-38		51-06		30-12
	83-43		51-29	629518-4H	21-40
629011	83-46	629325	37-05		23-37
629076	90-12		38-03		25-36
629077	89-13		39-03	629638	29-11
	90-13		40-03	629680	08-23
629084	21-23		41-05		09-24
629104	08-13		42-03	629703-11A2	54-07
	09-13		43-03	629703-8A1	54-07
	10-13		44-03	629726A3	11-01
629117	17-16		45-04	629747	11-08
	18-16	629338	54-18	629748	11-07
	19-16	629340	13-03	629837	83-34
629125	74-11		13-03		85-34
	77-05		14-03	629847	01-35
629138	37-04	629353	38-32		02-35
	38-02	629354	38-33		03-33
	39-02	629360	08-30	630046	15-06
	40-02		09-31		16-06
	41-04	629401	15-05	630055	
	42-02		16-05		37-02
	43-02	629422	89-12		41-02
	44-02	629436	29-01	630060	37-03
	45-02	629448	22-17		41-03
629163	39-45	629494	83-29	630063-1	03-27
	44-47		85-29	630065	44-34
629163-1	39-40	629495	83-26	630119	74-05A
	44-43		85-26		74-06
629163-5	37-12	629496	83-25	630124	66-12
	38-10		88-29		71-15
	39-09	629498	83-24	630184	79-06
	40-10		85-24		80-06
	41-11	629502	83-22	630261-35	08-11
	41-32		85-22		10-11
	42-10	629504	83-21	630261-37	08-10
	43-09		85-21		09-10
	44-10	629505	83-20		10-10
	44-18		85-20	630261-38	08-09
					09-09

PART NUMBER	FIG & INDEX	PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX
630261-38	10-09	630965	41-23	631351-9A3	52-17
630261-40	09-11		42-25		53-17
630350	38-39		43-25	631351A14	55-11
630387	53-07		44-37		56-11
	54-09		45-23	631351A19	54-22
	63-09	630966-.56	35-02	631351A20	54-22
630455	66-01	630966-4.00	04-23	631351A21	54-22
	67-01	630966-4.25	28-29	631367	33-02
	69-02	630979-1	68-23	631478	21-17
	71-01	631008	35-01		22-37
	72-01	631014	20-14	631496	17-04
630474	38-34	631016	20-04		18-04
630591	17-08	631034	20-01		19-04
	18-08	631056A1	20-17	631520	17-13
	19-08	631059	30-02		18-13
630655	29-09		32-07		19-13
630680	23-18	631075	20-14	631521	17-12
	25-18	631088-.44	11-06		18-12
	26-18	631152	06-02		19-12
	28-14	631154	06-01	631547	29-02
630681	23-17	631246	55-18	631638	21-16
	25-17		56-18		22-36
	26-17		61-10	631646	20-50
630691	29-12		62-10	631650	20-36
630693-10.44	04-08		64-19		21-36
	05-21	631252	23-11		22-24
630693-11.67	04-09		24-07	631653	20-08
630751-3A1	75-08		25-11		21-10
630763	52-01		26-11		22-10
	55-01		28-07	631656	29-00
	57-01	631263	52-02	631683	54-02
	59-01		53-02		63-02
	61-01		55-02	631684	54-03
630817	37-29		56-02		63-03
630817-1	41-35		57-02	631685	54-01
630826	13-06		58-02		63-01
	14-06		59-02	631687	03-23
630849	30-01		60-02	631714	22-02
	32-06		61-02	631714A7	22-00
630870	06-24		62-02	631716	10-01
630871	06-22		64-02	631737	85-28
630873	01-03		65-02	631737-2	83-28
	02-03	631266-1	07-34	631739	83-32
630881	37-30	631275-2	07-35		85-32
630892	06-06	631293	73-06	631782	20-52
630899	01-02	631307	73-07	631783	20-53
	02-02	631308	73-03	631784	20-54
630963	38-21	631330	79-04	631819	67-11
630964	38-23		80-04	631836	39-20
630965	37-25	631351	79-00		44-22
	38-27		80-00	631837	39-21
	39-34	631351-7A3	52-17		44-23
	40-23		53-17	631845	11-05

PART NUMBER	FIG & INDEX	PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX
631845	12-02	632443-6	04-15	632558	53-08
631867	01-27	632444-2	39-11		63-10
631882	74-08		44-12	632558A1	52-00
	75-10	632554-1	67-06		53-00
631915	07-32		68-03		63-00
631927	03-31		68-05	632557-2	59-24
631928	07-31		71-07		60-25
631972	37-11	632554-2	66-07	632585	15-01
	38-09		67-10		16-01
	40-09		68-05	632590	29-02
	42-12		68-15	632595	23-32
	43-08		69-13		25-33
631995	21-19		69-15		26-33
	22-39		69-20	632609	21-32
632017	30-14		70-12	632616	49-20
	68-29		71-10		77-03
	73-02		72-08	632653A1	89-02
	76-05		72-12		90-02
632018	08-20		72-25	632663	35-14
	09-21	632555-12	68-02	632706	30-01
632062-14A1	07-42	632555-14	69-14	632710	37-41
632062-16A1	07-42		69-19		39-51
632062-2A1	07-42	632555-15	69-12		40-33
632085	21-37	632555-2	56-14		45-35
	22-25	632555-23	67-09		51-26
632092-4	11-03	632555-24	70-11	632729-10	37-35
632105	83-33	632555-31	67-05		39-46
	85-33	632555-34	71-06	632729-12	45-31
632106	83-27	632555-40	68-02	632729-13	44-55
	85-27	632555-50	72-07		48-30
632115	76-02	632555-51	72-24		51-01
	77-04	632555-52	68-04	632748-14	54-26
632120	04-07	632555-7	68-04		57-25
632126	30-18	632556	66-06		58-25
	32-20		68-14		59-20
632149	07-35		71-09		60-21
632151	07-32		72-11		61-06
632224	30-05	632557	52-11		62-06
	32-11		53-11	632748-15	52-19
632239	20-57		55-06		54-26
632240	20-56		56-06		55-16
632266	20-43		57-10		56-16
632330	89-03		57-21		63-26
	90-03		58-10	632748-16	65-19
632357	07-05		58-21	632748-17	64-17
632379	20-51		59-10	632750	38-37
632398	13-06		60-10	632762	20-13
632437	29-03		63-13		21-15
632443-4	04-18		64-10		22-16
	08-26		65-11	632766	37-34
	09-27		70-06		39-48
	10-22	632557-1	54-13		44-49
	33-05	632558	52-08	632767	37-33

PART NUMBER	FIG & INDEX	PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX
632767	37-33	632916-11A2	60-05	633397	39-25
	39-47	632916-11A5	65-05		42-24
	44-48	632916-8A1	52-05		44-27
632770	21-02		53-05	633403	13-01
632774-1A2	38-31	632946	33-01		14-01
	54-00	632964-1	06-07	633409	57-15
632774-2A4	54-00	632964-2	06-07		58-15
632774-2A7	38-31	632970	20-00		69-17
632788	03-26	632977	20-02		70-02
632809	37-19	632977A6	20-00	633412	34-07
632810	37-20	633009	83-23	633435	43-10
632818-1A1	52-03		88-27	633444	55-04
	73-01	633036	73-10		56-04
632818-10A1	53-03	633121	74-09	6335789	87-09
632818-11A1	58-03	633129	38-15	633579	84-07
	60-03	633158	75-17		84-09
632818-11A2	53-03	633189	08-02A		84-11
632818-2A1	52-03		09-02A		84-13
	73-01		10-02A		84-15
632818-2A2	57-03	633207	39-16		84-17
	59-03	633233-29	06-29		86-07
	73-01	633233-3	06-29		86-09
632818-5A4	54-05	633233-31	06-29		86-11
	74-01	633233-6	06-29		86-13
632818-7A3	54-05	633233-7	06-29		86-15
	74-01	633240	06-30		86-17
632818-8A2	65-03	633281	39-39		87-07
	73-01		44-42		87-11
632818-9A3	63-05	633282	39-43		87-13
	74-01	633283	37-23		87-15
632840A1	54-06	633287	30-00		87-17
	67-00	633291	39-10		88-08
632853A1	54-04		44-11		88-10
	53-04	633299	68-11		88-12
	66-00	633311	84-00		88-14
632855-1A4	37-32	633358	47-17		88-16
	52-00	633381	64-08		88-18
	53-00	633381-11	65-08	633580	84-08
632856	21-00	633381-11A2	65-00		84-10
632859	63-18	633381-3	57-19		84-12
632871	37-13		58-19		84-14
	40-11	633381-3A1	57-00		84-16
	41-12		58-00		84-18
	42-13	633381-4	57-08		86-08
	45-11		58-08		86-10
632876	33-10		59-08		86-12
632892	08-18		60-08		86-14
	09-19	633381-4A1	57-00		86-16
632893	08-17		58-00		86-18
	09-18		59-00		87-08
632916-11A1	57-05		60-00		87-10
	58-05	633381-8	70-04		87-12
632916-11A2		633381-8A1	70-00		87-14

PART NUMBER	FIG & INDEX	PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX
633580	87-16	633787	42-36	634209	41-13
	87-18		44-35		42-14
	88-07	633789	76-02		45-12
	88-09	633790	68-28	634325	79-07
	88-11	633845	23-20		80-07
	88-13		24-15	634326	79-00
	88-15		25-20		80-00
	88-17		26-20	634326-4A15	54-22
633583	84-24		28-16	634326-4A7	57-24
	86-24	633924	88-33		58-24
	87-24	633925	84-34	634326-6A2	59-19
	88-24		86-31		60-20
633585	84-19		87-35	634488	39-19
	86-19		88-31	634503	09-14
	87-19	633926	84-33	634505	05-09
	88-20		86-32		17-41
633586	84-20		87-34		18-41
	86-23		88-32		19-41
	87-20	633927	84-32	634511	04-08
	88-19		86-35		05-09
	88-23		86-40	634536	76-06
633589	84-25		87-28	634592	23-45
	86-25		87-33		24-36
	87-25		88-41	634628	30-11
	88-25	633928	88-34	634675	83-06
633590	84-23		88-40		84-06
	86-20	633958-3	37-24		85-06
	87-23		37-26		86-06
633591	84-21		38-26		87-06
	86-21		38-28		88-06
	87-21		39-35	634794A6	52-00
	88-21		40-24	634794A7	53-00
633592	84-22		41-25	634798A6	53-00
	86-22		42-26	634798A9	52-00
	87-22		43-26	635050A1	24-02
	88-22		44-38		28-02
633593	84-26		45-24	635050A15	28-00
	86-26	633958-5	37-21	635050A4	24-00
	87-26		38-22	635076-1	68-24
	88-26		38-24	635076-5	68-24
633620	08-01		39-27	635134	07-30
633650	73-11		39-30	635158S4S10.00	54-23
633704	37-20		42-30	635158S4S12.00	54-24
633718	39-29		42-32	635158S4S13.00	65-18
633719	39-26		44-29	635158S4S14.00	54-23
	42-31		44-32		55-12
	44-28	634080	08-21		56-12
633720-1	39-28		09-22	635158S4S18.00	54-24
	42-33	634150	20-07	635158S4S22.00	55-13
	44-30		21-09		56-13
633721	39-31		22-09	635158S4S32.00	54-25
	42-34	634209	37-14	635158S4S36.00	65-17
633787	39-32		40-12	635218S4S13.00	63-23

PART NUMBER	FIG & INDEX	PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX
635218S4S43.00	63-25	636036	53-20	636380	41-19
635218S4S8.25	63-24		55-17		45-18
635327-2	63-15		56-17	636415	88-00
635334	23-31	636036-1	52-20	636465	37-38
635360	83-31		53-20		39-49
	85-31		54-27		45-32
635361	85-25		57-26		47-14
	86-29		58-26		48-29
635362	86-27		59-21	636577-2	52-22
635363	83-30		60-22	636603	86-00
	85-30		61-07	636687	84-31
635381-2	49-02		62-07		86-34
635456A6	54-00	636037	52-20		86-41
635616	36-07		53-20		87-29
635623	08-12		55-17		87-32
	09-12		56-17	636692	84-27
	10-12	636037-1	52-20		86-39
635630	40-30		53-20		87-27
	41-39		54-27		88-39
635640	36-02		57-26	636805	69-08
635645	38-13		58-26	636900	30-03
635699	86-28		59-21		32-09
	88-28		60-22	636919	84-30
635700	86-30		61-07		86-33
	88-30		62-07		87-31
635915A2	57-04	636062	41-34	636920	84-29
	58-04	636134A4	57-00	836921	84-28
	59-04	636134A5	57-00	636922	84-00
	60-04	636134A6	58-00		86-00
635921	40-37	636134A7	58-00		87-30
635950	69-04	636143A2	57-00	636951	85-00
635968A8	55-00		58-00	636953	83-00
635968A9	56-00	636143A3	40-27	637132	30-00
635988-8	88-36		57-00		32-00
635989	88-38		58-00	637244	41-42
635990-5	88-37	636143A4	40-27	637255-4	38-16
635991	85-35	636150	88-35	637286	74-08
	88-42	636188-17	48-21	637356	41-29
635996	30-03		51-17	637357	41-33
636035	52-20	636242	17-05	637409-48	83-07
	53-20		18-05		83-08
	55-17		19-05		83-09
	56-17	636350	73-09		83-10
636035-1	52-20	636353	40-17		83-11
	53-20		41-18		83-12
	54-27	636353	45-17		83-13
	57-26	636355	40-16		83-14
	58-26		41-17		83-15
	59-21	636355	45-16		83-16
	60-22	636376	33-15		83-17
	61-07		34-12		83-18
	62-07		36-12		85-07
636036	52-20	636380	40-18		85-08

PART NUMBER	FIG & INDEX	PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX
637409-48	85-09	639193	08-04	639522	68-31
	85-10		08-06	639573	17-24
	85-11		08-08		18-24
	85-12		09-04		19-24
	85-13		09-06	639591A2	69-01
	85-14		09-08	639596	63-06
	85-15		10-04		71-00
	85-16		10-06	639629	17-19
	85-17		10-08		17-22
	85-18	639195	08-07		18-19
637459	49-24		09-07		18-22
	68-27		10-07		19-19
637579	08-15	639196	08-03		19-22
	09-16		08-05	639660-13	37-09
	10-15		09-03		38-07
637583-17	59-16		09-05		39-07
	60-16		10-03		40-07
	69-25		10-05		41-09
637632	40-00	639272	17-02		41-31
637634	37-18		18-02		42-08
637735A3	41-28	639272A1	17-00		44-07
	59-00		18-00		45-08
	60-00	639274	17-02	639660-6	39-44
637736A4	59-00		18-02		44-46
637736A5	60-00	639274A1	17-00	639713A20	63-00
637749A11	54-00		18-00	639715A8	43-29
637749A19	54-00	639304	07-24A	639715A9	63-00
637749A23	54-00	639305	30-16	639717-11A1	63-07
637750A6	54-00		31-06	639997	06-12
637781	17-11		32-15		07-09
	18-11	639319-24	43-36	640056	29-14
	19-11	639319-26	44-50	640094-4	49-29
637817	25-39	639319-9	70-23	640095	49-28
	26-40	639332	46-15	640321	32-02
	28-20		48-34	640327-1	46-13
637847	23-45	639356-6-16.00	51-25		49-01
	24-36	639388	23-30	640342	32-08
	26-50	639405	23-24	630380	20-32
	28-43	639406	23-15		89-17
638125	17-06	639407	23-33		90-17
	18-06	639479	66-09	640564-1A1	39-38
	19-06		67-08		56-03
638139	85-23		71-12	640564-1A3	55-03
638172	89-15		72-10		68-00
	90-15	639495	03-27	640612	37-27
638600-2	58-00		68-38		38-29
639171	31-10	639497	69-09		39-36
		639508-5A2	55-00		40-25
			76-01		41-26
		639508-8A2	56-00		42-27
		639508-9A2	64-03		43-27
			76-01		44-39
		639513	51-07		54-25

PART NUMBER	FIG & INDEX	PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX
640620-5	07-29	640793	37-40	641361	06-31
640620-8	07-29		39-52		07-43
640625	15-02		40-32	641368	23-08
	16-02		41-41		24-04
640626	15-03		45-34		25-08
	16-03		49-14		26-08
640641	49-33		51-03		28-04
640642	42-20	640795	42-15	641407	04-32
640643-6A1	61-03	640801	26-53	641434-3	57-16
	77-01		27-19		58-16
640643-7A1	62-03	640803	25-15		69-18
	77-01		26-15	641434-4	57-16
640644	70-26	640808	25-31		58-16
640657	42-23		26-31		69-18
640667	70-01	640826	32-03	641516	52-20
640677	46-02	640877	46-12		53-26
640690	70-20	640932	29-10		54-27
640692	70-21	640934	29-08		57-26
640701	42-39	640946	11-09		58-26
640704	46-05		12-08		59-22
640705	46-04	640947	27-09		60-22
640706	46-03	640971A2	49-36		61-07
640707	46-01	640971A3	49-36		62-07
640710	46-08	641032	79-00	641639	20-44
640711	46-09		80-00	641651	06-11
640712	46-10	641032-15A3	64-16		07-08
640713	25-21	641032-16A5	63-22	641668	29-02
	26-21	641032-17A1	65-16	641682	17-21
640733	25-42	641047S4S15.00	68-32		18-21
	26-43	641047S4S20.00	50-09		19-21
640746	25-32	641047S6S-37.00	44-44	641701	54-28
	26-32	641047S8S29.00	50-19		63-28
640749	25-24	641047Y4YG18.00	51-21	641709	11-09
	26-24	641047Y6S19.00	51-11		12-08
640761	42-21	641066	17-01	641728	90-12
640764	42-22		18-01	641862	11-10
640765	42-29		19-01		12-09
	44-31	641100Y6S10.00	49-21	641888-1	37-22
640766	25-34	641100S4S20.00	49-09	641888-4	37-22
	26-34	641100S6S6.00	49-23	641888-5	38-19
640767	27-01	641100Y6S16.00	49-12	641889	77-02
640774	27-10	641100YS25.75	49-25	641907	25-46
640777	27-12	641204	42-04	641909	08-22
640781	27-05	641250	08-28		09-23
640782	06-02		09-29	641930-10.95	05-06
640791A2	61-04		10-25	641930-9.81	05-06
	62-04	641261	43-12	641931-10.75	04-05
	70-00	641284	46-11		05-05
640791A3	62-04	641302	15-04	641951	18-05
	70-00		16-04		19-05
640792A17	62-00	641306	08-29	641952	18-10A
640792A18	61-00		09-30	641973	19-04
640792A19	62-00		10-26	642004	38-25

PART NUMBER	FIG & INDEX	PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX
642056A2	29-02	642465	44-19	642668	48-06
642064	79-01	642486	68-35	642670	48-05
	80-01	642491	38-13	642671	48-02
642066	46-07	642502	48-09	642672	48-04
642067	46-06	642512	43-31	642673	48-03
642085	23-02	642513	44-17	642674	48-01
642085A2	23-00	642514	44-13	642680	47-05
642085A3	23-00	642517	44-08	642691	19-02
642087	25-02	642518-4	43-42	642691A1	19-00
	26-02		47-15	642700	48-31
642087A5	26-00		50-01	642701	51-30
642087A8	25-00	642519	48-28	642702A1	65-04
642095	79-01	642520	48-20		72-00
642100-5	57-27	642523	37-15	642702A4	45-30
	58-27		40-13		65-00
	59-22		41-14	642703A16	64-04
	60-23		45-13	642703A19	64-00
642165	03-01	642526A1	72-19		68-00
642185	03-01	642527	75-29	642703A5	44-41
642223	51-09	642537	48-25	642714	20-38
642224	20-11	642539	48-08		21-39
	21-13	642559	72-18A		22-27
	22-13	642562	45-28	642715	51-13
642238	53-01	642578	72-18	642720	09-15
	56-01	642589	29-04		10-14
	58-01	642590	40-02A	642722-1	64-05
	60-01		45-03		68-01
	62-01	642591	45-27	642724	63-27
	64-01	642594	19-02		64-18
	65-01	642594A1	19-00		65-20
642249	10-24	642602	15-02	642725	63-27
642250	07-01		16-02		64-18
642273A3	35-07	642603	15-03		65-20
642283	54-10		16-03	642726	63-27
642283A1	54-00	642606	15-05		64-18
642306	87-02		16-05		65-20
642318	18-08	642608	28-25	642727	63-27
	19-08	642612	28-17		64-18
642331	03-01	642622	28-23		65-20
642335	20-09	642623	28-30	642728	63-27
	21-11	642630	28-11		64-18
	22-11	642640	28-13		65-20
642336	20-06	642641	28-19	642729	63-27
	21-08	642650-1A3	54-00		64-18
	22-08		74-01		65-20
642383	25-41	642654A3	35-00	642749	27-18
	26-42	642657	50-10	642761	15-01
642391	48-35	642658	50-02		16-01
642392	48-18	642659	50-03	642777	70-03
642394	44-45	642662	43-30	642785	30-00
642396	09-01	642663	48-07	642796	74-13
642399	13-01	642665	48-19		76-08
642464	44-20	642666	48-11	642800	50-16

PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX	PART NUMBER	FIG. & INDEX
642801	50-11	643877	47-03		
642832	43-18	643878	47-01		
642833	43-19	643879	47-04		
642839	08-14	643880	47-06		
642871	72-15	643881	47-16		
642872	47-13	643882	47-11		
642874-2	50-17	643934	07-04A		
642891	48-10	643935	07-04		
642903A15	64-00	643967	17-34		
642904A3	65-00		18-34		
642914	07-19		19-34		
642917-1	38-07	643971	15-04		
	43-07		16-04		
643085	38-00	643989	03-01		
643121	15-04	643991	03-01		
	16-04	643998	38-12		
643138-1	70-03	646019	40-38		
643148	50-08	646021S4S-14.00	53-16		
643172	68-33	646021S4S14.00	52-16		
643193	02-01	646021S4S-36.00	53-18		
643201	01-01	646021S4S36.00	52-18		
643202	01-01	646044	68-20		
643206	02-01	646050	31-02A		
643207	02-01	646134	42-11		
643208	02-01	646140-1	01-27		
643212	01-01		02-27		
643226	20-45		03-23		
643227	20-45	646140-2	03-22		
643228	87-00	646237	20-18		
643254	38-11	646256	04-03A		
643255	38-12	646303	15-01		
643368	27-03		16-01		
643397	79-00	646487	07-21		
643397-1A1	61-05				
	62-05				
643556	27-06				
643558	27-02				
643559	27-07				
643560	27-00				
643581	79-08				
643719	48-12				
643730	85-02				
	86-02				
643746	38-25				
643751	18-42				
643766	18-04				
643771	18-02				
643771A1	18-00				
643797	49-22				
	51-10				
643808	85-02				
	86-02				
643876	47-02				

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. Figures 92, 93 and 94 are located on page 6-13 in the rear of this section. The other Figures referenced in this section are located throughout Section II.

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QTY.	FIGURE INDEX
TSIO-520-B2	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	637633		Riser Assy., Intake	1	37-18
	630817-4		Convolute Bellows	1	37-29
	634810A2		Fuel Injection Assy., Complete	1	Not Illus.
	635158S4S14.00		. Hose, Control-to-Fuel Pump	2	52-22
	631351-9A4		. Valve Assembly, Fuel Manifold	1	Not Illus.
TSIO-530-B5, BB5	641668		Alternator, 24 Volt, 50 Amp	1	29-1
	639808		Regulator, Voltage	1	92-1
	634661		Solenoid	1	93-1
TSIO-520-B9, BB9	636415		Harness Assembly, Ignition	1	89-
	630817-3		Convolute Bellows	1	37-29
TSIO-520-B10	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	637633		Riser Assembly, Intake	1	37-18
	630817-4		Convolute Bellows	1	37-29
	634810A6		Fuel Injection Assy., Complete	1	Not Illus.
	635158S4S14.00		. Hose, Control-to-Fuel Pump	2	52-22
	631351-9A4		. Valve Assy., Fuel Manifold	1	Not Illus.
TSIO-520-BB10	636415		Harness Assy., Ignition	1	89-
	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	637633		Riser Assembly, Intake	1	37-18
	630817-4		Convolute Bellows	1	37-29
	634810A7		Fuel Injection Assy., Complete	1	Not Illus.
	635158A4S14.00		. Hose, Control-to-Fuel Pump	2	53-22
TSIO-520-BB11	631351-9A4		. Valve Assy., Fuel Manifold	1	Not Illus.
	636415		Harness Assembly Ignition	1	89-
	630817-3		Convolute Bellows	1	37-29
	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	637633		Riser Assembly, Intake	1	37-18
	630817-4		Convolute Bellows	1	37-29
TSIO-520-B12	634810A6		Fuel Injection Assy., Complete	1	Not Illus.
	635158S4S14.00		. Hose, Control-to-Fuel Pump	2	52-22
	631351-9A4		. Valve Assy., Fuel Manifold	1	Not Illus.
	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	637633		Riser Assembly, Intake	1	37-18
	630817-4		Convolute Bellows	1	37-29
TSIO-520-BB12	634810A6		Fuel Injection Assy., Complete	1	Not Illus.
	635158S4S14.00		. Hose, Control-to-Fuel Pump	2	52-22
	631351-9A4		. Valve Assy., Fuel Manifold	1	Not Illus.
	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
TSIO-520-BB12	533355	①	. Gasket	1	6-30
	637633		Riser Assembly, Intake	1	37-18
	630817-4		Convolute Bellows	1	37-29
	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QTY.	FIGURE INDEX
TSIO-520-BB12 (Cont'd)	634810A7		Fuel Injection Assy., Complete	1	Not Illus.
	635158S4S14.00		. Hose, Control-to-Fuel Pump	1	53-22
	631351-9A4		. Valve Assy., Fuel Manifold	1	Not Illus.
TSIO-520-C3	637749A23		Fuel Injection Assy., Complete	1	Not Illus.
	631351A20		. Valve Assy., Fuel Manifold (See TSIO-520-H)	1	54-22/83
TSIO-520-D2, DB2	641670		Alternator, 12 Volt, 70 Amp	1	Not Illus.
TSIO-520-D3, DB3	641670		Alternator, 12 Volt, 70 Amp	1	Not Illus.
	636141		Magneto Assembly	2	Not Illus.
	633311		Harness Assembly, Ignition	1	85-
TSIO-520-E2	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	637633		Riser Assy., Intake	1	37-18
	630817-4		Convolute Bellows	1	37-29
	635286A8		Fuel Injection Assy., Complete	1	Not Illus.
	635158S4S14.00		. Hose, Control-to-Fuel Pump	2	52-22
	634326-10A4		. Valve Assy., Fuel Manifold	1	Not Illus.
TSIO-520-E3, EB3	634661		Solenoid	1	93-1
TSIO-520-E4	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	641668		Alternator, 24 volt, 50 Amp	1	29-2
	637633		Riser Assy., Intake	1	37-18
	630817-4		Convolute Bellows	1	37-29
	635286A8		Fuel Injection Assy., Complete	1	Not Illus.
	635158S4S14.00		. Hose, Control-to-Fuel Pump	2	52-22
	634326-10A4		. Valve Assy., Fuel Manifold	1	Not Illus.
	639808		Regulator, Voltage	1	92-1
TSIO-520-EB4	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	641668		Alternator, 24 Volt, 50 Amp	1	29-2
	637633		Riser Assembly, Intake	1	37-18
	630817-4		Convolute Bellows	1	37-29
	635286A9		Fuel Injection Assy., Complete	1	Not Illus.
	635158S4S14.00		. Hose, Control-to-Fuel Pump	2	53-22
	634326-10A4		. Valve Assy., Fuel Manifold	1	Not Illus.
	639808		Regulator, Voltage	1	92-1
TSIO-520-E5, EB5	641668		Alternator, 24 Volt, 50 Amp	1	29-2
	630817-3		Convolute Bellows	1	37-29
	639808		Regulator Voltage	1	92-1

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QTY.	FIGURE INDEX
TSIO-520-E8, EB8	630817-3		Convuluted Bellows	1	27-29
	636415		Harness Assy., Ignition	1	89-
TSIO-520-E9	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	637633		Riser Assy., Intake	1	37-18
	630817-4		Convuluted Bellows	1	37-29
	635286A8		Fuel Injection Assy., Complete	1	Not Illus.
	635158S4S14.00		. Hose, Control-to-Fuel Pump	2	52-22
	634326-10A4		. Valve Assy., Fuel Manifold	1	Not Illus.
	636415		Harness Assy., Ignition	1	89-
TSIO-520-EB9	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	637633		Riser Assy., Intake	1	37-18
	630817-4		Convuluted Bellows	1	37-29
	635286A9		Fuel Injection Assy., Complete	1	Not Illus.
	635158S4S14.00		. Hose, Control-to-Fuel Pump	2	53-22
	634326-10A4		. Valve Assy., Fuel Manifold	1	Not Illus.
	636415		Harness Assy., Ignition	1	89-
TSIO-520-E10	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	637633		Riser Assy., Intake	1	37-18
	630817-4		Convuluted Bellows	1	37-29
	635286A8		Fuel Injection Assy., Complete	1	Not Illus.
	635158S4S14.00		. Hose, Control-to-Fuel Pump	2	53-22
	634326-10A4		. Valve Assy., Fuel Manifold	1	Not Illus.
TSIO-520-EB10	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	637633		Riser Assy., Intake	1	37-18
	630817-4		Convuluted Bellows	1	37-29
	635286A9		Fuel Injection Assy., Complete	1	Not Illus.
	635158S4S14.00		. Hose, Control-to-Fuel Pump	2	53-22
	634326-10A4		. Valve Assembly, Fuel Manifold	1	Not Illus.
TSIO-520-E14, EB14	630817-3		Convuluted Bellows	1	37-29
	636415		Harness Assy., Ignition	1	89-
	641742		Gear Assy., Mag Drive	2	90-12
	629077		. Sleeve, Drive Gear	1	90-13
TSIO-520-H1	634592		Starter, 12 Volt	1	24-36
TSIO-520-J2	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	628555-9		Hose, Junction Box-to-Throttle Body	1	40-28
			Fuel Pressure Regulator		

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QTY.	FIGURE INDEX
TSIO-520-J2 (Cont'd)	637248A5		Fuel Injection Assy., Complete	1	Not Illus.
	632818-2A3		. Fuel Pump Assembly	1	Not Illus.
	631882		. . Elbow, 90 Degree	1	74-3
	628436		. . Elbow, 45 Degree	1	74-5
	631307		. . Connector	1	74-7
	628437		. . Elbow, 90 Degree	1	74-9
TSIO-520-JB2	633233-30		Rod and Cap Assy., Complete	1	6-29
	633240	①	. Gasket	1	6-29
	533355	①	. Gasket	1	6-29
	628555-9		Hose, Junction Box-to-Throttle Body	1	40-28
	638248A7		Fuel Injection Assy., Complete	1	Not Illus.
	632818-11A6		. Fuel Pump Assembly	1	Not Illus.
	631882		. . Elbow, 90 Degree	1	74-3
	628436		. . Elbow, 45 Degree	1	74-5
	631307		. . Connector	1	74-7
	628437		. . Elbow, 90 Degree	1	74-9
TSIO-520-J4	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	628555-9		Hose, Junction Box-to-Throttle Body	1	40-28
	637248A5		Fuel Injection Assy., Complete	1	Not Illus.
	632818-2A3		. Fuel Pump Assembly	1	Not Illus.
	631882		. . Elbow, 90 Degree	1	74-3
	628436		. . Elbow, 45 Degree	1	74-5
	631307		. . Connector	1	74-7
	628437		. . Elbow, 90 Degree	1	74-9
	641742		Gear Assembly, Mag Drive	2	90-12
	629077		. Sleeve	1	90-13
TSIO-520-JB4	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	53355	①	. Gasket	1	6-30
	628555-9		Hose, Junction Box-to-Throttle Body	1	40-28
	637248A7		Fuel Injection Assembly, Complete	1	Not Illus.
	632818-11A6		. Fuel Pump Assembly	1	Not Illus.
	631882		. . Elbow, 90 Degree	1	74-3
	628436		. . Elbow, 45 Degree	1	74-5
	631307		. . Connector	1	74-7
	628437		. . Elbow, 90 Degree	1	74-9
	641742		Gear Assy., Mag Drive	2	90-12
	629077		. Sleeve	1	90-13
TSIO-520-K2	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	628555-9		Hose, Junction Box-to-Throttle Body	1	41-37
	637737A4		Fuel Injection Assy., Complete	1	Not Illus.
	632818-2A3		. Fuel Pump Assembly	1	Not Illus.
	631882		. . Elbow, 90 Degree	1	74-3
	628436		. . Elbow, 45 Degree	1	74-5
	631307		. . Connector	1	74-7
	628437		. . Elbow, 90 Degree	1	74-9

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QTY.	FIGURE INDEX
TSIO-520-KB2	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	628555-9		Hose, Junction Box-to-Throttle Body	1	41-37
	637735A5		Fuel Injection Assy., Complete	1	Not Illus.
	632818-11A6		. Fuel Pump Assembly	1	Not Illus.
	631882		. . Elbow, 90 Degree	1	74-3
	628436		. . Elbow, 45 Degree	1	74-5
	631307		. . Connector	1	74-7
	628437		. . Elbow, 90 Degree	1	74-9
TSIO-520-LB6	642056A2		Alternator & Hub Assy., 24 Volt 100 Amp. ..	1	29-2
TSIO-520-M2	643935		Bracket, Engine Mount, Cyl. No. 2	1	7-4
	637847		Starter, 24 Volt	1	24-36
TSIO-520-M3	643935		Bracket, Engine Mount, Cyl. No. 2	1	7-4
	637847		Starter, 24 Volt	1	24-36
	643746		Tube, Fuel Pump-to-Air Manifold	1	38-25
	637749A21		Fuel Injection Assembly	1	54-
	642650-1A2		. Fuel Pump	1	54-5
TSIO-520-M4	643736		Crankcase Studding Assembly	1	3-
	643935		Engine Mount Bracket	1	7-4
	637847		Starter, 24 Volt	1	24-36
	643717		Oil Pump	1	21-
	643749		Oil Pump Gasket	1	21-1
	643746		Tube, Fuel Pump-to-Air Manifold	1	38-25
	637749A21		Fuel Injection Assembly	1	54-
	642650-1A2		. Fuel Pump	1	54-5
TSIO-520-N2	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	628555-9		Hose, Junction Box-to-Throttle Body	1	40-28
	637248A4		Fuel Injection Assy., Complete	1	Not Illus.
	632818-2A4		. Fuel Pump Assy.	1	Not Illus.
	628436		. . Elbow, 45 Degree	1	74-5
	631307		. . Connector	1	74-7
	628437		. . Elbow, 90 Degree	1	74-9
TSIO-520-NB2	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	628555-9		Hose, Junction Box-to-Throttle Body	1	40-28
	627248A6		Fuel Injection Assy., Complete	1	Not Illus.
	632818-11A3		. Fuel Pump Assembly	1	Not Illus.
	628436		. . Elbow, 45 Degree	1	74-5
	631307		. . Connector	1	74-7
	628437		. . Elbow, 90 Degree	1	74-9
TSIO-520-N4	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QTY.	FIGURE INDEX
	628555-9		Hose, Junction Box-to-Throttle Body	1	40-28
	627248A4		Fuel Injection Assy., Complete	1	Not Illus.
	632818-2A4		. Fuel Pump Assembly	1	Not Illus.
	628436		. . Elbow, 45 Degree	1	74-5
	631307		. . Connector	1	74-7
	628437		. . Elbow, 90 Degree	1	74-9
	641742		Gear Assy., Mag Drive	1	90-12
	629007		. Sleeve	1	90-13
TSIO-520-NB4	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	628555-9		Hose, Junction Box-to-Throttle Body	1	40-28
	637248A6		Fuel Injection Assy., Complete	1	Not Illus.
	632818-11A3		. Fuel Pump Assembly	1	Not Illus.
	628436		. . Elbow, 45 Degree	1	74-5
	631307		. . Connector	1	74-7
	628437		. . Elbow	1	74-9
	641742		Gear Assy. Mag Drive	1	90-12
	629007		. Sleeve	1	90-13
TSIO-520-N5	633233-31		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	642523		Tube Assy., Balance	1	40-13
	628555-17		Hose, Junction Box-to-Throttle Body	1	40-28
	642286		Intercooler Assembly	1	40-38
	646020		Elbow, Flexible	2	40-39
	642272A7		Fuel Injection Assy., Complete	1	Not Illus.
	632818-2A7		. Fuel Pump Assembly	1	Not Illus.
	628437		. . Elbow, 90 Degree	1	74-4
	628437		. . Elbow, 90 Degree	1	74-6
	636143A6		. Throttle and Control Assy.	1	Not Illus.
	635915A4		. . Throttle Assy., Air	1	Not Illus.
	632916-11A6		. . Control Assembly	1	Not Illus.
	628438		. . . Fitting, Connector	1	79-Port #1
	628436		. . . Elbow, 45 Degree	1	79-Port #2
	628478		. . . Elbow, 90 Degree	1	79-Port #3
	AN932-2		. . . Plug	1	79-Port #5
	633381-4A2		. . Link Rod Assy., Complete	1	57-
	642271		. . Controller Assembly	1	57-16
	633381-3A2		. . Link Rod Assy., Complete	1	57-
	634326-4A9		. Valve Assy., Fuel Manifold	1	57-24
	642100-6		. . Regulator Assy., Fuel Discharge	1	57-27
TSIO-520-NB5	633233-31		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	. Gasket	1	6-30
	533355	①	. Gasket	1	6-30
	642523		Tube Assy., Balance	1	40-13
	628555-17		Hose, Junction Box-to-Throttle Body	1	40-28
	642286		Intercooler Assembly	1	40-38
	646020		Hose, Flexible	2	40-39
	642272A9		Fuel Injection Assy., Complete	1	Not Illus.
	632818-11A4		. Fuel Pump Assembly	1	Not Illus.

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QTY.	FIGURE INDEX
TSIO-520-NB5 (Cont'd)	628437	. .	Elbow, 90 Degree	1	74-4
	628437	. .	Elbow, 90 Degree	1	74-6
	636143A6	. .	Throttle and Control Assy.	1	Not Illus.
	635915A4	. .	Throttle Assy., Air	1	Not Illus.
	632916-11A6	. .	Control Assembly	1	Not Illus.
	628438	. . .	Fitting, Connector	1	79 Port #1
	628436	. . .	Elbow, 45 Degree	1	79 Port #2
	628478	. . .	Elbow, 90 Degree	1	79 Port #3
	AN932-2	. . .	Plug	1	79 Port #5
	633381-4A2	. .	Link Rod Assy., Complete	1	58-
	642271	. .	Controller Assembly	1	58-16
	633381-3A2	. .	Link Rod Assy., Complete	1	58-
	634326-4A9	. .	Valve Assy., Fuel Manifold	1	58-24
	642100-6	. .	Regulator Assy., Fuel Discharge	1	58-27
TSIO-520-N6	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	① .	Gasket	1	6-30
	533355	① .	Gasket	1	6-30
	642523		Tube Assembly, Balance	1	40-13
	628555-7		Hose, Junction Box-to-Throttle Body	1	40-28
	642286		Intercooler Assembly	1	40-38
	646020		Elbow, Flexible	2	40-39
	642272A8		Fuel Injection Assy., Complete	1	Not Illus.
	632818-2A8	. .	Fuel Pump Assembly	1	Not Illus.
	628437	. .	Elbow, 90 Degree	1	74-4
	628437	. .	Elbow, 90 Degree	1	74-6
	628437	. .	Elbow, 90 Degree	1	74-9
	636143A6	. .	Throttle & Control Assy.	1	Not Illus.
	635915A4	. .	Throttle Assy., Air	1	Not Illus.
	632916-11A6	. .	Control Assembly	1	Not Illus.
	628438	. . .	Fitting, Connector	1	79 Port #1
	628436	. . .	Elbow, 45 Degree	1	79 Port #2
	628478	. . .	Elbow, 90 Degree	1	79 Port #3
	AN932-2	. . .	Plug	1	79 Port #5
	633381-4A2	. .	Link Rod Assy., Complete	1	57-
	642271	. .	Controller Assembly	1	57-16
	633381-3A2	. .	Link Rod Assy., Complete	1	57-
	634326-4A9	. .	Valve Assy., Fuel Manifold	1	57-24
	642100-6	. .	Regulator Assy., Fuel Discharge	1	57-27
TSIO-520-NB6	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	① .	Gasket		1
	633240	① .	Gasket	1	
	533355	① .	Gasket	1	
	642523		Tube, Assy., Balance	1	40-13
	628555-7		Hose, Junction Box-to-Throttle Body	1	40-28
	642286		Intercooler Assembly	1	40-38
	646020		Elbow, Flexible	2	40-39
	642272A10		Fuel Injection Assy., Complete	1	Not Illus.
	632818-11A5	. .	Fuel Pump Assembly	1	Not Illus.
	628437	. .	Elbow, 90 Degree	1	74-4

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QTY.	FIGURE INDEX
TSIO-520-NB6 (Cont'd)	628437	. .	Elbow, 90 Degree	1	74-6
	628437	. .	Elbow, 90 Degree	1	74-9
	636143A6	. .	Throttle and Control Assy.	1	Not Illus.
	635915A4	. .	Throttle Assy., Air	1	Not Illus.
	632916-11A6	. .	Control Assembly	1	Not Illus.
	628438	. . .	Fitting Connector	1	79 Port #1
	628436	. . .	Elbow, 45 Degree	1	79 Port #2
	628478	. . .	Elbow, 90 Degree	1	79 Port #3
	AN932-2	. .	Plug	1	79 Port #5
	633381-4A2	. .	Link Rod Assy., Complete	1	58-
	642271	. .	Controller Assembly	1	58-16
	633381-3A2	. .	Link Rod Assy., Complete	1	58-
	634326-4A9	. .	Valve Assy., Fuel Manifold	1	58-24
	642100-6	. .	Regulator Assy., Fuel Discharge	1	58-27
TSIO-520-N8	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	① .	Gasket	1	6-30
	533355	① .	Gasket	1	6-30
	642523		Tube Assy., Balance	1	40-13
	628555-7		Hose, Junction Box-to-Throttle Body	1	40-28
	642286		Intercooler Assembly	1	40-38
	646020		Elbow, Flexible	2	40-39
	642272A8		Fuel Injection Assy., Complete	1	Not Illus.
	632818-2A8	. .	Fuel Pump Assembly	1	Not Illus.
	628437	. .	Elbow, 90 Degree	1	74-4
	628437	. .	Elbow, 90 Degree	1	74-6
	628437	. .	Elbow, 90 Degree	1	74-9
	636143A6	. .	Throttle and Control Assy.	1	Not Illus.
	635915A4	. .	Throttle Assy., Air	1	Not Illus.
	632916-11A6	. .	Control Assembly	1	Not Illus.
	628438	. . .	Fitting, Connector	1	79 Port #1
	628436	. . .	Elbow, 45 Degree	1	79 Port #2
	628478	. . .	Elbow, 90 Degree	1	79 Port #3
	AN932-2	. .	Plug	1	79 Port #5
	633381-4A2	. .	Link Rod Assy., Complete	1	57-
	642271	. .	Controller Assembly	1	57-16
	633381-3A2	. .	Link Rod Assy., Complete	1	57-
	634326-4A9	. .	Valve Assy., Fuel Manifold	1	57-24
	642100-6	. .	Regulator Assy., Fuel Discharge	1	57-27
	641742		Gear Assy., Mag Drive	2	90-12
	629007	. .	Sleeve	1	90-13
TSIO-520-NB8	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	① .	Gasket	1	6-30
	533355	① .	Gasket	1	6-30
	642523		Tube Assy., Balance	1	40-13
	628555-7		Hose, Junction Box-to-Throttle Body	1	40-28
	6422286		Intercooler Assembly	1	40-38
	646020		Elbow, Flexible	2	40-39
	642272A10		Fuel Injection Assy., Complete	1	Not Illus.
	632818-11A5	. .	Fuel Pump Assy.	1	Not Illus.

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QTY.	FIGURE INDEX
TSIO-520-NB8 (Cont'd)	628437	. .	Elbow, 90 Degree	1	74-4
	628437	. .	Elbow, 90 Degree	1	74-6
	628437	. .	Elbow, 90 Degree	1	74-9
	636143A6	. .	Throttle and Control Assy.	1	Not Illus.
	635915A4	. .	Throttle Assy., Air	1	Not Illus.
	632916-11A6	. .	Control Assembly	1	Not Illus.
	628438	. . .	Fitting, Connector	1	79 Port #1
	628436	. . .	Elbow, 45 Degree	1	79 Port #2
	628478	. . .	Elbow, 90 Degree	1	79 Port #3
	AN932-2	. . .	Plug	1	79 Port #5
	633381-4A2	. .	Link Rod Assy., Complete	1	58-
	642271	. .	Controller Assembly	1	58-16
	633381-3A2	. .	Link Rod Assy., Complete	1	58-
	642326-4A9	. .	Valve Assy., Fuel Manifold	1	58-24
	642100-6	. .	Regulator Assy., Fuel Discharge	1	58-27
	641742	. .	Gear Assy., Mag Drive	2	90-12
	629007	. .	Sleeve	1	90-13
TSIO-520-NB9	643801	. .	Studding Assembly, Crankcase	1	Not Illus.
	643790	. .	Elbow	1	2-33
	630415	. .	Plug	1	2-33
	MS35769-11	. .	Gasket	1	2-34
	AN5-15A	. .	Bolt	1	2-37
	633233-31	. .	Rod and Cap Assembly, Oil Gage	1	6-29
	633240	① .	Gasket	1	6-30
	533355	① .	Gasket	1	6-30
	628437	. .	Elbow, 90 Degree, Pressure Port	1	30-10
	642523	. .	Tube Assembly, Balance	1	40-13
	642286	. .	Intercooler Assembly	1	40-38
	646020	. .	Elbow, Flexible	1	40-39
	642272A13	. .	Fuel Injection Assembly, Complete	1	Not Illus.
	642818-11A4	. .	Fuel Pump Assembly	1	Not Illus.
	628437	. .	Elbow, 90 Deg. F/P Outlet	1	74-4
	628437	. .	Elbow, 90 Deg., Vapor Return	1	74-6
	636143A6	. .	Throttle and Control Assembly	1	Not Illus.
	632916-11A6	. .	Control Assembly, Fuel	1	Not Illus.
	628438	. . .	Fitting, Connector	1	79 Port #1
	628436	. . .	Elbow, 45 Degree	1	79 Port #2
	628478	. . .	Elbow, 90 Degree	1	79 Port #3
	2024	. . .	Plug	1	79 Port #5
	633381-4A2	. .	Link Rod Assembly, Complete	1	58-
	641434-4	. .	Controller Assembly, Complete	1	58-16
	633381-3A2	. .	Link Rod Assembly, Complete	1	58-
	640718-2A3	. .	Valve Assembly, Fuel Manifold	1	Not Illus.
	631293	. .	Fitting, Fuel Inlet	1	82 - "B"
	AN780-2	. .	Nipple	4	82 - "C"
	642095	. .	Bracket, Fuel Manifold Valve	1	80-1
	AN500A8-10	. .	Screw	8	80-2/9
	MS35338-42	. .	Washer, Lock	4	80-3
	634325	. .	Cover	1	80-3
	635218-S4S19.00	. .	Hose Assembly, Oil Inlet (M/V)	1	Not Illus.
	635218-S4Y15.00	. .	Hose Assembly, Oil Return (M/V)	1	Not Illus.

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QTY.	FIGURE INDEX
TS10-520-NB9 (Cont'd)	641645	.	Bracket, M/V Oil Line, #4 Backbone	1	Not Illus.
	537911	.	Nut, Oil Line Bracket	1	Not Illus.
	539374	.	Washer, Oil Line Bracket	1	Not Illus.
	MS51861-44	.	Screw, Oil Line Bracket	1	Not Illus.
	642724	.	Tube, Fuel Discharge, Cyl. No. 1	1	58-26
	642726	.	Tube, Fuel Discharge, Cyl. No. 2	1	58-26
	642727	.	Tube, Fuel Discharge, Cyl. No. 3	1	58-26
	642728	.	Tube, Fuel Discharge, Cyl. No. 4	1	58-26
	642729	.	Tube, Fuel Discharge, Cyl. No. 5	1	58-26
	642725	.	Tube, Fuel Discharge, Cyl. No. 6	1	58-26
	642100-6	.	Regulator Assy., Fuel Discharge	1	58-27
	628555-17	.	Hose, Fuel Pump-to-Throttle Body	1	Not Illus.
TS10-520-NB10	643801	.	Studding Assembly, Crankcase	1	Not Illus.
	643790	.	Elbow	1	2-33
	630415	.	Plug	1	2-33
	MS35769-11	.	Gasket	1	2-34
	AN5-15A	.	Bolt	1	2-37
	633233-30	.	Rod and Cap Assembly, Oil Gage	1	6-29
	633240	①.	Gasket	1	6-30
	533355	①.	Gasket	1	6-30
	628437	.	Elbow, 90 Degree, Pressure Port	1	30-10
	642523	.	Tube Assembly, Balance	1	40-13
	642286	.	Intercooler Assembly	1	40-38
	646020	.	Elbow, Flexible	1	40-39
	642272A14	.	Fuel Injection Assembly, Complete	1	Not Illus.
	642818-11A5	.	Fuel Pump Assembly	1	Not Illus.
	628437	.	Elbow, 90 Deg. F/P Outlet	1	74-4
	628437	.	Elbow, 90 Deg. Vapor Return	1	74-6
	628437	.	Elbow, 90 Deg. S/C Pressure	1	74-9
	636143A6	.	Throttle and Control Assembly	1	Not Illus.
	632916-11A6	.	Control Assembly, Fuel	1	Not Illus.
	628438	.	Fitting, Connector	1	79 Port #1
	628436	.	Elbow, 45 Degree	1	79 Port #2
	628478	.	Elbow, 90 Degree	1	79 Port #3
	2024	.	Plug	1	79 Port #5
	633381-4A2	.	Link Rod Assembly, Complete	1	58-
	642271	.	Controller Assembly, Complete	1	58-16
	633381-3A2	.	Link Rod Assembly, Complete	1	58-
	640718-2A3	.	Valve Assembly, Fuel Manifold	1	Not Illus.
	631293	.	Fitting, Fuel Inlet	1	82 - "B"
	AN780-2	.	Nipple	4	82 - "C"
	642095	.	Bracket, Fuel Manifold Valve	1	80-1
	AN500A8-10	.	Screw	8	80-2/9
	MS35338-42	.	Washer, Lock	4	80-3
	634325	.	Cover	1	80-8
	635218-S4S19.00	.	Hose Assembly, Oil Inlet (M/V)	1	Not Illus.
	635218-S4Y15.00	.	Hose Assembly, Oil Return (M/V)	1	Not Illus.
	641645	.	Bracket, M/V Oil Line, #4 Backbone	1	Not Illus.
	537911	.	Nut, Oil Line Bracket	1	Not Illus.
	539374	.	Washer, Oil Line Bracket	1	Not Illus.

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QTY.	FIGURE INDEX
TSIO-520-NB10 (Cont'd)	MS51861-44	.	Screw, Oil Line Bracket	1	Not Illus.
	642724	.	Tube, Fuel Discharge, Cyl. No. 1	1	58-26
	642726	.	Tube, Fuel Discharge, Cyl. No. 2	1	58-26
	642727	.	Tube, Fuel Discharge, Cyl. No. 3	1	58-26
	642728	.	Tube, Fuel Discharge, Cyl. No. 4	1	58-26
	642729	.	Tube, Fuel Discharge, Cyl. No. 5	1	58-26
	642725	.	Tube, Fuel Discharge, Cyl. No. 6	1	58-26
	642100-6	.	Regulator Assy., Fuel Discharge	1	58-27
	628555-7	.	Hose, Fuel Pump-to-Throttle Body	1	Not Illus.
TSIO-520-NB12	643801	.	Studding Assembly, Crankcase	1	Not Illus.
	643790	.	Elbow	1	2-33
	630415	.	Plug	1	2-33
	MS35769-11	.	Gasket	1	2-34
	AN5-15A	.	Bolt	1	2-37
	633233-30	.	Rod and Cap Assembly, Oil Gage	1	6-29
	633240	①	Gasket	1	6-30
	533355	①	Gasket	1	6-30
	628437	.	Elbow, 90 Degree, Pressure Port	1	30-10
	642523	.	Tube Assembly, Balance	1	40-13
	642286	.	Intercooler, Assembly	1	40-38
	646020	.	Elbow, Flexible	1	40-39
	642272A14	.	Fuel Injection Assembly, Complete	1	Not Illus.
	642818-11A5	.	Fuel Pump Assembly	1	Not Illus.
	628437	.	Elbow, 90 Deg. F/P Outlet	1	74-4
	628437	.	Elbow, 90 Deg., Vapor Return	1	74-6
	628437	.	Elbow, 90 Deg. S/C Pressure	1	74-9
	636143A6	.	Throttle and Control Assembly	1	Not Illus.
	632916-11A6	.	Control Assembly, Fuel	1	Not Illus.
	628438	.	Fitting, Connector	1	79 Port #1
	628436	.	Elbow, 45 Degree	1	79 Port #2
	628478	.	Elbow, 90 Degree	1	79 Port #3
	2024	.	Plug	1	79 Port #5
	633381-4A2	.	Link Rod Assembly, Complete	1	58-
	642271	.	Controller Assembly, Complete	1	58-16
	633381-3A2	.	Link Rod Assembly, Complete	1	58-
	640718-2A3	.	Valve Assembly, Fuel Manifold	1	Not Illus.
	631293	.	Fitting, Fuel Inlet	1	82 - "B"
	AN780-2	.	Nipple	4	82 - "C"
	642095	.	Bracket, Fuel Manifold Valve	1	80-1
	AN500A8-10	.	Screw	8	80-2/9
	MS35338-42	.	Washer, Lock	4	80-3
	634325	.	Cover	1	80-8
	635218-S4S19.00	.	Hose Assembly, Oil Inlet (M/V)	1	Not Illus.
	635218-S4Y15.00	.	Hose Assembly, Oil Return (M/V)	1	Not Illus.
	641645	.	Bracket, M/V Oil Line, #4 Backbone	1	Not Illus.
	537911	.	Nut, Oil Line Bracket	1	Not Illus.
	539374	.	Washer, Oil Line Bracket	1	Not Illus.
	MS51861-44	.	Screw, Oil Line Bracket	1	Not Illus.
	642724	.	Tube, Fuel Discharge, Cyl. No. 1	1	58-26
	642726	.	Tube, Fuel Discharge, Cyl. No. 2	1	58-26

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QTY.	FIGURE INDEX
TSIO-520-NB12 (Cont'd)	642727	.	Tube, Fuel Discharge, Cyl. No. 3	1	58-26
	642728	.	Tube, Fuel Discharge, Cy. No. 4	1	58-26
	642729	.	Tube, Fuel Discharge, Cyl. No. 5	1	58-26
	642725	.	Tube, Fuel Discharge, Cyl. No. 6	1	58-26
	642100-6	.	Regulator Assy., Fuel Discharge	1	58-27
	641742		Gear Assembly, Mag Drive	2	90-12
	628555-7		Hose, Fuel Pump-to-Throttle Body	1	Not Illus.
TSIO-520-NB13	643801		Crankcase Studding Assembly	1	3-
	630415	.	Timing Hole Plug	1	3-
	628437		Elbow, Pressure Port	1	3-27
	642272A15		Fuel Injection Assembly	1	58-
	636143A2	.	Throttle & Control Assy.	1	58-
	635915A2	.	Throttle Assembly	1	58-4
	632916-11A1	.	Control Assembly	1	58-16
	640718-2A3	.	Manifold Valve	1	58-24
	632818-11A1	.	Fuel Pump	1	58-3
	642724	.	Tube, Fuel Discharge Cyl. No. 1	1	58-26
	642726	.	Tube, Fuel Discharge, Cyl. No. 2	1	58-26
	642727	.	Tube, Fuel Discharge, Cyl. No. 3	1	58-26
	642728	.	Tube, Fuel Discharge Cyl. No. 4	1	58-26
	642729	.	Tube, Fuel Discharge, Cyl. No. 5	1	58-26
	642725	.	Tube, Fuel Discharge, Cyl. No. 6	1	58-26
	644790		Elbow, 45°, Restricted	1	Not Illus.
	635218S4Y15.00		Hose Assembly, Oil Return	1	Not Illus.
	635218S4S19.00		Hose Assembly, Oil Inlet	1	Not Illus.
	641645		Bracket, #4 Backbone Bolt	1	Not Illus.
TSIO-520-NB14	643801		Crankcase Studding Assy.	1	2-
	630415	.	Timing Hole Plug	1	2-
	628439		Elbow 90°, Pressure Port	1	Not Illus.
	633233-30		Oil Gage Rod	1	6-29
	642272A16		Fuel Injection Assy.	1	58-
	640718-2A3	.	Fuel Manifold Valve	1	58-24
	632818-11A3	.	Fuel Pump	1	58-3
	635218S4Y15.00		Hose Assy., Oil Return	1	Not Illus.
	635218S4S19.00		Hose Assy., Oil Inlet	1	Not Illus.
	641645		Bracket, #4 Backbone Bolt	1	Not Illus.
	643790		Elbow, 45° Restricted	1	Not Illus.
TSIO-520-NB16	628555-9		Hose, F.P. To Throttle Body	1	Not Illus.
	643801		Crankcase Studding Assy.	1	2-
	630415	.	Plug, Timing Hole	1	2-
	628437		Elbow, 90°, Press Port	1	Not Illus.
	641742		Gear Assy., Mag Drive	2	90-12
	633233-30		Oil Gage Rod	1	6-29
	642272A16		Fuel Injection Assy.	1	58-
	640718-2A3	.	Fuel Manifold Valve	1	58-24
	632818-11A3	.	Fuel Pump	1	58-3
	635218S4Y15.00		Hose Assy., Oil Return	1	Not Illus.
	635218S4S19.00		Hose Assy., Oil Inlet	1	Not Illus.

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QTY.	FIGURE INDEX
TSIO-520-NB16 (Cont'd)	643790		Elbow, 45° Restricted	1	Not Illus.
	641645		Bracket #4 Backbone Bolt	1	Not Illus.
	628555-9		Hose, Fuel Pump-to-Throttle Body	1	Not Illus.
TSIO-520-P1	643935		Bracket, Engine Mount, Cyl. No. 2	1	7-4
TSIO-520-P2	643236		Crankcase Studding Assy.	1	
	643935		Bracket, Engine Mount	1	
	639304		Vernatherm	1	
	646050		Adapter, Oil Cooler Pad	1	
	535756		Gasket, Oil Cooler Adapter	1	
TSIO-520-P3	643236		Crankcase Studding Assy.	1	3-
	643935		Engine Mount Bracket	1	7-4
	639304		Vernatherm	1	7-
	646050		Adapter, Oil Cooler Pad	1	31-
	535756		Gasket, Oil Cooler Adapter	1	31-
	637749A21		Fuel Injection Assy.	1	54-
	642650-1A2		. Fuel Pump	1	54-5
TSIO-520-R1	643935		Bracket, Engine Mounting, Cyl. No. 2	1	7-4
TSIO-520-R3	643235		Studding, Assy., Crankcase	1	Not Illus.
	401841		. Stud, 1/4 x 2-7/64 Inch Long	3	3-6
	538944-10.00		Bolt, Thru, C/C-to-C/C at Nose	2	5-1
	641930-10.95		Bolt, Thru, Cyl. No. 6 Upper Boss	1	5-6
	643935		Bracket, Engine Mounting, Cyl. No. 2	1	7-4
	639304		Valve, Oil Temperature Control	1	94-1
	625966		. Gasket	1	94-2
	646050		Adapter Oil Cooler Pad	1	Not Illus.
	535756		Gasket	1	Not Illus.
TSIO-520-R4	643935		Bracket Engine Mount	1	7-4
	643746		Tube Assy., Air Manifold-to-Fuel Pump	1	38-25
	637749A21		Fuel Injection Assy.	1	54-
	642650-1A2		. Fuel Pump	1	54-5
TSIO-520-R5	643235		Crankcase Studding Assy.	1	3-
	538944-10.00		Bolt, Crankcase Thru	2	5-1
	641930-10.95		Bolt, Crankcase Thru	1	5-6
	643935		Bracket, Engine Mount	1	7-4
	639304		Vernatherm	1	7-
	646050		Adapter, Oil Cooler Pad	1	31-
	535756		Gasket, Oil Cooler Adapter	1	31-
	643756		Tube, Air Manifold-to-Fuel Pump	1	38-25
	637749A21		Fuel Injection Assy.	1	54-
	642650-1A2		. Fuel Pump	1	54-5
TSIO-520-R6	646024		Crankcase, Studding Assy.	1	3-
	538944-11.35		Bolt, Crankcase Thru	1	5-
	641930-10.95		Bolt, Crankcase Thru	1	5-6

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QTY.	FIGURE INDEX
TSIO-520-R6 (Cont'd)	538944-10.00		Bolt, Crankcase Thru	1	5-1
	643935		Bracket, Engine Mount	1	7-4
	639304		Vernatherm	1	7-
	646050		Adapter, Oil Cooler Pad	1	31-
	535756		Gasket	1	31-
	643746		Tube Assy., Air Manifold-to-Fuel Pump	1	38-25
	637749A28		Fuel Injection Assy.	1	54-
	642650-1A3		. Fuel Pump	1	54-5
TSIO-520-R7	643737		Crankcase, Studding Assy.	1	3-
	404584		Stud	1	3-
	641930-10.95		Bolt, Crankcase Thru	1	5-6
	538944-10.00		Bolt, Crankcase Thru	1	5-1
	538944-11.35		Bolt, Crankcase Thru	1	5-
	643935		Bracket, Engine Mount	1	7-4
	639304		Vernatherm	1	7-
	646050		Adapter, Oil Cooler	1	31-
	535756		Gasket, Oil Cooler Adapter	1	31-
	643717		Oil Pump	1	95
	643749		Gasket, Oil Pump	1	95-1
	641888-8		Box Assy., Junction	1	38-19
	635218S4S9.00		Hose Assy., Junction Box to Reg.	1	Not Illus.
	646173		Tube Assy, Air Manifold-to-Fuel Pump	1	38-25
	646188		Magneto, Slick	2	85-2
	628555-27		Hose, Venturi-to-Filter	1	Not Illus.
	628555-25		Hose, Filter-to-Tee	1	Not Illus.
	628555-28		Hose, Tee-to-Magneto	2	Not Illus.
	640187		Clamp, Hose at Filter	2	Not Illus.
	536388-.50		Clamp	6	Not Illus.
	643955		Air Filter	1	Not Illus.
	646258		Tee, Magneto Air Reference	1	Not Illus.
	637749-29		Fuel Injection Assembly	1	54-
	632774-3A1		. Throttle and Control Assy.	1	54-
	642650-1A3		. Fuel Pump	1	54-5
	642100-8A1		Fuel Pressure Regulator	1	57-27
	646215		Tube, Fuel Pressure Reg. Inlet	1	Not Illus.
	646214		Tube, Fuel Press. Reg. Outlet	1	Not Illus.
	643227		Filter, Oil	1	20-45
	646257		Harness, Ignition	1	85-
TSIO-520-UB2	643131		Bracket, Between Cyls. 4 & 6	1	Not Illus.
	643132		Bracket, Cyls. 1-3, 3-5, 2-4	3	Not Illus.
	643133		Baffle Assy., Cyls. 1-3, 3-5	2	Not Illus.
	643134		Baffle Assy., Between Cys. 2-4	1	Not Illus.
	643135		Baffle Assy., Between Cyls. 4-6	1	Not Illus.
	AN960-10L		Washer, Supports-to-Baffles	4	Not Illus.
	AN3-63A		Bolt, Support-to-Baffles	3	Not Illus.
	AN3-73A		Bolt, Support-to-Baffles	1	Not Illus.
	642055A1		Alternator and Hub Assy.	1	29-2
	642362		Hub Assy.	1	29-
	642903A21		Fuel Injection Assy.	1	65-

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QTY.	FIGURE INDEX
TS10-520-UB2 (Cont'd)	642703A23	.	Throttle and Control Assy.	1	65-
	641032-15A6	.	Manifold Valve	1	65-16
	636603	.	Ignition Harness	1	86-
TS10-520-UB3	643131		Bracket, Between Cyls. 4 & 6	1	Not Illus.
	643132		Bracket, Cyls. 1-3, 3-5, 2-4	3	Not Illus.
	643133		Baffle Assy., Cyls. 1-3, 3-5	2	Not Illus.
	643134		Baffle Assy., Between Cyls. 2 & 4	1	Not Illus.
	643135		Baffle Assy., Between Cyls. 4 & 6	1	Not Illus.
	AN960-10L		Washer, Support To Baffles	4	Not Illus.
	AN3-63A		Bolt	3	Not Illus.
	AN3-73A		Bolt, Support to Baffles	1	Not Illus.
	642056A2		Alternator and Hub Assy.	1	29-2
	642362		Hub Assy.	1	29-
	642903A22		Fuel Injection Assy.	1	65-
	642703A24	.	Throttle and Control Assy.	1	65-
	641032-15A6	.	Manifold Valve Assy.	1	65-16
	639508-9A3	.	Fuel Pump	1	65-3
	636603	.	Harness Assy.	1	86-
TS10-520-VB2	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	Gasket	1	6-30
	533355	①	Gasket	1	6-30
TS10-520-VB4	633233-30		Rod and Cap Assy., Oil Gage	1	6-29
	633240	①	Gasket	1	6-30
	533355	①	Gasket	1	6-30
	629422		Gear Assy., Mag Drive (L.H.)	1	90-12
	641742		Gear Assy., Mag Drive (R.H.)	1	90-12
	629006	.	Sleeve	1	90-13
L/TS10-520-AE2	626334		Plug	1	Not Illus.
	625966		Gasket	1	Not Illus.
	AN123866		O-Ring	1	Not Illus.
	639305		Vernatherm	1	Not Illus.
	639171		Oil Cooler	1	Not Illus.
	626332		Plate, Oil Cooler	1	Not Illus.
	626342		Gasket, Oil Cooler to Plate	1	Not Illus.
	626341		Gasket, Oil Cooler Plate to Crankcase	1	Not Illus.
	535668		Screw, Cooler to Plate to Crankcase	12	Not Illus.
TS10-520-AE3	626334		Plug	1	Not Illus.
	625966		Gasket	1	Not Illus.
	AN123866		O-Ring	1	Not Illus.
	639305		Vernatherm	1	Not Illus.
	639171		Oil Cooler	1	Not Illus.
	626332		Plate, Oil Cooler	1	Not Illus.
	626342		Gasket, Oil Cooler to Plate	1	Not Illus.
	626341		Gasket, Oil Cooler Plate to Crankcase	1	Not Illus.
	535668		Screw, Oil Cooler to Plate to Crankcase	12	Not Illus.
	628437		Elbow, 90° Junction Block	1	Not Illus.

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QTY.	FIGURE INDEX
TSIO-520-AE3 (Cont'd)	646233		Tube Assy., Fuel Press. Reg.	1	Not Illus.
	537961		Screw, Oil Sump to Crankcase (Rear)	2	Not Illus.
	646188		Magneto, Slick	2	15-2
	628555-2		Hose, 1-3-5 Side Magneto to Tee	1	
	628555-14		Hose, 2-4-6 Side Magneto to Tee	1	
	628555-29		Hose, Tee to Filter	1	
	628555-30		Hose, Filter to Throttle Body	1	
	640187		Clamp, At Filter	2	
	536388-.50		Clamp	6	
	643955		Filter, Air	1	
	646258		Tee, Magneto Air Ref.	1	
	MS21919DF16		Clamp, Filter Support	1	
	MS21919DF6		Clamp, Filter to Air Ref.	1	
	AN960-10L		Washer	1	
	AN3-4A		Bolt	1	
	MS21044N3		Nut, Self Locking	1	
	640103A25		Fuel Injection Assy.	1	14-
	643175-1A4		. Throttle and Control Assy.	1	14-
	639508-12A3		. Fuel Pump	1	14-2
	646292-1A1		Regulator, Fuel Press.	1	Not Illus.
	646228		Tube Assy., Fuel Press. Reg. Inlet	1	Not Illus.
	646229		Tube Assy., Fuel Press. Reg. Outlet	1	Not Illus.
	646240		Harness, Slick	1	15-
LTSIO-520-AE3	626334		Plug	1	
	625966		Gasket	1	
	AN123866		O-Ring	1	
	639305		Vernatherm	1	
	639171		Oil Cooler	1	
	626332		Plate, Oil Cooler	1	
	626342		Gasket, Cooler to Plate	1	
	626341		Gasket, Plate to Crankcase	1	
	535668		Screw, Cooler to Plate to Crankcase	12	
	628437		Elbow 90°, Junction Block	1	
	646233		Tube Assy., Fuel Press. Reg.	1	
	537961		Screw, Oil Sump to Crankcase, Rear	2	
	643648		Magneto, Slick	2	
	628555-2		Hose, 1-3-5 Side Magneto to Tee	1	
	628555-14		Hose, 2-4-6 Side Magneto to Tee	1	
	628555-29		Hose, Tee to Filter	1	
	628555-30		Hose, Filter to Throttle Body	1	
	640187		Clamp, Hose at Filter	2	
	536388-.50		Clamp	6	
	643955		Filter, Air	1	
	646258		Tee, Magneto Air Ref.	1	
	MS21919DF16		Clamp, Filter Support	1	
	MS21919DF6		Clamp, Filter to Air Ref.	1	
	AN960-10L		Washer	1	
	AN3-4A		Bolt	1	
	MS21044N3		Nut, Self Locking	1	
	646228		Tube, Fuel Press Reg. - Inlet	1	

MODEL SPEC	PART NUMBER	1 2 3 4 5	DESCRIPTION	QTY.	FIGURE INDEX
LTSIO-520-AE3 (Cont'd)	646229		Tube, Fuel Press Reg. - Outlet	1	94
	646292-1A1		Fuel Press Reg.	1	
	640103A26		Fuel Injection Assy.	1	
	643175-1A5		. Throttle and Control Assy.	1	
	639508-12A3		. Fuel Pump	1	
	646240		Harness, Slick	1	
TSIO-520-AF2	643738		Crankcase Studing Assy.	1	
	643717		Oil Pump	1	
	641888-8		Box Assy., Junction	1	
	635218S4S9.00		Hose, Junction to Regulator	1	
	646173		Tube Assy., Air Manifold to Fuel Pump	1	
	646188		Magneto, Slick	2	
	628555-27		Hose, Venturi to Filter	1	
	628555-25		Hose, Filter to Tee	1	
	628555-28		Hose, Tee to Magneto	2	
	640187		Clamp, At Filter	2	
	536388-.50		Clamp	6	
	643955		Filter, Air	1	
	646258		Tee, Magneto Air Ref.	1	
	637749A29		Fuel Injection Assy.	1	
	632774-3A1		. Throttle and Control Assy.	1	
	646230-11A1		. . Control Assy.	1	
	642100-8A1		Fuel Press Reg.	1	
	646215		Tube, Fuel Press, Reg. Inlet	1	
	646214		Tube, Fuel Press Reg. - Outlet	1	
	643227		Oil Filter	1	
	646257		Harness, Slick	1	

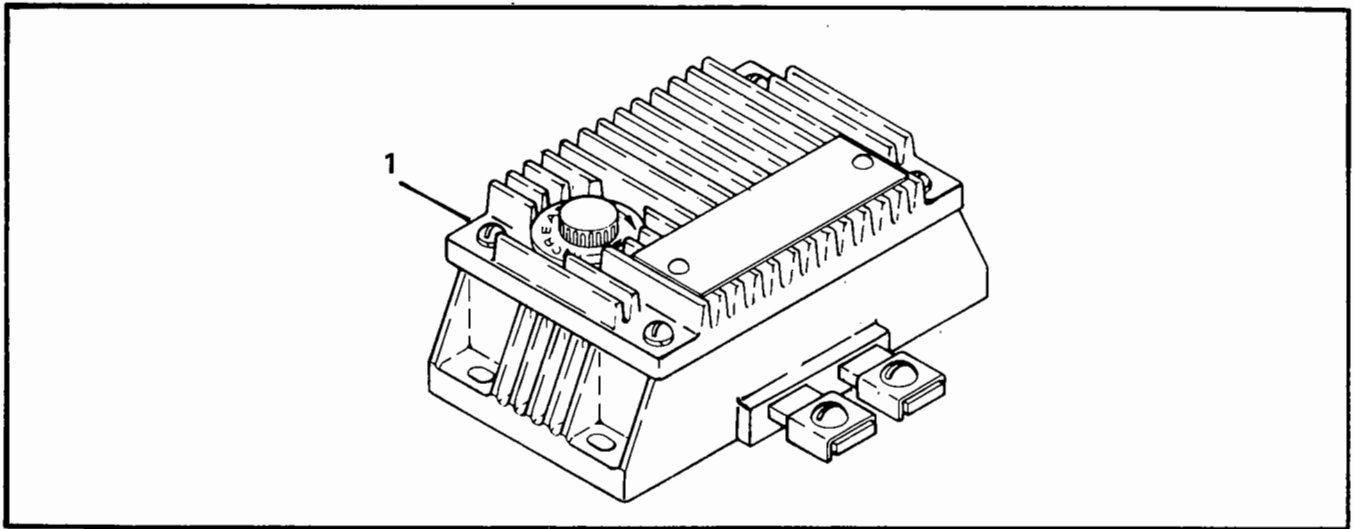


FIGURE 91.

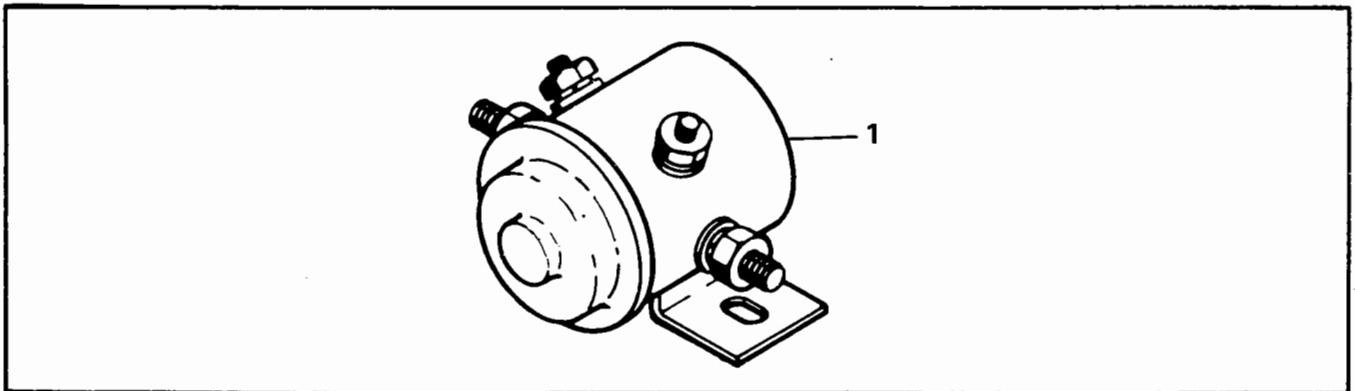


FIGURE 92.

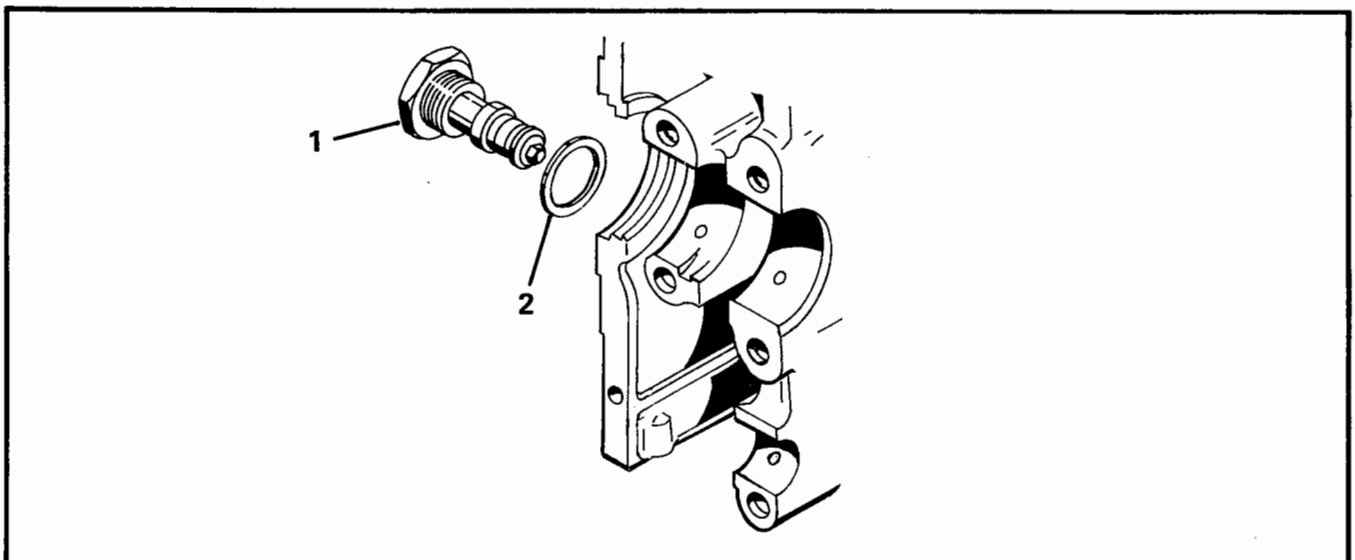


FIGURE 93.

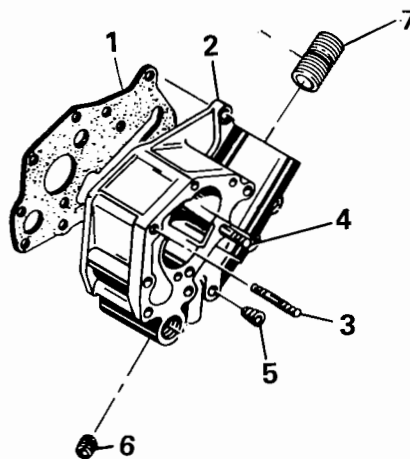


FIGURE 94. OIL PUMP ASSEMBLY, TS10-520-C, G, H, M, P, R, AF.

FIG. INDEX	PART NUMBER	1 2 3 4 5	DESCRIPTION	QUANTITY									
94-1	643749	\$	Gasket, Oil Pump-to-Crankcase	1									
	643717		Housing Assembly, Oil Pump, Complete	1									
-2	643716	.	Housing and Shaft Assy., Oil Pump	1									
-3	401800	† . .	Stud, 1/4 x 1-1/16 Inch Long	1									
-4	401832	† . .	Stud, 1/4 x 2-13/16 Inch Long	1									
-5	629518-1H	. .	Plug, Square Head, 1/8 - 27	1									
-6	AN932-5	. .	Plug, 1/2-14 NPT	1									
-7	632373	. .	Stud, Adapter	1									

NOTE:

Otherwise same as Figure 21.

SECTION VII

TSIO-520AE

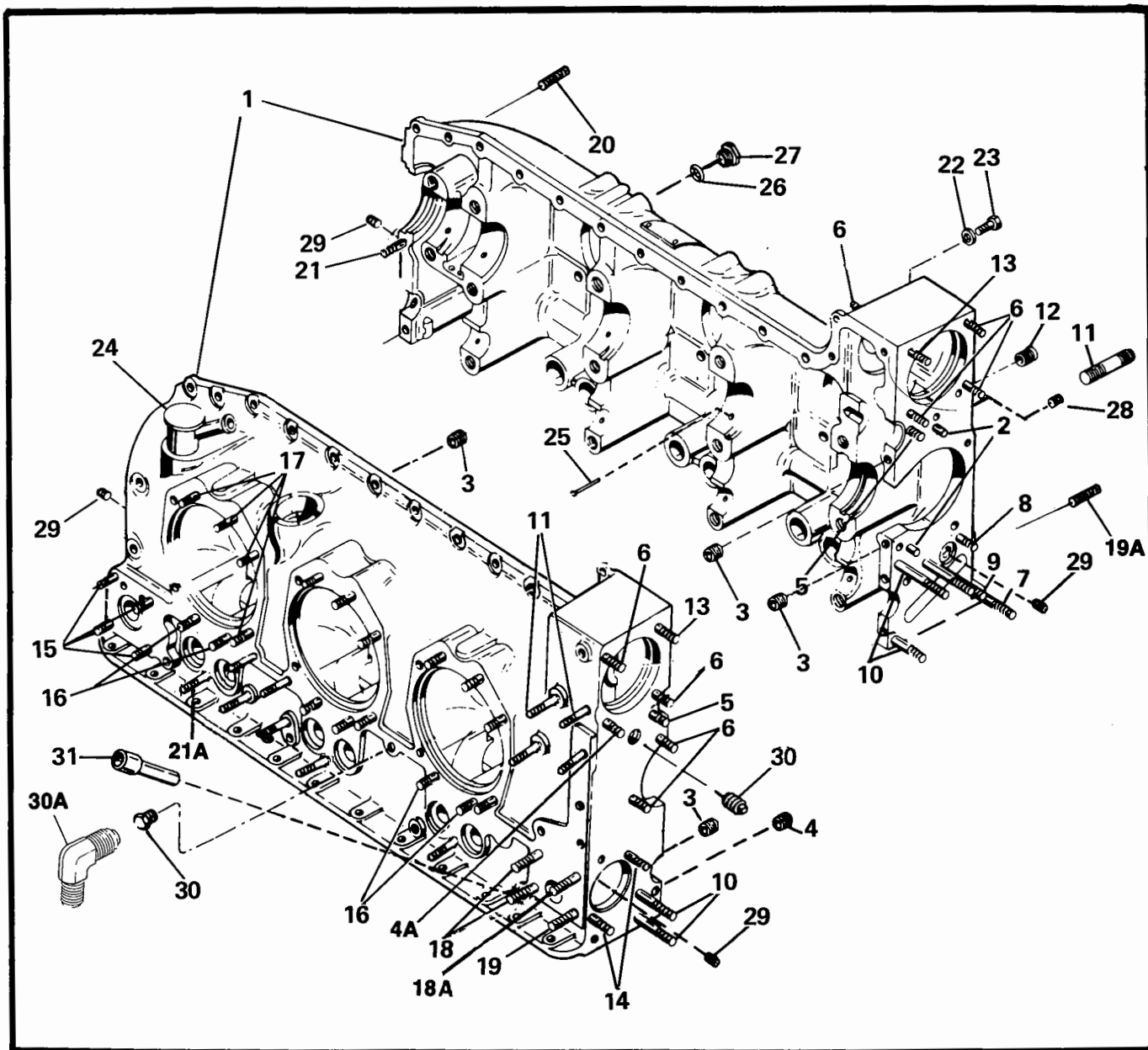


FIGURE 1. CRANKCASE STUDDING ASSEMBLY.

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
1-1	646056	Studding Assembly, Complete	1	L/AE
1-1	646058	Studding Assembly, Complete	1	AE
-2	531548	. Dowel Pin	2	
-3	MS122162	. Insert, Helical Coil	4	
-4	MS122122	. Insert, Helical Coil	1	
-4A	401836	. Stud, 1/4-20-28 x 1-3/8 Inch Long	1	
-5	401870	. Stud 1/4-20-28 x 1-1/8 Inch Long	2	
-6	401885	. Stud 5/16-18-24 x 1-5/16 Inch Long	11	
-7	401841	. Stud 1/4-20-28 x 2-1/8 Inch Long	1	
-8	401852	. Stud 1/4-20-28 x 1-13/32 Inch Long	1	
-9	402159	. Stud 1/4-20-28 x 4-1/8 Inch Long	1	
-10	402158	. Stud 1/4-20-28 x 4 13/32 Inch Long	4	
-11	401977	. Stud 3/18-16-24 x 2-3/32 Inch Long	3	
-12	MS122163	. Insert, Helical Coil	1	
-13	401965	. Stud 3/8-16-24 x 1-13/32 Inch Long	2	
-14	402151	. Stud 5/16-18-24 x 1-1/4 Inch Long	2	
-15	401899	. Stud 5/16-18-24 x 2.00 Inch Long	4	
-16	646140-2	. Stud 7/16 x 1-19/32 Inch Long	12	
-17	646140-1	. Stud 7/16 x 2-3/16 Inch Long	24	
-18	402066	. Stud 3/8-16-24 x 1-7/8 Inch Long	5	
-18A	402060	. Stud, 3/8-16-24 x 2-5/16 Inch Long	1	
-19	401972	. Stud 3/8-16-24 x 4-3/8 Inch Long	1	
-19A	401849	. Stud, 3/8-16-24 x 3-13/16 Inch Long	1	
-20	401808	. Stud 1/4-20-28 x 1-5/16 Inch Long	5	
-21	401950	. Stud 5/16-18-24 x 4-7/8 Inch Long	1	
-21A	402711	. Stud, 1/4-20-28 x 7/8 Inch Long	6	
-22	2473	. Washer, Flate	1	
-23	AN5-13A	. Bolt Screw	1	
-24	537505	. Breather Assy.	1	AE
-24A	646025	. Breather Assy.	1	L/AE
-25	629847	. Nozzle, Squirt	6	
-26	MS35769-11	. Gasket	2	
-27	532432	. Plug	2	
-28	629518-1H	. Plug, Pipe	1	
-29	2025	. Plug, Pipe	4	
-30	AN912-3	. Bushing, Reducer	2	
-30A	AN915-1	. Elbow Assy.	1	L/AE
-31	631927	. Housing, Oil Gage Rod	1	

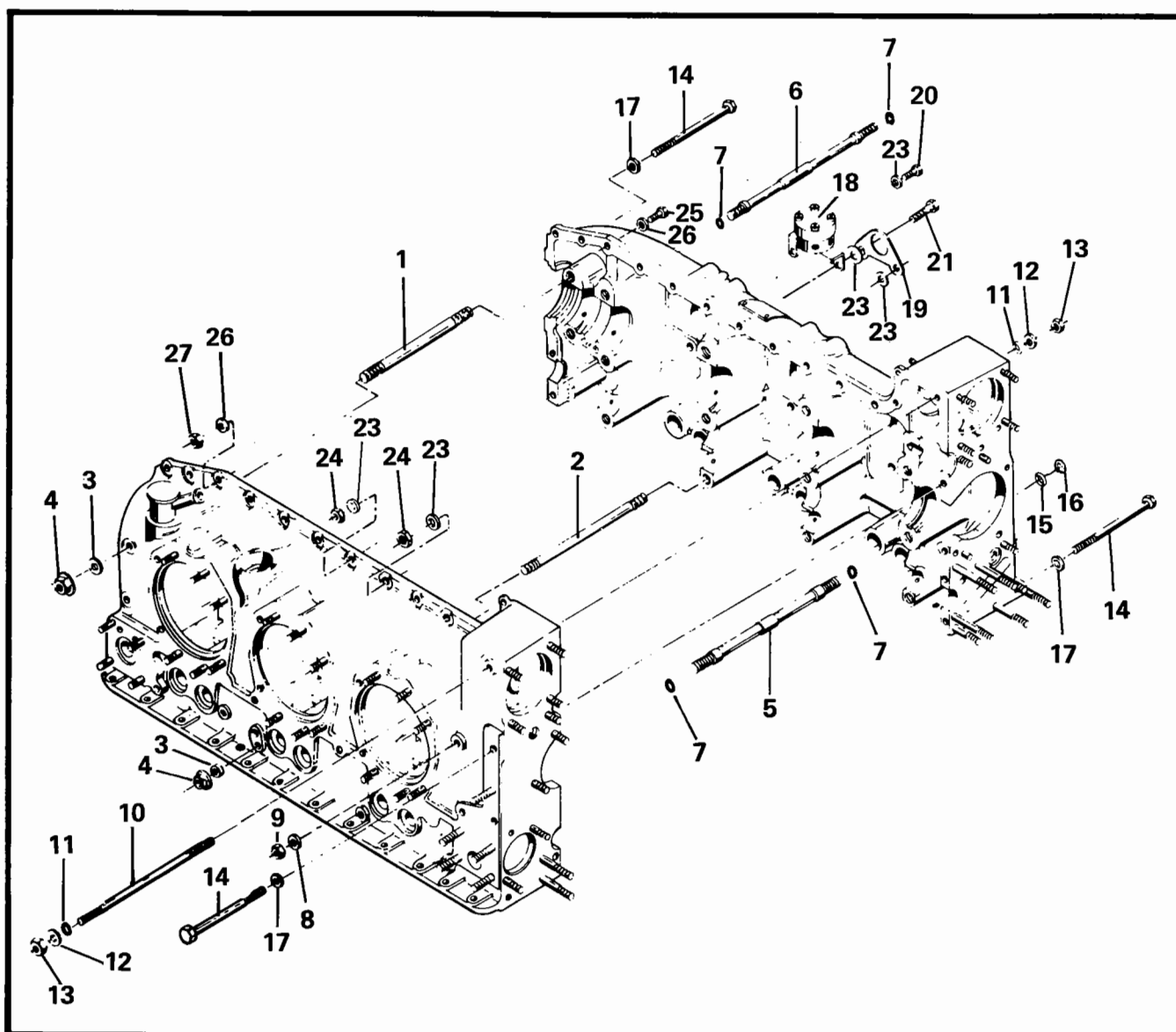


FIGURE 2. CRANKCASE ATTACHING PARTS.

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
2-1	538944-8.88	Bolt Thru 7/16-20	2	
-2	538944-10.50	Bolt Thru 7/16-20	4	
-3	25171	Spacer	12	
-4	531001	Nut, Flanged	12	
-5	641931-10.75	Bolt, Thru 1/2-20	7	
-6	641930-9.81	Bolt, Thru 1/2-20	1	
-7	MS29513-010	"O"Ring	16	
-8	538989	Washer, Plain	4	
-9	634511	Nut 1/2-20	4	
-10	630693-11.67	Bolt, Thru 3/8-24	1	
-11	AN123862	"O"Ring	2	
-12	24239	Washer	2	
-13	2441	Nut, Plain	1	
-14	643096	Bolt	5	
-15	MS9021-11	"O"Ring	1	
-16	539374	Washer	1	
-17	2473	Washer	4	
-18	641032-19A1	Fuel Manifold Valve (See Fig. 14)	1	
-19	538650	Lifting Eye	1	
ATTACHING PARTS				
-20	AN5-13A	Bolt	1	
-21	AN5-15A	Bolt	2	
-22	2473	Washer	3	
-23	2439	Nut	3	
		* * * *		
-24	AN5-13A	Bolt	9	
-25	2473	Washer	11	
-26	2439	Nut	12	

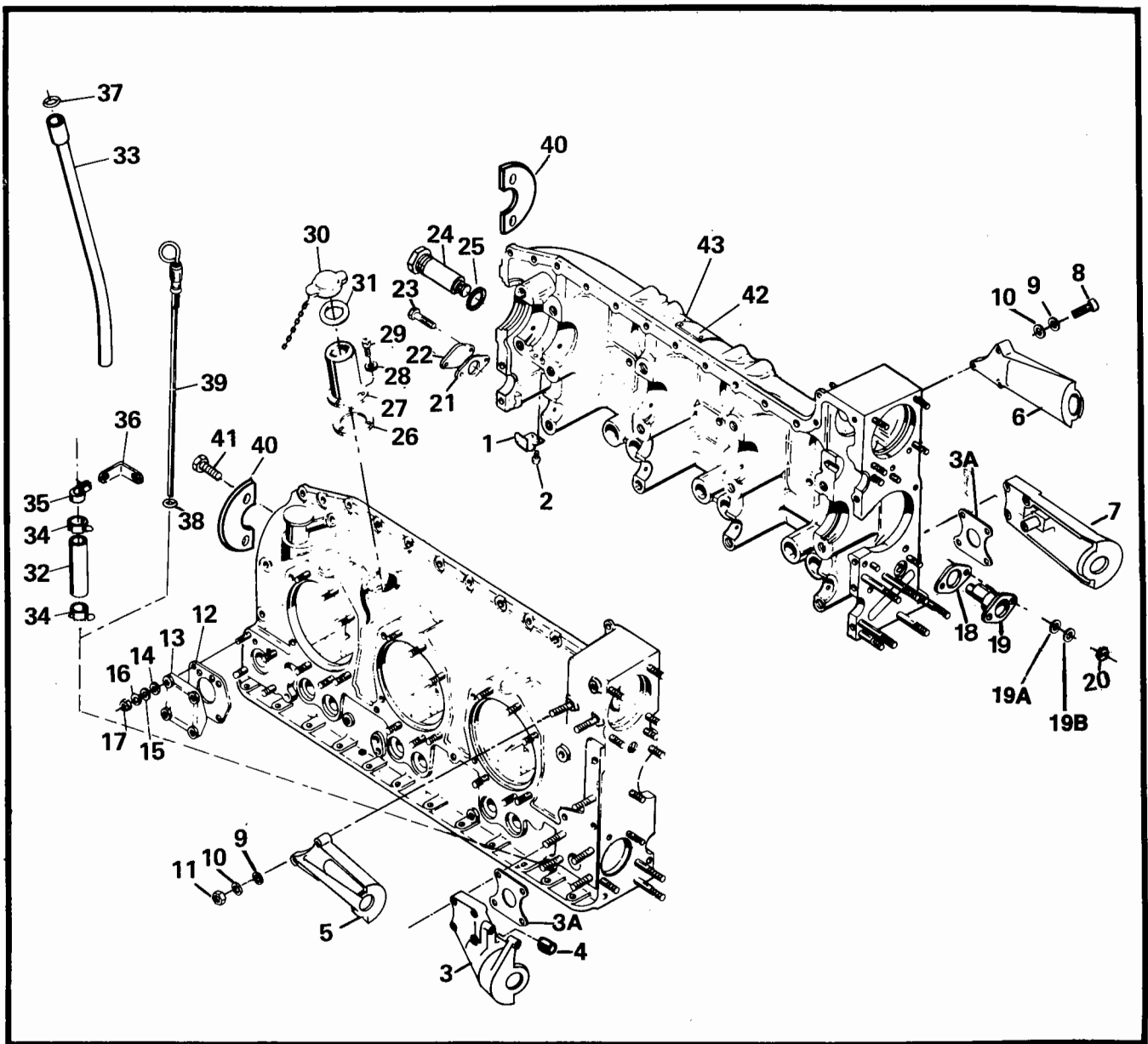


FIGURE 3. CRANKCASE ASSOCIATED PARTS

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
3-1	642250	Clip, Oil Transfer		
ATTACHING PARTS				
-2	AN500A10-4	Screw	2	
		* * * *		
-3	646057	Bracket Assembly, Engine Mounting	1	
-3A	643937	Spacer - C/Case to Lower Mt. Brkt.	2	
-4	643043	Bracket, Engine Mount, No. 2 Upper	1	
-5	643044	Bracket, Engine Mount, No. 1 Upper	1	
-6	643042	Bracket, Engine Mount	1	
-7	642265	. Bushing	1	

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
ATTACHING PARTS				
-8	MS90728-64	Screw	1	
-9	24239	Washer	4	
-10	539058	Washer	12	
-11	2441	Nut	11	
* * * *				
-12	641651	Gasket, Governor Pad	1	
-13	639997	Cover, Governor Pad	1	
ATTACHING PARTS				
-14	22535	Washer	8	
-15	2473	Washer	4	
-16	MS35337-45	Washer, Lock	4	
-17	2439	Nut	4	
* * * *				
-18	534740	Gasket, Idler Pin	1	
-19	643115	Pin, Idler Gear Support	1	
ATTACHING PARTS				
-19A	2472	Washer, Plain	2	
-19B	MS35337-44	Washer, Lock	2	
-20	2437	Nut	2	
* * * *				
-21	629202	Gasket, Cam Hole Cover	1	
-22	642914	Cover, Cam Hole	1	
ATTACHING PARTS				
-23	626487	Screw	2	
* * * *				
-24	639304	Oil Temperature Control Valve	1	
-25	625966	Gasket	1	
-26	538804	Gasket, Oil Filler Neck	1	
-27	538773	Neck Assembly, Oil Filler	1	
ATTACHING PARTS				
-28	MS35337-44	Washer, Lock	3	
-29	AN500-416-8	Screw	3	
* * * *				
-30	640620-17	Cap Assembly, Oil Filler	1	
-31	635134	Gasket, Oil Filler Cap	1	
-32	631928	Hose	1	
-33	643910	Housing Extension, Oil Gage Rod	1	
-34	36151R	Clamp, Hose	2	
-35	631266-1	Clamp, Tube	1	
-36	642820	Bracket	1	
-37	537299	Ring, Oil Gage Lock	1	
-38	MS9021-011	"O"Ring	1	
-39	642821	Rod Assembly, Oil Gage	1	AE
-39	642821-2	Rod Assembly, Oil Gage	1	L/AE
-40	641361	Plate, Oil Seal Retainer	2	
ATTACHING PARTS				
-41	628321-.38	Bolt	4	
* * * *				
-42	xxxx	Plate, Identification	1	
ATTACHING PARTS				
-43	24764	Screw Drive	6	

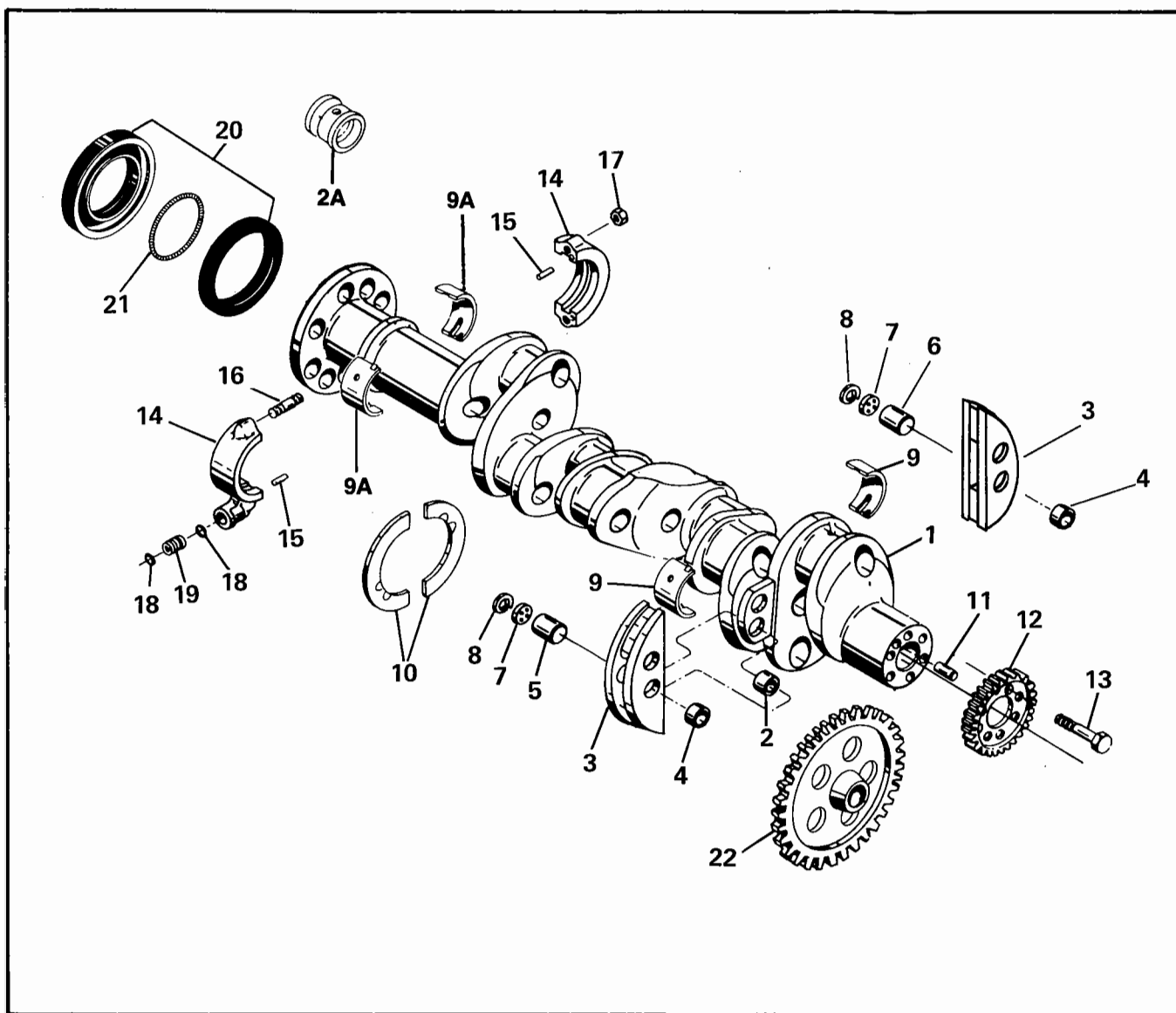


FIGURE 4. CRANKSHAFT GROUP

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
4-1	643126	Crankshaft and Counterweight Assembly	1	AE
-1	643126-1	Crankshaft and Counterweight Assembly	1	L/AE
-2	350998	. Bushing, Crankshaft, Counterweight	8	
-2A	633189	. Plug, Oil Transfer	1	
-3	639195	. Counterweight	2	
-4	639193	. . Bushing, Counterweight	4	
-5	643626-106	. Pin, Counterweight	2	
-6	643626-105	. Pin, Counterweight	2	
ATTACHING PARTS				
-7	643629	. Plate, Pin Retaining	8	
-8	629104	. Ring, Retaining	8	
* * * *				
-9	642720	Bearing, Main	6	
-9A	630464	Bearing, Main Front	4	
-10	646288	Washer, Thrust	4	
-11	536563	Dowel	1	
-12	536421	Gear, Crankshaft	1	
ATTACHING PARTS				
-13	536379	Screw	6	
* * * *				
-14	626739	Collar Assembly, Governor Oil Transfer	1	
-15	626889	. Dowel	2	
-16	401893	. Stud 1/4 x 1-1/4 Inch Long	2	
-17	MS21042-4	. Nut	2	
* * * *				
-18	MS9021-011	"O"Ring, Crankcase to Collar	2	
-19	642249	Sleeve, Oil Transfer	1	
-20	641250	Seal Assembly, Crankshaft Oil	1	
-21	641306	. Spring, Nose Seal	1	
-22	643113	Gear, Idler	1	

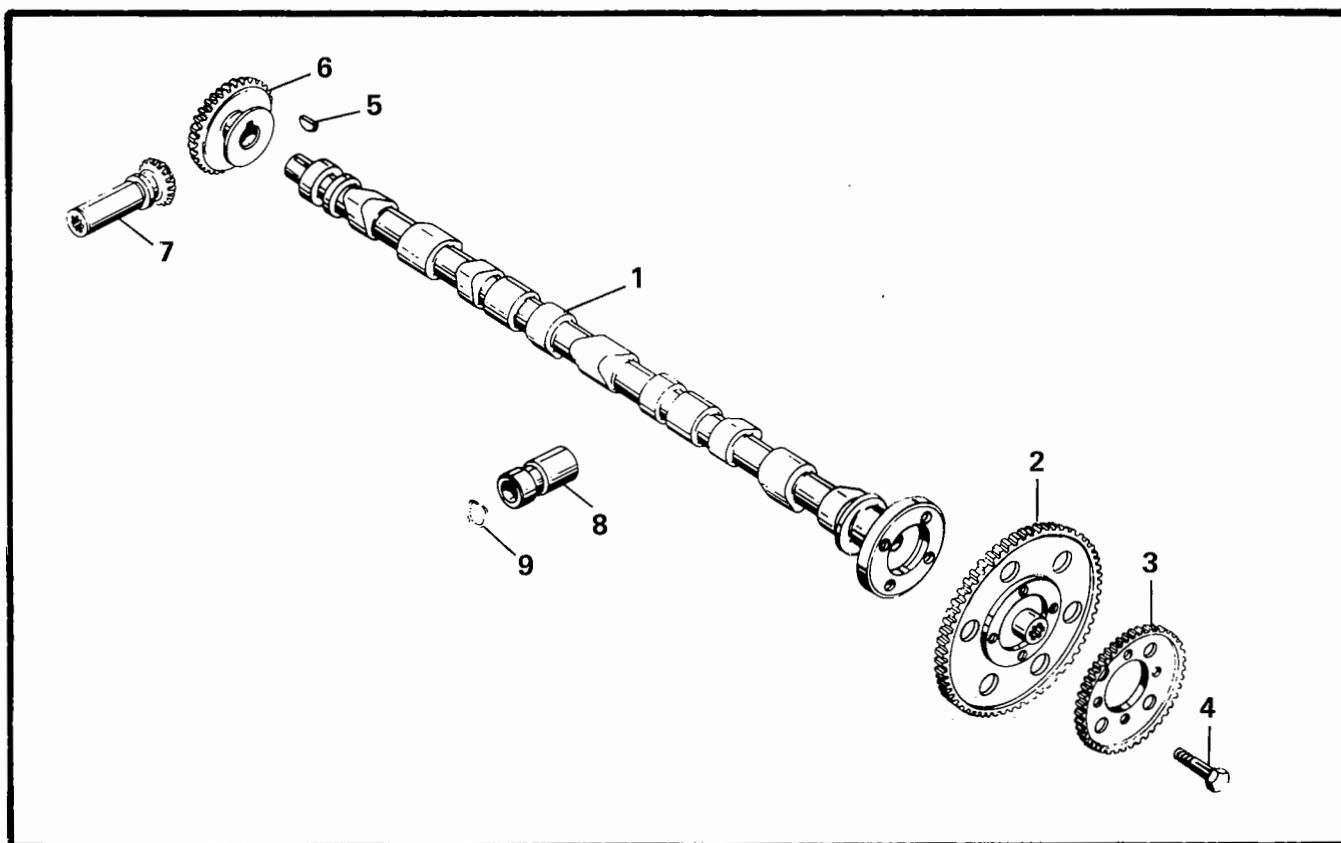


FIGURE 5. CAMSHAFT GROUP

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
5-1	643045	Camshaft	1	AE
-1	643944	Camshaft	1	L/AE
-2	643114	Gear, Camshaft	1	
-3	643117	Gear, Cam Cluster	1	
ATTACHING PARTS				
-4	535666	Screw	4	
-5	MS35756-8	Key, Woodruff	1	
-6	534655	Gear, Bevel, Governor Drive	1	
-7	538076	Gear, Bevel, Governor Driven	1	
-8	628488	Lifter Assembly, Intake	6	
-8	641709	Lifter Assembly, Exhaust	6	
-9	641862	Ring, Retaining	1	

On lifter P/N 628488 new retaining ring (red) replaced P/N 628491 on new design lifter. New lifter can be identified by 1/8" oil hole in socket vs 1/16" hole for original. Old socket tapered from center to O.D. New lifter socket shoulders halfway between center and O.D. Snap ring P/N 628491 must be used with old-style lifter.

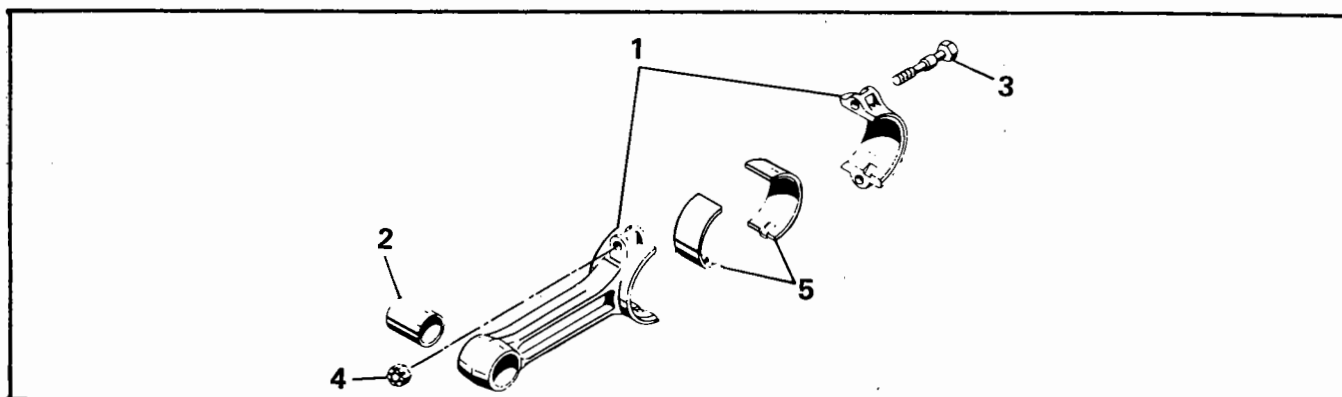


FIGURE 6. CONNECTING ROD ASSEMBLY.

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
6-1	643166	Connecting Rod Assembly	6	
-2	530658	. Bushing, Piston Pin	1	
-3	643112	. Bolt, Connecting Rod, Special	2	
-4	643215	. Nut, Special	2	
-5	630826	Bearing, Connecting Rod	12	

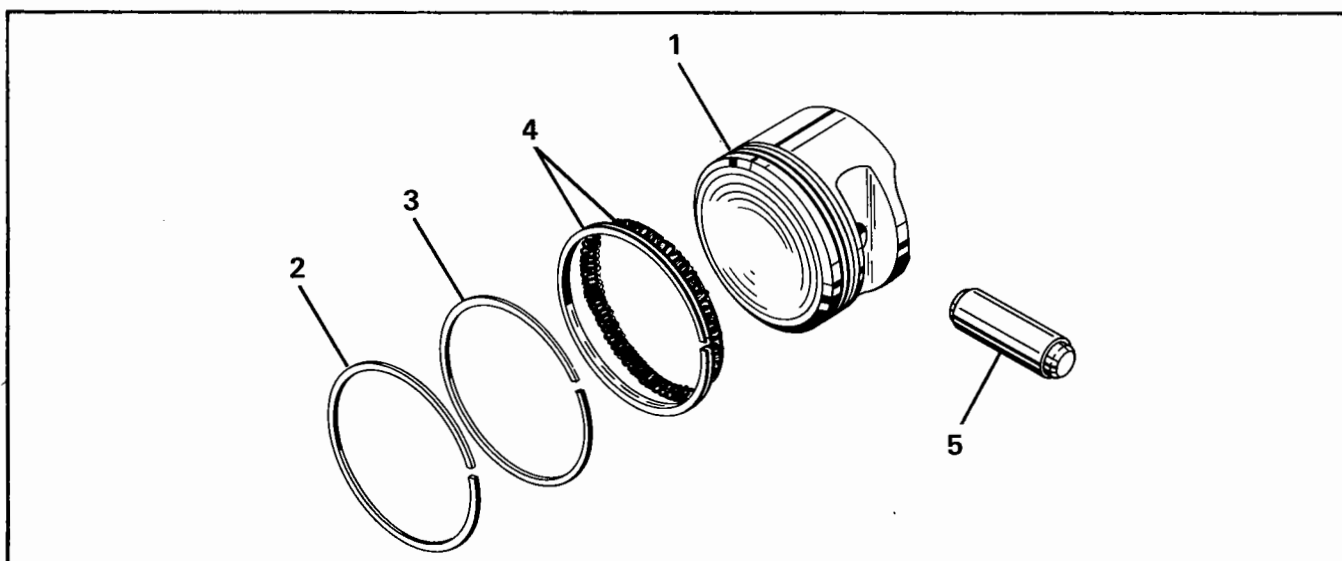


FIGURE 7. PISTON, RINGS AND PIN ASSEMBLY.

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
7-1	643735	Piston	6	
-2	640625	\$ Ring, Top Groove	6	
-3	640626	\$ Ring, 2nd Groove	6	
-4	641302	\$ Ring Assembly, 3rd Groove	6	
-5	643846	Pin and Plug Assembly	6	

\$ 640625A6 Ring Set Std.
 640625A6P005 Ring Set .005 In. O.S.
 640625A6P010 Ring Set .010 In. O.S.
 640625A6P015 Ring Set .015 In. O.S.

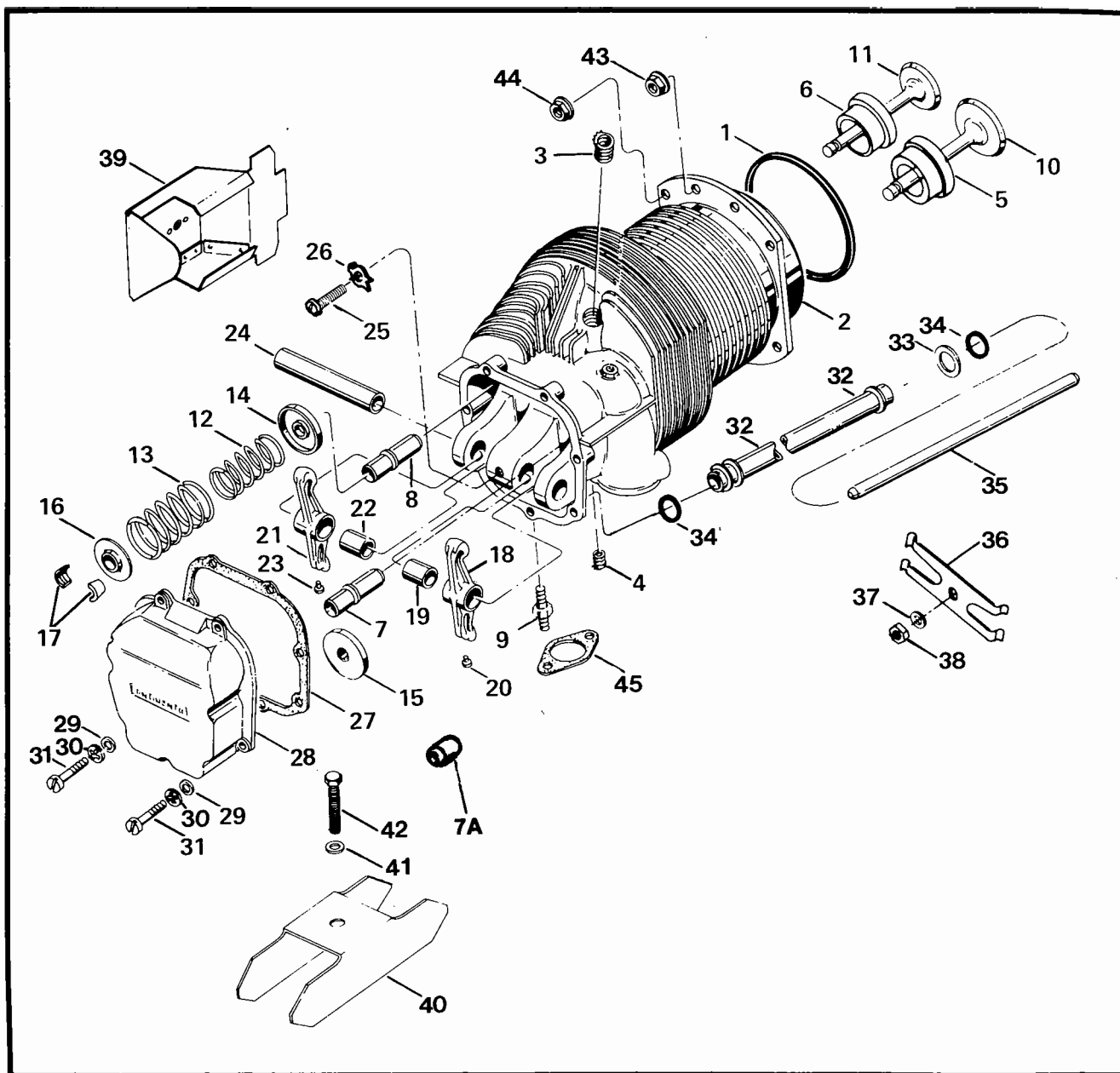


FIGURE 8. CYLINDER ASSEMBLY.

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
8-1	641066	"O"Ring	6	
	646098A1	Cylinder and Valve Assembly	6	
-2	646098	. Cylinder Assembly	1	
-3	520112-3	. . Insert, Spark Plug	2	
-4	MS122121	. . Insert, Intake Flange	2	
-5	643130	. . Insert, Intake Valve Seat	1	

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
-6	35967	. . Insert, Exhaust Valve Seat	1	
-7	643766	. . Guide, Intake Valve	1	
-7A	641952	. . Seal, Intake Valve	1	
-8	641951	. . Guide, Exhaust Valve	1	
-9	643804	. . Stud, Ring Locked	2	
-10	539988	. Valve, Intake	1	
-11	637781	. Valve, Exhaust	1	
-12	631521	. Spring	2	
-13	631520	. Spring, Valve, Outer	2	
-14	625393	. Retainer, Valve Spring, Inner	2	
-15	629117	. Roto Coil, Valve Spring, Outer, Exh.	2	
-16	24802	. Key, Valve Spring Retainer	4	
-17	646088	Rocker Assembly, Intake	6	
-18	530367	. Bushing	1	
-19	21007	. Screw, Drive No. 2	2	
-20	646086	Rocker Assembly, Exhaust	6	
-21	530367	. Bushing	1	
-22	21007	. Screw, Drive No. 2	2	
-23	625142	Shaft, Valve Rocker	6	
ATTACHING PARTS				
-24	535666	Screw	6	
-25	501868	Washer, Tab	6	
* * * *				
-26	532451	Gasket, Valve Rocker Cover	6	
-27	646285	Cover, Valve Rocker	6	
ATTACHING PARTS				
-28	AN960-416L	Washer, Plain	42	
-29	MS35337-44	Washer, Lock	42	
-30	535118	Screw	42	
* * * *				
-31	643100	Housing, Pushrod	12	
-32	534609	Washer, Pushrod Housing	6	
-33	534610	Packing, Pushrod Housing	12	
-33A	630286	"O"Ring	12	
-34	538305	Rod Assembly, Push	12	
-35	643098	Clip, Pushrod Housing	6	
-36	2472	Washer, Plain	6	
-37	2437	Nut	6	
-38	643230	Baffle Assembly	4	
-39	642536	Baffle, Engine Support	4	
-40	AN960-10L	Washer, Plain	4	
-41	AN3-73A	Bolt	4	
-42	531001	Nut, Flanged, 7/16	36	
-43	634505	Nut, Flanged, 1/2	12	
-44	627429	Gasket, Exhaust	6	

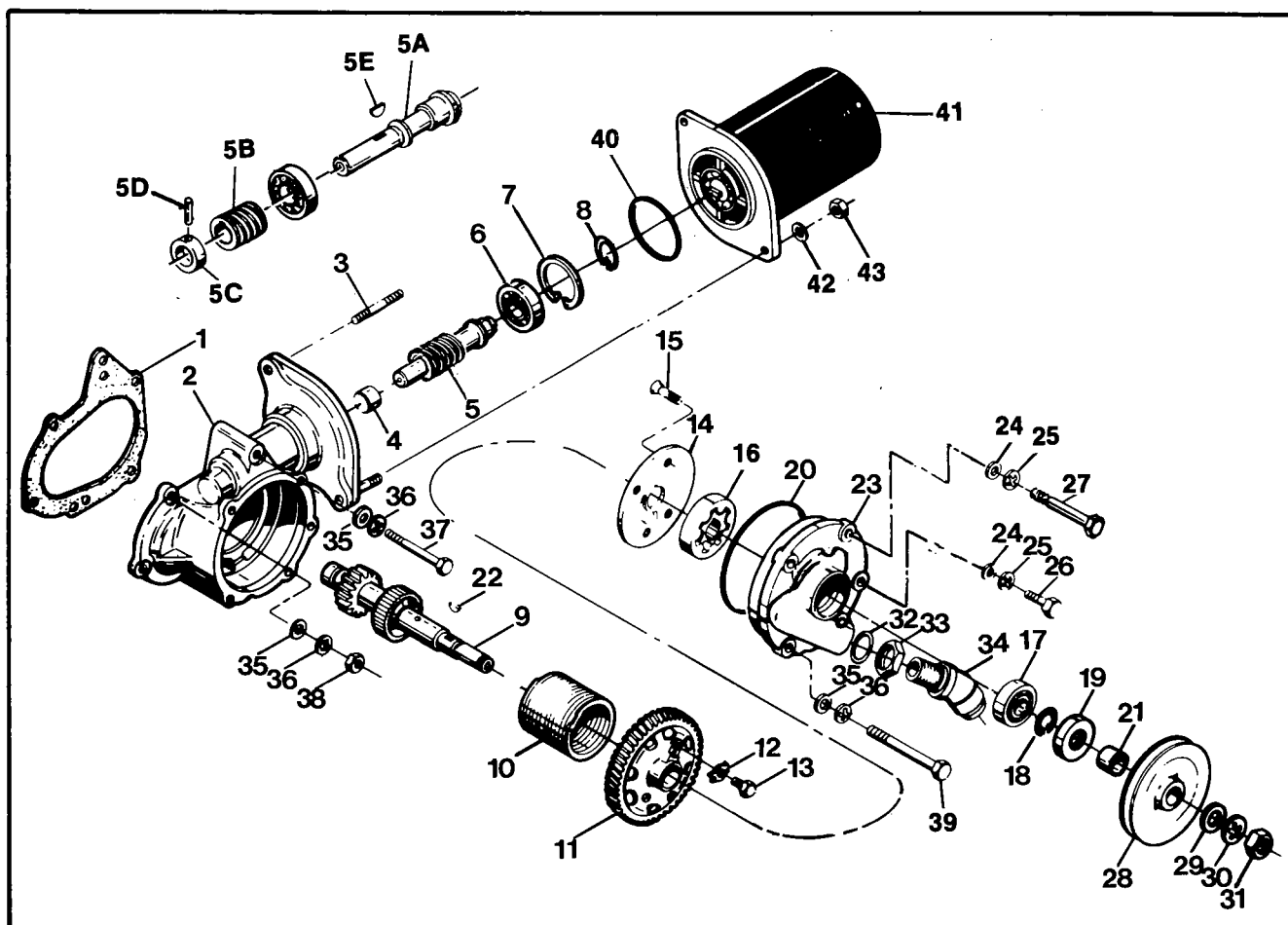


FIGURE 9. STARTER AND ADAPTER ASSEMBLY.

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
9-1	537445	Gasket	1	
	643165A1	Adapter Assembly, Starter	1	AE
	643165A3	Adapter Assembly, Starter	1	L/AE
-2	643165	. Adapter	1	
-3	402127	. . Stud 3/8 x 1-17/32 Inch Long	2	
-4	641368	. . Bearing, Needle	1	
-5	643303	. Shaft Assembly, Worm	1	AE
-5A	631253	. Shaft, Worm	1	L/AE
-5B	539793	. Gear, Starter Worm	1	L/AE
-5C	628149	. Bushing	1	L/AE
-5D	628155-1	. Pin	1	L/AE
-5E	MS35756-8	. Key, Woodruff	1	L/AE
-6	X13041	. Bearing, Ball	1	
-7	MS16626-3078	. Ring, Retaining	1	
-8	502287	. Ring, Retaining	1	
-9	643083	. Shaft Gear, Starter	1	

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
-10	643109	. Spring, Clutch	1	AE
-10	643110	. Spring, Clutch	1	L/AE
-11	643080	. Gear, Starter	1	AE
-11	643081	. Gear, Starter	1	L/AE
		ATTACHING PARTS		
-12	501867	. Washer, Tab	1	
-13	633845-1	. Screw	1	
		* * * *		
-14	643022	. Cover, Scavenge Pump	1	
		ATTACHING PARTS		
-15	MS35190-287	. Screw	3	
		* * * *		
-16	642641	. Gerotor, Oil Pump	1	
-17	643840	. Bearing, Ball	1	
-18	502020	. Ring, Retaining	1	
-19	532534	. Oil Seal	1	
-20	AN123902	. "O"Ring	1	
-21	642622	. Sleeve	1	
-22	MS35756-3	. Key, Woodruff	1	
-23	643020	. Cover, Starter Adapter	1	AE
-23	643021	. Cover, Starter Adapter	1	L/AE
		ATTACHING PARTS		
-24	2473	. Washer, Plain	2	
-25	MS35337-45	. Washer, Lock	2	
-26	537750	. Screw	1	
-27	538999	. Screw	1	
		* * * *		
-28	642623	. Sheave	1	
		ATTACHING PARTS		
-29	AN960-816	. Washer, Plain	1	
-30	MS35338-143	. Washer, Lock	1	
-31	MS9361-14	. Nut	1	
		* * * *		
-32	MS25778-8	. "O"Ring	1	
-33	AN924-8	. Nut	1	
-34	AN837-8	. Elbow	1	
-35	2473	Washer, Plain	6	
-36	MS35337-45	Washer, Lock	6	
-37	537742	Screw, 5/16-18 x 2-13/16 Inch Long	1	
-38	2439	Nut, Plain	2	
-39	630966-4.25	Bolt	1	
-40	MS9021-038	"O"Ring	1	
-41	642854	Starter	1	
		ATTACHING PARTS		
-42	539058	Washer	2	
-43	531003	Nut	2	
		* * * *		

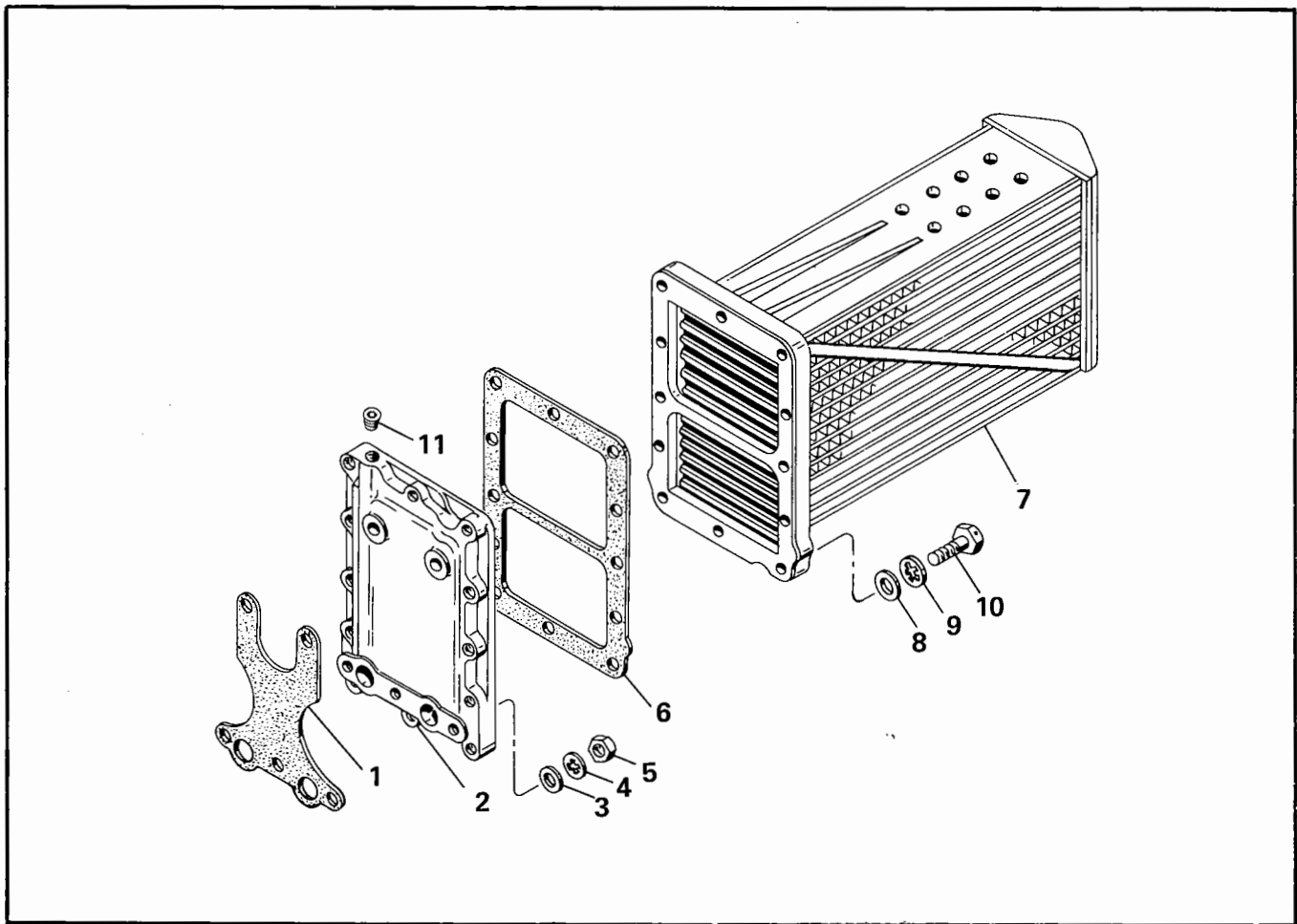


FIGURE 10. OIL COOLER

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
10-1	625303	Gasket, Oil Cooler Plate to C/Case	1	
-2	643856	Plate, Oil Cooler Adapter	1	
		ATTACHING PARTS		
-3	20522	Washer, Plain	5	
-4	MS35337-44	Washer, Lock	5	
-5	AN315-4R	Nut	5	
		* * * *		
-6	537282	Gasket	1	
-7	626189	Oil Cooler	1	
		ATTACHING PARTS		
-8	20522	Washer, Plain	12	
-9	MS35337-44	Washer, Lock	12	
-10	535631	Screw	12	
		* * * *		
-11	2026	Plug	1	

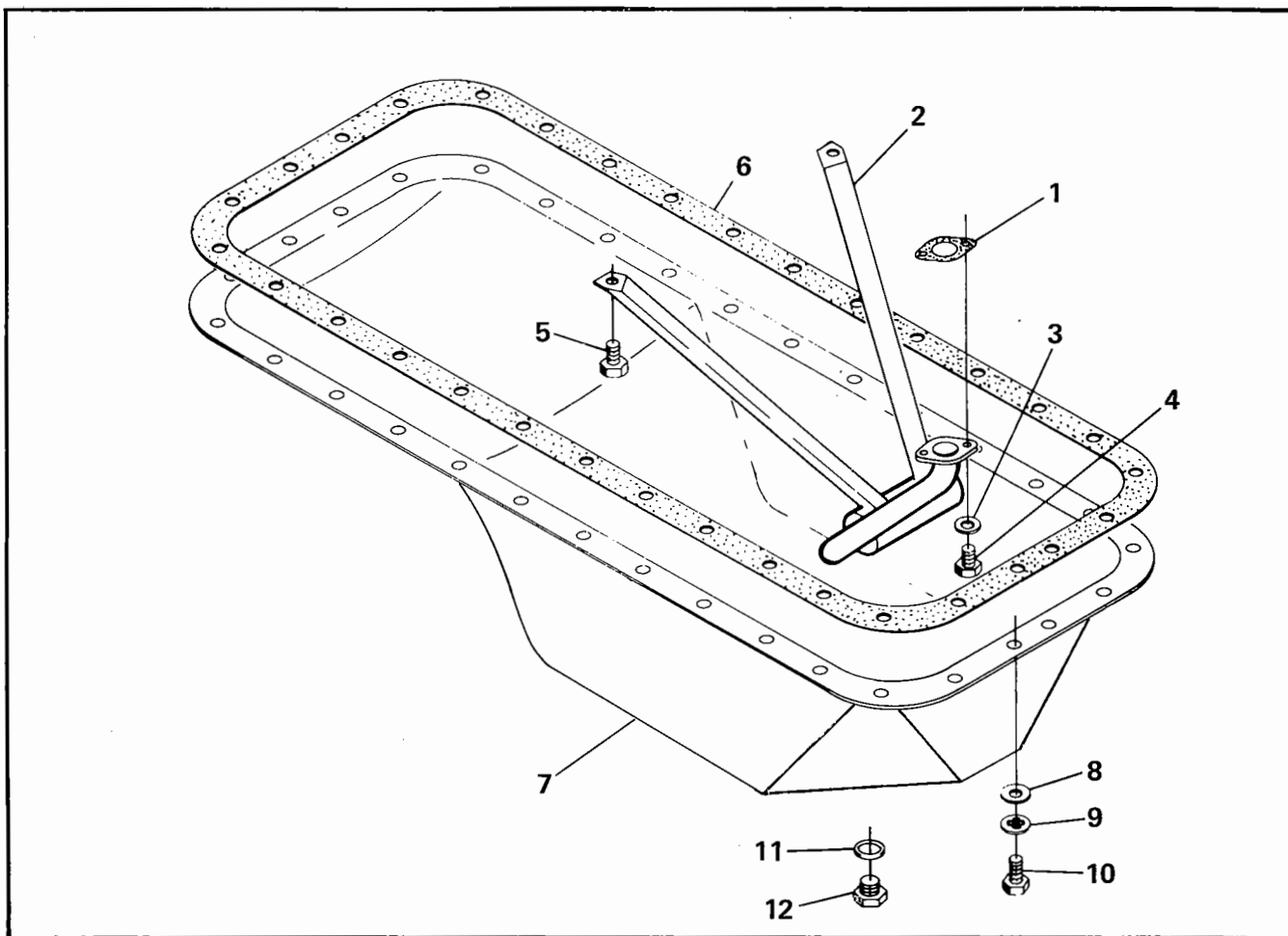


FIGURE 11. OIL SUMP

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
11-1	534940	Gasket	1	
-2	637813	Tube Assembly, Oil Pump Suction	1	
		ATTACHING PARTS		
-3	20522	Washer, Plain	2	
-4	MS20074-04-04	Bolt, Drilled Head	2	
-5	MS20074-04-03	Bolt, Drilled Head	2	
		* * * *		
-6	534743	Gasket, Oil Sump	1	
-7	643505	Sump, Oil	1	
		ATTACHING PARTS		
-8	2473	Washer, Plain	32	
-9	MS35337-45	Washer, Lock	32	
-10	530346	Bolt	28	
-10A	537961	ⓐ Bolt	4	
		* * * *		
-11	MS35769-11	Gasket	1	
-12	2265	Plug, Oil Drain	1	

ⓐ Install in holes 6, 7, 8, and 12 from front of sump on 2-4-6 side.

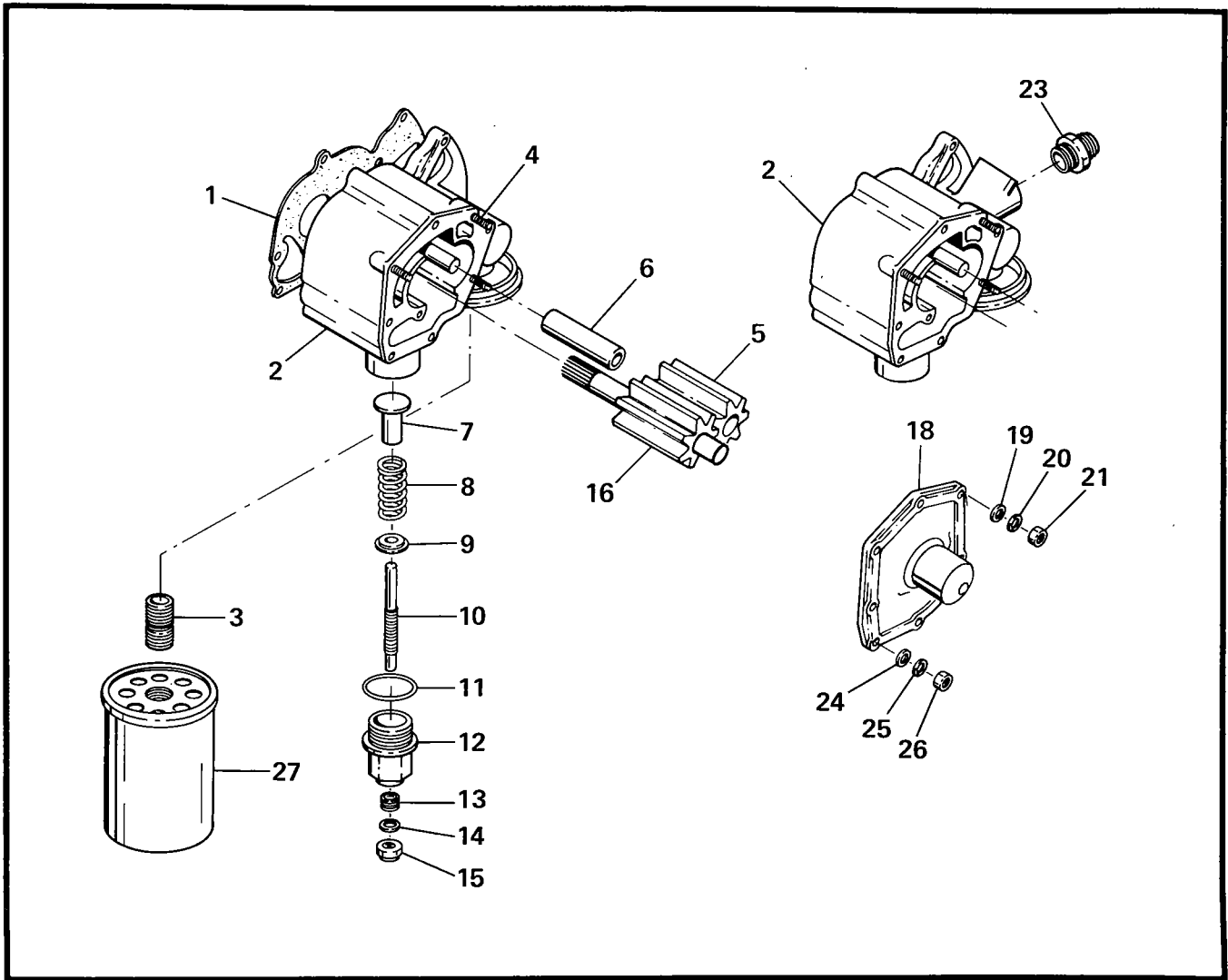


FIGURE 12. OIL PUMP ASSEMBLY

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
12-1	643168	Gasket, Oil Pump to C'Case	1	
	646045	Oil Pump Assembly	1	AE
	646045-1	Oil Pump Assembly	1	L/AE
-2	643159-1	. Housing Assembly	1	AE
-2	643159-2	. Housing Assembly	1	L/AE
-3	632373	. . Stud, Adapter	1	
-4	401800	. . Stud, 1/4 x 1-1/16 Inch Long	3	
-5	629218	. Gear Assembly, Oil Pump Driven	1	
-6	539523	. . Bushing	1	
-7	642336	. Plunger	1	
-8	634150	. Spring	1	
-9	631653	. Washer	1	
-10	642335	. Screw, Adjusting	1	
-11	AN900-18	. Gasket	1	
-12	642224	. Housing Assembly, Relief Valve	1	
-13	MS124657	. . Helical Coil Insert	1	
-14	X1473	. Washer	1	
-15	632762	. Nut, Elastic Stop	1	
-16	629443	. Gear Assembly, Tach Drive	1	
-17	646040	. Cover Assembly, Tach Drive	1	
		ATTACHING PARTS		
-18	2472	. Washer, Plain	3	
-19	MS35337-44	. Washer, Lock	3	
-20	2437	. Nut	3	
		* * * *		
-21	MS28778-4	. "O"Ring	1	
-22	MS21924-4	. Fitting, Straight	1	
-23	20522	Washer, Plain	7	
-24	MS35337-44	Washer, Lock	7	
-25	2437	Nut, Plain	7	
-26	643227	Filter Assembly	1	
-27	AN837-4	Elbow - 45°	1	AE
-28	AN833-4	Elbow - 90°	1	L/AE
-29	MS28778-4	O-Ring	1	
-30	AN924-4	Nut	1	

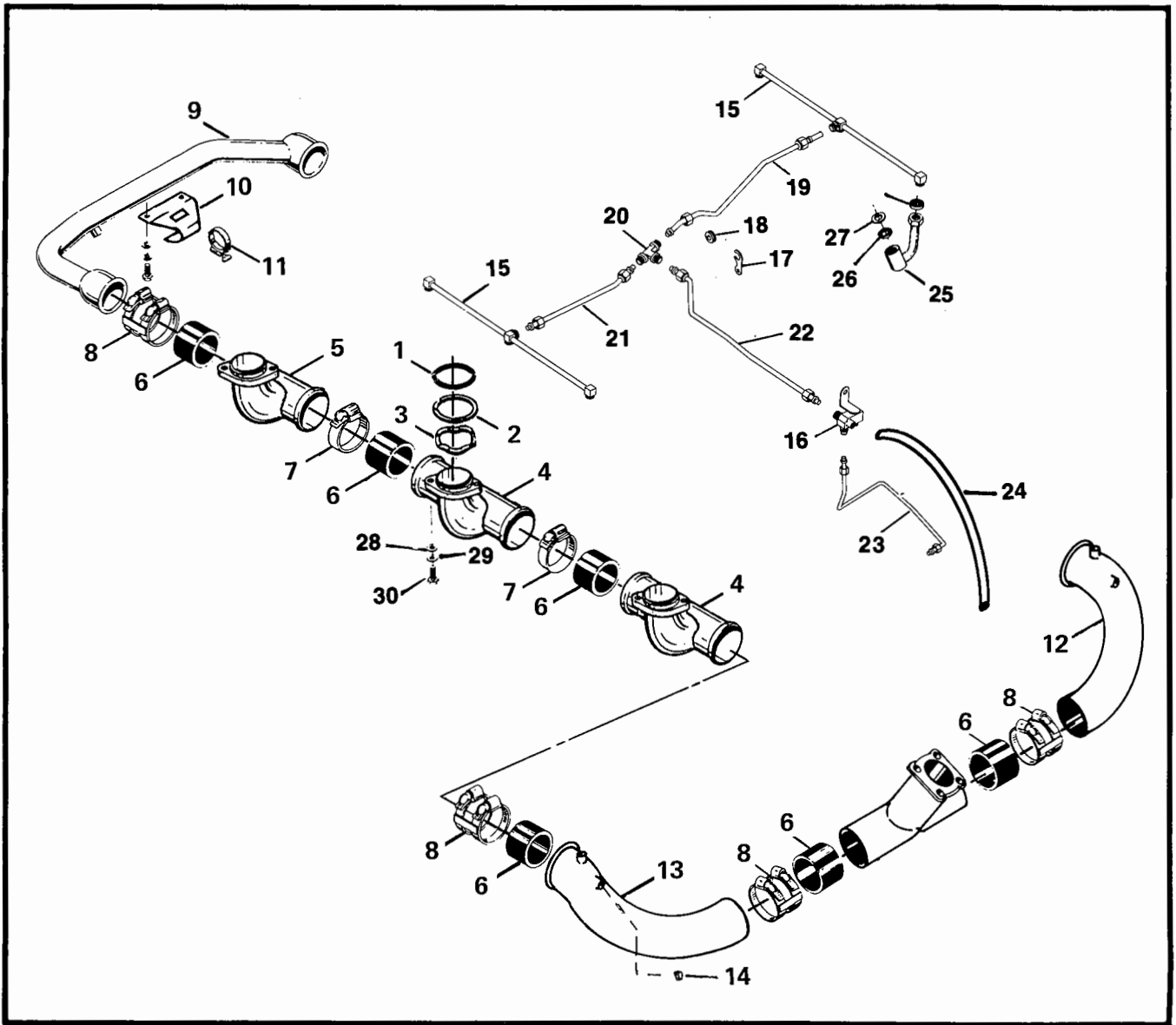


FIGURE 13. INDUCTION SYSTEM

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
13-1	646103	Seal, Intake Manifold	6	
-2	534365	Washer, Intake Manifold	6	
-3	534360	Spring, Intake Manifold	6	
-4	538554	Tube Assembly	5	
-5	628381	Tube Assembly, No. 6 Cylinder	1	
-6	642917-1	Hose	10	
-7	631972	Clamp	8	
-8	629163-5	Clamp	6	
-9	646023	Tube Assebmly, Balance	1	
-10	633435	Balance Tube Bracket	1	
-11	AN737TW46	Clamp, Balance Tube Bracket	1	
-12	643154	Elbow, Intake Manifold 2-4-6 Side	1	L/AE
-12	643155	Elbow, Intake Manifold 1-3-5 Side	1	AE
-13	643925	Elbow, Intake Manifold 1-3-5 Side	1	L/AE
-13	643926	Elbow, Intake Manifold 2-4-6 Side	1	AE
-14	629518-1H	. Plug, Pipe	6	
-15	646043	Tube Assembly, Air Manifold	2	
-16	646029	Manifold Assembly	1	
-17	633787	Bracket	1	
-18	MS35489-11	Grommet	1	
-19	646035	Tube Assembly	1	
-20	646026	Tee	1	
-21	646033	Tube Assembly	1	
-22	646036	Tube Assembly	1	
-23	646034	Tube Assembly	1	
-24	635218S6S23.00	Hose Assembly	1	
-25	643211	Sleeve Assembly, Injection Nozzle	6	
-26	640612	Washer, Rubber	6	
-27	628556	Washer, Plain	6	
-28	20522	Washer, Plain	12	
-29	MS35338-44	Washer, Lock	12	
-30	24835	Screw, 1/4-20 x 7/8 Inch Long	12	

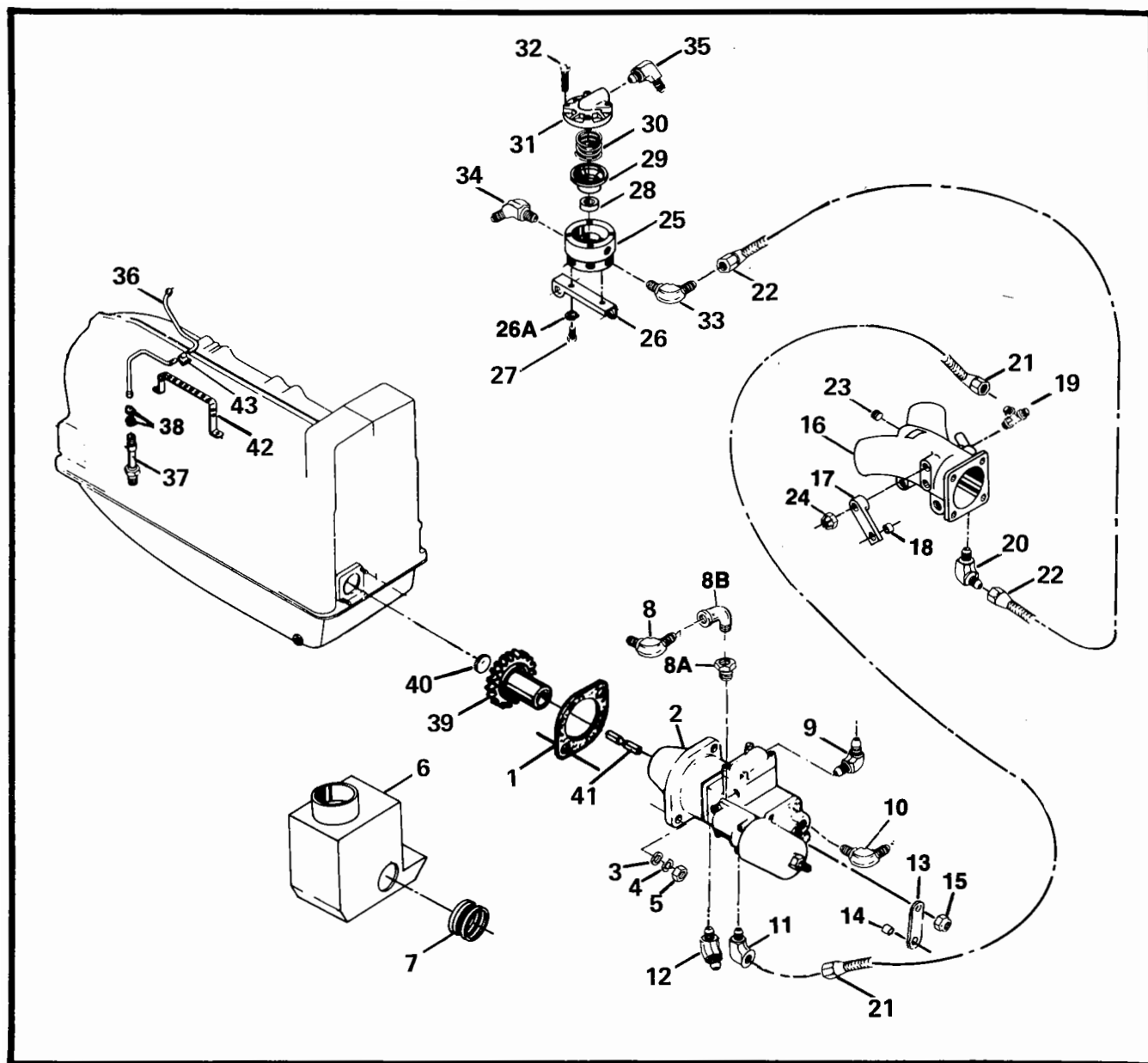


FIGURE 14. FUEL INJECTION SYSTEM

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
14-1	631685	Gasket, Fuel Pump	1	
	640103A23	Fuel Injection Assembly	1	AE
	640103A24	Fuel Injection Assembly	1	L/AE
-2	639508-12A1	. Fuel Pump Assembly	1	AE
-2	639508-13A2	. Fuel Pump Assembly	1	L/AE
ATTACHING PARTS				
-3	2473	. Washer, Flat	2	
-4	MS35337-45	. Washer, Lock	2	
-5	2439	. Nut, Plain	2	
		* * * *		
-6	642796	. . Shroud	1	
-7	626879-1	. . Grommet	2	
-8	646203	. . Fitting, Straight	1	
-8A	633121	. . Elbow, 45 Degree, Fuel Pump Inlet	1	
-8B	MS51508B8	. . Elbow, Fuel Pump Inlet	1	

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
-9	628437	. . Elbow, 90 Degree, Vapor Return	1	
-10	X5146	. . Elbow, Flex, S/C Pressure	1	
-11	629437	. . Elbow, 90 Degree, F.P. Outlet to Control	1	
-12	628436	. . Elbow, 45 Degree, Seal Drain	1	
-13	632555-53	. . Lever Assembly	1	
-14	632554-1	. . Bushing	1	
-15	MS21042-5	. . Nut	1	
-16	643175-1A2	. Throttle & Control Assembly	1	AE
-16	643175-1A3	. Throttle & Control Assembly	1	L/AE
-17	632555-34	. . Lever Assembly	1	
-18	632554-1	. . Bushing	1	
-19	632119	. . Fitting Tee, Fuel Inlet	1	
-20	628437	. . Elbow, 90 Degree, Fuel Outlet	1	
-21	635218S4S10.00	. . Hose Assembly, Control to Fuel Pump	1	AE
-21	635218S4S6.50	. . Hose Assembly, Control to Fuel Pump	1	L/AE
-22	635218S4S41.00	. . Hose Assembly, Control to Manifold Valve	1	AE
-22	635218S4S45.00	. . Hose Assembly, Control to Manifold Valve	1	L/AE
-23	629518-1H	. . Plug, Pipe	1	
-24	MS21042-5	. . Nut	1	
-25	641032-19A1	. Fuel Manifold Valve	1	AE
-25	641032-19A3	. Fuel Manifold Valve	1	L/AE
-26	642064	. . Bracket	1	
ATTACHING PARTS				
-26A	MS35338-43	. . Washer, Plain	2	
-27	AN500-10-5	. . Screw	2	
		* * * *		
-28	631330	. . Seal	1	
-29	626557	. . Screen	1	
-30	630184	. . Spring	1	
-31	634325	. . Cover	1	
ATTACHING PARTS				
-32	AN500A8-10	. . Screw	4	
		* * * *		
-33	628436	. . Elbow, Inlet	1	
-34	643764	. . Elbow, Pressure	1	
-35	628436	. . Elbow	1	
-36	643539	. Tube Assembly, Cyl. No. 1	1	
-36	643538	. Tube Assembly, Cyl. No. 2	1	
-36	643981	. Tube Assembly, Cyl. No. 3	1	
-36	643540	. Tube Assembly, Cyl. No. 4	1	
-36	643543	. Tube Assembly, Cyl. No. 5	1	
-36	643542	. Tube Assembly, Cyl. No. 6	1	
-37	643318-14A	. Nozzle Assembly, Fuel	6	
-37	643318-14B	. Nozzle Assembly, Fuel	6	
-38	MS9021-010	. . "O"Ring	2	
-39	631684	Gear Assembly, Fuel Pump	1	
-40	539634	. Plug	1	
-41	631683	Coupling, Drive	1	
-42	642858	Bracket	2	
-43	626577-2	Clamp	6	

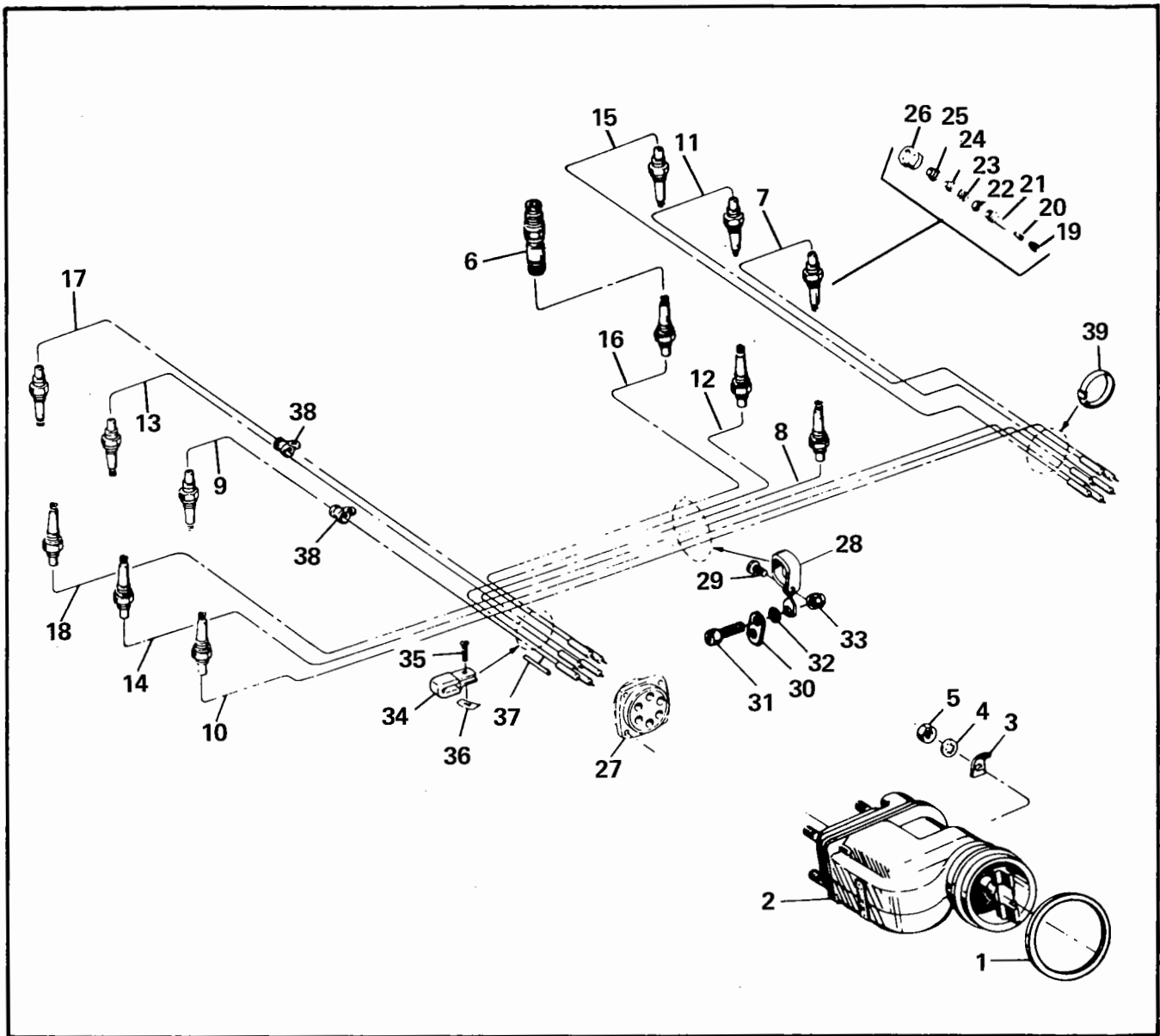


FIGURE 15. IGNITION SYSTEM

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
15-1	534750	Gasket	2	AE L/AE
-2	642306	Magneto	2	
	642784	Magneto	2	
ATTACHING PARTS				
-3	535847	Washer, Magneto Holding	4	
-4	MS35337-45	Washer, Lock	4	
-5	2439	Nut, Plain	4	
* * * *				
-6	634675	Spark Plug	12	
	643573	Harness Assembly	1	
-7	M1750-17	. Lead Assembly, No. 1 Upper	1	
-8	M1750-34	. Lead Assembly, No. 1 Lower	1	
-9	M1750-21	. Lead Assembly, No. 2 Upper	1	
-10	M1750-34	. Lead Assembly, No. 2 Lower	1	
-11	M1750-20	. Lead Assembly, No. 3 Upper	1	
-12	M1750-34	. Lead Assembly, No. 3 Lower	1	
-13	M1750-18	. Lead Assembly, No. 4 Upper	1	
-14	M1750-35	. Lead Assembly, No. 4 Lower	1	
-15	M1750-26	. Lead Assembly, No. 5 Upper	1	
-16	M1750-41	. Lead Assembly, No. 5 Lower	1	
-17	M1750-25	. Lead Assembly, No. 6 Upper	1	
-18	M1750-41	. Lead Assembly, No. 6 Lower	1	
-19	633586	. Spring	1	
-20	633585	. Screw	1	
-21	633591	. Sleeve	1	
-22	633592	. Washer	2	
-23	633590	. Spring	1	
-24	633583	. Ferrule	1	
-25	633589	. Ferrule	1	
-26	633593	. Nut, Spark Plug End	1	
-27	M1568	. End Cap	2	
-28	633924	. Clamp	1	
-29	633928	. Screw	1	
-30	636150	. Bracket	1	
-31	635988-8	. Screw	1	
-32	635990-5	. Washer, Lock	1	
-33	635989	. Nut	1	
-34	636692	. Clamp	2	
-35	636687	. Screw	2	
-36	633927	. Nut	2	
-37	635991	. Tubing, Spiral	1	
-38	633925	. Clamp	12	
-39	633926	. Strap	9	

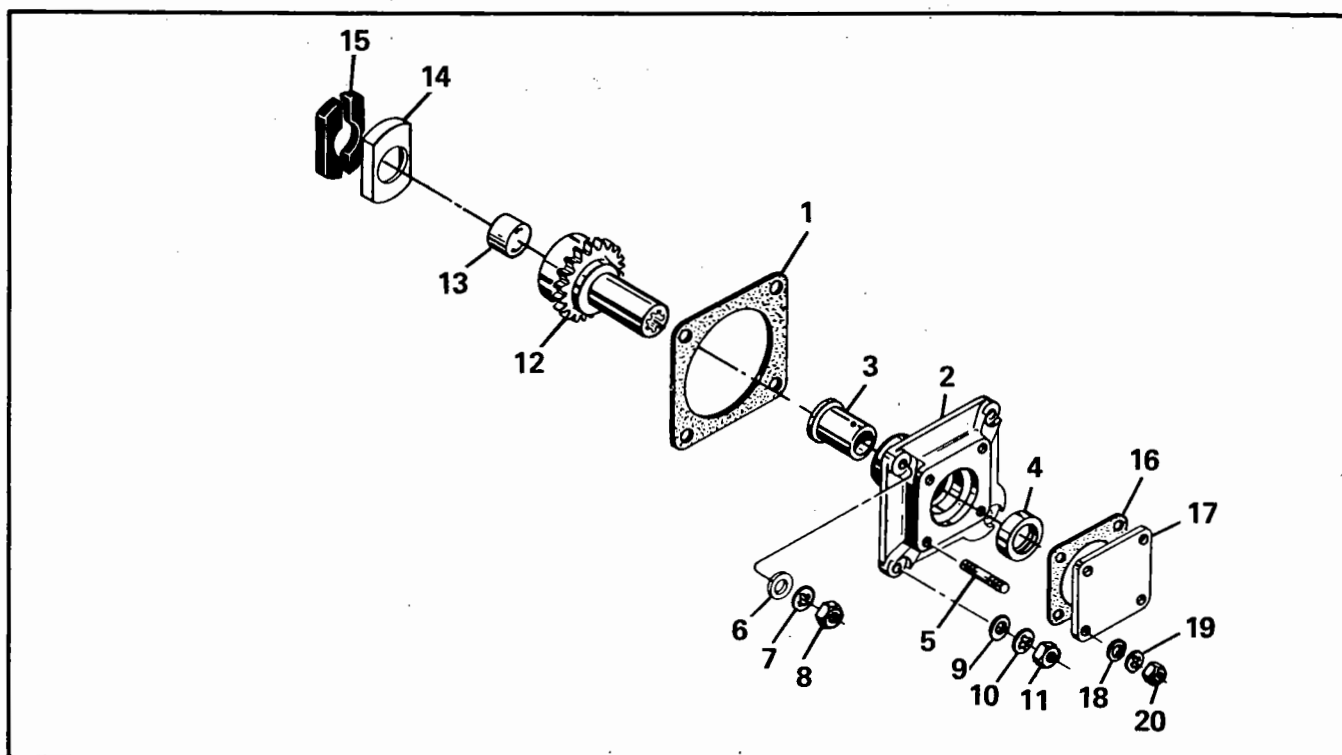


FIGURE 16. MAGNETO & ACCESSORY DRIVE ASSEMBLY.

FIG & INDEX	PART NUMBER	DESCRIPTION	QTY.	USABLE ON CODE
16-1	534863	Gasket, Adapter to Crankcase	2	
-2	643170A1	Adapter Assembly, Magneto	2	
		ATTACHING PARTS		
-3	2473	Washer, Flat	6	
-4	MS35337-45	Washer, Lock	6	
-5	2439	Nut, Plain	6	
-6	401507	Washer, Flat	2	
-7	MS35337-46	Washer, Lock	2	
-8	2441	Nut, Plain	2	
		* * * *		
-9	25102	Seal	1	
-10	632330	Bushing	1	
-11	25008	Stud	4	
-12	629076	Gear Assembly	2	
-13	629077	Sleeve	1	
-14	531178	Retainer, Drive Coupling	2	
-15	638172	Bushing, Drive Coupling	4	
-16	MS9134-01	Gasket	2	
-17	640380	Cover	2	
		ATTACHING PARTS		
-18	2472	Washer, Plain	8	
-19	MS35337-44	Washer, Lock	8	
-20	2437	Nut, Plain	8	
		* * * *		