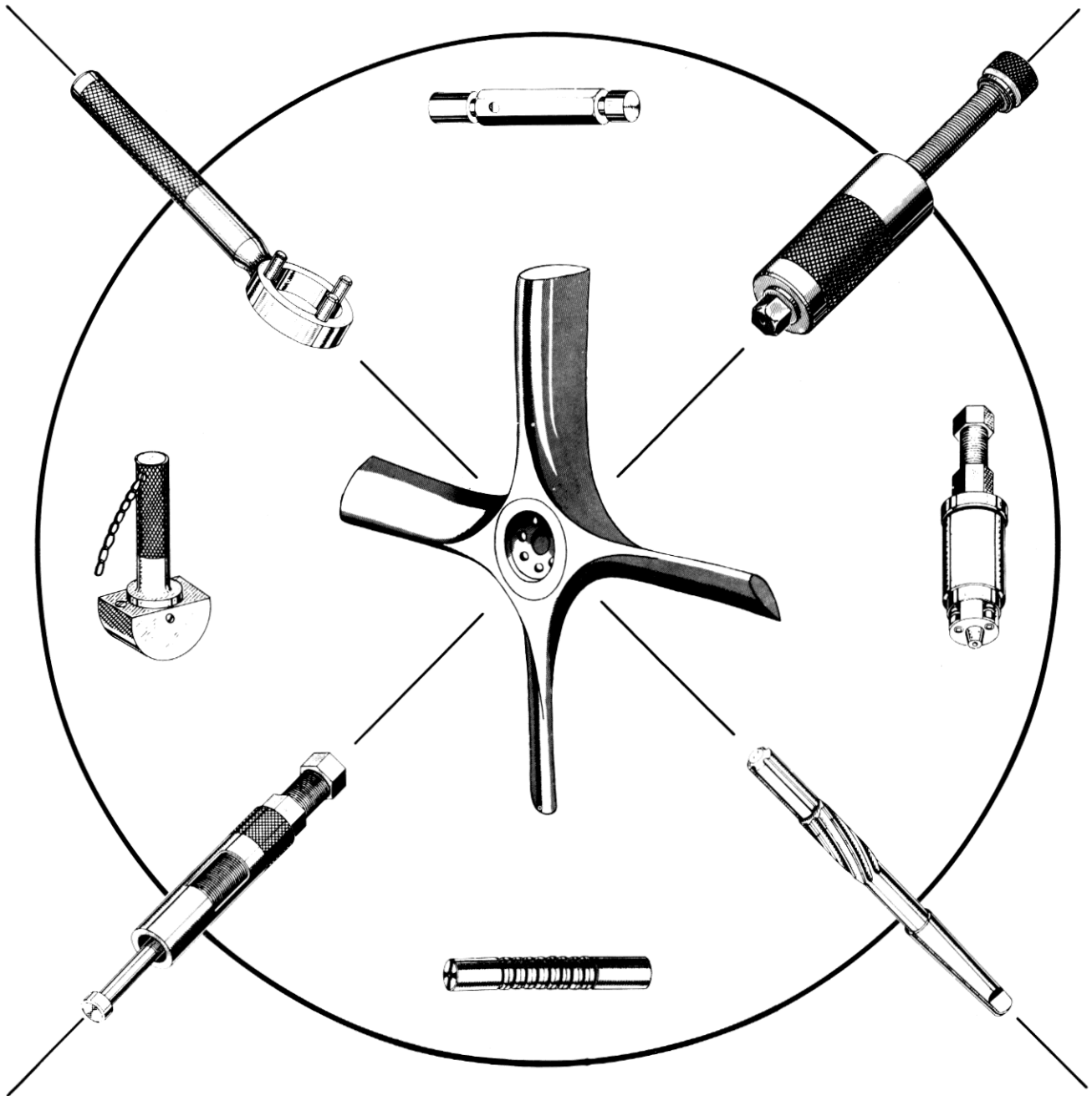


SPECIAL SERVICE TOOLS FOR AVCO LYCOMING PISTON ENGINES



SSP384

JAN. 1985

\$5.00

AVCO LYCOMING SERVICE TOOLS

INTRODUCTION

This catalog replaces Tool Catalog SSP578 dated November, 1978.

This catalog contains information relative to tools used for modification and maintenance of Avco Lycoming opposed aircraft engines. It consists of four sections: The first is an alphabetical index and the second a numerical pictorial listing with brief descriptions. The third is a Service Publication Cross Reference Index and the fourth is a listing of obsolete tools.

The illustrations used in this catalog show the general appearance of the tools but are not related according to size. In some cases, a single illustration has been used to cover a number of tools similar in appearance, with different tool numbers; therefore it is necessary, when ordering tools, to note carefully the descriptions and tool numbers in the text. Any tool described as being applicable to engines with "crosswise accessories" or "crosswise accessory housings" do not include VO-435-B1A and TVO-435-F1A helicopter engines and TIO-541 and TIGO-541 integral accessory drive engines; tools applicable to these engines are specifically designated by engine model.

PRICES

This catalog does not list prices. A separate numerically arranged parts and tool price list is available and is supplied to distributors of Avco Lycoming engines.

HOW TO ORDER

Tools must be ordered by or through authorized Avco Lycoming distributors. A tool must be designated by a tool number together with a name sufficiently descriptive to identify the tool. It is not necessary to write the full catalog description of the tool. Do not enter price of the tool on the order. Be sure to give definite shipping instructions.

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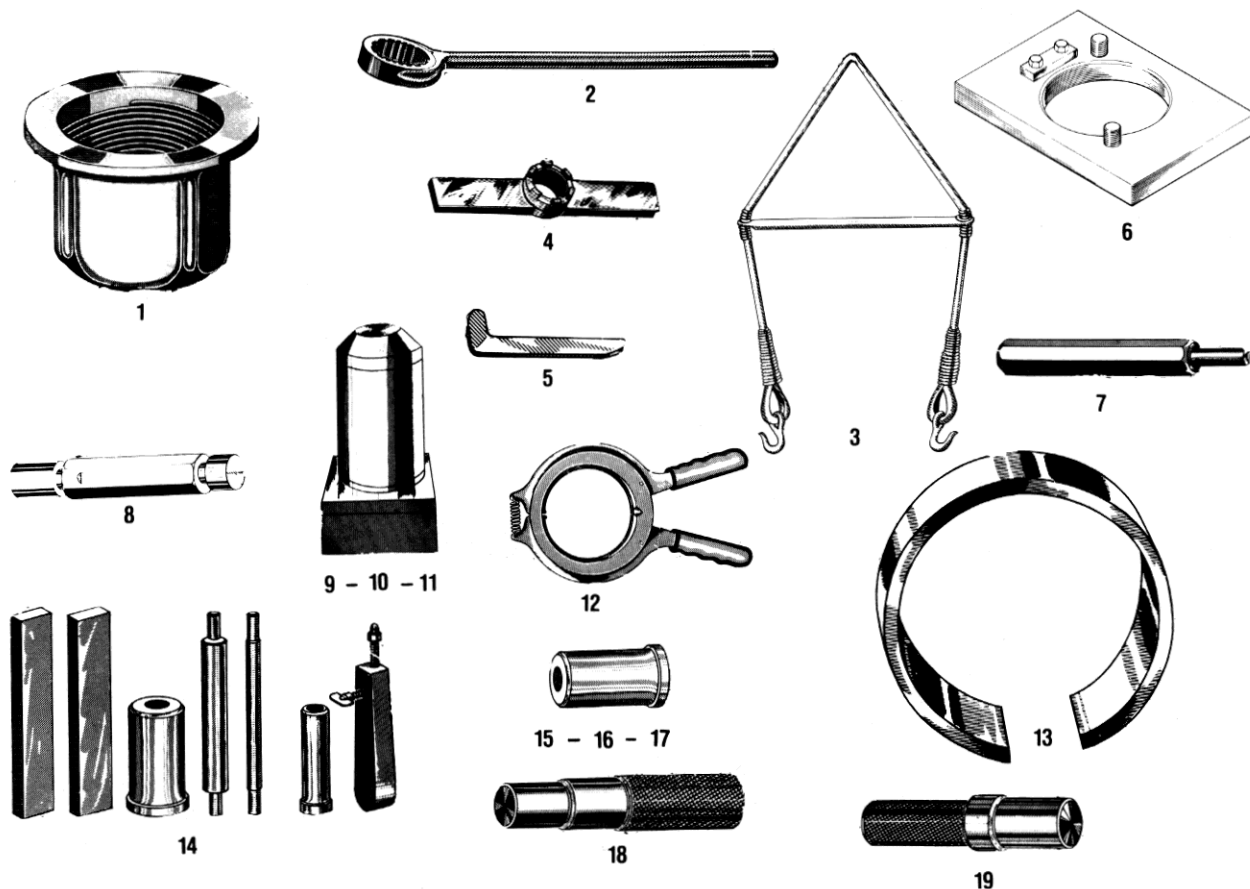
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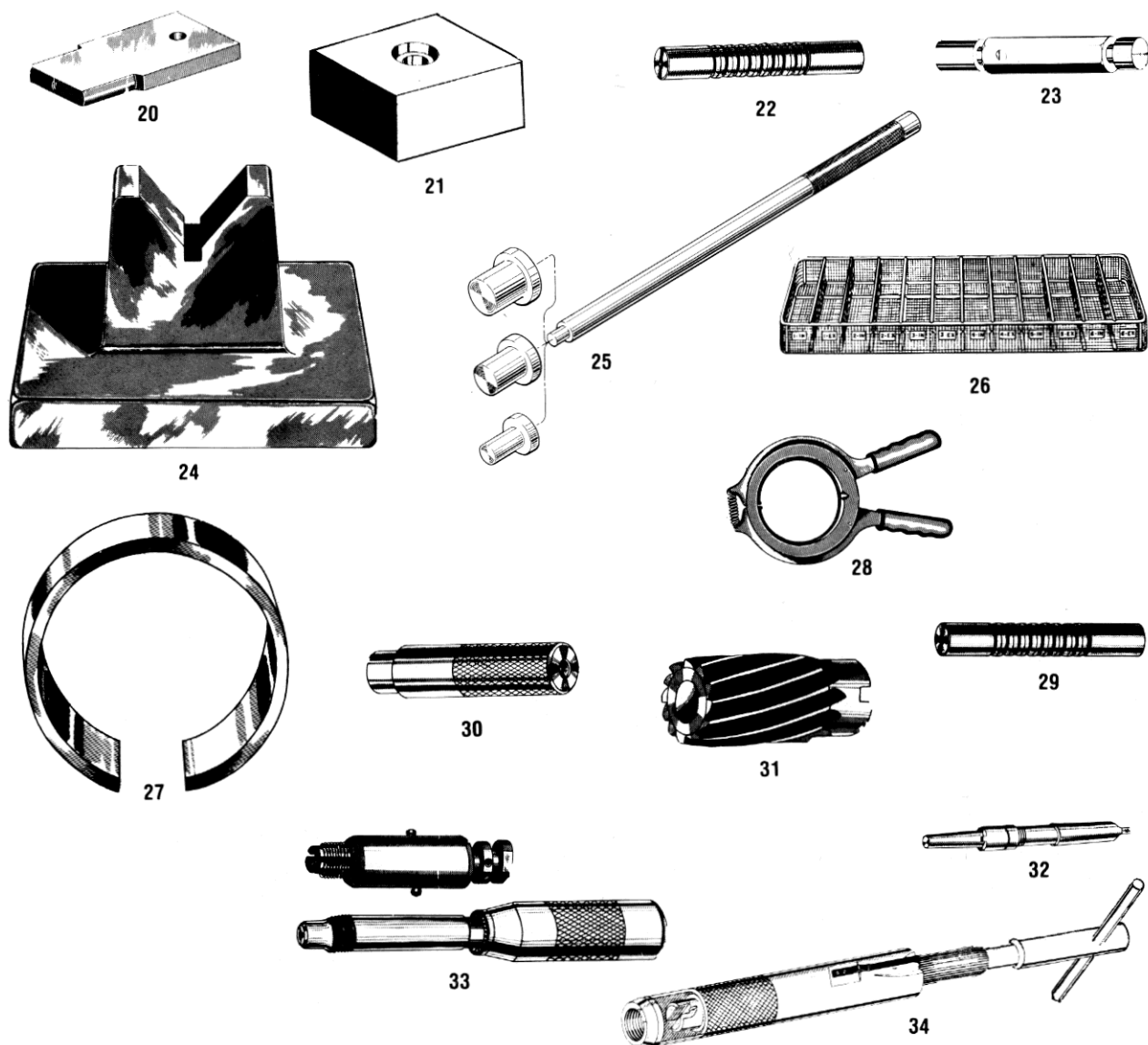
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
1	475-B	Protector, Crankshaft Propeller Nut Thread-All propeller shafts with No. 20 spline
2	1225-B	Wrench, Crankshaft No. 20 Spline - All propeller shafts with no. 20 spline (See ST-38 for No. 30)
3	1240	Cable, Engine Lifting - All engines employing two lifting straps
4	40714	Wrench, Thrust Bearing Lock Nut - All reduction gear housing employing a thrust bearing lock nut
5	62700	Gage, Valve Clearance - 0-235, 0-290-D Series solid tappets only
6	64501	Fixture, Valve Guide Replacement - All 4-3/8" and 4-7/8" bore cylinder assemblies
7	64505	Drift, Valve Guide Installation - All (flange) intake valve guides and all (flange) exhaust valve guides incorporating the .404/.405 guide hole I.D.
8	64514	Gage, Valve Guide ID - All intake valve guides and all exhaust valve guides incorporating the .404/.405 valve guide hole (See 64684 for Reamer)
9	64526	Block, Cylinder Holding - All cylinder assemblies with 4-3/8" bore
10	64526-1	Block, Cylinder Holding - All cylinder assemblies with 4-7/8" bore
11	64526-2	Block, Cylinder Holding - All cylinder assemblies with 5-1/8" bore
12	64528	Expander, Piston Ring - All cylinder assemblies with 4-7/8" bore
13	64529	Compressor, Piston Ring - All cylinder assemblies with 4-7/8" bore
14	64530	Gage, Connecting Rod Parallelism and Squareness - All engines
15	64530-9	Sleeve, Tapered, Connecting Rod Parallelism and squareness gage. Detail of 64530. Used on 2.4205/2.4210 bearing bores
16	64530-10	Sleeve, Tapered, Connecting Rod Parallelism and squareness gage. Detail of 64530. Used on 2.2970/2.2975 bearing bores
17	64530-11	Sleeve, Tapered, Connecting Rod Parallelism and squareness gage. Detail of 64530. Used on 2.4305/2.4310 bearing bores
18	64535	Drift, Connecting Rod Bushing Removal - All engines
19	64536	Drift, Connecting Rod Bushing Replacement - All engines



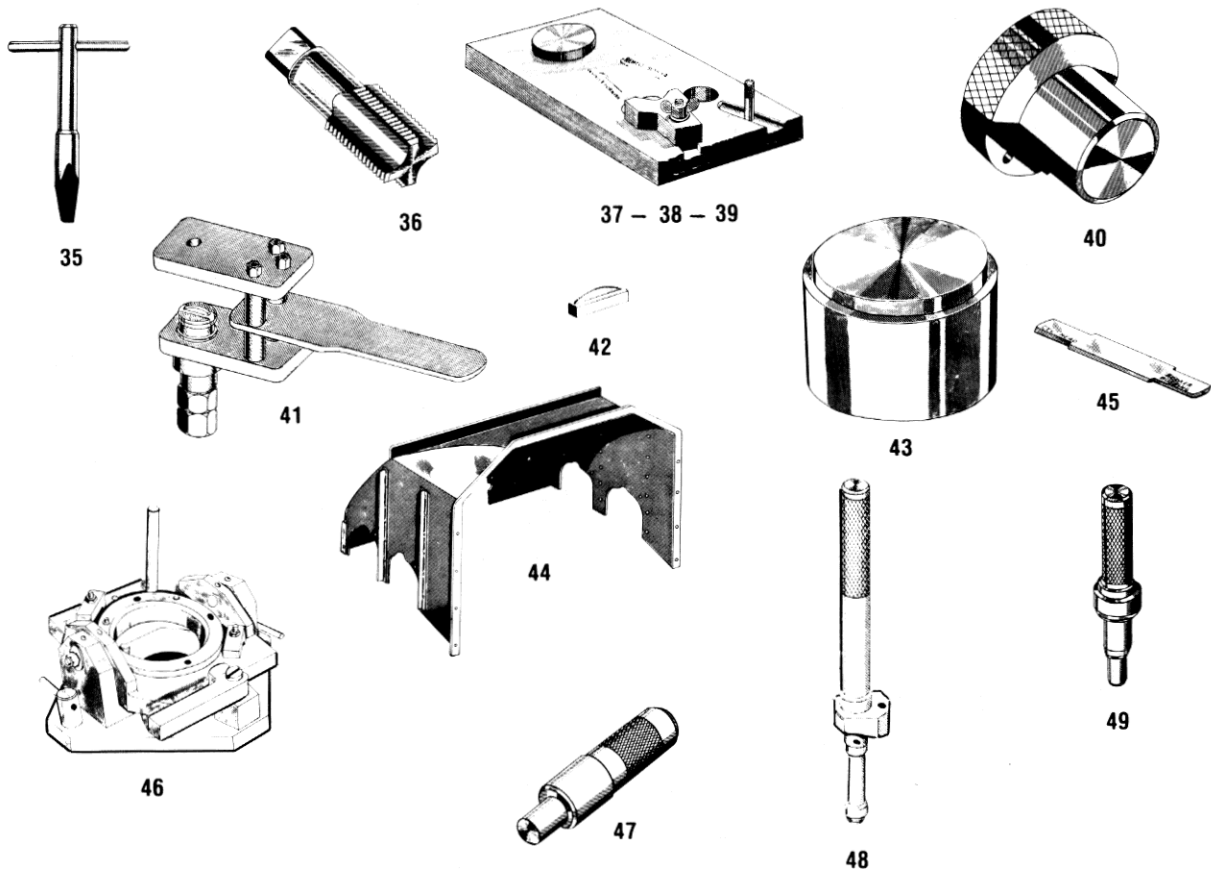
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
20	64537	Gage, Flat Plug - Connecting Rod Bushing Rejection - All engines
21	64540	Fixture, Rebushing Valve Rocker - All engines except 76 Series
22	64541	Burnisher, Valve Rocker Bushing - All engines except 76 Series (Use with 64826)
23	64542	Gage, Plug, Valve Rocker Bushing ID (Finish) - All engines except 76 Series
24	64545	Block, Vee - Check Crankshaft Run - All engines
25	64548	Drift, Replace Crankshaft Oil Tubes (Sludge Tubes) - All four cylinder direct drive engines employing sludge tubes
26	64553	Basket, Valve Parts, Cleaning - All engines
27	64559	Compressor, Piston Ring - All cylinder assemblies with 4-3/8" bore
28	64560	Expander, Piston Ring - All cylinder assemblies with 4-3/8" bore
29	64580	Burnisher, Connecting Rod Bushing - All engines
30	64588	Drift, Crankshaft Pilot Bushing - All geared engines
31	64589	Reamer, Crankshaft Pilot Bushing Finish - All geared engines
32	64590	Arbor, Crankshaft Pilot Bushing Reamer - All geared engines
33	64593	Expanding and Staking Tool, 18 MM Spark Plug Heli-Coil Insert - All engines (Includes long reach plugs)
34	64594	Inserting Tool, 18 MM Spark Plug Heli-Coil Insert - All engines (Including long reach spark plugs)



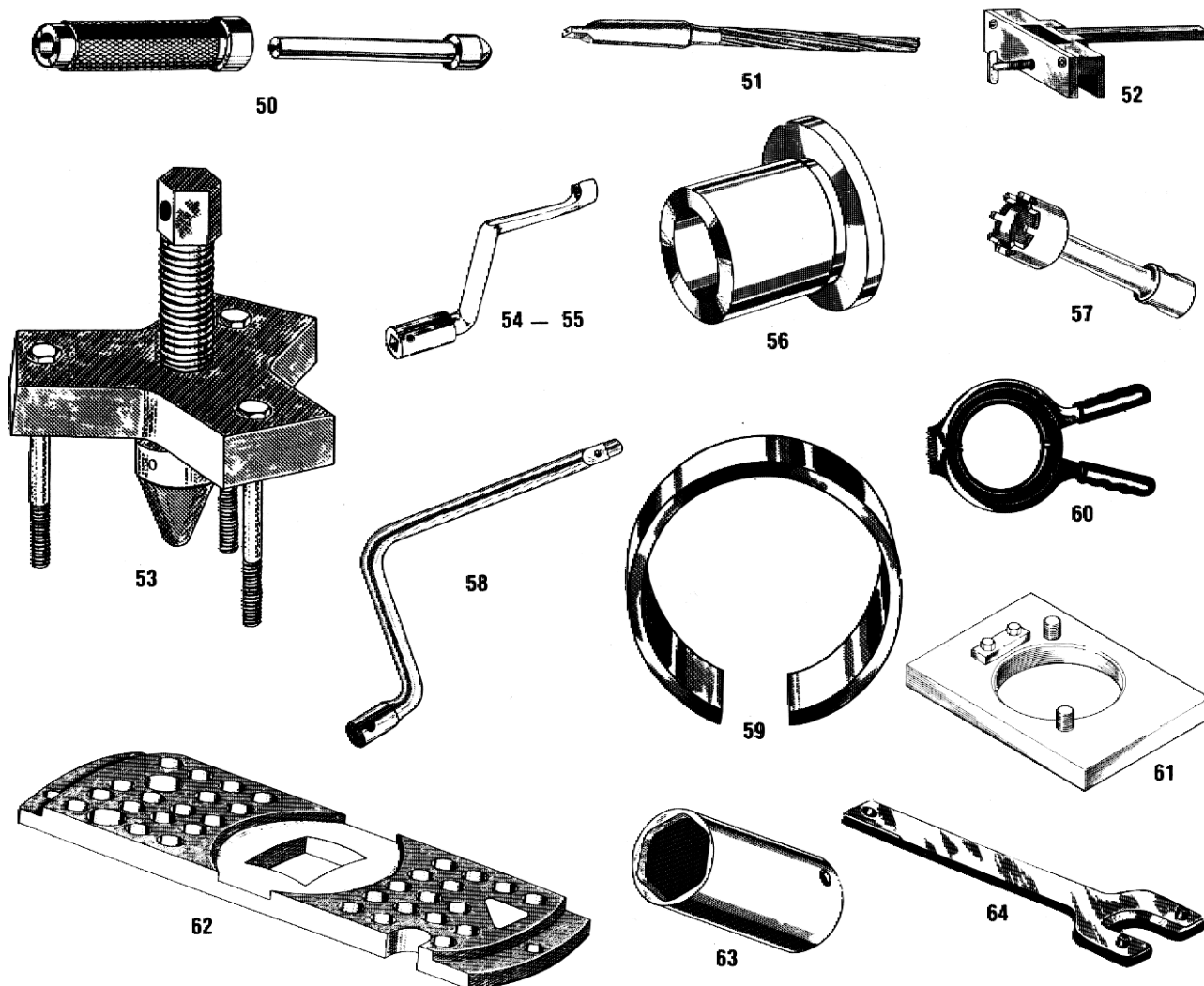
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
35	64595	Removing Tool, 18 MM Spark Plug Heli-Coil Insert - All engines (Includes long reach plugs)
36	64596-1	Tap, 18 MM Heli-Coil Spark Plug Bottoming Tap .010 o/s - All engines (Includes long reach plugs)
37	64597	Fixture, Remove, Replace, Burnish Connecting Rod Bushing - All engines
38	64597-10	Spacer, Use under detail 1 or detail 9 to hold connecting rod level with fixture. Use with connecting rods with $\frac{1.271}{1.273}$ bearing cap width (detail of 64597)
39	64597-11	Spacer, Use under detail 1 or detail 9 to hold connecting rod level with fixture. Use with connecting rods with $\frac{1.331}{1.333}$ bearing cap width (detail of 64597)
40	64599	Jig, Generator Mounting Bushing Drill for Dowel Pin - GO-435-C2 Series, GO-480-B1C, -C1D6, -G1D6, -G1F6, -G2D6, -G2F6, -C2 Series, -F Series
41	64603	Tool, Crankshaft Counterweight Plugs, Removal and Replacement - All Counterweights employing threaded plugs
42	64603-7	Blade, Counterweight Removal and Replacement Plug - Detail of 64603
43	64607	Block, Thrust Nut in Thrust Plate Assembly Installation - All reduction gear housings employing a thrust bearing locknut
44	64612	Shroud, Cooling - All four cylinder engines employing parallel valve cylinder except VO-360 and IVO-360
45	64613	Gage, Rocker Shaft Bushing Rejection - All engines except 76 Series
46	64644	Fixture, Valve Guide Replacement - All angle head cylinder assemblies
47	64647	Drift, Crankshaft Front Oil Plug - All geared engines except IGO-540, IGSO-540 and TIGO-541
48	64648	Drift, Crankshaft Oil Tubes - Replacement (Sludge Tubes) - All six cylinder vertical engines and all geared engines employing sludge tubes
49	64649	Drift, Rear Main Bearing Oil Tubes - GO-435-C2 Series, GO-480-B Series, -G1A6, -G1C6, -C1D6, -G1D6, -G1F6, -G2D6, -G2F6, -C2 Series, -F Series



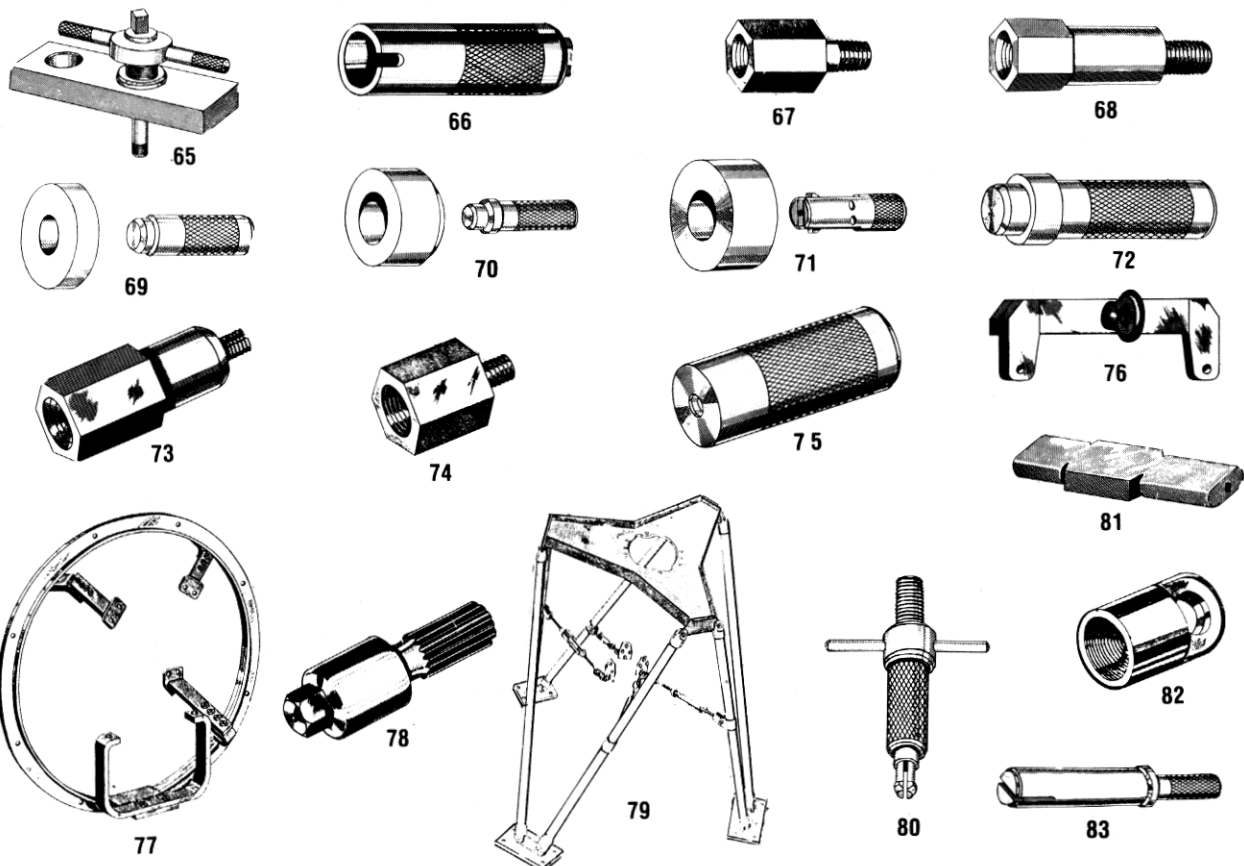
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
50	64681	Driver, Crankshaft Welch Plug - All direct drive except VO-435 and VO-540
51	64684	Reamer, Valve Guide ID - All intake valve guides and all exhaust valve guides incorporating the .404/.405 ID valve guide hole (See 64514 for Plug Gage)
52	64697	Pointer, Ignition Timing - All direct drive except TIO-541
53	64698	Puller, Pinion Cage - All geared engines except TIGO-541
54	64700	Wrench, (9/16" Spline) Cylinder base nut - All engines employing 68515 nut - (See 64701 for 3/4" Wrench)
55	64701	Wrench, (3/4" Spline) Cylinder base nut - All engines employing 68514 nut - (See 64700 for 9/16" wrench)
56	64704	Spacer, Supercharger Impeller (This spacer is used as a tool in setting up impeller in supercharger housing assembly to obtain tool box clearance) - All supercharger engines
57	64709	Wrench, Accessory Drive Shaft Nut - All crosswise accessory housing
58	64711	Handle, Cylinder Base Nut Wrench - Use with 64700 and 64701
59	64712	Compressor, Piston Ring - All 5-1/8" bore cylinder assemblies
60	64713	Expander, Piston Ring - All 5-1/8" bore cylinder assemblies
61	64714	Fixture, Valve Guide Replacement - All 5-1/8" bore parallel valve cylinder assemblies
62	64715	Plate, Impeller Nut - All supercharged engines
63	64719	Wrench, Propeller Shaft Sleeve Nut - All reduction gears employing nut P/N 67729
64	64721	Wrench, Propeller Flange Spanner - All engines with flanged propeller shaft less bushings except TIGO-541 (See ST-313)



AVCO LYCOMING SERVICE TOOLS

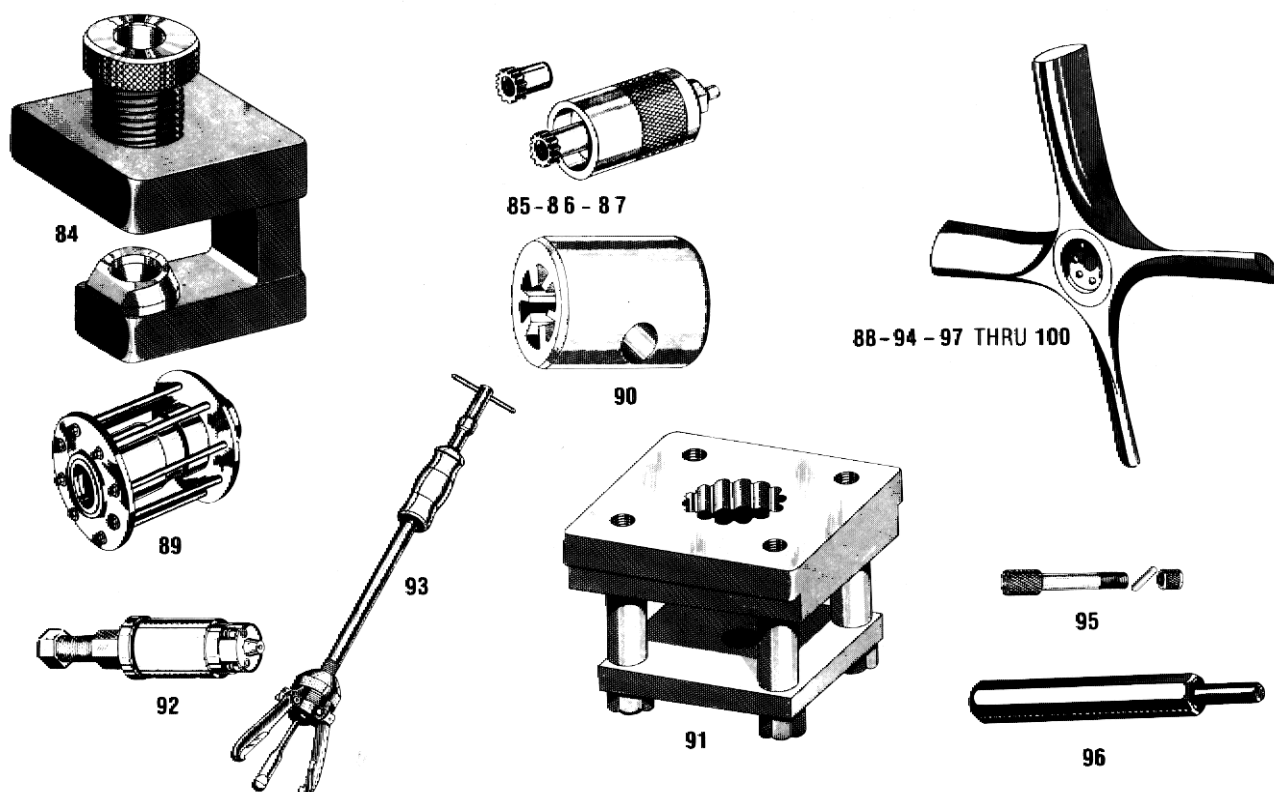
Ref.	Tool No.	Nomenclature and Description
65	64728	Puller, Generator Drive Countershaft - GO-480-B
66	64729	Wrench, Timing - All engines equipped for hand starters
67	64735	Adapter, Puller, Crankshaft Front Oil Plug P/N 70432 - VO-435, TVO-435, VO-540, TIVO-540
68	64737	Adapter, Puller, Crankshaft Rear Oil Tube P/N 69844 - VO-435, TVO-435, GO-480-D Series, -C1B6, -G1B6, -G1E6, GSO-480 Series, IGSO-480 Series, IGO-540 Series, IGSO-540 Series, VO-540 Series, TIVO-540 Series
69	64741	Drift, Magneto Coupling Sleeve Removal - All engines with crosswise accessory housings
70	64743	Drift, Magneto Drive Idler Gear Hub Bushing - All engines with crosswise accessory housings
71	64745	Drift, Starter Drive Adapter Bushing - All engines with crosswise accessory housings
72	64747	Drift, Oil Pump Drive Shaft Bushing Removal - All engines with crosswise accessory housings
73	64748	Adapter, Puller, Starter Jaw - All engines with crosswise accessory housings
74	64752	Adapter, Puller, Check Valve Retainer - All engines with crosswise accessory housings
75	64754	Drift, Crankshaft Oil Plug Installation - VO-435, TVO-435, VO-540, TIVO-540
76	64758	Bracket, Engine Lifting - GO-435-C2A, -C2B, VO-435-A Series
77	64759	Ring, Engine Mounting - All engines except turbocharger equipped and IO-720 series. (Use adapters 64898 or ST-88 with 4 cylinder engines. Use engine mounts ST-460 and ST-461 on applicable 6 cylinder direct drive engines). Use with ST-278, ST-162, and ST-165 as required.
78	64764	Wrench, Timing - All engines with crosswise accessory housing not employing hand starters except VO-435-B1A and TVO-435-F1A
79	64765	Stand, Test-Helicopter Engines - All six cylinder vertical engines
80	64766	Puller - Magneto Drive Shaft Sleeve - All engines employing crosswise accessory housing with rear mounted magnetos
81	64767	Gage, Connecting Rod Bushing ID Finish - All engines
82	64769	Eye, Engine Lifting - VO-435, TVO-435, VO-540, IVO-540 and TIVO-540
83	64770	Drift, Oil Seal Plug Installation - 0-235, 0-290, 0-320, IO-320, 0-340, 0-360, IO-360 and HIO-360 (Plug Size 1.753/1.755) P/N 61510



AVCO LYCOMING SERVICE TOOLS

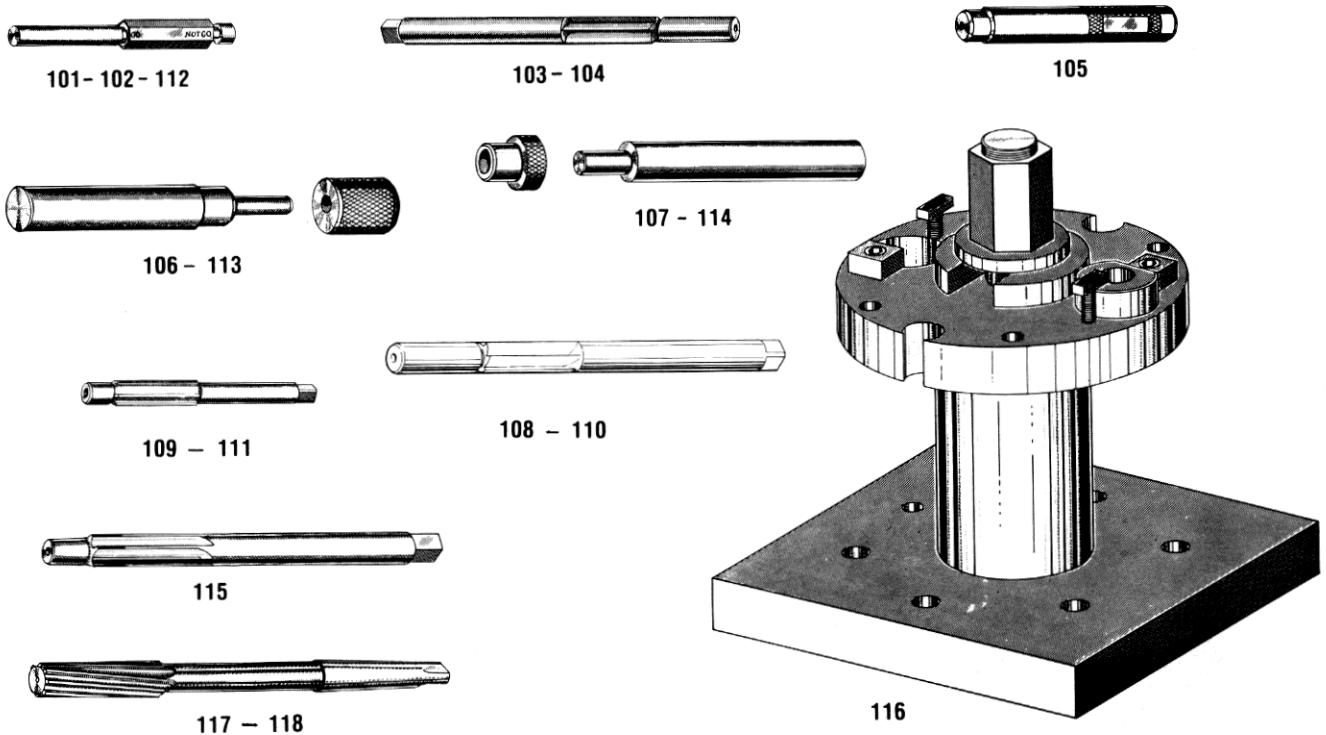
Ref.	Tool No.	Nomenclature and Description
84	64771	Drill, Jig, Mounting Bushing Crankcase - 0-320
85	64772	Puller, Crankshaft Spline Bushing Rear - All engines with crosswise accessory housings
86	64772-1	Nut, Splined - 13 Teeth - Detail of 64772
87	64772-5	Nut, Splined - 14 Teeth - Detail of 64772
88	64773	Club, Test, - GO-435-C2, VO-435, TVO-435, VO-540, IVO-540 and TIVO-540 (Use with 64774)
89	64774	Hub and Cone Assembly, Test Club (4 Blade) - All No. 20 spline propeller shafts with 2.365/2.367 OD
90	64778	Wrench, Impeller - GSO-480 Series, IGSO-480 Series and IGSO-540 Series
91	64780	Jig, Holding Supercharger Shaft Gear - GSO-480, IGSO-480, IGSO-540 Series
92	64781	Swaging Tool, Intake pipe - Engines employing intake pipe connections P/N 69602, 71699, 78914 with 1.672/1.696 ID
93	64782	Puller, Slide Hammer - Medium - Used with the following tools: 64735, 64737, 64748, 64752, 64784, 64831, 64866, ST-172 and ST-333
94	64783	Club, Test (4 Blade) - GO-480-B, -C1, -D, -F2, -F4A6, -G1 Series; GSO-480-A1, -B1 Series; IGSO-480; IGO-540 and IGSO-540
95	64784	Adapter, Puller, Crankshaft Sludge Tube - VO-435; TVO-435; VO-540; TIVO-540; IO-720 and all geared engines
96	64796	Drift, Valve Guide Installations - All (Flange) valve guides with .437/.438, .4375/.4385 ID valve guide hole
97	64801	*Club, Test - O-235 with AS-127 type 2 prop flange - 0-290-D, 0-320-A, -C, -E series and IO-320-A, -D, -E series, AIO-320-A, -B, -C. Use with 64979 or 64980
98	64802	Club, Test - 0-320-B, -D series, IO-320-B, -C series, 0-340-A, -B. Use with 64980
99	64803	Club, Test - 0-360; VO-360; IO-360; AIO-360; TIO-360; HO-360; HIO-360; IMO-360; 0-540; IO-540; TIO-540 and TIO-541 (Use with 64981)
100	64807	Club, Test - GO-480-C2, -F6, -F1A6, -F3A6, -F3B6, -G2D6, -G2F6 series; GSO-480-A2A6, -B2 series (Use with 64840)

* AS-127 Type 2 propeller flange can be identified by measuring from one prop attaching bushing across the center of the crankshaft to the opposite bushing. The center to center measurement is 4-3/4 inches.



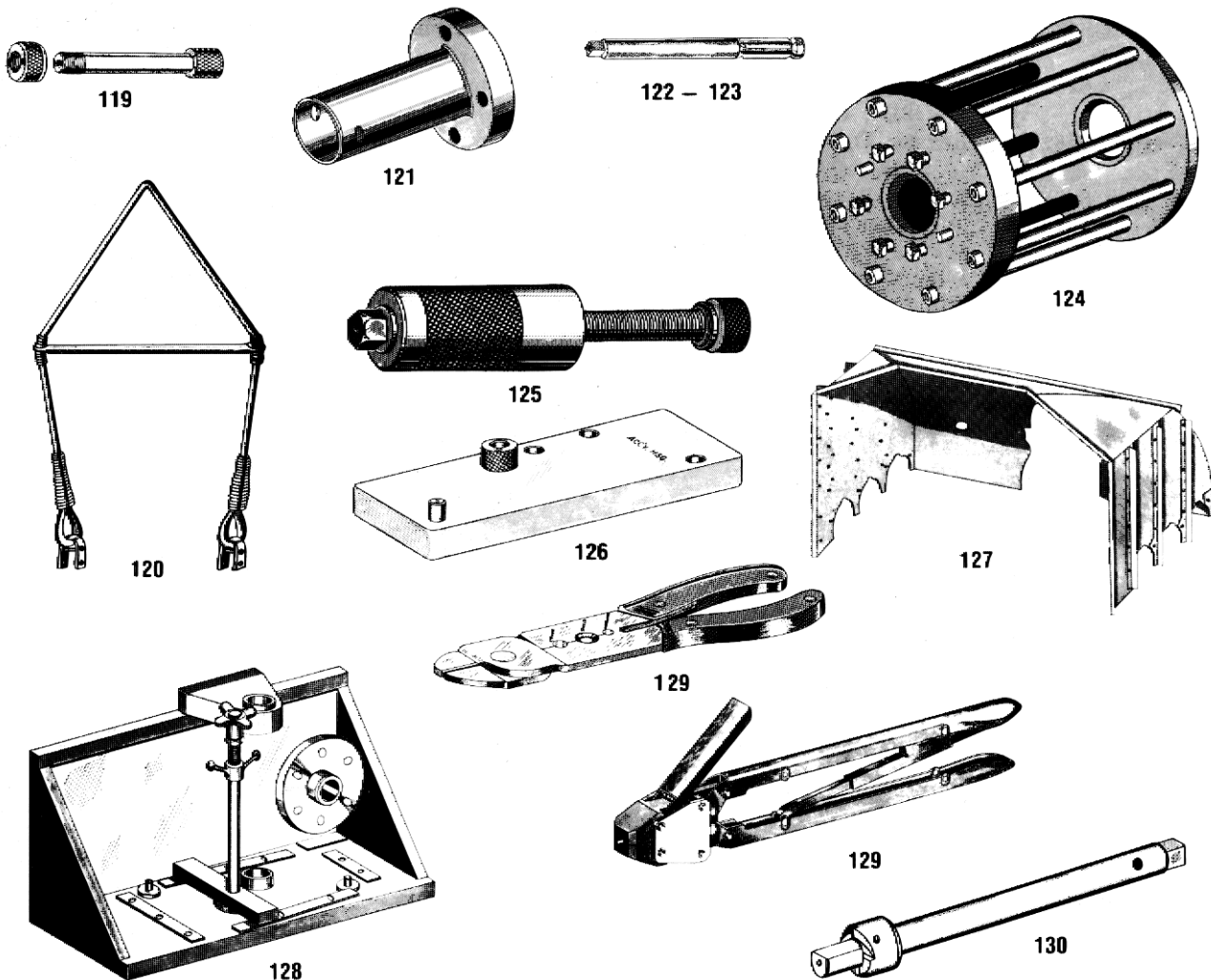
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
101	64810	Gage, Plug, Rocker Shaft Bushing Hole in Cylinder Head - All engines except 76 Series
102	64811	Gage, Plug, .005 o/s, Rocker Shaft Bushing Hole in Cylinder Head - All engines except 76 Series (See ST-191 for .010 o/s)
103	64812	Reamer, .005 o/s - Outer Rocker Shaft Bushing Hole in Cylinder Head - All engines employing angle valves
104	64813	Reamer, .010 o/s - Outer Rocker Shaft Bushing Hole in Cylinder Head - All engines employing angle valves
105	64814	Drift, Rocker Shaft Bushing Removal - All engines except 76 Series
106	64815	Drift, Outer Rocker Shaft Bushing Installation - All engines employing angle valves
107	64816	Drift, Inner Rocker Shaft Bushing Installation - All engines employing angle valves
108	64819	Reamer, Semi-Finish, Outer Rocker Shaft Bushing ID - All engines employing angle valves
109	64820	Reamer, Semi-Finish, Inner Rocker Shaft Bushing ID - All engines employing angle valves
110	64821	Reamer, Finish Outer Rocker Shaft Bushing ID - All engines employing angle valves
111	64822	Reamer, Finish Inner Rocker Shaft Bushing ID - All engines employing angle valves
112	64823	Gage, Plug - Rocker Shaft Bushing ID - All engines except 76 Series
113	64824	Drift, Outer Rocker Shaft Bushing Installation - All engines employing parallel valves except 76 Series
114	64825	Drift, Inner Rocker Shaft Bushing Installation - All engines employing parallel valves except 76 Series
115	64826	Reamer, Finish Inner and Outer Rocker Shaft Bushings - All engines employing parallel valves except 76 Series (Use with 64541)
116	64827	Fixture, Drill Drive Plate Dowel in Reduction Gear Housing - GO-480-F Series, -C2 Series, -G2D6, -G2F6 and GSO-480-B2D6
117	64828	Reamer, Drive Plate Dowel Hole in Reduction Gear Housing - GO-480-C2 Series, -F Series, -G2D6, -G2F6 and GSO-480-B2D6
118	64829	Reamer, Reduction Gear Housing Dowel Hole - GO-480-C2 Series, -F Series, -G2D6, -G2F6 and GSO-480-B2D6



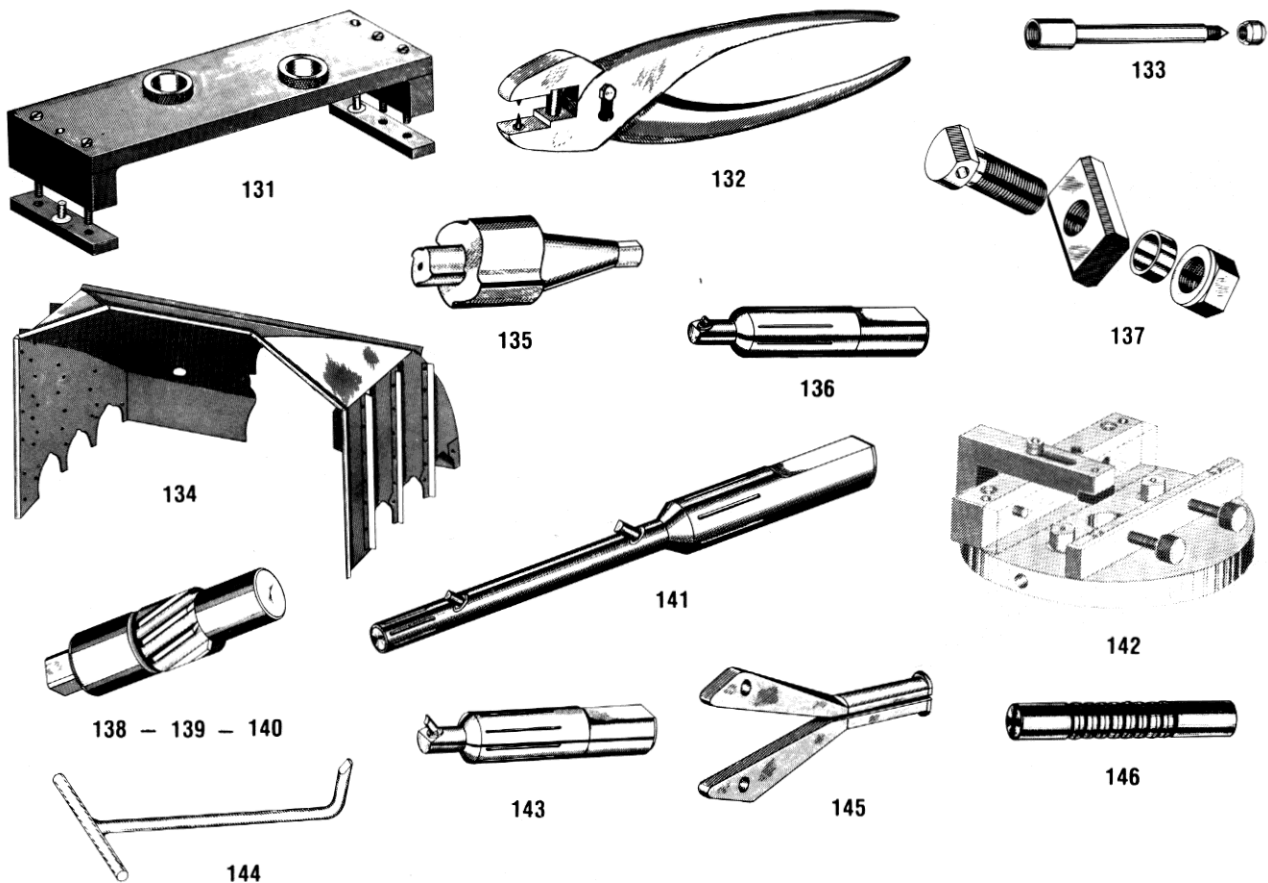
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
119	64831	Adapter, Puller, Crankshaft Rear Oil Tube - 0-435-A, GO-435-C2 Series, GO-480-B, -C2, -F Series, -C1D6, -G1A6, -G2D6, -G1F6, -G2F6, -G1G6
120	64834	Cable, Engine Lifting - All engines not employing lifting eyes
121	64836	Adapter, Propeller Shaft Flange - GO-480-C2 Series, -F6, -F1A6, -F3A6, -F3B6, -G2D6, -G2F6
122	64838	Reamer, .005 o/s Inner Rocker Shaft Hole in Cylinder Head (Used with 64812 reamer for angle head cylinder. Used for both shaft holes in parallel valve cylinders except 76 Series)
123	64839	Reamer, .010 o/s Inner Rocker Shaft Hole in Cylinder Head (Used with 64813 reamer for angle head cylinder. Used for both shaft holes in parallel valve cylinders except 76 Series)
124	64840	Adapter, Test Club - GO-480-C2 Series, -F6, -F1A6, -F3A6, -F3B6 Series, -G2 Series, GSO-480-A2A6, -B2 Series
125	64843	Puller, Piston Pin - All engines
126	64856	Bushing Plate, Crankcase and Accessory Housing Drill - All engines with crosswise accessory housings
127	64857	Shroud, Cooling - All six cylinder angle valve cylinders employing down draft exhaust except TIO and TIGO-541
128	64859	Fixture, Bore Accessory Housing Bushing - All engines with crosswise accessory housings
129	64861	Crimping Tool and Wire Stripper - All 7MM ignition harnesses (See ST-198 for 5MM)
130	64862	Spotfacer, Inner Rocker Shaft Bushing - All engines employing angle head valves



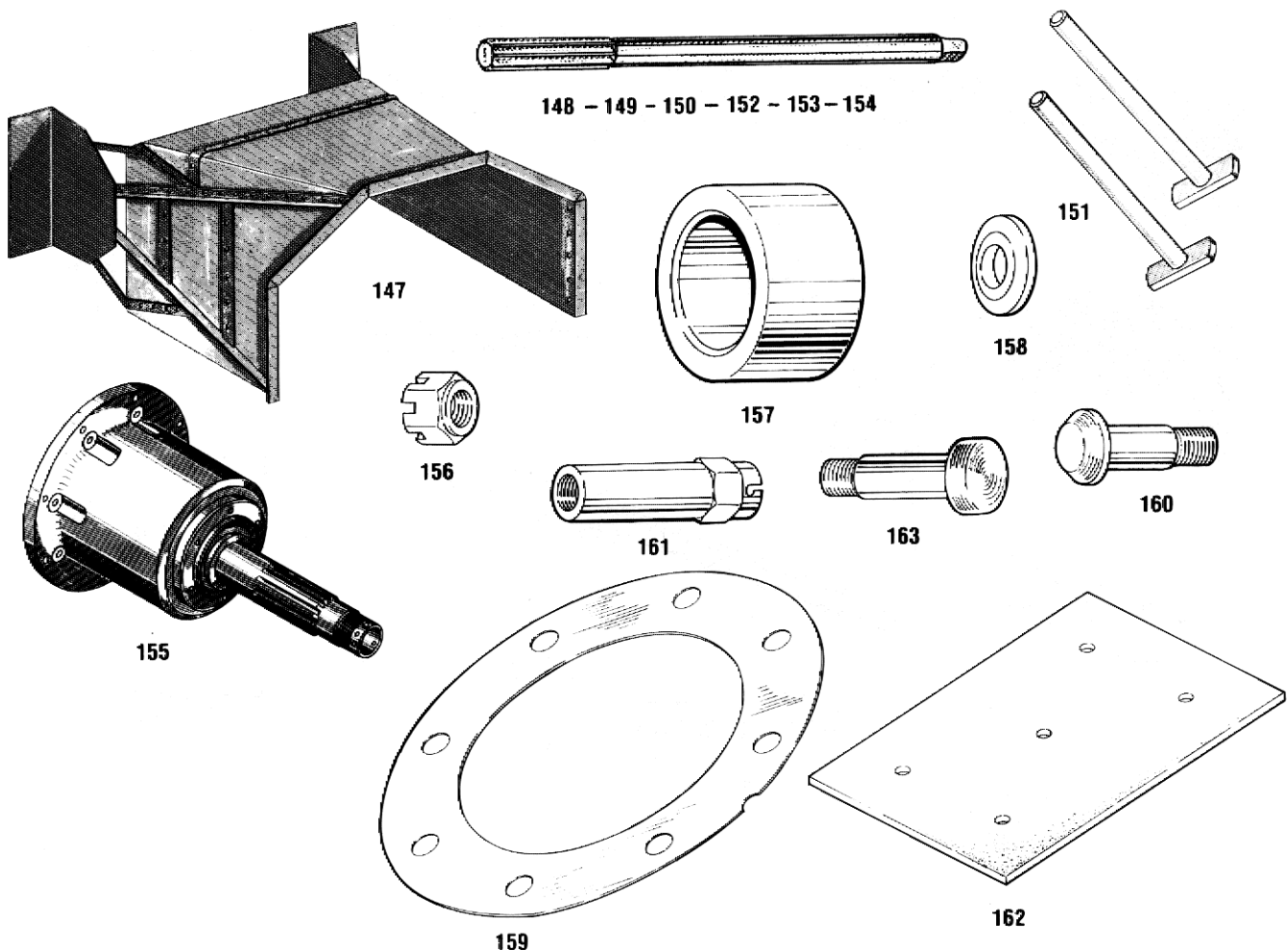
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
131	64863	Fixture, Bore Bushing in Accessory Housing Cover - All engines with crosswise accessory housings
132	64864	Tool, Roll Pin Spreader (Connecting Rod) - All engines employing roll pins
133	64866	Adapter, Sludge Tube Removal - O-540, IO-540 (P/N 60449)
134	64867	Shroud Cooling - All six cylinder parallel valve cylinders employing down draft exhaust
135	64868	Cutter, Oil Pump Housing (Convert to Large Capacity Filter) - All crosswise accessory housings not equipped with large filter
136	64870	Bar, Boring, Generator Drive Bushing and Annulus in Accessory Housing - All engines with crosswise accessory housings
137	64872	Puller, Remove and Install Crankshaft Counterweight Bushings - All engines with counterweight bushings
138	64874	Reamer, .005 o/s Counterweight Bushing Holes - All engines with counterweights (See ST-210 for .0075 o/s)
139	64875	Reamer, .010 o/s Counterweight Bushing Holes - All engines with counterweights (See ST-211 for .0125 o/s)
140	64876	Reamer, .015 o/s Counterweight Bushing Holes - All engines with counterweights
141	64877	Bar, Boring, Cross Shaft in Accessory Housing - All engines with crosswise accessory housings
142	64878	Fixture, Grind Bushings in Dynamic Counterweight - All engines with counterweight bushings
143	64884	Bar, Boring - Accessory Housing Cover Bushings - All engines with crosswise accessory housings
144	64885	Tool, Baffle Installation - All engines with cooling baffles
145	64886	Jaw, Slide Hammer Puller (Small Diameter) - All engines (Use with 64782)
146	64887	Burnisher, Magneto Drive Idler Gear (Hub Assembly) - All engines with crosswise accessory housings



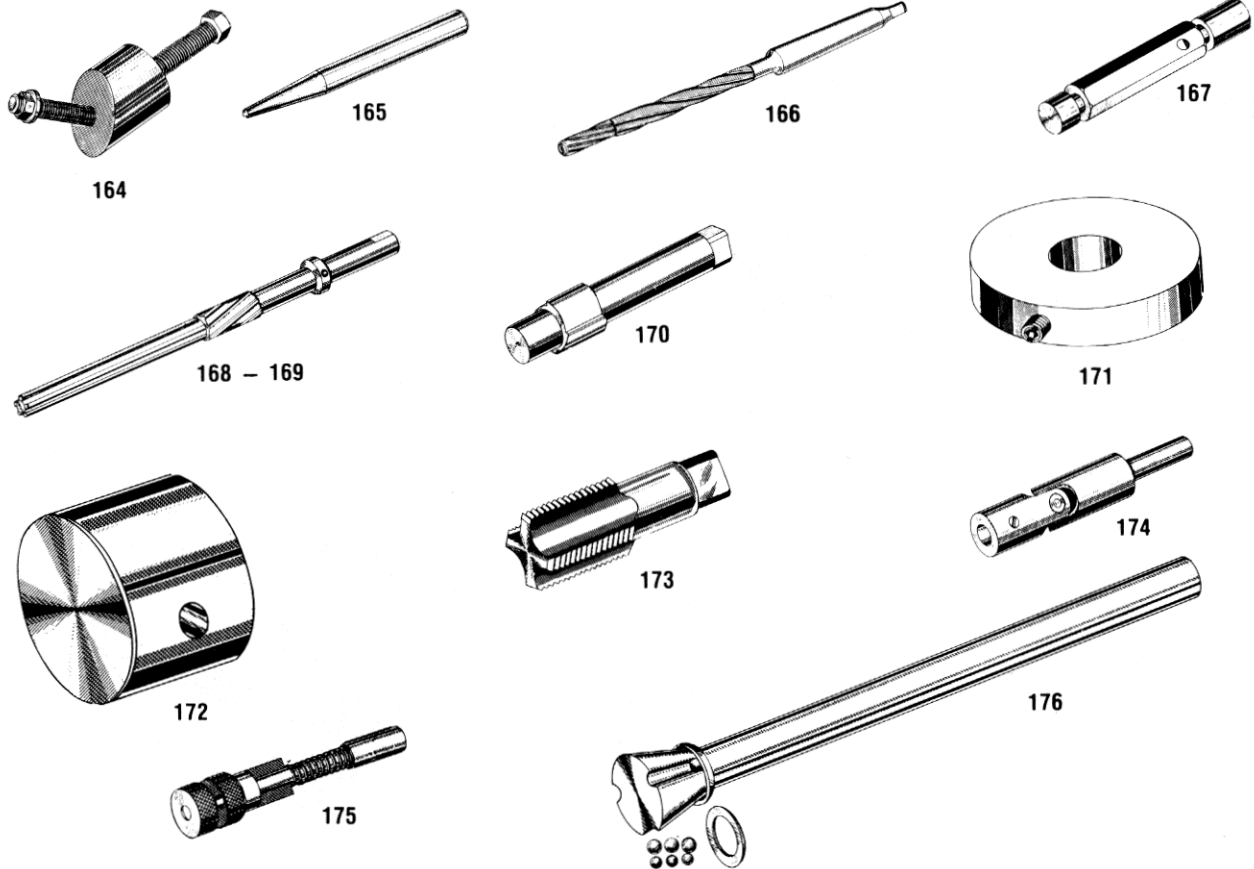
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
147	64888	Shroud Cooling (Permanent Installation) - All six cylinder down draft exhaust engines except IGO and IGSO-540, TIO and TIGO-541)
148	64891	Reamer, Body Fit Bolts Reduction Gear "Service" (STD) - All geared engines in which P/N 71184 body fit bolts are to be installed in reduction gear housing
149	64891-1	Reamer, Body Fit Bolts Reduction Gear "Service" (.010 o/s) - All geared engines in which P/N 71184 body fit bolts are to be installed in reduction gear housing
150	64891-2	Reamer, Body Fit Bolts Reduction Gear "Service" (.020 o/s) - All geared engines in which P/N 71184 body fit bolts are to be installed in reduction gear housing
151	64892	Gages, Check Circlips in Counterweights - All engines with counterweights that employ circlips
152	64893	Reamer, Body Fit Bolts Reduction Gear (STD) - All geared engines in which P/N 68364 body fit bolts are to be installed in reduction gear housing
153	64893-1	Reamer, Body Fit Bolts Reduction Gear (.010 o/s) - All geared engines employing P/N 68364-P10 body fit bolts in reduction gear housing
154	64893-2	Reamer, Body Fit Bolts Reduction Gear (.020 o/s) - All geared engines in which P/N 68364-P20 body fit bolts are to be installed in reduction gear housing
155	64894	Drive Assembly, Test - All six cylinder, vertical engines (Use 74822 gasket)
156	64894-1	Nut, Slotted - 3/8-16 thread (detail of 64894)
157	64894-3	Bearing, 2.001 OD x 1.377 ID x 1.19 long (detail of 64894)
158	64894-4	Spacer, Tapered - 1.0 diameter x .150 thick (detail of 64894)
159	64894-5	Shim, Laminated - 7.13 OD x 4.63 ID x .060 thick (detail of 64894)
160	64894-6	Screw, Sholder - .500 diameter x 1.42 long - 3/8-16 thread (detail of 64894)
161	64894-7	Nut, 3/8-24 x 2.25 long - 9/16 hex (detail of 64894)
162	64894-13	Pad, Access hole cover (detail of 64894)
163	64894-16	Screw, Sholder - .500 diameter x 1.72 long - 3/8-16 thread (detail of 64894)



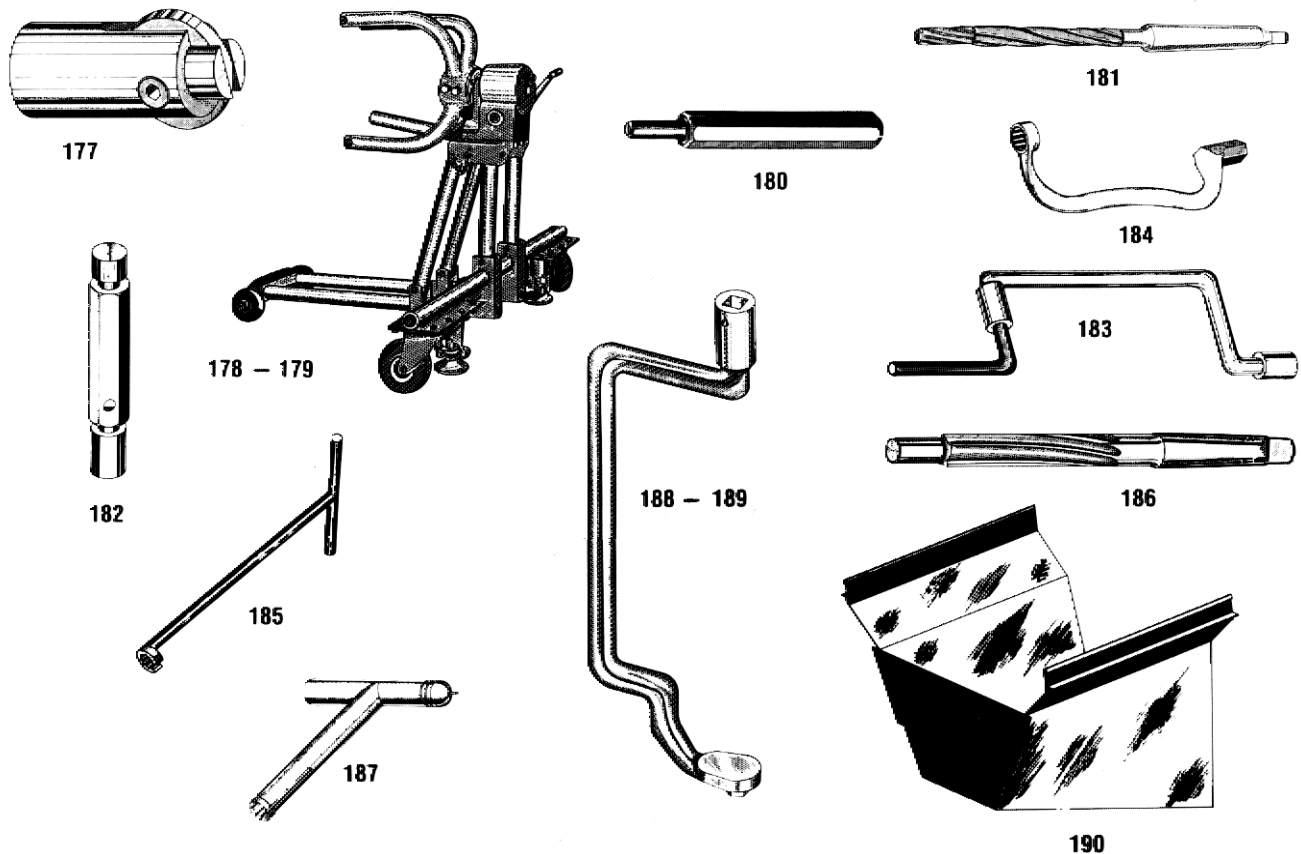
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
164	64898	Adapter, Dynafocal Mounts (Test Stand and Mounting Ring) - All engines employing 30° mounts
165	64899	Adapter, Magnetic Particle Inspection of Hydraulic Tappets - All engines except 0-235, 0-290-D, 76 Series, TIO-541 and TIGO-541 (Use with ST-387)
166	64900	Reamer, Valve Guide ID (Exhaust) - All valve guides with .4375/.4385 ID valve guide hole (See 64901 for Plug Gage)
167	64901	Gage, Plug Valve Guide ID (Exhaust) - All valve guides with .4375/.4385 ID valve guide hole (See 64900 for Reamer)
168	64902	Reamer, Rework High Compression Crankcase (Rough) - 0-320, 0-340, 0-360, VO-360 and 0-540 Series - To incorporate Body Fit Thru Studs (P/N 72698)
169	64903	Reamer, Rework High Compression Crankcase (Final) - 0-320, 0-340, 0-360, VO-360 and 0-540 Series - To incorporate Body Fit Thru Studs (P/N 72698)
170	64904	Counterbore, Rework High Compression Crankcase "O" Ring Recess - 0-320, 0-340, 0-360, VO-360 and 0-540 Series - To incorporate Body Fit Thru Studs (P/N 72698)
171	64905	Stop Collar, Use with 64902 and 64903 Reamers - High Compression Crankcase - 0-320, 0-340, 0-360, VO-360 and 0-540 Series - To incorporate Body Fit Thru Studs (P/N 72698)
172	64906	Plug, Bearing, High Compression Crankcase - 0-320, 0-340, 0-360, VO-360 and 0-540 Series - To incorporate Body Fit Thru Studs (P/N 72698)
173	64907	Tap, .007 o/s for 1/2" Thru-Stud, High Compression Crankcase, 0-320, 0-340, 0-360, VO-360 and 0-540 Series - To incorporate Body Fit Thru Studs (P/N 72698)
174	64908	Universal, Drill 1/2" - Rework High Compression Crankcase - 0-320, 0-340, 0-360, VO-360 and 0-540 Series - To incorporate Body Fit Thru Studs (P/N 72698)
175	64909	Gage, Reject Hydraulic Tappet Bodies - All engines except 0-235, 0-290-D, 76 Series, TIO-541 and TIGO-541
176	64910	Spinning Tool, Crankshaft Oil Tube Replacement (Sludge Tubes) - All engines employing sludge tubes



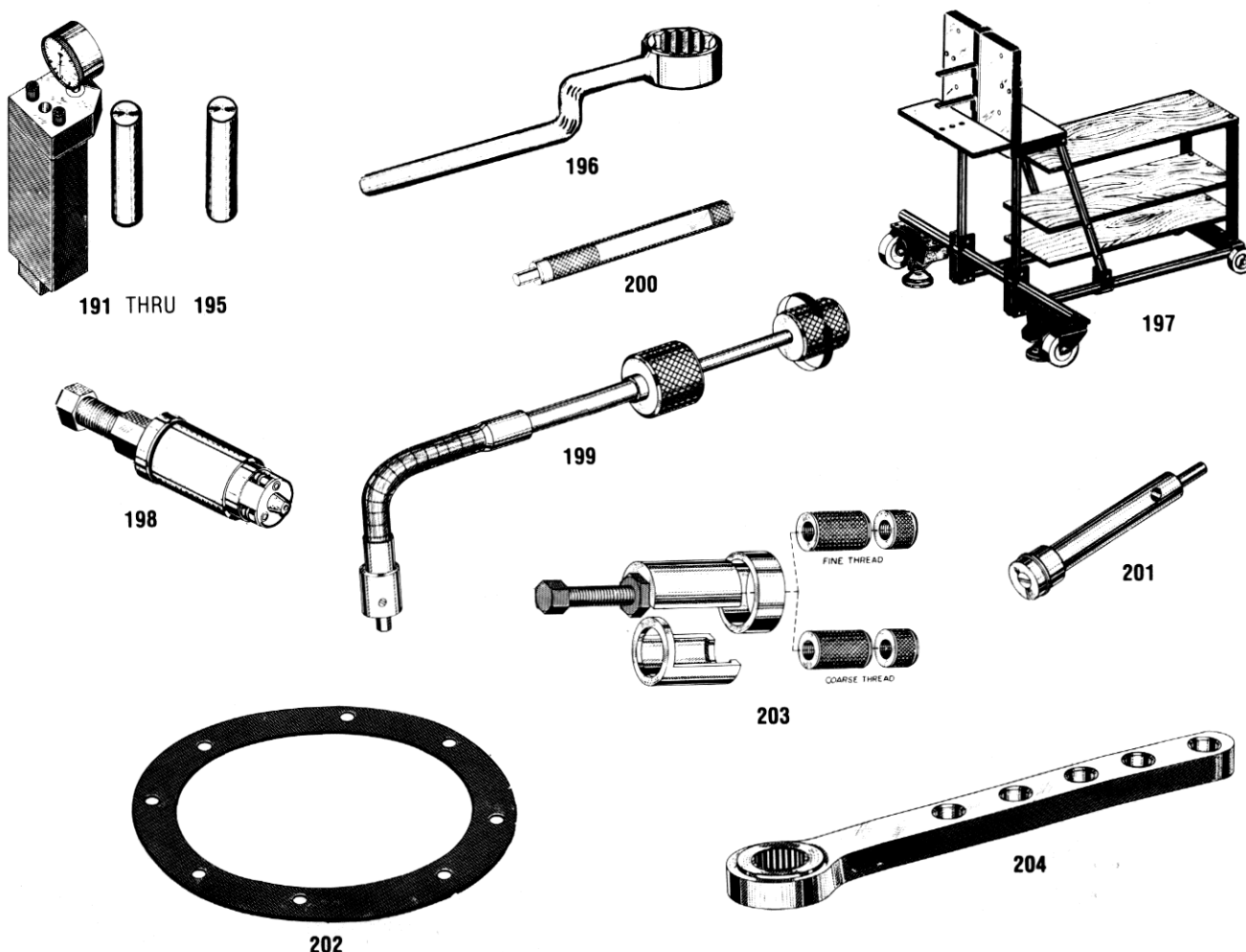
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
177	64914	Tool, Remove Fuel Injector Oil Filter - IGSO-480 Series
178	64916	Stand, Overhaul - All engines - available from (B.K. Sweeney Mfg. Co., 6300 East 44th Ave., Denver 16, Colorado)
179	64917	Adapter, Overhaul - All engines - available from (B.K. Sweeney Mfg. Co., 6300 East 44th Ave., Denver 16, Colorado)
180	64923	Drift, Exhaust Valve Guide Installation - All engines employing 1/2" (Flange) exhaust valve guides
181	64925	Reamer, Valve Guide ID (Brass) (Exhaust) - Pilot dia. .4888/.4893, Finished ID .4985/.4995 (Not used on Ni-Resist guides) (See 64927 for Plug Gage)
182	64927	Gage, Plug, Valve Guide ID (Exhaust) - All valve guides with .4985/.4995 ID valve guide hole (See 64925 for Reamer)
183	64932	Wrench, Offset Allen, Simmonds Injector Pump Installation - IGSO-540-B
184	64933	Wrench, 1/2" Top Exhaust Head Manifold Removal Tool - IO-540 Series, IGO-540-B Series, IGSO-540-B Series, IO-720-B Series
185	64934	Wrench, 7/16" Dry Vacuum Pump Installation - All engines employing 3P-194 Pesco Vacuum Pump
186	64939	Piloted Drill, Install 1/2" Diameter Exhaust Valve Guide - All angle head engines to be converted from 7/16" to 1/2" exhaust valves
187	64941	Tool, Remove Hydraulic Tappet Assemblies - All engines except 0-235, 0-290-D, 76 Series, TIO-541 and TIGO-541
188	64942	Wrench, (1/2" Allen) Cylinder Base Nut - All engines employing P/N 71133 Nut (See 64943 for 3/8" wrench)
189	64943	Wrench, (3/8" Allen) Cylinder Base Nut - All engines employing P/N 71134 Nut (See 64942 for 1/2" wrench)
190	64944	Shroud, Cooling (Updraft Exhaust) - IO-540-B Series, IGO-540-B, IGSO-540-B Series, TIO-540-A Series



AVCO LYCOMING SERVICE TOOLS

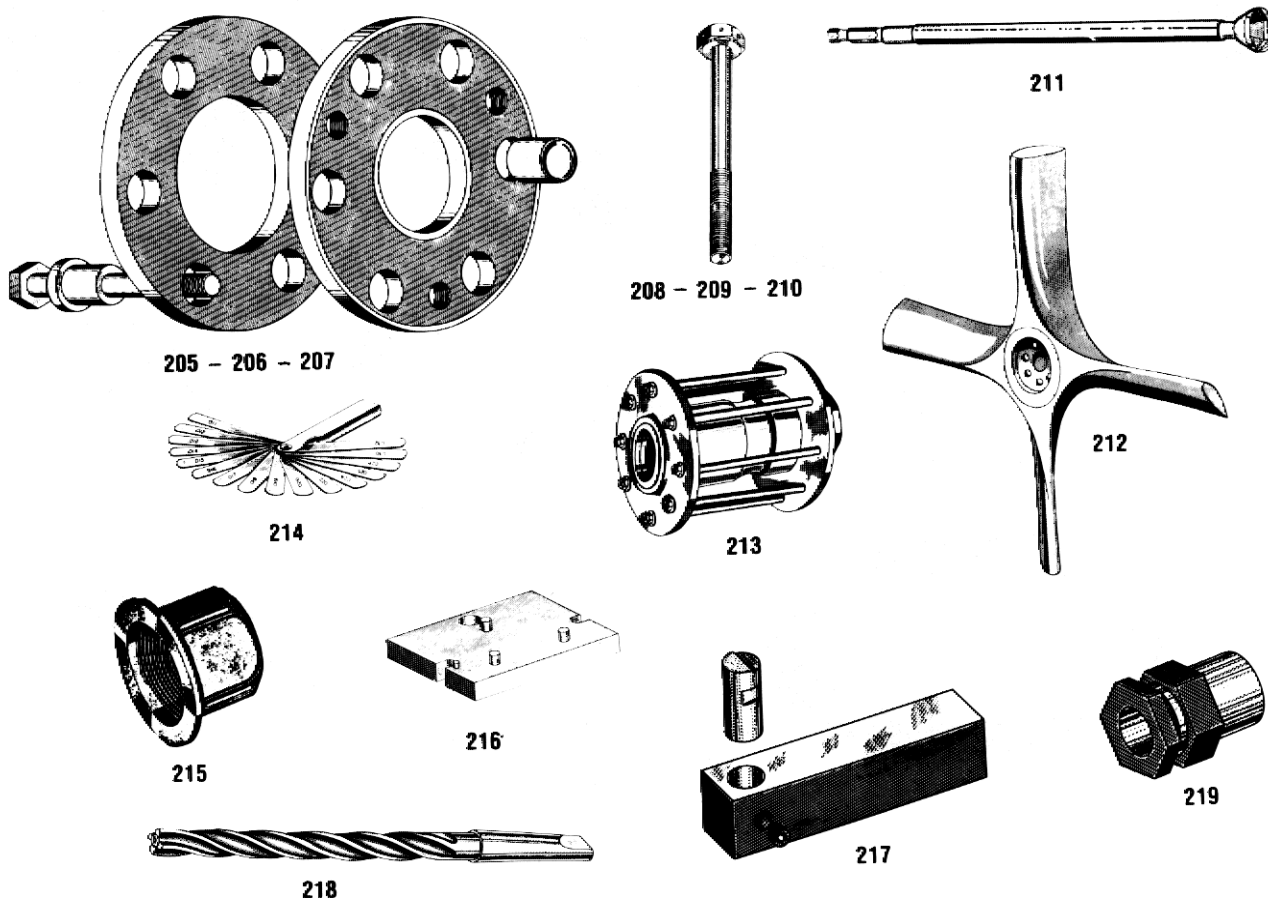
Ref.	Tool No.	Nomenclature and Description
191	64945	Gage, Connecting Rod Bolt Stretch - All engines employing stretch bolts in connecting rods
192	64945-7	Dial Indicator - Detail of 64945
193	64945-9	Set Master 2.1255 Length - Detail of 64945
194	64945-10	Set Master 2.2555 Length - Detail of 64945
195	64945-11	Gage Assembly and Set Masters - Less dial indicator
196	64946	Wrench, Offset, (1-5/16") Change Oil Screen in Aero Commander - IGO-540, IGSO-540
197	64947	Stand, Work - IGO-540, IGSO-540
198	64948	Swaging Tool, Intake Pipe, 0-235, 0-290, 0, IO, AEIO-320, 0-340, 0-360, IO-360, HO-360 engines employing intake pipe connections P/N 61376, 61377, 62115, 70482 with 1.422/1.446 ID
199	64970	Wrench, Adjust Bendix Injector (Idle Speed) on Aero Commander - IGO-540 Series
200	64971	Gage, Check Switch and Retard Terminal Contact Springs Positions (200 Series Magnetos) - All engines employing 200 series magnetos
201	64974	Tool, Rework Shroud Tube Holes in Cylinder Head - All engines employing angle head valves
202	64975	Rubber Mount, Test Stand (64765) - All six cylinder, vertical engines
203	64976	Puller, Gear, Magneto Assembly (P/N 60971) - All engines employing low tension magnetos
204	64977	Wrench, Special, Gears on Low Tension Magnetos (P/N 60971) - All engines employing low tension magnetos



AVCO LYCOMING SERVICE TOOLS

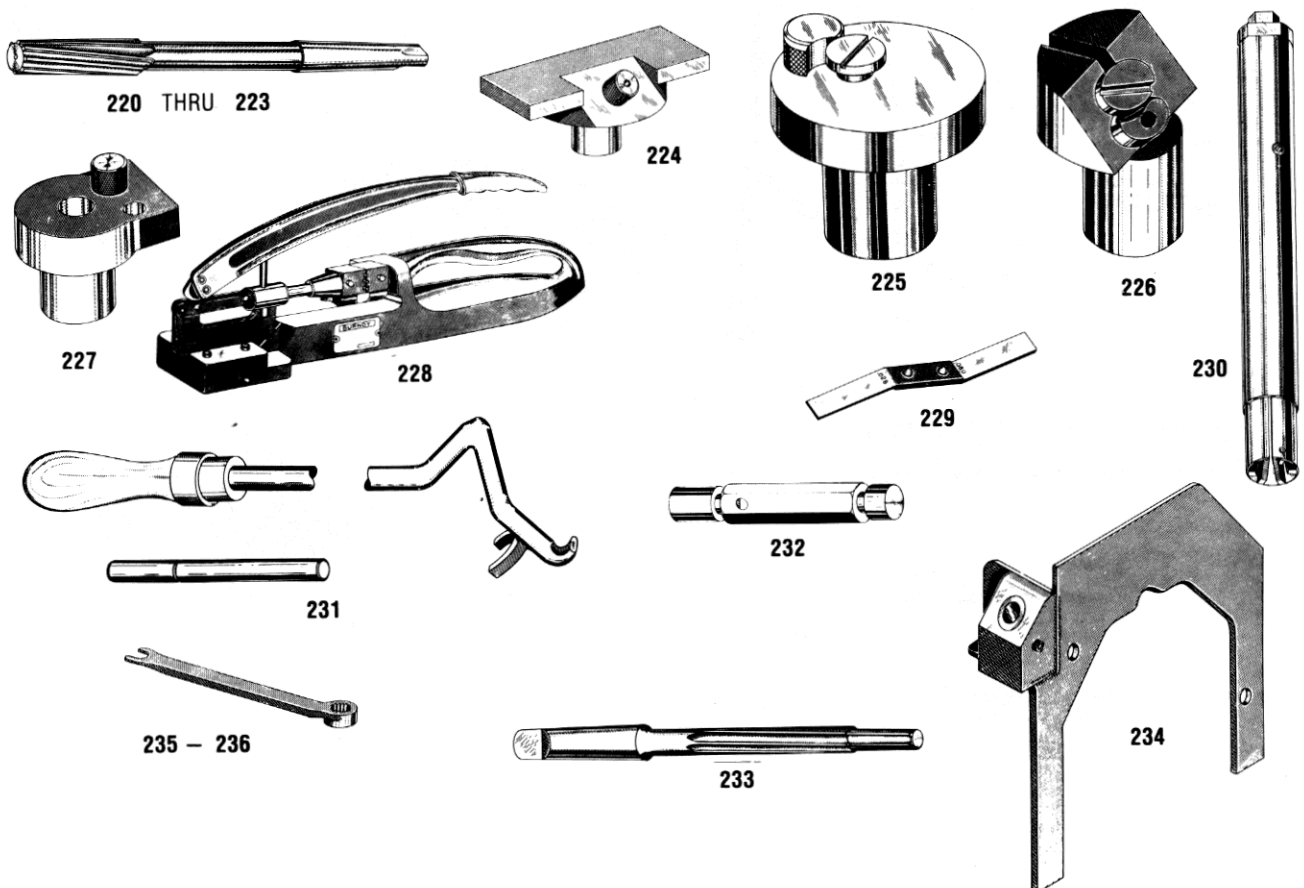
Ref.	Tool No.	Nomenclature and Description
205	64979	*Adapter, Test Club - All engines with AS-127 Type 2 propeller flange with bushings for 3/8 inch propeller attaching bolts (See ST-455 for AS-127 Type 1 propeller flange)
206	64980	*Adapter, Test Club - All engines with AS-127 Type 2 propeller flange with bushings for 7/16 inch propeller attaching bolts
207	64981	*Adapter, Test Club - All engines with AS-127 Type 2 propeller flange with bushings for 1/2 inch propeller attaching bolts
208	64982	Bolt, Propeller 3/8-24 Drilled Hex Head - Use with Adapter 64979
209	64983	Bolt, Propeller 7/16-20 Drilled Hex Head - Use with Adapter 64980
210	64984	Bolt, Propeller 1/2-30 Drilled Hex Head - Use with Adapter 64981
211	64987	Spinner, Cylinder Base Nut - All engines employing hex head cylinder base nuts
212	64988	Club, Test - IO-720
213	64989	Adapter, Test Club - IO-720
214	64992	Gage, Feeler to Set Simmonds 580 Injector IGSO-540-B Series
215	72762	Protector, Crankshaft Propeller Nut Thread - All propeller shafts with No. 30 spline
216	ST-8	Fixture, Counterboring P/N 72572 Reduction Gear Housing Seal - IGO and IGSO-540
217	ST-9	Depth Gage, Flush Pin, Counterbore Oil Passage Holes for "O" Rings on Reduction Gear Housing P/N 72572 - IGO and IGSO-540
218	ST-10	Drill, 4 Flute Flat Bottom, Drill Reduction Gear Housing P/N 72572 for Seal - IGO and IGSO-540
219	ST-11	Stop Collar, 19/32" Diameter Drill Reduction Gear Housing P/N 72572 for Seal - IGO and IGSO-540

* AS-127 Type 2 propeller flange can be identified by measuring from one prop attaching bushing across the center of the crankshaft to the opposite bushing. The center to center measurement is 4-3/4 inches.



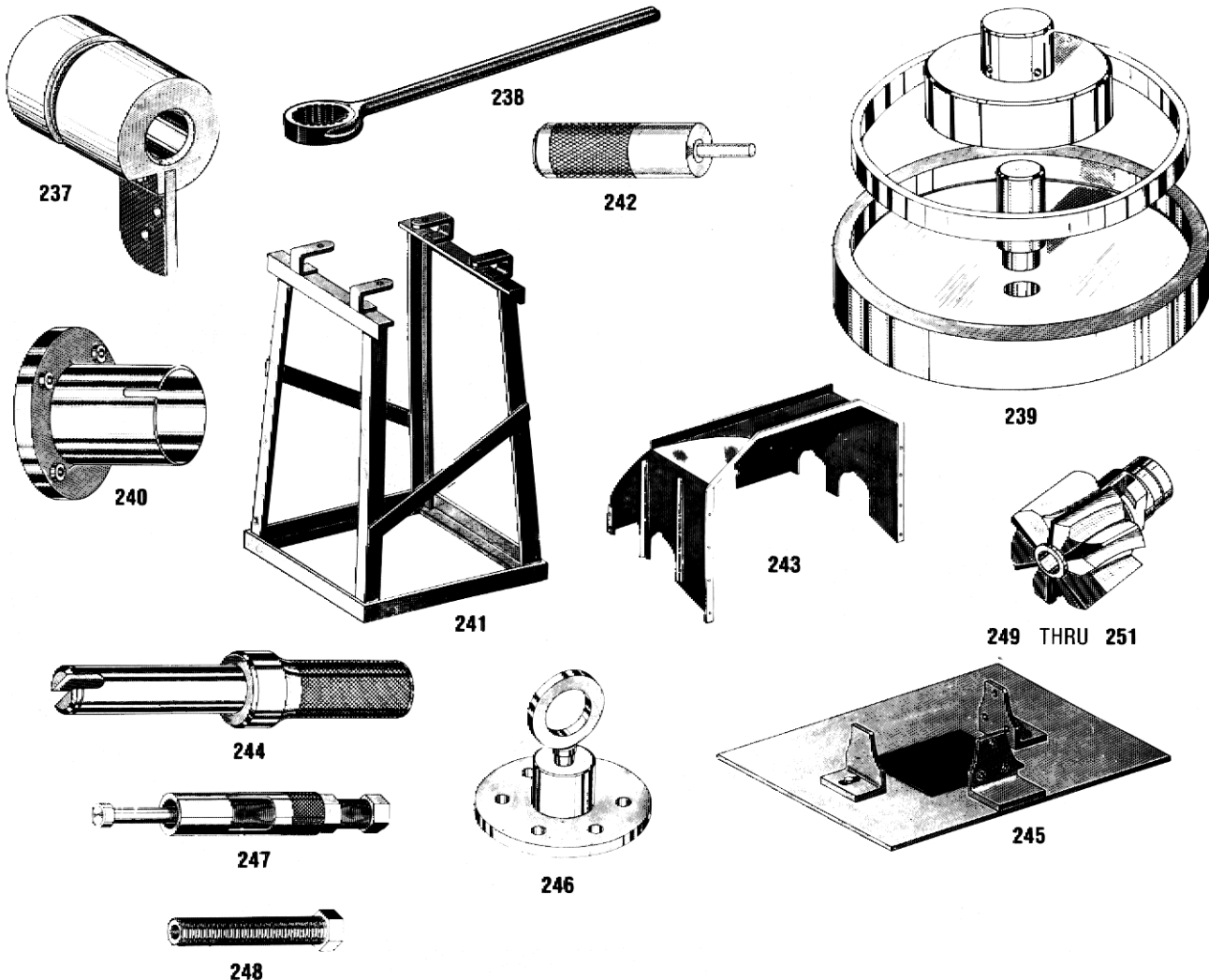
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
220	ST-12	Reamer, Hollow Dowel Holes in Reduction Gear - All GO and GSO-480 engines with flange propeller shaft
221	ST-13	Reamer, Hollow Dowel Holes in Reduction Gear .005 o/s - All GO and GSO-480 engines with flange propeller shaft
222	ST-14	Reamer, Hollow Dowel Holes in Reduction Gear .010 o/s - All GO and GSO-480 engines with flange propeller shaft
223	ST-15	Reamer, Hollow Dowel Holes in Reduction Gear .020 o/s - All GO and GSO-480 engines with flange propeller shaft
224	ST-17	Drill, Jig, Drill Hole to Pin Generator Drive Shaft Bushing in P/N 68967 Accessory Housing - GO-480-B, -B1A6 and -B1E6
225	ST-19	Drill, Jig, Remove and Install Generator Drive Gear Thrust and Drive Gear Bushings P/N 69525 Accessory Housing - GO-480-B1C
226	ST-20	Fixture, Plug Type Drill, Generator Housing Assembly - GO-435 and GO-480 Series
227	ST-21	Fixture, Plug Type Drill, Generator Housing Assembly - GO-435 and GO-480 Series
228	ST-22	Tool, Crimping, Crimp Burndy Hy-Rings on Low Tension Harness
229	ST-23	Gage, Valve Clearance .028 - .080 - All engines requiring a valve clearance between .028 - .080
230	ST-24	Indicator, Expander, Check alignment between crankshaft bore in accessory housing and the accessory drive - GSO-480, IGSO-480 and IGSO-540 Series
231	ST-25	Compressor, Valve Spring and Bar - All engines except 76 Series and TIO-541 Series (See St-266 and St-419)
232	ST-26	Gage, Plug, Valve Guide ID (Exhaust) - All valve guides with .437/.438 ID valve guide hole (See ST-27 for Reamer)
233	ST-27	Reamer, Valve Guide ID (Exhaust) - All valve guides with .437/.438 ID valve guide hole (See ST-26 for Plug Gage)
234	ST-28	Fixture, Drill Jig used to convert carburetor cylinders to fuel injection cylinders - All O-360, O-540 cylinders which are to be converted to IO-360, IO-540
235	ST-29	Wrench, Injector Fuel Flow Adjustment (Simmonds No. 580 Injector) - IGSO-540-B1A
236	ST-30	Wrench, Injector Fuel Flow Adjustment (Simmonds No. 580 Injector) - IGSO-540-B1A



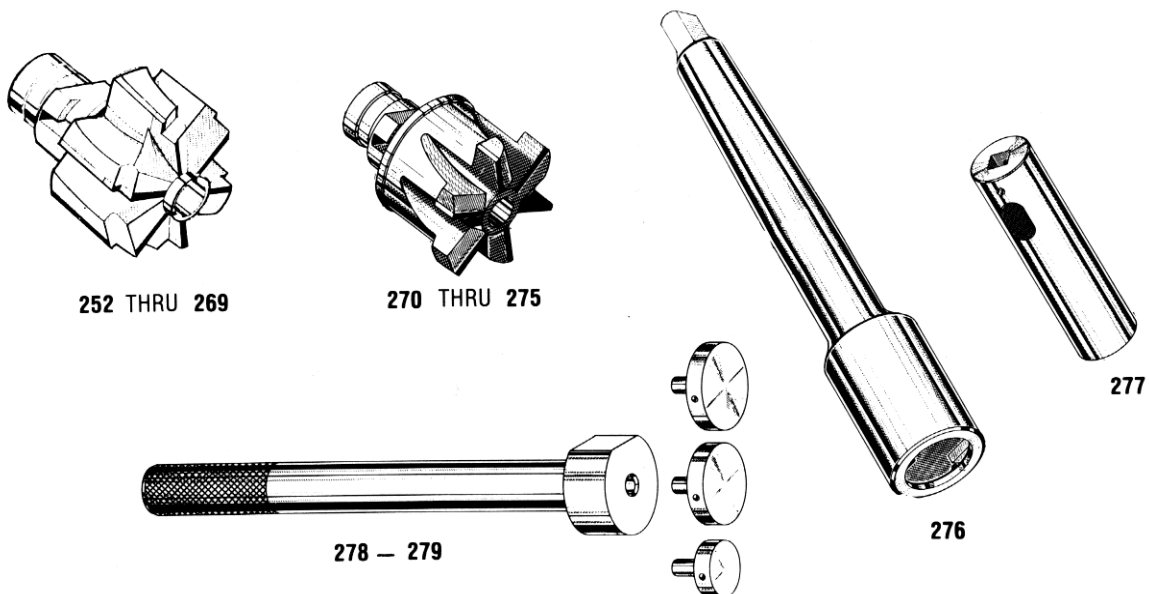
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
237	ST-37	Gage, Counterweight Clearance in Crankcase - All VO-540 engines employing counterweights
238	ST-38	Wrench, Crankshaft No. 30 Spline - All propeller shafts employing No. 30 spline
239	ST-39	Fixture, Insert Oil Seal in Thrust Bearing Cap - All geared engines
240	ST-40	Fixture, Drill Four Holes in Crankshaft - Oil Seal Retainer - All direct drive engines with crankcase front main bearing bore 2.566/2.567 diameter - This fixture can be used only when engine is disassembled.
241	ST-43	Stand, Engine Test - VO-360 and IVO-360
242	ST-44	Drift, Install Rear Crankshaft Oil Tube - All engines with crosswise accessory housings employing crankshafts with rear crankshaft oil tube (P/N 69843)
243	ST-45	Shroud, Cooling - VO-360 and IVO-360
244	ST-46	Drift, Install Crankshaft Oil Plug - O-540, IO-540 and TIO-540 (Plug size 1.380/1.382 P/N 71640)
245	ST-47	Plate, Engine Mounting - VO-435, TVO-435, VO-540, IVO-540 and TIVO-540 Series
246	ST-48	Eye, Lifting - All vertical engines
247	ST-49	Puller, Valve Guide - All engines
248	ST-49-4	Hex Head Cap Screw, Valve Guide Puller (Detail of ST-49) - All engines
249	ST-50-1	Cutter, Valve Seat (Intake) (.010 o/s) - All cylinder heads with 2.307 valve seat hole
250	ST-50-2	Cutter, Valve Seat (Intake) (.020 o/s) - All cylinder heads with 2.307 valve seat hole
251	ST-50-3	Cutter Valve Seat (Intake) (.030 o/s) - All cylinder heads with 2.307 valve seat hole



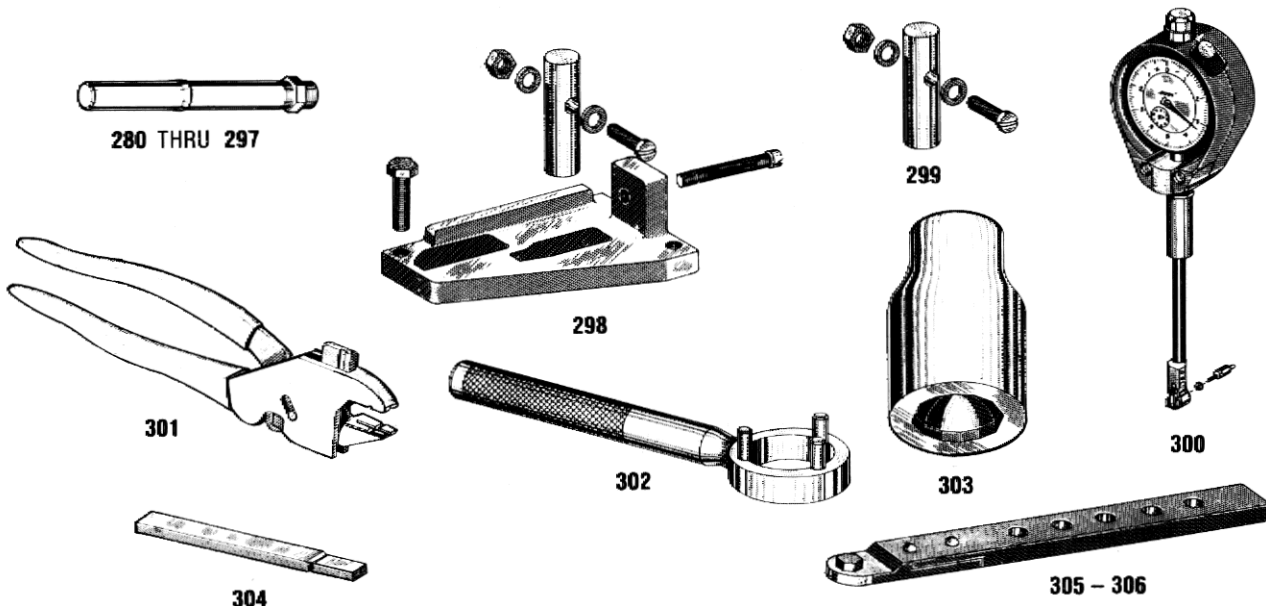
AVCO LYCOMING SERVICE TOOLS

ef.	Tool No.	Nomenclature and Description
52	ST-51-1	Cutter, Valve Seat (Intake) (.010 o/s) - All cylinder heads with 2.281 valve seat hole
53	ST-51-2	Cutter, Valve Seat (Intake) (.020 o/s) - All cylinder heads with 2.281 valve seat hole
54	ST-51-3	Cutter, Valve Seat (Intake) (.030 o/s) - All cylinder heads with 2.281 valve seat hole
55	ST-52-1	Cutter, Valve Seat (Exhaust) (.010 o/s) - All cylinder heads with 1.734 valve seat hole
56	ST-52-2	Cutter, Valve Seat (Exhaust) (.020 o/s) - All cylinder heads with 1.734 valve seat hole
57	ST-52-3	Cutter, Valve Seat (Exhaust) (.030 o/s) - All cylinder heads with 1.734 valve seat hole
58	ST-53-1	Cutter, Valve Seat (Intake) (.010 o/s) - All cylinder heads with 2.074 valve seat hole
59	ST-53-2	Cutter, Valve Seat (Intake) (.020 o/s) - All cylinder heads with 2.074 valve seat hole
60	ST-53-3	Cutter, Valve Seat (Intake) (.030 o/s) - All cylinder heads with 2.074 valve seat hole
61	ST-54-1	Cutter, Valve Seat (Exhaust) (.010 o/s) - All cylinder heads with 1.927 valve seat hole
62	ST-54-2	Cutter, Valve Seat (Exhaust) (.020 o/s) - All cylinder heads with 1.927 valve seat hole
63	ST-54-3	Cutter, Valve Seat (Exhaust) (.030 o/s) - All cylinder heads with 1.927 valve seat hole
64	ST-55-1	Cutter, Valve Seat (Intake) (.010 o/s) - All cylinder heads with 2.160 valve seat hole
65	ST-55-2	Cutter, Valve Seat (Intake) (.020 o/s) - All cylinder heads with 2.160 valve seat hole
66	ST-55-3	Cutter, Valve Seat (Intake) (.030 o/s) - All cylinder heads with 2.160 valve seat hole
67	ST-56-1	Cutter, Valve Seat (Intake) (.010 o/s) - All cylinder heads with 1.919 valve seat hole
68	ST-56-2	Cutter, Valve Seat (Intake) (.020 o/s) - All cylinder heads with 1.919 valve seat hole
69	ST-56-3	Cutter, Valve Seat (Intake) (.030 o/s) - All cylinder heads with 1.919 valve seat hole
70	ST-57-1	Cutter, Valve Seat (Intake) (.010 o/s) - All cylinder heads with 2.0885 valve seat hole
71	ST-57-2	Cutter, Valve Seat (Intake) (.020 o/s) - All cylinder heads with 2.0885 valve seat hole
72	ST-57-3	Cutter, Valve Seat (Intake) (.030 o/s) - All cylinder heads with 2.0885 valve seat hole
73	ST-58-1	Cutter, Valve Seat (Exhaust) (.010 o/s) - All cylinder heads with 1.995 valve seat hole
74	ST-58-2	Cutter, Valve Seat (Exhaust) (.020 o/s) - All cylinder heads with 1.995 valve seat hole
75	ST-58-3	Cutter, Valve Seat (Exhaust) (.030 o/s) - All cylinder heads with 1.995 valve seat hole
76	ST-62	Driver, Special Length for Use with Valve Seat Cutters - All cutters in ST series only
77	ST-63	Adapter, Hand Drive - Use with ST-62 Driver
78	ST-64	Drift, Valve Seat Replacement - All valve seats with dimensions between 1.870 and 2.040 ID
79	ST-65	Drift, Valve Seat Replacement - All valve seats with dimensions between 1.575 and 1.710 ID



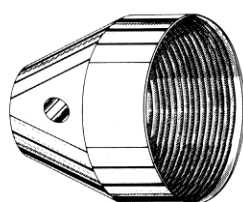
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
280	ST-66	Pilot, Valve Seat Cutter (Standard) - All cylinder heads with .5913 valve guide hole
281	ST-66-1	Pilot, Valve Seat Cutter (.010 o/s) - All cylinder heads with .5913 valve guide hole
282	ST-66-2	Pilot, Valve Seat Cutter (.020 o/s) - All cylinder heads with .5913 valve guide hole
283	ST-66-3	Pilot, Valve Seat Cutter (.030 o/s) - All cylinder heads with .5913 valve guide hole
284	ST-66-4	Pilot, Valve Seat Cutter (.040 o/s) - All cylinder heads with .5913 valve guide hole
285	ST-66-5	Pilot, Valve Seat Cutter (.005 o/s) - All cylinder heads with .5913 valve guide hole
286	ST-67	Pilot, Valve Seat Cutter (Standard) - All cylinder heads with .6613 valve guide hole
287	ST-67-1	Pilot, Valve Seat Cutter (.010 o/s) - All cylinder heads with .6613 valve guide hole
288	ST-67-2	Pilot, Valve Seat Cutter (.020 o/s) - All cylinder heads with .6613 valve guide hole
289	ST-67-3	Pilot, Valve Seat Cutter (.030 o/s) - All cylinder heads with .6613 valve guide hole
290	ST-67-4	Pilot, Valve Seat Cutter (.040 o/s) - All cylinder heads with .6613 valve guide hole
291	ST-67-5	Pilot, Valve Seat Cutter (.005 o/s) - All cylinder heads with .6613 valve guide hole
292	ST-68	Pilot, Valve Seat Cutter (Standard) - All cylinder heads with .6247 valve guide hole
293	ST-68-1	Pilot, Valve Seat Cutter (.010 o/s) - All cylinder heads with .6247 valve guide hole
294	ST-68-2	Pilot, Valve Seat Cutter (.020 o/s) - All cylinder heads with .6247 valve guide hole
295	ST-68-3	Pilot, Valve Seat Cutter (.030 o/s) - All cylinder heads with .6247 valve guide hole
296	ST-68-4	Pilot, Valve Seat Cutter (.040 o/s) - All cylinder heads with .6247 valve guide hole
297	ST-68-5	Pilot, Valve Seat Cutter (.005 o/s) - All cylinder heads with .6247 valve guide hole
298	ST-71	Gage, Check Bell-Mouthing of Exhaust Valve Guides - All parallel valve engines (See ST-310 for Angle Valves)
299	ST-71-8	Adapter (Post), Check Bell-Mouthing of 1/2" Exhaust Valve Guides - All parallel valve engine (Detail of ST-71)
300	ST-73	Gage, Counterweight Dial Bore (.7485/.7505 ID of Bushings) Replace Bushings in Counterweights - All engines equipped with counterweights employing bushings except counterweight P/N 77002
301	ST-78	Tool, Crimping Connecting Rod Nut and Ring Gear Plate Nut - All engines using crimp nuts
302	ST-79	Wrench, (Spanner) To Hold Magneto Gear - All four cylinder engines
303	ST-80	Socket, (Special) (1-5/16") Remove Oil Pressure Screen - IGSO-540 Series
304	ST-81	Gage, Flat Plug Rejection (Intake Valve Guide ID) - All engines
305	ST-83	Wrench, Break Loose Cylinder Base Nuts - All engines employing 1/2" Allen head cylinder base nuts (P/N 71133)
306	ST-84	Wrench, Break Loose Cylinder Base Nuts - All engines employing 3/8" Allen head cylinder base nuts (P/N 71134)



AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
307	ST-86	Protector, Thread No. 20 Spline Shaft - This tool must be used when changing propeller in order to keep from damaging propeller shaft threads
308	ST-87	Protector, Thread No. 30 Spline Shaft - This tool must be used when changing propeller in order to keep from damaging propeller shaft threads
309	ST-88	Adapter, Dynafocal Mounts - All engines employing 18° mounts
310	ST-89	Gage, Plug Valve Guide OD (Exhaust) (Standard) - All valve guides with .6247/.6257 valve guide hole in cylinder head
311	ST-89-1	Gage, Plug Valve Guide OD (Exhaust) (.010 o/s) - All valve guides with .6247/.6257 valve guide hole in cylinder head
312	ST-89-2	Gage, Plug Valve Guide OD (Exhaust) (.020 o/s) - All valve guides with .6247/.6257 valve guide hole in cylinder head
313	ST-89-3	Gage, Plug Valve Guide OD (Exhaust) (.030 o/s) - All valve guides with .6247/.6257 valve guide hole in cylinder head
314	ST-89-4	Gage, Plug Valve Guide OD (Exhaust) (.040 o/s) - All valve guides with .6247/.6257 valve guide hole in cylinder head
315	ST-89-5	Gage, Plug Valve Guide OD (Exhaust) (.005 o/s) - All valve guides with .6247/.6257 valve guide hole in cylinder head
316	ST-90-1	Reamer, Valve Guide OD (Exhaust) (.010 o/s) - All valve guides with .6247/.6257 valve guide hole in cylinder head
317	ST-90-2	Reamer, Valve Guide OD (Exhaust) (.020 o/s) - All valve guides with .6247/.6257 valve guide hole in cylinder head
318	ST-90-3	Reamer, Valve Guide OD (Exhaust) (.030 o/s) - All valve guides with .6247/.6257 valve guide hole in cylinder head
319	ST-90-4	Reamer, Valve Guide OD (Exhaust) (.040 o/s) - All valve guides with .6247/.6257 valve guide hole in cylinder head
320	ST-90-5	Reamer, Valve Guide OD (Exhaust) (.005 o/s) - All valve guides with .6247/.6257 valve guide hole in cylinder head
321	ST-91	Gage, Counterweight Squareness (Check Parallel and Squareness of Finished Inside Diameter of Bushing Hole) - All engines equipped with counterweights employing bushings except Counterweight P/N 77002
322	ST-92	Driver, Counterweight Bushing (Remove and Install Bushings) - All engines equipped with counterweights employing bushings except Counterweight P/N 77002
323	ST-93	Fixture Assembly, Counterweight (Install Bushings in Counterweights) - All engines equipped with counterweights employing bushings except Counterweight P/N 77002
324	ST-93-3	Spacer, Control Depth of Bushing - .370 thick (detail of ST-93)
325	ST-93-5	Spacer, Control Depth of Bushing - .440 thick (detail of ST-93)



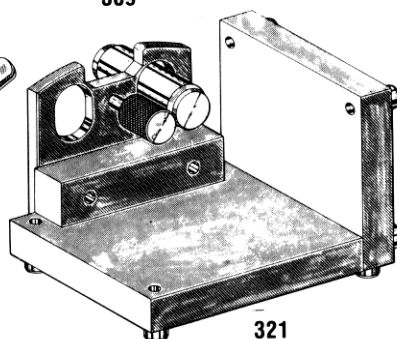
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316 THRU 320



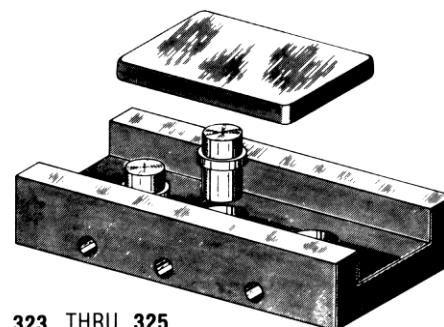
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310 THRU 315



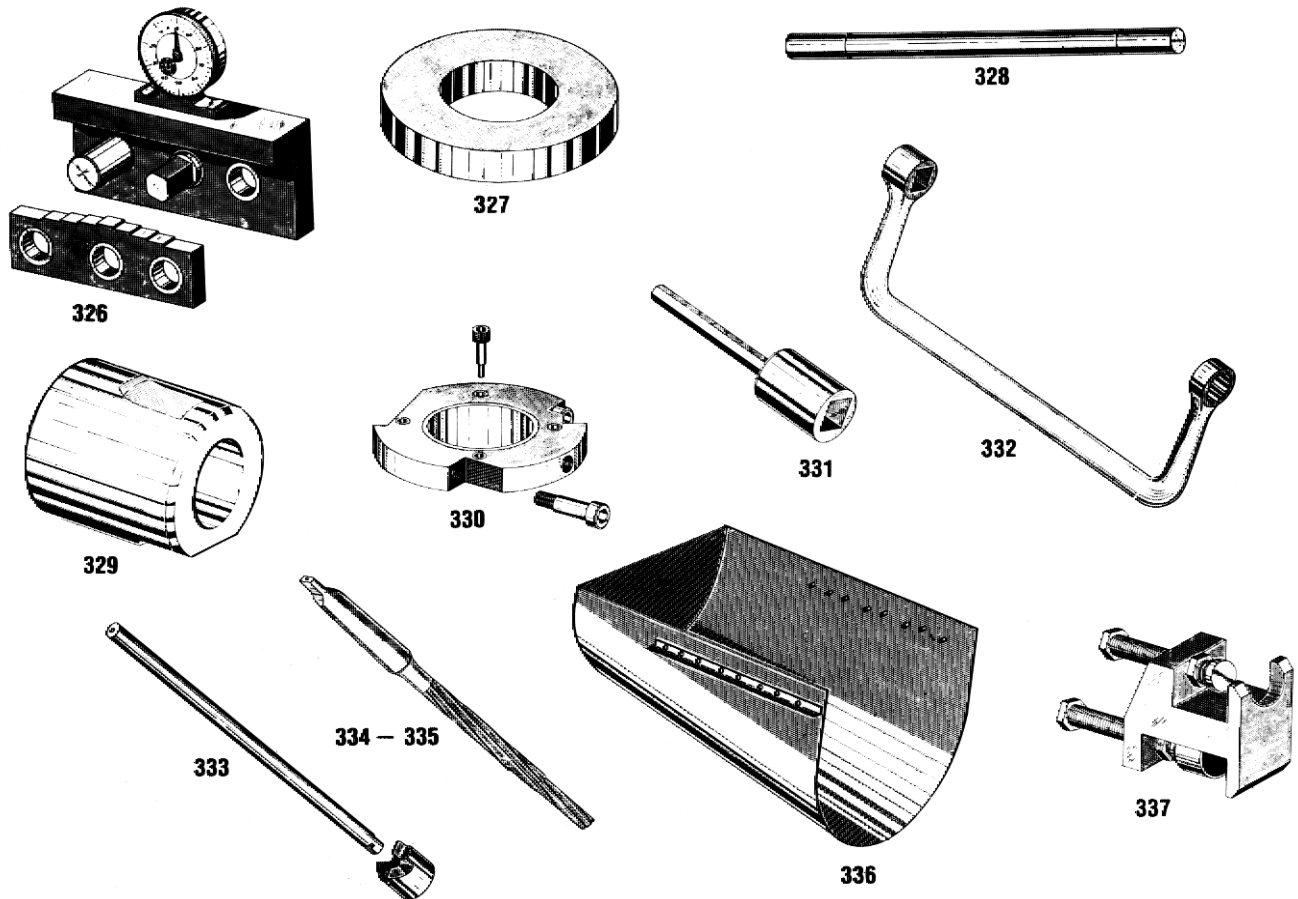
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323 THRU 325

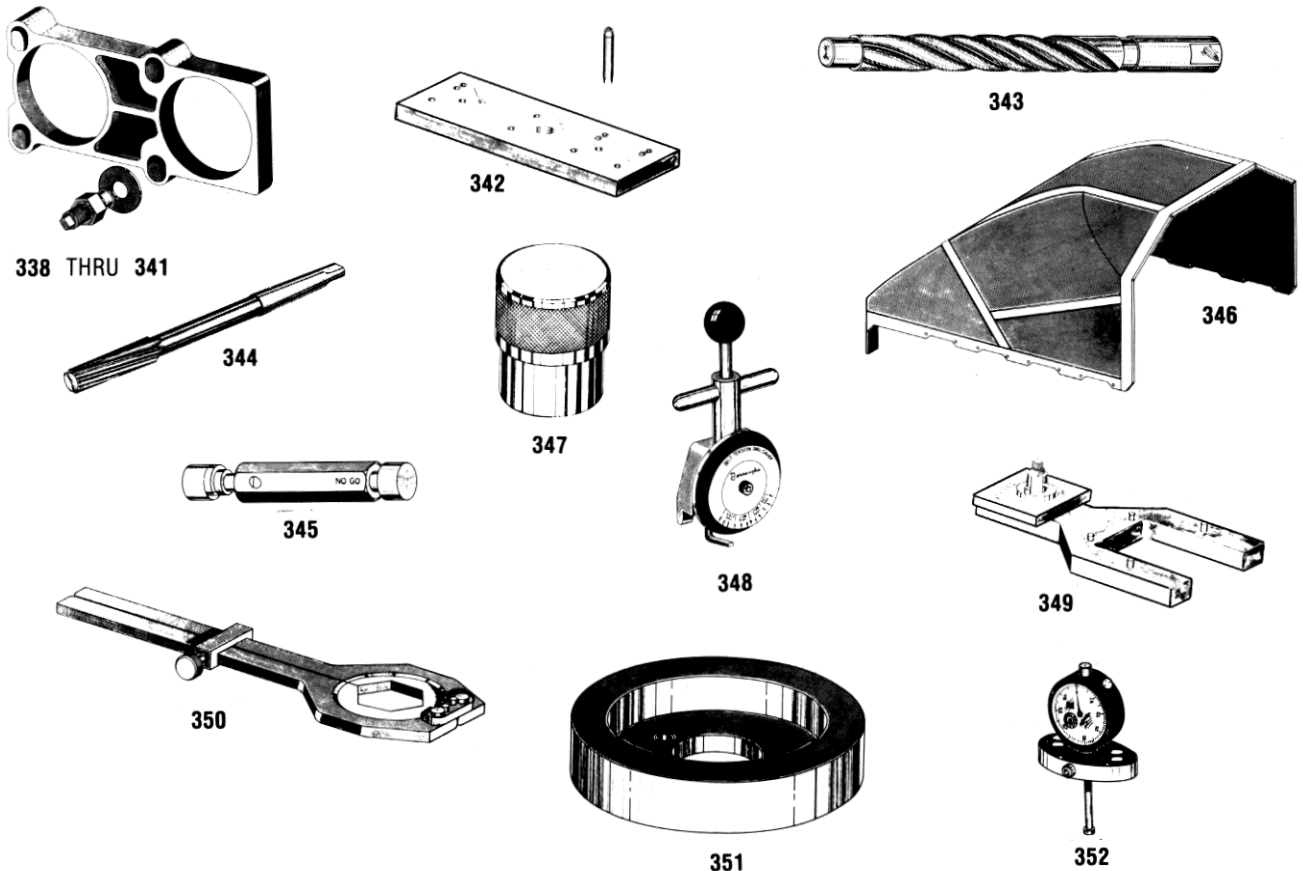
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
326	ST-94	Gage, Counterweight Bushing Location (Check Hole Location After Grinding) - All engines equipped with counterweights employing bushings except Counterweight P/N 77002
327	ST-95	Weight, Counterweight Balancing (.004 pound - Check Balance of Counterweight after Rebushing) - All engines equipped with counterweights employing bushings except Counterweight P/N 77002
328	ST-96	Arbor, Counterweight Balancing (Check Balance of Counterweights after Rebushing) - All engines equipped with counterweights employing bushings except Counterweight P/N 77002
329	ST-104	Wrench, Install and Remove Weatherhead Fittings - All engines with crosswise accessory housings
330	ST-105	Fixture, Drill Four Holes for Crankshaft - Oil Seal Retainer - All direct drive engines with a 2.375 Crankshaft seal diameter - This fixture can be used only when the engine is assembled.
331	ST-107	Wrench, Front Oil Plug - Remove and replace front oil plug (controllable pitch propeller)
332	ST-108	Wrench, Offset to Torque Nuts on Reduction Gear Housing - All geared engines except TIGO-541
333	ST-112	Back Spotfacer, Pilot and Driver - Modify all flanged reduction gear housings for use of body fit bolts
334	ST-113-1	Reamer, Valve Guide ID Exhaust (Ni-Resist) Pilot Dia. .4828/.4833 - Finished ID .4985/.4995 for large ID valve guide replacement (See 64927 for Plug Gage)
335	ST-113-2	Reamer, Valve Guide ID Exhaust (Ni-Resist) Pilot Dia. .4778/.4783 - Finished ID .4985/.4995 for small ID valve guide replacement (See 64927 for Plug Gage)
336	ST-114	Shroud, Cooling - IO-720-B1A - Up Draft Exhaust
337	ST-115	Tool, Install and Remove Propeller Flange Bushings - All flanged propeller shafts employing bushings



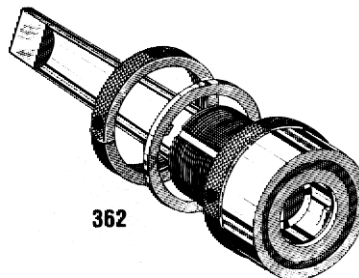
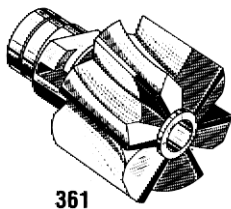
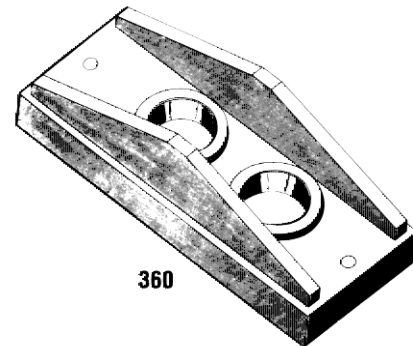
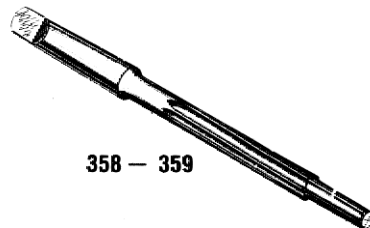
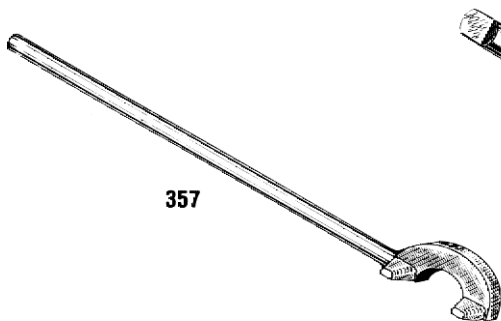
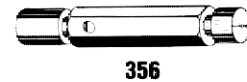
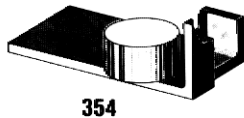
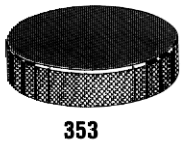
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
338	ST-122	Plate, Crankcase - Separates and draws together doweled crankcase halves - All engines employing crankcase thru stud dowels
339	ST-122-2	Stud, Crankcase Plate - (Detail of St-122)
340	ST-122-3	Nut, (Detail of ST-122)
341	ST-122-4	Washer, (Detail of ST-122)
342	ST-123	Plate, Bushing (Crankcase) - Drill and ream crankcase for standard thru stud dowels - All engines to employ crankcase standard thru stud dowels, except large cylinder base flange crankcases (See ST-270)
343	ST-124	Drill, Crankcase (Standard) - Thru Stud Dowel - All engines to employ crankcase standard thru stud dowels
344	St-125	Reamer, Crankcase (Standard) - Thru Stud Dowel - All engines to employ crankcase standard thru stud dowels
345	ST-126	Gage, Plug and Depth (Standard) - Crankcase - Thru Stud Dowel - All engines to employ crankcase standard thru stud dowels
346	ST-128	Shroud, Cooling - IO-720 A1A (Down Draft Exhaust)
347	ST-129	Sleeve, This tool is used to install AiResearch Piston (P/N 475515) into bypass cylinder - All T-1108 and T-1112 turbochargers
348	ST-131	Gage-Belt, Tension Dial - All direct drive engines
349	ST-133	Fixture-Holding Turbocharger - All T-1108 and T-1112 turbochargers - Use with St-135
350	ST-134	Wrench, Turbocharger - Wrench is used to remove back plate nut after it has been drilled and cracked - All T-1108 and T-1112 turbochargers
351	ST-135	Drill, Plate, Turbocharger - Drill plate is used to drill back plate nut in order that it may be cracked with a chisel. Use drill plate with holding fixture ST-133 - All T-1108 and T-1112 turbochargers
352	ST-136	Gage, Special Turbocharger (This gage is used for checking radial bearing play.) - All T-1108 and T-1112 turbochargers



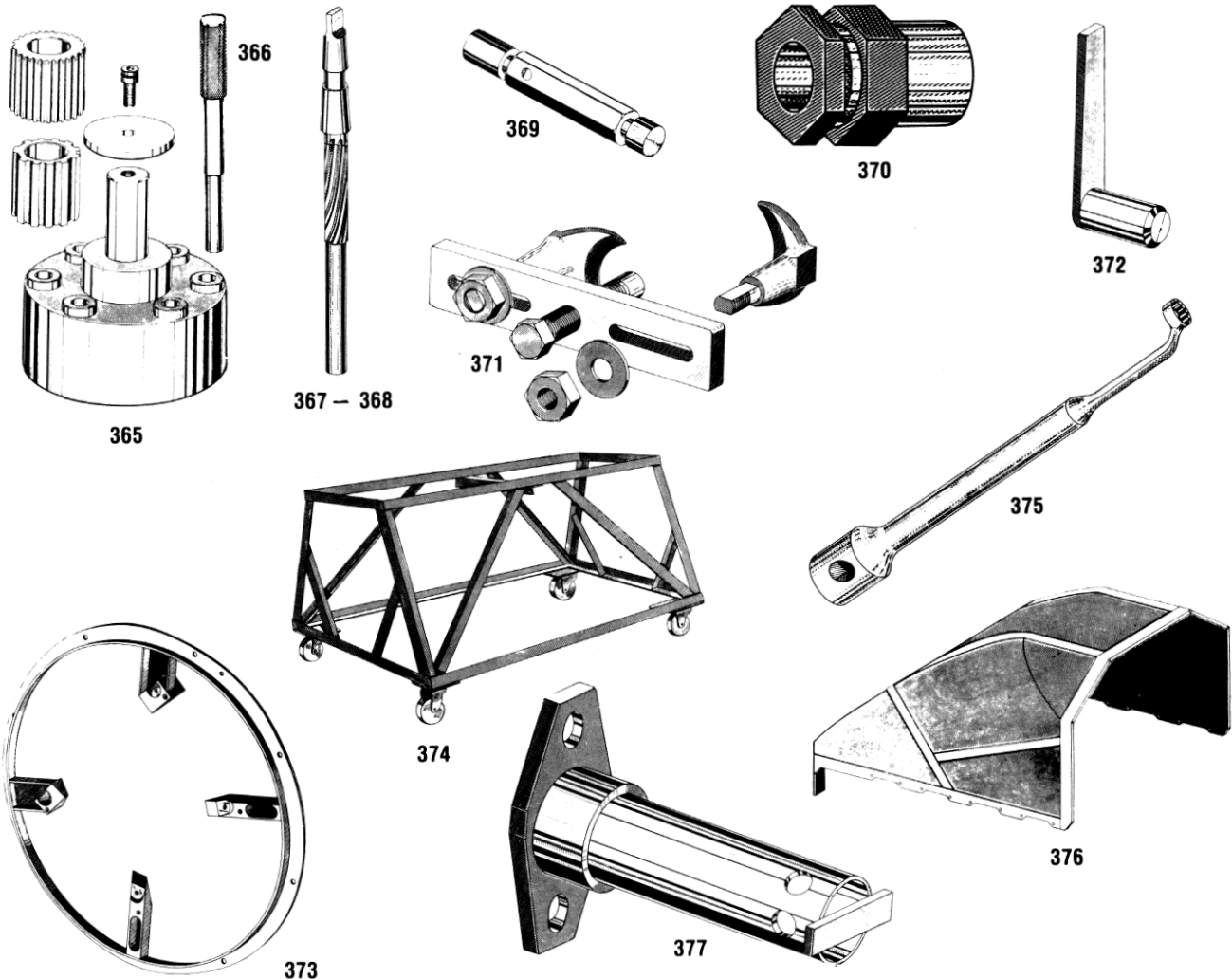
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
353	St-138	Gage, Block, Turbocharger - This block is used to set up vernier height gage and oval indicator to measure impeller tip height - All T-1108 and T-1112 turbochargers
354	ST-139	Jig, Welding Single Butterfly Exhaust Bypass Valve - All turbochargers single butterfly exhaust bypass valve
355	ST-140	Gage, Plug - Exhaust Bypass Valve (Wire Type for size up to .125 dia.) - This is the clearance between the butterfly and the housing in the closed position - All turbocharger exhaust bypass valves
356	ST-141	Gage, Plug, Double Exhaust Bypass Valve - This is the clearance between the butterfly and the housing in the open position - All turbocharger exhaust bypass valves used on TIO-541 engines
357	ST-142	Wrench, Shroud Tube - All engines employing lock type shroud tubes
358	ST-143-1	Reamer, Valve Guide ID Exhaust (Ni-Resist) - Pilot Dia. .4828/.4833 - Finished ID .4995/.5005 for large ID valve guide replacement (See ST-155 for Plug Gage)
359	ST-143-2	Reamer, Valve Guide ID Exhaust (Ni-Resist) - Pilot Dia. .4778/.4783 - Finished ID .4995/.5005 for small ID valve guide replacement (See ST-155 for Plug Gage)
360	ST-144	Fixture, Salvage Fretted Crankcase - Used on four and six cylinder engines with conventional crankcases. Use this tool with ST-145 and ST-146. (See ST-252 for crankcases with large cylinder base flanges)
361	ST-145	Cutter, Salvage Fretted Crankcase (Conventional) - See ST-144, ST-269
362	ST-146	Holder, Stop Collar, Salvage Crankcase - See ST-144 and ST-252
363	ST-147-1	Balls, Sizing - Pinion Cage, Balls are used to burnish pinion shaft holes to proper size - All standard reduction gears (Tools ST-148, ST-149, ST-150 are used in conjunction with this tool)
	ST-147-2	- All engines with standard planetary reduction gears
364	ST-148	Spacer, Adjustable, Pinion Cage - Spacer is used inside of pinion cage to keep it from collapsing when sizing balls are pushed thru pinion cage - All engines with planetary reduction gears



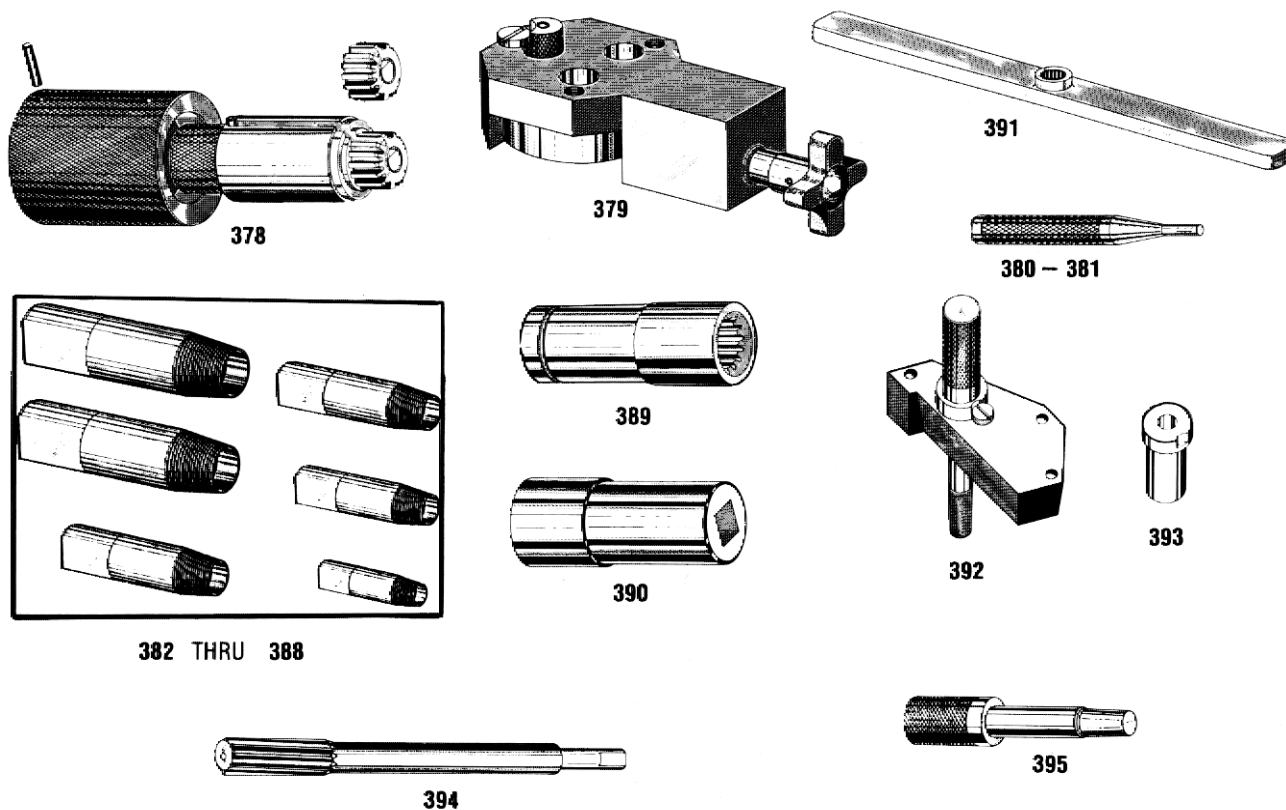
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
365	ST-149	Fixture, Location and Reaming Pinion Cage Gage was designed to keep pinion shaft holes in alignment with fixture - All engines with planetary reduction gears
366	ST-149-9	Pin, Locating (Detail of ST-149)
367	ST-150-1	Reamer, Piloted Pinion Cage (.011" o/s) - To keep pinion shaft holes in alignment with fixture ST-149. (ST-147, ST-148, ST-149 and are used in conjunction with this tool)
368	ST-150-2	Reamer, Piloted Pinion Cage (.022" o/s) - To keep pinion shaft holes in alignment with fixture ST-149. (ST-147, ST-148, ST-149 and are used in conjunction with this tool)
369	ST-155	Gage, Plug, Valve Guide ID (Exhaust) - All cylinder heads with .4995/.5005 ID valve guide hole (See ST-143-1 or ST-143-2 for Reamer)
370	ST-156	Stop, Drill and Reamer - All engines to employ crankcase thru-stud dowels (Tools ST-124 and ST-125 are used in conjunction with this tool)
371	ST-158	Puller ("V" Pulley) Generator and Alternator - All direct drive engines except 0-145 and 0-435 series
372	ST-160	Pilot Bar, Assembling Rocker Arms to Cylinder Head - All engines except 76 Series
373	ST-161	Ring, Engine Mounting - TIO-541 and TIGO-541
374	ST-162	Stand (Engine), - A-Frame, Overhaul - All engines
375	ST-163	Wrench, Remove Exhaust Pipe Flange (7/16") -TIO-541 and TIGO-541 (See ST-213 for 1/2")
376	ST-164	Shroud, Cooling - TIO-541
377	ST-165	Adapter, Engine Overhaul Assembly - All direct drive engines (Use with ST-278 overhaul A-frame skid)



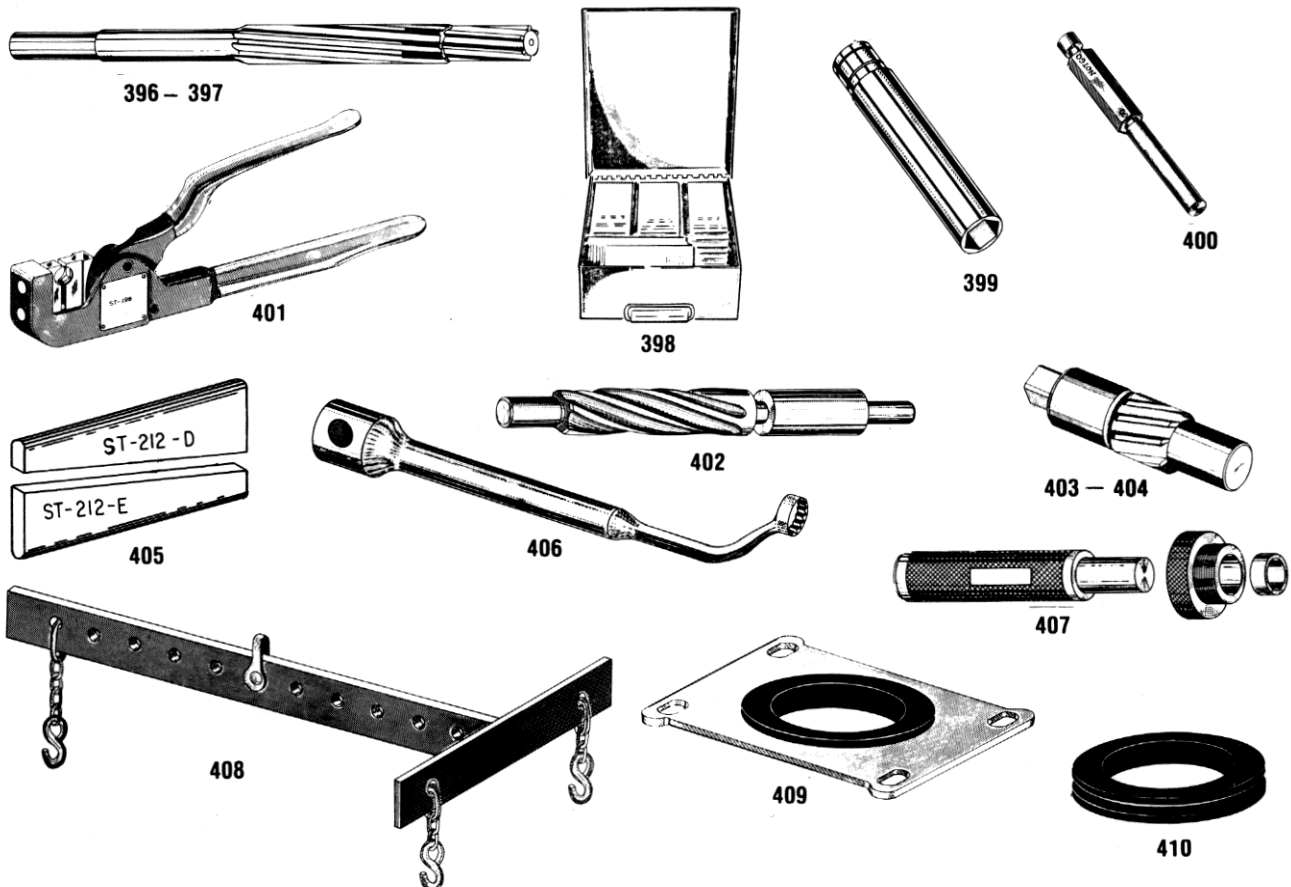
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
378	ST-168	Driver, (Special Assembly) Crankshaft rear spline bushing - All engines with crosswise accessory housings
379	ST-169	Fixture, Drill, Crankshaft Rear Bushing - All engines with crosswise accessory housings
380	ST-170	Drift, Crankshaft Rear Spline Bushing Dowel - All engines with crosswise accessory housings
381	ST-171	Tool, Peening, Crankshaft Rear Spline Bushing Dowel - All engines with crosswise accessory housings
382	ST-172	Puller Set - Oil Seal - All engines (Use with 64782 Slide Hammer)
383	ST-172-5	For Use With STD-547 Seal (Detail of ST-172)
384	ST-172-6	For Use With STD-911 Seal (Detail of ST-172)
385	ST-172-7	For Use With STD-2217 and STD-208 Seals (Detail of ST-172)
386	ST-172-8	For Use With STD-213 Seal (Detail of ST-172)
387	ST-172-9	For Use With LW-14260 and 61165 Seals (Detail of ST-172)
388	ST-172-10	For Use With STD-1708 Seal (Detail of ST-172)
389	ST-173	Holder, Accessory Drive Shaft - All crosswise accessory housings employing thirteen spline accessory drive shaft assemblies
390	ST-174	Holder, Accessory Drive Shaft - All crosswise accessory housings employing fourteen spline accessory drive shaft assemblies
391	ST-177	Wrench, Turbocharger Impeller - All T-1108 and T-1112 turbochargers
392	ST-179	Fixture, Reaming Valve Guide Hole in Cylinder Head - All parallel valve engines converting from 7/16" exhaust valves to 1/2" (Tools ST-180, ST-181 and ST-199 are used in conjunction with this tool)
393	ST-179-2	Bushing, Reaming valve guide hole in cylinder head fixture - (Detail of ST-179)
394	ST-179-3	Pin, Locating - Reaming valve guide hole in cylinder head fixture - (Detail of ST-179)
395	ST-180	Reamer, Rework Valve Guide Hole in Cylinder Head - All parallel valve engines converting 7/16" exhaust valves to 1/2" (Tools ST-179, ST-181 and ST-199 are used in conjunction with this tool)



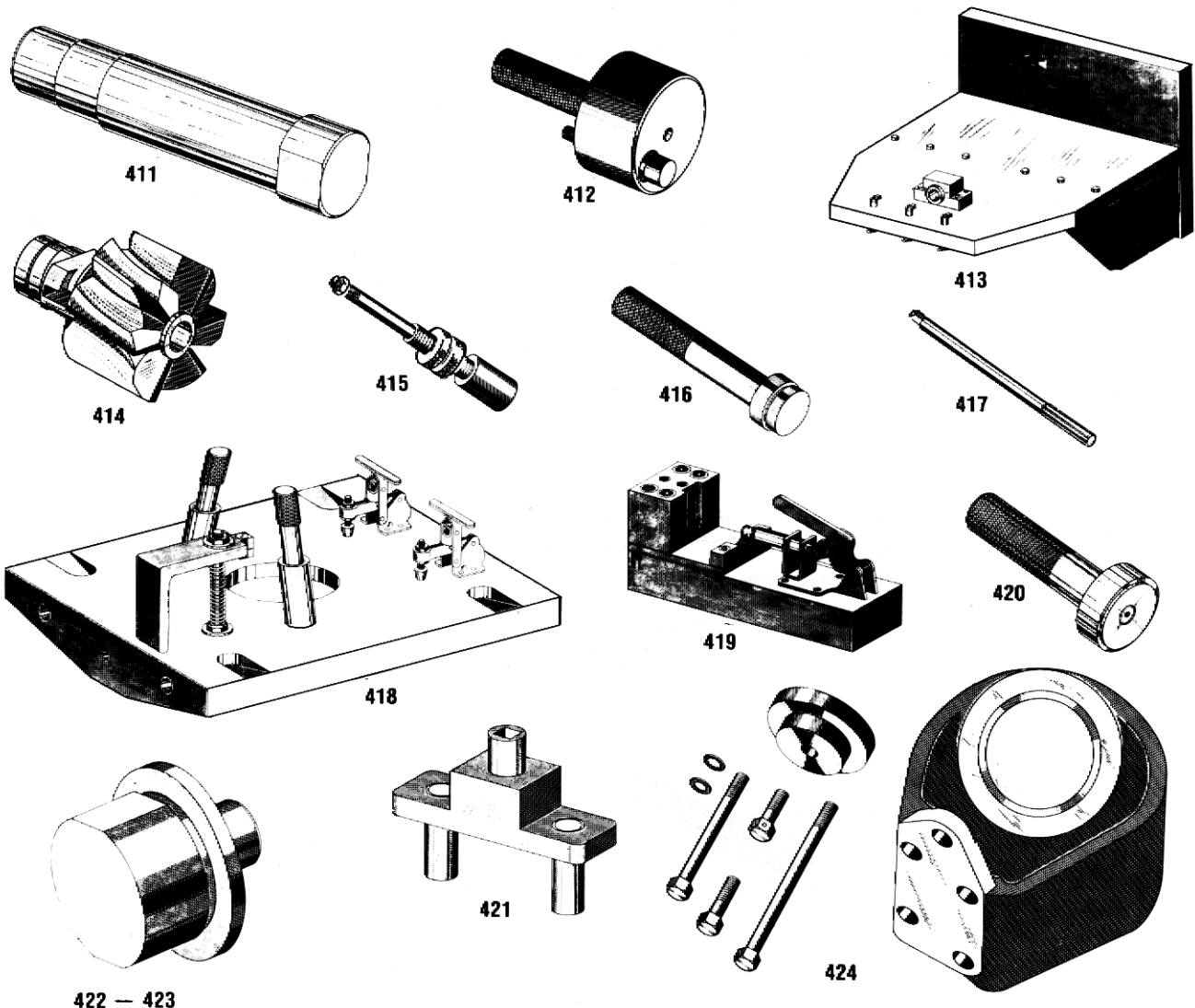
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
396	ST-181-1	Reamer, Valve Guide ID Exhaust (Ni-Resist) - All parallel valve engines employing 1/2" exhaust valves - Pilot dia. .4828/.4833 - Finished ID .4985/.4995 - For large ID valve guide replacement (Tools ST-179, ST-180 and ST-199 are used in conjunction with this tool) (See 64927 for Plug Gage)
397	ST-181-2	Reamer, Valve Guide ID Exhaust (Ni-Resist) - all parallel valve engines employing 1/2" exhaust valves - Pilot dia. .4778/.4783 - Finished ID .4985/.4995 - For small ID valve guide replacement (Tools ST-179, ST-180 and ST-199 are used in conjunction with this tool) (See 64927 for Plug Gage)
398	ST-184	Kit, Heli-Coil Repair - All engines
399	ST-190-2	Socket, Injector Nozzle - All TIO-541 and TIGO-541 engines
400	ST-191	Gage, Plug, .010 o/s, Rocker shaft bushing hole in cylinder head - All engines except 76 Series - See 64811 for .005 o/s
401	ST-198	Tool, Crimping (Grounded Sheath) Crimp ends on (5MM) harness (See 64861 for 7MM)
402	ST-199	Counterbore, Rework Parallel Valve Cylinder Heads in Exhaust Valve Guide Flange Area - All parallel valve engines converting from 7/16" to 1/2" (flange) exhaust valves (Tools ST-179, ST-180 and ST-181 are used in conjunction with this tool)
403	ST-210	Reamer, .0075" o/s Counterweight Bushing Holes - All engines equipped with counterweights
404	ST-211	Reamer, .0125" o/s Counterweight Bushing Holes - All engines equipped with counterweights
405	ST-212	Gage Blocks, Crankshaft Counterweight Bushing - To check parallelism of counterweight bushing to crankshaft - All engines equipped with counterweights
406	ST-213	Wrench, Remove Exhaust Pipe Flange (1/2") - TIO-541 and TIGO-541 (See ST-163 for 7/16")
407	ST-215	Driver, Sleeve, Oil Pressure Relief Valve - All direct drive engines except 76 Series and adjustable valves. (See St-249 for driver used on adjustable valves)
408	ST-220	Sling, Engine Lifting - TIO-541 and TIGO-541
409	ST-222	Plate, Torque Hold-Down - All engines except 0-235 series
410	ST-222-2	Insert, Torque Hold-Down Plate, (Detail of ST-222)



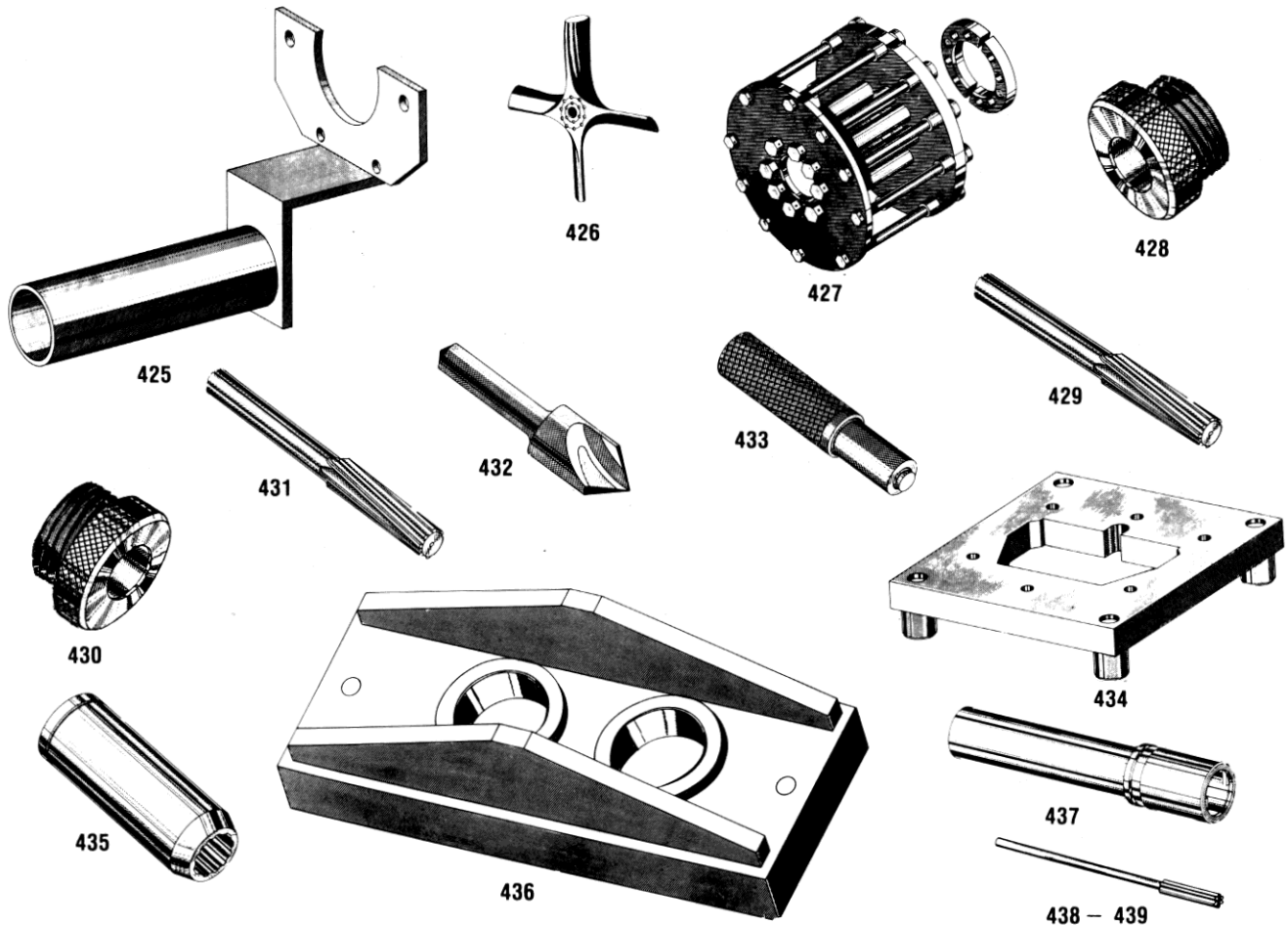
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
411	ST-223	Swaging Tool, Turbocharger Exhaust Pipes - All turbocharger exhaust pipes used on Avco Lycoming engines
412	ST-226	Gage, Intake Pipe Bore Salvage (Determine necessity for salvage) - IO, HIO, TIO and LTIO-540 tuned induction
413	ST-227	Fixture, Intake Pipe Bore Salvage (Mount housing and fixture to radial drill press) - IO, HIO, TIO and LTIO-540 tuned induction
414	ST-228	Counterbore, Intake Pipe Bore Salvage - IO, HIO, TIO and LTIO-540 tuned induction
415	ST-229	Pilot, Counterbore, Intake Pipe Bore Salvage - IO, HIO, TIO and LTIO-540 tuned induction
416	ST-230	Drift, Bushing Installation, Intake Pipe Bore Salvage - IO, HIO, TIO and LTIO-540 tuned induction
417	ST-231	Reamer, .088 - .089 Pin, Intake Pipe Bore Salvage - IO, HIO, TIO and LTIO-540 tuned induction
418	ST-232	Fixture, Valve Seat Replacement and Refacing - All cylinder assemblies employing angle head valves
419	ST-233	Fixture, Disassemble and assemble hydraulic lifters - 76 Series, TIO-541 and TIGO-541
420	ST-234	Drift, Crankshaft, Front Plug (OD Diameter 2.010/2.011) (P/N 77416)
421	ST-235	Wrench, Engine Timing (Starter Gear) - VO-435-B1A, TVO-435-F1A
422	ST-236	Arbor, Connecting Rod Slave Bolts - All connecting rods with a bore diameter of 2.4205/2.4210
423	ST-237	Arbor, Connecting Rod Slave Bolts - All connecting rods with a bore diameter of 2.2870/2.2875
424	ST-239	Kit, Engine Overhaul Ring Mounting (Use with ring ST-161) - TIO-541 and TIGO-541



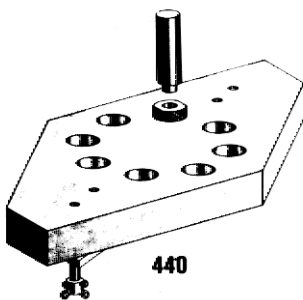
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
425	ST-240	Adapter, Engine Overhaul Assembly (Use with skid ST-278, overhaul stand ST-162 and ST-161 ring) - TIGO-541
426	ST-241	Club, Test (Used with adapter ST-242) - TIGO-541
427	ST-242	Adapter, Test Club - TIGO-541
NOTE: The following tools, ST-243, ST-244, ST-245, ST-246, ST-248 and ST-249 are used to modify the crankcase for use of adjustable oil pressure relief valve. See latest revision of Service Instruction No. 1172.		
428	ST-243	Bushing, Pilot, Oil Relief Valve (.001 o/s) - All direct drive engines
429	ST-244	Reamer, Oil Relief Valve (.001 o/s) - All direct drive engines
430	ST-245	Bushing, Pilot, Oil Relief Valve (.004 o/s) - All direct drive engines
431	ST-246	Reamer, Oil Relief Valve (.004 o/s) - All direct drive engines
432	ST-248	Countersink, Oil Relief Valve (.001 & .004 o/s) - All direct drive engines (Use with Pilot ST-245)
433	ST-249	Driver, Oil Relief Valve (.001 & .004 o/s) - All direct drive engines
434	ST-250	Fixture, Valve Seat Replacement and Refacing - All cylinder assemblies employing parallel valves
435	ST-251	Socket, Connecting Rod Nut - All engines
436	ST-252	Fixture, Salvage Fretted Crankcases - Used on four cylinder engines with large cylinder base flange crankcases. Use this tool with ST-269 and ST-146. (See ST-144 for conventional crankcases.)
437	ST-253	Driver, Intake Pipe Bore Salvage - IO, HIO, TIO and LTIO-540 Tuned Induction (Tools ST-226, ST-227, ST-228, ST-229, ST-230 and ST-231 are used in conjunction with this tool.)
438	ST-254	Reamer, Crankshaft Flange - .010 o/s Bolt (Use with ST-256 Fixture) - All geared engines
439	ST-255	Reamer, Crankshaft Flange - .010 o/s Bolt (use with Fixture ST-256) - All six cylinder vertical engines



AVCO LYCOMING SERVICE TOOLS

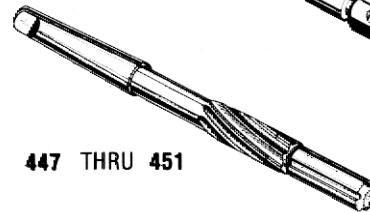
Ref.	Tool No.	Nomenclature and Description
440	ST-256	Fixture, Crankshaft Flange (.010 o/s Bolt) Use with ST-254 and ST-255 Reamers - All geared and six cylinder vertical engines
441	ST-257	Pilot, Valve Seat Cutter (Std.) - All cylinder heads with .6933 valve guide hole
442	ST-257-1	Pilot, Valve Seat Cutter (.010 o/s) - All cylinder heads with .6933 valve guide hole
443	ST-257-2	Pilot, Valve Seat Cutter (.020 o/s) - All cylinder heads with .6933 valve guide hole
444	ST-257-3	Pilot, Valve Seat Cutter (.030 o/s) - All cylinder heads with .6933 valve guide hole
445	ST-257-4	Pilot, Valve Seat Cutter (.040 o/s) - All cylinder heads with .6933 valve guide hole
446	ST-257-5	Pilot, Valve Seat Cutter (.005 o/s) - All cylinder heads with .6933 valve guide hole
447	ST-258-1	Reamer, Valve Guide OD (Exhaust) (.010 o/s) - All valve guides with .6933/.6943 valve guide hole in cylinder head
448	ST-258-2	Reamer, Valve Guide OD (Exhaust) (.020 o/s) - All valve guides with .6933/.6943 valve guide hole in cylinder head
449	ST-258-3	Reamer, Valve Guide OD (Exhaust) (.030 o/s) - All valve guides with .6933/.6943 valve guide hole in cylinder head
450	ST-258-4	Reamer, Valve Guide OD (Exhaust) (.040 o/s) - All valve guides with .6933/.6943 valve guide hole in cylinder head
451	ST-258-5	Reamer, Valve Guide OD (Exhaust) (.005 o/s) - All valve guides with .6933/.6943 valve guide hole in cylinder head
452	ST-259	Gage, Plug, Valve Guide OD (Exhaust) (STD) - All valve guides with .6933/.6943 valve guide hole in cylinder head
453	ST-259-1	Gage, Plug, Valve Guide OD (Exhaust) (.010 o/s) - All valve guides with .6933/.6943 valve guide hole in cylinder head
454	ST-259-2	Gage, Plug, Valve Guide OD (Exhaust) (.020 o/s) - All valve guides with .6933/.6943 valve guide hole in cylinder head
455	ST-259-3	Gage, Plug, Valve Guide OD (Exhaust) (.030 o/s) - All valve guides with .6933/.6943 valve guide hole in cylinder head
456	ST-259-4	Gage, Plug, Valve Guide OD (Exhaust) (.040 o/s) - All valve guides with .6933/.6943 valve guide hole in cylinder head
457	ST-259-5	Gage, Plug, Valve Guide OD (Exhaust) (.005 o/s) - All valve guides with .6933/.6943 valve guide hole in cylinder head
458	ST-260	Tool, Density Controller Adjusting - All engines employing a slotted head density controller adjustment screw
459	ST-264-B	Probe, Thermocouple Deck Temperature - 3/8-16 NC-3 thread
460	ST-264-C	Probe, Thermocouple Deck Temperature - 7/16-20 NF-3 thread
461	ST-265	Extension, Thermocouple - Use with ST-264-B, ST-264-C



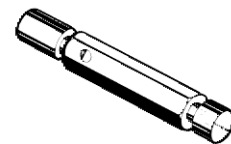
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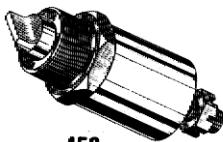
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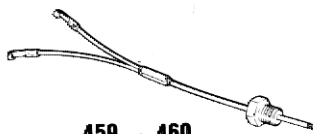
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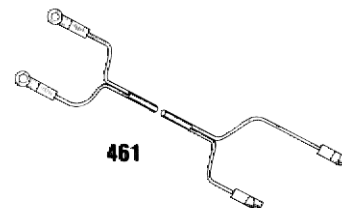
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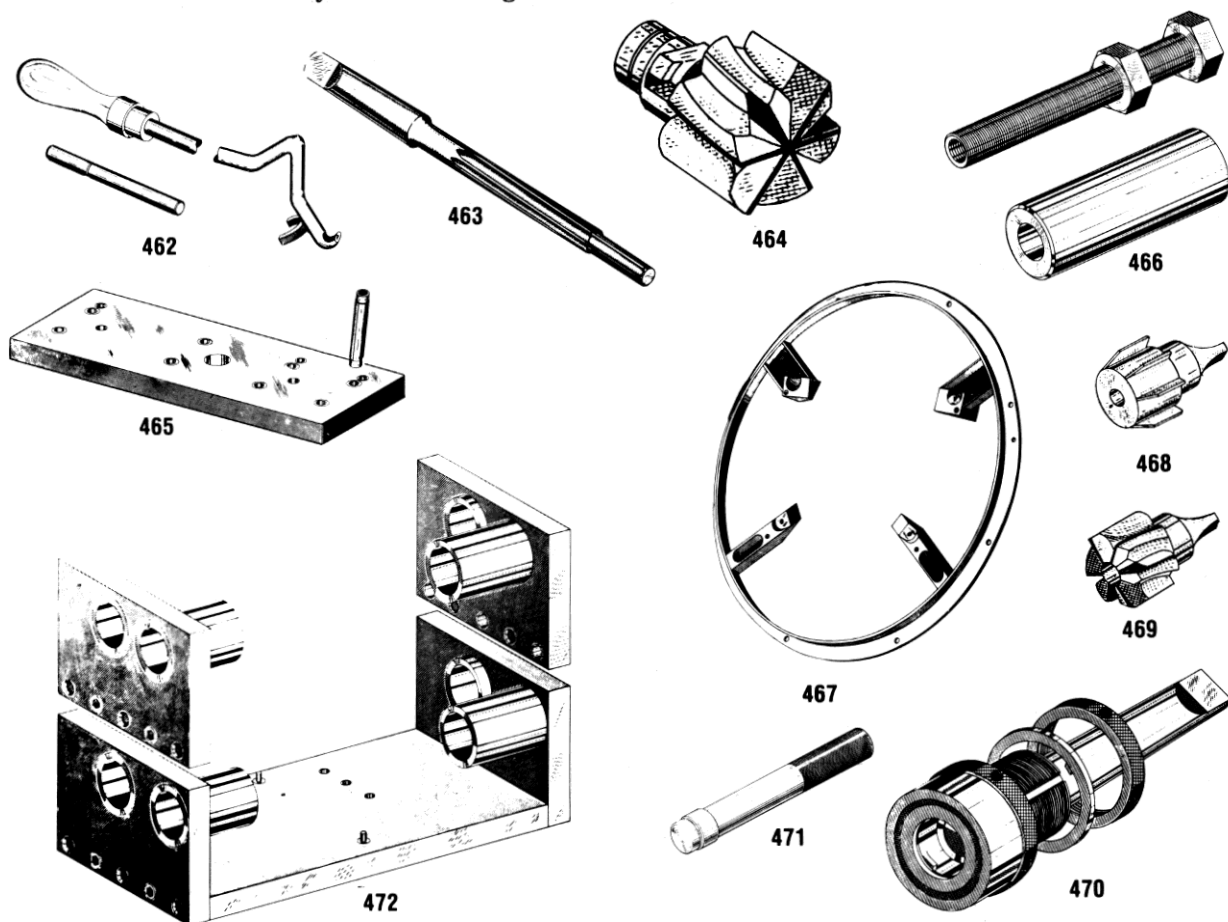
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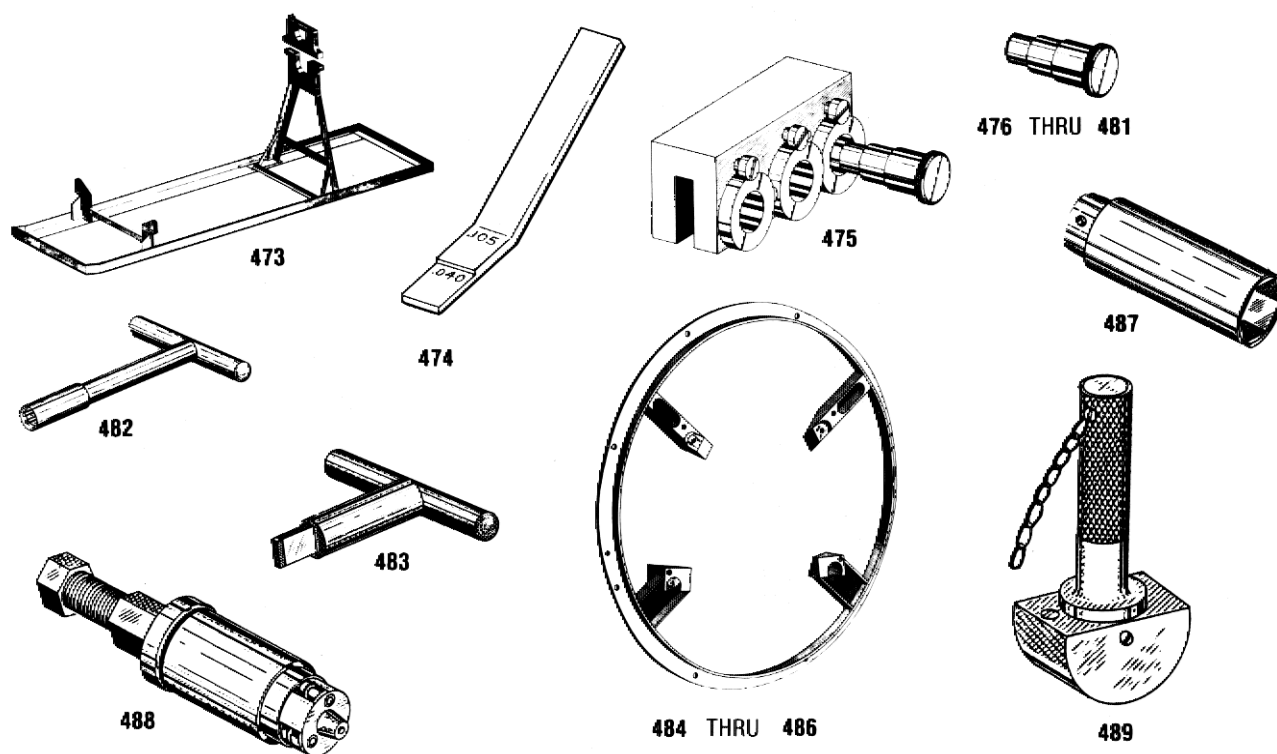
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
462	ST-266	Compressor, Valve Spring and Bar - TIO-541-E Series, TIGO-541-E Series (See ST-25 and ST-419)
463	ST-267	Reamer, Valve Guide ID (Ni-Resist) Pilot dia. .4778/.4783 - Finished ID .4980. This reamer is used only when valve guide is to be honed to size after reaming.
464	ST-269	Cutter, Salvage Fretted Crankcase "Conventional and Large Cylinder Base Flange Crankcases" - See ST-252
465	ST-270	Plate, Bushing (Crankcase) - Drill and ream crankcase for standard thru-stud dowels - All wide cylinder base flange crankcase (See ST-123 for conventional crankcases)
466	ST-271	Puller, Crankcase Thru-Stud - All engines employing drive thru-studs
467	ST-272	Ring, Engine Mounting - TIO-540 except -C1A, -E1A, -G1A, -H1A and -V2AD (Use with ST-278 and ST-162)
NOTE: The following tools, ST-273, ST-274, ST-275, ST-276 and ST-277 are used to modify the intake pipe bore in oil sump. See latest edition of Service Instruction No. 1168.		
468	ST-273	Countersink, Intake Pipe Bore - IO, AEIO, HIO, LIO and LHIO-360 engines employing large cylinder base flanges
469	ST-274	Counterbore, Intake Pipe Bore - IO, AEIO, HIO, LIO and LHIO-360 engines employing large cylinder base flanges
470	ST-275	Driver, Counterbore, Intake Pipe Bore - IO, AEIO, HIO, LIO and LHIO-360 engines employing large cylinder base flanges
471	ST-276	Drift, Bushing Installation, Intake Pipe Bore - IO, AEIO, HIO, LIO and LHIO-360 engines employing large cylinder base flanges
472	ST-277	Fixture, Intake Pipe Bore - IO, AEIO, HIO, LIO and LHIO-360 engines employing large cylinder base flanges



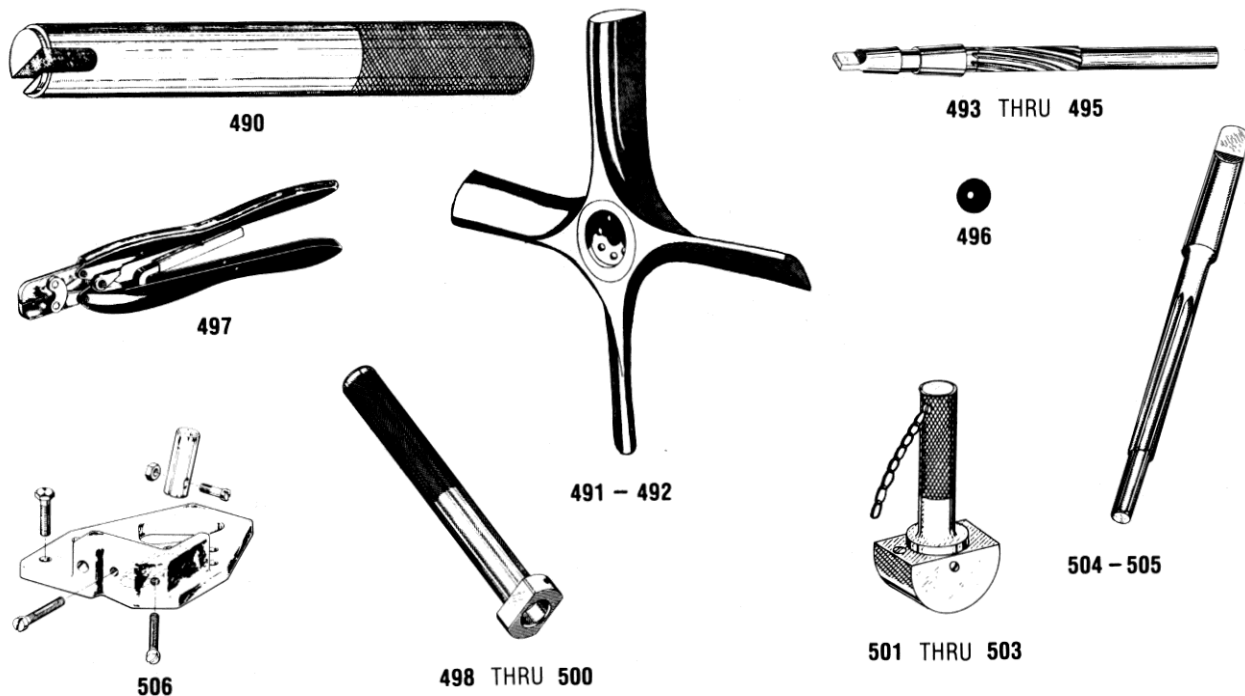
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
473	ST-278	Skid (Engine A-Frame Overhaul) - All engines (Use with ST-162)
474	ST-279	Gage, Valve Clearance - All engines requiring a valve clearance between .040 - .105
475	ST-280	Fixture, Ream Crankshaft Counterweight - All engines equipped with counterweights
476	ST-280-3	Plug, Std. Crankshaft Counterweight - For .9369/.9377 hole - Plug may be used with fixture 64873 or ST-280
477	ST-280-7	Plug, .005 o/s Crankshaft Counterweight - For .9420/.9425 hole - Plug may be used with fixture 64873 or ST-280
478	ST-280-8	Plug, .010 o/s Crankshaft Counterweight - For .9470/.9475 hole - Plug may be used with fixture 64873 or ST-280
479	ST-280-9	Plug, .015 o/s Crankshaft Counterweight - For .9520/.9525 hole - Plug may be used with fixture 64873 or ST-280
480	ST-280-10	Plug, .0075 o/s Crankshaft Counterweight - For .9445/.9450 hole - Plug may be used with fixture 64873 or ST-280
481	ST-280-11	Plug, .0125 o/s Crankshaft Counterweight - For .9495/.9500 hole - Plug may be used with fixture 64873 or ST-280
482	ST-283	Wrench, Differential Pressure Controller Adjusting - All turbochargers employing differential pressure controllers
483	ST-284	Tool, Differential pressure controller lock - All turbochargers employing differential pressure controllers
484	ST-285	Ring, Engine Mounting - TIO-360 (Use with ST-278 and ST-162)
485	ST-286	Ring, Engine Mounting - TIO-540-C1A and 6 cylinder direct drive engines without turbocharging (Use with ST-278, ST-162, ST-165)
486	ST-287	Ring, Engine Mounting - TIO-720-A (Use with ST-278 and ST-162)
487	ST-288	Socket, Spark Plug Wrench 7/8 " hex - All engines
488	ST-289	Swaging Tool, Intake Pipe - IO, TIO, HIO, LTIO-540 engines employing intake pipe connections P/N 72167, 72168, 72169 and IO-720 engines employing intake pipe connections P/N 75121, 75123, 75125 with 1.542/1.568 ID
489	ST-291	Driver, Main Bearing Straight Dowel - All engines employing straight main bearing dowels



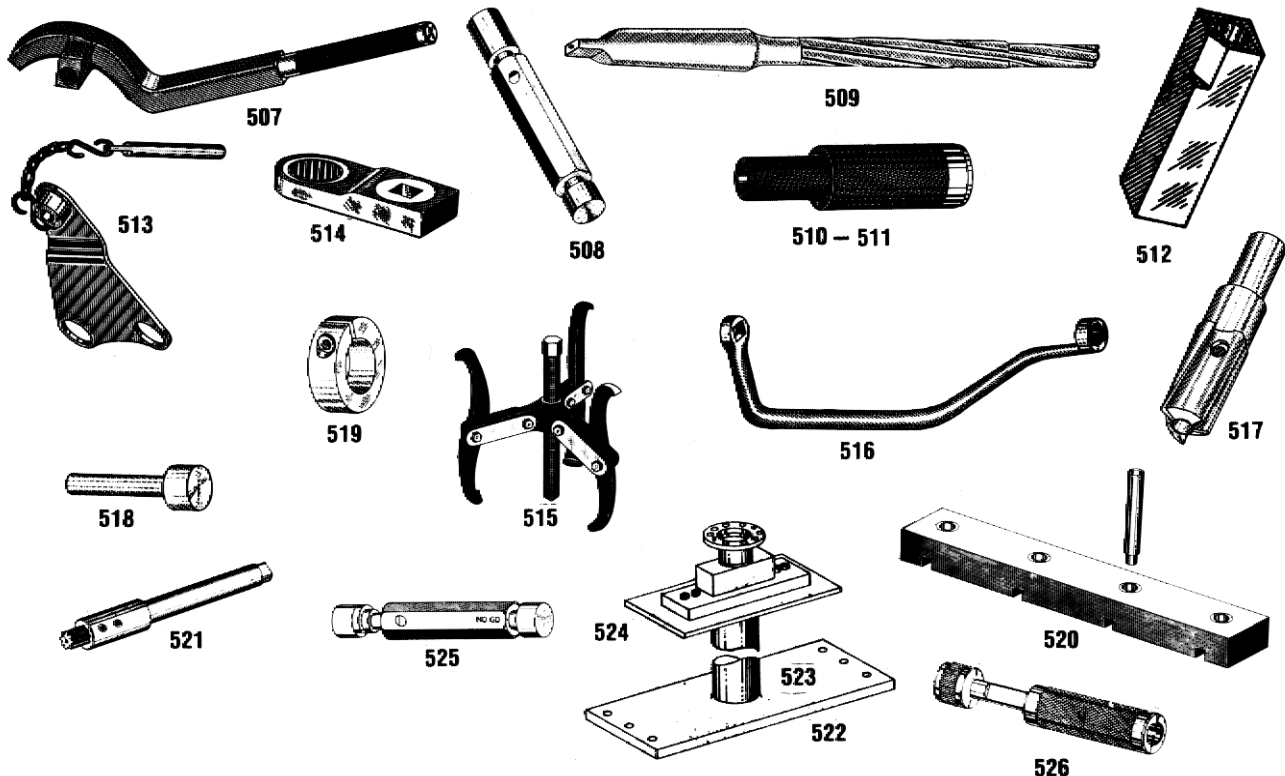
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
490	ST-295	Drift, Crankshaft, Oil Plug - IO, HIO, AIO, TO, TIO, LIO-360; 0, TIO, LTIO-540; TIO-541 and IO-720 (plug size 1.251/1.254)
491	ST-297	Club, Test (Left hand rotation) LIO-320
492	ST-298	Club, Test (Left hand rotation) LIO-360
493	ST-299-1	Reamer, Piloted Pinion Cage (.011 o/s) - To keep pinion shaft holes in alignment with fixture ST-149 (ST-148, ST-149 and ST-300-1 are used in conjunction with this tool)
494	ST-299-2	Reamer, Piloted Pinion Cage (.022 o/s) - To keep pinion shaft holes in alignment with fixture ST-149 (ST-148, ST-149 and ST-300-2 are used in conjunction with this tool)
495	ST-299-3	Reamer, Piloted Pinion Cage (.033 o/s) - To keep pinion shaft holes in alignment with fixture ST-149 (ST-148, ST-149 and ST-300-3 are used in conjunction with this tool)
496	ST-300-1	Balls, Sizing - Pinion Cage, (-1, .011 o/s, -2, .022 o/s, -3, .033 o/s) balls are used to burnish pinion shaft holes to proper size - all heavy duty reduction gears (Tools ST-148, ST-149, ST-299 are used in conjunction with this tool) - All engines with heavy duty planetary reduction gears.
497	ST-301	Tool, Crimping - Crimp spark plug wire terminal on 5MM ignition harness having 5/8-24 nut
498	ST-302	Drift, Valve Guide Installation (Intake and Exhaust) - All angle head engines employing flangeless valve guides
499	ST-303	Drift, Valve Guide Installation (Exhaust) - All parallel head engines employing flangeless exhaust valve guides
500	ST-304	Drift, Valve Guide Installation (Intake) - All parallel head engines employing flangeless intake valve guides
501	ST-305	Driver, Bearing Dowel (Straight and Stepped) - All crankcases with 2.9370 bearing bore diameter
502	ST-306	Driver, Bearing Dowel (Straight and Stepped) - All crankcases with 2.5665 bearing bore diameter
503	ST-307	Driver, Bearing Dowel (Straight and Stepped) - All crankcases with 2.8165 bearing bore diameter
504	ST-309-1	Reamer, Valve Guide ID Exhaust (Ni-Resist) - Pilot dia. .4828/.4833 finished ID .5000/.5010 for large ID valve guide replacement. (See ST-314 for Plug Gage)
505	ST-309-2	Reamer, Valve Guide ID Exhaust (Ni-Resist) - Pilot dia. .4777/.4783 finished ID .5000/.5010 for small ID valve guide replacement. (See ST-314 for Plug Gage)
506	ST-310	Gage, Check Bell-Mouthing of Exhaust Valve Guides - All angle valve engines employing 1/2" exhaust valves with down exhaust - (See ST-71 for parallel valves)



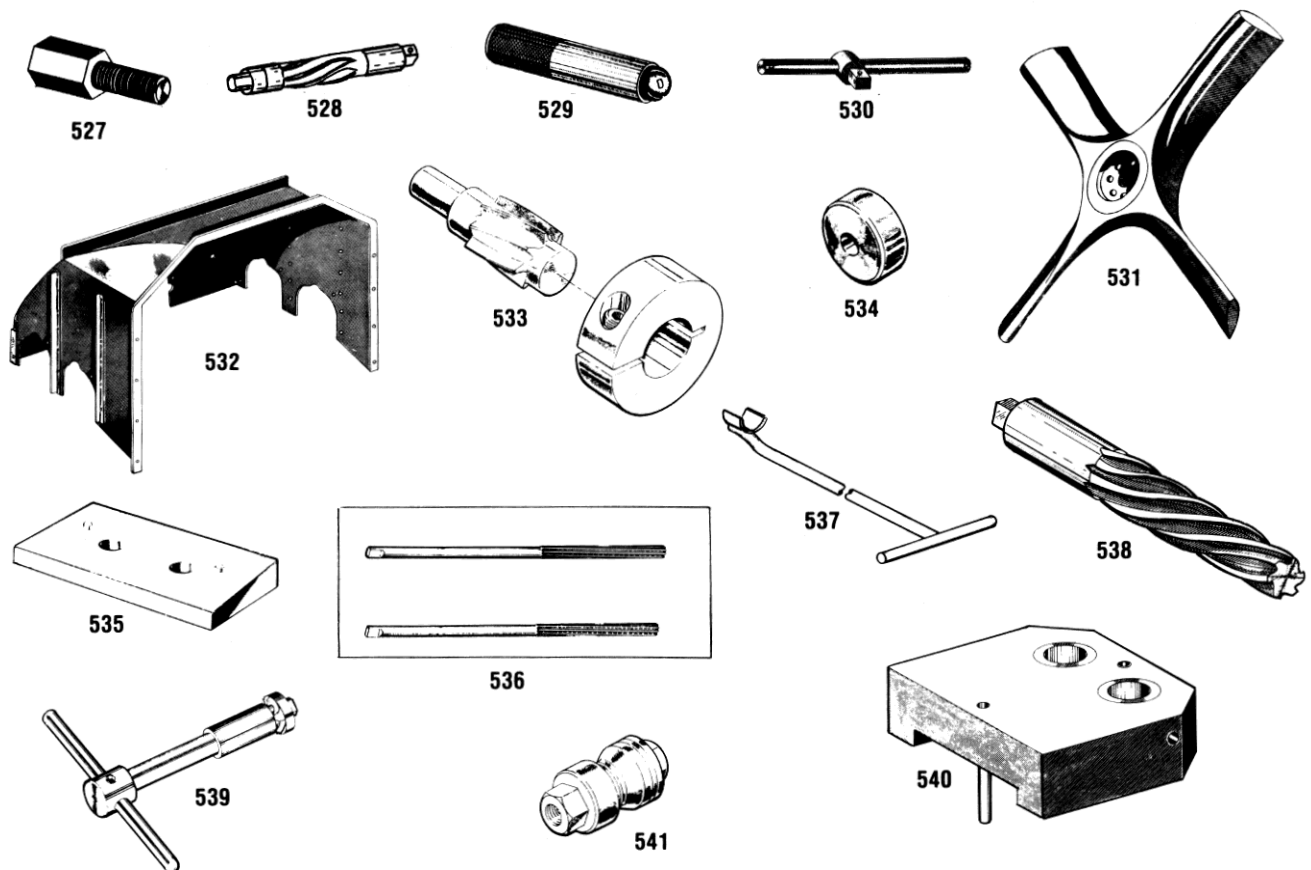
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
507	ST-313	Wrench, Crankshaft Flange - TIGO-541
508	ST-314	Gage, Plug, Valve Guide ID (Exhaust) - All valve guides with .5000/.5010 ID valve guide hole (See ST-315 for Reamer)
509	ST-315	Reamer, Valve Guide ID (Brass) (Exhaust) - Pilot dia. .4888/.4893 finished ID .5000/.5010, (not used on No-Resist Guides) See ST-314 for Plug Gage
510	ST-316	Driver, Crankcase Thru-Stud - TIO-541 and TIGO-541
511	ST-317	Driver, Crankcase Thru-Stud - All engines employing thru-studs (except TIO and TIGO-541)
512	ST-318	Gage, Fuel Injector and Controller Linkage - TIO-541 and TIGO-541 (Use with ST-319)
513	ST-319	Fixture, Fuel Injector and Controller Linkage - TIO-541 and TIGO-541 (Use with ST-318)
514	ST-320	Wrench, Propeller - TIGO-541
515	ST-321	Puller, Compressor Pulley - All engines employing compressors
516	ST-322	Wrench, (5/8" hex) Cylinder Base Nut - All engines employing P/N STD-2106 nut
517	ST-323	Counterbore, Crankcase Oil Seal recess - Use with ST-324, ST-325 - All engines employing crankcase thru-stud dowels
518	ST-324	Pilot, Crankcase Oil Seal Recess Counterbore - Use with ST-323, ST-325 - All engines employing crankcase thru-stud dowels
519	ST-325	Stop Collar, Crankcase Oil Seal Recess Counterbore - Use with ST-323, ST-324 - All engines employing crankcase thru-stud dowels
520	ST-327	Plate, Bushing (Crankcase) - Use with ST-328-2 - Ream crankcase for o/s thru-stud dowels
521	ST-328-2	Reamer, Crankcase (.6350 diameter for .010 o/s dowels) - Use with ST-327 - All engines to employ .010 o/s thru-stud dowels
522	ST-329	Fixture, Propeller Shaft Locknut Assembly - TIGO-541
523	ST-329-1	Fixture, Propeller Shaft Locknut (Detail of ST-329) - TIGO-541
524	ST-329-2	Stand, Propeller Shaft Locknut (Detail of ST-329) - TIGO-541
525	ST-331	Gage, Plug and Depth .010 o/s Crankcase Thru-Stud Dowel - All engines to employ crankcase .010 o/s thru-stud dowels (See ST-126 for standard gage)
526	ST-332	Driver, Dowel Crankcase - Drive Press fit dowels in crankcase - All engines to employ crankcase thru-stud dowels



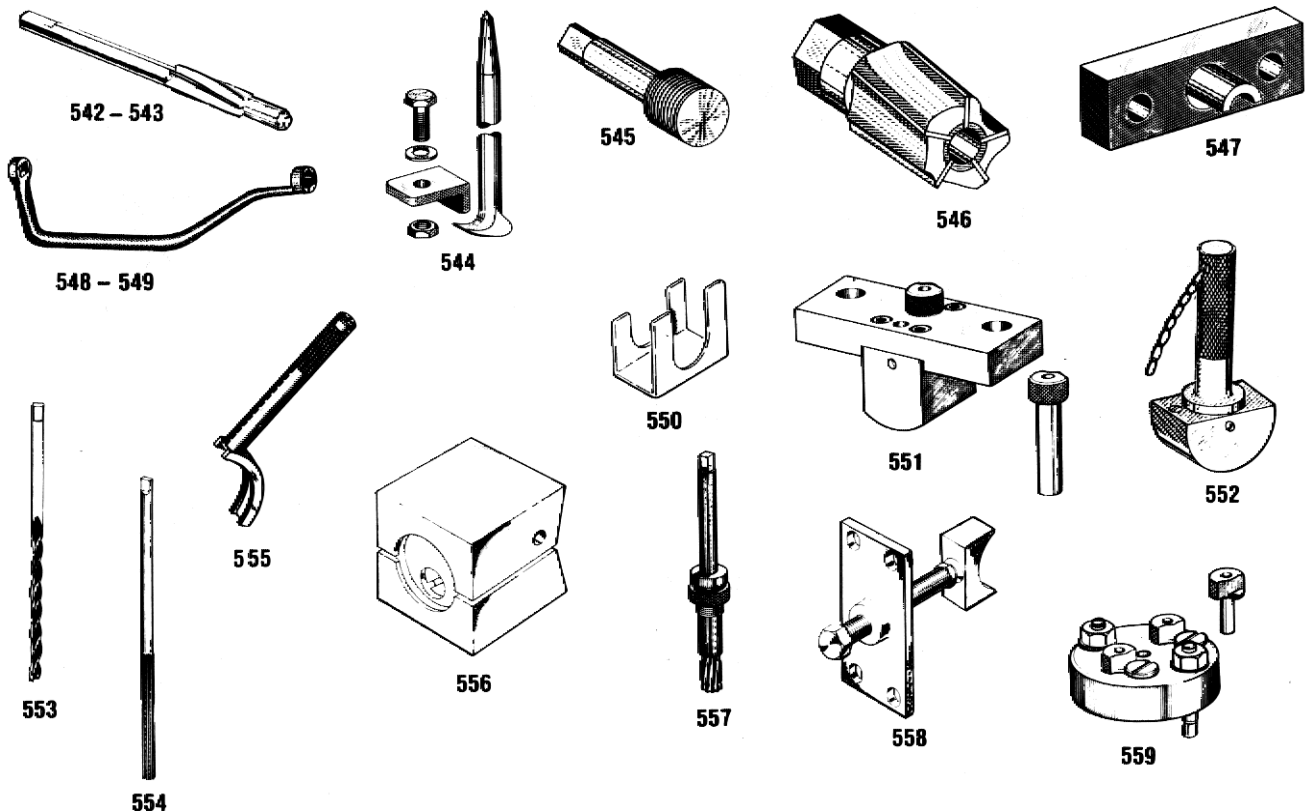
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
527	ST-333	Adapter - 5/8-18 NC-2 thread to 16 MM x 2 thread - Use with Metric Slide Hammer Puller
528	ST-338	Reamer, (Short) Hand-Expansion Valve Guide ID - All cylinder head with 1/2" valve guide hole
529	ST-340	Former, Oil Relief Valve Seat (Use with ST-245) - All engines
530	ST-345	Wrench, "T" Bar - Spark Plug (Use with ST-288) - All engines
531	ST-351	Club, Test (Left hand rotation) (Use with 64981) - LTIO-540
532	ST-352	Shroud, Cooling - All four cylinder angle valve engines
533	ST-354	Reamer and Stop, Shroud Tube adapter - TIO and TIGO-541-E engines - Use with ST-356, ST-357, ST-376, ST-361, ST-362, ST-363, ST-364, ST-365.
534	ST-356	Puller Insert, Shroud Tube Cylinder Head adapter - All cylinder heads reworked to install shroud tube adapter (P/N LW-13398) - Use with ST-354, ST-357, ST-361, ST-362, ST-363, ST-364, ST-365, ST-376, ST-381, ST-382.
535	ST-357	Fixture, Shroud Tube adapter - Rework shroud tube adapter (P/N 77755) on TIO and TIGO-541-E engines - Use with ST-354, ST-356, ST-376, ST-361, ST-362, ST-363, ST-364, ST-365.
536	ST-360	Reamer Set, Crankcase Bearing Dowel - All crankcases to employ .2545 or .2595 o/s Bearing Dowel Hole
537	ST-361	Tool, Shroud Tube Barrel, Spring and Assembly - TIO and TIGO-541-E - Use with ST-354, ST-356, ST-357, ST-362, ST-363, ST-364, ST-365, ST-376, ST-381, ST-382.
538	ST-362	Reamer, (Tapered) Cylinder Head Shroud Tube Hole - Ream cylinder heads to install (P/N LW-13398) adapter - TIO and TIGO-541-E - Use with ST-354, ST-356, ST-357, ST-361, ST-363, ST-364, ST-365, ST-376, ST-381, ST-382.
539	ST-363	Back Relief Cutter, Pilot and Driver - Cutter to relieve cylinder heads to install (P/N LW-13398) adapter - TIO and TIGO-541-E - Use with ST-354, ST-356, ST-357, ST-361, ST-362, ST-364, ST-365, ST-376, ST-381, ST-382.
540	ST-364	Fixture, Cylinder Head Shroud Tube Hole - Ream cylinder head to install (P/N LW-13398) adapter - TIO and TIGO-541-E - Use with ST-354, ST-356, ST-357, ST-361, ST-362, ST-363, ST-365, ST-376.
541	ST-365	Tool, Flaring - Flare cylinder head shroud tube adapter (P/N LW-13398) - TIO and TIGO-541-E -Use with ST-354, ST-356, ST-357, ST-361, ST-362, ST-363, ST-364, ST-376, ST-381, ST-382.



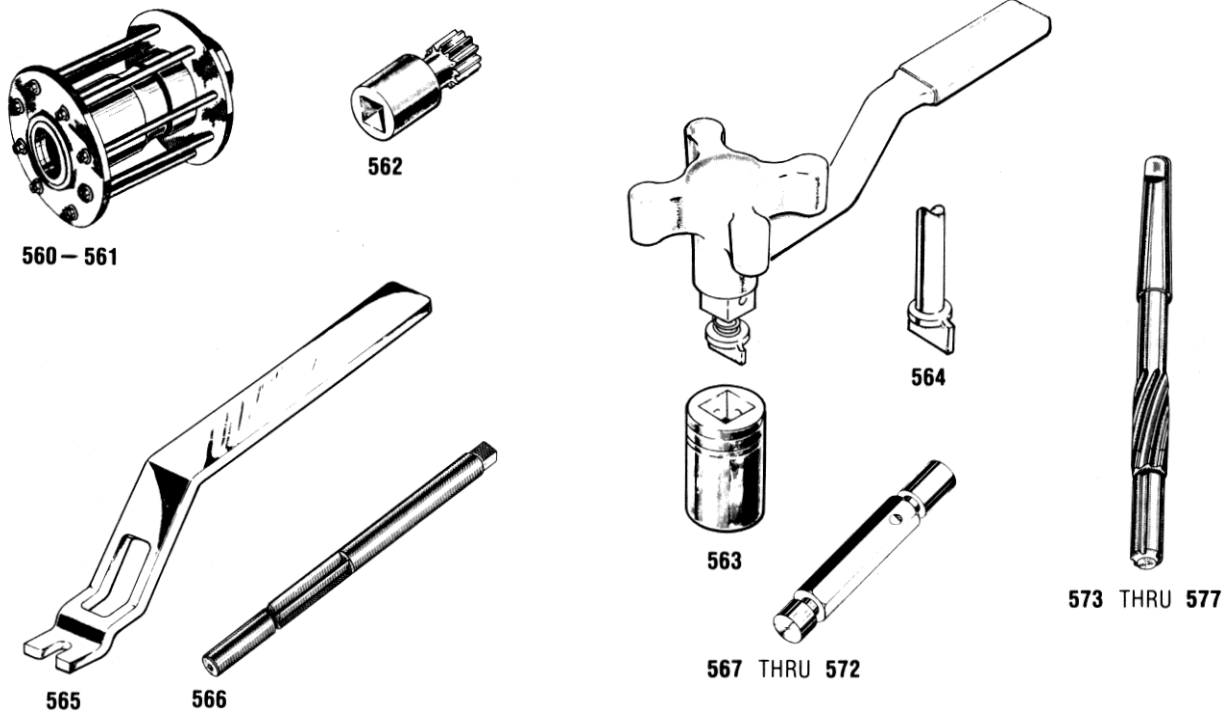
AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
542	ST-366-5	Reamer, Piloted Crankcase (.005 o/s) - Ream thru-stud hole in crankcase - All engines employing P/N 76220-P05 thru-stud
543	ST-366-1	Reamer, Piloted Crankcase (.010 o/s) - Ream thru-stud hole in crankcase - All engines employing P/N 76220-P10 thru-stud
544	ST-368	Kit, Valve Train Removal - Remove valve train with a pumped up hydraulic Lifter - Angle valve cylinders
545	ST-369	Pilot, Spark Plug Pad Counterbore - Use with counterbore ST-370 - All engines
546	ST-370	Counterbore, Spark Plug Pad - Use with pilot ST-369 - All engines
547	ST-372	Drill Jig, Crankshaft Front Oil Drain - Crankcases with no thrust bearing oil drain converting to oil lubrication stainless steel thrust bearing - TIGO-541
548	ST-374	Wrench, Cylinder Base Nut (9/16 hex) - All engines employing P/N STD-383-B nut
549	ST-375	Wrench, Cylinder Base Nut (3/4 hex) - All engines employing P/N STD-2090 nut
550	ST-376	Spring Holder, Shroud tube (Barrel Springs) - All engines employing Barrel Springs on Shroud Tubes
551	ST-377	Drill Fixture, Relocate front propeller shaft drive gear bearing dowel hole in crankcase - TIGO-541
552	ST-378	Driver, Bearing Dowel (Straight) - Crankcases with 2.923 bearing bore diameter - TIGO-541 -Use with ST-377, ST-379, ST-380.
553	ST-379	Drill, Flat Bottom - Propeller shaft drive bearing dowel hole in crankcase - TIGO-541
554	ST-380	Reamer, Propeller shaft drive gear bearing dowel in crankcase - TIGO-541
555	ST-383	Tool, Crankshaft oil seal installation - All engines employing stretch seals
556	ST-387	Fixture, Tappet body Magnaflux - All engines except 0-235, 0-290-D, 76 Series, TIO and TIGO-541 (Use with 64899)
557	ST-388	Reamer, Guide and Stop - Oil temperature By-Pass Valve Seat - All direct drive engines except TIO-541
558	ST-389	Tool, Crankcase separating - All doweled crankcase with drive thru-studs
559	ST-390	Fixture, Drill, Crankshaft Gear - TIO and TIGO-541



AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
560	ST-415	Hub and Cone Assembly, Test Club (4 Blade) - All No. 30 Spline propeller shafts with 2.615/2.617 OD
561	ST-415-2	Cone, Detail of ST-415
562	ST-416	Wrench, Spline, Oil pump drive - 76 Series engines
563	ST-418	Tool, (Solid tappets) Valve adjusting - 0-235, 0-290-D Series
564	ST-418-3	Blade, Screwdriver - Valve adjusting tool (Detail of ST-418)
565	ST-419	Compressor, Valve Spring - 76 Series engines
566	ST-427	Reamer, (STD) Rocker Shaft Bushing Hole - 0-235, 0-290 series cylinder for installation of bushings
567	ST-429	Gage, Plug Valve Guide OD (Intake and Exhaust) (STD) - All valve guides with .5913/.5923 valve guide hole in cylinder head
568	ST-429-1	Gage, Plug Valve Guide OD (Intake and Exhaust) (.010 o/s) - All valve guides with .5913/.5923 valve guide hole in cylinder head
569	ST-429-2	Gage, Plug Valve Guide OD (Intake and Exhaust) (.020 o/s) - All valve guides with .5913/.5923 valve guide hole in cylinder head
570	ST-429-3	Gage, Plug Valve Guide OD (Intake and Exhaust) (.030 o/s) - All valve guides with .5913/.5923 valve guide hole in cylinder head
571	ST-429-4	Gage, Plug Valve Guide OD (Intake and Exhaust) (.040 o/s) - All valve guides with .5913/.5923 valve guide hole in cylinder head
572	ST-429-5	Gage, Plug Valve Guide OD (Intake and Exhaust) (.005 o/s) - All valve guides with .5913/.5923 valve guide hole in cylinder head
573	ST-430-1	Reamer, Valve Guide OD (Intake and Exhaust) (.010 o/s) - All valve guides with .5913/.5923 valve guide hole in cylinder head
574	ST-430-2	Reamer, Valve Guide OD (Intake and Exhaust) (.020 o/s) - All valve guides with .5913/.5923 valve guide hole in cylinder head
575	ST-430-3	Reamer, Valve Guide OD (Intake and Exhaust) (.030 o/s) - All valve guides with .5913/.5923 valve guide hole in cylinder head
576	ST-430-4	Reamer, Valve Guide OD (Intake and Exhaust) (.040 o/s) - All valve guides with .5913/.5923 valve guide hole in cylinder head
577	ST-430-5	Reamer, Valve Guide OD (Intake and Exhaust) (.005 o/s) - All valve guides with .5913/.5923 valve guide hole in cylinder head



AVCO LYCOMING SERVICE TOOLS

Ref.	Tool No.	Nomenclature and Description
578	ST-431	Gage, Plug Valve Guide OD (Exhaust) (STD) - All valve guides with .6613/.6623 valve guide hole in cylinder head
579	ST-431-1	Gage, Plug Valve Guide OD (Exhaust) (.010 o/s) - All valve guides with .6613/.6623 valve guide hole in cylinder head
580	ST-431-2	Gage, Plug Valve Guide OD (Exhaust) (.020 o/s) - All valve guides with .6613/.6623 valve guide hole in cylinder head
581	ST-431-3	Gage, Plug Valve Guide OD (Exhaust) (.030 o/s) - All valve guides with .6613/.6623 valve guide hole in cylinder head
582	ST-431-4	Gage, Plug Valve Guide OD (Exhaust) (.040 o/s) - All valve guides with .6613/.6623 valve guide hole in cylinder head
583	ST-431-5	Gage, Plug Valve Guide OD (Exhaust) (.005 o/s) - All valve guides with .6613/.6623 valve guide hole in cylinder head
584	ST-432-1	Reamer, Valve Guide OD (Exhaust) (.010 o/s) - All valve guides with .6613/.6623 valve guide hole in cylinder head
585	ST-432-2	Reamer, Valve Guide OD (Exhaust) (.020 o/s) - All valve guides with .6613/.6623 valve guide hole in cylinder head
586	ST-432-3	Reamer, Valve Guide OD (Exhaust) (.030 o/s) - All valve guides with .6613/.6623 valve guide hole in cylinder head
587	ST-432-4	Reamer, Valve Guide OD (Exhaust) (.040 o/s) - All valve guides with .6613/.6623 valve guide hole in cylinder head
588	ST-432-5	Reamer, Valve Guide OD (Exhaust) (.005 o/s) - All valve guides with .6613/.6623 valve guide hole in cylinder head
589	ST-435	Reamer, Accessory Housing Oil Transfer Dowel - IGSO-540 engines
590	ST-436	Reamer, Accessory Housing Oil Transfer Dowel - IGSO-540 engines
591	ST-439	Countersink, (80°) Oil Relief Valve Seat Repair - 76 series engines with 1/2 inch oil supply port (Use with ST-245 bushing)
592	ST-440	Tool, Hydraulic Plunger Removal - TIO, TIGO-541 series
593	ST-443	Seal Puller and Installation Tool - Remove and install STD 2217 seal in vacuum pump adapter
594	ST-455	*Adapter, Test Club - All O-235 engines with AS-127 Type 1 prop flange and bushings for 3/8 inch prop attaching bolts
595	ST-456	*Club, Test - O-235 with AS-127 Type 1 prop flange (See 64801 for O-235 with AS-127 Type 2 prop flange)
596	ST-460	Mount, Engine Maintenance - All 6 cylinder direct drive engines without turbocharging. Use with 64759 at right top crankcase mounting pad
597	ST-461	Mount, Engine Maintenance - All 6 cylinder direct drive engines without turbocharging. Use with 64759 at left top crankcase mounting pad
598	ST-474	Tool Hydraulic Plunger Removal. 76 Series and TIO-541 Series

* AS-127 Type 1 prop flanges can be identified by measuring from one prop attaching bushing across the center of the crankshaft to the opposite bushing. The center to center measurement is 4-3/8 inches.



578 THRU 583



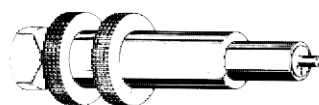
584 THRU 588



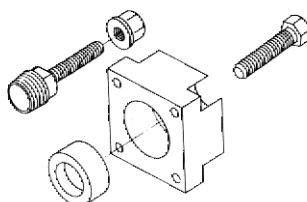
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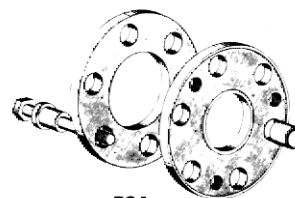
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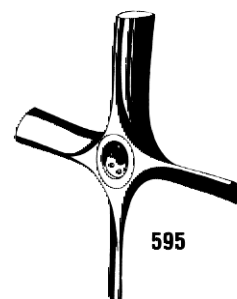
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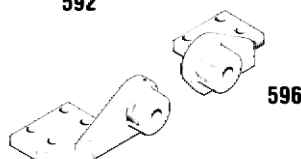
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SERVICE PUBLICATION CROSS REFERENCE INDEX

Tool No.	Name	See Latest Revision of Publication No.
1225-B	Wrench	S.I. 1144
40714	Wrench	S.B. 290, S.I. 1144
64501	Fixture	S.I. 1246, S.I. 1366
64514	Gage	S.I. 1425
64530	Gage	S.B. 244
64535	Drift	S.B. 244
64536	Drift	S.B. 244
64547	Drift	S.I. 1167
64572	Wrench	S.I. 1029
64580	Burnisher	S.B. 244
64593	Expanding Tool	S.I. 1043
64594	Inserting Tool	S.I. 1043
64596-1	Tap	S.I. 1043
64597	Fixture	S.B. 244
64607	Block	S.B. 184, S.I. 1144
64648	Driver	S.I. 1167
64681	Drift	S.I. 1098
64684	Reamer	S.I. 1425
64698	Puller	S.B. 290
64700	Wrench	S.I. 1029
64701	Wrench	S.I. 1029
64719	Wrench	S.B. 290
64737	Adapter	S.B. 292
64765	Test Stand	S.I. 1144
64767	Gage	S.B. 244
64770	Drift	S.I. 1098
64772	Puller	S.I. 1044, S.I. 1145
64796	Drift	S.I. 1246
64810	Gage	S.I. 1366
64827	Drill	S.B. 216
64828	Reamer	S.B. 216
64829	Reamer	S.B. 216
64856	Drill Jig	S.B. 239
64861	Crimping Tool	S.I. 1119
64862	Spotfacer	S.B. 225
64868	Counterbore	S.B. 252
64872	Puller	S.I. 1142
64874	Reamer	S.I. 1142
64875	Reamer	S.I. 1142
64876	Reamer	S.I. 1142
64878	Fixture	S.I. 1143
64891-1-2	Reamer	S.B. 257, S.I. 1117
64892-1-2-3	Gage	S.I. 1012
64894	Test Drive Assembly	S.I. 1144
64899	Adapter	S.I. 1011
64900	Reamer	S.I. 1425
64901	Gage	S.I. 1425
64902	Reamer	S.B. 273
64903	Reamer	S.B. 273
64904	Counterbore	S.B. 273

SERVICE PUBLICATION CROSS REFERENCE INDEX (CONT.)

Tool No.	Name	See Latest Revision of Publication No.
64905	Collar	S.B. 273
64906	Plug	S.B. 273
64907	Tap	S.B. 273
64908	Universal	S.B. 273
64910	Spinning Tool	S.I. 1167
64923	Installation Drift	S.I. 1136
64925	Reamer	S.I. 1028
64927	Gage	S.I. 1028, S.I. 1136, S.I. 1425
64939	Drill	S.I. 1028
64942	Wrench	S.I. 1029
64943	Wrench	S.I. 1029
64945	Gage	S.B. 302, S.B. 303, S.I. 1071, S.I. 1138, S.I. 1323, S.B. 371
64974	Shroud Tube Tool	S.I. 1347
64975	Gasket	S.I. 1144
ST-8	Fixture	S.I. 1064
ST-10	Drill	S.I. 1064
ST-11	Stop Collar	S.I. 1064
ST-23	Gage	S.B. 314, S.B. 315
ST-25	Compressor	S.I. 1425
ST-26	Plug Gage	S.I. 1246
ST-27	Reamer	S.I. 1246
ST-29	Wrench	S.I. 1069
ST-30	Wrench	S.I. 1069
ST-40	Fixture	S.I. 1073
ST-44	Drift	S.B. 292
ST-49	Puller	S.I. 1092, S.I. 1136, S.I. 1246
ST-50	Cutter	S.I. 1092
ST-51	Cutter	S.I. 1092
ST-52	Cutter	S.I. 1092
ST-53	Cutter	S.I. 1092
ST-54	Cutter	S.I. 1092
ST-55	Cutter	S.I. 1092
ST-56	Cutter	S.I. 1092
ST-57	Cutter	S.I. 1092
ST-58	Cutter	S.I. 1092
ST-62	Driver	S.I. 1092
ST-63	Adapter	S.I. 1092
ST-64	Drift	S.I. 1092
ST-65	Drift	S.I. 1092
ST-66	Pilot	S.I. 1092
ST-67	Pilot	S.I. 1092
ST-71	Gage	S.B. 293, S.I. 1088, S.B. 388
ST-71-8	Gage Adapter	S.B. 388
ST-73	Gage	S.I. 1143
ST-78	Plierwrench	S.B. 302, S.I. 1296
ST-83	Wrench	S.I. 1029
ST-84	Wrench	S.I. 1029
ST-91	Gage	S.I. 1143
ST-92	Driver	S.I. 1143

SERVICE PUBLICATION CROSS REFERENCE INDEX (CONT.)

Tool No.	Name	See Latest Revision of Publication No.
ST-93	Fixture	S.I. 1143
ST-94	Gage	S.I. 1143
ST-95	Weight	S.I. 1143
ST-96	Arbor	S.I. 1143
ST-105	Fixture	S.I. 1073
ST-107	Wrench	S.I. 1098
ST-112	Pilot	S.I. 1117
ST-113-1	Reamer	S.I. 1425
ST-113-2	Reamer	S.I. 1425
ST-115	Tool	S.B. 253, S.I. 1098, S.I. 1111, S.I. 1342
ST-122	Plate	S.I. 1112, S.I. 1123
ST-123	Plate	S.I. 1112, S.I. 1123
ST-124	Drill	S.I. 1112, S.I. 1123
ST-125	Reamer	S.I. 1112, S.I. 1123
ST-126	Gage	S.I. 1112, S.I. 1123
ST-131	Gage	S.L. L160, S.I. 1129
ST-143-1	Reamer	S.I. 1342, S.I. 1425
ST-143-2	Reamer	S.I. 1342, S.I. 1425
ST-144	Fixture	S.I. 1112
ST-145	Cutter	S.I. 1112
ST-146	Holder	S.I. 1112
ST-147	Ball	S.I. 1114
ST-148	Spacer	S.I. 1114, S.I. 1236
ST-149	Fixture	S.I. 1114, S.I. 1236
ST-150	Reamer	S.I. 1114
ST-155	Gage	S.I. 1425
ST-156	Stop Collar	S.I. 1112, S.I. 1123
ST-157	Drift	S.I. 1112
ST-158	Puller ("V" Pulley)	S.I. 1283
ST-168	Driver	S.I. 1145
ST-169	Fixture	S.I. 1145
ST-170	Drift	S.I. 1145
ST-171	Tool	S.I. 1145
ST-172	Puller Set	S.L. L195
ST-179	Fixture	S.I. 1136
ST-180	Reamer	S.I. 1136
ST-181	Reamer	S.I. 1136
ST-184	Repair Kit	S.I. 1122, S. L. L162
ST-190-2	Socket	S.B. 387, S.I. 1231
ST-198	Crimping Tool	S.I. 1153
ST-199	Counterbore	S.I. 1136
ST-210	Reamer	S.I. 1142
ST-211	Reamer	S.I. 1142
ST-212	Blocks	S.I. 1142
ST-222	Plate	S.I. 1112, S.I. 1029, S.I. 1123, S.I. 1290
ST-226	Gage	S.I. 1168
ST-227	Fixture	S.I. 1168
ST-228	Counterbore	S.I. 1168
ST-229	Pilot	S.I. 1168
ST-230	Drive	S.I. 1168

SERVICE PUBLICATION CROSS REFERENCE INDEX (CONT.)

Tool No.	Name	See Latest Revision of Publication No.
ST-231	Reamer	S.I. 1168
ST-232	Fixture	S.I. 1092
ST-236	Arbor	S.I. 1184
ST-237	Arbor	S.I. 1184
ST-243	Drill Bushing	S.I. 1172
ST-244	Reamer	S.I. 1172
ST-245	Drill Bushing	S.I. 1172
ST-246	Reamer	S.I. 1172
ST-248	Countersink	S.I. 1172
ST-249	Drift	S.I. 1172
ST-250	Fixture	S.I. 1092
ST-252	Fixture	S.I. 1112
ST-253	Driver	S.I. 1168
ST-254	Reamer	S.I. 1209
ST-255	Reamer	S.I. 1209
ST-256	Fixture	S.I. 1209
ST-264-B	Probe	S.I. 1187
ST-264-C	Probe	S.I. 1187
ST-265	Extension	S.I. 1187
ST-266	Compressor	S.I. 1192, S.I. 1425
ST-267	Reamer	S.I. 1200
ST-269	Cutter	S.I. 1112
ST-270	Plate	S.I. 1112, S.I. 1123
ST-271	Puller	S.I. 1123, S.I. 1290
ST-273	Countersink	S.I. 1168
ST-274	Counterbore	S.I. 1168
ST-275	Driver	S.I. 1168
ST-276	Drift	S.I. 1168
ST-277	Fixture	S.I. 1168
ST-280	Fixture	S.I. 1142
ST-289	Swaging Tool	S.I. 1355
ST-291	Driver	S.I. 1225, S.B. 326
ST-299-1	Reamer	S.I. 1236
ST-299-2	Reamer	S.I. 1236
ST-299-3	Reamer	S.I. 1236
ST-300-1	Sizing Ball	S.I. 1236
ST-300-2	Sizing Ball	S.I. 1236
ST-300-3	Sizing Ball	S.I. 1236
ST-302	Drift	S.I. 1256, S.I. 1430
ST-303	Drift	S.I. 1256
ST-304	Drift	S.I. 1256
ST-305	Driver	S.I. 1225
ST-309-1	Reamer	S.I. 1116, S.I. 1425
ST-309-2	Reamer	S.I. 1116, S.I. 1425
ST-310	Gage	S.B. 388
ST-314	Gage	S.I. 1116, S.I. 1425
ST-315	Reamer	S.I. 1116, S.I. 1425
ST-316	Driver	S.I. 1290
ST-317	Driver	S.I. 1290
ST-318	Gage	S.I. 1211

SERVICE PUBLICATION CROSS REFERENCE INDEX (CONT.)

Tool No.	Name	See Latest Revision of Publication No.
ST-319	Fixture	S.I. 1211
ST-322	Wrench	S.I. 1029
ST-323	Counterbore	S.I. 1123
ST-324	Pilot	S.I. 1123
ST-325	Stop Collar	S.I. 1123
ST-327	Plate	S.I. 1123
ST-328-2	Reamer	S.I. 1123
ST-329	Fixture	S.I. 1292
ST-329-1	Fixture	S.I. 1292
ST-329-2	Stand	S.I. 1292
ST-331	Gage	S.I. 1123
ST-332	Driver	S.I. 1123
ST-338	Reamer	S.I. 1116, S.I. 1425
ST-340	Former	S.I. 1172
ST-354	Reamer and Stop	S.I. 1297
ST-356	Puller	S.I. 1297
ST-357	Fixture	S.I. 1297
ST-360	Reamers	S.I. 1225, S.B. 326
ST-361	Shroud Tube Tool	S.I. 1297
ST-362	Reamer	S.I. 1297
ST-363	Cutter	S.I. 1297
ST-364	Fixture	S.I. 1297
ST-365	Flaring Tool	S.I. 1297
ST-366-5	Reamer	S.I. 1290
ST-366-1	Reamer	S.I. 1290
ST-367	Wrench	S.I. 1029
ST-372	Drill Jig	S.I. 1292
ST-376	Holder	S.I. 1297
ST-377	Fixture	S.I. 1312
ST-378	Driver	S.I. 1312
ST-379	Drill	S.I. 1312
ST-380	Reamer	S.I. 1312
ST-383	Oil Seal Tool	S.I. 1303, S.I. 1324
ST-387	Fixture	S.I. 1011
ST-388	Reamer, Guide and Stop	S.I. 1316
ST-389	Separator Tool	S.I. 1123
ST-394	Wrench	S.I. 1029
ST-395	Tester	S.I. 1308
ST-418	Tool	S.L. L196
ST-419	Compressor, Valve Spring	S.B. 435
ST-427	Reamer	S.I. 1366
ST-435	Reamer	S.I. 1394
ST-436	Reamer	S.I. 1394
ST-439	Countersink	S.I. 1172
ST-474	Hydraulic Tool	S.I. 1352, S.B. 424, S.B. 435

OBSOLETE SERVICE TOOLS

Tool No.	Description
218-B	Socket, Spark Plug Wrench (Replaced by ST-288)
1121-B	Wrench - Cylinder Base Nut (Replaced by ST-367)
1130-B	Compressor - Valve Spring (Replaced by ST-25)
1228-B	Wrench - Thrust Bearing Locknut (Replaced by 40714)
61550	Wrench, Cylinder Base Nut (Replaced by ST-367)
61551	Wrench, Cylinder Base Nut (Replaced by ST-394, ST-375)
61552	Extension - Cylinder Base Nut Wrench (No Replacement)
61678	Bar - Wrench (No Replacement)
64507	Gage, Plug Valve Guide OD (Replaced by ST-429-5)
64509	Gage, Plug Valve Guide OD (Replaced by ST-429-1)
64511	Gage, Plug Valve Guide OD (Replaced by ST-429-2)
64516-1	Pilot - Valve Seat Removal (See latest revision of S.I. 1092)
64517	Holder - Remove Valve Seat Counterbore (See latest revision of S.I. 1092)
64518	Counterbore - Remove Exhaust Valve Seat (See latest revision of S.I. 1092)
64519	Counterbore - Remove Valve Seat (Exhaust) (See latest revision of S.I. 1092)
64520	Fixture - Remove and Replace Valve Seat (Replaced by ST-250)
64521	Drift, Replace Exhaust Valve Seat (Replaced by ST-65)
64522	Wrench, Cylinder Base Nut (Replaced by ST-394)
64523	Wrench, Cylinder Base Nut (Replaced by ST-367)
64525	Drift - Replace Intake Valve Seat (Replaced by ST-65)
64527	Drift - Piston Pin (Replaced by 64843)
64547	Drift, Crankshaft Oil Tube (Replaced by 64548)
64565	Drift, Main Bearing Oil Tubes (No Replacement)
64571	Gage, Plug Valve Guide OD (Replaced by ST-429)
64572	Wrench, Cylinder Base Nut (Replaced by ST-394)
64579	Drift, Main Bearing Oil Tubes (No Replacement)
64581	Plate - Engine Mounting (No Replacement)
64582	Pointer - Ignition Timing (No Replacement)
64583	Gage, Flat Plug Rejection - Valve Guide ID (Replaced by ST-81)
64597-1	Fixture - Remove, Replace, Burnish Connecting Rod Bushing (Replaced by 64597)
64598	Drift - Replace Generator Mounting Bushing (No Replacement)
65600	Gage, Plug - Generator Mounting Bushing Finished ID (No Replacement)
64609	Shroud - No Replacement
64635	Compressor - Valve Spring (Replaced by ST-25)
64639	Gage, Plug Valve Guide OD (Replaced by ST-429-3)
64642	Drift - Valve Seat Replacement (Exhaust and Intake) (Replaced by ST-64)
64645	Puller - Valve Guide (Replaced by ST-49)
64670	Puller - Generator Drive Shaft Gear (No Replacement)
64678-2	Reamer, Valve Guide OD (Replaced by ST-430-5)
64678-3	Reamer, Valve Guide OD (Replaced by ST-430-1)
64678-4	Reamer, Valve Guide OD (Replaced by ST-430-2)
64678-5	Reamer, Valve Guide OD (Replaced by ST-430-3)
64688	Wrench, Pinion Cage Locknut (No Replacement)
64690	Driver - Relief Valve Sleeve (Replaced by ST-215)
64691	Counterbore - Valve Seat Removal (Intake) (See latest revision of S.I. 1092)
64692	Counterbore - Valve Seat Removal (Exhaust) (See latest revision of S.I. 1092)
64693	Counterbore - Valve Seat Removal (Intake) (See latest revision of S.I. 1092)
64694	Counterbore - Valve Seat Removal (Intake) (See latest revision of S.I. 1092)
64695	Drift - Valve Seat Replacement (Replaced by ST-64)
64696	Fixture - Valve Seat Replacement (Angle Heads) (Replaced by ST-232)
64699	Drift, Piston Pin Puller (Replaced by 64843)
64702	Wrench, Pinion Cage Nut (No Replacement)
64703	Wrench, Engine Rotor (Replaced by 64764)
64708	Holder - Accessory Drive Shaft (Replaced by ST-173, ST-174)

OBSOLETE SERVICE TOOLS (CONT.)

Tool No.	Description
64717	Wrench - Cylinder Base Nut (Replaced by 64942)
64718	Wrench - Cylinder Base Nut (Replaced by 64943)
64722	Wrench, Pinion Cage Nut (No Replacement)
64724	Gage - Flat Plug Rejection - Valve Guide ID (Replaced by ST-81)
64725	Gage, Plug - Valve Guide ID (No Replacement)
64726	Reamer, Valve Guide ID (No Replacement)
64727	Drift, Piston Pin Removal (Replaced by 64843)
64753	Tool - Vertical Lifting (Replaced by ST-48)
64755	Drift, Crankshaft Rear Oil Tube (Replaced by ST-44)
64760	Skid, A-Frame Overhaul (Replaced by ST-278)
64761	Wrench, Magneto Bushing (No Replacement)
64762	Stand (Engine), A-Frame Overhaul (Replaced by ST-162)
64786	Handle, Cutter - Valve Seat Recess (Replaced by ST-62, ST-63)
64787-1,-2,-3	Cutter - Valve Seat Recess (Exhaust) (See latest revision of S.I. 1092)
64788-1,-2,-3	Pilot - Valve Seat Recess Cutter (Exhaust and Intake) (See latest revision of S.I. 1092)
64789-1,-2,-3	Cutter - Valve Seat Recess (Intake) (See latest revision of S.I. 1092)
64790-1,-2,-3	Cutter - Valve Seat Recess (Intake) (See latest revision of S.I. 1092)
64791-1,-2,-3	Cutter - Valve Seat Recess (Exhaust) (See latest revision of S.I. 1092)
64792-1,-2,-3	Cutter - Valve Seat (See latest revision of S.I. 1092)
64793-1,-2,-3	Cutter - Valve Seat Recess (Intake) (See latest revision of S.I. 1092)
64794-1,-2,-3	Cutter - Valve Seat Recess (Intake) (See latest revision of S.I. 1092)
64795-1,-2,-3	Cutter - Valve Seat Recess (Exhaust) (See latest revision of S.I. 1092)
64800	Club - Test (Use 64801 or ST-456)
64804	Club - Test (No Replacement)
64805	Club - Test (No Replacement)
64806	Club - Test (Four-Blade) (Replaced by 64773)
64808	Jig - Drill, Rocker Shaft Bushing Dowel Hole (No Replacement)
64809	Jig - Dowel, Installing, Rocker Shaft Bushing (No Replacement)
64817	Drift, Dowel Installation, Rocker Shaft Bushing (No Replacement)
64818	Cutter - Rocker Shaft Bushing Dowel (No Replacement)
64832	Reamer - 0.005 o/s Inner Rocker Shaft Bushing Hole in Cylinder Head (Replaced by 64338)
64833	Reamer - 0.010 o/s Inner Rocker Shaft Bushing Hole in Cylinder Head (Replaced by 64839)
64837	Plate - Engine Mounting (No Replacement)
64842	Plate - Engine Mounting (No Replacement)
64869	Tool - Install and Remove Propeller Flange Bushing (Replaced by ST-115)
64873	Fixture - Ream Crankshaft Counterweight Holes (Replaced by ST-280)
64873-10	Plug, Crankshaft Counterweight (Replaced by ST-280-10)
64873-11	Plug, Crankshaft Counterweight (Replaced by ST-280-11)
64879	Spacer - Adjustable - Install Bushings in Counterweights (Replaced by ST-93)
64880	Counterbore - Exhaust Valve Seat Removal (See latest revision of S.I. 1092)
64881	Counterbore - Intake Valve Seat Removal (See latest revision of S.I. 1092)
64882-1,-2,-3	Cutter - Intake Valve Seat Recess (See latest revision of S.I. 1092)
64883-1,-2,-3	Cutter - Valve Seat Recess (Exhaust) (See latest revision of S.I. 1092)
64894-18	Gasket, Test Drive (Use 74822 Gasket)
64896	Drift, Installation, Expansion Plug (Replaced by 64681)
64897-1	Reamer - No Replacement
64897-2	Reamer - No Replacement
64911	Gage - Check Cam Lobe Wear (No Replacement)
64912,-1	Cutter - Copperlytic Exhaust Valve Seats (No Replacement)
64913,-1	Cutter - Copperlytic Intake Valve Seats (No Replacement)
64920	Gage, Flat Plug Rejection - Exhaust Valve Guide I.D. (See Table of Limits)

OBSOLETE SERVICE TOOLS (CONT.)

Tool No.	Description
64921	Drift - Valve Seat Replacement (Intake) (Replaced by ST-64)
64922-1,-2,-3	Cutter - Intake Valve Seat (See latest revision of S.I. 1092)
64924	Reamer, Valve Guide OD (Replaced by ST-432)
64924-1	Reamer, Valve Guide OD (Replaced by ST-432-5)
64924-2	Reamer, Valve Guide OD (Replaced by ST-432-1)
64924-3	Reamer, Valve Guide OD (Replaced by ST-432-2)
64924-4	Reamer, Valve Guide OD (Replaced by ST-432-3)
64926	Gage, Flat Plug Rejection - Exhaust Valve Guide I.D. (See Table of Limits)
64928	Gage, Plug Valve Guide OD (Replaced by ST-431-5)
64929	Gage, Plug Valve Guide OD (Replaced by ST-431-1)
64930	Gage, Plug Valve Guide OD (Replaced by ST-431-2)
64931	Gage, Plug Valve Guide OD (Replaced by ST-431-3)
64935	Hub and Cone Assembly, (Replaced by ST-415)
64937	Wrench - No. 30 Spline (Replaced by ST-38)
64938	Club - Test (Replaced by 64783)
64940	Gage, Plug Valve Guide OD (Replaced by ST-431)
64969	Gage - Dry Tappet Clearance (Replaced by ST-279)
64978	Reamer, Rocker Shaft Bushing Hole (Replaced by ST-427)
64985	Bolt - Propeller (See 64801 or ST-456)
64986	Flange, Propeller (See 64801 or ST-456)
65521	Handle, Offset - Spark Plug Wrench (Replaced by ST-345)
65522	Wrench - Cylinder Base Nut (Replaced by ST-375)
65523	Wrench - Cylinder Base Nut (Replaced by ST-374)
65526	Socket - Universal Joint (No Replacement)
65528	Gage, Valve Clearance - Dry Tappet (Replaced by ST-23)
ST-41	Fixture - Spotface, Mill Contour of Stretch Bolt in Connecting Rod Cap (No Replacement)
ST-42	Drill - Special Flat Bottom Core, Mill Contour in Connecting Rod Cap for Stretch Bolt (No Replacement)
ST-59	Pilot - Valve Seat Cutter (No Replacement)
ST-60	Pilot - Valve Seat Cutter (No Replacement)
ST-61	Pilot - Valve Seat Cutter (No Replacement)
ST-74	Gage Ring (No Replacement)
ST-85	Fixture - Drill Jig (No Replacement)
ST-90	Reamer - Valve Guide OD (No Replacement)
ST-97	Gage - Counterweight Hole Location (No Replacement)
ST-98	Weight - Counterweight Master (No Replacement)
ST-106	Drift - Crankshaft Oil Plug (No Replacement)
ST-110	Fixture - Ream and back spotface reduction gear housing (No Replacement)
ST-116	Puller - Remove Sludge Tubes from Crankshaft (Replaced by 64784)
ST-117	Gage, Flat Plug Rejection - Exhaust Valve Guide I.D. (See Table of Limits)
ST-118	Gage, Flat Plug Rejection - Intake Valve Guide I.D. (Replaced by ST-81)
ST-119	Gage, Flat Plug Rejection - Exhaust Valve Guide I.D. (See Table of Limits)
ST-120	Gage, Flat Plug Rejection - Exhaust Valve Guide I.D. (See Table of Limits)
ST-121	Gage, Flat Plug Rejection - Exhaust Valve Guide I.D. (See Table of Limits)
ST-127-1	Fixture, Test - Density Controller Calibration (Replaced by ST-282, ST-282-38)
ST-130	Drill, Piloted - Counterbore Crankcase for Oil Seal Retainer (No Replacement)
ST-132	Meter - Fuel Flow (No Replacement)
ST-151	Reamer - Hand - Valve Guide ID (Short) (Exhaust) (Replaced by ST-338)
ST-157	Driver - Dowel Crankcase (Replaced by ST-332)
ST-175	Reamer, Crankcase Vent Hole (No Replacement)
ST-176	Fixture, Reaming Valve Guide Hole in Cylinder Head (No Replacement)
ST-178	Reamer (Piloted) Rework Valve Guide Hole in Cylinder Head (No Replacement)
ST-181	Reamer, Valve Guide I.D. Exhaust (Replaced by ST-181-1 and ST-181-2)

OBSOLETE SERVICE TOOLS (CONT.)

Tool No.	Description
ST-182	Wrench - Cylinder Base Nut 3/8" (End Spline) (No Replacement)
ST-183	Wrench - Cylinder Base Nut 1/2" (End Spline) (No Replacement)
ST-185	Bushing Plate, (4 Cylinder) Crankcase Body Fit Stud (No Replacement)
ST-186	Bushing Plate, (6 Cylinder) Crankcase Body Fit Stud (No Replacement)
ST-187	Drill Jig, (4 Cylinder) Crankcase Bushing Pin (No Replacement)
ST-188	Drill Jig, (6 Cylinder) Crankcase Bushing Pin (No Replacement)
ST-189	Counterbore, Crankcase Bushing "O" Ring (No Replacement)
ST-190	Wrench - Injector Nozzle (Replaced by ST-190-2)
ST-190-1	Wrench - Injector Nozzle (Replaced by ST-190-2)
ST-192	Gage, Flat Plug Rejection - Exhaust Valve Guide I.D. (See Table of Limits)
ST-193	Fixture, Test (Adjustable) Absolute Pressure Controller (Replaced by ST-282, ST-282-38)
ST-194	Fixture, Test - Absolute Pressure Controller (Replaced by ST-282, ST-282-38)
ST-200	Rings, Engine Mounting (Replaced by 64759)
ST-202	Shroud, Cooling - (Replaced by 64612 and ST-352)
ST-204	Reamer, Valve Guide ID (Exhaust) (No Replacement)
ST-205	Gage, Plug, Valve Guide ID (Exhaust) (No Replacement)
ST-206	Reamer, Valve Guide ID (Exhaust) (No Replacement)
ST-207	Gage, Flat Plug Rejection (Exhaust) (No Replacement)
ST-208	Gage, Flat Plug Rejection (Exhaust) (No Replacement)
ST-209	Gage, Plug, Valve Guide ID (Exhaust) (No Replacement)
ST-214	Wrench - Cylinder Base Nut (No Replacement)
ST-218	Bearingizer Internal Thru 2.4210/2.4205 Dia. (No Replacement)
ST-219	Bearingizer Internal Thru 2.2875/2.2870 Dia. (No Replacement)
ST-238	Skid, Engine A-Frame Overhaul (Replaced by ST-278)
ST-258	Reamer, Valve Guide O.D. (No Replacement)
ST-282	Test Stand - (See Latest Revision of S.L. 184)
ST-282-37	Kit Vacuum System - (See Latest Revision of S.L. 184)
ST-282-38	Test Stand - (See Latest Revision of S.L. 184)
ST-290	Driver, Bearing Dowel (Replaced by ST-291)
ST-308	Reamer, Hand Short Valve Guide (Replaced by ST-338)
ST-311	Driver, Intake Pipe Pin (No Replacement)
ST-328-1	Reamer, Crankcase Thru-Stud Dowel (No Replacement)
ST-330	Gage, Plug and Depth, Crankcase Thru-Stud Dowel (No Replacement)
ST-331	Gage, Plug and Depth, Crankcase Thru-Stud Dowel (No Replacement)
ST-335	Counterbore - No Replacement
ST-336	Counterbore - No Replacement
ST-337	Fixture - No Replacement
ST-367	Wrench, Cyl. Base Nut (Replaced by ST-374)
ST-373	Fixture - No Replacement
ST-391	Bushing Pilot, (Reamer) Oil Cooler Bypass Valve Housing (No Replacement)
ST-392	Driver, Seat - Thermostatic Control Valve (No Replacement)
ST-393	Bushing Pilot, (Reamer) Oil Cooler Bypass Valve Housing (No Replacement)
ST-394	Wrench, Cyl. Base Nut (Replaced by ST-375)
ST-395	Tester, Magneto Pressurization (No Replacement)
ST-414	Extractor, Hydraulic Lifter Plunger (Replaced by ST-474)
ST-430	Reamer, Valve Guide O.D. (No Replacement)
ST-432	Reamer, Valve Guide O.D. (No Replacement)