

SKY-TEC STARTER ADAPTER MAINTENANCE MANUAL

P/N: ST1001



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This Manual provides service information for Sky-Tec starter adapter components. Tables found in this manual contain cross reference information to identify **Continental Aerospace Technologies' starter adapter components to Sky-Tec starter adapter replacement components.

Changes and updates to this Manual can be found at www.skytec.aero. Revisions will be tracked and recorded on the List of Affected Pages section of this document.

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* Sky-Tec is a trademark of Hartzell Engine Technologies LLC.

** Continental Aerospace Technologies and Continental are used in like-terms throughout this manual.

WARNING:

PEOPLE WHO FLY SHOULD RECOGNIZE THAT THERE ARE VARIOUS TYPES OF RISKS INVOLVED IN THIS ACTIVITY; AND THEY SHOULD TAKE ALL PRECAUTIONS TO MINIMIZE THEM, SINCE THEY CANNOT BE ELIMINATED ENTIRELY.

IT IS ESSENTIAL THAT THE STARTER ADAPTER IS PROPERLY MAINTAINED ACCORDING TO THE RECOMMENDED SERVICE PROCEDURES AND MONITORED TO DETECT IMPENDING PROBLEMS BEFORE THEY BECOME SERIOUS. ANY UNUSUAL OPERATION SHOULD BE INVESTIGATED AND CORRECTED, AS IT MAY BE A WARNING OF IMPENDING FAILURE.



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Record of Revisions

Revision Letter	Page(s) Revised	Description	Date
New	All	New Release	01/16/2020



Service Publication List

Pub. Number	Description	Starter Adapter Affected
Reserved		



List of Effective Pages

Content of Pages	Page	Date of Latest Revision
Title Page	i	New - 01/16/2020
Copyright statement	ii	New - 01/16/2020
Table of Contents	iii	New - 01/16/2020
Warning Letter	v	New - 01/16/2020
Record of Revisions	vi	New - 01/16/2020
Service Publication List	vii	New - 01/16/2020
List of Effective Pages	viii	New - 01/16/2020
Effectivity	ix	New - 01/16/2020
Airworthiness Limitations	A-1	New - 01/16/2020
Description and Operation	1-1	New - 01/16/2020
Troubleshooting	2-1	New - 01/16/2020
Check	3-1	New - 01/16/2020
Testing	4-1	New - 01/16/2020
Maintenance	5-1	New - 01/16/2020
Parts Index & IPL	6-1 thru 6-10	New - 01/16/2020



Effectivity

1. General

- A. The effectivity pertains to the following top-level starter adapter part numbers. The left column of each table contains part numbers for Continental starter adapter assemblies. The right column of each table contains the part numbers for Sky-Tec starter adapter assemblies.
- B. Listed Sky-Tec starter adapters are direct replacement for selected Continental starter adapter assemblies.

Continental Starter Adapter Assy. P/Ns	Sky-Tec Starter Adapter Assy. P/Ns	Continental Starter Adapter Assy. P/Ns	Sky-Tec Starter Adapter Assy. P/Ns
655034, 643147, 643165A1	55261	643259A18, 643259A7, 635050A4, 635050A14, 635050A5	55271
655035, 643152, 643165A3, 643165A2	55262	643259A39, 643259A37, 643259A25, 643259A13, 652410A1, 646814-1, 635050A16, 635050A15, 635050A13, 635050A12	55272
642083A12, 642083-1A2, 642083A13, 642083A11, 642083A10, 642083A9, 642083A7, 642083A5, 642083A4, 642083A2, 635049A1	55264	643259A43	55273
642087A68, 642087A63, 642087A58, 642087A54, 642087A50, 642087A46, 642087A40, 642087A34, 642087A30, 642087A26, 642087A22, 642087A17, 642087A14, 642087A10, 642087A5, 642087A2, 635061A8, 635061A6	55267	646220-1A1	55274
642087A69, 642087A64, 642087A59, 642087A55, 642087A51, 642087A47, 642087A35, 642087A31, 642087A27, 642087A23, 642087A18, 642087A15, 642087A11, 642087A6, 642087A3, 635061A9	55268	646220-1A3	55275
642087A70, 642087-1A5, 642087-1A2, 642087A65, 642087A61, 642087A60, 642087A56, 642087A52, 642087A48, 642087A42, 642087A36, 642087A32, 642087A28, 642087A24, 642087A21, 642087A20, 642087A19, 642087A16, 642087A13, 642087A9	55269	646220A37, 646220A14, 646220A2, 635048A1	55276
642087A72	55270	N/A	N/A

(Cont'd →)



Continental Starter Adapter Assy. P/Ns	Sky-Tec Starter Adapter Assy. P/Ns
646220A43, 646220A29, 646220A16, 646220A6, 635048A18, 635048A4	55277
646220A45, 646220A31, 646220A18, 646220A8, 635048A23, 635048A20, 635048A15, 635048A10, 635048A8	55278
646220A50, 646220A49, 646220A35, 646220A15, 646220A4, 635048A21, 635048A16, 635048A7	55279
646220A51, 646220A41, 646220A27, 646220A20, 646220A12, 646220A10, 646220A5, 635048A17, 635048A13, 635048A2	55280
646220A53	55281
646220A54, 646220A38, 646220A19, 646220A11, 646220A9, 646220A3, 635048A14	55282
646220A56	55283
646757A15, 646757A14, 646757A13, 646757A12, 646757A11, 646757A10, 646757A9, 646757A8, 646757A7, 646757A6, 646757A5, 646757A4, 646757A3, 646757A2, 646757A1	55284
646757A16	55285
653074A39, 653074A27, 653074A15, 653074A10, 653074A6, 653074A5	55287
653074A45, 653074A33, 653074A23	55288
653074A47, 653074A35, 653074A13, 653074A1, 641348A13, 641348A10	55289
653074A51, 653074A50, 653074A49, 653074A37, 653074A24	55290

Continental Starter Adapter Assy. P/Ns	Sky-Tec Starter Adapter Assy. P/Ns
653074A52, 653074A46, 653074A34, 653074A25	55291
653074A53	55292
653074A55	55293
653074A56	55294
658440A1, 642085A17, 642085A15, 642085A13, 642085A11, 642085A8, 642085A6, 642085A4, 642085A2, 642085-1A1, 635061A5, 635061A3, 635061A1	55297
658440A2, 642085A18, 642085A16, 642085A14, 642085A12, 642085A9, 642085A7, 642085A5, 642085A3	55298
658440A3, 642085A19	55299
658440A4, 642085A20	55300
658440A5, 642085A22	55301
658440A7	55302
658440A8	55303
653074A40, 653074A28, 653074A16, 653074A11, 653074A7, 653074A3, 641348A16, 641348A12, 641348A11	55304
653074A54	55305

(Cont'd)



AIRWORTHINESS LIMITATIONS

A.1 General Information

CAUTION:

THE AIRWORTHINESS LIMITATIONS HEREIN ARE THOSE MANDATED BY HARTZELL ENGINE TECHNOLOGIES. THESE LIMITATIONS ARE THE MINIMUM REQUIRED TO MEET CONTINUED AIRWORTHINESS BUT MAY BE SUPERSEDED BY MORE STRINGENT REQUIREMENTS AS PUBLISHED BY THE FAA, AIRCRAFT, ROTORCRAFT OR OTHER ENGINE MANUFACTURERS THAT USE THESE COMPONENTS IN THEIR APPLICATIONS. FAILURE TO OBSERVE THESE LIMITATIONS MAY COMPROMISE THE COMPONENT OR THE APPLICATION IT IS USED IN.

Airworthiness
Limitations

A.2 Airworthiness Limitation Statement

- A. The Airworthiness Limitations section is FAA approved and specifies maintenance required under §§43.16 and 91.403 of Title 14 of the Code of Federal Regulations unless an alternative program has been FAA approved.
- B. There are no new (or additional) airworthiness limitations associated with this equipment and/or installation.

Airworthiness Limitation Revisions Log

Revision Number	Description of Revision

CHAPTER 1 - DESCRIPTION AND OPERATION

1.1 General

Refer to applicable Continental engine service manuals for description and operation of selected starter adapter.

CHAPTER 2 - TROUBLESHOOTING

2.1 General

Refer to applicable Continental engine service manuals for troubleshooting of selected starter adapter.

CHAPTER 3 - CHECK

3.1 General

Refer to applicable Continental engine service manuals for periodic checks of selected starter adapter.

CHAPTER 4 - TESTING

4.1 General

For operational tests of affected starter adapters, refer to the applicable Continental engine service and maintenance manuals.

CHAPTER 5 - GENERAL MAINTENANCE

5.1 General

For general maintenance of affected starter adapters, refer to the applicable Continental engine service manuals.

For replacement parts, refer to Chapter 6 of this manual for Continental and Sky-Tec part number cross reference list.

CHAPTER 6 - PARTS INDEX & IPL

6.1 Parts Index

- A. This chapter contains a part number cross reference list for replacement of Continental starter adapter components with equivalent Sky-Tec components.
 - (1) Sky-Tec components are direct replacement with no change to form, fit, or function of original Continental components.

- B. Refer to *Continental Aerospace Technologies' Illustrated Parts List* for aid in locating the Sky-Tec equivalent part numbers found in this chapter.
 - (1) For starter adapters found in the Effectivity section of this manual that do not have a parts list on Continental's website, refer to Figure 6-1 and its IPL, this chapter.



Continental P/N	Sky-Tec P/N	Description
X13041	55257	BEARING-BALL-RADIAL
2024	55000	PLUG.125C'SUNK HD PIPE
20202	55002	WASHER-.880DX .453 ID.
20522	55005	WASHER-.250X.03125
22535	55006	SPACER-.33 ID X.25
25102	55008	SEAL .81 ID X 1.25 OD
352655	55009-1	STUD-.31-18
401752	55011-1	PLUG-PIPE .13-27
401801	55012-1	STUD.25-20-28X1.19
401814	55009-2	STUD .31-18
401825	55012-2	STUD.25-20X-28
401834	55009-3	STUD .31-18
401843	55012-3	STUD.25-20-28X1.56
401861	55013-1	STUD.38-16-24X1.75
401870	55012-4	STUD.25-20-28X1.12
401870P003	55012-4003	STUD.25-20-28X1.12#401850
401870P007	55012-4007	STUD.25-20-28X1.12#401850
401870P012	55012-4012	STUD.25-20-28X1.12#401850
401881	55009-4	STUD-.31-18
401893	55012-5	STUD .250-20 x .250-28 X 1.25
401899	55009-5	STUD .31-18
401899P003	55009-5003	STUD-.31-18-24X2.00
401899P007	55009-5007	STUD
401963	55012-6	STUD.25-20-28X1.00
401971	55009-6	STUD .31-18
401971P003	55009-6003	STUD .31-18-24X1.62
401971P007	55009-6007	STUD .31-18-24X1.62
402127	55013-2	STUD .38-16-24
402127P003	55013-2003	STUD .38-16-24X1.53
402127P007	55013-2007	STUD .38-16-24X1.53
402151	55009-7	STUD .31-18
402941	55011-2	PLUG-PIPE .06 X 27
501867	55014	WASHER-TAB .26 DIA ID
502020-3	55015-3	RING-RETAINING-INT

Table 6-1(cont'd →)



Continental P/N	Sky-Tec P/N	Description
502287-3	55015-4	RING-RETAINING-INT
521649-3	55239-2	RING-EXT RETAIN
522247-3	55239-3	RING - RETAINER
533285	55017	DOWEL .125 DIA X .31
534685	55018	BEARING-BALL
534715	55019	RING-INT RETAINING
534775	55334	SHEAVE-GEN DRIVE
534938	55020	SEAL-OIL
534980	55021	SLEEVE .67 ID X .60 THK
535539	55023	BEARING-BALL 1.85ODX.98ID
535631	55024	SCREW .25-20X1.00LG
537738	55026	COVER - STARTER ADAPTER
537750	55028	SCREW .31-18 NC3X1.12
538999	55029	BOLT-DRILLED HEX .31-18X3.62
539793	55030	GEAR-STARTER WORM
539805	55031	GEAR-STARTER WORM
626487	55032	BOLT-HEX HD .25-20NC-2 THD
627882	55035	DOWEL-SHOULDERED .51 LG
628071	55036	COVER ASM-STARTER ADPT
628071-1	55036-1	COVER ASM-STR ADAPTER
628149	55038	BUSHING-GEAR .38 LG
628155-1	55243	PIN-GROOVE .16 X .75 LG
628249-5	55244	BALL .14 DIA
628436	55040	ELBOW-FTG 45 DEG .13NPTF
629435	55042	GEAR-SHAFT STARTER
629518-4	55245-2	PLUG-.50-14 NPTF
629668	55045	COVER - STARTER DRIVE ADAPTER
630680	55048	BEARING-ROLLER
630773	55049	PIN-DOWEL-SCAV OIL PUMP
630966-1.20	55246-1	BOLT .31 - 18 X 1.20 LG
630979-24	55247-1	SEAL- "O" RING
631252	55050	SHAFT-WORM DRIVE
631253	55051	SHAFT-STARTER WORM
631254	55052	SHAFT ASM-STARTER WORM
631844	55053	COVER-STARTER ADPT

Table 6-1(cont'd →)



Continental P/N	Sky-Tec P/N	Description
631849	55054	SPACER - .99 ID 1.50 O.D.
631850	55055	SEAL-OIL 1.25 ID X .38
631851	55056	SPACER-OIL SEAL
631922	55057	WASHER .78 ID-PLAIN
632407A2	55058	ADPT ASM ACC DR COMP
632595	55062	BUSHING .50 ID X.55 LG
632979	55065	NUT-CASTLE .75-16
633039	55067	SLEEVE-SPRING CLUTCH
633342	55069	KEY-WOODRUFF
633343	55070	ELBOW - 90 DEG. STREET
633609-7	55248-1	BEARING-NEEDLE
633609-9	55248-2	BEARING-NEEDLE
643110M015	55120-2	SPRING - CLUTCH, LEFT HAND
633629	55072	GEAR SCAV PUMP DRIVER
633630	55073	GEAR ASM-SCAV PMP DRIVEN
633636	55076	BODY SCAV. OIL PUMP
633637	55077	GEAR SCAV PUMP DR
633751	55079	COVER-ADPT ACC DRV
633845	55080	SCREW-.25-20 X.41 LG
633845-1	55080-1	SCREW-.25-20 X .32 LG
643840	55126	BEARING-BALL
640255-1	55085-1	COVER ASM VAC PUMP
640380	55086	COVER-ACCESSORY
640684	55087	GEAR, BEVEL ACCESSORY DRIVER
640731	55088	BEARING-BALL
640746	55090	GEAR ASM-SCAC PUMP
640756-1A2	55344-5	ADAPTER ASM SCAV & ACC DR
640756-1A3	55344-4	ADAPTER ASM-SCAV/ACC DR.
640756A7	55344-2	ADAPTER ASM-SCAV & ACC DR
640756A8	55344-3	ADAPTER ASM-SCAV & ACC D
640756A9	55344-1	ADAPTER ASM-SCAV & ACC DR
640802	55094	GEAR BEVEL ACC DRIVEN
640808	55095	GEAR-SCAV PMP DRIVER
640809	55096	GEAR-BEVEL-ACC DRIVEN
640815	55097	HSG-GEARSHAFT-ACC DR

Table 6-1(cont'd →)



Continental P/N	Sky-Tec P/N	Description
640816	55098	BOLT HEX HD 4375-20X2LG
641103	55100	BODY ASM-SCAV & VAC PUMP
641368	55101	BEARING NEEDLE
641893	55338	SHEAVE ACC DRIVE
641948	55103	ADAPT ASM - FREON COMP
641948-1	55103-1	ADAPTER ASM
642083	55105	HOUSING STARTER ADAPTER
642087	55107	ADAPTER ASSY - STARTER DRIVE
642290	55108	BRKT FREON COMP-REAR
642612	55109	COVER - SCAVENGER PUMP
642622	55110	SLEEVE - WEAR
642623	55339	SHEAVE - ALT DRIVE
642641	55111	GEROTOR - OIL PUMP
642910	55112	SEAL-OIL, 1.06 ID
642927A1	55345-1	ADAPT-ASM-SCAV & ACC DR.
642927A2	55345-2	ADAPT-ASM-SCAV & ACC DR.
642930	55116	GEAR-SHAFT
643022	55117	COVER-SCAV PUMP
643109	55119	SPRING - CLUTCH, RIGHT HAND
643109M015	55119-2	SPRING - CLUTCH, RIGHT HAND
643110	55120	SPRING - CLUTCH, LEFT HAND
643165	55123	ADAPTER ASM STARTER
643259	55124	ADAPTER HSG - STARTER DR
643303	55125	SHAFT ASM - WORM
643840	55126	BEARING-BALL
643951	55127	ELBOW-TUBE 90 DEG.
643957-1	55258	SPACER-IDLER SHEAVE
646187	55128	NUT-HEX .50-20 UNF, L.H.
646220	55129	ADAPTER ASM - STARTER
646220-1	55129-1	STARTER ADAPTER ASM
646605	55130	NUT-PLAIN
646815	55132	COVER-STR ADPT & SC/PUMP
649186	55340	SHEAVE-DRIVE
649206	55137	BOLT HEX HD .3125-18X1.38
649285	55341	BRACKET - ALTERNATOR, REAR

Table 6-1(cont'd →)



Continental P/N	Sky-Tec P/N	Description
649290	55138	SPACER-.50 OD X .265 ID
649321	55140	BODY ASM - SCAV & VAC PUMP
649351	55141	SPACER, STARTER SHAFT
649865	55147	SPACER
649924	55154	NUT-SELF LOCKING
652388	55164	GEAR-WORM, STARTER
652406	55166	GEAR-SHAFT STARTER
652411	55167	SHAFTGEAR-STARTER
653014	55171	CLIP-SEAL RETAINER
653074	55172	STARTER ADAPTER ASM
653171	55174	SEAL-STARTER SHAFT
653328	55177	BRKT FREON COMP-FRT
653374	55342	BRACKET-ALTERNATOR-FRONT
653487	55182	GASKET-ACCESSORY DRIVE
653696	55187	GEAR-STARTER
653698	55188	SHAFTGEAR-STARTER
653708	55189	GEAR-STARTER
653709	55190	SHAFTGEAR- STARTER
653710	55191	SHAFTGEAR-STARTER
653711	55192	SHAFTGEAR-STARTER
653713	55193	SHAFTGEAR-STARTER
653714	55194	SHFT-GEAR START.L.H. ROT
653717	55195	GEAR-WORM STARTER
653719	55197	GEAR ASSY. STARTER
653720	55198	GEAR-WORM-STARTER
653721	55199	WORMGEAR-STARTER (L.H.)
653732	55346	GEAR-ASM-STARTER
653743	55200	GASKET-ACC CASE
653750	55201	GASKET-STARTER COVER
653789	55202	SPACER-IDLER SHEAVE
653882	55203	SHAFTGEAR-STARTER
654374	55204	EYE-LIFTING
654565	55206	SPRING-CLUTCH
654565M015	55206-2	SPRING - CLUTCH
654662	55207	ADPT ASM - FREON COMP.

Table 6-1(cont'd →)



Continental P/N	Sky-Tec P/N	Description
654817	55213	COVER ASSY-SCAVENGE PUMP
654818	55214	COVER ASSY-SCAVENGE PUMP
654819	55215	COVER ASSY-SCAVENGE PUMP
655266	55216	BUSHING-REDUCER
655711	55218	SHAFT GEAR-STARTER
655713	55220	BODY-SCAVENGE OIL & PTO
655714	55221	COVER-ASSY STARTER ADPTR
655749	55223	EYE-LIFTING
655919	55224	GEAR - BEVEL ACCESSORY
655942	55225	DOWEL THRU .453 X .625
656220	55227	STARTER SPRING
655713A1	55256-1	BODY ASM SCAV. & PTO
655715A2	55222-3	BODY ASM-SCAV & PTO
655715A3	55222-2	BODY ASM-SCAV. & PTO
655715A4	55222	BODY ASM-SCAV & PTO
657177-2	55256	BODY ASM SCAV. & PTO
657452	55229	SLEEVE-STARTER SHAFT
658501	55235	COVER-STARTER ADAPTER & SCAV.
658502	55236	COVER-STARTER ADAPTER & SCAV.
658506	55343	DAMPER - TORSIONAL
658653	55237	EYE-LIFTING, REAR
13XX299	55238	WASHER-LOCK .56

(cont'd) **Table 6-1**

6.2 IPL

- A. The following IPL is applicable to starter adapter models that do not have a parts list on Continental's website.

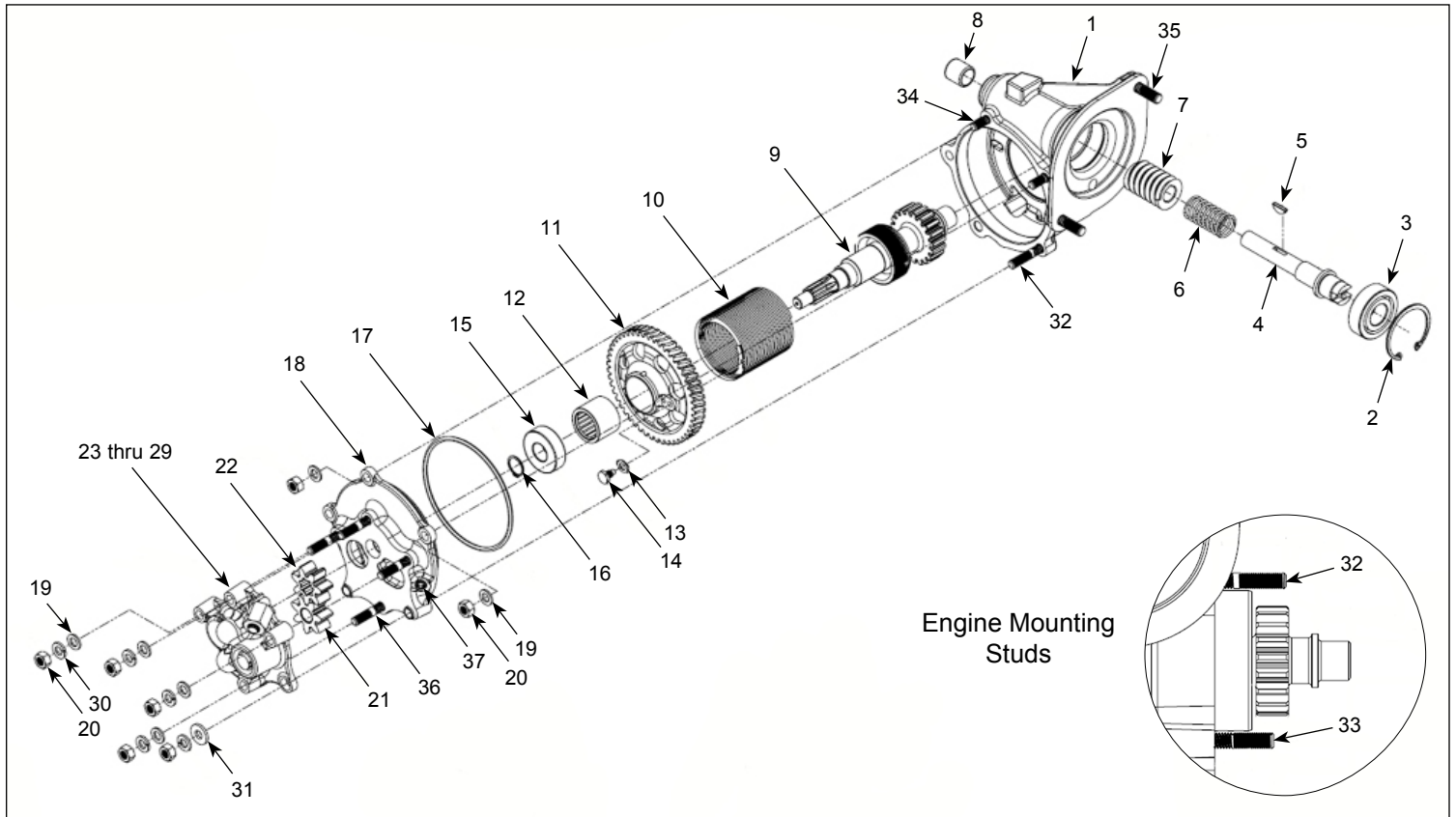


Figure 6-1



Index No.	Item P/N	Description	Starter Adapter P/N										
			55297	55298	55299	55300	55301	55302	55303				
1	55106	Body, Adapter Assembly, Starter Drive	1	1	1	1	1	1	1				
2	55015-4	Ring, Internal Retaining	1	1	1	1	1	1	1				
3	55257	Bearing, Ball	1	1	1	1	1	1	1				
4	55050	Shaft, Wormdrive	1	1	1	1	1	1	1				
5	MS35756-8	Woodruff Key	1	1	1	1	1	1	1				
6	55227	Spring, Compression	1	1	1	1	1	1	1				
7	55031	Gear, Starter Worm	1	1	1	1	1	1	1				
8	55101	Bearing, Needle	1	1	1	1	1	1	1				
9	55084	Shaft, Starter Gear	1	1	1	1	1	1	1				
10	55206	Spring, RH Clutch	1	1	1	1	1	1	1				
11	55164	Gear, Starter Worm	1	1	1	1	1	1	1				
12	55048	Bearing, Roller	1	1	1	1	1	1	1				
13	55014	Washer, Tab	1	1	1	1	1	1	1				
14	55080	Screw	1	1	1	1	1	1	1				
15	55018	Bearing, Ball	1	1	1	1	1	1	1				
16	55239-2	Ring, External Retaining	1	1	1	1	1	1	1				
17	55247-1	Seal, O-Ring	1	1	1	1	1	1	1				
18	55230	Cover Assembly, Starter Adapter	1	1	1	1	1	1	1				
19	AN960-516	Washer, Flat	6	6	6	6	6	6	6				
20	AN315-5R	Nut	7	7	7	7	7	7	7				
21	55134	Gear Assembly, Scavenge Pump	1	1	1	1	1	1	1				
22	55136	Gear, Scavenge Pump	1	1	1	1	1	1	1				
23	55232	Body and Fitting Assembly, Scavenge Pump *	1										
24	55232-1	Body and Fitting Assembly, Scavenge Pump *			1								
25	55232-2	Body and Fitting Assembly, Scavenge Pump *				1							
26	55232-3	Body and Fitting Assembly, Scavenge Pump *					1						
27	55232-4	Body and Fitting Assembly, Scavenge Pump *		1									
28	55232-5	Body and Fitting Assembly, Scavenge Pump *						1					
29	55232-6	Body and Fitting Assembly, Scavenge Pump *							1				
30	MS35338-45	Washer, Lock	5	5	5	5	5	5	5				
31	55010	Washer	1	1	1	1	1	1	1				
32	55009-2	Stud	2	2	2	2	2	2	2				
33	55009-6	Stud	1	1	1	1	1	1	1				
34	55009-4	Stud	2	2	2	2	2	2	2				
35	55013-2	Stud	2	2	2	2	2	2	2				
36	55009-3	Stud	4	4	4	4	4	4	4				
37	55000	Plug	1	1	1	1	1	1	1				
		* Refer to Figure 6-2 for fittings hardware											

IPL for Figure 6-1

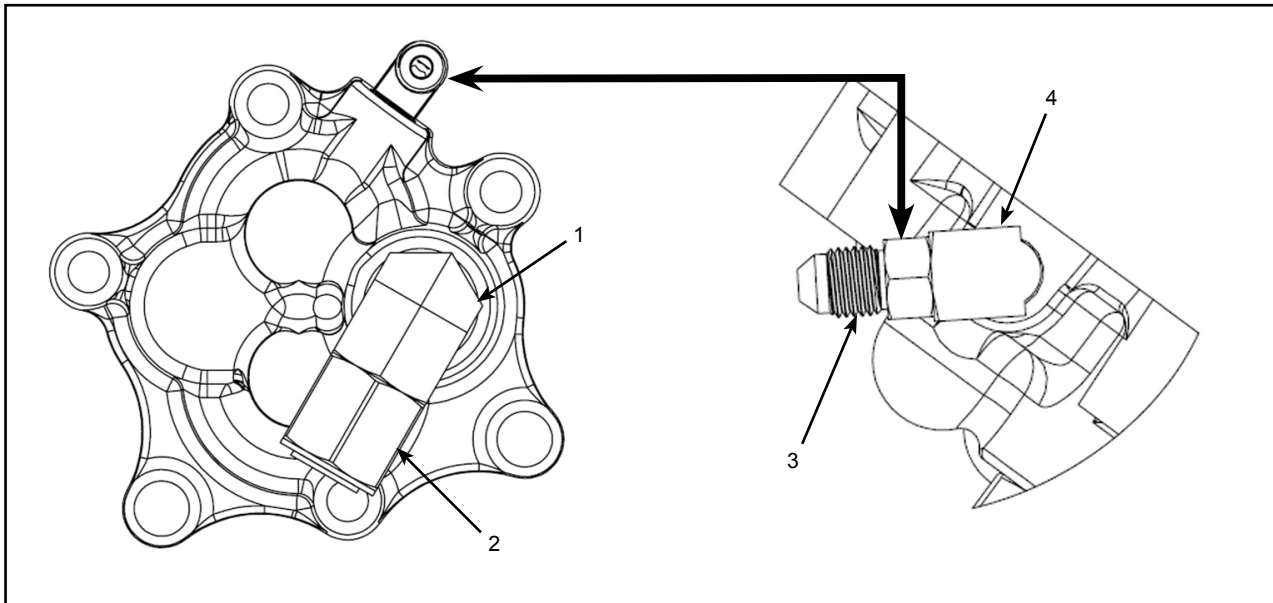


Figure 6-2

Index No.	Item P/N	Description	Scavenge Pump Assy P/N										
			55232	55232-1	55232-2	55232-3	55232-4	55232-5	55232-6				
1	MS51504B10Z	Elbow		1	1			1	1				
1	MS51504B8-8	Elbow				1	1						
1	55241-1	Plug	1										
2	AN929-8	Cap Assembly				1							
3	AN816-4B	Nipple	1										
4	55040	Fitting, Elbow, 45 DEG.			1								
4	55041	Fitting, Elbow, 90 DEG.	1	1		1							
4	55070	Elbow, 90 DEG.						1	1				
4	55245-1	Plug					1						

IPL for Figure 6-2