

TEXTRON Lycoming

SERVICE TABLE OF LIMITS AND TORQUE VALUE RECOMMENDATIONS

DIRECT DRIVE

NOTICE

The basic Table of Limits, SSP2070 (including SSP2070-1, SSP2070-2, SSP2070-3 and SSP2070-3A) has been completely revised and reissued herewith as SSP1776. It is now made up of the following four parts, each part contains five sections.

PART I	DIRECT DRIVE ENGINES (Including VO and IVO-360)
PART II	INTEGRAL ACCESSORY DRIVE ENGINES
PART III	GEARED ENGINES
PART IV	VERTICAL ENGINES (Excluding VO and IVO-360)

SECTION I	500 SERIES	CRANKCASE, CRANKSHAFT & CAMSHAFT
SECTION II	600 SERIES	CYLINDERS
SECTION III	700 SERIES	GEAR TRAIN
SECTION IV	800 SERIES	BACKLASH (GEAR TRAIN)
SECTION V	900 SERIES	TORQUE AND SPRINGS

This publication supersedes and replaces the previous publications SSP2070, SSP2070-1, SSP2070-2, SSP2070-3 and SSP2070-3A; it is not to be used in conjunction with them. To make sure that SSP1776 will receive the attention of maintenance personnel, a complete set of pages for the book is sent to all registered owners of Overhaul Manuals. These recipients should remove all previous Table of Limits material from the Overhaul Manual and discard.

Additional copies of this revised Table of Limits, bound in a plastic cover, are available as indicated in the latest edition of Service Letter No. L114.

Reference numbers in the Table of Limits vary from previous Table of Limits therefore, the current as well as the old numbers are listed. The shaded columns contain the old reference numbers.

SSP1776

April 30, 1979*

* - Indicates cut-off date for data retrieved prior to publication.

SERVICE TABLE OF LIMITS

PART 1 DIRECT DRIVE ENGINES

SECTION V SPECIAL TORQUE REQUIREMENTS

Ref. New	Ref. Old	Chart	Thread Size	Nomenclature	Torque Limits
900	829	A-B-D-G-Y-S-T-BD-BE	3/8-24	Connecting Rod Nuts	480 in. lbs.
		J	3/8-24	Connecting Rod Nuts	360 in. lbs.
		S1-S3-S5-S6-S7-S9-T3-AF	3/8-24	Connecting Rod Bolts - Tighten to Length	2.255 - 2.256
901	878	BD-BE	9/16-18	Oil Pump Shaft Nut	660 in. lbs.
902	877	BD-BE	5/16-24	Rocker Stud Nut	150 in. lbs.
903	840	ALL (AS APPLICABLE) (EXCEPT S7)	3/8-24	Magneto Nut (To attach drive member to magneto) - Bendix - Sintered Bushing - Gray	120 - 150 in. lbs.
				Magneto Nut (To attach drive member to magneto) - Bendix - Steel Bushing	170 - 300 in. lbs.
				Magneto Nut (To attach drive member to magneto) - Slick	120 - 300 in. lbs.
		S7	1/2-20	Magneto Nut (To attach drive member to magneto)	170 - 300 in. lbs.
904	839	ALL	10-32	Magneto Plate Screws (To attach ignition cable outlet plate to magneto)	15 in. lbs.
905	853	ALL	1/4-20	Rocker Box Screws	50 in. lbs.
906	852	ALL	5/16-18	Exhaust Port Studs	40 in. lbs. min.
907	830	ALL	18MM	Spark Plugs	420 in. lbs.
908	860	ALL	1/8-27 NPT	Fuel Pump Vent Fitting (Approximately two turns beyond finger tight)	96 in. lbs.
909	862	ALL	5/8-32	Alternator Pulley Nut	450 in. lbs.
910	864	ALL	1/4-28	Alternator Output Terminal Nut	85 in. lbs.
911	865	ALL	10-32	Alternator Auxiliary Terminal Nut	30 in. lbs.
912		ALL	5/16-24	Starter Terminal Nut	24 in. lbs.
913	857	ALL (AS APPLICABLE)	1/16-27 NPT	Piston Cooling Nozzle in Crankcase	100 in. lbs.
914	854	Y-S-T-AF	1/8-27 NPT	Injector Nozzle in Cylinder Head	60 in. lbs.
915	869	ALL (AS APPLICABLE)	3/4-16	Oil Filter Bolt (AC Can and Element Type)	300 in. lbs.
		ALL (AS APPLICABLE)	13/16-16	Oil Filter (Throw Away Type)	240 in. lbs.
	874	ALL (AS APPLICABLE)	3/4-16	Converter Stud	720 in. lbs.
916		ALL (AS APPLICABLE)	3/4-18 NPT	Carburetor Drain Plug	144 in. lbs.
917		ALL (AS APPLICABLE)	1.00-14	Oil Cooler Bypass Valve	300 in. lbs.
918		ALL (AS APPLICABLE)	1 1/4-12	Oil Pressure Relief Valve	300 in. lbs.

SERVICE TABLE OF LIMITS

PART 1 DIRECT DRIVE ENGINES

SECTION V SPECIAL TORQUE REQUIREMENTS (CONT.)

Ref. New	Ref. Old	Chart	Thread Size	Nomenclature	Torque Limits	
919	871	ALL	1/4 Hex Head and Below	Hose Clamps (Worm Type)	20 in. lbs.	
			5/16 Hex Head and Above	Hose Clamps (Worm Type)	45 in. lbs.	
920	875	ALL		Cylinder Head Drain Back Hose Clamps	10 in. lbs.	
921		S-T Exhaust V-Band Coupling Torque Data				
		Coupling Size Tube OD	Avco Lycoming Part No.	Vendor Part No.	T-Bolt Split Type Locknut Torque In. Lbs.	1/4 In. Drilled Hex Nut With Safety Wire Torque In. Lbs.
		1.75 in.	LW-12093-4	MVT69183-175	65	75
		2.00 in.	LW-12093-5	MVT69183-200	85	75
		2.25 in.	LW-12093-6	MVT69183-225	85	75
		2.25 in.	LW-12125-3	MVT69197-225	85	
		3.69 in.	LW-13464	U4204-55-369M	70	
922		ALL Turbocharger V-Band Torque Data				
		Turbocharger Model No.	V-Clamp Part No.	V-Clamp Diameter	Torque In. Lbs.	
		TO-473*	400500-600	6.00 in.	40-80	
		TEO659*	400500-685	6.85 in.	40-50	
		THO8A60*	400500-775	7.75 in.	40-60	
		THO8A69*	400500-775	7.75 in.	40-60	
		301E10-2**	TC-6-15	6.50 in.	15-20	
* - AiResearch turbocharger. ** - Rajay turbocharger.						
See latest edition of Service Instruction No. 1238 for assembly procedure.						
927	863	Chart	Thread Size	Nomenclature	Torque Limits	
		ALL DUAL MAGNETO MODELS	1/2-20	Crankshaft Gear Bolt	660 in. lbs.	
		BD	1/4	Crankshaft Gear Bolts	96 - 120 in. lbs.	
928		ALL	3/8-16	Cylinder Hold Down Studs (Crankcase Driving Torque)	100 in. lbs.	
			7/16-14	Cylinder Hold Down Studs (Crankcase Driving Torque)	200 in. lbs.	
			1/2-13	Cylinder Hold Down Studs (Crankcase Driving Torque)	250 in. lbs.	
929	858	A-B-D-BD-BE-J-G-Y- S-T-AF	3/8	Cylinder Hold Down Nuts	300 in. lbs.	
		A1	7/16	Cylinder Hold Down Nuts	420 in. lbs.	
		B-D-BD-BE-J-G-Y- S-T-AF	1/2	Cylinder Hold Down Nuts	600 in. lbs.	
		Cylinder Hold Down and Crankcase Parting Flange Nuts' Tightening Procedures - See latest edition of Service Instruction No. 1029.				

SERVICE TABLE OF LIMITS

PART 1 DIRECT DRIVE ENGINES

SECTION V SPECIAL TORQUE REQUIREMENTS (CONT.)

Ref. New	Ref. Old	Chart	Thread Size	Nomenclature			Torque Limits			
930	849	ALL	3/8	Allen Head Screw (Diaphragm Fuel Pump)			225 - 250 in. lbs.			
931		A	9/16	Locking Nut (Valve Adjusting Screw)			450 in. lbs.			
932	858	ALL	5/16-18	Exhaust Transitions - Studs (Driving Torque)			100 in. lbs.			
		ALL	3/8-16	Exhaust Transitions - Studs (Driving Torque)			200 in. lbs.			
SECTION V SPRINGS										
		Chart	Nomenclature	Avco Lyc. Part No.	Wire Dia.	Length At Comp. Length	COMP. LOAD			
							Mfr. Min.	Mfr. Max.	Serv. Max.	
950	800	A-B-D-G-J-S-T-Y-BD-BE	Outer Valve Springs (Parallel)	76994 LW-11800	.177	1.30 in.	112 lb.	122 lb.	109 lb. min.	
		A-B-D-G-J-S-T-Y-BD-BE	Outer Valve Springs (Parallel)	65427	.162	1.30 in.	82 lb.	89 lb.	79 lb. min.	
		S1-S2-S3-S5-S6-S7-S9-S10-T2-T3	Outer Valve Springs (Angle)	68326	.177	1.46 in.	103 lb.	111 lb.	100 lb. min.	
		S1-S2-S3-S5-S6-S7-S9-S10-T2-T3	Outer Valve Springs (Angle)	LW-11796	.182	1.43 in.	116 lb.	124 lb.	113 lb. min.	
951	801	A-B-D-G-J-S-T-Y-BD-BE	Auxilliary Valve Spring (Parallel)	65567 LW-11795	.135	1.17 in.	61 lb.	67 lb.	58 lb. min.	
		S1-S2-S3-S5-S6-S7-S9-S10-T2-T3-AF	Auxilliary Valve Spring (Angle)	68328 LW-11797	.142	1.33 in.	75 lb.	83 lb.	72 lb. min.	
952	802 803	ALL (AS APPLICABLE)	Oil Pressure Relief Valve Spring							
		Avco Lycoming Part Numbers	Identification							
			Dye	Free Length						
		61084	None	2.18	.054	1.30 in.	8.5 lb.	9.5 lb.	8.3 lb. min.	
		65703	None	2.16	.063	1.47 in.	17.8 lb.	19.4 lb.	18.0 lb. min.	
		68668	Purple	2.04	.054	1.30 in.	7.1 lb.	7.8 lb.	6.9 lb. min.	
77467	Yellow	1.90	.054	1.30 in.	6.4 lb.	7.1 lb.	6.2 lb. min.			
LW-11713	White	2.12	.059	1.44 in.	10.79 lb.	11.92 lb.	10.5 lb. min.			
953	811	A-B-G-J-S-T-Y-AF	Oil Cooler Bypass Spring		.0465	1.94 in.	6.50 lb.	7.25 lb.	6.41 lb. min.	
954		BD-BE	Oil Filter Bypass Spring		.047	1.00 in.	3.05 lb.	3.55 lb.	3.0 lb. min.	
955	806	D	Magneto Coupling Spring		.091	.603 in.	20 lb.	22 lb.	19 lb. min.	

SERVICE TABLE OF LIMITS

STANDARD TORQUE UNLESS OTHERWISE LISTED

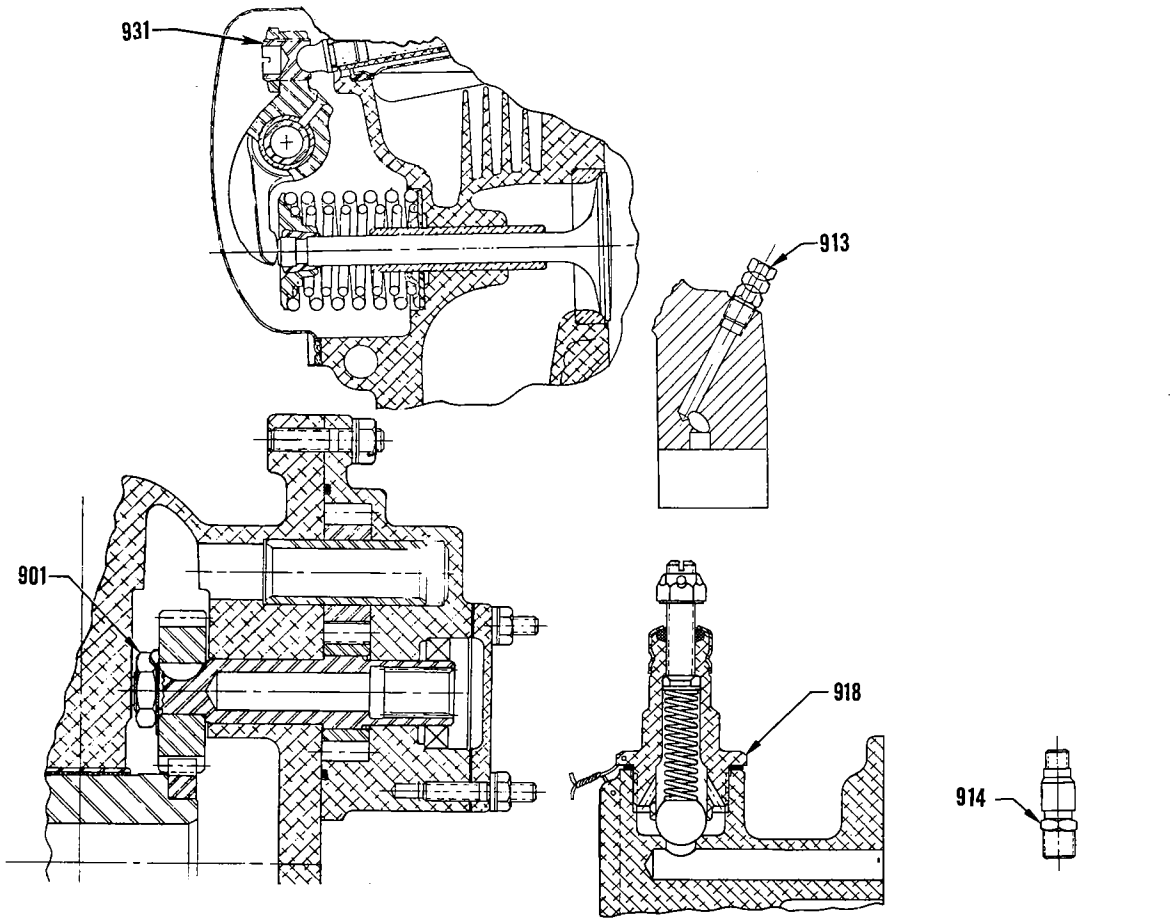
Torque limits for propeller attaching bolts to be supplied by propeller or airframe manufacturer.

TABLE I						TABLE II					
BOLTS, SCREWS AND NUTS						PIPE PLUGS					
Thread	Torque		Thread	Torque		Thread	Torque In. Lbs.				
	In. Lb.	Ft. Lb.		In. Lb.	Ft. Lb.						
10	49	-----	1/2	900	75	1/16-27 NPT	40				
1/4	96	-----	9/16	1320	110	1/8-27 NPT	40				
5/16	204	17	5/8	1800	150	1/4-18 NPT	85				
3/8	360	30	3/4	3240	270	3/8-18 NPT	110				
7/16	600	50				1/2-14 NPT	160				
THIN NUTS (1/2 DIA OF BOLT) - 1/2 LISTED TORQUE						3/4-14 NPT	230				
THIN NUTS (1/2 DIA OF BOLT) - 1/2 LISTED TORQUE						1-11 1/2 NPT	315				
TABLE III						TABLE IV					
CRUSH TYPE ASBESTOS GASKETS						FLEXIBLE HOSE OR TUBE FITTINGS					
Thd. Pitch On Part To Be Tightened Threads Per Inch	ANGLE OF TURN		Tube Size	Thread	Torque In. Lbs.						
	Aluminum Asbestos	Copper Asbestos									
8	135°	67°	(-3) 3/16	3/8-24	30						
10	135°	67°	(-4) 1/4	7/16-20	30						
12	180°	90°	(-5) 5/16	1/2-20	35						
14	180°	90°	(-6) 3/8	9/16-18	35						
16	270°	135°	(-8) 1/2	3/4-16	60						
18	270°	135°	(-10) 5/8	7/8-14	70						
20	270°	135°									
24	360°	180°									
28	360°	180°									
NOTE						TABLE V					
Install all crush type gaskets except the self centering type, with the unbroken surface against the flange of the plug or part being tightened against the seal. Turn the part until the sealing surfaces are in contact and then tighten to the angle of turn listed for the appropriate thread size. NOTE: Lubricate Threads Unless Otherwise Specified.						STUDS MIN. DRIVING TORQUE					
						Threads				Torque In. Lb s.	
						1/4-20				15	
						5/16-18				25	
						3/8-16				50	

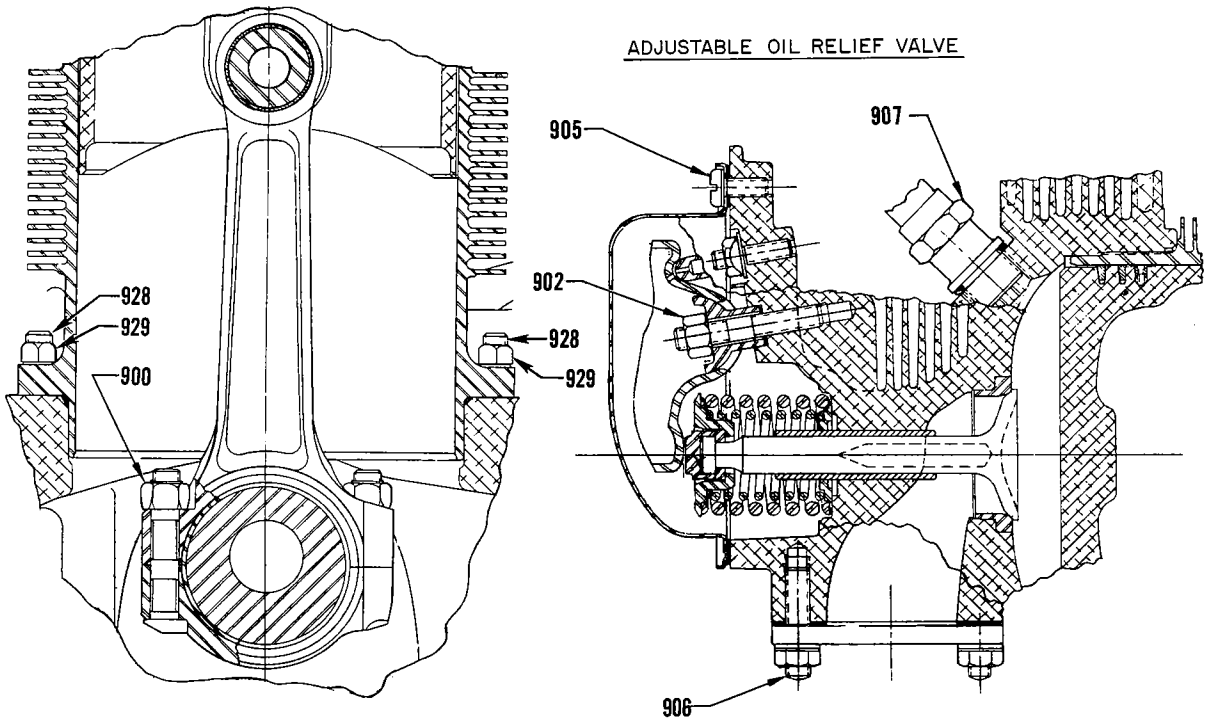
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SECTION V SPECIAL TORQUE REQUIREMENTS



ADJUSTABLE OIL RELIEF VALVE

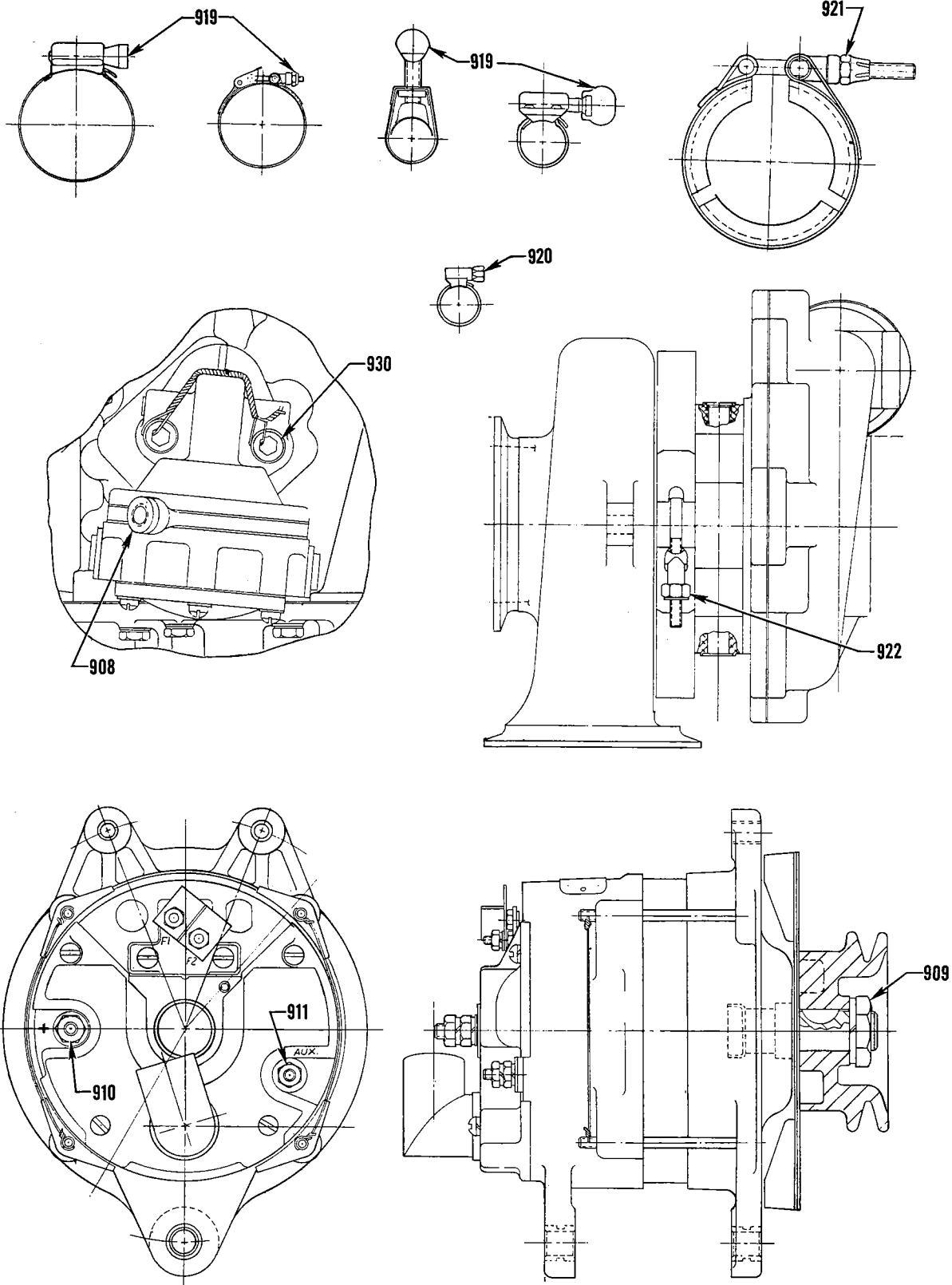


Engine Accessories and Hardware

SERVICE TABLE OF LIMITS

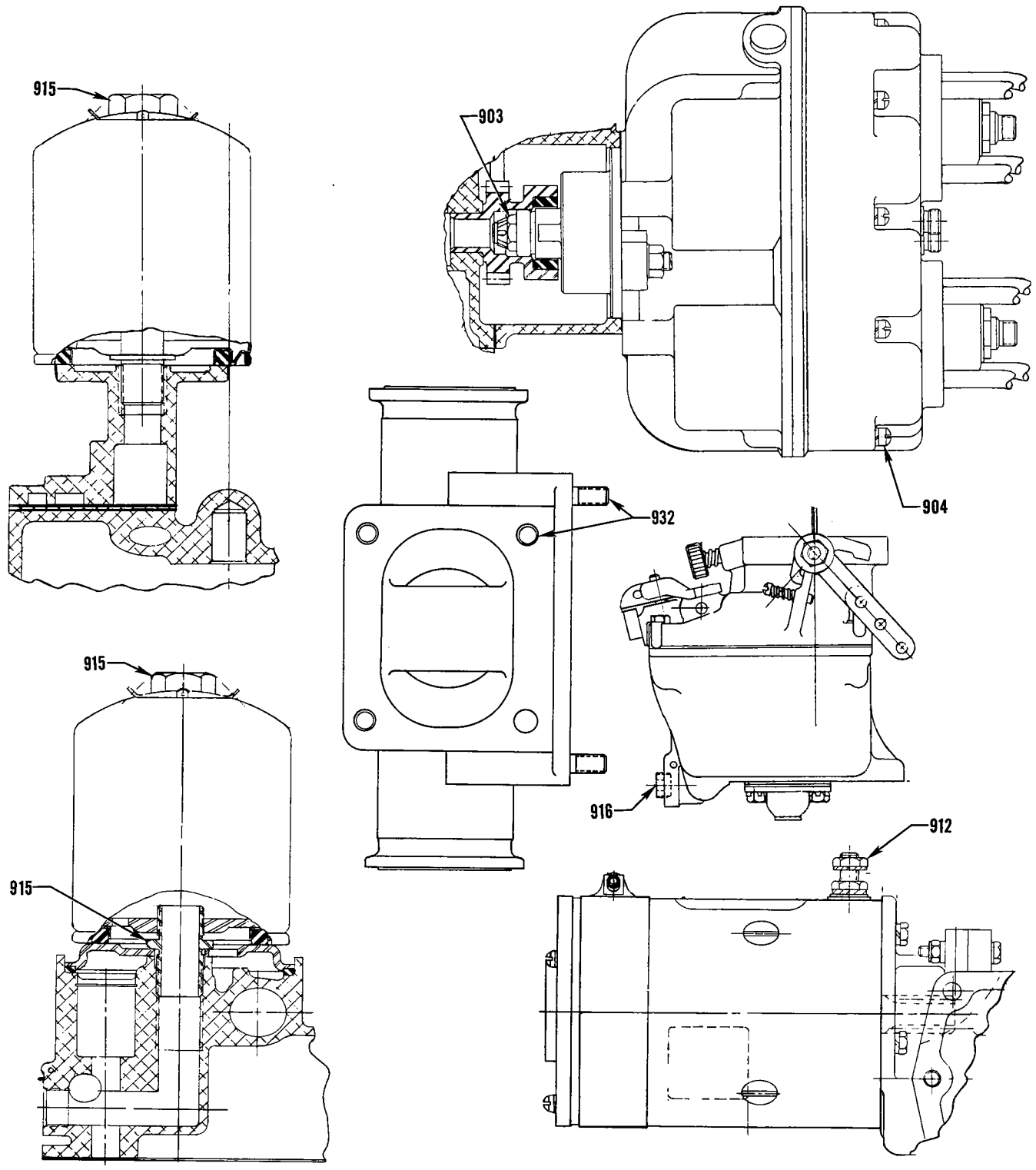
PART 1 DIRECT DRIVE ENGINES

SECTION V SPECIAL TORQUE REQUIREMENTS



Engine Accessories and Hardware

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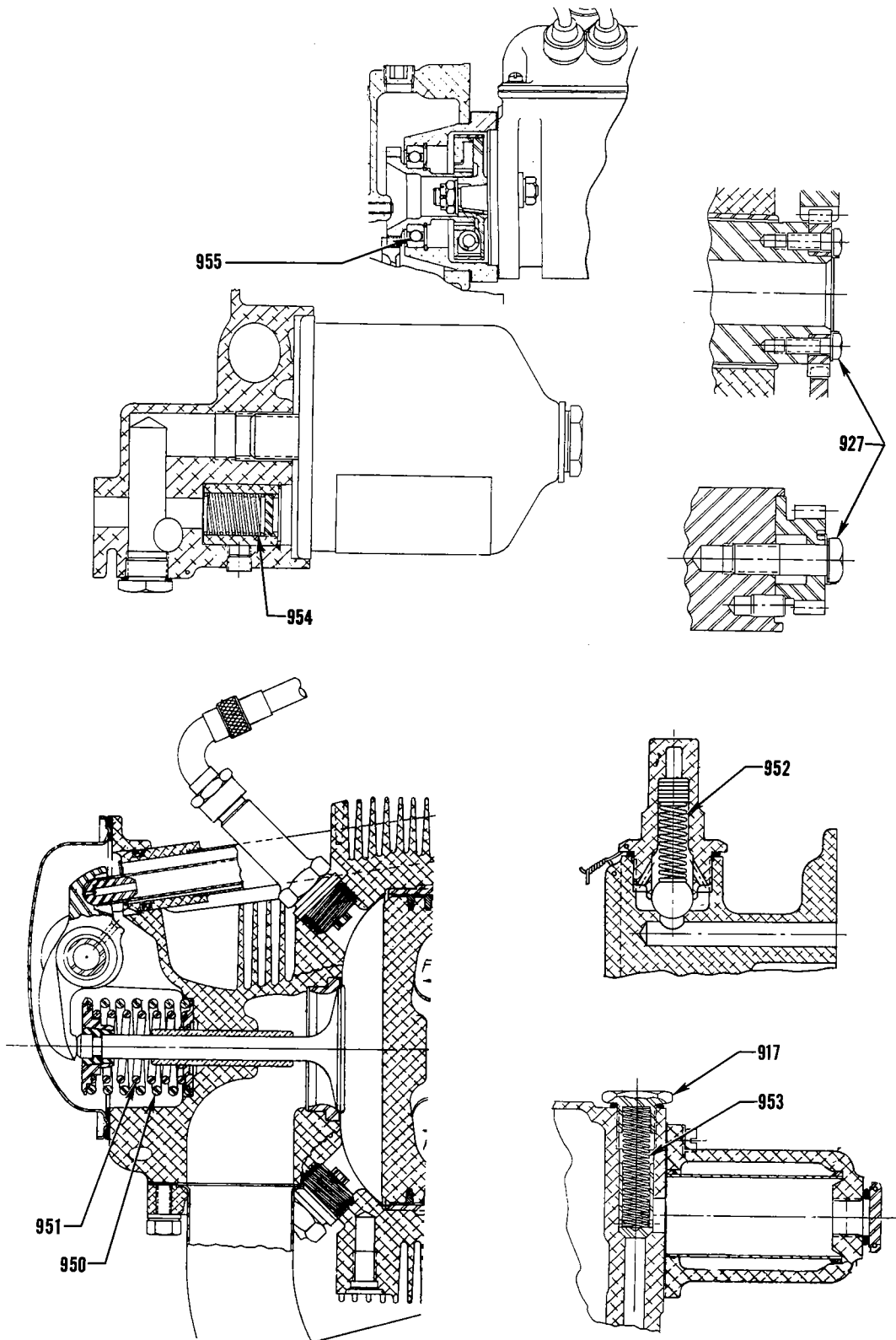


Engine Accessories and Hardware

SERVICE TABLE OF LIMITS

PART 1 DIRECT DRIVE ENGINES

SECTION V SPECIAL TORQUE REQUIREMENTS



Engine Springs and Hardware