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FAA-APPROVED
AIRPLANE FLIGHT MANUAL SUPPLEMENT
FOR
STC SA10925SC

INSTALLATION OF
SUPERCHARGER SYSTEM
IN CIRRUS DESIGN SR22

Registration No.: _____
Serial No: _____

This supplement must be attached to the appropriate FAA Approved Airplane Flight Manual when the aircraft is modified in accordance with **STC SA10925SC**. The information contained herein supplements or supersedes the Airplane Flight Manual only in those areas listed herein. For limitations, procedures and performance information not contained in this supplement, consult the Airplane Flight Manual.

FAA APPROVED

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Special Certification Office
Federal Aviation Administration
Fort Worth, TX 76193-0190

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List of Effective Pages

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Log of Revisions

Rev	Description	Page	FAA Approval
IR	Initial Release	All	*S. Frances Cox* Manager, Special Certification Office Fort Worth, Texas 5 December 2008
A	Placards and placard references	2-1, 2-2 4-2 thru 4-4, 5-3, 5-6 thru 5-11, 5-13, 5-14	Manager, Flight Test Branch, ANM-160L, Los Angeles Aircraft Certification Office 6-9-2009
	Cruise Power Fuel Flows	4-3	

Forward

This Airplane Flight Manual Supplement (AFMS) contains information that supplements or supersedes the basic SR22 Airplane Flight Manual as listed herein. This new information pertains to the operation of the SR22 aircraft modified by the installation of Bar Air supercharger system in accordance with **STC SA10925SC**.

Important Notice

This Supplement to the Airplane Flight Manual should be read carefully by the owner and/or operator in order to become familiar with the operation of the airplane. It contains limitations, operating procedures, performance information, and systems descriptions that are essential information for the pilot to properly operate the aircraft. As specified, this supplement must accompany the basic Airplane Flight Manual and be available to the pilot at any time during flight. See the basic Airplane Flight Manual for information not contained in this supplement.

Sections

This supplement is divided into the following sections:

Revising This AFM Supplement

Each time this supplement is revised or reissued, a new Log of Revisions page is provided along with the pages containing corresponding data or changes. In the footer of each page is shown the approval date and revision letter (when applicable). When updating this supplement to a later FAA Approved revision level, remove the Log of Revision page and the pages to be replaced and insert the new Log of Revision page and revised pages. That portion of text or an illustration, which has been revised by the addition of, or change in, information is denoted by a solid revision bar located adjacent to the area of change, and placed along the outside margin of a page. Revision bars show only information changed within latest revision.

Warnings, Cautions, and Notes

The following definitions apply to **WARNINGS**, **Cautions**, and Notes presented in this supplement.

• WARNING •

Operating procedures, techniques, etc., that could result in personal injury or loss of life if not carefully followed.

• Caution •

Operating procedures, techniques, etc., that could result in damage to equipment if not carefully followed.

• Note •

An operating procedure, technique, etc., that is considered essential and is being emphasized.

Section 1

General

The Airplane

Engine

This airplane is now equipped with a belt driven supercharger system to boost the manifold pressure that enables the engine to operate with sea level manifold pressure up to an altitude of approximately 6,000 feet. As the aircraft climbs above 6,000 feet the manifold pressure decreases at the same rate as a normally aspirated engine climbing from sea level. The result is significantly increased climb and cruise performance when operating above approximately 4,000 feet.

Fuel

Approved Fuel Grades:

100LL Grade Aviation Fuel (Blue)

All other general information is unchanged.

Section 2
Limitations

Instrument Markings

Manifold Pressure Gage
Green Arc.....15 to 29.6 Inches Hg
Red Line (Maximum)..... 29.6 Inches Hg

Refer to Section 3 for manifold pressure in excess of 29.6 in Hg.

Fuel Flow Gage
Green Arc.....10 to 21.5 GAL/HR

Fuel Limits

Approved FuelAviation Grade 100LL (Blue)

During full throttle operations, the engine must be leaned in accordance with *Maximum Power Fuel Flows* in Section 4 Normal Procedures.

During cruise power operations, leaning operations must be conducted in accordance with *Cruise Power Fuel Flows* in Section 4 Normal Procedures.

Fuel flows on placard are reference only. Refer to Section 4.

Placards

Instrument Panel Upper Right:

REQUIRED FUEL FLOWS
AT FULL THROTTLE
MAXIMUM CLIMB

ALTITUDE	GPH
16000	22
11000	25
6000	29
SL	29

Centered on Top Bezel of MFD (if Avidyne EMAX is installed):

DISREGARD % POWER INDICATIONS

Centered over Manifold Pressure gauge, or

Centered over Man Press gauge on MFD (EMAX equipped)

MAXIMUM MAN
PRESS 29.6 inHg

Section 3

Emergency Procedures

In-Flight Emergencies

Engine Failure In Flight

In addition to the basic AFM, a sudden reduction in manifold pressure without changing the power lever may indicate a failure of the supercharger system. When at high altitudes, *the engine may run rough or fail as result of an over-rich mixture setting for high power settings, therefore, use the following procedure to regain engine power.*

Basic AFM Warnings and Notes unchanged.

1. Best Glide Speed ..... ESTABLISH
2. Fuel Pump ..... BOOST
3. Fuel Selector ..... SWITCH TANKS
4. Mixture ..... FULL RICH, THEN LEAN AS REQUIRED UNTIL ENGINE STARTS
5. Alternate Induction Air ..... ON
6. Ignition Switch ..... CHECK BOTH
7. If partial power is restored, proceed to *Engine Partial Power Loss* in this supplement.
8. If engine does not start, proceed to *Engine Airstart* procedure from this supplement or *Forced Landing (Engine Out)* in basic AFM, as required.

Engine Partial Power Loss

In addition to the basic AFM, an abnormal reduction in manifold pressure without changing the power lever may indicate a failure of the supercharger system, therefore,

1. Mixture ..... LEAN FOR SMOOTH OPERATION
2. Power Lever ..... AS REQUIRED
3. Land as soon as practical.

Engine Airstart

The following procedures address most common causes for engine failures.

1. BAT Master Switches ..... ON
2. Power Lever ..... ½ INCH OPEN
3. Fuel Pump ..... BOOST
4. Fuel Selector ..... SWITCH TANKS
5. Mixture ..... FULL RICH, THEN LEAN AS REQUIRED UNTIL ENGINE STARTS
6. Ignition Switch ..... BOTH
7. Alternate Induction Air ..... ON
8. Alt Master Switches ..... OFF
9. Starter (Propeller not Windmilling) ..... ENGAGE
10. Power Lever ..... SLOWLY INCREASE
11. Alt Master Switches ..... ON
12. If engine will not start, perform *Forced Landing (Engine Out)* procedure in basic AFM.

Engine Overboost
(Manifold Pressures above 29.6 Inches Hg)

Failure of the manifold pressure regulation valve may result in boosted manifold pressures greater than 29.6 Inches Hg. depending upon the power lever setting and altitude.

1. Power Lever ..... SET MAP BELOW 29.6 Inches Hg
2. Land as soon as practical.

Section 4

Normal Procedures

Maximum Power Fuel Flows

When operating at full throttle (2700 RPM) for Takeoff and Maximum Performance Climbs, the mixture must be leaned to the following fuel flows (+1/-0) for the given pressure altitude. The fuel flow values in the table below are necessary to provide adequate engine cooling, detonation margin, takeoff performance, and climb performance.

Pressure Altitude	Fuel Flow	Pressure Altitude	Fuel Flow	Pressure Altitude	Fuel Flow
0	29.0	7000	28.1	14000	22.4
1000	29.0	8000	27.0	15000	21.8
2000	29.0	9000	26.2	16000	21.4
3000	29.0	10000	25.5	17000	20.7
4000	29.0	11000	24.7	17500	20.5
5000	29.0	12000	24.0		
6000	29.0	13000	23.3		

Normal or Short Field Takeoff

Add the following:
Engine Parameters.....CHECK DURING ACCELERATION

• WARNING •

MAP indications lower than the following values or engine RPMs lower than approximately 2600 RPM indicate a partial engine power failure, engine rigging issue, or indicator error, and takeoff should be aborted.

Approximate Pressure Altitude (feet)	Minimum MAP (inHg)
0	28.0
6000	28.0
8000	26.2
10000	24.3

Climb

1. Climb Power ..... FULL FORWARD
2. Mixture ..... LEAN Per *Maximum Power Fuel Flows*
3. Climb speed ..... below 10,000 ft, 115 KIAS
   above 10,000 ft, 110 KIAS
4. Engine Instruments ..... CHECK
5. Fuel Pump ..... OFF

• WARNING •

When operating at maximum power, fuel consumption will be greater than shown in Section 5 of the basic AFM. The pilot must closely monitor fuel quantities to ensure required fuel reserve is maintained.

• Caution •

At altitudes above 12,500 feet and when operating near full throttle, ensure mixture is leaned according to Maximum Power Fuel Flows. Full rich mixture settings may result in engine roughness.

Also, when operating at these higher altitudes, make small throttle and mixture changes.

• Note •

The Fuel Pump may be used for vapor suppression during climb. Fuel BOOST should be on when operating above 6,000 feet pressure altitude if operations are made with hot or warm fuel.

Cruise Power Fuel Flows

For high power cruise operations above 75% power, which is above approximately 26.8 inHg. at 2500 RPM, or 25.0 inHg at 2700 RPM, the mixture must not be leaned to fuel flows less than the following for the given pressure altitude.

Pressure Altitude	Fuel Flow	Pressure Altitude	Fuel Flow	Pressure Altitude	Fuel Flow
0	27.5	7000	26.6	14000	21.7
1000	27.5	8000	25.7	15000	21.3
2000	27.5	9000	24.9	16000	20.9
3000	27.5	10000	24.2	17000	20.2
4000	27.5	11000	24.0	17500	20.0
5000	27.5	12000	23.3		
6000	27.5	13000	22.6		

For normal power cruise operations 75% power and below, which is flight above 9500' at 2500 RPM or 11,500' at 2700 RPM, or power settings below approximately 26.8 inHg. at 2500 RPM, or 24.3 inHg. at 2700 RPM, lean the mixture to the following and approximate "Best Power (75°F rich of peak EGT)" fuel flows for the given pressure altitude.

Pressure Altitude	Fuel Flow	Pressure Altitude	Fuel Flow	Pressure Altitude	Fuel Flow
0	21.5	7000	20.6	14000	15.4
1000	21.5	8000	19.7	15000	14.9
2000	21.5	9000	18.9	16000	14.4
3000	21.5	10000	18.2	17000	13.6
4000	21.5	11000	18.0	17500	13.4
5000	21.5	12000	17.1		
6000	21.5	13000	16.5		

For normal power cruise operations 65% power and below, which is 50°F lean of peak EGT in flight above 9500' at 2500 RPM or above 11,500' at 2700 RPM or power settings below approximately 26.8 inHg. at 2500 RPM, or 24.3 inHg at 2700 RPM, the mixture can be leaned to "Best Economy" fuel flows in accordance with the basic AFM.

Always monitor CHTs and enrichen fuel flow to reduce temperatures.

Cruise

1. Cruise Power ..... THROTTLE SET FOR RPM
2. Fuel Pump ..... AS REQUIRED
3. Mixture ..... LEAN Per *Cruise Power Fuel Flows*
4. Engine Instruments ..... MONITOR
5. Fuel Flow, Fuel Balance, Fuel Quantity ..... MONITOR

• WARNING •

No re-determination of range and endurance has been made for this installation. Therefore, to ensure required fuel reserves will be maintained during any flight, the pilot must monitor fuel consumption and fuel quantity indications.

• Caution •

At altitudes above 12,500 feet and when operating near full throttle, ensure mixture is leaned according to Maximum Power Fuel Flows. Full rich mixture settings may result in engine roughness.

Also, when operating at these higher altitudes, make small throttle and mixture changes.

• Note •

Fuel BOOST must be used for switching from one tank to another. Failures to activate the Fuel Pump before transfer could result in delayed restart if the engine should quit due to fuel starvation.

Fuel BOOST should be on when operating above 6,000 feet pressure altitude if operations are made with hot or warm fuel.

Section 5

Performance Data

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Outside Air Temperature for ISA Conditions

Example:

Pressure Altitude..... 8000 FT
Outside Air Temp..... 48 °F
ISA Condition.....ISA + 10°C

Press Alt FT	ISA-30°C		ISA-10°C		ISA		ISA+10°C		ISA+30°C	
	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
0	-15	5	5	41	15	59	25	77	45	113
1000	-17	1	3	37	13	55	23	73	43	109
2000	-19	-2	1	34	11	52	21	70	41	106
3000	-21	-6	-1	30	9	48	19	66	39	102
4000	-23	-9	-3	27	7	45	17	63	37	99
5000	-25	-13	-5	23	5	41	15	59	35	95
6000	-27	-16	-7	20	3	38	13	56	33	92
7000	-29	-20	-9	16	1	34	11	52	31	88
8000	-31	-24	-11	12	-1	30	9	48	29	84
9000	-33	-27	-13	9	-3	27	7	45	27	81
10000	-35	-31	-15	5	-5	23	5	41	25	77
11000	-37	-34	-17	2	-7	20	3	38	23	74
12000	-39	-38	-19	-2	-9	16	1	34	21	70
13000	-41	-41	-21	-5	-11	13	-1	31	19	67
14000	-43	-45	-23	-9	-13	9	-3	27	17	63
15000	-45	-48	-25	-12	-15	6	-5	24	15	60
16000	-47	-52	-27	-16	-17	2	-7	20	13	56
17000	-49	-56	-29	-20	-19	-2	-9	16	11	52
17500	-50	-57	-30	-21	-20	-3	-10	15	10	51
0	-15	5	5	41	15	59	25	77	45	113

Takeoff Distance

Conditions For Table:

- .....Winds.....Zero
- .....Runway. Dry, Level, Paved
- .....Flaps..... 50%
- .....Power .....Full Throttle
- .....Mixture.....Set Per
  Maximum Power Fuel Flows

Example:

Outside Air Temp.....25°C
Weight .... 3400 LB
Pressure Altitude ..... 2000 FT
Headwind12 Knots
Runway..... ..... Dry, Level, Paved

Liftoff Speed73 KIAS
Obstacle Speed ..... 78 KIAS
Takeoff Ground Roll..... 1318 FT
Dist. Over 50' Obstacle..... 1871 FT

Factors:

Unchanged from basic AFM.

Takeoff Distance
3400 LB

WEIGHT = 3400 LB
Speed at Liftoff = 73 KIAS
Speed over 50 Ft. Obstacle = 78 KIAS
Flaps – 50%, Takeoff Pwr, Dry Paved

Headwind: Subtract 10% for 12 knots headwind
Tailwind: Add 10% for each 2 knots tailwind up to 10 knots
Dry and Wet Grass: Unchanged from AFM

PRESS ALT	DISTANCE	TEMPERATURE - °C					
FT	FT	0	10	20	30	40	ISA
SL	Grnd Roll	1047	1135	1228	1325	1427	1181
	50 ft	1482	1610	1744	1886	2035	1676
1000	Grnd Roll	1123	1218	1317	1422	1531	1247
	50 ft	1589	1726	1870	2022	2182	1769
2000	Grnd Roll	1201	1302	1409	1520	1638	1313
	50 ft	1697	1843	1998	2160	2331	1859
3000	Grnd Roll	1288	1396	1510	1630	1756	1386
	50 ft	1818	1974	2140	2314	2497	1959
4000	Grnd Roll	1381	1497	1620	1748	1883	1463
	50 ft	1948	2116	2293	2480	2676	2066
5000	Grnd Roll	1313	1424	1540	1663	1791	1369
	50 ft	1740	1890	2048	2215	2390	1815
6000	Grnd Roll	1410	1529	1654	1786	1924	1447
	50 ft	1867	2028	2198	2377	2565	1916
7000	Grnd Roll	1532	1662	1798	1941	2091	1547
	50 ft	2031	2207	2392	2587	2792	2051
8000	Grnd Roll	1686	1828	1977	2135	2300	1674
	50 ft	2243	2437	2641	2856	3083	2227
9000	Grnd Roll	1853	2009	2173	2346	2528	1810
	50 ft	2474	2687	2913	3151	3401	2415
10000	Grnd Roll	2042	2215	2396	2587	2788	1963
	50 ft	2738	2975	3225	3488	3766	2629

Takeoff Distance
2900 LB

WEIGHT = 2900 LB
Speed at Liftoff = 70 KIAS
Speed over 50 Ft. Obstacle = 74 KIAS
Flaps – 50%, Takeoff Pwr, Dry Paved

Headwind: Subtract 10% for 12 knots headwind
Tailwind: Add 10% for each 2 knots tailwind up to 10 knots
Dry and Wet Grass: Unchanged from AFM

PRESS ALT	DISTANCE	TEMPERATURE - °C					
FT	FT	0	10	20	30	40	ISA
SL	Grnd Roll	697	756	817	882	950	786
	50 ft	1002	1088	1179	1275	1376	1133
1000	Grnd Roll	748	811	877	946	1019	830
	50 ft	1075	1167	1265	1367	1476	1196
2000	Grnd Roll	799	867	937	1012	1090	874
	50 ft	1148	1246	1351	1460	1576	1257
3000	Grnd Roll	857	929	1005	1085	1168	922
	50 ft	1229	1335	1447	1564	1688	1325
4000	Grnd Roll	919	997	1078	1163	1253	973
	50 ft	1317	1431	1551	1677	1810	1397
5000	Grnd Roll	874	948	1025	1107	1192	911
	50 ft	1176	1278	1385	1497	1616	1227
6000	Grnd Roll	939	1018	1101	1188	1280	963
	50 ft	1262	1371	1486	1607	1735	1295
7000	Grnd Roll	1020	1106	1196	1291	1391	1029
	50 ft	1374	1492	1617	1749	1888	1387
8000	Grnd Roll	1122	1216	1316	1421	1531	1114
	50 ft	1517	1648	1786	1931	2085	1506
9000	Grnd Roll	1233	1337	1446	1562	1682	1204
	50 ft	1673	1817	1970	2130	2300	1633
10000	Grnd Roll	1359	1474	1595	1722	1855	1306
	50 ft	1852	2012	2181	2359	2546	1778

Takeoff Climb Gradient

Conditions For Table:

- Power ..... Full Throttle
- Mixture ..... Set Per *Maximum Power Fuel Flows*
- Flaps 50%
- Airspeed ..... Best Rate of Climb

Example:

Outside Air Temp ..... 20°C
Weight ..... 3400 LB
Pressure Altitude ..... 4000 FT
Climb Airspeed ..... 89 KIAS
Gradient ..... 647 FT/NM

Notes in basic AFM are unchanged.

Weight	Press Alt	Climb Speed	CLIMB GRADIENT – Feet per Nautical Mile				
			TEMPERATURE - °C				
LB	FT	KIAS	-20	0	20	40	ISA
3400	SL	91	648	627	603	578	609
	2000	90	692	661	629	597	639
	4000	89	724	686	647	609	663
	6000	88	747	701	657	613	680
	8000	87	675	629	584	541	614
	10000	86	644	537	494	452	528
2900	SL	91	802	799	771	741	778
	2000	90	876	840	803	765	814
	4000	89	915	870	825	780	842
	6000	88	944	890	838	786	864
	8000	87	861	807	754	703	786
	10000	86	753	700	650	602	688

Takeoff Rate of Climb

Conditions For Table:

- . Power.....Full Throttle
- Mixture ..... Set Per *Maximum Power Fuel Flows*
- Flaps.....50%
- Airspeed..Best Rate of Climb

Example:

Outside Air Temp.....10°C
Weight ..... 3400 LB
Pressure Altitude ..... 6000 FT
Climb Airspeed ..... 88 KIAS
Gradient ..... 1102 FPM

Notes in basic AFM are unchanged.

Weight	Press Alt	Climb Speed	RATE OF CLIMB – Feet per Minute (FPM)				
			TEMPERATURE - °C				
LB	FT	KIAS	-20	0	20	40	ISA
3400	SL	91	922	926	923	914	924
	2000	90	1008	1001	987	968	994
	4000	89	1083	1066	1041	1013	1058
	6000	88	1147	1118	1085	1046	1113
	8000	87	1064	1030	990	949	1032
	10000	86	1042	903	860	814	912
2900	SL	91	1140	1180	1179	1172	1180
	2000	90	1277	1272	1259	1241	1266
	4000	89	1369	1352	1327	1298	1344
	6000	88	1449	1419	1383	1342	1414
	8000	87	1357	1321	1279	1233	1322
	10000	86	1218	1178	1132	1083	1188

Enroute Climb Gradient

Conditions For Table:

- Power ..... Full Throttle
- Mixture ..... Set Per *Maximum Power Fuel Flows*
- Flaps ..... 0% (UP)
- Airspeed .....
  115 KIAS - Below 10,000 FT
  110 KIAS - Above 10,000 FT

Example:

Outside Air Temp ..... 20°C
Weight ..... 3400 LB
Pressure Altitude ..... 4000 FT
Climb Airspeed ..... 115 KIAS
Gradient ..... 531 FT/NM

Notes in basic AFM are unchanged.

Weight	Press Alt	Climb Speed	CLIMB GRADIENT – Feet per Nautical Mile				
			TEMPERATURE - °C				
LB	FT	KIAS	-20	0	20	40	ISA
3400	SL	115	703	632	568	508	583
	2000	115	683	613	550	491	578
	4000	115	662	594	531	474	571
	6000	115	641	574	512	456	564
	8000	115	558	496	440	389	499
	10000	115	464	409	359	313	421
	12000	110	416	364	316	272	386
	14000	110	333	286	244	204	315
	16000	110	252	211	174	140	245
2900	SL	115	891	808	733	663	751
	2000	115	868	786	712	643	744
	4000	115	843	763	690	623	737
	6000	115	818	739	668	602	728
	8000	115	721	649	583	523	652
	10000	115	610	546	487	433	561
	12000	110	561	499	443	392	526
	14000	110	463	408	359	313	443
	16000	110	369	321	277	237	361

Enroute Rate of Climb

Conditions For Table:

- Power ..... Full Throttle
- Mixture ..... Set Per *Maximum Power Fuel Flows*
- Flaps ..... 0% (UP)
- Airspeed .....
  115 KIAS - Below 10,000 FT
  110 KIAS - Above 10,000 FT

Example:

Outside Air Temp ..... 10°C
Weight ..... 3400 LB
Pressure Altitude ..... 6000 FT
Climb Airspeed ..... 115 KIAS
Gradient ..... 1151 FPM

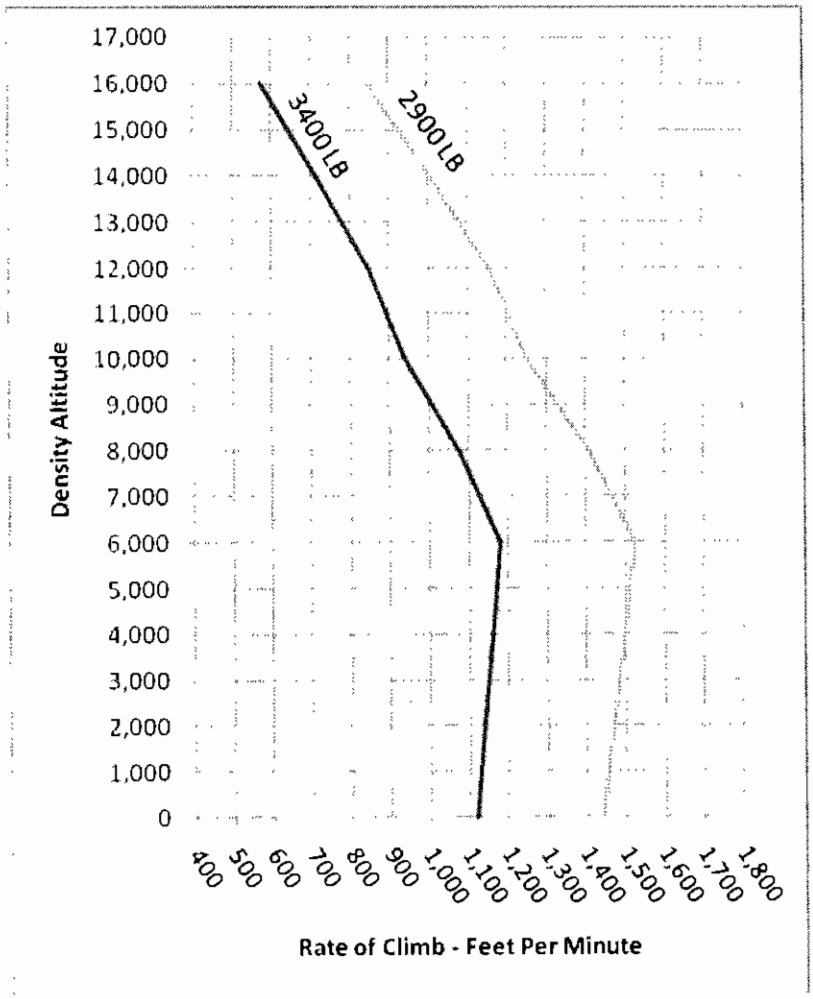
Notes in basic AFM are unchanged.

Weight	Press Alt	Climb Speed	RATE OF CLIMB – Feet per Minute (FPM)				
			TEMPERATURE - °C				
LB	FT	KIAS	-20	0	20	40	ISA
3400	SL	115	1263	1180	1097	1015	1118
	2000	115	1272	1187	1102	1018	1140
	4000	115	1279	1192	1105	1019	1161
	6000	115	1284	1195	1106	1017	1181
	8000	115	1161	1073	986	900	1077
	10000	115	1003	918	835	752	938
	12000	110	895	812	731	650	848
	14000	110	744	665	586	508	715
	16000	110	587	511	436	361	575
2900	SL	115	1601	1508	1416	1325	1439
	2000	115	1616	1521	1426	1332	1469
	4000	115	1629	1532	1435	1338	1497
	6000	115	1640	1540	1441	1342	1525
	8000	115	1500	1403	1306	1211	1407
	10000	115	1320	1227	1134	1043	1249
	12000	110	1206	1116	1026	937	1155
	14000	110	1036	949	863	778	1004
	16000	110	858	775	694	612	845

Enroute Rate of Climb Vs. Density Altitude

Conditions For Table:

- Power .....Full Throttle
- Mixture.....Set per *Maximum Power Fuel Flows*
- Flaps .....0% (UP)
- Airspeed .....115 KIAS - Below 10,000 FT
  110 KIAS - Above 10,000 FT



Time, Fuel and Distance to Climb

Conditions For Table:

- Power ..... Full Throttle
- Mixture..... Set Per *Maximum Power Fuel Flows*
- Fuel Density..... 6.0 LB/GAL
- Weight ..... 3400 LB
- Winds ..... Zero
- Flaps ..... 0% (UP)
- Airspeed
  - 115 KIAS - Below 10,000 FT
  - 110 KIAS - Above 10,000 FT

Example:

Outside Air Temp..... ISA
Weight ..... 3400 LB
Airport Pressure Altitude ..... 1000 FT
Cruise Pressure Altitude ..... 12000 FT
Time to Climb ..... 10.3 Minutes
Fuel to Climb ..... 4.7 Gallon
Distance to Climb ..... 21.8 NM

Factors in basic AFM are unchanged.

Press Alt	OAT (ISA)	Climb Speed	Rate of Climb	TIME, FUEL, DISTANCE – From Sea Level		
				Time	Fuel	Distance
FT	°C	KIAS	FPM	Minutes	U.S. Gal	NM
0	**15**	115	1118	0.0	0.0	0.0
1000	**13**	115	1129	0.9	0.4	1.7
2000	**11**	115	1140	1.8	0.9	3.4
3000	**9**	115	1151	2.6	1.3	5.2
4000	7	115	1161	3.5	1.7	6.9
5000	**5**	115	1171	4.4	2.1	8.7
6000	**3**	115	1181	5.2	2.5	10.4
7000	1	115	1129	6.1	2.9	12.3
8000	-1	115	1077	7.0	3.4	14.2
9000	**-3**	115	1008	7.9	3.8	16.3
10000	**-5**	115	938	9.0	4.2	18.6
11000	-7	110	893	10.1	4.7	21.0
12000	**-9**	110	848	11.2	5.1	23.5
13000	**-11**	110	782	12.4	5.6	26.2
14000	**-13**	110	715	13.8	6.1	29.2
15000	**-15**	110	645	15.3	6.7	32.6
16000	-17	110	575	16.9	7.3	36.4
17000	**-19**	110	505	18.7	7.9	40.7
17500	**-20**	110	435	19.8	8.3	43.3

Cruise Performance
Range and Endurance

• Warning •

The Cruise Performance and Range / Endurance Profile tables provided in Section 5 of the basic AFM have not been verified for the aircraft modified with the installation of this supercharger system. The pilot must closely monitor fuel consumption and fuel quantity to ensure required fuel reserve is maintained.

Leaning operations must be conducted in accordance with Section 2 and 4 in this airplane flight manual supplement.

Balked Landing Climb Gradient

Conditions For Table:

- Power ..... Full Throttle
- Mixture ..... Set Per *Maximum Power Fuel Flows*
- Flaps ..... 100% (DN)
- Climb Airspeed ..... 77 KIAS

Example:

Outside Air Temp ..... 20°C
Weight ..... 3400 LB
Pressure Altitude ..... 4000 FT
Climb Airspeed ..... 77 KIAS
Gradient ..... 319 FT/NM

Notes in basic AFM are unchanged.

Weight	Press Alt	Climb Speed	CLIMB GRADIENT – Feet per Nautical Mile				
			TEMPERATURE - °C				
LB	FT	KIAS	-20	0	20	40	ISA
3400	SL	77	492	516	525	526	524
	2000	77	581	587	581	567	580
	4000	77	650	640	619	592	624
	6000	77	700	674	640	600	655
	8000	77	635	601	561	514	586
	10000	77	541	501	455	402	494
2900	SL	77	634	688	700	626	698
	2000	77	765	772	765	749	764
	4000	77	846	834	810	778	815
	6000	77	905	874	835	788	851
	8000	77	829	789	741	687	769
	10000	77	718	672	617	556	660

Balked Landing Rate of Climb

Conditions For Table:

- Power ..... Full Throttle
- Mixture ..... Set Per *Maximum Power Fuel Flows*
- Flaps ..... 100% (DN)
- Climb Airspeed ..... 77 KIAS

Example:

Outside Air Temp ..... 20°C
Weight ..... 3400 LB
Pressure Altitude ..... 4000 FT
Climb Airspeed ..... 77 KIAS
Gradient ..... 862 FPM

Notes in basic AFM are unchanged.

Weight	Press Alt	Climb Speed	RATE OF CLIMB – Feet per Minute (FPM)				
			TEMPERATURE - °C				
LB	FT	KIAS	-20	0	20	40	ISA
3400	SL	77	592	644	680	704	673
	2000	77	724	760	780	786	771
	4000	77	841	860	862	852	862
	6000	77	941	940	926	897	939
	8000	77	886	871	841	798	873
	10000	77	784	755	709	648	763
2900	SL	77	762	860	906	837	896
	2000	77	954	1000	1027	1039	1017
	4000	77	1095	1121	1127	1119	1125
	6000	77	1216	1220	1206	1177	1219
	8000	77	1156	1144	1113	1066	1144
	10000	77	1040	1012	963	896	1020

Section 6

Weight and Balance

There are no changes to aircraft weight limits or center of gravity (CG) limits. See basic Airplane Flight Manual for weight and center of gravity information.

The Equipment List / Weight and Balance Record are revised by the STC installer for installation of this supercharger system. For current empty weight and CG, see revised weight and balance record.

Section 7

Airplane and Systems Description

Engine

The SR22 is powered by the original Teledyne Continental Motors IO-550-N six cylinder engine that now has a belt-driven supercharger installed. The Time Between Overhaul (TBO) requirements are unchanged.

Engine Supercharging System

The supercharging system provides sea level manifold pressure to approximately 6,000 feet thereby increasing engine power output when operating at higher altitudes. This results in an improved rate of climb and cruise airspeeds. Unlike a turbocharging system, this system is not exhaust gas driven and has no waste-gate or turbo-controller, therefore, much less potential for engine hazards. The system has no modifications to the exhaust system and requires no cool down periods at engine shutdown.

This system consists of a supercharger, a boost control valve, an overboost valve, and minor fuel injection and air induction alterations. Induction air is drawn through the air filter at the right side of the engine to the supercharger and exits the supercharger on the left side of the engine through a boost control valve, past the overboost valve, and into the throttle body. The supercharger utilizes oil from the engines's oil system for lubrication. The boost control valve limits maximum manifold pressure to 29.6 Inches Hg. The overboost valve protects the engine should a failure of the boost control valve occur.

Supercharger

The supercharger is a centrifugal compressor, mounted at the rear of the engine on the left side, and is belt-driven from the left engine accessory drive. The amount of boost available is based directly upon engine RPM and ambient air pressure. Higher RPM and higher ambient pressure (limited to 29.6 inHg) results in higher manifold pressures.

Boost Control Valve

A boost control valve will limit the manifold pressures to no more than 29.6 Inches Hg for any throttle setting and will protect against engine overboosting. Power for operation is supplied through a 5-amp circuit breaker labeled BOOST CTRL located on the Essential Bus.

Induction System

Induction air still enters the engine compartment through the original inlets in the forward cowling and is drawn through the air filter. The original air filter has been relocated to the right side of the engine compartment. Air discharged from the supercharger is ducted directly into the engine throttle body.

Refer to Engine Controls, Alternate Air Control and Valve in the basic AFM.

Critical Altitude

The critical altitude is the altitude in which the desired manifold pressure can no longer be maintained. This occurs when the supercharger can no longer boost the ambient air above the desired manifold pressure.

Critical altitude will vary with ambient pressures and engine RPM. The critical altitude for full throttle (29.6 inHg. and 2700 RPM) is approximately 6,000 feet pressure altitude.

Engine Oil System

A small amount of oil is diverted from the engine to lubricate the supercharger. After this oil passes through the supercharger, it is returned to the engine. This engine oil is screened and filtered before re-entering the engine.

Engine Fuel Injection

Air discharged directly from the supercharger is supplied to the fuel injection nozzles. This is necessary because manifold pressure will be greater than ambient pressure when operating above sea level. This provides proper fuel atomization and results in smoother engine operation.

Alternate Air Control and Door

The alternate air door has been relocated to the forward engine baffle on the right side of the engine compartment. The source of the alternate air is unchanged and operation of the alternate air control is unchanged.

Engine Indicating

Fuel Flow / Manifold Pressure Gage

Refer to *Section 2, Limitations,* in this AFMS for new instrument markings and operational limits.

Section 8

Handling, Service, and Maintenance

There are no additional requirements for the continued safe and efficient operation of your aircraft. For inspection and maintenance requirements pertaining to the supercharger system, see Forced Aeromotive Technologies Instructions for Continued Airworthiness, Document No. 22006-30 provided with this installation.