ENGINE FAILURES

DISCONTINUED TAKEOFF PROCEDURE

1. Throttles -- CLOSE IMMEDIATELY.
2. Brakes -- AS REQUIRED.

NOTE

Total distances required to accelerate to various speeds and then stop are shown in Section 5.

CONTINUED TAKEOFF WITH ENGINE OUT

1. Throttles -- FULL FORWARD.
2. Propeller Controls -- FULL FORWARD.
3. Mixture Controls -- FULL FORWARD.
4. Inoperative Engine -- IDENTIFY from manifold pressure, RPM, fuel flow and EGT (if installed) indications.

NOTE

Verify inoperative engine by momentarily closing throttle and noting power response to throttle movement.

5. Windmilling Propeller -- FEATHER PROMPTLY.
6. Wing Flaps -- RETRACT slowly.
7. Airspeed -- 89 KIAS (80 KIAS with obstacles ahead).
8. Landing Gear -- RETRACT (after immediate obstacles are cleared).
9. Inoperative Engine -- SECURE.

ENGINE OUT DURING FLIGHT

1. Power -- INCREASE as required.
2. Inoperative Engine -- IDENTIFY (check power response to throttle movement).
3. Cowl Flaps -- OPEN as required on operating engine.
4. Mixture -- ADJUST for new power setting if required.
5. Inoperative Engine -- ATTEMPT RESTART.
   a. Mixture -- FULL RICH (if fuel flow is deficient).
   b. Auxiliary Fuel Pump -- ON (if fuel flow is deficient).

BEFORE TAKEOFF

WARM-UP

Since the engines are closely cowled for efficient in-flight cooling, precautions should be taken to avoid overheating on the ground. Full power checks on the ground are not recommended unless the pilot has good reason to suspect that the engines are not turning up properly.

MAGNETO CHECK

The magneto check should be made at 1800 RPM with the propeller control full forward as follows: Move the ignition switch first to R position and note RPM. Then move switch back to BOTH position to clear the other set of plugs. Then move switch to L position, note RPM and return the switch to the BOTH position. The difference between the two magnetos operated singly should not be more than 50 RPM. The maximum drop on either magneto should not exceed 150 RPM. If there is a doubt concerning the operation of the ignition system, RPM checks at a higher engine speed

will usually confirm whether a deficiency exists. The rear engine magnetos should be checked last to minimize the possibility of an undetected rear engine stoppage due to an incorrect idle adjustment.

An absence of RPM drop may be an indication of faulty grounding of one side of the ignition system or should be cause for suspicion that the magneto timing is set in advance of the setting specified.

ELECTRICAL SYSTEM CHECKS

To run a functional check of the battery and alternator circuits, use the following procedure:

1. Run both engines at 1000 RPM with some electrical equipment on.
2. Turn front and rear alternator switches off.
3. The BAT DIS light and front and rear ALT NOT CHARGING lights should be illuminated.
4. Turn front alternator switch on. Both the BAT DIS light and the

SINGLE ENGINE MAXIMUM RATE OF CLIMB

CONDITIONS:
Inoperative Propeller Feathered
Flaps Up
Gear Up
2800 RPM
37 Inches Hg
Mixture Set at 140 PPH
Cowl Flaps Open on Operating Engine
Cowl Flaps Closed on Inoperative Engine

WEIGHT LBS	PRESS ALT FT	CLIMB SPEED KIAS	RATE OF CLIMB - FPM			
			-20°C	0°C	20°C	40°C
4700	S.L.	89	545	445	350	255
	4000	89	455	360	265	170
	8000	88	360	270	175	80
	12,000	88	260	165	80	- - -
	16,000	88	135	45	-30	- - -
	20,000	87	-15	-75	- - -	- - -
4400	S.L.	86	635	535	440	340
	4000	86	545	450	355	260
	8000	85	445	360	265	170
	12,000	85	345	255	170	- - -
	16,000	85	225	135	50	- - -
	20,000	85	70	-10	- - -	- - -
4100	S.L.	83	735	635	535	430
	4000	83	640	540	445	350
	8000	83	545	455	365	270
	12,000	83	440	355	265	- - -
	16,000	83	320	235	150	- - -
	20,000	83	165	85	- - -	- - -

Figure 5-10. Single Engine Maximum Rate of Climb

LANDING DISTANCE
MAXIMUM LANDING WEIGHT - 4465 LBS

CONDITIONS:
Full Flaps
Power Off
Maximum Braking
Paved, Level, Dry Runway
Zero Wind

SHORT FIELD

NOTES:
1. Short field technique as specified in Section 4.
2. Decrease distances 10% for each 11 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2.5 knots.
3. For operation on a dry, grass runway, increase distances by 50% of the "ground roll" figure.

WEIGHT LBS	SPEED AT 50 FT KIAS	PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
			GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS
4465	78	S.L.	755	1610	780	1650	810	1700	835	1740	865	1790
		1000	780	1650	810	1700	840	1750	865	1790	895	1840
		2000	810	1700	840	1750	870	1795	900	1845	930	1895
		3000	840	1750	870	1800	900	1850	935	1900	965	1950
		4000	875	1805	905	1855	935	1905	970	1960	1000	2010
		5000	905	1855	940	1910	970	1960	1005	2020	1040	2075
		6000	940	1910	975	1970	1010	2025	1045	2080	1080	2140
		7000	975	1970	1010	2025	1050	2090	1085	2150	1120	2205
		8000	1015	2035	1050	2090	1090	2155	1125	2215	1165	2280

Figure 5-18. Landing Distance (Sheet 1 of 2)