

FUEL SYSTEM

Fuel is contained in two integral sealed sections in the front part of each wing root. Each tank will hold 26 gallons of gasoline. These fuel tanks each have a sump drain under the wing from which fuel may be sampled to check for water or sediment contamination. A small plastic cup with an actuator prong is provided to obtain fuel samples. If water is present in the fuel, a distinct line separating the water from the gasoline may be seen through the plastic cup. Water, being heavier, will be on the bottom of the cup, and the light-colored fuel will be on top.

Aluminum fuel lines feed the fuel from the tank to a two-way, positive-setting selector valve on the floor ahead of the pilot's seat. The selector valve feeds fuel from one of the tanks at a time, and also has an "off" position for extended periods of storage or for emergency use. The selector valve also contains a sump drain which is actuated by pulling the ring adjacent to the fuel valve handle. Switch the selector valve handle to the right and left tanks to drain the respective lines. Be sure sump drain returns to normal closed position after releasing the ring. Fuel is fed from the selector valve through the electric boost pump, then to the engine driven pump and into the carburetor. The electric boost pump is turned on for take-off and landing to provide fuel pressure if the engine driven pump malfunctions.

WARNING: Under no circumstances should aviation fuel of a lower grade than 91/98 octane be used. Aviation fuels may distinguished by their color: 80 octane is red, 91 octane is blue, and 100 octane is green. If 91/98 octane is not available, 100/130 octane gasoline may be used.

THE ELECTRICAL SYSTEM

The Mark 21 electrical system is provided with a 50 amp 12 volt generator and a 35 amp-hour battery which is located on the forward left side of the firewall. All electrical systems can

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copilot's side and the controls used for normal spin recovery techniques. The pilot should use the cut-off valve located in the pilot's left control wheel handle to cut off the PC system when employing spin recovery control procedures.

THE TRIM SYSTEM

A small control wheel on the floor between the front seats actuates the adjustable stabilizer via a gear reduction and torque tube linkage which actuates the empennage jack screw. A friction lock is provided on the pilot side of the trim control pedestal. Rotating the friction screw clockwise increases trim friction. The position of the stabilizer is indicated by a pointer on the aft side of the nose wheel well. The intermediate mark in the pointer range is the normal take-off setting of the trim control. The trim system also changes the setting of the trim bungees connected to the elevator horns to obtain trim assist from the elevators.

FLAPS

The wide span flaps are hydraulically controlled by a hand operated pump which actuates a hydraulic cylinder. A relief valve is provided which releases the flaps at a slow rate as the springs (or air pressure) raise them. Hydraulic fluid used is the same as the brake system fluid and is stored in the brake reservoir on the aft side of the firewall. To lower the flaps, first set the flap-shaped control (adjacent to the flap handle) in the down position. Then pump the handle to obtain the desired setting: two strokes for take-off; four and one-half strokes for full deflection or any intermediate setting. To raise the flaps, place the control in the up position. The flaps will then rise at a controlled rate to the up position or they may be stopped at an intermediate position by placing the control in the down position again. The position of the flaps is indicated by a pointer on the aft side of the nose wheel well. The intermediate mark in the pointer range is the flap take-off setting.

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PART IV **PERFORMANCE DATA**

FIGURE 1
TAKE OFF AND CLIMB DATA

Alt. Feet	Temp. °F.	TAKE OFF WEIGHT 2200 LBS.				TAKE OFF WEIGHT 2575 LBS.			
		Ground Run Feet*	Total Dist. To Clear 50*	Max. R/C Ft/Min	Best R/C Speed IAS	Ground Run Feet*	Total Dist. To Clear 50*	Max. R/C Ft/Min	Best R/C Speed IAS
SEA LEVEL	100°	745	1290	895	97	1030	1760	695	97
	59°	620	1075	1000	100	815	1395	800	100
	20°	520	900	1110	103	660	1130	910	103
2500°	90°	900	1560	795	95	1345	2305	595	95
	50°	745	1290	900	97	1030	1760	700	98
	10°	615	1065	1010	100	805	1380	810	100
5000°	80°	1125	1955	700	93	1910	3275	500	93
	41°	900	1560	795	95	1340	2300	595	95
	0°	740	1280	910	97	1000	1715	710	98

TAKE OFF CONFIGURATION:

- * Gear down, full rich mixture, 15° (take off position) flaps
- Wind calm → hard surface runway

CLIMB CONFIGURATION:

Gear Up - Best Power Mixture - Cowl Flaps Open - Flaps Up

FIGURE 3

CRUISE & RANGE DATA

WEIGHT = 2200 LBS.: BEST POWER MIXTURE
52 GAL. USABLE FUEL; NO RESERVE FOR RANGE CALCULATIONS
STANDARD ATMOSPHERE

ALTITUDE 2500' MSL

R.P.M.	M.P. IN. HG.	B.H.P.	% B.H.P.	GAL. HOUR	LBS. HOUR	TRUE AIR SPEED	ENDUR. HR:MIN.	RANGE Statute MILES
2600	27.0	170	95	14.4	86.4	185	3:37	667
	26.0	162	90	13.4	80.4	180	3:53	697
	25.0	155	86	12.8	76.8	175	4:04	710
	24.0	147	82	12.0	72.0	170	4:20	736
2500	26.0	159	88	13.1	78.6	178	3:58	705
	25.0	151	84	12.3	73.8	174	4:13	735
	24.0	144	80	11.6	69.6	168	4:29	752
	23.0	136	76	11.0	66.0	163	4:32	770
2400	25.0	148	82	11.7	70.2	171	4:26	759
	24.0	140	78	11.0	66.0	166	4:43	784
	23.0	132	73	10.4	62.4	160	5:00	800
	22.0	125	70	9.8	58.8	154	5:19	817
2300	24.0	136	76	10.7	64.2	163	4:52	792
	23.0	128	71	10.0	60.0	157	5:12	816
	22.0	121	67	9.5	57.0	152	5:28	831
	21.0	113	63	8.7	53.4	145	5:50	847
1800*	17.0	66	37	5.7	34.2	109	8:07	594

* MAXIMUM RANGE

ACCURACY OF DATA IS ± 3%

EACH 100 LBS. CHANGE IN AIRPLANE WEIGHT
WILL AFFECT RANGE BY 1.2 PERCENT