Power settings for Eahart's S3H1 Wasp engines

PWA 01. 71A

SUGGESTED ENGINE OPERATION TABLE

TAKE-OFF, CLIMB, and CRUISE — NO RAM (4)

No increase in power rating using higher octane fuel

POWER CONDITION	% NORMAL RATED POWER	BHP (2)	RPM	MANIFOLD PRESSURE IN. HG	MIXTURE		APPROX. FUEL GAL./HR.	CRITICAL ALTITUDE (1)
					NA-Y9J	OTHER (5)		
Take-off — 80/87 Fuel		600	2250	35.5	Auto Rich	Full Rich	65	3,000
Take-off — 91/96 Fuel		600	2250	36.0	Auto Rich	Full Rich	66	2,300
Normal Rated — 80/87	100	550	2200	32.5	Auto Rich	Full Rich	55	5,000
Normal Rated — 91/96	100	550	2200	33.0	Auto Rich	Full Rich	56	4,500
Climb	91	500	2200	29.5	Auto Rich	Full Rich	47	8,000
Climb	82	450	2100	27.5	Auto Rich	Full Rich	40	9,000
Climb				26.0	Auto Rich	Full Rich	34	10,500
Max. Cruise				26.0	Auto Lean	0.080	32	10,300
Cruise (3)				23.5	Auto Lean	0.072	28	12,500
Cruise				25.0	Auto Lean	0.072	28	10,500
Cruise				27.0	Auto Lean	0.072	28	8,100
Cruise (3)				21.5	Auto Lean	0.072	25	14,500
Cruise				23.5	Auto Lean	0.072	24	11,500
Cruise				26.5	Auto Lean	0.072	24	7,500
Cruise (3)				19.0	Auto Lean	0.072	22	17,000
Cruise	45	250	1550	21.5	Auto Lean	0.072	21	13,500
Cruise	45	250	1400	24.0	Auto Lean	0.072	21	9,800

Increased fuel flow necessary for the same power output using the lower density 91/96 octane fuel, necessitating higher manifold pressure.

NOTES

(1) Critical altitudes will be increased by the amount of ram developed in any particular installation.

(2) Specified bhp is at the critical altitude shown, at the designated rpm, manifold pressure, and mixture settings. To obtain this bhp at lower altitudes with part throttle, increase manifold pressure approximately 0.3 in. Hg for each thousand feet below the critical altitudes shown.

(3) The cruise power settings include a range of rpm, the highest rpm being on propeller load and the lowest at approximately 120 bmep. $\left(\text{bmep} = 591 \times \frac{\text{bhp}}{\text{rpm}}\right)$

(4) All power settings are based upon NACA standard atmospheric conditions of temperature and pressure with no carburetor heat. During climb, cruise and descent, it is desirable whenever practicable to maintain 32°C carburetor air temperature for best engine operation. With NA-Y9C carburetors, 32°C CAT must be maintained during climb and cruise. This will require increased manifold pressure at part throttle and increased rpm at full throttle to obtain the specified power. The correction amounts to about 0.5 in. Hg more manifold pressure (part throttle) or 20 more rpm (full throttle) for each 10°C increase above NACA standard day values.

(5) For carburetors not equipped with automatic mixture control units, and when above 5000 feet altitude, lean the mixture to the minimum required for smooth engine operation, or to the desired F/A ratio if such instrumentation is provided.