

PART II

LIMITATIONS

57. Engine limitations—Avon Mks. 115 and 121

Power Rating	Time Limit	Avon 115		Avon 121	
		R.p.m.	J.p.t. (°C.)	R.p.m.	J.p.t. (°C.)
Take-off and Operational Necessity	10 minutes (combined)	7,950 ±50	710	8,100 ±50	690
Intermediate	30 minutes	7,800	685	7,950	655
Maximum Continuous	Unrestricted	7,550	635	7,700	625
Minimum Approach	Unrestricted	4,500	—	4,500	—
Ground Idling	Unrestricted	2,750 ±100	530	3,000 ±100	525

Minimum oil pressure (both marks).

At Maximum Continuous r.p.m.—15 lb./sq. in.

58. Flying limitations

- (a) (i) Intentional spinning is prohibited. External stores listed overleaf may be carried subject to the observance of the appropriate limitations.
- (ii) When carrying external stores, 38° flap must be used for take-off. Combat manœuvres are permitted with fuel in the drop tanks if Mod. 520 is embodied.
- (iii) When carrying external stores, other than *empty inboard* drop tanks, practice selections of Manual must not be made since the presence of such stores increases the difficulties of reselecting Power. Manual landings with asymmetric stores other than *one empty inboard* drop tank are prohibited.
- (b) The aircraft is cleared for Ground Attack, with guns only, subject to the provisions of sub-para. (c) and provided that Hunter Mods. 365 and 327 are embodied.

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(c)

Configuration Limitation	Clean aircraft	With inboard drop tanks	With outboard drop tanks	With RP's	With 1,000 lb. bombs
Max. speed In Power Knots	620K*	590K*	590K/ 0.88M	590K*	590K*
Mach No. Knots	* No Mach limit but see paras. 85 and 86		(60° dive max. for firing)	(60° dive max. for release)	
In Manual	0.75M below 15,000 ft., 0.85M above 15,000 ft. (If inadvertent reversion to Manual occurs at speeds above this, speed must be reduced immediately)				
Jettisoning (see para. 108)	—	250-300K (unfinned) 200-450K (finned)	250-300K (unfinned) 200-450K (finned)	—	Up to 590K and 60° dive
Max.A.U.W.(lb.) Take-off Landing	17,250	19,500	21,735	21,735	21,735
15,600 lb. in all configurations					
G limits (accelerometer readings) Positive Negative readings Positive Negative	+ 7 in all configurations - 3½ in all configurations Between 10,000 and 30,000 ft. when Mod. 533 (extended wing leading edge) is <i>not</i> embodied, positive accelerometer readings must not exceed:— Below 0.9M The reading at which buffeting com- mences Above 0.9M +4				
For the opera- tion of:— Undercarriage Flaps (see para. 74) To or from 38° Beyond 38° para. 74 To or from 38° Beyond 38°	230K in all configurations 300K or 0.9M in all configurations 250K in all configurations NOTE.—The speeds for the operation of a service also apply with the service in the extended position				

25 lb. practice bombs may be carried on inboard pylons only; dive angles for release or jettison must not exceed 60°. The following maximum speeds must not be exceeded:—

No. 1 Mk. 1 (0.025 in. min. thickness vanes) ... 400 knots
No. 1 Mk. 1 (0.037 in. min. thickness vanes) ... 500 knots
No. 2 Mk. 1 ... 500 knots

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(d) *Gun firing*

(i) Gun firing is permitted within the limitations imposed by the modification state listed below provided that:—
1. Speed is maintained above 200 knots.
2. The aircraft is not allowed to penetrate beyond the initial onset of buffet when G is applied.
3. When carrying stores the *minimum* firing speed is 350 knots. When Mod. 645 is embodied this speed is reduced to 200 knots (Avon 115) and 150 knots (Avon 121).

(ii) The following are the airframe mods. governing the limitations in (iii) and (iv):—

Mod. State	Mod. Nos.
1	273 (Part A), 285, 289, 295, 301, 302, 336, 451, 478 (Part B)
2	State 1, +434, 435
3	State 2, +413, 462, 478 (Part A), 484, 506, 521, 523, 552, 570, 571, 572, 573, 577, 581, 585
4	State 3, +592, 598

(iii) *With Avon 115 engine fitted*

The following table lists the gun firing limitations as dictated by the mod. state given in (ii).

Mod. state	No. of guns	Type of ammo.	Max. length of burst (secs.)	Min. interval between bursts (secs.)	Max. height (ft.)	Max. IAS (kts.)
1	4	L.V. only	1½	3	35,000	400
2	4	L.V.	1½	3	35,000	400
2	4	H.V.	1½	3	25,000	250
3	2	L.V.	1½	3	35,000	550
3 + Mod. 646	2	L.V.	1½	3	35,000	620*
3	2	H.V.	1½	3	25,000	550
3 + Mod. 646	2	H.V.	1½	3	25,000	620*
4	4	L.V.	1½	3	35,000	550
4 + Mod. 646	4	L.V.	1½	3	35,000	620*
4	4	H.V.	1½	3	25,000	550
4 + Mod. 646	4	H.V.	1½	3	25,000	620*

* Air firing at speeds above 550 knots with airbrake out is permitted when operationally necessary, but a limited number of strikes on the airbrake will be experienced.

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(iv) With Avon 121 engine fitted

Mod. state	No. of guns	Type of ammo.	Max. length of burst (secs.)	Min. interval between bursts (secs.)	Max. height (ft.)	Max. IAS (kts.)
1	4	L.V. only	1½	3	48,000	400
2	4	L.V.	1½	3	48,000	400
2	4	H.V.	1½	3	0-25,000 25-48,000	250 350
3	2	L.V. or H.V.	—	—	48,000	550
3+ Mod. 646	2	" "	—	—	48,000	620*
4	4	" "	—	—	48,000	550
4+ Mod. 646	4	" "	—	—	48,000	620*

* Air firing at speeds above 550 knots with airbrake out is permitted when operationally necessary, but a limited number of strikes on the airbrake will be experienced.

(e) Aircraft approach limitation (AAL)

The AAL for BARBRO is 300 feet* and is subject to the following:

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(e) Aircraft approach limitations (AAL)

The AAL's, subject to the standard conditions of pilot proficiency, airfield approach lighting, minimum visibility and accurate height information are:—

- (i) The slant visibility must be sufficient to provide minimum cross-bars to be seen at break-off height.
- (ii) GCA Precision Radar 200 ft.
- (iii) Search Radar 300 ft.
- (iv) The GCA controller must announce to the pilot arrival break-off height 300 ft.
- (v) The flying controls must be in Power.

* Altimeter reading above runway level.

(f) Temporary restrictions

(i) Misting

Ample time must be allowed for demisting after a rapid descent from a long cruise at high altitude; so far 5 minutes has been sufficient, but experience on aircraft without manual control of flood flow indicates that up to 15 minutes might be necessary.

(ii) Undercarriage operation at high altitude

Pending further trials, the undercarriage should not be lowered (e.g. for stalling practice) above about 25,000 ft.

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