Chapter 3 - LOADING, C.G. AND FATIGUE INDEX DATA

LIST OF CONTENTS

	Para.
LOADING AND C.G. DATA	
General	1
Datum point	2
Weight limitations	3
C.G. range	4
Operational note	5
Changes in weight and moment due to modifications	6
E.C.U. included in given basic weight	7
Changes of E.C.U.	8

	Para.
FATIGUE INDEX DATA	
Fatigue index data — introduction	
General	9
Assessing consumption of fatigue index	10
Unmetered flying	11
Recording fatigue consumption data	12
Aircraft fitted with fatigue meters	13
Aircraft without fatigue meters	14
Refining of fatigue index	15
Changes in recording to be made on fitment of a fatigue meter	16
Fatigue index data — application	
General	17
Fatigue index	18
Critical components	20
Fatigue meters	21
Fatigue index data — calculation	
General	23
Fatigue life	24
Critical components	25
Fatigue consumption calculations	26
Ex-Display team aircraft	27

LIST OF ILLUSTRATIONS

	Fig.
Loading and C.G. diagram For Table 1 only	1
Loading and C.G. diagram for Tables 2 & 3	2

LIST OF TABLES

	Table
Removable equipment included in basic weight	1
Operational load items	2
Expendable load items	3
Metered flying formulae	4

LOADING AND C.G. DATA

General

1. It is essential that the loading of an aircraft be kept within the limitations of the approved C.G. range and the all-up weight. So far as the C.G. range of this aircraft is concerned only the fore-and-aft location of the C.G. need be calculated. To determine the C.G. position the aircraft is considered standing with the fuselage datum line horizontal and the undercarriage down. ◀ Reference should be made to A.P.119W–0001–1 for general information on aircraft loading. ▶

Datum point

2. This is the foremost face of a spigot hole situated in the wheel bay on the fuselage skin just forward of the undercarriage door hydraulic jack. This fixed point is located 19 inches aft of the main spar frame and 4 inches below the fuselage datum.

Weight limitations

3. (1) *Clean.* The maximum permissible all-up weight of the clean aircraft for take-off and all forms of flying is 18 400 lb.

(2) *With external stores.* When carrying external stores, the maximum permissible all-up weight of the aircraft for take-off and all forms of flying is 25 000 lb.

(3) *Landing.* The maximum permissible landing weight of the aircraft (except in an emergency) is 18 500 lb.

Note . . .

Pilots are warned to exercise particular care when landing at this weight on rough or semi-prepared airfields, or in other conditions likely to create high undercarriage loads.

C.G. Range

4. The approved limits of C.G. travel, measured parallel to the fuselage datum are 0 inches to 14·5 inches aft of the C.G. datum point, as illustrated on Fig. 2.

Note . . .

The aft limit (14·5 in. aft of the datum) as originally approved by A. & A.E.E. Boscombe Down was obtained by assuming that fuel was completely consumed.

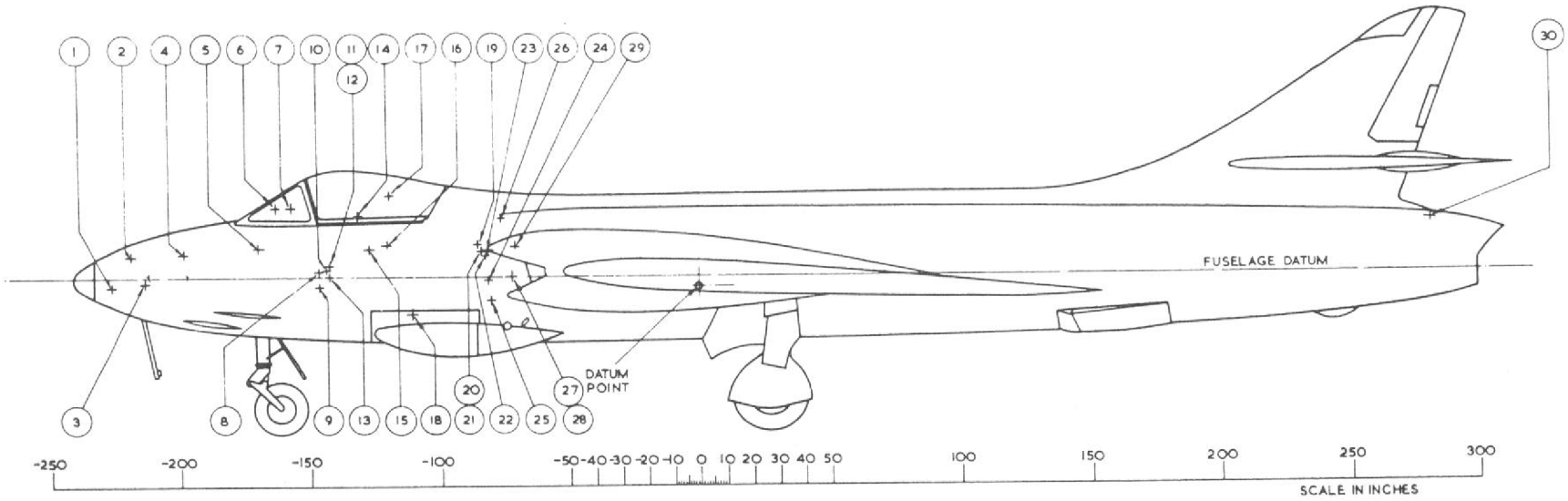

FIG. I LOADING AND C.G. DIAGRAM
FOR TABLE I ONLY.

TABLE 1
Removable equipment included in basic weight

Item No.	Ref. No.	Description	Weight (lb.)	Moment (lb. in.) −	Moment (lb. in.) +
A.R.I. 5820					
1	10D/18554 or	Radar head, Type 2	48·5	10 966	
	10D/21292	Radar head, Type 2A	1·5	320	
4	10D/18553	Junction box, Type 370	26·5	5 263	
5	10Q/16076	Ranging unit			
A.R.I. 18124/1 (Post Mod. 968)					
10	10L/9990839	Control unit, Type C.1607/2	3·0	435	
27	10D/9428542	Trans/rec. unit, Type 5	47·0	3 398	
A.R.I. 23057 (Post Mod. 968)					
24	10D/20773 or	Trans/rec. unit, Type T.R.10056	10·5	855	
	10D/23507	Trans/rec. unit, Type M.4			
	10D/20773 or	Trans/rec. unit, Type T.R.10056 (Post Mod. 1096)	10·5	840	
	10D/23507	Trans/rec. unit, Type M.4 (Post Mod. 1096)	17·0	1 377	
25	5J/3458	Battery			
A.R.I. 18064 (Pre. Mod. 968 or Post Mod. 973)					
8	10L/246	Control unit, Type 382	1·5	219	
28	10D/21507–8	Trans/rec. units, Types T.R.1985–6A	52·5	3 770	
A.R.I. 5848					
11	10L/16192	Control unit, Type 927	1·5	215	
12	16K–1660–036290585	Control unit, Type C.1128/APX-25	1·0	143	
22	16K–1660–036290932	Coder unit, Type KY-95A-APX-25	10·5	870	
29	10D/20334	Trans/rec. unit, Type T.R.4585	33·0	2 366	
A.R.I. 23013					
13	10L/16264	Control unit, Type 8197	2·5	355	
20	10D/19594	Trans/rec. unit, Type T.R.8193	31·5	2 621	
	10D/19594	Trans/rec. unit, Type T.R.8193 (Post Mod. 1096)	31·5	2 586	
21	10D/19595	Junction box, Type 8196	3·0	849	
A.R.I. 5877					
17	10U/17211	R.F. amplifier, Type 8281	5·0	590	
26	10U/17212	I.F. amplifier, Type 8282	9·0	693	

TABLE 1

Removable equipment included in basic weight (Contd.)

Item No.	Ref. No.	Description	Weight (lb.)	Moment (lb. in.) −	Moment (lb. in.) +
A.R.I. 18120/1					
19	10D/20572	A.F. unit, Type 9635	7·0	601	
23	10D/20571	R.F. unit, Type 11037	12·0	984	
Miscellaneous equipment					
2	14A/4929 or 14A/4981	Camera gun, G90	7·0	1 532	
5	6A/2958 or 6A/2089	Clock, Mk. 4B / Clock, Type 5 ACA	0·5	85	
6	8B/3593 or 8B/3772	Gunsight, Mk. 8 (Post Mod. 378) / Gunsight, Mk. 5B (Post Mod. 700)	9·0	1 463	
7	14A/4196	Camera recorder	2·5	391	
9	27C/2319 or 27C/2393 or 27C/2228	Survival pack, Type Q c/w seat cushion 15A/729 (Pre ejection seat Mod. 421) / Survival pack, Type R c/w seat cushion 27C/2428 (Post ejection seat Mod. 421) / Survival pack, Type J (Pre. Mod. 282)	33·0	4 818	
14	15A/671 or 15A/684	Parachute assembly, back type Mk. 9 c/w Back pad 15A/780 (Post Mod 282) / Parachute assembly, back type Mk. 13 (Pre Mod. 282)	34·0	4 437	
15	12K/1300 or 12K/1314	Seat cartridges	1·0	127	
16	27C/2380–1	Survival packs (Mod. 847)	14·0	1 659	
18		Guns and accessories	827·4	91 301	
30	15D/732	Brake parachute, Type LB.52 Mk. 3	12·0		3 384

AIRCRAFT AT BASIC WEIGHT 14 572 lb. Moment 181 130 lb. in.

(These are typical figures and should only be used if the basic weight and moment record card, R A F. Form 4908, is out of date or inaccurate).

Operational notes

5. The following notes are inserted to give guidance on particular items of loading peculiar to the type :—

(1) In order to maintain the C.G. position between the given approved limits, it is essential that ballast is fitted if the following items of equipment are not carried :—

(*a*) When the radar head and ranging unit are removed, fit ballast Ref. No. 26FX/100021 (Mod. 21) or 26FX/100637 (Mod. 637).

(*b*) When I.F.F. Mk. 3 is removed, fit ballast Part No. C.206617 (Mod. 247). Ballast in lieu of I.F.F. Mk. 10, on aircraft Post Mod. 794, is not required.

(*c*) When D.M.E. is removed, fit ballast Part No. C.206618 (Mod. 246)

(2) When external link collectors (Mod. 302) are fitted the weight of 540 retained links is 67·5 lb, with a load arm of −98·75 in. (Moment −6 666 lb in.). In all C.G. calculations which allow for the expenditure of ammunition, the effect of these retained links must be included.

(3) When drop tanks are carried on outboard pylons, ammunition or ballast in lieu must be carried. This proviso does not preclude the expenditure of ammunition after the rear fuselage tanks have been emptied.

(4) Landing with full R.P. load, ammunition having been expended, must be regarded as an emergency condition, due consideration being given to the aft C.G. position then obtained.

(5) Modifications 941 and 942 must be incorporated on any aircraft prior to its assuming a load of or including 24 R.Ps. with 25 lb heads.

(6) Changes in fuel tank capacities occur with variations in drop tank configurations (c f. Leading Particulars—Engine). The load arms for fuel given in Table 3 will not alter for these capacity changes

Changes in weight and moment due to modifications

6. When the modification state of an aircraft is changed, the appropriate aircraft basic weight and moment record card (MOD Form 751) should be amended in accordance with the weight and moment figures to be found in paragraph 12 of the relevant modification leaflet.

E.C.U. included in given basic weight

7. The E.C.U. installed in this aircraft is an Avon Mk.20701 having an average weight of 2883 lb with a C.G. position 21.58 in. aft of engine C.G. datum (centreline of front suspension).

Changes of E.C.U.

8. When an E.C.U. is changed, reference should be made to the appropriate Form 753 for its weight and C.G. position. If the Form 753 quotes two weights and two C.G. positions, the highest figures are to be used for any aircraft weight and moment records. The aircraft C.G. datum point is 51.05 in. forward of the engine C.G. datum point, therefore this dimension must be added to the dimension for the C.G. of the E.C.U. to obtain the moment for the E.C.U. weight about the aircraft C.G. datum,e.g.:-

Form 753 quotes:-

2847 lb/2912 lb C.G. 21.33 in/21.83 in. aft of centreline front suspension.
Highest weight 2912 lb highest C.G. position 21.83 in. aft.

Moment of E.C.U. weight about aircraft datum is:-

2912 x (21.83 + 51.05) = 2912 x 72.88 = 212226 lb in.

In this manner it is possible to ascertain the weight difference and change in moment for a change of E.C.U. for inclusion in the information recorded on the Aircraft Basic Weight and Moment Record (MOD Form 751).

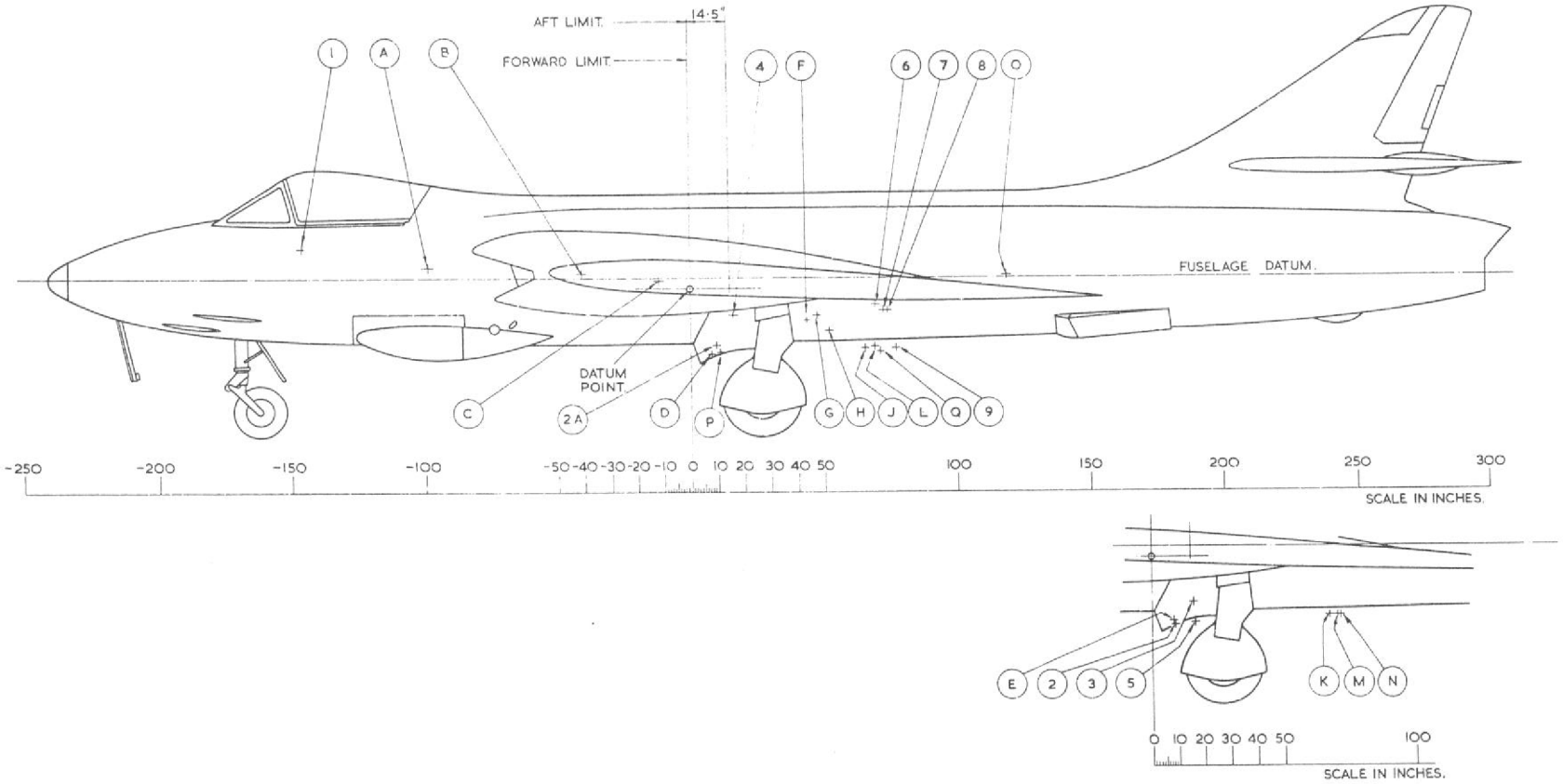

FIG. 2 LOADING AND C.G. DIAGRAM FOR TABLES 2 & 3.

21554

TABLE 2—Operational load items

Item No.	Description	Weight (lb)	Arm (in.)	Moment (lb in.) −	Moment (lb in.) +
1	Pilot	180·00	−145·90	26 262	
2	Two 230 gal. drop tanks (*pre Mod. 1242*) on inboard pylons	500·00	8·40		4 200
2A	Two 230 gal. drop tanks (*post Mod. 1242*) on inboard pylons	534·00	9·75		5 207
3	Two inboard pylons	125·00	15·80		1 975
4	Side struts for 230 gallon drop tanks	16·00	16·00		256
5	Two 100 gal. drop tanks on inboard pylons	300·00	16·40		4 920
6	R.P. removable mountings	130·00	70·00		9 100
7	Two outboard pylons (Post Mod. 1160)	94·00	74·20		6 975
8	Two outboard pylons	72·00	74·65		5 375
9	Two 100 gal. drop tanks on outboard pylons	300·00	77·25		23 175

TABLE 3—Expendable load items

Item Letter	Description	Weight (lb)	Arm (in.)	Moment (lb in.) −	Moment (lb in.) +
A	Ammunition	582·00	−98·75	57 473	
B	Fuel front tanks (202 gal.)	1 555·00	−40·50	62 978	
C	Fuel wing tanks (150 gal.)	1 155·00	−11·50	13 283	
D	Overload fuel in inboard 100 gal. drop tanks (200 gal.)	1 540·00	8·80		13 552
E	Overload fuel in inboard 230 gal. drop tanks (*pre Mod. 1242*) (478 gal.) Overload fuel in inboard 230 gal. drop tanks (*post Mod. 1242*)	3 681·00	8·80		32 393
P	Front compartment (*365 gal.*)	2 811·00	◀ −10·73	30 162	▶
Q	Rear compartment (*113 gal.*)	870·00	72·00		62 640
F	16 R.P. double tier 60 lb. head	1 520·00	44·20		67 206
G	8 R.P. single tier 60 lb. head	760·00	47·55		36 138
H	24 R.P. triple tier 25 lb. head	1 440·00	52·15		75 096
J	2 × 19 S.N.E.B./MATRA R.P. launchers, Type 116M (Operational) on outboard pylons	580·00	66·65		38 657
K	2 × S.N.E.B./MATRA R.P. launchers, Type 155 (rockets expended) on outboard pylons	394·00	66·75		26 300
M	2 × S.N.E.B./MATRA R.P. launchers, Type 116M (rockets expended) on outboard pylons	116·00	69·65		8 079
N	2 × 18 S.N.E.B./MATRA R.P. launchers, Type 155 (Practice) on outboard pylons	796·00	71·80		57 153
L	Overload fuel in outboard 100 gal. drop tanks (198 gal.)	1 525·00	69·65		106 216
O	Fuel, rear tanks (52 gal.)	400·00	119·50		47 800

FATIGUE INDEX DATA

Fatigue index data — introduction

General

9. The Fatigue Index is defined as a figure indicating the fatigue consumption of an aircraft as obtained from the application to the fatigue formula of fatigue meter readings or other assessments. It follows that the Fatigue Index figure will be inaccurate if recording is slovenly or should the fatigue meter be unserviceable. It is imperative that all personnel are aware of these two vital aspects to the conservation and safety of aircraft.

Assessing consumption of fatigue index

10. The most accurate current method of determining the Fatigue Index consumed is by means of a fatigue meter. This instrument includes a number of counters which indicate when "g" thresholds are exceeded. The substitution of these "g" counts in a formula gives the Fatigue Index consumed for the period concerned. There may be several formulae for one type of aircraft to correspond with different all-up weights, different weight distributions or different types of fatigue meters which may be fitted.

Unmetered flying

11. Unless a fatigue meter is fitted to the aircraft (*or when an installed fatigue meter is unserviceable*) fatigue consumption is assessed from details of the flying carried out. Different types of manoeuvre impose varying loads on aircraft and it is necessary to break down the flying carried out into the various sortie patterns expected in service. The particular theatre of operations may also affect the fatigue consumption of an aircraft and in such cases a separate factor or formula will be quoted for each theatre. It is then possible for the design authority to estimate a fatigue index consumption rate for each sortie pattern. Because fatigue damage estimates based on sortie patterns are derived from the average expected loadings, the rates are factored to allow for "worse case" situations. Thus, fatigue consumption assessed on a sortie pattern basis is extravagant when compared with the more accurate fatigue meter based index. Hence, it is essential that priority is always given to the replacement of defective fatigue meters.

Recording fatigue consumption data

12. The consumption of Fatigue Index is to be recorded on Form 700 and Form 4832A or B as appropriate. Instructions for compilation in the Form 700 are contained in the General Instructions for that form; the Forms 4832 Series are to be kept in the Form 4832, a manilla folder expressly designed for the purpose. All personnel responsible for the collection and compilation of fatigue data should appreciate the need for accuracy, neatness and legibility of the entries. Careless or incomplete recording is dangerous if it causes a less damaging sortie to be assumed; it is wasteful if in the interests of safety the worse case has to be assumed. In extreme cases, continued careless or incomplete recording can result in the expensive premature removal of an aircraft from service because of doubt regarding the true situation. Examples of correct and bad recording are shown in the associated A.D.101A–1200–D1, Aircraft Fatigue Recording.

Aircraft fitted with fatigue meters

13. The fatigue data for aircraft fitted with fatigue meters is to be recorded on Form 4832A or Form 700. In respect of Forms 4832A, the aircraft captain is responsible for action in the columns (a) to (l). The responsibility for reading the meter and completing columns (m) to (ad) may rest with either a crew member or servicing personnel depending on the type of aircraft. The Unit Engineering Records Section is responsible for calculating the Fatigue Index consumed. The attention of all personnel responsible for reading fatigue meters is to be drawn to the serviceability checks described in the publication "Fatigue Meters", A.P.112G–0203–1, Chapter 2.

Arcraft without fatigue meters

14. The captain of the aircraft is responsible for the accuracy of columns (a) to (l) in Form 4832B and the Unit Engineering Records Section is responsible for completing the cumulative totals, factorizing the flying hours, and expressing the life used as the Fatigue Index.

Refining of fatigue index

15. When the fatigue records for an aircraft show that its Fatigue Index is 80, action is to be taken in accordance with Leaflet C6 of A.P.3158, Vol. 2.

Changes in recording to be made on fitment of a fatigue meter

16. On fitment of the meter it will be necessary to obtain the Fatigue Index already consumed from the last Form 4832B and carry it forward to the first Form 4832A which will be brought into use on fitment of the meter.

Fatigue index data — application

General

17. The following data apply to all Mk. 9 aircraft, but note that special calculations are necessary for the ex. 92 and 111 Squadron aerobatic display team aircraft (*para. 27 to 29*).

Fatigue index

18. During comprehensive fatigue testing of the basic Hunter airframe fatigue damage was induced which caused failure in three main sections, viz:

(1) *Front fuselage* — upper longerons forward of the front transport joint.

(2) *Centre fuselage* — lower tie-bar at Frame 25, plus stringer "E" and rear spar attachment fitting.

(3) *Wing* — root end lugs (wing-to-fuselage attachment).

19. Fatigue consumption of the foregoing three sections of the aircraft must be recorded and calculated separately using the formulae and factors given in para 26. The safe fatigue life of each section is FI = 100, but life extensions may be obtained as follows:

(1) *Front Fuselage.* At or before FI = 100, the front fuselage can be restored once only to "as new" condition (FI = 0) by embodying Modification Hunter 1330. If not already embodied, Modifications Hunter 943 and 1014 must be embodied concurrently.

(2) *Centre Fuselage.* There is no recovery scheme for the centre fuselage, which thus governs the total fatigue life of the aircraft.

(3) *Wing.* At or before FI = 100, a wing can be restored to "as new" condition (FI = 0) by renewing the steel bottom boom to repair sketch D.41170. This is a Category Four repair.

Note . . .

If the life of a Front Fuselage or Wing is renewed under sub-para (1) or (3), fatigue consumption for the item concerned is to begin again from ZERO FI. The relevant Fatigue Sheets and log card (F.4801 and/or 4805) are to be endorsed "SECOND LIFE".

Critical components

20. In addition to the main critical areas described above there are two other critical components as follows:—

(1) *Fuselage* — main plane front locating spigot.

(2) *Fuselage front transport joint* — top spigots and nuts.

The above items are fatigue-indexed in relation to the main critical areas, as described in para. 25.

Fatigue meters

21. Mk.2D meters were fitted under Mod. Hunter 870, Mk.14 meters under Mod. Hunter 951 and Mk.15 meters under Mod Hunter 1273.

22. The key to the letters quoted in the metered formulae in para. 26 is as follows:—

Mk.2D meter		Mk.14 meter	
"g" level	Counts	"g" level	Counts
−1·5	C1	−1·5	C1
−0·5	C2	−0·5	C2
2·5	C3	0·25	C3
3·5	C4	1·75	C4
4·5	C5	2·5	C5
6·0	C6	3·5	C6
		5·0	C7
		7·0	C8

Mk.15 meter

"g" level	Counts
−1·5	C1
−0·5	C2
0·25	C3
2·5	C4
3·5	C5
5·0	C6
7·0	C7
8·0	C8

Fatigue index data — calculation

General

23. Separate fatigue indices are to be calculated for the FRONT and CENTRE FUSELAGE and the WINGS, in which the critical areas are the top longerons, the lower tie-bars at frame 25, and the main wing-to-fuselage attachment lugs respectively.

Fatigue life

24. All Hunter Mk. 9 aircraft were converted from Mk. 6 but the full ground attack standard was not achieved until the embodiment of Mod. 942, 943 and 1014. These modifications were done either during conversion or some time after. Fatigue damage rate on the FRONT FUSELAGE (*upper longerons*) was reduced considerably by embodiment of Mod. 943. At the same time, coincident with use of the aircraft in the full GA role, fatigue damage rate to the WINGS and CENTRE FUSELAGE increased. All flying (*both as Mk. 6 and Mk. 9*) *prior* to embodiment of Mod. 943 is treated as Mk. 6 flying from the fatigue aspect. Flying in the GA role *after* embodiment of Mod. 943 introduces different fatigue factors (*decreased for the FRONT fuselage, increased for WINGS and CENTRE fuselage*).

Critical components

25. (1) *Fuselage front transport joint.* The top spigots and nuts must be replaced by the time 43 Index is reached on the FRONT fuselage. Embodiment of Mod. 943 satisfies this requirement and eliminates these items as fatigue-lifed components.

(2) *Fuselage — main plane front locating spigots.* These spigots are lifed at 25 Index on the CENTRE FUSELAGE. When this point is reached, the spigots become subject to the requirements of S.I. Hunter 96. Replacement of spigots under Mod. 1327 and 1334 (controlled by MOD) removes the lifing.

(Continued overleaf)

Fatigue consumption calculations

26. Fatigue Index consumption for front fuselage and wings is to be calculated as shown below, the results being added together to give total consumption for each component. If a wing is changed, separate calculations must be made for each wing thereafter.

(1) *All flying pre. Mod. 943.* Fatigue consumption during all flying prior to the embodiment of Mod. 943 (*both as Mk. 9 and as Mk. 6 before conversion*) is to be calculated using the formulae and/or factors for Mk. 6 aircraft given below for front fuselage and wings. Fatigue Index for the centre fuselage is to be taken as HALF that calculated for the wings.

(*a*) *Unmetered flying.* The fatigue index consumed per hour of unmetered flying is as follows :—

Role	Front fuselage	Wing
High altitude interceptions	0·0061	0·003
General handling, continua-tion training and general flying (*including recce, formation, cross-country, etc.*)	0·021	0·013
Air-to-air, combat, cine	0·064	0·040
Ground attack, aerobatics	0·132	0·089

Note . . .

Fatigue consumption prior to installation of a fatigue meter or during periods of meter unserviceability is to be calculated as above. Where sortie details are not available, however, the fatigue index consumed per flying hour may be taken as :—

Chivenor (No.229 OCU) flying		
(a) No. 3 Squadron since 1st July, 1966 (*approx. date of introduction of Mk. 10 aircraft at Chivenor*)	0·062	0·041
(b) All other non-Chivenor flying	0·054	0·036

(*b*) *Metered flying.* The fatigue index consumed during metered flying is to be calculated as shown in Table 4.

TABLE 4 — Metered flying formulae

Type of meter	Front fuselage	Wing
Mk.2D	1/1000 (1·7 C1 + 0·76 C2 + 0·58 C3 + 0·92 C4 + 2·06 C5 + 3·27 C6)	1/1000 (1·18 C1 + 0·55 C2 + 0·3 C3 + 0·66 C4 + 1·46 C5 + 2·35 C6)
Mk.14	1/1000 (1·3 C1 + 0·85 C2 + 0·036 C3 + 0·042 C4 + 0·41 C5 + 1·31 C6 + 3·09 C7 + 4·27 C8)	1/1000 (0·95 C1 + 0·37 C2 + 0·23 C3 + 0·015 C4 + 0·24 C5 + 0·9 C6 + 2·19 C7 + 3·09 C8)

(2) *All flying Post-Mod. 943.*

(*a*) *Unmetered flying.* For any period of flying *without* fatigue meter fitted or with meter unserviceable, the fatigue index consumed per flying hour is to be calculated as follows :—

	Front fuselage	Centre fuselage	Wing
(*a*) Cross-country, Ferry and Navex	0·0032	0·0039	0·008
(*b*) General high-level flying, Recce, Training, Air-tests	0·006	0·0071	0·015
(*c*) General low-level and medium-level flying, Cine, Combat and Formation flying ...	0·011	0·013	0·027
(*d*) Ground attack	0·032	0·037	0·073
(*e*) Aerobatics	0·034	0·040	0·077

Note . . .

For any period of flying, where the above factors cannot be applied because sortie pattern details have been lost, the fatigue index consumed per flying-hour may be taken for retrospective calculations as :—

Front fuselage	Centre fuselage	Wing
0·016	0·020	0·040

(*b*) *Metered flying*. The fatigue index consumed is to be calculated from fatigue meter records by the formulae in Table 4.

TABLE 4 — Metered flying formulae

Type of meter	Front fuselage	Centre fuselage	Wing
Mk.2D	1/1000 (0·62 C1 + 0·32 C2 + 0·051 C3 + 0·25 C4 + 0·59 C5 + 1·33 C6)	1/1000 (0·71 C1 + 0·38 C2 + 0·072 C3 + 0·29 C4 + 0·68 C5 + 1·5 C6)	1/1000 (1·17 C1 + 0·7 C2 + 0·23 C3 + 0·55 C4 + 1·18 C5 + 2·49 C6)
Mk.14	1/1000 (0·55 C1 + 0·3 C2 + 0·025 C3 + 0.00008 C4 + 0·051 C5 + 0·33 C6 + 0·98 C7 + 1·56 C8)	1/1000 (0·61 C1 + 0·35 C2 + 0·037 C3 + 0·0004 C4 + 0·07 C5 + 0·38 C6 + 1·11 C7 + 1·76 C8)	1/1000 (C1 + 0·59 C2 + 0·14 C3 + 0·008 C4 + 0·2 C5 + 0·72 C6 + 1·9 C7 + 2·9 C8)
Mk.15	1/1000 (0·55 C1 + 0·3 C2 + 0·025 C3 + 0·051 C4 + 0·33 C5 + 0·98 C6 + 1·56 C7 + 1·7 C8)	1/1000 (0·61 C1 + 0·35 C2 + 0·037 C3 + 0·07 C4 + 0·38 C5 + 1·11 C6 + 1·76 C7 + 1·95 C8)	1/1000 (C1 + 0·59 C2 + 0·14 C3 + 0·2 C4 + 0·72 C5 + 1·9 C6 + 2·9 C7 + 3·2 C8)

Ex-Display team aircraft

27. The following aircraft are known to have been used in No. 92 and 111 Squadron aerobatic display teams, prior to conversion to Mk. 9 :—

XE 532, XF 416, 430, 446, 511, XG 194, 228.

28. In the absence of detailed records covering the periods of display team flying, the proportion of flying in No. 111 and 92 Squadrons to be counted as aerobatic, and the periods covered, are to be taken as follows :—

111 Squadron — 1956, 20 per cent.
1957 to 1960 inclusive, 50 per cent.

92 Squadron — 1960 and 1963, 20 per cent.
1961/62, 50 per cent.

29. Fatigue consumption during aerobatic flying, assessed as in para. 28 or taken from actual records, is to be calculated using the factors given in para. 25 (*1*)(*a*) for the aerobatic role.