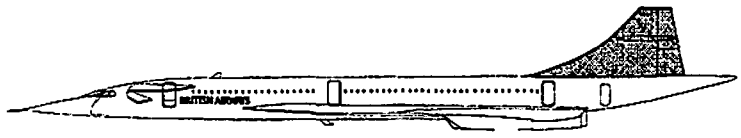
BRITISH AIRWAYS



Concorde

Load & Balance Manual

ATP No. 1806

Serial No. .....

Holder No. .....

This Manual complies with ANO(1995) Article 27, BCAR B5-3 and B7-3, JAR OPS 1, SubPart J Commander's Exemption File ref. 10A/X/441, Secondary Procedure AL-15-05 and QSD Technical Procedure SD 16.3. The inclusion of an uncertified revision will invalidate this certification.

Signed ..... Steve Slater

Head of Technical & Training and where applicable, on behalf of the Engineering Technical and Quality Director.

Date .....20 September 2002.....

CAA Approval No.DAI/8566/78

This publication forms part of the British Airways approved Operations Manual.

BRITISH AIRWAYS

Concorde Load & Balance
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LETTER OF TRANSMITTAL - REV 150
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BALANCE CHART

C530/1	V465(Issue E)
C535/1	V466(Issue E)
C540/1	V467(Issue E)

British airways

TEMPORARY REVISION RECORD SHEET

Rev No	Date Entered	Initials	Rev No	Date Entered	Initials	Rev No	Date Entered	Initials

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TEMPORARY REVISION RECORD SHEET

Rev No	Date Entered	Initials	Rev No	Date Entered	Initials	Rev No	Date Entered	Initials

LETTER OF TRANSMITTAL - REV 142
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Approved Design Signator: D.R.A.F. Lemin

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BALANCE CHART

C530/1	V465(Issue E)
C535/1	V466(Issue E)
C540/1	V467(Issue E)

LETTER OF TRANSMITTAL - REV 141
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BALANCE CHART

C530/1	V465(Issue E)
C535/1	V466(Issue E)
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BALANCE CHART

C530/1	V465(Issue E)
C535/1	V466(Issue E)
C540/1	V467(Issue E)

LETTER OF TRANSMITTAL - REV 139
AND
LIST OF EFFECTIVE PAGES

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Approved Design Signator: D.R.A. Fleming

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BALANCE CHART

C530/1	V465(Issue E)
C535/1	V466(Issue E)
C540/1	V467(Issue E)

LETTER OF TRANSMITTAL - REV 138 AND LIST OF EFFECTIVE PAGES

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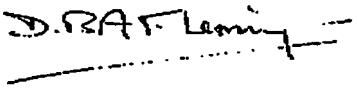
This permanent revision complies with ANO (1995) Article 27, BCAR B5-3 and B7-3, JAR OPS 1, Secondary Procedure AL-15-05 and QSD Technical Procedure SD 16.3.

Approved Design Signator 

This manual consists of the following pages, listed to show the latest issue date of each, enabling a complete check of all pages to be made.

1. Instructions for the insertion of pages issued with this revision and where applicable for the removal of sheets not being replaced are given below.
2. REMOVE & DESTROY any page having the same page reference as a replacement page issued with this revision.
3. REMOVE & DESTROY the List of Effective Pages dated before 17 December 1998 from the front of the manual and INSERT this sheet in its place.
4. Record this revision number on the Record Sheet in front of the Manual.

Chapter Section		Page	Date
Title Page/Rev.Record	Insert		31 Mar.99
Load & Balance Info	Insert		31 Mar.99
Summary of Changes	Insert		31Mar.99
List of Effective Pages	Insert		31 Mar.99
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BALANCE CHART

Insert	C530/1	V465(Issue E)
Insert	C535/1	V466(Issue E)
Insert	C540/1	V467(Issue E)

CHAPTER 1

Contents

Weight & Balance

A. Maximum Weights

Maximum Taxi Weight	186,880kg
Maximum Take-Off Weight	185,070 kg *
Maximum Landing Weight	111,130 kg
Maximum Zero Fuel Weight	92,080 kg

* Maximum Take Off Weight at aerodromes in the USA is restricted to 182,250 kg (RTOW)

B. Centre of Gravity Limits

1. Take-Off

(a) Take off at weights less than 140,000kg, use **53.0% Co**

(b) Take off at weights of 140,000kg or more and take off fuel **NOT GREATER** than 1500 kg more than that given in Table 5 for the actual aircraft zero fuel condition, use **53.5% Co**

(c) Take off at weights of 140,000kg or more and take off fuel weights **GREATER** than 1500 kg more than those given in Table 5 for the actual aircraft zero fuel condition, use **54.0% Co**.

NOTE: Pre Take-off Transfer from Tank 9 to Tank 11 is not permitted to achieve 54% Take-off CG (see Chapter 6).

2. Landing

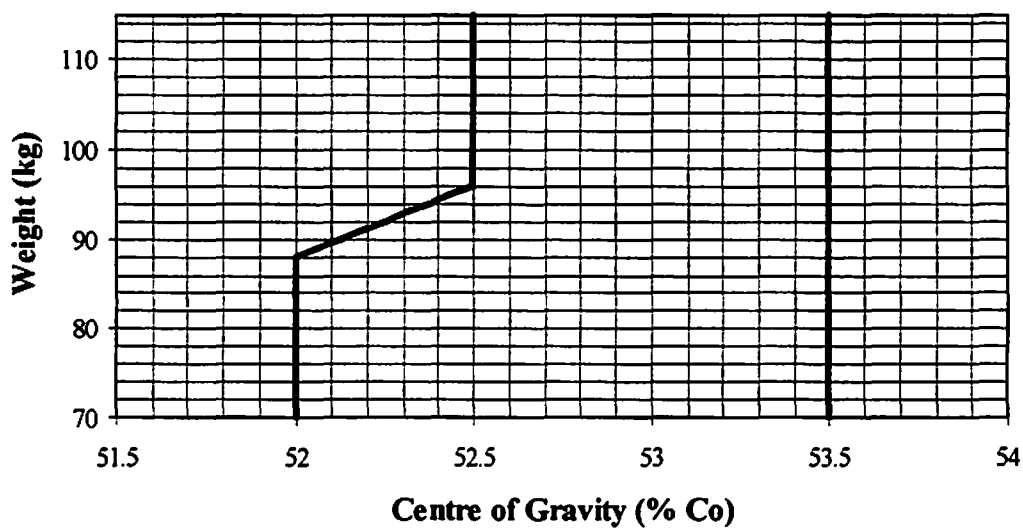
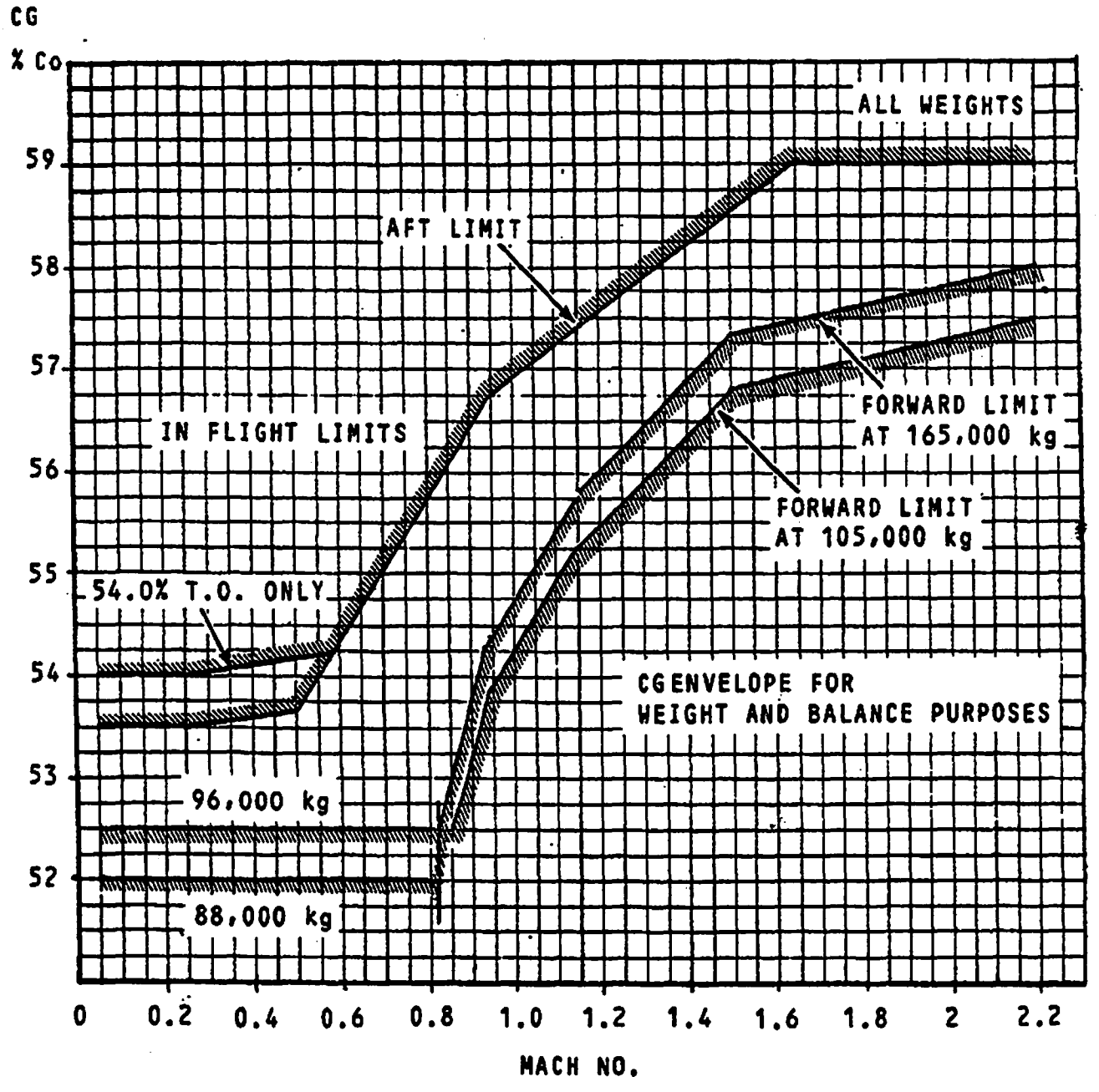


Figure 1: Centre of Gravity Limits for Landing

3. In Flight

Ref. Fig 2



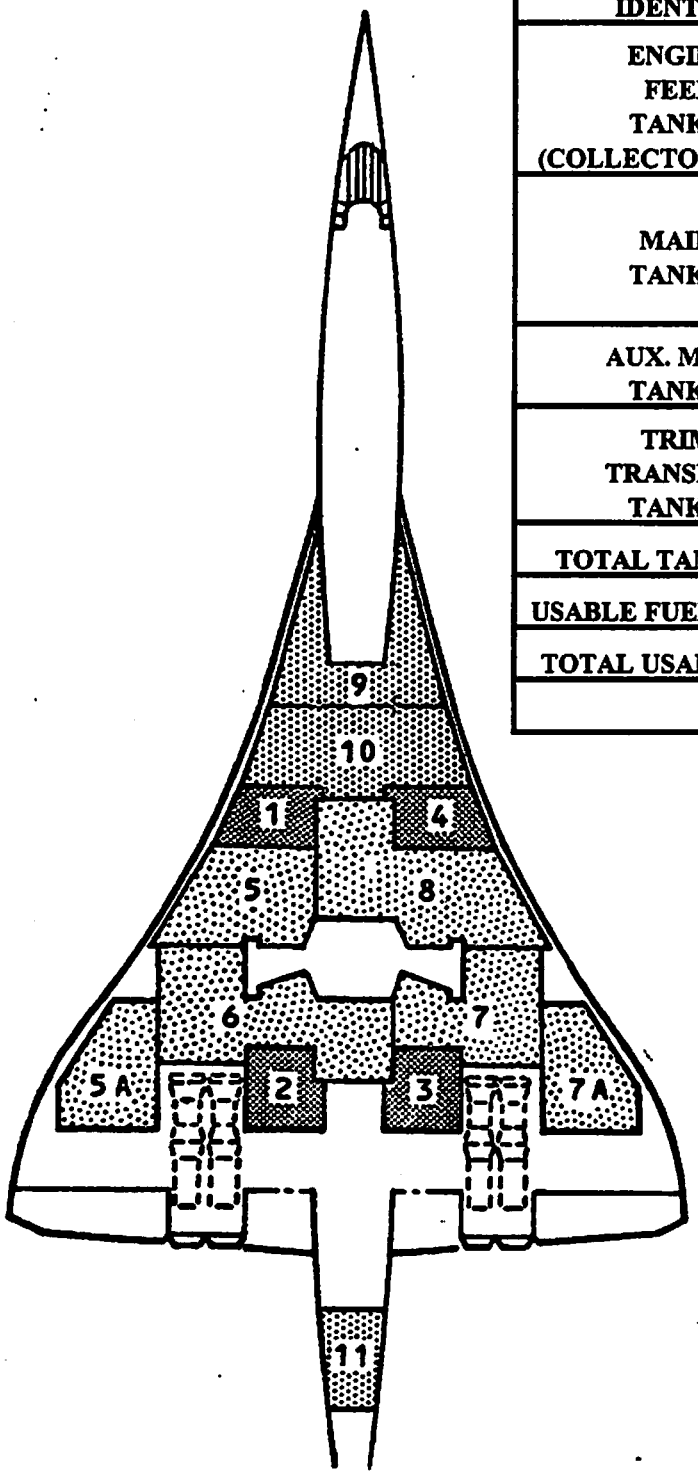
Note: *The limits shown are for Weight & Balance purposes.*
They are not the Warning Limits.
For Flying Limits see the Flight Manual

Figure 2: Centre of Gravity Limits for In Flight

C. Fuel

(i) Fuel Tank Arrangement

1. The fuel tanks arrangement and usable fuel quantities are shown in the figure and table below:-



TANK IDENTITY	TANK NO.	WEIGHT (Kg)
ENGINE FEED TANKS (COLLECTOR	1 2 3 4	4156 4560 4560 4156
MAIN TANKS	5 6 7 8	7120 11547 7390 12739
AUX. MAIN TANKS	5A 7A	2220 2220
TRIM TRANSFER TANKS	9 10 11	11070 11910 10390
TOTAL TANK		94018
USABLE FUEL IN		370
TOTAL USABLE		94388
FUEL DENSITY 0.79		

2. Unusable Fuel - The total unusable fuel quantity is 421 kg.

(ii) Fuel Loading and Trimming

1. Maximum Take-Off Fuel

The maximum fuel that can be loaded at take-off is a function of the Zero Fuel Weight and Centre of Gravity (CG) and is limited by the following:-

a) Take-off C. G. of 53.5% Co

or

b) Take-off C. G. of 54.0% Co

or

c) The maximum structural take-off weight

Further limits may be imposed by performance restrictions on Take-off weight or the tanks may be volume limited.

The TOCG decision, above 140,000 kg, is a function of the LIZFW and the DELTA tank 11 fuel only.

If all fuel tanks are filled, including Tank 11 then the resulting aircraft CG will lie aft of the required Take-Off C. G. (53.5% or 54.0%). Fuel must therefore be burnt off from Tank 11 during taxi to move the aircraft CG forward to that appropriate for take-off.

If the Tank 11 burn-off exceeds the taxi allowance then the fuel will be burnt needlessly and the Flight Plan fuel for take-off may not be available.

Loading of fuel for take-off in excess of the maximum for the appropriate Take-off CG will lead to excess burn-off before take-off.

The maximum Take-off CG limited by fuel is increased by achieving a more forward Zero Fuel CG position.

Table 5 (01-01-08A) entitled Maximum Take-off fuel indicates:-

(A) The maximum Take-off fuel called "Take-off CG limited fuel at 53.5% Co" for a range of Zero Fuel weights and Zero fuel CG's, at a density of 0.79 kg.litre ignoring Take-off weight limits.

(B) The correction to be applied to the total fuel quantity for specific gravities from 0.725 to 0.854 (inclusive)

(C) An instruction that up to 1500 kg more fuel than shown in the table can be loaded for Take-off at 54.0% Co.

The 'Maximum Take-off Fuel" for any particular flight will be the maximum that can be loaded without infringing the following:-

- Maximum Structural Take-Off Weight Limit
- RTOW limit
- Take-off CG Limit of 53.5% Co or 54.0% Co (as corrected for fuel density) + HLI
- Fuel Tank Capacity

To obtain the "Take-off CG limited Fuel at 53.5% Co" enter the table with Zero Fuel weight and Zero Fuel CG and read off the fuel amount. If the fuel density is different from 0.79 kg/litre an adjustment to the total fuel must be made by adding or subtracting the "Fuel Density Correction" found in the lower table.

To obtain the "Take-off CG limited Fuel at 54.0% Co" follow the procedure described in the preceding paragraph and add.

(2) Recommended Fuel Distribution

Refuelling of the aircraft is carried out to a fixed schedule tabulated for a range of fuel densities.

A sample table (density 0.799 to 0.800 kg/litre) is shown in Table 6 and a complete set of tables is included in the Fluid Replenishment Manual.

The fuelling schedule tables are arranged in increments of 1,000kg for total fuel loads up to approximately 83,000 kg - 94, 000 kg (depending on density) and in increments of 200 kg above these quantities. It is recommended that the fuel required be "rounded up" to the nearest value in the table but a more precise total can be obtained using the interpolation tables for 100 kg increments at the bottom of each main table.

Those tanks that are selected "full" will shut-off at "high level" and give a fuel quantity accuracy within 0.5%. Investigation is necessary if the discrepancy is either negative or exceeds +2%.

Tanks that are part-full may be "topped up" until the gauges read the precise quantity required. The correction will always be small.

(3) Refuelling Procedure

The refuelling procedure is laid down in the Fluid Replenishment Manual. A copy of the 'Refuelling Sheet' , which will record the fuel quantities as loaded into the tanks, is included for reference only.

(4) Pre-Take-Off Transfer

When the Zero Fuel Weight and Zero Fuel CG of the aircraft have been established the required pre take-off transfer is obtained by completing that part of the balance chart below the Zero Fuel Grid (as explained in Section 6).

The refuelling tables are compiled so as to give a constant fuel moment up to the fuel level at which tanks 1-10 (inclusive) are full. At this point there will be some fuel in tank 11. Above this quantity the additional fuel, which can only be put into tank 11, will move the CG aft. This additional fuel is designated "Delta Tank 11 fuel."

The "Delta Tank 11 Fuel" is obtained from Table 2 (see 06-03-06) using either:-

The total amount of fuel in Tank 11 obtained from either the Fuel Loading Tables for the appropriate density or from the Fuel sheet.

Or

The total amount of fuel used in entering the appropriate Fuel Loading Table for the density of fuel uplift (i.e. required fuel plus 500kg allowance for hot residual fuel).

NOTE: Maximum Pre Take-off burn-off from Tank 11 is:-
1800 kg for 54% Take-off CG and
3300 kg for 53.5% Take-off CG

Note: When HLI fuel is used the Delta Tank 11 fuel is the same as for full tanks. When calculating final tank 11 fuel, for take off, the tank 11 contents used before subtracting the PTOBO must include the tank 11 HLI increment.

(5) In-Flight Regime

(a) Rearwards transfer for Supersonic Flight

To avoid transgression of the nominal aft CG limit of 59% Co at termination of rearward transfer it is only necessary to derive the quantity of fuel required in tank 11. This is obtained from table 7 by entering with the Zero Fuel Weight and Zero Fuel CG and reading off the "Tank 11 initial cruise " quantity. Table 7 is compiled for a fuel weight of 70,000 kg at start of cruise. For other fuel weights at start of cruise, a correction must be made to the "tank 11 initial cruise" quantity by referring to the "Start of Cruise Fuel Weight Correction to Initial Cruise Quantity " table (also shown in Table 7.

(b) Trimming during Cruise

During cruise the aircraft CG will be adjusted so as to maintain an elevon angle of 0.5^{O} DOWN. A rearward CG movement can be obtained by selecting "Tanks 1 and 4 to aft trim" and a forward CG movement by transferring fuel from tank 11 to the main tanks (5 and 7).

(c) Maximum Fuel at M = 1.5

In extreme combinations of very high fuel load, and low ambient temperatures it is possible that the fuel remaining at M = 1.5 (the critical point on the forward CG limit) will be in excess of that which enables the required aft CG to be obtained. In these cases it will be necessary to ld hold Mach No. For a period so that the forward CG boundary is not infringed. The maximum l fuel penalty will not exceed 500 kg. To obtain the maximum permissible fuel at M = 1.5 enter table 8 with Zero fuel Weights and Zero Fuel CG, read off the " Maximum Permissible fuel" and correct for fuel densities other than 0.790 kg/litre by referring to the lower table.

Note: In practice this is only likely to be an operational limitation following a direct acceleration with a high fuel load and low upper atmosphere temperatures.

(d) Minimum Fuel for Continued Supersonic Cruise

During the latter part of supersonic cruise, the level of fuel in each of the collector tanks is maintained above 2500 kg by transferring from Tank 11. This procedure will move the aircraft CG forward, until the forward CG boundary is approached, at which point transfer from Tank 11 is stopped. The level in each engine feed tank is then allowed to fall to 1000 kg and when this situation is reached deceleration must commence. To obtain the fuel quantity appropriate to this condition enter Table 9 with Zero Fuel Weight and Zero Fuel CG and read off the "Minimum Fuel for Continued Supersonic Cruise."

(e) Forward Transfer for Landing

For Landing it may be necessary to transfer fuel forward into tank 9. The amount required will be found by entering Zero Fuel CG and Landing Fuel Weight into Table 10 and reading off the "Tank 9 Landing Fuel."

NOTE: The " Tank 9 Landing Fuel" includes any necessary forward ballast fuel (see section 6). As the landing fuel weight decreases so the tank 9 landing fuel decreases until ultimately the tank is either empty or contains only ballast fuel.

(5) Take-off at Weight Less than 140, 000 kg

With fuel distribution corresponding to Take-off Weights of less than 140,000 kg it is possible for the indicated CG to move aft a substantial amount during climb due to the attitude/quantity response of the F.Q.I. system of tanks 9 and 11.

(6) Take-Off at 54.0% Co

Take-off at 54.0% is only permitted with fuel loads greater than the maximum fuels associated with take-off at 53.5% Co (see section 6 or table 5).

The MAXIMUM fuel for take-off at 54.0% Co is 1500 kg greater than the quantities shown in table 5. Taxi fuel in excess of tank 11 burn-off value given on the Balance Chart should be burnt from the collector tanks.

(7) Maximum Fuel Tank Capacity

Use of 54.0% Take-off CG increases the possibility of fuels loads up to Maximum Fuel Tank Capacity being required. Table 11 in this section gives the nominal maximum tank capacity for the full range of fuel densities.

(8) Use of High Level Incremental Fuel (HLI)

This fuel must be loaded according to the instructions contained in the Fluid Replenishment Manual. There is no index effect when the fuel is loaded according to these instructions and therefore no adjustment is necessary to the Balance Chart. The Loadsheet must include the HLI fuel. Both Maximum Take-off Fuel (Table 5) and Maximum Fuel Tank Capacity (Table 11) are increased by the amount of HLI fuel.

The use of HLI fuel requires the achievement of a forward ZFCG to prevent excessive amounts of Pre Take-off burn off from Tank 11.

Table 12 in this section gives the maximum Tank 11 burn-off that may be planned and which is limited by the Taxi Fuel allowance and the amount of HLI fuel required.

Note:- The requirement to obtain a Zero Fuel CG sufficiently forward are worsened by the use of High Density Fuel.

Table 13 in this section shows the rearmost ZFCG that can be planned for 1000 kg taxi and 1200kg HLI fuel, together with a correction table giving the effect of less restrictive taxi fuel and HLI fuel values.

(9) Ground Stability During Refuelling

When refuelling the aircraft all the refuel inlet valves to tanks which require fuel are selected to open. If the aircraft becomes tail heavy the weight switches on the nose landing gear will operate and close the inlet valves of tanks aft of the landing gear. On occasions, with high fuel loads, it may not be possible to load the taxi fuel into Tank 11 until the crew and payload are on the aircraft. *For hold loading/unloading rules see section 6.*

(10) Ground Stability After Landing

During taxi bring the total quantity of fuel in Tank 9 up to 4000 kg to ensure stability of the aircraft during unloading of payload and crew.

When landing fuel loads are low and 4000 kg cannot be achieved in Tank 9 then maintain the highest practicable quantity and ensure that the rear hold is unloaded before the forward hold. Additionally Technical and Cabin Crew should remain on the aircraft until all passengers have disembarked.

For hold loading/unloading rules see section 6.

(11) Failed CG Indicator

On the rare occasions of losing CG indication, the aircraft is trimmed to elevon angle above high subsonic Mach No's. A manual chart, shown in Figure 15 is available to monitor aircraft CG and/or the HP200L Portable Computer can also be used.

Compilation of the chart is as follows:-

(a) Plot the Zero Fuel Weight and Zero Fuel CG in the top grid.
(b) Drop a vertical line, from the point obtained in (a), to the first applicable tank until the vertical line meets one of the oblique lines on the scale.
(c) Draw a horizontal line in the direction indicated by the arrow at the end of the scale for a distance corresponding to the tank quantity.
(d) Repeat the process for all relevant tanks and then drop a vertical line into the Aircraft Weight/CG grid.
(e) Obtain the aircraft total weight from the total of Zero Fuel Weight and fuel in tanks.
(f) Mark the intersection of aircraft weight with the vertical line from (d) above.
(g) Drop a vertical line into the fuel transfer scales and choose a fuel transfer or transfers to achieve a CG within the CG/Mach. No. Corridor shown on the left hand side.

Maximum Take-off Fuel

Take-off CG Limited Fuel at 53.5% Co (1,000 kg) (Fuel Density = 0.790)								
ZFCG	ZFWt x 1,000 kg							
% Co	78.0	80.0	82.0	84.0	86.0	88.0	90.0	92.0
51.5	93.0	93.1	93.2	93.2	93.3	93.4	93.4	93.5
51.6	92.9	93.0	93.0	93.1	93.1	93.2	93.3	93.3
51.7	92.7	92.8	92.9	92.9	93.0	93.1	93.1	93.2
51.8	92.6	92.7	92.7	92.8	92.9	92.9	93.0	93.0
51.9	92.6	92.6	92.6	92.7	92.7	92.8	92.8	92.9
52.0	92.4	92.4	92.5	92.5	92.6	92.6	92.7	92.7
52.1	92.3	92.3	92.3	92.4	92.4	92.5	92.5	92.6
52.2	92.2	92.2	92.2	92.2	92.3	92.3	92.4	92.4
52.3	92.0	92.0	92.1	92.1	92.1	92.2	92.2	92.3
52.4	91.8	91.9	91.9	92.0	92.0	92.0	92.1	92.1
52.5	91.0	91.8	91.8	91.8	91.9	91.9	91.9	92.0
52.6	91.6	91.6	91.7	91.7	91.7	91.7	91.8	91.8
52.7	91.5	91.5	91.5	91.5	91.6	91.6	91.6	91.0
52.8	91.3	91.4	91.4	91.4	91.4	91.5	91.5	91.5
52.9	91.2	91.2	91.3	91.3	91.3	91.3	91.3	91.4
53.0	91.1	91.1	91.1	91.1	91.1	91.2	91.2	91.2
53.1	91.0	91.0	91.0	91.0	91.0	91.0	91.0	91.0
53.2	90.8	90.8	90.8	90.9	90.9	90.9	90.9	90.9
53.3	90.7	90.7	90.7	90.7	90.7	90.7	90.7	90.7
53.4	90.6	90.6	90.6	90.6	90.6	90.6	90.6	90.6
53.5	90.4	90.4	90.4	90.4	90.4	90.4	90.4	90.4
53.6	90.3	90.0	90.3	90.3	90.3	90.3	90.3	90.3
53.7	90.2	90.2	90.2	90.2	90.2	90.1	90.1	90.1
53.8	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
53.9	89.9	89.9	89.9	89.9	89.9	89.9	89.9	89.8
54.0	89.8	89.8	89.8	89.7	89.7	89.7	89.7	89.7
54.1	89.7	89.6	89.6	89.6	89.6	89.5	89.5	89.5
54.2	89.5	89.5	89.5	89.5	89.4	89.4	89.4	89.4
54.3	89.4	89.4	89.4	89.3	89.3	89.2	89.2	89.2
54.4	89.3	89.2	89.2	89.2	89.2	89.1	89.1	89.1
54.5	89.1	89.1	89.1	89.0	89.0	88.9	88.9	88.9
54.6	89.0	89.0	89.0	88.9	88.9	88.8	88.8	88.7
54.7	88.8	88.8	88.8	88.8	88.7	88.7	88.7	88.6
54.8	88.7	88.7	88.7	88.7	88.3	88.5	88.5	88.5
54.9	88.6	88.6	88.5	88.5	88.4	88.4	88.4	88.3
55.0	88.4	88.4	88.4	88.4	88.3	88.3	88.3	

May Include Ballast Fuel Check Load Sheet

May Include Ballast Fuel Check Load Sheet

Fuel Density Correction

Density	Corrn	Density	Corrn	Density	Corrn	Density	Corrn	Density	Corrn
.725 - .729	-7.4	.770 - .771	-2.3	.787 - .788	-0.3	.805 - .806	+1.7	.823 - .824	+3.8
.730 - .734	-6.9	.772 - .773	-2.1	.789 - .790	-0.1	.807 - .808	+1.9	.825 - .826	+4.0
.735 - .739	-6.3	.744	-1.8	.791 - .792	+0.1	.809 - .810	+2.2	.827 - .828	+4.2
.740 - .744	-5.7	.775 - .776	-1.7	.793 - .794	+0.3	.811 - .812	+2.4	.829 - .830	+4.5
.745 - .749	-5.1	.777 - .778	-1.5	.795 - .796	+0.6	.813 - .814	+2.6	.831 - .832	+4.7
.750 - .754	-4.6	.779 - .780	-1.3	.797 - .798	+0.8	.815 - .816	+2.9	.833 - .834	+4.9
.755 - .759	-4.1	.781 - .782	-1.0	.799 - .800	+1.0	.817 - .818	+3.1	.835 - .839	+5.1
.760 - .764	-3.5	.783 - .784	-0.8	.801 - .802	+1.3	.819 - .820	+3.3	.840 - .844	+5.7
.765 - .769	-2.9	.785 - .786	-0.6	.803 - .804	+1.5	.821 - .822	+3.5	.845 - .849	+6.3
								.850 - .854	+6.9

Key: Density (kg/Litre) & Corrn (1000 kg)

Maximum Fuel For Take-off at 54.0% Co is 1500 kg greater than the quantities derived from the tables above.

Maximum Fuel for Take-off is increase by the amount of High Level Incremental (H.L.I.) Fuel.

TABLE 5

BRITISH AIRWAYS

01-01-10

Concorde Load & Balance

31 March 99

Concorde
Fluid Replenishment Manual

kg/litre Density (kg/Imp.Gall)	.799/.800
	3.64

	Tanks 1,2,3 & 4 Full								
Total	5A	7A	5	6	7	8	9	10	11
25000	270	270	0	0	0	0	6390	0	0
26000	590	590	0	0	0	0	6750	0	0
27000	910	910	0	0	0	0	7110	0	0
28000	1220	1220	0	0	0	0	7490	0	0
29000	1540	1540	0	0	0	0	7850	0	0
30000	1850	1850	0	0	0	0	8230	0	0
31000	2170	2170	0	0	0	0	8590	0	0
31220	2240F	2240F	0	0	0	0	8670	0	0
32000			0	0	0	0	9160	0	290
33000			0	0	0	0	9780	0	670
34000			0	0	0	0	10400	0	1050
35000			0	0	0	0	11020	0	1430
35280			0	0	0	0	11200F	0	1530
36000			0	0	0	0		520	1730
37000			0	0	0	0		1250	2000
38000			0	0	0	0		1970	2280
38430			0	0	0	0		2280	2400
39000			0	250	0	250		2350	2400
40000			0	690	0	690		2470	2400
41000			0	1130	0	1130		2590	2400
42000			0	1570	0	1570		2710	2400
43000			0	2010	0	2010		2830	2400
44000			0	2440	0	2440		2970	2400
45000			0	2880	0	2880		3090	2400
46000			0	3320	0	3320		3210	2400
47000			0	3760	0	3760		3330	2400
48000			0	4200	0	4200		3450	2400
49000			0	4640	0	4640		3570	2400
50000			0	5080	0	5080		3690	2400
51000			0	5520	0	5520		3810	2400
52000			0	5960	0	5960		3930	2400
53000			0	6400	0	6400		4050	2400
54000			0	6830	0	6830		4190	2400
55000			0	7270	0	7270		4310	2400
56000			0	7710	0	7710		4430	2400
57000			0	8150	0	8150		4550	2400
58000			0	8590	0	8590		4670	2400
59000			0	9030	0	9030		4790	2400
60000			0	9470	0	9470		4910	2400
61000			0	9910	0	9910		5030	2400
62000			0	10350	0	10350		5150	2400
63000			0	10780	0	10780		5290	2400
64000			0	11220	0	11220		5410	2400
65000			0	11660	0	11660		5530	2400
65060			0	11690F	0	11690F		5530	2400
66000			430		0			5530	2480
67000			890		0			5530	2560
67830			1270		0			5530	2630
	(kgs) per 100 kgs increment								
Between	5A	7A	5	6	7	8	9	10	11
25000									
31220	30	30	0	0	0	0	40	0	0
35280	0	0	0	0	0	0	60	0	40
38430	0	0	0	0	0	0	0	70	30
65060	0	0	0	45	0	45	0	10	0
67830	0	0	45	0	0	45	0	0	10

NOTE: Total includes system usable of 370 kgs

BRITISH AIRWAYS

01-01-11

Concorde Load & Balance

31 March 99

kg/litre Density	.799/.800
(kg/Imp.Gall)	3.64

Fuel Loading Table

Tanks 1,2,3,4,5A,7A,6, 8 & 9 Full				
Total	5	7	10	11
67830	1270	0	5530	2630
68000	1340	70	5560	2630
69000	1780	510	5680	2630
70000	2210	940	5820	2630
71000	2640	1370	5960	2630
72000	3080	1810	6080	2630
73000	3510	2240	6220	2630
74000	3940	2670	6360	2630
75000	4380	3110	6480	2630
76000	4810	3540	6620	2630
77000	5240	3970	6760	2630
78000	5680	4410	6880	2630
79000	6110	4840	7020	2630
80000	6540	5270	7160	2630
81000	6970	5700	7300	2630
81680	7270F	6000	7380	2630
82000		6220	7480	2630
83000		6890	7810	2630
83870		7470F	8100	2630
84000			8190	2670
85000			8920	2940
86000			9640	3220
87000			10370	3490
88000			11090	3770
89000			11820	4040
89310			12040F	4130
(kgs) per 100 kgs increment				
Between	5	7	10	11
67830				
81680	40	40	20	0
83870	0	70	30	0
89310	0	0	70	30

From 89310 kgs All increment in Tank 11. Tanks 1 to 10 full	
Total	11
89310	4130
89400	4220
89600	4420
89800	4620
90000	4820
90200	5020
90400	5220
90600	5420
90800	5620
91000	5820
91200	6020
91400	6220
91600	6420
91800	6620
92000	6820
92200	7020
92400	72220
92600	7420
92800	7620
93000	7820
93200	8020
93400	8220
93600	8420
93800	8620
94000	8820
94200	9020
94400	9220
94600	9420
94800	9620
95000	9820
95200	10020
95400	10220
95600	10420
95680	10500

Full Quantities (kgs) Tanks 1 to 11

Tank	Full Capacity	
1	4240	
2	4610	
3	4610	
4	4240	
5A	2240	
7A	2240	22180
5	7270	
6	11690	
7	7470	
8	12960	39390
9	11200	
10	12040	
11	10500	33740

Total 95680 (including trapped usable fuel 370 kgs)

Tank 11 Quantity Required to Achieve 59.0% at start cruise							
ZFCG	ZFWT x 1,000 kg						
(%Co)	80.0	82.0	84.0	86.0	88.0	90.0	92.0
51.5	11.5	11.8	12.1	12.3	12.6	12.9	13.2
51.6	11.4	11.6	11.9	12.2	12.4	12.7	13.0
51.7	11.2	1.5	11.8	12.0	12.3	12.6	12.8
51.8	11.1	11.3	11.6	11.9	12.1	12.4	12.7
51.9	10.9	11.2	11.4	11.7	12.0	12.2	12.5
52.0	10.8	11.0	11.3	11.5	11.8	12.1	12.3
52.1	10.6	10.9	11.1	11.4	11.6	11.9	12.1
52.2	10.5	10.7	11.0	11.2	11.5	11.7	12.0
52.3	10.3	10.6	10.8	11.1	11.3	11.6	11.8
52.4	10.2	10.4	10.7	10.9	11.2	11.4	11.6
52.5	10.1	10.3	10.5	10.8	11.0	11.2	11.5
52.6	9.9	10.1	10.4	10.6	10.8	11.1	11.3
52.7	9.8	10.0	10.2	10.5	10.7	10.9	11.1
52.8	9.6	9.8	10.1	10.3	10.5	10.7	11.0
52.9	9.5	9..7	9.9	10.1	10.4	10.6	10.8
53.0	9.3	9.5	9.8	10.0	10.2	10.4	10.6
53.1	9.2	9.4	9.6	9.8	10.0	10.3	10.5
53.2	9.0	9.2	9.5	9..7	9.9	10.1	10.3
53.3	8.9	9.1	9.3	9.5	9.7	9.9	10.1
53.4	8.7	8.9	9.2	9.4	9.6	9.8	10.0
53.5	8.6	8.8	9.0	9.2	9.4	9.6	9.8
53.6	8.5	8.6	8.8	9.0	9.2	9.4	9.6
53.7	8.3	8.5	8.7	8.9	9.1	9.3	9.5
53.8	8.2	8.4	8.5	8.7	8.9	9.1	9.3
53.9	8.0	8.2	8.4	8.6	8.8	8.9	9.1
54.0	7.9	8.1	8.2	8.4	8.6	8.8	9.0
54.1	7.7	7.9	8.1	8.3	8.4	8.6	8.8
54.2	7.6	7.8	7.9	8.1	8.3	8.5	8.6
54.3	7.4	7.6	7.8	7.9	8.1	8.3	8.5
54.4	7.3	7.5	7.6	7.8	8.0	8.1	8.3
54.5	7.1	7.3	7.5	7.6	7.8	8.0	8.1

Start of Cruise Fuel Weight Correction To Initial Cruise Quantity							
Fuel Weight	70.0	65.0	60.0	55.0	50.0	45.0	40.0
Correction	0.0	-0.2	-0.3	-0.5	-0.6	-0.8	-1.0
Fuel Weight	35.0	30.0	25.0	20.0			
Correction	-1.1	-1.3	-1.4	-1.6			

NOTE: Due to fuel density variations and the Volumetric Capacity of Tank 11 the required contents shown above the broken line may not be achieved. In these cases Tank 11 high level shut off will occur and the initial cruise CG will be forward of 59.0% Co.

TABLE 7

Maximum Fuel, M= 1.5 (kg x 1,000)							
ZFCG	ZFWT x 1,000 kg						
(%Co)	80.0	82.0	84.0	86.0	88.0	90.0	92.0
51.5	78.1	77.6	77.2	76.8	76.3	75.9	75.5
51.6	78.4	77.9	77.5	77.1	76.7	76.2	75.8
51.7	78.7	78.2	77.8	77.4	77.0	76.6	76.2
51.8	79.0	78.5	78.1	77.7	77.3	76.9	76.5
51.9	79.3	78.9	78.4	78.0	77.6	77.2	76.8
52.0	79.6	79.2	78.8	78.4	78.0	77.6	77.2
52.1	79.9	79.5	79.1	78.7	78.3	77.9	77.5
52.2	80.0	79.8	79.4	79.0	78.6	78.2	77.9
52.3	79.8	80.1	79.7	79.3	79.0	78.6	78.2
52.4	79.7	80.0	80.0	79.7	79.3	78.9	78.6
52.5	79.5	79.9	80.3	80.0	79.6	79.3	78.9
52.6	79.3	79.7	80.1	80.3	79.9	79.6	79.2
52.7	79.2	79.6	79.9	80.3	80.3	79.9	79.6
52.8	79.0	79.4	79.8	80.1	80.5	80.3	79.9
52.9	78.9	79.2	79.6	80.0	80.3	80.6	80.3
53.0	78.7	79.1	79.4	79.8	80.2	80.5	80.6
53.1	78.6	78.9	79.3	79.6	80.0	80.4	80.7
53.2	78.4	78.8	79.1	79.5	79.8	80.2	80.5
53.3	78.3	78.6	79.0	79.3	79.7	80.0	80.4
53.4	78.1	78.5	78.8	79.1	79.5	79.8	80.2
53.5	78.0	78.3	78.6	79.0	79.3	79.7	80.0
53.6	77.8	78.1	78.5	78.8	79.1	79.5	79.8
53.7	77.6	78.0	78.3	78.6	79.0	79.3	79.5
53.8	77.5	77.8	78.1	78.5	78.8	79.1	79.5
53.9	77.3	77.7	78.0	78.3	78.6	79.0	79.3
54.0	77.2	77.5	77.8	78.1	78.5	78.8	79.1
54.1	77.0	77.3	77.7	78.0	78.3	78.6	78.9
54.2	76.9	77.2	77.5	77.8	78.1	78.4	78.7
54.3	76.7	77.0	77.3	77.6	78.0	78.3	78.6
54.4	76.6	76.9	77.2	77.5	77.8	78.1	78.4
54.5	76.4	76.7	77.0	77.3	77.6	77.9	78.2

Fuel Density (kg/litre), correction (1,000 kg)							
Fuel Weight	.750	.755	.760	.765	.770	.775	.780
Correction	-3.2	-2.8	-2.4	-2.0	-1.6	-1.2	-0.8
Fuel Weight	.785	.790	.795	.800	.805	.810	.815
Correction	-0.4	0.0	+0.4	+0.8	+1.3	+1.7	+2.1
Fuel Weight	.820	.825	.830	.835	.840	.845	.850
Correction	+2.5	+2.9	+3.3	+3.7	+4.1	+4.5	+4.9

Interpolate as required for intermediate density values

TABLE 8

Minimum Fuel for Continued Supersonic Cruise

Tanks 1,2,3,4 at 1,000 kg. Remainder in Tank 11.

ZFCG (%Co)	ZFWT x 1,000 kg						
	80.0	82.0	84.0	86.0	88.0	90.0	92.0
51.5	11.7	11.9	12.1	12.3	12.4	12.6	12.8
51.6	11.5	11.7	11.9	12.1	12.3	12.5	12.7
51.7	11.4	11.6	11.8	11.9	12.1	12.3	12.5
51.8	11.2	11.4	11.6	11.8	12.0	12.2	12.4
51.9	11.1	11.3	11.5	11.6	11.8	12.0	12.2
52.0	11.0	11.1	11.3	11.5	11.7	11.8	12.0
52.1	10.8	11.0	11.2	11.3	11.5	11.7	11.9
52.2	10.7	10.8	11.0	11.2	11.4	11.5	11.7
52.3	10.5	10.7	10.9	11.0	11.2	11.4	11.5
52.4	10.4	10.6	10.7	10.9	11.0	11.2	11.4
52.5	10.3	10.4	10.6	10.7	10.9	11.1	11.2
52.6	10.2	10.3	10.4	10.6	10.7	10.9	11.0
52.7	10.0	10.1	10.3	10.4	10.6	10.7	10.9
52.8	9.8	10.0	10.1	10.3	10.4	10.6	10.8
52.9	9.7	9.8	10.0	10.1	10.3	10.4	10.6
53.0	9.6	9.7	9.8	10.0	10.1	10.3	10.4
53.1	9.4	9.6	9.7	9.8	10.0	10.1	10.2
53.2	9.3	9.4	9.5	9.7	9.8	9.9	10.1
53.3	9.1	9.3	9.4	9.5	9.6	9.8	9.9
53.4	9.0	9.1	9.2	9.4	9.5	9.6	9.7
53.5	8.8	9.0	9.1	9.2	9.3	9.5	9.6
53.6	8.7	8.8	9.0	9.1	9.2	9.3	9.4
53.7	8.6	8.7	8.8	8.9	9.0	9.1	9.3
53.8	8.4	8.5	8.7	8.8	8.9	9.0	9.1
53.9	8.3	8.4	8.5	8.6	8.7	8.8	8.9
54.0	8.2	8.3	8.4	8.5	8.6	8.7	8.8
54.1	8.0	8.1	8.2	8.3	8.4	8.5	8.6
54.2	7.9	8.0	8.1	8.2	8.3	8.4	8.5
54.3	7.7	7.8	7.9	8.0	8.1	8.2	8.3
54.4	7.6	7.7	7.8	7.9	8.0	8.1	8.2
54.5	7.4	7.5	7.6	7.7	7.8	7.9	8.0

TABLE 9

ZFCG	Tank 9 Landing (kg) Aft CG Limit = 53.5% for FWD limits see 01-01-01																
	Landing Fuel Weight x 1,000 kg																
(%Co)	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0
51.5	0	0	0	0	0	0	0	0	0	0	0	0	0				
51.6	0	0	0	0	0	0	0	0	0	0	0	0	0				
51.7	0	0	0	0	0	0	0	0	0	0	0	0	0				
51.8	0	0	0	0	0	0	0	0	0	0	0	0	0				
51.9	0	0	0	0	0	0	0	0	0	0	0	0	0				
52.0	0	0	0	0	0	0	0	0	0	0	0	0	0				
52.1	0	0	0	0	0	0	0	0	0	0	0	10	190	370	550	720	900
52.2	0	0	0	0	0	0	0	0	0	0	40	210	390	570	750	920	1100
52.3	0	0	0	0	0	0	0	0	0	60	240	410	590	770	940	1120	1300
52.4	0	0	0	0	0	0	0	0	80	260	440	610	790	970	1140	1320	1500
52.5	0	0	0	0	0	0	0	30	280	460	640	810	990	1170	1340	1520	1700
52.6	0	0	0	0	0	0	0	230	470	680	840	1010	1190	1370	1540	1720	1900
52.7	0	0	0	0	0	0	0	410	610	860	1030	1210	1390	1570	1740	1920	2100
52.8	0	0	0	0	0	0	150	550	800	1060	1230	1410	1590	1760	1940	2120	2300
52.9	0	0	0	0	0	130	350	690	1000	1260	1430	1610	1790	1960	2140	2320	2500
53.0	0	0	0	0	110	330	540	820	1200	1460	1630	1810	1990	2160	2340	2520	2690
53.1	0	0	0	90	300	520	740	960	1400	1660	1830	2010	2190	2360	2540	2720	2890
53.2	0	0	70	280	500	720	930	1150	1600	1850	2030	2210	2390	2560	2740	2920	3090
53.3	0	40	260	480	690	910	1130	1350	1800	2050	2230	2410	2550	2760	2940	3120	3290
53.4	20	240	460	670	890	1110	1320	1540	2000	2250	2430	2610	2780	2960	3140	3320	3490
53.5	220	430	650	870	1080	1300	1520	1740	2200	2450	2630	2810	2980	3160	3340	3510	3690
53.6	440	6680	880	1090	1310	1530	1740	1960	2420	2610	2860	3040	3210	3390	3570	3740	3920
53.7	670	880	1100	1320	1530	1750	1970	2180	2570	2840	3090	3270	3440	3620	3800	3970	4150
53.8	890	1110	1320	1540	1760	1970	2190	2410	2730	3070	3320	3490	3670	3850	4030	4200	4380
53.9	1110	1330	1550	1760	1980	2200	2420	2630	2880	3290	3550	3720	3900	4080	4250	4430	4610
54.0	1340	1560	1770	1990	2210	2420	2640	2860	3070	3520	3780	3950	4130	4310	4480	4660	4840
54.1	1560	1780	2000	2210	2430	2650	2860	3080	3300	3750	4010	4180	4360	4540	4710	4890	5070
54.2	1790	2000	2220	2440	2650	2870	3090	3310	3520	3980	4230	4410	4590	4770	4940	5120	5300
54.3	*	2230	2450	2660	2880	3100	3310	3530	3750	4210	4460	4640	4820	5000	5170	5350	5530
54.4	*	2450	2670	2890	3100	3320	3540	3750	3970	4420	4620	4870	5050	5220	5400	5580	5760
54.5	*	2680	2890	3110	3330	3540	3760	3980	4200	4580	4850	5100	5280	5450	5630	5810	5980
54.6	*	2900	3120	3330	35550	3770	3990	4200	4420	4730	5080	5330	5510	5680	5860	6040	6210
54.7	*	3130	3340	3560	3780	3990	4210	4430	4640	4890	5310	5560	5740	5910	6090	6270	6440
54.8	*	3350	3570	3780	4000	4220	4430	4650	4870	5090	5540	5790	5960	6140	6320	6500	6670
54.9	*	3570	3790	4010	4220	4440	4660	4880	5090	5310	5760	6020	6190	6370	6550	6720	6900
55.0	*	3800	4020	4230	4450	4670	4880	5100	5320	5530	5990	6250	6420	6600	6780	6950	7130
55.1	*	*	4240	4460	4670	4890	5110	5320	5540	5760	6220	6470	6650	6830	7010	7180	7360
55.2	*	*	4460	4680	4900	5110	5330	5550	5770	5980	6430	6630	6880	7060	7240	7410	7590
55.3	*	*	4690	4900	5120	5340	5560	5770	5990	6210	6590	6860	7110	7290	7470	7640	7820
55.4	*	*	4910	5130	5350	5560	5780	6000	6210	6430	6740	7090	7340	7520	7690	7870	8050
55.5	*	*	5140	5350	5570	5790	6000	6220	6440	6660	6900	7320	7570	7750	7920	8100	8280

* Ballast Fuel exceeds Landing Fuel

Include Tank 9 Fuel to Balance Maximum Tank 11 Ballast Fuel

Tank 9 quantities include Ballast (unusable) fuel

Table 10

Refuelling Sheet

CONCORDE REFUELLING SHEET

Date	Station	A/C regn.	Service Nr.	Destination	Eng. officer	BRITISH AIRWAYS

FUEL UPLIFT CALCULATIONS

Total fuel required Kgs *(excluding HLI fuel)*	A	
Fuel in tanks on arrival Kgs A/C gauges	B	
Fuel to be uplifted Kgs (A-B)	C	
Density of fuel uplift required Kgs/Litre	D	
Volume of fuel uplift required at 0.840 Kgs/Litre (Table Nr. 4)	E	
Correction for densities other than 0.840 Kgs/Litre (Table Nr. 5)	F	
Corrected volume of fuel uplift required Litres (E & F)	G	
Refuel meter(s)	H	
Discrepancy	I	+ −
HLI fuel uplift	J	

FUEL DISTRIBUTION ON ARRIVAL

COLLECTOR & AUX TANKS		WING TRANSFER TANKS		TRIM TANKS	
1		5		9	
2		6		10	
3		7		11	
4		8			
5A					
7A					
COLLECTOR AUX. TOTAL		W.T. TOTAL		TRIM TOTAL	
WING TRANS TOTAL					
TRIM TOTAL					
USABLE FUEL IN LINES	370				
		TOTAL FUEL ON BOARD ON ARRIVAL. ENTER AS ITEM B			

HLI FUEL VOLUMETRIC	1	2	3	4	5A	7A	5	6	7	8	9	10	11	Total

FUEL DISTRIBUTION ON DEPARTURE *(excluding HLI fuel)*

COLLECTOR & AUX TANKS		WING TRANSFER TANKS		TRIM TANKS	
1		5		9	
2		6		10	
3		7		11	
4		8			
5A					
7A					
COLLECTOR AUX. TOTAL		W.T. TOTAL		TRIM TOTAL	
WING TRANS TOTAL					
TRIM TOTAL					
USABLE FUEL IN LINES	370				
HLI FUEL		Kgs			
		TOTAL DEPARTURE FUEL Kgs			

FLUID STATE

Engine Nr.	1	2	3	4
Engine oil uplift - U.S. qts				
Engine oil qty - U.S. qts				
C.S.D. oil uplift				
Hydraulic tank		G	Y	B
Hydraulic oil uplift - U.S. qts				
Hydraulic oil qty - U.S. gals				

RECEIPT EXTRACT

To be completed by Fuel Co. Representative
I hereby certify the delivery of the quantities of Oil to Specification _____
and of Fuel to Specification _____ metered to this aircraft to be:
LITRES
U.S. GAL.
IMP. GAL.

In accordance with delivery receipt Nr.

Signed _____ Status _____

CERTIFICATION

I hereby certify that the above quantity of fuel and the required quantities of oil are on board this aircraft at the time of departure.
Signature _____ Name *(block letters)* _____

BA AUTHORISED REFUELLER

Checked by _____ C/signed _____
Engineer officer _____ Captain _____

X7103 JP

Figure 14

Fuel Transfer Chart

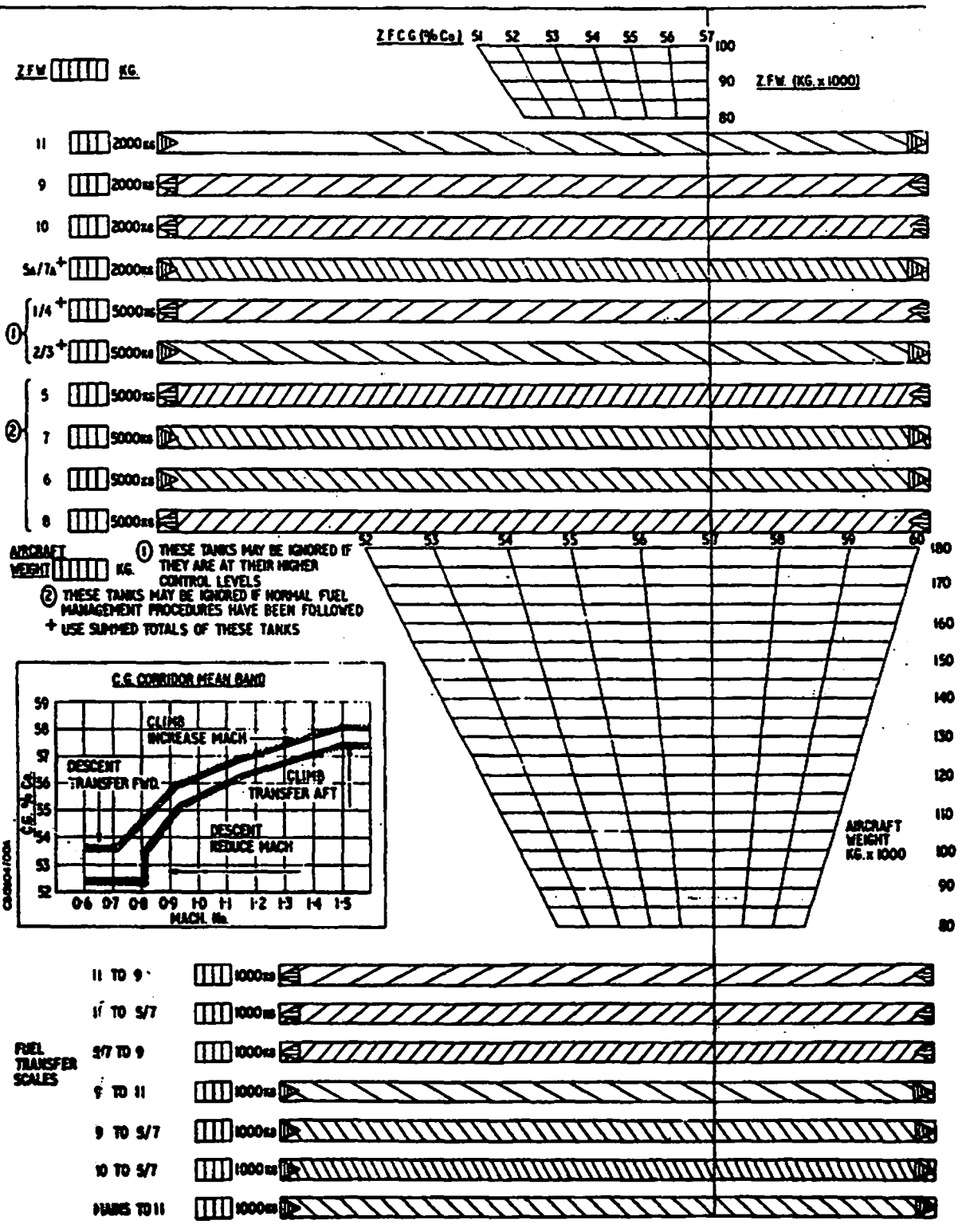


Fig 15

Concorde Maximum Fuel Tank Capacity

Fuel Density (kg/litre)	Maximum Tank Capacity (kg)	Fuel Density (kg/litre)	Maximum Tank Capacity (kg)
.725 - .729	86880	.795 - .796	95210
.730 - .734	87450	.797 - .798	95450
.735 - .739	88040	.799 - .800	95680
.740 - .744	88650	.801 - .802	95930
.745 - .749	89240	.803 - .804	96170
.750 - .754	89850	.805 - .806	96410
.755 - .759	90440	.807 - .808	96670
.760 - .764	91030	.809 - .810	96900
.765 - .769	91640	.811 - .812	97130
.770 - .771	92230	.813 - .814	97350
.772 - .773	92480		
.744	92710	.815 - .816	97610
		.817 - .818	97830
.775 - .776	92830	.819 - .820	98080
.777 - .778	93070	.821 - .822	98300
.779 - .780	93320	.823 - .824	98540
.781 - .782	93530		
.783 - .784	93770	.825 - .826	98800
		.827 - .828	99020
.785 - .786	94000	.829 - .830	99290
.787 - .788	94250	.831 - .832	99510
.789 - .790	94510	.833 - .834	99760
.791 - .792	94740	.835 - .839	99990
.793 - .794	94990	.840 - .844	100570
		.845 - .849	101170
		.850 - .854	101780

Table 11

Maximum Tank Capacity is increased by the amount of the High Level Incremental Fuel

H.L.I Fuel (kg)	Maximum Planned Tank 11 Burn-Off								
	Taxi Fuel								
	800	**900**	**1000**	**1100**	**1200**	**1300**	**1400**	**1500**	**1600**
500 to 900	800	900	1000	1100	1200	1300	1400	1500	1600
1000	700	800	900	1000	1100	1200	1300	1400	1500
1100	600	700	800	900	1000	1100	1200	1300	1400
1200	500	600	700	800	900	1000	1100	1200	1300

Table 12

Table 13: High Level Incremental Fuel
Zero Fuel CG Rear Planning Limit

Zero Fuel Weight (1000 kg)	Rear Limit of ZFCG						
	Fuel Density (kg/litre)						
	0.835	**0.825**	**0.815**	**0.805**	**0.795**	**0.785**	**0.775**
92	52.03	52.06	52.10	52.14	52.18	52.21	52.27
90	52.00	52.03	52.07	52.11	52.15	52.18	52.22
88	51.97	52.00	52.04	52.08	52.12	52.15	52.18
86	51.93	51.97	52.01	52.05	52.09	52.12	52.15
84	51.89	51.93	51.97	52.01	52.05	52.08	52.12
82	51.85	51.89	51.93	51.97	52.02	52.05	52.09
80	51.81	51.85	51.89	51.93	51.99	52.02	52.06

Note1: Table is calculated for 1000 kg of taxi fuel and 1200 kg of HLI fuel. CG corrections applicable to other combinations of HLI fuel and taxi fuel are given below.

Note 2: ZFCG values in shaded area are forward of Fwd ZFCG limit. Use of correction table (where applicable) may result in improved values.

Note 3: ZFW/Fuel Weight combinations above pecked line result in take-off weights greater than 185070 kg.

Correction to Rear Limit of ZFCG (add correction to ZFCG from the table above)

H.L.I Fuel (kg)	Taxi Fuel							
	800	**1000**	**1200**	**1400**	**1600**	**1800**	**2000**	**2200**
1000	0.00	0.14	0.29	0.44	0.59	0.74	0.89	1.04
1100	-0.08	0.07	0.22	0.37	0.52	0.67	0.82	0.97
1200	-0.15	0.00	0.15	0.30	0.45	0.60	0.75	0.90

Example: 1400 kg of taxi fuel, 1100 kg HLI fuel & density is 0.805 kg/litre. Rear limit of ZFCG at 86000 kg ZFW = 52.05 + 0.37 = **52.42%**

Note: These values are for planning guidance. In practice the PTOBO from tank 11 should be a value acceptable to operating crew.

Loading Advice

Landing ballast in tank 9 or tank 11 should be avoided. It is only acceptable if load movement is not possible. The operating crew must be advised if landing ballast can not be avoided.

Landing ballast increases the effective ZFW, reduces the useable fuel and requires more fuel burn to carry the ballast. This can be equated to approx. 3 times the weight of the ballast.

Practical ZFCG / Ideal Trim

As with all aircraft, Concorde is more efficient with an Aft ZFCG, even at full tanks and full HLI the ZFCG is unlikely to be required to be forward of 52.2% (LIZFW - 105 IU approx.).

The practical aft limit of ZFCG is 53.1%. This ZFCG requires no tank 9 landing fuel when the tank contents has reduced to a reserve of 6,500 kg. It is therefore practical to aim for a ZFCG of 53.0% (approx. A LIZFW of - 40 IU). This target remains, with increasing fuel load, until the Delta tank 1 exceeds 5,300 kg. With Delta tank 11 above 5,300 kg the target ZFCG (LIZFW) moves forward approx. 0.7% (55 IU) for each extra 1,000 kg of delta tank 11.

The following graph shows the delta tank 11 fuel on board at take off for various at LIZFW.

Case 1: The top graph represents the delta tank 11 fuel on board for a 54.0% TOCG. Any delta tank 11 fuel above the line represents the PTOBO from tank 11 to achieve 53.5% TOCG.

Case2: The lower graph line represents the delta tank 11 fuel on board for a 53.5% TOCG. Any delta tank 11 fuel above the line represents the PTOBO from tank 11 to achieve a 53.5% TOCG.

Case 3: Below the lower graph line will require a PTOTR from tank 9 to tank 11 to achieve a 53.5%. Values on the graph do not represent the transfer required.

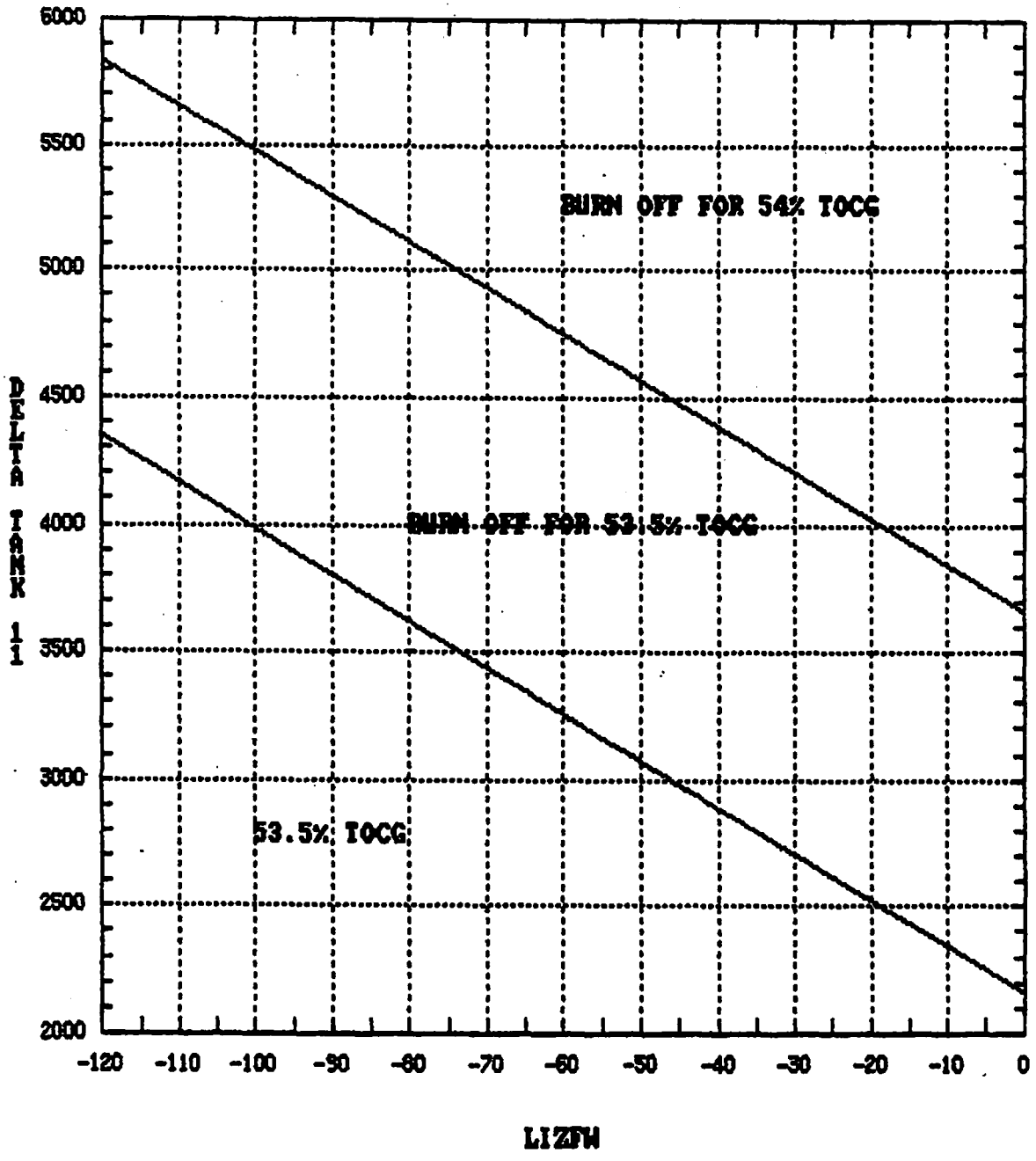

6000
5500
5000
4500
4000
3500
3000
2500
2000
DELTA TANK 11
BURN OFF FOR 54% TOCG
BURN OFF FOR 53.5% TOCG
53.5% TOCG
-120
-110
-100
-90
-80
-70
-60
-50
-40
-30
-20
-10
0
LIZFW

Table 13

1. Special Cases

A. Door or Slide Unserviceability

In the event of a door, escape slide or slide raft being unserviceable, it is permissible to operate as far as the next station at which the unserviceability can be rectified provided that the other passenger doors, slides and emergency exits are serviceable in every respect and the following restrictions are complied with:-

Permitted capacity with left or right hand door/exits inoperative

Door	Cabin Area				Total Pax
	OA	OB	OC	OD	
1 (Fwd)	← 30 →		28	32	90
2 (Mid)	20	20	← 45 →		85
3 (Aft)	20	20	← 45 →		85

B. Test Flights

In order to obtain the required C of G it is necessary to carry shingle ballast and the amount and distribution is as follows:-

Compartment 1 = 975 kg, i.e. 39 bags @ 25 kg

Compartment 2 = 575 kg, i.e. 23 bags @ 25 kg

The ballast is to be adequately restrained to prevent movement in flight.

Aircraft Weight & Index Data

1. Aircraft Version

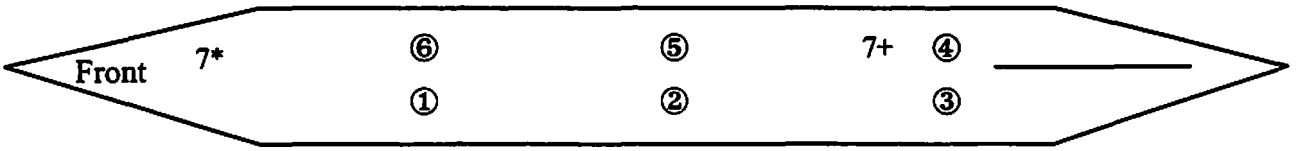
AIRCRAFT TYPE CODE SSC			
AIRCRAFT REGISTRATION	CONFIGURATION CODE	VERSION CODE	CONFIGURATION
G-BOAA, OAB OAC, OAD, OAE, OAF & OAG	B	SSCB	100R

2. Basic Weight And Index

The Weight Schedule Extract contained in the Certificate File shows the current Basic Weight and Index for the aircraft.

3. Crew Weight And Indices

The index effect assumes Technical Crew seated on the Flight Deck and cabin crew seated in the following order.



Technical Crew	CABIN CREW					
	0	4	5	6	7+	7*
3 KG IU	297 -26	653 -32	742 -35	831 -41	920 -40	920 -49
4 KG IU	396 -34	752 -40	841 -43	930 -50	1019 -49	1019 -58
5 KG IU	495 -43	851 -49	940 -52	1029 -59	1118 -57	

NOTES: 1. Notional Weights

- Flight Deck Crew including cabin baggage 85 Kg each.
- Cabin Crew including cabin baggage 75 Kg each.
- Hold baggage - 14 Kg per piece per Crew member in CPT 1 assumed for all crew.

2. \+ With 7th crew member in the most aft seat row.

* With 7th crew member on the flight deck.

4. Catering Weights And Indices

Aircraft Type Code SSC

CODE	LOAD IN GALLEYS (kg)				INDEX EFFECT	PRODUCT CODE
	FWD	MID	AFT	TOTAL		
A	621	58	789	1468	-24	+04
B	585	84	810	1479	-21	+01, +03
C	567	84	723	1374	-22	+02

* The catering product codes are given for reference and can be found in the Catering Schedule.

NOTE: For Catering Loads on Training Flights etc., use Additions and Deductions Index Table in Chapter 7.

5. Dry Operating Weight And Index

The Dry Operating Weight/Index is the total of the aircraft Basic Weight/Index, the Crew Weight/Index, the Catering Weight/Index and any adjustments required to the Basic Weight/Index.

Aircraft Weight & Index Data

1. Aircraft Version

AIRCRAFT TYPE CODE SSC			
AIRCRAFT REGISTRATION	CONFIGURATION CODE	VERSION CODE	CONFIGURATION
G-BOAA, OAB OAC, OAD, OAE, OAF & OAG	B	SSCB	100R

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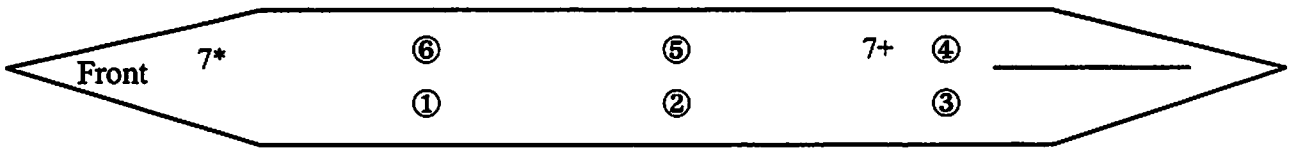
The index effect assumes Technical Crew seated on the Flight Deck and cabin crew seated in the following order.



Technical Crew	CABIN CREW					
	0	4	5	6	7+	7*
3 KG IU	297 -26	653 -32	742 -35	831 -41	920 -40	920 -49
4 KG IU	396 -34	752 -40	841 -43	930 -50	1019 -49	1019 -58
5 KG IU	495 -43	851 -49	940 -52	1029 -59	1118 -57	

NOTES: 1. Notional Weights

- Flight Deck Crew including cabin baggage 85 Kg each.
- Cabin Crew including cabin baggage 75 Kg each.
- Hold baggage - 14 Kg per piece per Crew member in CPT 1 assumed for all crew.

2. \+ With 7th crew member in the most aft seat row.

* With 7th crew member on the flight deck.

4. Catering Weights And Indices

Aircraft Type Code SSC

CODE	LOAD IN GALLEYS (kg)				INDEX EFFECT	PRODUCT CODE
	FWD	MID	AFT	TOTAL		
A	628	65	793	1485	-25	+4
B	574	94	797	1465	-21	+1, +3
C	555	94	710	1359	-23	+2

* The catering product codes are given for reference and can be found in the Catering Schedule.

NOTE: For Catering Loads on Training Flights etc., use Additions and Deductions Index Table in Chapter 7.

5. Dry Operating Weight And Index

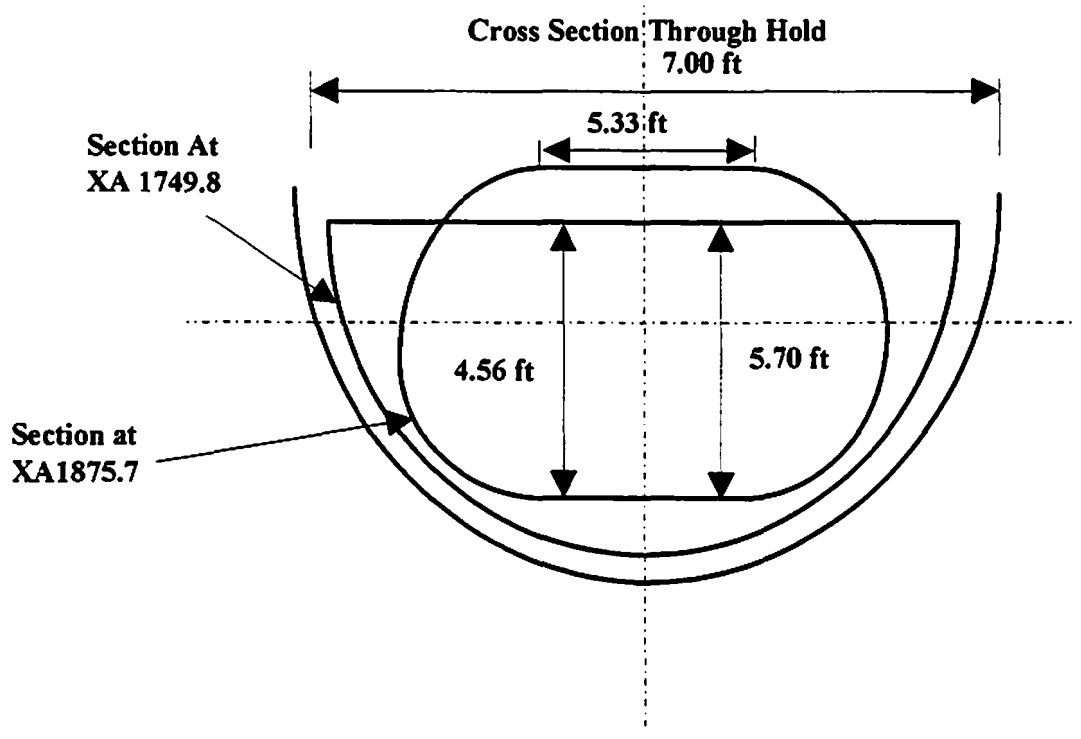
The Dry Operating Weight/Index is the total of the aircraft Basic Weight/Index, the Crew Weight/Index, the Catering Weight/Index and any adjustments required to the Basic Weight/Index.

CHAPTER 2

Contents

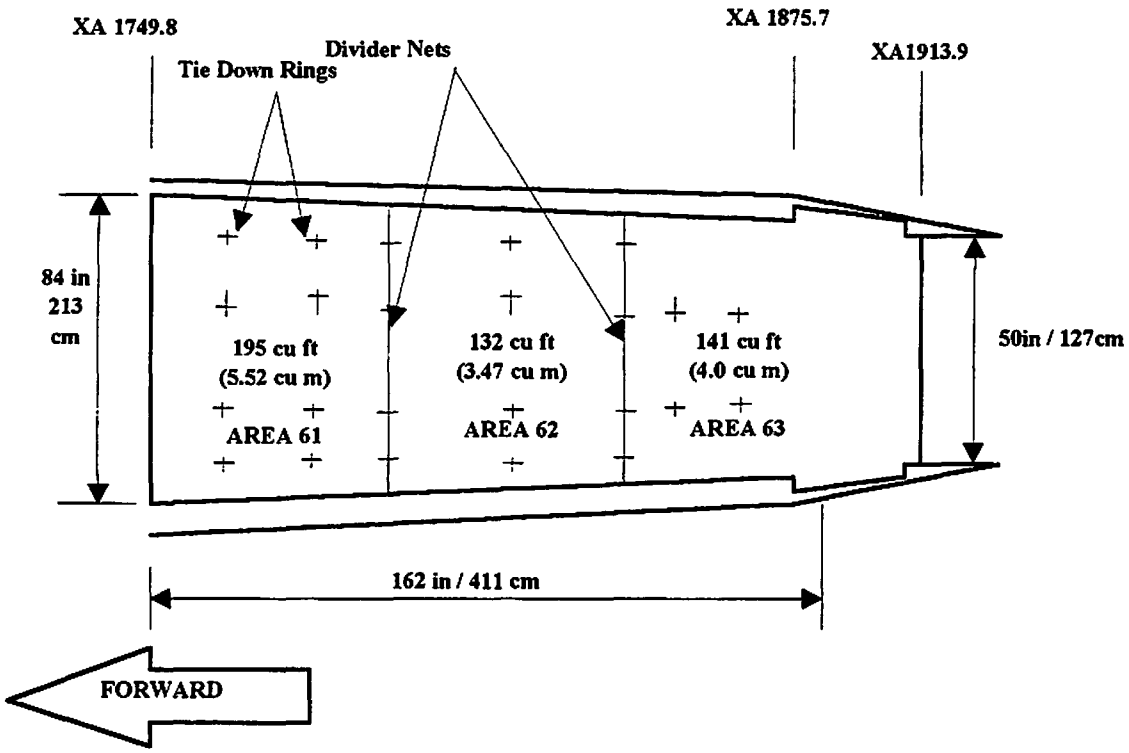
Cargo Hold Layout

A: Forward Hold, Compartments 1 & 2

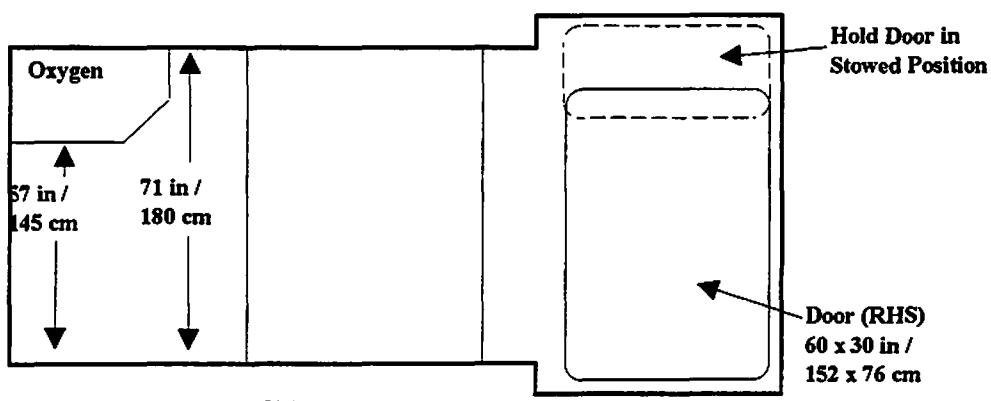


B: Aft Hold, Compartments 6

Compartment	Max Loading kg	Max Floor Loading Intensity kg/ft^2	Max Total Running Load kg/in^2	Usable Volume ft^3
Hold 6 unlashed	2268	45.36	8.13	421
Hold 6 lashed	2767	45.36	8.13	421

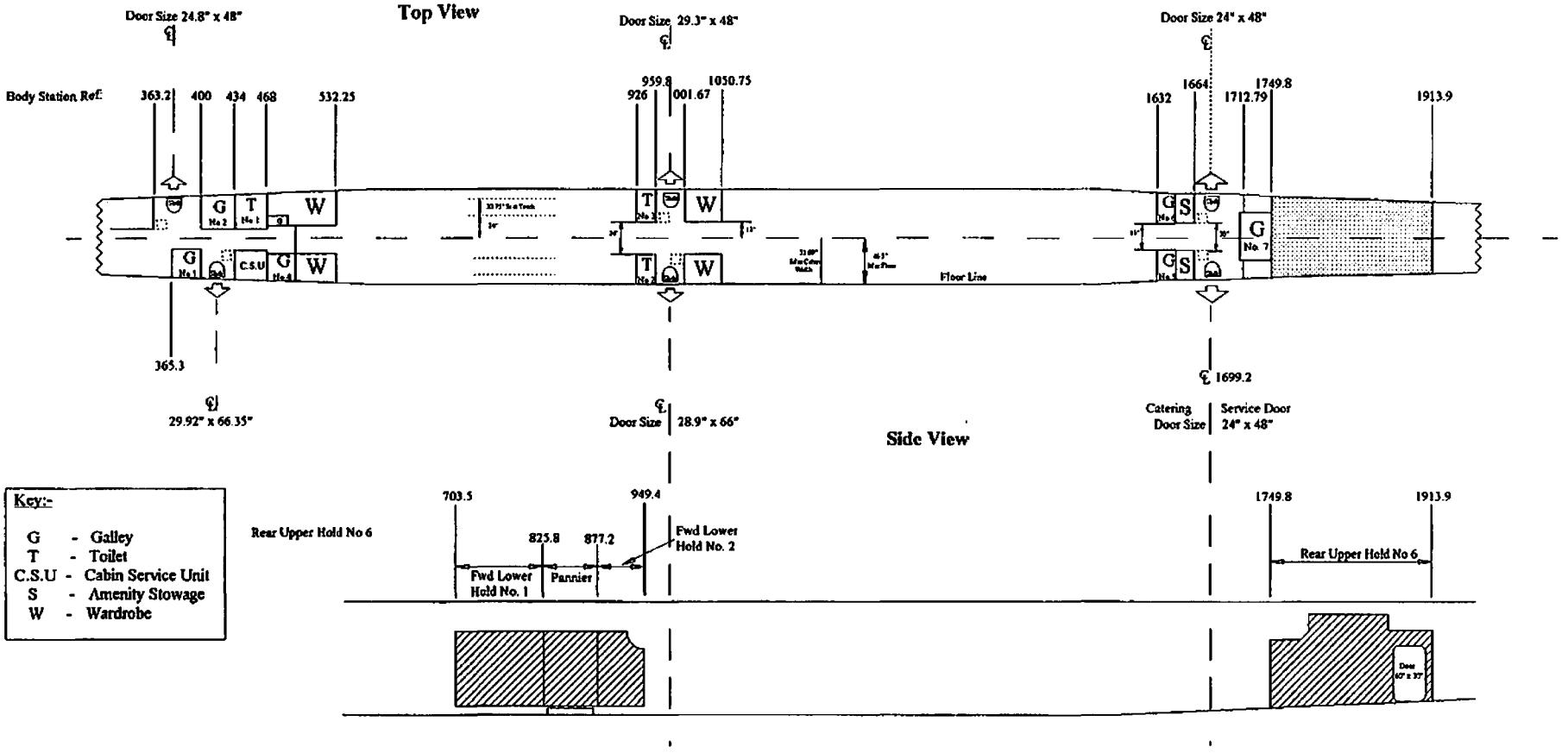


PLAN AT FLOOR LEVEL



SIDE VIEW

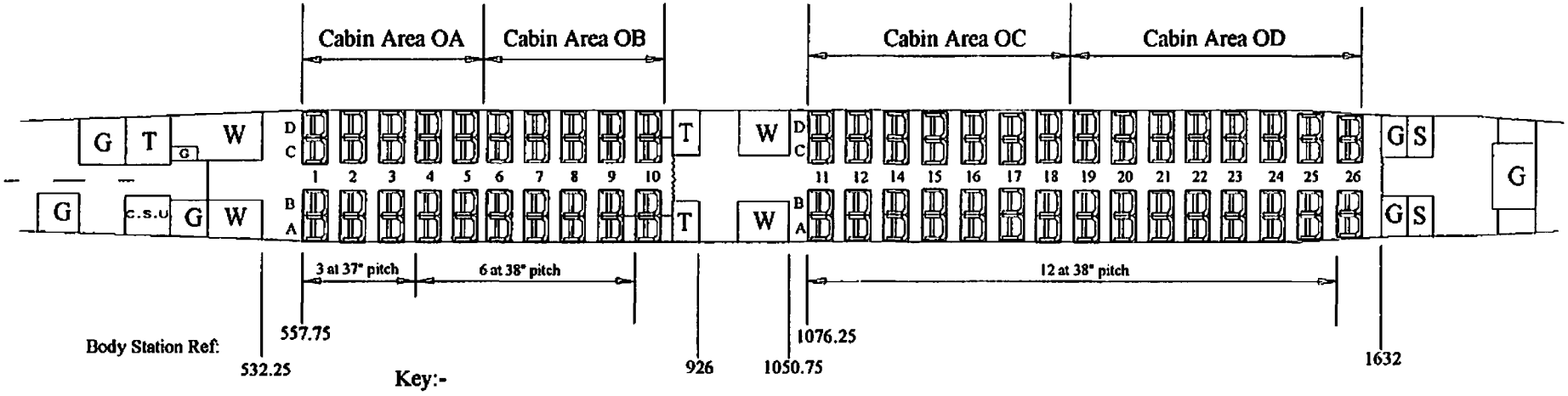
Basic Equipment & Limitations



Maximum Compartments Loads

Compartment	Max Load, kg	Max Floor Loading Intensity, kg/sq ft	Max Total Running Load, kg.in	Usable Volume, cu ft
Hold 1	995	45.36	8.13	315
Hold 2 excl Mail Pannier	499	45.36	8.13	67
	86	-	-	11
Hold 6 excl dip Mail Locker	2132	45.36	8.13	410
Dip Mail Locker	136	-	-	11
Main Cabin Floor	-	34.02	11.34	-

Concorde Seating Layout - 100F



Key:-

G - Galley, T - Toilet, C.S.U - Cabin Service Unit, S - Amenity Stowage, W - Wardrobe

Item	Part No	Description	a	b	
1	0BA-21290	Emergency Equipment	1		Dimensions are to and from Centreline forward Pick-up point on seat. Bulkhead to front of seat cushion dimensions are shown. For Commercial Purposes. Where this dimensions equals IATA maximum allowed. It will be marked "I.A.T.A"
2	2050-002-001	Seat LH Rows 1-10	10		
3	2050-002-002	Seat RH Rows 1-10	10		
4	2000-02-001	Seat LH Rows 11-26	15		
5	2000-02-002	Seat RH Rows 11-26	15		
6	2000-10-015	Seat Tables	8		
7	LGC-2215-7	Foot Hassocks	8		

Smoking Areas

Not Applicable

CHAPTER 3

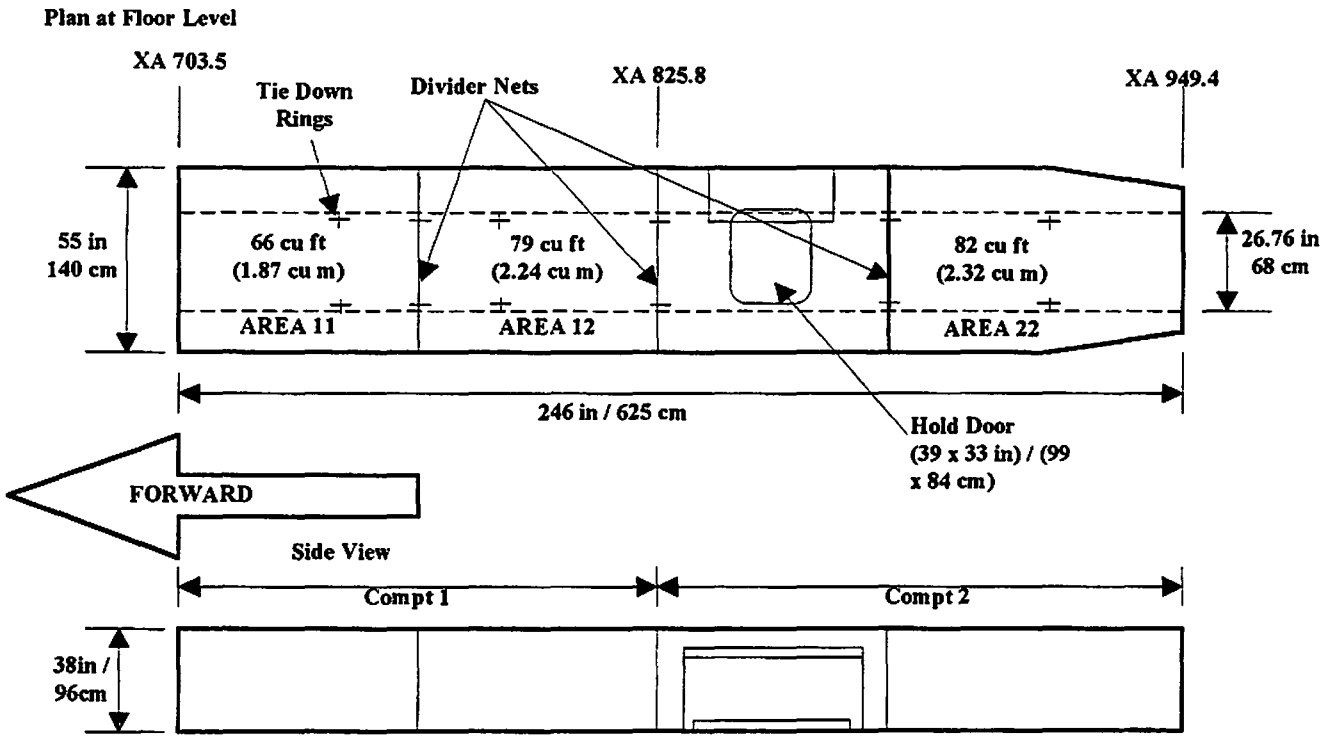
Contents

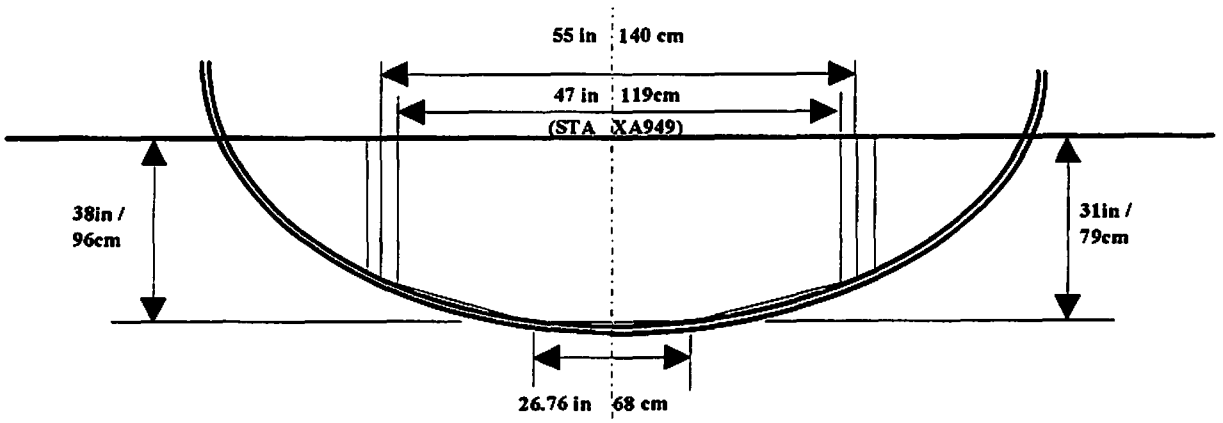
Loading Limitations & Cargo Restraint

Cargo Hold Layout

A: Forward Hold, Compartments 1 & 2

Compartment	Max Loading kg	Max Floor Loading Intensity kg/ft^2	Max Total Running Load kg/in^2	Usable Volume ft^3
Hold 1	995	45.36	8.13	115
Hold 2	585	45.36	8.13	78
Total	**1580**	**45.36**	**8.13**	**193**





Section Through Compartment
Constant From STA XA873 to STA916
Constant Taper from STA XA9416 to STA XA949

Loading Limitations & Cargo Restraint

1. Loading Limitations

The aircraft is designed to be efficient and carry load at minimum structure weight. The results in essentially a light structure which is never strong enough to permit loading without regard to certain basic limitations. Restrictions are therefore imposed on the loads which may be carried and on the manner in which these loads are transmitted through the aircraft floor into the aircraft structure.

The limitations are as follows:-

A. Maximum Compartment or Hold Load (Kg)

This is the maximum total load which may be carried in the designated hold.

B. Maximum Floor Loading Intensity (Kg/Sq. Ft)

This is the maximum load per unit of floor area which may be allowed within a specified hold. In certain circumstances, load with a floor loading intensity greater than the maximum aircraft floor limit may be carried by using spreaders.
These are lengths of timber placed between the load and the floor and their purpose is to spread the load over a greater area of floor and a larger number of floor beams.
The floor beams normally run from side to side at approximately 20 inch pitch, therefore the spreaders are placed in a fore and aft direction.

To effectively spread the weight of an item over several floor beams, it is obvious that the spreaders themselves must posses a sufficient degree of stiffness or rigidity to accomplish the load transfer. The degree of stiffness which will dictate the cross sectional dimensions of the spreaders is dependant upon two main factors:

(1) The load to be placed upon the spreaders and

(2) The length of spreaders projecting beyond each end of the actual length of the package i.e. the extension or overhang.

Information on spreader sizes is given in 03-06.

C. Maximum Running Load (Kg/In)

This is maximum load which can be carried in a given fore and aft length of hold.
In certain circumstances load with a greater running load than the maximum may be carried by using spreaders. See Para B above.

D. Maximum Concentrated Load (Kg/Sq. In)

Concentrated loads produce contact pressures at which the flooring itself will become damaged by indentation or puncture e.g. by the castors of stand on which a piece of machinery may be mounted. Station staff must make certain that there is no risk of causing

damage to the floor of an aircraft by loading heavy objects with small points of contact with the floor. Care must also be taken when using pinch-bars, etc.

2. Heavy Cargo

Before Loading heavy items of cargo, always consult the Station Engineer and, if possible, the aircraft Captain. The Engineering staff's experience in the use of the special equipment for loading such items will always be an advantage.

Always use adequate spreaders and ensure that rollers, pinch-bars and crowbars are not used in a way that will damage the floor structure. The use of crowbars/pinch-bars is, in any case, not recommended. When there is no alternative, they may be used on top of load spreaders or in conjunction with a piece of ¾" ply board at least 24" square. This must be placed on the floor to take the weight at the point of contact and spread the load. The minimum size of 24" square for the ply board ensures that the spread of the load will cover at least one frame. Never use pinch-bars, crowbars or similar devices directly on the aircraft floor.

3. Unusual Restraint Problems

Unusual restraint and stowage problems not covered in this chapter, should be referred to Engineering Technical Services, LHRMXBA.

4. Compartment

All damage to webbing and restraint/attachment fittings must be reported to the Ground Engineer for rectification/replacement.

Compartment nets must be replaced of more than one net attachment point is damaged or missing.

Compartments nets with one damaged/missing attachment point can still be used but with the following limitations. The load adjacent to the damaged net must be reduced to 50% of the maximum compartment load, as shown in Section 03-02 of this manual.

If no net is fitted the load in the adjacent compartments must be restrained I.A.W. Section 03-07 of this manual.

Loading Limitations & Cargo Restraint

MAXIMUM COMPARTMENT LOADS					
Compartment	Max. Load Kg.		Max. Total Loading Intensity Kg/Sq. Ft.	Max. Total Running Load Kg/In	Useable Volume Cu. Ft.
1	995		45.36	8.17	115
2	585		45.36	8.17	78
Hold 6	2268*		45.36	8.17	421
Main Cabin Floor	-		34.02	11.34	-
	RAILS	**FLOOR**			
Fwd Left Wardrobe #	72.8	91	-	-	29
Fwd Right Wardrobe #	72.8	91	-	-	41
Mid Left Wardrobe #	72.8	136.5	-	-	48
Mid Right Wardrobe #	72.8	136.5	-	-	48

* Very high density cargo or cargo in excess 2268 kg up to 2767 kg will require lashing.

The Maximum Concentrated load at any isolated point acting directly on main cabin and hold floors is 45.0 kg. Such points must be separated by at least 14 inches, and the floor area in a 7 inch radius from such point must not contain any other load.

\# *NOTES 1.* *The maximum load in any the wardrobes is made up of the load allowed on the hanging rails (36.4 kg each) and that which is allowed on the floor up to a height of 20 inches (51 cm).*

2. *Fwd Right Wardrobe has been reduced below the placard maximum to allow for the catering items installed in its structure.*

Intentionally Blank

Loading Limitations & Cargo Restraint

Package Acceptance Data - General

1. Introduction

03-03 to 03-05 contain information for use in the acceptance and the subsequent loading and lashing of packages.
These sections include information on the following aspects which require checking for each package:-

(a) Classification of load.
(b) Maximum physical package size of aircraft doors and holds.
(c) Maximum structural package size relative to floor strengths and maximum hold load limits.
(d) Load spreader and tie-down requirements.

2. Classification Of Load

Class 1 Any Item Weighing More than 250 Kg. (Compartment 6 Only)

This type of cargo must not be stacked.

Each item of load in this category must be individually lashed. Class 3 load may be stacked on class 1 load provided the allowable floor loading is not exceeded.

It will not normally be practicable to carry this class of load because of structural loading limitations and access.

Class 2 Any Item Weighing between 75 Kg and 250 Kg .

The heavier articles must always be stowed beneath the lighter articles to avoid crushing.

Load in this category need not be lashing, provided that the items are fully contained within a netted area and tightly packed with other load (only load for the same destination may be used as packing).

Class 3 Any Item Weighing Less than 75 Kg

This category of load may be stacked in layers and lashed with webbing or netting. Cargo restraining nets where fitted are sufficient to restrain movement without the need to lash.

NOTE: 1 *It is permissible to leave individual hold nets un-rigged for both Class 2 and 3 loads between adjacent stowage areas provided that such areas are volumetrically full, or almost full, and load movement is not possible in any direction. The door area protection net MUST, however, always be fitted.*

Continued.....

(Instances have occurred where the door has been unlocked by loose packages falling against the door). In practice it must be remembered that the stowage nets provide a ready means of segregation of deadload for different destinations and this fact must always be considered before deciding to leave a net un-rigged when the hold is volumetrically full.

2. *Although Class 1 load must not be stacked, this does not preclude Class 3 load being stacked on top of, or alongside, a Class 1 package provided the combined weight of both loads does not exceed the maximum running load (Kg per inch) or floor loading (Kg/sq. Ft).*

3. Door Dimensions

Location	Height (In)	Width (In)	Sill Height (In)	
			MAX @ OEW	MIN @ MTW
Fwd Pax Door (Left Side)	66	29	195	176
Fwd Service Door (Right Side)	48	24	195	176
Rear Service Doors	48	24	165	160
Mid Cabin Emergency Door	-	-	187	175
No.2 Hold Door (Centre belly)	Length			
	39	33	139	127
No. 6 Hold Door	60	30	155	150

Loading Limitations & Cargo Restraint

Maximum Package Length (Physical Limitations) - Holds

The following tables give the maximum size of packages which can be accommodated in the cargo holds.

The package dimensions shown are based on that assumption that the package is loaded horizontally into the hold. Packages having dimensions exceeding those quoted may be loaded if the package can be hand manoeuvred through the door by tilting to avoid obstructions. In this case, or where package dimensions are show to be marginal from the tables, a trial loading is recommended.

To use the table proceed as follows:-

- Select the table appropriate to the hold to be loaded
- Enter the package height and width dimensions in the table and read off the inter-section which will give the maximum length of package that can be loaded.

Forward Hold - Compartments 1 & 2

Height	Width (INS)						
INS	5	10	15	20	25	30	35
5	125	106	85	68	58	45	38
10	125	106	85	68	58	45	38
15	125	106	85	68	58	45	38
20	125	106	85	68	58	45	38
25	125	106	85	68	58	45	37
30	125	95	75	62	54	44	34

Height	Width (cm)						
cm	13	25	38	51	64	76	89
13	318	269	216	173	147	114	97
25	318	269	216	173	147	114	97
38	318	269	216	173	147	114	97
51	318	269	216	173	147	114	97
64	318	269	216	173	147	114	94
76	318	241	191	157	137	112	86

Aft Hold - Compartment 6

Height	Width (INS)					
INS	5	10	15	20	25	30
5	178	175	152	123	103	87
10	178	175	149	121	101	85
15	178	175	145	118	100	81
20	177	174	139	113	98	79
25	177	168	133	111	96	76
30	176	156	127	104	93	73
35	175	147	122	103	80	70
40	174	139	116	100	78	67
45	162	131	109	96	76	63
50	146	22	106	92	71	56
55	130	117	104	91	64	42
60	94	87	53	37		

Height	Width (cm)					
cm	13	25	38	51	64	76
13	452	445	386	312	262	221
25	452	445	378	307	257	216
38	452	445	368	300	254	206
51	450	442	353	287	249	201
64	450	427	338	282	244	193
76	447	396	323	264	236	185
89	445	373	310	262	203	178
102	442	353	295	254	198	170
114	411	333	277	244	193	160
127	371	55.9	269	234	180	142
140	330	297	264	231	163	107
152	239	221	135	94		

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Loading Limitations & Cargo Restraint

Maximum Package Sizes (Structural Limitations - Class 1 & 2 Load In Compartment 6 & Class 2 & 3 Load In Compartment 1 & 2).

1. General

A. When a package of weight which requires separate restraint (i.e. Class 1 or Class 2 load) is offered for carriage, and dimensions are such that it is capable of being door, determine:-

(1) If the package is acceptable for loading without the need for spreaders
or

(2) If the package is acceptable for loading provided spreaders are used
or

(3) The package exceeds the allowable strength limits and is unacceptable.

NOTE:

1. If spreaders are required, due allowance must be made for the spreader thickness and the resulting increase in package height with - in the hold.
2. Packages of individual weight in excess of 75 Kg cannot be accepted for carriage in Compartments 1 & 2.
3. Due to access requirements within the hold for tie down around the side of a package, the maximum acceptable width of any package is normally 50 inches, however, this dimension is flexible inasmuch that packages in excess of this width may be carried provided loading staff still have sufficient access to attach the side restraint lashings. Close co-operation between loading and acceptance staff is, therefore, necessary in this instance. The door to Compartment 6 is only 30 inches wide therefore packages may have to be turned to enter the hold.

   Due to the obstruction of dip locker in Compartment 6, the maximum acceptable width in this area is reduced to approximately 40 inches.

   The flat floor width in Compartment 6 varies from approximately 60 inches aft. To 80 inches forward.

B. Packages For Trans-Shipment To Another Aircraft Type.

When packages are accepted that will be transhipped to another aircraft type, the regulations of that aircraft must also be considered.

2. Determination Of Spreader Requirement

The need for spreaders is dependent upon three main factors, thus:-

A. Consideration of distributed floor load (Kg./sq.ft.). This is calculated using the dimensions of the package actually in contact with the floor.

$$\text{Thus floor loading} = \frac{\text{Weight (Kg)}}{\text{Package contact area (sq. ft.)}}$$

B. Consideration of fore and aft running load limitation (Kg./inch).

Thus running load = $\frac{\text{Weight (Kg.)}}{\text{Package length ins.}}$

C. Consideration of a point or concentrated load acting on floor. A concentrated load will result from a load which has a very small contact area with the floor.
A good example of a concentrated load is a 4 wheeled vehicle in which it may be assumed that each wheel carries ¼ of the total weight of the vehicle. The actual contact area of the wheel to the floor is very small and it may be assumed, therefore, that the floor is subjected to 4 concentrated loads. The maximum allowable concentrated load is shown in 03-02 page 1. If this figure is exceeded spreaders are required and the load intensity is then calculated as shown for a distributed load.

D. Although the spreader requirement may be calculated, it is recommended that the chart "Determination of Spreader Requirement" on page 4 is used according to the following procedure:-

(a) Establish the weight scale with package weight and project a horizontal line to the left to intersect the diagonal line.

(b)

(i) Enter the weight scale with the package weight and project a horizontal line to the left to intersect the diagonal line

(ii) From this intersection point project a vertical line to intersect the max. Running load line.

(iii) From this intersection point project a horizontal line to the right to intersect the SPREADER LENGTH LINE - THIS IS THE MINIMUM LENGTH OF SPREADER ACCEPTABLE.

(iv) Enter the actual package length scale with the package length and project a horizontal line to the right to intersect the SPREADER LENGTH LINE - THIS IS THE MAXIMUM LENGTH OF SPREADER ACCEPTABLE.

(v) From the weight scale project a horizontal line to the right to intersect the max. Floor loading line.

(vi) From this intersection point project a vertical line to intersect the LINES GIVING NUMBERS AND SIZES OF SPREADERS.

(vii) From these intersection points select a convenient combination of spreader numbers/sizes and lengths that fall within the horizontal band between the MIN AND MAX SPREADER LENGTH LINES drawn in stages (iii) and (iv) respectively.

(c) This should become clear when following the example on the chart for a package of 500 Kg with a length of 60" and a width of 20".

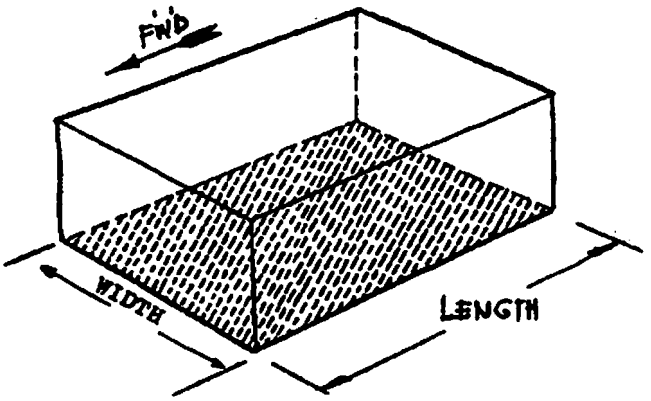
It will be noticed that for step (vii) we have a choice of 4 combinations.

	4 off	4" x 4" by 100" long (width: 16")
or	3 off	6" x 3" by 88" long (width: 18")
or	5 off	4" x 4" by 79" long (width: 20")
or	4 off	6" x 3" by 66" long (width: 24")
or	6 off	4" x 4" by 66" long (width: 24")

The last two combinations show a width of spreaders wider than the package width, therefore a choice must be made between the first three. It will probably be most convenient to use 3 spreaders 6" by 3" in section and at least 88" long.

E. Package Lengths and widths to be used for assessing spreader requirements must be based upon the following:-

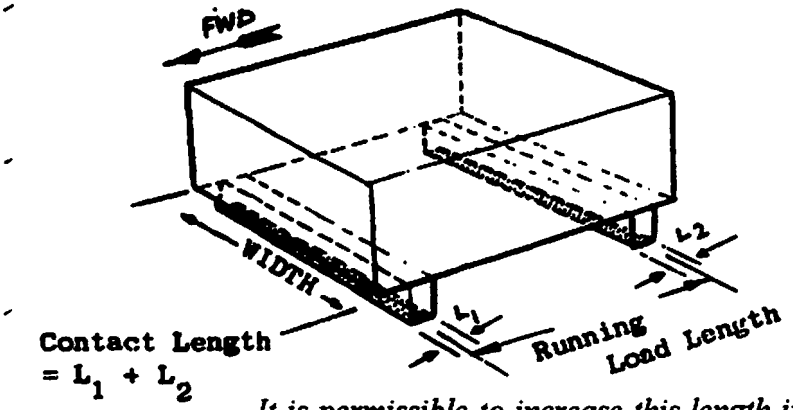
(a) Package having smooth under-surface spreader requirements must be based upon the following :-



Floor Loading:
Use actual package length & width dimensions.

Running Load:
Use actual package length dimension

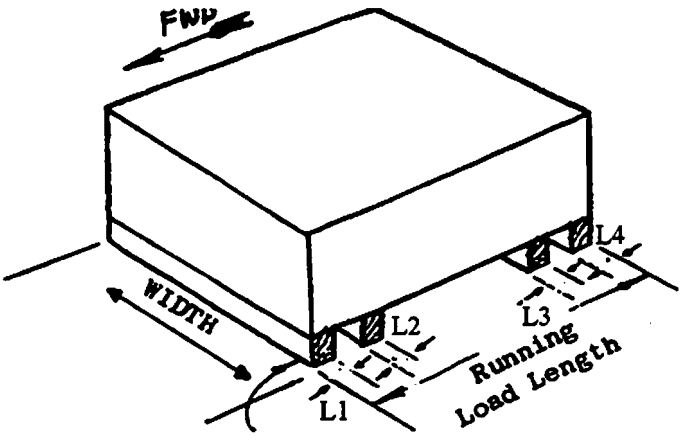
(b) Package having fork lift or similar skids on bottom surface i.e. contact on skids only.



Floor Loading:
Use contact length & width

Running Load:
Use length shown

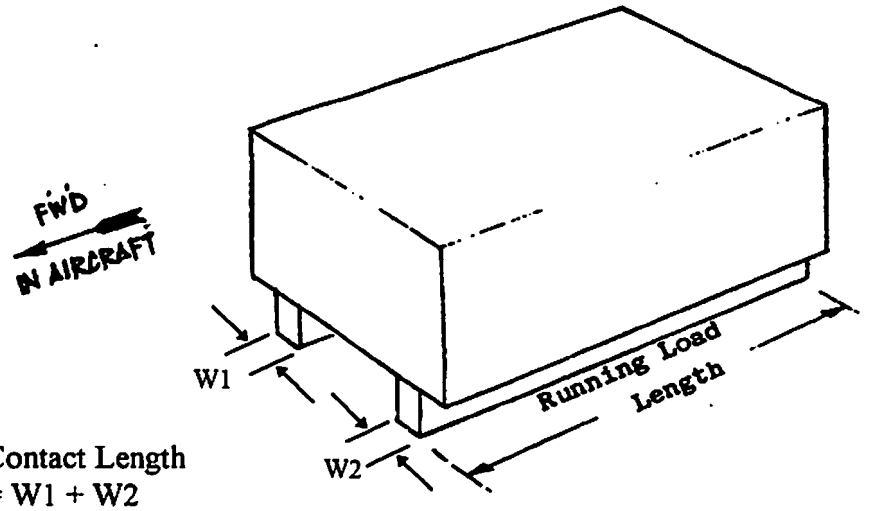
It is permissible to increase this length if necessary by placing additional skids underneath the package of similar dimensions to existing skids. See following sketch.



Additional Skid Positioned beneath package at each end

Contact Length
= L1 + L2 + L3 + L4

(c) Package with skids running fore and aft in aircraft.



Floor Loading:
Use contact length & width

Running Load:
Use length shown

Contact Length
= W1 + W2

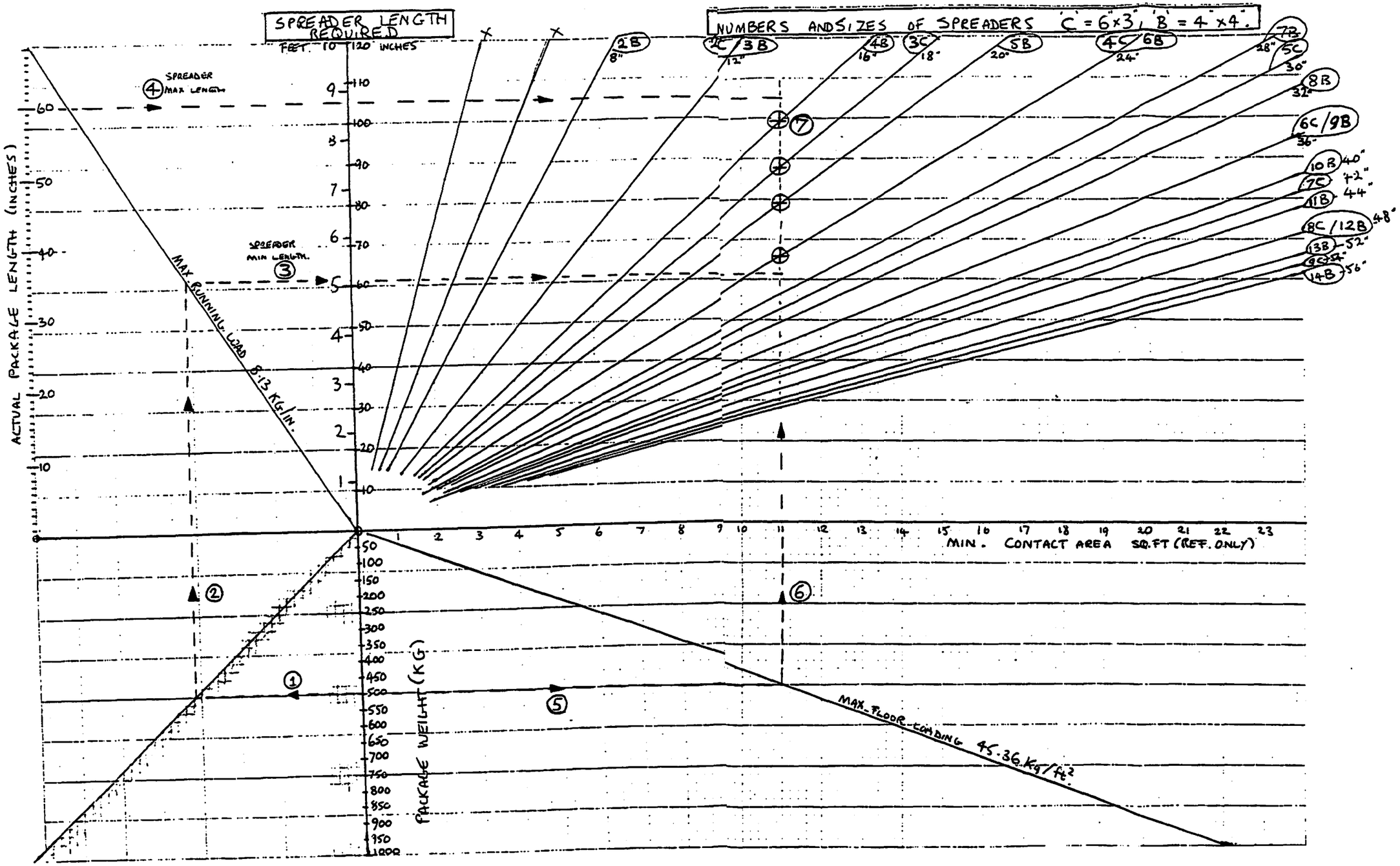
BRITISH AIRWAYS

Concorde Load & Balance

03-05-15

31 March 9

CONCORDE HOLD 6: DETERMINATION OF SPREADER REQUIREMENT



Load Spreading

1. Methods of Load Spreading

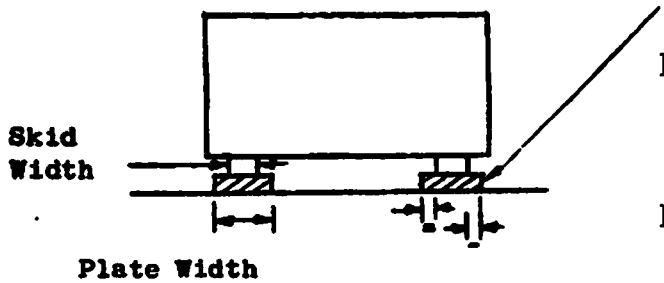
Two methods of load spreading may be employed, either by using plywood spreader plates or by using fore and aft spreaders. (If the load intensity exceeds the capability of spreader plates, this method must be used).

A. Plywood Spreader Plates

The package floor loading intensity is calculated on the dimensions of the package **ACTUALLY IN CONTACT WITH THE FLOOR**. In the case of the packages having fork lift skids on the bottom surface, the floor loading intensity must be calculated using the skid area,

$$\text{i.e. floor loading} = \frac{\text{Weight}}{\text{Skid area}}$$

Where the maximum allowable floor loading is exceeded, it is permissible to place plywood spreader plates between the skids and the floor subject to the following size limitations: -



Spreader Plate ¾" Plywood (Min Thickness)

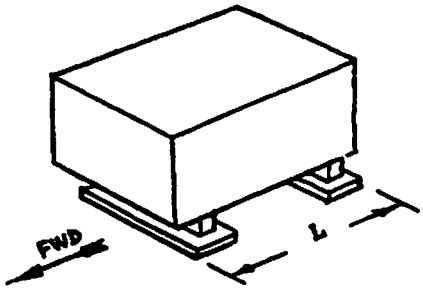
Max Effective Plate Length = Actual Skid Length plus 8" (4" extension on each end)

Max Effective Plate Width = 4 x Actual Skid Widt

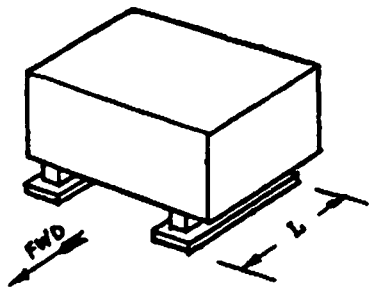
Note: Actual sizes may be greater than those shown but calculations must be based upon effective sizes.

If this methods is used to satisfy the distributed floor loading requirements, the length used to calculate the running load will be based upon the following:-

(a) Skids running laterally across Aircraft.



(b) Skids running fore and aft in Aircraft.



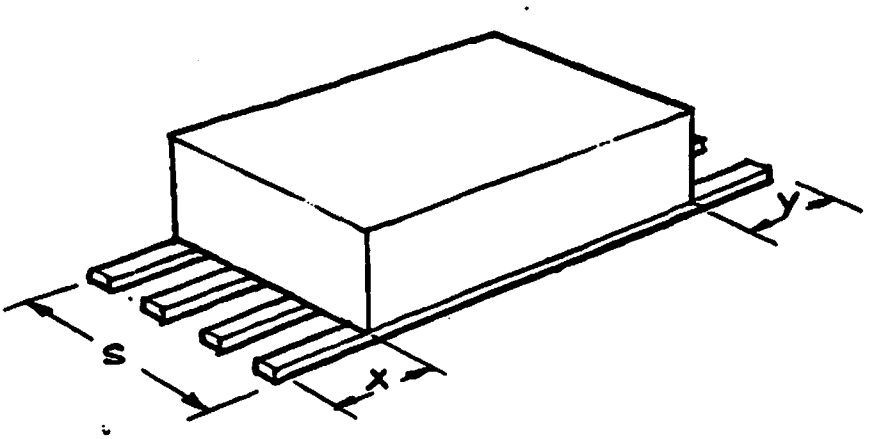
L = Length to be used in calculating running load, i.e.

$$\text{Running Load} = \frac{\text{Weight (Kgs.)}}{\text{Length (Ins.)}}$$

It will be seen from the diagrams that it is usually desirable to arrange the package so that the skids are running for aft in the aircraft hold.

B. Fore And Aft Spreaders

If load spreaders are required and spreader plates cannot be used (or as an alternative to plates), fore and aft spreaders may be placed in the hold.
Obtain the spreader length and section required from the chart "Determination of Spreader Requirement"



X MUST EQUAL Y FOR EACH SPREADER TOTAL OVERHANG = X + Y

Spreaders must never exceed 1.75 times the actual package length in contact.

Spreaders must be continuous in their length.

NOTE: Heavy Cargo requiring load spreaders should only be carried in Compartment 6.

Cargo Restraint

1. General

All load on aircraft must be secured because of the acceleration imposed on it by the movement of the aircraft both on the ground, i.e. take -off and landing, and in the air.

A. Definitions

Acceleration This is the **Rate Of Change** of speed of an object.

Force The result of an **Acceleration** on an object is a **Force** (The force due to the gravitation of the earth is termed **Weight**).

'G' All forces in any direction can be expressed in terms of weight. For example, if under emergency landing conditions, the force applied in the line of motion to an aircraft to slow down (change its speed) is 9 times the weight of the aircraft, this force can be expressed in terms of decelerations as 9G i.e. nine times its weight.

There are 4 main reasons which cause load to shift; these are: -

(1) **Acceleration On Take-Off**
Load tends to slip back.

(2) **Yawing (Slide Slipping)**
This normally occurs in turbulent conditions and during approach to land. This requires load to be lashed on both sides.

(3) **Slowing Down (Severe In Emergencies)**

(4) **Vertical Drops**
Experienced in bumpy conditions. Load tends to leave the floor.

To restrain against:-

(a) Forward movement - all the lashing needed must be from the point of restrain on the load to lashing point behind this point of restraint.

(b) Backward movement -Lashing must be from the point of restraint on the load to a point forward of this.

(c) Upward movement - Lashing must be from a point as close as possible to the load, preferably going over the load from a lashing point on one side to a lashing point on the opposite side.

(d) Sideways movement - Lashing against sideways movements must always be on the opposite side to the side being restrained.

B. Securing Load

To meet there 4 conditions, all load on an aircraft must be restrained adequately against the forces likely to be imposed on it in any **Particular Direction**. These forces are expressed as follows.

	Fwd 'G'	Back 'G'	Side 'G'	Up 'G'
Compartment 1 &2	1.5	1.5	1.5	3.0
Compartment 6	3.0	1.5	1.5	3.0
Passenger Cabins	9.0	1.5	2.25	4.5

It will be noticed that the restraint required for load at passenger cabin and flight deck levels is grater than those for load at the lower levels of the belly holds.
The nets in the holds will restrain the maximum permissible loads for the netted areas provided:-

(a) The load comprises only Class 2 and 3 load.
(b) The load is tightly packed and movement is not possible in any direction.

C. Lashing Material

The standard lashing equipment used for tie down is the 'A' strap assembly.
If for any reason it is not possibly to use 'A' strap assembly, rope must be used instead. The grade of rope used has an ultimate strength rating of 908 Kg, but due to the uncertainty of lashing angles, the allowable ultimate strength which must be used for restraint calculations is 640 Kg.
When rope lashing is used, it is essential to realise that the amount of restraint achieved is governed by the weakest part of the system, e.g. if a 1,000 kg, ring is used with a 500 kg rope, the maximum restraint can only be 500 Kg.

D. Overall Tie Down Lengths

The overall length of fore and aft lashings must not exceed the following figures: -

Compartment 1	130 ins.
Compartment2	107 ins.

E. Tie Down Requirements for Two Packages of equal Weight and Size

Provided such packages are placed together in a fore and aft direction, lashing may be calculated on the combined weight of both packages if the 'A' strap is used. If rope is used, fore and aft lashing may be calculated on the combined weight of both packages, but individual side restrain must be provided to each package.

NOTE: If the strength of rope available locally is not know, a sample (about 10') should be sent to your Traffic Controller. If supplies are not available regularly, ident on Stores Demand Note Code No. ORPZ0030.

F. Hold Tie Down Fittings

i) Compartment 1 & 2 (Lower Hold)

The maximum ultimate load limitation for net lashing attachment points is 182 Kg (providing the net is detached).

The above loads may be applied at any angle not exceeding 45 from the perpendicular centre line of the fitting.

ii) Compartment 6 (Upper Hold)

The maximum ultimate load limitations for the tie down fittings in the holds are as follows:-

Lashing points in floor.	1800 Kg	Fixed points
Roof points in floor.	360 Kg	Fixed points
Side wall points (if net detached)	360 Kg	Fixed points

The above loads may be applied at any angle not exceeding 45 from the perpendicular centre line of the fitting.

NOTE: 1. This information is shown for reference only. Loads positioned and lashed using the 'A' strap assembly will automatically comply with these ratings.

2. Tiedown Using 'A' Strap Assembly

This strap assembly has been designed to provide the correct amount of restraint in under floor freight holds for packages required separate tie down. Each assembly comprises two 'A' straps and three 8 ft. Long flat straps. In the case of very long packages where the 8 ft. Straps do not provide sufficient length, three additional 8 ft. Straps may be joined on.

Provided the strap assembly is correctly fitted over the package, restrain is automatically provided in all directions and no tie down strength calculations are required.
The maximum package weights which may be restrained are: -

(a) For packages not exceeding 375 Kg, one strap assembly is required (i.e. two 'A' straps and three 8ft. Straps).

(b) For packages exceeding 375 Kg. Up to maximum weight of 750 Kg, two strap assemblies are required. Separate strap assemblies are provided for Concorde aircraft and it is essential that the correct assembly is used. These are colour coded as follows: -

CONCORDE 'A' strap webbing colour white.

A. Procedure

(i) Locate 'A' strap tie down fittings in the Floor lashing points as close as possible to the forward and aft ends of the package.

(ii) Attach the top and side straps to both front and rear 'A' straps as shown on the diagram and pull tight.

NOTE: The top strap must be tightened first since this pulls the 'A' straps into their correct positions and ensures an even distribution of load in the strap assembly.

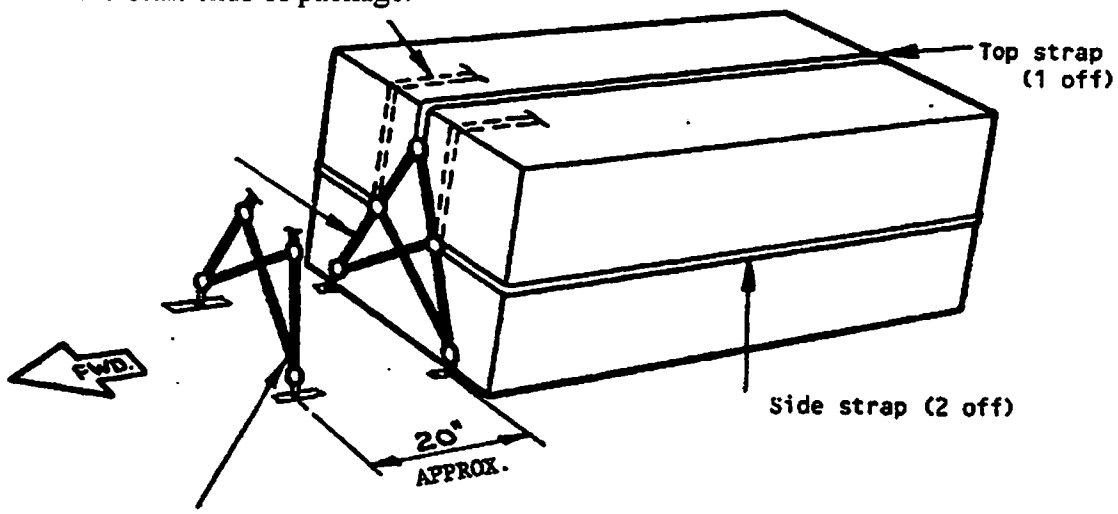
(iii) If the package weight exceeds 375 kg. Repeat stages (a) and (b) with the second pair of 'A' straps positioned 20 inches from the first straps.

NOTE: These strap assemblies are to be placed in the stowage bag after use and must not be removed from the aircraft. Lost straps may cause a loading delay at another station and the replacement cost is very high.

Freight Hold Restraint Strap Assembly

If an irregular top surface prevents adequate restraint using one top strap, additional straps may fitted as shown by dotted lines. The overall restraint values are however unchanged.

'A' strap (2 off) Position as close as possible to forward &aft ends of package.

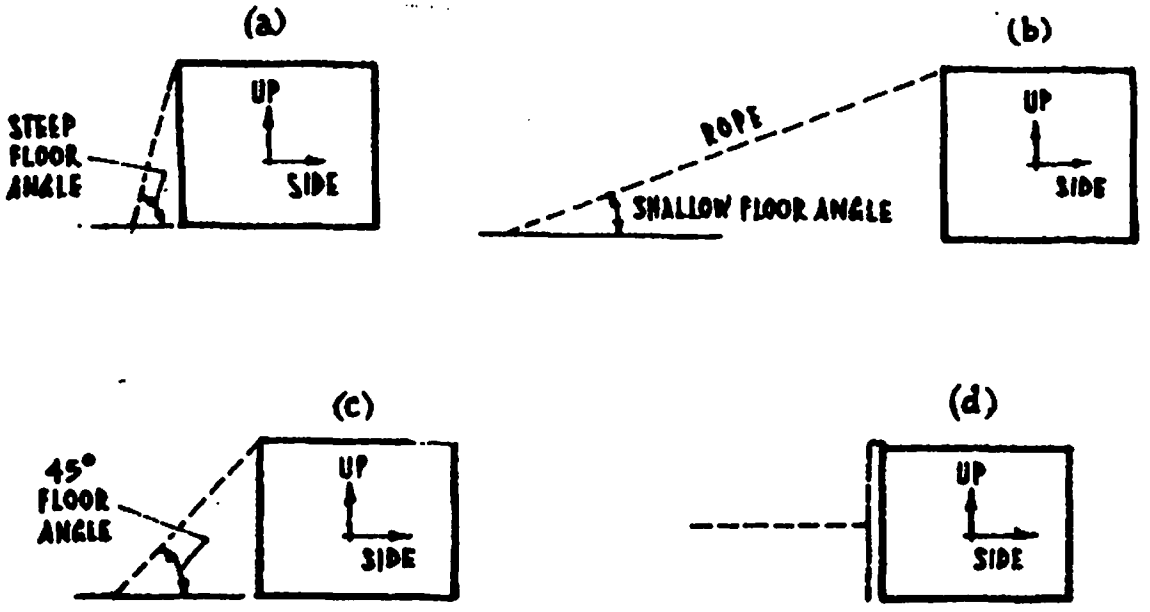


Additional 'A' straps for package weights exceeding 375 kg. (required at each end of package, together with additional top and side straps).

3. Tie Down Using Rope

A. Effect of Angle

When a rope is inclined at an angle to the floor, the effectiveness of the rope restraint is reduced as the angle relative to the direction of the direction of the load to be restrained increases. However, if the angle is approximately 45^0 to the floor line, the rope may be considered to act in more than one direction. The following diagram should clarify this point.



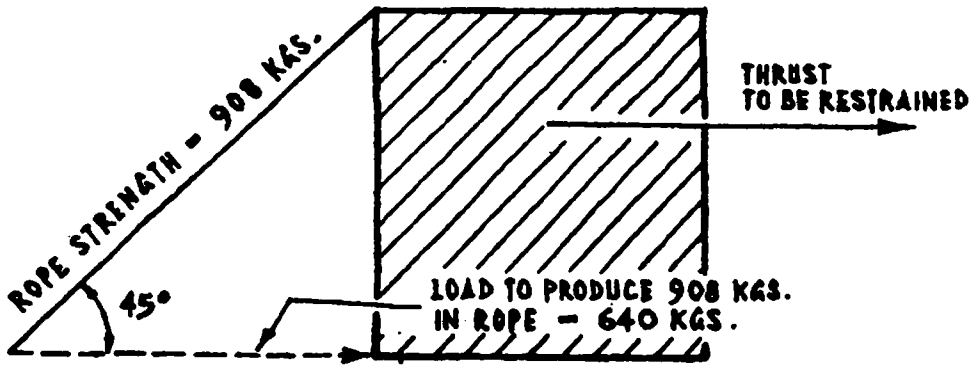
(i) Restraint is very effective in UP direction but poor in SIDE direction.

(ii) Restraint is very effective in SIDE direction but poor in UP direction.

(iii) Restraint is effective in both UP and SIDE directions, but is not so effective as (a) in the UP direction or (b) in the SIDE direction. In other words the most effective restraint is provided by ropes which are acting in the same direction as the applied load a shown in diagram (d). It will be seen that method (c) therefore represents a good compromise and reduces the number of ropes required to a minimum.

B. Effective Reduction Of Rope Strength Due To 45^0 Angle.

Although the 45 angle is good compromise, an effective reduction in the rope strength is required when calculating the individual directional restraints thus:



The maximum allowable load to produce 908 Kg. (ultimate rope strength) in the rope may be determined by measuring the sides of a right angled triangle, i.e. 9.08 ins. Or using simple trigonometry and is found to be 640 Kg. In other words if rope is inclined at 45^0 the resultant load in the rope, to restrain a thrust of 640 Kg. Will be 908Kgs.

At steep angles, diagram (a), the resultant load in the rope will be consider- ably higher (640 Kg thrust at 75 = 2470 Kg. In the rope) and at shallow angles diagram (b) the resultant load in the rope will be lower (640 Kg. Thrust at 25 = 701 Kg in the rope).
The rope load, therefore, will only equal the thrust to be restrained when the angle in 0 , see diagram (d).

If it is assumed that the lashing angles are approximately 45^0 to the floor line, the effective rope strength can, therefore, be reduced from 908 Kg. To 640 Kg. And the angle ignored for restraint calculations. The important point to remember is that although an effective rope strength of 640 Kg. Is used in calculations, the actual load in the rope due to the angle is 908 Kg. i.e. the ultimate rope strength.

NOTE: 1 *It is permissible to consider a rope 45^0 acting in more than one direction since it is assumed that the restrained accelerations are applied independently and do not act simultaneously.*

2. *All ropes should be attached to, or pass over the top of packages. This is to avoid the package toppling or overturning when subjected to the 'g' loads.*

C. Maximum Allowable Ultimate Loads on Tie Down Fittings in Compartment 6.

Due to lashing angles, the following values are to be used for all restraint calculations when rope is used.

Location	*Allowable Ultimate Load*
Lashing points in floor	1250 Kg
Roof points (if net detached)	250 Kg
Side wall points (if net detached)	250 Kg

EXAMPLE: A package weighing 500 Kg has been positioned in Hold 6.

Required Tie Down - Forwards 500 x 3.0 = 1500 Kg
Side 500 x 1.5 = 750 Kg (each side)
Rear 500 x 1.5 = 750 Kg
Up 500 x 3.0 = 1500 Kg

FORWARDS Lashings required = $\frac{1500}{1250} = 2$

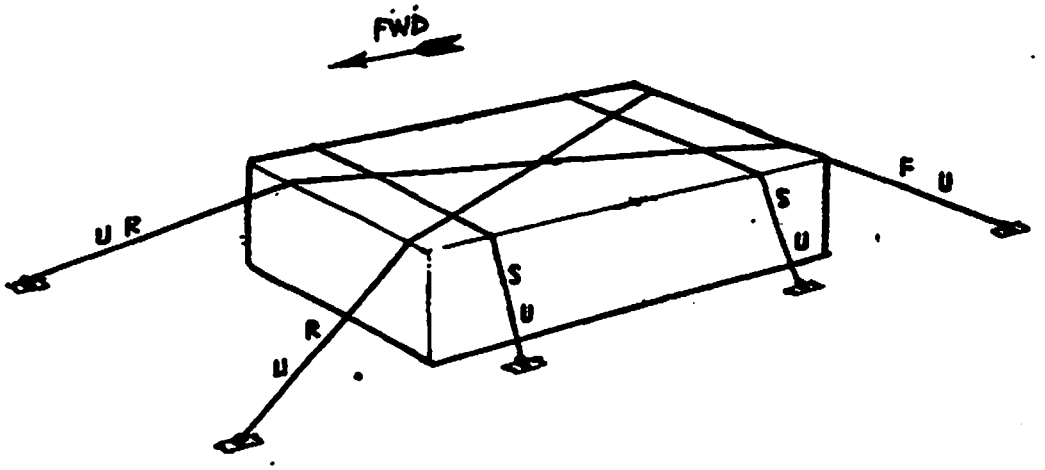
SIDE Lashings required = $\frac{750}{250} = 3$ If net attachment points are used.

REAR Lashings required = $\frac{750}{1250} = 1$ Therefore use 2 for symmetry.

UP Lashings required = $\frac{1500}{1250} = 2$

NOTES: 1. Provided lashings are approximately at 45^0 to the floor line, they may be considered to act in more than one direction.

2. Although the rope strength is 640 kg, the limiting tie down points have lower values and are hence the limiting values.



The lashing are labelled in the direction in which they are effective. In this diagram, the up restraint is provided by the restraints primarily required for the other directions.
(R = REAR, U = UP, S = SIDE, F = FORWARD).

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Seat Loading in Passenger Cabins

1. Limitations

(a) The maximum weight per seat place is 50 kgs.

(b) The type of load suitable for seat loading is restricted to the following:-

(i) Post Office mail bags.

(ii) Soft crushable load e.g. fabrics, whole individual piece weight does not exceed 25 kg. But whose size is approximately the same as a mail bag. The decision to carry load other than mail bags must be at the discretion of the Airport Manager (or equivalent) and will only be carried if Post Office mail is not available.

(c) All individual pieces must be adequately restrained in all directions by the rope pattern shown on the diagrams, i.e. it shall not be possible for individual pieces to "break out" in any direction.

(d) Seats must be progressively loaded forward from the rearmost seats in the compartment.

2. Procedure

(a) Remove seat cushion and seat track inserts and stow under seat.

(b) Fold the two centre armrest into a vertical position between the seat backs.

(c) Place polythene sheeting on seat to prevent contamination of upholstery.

(d) Insert tie down rings into seat tracks as shown in diagram and attach ropes as required. (Tie down rings and rope must have an ultimate strength rating of 2000 lb/907 kg). Do not attach ropes to any part of the seat leg structure.

(e) Attach ropes around outer seat members wrapping a suitable soft protection around seat structure to prevent local damage to the upholstery. Do not attach ropes to the rests.

(f) After placing load on seat, securely tie ropes down to pattern shown in diagram. A knot should be tied wherever ropes cross each other.

Chapter 4

Not Applicable to this aircraft type

Chapter 5

Contents

05-04 Stowage And Documentation Instructions - Special Deadload (Cntd)

2. Cabin Baggage & Specially Authorised Cabin Loaded Baggage

3. Diplomatic Mail
   A. Queen's Messenger Accompanied Diplomatic Mail - 10 Kg or Less
   B. Queen's Messenger Accompanied Diplomatic Mail - more than 10 Kg
   C. British Airways Security Courier Accompanied Diplomatic Mail
   D. Unaccompanied Diplomatic Mail

4. Checked Baggage
   A. Checked Bags of more than 25 Kg each
   B. Battery - Driven Wheelchairs and other Mobility Aids as Checked Baggage

5. Cabin Loading Of Deadload
   A. Cabin Loading On Seats
   B. Cabin Loading On Floor (Seats Removed) - Not Permitted On Concorde

6. Deadload Requiring Special Handling
   A. Press Material, Newsfilm and Small Items of Cargo
   B. Items over 150 Kg each
   C. Valuable Cargo
   D. Munitions Of War
   E. Human Remains
   F. Fresh Meat, Agricultural Food Products And Seafood
   G. Vaccines Requiring Re-Icing
   H. Hatching Eggs - Not Permitted On Concorde
   I. Flowers And Plants
   J. Paper. Plastic And Other Inflammable Material
   K. Undeveloped Film
   L. Petrol/Diesel Powered Vehicles Or Engines - Not Permitted On Concorde

05-05 Special Loading Facilities And Accessories

1. Stretcher - Trestle Mounted - Not Permitted On Concorde
2. Stretcher - Emergency Floor Mounted - Not Applicable To Concorde
3. Security Locker
4. Infant Car Seat

05-06 Special Instructions

1. Incapacitated Passengers - Seats To Be Occupied
2. Baggage Unloading and Delivery
3. Security Procedures - Hold Stowage Of Cabin Baggage

05-07 Notification To Captain

05-08 Loadsheet

05-09 Nil Change Of Load Certificate

1. General

To comply with the appropriate article of the Air Navigation Order, the person responsible for the trim of the aircraft must give written instructions to the person responsible for the physical loading. For this purpose, a Loading Instruction and Report Form is used.

Written instructions must also be given when load is to be moved to adjust trim. This applies whether uplift or discharge of load is involved or not.

Loading and Load sheet activities are not complete and the aircraft not clear to leave until the ground operations official responsible for the departure is satisfied that the Load sheet (aircraft and ground copies) and Loading Instructions Report show the same figures.

2. Load Planning

Route Capacity Control Advice's (RCCA's) are issued by Commercial Control Manager for all flights. These allocate to stations, the weight and volume to be used for Baggage, Cargo and Mail. Any queries to LONQRBA.

A. **On Multi-Sector Flights,** stations must consider the needs of en-route stations as well as their own.

With this in mind, the following principles should be following as far as possible.

(1) Load must never be overstowed by load to another destination. Always follow the "first on, last off" principle.

(2) When trimming the aircraft, always consider the trim out of en-route stations. Whenever possible, at the originating station the aircraft should be trimmed so that when load for en-route stations is removed, the aircraft will remain in trim without having to move transit load even if there is no joining load.

B. **On Single Sector Flights,** whenever possible, the baggage should be split between the forward and aft holds thus facilitating faster baggage offload at the destination.

C. **Concorde Load Plan**

Stations must complete a Concorde Load Plan (form number T1979) for every flight. Instructions for completing this form are given below. It must be used with a trial trim to ensure a forward trim when loaded, thereby maximising payload and fuel availability (See Section 6).

..... Cont. over page

Completion

(i) Heading

Flight Number	Self explanatory
Date	Date of departure from the station completing the load plan.
Aircraft Registration	Full registration.
Crew	The number of Flight Deck and Cabin Crew e.g. 3/6.

(ii) Part 1A Load Planning

This section must be completed for every flight.

Dry Operating Weight Calculation (Item A)	The Dry Operating Weight is the sum total of the Basic Weight and the weights for crew, crew baggage and pantry. A column is provided to similarly calculate the Dry Operating Index.
Estimated Total Traffic Load (Item B)	Enter the actual weights, if know, for transit deadload and transit passenger load in the first two lines. If the actual weights are not know, estimates based on the booked load should be used. Enter the estimated weights of joining deadload and passenger load in the next two lines. The Estimated Traffic Load is the total of all of these weights.
Estimated Zero Fuel Weight Calculation	This is the total of Item A and Item B above.
Estimated Zero Fuel C of G	Take this form the trial trim.

(iii) Part 1B Load Distribution Plan

Completion of this section is optional. If required it may be used to plan the most advantageous distribution of load and use of load and use of available volume.

(iv) Part 2 Determination of C of G Limited TOW (Fuel Sheet Item C)

This section must be completed for every flight.

Specific Gravity of fuel	Obtain from Engineering.

Max T. O. Fuel - Table 5	Use Table 5 (01-01-08 or reverse of from) to obtain this figure. From the column headed 7FCG (% Co.). Select Estimated Fuel C of G already entered in Part 1A. Read across to the nearest Estimated Zero Fuel Weight. That figure is the maximum fuel available as restricted by trim at 53.5% take off. It is only applicable for a fuel Specific Gravity of 0.790. For other SG s a correction is obtained from the lower part of Table 5.
SG Correction +/-	Add or Subtract the SG correction explained above as applicable.
Corrected Max T.O. Fuel	This is the sum of the first two lines.
Estimated Zero Fuel Weight	As explained above.
53.5% Limited TOW	This figure is the estimated Maximum Take Off Weight as restricted by trim at 53.5% take off. It is planning weight and may possibly be exceeded by achieving a more forward trim.
54% Take Off Option	A fixed amount of 1500 kg is the extra weight available for fuel should 54% be used for take off.
54% Limited TOW	This figure is the estimated Maximum Take Off Weight as restricted by trim at 54% take off. It is the total of the 53.3% figure and the 54% option. It is possibly be exceeded by achieving a more forward trim.

(v) Volumetric Fuel Limitation Check.

The purpose of this calculation is to ensure the maximum allowable take - off fuel as limited by trim or the Total in Tanks figure from the Fuel Sheet, do not exceed the Maximum Fuel Tank .
Capacity given in Table 11 (01-01-16 or on the reverse of this form) minus the Taxi Fuel.

This items marked a circled asterisk * must be transferred to the Fuel Sheet.

3. Loading Instruction Report Forms

These are combined load distribution, planning and loading instructions documents. A specimen copy is included in this instruction.

A. Distribution

The number of copies prepared for each flight are at the discretion of the local Airport Manager.

However, at least one Form must be prepared by the Load Planner for the Loading Supervisor. After any necessary amendments, and on completion of loading, the form must be signet by the Loading Supervisor and returned to the Load Planner, to be kept with the flight documentation for the statutory time in the Departure Airport file.

B. Completion

Detailed completion instructions are contained in Ground Operations Manual Instruction D/1.

The following basic information must be recorded in each Compartment Cabin Area or seat position in which load for any one destination is to be placed.

(i) Baggage by :

(a) Standard Weight/Number of pieces.

Or (b) Actual weight

(ii) Cargo, Mail and EIC by weight

(iii) Destination Station in 3 letter code, if a multi-sector flight.

(iv) Tie down instructions for items which require individual restraint.
Livestock, special stowage etc. should be entered in the 'Special Instruction' box.

(v) For OFF and TRANSIT see Ground Operations Manual Instruction D/1.

BRITISH AIRWAYS

STATION	FLIGHT Nr	DATE	A/C REG	PREPARED BY

Loading Instructions and report
CONCORDE

DISEMBARKING LOAD	CPT SECTION

SPECIAL INSTRUCTIONS
TRANSIT
JOINING

6
(63) A + B = 102 CU. FT.
(63b)
(63a)
DOOR
16 CU. FT.
DIP. LOCKER (When fitted)
(62b) 58 CU. FT.
(62a) 66 CU. FT.
(61) 108 CU. FT.
MAX. LOAD 2268 KGS. (Inc. DIP. LOCKER)

2
(22) 88 CU. FT.
DOOR HOUSING
DOOR
(21) 7 CU. FT.
MAX. LOAD 585 KGS.

1
(12) 83 CU. FT.
(11) 53 CU. FT.
MAX. LOAD 895 KGS.

Codes:
B - Baggage
C - Cargo
M - Mail
L - Livestock
P - Perishable
X - Empty Section

DEVIATIONS +/-

This aircraft has been loaded in accordance with these instructions except for the deviations recorded. The load has been secured in accordance with company regulations.

Signed...

Loading Supervisor or person responsible for loading

M307

BRITISH AIRWAYS

Concorde Load & Balance

05-01-06
31 March 99

CONCORDE LOAD PLAN

FLT -	DATE -	A/C REGN -	CREW -

BASIC WEIGHT					
CREW					
PANTRY					
DRY OPERATING WEIGHT					

CONFIG		
SEATS BLOCKED	-	
SALEABLE SEATS	=	
PAX BKD	-	
SEATS AVAIL	=	

EST TOTAL TRAFFIC LOAD

PAX x 75 KG					
BAGS (PAX x 1.2 = PCS x 16)					
COURIER					
CARGO					
EIC					
MAIL					
E.T.T.L					
DRY OPERATING WT					
EST. ZERO FUEL WT					

PLANNED DISTRIBUTION

		TOTAL				C1	C2	C6	0
INCL COU	B								
INCL EIC	C								
	M								
TOTAL									
						995	585	2767 / 2268	

CMPT. MAX

PAX DISTRIBUTION

MAX	A	B	C	D
PLANNED	A	B	C	D

PLANNED CABIN BAG DISTRIBUTION	FWD	PAX (A + B) x 3 =	
	MID	PAX (C + D) x 3 =	

ADDITIONAL INFO FOR FLT OPS

EST ZFCG

TABLE 5 - MAX. T.O. FUEL							
S.G. CORRECTION	+/-						
CORRECTED MAX T.O. FUEL @ 53.5%			1	5	0	0	
54% T.O. CORRECTION	+						
CORRECTED MAX T.O. FUEL @ 54.0%							

FULL TANKS @ S.G							

RTOW/MTOW							
EZFW							
MAX T.O. FUEL (BY WT)							

CHECK

GP (25/4/95)

Stowage and Documentation Instructions - Dangerous Goods.

Introduction

British Airways holds a written approval from the United Kingdom Civil Aviation Authority to transport dangerous goods by air in accordance with the International Civil Aviation Organisation's Technical Instructions For The Safe Transport Of Dangerous Goods By Air.

Both Domestic and International Legislation requires that the carriage of dangerous goods must fully comply with the provisions of current ICAO Technical Instructions. These provisions are reflected in the current edition of the IATA Dangerous Goods Regulations which British Airways uses as a working manual.

Handling and Loading information is contained in Section 9 of the IATA Dangerous Goods Regulations.

Restraint of Dangerous Goods

Dangerous Goods must be loaded and secured in such a manner that will prevent any movement during flight, which would change the orientation of the packages. This can be achieved, either by ensuring the compartment or ULD is volumetrically full, or by means of individual restraint by use of straps, rope, etc.

Spillable batteries containing acids must be restrained by the use of straps, rope, etc. Securing by other baggage or cargo is not permitted.

For packages containing radioactive materials, the securing must be adequate to ensure that the separation requirements contained within the IATA Dangerous Goods Regulations are met at all times.

Additional US Requirement

When carriage of dangerous goods is FROM, TO or WITHIN the USA the following additional US Department of Transportation regulations apply.

The total net quantity of dangerous goods is limited to 25 kgs per inaccessible hold except for :-

1. NON FLAMMABLE NON TOXIC GASES (RING & RCL) - LIMITED PER HOLD 75 KGS NET WEIGHT.

2. Class 9. Only standard aircraft and hold limitations apply for class 9 including Magnetised Material (MAG), Miscellaneous Dangerous Goods (RMD), Dry Ice (ICE), Consumer

   Commodity - ORM-D etc

On the Concorde there are two holds.

FWD HOLD - Compartments One and Two
AFT HOLD - Compartment Six.

Stowage and Documentation Instructions - Dangerous Goods

REF NO.	CLASS	ITEM	CODE	CPT	LIMITS	NOTES	ENTRY REQ'D	
							NTC	LDM
1	1.4S	EXPLOSIVES	RXS	ANY		Explosives of classes other than 1.4s are NOT acceptable for carriage in passenger aircraft.	YES	YES
2	2.1	FLAMMABLE GAS	RFG	ANY			YES	YES
3	2.2	NON-FLAMMABLE NON TOXIC GASES	RNG	ANY			YES	YES
4	2.2	REFRIGERATED LIQUID GAS	RCL	ANY		1. Not in same Hold as Live animals or Hatching Eggs.	YES	YES
5	3	FLAMMABLE LIQUID	RFL	ANY		1. Not adjacent to Class 5.1 (ROX).	YES	YES
6	4.1	FLAMMABLE SOLID	RFS	ANY			YES	YES
7	4.2	SPONTANEOUSLY COMBUSTIBLE	RSC	ANY		1. Not adjacent to Class 5.1 (ROX)	YES	YES
8	4.3	WATER REACTIVE MATERIAL (DANGEROUS WHEN WET)	RFW	ANY		1. Not adjacent to Class 8 (RCM).	YES	YES
9	5.1	OXIDISING MATERIAL	ROX	ANY		1. Not adjacent to Class 3, Class 4.2, (RFC, RSC).	YES	YES
10	5.2	ORGANIC PEROXIDE	ROP	ANY		Class 8 .(RFL, RSC, RFW, RCM).	YES	YES
11	6.1	TOXIC	RPB	ANY		1. Not in same CPT as, or adjacent to, foodstuffs. 2. Not in same CPT as, or adjacent to, live animals 3. Not in same CPT as, or adj to, hold loaded catering equipment.	YES	YES
12	6.2	INFECTIOUS SUBSTANCES	RIS	ANY		1. Not in same CPT as, or adjacent to, foodstuffs. 2. Not in same CPT as, or adjacent to, live animals 3. Not in same CPT as, or adj to, hold loaded catering equipment.	YES	YES
13	7	RADIOACTIVE CATEGORY I	RRW	ANY		NOT PERMITTED		
14	7	RADIOACTIVE CATEGORY II & III	RRY	ANY		NOT PERMITTED		

REF NO.	CLASS	ITEM	CODE	CPT	LIMITS	NOTES	ENTRY REQ'D	
							NTC	LDM
15	8	CORROSIVE	RCM	ANY		1. Not adjacent Class 4.3 (RFW).	YES	YES
16	9	MISCELLANEOUS DANERGOUS GOODS	RMD	ANY			YES	YES
17	9	MAGNETISED MATERIAL	MAG	ANY	Maximum weight of SINGLE magnetic source without compass check - 500 kg	1. Load in random fashion ie. front to rear, top to bottom. This assists in cancelling out the magnetic fields generated by each package. 2. For single magnetic source in excess of 500 kg consult the Station Engineer who will decide if a compass swing is required. 3. Ferrous metal is not considered to be magnetised material and is subject to limitation.	YES	YES
18	9	DRY ICE	ICE	6	200 kg	1. Ventilate HOLD before entering to unload. 2. Not in same HOLD as hatching Eggs or AVI.	YES	YES
19		CARGO AIRCRAFT ONLY ITEMS	CAO	NOT PERMITTED				

20. Reporting of Damage and Spillage of Restricted Articles

A. Damaged Packages - Safety Precautions

Restricted articles packages showing signs of leakage, fumes or other evidence of damage should be removed to a safe isolated place, preferably in the open air. Wherever possibly, remotely operated mechanical handling devices, such as a forklift truck, should be used to remove damaged packages so as to minimise danger from fumes or skin or clothing contact with material which may be dangerous. No attempt should be made to open damaged packages.

In all cases of doubt, call the Airport or Town Services, who, in most countries, have access to Hazard Identification schemes detailing the precautionary measures necessary when dealing with spillage's or other incidents involving hazardous chemicals or other
materials. The engineer responsible for handling the aircraft must be told immediately of any spillage which has occurred inside the aircraft.

When handling damaged packages the following general precautions should be taken:

(1) Do not allow the contents of the package to come into contact with any part of the body.

(2) Do not inhale any vapour or fumes.

(3) Guard against fire

(4) Never load a damaged package or one suspected to be damaged into any aircraft.

When part of a consignment is found to be leaking or emitting fumes, the entire consignment, or in the case of mixed consignment, that part containing restricted articles, must be stopped. After reference to the local fire authority to ensure the packages are safe to handle, the consignment must be returned to the shipper if at origin. If discovered at a transit or transhipment point no attempt is to be made to effect repairs without prior reference to the Route Divisional Customer Service Controller. Charges for repairing etc, if authorised by Customer Service Controller, are to be borne by the shipper.

B. Damage to Radioactive Packages - Safety Precautions

In the unlikely event of damage to a consignment as the result of a accident, fire or other cause, precautions should be taken:

(1) To isolate the consignment at once and keep personnel away until qualified persons with proper equipment give instructions for safe handling and/or decontamination.

(2) If the inner container is damaged, to avoid contact with, or inhalation of the material.

(3) According to the location of the aircraft, to notify the Civil Aviation Authorities and/or Airport Authority, or otherwise as required by local law regulations. If appropriate seek

technical assistance from qualified radiochemical authorities such as Atomic Energy Centre, Military, Civil Defence or Fire Service, Hospital Medical Officers, etc.

Reporting of Spillage or Leakage

(1) Introduction

This instruction has been issued to alert staff to the extreme importance of reporting spillages or leakages from cargo and baggage on both passenger and freighter aircraft.

The integrity of aircraft structures and components may be adversely affected by spillage of powders or liquids in the aircraft holds.

Any liquid or powder found in aircraft holds should be treated as potentially dangerous until a positive identification can be made.

'DAMAGE DUE TO MISHANDLING COULD CAUSE A SPILLAGE'

(2) Procedure

When spillage or leakage is discovered in holds, compartments, ULDs or on equipment used for loading or unloading aircraft, the Engineer and Senior Station Official must be notified immediately.

The Senior Official must check the relevant documentation and, if necessary, institute a check of on/offloaded freight and, where possible baggage, in order to determine to origin and nature of the spillage.

Assistance in establishing the identity of any spillage suspected as emanating from freight can be obtained from the Cargo Unit which dispatched the freight.

This information must be passed to the Engineer as soon as possibly in order that appropriate engineering action can be taken in accordance with Maintenance instructions.

The incident must be treated as a Ground Handling Incident and reported as such to the appropriate Customer Service Support Manager and Air Safety Department.

Senior Station Officials are responsible for ensuring that all staff concerned with handling British Airways aircraft and equipment are made aware of the requirements of this instruction.

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Stowage and Documentation Instructions - Live Animals

1. General

The welfare of animals in aircraft is the subject of UK Government legislation. The relevant order is 'The Transit of Animals (General) order 1973'. Under this order it is the duty of every person responsible of loading or unloading animals, to ensure that they are not and will not be caused injury or unnecessary suffering, due to the use of inadequate containers, improper stowage, exposure to weather, lack of fresh air, exposure to undue fluctuations of temperature, humidity or air pressure, or undue noise or vibration.

The following manual are available for reference:

IATA Live Animals Manual
Customer Service Manual B/16
Cargo and Mail Manual Section F
Ground Operations Manual D/12

Live animals must travel as cargo on all British Airways flights, with the exception of the categories listed below where carriage as baggage is permitted.

2. Exception For Carriage of Live Animals as Baggage

a. On Domestic flights within the United Kingdom (including Jersey) live animals may be carried as baggage.

b. On International and Intercontinental Flights, only domestic cats and dogs may carried as baggage provided the requirements of the country of export, import and transit stations are met.
See Customer Service Manual B/16 for exceptions.

NOTES:

i The Shippers Certificate required for animals consigned as cargo is not required when animals are carried as baggage.

ii For animals carried as baggage the 3 letter code 'PET' is used instead of 'AVI'.

iii Live animals carried as baggage must be load in the aircraft hold except for :

Guide Dogs for the Blind
Hearing Dogs for the Deaf - See Paragraph C.
Search and Rescue Dogs

c. Carriage of Guide Dogs for the Blind/Hearing Dogs for the Deaf/Search and Rescue Dogs.

British Airways will accept Guide Dogs for the Deaf and Rescue Dogs for carriage in the passenger cabin only on journeys wholly within the UK subject to the following.

(1) The dog must be a properly trained Guide Dog/Hearing Dog and request for carriage must be sponsored officially by the appropriate training organisation. In the United Kingdom the training organisation is usually "The Guide Dogs for the Blind Association" or "Hearing Dogs for the Deaf" or "K-9 Search and Rescue".

(2) The Senior Airport Official at the station of embarkation must be satisfied that the request is bona fide, that refusal would cause serious inconvenience to the passenger and that acceptance would not be likely to cause a nuisance to the other passengers.

(3) A seat must be blocked off for the dog so that it may travel with the passenger and not inconvenience the other passengers. As no charge will be made for this seat discretion must be exercised in selecting a flight not likely to be fully booked so that revenue is not likely to be lost.

(4) The passenger must carry tranquillising drugs for administering to the dog if required.

3. Advise of Carriage of Animals

Loading Instruction/Report Form:	State type of animal in Special Introduction box with any special instructions for the loading staff.
Special Load - Notification Form:	Entry always required
Loadsheet:	AVI or PET entry as appropriate in Remarks is always required.
Loadmessage:	AVI or PET entry as appropriate is always required.

4. Feeding and Watering

Most animals will require watering, but for feeding, documents should be checked for any specific instructions from the shipper. Food where supplied will be attached to the container.

NOTES:
1. No live bait to be supplied as food.
2. No 'tit bits' to be given to animals
3. The seals of 'sealed' containers must be broken or tampered with.

5. Exercise and Escape

Exercise may be necessary, within restricted areas during delays - if LOCAL REGULATIONS PERMIT.

Care must be taken to prevent escape, but in the event of this happening Police and local authorities must be told immediately.

6. Loading of Animals on Aircraft - General Rules

1. Load or unload as near as possible to aircraft departure or arrival.

2. In warm water when a large consignment of animals is being carried, leave the hold door open until the aircraft is about to depart.

3. In case of delay, do not lave animals on apron or in aircraft hold unnecessarily.

4. Place animal containers on continuous polythene sheeting (500 gauge) of sufficient size to extend beyond the base of the container to protect the hold floor from excreta and liquid spillage.

5. If the airborne time is expected to be more than one hour or the hold floor is below freezing point at the time of loading, the animal containers must not be loaded directly onto the hold floor. Stow containers on aircraft shelves or on spreaders at least 5cm (2 inch) off the hold floor. For tropical fish consignment stow at least 7.5cm (3 inch) off the hold floor.

6. Containers must kept upright and level when being loaded or unloaded.

7. Stow container upright and restrain them to prevent injury to the animals and damage to the aircraft.

8. Air must be able to circulate freely around each container, ventilation holes and grilles must not be blocked. Other loads in the hold, particularly PO mail, should be secured to prevent accidental damage to adjacent animal containers or impeding the air circulating around them.

9. Ensure there is a gap of at least 15cm (6 inch) between the top of the container and hold ceiling to allow airflow across the top of the container.

10. Do not load live animals in the same compartment as, foodstuffs or poisons including harmful and infectious substances unless each is stowed in a separate closed ULDs.

11. Do not load live animals or hatching eggs in the same hold as dry ice or cryogenic liquids (e.g. Liquid Nitrogen).

12. Do not load animals labelled "Laboratory Animals" adjacent to other animals.

13. Do not load 'Natural Enemies' adjacent to each other unless they come from the same household.

14. Animals and hatching eggs must be separated from consignments of Radioactive Category II and III yellow by a minimum distance of 0.5m (1 ½ feet).

15. Animals, with the exception of fish in sealed plastic containers, must not be stowed in enclosed ULDs.

7. Loading of Animals Concorde Rules :

A. The carriage of live animals as cargo on Concorde is not permitted.
Domestic cats and dogs may be carried as checked baggage in compartment 1 and 2.
One medium size animal 10 kg to 50 kg or
Two small size animals up to 10 kg each may be carried in the forward hold.

Container dimensions must not exceed :

100cm x 60cm x 76cm high
39in x 24in x 30in high

B. Guide dog and Hearing dogs may be carried routinely in the cabin on UK Domestic Services (see 05-03-01). The following requirements must be met.

1. Dog to 'occupy' seat next to the passenger. If all passenger seats are full, the dog is to lie under the owner's seat.

2. Documentation procedures:

Loading Instructions/Report Form	- Nil
Special Load - Notification Form	- PET in cabin
Loadsheet	- Show actual weight as CABIN BAGGAGE
Balance Chart - 30 kg or less	- Nil
More than 30 kg	- Convert to EQUIVALENT PASSENGER in appropriate Cabin Area
Loadmessage	- PET in cabin and plan language remark

C. Animals in the Cabin

Approval to carry animals other than Guide dogs/Hearing dogs or Search and Rescue Dogs in the cabin on routes other than those listed in paragraph B above will not normally be given, however, in exceptional circumstances approval may be obtained from Airport Procedures and Publications (LHRGGBA) or Cargo Industry Standards (LHRCNBA).

D. Quantities specified and species not covered in this chapter may be carried under a special authority from Cargo Industry - LHRCNBA.

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Stowage and Documentation Instructions - Special Deadload

Stowage Details			Documentation Procedures				Notes
			LDG Inst/Report	Loadsheet	Balance Chart	LDM	
1	A	NON REVENUE ITEMS FLIGHT DOCUMENTS CONTAINER Care of Senior Cabin Crew member	-	-	-		Standard Instruction: GOM C/12
	B	AIRWAYBILL CONTAINER Compartment 2 Section 21					
	C	OCS MAIL Compartment 2 Section 21				COM	Standard Instruction GOM C/14 Must bear a label or tag with IATA 3 letter destination code
	D	CREW BAGGAGE Compartment 1 Section 22	-	Included in Crew Weight See 01.03	Included in Crew Index See 01.03		Standard Instruction: GOM E/12
2		CREW BAGGAGE AND SPECIALLY AUTHORISED CABIN BAGGAGE APPLICABLE FOR SUCH ITEMS AS VALUABLE / DELICATE BAGGAGE AND SOFT CRUSHABLE ITEMS From Row 26 Forward See 03-08-01	CPT 0 Enter Row number, side and weight e.g. Row 26 Right 20 Kg	Show actual weight as baggage in CPT 0. Show equivalent pax in SEATING CONDITIONS BOX	30 KG or less nil. More than 30 kg convert into EQUIVALENT PAX in CABIN AREA, eg OE	SOC	See 03-08-01 for limitations

Stowage and Documentation Instructions - Special Deadload

Stowage Details			Documentation Procedures				Notes
			LDG Inst/Report	Loadsheet	Balance Chart	LDM	
3		DIPLOMATIC MAIL					
	A	QUEEN'S MESSENGER ACCOMPANIED DIPLOMATIC MAIL - 10 KG OR LESS					Standard Instruction: GOM D/8
		Under seat occupied by QM	-	Show actual weight as "CABIN BAGGAGE"			1. PAX Seats unuseable - nil 2. QM may occupy any seat
	B	QUEEN'S MESSENGER ACCOMPANIED DIPLOMATIC MAIL - MORE THAN 10 KG					
		Not Applicable					
	C	BRITISH AIRWAYS SECURITY COURIER ACCOMPANIED DIPLOMATIC MAIL					
		In a security container in belly compartment	Normal	Show total of container and contents as PO mail in CPT	Normal	-	
	D	UNACCOMPANIED DIPLOMATIC MAIL					
		On Flight Deck, care of the Captain, (at their discretion)	-	Include as Mail in CPT 0	-	DIP	Standard Instruction: GOM D/4 para 13: C & MM G/11

	Stowage Details	Documentation Procedures				Notes
		LDG Inst/Report	Loadsheet	Balance Chart	LDM	
4	CHECKED BAGGAGE					
	A CHECKED BAGS OF MORE THAN 25 KG ECH					
	(1) if allowing for them at the STANDARD weight then no restriction	Normal	Normal	Normal	-	Standard Instruction: GOM C/10 para 4.4
	(2) If using ACTUAL weight for these pieces, then ANY CPT	Enter ACTUAL weight for these pieces in appropriate CPT(s)	Include these pieces at ACTUAL weight in baggage totals.	Normal	-	
	B BATTERY DRIVEN WHEELCHAIRS AND OTHER MOBILITY AS CHECKED BAGGAGE					
	(1) Wet Cell Batteries	Normal	Normal	Normal	-	1. The battery must be removed and the vehicle may then be carried witout restriction. The removed battery may be carried as baggage in accordance with the provisions of the IATA Dangerous Godds Regulations. 2. May be loaded in any CPT, CSM B7
	(2) Dry Cell or Non Spillable Wet Cell	Normal	Normal	Normal	-	1. Battery Terminals must be disconnected and taped to prevent short circuiting across the terminals. 2. Battery may be left in vehicle but must be securely fastened in the battery tray. CSM B7 3. May be loaded in any CPT

Stowage Details			Documentation Procedures			LDM	Notes
			LDG Inst/Report	Loadsheet	Balance Chart		
5	CABIN LOADING OF DEADLOAD						
	A	CABIN LOADING ON SEATS From Row 26 Foward See 03-08-01	CPT 0 Enter Row Number, side and weight. eg, Row 26 RIGHT 20 kg	Show Actual weight by category in CPT 0. Show equivalent pax in SEATING CONDITIONS BOX	30 kg or less - nil. More than 30 kg convert into EQUIVALENT PAX in Cabin Area eg. OE	SOC	See 03-08-01. Restricted to Post Office Mail and soft crushable load.
	B	CABIN LOADING ON FLOOR (SEATS REMOVED) - NOT PERMITTED ON CONCORDE					

		Item	Code	Compartment	Limitations	Notes	Entry Required NTC	Entry Required LDM
6		DEADLOAD REQUIRING SPECIAL HANDLING						
	A	Press Material Newsfilms and Small Items of Cargo	-	In yellow plastic "PRESS BAG" in same CPT as other load for that dest.	-	Standard Instruction: GOM D/9	No	No
	B	Items Over 150 Kg Each	HEA	Cpt 6	-	1. Only Load in CPT 6 if prior arrangements have been made to use loading vehicles that do not endanger the trailing edge of the wing or engine nacelle at both the departure and destination station. 2. Restaint and Spreading Instruction See 03-06 and 07	No	Yes
	C	Valuable Cargo	VAL	SECURITY LOCKER if fitted or ANY	-	Standard Instruction: GOM D/4	Yes	No
	D	Munitions of War	MUW & MWB	ANY	-	Standard Instruction: Cargo & Mail Manual D/1	Yes	Yes
	E	Human Remains						
		(1) Ashes	-	ANY	-	Do not stow under any other load	No	No
		(2) In Coffins	HUM	ANY	-	1. Not in the same HOLD as live animals (Mammals) 2. Stow at least 2 ft (0.6m) from foodstuffs 3. Stow horizontally (and keep as horizontal as possible during loading/unloading) 4. Do not stow under any other load	Yes	Yes

Cont'd....

	Item	Code	Compartment	Limitations	Notes	Entry Required NTC	Entry Required LDM
E	Human Remains (Contd)	-	-	-	5. If possible stow (with accompanying flowes) in a CPT which contains no other load. 6. Do not lift by the Lid or ornamental handles. 7. If possible load and unload out of the sight of passengers.		
F	Fresh Meat and Agricultural Food Products Fruit and Vegetables Seafood	PEM PER PEP PES	ANY	-	1. Not in the same HOLD as live animals (Mammals & birds) 2. Not in the same CPT as, or adjacent to RPB or RIS. 3. Check that the Compartments are clean and free from Debris	Yes	Yes
G	Vaccines Requiring Re-icing	PER	ANY	-	Not permitted in DRY ICE	Yes	Yes
H	Hatching Eggs - NOT PERMITTED ON CONCORDE						
I	Flowers & Plants	PEF	ANY	-	Do Not load directly onto the floor	Yes	Yes
J	Paper, Plastic and Other Inflammable Materials	-	ANY	-	Do not load near light fittings	No	No
K	Undeveloped Film	FIL	ANY	-	1. If RRY on board, ensure the appropriate separation distance indicated on the RRY table in 05-02 or the Dangerous Goods Regulations is complied with. 2. If colour film, do not load directly on hold floor.	No	Yes
L	Petrol / Diesel Powered Vehicles or Engines - NOT PERMITTED ON CONCORDE					No	Yes

Note: Other cargo requiring special handling e.g. Drugs, Dry Ice, Human Eyes, Insecticides, Medical Supplies, Odoriferous Cargo, Wet Cargo, See Ground Operations Manual D/17, or Cargo and Mail Manual

Special Loading Facilities and Accessories

	Stowage Details	Documentation Procedures			LDM	Notes
		LDG Inst/Report	Loadsheet	Balance Chart		
1	STRETCHER - TRESLTE MOUNTER - NOT PERMITTED ON CONCORDE					
2	STRETCHER - EMERGENCY FLOOR MOUNTED - NOT APPLICABLE TO CONCORDE					
3	SECURITY LOCKER Cpt 6 See 03-04-02	Normal	Include in Cpt 6 total	Include in Cpt 6 total	-	Maximum weight - 136 kg Maximum volume - 11 cu. ft
4	INFANT CAR SEAT Locate at a window seat Do not use emergency exit rows, or rows immediatley forward or aft of emergency exit rows.	-	Included in Pax weight (child weight used instead of infant weight)	-	-	1. Infant must be under three years of age but not less than six months old. 2. Only approved seats are allowable. (See Customer Service Manual, Inst C/7) 3. Responisble adults must occupy adjacent seats. (See Customer Service Manual, Inst C/7)

Special Instructions

1. **Incapacitated Passengers - Seats to be Occupied**

   When there are 3 or more incapacitated passengers on a scheduled flight, they must be seated in rows 7 -10.

   All categories of wheelchair cases are permitted on Concorde.

2. **Baggage Unloading and Delivery**

   Sufficient equipment must be provided to ensure a continuous flow of baggage from the aircraft to the baggage hall.

   Concorde handling must take priority over all other services.

	Stowage Details	Documentation Procedures				Notes
		LDG Inst/Report	Loadsheet	Balance Chart	LDM	
3	SECURITY PROCEDURES - HOLD STOWAGE OF CABIN BAGGAGE					See 03-02
	(1) If ALL Cabin baggage is to be Hold Loaded - Any CPT may be used	Cpt ... Enter "CABIN BAGS"	After completion as normal make LMC "CABIN BAGS" CPT 0 - ... kg "CABIN BAGS" CPT ...+... kg. Calculate by multiplying number of adult pax by 6kg	Include LMC in CPT total as normal.	-	Include in calculation of CPT load. Crosscheck new CPT total against CPT maxima.
	(2) Single items removed from pax by security staff - Place in a "Checked Baggage Box" and load with baggage for same destination.	Cpt ... Enter 'SEC' followed by number of bags.	-	-	SEC	Standard Instruction: CSM B/12 and B/10 1. Place article in a "checked Baggage Box" and label with a "Voluntary Separation Tag"

Special Load - Notification To Captains.

1. Introduction

The Captain is finally responsible for the safe loading of his aircraft and it is especially important for him to be load of a potentially hazardous nature as soon as possible. He may wish to inspect it before departure.

The Captain must also be advised of live animals (the ventilation/heating system for the holds flight deck controlled), munitions of war, valuable consignments and human remains.

The notification procedure described is an IATA - Airport Handling Committee standard. Compliance on your part, or that of your Handling Agent is essential.

Who originates the Notification, and where, are matters for local decision. Live animals carried as baggage must be included.

Where an en route crew change occurs the disembarking Captain is responsible for handling over the Notification(s) to the embarking Captain.

For flight where no Dangerous Goods or other special loads are carried an appropriately completed NOTOC must be presented to the Captain. For 'nil returns' enter 'NIL' in the appropriate areas. 'Nil return' must contain both the Preparer's and Captain's signature.

2. Form NR And Distribution

M214 or local equivalent. Specimen on page 05-07-02. Minimum of 2, original for Captain and 1 for loading station's file.

BRITISH AIRWAYS

Station of loading LHR | A/C Regn G-BOAC | **Special load – notification to Captain**

Flight BA001 | Date 01 JAN 96 | Prepared by A. Howcroft

Dangerous Goods

Station of unloading	Air Waybill Nr (last 4)	Proper shipping name	Class or division, for Class 1 also compatibility group	UN or ID number	Subsidiary risk	Number of packages	Net quantity or transport index per package	For radioactive material - the category of the package	Packing group	Code	CAO (X)	Loaded ULD ID	Loaded Compartment/ Position
JFK	2351	RADIOACTIVE MATERIAL FISSILE N.O.S. (URANIUM ENRICHED TO NOT MORE THAN 90% WITH URANIUM 235)	7	2918		1	3.0TI	III		RRY			6

Other special load – including AVI MUW VAL HUM

Station of unloading	Air Waybill Nr (last 4)	Nr of packages	Contents/Description	Quantity	Code	Loaded ULD ID	Loaded Compartment/ Position

Additional information

There is no evidence that any damaged or leaking packages have been loaded on the aircraft | Loaded as shown | Captain's signature

M214(2nd)

Loadsheet

1. General

A. All Loadsheets must confirm to IATA Recommended Practices.

B. British Airways uses the following type of Loadsheets:

Four Sector - Manual (T978/A5991). Completed example 05-08-05.
EDP Loadsheet - Departure Control System. Completed example 05-08-06.

2. Distribution Of Copies

To comply with Statutory and British Airways requirements, copies of Loadsheets must distributed as follows:

Original - To be retained on departure airport file. These copies must be retained for a minimum statutory period of six month.

1 copy - To be retained by the Captain for attachment to the service Flight Plan. Include a copy of the balance chart (if applicable).

NOTE: If a transit station removes this loadsheet from the aircraft for any purpose, they must ensure it is returned to the Captain.

Certain stations are required to send a copy of the loadsheet to Revenue Accounts. For a list of these stations see Ground Operations Manual, Instruction C/11, Paragraph 5.

NOTE: For aircraft returning to the ramp and subsequently making a second departure (including when a change of aircraft is made), a copy of the Loadsheet for each of the departures must be retained on file. According to circumstances, the Loadsheet for the first departure, whether or not the aircraft actually took off, may be called for by Inspector of Accidents to support an inquiry or investigation.

3. Accuracy Standards

Transit Stations may carry forward load details from the previous Station's Loadsheet, but must check information with the incoming Load Message to avoid repetition of errors. If an error in the Traffic Load is apparent, the appropriate cross check must be made to locate the error.

4. Loadsheet Completion

Detailed completion instructions are contained in Ground Operations Manual Instruction C/7.

The following summary is included to enable Loadsheet to be prepared at stations where staff are unfamiliar with British Airways Loadsheet procedures, or have no access to the Ground Operations Manual.

The aircraft trim is calculated on the appropriate Balance Chart. See Chapter 6.

Loadsheet Completion (Contd.)

Refer to numbered key on page 05-08-04.

1.	VERSION	
2.	CREW	Flight Deck/Cabin Crew. Cabin Crew may be shown as one figure or split Male/Female if required.
3.	BASIC WEIGHT	From Aircraft Weight Schedule Extract.
4.	CREW WEIGHT	From 01-03.
5.	PANTRY WEIGHT	From 01-03.
6.	BLANK LINE	Not used on Concorde.
7.	TAKE OFF FUEL	Total fuel less taxi fuel allowance from 01-01 or Captain.
8.	MZFW	From 01-01.
9.	MTOW	From 01-01 (RTOW supplied by Captain).
10.	MLW	From 01-01 (RLW supplied by Captain).
11.	TRIP FUEL	Supplied by Captain.
12.	PASSENGERS (By Destination)	Male/Female/Child/Infant.
13.	CABIN BAGGAGE (By Destination)	Only used for large amounts of Cabin Baggage or other specially authorised items after consultation with the Captain.
14.	BAGGAGE WEIGHT (By Destination)	Standard weight authorised - see para 5. If actual weights used - delete appropriate words in statement at bottom of Loadsheet. Individual pieces over 25kg - see 05-04. Specially authorised cabin - loaded baggage and Diplomatic Mail (as per 03-06) - add actual weight of item to the Baggage weight and show in CPT 0.
15.	CARGO (By Destination)	Include all EIC in Cargo weight and show in appropriate CPT.
16.	MAIL (By Destination)	Include Diplomatic Mail care of Captain in Mail weight and show in Cpt '0'.
17.	DISTRIBUTION WEIGHT (By Destination)	Enter Load in each compartment.
18.	REMARKS (By Destination)	See Appendix A for list of Codes for use on LDM.

18.	REMARKS (By Destination)	See Appendix A for list of Codes for use on LDM.
19	PASSENGER WEIGHT	Standard Weights authorised - see page 05-08-07 para 6. If actual weights used - delete appropriate words in statement at bottom of Loadsheet.
20.	LAST MINUTE (CHANGES)	Fuel changes not permitted in LMC box. Actual Take-OFF, Landing and Zero Fuel Weights must be amended for all LMCs.
21.	BALANCE AND SEATING CONDITIONS	Enter passenger distribution as trimmed on Balance Chart. Include 'Equivalent' passengers as a separate figure following by EQ e.g. 0E 5/1 EQ. Enter the following information as calculated on the Balance Chart: Dry Operating Index (DOI), Laden Index Zero Fuel Weight (LIZFW), Zero Fuel Centre of Gravity (ZFCG), Pre Take-OFF Transfer Tank 9 to Tank 11 (PTOR 9/11) or Pre Take -OFF Burn Off Tank 11 (PTOBO) and Centre of Gravity at Landing Weight after passenger movement if required - (LDZFCG).
22.	NOTES	Enter Final Tank 11 Contents figure. Enter take-off C of G. Example T.O. CG 53.5% Co.

BRITISH AIRWAYS

05-08-04
31 March 99

Concorde Load & Balance

Priority | Address(es) | Originator | Recharge/date/time | Initials | LDM

Loadsheet and loadmessage
Passenger aircraft
All weights in kilos

Date

Flight | A/c reg. | Version (1) | Crew (4)

			Zero fuel	Take-off	Landing
Basic weight (3)		Maximum weights for	(8)		(10)
Crew (4)		Take-off fuel +		Trip fuel + (11)	
Pantry (5)		Allowed weight take-off (lowest of a, b or c)	a	b (9)	c
(6)		Operating weight −			
Dry operating weight		Allowed traffic load			
Take-off fuel + (7)					
Operating weight					

Dest.	Nr of passengers M	A/F	Ch	Inf	Cab bag	Total	Distribution weight 1	2	3	4	5	6	0	Remarks PAX	PAD
						Tr									
		(12)			(13)	B (14)									
						C (15)		(17)							
						M (16)									
						T									

(repeated 4 times)

Total passenger weight (19)		Allowed traffic load	(18)
Total traffic load	−		
Dry operating weight	+	Underload before LMC	=
Zero fuel weight Max. (8)	LMC (20) ± =	Last minute changes: Dest. / Specification (M–A/F CH–INF / B–C–M) / CI/ Cpt / + / − / Weight	
Take-off fuel	+ (7)		
Take-off weight Max. (9)	LMC ± =	(20)	
Trip fuel	− (11)		
Landing weight Max. (10)	LMC ± =	LMC total +/−	

Check LMC total with underload

Notes (22)

Balance and seating conditions (21)

Passengers/Inf

Prepared by

Approved by

T978/A8991(2nd)

Authorised weights used for passengers, crew and baggage

Loadsheet and loadmessage
Passenger aircraft
All weights in kilos

Date: 01-Nov-99

LDM

FLIGHT	A/C REG.	VERSION	CREW
BA 5555	GBOAC	SSCB	5/6

Basic weight	78866	Maximum weight for	Zero fuel	Take-off	Landing
Crew	831		92080		111130
Pantry	1532	Take-off fuel	78600		62000
			a	b	c
Dry operating weight	81229	Allowed take-off weight (lowest of a b c)	170680	185070	173130
Take-off fuel	78600	Operating weight	159829		
Operating weight	159829	Allowed traffic load	10851		

Dest	Nr of passengers M	A / F	CH	In	Cab bag		Total	1	2	3	4	5	6	0	PAD	PAX
						Tr										
						B										
						C									pax/ / / pad/ / /	
						M										
						T		1/	2/	3/	4/	5/	6/	0/		
LHR						Tr										
						B	1680						1680			
	90					C	30	30							pax / / / pad / / /	
						M										
													6/	0/		
	90						1710	30					1680			

Total passenger weight +	8190	Allowed traffic load	10851	SI B W 78866 B I 108
Total traffic load =	9900	→ ⊖	9900	
Dry operating weight +	81229	Underload before LMC =	951	Notes FINAL TANK 11
		=		CONTENTS 4783
Zero fuel weight LMC	91129	last minute changes		TOCG 53. 5% CO
Max +/- =		specification: Dest / M-F-CD-INF / B-C-M / cl / cpt		Balance and seating conditions
92080 +/- =				DOI 47.7
Take-off fuel	78600			LIZFW -67.5
				ZFCG 52.69
Take-off weight LMC	169729			PTOTR 9/11 2153 ELVN 2. 5
Max +/- =				A20 B20 C25 D25
185070 +/- =				Passengers/inf 90
Trip fuel ⊖	62000			
				Prepared by KEVIN DOYLE QXD10
Landing weight LMC	107729			
Max +/- =		LMC total + / -		Approved by
111130 +/- =				

Check LMC total with underload

Authorised weights used for passengers and baggage

```
LOADSHEET      CHECKED        APPROVED/TIME        EDNO.
ALL WEIGHTS IN KILOS                                 02.

FROM/TO FLIGHT        A/C REG VERSION       CREW    DATE    TIME.
QXD LHR BA8888 /01NOV GBOAC   SSCB          3/6     02NOV99 1616.

                        WEIGHT           DISTRIBUTION.
LOAD IN COMPARTMENTS      1710     1/    30 6/  1680.

PASSENGER/CABIN BAG       8190  90/  0/  0/  0 TTL  90.
                              PAX   0/ 90     SOC   0/  0.
                              BLKD  0.
.....................................................
TOTAL TRAFFIC LOAD         9900.
DRY OPERATING WEIGHT      81229.
ZERO FUEL WEIGHT ACTUAL   91129 MAX  92080  L   ADJ.
TAKE OFF FUEL             78600.
TAKE OFF WEIGHT  ACTUAL  169729 MAX 185070      ADJ.
TRIP FUEL                 62000.
LANDING WEIGHT   ACTUAL  107729 MAX 111130      ADJ.

                                  ..................................
BALANCE AND SEATING CONDITIONS .      LAST MINUTE CHANGES.
BI  108.0   DOI   47.7         .DEST  SPEC    CL/CPT % - WEIGHT.
LIZFW  -67.5                   .:
PTOTR   9-11/2153              .:
PRODUCED TO 53.5 CO TAKE-OFF   .:
ZFCG   52.69  ELEVON   2.50    .:
A20.B20.C25.D25                .:
SEATROW TRIM                   .:
                               .:
UNDERLOAD BEFORE LMC       951.          LMC TOTAL.
.....................................................
LOADMESSAGE AND CAPTAINS INFORMATION BEFORE LMC.

TAXI FUEL  1400 TAXI WGT   171129 MAX   186880.

-LHR.90/0/0/0.T1710.1/30.6/1680.PAX/0/90.PAD/0/0.

SI.
BW78866 BI 108.0 CATERING 1532/19.0-.
SERVICE WEIGHT ADJ WGT/IND.
ADD.
NIL.
DEDUCTIONS.
NIL.

.... PL TEXT ADDITION ....
LOADSHEET COMPLETED BY KEVIN DOYLE QXD10.

PANTRY CODE A.
.....................................................

CONCORDE SPECIAL INFORMATION          SG - 0.800.

TANK 11 FUEL          /  2630         BREAKPOINT FUEL / 89310.

PTOTR   9-11          /  2153         DELTA TANK FUEL /     0.

FINAL TANK 11 CONTENTS /  4783        FUEL IN TANKS   / 80000.

.....................................................

AUTHORISED WEIGHTS USED FOR PASSENGERS CREW AND BAGGAGE.

LHR   FRE      30   POS       0   BAG 120/  1680   TRA       0.
```

5. Standard Baggage Weights

(Standard Instruction - Ground Operations Manual C/10)

11 kg per piece: Permitted for use on publicly scheduled flights operating entirely within the United Kingdom, except those:

(a) To/From Jersey.
(b) Shuttle services and other domestic services operating to/from London.

11 kg per piece: Permitted for use on 'Sole-use' charter flights operating wholly within the United Kingdom.

13 kg per piece: Permitted for use on.

(a) Shuttle services and other domestic services operating to/from London.
(b) Shorthaul flights operating only for the carriage of INCLUSIVE TOUR passengers.
(c) Sole-use characters within Europe, subject to the conditions in the Ground Operations Manual Instruction C/10 paragraph 2.3.

14 kg per piece: Permitted for use on all publicly scheduled flights operating within Europe, to and from Jersey and Tel Aviv.

NOTE: See Ground Operations Manual C/10 for authority to use 14 kg per piece on UK, "Domestic" sectors of International through flights if desired.

16 kg per piece: Permitted for use on all publicly scheduled Longhaul flights and all intercontinental flights operating for the carriage of INCLUSIVE TOUR passengers.

NOTE: See Ground Operations Manual C/10 for authority to use 16 kg per piece on UK, "Domestic", or "European" sectors of intercontinental through flights id desired.

20 kg per piece: Permitted for use on flights between London and Jamaica, Jamaica and London, and any intermediate sectors on these flights.

6. Standards Passenger Weights

(Standard Instruction - Ground Operations Manual C/10)

Adult Male = 88 kg Adult Female = 70 kg Child = 35 kg Infant = Nil kg.

Optionally stations may elect to use Adult (84 kg) Child (35 kg) Infant (Nil) weights provided this does not cause the refusal of revenue load or operational fuel, and the conditions in GOM Instruction C/10 are complied with.

NOTE: When a flight is identified as carrying a significant number (in excess of 10% of the total seating capacity) of passengers whole weight including hand baggage is expected to exceed the Standard Passenger Weight, this extra weight must be

accounted for on the loadsheet either by using the actual weight by adding 10 kg for each member of the group, and adjust the index accordingly.

7. Special Fuel Conditions

A. High Level Incremental (H.L.I.) Fuel.

When High Level Incremental (H.L.I.) Fuel is used it must be included in the Take-OFF Fuel figure on the Loadsheet. For further details see chapters 01 and 06.

B. Non Standard Taxi Fuel

When Taxi Fuel in Excess of the standard figure is uplifted the total Taxi Fuel figure must be added to the Take-OFF Weight to ensure the Maximum Taxi Weight is not exceeded.

The Maximum Taxi Weight must be entered in the 'Notes' box of the Loadsheet together with the **Actual Taxi Weight**.

C. Landing Ballast Fuel

Ballast fuel may be carried in Tank 9 or 11 to achieve a satisfactory C of G for landing if this cannot be achieved by passenger/deadload distribution subject to the following instructions being adhered to.

(1) The weight of the Ballast Fuel will NOT be entered in the Blank Line or included in the Zero Fuel Weight calculation.

(2) The quantity of Ballast Fuel required will be included in the total fuel uplift figure but must remain unused at the time of landing.

(3) The weight of the Ballast Fuel must be included in the Take-OFF Fuel figure on the Loadsheet.

Code For Use On Loadsheet/LDM

Each code must be preceded by a full stop and followed by an oblique; the number after the oblique indicates cpt of loading, e.g. •AVI/1.

AOG - Spare parts required for aircraft on the ground.

AVG - Guide dog in Cabin.

AVI - Livestock.

AVM - Livestock as Mail.

BAL - Ballast followed by the Compartment and weight e.g. •BAL/2/250.

BGF - First Class Baggage.

BGY - Economy Class Baggage.

COM - Company Mail, followed by Compartment and weight e.g. •COM/6/10.

COU - Courier Bags, following by Compartment, weight and pieces e.g. •COU/6/250/18.

DIP - Diplomatic Mail; followed by the number of bags e.g. •DIP/6.

DIV - Diversion load.

EAT - Foodstuffs for human consumption.

EHO - Express Handling Cargo.

EIC - Equipment in Compartment (not included in the basic weight/index or dry operating weight/index,) e.g. loading and lashing equipment etc); followed by the Compartment and weight, e.g. •EIC/5/200.

EXP - Expedite Bags.

FIL - Undeveloped Film.

FRG - Unbooked non-revenue cargo.

FSH - Live Fish.

GML - General Mail.

HEA - Heavy cargo above 150 kg per piece; followed by the Compartment and weight, e.g •HEA/1/385. Two or more heavy pieces in the same compartment need to be shown individually e.g. •HEA/1/196 HEA/1/204.

HBG - Hand Baggage.

HEG - Hatching Eggs.

HUM - Human remains in coffins.

ICE - Compartment containing dry ice; following by the Compartment and weight e.g. •ICE/4/70.

LHO - Live Human Organs.

MAG - Magnetic Materials (magnetised material label).

MIS - Infectious Substance in air mail.

MUW - Munitions of War.

MWB - Munitions of War in Baggage.

NIL - No item loaded for that destination.

OBX - Obnoxious Cargo.

PAD - Indicating the number of Rebate passengers not entitled to a firm reservation, and the number of seats occupied by class. Figure group of each class to be separated by an oblique Sequence of classes as for PAX. PAD are included in the PAX CM distribution. e.g. PAD/0/2.

PAX - The number of seat occupying passenger (s) proceeded by zero and an oblique. e.g. PAX/0/87.

PEA - Articles made from or containing parts of endangered species (CITES).

PEF - Perishable, flowers.

PEM - Perishable, meat.

PEP - Perishable, FRUIT AND VEGETABLES.

PER - Perishable, other than PFE, PEM, PEP, PES.

PES - Perishable, seafood.

PET - Pets as passenger baggage.

RCL - Refrigerated Liquid Gas.

RCM - Corrosive Materials.

RFL - Flammable Liquids.

RFG - Flammable Gasses.

RFS - Flammable Solids.

RFW - Dangerous when Wet.

RIS - Infectious Substance.

RMD - Miscellaneous Dangerous Goods.

RNG - Non-flammable, Non-toxic Gases.

ROB - Remaining On Board.

ROX - Oxidising Materials.

ROP - Organic peroxides.

RPB - Toxic.

RRW - Radioactive Materials (white label) Category I.

RRY - Radioactive Materials (yellow label) Categories II and III followed by the Compartment and number of Transport Indices. e.g. . •RRY/1/4.

RSB - Polystyrene Beads.

RSC - Spontaneously Combustible Material.

RXS - Explosive 1.4S.

SEC - Security item; followed by Compartment and number of items, e.g. . •SEC/2/4.

SOC - Seats occupied by Baggage, cargo and/or mail; followed by the number of seats occupied. Figure group of each class to be separated by an oblique (Sequence of classes CM). SOC not included in PAX CM distribution. e.g. .SOC/0/9 or .SOC/2/4.

SOS - Urgent Medical Supplies.

SPB - Special Bags.

TRC - Transit Cabin Load.

ULD - Unit Load Device.

VAL - Valuables.

WET - Wet Cargo.

XCR - Operating crew occupying passenger seat when no crew seat available: followed by the number of seats by class. Figure group of each class to be separated by an oblique. XCR not included in PAX CM distribution. e.g. .XCR/1/2 or .XCR/0/1.

XPS - Express Parcel Service.

INTENTIONALLY BLANK

Customer Service Instructions

Nil Change Of Load Certificate

1. Introduction

Whenever an aircraft diverts or makes a technical stop, provided the subsequent sector involves no change to the traffic load or crew complement, a "Nil" Change of Load Certificate may be prepared in lieu of new loadsheet. A specimen of a Certificate is shown overleaf.

This form certifies that the load has not been changed and enable revised balance data to be established following a change of fuel load. Should a crew change occur, provided the outgoing Captain can certify that the load is unchanged, a Nil Change of Load Certificate can be used. Where any doubt exists a complete loadsheet and balance chart must be completed.

2. Completion Of Form

i Use the appropriate form depending on the Take OFF Weight or Take OFF CG requirement.

ii Prepare in duplicate, leaving a copy at the departure station.

iii Enter onward flight details and previous flight details.

iv Extract LIZFW, ZFW and ZFCG from previous loadsheet and enter in the appropriate boxes.

v Enter the new Take OFF Fuel, Trip Fuel in the appropriate boxes and derive the Landing Weight.

vi Enter the Total Fuel (including Taxi) and the fuel density in the boxes provided.

vii Derive Delta Tank 11 fuel using the Fluid Replenishment Manual.

viii Complete the trim part of the diagram and derive either the Pre Take Off Transfer or the Pre Take Off Take Off Burn Off.

ix Calculate the Fuel Tank 11 contents.

BRITISH AIRWAYS

05-09-02
31 March 99

Concorde Load & Balance

BRITISH AIRWAYS

Elevon Trim Angle At T.O 1.5° Down

CONCORDE
Nil change of Load Certificate

Take Off CG 53.0% Co.

Priority | Address(es) | All Weights in Kilos

Originator | Recharge/date/time | Initials | L D M | Date | From | To

Flight | A/c Reg | Version | Crew

NIL Traffic Load Change from Previous Sector. All Loads Details with the exception of fuel are as stated on the loadsheet for

Flight | Date | From | To

M / A/F / Ch / Inf / T / 1/. / 2/. / 3/. / 4/. / 5/. / 0/. FY / PAD

Item	Maximum Allowable Weight	Actual	Actual
Zero Fuel Weight as per Previous Sector listed above			
Take - Off Fuel - (taxi)			
Take - Off Weight			
Trip Fuel			
Landing Weight			

LIZFW ± . From Previous Loadsheet

ZERO FUEL CG .

Prepare in duplicate. One copy to be left at departing station.
Complete Flight Details and Previous Flight Details.
Extract LIZFW, ZFW & ZFCG from previous load Sheet and enter in appropriate boxes.
Enter New Take Off Fuel, Trip fuel, in boxes above and derive landing weight.

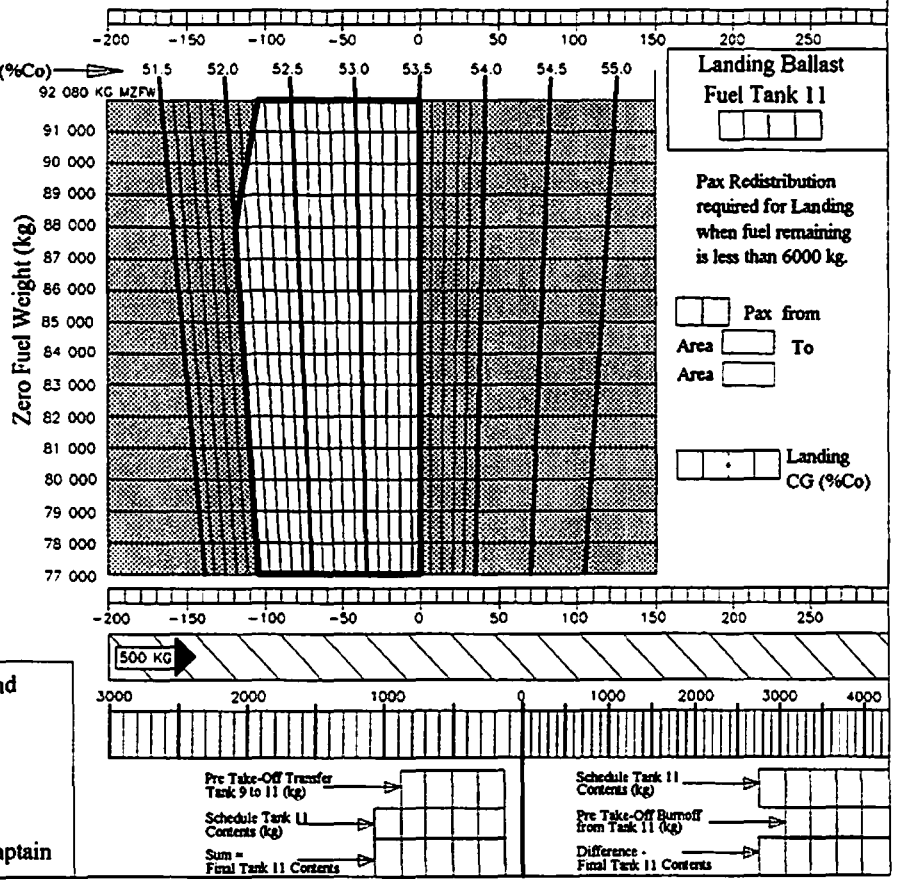
Landing Ballast Fuel Tank 9

Cabin Area	OA	OB	OC	OD
Seat Rows	1-5	6-10	11-18	19-26
Max Pax	20	20	28	32

Total Fuel (incl taxi)

Fuel Density (kg/litre) 0.

Delta Tank 11



Landing Ballast Fuel Tank 11

Pax Redistribution required for Landing when fuel remaining is less than 6000 kg.

Pax from Area To Area

Landing CG (%Co)

I Certify that the Weight Distribution and Security of the Load on this flight are unchanged from the Previous Flight identifed above.

Signature _____ Captain

V462 (Issue E)

BRITISH AIRWAYS

05-09-03
31 March 99

Concorde Load & Balance

CONCORDE
Nil change of Load Certificate

BRITISH AIRWAYS

Elevon Trim Angle At T.O 2.5° Down

Take Off CG 53.5% Co.

Priority | Address(es) | All Weights in Kilos

Originator | Recharge/date/time | Initials | L D M | Date | From | To

Flight | A/c Reg | Version | Crew

NIL Traffic Load Change from Previous Sector. All Loads Details with the exception of fuel are as stated on the loadsheet for

Flight | Date | From | To

M / A/F / Ch / Inf / T | 1/. | 2/. | 3/. | 4/. | 5/. | 0/. | FY / PAD

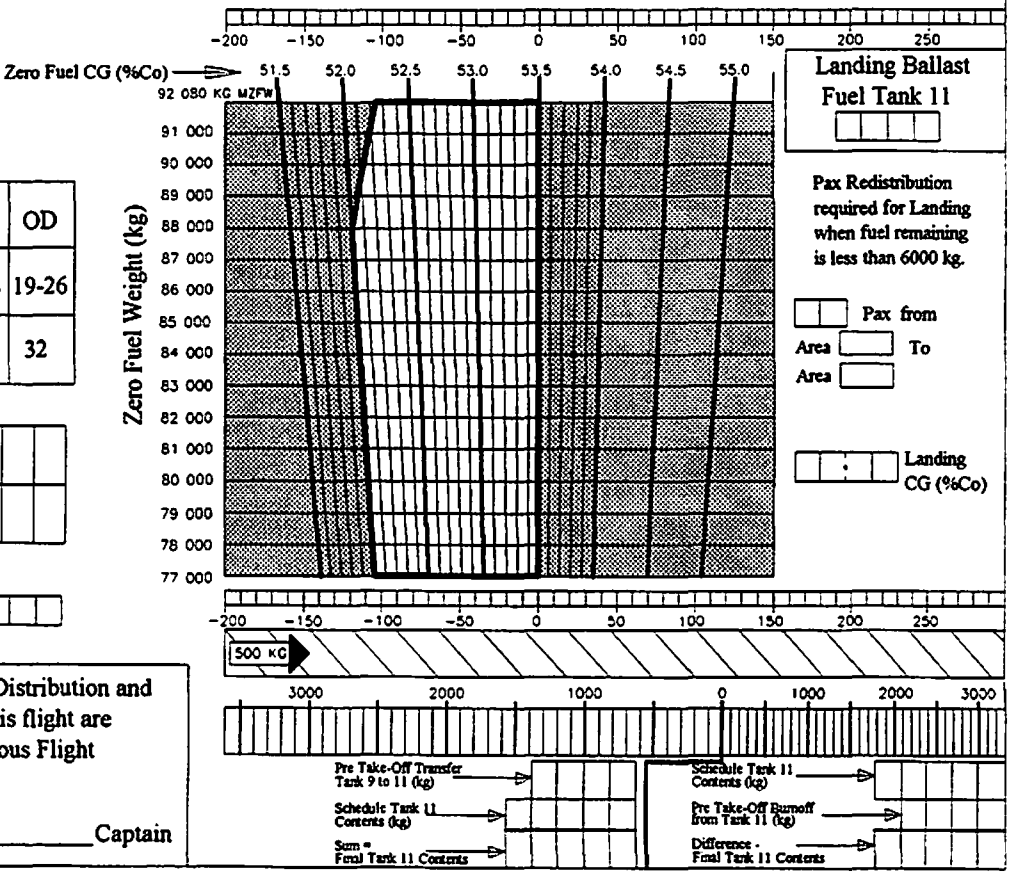
Item	Maximum Allowable Weight	Actual	Actual
Zero Fuel Weight as per Previous Sector listed above			
Take - Off Fuel - (taxi)			
Take - Off Weight			
Trip Fuel			
Landing Weight			

LIZFW +/- . From Previous Loadsheet

ZERO FUEL CG .

Prepare in duplicate. One copy to be left at departing station.
Complete Flight Details and Previous Flight Details.
Extract LIZFW, ZFW & ZFCG from previous load Sheet and enter in appropriate boxes.
Enter New Take Off Fuel, Trip fuel, in boxes above and derive landing weight.

Landing Ballast Fuel Tank 9



Landing Ballast Fuel Tank 11

Pax Redistribution required for Landing when fuel remaining is less than 6000 kg.

Pax from Area To Area

Landing CG (%Co)

Cabin Area	OA	OB	OC	OD
Seat Rows	1-5	6-10	11-18	19-26
Max Pax	20	20	28	32

Total Fuel (incl taxi)

Fuel Density (kg/litre) 0.

Delta Tank 11

I Certify that the Weight Distribution and Security of the Load on this flight are unchanged from the Previous Flight identifed above.

Signature _____ Captain

BRITISH AIRWAYS

05-09-04
31 March 99

Concorde Load & Balance

CONCORDE
Nil change of Load Certificate

BRITISH AIRWAYS

Elevon Trim Angle
At T.O 2.5° Down

Take Off CG
54.0 % Co.

Priority | Address(es) | All Weights in Kilos

Originator | Recharge/date/time | Initials | L D M | Date | From | To

Flight | A/c Reg | Version | Crew

NIL Traffic Load Change from Previous Sector. All Loads Details with the exception of fuel are as stated on the loadsheet for

Flight | Date | From | To

M A/F Ch Inf FY / PAD
/ / / T 1/. 2/. 3/. 4/. 5/. 0/.

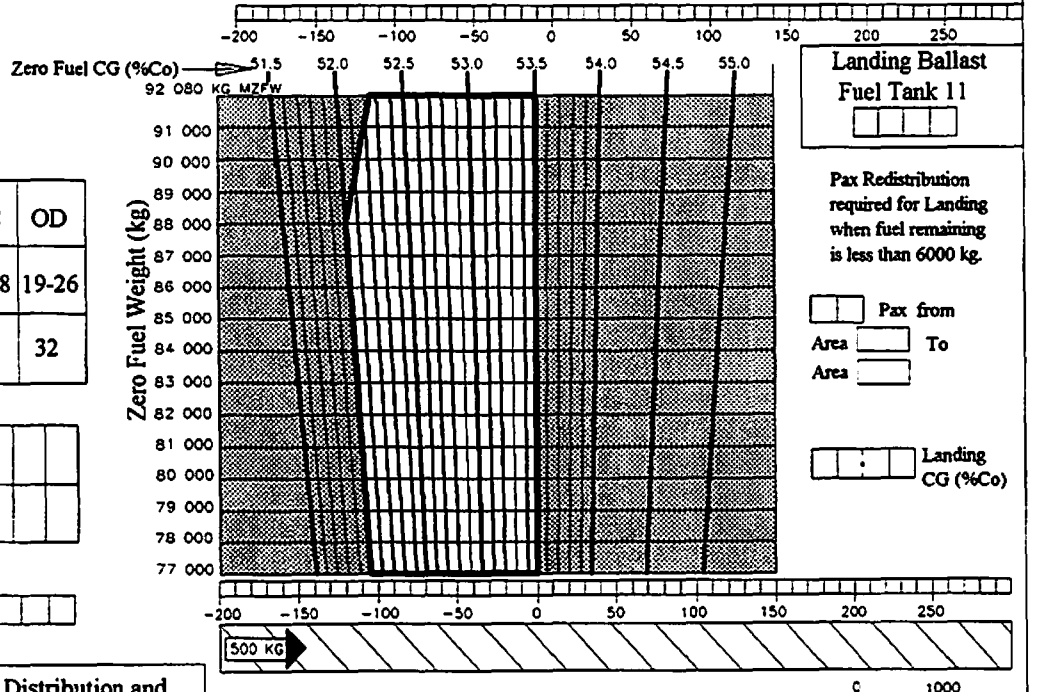
Item	Maximum Allowable Weight	Actual	Actual
Zero Fuel Weight as per Previous Sector listed above			
Take - Off Fuel - (taxi)			
Take - Off Weight			
Trip Fuel			
Landing Weight			

LIZFW +/- : From Previous Loadsheet

ZERO FUEL CG :

Prepare in duplicate. One copy to be left at departing station.
Complete Flight Details and Previous Flight Details.
Extract LIZFW, ZFW & ZFCG from previous load Sheet and enter in appropriate boxes.
Enter New Take Off Fuel, Trip fuel, in boxes above and derive landing weight.

Landing Ballast Fuel Tank 9



Landing Ballast Fuel Tank 11

Cabin Area	OA	OB	OC	OD
Seat Rows	1-5	6-10	11-18	19-26
Max Pax	20	20	28	32

Pax Redistribution required for Landing when fuel remaining is less than 6000 kg.

Pax from Area To Area

Landing CG (%Co)

Total Fuel (incl taxi)

Fuel Density (kg/litre) 0

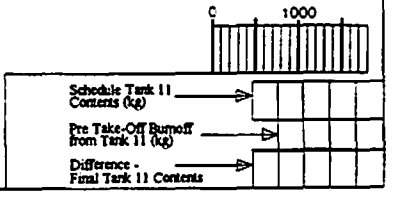
Delta Tank 11

I Certify that the Weight Distribution and Security of the Load on this flight are unchanged from the Previous Flight identifed above.

Signature _____ Captain

Note 1: If fuel transfer line lies to left of zero, adjust ZFCG to give tank 11 burn off.

Note 2: Maximum pre take-off burn-off from tank 11 is 1800 kg



V464 (Issue E)

CHAPTER 6

Contents

Determination of Centre of Gravity

Load and Balance calculations for Concorde involve additional checks to those carried out on other British Airways. In particular, the calculation of aircraft centre of gravity (CG) position for both take-off and landing, must be made with a very high degree of accuracy.

(1) Take-Off

Take-off is with the aircraft CG at one of the following three specified positions: -

- 53.0% Co for weights that are below 140,000 kg.
- 53.5% Co for weights at and above 140,000 kg and fuel loads up to the maximum quoted in Table 5. (Ref. 01-01-09)
- 54.0% Co when it is necessary to carry a fuel load in excess of the 53.5% Co maximum quoted in Table 5. (Ref. 01-01-09)

NOTE: Pre Take-Off transfer from Tank 9 to Tank 11 is not permitted to achieve 54% take-off CG (Ref. para (9)).

Balance Charts are provided for each of the 3 take-off CG positions.

(2) Landing

Landing CG must be within defined limits and this is achieved by ensuring that the Zero Fuel CG is within limits. In extreme cases it may be necessary to use fuel as ballast or to relocate passengers in flight before landing.

(3) Payload Distribution

Passengers are assumed to be evenly distributed within each of the four cabin areas and baggage/cargo is assumed to be evenly distributed in each of the compartments. To achieve the maximum fuel load, passengers and baggage should be loaded from the front as far as practicable. Holds should be loaded in the order 1, 2 then 6. In certain cases a ZFCG forward of the forward Take-off and Landing CG limit may be desirable in order to achieve maximum fuel at the take-off (with a requirement to re-distribute passengers for landing).

(4) Cabin Baggage

(A) General

The National passenger weights of 88kg male, 70 kg female and 84 kg Adult include a cabin baggage allowance of 6kg.

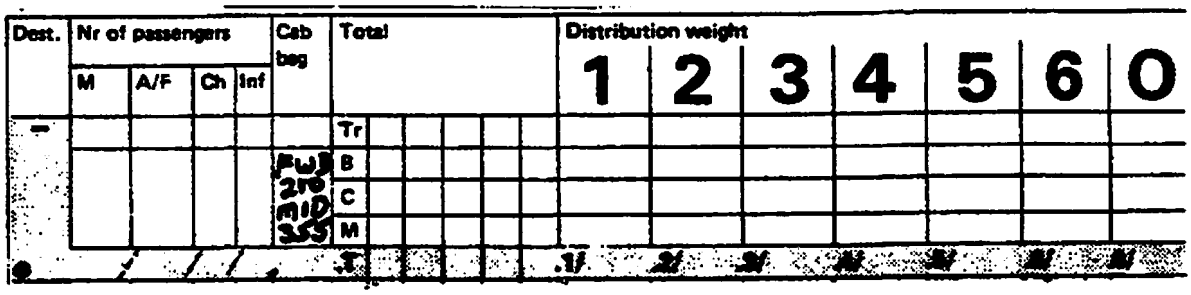
On all flights where cabin baggage is carried the following procedure will apply.

(B) Computerised and Manual Loadsheets

It is to be assumed that 3 kg is to remain with passenger at their seat position or the stowage bin above. 3kg (or more or less if the cabin baggage has been weight and found to be so) is to be allocate to the wardrobe at the front of the cabin the passenger is seated in.

i. e. Rows 1-10 weight allocated to Fwd wardrobes.
Rows 11-26 weight allocated to Mid wardrobes.

On a manual loadsheet the cabin baggage in the wardrobes is to be shown thus.



(C) Maximum Weights in Wardrobes

These are stated on page 03-02-01.

(5) Fuel

Fuel loading and trimming is dealt with on page 01-01-04 of this manual.

(6) Use Of Fuel For Trimming

The design concept of Concorde requires that the CG of the aircraft be capable of adjustment in flight, to compensate for movement of the aerodynamic centre of pressure, and reduce trim drag to a minimum. To this end, the aircraft fuel can be transferred between various aircraft fuel tanks to obtain the necessary movement of CG.
This system is also utilised when taxing before take-off to make any necessary fine adjustments to obtain the precise take-off to make any necessary fine adjustments to obtain the precise take-off CG of 53.5% Co. or 54% Co (or 53.0% Co at the take-off weights less than 140,000 kg). The required CG movement is obtained by transferring fuel:-

(a) between the front and rear trim tanks.

(b) from the trim tanks to the main tanks.

During climb and acceleration, only sufficient fuel is transferred into tank 11 to satisfy CG requirements; the majority of the trim tank fuel (9 and 10) being transferred to the main tank (5 and 7). During deceleration and descent, a small quantity of the fuel in tank 11 is transferred forward into tank 9, and the remainder into the main tanks, 5 and 7 (thence to the collector tanks) to obtain the required landing CG.

On the rare occasions when it becomes necessary to burn reserve fuel the landing CG is maintained within limits by reducing the fuel remaining in tank 9 by rearwards transfer to the main tanks.

(7) Landing Cg Using Fuel Ballast and/or Passenger Redistribution in Flight.

The aircraft may be laded on most occasions so that the Zero Fuel CG lies within the required CG limits i.e. the unshaded portion of the trim diagram of the trim diagram of the Balance Chart. On these occasions no fuel ballast or passenger redistribution in flight will be necessary. However there may be occasions when it is not possible and it will then be necessary to plan to redistribute passengers prior to landing (if the fuel remaining falls below 6000 kg) or make use of fuel as ballast.

(I) Ballast Fuel

Ballast fuel must not be consumed. It must be added to the fuel required for flight and taxi fuel to form the Total quantity used to determine the distribution of total fuel the Standard Fuel Distribution Tables. During flight the ballast fuel forms part of the total fuel on the aircraft and is transferred for trim purposes. It must remain in either tank 9 or tank 11, as appropriate, for landing.

(II) Passenger Redistribution In Flight

In situations where it is necessary to carry the maximum fuel possible and impossible to schedule take off at 54% Co it may be advantageous to achieve a zero fuel CG forward landing limits. It is obvious that in such a situation carriage of ballast fuel is unacceptable. It is permissible to load the aircraft with a Zero Fuel CG forward of the landing limit provided that a planned rearwards redistribution of passengers can be made that will give a landing CG on or aft of the forward landing limits. The methods is described in the Balance Chart instructions.

In flight passenger movement will only become necessary when the total fuel on board falls to less than about 6000 kg and insufficient fuel remains to achieve correct trim for landing. The procedure must only be carried out on Captains Instructions.

(8) Last Minute Changes

Zero Fuel CG has a strong influence on both the maximum fuel load that may be carried and also on the Pre Take-off transfer required to achieve the correct Take-off CG. Therefore the procedure for accepting "Last minute" changes of load must be more carefully defined and controlled than on other aircraft.

Rules

(i) "Last minute" passengers are acceptable as joining load with no change to the Pre Take-off transfer or Burn off quantities, Zero Fuel CG Fuel Ballast or Passenger Redistribution data PROVIDED the LMC is confined to that stated below:

The number of passengers accepted as "Last minute" additions is limited to the number of vacant seats in rows 14 and 15 with their hold baggage being stowed in Compartment 6.

(ii) For any other Traffic Load change the trim MUST be rechecked. Obtain the total index change from 07-01-01, Table 4A and adjust the Zero Fuel line by the same amount to obtain the amended Zero Fuel CG and Pre Take-Off.
Transfer or Burn off to achieve the correct Take-off CG.

(iii) Allowance must be made on the loadsheet for weight increase in the normal manner.

(9) Loading To Achieve Take-Off Fuel

Reference to Table 5 Section 1 shows that the maximum fuel that may be loaded for Take-off is a function of Zero Fuel Weight an CG with the maximum fuel increasing at more forward CG positions.

In the event that the flight plan fuel cannot be achieved with take-off at 53.5% Co it is preferable to schedule take-off at 54.0% Co. Should this not be possible it may be necessary to achieve a Zero Fuel C.G. forward of the forward landing limit. Use of ballast fuel is not acceptable in maximum usable fuel situation therefore advantage must be taken of the facility to show that a landing CG may be achieved by in flight redistribution of passengers, if the fuel remaining falls below 6000 kg. Redistribution of passengers in flight must only be carried out Captains Instructions.

(10) Take-Off At 54.0% Take-Off Cg

In addition to the methods described above the maximum fuel at Take-off may be increased by achieving a Take-off CG of 54.0% Co. The Total Fuel Load (including taxi fuel) must be at least 1500 kg greater than the Maximum fuel for Take-off at 53.5% (obtain from Table 5 Section 1). If the requirement is not met then the resulting aircraft CG on the ramp will be forward of 54%. A rearward transfer of fuel is not permissible for 54% TOCG and it would therefore be necessary to achieve a more rearward ZFCG by redistribution of payload until a Pre Take-off Burn-off from Tank 11 is achieved.

(11) Maximum Fuel Tank Capacity

Table 11 in Section 1 of this manual given nominal tank capacities for the full range of fuel densities.

(12) Taxi Fuel

Taxi fuel (and any ballast fuel) is included in the fuel quantity used for Balance Chart computations. The pre take-off transfer or burn-off required is shown on the Balance Chart.

(i) If pre take-off transfer is from Tank 9 to Tank 11 then this is a straightforward transfer. Taxi fuel must be burnt from the collector tanks (1, 2, 3, 4) WITHOUT inwards fuel transfer from the trim tanks (9, 10, 11).

(ii) If pre take-off burn off is from Tank 11 then this fuel quantity must be burnt, before take-off, from the collector tanks (1, 2, 3, 4) and replaced by fuel from Tank 11.

The amount to be burnt off takes taxi fuel into account e.g if the specified burn-off from Tank 11 is less than the taxi fuel then only the specified quantity should be transferred
from Tank 11. The remaining taxi fuel must be burnt from the collector tanks (1, 2, 3, 4) without further transfer.

(iii) Any EXCESS fuel burn-off required before Take-off should be burnt from the collector tanks (1, 2, 3, 4) without inwards transfer from the trim tanks.

(iv) If the fuel burnt before Take-off exceeds the planned taxi-fuel by more than 2000 kg, take-off at a CG position of 54% is not permitted. In this event 1500 kg of fuel must be transferred from Tank 11 to main transfer tanks to give the required take-off CG position of 53.5% Co. This is due to excessive fuel used from mains during taxi.

(13) Maximum Pre Take-Off Burn-Off From Tank 11

Maximum Pre Take-off burn-off from Tank 11 is 1800 kg for 54% Take-off CG and 3300 kg for 53.5% Take-off CG.

NB The DCS System does not take this figure into account.

(14) Ground Stability

(A) General

The restrictions applied to loading the aircraft are dependent upon the fuel state. The risk of tipping is very much increased at high fuel loads i.e above about 96% of volumetric capacity. (96% of volumetric capacity with normal fuel loading corresponds to 6500 kg in Tank 11). During normal refuelling the aircraft CG initially moves forwards but as higher fuel quantities are achieved the aircraft CG moves rearward. The resulting noseleg extension may be sufficient to operate a switch which will stop fuel entering tanks aft of the landing gear.

The following paragraphs contain and unloading rules which when followed will make the risk of tipping remote and should be read in conjunction with the notes above.

(B) Loading

(i) If fuel in tanks is less than 96% of volumetric capacity and 4000 Kg or more is in Tank 9 then both forward and rear holds and forward and rear galleys may be loaded simultaneously.

(ii) If fuel in tanks is greater than 96% of volumetric capacity then
load the forward hold before the rear hold and the forward galley before the rear galley.

(iii) In the case of high fuel loads it is possible that the nose leg weight switch may

operate all fuel is on board. In this event completion of refuelling will be delayed until passengers have boarded.

(iv) Passengers are to embark/disembark through the forward door only.

(v) Excessive numbers of personnel aft of row 19 i.e. in rear galley area or compartment 6 should be avoided wherever possible.

(C) *Unloading following Normal Sector Fuel Usage*

(i) Provided that at least 4000 kg of fuel is present in Tank 9 then simultaneous unloading of forward and aft holds is permissible.

(ii) When landing fuels are low and 4000 kg cannot be achieved in Tank 9 then maintain the highest practicable quantity and ensure that the rear hold is unloaded before the forward hold and the rear galley before the forward galley. Additionally Technical and Cabin Crew should remain in the aircraft, positioned forward of row 19, until all passengers have disembarked.

(D) Unloading following return to Ramp (High Fuel Load)

(i) Unload rear hold before forward hold and rear galley before forward galley.

EFFECT OF PASSENGER MOVEMENT

No of Pax	INDEX UNITS					
	Area A to B	Area A to C	Area A to D	Area B to A	Area B to C	Area B to D
1	+ 1	+ 4	+ 6	- 1	+ 3	+ 4
2	+ 2	+ 8	+ 11	- 2	+ 5	+ 9
3	+ 4	+ 11	+ 17	- 4	+ 8	+ 13
4	+ 5	+ 15	+ 22	- 5	+ 10	+ 17
5	+ 6	+ 19	+ 28	- 6	+ 13	+ 22
6	+ 7	+ 23	+ 34	- 7	+ 15	+ 26
7	+ 9	+ 26	+ 39	- 9	+ 18	+ 31
8	+ 10	+ 30	+ 45	- 10	+ 20	+ 35
9	+ 11	+ 34	+ 51	- 11	+ 23	+ 39
10	+ 12	+ 38	+ 56	- 12	+ 25	+ 44

No of Pax	INDEX UNITS					
	Area C to A	Area C to B	Area C to D	Area D to A	Area D to B	Area D to C
1	- 4	- 3	+ 2	- 6	- 4	- 2
2	- 8	- 5	+ 4	- 11	- 9	- 4
3	- 11	- 8	+ 6	- 17	- 13	- 6
4	- 15	- 10	+ 7	- 22	- 17	- 7
5	- 19	- 13	+ 9	- 28	- 22	- 9
6	- 23	- 15	+ 11	- 34	- 26	- 11
7	- 26	- 18	+ 13	- 39	- 31	- 13
8	- 30	- 20	+ 15	- 45	- 35	- 15
9	- 34	- 23	+ 17	- 51	- 39	- 17
10	- 38	- 25	+ 19	- 56	- 44	- 19

TABLE 3

TABLE 4

ELEVON TRIM ANGLE AT TAKE-OFF

TAKE-OFF CG POSITION (% Co)	ELEVON TRIM ANGLE (°DOWN)
53.0	1.5
53.5	2.5
54.0	2.5

TABLE 4A

ADDITIONS AND DEDUCTIONS INDEX TABLE

The table gives the index correction required for specified increments of load in kg added or deducted. The sign conventions for ITEMS ON are shown on the left and ITEMS OFF on the right.

SIGN	LOCATION	LOAD (KG) 20	30	40	50	70	85	100	SIGN
ITEMS ON (ADDITIONS)	FLIGHT DECK	2	3	4	5	7	8	9	ITEMS OFF (DEDUCTIONS)
	GALLEY UNITS 1-4	1	2	3	4	5	6	7	
−	COMPARTMENT 1	1	1	2	2	3	4	5	+
	COMPARTMENT 2	1	1	1	2	2	3	4	
	AREA A (ROWS 1-5)	1	2	2	3	4	5	6	
	AREA B (ROWS 6-10)	1	1	2	2	3	4	4	
	MID TOILETS/ EMERGENCY EXITS	1	1	1	2	2	2	3	
	AREA C (ROWS 11-18)	0	0	1	1	1	1	1	
	AREA D (ROWS 19-26)	0	0	0	1	1	1	1	
	GALLEY UNITS 5-7	1	1	1	1	2	3	3	
+	COMPARTMENT 6	1	1	2	2	3	3	4	−

Non - Standards Fuel Distribution For Take-Off

(1) Dispatch Of Aircraft With Tanks 5A/7A Empty

(This procedure to be used in conjunction with the MEL procedures). Departure with either tank 5A or 7A (or both) empty is an approved procedure provided that the special Refuelling Procedures and Balance Chart Procedures given below are followed.

(A) Refuel Distribution

Enter he refuelling schedule appropriate to the fuel density with the required total fuel load PLUS the short fall due to the empty tank (or tanks). This will distribute the fuel correctly in the available fuel tanks. (See Refuelling Book for procedure) . This procedure is to be used only where the refuelling schedule requires Tanks 5A and 7A to be fuel.

(B) Balance Chart

(Manual Balance Chart must be used).

(i) Determine the Zero Fuel Weight and Zero Fuel CG in the usual manner.

(ii) Continue the vertical line down onto the lower Index Scale.

(iii) On the lower Index Scale draw a horizontal line to the left equivalent to -43 Index Units for either Tank 5A or Tank 7A empty (for BOTH Tanks 5A and 7A empty draw a line to the left equivalent to -86 Index Units).

(iv) Obtain the 'Delta Tank 11 fuel' figure from Table 2 (Ref. 06-04-04) as follows: USING COLUMN B of Table 2.

Obtain Tank 11 fuel quantity from the fuel sheet. This must agree with the value given in the Refuelling Schedule at the appropriate fuel density for the total fuel required (total requirement PLUS the short fall due to the empty tank or tanks). If the Tank 11 fuel quantity is greater than the appropriate figure in Column B of Table 2, the difference is "Delta Tank 11". If the Tank 11 fuel quantity is less than the Column B value then "Delta Tank 11" fuel value is ZERO.

(v) Drop a vertical line onto the Delta Tank 11 scale and draw a horizontal line to the right, equivalent to the weight of Delta Tank 11 fuel (if any).

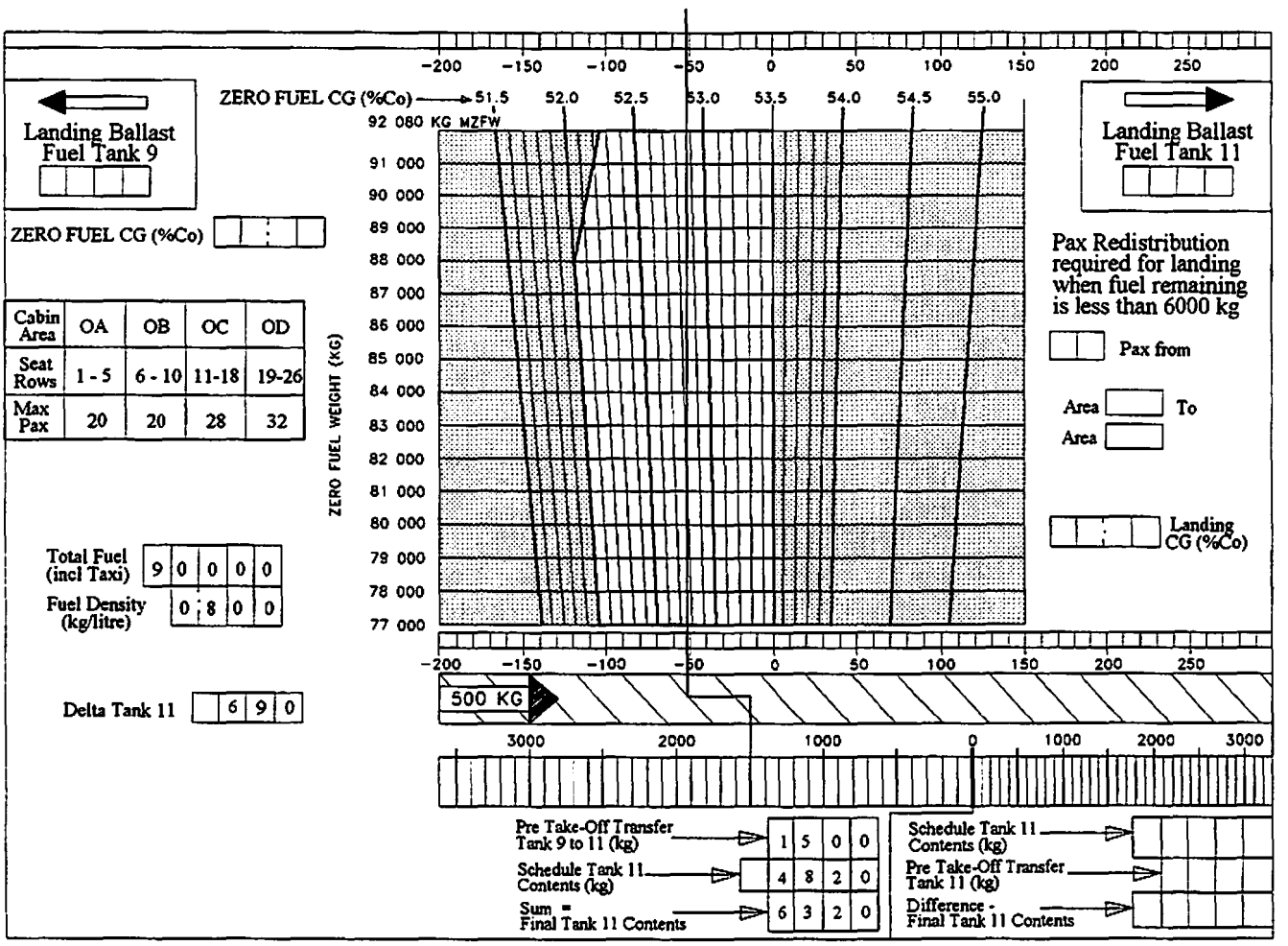
(vi) Drop a vertical line onto the pre take-off transfer/burn-off scale in the usual way and complete the remainder of the balance chart.

(vii) Example A and B on the following pages illustrate the procedure.

Example A

All Tanks Serviceable

Total fuel 90,000 kg at 0.800 Kg/litre
Breakpoint total fuel = 89310 kg so Delta Tank 11 = 90000 - 89310 = 690 kg
Schedule Tank 11 fuel = 4820 kg
Pre Take-off transfer Tank 9 to 11 = 1500 kg
Final Tank 11 = 6320 kg.

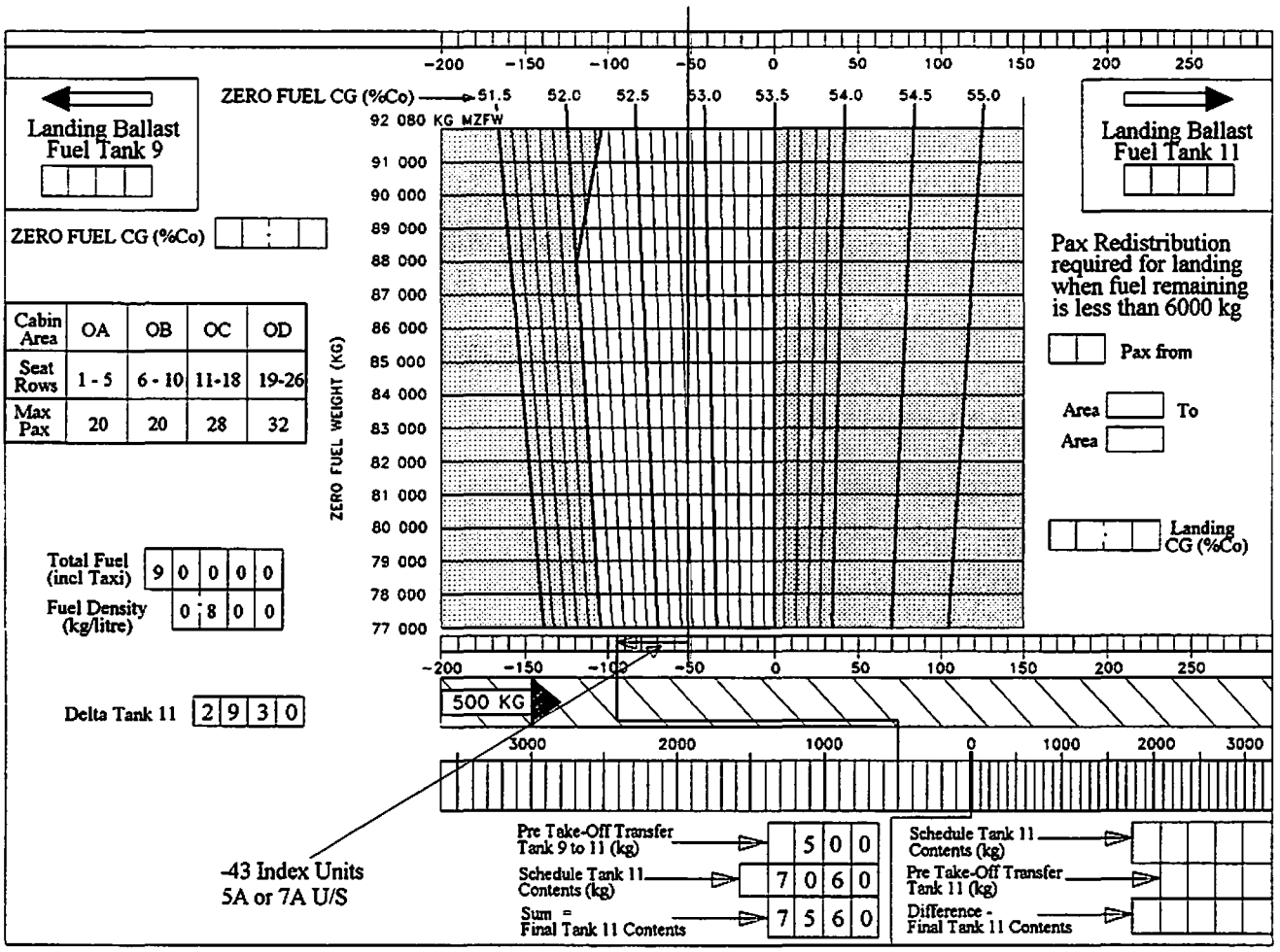


V466 (Issue E)

Example B

Tank 5A or 7A Unserviceable & Empty

Total fuel 90,000 kg at 0.800 Kg/litre
Breakpoint total fuel = 89310 kg
Total fuel plus shortfall from Tank 5A = 90000 + 2240 = 92240 kg
Delta Tank 11 = 92240 - 89310 = 2930 kg
Pre Take-off transfer from Tank 9 = 500 kg
Schedule Tank 11 fuel = 7060 kg
Final Tank 11 fuel = 7560 kg



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(2) Positioning Flights With Low Fuel Loads

The construction of Concorde Balance Chart assumes that fuel is loaded according to the Fuel loading tables in the Fluid Replenishment Manual in order to achieve the correct Take-off CG. Where low fuel loads are required, (associated with a very lightly loaded aircraft with an aft ZFCG) the Balance Chart requirement for Tank 11Burn-off cannot be achieved due to insufficient fuel in Tank 11.

In the first instance, if it is found that the schedule Tank 11 value is less than the PTOBO T11 quantity then increase the Total Fuel Load until sufficient Tank 11 fuel is scheduled. Then employ the Balance Charts in the normal manner.

If it is not possible to increase the Total Fuel load (e.g. due Landing Weight Limitations) then the procedure given below should be used.

Procedure

Reference to the Fuel loading table should be made to establish the Scheduled Tank 11 value. As a general guide Table 15 given fuel quantities below which scheduled Tank 11 values are zero.

Where insufficient Tank 11 fuel is scheduled, use either of the following procedures: -

A) Using Tank 10 Zero Fuel Ballast

(i) Obtain Zero Fuel CG in the normal manner. This value should be entered in the box provided on the Balance Chart and is the value to be entered in the aircraft CG computer.

(ii) Enter table 14 below with Zero Fuel Weight and Zero Fuel CG and obtain Tank 10 Zero Fuel Ballast (T10ZFB). Note that the no Tank 9 landing Ballast Fuel is required if Tank 10 Zero Fuel Ballast is used.

Use of this Tank 10ZF Ballast will give a ballasted ZFCG of 53.5% and a ballasted Zero Fuel Weight equal to ZFW + Tank 10 ZF Ballast. This Tank 10 Fuel is UNUSABLE FUEL and must remain in Tank 10 for the duration of the flight.

(iii) Drop a vertical from the Ballasted ZFCG of 53.5% through the Delta Tank 11 scale (fuel loads will be insufficient to produce a Delta Tank 11 value) onto the Pre Take-off fuel transfer scale and read off the Pre Take-off transfer (Tank 9 to Tank 11).

(iv) The Tank 10 Zero Fuel Ballast is additional to the Total Fuel required and should be considered as forming part of the Zero Fuel Weight. However, the Zero Fuel Weight

(v) Fuel Distribution should be :

Total Fuel including taxi - load according to refuel schedule
Tank 10 Zero Fuel Ballast - load in Tank 10.

B) Using Tank 9 Zero Fuel Ballast

(i) Obtain Zero Fuel Weight in the normal manner. This value should be entered in the aircraft e.g. On board computer.

(ii) Enter the bottom half of table 1 on 06-03-05 and obtain the Tank 9 Zero Fuel Ballast Fuel. *NOTE that tank 10 ZFB Fuel is not required if Tank 9 ZFB is used.* The addition of this Tank 9 ZFB fuel will give a ballasted ZF CG of 53.5% and a ballasted ZFW equal to ZFW plus tank 9 ZFB fuel. This additional fuel to Tank 9 is UNUSABLE FUEL and must remain in Tank 9 for the duration of that flight.

(iii) Drop a vertical line from the ballasted ZFW CG of 53.5% through the Delta Tank 11 scale onto the Pre Take Off Fuel Transfer scale and read off the Pre Take Off Transfer (Tank 9 to 11)

(iv) The Tank 9 ZFB fuel is added to the total fuel required and should be considered as forming part of the Zero Fuel Weight. However the AFW and ZFCG to be loaded into the aircraft CG computer should be without Tank 9 ZFB fuel.

(v) Fuel Distribution should be :

Total Fuel including taxi - load according to refuel schedule
Tank 9 Zero Fuel Ballast - load in Tank 9.

Table 14: Tank 10 Zero Fuel Ballast

ZF WT 1000 KG	76	77	78	79	80	81
ZFCG	TANK 10 ZERO FUEL BALLAST(KG)					
55.0	5000	5050	5100	5150	5250	5300
54.9	4650	4725	4775	4825	4900	4950
54.8	4300	4400	4450	4500	4550	4600
54.7	3975	4050	4100	4150	4200	4250
54.6	3650	3700	3750	3800	3850	3900
54.5	3325	3375	3425	3450	3500	3550
54.4	3000	3050	3100	3100	3150	3200
54.3	2675	2700	2750	2775	2800	2850
54.2	2350	2350	2400	2450	2450	2500
54.1	2025	2025	2050	2100	2100	2150
54.0	1700	1700	1700	1750	1750	1800
53.9	1350	1375	1375	1400	1400	1425
53.8	1000	1050	1050	1050	1050	1050
53.7	675	700	700	700	700	725
53.6	350	350	350	350	350	400
53.5	0	0	0	0	0	0

Table 14

Table 15: Total Fuel Quantities Where Scheduled Tank 11 Value Is Zero

Fuel Density (Kg/Litre)	Total Fuel (Kg)
0.73	28860
0.75	29570
0.77	30240
0.78	30560
0.79	30900
0.80	31220
0.81	31570
0.83	32280
0.85	33000

Table 15

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Tank 10 Zero Fuel Ballast Procedure

BRITISH AIRWAYS

CONCORDE 100F

For Take-Off Weights Less Than 140,000 kg

C530/1

Using Standard Fuel Distribution

TAKE-OFF CG 53.0% Co

Elevon Trim Angle at T.O. 1.5° Down

	-	+
Basic Index		100
Crew	26	
Pantry		
Totals	26	100
Dry Operating Index		74

Cabin Areas: OA | OB | OC | OD | 6

Compartments: 1 | 2

0 50 100 150 200 250

Compartment 1		500 KG
Compartment 2		500 KG
Compartment 6		500 KG
Cabin Area OA		5 PAX
Cabin Area OB		5 PAX
Cabin Area OC		10 PAX
Cabin Area OD		10 PAX
Fwd Wardrobes	MAX 327	100 KG
Aft Wardrobes	MAX 418	500 KG

-200 -150 -100 -50 0 50 100 150 200 250

Landing Ballast Fuel Tank 9

ZERO FUEL CG (%Co) 5 4 5 5

ZERO FUEL CG (%Co) → 51.5 52.0 52.5 53.0 53.5 54.0 54.5 55.0

92 080 KG MZFW

ZERO FUEL WEIGHT (KG): 91 000 90 000 89 000 88 000 87 000 86 000 85 000 84 000 83 000 82 000 81 000 80 000 79 000 78 000 77 000

Landing Ballast Fuel Tank 11

Cabin Area	OA	OB	OC	OD
Seat Rows	1 - 5	6 - 10	11-18	19-26
Max Pax	20	20	28	32

Pax Redistribution required for landing when fuel remaining is less than 6000 kg

Pax from Area ☐ To Area ☐

Landing CG (%Co)

Total Fuel (incl Taxi) 2 8 0 0 0

Fuel Density (kg/litre) 0 8 0 0

Delta Tank 11 N I L

Delta Tank 11 value will be NIL at fuel loads for TOW below 140,000 kg

-200 -150 -100 -50 0 50 100 150 200 250

800 KG

3000 2000 1000 0 1000 2000 3000 4000

Tank 10 ZFW Ballast = 3600 kg

Pre Take-Off Transfer Tank 9 to 11 (kg)			7	3	0
Schedule Tank 11 Contents (kg)	0	0	0	0	0
Sum = Final Tank 11 Contents			7	3	0

V465 (Issue E)

Example

Aircraft positioning flight, 3 Tech Crew, no catering, no Cabin Crew. No passengers or baggage.

From Weight Schedule Extract in Certificate File Basic Weight	78000 kg	+ 100 IU
PLUS 3 crew on Flight Deck	297	- 26
PLUS 3 crew bags Cpt 2	78297 kg	+ 74 IU

Total fuel required for flight 28,000 kg with Density - 0.80Kg/litre. Take-off weight is less than 140,000 kg therefore use 53.0% Co Take-off CG. ZFCG - 54.55%.
Delta Tank 11 fuel = 0. In such a case a burn off from Tank 11 would be called for but the Fuel loading Table for 28,000 kg at a specific gravity of 0.8 required NIL fuel in Tank 11. It follows that the use of a ballast procedure is required.

Using Tank 10 Ballast Fuel Procedure: -

Enter Table 14 with Zero Fuel Weight and CG (78297 kg / 54.55%) and obtain Tank 10 Zero Fuel Ballast Fuel (3600 kg).

Note that using this procedure no Tank 9 Ballast Fuel is required.
Ballasted Zero Fuel Weight = 78297 + 3600 = 81897 kg
Ballasted ZFCG = 53.5%

On the Balance Chart Drop a vertical through the Delta Tank 11 scale onto the Pre Take-off Fuel Transfer scale and read off the Pre Take-off Transfer Tank 9 to Tank 11 (730 kg).

NOTES:

1. Zero Fuel Weight and CG for CG computer 78297 kg / 54.55%

2. Fuel requirement becomes: -

   28000 kg loaded according to Fuel Loading Tables
   Plus 3905 kg in additional fuel in Tank 10

3. Zero Fuel Weight for calculation of Taxi weight, Take-off weight and landing Weight is ballasted Zero Fuel Weight to which must be added usable fuel.

Using Tank 9 Ballast Fuel Procedure

BRITISH AIRWAYS

CONCORDE 100F

For Take-Off Weights Less Than 140,000 kg

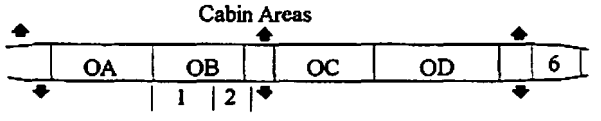
C530/1

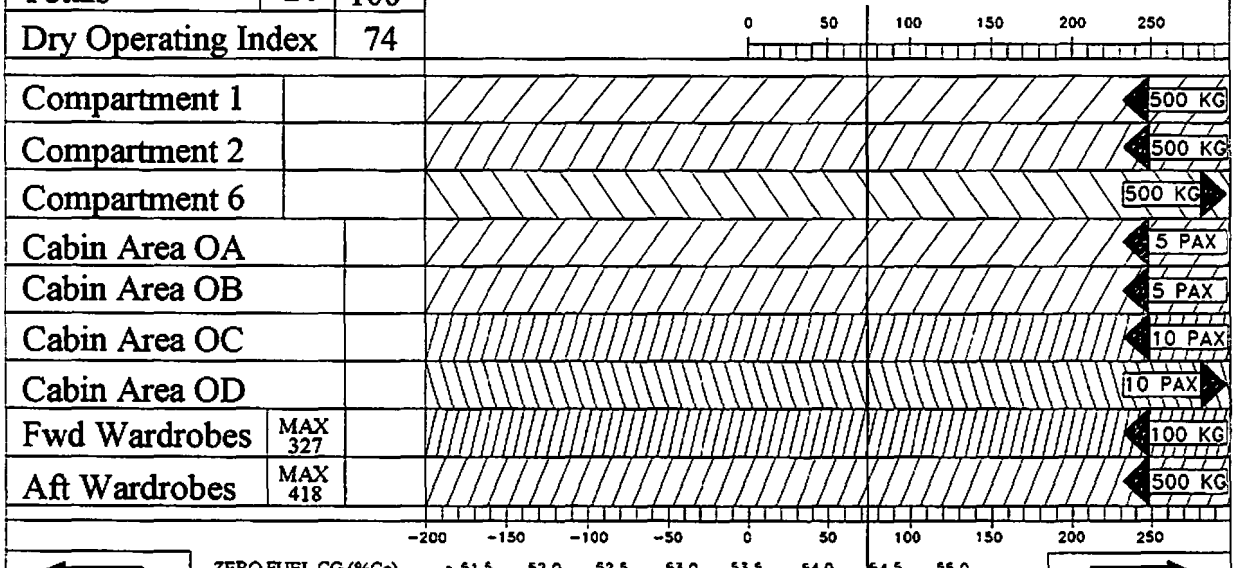
Using Standard Fuel Distribution

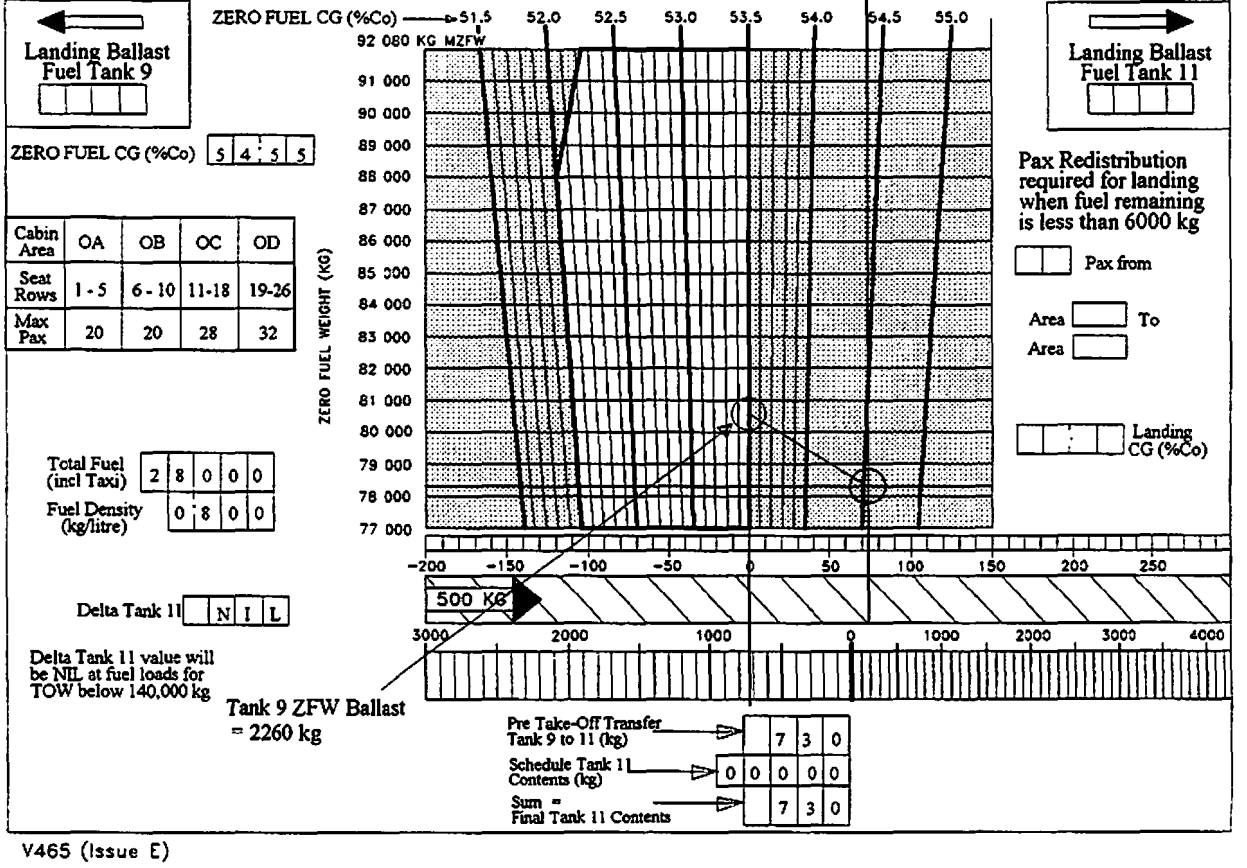
TAKE-OFF CG 53.0% Co

	-	+
Basic Index	X	100
Crew	26	X
Pantry		X
Totals	26	100
Dry Operating Index		74

Elevon Trim Angle at T.O. 1.5° Down







Using Tank 9 Ballast fuel Procedure

Enter Table 1 (06-03-05) with Zero Fuel Weight and CG (78297 kg / 54.55%) and obtain Tank 9 Zero Fuel Ballast Fuel (2260 kg).

Note: that using this procedure Tank 10 Zero Fuel Ballast Fuel is required.

Ballasted ZFW = 78297 kg + 2260 kg = 80557 kg
Ballasted ZFCG = 53.5%

On the Balance Chart drop a vertical line through the Delta Tank 11 scale onto to the Pre Take Off Fuel Transfer scale and read off the Pre Take Off Transfer Tank 9 10 11 (730 kg)

Notes:

1. ZFW and ZFCG for CG computer 78297 kg / 54.55%

2. Fuel requirements becomes:-
   28000 kg loaded according to Fuel loading Tables PLUS
   2260 kg additional fuel in Tank 9

3 Zero fuel Weight for calculation of Taxi Weight, Take Off Weight and Landing Weight is the ballasted Zero Fuel Weight.

1. Use Of Manual Balance Charts (Without High Level Incremental Fuel)

Balance charts are provided to determine load distribution.

(i) For Take-off at 53.0% Co. C530/1

(ii) For Take-off at 53.5% Co. C535/1

(iii) For Take-off at 54.0% Co. C540/1

These Balance chart must be used in conjunction with the Standard Fuel Loading as defined in the BA Fluid Replenishment Manual and the Standard Fuel Management if flight as defined in the Flying Manual Vol. II Chapter 6.

NOTE: *A high degree of accuracy is required.*
Worked examples are given in this section.

(1) Refer to the Weight Schedule Extract of the aircraft to be loaded and obtain the Basic Index. Enter this value in the box provided.

(2) Add the indices for Crew, Catering and any adjustments to the Basic condition to obtain the Dry Operating Index. (see 01-03).

(3) Enter the Dry Operating Index Scale at this value and draw a line vertically down on to the first applicable scale below.

(4) Lay off the appropriate amount on this scale, in the direction indicated by the arrow.

(5) Repeat this process of descending vertically from scale to scale laying off on each the appropriate amount in the correct direction, until the scale for Cabin Area OD has been completed, and then drop a vertical through the index scale into the Zero Fuel Grid.

(6) Obtain the Zero Fuel Weight the Loadsheet. Enter the Zero Fuel gird and mark the intersection of the vertical from (5) above and Zero Fuel Weight Grid.

(7) Obtain the Zero Fuel CG and enter this value in the box on the left side of the grid.

(8) If the Zero Fuel CG lies in the unshaded portions of the grid then no passenger movement or ballast fuel is required. Load should be adjusted to achieve this whenever possible, (e.g. Compartment 6 load to Compartment 1, reseat passengers) unless a high fuel load is required. A higher fuel load at Take-off will be achieved by obtaining a Zero Fuel CG forward of the forward landing limit.

(9) If the Zero Fuel CG lies too far aft (i.e. ZFCG greater than 53.5% Co) then ballast fuel in Tank 9 will be required for landing. Enter Table 1 with the Zero Fuel Weight and Zero Fuel CG and read off the Tank 9 ballast fuel. Enter in the space provided. Ballast fuel not be consumed.
It must be added to the fuel required for the flight and the Standard Fuel Loading Tables used to determine the distribution of the total fuel.

(10) If the Zero Fuel CG lies forward of the forward landing limit (i.e. ZFCG less than 52% at 88,000 kg and below, moving to 52.26% at Maximum Zero Fuel Weight, 92,080 kg)

(i) In high fuel load cases plan to redistribute passengers aft in flight before landing.
(a) First establish from the balance chart the index shift required to bring the Zero Fuel CG within limits for landing (a rearwards shift requires a positive (+) Index shift.
(b) With a knowledge of the actual passenger distribution and empty seats use table 3 to find the number of passengers required to be moved rearwards to achieve the required index shift. Enter on balance chart.
(c) On the balance chart show the correct Zero Fuel CG in the Landing Zero Fuel CG box

NOTE:
1. The actual Zero Fuel CG for Take-off is unchanged.
2. Should the consumption of reserve fuel bring the total fuel remaining down towards 6000 kg then passenger movement will be necessary to achieve a Landing CG within limits. Passenger redistribution in flight must only be carried out on Captain instructions.
3. Always ensure that in flight passenger movement is feasible i.e. sufficient vacant seats remain in the aft cabin areas to accommodate the transferred passengers.

(ii) If the planned redistribution of passengers before landing is insufficient to bring the ZFCG within limits then ballast fuel in Tank 11 will be required for landing. This may be additional to any planned in-flight passenger redistribution.

Enter Table 1 with the Zero Fuel Weight and Zero Fuel CG (corrected foe any passenger redistribution as above) and read off the Tank 11 ballast fuel. Enter in the space provided. Ballast fuel must not be consumed. It must be added to the fuel required for the flight and that Standard Fuel Loading Tables used to determine the distribution of the total fuel.

(11) Obtain the "Delta Tank 11 fuel" figure from Table 2 using the Tank 11 figure shown on the Fuel Sheet. This must agree with the value given in the Refuelling Schedule for the fuel uplift density.

NOTE: Delta Tank 11 = Tank 11 quantity from fuel Loading table or fuel sheet MINUS (BREAKPOINT (FUEL (COLUMN B)

If Breakpoint Fuel is greater than Tank 11 quantity then Delta 11 is Zero.
Enter the Delta Tank 11 fuel in the appropriate box.

Continue the vertical line down from the ZERO FUEL CG position through the index scale until it meets one of the oblique lines on the Delta Tank 11 scale. Draw a horizontal line to the right for a distance corresponding scale. Draw a horizontal line to the right for a distance corresponding to the Delta Tank 11 value.

Enter in the next scale.

(12) The Pre Take-off fuel transfer scales are in two parts.

(i) The scale to the left of the zero transfer point given the quantity of fuel to be transferred from Tank 9 to Tank 11 give the correct CG for Take-off. (TAKE OFF CG's 53.0% & 53.5% ONLY). Enter the quantity in the space provided.

(ii) The scale to the right of the zero transfer point given the required fuel burn off from Tank11 to give the correct Cg for take-off. Enter the quantity in the space provided.

When using 54% Balance Chart if the Vertical line falls in the area to the left of the Pre Take-off Burn off from Tank 11 scale then payload should be moved to obtain a more AFT Zero Fuel CG to achieve a Pre Take-off Burn-off.

Alternatively, if Take-off weight limitations allow, then Total Fuel quantity may be increased to give a Pre Take-off Burn off.

(13) Enter into the appropriate box the Tank 11 quantity obtain from the fuel sheet or fuel Loading Tables for the correct Fuel Density.

In the case of "pre take-off transfer" ADD the Tank 11 quantity and transfer amount to obtain the 'Final Tank 11 contents'.

In the case of "pre take-off" burn-off", SUBTRACT the burn-off to obtain 'Final Tank 11 contents'.

See 06-01-04 for information on use of taxi fuel.

(14) The appropriate eleven trim angle is pre-printed in the box at the bottom left hand corner of the balance chart in accordance with Table 4.

2. Use Of Manual Balance Charts (With High Level Incremental Fuel)

Procedures given by 1 paras (1) to (10) are unchanged and should be followed as usual.

Revised paras (11), (12) and (13).

(11) To obtain "Delta Tank 11 Fuel" when HLI fuel is used obtain Tank 11 quality from the fuel sheet. This **MUST** agree with value given by the Fuel Loading Tables for Maximum Tankage at the uplift fuel density.

Subtract from this the appropriate value from Column B of Table 2.

Delta Tank 11 =	(Tank 11 quantity)		('Breakpoint')
	(from fuel loading)	MINUS	(fuel)
	(tables or fuel sheet)		(Column B)

Enter Delta Tank 11 fuel in the appropriate box.

Continue the vertical line down from the ZERO FUEL CG position through the index scale until it meets one of the oblique lines on the Delta Tank 11 scale. Draw a horizontal line to the right for a distance corresponding to the Delta Tank 11 value.

Enter the next scale.

(12) High level incremental fuel will only be used in conjunction with 54% TOCG, for which only Pre take-off burn-off from Tank 11 is permitted.

The scale gives the required fuel burn-off from Tank 11 to give the correct CG for take-off.

Enter the quantity in the space provided.

NOTE: Table 12 in Chapter 1 given the Maximum Planned Tank 11 burn-off when HLI fuel is used. If the Pre Take-off Tank 11 Burn-off obtained in paras (1) to (12) above exceeds the value obtained from Table 12 then the Zero Fuel CG must be planned more forward. Table 12 in Chapter 1 given the rear most ZFCG that may be planned.

(13) Enter into the appropriate box the Tank 11 quantity obtain from the fuel sheet or Fuel Schedule for the correct Fuel Loading Tables for the correct Fuel Density.

SUBTRACT the burn-off to obtain 'Final Tank 11 contents'.

See 06-01-04 for information on use of taxi fuel.

Ballast Fuel for Landing									
	Zero Fuel Weight (1000 kg)								
ZFCG	76	78	80	82	84	86	88	90	92
(% Co)	Ballast Fuel in Tank 11 (kg)								
51.5			662	679	695	712	801	1024	1257
51.6			530	543	556	570	641	861	1089
51.7			397	407	417	427	481	697	922
51.8			265	272	278	285	321	533	754
51.9			132	136	139	142	160	369	586
52.0			0	0	0	0	0	205	419
52.1			0	0	0	0	0	41	251
52.2			0	0	0	0	0	0	84
	Ballast Fuel in Tank 9 (kg)								
53.6	210	210	220	220	230	240	240	250	250
53.7	420	430	440	450	460	470	480	490	500
53.8	620	640	660	670	690	710	720	740	750
53.9	830	850	880	900	920	940	960	980	1010
54.0	1040	1070	1090	1120	1150	1180	1200	1230	1260
54.1	1250	1280	1310	1350	1380	1410	1440	1480	1510
54.2	1450	1490	1530	1570	1610	1650	1680	1720	1760
54.3	1660	1710	1750	1790	1840	1880	1930	1970	2010
54.4	1870	1920	1970	2020	2070	2120	2170	2210	2260
54.5	2080	2130	2190	2240	2300	2350	2410	2460	2520
54.6	2290	2350	2410	2470					
54.7	2490	2560	2630	2690					
54.8	2700	2770	2840	2910					
54.9	2910	2990	3060	3140					
55.0	3120	3200	3280	3360					
55.1	3330	3410	3500	3590					
55.2	3530	3630	3720	3810					
55.3	3740	3840	3940	4040					
55.4	3950	4050	4160	4260					
55.5	4160	4270	4380	4480					

Table 1: Ballast Fuel for Landing

Fuel Density (kg/litre)	A Total Fuel (kg) at which Delta Tank 11 = 0	B Breakpoint fuel Tank 11 Loading (kg) at which Delta Tank 11 = 0
.725 - .729	80890	3540
.730 - .734	81440	3590
.735 - .739	82010	3630
.740 - .744	82570	3650
.745 - .749	83140	3690
.750 - .754	83730	3740
.755 - .759	84300	3790
.760 - .764	84860	3820
.765 - .769	85440	3860
.770 - .771	86000	3890
.772 - .773	86240	3910
.744	86460	3930
.775 - .776	86570	3930
.777 - .778	86820	3960
.779 - .780	87050	3970
.781 - .782	87230	3970
.783 - .784	87480	4000
.785 - .786	87680	4000
.787 - .788	87920	4020
.789 - .790	88190	4050
.791 - 792	88400	4060
.793 - .794	88640	4080
.795 - .796	88850	4090
.797 - .798	89070	4100
.799 - .800	89310	4130
.801 - .802	89540	4140
.803 - .804	89760	4150
.805 - .806	90000	4170
.807 - .808	90240	4180
.809 - .810	90460	4200
.811 - .812	90690	4220
.813 - .814	90890	4230
.815 - .816	91140	4240
.817 - .818	91350	4260
.819 - .820	91590	4280
.821 - .822	91820	4310
.823 - .824	92040	4320
.825 - .826	92270	4320
.827 - .828	92500	4350
.829 - .830	92750	4360
.831 - .832	92960	4370
.833 - .834	93210	4400
.835 - .839	93410	4400
.840 - .844	93970	4440
.845 - .849	94540	4480
.850 - .854	95930	4520

Table 2: Derivation of Delta Tank 11 Fuel

No of Pax	Index Units					
	Area A to B	Area A to C	Area A to D	Area B to C	Area B to D	Area C to D
1	+ 1	+ 4	+ 6	+ 3	+ 4	+ 2
2	+ 2	+ 8	+ 11	+ 5	+ 9	+ 4
3	+ 4	+ 11	+ 17	+ 8	+ 13	+ 6
4	+ 5	+ 15	+ 22	+ 10	+ 17	+ 7
5	+ 6	+ 19	+ 28	+ 13	+ 22	+ 9
6	+ 7	+ 23	+ 34	+ 15	+ 26	+ 11
7	+ 9	+ 26	+ 39	+ 18	+ 31	+ 13
8	+ 10	+ 30	+ 45	+ 20	+ 35	+ 15
9	+ 11	+ 34	+ 51	+ 23	+ 39	+ 17
10	+ 12	+ 38	+ 56	+ 25	+ 44	+ 19

No of Pax	Index Units					
	Area B to A	Area C to A	Area C to B	Area D to A	Area D to B	Area D to C
1	- 1	- 4	- 3	- 6	- 4	- 2
2	- 2	- 8	- 5	- 11	- 9	- 4
3	- 4	- 11	- 8	- 17	- 13	- 6
4	- 5	- 15	- 10	- 22	- 17	- 7
5	- 6	- 19	- 13	- 28	- 22	- 9
6	- 7	- 23	- 15	- 34	- 26	- 11
7	- 9	- 26	- 18	- 39	- 31	- 13
8	- 10	- 30	- 20	- 45	- 35	- 15
9	- 11	- 34	- 23	- 51	- 39	- 17
10	- 12	- 38	- 25	- 56	- 44	- 19

Table 3: Effect of Passenger Movement

Take Off CG Position (% Co)	Elevon Trim Angle (% Down)
53.0	1.5
53.5	2.5
54.0	2.5

Table 4: Elevon Trim Angle at Take Off

The following table gives the index correction required for specified increments of load in kg added or deducted. The sign conventions for ITEMS ON are shown on the left and ITEMS OFF on the right.

	Location	Load (kg) 20	30	40	50	70	85	100	
- ITEMS ON – ADDITIONS	Flight Deck	2	3	4	5	7	8	9	ITEMS OFF – DEDUCTIONS +
	Galley Units 1-4	1	2	3	4	5	6	7	
	Compartment 1	1	1	2	2	3	4	5	
	Compartment 2	1	1	1	2	2	3	4	
	Area A (Rows 1-5)	1	2	2	3	4	5	6	
	Area B (Rows 6-10)	1	1	2	2	3	4	4	
	Mid Toilets / Emergency Exits	1	1	1	2	2	2	3	
	Area C (Rows 11-18)	0	0	1	1	1	1	1	
+ ITEMS ON – ADDITIONS	Area D (Rows 19-26)	0	0	0	1	1	1	1	ITEMS OFF – DEDUCTIONS -
	Galley Units 5-7	1	1	1	1	2	3	3	
	Compartment 6	1	1	2	2	3	3	4	

Table 4A: Additions and Deductions Index Table

Balance Chart Examples

The example are designed to illustrate the various features of the Concorde Balance Chart including the "out of limits" situations.

The example should be studied in conjunction with the instructions given in this manual.

Case 1 shows a loading case with the Zero Fuel CG (ZFCG) within landing limits and a relatively low fuel load giving "Delta Tank 11 = 0." This results in a large Pre Take-off transfer from Tank 9 to Tank 11.

Case 2 using same payload as Case 1 this example illustrates the derivation of Delta Tank 11 fuel for the higher fuel load.

Case 3A illustrates the high fuel load case where ZFCG is aft of an optimum forward position. The Pre Take Off burn off required, in this case 2200 kg, may be greater than the planned taxi fuel. This would result in Take off fuel being less than planned.

This situation could be improved by adjusting the Pax and payload position to achieve a more forward CG or by the use of the 54.0% Take Off as in **Case 3B**.

Case 4 is designed to show how to trim a lightly laden (or in this case empty) air-craft by use of fuel ballast. The case of a ZFCG beyond the forward landing limit is unlikely to be dealt with by the use of ballast fuel but the principle is the same.

Case 5 illustrates case where near maximum fuel is required using 53.5% TOCG. In order to increase the fuel quantity available at Take-off a forwards ZFCG (beyond the forward landing limits) permits Tank 11 fuel to be increased. Towards the end of the flight if the fuel remaining falls below about 6000 kg the ZFCG must be brought within the landing limits . The case also demonstrates a loading which produces neither Pre Take-off transfer from Tank 9 to Tank 11 nor Pre Take-off Burn-off from Tank 11.

NOTE: If initial attempt to achieve a Zero Fuel CG within the landing limits is unsuccessful and a high fuel is NOT required first attempt to redistribute deadload. Then if unsuccessful attempt to redistribute passengers. Always attempt to achieve a ZFCG as far forward as possible. This allows carriage of greater fuel quantities.

Case 6 illustrates the use of 53.0% Co. Balance Chart. The Take-off weight is less than 140,000 kg. The method of trim calculation is identical to the normal Balance Chart but the Pre Take-off Transfer or Burn off scales have been amended to give a Take-off CG of 53.0% Co.

Case 7 shows the procedure to be adopted in the use of 54% TOCG. Note that it is necessary to initially plan to use 53.5% TOCG in order to establish that the Tank 11 Burn-off for 53.5% Take-off is greater than 1500 kg. Only if this condition is satisfied may 54% TOCG be used.

Case 8 demonstrates the use of High Level Incremental Fuel.

Balance Chart Example

Aircraft Dry Operating Weight and Index: DOW 80296 kg
DOI various

Case 1

90% Load factor, no freight, low fuel load.

CPT 1	460 kg
CPT 2	268 kg
CPT 6	1162 kg
CABIN AREA	OA 18
	OB 25
	OC 29
	OD 29

ZFW = 90046 kg

TOTAL FUEL (INCLUDING TAXI) = 70,000 kg at. 80 kg/litre

NOTES:

1. *Zero fuel CG within landing limits - no ballast or pax In flight movement required.*
2. *From Fuel Loading tables or Fuel Sheet Tank 11 quantity = 2630 kg. This is less than "Breakpoint Fuel", therefore Delta Tank 11 = 0.*
3. *Pre Take-off transfer = 2380 kg, Tank 9 to Tank 11.*
4. *Final Tank 11 = 2630 + 2380 = 5010 kg*

Case 2

Payload as in Case 1.
Total fuel = 91,000 kg at .800 kg/litre.

NOTES:

1. From Fuel Loading tables or Fuel Sheet Tank 11 quantity = 5820 kg. This is greater than "Breakpoint Fuel" thus Delta Tank 11 = 5820 - 4130 = 1690 kg.
2. Pre Take-off Transfer = 1350 kg, Tank 9 to Tank 11.
3. Final Tank 11 = 5820 + 1350 = 7170 kg.

Case 3A

Payload low and evenly distributed, low baggage load, no freight.
Total fuel 95000 kg. At 0.800 kg/litre.

NOTES:

1. ZFW 83854 kg. ZFCG 52.58% Co.
2. From Fuel Loading tables or Fuel Sheet Tank 11 quantity = 9820 kg. This is greater than "Breakpoint" fuel thus Delta Tank 11 = 9820 - 4130 = 5690 kg.

3. Pre Take-off burn-off from Tank 11 = 2200 kg.

4. Final Tank 11 = 9820 - 2200 = 7620 kg.

If a taxi fuel of 1400 kg is required then, to achieve a 2200 kg burn off an extra 800 kg (2200 - 1400 must be burnt off before Take -off from Tanks 1, 2, 3 & 4 and replaced from Tank 11.
Thus the maximum fuel at Take-off is limited by Take-off CG considerations to 9500 - 2200 = 92800 kg.

Case 3B

As in case 3A except by selecting a 54.% Take Off, it will be found that only 750 kg must be burnt from Tank 11 with the remainder coming from Tanks 1,2,3 & 4.

Case 4

Zero Fuel CG outside aft landing limit.
This is low payload case - typical of non revenue ferry flight.
ZFW = 80296 kg
ZFCG = 54.03% Co.

In order to achieve a ZFCG within landing limits, using Table 1 (06-03-05), 1160 kg of ballast fuel must be carried. For loading purposes this fuel must be considered as part of the fuel load. It is only required as ballast in Tank 9 for landing when fuel remaining is low. The landing ZFCG is unaffected.

NOTE: 1. Fuel load (including ballast) = 80,000 kg/litre at 0.800 kg/litre.
Tank 1 quantity = 2630 kg which is less than "Breakpoint Fuel".
Thus Delta Tank 11 = 0.
2. Pre Take-off Transfer Tank 9 to 11 = 920 kg.
3. Final Tank 11 = 2630 + 920 = 3550 kg.

Case 5

Zero Fuel CG outside forward landing limits. ZFW = 86800 kg.
Reference to Table 5 (01-01-09) shows that the amount of fuel available for Take-off is increased at more forward positions of Zero Fuel CG. This has been achieved in this case by seating passengers forwards.

CPT 1	460 kg	CABIN AREA	OA - 20 PAX
2	268 kg		OB - 20 PAX
6	532 kg		OC - 20 PAX
			OD - ZERO

Zero Fuel CG = 51.90% Co. Total fuel = 93710 kg at .800 kg/litre.

NOTE: 1. Fuel Loading Tables or Fuel Sheet value of Tank 11 = 8920 kg which is greater than Break point Fuel of 4130 kg. Delta Tank 11 = 8920 - 4130 = 4790 kg.

Assuming that it was operationally unacceptable to carry ballast fuel (e.g. high fuel load required) it is possible to achieve a ZFCG within the landing limits by a planned rearwards movement of passengers in flight.

Using Table 3 (06-03-07) the necessary index change of + 28IU to bring the ZFCG within the landing limits could be achieved by moving 5 pax. from Area B to Area D. This would only be done on Captain's instruction and would only be necessary when the fuel remaining dropped to less than 6000 kg (approx.). The revised ZFCG that would be achieved by the in flight movement of passengers must be noted in addition to the actual ZFCG for Take-off.

Case 6

Take-off weight less than 140,000 kg.
Take-off CG 53.0% Co.

Using the same payload and distribution as Case 3 but with a total fuel of 48000 kg at .800 kg/litre.

ZFW 83888 kg. ZFCG 52.65% Co.
Take-off weight = (83888 + 48000) less 1800 kg taxi fuel
= 130088 kg (i.e. less than 140,000 kg)
Therefore use 53.0% Co. Balance Chart.
Delta Tank 11 fuel = 0
Pre Take-off transfer Tank 9 to Tank 11 = 1450 kg.
Scheduled Tank 11 = 2400 kg.
Final Tank 11 contents = 3850 kg.

Case 7

<u>Initial Planning is carried out using 53.5% Balance Chart.</u>

Taking the same passenger/baggage loading as in CASE 1 then
ZFW = 89559 kg ZFCG = 52.36% Co.

Take- off fuel required is 93630 kg and with a taxi fuel allowance of 1800 kg then total fuel is 95430 kg. (Fuel allowance of 1800 kg then total fuel is 95430 kg. (Fuel Density 0.800 Kg/litre).
From fuel schedule or fuel sheet Tank 11 quantity = 10250 kg. Using Table 2 (06-03-06), Delta Tank 11 = 10250 - 4130 = 6120 Kg. Pre Take-off burn-off from Tank 11 for a 53.5%, Take-off CG is 2450 kg. This is greater than the taxi fuel allowance and the Flight Plan Take-off fuel requirement is not met. Now the Tank 11 Burn-off for 53.5% Take-off exceeds 1500kg therefore 54% TOCG may be used.

<u>Using the 54% Balance Chart</u> the Pre Take-off Burn-off from Tank 11 for 54% Take-off is 1020 kg. This is less than the taxi fuel allowance.

Case 8

Use of High Level Incremental Fuel, 54% TOCG.

Flight Plan fuel requirement = 94420 kg (including 1000 kg taxi fuel), Fuel

Density = 0.780 kg/litre. Reference to Table 11 (01-01-16) shows that Maximum

Fuel Tank Capacity is 93320 kg.

Therefore 1100 kg of High Level Incremental Fuel (HLI Fuel) is required. Taking the same payload as **Case 1**, but ensuring seats are filling from the front the Zero Fuel Weight and CG are 89559 kg and 52.36% Co. Tank 11 quantity front the Zero Fuel Weight and CG are 89559 kg and 52.35% Co. Tank 11 quantity from Fuel Schedule or Fuel Sheet = 10240 kg (from max Tankage value).

Delta Tank 11 = 10240 - 3970 = 6270 kg.
Pre Take-off Burn-off from Tank 11 = 800 kg.

Note that these values do not require correction for HLI fuel.

Reference to Table 12 (10-01-17) shows that this value of 800 kg for Tank 11 Burn -off is the maximum allowed for the combination of HLI fuel and Taxi fuel. Reference to Table 5 (01-01-9) shows that the Maximum Take-off Fuel for 0.780 kg/litre, 54% TOCG and 1100 kg HLI fuel is 93400 kg, demonstrating that in this example the total fuel load of 94420 kg is the maximum that may be loaded.

Case 1

BRITISH AIRWAYS

CONCORDE 100F

C535/1

Using Standard Fuel Distribution

TAKE-OFF CG 53.5% Co

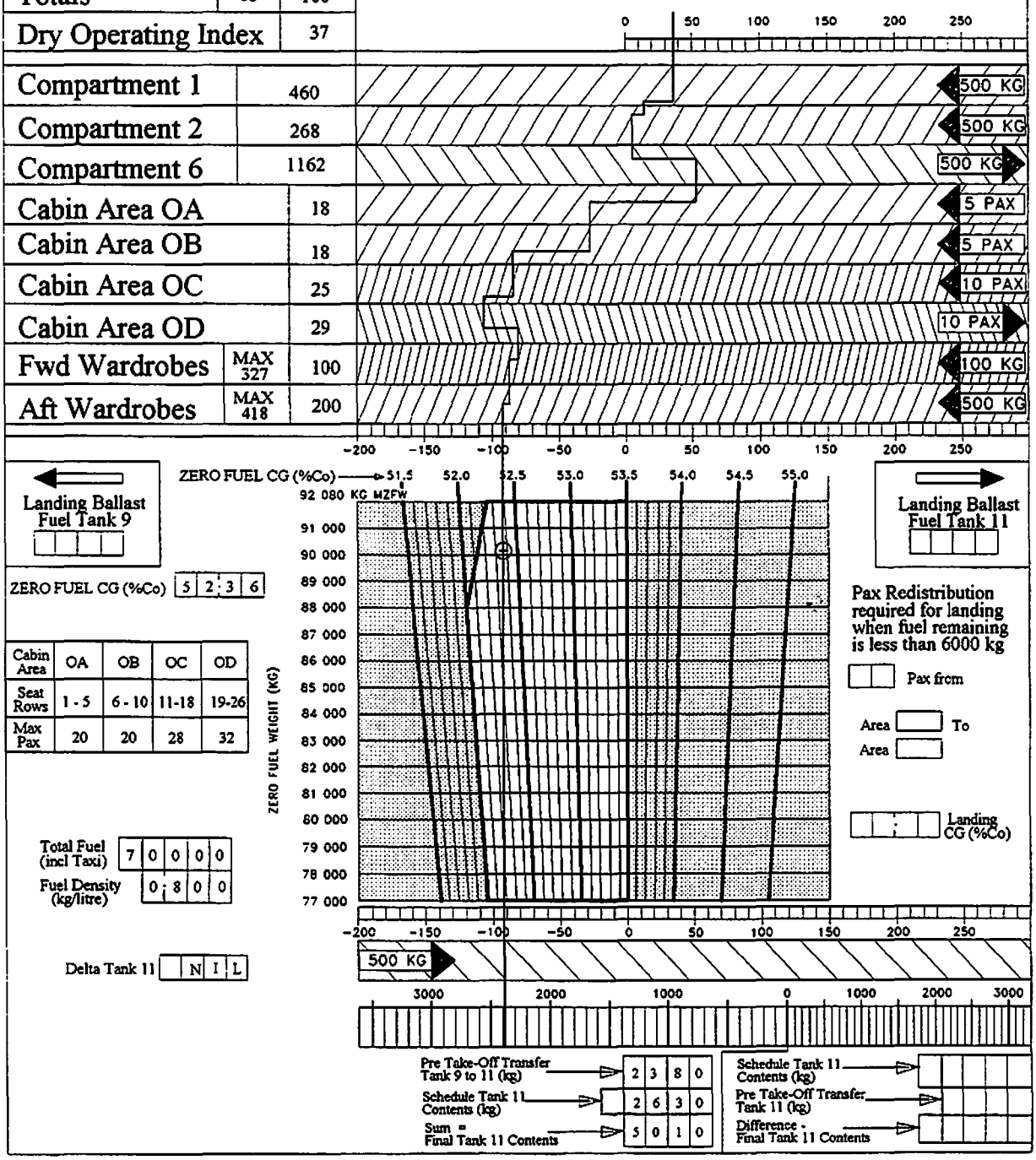
	-	+
Basic Index		100
Crew	41	
Pantry	22	
Totals	63	100
Dry Operating Index		37

Elevon Trim Angle at T.O. 2.5° Down

Cabin Areas: OA | OB | OC | OD | 6

Compartments: 1 | 2

Compartment 1	460	500 KG
Compartment 2	268	500 KG
Compartment 6	1162	500 KG
Cabin Area OA	18	5 PAX
Cabin Area OB	18	5 PAX
Cabin Area OC	25	10 PAX
Cabin Area OD	29	10 PAX
Fwd Wardrobes	MAX 327 / 100	100 KG
Aft Wardrobes	MAX 418 / 200	500 KG



Landing Ballast Fuel Tank 9

Landing Ballast Fuel Tank 11

ZERO FUEL CG (%Co) 5 2 3 6

Cabin Area	OA	OB	OC	OD
Seat Rows	1 - 5	6 - 10	11-18	19-26
Max Pax	20	20	28	32

Pax Redistribution required for landing when fuel remaining is less than 6000 kg

Pax from

Area To Area

Landing CG (%Co)

Total Fuel (incl Taxi) 7 0 0 0 0

Fuel Density (kg/litre) 0 . 8 0 0

Delta Tank 11 N I L

500 KG

Pre Take-Off Transfer Tank 9 to 11 (kg)	2 3 8 0
Schedule Tank 11 Contents (kg)	2 6 3 0
Sum = Final Tank 11 Contents	5 0 1 0

Schedule Tank 11 Contents (kg)

Pre Take-Off Transfer Tank 11 (kg)

Difference = Final Tank 11 Contents

Case 2

BRITISH AIRWAYS

CONCORDE 100F

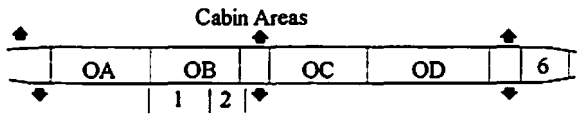
C535/1

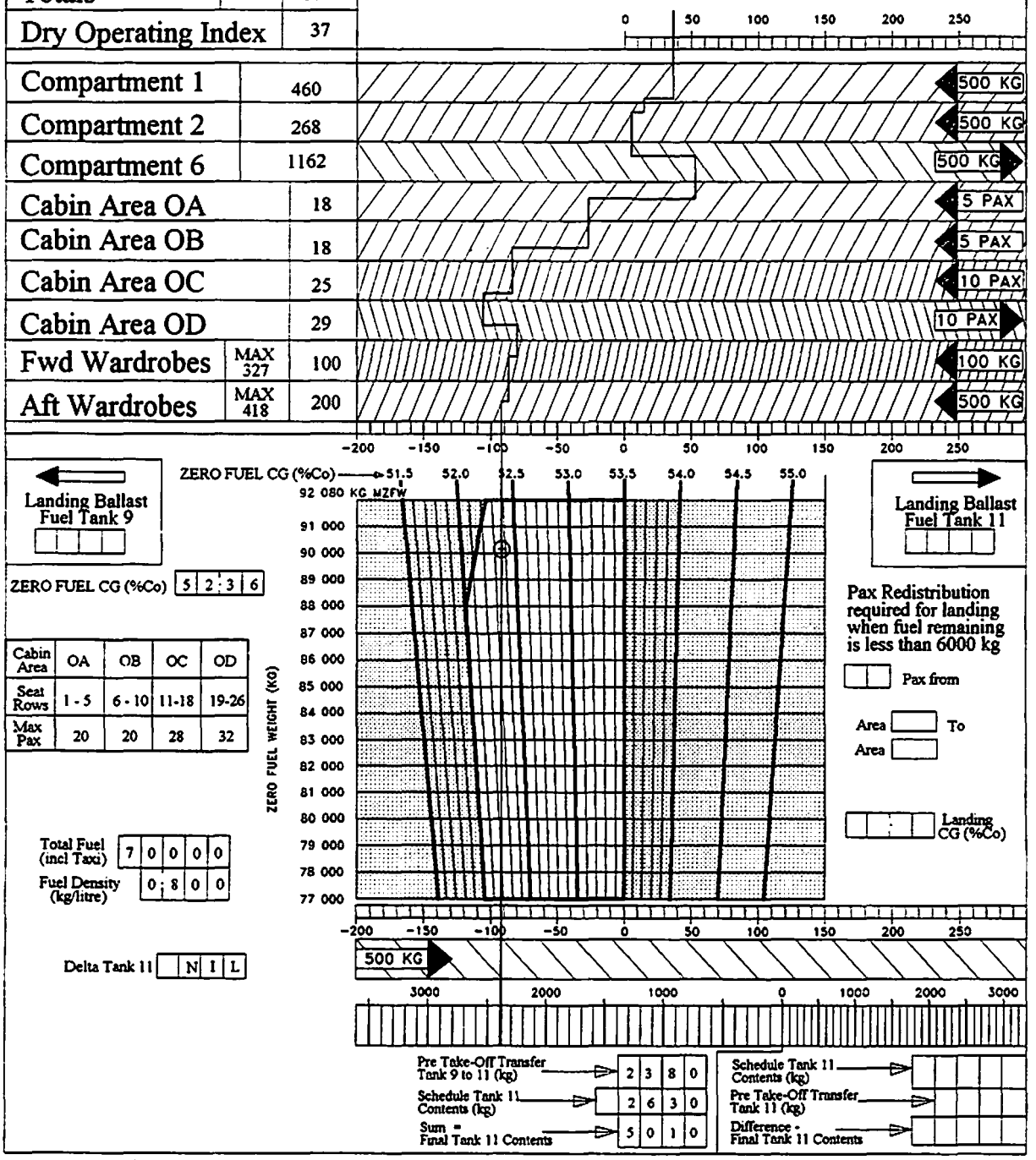
Using Standard Fuel Distribution

TAKE-OFF CG 53.5% Co

	-	+
Basic Index		100
Crew	41	
Pantry	22	
Totals	63	100
Dry Operating Index		37

Elevon Trim Angle at T.O. 2.5° Down





Landing Ballast Fuel Tank 9

Landing Ballast Fuel Tank 11

ZERO FUEL CG (%Co) 5 2 3 6

Cabin Area	OA	OB	OC	OD
Seat Rows	1 - 5	6 - 10	11-18	19-26
Max Pax	20	20	28	32

Pax Redistribution required for landing when fuel remaining is less than 6000 kg

Pax from Area To Area

Landing CG (%Co)

Total Fuel (incl Taxi) 7 0 0 0 0

Fuel Density (kg/litre) 0 . 8 0 0

Delta Tank 11 N I L

Pre Take-Off Transfer Tank 9 to 11 (kg) 2 3 8 0

Schedule Tank 11 Contents (kg) 2 6 3 0

Sum = Final Tank 11 Contents 5 0 1 0

Schedule Tank 11 Contents (kg)

Pre Take-Off Transfer Tank 11 (kg)

Difference - Final Tank 11 Contents

V466 (Issue E)

Case 3A

BRITISH AIRWAYS

CONCORDE 100F

C535/1

Using Standard Fuel Distribution

TAKE-OFF CG 53.5% Co

	-	+
Basic Index		100
Crew	39	
Pantry	22	
Totals	61	100
Dry Operating Index		39

Elevon Trim Angle at T.O. 2.5° Down

Cabin Areas: OA | OB (1 | 2) | OC | OD | 6

Compartments

Compartment 1	200	500 KG
Compartment 2	100	500 KG
Compartment 6	---	500 KG
Cabin Area OA	10	5 PAX
Cabin Area OB	12	5 PAX
Cabin Area OC	15	10 PAX
Cabin Area OD	---	10 PAX
Fwd Wardrobes MAX 327	50	100 KG
Aft Wardrobes MAX 418	100	500 KG

Landing Ballast Fuel Tank 9

Landing Ballast Fuel Tank 11

ZERO FUEL CG (%Co) 51.5 52.0 52.5 53.0 53.5 54.0 54.5 55.0

ZERO FUEL WEIGHT (KG): 92 080 KG MZFW; 91 000; 90 000; 89 000; 88 000; 87 000; 86 000; 85 000; 84 000; 83 000; 82 000; 81 000; 80 000; 79 000; 78 000; 77 000

ZERO FUEL CG (%Co) 52.58

Cabin Area	OA	OB	OC	OD
Seat Rows	1 - 5	6 - 10	11-18	19-26
Max Pax	20	20	28	32

Pax Redistribution required for landing when fuel remaining is less than 6000 kg

Pax from Area ____ To Area ____

Landing CG (%Co)

Total Fuel (incl Taxi) 95000

Fuel Density (kg/litre) 0.800

Delta Tank 11 5690

-200 -150 -100 -50 0 50 100 150 200 250

500 KG

3000 2000 1000 0 1000 2000 3000

Pre Take-Off Transfer Tank 9 to 11 (kg)	
Schedule Tank 11 Contents (kg)	
Sum = Final Tank 11 Contents	

Schedule Tank 11 Contents (kg)	9820
Pre Take-Off Transfer Tank 11 (kg)	2200
Difference - Final Tank 11 Contents	7620

Case 3B

CONCORDE 100F

BRITISH AIRWAYS

C540/1

Using Standard Fuel Distribution

TAKE-OFF CG 54.0% Co

	-	+
Basic Index		
Crew		
Pantry		
Totals		
Dry Operating Index		

Elevon Trim Angle at T.O. 2.5° Down

Cabin Areas: OA | OB | OC | OD | 6

Compartments: 1 | 2

0 50 100 150 200 250

Compartment 1		500 KG
Compartment 2		500 KG
Compartment 6		500 KG
Cabin Area OA		5 PAX
Cabin Area OB		5 PAX
Cabin Area OC		10 PAX
Cabin Area OD		10 PAX
Fwd Wardrobes	MAX 327	100 KG
Aft Wardrobes	MAX 418	500 KG

-200 -150 -100 -50 0 50 100 150 200 250

Landing Ballast Fuel Tank 9

ZERO FUEL CG (%Co) 5 2 5 8

ZERO FUEL CG (%Co) → 51.5 52.0 52.5 53.0 53.5 54.0 54.5 55.0

92 080 KG MZFW

ZERO FUEL WEIGHT (KG): 91 000 90 000 89 000 88 000 87 000 86 000 85 000 84 000 83 000 82 000 81 000 80 000 79 000 78 000 77 000

Landing Ballast Fuel Tank 11

Pax Redistribution required for landing when fuel remaining is less than 6000 kg

Pax from Area ☐ To Area ☐

Landing CG (%Co) ☐ ☐ . ☐ ☐

Cabin Area	OA	OB	OC	OD
Seat Rows	1 - 5	6 - 10	11-18	19-26
Max Pax	20	20	28	32

Total Fuel (incl Taxi) 9 5 0 0 0

Fuel Density (kg/litre) 0 . 0 0 0

Delta Tank 11 5 6 9 0

-200 -150 -100 -50 0 50 100 150 200 250

500 KG

1000

Note 1: If fuel transfer line lies to left of zero, adjust ZFCG to give tank 11 burn-off.

Note 2: Maximum pre Take-off burn-off from tank 11 is 1800 kg.

Schedule Tank 11 Contents (kg)	9 8 2 0
Pre Take-Off burnoff Tank 11 (kg)	7 5 0
Difference - Final Tank 11 Contents	9 0 7 0

V467 (Issue E)

Case 4

CONCORDE 100F

C535/1

BRITISH AIRWAYS

Using Standard Fuel Distribution

TAKE-OFF CG 53.5% Co

Elevon Trim Angle at T.O. 2.5° Down

	-	+
Basic Index		100
Crew	41	
Pantry	22	
Totals	63	100
Dry Operating Index		37

Cabin Areas: OA | OB (1 | 2) | OC | OD | 6

Compartments

Compartment 1		---
Compartment 2		---
Compartment 6		---
Cabin Area OA		---
Cabin Area OB		---
Cabin Area OC		---
Cabin Area OD		---
Fwd Wardrobes	MAX 327	---
Aft Wardrobes	MAX 418	---

0 50 100 150 200 250

500 KG
500 KG
500 KG
5 PAX
5 PAX
10 PAX
10 PAX
100 KG
500 KG

-200 -150 -100 -50 0 50 100 150 200 250

Landing Ballast Fuel Tank 9

ZERO FUEL CG (%Co) 5 4 . 0 3

ZERO FUEL CG (%Co) → 51.5 52.0 52.5 53.0 53.5 54.0 54.5 55.0

92 080 KG MZFW

ZERO FUEL WEIGHT (KG): 91 000 90 000 89 000 88 000 87 000 86 000 85 000 84 000 83 000 82 000 81 000 80 000 79 000 78 000 77 000

Landing Ballast Fuel Tank 11: 1 0 9 0

Pax Redistribution required for landing when fuel remaining is less than 6000 kg

Pax from Area ☐ To Area ☐

Landing CG (%Co)

Cabin Area	OA	OB	OC	OD
Seat Rows	1 - 5	6 - 10	11-18	19-26
Max Pax	20	20	28	32

Total Fuel (incl Taxi): 8 0 0 0 0

Fuel Density (kg/litre): 0 . 8 0 0

Delta Tank 11: N I L

-200 -150 -100 -50 0 50 100 150 200 250

500 KG

3000 2000 1000 0 1000 2000 3000

Pre Take-Off Transfer Tank 9 to 11 (kg)		9	2	0
Schedule Tank 11 Contents (kg)	2	6	3	0
Sum = Final Tank 11 Contents	3	5	5	0

Schedule Tank 11 Contents (kg)

Pre Take-Off Transfer Tank 11 (kg)

Difference - Final Tank 11 Contents

Case 5

BRITISH AIRWAYS

CONCORDE 100F

C535/1

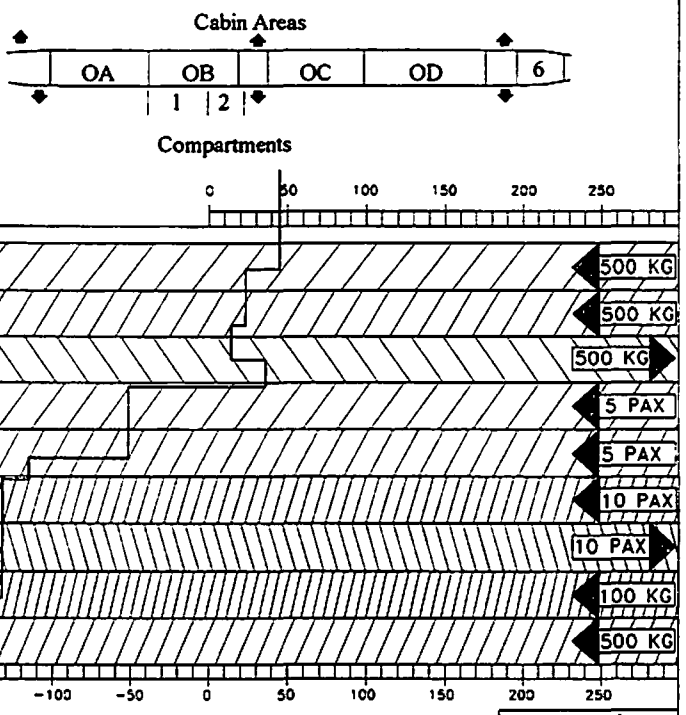
Using Standard Fuel Distribution

TAKE-OFF CG 53.5% Co

Elevon Trim Angle at T.O. 2.5° Down

	-	+
Basic Index		106
Crew	41	
Pantry	21	
Totals	62	106
Dry Operating Index		44

Compartment 1		460
Compartment 2		460
Compartment 6		460
Cabin Area OA		20
Cabin Area OB		20
Cabin Area OC		20
Cabin Area OD		---
Fwd Wardrobes	MAX 327	160
Aft Wardrobes	MAX 418	80



Landing Ballast Fuel Tank 9: 5 7 0

ZERO FUEL CG (%Co) 5 1 6 5

ZERO FUEL CG (%Co) → 51.5 52.0 52.5 53.0 53.5 54.0 54.5 55.0

92 080 KG MZFW

ZERO FUEL WEIGHT (KG): 91 000, 90 000, 89 000, 88 000, 87 000, 86 000, 85 000, 84 000, 83 000, 82 000, 81 000, 80 000, 79 000, 78 000, 77 000

28 IU

Landing Ballast Fuel Tank 11

Cabin Area	OA	OB	OC	OD
Seat Rows	1 - 5	6 - 10	11-18	19-26
Max Pax	20	20	28	32

Pax Redistribution required for landing when fuel remaining is less than 6000 kg

0 5 Pax from

Area OA To

Area OD

5 2 0 2 Landing CG (%Co)

Total Fuel (incl Taxi) 9 4 1 0 0

Fuel Density (kg/litre) 0 8 0 0

Delta Tank 11 4 7 9 0

500 KG

3000 2000 1000 0 1000 2000 3000

Pre Take-Off Transfer Tank 9 to 11 (kg)		N	I	L
Schedule Tank 11 Contents (kg)	8	9	2	0
Sum = Final Tank 11 Contents	8	9	2	0

Schedule Tank 11 Contents (kg)	
Pre Take-Off Transfer Tank 11 (kg)	
Difference - Final Tank 11 Contents	

V466 (Issue E)

Case 6

CONCORDE 100F

BRITISH AIRWAYS

For Take-Off Weights Less Than 140,000 kg

C530/1

Using Standard Fuel Distribution

TAKE-OFF CG 53.0% Co

Elevon Trim Angle at T.O. 1.5° Down

	-	+
Basic Index		100
Crew	39	
Pantry	20	
Totals	59	100
Dry Operating Index		41

Cabin Areas: OA | OB | OC | OD | 6 | 1 | 2

Compartments

Compartment 1	200	500 KG
Compartment 2	100	500 KG
Compartment 6	---	500 KG
Cabin Area OA	10	5 PAX
Cabin Area OB	12	5 PAX
Cabin Area OC	15	10 PAX
Cabin Area OD	---	10 PAX
Fwd Wardrobes MAX 327	50	100 KG
Aft Wardrobes MAX 418	100	500 KG

Compartments scale: 0 50 100 150 200 250

-200 -150 -100 -50 0 50 100 150 200 250

Landing Ballast Fuel Tank 9

ZERO FUEL CG (%Co) 5 2 . 5 0

ZERO FUEL CG (%Co) → 51.5 52.0 52.5 53.0 53.5 54.0 54.5 55.0

92 080 KG MZFW

ZERO FUEL WEIGHT (KG): 92 000 91 000 90 000 89 000 88 000 87 000 86 000 85 000 84 000 83 000 82 000 81 000 80 000 79 000 78 000 77 000

Landing Ballast Fuel Tank 11

Cabin Area	OA	OB	OC	OD
Seat Rows	1 - 5	6 - 10	11-18	19-26
Max Pax	20	20	28	32

Pax Redistribution required for landing when fuel remaining is less than 6000 kg

Pax from Area ☐ To Area ☐

Landing CG (%Co) ☐☐.☐

Total Fuel (incl Taxi) 4 8 0 0 0

Fuel Density (kg/litre) 0 . 8 0 0

Delta Tank 11 N I L

-200 -150 -100 -50 0 50 100 150 200 250

500 KG

3000 2000 1000 0

Pre Take-Off Transfer Tank 9 to 11 (kg)	1	4	5	0
Schedule Tank 11 Contents (kg)	2	4	0	0
Sum = Final Tank 11 Contents	3	8	5	0

Case 7
CONCORDE 100F

BRITISH AIRWAYS

C540/1

Using Standard Fuel Distribution

TAKE-OFF CG 54.0% Co

	-	+
Basic Index		100
Crew	41	
Pantry	22	
Totals	63	100
Dry Operating Index		37

Elevon Trim Angle at T.O. 2.5° Down

Cabin Areas: OA | OB | OC | OD | 6

Compartments: 1 | 2

Compartment 1	460	500 KG
Compartment 2	268	500 KG
Compartment 6	1162	500 KG
Cabin Area OA	18	5 PAX
Cabin Area OB	18	5 PAX
Cabin Area OC	25	10 PAX
Cabin Area OD	29	10 PAX
Fwd Wardrobes	MAX 327 / 100	100 KG
Aft Wardrobes	MAX 418 / 200	500 KG

0 50 100 150 200 250

-200 -150 -100 -50 0 50 100 150 200 250

Landing Ballast Fuel Tank 9

ZERO FUEL CG (%Co) 5 2 3 6

ZERO FUEL CG (%Co) 51.5 52.0 52.5 53.0 53.5 54.0 54.5 55.0

92 080 KG MZFW

ZERO FUEL WEIGHT (KG): 92 000, 91 000, 90 000, 89 000, 88 000, 87 000, 86 000, 85 000, 84 000, 83 000, 82 000, 81 000, 80 000, 79 000, 78 000, 77 000

Landing Ballast Fuel Tank 11

Pax Redistribution required for landing when fuel remaining is less than 6000 kg

Pax from Area To Area

Landing CG (%Co)

Cabin Area	OA	OB	OC	OD
Seat Rows	1 - 5	6 - 10	11-18	19-26
Max Pax	20	20	28	32

Total Fuel (incl Taxi) 9 5 4 3 0

Fuel Density (kg/litre) 0 8 0 0

Delta Tank 11 6 1 2 0

500 KG

1000

Note 1: If fuel transfer line lies to left of zero, adjust ZFCG to give tank 11 burn-off.

Note 2: Maximum pre Take-off burn-off from tank 11 is 1800 kg.

Schedule Tank 11 Contents (kg)	1 0 2 5 0
Pre Take-Off burnoff Tank 11 (kg)	1 0 2 0
Difference - Final Tank 11 Contents	9 2 3 0

Case 8

CONCORDE 100F

BRITISH AIRWAYS

C540/1

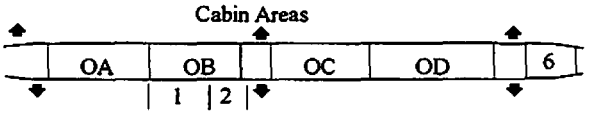
Using Standard Fuel Distribution

TAKE-OFF CG 54.0% Co

	-	+
Basic Index		100
Crew	41	
Pantry	22	
Totals	63	100
Dry Operating Index		37

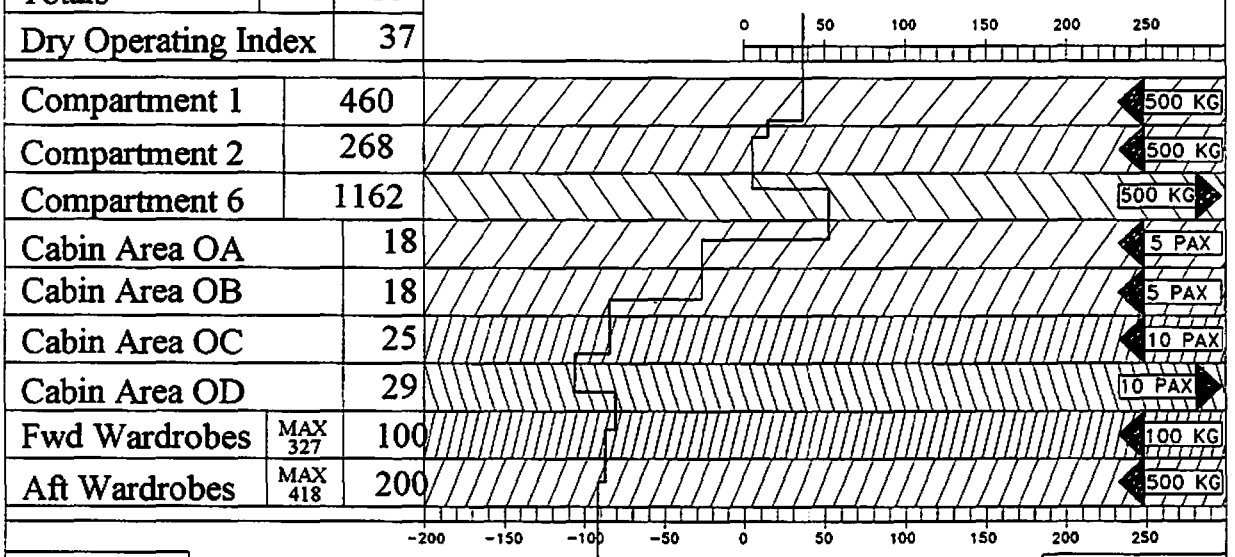
Elevon Trim Angle at T.O. 2.5° Down

Cabin Areas



Compartments

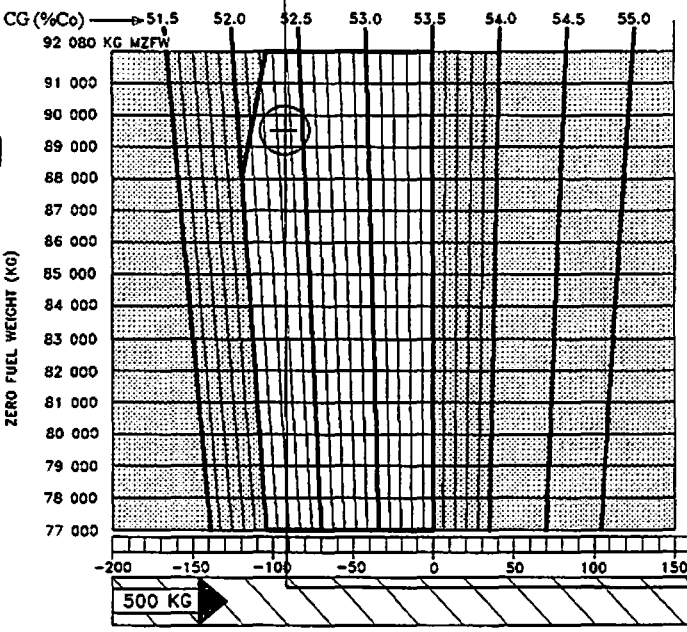
Compartment 1		460
Compartment 2		268
Compartment 6		1162
Cabin Area OA		18
Cabin Area OB		18
Cabin Area OC		25
Cabin Area OD		29
Fwd Wardrobes	MAX 327	100
Aft Wardrobes	MAX 418	200



Landing Ballast Fuel Tank 9

Landing Ballast Fuel Tank 11

ZERO FUEL CG (%Co) 5 2 3 6



Cabin Area	OA	OB	OC	OD
Seat Rows	1 - 5	6 - 10	11-18	19-26
Max Pax	20	20	28	32

Pax Redistribution required for landing when fuel remaining is less than 6000 kg

Pax from Area To Area

Landing CG (%Co)

Total Fuel (incl Taxi) 90 40 40 20 0

Fuel Density (kg/litre) 0 7 8 0

Delta Tank 11 6 2 7 0

Note 1: If fuel transfer line lies to left of zero, adjust ZFCG to give tank 11 burn-off.

Note 2: Maximum pre Take-off burn-off from tank 11 is 1800 kg.

Schedule Tank 11 Contents (kg)	1	0	2	4	0
Pre Take-Off burnoff Tank 11 (kg)			8	0	0
Difference - Final Tank 11 Contents		9	4	4	0

Concorde Portable Computer, Hewlett Packard 200lx.

General Instructions.

The computer is kept in a dedicated zipped leather wallet issued to each Captain, Co-pilot and Flight Engineer. Two spare AA batteries should also be in the wallet.

The computer has a hinged lid with an integral display. The lid is opened by pressing on the release latch in the centre of the lid and lifting.

The computer is turned on and off, alternately, by pressing the button at the top right of the keyboard. When turned off the display goes blank but the computer remains frozen where it was at turn off. When turned on again the computer resumes exactly where it was when turned off. It is suggested that the computer is normally reset to the Concorde index when the program in use is no longer required.

The programs are stored on a flash RAM card that will retain the programs even if the main computers batteries go flat. Spare batteries are available form the Concorde fleet office. The flash RAM card is removed by sliding the "grip" at the lower left front of the machine to the left, it is fairly stiff. The card is replaced by sliding it in and pushing home firmly.

Any program update will be notified by Flight Notice. The new program will be made available, on another flash RAM, from the Concorde fleet office. Old flash RAM cards will be retained by the office for update.

If there is a problem with the computer, or you wish to use some of the built in functions, the computer will have to be rebooted. To reboot the computer, after turn on, hold the **<CTRL>** and **<ALT>** keys down then press and release the **<DEL>** key. Release the **<CTRL>** and **<ALT>** keys. After a short program sequence the 200LX title page will appear and the display may then change to the day reminders. The keys with the turquoise key faces may now be used. To use the Concorde programs, press and release the **<&...>** key; the applications windows type menu will appear. Press and release the **<ALT>** key, press and release the **<A>** key, press and release the **<T>** key and then press and release the **<ENTER>** key. The computer is now in its DOS mode. Type the letters INDEX and press and release the **<ENTER>** key. The index title page should appear. There are other methods of running the Concorde programs but this method ensures that sufficient memory is available if other functions have been in use. The zoom function should be used to get the screen to the most suitable size by alternately pressing and releasing the **<Fn>** key followed by the **SPACE** bar. This zoom feature can also be useful if the view screen fails to align in an ideal manner with the full screen. Repeating the key presses **<Fn>** and **SPACE** three times will normally return the view screen to the same zoom but at a logical viewing position. The view screen can be moved around the full PC screen by holding the **<MENU>** key and using the cursor arrow keys at the top right of the keyboard.

To set the **CAPS** lock, capitals lock, press and release the shift key, bottom left or right of the QWERTY key board followed by pressing and releasing the **<0>** (zero) key. When the **CAPS** lock is set a small up arrow symbol appears at the bottom right of the screen. Other shifted symbols on the numeric part of the keyboard, such as the **"?"**, may be obtained by pressing and releasing the shift key followed by the key below the shifted symbol required.

When the computer displays a "?", that is the prompt for an input. All inputs that are typed to the screen can be erased by the back space, and must be followed by <ENTER>.

When the computer displays a "#", that is the prompt to just press a key.

To select a program from the index press the number required.

If it is essential to exit a program without reaching the end hold the <CTRL> key, press and release the <MENU>. Release <CTRL> key followed by pressing any other key. (Only available at output or ? prompt.) Type INDEX and press <ENTER> to start again.

The above instructions apply to all the Concorde programs on the HP200LX.

In addition to the HP200LX, all the programs can be run on any IBM compatible PC using the 3.5in disk provided.

Current Version: Version 2

The Index

```
**********************************************************
*    Concorde.  INDEX FOR HP 200LX PROGRAMS              *
**********************************************************
                    EGT TREND.....0

                    LOADSHEET.....1

                    FUEL FLIGHT PLAN.....2

                    REFUEL.....3

                    IN FLIGHT C of G.....4

                    TAKE-OFF CALCULATIONS.....5

                    PRESS REQUIRED NUMBER.....#
```

The # symbol is shown requiring one of the numbers shown to be pressed. In addition, if it is required to leave the Concorde suit of programs, the 9 may be pressed **(9 for EXIT)**.

Press the number <1> to access the loadsheet program.

The message "***** LOADING, PLEASE WAIT ***** " will be displayed while the program is loading. Programs take different times to load but the longest should be less than one second.

The Loadsheet Program.

The main object of the program is to enable a manual loadsheet to be completed by doing all the calculation usually done on the loadsheet and the balance chart. A nil change of load certificate may also be completed by use of this program. A DCS loadsheet may be amended, using this program, for any change of fuel balance that can not be performed by DCS. This covers an "A" tank empty, fuel transfer to achieve a 54.0% TOCG and zero fuel ballast required in tank 9 or 10.

Additionally, if a suitable printer is available, a print similar to DCS or one similar to a manual loadsheet may be obtained.

The title page is displayed.
If necessary adjust the zoom using **<fn>** **<ZOOM>** space bar, so that the display fits the screen.

Set the capitals lock. (Shift, up orange arrow, followed by **<0>**. CAPS lock set is confirmed by an apex up triangle at the bottom right of the screen on the HP200LX)

To EXIT Loadsheet Program and return to the index press **<X>** **<ENTER>**.

At this display, and for most inputs throughout the program, additional help is available by inputting a ?. This is **<SHIFT>** **<3>** on the HP 200.

Press <ENTER> to continue with the program.

*IMPORTANT. Any input or output item that has a * at the start of the input prompt or output line is an item that **must** be written on the manual loadsheet.*

Many inputs requested will have a value already set (SET =). To retain this value just press **<ENTER>**. Most inputs have numeric or logical limits displayed. The help (?), the SET value and the input prompt will often advise the form the input should take.

Most input prompts use the word or terminology that appears on the manual loadsheet or on a DCS print. Other wording before the SET value may clarify the meaning.

It may be easier to complete the loadsheet in the computer before starting to write on the loadsheet. The overall load situation will then be assured and any changes made before writing starts. All the information required to be written on the loadsheets is available at the end by selecting SUMMARY on the final options screen.

Program Identification

The program identification display contains three items that must appear on the loadsheet. "PC loadsheet" and the "PROGRAM DATE" must be written in the "Prepared by box".
The version, SSCB, is the current configuration of the aircraft.

Press <ENTER> to continue.

Flight identification

DEPARTURE AIRFIELD..... SET = ??? *Input required with currently set code.*
*Originator.....? *? for Help*
** must write on loadsheet.*

Input prompt usually uses the wording pre printed on the loadsheet form.
If the letters input are not capitals, **!!! USE CAPITAL LETTERS !!!** will be displayed and an audio two tone warning is given. The original prompt is repeated. SET is unchanged.

If the input is ? for help the following is displayed:-

3 LETTER CODE OF DEPARTURE AIRFIELD.
DEPARTURE AIRFIELD.....SET = ??? }
*Originator.....? } Original lines repeated.

DESTINATION AIRFIELD.....SET = ???
*Dest. {Destination}.....?
IF "?" is used then the following will appear: "3 LETTER CODE OF DESTINATION AIRFIELD."

FLIGHT NUMBER.....SET = BA?????
*Flight.....?
IF "?" is used then the following will appear: "FULL FLIGHT NUMBER. E.g. BA9123C."

Expects airline designator and allows for four digits and any following letter.
INCLUDE AIRLINE CODE can be displayed as a reminder.

AIRCRAFT REGISTRATION.. SET = ?
*A/c reg.....G-BOA?
IF "?" is used then the following will appear: "LAST LETTER OF AIRCRAFT REGISTRATION."

A correct letter must be used so that the program selects the correct basic weight and index for later use. If wrong letter is used then "NOT A VALID REGISTRATION LETTER" will be displayed with a warning sound. Followed by "PRESS <ENTER> TO CONTINUE." The original prompt is repeated.

DATE OF FLIGHT.....SET = DDMMMYY
*Date.....?
IF "?" is used then the following will appear: "GMT DATE OF FLIGHT. e.g. 04JUL98." This may be different from the date of the loadsheet.

"SUMMARY OF FLIGHT IDENTIFICATION," the above inputs will now be displayed.
To edit any of the items type <E> and press **<ENTER>**. The previous inputs will be displayed in order, with the previous entry shown after the word SET. To retain a particular set value press **<ENTER>**, to change the set value type the input, repeat the above stages, and press **<ENTER>**.

At the summary press **<ENTER>** to continue.

Regulated weights

REGULATED TAKE-OFF WEIGHT.....SET = 185070
(MIN = 105000 MAX = 185070).
*Take-off weight.....Max.?
IF "?" is used then the following will appear: "PERFORMANCE OR OTHER LIMIT. MAX IN USA IS 182250."

Legal and/or logical limits will applied by the program. For example SET will be 182250 for some USA departure airfields that are recognised by the program.

REGULATED LANDING WEIGHT...SET = 111130
(MIN = 90000 MAX = 111130)
*Landing weight.....Max. ?
IF "?" is used then the following will appear: "PERFORMANCE OR OTHER LIMIT."

REGULATED ZERO FUEL WEIGHT....SET = 92080
(MIN = 75000 MAX = 92080)
*Zero fuel weight.....Max.?
IF "?" is used then the following will appear: "STRUCTURAL OR OTHER LIMITS."

SUMMARY OF MAX WEIGHTS. Weights can be edited at this stage by **<E> <ENTER>**.

At the summary **press <ENTER> to continue.**

Nil Change of Load Certificate

NIL CHANGE OF LOAD CERTIFICATE... SET = N
NIL CHANGE CERTIFICATE.....Y/N...?

IF "?" is used then the following will appear: "FOR THE NIL CHANGE OF LOAD CERTIFICATE.
<Y><ENTER> FOR YES.
<N><ENTER> FOR NO."

1) If **N** is retained or selected a full loadsheet will be calculated. Go to BASIC WEIGHT (See Page 06-05-06).

2) If **Y** for yes is selected the program will be locked in the nil change of load certificate mode and will request values from the previous loadsheet. This mode can be used to pen amend a DCS loadsheet.

ZERO FUEL WEIGHT.....SET = 0
(MIN = 75000 MAX = 92080)
*Zero fuel weight.....?
IF "?" is used then the following will appear: "INPUT ZERO FUEL WEIGHT FROM THE PREVIOUS SECTOR LOADSHEET."

LADEN INDEX AT ZFW.....SET = 0
(MIN = -200 MAX = +150)
*LIZFW.....?

IF "?" is used then the following will appear: "INPUT LADEN INDEX ZERO FUEL WEIGHT FROM PREVIUOS LOADSHEET."

SUMMARY AT ZERO FUEL WEIGHT. Zero fuel weight and index can be edited **<E><ENTER>** TO EDIT.

!!! IMPORTANT !!! Compare the calculated Zero Fuel Centre of Gravity with the value from the previous sector loadsheet.

From a previous main frame (DCS) or portable computer loadsheet, if the values differ by more than 0.02 then check the input values, including any sign, are correct. If the ZFW and LIZFW are correct and the difference in ZFCG remains greater than 0.02 then a complete new loadsheet is required. From a previous manual, draw down, loadsheet the difference may be no more than 0.06

The program will then go to the start of the fuel input section described later.

PRESS <ENTER> TO CONTINUE will go to the fuel section (see page 06-05-15).

Full Loadsheet

BASIC WEIGHT.....SET = 78610
(Min = 75000 Max = 80000)
*Basic weight..... ?

IF "?" is used then the following will appear: " CHECK WEIGHT AGREES WITH CERTIFICATE FILE."

BASIC INDEX.....SET = 97
(Min = 60 Max = 150)
*Basic index.....?

IF "?" is used then the following will appear: "CHECK INDEX AGREES WITH CERTIFICATE FILE."

For both the Basic Weight and Basic Index shown at the SET the value should be the correct basic weight and basic index for the aircraft registration used. If the set value disagrees with the certificate file then enter the correct basic index from the certificate file as this is the most up to date.

Crew

NUMBER OF FLIGHT CREW.....SET = 3
(Min = 3 Max = 9)
*FLIGHT CREW.....?

IF "?" is used then the following will appear: "TOTAL NUMBER OF FLIGHT DECK CREW. REGARDLESS OF SEATING POSITION."

Three is the minimum to operate a flight. 9 is the maximum with the flight deck and seat row 26 full of flight deck crew.

If the number of flight crew is greater than 3 the next request is :-

NUMBER ON FLIGHT DECK.....SET = 3
(Min = 3 Max = 5)
NUMBER ON FLIGHT DECK.....?

IF "?" is used then the following will appear: "NUMBER OF FLIGHT DECK CREW SEATED ON THE FLIGHT DECK."

Three is the minimum to operate a flight. 5 is the maximum number of seats on the flight deck. 4 will be the Max if the number of flight crew was 4.

The program now responds with the number of flight deck crew that will have to sit in seat row 26. This can be zero.

FLIGHT DECK CREW IN ROW 26 = ...
PRESS <ENTER> TO CONTINUE.

NUMBER OF CABIN CREW.....SET = 6
(Min = 0 Max = 12)
*CABIN CREW.....?

IF "?" is used then the following will appear: " TOTAL NUMBER OF CABIN CREW. REGARDLESS OF SEAT POSITION."

The SET value is for a standard cabin crew. The minimum value of zero allows for a positioning flight. The maximum value allows cabin crew to sit at the door pair seats, seat row 26 and the flight deck. The maximum will be reduced if seat row 26 or the extra flight deck seats are already occupied by flight deck crew.

If the value of 6 is accepted or entered the program will ask:-

CABIN CREW SEATING NORMAL...SET = Y
CABIN CREW SEATING NORMAL Y/N..?

IF "?" is used then the following will appear: "ARE THE 6 CABIN CREW SEATED NORMALLY? i.e. 2 AT EACH PAIR OF DOORS. <Y><ENTER> FOR YES. <N><ENTER> FOR NO."

This is to allow for 6 cabin crew but with the seating position not standard.

If the number entered is not 6 and normal or 0 the program will request the number of cabin crew seated at the specified locations.

CABIN CREW AT DOORS 1... SET = 2
(Min = 0 Max = 2)
CABIN CREW AT DOOR PAIR 1.....?

IF "?" is used then the following will appear: "NUMBER OF CABIN CREW AT DOORS 1 LEFT AND RIGHT."

CABIN CREW AT DOORS 2... SET = 2
(Min = 0 Max = 2)
CABIN CREW AT DOOR PAIR 2.....?

IF "?" is used then the following will appear: "NUMBER OF CABIN CREW AT DOORS 2 LEFT AND RIGHT."

CABIN CREW AT DOORS 3... SET = 2
(Min = 0 Max = 2)
CABIN CREW AT DOOR PAIR 3.....?

IF "?" is used then the following will appear: "NUMBER OF CABIN CREW AT DOORS 3 LEFT AND RIGHT."

CABIN CREW IN ROW 26..... SET = 0
(Min = 0 Max = 4)
CABIN CREW AT SEAT ROW 26.....?

IF "?" is used then the following will appear: "NUMBER OF CABIN CREW SEATED IN ROW 26."

The maximum will be reduced if seats in row 26 are already occupied by flight crew or if the total number of cabin crew already entered would be reached.

CABIN CREW ON FLT DECK... SET = 0
(Min = 0 Max = 2)
CABIN CREW ON FLIGHT DECK.....?

IF "?" is used then the following will appear: "NUMBER OF CABIN CREW SEATED ON FLIGHT DECK."

The maximum will be reduced if either of the flight deck supernumerary seats are already occupied by flight crew or by the total number of cabin crew originally entered.

If the number of cabin crew entered at the specific locations fails to equal the total number originally entered a visual and audio warning is given.

!!! CABIN CREW NO TALLY !!! (with audio warning.)
CABIN CREW AT LOCATION DO NOT EQUAL INPUT NUMBER OF CABIN CREW.
PRESS <ENTER> TO CONTINUE. ?

The program will return to the original request for the total number of cabin crew. Correct the required values to avoid another warning.

NUMBER OF CREW BAGS.....SET = 9
(Min = 0 Max = 9)
NUMBER OF CREW BAGS.....?

IF "?" is used then the following will appear: "NUMBER OF CREW BAGS TO GO IN HOLDS."

The maximum will equal the total number of flight and cabin crew. Any additional crew bags should be treated as ordinary hold baggage and added to the hold load.

HOLD TO LOAD CREW BAGS..SET = 1
(Min = 1 Max = 6)
HOLD TO LOAD CREW BAGS.....?

IF "?" is used then the following will appear: "THE HOLD COMPARTMENT TO LOAD CREW BAGS. i.e. HOLD COMPARTMENT 1, 2 OR 6."

The normal hold for crew bags is hold compartment 1.
If the entered or accepted number is not a correct hold location a visual and audio warning is given.
!!!! LOCATION NOT RECOGNISED !!! (with audio warning.)

The calculated total crew weight and index is displayed.

*CREW. (WEIGHT).....= 831
*CREW. (INDEX).....= -30
PRESS <ENTER> TO CONTINUE.

NOTE: The crew index will probably be negative. (A minus sign.)

Pantry

PANTRY A,B,C,X,Y OR Z.....SET = A
*Pantry (CODE).....?

IF "?" is used then the following will appear: "STANDARD CODES ARE A,B,C AND Z (Zero)
CODE Y, INPUT TOTAL WEIGHT AND INDEX.
CODE X, INPUT WEIGHTS AT LOCATIONS."

Entry of codes A, B, C or Z will then display the total weight and index of the pantry.
Code Y is for when the total pantry weight and index are known.
Code X is for when the pantry load at the normal pantry locations is known.

!!! WARNING !!!
For non-standard pantry DCS loadsheets show a pantry code of Z for zero and then add the weights as a service weight and index adjustment. This program genuinely calls code Z zero. To input individual weights at galley locations select pantry code X.

Pantry code Y

TOTAL PANTRY WEIGHT .....SET = 0
(Min = 0 Max = 2000)
*Pantry (WEIGHT).....?

IF "?" is used then the following will appear: "TOTAL WEIGHT OF ALL THE PANTRY."

TOTAL PANTRY INDEX.....SET = 0
(Min = -80 Max = 30)
*Pantry (INDEX).....?

IF "?" is used then the following will appear: "TOTAL INDEX OF ALL THE PANTRY."

Pantry code X.

WEIGHT AT FWD GALLEY....SET = 0
(Min = 0 Max = 1000)
*FWD GALLEY. (WEIGHT).....?

IF "?" is used then the following will appear: "TOTAL WEIGHT AT FWD GALLEYS FROM
CATERING NOTIFICATION."

The information may also be obtained from the previous loadsheet.

WEIGHT AT MID GALLEY.....SET = 0
(MIN = 0 MAX = 400)
*MID GALLEY (WEIGHT).....?

IF "?" is used then the following will appear: "TOTAL WEIGHT AT MID GALLEYS FROM
CATERING NOTIFICATION."

NOTE: There are no galleys as such in the middle of the aircraft, but the stowage's for catering equipment are referred to as the mid galley.

WEIGHT OF CABIN SPREAD. SET = 0
(MIN = 0 MAX = 400)
*CABIN SPREAD (WEIGHT).....?

IF "?" is used then the following will appear: "TOTAL WEIGHT OF CABIN SPREAD FROM CATERING NOTIFICATION. e.g. SEAT BACK PACKS AND BLANKETS."

This is the part of the catering load that is the same for every seat location.

WEIGHT AT AFT GALLEY...SET = 0
(MIN = 0 MAX = 1000)
*AFT GALLEY (WEIGHT).....?

IF "?" is used then the following will appear: "TOTAL WEIGHT AT AFT GALLEY FROM CATERING NOTIFICATION."

For all pantry codes the program displays the total pantry weight and index.

*Pantry (WEIGHT)..... = 1500
*Pantry (INDEX)..... = -25
PRESS <ENTER> TO CONTINUE.

NOTE: The pantry index will probably be negative. (A minus sign.)

Dry operating adjustments.

DRY OPERATING WT ADJ.....SET = 0
(MIN = - 1000 MAX = 1000)
*DRY OPERATIG WEIGHT ADJ....?

IF "?" is used then the following will appear: "ADJUSTMENT TO DRY OPERATING WEIGHT. e.g. ADDITION OR DELETION OF EQUIPMENT."

DRY OPERATING IND ADJ.....SET = 0
(MIN = -50 MAX = 50)
*DRY OPERATING IND ADJ.....?

IF "?" is used then the following will appear: "ADJUSTMENT TO DRY OPERATING INDEX. e.g. ADDITION OR DELETION OF EQUIPMENT."

These adjustments could, for example, be the removal of unserviceable seats or the addition of recording equipment. The index will either be advised or can be calculated by reference to the ADDITIONS AND DEDUCTIONS INDEX TABLE, TABLE 4A, on the card at the back of this manual at 07-01-01 or the same TABLE 4A on page 06-03-08.

SUMMARY AT DRY OPERATING WEIGHT/INDEX.
<E><ENTER> TO EDIT
PRESS <ENTER> TO CONTINUE.

Edit is for items input since the SUMMARY OF MAX WEIGHTS.
*NOTE: All the items in this summary are marked with a * and must be written on the loadsheet.*

Traffic load

Passengers

PASSENGERS IN AREA A....SET = 0
(MIN = 0 MAX = 20)
*PASSENGERS AREA A.....?
IF "?" is used then the following will appear: "SEATS OCCUPIED IN ROWS 1 TO 5."

PASSENGERS IN AREA B....SET = 0
(MIN = 0 MAX = 20)
*PASSENGERS AREA B.....?
IF "?" is used then the following will appear: "SEATS OCCUPIED IN ROWS 6 TO 10."

PASSENGERS IN AREA C....SET = 0
(MIN = 0 MAX = 28)
*PASSENGERS AREA C.....?
IF "?" is used then the following will appear: "SEATS OCCUPIED IN ROWS 11 TO 18."
NOTE: There is no row called row 13.

PASSENGERS IN AREA D....SET = 0
(MIN = 0 MAX = 32)
*PASSENGERS AREA D.....?
IF "?" is used then the following will appear: "SEATS OCCUPIED IN ROWS 19 TO 26."

The maximum may be reduced by flight or cabin crew already in row 26.

PASSENGERS ON FLT DECK....SET = 0
(MIN = 0 MAX = 2)
*PASSENGERS ON FLIGHT DECK.....?
IF "?" is used then the following will appear: "PASSENGERS SEATED ON THE FLIGHT DECK.
ONLY WITH PERMISSION OF THE CAPTAIN.
ADULT PASSENGERS ONLY."

The maximum may be reduced by flight or cabin crew already on the extra flight deck seats.

Caution:- DCS puts flight deck passengers as part of the dry operating weight and index, in the additions, and not as part of the traffic load as in this program. This could account for some significant differences in dry operating weight and index if comparing loadsheet calculation from DCS with this program. However ZFW, LIZFW and ZFCG should be comparable.

PASSENGER MALE/FEMALE SPLIT...SET = Y
PASSENGER MALE/FEMALE SPLIT.....?
IF "?" is used then the following will appear: "ARE THE MORE ACCURATE WEIGHT
OBTAINED REQUIRED FOR THIS FLIGHT.
<Y><ENTER> FOR YES. <N><ENTER> FOR NO."

Normally the male/female breakdown of the passenger load is known and should be used.

MALE ADULT PASSENGERS....SET = 0
(MIN = 0 MAX = 100)
*MALE PASSENGERS.....?
IF "?" is used then the following will appear: "TOTAL NUMBER OF MALE ADULT PASSENGERS."

Maximum will be the total number of seats occupied.

FEMALE ADULT PASSENGERS.SET = 0
(MIN = 0 MAX = 100)
*FEMALE PASSENGERS.....?
IF "?" is used then the following will appear: "TOTAL NUMBER OF FEMALE ADULT PASSENGERS."

Maximum will be reduced by the number of male passengers.

CHILD PASSENGERS.....SET = 0
(MIN = 0 MAX = 100)
*CHILD PASSENGERS.....?
IF "?" is used then the following will appear: "TOTAL NUMBER OF CHILD PASSENGERS."

Maximum will be reduced by male and female passengers.

INFANT PASSENGERS.....SET = 100
(MIN = 0 MAX = 100)
*INFANT PASSENGERS.....?
IF "?" is used then the following will appear: "TOTAL NUMBER OF INFANT PASSENGERS."

Maximum will be limited to the number of adult passengers in the cabin.

If the seats occupied and the passengers by type do not equate a visual and audio warning will be given.

!!! WARNING !!! (with audio warning.)
PASSENGER NUMBERS NO TALLY.
PASSENGERS BY AREA .....= 100
PASSENGERS BY SEATED TYPE..= 99
PRESS <**ENTER**> TO CONTINUE.

The program will return to the passengers by area part of the program. Check the SET values carefully and correct the wrong input to avoid a repeat of the warning.

SUMMARY OF PASSENGERS will be displayed first by seat position, second by passenger type and finally by passengers/infants and the total passenger weight and index. Note the total passenger index is not required to be written on the loadsheet.

<**E**><**ENTER**> TO EDIT from start of traffic load or
PRESS <ENTER> TO CONTINUE.

Wardrobes, hand baggage.

TOTAL WARDROBE WEIGHT.....SET = 300
(MIN = 0 MAX = 745)
*WARDROBE BAGGAGE WEIGHT.....?

IF "?" is used then the following will appear: "TOTAL WEIGHT OF PASSENGER HAND BAGGAGE TO BE STOWED IN THE WARDROBES."

The set value will be 3 kilos for each seat occupied by a passenger. It is assumed, that each passenger has 6 kilos of hand baggage. 3 kilos remain with the passenger at the seat location and the remainder, normally 3 kilos, goes in to the wardrobe at the front of the cabin where the passenger is seated or the fwd wardrobe if the passenger is seated on the flight deck.

If the total weight of hand baggage is known, subtract 3 kilos per passenger, to allow for the 3 kilos at the seat location and enter the remainder as the total wardrobe weight. If this sum results in a minus the passengers have less than 3 kilos of hand baggage each. In this case enter a zero for the total wardrobe weight. Hand bags, gifts or duty free will ensure that on average all passenger have a minimum of 3 kilos of hand baggage.

When comparing this program with a DCS loadsheet the hand baggage weight is obtained by subtracting the total passenger weight from this program from the DCS total for passengers and cabin baggage. If the result is negative use zero and a small difference in weight will result.

FWD WARDROBE WEIGHT.....SET = 120
(MIN = 0 MAX = 327)
*FWD WARDROBE WEIGHT.....?

IF "?" is used then the following will appear: "TOTAL WEIGHT IN FWD WARDROBE."

SET values are obtained as explained above. If another value is entered for the total wardrobe weight the SET value for each wardrobe will result from dividing the total weight in the proportions of the passengers seated at each end of the aircraft.

MID WARDROBE WEIGHT SET = 180
(MIN = 0 MAX = 418)
*MID WARDROBE WEIGHT.....?

IF "?" is used then the following will appear: "TOTAL WEIGHT IN MID WARDROBE."

The values at each wardrobe can be entered separately to allow for other equipment, such as a ground engineers tool box, to be included in the wardrobe weight.

The program then displays:-

CABIN BAGGAGE TOTALS.
*FORWARD WARDROBE.....FW = 120
*MIDDLE WARDROBE.....MW = 180
*Cab bag.....TOTAL. = 300
<E><**ENTER**> TO EDIT OR
PRESS <**ENTER**> TO CONTINUE.

The edit will enable edit of the individual wardrobe weights but not the total weight.

Hold baggage.

*Distribution (HOLD 1) SET = 0
(MIN = 0 MAX = 995)
*HOLD COMPARTMENT 1...?

IF "?" is used then the following will appear: "REVENUE LOAD IN HOLD COMPARTMENT 1."

*Distribution (HOLD 2) SET = 0
(MIN = 0 MAX = 585)
*HOLD COMPARTMENT 2...?

IF "?" is used then the following will appear: "REVENUE LOAD IN HOLD COMPARTMENT 2."

*Distribution (HOLD 6) SET = 0
(MIN = 0 MAX = 2767)
*HOLD COMPARTMENT 6...?

IF "?" is used then the following will appear: "REVENUE LOAD IN HOLD COMPARTMENT 6."

For loads in hold 6 greater than 2268 Kg. there is an audio and visual warning:-

!!! ABOVE UNLASHED LIMIT !!!
!!! MUST LASH OR TIGHTLY NET !!!
PRESS <**ENTER**> TO CONTINUE.

Maximum limits for holds will be reduced by the weight of crew baggage already allocated to the particular hold.

There is no location 0, as on DCS. All loads must be allocated a location.

SUMMARY OF HOLDS WEIGHTS is then displayed.
<E><ENTER> TO EDIT OR
PRESS <ENTER> TO CONTINUE.

Edit is for the hold loads.

Adjustments to traffic load.

TRAFFIC WEIGHT ADJ.....SET = 0
(MIN = 0 MAX = 1000)
*TRAFFIC WT ADJUSTMENT....?

IF "?" is used then the following will appear: "ADJUSTMENT TO TRAFFIC WEIGHT.
e.g. ADDITION OF REVENUE LOAD."

This could be a seat occupied by cargo or other loads.

TRAFFIC INDEX ADJ.....SET = 0
(MIN = -50 MAX = 50)
*TRAFFIC INDEX ADJUSTMENT .?

IF "?" is used then the following will appear: "ADJUSTMENT TO TRAFFIC INDEX.
e.g., DUE TO ADDITION OF REVENUE LOAD.
<E><ENTER> TO EDIT OR
PRESS ENTER TO CONTINUE."

The index will either be advised or can be calculated by reference to the ADDITIONS AND DEDUCTIONS INDEX TABLE, TABLE 4A, on the card at the back of this manual at 07-01-01 or the same TABLE 4A on page 06-03-08.

SUMMARY TO TRAFFIC LOAD will be displayed including any adjustments and the total traffic load.

This edit is for the traffic load adjustments.

SUMMARY AT ZERO FUEL WEIGHT will now be displayed.
The edit at this display will go back to the start of the passenger load.
The nil change of load certificate also displays this summary.

Fuel

From this section onward the full loadsheet and the nil change of load certificate are the same.

IS FUEL DISTRIBUTION UNUSUAL?.SET = Y
FUEL DISTRIBUTION UNUSUAL.....Y/N.... ?

IF "?" is used then the following will appear: "IS THE FUEL DISTRIBUTION NORMAL?
e.g. HOT RESIDUAL FUEL OR 'A' TANK
EMPTY."

Selecting N will then offer the options of hot residual fuel, one or more 'A' tanks empty or cancelling any zero fuel ballast.

HOT RESIDUAL FUEL PROCEDURE?..SET = N
HOT RESIDUAL FUEL PROCEDURE...Y/N...?

IF "?" is used then the following will appear: "IS THE HOT RESIDUAL FUEL PROCEDURE TO
BE USED. USE IF REFUEL WITHIN 5HRS OF
SUPERSONIC SECTOR."

HOW MANY 'A' TANKS ARE EMPTY...SET = 0
(MIN = 0 MAX = 2)
*NUMBER OF 'A' TANKS EMPTY.....?

IF "?" is used then the following will appear: "INPUT HOW MANY 'A' TANKS ARE EMPTY THAT THE REFUEL SCHEDULE REQUIRES TO BE FULL? 0, 1 or 2."

CANCEL ANY ZERO FUEL BALLAST....SET =N
CANCEL ANY ZERO FUEL BALLAST...Y/N...?

IF "?" is used then the following will appear: "FOLLOWING FIRST RUN ZERO FUEL BALLAST MAY HAVE BEEN REQUIRED. TO CANCEL IT <Y><ENTER> FOR YES. <N><ENTER> FOR NO."

Zero fuel ballast, when required, is locked in and added to the total fuel required. If the fuel load changes this input enables the ballast to be cancelled. If it is not cancelled it will continue to be added to the fuel required. If the same or a different ballast quantity is required with the new fuel load that value will be calculated later in the program.

DENSITY OF UPLIFT FUEL....SET = 0
(MIN = 0.77 MAX = 0.836)
DENSITY OF UPLIFT FUEL.....?

IF "?" is used then the following will appear: "THE DENSITY IN Kg/Litre. OR SPECIFIC GRAVITY."

The program now displays information useful for load planning.
For the zero fuel conditions and the fuel density the program calculates maximum fuels without and with HLI fuel, where applicable.
Values displayed are for take-off CGs of 53.0%, 53.5%, 54.0%, maximum tanks and the limit due to RTOW.

TAKE-OFF FUEL.....SET = 0
(MIN = 25000 MAX = 94500)
<M><ENTER> FOR MAX FUELS AGAIN.
*Take-off fuel.....?

IF "?" is used then the following will appear: "FUEL TO BE ON BOARD AT TAKE-OFF. MINIMUM FOR SUPERSONIC SECTOR IS 35000."

Minimum is the lowest allowed however the minimum for a supersonic sector is 35000.
The maximum will be limited by tanks, RTOW or the maximum for 54.0% with HLI.
The maximum fuels previously displayed are available with <M><ENTER>.

The program then displays the *Take-off weight.....= 183240

PRESS <ENTER> TO CONTINUE.

TRIP FUEL.....SET = 0
(MIN = 72110 MAX = 85500)
*Trip fuel.....?

IF "?" is used then the following will appear: "FUEL REQUIRED FROM TAKE-OFF TO LANDING."

Minimum is 3000 or the quantity required to reduce to the landing weight max. already entered. Maximum will take the landing fuel down to 6500.

The program then displays *Landing weight.....= 104340

PRESS <**ENTER**> TO CONTINUE.

TAXI FUEL .....SET = 1400
(MIN = 400 MAX = 3640)
TAXI FUEL.....?

IF "?" is used then the following will appear: "FUEL REQUIRED TO START AND TAXI TO T/O."

Minimum is the practical value of 400. Maximum is 9000 or lower if that would exceed the maximum ramp weight or maximum fuel in tanks.

The program then displays TAXI WEIGHT.....= 184640

PRESS <**ENTER**> TO CONTINUE.

SUMMARY TO LANDING WEIGHT is then displayed.

PRESS <**ENTER**> TO CONTINUE.

SUMMERY TO RAMP WEIGHT is then displayed.

<**E**> <**ENTER**> TO EDIT OR
PRESS <**ENTER**> TO CONTINUE.

REQUIRED FUEL SCHEDULE is displayed.

TOTAL FUEL REQUIRED..... = 90400
REFUEL TO SCHEDULE FOR .....= 90900
AT FUEL DENSITY OF .....= 0.800
PRESS <**ENTER**> TO CONTINUE.

The "total fuel required" includes any zero fuel (take-off) ballast.
"Refuel to schedule for" is the schedule that must be used from the fluid replenishment manual and allows for hot residual fuel or any 'A' tank empty. If zero fuel (take-off) ballast is required it will be indicated at this stage with the tank requiring the ballast.

If the fuel schedule required is at or above breakpoint the program calculates and displays:-

TANK 11 VALUES.
*SCHEDULE TANK 11.....= 8220
*DELTA TANK 11.....= 4090
PRESS <**ENTER**> TO CONTINUE.

If the fuel schedule required is below breakpoint the tank 11 contents is requested:-

*SCHEDULE TANK 11.....SET = -1
(MIN = 0 MAX = 4130)
*SCHEDULE TANK 11.....?

IF "?" is used then the following will appear: "REFUEL TANK 11 FROM THE REFUEL SCHEDULE."

The set value is below the min. limit so that a "legal" quantity has to entered, just pressing <ENTER> accidentally will not be accepted by the program.
The maximum limit is tank 11 at breakpoint because the program will have calculated the values at or above breakpoint.

C of G BEFORE FUEL MOVEMENT.
RAMP Centre of Gravity.....= 51.82

PRESS <**ENTER**> TO CONTINUE.

This is provided as "nice to know". It gives a good idea of the fuel movement required and is the value that should be shown on the aircraft's CG displays when correctly loaded with the ZFW and ZFCG and the refuelling is complete with the flight deck gauges active. It may be advisable to check the loadsheet, the fuel loading and the setting of the ZFW and ZFCG if the calculated ramp CG is significantly different to that displayed. A small CG movement is assumed during taxi so a ramp CG that suggests a very small PTOBO for 54.0% Co. could actually be a much larger PTOBO for 53.5% Co.

If zero fuel (take-off) ballast is required:-

!! WARNING !! (plus audio)
PTOBO EXCEEDS SCHEDULE TANK 11.
ZERO FUEL BALLAST REQUIRED.
TANK 10 ZERO FUEL BALLAST....= 4340
OR IF SPACE AVAILABLE IN TANK 9
TANK 9 ZERO FUEL BALLAST.....= 2721
*TANK FOR BALLAST 9 OR 10...= ?

The ballast fuel for tank 10 or 9 are shown. If there is sufficient space in tank 9 then less total fuel will be required. Tank 9 zero fuel and landing ballast will be the same. If tank 10 is used for zero fuel ballast that ballast may be moved and replaced by the tank 9 landing ballast that is also shown. If tank 10 ballast is loaded and not moved then the ZFCG to use when calculating the landing fuel in tank 9 is the ballasted ZFCG that will always be 53.5%

!!! WARNING !!! *(plus audio)*
!! REVISED FUEL AND WEIGHTS TO FOLLOW !!
PRESS <**ENTER**> TO CONTINUE.

The program returns to take-off fuel and gives the revised fuel and weights, the required refuel schedule and the quantity and tank required for the zero fuel ballast.. Press <ENTER> at each input to accept the new set values. The requirement for zero fuel ballast is now locked in. If due to subsequent changes zero fuel ballast appears to be unnecessary it can only be cancelled following the IS FUEL DISTRIBUTION UNUSUAL prompt.

If a PTOBO is required for a 53.5% TOCG then an option is offered:-

TRANSFER FOR A 54.0% TOCG.....SET = N
*TRANSFER FOR A 54.0% TOCG...Y/N.....?

If yes is selected the following is displayed:-

TRANSFER FOR A 54.05 TOCG.
*TRANSFER 1,2,3,4 TO 11.....= 1160
*MAX TAXI BEFORE 53.5% TOCG ...= 2240

This is the equivalent of loading an extra 1160 Kg. of fuel and burning it off.
The 1160 is to achieve 54.0%. The 2240 is the taxi fuel plus 2000 minus the 1160 that is assumed to have been burned already.

SUMMARY TO TOCG FINAL T11 ETC is displayed.

PRESS <**ENTER**> TO CONTINUE.

OPTIONS AND OUTPUTS.....SET = ?
RETURN TO OLD LOADSHEET.....= (**O**) This loadsheet with the set values as entered.
SUMMARIES.....(DISPLAY) = (**D**) Display the summaries already seen.
MANUAL TYPE LOADSHEET (PRINT) = (**P**) Will print if, printer available.
DCS TYPE LOADSHEET.....(PRINT) = (**D**) Will print if, printer available.
TO EXIT THE PROGRAM..(TO INDEX) = (**X**) A safeguard is provided.
SELECT.....?

For most errors the program will report an error and attempt to return to the final output menu. If this happens select OLD LOADSHEET (**O**) and check the SET values are the required values.

If there are any problems or suggestions please advise the Concorde fleet office with as many details as possible.

Intentionally Blank

Concorde Portable Loadsheet Computer Sharp Pc-1248

Control

A register has been created to show the date of the latest issue of the program, the keeper of each machine, the date issued, the date of battery replacement and the date of issue of the program resident in the machine.

The register is kept, with spare batteries and recorder/printer at a suitable location, e.g. FMT office. After a battery change the program should be re-loaded.

For each departure ex LHR, check that the date of the program resident in the issued machine is the same as the date of the latest issue of the program, as indicated in the front of the register. If there is later issue of the program the new issue should be loaded. Load time is approximately 5 minutes.

To cover the eventuality of loss or damage to a computer, spare machines will be available, from the fleet office.

Lack of suitably programmed portable computer will be an allowable deficiency as suitable manual Loadsheet information is available on all aircraft.

Machines at overseas bases will have programs updates and batteries replaced by machine exchange, either by established channels or by personal carriage by flight crew.

Nil Change of Load Certificate

This section should be read in conjunction with the detailed Instructions given in the reminder of the text.

A. Complete data from the previous Loadsheet on to the Certificate .

B. On PC1248 start as for a new Loadsheet.

C. After confirming Instruction 4, *RTOW=, and Instruction 5,*RLW=, the computer will show *BASIC WT=.

DO NOT enter the Basic Weight but press DEF key followed by A.

D. From the previous Loadsheet enter *ZFW=.

E. From the previous Loadsheet enter *LIZFW=. (include the sign when negative).

F. The computer confirms inputs, rounds the *LIZFW to nearest whole number, and calculates the *ZFCG.

G. If the *ZFCG agrees with the previous Loadsheet within 0.02% continue at Instruction 38, (*T/O Fuel).

H. The underload is not required with the Nil Change of Load Certificate.

I. In the Captains signature box print "PC1248", and the "program date".

J. Sign the Captains signature box.

Loadsheet Completion Instructions Using A Sharp Pc-1248 Portable Computer.

The object of the computer program is to lead the operator through the "manual" Loadsheet, doing all the calculations, making the decisions and providing prompts where information is required to be entered on the Loadsheet.

General

All information that **must** be entered on the "manual" Loadsheet has a * as the first character of the prompt or calculated result; other items of use that may be entered on the Loadsheet are also provided.

All data typed in must be followed by pressing the **ENTER** key.
Pressing the CL (clear) key, before **ENTER** has been pressed, will clear the input part of the display, leaving any previously entered value unchanged until a new value is typed in and **ENTER** pressed. If no new value typed and **ENTER** is pressed the original value will continue to be used.

Enter only whole numbers (integers), or letters, as prompted.
To pass from one display to the next display press the **ENTER** key.
For a NEW LOADSHEET, if the input is to be the normal value or zero just press the **ENTER** key in response to the prompt.

Input limits are provided, an input outside the limit will result in a LIMIT message and return to the original prompt.

Output limits, and comments, are provided; any limit exceeded will be reported and can result in a return to the logical place in the program to correct the situation.

Some entries and results may be required to be entered on the Loadsheet more than once.

The Manual Loadsheet, completed by means of the Sharp PC 1248 computer does not require the calculation to be made of the Allowed Traffic Load (Columns (a) , (b) or (c) as this has automatically been calculated in the computer when deriving the Underload figure (Instruction NR. 54).

NORMAL VALUES

*RTOW = 185070
*RLW = 111130
*FLT = CREW = 3
*CABIN CREW = 6
PANTRY CODE, A
TAXI FUEL = 1400

All other input values are set to zero for NEW LOADSHEET.

Concorde Loadsheet Using A Sharp Pc-1248 Portable Computer

Instructions

1. Press **ON**. (Top right)
2. For NEW LOADSHEET press **DFE** key followed by **L**.
   For OLD LOADSHEET press **DEF** key followed by = .
   For INPUT CHECK press **DEF** followed by **SPC** key.
   (These commands can be used at any time including part way through the program).
3. Press **ENTER** to pass each report. Check program date is correct.
4. *MAXZFW = , 92080, a reminder of the Maximum Zero Fuel Weight.
5. *RTOW = , regulated take off weight, press **ENTER** if NORMAL VALUE applies.
6. *RLW = , regulated landing weight, press **ENTER** if NORMAL VALUE applies.
7. *BASIC WT = , basic weight from aircraft certificate file.
   (Respond with **DEF** key and "**A**" will enter the program at *ZFW, *LIZFW).
8. *BASIC IND = , basic index from aircraft certificate file.
9. *FLT CREW = , flight deck crew on flight deck seats, press **ENTER** if NORMAL VALUE applies.
10. *CABIN CREW = , cabin crew on cabin crew seats, press **ENTER** if NORMAL VALUE applies. Numbers other than 6 or 0 will request number of number of cabin crew at each location, CREW DOOR 1 = , CREW DOOR 2 = , CREW DOOR 3 = , CREW R26 = .
11. *CABIN CREW = , confirmation of number of Cabin Crew.
12. WITHOUT BAGS = , the total number of crew that do not have bags in hold compartment 1. Normal value zero, just press **ENTER**.
13. *CREW WT = , crew weight; calculated result.
14. * CREW IND = , crew index; calculated result. *NOTE the sign.*
15. PANTRY CODE, (A, C, Z, X, Y), A, C and Z are standard pantries.
    "A" (normal value.) 1520/-24 "B" 1565/-26
    "C" 970/-12
    "Z" for zero pantry.
    "X" will require weights for FWD GALLEY = , AFT GALLEY = and MID GALLEY = load.
    "Y" will require total pantry weight, *PANTRY WT = , and total pantry index,
    *PANTRY IND =. (Include sign for negative index units).
16. *PANTRY WT = , pantry weight entered or calculated result.
17. *PANTRY IND = , pantry index entered or calculated result. Note the sign.
18. *DO WT ADJ = ,dry operating weight adjustment, if required. If zero, just press **ENTER**.
19. *DOI ADJ = , dry operating index adjustment, if required. If negative enter the sign. If zero, just press **ENTER**.
20. *DRY OP WT = , dry operating weight; calculated result.

21. *DOI = , dry operating index; calculated result. Note the sign.

22. *PAX AREA A = *PAX AREA D = , enter total of adults, or males and females, plus children in each cabin area.

23. M/F SPLIT Y/N, male/female split yes/no. For normal splits just press **ENTER** and *PAX MALE = , PAX FEMALE = will be requested. If the split is not required press N and ENTER, then the standard adult weight will be used.

24. *PAX CHILD = , total of child passengers.

25. *PAX INFANT =, total of infant passengers.

26. *PAS/INF = , totals of passengers and infants; calculated result.

27. *PAX WT = , total passenger weight; calculated result.

28. XF. W/ROBE = , extra load, additional to the passenger cabin baggage allowance, in the fwd wardrobe.
XM. W/ROBE = , extra load, additional to the passenger cabin baggage allowance, in the mid wardrobe.
Negative values may be entered to reduce the wardrobe loading to a minimum of zero if reduced or no cabin baggage is in the wardrobes.

29. XCAB. BAG = , total extra cabin baggage in the wardrobe that is additional to the passenger cabin baggage allowance calculated result.

30. *FW/MW = , total cabin baggage stowed in the fwd and mid wardrobe; calculated result.

31. *HOLD 1 = , total weight in hold compartment 1, **DO NOT INCLUDE CREW BAGS**.

32. *HOLD 2 = , weight in hold compartment 2.

33. *HOLD 6 = , total in hold compartment 6.

34. *HOLD WT = , total hold weight ; calculated result.

35. *ZFW ADJ = , zero fuel weight adjustment, if required. If zero, just press **ENTER**.

36. *LIZFW ADJ = , laden index zero fuel weight adjustment, if required. If negative enter the sign. If zero, just press **ENTER**.

37. *TRAFFIC LD =, total traffic load; calculated result.

38. *ZFW = , the ZERO fuel weight; calculated result.

39. *LIZFW = , laden index zero fuel weight; calculated result. Note the sign.

40. *ZFCG = , zero fuel centre of gravity; calculated result.

41. *T/0 FUEL = , take-off fuel, **not the total fuel**.

42. *T/0 WT = , take-off weight; calculated result.

43. *TRIP FL = , trip fuel.

44. *LAND WT = , landing weight; calculated result.

45. TAXI FUEL = , fuel for start and taxi. If NORMAL VALUE, 1400kg., just press **ENTER**.

46. TAXI WT = , taxi weight; fuelled, loaded and ready to start; calculated result.

47. REFUEL T11 = , the re-fuel schedule tank 11 contents.

48. *DELTA T11 = , the delta tank 11 fuel, may not be requested.

49. A TANKS EMPTY = , how many "A" tanks required to be full by the re-fuel schedule, are empty. 0, 1 or 2. If zero, just press **ENTER**.

50. RAMP CG = , ramp centre of gravity, before transfer or burn-off; calculated result.

51. *T/0 CG = , the take off centre of gravity position required; calculated result.

52. *ELEVON = , the elevon trim position required for take-off; calculated result.

53. *T9 BALLAST = ,tank 9 ballast, if required, will be shown followed by some REVISED WEIGHTS; calculated result.

54. *TRANS 9-11 = , fuel transfer required from tank 9 to tank 11 to achieve the required take-off centre of gravity; calculated result.
OR
*T11 B/0 = , tank 11 fuel required to be burned off to achieve take-off centre of gravity; calculated result.

55. *FINAL T11 = , the final contents required in fuel tank 11 to achieve the required take-off centre of gravity; calculated result. calculated result.

56. *, any required landing ballast will shown; calculated result.

57. *U/LD = , the underload before last minute change, and the limiting factor.
TOW, take-off weight; LWT, landing weight; ZFW, zero fuel weight.

58. END. CHECK NEXT. , the end of the load sheet. The INPUT CHECK routine is next.

59. INPUT CHECK, press ENTER repeatedly to check the inputs.

To Edit or Review

Repeatedly press **ENTER**, past OLD LOADSHEET, do not enter any information in response to the prompts,
until the input requiring change is prompted, then make the new entry and press **ENTER**. Further presses of **ENTER** only will show all the calculated result using the inputs not changed and the edited inputs, do not reply to the prompts unless further inputs have to be changed.

Other Information Required

In addition to the RTOW and RLW entered in the Max. Boxes, complete the Zero fuel weight Max. Box by printing 92080.

When signing the "Prepared by" box add, after the signature PC-1248, and the date of the computer program.

BRITISH AIRWAYS

06-06-06
31 March 99

Concorde Load & Balance

LIMITS

Input

	MAX	MIN	
RTOW	185070	NONE	
RLW	111130	NONE	
BASIC WT	80000	75000	
BASIC IND	150	60	
FLT CREW	5	3	
CABIN CREW	6	0	
CREW D1, D2, D3.	2	0	
ROW 26	4	0	
WITHOUT BAGS	TOTAL CREW	0	(Over total assumes total, no report.)
PANTRY WT	2000	0	
PANTRY IND	0	-42	
FWD GALLEY	1000	0	
AFT GALLEY	1000	0	
CABIN SPREAD	400	0	
DO WT ADJ	1000	-1000	
DOI ADJ	58	-58	
PAX A, B	20	0	
PAX C	28	0	
PAX D	32	0	
PAX MALE, FEMALE	CHECK SUM	0	(CHECK SUM A+B+C+D+M+F+CH)
PAX CHILD	A+B+C+D	0	
PAX INFANT	ADULT TOTAL	0	
FWD WARDROBE	327	0	
MID WARDROBE	418	0	
HOLD 1	995	0	
HOLD 2	585	0	(Max includes crew bags)
HOLD 6	2767	0	(WARN above UNLASHES LIMIT of 2268)
ZFW ADJ	1000	-1000	
LIZFW ADJ	58	-58	
T/0 FUEL	102000	25000	
TRIP FUEL	WARN	3000	(Warn if landing less than 10000) (Re-enter if land fuel less than 6500)
TAXI FUEL	5000	400	
REFL T11	12000	0	
DELTA T11	6770	0	
A TANKS EMPTY	2	0	

Output

ZFW	92080		
T/0 WT	RTOW	(Max 185070.)	
LAND WT	RLW	(Max 111130.)	(If over, report only; over by ?.)
TAXI WT	186880		
T11 B/0	1800	(for 54% T/0 only.)	(53.5% T11 B/0 over 1497 requires 54% T/0.)

Loading advice

Definitions

Cabin area A .. Row 1 to 5.
Cabin area B .. Rows 6 to 10.
Cabin area C .. Rows 11 to 18.
Cabin area D .. Rows 19 to 26.

Hold compartment 1 Fwd hold fwd. of door.
Hold compartment 2 Fwd. Hold aft. Of door.
Hold compartment 6 Aft. Hold

Passenger bags ... 1 bag = 16Kg.

Approximate hold volumetric limits

Hold compartment 1	40 to 50 bags.	
Hold compartment 2	10 to 25 bags.	
Hold compartment 6	118 to 125 bags.	(with no spares pack)
	98 to 105 bags.	(with spares pack)

Distribution

Assumptions Pantry A. Pantry A. Crew 3/6. 1.5 bags per passenger.

Total pax.	Pax loading	Baggage loading
0 to 20	.. Load passengers in area A	.....Bags in hold compartment 1.
21 to 30	.. 20 in A, reminder equal per area	.....Bags in hold compartment 1.
31 to 80	.. 20 in A, reminder equal per area	.....Bags 45 in 1, balance in 6.
81 to 96	.. 20 in A and B, reminder equal	.....Bags 45 in 1, balance in 6.
96 to 100	.. 20 in A and B, 28 in C, others in 10	.....Bags 45 in 1, balance in 6.

ZFCG 0 to 20 pax. , 54.1% to 52.6%.
21 to 30 pax. , 52.6% to 52.3%.
31 to 100 pax . , 52.3% to 52.6%.

Spares pack of 500 Kg in hold compartment 6 adds 0.3% to ZFCG.
For each 1 person extra on flight - deck subtract 0.1% from ZFCG.
10 bags from hold compartment 6 to hold compartment 2 subtract 0.15% from ZFCG and will reduce tank 11 burn-off by 195 Kg.

With no baggage and same pax. Distribution.
ZFCG 0 to 20 pax . , 54.1% to 52.9%.
21 to 96 pax . , 52.9% to 52.1%.
97 to 100 pax . , 52.1% to 52.2%.

Concorde Load & Balance

Loadsheet and loadmessage
Passenger aircraft
All weights in kilos

Priority / Address(es): LHRWMBA

Originator | Recharge/date/time: / | Initials: LDM

Date: 29 FEB 90

Flight: BA9/23C | A/c reg.: GBOXX | Version: SSCB | Crew: 4/6/1

Basic weight	+105 (7)(6)	78200	
Crew	−45 (12)(11)	8910	
Pantry "A"	−26 (15)(14)	1570	
	(17)(16)		
Dry operating weight	+34 (19)(18)	80660	
Take-off fuel	+		
Operating weight			

Maximum weights for	Zero fuel	Take-off	Landing
Take-off fuel	+	[redacted]	Trip fuel +
Allowed weight take-off (lowest of a, b or c)	a	b	c
Operating weight	−		
Allowed traffic load			

Dest.	Nr of passengers M / A(F) / Ch / Inf	Cab bag		Total	1	2	3	4	5	6	0	Remarks PAX	PAD
		(26)	Tr										
BGR	(21) 50 48 (22)(23) 2 2	Fwd B /31	B	1995	612	97				1286		(28)	(25)
		Aft B /10	C	480		80				400		Tr/ 100	Tr/ 12
		/63	M									E/C/6/400	
	50/48/2/2. 204		T	2475	1/612	2/177	3/	4/	5/	6/1686/		E/C/2/80	
		(27)	Tr	(31)	(28)	(29)				(30)			
			B										
			C									Tr/ / /	Tr/ / /
			M										
	/ / / .		T		1/	2/	3/	4/	5/	6/	0/		
			Tr										
			B										
			C									Tr/ / /	Tr/ / /
			M										
	/ / / .		T		1/	2/	3/	4/	5/	6/	0/		
			Tr										
			B										
			C									Tr/ / /	Tr/ / /
			M										
	/ / / .		T	(31)	1/	2/	3/	4/	5/	6/	0/		
	50 48 2 2 204			2475	612	177				1686			
				(27) 284	(28)	(29)				(30)			

Total passenger weight	+ (25) 7270	Allowed traffic load
Total traffic load	= 10029 (34)	−
Dry operating weight	(18) 80660	Underload before LMC — ZFW = (56) 1391
Zero fuel weight Max. (58) 92080	LMC = 90689 (35)	
Take-off fuel	+ 90000 (38)	
Take-off weight Max. (4) 184600	LMC = 180689 (39)	
Trip fuel	− 74280 (40)	
Landing weight Max. (5) 111130	LMC = 106409 (41)	LMC total +/−

Last minute changes

Dest.	Specification (M–A/F, CH–INF, B–C–M)	Cl/Cpt	+/−	Weight

Check LMC total with underload

SI ▶ BW 78200 (6)
BI +105 (7)

Notes T.O.CG = 53.5 (48)
FINAL T11 = 7240 (52)

Balance and seating conditions
D.O.I. = 34 (19) ELEVON
LIZFW = −92 (36) = 2.5 (49)
ZFCG = 62.48 (37)
PTOTR9/11 = 1020 (51)
A 20 B 20 C 28 D 32 (20)

Passengers/Inf 100/2 (24)

Prepared by PC1248
A. Despatcher 17.18.88 (59)

Approved by
T. H. E Captain

Authorised weights used for passengers, crew and baggage

Loading Instruction/Report Forms

A Guide To Completion By Concorde Crews

1. Must be completed before every departure and signed at:
   *1. by the person issuing the Instruction.
   *1a. by the person responsible for loading.

2. Special Instructions at *2 must include details of any Dangerous Goods or Special Loads and any special requirements - See Load and Balance Manual Section 5.

3. Load distribution in Compartment requires "Fix" (positive weight of cargo/mail or number of bags) and "Rest" locations where a specific load category is to be loaded in more than one Compartment, e.g. Baggage in Compartments 1 and 6. **Usually, but not always,** start loading in Compartment 1 then work backwards to Compartment 6.

4. Any amendments/deviations to the planned load must be recorded at *3 by the person responsible for loading, and any such deviations must be included on the Loadsheet.

BRITISH AIRWAYS

STATION	FLIGHT No	DATE	A/C REG	PREPARED BY
				* 1

Loading instructions and report

CONCORDE

DISEMBARKING LOAD	CPT SECTION

SPECIAL INSTRUCTIONS JOINING

TRANSIT

* 2

(63) A+B - 102 CU FT.	(62c) 56 CU FT.	(61) 186 CU FT	(22) 66 CU FT.	DOOR HOUSING	(12) 63 CU FT	(11) 62 CU FT
(63b)						
	(62a) 56 CU FT. **6**		**2**	DOOR		**1**
(63a)				(21) 7 CU FT.		
DOOR / 10 CU FT. DIP. LOCKER (When fitted)						
MAX. LOAD 2268 KGS. (Inc. DIP. LOCKER)			MAX. LOAD 686 KGS.		MAX. LOAD 995 KGS.	

Codes:
B -Baggage
C -Cargo
M -Mail
L -Livestock
P -Perishable
X -Empty Section

DEVIATIONS +/-

* 3

This aircraft has been loaded in accordance with these instructions except for the deviations recorded. The load has been secured in accordance with company regulations.

* 1a.

Signed _____
Loading Supervisor or person responsible for loading

BRITISH AIRWAYS

Concorde Load & Balance

06-07-02
31 March 99

BRITISH AIRWAYS

STATION	FLIGHT No	DATE	A/C REG	PREPARED BY

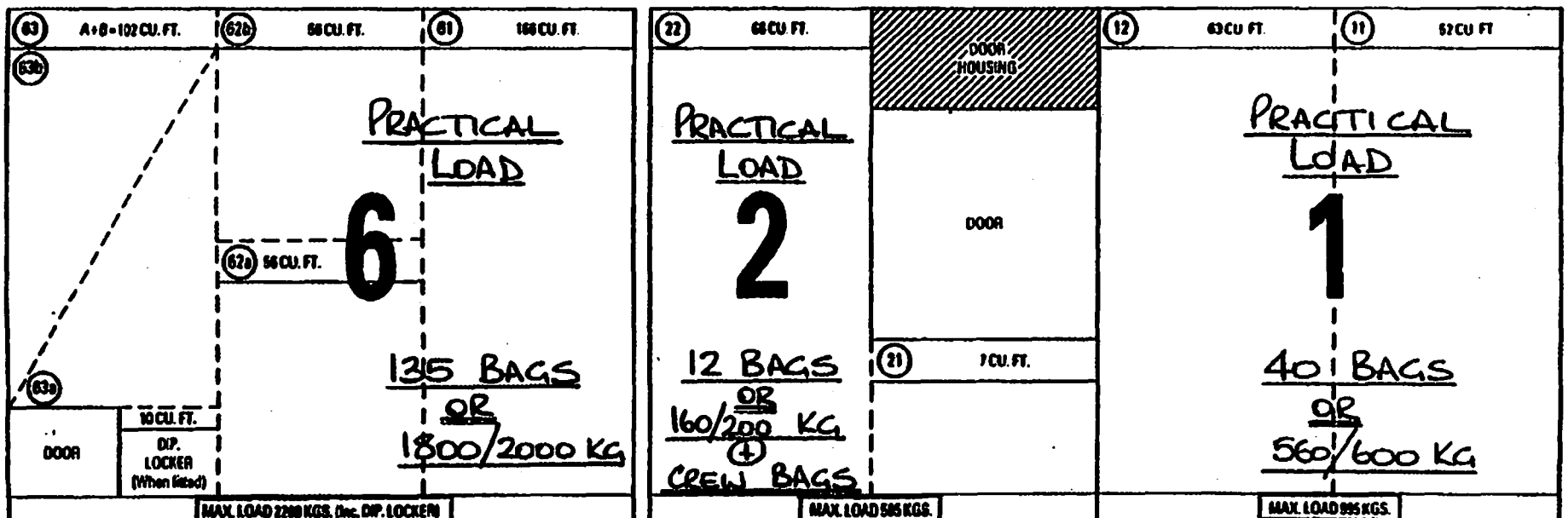
Loading instructions and report

CONCORDE

DISEMBARKING LOAD	CPT SECTION

SPECIAL INSTRUCTIONS TRANSIT JOINING

- LIVE ANIMALS (CATS/DOGS) AS BAGGAGE - CPTS 1/2 ONLY.
- RADIOACTIVE MATERIALS (MAX 30 T.I.) - CPT 6 ONLY.
- DRY ICE (MAX. NETT. WEIGHT 200 KG) - CPT 6 ONLY.



Codes:
B -Baggage
C -Cargo
M -Mail
L -Livestock
P -Perishable
X -Empty Section

DEVIATIONS +/-

MAY BE INCREASED TO 2767KG IF ALL LOAD LASHED DOWN

This aircraft has been loaded in accordance with these instructions except for the deviations recorded. The load has been secured in accordance with company regulations.

Signed _____
Loading Supervisor or person responsible for loading

M387

BRITISH AIRWAYS

STATION	FLIGHT No	DATE	A/C REG	PREPARED BY
LHR	BA9001C	11MAR92	G-BOAC	

Loading instructions and report

CONCORDE

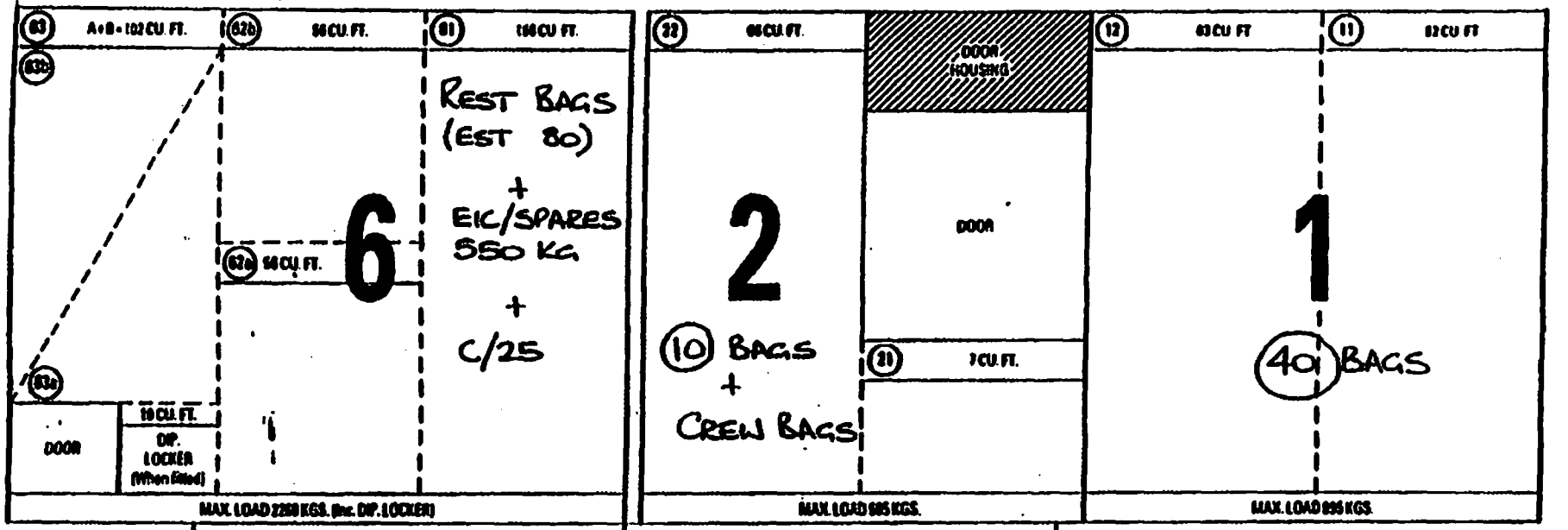
DISEMBARKING LOAD	CPT SECTION

SPECIAL INSTRUCTIONS

TRANSH— JOINING

CPT 6. SPARES PACK (EIC 550 KG) - DO NOT OFFLOAD

CPT 6. 1/25 KG RRY (T.I 1.0) - LOAD ON FLOOR AGAINST AFT BULKHEAD.



Codes:
B -Baggage
C -Cargo
M -Mail
L -Livestock
P -Perishable
X -Empty Section

DEVIATIONS +/-

CPT 6. + 5 BAGS

This aircraft has been loaded in accordance with these instructions except for the deviations recorded. The load has been secured in accordance with company regulations.

Ed Loader

Signed
Loading Supervisor or person responsible for loading

M307

BRITISH AIRWAYS

Concorde Load & Balance

06-07-04
31 March 99

CHAPTER 7

Contents

TABLE 4: ELEVON TRIM ANGLE AT TAKE-OFF

Take Off CG Position (% Co)	Elevon Trim Angle ((% Down)
53	1.5
53.5	2.5
54	2.5

Take-off at 53.0% Co. is only applicable to Actual Take-off Weights less than 140,000 kg

DERIVATION OF DELTA TANK 11

Fuel Density (kg/litre)	A Total Fuel (kg) at which Delta Tank 11 = 0	B Breakpoint fuel Tank 11 Loading (kg) at which Delta Tank 11 = 0	Fuel Density (kg/litre)	A Total Fuel (kg) at which Delta Tank 11 = 0	B Breakpoint fuel Tank 11 Loading (kg) at which Delta Tank 11 = 0
.725 - .729	80890	3540	.795 - .796	88850	4090
.730 - .734	81440	3590	.797 - .798	89070	4100
.735 - .739	82010	3630	.799 - .800	89310	4130
.740 - .744	82570	3650	.801 - .802	89540	4140
.745 - .749	83140	3690	.803 - .804	89760	4150
.750 - .754	83730	3740	.805 - .806	90000	4170
.755 - .759	84300	3790	.807 - .808	90240	4180
.760 - .764	84860	3820	.809 - .810	90460	4200
.765 - .769	85440	3860	.811 - .812	90690	4220
.770 - .771	86000	3890	.813 - .814	90890	4230
.772 - .773	86240	3910	.815 - .816	91140	4240
.744	86460	3930	.817 - .818	91350	4260
.775 - .776	86570	3930	.819 - .820	91590	4280
.777 - .778	86820	3960	.821 - .822	91820	4310
.779 - .780	87050	3970	.823 - .824	92040	4320
.781 - .782	87230	3970	.825 - .826	92270	4320
.783 - .784	87480	4000	.827 - .828	92500	4350
.785 - .786	87680	4000	.829 - .830	92750	4360
.787 - .788	87920	4020	.831 - .832	92960	4370
.789 - .790	88190	4050	.833 - .834	93210	4400
.791 - 792	88400	4060	.835 - .839	93410	4400
.793 - .794	88640	4080	.840 - .844	93970	4440
			.845 - .849	94540	4480
			.850 - .854	95930	4520

Delta Tank 11 fuel equals either: **TABLE 2**

Total Fuel read from schedule minus column A or

Tank 11 loading minus colmn B (Breakpoint fuel)

TABLE 4A: ADDITIONS AND DEDUCTIONS INDEX TABLE

The table gives the index correction required for specified increments of load in kg added or deducted. The sign conventions for ITEMS ON are shown on the left and ITEMS OFF on the right.

	Location	Load (kg) 20	30	40	50	70	85	100	
- ITEMS ON ADDITIONS +	Flight Deck	2	3	4	5	7	8	9	ITEMS OFF DEDUCTIONS +
	Galley Units 1-4	1	2	3	4	5	6	7	
	Compartment 1	1	1	2	2	3	4	5	
	Compartment 2	1	1	1	2	2	3	4	
	Area A (Rows 1-5)	1	2	2	3	4	5	6	
	Area B (Rows 6-10)	1	1	2	2	3	4	4	
	Mid Toilets / Emergency Exits	1	1	1	2	2	2	3	
	Area C (Rows 11-18)	0	0	1	1	1	1	1	
	Area D (Rows 19-26)	0	0	0	1	1	1	1	
	Galley Units 5-7	1	1	1	1	2	3	3	-
	Compartment 6	1	1	2	2	3	3	4	

TABLE 1: BALLAST FUEL FOR LANDING

Ballast Fuel for Landing									
	Zero Fuel Weight (1000 kg)								
ZFCG (% Co)	76	78	80	82	84	86	88	90	92
	Ballast Fuel in Tank 11 (kg)								
51.5			662	679	695	712	801	1024	1257
51.6			530	543	556	570	641	861	1089
51.7			397	407	417	427	481	697	922
51.8			265	272	278	285	321	533	754
51.9			132	136	139	142	160	369	586
52.0			0	0	0	0	0	205	419
52.1			0	0	0	0	0	41	251
52.2			0	0	0	0	0	0	84
Ballast Fuel in Tank 9 (kg)									
53.6	210	210	220	220	230	240	240	250	250
53.7	420	430	440	450	460	470	480	490	500
53.8	620	640	660	670	690	710	720	740	750
53.9	830	850	880	900	920	940	960	980	1010
54.0	1040	1070	1090	1120	1150	1180	1200	1230	1260
54.1	1250	1280	1310	1350	1380	1410	1440	1480	1510
54.2	1450	1490	1530	1570	1610	1650	1680	1720	1760
54.3	1660	1710	1750	1790	1840	1880	1930	1970	2010
54.4	1870	1920	1970	2020	2070	2120	2170	2210	2260
54.5	2080	2130	2190	2240	2300	2350	2410	2460	2520
54.6	2290	2350	2410	2470					
54.7	2490	2560	2630	2690					
54.8	2700	2770	2840	2910					
54.9	2910	2990	3060	3140					
55.0	3120	3200	3280	3360					
55.1	3330	3410	3500	3590					
55.2	3530	3630	3720	3810					
55.3	3740	3840	3940	4040					
55.4	3950	4050	4160	4260					
55.5	4160	4270	4380	4480					

TABLE 3: EFFECT OF PASSENGER MOVEMENT

No of Pax	Index Units					
	Area A to B	Area A to C	Area A to D	Area B to C	Area B to D	Area C to D
1	+ 1	+ 4	+ 6	+ 3	+ 4	+ 2
2	+ 2	+ 8	+ 11	+ 5	+ 9	+ 4
3	+ 4	+ 11	+ 17	+ 8	+ 13	+ 6
4	+ 5	+ 15	+ 22	+ 10	+ 17	+ 7
5	+ 6	+ 19	+ 28	+ 13	+ 22	+ 9
6	+ 7	+ 23	+ 34	+ 15	+ 26	+ 11
7	+ 9	+ 26	+ 39	+ 18	+ 31	+ 13
8	+ 10	+ 30	+ 45	+ 20	+ 35	+ 15
9	+ 11	+ 34	+ 51	+ 23	+ 39	+ 17
10	+ 12	+ 38	+ 56	+ 25	+ 44	+ 19

No of Pax	Index Units					
	Area B to A	Area C to A	Area C to B	Area D to A	Area D to B	Area D to C
1	- 1	- 4	- 3	- 6	- 4	- 2
2	- 2	- 8	- 5	- 11	- 9	- 4
3	- 4	- 11	- 8	- 17	- 13	- 6
4	- 5	- 15	- 10	- 22	- 17	- 7
5	- 6	- 19	- 13	- 28	- 22	- 9
6	- 7	- 23	- 15	- 34	- 26	- 11
7	- 9	- 26	- 18	- 39	- 31	- 13
8	- 10	- 30	- 20	- 45	- 35	- 15
9	- 11	- 34	- 23	- 51	- 39	- 17
10	- 12	- 38	- 25	- 56	- 44	- 19

BRITISH AIRWAYS

CONCORDE 100F

For Take-Off Weights Less Than 140,000 kg

C530/1

Using Standard Fuel Distribution

TAKE-OFF CG 53.0% Co

Elevon Trim Angle at T.O. 1.5° Down

	-	+
Basic Index		
Crew		
Pantry		
Totals		
Dry Operating Index		

Cabin Areas

OA | OB | OC | OD | 6

1 | 2

Compartments

0 50 100 150 200 250

Compartment 1		500 KG
Compartment 2		500 KG
Compartment 6		500 KG
Cabin Area OA		5 PAX
Cabin Area OB		5 PAX
Cabin Area OC		10 PAX
Cabin Area OD		10 PAX
Fwd Wardrobes	MAX 327	100 KG
Aft Wardrobes	MAX 418	500 KG

-200 -150 -100 -50 0 50 100 150 200 250

Landing Ballast Fuel Tank 9

ZERO FUEL CG (%Co) ⟶ 51.5 52.0 52.5 53.0 53.5 54.0 54.5 55.0

92 080 KG MZFW

ZERO FUEL WEIGHT (KG)

91 000 90 000 89 000 88 000 87 000 86 000 85 000 84 000 83 000 82 000 81 000 80 000 79 000 78 000 77 000

Landing Ballast Fuel Tank 11

ZERO FUEL CG (%Co)

Cabin Area	OA	OB	OC	OD
Seat Rows	1 - 5	6 - 10	11-18	19-26
Max Pax	20	20	28	32

Pax Redistribution required for landing when fuel remaining is less than 6000 kg

Pax from

Area To

Area

Landing CG (%Co)

Total Fuel (incl Taxi)

Fuel Density (kg/litre) 0

-200 -150 -100 -50 0 50 100 150 200 250

500 KG

3000 2000 1000 0 1000 2000 3000 4000

Delta Tank 11 N I L

Delta Tank 11 value will be NIL at fuel loads for TOW below 140,000 kg

Pre Take-Off Transfer Tank 9 to 11 (kg)

Schedule Tank 11 Contents (kg)

Sum = Final Tank 11 Contents

BRITISH AIRWAYS

CONCORDE 100F

C535/1

Using Standard Fuel Distribution

TAKE-OFF CG 53.5% Co

Elevon Trim Angle at T.O. 2.5° Down

	-	+
Basic Index		
Crew		
Pantry		
Totals		
Dry Operating Index		

Cabin Areas: OA | OB | OC | OD | 6

Compartments: 1 | 2

0 50 100 150 200 250

Compartment 1		500 KG
Compartment 2		500 KG
Compartment 6		500 KG
Cabin Area OA		5 PAX
Cabin Area OB		5 PAX
Cabin Area OC		10 PAX
Cabin Area OD		10 PAX
Fwd Wardrobes	MAX 327	100 KG
Aft Wardrobes	MAX 418	500 KG

−200 −150 −100 −50 0 50 100 150 200 250

Landing Ballast Fuel Tank 9

ZERO FUEL CG (%Co)

ZERO FUEL CG (%Co) → 51.5 52.0 52.5 53.0 53.5 54.0 54.5 55.0

92 080 KG MZFW

ZERO FUEL WEIGHT (KG)

91 000 90 000 89 000 88 000 87 000 86 000 85 000 84 000 83 000 82 000 81 000 80 000 79 000 78 000 77 000

Landing Ballast Fuel Tank 11

Pax Redistribution required for landing when fuel remaining is less than 6000 kg

Pax from

Area To

Area

Landing CG (%Co)

Cabin Area	OA	OB	OC	OD
Seat Rows	1 - 5	6 - 10	11-18	19-26
Max Pax	20	20	28	32

Total Fuel (incl Taxi)

Fuel Density (kg/litre) 0

Delta Tank 11

−200 −150 −100 −50 0 50 100 150 200 250

500 KG

3000 2000 1000 0 1000 2000 3000

Pre Take-Off Transfer Tank 9 to 11 (kg)

Schedule Tank 11 Contents (kg)

Sum = Final Tank 11 Contents

Schedule Tank 11 Contents (kg)

Pre Take-Off Transfer Tank 11 (kg)

Difference - Final Tank 11 Contents

BRITISH AIRWAYS

CONCORDE 100F

C540/1

Using Standard Fuel Distribution

TAKE-OFF CG 54.0% Co

Elevon Trim Angle at T.O. 2.5° Down

	-	+
Basic Index		
Crew		
Pantry		
Totals		
Dry Operating Index		

Cabin Areas: OA | OB | OC | OD | 6 (1 | 2)

Compartments

0 50 100 150 200 250

Compartment 1		500 KG
Compartment 2		500 KG
Compartment 6		500 KG
Cabin Area OA		5 PAX
Cabin Area OB		5 PAX
Cabin Area OC		10 PAX
Cabin Area OD		10 PAX
Fwd Wardrobes	MAX 327	100 KG
Aft Wardrobes	MAX 418	500 KG

-200 -150 -100 -50 0 50 100 150 200 250

Landing Ballast Fuel Tank 9

ZERO FUEL CG (%Co)

ZERO FUEL CG (%Co) → 51.5 52.0 52.5 53.0 53.5 54.0 54.5 55.0

ZERO FUEL WEIGHT (KG)

92 080 KG MZFW
91 000
90 000
89 000
88 000
87 000
86 000
85 000
84 000
83 000
82 000
81 000
80 000
79 000
78 000
77 000

Landing Ballast Fuel Tank 11

Cabin Area	OA	OB	OC	OD
Seat Rows	1 - 5	6 - 10	11-18	19-26
Max Pax	20	20	28	32

Pax Redistribution required for landing when fuel remaining is less than 6000 kg

Pax from

Area To Area

Landing CG (%Co)

Total Fuel (incl Taxi)

Fuel Density (kg/litre) 0

Delta Tank 11

-200 -150 -100 -50 0 50 100 150 200 250

500 KG

0 1000

Schedule Tank 11 Contents (kg)

Pre Take-Off burnoff Tank 11 (kg)

Difference - Final Tank 11 Contents

Note 1: If fuel transfer line lies to left of zero, adjust ZFCG to give tank 11 burn-off.

Note 2: Maximum pre Take-off burn-off from tank 11 is 1800 kg.

BRITISH AIRWAYS

CONCORDE 100F

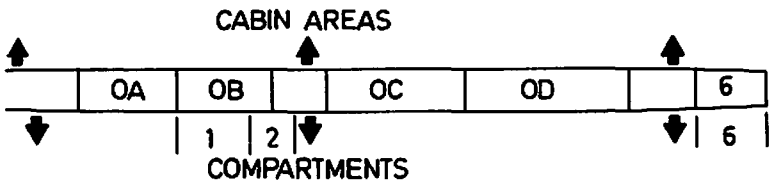
C530/1
ISSUE A

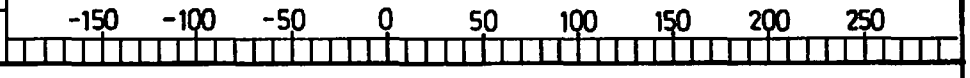
USING STANDARD FUEL DISTRIBUTION

TAKE-OFF CG 53·0% Co

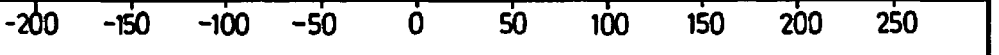
TAKE-OFF WEIGHTS LESS THAN 140 000 KG

	−	+
BASIC INDEX	X	
CREW		X
PANTRY		X
TOTALS		
DRY OPERATING INDEX		

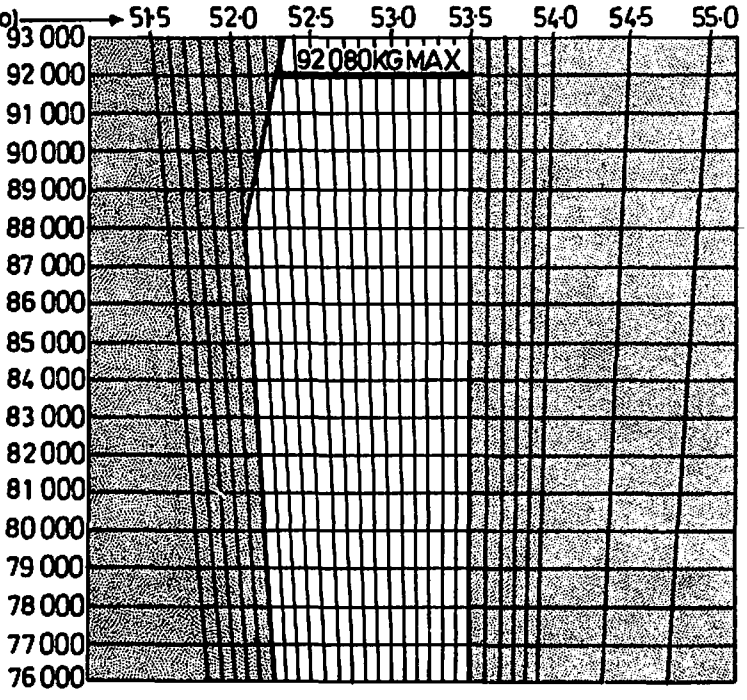




COMPARTMENT 1	500 KG
COMPARTMENT 2	500 KG
COMPARTMENT 6	500 KG
CABIN AREA OA	5 PAX
CABIN AREA OB	5 PAX
CABIN AREA OC	10 PAX
CABIN AREA OD	10 PAX



ZERO FUEL CG(%Co) →



LANDING BALLAST-FUEL TANK 11

LANDING BALLAST-FUEL TANK 9

ZERO FUEL CG(%Co)

PAX REDISTRIBUTION REQUIRED FOR LANDING WHEN FUEL REMAINING IS LESS THAN 6000 KG

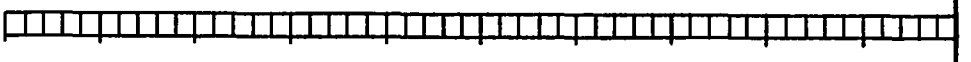
PAX FROM AREA TO AREA

CABIN AREA	OA	OB	OC	OD
SEAT ROWS	1-5	6-10	11-18	19-26
MAX PAX	20	20	28	32

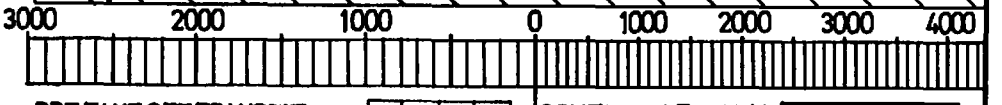
LANDING CG(%Co)

TOTAL FUEL (INCL TAXY)

FUEL DENSITY 0·



DELTA TANK 11



ELEVON TRIM ANGLE AT TO 1·5° DOWN

PRE TAKE-OFF TRANSFER TANK 9 TO 11 (KG)

SCHEDULE TANK 11 CONTENTS (KG)

SUM = FINAL TANK 11 CONTENTS

SCHEDULE TANK 11 CONTENTS (KG)

PRE TAKE-OFF BURNOFF FROM TANK 11 (KG)

DIFFERENCE = FINAL TANK 11 CONTENTS

BRITISH AIRWAYS

CONCORDE 100F

C535/1
ISSUEA

USING STANDARD FUEL DISTRIBUTION — TAKE-OFF CG 53·5%Co

	−	+
BASIC INDEX		
CREW		
PANTRY		
TOTALS		
DRY OPERATING INDEX		

CABIN AREAS: OA | OB | OC | OD | 6

COMPARTMENTS: 1 | 2 | 6

-150 -100 -50 0 50 100 150 200 250

COMPARTMENT	1	500KG
COMPARTMENT	2	500KG
COMPARTMENT	6	500KG
CABIN AREA	OA	5 PAX
CABIN AREA	OB	5 PAX
CABIN AREA	OC	10 PAX
CABIN AREA	OD	10 PAX

-200 -150 -100 -50 0 50 100 150 200 250

ZERO FUEL CG(%Co) → 51·5 52·0 52·5 53·0 53·5 54·0 54·5 55·0

ZERO FUEL WEIGHT(KG): 93000 92000 91000 90000 89000 88000 87000 86000 85000 84000 83000 82000 81000 80000 79000 78000 77000 76000

92 080KG MAX

LANDING BALLAST – FUEL TANK 11

LANDING BALLAST – FUEL TANK 9

ZERO FUEL(CG%Co)

CABIN AREA	OA	OB	OC	OD
SEAT ROWS	1-5	6-10	11-18	19-26
MAX PAX	20	20	28	32

PAX REDISTRIBUTION REQUIRED FOR LANDING WHEN FUEL REMAINING IS LESS THAN 6000KG

PAX FROM AREA TO AREA

LANDING CG(%Co)

TOTAL FUEL (INCL TAXY)

FUEL DENSITY (KG/LITRE) 0:

DELTA TANK 11

500KG

3000 2000 1000 0 1000 2000 3000

ELEVON TRIM ANGLE AT TO 2·5° DOWN

PRE TAKE-OFF TRANSFER TANK 9 TO 11 (KG)

SCHEDULE TANK 11 CONTENTS (KG)

SUM = FINAL TANK 11 CONTENTS

SCHEDULE TANK 11 CONTENTS (KG)

PRE TAKE-OFF BURNOFF FROM TANK 11 (KG)

DIFFERENCE = FINAL TANK 11 CONTENTS

BRITISH AIRWAYS

CONCORDE 100F

C540/1
ISSUE A

USING STANDARD FUEL DISTRIBUTION — TAKE-OFF CG 54·0%Co

	−	+
BASIC INDEX	X	
CREW		X
PANTRY		X
TOTALS		
DRY OPERATING INDEX		

CABIN AREAS: OA | OB | OC | OD | 6
COMPARTMENTS: 1 | 2 | 6

-150 -100 -50 0 50 100 150 200 250

COMPARTMENT 1	500KG
COMPARTMENT 2	500KG
COMPARTMENT 6	500KG
CABIN AREA OA	5 PAX
CABIN AREA OB	5 PAX
CABIN AREA OC	10 PAX
CABIN AREA OD	10 PAX

-200 -150 -100 -50 0 50 100 150 200 250

ZERO FUEL CG(%Co) → 51·5 52·0 52·5 53·0 53·5 54·0 54·5 55·0

ZERO FUEL WEIGHT (KG): 93 000 92 000 91 000 90 000 89 000 88 000 87 000 86 000 85 000 84 000 83 000 82 000 81 000 80 000 79 000 78 000 77 000 76 000

92 080KG MAX

LANDING BALLAST – FUEL TANK 11

ZERO FUEL(CG %Co)

CABIN AREA	OA	OB	OC	OD
SEAT ROWS	1-5	6-10	11-18	19-26
MAX PAX	20	20	28	32

TOTAL FUEL (INCL TAXY)

FUEL DENSITY (KG/LITRE) 0·

DELTA TANK 11

ELEVON TRIM ANGLE AT T.O. 2·5° DOWN

LANDING BALLAST – FUEL TANK 9

PAX REDISTRIBUTION REQUIRED FOR LANDING WHEN FUEL REMAINING IS LESS THAN 6000 KG

PAX FROM AREA TO AREA

LANDING CG(%Co)

500KG

0 1000

NOTE 1: If fuel transfer line lies to left of zero, adjust ZFCG to give tank 11 burn-off.

NOTE 2 Maximum pre take-off burn-off from tank 11 is 1800Kg

SCHEDULE TANK 11 CONTENTS (KG)
PRE TAKE-OFF BURNOFF FROM TANK 11 (KG)
DIFFERENCE – FINAL TANK 11 CONTENTS