Weight & Balance

- Introduction.-

The center of gravity is critical to the aircraft's ability to fly, a determination of the aircraft's center of gravity and total weight is necessary, and, required by the FAA, EU-OPS and most other Civil Aviation Authorities before every take-off. The loadsheet must reflect the actual load and balance of the aircraft prior take-off and must be prepared in accordance with the Airline's and official regulations.

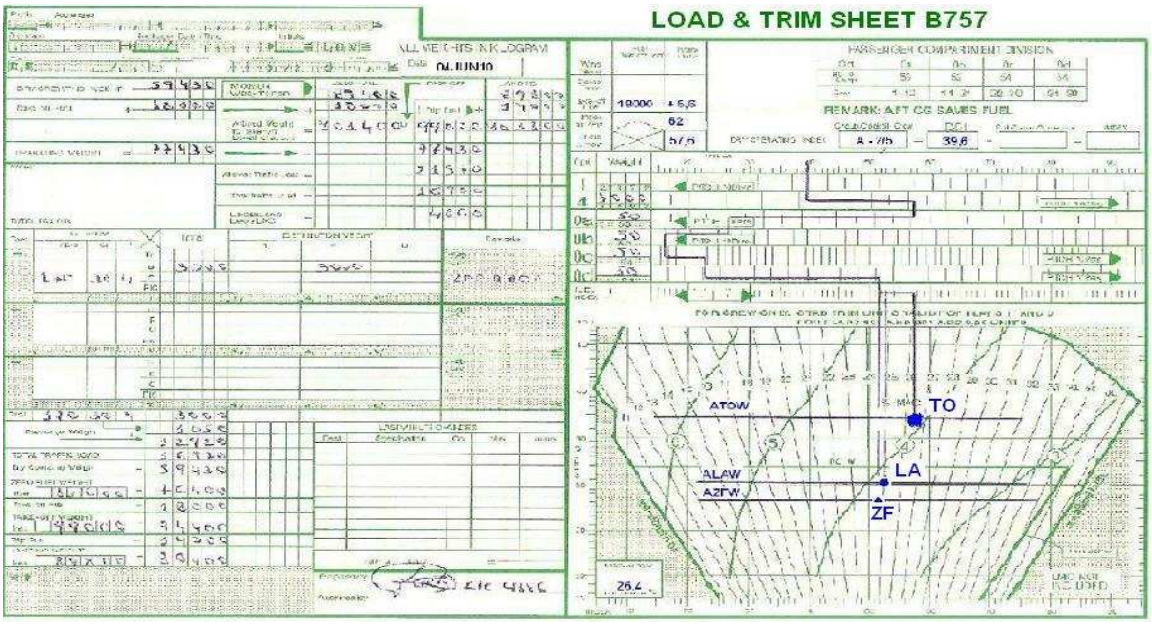
The loadsheet can be manual or automated. Manual loadsheet requires 5 to 15 minutes depending on their complexity and the skill of the person in charge of processing. Mathematical and other errors are possible. The automated

loadsheet can be rendered in few minutes, but many of them may experience system's shutdown when the connection is down (centralized systems).

However, our system does not have that problem. Because LOBYC ® is an independent program which does not need to rely upon external CPU's or phone connections. That's what makes it so quick. Furthermore, the program will continue to do its job even if there are breakdowns in other systems. This is where a program like LOBYC ® proves its worth.

For this reason our system LOBYC ® will **always ensure its mechanized production in less than a minute** (narrow-body aircraft)

Example of manual loadsheet (5 to 15 minutes for prossesing).



<u>Automated load and balance system LOBYC ® implementation</u> -

LOBYC ® is independent of other systems, though compatible with any DCS system. This means you can install the LOBYC ® program on any computer either desktop or laptop.

For this reason, the LOBYC ® program offers the following solutions :

1. Handling agent or representative. Only a computer and a printer are sufficient to print the loadsheet in less than a minute using LOBYC ®.

2. Centralized flight dispatcher office. No matter where the plane is. Just transmit to the flight dispatcher the data needed for the loadsheet. Then they make it and send it via email, fax or even the pilot via ACARS (Aircraft Communications Addressing and Reporting System) or their smart - phone.

3. The same pilot. He only needs a netbook (laptop). Printer is not neccesary. The handling agent or representative shall transmit the pilot data necessary to make the loadsheet using the following form - **" Loadsheet information form "** - in triplicate. The pilot entered the information on his netbook and transfer the 11 data to the " Loadsheet information form ". Captain will sign it and will give a copy to the ground agent to be filed at least three months.

Exemple of Loadsheet information form

Company Airlines
All weights in kgs.

LOADSHEET INFORMATION B738				DATE : 30MAR11	TIME : 1015
FLIGHT NR.	A/C REG	FROM	TO	VERSION	CREW
XX123	EC-ZZZ	TFS	LIS	Y189	2/4

DEST	PAX (M/F/C/I)	Total	BAGS (Pces. / Kgs.)	CARGO	MAIL	EIC
LIS	90 / 95 / 4 / 2	189 + 2	180 / 2340	NIL	NIL	NIL
Total	90 / 95 / 4 / 2	189 + 2	180 / 2340	NIL	NIL	NIL

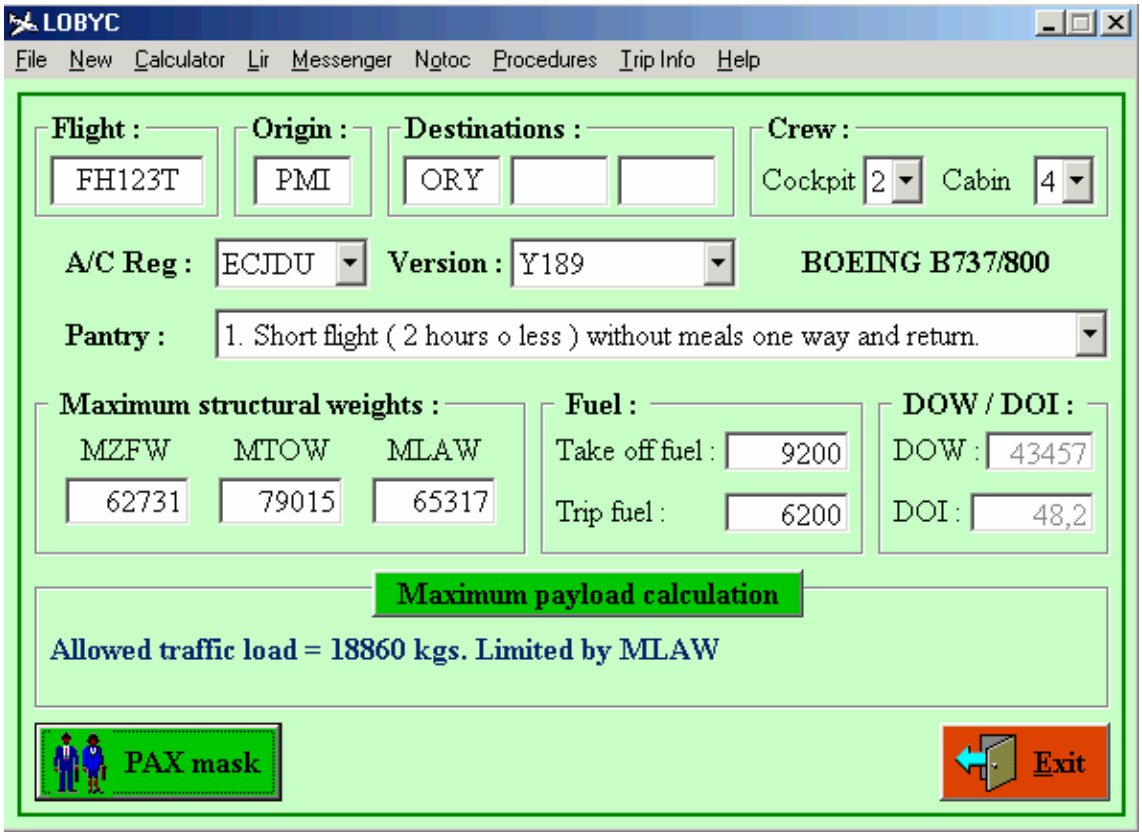
PAX DISTRIBUTION				HOLD DISTRIBUTION			
A/ 45	B/ 48	C/ 48	D/ 48	1/	2/ 650	3/ 1690	4/

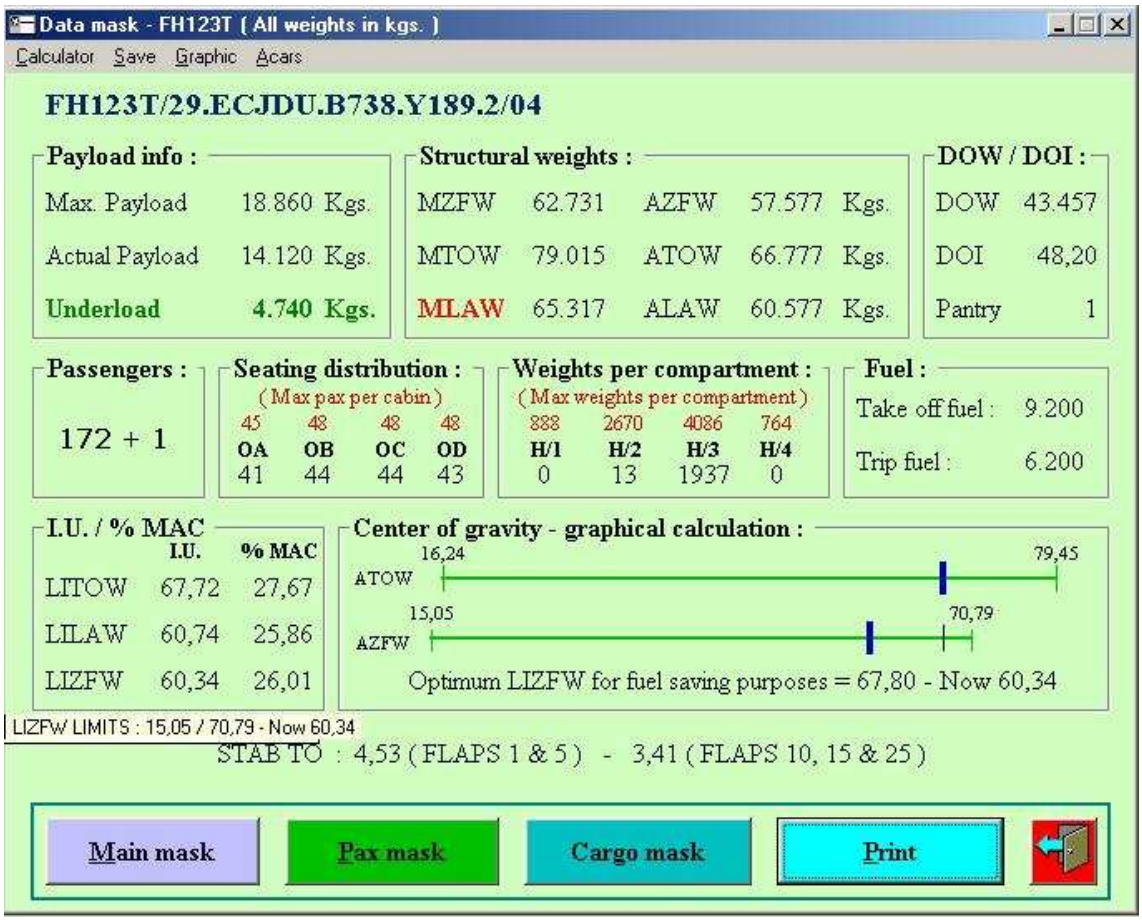
	ACTUAL	MAX	LIMITING	% MAC	Stab To
Zero fuel weight	60040	62731	L	23,16	5,09 (Flaps 5)
Take-off fuel	9000				
Take-off weight	69040	79015		25,25	LMC
Trip fuel	6800				
Landing weight	62240	65317		23,10	
Underload	2691				

REMARKS	Approved
01 AVIH/2 - 02 WCHS - EET 0150	Captain's signature
Prepared and signed by : HANDLING AGENT NAME & SIGNAT.	Captain's name

For this example we used **blue colour** for the data entered by the handling agent or representative. Data also can provide the pilot by radio. In **green colour** the data entered by the pilot.

LOBYC ® save time, fuel, effort and reduces the overall operating cost of the aircraft.


LOBYC
File New Calculator Lir Messenger Notoc Procedures Trip Info Help
Flight :
FH123T
Origin :
PMI
Destinations :
ORY
Crew :
Cockpit 2 Cabin 4
A/C Reg : ECJDU
Version : Y189
BOEING B737/800
Pantry :
1. Short flight (2 hours o less) without meals one way and return.
Maximum structural weights :
MZFW MTOW MLAW
62731 79015 65317
Fuel :
Take off fuel : 9200
Trip fuel : 6200
DOW / DOI :
DOW : 43457
DOI : 48,2
Maximum payload calculation
Allowed traffic load = 18860 kgs. Limited by MLAW
PAX mask
Exit


Data mask - FH123T (All weights in kgs.)
Calculator Save Graphic Acars
FH123T/29.ECJDU.B738.Y189.2/04
Payload info :
Max. Payload 18.860 Kgs.
Actual Payload 14.120 Kgs.
Underload 4.740 Kgs.
Structural weights :
MZFW 62.731 AZFW 57.577 Kgs.
MTOW 79.015 ATOW 66.777 Kgs.
MLAW 65.317 ALAW 60.577 Kgs.
DOW / DOI :
DOW 43.457
DOI 48,20
Pantry 1
Passengers :
172 + 1
Seating distribution :
(Max pax per cabin)
45 48 48 48
OA OB OC OD
41 44 44 43
Weights per compartment :
(Max weights per compartment)
888 2670 4086 764
H/1 H/2 H/3 H/4
0 13 1937 0
Fuel :
Take off fuel : 9.200
Trip fuel : 6.200
I.U. / % MAC
I.U. % MAC
LITOW 67,72 27,67
LILAW 60,74 25,86
LIZFW 60,34 26,01
Center of gravity - graphical calculation :
16,24
79,45
ATOW
15,05
70,79
AZFW
Optimum LIZFW for fuel saving purposes = 67,80 - Now 60,34
LIZFW LIMITS : 15,05 / 70,79 - Now 60,34
STAB TO : 4,53 (FLAPS 1 & 5) - 3,41 (FLAPS 10, 15 & 25)
Main mask
Pax mask
Cargo mask
Print

Exemple of automated loadsheet (rendered in less than 1 minute).

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L O A D S H E E T            CHECKED          APPROVED         EDNO
ALL WEIGHTS IN KG                                              02
FUTURA B-737/800
DATABASE NOV/07

FROM/TO  FLIGHT     A/C-REG     VERSION     CREW     DATE     TIME
PMI-ORY  FH123T      ECJDU       Y189       2/04   29MAR08   1922

                         WEIGHT DISTRIBUTION
LOAD IN COMPARTMENTS       1950 2/13.3/1937

PASSENGER                 12170 70/80/22/1   TTL 172 + 1
                                Y172         CAB
TOTAL TRAFFIC LOAD        14120
DRY OPERATING WEIGHT      43457 GRP: 1
ZERO FUEL WEIGHT ACTUAL   57577 MAX  62731   ADJ
TAKE OFF FUEL              9200
TAKE OFF WEIGHT  ACTUAL   66777 MAX  79015   ADJ
TRIP FUEL                  6200
LANDING WEIGHT   ACTUAL   60577 MAX  65317 L ADJ

BALANCE AND SEATING CONDITIONS          LAST MINUTE CHANGES
DOI     48.20    DLI     59.73   DEST   SPEC   CL/CPT  + - WEIGHT
LIZFW   60.34    MACZFW  26.01
LITOW   67.72    MACTOW  27.67
LILAW   60.74    MACLAW  25.86

STAB TO 4.53 ( FLAPS 1 & 5 )
STAB TO 3.41 ( FLAPS 10, 15 & 25 )

* TRIM BY CABIN AREA
  A41.B44.C44.D43

UNDERLOAD BEFORE L.M.C.   4740              LMC  TOTAL + -
--------------------------------------------------------------------------
LOADMESSAGE AND CAPTAINS INFORMATION BEFORE L.M.C.
FH123T/29.ECJDU.B738.Y189.2/04
-ORY.70/80/22/1.T1950.2/13.3/1937.PAX/172.PRF/1.DHC/0.B150/1950.C0
.M0.E0.AVIH/2/13

* LIZFW LIMITS : 15.05 / 70.79 - MACZFW LIMITS : 8.34 / 30.09 - Now 26.01
* LITOW LIMITS : 16.24 / 79.45 - MACTOW LIMITS : 10.35 / 31.62 - Now 27.67

* STANDARD WEIGHTS USED FOR PAX  : 76 / 76 / 35 / 0
* STANDARD WEIGHT  USED FOR BAGS : 13

SI : 01 UM - EET 0135
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http://www.lobyc.com

E-mail : loadcontrol@lobyc.com