

EVIONICA

Weight&Balance

User Manual (Cargo operation)

Revision 1.9
28.06.2023

1. OPERATIONAL WEIGHT AND CG COMPUTATION.

A. GENERAL

Evionica W&B is a software solution used to calculate the aircraft actual mass and the position of the CG. Once the calculations are done one can generate appropriate documents including:

- Loading Instruction and Report,
- Loadsheet
- and CPM message.

Documents can be printed or, in case of Loadsheet and CMP, they can be shared via e-mail straight forward from the software. Also, this solution ensures live validation of both weight and CG position, presenting appropriate notifications to the user whenever the aircraft is outside of its operational envelope. These limitations are based on information derived from the aircraft documentation provided by operator. Once all calculations are completed, Weight and Balance Loadsheet is issued to certify that all structural limitations are not exceeded and CG within their limits.

The administrator of this system is Evionica, who is responsible for the system availability and configuration. The configuration process includes the set-up of mathematical formulas for each aircraft. The correctness of results is assured as all formulas are intact with manufacturer's documentation and recommendations as well as the manuals provided by airline and its accuracy is proven in the process of user acceptance tests. The access to configuration files is granted solely to the Evionica staff, therefore the regular user can only enter the operational details regarding the flight and only in the requested format. This approach ensures system integrity and reliability. Evionica offers full support in terms of keeping the aircraft database up to date and the date of last update for each aircraft is available in-app to be reviewed by the user.

The solution is cloud based, the acquired technology allows to perform all calculation also when offline or with limited access to the internet connection. The internet connection is only required to update the database and share the documents via e-mail. Information about the available update is propagated automatically as soon as the internet connection is granted.

B. STANDARD INDEX UNIT AND MAC%

Evionica uses INDEX as a balance unit used for computation of trim condition and validating it against operational envelope. Index is an equivalent moment around a reference station scaled up to obtain more comprehensive quantity.

The basic equation for INDEX:

$$Index = \frac{W * (Sta. - Ref. Sta.)}{C} + K$$

Where:

W – Actual weight of aircraft

$Sta.$ – Arm (station), horizontal distance measured from a zero station

$Ref. Sta.$ – Reference station, selected point around which all index values are calculated. It is located at 25% of MAC, as the equivalent lift force is assumed to be applied at this point, it can be treated as a neutral point.

C – constant used as denominator to convert moment to index value and scale it down.

K – constant used to avoid negative index values, it is only used in reference to the whole aircraft (for example when deriving Basic Index) and it is skipped when index increment is calculated separately for each item loaded.

The following formulas are used for conversion between INDEX unit and %MAC :

$$\%MAC = \frac{\left(\frac{C * (I - K)}{W}\right) + Ref. Sta. - LEMAC}{\frac{MAC}{100}}$$
$$Index = \frac{W \left[\left(\%MAC * \frac{MAC}{100}\right) + LEMAC - Ref. Sta. \right]}{C} + K$$

Where:

$LEMAC$ – Horizontal distance in meters from the station zero to location of the Leading Edge of the MAC

MAC – Length of the Mean Aerodynamic Chord

C. FUEL

The Index correction for usable fuel is calculated using the quantity of fuel in relation to its H-Arm and it is derived according to automatic refueling sequence which specifies the final distribution of fuel in the tanks. The resultant index is determined for the specific fuel quantity using linear interpolation

D. POSITION AND COMBINED LIMITATIONS

All limitations for floor loading and combined limits used within the Evionica WB solution were derived from the source manuals. As such, the WB system will not allow a position to exceed its maximum allowable limits.

Limitations verified dynamically in the system:

- Floor weight loading
- Running loads
- Accumulated loads
- Pyramidal loading
- Fuselage shear loads
- Certified unit load device weights by location
- Cargo hold capacity

2. USER MANAGEMENT

Access to the system is restricted only for the verified users. Evionica W&B account is personal and user management is done on Evionica end. Additionally the account can be integrated with SSO/SAML provider.

There is possibility to grant read-only access for users who are only able to preview and share generated documents and release messages.

3. USER MANUAL

FLIGHT SCHEDULE

The main page of the Evionica W&B solution software is flight schedule containing information on the flights including their number, route, operational date and time, aircraft registration, load controller assigned, and current status of the loadsheet revision. If the loadsheet revision has been already completed there are also details on the time it was saved.

Browse the schedule

The flight schedule can be browsed using the date and flight number filters and it allows to find and preview the archive documents created using the software.

The screenshot displays the 'FLIGHT SCHEDULE' interface. At the top right, it shows 'ONLINE John Doe' with a 'Click to log out' label. Below this is a search bar labeled 'Search a flight' and a date selector labeled 'Select operational date' showing '28 Aug 2023'. A '+ Add new flight' button is labeled 'Create flight'. The main content area shows a list of flights with columns for flight number, route, time, aircraft registration, and status. The flights listed are:

Flight Number	Route	Time	Aircraft Registration	Status	Actions
EV1515	WAW → LEJ	23:45	GX-321	New	Start balancing, Archive
EV1114	WAW → LEJ	23:30	B-747F	New	Start balancing, Archive
EV1113	WAW → ORD	22:55	SP-EVI	New	Start balancing, Archive
EV1112	WAW → MIA	22:40	B-747F	New	Start balancing, Archive
EV1110	WAW → JFK	21:10	SP-EVI	New	Start balancing, Archive

Create the flight:

Click on the “Add new flight” button on a flight schedule and fill in the flight form correctly.

- Enter flight number,
- Give departure and destination stations: both ICAO and IATA airports codes can be used,
- Choose operational date and time,
- Select aircraft registration (the fleet is pre-configured)

NEW FLIGHT J.Doe

Enter flight details

Flight number: EV0001

From: WAW

To: MIA

Operational date (UTC): 2022-11-21

Time of departure: 13:00

AC: SP-EVI (MD-11F)

Select aircraft

Cancel Create

Click to proceed

Fleet database is available in the app, and it is kept up to date by Evionica. The user can choose one of pre-defined aircrafts by selecting correct registration & configuration on the list. When aircraft is chosen, it is possible to identify its basic weight, index, constants in mathematical formulas, and operational configuration necessary to perform correct calculations.

The last update of the configuration file of the selected aircraft is visible during balancing on the data tab in the upper right corner.

Limiting weights DOW Fuel Load planning Documents

MZFW: 209 242 kg

MTOW: 285990 kg

MLAW: 222941 kg

MTXW: 287 124 kg

Centerline gear position: Extended

SP-EVI
MD-11 FREIGHTER — Freighter
① MDCK5542/13 effective date: 2023-08-01

Date of the last configuration update

Copy flight

When flying multi-sector, at least some part of the payload is included on each step of the way, to avoid reentering the same details separately for each sector, the consecutive flights can be created based on the previous loadsheet. The system allows to copy payload to the new flight based on the details available in one that already exist.

- Select flight on a Flight Schedule
- Click to copy
- Adjust the flight details
- Voila! payload details have been copied for a new flight

FLIGHT SCHEDULE ● ONLINE John Doe

Q Flight number < 28 Aug 2023 > + Add new flight

≡ Departures ≡ Arrivals

EV1515 WAW → LEJ	23:45	GX-321	New	Start balancing	
EV1114 WAW → LEJ	23:30	B-747F	New	Start balancing	
EV1113 WAW → ORD	22:55	SP-EVI	New	Start balancing	
EV1112 WAW → MIA	22:40	B-747F	In Progress	★ J.Doe	Click to copy
EV1110 WAW → JFK	21:10	SP-EVI	New	Start balancing	

FLIGHT SCHEDULE ● ONLINE John Doe

Q Flight number < 28 Aug 2023 > + Add new flight

≡ Departures ≡ Arrivals

Update flight details

Flight number:

From:

To:

Operational date (UTC):

Time of departure:

AC:

Cancel

COMPLETING LOADSHEET

The balancing process is divided into 5 steps, which are dependent one on another. All documents including Loading Instruction and Loadsheets can be generated and printed on the last step- *DOCUMENTS*. The last stage is only accessible if all required data are entered, and the aircraft is both in trim and not overloaded.

LIMITING WEIGHTS

Select gear position

The gear position must be selected in the first step. Depending on its position (retracted or extended) the appropriate set of MZFW, MTOW, MTXW and MLAW is applied.

Adjust limiting weights

MTOW and MLAW can be also manually adjusted at this step if there is a need for additional reduction due to runway or aircraft condition, at the same time it is never possible to increase any of the limiting weights from the user perspective.

EV1113 WAW → ORD 28AUG23 Edit ONLINE John Doe

Limiting weights DOW Fuel Load planning Documents

MZFW	209 242 kg
MTOW	285990 kg
MLAW	222941 kg
MTXW	287 124 kg

Centerline gear position: Extended (dropdown menu open with options: Extended, Retracted)

SP-EVI
MD-11 FREIGHTER — Freighter
MDCK5542/13 effective date: 2023-08-01

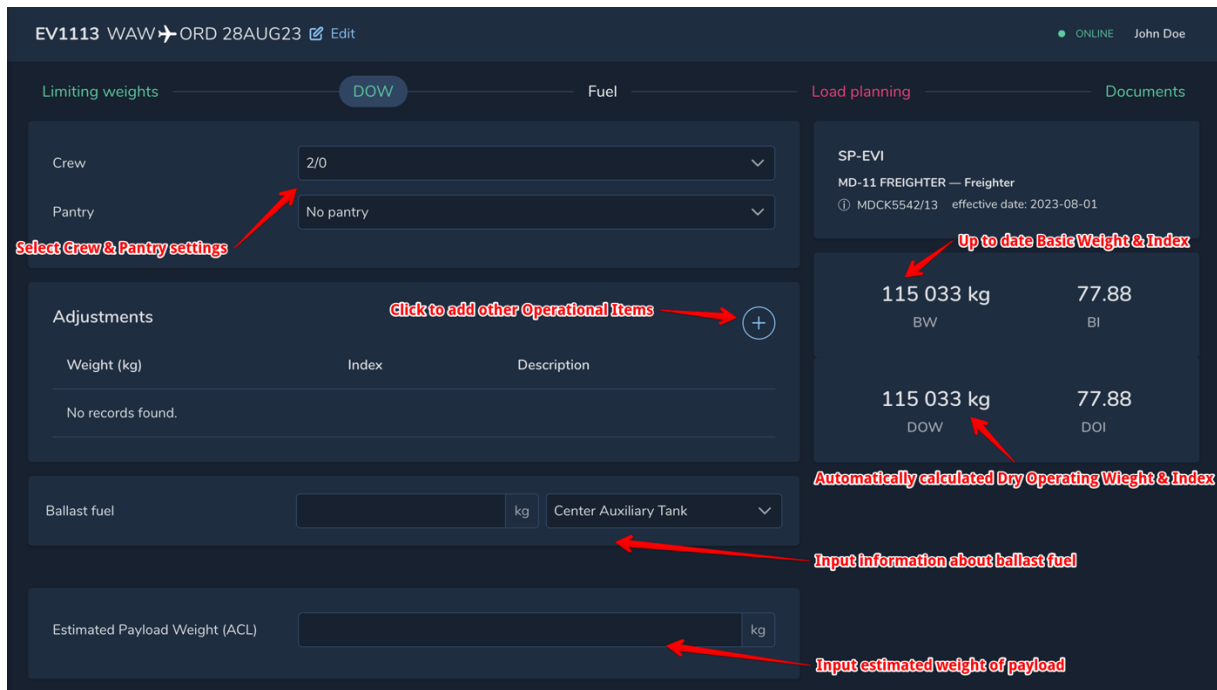
Adjust MTOW/ MLAW if required

Adjust centerline gear position

Back Next

DOW

To calculate the appropriate Dry Operating Weight and Index the load controller must provide information on crew, pantry, and other operational items that must be included in this weight. The starting point in the calculation is Basic Weight and Basic Index which are visible at the top of the page and they come from the fleet database.



Select crew

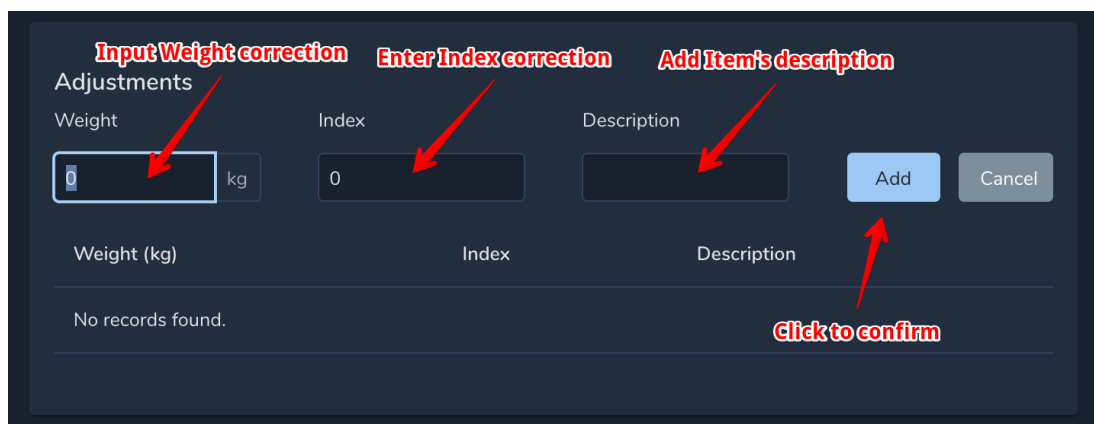
Details on the influence of the crew members on aircraft weight and index are defined in the database in form of pre-sets. The user must select the configuration from the list and appropriate correction is automatically added to the BW and BI.

Choose pantry

Similarly, to crew, pantry pre-sets are defined within configuration files for each aircraft. If it is applicable, the pantry must be selected from a dropdown list to include its influence on weight and index.

Add operational items

Extra operational items not included in basic weight, can be defined in the adjustment section. For each item the weight and requested index correction must be provided, also some short description of the adjustment can be written.



For repeating operational items to be included by default, they can be specified during aircraft setup and implementation or at any other point during the exploitation.

To define these items please contact support.wb@evionica.com

Adjustments			+
<input type="checkbox"/>	Weight (kg)	Index	Description
<input type="checkbox"/>	100	0.5	Test Adjustment

Define ballast fuel

Whenever extra amount of fuel is necessary as a form of ballast it should be defined in the DOW step. In the *BALLAST FUEL* section, there's a special place to declare the required amount of the ballast fuel and select in which tank it will be stored. The appropriate correction resulting from the ballast fuel amount is included in DOW/ DOI and AZFW/LIZFW.

Enter ACL value

If the Aircraft Load value is provided by the loadmaster, the weight of all loaded items will be validated against it. Whenever the ACL is exceeded, the red marking will appear and loadsheet will be unavailable. If ACL is not defined by the user actual Underload will be shown and tracked on the *LOAD PLANNING* screen.

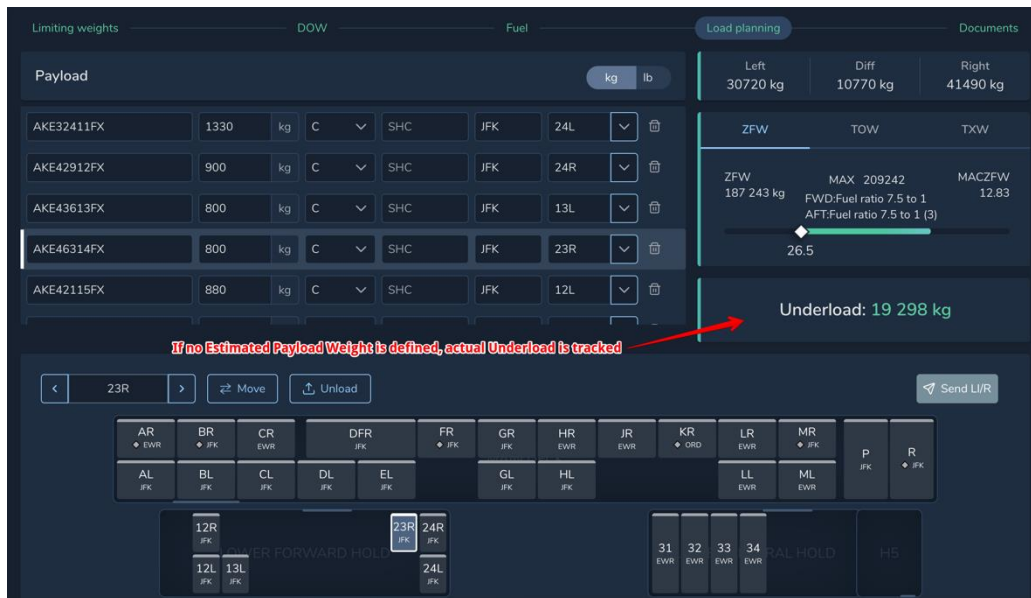
When ACL was provided:

The screenshot displays the 'Load planning' screen with the following data:

Limiting weights	DOW	Fuel	Load planning	Documents
Payload			Left: 25525 kg, Diff: 8100 kg, Right: 33625 kg	
PMC17328FX	3300 kg, C	ICE,RDS, EWR, KL	ZFW: 174 183 kg, TOW: 209242, TXW: 21.57	
PMC17529FX	3300 kg, C	SHC, EWR, JR	FWD:Fuel ratio 7.5 to 1, AFT:Fuel ratio 7.5 to 1 (3)	
PMC64130FX	3300 kg, C	SHC, EWR, HR	50.7	
PAJ27811FX	2700 kg, C	SHC, JFK, GR	ACL loaded: 59150 kg, ACL remaining: 50850 kg	
PAJ03212FX	2800 kg, C	SHC, JFK, FR		
PAJ20013FX	2900 kg, C	SHC, JFK, FL		

Actual Aircraft Load validated against estimated payload weight

If no ACL was defined for the flight, actual *Underload* is tracked:



FUEL

Fuel section must be filled in at least with some estimates in order to proceed with Load Planning.

Select fueling procedure

The appropriate fueling schedule must be selected by the user at this stage, in case if the ballast fuel has been previously declared in the DOW and it requires a special schedule to be applied- the notification will be presented to the user.

Enter fuel data

The loadmaster must enter the amount of Block Fuel (Total weight of usable fuel), as well as weights required for Taxi and Trip.

EV1113 WAW ✈️ ORD 28AUG23 [Edit](#) ● ONLINE John Doe

Limiting weights DOW **Fuel** Load planning Documents

Procedure: Ground Fuel Schedule Ratio 7.5 to 1 ↖ Adjust fuel procedure

Fuel density: 0.8 kg/l

Max (fuel) weight: 117 354 kg

Total (block) fuel: kg

Taxi fuel: kg ↖ Input fuel data

Trip fuel: kg

Take-off fuel: 66 400 kg

SP-EVI

MD-11 FREIGHTER — Freighter

① MDCK5542/13 effective date: 2023-08-01

Back

Evionica W&B solution software provides initial validation of the entered weights.

- The block fuel must be lower than the maximum fuel capacity
- The sum of taxi and trip fuel must be always lower than the block fuel
- A warning message is presented in rare cases when trip fuel is lower than the amount required for taxi.

This approach ensures reduction of the typo mistakes and accidental confusion of block, trip, and taxi forms.

LOAD PLANNING

The screenshot shows the Load Planning interface with several red annotations:

- Verify lateral distribution**: Points to the 'Load planning' tab.
- Select payload weight unit**: Points to the 'kg' and 'lb' unit selection buttons.
- Import payload or add ULDs manually**: Points to the '+ Add' and 'Import' buttons.
- Verify current CG position**: Points to the 'ZFW' (Zero Fuel Weight) field.
- Switch operational envelope**: Points to the 'MAX 209242' and 'MACZFW 16.88' fields.
- Check underload left**: Points to the 'FR' (Forward) button.

The interface displays a table of payload items, a summary of weights (Left: 34020 kg, Diff: 2390 kg, Right: 36410 kg), and a detailed view of the Zero Fuel Weight (ZFW) and operational envelope. The ZFW is 185,463 kg, and the current CG position is 37.9. The ACL (Actual Center of Gravity Limit) loaded is 70,430 kg, and the ACL remaining is 39,570 kg. The bottom section shows a grid of ULD (Unit Load Device) positions with their respective weights and maximum capacities.

On the right part of the Load Planning screen, here's a set of indicators helping the loadmaster judge the trim condition.

Lateral Imbalance

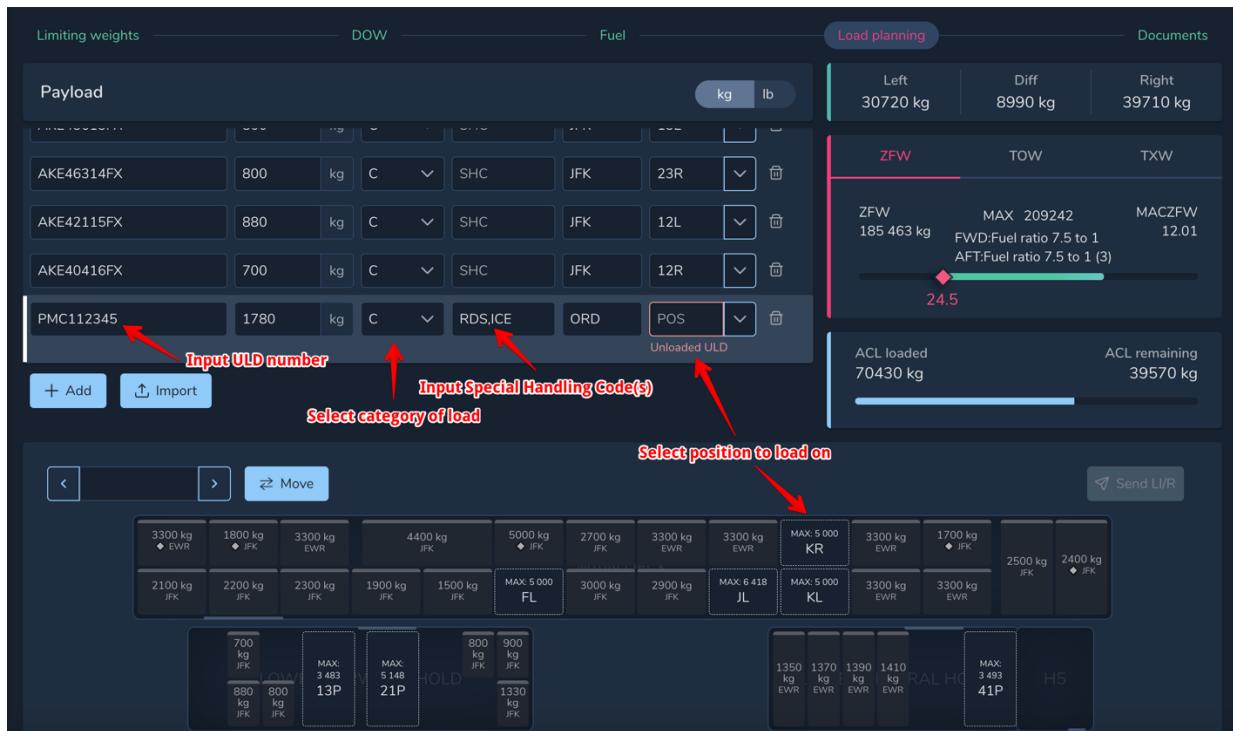
The Left/Right distribution indicates the current total weight loaded on the left and right side of the aircraft and the difference between them. If the *Lateral Imbalance Limit* is exceeded the bar indicator will turn red and the loadsheet will be block

CG position

Below, one can find the actual zero fuel weight and index as well as the resulting %MAC. The CG position is validated against an appropriate operational envelope. Forward and aft limits are dynamically selected depending on aircraft configuration and current mass of the aircraft. This mechanism includes effect of gear position, fuel schedule, aircraft mass or increased cumulative loads exerted in the aft part of the cabin.

Underload

If, by any chance, the actual underload of the aircraft is exceeded, the notification is shown and the loadsheet preview is blocked until the conflict is resolved.



ADDING PAYLOAD

Each ULD must be separately defined, its identification number and weight are obligatory while the SHC code is optional. If the SHC code is provided a special marking is visible on deck map and LIR to drag one's attention.

Select load category

For each item on a list the user can select what kind of load it is. By default, it is cargo, but the user can switch it to equipment, empty ULD, etc.

Select Position

The three-letter prefix in the number will be validated and if recognized the feasible positions are shown on the deck map. The ULD is automatically loaded on first available position. Distribution might be adjusted anytime. The loadmaster must select given ULD either on a list or on the map of the deck. Once selected, another free position might be chosen and the ULD is reallocated.

EV1113 WAW → ORD 28AUG23 [Edit](#) ● ONLINE John Doe

Limiting weights — DOW — Fuel — **Load planning** — Documents

Payload kg lb

No payload
Click the button below to create new item

[+ Add](#) [↑ Import](#)

Click to upload from file

Left	Diff	Right
0 kg	0 kg	0 kg

ZFW 115 033 kg MAX 209242 MACZFW 37.69

FWD: Fuel ratio 7.5 to 1

AFT: Fuel ratio 7.5 to 1 (3)

77.9

TOW 181 433 kg MAX 285990 MACTOW 35.55

FWD: Ratio 7.5 to 1

AFT: Ratio 7.5 to 1

88.2

TXW 182 033 kg MAX 287124 L MACTXW 35.39

FWD: Ratio 7.5 to 1

AFT: Ratio 7.5 to 1

87.9

Underload: 91 508 kg

Import from file

Payload details can be populated to the W&B solution using standardized UWS (excel template). On the Load Planning step there is a possibility. To upload UWS file and Payload list is populated based on data available in that file.

EV1113 WAW → ORD 28AUG23 [Edit](#) ● ONLINE John Doe

Limiting weights — DOW — Fuel — **Load planning** — Documents

Payload kg lb

PMC1234 1000 kg C SHC ORD NO SLOT

[+ Add](#) [↑ Import](#)

Current payload list will be overwritten

[Cancel](#) [Upload](#)

Left	Diff	Right
0 kg	0 kg	0 kg

ZFW 115 033 kg MAX 209242 MACZFW 37.69

FWD: Fuel ratio 7.5 to 1

AFT: Fuel ratio 7.5 to 1 (3)

77.9

TOW 181 433 kg MAX 285990 MACTOW 35.55

FWD: Ratio 7.5 to 1

AFT: Ratio 7.5 to 1

88.2

TXW 182 033 kg MAX 287124 L MACTXW 35.39

FWD: Ratio 7.5 to 1

AFT: Ratio 7.5 to 1

87.9

Underload: 90 508 kg

EV1113 WAW → ORD 28AUG23 Edit

Limiting weights DOW Fuel Load planning Documents

Import success! 31 ULDs added.

Left: 0 kg, Diff: 0 kg, Right: 0 kg

ZFW: 115 033 kg, MAX: 209242, MACZFW: 37.69
 FWD: Fuel ratio 7.5 to 1
 AFT: Fuel ratio 7.5 to 1 (3)
 77.9

TOW: 181 433 kg, MAX: 285990, MACTOW: 35.55
 FWD: Ratio 7.5 to 1
 AFT: Ratio 7.5 to 1
 88.2

TXW: 182 033 kg, MAX: 287124 L, MACTXW: 35.39
 FWD: Ratio 7.5 to 1
 AFT: Ratio 7.5 to 1
 87.9

Underload: 22 778 kg

ULD ID	Weight (kg)	Unit	Category	Location	Position
ALF30511FX	1350	kg	C	SHC	EWR
ALF37212FX	1370	kg	C	SHC	EWR
ALF32813FX	1390	kg	C	SHC	EWR
ALF27314FX	1410	kg	C	SHC	EWR
AKE32411FX	1330	kg	C	SHC	JFK
AKE42912FX	900	kg	C	SHC	JFK
AKE43613FX	800	kg	C	SHC	JFK
AKE46314FX	800	kg	C	SHC	JFK
AKE42115FX	880	kg	C	SHC	JFK
AKE40416FX	700	kg	C	SHC	JFK

When any ULDs have been already added, importing from file will overwrite your current data. If invalid UWS template is in use, error notification will appear

Move/Swap containers

Limiting weights DOW Fuel Load planning Documents

Left: 34020 kg, Diff: 2390 kg, Right: 36410 kg

ZFW: 185 463 kg, MAX: 209242, MACZFW: 16.88
 FWD: Fuel ratio 7.5 to 1
 AFT: Fuel ratio 7.5 to 1 (3)
 37.9

ACL loaded: 70430 kg, ACL remaining: 39570 kg

Click "Move" or double-click the ULD to swap position

Possible to swap with BLUE ULDs

ULD is too heavy to swap with RED ULDs

Position unavailable due to weight of the ULD

Empty positions available

Send LIR

ULD ID	Weight (kg)	Location	Position
AGA56711FX	4400	JFK	DFR
PMC17812FX	1800	JFK	BR
PMC11983FX	1900	JFK	DL
PMC16714FX	5000	JFK	FR
PMC15415FX	2100	JFK	AL
PMC13516FX	2200	JFK	BL

Two containers of the same type can be swapped. When ULD is selected (either on the map or on the list) all feasible positions are shown: free + taken with the possibility to swap. The weight of each ULD is also shown on the map.

Add nonstandard loads

Limiting weights DOW Fuel **Load planning** Documents

Payload kg lb

AKE42912FX	900	kg	C	SHC	JFK	24R	🗑️
AKE43613FX	800	kg	C	SHC	JFK	13L	🗑️
AKE46314FX	800	kg	C	SHC	JFK	23R	🗑️
AKE42115FX	880	kg	C	SHC	JFK	12L	🗑️
AKE40416FX	700	kg	C	SHC	JFK	12R	🗑️
ENGINE	1780	kg	C	HEA	ORD	HR	🗑️

Left 27820 kg **Diff** 7070 kg **Right** 34890 kg

ZFW 177 743 kg **TOW** MAX 209242 **TXW** MACZFW 11.17
 FWD:Fuel ratio 7.5 to 1 AFT:Fuel ratio 7.5 to 1 (3)

23.4

ACL loaded 62710 kg ACL remaining 47290 kg

non-standard ULD code **Place in the starting point**

HR Move Change size Unload Send L/R

3300 kg EWR	1800 kg JFK	3300 kg EWR	4400 kg JFK	5000 kg JFK	2700 kg JFK	1780 kg ORD	MAX: 6 032 JR	MAX: 4 109 KR	3300 kg EWR	1700 kg JFK	2500 kg JFK	2400 kg JFK	
2100 kg JFK	2200 kg JFK	2300 kg JFK	1900 kg JFK	1500 kg JFK	MAX: 4 109 FL	3000 kg JFK	MAX: 6 032 HL	MAX: 6 032 JL	MAX: 4 109 KL	3300 kg EWR	3300 kg EWR		
MAX: 1 988 11R	700 kg JFK	MAX: 1 588 13R	MAX: 1 588 14R	MAX: 1 588 15R	MAX: 1 588 21R	MAX: 1 588 22R	800 kg JFK	900 kg JFK					
MAX: 1 988 11L	880 kg JFK	800 kg JFK	MAX: 1 588 14L	MAX: 1 588 15L	MAX: 1 588 21L	MAX: 1 588 22L	1330 kg JFK						
									1350 kg EWR	1370 kg EWR	1390 kg EWR	1410 kg EWR	MAX: 3 402 H5 PCS: 0

Limiting weights DOW Fuel **Load planning** Documents

Payload kg lb

AKE42912FX	900	kg	C	SHC	JFK	24R	🗑️
AKE43613FX	800	kg	C	SHC	JFK	13L	🗑️
AKE46314FX	800	kg	C	SHC	JFK	23R	🗑️
AKE42115FX	880	kg	C	SHC	JFK	12L	🗑️
AKE40416FX	700	kg	C	SHC	JFK	12R	🗑️
ENGINE	1780	kg	C	HEA	ORD	HR	🗑️

Left 27820 kg **Diff** 7070 kg **Right** 34890 kg

ZFW 177 743 kg **TOW** MAX 209242 **TXW** MACZFW 11.17
 FWD:Fuel ratio 7.5 to 1 AFT:Fuel ratio 7.5 to 1 (3)

23.4

ACL loaded 62710 kg ACL remaining 47290 kg

click to change size **Select "endpoint"**

HR Move Change size Unload Send L/R

3300 kg EWR	1800 kg JFK	3300 kg EWR	4400 kg JFK	5000 kg JFK	2700 kg JFK	1780 kg ORD	MAX: 6 032 JR	MAX: 4 109 KR	3300 kg EWR	1700 kg JFK	2500 kg JFK	2400 kg JFK	
2100 kg JFK	2200 kg JFK	2300 kg JFK	1900 kg JFK	1500 kg JFK	3000 kg JFK	MAX: 6 032 HL	MAX: 6 032 JL	MAX: 4 109 KL	3300 kg EWR	3300 kg EWR			
	700 kg JFK			800 kg JFK	900 kg JFK								
	880 kg JFK	800 kg JFK							1350 kg EWR	1370 kg EWR	1390 kg EWR	1410 kg EWR	MAX: 3 402 H5 PCS: 0

Limiting weights DOW Fuel **Load planning** Documents

Payload kg lb

AKE42912FX	900	kg	C	▼	SHC	JFK	24R	▼	🗑️
AKE43613FX	800	kg	C	▼	SHC	JFK	13L	▼	🗑️
AKE46314FX	800	kg	C	▼	SHC	JFK	23R	▼	🗑️
AKE42115FX	880	kg	C	▼	SHC	JFK	12L	▼	🗑️
AKE40416FX	700	kg	C	▼	SHC	JFK	12R	▼	🗑️
ENGINE	1780	kg	C	▼	HEA	ORD	H//KO	▼	🗑️

Left 28710 kg Diff 5290 kg Right 34000 kg

ZFW TOW TXW

ZFW 177 743 kg MAX 209242 MACZFW 11.59

FWD:Fuel ratio 7.5 to 1

AFT:Fuel ratio 7.5 to 1 (3)

24.5

ACL loaded 62710 kg ACL remaining 47290 kg

Custom space on deck reserved for the overhang

H//KO Unload Send L/R

AR EWR BR JFK CR EWR DFR JFK FR JFK GR JFK LR EWR MR JFK P JFK R JFK

AL JFK BL JFK CL JFK DL JFK EL JFK GL JFK LL EWR ML EWR

12R JFK 23R JFK 24R JFK

12L JFK 13L JFK 24L JFK

31 EWR 32 EWR 33 EWR 34 EWR BULK HOLD H5

For loads which cannot be recognized as standard container or pallet there is a possibility to block more than one standard position. Once the overhang item is positioned on the initial position, the loadmaster can click on the “CHANGE SIZE” option to expand this item. To calculate the effect on CG position, the weight of the load is evenly distributed on all selected positions

Add bulk load

On the right if the ULD code is not recognized, the user always have a possibility to load it to the bulk hold. Several items on the list can be loaded to the bulk hold until its maximum capacity is exceeded. Clicking on the bulk hold on the deck map, will filter the Payload List, to show only the bulk items loaded.

Limiting weights DOW Fuel **Load planning** Documents

Payload kg lb

AKE42912FX	900	kg	C	SHC	JFK	24R	🗑️
AKE43613FX	800	kg	C	SHC	JFK	13L	🗑️
AKE46314FX	800	kg	C	SHC	JFK	23R	🗑️
AKE42115FX	880	kg	C	SHC	JFK	12L	🗑️
AKE40416FX	700	kg	C	SHC	JFK	12R	🗑️
BULK1	230	kg	C	EIC	ORD	POS	🗑️

Uld code not recognized

Left	27820 kg	Diff	5290 kg	Right	33110 kg
ZFW	175 963 kg	TOW	MAX 209242	TXW	MACZFW 11.15
		FWD:Fuel ratio 7.5 to 1		AFT:Fuel ratio 7.5 to 1 (3)	
23.6					
ACL loaded	60930 kg	ACL remaining	49070 kg		

← → **Move** Send L/R

3300 kg EWR	1800 kg JFK	3300 kg EWR	4400 kg JFK	5000 kg JFK	2700 kg JFK	MAX: 6 032 HR	MAX: 6 032 JR	MAX: 4 109 KR	3300 kg EWR	1700 kg JFK	2500 kg JFK	2400 kg JFK
2100 kg JFK	2200 kg JFK	2300 kg JFK	1900 kg JFK	1500 kg JFK	MAX: 4 109 FL	3000 kg JFK	MAX: 6 032 HL	MAX: 6 032 JL	MAX: 4 109 KL	3300 kg EWR	3300 kg EWR	
MAX: 1 588 11R	700 kg JFK	MAX: 1 588 13R	MAX: 1 588 14R	MAX: 1 588 15R	MAX: 1 588 21R	MAX: 1 588 22R	800 kg JFK	900 kg JFK				
MAX: 1 588 11L	880 kg JFK	800 kg JFK	MAX: 1 588 14L	MAX: 1 588 15L	MAX: 1 588 21L	MAX: 1 588 22L	MAX: 1 588 23L	1330 kg JFK				
									1350 kg EWR	1370 kg EWR	1390 kg EWR	1410 kg EWR
									MAX: 1 588 41R	MAX: 1 588 42R	MAX: 1 588 43R	MAX: 3 402 H5
									MAX: 1 588 41L	MAX: 1 588 42L	MAX: 1 588 43L	PCS: 0

Select bulk compartment

Limiting weights DOW Fuel **Load planning** Documents

Payload : H5 **3. Click to clear filters** kg lb

BULK1	230	kg	C	EIC	ORD	H5	🗑️
BULK2	115	kg	C	SHC	ORD	H5	🗑️

2. Payload list filtered to show only items loaded to bulk hold

1. Click to see all bulk items

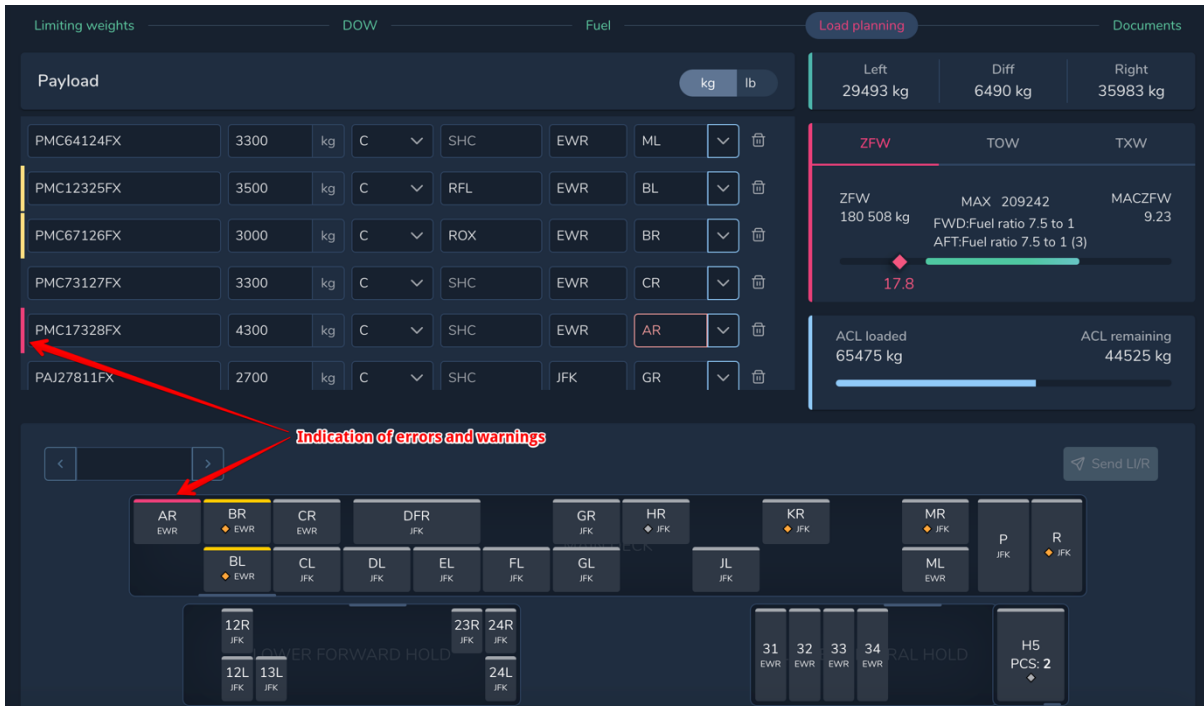
Left	27993 kg	Diff	5290 kg	Right	33283 kg
ZFW	176 308 kg	TOW	MAX 209242	TXW	MACZFW 11.60
		FWD:Fuel ratio 7.5 to 1		AFT:Fuel ratio 7.5 to 1 (3)	
24.7					
ACL loaded	61275 kg	ACL remaining	48725 kg		

← H5 → **Move** **Unload** Send L/R

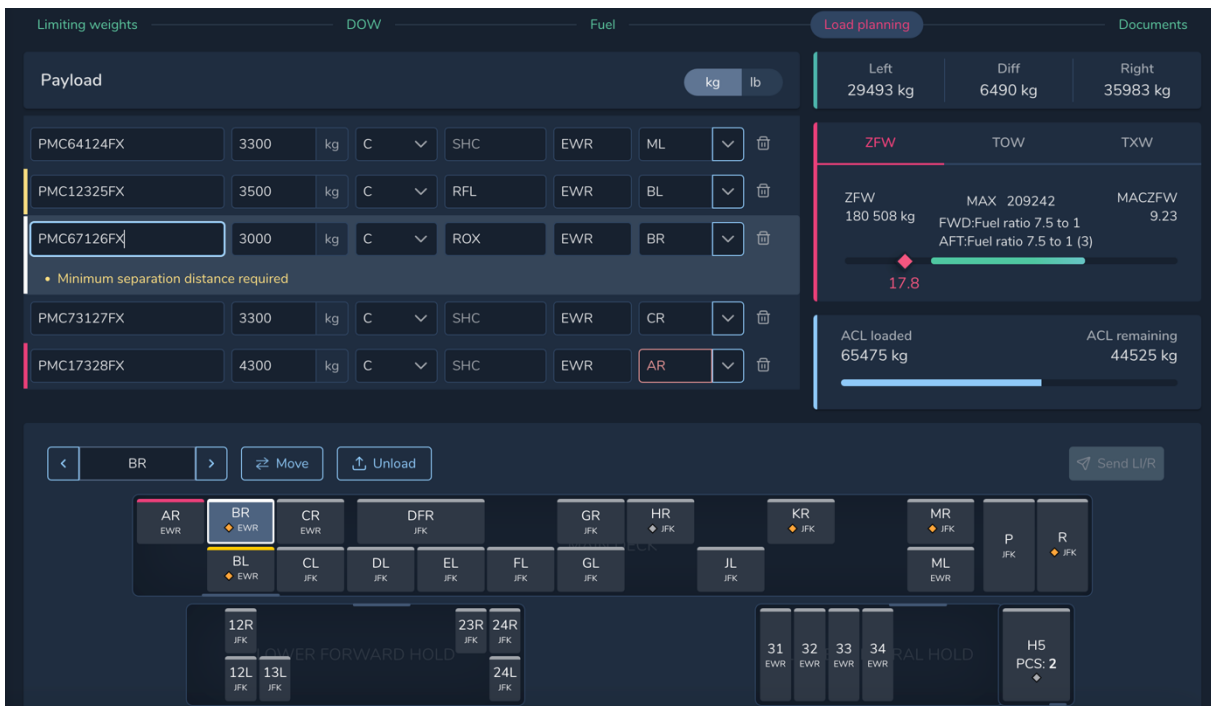
3300 kg EWR	1800 kg JFK	3300 kg EWR	4400 kg JFK	5000 kg JFK	2700 kg JFK	MAX: 6 032 HR	MAX: 6 032 JR	MAX: 4 109 KR	3300 kg EWR	1700 kg JFK	2500 kg JFK	2400 kg JFK
2100 kg JFK	2200 kg JFK	2300 kg JFK	1900 kg JFK	1500 kg JFK	MAX: 4 109 FL	3000 kg JFK	MAX: 6 032 HL	MAX: 6 032 JL	MAX: 4 109 KL	3300 kg EWR	3300 kg EWR	
MAX: 1 588 11R	700 kg JFK	MAX: 1 588 13R	MAX: 1 588 14R	MAX: 1 588 15R	MAX: 1 588 21R	MAX: 1 588 22R	800 kg JFK	900 kg JFK				
MAX: 1 588 11L	880 kg JFK	800 kg JFK	MAX: 1 588 14L	MAX: 1 588 15L	MAX: 1 588 21L	MAX: 1 588 22L	MAX: 1 588 23L	1330 kg JFK				
									1350 kg EWR	1370 kg EWR	1390 kg EWR	1410 kg EWR
									MAX: 1 588 41R	MAX: 1 588 42R	MAX: 1 588 43R	MAX: 3 402 H5
									MAX: 1 588 41L	MAX: 1 588 42L	MAX: 1 588 43L	PCS: 2

Error notifications

Errors are indicated both on the Payload list and on a Deck map, so looking at the map user can quickly verify which ULDs require their attention. Selecting item on a Payload List/ Deck Map allows to check explanation of the error.



Expand element to see what's wrong:



STRUCTURAL LIMITATIONS

Evionica W&B solution verifies distribution of cargo against different structural limits. Validation happens dynamically and if any limit is exceeded preview of LS is blocked. We currently distinguish 4 different limit types:

Running Loads

Running load is a limitation allowing to prevent floor damage, it is given as kilogram per meter, kilogram per inch or pound per inch. If the pallets are loaded side-by-side we must

sum up the mass of ULDs loaded on Right and Left position and the sum of two must be validated against the limit as they are both located at the same cross section.

The screenshot displays the 'Load planning' interface. On the left, a 'Payload' table lists ULDs with their weights and positions. A red arrow points to ULD PMC16517FX (3500 kg, CL) with the note 'affected ULDs'. Another red arrow points to ULD PMC12118FX (3500 kg, CR) with the note 'affected zone of the deck'. The deck layout below shows various hold positions, with CR and CL highlighted in yellow. On the right, weight metrics are shown: Left 29493 kg, Diff 6990 kg, Right 36483 kg. ZFW is 181,008 kg, TOW is 209,242 kg, and TXW is 12.12. A fuel ratio slider is set to 25.4. At the bottom, ACL loaded is 65,975 kg and ACL remaining is 44,025 kg.

Combined Running Load Limit applies to both upper and lower deck at the same time:

The screenshot displays the 'Load planning' interface. On the left, a 'Payload' table lists ULDs. A red arrow points to ULD PMC16517FX (3300 kg, CL) with the note 'Affected ULDs'. Another red arrow points to ULD PMC12118FX (3500 kg, CR) with the note 'Affected ULDs'. A third red arrow points to ULD AKE18911FX (3500 kg, 14R) with the note 'Cross section affected by the Combined Running Load Limit'. The deck layout below shows various hold positions, with CR and CL highlighted in yellow. On the right, weight metrics are shown: Left 23,893 kg, Diff 14,490 kg, Right 38,383 kg. ZFW is 177,308 kg, TOW is 209,242 kg, and TXW is 20.49. A fuel ratio slider is set to 47.9. At the bottom, ACL loaded is 62,275 kg and ACL remaining is 47,725 kg.

Shell Zone limits:

Within a given hold there can be a separate zone defined (aka Shell Zone) having a certain capacity.

Cumulative Shell Zone limits affects both upper and lower deck at the same time meaning that it sums up the whole cargo in a given area of the aircraft loaded in the main deck and lower deck and validate it against maximum:

The screenshot displays a load planning interface with the following components:

- Limiting weights:** DOW, Fuel, Load planning (active), Documents.
- Payload List:**
 - PMC13516FX: 3500 kg, C, SHC, JFK, LL
 - PMC16517FX: 3300 kg, C, SHC, JFK, AL (highlighted)
 - PMC12118FX: 3500 kg, C, RMD,RDS, JFK, AR (highlighted)
 - AKE18911FX: 1500 kg, C, RFL, JFK, 12L (highlighted)
 - PMC64124FX: 3300 kg, C, SHC, EWR, ML
- Alerts:** "Shell zone limit exceeded by 749 kg"
- Summary Metrics:**
 - Left: 24493 kg, Diff: 13290 kg, Right: 37783 kg
 - ZFW: 177 308 kg, MAX: 209242, MACZFW: 16.40
 - FWD:Fuel ratio 7.5 to 1, AFT:Fuel ratio 7.5 to 1 (3)
 - ACL loaded: 62275 kg, ACL remaining: 47725 kg
- Deck Layout:** A grid of hold locations including AR, BR, DFR, FR, GR, HR, JR, KR, MR, P, AL, BL, FL, GL, LL, ML, 11R, 12R, 11L, 12L, 24R, 24L, 31, 32, 33, 34, and H5 PCS: 2.

Hold capacity:

Validates maximum capacity of a given hold space:

The screenshot displays a load planning interface with the following components:

- Limiting weights:** DOW, Fuel, Load planning (active), Documents.
- Payload List:**
 - ALF30511FX: 2100 kg, C, SHC, EWR, 42 (highlighted)
 - ALF37212FX: 2000 kg, C, SHC, EWR, 31 (highlighted)
 - ALF32813FX: 2000 kg, C, SHC, EWR, 41 (highlighted)
 - ALF27314FX: 2000 kg, C, SHC, EWR, 34 (highlighted)
 - AKE32411FX: 1000 kg, C, SHC, JFK, 43L (highlighted)
- Alerts:** "Hold capacity exceeded by 774 kg"
- Summary Metrics:**
 - Left: 26875 kg, Diff: 15300 kg, Right: 42175 kg
 - ZFW: 184 083 kg, MAX: 209242, MACZFW: 25.52
 - FWD:Fuel ratio 7.5 to 1, AFT:Fuel ratio 7.5 to 1 (3)
 - ACL loaded: 69050 kg, ACL remaining: 40950 kg
- Deck Layout:** A grid of hold locations including AR, CR, DFR, FR, GR, HR, JR, KR, MR, P, BL, DL, FL, GL, LL, ML, 11R, 12R, 11L, 12L, 31, 32, 33, 34, 41, 42, 43R, 43L, and H5.

Pyramidal Loads:

Special kind of structural limitation that applies mostly to converted freighters. It monitors the minimum mass required in a forward part of a fuselage depending on the current %MAC and total Payload mass. This check is introduced to prevent excessing bending of a structure.

Payload

kg **Minimum weight required** DIR Right X
Minimum total weight on positions A1, A2, 11, 12 is 679 kg

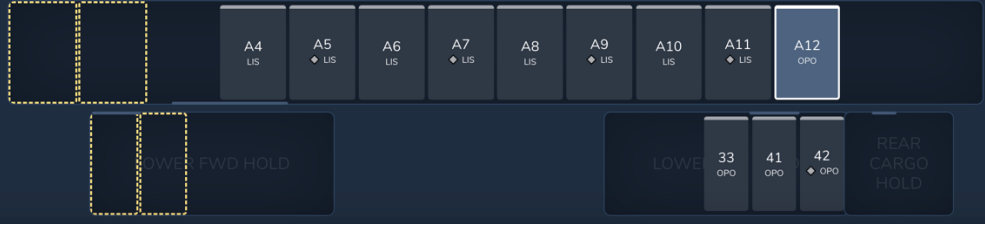
PAJ23444FX	1600	kg	C	SHC	LIS	A10	
PAJ63876FX	1700	kg	C	RFL	LIS	A11	
PAJ18486FX	1760	kg	C	SHC	OPO	A12	
PAJ11135FX	1650	kg	C	SHC	OPO	POS	
PAJ55673FX	1490	kg	C	SHC	OPO	POS	
PAJ53737FX	1330	kg	C	SHC	OPO	POS	
AKH81311LO	1100	kg	C	ICE,RDS	OPO	42	

ZFW 64 752 kg MAX 73800 L MACZFW 33.59
73.3

TOW 69 552 kg MAX 89000 MACTOW 31.34
68.5

Underload: 308 kg

< A12 > Move Change size Unload Send L/R



DANGEROUS GOODS SEGREGATION

Evionica W&B solution verifies distribution of DGRs and Special Loads onboard. Compatibility is checked based on the SHC/IMP codes entered for each ULD. Multiple codes loaded on same pallet/container should be separated with dot (.) or a coma (,).

The screenshot displays the Evionica W&B software interface. The top navigation bar includes 'Limiting weights', 'DOW', 'Fuel', 'Load planning', and 'Documents'. The 'Load planning' section is active, showing a table of payload items and a summary of aircraft weights.

Item	Weight	Unit	Category	Code	Location	Container
PMC17812FX	3000	kg	C	ROX	JFK	KR
PMC11983FX	1900	kg	C	SHC	JFK	DL
PMC16714FX	5000	kg	C	ELI,ELM	JFK	HR
PMC15415FX	2100	kg	C	AVI	JFK	FL
PMC13516FX	3500	kg	C	SHC	JFK	LL
PMC16517FX	3300	kg	C	SHC	JFK	CR

The right side of the interface shows aircraft weight data:

Left	Diff	Right
26875 kg	15300 kg	42175 kg

Below this, ZFW (Zerofuel weight) is shown as 184 083 kg, with a maximum of 209242 kg. Fuel ratios are also displayed: FWD: 7.5 to 1 and AFT: 7.5 to 1 (3). The current fuel ratio is 46.5. ACL (Actual Cargo Load) loaded is 69050 kg, with 40950 kg remaining.

The bottom section shows a grid of ULDs (Unit Load Devices) with their loading status. A red arrow points to the 'FL' ULD, which is marked with a diamond symbol, indicating it contains a Special Load. Another red arrow points to the 'F' ULD, which is marked with a diamond symbol, indicating it contains a Dangerous Good (DGR).

When the correct substance code is entered, the ULD will be marked with the symbol depending on if the substance is classified as DGR or Special Load. The information on what kind of goods are loaded is also added on a Loadsheets- all recognized codes are listed under SI, with their position of loading given.

NOTOC

Airline can also specify which of the goods require a NOTOC, and if at least one code meeting the criterium is loaded the appropriate indication will appear on the loadsheet.

```
DRY OPERATING WEIGHT      259029
*****
TOTAL TRAFFIC LOAD        4000
ZERO FUEL WEIGHT ACTUAL   263029 MAX 461300      ADJ
*****
TAXI FUEL                  400
TAKE OFF FUEL             199600
TAXI WEIGHT ACTUAL        463029 MAX 630900      ADJ
*****
TAKE OFF WEIGHT ACTUAL    462629 MAX 630500      L  ADJ
*****
TRIP FUEL                 190000
LANDING WEIGHT ACTUAL     272629 MAX 491500      ADJ

BALANCE AND SEATING CONDITIONS
DOI      307.22          FWD LIMIT      AFT LIMIT
LIZFW 270.98 MACZFW 30.42 12.00          31.11
LITXW 318.98 MACTXW 29.99 13.39          34.00
LITOW 318.89 MACTOW 29.99 13.39          34.00

UNDERLOAD BEFORE LMC      167871

CAPTAINS INFORMATION/NOTES
BI 316.00
GROUND RATIO FUELING PROCEDURE FWD
GROUND RATIO WIDEST (3) AFT
LATERAL IMBALANCE: L 1300 / R 2700 / DIFF 1400
PAX WEIGHTS M80/F70/CH35/I0
PANTRY CODE
NOTOC: YES
SI
-1L/ELI.ELM-2L/AVI.RMD

POWERED BY EVIONICA
```

NOTOC is required for the flight

Information on Special Loads onboard

Forbidden goods

If the goods are not allowed for the transport, there is notification and all forbidden goods are listed. Additionally, there's no possibility to load forbidden loads.

Limiting weights DOW Fuel **Load planning** Documents

Payload kg lb

Item	Weight	Unit	Class	Code	Origin	Destination	Slot	Action
PMC16714FX	5000	kg	C	ELI,ELM	JFK	HR		
PMC15415FX	2100	kg	C	EAT	JFK	NO SLOT	Unloaded ULD	
PMC13516FX	3500	kg	C	SHC	JFK	LL		
PMC16517FX	3300	kg	C	SHC	JFK	CR		
PMC12118FX	3500	kg	C	RMD,RDS	JFK	AR		

Forbidden goods highlighted → Not allowed: EAT Unloaded ULD

Left: 24775 kg Diff: 17400 kg Right: 42175 kg

ZFW: 181 983 kg TOW: MAX 209242 TXW: MACZFW 21.07

FWD:Fuel ratio 7.5 to 1 AFT:Fuel ratio 7.5 to 1 (3) 49.4

ACL loaded: 66950 kg ACL remaining: 43050 kg

3500 kg JFK 3300 kg JFK 4400 kg JFK 3000 kg EWR 2700 kg JFK 5000 kg JFK 3500 kg EWR 3000 kg JFK 2000 kg EWR 2300 kg EWR

1500 kg JFK 1900 kg JFK 3000 kg JFK 3500 kg JFK 3300 kg EWR

1200 kg JFK 1000 kg JFK 1200 kg JFK 2000 kg EWR 1000 kg JFK 1000 kg JFK

LOWER FORWARD HOLD

3175 kg ORD 2000 kg EWR 2000 kg EWR 2100 kg EWR H5

Move No possibility to load forbidden goods Send L/R

Compatibility check within ULD

If the goods cannot be loaded within the same ULD, there is error indication, all incompatible goods are listed and ULD cannot be loaded.

Limiting weights DOW Fuel **Load planning** Documents

Payload kg lb

Item	Weight	Unit	Class	Code	Origin	Destination	Slot	Action
PMC16714FX	5000	kg	C	ELI,ELM	JFK	HR		
PMC15415FX	2100	kg	C	ROX, RFL, PEF	JFK	NO SLOT	Unloaded ULD	
PMC13516FX	3500	kg	C	SHC	JFK	LL		
PMC16517FX	3300	kg	C	SHC	JFK	CR		
PMC12118FX	3500	kg	C	RMD,RDS	JFK	AR		
AKF18911FX	1200	kg	C	RFI	JFK	17I		

Conflicting goods loaded in the same ULD → Conflicting: ROX-RFL Unloaded ULD

Left: 24775 kg Diff: 17400 kg Right: 42175 kg

ZFW: 181 983 kg TOW: MAX 209242 TXW: MACZFW 21.07

FWD:Fuel ratio 7.5 to 1 AFT:Fuel ratio 7.5 to 1 (3) 49.4

ACL loaded: 66950 kg ACL remaining: 43050 kg

3500 kg JFK 3300 kg JFK 4400 kg JFK 3000 kg EWR 2700 kg JFK 5000 kg JFK 3500 kg EWR 3000 kg JFK 2000 kg EWR 2300 kg EWR

1500 kg JFK 1900 kg JFK 3000 kg JFK 3500 kg JFK 3300 kg EWR

1200 kg JFK 1000 kg JFK 1200 kg JFK 2000 kg EWR 1000 kg JFK 1000 kg JFK

LOWER FORWARD HOLD

3175 kg ORD 3175 kg ORD 2000 kg EWR 2000 kg EWR 2100 kg EWR H5

Move No possibility to load Send L/R

Segregation required

If the ULDs containing the goods can be loaded next to each other (minimum separation distance determined by airline is verified)

The screenshot shows the 'Load planning' interface. At the top, there are tabs for 'Limiting weights', 'DOW', 'Fuel', 'Load planning', and 'Documents'. The 'Load planning' tab is active. On the left, a 'Payload' table lists ULDs with their weights and destinations. On the right, summary statistics show 'Left' (32075 kg), 'Diff' (1900 kg), and 'Right' (33975 kg). Below this, a 'ZFW' section shows 'ZFW 181 083 kg', 'MAX 209242', and 'MACZFW 19.86'. A slider for 'FWD:Fuel ratio 7.5 to 1' and 'AFT:Fuel ratio 7.5 to 1 (3)' is set to 46.1. At the bottom right, 'ACL loaded 66050 kg' and 'ACL remaining 43950 kg' are shown. The deck layout at the bottom includes ULDs AR, BL, CL, DL, EL, FR, GR, HR, JR, MR, P, R, LL, ML, 11R, 12R, 11L, 12L, 23R, 24, 23L, 32, 33, 34, 41, 42, and H5.

ULD	Weight	Unit	Category	Destination	Location
PMC13516FX	3500	kg	C	SHC	JFK LL
PMC16517FX	3300	kg	C	ROX	JFK BL
PMC12118FX	3500	kg	C	RMD,RDS	JFK AR
AKE18911FX	1200	kg	C	RFL	JFK 12L
PMC64124FX	3300	kg	C	SHC	EWR ML
PMC12325FX	2000	kg	C	RFL	EWR MR

This screenshot is identical to the one above, but with a warning message: '• Minimum separation distance required' next to the ULD 'PMC16517FX'. The deck layout is also identical, showing the same arrangement of ULDs.

When positioning an ULD, all remaining ULDs consisting of the conflicting goods are marked with a yellow border on a deck map, meaning that the minimum separation distance between them is required:

The screenshot displays a cargo loading management interface. At the top, there are tabs for 'Limiting weights', 'DOW', 'Fuel', 'Load planning', and 'Documents'. The 'Payload' section lists items with their weights and units. The 'Load planning' section shows metrics for Left, Diff, and Right, along with ZFW, TOW, and TXW. The 'Deck map' at the bottom shows a grid of ULDs with their weights and maximum capacities. A selected ULD is highlighted in blue, and other ULDs with conflicting goods are highlighted with yellow borders. Red arrows point from the text 'Indication of ULDs containing goods that require separation with selected ULD' to these yellow-bordered ULDs.

Item	Weight	Unit	Category	Code	Location	Priority
PMC16714FX	5000	kg	C	ELI,ELM	JFK	HR
PMC15415FX	2100	kg	C	ROX	JFK	CL
PMC13516FX	3500	kg	C	SHC	JFK	LL
PMC16517FX	3300	kg	C	SHC	JFK	CR
PMC12118FX	3500	kg	C	RMD,RDS	JFK	AR
AKE18911FX	1200	kg	C	RFL	JFK	12L

Load Planning Metrics:

- Left: 26875 kg
- Diff: 15300 kg
- Right: 42175 kg
- ZFW: 184 083 kg
- TOW: MAX 209242
- TXW: MACZFW 18.55
- FWD:Fuel ratio 7.5 to 1
- AFT:Fuel ratio 7.5 to 1 (3)
- 42.5
- ACL loaded: 69050 kg
- ACL remaining: 40950 kg

Deck Map ULDs:

- 3500 kg JFK (Yellow border)
- MAX: 4 109 BR
- 3300 kg JFK (Yellow border)
- 4400 kg JFK
- 3000 kg EWR (Yellow border)
- 2700 kg JFK
- 5000 kg JFK (Yellow border)
- 3500 kg EWR
- 3000 kg JFK (Yellow border)
- MAX: 4 109 LR
- 2000 kg EWR (Yellow border)
- 2300 kg EWR
- MAX: 3 175 R
- MAX: 4 082 AL
- 1500 kg JFK
- 2100 kg JFK (Yellow border)
- 1900 kg JFK
- MAX: 5 000 EL
- MAX: 5 000 FL
- 3000 kg JFK
- MAX: 6 803 HL
- MAX: 6 418 JL
- MAX: 5 000 KL
- 3500 kg JFK
- 3300 kg EWR
- 1200 kg JFK
- 1000 kg JFK
- MAX: 3 483 13P
- MAX: 5 148 21P
- 1200 kg JFK
- 2000 kg EWR
- 1000 kg JFK
- 3175 kg ORD
- 3175 kg ORD
- 2000 kg EWR
- 2000 kg EWR
- 2100 kg EWR
- H5

GENERATING DOCUMENTS

Limiting weights | DOW | Fuel | Load planning | Documents

Registration and configuration details
 GX-321
 Airbus A321
 LYX/A321-211/EPW/CGB/1.3
 effective date: 2023-02-17

Fuel data
 Fuel
 15000 kg Total
 200 kg Taxi
 14800 kg Take-off
 13000 kg Trip

Out of trim
 Flight assigned to: ★ J.Doe

Documents
 Loadsheet | CPM | LIR
 MVT (Arrival) | MVT (Departure)
 No documents for the flight yet.

Underload: 3 239 kg ← **Current Underload**

Lateral distribution
 Left: 5475 kg | Diff: 0 kg | Right: 5475 kg

Current weight | **Design (Maximum) weight**
 ZFW: 57 411 kg | MAX: 73800 L | MACZFW: 14.10
 23.8 ← **Current CG position**

Current Load plan
 CPT | Load | Position name
 A1 | NIL
 A2 | NIL ← **Indication of empty compartment**
 A3 | NIL
 A4 | C PAJ11113FX/LIS/1290 kg ← **Details of the load placed in the position**
 A5 | C PAJ17996FX/LIS/2000 kg/ELI,ELM

TOW 72 211 kg | MAX: 89000 | MACTOW: 14.16
 17.2

TOW 72 323 kg | MAX: 89000 | MACTOW: 14.24
 17.4

Basic Weight & Index
 46 292 kg BW | 38.3 BI
 46 574 kg DOW | 35.43 DOI
 ← **Calculated Dry Operating Weight & Index**

Crew composition
 Crew: 2/0

DOW/DOI adjustments
 Adjustments
 Weight (kg) | Index | Description
 112 | 0.2 | EIC

Load Distribution
 A3 | NIL
 A4 | C PAJ11113FX/LIS/1290 kg
 A5 | C PAJ17996FX/LIS/2000 kg/ELI,ELM
 A6 | C PAJ28978FX/LIS/1359 kg
 A7 | C PAJ63849FX/LIS/1450 kg/ROX
 A8 | C PAJ37748FX/LIS/1550 kg
 A9 | C PAJ23444FX/LIS/1600 kg
 A10 | C PAJ63876FX/LIS/1700 kg/RFL
 A11 | NIL
 A12 | NIL
 A13 | NIL
 A14 | NIL
 11 | NIL

Every document can be generated on the last step. You'll find there a live preview of all W&B parameters presented on a dashboard.

The image displays two screenshots of a flight planning dashboard for aircraft SP-EVI (MD-11 FREIGHTER).

Top Screenshot (In trim):

- Limiting weights:** Left: 28775 kg, Diff: 8500 kg, Right: 37275 kg. ZFW: 181 083 kg, MAX: 209242, MACZFW: 20.63. FWD:Fuel ratio 7.5 to 1, AFT:Fuel ratio 7.5 to 1 (3). Balance: 48.2.
- Fuel:** Total: 67000 kg, Taxi: 600 kg. Take-off: 66 400 kg, Trip: 50000 kg.
- Load distribution:**

CPT	Load
AL	NIL
AR	PMC12118FX/JFK/3500 kg/RMD,RDS
BL	NIL
BR	NIL
CL	PAJ03212FX/JFK/1500 kg
CR	PMC16517FX/JFK/3300 kg/ROX
- Weight Summary:** 115 033 kg BW, 77.88 BI, 115 033 kg DOW, 77.88 DOI.
- Documents:** In trim status. Options: Loadsheet, CPM, LIR, MVT (Arrival), MVT (Departure). Note: "No documents for the flight yet."

Bottom Screenshot (Out of trim):

- Limiting weights:** Left: 22275 kg, Diff: 15000 kg, Right: 37275 kg. ZFW: 174 583 kg, MAX: 209242, MACZFW: 19.08. FWD:Fuel ratio 7.5 to 1 (3), AFT:Fuel ratio 7.5 to 1 (3). Balance: 44.3.
- Fuel:** Total: 67000 kg, Taxi: 600 kg. Take-off: 66 400 kg, Trip: 50000 kg.
- Load distribution:**

CPT	Load
AL	NIL
AR	PMC12118FX/JFK/3500 kg/RMD,RDS
BL	NIL
- Weight Summary:** 115 033 kg BW, 77.88 BI.
- Documents:** Out of trim status. Options: Loadsheet, CPM, LIR, MVT (Arrival), MVT (Departure). Documents listed: LS EDNO 1 (Final, 28 AUG 23 18:03), LIR EDNO 1 (28 AUG 23 17:58).

Annotations in red text and arrows:

- "Current trim status" points to the "In trim" radio button in the top screenshot.
- "Select type of document to generate" points to the document generation buttons in the top screenshot.
- "Dashboard presenting current data" points to the load distribution table in the top screenshot.
- "Aircraft is out of trim" points to the "Out of trim" radio button in the bottom screenshot.
- "Generation of some documents is blocked" points to the document generation buttons in the bottom screenshot.

If the aircraft is in trim, you can generate and share the relevant documents. There is also access to documents archive, you can preview every document that's been saved for the flight.

LOADSHEET

Same rule applies to Loadsheet, the document can be generated on *DOCUMENTS* step any time provided aircraft is in trim and all ULDs added are loaded properly.

Cross check Loadsheet

Once the aircraft is correctly balanced the loadsheet preview is accessible. It is formatted according to IATA standard and at the bottom there is an SI section containing some auto-generated comments like DGRs information, but user can also add some free text in the box below.

Choose loadsheet designation

Loadsheet can be saved as preliminary or final, the appropriate designation should be selected at the bottom of the page prior to saving.

Save loadsheet revision

To save loadsheet revision the “Save” button must be clicked.

The screenshot shows the 'Loadsheet EDNO 1' interface. The main content area displays a detailed loadsheet table and summary statistics. The table includes columns for compartment codes (AL, BL, CL, etc.), weights, and deck locations (MAIN DECK, LOWER DECK). Summary statistics include Basic Operational Weight (115033), Total Traffic Load (66050), and various fuel and weight limits. At the bottom, there is a section for 'Input supplementary Information' (SI) with a text input field. Below the input field are two buttons: 'Preliminary' and 'Final'. At the very bottom, there are 'Save' and 'Cancel' buttons. Red arrows point to these elements with labels: 'Select Loadsheet' points to the 'Loadsheet' button in the 'Documents' panel; 'Input supplementary Information' points to the SI text input field; 'Select Primary/ Final designation' points to the 'Final' button; and 'Click to save' points to the 'Save' button.

Limiting weights **DOW** **Fuel** **Load planning** **Documents**

Loadsheet EDNO 1

L O A D S H E E T CHECKED APPROVED EDNO
ALL WEIGHTS IN KILOGRAMS J.Doe 1F

FROM/TO	FLIGHT	A/C REG	VERSION	CREW	DATE	TIME
WAW ORD	EV1113	SP-EVI	Freighter	2/0	28 AUG 23	1800

LOAD IN COMPARTMENTS WEIGHT 66050

DISTRIBUTION		MAIN DECK		LOWER DECK			
AL	0	AR	3500	11L	1000	11R	1200
BL	0	BR	0	12L	1200	12R	1000
CL	1500	CR	3300	13L	0	13R	0
DL	1900			14L	0	14R	0
DFR	4400			15L	0	15R	0
EL	3000			21L	0	21R	0
FL	0	FR	3000	22L	0	22R	0
GL	3000	GR	2700	23L	1000	23R	1200
HL	0	HR	2100		24		2000
JL	0	JR	3500	31L	0	31R	0
KL	0	KR	0		32		3175
LL	3500	LR	0		33		3175
ML	3300	MR	2000		34		2000
		P	2300		41		2000
		R	2000		42		2100
				43L	0	43R	0
				H5			0

BASIC OPERATIONAL WEIGHT 115033

ADDITIONAL CREW 0
SERVICE ADJUSTMENTS 0
BALLAST FUEL 0
DRY OPERATING WEIGHT 115033

TOTAL TRAFFIC LOAD 66050
ZERO FUEL WEIGHT ACTUAL 191083 MAX 209242 ADJ

TAXI FUEL 600
TAKE OFF FUEL 66400
TAXI WEIGHT ACTUAL 248083 MAX 287124 ADJ

TAKE OFF WEIGHT ACTUAL 247483 MAX 285990 ADJ

TRIP FUEL 50000
LANDING WEIGHT ACTUAL 197483 MAX 222941 L ADJ

BALANCE AND SEATING CONDITIONS

DOI	FWD LIMIT	AFT LIMIT	
77.88			
LIZFW 48.22	MACZFW 20.63	12.32	29.60
LITXW 58.27	MACTXW 23.55	13.03	34.00
LITOW 58.58	MACTOW 23.64	13.04	34.00

UNDERLOAD BEFORE LMC 25458

CAPTAINS INFORMATION/NOTES
BI 77.88
FWD:FUEL RATIO 7.5 To 1
AFT:FUEL RATIO 7.5 To 1 (3)
LATERAL IMBALANCE: L 28775 / R 37275 / DIFF 8500
PANTRY CODE No pantry
NOTOC: YES

SI
-AR/RMD,RDS-CR/ROX-EL/ROX-FR/ROX-HR/ROX-MR/RFL-R/ELI.ELM
-12L/RFL-33/EIC

POWERED BY EVIONICA

SI

Input supplementary Information

Preliminary **Final**

Select Primary/ Final designation

To print or share, save the document first **Save** Cancel

Documents

In trim
Flight assigned to:
★ J.Doe

Select Loadsheet

Loadsheet CPM LIR MVT (Arrival)
MVT (Departure)

LS EDNO 1 Draft

LIR EDNO 1 ★ J.Doe
28 AUG 23 17:58

CONTAINER PALLET MESSAGE

The final distribution decided in Load Planning step is propagated to the *DOCUMENTS* step to preview the CPM message.

Preview CPM

Preview can be accessed at any point and it is formatted in accordance with the IATA recommendations.

Add Supplementary Information

At the end of the CPM message there is an SI space that can be edit by the loadmaster to provide some supplementary information in a free text form.

The screenshot shows a software interface for flight planning. At the top, it displays flight details: EV1113 WAW → ORD 28AUG23. The interface is divided into several sections: 'Limiting weights', 'DOW', 'Fuel', 'Load planning', and 'Documents'. The 'Documents' section is active, showing a 'CPM' message in kilograms. Below the CPM message is an 'SI' (Supplementary Information) field, which is currently empty. A red arrow points to this field with the text 'Input Supplementary information'. At the bottom right, there are 'Save' and 'Cancel' buttons, with a red arrow pointing to the 'Save' button and the text 'Click to save'. The CPM message content is as follows:

```
CPM
CPM IN KILOGRAMS
EV1113/28.SPEVI.WAW
-AL/N-AR/PMC12118FX/JFK/3500/C/RMD,RDS
-BL/N-BR/N
-CL/PAJ03212FX/JFK/1500/M-CR/PMC16517FX/JFK/3300/C/ROX
-DL/PMC11983FX/JFK/1900/C
-DFR/AGA56711FX/JFK/4400/C
-EL/PMC17812FX/JFK/3000/C/ROX
-FL/PAJ04214FX/JFK/3000/C-FR/PMC67126FX/EWR/3000/C/ROX
-GL/N-GR/PAJ27811FX/JFK/2700/C
-HL/N-HR/PMC15415FX/JFK/2100/C/ROX
-JL/N-JR/PMC73127FX/EWR/3500/C
-KL/N-KR/N
-LL/N-LR/N
-ML/PMC64124FX/EWR/3300/C-MR/PMC12325FX/EWR/2000/C/RFL
-P/PMC17328FX/EWR/2300/C
-R/PMC16714FX/JFK/2000/C/ELI,ELM
-11L/AKE42115FX/JFK/1000/C-11R/AKE40416FX/JFK/1200/C
-12L/AKE18911FX/JFK/1200/C/RFL-12R/AKE43613FX/JFK/1000/C
-13L/N-13R/N
-14L/N-14R/N
-15L/N-15R/N
-21L/N-21R/N
-22L/N-22R/N
-23L/AKE32411FX/JFK/1000/C-23R/AKE42912FX/JFK/1200/C
-24/ALF37212FX/EWR/2000/C
-31L/N-31R/N
-32/ALF23243FX/ORD/3175/C
-33/ALF34034FX/ORD/3175/C/EIC
-34/ALF27314FX/EWR/2000/C
-41/ALF32813FX/EWR/2000/C
-42/ALF30511FX/EWR/2100/C
-43L/N-43R/N
-H5/N
-AR/RMD,RDS-CR/ROX-EL/ROX-FR/ROX-HR/ROX-MR/RFL-R/ELI,ELM
-12L/RFL-33/EIC
```

SI

To print or share, save the document first

Save Cancel

MOVEMENT MESSAGE

Templates are given separately for Arrival and Departure message; the actual timestamps and delay codes must be input manually.

Document Type	Document Name	Author	Timestamp
LS	EDNO 1	J.Doe	28 AUG 23 18:03
LIR	EDNO 1	J.Doe	28 AUG 23 17:58

SHARING DOCUMENTS

Once document is ready and available in the Archive it be shared or printed. Select document you want to share on the list and provide e-mail or SITA addresses to send it.

Share document

Only the latest revision of each document can be either printed or shared via e-mail. To share the documents the user must provide with at least one e-mail address and click on “Share” button. If there is more than one recipient, the e-mail addresses should be separated with a coma.

Browse previous revisions

If there is more than one revision already generated for the flight, they all can be preview on the DOCUMENTS step. For each of them there is information on the time of saving and revision author given.

The screenshot displays a flight management system interface for flight EV1113 WAW-ORD on 28 AUG 23. The interface includes tabs for 'Limiting weights', 'DOW', 'Fuel', 'Load planning', and 'Documents'. A red arrow points to the 'Input list of recipients' field, which contains email addresses: 'loadsheet@evionica.com', 'occ@evionica.com', and 'name@email.com, name2@email.com'. Another red arrow points to the 'Click to send' button. Below this is a 'Share' button and a 'Print' button. The 'Documents' section on the right shows 'In trim' status, flight assigned to J.Doe, and buttons for 'Loadsheet', 'CPM', 'LIR', 'MVT (Arrival)', and 'MVT (Departure)'. A list of documents includes 'LS EDNO 1' (Final, 28 AUG 23 18:03) and 'LIR EDNO 1' (28 AUG 23 17:58). A red arrow points to the 'LIR EDNO 1' document with the text 'Select document to Print or Share'.

Loadsheet EDNO 1

FROM/TO	FLIGHT	A/C REG	VERSION	CREW	DATE	TIME
WAW ORD	EV1113	SP-EVI	Freighter	2/0	28 AUG 23	1803

LOAD IN COMPARTMENTS	WEIGHT
	66050

DISTRIBUTION		LOWER DECK	
AL	0	11L	1000
BL	0	12L	1200
CL	1500	13L	0
DL	1900	14L	0
DFR	4400	15L	0
EL	3000	21L	0
FL	0	22L	0
GL	3000	23L	1000
HL	0	HR	24 2000
JL	0	JR	31L 0 31R 0
KL	0	KR	0 32 3175
LL	3500	LR	0 33 3175
ML	3300	MR	0 34 2000
P	2300		41 2000
R	2000		42 2100
		43L	0 43R 0
		H5	0

SHARING DOCUMENTS: ADDRESSBOOK

Sharing documents can be even easier if the appropriate e-mail / SITA addresses are suggested. Addressbook can be set up so the recipients list is automatically propagated depending on the flights *Departure* and *Arrival* airports.

Since different departments are responsible for processing of selected documents, separate *Addressbook* can be defined for every document type.

When it is configured the addresses will appear automatically in the forms designated for each document.

UPDATING DOCUMENTS

At any point you can get back to the process to add or correct some details. New revision of documents is created in the same manner on the *DOCUMENTS* step. If after performing changes, current data are different from the last revision of Loadsheet user is informed that new edition might be required.

The screenshot displays the flight management interface for EV1113 WAW ORD 28AUG23. A red box highlights a notification: "Current data differs from latest loadsheet. CREATE NEW LOADSHEET". The interface is divided into several sections:

- Limiting weights:** Shows Left (25275 kg), Diff (12000 kg), and Right (37275 kg). It also includes ZFW (177 583 kg), TOW (209242 kg), and TXW (18.98 kg).
- Fuel:** Shows Total (67000 kg) and Taxi (600 kg). It also includes Take-off (66 400 kg) and Trip (50000 kg).
- Load distribution:** Lists various load items (CPT, AL, AR, BL, BR, CL, CR, DL, DFR, EL) with their respective weights and descriptions.
- Documents:** Shows "In trim" status, flight assigned to J.Doe, and buttons for "Loadsheet", "CPM", "LIR", "MVT (Arrival)", and "MVT (Departure)".

CHANGE OF AIRCRAFT

Aircraft can be changed at each step of balancing process.

- Click "Edit" icon
- Select different aircraft form a list

If the type of new aircraft does not match the old one, all data **except payload list** will be cleared out, so the loadmaster must provide the maximum masses limitations, DOW details, and fuel figures from scratch.

Click to update aircraft

Limiting weights

DOW

Fuel

Load planning

Documents

Crew

Pantry

SP-EVI
 MD-11 FREIGHTER — Freighter
 MDCK5542/13 effective date: 2023-08-01

Adjustments



Weight (kg)	Index	Description
No records found.		

115 033 kg 77.88
 BW BI

115 033 kg 77.88
 DOW DOI

Ballast fuel kg

Estimated Payload Weight (ACL) kg

Back Next

Limiting weights

DOW

Fuel

Load planning

Documents

Crew

Pantry

SP-EVI
 MD-11 FREIGHTER — Freighter
 MDCK5542/13 effective date: 2023-08-01

Adjustments

Weight (kg)	Index	Description
No records found.		

115 033 kg 77.88
 BW BI

115 033 kg 77.88
 DOW DOI

Ballast fuel kg

Estimated Payload Weight (ACL) kg

Flight details ×

Flight number

From

To

Operational date (UTC)

Time of departure

AC ▼

Cancel

Select new tail number

Back Next

TAKE OVER SOMEONE'S FLIGHT

Browse loadsheet archive

When entering a flight assigned to a different load controller, the user is directed to the *DOCUMENTS* step, where the LI/R, Loadsheet, and CPM can be previewed conditioning that they were already completed by somebody else.

Print/ Share somebody's loadsheet

Any user can also share/print the latest revision of loadsheet and CPM.

Take over somebody's flight

If the flight is in progress (by someone else) and they know their colleague can't proceed, anyone can take over to complete the calculations. To finish the process they must click on "Take over" button and confirm that they want to proceed. The original load controller will then receive the notification that the flight has been taken over and somebody else will continue.

The screenshot displays a flight management interface with the following sections:

- Limiting weights**: SP-EVI, MD-11 FREIGHTER, MDC5542/13, effective date: 2023-08-01.
- DOW**: Underload: 12 820 kg.
- Fuel**: Total 55122 kg, Taxi 122 kg, Take-off 55 000 kg, Trip 32122 kg.
- Load planning**: Out of trim, Flight assigned to: K.Welc | evioni, Take over button.
- Documents**: Loadsheet, CPM, LIR, MVT (Arrival), MVT (Departure). No documents for the flight yet.
- Load distribution**: CPT, Load, AL, AR, BL, BR, CL, CR, DL with associated weights and ratios.
- Weight Metrics**: ZFW (185 463 kg), TOW (240 463 kg), TXW (240 585 kg) with MAX, MACTOW, and MACTXW values.