EMBRAER

AIRPLANE WEIGHING FORM

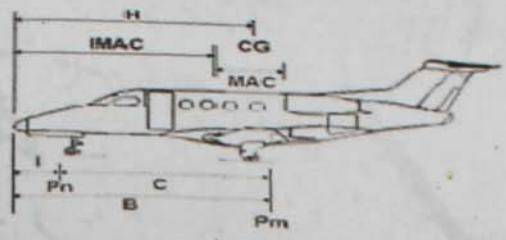
PHENOM 100® BY EMBRAER

Model	Serial Number	Airplane Register	Category
EMB-500	50000082	N100EQ	NORMAL
Date Weighed	Place Weighed	Condition	Change Date
OCT/03/2009	EMBRAER-GPX	LEVELED	-X-
Weighing Configuration		After Change Configuration	
Crew = 2	Pax = 4	Crew = -X-	Pax = -X-

1-Airplane Weighet On Jacks.
2-Basic Airplane As On Basic Equipment Check List
3-Weighing Kit: **Revere Analogic**

4-PN ==> 64003-05
5-SN ==> 6141U
6-Weighing Kit Calibration Expire Date ==> JUN/04/2010
7-Local Weighing Latitude ==> -21,839

CONSTANT & MEASUREMENTS (in) WEIGHING ON THE JACKS.		
B =	255.039	a = 0
MAC =	64.555	Cos a = 1
IMAC =	209.626	Tg a = 0
l =	98.819	
C =	156.220	



REACTION	WEIGHTS (lb)	(lb)	ARM (in)	MOMENT (lb*in)/1000	%MAC	INDEX
Left (Pe)	3074.51	3074.51	255.039	784.12		
Right (Pd)	2985.00	2985.00	255.039	761.29		
Sub Total (Pm)	6059.51	6059.51	255.039	1545.41		
Nose (Pn)	845.73	845.73	98.819	83.57		
TOTAL (as weighed)(P)	6905.24	6905.24	235.905	1628.98	40.7	16.3

CHANGES	WEIGHT (lb)	ARM (in)	MOMENT (lb*in)/1000	%MAC	INDEX
TOTAL (as weighed)(P)	6905.24	235.905	1628.98	40.7	16.3
Total Column I	26.01	255.788	6.65		
Total Column II	0.00	0.000	0.00		
EQUIPPED EMPTY WEIGHT	6879.23	235.830	1622.33	40.6	16.2

BASIC VALUES ACCORDING TO EMBRAER STANDARD CONDITIONS

DESCRIPTION	WEIGHT (lb)	ARM (in)	MOMENT (lb*in)/1000	%MAC	INDEX
EQUIPPED EMPTY WEIGHT	6879.23	235.830	1622.33		
Hydraulic Fluid	3.09	34.173	0.11		
Engine Oil	17.64	302.519	5.34		
Wing unusable Fuel	44.09	228.875	10.09		
STANDARD BASIC EMPTY WEIGHT	6944.04	235.866	1637.86	40.6	16.4

FORMULAS USED

$$H = \frac{\text{TOTAL MOMENT}}{\text{TOTAL WEIGHT}} \qquad \%MAC = \frac{H - IMAC}{MAC} \times 100 \qquad INDEX = \frac{\text{MOMENT}}{100}$$

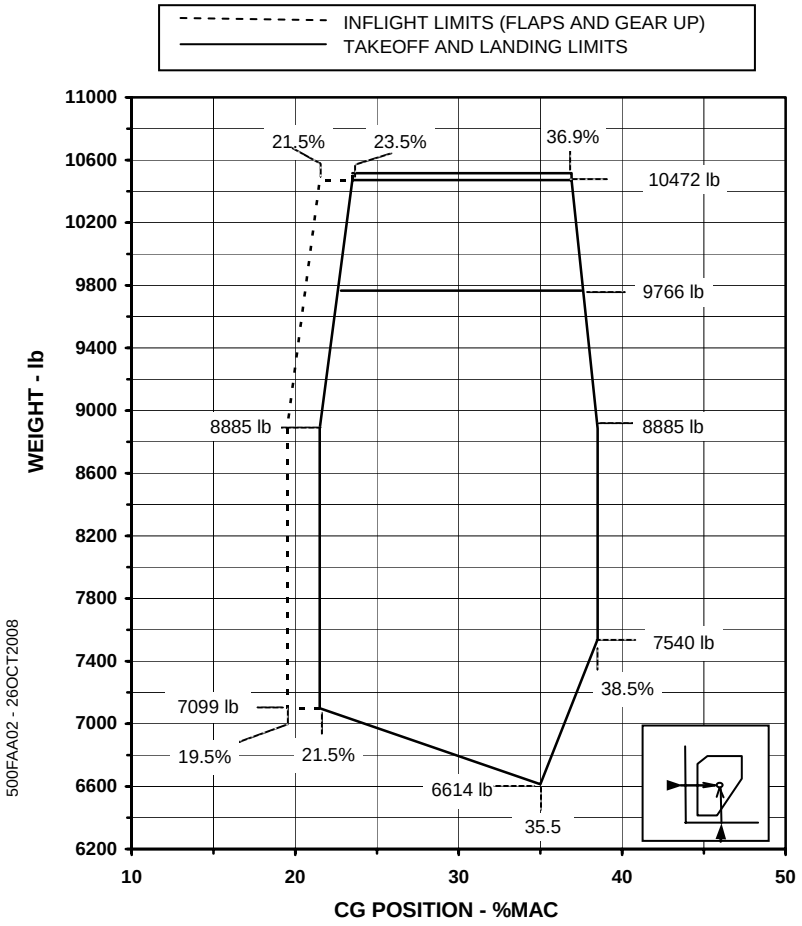
Weighing Status: FINAL

Quality Assurance

GENERAL DATA

The general data is intended to be used for specific weight and balance calculations and is equivalent to the information contained in the AFM Weight & Balance Section.

CENTER OF GRAVITY LIMITS



BALANCE REFERENCE SYSTEM

BALANCE ARMS/BODY STATION

Longitudinal location of the Centers of Gravity (CG) identified throughout this manual regarding airplane and components will be referred to as Balance Arms. Balance Arms are the distance in meters from Airplane Datum, which is located at the zero station of the fuselage.

Balance Arms (BA) are equivalent to Body Station (BS) on the PHENOM 100.

AIRPLANE DATUM

The Airplane Datum is a plane, perpendicular to the fuselage centerline.

For external reference, the Datum is located at 255.08 in ahead of the wing jack points.

WING MEAN AERODYNAMIC CHORD (MAC)

MAC length = 64.57 in.

LEMAC balance arm = 209.64 in.

Percentage of MAC is obtained using the following formula:

$$\%MAC = \frac{(B.A. - 209.64) \times 100}{64.57}$$

Where B.A. = Balance arm of airplane CG measured in inches (in).

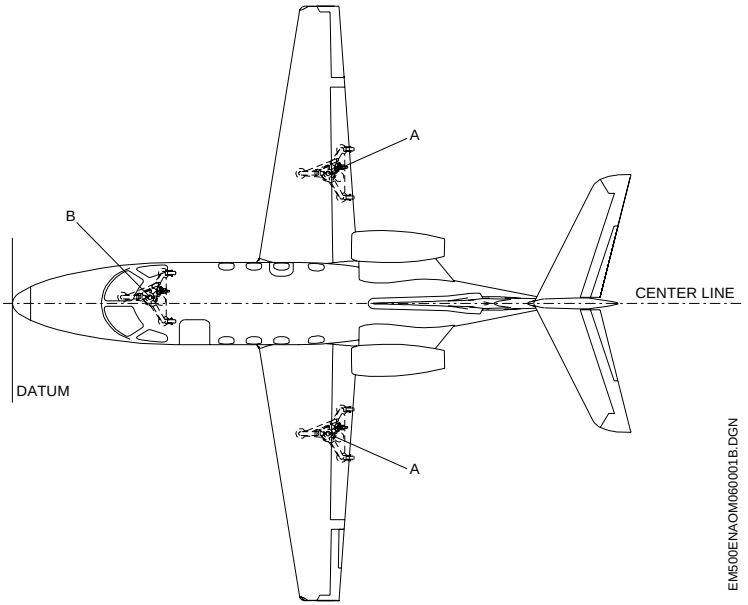
AIRPLANE JACKING

Refer to Chapter 7 of the Aircraft Maintenance Manual for airplane jacking procedures.

JACKING POINTS LOCATION

POINT	BALANCE ARM (in)	CENTERLINE DISTANCE (in)
A	255.08	107.56
B	98.82	6.14

NOTE: The jacking points balance arms refer to the Airplane Datum.



JACKING POINTS

FUEL DATA

FUEL DEFINITIONS

- USABLE FUEL - Is the fuel to be effectively consumed by the engines.
- UNUSABLE FUEL - Is the fuel remaining after total usable fuel has been consumed.

FUEL QUANTITIES

FUEL CATEGORY	VOLUME (US Gal)	WEIGHT (lb)	CG BALANCE ARM (in)
UNUSABLE	6.6	44.2	228.98
USABLE	418.7	2806	230.93

NOTE: The values specified above have been determined for an adopted fuel density of 6.701 lb/US Gal.

FUEL DISTRIBUTION TABLE

FUEL DISTRIBUTION ON THE LEFT AND RIGHT WING TANKS	
WEIGHT (lb)	**CG BALANCE ARM (in)**
50	228.65
100	228.23
150	227.83
200	227.46
250	227.05
300	226.74
350	226.44
400	226.16
450	226.00
500	225.86
550	225.75
600	225.73
650	225.70
700	225.73
750	225.75
800	225.82
850	225.90
900	225.95
950	226.02
1000	226.12
1050	226.20
1100	226.31
1150	226.37
1200	226.44
1250	226.52

FUEL DISTRIBUTION ON THE LEFT AND RIGHT WING TANKS	
WEIGHT (lb)	**CG BALANCE ARM (in)**
1300	226.60
1350	226.70
1400	226.77
1450	226.88
1500	226.97
1550	227.05
1600	227.16
1650	227.27
1700	227.40
1750	227.50
1800	227.64
1850	227.76
1900	227.92
1950	228.06
2000	228.22
2050	228.39
2100	228.54
2150	228.71
2200	228.88
2250	229.06
2300	229.22
2350	229.38
2400	229.56
2450	229.73
2500	229.89
2550	230.07

FUEL DISTRIBUTION ON THE LEFT AND RIGHT WING TANKS	
WEIGHT (lb)	**CG BALANCE ARM (in)**
2600	230.23
2650	230.40
2700	230.57
2750	230.73
2800	230.91
2806	230.93

NOTE: The values specified above have been determined for an adopted fuel density of 6.701 lb/US Gal.

MISCELLANEOUS FLUIDS

FLUID	WEIGHT (lb)	BALANCE ARM (in)
ENGINE OIL (1)	17.6	302.52
HYDRAULIC (2)	3.1	34.17
WASTE TANK FLUID	7.7	249.17

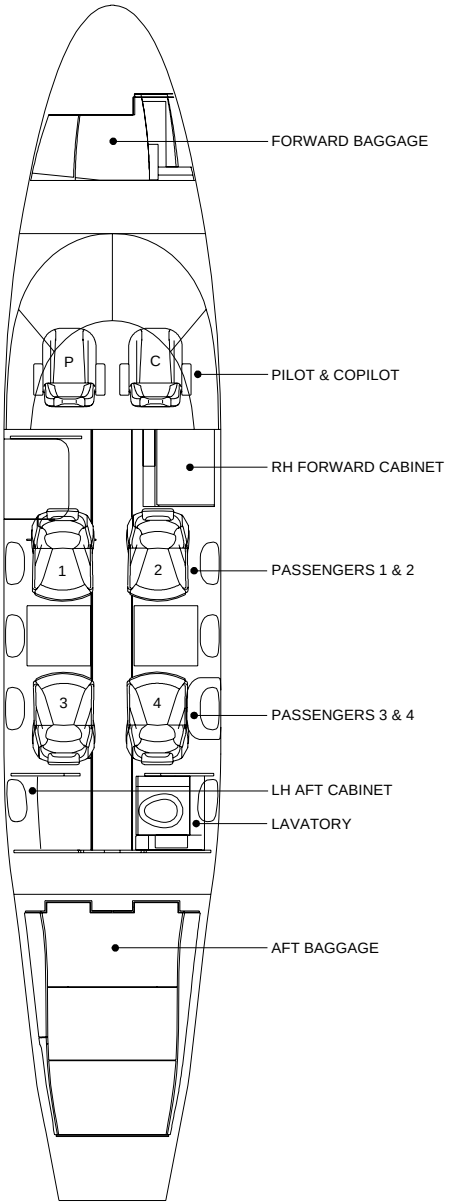
NOTE: 1) Adopted engine oil Density (ref. MIL-L-7808): 8.34 lb/US Gal.

2) Adopted hydraulic fluid density (ref. SAE AS 1241A TYPE IV): 7.09 lb/US Gal.

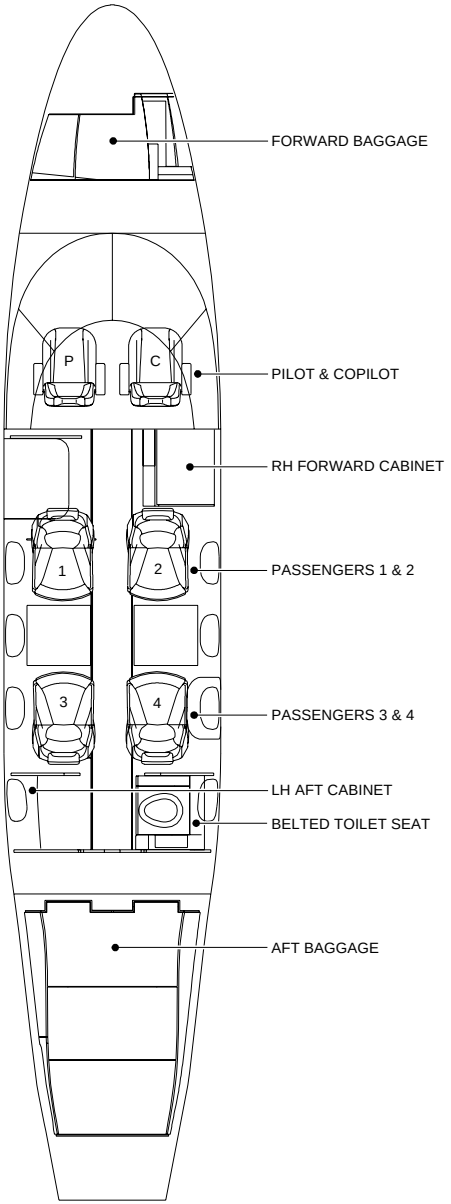
CONFIGURATION

CREW, PASSENGER, AND BAGGAGE LOCATION

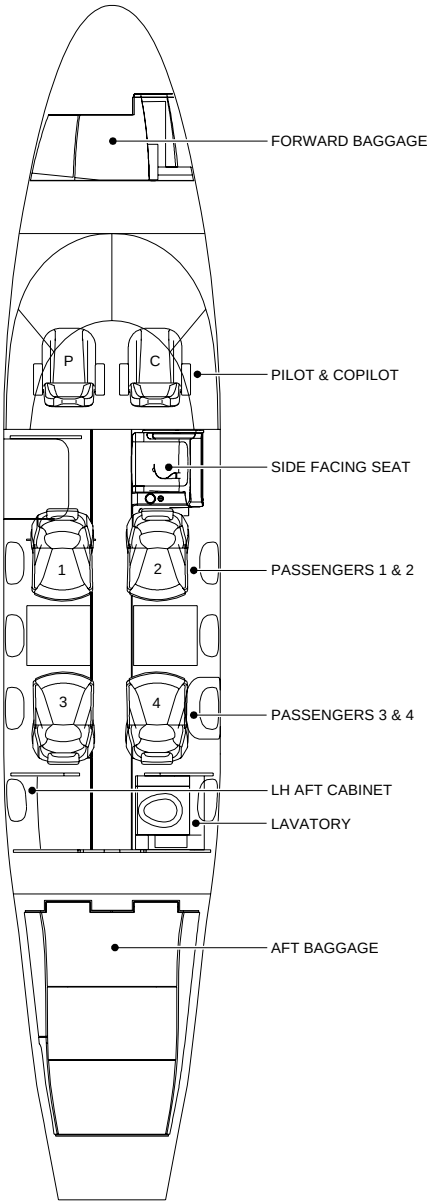
Balance Arm (in)	
Pilot & Copilot	108.90
Side Facing Seat (if applicable)	142.60
Passengers 1 & 2	176.97
Passengers 3 & 4	214.68
Belted Toilet Seat (if applicable)	249.76
Forward Baggage Compartment	45.47
RH Forward Cabinet (if applicable)	143.46
Lavatory	249.76
LH AFT Cabinet	249.76
Aft Baggage Compartment	314.29



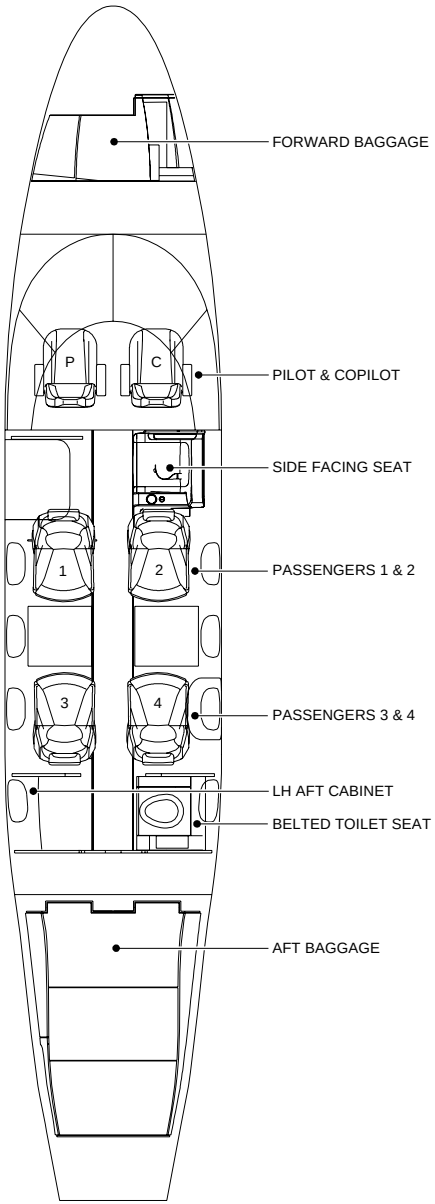
STANDARD CONFIGURATION



CONFIGURATION – OPTION 1



CONFIGURATION – OPTION 2



CONFIGURATION – OPTION 3

DCA15MA029

Phenom 100, N100EQ, Weight and Balance Calculations

	Ramp Weight				Takeoff				Approach		
Description	w	a	m		w	a	m		w	a	m
BEW	6944.04	235.97	1641427.17		6944.04	235.97	1641427		6944.04	235.97	1641427
Pilot & front passenger	361	108.9	39312.9		361	108.9	39312.9		361	108.9	39312.9
Passenger (row 1)	300	176.97	53091		300	176.97	53091		300	176.97	53091
Airplane flight manuals	7.5	143.46	1075.95		7.5	143.46	1075.95		7.5	143.46	1075.95
Baggage and cargo	18.6	314.29	5845.794		18.6	314.29	5845.794		18.6	314.29	5845.794
Misc	4.6	176.97	814.062		4.6	176.97	814.062		4.6	176.97	814.062
Zero fuel weight	7635.74		1741566.876		7635.74		1741567		7635.74		1741567
Fuel	1962.11	228.22	447792.7442		1862.11	227.92	424412.1		1036.17	226.12	234298.8
Total	9597.85	228.1094	2189359.62		9497.85	228.0494	2165979		8671.91	227.8466	1975866
%MAC calc		28.60366				28.51076				28.19676	