WEIGHING AND BALANCING - MAINTENANCE PRACTICES

EFFECTIVITY: ACFT MODEL(S) EMB-135

1. General

A. This section gives the procedure to weigh the aircraft on the Basic Empty Weigh (BEW) configuration as specified in the Weight and Balance Manual.

NOTE: To get the accurate results, weigh the aircraft on a level area in a hangar and obey the conditions below:

- Close the hangar doors and windows.
- Turn off the hangar heating, air conditioning, and ventilation systems.

B. The procedures in this section are given in the sequence below. The tasks identified with (♦) are part of the Scheduled Maintenance Requirements Document (SMRD).

TASK NUMBER	*DESCRIPTION*	*EFFECTIVITY*
08-10-00-500-801-A	AIRCRAFT WEIGHING ON JACKS (WITH AN ELECTRONIC WEIGHING KIT)	APPLICABLE TO EMB-145 ( ) AND EMB-135 ( ) MODELS
08-10-00-500-802-A	AIRCRAFT WEIGHING ON WHEELS (WITH GROUND SCALES)	ACFT MODEL(S) EMB-135

TASK 08-10-00-500-801-A
EFFECTIVITY: APPLICABLE TO EMB-145 ( ) AND EMB-135 ( ) MODELS

2. AIRCRAFT WEIGHING ON JACKS (WITH AN ELECTRONIC WEIGHING KIT)

A. General

(1) For the aircraft weighing procedures given below, the Electronic Weighing Kit, GSE 006, is used.

B. References

REFERENCE	*DESIGNATION*
AMM TASK 07-10-00-500-801-A/200	-
AMM TASK 07-10-00-500-802-A/200	-
AMM TASK 08-20-00-500-801-A/200	AIRCRAFT LEVELING IN THE PASSENGER CABIN
AMM TASK 12-11-01-600-802-A/300	FUEL-TANK PRESSURE DEFUELING - SERVICING
AMM TASK 12-11-03-600-801-A/300	FUEL TANK DRAINING - SERVICING
AMM TASK 12-12-01-600-801-A/300	ENGINE - SERVICING
AMM TASK 12-12-02-600-801-A/300	AUXILIARY-POWER-UNIT FILLING
AMM TASK 12-13-01-600-801-A/300	HYDRAULIC SYSTEM RESERVOIR - FLUID LEVEL CHECK
AMM TASK 12-13-06-600-801-A/300	LANDING GEAR AND MAIN DOOR ACCUMULATOR - CHARGE
AMM TASK 12-14-00-600-801-A/300	-
AMM TASK 12-15-01-600-801-A/300	WATER TANK - FILLING
AMM TASK 12-22-00-600-801-A/300	LIGHT DIRT - SERVICING
AMM TASK 32-10-02-200-801-A/600	MLG SHOCK ABSORBER - INSPECTION
AMM TASK 32-10-02-600-801-A/300	MLG SHOCK ABSORBER - SERVICING
AMM TASK 32-20-01-200-801-A/600	NLG - INSPECTION
AMM TASK 32-20-01-600-801-A/300	NLG SHOCK ABSORBER - SERVICING
AMM TASK 32-44-02-600-801-A/300	EMERGENCY/PARKING BRAKE ACCUMULATOR - CHARGE
AMM TASK 32-49-01-200-801-A/600	MLG WHEEL TIRE - INSPECTION
AMM TASK 32-49-04-600-801-A/300	NLG WHEEL TIRE - CHECK AND CHARGING
AMM TASK 38-30-00-600-801-A/300	-

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
GSE 006	Kit, electronic weighing	Aircraft weighing	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
5	Do the task	Indicator panel of the electronic weighing kit/jacks

I. Preparation

SUBTASK 841-008-C

(1) Defuel and drain the aircraft (AMM TASK 12-11-01-600-802-A/300 and AMM TASK 12-11-03-600-801-A/300).

(2) Clean and dry the aircraft if necessary (AMM TASK 12-22-00-600-801-A/300).

(3) Do a check and, if necessary, replenish these units or systems:

- Engine oil tanks (AMM TASK 12-12-01-600-801-A/300).
- APU oil tank (AMM TASK 12-12-02-600-801-A/300).
- Hydraulic reservoirs (AMM TASK 12-13-01-600-801-A/300).
- The oxygen system (AMM TASK 12-14-00-600-801-A/300)

(4) Drain the potable water system (AMM TASK 12-15-01-600-801-A/300).

(5) Drain the toilet water tank (AMM TASK 38-30-00-600-801-A/300).

(6) Do a check and, if necessary, charge the MLG shock absorbers (AMM TASK 32-10-02-200-801-A/600 and AMM TASK 32-10-02-600-801-A/300).

(7) Do a check and, if necessary, recharge the two hydraulic accumulators (AMM TASK 32-44-02-600-801-A/300 and AMM TASK 12-13-06-600-801-A/300).

(8) Do a check and, if necessary, service the NLG shock absorbers (AMM TASK 32-20-01-200-801-A/600 and AMM TASK 32-20-01-600-801-A/300).

(9) Do a check and, if necessary, charge all MLG tires (AMM TASK 32-49-01-200-801-A/600).

(10) Do a check and, if necessary, charge the NLG tires (AMM TASK 32-49-04-600-801-A/300).

(11) Remove all aircraft technical documentation from the cockpit.

(12) Adjust the pilot seats to their middle positions.

(13) Make sure that these items of rescue equipment are in their correct position: full-face masks (2), flashlight (with batteries), hatchet, headset with boom-mounted microphone (2), emergency landing-gear control lever, oxygen masks (3), life vests (3), fire extinguisher (1), and protective breathing equipment (PBE).

(14) Make sure of the correct position of the passenger oxygen masks.

(15) Make sure of the correct position of the fire extinguishing bottles (2).

(16) Make sure of the correct installation of the portable oxygen cylinders.

(17) Make sure that the galley is with all accessories, except for the movable service equipment.

(18) Make sure that the first-aid kit and the escape rope are installed.

(19) Inventory the aircraft with the component weights and the related balance as shown in Chart A (Basic Equipment Checklist) to determine the aircraft configuration at the time of weighing.

NOTE: The Chart A (Basic Equipment Checklist) is supplied at the aircraft delivery.

(20) Make sure that the aircraft is in this configuration:

(a) Flaps retracted.

(b) Control surfaces in neutral position.

(c) Blanking plate, covers, protective carpets, shop equipment, and tools removed.

(d) Cargo door, service door, emergency exits, and access panels closed.

(21) Install the adapters and the load cells of the electronic weighing kit on the jacks, below the three jacking points on the fuselage and wings (Figure 201).

(22) Lift the aircraft until the tires are off the ground, as written in Complete Aircraft Jacking (AMM TASK 07-10-00-500-801-A/200).

(23) Level the aircraft (AMM TASK 08-20-00-500-801-A/200) and then close the main door.

(24) Keep the work area clean and remove all equipment that is not necessary to do the task.

J. Weighing

SUBTASK 580-008-C

(1) Weigh the aircraft. Refer to the instructions given in the weighing equipment manufacturer's manual.

NOTE: The 45-degree latitude is a default kept on the memory of the Electronic Weighing Kit, but the degrees can be adjusted up or down in 5-degree increments to compensate for the difference in weight at the weighing location. The input of the nearest latitude value permits the Weighing Kit to do the correction automatically.

(2) Write the value got in the applicable document.

K. Follow-on

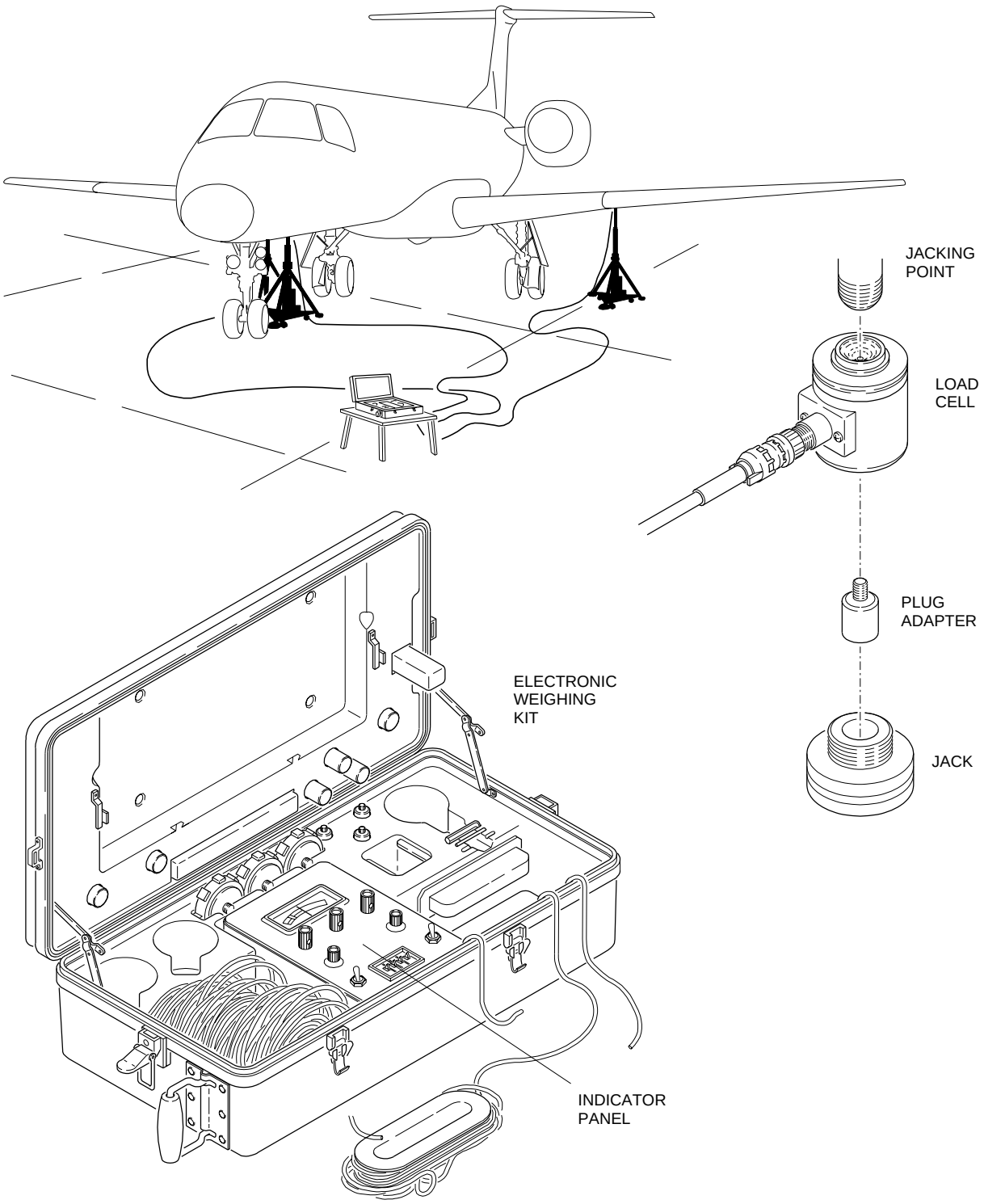
SUBTASK 842-008-C

(1) Lower the aircraft, as written in Complete Aircraft Lowering (AMM TASK 07-10-00-500-802-A/200).

(2) Remove the load cells and the adapters of the electronic weighing kit from the jacks (Figure 201).

EFFECTIVITY: APPLICABLE TO EMB-145 ( ) AND EMB-135 ( ) MODELS

Aircraft Weighing on Electronic Weighing Kit
Figure 201



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TASK 08-10-00-500-802-A
EFFECTIVITY: ACFT MODEL(S) EMB-135

3. AIRCRAFT WEIGHING ON WHEELS (WITH GROUND SCALES)

A. General

(1) This task gives the instructions for the aircraft weighing on wheels. For this procedure, ground scales GSE 289 were used. However, you can use other similar commercially-available equipment to do it.

B. References

REFERENCE	*DESIGNATION*
AMM TASK 12-11-01-600-802-A/300	FUEL-TANK PRESSURE DEFUELING - SERVICING
AMM TASK 12-11-03-600-801-A/300	FUEL TANK DRAINING - SERVICING
AMM TASK 12-12-01-600-801-A/300	ENGINE - SERVICING
AMM TASK 12-12-02-600-801-A/300	AUXILIARY-POWER-UNIT FILLING
AMM TASK 12-13-01-600-801-A/300	HYDRAULIC SYSTEM RESERVOIR - FLUID LEVEL CHECK
AMM TASK 12-13-06-600-801-A/300	LANDING GEAR AND MAIN DOOR ACCUMULATOR - CHARGE
AMM TASK 12-14-00-600-801-A/300	-
AMM TASK 12-15-01-600-801-A/300	WATER TANK - FILLING
AMM TASK 12-22-00-600-801-A/300	LIGHT DIRT - SERVICING
AMM TASK 32-10-02-200-801-A/600	MLG SHOCK ABSORBER - INSPECTION
AMM TASK 32-10-02-600-801-A/300	MLG SHOCK ABSORBER - SERVICING
AMM TASK 32-20-01-200-801-A/600	NLG - INSPECTION
AMM TASK 32-20-01-600-801-A/300	NLG SHOCK ABSORBER - SERVICING
AMM TASK 32-44-02-600-801-A/300	EMERGENCY/PARKING BRAKE ACCUMULATOR - CHARGE
AMM TASK 32-49-01-200-801-A/600	MLG WHEEL TIRE - INSPECTION
AMM TASK 32-49-04-600-801-A/300	NLG WHEEL TIRE - CHECK AND CHARGING
AMM TASK 38-30-00-600-801-A/300	-

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
GSE 289	Scales	Aircraft weighing	
GSE 070	Digital Protractor	Aircraft leveling	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
3	Do the task	Cockpit//Platform scales

I. Preparation

SUBTASK 841-009-B

(1) Defuel and drain the aircraft (AMM TASK 12-11-01-600-802-A/300) and (AMM TASK 12-11-03-600-801-A/300).

(2) Clean and dry the aircraft if necessary (AMM TASK 12-22-00-600-801-A/300).

(3) Do a check and, if necessary, replenish these units or systems:

- Engine oil tanks (AMM TASK 12-12-01-600-801-A/300).
- APU oil tank (AMM TASK 12-12-02-600-801-A/300).
- Hydraulic reservoirs (AMM TASK 12-13-01-600-801-A/300).
- The oxygen system (AMM TASK 12-14-00-600-801-A/300)

(4) Drain the potable water system (AMM TASK 12-15-01-600-801-A/300).

(5) Drain the toilet water tank (AMM TASK 38-30-00-600-801-A/300).

(6) Do a check and, if necessary, charge the MLG shock absorbers (AMM TASK 32-10-02-200-801-A/600) and (AMM TASK 32-10-02-600-801-A/300).

(7) Do a check and, if necessary, recharge the two hydraulic accumulators (AMM TASK 32-44-02-600-801-A/300 and AMM TASK 12-13-06-600-801-A/300).

(8) Do a check and, if necessary, service the NLG shock absorbers (AMM TASK 32-20-01-200-801-A/600 and AMM TASK 32-20-01-600-801-A/300).

(9) Do a check and, if necessary, charge all MLG tires (AMM TASK 32-49-01-200-801-A/600).

(10) Do a check and, if necessary, charge the NLG tires (AMM TASK 32-49-04-600-801-A/300).

(11) Remove all aircraft technical documentation from the cockpit.

(12) Adjust the pilot seats to their middle positions.

(13) Make sure that these items of rescue equipment are in their correct position: full-face masks (2), flashlight (with batteries), hatchet, headset with boom-mounted microphone (2), emergency landing-gear control lever, oxygen masks (3), life vests (3), fire extinguisher (1), and protective breathing equipment (PBE).

(14) Make sure of the correct position of the passenger oxygen masks.

(15) Make sure of the correct position of the fire extinguishing bottles (2).

(16) Make sure of the correct installation of the portable oxygen cylinders.

(17) Make sure that the galley is with all accessories, except for the movable service equipment.

(18) Make sure that the first-aid kit and the escape rope are installed.

(19) Inventory the aircraft with the component weights and the related balance as shown in Chart A (Basic Equipment Checklist) to determine the aircraft configuration at the time of weighing.

NOTE: The Chart A (Basic Equipment Checklist) is supplied at the aircraft delivery.

(20) Make sure that the aircraft is in this configuration:

(a) Flaps retracted.

(b) Control surfaces in neutral position.

(c) Blanking plate, covers, protective carpets, shop equipment, and tools removed.

(d) Main door, service door, compartment door, emergency exits, and access panels closed.

(21) Keep the work area clean and remove all equipment that is not necessary to do the task.

J. Weighing

SUBTASK 580-009-B

CAUTION: PUT THE AIRCRAFT ONTO THE PLATFORM SCALES AND STOP IT SLOWLY AND SMOOTHLY. DO NOT APPLY THE AIRCRAFT BRAKES.

(1) Zero the weighing platform scales. Refer to the instructions of the weighing equipment manufacturer's manual.

(2) Put the platform scales in position (Figure 202).

(3) Correctly put the aircraft wheels on the platform scales (Figure 202).

(4) Weigh the aircraft and write the result in the aircraft weighing record sheet.

(5) Remove the aircraft from the weighing platform scales.

(6) Make sure that the platform scales are in the zero load condition.

(7) Correctly put the aircraft wheels on the platform scales again. Refer to Figure 202.

(8) Weigh the aircraft again and record the result in the aircraft weighing record sheet.

NOTE: If important differences between the weighing records are found, weigh the aircraft one more time and reject the most disputable result.

(9) Write the aircraft weight in the applicable document.

(10) Move the pilot seat back. Position the digital protractor on the seat track and measure the aircraft pitch angle (Figure 202). Read and write down the value.

CAUTION: BECAUSE THE AIRCRAFT WEIGHING IS DONE ON THE GROUND, IN NORMAL ATTITUDE, WITHOUT A PREVIOUS LEVELING, THE FORMULAS BELOW WERE DEVELOPED TO GIVE THE LONGITUDINAL C.G. DISTANCE (X) FROM THE "DATUM" BASED ON THE AIRCRAFT WEIGHING. THESE FORMULAS ARE APPLICABLE ONLY TO THE AIRCRAFT IN THE BASIC EMPTY WEIGHT CONDITION (REFER TO DEFINITION IN THE WEIGHT AND BALANCE MANUAL), WITHOUT FUEL ON BOARD, AND FOR THE SPECIFIC CONFIGURATION (WITH THE THRUST REVERSERS INSTALLED OR NOT).

(11) To get the longitudinal CG distance (X) from the "DATUM", use the formulas below as applicable.

(a) Aircraft equipped with the Thrust Reversers.

- Formula: $X\ (m) = (1/\cos \alpha)\ [12.4343\ (1 - N / W) - 1.07] + 3.2615 - 0.9317 \sin \alpha$.

(b) Aircraft not equipped with the Thrust Reversers.

- Formula: $X\ (m) = (1/\cos \alpha)\ [12.4343\ (1 - N / W) - 1.07] + 3.2615 - 0.9197 \sin \alpha$.
- Where:

1. X (m) = Distance from "Datum" measured parallel to the fuselage center line, in meters.
2. W = N + R = Total aircraft weight (Kg).
3. N = Nose landing gear reaction, total (Kg).
4. R = Main landing gear reaction, total (Kg).
5. α = Aircraft pitch attitude:

NOTE: The sign of the pitch angle must be taken into account when you get $\sin \alpha$.

- Nose up: $\alpha > 0 \rightarrow \sin \alpha > 0$
- Nose down: $\alpha < 0 \rightarrow \sin \alpha < 0$

(12) Write down the value of longitudinal CG distance (X) in the applicable document.

K. Follow-on

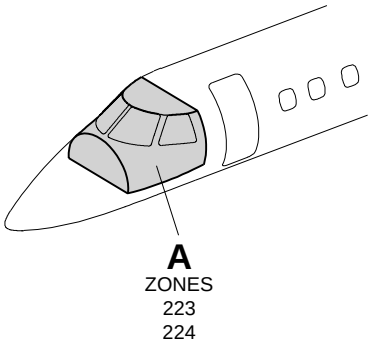
SUBTASK 842-009-B

(1) Remove the aircraft from the platform scales (Figure 202).

(2) Remove the platforms (Figure 202).

EFFECTIVITY: ACFT MODEL(S) EMB-135

Aircraft Weighing on Scales
Figure 202 - Sheet 1



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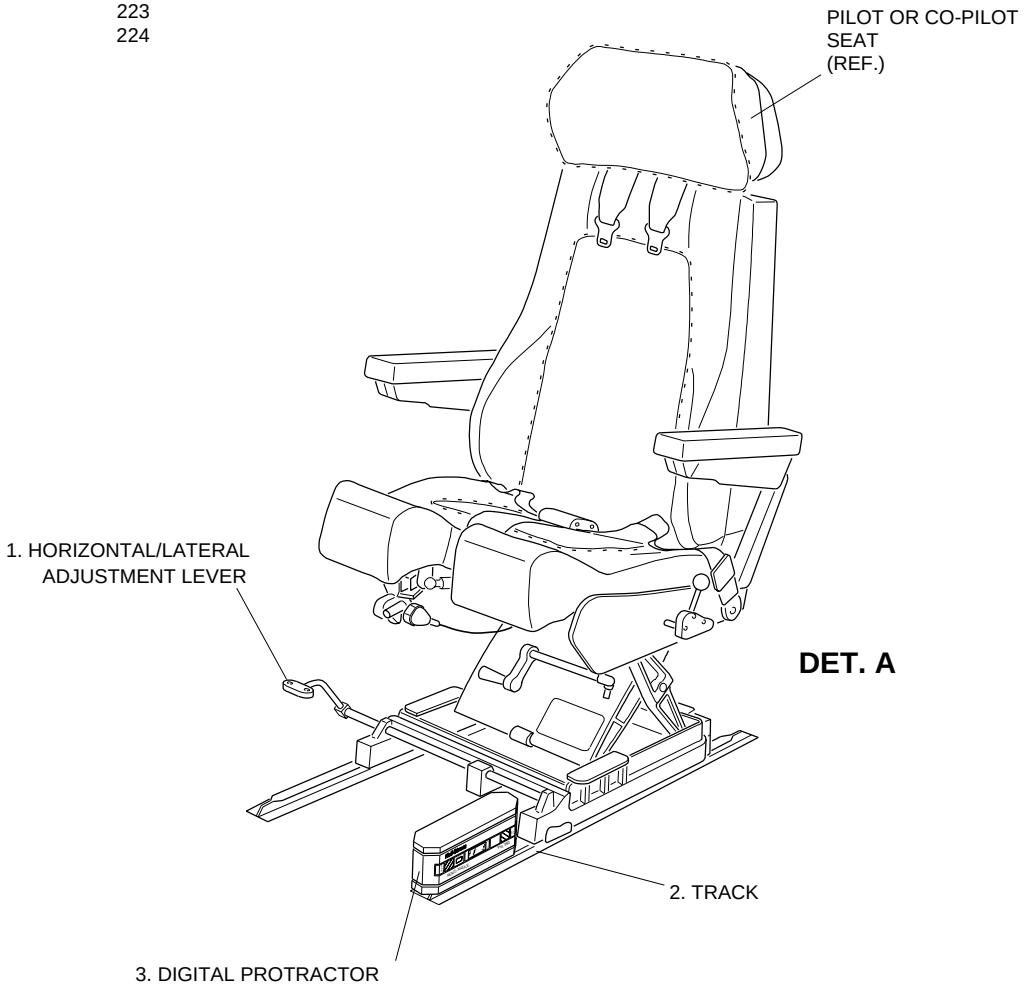

DET. A

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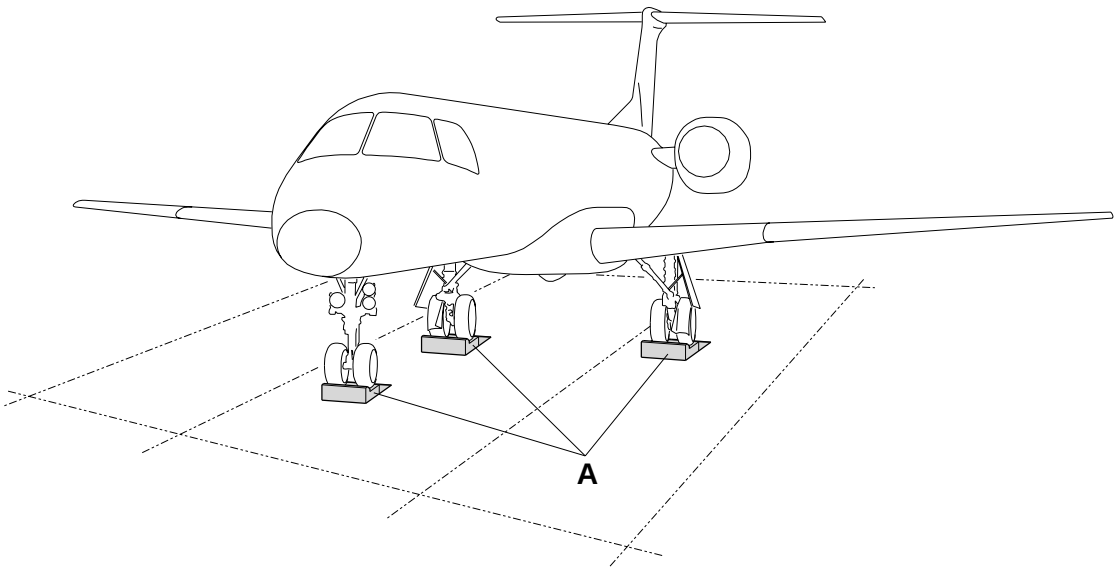
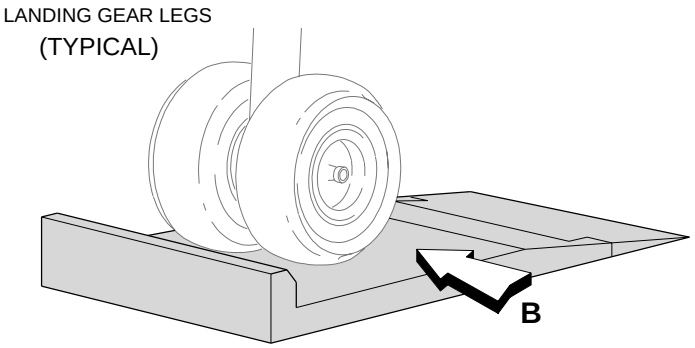
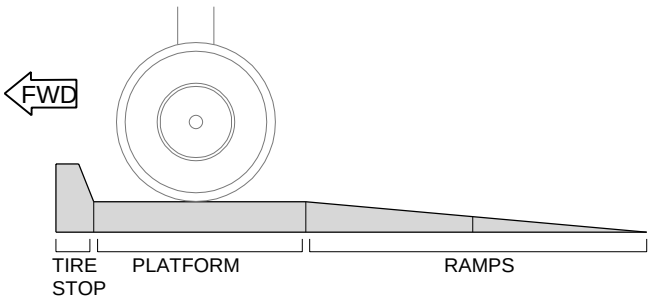
EFFECTIVITY: ACFT MODEL(S) EMB-135
Aircraft Weighing on Scales
Figure 202 - Sheet 2





DET. A



VIEW. B

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