

DCA21FA174

MAINTENANCE RECORDS

Group Chair's Factual Report - Attachment 3

Weight and Balance

December 16, 2022



WORK PROCEDURES SHEET

PREPARED BY

REVIEWED BY

RII/MII SELECTED BY

AREA/PHASE/SHOP
ENG D

TITLE

WEIGHING - BOEING 737 AIRPLANE

REVISION LETTER: Original

DATE: 04 Mar. 2021

ITEM
NO.ASSIGNED
TO

DESCRIPTION

DONE
BYINSP
BYCUSTOM
INSP

REFERENCE : Boeing B737-200 Weight & Balance Manual

X

X

1 CLNG Remove dirt, grease, rain drops, moisture, etc. if available from the airplane.

2 TOWING Drain the fuel to a trapped condition with the airplane in a specific attitude and then move the airplane into hangar.

3 SVCE
REI Conduct an inventory of the basic items according to Equipment Check List of Boeing 737 airplane, and remove loose foreign objects and/or not basic items. Before commencing actual weighing check the following condition.

- (✓) Fuel shall be drained to a trapped condition with the airplane in a specific attitude.
- (✓) Engine system oil serviced as for flight.
- (✓) Constant Speed Drive system oil serviced as for flight.
- (✓) All engine tank oil filled to flight operating condition.
- (✓) All engine starter oil receptacles completely filled (when applicable).
- (✓) All washing and drinking water tanks completely drained.
- (✓) All chemical toilet fluid tanks drained.
- (✓) All hydraulic power systems filled to specified operating quantities.
- (✓) All landing gear oleos completely serviced with oil.
- (✓) All air bled from nose gear and main gear oleos to permit jacking on landing gear or installation of oleo locks (as applicable).

CAUTION : CHECK THAT OLEOS ARE COMPLETELY COMPRESSED.

- (✓) All landing gear tires inflated to specified operating pressures.
- (✓) Fire extinguisher and oxygen system completely filled.
- (✓) Wing flaps and spoilers retracted and control surfaces neutral.
- (✓) Airplane restored to a cleanliness level at least consistent with good weather operating conditions.

MODEL TYPE
B737SERIAL NO.
N810TAPROG/WORK ORDER NO.
CA1247DATE ISSUED
MAR 04 2021DATE COMP
APR 19 2021STATION
TNNPAGE/ REVIEWED BY
1 of 5
CODE B737-08-10

FORM 483433 (JUL.19)

TO ORDER, CONTACT ENGINEERING AND STATE THIS CODE.



BR-001

001113F21030538

SI-03



WORK PROCEDURES SHEET

AREA/PHASE/SHOP ENG D		TITLE WEIGHING - BOEING 737 AIRPLANE	PREPARED BY [REDACTED]	REVIEWED BY [REDACTED]	RII/MII SELECTED BY [REDACTED]
			REVISION LETTER: Original		
			DATE: 04 Mar, 2021		
ITEM NO.	ASSIGNED TO	DESCRIPTION	DONE BY	INSP BY	CUSTOM INSP

Record basic items if removed during weighing :

BASIC ITEM

LOCATION (ARM)

NONE

NONE

SVCE:

REI:

4 SVCE Connect cables from indicator unit to load cells, and Connect appropriate power source to the weighing kit indicator unit.

5 SVCE Position load cells on each jack at inboard wing (2) and aft body jack point. Connect cable from indicator unit 2to load cells and connect appropriate power source to the weighing kit indicator unit .

6 ENG D Turn on indicator unit and select the first load cell without load condition to set the display for that load cell to zero. Continue the same operation for the other two load cells .

7 SVCE Jack up the aircraft so that all load cells take some load and allow thirty (30) minutes for warm-up.
ENG D

SVCE:

ENG D:

MODEL TYPE B737	SERIAL NO. N810TA	PROD/WORK ORDER NO. CA1247	DATE ISSUED MAR 04 2021	DATE COMPLETED APR 19 MAR 2021	STATION TNN	PAGE REVIEWED 2 of 5	CODE B737-08-10
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WORK PROCEDURES SHEET

AREA/PHASE/SHOP ENG D		TITLE WEIGHING - BOEING 737 AIRPLANE	REVISION LETTER: Original DATE: 04 Mar, 2021
ITEM NO.	ASSIGNED TO	DESCRIPTION	DONE BY INSPI BY CUSTOM INSP
8	SVCE ENG D	After warm -up lower the aircraft so that all load cells are clear of jacking points and ensure the display of each load cell to be zero.	
9	SVCE	Suspend plumb bob cord freely from bottom of vee slot on the right side of the main gear wheel well at BS 685 as shown in Figure. 1.	
10	SVCE	Jack up the airplane evenly at all points until wheels clear the floor. Adjust the airplane laterally and longitudinally and check airplane for level position with the plumb bob devise.	
11	ENG D	Record all load cell readings at least two times according to the weighing kit operation instructions.	
12	SVCE ENG D	Lower the airplane till load cells are free, and wait two (2) minutes for load cells to stabilize. Record zero shift scale readings. <u>NOTES</u> : 1. Do not remove cables from load cells and/or indicator unit of weighing kit until, zero shift scale readings are checked and recorded. 2. If the zero shift is greater than the limits as specified by weighing kit manufacturer, repeat the weighing procedure.	

MODEL/TYPE B737	SERIAL NO. N810TA	PROD/WORK ORDER NO. CA1247	DATE ISSUED MAR 04 2021	DATE COMPLETED APR 19 2021	STATION TNN	PAGE/REVIEWED 3 of 3	CODE B737-08
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WORK PROCEDURES SHEET

AREA/PHASE/SHOP		TITLE	REVISION LETTER: Original		
ITEM NO.	ASSIGNED TO	DESCRIPTION	DONE BY	INSP BY	CUSTOM INSP
ENG D		WEIGHING - BOEING 737 AIRPLANE	DATE: 04 Mar, 2021		
13	SVCE ENG D	Repeat weighing procedures per steps 10 through 12, and compare with preceding result to determine if two weighing results are in reasonable agreement. NOTE: If this cannot be achieved, malfunction of the weighing equipment should be suspected.	SVCE:		
			ENG D:	X	
14	SVCE	Remove jack from the airplane and turn off indicator unit of weighing kit. Disconnect cables and load cells, and place properly cables, load cells etc, into weighing kit.			
15	SVCE	Return the airplane to serviceable configuration.			
16	ENG D	Update the weight and balance data record.			

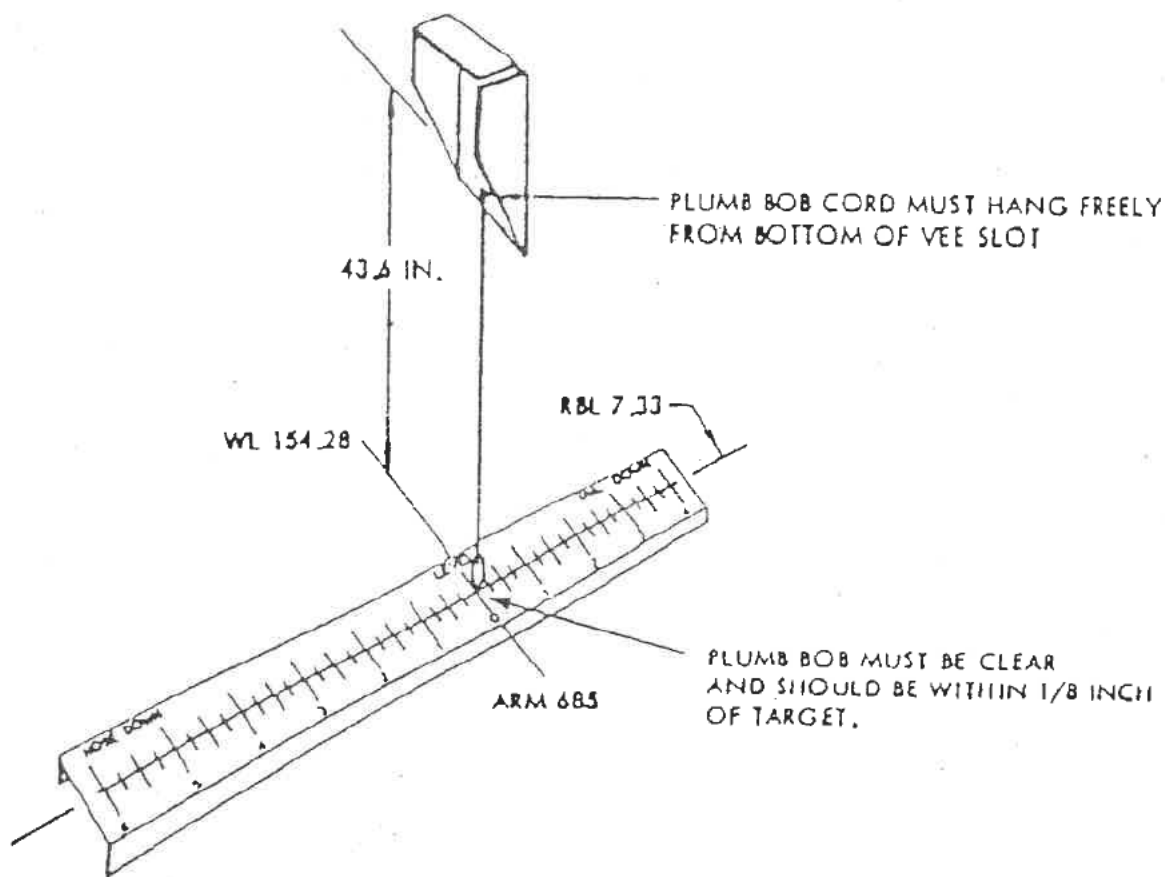
N/A

MODEL TYPE B737	SERIAL NO. N810TA	PROD/WORK ORDER NO. CA1247	DATE ISSUED MAR 04 2021	DATE COMPLETED APR 19 2021	STATION TNN	PAGE/REVIEWED 4 of 5
						CODE B737-08-10



WORK PROCEDURES SHEET

AREA/PHASE/SHOP ENGD		TITLE WEIGHING - BOEING 737 AIRPLANE	PREPARED BY [REDACTED]	REVIEWED BY [REDACTED]	RII/MII SELECTED BY
			REVISION LETTER: Original		
			DATE: 04 Mar, 2021		
ITEM NO.	ASSIGNED TO	DESCRIPTION	DONE BY	INSP BY	CUSTOM INSP



NOTE: PLUMB BOB TARGET AND SUSPENSION FITTING IS INSTALLED ON THE RIGHT HAND SIDE OF THE MAIN GEAR WHEEL WELL AT STATION 685. FOR DETAIL REFER TO BOEING DRAWING 65-52935.

FIG. 1

D6-15066 -2

MODEL TYPE B737	SERIAL NO. N810TA	PROD/WORK ORDER NO. CA1247	DATE ISSUED MAR 04 2021	DATE COMPLETED APR 4 2021	STATION TNN	PAGE/ REVIEWED BY 5 of 5	CODE B737-08-10
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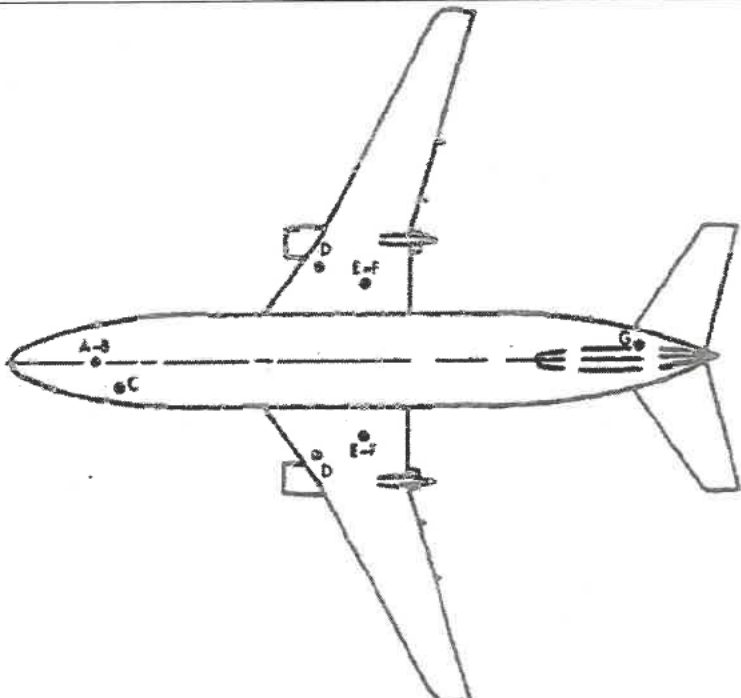
AIRCRAFT WEIGHT AND BALANCE WEIGHING REPORT

REGISTRATION: N810TA
 AIRCRAFT MODEL: 737-200
 SERIAL NUMBER: 21116
 WEIGHING DATE: April 19, 2021

EQUIPMENT:
 DUE DATE:
 PERFORMED BY:
 A&P and RII No.:

ELECTRONIC WEIGHING KIT
 TYPE: 64001-08J5
 S/N : 1265G4
 September 16, 2021

AIRCRAFT JACKING POINTS

								
LOCATION		*A	B	C	D	E	*F	G
		NOSE GEAR JACK POINT	NOSE GEAR WHEELS	FORWARD BODY JACK POINT	WING PANEL JACK POINT	MAIN GEAR WHEELS	MAIN GEAR JACK POINT	AFT BODY JACK POINT
ARM - IN.		250.0 ^①	250.2 ^①	258.9	579.8	698.0 ^①	698.1 ^①	1127.1
DISTANCE FROM CENTER LINE - IN.	RIGHT	0	0	NO JACK POINT	114.5	101.8	101.8	10.9
	LEFT	0	0	47.7	114.5	101.8	101.8	NO JACK POINT

① BALANCE ARMS ARE FOR GEARS IN FULLY COMPRESSED POSITION.
 ARMS FOR ALTERNATE OLEO EXTENSIONS ARE SHOWN IN THE WEIGHT AND BALANCE CONTROL
 LOADING MANUAL (D6-15066-3) SECTION 80-10 PAGES 5-6.

*RAI LOAD CELLS TO BE POSITIONED AT NOSE GEAR AND MAIN GEAR JACK POINTS/COLUMN A&F

AIRCRAFT WEIGHT AND BALANCE WEIGHING REPORT WEIGHING SCALE CALCULATIONS

REACTION POINT	SERIAL NUMBER	1 st (LBS)	2 nd (LBS)	MEAN WEIGHT (LBS)	ARM(IN)	MOMENT (LBS. IN)
LEFT WING PANEL JACK POINT	50824733 (RED)	26130	26130	51395.00	579.80	29798821.00
RIGHT WING PANEL JACK POINT	50824731 (YEL)	25260	25270			
SUB TOTAL (WING PANEL JACK POINT)	X	51390	51400			
AFT BODY JACK POINT	50538323 (BLU)	8160	8160	8160.00	1127.10	9197136.00
TOLERENCE BETWEEN 1 ST & 2 ND READING +/- 30LBS MAX		59550	59560	59555.00	654.79	38995957.00
TOTAL:						
MINUS(-) APPENDIX A (i.e Chocks)				3.45	744.54	2568.66
PLUS(+) APPENDIX B				168.10	598.60	100624.66
AIRCRAFT EMPTY WEIGHT:				59719.65	654.63	39094013.00
PERCENT MAC = ((ARM-625.6)/1.345)		21.58%				

NOTE: USE FIRST SCALE READINGS FOR CALCULATIONS

APPENDIX A			
ITEMS WEIGHED BUT NOT PART OF THE BASIC EMPTY WEIGHT (BEW)			
ITEM	WEIGHT(LBS)	ARM(IN)	MOMENT (LBS.IN)
1) PLUMB BOB	0.20	685.00	137.00
2) WING JACK PAD (2EA)	2.25	579.80	1304.55
3) AFT BODY JACK PAD	1.00	1127.10	1127.10
TOTAL	3.45	744.54	2568.65
APPENDIX B			
ITEMS NOT WEIGHED BUT PART OF THE BASIC EMPTY WEIGHT (BEW)			
ITEM	WEIGHT(LBS)	ARM(IN)	MOMENT(LBS.IN)
1) DRAINABLE UNUSABLE FUEL	+168.10	598.60	100624.66
TOTAL	+168.10	598.60	100624.66

This weighing is carried out in accordance with the Weight and Balance and Loading Manual (D6-15066-3) for Boeing 737-200 aircrafts in Cargo Configuration. This aircraft basic empty weight (BEW) includes all the standard equipment not normally varying between aircraft configurations (Ref. D6-15066-3 Section 10-30 Page 1). But, excludes operational items removed for weighing (Ref. RAI Weight and Balance Manual Chapter 3 Item 3.4 Listing). These items re-installed after weighing now become part of the aircrafts basic operating weight (BOW).

Calculations Reviewed and Confirmed By: [REDACTED] Date: April 19, 2021

AIRCRAFT WEIGHT AND BALANCE WEIGHING REPORT

PRE-WEIGHING CHECK LIST				Page 1 of 2
AIRCRAFT MAKE: BOEING	MODEL: 737-200	SERIAL NO: 21116	REG. NO. N810TA	DATE: April 19, 2021
LOCATION: TNN				
The following procedure serves to prepare the A/C for weighing to determine the Basic Operating Empty Weight.				
NOTE: Bleed air from Nose and Main Landing Gear struts until completely compressed. Re-inflate nose strut as needed to level aircraft or use strut extension charts from Boeing Weight and Balance Control Loading Manual D6-15066-3 Section 80-10 Pages 5 and 6				
CAUTION: Weighing shall be performed on a level area inside the hangar.				
ITEM	MECHANIC	INSPECTOR		
1. Ensure Calibration date checked prior to using weighing equipment				
2. Defuel the Aircraft				
3. Check that hydraulic systems are serviced to proper levels				
4. Completely drain potable water tanks				
5. Completely drain FWD lavatory tanks				
6. Perform inventory of equipment using equipment list (RAI10023D)				
7. Empty trash from galley waste bin				
8. Position aircraft in hanger where jacking and weighing will take place. If weighing platforms are to be used, DO NOT position aircraft on to scales at this time.				
9. When raised, position the aircraft in 1 degree nose down 0 degree roll attitude.				
10. Completely service landing gear oleos with oil and bleed air to fully compressed				
11. Completely drain unusable drainable fuel from all fuel tanks.				
12. Check to ensure engine tank oil, CSD oil, starter oil, and APU oil are serviced to proper levels.				
13. Check exterior of aircraft in the wheel bays and flap well areas to ensure the aircraft is free of accumulated dirt and debris. Wash aircraft if necessary.				
14. Remove all tools and work equipment from flight and cargo compartments.				
15. Make certain that all control surfaces are in the neutral position. Flaps and Spoilers retracted.				
16. Close all passenger, crew, cargo, inspection doors and windows.				
17. Tow aircraft onto the weighing platforms or into position for jacking.				
18. Prior to taking readings, disconnect Ground Power and tow bar from the aircraft.				

AIRCRAFT WEIGHT AND BALANCE WEIGHING REPORT

PRE-WEIGHING CHECK LIST				Page 2 of 2
AIRCRAFT MAKE: BOEING	MODEL: 737-200	SERIAL NO: 21116	REG. NO. N810TA	DATE: April 19, 2021
ITEM			MECHANIC	INSPECTOR
19. Weigh the aircraft per the Weighing Equipment's Instructions, making necessary write-ups on the front page. Reference Boeing Weight and Balance Document D6-15066-2, Chapter 80-10, Pages 1-8				
20. Set all cells to register zero on weighing unit				
21. Recheck jacks for perfect alignment with external jack cones				
22. Jack airplane evenly at all points until wheels clear the floor.				
23. Check airplane for level position with the plumb bob device.				
25. Record weight for each cell registered on Weighing Report (Page 2)				
26. Lower the whole airplane in level position until cells are clear of external jack cones.				
27. Record zero drift for each cell registered on weighing unit. a) First weighing results recorded. b) Second weighing results recorded.				
Note: Repeat weighing procedure items until two sets of figures are in reasonable agreement. If cannot be achieved, malfunction of the weighing should be suspected. (+/- 30LBS Max Tolerance between readings)				
28. Restore aircraft to normal configuration. This includes re-servicing all landing gear struts.(If Required)				

RAI

Form	Rev.	Date
RAI10023		

AIRCRAFT WEIGHT AND BALANCE WEIGHING REPORT PRE-WEIGHING INVENTORY CHECKLIST

AIRCRAFT N: N810TA		DATE: April 19, 2021		MAINTENANCE STATION: TNN	
COCKPIT	RECORD ANY DEVIATIONS TO THE CHECK LIST		REMOVED	MECHANIC	INSPECTOR/RII
	CRASH AXE		—		
	LOG BOOK		—		
	AIRCRAFT LIBRARY		—		
	LIFE VEST		—		
	PORTABLE OXYGEN BOTTLES AND MASKS		—		
	HEADSET AND MIKES		—		
	SMOKE GOGGLES		—		
	PORTABLE FIRE EXTINGUISHERS		—		
	GEAR PINS		—		
	PYROTECHNIC SIGNALING DEVICE		—		
	PERSONAL BREATHING EQUIPMENT (PBE)		—		
MISC. ITEMS	TAIL STAND (IF CARRIED)		NOT CARRIED		
	SPARE FLUIDS (IF CARRIED FWD GALLEY)		NOT CARRIED		
	FIRST AID KIT		—		

RAI

Form	Rev.	Date
RAI10023		

AIRCRAFT WEIGHT AND BALANCE WEIGHING REPORT POST-WEIGHING CHECKLIST

AIRCRAFT N: N810TA		DATE: April 19, 2021		MAINTENANCE STATION: TNN	
COCKPIT	RECORD ANY DEVIATIONS TO THE CHECK LIST		INSTALLED		
	CRASH AXE		✓		
	LOG BOOK		✓		
	AIRCRAFT LIBRARY		✓		
	LIFE VEST		✓		
	PORTABLE OXYGEN BOTTLES AND MASKS		✓		
	HEADSET AND MIKES		✓		
	SMOKE GOGGLES		✓		
	PORTABLE FIRE EXTINGUISHERS		✓		
	GEAR PINS		✓		
	PYROTECHNIC SIGNALING DEVICE		✓		
	PERSONAL BREATHING EQUIPMENT (PBE)		✓		
MISC. ITEMS	TAIL STAND (IF CARRIED)		NOT CARRIED		
	SPARE FLUIDS (IF CARRIED FWD GALLEY)		NOT CARRIED		
	FIRST AID KIT		✓		
COMPLETION	AIRCRAFT LOG BOOK				
	WEIGHING FORM (RAI290)				
	WEIGHT AND BALANCE REPORT (WB 121-640)				
	CONTINUOUS WEIGHING RECORD (RAI117)				
	REQUIRED INSPECTION DATA SHEET				
	ELECTRONIC SCALES REMOVED AND STOWED				
	AIRCRAFT JACKS REMOVED AND STOWED				