CHAPTER

08

LEVELLING AND WEIGHING

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CHAPTER 08 - LEVELING & WEIGHING
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WEIGHING - MAINTENANCE PRACTICES

1. General

A. Check the airplane inventory for items which are not included in the basic empty weight of the airplane as supplied by the manufacturer but which will have to be weighed with the airplane; for example, any optional equipment or customer-supplied fixed equipment. Enter each item, its weight and its arm in Table II of the Airplane Weighing Form (Ref. to Fig. 202); these items will be subtracted from the "Airplane as Weighed" figures to achieve accurate basic empty weight figure.

B. Check the airplane inventory for items which are included in the basic empty weight of the airplane but which will not be weighed with the airplane; for example, a component which has been removed for repair, overhaul etc. Enter each item, its weight and its arm in Table II of the Airplane Weighing Form (Ref. to Fig. 202); these items will be added to the Airplane as Weighed figures to achieve accurate basic empty weight figures.

NOTE: Component weight and arm information can be found in the equipment list in the Weight and Balance Section of the Airplane Flight Manual.

C. Remove all loose items which are not included in the basic empty weight figures.

D. All weighing operations must be conducted in a closed hangar and care taken that no air currents pass over the airplane during weighing, otherwise inaccurate readings could result.

E. If necessary, wash the airplane to remove accumulations of mud, dirt, grease, etc.

2. Procedures

A. Tools and Equipment

NOMENCLATURE	PART NUMBER	MANUFACTURER
Electronics Scales		
Platform Scales		

B. Referenced Information

Maintenance Manual Chapter 07-10-00
Maintenance Manual Chapter 08-20-00
Maintenance Manual Chapter 12-10-00

C. Procedure - Electronic Scales Method (Ref. to Fig. 201 and 202)

NOTE: Refer to the manual supplied with the electronic scales for specific instructions on the use of the scales, and to Para.1 for general instructions.

(1) Defuel the airplane (Ref. to 12-10-00) until only unusable fuel remains.
(2) Replenish the following to normal operating capacity (Ref. to 12-10-00):
- engine oil tank (left and right engines)
- hydraulic pump package
- environmental control system fluid
- oxygen bottle

(3) Install nose and wing jacking pads and place jacks in position under pads (Ref. to 07-10-00).
(4) Place an electronic scale cell between each jack and jacking pad.
(5) Jack the airplane (Ref. to 07-10-00).
(6) Level the airplane (Ref. to 08-20-00).
(7) Check the readings of the left main, right main and nose scale cells and record the weights in the appropriate space under the heading SCALE READING on Table I of the Airplane Weighing Form (Ref. to Fig. 202).
(8) Remove the airplane from the jacks (Ref. to 07-10-00), taking care that no damage occurs to the scale cells.
(9) With all weight removed from the cells and scale switches adjusted to zero, a small plus or minus weight reading may occur on the scale. If there is a plus reading, divide it by two and enter it as a negative number under Tare on Table I of the Airplane Weighing Form. If there is minus reading, divide it by two and enter it as a positive number under Tare on Table I of the Airplane Weighing Form. If the tare is greater than ±5 pounds (±2.27 kg) for any one cell, repeat the weighing procedure.
(10) Add or subtract the tare of each cell to or from its respective scale reading. Enter the results under Net Weight in Table I of the Airplane Weighing Form.
(11) Add the three net weight figures and enter the total at the bottom of the Net Weight Column; this is the Airplane Total as Weighed (W).
(12) Using formula B in Table I of the Airplane Weighing Form, calculate the CG location and enter the figure in the space provided.
(13) Transfer the Airplane Total as weighed (W) figure and the CG figure to the spaces provided on the Table II of the Airplane Weighing Form.
(14) Muliply the W and CG figures, divide by 100, and enter the resultant moment figure in the space provided.
(15) Add and/or subtract the missing/extra equpment figures to/from the airplane as weighed figures and record the resultant Basic Empty Weight, CG and moment figures in the spaces provided.

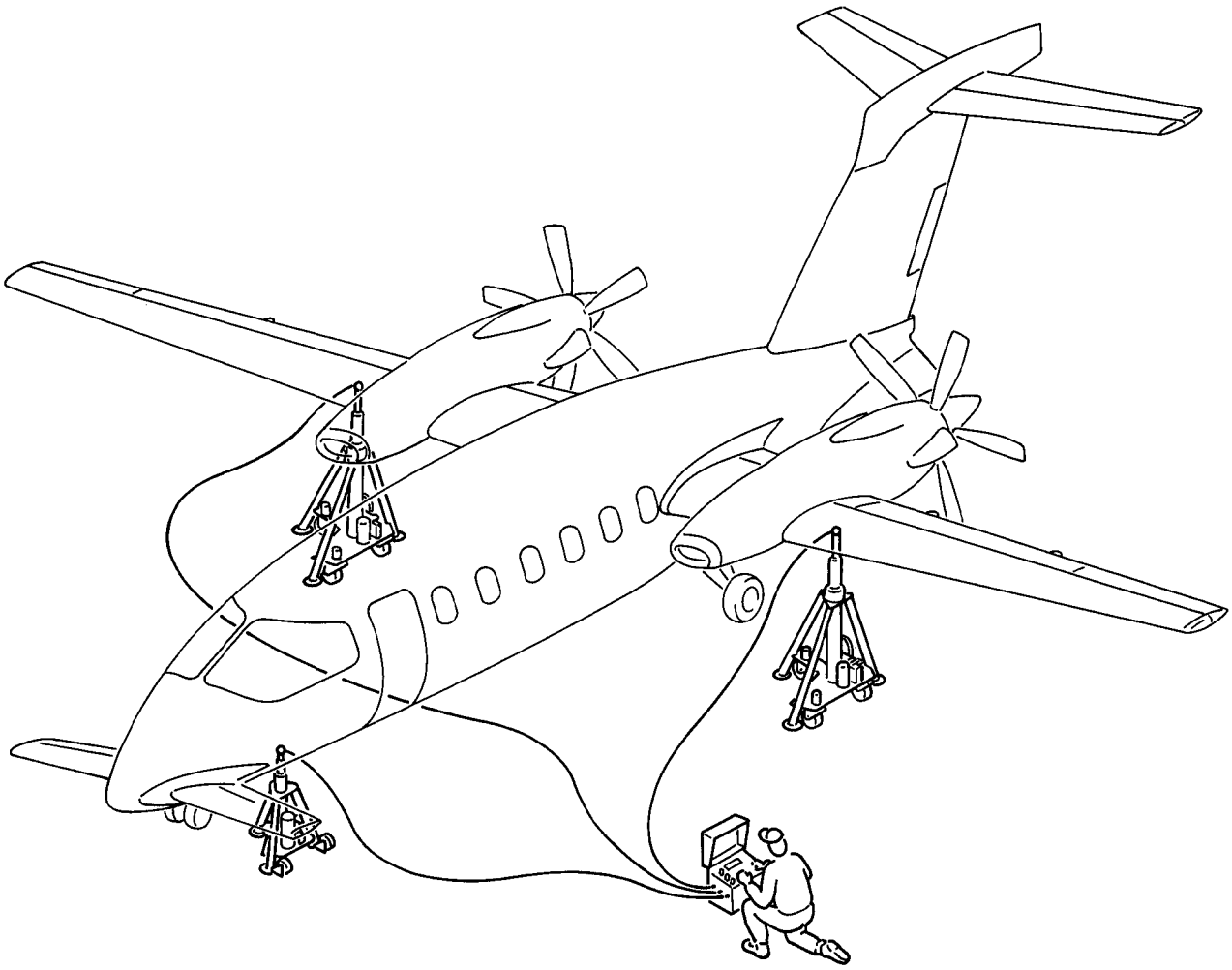

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Fig. 201 - Weighing with Electronic Scales

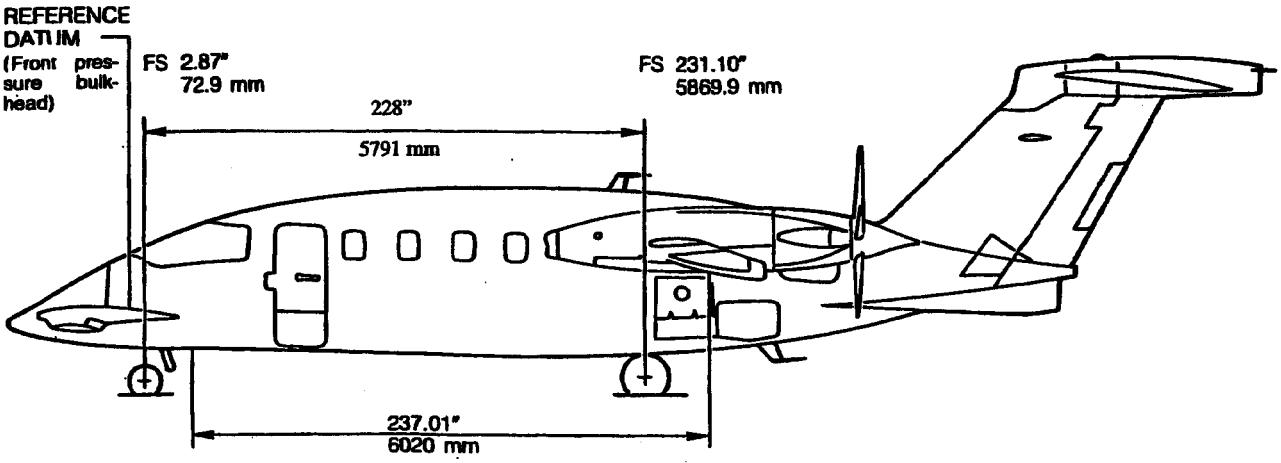

TABLE I

POSITION	SCALE READING	TARE	NET WEIGHT
Left Main			(W_L)
Right Main			(W_R)
Nose			(W_N)
AIRPLANE TOTAL AS WEIGHED			(W)

Note: For customer convenience the C.G. is calculated in inches

C.G. Arm of airplane as weighed:

A. ON WHEELS: $231.10 - \frac{(228.23)W_N}{W} =$ inches aft of reference datum

B. ON JACKS: $257.76 - \frac{(237.01)W_N}{W} =$ inches aft of reference datum

FS
Fuselage Station, a position along the fuselage measured in inches from the reference datum.

LEVELING PROVISIONS
Longitudinal - LH passenger seat rail rearward of the cabin door threshold at FS 86.00".
Lateral - Across pilot seat rails forward of the cabin door threshold at FS 61.00".

TABLE I - AIRPLANE AS WEIGHED
(Including full of oil and operating fluids but no usable fuel).

TABLE II BASIC EMPTY WEIGHT AND C.G.

ITEM	WEIGHT (LBS)	C.G.. ARM (IN)	MOMENT (IN LBS /100)
Airplane as weighed (total)			
Extra equipment (to be subtracted from airplane as weighed)			
Missing equipment (to be added to airplane as weighed)			
Basic empty weight			

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Fig. 202 - Airplane Weighing Form

D. Procedure - Platform Scales Method (Ref. to Fig. 202 and 203)

(1) Defuel the airplane (Ref. to 12-10-00) until only unusable fuel remains.

(2) Replenish the following to normal operating capacity (Ref. to 12-10-00):

- engine oil tank (left and right engines)
- hydraulic pump package
- environmental control system fluid
- oxygen bottle

(3) Inflate the tires to proper pressure (Ref. to 12-10-00)

NOTE: If the platform scales are not equipped with built-in wheel chocks, it will be necessary to apply the parking brake after the airplane is placed on the scales.

(4) Jack the airplane (Ref. to 07-10-00) until the platform scales can be placed under the wheels.

(5) Position the scales under the wheels and lower the airplane onto the scales. If applicable, apply the airplane parking brake.

(6) Level the airplane as per the "on wheels" procedure (Ref. to 08-20-00).

(7) Remove the jacks from the immediate vicinity of the airplane and remove the jack pads (Ref. to 07-10-00).

(8) Close the cabin door.

(9) Check the readings on the left main, right main and nose platform scales and record the weights in the appropriate space under the heading SCALE READING on Table I of the Airplane Weighing Form (Ref. to Fig. 202)

(10) Jack the airplane (Ref. to 07-10-00) until the airplane weight is completely off the scales. If there is a plus reading on the scales, divide it by two and enter it as a negative number under Tare on Table I of the Airplane Weighing Form. If there is a negative reading on the scales, enter it as a positive number under Tare on Table I of the Airplane Weighing Form. If the tare is greater than ±5 pounds (±2.27 kg) for any one scale, the scales need to be recalibrated and certified and the weighing procedure repeated.

(11) Remove the platform scales, lower the airplane to the ground and remove the jacks and jacking pads (Ref. to 07-10-00).

(12) Add or subtract the tare of each scale to or from its respective scale reading. Enter the result under Net Weight in Table I of the Airplane Weighing Form.

(13) Add the three net weight figures and enter the total at the bottom of the Net Weight Column; this is the Airplane Total as Weighed (W).

(14) Using formula A in Table I of the Airplane Weighing Form, calculate the CG location and enter the figure in the space provided.

(15) Transfer the Airplane Total as Weighed (W) figure and the CG figure to the spaces provided on Table II of the Airplane Weighing Form.

(16) Multiply the W and CG figures, divide by 100, and enter the resultant moment figure in the space provided.

(17) Add and/or subtract the missing/extra equipment figures and record the resultant Basic Empty Weight, CG and Moment figures in the spaces provided.

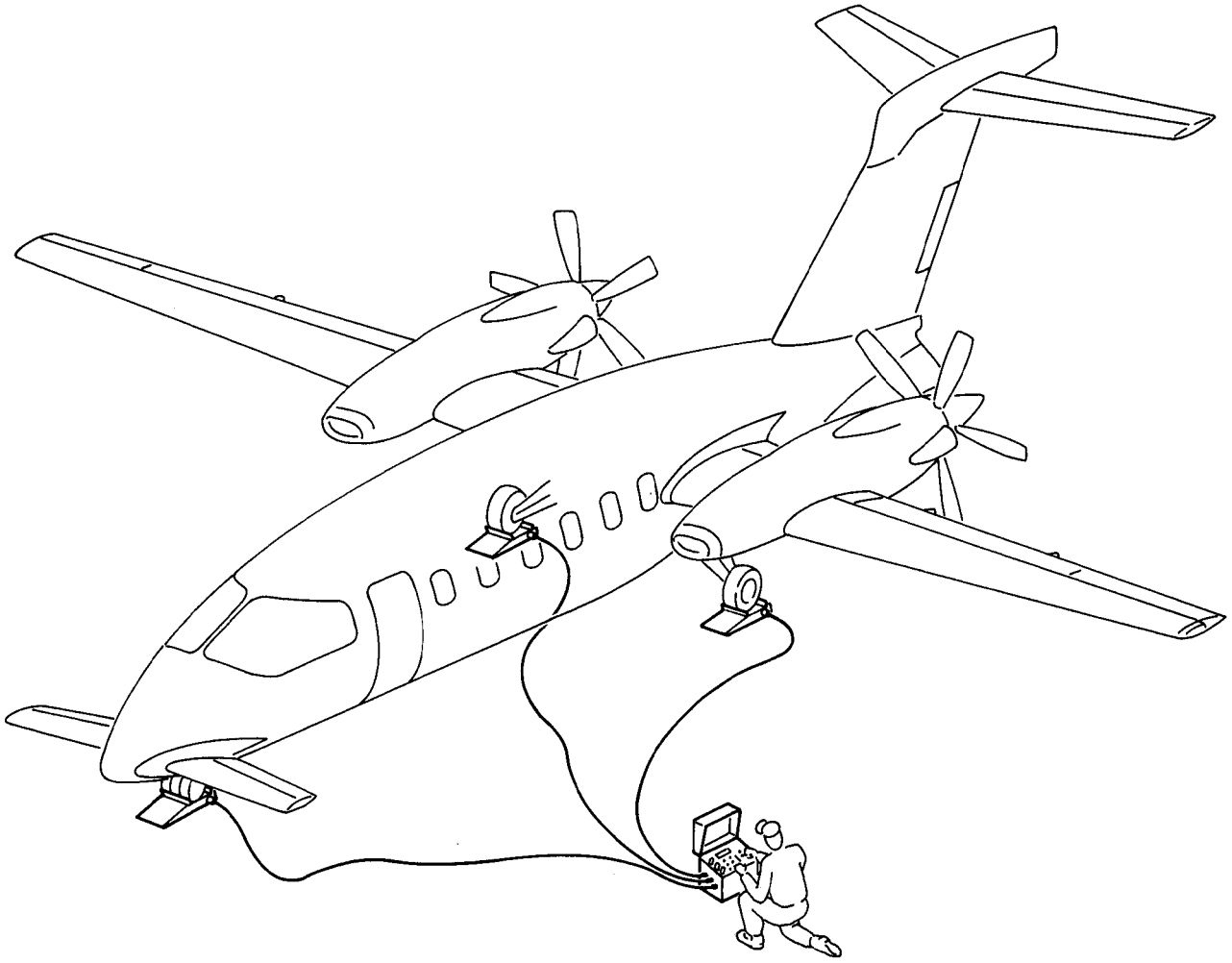

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Fig. 203 - Weighing with Platform Scales

LEVELING - MAINTENANCE PRACTICES

1. General

A. The airplane may be leveled on jacks or on wheels.

B. To level the airplane three reference marks are provided. One reference mark, located on the left side of the fuselage at FS 8130, is a common mark used for both lateral and longitudinal leveling. The other lateral leveling mark is located on the right side of the fuselage at FS 8130, and the other longitudinal mark is located on the forward mast of cabin door.

2. Procedure

A. Referenced Information

Maintenance Manual Chapter 07-10-00

B. Leveling on jacks (Ref. to Fig. 201 and 202)

(1) Place the airplane jacks in position (Ref. to 07-00-00).
(2) Use a tube with stiff and transparent ends long enough to reach the reference marks.
(3) Fill the tube with water and position the ends at the lateral reference marks.
(4) Level the airplane adjusting the jack under the wing of the lower side.
(5) The airplane is considered leveled when the water at both tube ends exactly reaches the reference marks.
(6) Level the airplane adjusting the nose jack.
(7) The airplane is considered leveled when the water at both tube ends exactly reaches the reference marks.

C. Leveling on wheels (Ref. to Fig. 201 and 202)

NOTE: Leveling on wheels can be performed deflating the tires or deflating the shock absorbers.

(1) Use a tube with stiff and transparent ends long enough to reach the marks.
(2) Fill the tube with water and position the ends at the lateral reference marks.

CAUTION: BE CAREFUL WHEN YOU DEFLATE THE TIRES. DO NOT DEFLATE THEM TO A POINT WHERE DAMAGE TO THE TIRE SIDEWALLS CAN OCCUR.

(3) Level the airplane as necessary deflating the tires or landing gear shock absorbers.
(4) The airplane is considered leveled when the water at both tube ends exactly reaches the reference marks.
(5) Position the tube ends at the longitudinal reference marks.

CAUTION: BE CAREFUL WHEN YOU DEFLATE THE TIRES. DO NOT DEFLATE THEM TO A POINT WHERE DAMAGE TO THE TIRE SIDEWALLS CAN OCCUR.

(6) Level the airplane as necessary deflating the airplane tires or landing gear shock absorbers.

(7) The airplane is considered leveled when the water at both tube ends exactly reaches the reference marks.

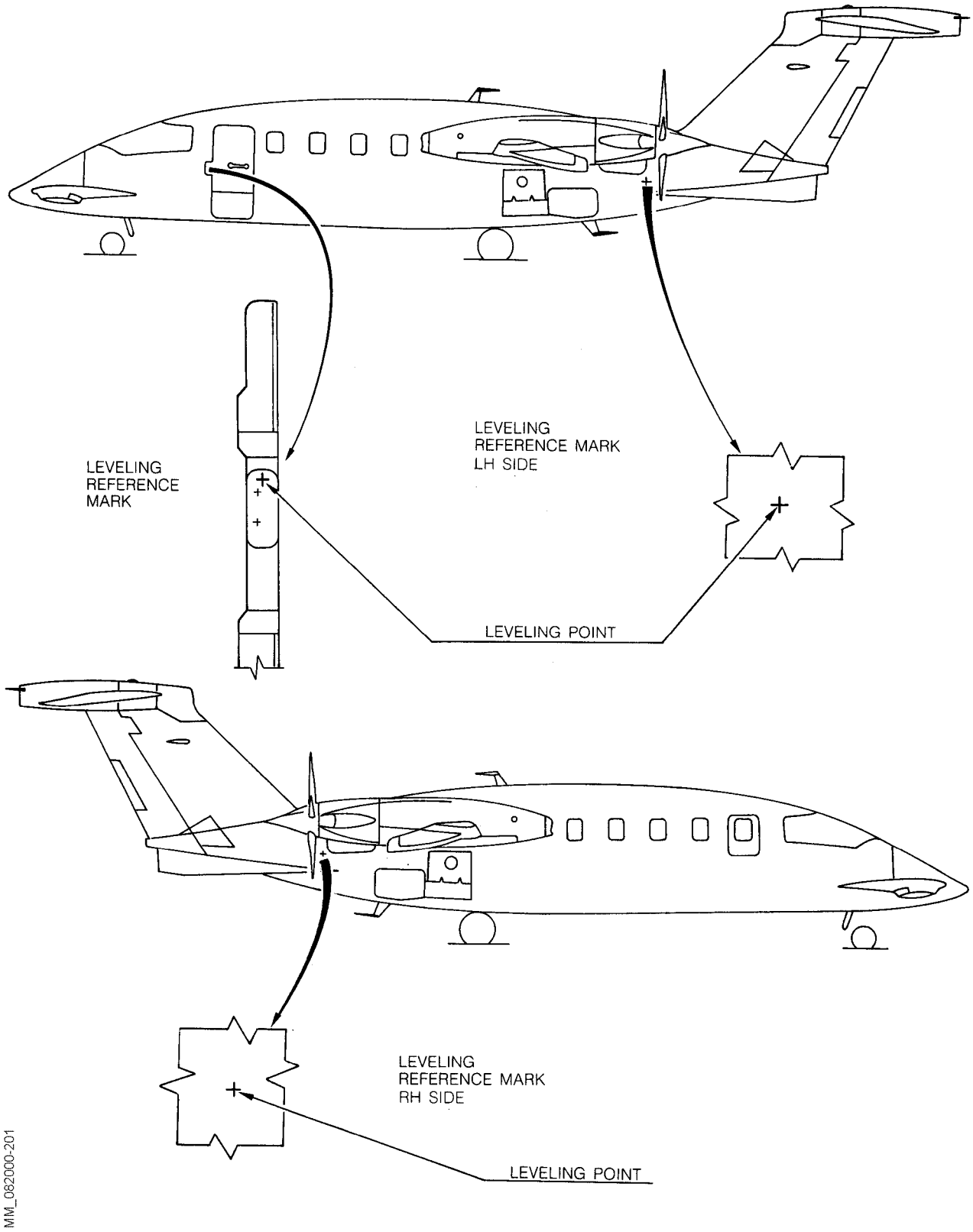
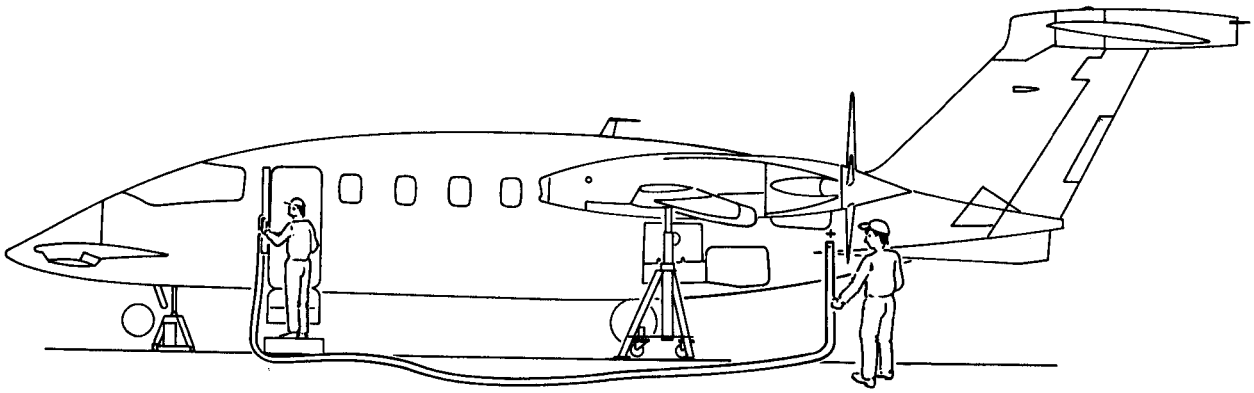
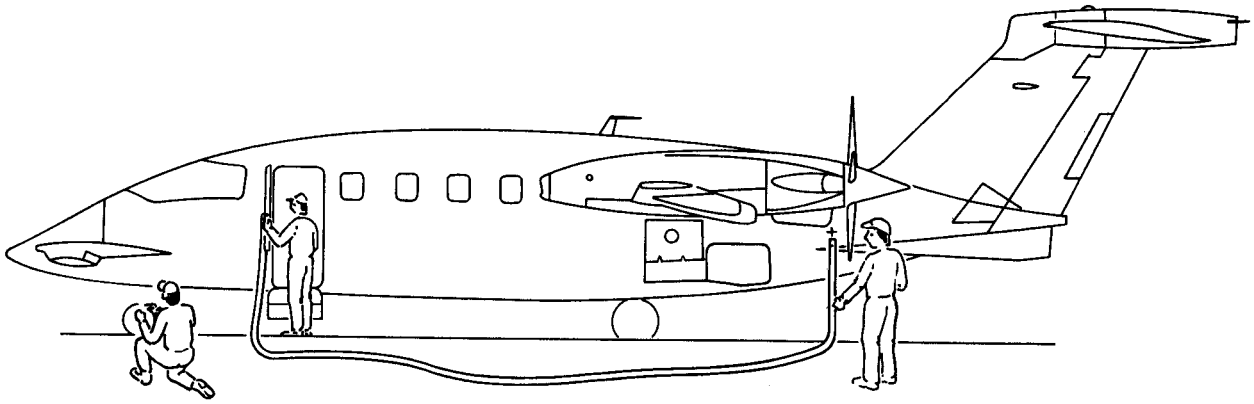


Fig. 201 - Leveling Reference Marks



A - LEVELING ON JACKS



B - LEVELING ON WHEELS

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Fig. 202 - Airplane Leveling