SECTION V
PERFORMANCE

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TITLES IN CAPITAL LETTERS ARE CHARTS
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REGULATORY COMPLIANCE

The information in this section is presented in compliance with the requirements of RBHA 1350 (FAR Part 25, amendment 25-54).

STANDARD PERFORMANCE CONDITIONS

All performance in this section is based on flight test data and the following conditions:

- Pertinent power less installation, air bleed, and accessory losses.
- Full temperature accountability within the operational limits for which the airplane is certified.
- Wing flap position as follows:

	WING FLAP POSITION
TAKEOFF	15°
ENROUTE	0°
APPROACH	15°
LANDING	25° OR 45°

- The wind correction grids are factored in compliance with the regulations, and represent the headwind/tailwind components measured at 10 m (32.8 feet) height.
- Humidity has no appreciable effect on the power of the engines; therefore, it has not been considered in the performance data.
- Left engine failure is the critical case for all takeoff, approach, and landing configurations.
- All takeoff and landing performances based on paved, dry runway.

PERFORMANCE CONFIGURATION

The configurations referred to by name in the charts are shown below. Performance conditions not shown below are on the appropriate charts.

	NUMBER OF OPERATING ENGINES	POWER	FLAPS	GEAR	AIRSPEED
TAKEOFF	2	TAKEOFF ON ALL ENGINES AND ONE ENGINE SUBSEQUENT TO V_{EF}	15°	DOWN	0 TO V_2
1st SEGMENT CLIMB	1	TAKEOFF ON OPERATING ENGINE	15°	DOWN TO UP	V_2
2nd SEGMENT CLIMB	1	TAKEOFF ON OPERATING ENGINE	15°	UP	V_2
3rd SEGMENT	1	TAKEOFF ON OPERATING ENGINE	15° TO 0°	UP	V_2 TO FINAL SEGMENT SPEED
FINAL SEGMENT CLIMB	1	MAX. CONTINUOUS ON OPERATING ENGINE	0°	UP	FINAL SEGMENT SPEED
ENROUTE CLIMB	1	MAX. CONTINUOUS ON OPERATING ENGINE	0°	UP	ENROUTE CLIMB SPEED
APPROACH CLIMB	1	TAKEOFF ON OPERATING ENGINE	15°	UP	V_2
LANDING CLIMB	2	TAKEOFF	25° or 45°	DOWN	LANDING CLIMB SPEED APPROPRIATE TO FLAP SETTING
LANDING	1	GROUND IDLE ON ONE ENGINE AFTER TOUCH-DOWN	25° or 45°	DOWN	LANDING REFERENCE SPEED APPROPRIATE TO FLAP SETTING

For takeoff and landing: anti-skid and autofeather ON.
Takeoff, enroute, and landing performance may be scheduled with engine airbleed open or closed. When engine airbleed is open, pack and bleed switches are selected to LOW position.

DEFINITIONS

AIRSPEED

INDICATED AIRSPEED, KIAS

It is the airspeed indicator reading (knots), as installed in the airplane, uncorrected for static position error. Zero instrument error is assumed.

CALIBRATED AIRSPEED, KCAS

It is the indicated airspeed (knots), corrected for static source position error.

EQUIVALENT AIRSPEED, KEAS

It is the calibrated airspeed (knots), corrected for compressibility.

TRUE AIRSPEED, TAS

It is the equivalent airspeed corrected for atmospheric density effects.

CRITICAL ENGINE FAILURE SPEED, V_{EF}

It is the speed at which, if the most critical engine fails, the engine failure is recognized at V_1.

TAKEOFF DECISION SPEED, V_1

It is the speed at which, following a failure of the critical engine at V_{EF}, the decision to continue the takeoff results in a takeoff distance to a height of 35 feet at V_2 speed, that will not exceed the scheduled takeoff distance; or the distance to bring the airplane to a full stop will not exceed the accelerate-stop distance available.

V_1 must not be greater than the rotation speed (V_R), or less than the V_{1MIN}.

V_{1MIN}

It is the V_1 obtained when the engine failure occurs at V_{MCG}.

ROTATION SPEED, V_R

It is the speed at which rotation is initiated during the takeoff to attain the V_2 speed at or before a height of 35 feet above runway surface.

DECISION SPEED RATIO, V_1/V_R

The ratio of the takeoff decision speed (V_1), to the rotation speed (V_R).

LIFT-OFF SPEED, V_{LOF}

Speed at which the airplane becomes airborne.

DEFINITIONS (Continued)

TAKEOFF SAFETY SPEED, V_2

The target speed to be attained at the 35 feet height, during a takeoff with engine failure.

FINAL SEGMENT SPEED

The speed to be used at the final segment, with flaps up and takeoff power on operating engine.

AIR MINIMUM CONTROL SPEED, V_{MCA}

The minimum flight speed at which the airplane is controllable with a maximum 5° bank when one engine suddenly becomes inoperative with the remaining engine operating at takeoff power. The value presented represents the most critical combination of power, weight and center of gravity.

GROUND MINIMUM CONTROL SPEED, V_{MCG}

The minimum speed on the ground at which the takeoff can be continued, utilizing aerodynamic controls only, when one engine suddenly becomes inoperative and the remaining engine is operating at takeoff power. The value presented represents the most critical combination of power, weight and center of gravity.

LANDING REFERENCE SPEED, $V_{REF\ XX}$

The reference speed at 50 feet height in a normal landing with landing configuration (gear down and specific landing flaps). The V_{REF} 45 is equal to 1.3 V_S for landing flaps 45° and V_{REF} 25 is equal to 1.37 V_S for landing flaps 25°.

APPROACH CLIMB SPEED

The speed used for a missed or aborted approach, with gear up, flap 15° and takeoff power (inflight setting) on one engine.

LANDING CLIMB SPEED

The speed used for a balked landing, with specific landing flaps, gear down, and takeoff power (inflight setting) on both engines.

DESIGN MANEUVERING SPEED, V_A

The maximum speed at which application of full available aileron, rudder or elevator will not overstress the airplane. Maneuver involving pitching control shall not exceed the limit load factor of 2.80 g.

DEFINITIONS (Continued)

METEOROLOGICAL

INTERNATIONAL STANDARD ATMOSPHERE, ISA

As accepted by the International Civil Aviation Organization.

INDICATED OUTSIDE AIR TEMPERATURE

Outside air temperature as indicated by the OAT instrument.

TRUE OUTSIDE AIR TEMPERATURE

The free air static (ambient) temperature (see temperature conversion chart in this section).

WIND VELOCITY

The actual wind velocity at 10 m height reported from the tower and corrected by the wind component chart to a headwind or tailwind component parallel to the flight path.

DEFINITIONS (Continued)

TAKEOFF PATH

The takeoff path assumes failure of the most critical engine at V_{EF} and extends from a standing start to a point in the takeoff at which the airplane is at least 1500 feet above the takeoff surface and has achieved the enroute configuration and final climb speed. The takeoff path is divided into segments related to the distinct changes in the configuration, power, and speed.
Some of the terms used in the takeoff path are defined below.

TAKEOFF DISTANCE

The greater of the distance from the start of the takeoff to the point at which the airplane is 35 feet above the takeoff surface, with a failure of the critical engine at V_{EF}; or 115 percent of the distance with all engines operating, from the start of the takeoff to a point 35 feet above the takeoff surface.

TAKEOFF RUN

The greater of the distance from the start of the takeoff to a point equidistant between lift off and the point at which the airplane is 35 feet above the takeoff surface, with a failure of the critical engine at V_{EF}; or 115 percent of the distance from the start of the takeoff to a point equidistant between lift off and the point at which the airplane is 35 feet above the takeoff surface, with all engines operating.

ACCELERATE-STOP DISTANCE

The horizontal distance traversed from brake release to the point at which the airplane comes to a complete stop on a takeoff during which the pilot elects to stop at V_1. The accelerate-stop distance must not exceed the length of the runway plus the length of the stopway.

CLEARWAY

An area beyond the end of the runway, not less than 152.4 m (500 ft) wide, centrally located about the extended centerline of the runway, and under the control of the airport authorities. The clearway is expressed in terms of a clearway plane, extending from the end of the runway with an upward slope not exceeding 1.25 %, above which no object nor any terrain protrudes. However, threshold lights may protrude above the plane if their height above the end of the runway is 0.66 meters (26 inches) or less and if they are located to each side of the runway.

STOPWAY

An area beyond the takeoff runway, no less wide than the runway and centered upon the extended centerline of the runway, able to support the airplane during an aborted takeoff, without causing structural damage to the airplane, and designated by the airport authorities for use in decelerating the airplane during an aborted takeoff.

DEFINITIONS (Continued)

TAKEOFF FLIGHT PATH

The takeoff flight path begins 35 feet above the takeoff surface at the end of the takeoff distance and extends to a point at which the airplane is at least 1500 feet above the takeoff surface and has achieved the enroute configuration and final climb speed, whichever point is higher.

REFERENCE ZERO

This is the reference to which the coordinates of the various points in the takeoff are referred to. It is defined as the end of the takeoff distance and 35 feet below the flight path at this point.

LEVEL OFF HEIGHT

The height above runway at which the third segment is performed (400 ft minimum).

FIRST SEGMENT

Extends from the end of the takeoff distance to the point at which the landing gear is fully retracted, using takeoff power and takeoff flaps, at a constant V_2 speed.

SECOND SEGMENT

Extends from the gear retracted point to the level off height (400 ft minimum), using takeoff power and takeoff flaps at a constant V_2.

THIRD SEGMENT

The horizontal distance required to accelerate, at constant altitude, using takeoff power to the final segment speed while retracting flaps.

FINAL SEGMENT

Extends from the end of the third segment to a gross height of at least 1500 feet, with flaps retracted, maximum continuous power, and at final segment speed.

ENROUTE CLIMB

Climb with flaps 0°, landing gear retracted, maximum continuous power on one engine, and at enroute climb speed.

APPROACH CLIMB

Climb from a missed or aborted approach, with flaps 15°, gear up, and takeoff power on one engine, at the maximum landing weight, and at the adopted approach climb speed.

LANDING CLIMB

Climb from a balked landing with landing flaps, landing gear extended, takeoff power on both engines, and at the adopted landing climb speed.

DEFINITIONS (Continued)

GROSS CLIMB GRADIENT

The ratio, in the same unit, expressed as a percentage of the change in geometric height divided by the horizontal distance travelled in a given time. The gradients shown on the charts are true gradients, i.e., they are derived from true (not pressure) rates of climb.

NET CLIMB GRADIENT

The demonstrated gross gradient reduced by 0.8% during takeoff phase and 1.1% enroute.

DEMONSTRATED CROSSWIND

The maximum demonstrated crosswind component for takeoff and landing is 30 knots measured at tower height of 10 m (32.8 ft). The demonstration was made with both engines operating on a dry runway.

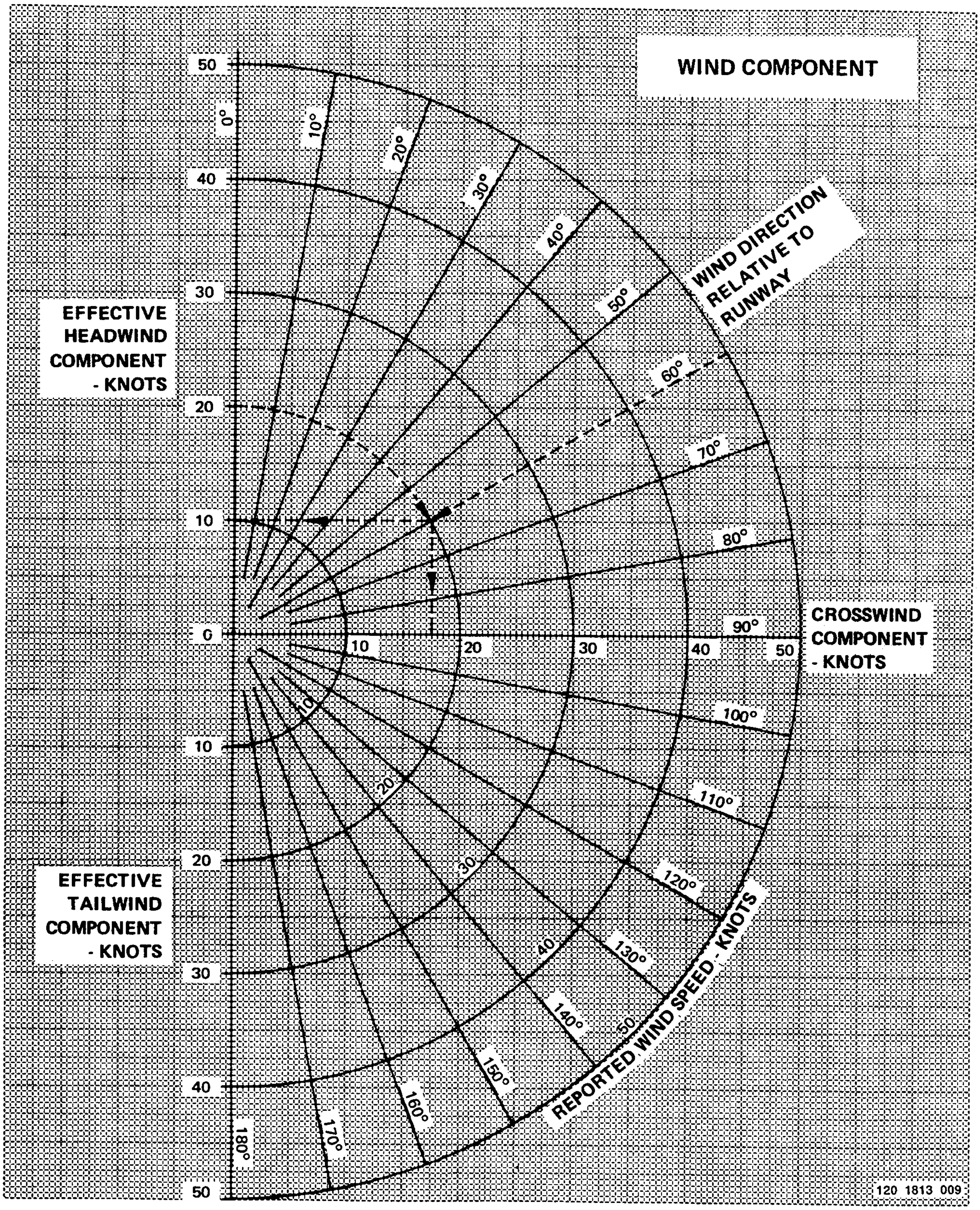
NOISE LEVELS

The Effective Perceived Noise Levels (EPNL) established in accordance with appropriate regulations are:

NOISE LEVEL IN EPN db

CONDITION	ACTUAL	MAXIMUM ALLOWABLE
Sideline	83.9	94
Takeoff	82.3	89
Approach	92.7	98

These values are stated for reference conditions of standard atmospheric pressure at sea level, 25°C ambient temperature, 70% relative humidity, and zero wind.
Takeoff and sideline noise levels were established at the maximum takeoff weight of 11990 kg (EMB-120ER), V_2 + 10 KIAS climb speed, 15° flaps, and all engines with maximum takeoff power setting.
Approach noise levels were established from a 3° glide slope at the maximum landing weight of 11700 kg (EMB-120ER), approach speed of 1.3 V_S + 10 kt, and 45° flaps.
No special noise abatement procedure was used.


WIND COMPONENT
WIND DIRECTION RELATIVE TO RUNWAY
EFFECTIVE HEADWIND COMPONENT - KNOTS
EFFECTIVE TAILWIND COMPONENT - KNOTS
CROSSWIND COMPONENT - KNOTS
REPORTED WIND SPEED - KNOTS
0°
10°
20°
30°
40°
50°
60°
70°
80°
90°
100°
110°
120°
130°
140°
150°
160°
170°
180°
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0
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20
30
40
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120 1813 009

Figure 5-1

POSITION ERROR CORRECTIONS

These are corrections applied to indicated airspeed or altitude to eliminate the effect of location of the static port on the instrument reading. Since all airspeeds and altitudes in this section are presented as "indicated values", no position correction need be made when reading from the charts. The curves were computed for a 9600 kg average weight and the effects of weight variations are considered negligible.

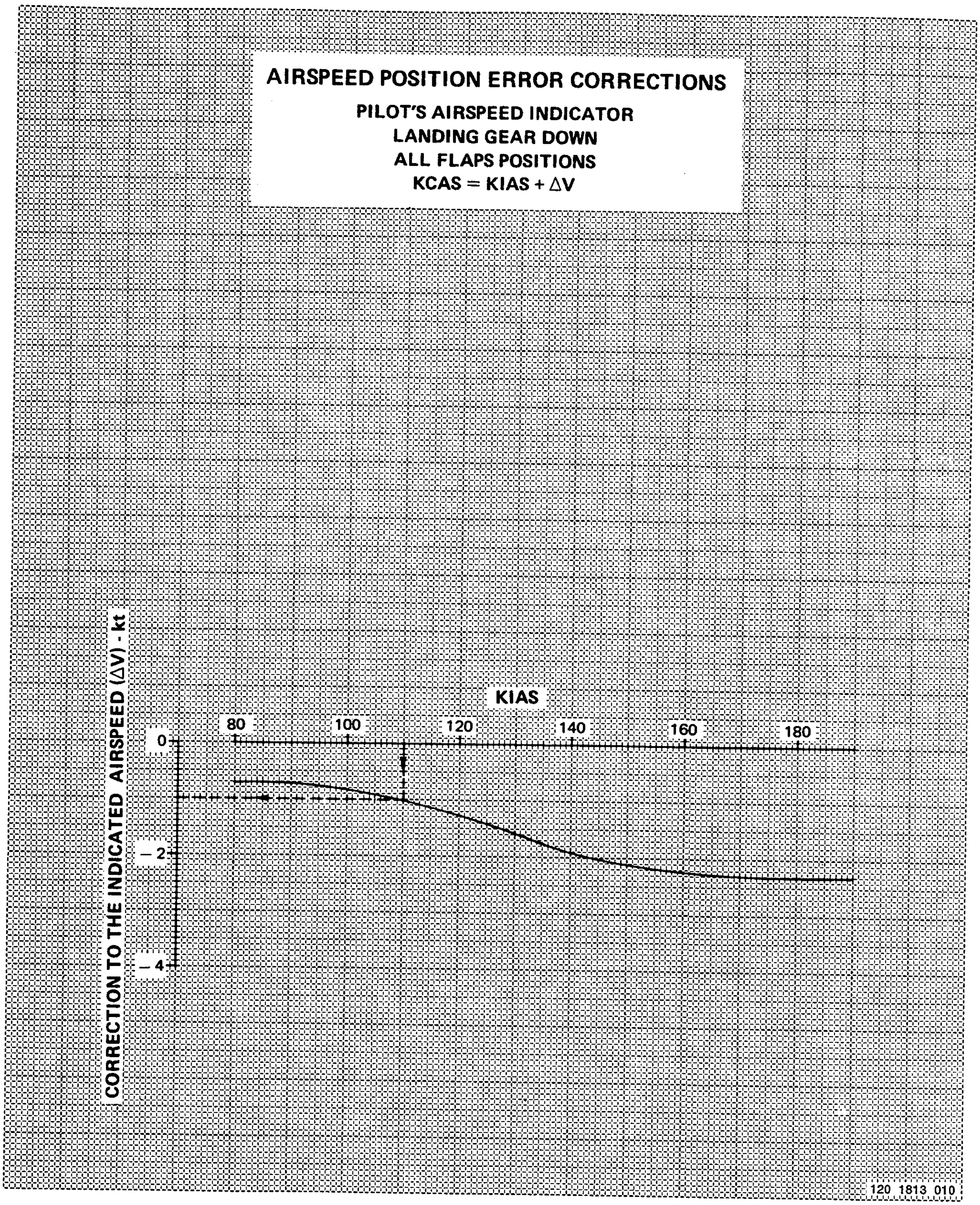

Figure 5-2 (Sheet 1 of 5)

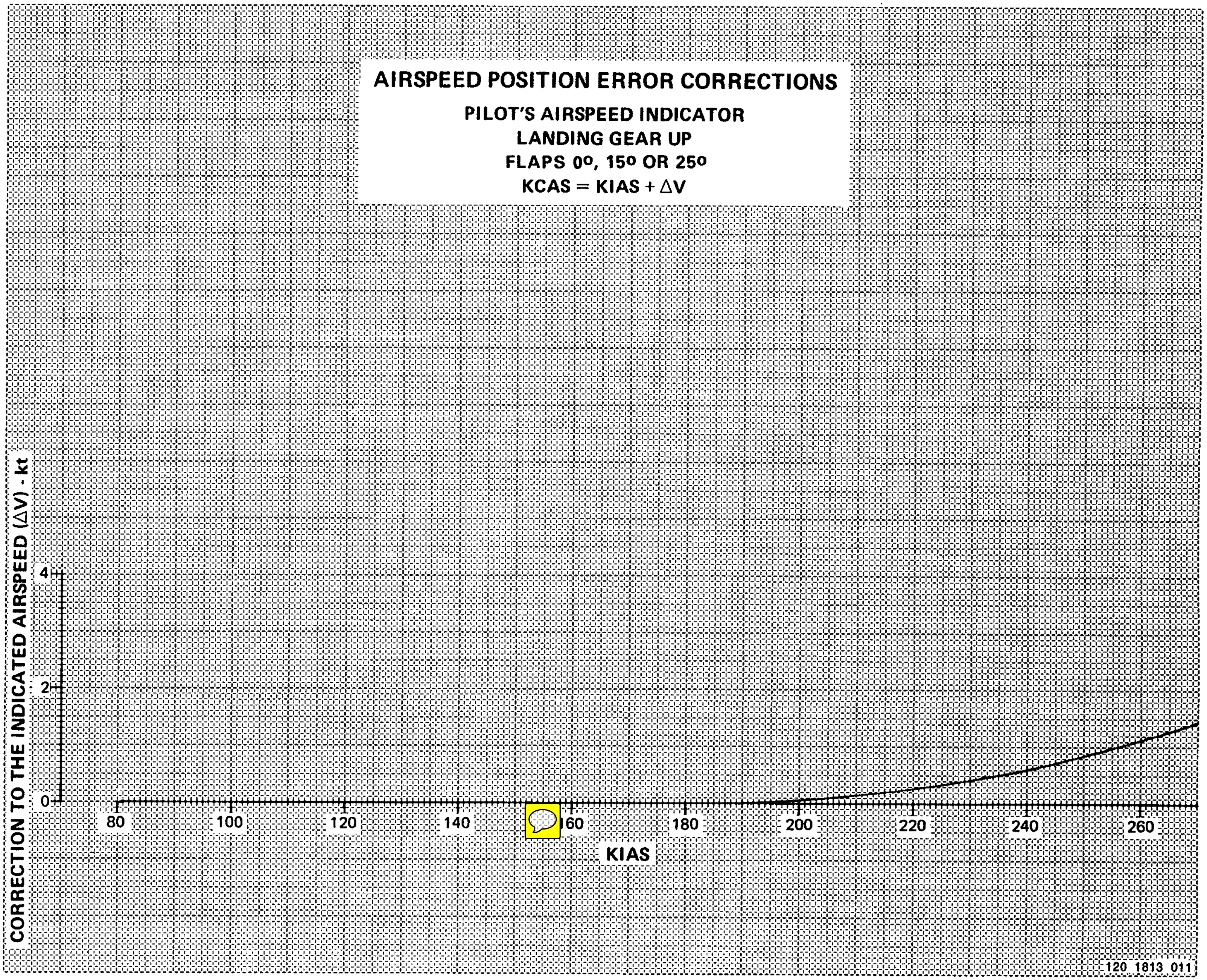

Figure 5-2 (Sheet 2 of 5)

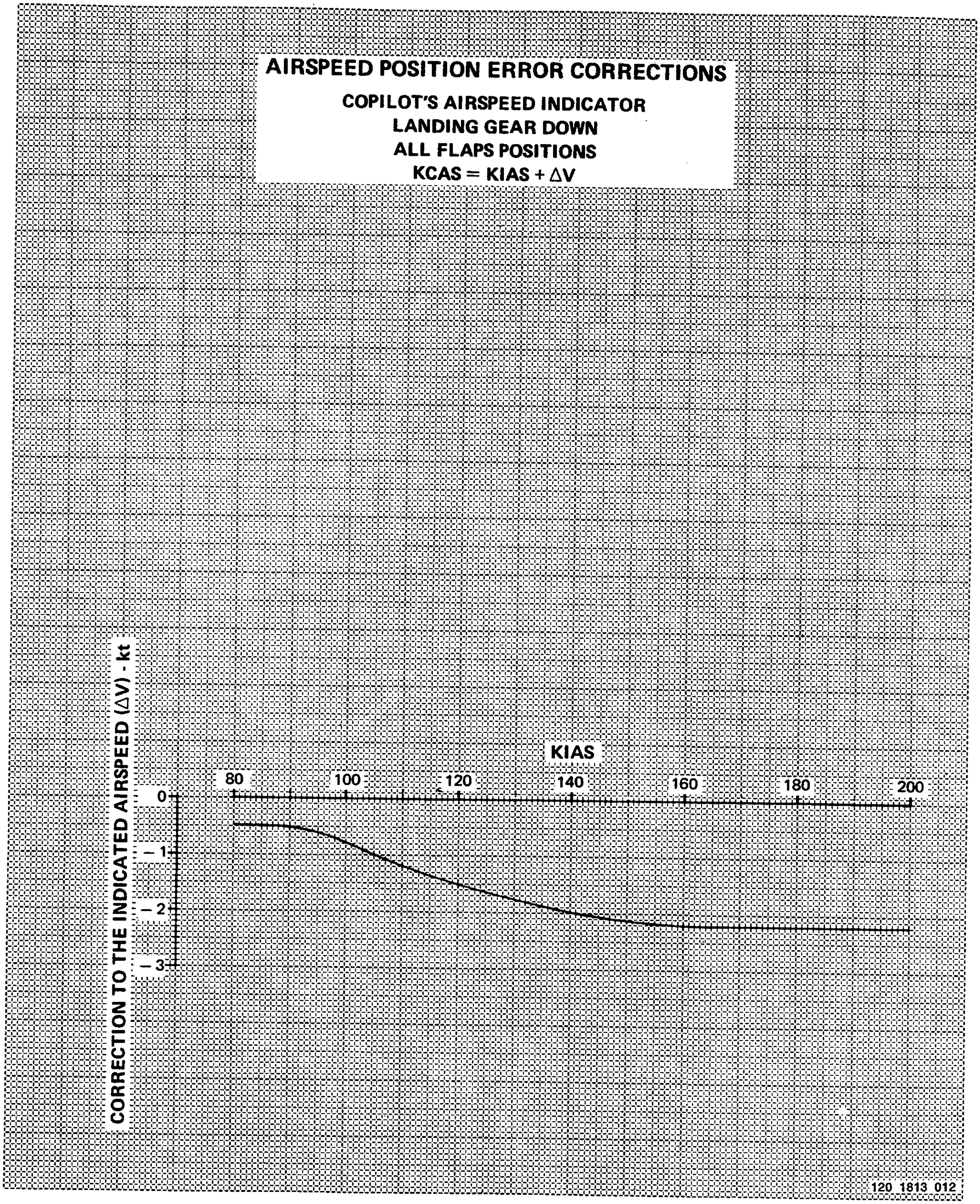

Figure 5-2 (Sheet 3 of 5)

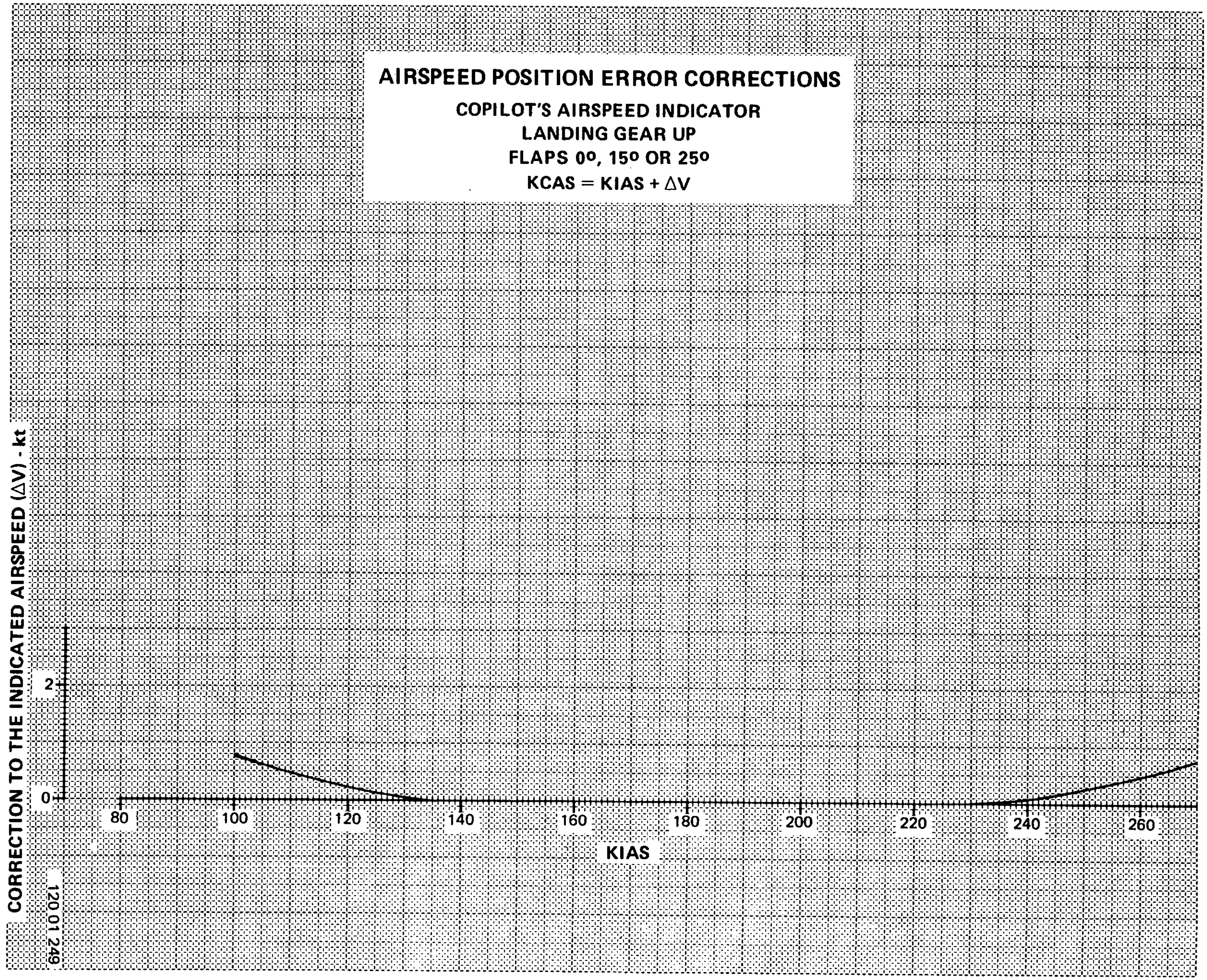

Figure 5-2 (Sheet 4 of 5)

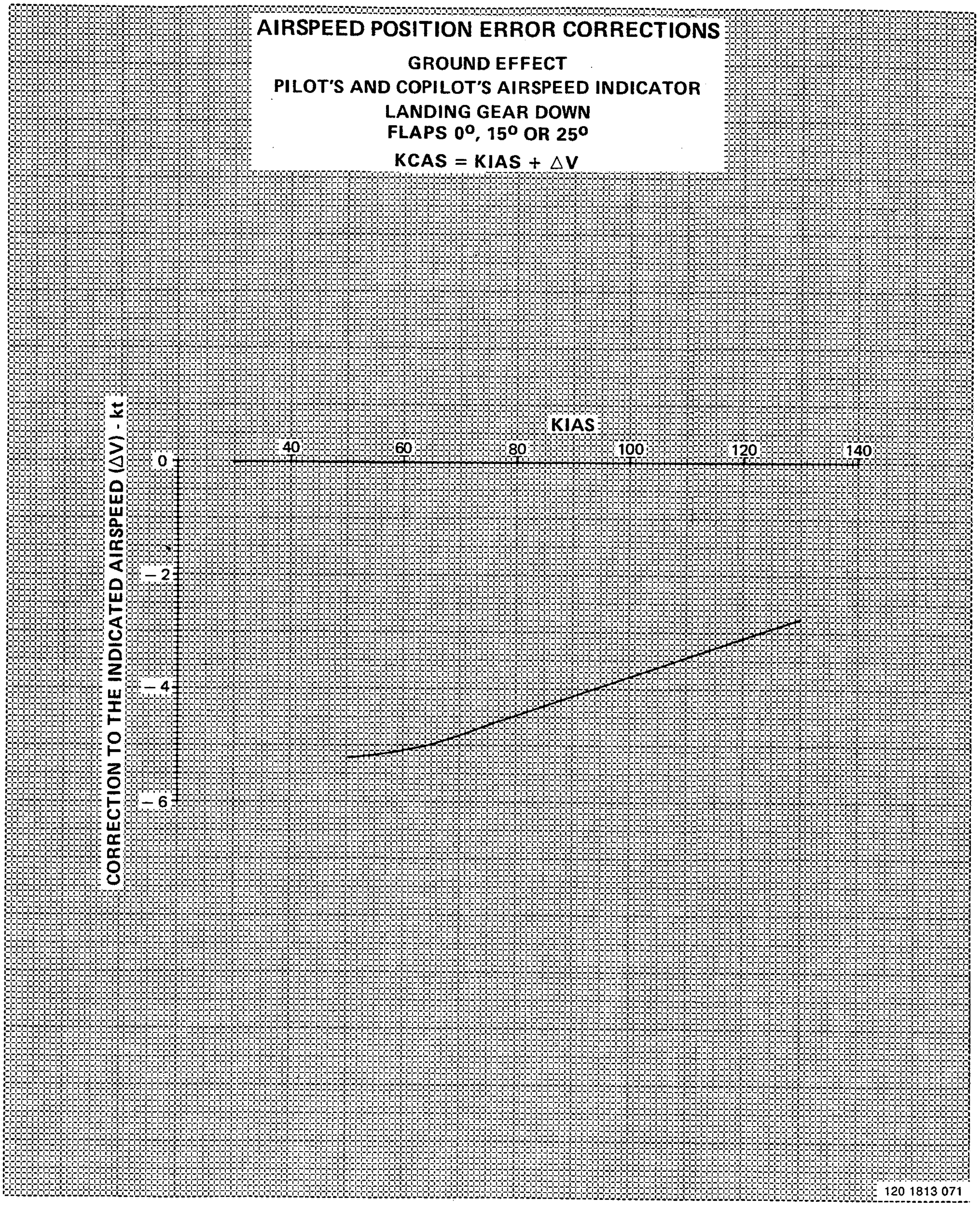

Figure 5-2 (Sheet 5 of 5)

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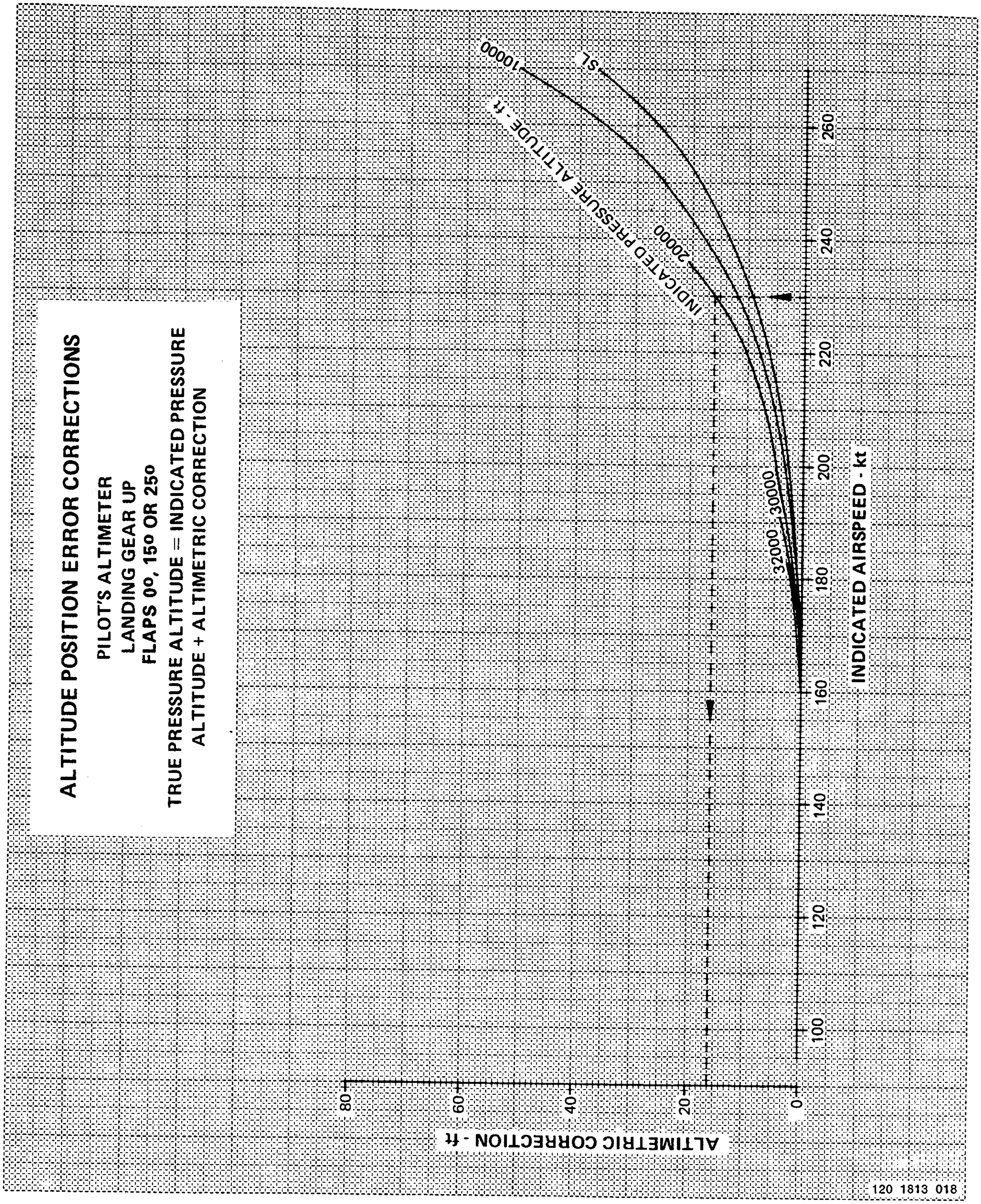


Figure 5-3 (Sheet 1 of 4)

EMBRAER
EMB 120 Brasilia
AIRPLANE FLIGHT MANUAL

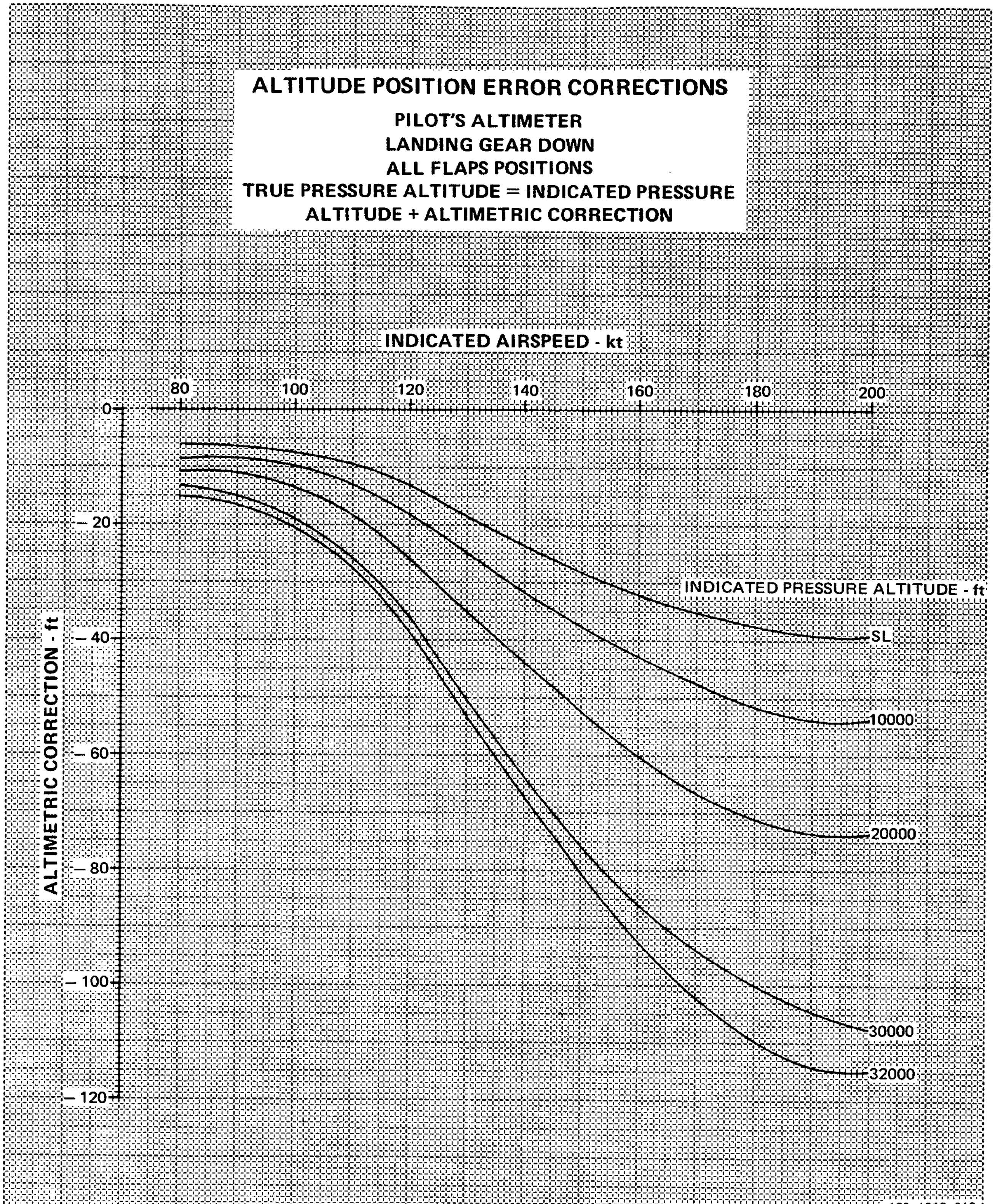


Figure 5-3 (Sheet 2 of 4)

CTA APPROVED

NOVEMBER 16, 1987

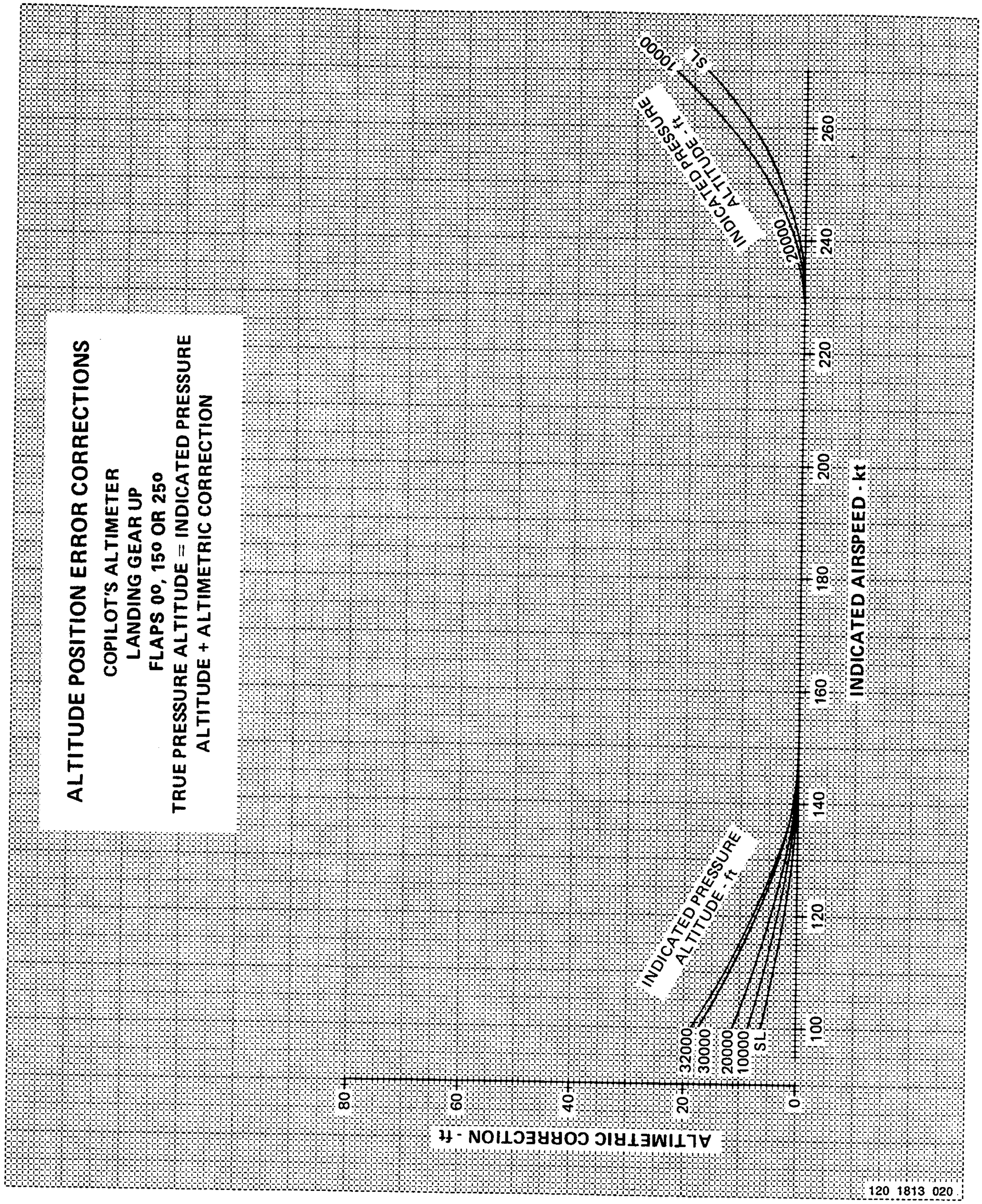


Figure 5-3 (Sheet 3 of 4)

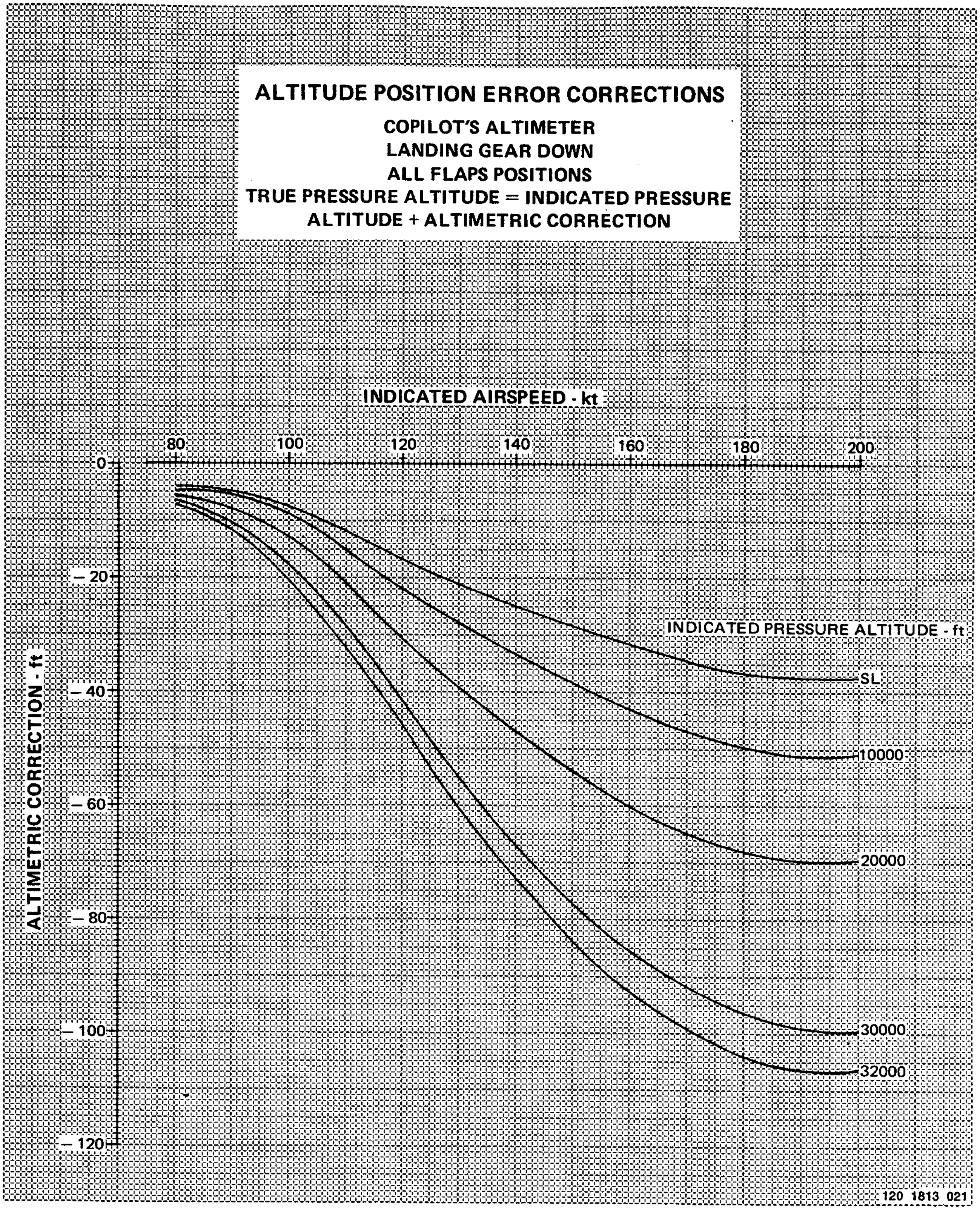


Figure 5-3 (Sheet 4 of 4)

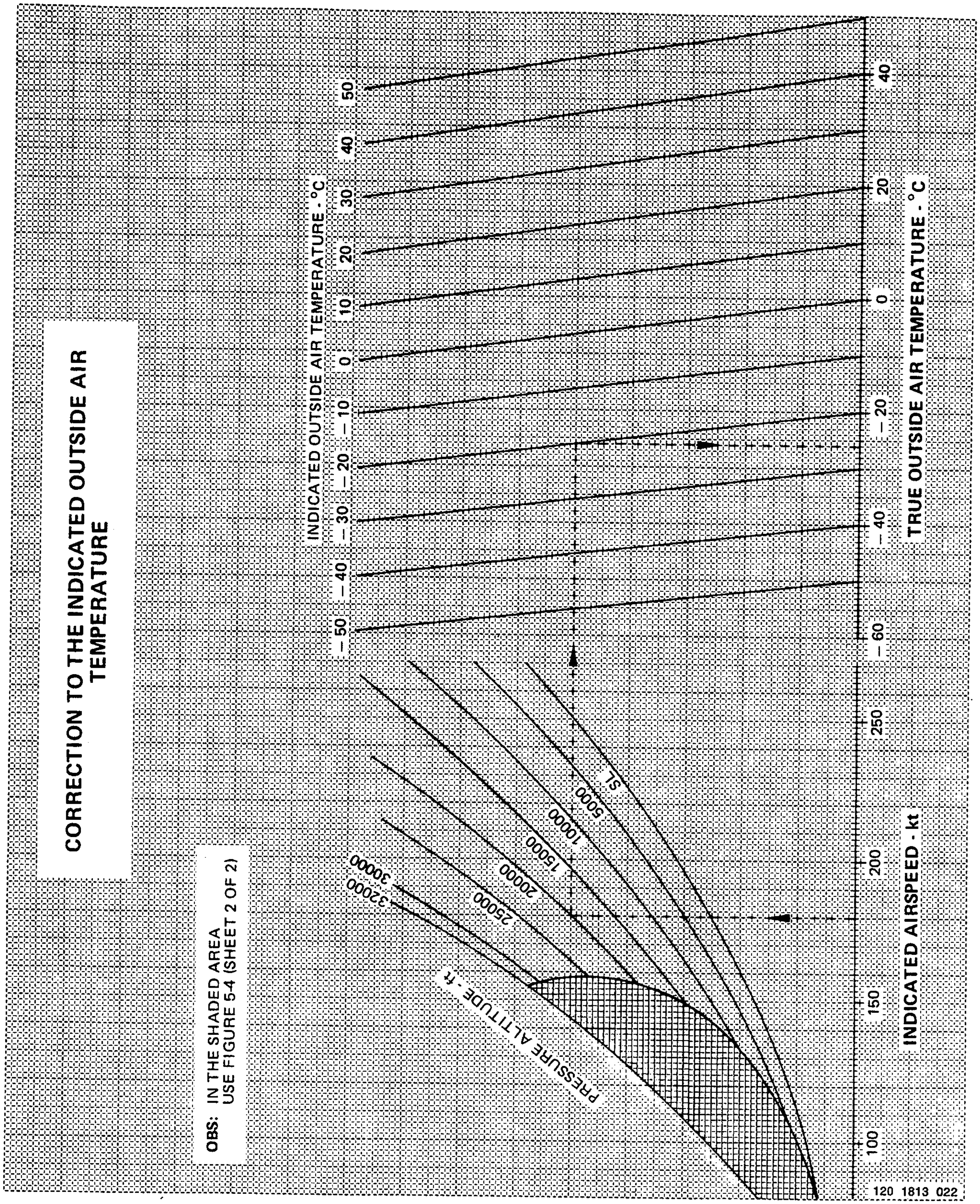


Figure 5-4 (Sheet 1 of 2)

CORRECTION TO THE INDICATED OUTSIDE AIR TEMPERATURE

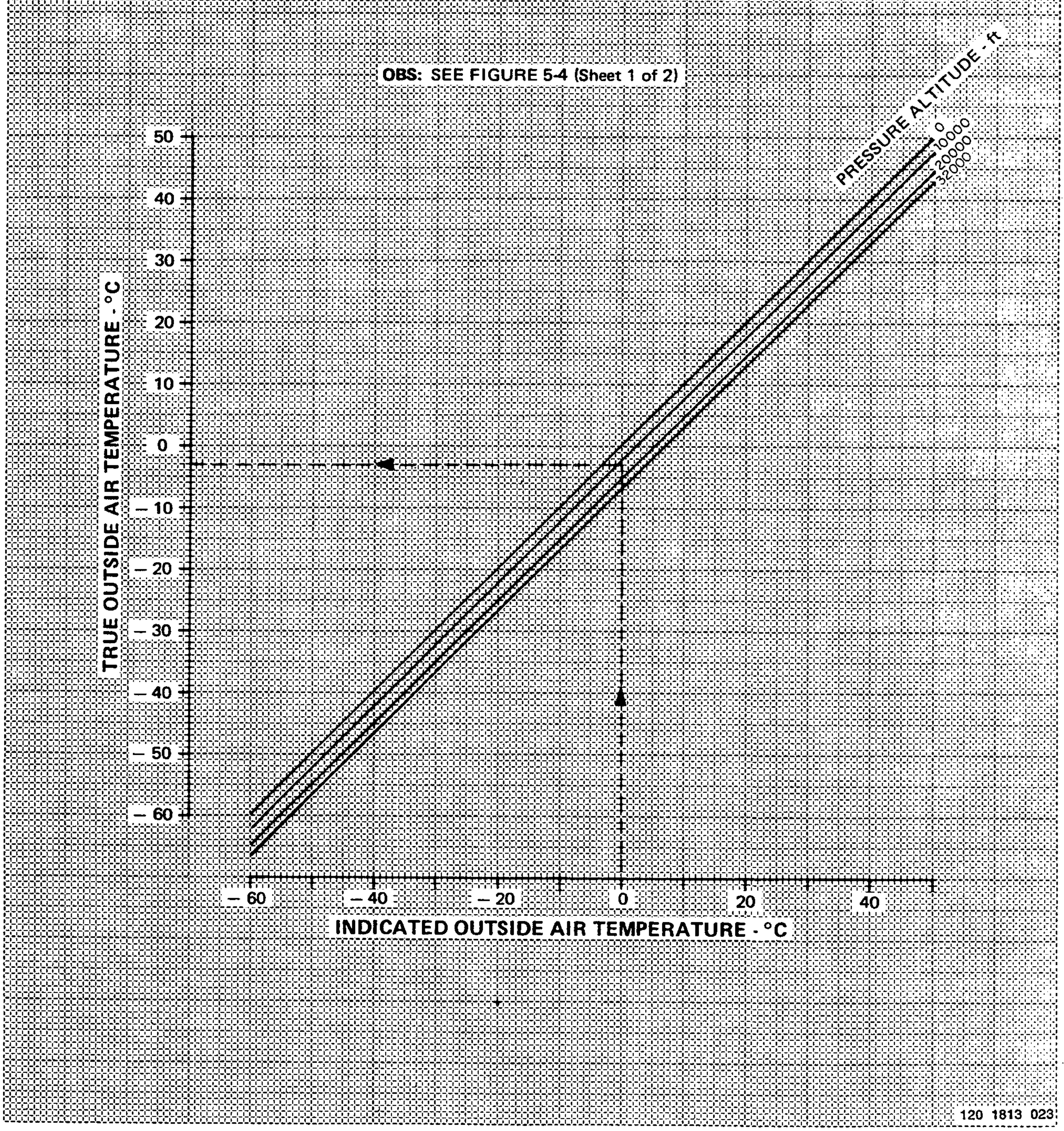
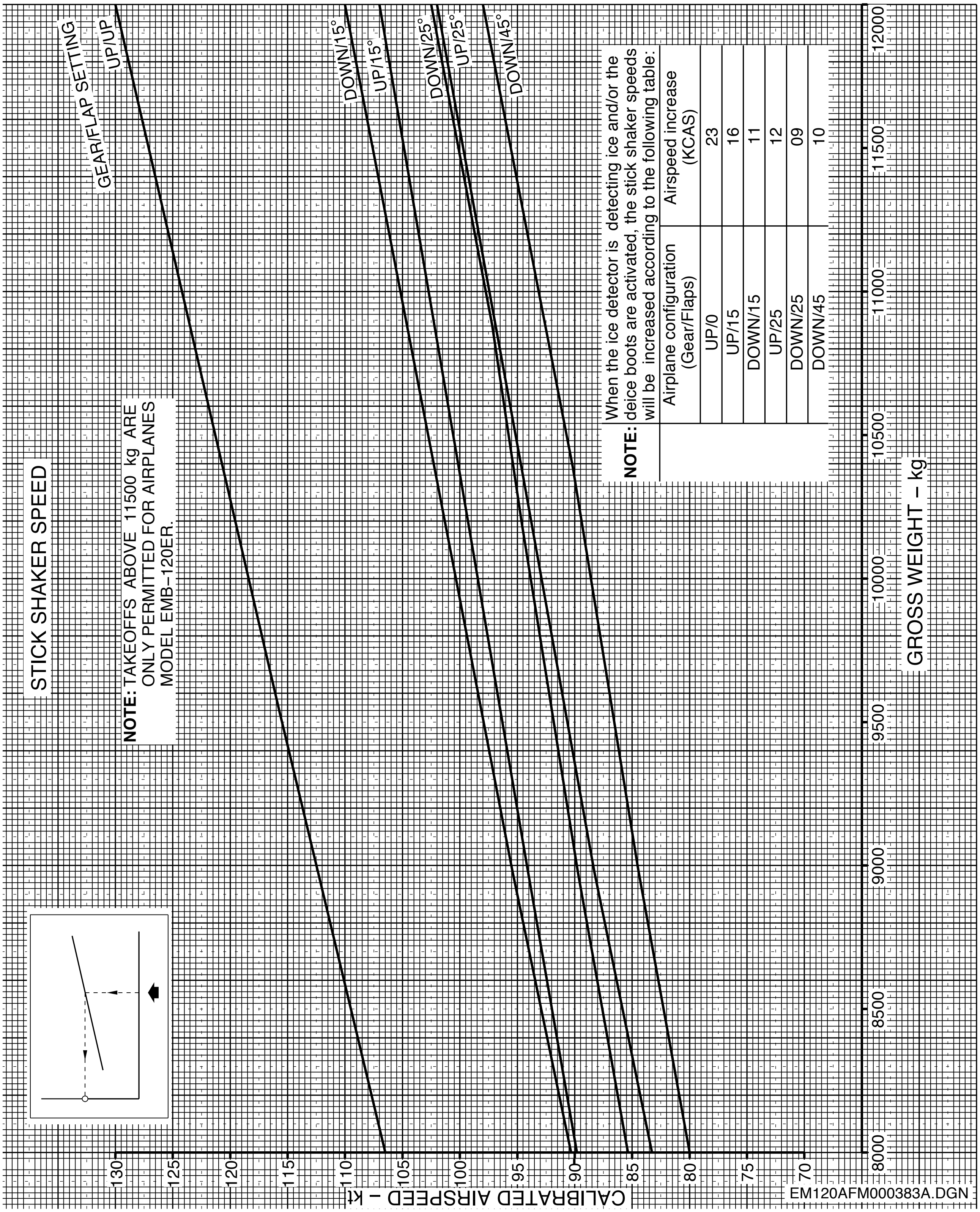


Figure 5-4 (Sheet 2 of 2)

SPPEDS IN THE STALL

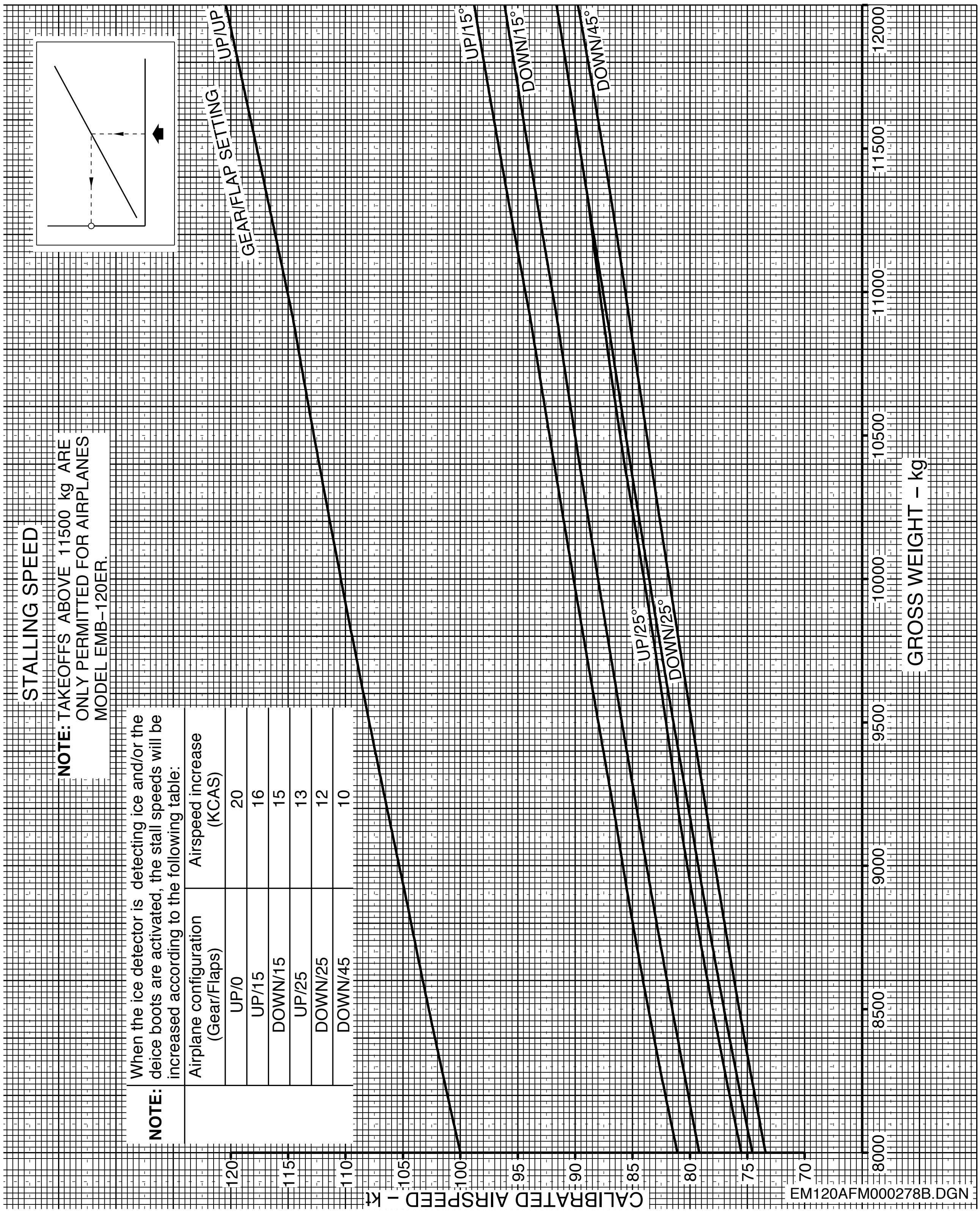
The stall speed and stick shaker speed, with zero thrust derived in accordance with the airworthiness requirements, and upon which the various handling speeds are based, are shown in terms of KCAS for various weights and airplane configurations.



NOTE: When the ice detector is detecting ice and/or the deice boots are activated, the stick shaker speeds will be increased according to the following table:

Airplane configuration (Gear/Flaps)	Airspeed increase (KCAS)
UP/0	23
UP/15	16
DOWN/15	11
UP/25	12
DOWN/25	09
DOWN/45	10

Figure 5-5



Airplane configuration (Gear/Flaps)	Airspeed increase (KCAS)
UP/0	20
UP/15	16
DOWN/15	15
UP/25	13
DOWN/25	12
DOWN/45	10

Figure 5-6

ENGINE DATA

GENERAL

This section contains the engine torquemeter readings for the PW118 engine installed on the EMB-120RT BRASILIA airplane.
It should be possible to set torque here defined without reaching T_6 and N_H limits.

TAKEOFF AND MAX. CONTINUOUS POWER

Static power settings are shown for various pressure altitudes and ambient temperatures, with pack and bleed switches in LOW position (engine bleed open), and engine bleed closed.
Inflight power settings are shown for various pressure altitudes, airspeds, and indicated outside air temperatures, with pack and bleed switches in LOW position, (engine bleed open), and engine bleed closed.

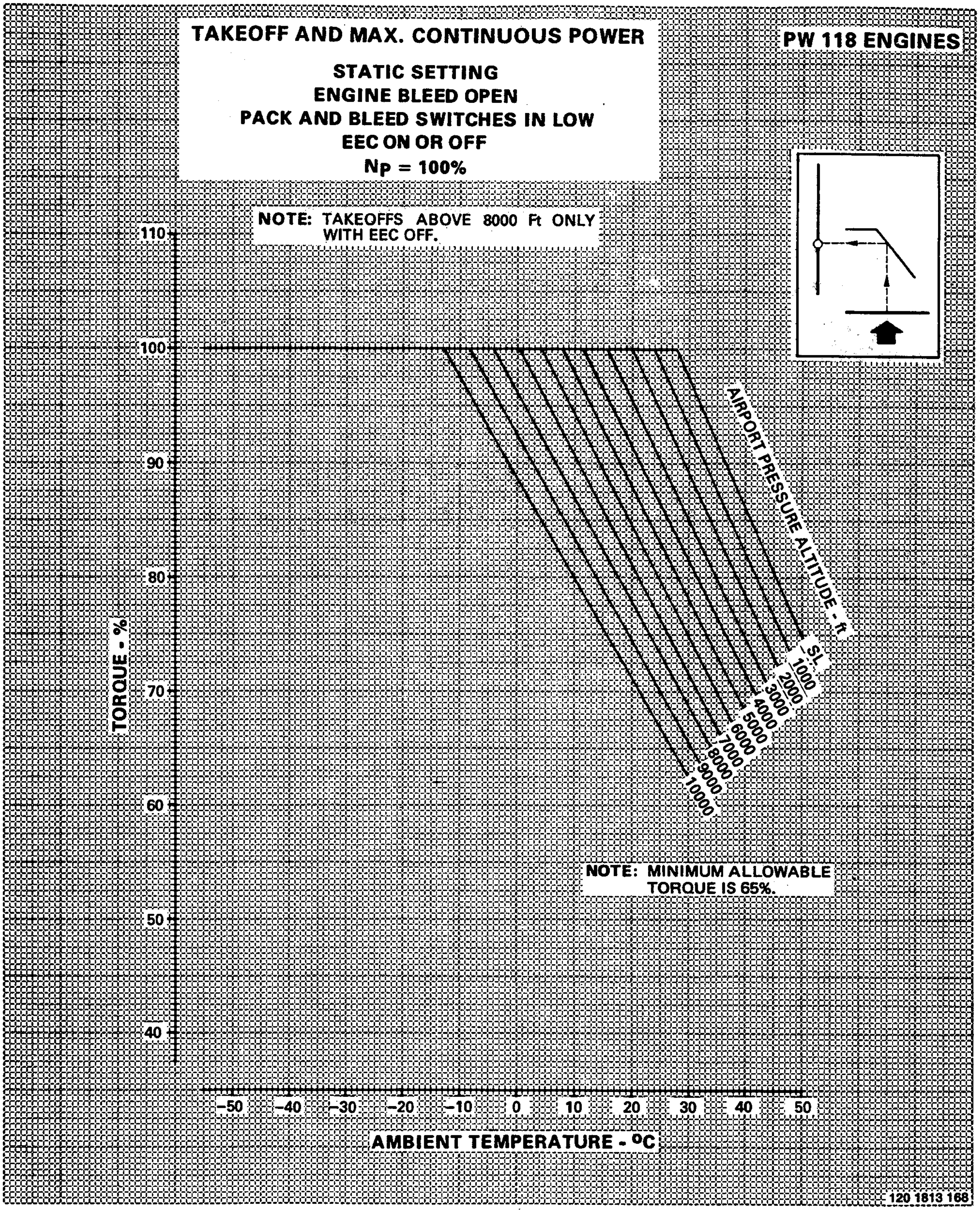


Figure 5-7 (Sheet 1 of 4)

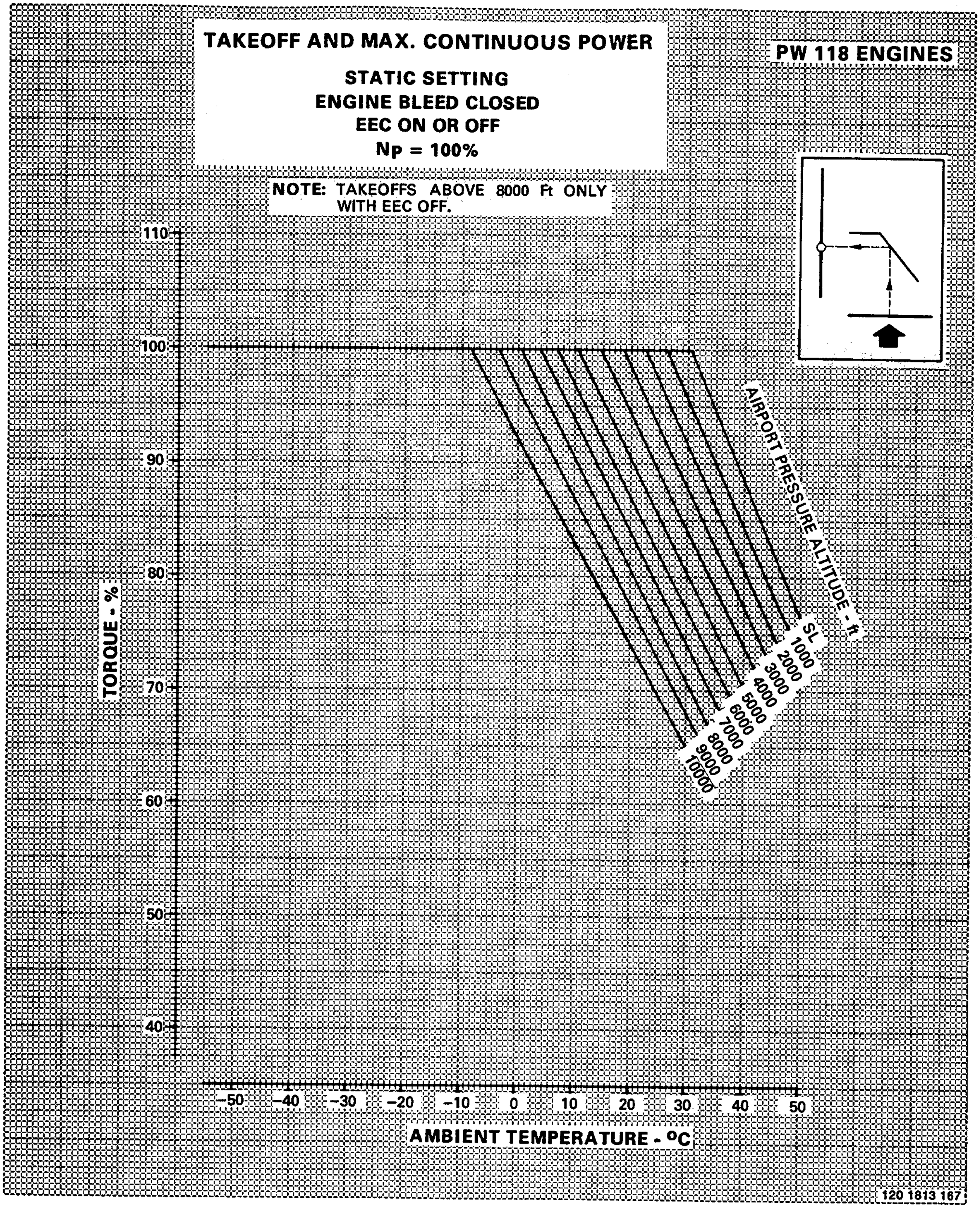


Figure 5-7 (Sheet 2 of 4)

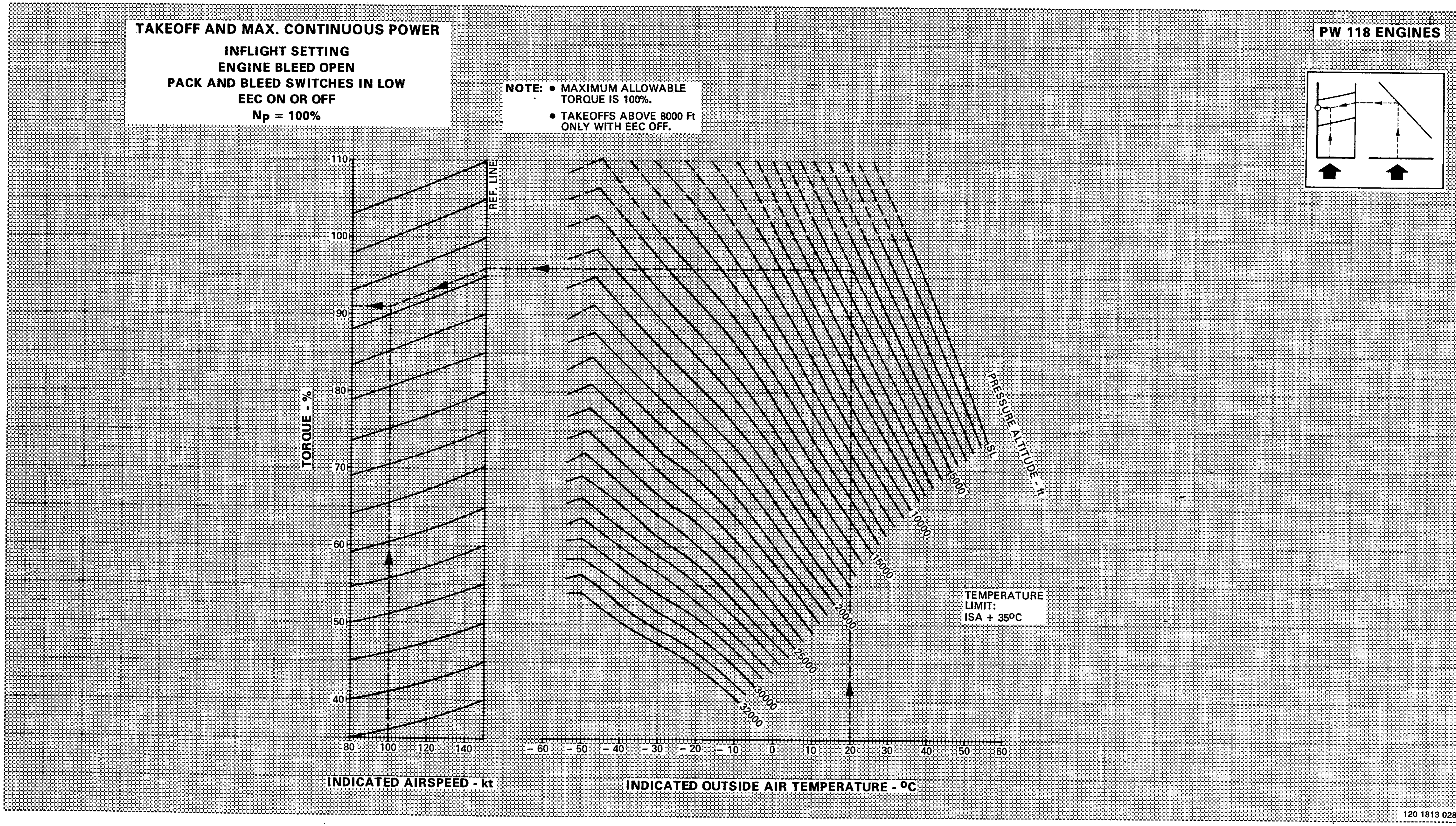


Figure 5-7 (Sheet 3 of 4)

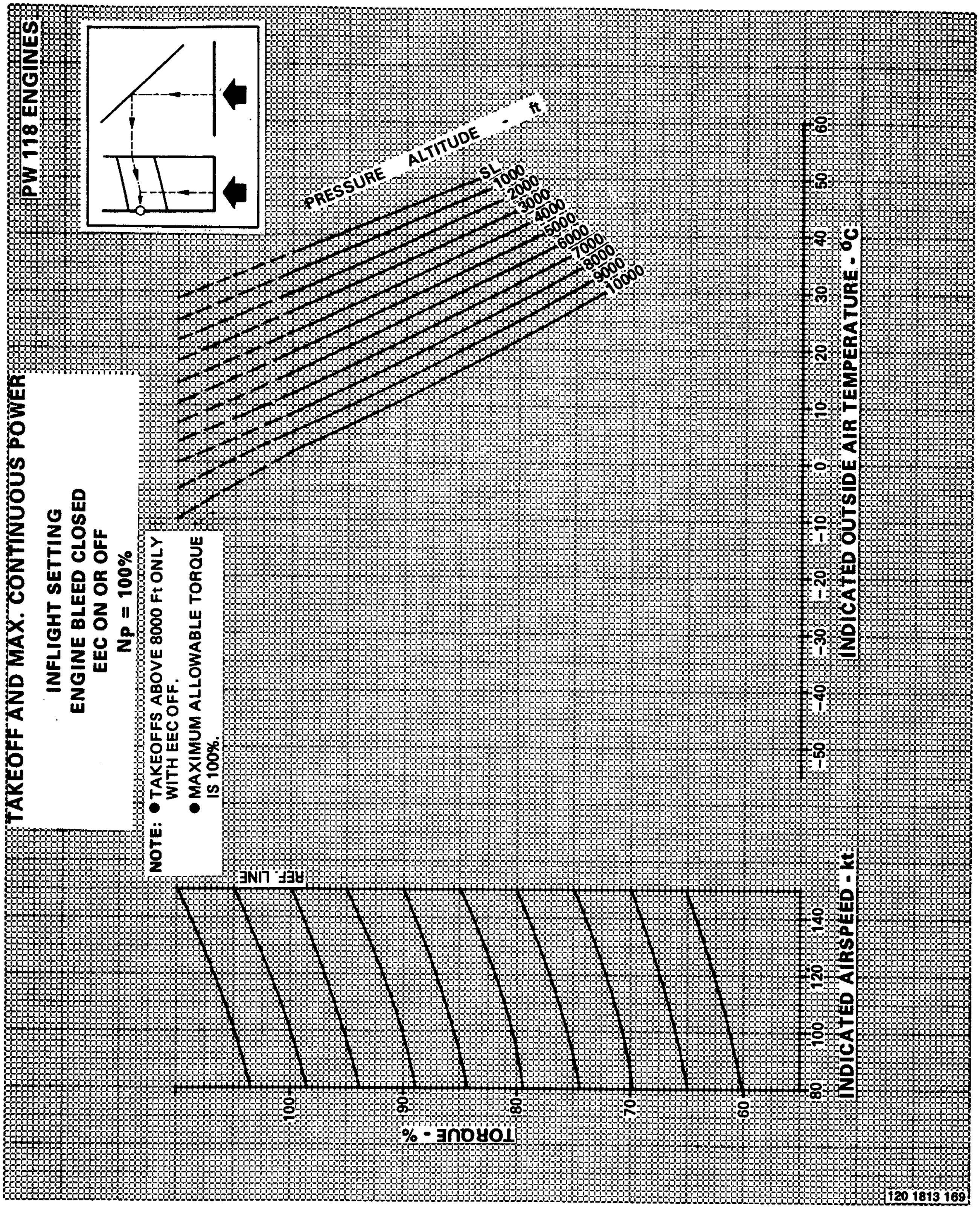


Figure 5-7 (Sheet 4 of 4)

GENERAL

The charts in this section present the information which permit the calculation of the takeoff performance for any combination of configuration, weight, altitude and temperature within the approved operational limits of the airplane.

TAKEOFF PROCEDURES

Takeoff power (static setting) may be set prior to brake release or during takeoff run (Rolling Takeoff). For Rolling Takeoff, the power should be set to approximately 75% of the torque determined in the power setting chart on runway alignment and to takeoff power before reaching 60 KIAS during takeoff run. Rotation to a takeoff attitude is initiated at V_R. A speed not less than V_2 is obtained at a height of 35 feet. Landing gear is selected UP at the 35 ft point. The climb is continued to the acceleration height where the airplane accelerates in level flight to the final segment speed, and retracts the flaps. During acceleration, flaps are retracted at V_2 + 20 KIAS. When final segment speed is reached and flaps are retracted, the climb is resumed as far as necessary.
If the flight path has to be extended beyond the limits of the net flight path data, the enroute climb chart must be used and power reset according to the chart for inflight setting.
In the event of an engine failure, the takeoff is normally refused when the failure is recognized prior to V_1, and is normally continued when is recognized after V_1.

NOTE: Accelerate-stop distances were not based on use of propeller reverse; however, distances can be decreased by using reverse.

CHART PRESENTATION

FIELD LENGTH AND CLIMB PERFORMANCE LIMITS

APPLICABILITY OF ENGINE BLEED CORRECTION

This chart is used to define whether or not the engine bleed corrections presented on the takeoff and landing performance charts should be applied, when engine bleed is open.

CORRECTIONS TO RUNWAY LENGTH (TAKEOFF AND ACCELERATE-STOP)

These charts are used to find corrected runway lengths, accounting for wind, runway slope, EEC, bleed effects, and takeoff technique. These charts should always be used before entering the Maximum Takeoff Weight Field Length Limited.

The "corrected runway length" is simply the actual runway length available, with existing slope and wind, converted to a zero-slope, zero-wind runway length which would allow the same takeoff weight. For example, an actual 1400 m runway at the Takeoff Distance chart, with 1 percent downhill slope and 10 kt headwind becomes a corrected 1520 m runway, which means that a zero-slope runway 1520 m long under zero wind would be required to achieve the same takeoff weight as the 1400 m runway with favorable slope and wind.

MAXIMUM TAKEOFF WEIGHT FIELD LENGTH LIMITED

This chart shows field length limitations on the takeoff weight as a function of the airport pressure altitude, true outside air temperature and corrected runway length (takeoff and accelerate-stop).

MAXIMUM TAKEOFF WEIGHT BRAKE ENERGY LIMITED

This chart shows the maximum allowable takeoff weight which meets the brake energy requirements in case of a refused takeoff, as a function of true outside air temperature, airport pressure altitude, wind, runway slope and V_1/V_R ratio.

MAXIMUM TAKEOFF WEIGHT – CLIMB LIMITED

The maximum allowable takeoff weight, which meets the minimum climb gradient requirements, is shown as a function of airport pressure altitude and true outside air temperature, accounting for the bleed, EEC and airplane configuration effects.

GROUND MINIMUM CONTROL SPEED – AIR MINIMUM CONTROL SPEED

The Ground Minimum Control Speed (V_{MCG}) and Air Minimum Control Speed (V_{MCA}) are shown as a function of the true outside air temperature and airport pressure altitude.

TAKEOFF SPEEDS

V_{1MIN}, V_R, and V_2 are shown as a function of true outside air temperature, airport pressure altitude, and gross weight.

A separate chart is provided for V_1, which is shown as a function of V_R and V_1/V_R ratio.

CHART PRESENTATION (Continued)

TAKEOFF NET FLIGHT PATH

Flight path construction is illustrated on the Takeoff Profile figure.

OBSTACLE CLEARANCE – REFERENCE GRADIENT

This chart shows reference gradient to be used on the obstacle analysis as a function of the true outside air temperature, airport pressure altitude, gross weight, accounting for the EEC, bleed and airplane configuration effects.

CLOSE IN OBSTACLE CLEARANCE

This chart shows the net takeoff flight paths, for the first and second segments out to a distance of 6300 m, as a function of the wind correction and the reference gradient.

DISTANT OBSTACLE CLEARANCE

This chart shows the net takeoff flight path, out to a distance of 17000 m, as a function of the wind correction and the reference gradient. Level off height lines are superimposed on the flight path lines.

3RD SEGMENT NET HORIZONTAL DISTANCE

The horizontal distance required for acceleration to the final segment speed is given as a function of the reference gradient, the level off height, and wind component.
The height of the third segment may be varied to suit the conditions. The lower limit is defined by a gross height of 400 ft; the upper limit is defined by a gross height of 1500 ft. In general, since most obstacles are close in, it will be advantageous to use the greatest acceleration height, but if the critical obstacle is a long way out it may be better to accelerate at the minimum height in order to improve the later stages of the flight path.
If obstacles exist both close in and far out, there may be an advantage in accelerating at an intermediate height.
If there are no obstacles, any convenient height between the two limits may be selected for the acceleration.

FINAL SEGMENT NET GRADIENT OF CLIMB

The net gradient of climb between the end of the third segment and the 1500 ft is given as a function of the reference gradient and wind component. Obstacles above 1500 ft must be based on the Enroute Net Climb Gradient chart.

FINAL SEGMENT SPEED

The speed at the final segment, with flaps up and takeoff power on operating engine, is shown as a function of the gross weight.

CHART PRESENTATION (Continued)

GROSS HEIGHT – PRESSURE ALTITUDE CONVERSION

Obstacle clearance heights are measured vertical distances, and do not necessarily correspond to the indicated change in height on a pressure altimeter under different temperature conditions.
The Gross Height – Pressure Altitude Conversion chart is used to determine the indicated pressure altitudes, at which the flight path segments are completed.
Conversely, if takeoff flight path procedures are based on pressure altitude indications, the corresponding actual heights may be found from which to construct the segments of an obstacle clearance flight path.

PROCEDURE FOR USE OF TAKEOFF PERFORMANCE CHARTS

1. Enter Applicability of Engine Bleed Correction with true outside air temperature and pressure altitude, to determine whether or not the bleed corrections are applicable.
2. Enter Corrections to Runway Length (Takeoff) chart with actual runway length, add available or maximum allowable clearway, whichever is less, following the 45-degree guide lines. Proceed through the runway slope, wind, EEC and bleed corrections (if necessary), takeoff technique (static or rolling), and read the corrected runway length (takeoff).
3. Enter Correction to Runway Length (Accelerate-Stop) chart with actual runway length plus stopway, make runway slope, wind, EEC and bleed corrections (if necessary), takeoff technique (static or rolling), and read the corrected runway length (accelerate-stop).
4. Enter Maximum Takeoff Weight Field Length Limited chart with the corrected runway length (takeoff and accelerate-stop) read on steps 2 and 3 above. From the intersection, trace right and downwards, parallel to the guide lines, until it intersects V_1/V_R reference line ($V_1/V_R = 1$) then trace horizontally to the weight guide lines.
   Enter the right side of the chart with the true ouside air temperature and airport pressure altitude, and trace left horizontally until it intersects the weight reference line. Follow the guide lines until it intersects the corrected distances horizontal line. Read the gross weight.
5. Enter Maximum Takeoff Weight Brake Energy Limited chart with true outside air temperature and airport pressure altitude and trace horizontally to the right, to the wind reference line. Follow the guide lines up to the corresponding wind and trace horizontally to the slope reference line. Follow the guide lines up to the corresponding slope and then trace horizontally to the V_1/V_R ratio reference line. Follow the guide lines up to the corresponding V_1/V_R ratio and from this point trace horizontally to the right and read the gross weight.
6. Enter Maximum Takeoff Weight Climb Limited chart with true outside air temperature and airport pressure altitude, make the bleed correction (if necessary), make the EEC and airplane configuration corrections, and read gross weight.

   NOTE: Steps from 7 to 10 are applicable only when obstacles are present on the takeoff flight path.

7. Enter Obstacle Clearance – Reference Gradient chart with true outside air temperature, airport pressure altitude, the least weight determined from steps 4, 5 and 6 above, make the EEC correction, the bleed correction (if necessary) and the airplane configuration correction, following the guide lines, to read the reference gradient.
8. Enter Close-in Obstacle Clearance Chart or Distant Obstacle Clearance Chart, as applicable, with the obstacle distance from the reference zero, wind component, and the reference gradient read on step 7. Read the height above reference zero available.
   If the height above reference zero available does not exceed the required obstacle height, the weight must be reduced to satisfy the obstacle clearance requirements.

PROCEDURE FOR USE OF TAKEOFF PERFORMANCE CHARTS (Continued)

When weight is reduced to achieve the obstacle clearance, the horizontal distance between the obstacle and reference zero increases, since field length required is less. On sloped runways, the obstacle height also changes when the entire takeoff distance is not used: the flight path begins at a higher elevation on a downhill runway, and a lower elevation on a uphill runway.

NOTE: Operating rules require that the airplane net flight path shall clear the obstacle by 35 feet. The flight path data given herein is such that all heights have been reduced by 35 feet, for convenience in use; therefore, the obstacle height should be compared directly with the values found on the charts.
When an obstacle cannot be cleared at 1500 feet height, it is necessary to construct the flight path beyond the end of second segment using the Third Segment Horizontal Distance and Enroute Net Climb Gradient charts.

9. Enter 3rd Segment Net Horizontal Distance chart with the reference gradient, level off height and wind component. Read 3rd segment horizontal distance.
10. Enter Final Segment Net Gradient of Climb chart with the reference gradient, and wind component. Read the final segment net gradient. Calculate the horizontal distance to climb from the level off height to the obstacle height. Add this distance to the distances obtained in steps 9 and 8 to get the total distance from reference zero to end of final segment.
    If the total distance to required obstacle clearance height exceeds the obstacle horizontal distance, the weight must be reduced to satisfy the obstacle clearance requirements.
11. Enter Takeoff Speed – (V_R and V_2, chart with true outside air temperature, airport pressure altitude, the least weight determined by the field length, brake energy, climb or obstacle clearance limits, to read V_{1MIN}, V_R, and V_2.
    Enter Takeoff Speeds – V_1 chart with V_R and V_1/V_R ratio obtained in step 4. Read V_1.
    If V_1 results lower than V_{1MIN}, reduce weight and calculate V_R, V_1/V_R ratio (using the Maximum Takeoff Weight Field Length Limited chart, at a constant accelerate-stop distance) and V_1, until V_1 is equal to or greater than V_{1MIN}. It is helpful to repeat this procedure for several weights and plot V_1 against weight, and read the maximum allowable weight for the V_{1MIN}.

PROCEDURE FOR USE OF TAKEOFF PERFORMANCE CHARTS (Continued)

ILLUSTRATIVE EXAMPLE

Takeoff data:

- Engine Bleed Closed
- EEC on
- Flaps 15°
- Post-Mod. SB 120-055-0007
- Static Takeoff
- Actual Runway Length = 1400 m
- Clearway = 180 m
- Airport Pressure Altitude = 2000 ft
- Runway Slope = 1% (uphill)

Obstacle: 295 m high at 10830 m from brake release.

- Reported Wind = + 10 kt (headwind)
- Airport Temperature = 20°C

See PROCEDURE FOR USE OF TAKEOFF PERFORMANCE CHARTS for chart titles and method of use.

1. Determine corrected runway length (takeoff) = 1480 m.
2. Determine corrected runway length (accelerate-stop) = 1480 m.
3. Determine the maximum takeoff weight field length limited and V_1 / V_R ratio = 10850 kg and 0.98.
4. Determine the maximum takeoff weight brake energy limited = 11990 kg.
5. Determine maximum takeoff weight climb limited = 11990 kg.
6. Determine the reference gradient = 2.8%.
7. Determine obstacle height and distance from reference zero.

Height: $295 - \frac{1}{100} \times (1400 + 180) = 279$ m.

Where: – 1/100 = runway slope.
– (1400 + 180) = takeoff distance.

Distance: 10830 – (1400 + 180) = 9250 m.

NOTE: The runway slope should be included in the obstacle clearance assessment only if the actual runway used exhibits a uniform slope.

PROCEDURE FOR USE OF TAKEOFF PERFORMANCE CHARTS (Continued)

8. Determine height above reference zero from the Distant Obstacle Clearance chart = 265 m. The airplane will fail to clear the obstacle by 14 m.
9. Determine a lower weight to verify if the obstacle will be cleared: let's assume 10650 kg.
10. Determine the takeoff distance for this new weight; use the highest V_1/V_R ratio that can be employed in the available accelerate-stop distance. Enter Maximum Takeoff Weight Field Length Limited chart with the previous airport temperature and pressure altitude, proceed left to the weight reference line. Follow the guide lines until it intercepts the weight defined in step 9, then proceed horizontally left to the V_1/V_R reference line. Follow the guide lines until intercepting the previous corrected runway length (accelerate-stop) (1480 m).
    Corrected runway length (takeoff) = 1320 m and V_1/V_R ratio = 1.00.
11. Determine the actual takeoff distance, entering the Corrections to Runway Length (Takeoff) chart in a reverse way =1380 m.

    NOTE: It must be observed that the clearway correction had not been performed, since we need to determine the distance to 35 feet.

12. Determine the obstacle height and distance from reference zero:

    Height: $295 - \frac{1}{100}(1380) = 281$ m.

    Distance: 10830 − 1380 = 9450 m.
13. Determine reference gradient for 10650 kg =3.0%.
14. Determine the height above reference zero for 9450 m and 3.0% = 290 m.
    The airplane will clear the obstacle by 9 m.
    Failure to clear the obstacle requires that the procedure be repeated for a lower weight.
15. Interpolate between 10850 kg with 14 m (V_1/V_R = 0.98) below obstacle height and 10650 kg with 9 m (V_1/V_R = 1.00) above obstacle height, to determine weight and V_1/V_R for zero clearance: = 10728 kg, V_1/V_R = 0.99.
16. Determine V_1, V_R, V_2, final segment speed, and the level off altitude.
    V_R = 108 KIAS
    V_2 = 112 KIAS
    V_1 = 107 ($V_{1\,MIN}$ = 98 KIAS)
    Final Segment Speed = 142 KIAS

A 1400 ft gross level off height can be adopted, which means a pressure altitude increment of 1375 ft. The level off pressure altitude will be = 2000 + 1375 =3375 ft.

TAKEOFF PROFILE

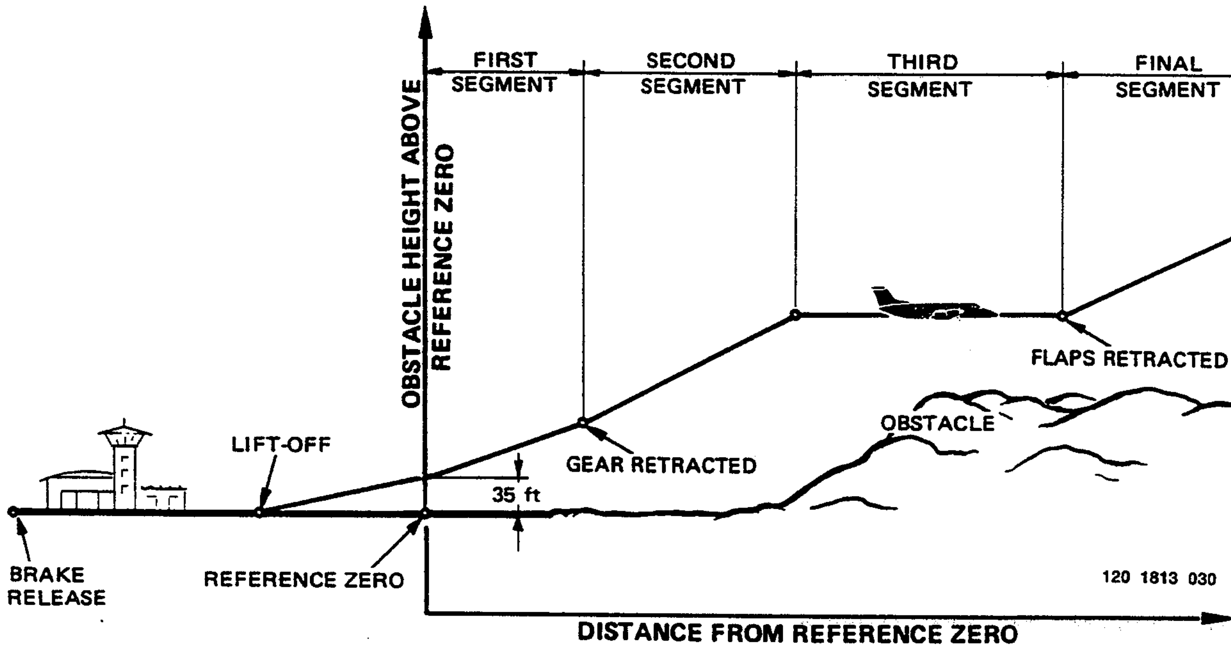


Figure 5-8

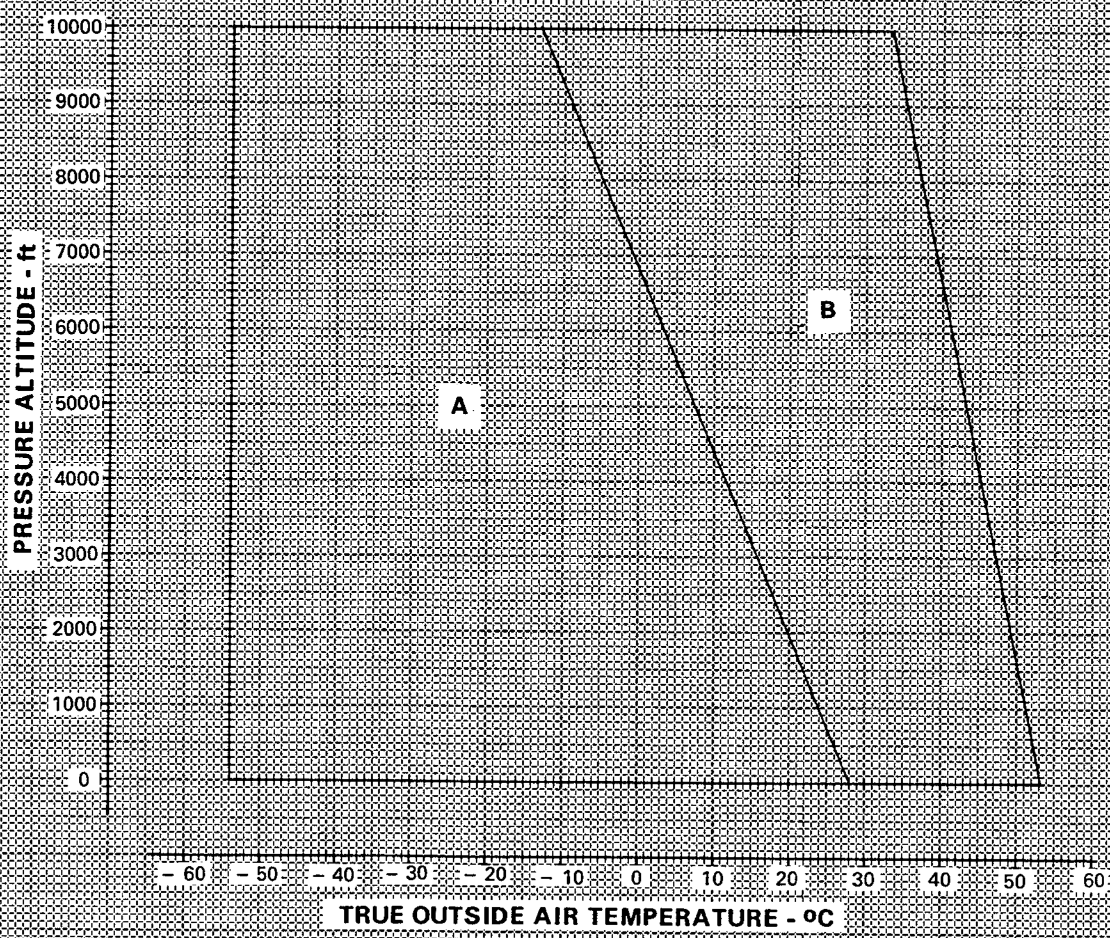
APPLICABILITY OF ENGINE BLEED CORRECTION

PW 118 ENGINES

THE ENGINE BLEED CORRECTION PRESENTED ON TAKEOFF AND LANDING PERFORMANCE CHARTS MUST BE APPLIED ONLY WHEN TAKEOFF AND LANDING ARE PERFORMED WITH BLEED OPEN AND WITHIN THE FOLLOWING CONDITIONS:

REGION A - ENGINE BLEED CORRECTION IS NOT APPLICABLE

REGION B - ENGINE BLEED CORRECTION IS APPLICABLE



120 1813 031A

Figure 5-9

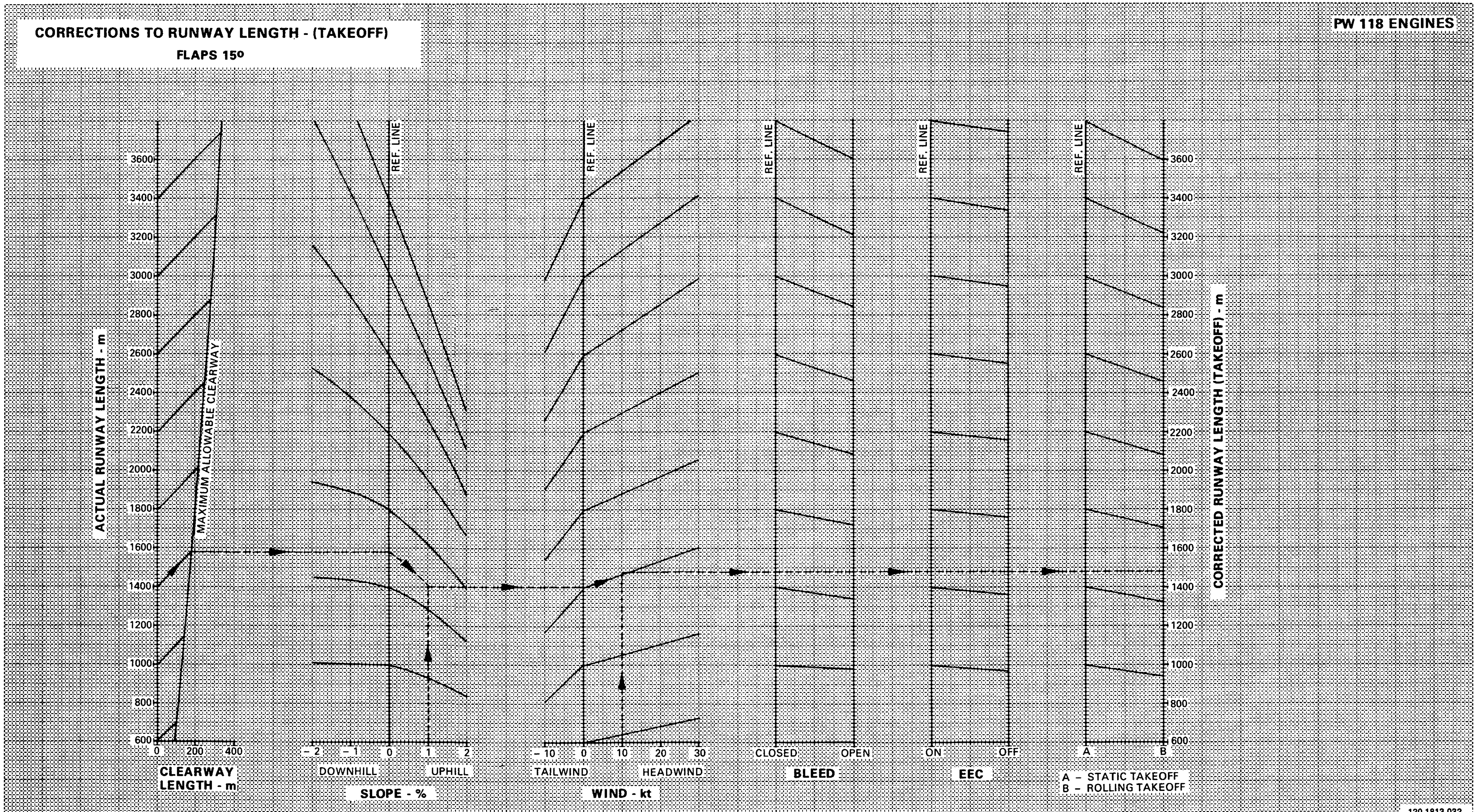

CORRECTIONS TO RUNWAY LENGTH - (TAKEOFF)
FLAPS 15º
PW 118 ENGINES
ACTUAL RUNWAY LENGTH - m
MAXIMUM ALLOWABLE CLEARWAY
REF. LINE
CORRECTED RUNWAY LENGTH (TAKEOFF) - m
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
0
200
400
CLEARWAY LENGTH - m
-2
-1
0
1
2
DOWNHILL
UPHILL
SLOPE - %
-10
0
10
20
30
TAILWIND
HEADWIND
WIND - kt
CLOSED
OPEN
BLEED
ON
OFF
EEC
A
B
A - STATIC TAKEOFF
B - ROLLING TAKEOFF
120 1813 032

Figure 5-10

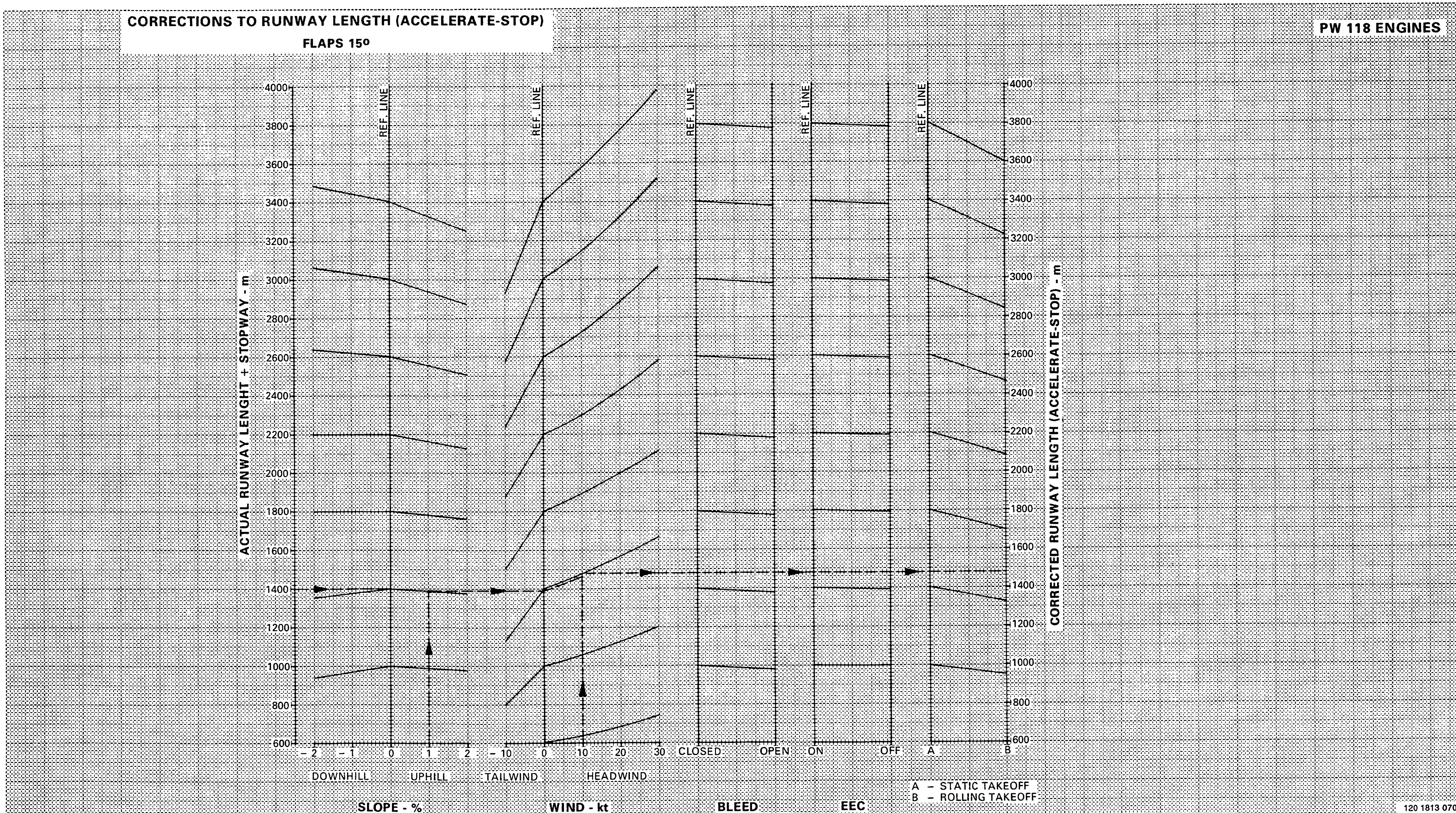

CORRECTIONS TO RUNWAY LENGTH (ACCELERATE-STOP)
FLAPS 15°
PW 118 ENGINES
ACTUAL RUNWAY LENGHT + STOPWAY - m
CORRECTED RUNWAY LENGTH (ACCELERATE-STOP) - m
REF. LINE
4000
3800
3600
3400
3200
3000
2800
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
– 2
– 1
0
1
2
– 10
0
10
20
30
CLOSED
OPEN
ON
OFF
A
B
DOWNHILL
UPHILL
TAILWIND
HEADWIND
SLOPE - %
WIND - kt
BLEED
EEC
A – STATIC TAKEOFF
B – ROLLING TAKEOFF
120 1813 070

Figure 5-11

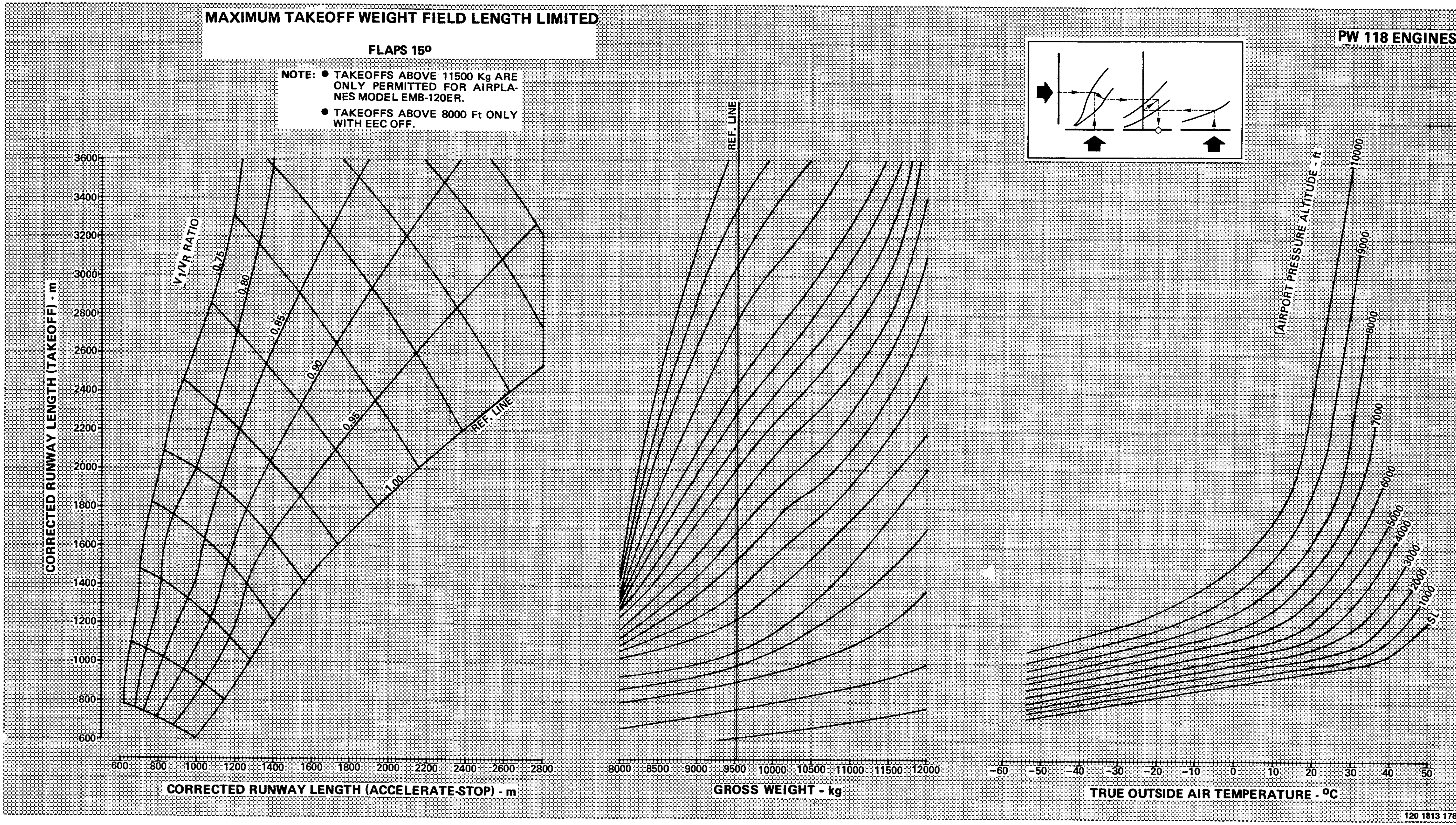

MAXIMUM TAKEOFF WEIGHT FIELD LENGTH LIMITED
FLAPS 15°
NOTE: ● TAKEOFFS ABOVE 11500 Kg ARE ONLY PERMITTED FOR AIRPLANES MODEL EMB-120ER.
● TAKEOFFS ABOVE 8000 Ft ONLY WITH EEC OFF.
PW 118 ENGINES
CORRECTED RUNWAY LENGTH (TAKEOFF) - m
CORRECTED RUNWAY LENGTH (ACCELERATE-STOP) - m
V1/VR RATIO
0.75
0.80
0.85
0.90
0.95
1.00
REF. LINE
GROSS WEIGHT - kg
AIRPORT PRESSURE ALTITUDE - ft
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
SL
TRUE OUTSIDE AIR TEMPERATURE - °C
120 1813 178

Figure 5-12

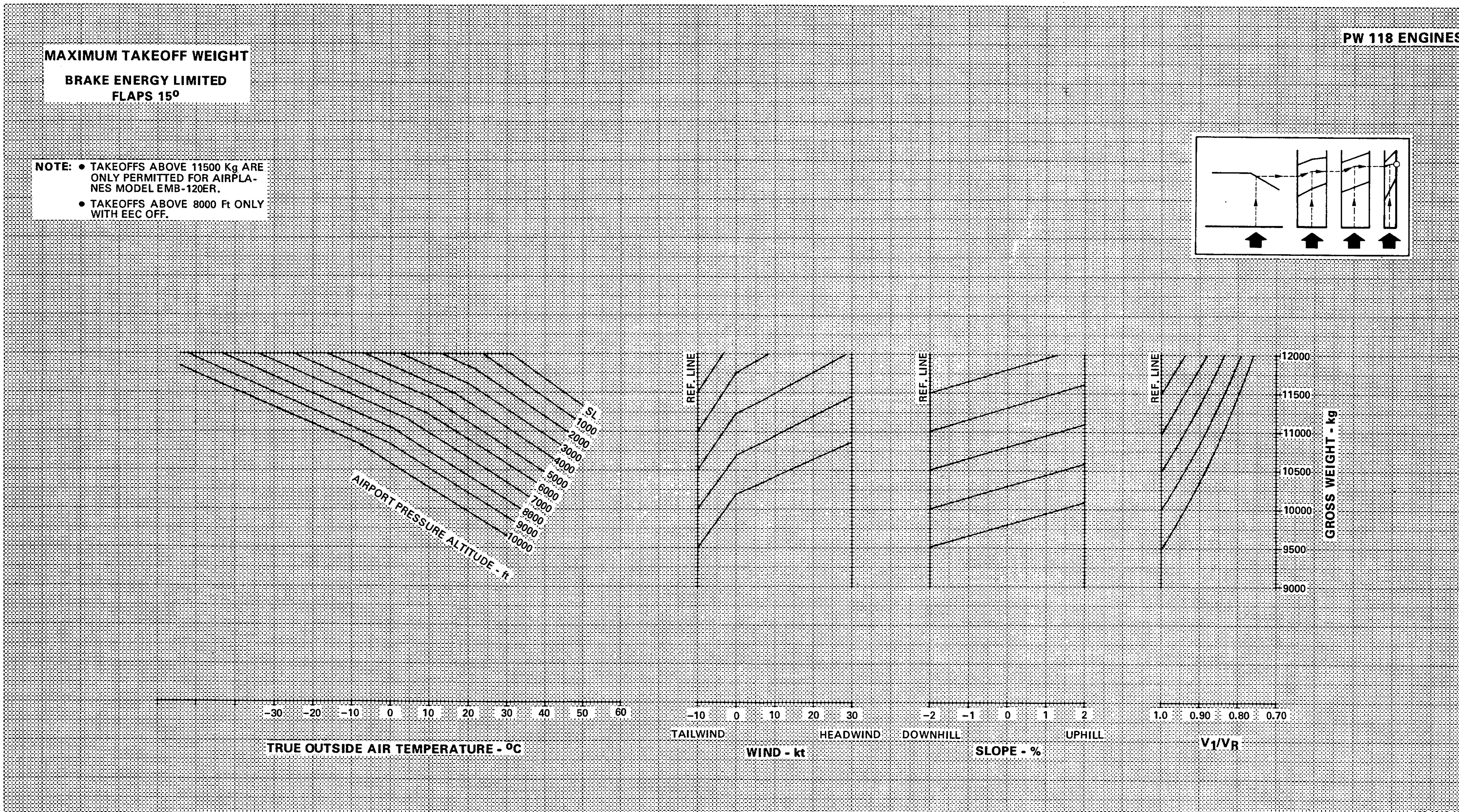

MAXIMUM TAKEOFF WEIGHT
BRAKE ENERGY LIMITED
FLAPS 15°
PW 118 ENGINES
NOTE: • TAKEOFFS ABOVE 11500 Kg ARE ONLY PERMITTED FOR AIRPLANES MODEL EMB-120ER.
• TAKEOFFS ABOVE 8000 Ft ONLY WITH EEC OFF.
SL
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
AIRPORT PRESSURE ALTITUDE - ft
REF. LINE
REF. LINE
REF. LINE
12000
11500
11000
10500
10000
9500
9000
GROSS WEIGHT - kg
-30
-20
-10
0
10
20
30
40
50
60
TRUE OUTSIDE AIR TEMPERATURE - °C
-10
0
10
20
30
TAILWIND
HEADWIND
WIND - kt
-2
-1
0
1
2
DOWNHILL
UPHILL
SLOPE - %
1.0
0.90
0.80
0.70
V_1/V_R
120 1813 150

Figure 5-12A

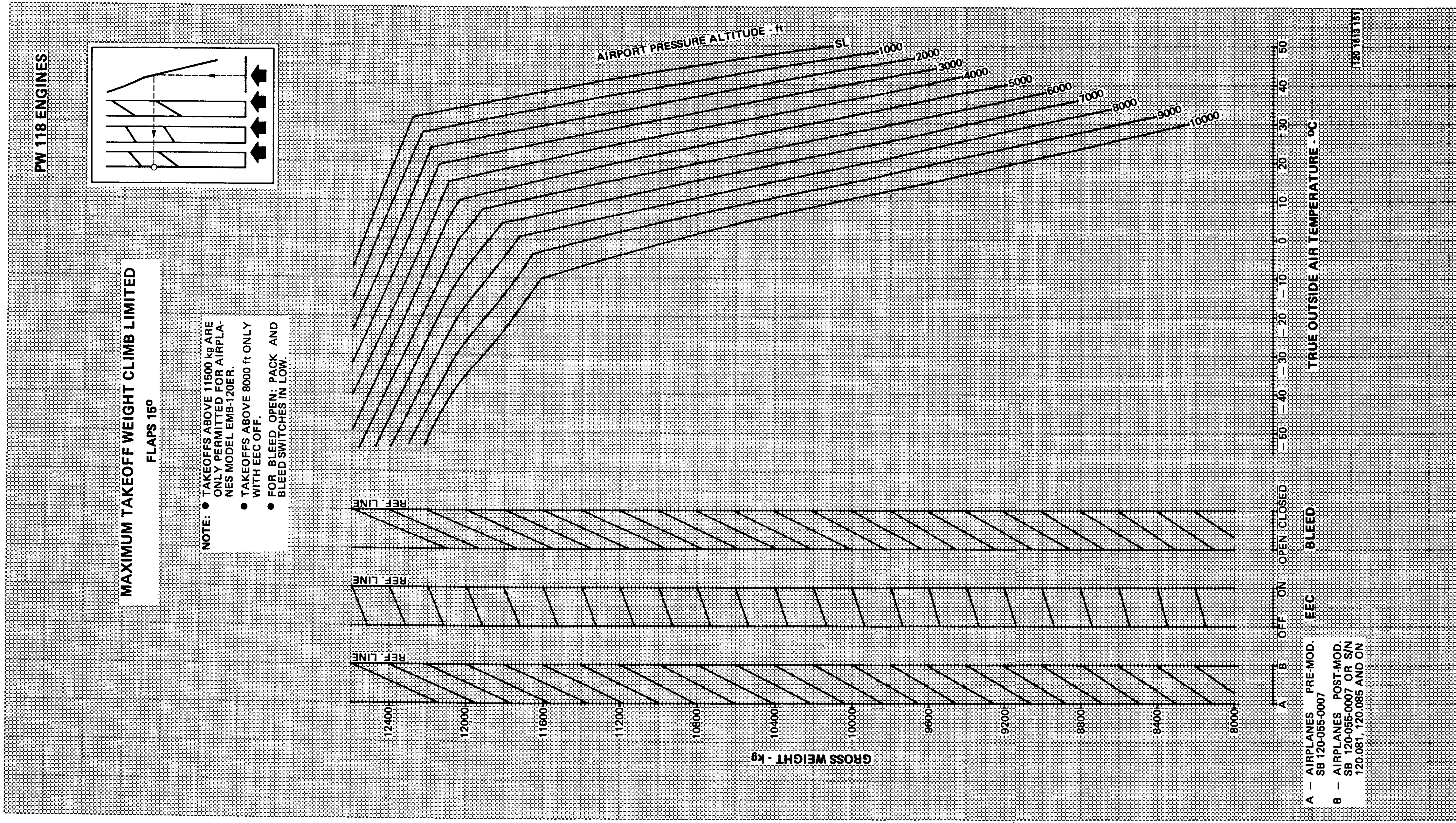

PW 118 ENGINES
MAXIMUM TAKEOFF WEIGHT CLIMB LIMITED
FLAPS 15º
NOTE: ● TAKEOFFS ABOVE 11500 kg ARE ONLY PERMITTED FOR AIRPLANES MODEL EMB-120ER.
● TAKEOFFS ABOVE 8000 ft ONLY WITH EEC OFF.
● FOR BLEED OPEN: PACK AND BLEED SWITCHES IN LOW.
AIRPORT PRESSURE ALTITUDE - ft
SL
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
TRUE OUTSIDE AIR TEMPERATURE - ºC
-50
-40
-30
-20
-10
0
10
20
30
40
50
REF. LINE
OPEN
CLOSED
BLEED
REF. LINE
OFF
ON
EEC
REF. LINE
A
B
GROSS WEIGHT - kg
12400
12000
11600
11200
10800
10400
10000
9600
9200
8800
8400
8000
A – AIRPLANES PRE-MOD. SB 120-055-0007
B – AIRPLANES POST-MOD. SB 120-055-0007 OR S/N 120.081, 120.085 AND ON
120 1813 151

Figure 5-13

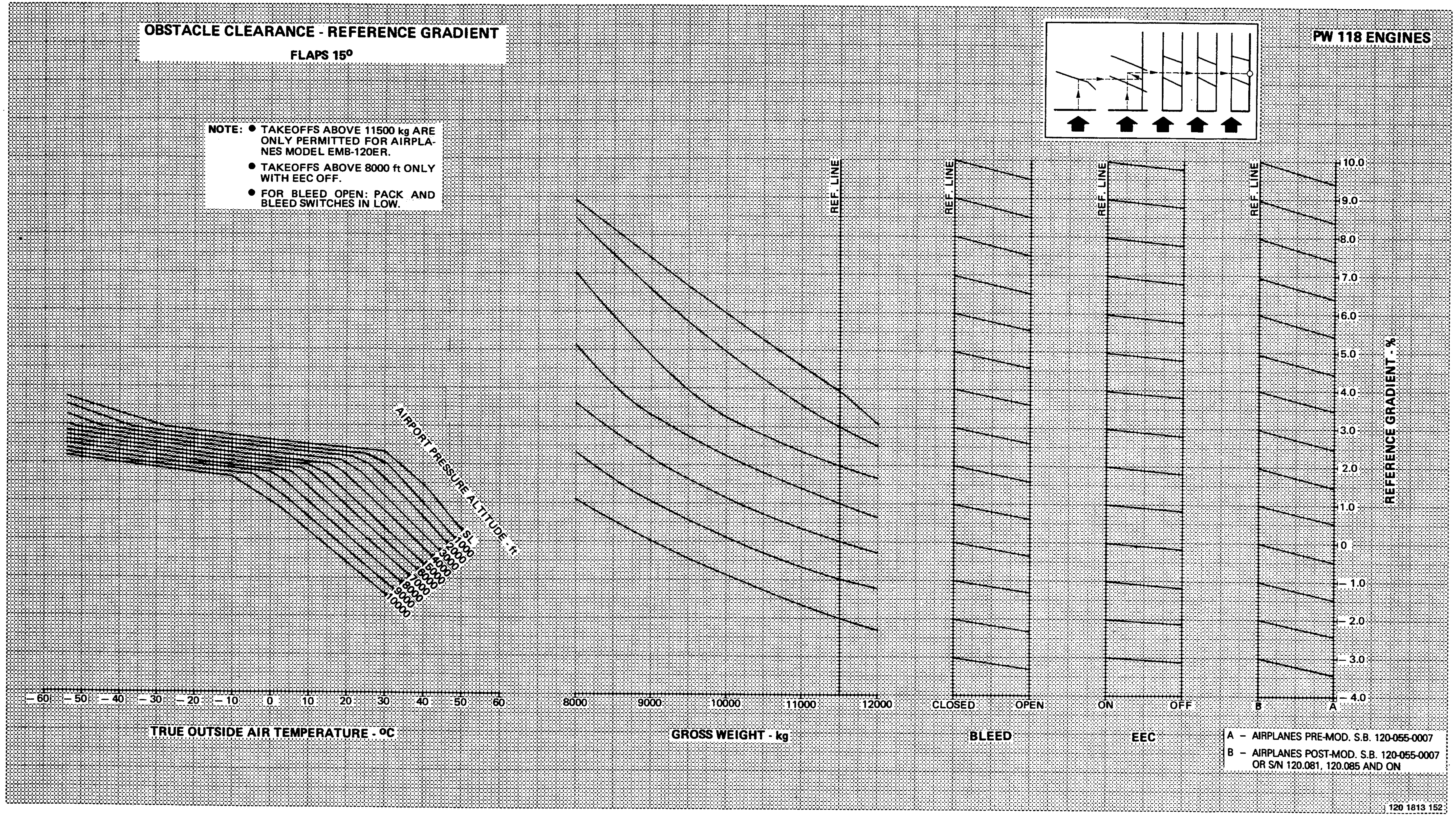

OBSTACLE CLEARANCE - REFERENCE GRADIENT
FLAPS 15°
PW 118 ENGINES
NOTE: • TAKEOFFS ABOVE 11500 kg ARE ONLY PERMITTED FOR AIRPLANES MODEL EMB-120ER.
• TAKEOFFS ABOVE 8000 ft ONLY WITH EEC OFF.
• FOR BLEED OPEN: PACK AND BLEED SWITCHES IN LOW.
AIRPORT PRESSURE ALTITUDE - ft
SL
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
REF. LINE
REFERENCE GRADIENT - %
TRUE OUTSIDE AIR TEMPERATURE - °C
GROSS WEIGHT - kg
BLEED
CLOSED
OPEN
EEC
ON
OFF
A – AIRPLANES PRE-MOD. S.B. 120-055-0007
B – AIRPLANES POST-MOD. S.B. 120-055-0007 OR S/N 120.081, 120.085 AND ON
120 1813 152

Figure 5-14

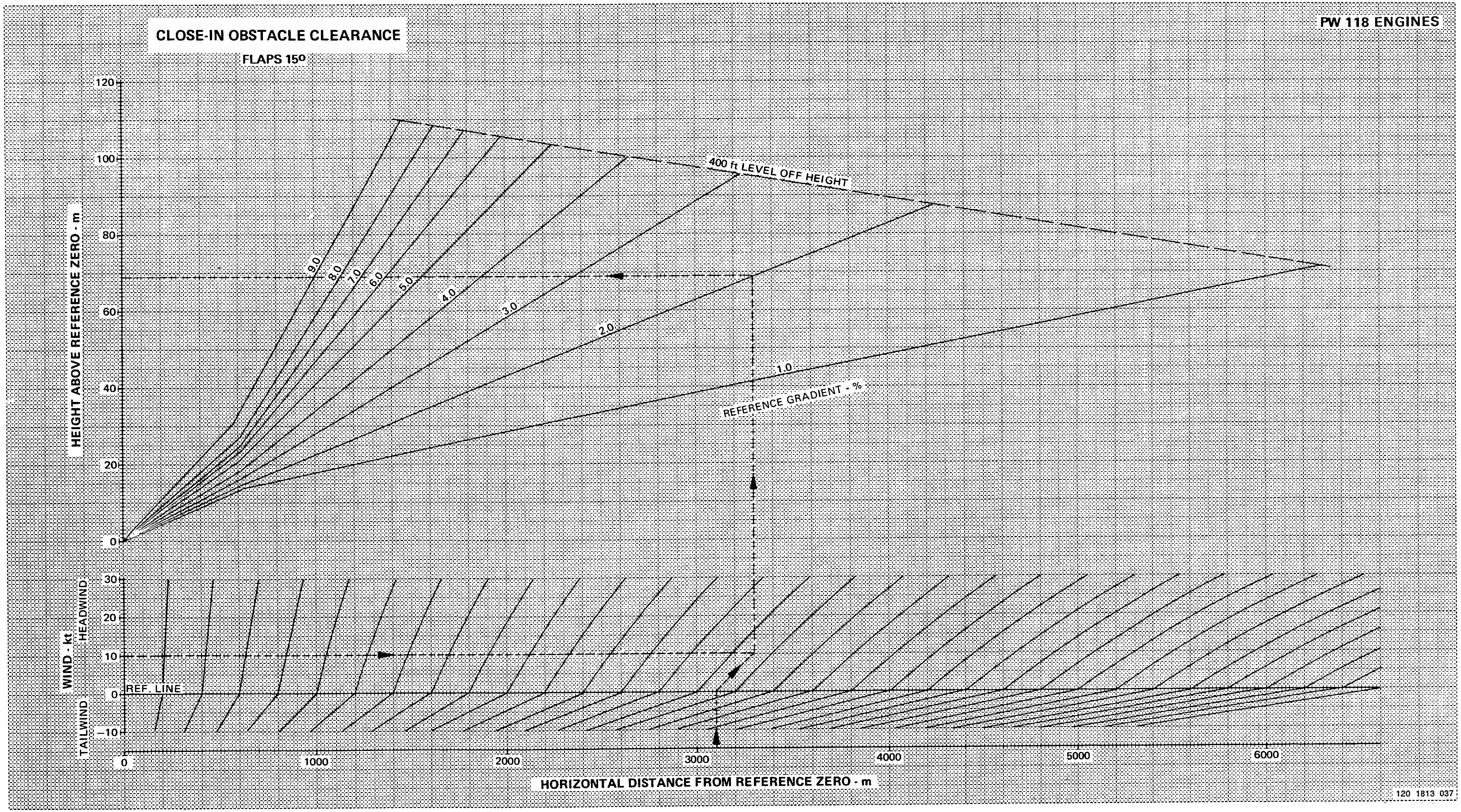

CLOSE-IN OBSTACLE CLEARANCE
FLAPS 15°
PW 118 ENGINES
HEIGHT ABOVE REFERENCE ZERO - m
0
20
40
60
80
100
120
400 ft LEVEL OFF HEIGHT
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
REFERENCE GRADIENT - %
WIND - kt
HEADWIND
TAILWIND
30
20
10
0
−10
REF. LINE
0
1000
2000
3000
4000
5000
6000
HORIZONTAL DISTANCE FROM REFERENCE ZERO - m
120 1813 037

Figure 5-15

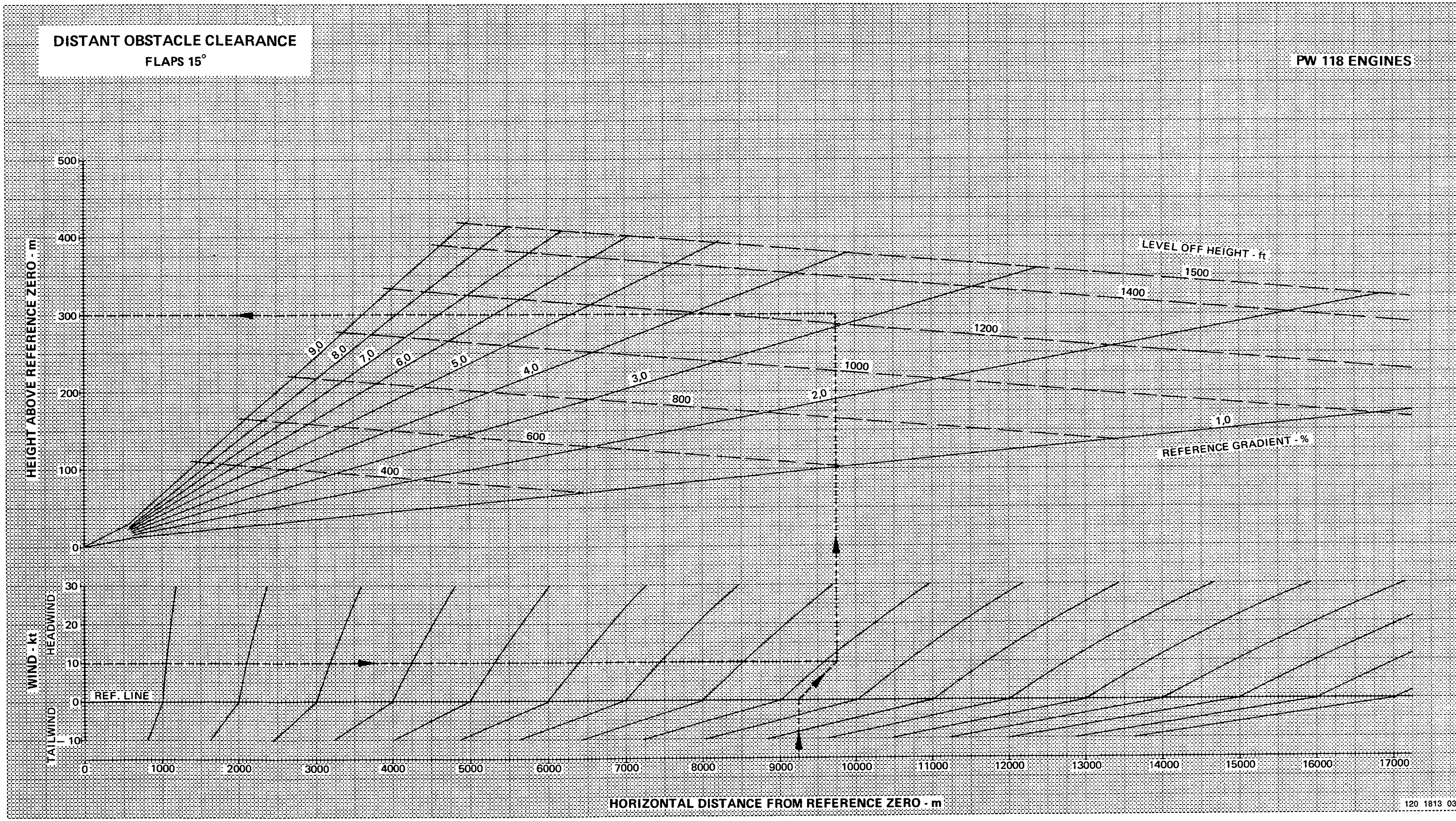

DISTANT OBSTACLE CLEARANCE
FLAPS 15°
PW 118 ENGINES
HEIGHT ABOVE REFERENCE ZERO - m
500
400
300
200
100
0
LEVEL OFF HEIGHT - ft
1500
1400
1200
1000
800
600
400
9,0
8,0
7,0
6,0
5,0
4,0
3,0
2,0
1,0
REFERENCE GRADIENT - %
WIND - kt
HEADWIND
TAILWIND
30
20
10
0
−10
REF. LINE
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000
12000
13000
14000
15000
16000
17000
HORIZONTAL DISTANCE FROM REFERENCE ZERO - m
120 1813 038

Figure 5-16

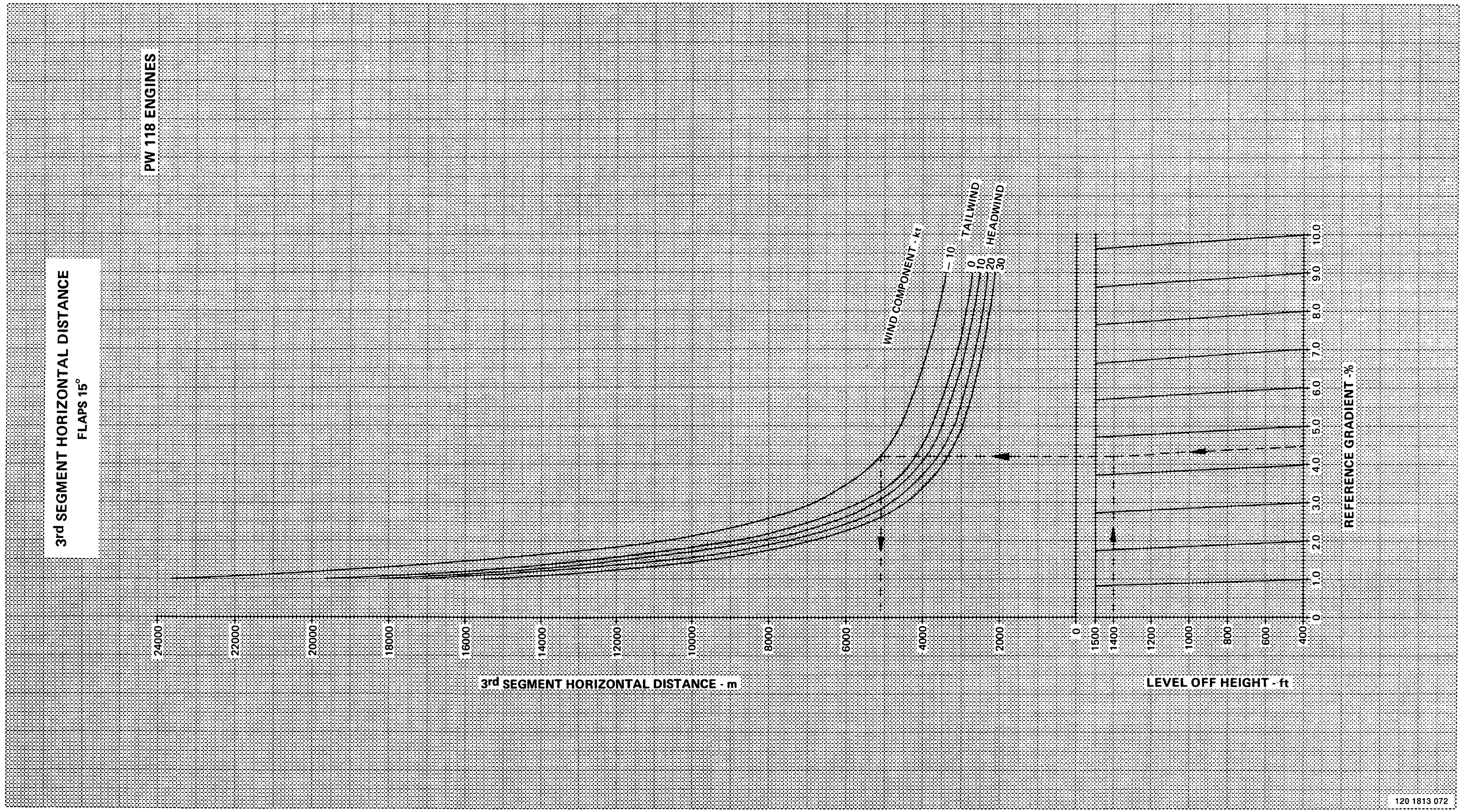

PW 118 ENGINES
3rd SEGMENT HORIZONTAL DISTANCE
FLAPS 15°
WIND COMPONENT - kt
TAILWIND
HEADWIND
- 10
0
10
20
30
REFERENCE GRADIENT -%
0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
24000
22000
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
1500
1400
1200
1000
800
600
400
3rd SEGMENT HORIZONTAL DISTANCE - m
LEVEL OFF HEIGHT - ft
120 1813 072

Figure 5-17

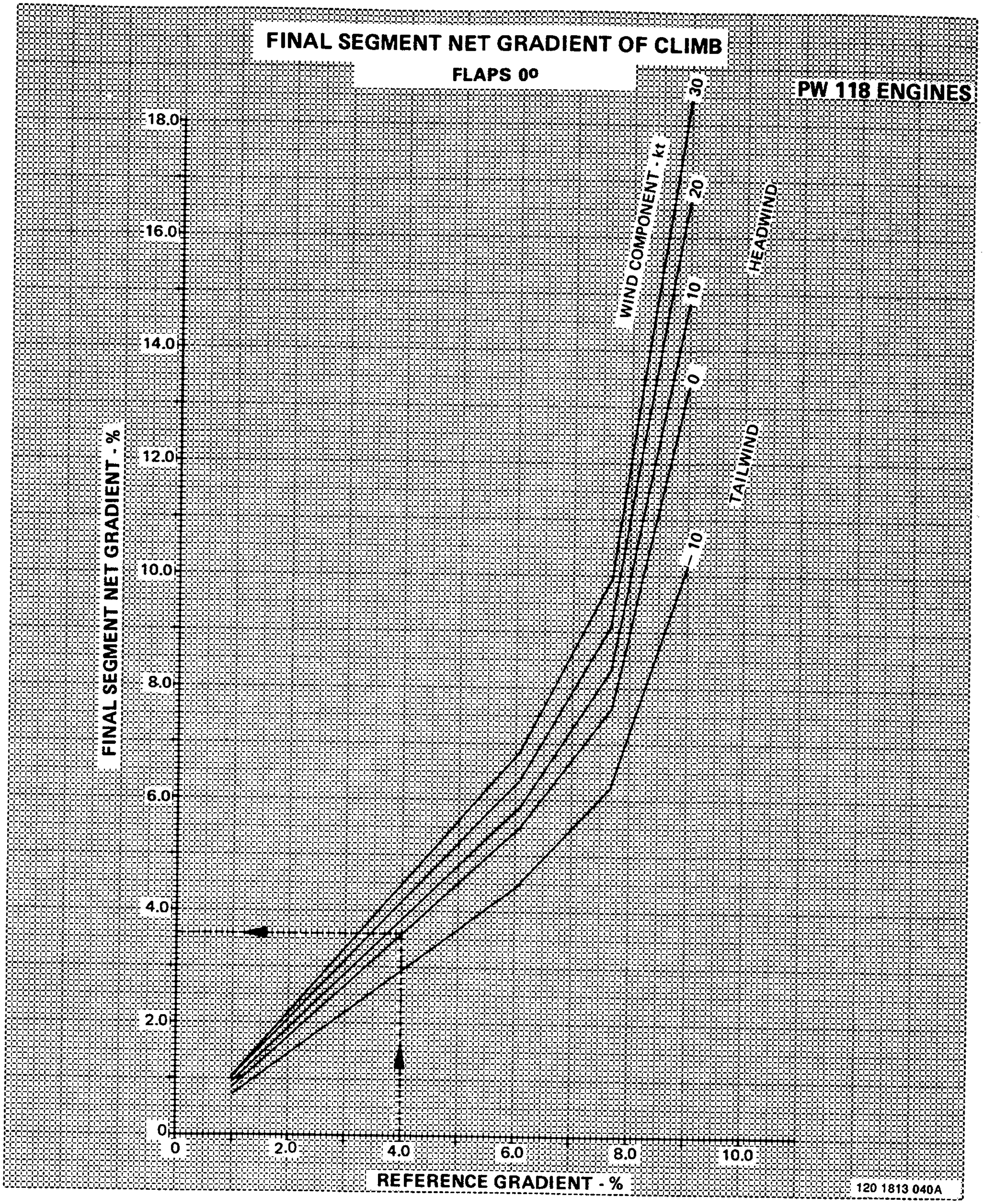

FINAL SEGMENT NET GRADIENT OF CLIMB
FLAPS 0º
PW 118 ENGINES
FINAL SEGMENT NET GRADIENT - %
REFERENCE GRADIENT - %
WIND COMPONENT - kt
HEADWIND
TAILWIND
30
20
10
0
-10
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0
0
2.0
4.0
6.0
8.0
10.0
120 1813 040A

Figure 5-18

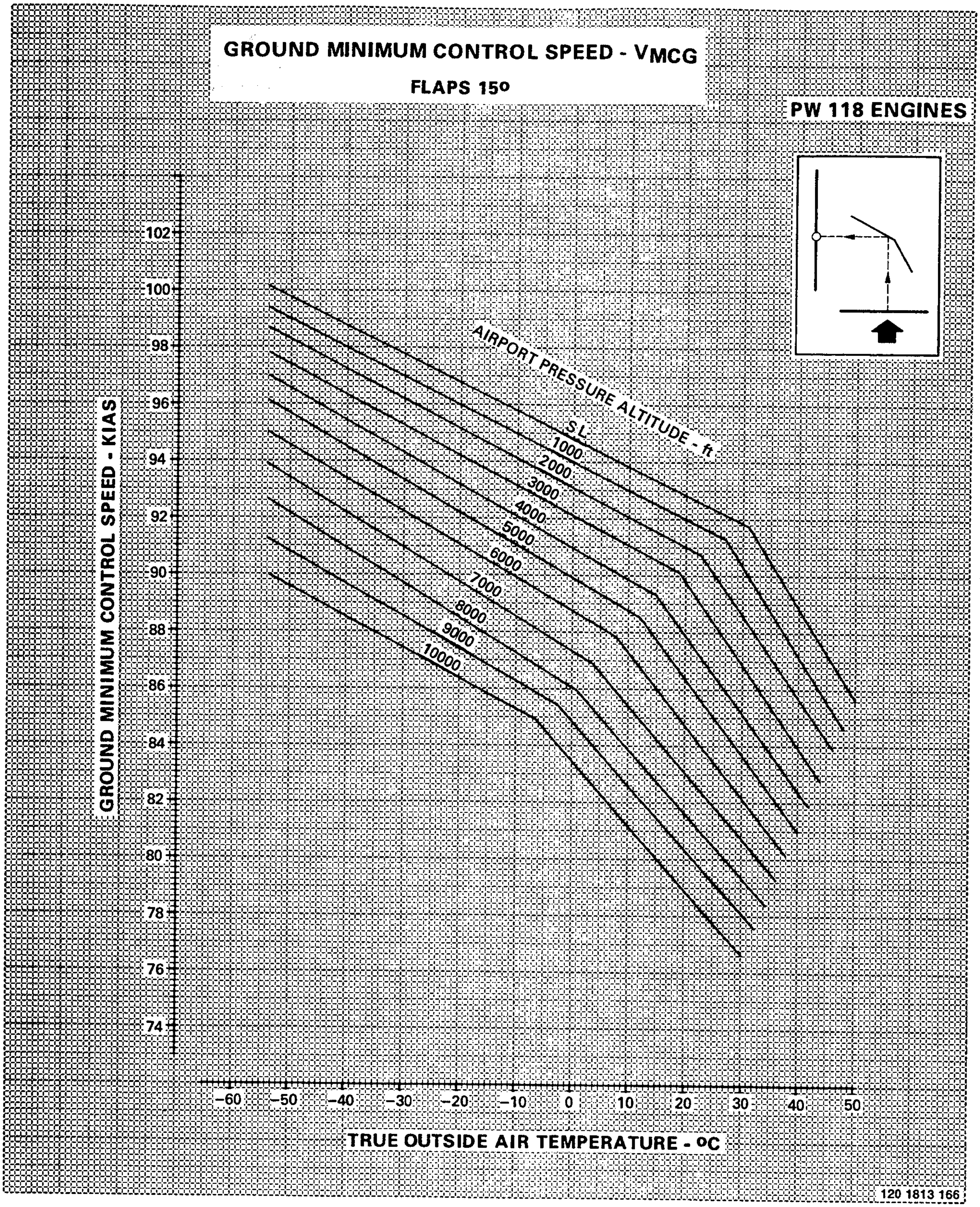

GROUND MINIMUM CONTROL SPEED - VMCG
FLAPS 15°
PW 118 ENGINES
AIRPORT PRESSURE ALTITUDE - ft
S.L.
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
GROUND MINIMUM CONTROL SPEED - KIAS
102
100
98
96
94
92
90
88
86
84
82
80
78
76
74
-60
-50
-40
-30
-20
-10
0
10
20
30
40
50
TRUE OUTSIDE AIR TEMPERATURE - °C
120 1813 166

Figure 5-19

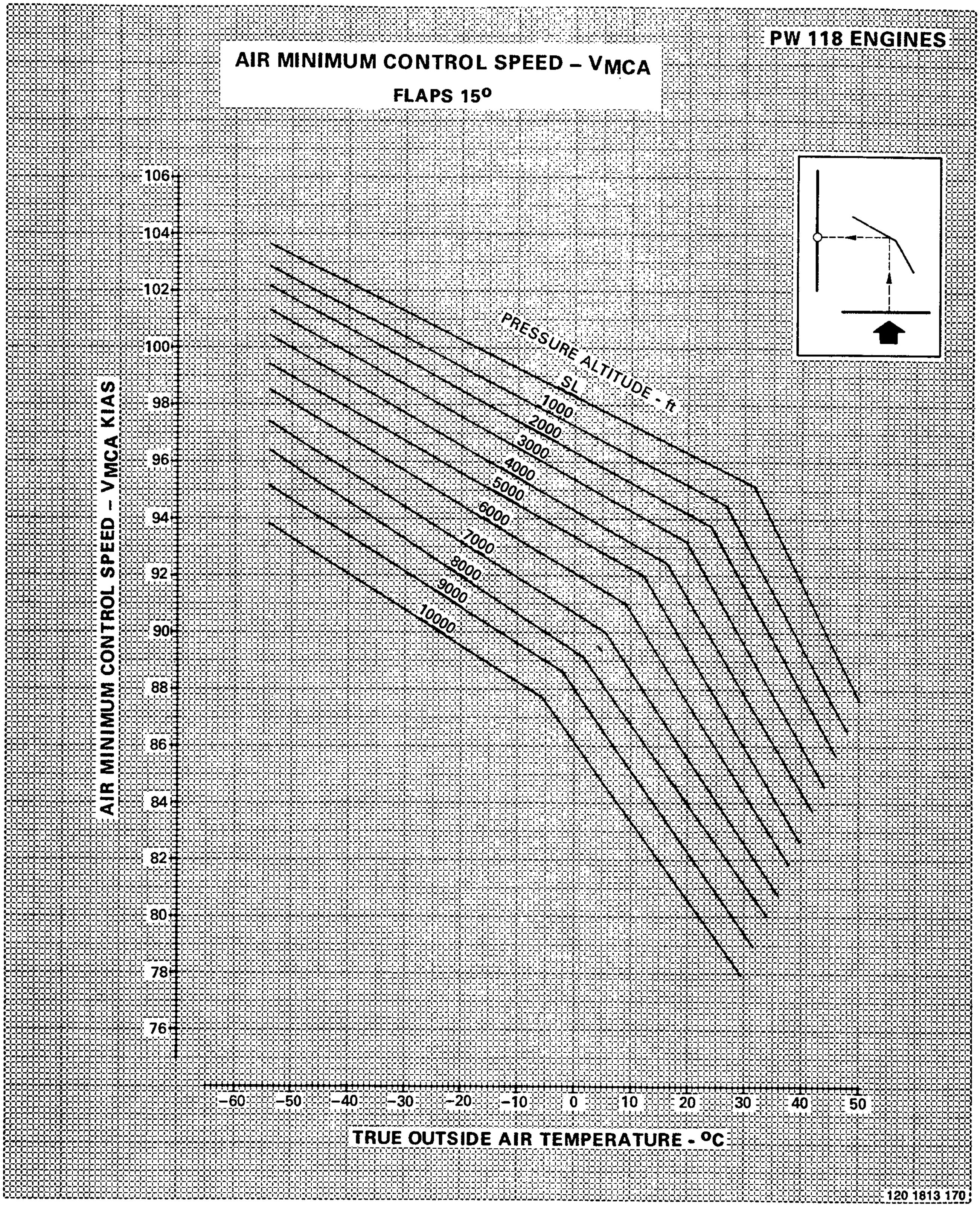

PW 118 ENGINES
AIR MINIMUM CONTROL SPEED – VMCA
FLAPS 15°
AIR MINIMUM CONTROL SPEED – VMCA KIAS
106
104
102
100
98
96
94
92
90
88
86
84
82
80
78
76
PRESSURE ALTITUDE - ft
SL
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
-60
-50
-40
-30
-20
-10
0
10
20
30
40
50
TRUE OUTSIDE AIR TEMPERATURE - °C
120 1813 170

Figure 5-20

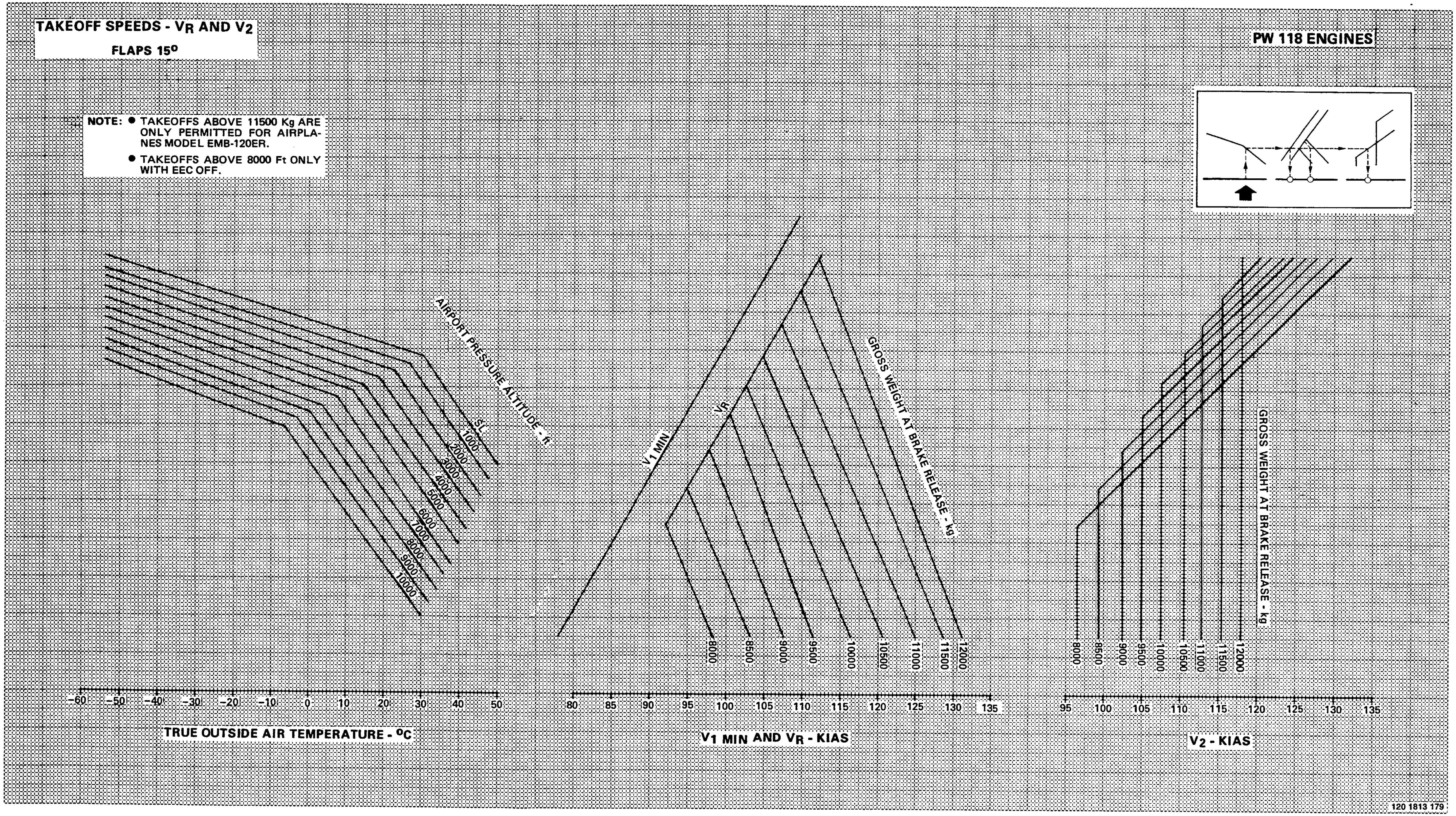

TAKEOFF SPEEDS - V_R AND V_2
FLAPS 15°
PW 118 ENGINES
NOTE: • TAKEOFFS ABOVE 11500 Kg ARE ONLY PERMITTED FOR AIRPLANES MODEL EMB-120ER.
• TAKEOFFS ABOVE 8000 Ft ONLY WITH EEC OFF.
AIRPORT PRESSURE ALTITUDE - ft
SL
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
V_1 MIN
V_R
GROSS WEIGHT AT BRAKE RELEASE - kg
8000
8500
9000
9500
10000
10500
11000
11500
12000
-60 -50 -40 -30 -20 -10 0 10 20 30 40 50
TRUE OUTSIDE AIR TEMPERATURE - °C
80 85 90 95 100 105 110 115 120 125 130 135
V_1 MIN AND V_R - KIAS
95 100 105 110 115 120 125 130 135
V_2 - KIAS
120 1813 179

Figure 5-21

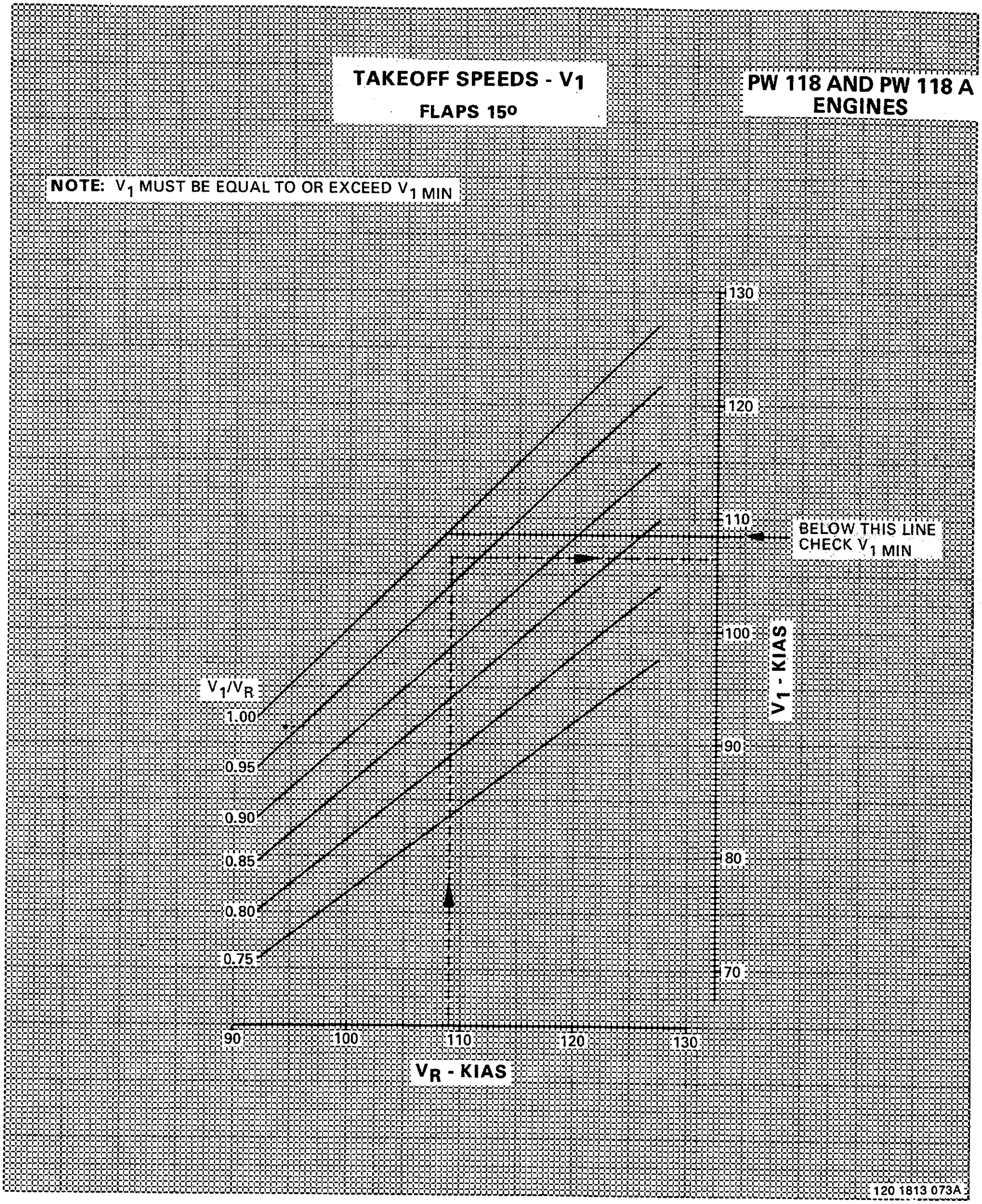

TAKEOFF SPEEDS - V_1
FLAPS 15°
PW 118 AND PW 118 A ENGINES
NOTE: V_1 MUST BE EQUAL TO OR EXCEED $V_{1\ MIN}$
V_1/V_R
1.00
0.95
0.90
0.85
0.80
0.75
BELOW THIS LINE CHECK $V_{1\ MIN}$
130
120
110
100
90
80
70
V_1 - KIAS
90
100
110
120
130
V_R - KIAS
120 1813 073A

Figure 5-22

EMBRAER
EMB 120 Brasilia
AIRPLANE FLIGHT MANUAL

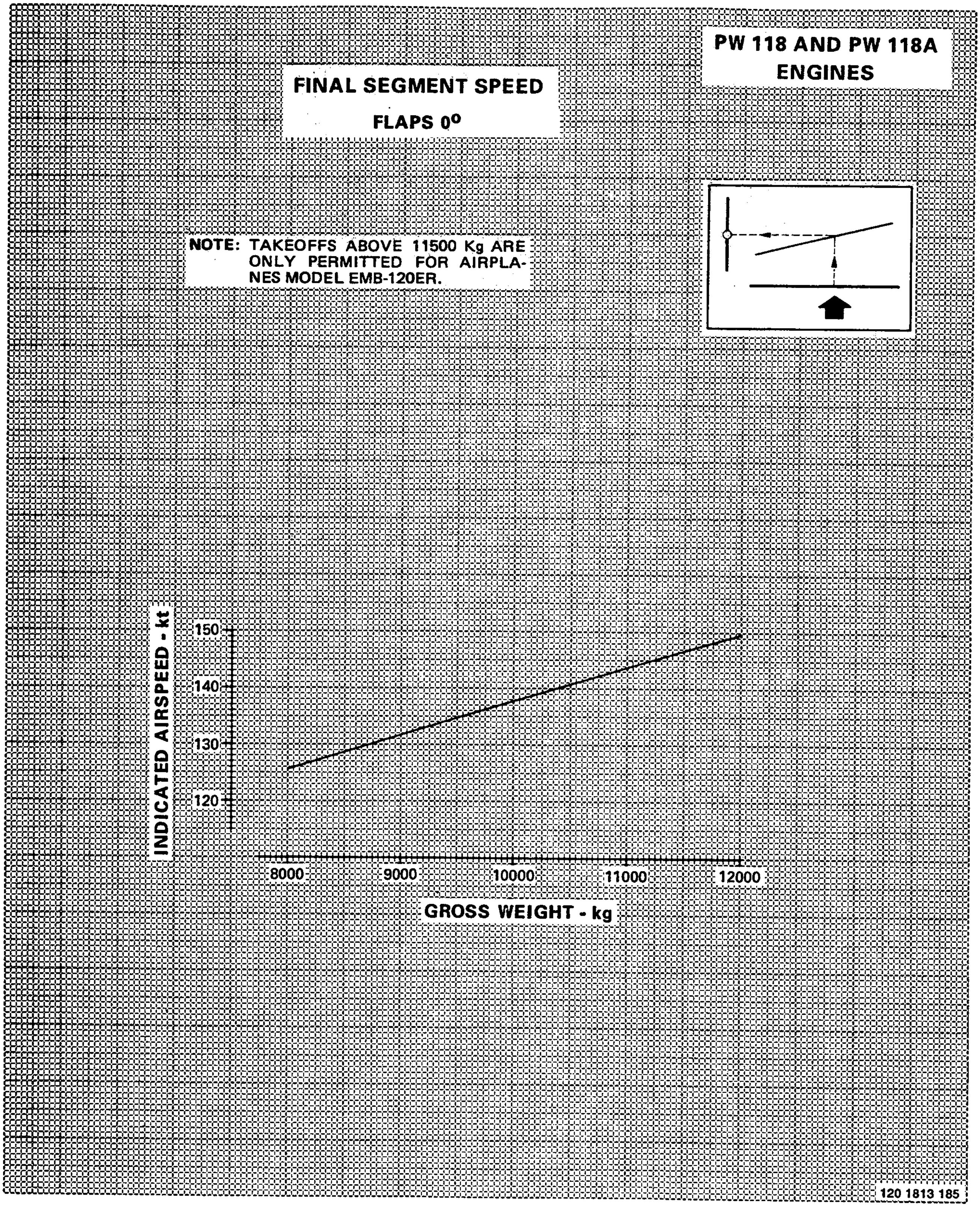


Figure 5-23

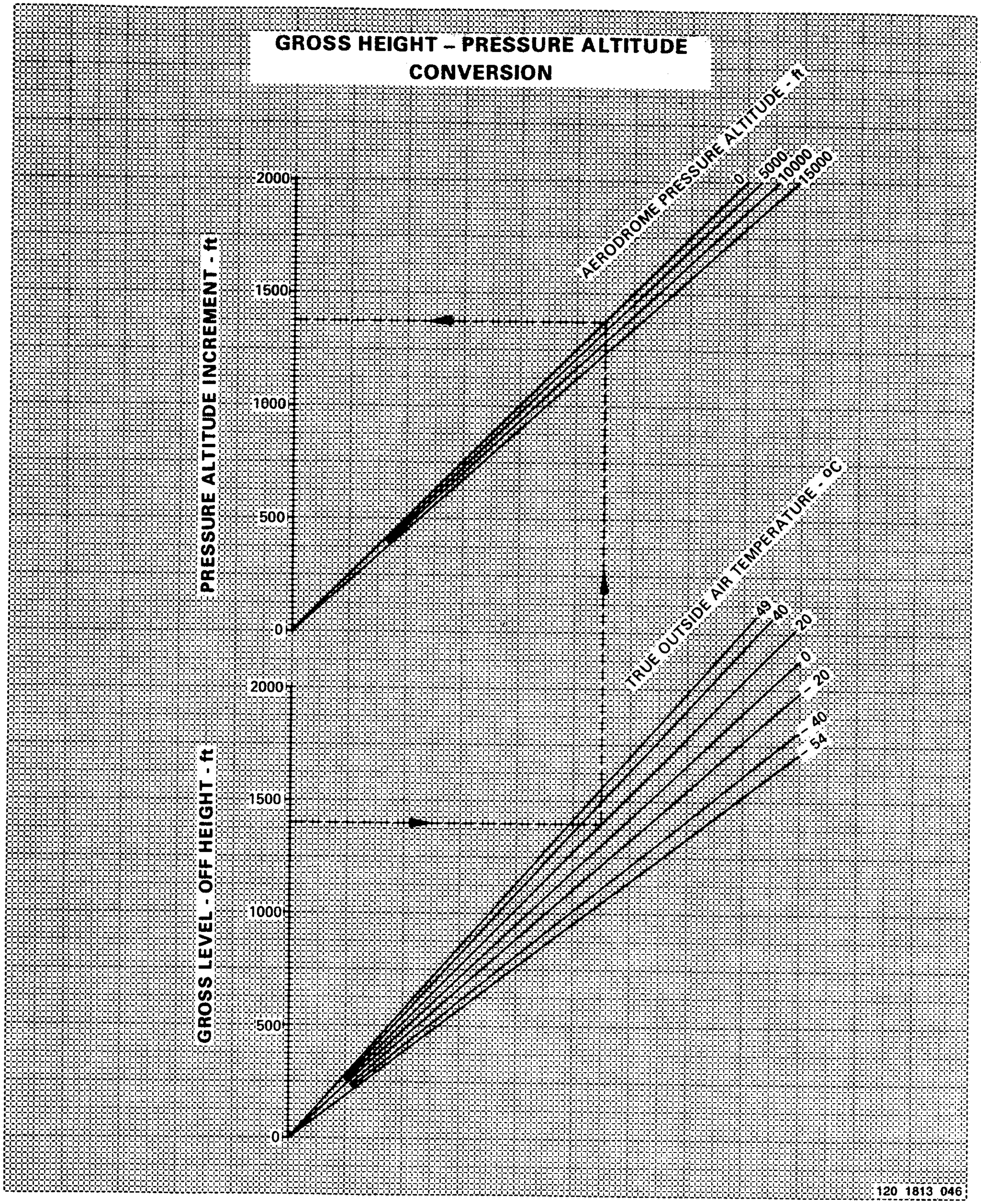

GROSS HEIGHT – PRESSURE ALTITUDE CONVERSION
PRESSURE ALTITUDE INCREMENT - ft
AERODROME PRESSURE ALTITUDE - ft
0
5000
10000
15000
2000
1500
1000
500
0
GROSS LEVEL - OFF HEIGHT - ft
TRUE OUTSIDE AIR TEMPERATURE - ºC
49
40
20
0
- 20
- 40
- 54
2000
1500
1000
500
0
120 1813 046

Figure 5-24

GENERAL

Enroute climb speeds, enroute net climb gradients, and enroute climb weight for positive net gradient charts are presented in this section.

The one engine inoperative enroute climb speed is shown for various weights.

The one engine inoperative enroute net gradient of climb shown for various pressure altitudes, true outside air temperatures, and weights.

The one engine inoperative climb weight for positive net gradient is shown for various pressure altitudes, and temperature relation to ISA.

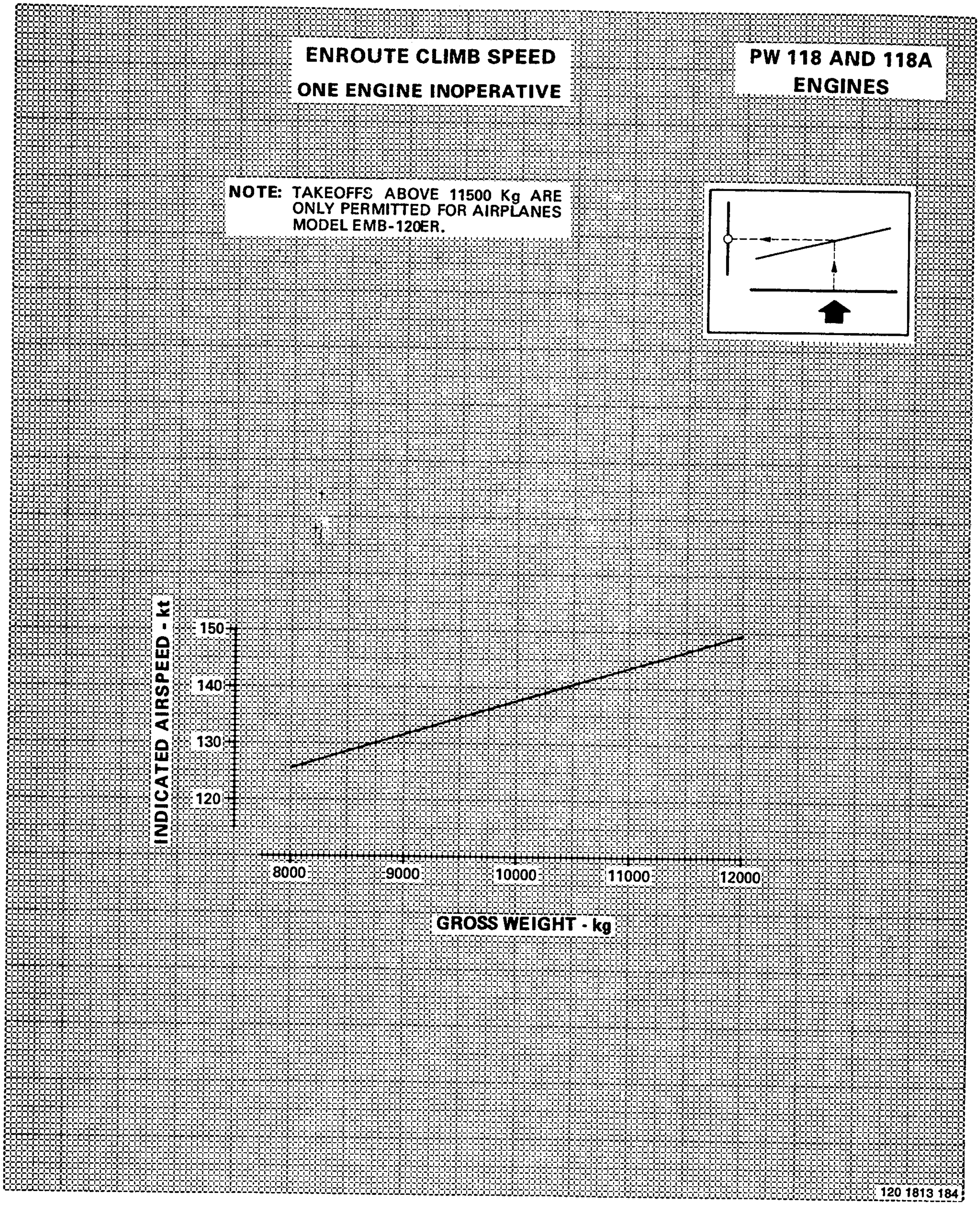

ENROUTE CLIMB SPEED
ONE ENGINE INOPERATIVE
PW 118 AND 118A ENGINES
NOTE: TAKEOFFS ABOVE 11500 Kg ARE ONLY PERMITTED FOR AIRPLANES MODEL EMB-120ER.
INDICATED AIRSPEED - kt
150
140
130
120
8000
9000
10000
11000
12000
GROSS WEIGHT - kg
120 1813 184

Figure 5-25

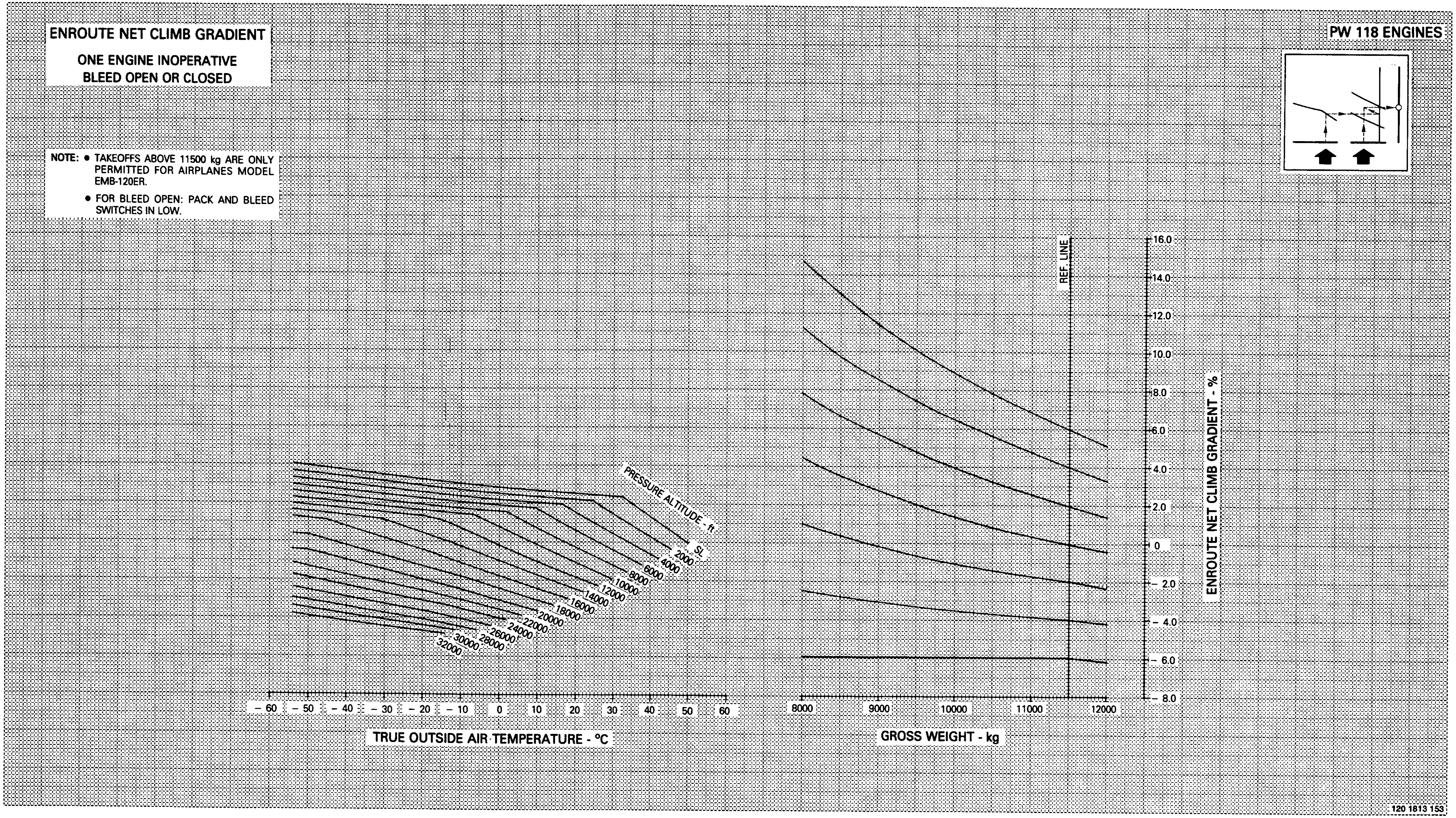

ENROUTE NET CLIMB GRADIENT
ONE ENGINE INOPERATIVE
BLEED OPEN OR CLOSED
PW 118 ENGINES
NOTE: • TAKEOFFS ABOVE 11500 kg ARE ONLY PERMITTED FOR AIRPLANES MODEL EMB-120ER.
• FOR BLEED OPEN: PACK AND BLEED SWITCHES IN LOW.
PRESSURE ALTITUDE - ft
SL
2000
4000
6000
8000
10000
12000
14000
16000
18000
20000
22000
24000
26000
28000
30000
32000
REF. LINE
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0
– 2.0
– 4.0
– 6.0
– 8.0
ENROUTE NET CLIMB GRADIENT - %
– 60
– 50
– 40
– 30
– 20
– 10
0
10
20
30
40
50
60
TRUE OUTSIDE AIR TEMPERATURE - °C
8000
9000
10000
11000
12000
GROSS WEIGHT - kg
120 1813 153

Figure 5-26

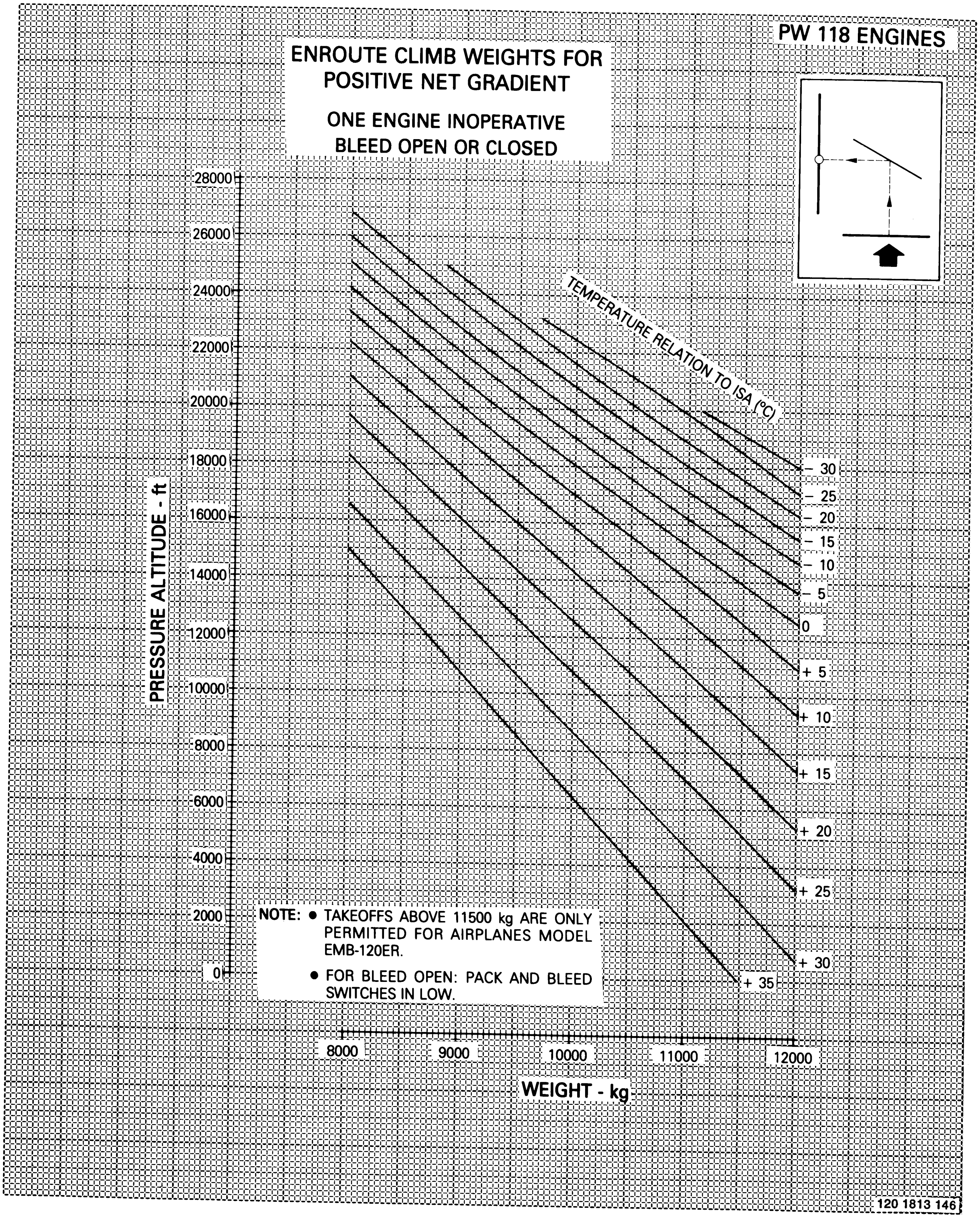

PW 118 ENGINES
ENROUTE CLIMB WEIGHTS FOR POSITIVE NET GRADIENT
ONE ENGINE INOPERATIVE
BLEED OPEN OR CLOSED
PRESSURE ALTITUDE - ft
28000
26000
24000
22000
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
TEMPERATURE RELATION TO ISA (°C)
– 30
– 25
– 20
– 15
– 10
– 5
0
+ 5
+ 10
+ 15
+ 20
+ 25
+ 30
+ 35
NOTE: • TAKEOFFS ABOVE 11500 kg ARE ONLY PERMITTED FOR AIRPLANES MODEL EMB-120ER.
• FOR BLEED OPEN: PACK AND BLEED SWITCHES IN LOW.
8000
9000
10000
11000
12000
WEIGHT - kg
120 1813 146

Figure 5-27

GENERAL

The charts on the following pages present approach and landing speeds, approach and landing climb gradients, maximum landing weights and landing field lengths.

PROCEDURES

For final approach, wing flaps should be at the selected landing position and the speed set according to the flap configuration at the value given here. At 50 ft, the throttles are reduced smoothly. Apply brakes when the airplane is firmly on the ground with nose wheel in contact. Refer to Section 4 (Normal Procedures) for more detailed information on landing procedures.

NOTE: Landing field lengths were not based on use of propeller reverse; however, landing distances can be decreased by using reverse.

CHART PRESENTATION

APPROACH AND LANDING CLIMB GRADIENTS

The Approach Climb Gradient is shown as a function of true outside air temperature, airport pressure altitude, and gross weight, taking into account the bleed and airplane configuration effects.
The Landing Climb Gradients (flaps 25° or 45°) are shown as a function of true outside air temperature, airport pressure altitude, and gross weight, taking into account the bleed effect.
The adopted Approach Climb Speed is V_2 (refer to Takeoff Speeds – V_R and V_2 chart).
The adopted Landing Climb Speed for flaps 25° is presented in the Landing Climb Gradient – Flaps 25° chart.
The adopted Landing Climb Speed for flaps 45° is presented in the Landing Climb Gradient – Flaps 45° chart.

MAXIMUM LANDING WEIGHTS – CLIMB LIMITED

The maximum allowable landing weight approach climb limited for flaps 15° is shown as function of pressure altitude and true outside air temperature, taking into account the bleed and airplane configuration effects.
The maximum allowable landing weight landing climb limited, for flaps 25° and 45°, are shown as a function of pressure altitude and true outside air temperature, taking into account the bleed effect.

CHART PRESENTATION (Continued)

MAXIMUM LANDING WEIGHTS – FIELD LENGTH LIMITED

The maximum allowable landing weight is shown, for flaps 25° and 45°, as a function of the available field length and airport pressure altitude, taking into account wind component and alternative destination.
Also, these charts may be used, in a reverse may, to obtain the landing distance required from 50 ft height to rest.
The landing distance shown includes the factor prescribed in the regulations; therefore, the values obtained may be equated directly with the landing distance available.
The Landing Reference Speed, to be used for the selected flap configuration, is also presented in these charts, as a function of the gross weight.

LANDING BRAKE ENERGY

The landing weight is shown, for flaps 25° and 45°, as a function of true outside air temperature and airport pressure altitude, taking into account wind component and runway slope effects.

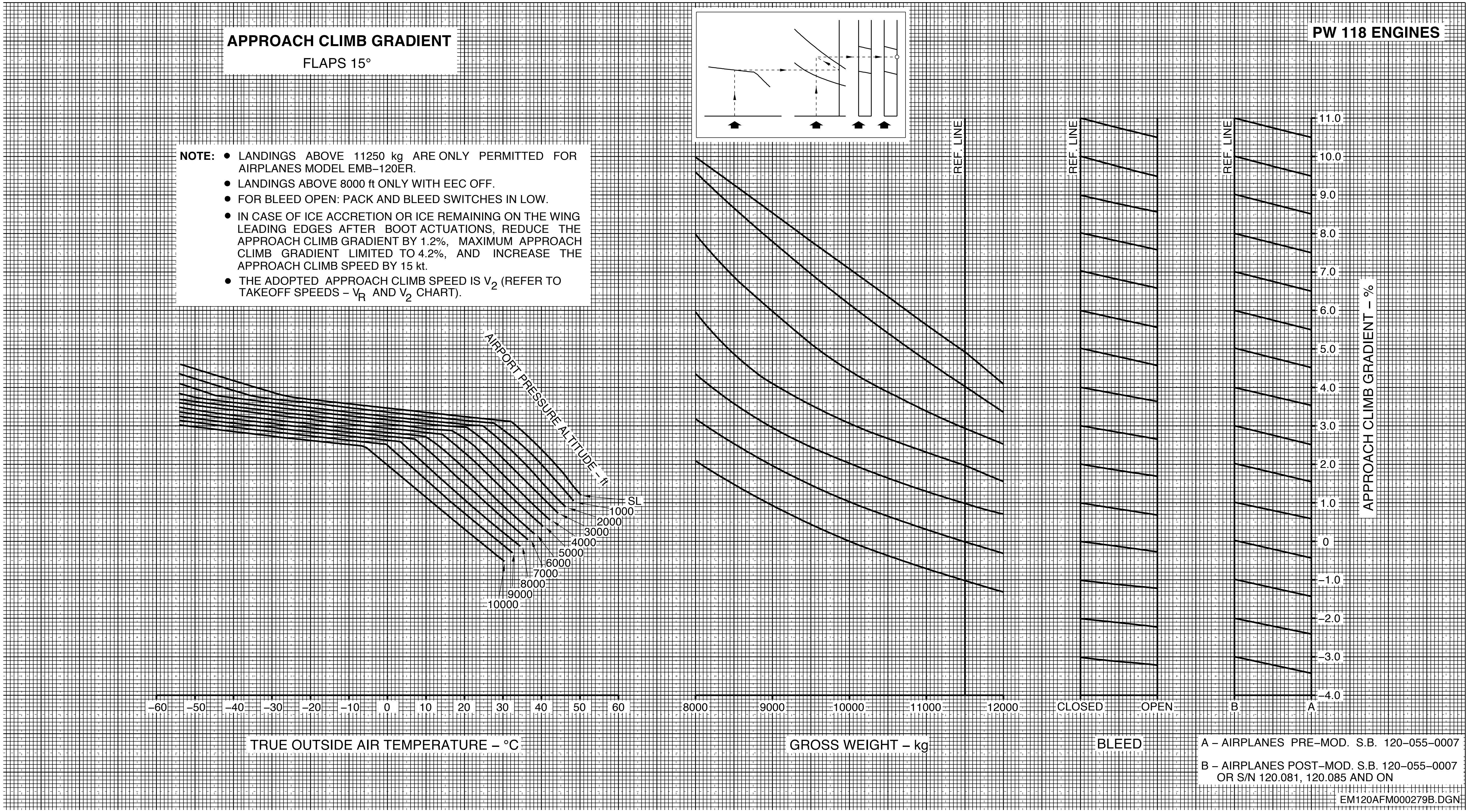

APPROACH CLIMB GRADIENT
FLAPS 15°
PW 118 ENGINES
NOTE: ● LANDINGS ABOVE 11250 kg ARE ONLY PERMITTED FOR AIRPLANES MODEL EMB-120ER.
● LANDINGS ABOVE 8000 ft ONLY WITH EEC OFF.
● FOR BLEED OPEN: PACK AND BLEED SWITCHES IN LOW.
● IN CASE OF ICE ACCRETION OR ICE REMAINING ON THE WING LEADING EDGES AFTER BOOT ACTUATIONS, REDUCE THE APPROACH CLIMB GRADIENT BY 1.2%, MAXIMUM APPROACH CLIMB GRADIENT LIMITED TO 4.2%, AND INCREASE THE APPROACH CLIMB SPEED BY 15 kt.
● THE ADOPTED APPROACH CLIMB SPEED IS V2 (REFER TO TAKEOFF SPEEDS – VR AND V2 CHART).
AIRPORT PRESSURE ALTITUDE – ft
SL
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
REF. LINE
REF. LINE
REF. LINE
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0
–1.0
–2.0
–3.0
–4.0
APPROACH CLIMB GRADIENT – %
–60 –50 –40 –30 –20 –10 0 10 20 30 40 50 60
8000 9000 10000 11000 12000
CLOSED OPEN
B A
TRUE OUTSIDE AIR TEMPERATURE – °C
GROSS WEIGHT – kg
BLEED
A – AIRPLANES PRE-MOD. S.B. 120-055-0007
B – AIRPLANES POST-MOD. S.B. 120-055-0007 OR S/N 120.081, 120.085 AND ON
EM120AFM000279B.DGN

Figure 5-28

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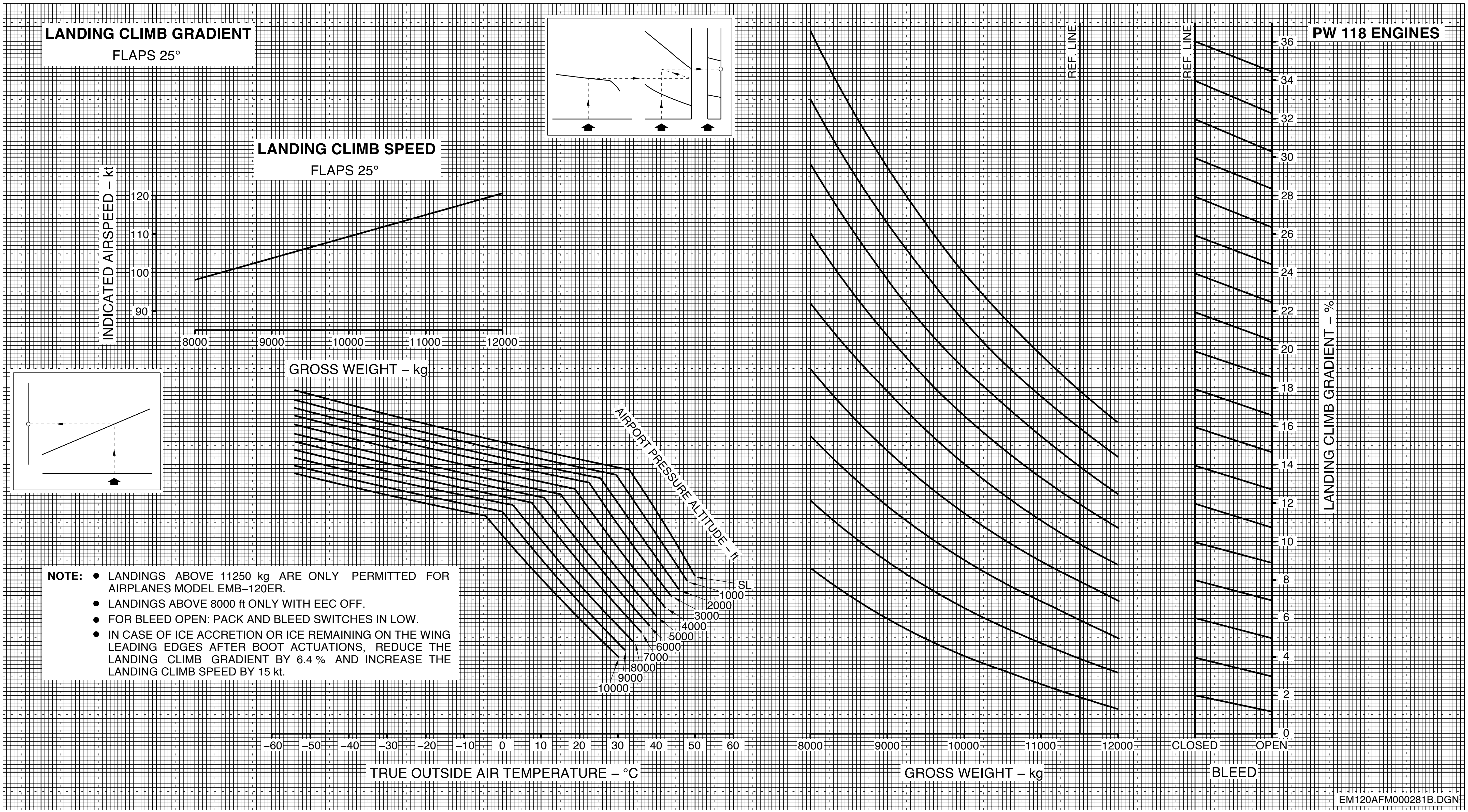

Figure 5-29 (Sheet 1 of 2)

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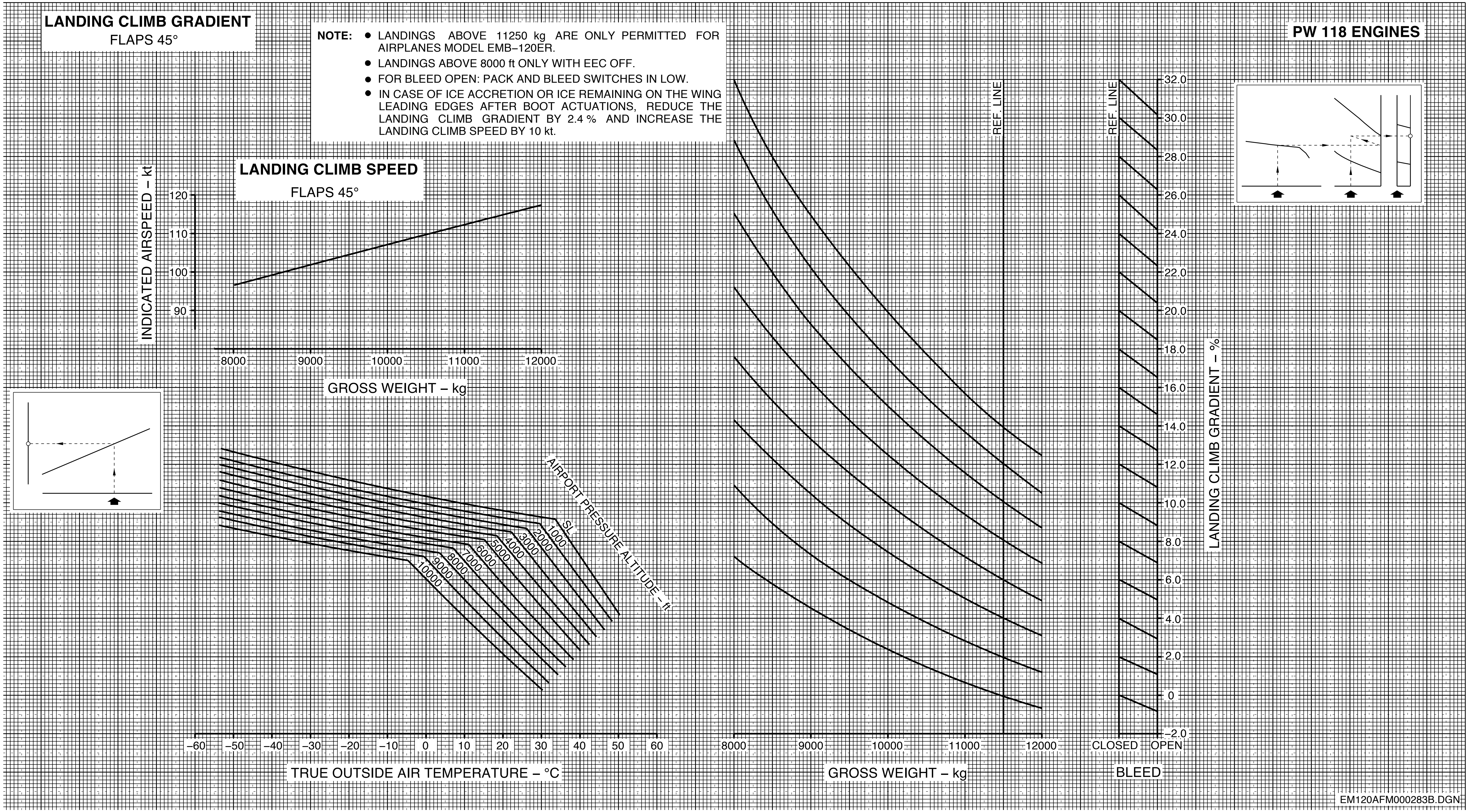

Figure 5-29 (Sheet 2 of 2)

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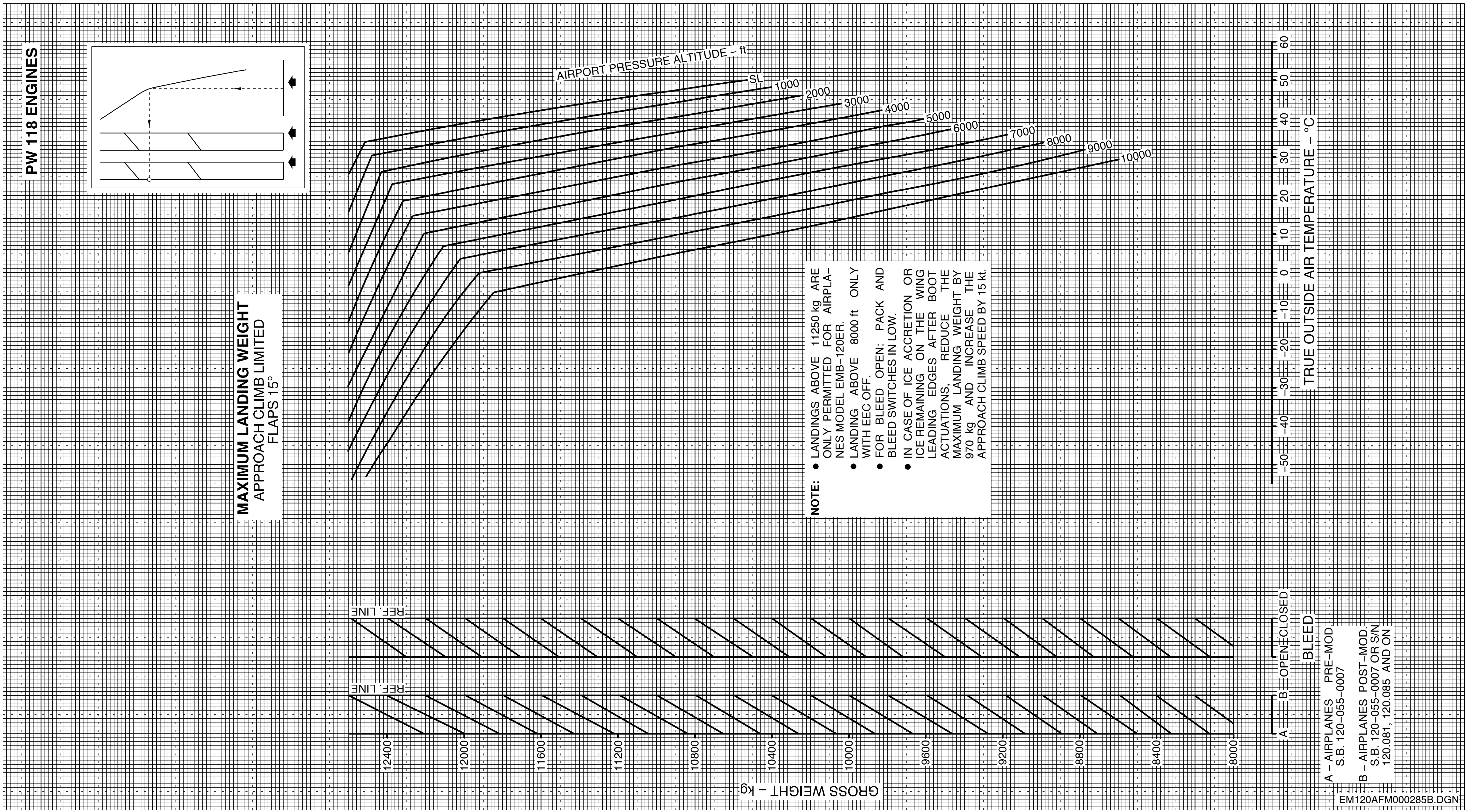
PW 118 ENGINES
MAXIMUM LANDING WEIGHT
APPROACH CLIMB LIMITED
FLAPS 15°
AIRPORT PRESSURE ALTITUDE – ft
SL
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
NOTE: ● LANDINGS ABOVE 11250 kg ARE ONLY PERMITTED FOR AIRPLANES MODEL EMB-120ER.
● LANDING ABOVE 8000 ft ONLY WITH EEC OFF.
● FOR BLEED OPEN: PACK AND BLEED SWITCHES IN LOW.
● IN CASE OF ICE ACCRETION OR ICE REMAINING ON THE WING LEADING EDGES AFTER BOOT ACTUATIONS, REDUCE THE MAXIMUM LANDING WEIGHT BY 970 kg AND INCREASE THE APPROACH CLIMB SPEED BY 15 kt.
TRUE OUTSIDE AIR TEMPERATURE – °C
60
50
40
30
20
10
0
−10
−20
−30
−40
−50
REF. LINE
REF. LINE
OPEN CLOSED
BLEED
A
B
A – AIRPLANES PRE-MOD. S.B. 120-055-0007
B – AIRPLANES POST-MOD. S.B. 120-055-0007 OR S/N 120.081, 120.085 AND ON
12400
12000
11600
11200
10800
10400
10000
9600
9200
8800
8400
8000
GROSS WEIGHT – kg
EM120AFM000285B.DGN

Figure 5-30

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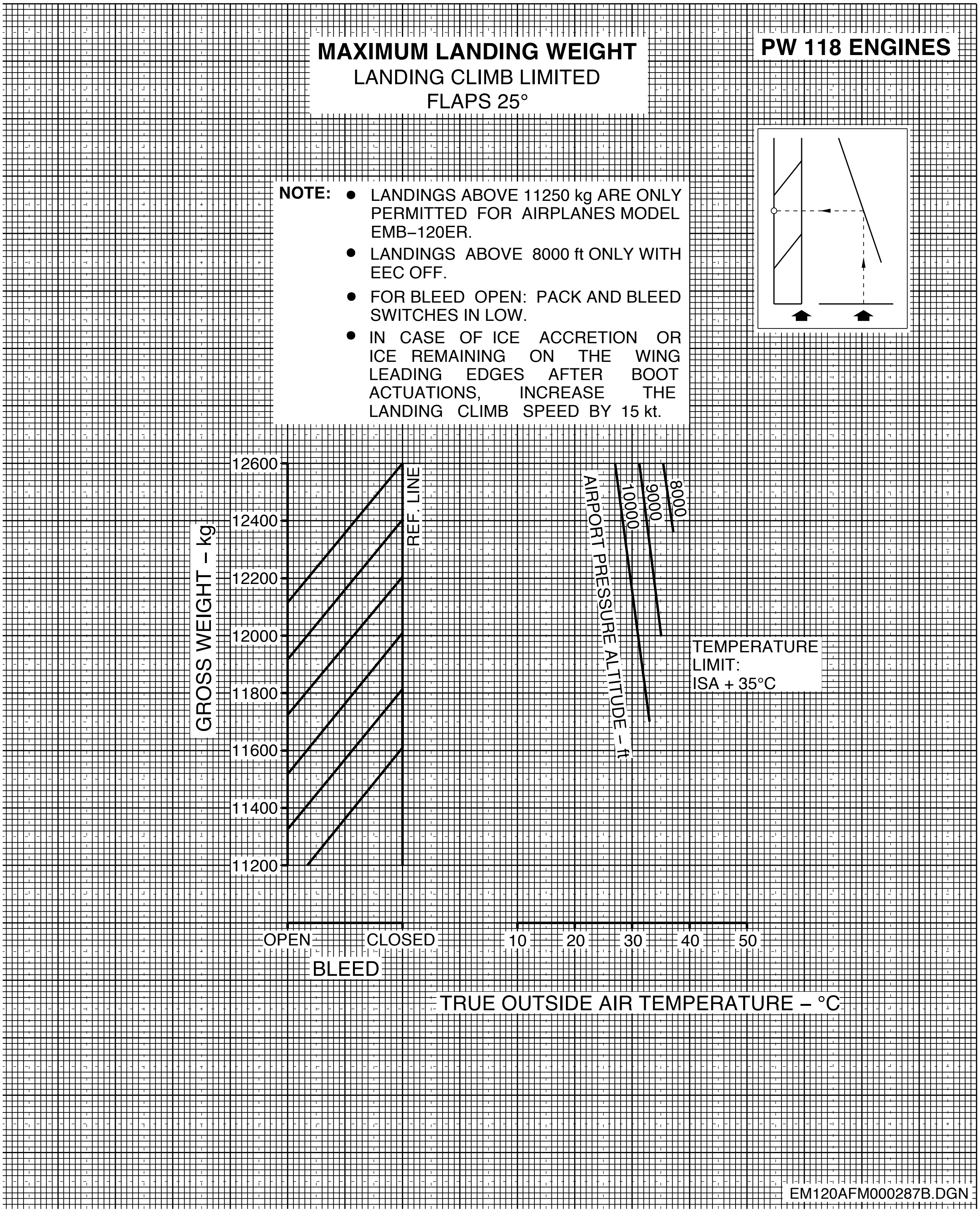

Figure 5-31 (Sheet 1 of 2)

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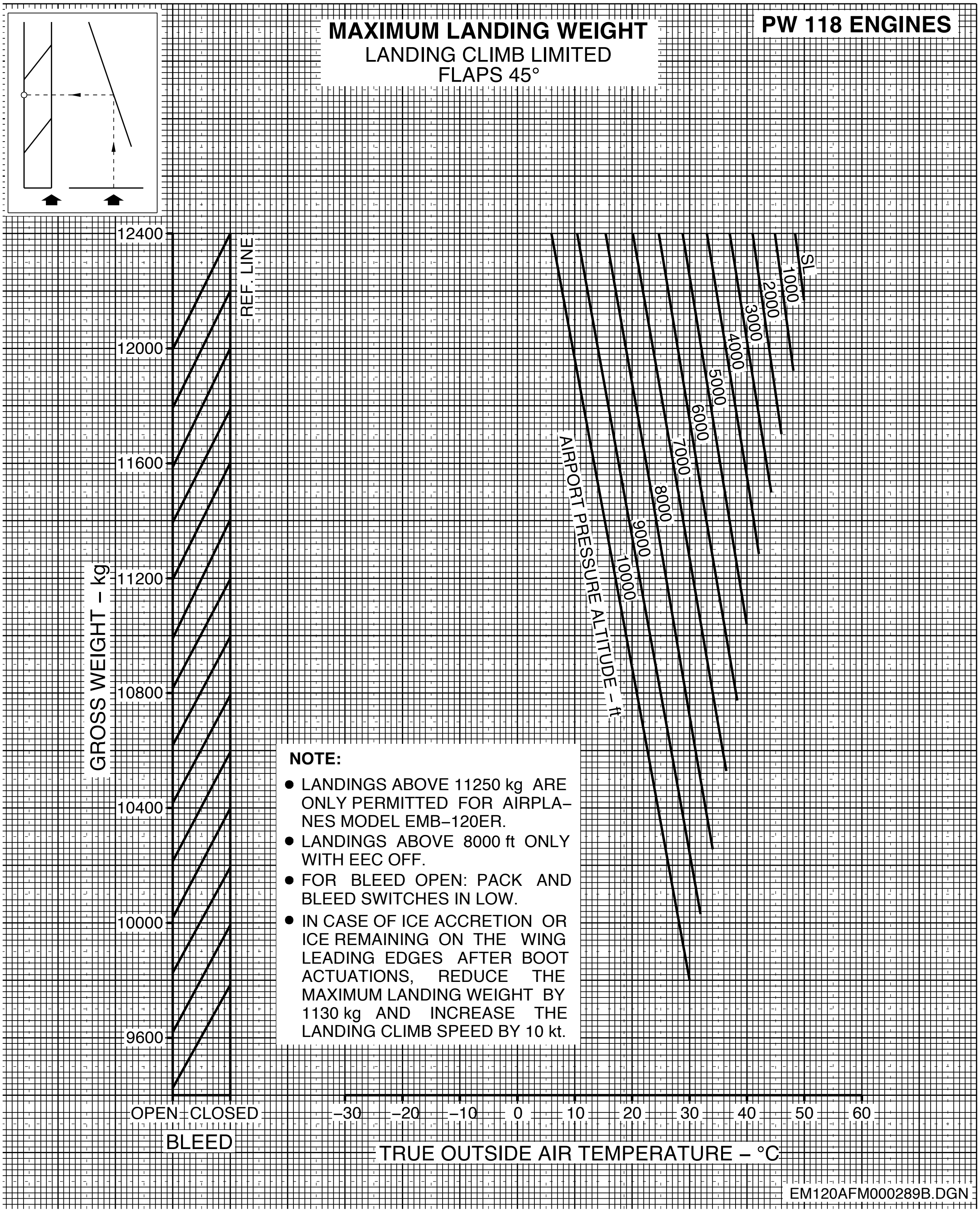

Figure 5-31 (Sheet 2 of 2)

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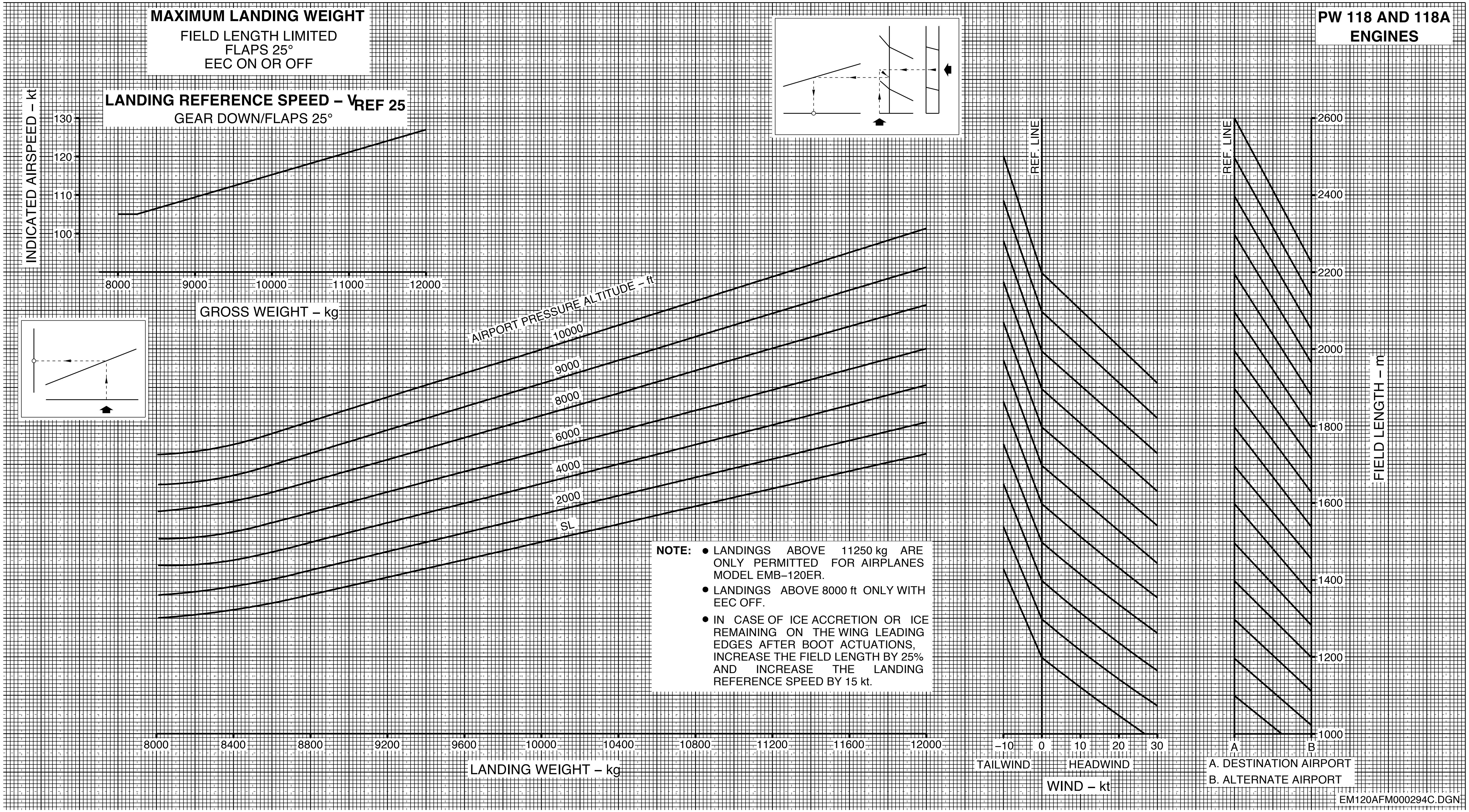

Figure 5-34 (Sheet 1 of 2)

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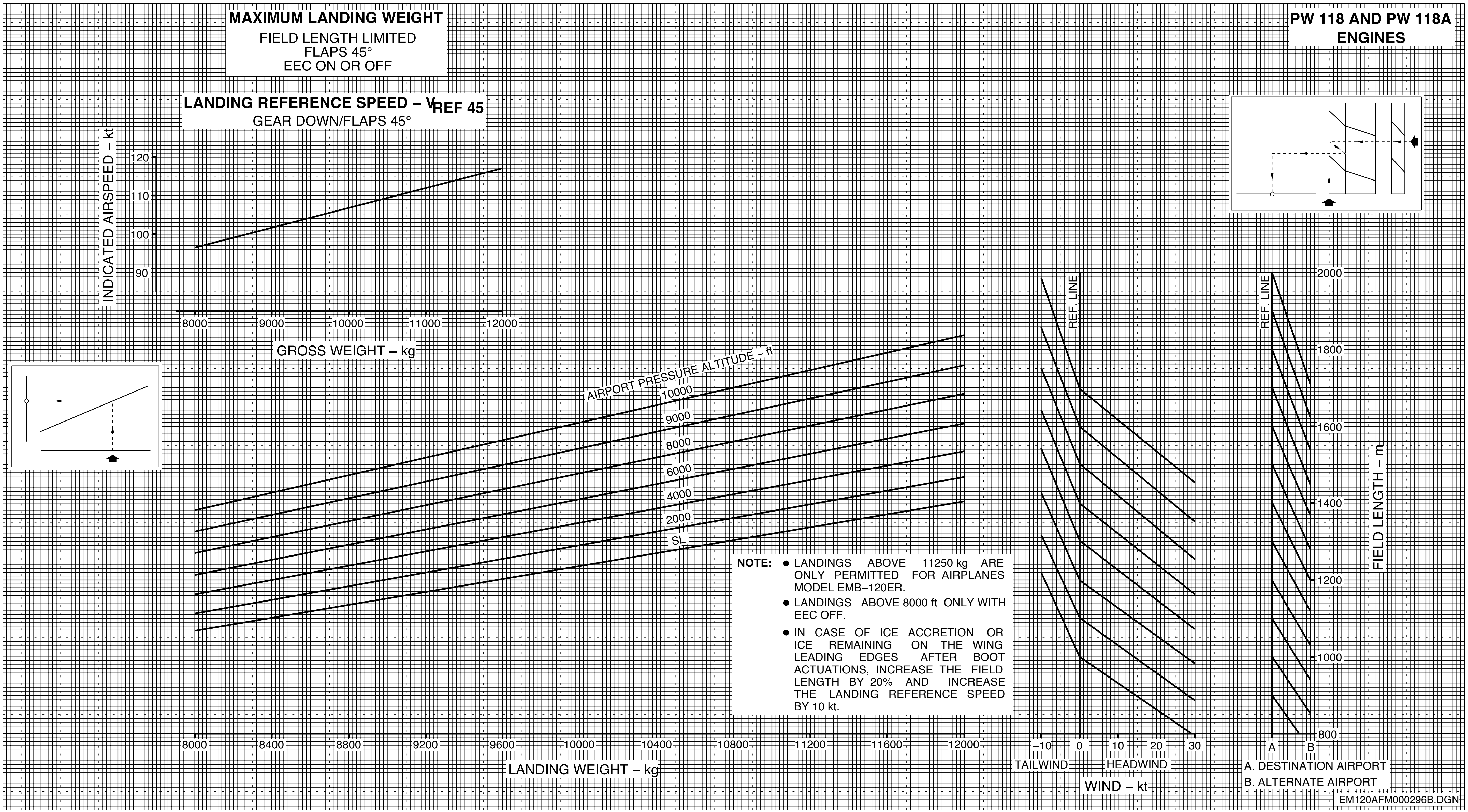

Figure 5-34 (Sheet 2 of 2)

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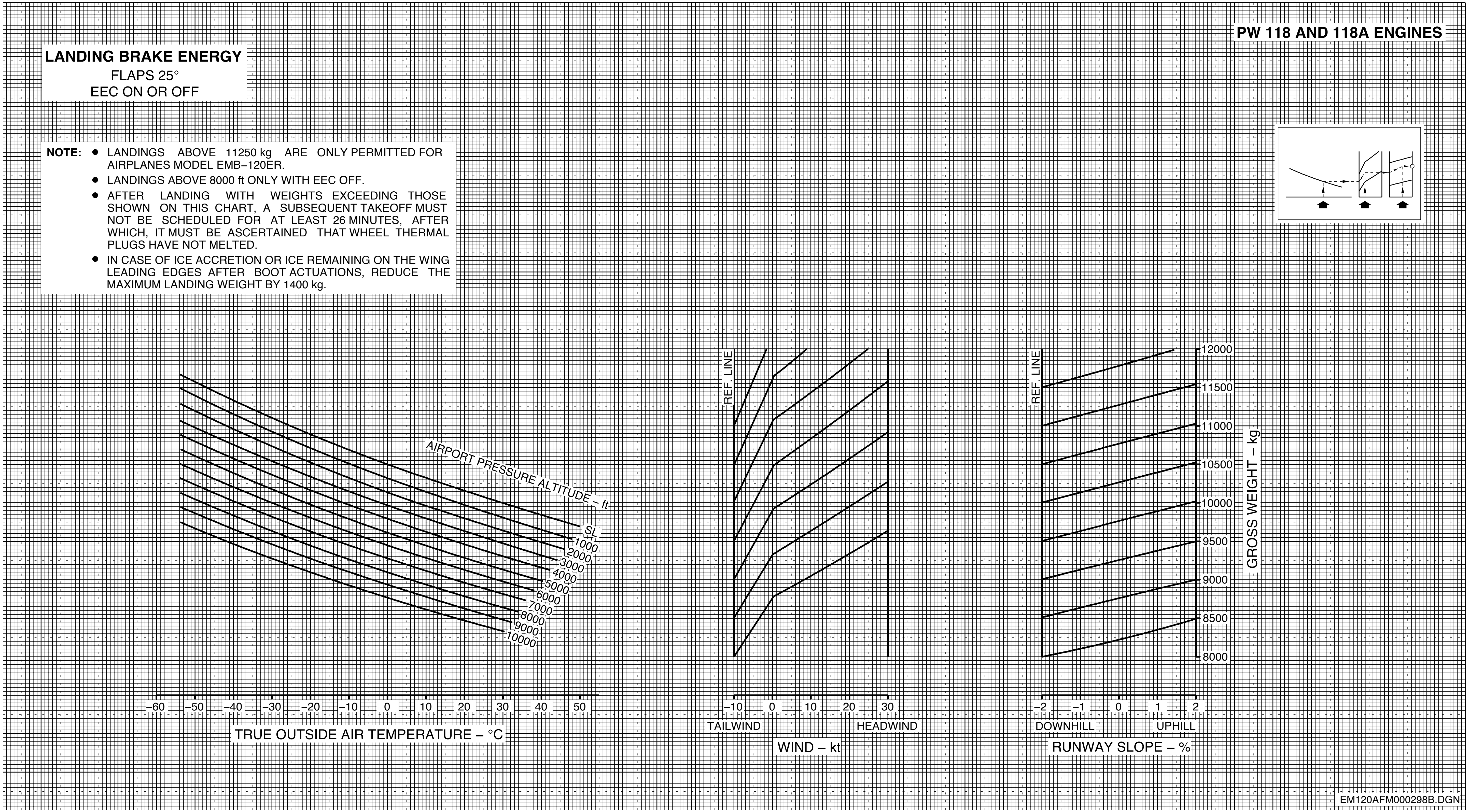

Figure 5-35 (Sheet 1 of 2)

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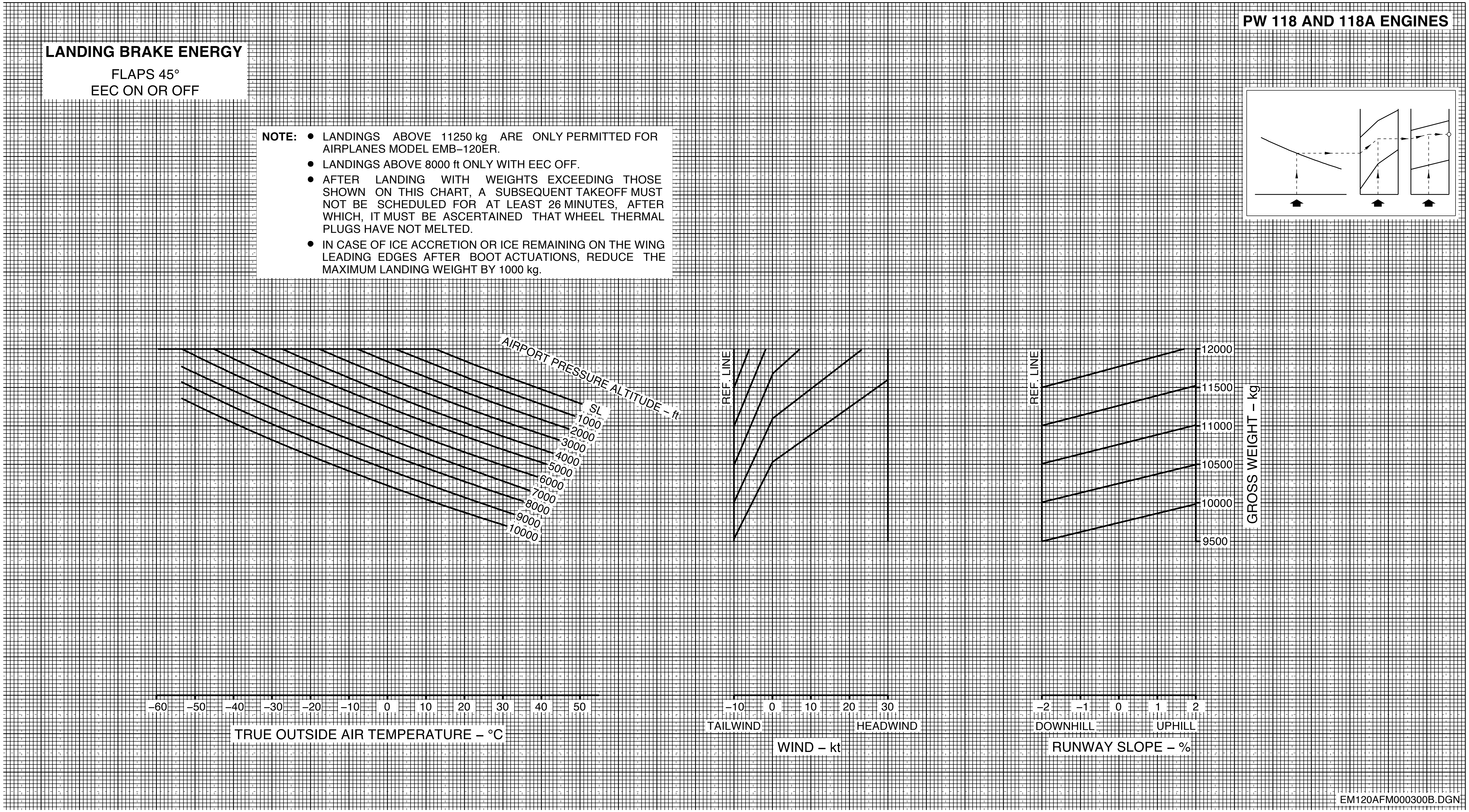

Figure 5-35 (Sheet 2 of 2)

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